

## U-NII-2C

| Test Mode                                                                                   | Channel/<br>Frequency<br>(MHz) | Average Power<br>Measured<br>(dBm) | Average Power<br>with duty factor<br>(dBm) | Limit<br>(dBm) | Conclusion |
|---------------------------------------------------------------------------------------------|--------------------------------|------------------------------------|--------------------------------------------|----------------|------------|
| 802.11a                                                                                     | 100/5500                       | 20.49                              | 20.66                                      | 24.00          | PASS       |
|                                                                                             | 120/5600                       | 21.13                              | 21.30                                      | 24.00          | PASS       |
|                                                                                             | 140/5700                       | 19.25                              | 19.42                                      | 24.00          | PASS       |
|                                                                                             | 144/5720                       | 18.28                              | 18.45                                      | 23.98          | PASS       |
| 802.11n HT20                                                                                | 100/5500                       | 19.64                              | 20.61                                      | 24.00          | PASS       |
|                                                                                             | 120/5600                       | 20.12                              | 21.09                                      | 24.00          | PASS       |
|                                                                                             | 140/5700                       | 17.62                              | 18.59                                      | 24.00          | PASS       |
|                                                                                             | 144/5720                       | 19.27                              | 20.24                                      | 24.00          | PASS       |
| 802.11n HT40                                                                                | 102/5510                       | 17.07                              | 17.07                                      | 24.00          | PASS       |
|                                                                                             | 118/5590                       | 19.69                              | 19.69                                      | 24.00          | PASS       |
|                                                                                             | 134/5670                       | 18.16                              | 18.16                                      | 24.00          | PASS       |
|                                                                                             | 142/5710                       | 22.60                              | 22.60                                      | 24.00          | PASS       |
| 802.11ac VHT20                                                                              | 100/5500                       | 19.41                              | 20.38                                      | 24.00          | PASS       |
|                                                                                             | 120/5600                       | 20.18                              | 21.15                                      | 24.00          | PASS       |
|                                                                                             | 140/5700                       | 20.26                              | 21.23                                      | 24.00          | PASS       |
|                                                                                             | 144/5720                       | 18.72                              | 19.69                                      | 24.00          | PASS       |
| 802.11ac VHT40                                                                              | 102/5510                       | 22.22                              | 23.20                                      | 24.00          | PASS       |
|                                                                                             | 118/5590                       | 22.63                              | 23.61                                      | 24.00          | PASS       |
|                                                                                             | 134/5670                       | 22.36                              | 23.34                                      | 24.00          | PASS       |
|                                                                                             | 142/5710                       | 22.45                              | 23.43                                      | 24.00          | PASS       |
| 802.11ac VHT80                                                                              | 122/5610                       | 13.55                              | 14.55                                      | 24.00          | PASS       |
|                                                                                             | 138/5690                       | 18.94                              | 19.94                                      | 24.00          | PASS       |
| 802.11ax HE20                                                                               | 100/5500                       | 19.12                              | 19.12                                      | 24.00          | PASS       |
|                                                                                             | 120/5600                       | 19.55                              | 19.55                                      | 24.00          | PASS       |
|                                                                                             | 140/5700                       | 19.89                              | 19.89                                      | 24.00          | PASS       |
|                                                                                             | 144/5720                       | 18.95                              | 18.95                                      | 24.00          | PASS       |
| 802.11ax HE40                                                                               | 102/5510                       | 15.66                              | 15.66                                      | 24.00          | PASS       |
|                                                                                             | 118/5590                       | 21.92                              | 21.92                                      | 24.00          | PASS       |
|                                                                                             | 134/5670                       | 22.28                              | 22.28                                      | 24.00          | PASS       |
|                                                                                             | 142/5710                       | 22.13                              | 22.13                                      | 24.00          | PASS       |
| 802.11ax HE80                                                                               | 122/5610                       | 19.77                              | 19.77                                      | 24.00          | PASS       |
|                                                                                             | 138/5690                       | 22.36                              | 22.36                                      | 24.00          | PASS       |
| Note: Average Power with duty factor = Average Power Measured +Duty cycle correction factor |                                |                                    |                                            |                |            |

**U-NII-3**

| Test Mode                                                                                   | Channel/<br>Frequency<br>(MHz) | Average Power<br>Measured<br>(dBm) | Average Power<br>with duty factor<br>(dBm) | Limit<br>(dBm) | Conclusion |
|---------------------------------------------------------------------------------------------|--------------------------------|------------------------------------|--------------------------------------------|----------------|------------|
| 802.11a                                                                                     | 144/5720                       | 13.51                              | 13.68                                      | 30.00          | PASS       |
|                                                                                             | 149/5745                       | 24.56                              | 24.73                                      | 30.00          | PASS       |
|                                                                                             | 157/5785                       | 24.63                              | 24.80                                      | 30.00          | PASS       |
|                                                                                             | 165/5825                       | 23.24                              | 23.41                                      | 30.00          | PASS       |
| 802.11n HT20                                                                                | 144/5720                       | 14.57                              | 15.54                                      | 30.00          | PASS       |
|                                                                                             | 149/5745                       | 22.33                              | 23.30                                      | 30.00          | PASS       |
|                                                                                             | 157/5785                       | 23.24                              | 24.21                                      | 30.00          | PASS       |
|                                                                                             | 165/5825                       | 24.06                              | 25.03                                      | 30.00          | PASS       |
| 802.11n HT40                                                                                | 142/5720                       | 11.32                              | 11.32                                      | 30.00          | PASS       |
|                                                                                             | 151/5755                       | 24.21                              | 24.21                                      | 30.00          | PASS       |
|                                                                                             | 159/5795                       | 24.11                              | 24.11                                      | 30.00          | PASS       |
| 802.11ac VHT20                                                                              | 144/5720                       | 16.50                              | 17.47                                      | 30.00          | PASS       |
|                                                                                             | 149/5745                       | 23.40                              | 24.37                                      | 30.00          | PASS       |
|                                                                                             | 157/5785                       | 23.06                              | 24.03                                      | 30.00          | PASS       |
|                                                                                             | 165/5825                       | 23.62                              | 24.59                                      | 30.00          | PASS       |
| 802.11ac VHT40                                                                              | 142/5710                       | 12.24                              | 13.22                                      | 30.00          | PASS       |
|                                                                                             | 151/5755                       | 23.87                              | 24.85                                      | 30.00          | PASS       |
|                                                                                             | 159/5795                       | 24.47                              | 25.45                                      | 30.00          | PASS       |
| 802.11ac VHT80                                                                              | 138/5690                       | 4.32                               | 5.32                                       | 30.00          | PASS       |
|                                                                                             | 155/5775                       | 18.38                              | 19.38                                      | 30.00          | PASS       |
| 802.11ax HE20                                                                               | 144/5720                       | 16.28                              | 16.28                                      | 30.00          | PASS       |
|                                                                                             | 149/5745                       | 23.18                              | 23.18                                      | 30.00          | PASS       |
|                                                                                             | 157/5785                       | 23.33                              | 23.33                                      | 30.00          | PASS       |
|                                                                                             | 165/5825                       | 23.49                              | 23.49                                      | 30.00          | PASS       |
| 802.11ax HE40                                                                               | 142/5710                       | 13.11                              | 13.11                                      | 30.00          | PASS       |
|                                                                                             | 151/5755                       | 22.14                              | 22.14                                      | 30.00          | PASS       |
|                                                                                             | 159/5795                       | 22.57                              | 22.57                                      | 30.00          | PASS       |
| 802.11ax HE80                                                                               | 138/5690                       | 8.68                               | 8.68                                       | 30.00          | PASS       |
|                                                                                             | 155/5775                       | 21.75                              | 21.75                                      | 30.00          | PASS       |
| Note: Average Power with duty factor = Average Power Measured +Duty cycle correction factor |                                |                                    |                                            |                |            |

# MIMO

## U-NII-1

| Test Mode         | Channel/<br>Frequency<br>(MHz) | MIMO Antenna 1                     |                                            | MIMO Antenna 2                     |                                            | Total<br>Power<br>(dBm) | Limit<br>(dBm) | Conclusion |
|-------------------|--------------------------------|------------------------------------|--------------------------------------------|------------------------------------|--------------------------------------------|-------------------------|----------------|------------|
|                   |                                | Average Power<br>Measured<br>(dBm) | Average Power<br>with duty factor<br>(dBm) | Average Power<br>Measured<br>(dBm) | Average Power<br>with duty factor<br>(dBm) |                         |                |            |
| 802.11a           | 36/5180                        | 6.72                               | 6.89                                       | 9.33                               | 9.50                                       | 11.40                   | 24.00          | PASS       |
|                   | 40/5200                        | 6.71                               | 6.88                                       | 9.58                               | 9.75                                       | 11.55                   | 24.00          | PASS       |
|                   | 48/5240                        | 7.64                               | 7.81                                       | 10.41                              | 10.58                                      | 12.42                   | 24.00          | PASS       |
| 802.11n<br>HT20   | 36/5180                        | 6.29                               | 7.26                                       | 9.44                               | 10.41                                      | 12.12                   | 24.00          | PASS       |
|                   | 40/5200                        | 6.68                               | 7.65                                       | 9.55                               | 10.52                                      | 12.33                   | 24.00          | PASS       |
|                   | 48/5240                        | 6.35                               | 7.32                                       | 9.40                               | 10.37                                      | 12.12                   | 24.00          | PASS       |
| 802.11n<br>HT40   | 38/5190                        | 9.25                               | 9.25                                       | 12.04                              | 12.04                                      | 13.87                   | 24.00          | PASS       |
|                   | 46/5230                        | 9.36                               | 9.36                                       | 11.73                              | 11.73                                      | 13.71                   | 24.00          | PASS       |
| 802.11ac<br>VHT20 | 36/5180                        | 6.62                               | 7.59                                       | 9.30                               | 10.27                                      | 12.14                   | 24.00          | PASS       |
|                   | 40/5200                        | 6.50                               | 7.47                                       | 9.60                               | 10.57                                      | 12.30                   | 24.00          | PASS       |
|                   | 48/5240                        | 6.37                               | 7.34                                       | 8.79                               | 9.76                                       | 11.73                   | 24.00          | PASS       |
| 802.11ac<br>VHT40 | 38/5190                        | 8.95                               | 9.93                                       | 12.44                              | 13.42                                      | 15.03                   | 24.00          | PASS       |
|                   | 46/5230                        | 9.06                               | 10.04                                      | 11.94                              | 12.92                                      | 14.73                   | 24.00          | PASS       |
| 802.11ac<br>VHT80 | 42/5210                        | 11.27                              | 12.27                                      | 14.76                              | 15.76                                      | 17.36                   | 24.00          | PASS       |
| 802.11ax<br>HE20  | 36/5180                        | 6.09                               | 6.09                                       | 9.16                               | 9.16                                       | 10.90                   | 24.00          | PASS       |
|                   | 40/5200                        | 6.26                               | 6.26                                       | 9.50                               | 9.50                                       | 11.19                   | 24.00          | PASS       |
|                   | 48/5240                        | 6.53                               | 6.53                                       | 9.18                               | 9.18                                       | 11.06                   | 24.00          | PASS       |
| 802.11ax<br>HE40  | 38/5190                        | 9.04                               | 9.04                                       | 11.67                              | 11.67                                      | 13.56                   | 24.00          | PASS       |
|                   | 46/5230                        | 8.75                               | 8.75                                       | 11.63                              | 11.63                                      | 13.44                   | 24.00          | PASS       |
| 802.11ax<br>HE80  | 42/5210                        | 11.45                              | 11.45                                      | 14.51                              | 14.51                                      | 16.26                   | 24.00          | PASS       |

Note: 1. For Total Power, according to KDB 662911 D01 Multiple Transmitter Output v02r01 1),

The Total Power =  $10\log(10^{(\text{Power antenna1 in dBm}/10)} + 10^{(\text{Power antenna2 in dBm}/10)})$ .

2. The manufacturer declared the transmitter output signals is CDD mode And  $N_{ss}=1$ . According to KDB 662911 D01 Multiple Transmitter Output v02r01 F)2)f(i): If all antennas have the same gain, Directional gain =  $G_{ANT} + \text{Array Gain}$ ,

For power measurements on IEEE 802.11 devices,

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

Array Gain = 0 dB (i.e., no array gain) for channel widths  $\geq 40$  MHz for any  $N_{ANT}$ ;

Array Gain =  $5 \log(N_{ANT}/N_{SS})$  dB or 3 dB, whichever is less, for 20-MHz channel widths with  $N_{ANT} \geq 5$ .

So directional gain =  $G_{ANT} + \text{Array Gain} = 4.95 + 0 = 4.95 \text{ dBi} < 6 \text{ dBi}$ . So the power limit is 30dBm.

## U-NII-2A

| Test Mode         | Channel/<br>Frequency<br>(MHz) | MIMO Antenna 1                     |                                            | MIMO Antenna 2                     |                                            | Total<br>Power<br>(dBm) | Limit<br>(dBm) | Conclusion |
|-------------------|--------------------------------|------------------------------------|--------------------------------------------|------------------------------------|--------------------------------------------|-------------------------|----------------|------------|
|                   |                                | Average Power<br>Measured<br>(dBm) | Average Power<br>with duty factor<br>(dBm) | Average Power<br>Measured<br>(dBm) | Average Power<br>with duty factor<br>(dBm) |                         |                |            |
| 802.11a           | 52/5260                        | 13.77                              | 13.94                                      | 15.99                              | 16.16                                      | 18.20                   | 24.00          | PASS       |
|                   | 60/5300                        | 14.05                              | 14.22                                      | 16.85                              | 17.02                                      | 18.85                   | 24.00          | PASS       |
|                   | 64/5320                        | 14.29                              | 14.46                                      | 16.39                              | 16.56                                      | 18.64                   | 24.00          | PASS       |
| 802.11n<br>HT20   | 52/5260                        | 13.19                              | 14.16                                      | 16.41                              | 17.38                                      | 19.07                   | 24.00          | PASS       |
|                   | 60/5300                        | 12.86                              | 13.83                                      | 15.77                              | 16.74                                      | 18.53                   | 24.00          | PASS       |
|                   | 64/5320                        | 13.24                              | 14.21                                      | 15.04                              | 16.01                                      | 18.21                   | 24.00          | PASS       |
| 802.11n<br>HT40   | 54/5270                        | 16.31                              | 16.31                                      | 18.45                              | 18.45                                      | 20.52                   | 24.00          | PASS       |
|                   | 62/5310                        | 17.24                              | 17.24                                      | 17.83                              | 17.83                                      | 20.55                   | 24.00          | PASS       |
| 802.11ac<br>VHT20 | 52/5260                        | 13.66                              | 14.63                                      | 16.23                              | 17.20                                      | 19.11                   | 24.00          | PASS       |
|                   | 60/5300                        | 14.02                              | 14.99                                      | 15.48                              | 16.45                                      | 18.79                   | 24.00          | PASS       |
|                   | 64/5320                        | 14.47                              | 15.44                                      | 15.13                              | 16.10                                      | 18.79                   | 24.00          | PASS       |
| 802.11ac<br>VHT40 | 54/5270                        | 16.24                              | 17.22                                      | 18.53                              | 19.51                                      | 21.52                   | 24.00          | PASS       |
|                   | 62/5310                        | 17.53                              | 18.51                                      | 18.41                              | 19.39                                      | 21.98                   | 24.00          | PASS       |
| 802.11ac<br>VHT80 | 58/5290                        | 12.88                              | 13.88                                      | 14.39                              | 15.39                                      | 17.71                   | 24.00          | PASS       |
| 802.11ax<br>HE20  | 52/5260                        | 13.28                              | 13.28                                      | 16.03                              | 16.03                                      | 17.88                   | 24.00          | PASS       |
|                   | 60/5300                        | 13.69                              | 13.69                                      | 15.42                              | 15.42                                      | 17.65                   | 24.00          | PASS       |
|                   | 64/5320                        | 14.01                              | 14.01                                      | 14.62                              | 14.62                                      | 17.34                   | 24.00          | PASS       |
| 802.11ax<br>HE40  | 54/5270                        | 17.28                              | 17.28                                      | 18.93                              | 18.93                                      | 21.19                   | 24.00          | PASS       |
|                   | 62/5310                        | 12.20                              | 12.20                                      | 13.31                              | 13.31                                      | 15.80                   | 24.00          | PASS       |
| 802.11ax<br>HE80  | 58/5290                        | 13.47                              | 13.47                                      | 15.21                              | 15.21                                      | 17.44                   | 24.00          | PASS       |

Note: 1. For Total Power, according to KDB 662911 D01 Multiple Transmitter Output v02r01 1),

The Total Power =  $10\log(10^{(\text{Power antenna1 in dBm}/10)} + 10^{(\text{Power antenna2 in dBm}/10)})$ .

2. The manufacturer declared the transmitter output signals is CDD mode And  $N_{ss}=1$ . According to KDB 662911 D01 Multiple Transmitter Output v02r01 F)2)f)(i): If all antennas have the same gain, Directional gain =  $G_{ANT} + \text{Array Gain}$ ,

For power measurements on IEEE 802.11 devices,

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

Array Gain = 0 dB (i.e., no array gain) for channel widths  $\geq 40$  MHz for any  $N_{ANT}$ ;

Array Gain =  $5 \log(N_{ANT}/N_{SS})$  dB or 3 dB, whichever is less, for 20-MHz channel widths with  $N_{ANT} \geq 5$ .

So directional gain =  $G_{ANT} + \text{Array Gain} = 4.89 + 0 = 4.89 \text{ dBi} < 6 \text{ dBi}$ . So the power limit is 24dBm.

## U-NII-2C

| Test Mode         | Channel/<br>Frequency<br>(MHz) | MIMO Antenna 1                     |                                            | MIMO Antenna 2                     |                                            | Total<br>Power<br>(dBm) | Limit<br>(dBm) | Conclusion |
|-------------------|--------------------------------|------------------------------------|--------------------------------------------|------------------------------------|--------------------------------------------|-------------------------|----------------|------------|
|                   |                                | Average Power<br>Measured<br>(dBm) | Average Power<br>with duty factor<br>(dBm) | Average Power<br>Measured<br>(dBm) | Average Power<br>with duty factor<br>(dBm) |                         |                |            |
| 802.11a           | 100/5500                       | 16.26                              | 16.43                                      | 15.34                              | 15.51                                      | 19.01                   | 24.00          | PASS       |
|                   | 120/5600                       | 15.37                              | 15.54                                      | 14.25                              | 14.42                                      | 18.03                   | 24.00          | PASS       |
|                   | 140/5700                       | 15.31                              | 15.48                                      | 15.33                              | 15.50                                      | 18.50                   | 24.00          | PASS       |
|                   | 144/5720                       | 14.46                              | 14.63                                      | 14.73                              | 14.90                                      | 17.77                   | 23.98          | PASS       |
| 802.11n<br>HT20   | 100/5500                       | 15.16                              | 16.13                                      | 14.29                              | 15.26                                      | 18.73                   | 24.00          | PASS       |
|                   | 120/5600                       | 15.09                              | 16.06                                      | 14.27                              | 15.24                                      | 18.68                   | 24.00          | PASS       |
|                   | 140/5700                       | 14.43                              | 15.40                                      | 14.30                              | 15.27                                      | 18.35                   | 24.00          | PASS       |
|                   | 144/5720                       | 14.26                              | 15.23                                      | 14.28                              | 15.25                                      | 18.25                   | 24.00          | PASS       |
| 802.11n<br>HT40   | 102/5510                       | 13.47                              | 13.47                                      | 13.41                              | 13.41                                      | 16.45                   | 24.00          | PASS       |
|                   | 118/5590                       | 18.56                              | 18.56                                      | 17.60                              | 17.60                                      | 21.12                   | 24.00          | PASS       |
|                   | 134/5670                       | 14.95                              | 14.95                                      | 15.10                              | 15.10                                      | 18.03                   | 24.00          | PASS       |
|                   | 142/5710                       | 17.92                              | 17.92                                      | 17.66                              | 17.66                                      | 20.80                   | 24.00          | PASS       |
| 802.11ac<br>VHT20 | 100/5500                       | 15.52                              | 16.49                                      | 13.91                              | 14.88                                      | 18.77                   | 24.00          | PASS       |
|                   | 120/5600                       | 15.40                              | 16.37                                      | 14.30                              | 15.27                                      | 18.86                   | 24.00          | PASS       |
|                   | 140/5700                       | 15.49                              | 16.46                                      | 15.53                              | 16.50                                      | 19.49                   | 24.00          | PASS       |
|                   | 144/5720                       | 14.40                              | 15.37                                      | 14.52                              | 15.49                                      | 18.44                   | 24.00          | PASS       |
| 802.11ac<br>VHT40 | 102/5510                       | 18.10                              | 19.08                                      | 17.12                              | 18.10                                      | 21.63                   | 24.00          | PASS       |
|                   | 118/5590                       | 19.27                              | 20.25                                      | 17.49                              | 18.47                                      | 22.46                   | 24.00          | PASS       |
|                   | 134/5670                       | 17.70                              | 18.68                                      | 17.36                              | 18.34                                      | 21.52                   | 24.00          | PASS       |
|                   | 142/5710                       | 17.79                              | 18.77                                      | 17.79                              | 18.77                                      | 21.78                   | 24.00          | PASS       |
| 802.11ac<br>VHT80 | 122/5610                       | 10.40                              | 11.40                                      | 10.36                              | 11.36                                      | 14.39                   | 24.00          | PASS       |
|                   | 138/5690                       | 15.62                              | 16.62                                      | 16.05                              | 17.05                                      | 19.85                   | 24.00          | PASS       |
| 802.11ax<br>HE20  | 100/5500                       | 14.94                              | 14.94                                      | 14.35                              | 14.35                                      | 17.66                   | 24.00          | PASS       |
|                   | 120/5600                       | 15.08                              | 15.08                                      | 14.06                              | 14.06                                      | 17.61                   | 24.00          | PASS       |
|                   | 140/5700                       | 14.93                              | 14.93                                      | 15.21                              | 15.21                                      | 18.08                   | 24.00          | PASS       |
|                   | 144/5720                       | 14.26                              | 14.26                                      | 14.00                              | 14.00                                      | 17.14                   | 24.00          | PASS       |
| 802.11ax<br>HE40  | 102/5510                       | 12.29                              | 12.29                                      | 11.74                              | 11.74                                      | 15.03                   | 24.00          | PASS       |
|                   | 118/5590                       | 18.26                              | 18.26                                      | 17.00                              | 17.00                                      | 20.68                   | 24.00          | PASS       |
|                   | 134/5670                       | 18.28                              | 18.28                                      | 17.91                              | 17.91                                      | 21.11                   | 24.00          | PASS       |
|                   | 142/5710                       | 17.05                              | 17.05                                      | 16.69                              | 16.69                                      | 19.89                   | 24.00          | PASS       |
| 802.11ax<br>HE80  | 122/5610                       | 19.32                              | 19.32                                      | 18.02                              | 18.02                                      | 21.73                   | 24.00          | PASS       |
|                   | 138/5690                       | 19.01                              | 19.01                                      | 18.96                              | 18.96                                      | 21.99                   | 24.00          | PASS       |

Note: 1. For Total Power, according to KDB 662911 D01 Multiple Transmitter Output v02r01 1),

The Total Power =  $10\log_{10}(10^{(\text{Power antenna1 in dBm}/10)} + 10^{(\text{Power antenna2 in dBm}/10)})$ .

2. The manufacturer declared the transmitter output signals is CDD mode And  $N_{ss}=1$ . According to KDB 662911 D01 Multiple Transmitter Output v02r01 F)2)f(i): If all antennas have the same gain, Directional gain =  $G_{ANT} + \text{Array Gain}$ , For power measurements on IEEE 802.11 devices,  
Array Gain = 0 dB (i.e., no array gain) for  $N_{ANT} \leq 4$ ;  
Array Gain = 0 dB (i.e., no array gain) for channel widths  $\geq 40$  MHz for any  $N_{ANT}$ ;  
Array Gain =  $5 \log(N_{ANT}/N_{SS})$  dB or 3 dB, whichever is less, for 20-MHz channel widths with  $N_{ANT} \geq 5$ .  
So directional gain =  $G_{ANT} + \text{Array Gain} = 4.94 + 0 = 4.94$  dBi < 6dBi. So the power limit is 24dBm.

## U-NII-3

| Test Mode         | Channel/<br>Frequency<br>(MHz) | MIMO Antenna 1                     |                                            | MIMO Antenna 2                     |                                            | Total<br>Power<br>(dBm) | Limit<br>(dBm) | Conclusion |
|-------------------|--------------------------------|------------------------------------|--------------------------------------------|------------------------------------|--------------------------------------------|-------------------------|----------------|------------|
|                   |                                | Average Power<br>Measured<br>(dBm) | Average Power<br>with duty factor<br>(dBm) | Average Power<br>Measured<br>(dBm) | Average Power<br>with duty factor<br>(dBm) |                         |                |            |
| 802.11a           | 144/5720                       | 10.23                              | 10.40                                      | 11.04                              | 11.21                                      | 13.84                   | 30.00          | PASS       |
|                   | 149/5745                       | 22.97                              | 23.14                                      | 23.70                              | 23.87                                      | 26.53                   | 30.00          | PASS       |
|                   | 157/5785                       | 23.11                              | 23.28                                      | 24.01                              | 24.18                                      | 26.76                   | 30.00          | PASS       |
|                   | 165/5825                       | 19.44                              | 19.61                                      | 20.71                              | 20.88                                      | 23.30                   | 30.00          | PASS       |
| 802.11n<br>HT20   | 144/5720                       | 11.06                              | 12.03                                      | 12.78                              | 13.75                                      | 15.99                   | 30.00          | PASS       |
|                   | 149/5745                       | 18.28                              | 19.25                                      | 20.15                              | 21.12                                      | 23.29                   | 30.00          | PASS       |
|                   | 157/5785                       | 22.08                              | 23.05                                      | 23.03                              | 24.00                                      | 26.56                   | 30.00          | PASS       |
|                   | 165/5825                       | 21.86                              | 22.83                                      | 23.49                              | 24.46                                      | 26.73                   | 30.00          | PASS       |
| 802.11n<br>HT40   | 142/5710                       | 8.31                               | 8.31                                       | 9.51                               | 9.51                                       | 11.96                   | 30.00          | PASS       |
|                   | 151/5755                       | 16.17                              | 16.17                                      | 17.82                              | 17.82                                      | 20.08                   | 30.00          | PASS       |
|                   | 159/5795                       | 17.14                              | 17.14                                      | 19.27                              | 19.27                                      | 21.34                   | 30.00          | PASS       |
| 802.11ac<br>VHT20 | 144/5720                       | 15.61                              | 16.58                                      | 15.01                              | 15.98                                      | 19.30                   | 30.00          | PASS       |
|                   | 149/5745                       | 22.24                              | 23.21                                      | 22.65                              | 23.62                                      | 26.43                   | 30.00          | PASS       |
|                   | 157/5785                       | 21.82                              | 22.79                                      | 22.87                              | 23.84                                      | 26.36                   | 30.00          | PASS       |
|                   | 165/5825                       | 21.68                              | 22.65                                      | 23.07                              | 24.04                                      | 26.41                   | 30.00          | PASS       |
| 802.11ac<br>VHT40 | 142/5710                       | 11.12                              | 12.10                                      | 11.73                              | 12.71                                      | 15.43                   | 30.00          | PASS       |
|                   | 151/5755                       | 22.68                              | 23.66                                      | 23.38                              | 24.36                                      | 27.03                   | 30.00          | PASS       |
|                   | 159/5795                       | 22.58                              | 23.56                                      | 23.64                              | 24.62                                      | 27.13                   | 30.00          | PASS       |
| 802.11ac<br>VHT80 | 138/5690                       | 0.87                               | 1.87                                       | 2.54                               | 3.54                                       | 5.80                    | 30.00          | PASS       |
|                   | 155/5775                       | 14.84                              | 15.84                                      | 16.84                              | 17.84                                      | 19.97                   | 30.00          | PASS       |
| 802.11ax<br>HE20  | 144/5720                       | 15.07                              | 15.07                                      | 15.42                              | 15.42                                      | 18.26                   | 30.00          | PASS       |
|                   | 149/5745                       | 21.60                              | 21.60                                      | 22.44                              | 22.44                                      | 25.05                   | 30.00          | PASS       |
|                   | 157/5785                       | 21.75                              | 21.75                                      | 22.75                              | 22.75                                      | 25.29                   | 30.00          | PASS       |
|                   | 165/5825                       | 21.85                              | 21.85                                      | 23.06                              | 23.06                                      | 25.51                   | 30.00          | PASS       |
| 802.11ax<br>HE40  | 142/5710                       | 11.38                              | 11.38                                      | 12.38                              | 12.38                                      | 14.92                   | 30.00          | PASS       |
|                   | 151/5755                       | 18.78                              | 18.78                                      | 20.60                              | 20.60                                      | 22.79                   | 30.00          | PASS       |
|                   | 159/5795                       | 18.20                              | 18.20                                      | 20.86                              | 20.86                                      | 22.74                   | 30.00          | PASS       |
| 802.11ax<br>HE80  | 138/5690                       | 5.74                               | 5.74                                       | 6.71                               | 6.71                                       | 9.26                    | 30.00          | PASS       |
|                   | 155/5775                       | 17.29                              | 17.29                                      | 19.54                              | 19.54                                      | 21.57                   | 30.00          | PASS       |

Note: 1. For Total Power, according to KDB 662911 D01 Multiple Transmitter Output v02r01 1),

The Total Power =  $10\log(10^{(\text{Power antenna1 in dBm}/10)} + 10^{(\text{Power antenna2 in dBm}/10)})$ .

2. The manufacturer declared the transmitter output signals is CDD mode And  $N_{ss}=1$ . According to KDB 662911 D01

Multiple Transmitter Output v02r01 F)2)f(i): If all antennas have the same gain, Directional gain =  $G_{ANT} + \text{Array Gain}$ ,

For power measurements on IEEE 802.11 devices,

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

Array Gain = 0 dB (i.e., no array gain) for channel widths  $\geq 40$  MHz for any  $N_{\text{ANT}}$ ;

Array Gain =  $5 \log(N_{\text{ANT}}/N_{\text{SS}})$  dB or 3 dB, whichever is less, for 20-MHz channel widths with  $N_{\text{ANT}} \geq 5$ .

So directional gain =  $G_{\text{ANT}} + \text{Array Gain} = 5.28 + 0 = 5.28 \text{ dBi} < 6 \text{ dBi}$ . So the power limit is 30dBm.



# Beamforming

## U-NII-1

| Test Mode         | Channel/<br>Frequency<br>(MHz) | MIMO Antenna 1                     |                                            | MIMO Antenna 2                     |                                            | Total<br>Power<br>(dBm) | Limit<br>(dBm) | Conclusion |
|-------------------|--------------------------------|------------------------------------|--------------------------------------------|------------------------------------|--------------------------------------------|-------------------------|----------------|------------|
|                   |                                | Average Power<br>Measured<br>(dBm) | Average Power<br>with duty factor<br>(dBm) | Average Power<br>Measured<br>(dBm) | Average Power<br>with duty factor<br>(dBm) |                         |                |            |
| 802.11a           | 36/5180                        | 6.72                               | 6.89                                       | 9.33                               | 9.50                                       | 11.40                   | 22.04          | PASS       |
|                   | 40/5200                        | 6.71                               | 6.88                                       | 9.58                               | 9.75                                       | 11.55                   | 22.04          | PASS       |
|                   | 48/5240                        | 7.64                               | 7.81                                       | 10.41                              | 10.58                                      | 12.42                   | 22.04          | PASS       |
| 802.11n<br>HT20   | 36/5180                        | 6.29                               | 7.26                                       | 9.44                               | 10.41                                      | 12.12                   | 22.04          | PASS       |
|                   | 40/5200                        | 6.68                               | 7.65                                       | 9.55                               | 10.52                                      | 12.33                   | 22.04          | PASS       |
|                   | 48/5240                        | 6.35                               | 7.32                                       | 9.40                               | 10.37                                      | 12.12                   | 22.04          | PASS       |
| 802.11n<br>HT40   | 38/5190                        | 9.25                               | 9.25                                       | 12.04                              | 12.04                                      | 13.87                   | 22.04          | PASS       |
|                   | 46/5230                        | 9.36                               | 9.36                                       | 11.73                              | 11.73                                      | 13.71                   | 22.04          | PASS       |
| 802.11ac<br>VHT20 | 36/5180                        | 6.62                               | 7.59                                       | 9.30                               | 10.27                                      | 12.14                   | 22.04          | PASS       |
|                   | 40/5200                        | 6.50                               | 7.47                                       | 9.60                               | 10.57                                      | 12.30                   | 22.04          | PASS       |
|                   | 48/5240                        | 6.37                               | 7.34                                       | 8.79                               | 9.76                                       | 11.73                   | 22.04          | PASS       |
| 802.11ac<br>VHT40 | 38/5190                        | 8.95                               | 9.93                                       | 12.44                              | 13.42                                      | 15.03                   | 22.04          | PASS       |
|                   | 46/5230                        | 9.06                               | 10.04                                      | 11.94                              | 12.92                                      | 14.73                   | 22.04          | PASS       |
| 802.11ac<br>VHT80 | 42/5210                        | 8.19                               | 9.19                                       | 11.19                              | 12.19                                      | 13.95                   | 22.04          | PASS       |
| 802.11ax<br>HE20  | 36/5180                        | 6.09                               | 6.09                                       | 9.16                               | 9.16                                       | 10.90                   | 22.04          | PASS       |
|                   | 40/5200                        | 6.26                               | 6.26                                       | 9.50                               | 9.50                                       | 11.19                   | 22.04          | PASS       |
|                   | 48/5240                        | 6.53                               | 6.53                                       | 9.18                               | 9.18                                       | 11.06                   | 22.04          | PASS       |
| 802.11ax<br>HE40  | 38/5190                        | 9.04                               | 9.04                                       | 11.67                              | 11.67                                      | 13.56                   | 22.04          | PASS       |
|                   | 46/5230                        | 8.75                               | 8.75                                       | 11.63                              | 11.63                                      | 13.44                   | 22.04          | PASS       |
| 802.11ax<br>HE80  | 42/5210                        | 8.25                               | 8.25                                       | 10.91                              | 10.91                                      | 12.79                   | 22.04          | PASS       |

Note: 1. For Total Power, according to KDB 662911 D01 Multiple Transmitter Output v02r01 1),

The Total Power =  $10\log(10^{(\text{Power antenna1 in dBm}/10)} + 10^{(\text{Power antenna2 in dBm}/10)})$ .

2. Direction gain calculation according to KDB662911 D01 Multiple Transmitter Output v02r01 F)2)e(i): If all antennas have the same gain, directional gain =  $G_{\text{ANT}} + 10 \log(N_{\text{ANT}}/N_{\text{ss}}) = 4.95 + 10\log(2/1) = 7.96 \text{ dBi} > 6\text{dBi}$ . So the limit is  $24 - (7.96 - 6) = 22.04 \text{ dBm}$ .

## U-NII-2A

| Test Mode         | Channel/<br>Frequency<br>(MHz) | MIMO Antenna 1                     |                                            | MIMO Antenna 2                     |                                            | Total<br>Power<br>(dBm) | Limit<br>(dBm) | Conclusion |
|-------------------|--------------------------------|------------------------------------|--------------------------------------------|------------------------------------|--------------------------------------------|-------------------------|----------------|------------|
|                   |                                | Average Power<br>Measured<br>(dBm) | Average Power<br>with duty factor<br>(dBm) | Average Power<br>Measured<br>(dBm) | Average Power<br>with duty factor<br>(dBm) |                         |                |            |
| 802.11a           | 52/5260                        | 13.77                              | 13.94                                      | 15.99                              | 16.16                                      | 18.20                   | 22.10          | PASS       |
|                   | 60/5300                        | 14.05                              | 14.22                                      | 16.85                              | 17.02                                      | 18.85                   | 22.10          | PASS       |
|                   | 64/5320                        | 14.29                              | 14.46                                      | 16.39                              | 16.56                                      | 18.64                   | 22.10          | PASS       |
| 802.11n<br>HT20   | 52/5260                        | 13.19                              | 14.16                                      | 16.41                              | 17.38                                      | 19.07                   | 22.10          | PASS       |
|                   | 60/5300                        | 12.86                              | 13.83                                      | 15.77                              | 16.74                                      | 18.53                   | 22.10          | PASS       |
|                   | 64/5320                        | 13.24                              | 14.21                                      | 15.04                              | 16.01                                      | 18.21                   | 22.10          | PASS       |
| 802.11n<br>HT40   | 54/5270                        | 16.31                              | 16.31                                      | 18.45                              | 18.45                                      | 20.52                   | 22.10          | PASS       |
|                   | 62/5310                        | 17.24                              | 17.24                                      | 17.83                              | 17.83                                      | 20.55                   | 22.10          | PASS       |
| 802.11ac<br>VHT20 | 52/5260                        | 13.66                              | 14.63                                      | 16.23                              | 17.20                                      | 19.11                   | 22.10          | PASS       |
|                   | 60/5300                        | 14.02                              | 14.99                                      | 15.48                              | 16.45                                      | 18.79                   | 22.10          | PASS       |
|                   | 64/5320                        | 14.47                              | 15.44                                      | 15.13                              | 16.10                                      | 18.79                   | 22.10          | PASS       |
| 802.11ac<br>VHT40 | 54/5270                        | 16.24                              | 17.22                                      | 18.53                              | 19.51                                      | 21.52                   | 22.10          | PASS       |
|                   | 62/5310                        | 17.53                              | 18.51                                      | 18.41                              | 19.39                                      | 21.98                   | 22.10          | PASS       |
| 802.11ac<br>VHT80 | 58/5290                        | 12.88                              | 13.88                                      | 14.39                              | 15.39                                      | 17.71                   | 22.10          | PASS       |
| 802.11ax<br>HE20  | 52/5260                        | 13.28                              | 13.28                                      | 16.03                              | 16.03                                      | 17.88                   | 22.10          | PASS       |
|                   | 60/5300                        | 13.69                              | 13.69                                      | 15.42                              | 15.42                                      | 17.65                   | 22.10          | PASS       |
|                   | 64/5320                        | 14.01                              | 14.01                                      | 14.62                              | 14.62                                      | 17.34                   | 22.10          | PASS       |
| 802.11ax<br>HE40  | 54/5270                        | 17.28                              | 17.28                                      | 18.53                              | 18.53                                      | 20.96                   | 22.10          | PASS       |
|                   | 62/5310                        | 12.20                              | 12.20                                      | 13.31                              | 13.31                                      | 15.80                   | 22.10          | PASS       |
| 802.11ax<br>HE80  | 58/5290                        | 13.47                              | 13.47                                      | 15.21                              | 15.21                                      | 17.44                   | 22.10          | PASS       |

Note: 1. For Total Power, according to KDB 662911 D01 Multiple Transmitter Output v02r01 1),

The Total Power =  $10 \log(10^{(\text{Power antenna1 in dBm}/10)} + 10^{(\text{Power antenna2 in dBm}/10)})$ .

2. Direction gain calculation according to KDB662911 D01 Multiple Transmitter Output v02r01 F)2)e)(i): If all antennas have the same gain, directional gain =  $G_{\text{ANT}} + 10 \log(N_{\text{ANT}}/N_{\text{ss}}) = 4.89 + 10 \log(2/1) = 7.90 \text{ dBi} > 6 \text{ dBi}$ . So the limit is  $24 - (7.90 - 6) = 22.1 \text{ dBm}$ .

## U-NII-2C

| Test Mode         | Channel/<br>Frequency<br>(MHz) | MIMO Antenna 1                     |                                            | MIMO Antenna 2                     |                                            | Total<br>Power<br>(dBm) | Limit<br>(dBm) | Conclusion |
|-------------------|--------------------------------|------------------------------------|--------------------------------------------|------------------------------------|--------------------------------------------|-------------------------|----------------|------------|
|                   |                                | Average Power<br>Measured<br>(dBm) | Average Power<br>with duty factor<br>(dBm) | Average Power<br>Measured<br>(dBm) | Average Power<br>with duty factor<br>(dBm) |                         |                |            |
| 802.11a           | 100/5500                       | 16.26                              | 16.43                                      | 15.36                              | 15.53                                      | 19.02                   | 22.05          | PASS       |
|                   | 120/5600                       | 15.53                              | 15.70                                      | 14.91                              | 15.08                                      | 18.41                   | 22.05          | PASS       |
|                   | 140/5700                       | 15.31                              | 15.48                                      | 15.33                              | 15.50                                      | 18.50                   | 22.05          | PASS       |
|                   | 144/5720                       | 14.46                              | 14.63                                      | 14.73                              | 14.90                                      | 17.77                   | 22.03          | PASS       |
| 802.11n<br>HT20   | 100/5500                       | 15.19                              | 16.16                                      | 14.29                              | 15.26                                      | 18.74                   | 22.05          | PASS       |
|                   | 120/5600                       | 15.05                              | 16.02                                      | 14.66                              | 15.63                                      | 18.84                   | 22.05          | PASS       |
|                   | 140/5700                       | 14.43                              | 15.40                                      | 14.30                              | 15.27                                      | 18.35                   | 22.05          | PASS       |
|                   | 144/5720                       | 14.26                              | 15.23                                      | 14.28                              | 15.25                                      | 18.25                   | 22.05          | PASS       |
| 802.11n<br>HT40   | 102/5510                       | 13.47                              | 13.47                                      | 13.41                              | 17.12                                      | 18.68                   | 22.05          | PASS       |
|                   | 118/5590                       | 17.93                              | 17.93                                      | 17.45                              | 17.45                                      | 20.71                   | 22.05          | PASS       |
|                   | 134/5670                       | 14.95                              | 14.95                                      | 15.10                              | 15.10                                      | 18.03                   | 22.05          | PASS       |
|                   | 142/5710                       | 17.92                              | 17.92                                      | 17.66                              | 17.66                                      | 20.80                   | 22.05          | PASS       |
| 802.11ac<br>VHT20 | 100/5500                       | 15.52                              | 16.49                                      | 13.91                              | 14.88                                      | 18.77                   | 22.05          | PASS       |
|                   | 120/5600                       | 15.49                              | 16.46                                      | 14.85                              | 15.82                                      | 19.16                   | 22.05          | PASS       |
|                   | 140/5700                       | 15.49                              | 16.46                                      | 15.53                              | 16.50                                      | 19.49                   | 22.05          | PASS       |
|                   | 144/5720                       | 14.40                              | 15.37                                      | 14.52                              | 15.49                                      | 18.44                   | 22.05          | PASS       |
| 802.11ac<br>VHT40 | 102/5510                       | 18.10                              | 19.08                                      | 17.12                              | 18.10                                      | 21.63                   | 22.05          | PASS       |
|                   | 118/5590                       | 17.46                              | 18.44                                      | 17.04                              | 18.02                                      | 21.25                   | 22.05          | PASS       |
|                   | 134/5670                       | 17.70                              | 18.68                                      | 17.36                              | 18.34                                      | 21.52                   | 22.05          | PASS       |
|                   | 142/5710                       | 17.79                              | 18.77                                      | 17.79                              | 18.77                                      | 21.78                   | 22.05          | PASS       |
| 802.11ac<br>VHT80 | 122/5610                       | 15.76                              | 16.76                                      | 14.29                              | 15.29                                      | 19.10                   | 22.05          | PASS       |
|                   | 138/5690                       | 15.62                              | 16.62                                      | 16.05                              | 17.05                                      | 19.85                   | 22.05          | PASS       |
| 802.11ax<br>HE20  | 100/5500                       | 14.94                              | 14.94                                      | 16.05                              | 16.05                                      | 18.54                   | 22.05          | PASS       |
|                   | 120/5600                       | 14.90                              | 14.90                                      | 14.79                              | 14.79                                      | 17.85                   | 22.05          | PASS       |
|                   | 140/5700                       | 14.93                              | 14.93                                      | 15.21                              | 15.21                                      | 18.08                   | 22.05          | PASS       |
|                   | 144/5720                       | 14.26                              | 14.26                                      | 14.00                              | 14.00                                      | 17.14                   | 22.05          | PASS       |
| 802.11ax<br>HE40  | 102/5510                       | 12.29                              | 12.29                                      | 11.74                              | 11.74                                      | 15.03                   | 22.05          | PASS       |
|                   | 118/5590                       | 18.11                              | 18.11                                      | 17.99                              | 17.99                                      | 21.06                   | 22.05          | PASS       |
|                   | 134/5670                       | 18.08                              | 18.08                                      | 17.91                              | 17.91                                      | 21.01                   | 22.05          | PASS       |
|                   | 142/5710                       | 17.05                              | 17.05                                      | 16.69                              | 16.69                                      | 19.89                   | 22.05          | PASS       |
| 802.11ax<br>HE80  | 122/5610                       | 18.07                              | 18.07                                      | 18.01                              | 18.01                                      | 21.05                   | 22.05          | PASS       |
|                   | 138/5690                       | 18.01                              | 18.01                                      | 18.06                              | 18.06                                      | 21.04                   | 22.05          | PASS       |

Note: 1. For Total Power, according to KDB 662911 D01 Multiple Transmitter Output v02r01 1),

The Total Power =  $10\log(10^{(\text{Power antenna1 in dBm}/10)} + 10^{(\text{Power antenna2 in dBm}/10)})$ .

2. Direction gain calculation according to KDB662911 D01 Multiple Transmitter Output v02r01 F)2)e)(i): If all antennas have the same gain, directional gain =  $G_{\text{ANT}} + 10 \log(N_{\text{ANT}}/N_{\text{ss}}) = 4.94 + 10\log(2/1) = 7.95 \text{ dBi} > 6\text{dBi}$ . So the limit is  $24 - (7.95 - 6) = 22.05 \text{ dBm}$ .

## U-NII-3

| Test Mode         | Channel/<br>Frequency<br>(MHz) | MIMO Antenna 1                     |                                            | MIMO Antenna 2                     |                                            | Total<br>Power<br>(dBm) | Limit<br>(dBm) | Conclusion |
|-------------------|--------------------------------|------------------------------------|--------------------------------------------|------------------------------------|--------------------------------------------|-------------------------|----------------|------------|
|                   |                                | Average Power<br>Measured<br>(dBm) | Average Power<br>with duty factor<br>(dBm) | Average Power<br>Measured<br>(dBm) | Average Power<br>with duty factor<br>(dBm) |                         |                |            |
| 802.11a           | 144/5720                       | 10.23                              | 10.40                                      | 11.04                              | 11.21                                      | 13.84                   | 27.71          | PASS       |
|                   | 149/5745                       | 22.97                              | 23.14                                      | 23.70                              | 23.87                                      | 26.53                   | 27.71          | PASS       |
|                   | 157/5785                       | 23.11                              | 23.28                                      | 24.01                              | 24.18                                      | 26.76                   | 27.71          | PASS       |
|                   | 165/5825                       | 19.44                              | 19.61                                      | 20.71                              | 20.88                                      | 23.30                   | 27.71          | PASS       |
| 802.11n<br>HT20   | 144/5720                       | 11.06                              | 12.03                                      | 12.78                              | 13.75                                      | 15.99                   | 27.71          | PASS       |
|                   | 149/5745                       | 18.28                              | 19.25                                      | 20.15                              | 21.12                                      | 23.29                   | 27.71          | PASS       |
|                   | 157/5785                       | 22.08                              | 23.05                                      | 23.03                              | 24.00                                      | 26.56                   | 27.71          | PASS       |
|                   | 165/5825                       | 21.86                              | 22.83                                      | 23.49                              | 24.46                                      | 26.73                   | 27.71          | PASS       |
| 802.11n<br>HT40   | 142/5710                       | 8.31                               | 8.31                                       | 9.51                               | 9.51                                       | 11.96                   | 27.71          | PASS       |
|                   | 151/5755                       | 16.17                              | 16.17                                      | 17.82                              | 17.82                                      | 20.08                   | 27.71          | PASS       |
|                   | 159/5795                       | 17.14                              | 17.14                                      | 19.27                              | 19.27                                      | 21.34                   | 27.71          | PASS       |
| 802.11ac<br>VHT20 | 144/5720                       | 15.61                              | 16.58                                      | 15.01                              | 15.98                                      | 19.30                   | 27.71          | PASS       |
|                   | 149/5745                       | 22.24                              | 23.21                                      | 22.65                              | 23.62                                      | 26.43                   | 27.71          | PASS       |
|                   | 157/5785                       | 21.82                              | 22.79                                      | 22.87                              | 23.84                                      | 26.36                   | 27.71          | PASS       |
|                   | 165/5825                       | 21.68                              | 22.65                                      | 23.07                              | 24.04                                      | 26.41                   | 27.71          | PASS       |
| 802.11ac<br>VHT40 | 142/5710                       | 11.12                              | 12.10                                      | 11.73                              | 12.71                                      | 15.43                   | 27.71          | PASS       |
|                   | 151/5755                       | 22.68                              | 23.66                                      | 23.38                              | 24.36                                      | 27.03                   | 27.71          | PASS       |
|                   | 159/5795                       | 22.58                              | 23.56                                      | 23.64                              | 24.62                                      | 27.13                   | 27.71          | PASS       |
| 802.11ac<br>VHT80 | 138/5690                       | 0.87                               | 1.87                                       | 2.54                               | 3.54                                       | 5.80                    | 27.71          | PASS       |
|                   | 155/5775                       | 14.84                              | 15.84                                      | 16.84                              | 17.84                                      | 19.97                   | 27.71          | PASS       |
| 802.11ax<br>HE20  | 144/5720                       | 15.07                              | 15.07                                      | 15.42                              | 15.42                                      | 18.26                   | 27.71          | PASS       |
|                   | 149/5745                       | 21.60                              | 21.60                                      | 22.44                              | 22.44                                      | 25.05                   | 27.71          | PASS       |
|                   | 157/5785                       | 21.75                              | 21.75                                      | 22.75                              | 22.75                                      | 25.29                   | 27.71          | PASS       |
|                   | 165/5825                       | 21.85                              | 21.85                                      | 23.06                              | 23.06                                      | 25.51                   | 27.71          | PASS       |
| 802.11ax<br>HE40  | 142/5710                       | 11.38                              | 11.38                                      | 12.38                              | 12.38                                      | 14.92                   | 27.71          | PASS       |
|                   | 151/5755                       | 18.78                              | 18.78                                      | 20.60                              | 20.60                                      | 22.79                   | 27.71          | PASS       |
|                   | 159/5795                       | 18.20                              | 18.20                                      | 20.86                              | 20.86                                      | 22.74                   | 27.71          | PASS       |
| 802.11ax<br>HE80  | 138/5690                       | 5.74                               | 5.74                                       | 6.71                               | 6.71                                       | 9.26                    | 27.71          | PASS       |
|                   | 155/5775                       | 17.29                              | 17.29                                      | 19.54                              | 19.54                                      | 21.57                   | 27.71          | PASS       |

Note: 1. For Total Power, according to KDB 662911 D01 Multiple Transmitter Output v02r01 1),

The Total Power =  $10\log(10^{(\text{Power antenna1 in dBm}/10)} + 10^{(\text{Power antenna2 in dBm}/10)})$ .

2. Direction gain calculation according to KDB662911 D01 Multiple Transmitter Output v02r01 F)2)e)(i): If all antennas have the same gain, directional gain =  $G_{\text{ANT}} + 10 \log(N_{\text{ANT}}/N_{\text{ss}}) = 5.28 + 10\log(2/1) = 8.29 \text{ dBi} > 6\text{dBi}$ . So the limit is  $30 - (8.29 - 6) = 27.71 \text{ dBm}$ .

### 5.3. Frequency Stability

#### Ambient condition

| Temperature | Relative humidity | Pressure         |
|-------------|-------------------|------------------|
| 15°C ~ 35°C | 20% ~ 80%         | 86 kPa ~ 106 kPa |

#### Method of Measurement

##### 1. Frequency stability with respect to ambient temperature

- a) Supply the EUT with a nominal ac voltage or install a new or fully charged battery in the EUT. If possible, a dummy load shall be connected to the EUT because an antenna near the metallic walls of an environmental test chamber could affect the output frequency of the EUT. If the EUT is equipped with a permanently attached, adjustable-length antenna, then the EUT shall be placed in the center of the chamber with the antenna adjusted to the shortest length possible. Turn ON the EUT and tune it to one of the number of frequencies shown in 5.6.
- b) Couple the unlicensed wireless device output to the measuring instrument by connecting an antenna to the measuring instrument with a suitable length of coaxial cable and placing the measuring antenna near the EUT (e.g., 15 cm away), or by connecting a dummy load to the measuring instrument, through an attenuator if necessary.
- c) Adjust the location of the measurement antenna and the controls on the measurement instrument to obtain a suitable signal level (i.e., a level that will not overload the measurement instrument but is strong enough to allow measurement of the operating or fundamental frequency of the EUT).
- d) Turn the EUT OFF and place it inside the environmental temperature chamber. For devices that have oscillator heaters, energize only the heater circuit.
- e) Set the temperature control on the chamber to the highest specified in the regulatory requirements for the type of device and allow the oscillator heater and the chamber temperature to stabilize.
- f) While maintaining a constant temperature inside the environmental chamber, turn the EUT ON and record the operating frequency at startup, and at 2 minutes, 5 minutes, and 10 minutes after the EUT is energized. Four measurements in total are made.
- g) Measure the frequency at each of frequencies specified in 5.6.
- h) Switch OFF the EUT but do not switch OFF the oscillator heater.
- i) Lower the chamber temperature by not more than 10°C, and allow the temperature inside the chamber to stabilize.
- j) Repeat step f) through step i) down to the lowest specified temperature.

##### 2. Frequency stability when varying supply voltage

Unless otherwise specified, these tests shall be made at ambient room temperature (+15°C to +25 °C). An antenna shall be connected to the antenna output terminals of the EUT if possible. If the EUT is equipped with or uses an adjustable-length antenna, then it shall be fully extended.

- a) Supply the EUT with nominal voltage or install a new or fully charged battery in the EUT. Turn ON the EUT and couple its output to a frequency counter or other frequency-measuring instrument.

- b) Tune the EUT to one of the number of frequencies required in 5.6. Adjust the location of the measurement antenna and the controls on the measurement instrument to obtain a suitable signal level (i.e., a level that will not overload the measurement instrument but is strong enough to allow measurement of the operating or fundamental frequency of the EUT).
- c) Measure the frequency at each of the frequencies specified in 5.6.
- d) Repeat the above procedure at 85% and 115% of the nominal supply voltage.

**Limit**

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.

**Measurement Uncertainty**

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor  $k = 2$ ,  $U = 936\text{Hz}$

## Test Results

| Voltage<br>(V) | Temperature<br>(°C) | U-NII-1 Test Results |             |             |             |
|----------------|---------------------|----------------------|-------------|-------------|-------------|
|                |                     | 5200MHz              |             |             |             |
|                |                     | 1min                 | 2min        | 5min        | 10min       |
| 24             | -30                 | 5199.995351          | 5199.987609 | 5199.983663 | 5199.981936 |
| 24             | -20                 | 5200.000747          | 5199.987469 | 5199.976684 | 5199.981553 |
| 24             | -10                 | 5199.993488          | 5199.986633 | 5199.972068 | 5199.978143 |
| 24             | 0                   | 5199.995275          | 5199.981828 | 5199.968084 | 5199.971751 |
| 24             | 10                  | 5199.990229          | 5199.978028 | 5199.962631 | 5199.964039 |
| 24             | 20                  | 5199.983655          | 5199.972338 | 5199.954469 | 5199.961135 |
| 24             | 30                  | 5199.976908          | 5199.964089 | 5199.945742 | 5199.953887 |
| 24             | 40                  | 5199.970597          | 5199.963569 | 5199.944790 | 5199.949032 |
| 24             | 50                  | 5199.961408          | 5199.963502 | 5199.940370 | 5199.946333 |
| 9              | 20                  | 5199.957457          | 5199.962686 | 5199.939943 | 5199.941290 |
| 36             | 20                  | 5199.955308          | 5199.957489 | 5199.934257 | 5199.940141 |
| Max. ΔMHz      |                     | -0.044692            | -0.042511   | -0.065743   | -0.059859   |
| PPM            |                     | -8.594615            | -8.175192   | -12.642885  | -11.511346  |

| Voltage<br>(V) | Temperature<br>(°C) | U-NII-2A Test Results |             |             |             |
|----------------|---------------------|-----------------------|-------------|-------------|-------------|
|                |                     | 5300MHz               |             |             |             |
|                |                     | 1min                  | 2min        | 5min        | 10min       |
| 24             | -30                 | 5300.007958           | 5300.007404 | 5300.001746 | 5299.993205 |
| 24             | -20                 | 5300.001228           | 5300.004911 | 5299.994278 | 5299.992084 |
| 24             | -10                 | 5299.995967           | 5299.999502 | 5299.987539 | 5299.991647 |
| 24             | 0                   | 5299.993530           | 5299.996332 | 5299.992698 | 5299.991626 |
| 24             | 10                  | 5299.989595           | 5299.992990 | 5299.984049 | 5299.984740 |
| 24             | 20                  | 5299.985399           | 5299.983477 | 5299.979630 | 5299.980981 |
| 24             | 30                  | 5299.979973           | 5299.981476 | 5299.970124 | 5299.973964 |
| 24             | 40                  | 5299.978026           | 5299.979200 | 5299.967026 | 5299.972374 |
| 24             | 50                  | 5299.976891           | 5299.977415 | 5299.965360 | 5299.970931 |
| 9              | 20                  | 5299.974549           | 5299.967625 | 5299.955940 | 5299.966799 |
| 36             | 20                  | 5299.966793           | 5299.966058 | 5299.952924 | 5299.961864 |
| Max. ΔMHz      |                     | -0.033207             | -0.033942   | -0.047076   | -0.038136   |
| PPM            |                     | -6.265472             | -6.404151   | -8.882264   | -7.195472   |

| Voltage<br>(V) | Temperature<br>(°C) | U-NII-2C Test Results |             |             |             |
|----------------|---------------------|-----------------------|-------------|-------------|-------------|
|                |                     | 5580MHz               |             |             |             |
|                |                     | 1min                  | 2min        | 5min        | 10min       |
| 24             | -30                 | 5579.992198           | 5579.984371 | 5579.979611 | 5579.969679 |
| 24             | -20                 | 5579.990154           | 5579.974964 | 5579.977573 | 5579.968983 |
| 24             | -10                 | 5579.983665           | 5579.965122 | 5579.968532 | 5579.960229 |
| 24             | 0                   | 5579.980956           | 5579.969890 | 5579.969618 | 5579.959717 |
| 24             | 10                  | 5579.979439           | 5579.961064 | 5579.962453 | 5579.957289 |
| 24             | 20                  | 5579.969709           | 5579.951157 | 5579.958059 | 5579.954015 |
| 24             | 30                  | 5579.962640           | 5579.944927 | 5579.953086 | 5579.948220 |
| 24             | 40                  | 5579.956697           | 5579.936045 | 5579.946540 | 5579.947875 |
| 24             | 50                  | 5579.954925           | 5579.928113 | 5579.941152 | 5579.943231 |
| 9              | 20                  | 5579.948156           | 5579.925976 | 5579.934635 | 5579.939270 |
| 36             | 20                  | 5579.945058           | 5579.922660 | 5579.927429 | 5579.936375 |
| Max. ΔMHz      |                     | -0.054942             | -0.077340   | -0.072571   | -0.063625   |
| PPM            |                     | -9.846237             | -13.860215  | -13.005556  | -11.402330  |

| Voltage<br>(V) | Temperature<br>(°C) | U-NII-3 Test Results |             |             |             |
|----------------|---------------------|----------------------|-------------|-------------|-------------|
|                |                     | 5785MHz              |             |             |             |
|                |                     | 1min                 | 2min        | 5min        | 10min       |
| 24             | -30                 | 5785.001799          | 5784.993796 | 5784.983940 | 5784.978491 |
| 24             | -20                 | 5784.996112          | 5784.989732 | 5784.975466 | 5784.977306 |
| 24             | -10                 | 5784.991691          | 5784.988813 | 5784.974117 | 5784.974044 |
| 24             | 0                   | 5784.993621          | 5784.987300 | 5784.969673 | 5784.969738 |
| 24             | 10                  | 5784.983887          | 5784.980607 | 5784.961057 | 5784.969575 |
| 24             | 20                  | 5784.975077          | 5784.978643 | 5784.953467 | 5784.964835 |
| 24             | 30                  | 5784.974477          | 5784.976644 | 5784.950686 | 5784.960513 |
| 24             | 40                  | 5784.967251          | 5784.972336 | 5784.941460 | 5784.955493 |
| 24             | 50                  | 5784.963669          | 5784.964570 | 5784.938606 | 5784.950153 |
| 9              | 20                  | 5784.957954          | 5784.958082 | 5784.933390 | 5784.942798 |
| 36             | 20                  | 5784.954761          | 5784.955626 | 5784.930686 | 5784.933754 |
| Max. ΔMHz      |                     | -0.045239            | -0.044374   | -0.069314   | -0.066246   |
| PPM            |                     | -7.820052            | -7.670527   | -11.981677  | -11.451340  |



## 5.4. Power Spectral Density

### Ambient condition

| Temperature | Relative humidity | Pressure         |
|-------------|-------------------|------------------|
| 15°C ~ 35°C | 20% ~ 80%         | 86 kPa ~ 106 kPa |

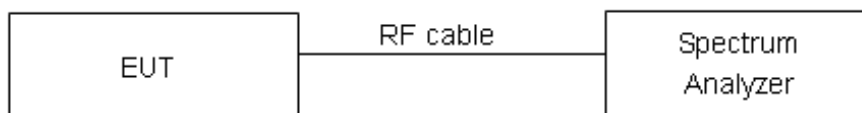
### Method of Measurement

The EUT was connected to the spectrum analyzer through an external attenuator (20dB) and a known loss cable.

Set RBW = 1MHz, VBW = 3MHz for the band 5.150-5.250GHz, 5.250-5.350GHz, 5.470-5.725GHz.  
Set RBW = 470kHz, VBW = 1.5MHz for the band 5.725-5.850GHz

The conducted PSD is measured at each antenna port. The measured results at the various antenna ports are then summed mathematically.

### Test setup



### Limits

Rule FCC Part 15.407(a)(1)/ FCC Part 15.407(a)(2) / FCC Part 15.407(a)(3)

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

For client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For the band 5.725-5.85 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the

amount in dB that the directional gain of the antenna exceeds 6 dBi.

| Frequency Bands/GHz      | Limits       |
|--------------------------|--------------|
| 5.15-5.25                | 17/11dBm/MHz |
| 5.25-5.35 and 5.47-5.725 | 11dBm/MHz    |
| 5.725-5.85               | 30dBm/500kHz |

### Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor  $k = 2$ ,  $U = 0.75\text{dB}$ .

**Test Results:**
**SISO Antenna 1**
**U-NII-1**

| Mode                                                                  | Channel/<br>Frequency<br>(MHz) | Read Value<br>(dBm /MHz) | Power Spectral<br>Density<br>(dBm /MHz) | Limit<br>(dBm /MHz) | Conclusion |
|-----------------------------------------------------------------------|--------------------------------|--------------------------|-----------------------------------------|---------------------|------------|
| 802.11a                                                               | 36/5180                        | 4.47                     | 4.64                                    | 11                  | PASS       |
|                                                                       | 40/5200                        | 2.41                     | 2.58                                    | 11                  | PASS       |
|                                                                       | 48/5240                        | 4.47                     | 4.64                                    | 11                  | PASS       |
| 802.11n<br>HT20                                                       | 36/5180                        | 3.11                     | 4.08                                    | 11                  | PASS       |
|                                                                       | 40/5200                        | 1.49                     | 2.46                                    | 11                  | PASS       |
|                                                                       | 48/5240                        | 3.03                     | 4.00                                    | 11                  | PASS       |
| 802.11n<br>HT40                                                       | 38/5190                        | 1.18                     | 1.18                                    | 11                  | PASS       |
|                                                                       | 46/5230                        | 1.16                     | 1.16                                    | 11                  | PASS       |
| 802.11ac<br>VHT20                                                     | 36/5180                        | 2.98                     | 3.95                                    | 11                  | PASS       |
|                                                                       | 40/5200                        | 1.15                     | 2.12                                    | 11                  | PASS       |
|                                                                       | 48/5240                        | 1.07                     | 2.04                                    | 11                  | PASS       |
| 802.11ac<br>VHT40                                                     | 38/5190                        | 1.19                     | 2.17                                    | 11                  | PASS       |
|                                                                       | 46/5230                        | 1.12                     | 2.10                                    | 11                  | PASS       |
| 802.11ac<br>VHT80                                                     | 42/5210                        | -0.19                    | 0.81                                    | 11                  | PASS       |
| 802.11ax<br>HE20                                                      | 36/5180                        | 2.66                     | 2.66                                    | 11                  | PASS       |
|                                                                       | 40/5200                        | 0.97                     | 0.97                                    | 11                  | PASS       |
|                                                                       | 48/5240                        | 2.98                     | 2.98                                    | 11                  | PASS       |
| 802.11ax<br>HE40                                                      | 38/5190                        | 0.77                     | 0.77                                    | 11                  | PASS       |
|                                                                       | 46/5230                        | 0.40                     | 0.40                                    | 11                  | PASS       |
| 802.11ax<br>HE80                                                      | 42/5210                        | -0.74                    | -0.74                                   | 11                  | PASS       |
| Note: Power Spectral Density =Read Value+Duty cycle correction factor |                                |                          |                                         |                     |            |

**U-NII-2A**

| Mode                                                                  | Channel /Frequency (MHz) | Read Value (dBm /MHz) | Power Spectral Density (dBm /MHz) | Limit (dBm /MHz) | Conclusion |
|-----------------------------------------------------------------------|--------------------------|-----------------------|-----------------------------------|------------------|------------|
| 802.11a                                                               | 52/5260                  | 5.06                  | 5.23                              | 11               | PASS       |
|                                                                       | 60/5300                  | 5.24                  | 5.41                              | 11               | PASS       |
|                                                                       | 64/5320                  | 5.44                  | 5.61                              | 11               | PASS       |
| 802.11n HT20                                                          | 52/5260                  | 3.52                  | 4.49                              | 11               | PASS       |
|                                                                       | 60/5300                  | 4.34                  | 5.31                              | 11               | PASS       |
|                                                                       | 64/5320                  | 3.86                  | 4.83                              | 11               | PASS       |
| 802.11n HT40                                                          | 54/5270                  | 3.71                  | 3.71                              | 11               | PASS       |
|                                                                       | 62/5310                  | -0.45                 | -0.45                             | 11               | PASS       |
| 802.11ac VHT20                                                        | 52/5260                  | 9.37                  | 10.34                             | 11               | PASS       |
|                                                                       | 60/5300                  | 9.00                  | 9.97                              | 11               | PASS       |
|                                                                       | 64/5320                  | 9.42                  | 10.39                             | 11               | PASS       |
| 802.11ac VHT40                                                        | 54/5270                  | 8.76                  | 9.74                              | 11               | PASS       |
|                                                                       | 62/5310                  | 9.46                  | 10.44                             | 11               | PASS       |
| 802.11ac VHT80                                                        | 58/5290                  | -3.46                 | -2.46                             | 11               | PASS       |
| 802.11ax HE20                                                         | 52/5260                  | 3.42                  | 3.42                              | 11               | PASS       |
|                                                                       | 60/5300                  | 3.40                  | 3.40                              | 11               | PASS       |
|                                                                       | 64/5320                  | 3.71                  | 3.71                              | 11               | PASS       |
| 802.11ax HE40                                                         | 54/5270                  | 3.04                  | 3.04                              | 11               | PASS       |
|                                                                       | 62/5310                  | -1.33                 | -1.33                             | 11               | PASS       |
| 802.11ax HE80                                                         | 58/5290                  | -2.96                 | -2.96                             | 11               | PASS       |
| Note: Power Spectral Density =Read Value+Duty cycle correction factor |                          |                       |                                   |                  |            |

## U-NII-2C

| Mode                                                                  | Channel /Frequency (MHz) | Read Value (dBm /MHz) | Power Spectral Density (dBm /MHz) | Limit (dBm /MHz) | Conclusion |
|-----------------------------------------------------------------------|--------------------------|-----------------------|-----------------------------------|------------------|------------|
| 802.11a                                                               | 100/5500                 | 9.99                  | 10.16                             | 11               | PASS       |
|                                                                       | 120/5600                 | 8.93                  | 9.10                              | 11               | PASS       |
|                                                                       | 140/5700                 | 9.12                  | 9.29                              | 11               | PASS       |
|                                                                       | 144/5720                 | 9.00                  | 9.17                              | 11               | PASS       |
| 802.11n HT20                                                          | 100/5500                 | 8.91                  | 9.88                              | 11               | PASS       |
|                                                                       | 120/5600                 | 5.91                  | 6.88                              | 11               | PASS       |
|                                                                       | 140/5700                 | 5.21                  | 6.18                              | 11               | PASS       |
|                                                                       | 144/5720                 | 10.00                 | 10.97                             | 11               | PASS       |
| 802.11n HT40                                                          | 102/5510                 | 1.35                  | 1.35                              | 11               | PASS       |
|                                                                       | 118/5590                 | 3.42                  | 3.42                              | 11               | PASS       |
|                                                                       | 134/5670                 | 3.02                  | 3.02                              | 11               | PASS       |
|                                                                       | 142/5710                 | 7.70                  | 7.70                              | 11               | PASS       |
| 802.11ac VHT20                                                        | 100/5500                 | 8.96                  | 9.93                              | 11               | PASS       |
|                                                                       | 120/5600                 | 9.81                  | 10.78                             | 11               | PASS       |
|                                                                       | 140/5700                 | 9.72                  | 10.69                             | 11               | PASS       |
|                                                                       | 144/5720                 | 9.63                  | 10.60                             | 11               | PASS       |
| 802.11ac VHT40                                                        | 102/5510                 | 6.84                  | 7.82                              | 11               | PASS       |
|                                                                       | 118/5590                 | 5.52                  | 6.50                              | 11               | PASS       |
|                                                                       | 134/5670                 | 7.07                  | 8.05                              | 11               | PASS       |
|                                                                       | 142/5710                 | 7.49                  | 8.47                              | 11               | PASS       |
| 802.11ac VHT80                                                        | 122/5610                 | -1.05                 | -0.05                             | 11               | PASS       |
|                                                                       | 138/5690                 | 0.32                  | 1.32                              | 11               | PASS       |
| 802.11ax HE20                                                         | 100/5500                 | 8.80                  | 8.80                              | 11               | PASS       |
|                                                                       | 120/5600                 | 9.37                  | 9.37                              | 11               | PASS       |
|                                                                       | 140/5700                 | 9.62                  | 9.62                              | 11               | PASS       |
|                                                                       | 144/5720                 | 9.42                  | 9.42                              | 11               | PASS       |
| 802.11ax HE40                                                         | 102/5510                 | 0.19                  | 0.19                              | 11               | PASS       |
|                                                                       | 118/5590                 | 4.88                  | 4.88                              | 11               | PASS       |
|                                                                       | 134/5670                 | 6.58                  | 6.58                              | 11               | PASS       |
|                                                                       | 142/5710                 | 7.06                  | 7.06                              | 11               | PASS       |
| 802.11ax HE80                                                         | 122/5610                 | 1.99                  | 1.99                              | 11               | PASS       |
|                                                                       | 138/5690                 | 3.78                  | 3.78                              | 11               | PASS       |
| Note: Power Spectral Density =Read Value+Duty cycle correction factor |                          |                       |                                   |                  |            |

## U-NII-3

| Mode                                                               | Channel /Frequency (MHz) | Read Value (dBm/470kHz) | Power Spectral Density (dBm/500kHz) | Limit (dBm/500kHz) | Conclusion |
|--------------------------------------------------------------------|--------------------------|-------------------------|-------------------------------------|--------------------|------------|
| 802.11a                                                            | 144/5720                 | 4.57                    | 5.01                                | 30                 | PASS       |
|                                                                    | 149/5745                 | 9.53                    | 9.97                                | 30                 | PASS       |
|                                                                    | 157/5785                 | 9.26                    | 9.70                                | 30                 | PASS       |
|                                                                    | 165/5825                 | 6.93                    | 7.37                                | 30                 | PASS       |
| 802.11n HT20                                                       | 144/5720                 | 5.01                    | 6.25                                | 30                 | PASS       |
|                                                                    | 149/5745                 | 5.56                    | 6.80                                | 30                 | PASS       |
|                                                                    | 157/5785                 | 8.00                    | 9.24                                | 30                 | PASS       |
|                                                                    | 165/5825                 | 7.84                    | 9.08                                | 30                 | PASS       |
| 802.11n HT40                                                       | 142/5720                 | 2.03                    | 2.30                                | 30                 | PASS       |
|                                                                    | 151/5755                 | 0.26                    | 0.53                                | 30                 | PASS       |
|                                                                    | 159/5795                 | 1.30                    | 1.57                                | 30                 | PASS       |
| 802.11ac VHT20                                                     | 144/5720                 | 7.81                    | 9.05                                | 30                 | PASS       |
|                                                                    | 149/5745                 | 8.25                    | 9.49                                | 30                 | PASS       |
|                                                                    | 157/5785                 | 8.14                    | 9.38                                | 30                 | PASS       |
|                                                                    | 165/5825                 | 7.94                    | 9.18                                | 30                 | PASS       |
| 802.11ac VHT40                                                     | 142/5710                 | 4.20                    | 5.45                                | 30                 | PASS       |
|                                                                    | 151/5755                 | 5.57                    | 6.82                                | 30                 | PASS       |
|                                                                    | 159/5795                 | 5.70                    | 6.95                                | 30                 | PASS       |
| 802.11ac VHT80                                                     | 138/5690                 | -4.86                   | -3.59                               | 30                 | PASS       |
|                                                                    | 155/5775                 | -3.69                   | -2.42                               | 30                 | PASS       |
| 802.11ax HE20                                                      | 144/5720                 | 7.69                    | 7.96                                | 30                 | PASS       |
|                                                                    | 149/5745                 | 7.81                    | 8.08                                | 30                 | PASS       |
|                                                                    | 157/5785                 | 7.50                    | 7.77                                | 30                 | PASS       |
|                                                                    | 165/5825                 | 7.51                    | 7.78                                | 30                 | PASS       |
| 802.11ax HE40                                                      | 142/5710                 | 4.10                    | 4.37                                | 30                 | PASS       |
|                                                                    | 151/5755                 | 2.76                    | 3.03                                | 30                 | PASS       |
|                                                                    | 159/5795                 | 2.93                    | 3.20                                | 30                 | PASS       |
| 802.11ax HE80                                                      | 138/5690                 | -1.30                   | -1.03                               | 30                 | PASS       |
|                                                                    | 155/5775                 | -1.06                   | -0.79                               | 30                 | PASS       |
| Note: PSD=Read Value+Duty cycle correction factor +10*log(500/470) |                          |                         |                                     |                    |            |

**SISO Antenna 2**
**U-NII-1**

| Mode                                                                  | Channel/<br>Frequency<br>(MHz) | Read Value<br>(dBm /MHz) | Power Spectral<br>Density<br>(dBm /MHz) | Limit<br>(dBm /MHz) | Conclusion |
|-----------------------------------------------------------------------|--------------------------------|--------------------------|-----------------------------------------|---------------------|------------|
| 802.11a                                                               | 36/5180                        | 3.31                     | 3.48                                    | 11                  | PASS       |
|                                                                       | 40/5200                        | 3.66                     | 3.83                                    | 11                  | PASS       |
|                                                                       | 48/5240                        | 3.61                     | 3.78                                    | 11                  | PASS       |
| 802.11n<br>HT20                                                       | 36/5180                        | 1.46                     | 2.43                                    | 11                  | PASS       |
|                                                                       | 40/5200                        | 2.08                     | 3.05                                    | 11                  | PASS       |
|                                                                       | 48/5240                        | 2.19                     | 3.16                                    | 11                  | PASS       |
| 802.11n<br>HT40                                                       | 38/5190                        | 2.05                     | 2.05                                    | 11                  | PASS       |
|                                                                       | 46/5230                        | 2.32                     | 2.32                                    | 11                  | PASS       |
| 802.11ac<br>VHT20                                                     | 36/5180                        | 2.30                     | 3.27                                    | 11                  | PASS       |
|                                                                       | 40/5200                        | 2.15                     | 3.12                                    | 11                  | PASS       |
|                                                                       | 48/5240                        | 2.62                     | 3.59                                    | 11                  | PASS       |
| 802.11ac<br>VHT40                                                     | 38/5190                        | 2.84                     | 3.82                                    | 11                  | PASS       |
|                                                                       | 46/5230                        | 2.57                     | 3.55                                    | 11                  | PASS       |
| 802.11ac<br>VHT80                                                     | 42/5210                        | -0.42                    | 0.58                                    | 11                  | PASS       |
| 802.11ax<br>HE20                                                      | 36/5180                        | 2.29                     | 2.29                                    | 11                  | PASS       |
|                                                                       | 40/5200                        | 2.31                     | 2.31                                    | 11                  | PASS       |
|                                                                       | 48/5240                        | 2.34                     | 2.34                                    | 11                  | PASS       |
| 802.11ax<br>HE40                                                      | 38/5190                        | 1.92                     | 1.92                                    | 11                  | PASS       |
|                                                                       | 46/5230                        | 2.67                     | 2.67                                    | 11                  | PASS       |
| 802.11ax<br>HE80                                                      | 42/5210                        | -0.89                    | -0.89                                   | 11                  | PASS       |
| Note: Power Spectral Density =Read Value+Duty cycle correction factor |                                |                          |                                         |                     |            |

**U-NII-2A**

| Mode                                                                  | Channel /Frequency (MHz) | Read Value (dBm /MHz) | Power Spectral Density (dBm /MHz) | Limit (dBm /MHz) | Conclusion |
|-----------------------------------------------------------------------|--------------------------|-----------------------|-----------------------------------|------------------|------------|
| 802.11a                                                               | 52/5260                  | 8.89                  | 9.06                              | 11               | PASS       |
|                                                                       | 60/5300                  | 9.55                  | 9.72                              | 11               | PASS       |
|                                                                       | 64/5320                  | 9.71                  | 9.88                              | 11               | PASS       |
| 802.11n HT20                                                          | 52/5260                  | 8.98                  | 9.95                              | 11               | PASS       |
|                                                                       | 60/5300                  | 8.54                  | 9.51                              | 11               | PASS       |
|                                                                       | 64/5320                  | 7.85                  | 8.82                              | 11               | PASS       |
| 802.11n HT40                                                          | 54/5270                  | 8.24                  | 8.24                              | 11               | PASS       |
|                                                                       | 62/5310                  | 3.13                  | 3.13                              | 11               | PASS       |
| 802.11ac VHT20                                                        | 52/5260                  | 8.39                  | 9.36                              | 11               | PASS       |
|                                                                       | 60/5300                  | 8.56                  | 9.53                              | 11               | PASS       |
|                                                                       | 64/5320                  | 8.53                  | 9.50                              | 11               | PASS       |
| 802.11ac VHT40                                                        | 54/5270                  | 8.00                  | 8.98                              | 11               | PASS       |
|                                                                       | 62/5310                  | 7.96                  | 8.94                              | 11               | PASS       |
| 802.11ac VHT80                                                        | 58/5290                  | -0.25                 | 0.75                              | 11               | PASS       |
| 802.11ax HE20                                                         | 52/5260                  | 8.56                  | 8.56                              | 11               | PASS       |
|                                                                       | 60/5300                  | 8.42                  | 8.42                              | 11               | PASS       |
|                                                                       | 64/5320                  | 7.83                  | 7.83                              | 11               | PASS       |
| 802.11ax HE40                                                         | 54/5270                  | 7.93                  | 7.93                              | 11               | PASS       |
|                                                                       | 62/5310                  | 2.97                  | 2.97                              | 11               | PASS       |
| 802.11ax HE80                                                         | 58/5290                  | 0.65                  | 0.65                              | 11               | PASS       |
| Note: Power Spectral Density =Read Value+Duty cycle correction factor |                          |                       |                                   |                  |            |



## U-NII-2C

| Mode                                                                  | Channel /Frequency (MHz) | Read Value (dBm /MHz) | Power Spectral Density (dBm /MHz) | Limit (dBm /MHz) | Conclusion |
|-----------------------------------------------------------------------|--------------------------|-----------------------|-----------------------------------|------------------|------------|
| 802.11a                                                               | 100/5500                 | 10.05                 | 10.22                             | 11               | PASS       |
|                                                                       | 120/5600                 | 9.96                  | 10.13                             | 11               | PASS       |
|                                                                       | 140/5700                 | 8.88                  | 9.05                              | 11               | PASS       |
|                                                                       | 144/5720                 | 8.99                  | 9.16                              | 11               | PASS       |
| 802.11n HT20                                                          | 100/5500                 | 9.00                  | 9.97                              | 11               | PASS       |
|                                                                       | 120/5600                 | 9.10                  | 10.07                             | 11               | PASS       |
|                                                                       | 140/5700                 | 7.52                  | 8.49                              | 11               | PASS       |
|                                                                       | 144/5720                 | 9.78                  | 10.75                             | 11               | PASS       |
| 802.11n HT40                                                          | 102/5510                 | 3.54                  | 3.54                              | 11               | PASS       |
|                                                                       | 118/5590                 | 5.27                  | 5.27                              | 11               | PASS       |
|                                                                       | 134/5670                 | 4.65                  | 4.65                              | 11               | PASS       |
|                                                                       | 142/5710                 | 9.70                  | 9.70                              | 11               | PASS       |
| 802.11ac VHT20                                                        | 100/5500                 | 8.68                  | 9.65                              | 11               | PASS       |
|                                                                       | 120/5600                 | 8.65                  | 9.62                              | 11               | PASS       |
|                                                                       | 140/5700                 | 9.32                  | 10.29                             | 11               | PASS       |
|                                                                       | 144/5720                 | 9.92                  | 10.89                             | 11               | PASS       |
| 802.11ac VHT40                                                        | 102/5510                 | 8.59                  | 9.57                              | 11               | PASS       |
|                                                                       | 118/5590                 | 8.22                  | 9.20                              | 11               | PASS       |
|                                                                       | 134/5670                 | 8.93                  | 9.91                              | 11               | PASS       |
|                                                                       | 142/5710                 | 9.18                  | 10.16                             | 11               | PASS       |
| 802.11ac VHT80                                                        | 122/5610                 | 1.37                  | 2.37                              | 11               | PASS       |
|                                                                       | 138/5690                 | 2.28                  | 3.28                              | 11               | PASS       |
| 802.11ax HE20                                                         | 100/5500                 | 8.60                  | 8.60                              | 11               | PASS       |
|                                                                       | 120/5600                 | 8.39                  | 8.39                              | 11               | PASS       |
|                                                                       | 140/5700                 | 9.63                  | 9.63                              | 11               | PASS       |
|                                                                       | 144/5720                 | 9.47                  | 9.47                              | 11               | PASS       |
| 802.11ax HE40                                                         | 102/5510                 | 2.19                  | 2.19                              | 11               | PASS       |
|                                                                       | 118/5590                 | 7.82                  | 7.82                              | 11               | PASS       |
|                                                                       | 134/5670                 | 8.46                  | 8.46                              | 11               | PASS       |
|                                                                       | 142/5710                 | 8.79                  | 8.79                              | 11               | PASS       |
| 802.11ax HE80                                                         | 122/5610                 | 5.02                  | 5.02                              | 11               | PASS       |
|                                                                       | 138/5690                 | 5.42                  | 5.42                              | 11               | PASS       |
| Note: Power Spectral Density =Read Value+Duty cycle correction factor |                          |                       |                                   |                  |            |

## U-NII-3

| Mode                                                               | Channel /Frequency (MHz) | Read Value (dBm/470kHz) | Power Spectral Density (dBm/500kHz) | Limit (dBm/500kHz) | Conclusion |
|--------------------------------------------------------------------|--------------------------|-------------------------|-------------------------------------|--------------------|------------|
| 802.11a                                                            | 144/5720                 | 6.68                    | 7.12                                | 30                 | PASS       |
|                                                                    | 149/5745                 | 10.71                   | 11.15                               | 30                 | PASS       |
|                                                                    | 157/5785                 | 10.98                   | 11.42                               | 30                 | PASS       |
|                                                                    | 165/5825                 | 9.47                    | 9.91                                | 30                 | PASS       |
| 802.11n HT20                                                       | 144/5720                 | 6.73                    | 7.97                                | 30                 | PASS       |
|                                                                    | 149/5745                 | 8.33                    | 9.57                                | 30                 | PASS       |
|                                                                    | 157/5785                 | 9.83                    | 11.07                               | 30                 | PASS       |
|                                                                    | 165/5825                 | 10.08                   | 11.32                               | 30                 | PASS       |
| 802.11n HT40                                                       | 142/5720                 | 3.99                    | 4.26                                | 30                 | PASS       |
|                                                                    | 151/5755                 | 7.12                    | 7.39                                | 30                 | PASS       |
|                                                                    | 159/5795                 | 7.13                    | 7.40                                | 30                 | PASS       |
| 802.11ac VHT20                                                     | 144/5720                 | 8.29                    | 9.53                                | 30                 | PASS       |
|                                                                    | 149/5745                 | 9.41                    | 10.65                               | 30                 | PASS       |
|                                                                    | 157/5785                 | 9.07                    | 10.31                               | 30                 | PASS       |
|                                                                    | 165/5825                 | 9.51                    | 10.75                               | 30                 | PASS       |
| 802.11ac VHT40                                                     | 142/5710                 | 5.08                    | 6.33                                | 30                 | PASS       |
|                                                                    | 151/5755                 | 6.86                    | 8.11                                | 30                 | PASS       |
|                                                                    | 159/5795                 | 6.83                    | 8.08                                | 30                 | PASS       |
| 802.11ac VHT80                                                     | 138/5690                 | -3.48                   | -2.21                               | 30                 | PASS       |
|                                                                    | 155/5775                 | -1.52                   | -0.25                               | 30                 | PASS       |
| 802.11ax HE20                                                      | 144/5720                 | 7.95                    | 8.22                                | 30                 | PASS       |
|                                                                    | 149/5745                 | 9.15                    | 9.42                                | 30                 | PASS       |
|                                                                    | 157/5785                 | 8.85                    | 9.12                                | 30                 | PASS       |
|                                                                    | 165/5825                 | 9.73                    | 10.00                               | 30                 | PASS       |
| 802.11ax HE40                                                      | 142/5710                 | 4.99                    | 5.26                                | 30                 | PASS       |
|                                                                    | 151/5755                 | 5.68                    | 5.95                                | 30                 | PASS       |
|                                                                    | 159/5795                 | 6.15                    | 6.42                                | 30                 | PASS       |
| 802.11ax HE80                                                      | 138/5690                 | 0.22                    | 0.49                                | 30                 | PASS       |
|                                                                    | 155/5775                 | 1.30                    | 1.57                                | 30                 | PASS       |
| Note: PSD=Read Value+Duty cycle correction factor +10*log(500/470) |                          |                         |                                     |                    |            |

**MIMO**  
**U-NII-1**

| Mode              | Channel/<br>Frequency<br>(MHz) | Power Spectral Density  |                  |                         |                  |                        | Limit<br>(dBm<br>/MHz) | Conclusion |
|-------------------|--------------------------------|-------------------------|------------------|-------------------------|------------------|------------------------|------------------------|------------|
|                   |                                | Antenna 1               |                  | Antenna 2               |                  | Total PSD<br>(dBm/MHz) |                        |            |
|                   |                                | Read Value<br>(dBm/MHz) | PSD<br>(dBm/MHz) | Read Value<br>(dBm/MHz) | PSD<br>(dBm/MHz) |                        |                        |            |
| 802.11a           | 36/5180                        | -3.48                   | -3.31            | -0.99                   | -0.82            | 1.12                   | 9.04                   | PASS       |
|                   | 40/5200                        | -3.86                   | -3.69            | -0.66                   | -0.49            | 1.21                   | 9.04                   | PASS       |
|                   | 48/5240                        | -2.73                   | -2.56            | -0.03                   | 0.14             | 2.01                   | 9.04                   | PASS       |
| 802.11n<br>HT20   | 36/5180                        | -3.77                   | -2.80            | -1.07                   | -0.10            | 1.77                   | 9.04                   | PASS       |
|                   | 40/5200                        | -3.55                   | -2.58            | -1.18                   | -0.21            | 1.78                   | 9.04                   | PASS       |
|                   | 48/5240                        | -4.19                   | -3.22            | -1.24                   | -0.27            | 1.51                   | 9.04                   | PASS       |
| 802.11n<br>HT40   | 38/5190                        | -3.96                   | -3.96            | -1.54                   | -1.54            | 0.43                   | 9.04                   | PASS       |
|                   | 46/5230                        | -3.98                   | -3.98            | -1.08                   | -1.08            | 0.72                   | 9.04                   | PASS       |
| 802.11ac<br>VHT20 | 36/5180                        | -4.29                   | -3.32            | -1.18                   | -0.21            | 1.52                   | 9.04                   | PASS       |
|                   | 40/5200                        | -3.95                   | -2.98            | -1.00                   | -0.03            | 1.75                   | 9.04                   | PASS       |
|                   | 48/5240                        | -3.72                   | -2.75            | -1.11                   | -0.14            | 1.76                   | 9.04                   | PASS       |
| 802.11ac<br>VHT40 | 38/5190                        | -3.84                   | -2.86            | -1.23                   | -0.25            | 1.65                   | 9.04                   | PASS       |
|                   | 46/5230                        | -4.03                   | -3.05            | -1.89                   | -0.91            | 1.16                   | 9.04                   | PASS       |
| 802.11ac<br>VHT80 | 42/5210                        | -4.41                   | -3.41            | -1.53                   | -0.53            | 1.27                   | 9.04                   | PASS       |
| 802.11ax<br>HE20  | 36/5180                        | -4.29                   | -4.29            | -1.31                   | -1.31            | 0.46                   | 9.04                   | PASS       |
|                   | 40/5200                        | -3.75                   | -3.75            | -1.18                   | -1.18            | 0.73                   | 9.04                   | PASS       |
|                   | 48/5240                        | -4.05                   | -4.05            | -1.81                   | -1.81            | 0.22                   | 9.04                   | PASS       |
| 802.11ax<br>HE40  | 38/5190                        | -4.12                   | -4.12            | -1.57                   | -1.57            | 0.35                   | 9.04                   | PASS       |
|                   | 46/5230                        | -4.56                   | -4.56            | -1.72                   | -1.72            | 0.10                   | 9.04                   | PASS       |
| 802.11ax<br>HE80  | 42/5210                        | -5.20                   | -5.20            | -1.68                   | -1.68            | -0.08                  | 9.04                   | PASS       |

Note: 1. Power Spectral Density =Read Value+Duty cycle correction factor

2. For Total PSD, according to KDB 662911 D01 Multiple Transmitter Output v02r01 2)a),

the power spectral density= $10\log(10^{(\text{PSD antenna 1 in dBm}/10)}+10^{(\text{PSD antenna 2 in dBm}/10)})$

3. The manufacturer declared the transmitter output signals is CDD mode And Nss=1. According to KDB 662911 D01 Multiple Transmitter Output v02r01 F)2)f(i): If all antennas have the same gain, Directional gain =  $G_{\text{ANT}} + \text{Array Gain}$ , For PSD measurements on all devices, Array Gain= $10\log(\text{Nant}/\text{Nss})\text{dB}$ ,

so directional gain= $G_{\text{ANT}} + \text{Array Gain} = 4.95 + 10\log(2/1) = 7.96 > 6 \text{ dBi}$ .

So the PSD limit is  $11 - (\text{directional gain} - 6 \text{ dBi}) = 11 - (7.96 - 6) = 9.04 \text{ dBm}$ .

## U-NII-2A

| Mode              | Channel<br>/Frequency<br>(MHz) | Power Spectral Density  |                  |                         |                  |                        | Limit<br>(dBm<br>/MHz) | Conclusion |
|-------------------|--------------------------------|-------------------------|------------------|-------------------------|------------------|------------------------|------------------------|------------|
|                   |                                | Antenna 1               |                  | Antenna 2               |                  | Total PSD<br>(dBm/MHz) |                        |            |
|                   |                                | Read Value<br>(dBm/MHz) | PSD<br>(dBm/MHz) | Read Value<br>(dBm/MHz) | PSD<br>(dBm/MHz) |                        |                        |            |
| 802.11a           | 52/5260                        | 3.48                    | 3.65             | 5.79                    | 5.96             | 7.97                   | 9.10                   | PASS       |
|                   | 60/5300                        | 3.72                    | 3.89             | 5.67                    | 5.84             | 7.98                   | 9.10                   | PASS       |
|                   | 64/5320                        | 4.24                    | 4.41             | 6.18                    | 6.35             | 8.50                   | 9.10                   | PASS       |
| 802.11n<br>HT20   | 52/5260                        | 2.22                    | 3.19             | 5.66                    | 6.63             | 8.25                   | 9.10                   | PASS       |
|                   | 60/5300                        | 2.59                    | 3.56             | 5.20                    | 6.17             | 8.07                   | 9.10                   | PASS       |
|                   | 64/5320                        | 2.76                    | 3.73             | 5.46                    | 6.43             | 8.30                   | 9.10                   | PASS       |
| 802.11n<br>HT40   | 54/5270                        | 2.84                    | 2.84             | 4.78                    | 4.78             | 6.93                   | 9.10                   | PASS       |
|                   | 62/5310                        | 3.56                    | 3.56             | 4.59                    | 4.59             | 7.12                   | 9.10                   | PASS       |
| 802.11ac<br>VHT20 | 52/5260                        | 3.42                    | 4.39             | 5.66                    | 6.63             | 8.66                   | 9.10                   | PASS       |
|                   | 60/5300                        | 3.36                    | 4.33             | 4.95                    | 5.92             | 8.21                   | 9.10                   | PASS       |
|                   | 64/5320                        | 3.64                    | 4.61             | 4.66                    | 5.63             | 8.16                   | 9.10                   | PASS       |
| 802.11ac<br>VHT40 | 54/5270                        | 2.68                    | 3.66             | 4.91                    | 5.89             | 7.93                   | 9.10                   | PASS       |
|                   | 62/5310                        | 3.69                    | 4.67             | 4.36                    | 5.34             | 8.03                   | 9.10                   | PASS       |
| 802.11ac<br>VHT80 | 58/5290                        | -3.79                   | -2.79            | -2.42                   | -1.42            | 0.96                   | 9.10                   | PASS       |
| 802.11ax<br>HE20  | 52/5260                        | 2.67                    | 2.67             | 5.27                    | 5.27             | 7.17                   | 9.10                   | PASS       |
|                   | 60/5300                        | 2.94                    | 2.94             | 4.77                    | 4.77             | 6.96                   | 9.10                   | PASS       |
|                   | 64/5320                        | 3.83                    | 3.83             | 4.11                    | 4.11             | 6.98                   | 9.10                   | PASS       |
| 802.11ax<br>HE40  | 54/5270                        | 3.73                    | 3.73             | 5.45                    | 5.45             | 7.68                   | 9.10                   | PASS       |
|                   | 62/5310                        | -1.35                   | -1.35            | -0.75                   | -0.75            | 1.97                   | 9.10                   | PASS       |
| 802.11ax<br>HE80  | 58/5290                        | -2.82                   | -2.82            | -1.55                   | -1.55            | 0.87                   | 9.10                   | PASS       |

Note: 1. Power Spectral Density =Read Value+Duty cycle correction factor  
2. For Total PSD, according to KDB 662911 D01 Multiple Transmitter Output v02r01 2)a),  
the power spectral density= $10\log(10^{(\text{PSD antenna 1 in dBm}/10)}+10^{(\text{PSD antenna 2 in dBm}/10)})$   
3. The manufacturer declared the transmitter output signals is CDD mode And Nss=1. According to KDB 662911 D01 Multiple Transmitter Output v02r01 F)2)f)(i): If all antennas have the same gain, Directional gain =  $G_{\text{ANT}} + \text{Array Gain}$ , For PSD measurements on all devices,  $\text{Array Gain}=10\log(\text{Nant}/\text{Nss})\text{dB}$ ,  
so directional gain= $G_{\text{ANT}}+\text{Array Gain}=4.89+10\log(2/1)=7.90>6\text{ dBi}$ .  
So the PSD limit is  $11-(\text{directional gain}-6\text{ dBi})=11-(7.90-6)=9.10\text{ dBm}$ .

## U-NII-2C

| Mode              | Channel<br>/Frequency<br>(MHz) | Power Spectral Density  |                  |                         |                  |                        | Limit<br>(dBm<br>/MHz) | Conclusion |
|-------------------|--------------------------------|-------------------------|------------------|-------------------------|------------------|------------------------|------------------------|------------|
|                   |                                | Antenna 1               |                  | Antenna 2               |                  | Total PSD<br>(dBm/MHz) |                        |            |
|                   |                                | Read Value<br>(dBm/MHz) | PSD<br>(dBm/MHz) | Read Value<br>(dBm/MHz) | PSD<br>(dBm/MHz) |                        |                        |            |
| 802.11a           | 100/5500                       | 6.00                    | 6.17             | 4.82                    | 4.99             | 8.63                   | 9.05                   | PASS       |
|                   | 120/5600                       | 5.59                    | 5.76             | 4.69                    | 4.86             | 8.34                   | 9.05                   | PASS       |
|                   | 140/5700                       | 5.19                    | 5.36             | 4.78                    | 4.95             | 8.17                   | 9.05                   | PASS       |
|                   | 144/5720                       | 5.37                    | 5.54             | 5.30                    | 5.47             | 8.52                   | 9.05                   | PASS       |
| 802.11n<br>HT20   | 100/5500                       | 5.43                    | 6.40             | 3.91                    | 4.88             | 8.72                   | 9.05                   | PASS       |
|                   | 120/5600                       | 5.13                    | 6.10             | 4.51                    | 5.48             | 8.81                   | 9.05                   | PASS       |
|                   | 140/5700                       | 4.76                    | 5.73             | 4.74                    | 5.71             | 8.73                   | 9.05                   | PASS       |
|                   | 144/5720                       | 4.87                    | 5.84             | 4.75                    | 5.72             | 8.79                   | 9.05                   | PASS       |
| 802.11n<br>HT40   | 102/5510                       | 0.48                    | 0.48             | -0.32                   | -0.32            | 3.11                   | 9.05                   | PASS       |
|                   | 118/5590                       | 4.78                    | 4.78             | 4.09                    | 4.09             | 7.46                   | 9.05                   | PASS       |
|                   | 134/5670                       | 1.90                    | 1.90             | 1.39                    | 1.39             | 4.66                   | 9.05                   | PASS       |
|                   | 142/5710                       | 4.52                    | 4.52             | 4.41                    | 4.41             | 7.48                   | 9.05                   | PASS       |
| 802.11ac<br>VHT20 | 100/5500                       | 4.88                    | 5.85             | 3.83                    | 4.80             | 8.37                   | 9.05                   | PASS       |
|                   | 120/5600                       | 5.17                    | 6.14             | 4.43                    | 5.40             | 8.80                   | 9.05                   | PASS       |
|                   | 140/5700                       | 4.77                    | 5.74             | 4.71                    | 5.68             | 8.72                   | 9.05                   | PASS       |
|                   | 144/5720                       | 4.92                    | 5.89             | 5.08                    | 6.05             | 8.98                   | 9.05                   | PASS       |
| 802.11ac<br>VHT40 | 102/5510                       | 4.81                    | 5.79             | 3.53                    | 4.51             | 8.21                   | 9.05                   | PASS       |
|                   | 118/5590                       | 4.01                    | 4.99             | 3.36                    | 4.34             | 7.69                   | 9.05                   | PASS       |
|                   | 134/5670                       | 4.03                    | 5.01             | 4.57                    | 5.55             | 8.30                   | 9.05                   | PASS       |
|                   | 142/5710                       | 4.40                    | 5.38             | 4.43                    | 5.41             | 8.41                   | 9.05                   | PASS       |
| 802.11ac<br>VHT80 | 122/5610                       | -0.68                   | 0.32             | -0.96                   | 0.04             | 3.19                   | 9.05                   | PASS       |
|                   | 138/5690                       | -0.86                   | 0.14             | -0.73                   | 0.27             | 3.22                   | 9.05                   | PASS       |
| 802.11ax<br>HE20  | 100/5500                       | 4.90                    | 4.90             | 3.89                    | 3.89             | 7.43                   | 9.05                   | PASS       |
|                   | 120/5600                       | 4.99                    | 4.99             | 4.09                    | 4.09             | 7.57                   | 9.05                   | PASS       |
|                   | 140/5700                       | 4.68                    | 4.68             | 4.47                    | 4.47             | 7.59                   | 9.05                   | PASS       |
|                   | 144/5720                       | 4.79                    | 4.79             | 4.64                    | 4.64             | 7.73                   | 9.05                   | PASS       |
| 802.11ax<br>HE40  | 102/5510                       | -1.12                   | -1.12            | -1.56                   | -1.56            | 1.68                   | 9.05                   | PASS       |
|                   | 118/5590                       | 5.36                    | 5.36             | 4.61                    | 4.61             | 8.01                   | 9.05                   | PASS       |
|                   | 134/5670                       | 5.00                    | 5.00             | 4.53                    | 4.53             | 7.78                   | 9.05                   | PASS       |
|                   | 142/5710                       | 4.46                    | 4.46             | 4.16                    | 4.16             | 7.32                   | 9.05                   | PASS       |
| 802.11ax<br>HE80  | 122/5610                       | 2.46                    | 2.46             | 1.27                    | 1.27             | 4.92                   | 9.05                   | PASS       |
|                   | 138/5690                       | 3.04                    | 3.04             | 2.23                    | 2.23             | 5.66                   | 9.05                   | PASS       |

Note: 1. Power Spectral Density =Read Value+Duty cycle correction factor  
2. For Total PSD, according to KDB 662911 D01 Multiple Transmitter Output v02r01 2)a),  
the power spectral density= $10\log(10^{(\text{PSD antenna 1 in dBm}/10)}+10^{(\text{PSD antenna 2 in dBm}/10)})$   
3. The manufacturer declared the transmitter output signals is CDD mode And Nss=1. According to KDB 662911 D01 Multiple Transmitter Output v02r01 F)2)f)(i): If all antennas have the same gain, Directional gain =  $G_{\text{ANT}} + \text{Array Gain}$ , For PSD measurements on all devices, Array Gain= $10\log(\text{Nant}/\text{Nss})\text{dB}$ ,  
so directional gain= $G_{\text{ANT}}+\text{Array Gain}=4.94+10\log(2/1)=7.95>6\text{ dBi}$ .

So the PSD limit is  $11 - (\text{directional gain} - 6 \text{ dBi}) = 11 - (7.95 - 6) = 9.05 \text{ dBm}$ .

### U-NII-3

| Mode              | Channel<br>/Frequency<br>(MHz) | Power Spectral Density         |                         |                                |                         |                               | Limit<br>(dBm/<br>500kHz) | Conclusion |
|-------------------|--------------------------------|--------------------------------|-------------------------|--------------------------------|-------------------------|-------------------------------|---------------------------|------------|
|                   |                                | Antenna 1                      |                         | Antenna 2                      |                         | Total PSD<br>(dBm/<br>500kHz) |                           |            |
|                   |                                | Read Value<br>(dBm/<br>470kHz) | PSD<br>(dBm/<br>470kHz) | Read Value<br>(dBm/<br>470kHz) | PSD<br>(dBm/<br>470kHz) |                               |                           |            |
| 802.11a           | 144/5720                       | 3.06                           | 3.50                    | 3.62                           | 4.06                    | 6.80                          | 27.71                     | PASS       |
|                   | 149/5745                       | 9.26                           | 9.70                    | 10.07                          | 10.51                   | 13.13                         | 27.71                     | PASS       |
|                   | 157/5785                       | 9.42                           | 9.86                    | 10.37                          | 10.81                   | 13.37                         | 27.71                     | PASS       |
|                   | 165/5825                       | 5.89                           | 6.33                    | 7.20                           | 7.64                    | 10.04                         | 27.71                     | PASS       |
| 802.11n<br>HT20   | 144/5720                       | 3.22                           | 4.46                    | 5.24                           | 6.48                    | 8.60                          | 27.71                     | PASS       |
|                   | 149/5745                       | 4.65                           | 5.89                    | 6.83                           | 8.07                    | 10.13                         | 27.71                     | PASS       |
|                   | 157/5785                       | 8.38                           | 9.62                    | 8.99                           | 10.23                   | 12.95                         | 27.71                     | PASS       |
|                   | 165/5825                       | 7.93                           | 9.17                    | 9.60                           | 10.84                   | 13.10                         | 27.71                     | PASS       |
| 802.11n<br>HT40   | 142/5710                       | 0.74                           | 1.01                    | 2.23                           | 2.50                    | 4.83                          | 27.71                     | PASS       |
|                   | 151/5755                       | -0.66                          | -0.39                   | 0.96                           | 1.23                    | 3.51                          | 27.71                     | PASS       |
|                   | 159/5795                       | 0.09                           | 0.36                    | 2.15                           | 2.42                    | 4.52                          | 27.71                     | PASS       |
| 802.11ac<br>VHT20 | 144/5720                       | 7.42                           | 8.66                    | 7.64                           | 8.88                    | 11.78                         | 27.71                     | PASS       |
|                   | 149/5745                       | 7.84                           | 9.08                    | 8.60                           | 9.84                    | 12.49                         | 27.71                     | PASS       |
|                   | 157/5785                       | 7.87                           | 9.11                    | 9.19                           | 10.43                   | 12.83                         | 27.71                     | PASS       |
|                   | 165/5825                       | 8.01                           | 9.25                    | 9.61                           | 10.85                   | 13.13                         | 27.71                     | PASS       |
| 802.11ac<br>VHT40 | 142/5710                       | 3.38                           | 4.63                    | 4.46                           | 5.71                    | 8.21                          | 27.71                     | PASS       |
|                   | 151/5755                       | 5.62                           | 6.87                    | 6.23                           | 7.48                    | 10.20                         | 27.71                     | PASS       |
|                   | 159/5795                       | 5.83                           | 7.08                    | 6.71                           | 7.96                    | 10.55                         | 27.71                     | PASS       |
| 802.11ac<br>VHT80 | 138/5690                       | -6.83                          | -5.56                   | -5.11                          | -3.84                   | -1.61                         | 27.71                     | PASS       |
|                   | 155/5775                       | -5.06                          | -3.79                   | -3.08                          | -1.81                   | 0.32                          | 27.71                     | PASS       |
| 802.11ax<br>HE20  | 144/5720                       | 6.29                           | 6.56                    | 7.17                           | 7.44                    | 10.03                         | 27.71                     | PASS       |
|                   | 149/5745                       | 7.74                           | 8.01                    | 8.28                           | 8.55                    | 11.30                         | 27.71                     | PASS       |
|                   | 157/5785                       | 7.74                           | 8.01                    | 8.73                           | 9.00                    | 11.54                         | 27.71                     | PASS       |
|                   | 165/5825                       | 7.86                           | 8.13                    | 9.15                           | 9.42                    | 11.83                         | 27.71                     | PASS       |
| 802.11ax<br>HE40  | 142/5710                       | 3.36                           | 3.63                    | 3.65                           | 3.92                    | 6.79                          | 27.71                     | PASS       |
|                   | 151/5755                       | 1.45                           | 1.72                    | 3.43                           | 3.70                    | 5.83                          | 27.71                     | PASS       |
|                   | 159/5795                       | 1.69                           | 1.96                    | 4.12                           | 4.39                    | 6.35                          | 27.71                     | PASS       |
| 802.11ax<br>HE80  | 138/5690                       | -2.33                          | -2.06                   | -1.76                          | -1.49                   | 1.24                          | 27.71                     | PASS       |
|                   | 155/5775                       | -2.37                          | -2.10                   | -0.33                          | -0.06                   | 2.05                          | 27.71                     | PASS       |

Note: 1.  $\text{PSD} = \text{Read Value} + \text{Duty cycle correction factor} + 10 \cdot \log(500/470)$

2. For Total PSD, according to KDB 662911 D01 Multiple Transmitter Output v02r01 2)a),  
the power spectral density =  $10 \log(10^{(\text{PSD antenna 1 in dBm}/10)} + 10^{(\text{PSD antenna 2 in dBm}/10)})$

3. The manufacturer declared the transmitter output signals is CDD mode And Nss=1. According to KDB 662911 D01 Multiple Transmitter Output v02r01 F)2)f(i): If all antennas have the same gain, Directional gain =  $G_{\text{ANT}} + \text{Array Gain}$ , For PSD measurements on all devices, Array Gain =  $10 \log(N_{\text{ant}}/N_{\text{ss}}) \text{ dB}$ ,

so directional gain= $G_{\text{ANT}} + \text{Array Gain} = 5.28 + 10\log(2/1) = 8.29 > 6$  dBi.

So the PSD limit is  $30 - (\text{directional gain} - 6 \text{ dBi}) = 30 - (8.29 - 6) = 27.71$  dBm.

## Beamforming

### U-NII-1

| Mode              | Channel/<br>Frequency<br>(MHz) | Power Spectral Density  |                  |                         |                  |                        | Limit<br>(dBm<br>/MHz) | Conclusion |
|-------------------|--------------------------------|-------------------------|------------------|-------------------------|------------------|------------------------|------------------------|------------|
|                   |                                | Antenna 1               |                  | Antenna 2               |                  | Total PSD<br>(dBm/MHz) |                        |            |
|                   |                                | Read Value<br>(dBm/MHz) | PSD<br>(dBm/MHz) | Read Value<br>(dBm/MHz) | PSD<br>(dBm/MHz) |                        |                        |            |
| 802.11a           | 36/5180                        | -3.48                   | -3.31            | -0.99                   | -0.82            | 1.12                   | 9.04                   | PASS       |
|                   | 40/5200                        | -3.86                   | -3.69            | -0.66                   | -0.49            | 1.21                   | 9.04                   | PASS       |
|                   | 48/5240                        | -2.73                   | -2.56            | -0.03                   | 0.14             | 2.01                   | 9.04                   | PASS       |
| 802.11n<br>HT20   | 36/5180                        | -3.77                   | -2.80            | -1.07                   | -0.10            | 1.77                   | 9.04                   | PASS       |
|                   | 40/5200                        | -3.55                   | -2.58            | -1.18                   | -0.21            | 1.78                   | 9.04                   | PASS       |
|                   | 48/5240                        | -4.19                   | -3.22            | -1.24                   | -0.27            | 1.51                   | 9.04                   | PASS       |
| 802.11n<br>HT40   | 38/5190                        | -3.96                   | -3.96            | -1.54                   | -1.54            | 0.43                   | 9.04                   | PASS       |
|                   | 46/5230                        | -3.98                   | -3.98            | -1.08                   | -1.08            | 0.72                   | 9.04                   | PASS       |
| 802.11ac<br>VHT20 | 36/5180                        | -4.29                   | -3.32            | -1.18                   | -0.21            | 1.52                   | 9.04                   | PASS       |
|                   | 40/5200                        | -3.95                   | -2.98            | -1.00                   | -0.03            | 1.75                   | 9.04                   | PASS       |
|                   | 48/5240                        | -3.72                   | -2.75            | -1.11                   | -0.14            | 1.76                   | 9.04                   | PASS       |
| 802.11ac<br>VHT40 | 38/5190                        | -3.84                   | -2.86            | -1.23                   | -0.25            | 1.65                   | 9.04                   | PASS       |
|                   | 46/5230                        | -4.03                   | -3.05            | -1.89                   | -0.91            | 1.16                   | 9.04                   | PASS       |
| 802.11ac<br>VHT80 | 42/5210                        | -8.06                   | -7.06            | -5.68                   | -4.68            | -2.70                  | 9.04                   | PASS       |
| 802.11ax<br>HE20  | 36/5180                        | -4.29                   | -4.29            | -1.31                   | -1.31            | 0.46                   | 9.04                   | PASS       |
|                   | 40/5200                        | -3.75                   | -3.75            | -1.18                   | -1.18            | 0.73                   | 9.04                   | PASS       |
|                   | 48/5240                        | -4.05                   | -4.05            | -1.81                   | -1.81            | 0.22                   | 9.04                   | PASS       |
| 802.11ax<br>HE40  | 38/5190                        | -4.12                   | -4.12            | -1.57                   | -1.57            | 0.35                   | 9.04                   | PASS       |
|                   | 46/5230                        | -4.56                   | -4.56            | -1.72                   | -1.72            | 0.10                   | 9.04                   | PASS       |
| 802.11ax<br>HE80  | 42/5210                        | -8.42                   | -8.42            | -5.52                   | -5.52            | -3.72                  | 9.04                   | PASS       |

Note: 1. Power Spectral Density =Read Value+Duty cycle correction factor  
2. For Total PSD, according to KDB 662911 D01 Multiple Transmitter Output v02r01 2)a),  
the power spectral density= $10\log(10^{(\text{PSD antenna 1 in dBm}/10)}+10^{(\text{PSD antenna 2 in dBm}/10)})$   
3. The manufacturer declared the transmitter output signals is CDD mode And Nss=1. Direction gain calculation  
according to KDB662911 D01 Multiple Transmitter Output v02r01 F)2)e)(i): If all antennas have the same gain,  
directional gain =  $G_{\text{ANT}} + 10 \log(N_{\text{ANT}}/N_{\text{ss}})=4.95+10\log(2/1)= 7.96 >6 \text{ dBi}$ .  
So the PSD limit is  $11-(\text{directional gain}-6 \text{ dBi}) =11-(7.96-6)= 9.04 \text{ dBm}$ .



## U-NII-2A

| Mode              | Channel<br>/Frequency<br>(MHz) | Power Spectral Density  |                  |                         |                  |                        | Limit<br>(dBm<br>/MHz) | Conclusion |
|-------------------|--------------------------------|-------------------------|------------------|-------------------------|------------------|------------------------|------------------------|------------|
|                   |                                | Antenna 1               |                  | Antenna 2               |                  | Total PSD<br>(dBm/MHz) |                        |            |
|                   |                                | Read Value<br>(dBm/MHz) | PSD<br>(dBm/MHz) | Read Value<br>(dBm/MHz) | PSD<br>(dBm/MHz) |                        |                        |            |
| 802.11a           | 52/5260                        | 3.48                    | 3.65             | 5.79                    | 5.96             | 7.97                   | 9.10                   | PASS       |
|                   | 60/5300                        | 3.72                    | 3.89             | 5.67                    | 5.84             | 7.98                   | 9.10                   | PASS       |
|                   | 64/5320                        | 4.24                    | 4.41             | 6.18                    | 6.35             | 8.50                   | 9.10                   | PASS       |
| 802.11n<br>HT20   | 52/5260                        | 2.22                    | 3.19             | 5.66                    | 6.63             | 8.25                   | 9.10                   | PASS       |
|                   | 60/5300                        | 2.59                    | 3.56             | 5.20                    | 6.17             | 8.07                   | 9.10                   | PASS       |
|                   | 64/5320                        | 2.76                    | 3.73             | 5.46                    | 6.43             | 8.30                   | 9.10                   | PASS       |
| 802.11n<br>HT40   | 54/5270                        | 2.84                    | 2.84             | 4.78                    | 4.78             | 6.93                   | 9.10                   | PASS       |
|                   | 62/5310                        | 3.56                    | 3.56             | 4.59                    | 4.59             | 7.12                   | 9.10                   | PASS       |
| 802.11ac<br>VHT20 | 52/5260                        | 3.42                    | 4.39             | 5.66                    | 6.63             | 8.66                   | 9.10                   | PASS       |
|                   | 60/5300                        | 3.36                    | 4.33             | 4.95                    | 5.92             | 8.21                   | 9.10                   | PASS       |
|                   | 64/5320                        | 3.64                    | 4.61             | 4.66                    | 5.63             | 8.16                   | 9.10                   | PASS       |
| 802.11ac<br>VHT40 | 54/5270                        | 2.68                    | 3.66             | 4.91                    | 5.89             | 7.93                   | 9.10                   | PASS       |
|                   | 62/5310                        | 3.69                    | 4.67             | 4.36                    | 5.34             | 8.03                   | 9.10                   | PASS       |
| 802.11ac<br>VHT80 | 58/5290                        | -3.79                   | -2.79            | -2.42                   | -1.42            | 0.96                   | 9.10                   | PASS       |
| 802.11ax<br>HE20  | 52/5260                        | 2.67                    | 2.67             | 5.27                    | 5.27             | 7.17                   | 9.10                   | PASS       |
|                   | 60/5300                        | 2.94                    | 2.94             | 4.77                    | 4.77             | 6.96                   | 9.10                   | PASS       |
|                   | 64/5320                        | 3.83                    | 3.83             | 4.11                    | 4.11             | 6.98                   | 9.10                   | PASS       |
| 802.11ax<br>HE40  | 54/5270                        | 3.73                    | 3.73             | 5.45                    | 5.45             | 7.68                   | 9.10                   | PASS       |
|                   | 62/5310                        | -1.35                   | -1.35            | -0.75                   | -0.75            | 1.97                   | 9.10                   | PASS       |
| 802.11ax<br>HE80  | 58/5290                        | -2.82                   | -2.82            | -1.55                   | -1.55            | 0.87                   | 9.10                   | PASS       |

Note: 1. Power Spectral Density =Read Value+Duty cycle correction factor  
2. For Total PSD, according to KDB 662911 D01 Multiple Transmitter Output v02r01 2)a),  
the power spectral density= $10\log(10^{(\text{PSD antenna 1 in dBm}/10)}+10^{(\text{PSD antenna 2 in dBm}/10)})$   
3. The manufacturer declared the transmitter output signals is CDD mode And Nss=1. Direction gain calculation according to KDB662911 D01 Multiple Transmitter Output v02r01 F)2)e)(i): If all antennas have the same gain, directional gain =  $G_{\text{ANT}} + 10 \log(N_{\text{ANT}}/N_{\text{ss}}) = 4.89+10\log(2/1) = 7.90 > 6 \text{ dBi}$ .  
So the PSD limit is  $11-(\text{directional gain}-6 \text{ dBi}) = 11-(7.90-6) = 9.10 \text{ dBm}$ .

## U-NII-2C

| Mode              | Channel<br>/Frequency<br>(MHz) | Power Spectral Density  |                  |                         |                  |                        | Limit<br>(dBm<br>/MHz) | Conclusion |
|-------------------|--------------------------------|-------------------------|------------------|-------------------------|------------------|------------------------|------------------------|------------|
|                   |                                | Antenna 1               |                  | Antenna 2               |                  | Total PSD<br>(dBm/MHz) |                        |            |
|                   |                                | Read Value<br>(dBm/MHz) | PSD<br>(dBm/MHz) | Read Value<br>(dBm/MHz) | PSD<br>(dBm/MHz) |                        |                        |            |
| 802.11a           | 100/5500                       | 6.00                    | 6.17             | 4.82                    | 4.99             | 8.63                   | 9.05                   | PASS       |
|                   | 120/5600                       | 5.59                    | 5.76             | 4.69                    | 4.86             | 8.34                   | 9.05                   | PASS       |
|                   | 140/5700                       | 5.19                    | 5.36             | 4.78                    | 4.95             | 8.17                   | 9.05                   | PASS       |
|                   | 144/5720                       | 5.37                    | 5.54             | 5.30                    | 5.47             | 8.52                   | 9.05                   | PASS       |
| 802.11n<br>HT20   | 100/5500                       | 5.43                    | 6.40             | 3.91                    | 4.88             | 8.72                   | 9.05                   | PASS       |
|                   | 120/5600                       | 5.13                    | 6.10             | 4.51                    | 5.48             | 8.81                   | 9.05                   | PASS       |
|                   | 140/5700                       | 4.76                    | 5.73             | 4.74                    | 5.71             | 8.73                   | 9.05                   | PASS       |
|                   | 144/5720                       | 4.87                    | 5.84             | 4.75                    | 5.72             | 8.79                   | 9.05                   | PASS       |
| 802.11n<br>HT40   | 102/5510                       | 0.48                    | 0.48             | -0.32                   | -0.32            | 3.11                   | 9.05                   | PASS       |
|                   | 118/5590                       | 4.78                    | 4.78             | 4.09                    | 4.09             | 7.46                   | 9.05                   | PASS       |
|                   | 134/5670                       | 1.90                    | 1.90             | 1.39                    | 1.39             | 4.66                   | 9.05                   | PASS       |
|                   | 142/5710                       | 4.52                    | 4.52             | 4.41                    | 4.41             | 7.48                   | 9.05                   | PASS       |
| 802.11ac<br>VHT20 | 100/5500                       | 4.88                    | 5.85             | 3.83                    | 4.80             | 8.37                   | 9.05                   | PASS       |
|                   | 120/5600                       | 5.17                    | 6.14             | 4.43                    | 5.40             | 8.80                   | 9.05                   | PASS       |
|                   | 140/5700                       | 4.77                    | 5.74             | 4.71                    | 5.68             | 8.72                   | 9.05                   | PASS       |
|                   | 144/5720                       | 4.92                    | 5.89             | 5.08                    | 6.05             | 8.98                   | 9.05                   | PASS       |
| 802.11ac<br>VHT40 | 102/5510                       | 4.81                    | 5.79             | 3.53                    | 4.51             | 8.21                   | 9.05                   | PASS       |
|                   | 118/5590                       | 4.01                    | 4.99             | 3.36                    | 4.34             | 7.69                   | 9.05                   | PASS       |
|                   | 134/5670                       | 4.03                    | 5.01             | 4.57                    | 5.55             | 8.30                   | 9.05                   | PASS       |
|                   | 142/5710                       | 4.40                    | 5.38             | 4.43                    | 5.41             | 8.41                   | 9.05                   | PASS       |
| 802.11ac<br>VHT80 | 122/5610                       | -0.68                   | 0.32             | -0.96                   | 0.04             | 3.19                   | 9.05                   | PASS       |
|                   | 138/5690                       | -0.86                   | 0.14             | -0.73                   | 0.27             | 3.22                   | 9.05                   | PASS       |
| 802.11ax<br>HE20  | 100/5500                       | 4.90                    | 4.90             | 3.89                    | 3.89             | 7.43                   | 9.05                   | PASS       |
|                   | 120/5600                       | 4.99                    | 4.99             | 4.09                    | 4.09             | 7.57                   | 9.05                   | PASS       |
|                   | 140/5700                       | 4.68                    | 4.68             | 4.47                    | 4.47             | 7.59                   | 9.05                   | PASS       |
|                   | 144/5720                       | 4.79                    | 4.79             | 4.64                    | 4.64             | 7.73                   | 9.05                   | PASS       |
| 802.11ax<br>HE40  | 102/5510                       | -1.12                   | -1.12            | -1.56                   | -1.56            | 1.68                   | 9.05                   | PASS       |
|                   | 118/5590                       | 5.36                    | 5.36             | 4.61                    | 4.61             | 8.01                   | 9.05                   | PASS       |
|                   | 134/5670                       | 5.00                    | 5.00             | 4.53                    | 4.53             | 7.78                   | 9.05                   | PASS       |
|                   | 142/5710                       | 4.46                    | 4.46             | 4.16                    | 4.16             | 7.32                   | 9.05                   | PASS       |
| 802.11ax<br>HE80  | 122/5610                       | 2.46                    | 2.46             | 1.27                    | 1.27             | 4.92                   | 9.05                   | PASS       |
|                   | 138/5690                       | 3.04                    | 3.04             | 2.23                    | 2.23             | 5.66                   | 9.05                   | PASS       |

Note: 1. Power Spectral Density =Read Value+Duty cycle correction factor

2. For Total PSD, according to KDB 662911 D01 Multiple Transmitter Output v02r01 2)a),  
the power spectral density= $10\log(10^{(\text{PSD antenna 1 in dBm}/10)}+10^{(\text{PSD antenna 2 in dBm}/10)})$

3. The manufacturer declared the transmitter output signals is CDD mode And Nss=1. Direction gain calculation according to KDB662911 D01 Multiple Transmitter Output v02r01 F)2)e)(i): If all antennas have the same gain, directional gain =  $G_{\text{ANT}} + 10 \log(N_{\text{ANT}}/N_{\text{ss}}) = 4.94+10\log(2/1)= 7.95 > 6 \text{ dBi}$ .  
So the PSD limit is  $11-(\text{directional gain}-6 \text{ dBi}) = 11-(7.95-6)= 9.05 \text{ dBm}$ .

## U-NII-3

| Mode              | Channel<br>/Frequency<br>(MHz) | Power Spectral Density         |                         |                                |                         |                               | Limit<br>(dBm/<br>500kHz) | Conclusion |
|-------------------|--------------------------------|--------------------------------|-------------------------|--------------------------------|-------------------------|-------------------------------|---------------------------|------------|
|                   |                                | Antenna 1                      |                         | Antenna 2                      |                         | Total PSD<br>(dBm/<br>500kHz) |                           |            |
|                   |                                | Read Value<br>(dBm/<br>470kHz) | PSD<br>(dBm/<br>470kHz) | Read Value<br>(dBm/<br>470kHz) | PSD<br>(dBm/<br>470kHz) |                               |                           |            |
| 802.11a           | 144/5720                       | 3.06                           | 3.50                    | 3.62                           | 4.06                    | 6.80                          | 27.71                     | PASS       |
|                   | 149/5745                       | 9.26                           | 9.70                    | 10.07                          | 10.51                   | 13.13                         | 27.71                     | PASS       |
|                   | 157/5785                       | 9.42                           | 9.86                    | 10.37                          | 10.81                   | 13.37                         | 27.71                     | PASS       |
|                   | 165/5825                       | 5.89                           | 6.33                    | 7.20                           | 7.64                    | 10.04                         | 27.71                     | PASS       |
| 802.11n<br>HT20   | 144/5720                       | 3.22                           | 4.46                    | 5.24                           | 6.48                    | 8.60                          | 27.71                     | PASS       |
|                   | 149/5745                       | 4.65                           | 5.89                    | 6.83                           | 8.07                    | 10.13                         | 27.71                     | PASS       |
|                   | 157/5785                       | 8.38                           | 9.62                    | 8.99                           | 10.23                   | 12.95                         | 27.71                     | PASS       |
|                   | 165/5825                       | 7.93                           | 9.17                    | 9.60                           | 10.84                   | 13.10                         | 27.71                     | PASS       |
| 802.11n<br>HT40   | 142/5710                       | 0.74                           | 1.01                    | 2.23                           | 2.50                    | 4.83                          | 27.71                     | PASS       |
|                   | 151/5755                       | -0.66                          | -0.39                   | 0.96                           | 1.23                    | 3.51                          | 27.71                     | PASS       |
|                   | 159/5795                       | 0.09                           | 0.36                    | 2.15                           | 2.42                    | 4.52                          | 27.71                     | PASS       |
| 802.11ac<br>VHT20 | 144/5720                       | 7.42                           | 8.66                    | 7.64                           | 8.88                    | 11.78                         | 27.71                     | PASS       |
|                   | 149/5745                       | 7.84                           | 9.08                    | 8.60                           | 9.84                    | 12.49                         | 27.71                     | PASS       |
|                   | 157/5785                       | 7.87                           | 9.11                    | 9.19                           | 10.43                   | 12.83                         | 27.71                     | PASS       |
|                   | 165/5825                       | 8.01                           | 9.25                    | 9.61                           | 10.85                   | 13.13                         | 27.71                     | PASS       |
| 802.11ac<br>VHT40 | 142/5710                       | 3.38                           | 4.63                    | 4.46                           | 5.71                    | 8.21                          | 27.71                     | PASS       |
|                   | 151/5755                       | 5.62                           | 6.87                    | 6.23                           | 7.48                    | 10.20                         | 27.71                     | PASS       |
|                   | 159/5795                       | 5.83                           | 7.08                    | 6.71                           | 7.96                    | 10.55                         | 27.71                     | PASS       |
| 802.11ac<br>VHT80 | 138/5690                       | -6.83                          | -5.56                   | -5.11                          | -3.84                   | -1.61                         | 27.71                     | PASS       |
|                   | 155/5775                       | -5.06                          | -3.79                   | -3.08                          | -1.81                   | 0.32                          | 27.71                     | PASS       |
| 802.11ax<br>HE20  | 144/5720                       | 6.29                           | 6.56                    | 7.17                           | 7.44                    | 10.03                         | 27.71                     | PASS       |
|                   | 149/5745                       | 7.74                           | 8.01                    | 8.28                           | 8.55                    | 11.30                         | 27.71                     | PASS       |
|                   | 157/5785                       | 7.74                           | 8.01                    | 8.73                           | 9.00                    | 11.54                         | 27.71                     | PASS       |
|                   | 165/5825                       | 7.86                           | 8.13                    | 9.15                           | 9.42                    | 11.83                         | 27.71                     | PASS       |
| 802.11ax<br>HE40  | 142/5710                       | 3.36                           | 3.63                    | 3.65                           | 3.92                    | 6.79                          | 27.71                     | PASS       |
|                   | 151/5755                       | 1.45                           | 1.72                    | 3.43                           | 3.70                    | 5.83                          | 27.71                     | PASS       |
|                   | 159/5795                       | 1.69                           | 1.96                    | 4.12                           | 4.39                    | 6.35                          | 27.71                     | PASS       |
| 802.11ax<br>HE80  | 138/5690                       | -2.33                          | -2.06                   | -1.76                          | -1.49                   | 1.24                          | 27.71                     | PASS       |
|                   | 155/5775                       | -2.37                          | -2.10                   | -0.33                          | -0.06                   | 2.05                          | 27.71                     | PASS       |

Note: 1.  $PSD = \text{Read Value} + \text{Duty cycle correction factor} + 10 \cdot \log(500/470)$

2. For Total PSD, according to KDB 662911 D01 Multiple Transmitter Output v02r01 2)a),  
the power spectral density  $= 10 \log(10^{(PSD \text{ antenna 1 in dBm}/10)} + 10^{(PSD \text{ antenna 2 in dBm}/10)})$

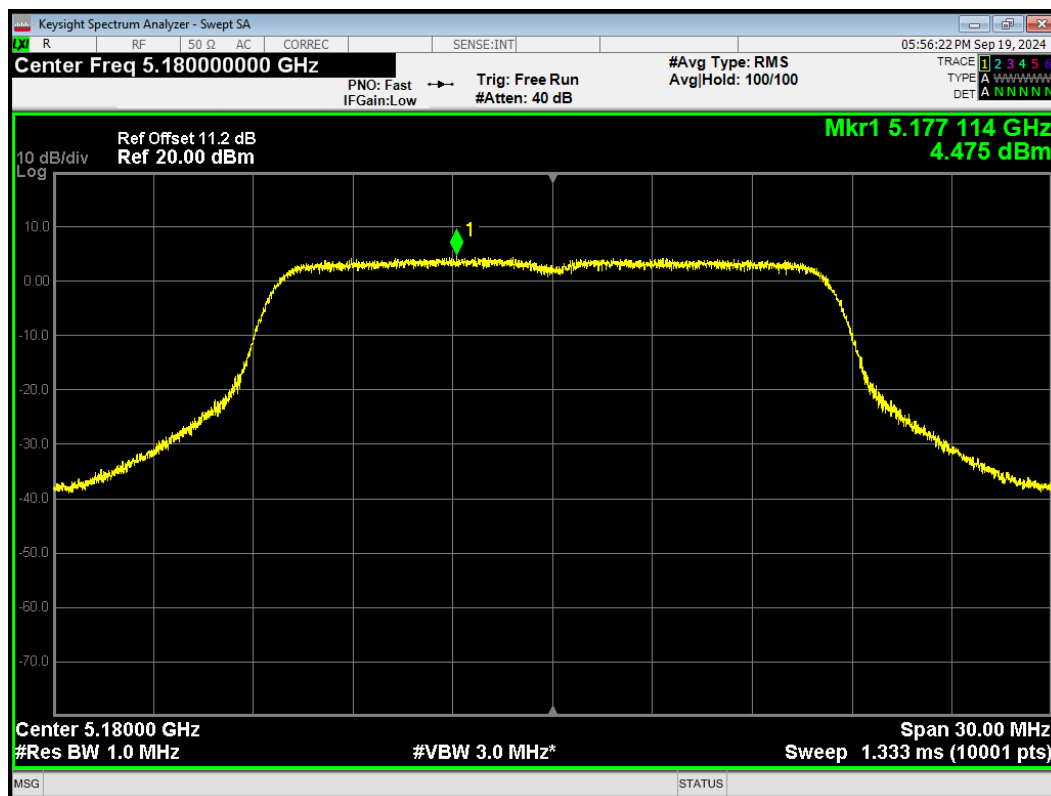
3. The manufacturer declared the transmitter output signals is CDD mode And Nss=1. Direction gain calculation according to KDB662911 D01 Multiple Transmitter Output v02r01 F)2)e)(i): If all antennas have the same gain,  
directional gain  $= G_{ANT} + 10 \log(N_{ANT}/N_{ss}) = 5.28 + 10 \log(2/1) = 8.29 > 6 \text{ dBi}$ .

So the PSD limit is  $30 - (\text{directional gain} - 6 \text{ dBi}) = 30 - (8.29 - 6) = 27.71 \text{ dBm}$ .

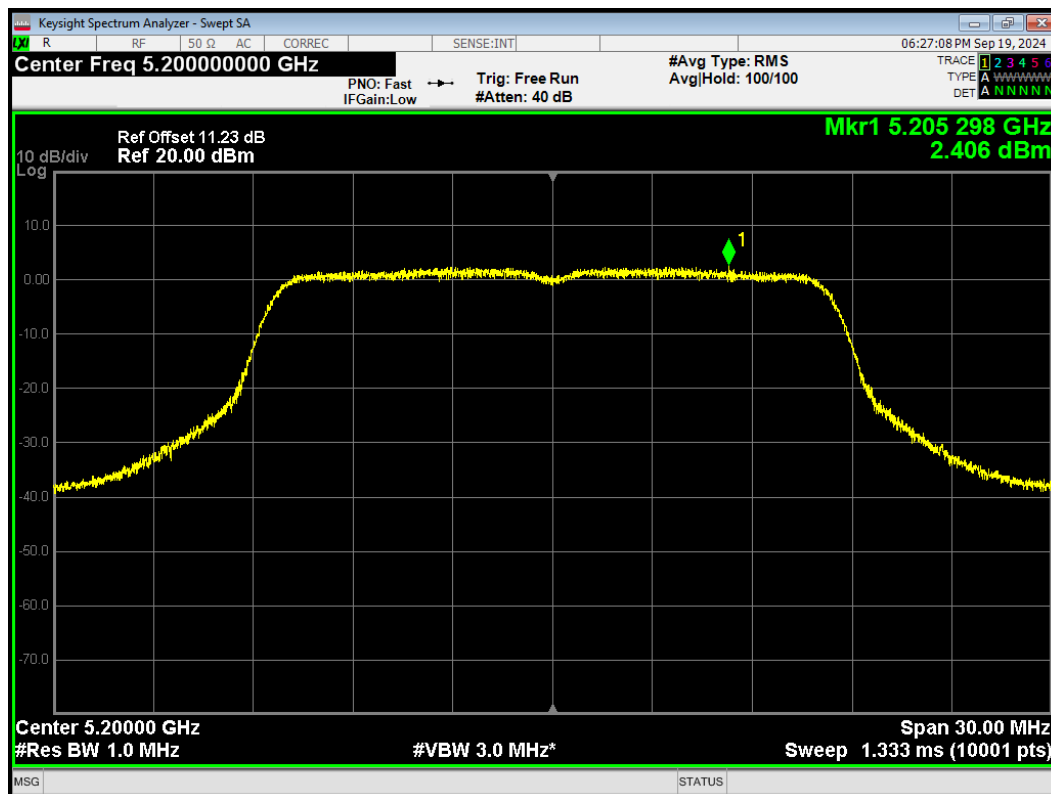
SISO Antenna 1

U-NII-1

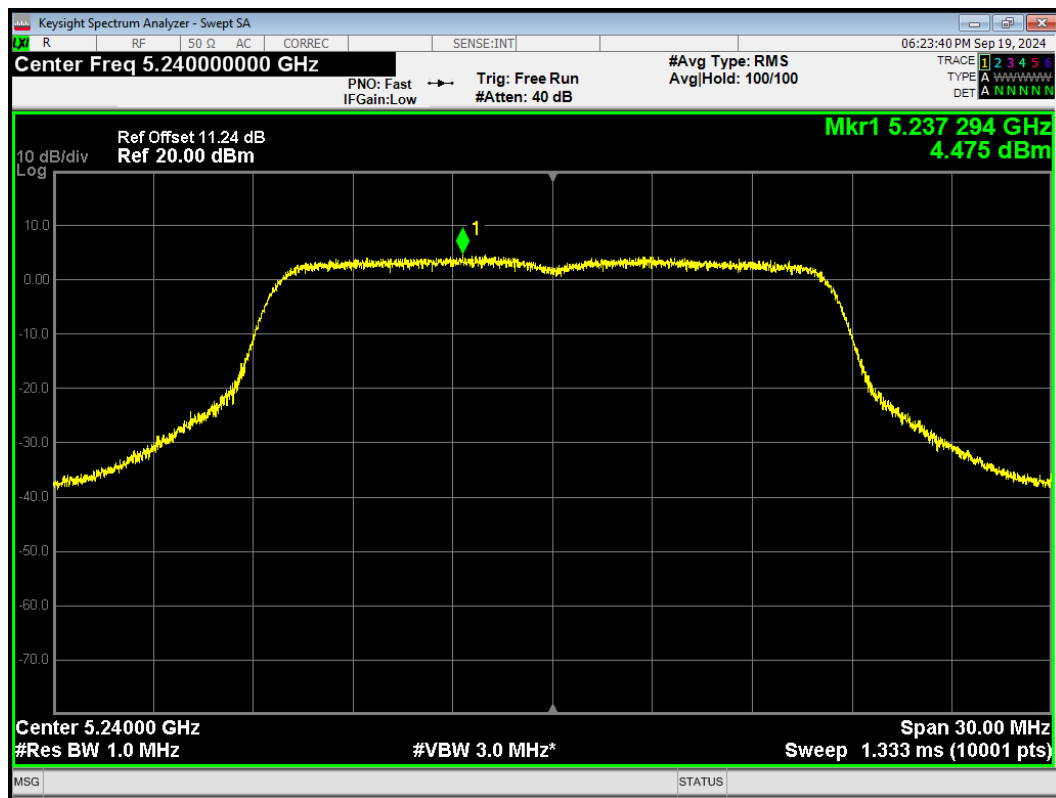
PSD 802.11a 5180MHz



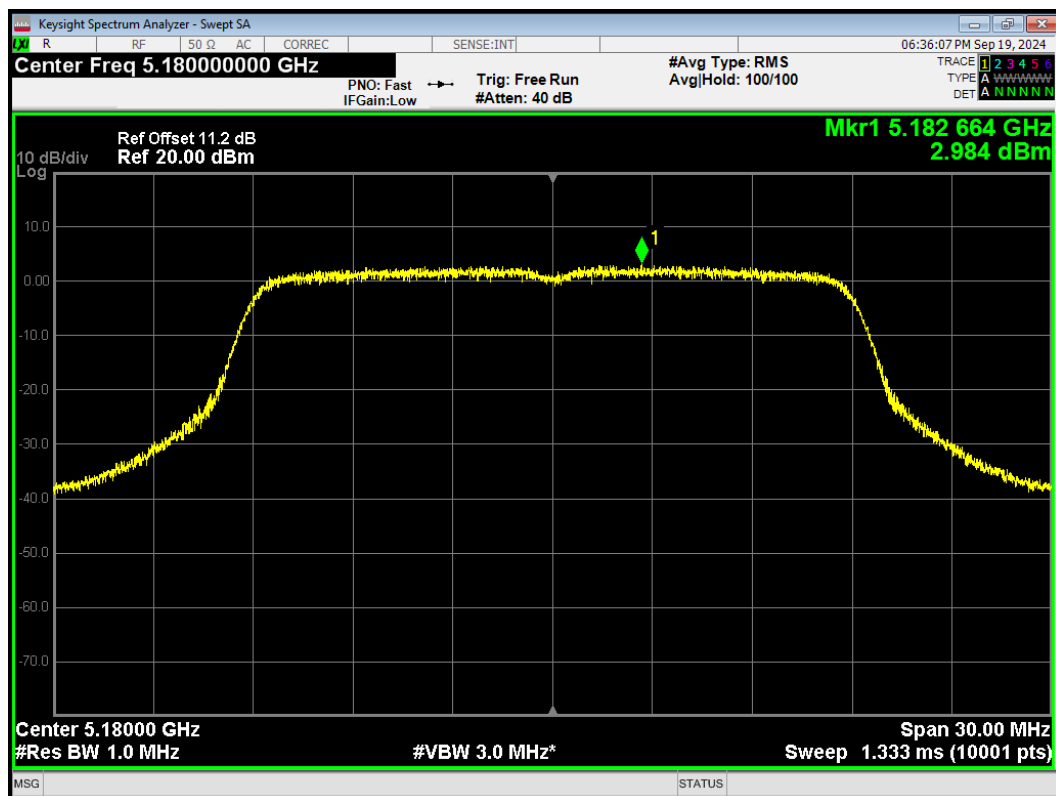
PSD 802.11a 5200MHz



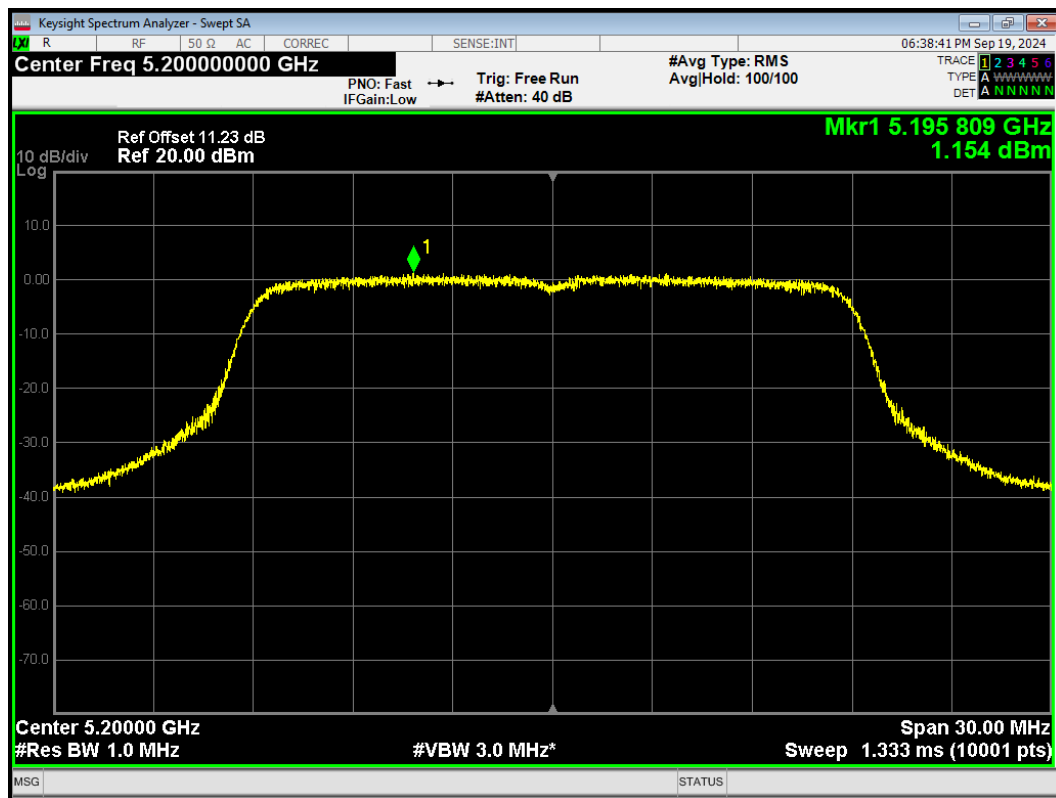
PSD 802.11a 5240MHz



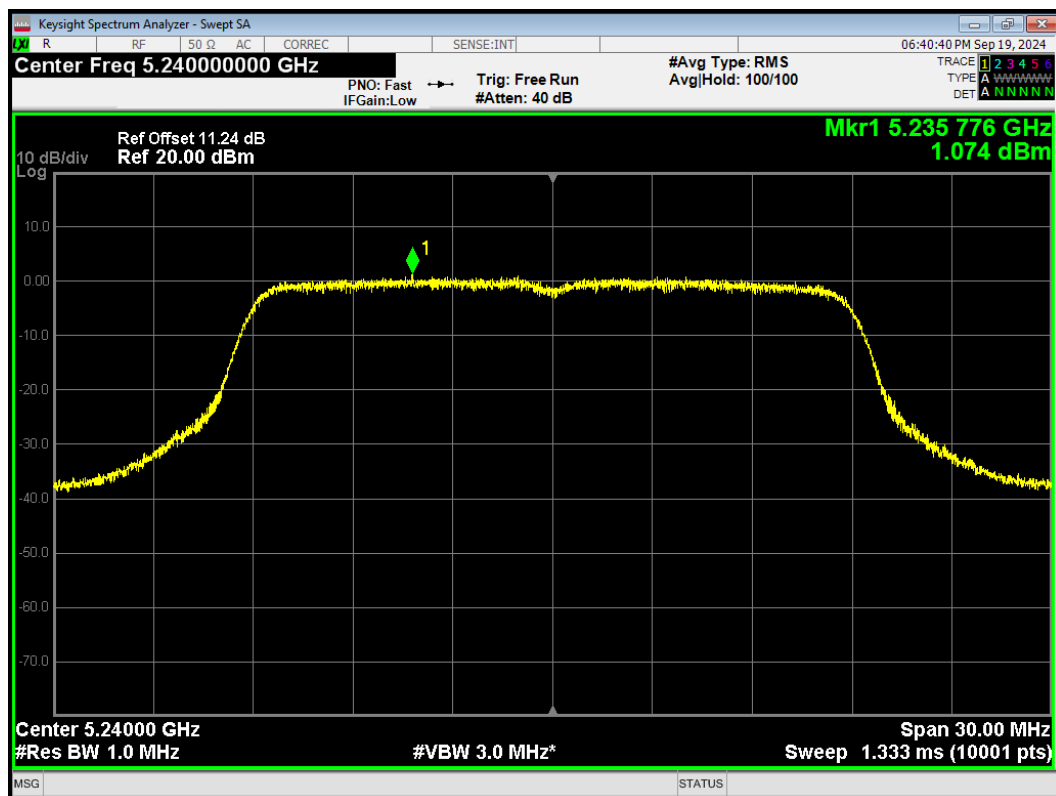
PSD 802.11ac(VHT20) 5180MHz



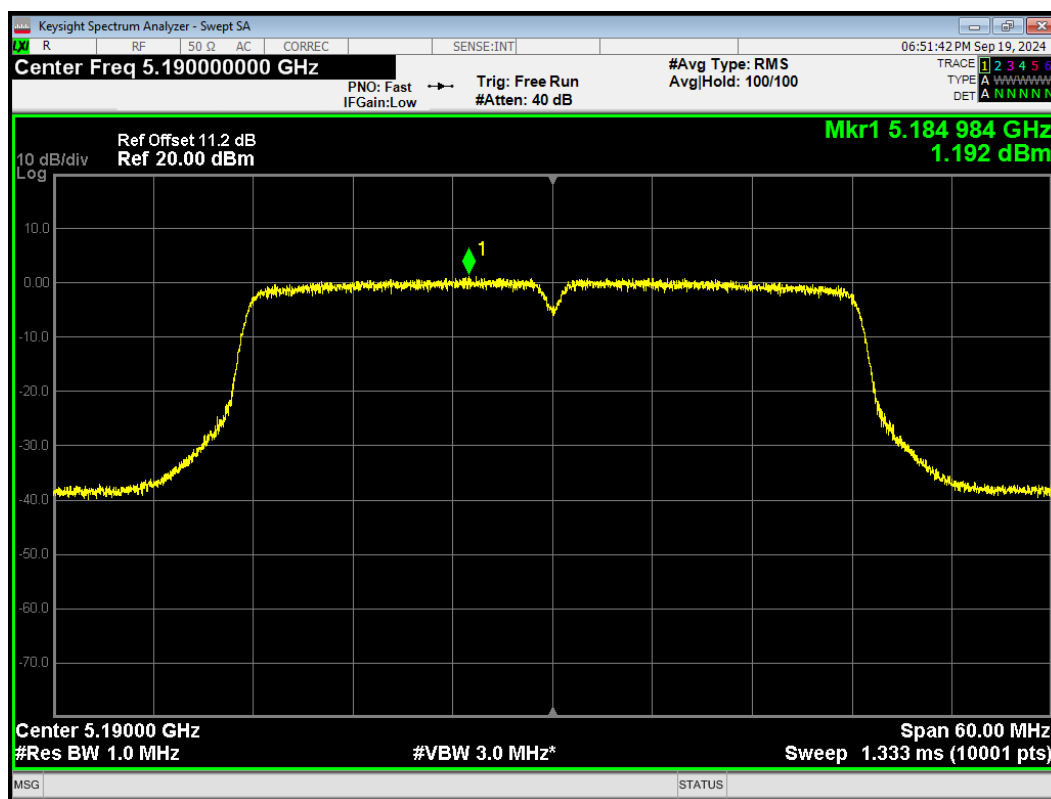
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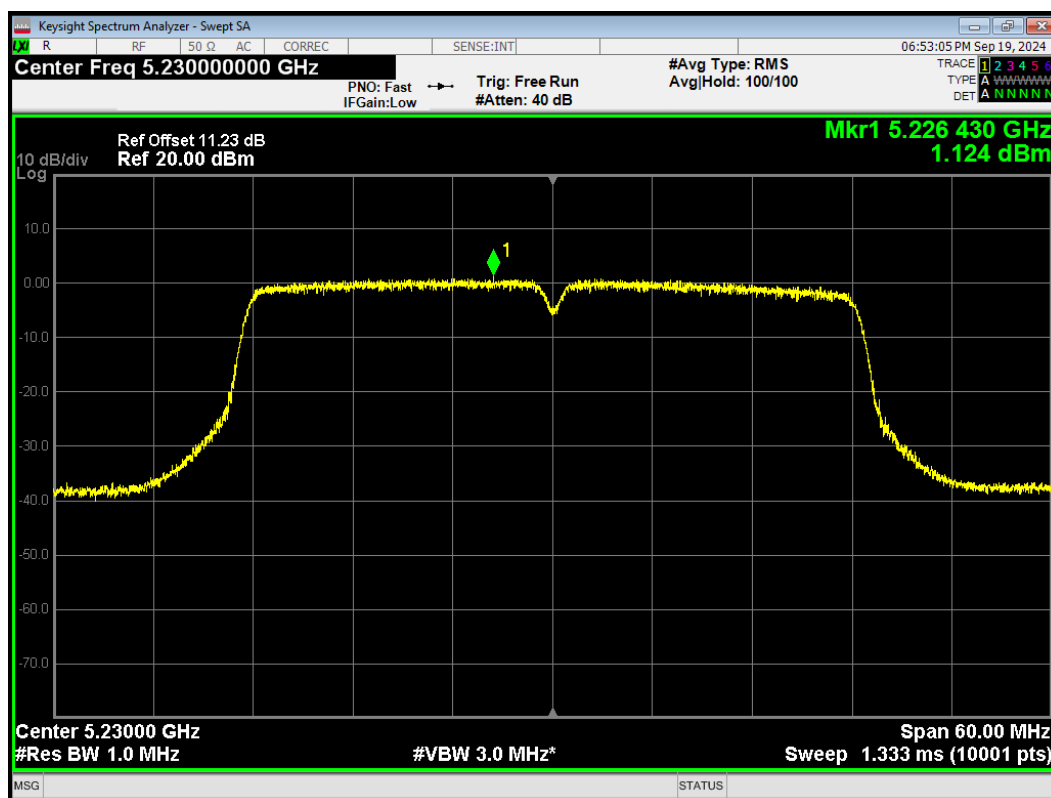
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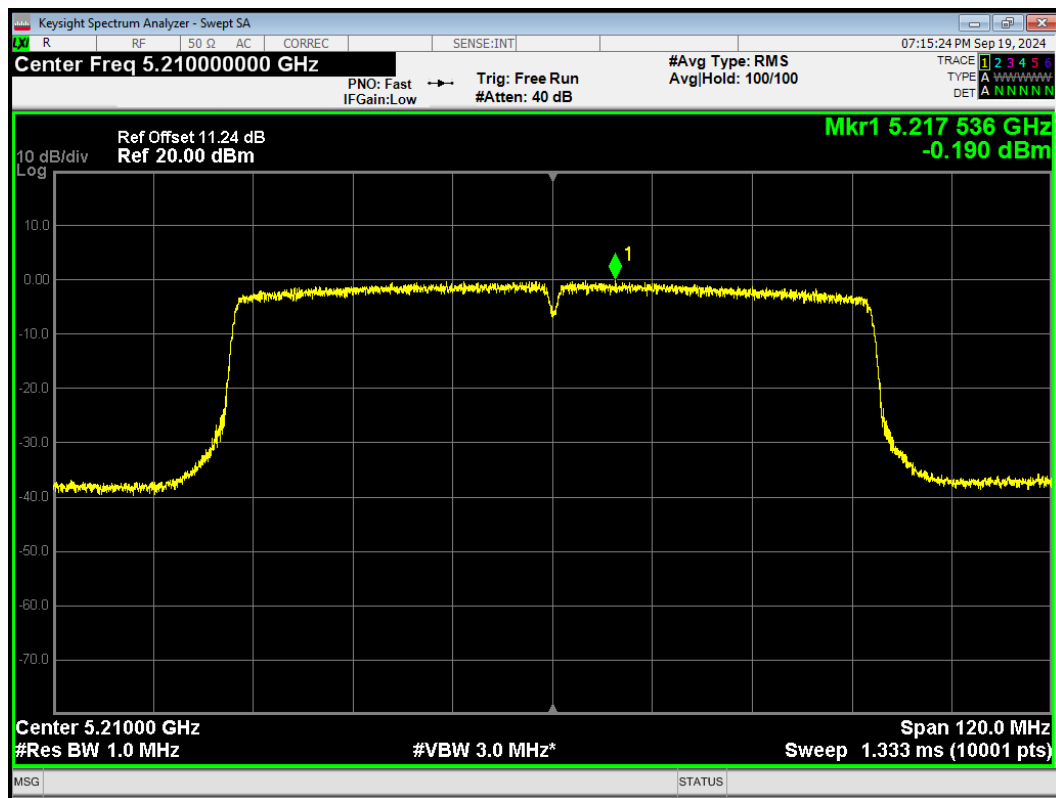
PSD 802.11ac(VHT40) 5190MHz



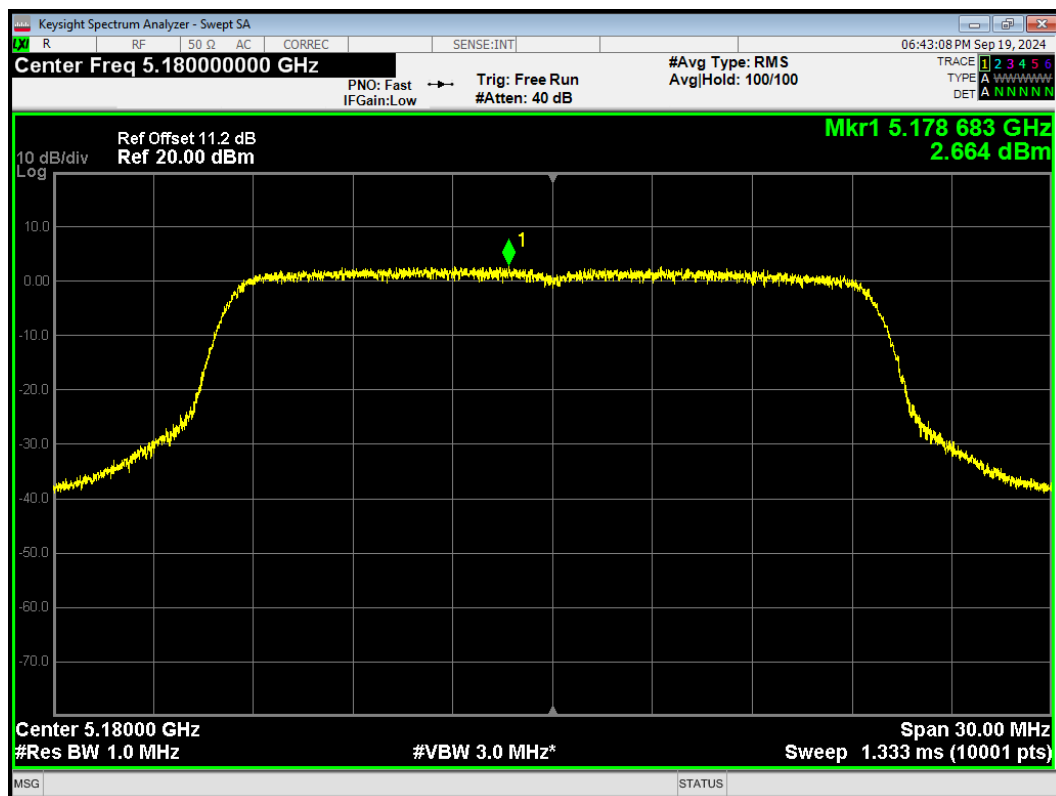
PSD 802.11ac(VHT40) 5230MHz



PSD 802.11ac(VHT80) 5210MHz

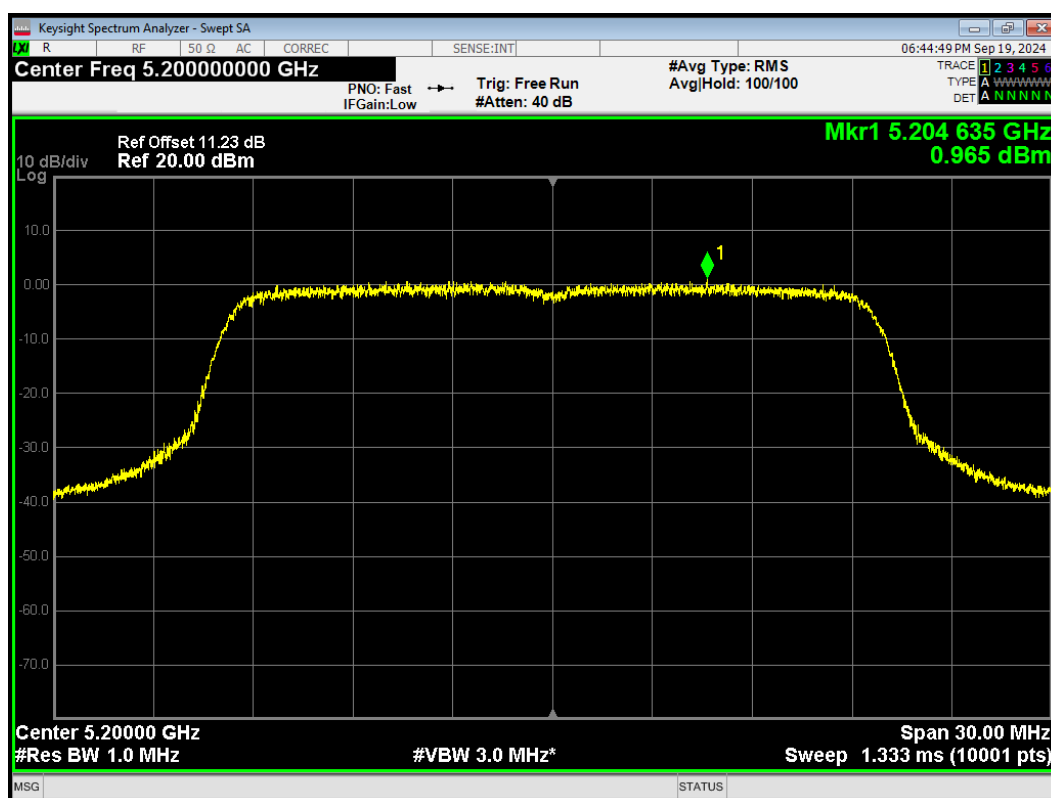


PSD 802.11ax(HE20) 5180MHz

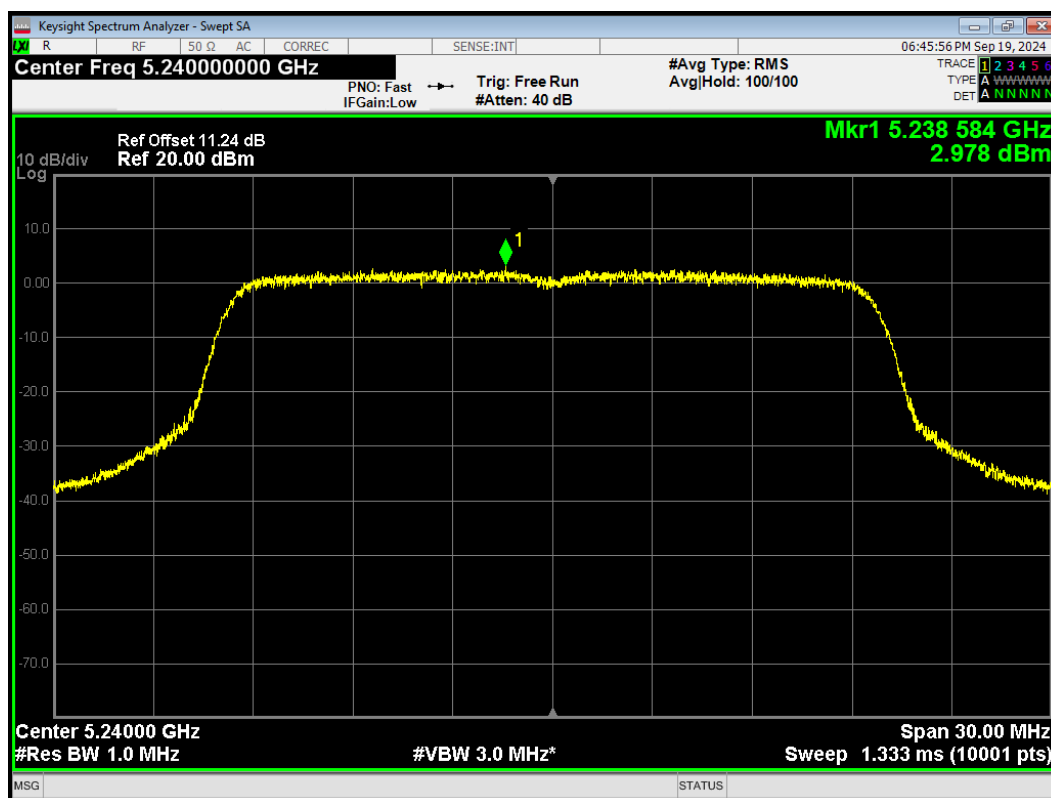




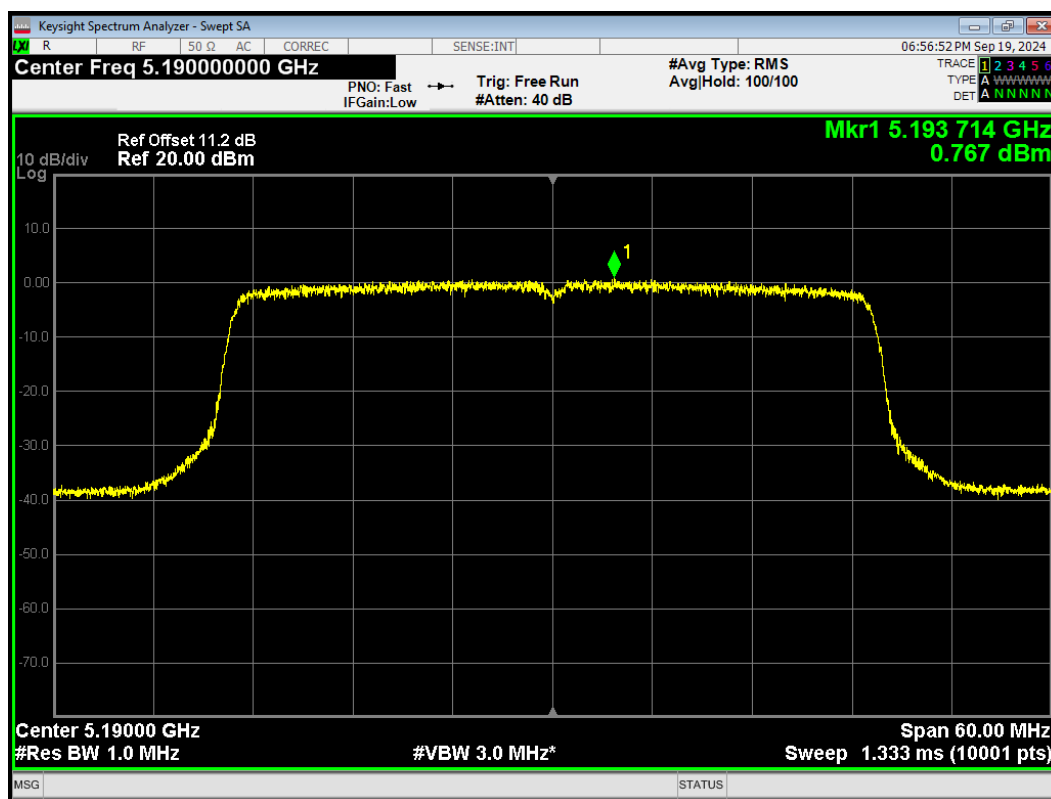
PSD 802.11ax(HE20) 5200MHz



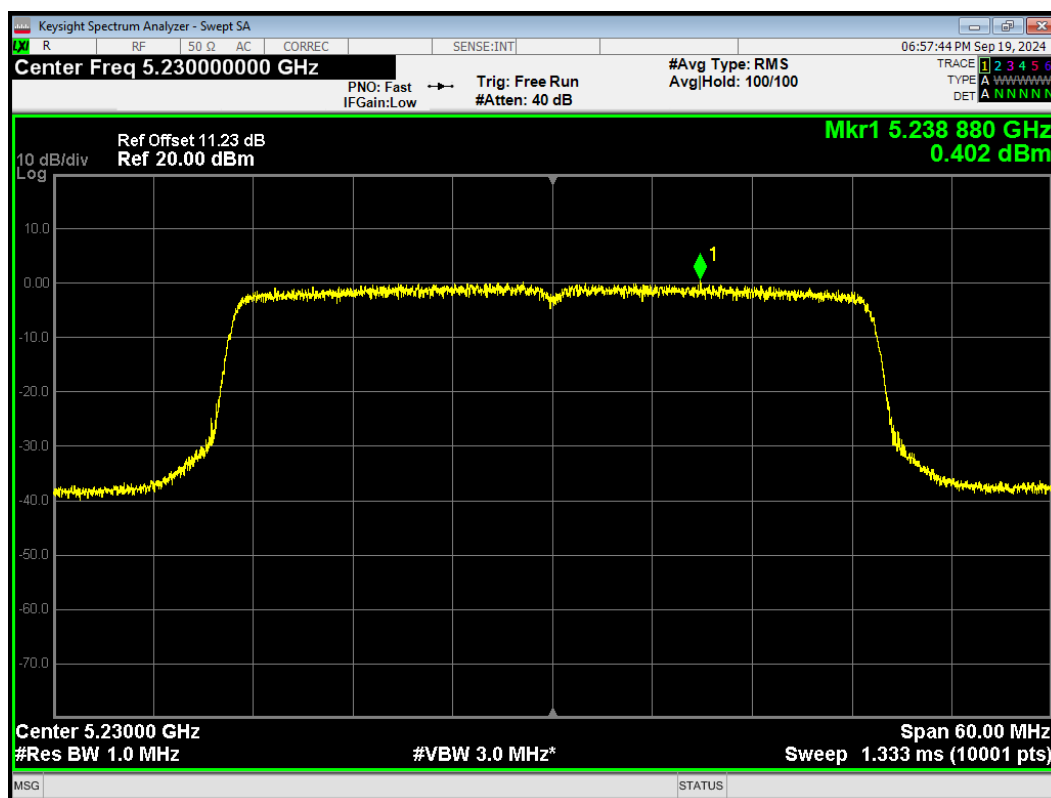
PSD 802.11ax(HE20) 5240MHz



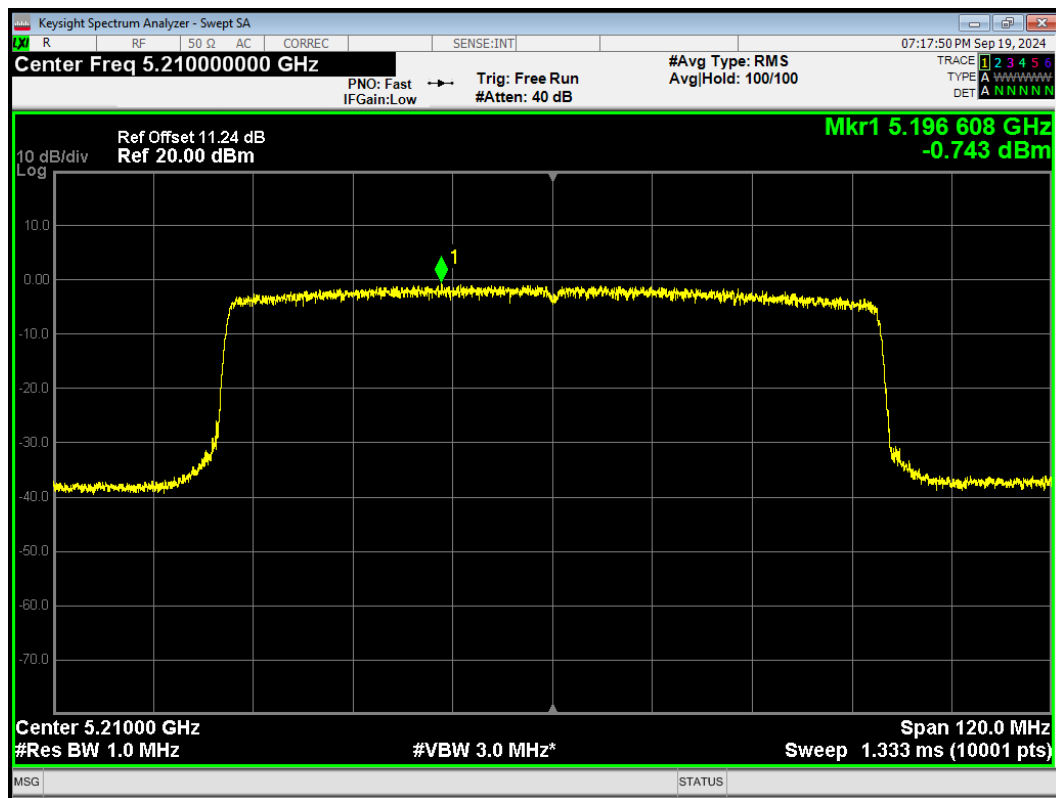
PSD 802.11ax(HE40) 5190MHz



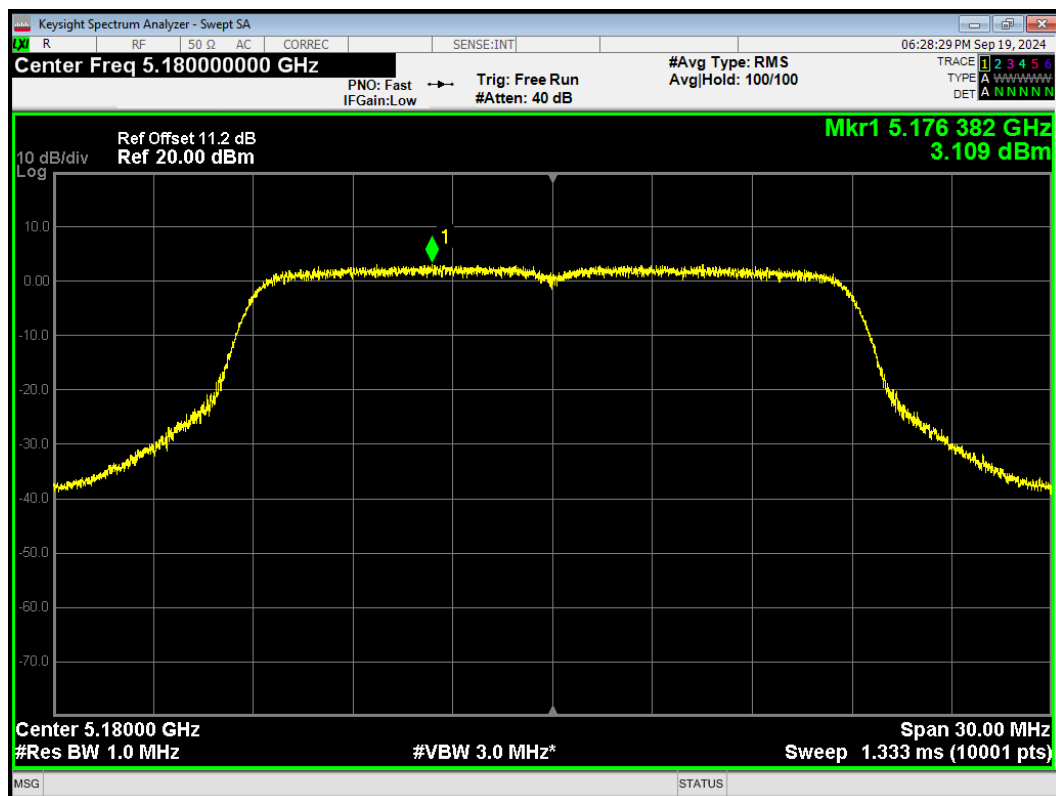
PSD 802.11ax(HE40) 5230MHz



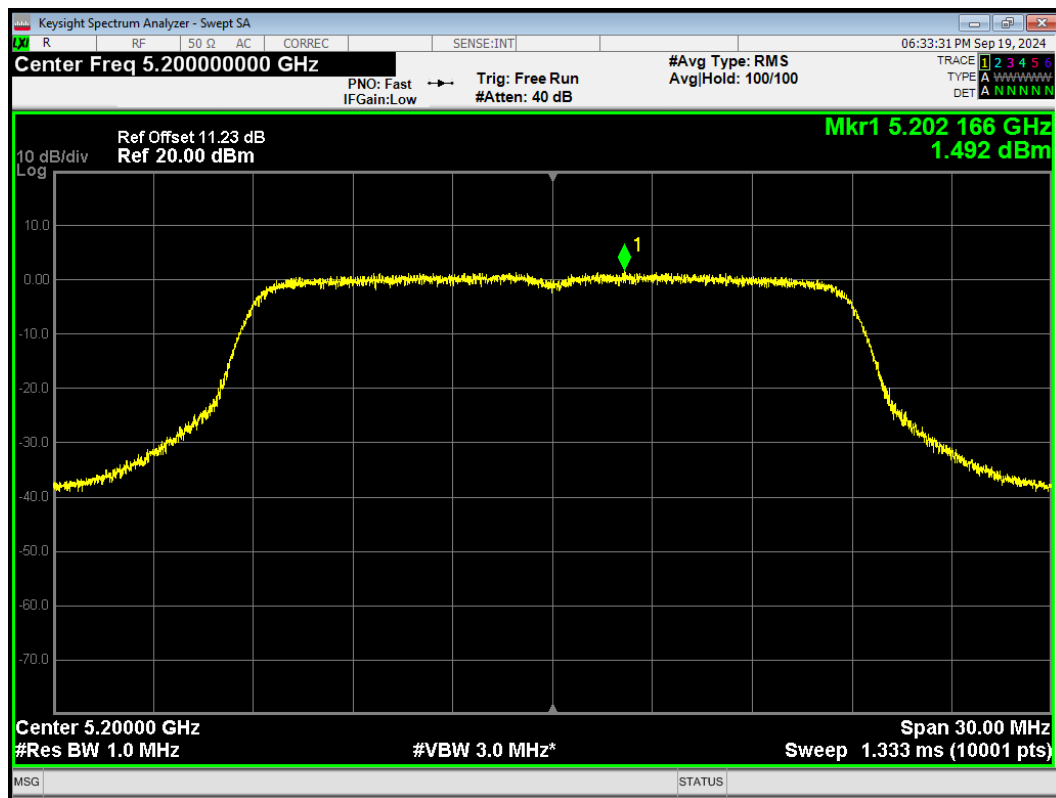
PSD 802.11ax(HE80) 5210MHz



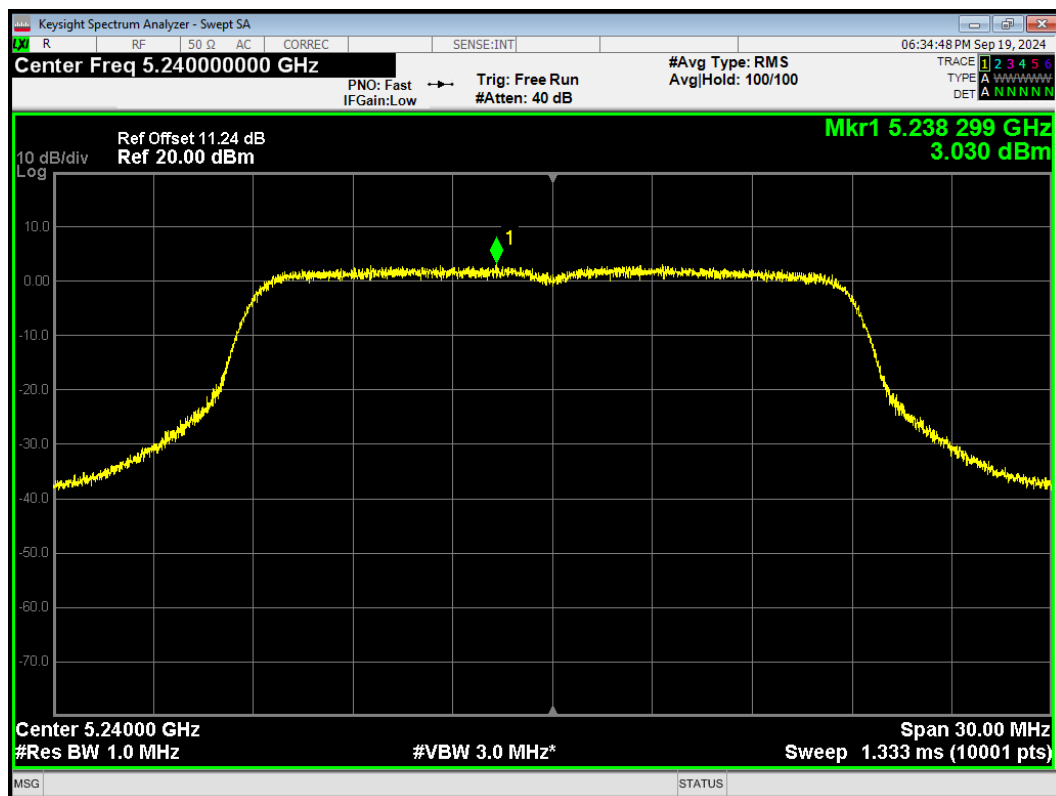
PSD 802.11n(HT20) 5180MHz



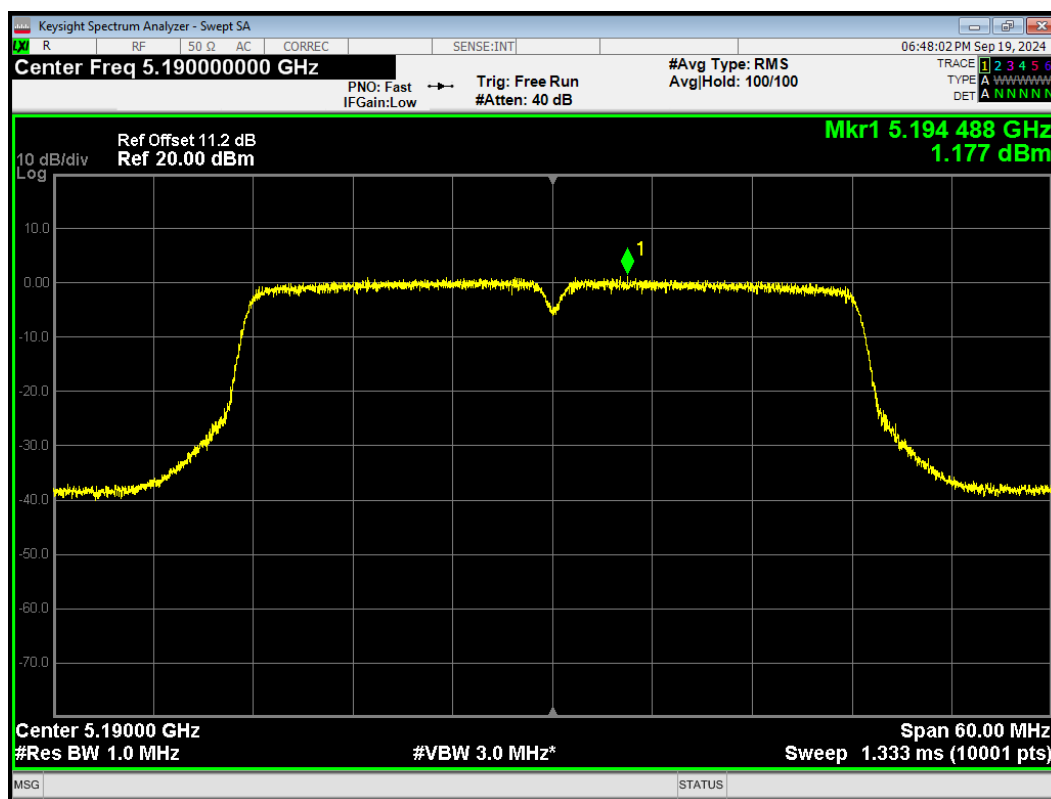
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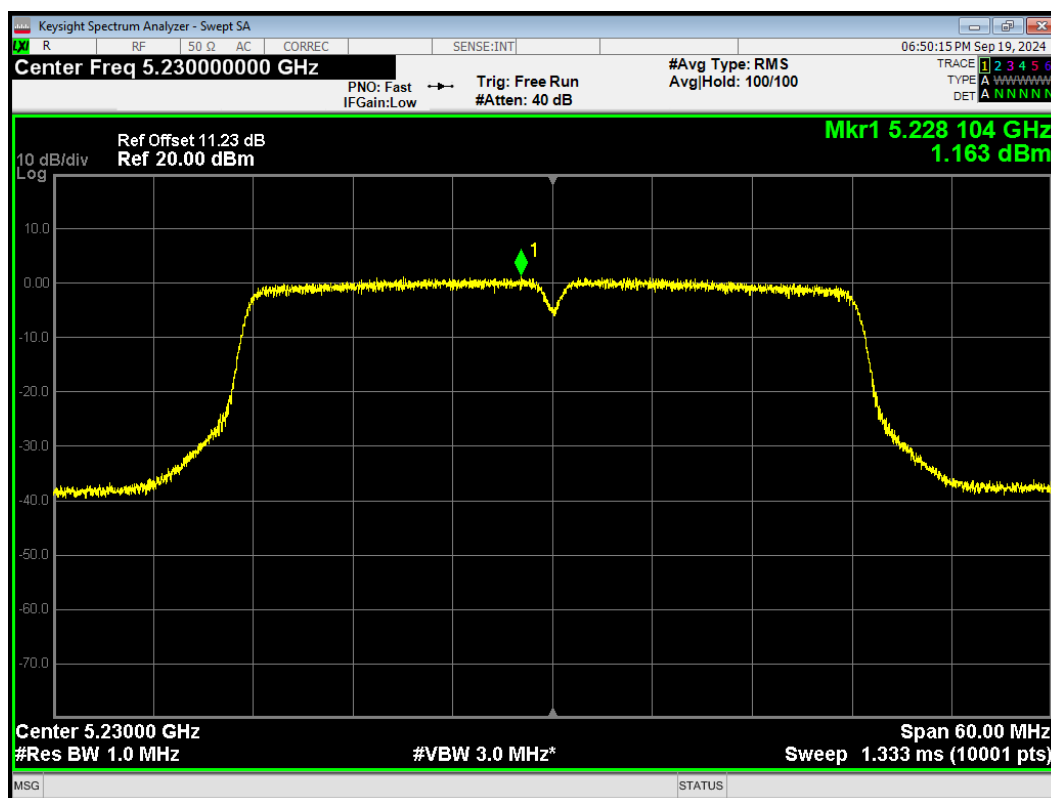
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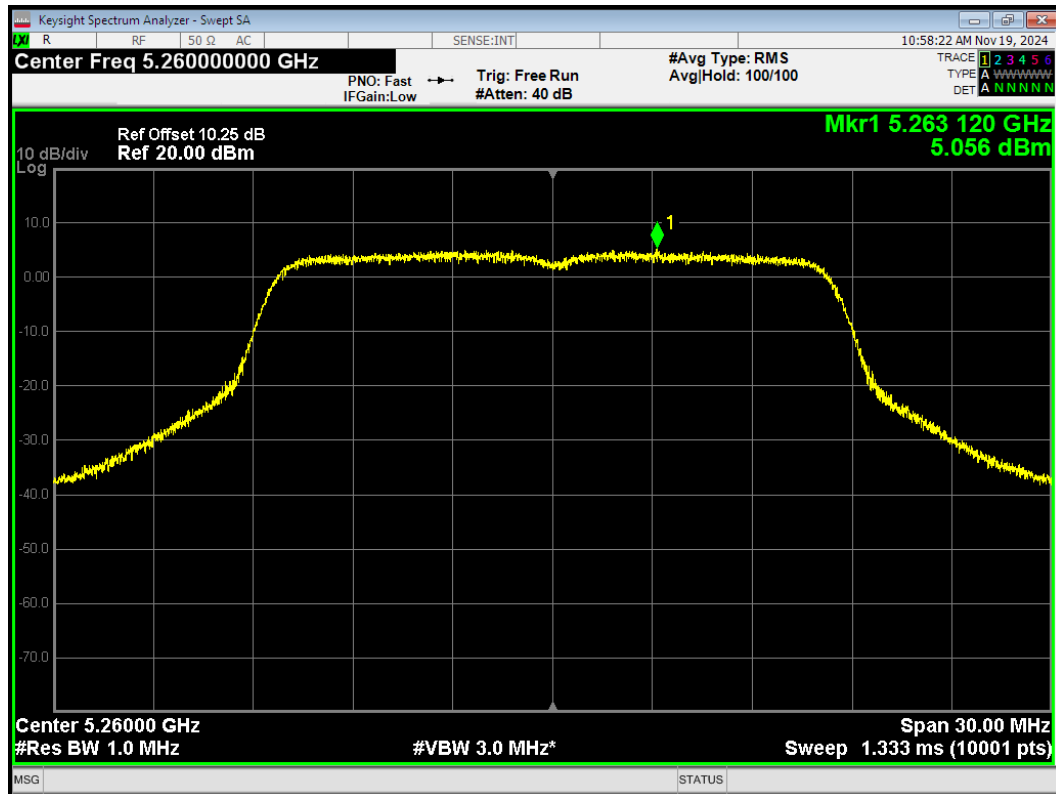
PSD 802.11n(HT40) 5190MHz



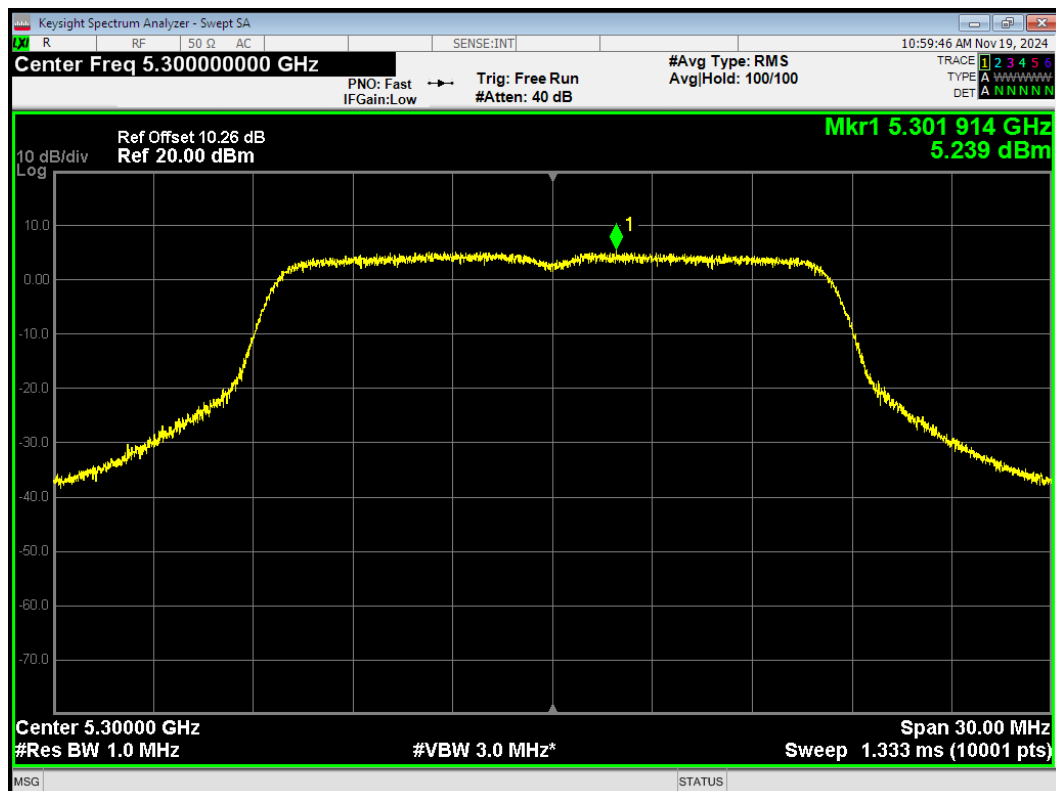
PSD 802.11n(HT40) 5230MHz



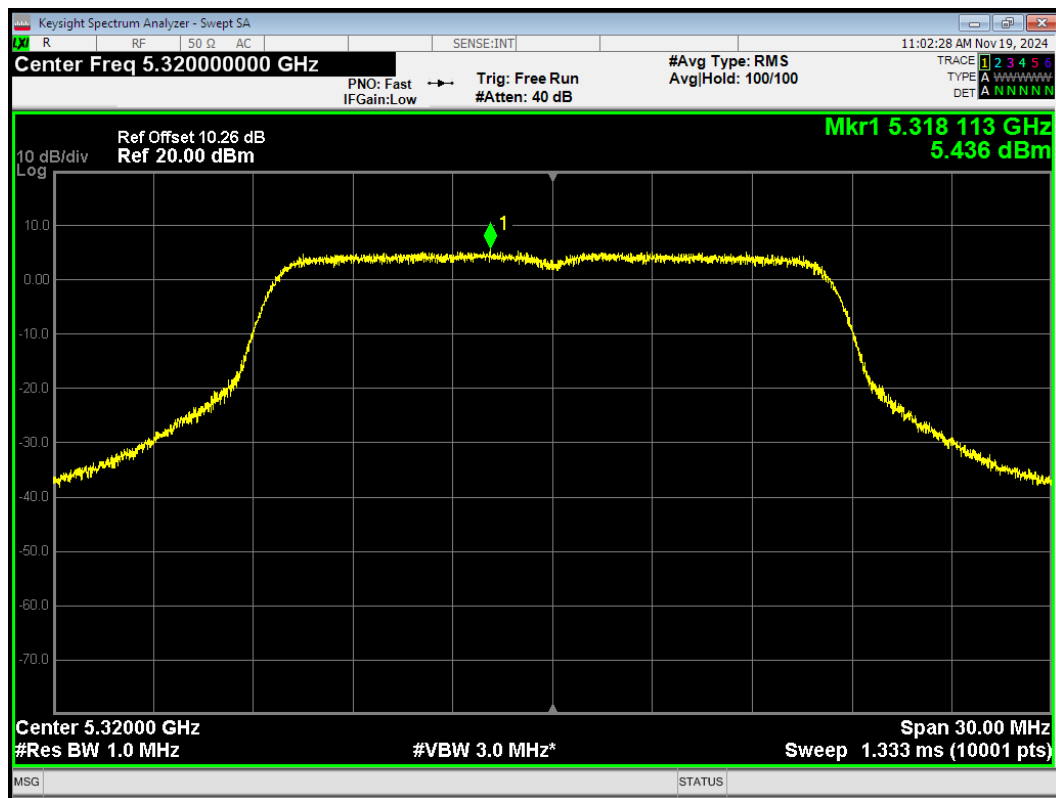
PSD 802.11a 5260MHz



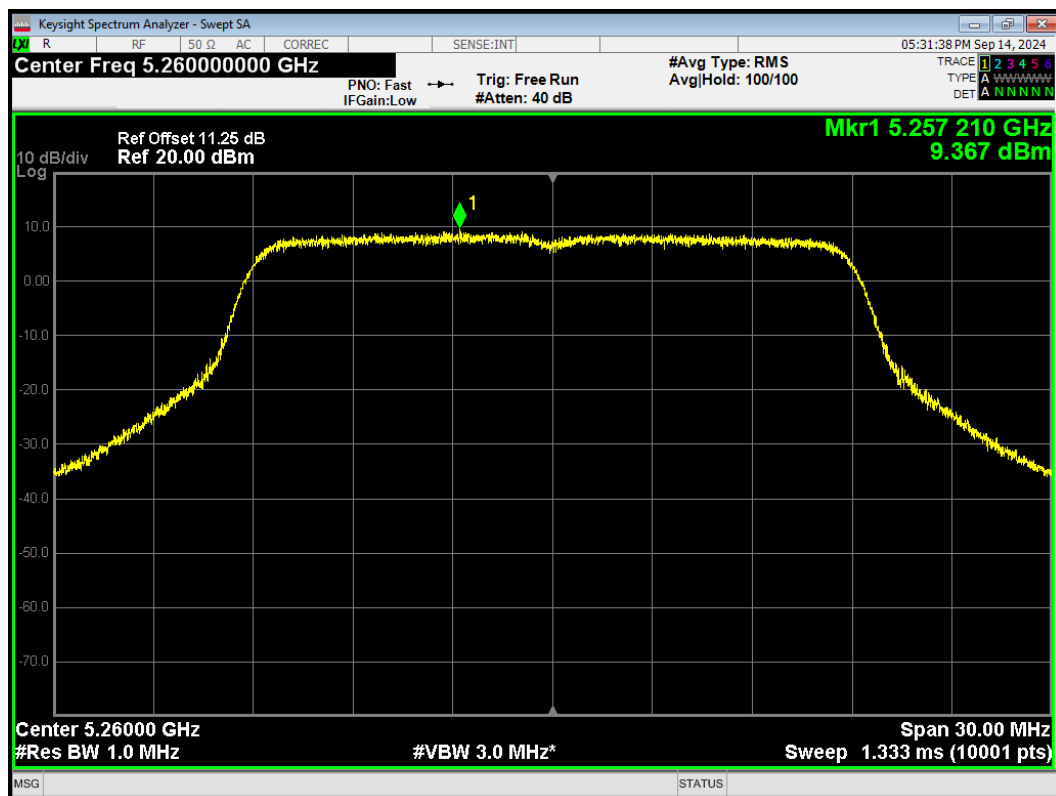
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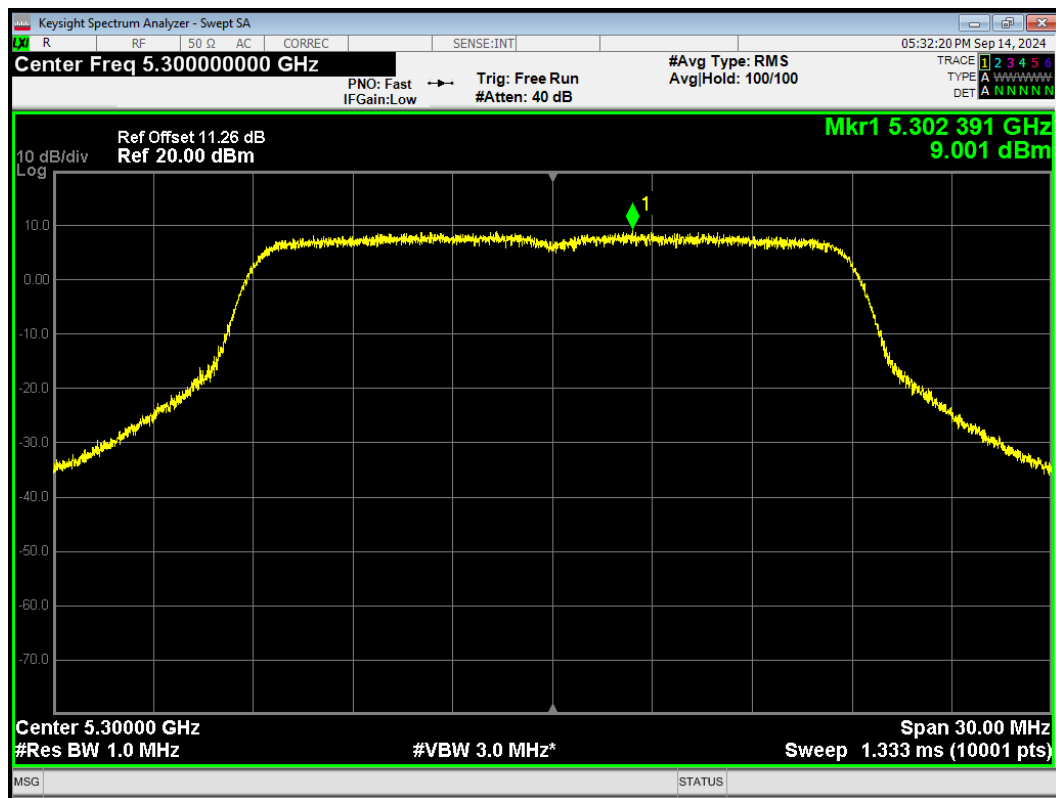
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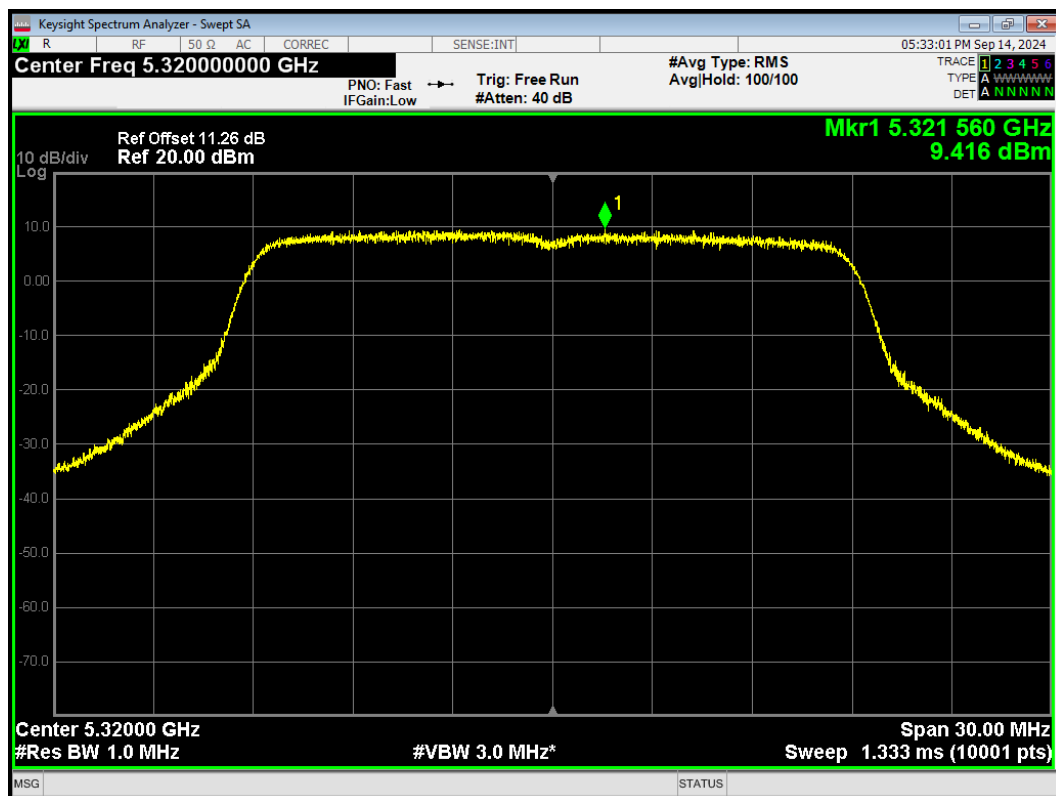
PSD 802.11ac(VHT20) 5260MHz



PSD 802.11ac(VHT20) 5300MHz

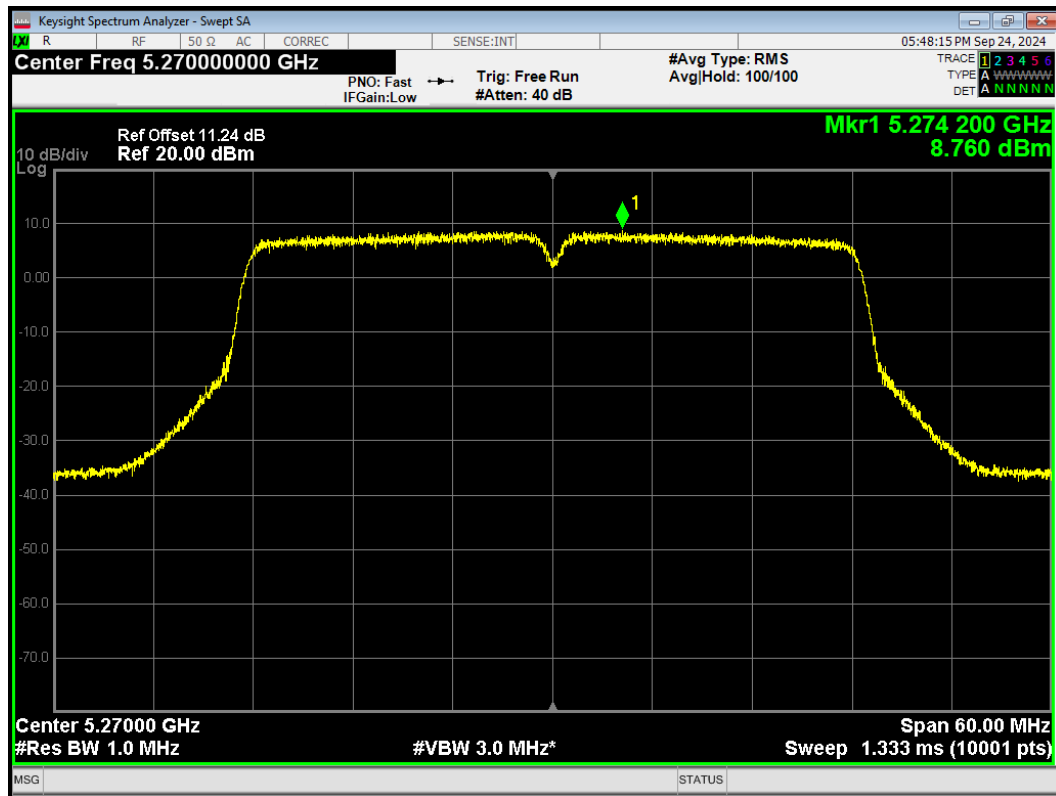


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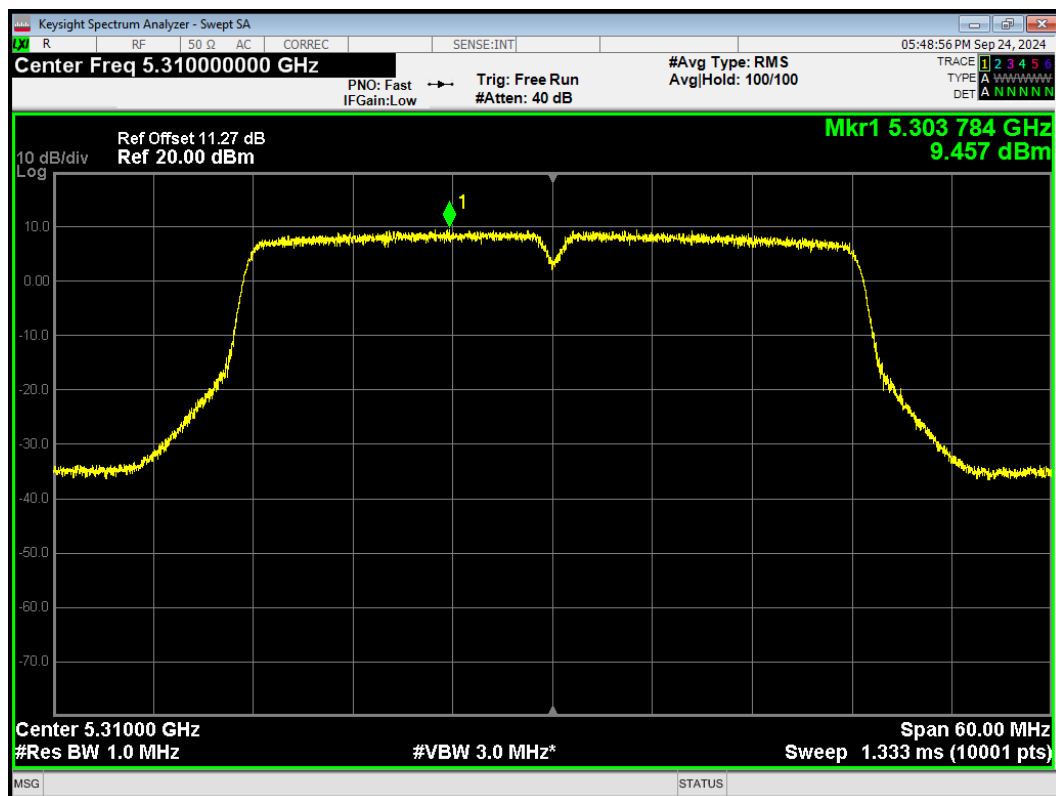




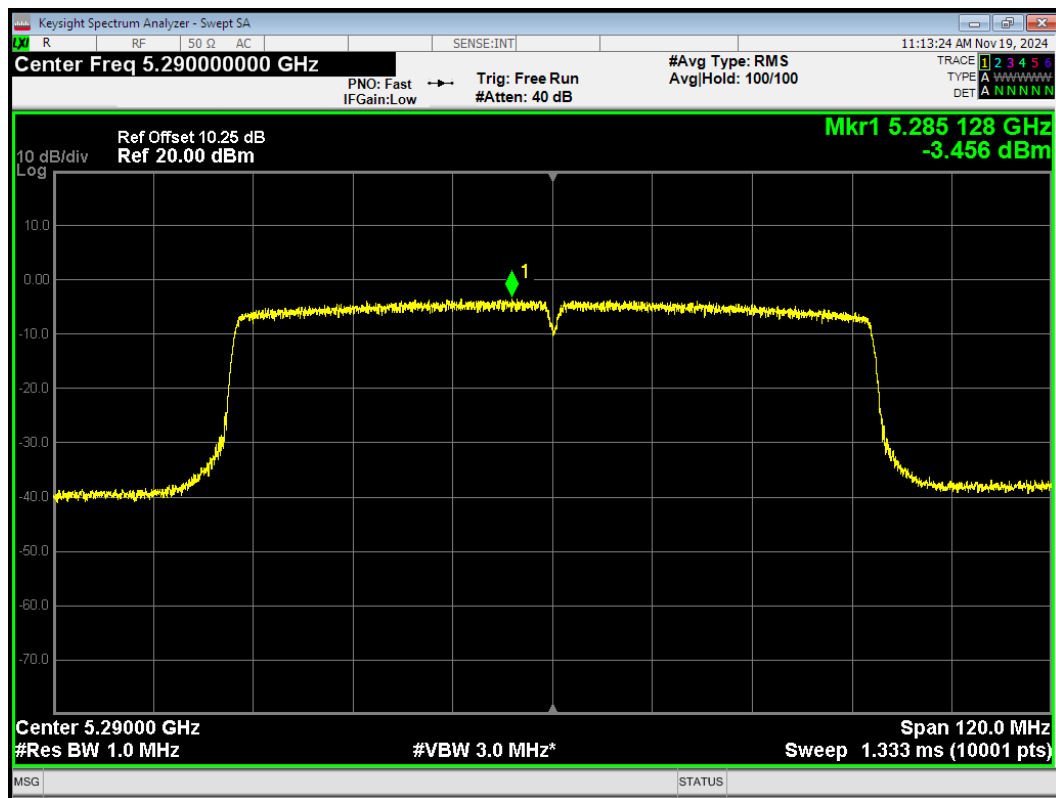
PSD 802.11ac(VHT40) 5270MHz



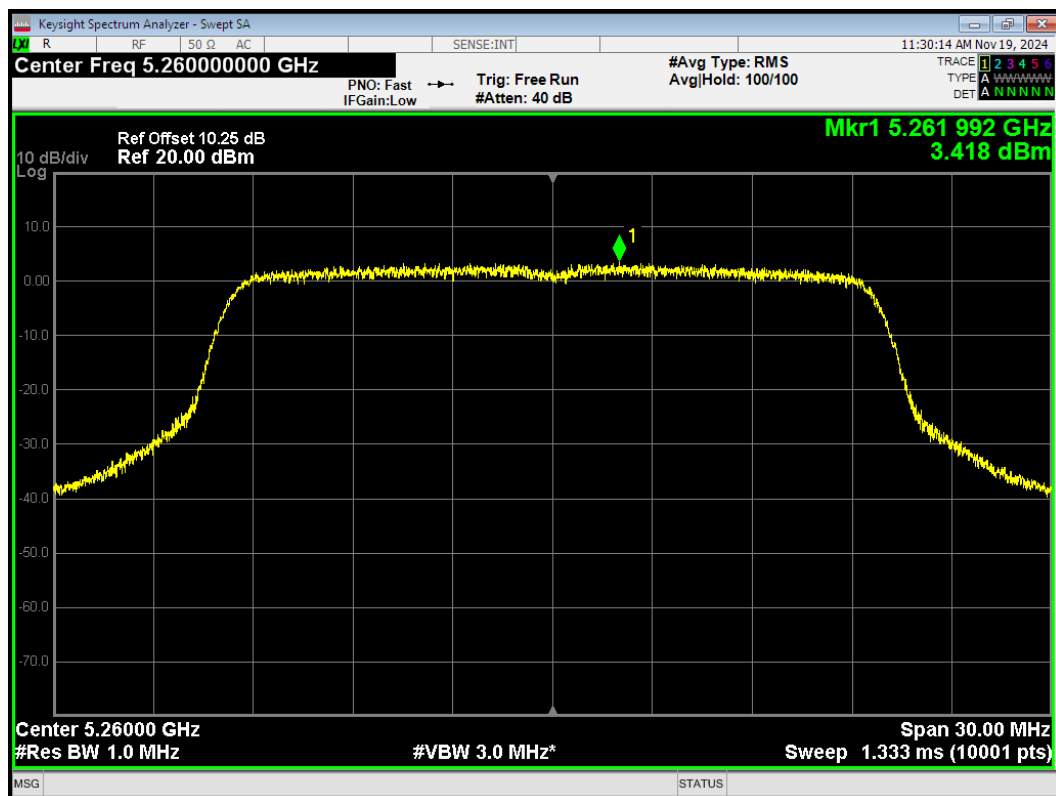
PSD 802.11ac(VHT40) 5310MHz



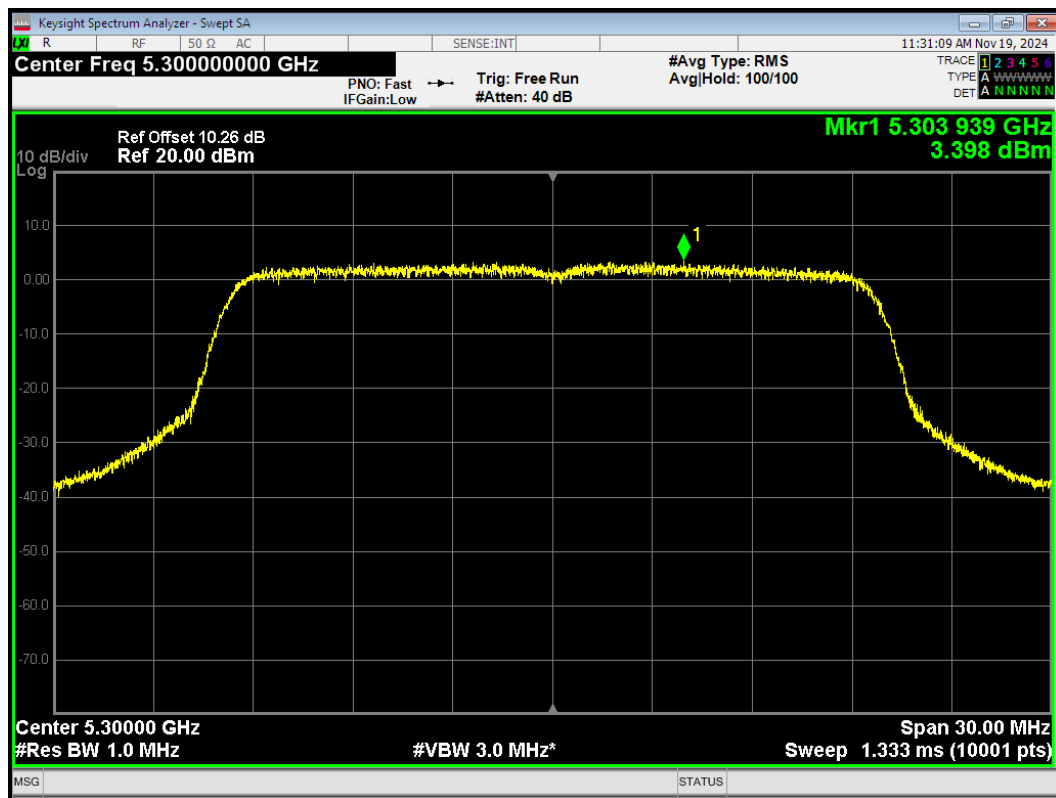
PSD 802.11ac(VHT80) 5290MHz



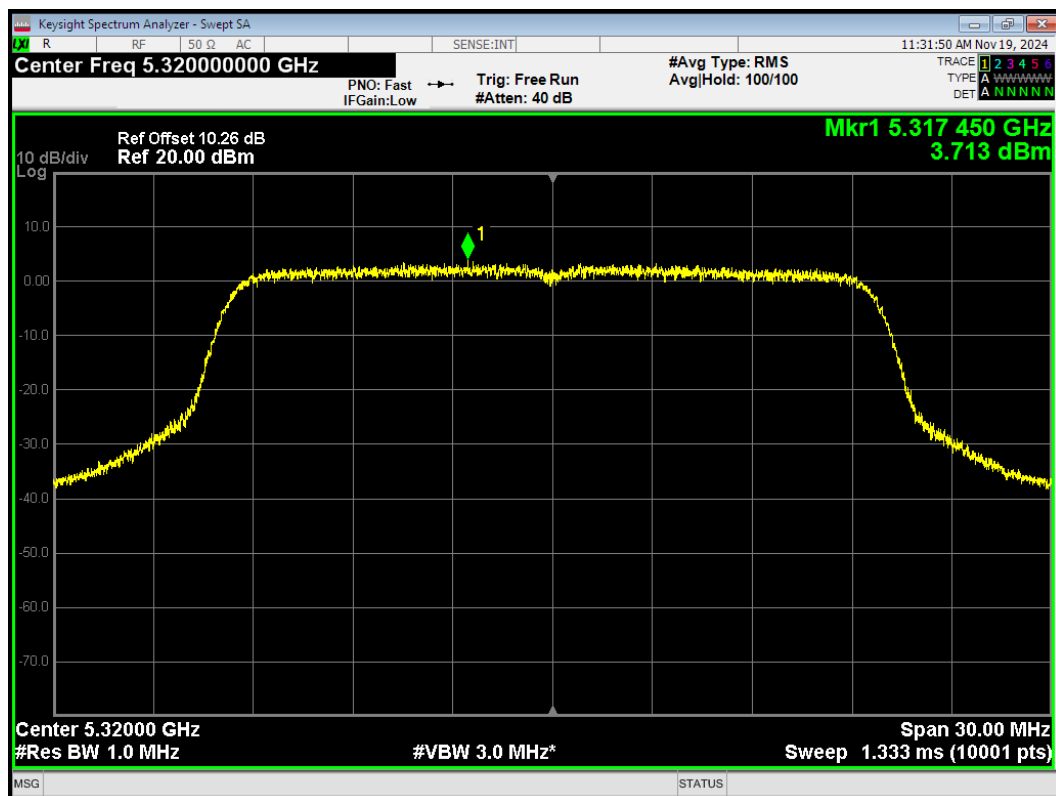
PSD 802.11ax(HE20) 5260MHz



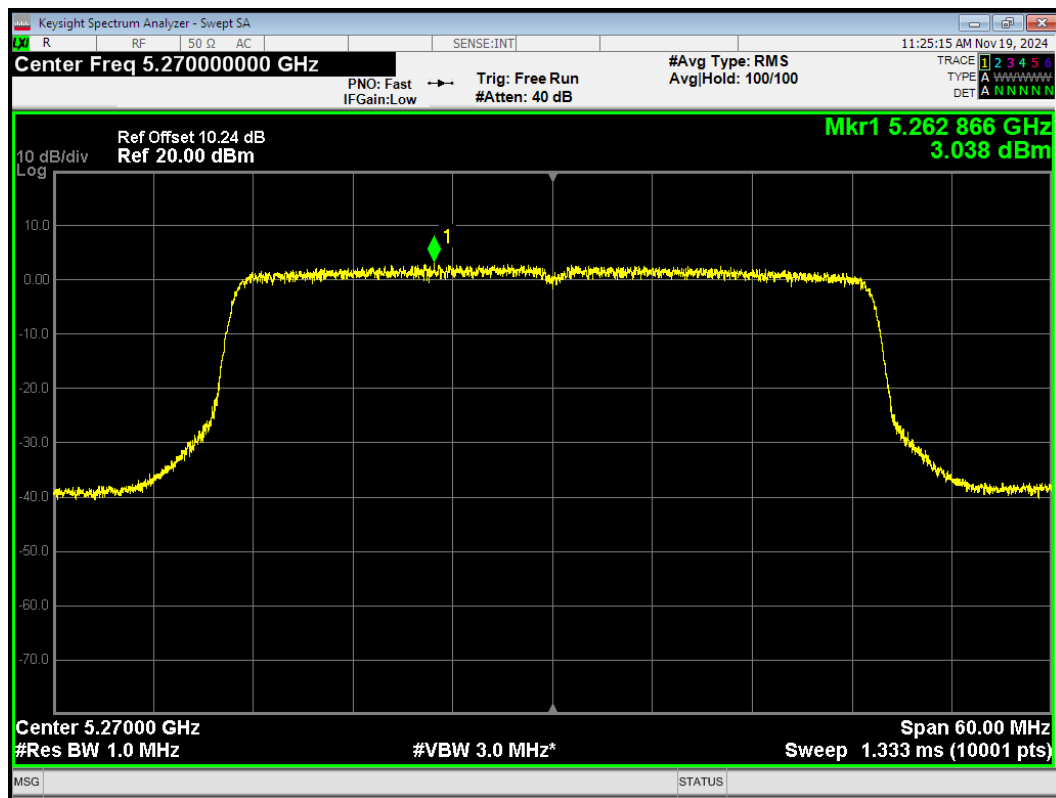
PSD 802.11ax(HE20) 5300MHz



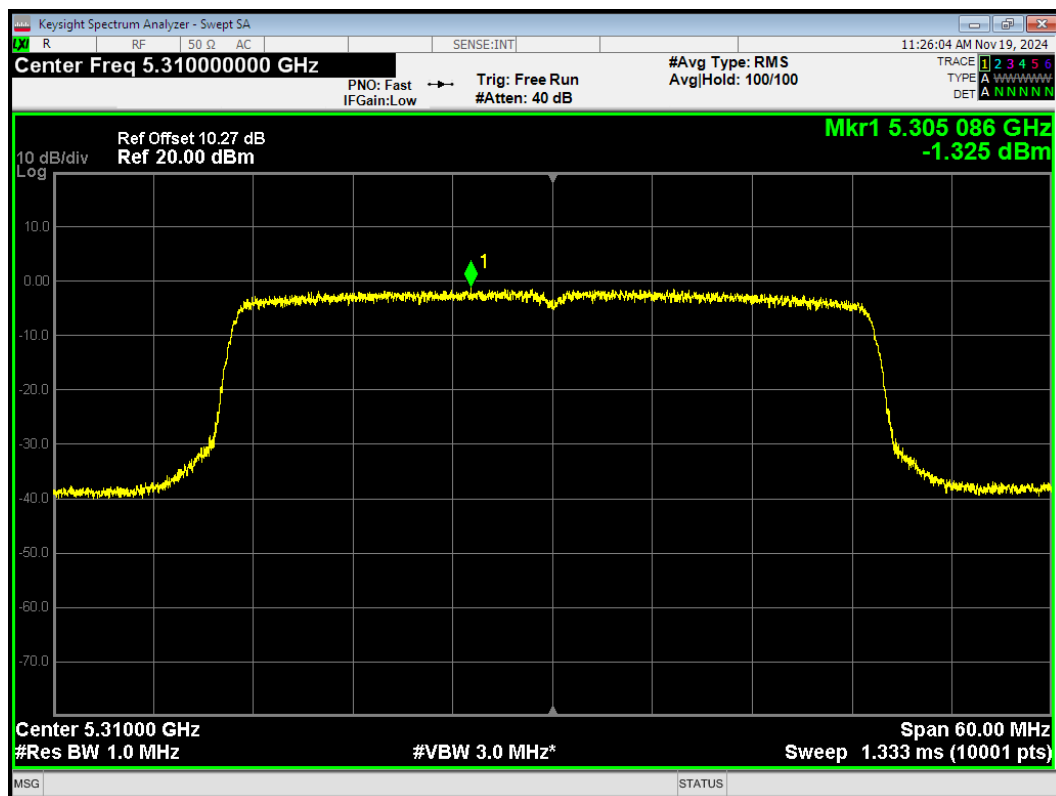
PSD 802.11ax(HE20) 5320MHz



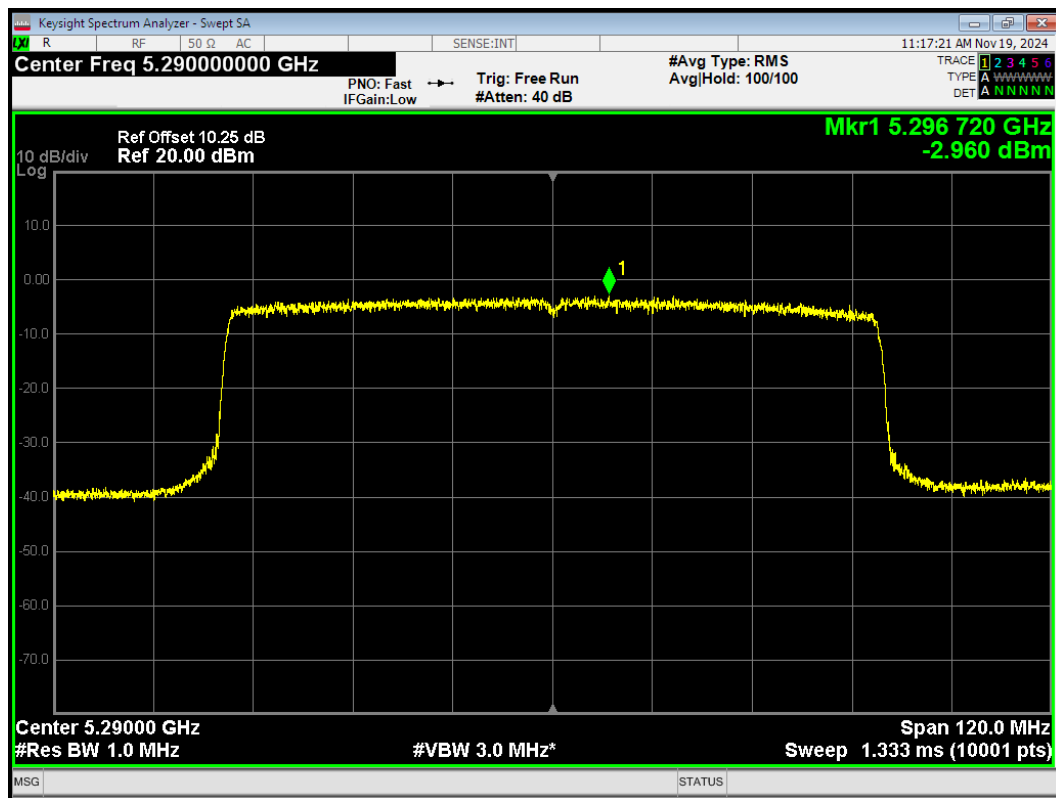
PSD 802.11ax(HE40) 5270MHz



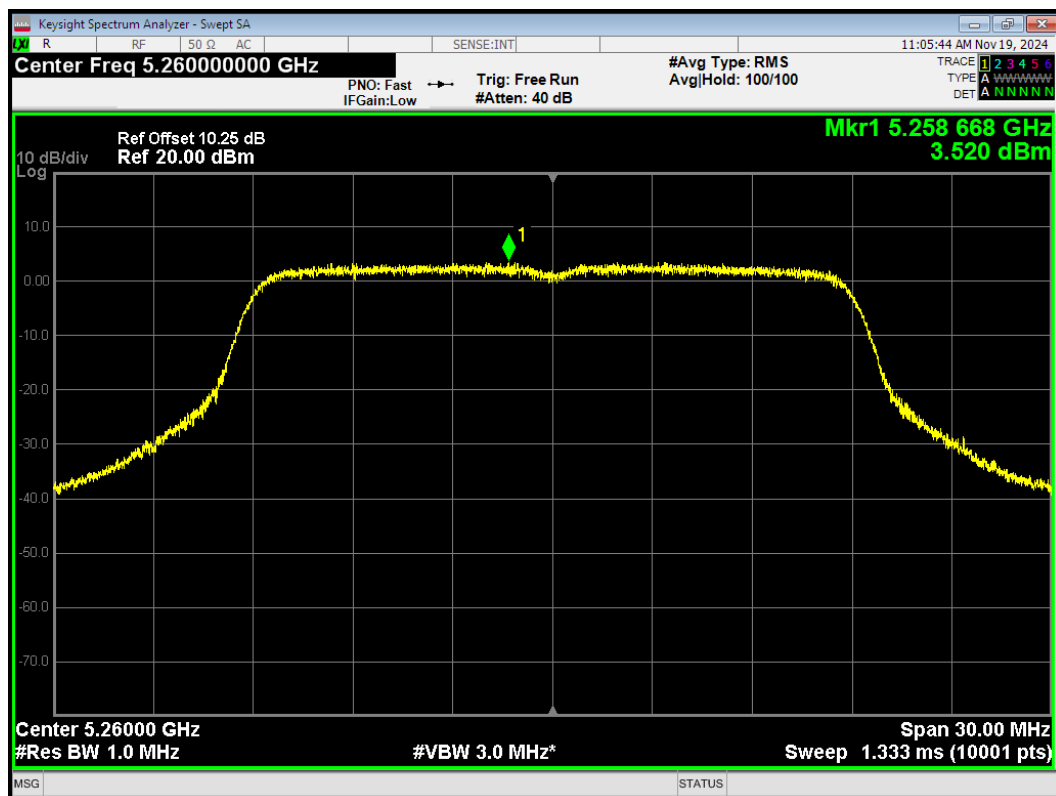
PSD 802.11ax(HE40) 5310MHz



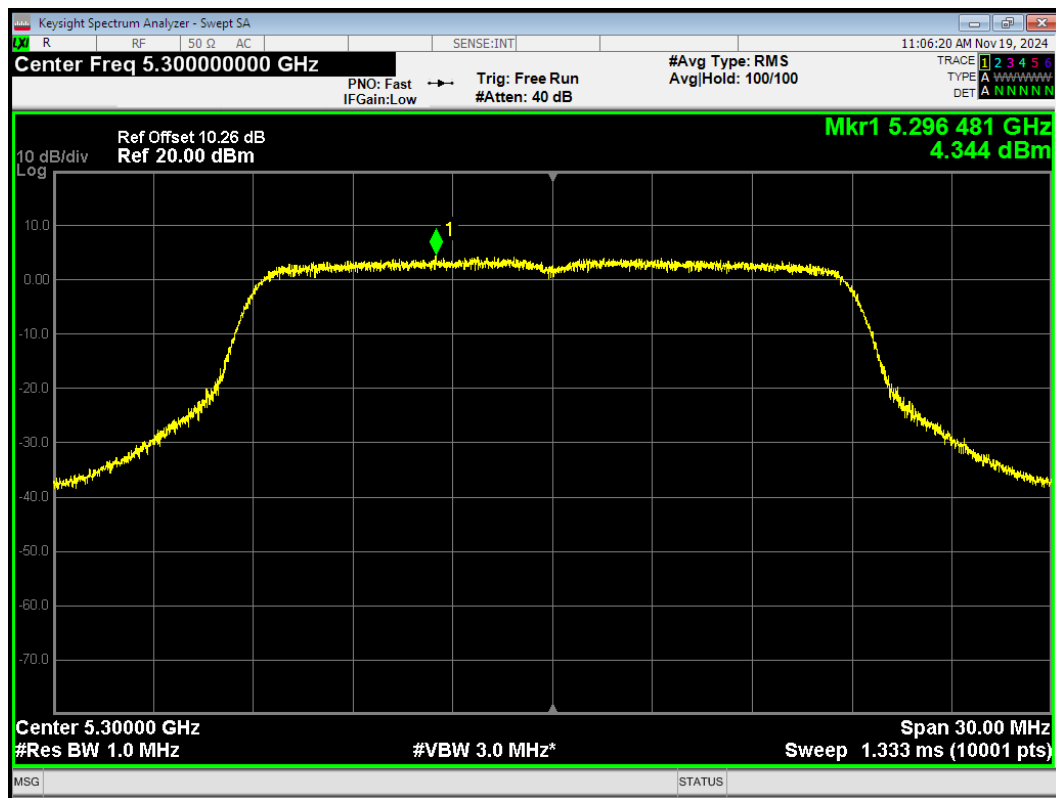
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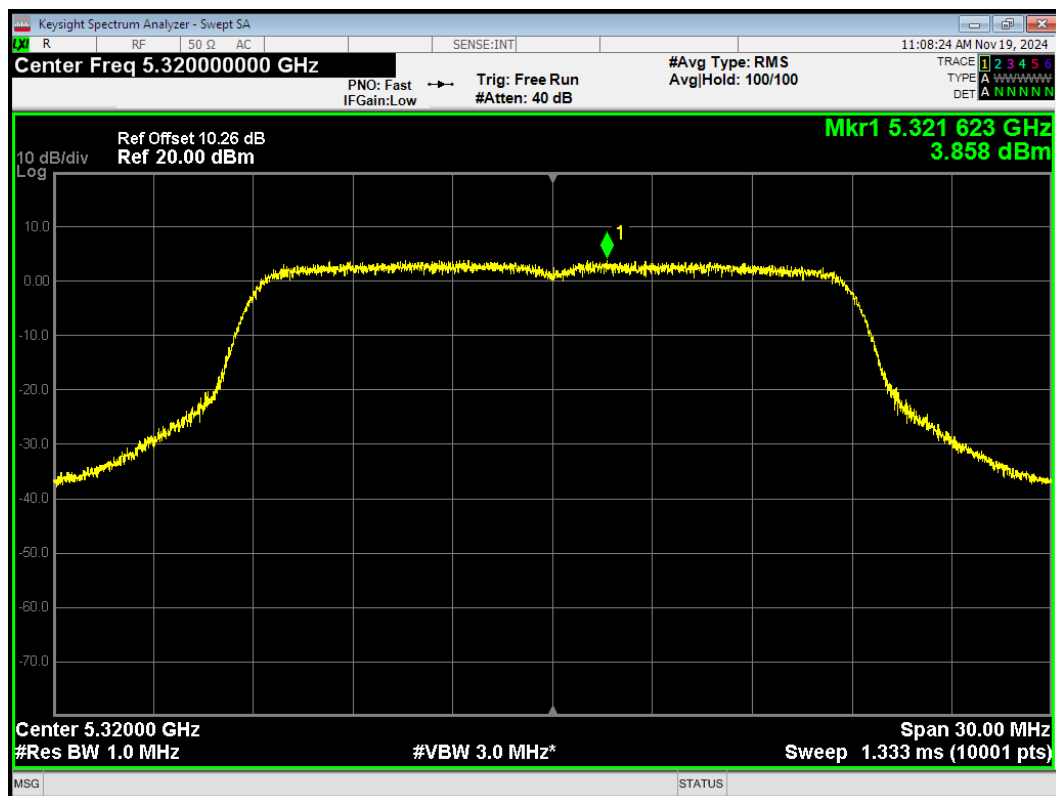
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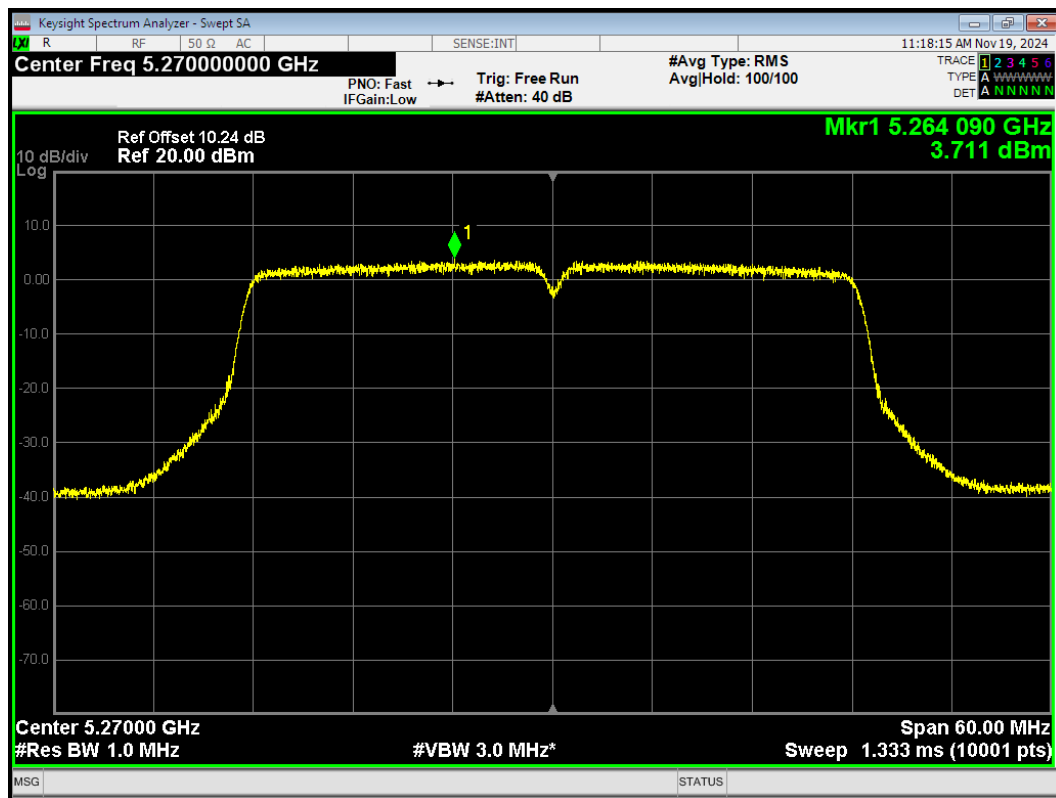
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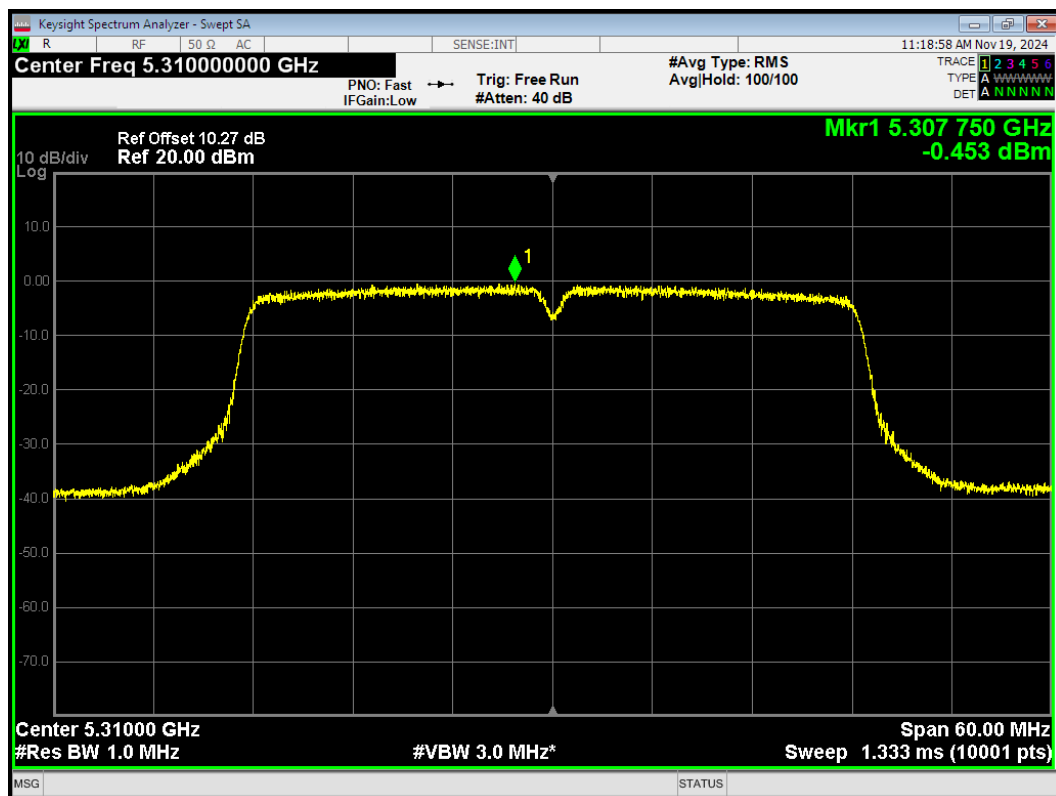
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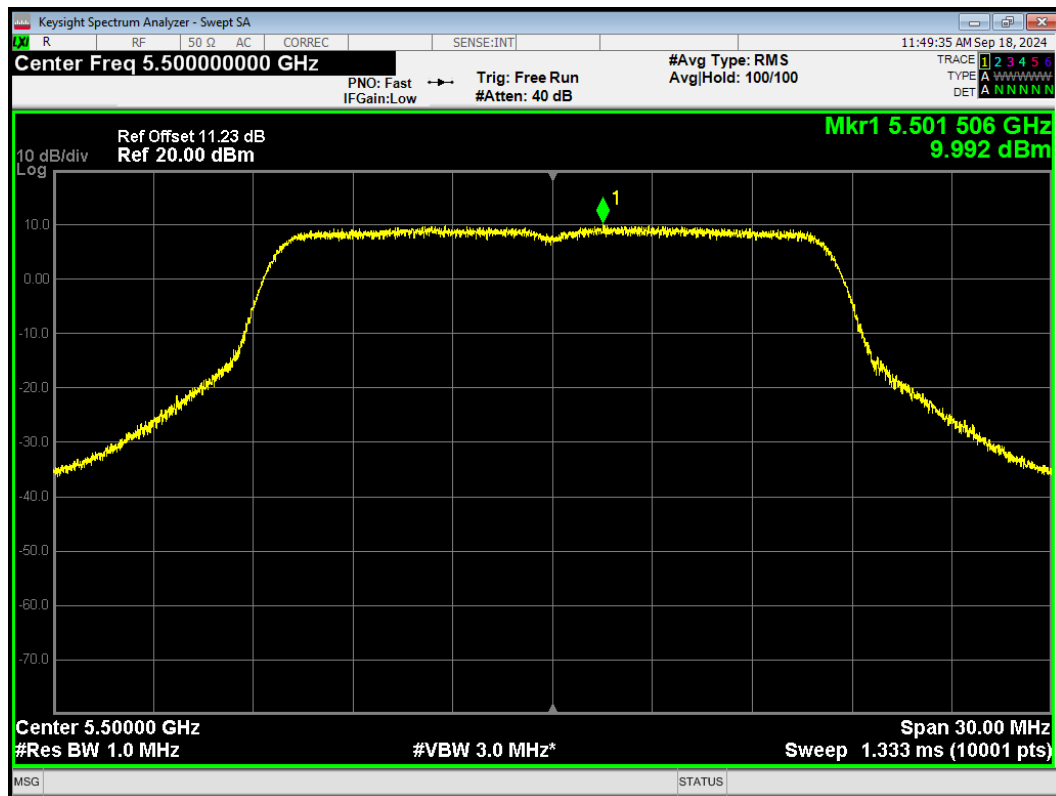
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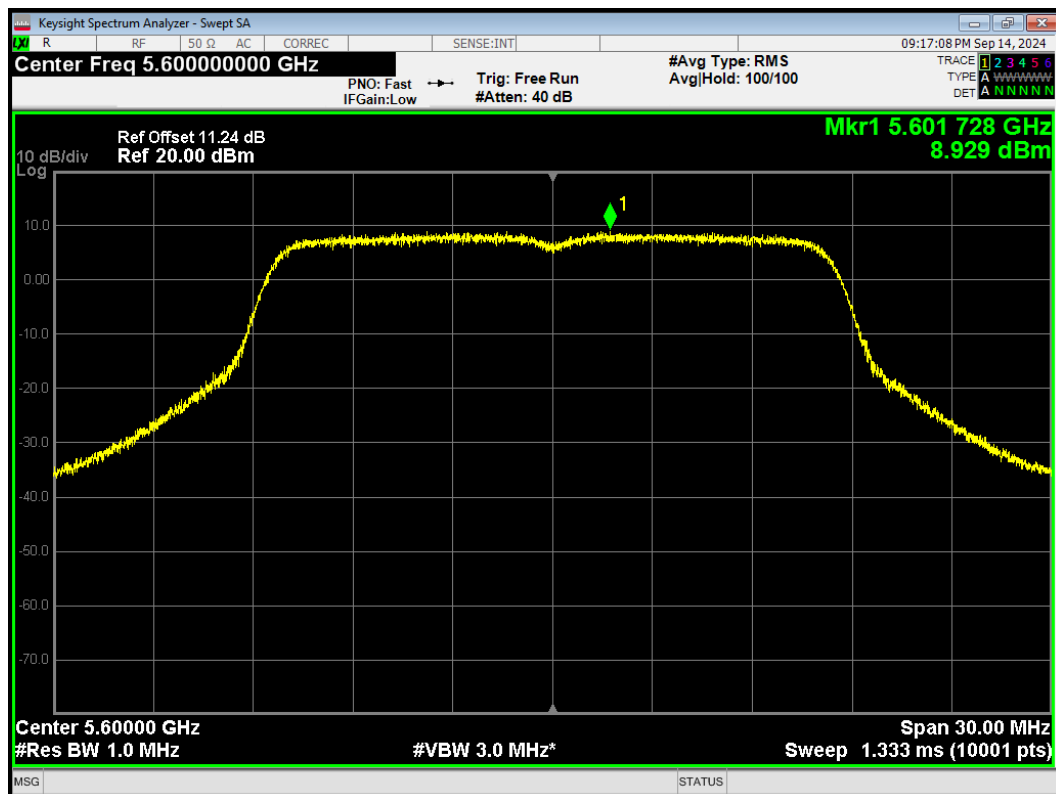
PSD 802.11n(HT40) 5310MHz



PSD 802.11a 5500MHz

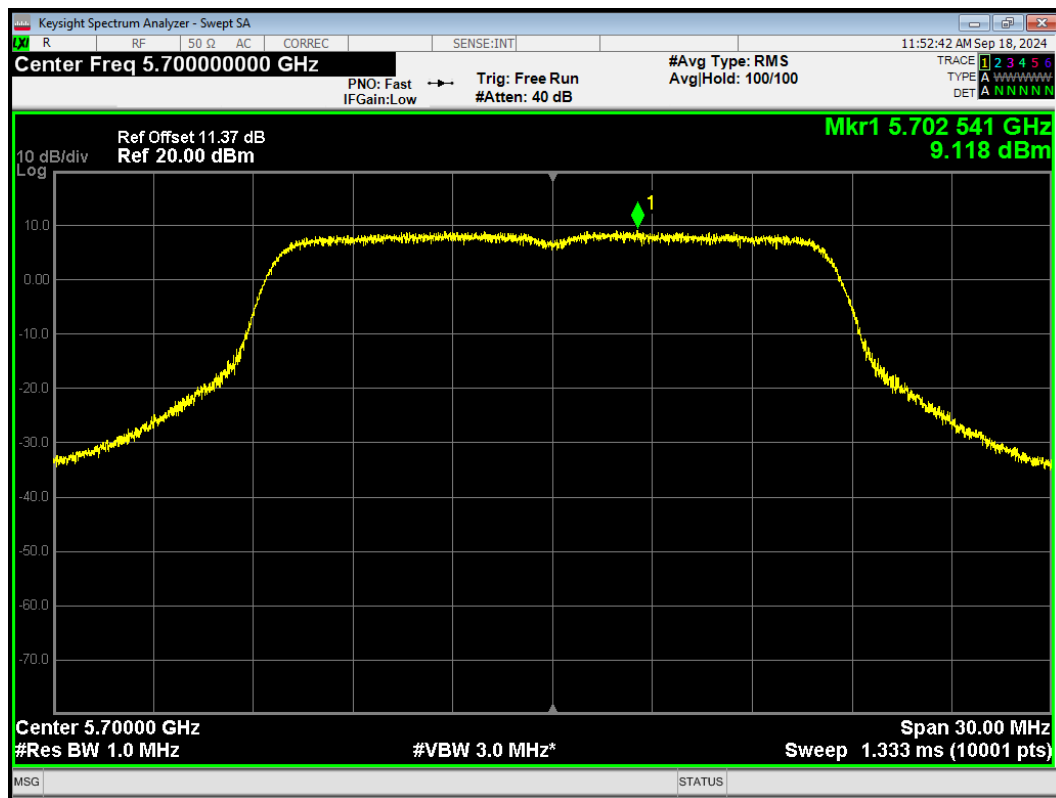


PSD 802.11a 5600MHz

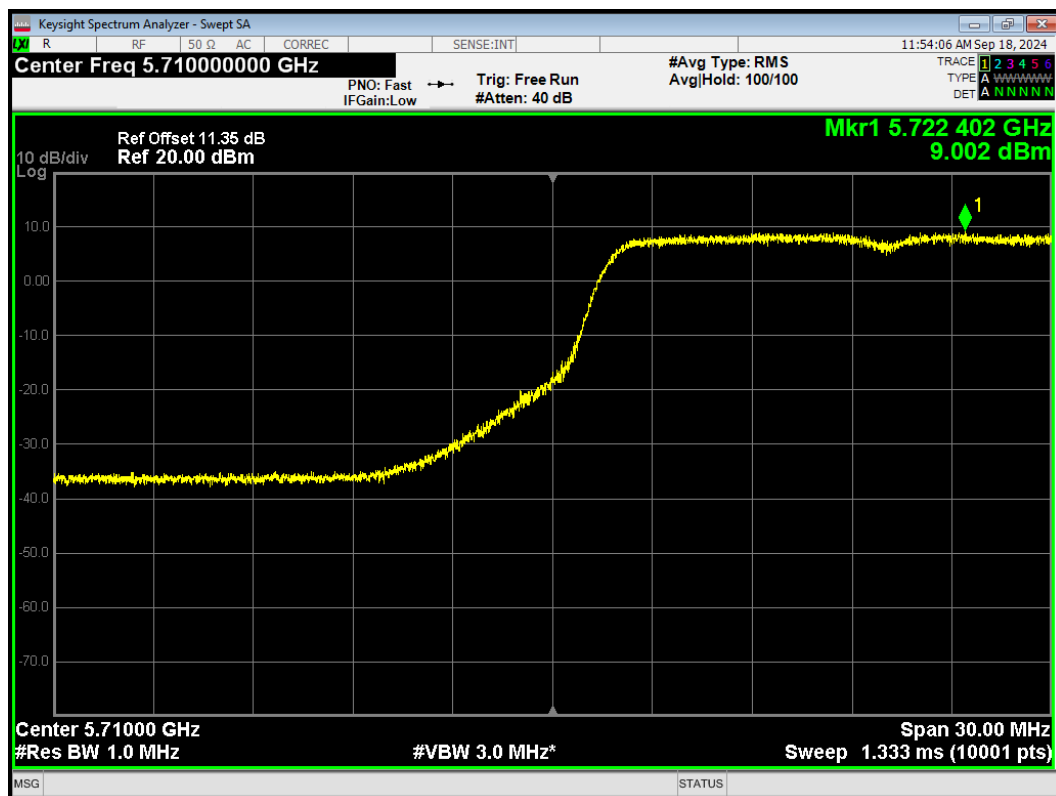




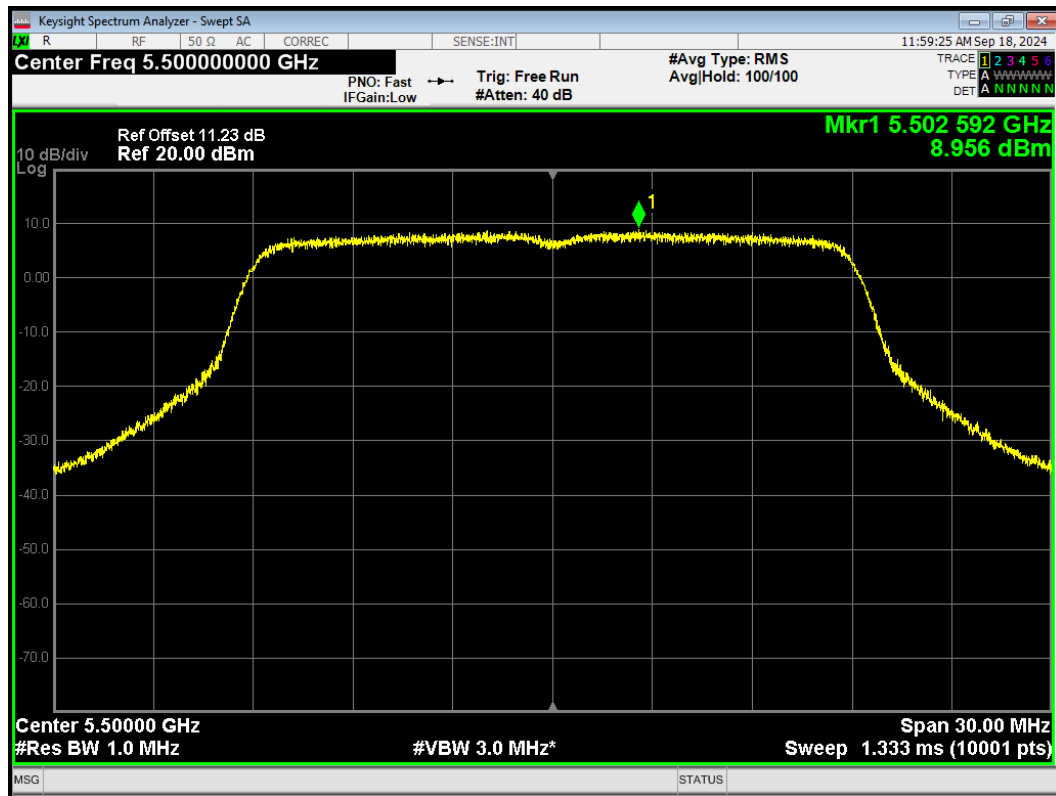
PSD 802.11a 5700MHz



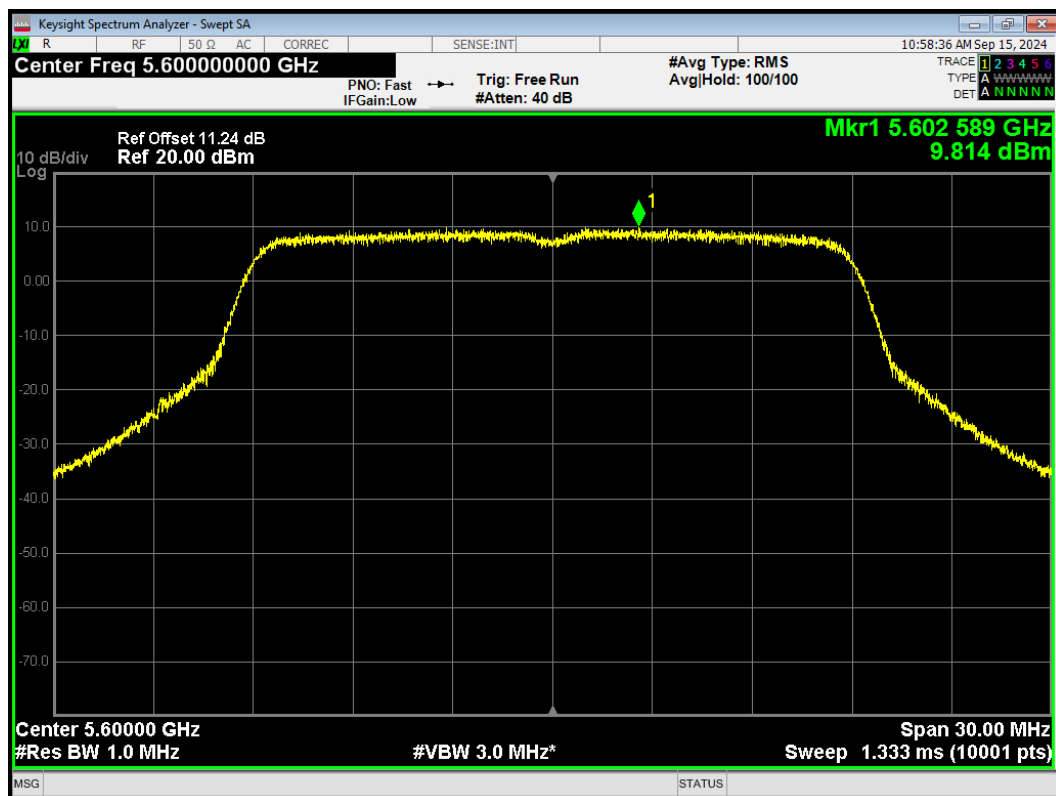
PSD 802.11a 5710MHz



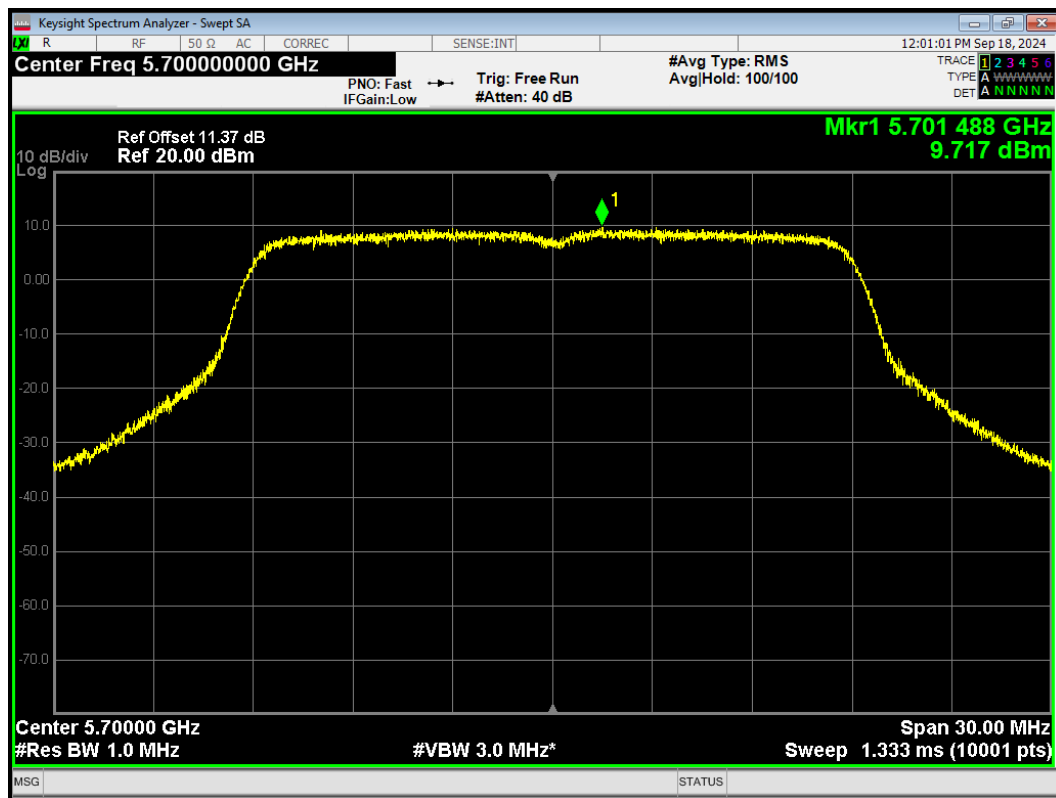
PSD 802.11ac(VHT20) 5500MHz



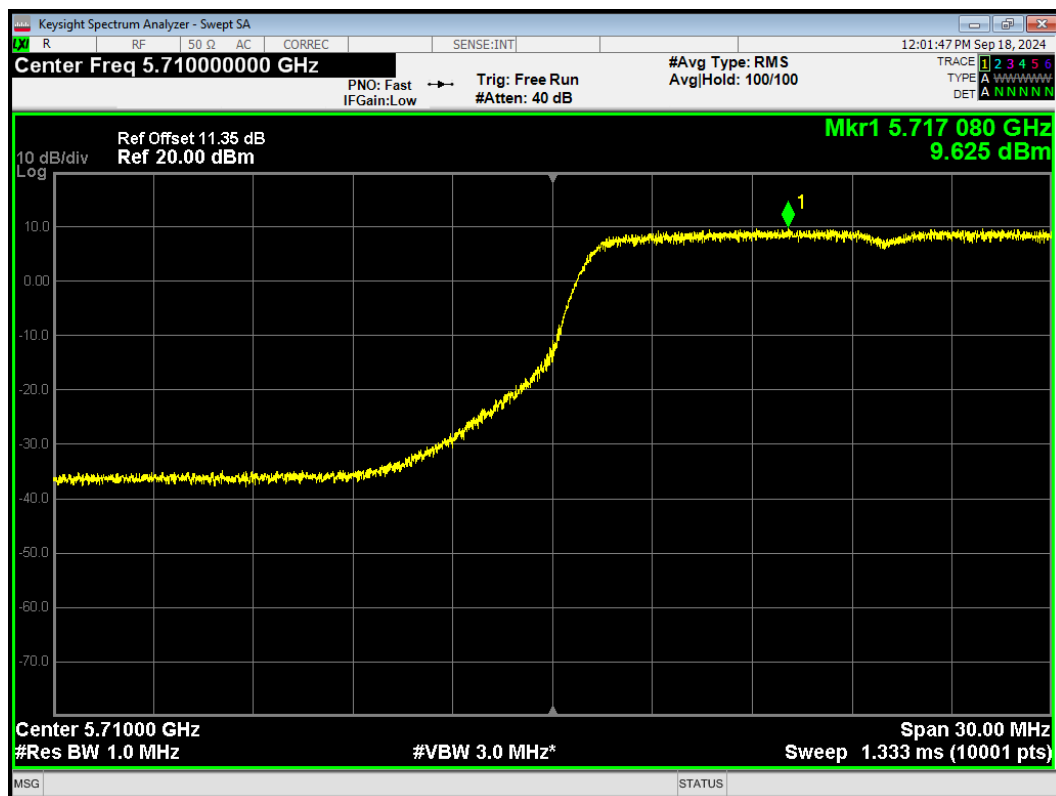
PSD 802.11ac(VHT20) 5600MHz



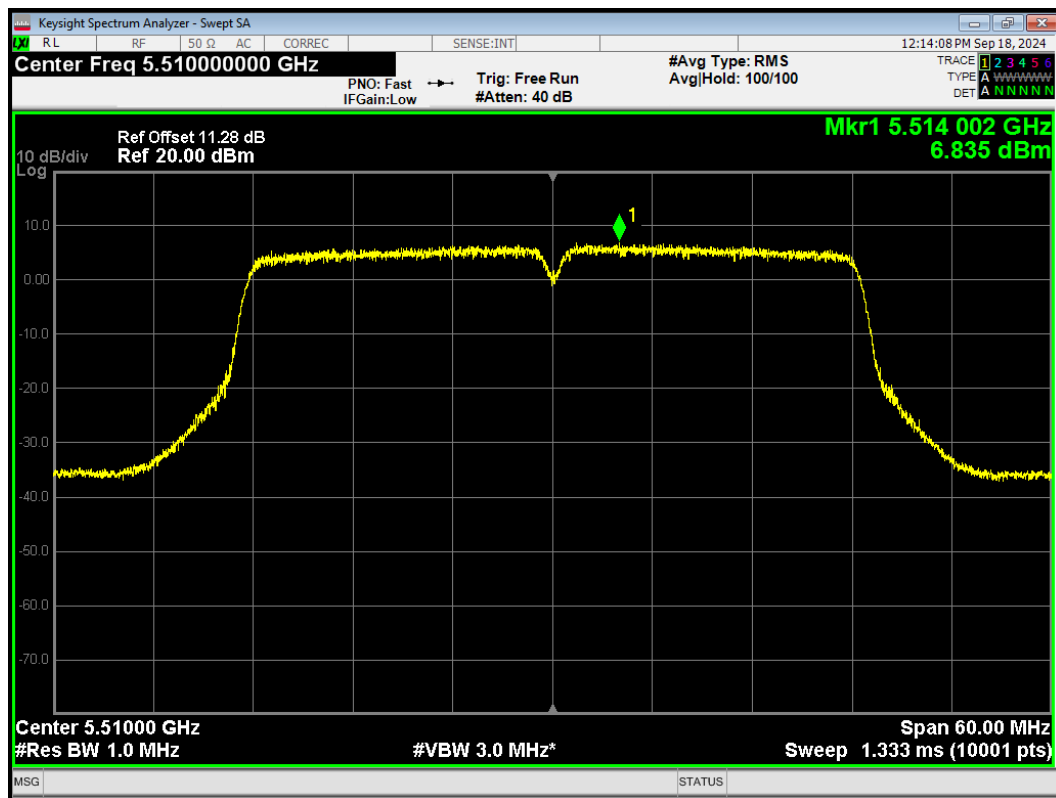
PSD 802.11ac(VHT20) 5700MHz



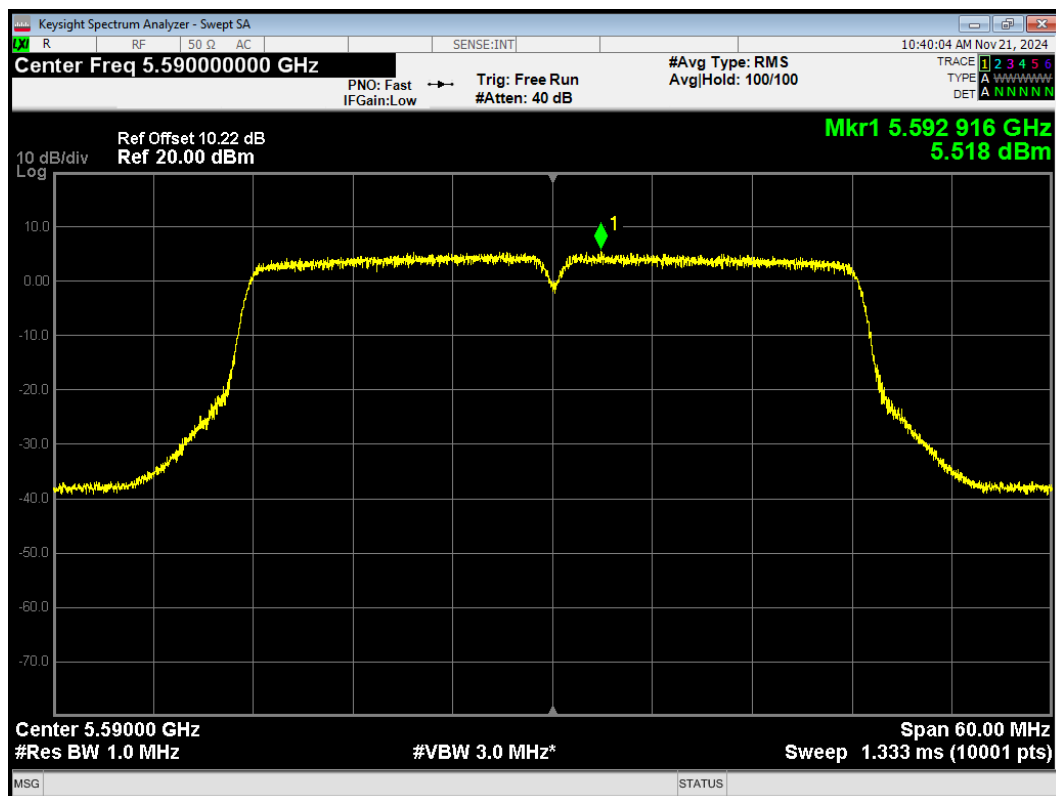
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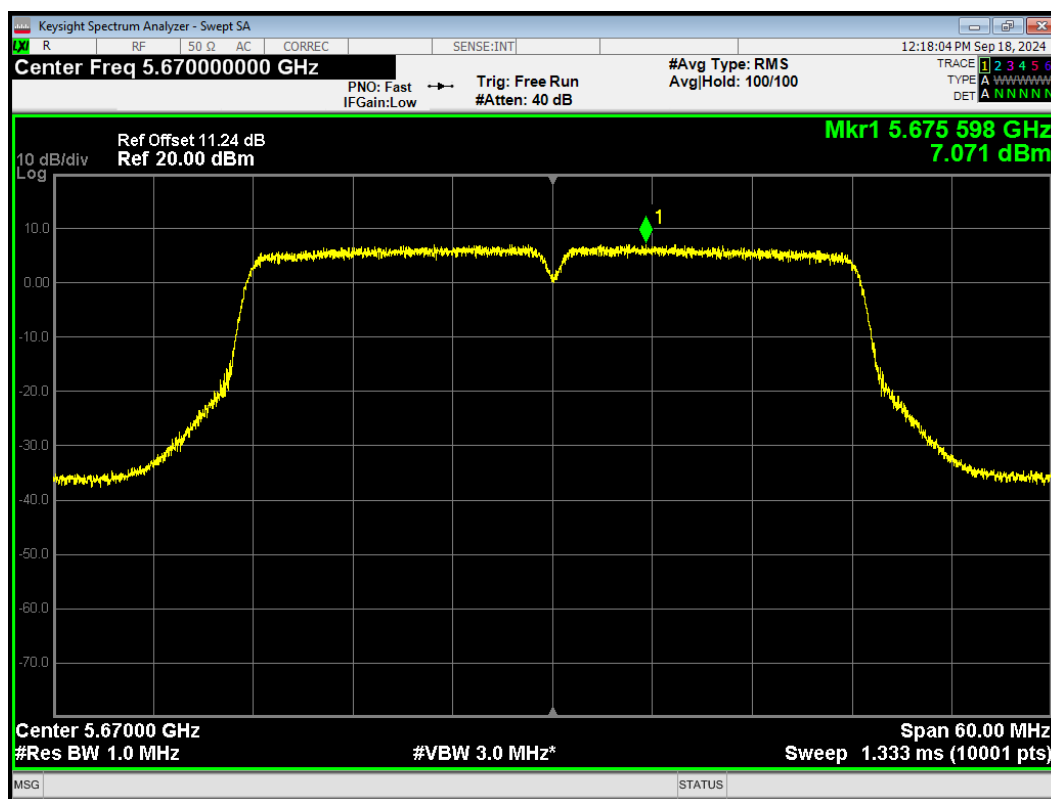
PSD 802.11ac(VHT40) 5510MHz



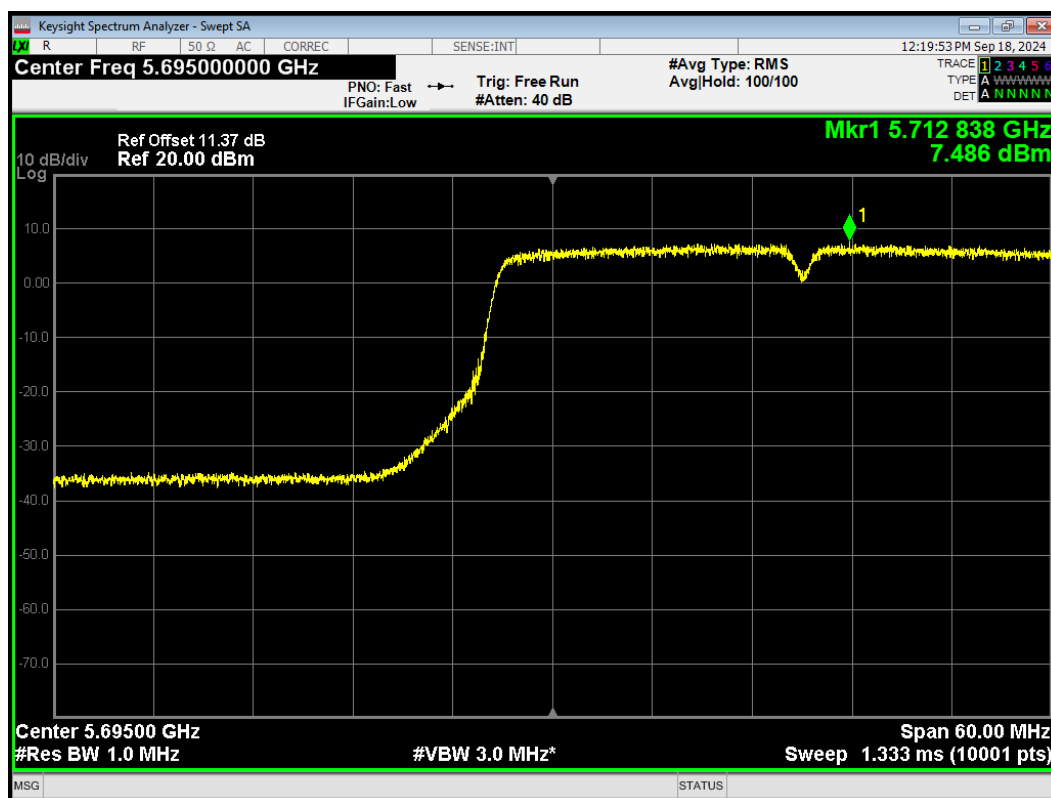
PSD 802.11ac(VHT40) 5590MHz



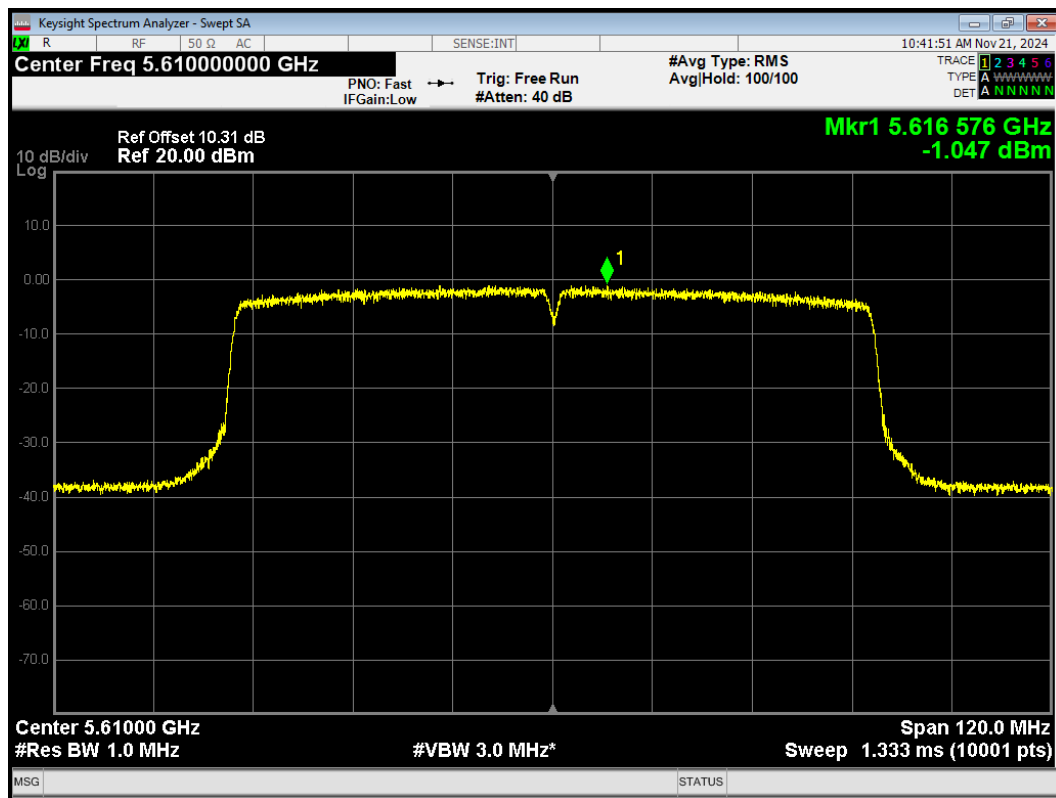
PSD 802.11ac(VHT40) 5670MHz



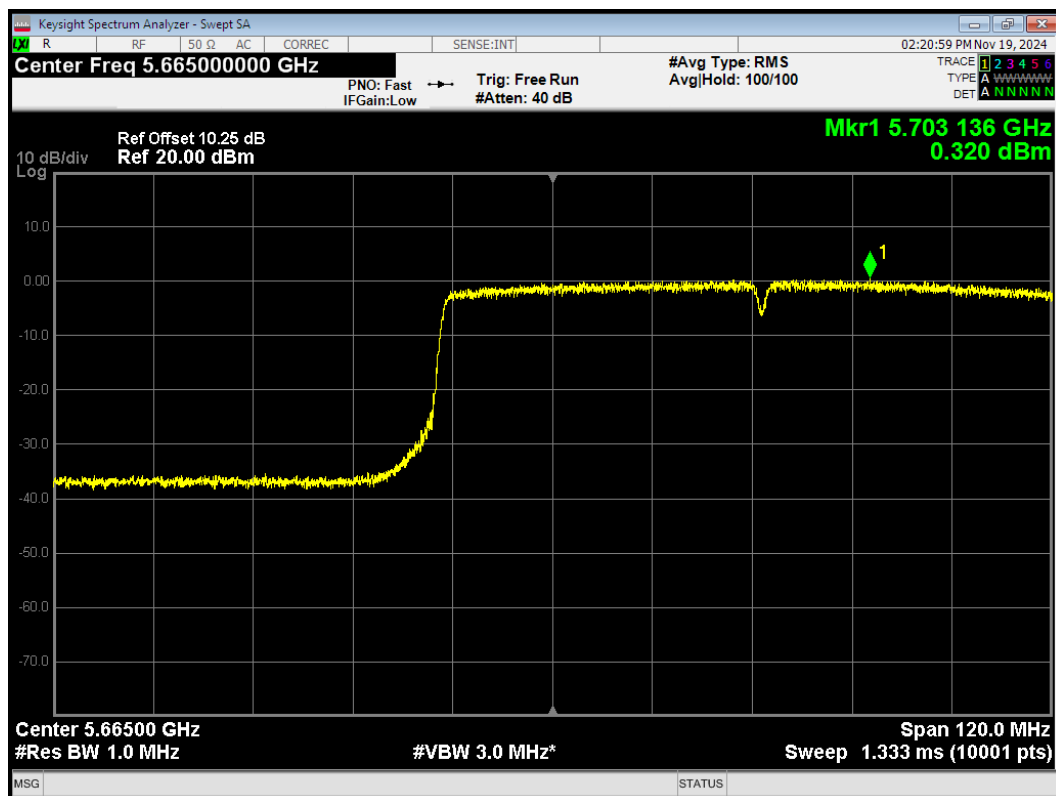
PSD 802.11ac(VHT40) 5695MHz



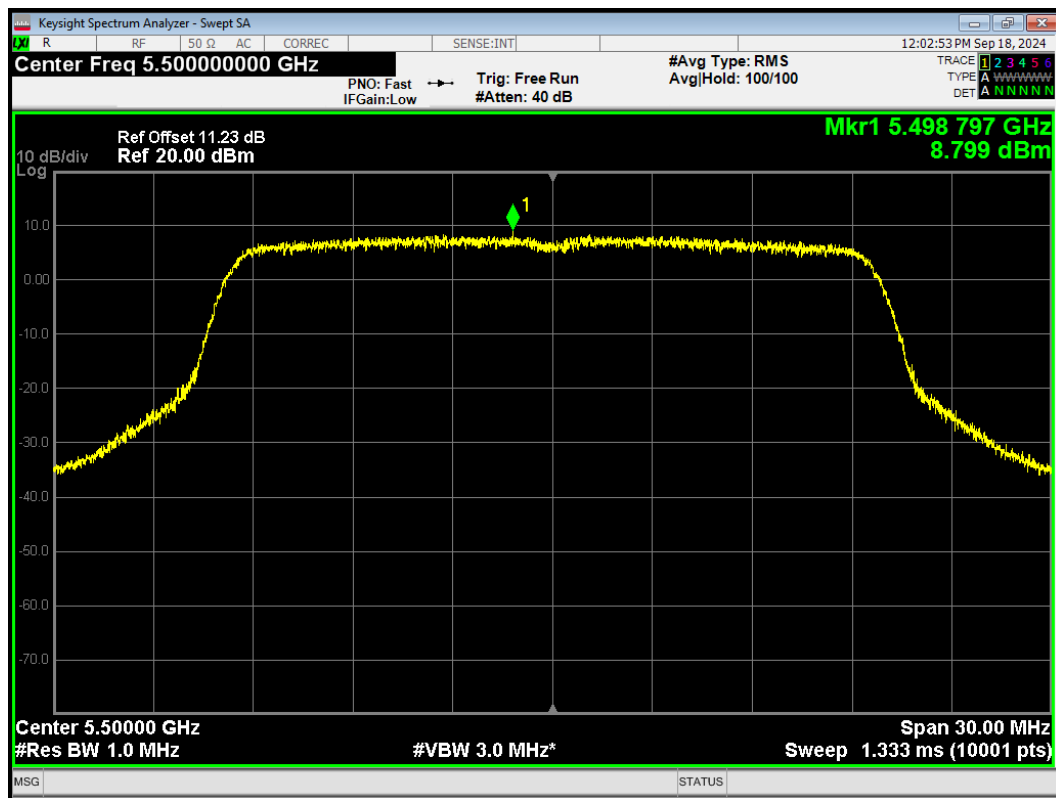
PSD 802.11ac(VHT80) 5610MHz



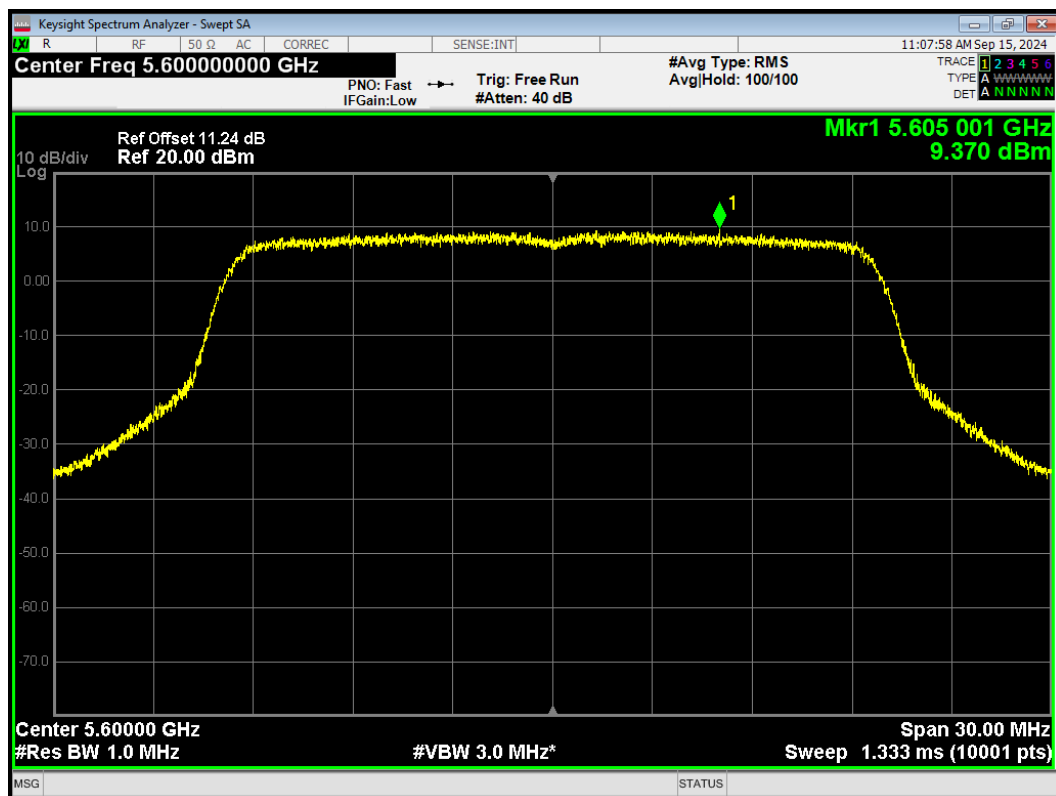
PSD 802.11ac(VHT80) 5665MHz



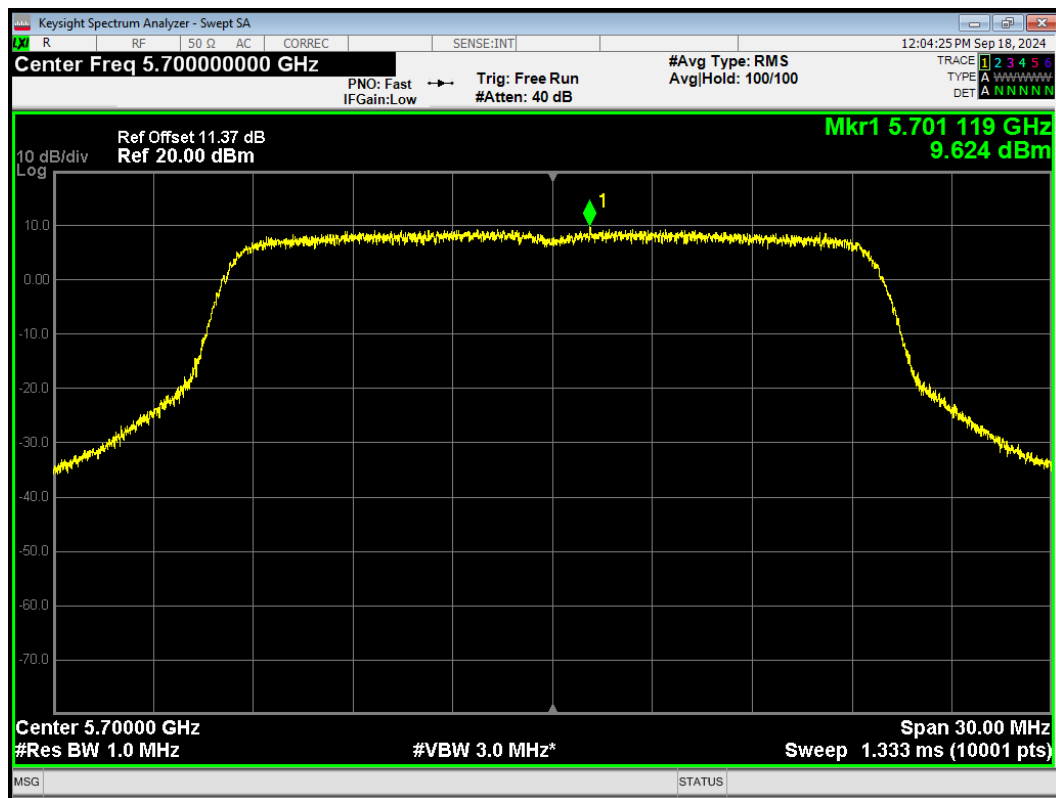
PSD 802.11ax(HE20) 5500MHz



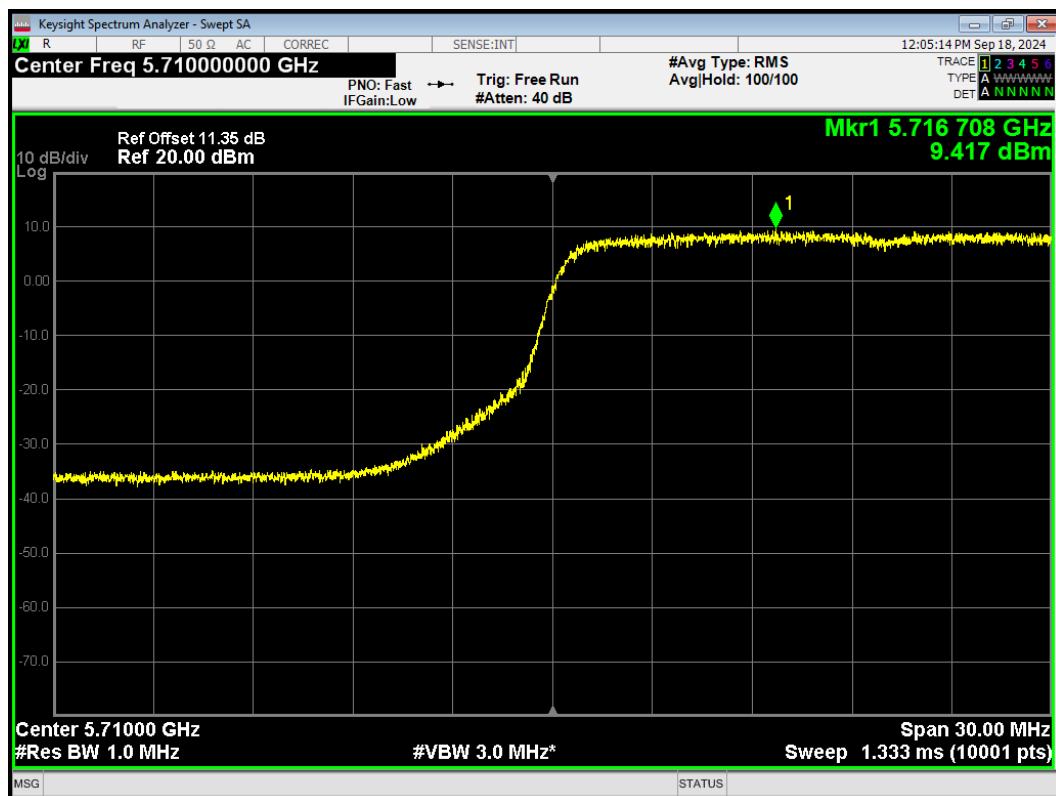
PSD 802.11ax(HE20) 5600MHz



PSD 802.11ax(HE20) 5700MHz

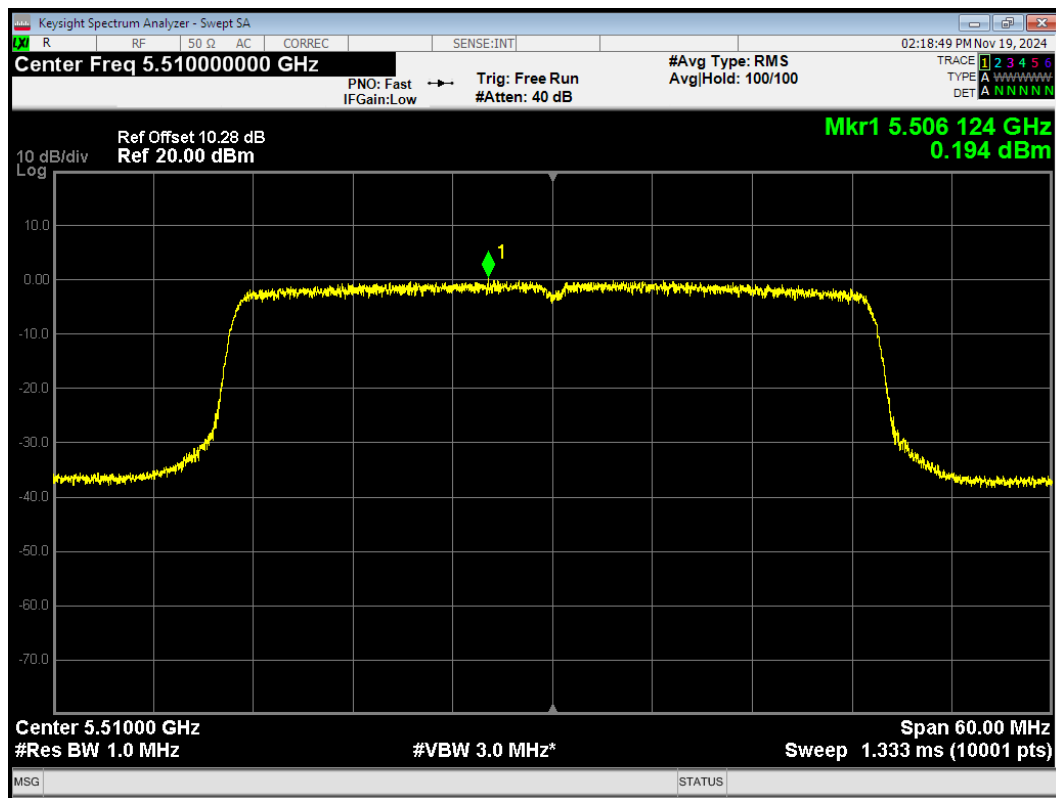


PSD 802.11ax(HE20) 5710MHz

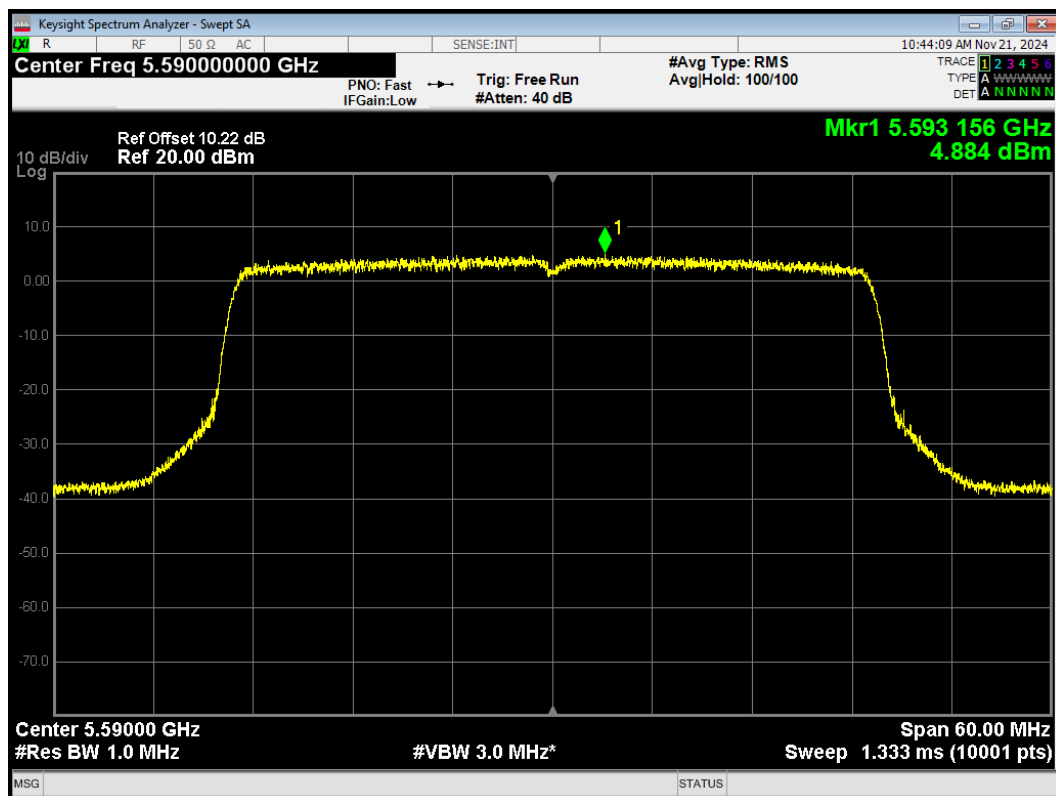




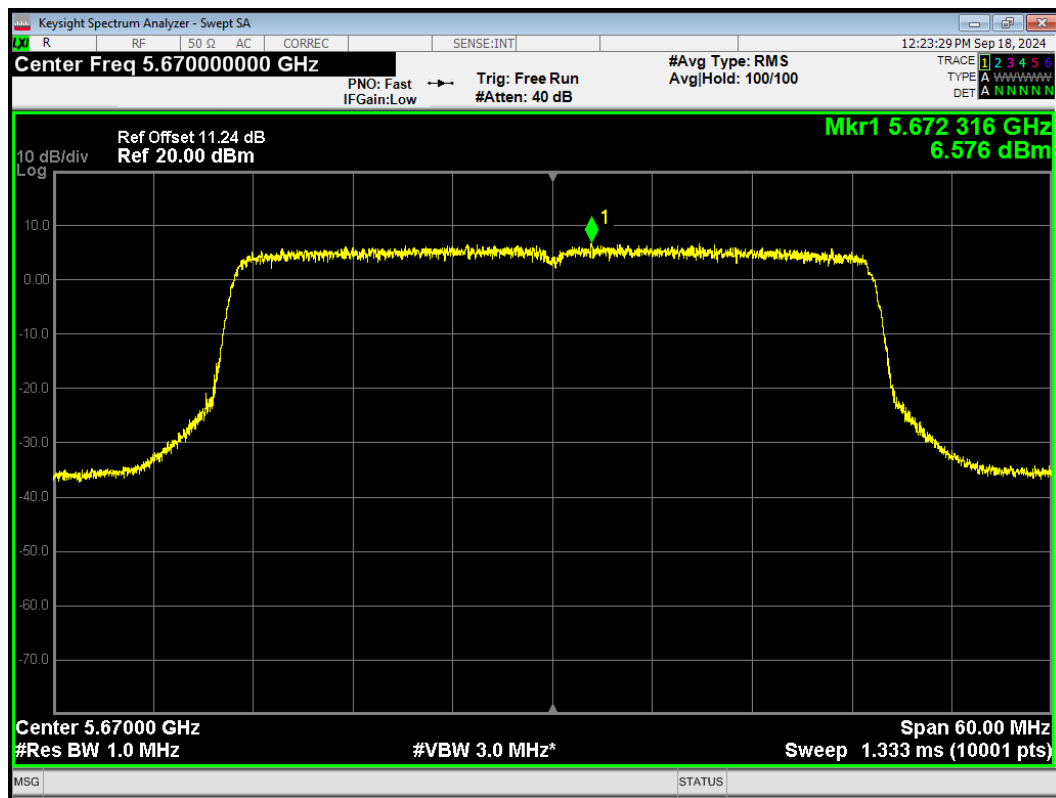
PSD 802.11ax(HE40) 5510MHz



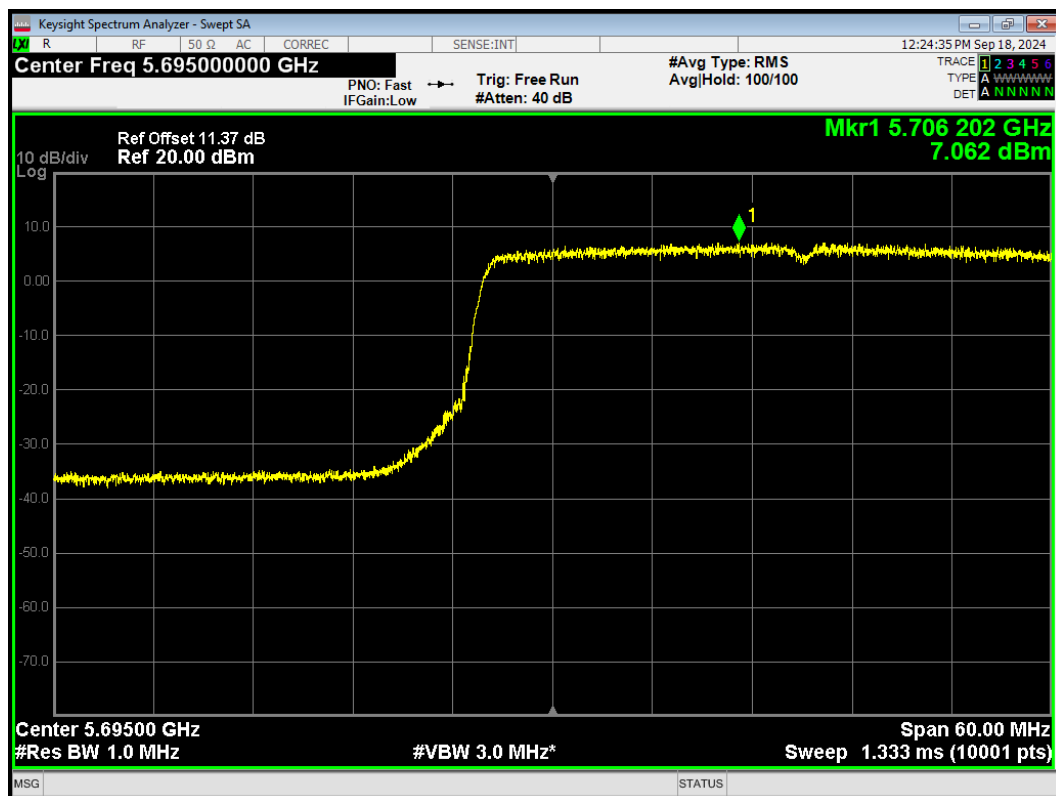
PSD 802.11ax(HE40) 5590MHz



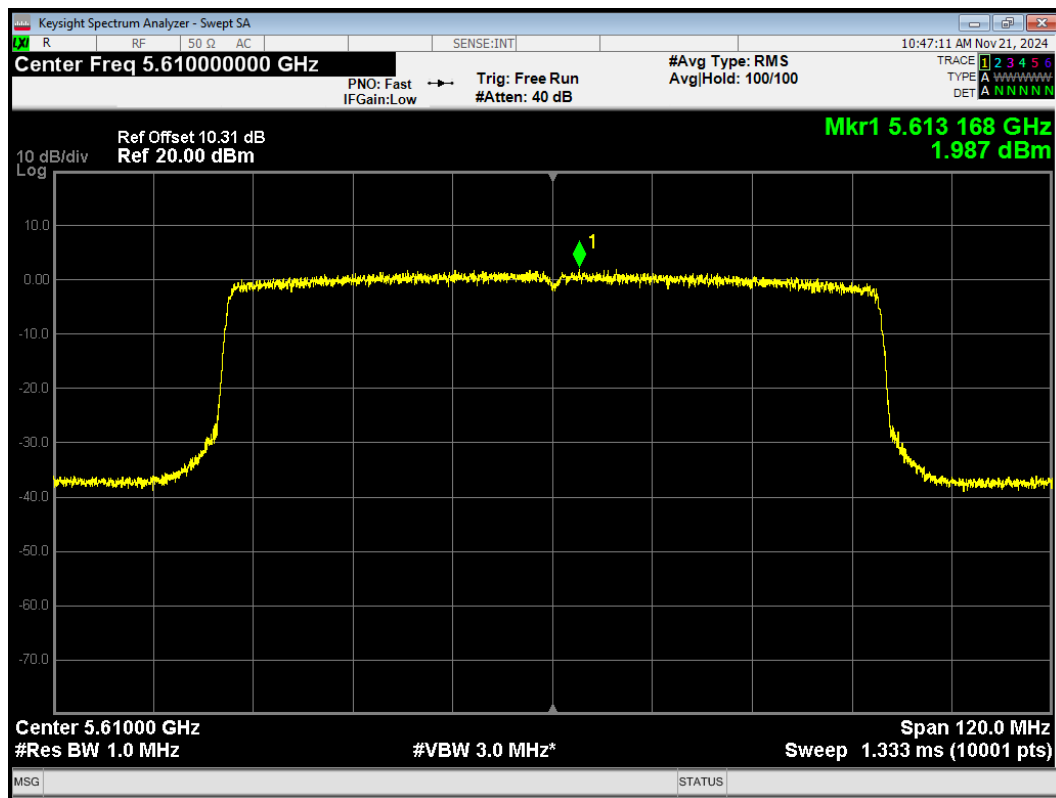
PSD 802.11ax(HE40) 5670MHz



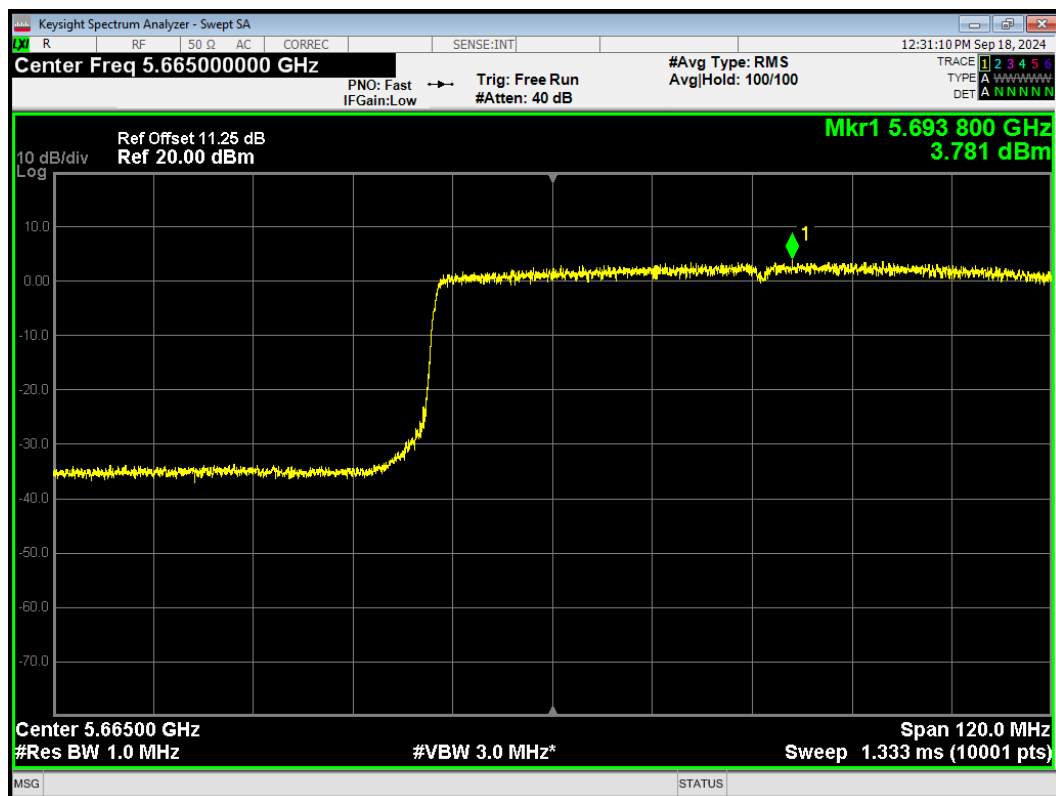
PSD 802.11ax(HE40) 5695MHz



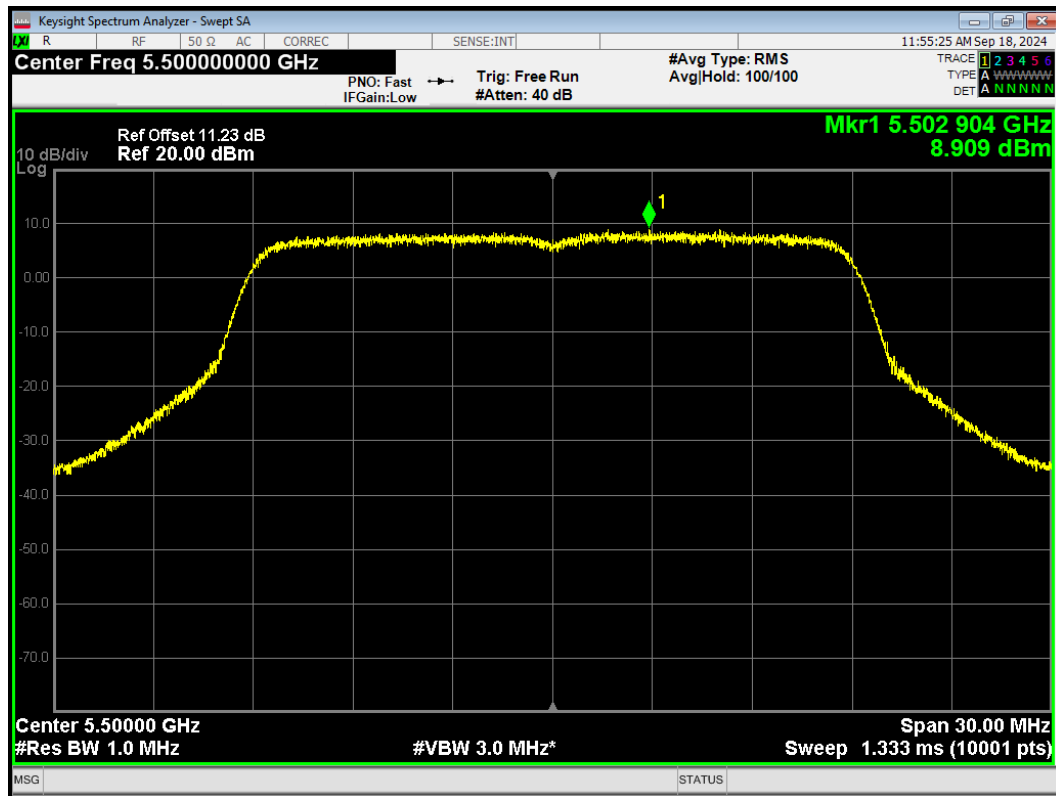
PSD 802.11ax(HE80) 5610MHz



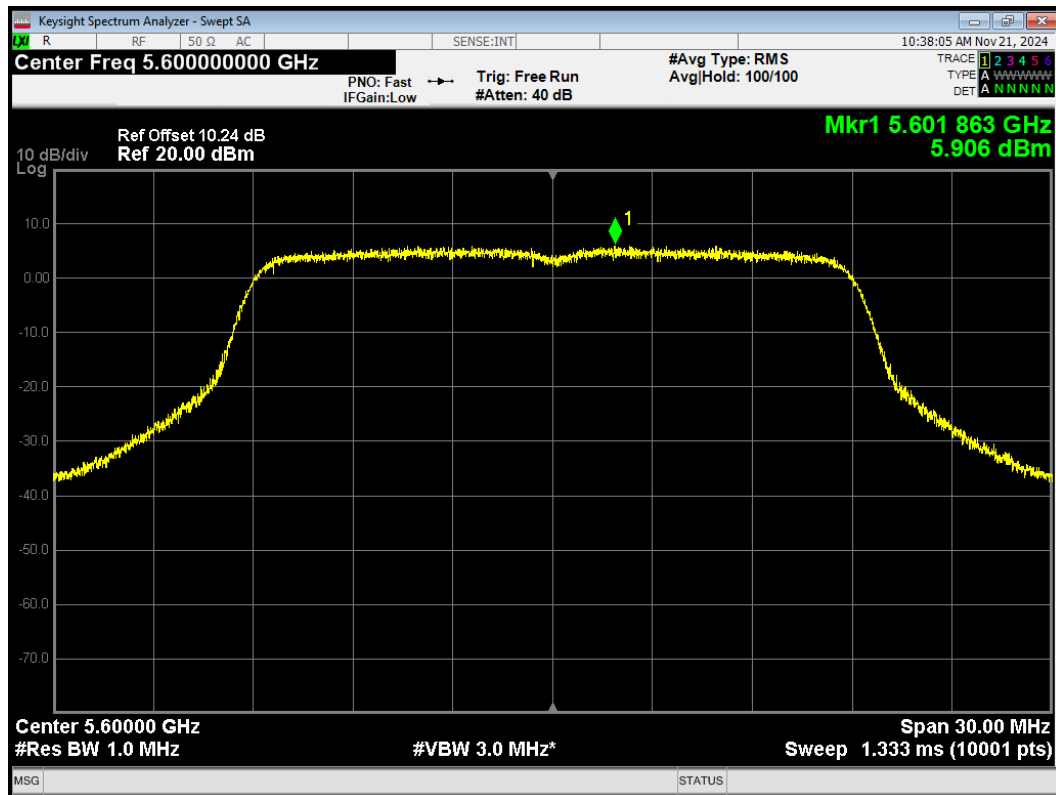
PSD 802.11ax(HE80) 5665MHz



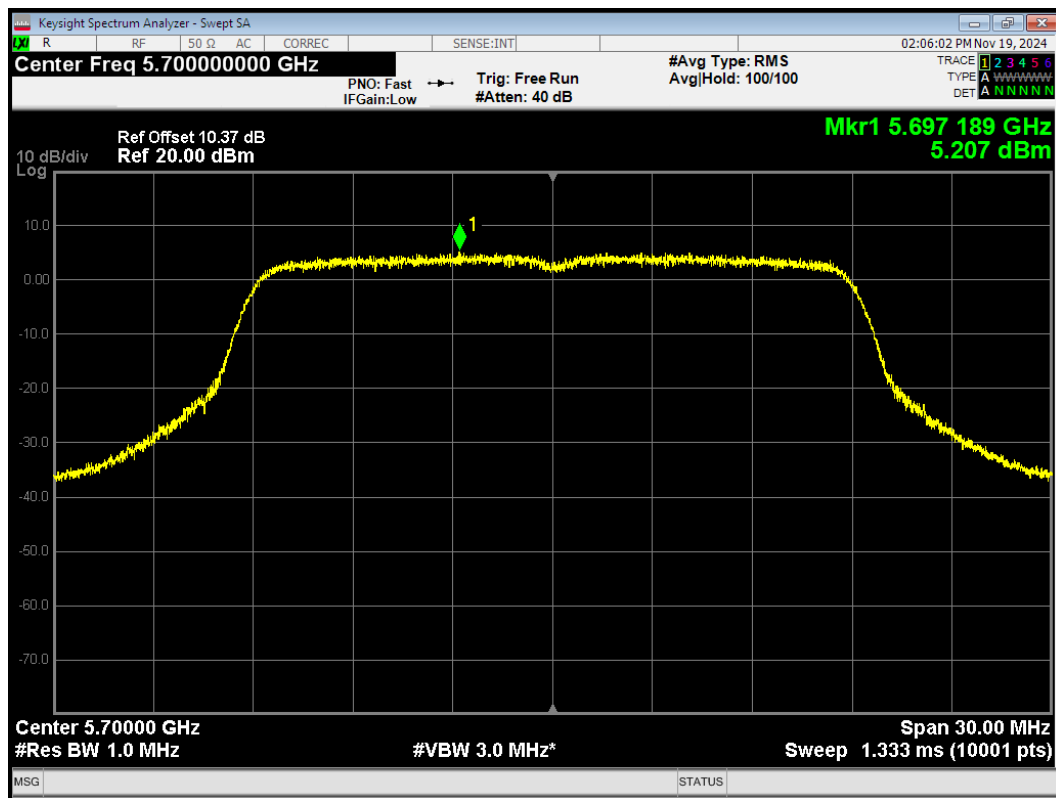
PSD 802.11n(HT20) 5500MHz



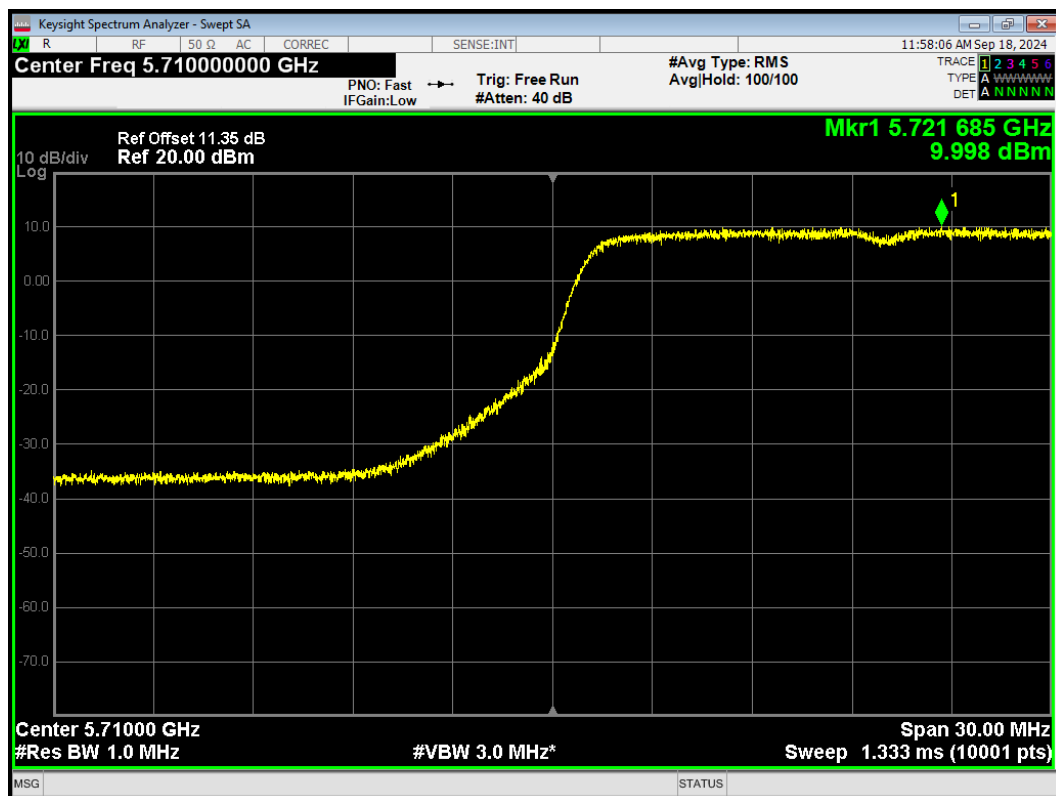
PSD 802.11n(HT20) 5600MHz



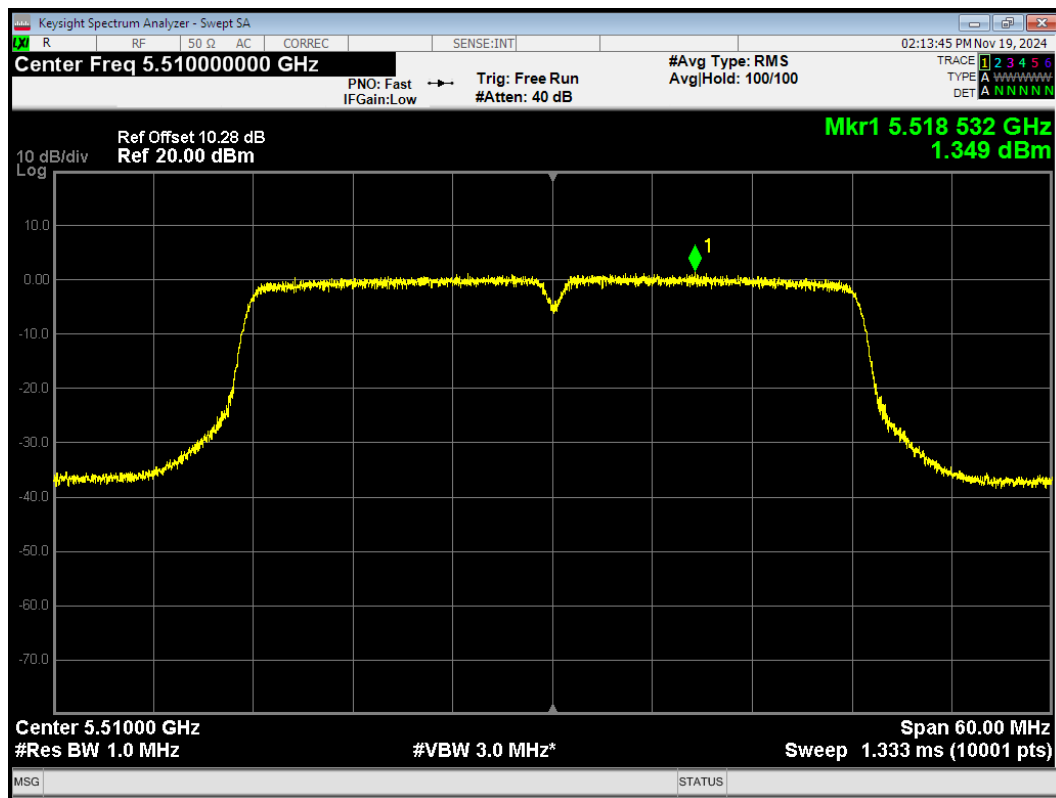
PSD 802.11n(HT20) 5700MHz



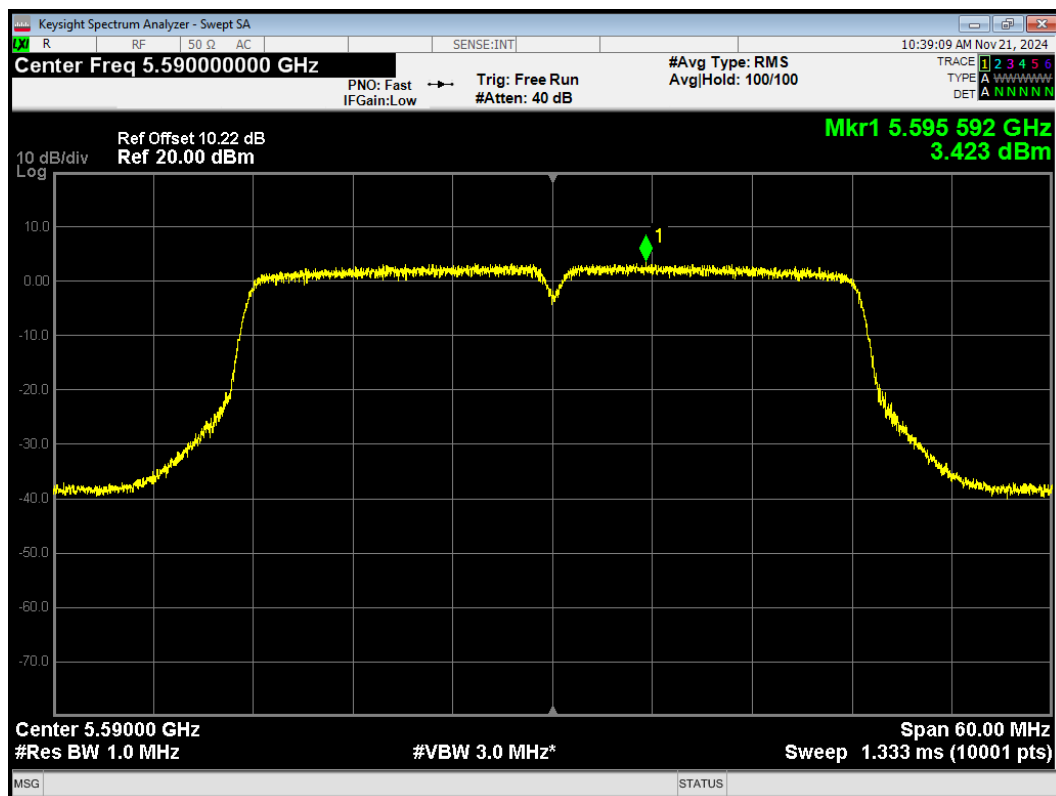
PSD 802.11n(HT20) 5710MHz



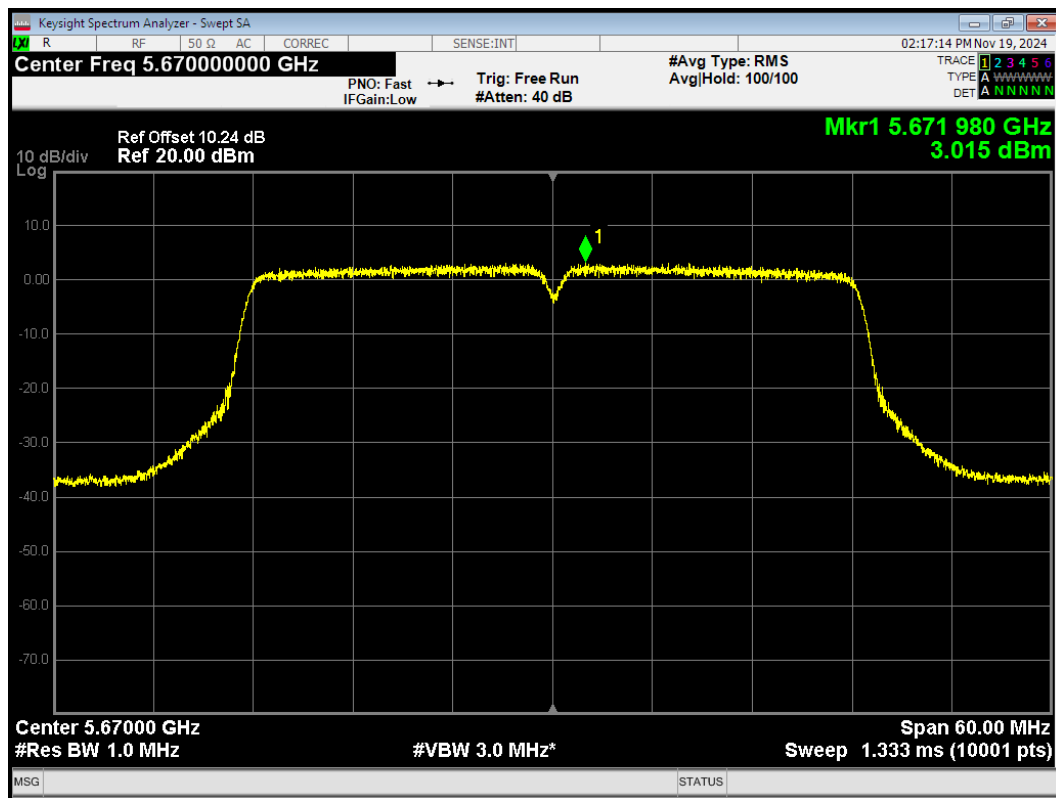
PSD 802.11n(HT40) 5510MHz



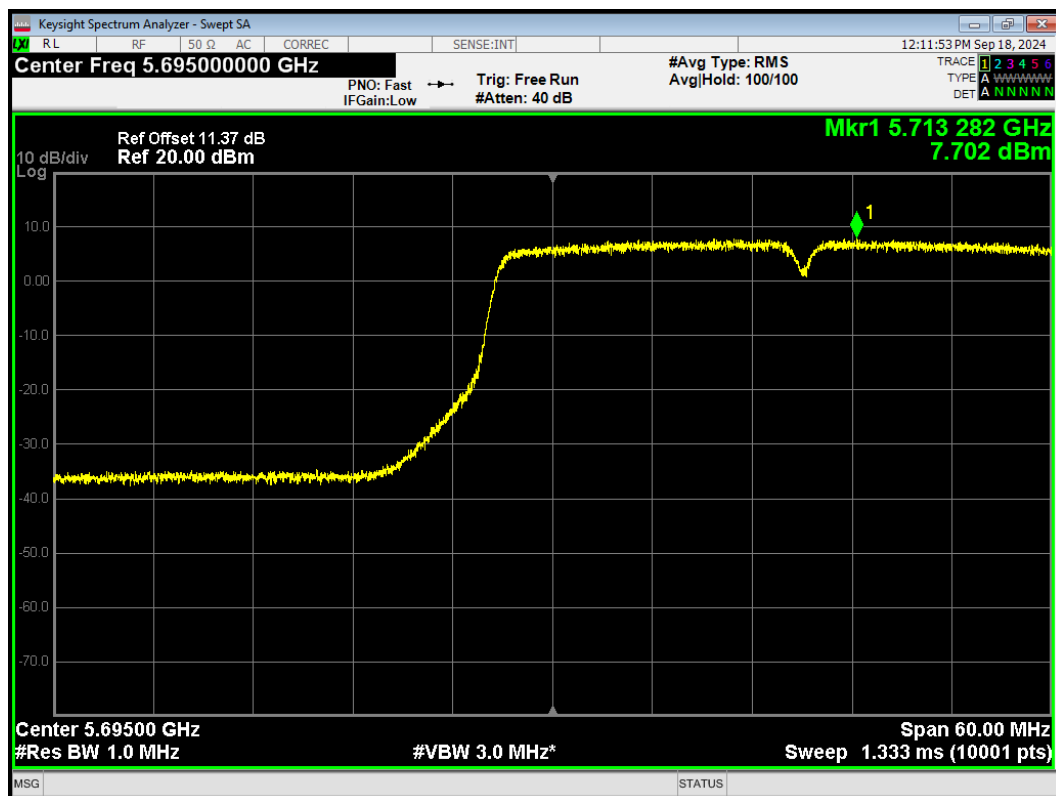
PSD 802.11n(HT40) 5590MHz



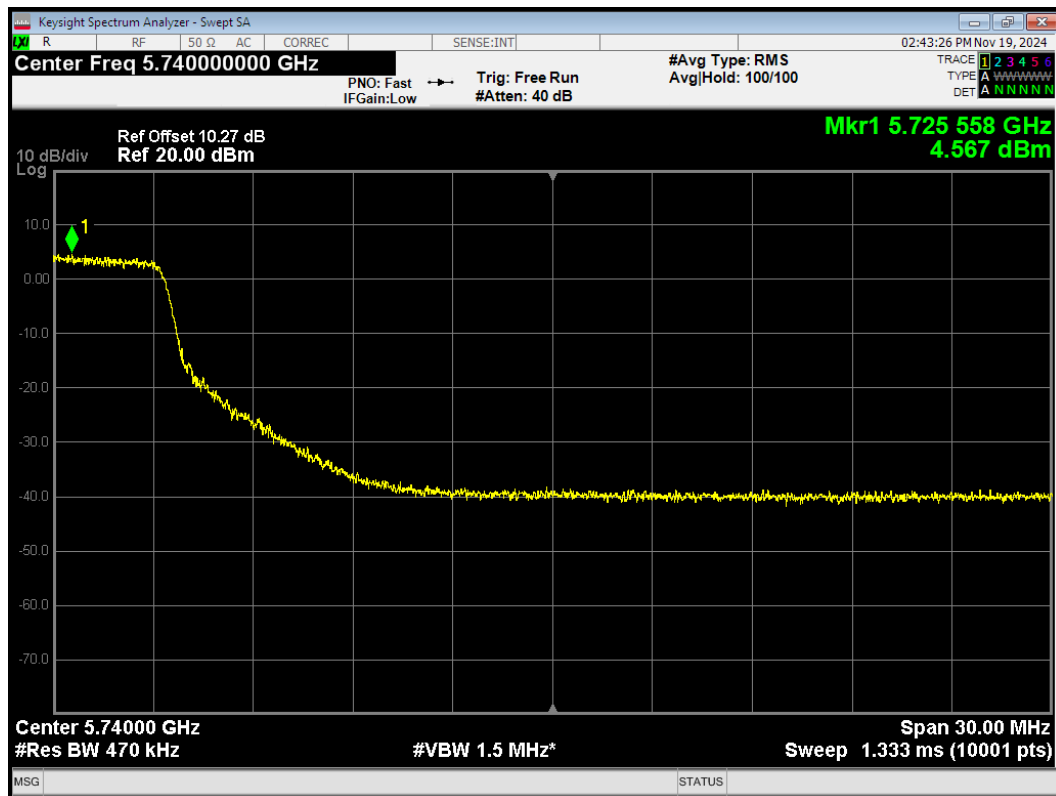
PSD 802.11n(HT40) 5670MHz



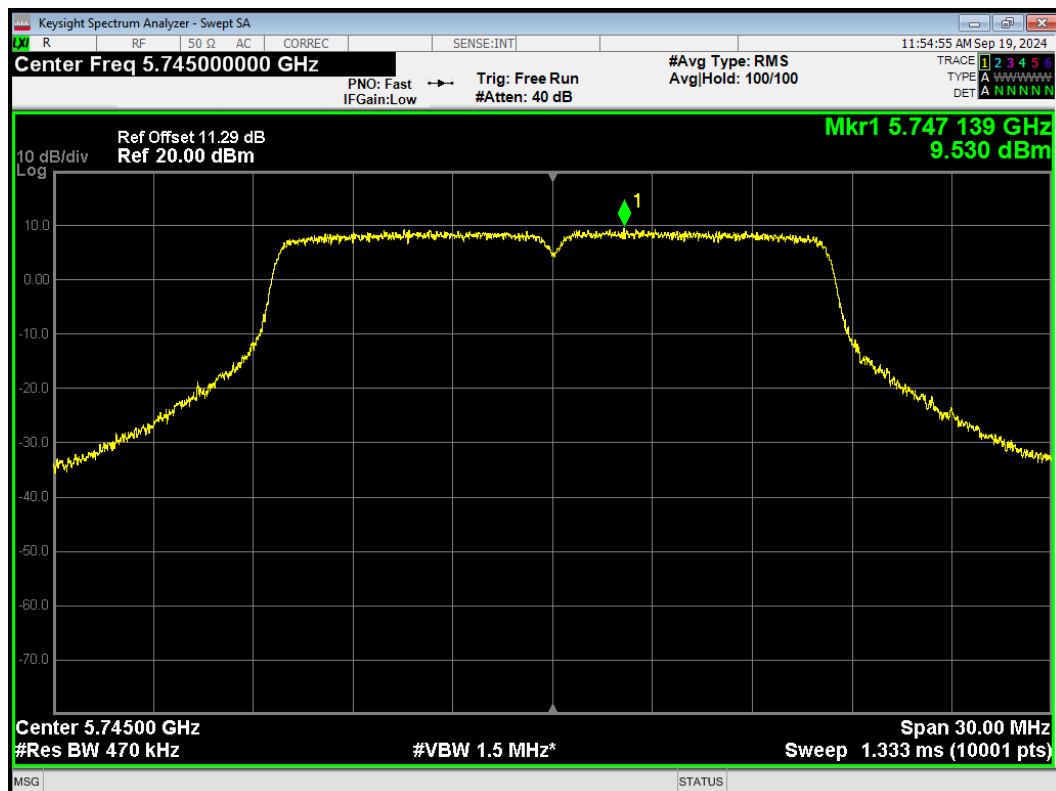
PSD 802.11n(HT40) 5695MHz



PSD 802.11a 5740MHz

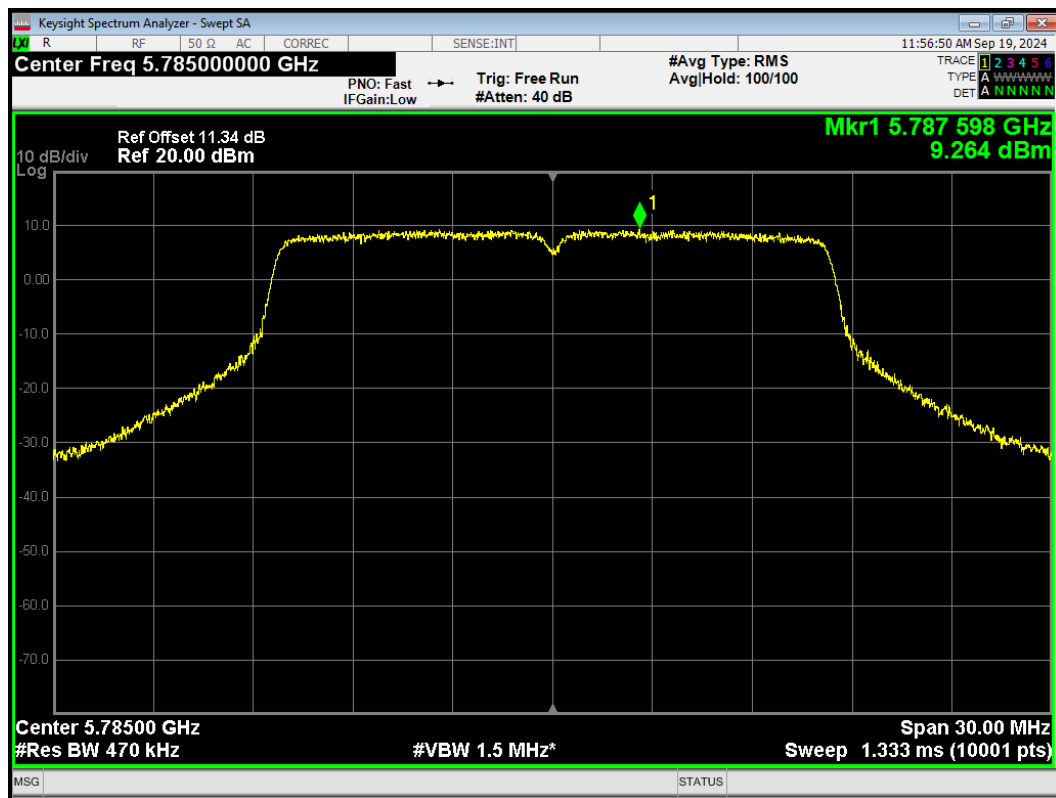


PSD 802.11a 5745MHz

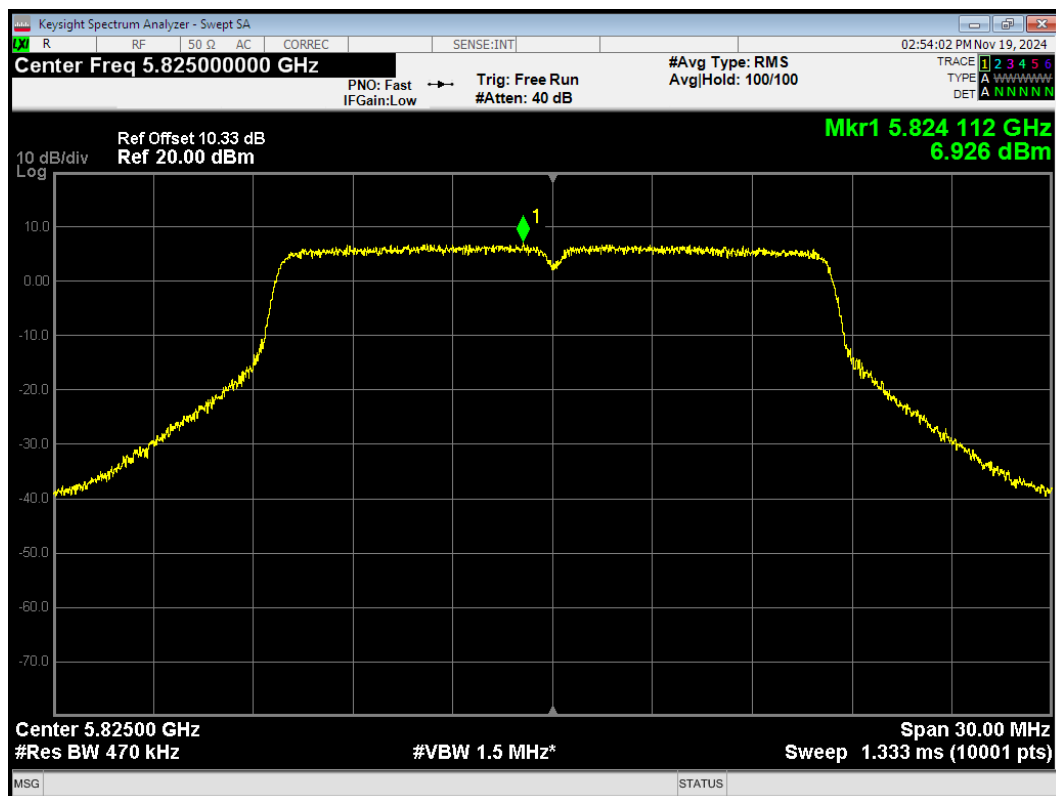




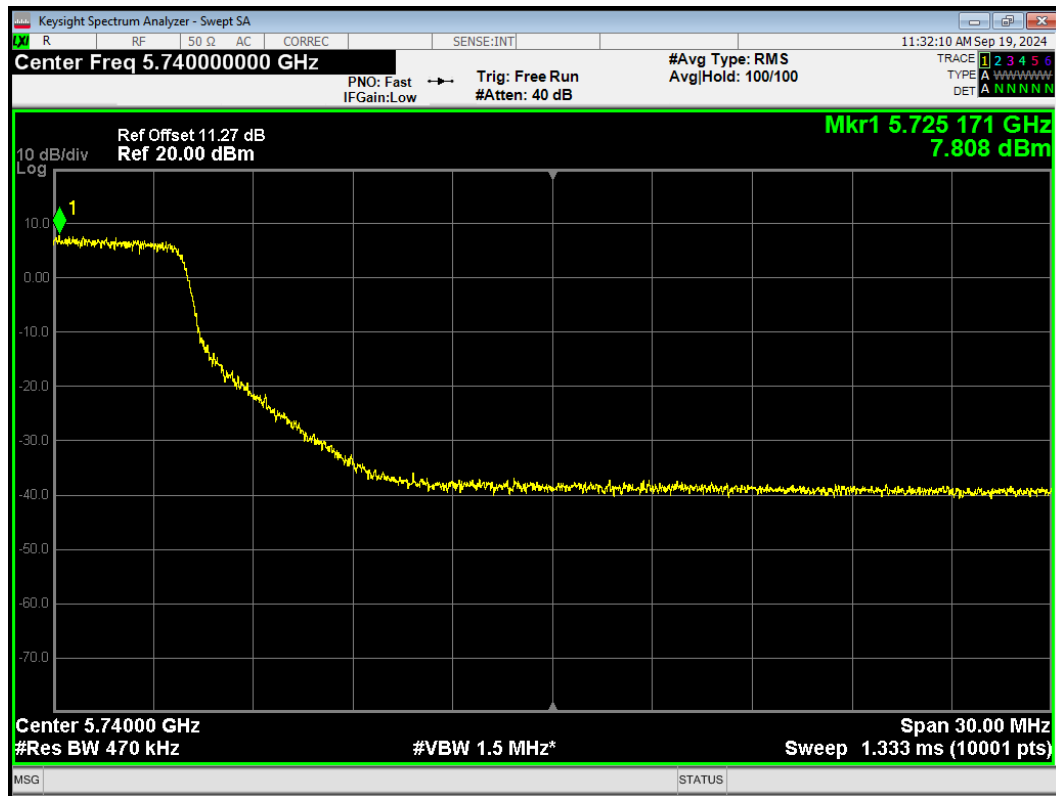
PSD 802.11a 5785MHz



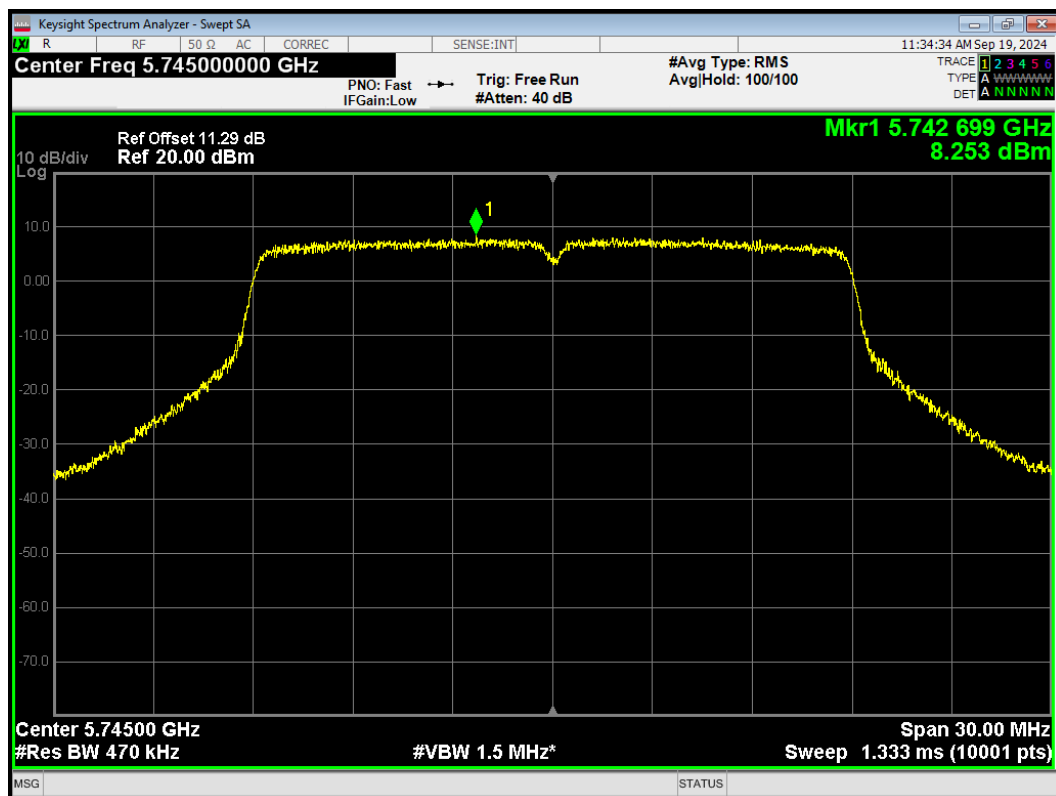
PSD 802.11a 5825MHz



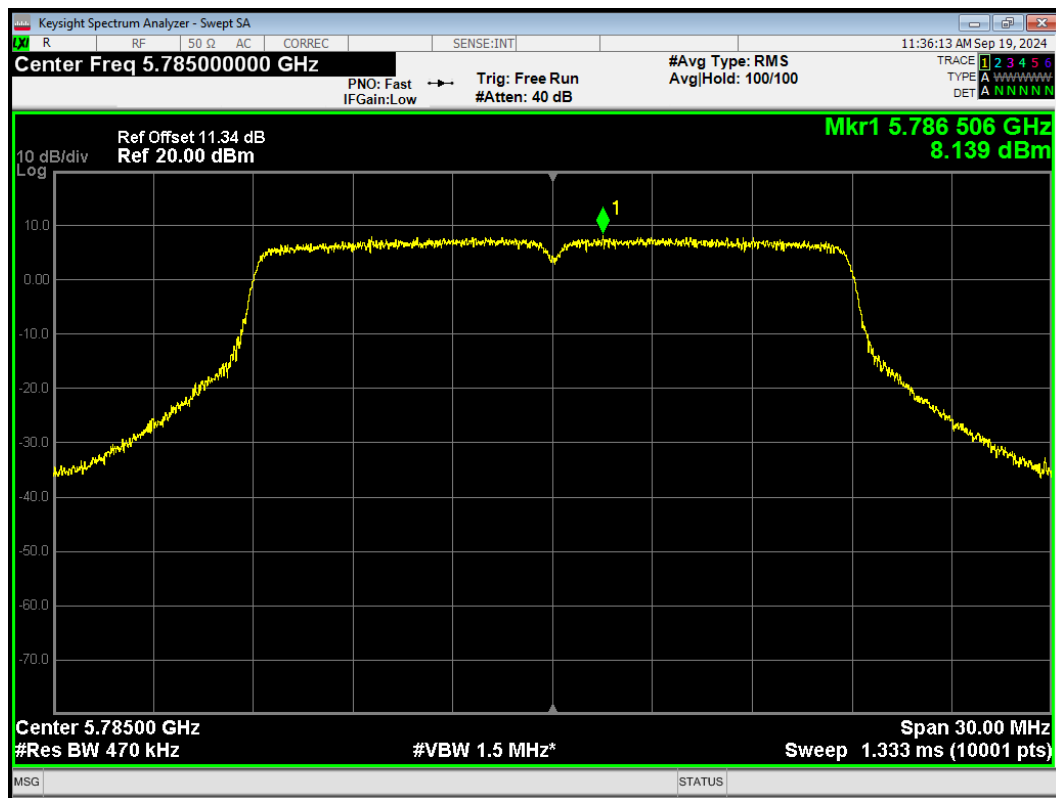
PSD 802.11ac(VHT20) 5740MHz



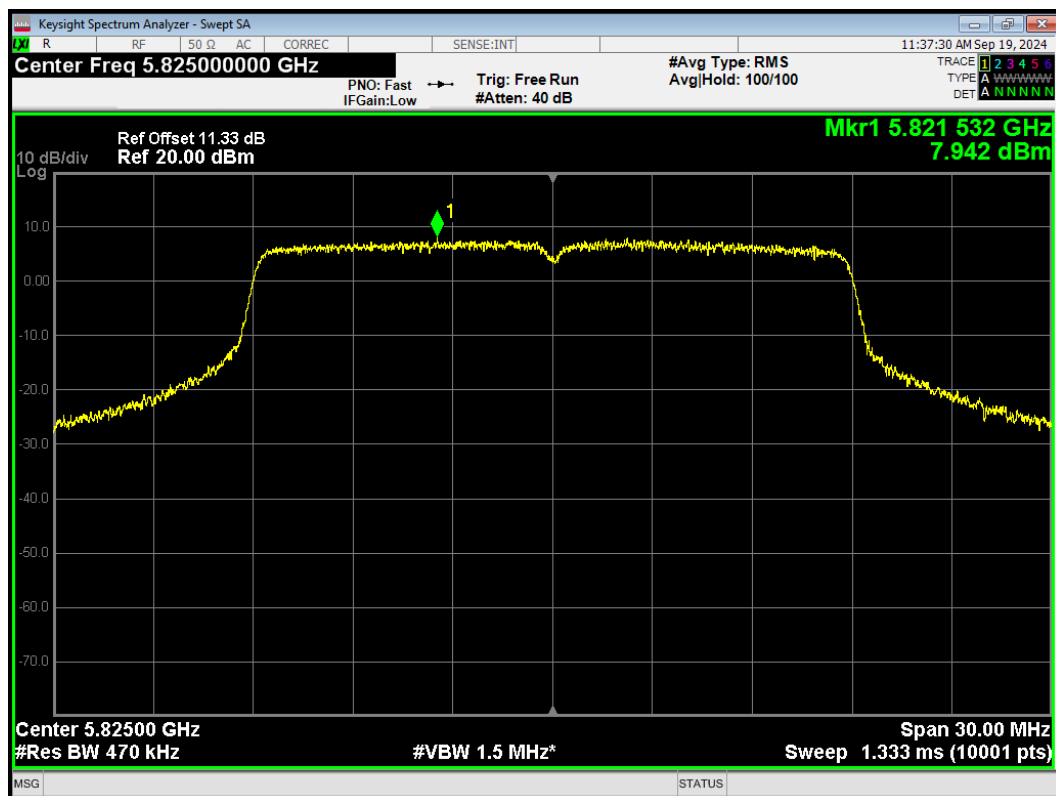
PSD 802.11ac(VHT20) 5745MHz



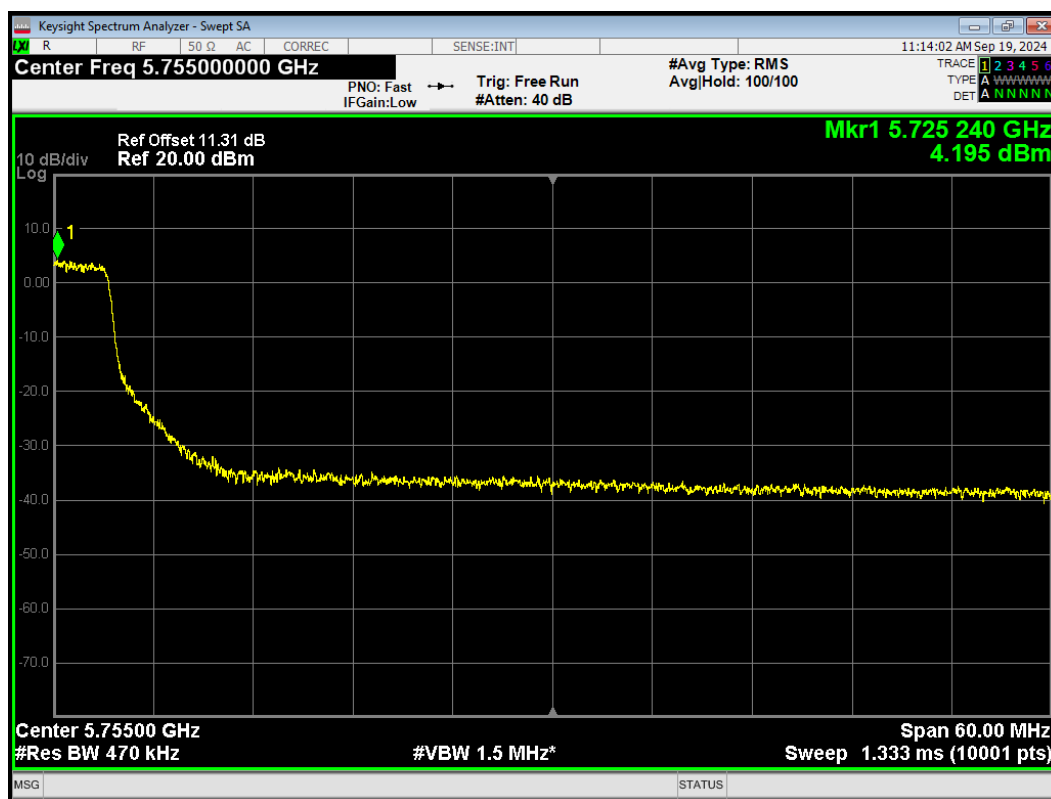
PSD 802.11ac(VHT20) 5785MHz



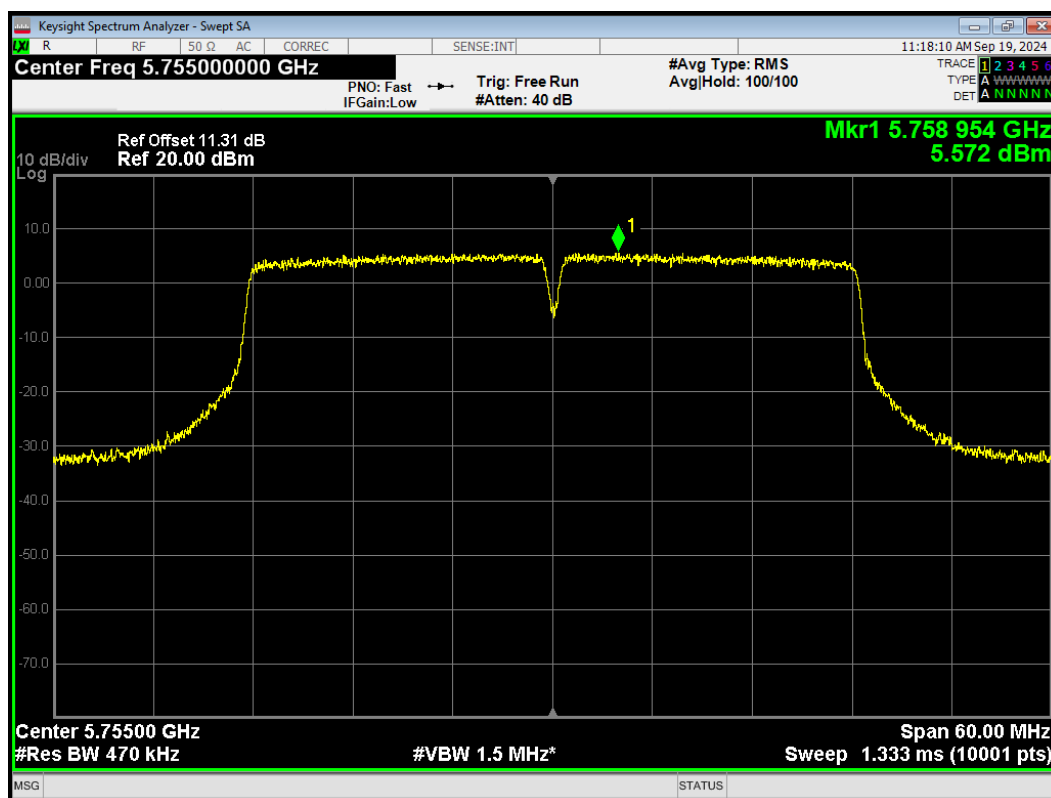
PSD 802.11ac(VHT20) 5825MHz



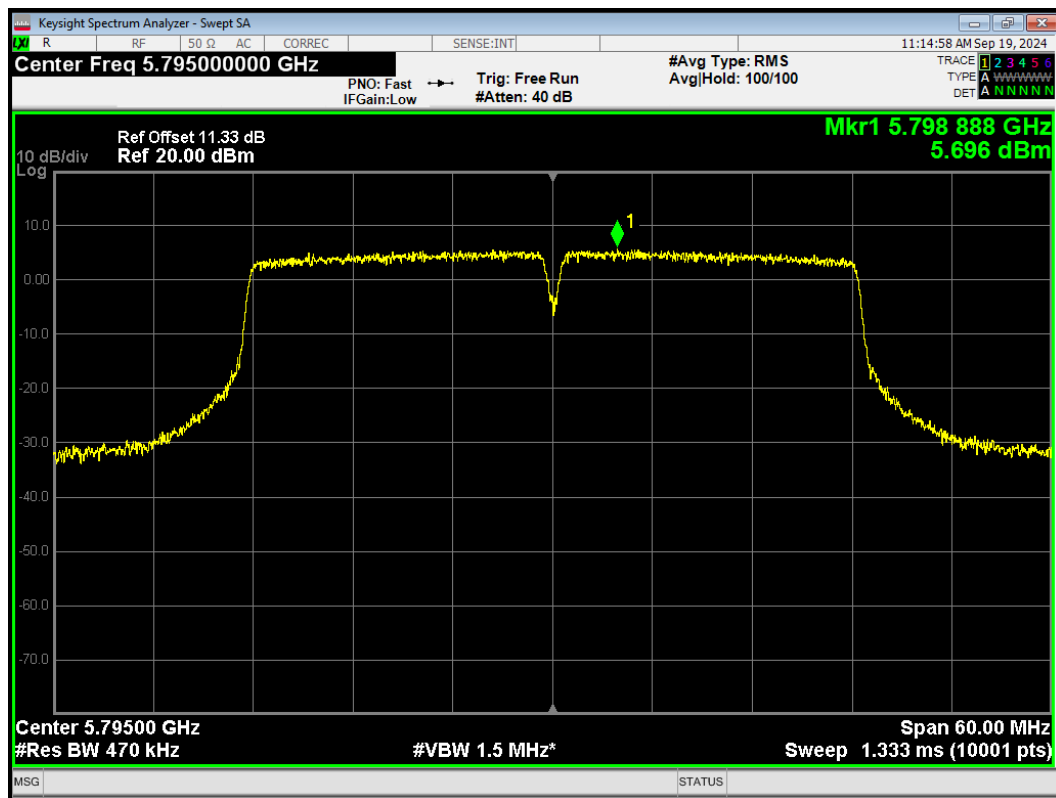
PSD 802.11ac(VHT40) 5755MHz



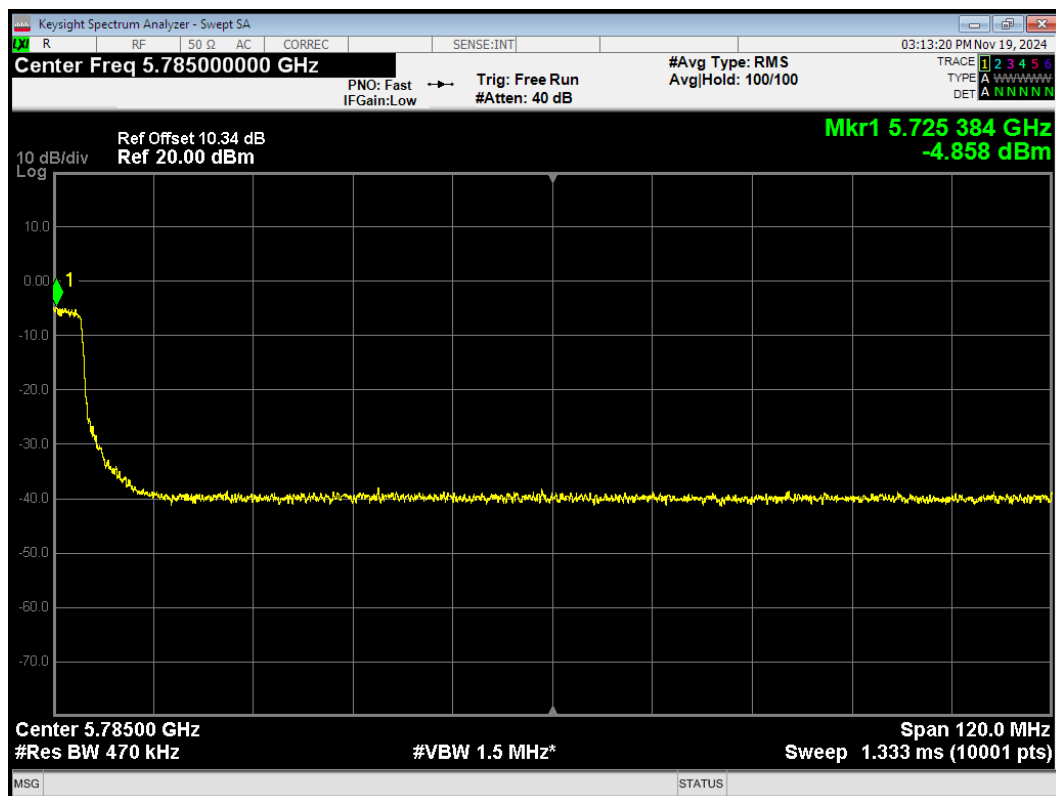
PSD 802.11ac(VHT40) 5755MHz



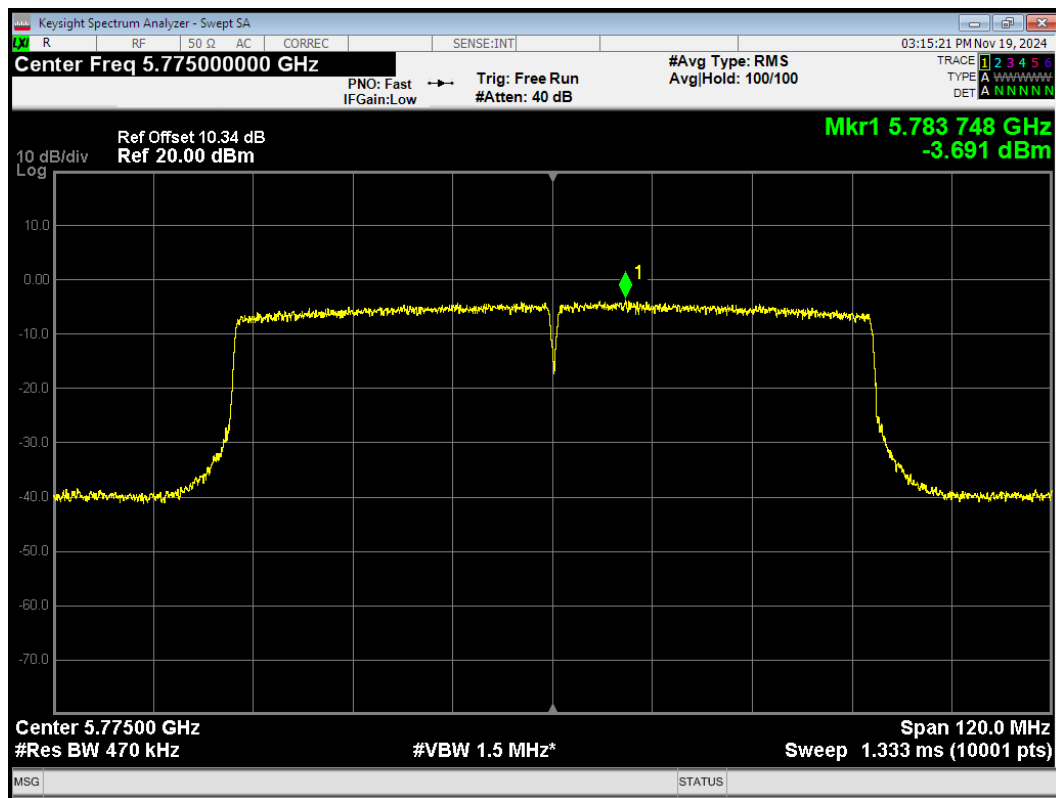
PSD 802.11ac(VHT40) 5795MHz



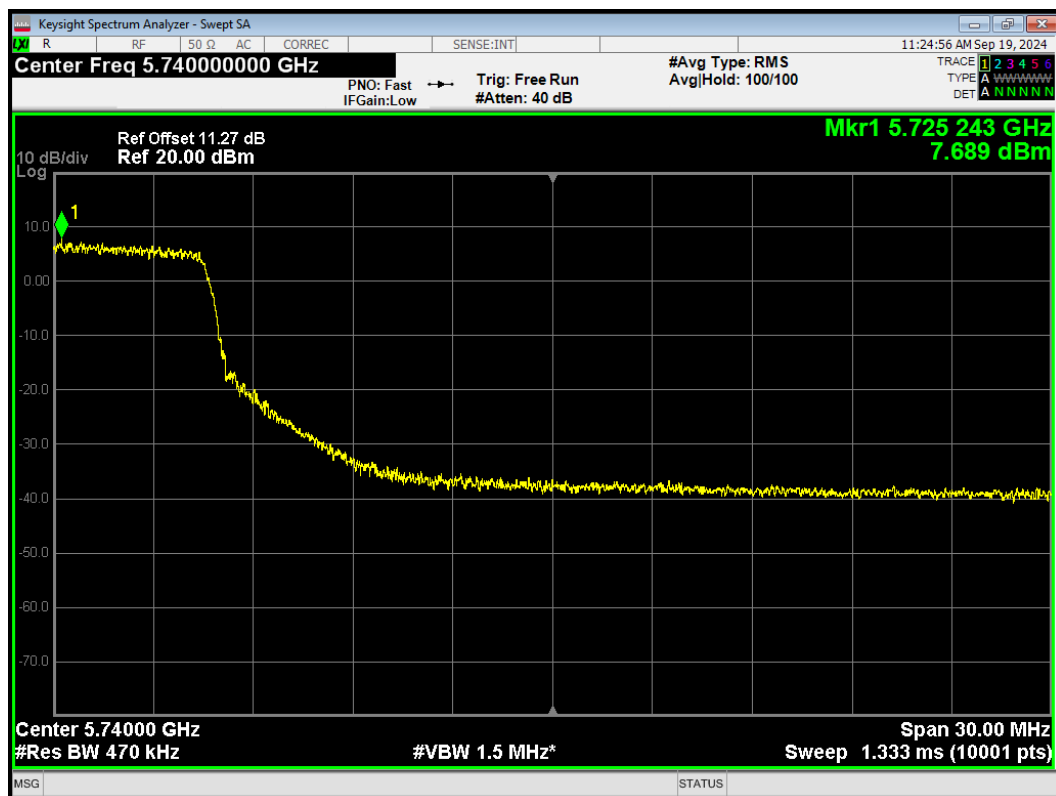
PSD 802.11ac(VHT80) 5785MHz



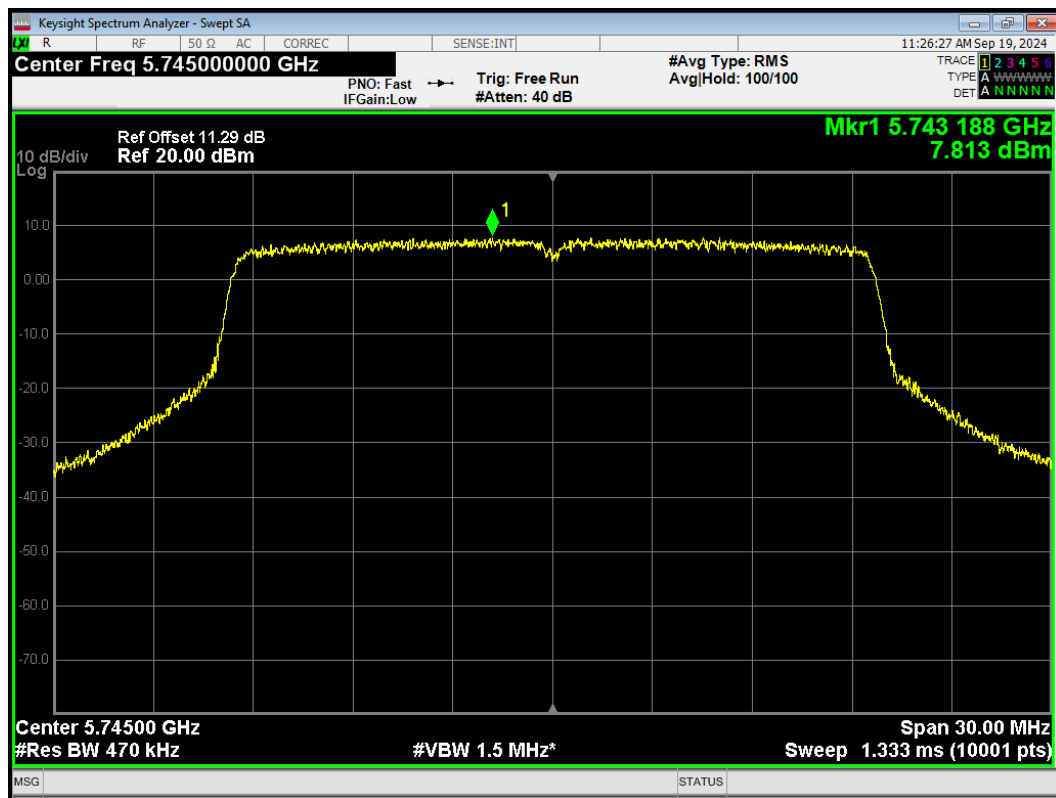
PSD 802.11ac(VHT80) 5775MHz



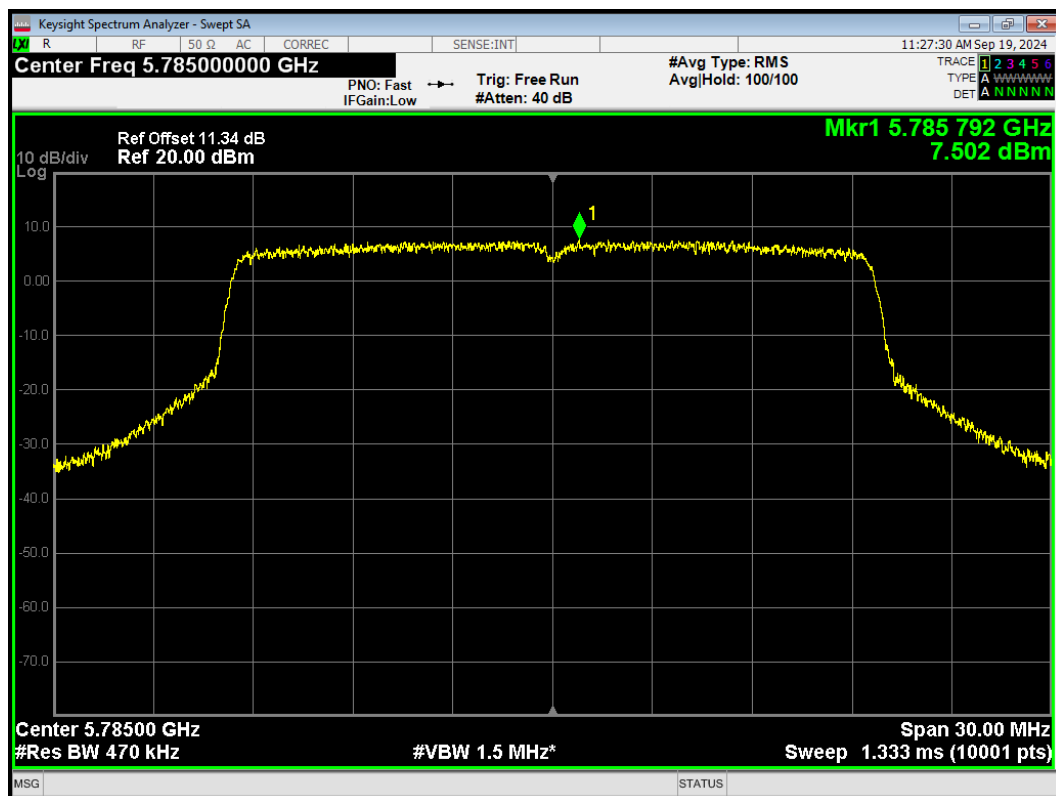
PSD 802.11ax(HE20) 5740MHz



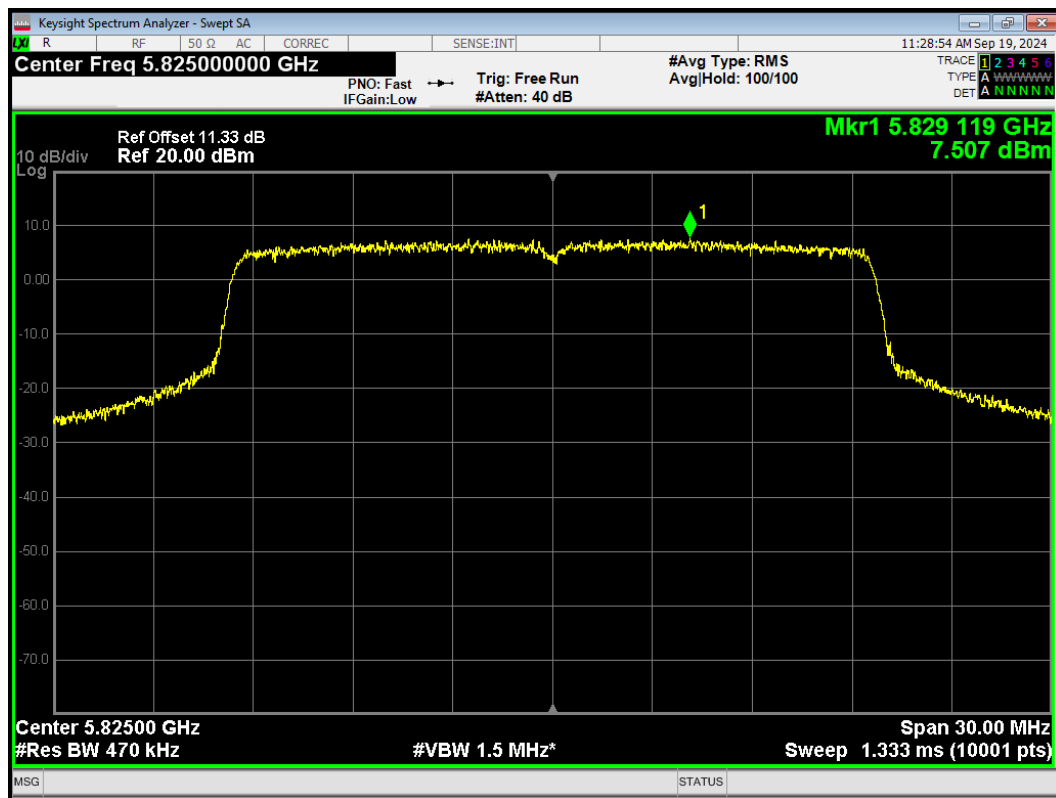
PSD 802.11ax(HE20) 5745MHz



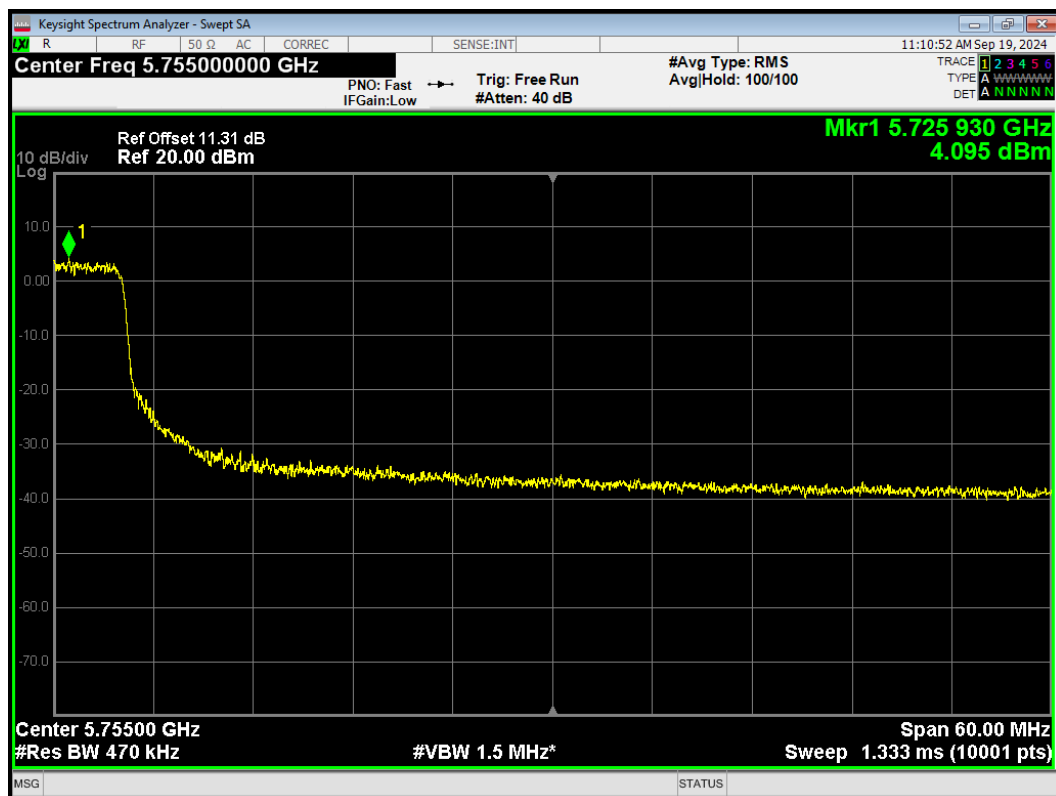
PSD 802.11ax(HE20) 5785MHz



PSD 802.11ax(HE20) 5825MHz

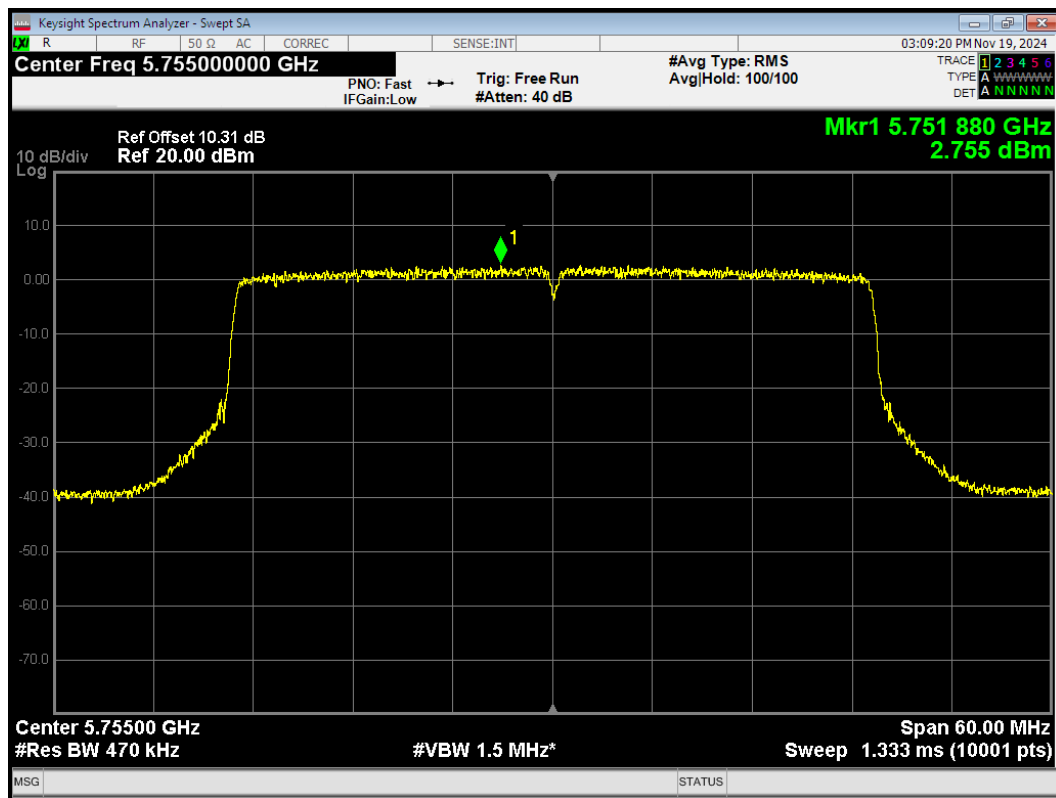


PSD 802.11ax(HE40) 5755MHz

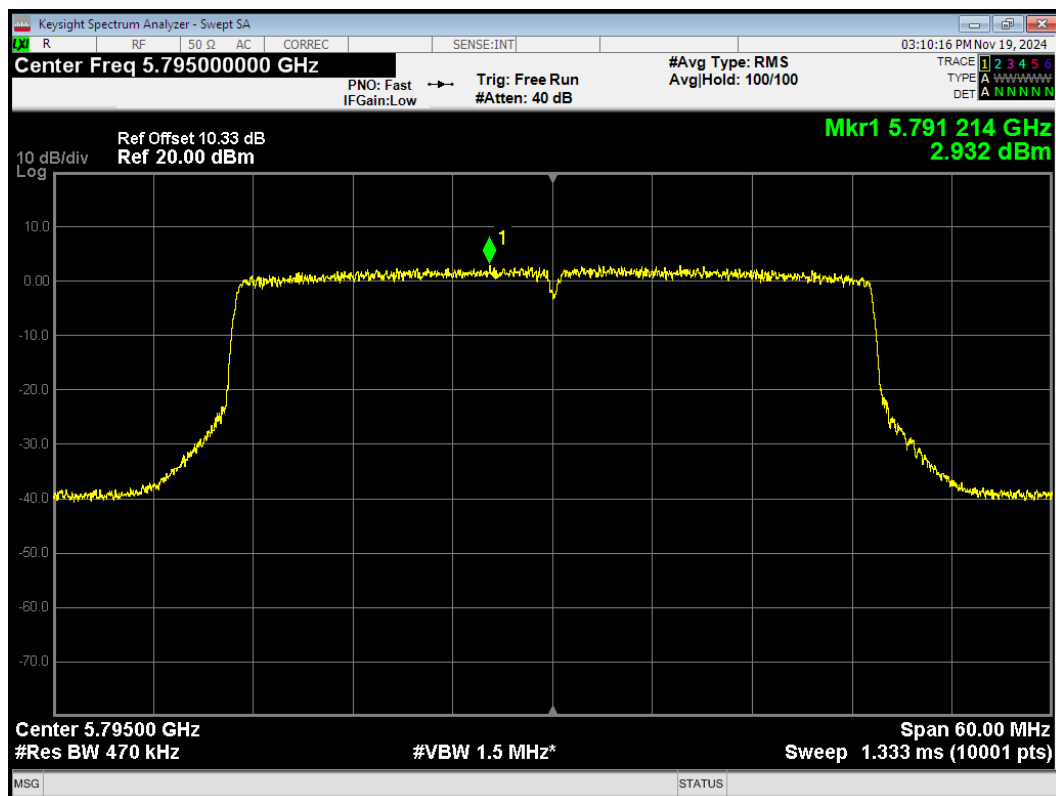




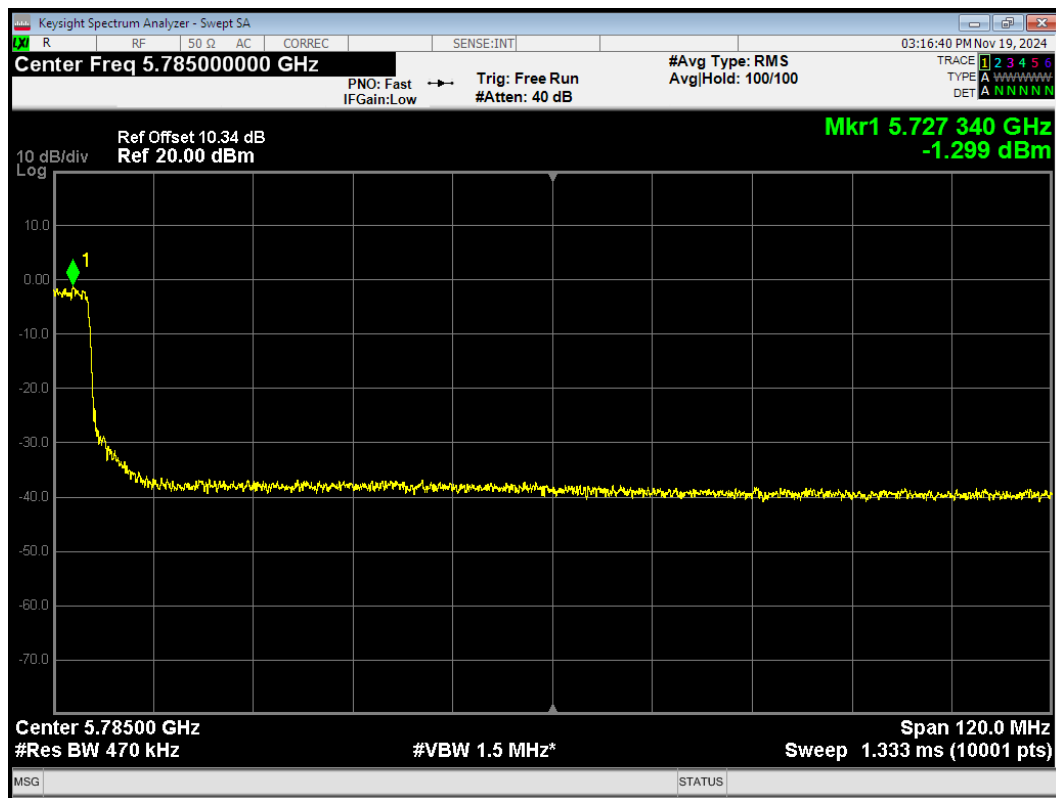
PSD 802.11ax(HE40) 5755MHz



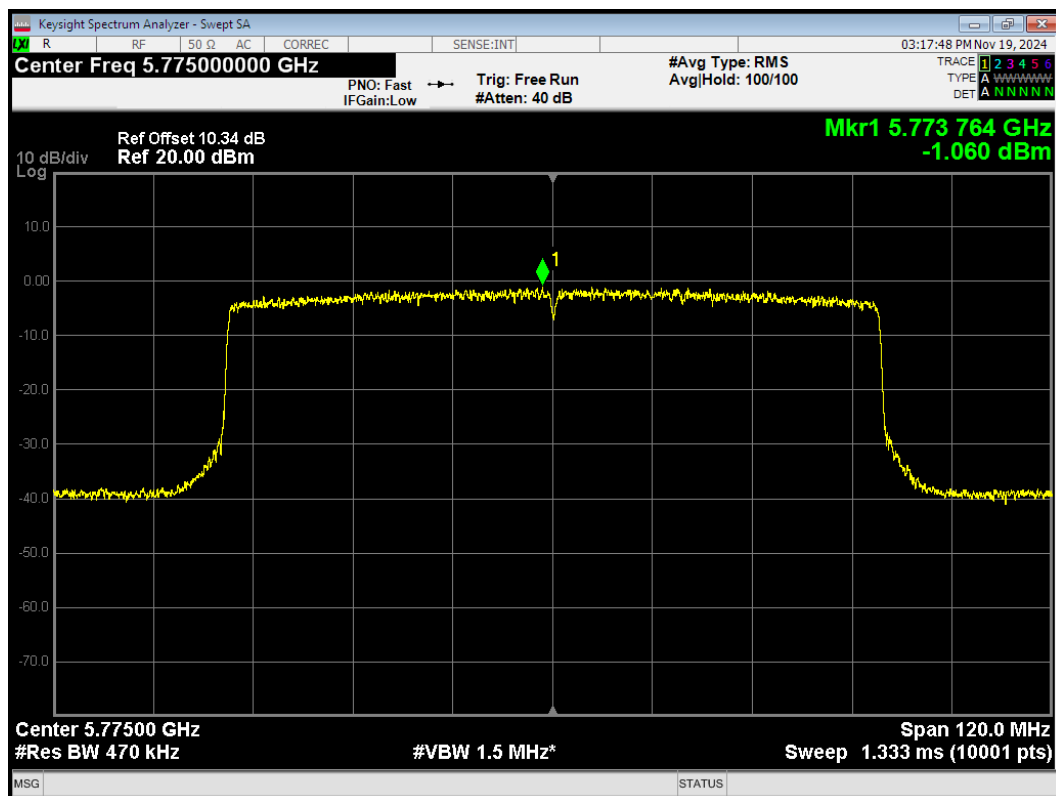
PSD 802.11ax(HE40) 5795MHz



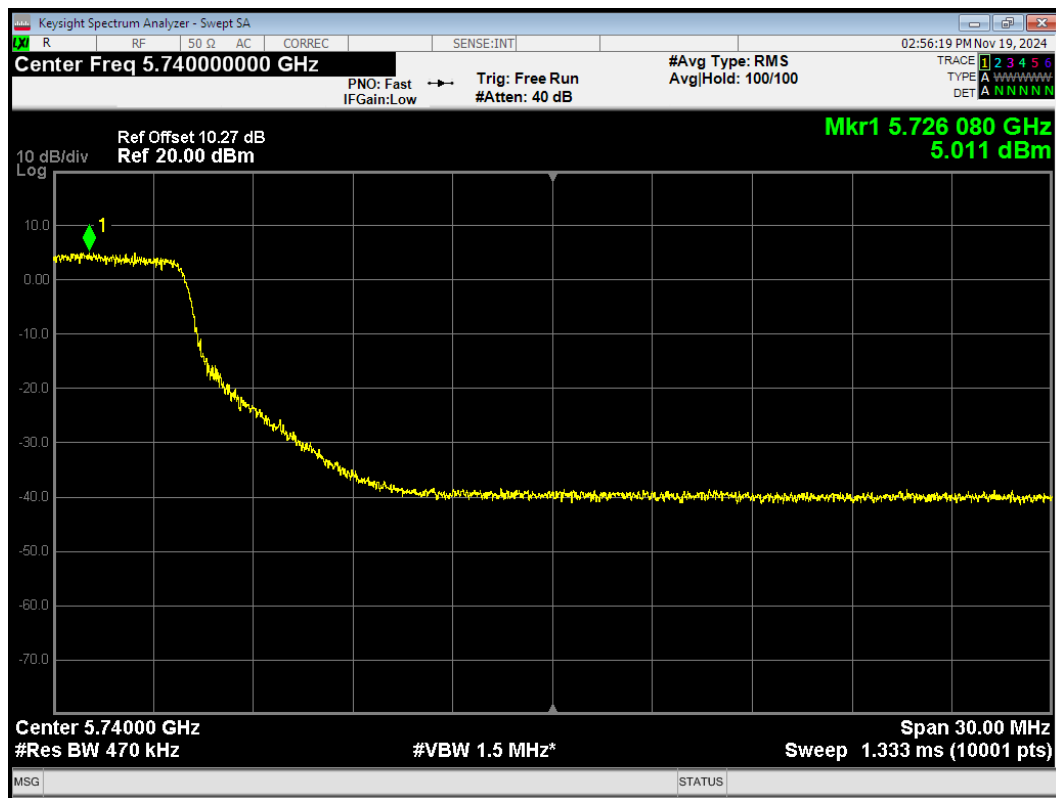
PSD 802.11ax(HE80) 5785MHz



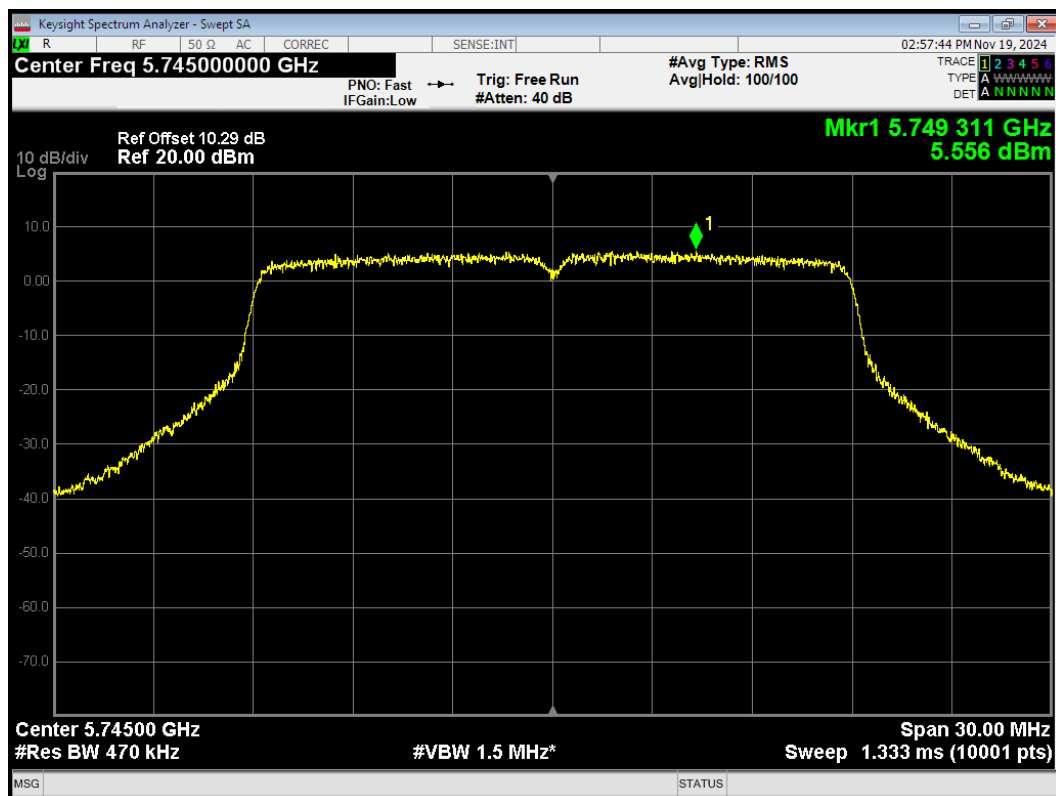
PSD 802.11ax(HE80) 5775MHz



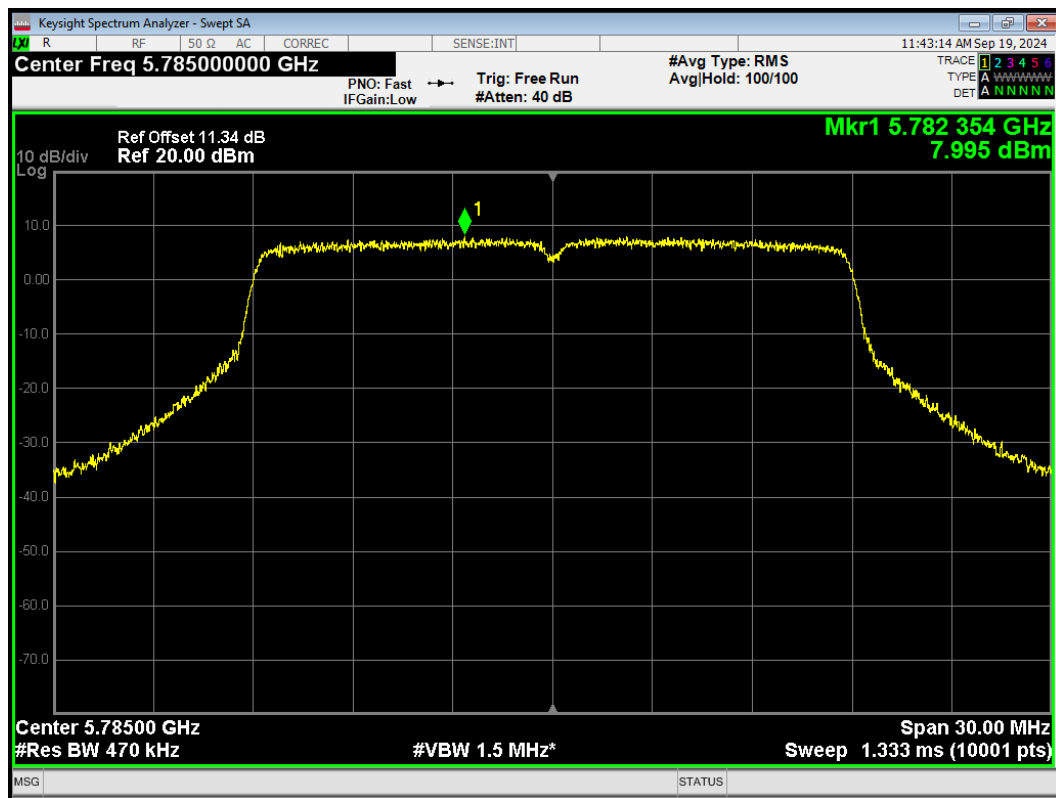
PSD 802.11n(HT20) 5740MHz



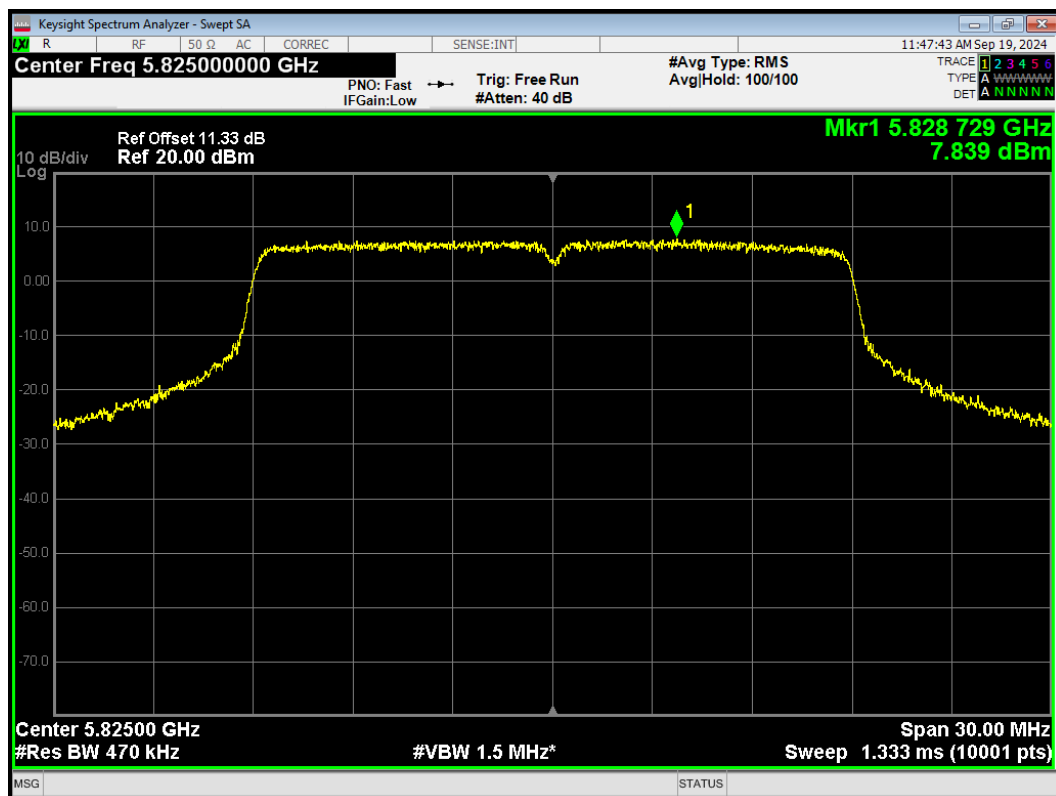
PSD 802.11n(HT20) 5745MHz



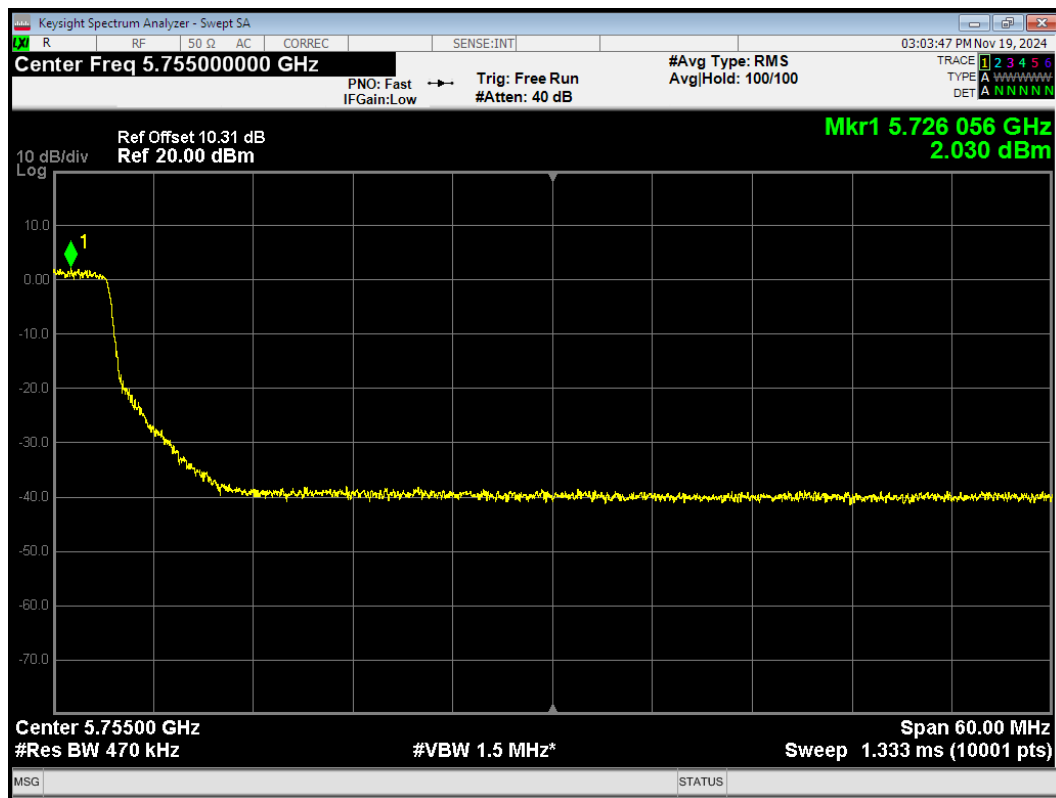
PSD 802.11n(HT20) 5785MHz



PSD 802.11n(HT20) 5825MHz



PSD 802.11n(HT40) 5755MHz



PSD 802.11n(HT40) 5755MHz

