# RF MEASUREMENT REPORT

| | |
|---|---|
| **FCC ID:** | TK4WPQ618HV |
| **Applicant:** | Compex Systems Pte Ltd |
| **Product:** | Wireless Access Point |
| **Model No.:** | WPQ618HV, WPQ618LV |
| **Brand Name:** | COMPEX |
| **FCC Classification:** | Unlicensed National Information Infrastructure (NII) |
| **FCC Rule Part(s):** | Part 15 Subpart E (Section 15.407) |
| **Result:** | Complies |
| **Test Date:** | 2022-04-19 ~ 2022-05-30 |

**Reviewed By:** Jame Yuan

**Approved By:** Robin Wu


## Revision History

| Report No. | Version | Description | Issue Date | Note |
|---|---|---|---|---|
| 2203RSU059-U4 | Rev. 01 | Initial Report | 2022-08-08 | Valid |
| | | | | |

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# 1. General Information

## 1.1. Applicant

Compex Systems Pte Ltd

No:9 Harrison Road, Harrison Industrial Building, #05-01, Singapore 369651

## 1.2. Manufacturer

Compex Systems Pte Ltd

No:9 Harrison Road, Harrison Industrial Building, #05-01, Singapore 369651

## 1.3. Testing Facility

| | | | | | |
|---|---|---|---|---|---|
| ☒ | **Test Site – MRT Suzhou Laboratory** | | | | |
| | **Laboratory Location (Suzhou - Wuzhong)**<br>D8 Building, No.2 Tian'edang Rd., Wuzhong Economic Development Zone, Suzhou, China<br>**Laboratory Location (Suzhou - SIP)**<br>4b Building, Liando U Valley, No.200 Xingpu Rd., Shengpu Town, Suzhou Industrial Park, China | | | | |
| | **Laboratory Accreditations** | | | | |
| | A2LA: 3628.01 | | CNAS: L10551 | | |
| | FCC: CN1166 | | ISED: CN0001 | | |
| | VCCI: | ☐R-20025 | ☐G-20034 | ☐C-20020 | ☐T-20020 |
| | | ☐R-20141 | ☐G-20134 | ☐C-20103 | ☐T-20104 |
| ☒ | **Test Site – MRT Shenzhen Laboratory** | | | | |
| | **Laboratory Location (Shenzhen)**<br>1G, Building A, Junxiangda Building, Zhongshanyuan Road West, Nanshan District, Shenzhen, China | | | | |
| | **Laboratory Accreditations** | | | | |
| | A2LA: 3628.02 | | CNAS: L10551 | | |
| | FCC: CN1284 | | ISED: CN0105 | | |
| ☐ | **Test Site – MRT Taiwan Laboratory** | | | | |
| | **Laboratory Location (Taiwan)**<br>No. 38, Fuxing 2nd Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.) | | | | |
| | **Laboratory Accreditations** | | | | |
| | TAF: L3261-190725 | | | | |
| | FCC: 291082, TW3261 | | ISED: TW3261 | | |

### 1.4. Product Information

| | |
|---|---|
| Product Name | Wireless Access Point |
| Model No. | WPQ618HV, WPQ618LV |
| EUT Identification No. | 20210407Sample#02 |
| Wi-Fi Specification | 802.11a/b/g/n/ac/ax |
| Bluetooth Specification | V4.2 dual mode |
| Antenna Information | Refer to section 1.6 |
| Power Supply | AC/DC Adapter or PoE Adapter |
| Remark: The information of EUT was provided by the manufacturer, and the accuracy of the information shall be the responsibility of the manufacturer. | |

### 1.5. Radio Specification

| | |
|---|---|
| Frequency Range | For 802.11a/n-HT20/ac-VHT20/ax-HE20:<br>5180~5240MHz, 5745~5825MHz<br>For 802.11n-HT40/ac-VHT40/ax-HE40:<br>5190~5230MHz, 5755~5795MHz<br>For 802.11ac-VHT80/ax-HE80:<br>5210MHz, 5775MHz |
| Type of Modulation | 802.11a/n/ac: OFDM<br>802.11ax: OFDMA |
| Data Rate | 802.11a: 6/9/12/18/24/36/48/54Mbps<br>802.11n: up to 300Mbps<br>802.11ac: up to 866.6Mbps<br>802.11ax: up to 1201Mbps |

Note: For other features of this EUT, test report will be issued separately.

### 1.6. Working Frequencies

802.11a/n-HT20/ac-VHT20/ax-HE20

| Channel | Frequency | Channel | Frequency | Channel | Frequency |
|---|---|---|---|---|---|
| 36 | 5180 MHz | 40 | 5200 MHz | 44 | 5220 MHz |
| 48 | 5240 MHz | 149 | 5745 MHz | 153 | 5765 MHz |
| 157 | 5785 MHz | 161 | 5805 MHz | 165 | 5825 MHz |

802.11n-HT40/ac-VHT40/ax-HE40

| Channel | Frequency | Channel | Frequency | Channel | Frequency |
|---|---|---|---|---|---|
| 38 | 5190 MHz | 46 | 5230 MHz | 151 | 5755 MHz |
| 159 | 5795 MHz | -- | -- | -- | -- |

802.11ac-VHT80/ax-HE80

| Channel | Frequency | Channel | Frequency | Channel | Frequency |
|---|---|---|---|---|---|
| 42 | 5210 MHz | 155 | 5775 MHz | -- | -- |

### 1.7. Antenna Details

| Antenna Type | Frequency Band (GHz) | Max Peak Gain (dBi) | CDD Directional Gain (dBi) | |
|---|---|---|---|---|
| | | | For Power | For PSD |
| Wi-Fi Antenna (2*2 MIMO) | | | | |
| Omni Antenna 1# | 2.4 ~ 2.5 | 8.00 | 8.00 | 11.01 |
| | 5.15 ~ 5.85 | 5.00 | 5.00 | 8.01 |
| Omni Antenna 2# (P/NO: WD12020258G) | 2.4 ~ 2.5 | 1.91 | 1.91 | 4.92 |
| | 5.15 ~ 5.85 | 3.39 | 3.39 | 6.40 |
| Omni Antenna 3# (P/NO: 02S00029A) | 2.4 ~ 2.5 | 3.41 | 3.41 | 6.42 |
| | 5.15 ~ 5.85 | 3.55 | 3.55 | 6.56 |
| Bluetooth Antenna | | | | |
| Omni-directional | 2.4 ~ 2.5 | 2.00 | | |

Note 1: The EUT supports Cyclic Delay Diversity (CDD) mode, and CDD signals are correlated.

For CDD transmissions, directional gain is calculated as follows, $N_{ANT}$ = 2, $N_{SS}$ = 1.

If all antennas have the same gain, $G_{ANT}$, 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 ($N_{ANT}$/ $N_{SS}$) dB = 3.01;

- For power measurements on IEEE 802.11 devices,

  Array Gain = 0 dB for $N_{ANT} \leq 4$;

Note 2: We selected the antenna 1# and antenna 3# to perform the test.

# 2. Test Configuration

## 2.1. Test Mode

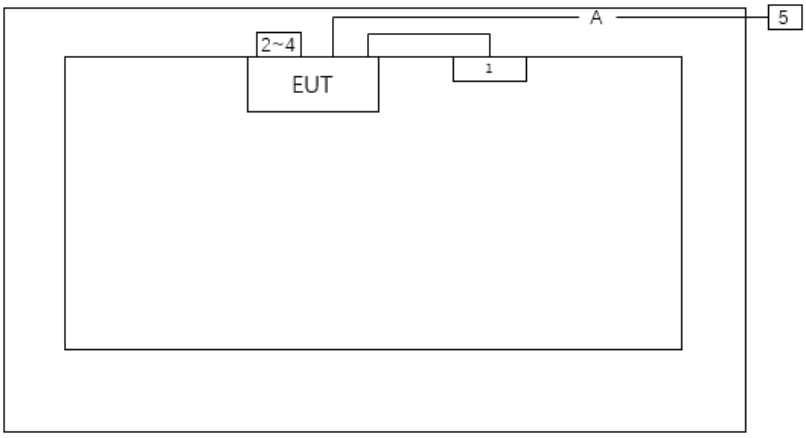
| |
|---|
| Mode 1: Transmit by 802.11a (6Mbps) |
| Mode 2: Transmit by 802.11ac-VHT20 (MCS0) |
| Mode 3: Transmit by 802.11ac-VHT40 (MCS0) |
| Mode 4: Transmit by 802.11ac-VHT80 (MCS0) |
| Mode 5: Transmit by 802.11ax-HE20 (MCS0) |
| Mode 6: Transmit by 802.11ax-HE40 (MCS0) |
| Mode 7: Transmit by 802.11ax-HE80 (MCS0) |

Note 1: Due to the same modulation between 802.11n and 802.11ac, so 802.11n-HT20 and HT40 are covered by 802.11ac-VHT20 and VHT40 in this report, meanwhile, power for 802.11n-HT20 and HT40 will not be greater than 802.11ac-VHT20 and VHT40.

## 2.2. Test System Connection Diagram

The device was tested per the guidance ANSI C63.10: 2013 was used to reference the appropriate EUT setup for radiated emissions testing and AC line conducted testing.

Connection Diagram – Radiated Emission testing & AC Conducted Emissions




| Cable Type | | Cable Description |
|---|---|---|
| A | LAN Cable | Non shielded, > 10m |

## 2.3. Test System Details

| Product | | Manufacturer | Model No. |
|---|---|---|---|
| 1 | Adapter | SWITCHING Power Supply | S050FU1200400 |
| 2~4 | Simulated load | N/A | 001 |
| 5 | Notebook | Lenovo | E431 |

Note: This adapter is provided by the laboratory for testing only, not by the applicant.

### 2.4. Test Software

The test utility software used during testing was engineering order provided by manufacturer.

### 2.5. Applied Standards

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

- FCC Part 15.407
- KDB 789033 D02v02r01
- KDB 662911 D01v02r01
- ANSI C63.10-2013

### 2.6. Test Environment Condition

| | |
|---|---|
| Ambient Temperature | 15 ~ 35°C |
| Relative Humidity | 20 ~ 75%RH |

## 3. Antenna Requirements

**Excerpt from §15.203 of the FCC Rules/Regulations:**

"An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section."

For Omni Antenna1# Configuration

- The antenna of the device is permanently attached.
- There are no provisions for connection to an external antenna.

For Omni Antenna 2# and Omni Antenna 3# Configuration

- The antenna of the device uses IPEX connector

**Conclusion:**

The unit complies with the requirement of §15.203.

## 4. Measuring Instrument

| Instrument | Manufacturer | Model No. | Asset No. | Cali. Interval | Cali. Due Date | Test Site |
|---|---|---|---|---|---|---|
| Two-Line V-Network | R&S | ENV216 | MRTSUE06002 | 1 year | 2022-06-08 | WZ-SR2 |
| Shielding Room | MIX-BEP | WZ-SR2 | MRTSUE06215 | N/A | N/A | WZ-SR2 |
| Thermohygrometer | testo | 608-H1 | MRTSUE06404 | 1 year | 2022-06-28 | WZ-SR2 |
| EMI Test Receiver | R&S | ESR3 | MRTSUE06909 | 1 year | 2022-11-01 | WZ-SR2 |
| EMI Test Receiver | R&S | ESR7 | MRTSUE06001 | 1 year | 2022-12-29 | WZ-AC1 |
| TRILOG Antenna | Schwarzbeck | VULB 9168 | MRTSUE06172 | 1 year | 2022-08-05 | WZ-AC1 |
| Anechoic Chamber | TDK | WZ-AC1 | MRTSUE06212 | 1 year | 2023-04-21 | WZ-AC1 |
| Thermohygrometer | testo | 608-H1 | MRTSUE06403 | 1 year | 2022-06-28 | WZ-AC1 |
| Signal Analyzer | Keysight | N9010B | MRTSUE06607 | 1 year | 2022-12-29 | WZ-AC1 |
| Thermohygrometer | testo | Testo 608-H1 | MRTSUE11039 | 1 year | 2022-11-11 | WZ-AC1 |
| Loop Antenna | Schwarzbeck | FMZB 1519 | MRTSUE06025 | 1 year | 2022-10-28 | WZ-AC1 |
| Horn Antenna | Schwarzbeck | BBHA 9170 | MRTSUE06292 | 1 year | 2022-10-20 | NS-AC1 |
| Anechoic Chamber | BOOMWAVE | NS-AC1 | MRTSUE06496 | 1 year | 2022-07-24 | NS-AC1 |
| Horn Antenna | Schwarzbeck | BBHA 9120D | MRTSUE06572 | 1 year | 2023-04-01 | NS-AC1 |
| TRILOG Antenna | Schwarzbeck | VULB 9162 | MRTSUE06573 | 1 year | 2022-06-29 | NS-AC1 |
| Preamplifier | Schwarzbeck | BBV 9718 | MRTSUE06574 | 1 year | 2022-07-12 | NS-AC1 |
| EMI Test Receiver | R&S | ESR3 | MRTSUE06575 | 1 year | 2022-06-27 | NS-AC1 |
| Thermohygrometer | DELI | NO.8813 | MRTSUE06588 | 1 year | 2022-06-30 | NS-AC1 |
| Preamplifier | EMCI | EMC184045SE | MRTSUE06641 | 1 year | 2023-01-13 | NS-AC1 |
| Signal Analyzer | Agilent | N9010A | MRTSUE06195 | 1 year | 2023-04-13 | NS-AC1 |
| High Pass Filter | WI | WHKX10-2501-3050-18000-80SS | MRTSUE06151 | 1 year | 2023-03-09 | NS-AC1 |
| Signal Analyzer | Keysight | N9020A | MRTSUE10065 | 1 year | 2022-06-17 | NS-TR2 |
| USB Power Sensor | Keysight | U2021XA | MRTSUE06581 | 1 year | 2022-08-15 | NS-TR2 |
| Thermohygrometer | DELI | NO.8813 | MRTSUE06783 | 1 year | 2023-04-14 | NS-TR2 |
| Temperature Chamber | OUKE | OK-TH-100C | MRTSUE06899 | 1 year | 2022-11-01 | NS-TR2 |
| Attenuator | MVE | MVE2213 | MRTSUE11064 | 1 year | 2023-06-09 | NS-TR2 |
| Attenuator | MVE | MVE2213 | MRTSUE11065 | 1 year | 2023-06-09 | NS-TR2 |

| Software | Version | Function |
|---|---|---|
| EMI V3 | V3.0.0 | EMI Test Software |
| Controller_MF 7802 | 2.03C | RE Antenna&turntable |
| BenchVue Power Meter | 2021 | Power |
| Controller_T-E-TAC-2 | 1.02 | RE Antenna&turntable |

# 5. Decision Rules and Measurement Uncertainty

## 5.1. Decision Rules

The Decision Rule is based on Simple Acceptance in accordance with ISO Guide 98-4: 2012 Clause 8.2. (Measurement uncertainty is not taken into account when stating conformity with a specified requirement.)

## 5.2. Measurement Uncertainty

Where relevant, the following test uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k = 2.

| |
|---|
| AC Conducted Emission Measurement |
| Measurement Uncertainty for a Level of Confidence of 95% (U=2Uc(y)):<br>9kHz~150kHz: 3.74dB<br>150kHz~30MHz: 3.44dB |
| Radiated Disturbance |
| Measurement Uncertainty for a Level of Confidence of 95% (U=2Uc(y)):<br>Horizontal:<br>30MHz~300MHz: 5.04dB<br>300MHz~1GHz: 4.95dB<br>1GHz~40GHz: 6.40dB<br>Vertical:<br>30MHz~300MHz: 5.24dB<br>300MHz~1GHz: 6.03dB<br>1GHz~40GHz: 6.40dB |
| Spurious Emissions, Conducted |
| Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)):<br>0.78dB |
| Output Power |
| Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)):<br>1.13dB |
| Power Spectrum Density |
| Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)):<br>1.15dB |
| Occupied Bandwidth |
| Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)):<br>0.28% |

# 6. Test Result

## 6.1. Summary

| FCC Section(s) | Test Description | Test Condition | Verdict |
|---|---|---|---|
| 15.407(a) | 26dB & 99% Bandwidth | Conducted | Pass |
| 15.407(e) | 6dB Bandwidth | | Pass |
| 15.407(a)(1)(ii), (2), (3)(i) | Maximum Conducted Output Power | | Pass |
| 15.407(h)(1) | Transmit Power Control | | Pass |
| 15.407(a)(1)(ii), (2), (3)(i), (12) | Peak Power Spectral Density | | Pass |
| 15.407(b)(1), (2), (3), (4)(i) | Undesirable Emissions | | Pass |
| 15.205, 15.209<br>15.407(b)(8), (9), (10) | General Field Strength Limits (Restricted Bands and Radiated Emission Limits) | Radiated | Pass |
| 15.207 | AC Conducted Emissions 150kHz - 30MHz | Line Conducted | Pass |

**Remark:**

1. The analyzer plots shown in this section were all taken with a correction table loaded into the analyzer. The correction table was used to account for the losses of the cables and attenuators used as part of the system to connect the EUT to the analyzer at all frequencies of interest.
2. Output power test was verified over all data rates of each mode (data refers to operational description), and then choose the maximum power output (low data rate) for final test of each channel.
3. For radiated emission test, every axis (X, Y, Z) was also verified. The test results shown in the following sections represent the worst-case emissions.
4. EUT supports one configuration only in 802.11ax full RU mode.

## 6.2. 26dB & 99% Bandwidth Measurement

### 6.2.1. Test Limit

N/A

### 6.2.2. Test Procedure

KDB 789033 D02v02r01- Section Ⅱ)C)1) (26dB Bandwidth)

KDB 789033 D02v02r01- Section Ⅱ)D) (99% Bandwidth)

### 6.2.3. Test Setting

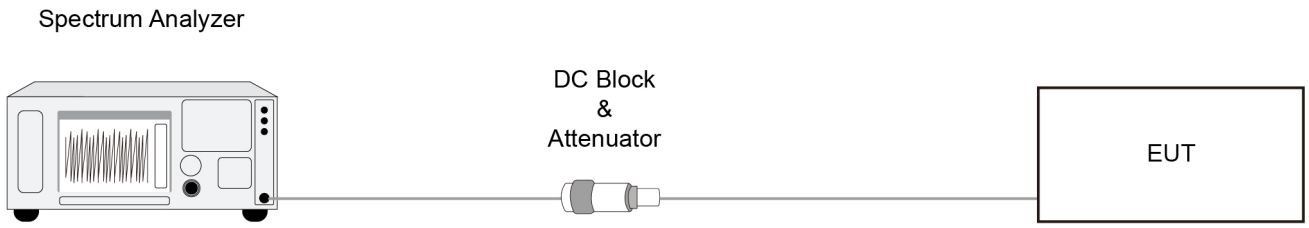
**26dB Bandwidth**

1. The analyzers' automatic bandwidth measurement capability was used to perform the 26dB bandwidth
2. RBW = approximately 1% of the emission bandwidth.
3. VBW > RBW
4. Detector = Peak.
5. Trace mode = max hold.
6. Measure the maximum width of the emission that is 26 dB down from the maximum of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

**99% Bandwidth**

1. Set center frequency to the nominal EUT channel center frequency.
2. RBW = 1% to 5% of the OBW
3. VBW ≥ 3 × RBW
4. Span = 1.5 times to 5 times the OBW
5. Detector = peak
6. Trace mode = max hold
7. Allow the trace to stabilize
8. Use the 99% power bandwidth function of the instrument.

### 6.2.4. Test Setup




### 6.2.5. Test Result

Refer to Appendix A.2.

## 6.3. 6dB Bandwidth Measurement

### 6.3.1. Test Limit

The minimum 6dBbandwidth shall be at least 500 kHz.

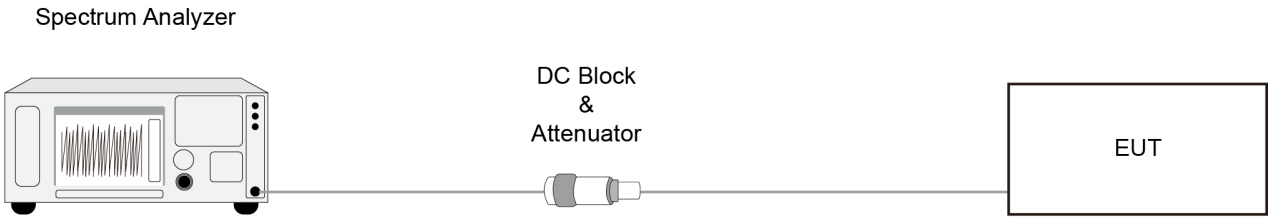
### 6.3.2. Test Procedure

KDB 789033 D02v02r01- Section II)C)2)

### 6.3.3. Test Setting

1. Set center frequency to the nominal EUT channel center frequency.
2. RBW = 100 kHz.
3. VBW ≥ 3 × RBW.
4. Detector = Peak.
5. Trace mode = max hold.
6. Sweep = auto couple.
7. Allow the trace to stabilize.
8. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

### 6.3.4. Test Setup




### 6.3.5. Test Result

Refer to Appendix A.3.

## 6.4. Output Power Measurement

### 6.4.1. Test Limit

For the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi.

For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz.

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W (30dBm).

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

### 6.4.2. Test Procedure

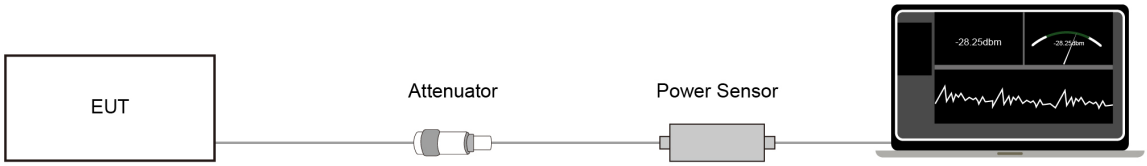
KDB 789033D02v02r01- Section II)E)3)b) Method PM-G

### 6.4.3. Test Setting

**Average Power Measurement**

Average power measurements were performed only when the EUT was transmitting at its maximum power control level using a broadband power meter with a pulse sensor. The power meter implemented triggering and gating capabilities which were set up such that power measurements were recorded only during the ON time of the transmitter.

### 6.4.4. Test Setup




### 6.4.5. Test Result

Refer to Appendix A.4.

## 6.5. Transmit Power Control Measurement

### 6.5.1. Test Limit

The U-NII device is required to have the capability to operate at least 6 dB below the mean EIRP value of 30 dBm.

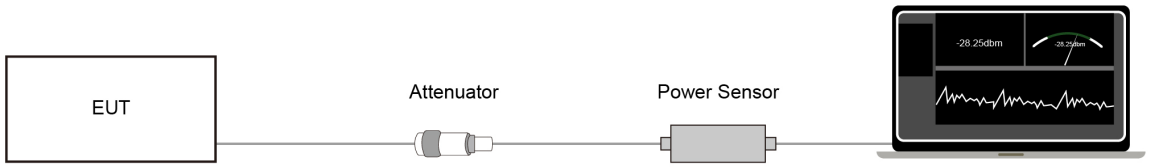
### 6.5.2. Test Procedure

KDB 789033 D02v01- Section Ⅱ)E)3)b) Method PM-G

### 6.5.3. Test Setting

Average power measurements were performed only when the EUT was transmitting at its maximum power control level using a broadband power meter with a pulse sensor. The power meter implemented triggering and gating capabilities which were set up such that power measurements were recorded only during the ON time of the transmitter. The trace was averaged over 100 traces to obtain the final measured average power.

### 6.5.4. Test Setup




### 6.5.5. Test Result

Device supports TPC mechanism, details refer to the operational description.

## 6.6. Power Spectral Density Measurement

### 6.6.1. Test Limit

For the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band.

For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band.

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

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

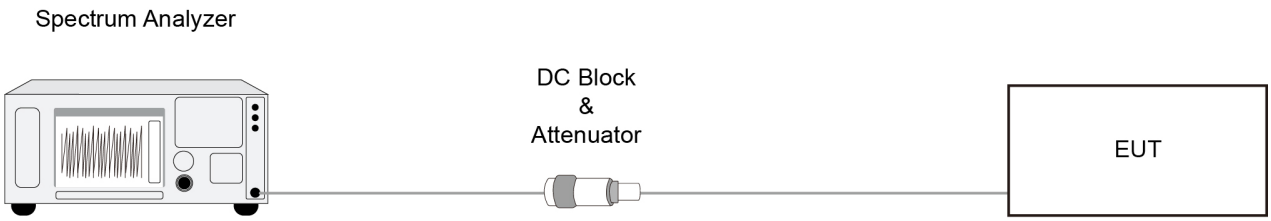
### 6.6.2. Test Procedure

KDB 789033 D02v02r01-Section Ⅱ)F)

### 6.6.3. Test Setting

1. Analyzer was set to the center frequency of the UNII channel under investigation
2. Span was set to encompass the entire 26dB EBW of the signal.
3. RBW = 1MHz (510kHz, if measurement bandwidth of Maximum PSD is specified in 500 kHz)
4. VBW = 3 × RBW
5. Number of sweep points ≥ 2 × (span / RBW)
6. Detector = power averaging (Average)
7. Sweep time = auto
8. Trigger = free run
9. Trace average at least 100 traces in power averaging (rms) mode; however, the number of traces to be averaged shall be increased above 100 as needed to ensure that the average accurately represents the true average over the on and off periods of the transmitter.
10. Use the peak search function on the instrument to find the peak of the spectrum and record its value.
11. Add 10*log(1/x), where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times (because the measurement represents an average over both the on and off times of the transmission). For example, add 10*log(1/0.25) = 6 dB if the duty cycle is 25 percent.

### 6.6.4. Test Setup




### 6.6.5. Test Result

Refer to Appendix A.5.

## 6.7. Frequency Stability Measurement

### 6.7.1. Test Limit

Manufactures of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

### 6.7.2. Test Procedure

**Frequency Stability Under Temperature Variations:**

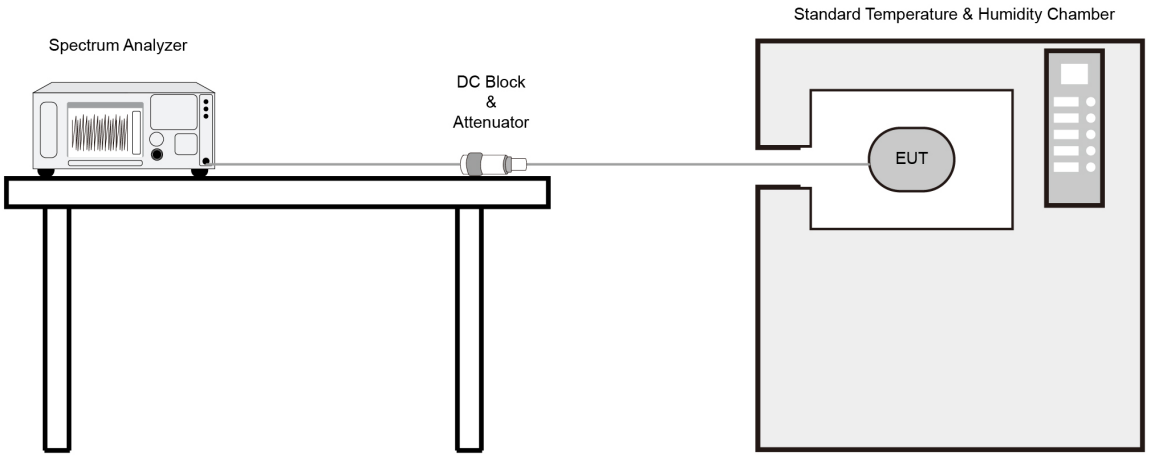
The equipment under test was connected to an external AC or DC power supply and input rated voltage. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. The EUT was placed inside the temperature chamber. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 20°C operating frequency as reference frequency. Turn EUT off and set the chamber temperature to highest. After the temperature stabilized for approximately 30 minutes recorded the frequency. Repeat step measure with 10°C decreased per stage until the lowest temperature reached.

**Frequency Stability Under Voltage Variations:**

Set chamber temperature to 20°C. Use a variable AC power supply / DC power source to power the EUT and set the voltage to rated voltage. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency.

Reduce the input voltage to specify extreme voltage variation (±15%) and endpoint, recordthe maximum frequency change.

### 6.7.3. Test Setup



### 6.7.4. Test Result

Refer to Appendix A.6.

## 6.8. Radiated Spurious Emission Measurement

### 6.8.1. Test Limit

All out of band emissions appearing in a restricted band as specified in Section 15.205 of the Title 47 CFR must not exceed the limits shown in Table per Section 15.209.

| FCC Part 15 Subpart C Paragraph 15.209 | | |
|---|---|---|
| Frequency [MHz] | Field Strength [uV/m] | Measured Distance [Meters] |
| 0.009 - 0.490 | 2400/F (kHz) | 300 |
| 0.490 - 1.705 | 24000/F (kHz) | 30 |
| 1.705 - 30 | 30 | 30 |
| 30 - 88 | 100 | 3 |
| 88 - 216 | 150 | 3 |
| 216 - 960 | 200 | 3 |
| Above 960 | 500 | 3 |

### 6.8.2. Test Procedure

KDB 789033 D02v02r01- Section II)G)

### 6.8.3. Test Setting

**Table 1 - RBW as a function of frequency**

| Frequency | RBW |
|---|---|
| 9 ~ 150 kHz | 200 ~ 300 Hz |
| 0.15 ~ 30 MHz | 9 ~ 10 kHz |
| 30 ~ 1000 MHz | 100 ~ 120 kHz |
| > 1000MHz | 1MHz |

**Quasi-Peak Measurements below 1GHz**

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest

2. Span was set greater than 1MHz

3. RBW = as specified in Table 1

4. Detector = CISPR quasi-peak

5. Sweep time = auto couple

6. Trace was allowed to stabilize

**Peak Measurements above 1GHz**

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest

2. RBW = 1MHz

3. VBW = 3MHz

4. Detector = peak

5. Sweep time = auto couple

6. Trace mode = max hold

7. Trace was allowed to stabilize

**Average Measurements above 1GHz (Method VB)**

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest

2. RBW = 1MHz

3. VBW; If the EUT is configured to transmit with duty cycle ≥ 98%, set VBW = 10 Hz.

If the EUT duty cycle is < 98%, set VBW ≥ 1/T. T is the minimum transmission duration.

4. Detector = Peak

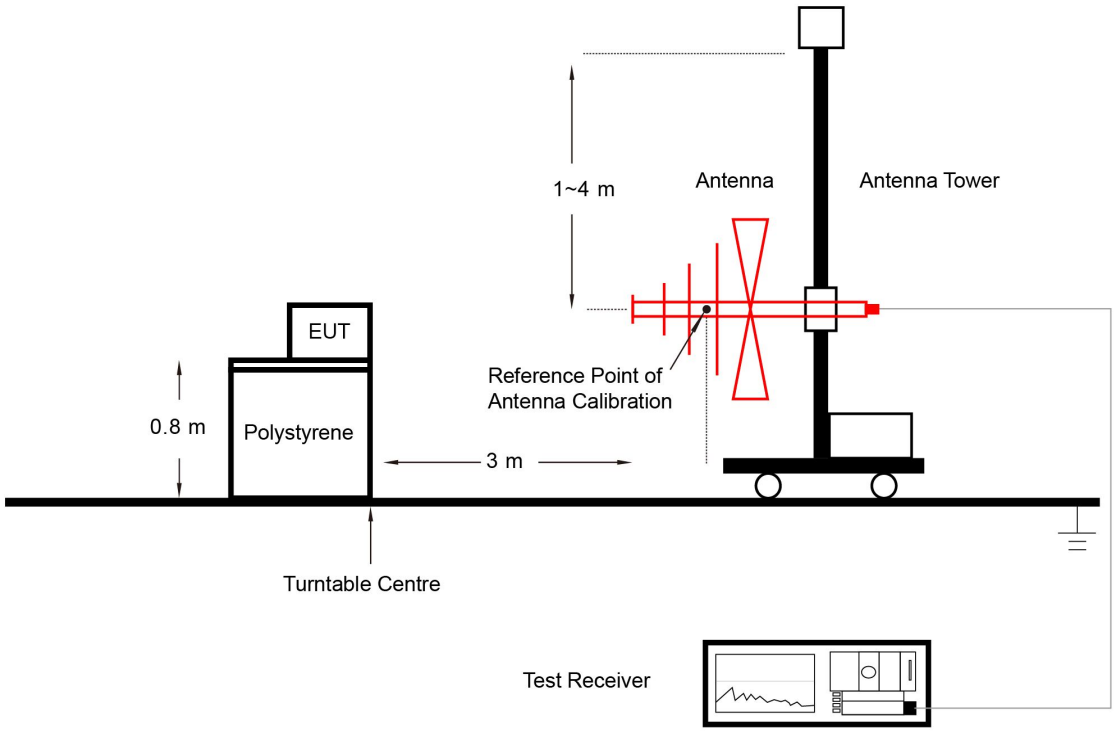
5. Sweep time = auto

6. Trace mode = max hold

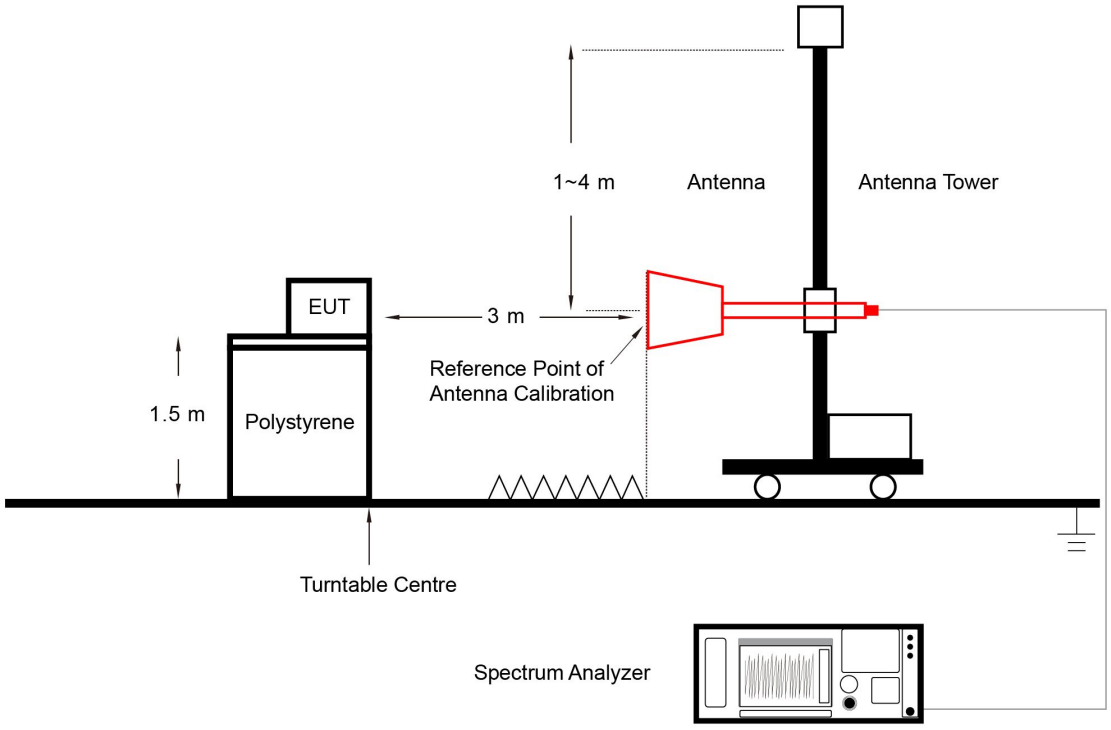
7. Trace was allowed to stabilize

### 6.8.4. Test Setup

Below 1GHz Test Setup:




Above 1GHz Test Setup:



### 6.8.5. Test Result

Refer to Appendix A.7.

## 6.9. Radiated Restricted Band Edge Measurement

### 6.9.1. Test Limit

**For 15.205 requirement:**

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a) of FCC part 15, must also comply with the radiated emission limits specified in Section 15.209(a).

| Frequency (MHz) | Frequency (MHz) | Frequency (MHz) | Frequency (GHz) |
|---|---|---|---|
| 0.090 - 0.110 | 16.42 - 16.423 | 399.9 - 410 | 4.5 - 5.15 |
| [1] 0.495 - 0.505 | 16.69475 - 16.69525 | 608 - 614 | 5.35 - 5.46 |
| 2.1735 - 2.1905 | 16.80425 - 16.80475 | 960 - 1240 | 7.25 - 7.75 |
| 4.125 - 4.128 | 25.5 - 25.67 | 1300 - 1427 | 8.025 - 8.5 |
| 4.17725 - 4.17775 | 37.5 - 38.25 | 1435 - 1626.5 | 9.0 - 9.2 |
| 4.20725 - 4.20775 | 73 - 74.6 | 1645.5 - 1646.5 | 9.3 - 9.5 |
| 6.215 - 6.218 | 74.8 - 75.2 | 1660 - 1710 | 10.6 - 12.7 |
| 6.26775 - 6.26825 | 108 - 121.94 | 1718.8 - 1722.2 | 13.25 - 13.4 |
| 6.31175 - 6.31225 | 123 - 138 | 2200 - 2300 | 14.47 - 14.5 |
| 8.291 - 8.294 | 149.9 - 150.05 | 2310 - 2390 | 15.35 - 16.2 |
| 8.362 - 8.366 | 156.52475 - 156.52525 | 2483.5 - 2500 | 17.7 - 21.4 |
| 8.37625 - 8.38675 | 156.7 - 156.9 | 2690 - 2900 | 22.01 - 23.12 |
| 8.41425 - 8.41475 | 162.0125 - 167.17 | 3260 - 3267 | 23.6 - 24.0 |
| 12.29 - 12.293 | 167.72 - 173.2 | 3332 - 3339 | 31.2 - 31.8 |
| 12.51975 - 12.52025 | 240 - 285 | 3345.8 - 3358 | 36.43 - 36.5 |
| 12.57675 - 12.57725 | 322 - 335.4 | 3600 - 4400 | ([2]) |
| 13.36 - 13.41 | -- | -- | -- |

**For 15.407(b) requirement:**

For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

For transmitters operating in the 5.725-5.85 GHz band: 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.

Refer to KDB 789033 D02v02r01 G)2)c), as specified in § 15.407(b), emissions above 1000 MHz that are outside of the restricted bands are subject to a maximum emission limit of -27 dBm/MHz (or -17 dBm/MHz as specified in § 15.407(b)(4)). However, an out-of-band emission that complies with both the peak and average limits of § 15.209 is not required to satisfy the -27 dBm/MHz or -17 dBm/MHz maximum emission limit.

All out of band emissions appearing in a restricted band as specified in Section 15.205 of the Title 47CFR must not exceed the limits shown in Table per Section 15.209.

| FCC Part 15 Subpart C Paragraph 15.209 | | |
|---|---|---|
| Frequency [MHz] | Field Strength [uV/m] | Measured Distance [Meters] |
| 0.009 - 0.490 | 2400/F (kHz) | 300 |
| 0.490 - 1.705 | 24000/F (kHz) | 30 |
| 1.705 - 30 | 30 | 30 |
| 30 - 88 | 100 | 3 |
| 88 - 216 | 150 | 3 |
| 216 - 960 | 200 | 3 |
| Above 960 | 500 | 3 |

### 6.9.2. Test Procedure

KDB 789033 D02v02r01- Section II)G)

### 6.9.3. Test Setting

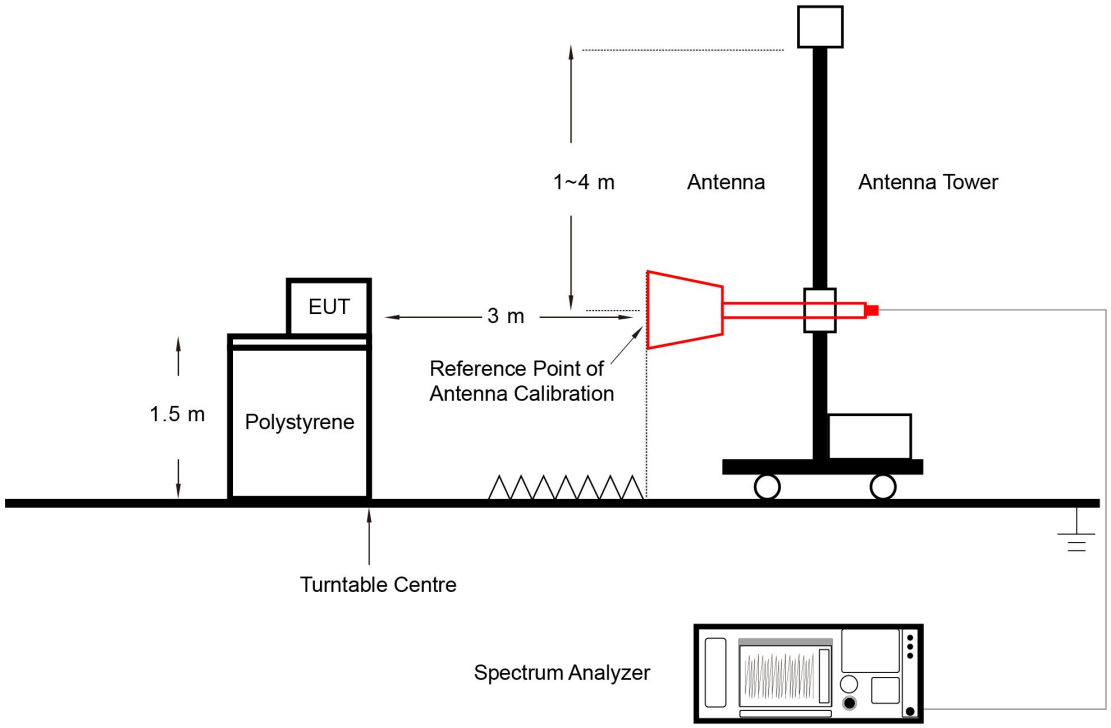
**Peak Measurements above 1GHz**

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW = 3MHz
4. Detector = Peak
5. Sweep time = Auto couple
6. Trace mode = Max hold
7. Trace was allowed to stabilize

**Average Measurements above 1GHz (Method VB)**

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW; if the EUT is configured to transmit with duty cycle ≥ 98%, set VBW = 10Hz
4. If the EUT duty cycle is < 98%, set VBW ≥ 1/T. T is the minimum transmission duration
5. Detector = Peak
6. Sweep time = Auto
7. Trace mode = Max hold
8. Trace was allowed to stabilize

### 6.9.4. Test Setup




### 6.9.5. Test Result

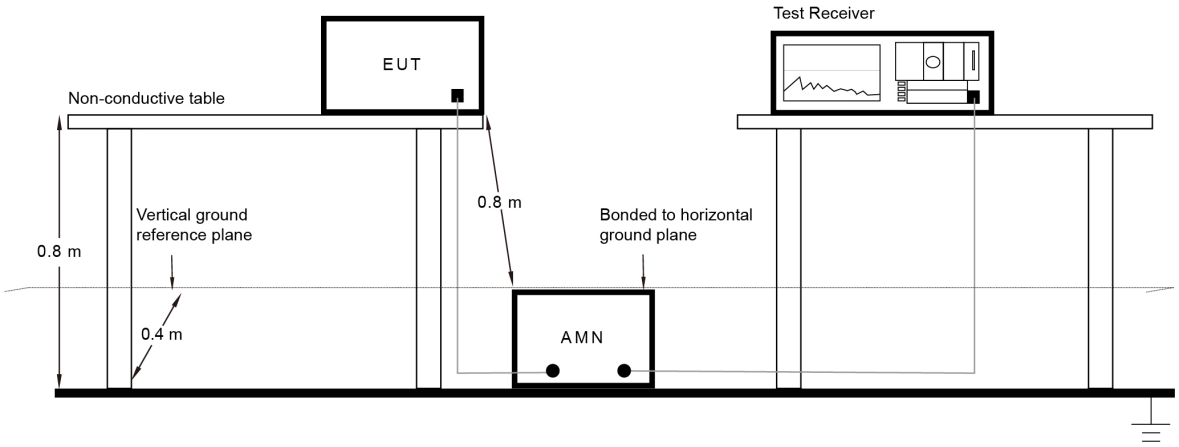
Refer to Appendix A.8.

## 6.10. AC Conducted Emissions Measurement

### 6.10.1. Test Limit

| FCC Part 15.207 Limits | | |
|---|---|---|
| Frequency (MHz) | QP (dBuV) | AV (dBuV) |
| 0.15 - 0.50 | 66 - 56 | 56 - 46 |
| 0.50 - 5.0 | 56 | 46 |
| 5.0 - 30 | 60 | 50 |
| Note 1: The lower limit shall apply at the transition frequencies. | | |
| Note 2: The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.5MHz. | | |

### 6.10.2. Test Setup




### 6.10.3. Test Result

Refer to Appendix A.9.

# Appendix A – Test Result

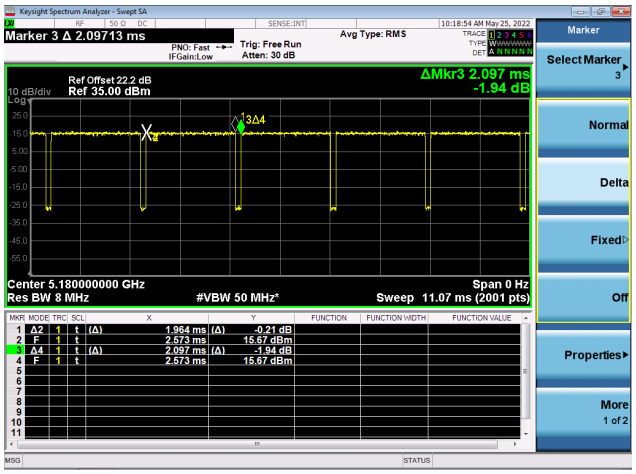
## A.1 Duty Cycle Test Result

| Test Site | NS-TR2 | Test Engineer | Summer Tang |
|---|---|---|---|
| Test Date | 2022/05/25 | | |

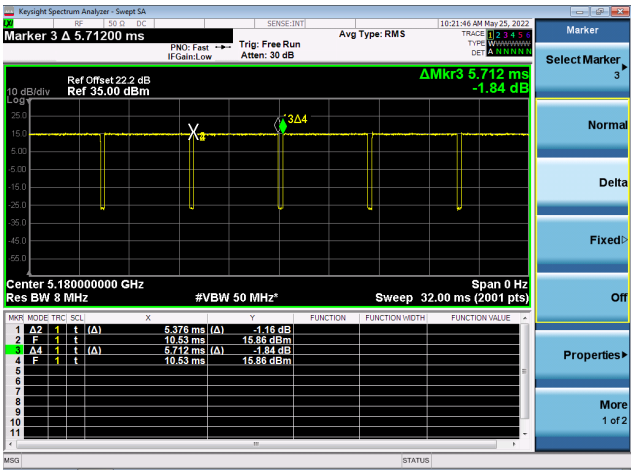
| Test Mode | Duty Cycle | Test Mode | Duty Cycle |
|---|---|---|---|
| 802.11a | 93.66% | 802.11ax-HE20 | 94.72% |
| 802.11ac-VHT20 | 94.12% | 802.11ax-HE40 | 96.02% |
| 802.11ac-VHT40 | 89.40% | 802.11ax-HE80 | 95.24% |
| 802.1ac-VHT80 | 95.73% | -- | -- |

Duty Cycle (T = Transmission Duration)

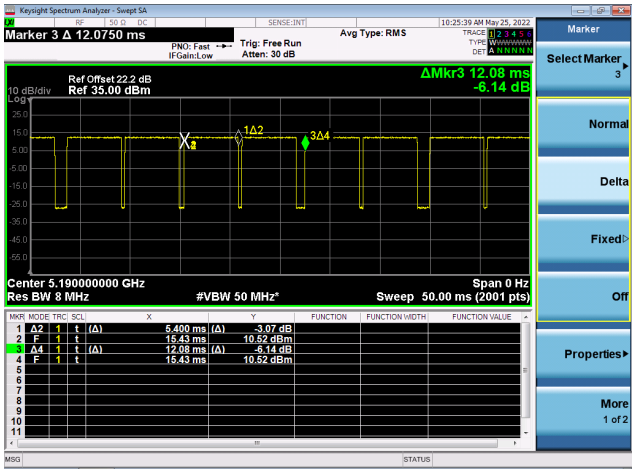
802.11a (T = 1.964ms)



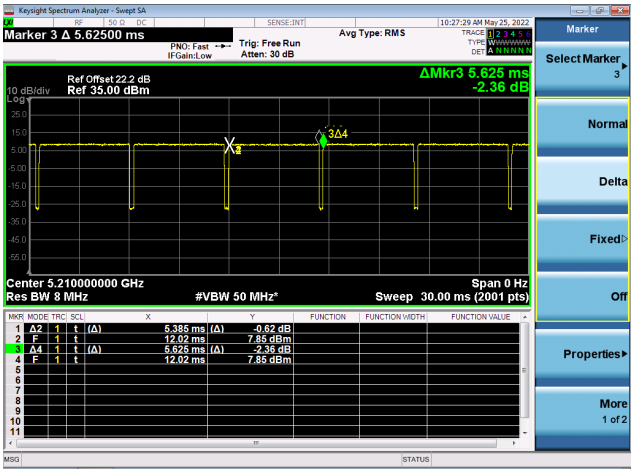

802.11ac-VHT20 (T = 5.376ms)

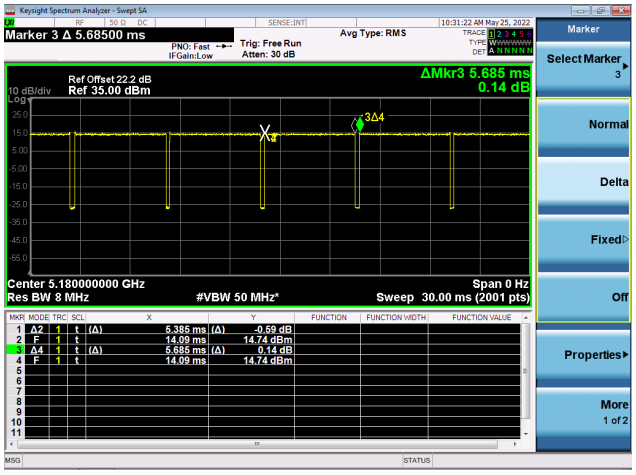
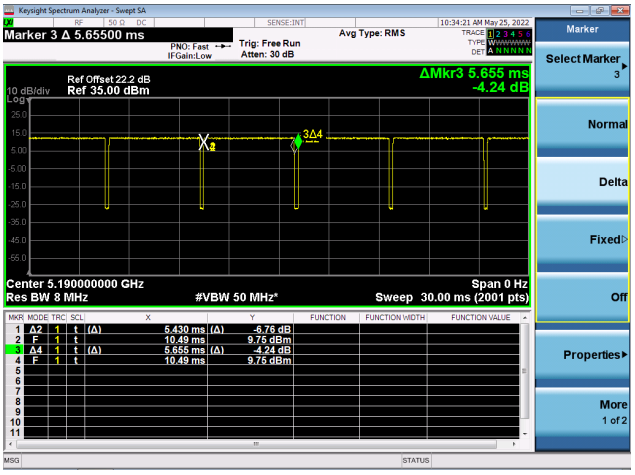
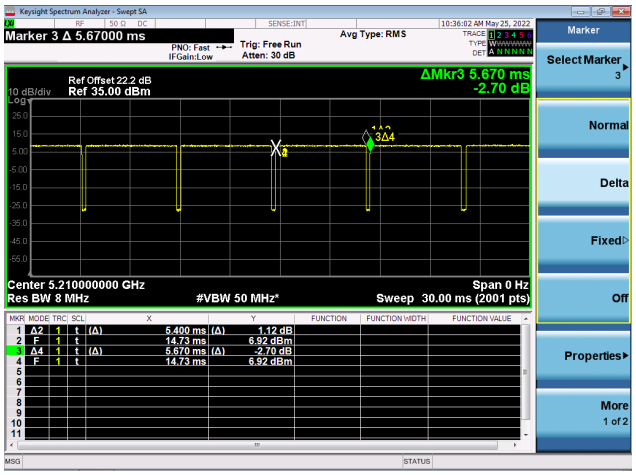



802.11ac-VHT40 (T = 5.400ms)




802.11ac-VHT80 (T = 5.385ms)

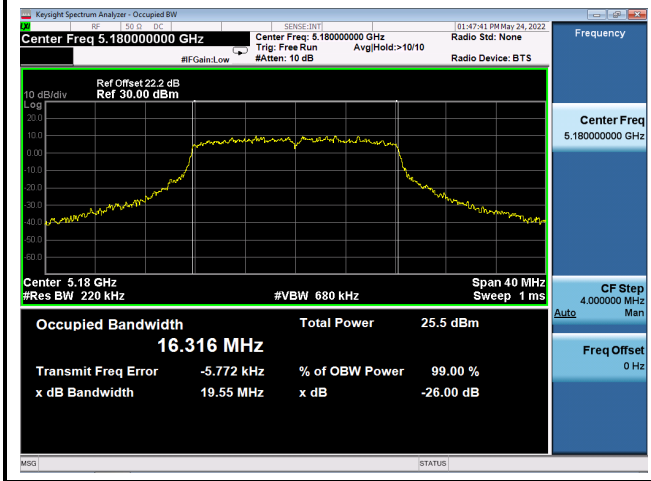
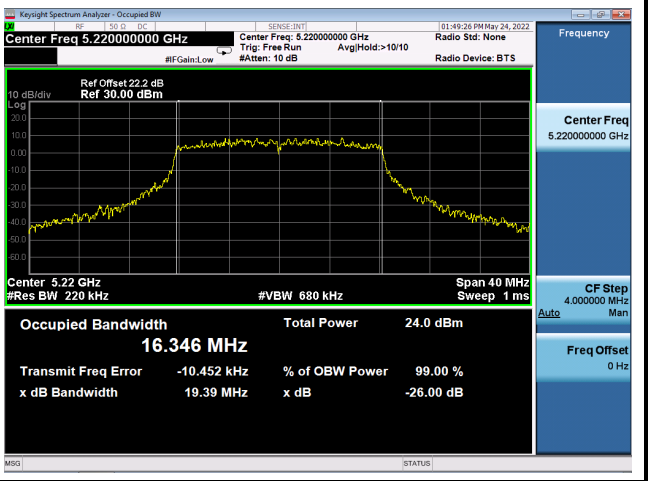
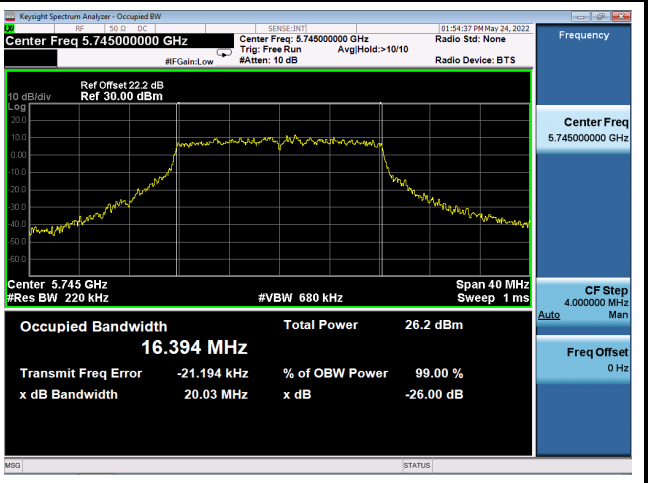
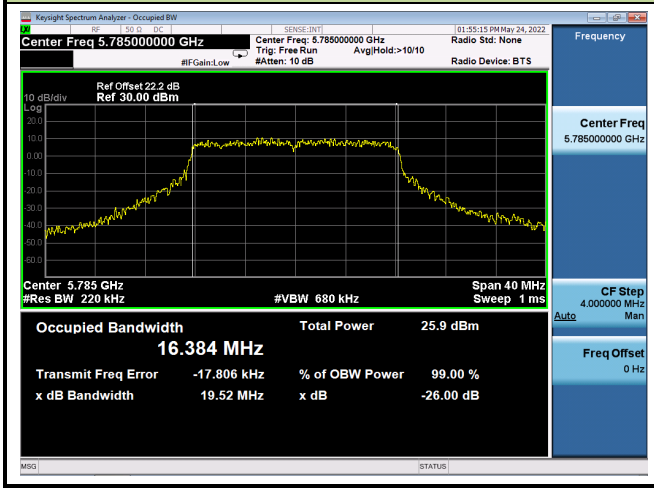
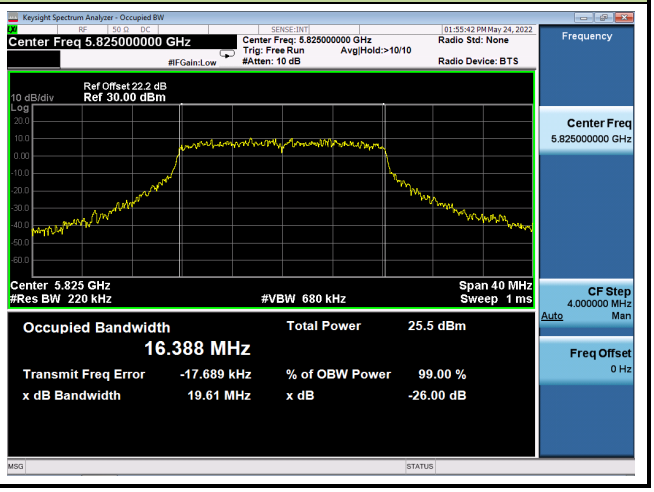


| Duty Cycle (T = Transmission Duration) | |
|---|---|
| 802.11ax-HE20 (T = 5.385ms) | 802.11ax-HE40 (T = 5.430ms) |
|  |  |
| 802.11ax-HE80 (T = 5.400ms) | |
|  | |

### A.2 26dB Bandwidth Test Result

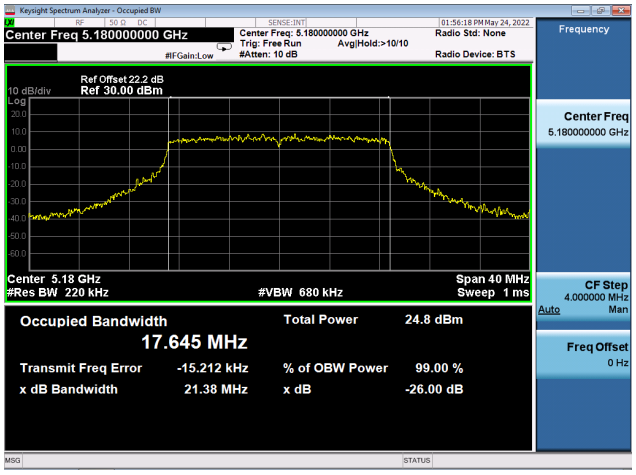
| Test Site | NS-TR2 | Test Engineer | Summer Tang |
|---|---|---|---|
| Test Date | 2022/05/24 | | |

| Test Mode | Data Rate/ MCS | Channel No. | Frequency (MHz) | 26dB Bandwidth (MHz) | 99% Bandwidth (MHz) |
|---|---|---|---|---|---|
| 802.11a | 6Mbps | 36 | 5180 | 19.55 | 16.316 |
| 802.11a | 6Mbps | 44 | 5220 | 19.39 | 16.346 |
| 802.11a | 6Mbps | 48 | 5240 | 18.63 | 16.296 |
| 802.11a | 6Mbps | 149 | 5745 | 20.03 | 16.394 |
| 802.11a | 6Mbps | 157 | 5785 | 19.52 | 16.384 |
| 802.11a | 6Mbps | 165 | 5825 | 19.61 | 16.388 |
| 802.11ac-VHT20 | MCS0 | 36 | 5180 | 21.38 | 17.645 |
| 802.11ac-VHT20 | MCS0 | 44 | 5220 | 21.08 | 17.652 |
| 802.11ac-VHT20 | MCS0 | 48 | 5240 | 20.80 | 17.638 |
| 802.11ac-VHT20 | MCS0 | 149 | 5745 | 21.02 | 17.643 |
| 802.11ac-VHT20 | MCS0 | 157 | 5785 | 20.57 | 17.653 |
| 802.11ac-VHT20 | MCS0 | 165 | 5825 | 20.85 | 17.639 |
| 802.11ac-VHT40 | MCS0 | 38 | 5190 | 40.19 | 36.128 |
| 802.11ac-VHT40 | MCS0 | 46 | 5230 | 39.78 | 36.101 |
| 802.11ac-VHT40 | MCS0 | 151 | 5755 | 40.00 | 36.215 |
| 802.11ac-VHT40 | MCS0 | 159 | 5795 | 39.33 | 36.090 |
| 802.11ac-VHT80 | MCS0 | 42 | 5210 | 80.96 | 75.493 |
| 802.11ac-VHT80 | MCS0 | 155 | 5775 | 81.39 | 75.432 |
| 802.11ax-HE20 | MCS0 | 36 | 5180 | 21.28 | 18.935 |
| 802.11ax-HE20 | MCS0 | 44 | 5220 | 20.69 | 18.956 |
| 802.11ax-HE20 | MCS0 | 48 | 5240 | 20.91 | 18.951 |
| 802.11ax-HE20 | MCS0 | 149 | 5745 | 21.26 | 18.979 |
| 802.11ax-HE20 | MCS0 | 157 | 5785 | 21.50 | 18.999 |
| 802.11ax-HE20 | MCS0 | 165 | 5825 | 20.49 | 18.902 |
| 802.11ax-HE40 | MCS0 | 38 | 5190 | 40.34 | 37.634 |
| 802.11ax-HE40 | MCS0 | 46 | 5230 | 40.58 | 37.685 |
| 802.11ax-HE40 | MCS0 | 151 | 5755 | 40.36 | 37.624 |
| 802.11ax-HE40 | MCS0 | 159 | 5795 | 40.62 | 37.795 |
| 802.11ax-HE80 | MCS0 | 42 | 5210 | 81.83 | 76.946 |
| 802.11ax-HE80 | MCS0 | 155 | 5775 | 81.23 | 77.182 |

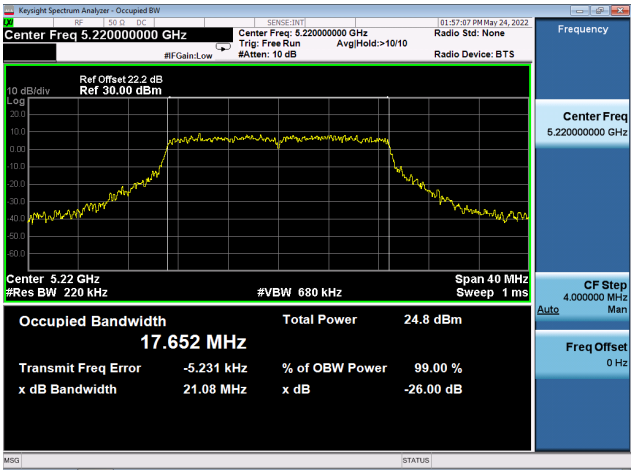
| 802.11a 26dB & 99% Bandwidth | |
|---|---|
| Channel 36 (5180MHz) | Channel 44 (5220MHz) |
|  |  |
| Channel 48 (5240MHz) | Channel 149 (5745MHz) |
|  |  |
| Channel 157 (5785MHz) | Channel 165 (5825MHz) |
|  |  |

## 802.11ac-VHT20 26dB & 99% Bandwidth

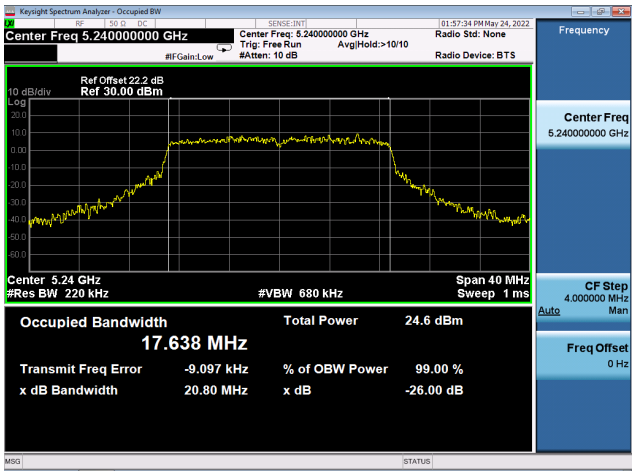
### Channel 36 (5180MHz)



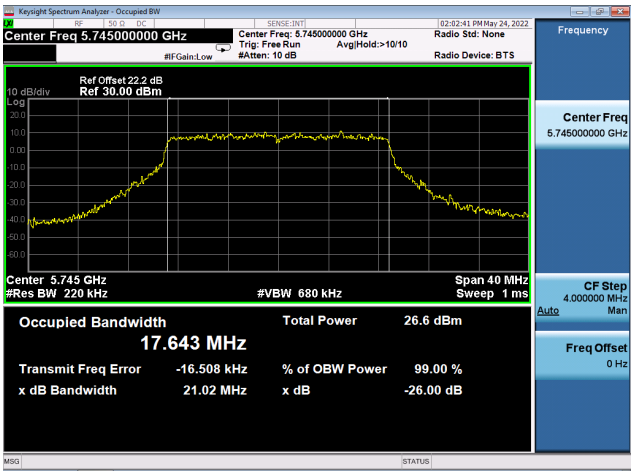

### Channel 44 (5220MHz)



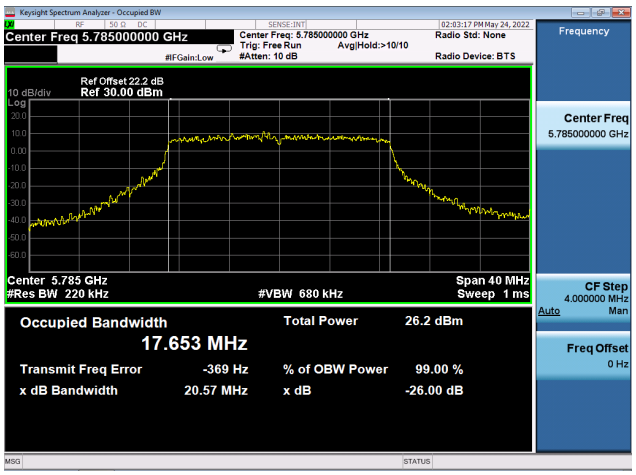

### Channel 48 (5240MHz)



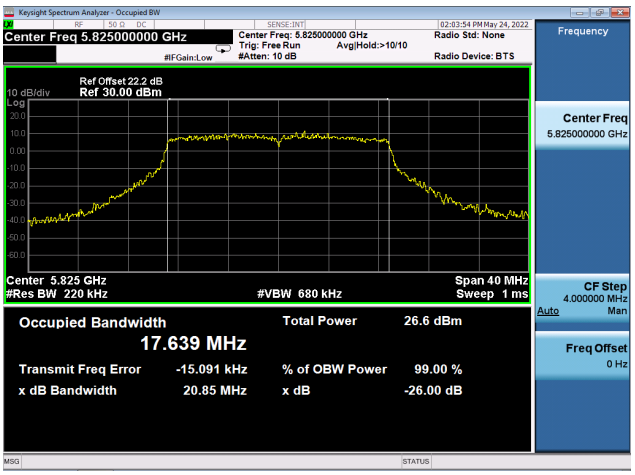

### Channel 149 (5745MHz)

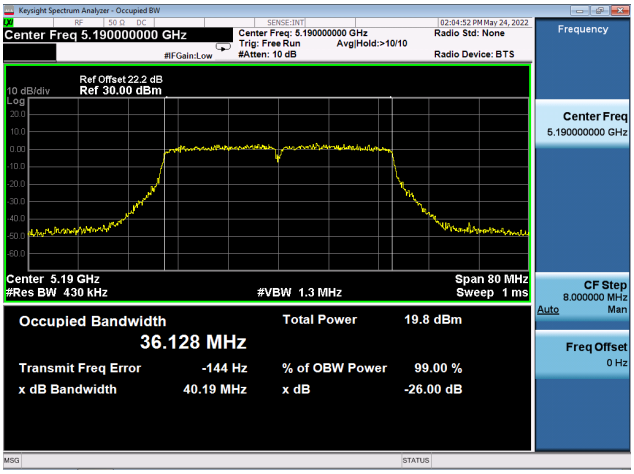
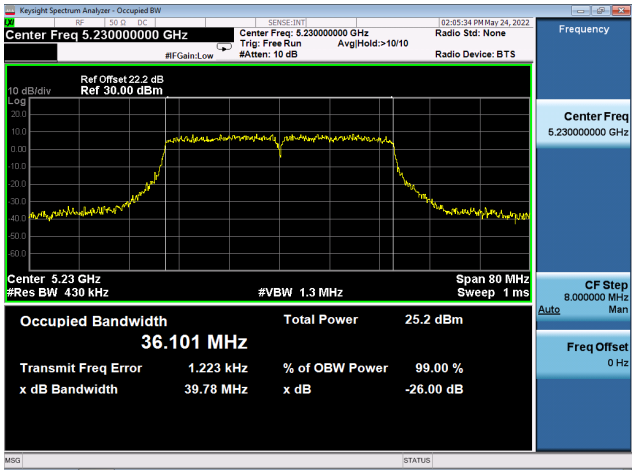
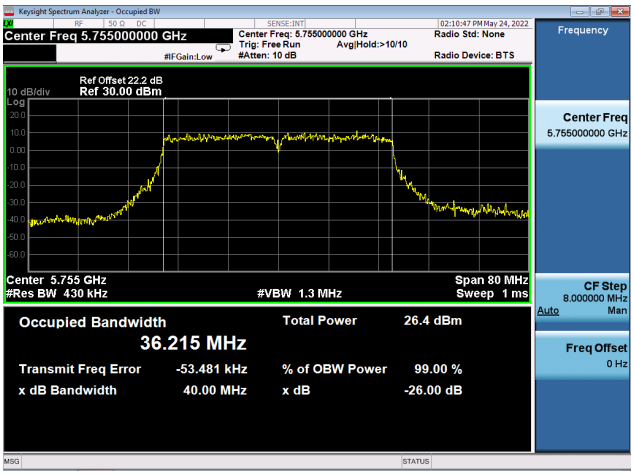
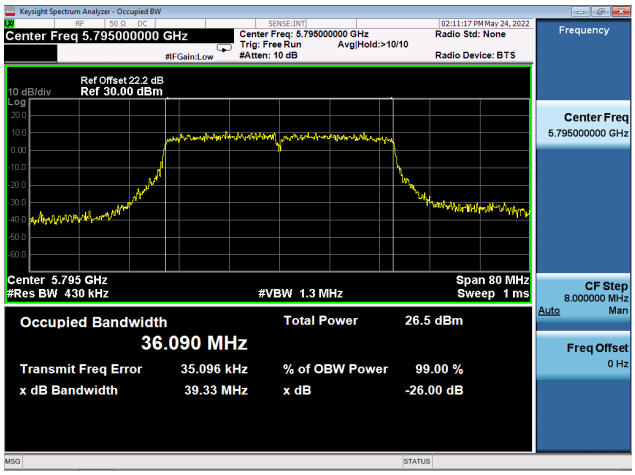


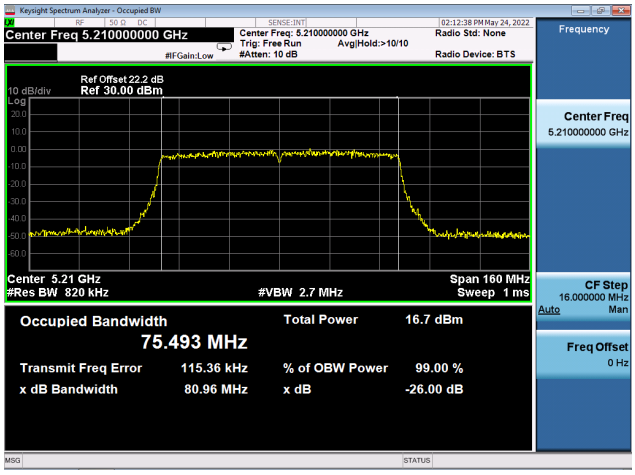
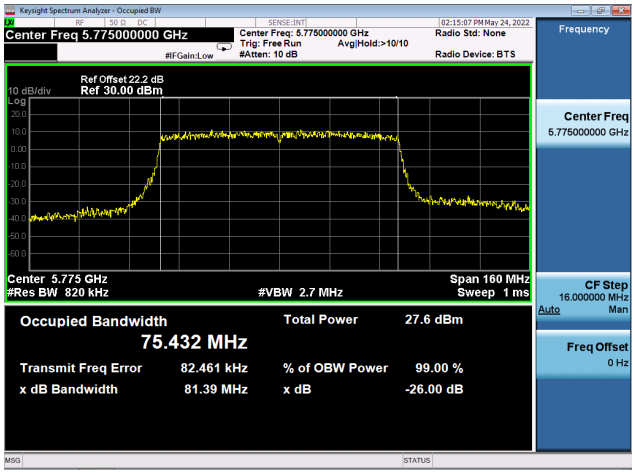

### Channel 157 (5785MHz)




### Channel 165 (5825MHz)

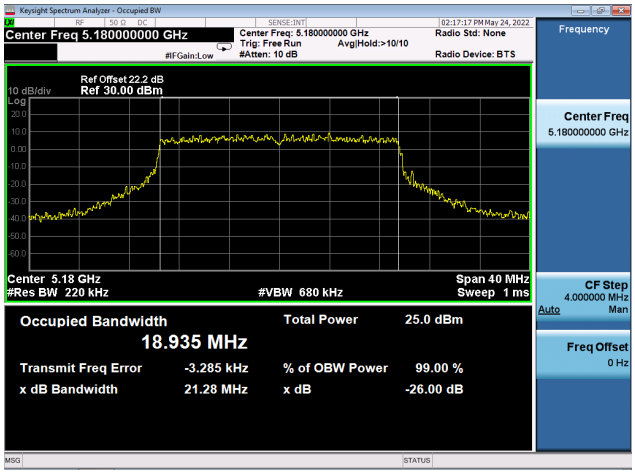


| 802.11ac-VHT40 26dB & 99% Bandwidth | |
|---|---|
| Channel 38 (5190MHz) | Channel 46 (5230MHz) |
|  |  |
| Channel 151 (5755MHz) | Channel 159 (5795MHz) |
|  |  |

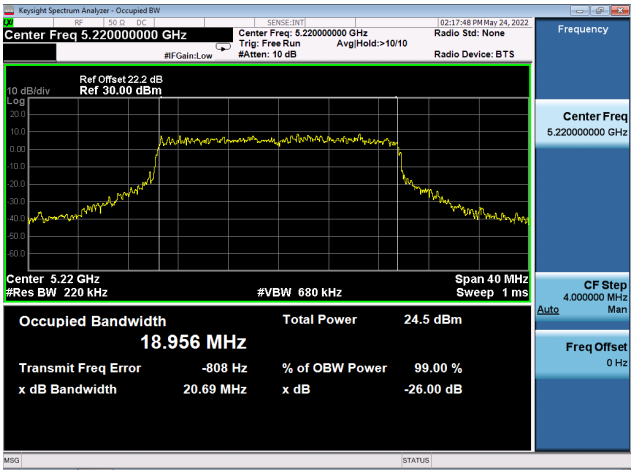
| 802.11ac-VHT80 26dB & 99% Bandwidth | |
|---|---|
| Channel 42 (5210MHz) | Channel 155 (5775MHz) |
|  |  |

## 802.11ax-HE20 26dB & 99% Bandwidth

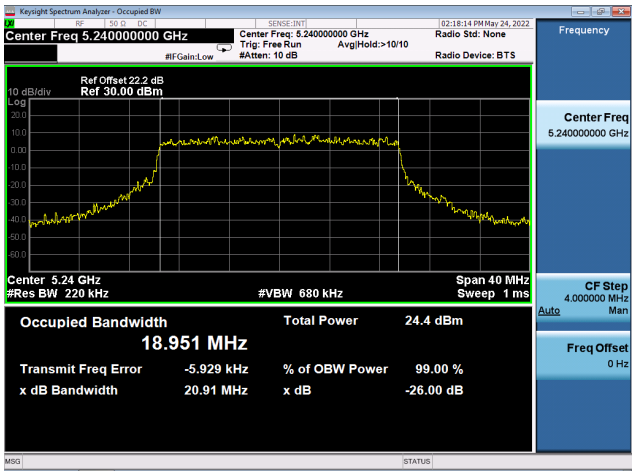
### Channel 36 (5180MHz)



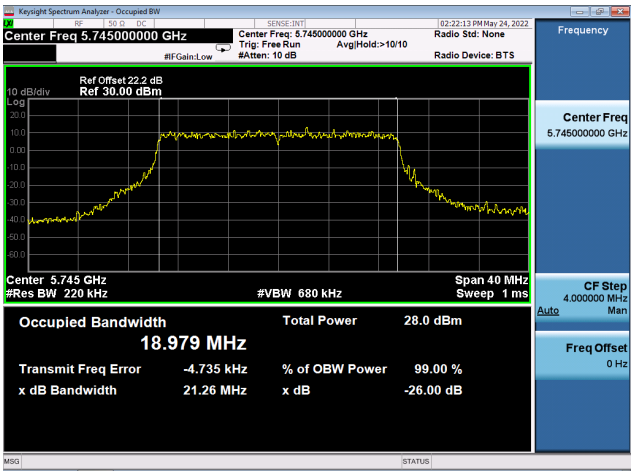

### Channel 44 (5220MHz)



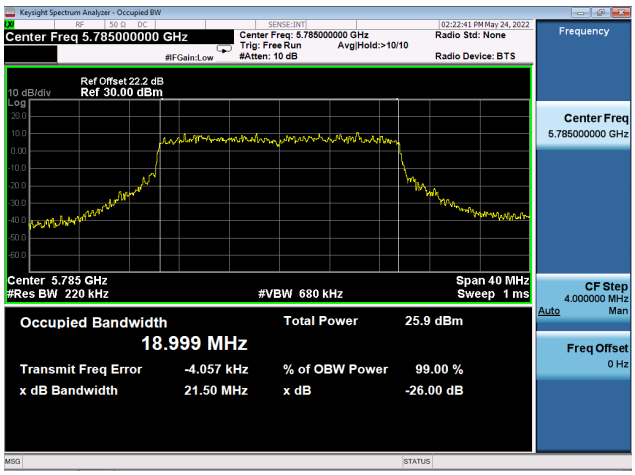

### Channel 48 (5240MHz)



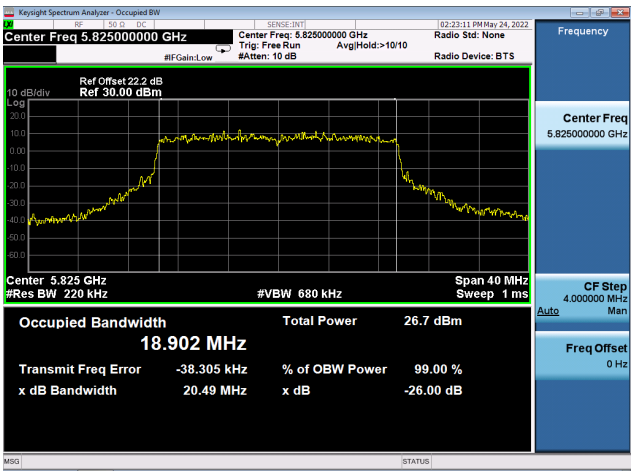

### Channel 149 (5745MHz)

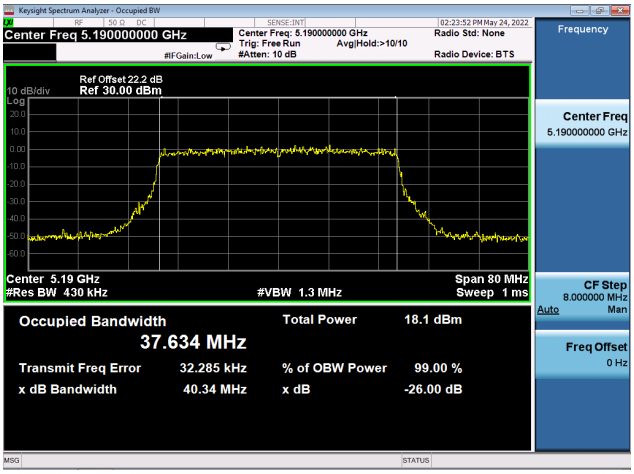
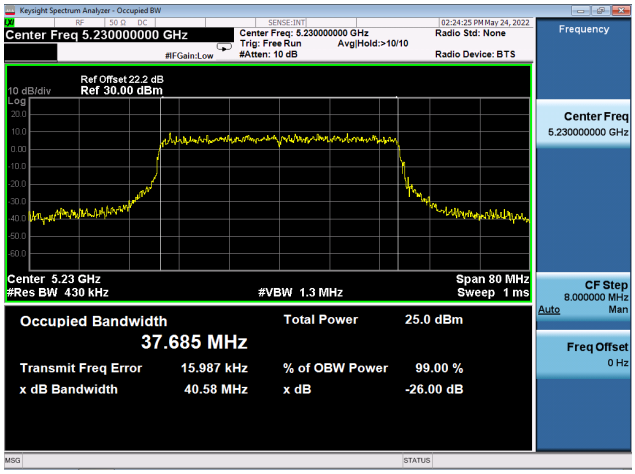
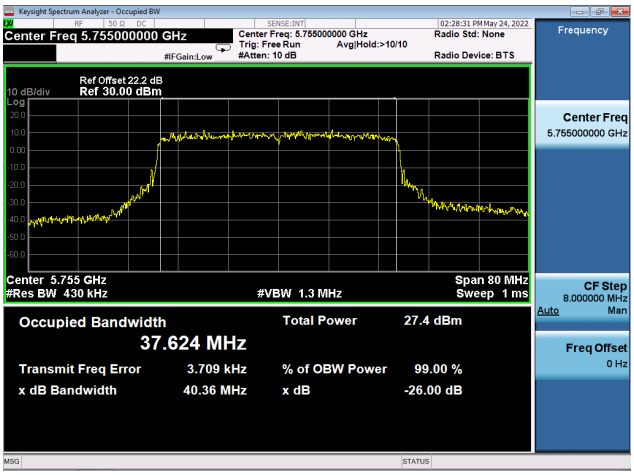
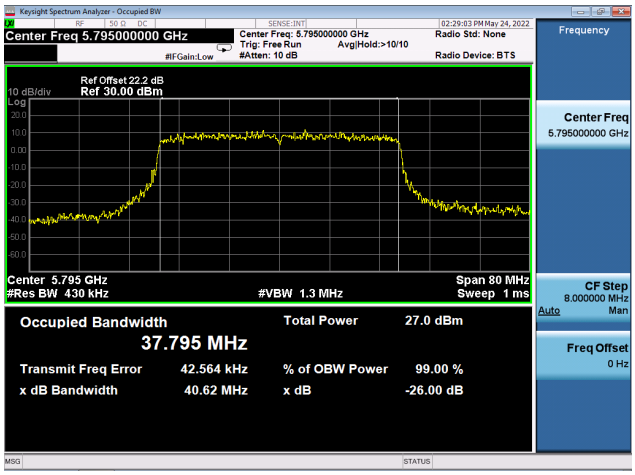


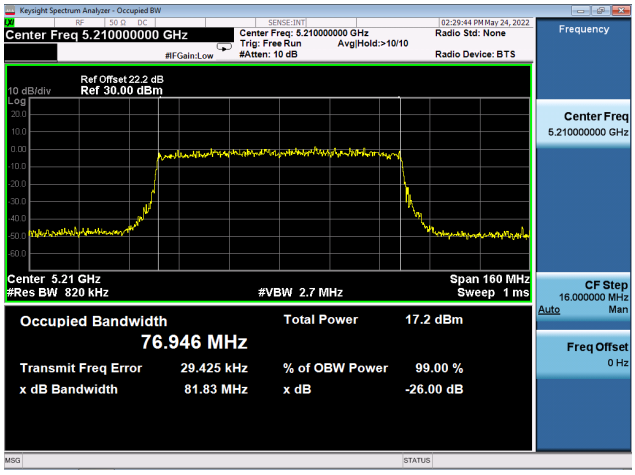
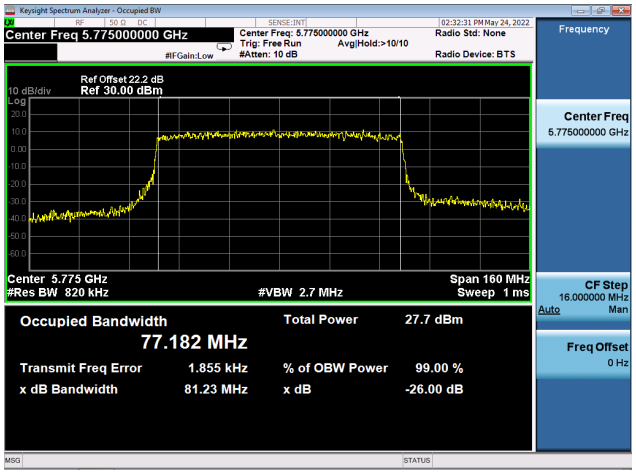

### Channel 157 (5785MHz)




### Channel 165 (5825MHz)



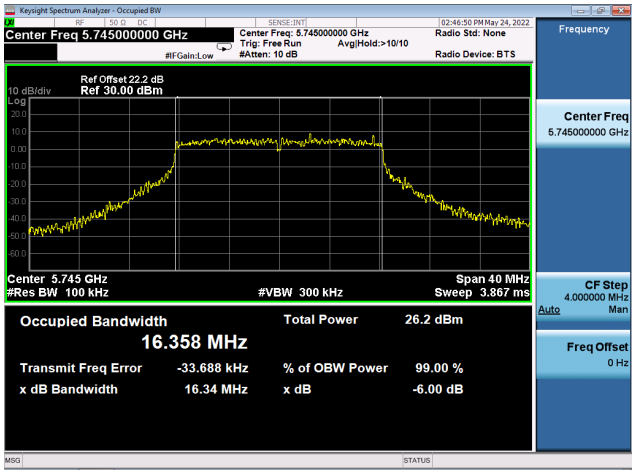
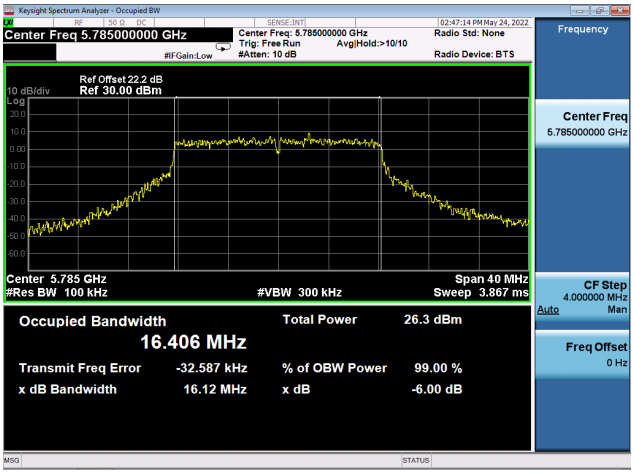
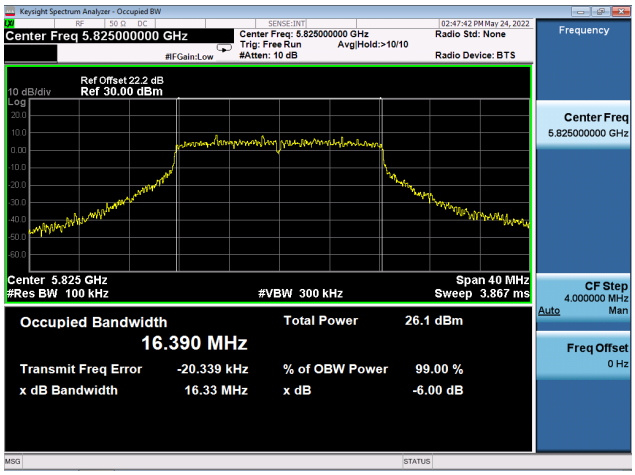
| 802.11ax-HE40 26dB & 99% Bandwidth | |
|---|---|
| Channel 38 (5190MHz) | Channel 46 (5230MHz) |
|  |  |
| Channel 151 (5755MHz) | Channel 159 (5795MHz) |
|  |  |

| 802.11ax-HE80 26dB & 99% Bandwidth | |
|---|---|
| Channel 42 (5210MHz) | Channel 155 (5775MHz) |
|  |  |

### A.3 6dB Bandwidth Test Result

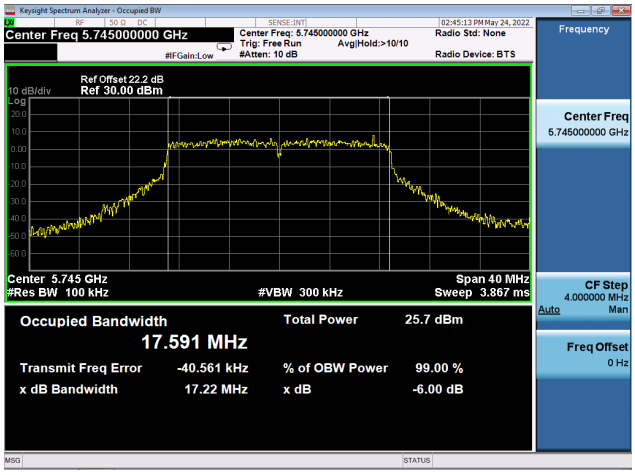
| Test Site | NS-TR2 | Test Engineer | Summer Tang |
|---|---|---|---|
| Test Date | 2022/05/24 | | |

| Test Mode | Data Rate/ MCS | Channel No. | Frequency (MHz) | 6dB Bandwidth (MHz) | Limit (MHz) | Result |
|---|---|---|---|---|---|---|
| 802.11a | 6Mbps | 149 | 5745 | 16.34 | ≥ 0.5 | Pass |
| 802.11a | 6Mbps | 157 | 5785 | 16.12 | ≥ 0.5 | Pass |
| 802.11a | 6Mbps | 165 | 5825 | 16.33 | ≥ 0.5 | Pass |
| 802.11ac-VHT20 | MCS0 | 149 | 5745 | 17.22 | ≥ 0.5 | Pass |
| 802.11ac-VHT20 | MCS0 | 157 | 5785 | 17.64 | ≥ 0.5 | Pass |
| 802.11ac-VHT20 | MCS0 | 165 | 5825 | 17.48 | ≥ 0.5 | Pass |
| 802.11ac-VHT40 | MCS0 | 151 | 5755 | 36.43 | ≥ 0.5 | Pass |
| 802.11ac-VHT40 | MCS0 | 159 | 5795 | 36.48 | ≥ 0.5 | Pass |
| 802.11ac-VHT80 | MCS0 | 155 | 5775 | 74.69 | ≥ 0.5 | Pass |
| 802.11ax-HE20 | MCS0 | 149 | 5745 | 19.07 | ≥ 0.5 | Pass |
| 802.11ax-HE20 | MCS0 | 157 | 5785 | 18.87 | ≥ 0.5 | Pass |
| 802.11ax-HE20 | MCS0 | 165 | 5825 | 19.05 | ≥ 0.5 | Pass |
| 802.11ax-HE40 | MCS0 | 151 | 5755 | 37.84 | ≥ 0.5 | Pass |
| 802.11ax-HE40 | MCS0 | 159 | 5795 | 37.86 | ≥ 0.5 | Pass |
| 802.11ax-HE80 | MCS0 | 155 | 5775 | 76.26 | ≥ 0.5 | Pass |

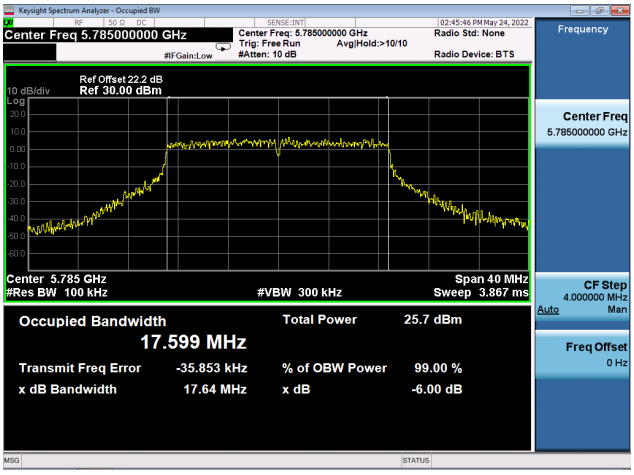
| 802.11a 6dB Bandwidth | |
|---|---|
| Channel 149 (5745MHz) | Channel 157 (5785MHz) |
|  |  |
| Channel 165 (5825MHz) | |
|  | |

## 802.11ac-VHT20 6dB Bandwidth

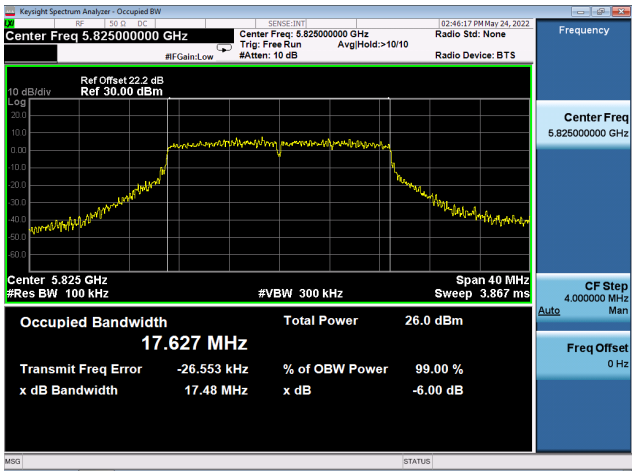
### Channel 149 (5745MHz)




### Channel 157 (5785MHz)

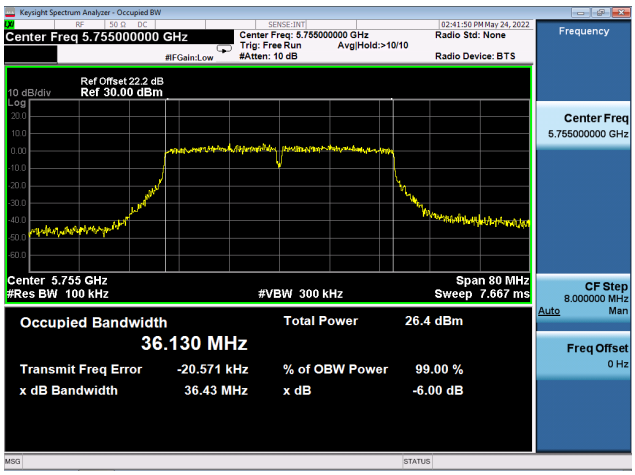



### Channel 165 (5825MHz)

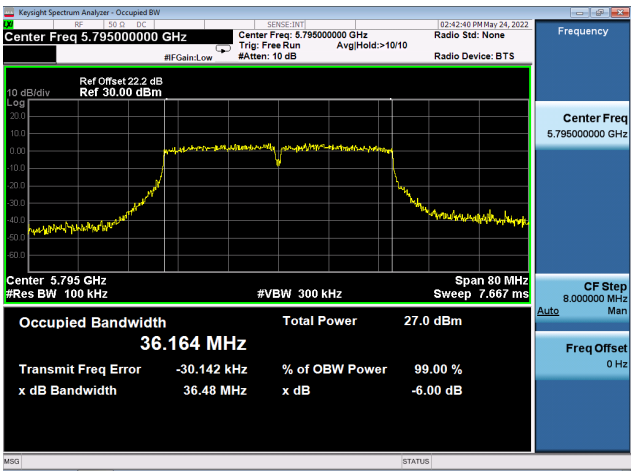


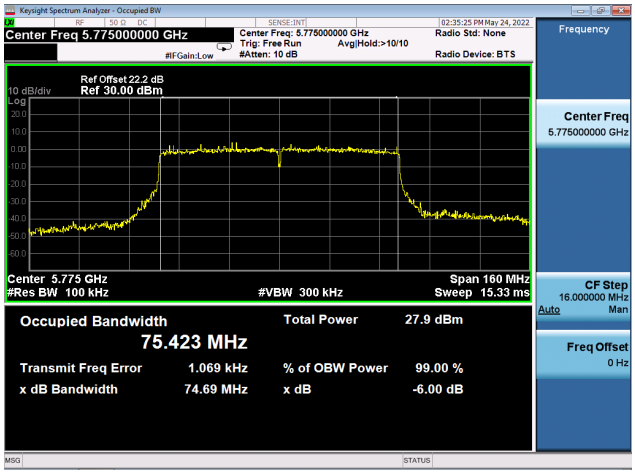

## 802.11ac-VHT40 6dB Bandwidth

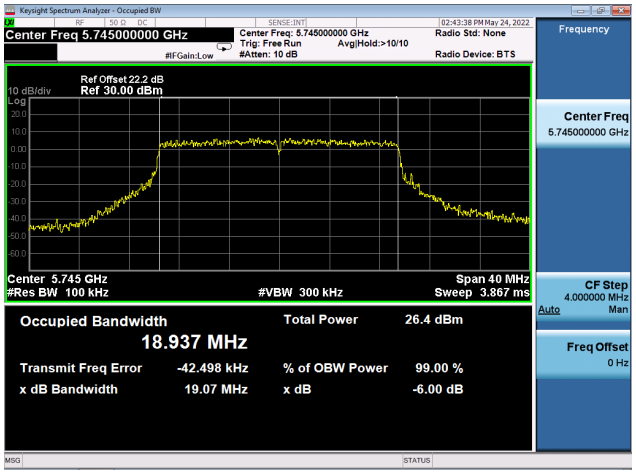
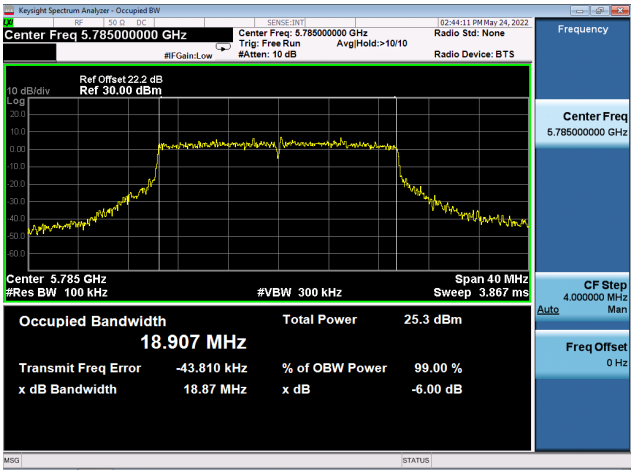
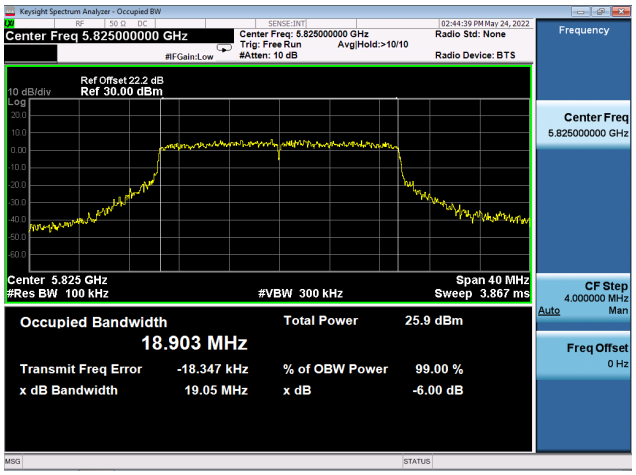
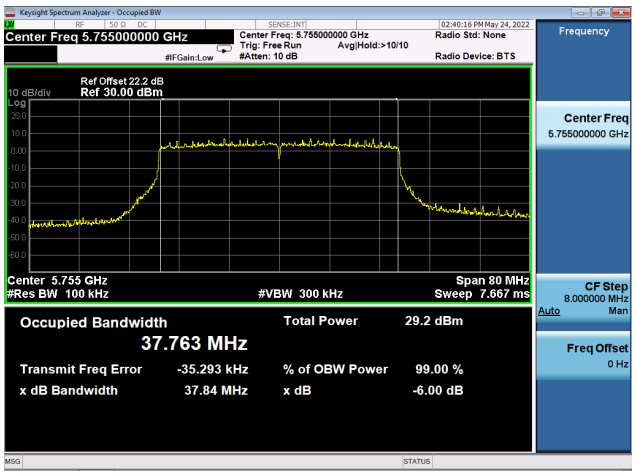
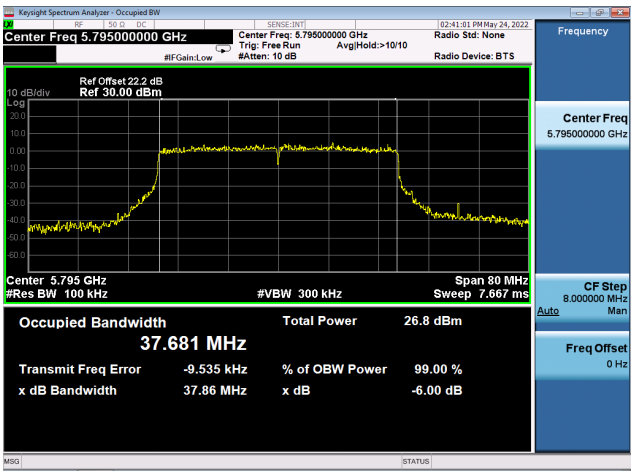
### Channel 151 (5755MHz)

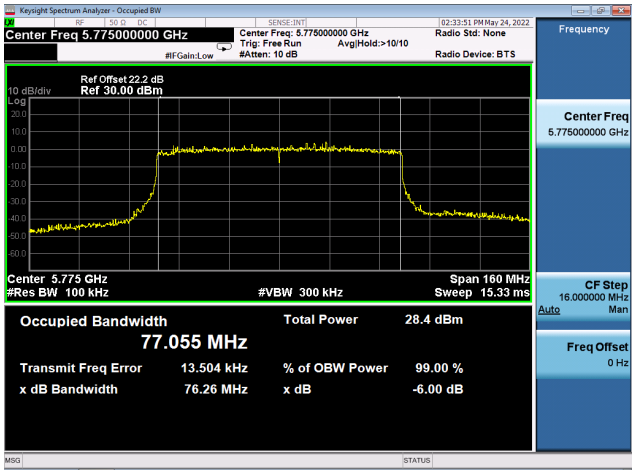



### Channel 159 (5795MHz)



| 802.11ac-VHT80 6dB Bandwidth | |
|---|---|
| Channel 155 (5775MHz) | |
|  | |

| 802.11ax-HE20 6dB Bandwidth | |
|---|---|
| Channel 149 (5745MHz) | Channel 157 (5785MHz) |
|  |  |
| Channel 165 (5825MHz) | |
|  | |
| 802.11ac-VHT40 6dB Bandwidth | |
| Channel 151 (5755MHz) | Channel 159 (5795MHz) |
|  |  |

| 802.11ax-HE80 6dB Bandwidth | |
|---|---|
| Channel 155 (5775MHz) | |
|  | |

### A.4 Output Power Test Result

| Test Site | NS-TR2 | Test Engineer | Summer Tang |
|---|---|---|---|
| Test Date | 2022/05/23 | | |

| Test Mode | Data Rate MCS | Channel No. | Freq. (MHz) | Average Power (dBm) | | Total Average Power (dBm) | Average Power Limit (dBm) |
|---|---|---|---|---|---|---|---|
| | | | | Ant 0 | Ant 1 | | |
| 11a | 6Mbps | 36 | 5180 | 18.73 | 18.95 | 21.85 | 30.00 |
| 11a | 6Mbps | 44 | 5220 | 18.34 | 18.62 | 21.49 | 30.00 |
| 11a | 6Mbps | 48 | 5240 | 18.85 | 19.11 | 21.99 | 30.00 |
| 11a | 6Mbps | 149 | 5745 | 20.89 | 20.55 | 23.73 | 30.00 |
| 11a | 6Mbps | 157 | 5785 | 21.12 | 20.59 | 23.87 | 30.00 |
| 11a | 6Mbps | 165 | 5825 | 20.78 | 20.02 | 23.43 | 30.00 |
| 11ac-VHT20 | MCS0 | 36 | 5180 | 18.56 | 18.80 | 21.69 | 30.00 |
| 11ac-VHT20 | MCS0 | 44 | 5220 | 19.62 | 19.80 | 22.72 | 30.00 |
| 11ac-VHT20 | MCS0 | 48 | 5240 | 19.18 | 19.52 | 22.36 | 30.00 |
| 11ac-VHT20 | MCS0 | 149 | 5745 | 20.83 | 20.38 | 23.62 | 30.00 |
| 11ac-VHT20 | MCS0 | 157 | 5785 | 21.03 | 20.45 | 23.76 | 30.00 |
| 11ac-VHT20 | MCS0 | 165 | 5825 | 21.03 | 20.41 | 23.74 | 30.00 |
| 11ac-VHT40 | MCS0 | 38 | 5190 | 12.86 | 12.98 | 15.93 | 30.00 |
| 11ac-VHT40 | MCS0 | 46 | 5230 | 18.98 | 19.29 | 22.15 | 30.00 |
| 11ac-VHT40 | MCS0 | 151 | 5755 | 21.21 | 20.63 | 23.94 | 30.00 |
| 11ac-VHT40 | MCS0 | 159 | 5795 | 21.41 | 20.73 | 24.09 | 30.00 |
| 11ac-VHT80 | MCS0 | 42 | 5210 | 9.54 | 9.90 | 12.73 | 30.00 |
| 11ac-VHT80 | MCS0 | 155 | 5775 | 21.52 | 20.86 | 24.21 | 30.00 |
| 11ax-HE20 | MCS0 | 36 | 5180 | 18.47 | 18.58 | 21.54 | 30.00 |
| 11ax-HE20 | MCS0 | 44 | 5220 | 18.36 | 18.73 | 21.56 | 30.00 |
| 11ax-HE20 | MCS0 | 48 | 5240 | 18.54 | 18.75 | 21.66 | 30.00 |
| 11ax-HE20 | MCS0 | 149 | 5745 | 21.68 | 21.15 | 24.43 | 30.00 |
| 11ax-HE20 | MCS0 | 157 | 5785 | 20.78 | 20.28 | 23.55 | 30.00 |
| 11ax-HE20 | MCS0 | 165 | 5825 | 21.27 | 20.70 | 24.00 | 30.00 |
| 11ax-HE40 | MCS0 | 38 | 5190 | 10.99 | 11.22 | 14.12 | 30.00 |
| 11ax-HE40 | MCS0 | 46 | 5230 | 18.66 | 18.92 | 21.80 | 30.00 |
| 11ax-HE40 | MCS0 | 151 | 5755 | 21.22 | 20.72 | 23.99 | 30.00 |
| 11ax-HE40 | MCS0 | 159 | 5795 | 21.04 | 20.35 | 23.72 | 30.00 |
| 11ax-HE80 | MCS0 | 42 | 5210 | 10.01 | 10.10 | 13.07 | 30.00 |
| 11ax-HE80 | MCS0 | 155 | 5775 | 21.22 | 20.62 | 23.94 | 30.00 |

Note 1: Total Average Power (dBm) = $10*\log\{10^{(\text{Ant 0 Average Power }/10)} + 10^{(\text{Ant 1 Average Power }/10)}\}$.

### A.5 Power Spectral Density Test Result

| Test Site | NS-TR2 | Test Engineer | Summer Tang |
|---|---|---|---|
| Test Date | 2022/05/24 | | |
| Test Item | Power Spectral Density (UNII-1) | | |

| Test Mode | Data Rate/ MCS | Channel No. | Freq. (MHz) | AVPSD (dBm/ MHz) | | Duty Cycle (%) | Total PSD (dBm/ MHz) | PSD Limit (dBm/MHz) |
|---|---|---|---|---|---|---|---|---|
| | | | | Ant 0 | Ant 1 | | | |
| 11a | 6Mbps | 36 | 5180 | 7.934 | 7.925 | 93.66 | 11.22 | 14.99 |
| 11a | 6Mbps | 44 | 5220 | 7.382 | 7.953 | 93.66 | 10.97 | 14.99 |
| 11a | 6Mbps | 48 | 5240 | 8.153 | 8.305 | 93.66 | 11.52 | 14.99 |
| 11ac-VHT20 | MCS0 | 36 | 5180 | 7.540 | 7.731 | 94.12 | 10.91 | 14.99 |
| 11ac-VHT20 | MCS0 | 44 | 5220 | 8.172 | 8.466 | 94.12 | 11.59 | 14.99 |
| 11ac-VHT20 | MCS0 | 48 | 5240 | 7.736 | 8.122 | 94.12 | 11.21 | 14.99 |
| 11ac-VHT40 | MCS0 | 38 | 5190 | -1.473 | -0.941 | 89.40 | 2.30 | 14.99 |
| 11ac-VHT40 | MCS0 | 46 | 5230 | 4.660 | 4.881 | 89.40 | 8.27 | 14.99 |
| 11ac-VHT80 | MCS0 | 42 | 5210 | -7.854 | -7.226 | 95.73 | -4.33 | 14.99 |
| 11ax-HE20 | MCS0 | 36 | 5180 | 6.718 | 6.966 | 94.72 | 10.09 | 14.99 |
| 11ax-HE20 | MCS0 | 44 | 5220 | 6.676 | 6.902 | 94.72 | 10.04 | 14.99 |
| 11ax-HE20 | MCS0 | 48 | 5240 | 6.507 | 7.047 | 94.72 | 10.03 | 14.99 |
| 11ax-HE40 | MCS0 | 38 | 5190 | -3.328 | -2.975 | 96.02 | 0.04 | 14.99 |
| 11ax-HE40 | MCS0 | 46 | 5230 | 4.376 | 4.830 | 96.02 | 7.80 | 14.99 |
| 11ax-HE80 | MCS0 | 42 | 5210 | -7.196 | -6.758 | 95.24 | -3.75 | 14.99 |

Note: When EUT duty cycle < 98%, the total PSD (dBm/MHz) =10*log $\{10^{(\text{Ant 0 AVGPSD}/10)} + 10^{(\text{Ant 1 AVGPSD}/10)}\}$ +10*log (1/Duty cycle).

| Test Site | WZ-SR5 | Test Engineer | Luis Yang |
|---|---|---|---|
| Test Date | 2022/05/24 | | |
| Test Item | Power Spectral Density (UNII-3) | | |

| Test Mode | Data Rate/ MCS | Channel No. | Freq. (MHz) | AVPSD (dBm/ 510KHz) | | Duty Cycle (%) | Total PSD (dBm/ 510KHz) | PSD Limit (dBm/ 500KHz) |
|---|---|---|---|---|---|---|---|---|
| | | | | Ant 0 | Ant 1 | | | |
| 11a | 6Mbps | 149 | 5745 | 7.983 | 7.406 | 93.66 | 11.00 | 27.99 |
| 11a | 6Mbps | 157 | 5785 | 8.128 | 7.155 | 93.66 | 10.96 | 27.99 |
| 11a | 6Mbps | 165 | 5825 | 7.269 | 6.521 | 93.66 | 10.21 | 27.99 |
| 11ac-VHT20 | MCS0 | 149 | 5745 | 7.279 | 6.334 | 94.12 | 10.11 | 27.99 |
| 11ac-VHT20 | MCS0 | 157 | 5785 | 7.568 | 6.890 | 94.12 | 10.52 | 27.99 |
| 11ac-VHT20 | MCS0 | 165 | 5825 | 7.202 | 6.643 | 94.12 | 10.20 | 27.99 |
| 11ac-VHT40 | MCS0 | 151 | 5755 | 4.867 | 3.483 | 89.40 | 7.73 | 27.99 |
| 11ac-VHT40 | MCS0 | 159 | 5795 | 4.837 | 3.423 | 89.40 | 7.68 | 27.99 |
| 11ac-VHT80 | MCS0 | 155 | 5775 | 1.954 | 0.799 | 95.73 | 4.61 | 27.99 |
| 11ax-HE20 | MCS0 | 149 | 5745 | 8.320 | 7.029 | 94.72 | 10.97 | 27.99 |
| 11ax-HE20 | MCS0 | 157 | 5785 | 6.809 | 5.760 | 94.72 | 9.56 | 27.99 |
| 11ax-HE20 | MCS0 | 165 | 5825 | 7.610 | 6.122 | 94.72 | 10.18 | 27.99 |
| 11ax-HE40 | MCS0 | 151 | 5755 | 5.081 | 3.995 | 96.02 | 7.76 | 27.99 |
| 11ax-HE40 | MCS0 | 159 | 5795 | 4.567 | 3.686 | 96.02 | 7.34 | 27.99 |
| 11ax-HE80 | MCS0 | 155 | 5775 | 1.784 | 0.804 | 95.24 | 4.54 | 27.99 |

Note 1:

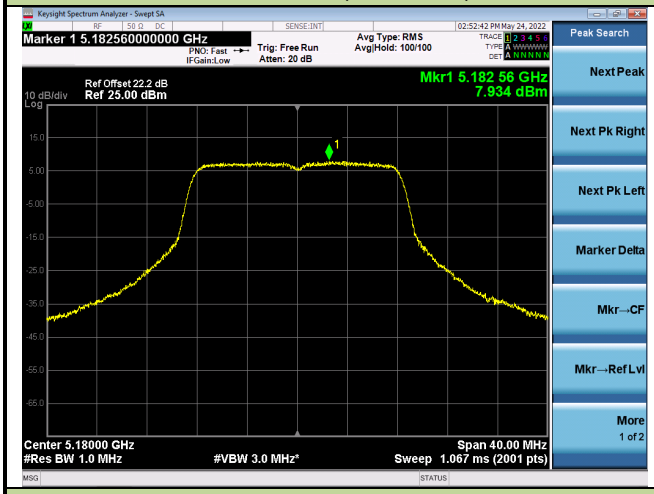
When EUT duty cycle < 98%, the total PSD (dBm/510kHz) =10*log {$10^{(\text{Ant 0 AVGPSD}/10)}$ + $10^{(\text{Ant 1 AVGPSD}/10)}$}

+10*log (1/Duty cycle).

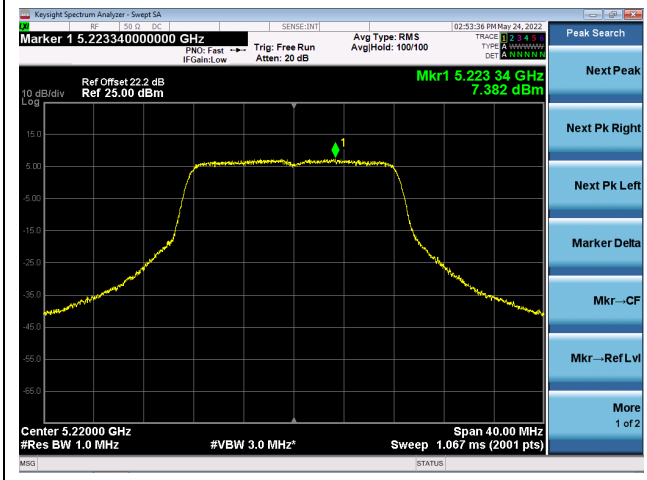
Note 2: PSD Limit (dBm/500KHz) = 30 - (8.01 - 6) = 27.99dBm/500kHz

## 802.11a Power Spectral Density – Ant 0

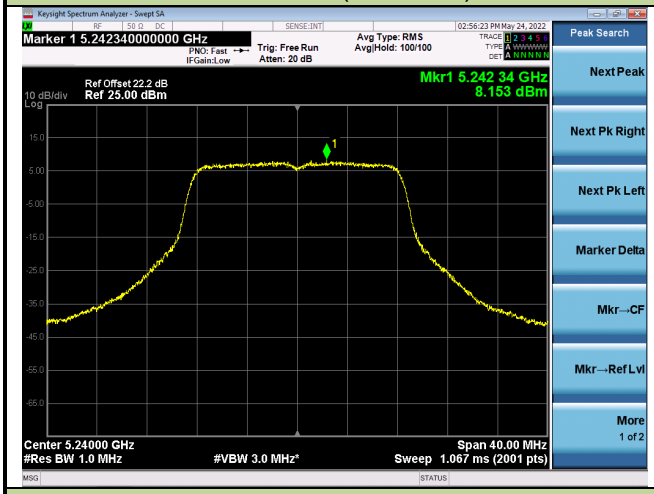
### Channel 36 (5180MHz)



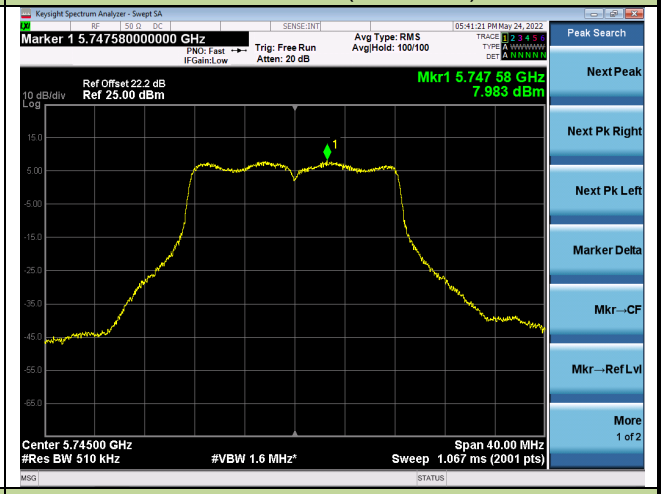

### Channel 44 (5220MHz)



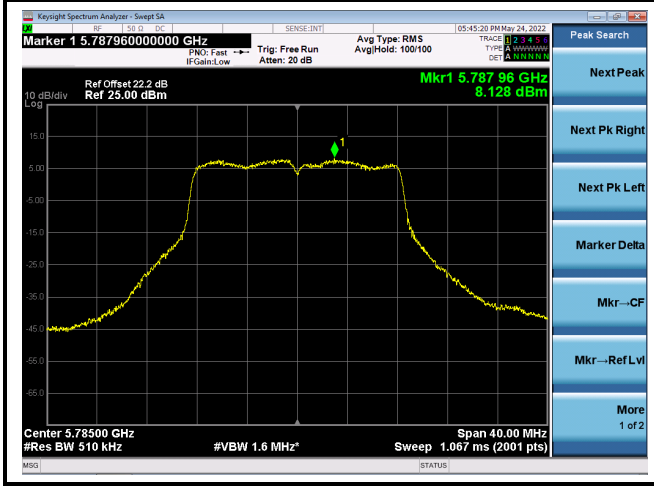

### Channel 48 (5240MHz)




### Channel 149 (5745MHz)




### Channel 157 (5785MHz)




### Channel 165 (5825MHz)