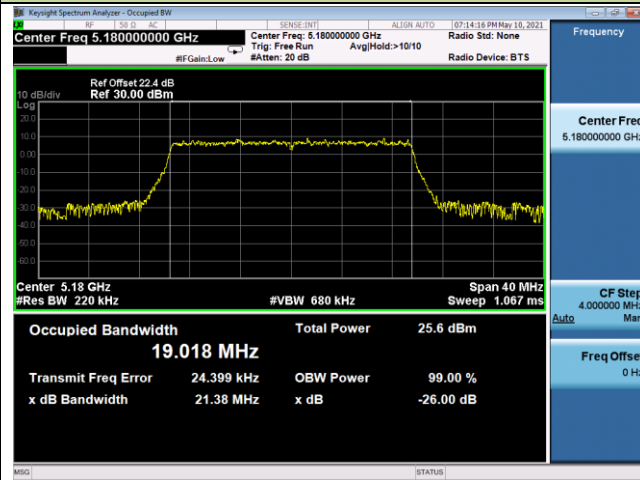
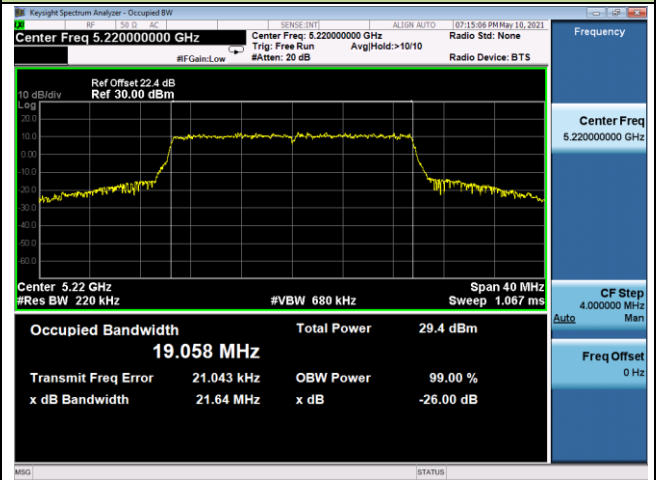


## 802.11ax-HE20 26dB Bandwidth

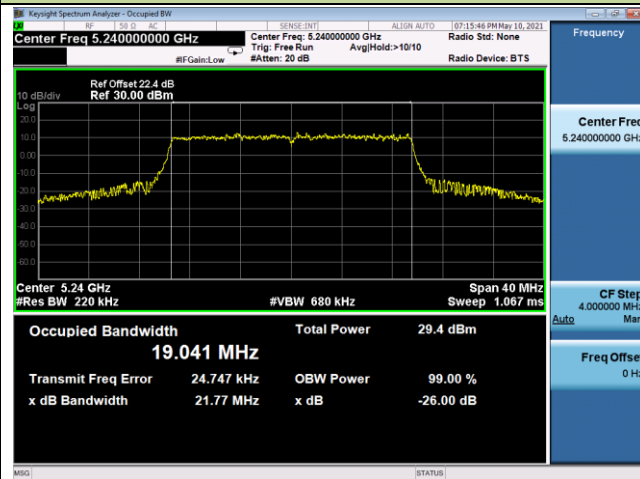
## Channel 36 (5180MHz)



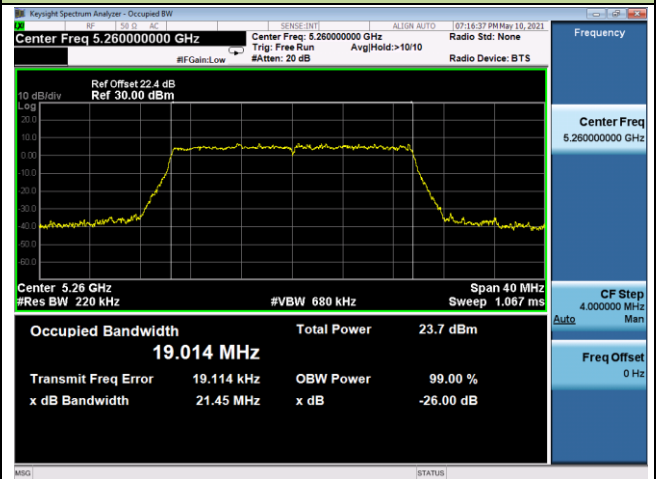
## Channel 44 (5220MHz)



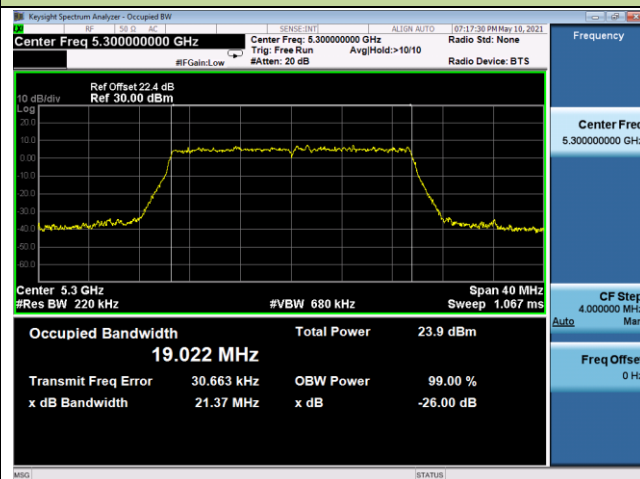
## Channel 48 (5240MHz)



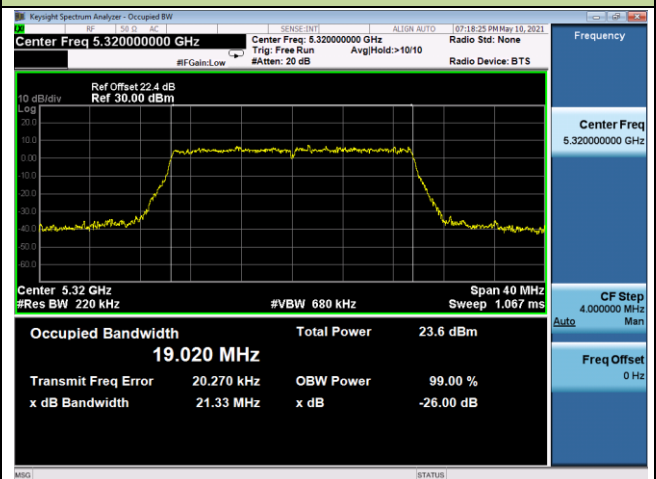
## Channel 52 (5260MHz)

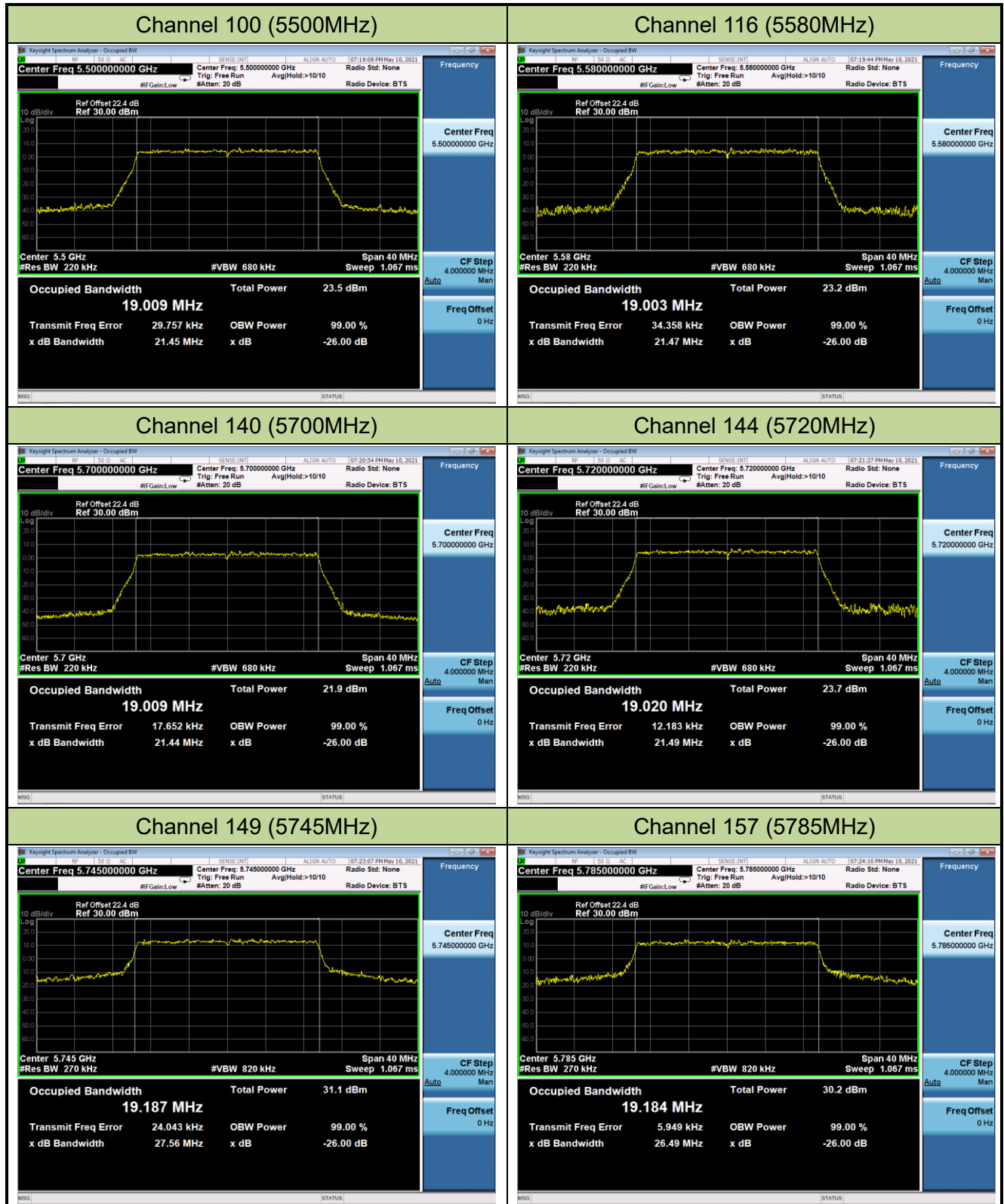


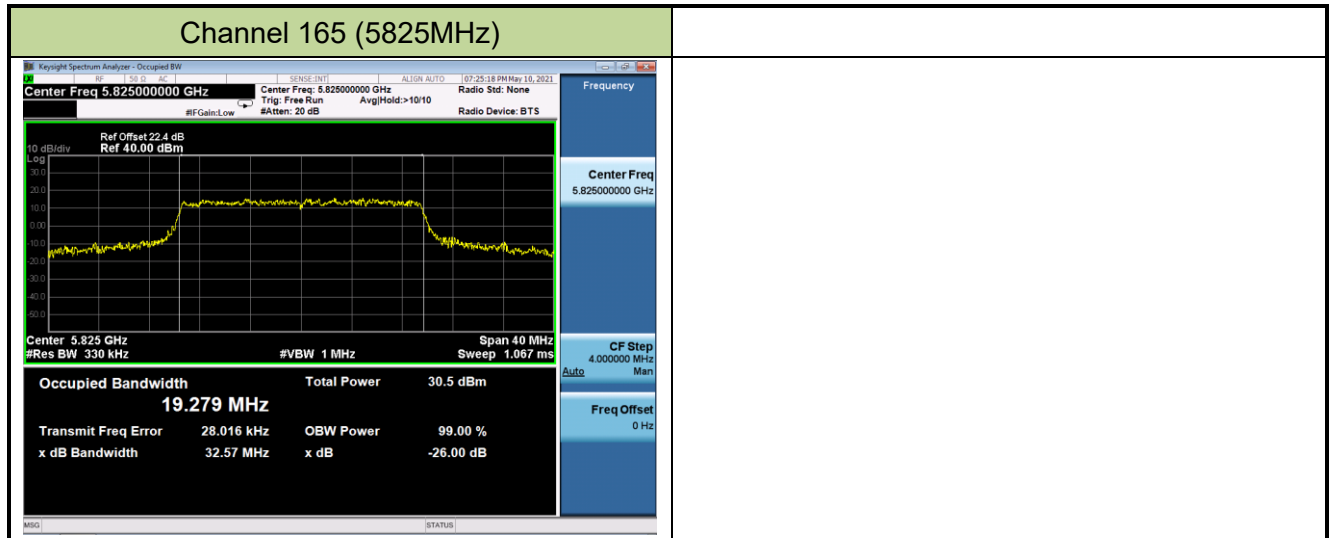
## Channel 60 (5300MHz)



## Channel 64 (5320MHz)

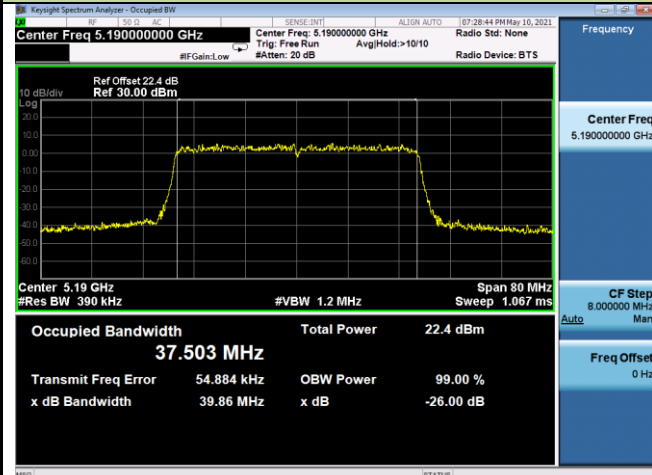




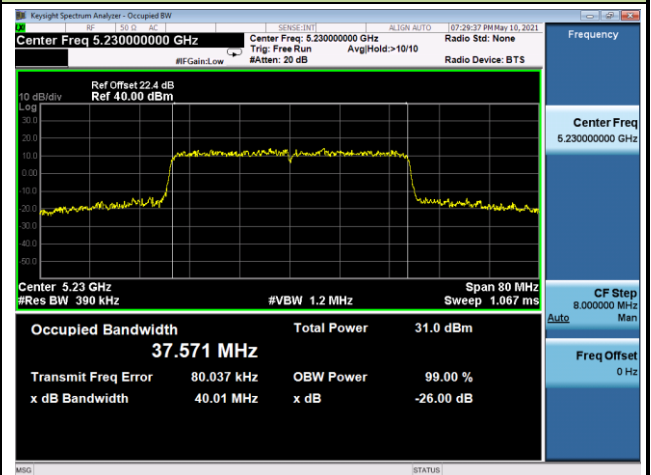


## 802.11ax-HE40 26dB Bandwidth

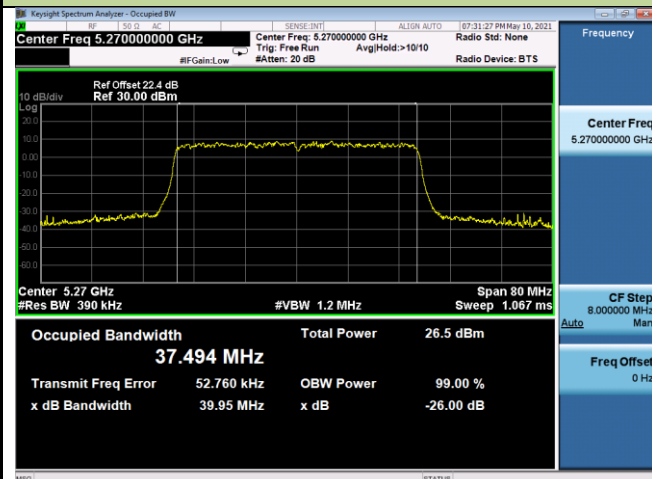
## Channel 38 (5190MHz)



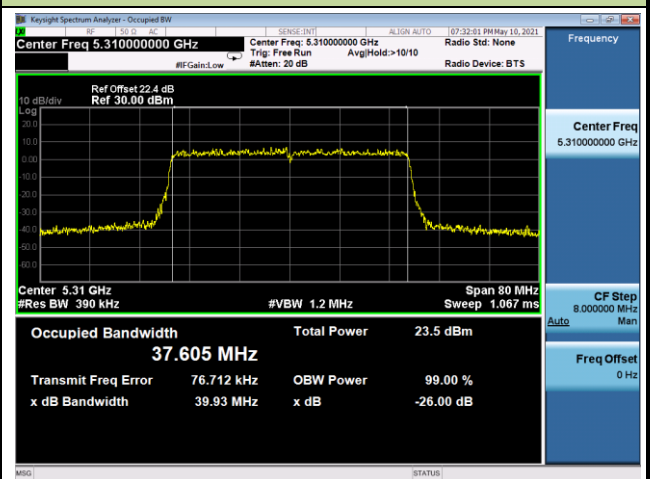
## Channel 46 (5230MHz)



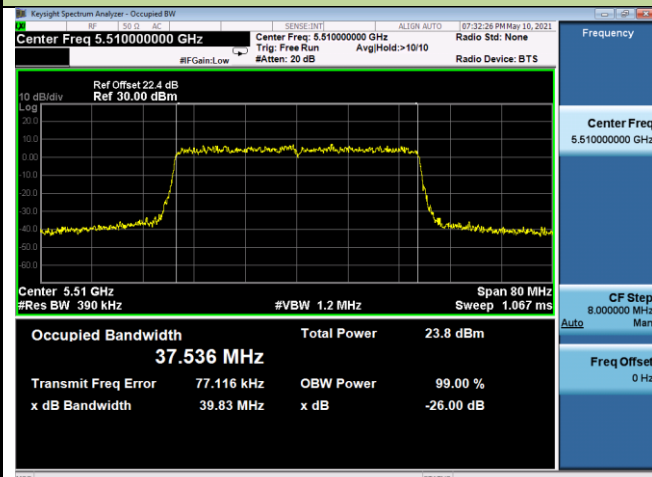
## Channel 54 (5270MHz)



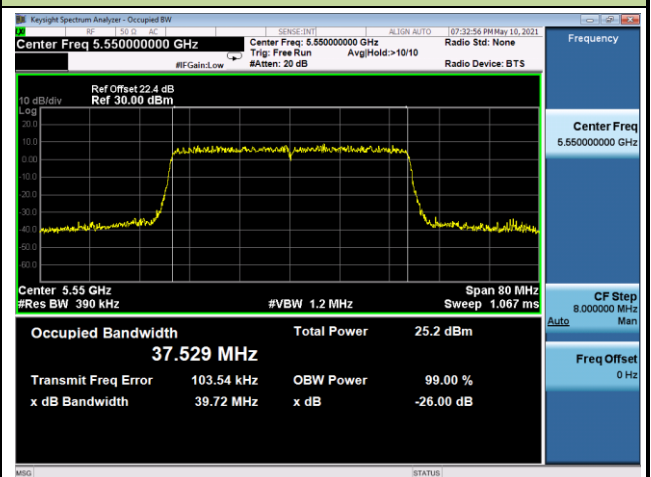
## Channel 62 (5310MHz)



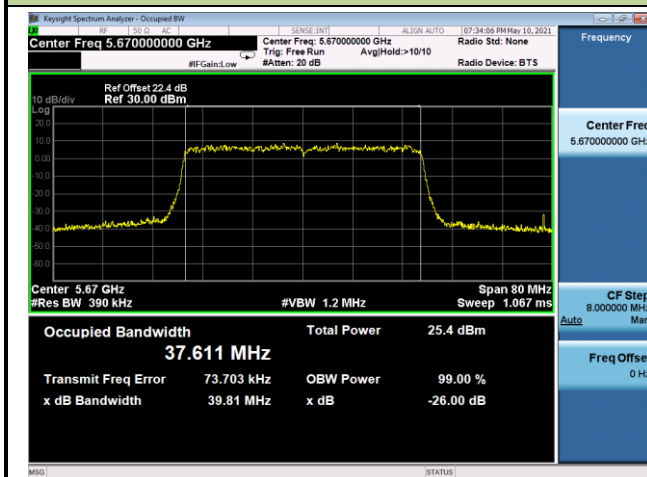
## Channel 102 (5510MHz)



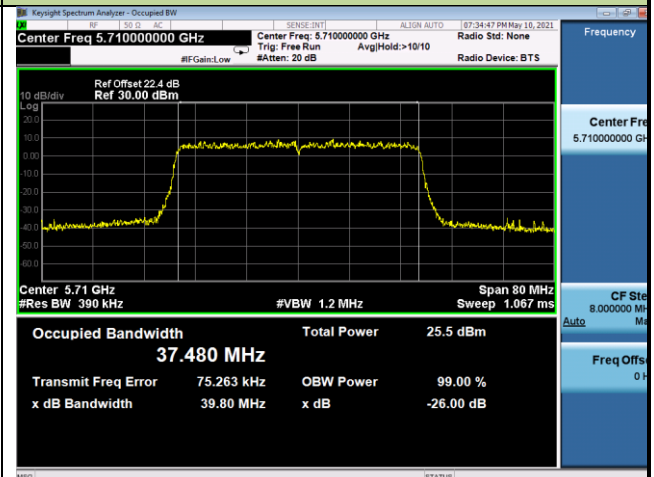
## Channel 110 (5550MHz)



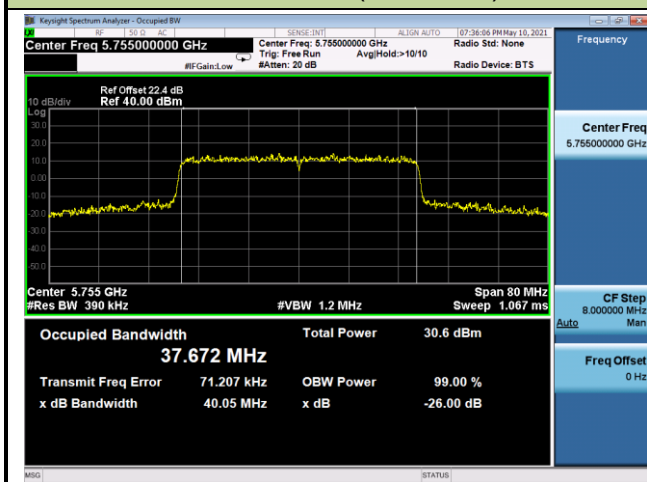
### Channel 134 (5670MHz)



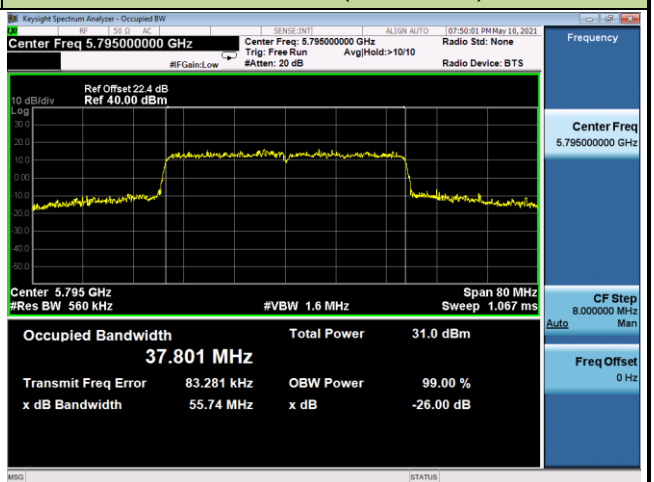
### Channel 142 (5710MHz)



### Channel 151 (5755MHz)

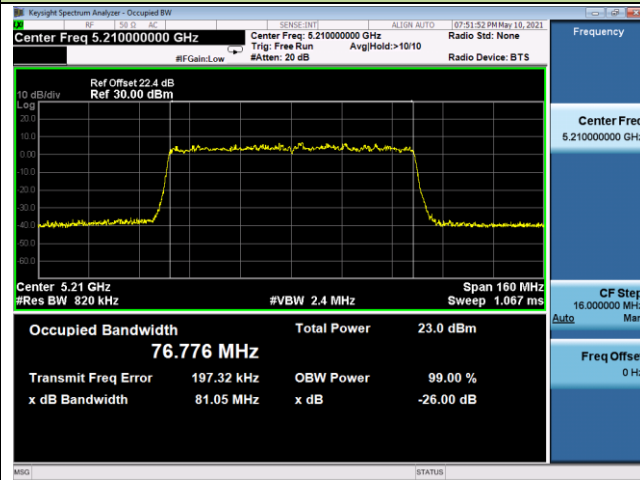


### Channel 159 (5795MHz)

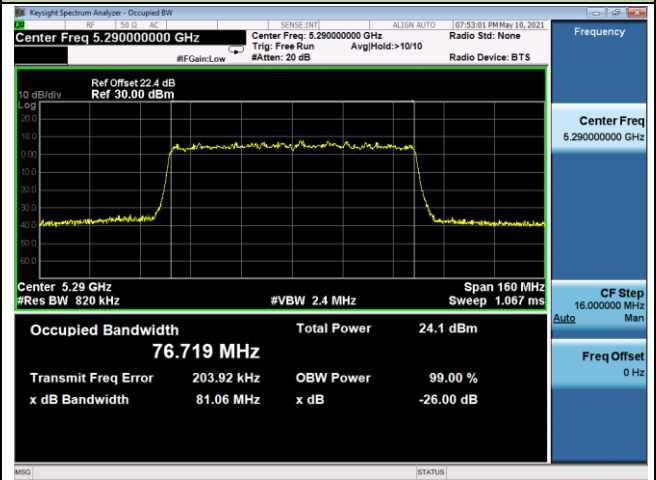


## 802.11ax-HE80 26dB Bandwidth

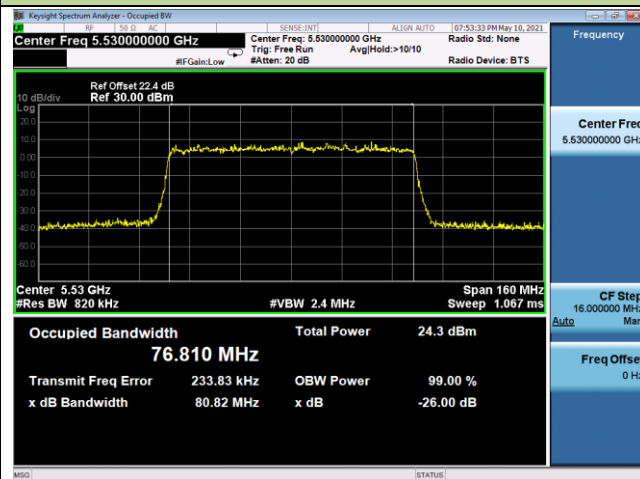
## Channel 42 (5210MHz)



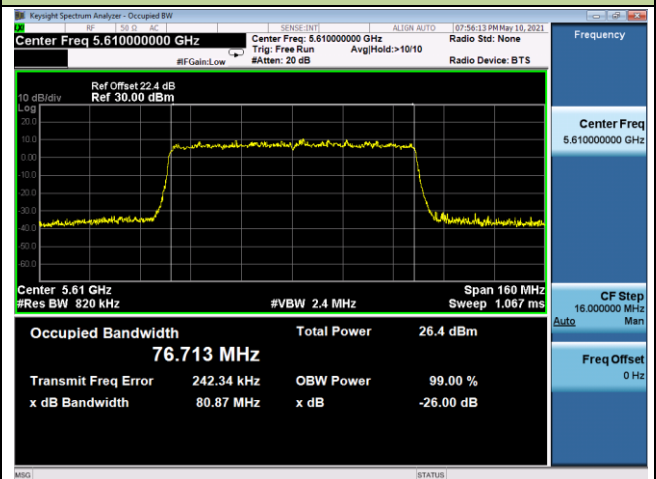
## Channel 58 (5290MHz)



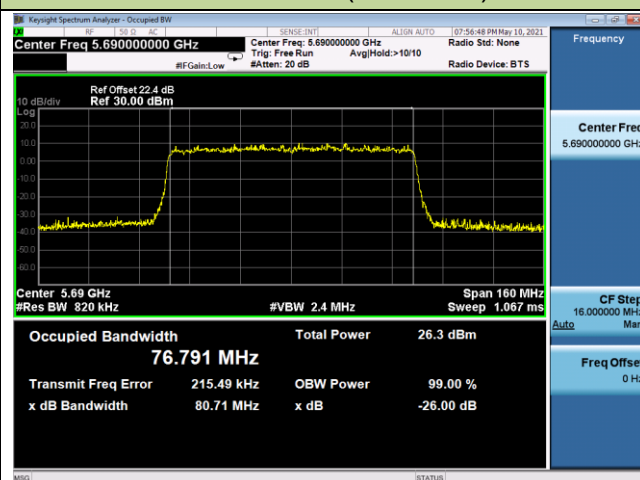
## Channel 106 (5530MHz)



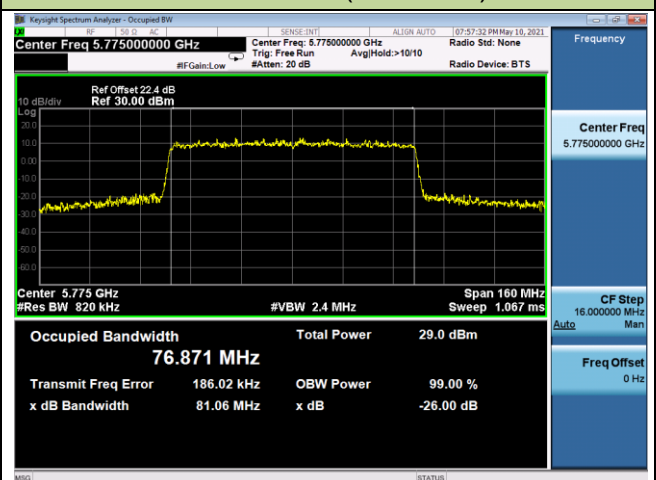
## Channel 122 (5610MHz)



## Channel 138 (5690MHz)

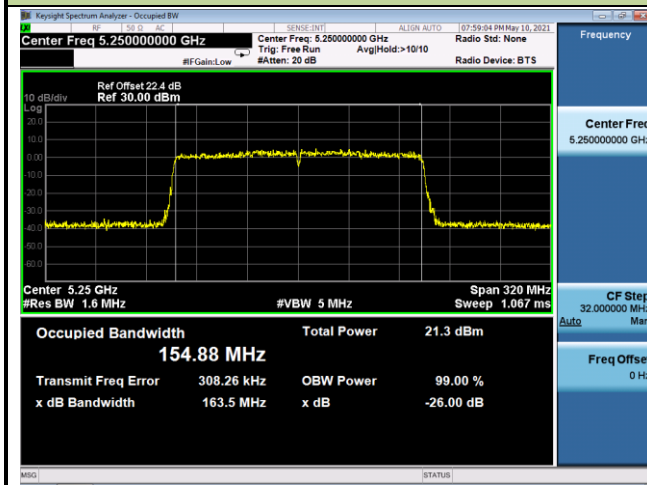


## Channel 155 (5775MHz)

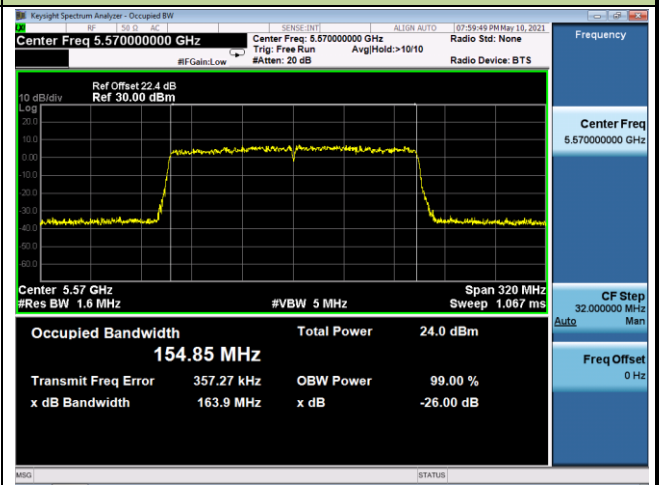


## 802.11ax-HE160 26dB Bandwidth

## Channel 50 (5250MHz)



## Channel 114 (5570MHz)



### 5.3. 6dB Bandwidth Measurement

#### 5.3.1. Test Limit

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

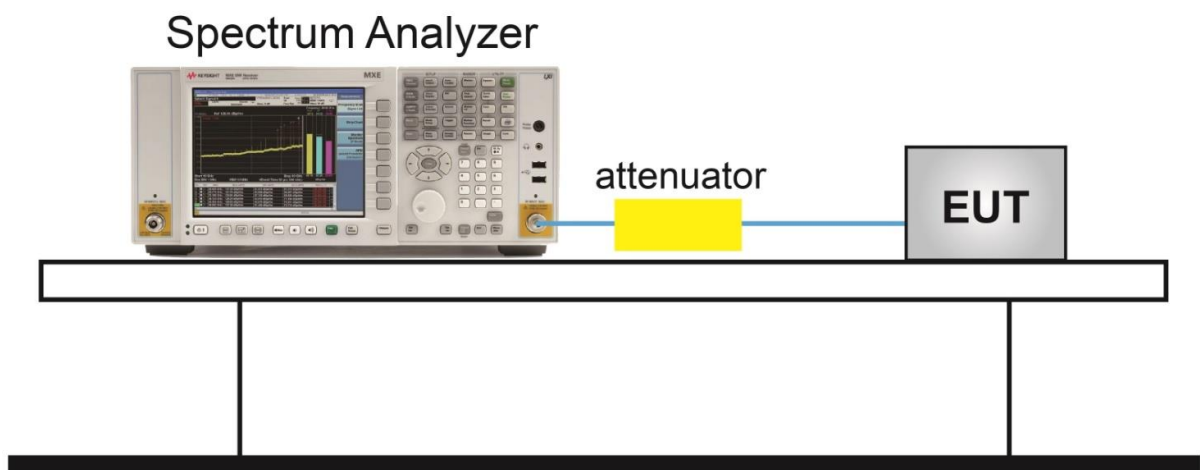
#### 5.3.2. Test Procedure

KDB 789033 D02v02r01 - Section C.2

#### 5.3.3. Test Setting

1. Set center frequency to the nominal EUT channel center frequency.
2. RBW = 100 kHz.
3. VBW  $\geq 3 \times$  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.

#### 5.3.4. Test Setup



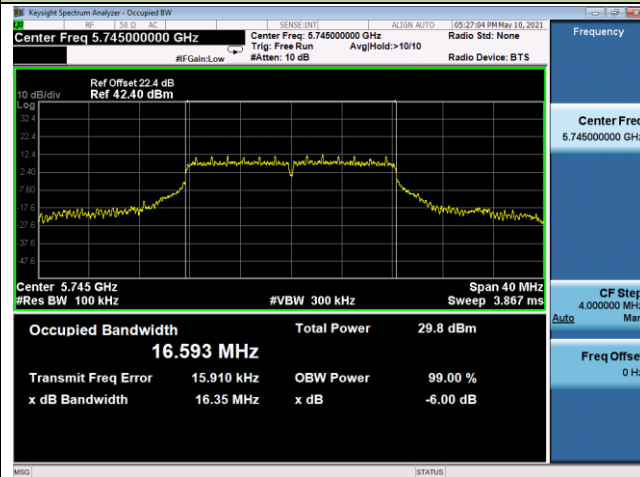
### 5.3.5. Test Result

|           |                    |               |            |
|-----------|--------------------|---------------|------------|
| Product   | Kinetic VoIP Modem | Test Engineer | Yuri Li    |
| Test Site | WZ-TR3             | Test Date     | 2021/05/10 |

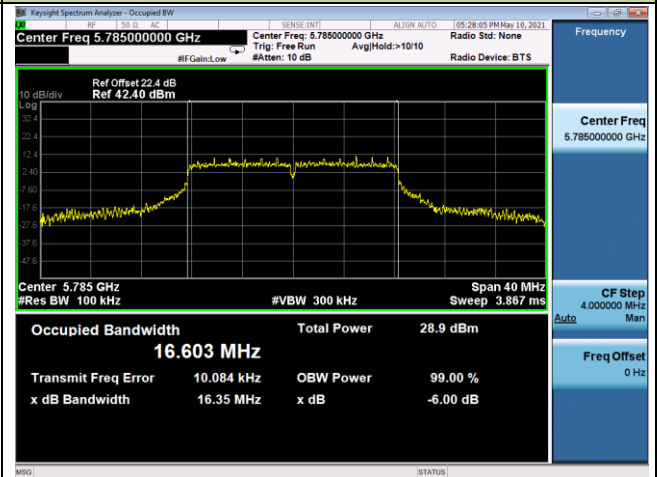
| Test Mode      | Data Rate/<br>MCS | Channel<br>No. | Frequency<br>(MHz) | 6dB Bandwidth<br>(MHz) | Limit<br>(MHz) | Result |
|----------------|-------------------|----------------|--------------------|------------------------|----------------|--------|
| 802.11a        | 6Mbps             | 149            | 5745               | 16.35                  | ≥ 0.5          | Pass   |
| 802.11a        | 6Mbps             | 157            | 5785               | 16.35                  | ≥ 0.5          | Pass   |
| 802.11a        | 6Mbps             | 165            | 5825               | 16.36                  | ≥ 0.5          | Pass   |
| 802.11ac-VHT20 | MCS0              | 149            | 5745               | 17.57                  | ≥ 0.5          | Pass   |
| 802.11ac-VHT20 | MCS0              | 157            | 5785               | 17.58                  | ≥ 0.5          | Pass   |
| 802.11ac-VHT20 | MCS0              | 165            | 5825               | 17.59                  | ≥ 0.5          | Pass   |
| 802.11ac-VHT40 | MCS0              | 151            | 5755               | 36.33                  | ≥ 0.5          | Pass   |
| 802.11ac-VHT40 | MCS0              | 159            | 5795               | 35.33                  | ≥ 0.5          | Pass   |
| 802.11ac-VHT80 | MCS0              | 155            | 5775               | 75.43                  | ≥ 0.5          | Pass   |
| 802.11ax-HE20  | MCS0              | 149            | 5745               | 18.98                  | ≥ 0.5          | Pass   |
| 802.11ax-HE20  | MCS0              | 157            | 5785               | 18.97                  | ≥ 0.5          | Pass   |
| 802.11ax-HE20  | MCS0              | 165            | 5825               | 18.93                  | ≥ 0.5          | Pass   |
| 802.11ax-HE40  | MCS0              | 151            | 5755               | 37.41                  | ≥ 0.5          | Pass   |
| 802.11ax-HE40  | MCS0              | 159            | 5795               | 37.58                  | ≥ 0.5          | Pass   |
| 802.11ax-HE80  | MCS0              | 155            | 5775               | 76.25                  | ≥ 0.5          | Pass   |

## 802.11a 6dB Bandwidth

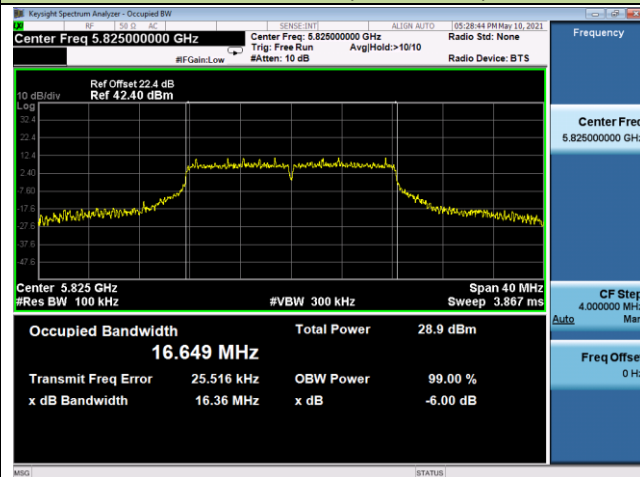
## Channel 149 (5745MHz)



## Channel 157 (5785MHz)

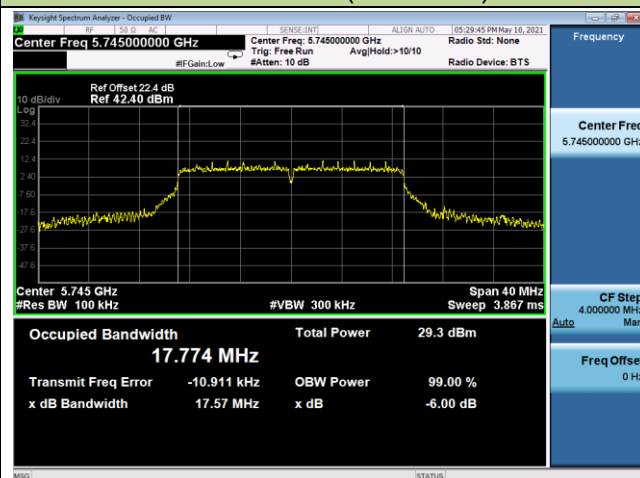


## Channel 165 (5825MHz)

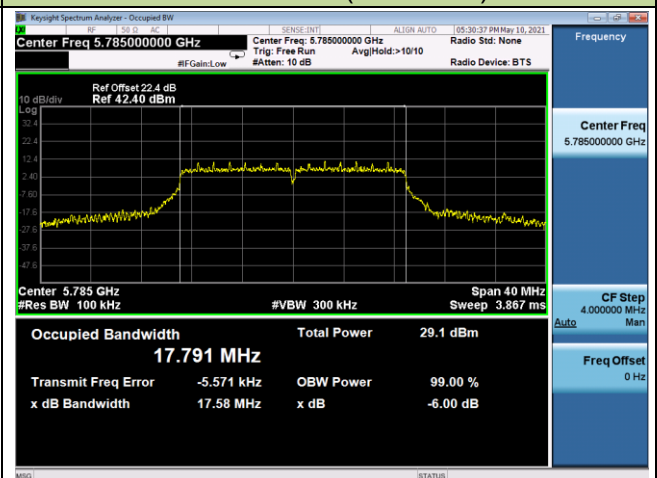


## 802.11ac-VHT20 6dB Bandwidth

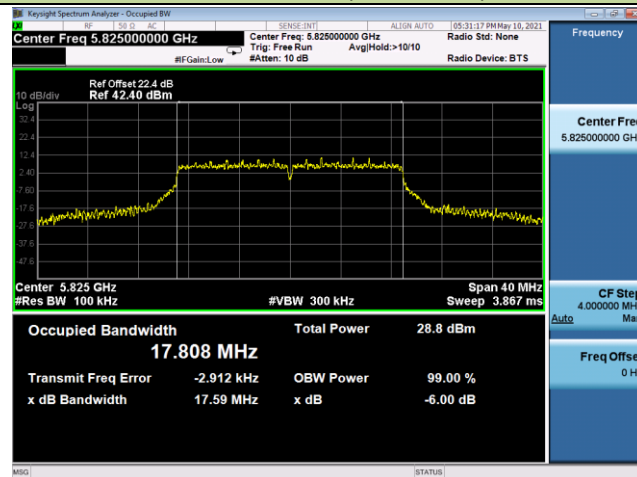
## Channel 149 (5745MHz)



## Channel 157 (5785MHz)

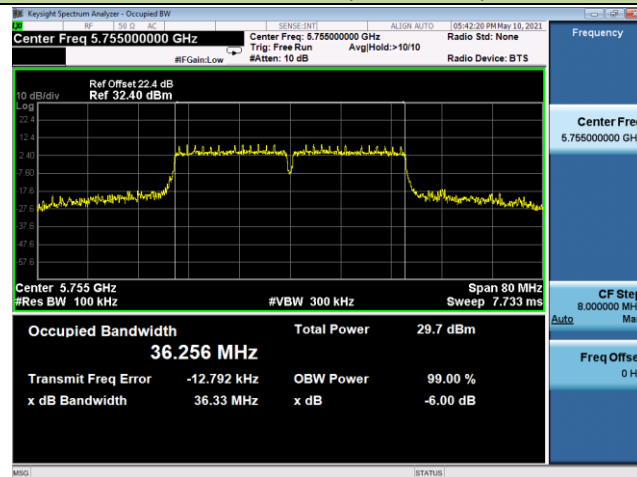


### Channel 165 (5825MHz)

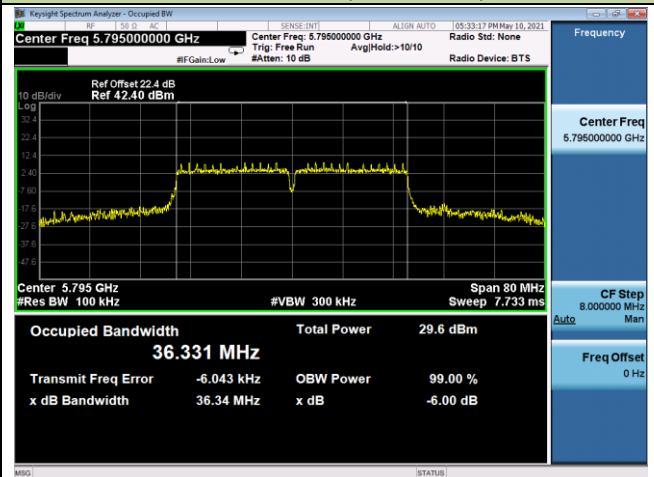


### 802.11ac-VHT40 6dB Bandwidth

### Channel 151 (5755MHz)

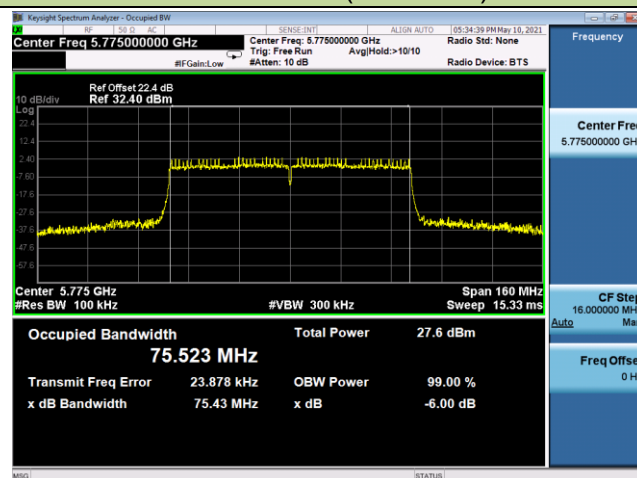


### Channel 159 (5795MHz)



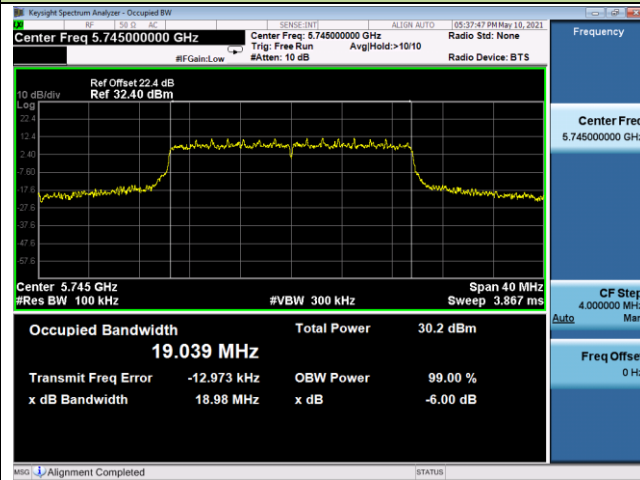
### 802.11ac-VHT80 6dB Bandwidth

### Channel 155 (5775MHz)

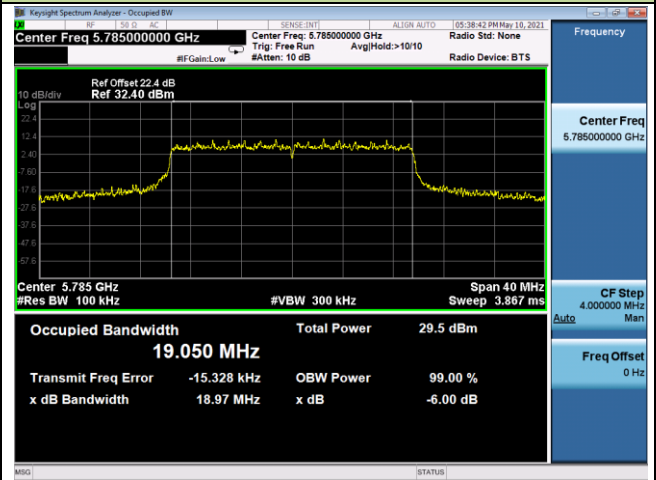


# 802.11ax-HE20 6dB Bandwidth

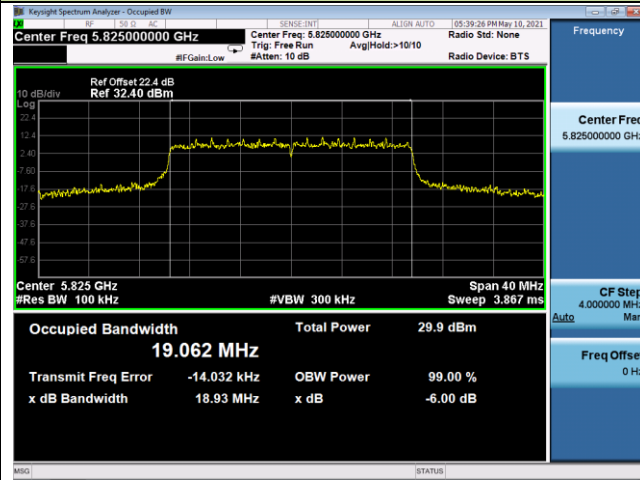
## Channel 149 (5745MHz)



## Channel 157 (5785MHz)

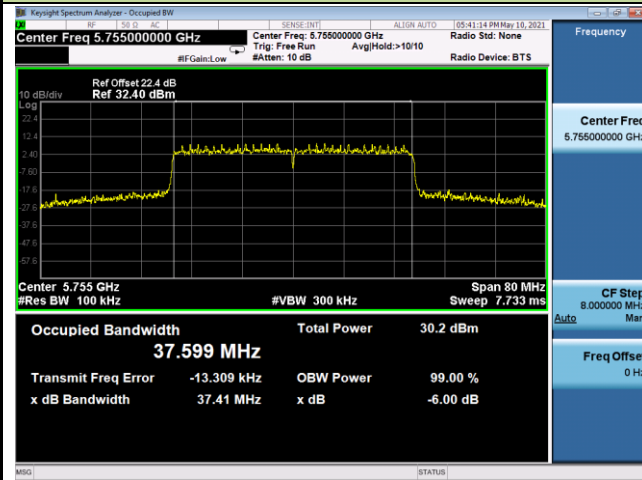


## Channel 165 (5825MHz)

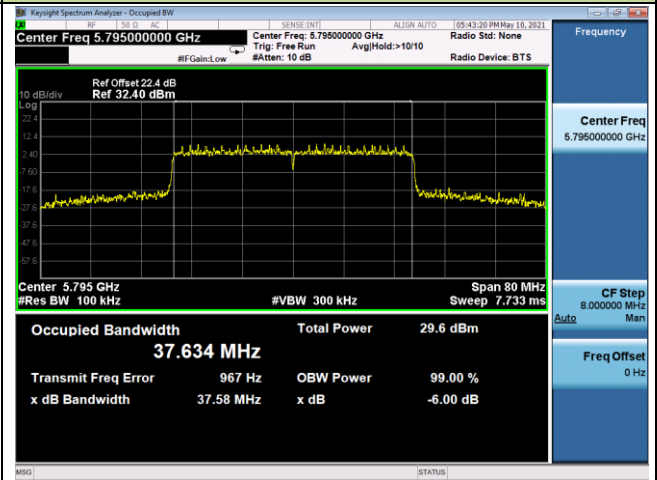


## 802.11ax-HE40 6dB Bandwidth

## Channel 151 (5755MHz)

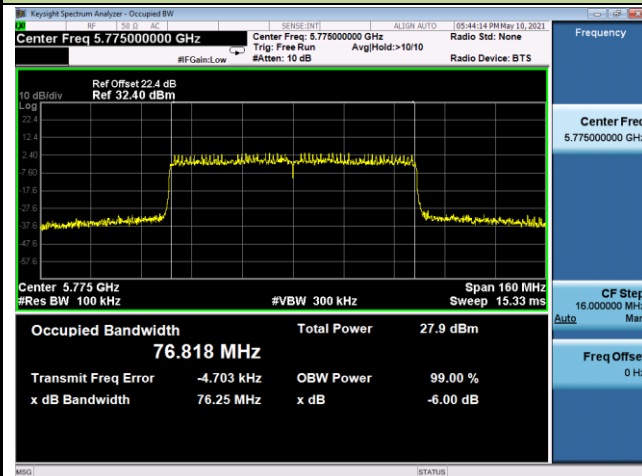


## Channel 159 (5795MHz)



## 802.11ax-HE80 6dB Bandwidth

## Channel 155 (5775MHz)



## 5.4. Output Power Measurement

### 5.4.1. Test Limit

For an indoor access point operating in 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 an indoor access point operating in the band 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 (23.98dBm) or 11dBm +10 log (26dB BW).

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.

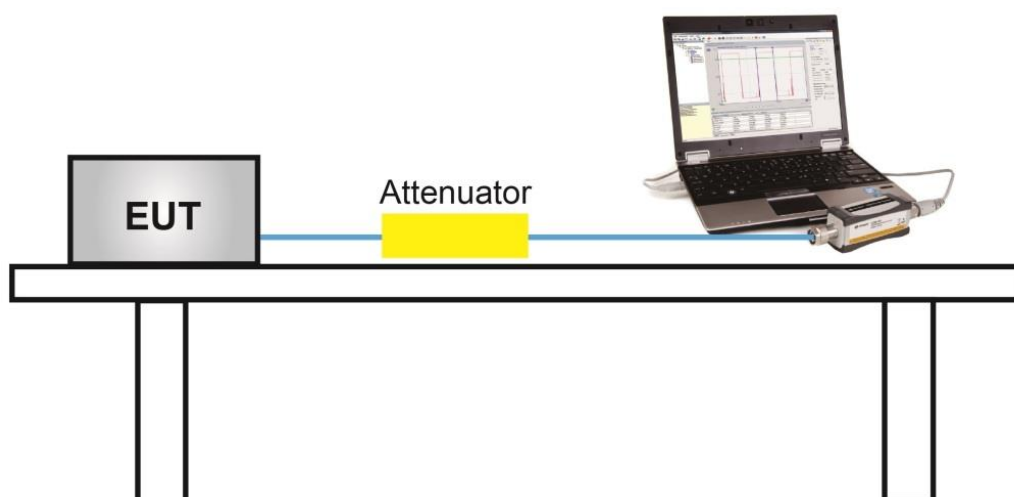
### 5.4.2. Test Procedure

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

### 5.4.3. 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.

### 5.4.4. Test Setup



### 5.4.5. Test Result

|           |                    |               |            |
|-----------|--------------------|---------------|------------|
| Product   | Kinetic VoIP Modem | Test Engineer | Yuri Li    |
| Test Site | WZ-TR3             | Test Date     | 2021/05/07 |

| Test Mode  | Data Rate/<br>MCS | Ch. No. | Freq. (MHz) | Ant 0<br>Average Power (dBm) | Ant 1<br>Average Power (dBm) | Ant 2<br>Average Power (dBm) | Ant 3<br>Average Power (dBm) | Total<br>Average Power (dBm) | Average Power Limit (dBm) | Result |
|------------|-------------------|---------|-------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|---------------------------|--------|
| 11a        | MCS0              | 36      | 5180        | 18.25                        | 18.57                        | 18.45                        | 18.26                        | 24.41                        | ≤ 30.00                   | Pass   |
| 11a        | MCS0              | 44      | 5220        | 21.40                        | 21.86                        | 21.35                        | 20.64                        | 27.35                        | ≤ 30.00                   | Pass   |
| 11a        | MCS0              | 48      | 5240        | 21.25                        | 21.90                        | 21.74                        | 20.71                        | 27.45                        | ≤ 30.00                   | Pass   |
| 11a        | 6Mbps             | 52      | 5260        | 16.06                        | 15.70                        | 15.88                        | 15.53                        | 21.82                        | ≤ 23.98                   | Pass   |
| 11a        | 6Mbps             | 60      | 5300        | 15.96                        | 15.80                        | 15.97                        | 15.73                        | 21.89                        | ≤ 23.98                   | Pass   |
| 11a        | 6Mbps             | 64      | 5320        | 16.04                        | 15.93                        | 15.85                        | 15.54                        | 21.86                        | ≤ 23.98                   | Pass   |
| 11a        | 6Mbps             | 100     | 5500        | 15.67                        | 15.67                        | 15.77                        | 15.78                        | 21.74                        | ≤ 23.98                   | Pass   |
| 11a        | 6Mbps             | 116     | 5580        | 15.92                        | 15.87                        | 15.90                        | 15.46                        | 21.81                        | ≤ 23.98                   | Pass   |
| 11a        | 6Mbps             | 140     | 5700        | 15.35                        | 15.62                        | 15.62                        | 15.00                        | 21.43                        | ≤ 23.98                   | Pass   |
| 11a        | 6Mbps             | 144     | 5720        | 15.36                        | 15.52                        | 15.51                        | 15.06                        | 21.39                        | ≤ 22.95                   | Pass   |
| 11a        | 6Mbps             | 149     | 5745        | 22.56                        | 22.53                        | 22.82                        | 23.34                        | 28.85                        | ≤ 30.00                   | Pass   |
| 11a        | 6Mbps             | 157     | 5785        | 22.62                        | 22.32                        | 22.68                        | 23.23                        | 28.75                        | ≤ 30.00                   | Pass   |
| 11a        | 6Mbps             | 165     | 5825        | 22.29                        | 22.02                        | 22.53                        | 23.14                        | 28.54                        | ≤ 30.00                   | Pass   |
| 11ac-VHT20 | MCS0              | 36      | 5180        | 19.80                        | 20.20                        | 19.89                        | 19.15                        | 25.80                        | ≤ 30.00                   | Pass   |
| 11ac-VHT20 | MCS0              | 44      | 5220        | 22.13                        | 22.32                        | 22.11                        | 20.89                        | 27.92                        | ≤ 30.00                   | Pass   |
| 11ac-VHT20 | MCS0              | 48      | 5240        | 21.80                        | 22.20                        | 22.08                        | 21.08                        | 27.83                        | ≤ 30.00                   | Pass   |
| 11ac-VHT20 | MCS0              | 52      | 5260        | 16.69                        | 16.23                        | 16.30                        | 15.99                        | 22.33                        | ≤ 23.98                   | Pass   |
| 11ac-VHT20 | MCS0              | 60      | 5300        | 16.21                        | 16.09                        | 16.24                        | 15.84                        | 22.12                        | ≤ 23.98                   | Pass   |
| 11ac-VHT20 | MCS0              | 64      | 5320        | 16.01                        | 16.20                        | 16.06                        | 15.79                        | 22.04                        | ≤ 23.98                   | Pass   |
| 11ac-VHT20 | MCS0              | 100     | 5500        | 16.10                        | 16.20                        | 16.23                        | 16.25                        | 22.22                        | ≤ 23.98                   | Pass   |
| 11ac-VHT20 | MCS0              | 116     | 5580        | 16.12                        | 16.22                        | 16.20                        | 15.78                        | 22.10                        | ≤ 23.98                   | Pass   |
| 11ac-VHT20 | MCS0              | 140     | 5700        | 15.78                        | 15.98                        | 16.31                        | 15.54                        | 21.93                        | ≤ 23.98                   | Pass   |
| 11ac-VHT20 | MCS0              | 144     | 5720        | 15.36                        | 15.67                        | 16.01                        | 15.48                        | 21.66                        | ≤ 22.97                   | Pass   |
| 11ac-VHT20 | MCS0              | 149     | 5745        | 22.63                        | 22.60                        | 22.92                        | 23.46                        | 28.94                        | ≤ 30.00                   | Pass   |
| 11ac-VHT20 | MCS0              | 157     | 5785        | 22.64                        | 22.39                        | 22.79                        | 23.47                        | 28.86                        | ≤ 30.00                   | Pass   |
| 11ac-VHT20 | MCS0              | 165     | 5825        | 22.49                        | 22.27                        | 22.75                        | 23.38                        | 28.76                        | ≤ 30.00                   | Pass   |

| Test Mode   | Data Rate/<br>MCS | Ch. No. | Freq. (MHz) | Ant 0<br>Average Power (dBm) | Ant 1<br>Average Power (dBm) | Ant 2<br>Average Power (dBm) | Ant 3<br>Average Power (dBm) | Total<br>Average Power (dBm) | Average Power Limit (dBm) | Result |
|-------------|-------------------|---------|-------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|---------------------------|--------|
| 11ac-VHT40  | MCS0              | 38      | 5190        | 15.24                        | 15.12                        | 15.37                        | 15.14                        | 21.24                        | ≤ 30.00                   | Pass   |
| 11ac-VHT40  | MCS0              | 46      | 5230        | 23.35                        | 23.47                        | 23.44                        | 22.59                        | 29.25                        | ≤ 30.00                   | Pass   |
| 11ac-VHT40  | MCS0              | 54      | 5270        | 17.87                        | 17.67                        | 17.81                        | 17.56                        | 23.75                        | ≤ 23.98                   | Pass   |
| 11ac-VHT40  | MCS0              | 62      | 5310        | 16.25                        | 16.44                        | 16.31                        | 16.15                        | 22.31                        | ≤ 23.98                   | Pass   |
| 11ac-VHT40  | MCS0              | 102     | 5510        | 17.16                        | 16.95                        | 16.90                        | 16.92                        | 23.00                        | ≤ 23.98                   | Pass   |
| 11ac-VHT40  | MCS0              | 110     | 5550        | 17.96                        | 17.83                        | 17.95                        | 17.33                        | 23.80                        | ≤ 23.98                   | Pass   |
| 11ac-VHT40  | MCS0              | 134     | 5670        | 17.71                        | 18.05                        | 17.70                        | 17.56                        | 23.78                        | ≤ 23.98                   | Pass   |
| 11ac-VHT40  | MCS0              | 142     | 5710        | 17.76                        | 18.07                        | 17.65                        | 17.52                        | 23.78                        | ≤ 23.98                   | Pass   |
| 11ac-VHT40  | MCS0              | 151     | 5755        | 22.84                        | 22.74                        | 23.41                        | 22.58                        | 28.92                        | ≤ 30.00                   | Pass   |
| 11ac-VHT40  | MCS0              | 159     | 5795        | 22.65                        | 22.65                        | 23.21                        | 22.53                        | 28.79                        | ≤ 30.00                   | Pass   |
| 11ac-VHT80  | MCS0              | 42      | 5210        | 14.62                        | 14.47                        | 14.41                        | 14.50                        | 20.52                        | ≤ 30.00                   | Pass   |
| 11ac-VHT80  | MCS0              | 58      | 5290        | 15.47                        | 15.64                        | 15.85                        | 15.57                        | 21.66                        | ≤ 23.98                   | Pass   |
| 11ac-VHT80  | MCS0              | 106     | 5530        | 15.63                        | 15.43                        | 15.78                        | 15.61                        | 21.63                        | ≤ 23.98                   | Pass   |
| 11ac-VHT80  | MCS0              | 122     | 5610        | 17.66                        | 17.79                        | 17.95                        | 17.28                        | 23.70                        | ≤ 23.98                   | Pass   |
| 11ac-VHT80  | MCS0              | 138     | 5690        | 17.78                        | 17.88                        | 18.02                        | 17.41                        | 23.80                        | ≤ 23.98                   | Pass   |
| 11ac-VHT80  | MCS0              | 155     | 5775        | 20.31                        | 20.11                        | 20.31                        | 19.65                        | 26.12                        | ≤ 30.00                   | Pass   |
| 11ac-VHT160 | MCS0              | 50      | 5250        | 13.61                        | 13.88                        | 14.00                        | 14.02                        | 19.90                        | ≤ 23.98                   | Pass   |
| 11ac-VHT160 | MCS0              | 114     | 5570        | 15.73                        | 15.56                        | 15.68                        | 15.33                        | 21.60                        | ≤ 23.98                   | Pass   |
| 11ax-HE20   | MCS0              | 36      | 5180        | 19.05                        | 19.25                        | 18.97                        | 18.34                        | 24.94                        | ≤ 30.00                   | Pass   |
| 11ax-HE20   | MCS0              | 44      | 5220        | 22.51                        | 22.67                        | 22.49                        | 21.56                        | 28.35                        | ≤ 30.00                   | Pass   |
| 11ax-HE20   | MCS0              | 48      | 5240        | 22.02                        | 22.48                        | 22.40                        | 21.39                        | 28.11                        | ≤ 30.00                   | Pass   |
| 11ax-HE20   | MCS0              | 52      | 5260        | 16.75                        | 16.68                        | 16.52                        | 16.12                        | 22.54                        | ≤ 23.98                   | Pass   |
| 11ax-HE20   | MCS0              | 60      | 5300        | 16.46                        | 16.47                        | 16.44                        | 16.14                        | 22.40                        | ≤ 23.98                   | Pass   |
| 11ax-HE20   | MCS0              | 64      | 5320        | 16.47                        | 16.42                        | 16.41                        | 15.99                        | 22.35                        | ≤ 23.98                   | Pass   |
| 11ax-HE20   | MCS0              | 100     | 5500        | 16.13                        | 16.31                        | 16.29                        | 16.12                        | 22.23                        | ≤ 23.98                   | Pass   |
| 11ax-HE20   | MCS0              | 116     | 5580        | 16.33                        | 16.27                        | 16.42                        | 15.97                        | 22.27                        | ≤ 23.98                   | Pass   |
| 11ax-HE20   | MCS0              | 140     | 5700        | 14.44                        | 14.70                        | 14.86                        | 14.17                        | 20.57                        | ≤ 23.98                   | Pass   |
| 11ax-HE20   | MCS0              | 144     | 5720        | 16.17                        | 16.35                        | 16.71                        | 15.92                        | 22.32                        | ≤ 22.97                   | Pass   |
| 11ax-HE20   | MCS0              | 149     | 5745        | 22.93                        | 22.81                        | 23.16                        | 23.37                        | 29.09                        | ≤ 30.00                   | Pass   |
| 11ax-HE20   | MCS0              | 157     | 5785        | 22.53                        | 22.26                        | 22.88                        | 21.89                        | 28.43                        | ≤ 30.00                   | Pass   |
| 11ax-HE20   | MCS0              | 165     | 5825        | 22.80                        | 22.42                        | 22.79                        | 22.45                        | 28.64                        | ≤ 30.00                   | Pass   |

| Test Mode  | Data Rate/<br>MCS | Ch. No. | Freq. (MHz) | Ant 0<br>Average Power (dBm) | Ant 1<br>Average Power (dBm) | Ant 2<br>Average Power (dBm) | Ant 3<br>Average Power (dBm) | Total<br>Average Power (dBm) | Average Power Limit (dBm) | Result |
|------------|-------------------|---------|-------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|---------------------------|--------|
| 11ax-HE40  | MCS0              | 38      | 5190        | 15.02                        | 14.71                        | 15.04                        | 14.88                        | 20.94                        | ≤ 30.00                   | Pass   |
| 11ax-HE40  | MCS0              | 46      | 5230        | 23.38                        | 23.52                        | 23.44                        | 22.32                        | 29.21                        | ≤ 30.00                   | Pass   |
| 11ax-HE40  | MCS0              | 54      | 5270        | 17.92                        | 17.89                        | 17.94                        | 17.48                        | 23.83                        | ≤ 23.98                   | Pass   |
| 11ax-HE40  | MCS0              | 62      | 5310        | 15.83                        | 16.36                        | 16.44                        | 16.10                        | 22.21                        | ≤ 23.98                   | Pass   |
| 11ax-HE40  | MCS0              | 102     | 5510        | 16.22                        | 16.23                        | 16.08                        | 15.86                        | 22.12                        | ≤ 23.98                   | Pass   |
| 11ax-HE40  | MCS0              | 110     | 5550        | 17.92                        | 17.61                        | 17.85                        | 17.51                        | 23.75                        | ≤ 23.98                   | Pass   |
| 11ax-HE40  | MCS0              | 134     | 5670        | 17.34                        | 17.93                        | 17.56                        | 17.03                        | 23.50                        | ≤ 23.98                   | Pass   |
| 11ax-HE40  | MCS0              | 142     | 5710        | 17.65                        | 17.90                        | 17.33                        | 17.59                        | 23.64                        | ≤ 23.98                   | Pass   |
| 11ax-HE40  | MCS0              | 151     | 5755        | 22.76                        | 22.72                        | 23.18                        | 22.47                        | 28.81                        | ≤ 30.00                   | Pass   |
| 11ax-HE40  | MCS0              | 159     | 5795        | 22.72                        | 22.53                        | 22.81                        | 22.25                        | 28.60                        | ≤ 30.00                   | Pass   |
| 11ax-HE80  | MCS0              | 42      | 5210        | 14.36                        | 14.43                        | 14.31                        | 14.49                        | 20.42                        | ≤ 30.00                   | Pass   |
| 11ax-HE80  | MCS0              | 58      | 5290        | 14.92                        | 15.75                        | 15.77                        | 15.64                        | 21.55                        | ≤ 23.98                   | Pass   |
| 11ax-HE80  | MCS0              | 106     | 5530        | 16.36                        | 16.21                        | 16.43                        | 16.17                        | 22.31                        | ≤ 23.98                   | Pass   |
| 11ax-HE80  | MCS0              | 122     | 5610        | 17.68                        | 17.65                        | 18.00                        | 17.33                        | 23.69                        | ≤ 23.98                   | Pass   |
| 11ax-HE80  | MCS0              | 138     | 5690        | 17.77                        | 17.80                        | 17.97                        | 17.31                        | 23.74                        | ≤ 23.98                   | Pass   |
| 11ax-HE80  | MCS0              | 155     | 5775        | 20.68                        | 20.56                        | 20.86                        | 19.76                        | 26.51                        | ≤ 30.00                   | Pass   |
| 11ax-HE160 | MCS0              | 50      | 5250        | 13.36                        | 13.38                        | 13.48                        | 13.61                        | 19.48                        | ≤ 23.98                   | Pass   |
| 11ax-HE160 | MCS0              | 114     | 5570        | 15.28                        | 15.10                        | 15.13                        | 15.16                        | 21.19                        | ≤ 23.98                   | Pass   |

Note: Total Average Power (dBm) =  $10 \cdot \log \{10^{(\text{ANT 0 Average Power} / 10)} + 10^{(\text{ANT 1 Average Power} / 10)} + 10^{(\text{ANT 2 Average Power} / 10)} + 10^{(\text{ANT 3 Average Power} / 10)}\}$  (dBm).

For 5720MHz, Power Limit =  $11 + 10 \cdot \log(\text{BW}_{(26\text{dBc})} / 2 + 5\text{MHz})$ .

## 5.5. Transmit Power Control

### 5.5.1. 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.

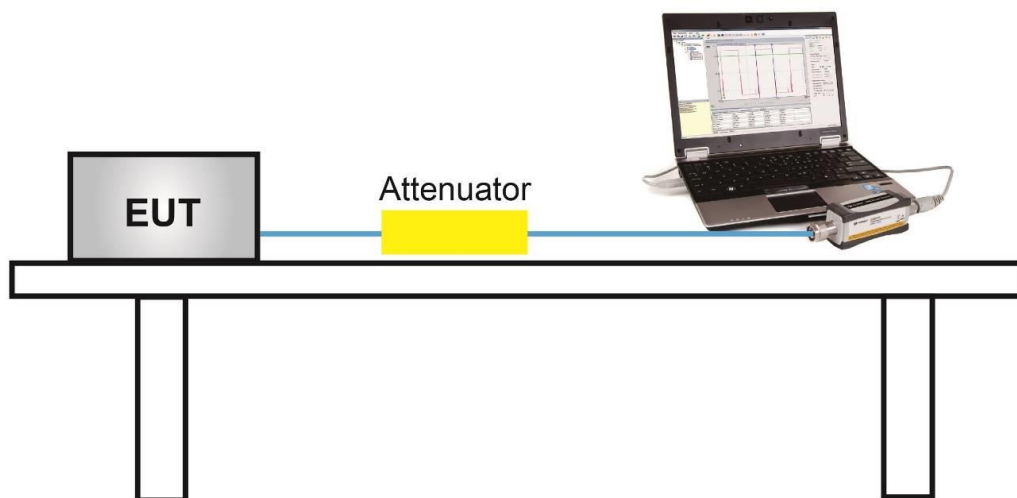
### 5.5.2. Test Procedure Used

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

### 5.5.3. 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.

### 5.5.4. Test Setup



### 5.5.5. Test Result

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

## **5.6. Power Spectral Density Measurement**

### **5.6.1. Test Limit**

For an indoor access point operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1MHz band.

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

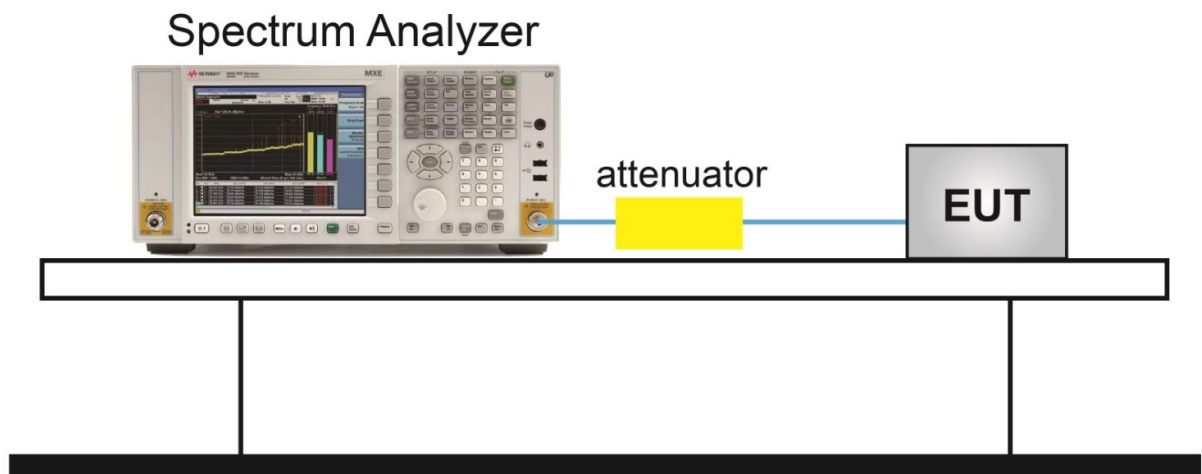
### **5.6.2. Test Procedure**

KDB 789033 D02v02r01 - Section F

### **5.6.3. 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, VBW  $\geq 3 \times$  RBW for U-NII-1, U-NII-2A, and U-NII-2C;  
RBW = 510kHz; VBW  $\geq 3 \times$  RBW for U-NII-3;
4. Number of sweep points  $\geq 2 \times (\text{span} / \text{RBW})$
5. Detector = power averaging (Average)
6. Sweep time = auto
7. Trigger = free run
8. Use the peak search function on the instrument to find the peak of the spectrum and record its value.
9. Add  $10 \times \log(1/x)$ , 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  $10 \times \log(1/0.25) = 6$  dB if the duty cycle is 25 percent.

#### 5.6.4. Test Setup



### 5.6.5. Test Result

|           |                    |               |                  |
|-----------|--------------------|---------------|------------------|
| Product   | Kinetic VoIP Modem | Test Engineer | Luis Yang        |
| Test Site | WZ-TR3             | Test Date     | 2021/05/06~05/08 |

| Test Mode                       | Data Rate/MCS | Ch. No. | Freq. (MHz) | Ant 0 PSD (dBm/MHz) | Ant 1 PSD (dBm/MHz) | Ant 2 PSD (dBm/MHz) | Ant 3 PSD (dBm/MHz) | Duty Cycle (%) | Total PSD (dBm/MHz) | PSD Limit (dBm/MHz) | Result |
|---------------------------------|---------------|---------|-------------|---------------------|---------------------|---------------------|---------------------|----------------|---------------------|---------------------|--------|
| For NII-1, NII-2A, NII-2C Band: |               |         |             |                     |                     |                     |                     |                |                     |                     |        |
| 11a                             | 6Mbps         | 36      | 5180        | 7.63                | 7.65                | 7.36                | 6.86                | 94.93          | 13.63               | ≤ 16.81             | Pass   |
| 11a                             | 6Mbps         | 44      | 5220        | 10.39               | 10.53               | 10.27               | 9.62                | 94.93          | 16.46               | ≤ 16.81             | Pass   |
| 11a                             | 6Mbps         | 48      | 5240        | 10.50               | 10.57               | 10.39               | 9.40                | 94.93          | 16.49               | ≤ 16.81             | Pass   |
| 11a                             | 6Mbps         | 52      | 5260        | 4.59                | 4.46                | 4.21                | 4.29                | 94.93          | 10.64               | ≤ 10.81             | Pass   |
| 11a                             | 6Mbps         | 60      | 5300        | 4.21                | 4.51                | 4.54                | 4.63                | 94.93          | 10.72               | ≤ 10.81             | Pass   |
| 11a                             | 6Mbps         | 64      | 5320        | 4.42                | 4.27                | 4.65                | 4.51                | 94.93          | 10.71               | ≤ 10.81             | Pass   |
| 11a                             | 6Mbps         | 100     | 5500        | 4.27                | 4.20                | 4.21                | 4.41                | 94.93          | 10.52               | ≤ 10.88             | Pass   |
| 11a                             | 6Mbps         | 116     | 5580        | 4.45                | 4.37                | 4.51                | 4.40                | 94.93          | 10.68               | ≤ 10.88             | Pass   |
| 11a                             | 6Mbps         | 120     | 5600        | 4.43                | 4.49                | 4.50                | 4.38                | 94.93          | 10.70               | ≤ 10.88             | Pass   |
| 11a                             | 6Mbps         | 140     | 5700        | 4.39                | 4.51                | 4.46                | 4.31                | 94.93          | 10.66               | ≤ 10.88             | Pass   |
| 11a                             | 6Mbps         | 144     | 5720        | 4.00                | 4.35                | 4.53                | 4.31                | 94.93          | 10.55               | ≤ 10.88             | Pass   |
| 11ac-VHT20                      | MCS0          | 36      | 5180        | 7.79                | 8.31                | 8.48                | 8.21                | 97.86          | 14.32               | ≤ 16.81             | Pass   |
| 11ac-VHT20                      | MCS0          | 44      | 5220        | 10.46               | 10.37               | 10.28               | 9.54                | 97.86          | 16.29               | ≤ 16.81             | Pass   |
| 11ac-VHT20                      | MCS0          | 48      | 5240        | 10.33               | 10.59               | 10.77               | 9.80                | 97.86          | 16.50               | ≤ 16.81             | Pass   |
| 11ac-VHT20                      | MCS0          | 52      | 5260        | 4.55                | 4.47                | 4.35                | 4.49                | 97.86          | 10.58               | ≤ 10.81             | Pass   |
| 11ac-VHT20                      | MCS0          | 60      | 5300        | 4.51                | 4.42                | 4.62                | 4.53                | 97.86          | 10.64               | ≤ 10.81             | Pass   |
| 11ac-VHT20                      | MCS0          | 64      | 5320        | 4.57                | 4.31                | 4.52                | 4.60                | 97.86          | 10.62               | ≤ 10.81             | Pass   |
| 11ac-VHT20                      | MCS0          | 100     | 5500        | 4.69                | 4.44                | 4.47                | 4.62                | 97.86          | 10.67               | ≤ 10.88             | Pass   |
| 11ac-VHT20                      | MCS0          | 116     | 5580        | 4.28                | 4.38                | 4.49                | 4.34                | 97.86          | 10.49               | ≤ 10.88             | Pass   |
| 11ac-VHT20                      | MCS0          | 120     | 5600        | 4.37                | 4.44                | 4.77                | 4.32                | 97.86          | 10.59               | ≤ 10.88             | Pass   |
| 11ac-VHT20                      | MCS0          | 140     | 5700        | 4.34                | 4.54                | 4.71                | 4.25                | 97.86          | 10.58               | ≤ 10.88             | Pass   |
| 11ac-VHT20                      | MCS0          | 144     | 5720        | 4.12                | 4.41                | 4.81                | 4.35                | 97.86          | 10.54               | ≤ 10.88             | Pass   |

| Test Mode   | Data Rate/<br>MCS | Ch. No. | Freq. (MHz) | Ant 0PSD<br>(dBm/<br>MHz) | Ant 1 PSD<br>(dBm/<br>MHz) | Ant 2 PSD<br>(dBm/<br>MHz) | Ant 3 PSD<br>(dBm/<br>MHz) | Duty Cycle<br>(%) | Total PSD<br>(dBm/<br>MHz) | PSD Limit<br>(dBm/<br>MHz) | Result |
|-------------|-------------------|---------|-------------|---------------------------|----------------------------|----------------------------|----------------------------|-------------------|----------------------------|----------------------------|--------|
| 11ac-VHT40  | MCS0              | 38      | 5190        | 0.72                      | 0.89                       | 0.63                       | 0.52                       | 96.72             | 6.86                       | ≤ 16.81                    | Pass   |
| 11ac-VHT40  | MCS0              | 46      | 5230        | 8.69                      | 8.81                       | 9.20                       | 7.99                       | 96.72             | 14.86                      | ≤ 16.81                    | Pass   |
| 11ac-VHT40  | MCS0              | 54      | 5270        | 3.30                      | 3.24                       | 3.32                       | 3.24                       | 96.72             | 9.44                       | ≤ 10.81                    | Pass   |
| 11ac-VHT40  | MCS0              | 62      | 5310        | 1.90                      | 2.20                       | 2.17                       | 2.01                       | 96.72             | 8.24                       | ≤ 10.81                    | Pass   |
| 11ac-VHT40  | MCS0              | 102     | 5510        | 2.68                      | 2.95                       | 2.89                       | 2.43                       | 96.72             | 8.91                       | ≤ 10.88                    | Pass   |
| 11ac-VHT40  | MCS0              | 110     | 5550        | 3.56                      | 3.43                       | 3.65                       | 3.08                       | 96.72             | 9.60                       | ≤ 10.88                    | Pass   |
| 11ac-VHT40  | MCS0              | 118     | 5590        | 3.46                      | 3.77                       | 3.68                       | 3.19                       | 96.72             | 9.70                       | ≤ 10.88                    | Pass   |
| 11ac-VHT40  | MCS0              | 134     | 5670        | 3.35                      | 3.81                       | 3.42                       | 3.10                       | 96.72             | 9.59                       | ≤ 10.88                    | Pass   |
| 11ac-VHT40  | MCS0              | 142     | 5710        | 3.47                      | 4.00                       | 3.81                       | 3.35                       | 96.72             | 9.83                       | ≤ 10.88                    | Pass   |
| 11ac-VHT80  | MCS0              | 42      | 5210        | -3.00                     | -2.91                      | -2.53                      | -3.30                      | 93.66             | 3.38                       | ≤ 16.81                    | Pass   |
| 11ac-VHT80  | MCS0              | 58      | 5290        | -1.80                     | -1.33                      | -1.60                      | -1.91                      | 93.66             | 4.65                       | ≤ 10.81                    | Pass   |
| 11ac-VHT80  | MCS0              | 106     | 5530        | -1.82                     | -1.73                      | -1.43                      | -1.06                      | 93.66             | 4.81                       | ≤ 10.88                    | Pass   |
| 11ac-VHT80  | MCS0              | 122     | 5610        | 0.59                      | 0.77                       | 0.92                       | 0.45                       | 93.66             | 6.99                       | ≤ 10.88                    | Pass   |
| 11ac-VHT80  | MCS0              | 138     | 5690        | 0.70                      | 0.84                       | 0.91                       | 0.24                       | 93.66             | 6.99                       | ≤ 10.88                    | Pass   |
| 11ac-VHT160 | MCS0              | 50      | 5250        | -6.14                     | -6.38                      | -6.24                      | -6.51                      | 89.17             | 0.20                       | ≤ 10.81                    | Pass   |
| 11ac-VHT160 | MCS0              | 114     | 5570        | -4.80                     | -4.84                      | -4.42                      | -4.96                      | 89.17             | 1.77                       | ≤ 10.88                    | Pass   |
| 11ax-HE20   | MCS0              | 36      | 5180        | 6.83                      | 7.15                       | 7.22                       | 6.40                       | 97.50             | 13.04                      | ≤ 16.81                    | Pass   |
| 11ax-HE20   | MCS0              | 44      | 5220        | 10.28                     | 10.55                      | 10.57                      | 9.58                       | 97.50             | 16.39                      | ≤ 16.81                    | Pass   |
| 11ax-HE20   | MCS0              | 48      | 5240        | 10.55                     | 10.89                      | 10.67                      | 9.51                       | 97.50             | 16.57                      | ≤ 16.81                    | Pass   |
| 11ax-HE20   | MCS0              | 52      | 5260        | 4.25                      | 4.38                       | 4.37                       | 4.24                       | 97.50             | 10.44                      | ≤ 10.81                    | Pass   |
| 11ax-HE20   | MCS0              | 60      | 5300        | 4.42                      | 4.51                       | 4.26                       | 4.36                       | 97.50             | 10.52                      | ≤ 10.81                    | Pass   |
| 11ax-HE20   | MCS0              | 64      | 5320        | 4.49                      | 4.58                       | 4.65                       | 4.51                       | 97.50             | 10.69                      | ≤ 10.81                    | Pass   |
| 11ax-HE20   | MCS0              | 100     | 5500        | 4.25                      | 4.23                       | 4.43                       | 4.39                       | 97.50             | 10.46                      | ≤ 10.88                    | Pass   |
| 11ax-HE20   | MCS0              | 116     | 5580        | 4.46                      | 4.38                       | 4.47                       | 4.26                       | 97.50             | 10.52                      | ≤ 10.88                    | Pass   |
| 11ax-HE20   | MCS0              | 120     | 5600        | 4.09                      | 4.43                       | 4.89                       | 4.28                       | 97.50             | 10.56                      | ≤ 10.88                    | Pass   |
| 11ax-HE20   | MCS0              | 140     | 5700        | 2.51                      | 2.89                       | 3.18                       | 2.98                       | 97.50             | 9.03                       | ≤ 10.88                    | Pass   |
| 11ax-HE20   | MCS0              | 144     | 5720        | 4.31                      | 4.57                       | 4.85                       | 4.50                       | 97.50             | 10.69                      | ≤ 10.88                    | Pass   |

| Test Mode  | Data Rate/<br>MCS | Ch. No. | Freq. (MHz) | Ant 0PSD<br>(dBm/MHz) | Ant 1 PSD<br>(dBm/MHz) | Ant 2 PSD<br>(dBm/MHz) | Ant 3 PSD<br>(dBm/MHz) | Duty Cycle (%) | Total PSD<br>(dBm/MHz) | PSD Limit<br>(dBm/MHz) | Result |
|------------|-------------------|---------|-------------|-----------------------|------------------------|------------------------|------------------------|----------------|------------------------|------------------------|--------|
| 11ax-HE40  | MCS0              | 38      | 5190        | 0.52                  | 0.74                   | 0.37                   | 0.30                   | 95.85          | 6.69                   | ≤ 16.81                | Pass   |
| 11ax-HE40  | MCS0              | 46      | 5230        | 8.38                  | 8.87                   | 9.05                   | 7.92                   | 95.85          | 14.78                  | ≤ 16.81                | Pass   |
| 11ax-HE40  | MCS0              | 54      | 5270        | 3.46                  | 3.49                   | 3.50                   | 3.25                   | 95.85          | 9.63                   | ≤ 10.81                | Pass   |
| 11ax-HE40  | MCS0              | 62      | 5310        | 1.91                  | 1.99                   | 2.25                   | 1.94                   | 95.85          | 8.23                   | ≤ 10.81                | Pass   |
| 11ax-HE40  | MCS0              | 102     | 5510        | 2.21                  | 1.96                   | 1.89                   | 1.73                   | 95.85          | 8.16                   | ≤ 10.88                | Pass   |
| 11ax-HE40  | MCS0              | 110     | 5550        | 3.64                  | 3.60                   | 3.52                   | 2.87                   | 95.85          | 9.62                   | ≤ 10.88                | Pass   |
| 11ax-HE40  | MCS0              | 118     | 5590        | 3.61                  | 3.19                   | 3.47                   | 2.65                   | 95.85          | 9.45                   | ≤ 10.88                | Pass   |
| 11ax-HE40  | MCS0              | 134     | 5670        | 3.35                  | 3.93                   | 3.29                   | 3.43                   | 95.85          | 9.71                   | ≤ 10.88                | Pass   |
| 11ax-HE40  | MCS0              | 142     | 5710        | 3.41                  | 3.82                   | 3.75                   | 3.89                   | 95.85          | 9.93                   | ≤ 10.88                | Pass   |
| 11ax-HE80  | MCS0              | 42      | 5210        | -2.74                 | -2.97                  | -3.01                  | -2.89                  | 92.45          | 3.46                   | ≤ 16.81                | Pass   |
| 11ax-HE80  | MCS0              | 58      | 5290        | -1.90                 | -1.10                  | -1.33                  | -1.44                  | 92.45          | 4.93                   | ≤ 10.81                | Pass   |
| 11ax-HE80  | MCS0              | 106     | 5530        | -0.67                 | -1.14                  | -0.69                  | -1.02                  | 92.45          | 5.49                   | ≤ 10.88                | Pass   |
| 11ax-HE80  | MCS0              | 122     | 5610        | 0.91                  | 0.50                   | 1.10                   | 0.52                   | 92.45          | 7.13                   | ≤ 10.88                | Pass   |
| 11ax-HE80  | MCS0              | 138     | 5690        | 0.67                  | 0.71                   | 0.80                   | 0.34                   | 92.45          | 6.99                   | ≤ 10.88                | Pass   |
| 11ax-HE160 | MCS0              | 50      | 5250        | -6.50                 | -6.08                  | -6.21                  | -6.19                  | 88.20          | 0.32                   | ≤ 10.81                | Pass   |
| 11ax-HE160 | MCS0              | 114     | 5570        | -4.77                 | -4.72                  | -4.35                  | -4.81                  | 88.20          | 1.91                   | ≤ 10.88                | Pass   |

Note 1:

When EUT duty cycle < 98%, the total PSD (dBm/MHz) =  $10 \cdot \log \{10^{(\text{Ant 0 AVGPSD}/10)} + 10^{(\text{Ant 1 AVGPSD}/10)} + 10^{(\text{Ant 2 AVGPSD}/10)} + 10^{(\text{Ant 3 AVGPSD}/10)}\} + 10 \cdot \log (1/\text{Duty cycle})$ .

Note 2: PSD Limit Calculation as below:

For 5150-5250MHz: PSD Limit = 17 - (6.19 - 6) = 16.81dBm/MHz;

For 5250-5350MHz: PSD Limit = 11 - (6.19 - 6) = 10.81dBm/MHz;

For 5470-5725MHz: PSD Limit = 11 - (6.12 - 6) = 10.88dBm/MHz;

| Test Mode       | Data Rate/<br>MCS | Ch. No. | Freq. (MHz) | Ant 0<br>PSD<br>(dBm/<br>510kHz) | Ant 1<br>PSD<br>(dBm/<br>510kHz) | Ant 2<br>PSD<br>(dBm/<br>510kHz) | Ant 3<br>PSD<br>(dBm/<br>510kHz) | Duty Cycle (%) | Total<br>PSD<br>(dBm/<br>510kHz) | PSD Limit<br>(dBm/<br>500kHz) | Result |
|-----------------|-------------------|---------|-------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------|----------------------------------|-------------------------------|--------|
| For NII-3 Band: |                   |         |             |                                  |                                  |                                  |                                  |                |                                  |                               |        |
| 11a             | 6Mbps             | 149     | 5745        | 8.89                             | 8.70                             | 8.82                             | 8.72                             | 94.93          | 15.03                            | ≤ 29.37                       | Pass   |
| 11a             | 6Mbps             | 157     | 5785        | 8.36                             | 8.71                             | 8.84                             | 9.66                             | 94.93          | 15.17                            | ≤ 29.37                       | Pass   |
| 11a             | 6Mbps             | 165     | 5825        | 8.76                             | 8.54                             | 8.91                             | 8.63                             | 94.93          | 14.96                            | ≤ 29.37                       | Pass   |
| 11ac-VHT20      | MCS0              | 149     | 5745        | 8.79                             | 8.84                             | 8.87                             | 9.33                             | 97.86          | 15.08                            | ≤ 29.37                       | Pass   |
| 11ac-VHT20      | MCS0              | 157     | 5785        | 8.50                             | 8.26                             | 8.50                             | 8.06                             | 97.86          | 14.45                            | ≤ 29.37                       | Pass   |
| 11ac-VHT20      | MCS0              | 165     | 5825        | 8.39                             | 8.84                             | 8.82                             | 9.66                             | 97.86          | 15.07                            | ≤ 29.37                       | Pass   |
| 11ac-VHT40      | MCS0              | 151     | 5755        | 5.53                             | 5.75                             | 6.06                             | 5.63                             | 96.72          | 11.91                            | ≤ 29.37                       | Pass   |
| 11ac-VHT40      | MCS0              | 159     | 5795        | 5.68                             | 5.58                             | 6.39                             | 5.57                             | 96.72          | 11.98                            | ≤ 29.37                       | Pass   |
| 11ac-VHT80      | MCS0              | 155     | 5775        | 0.22                             | 0.37                             | 0.18                             | -0.34                            | 93.66          | 6.42                             | ≤ 29.37                       | Pass   |
| 11ax-HE20       | MCS0              | 149     | 5745        | 8.55                             | 8.53                             | 9.15                             | 9.68                             | 97.50          | 15.13                            | ≤ 29.37                       | Pass   |
| 11ax-HE20       | MCS0              | 157     | 5785        | 8.40                             | 8.09                             | 8.70                             | 7.57                             | 97.50          | 14.34                            | ≤ 29.37                       | Pass   |
| 11ax-HE20       | MCS0              | 165     | 5825        | 8.50                             | 8.43                             | 8.82                             | 9.71                             | 97.50          | 15.03                            | ≤ 29.37                       | Pass   |
| 11ax-HE40       | MCS0              | 151     | 5755        | 5.60                             | 5.61                             | 6.24                             | 5.23                             | 95.85          | 11.89                            | ≤ 29.37                       | Pass   |
| 11ax-HE40       | MCS0              | 159     | 5795        | 5.38                             | 5.83                             | 6.01                             | 5.63                             | 95.85          | 11.92                            | ≤ 29.37                       | Pass   |
| 11ax-HE80       | MCS0              | 155     | 5775        | 0.56                             | 0.76                             | 0.10                             | 0.06                             | 92.45          | 6.74                             | ≤ 29.37                       | Pass   |

Note 1:

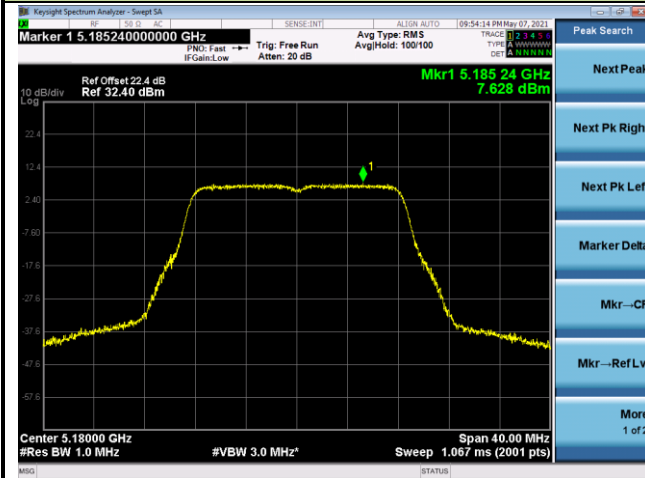
When EUT duty cycle < 98%, the total PSD (dBm/510kHz) =  $10 \cdot \log \{10^{(\text{Ant 0 AVGPSD}/10)} + 10^{(\text{Ant 1 AVGPSD}/10)} + 10^{(\text{Ant 2 AVGPSD}/10)} + 10^{(\text{Ant 3 AVGPSD}/10)}\} + 10 \cdot \log (1/\text{Duty cycle})$ .

Note 2: PSD Limit Calculation as below:

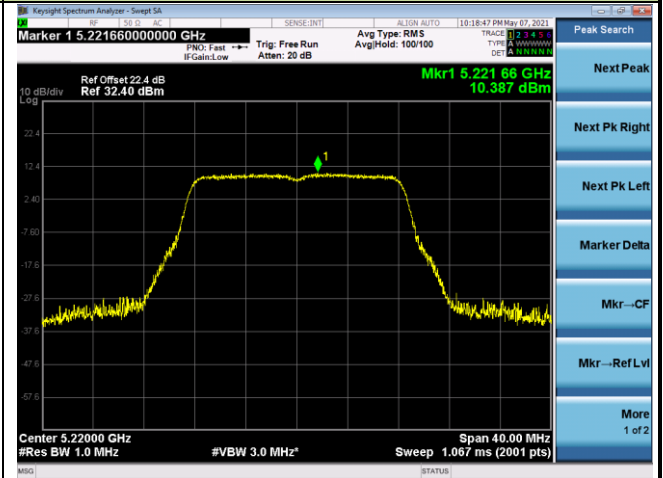
For 5725-5850MHz: PSD Limit = 30 - (6.63 - 6) = 29.37dBm/MHz;

## 802.11a Power Spectral Density - Ant 0

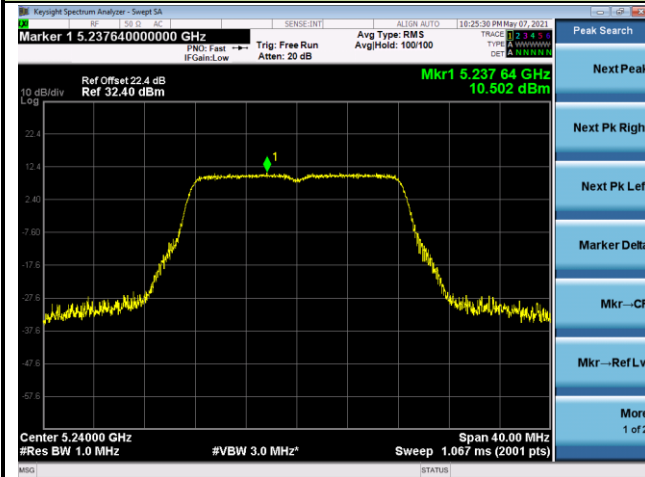
## Channel 36 (5180MHz)



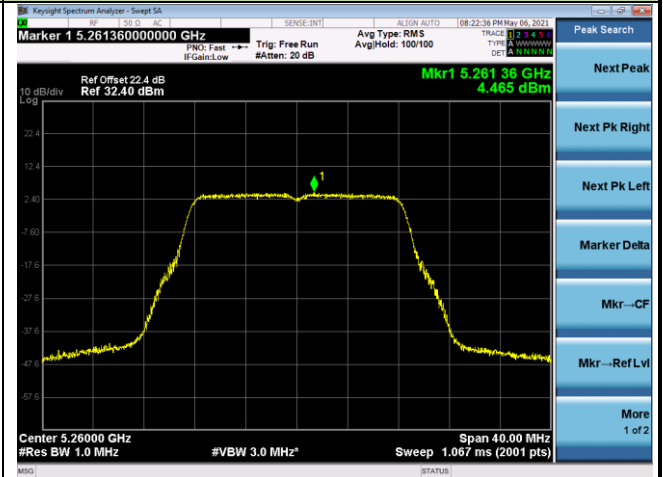
## Channel 44 (5220MHz)



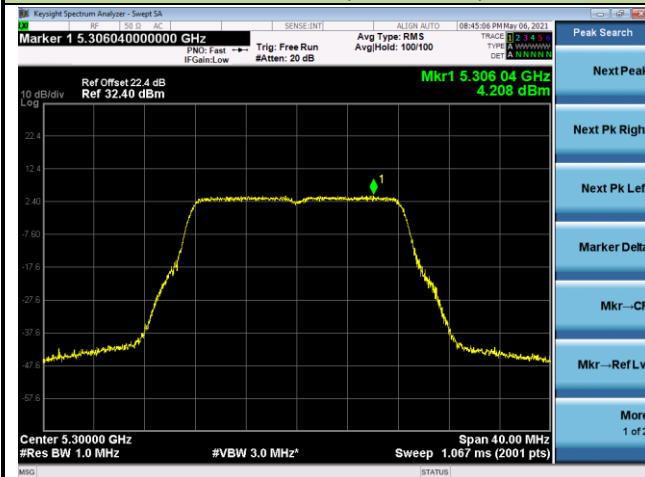
## Channel 48 (5240MHz)



## Channel 52 (5260MHz)



## Channel 60 (5300MHz)



## Channel 64 (5320MHz)

