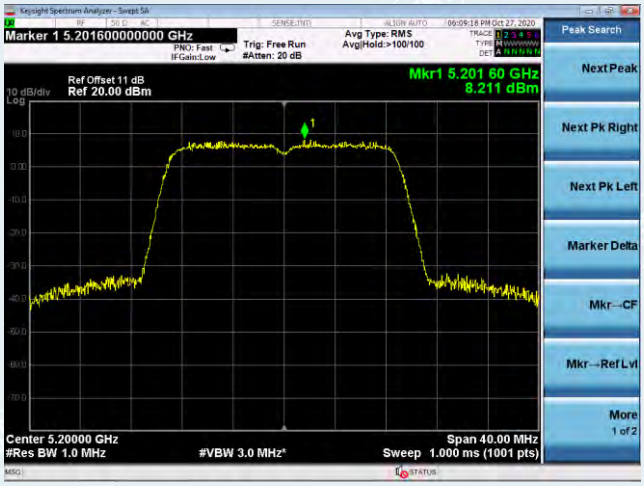
## 802.11ac VHT20 mode (antenna 2)

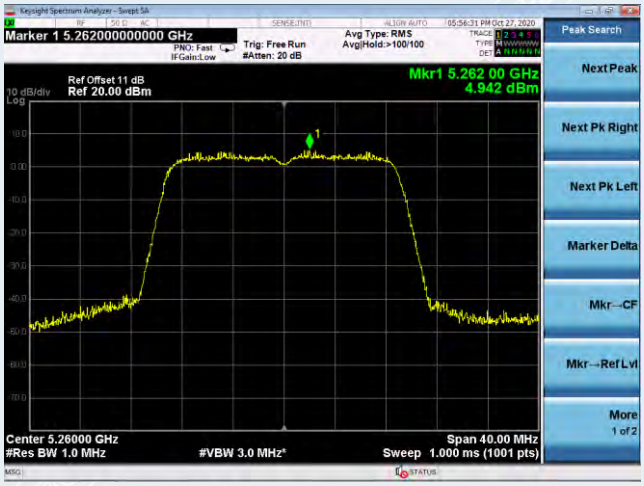
Channel 5180MHz

Channel 5200MHz



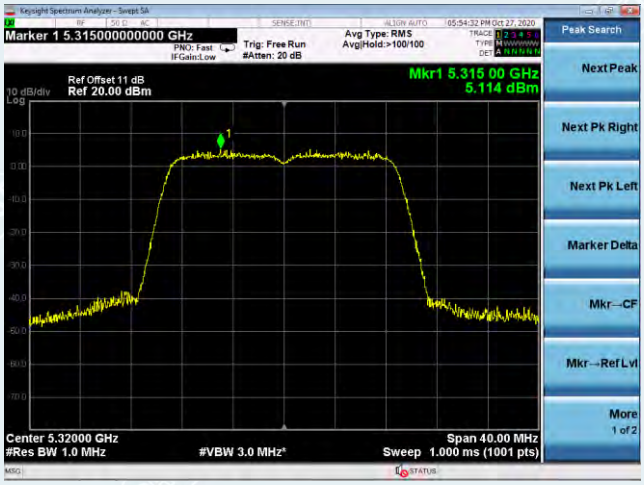

Channel 5240MHz

Channel 5260MHz



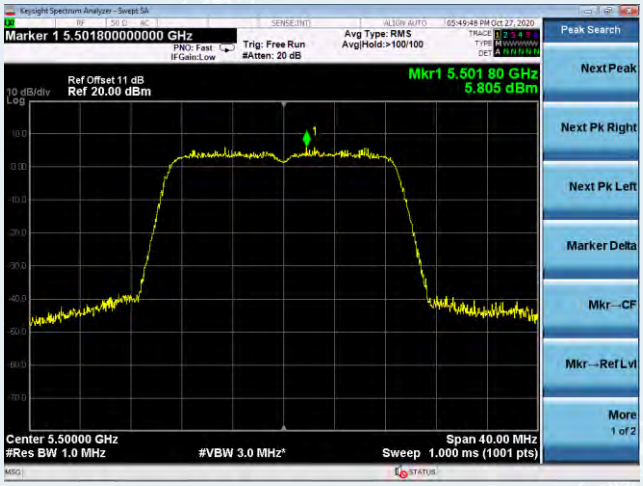

Channel 5300MHz

Channel 5320MHz

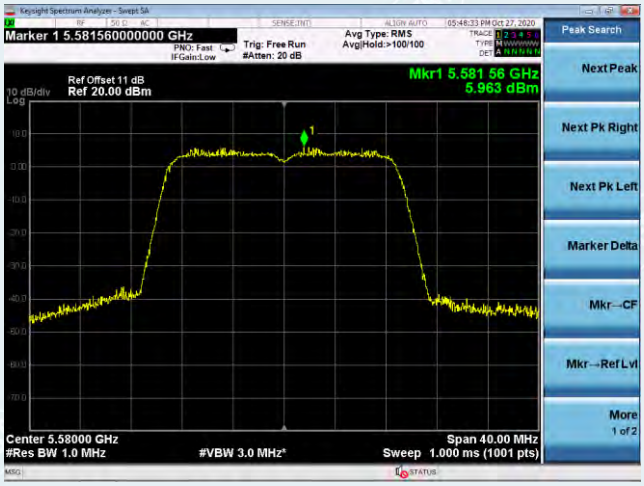


## 802.11ac VHT20 mode (antenna 2)

Channel 5500MHz

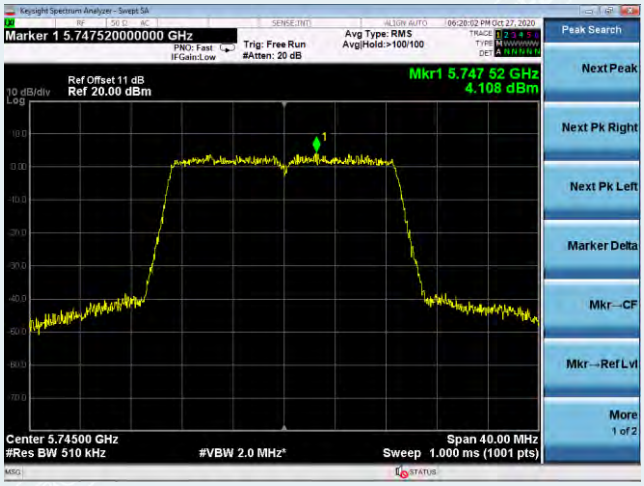



Channel 5580MHz

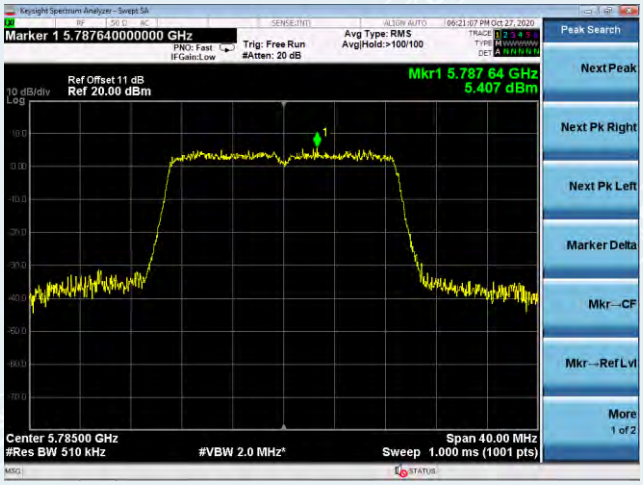



Channel 5700MHz

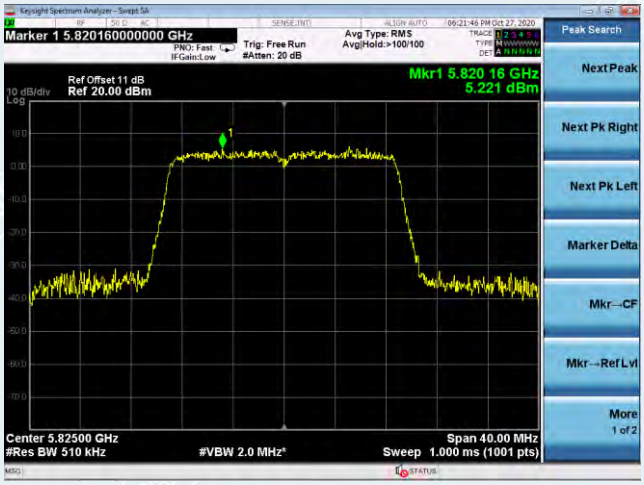
Channel 5745MHz




Channel 5785MHz

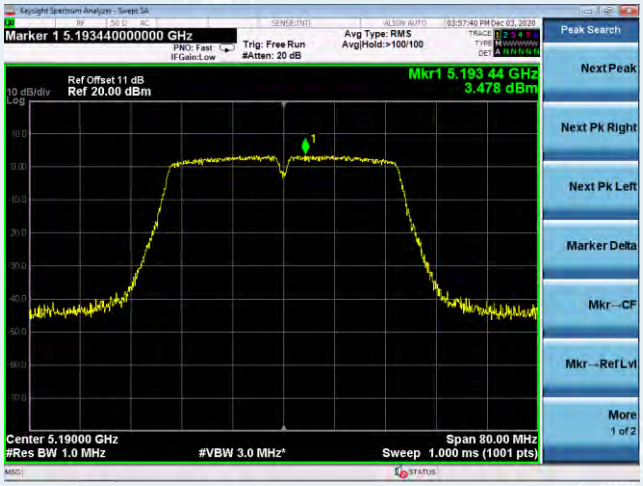



Channel 5825MHz

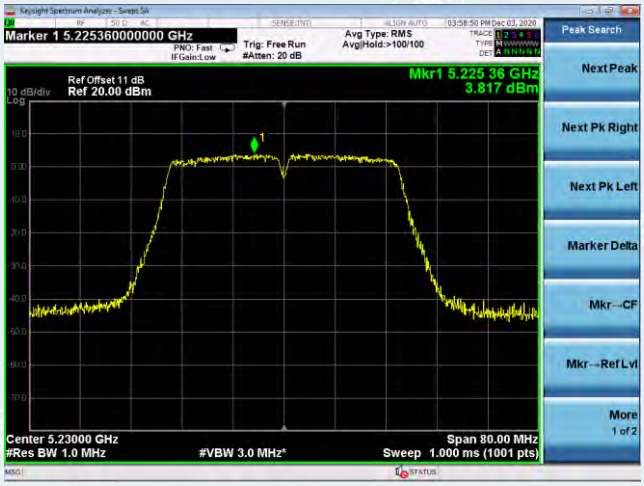


## 802.11n HT40 mode (antenna 1)

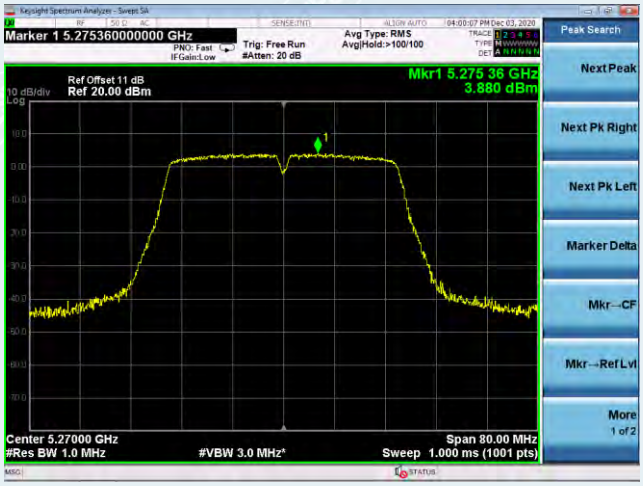
Channel 5190MHz



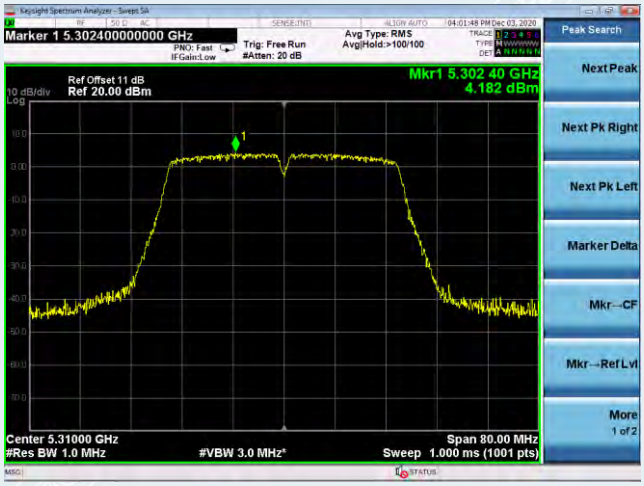

Channel 5230MHz



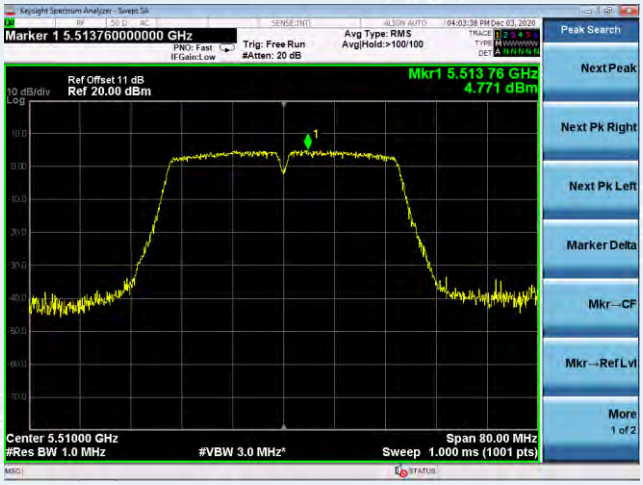

Channel 5270MHz



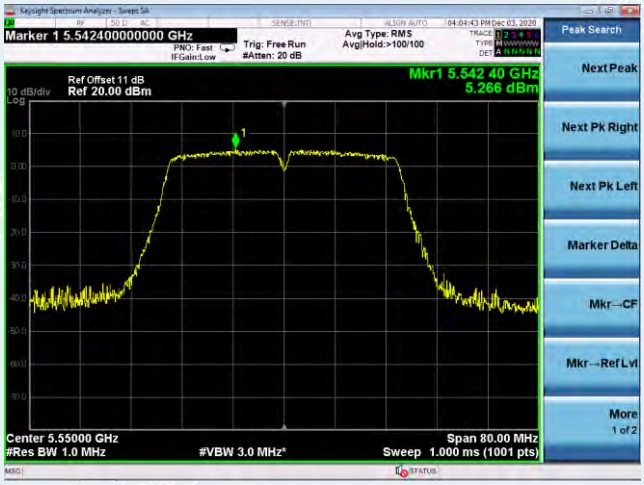

Channel 5310MHz




Channel 5510MHz



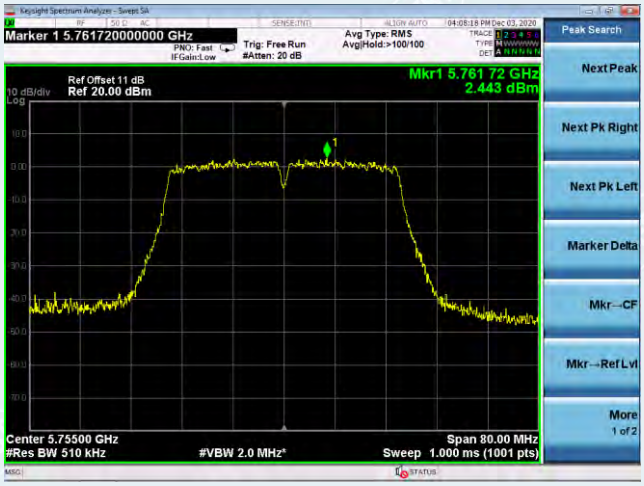

Channel 5550MHz



## 802.11n HT40 mode (antenna 1)

Channel 5670MHz

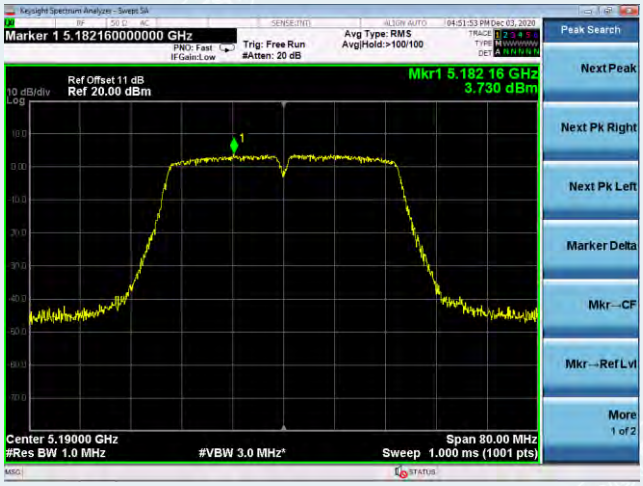
Channel 5755MHz



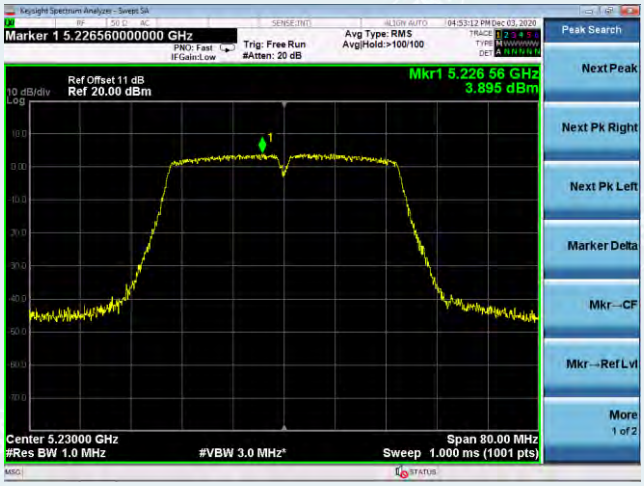

Channel 5795MHz

## 802.11n HT40 mode (antenna 2)

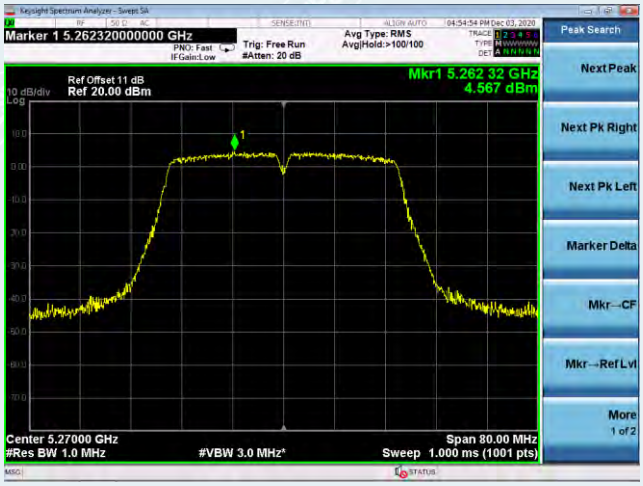
Channel 5190MHz



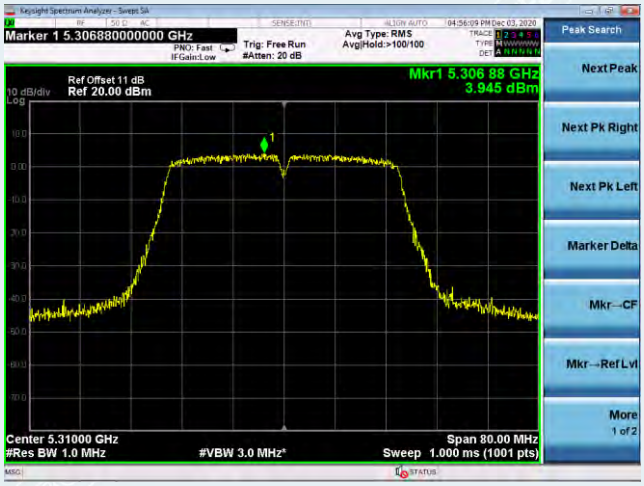

Channel 5230MHz




Channel 5270MHz

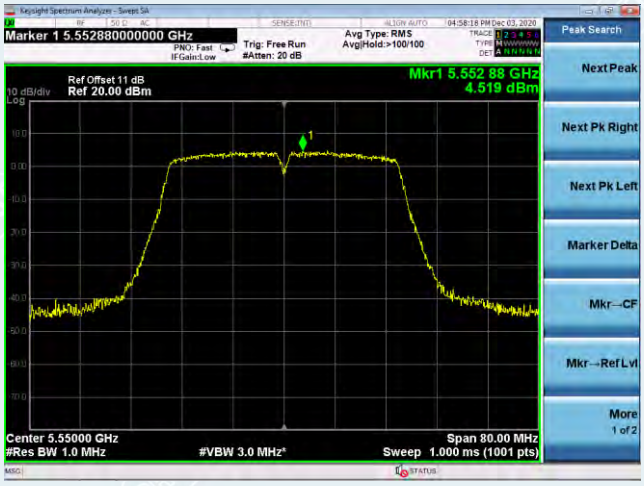



Channel 5310MHz



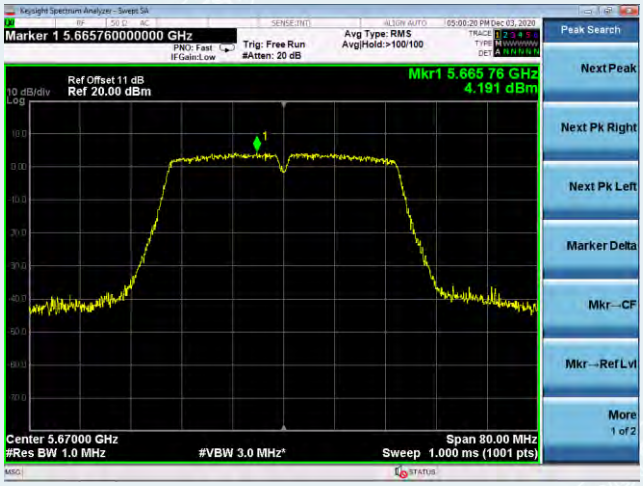

Channel 5510MHz

Channel 5550MHz

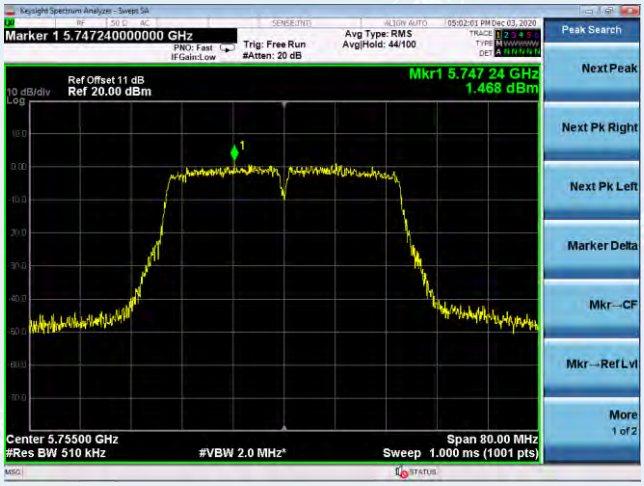


## 802.11n HT40 mode (antenna 2)

Channel 5670MHz



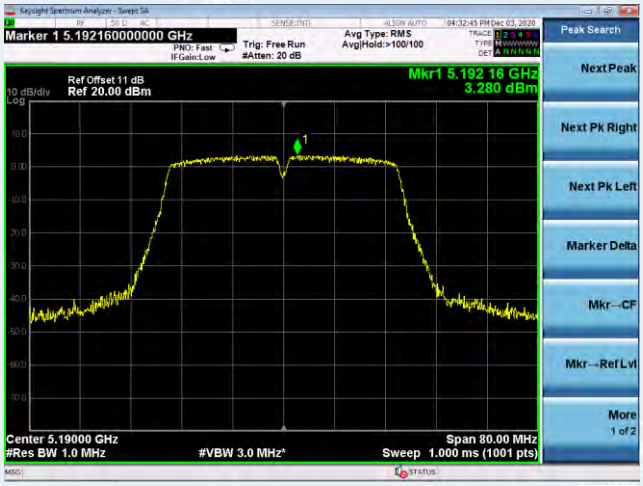

Channel 5755MHz



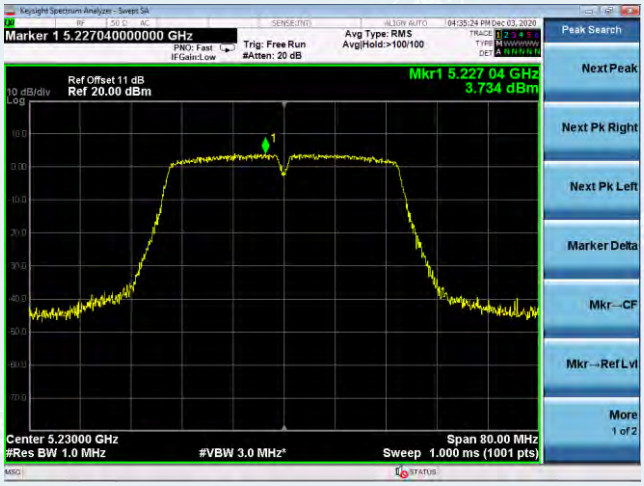

Channel 5795MHz

## 802.11ac VHT40 mode (antenna 1)

Channel 5190MHz

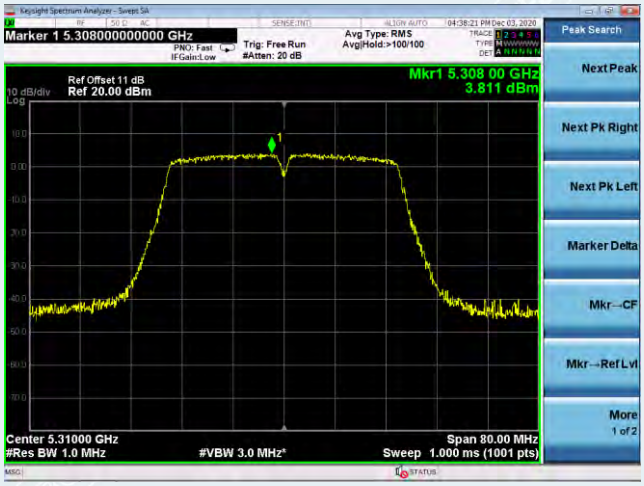



Channel 5230MHz

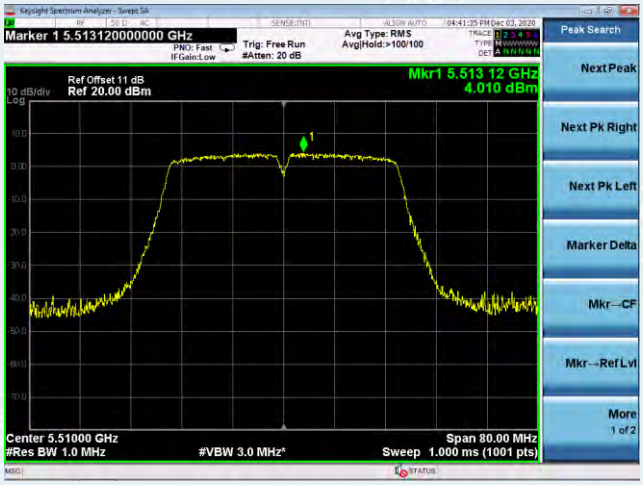



Channel 5270MHz

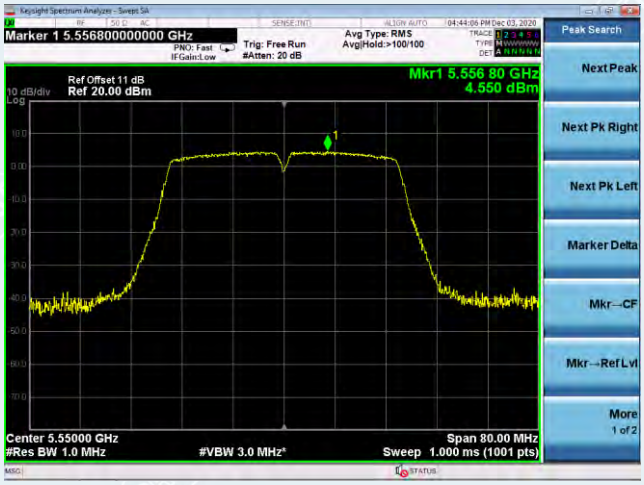
Channel 5310MHz




Channel 5510MHz

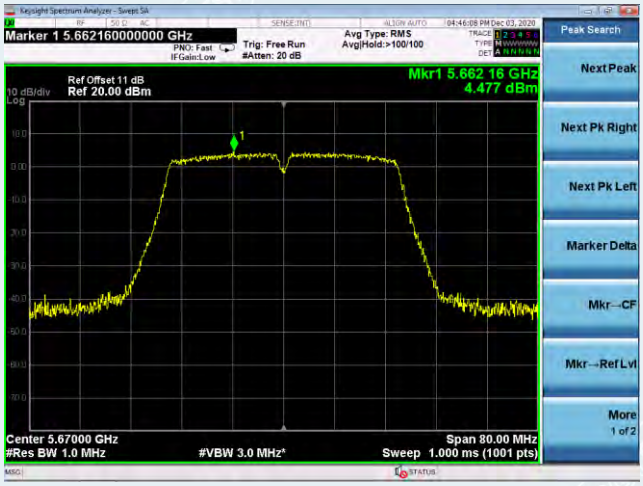



Channel 5550MHz

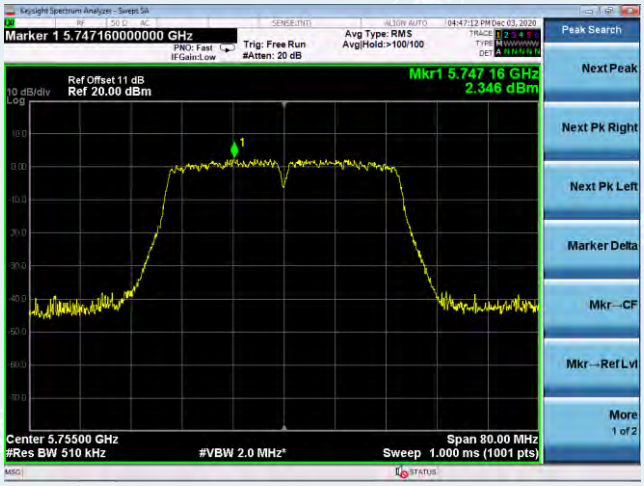


## 802.11ac VHT40 mode (antenna 1)

Channel 5670MHz




Channel 5755MHz

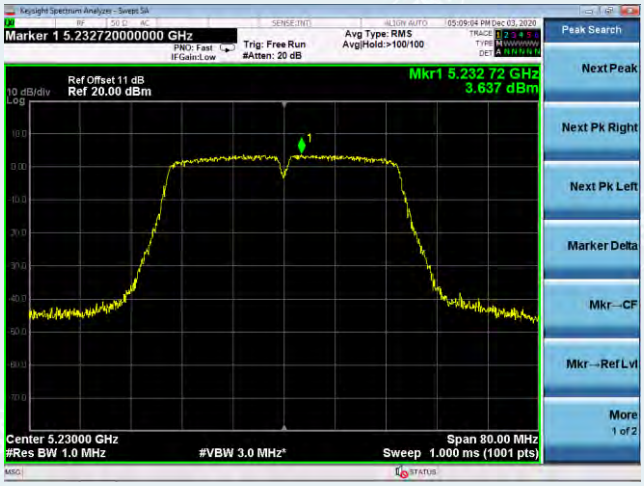



Channel 5795MHz

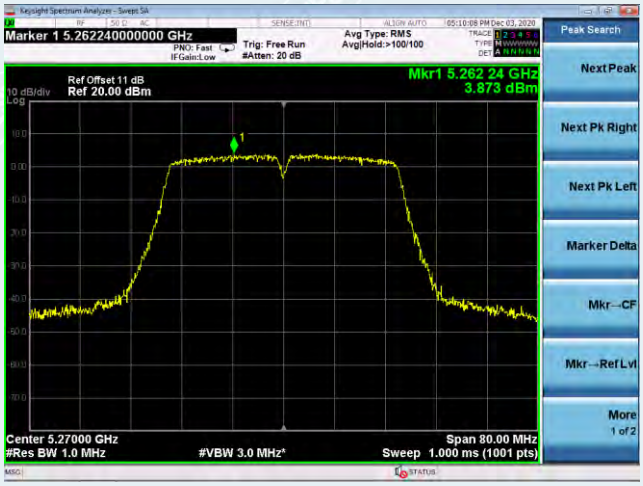
## 802.11ac VHT40 mode (antenna 2)

Channel 5190MHz

Channel 5230MHz

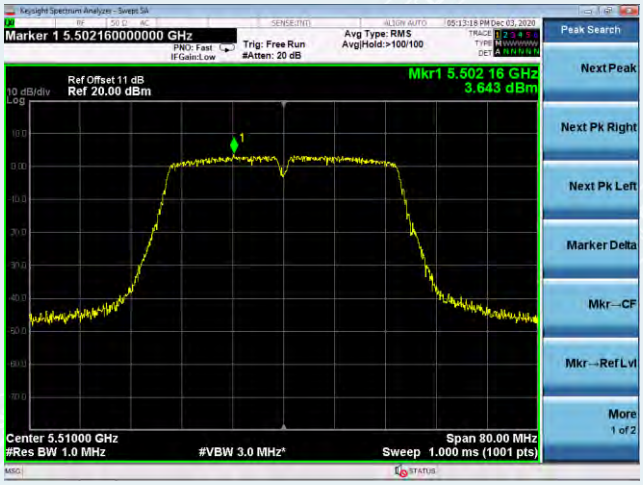



Channel 5270MHz

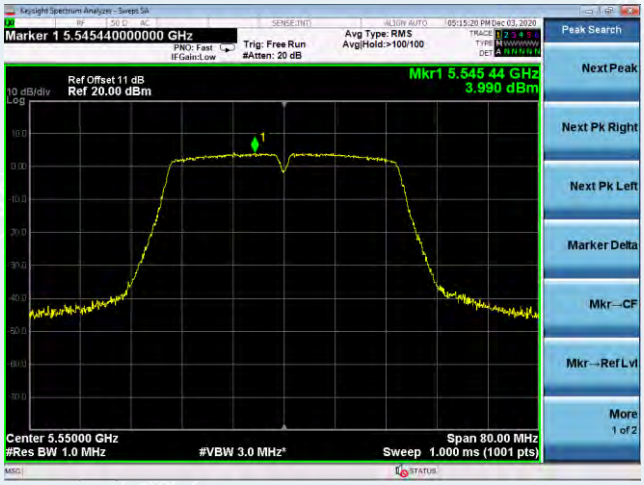



Channel 5310MHz

Channel 5510MHz

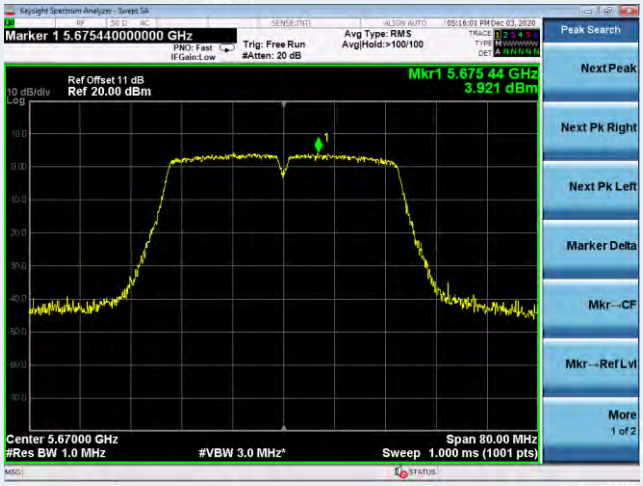



Channel 5550MHz



## 802.11ac VHT40 mode (antenna 2)

Channel 5670MHz

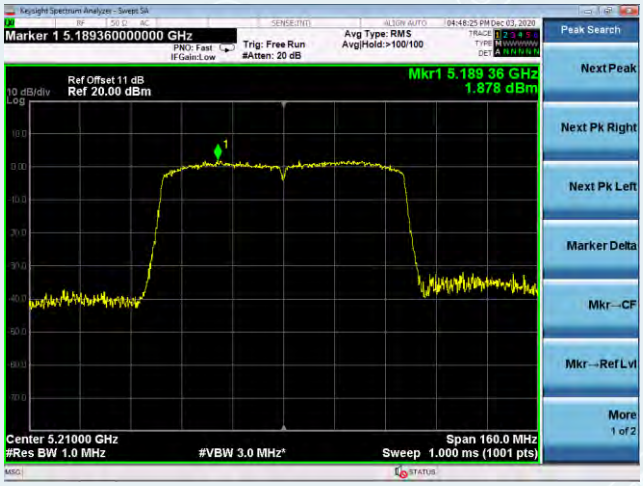



Channel 5755MHz

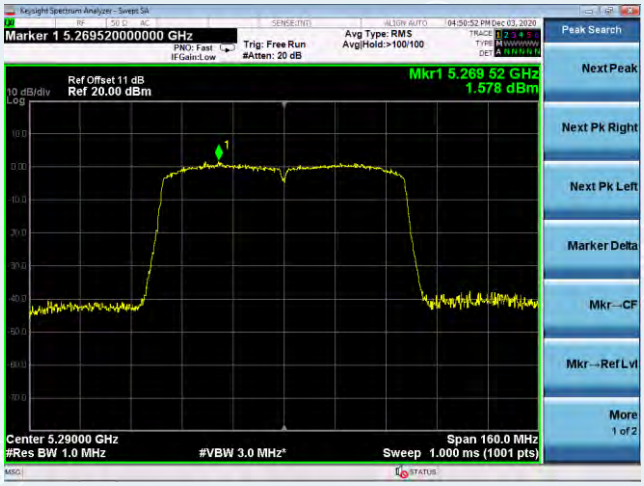
Channel 5795MHz

## 802.11ac VHT80 mode (antenna 1)

Channel 5210MHz

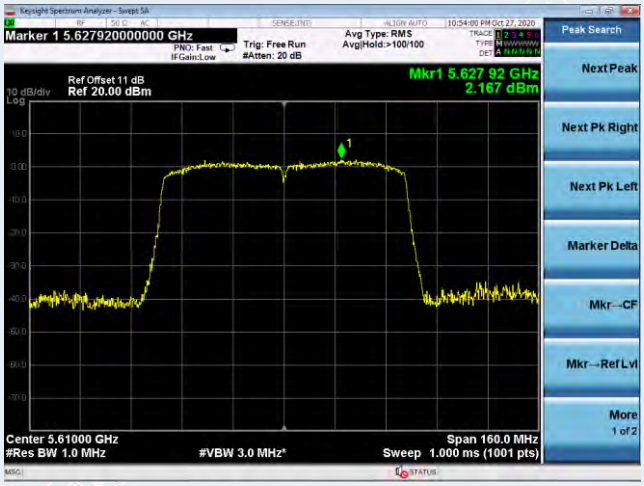



Channel 5290MHz

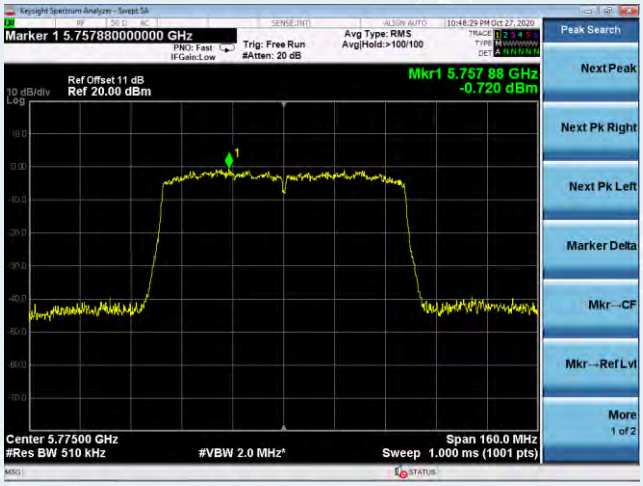



Channel 5530MHz

Channel 5610MHz

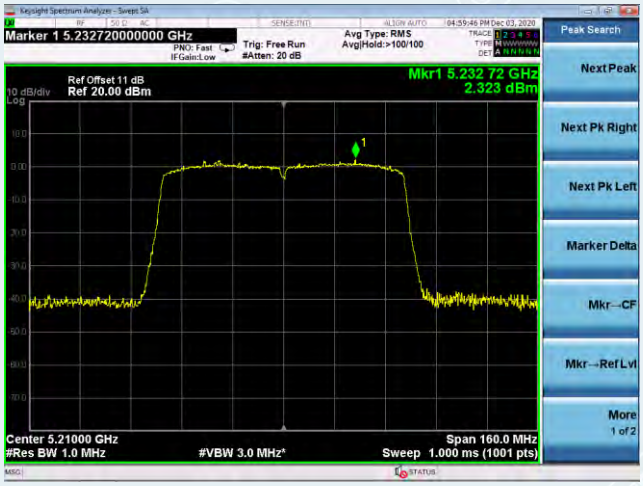



Channel 5775MHz

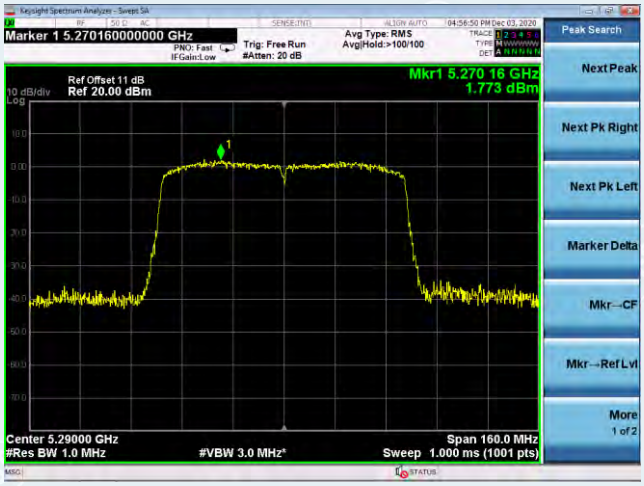


## 802.11ac VHT80 mode (antenna 2)

Channel 5210MHz



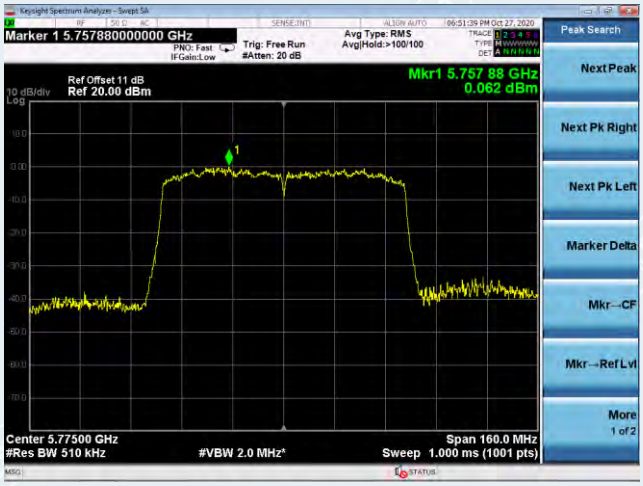

Channel 5290MHz




Channel 5530MHz

Channel 5610MHz

Channel 5775MHz



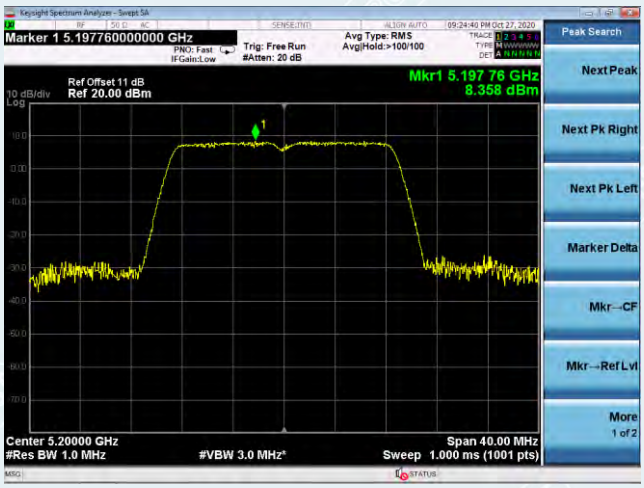
# Beamforming

Test Results (plots) of PSD

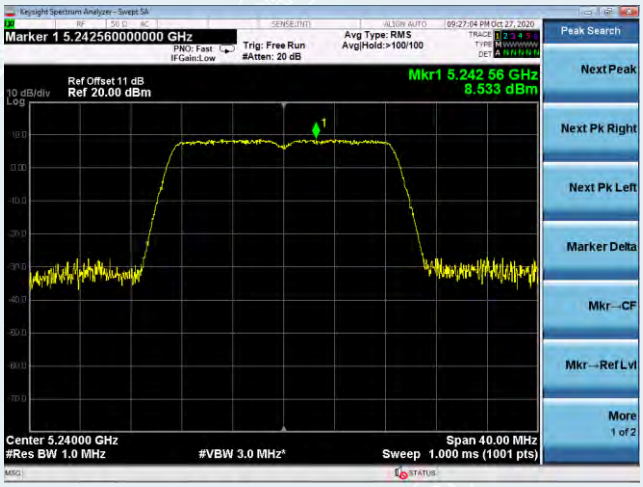
## 802.11n HT20 mode (antenna 1)

Channel 5180MHz

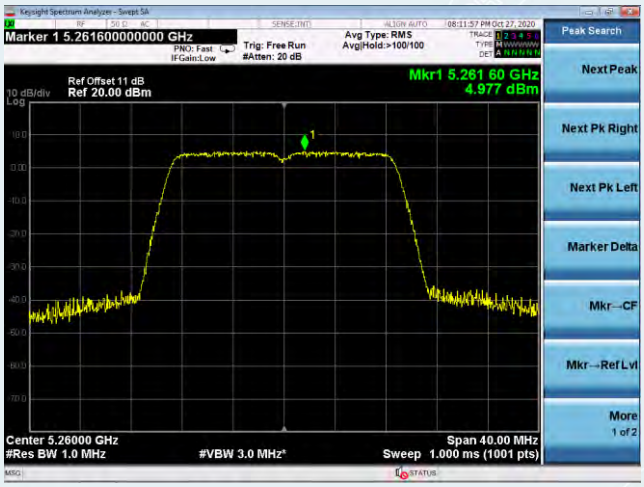
Channel 5200MHz




Channel 5240MHz

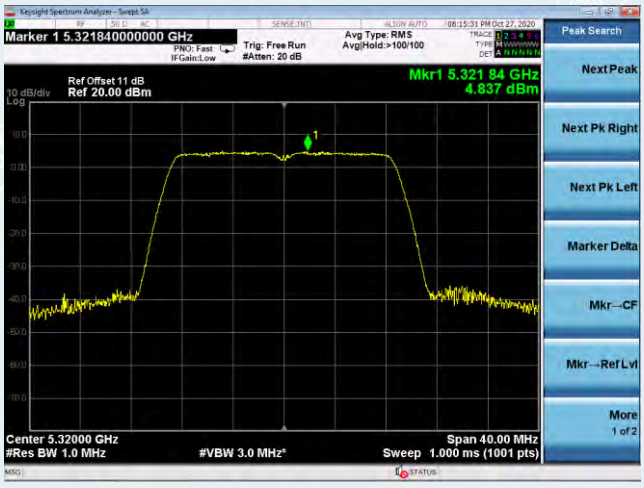



Channel 5260MHz



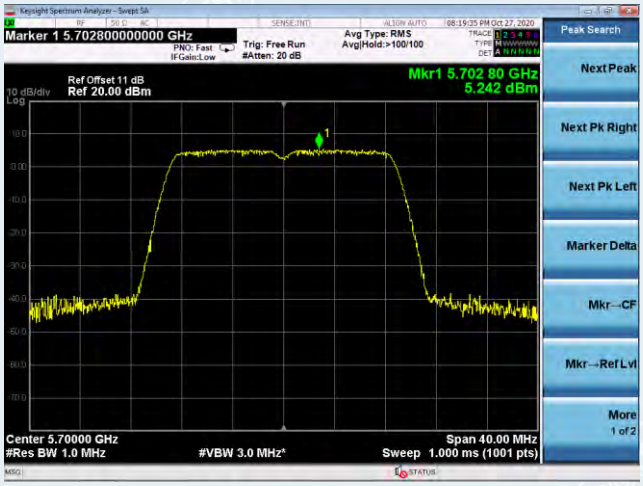

Channel 5300MHz

Channel 5320MHz

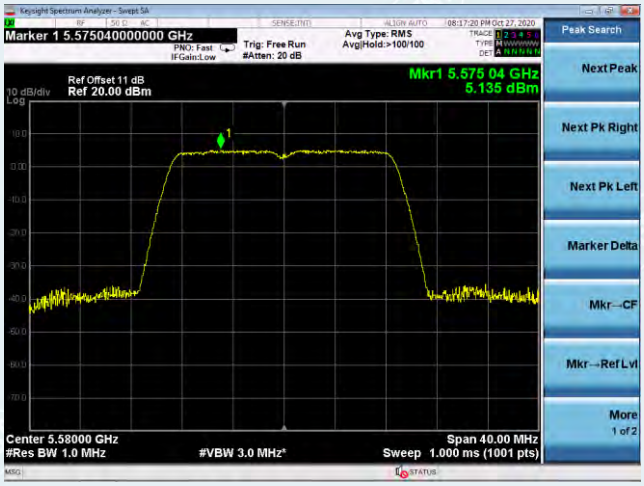


## 802.11n HT20 mode (antenna 1)

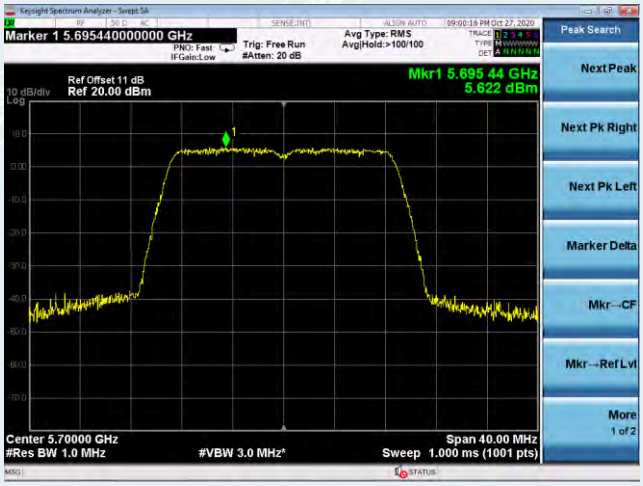
Channel 5500MHz



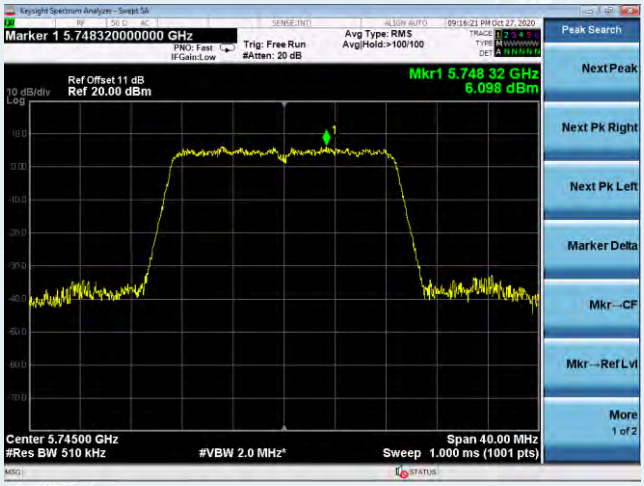

Channel 5580MHz




Channel 5700MHz




Channel 5745MHz

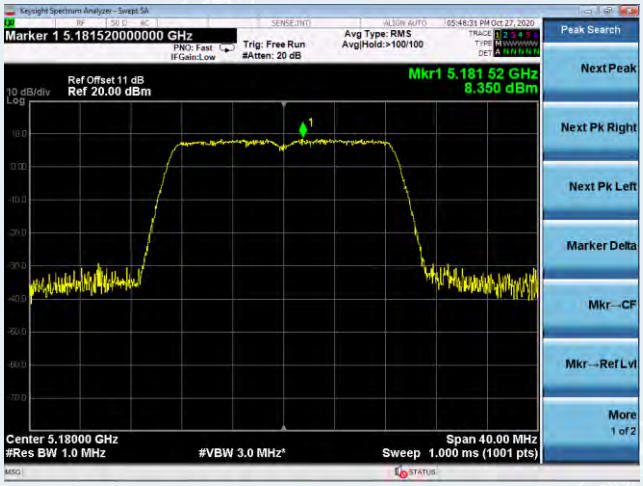



Channel 5785MHz

Channel 5825MHz

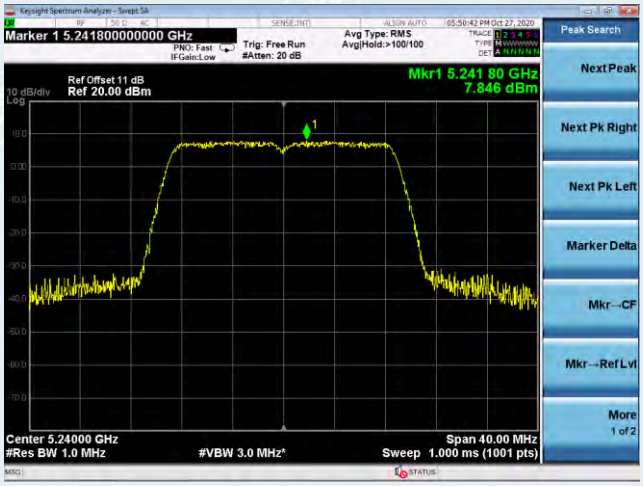
## 802.11n HT20 mode (antenna 2)

Channel 5180MHz

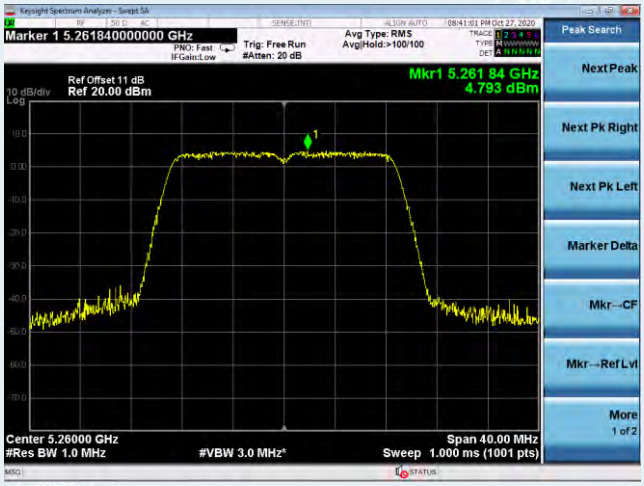



Channel 5200MHz

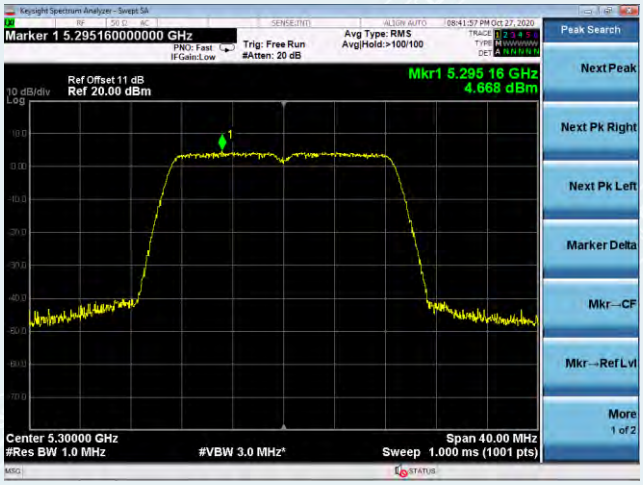
Channel 5240MHz



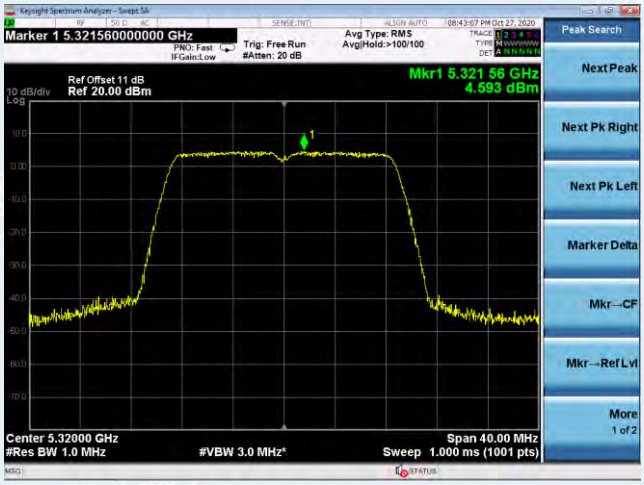

Channel 5260MHz




Channel 5300MHz



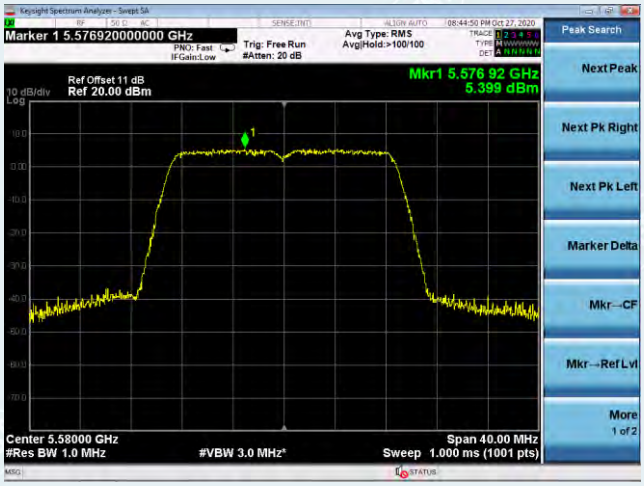

Channel 5320MHz



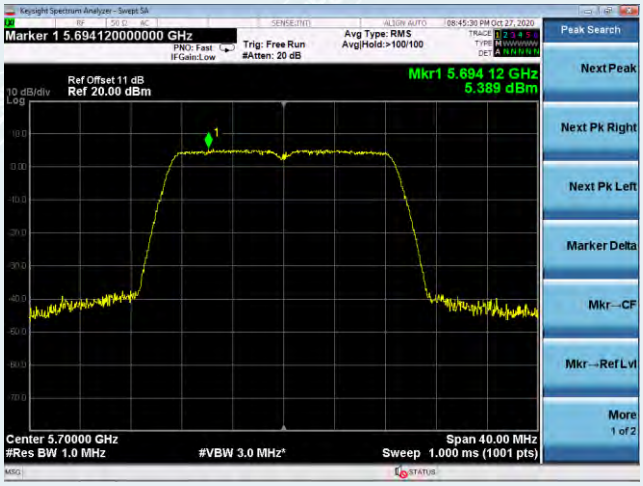
## 802.11n HT20 mode (antenna 2)

Channel 5500MHz

Channel 5580MHz



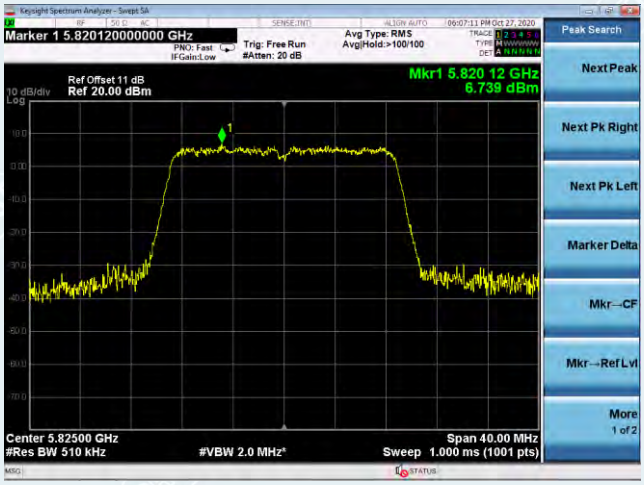

Channel 5700MHz




Channel 5745MHz

Channel 5785MHz

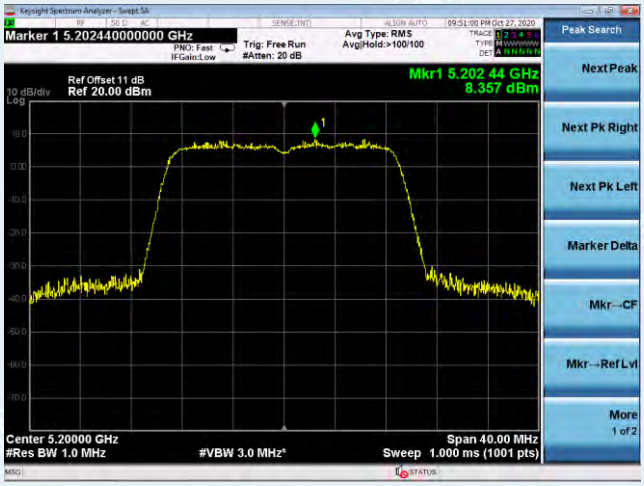
Channel 5825MHz



## 802.11ac VHT20 mode (antenna 1)

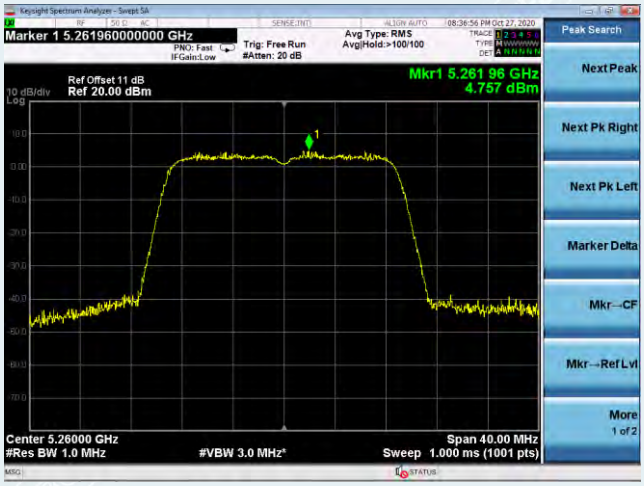
Channel 5180MHz

Channel 5200MHz



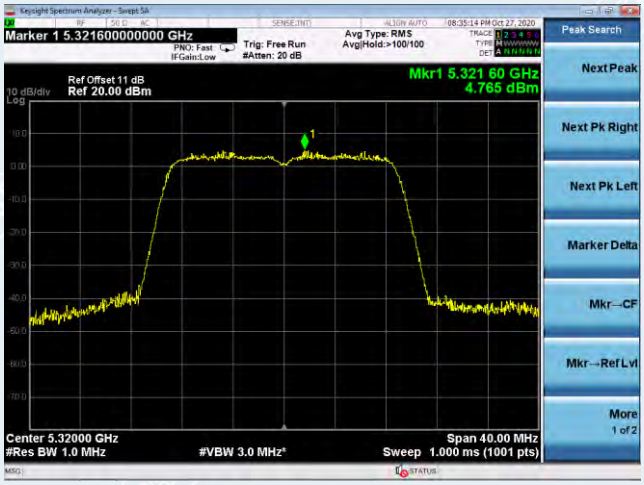

Channel 5240MHz

Channel 5260MHz




Channel 5300MHz

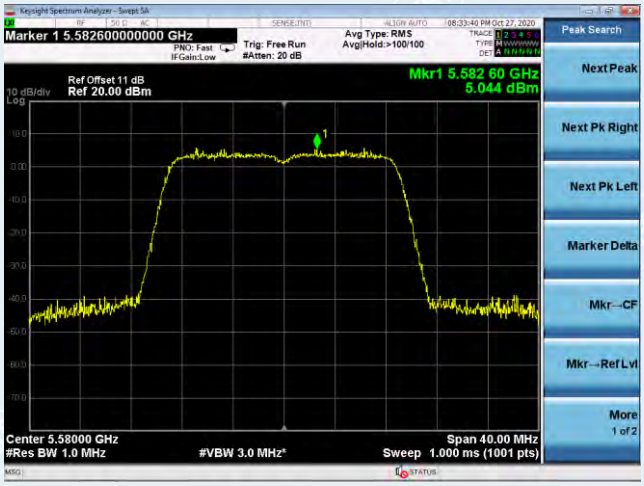
Channel 5320MHz



## 802.11ac VHT20 mode (antenna 1)

Channel 5500MHz

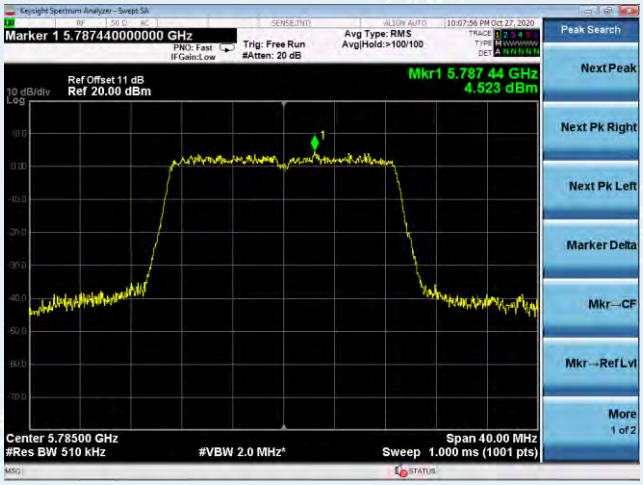
Channel 5580MHz



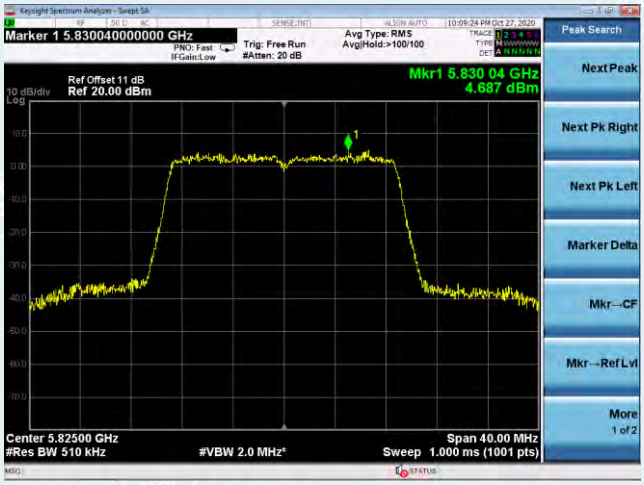

Channel 5700MHz

Channel 5745MHz

Channel 5785MHz



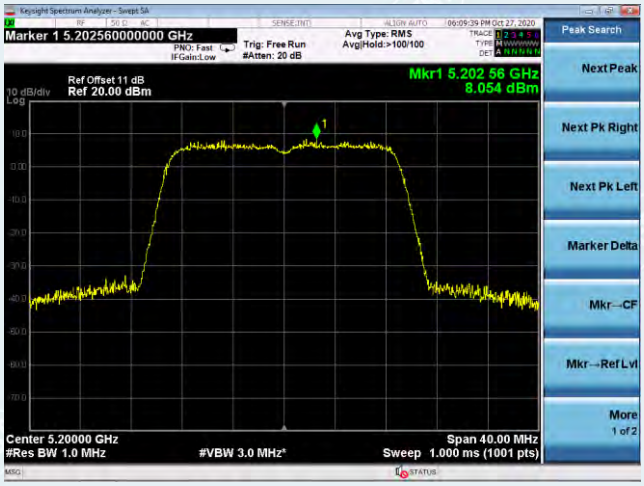

Channel 5825MHz



## 802.11ac VHT20 mode (antenna 2)

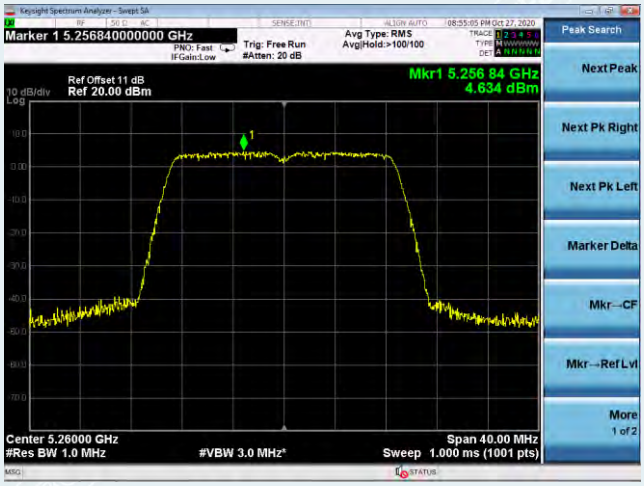
Channel 5180MHz

Channel 5200MHz

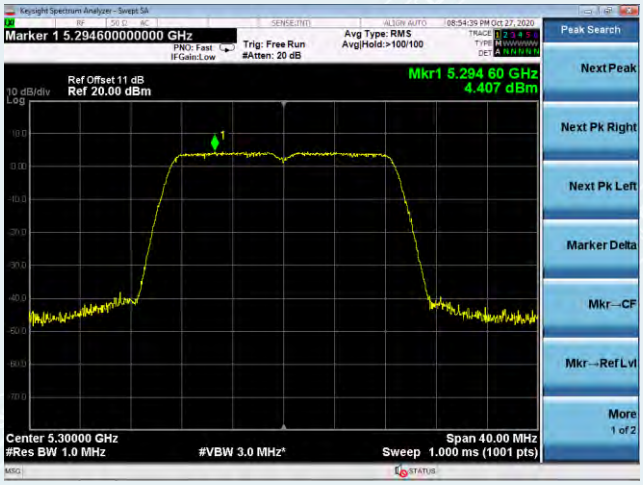



Channel 5240MHz

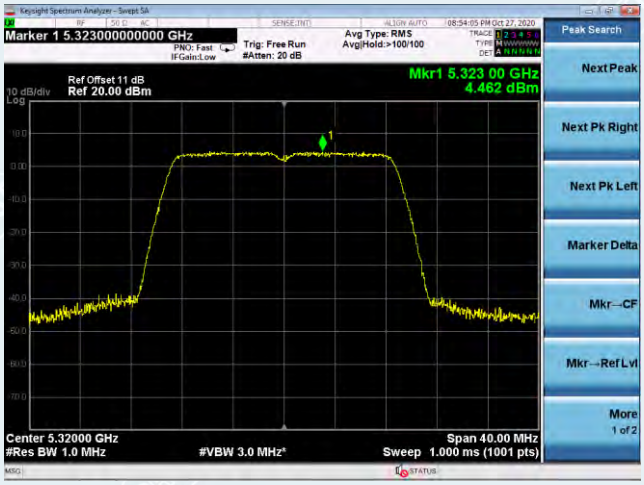
Channel 5260MHz




Channel 5300MHz

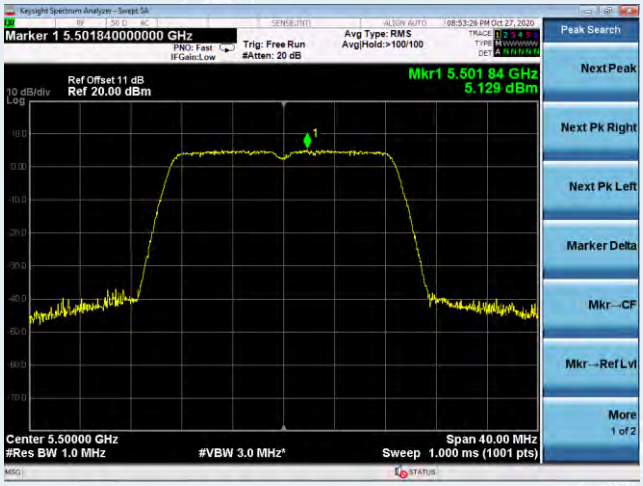



Channel 5320MHz



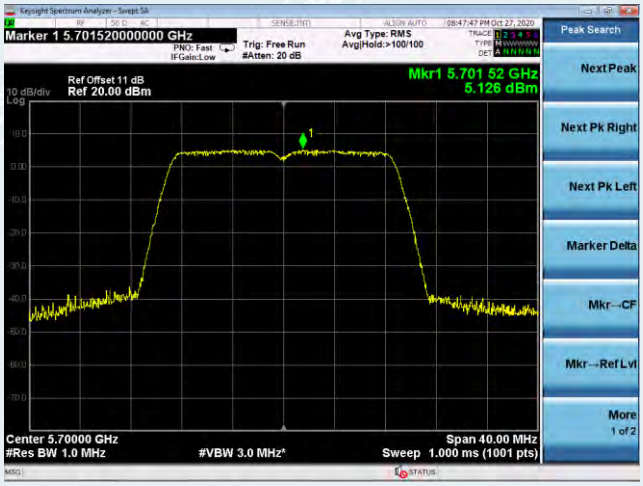
## 802.11ac VHT20 mode (antenna 2)

Channel 5500MHz



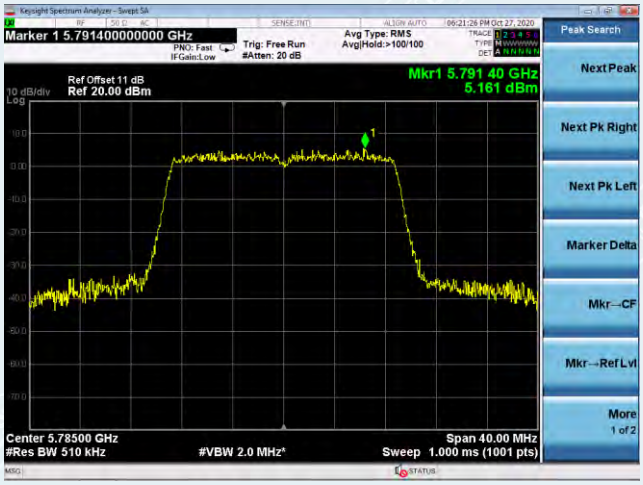

Channel 5580MHz

Channel 5700MHz




Channel 5745MHz

Channel 5785MHz




Channel 5825MHz

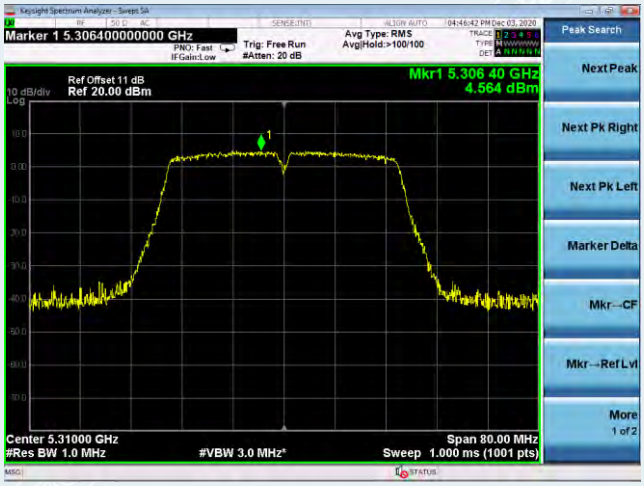
## 802.11n HT40 mode (antenna 1)

Channel 5190MHz

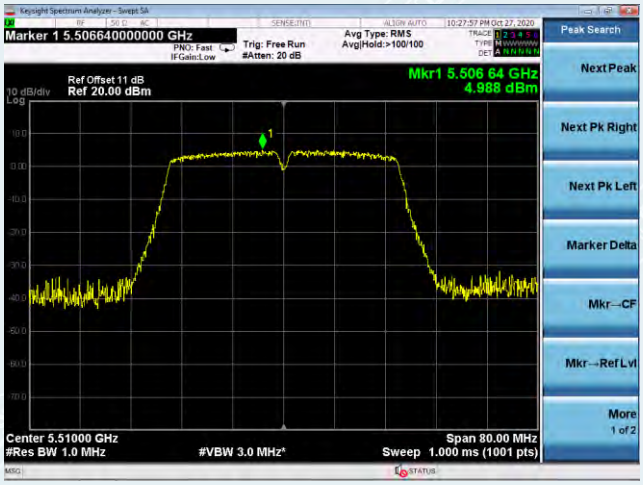
Channel 5230MHz

Channel 5270MHz

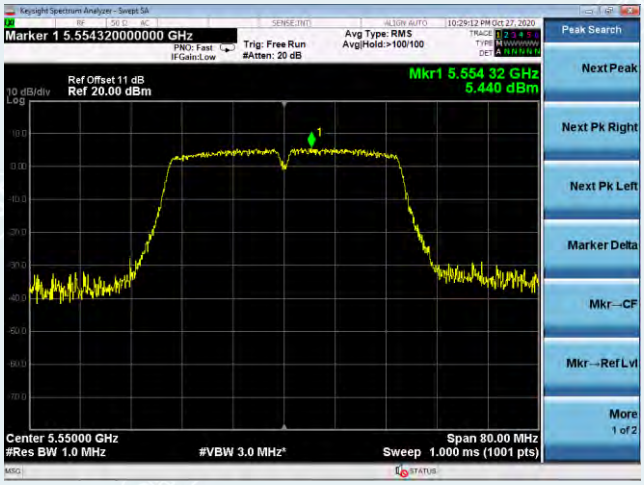
Channel 5310MHz




Channel 5510MHz



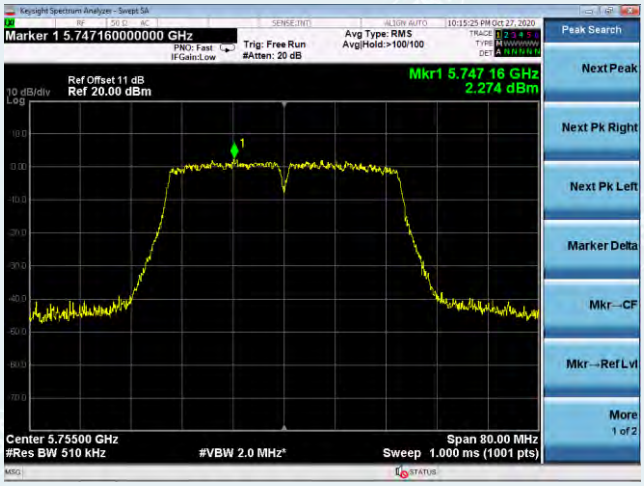

Channel 5550MHz



## 802.11n HT40 mode (antenna 1)

Channel 5670MHz

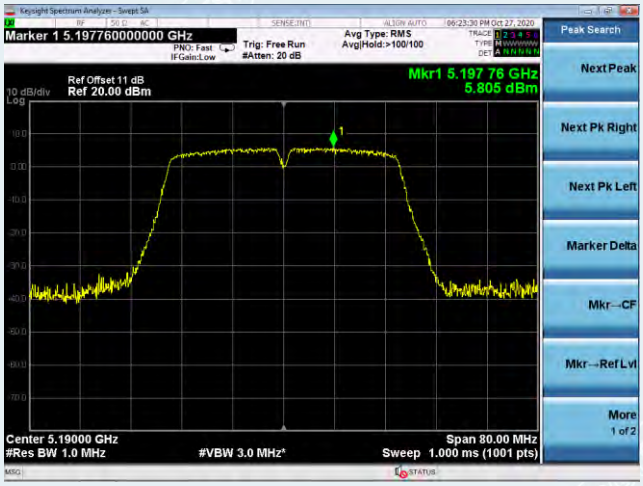
Channel 5755MHz



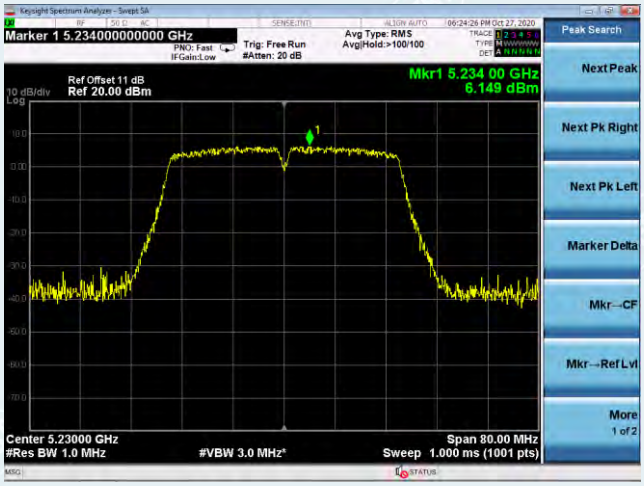

Channel 5795MHz

## 802.11n HT40 mode (antenna 2)

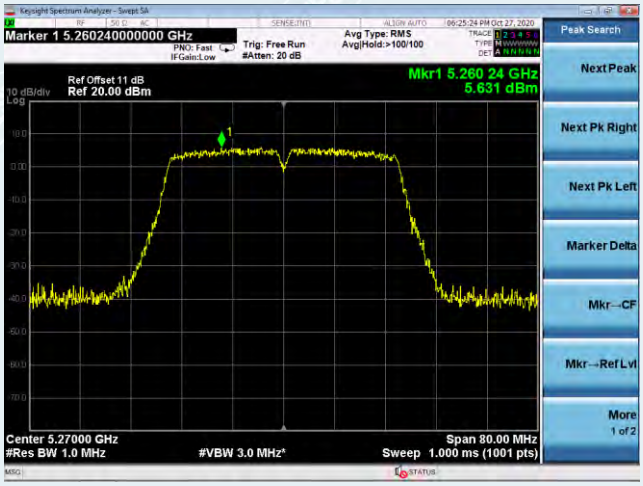
Channel 5190MHz



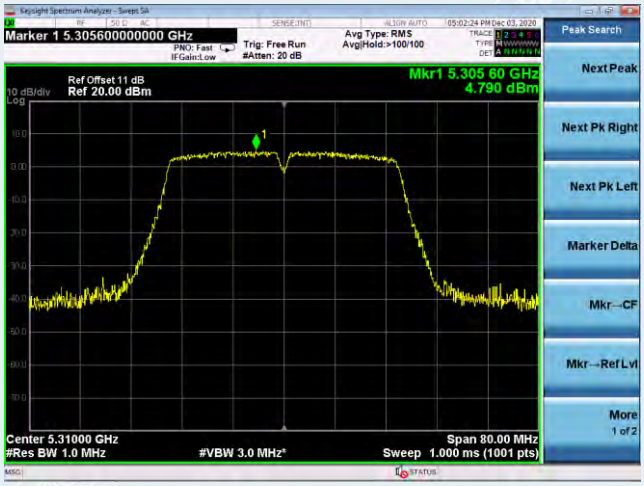

Channel 5230MHz




Channel 5270MHz

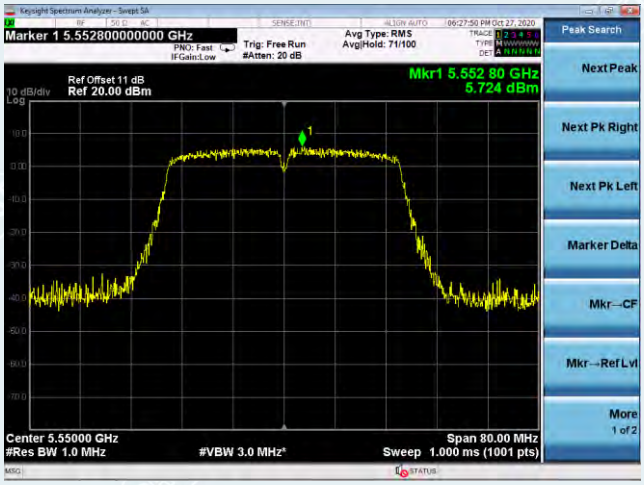



Channel 5310MHz



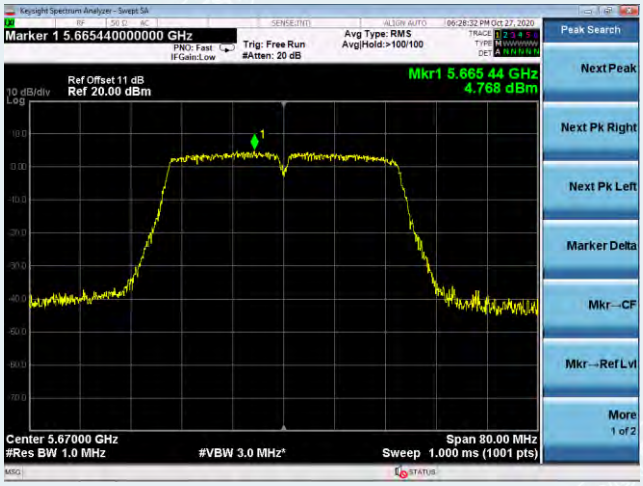

Channel 5510MHz

Channel 5550MHz



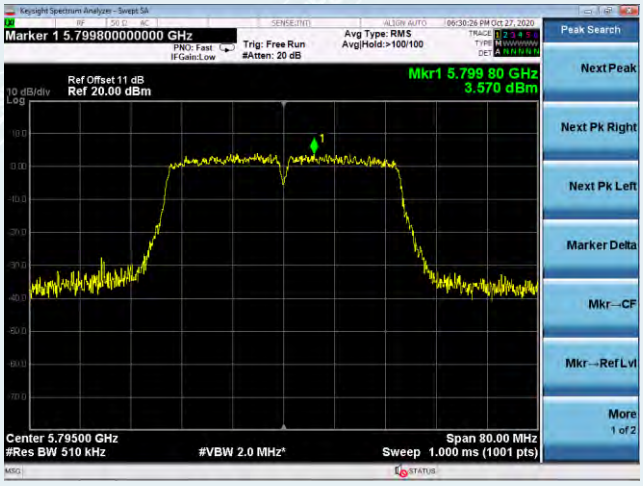
## 802.11n HT40 mode (antenna 2)

Channel 5670MHz



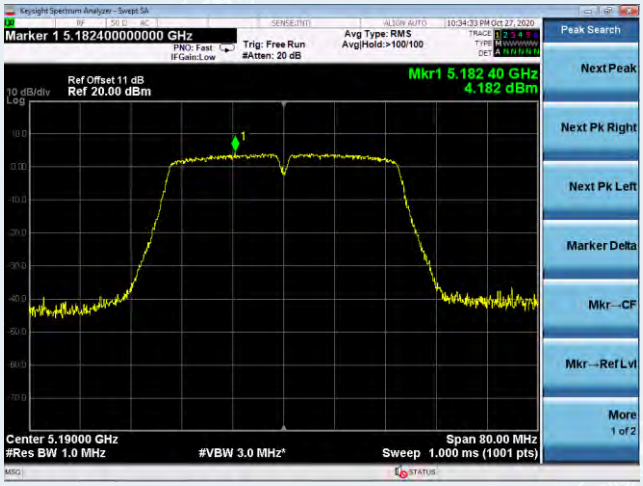

Channel 5755MHz

Channel 5795MHz



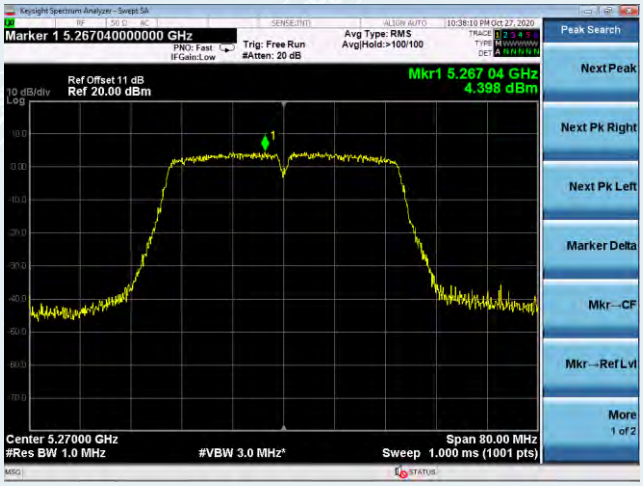
## 802.11ac VHT40 mode (antenna 1)

Channel 5190MHz

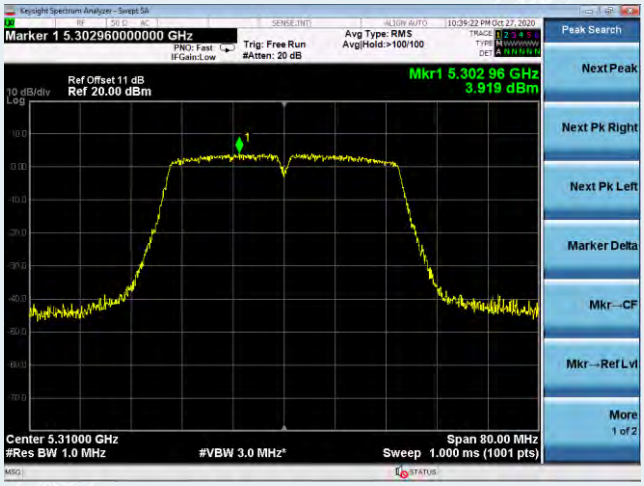



Channel 5230MHz

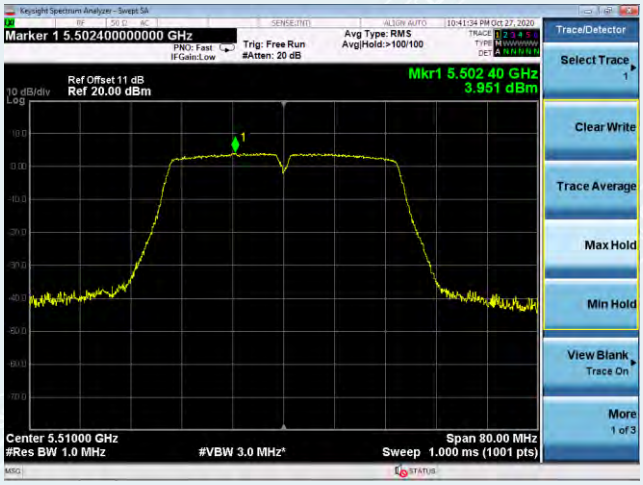
Channel 5270MHz



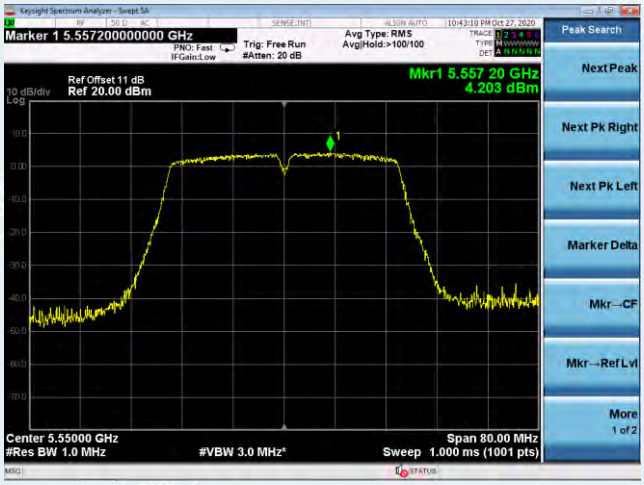

Channel 5310MHz




Channel 5510MHz



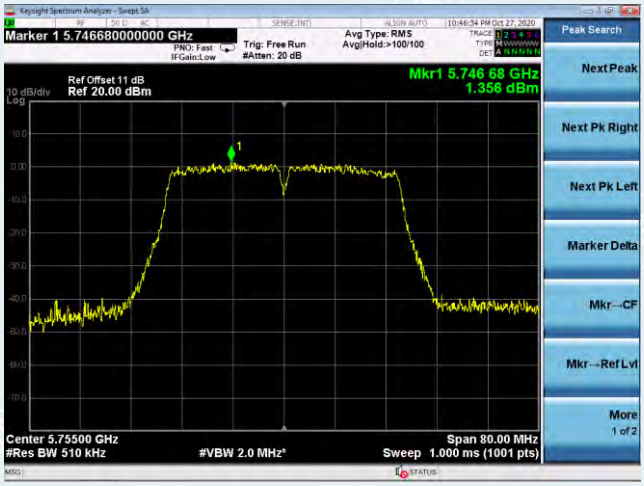

Channel 5550MHz



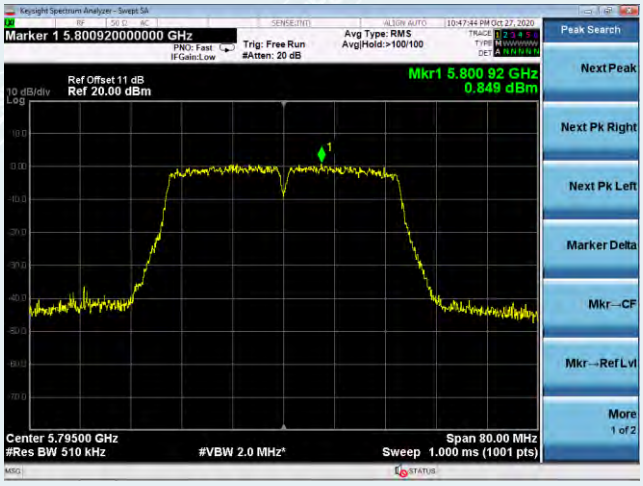
## 802.11ac VHT40 mode (antenna 1)

Channel 5670MHz

Channel 5755MHz

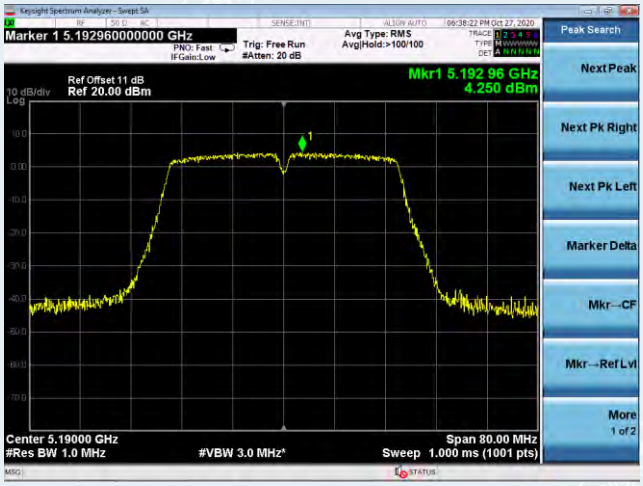



Channel 5795MHz

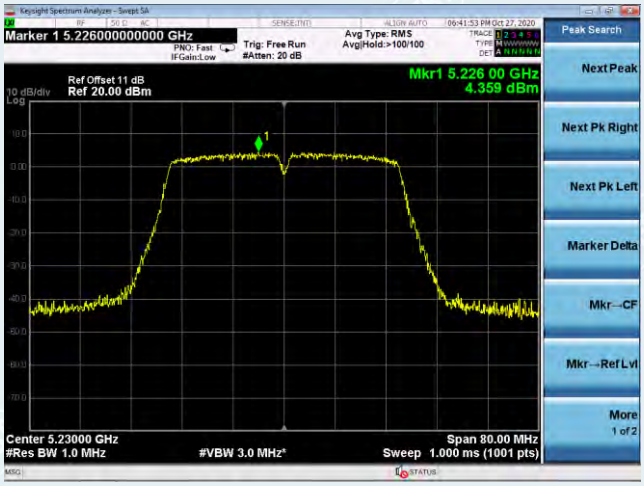


## 802.11ac VHT40 mode (antenna 2)

Channel 5190MHz



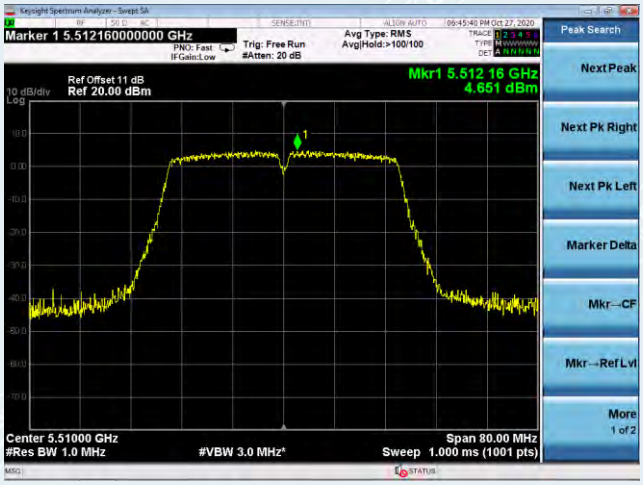

Channel 5230MHz



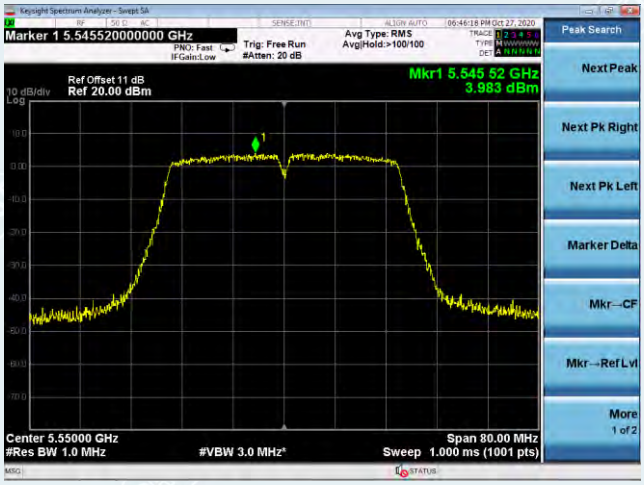

Channel 5270MHz

Channel 5310MHz

Channel 5510MHz

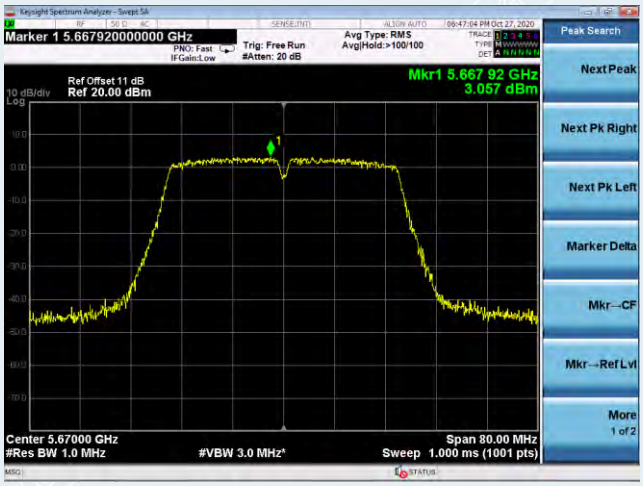



Channel 5550MHz

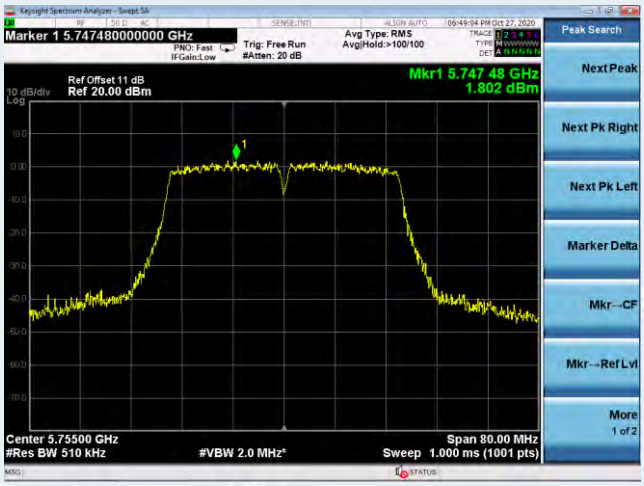


## 802.11ac VHT40 mode (antenna 2)

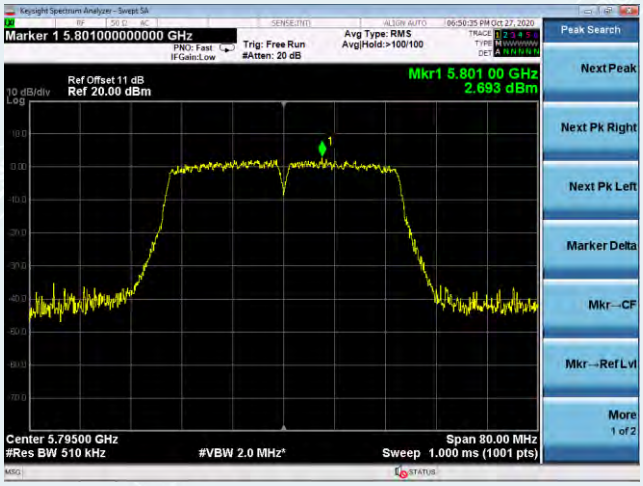
Channel 5670MHz




Channel 5755MHz

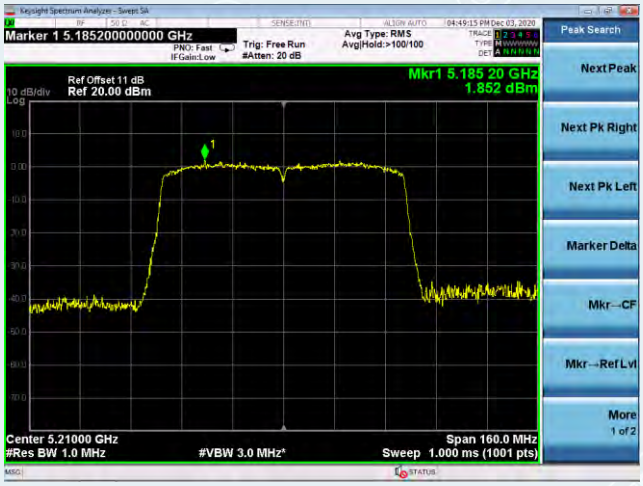



Channel 5795MHz

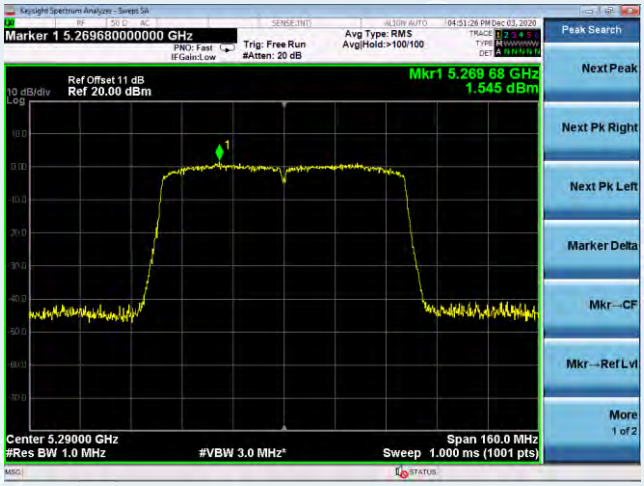


## 802.11ac VHT80 mode (antenna 1)

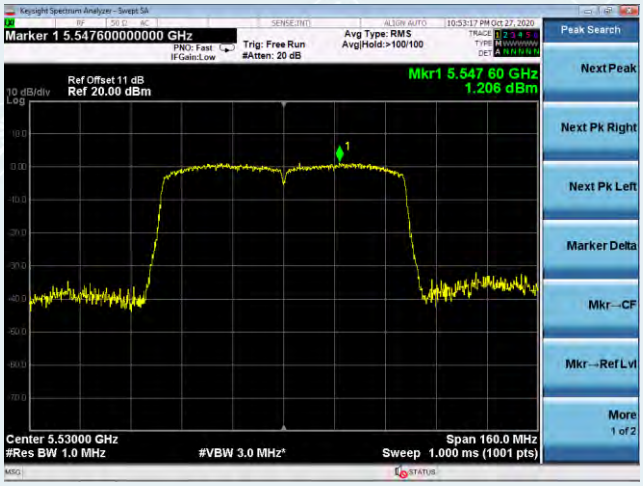
Channel 5210MHz



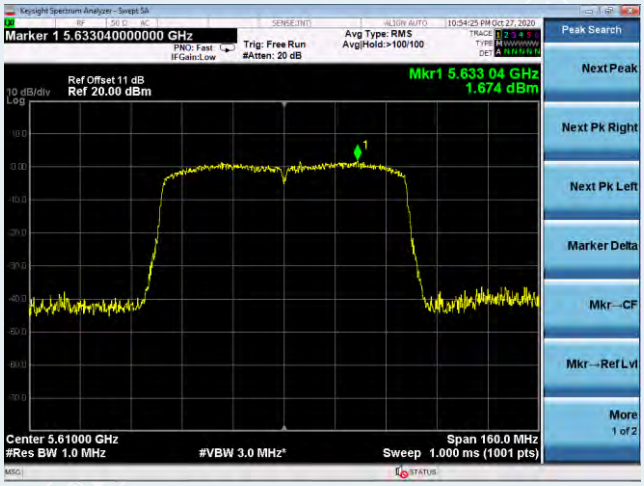

Channel 5290MHz




Channel 5530MHz



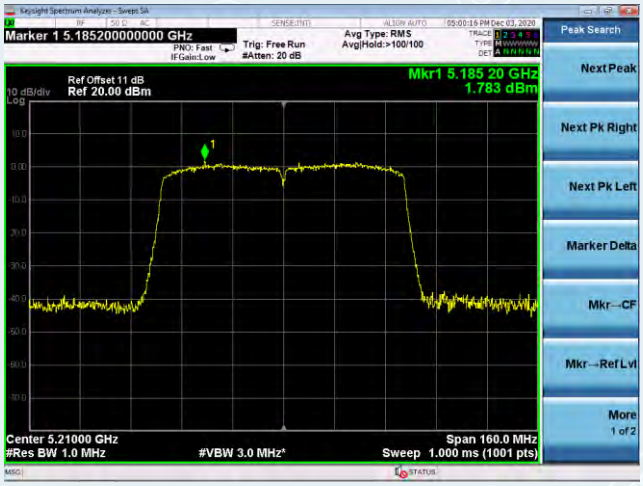

Channel 5610MHz



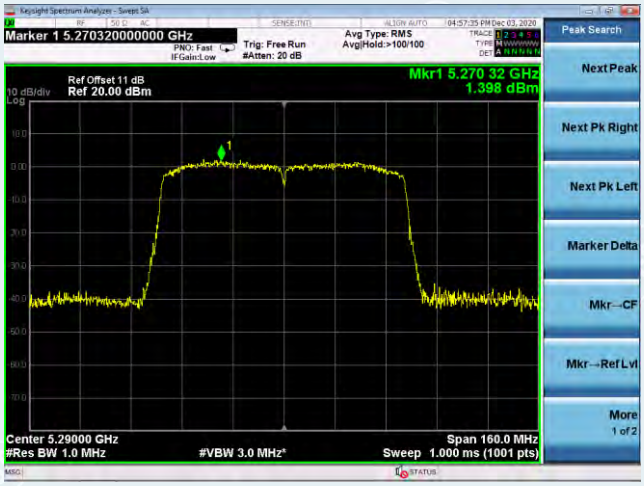

Channel 5775MHz

## 802.11ac VHT80 mode (antenna 2)

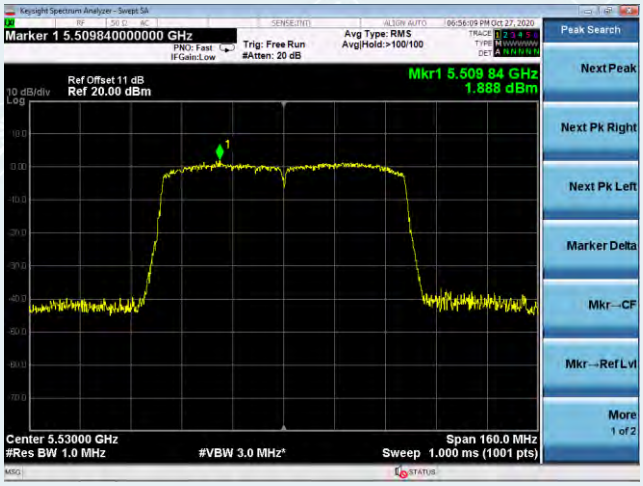
Channel 5210MHz



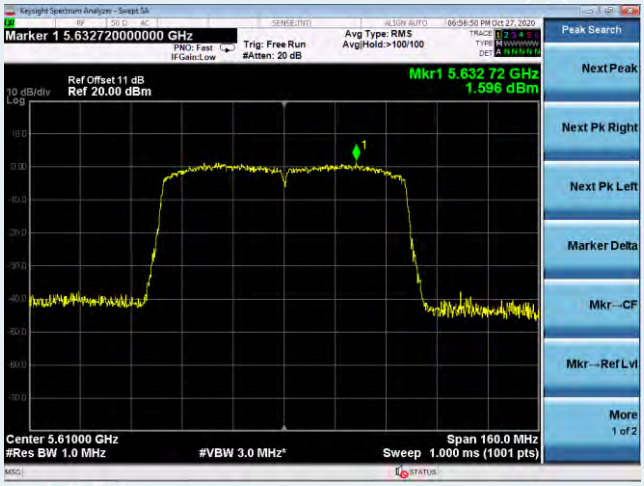

Channel 5290MHz



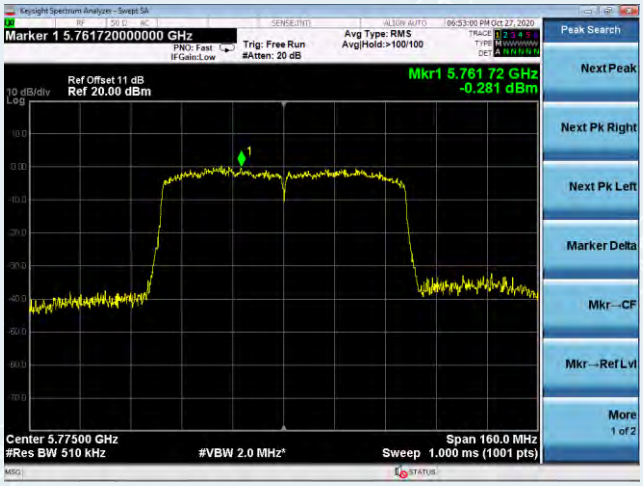

Channel 5530MHz




Channel 5610MHz




Channel 5775MHz



# 11. FREQUENCY STABILITY

## 11.1. LIMITS

According to §15.407(g), manufacturers 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 users manual.

## 11.2. TEST PROCEDURES

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 –20°C. After the temperature stabilized for approximately 30 minutes recorded the frequency. Repeat step measure with 10°C increased per stage until the highest temperature of +50°C reached.

## 11.3. TEST SETUP

## 11.4. TEST RESULTS

## Non- Beamforming

**802.11a mode**

Voltage vs. Frequency Stability

| Voltage | Measurement Frequency (MHz) |
|---|---|
| (V) | 5180.0000 |
| 132 | 5179.9444 |
| 120 | 5179.9444 |
| 108 | 5179.9448 |
| Max. Deviation (MHz) | 0.0556 |
| Max. Deviation (ppm) | 10.7336 |

| Voltage | Measurement Frequency (MHz) |
|---|---|
| (V) | 5260.0000 |
| 132 | 5259.9432 |
| 120 | 5259.9436 |
| 108 | 5259.9434 |
| Max. Deviation (MHz) | 0.0568 |
| Max. Deviation (ppm) | 10.7985 |

| Voltage | Measurement Frequency (MHz) |
|---|---|
| (V) | 5500.0000 |
| 132 | 5499.9402 |
| 120 | 5499.9408 |
| 108 | 5499.9406 |
| Max. Deviation (MHz) | 0.0598 |
| Max. Deviation (ppm) | 10.8727 |

| Voltage | Measurement Frequency (MHz) |
|---|---|
| (V) | 5745.0000 |
| 132 | 5744.9378 |
| 120 | 5744.9382 |
| 108 | 5744.9380 |
| Max. Deviation (MHz) | 0.0622 |
| Max. Deviation (ppm) | 10.8268 |

Temperature vs. Frequency Stability

| Voltage | Measurement Frequency (MHz) |
|---|---|
| (℃) | 5180.0000 |
| -5 | 5179.9442 |
| 5 | 5179.9444 |
| 15 | 5179.9442 |
| 25 | 5179.9446 |
| 35 | 5179.9444 |
| 45 | 5179.9446 |
| 50 | 5179.9444 |
| Max. Deviation (MHz) | 0.0558 |
| Max. Deviation (ppm) | 10.7722 |

Temperature vs. Frequency Stability

| Voltage | Measurement Frequency (MHz) |
|---|---|
| (℃) | 5260.0000 |
| -5 | 5259.9440 |
| 5 | 5259.9442 |
| 15 | 5259.9438 |
| 25 | 5259.9436 |
| 35 | 5259.9438 |
| 45 | 5259.9434 |
| 50 | 5259.9436 |
| Max. Deviation (MHz) | 0.0566 |
| Max. Deviation (ppm) | 10.7605 |

Temperature vs. Frequency Stability

| Voltage | Measurement Frequency (MHz) |
|---|---|
| (℃) | 5500.0000 |
| -5 | 5499.9414 |
| 5 | 5499.9420 |
| 15 | 5499.9412 |
| 25 | 5499.9410 |
| 35 | 5499.9408 |
| 45 | 5499.9406 |
| 50 | 5499.9408 |
| Max. Deviation (MHz) | 0.0594 |
| Max. Deviation (ppm) | 10.8000 |

Temperature vs. Frequency Stability

| Voltage | Measurement Frequency (MHz) |
|---|---|
| (℃) | 5745.0000 |
| -5 | 5744.9374 |
| 5 | 5744.9372 |
| 15 | 5744.9370 |
| 25 | 5744.9378 |
| 35 | 5744.9380 |
| 45 | 5744.9374 |
| 50 | 5744.9382 |
| Max. Deviation (MHz) | 0.0630 |
| Max. Deviation (ppm) | 10.9661 |

**----------This is the last page of the report. ----------**