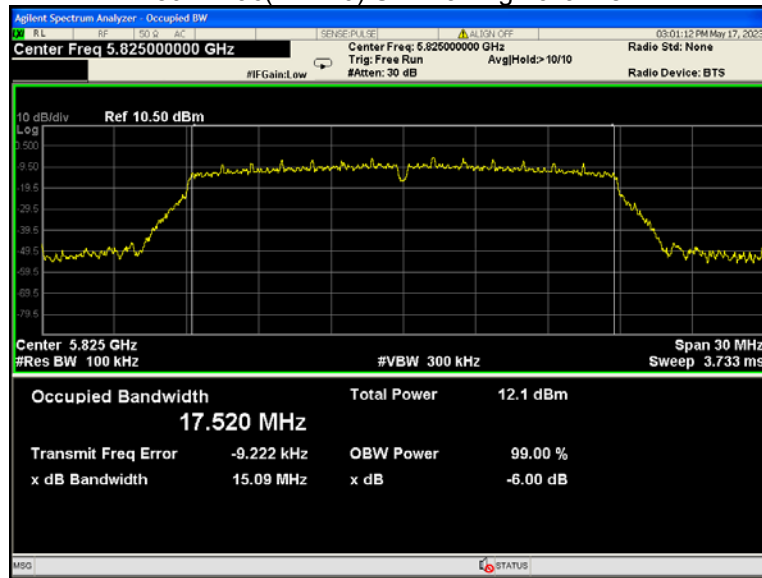
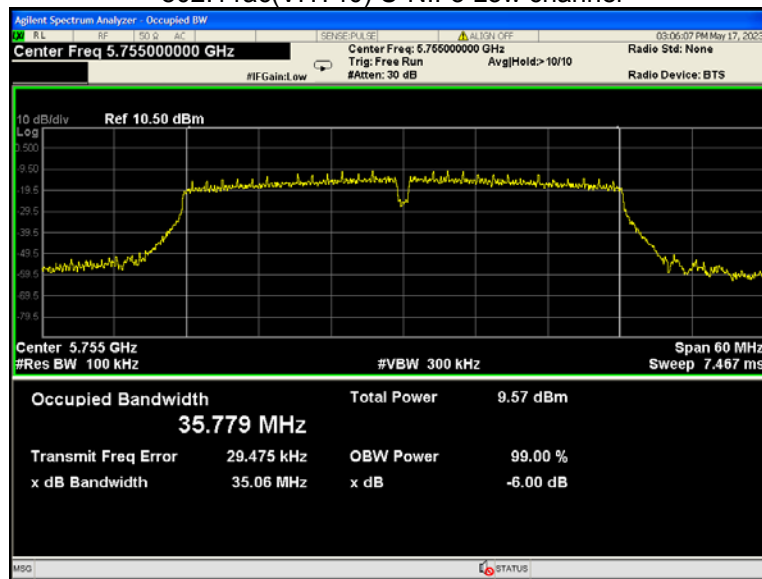


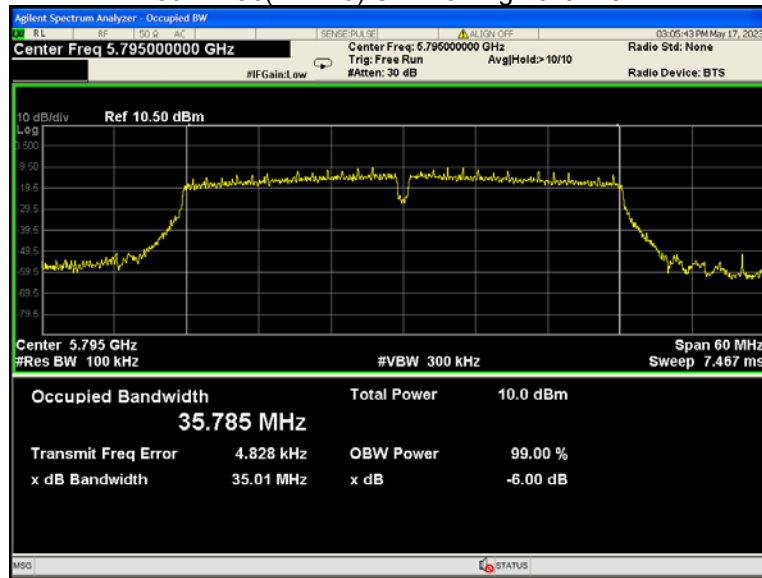
802.11ac(VHT20) U-NII-3 High channel



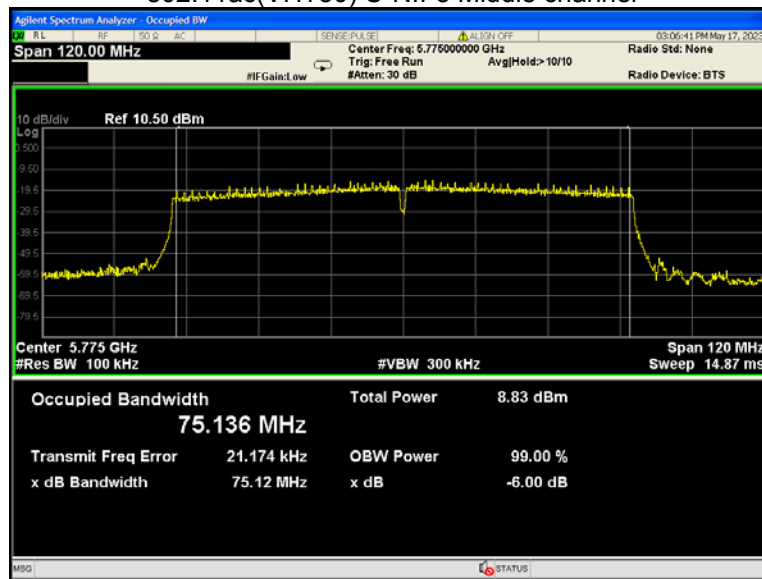
802.11ac(VHT40) U-NII-3 Low channel



802.11ac(VHT40) U-NII-3 High channel



802.11ac(VHT80) U-NII-3 Middle channel



12 26 dB Bandwidth and 99% Occupied Bandwidth

| | |
|-------------------|------------------------------------------------------------------------------------------|
| Test Requirement: | FCC 47CFR Part 15 Section 15.407 (a) KDB662911 D01 Multiple Transmitter Output v02r01 |
| Test Method: | KDB789033 D02 General U-NII Test Procedures New Rules v02r01 Section D |
| Test Limit: | No restriction limits |
| Test Result: | PASS |

12.1 Test Procedure

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;
2. Set the spectrum analyzer: RBW = 1% to 5% of the OBW, VBW = 3x RBW

12.2 Test Result

| Band | Operation mode | 26 dB Bandwidth (MHz) | | | 99% Bandwidth (MHz) | | |
|---------|-----------------|-----------------------|--------|-------|---------------------|--------|--------|
| | | Low | Middle | High | Low | Middle | High |
| U-NII-1 | 802.11a | 20.40 | 19.89 | 19.85 | 16.460 | 16.415 | 16.439 |
| | 802.11n(HT20) | 20.01 | 20.31 | 20.18 | 17.553 | 17.597 | 17.584 |
| | 802.11n(HT40) | 40.33 | / | 40.00 | 35.965 | / | 35.946 |
| | 802.11ac(VHT20) | 20.04 | 20.09 | 20.02 | 17.545 | 17.539 | 17.529 |
| | 802.11ac(VHT40) | 40.30 | / | 40.20 | 35.958 | / | 35.890 |
| | 802.11ac(VHT80) | / | 80.31 | / | / | 75.302 | / |

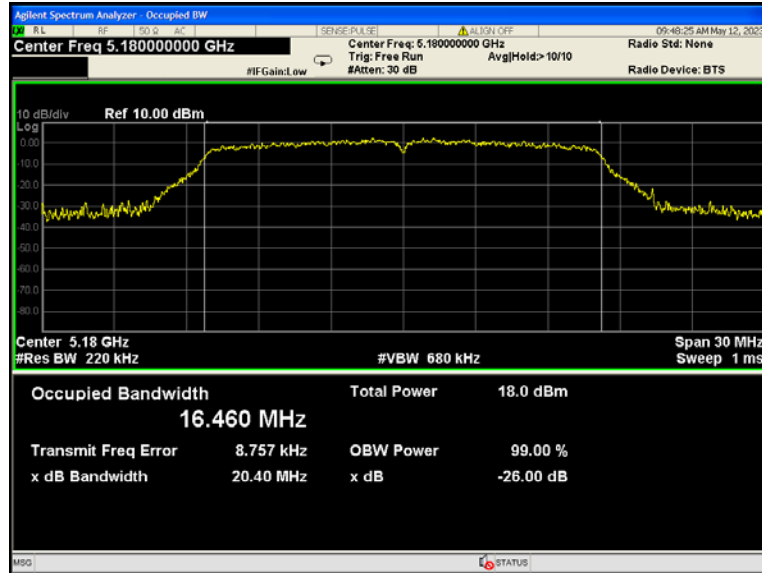
| Band | Operation mode | 26 dB Bandwidth (MHz) | | | 99% Bandwidth (MHz) | | |
|----------|-----------------|-----------------------|--------|-------|---------------------|--------|--------|
| | | Low | Middle | High | Low | Middle | High |
| U-NII-2A | 802.11a | 19.75 | 19.82 | 19.87 | 16.409 | 16.443 | 16.415 |
| | 802.11n(HT20) | 20.11 | 20.13 | 20.23 | 17.524 | 17.538 | 17.535 |
| | 802.11n(HT40) | 40.18 | / | 40.12 | 35.919 | / | 35.965 |
| | 802.11ac(VHT20) | 20.19 | 20.12 | 20.31 | 17.528 | 17.548 | 17.551 |
| | 802.11ac(VHT40) | 40.33 | / | 40.20 | 35.973 | / | 35.959 |
| | 802.11ac(VHT80) | / | 80.42 | / | / | 75.190 | / |

| Band | Operation mode | 26 dB Bandwidth (MHz) | | | 99% Bandwidth (MHz) | | |
|----------|-----------------|-----------------------|--------|-------|---------------------|--------|--------|
| | | Low | Middle | High | Low | Middle | High |
| U-NII-2C | 802.11a | 19.85 | 19.69 | 19.88 | 16.449 | 16.381 | 16.425 |
| | 802.11n(HT20) | 19.99 | 20.15 | 20.22 | 17.553 | 17.525 | 17.570 |
| | 802.11n(HT40) | 40.08 | 40.45 | 40.07 | 35.908 | 35.949 | 35.980 |
| | 802.11ac(VHT20) | 20.12 | 20.02 | 20.12 | 17.538 | 17.552 | 17.538 |
| | 802.11ac(VHT40) | 40.39 | 39.91 | 39.94 | 35.953 | 35.925 | 35.920 |
| | 802.11ac(VHT80) | 80.57 | 80.21 | / | 75.232 | 75.180 | / |

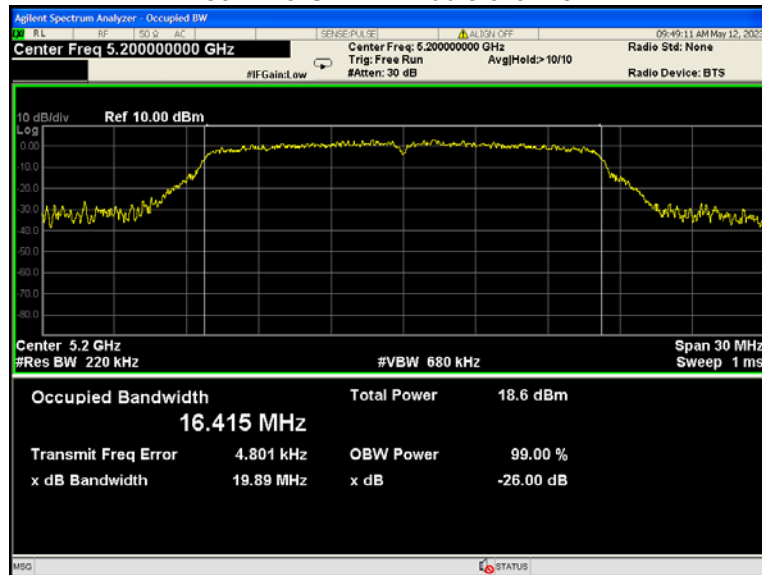
| Band | Operation mode | 99% Bandwidth (MHz) | | |
|---------|-----------------|---------------------|--------|--------|
| | | Low | Middle | High |
| U-NII-3 | 802.11a | 16.402 | 16.398 | 16.404 |
| | 802.11n(HT20) | 17.541 | 17.559 | 17.568 |
| | 802.11n(HT40) | 35.959 | / | 35.912 |
| | 802.11ac(VHT20) | 17.571 | 17.540 | 17.554 |
| | 802.11ac(VHT40) | 35.963 | / | 35.929 |
| | 802.11ac(VHT80) | / | 75.319 | / |

Test result plots shown as follows:

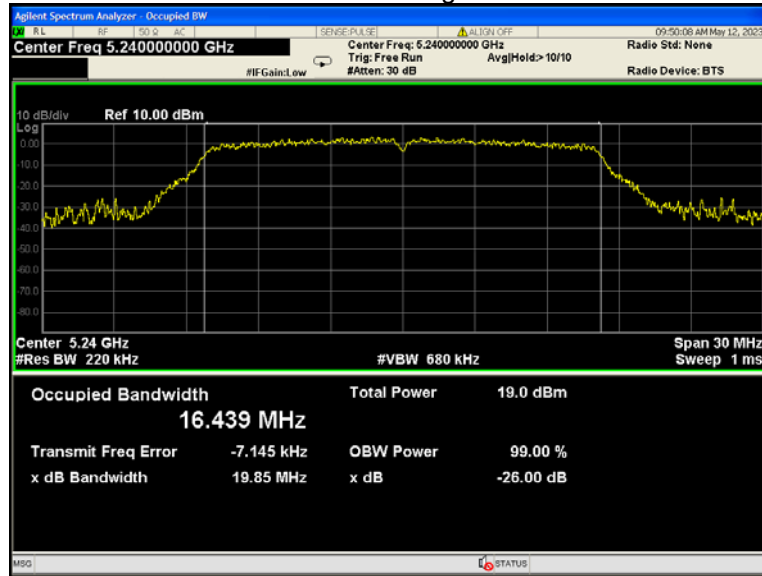
26dB & 99dB Bandwidth
802.11a U-NII-1 Low channel



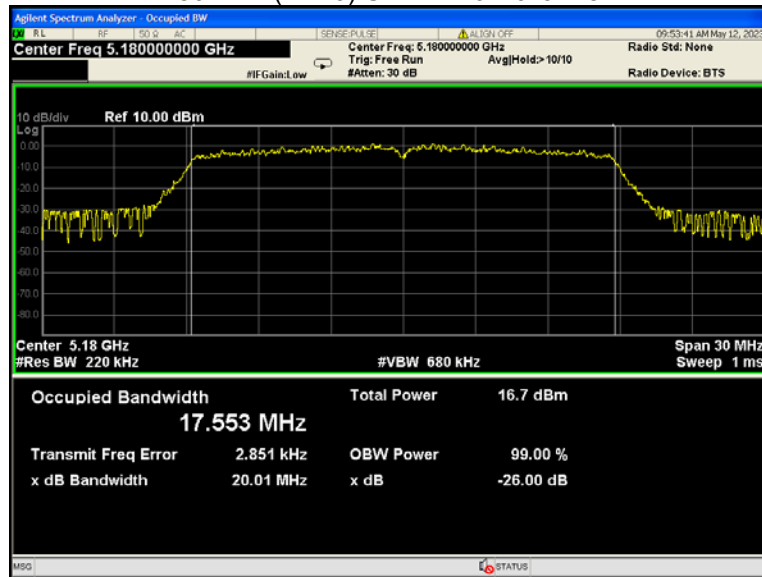
802.11a U-NII-1 Middle channel



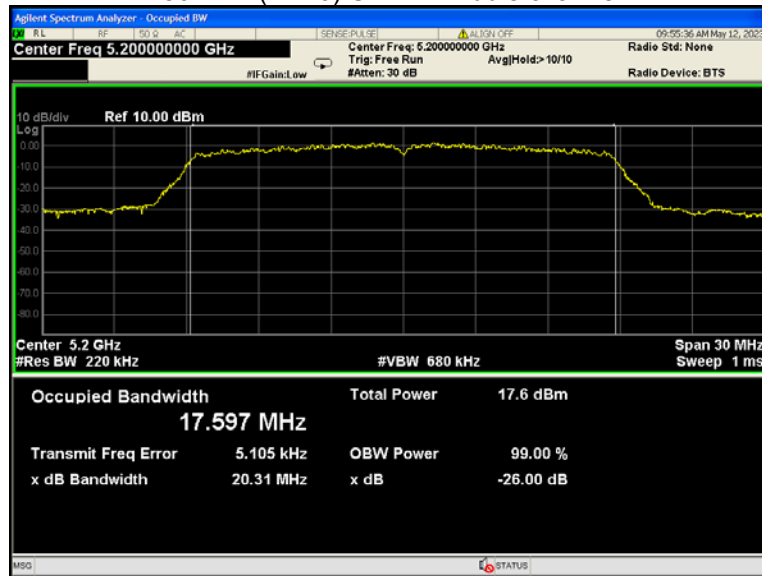
802.11a U-NII-1 High channel



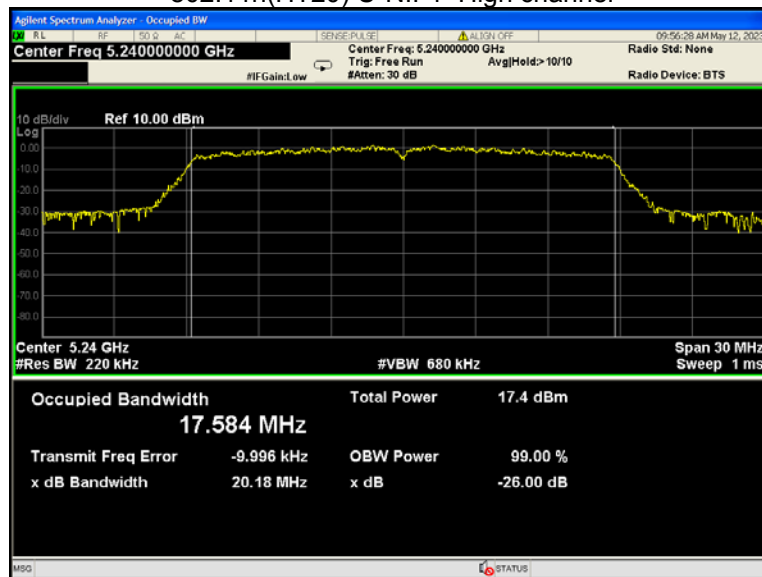
802.11n(HT20) U-NII-1 Low channel



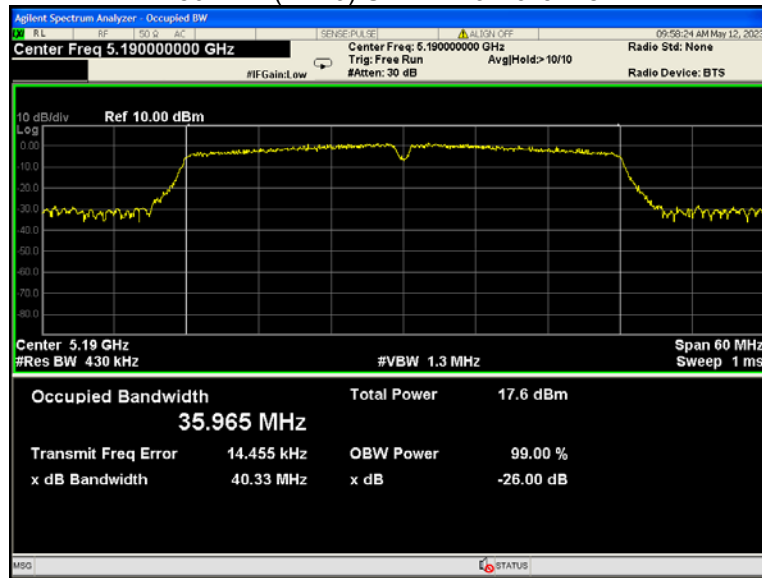
802.11n(HT20) U-NII-1 Middle channel



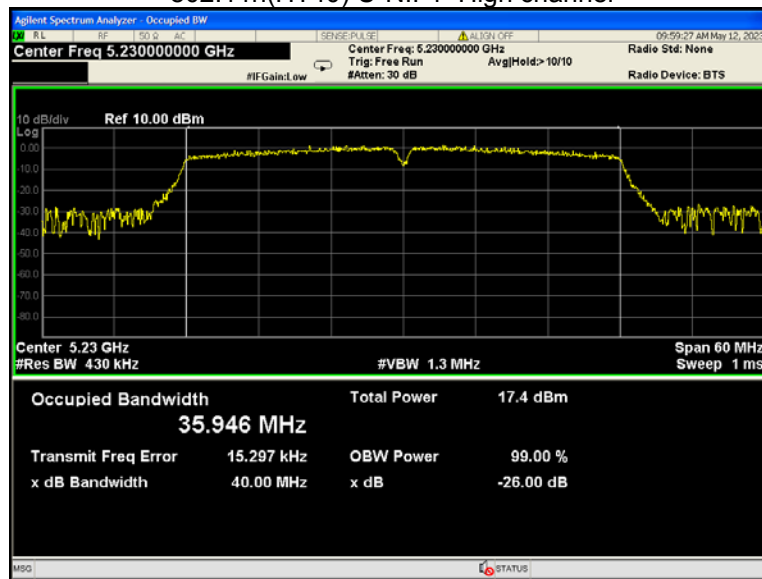
802.11n(HT20) U-NII-1 High channel



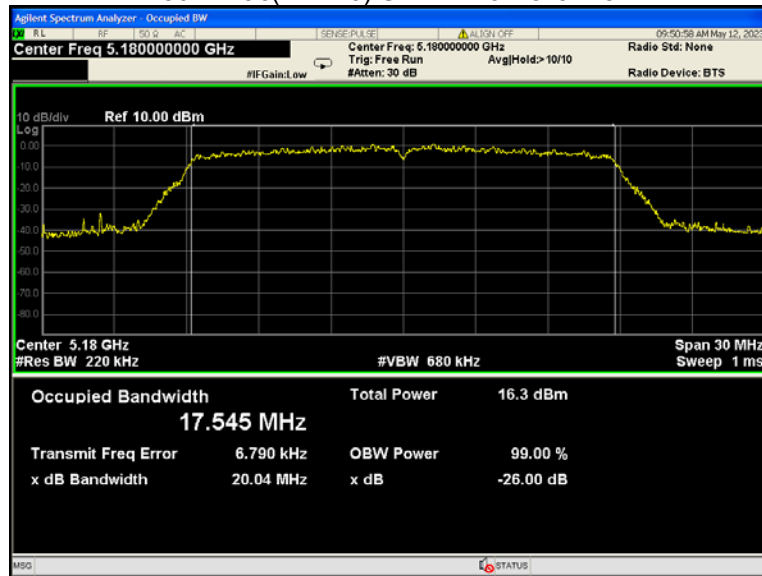
802.11n(HT40) U-NII-1 Low channel



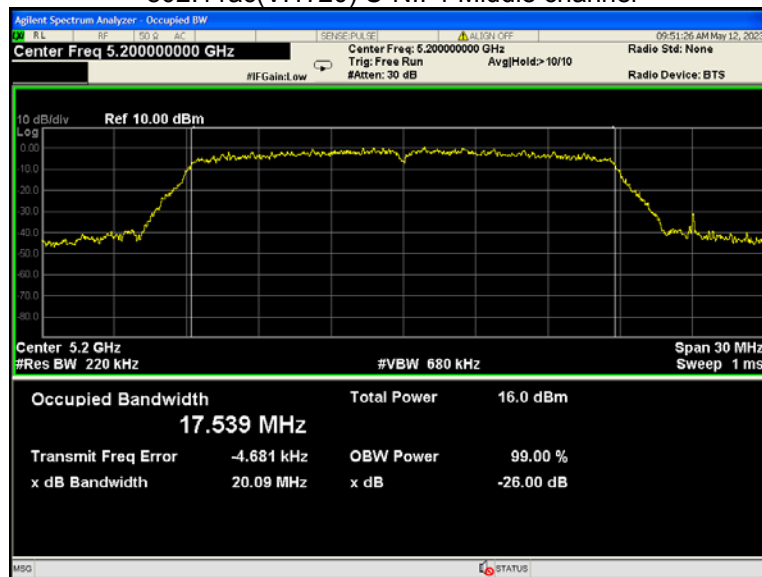
802.11n(HT40) U-NII-1 High channel



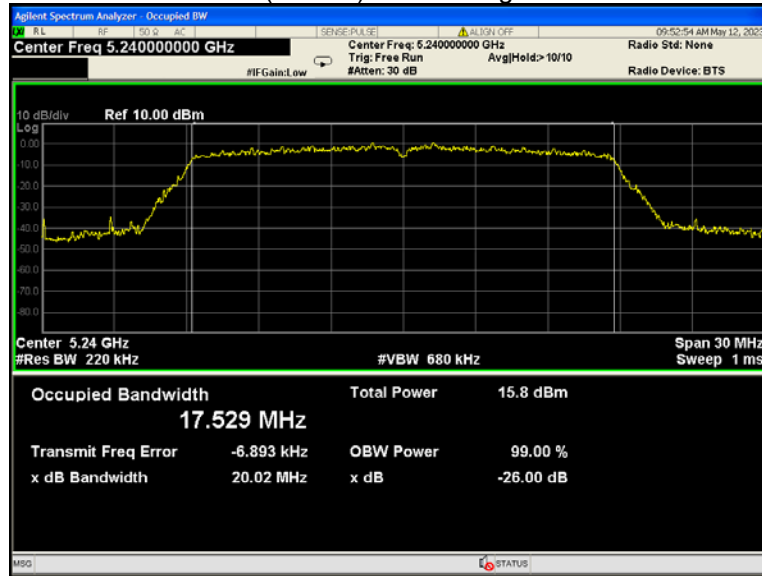
802.11ac(VHT20) U-NII-1 Low channel



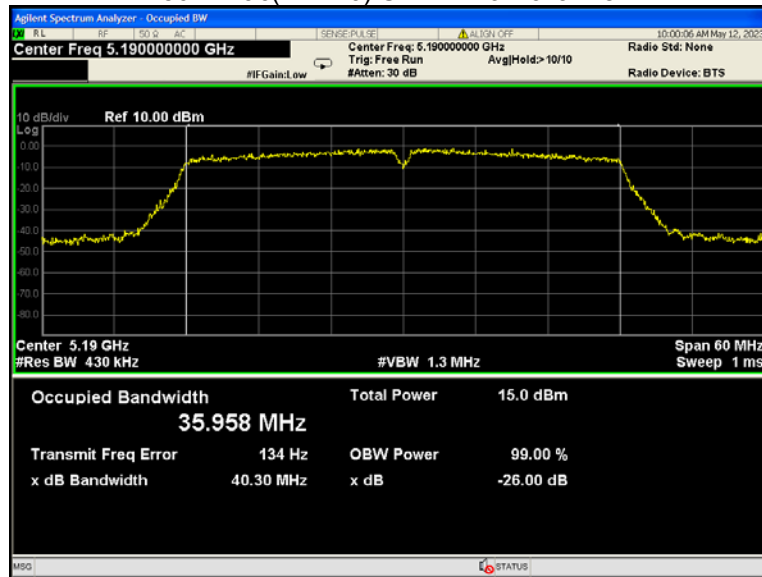
802.11ac(VHT20) U-NII-1 Middle channel



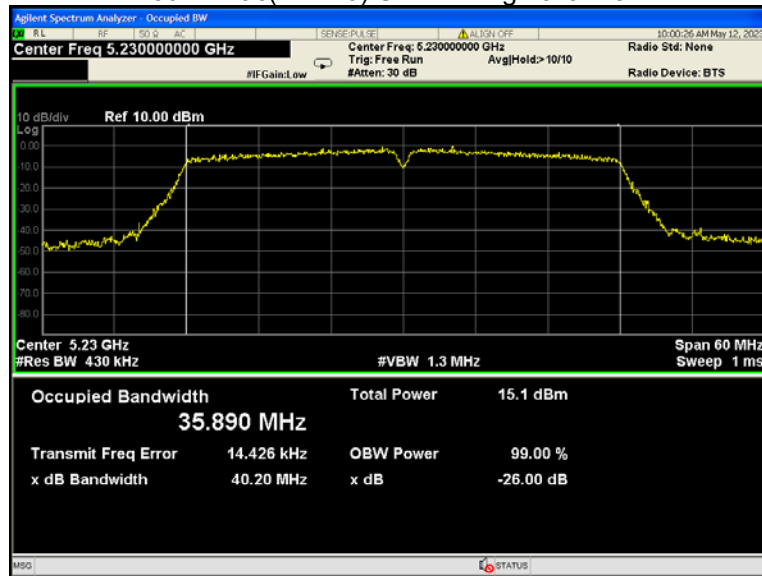
802.11ac(VHT20) U-NII-1 High channel



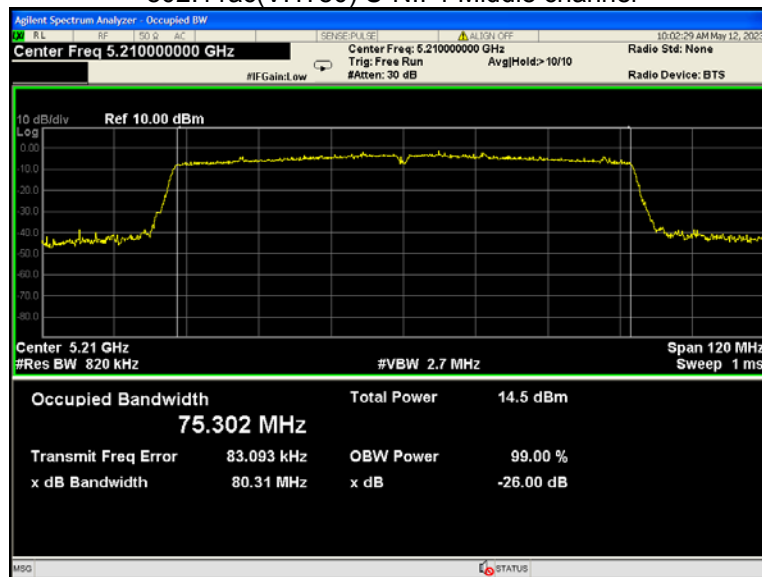
802.11ac(VHT40) U-NII-1 Low channel



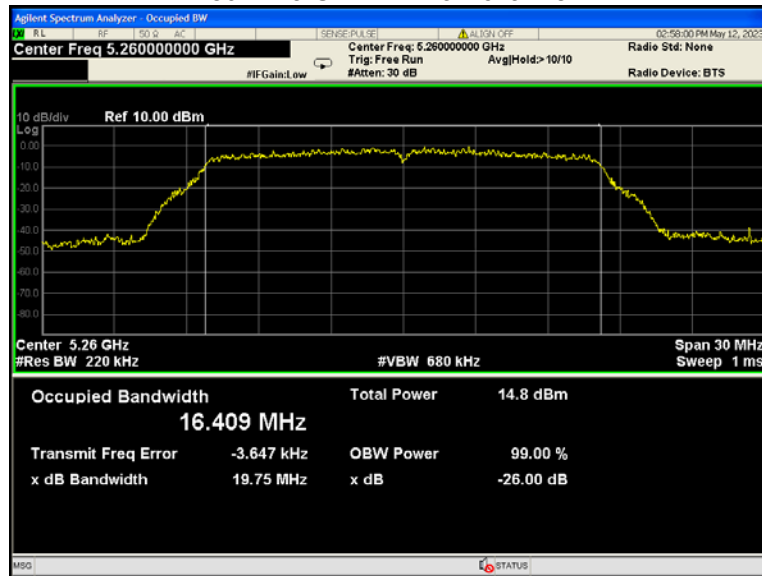
802.11ac(VHT40) U-NII-1 High channel



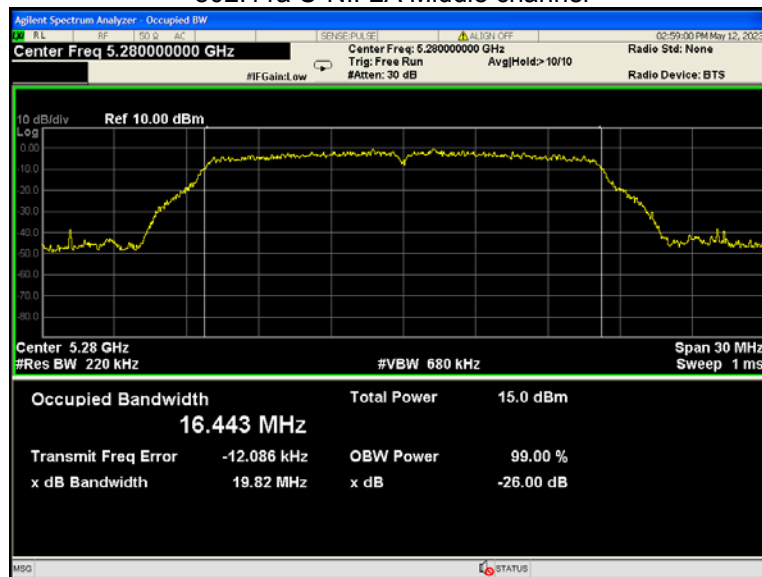
802.11ac(VHT80) U-NII-1 Middle channel



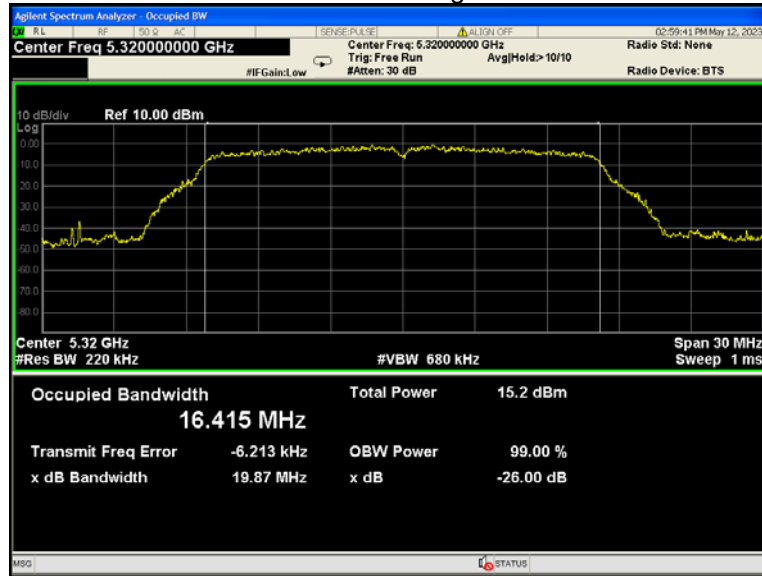
802.11a U-NII-2A Low channel



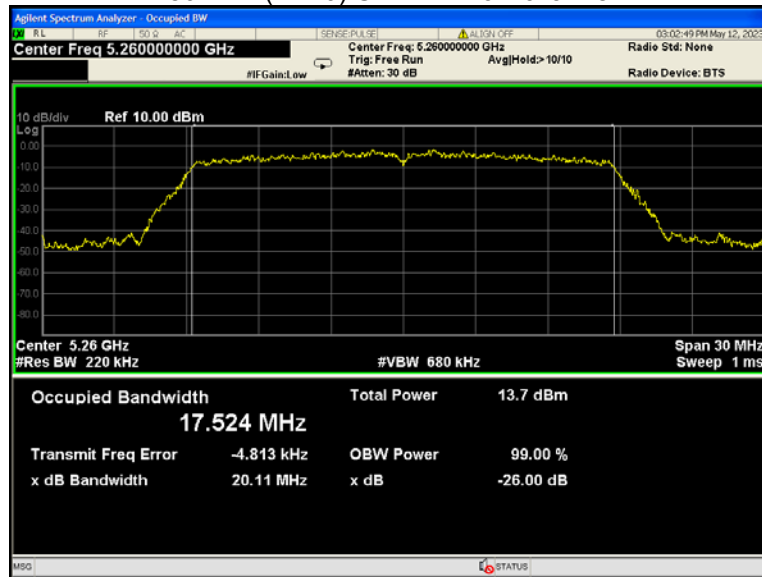
802.11a U-NII-2A Middle channel



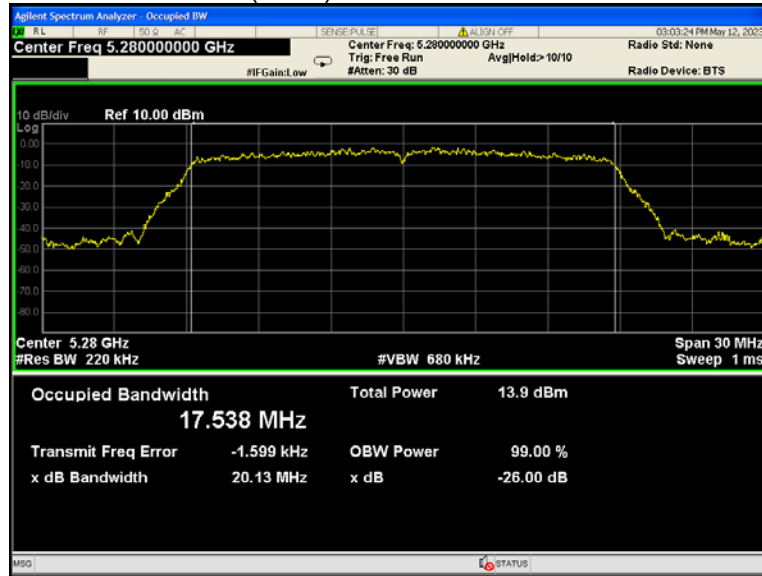
802.11a U-NII-2A High channel



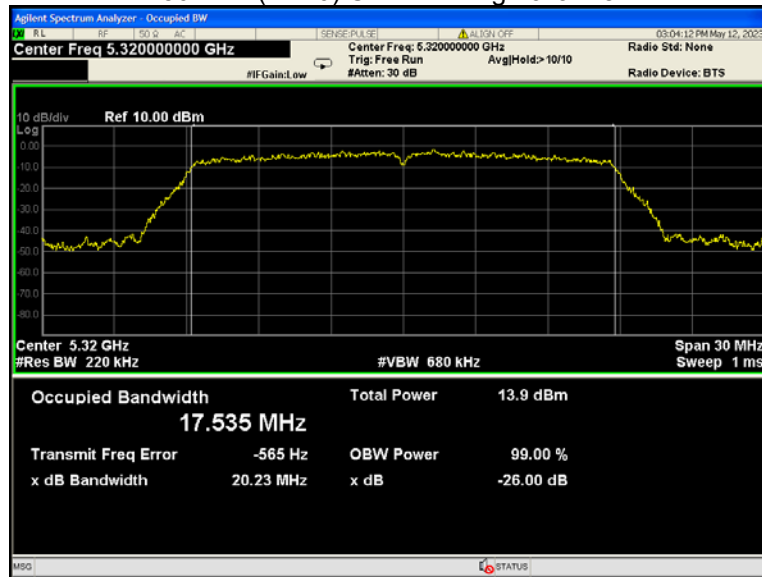
802.11n(HT20) U-NII-2A Low channel



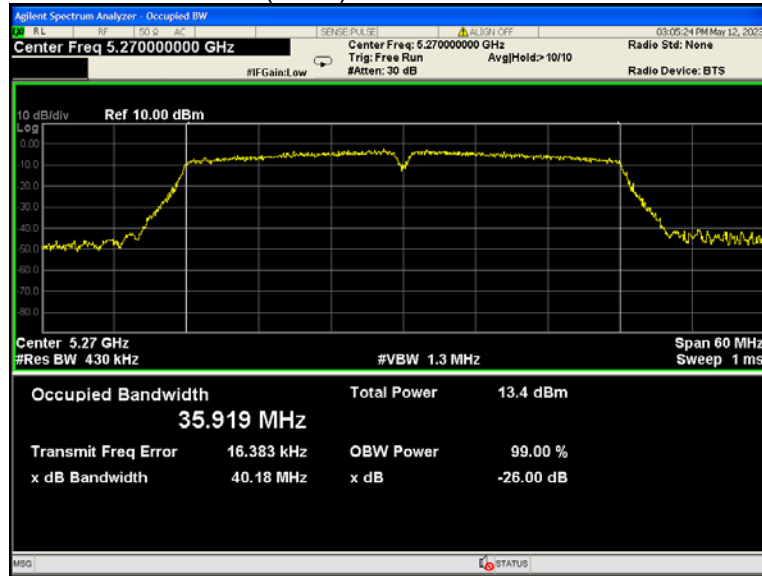
802.11n(HT20) U-NII-2A Middle channel



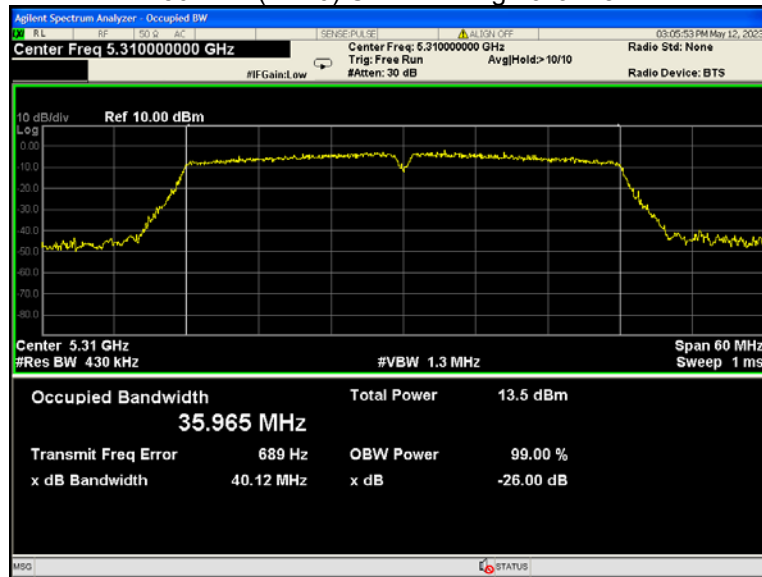
802.11n(HT20) U-NII-2A High channel



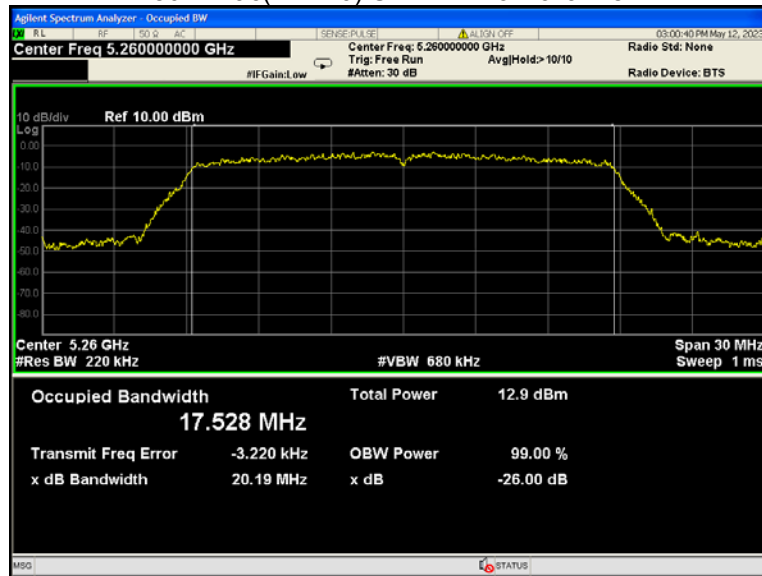
802.11n(HT40) U-NII-2A Low channel



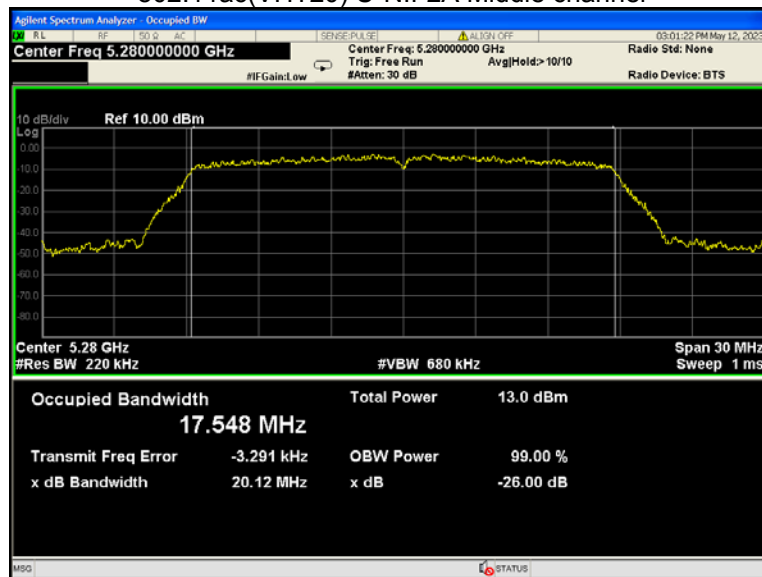
802.11n(HT40) U-NII-2A High channel



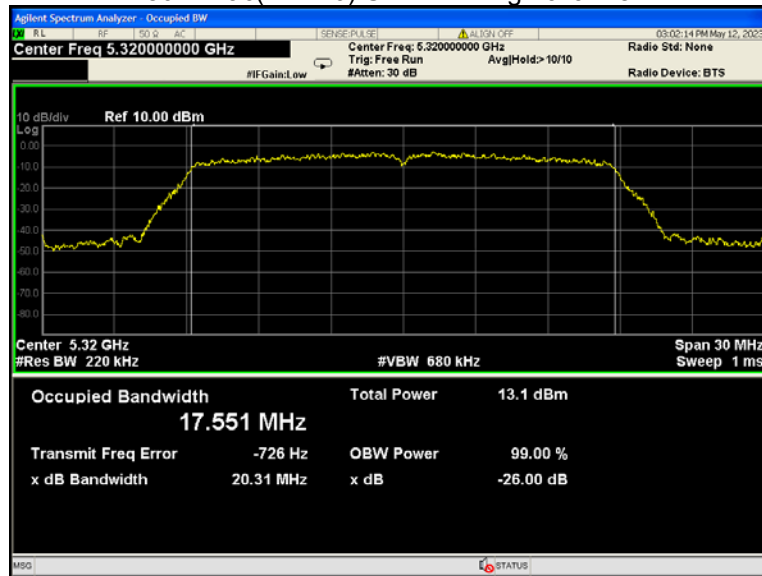
802.11ac(VHT20) U-NII-2A Low channel



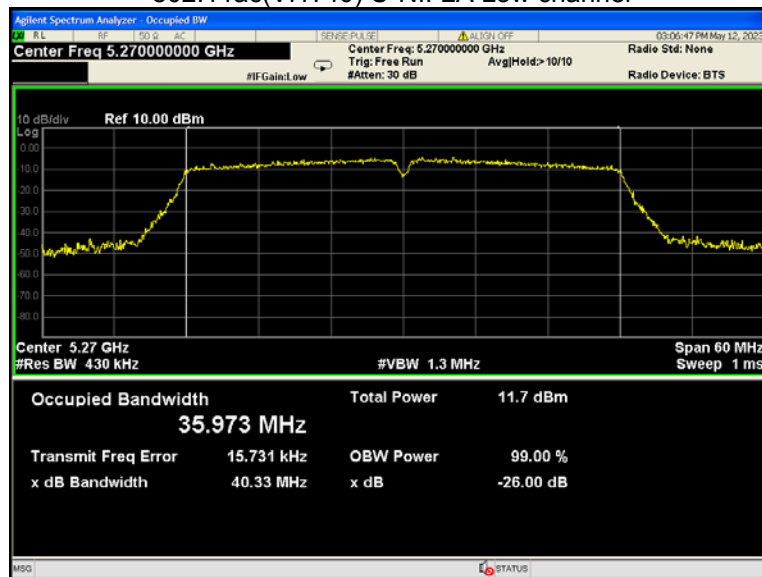
802.11ac(VHT20) U-NII-2A Middle channel



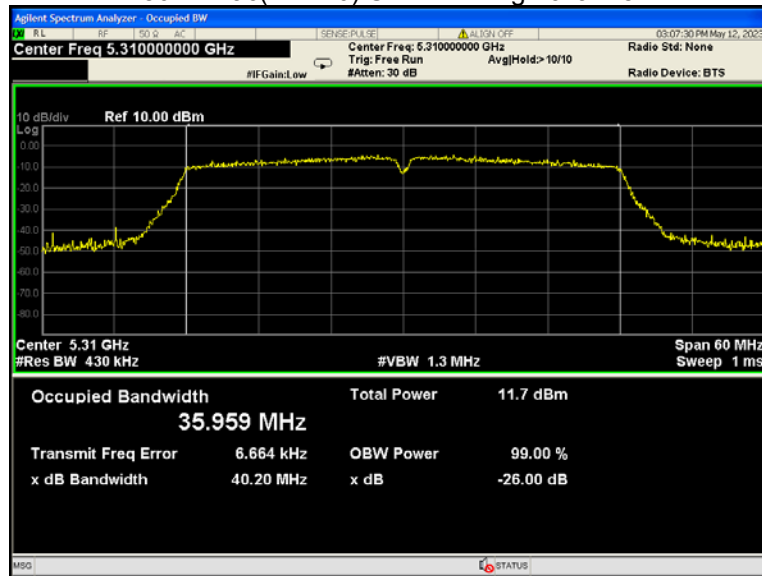
802.11ac(VHT20) U-NII-2A High channel



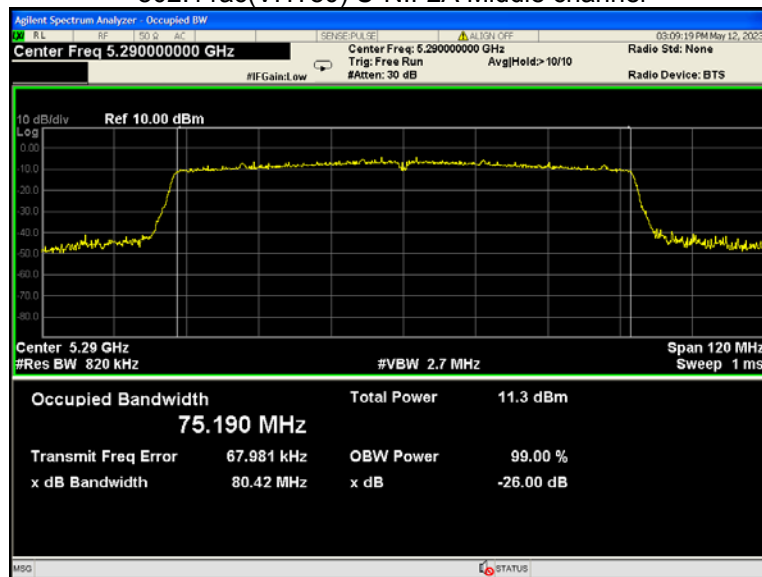
802.11ac(VHT40) U-NII-2A Low channel



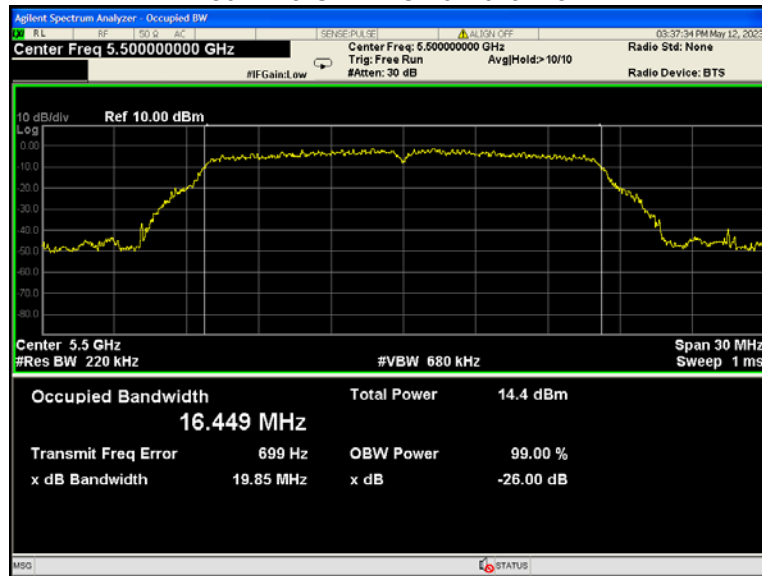
802.11 ac(VHT40) U-NII-2A High channel



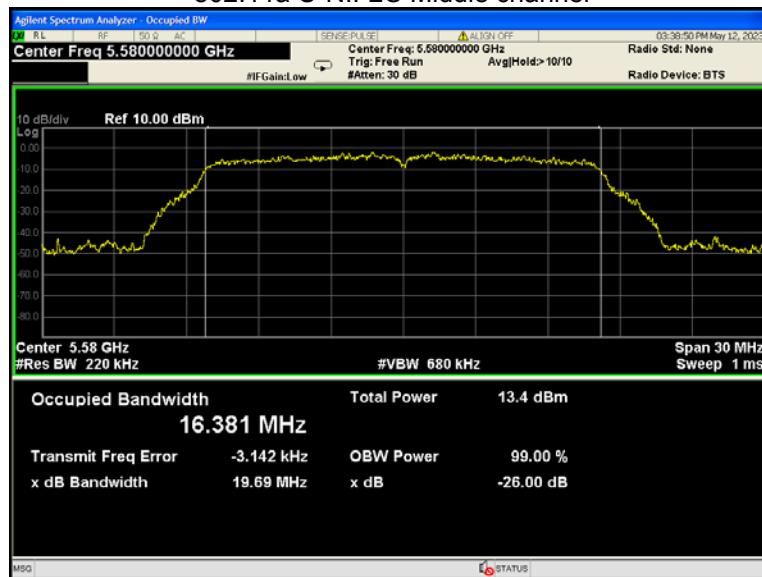
802.11ac(VHT80) U-NII-2A Middle channel



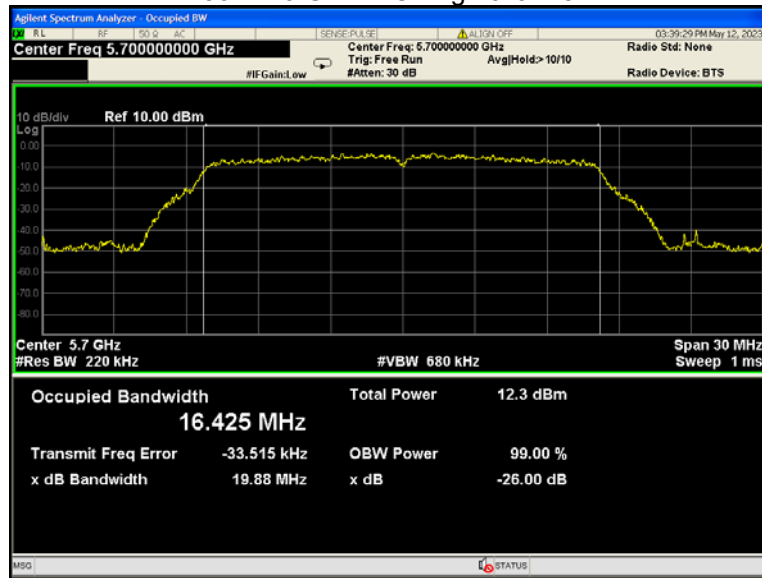
802.11a U-NII-2C Low channel



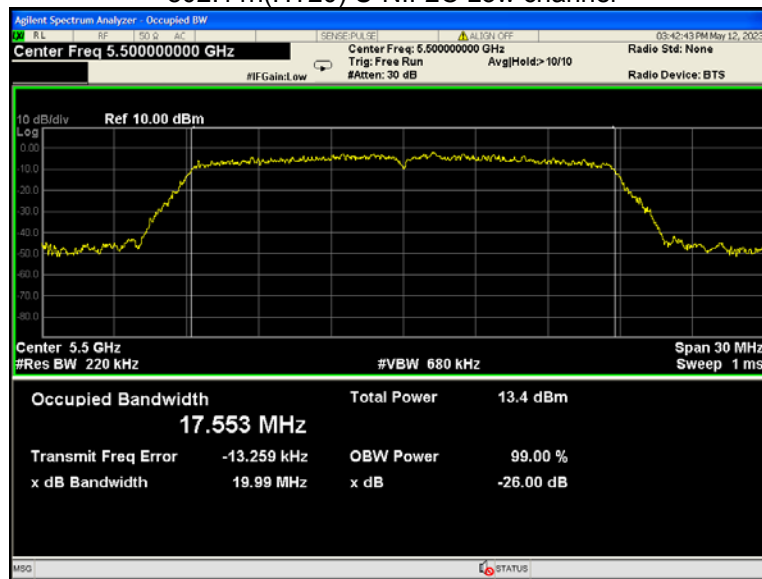
802.11a U-NII-2C Middle channel



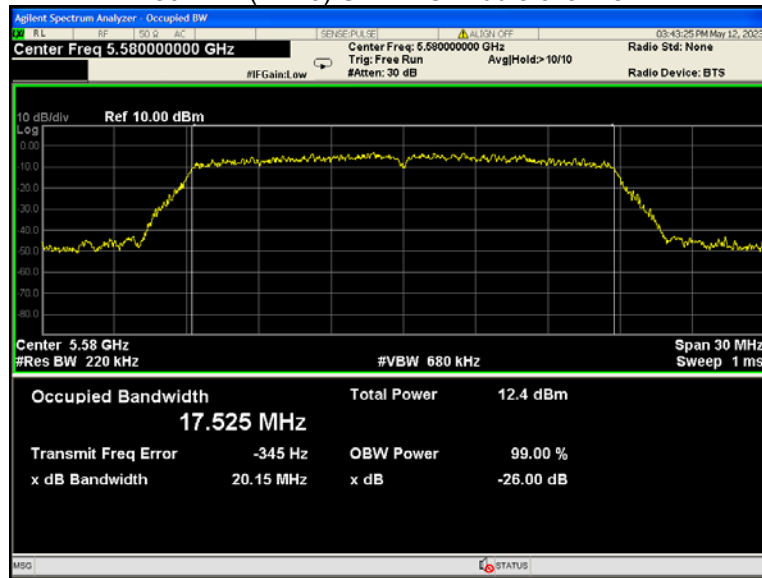
802.11a U-NII-2C High channel



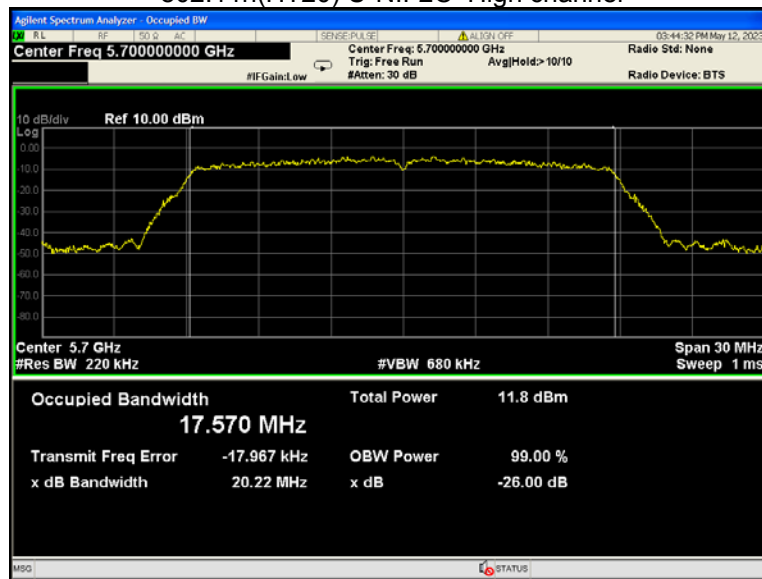
802.11n(HT20) U-NII-2C Low channel



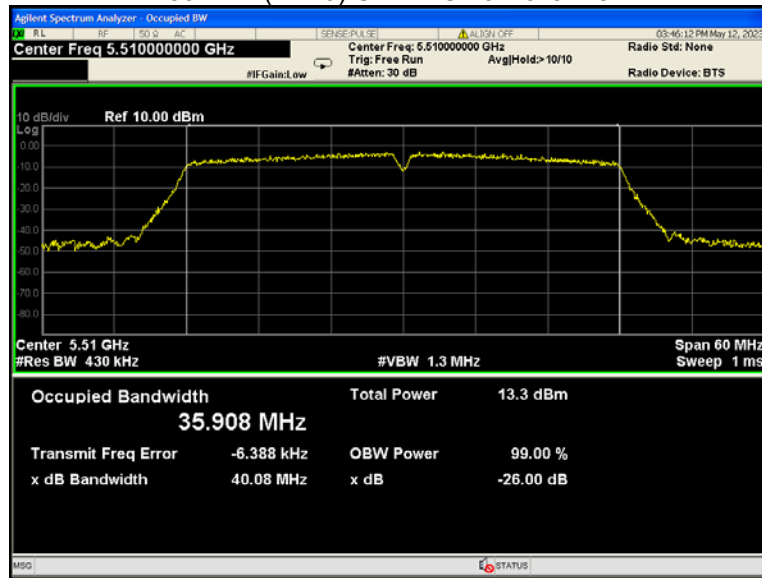
802.11n(HT20) U-NII-2C Middle channel



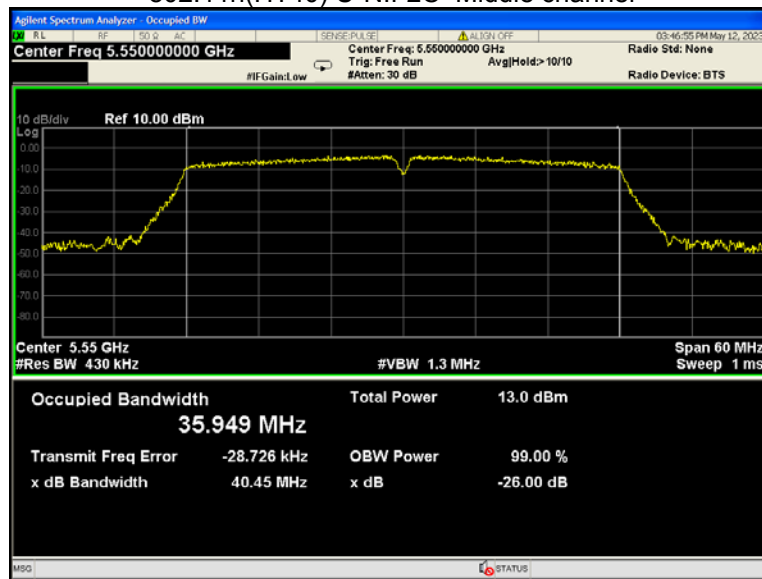
802.11n(HT20) U-NII-2C High channel



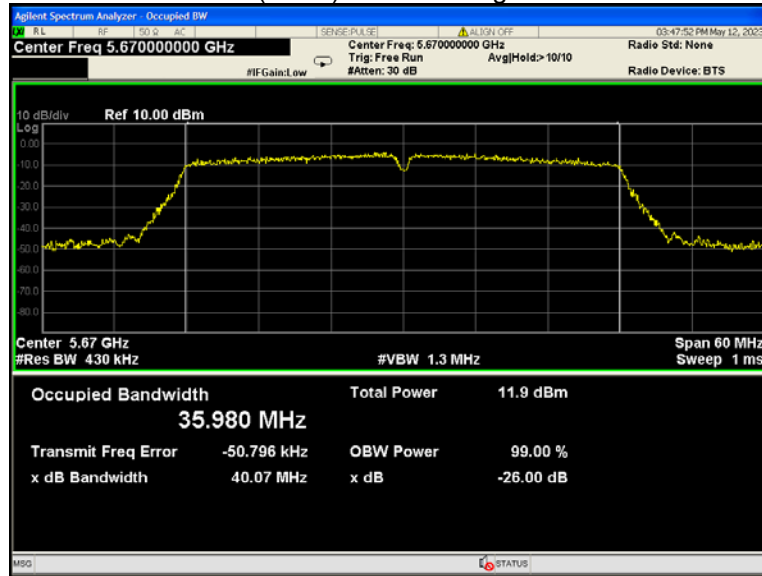
802.11n(HT40) U-NII-2C Low channel



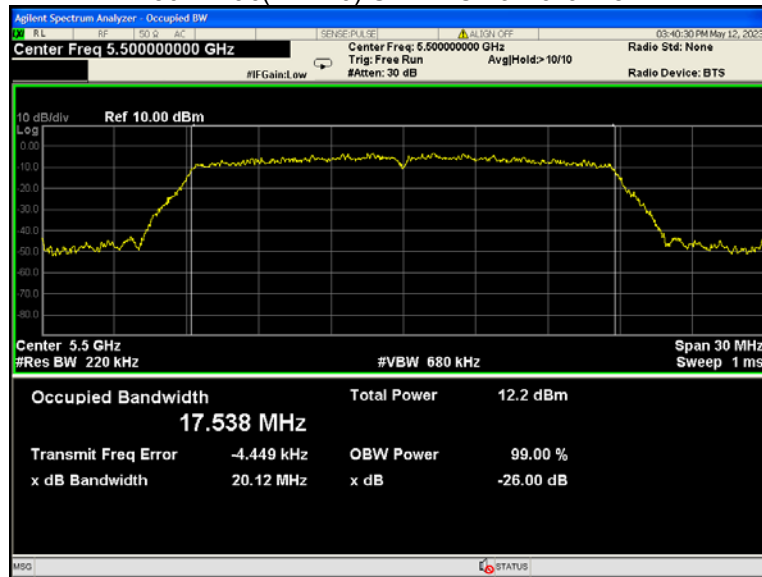
802.11n(HT40) U-NII-2C Middle channel



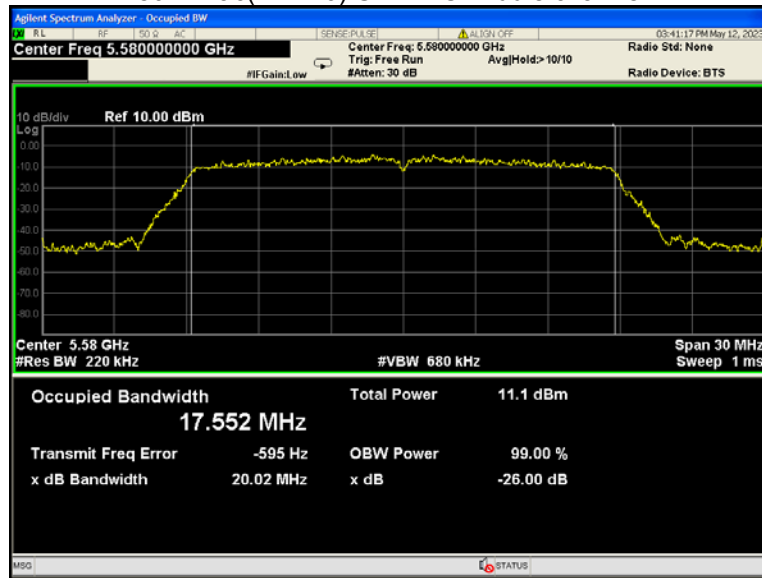
802.11n(HT40) U-NII-2C High channel



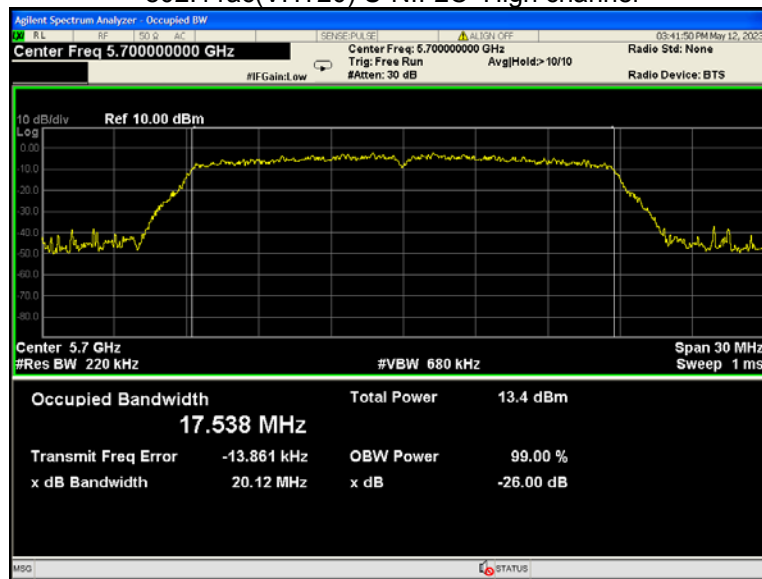
802.11ac(VHT20) U-NII-2C Low channel



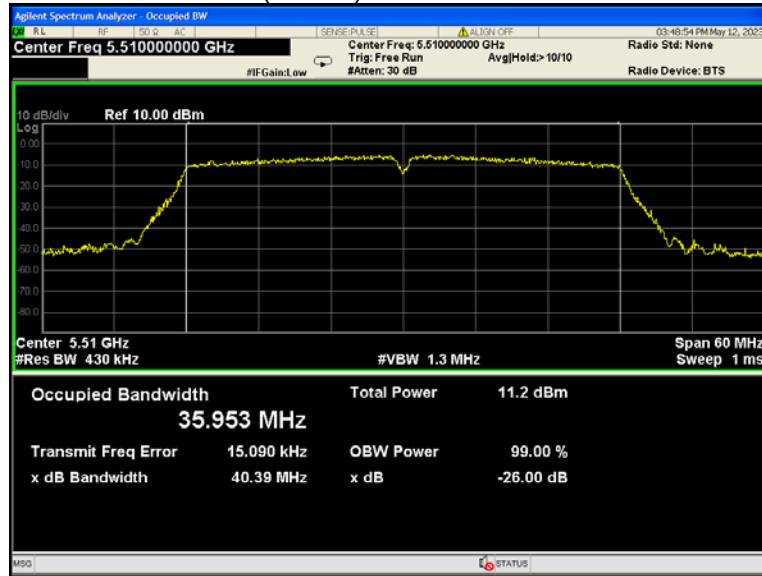
802.11ac(VHT20) U-NII-2C Middle channel



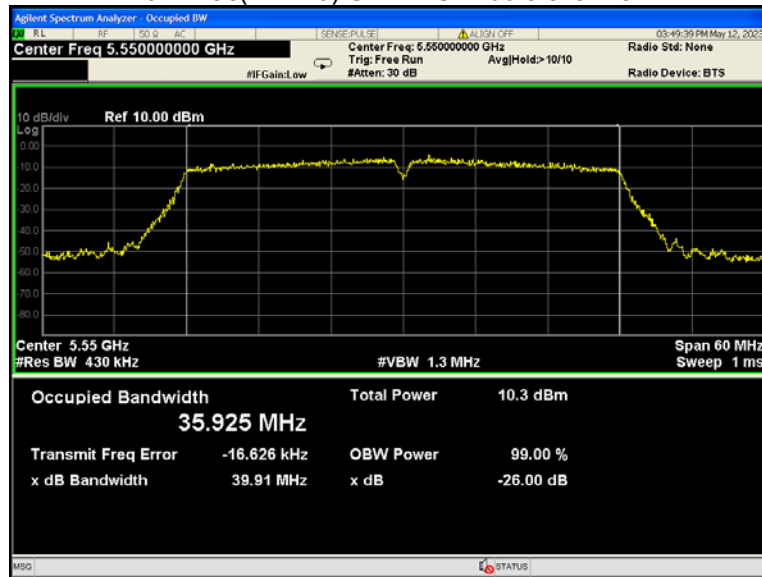
802.11ac(VHT20) U-NII-2C High channel



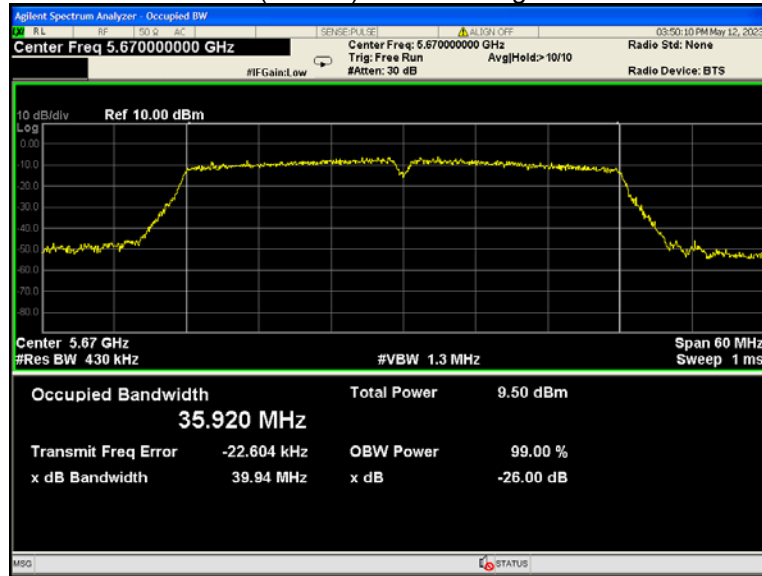
802.11ac(VHT40) U-NII-2C Low channel



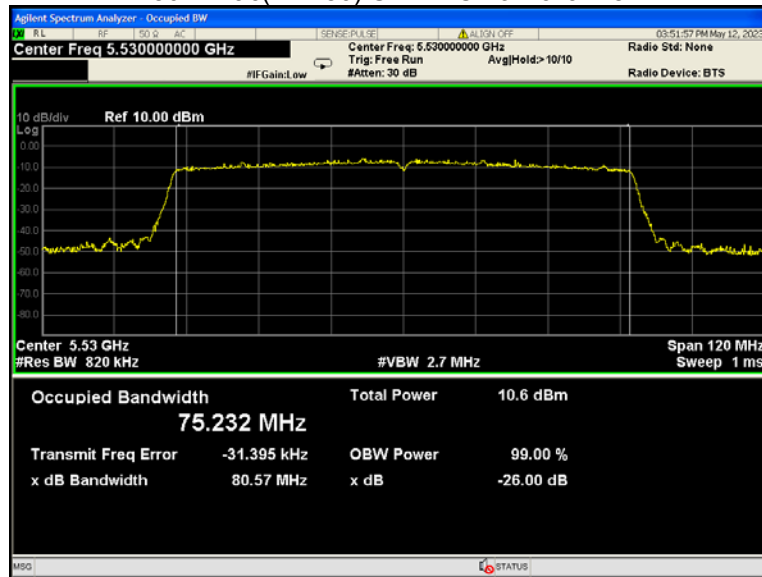
802.11ac(VHT40) U-NII-2C Middle channel



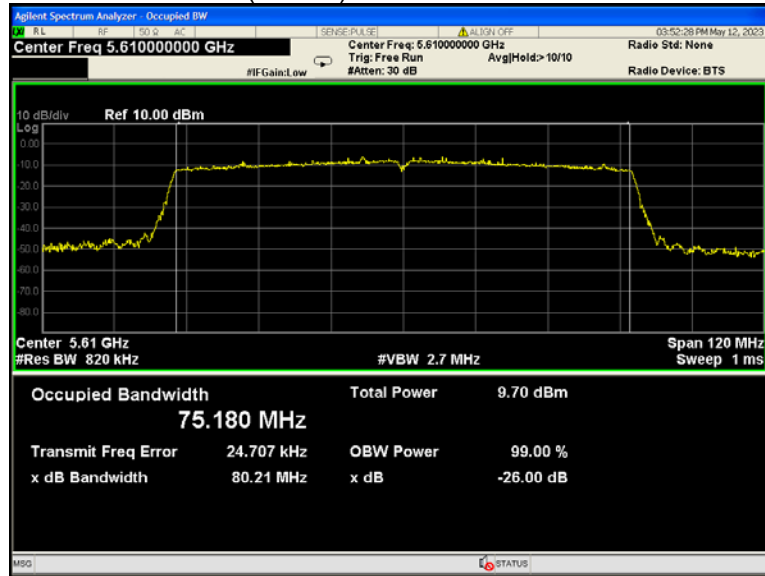
802.11ac(VHT40) U-NII-2C High channel



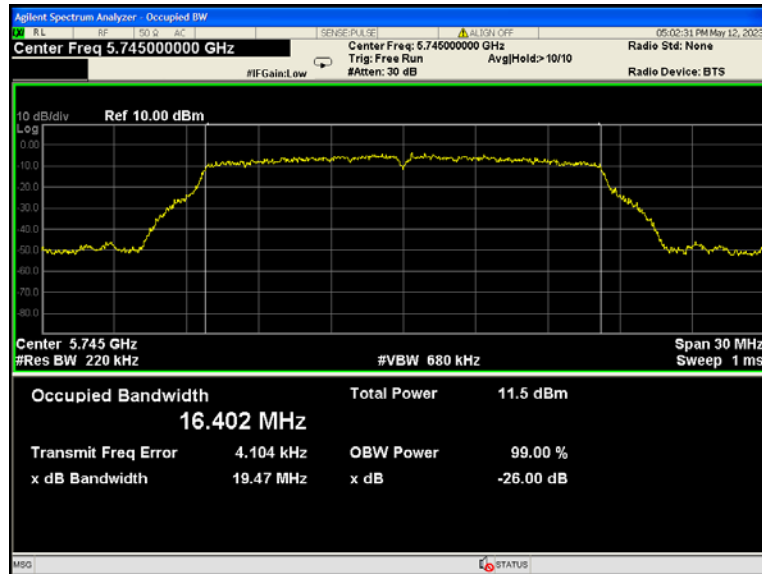
802.11ac(VHT80) U-NII-2C Low channel



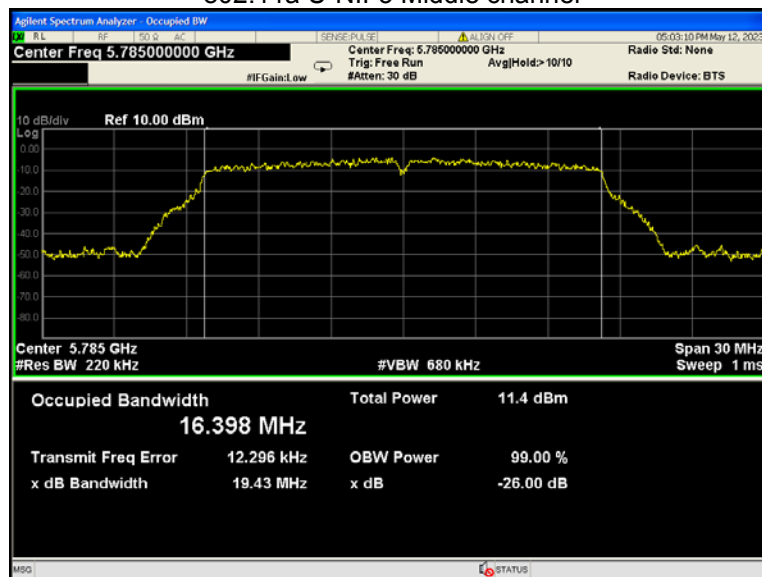
802.11ac(VHT80) U-NII-2C Middle channel



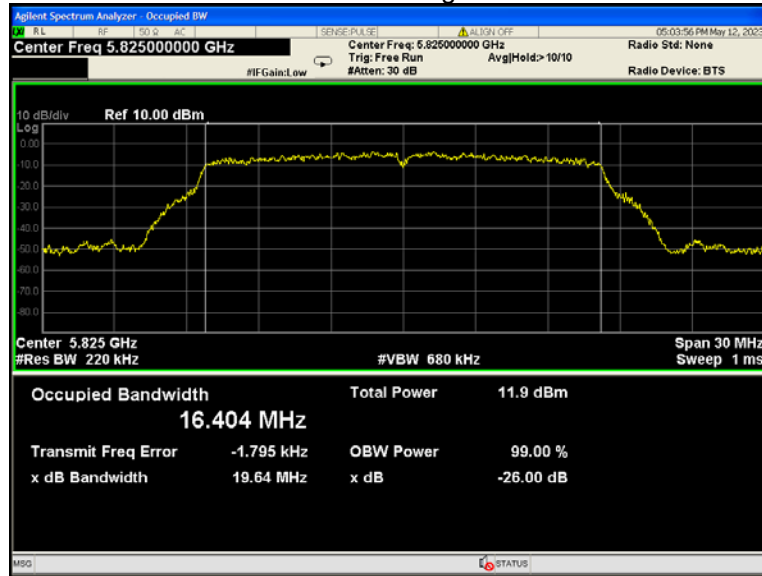
99% Occupied Bandwidth
802.11a U-NII-3 Low channel



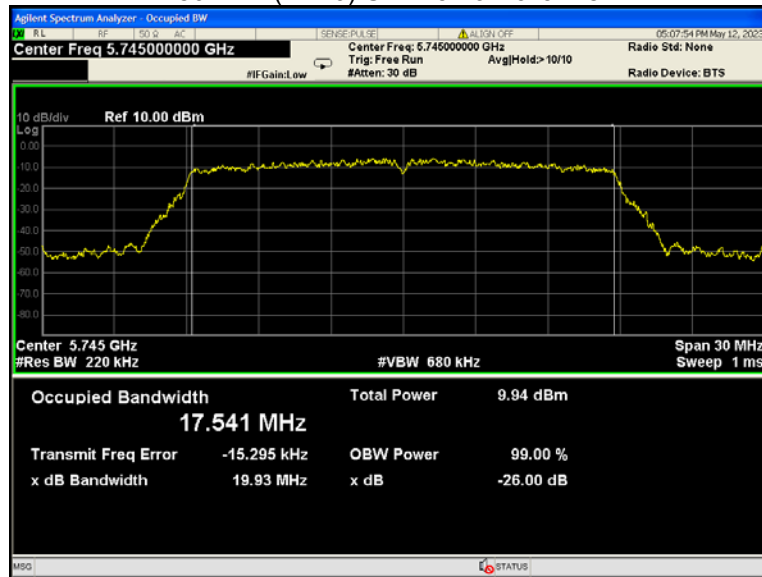
802.11a U-NII-3 Middle channel



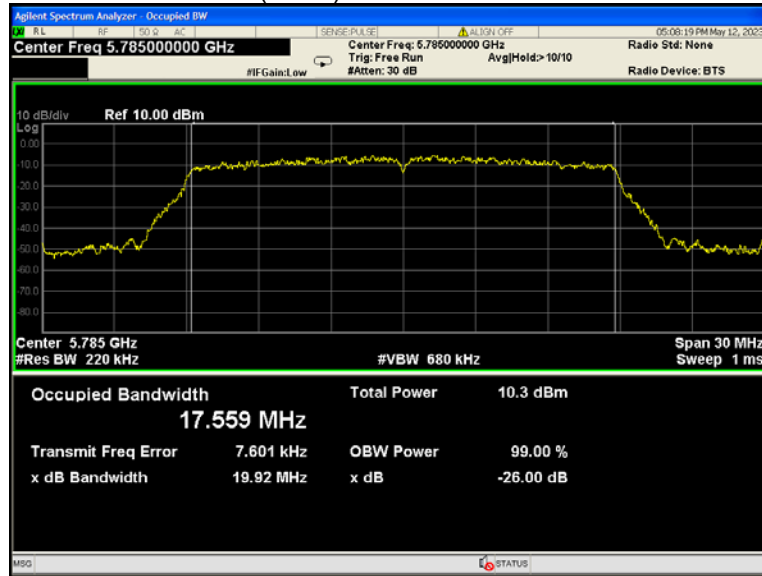
802.11a U-NII-3 High channel



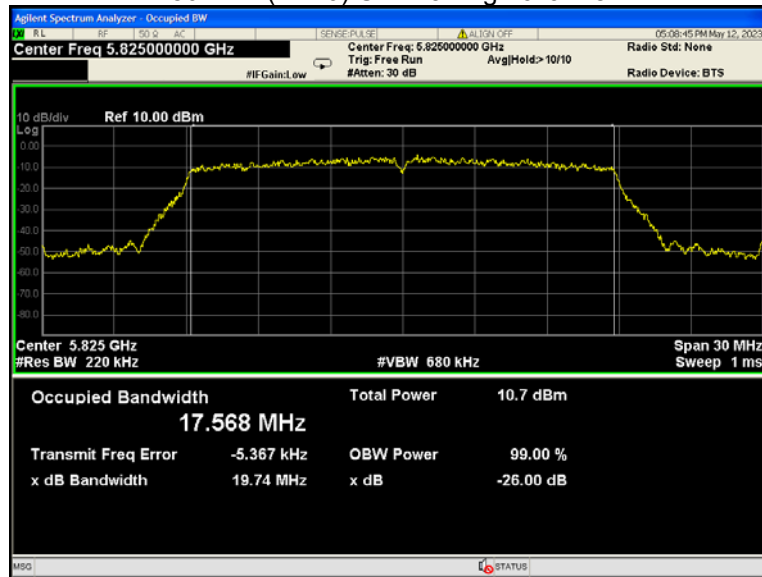
802.11n(HT20) U-NII-3 Low channel



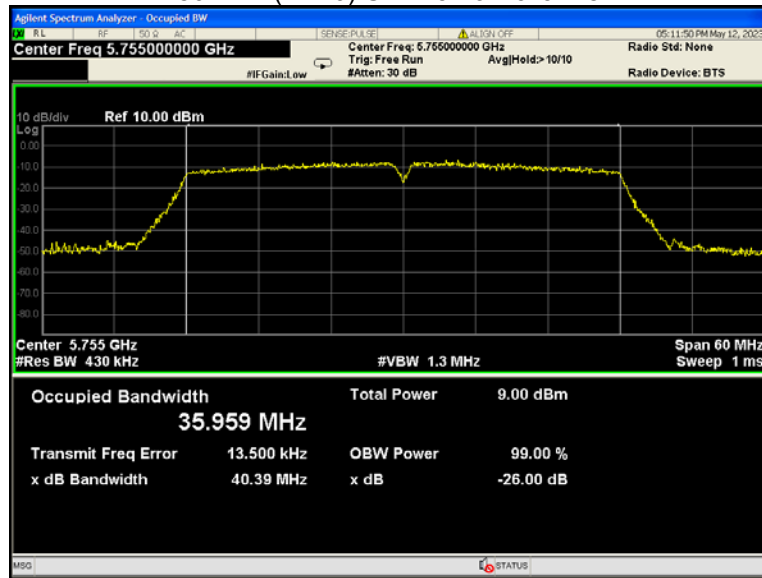
802.11n(HT20) U-NII-3 Middle channel



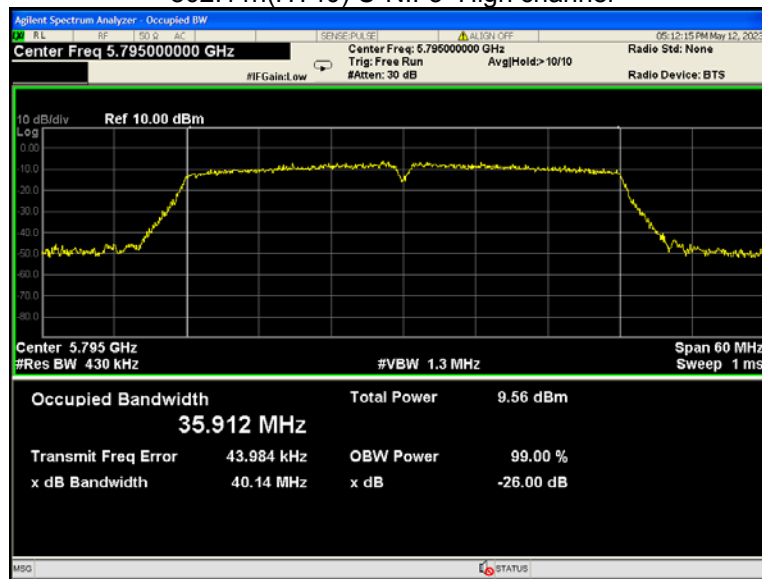
802.11n(HT20) U-NII-3 High channel



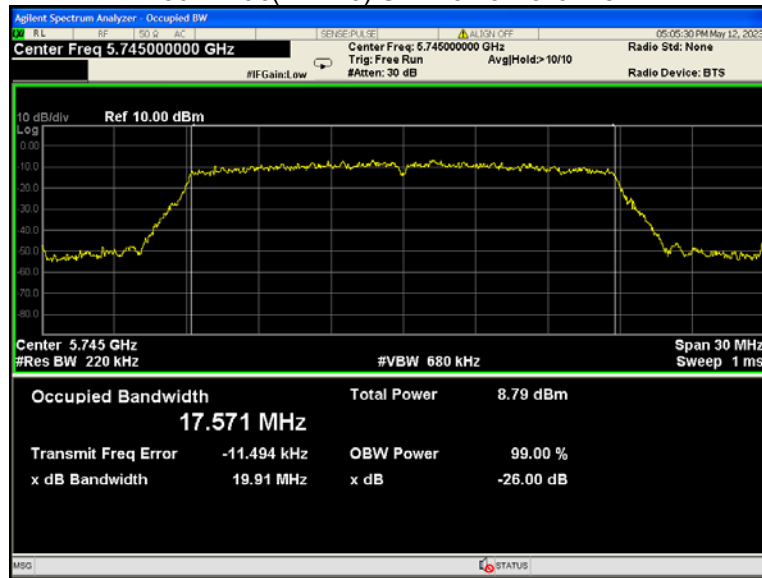
802.11n(HT40) U-NII-3 Low channel



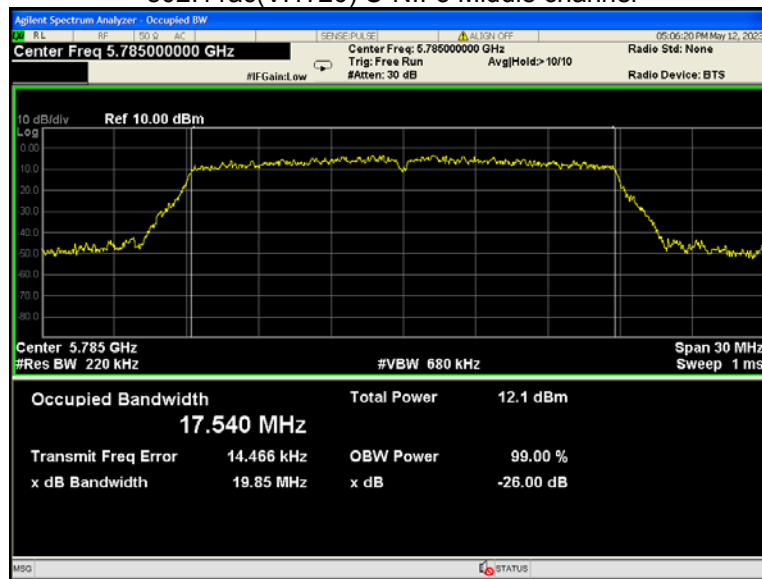
802.11n(HT40) U-NII-3 High channel



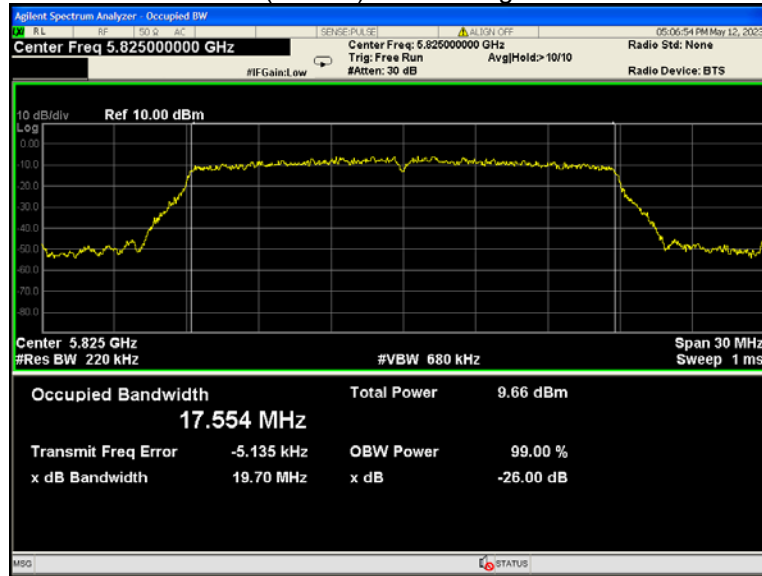
802.11ac(VHT20) U-NII-3 Low channel



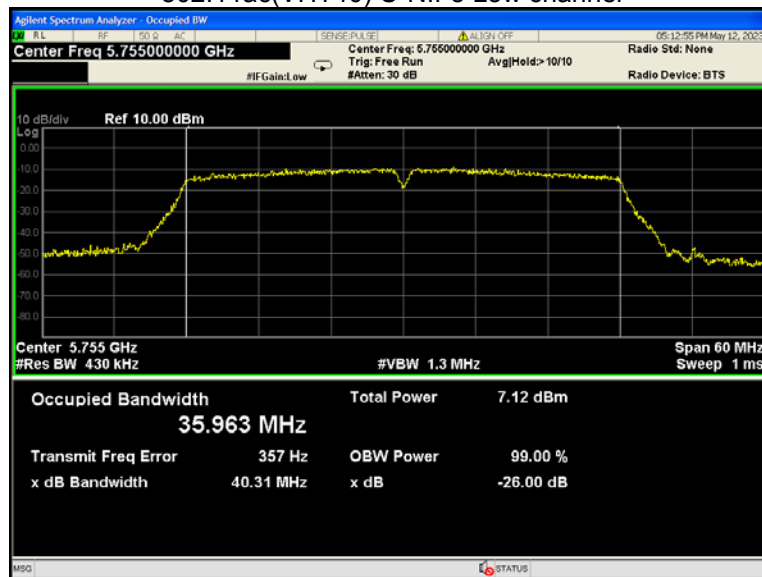
802.11ac(VHT20) U-NII-3 Middle channel



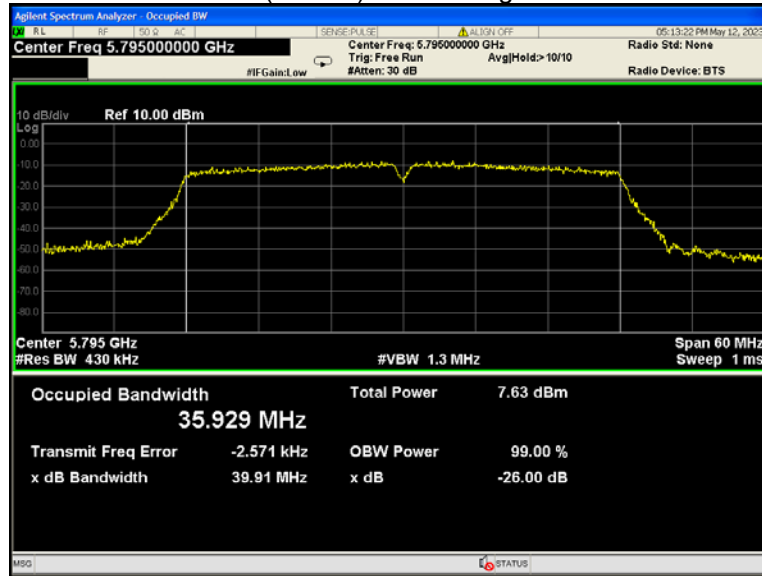
802.11ac(VHT20) U-NII-3 High channel



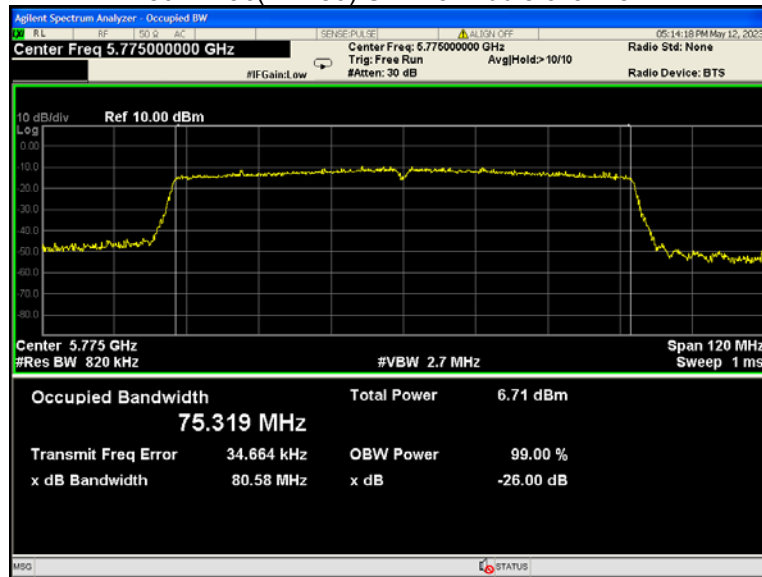
802.11ac(VHT40) U-NII-3 Low channel



802.11ac(VHT40) U-NII-3 High channel



802.11ac(VHT80) U-NII-3 Middle channel



13 Conducted Output Power

| | |
|-------------------|---------------------------------------------------------------------------------------------|
| Test Requirement: | FCC 47CFR Part 15 Section 15.407(a) KDB662911 D01 Multiple Transmitter Output v02r01 |
| Test Method: | KDB789033 D02 General U-NII Test Procedures New Rules v02r01 Section E |
| Test Limit: | U-NII-1 250mW(24dBm) U-NII-2A 250mW(24dBm) U-NII-2C 250mW(24dBm) U-NII-3 1W(30dBm) |
| Test Result: | PASS Conducted output power= measurement power+10log(1/x) |
| Remark: | X is duty cycle=1, so 10log(1/1)=0 Conducted output power= measurement power |

13.1 Test Procedure

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
2. Set the spectrum analyzer: RBW = 1 MHz. VBW = 3 MHz. Sweep = auto; Detector Function = Peak, Set the span to fully encompass the DTS bandwidth.
3. Keep the EUT in transmitting at lowest, medium and highest channel individually. Record the max value.

13.2 Test Result

| Band | Operation mode | Conducted Output Power (dBm) | | |
|---------|-----------------|------------------------------|--------|--------------|
| | | Low | Middle | High |
| U-NII-1 | 802.11a | 13.38 | 13.65 | 13.95 |
| | 802.11n(HT20) | 12.09 | 12.32 | 12.57 |
| | 802.11n(HT40) | 12.37 | / | 12.69 |
| | 802.11ac(VHT20) | 11.13 | 11.30 | 11.89 |
| | 802.11ac(VHT40) | 10.38 | / | 10.79 |
| | 802.11ac(VHT80) | / | 10.48 | / |

| Band | Operation mode | Conducted Output Power (dBm) | | |
|----------|-----------------|------------------------------|--------|--------------|
| | | Low | Middle | High |
| U-NII-2A | 802.11a | 13.82 | 13.99 | 14.06 |
| | 802.11n(HT20) | 12.72 | 12.79 | 12.84 |
| | 802.11n(HT40) | 12.83 | / | 12.90 |
| | 802.11ac(VHT20) | 11.74 | 11.82 | 11.89 |
| | 802.11ac(VHT40) | 11.02 | / | 11.11 |
| | 802.11ac(VHT80) | / | 10.98 | / |

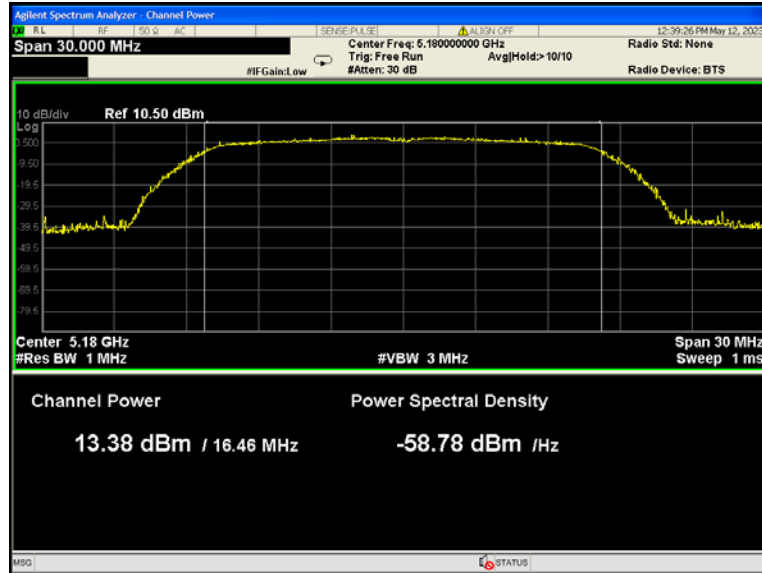
| Band | Operation mode | Conducted Output Power (dBm) | | |
|----------|-----------------|------------------------------|--------|-------|
| | | Low | Middle | High |
| U-NII-2C | 802.11a | 12.94 | 11.53 | 11.26 |
| | 802.11n(HT20) | 11.65 | 10.70 | 9.62 |
| | 802.11n(HT40) | 11.54 | 10.79 | 9.55 |
| | 802.11ac(VHT20) | 10.72 | 9.21 | 8.70 |
| | 802.11ac(VHT40) | 10.50 | 9.22 | 8.20 |
| | 802.11ac(VHT80) | 8.97 | 7.93 | |

| Band | Operation mode | Conducted Output Power (dBm) | | |
|---------|-----------------|------------------------------|--------|--------------|
| | | Low | Middle | High |
| U-NII-3 | 802.11a | 10.03 | 10.20 | 10.61 |
| | 802.11n(HT20) | 8.65 | 9.05 | 9.43 |
| | 802.11n(HT40) | 9.24 | / | 9.66 |
| | 802.11ac(VHT20) | 7.53 | 8.00 | 8.46 |
| | 802.11ac(VHT40) | 7.20 | / | 8.29 |
| | 802.11ac(VHT80) | / | 7.71 | / |

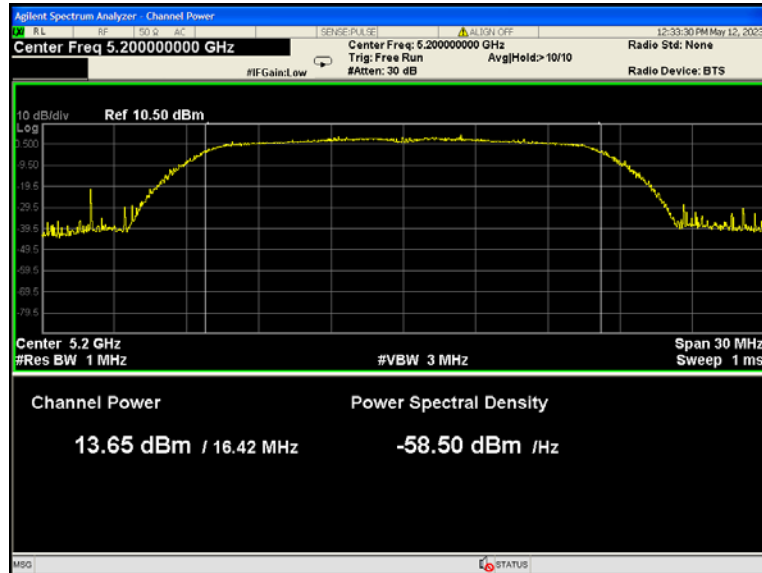
* All transmit signals are completely uncorrelated with each other, Directional gain = G_{ANT} which is less than 6dBi. So the limit does not be reduced.

Test result plots shown as follows:

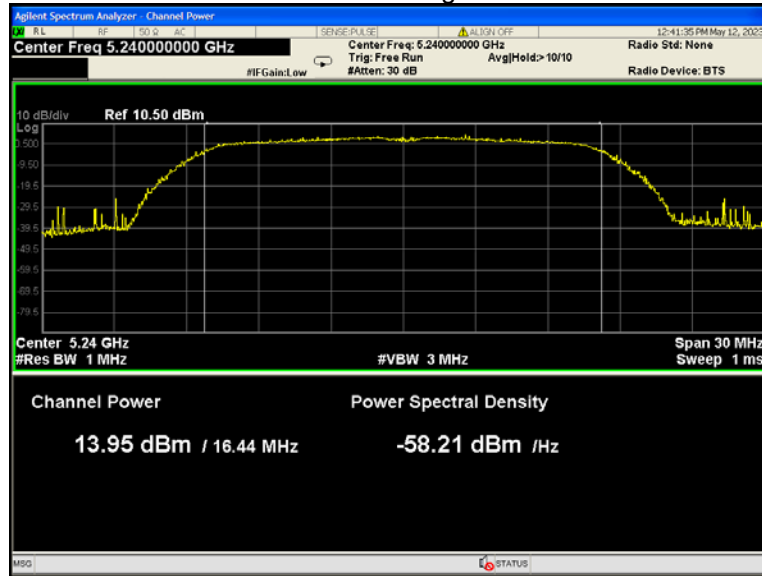
802.11a U-NII-1 Low channel



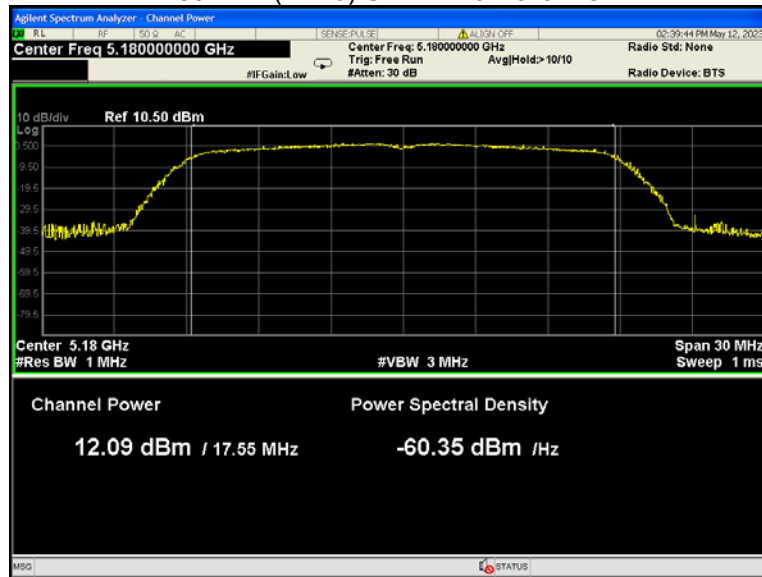
802.11a U-NII-1 Middle channel



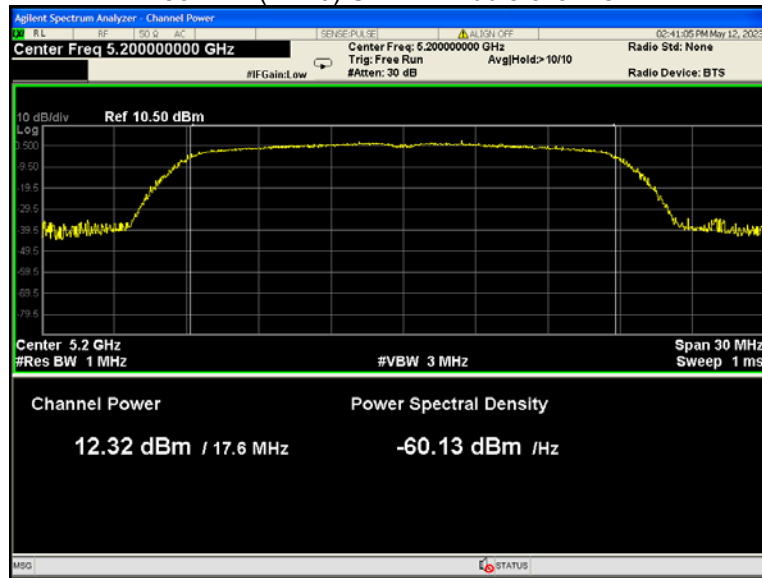
802.11a U-NII-1 High channel



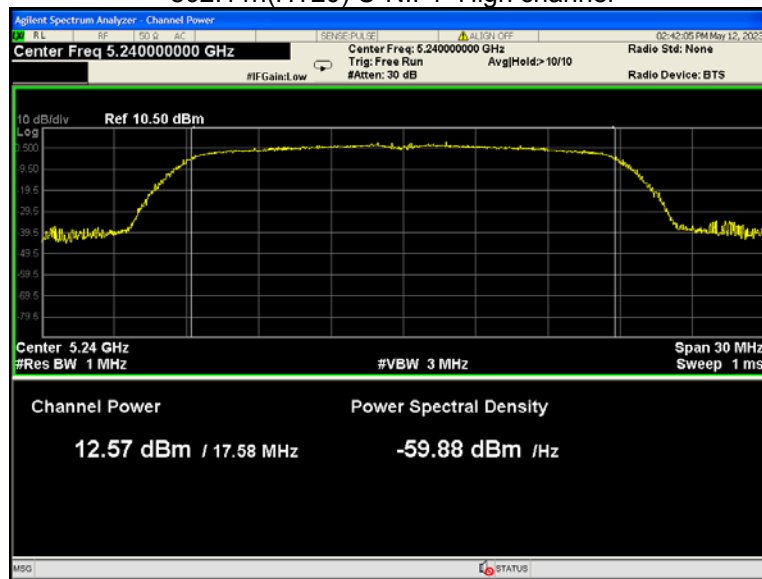
802.11n(HT20) U-NII-1 Low channel



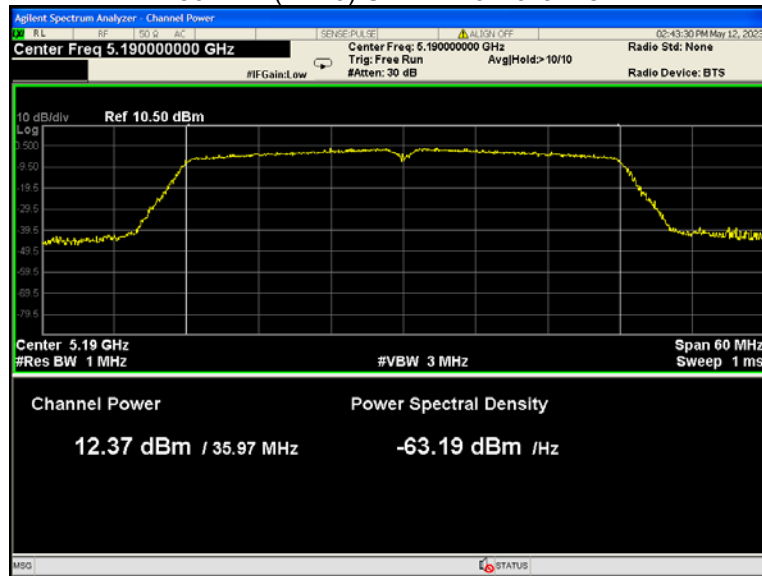
802.11n(HT20) U-NII-1 Middle channel



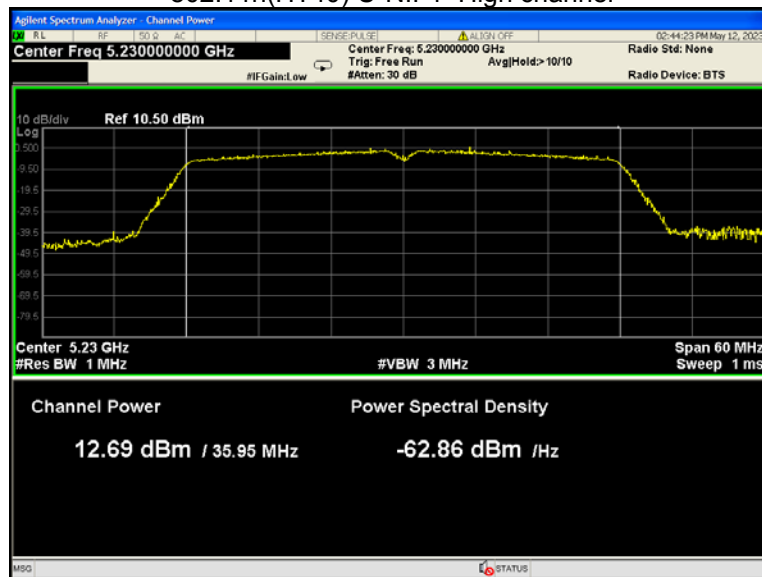
802.11n(HT20) U-NII-1 High channel



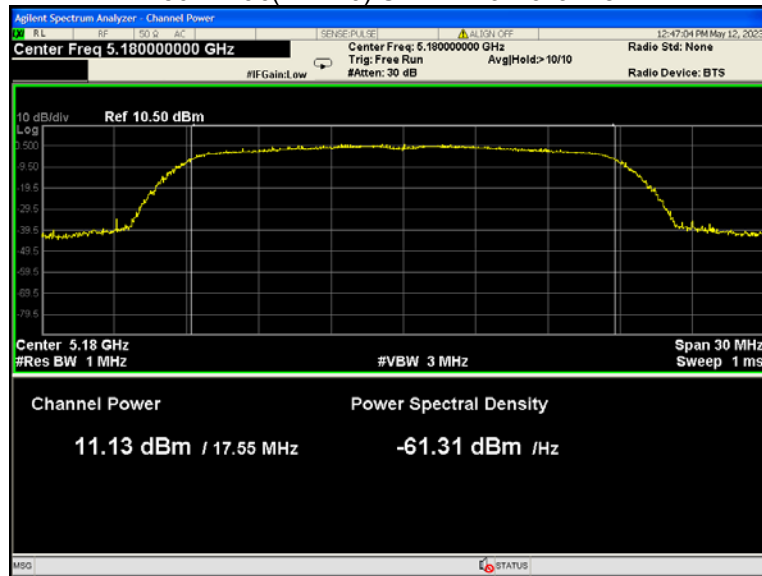
802.11n(HT40) U-NII-1 Low channel



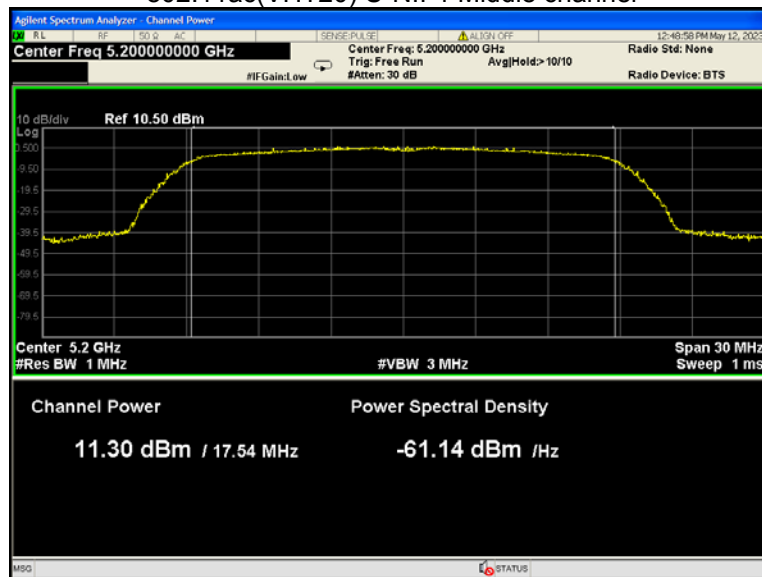
802.11n(HT40) U-NII-1 High channel



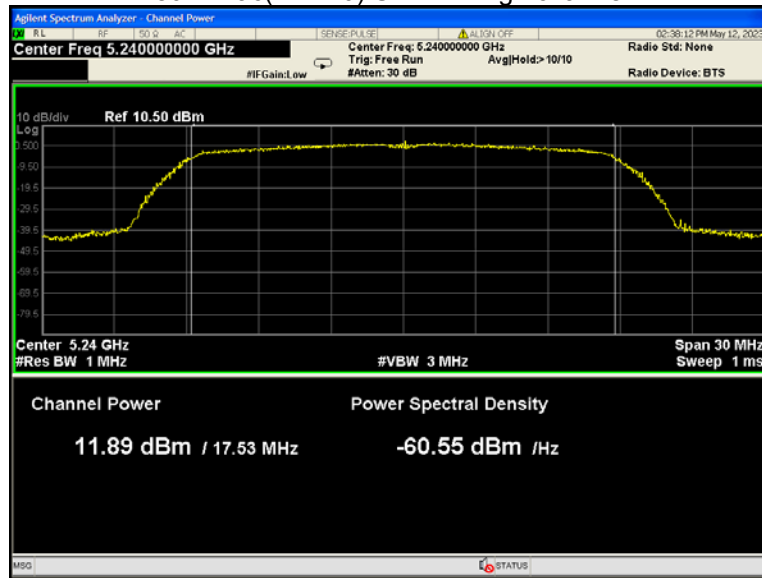
802.11ac(VHT20) U-NII-1 Low channel



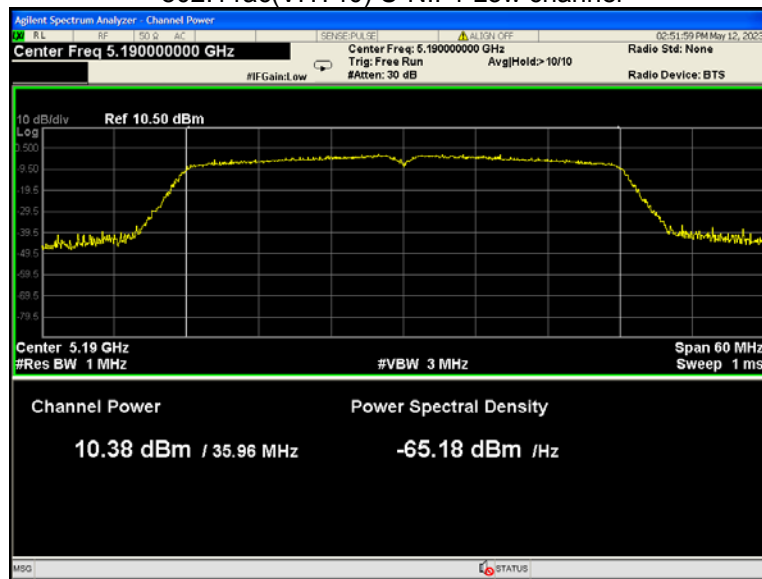
802.11ac(VHT20) U-NII-1 Middle channel



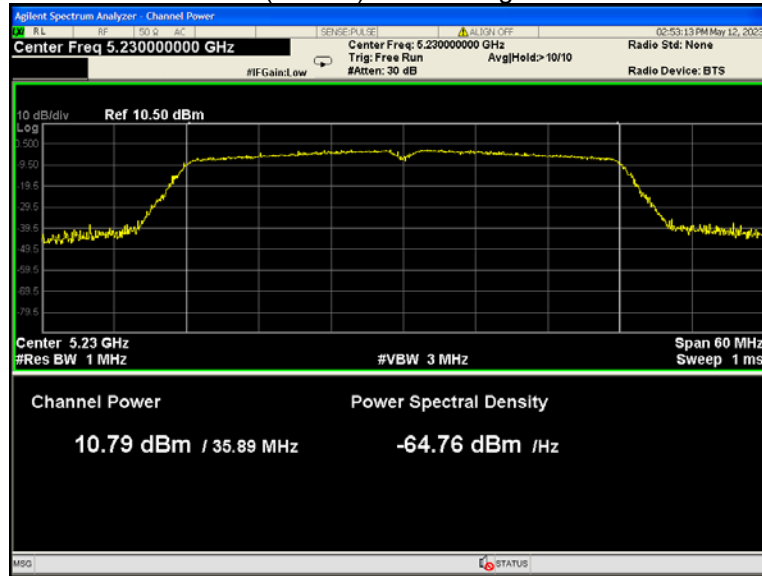
802.11ac(VHT20) U-NII-1 High channel



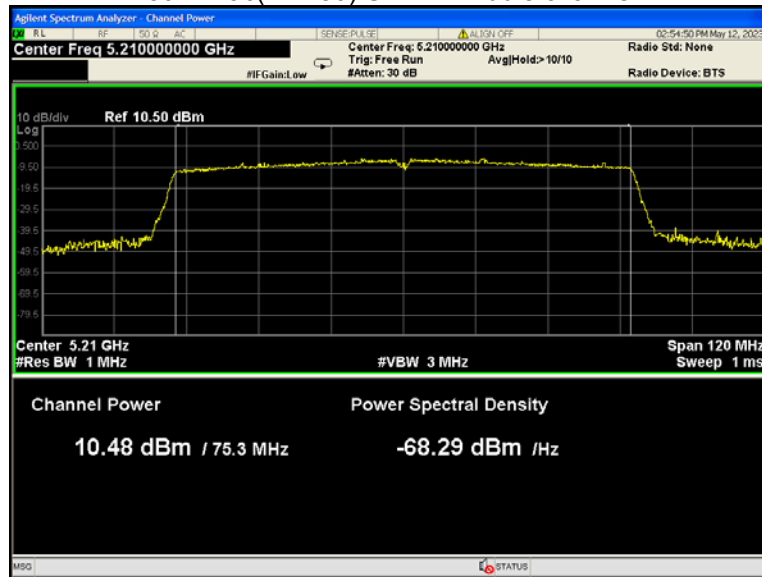
802.11ac(VHT40) U-NII-1 Low channel



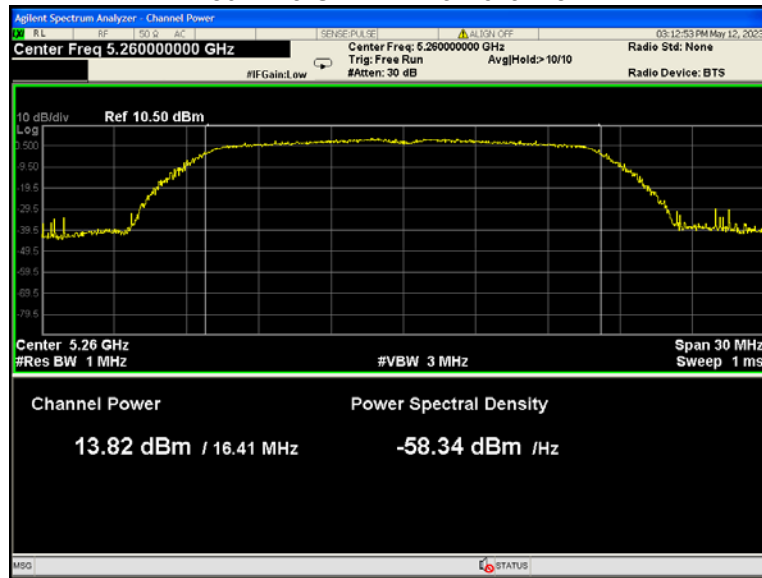
802.11ac(VHT40) U-NII-1 High channel



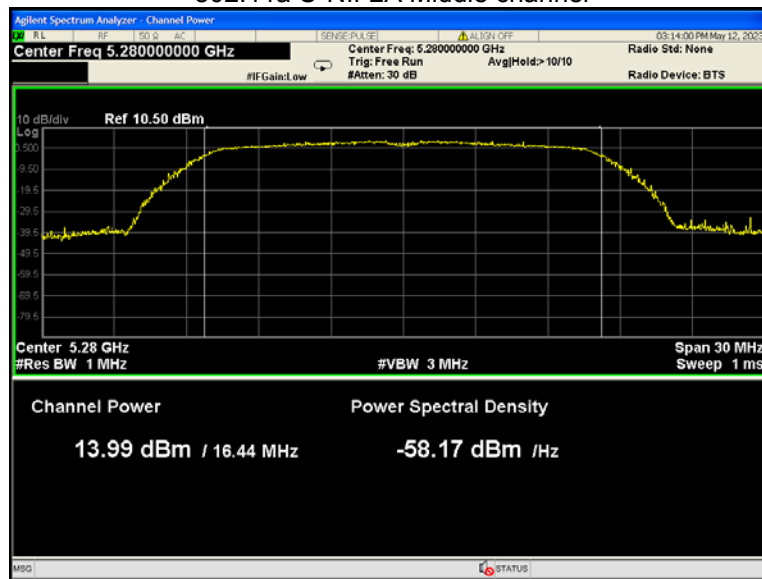
802.11ac(VHT80) U-NII-1 Middle channel



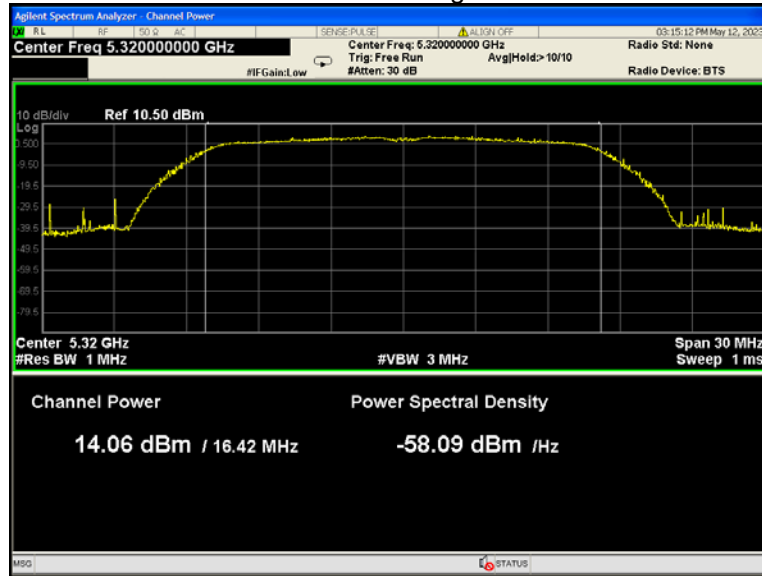
802.11a U-NII-2A Low channel



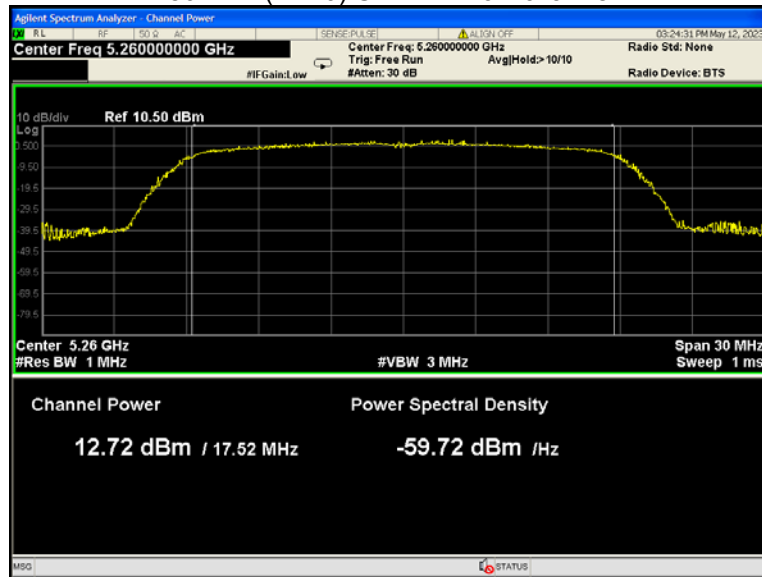
802.11a U-NII-2A Middle channel



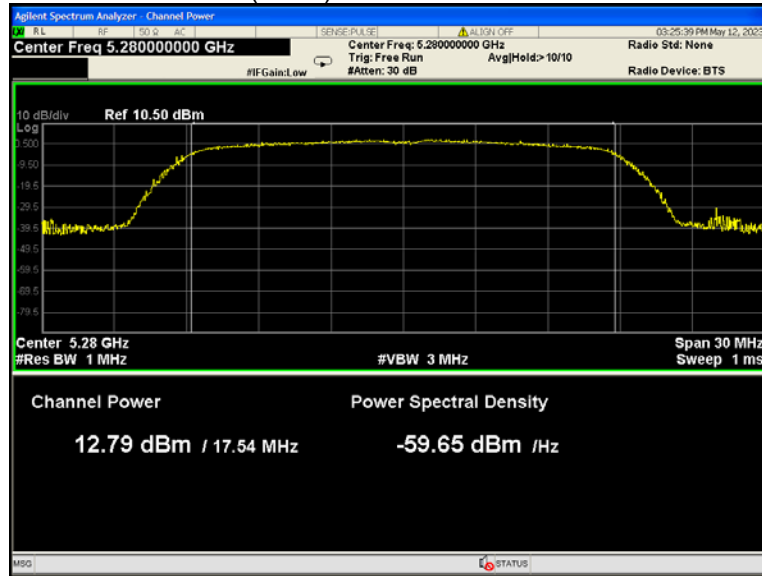
802.11a U-NII-2A High channel



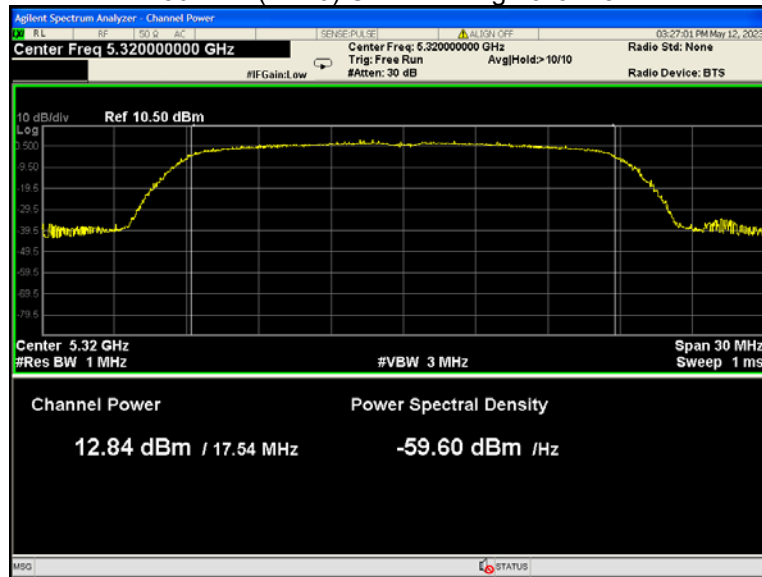
802.11n(HT20) U-NII-2A Low channel



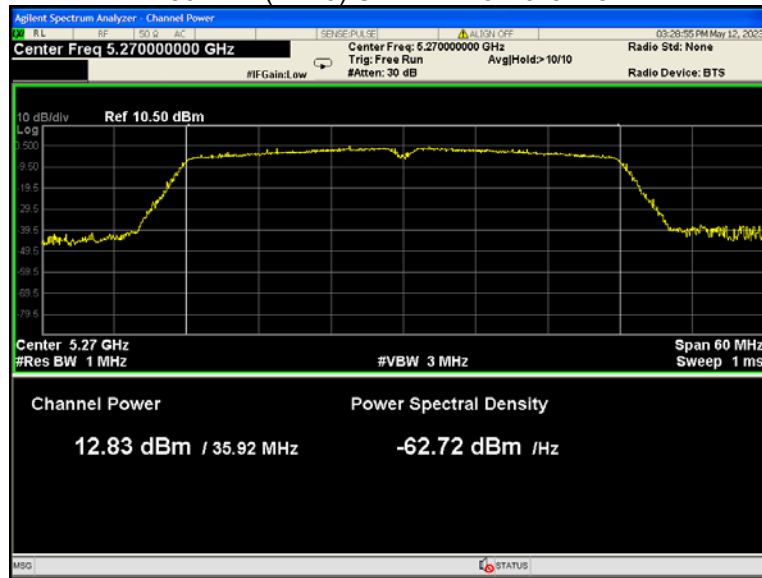
802.11n(HT20) U-NII-2A Middle channel



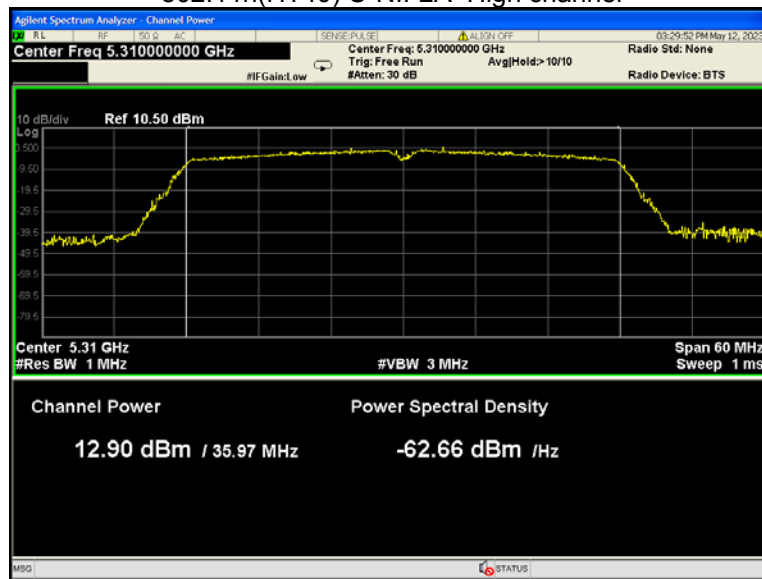
802.11n(HT20) U-NII-2A High channel



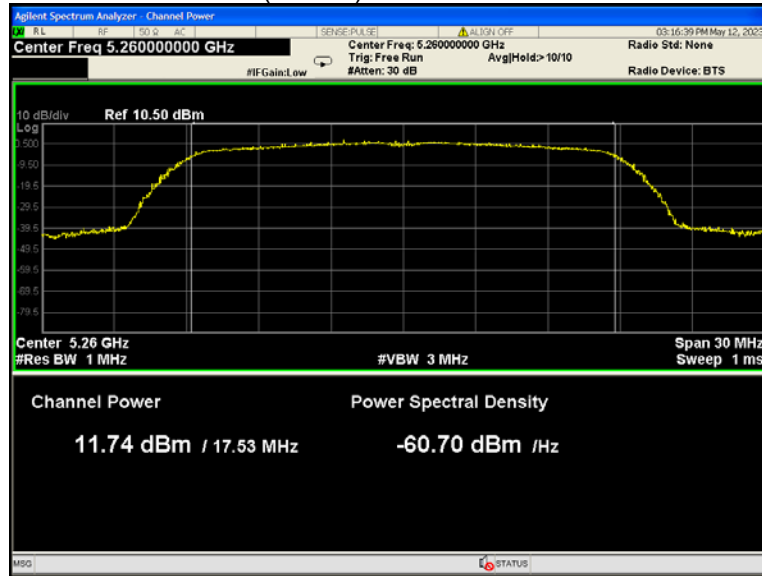
802.11n(HT40) U-NII-2A Low channel



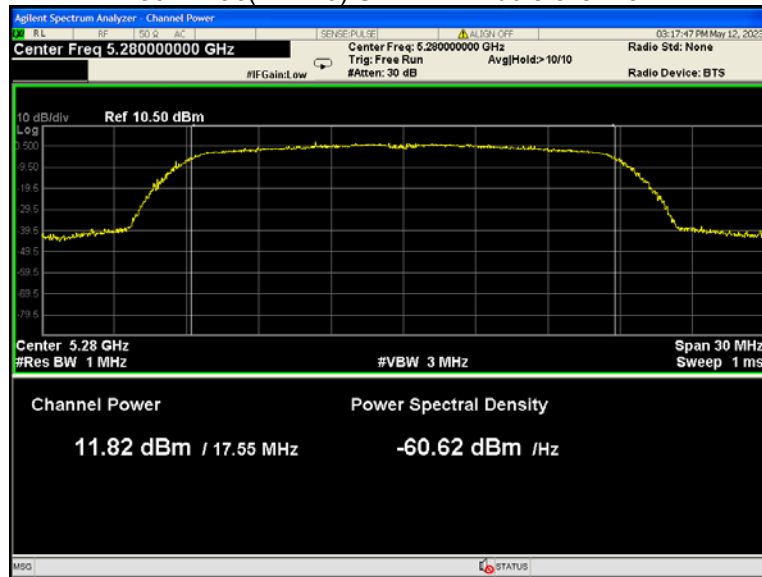
802.11n(HT40) U-NII-2A High channel



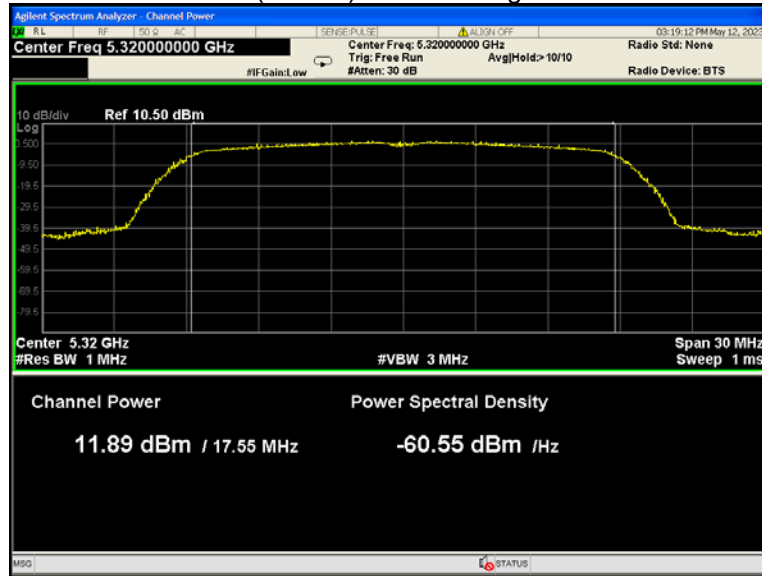
802.11ac(VHT20) U-NII-2A Low channel



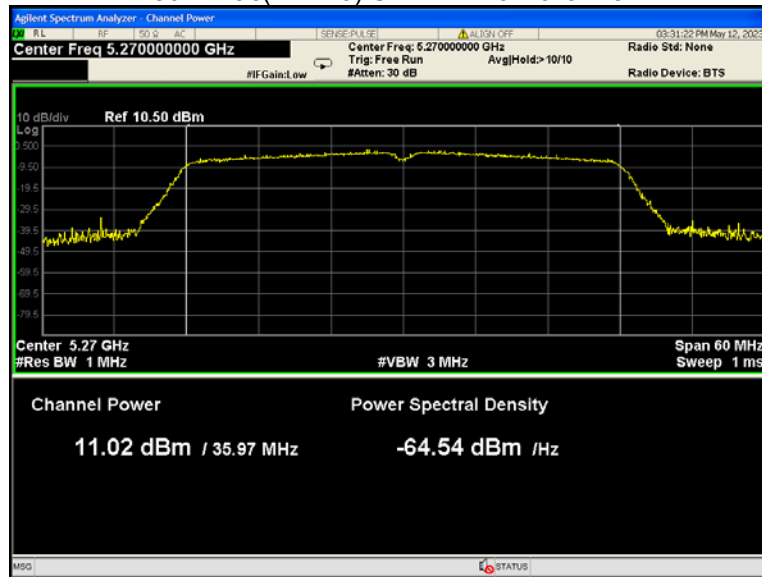
802.11ac(VHT20) U-NII-2A Middle channel



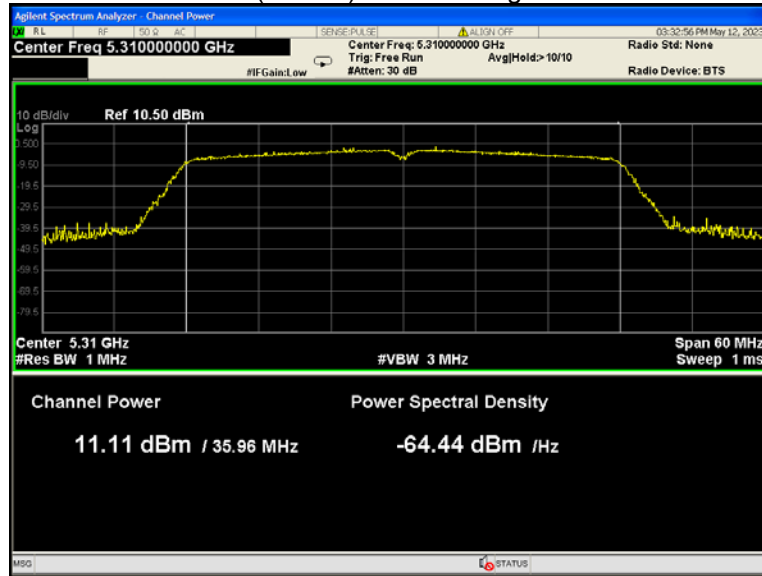
802.11ac(VHT20) U-NII-2A High channel



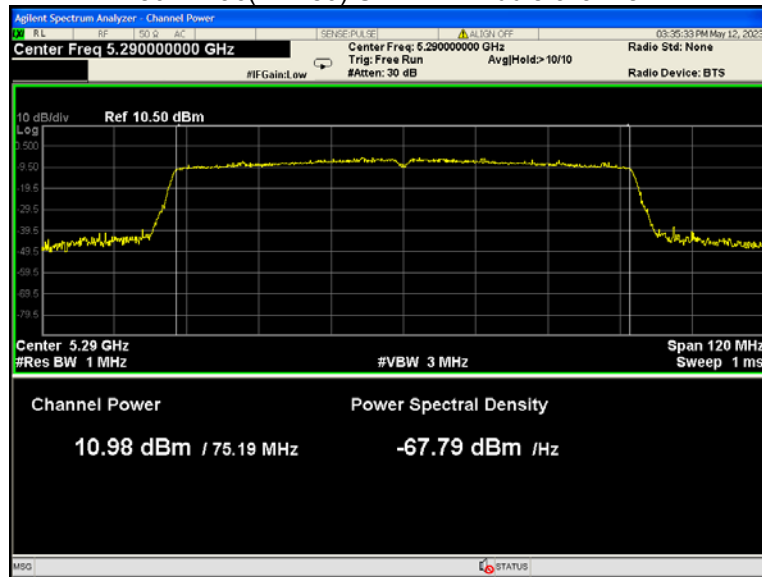
802.11ac(VHT40) U-NII-2A Low channel



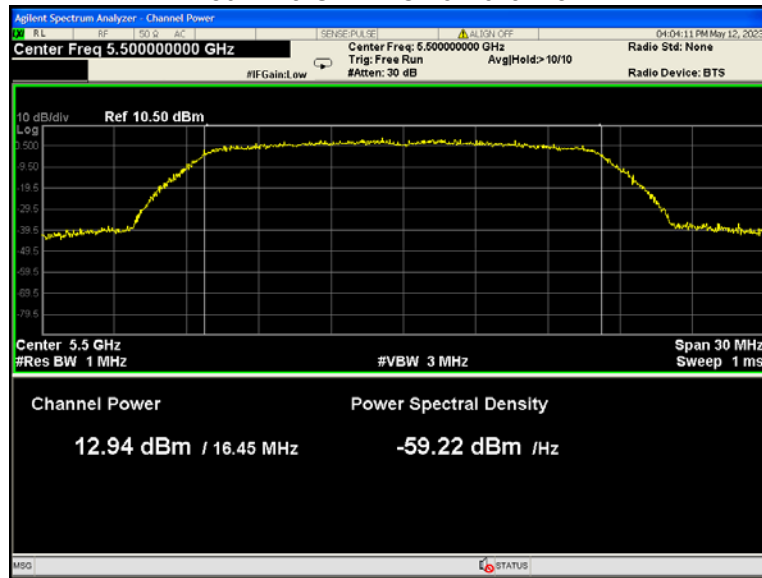
802.11ac(VHT40) U-NII-2A High channel



802.11ac(VHT80) U-NII-2A Middle channel



802.11a U-NII-2C Low channel



802.11a U-NII-2C Middle channel

