

Appendix E

RF Test Data for 5.8G WLAN (Conducted Measurement)

Product Name: 14.1 inch laptop

Trade Mark: Hyundai

Test Model: HT14CCIC44EGH

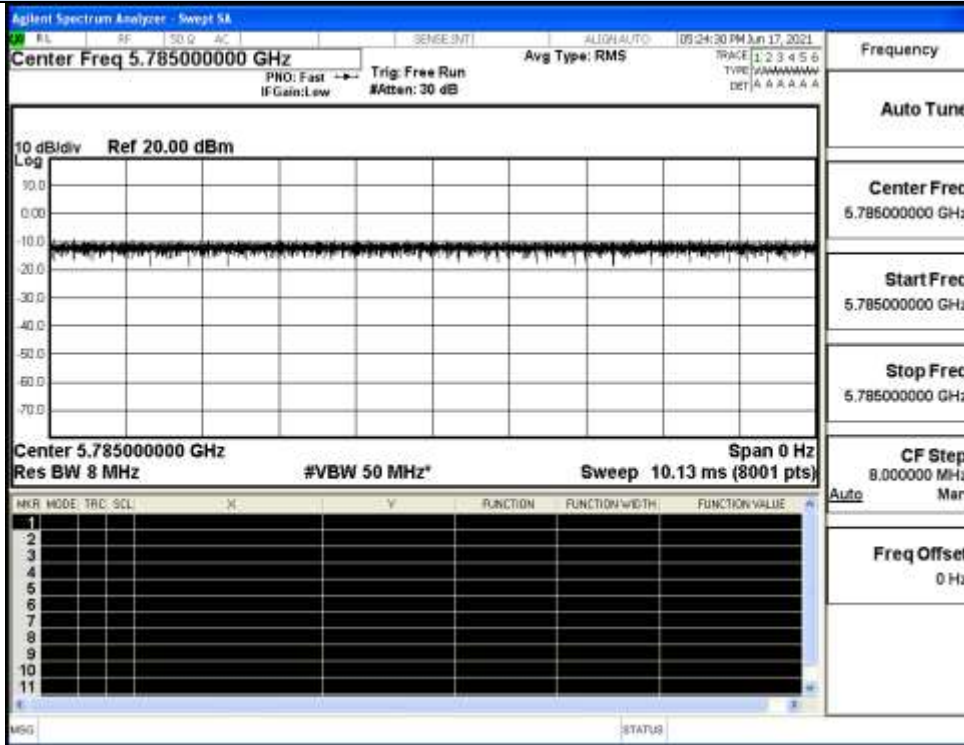
Environmental Conditions

| | |
|--------------------|-----------|
| Temperature: | 25 ° C |
| Relative Humidity: | 50% |
| ATM Pressure: | 100.0 kPa |
| Test Engineer: | Kay Hu |
| Supervised by: | Li Huan |

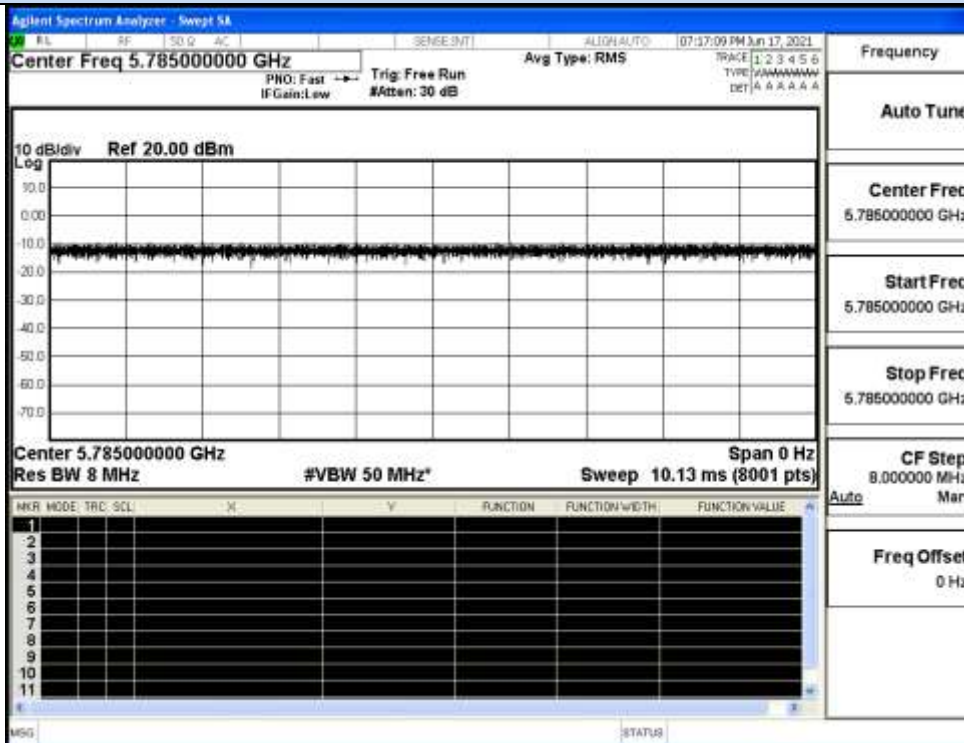
E.1 Duty Cycle

| Test Mode | Test Frequency (MHz) | Duty Cycle (%) | 10log(1/x) Factor (dB) | 1/B Minimum VBW(KHz) |
|-------------|----------------------|----------------|------------------------|----------------------|
| 11A | 5785 | 100 | 0.00 | 0.01 |
| 11N20 SISO | 5785 | 100 | 0.00 | 0.01 |
| 11N40 SISO | 5755 | 100 | 0.00 | 0.01 |
| 11AC20 SISO | 5785 | 100 | 0.00 | 0.01 |
| 11AC40 SISO | 5755 | 100 | 0.00 | 0.01 |
| 11AC80 SISO | 5775 | 100 | 0.00 | 0.01 |

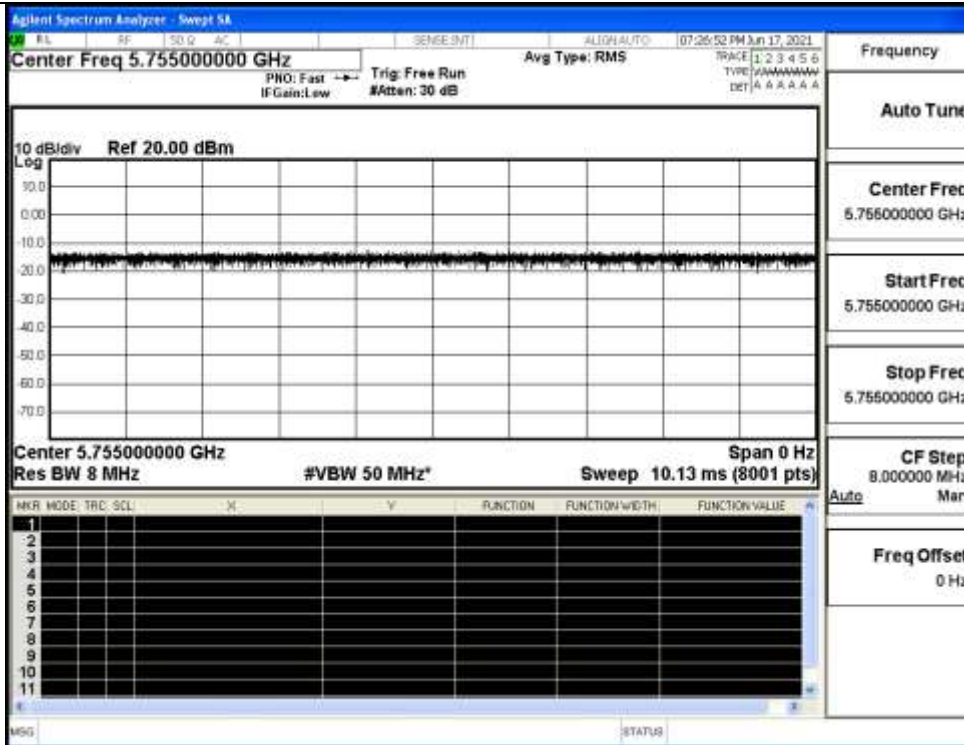
On Time and Duty Cycle



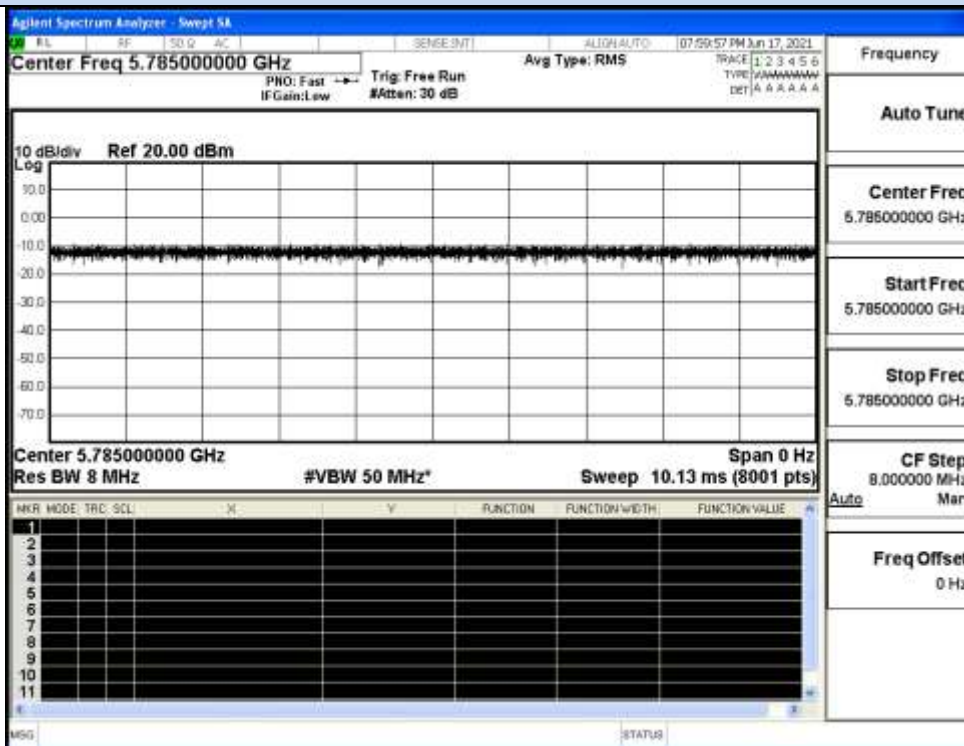
IEEE 802.11a



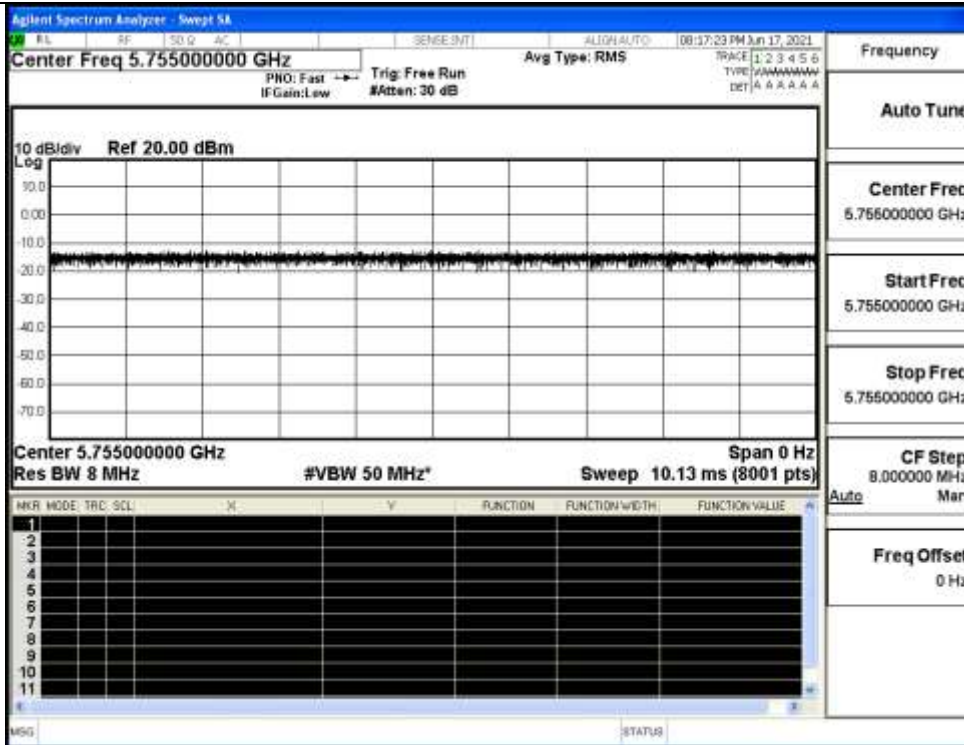
IEEE 802.11n HT20



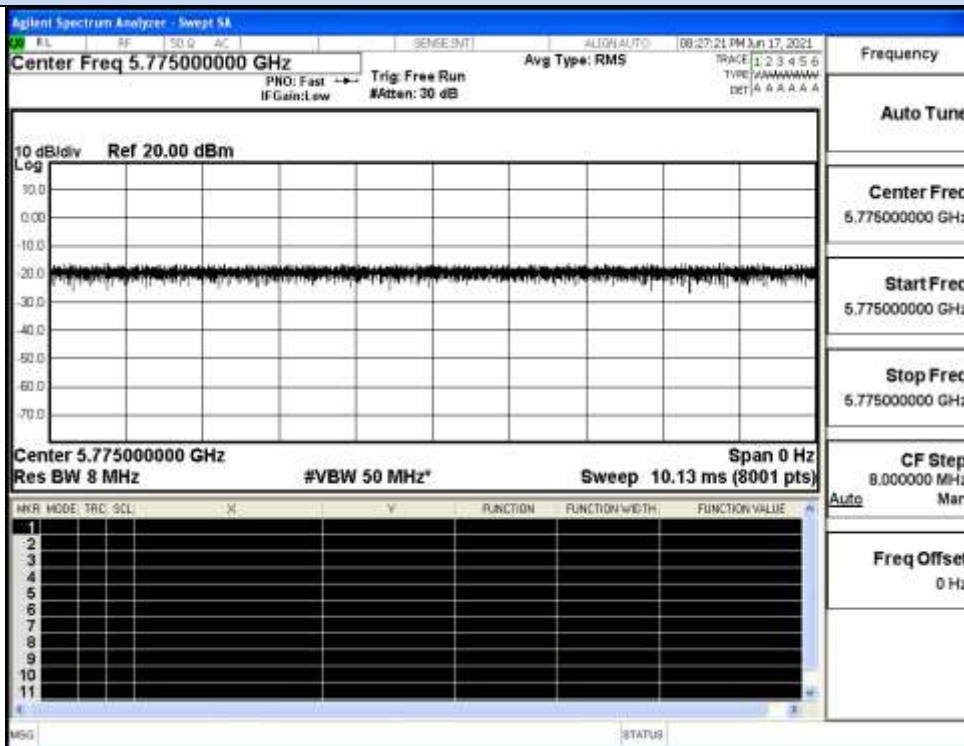
IEEE 802.11n HT40



IEEE 802.11AC20



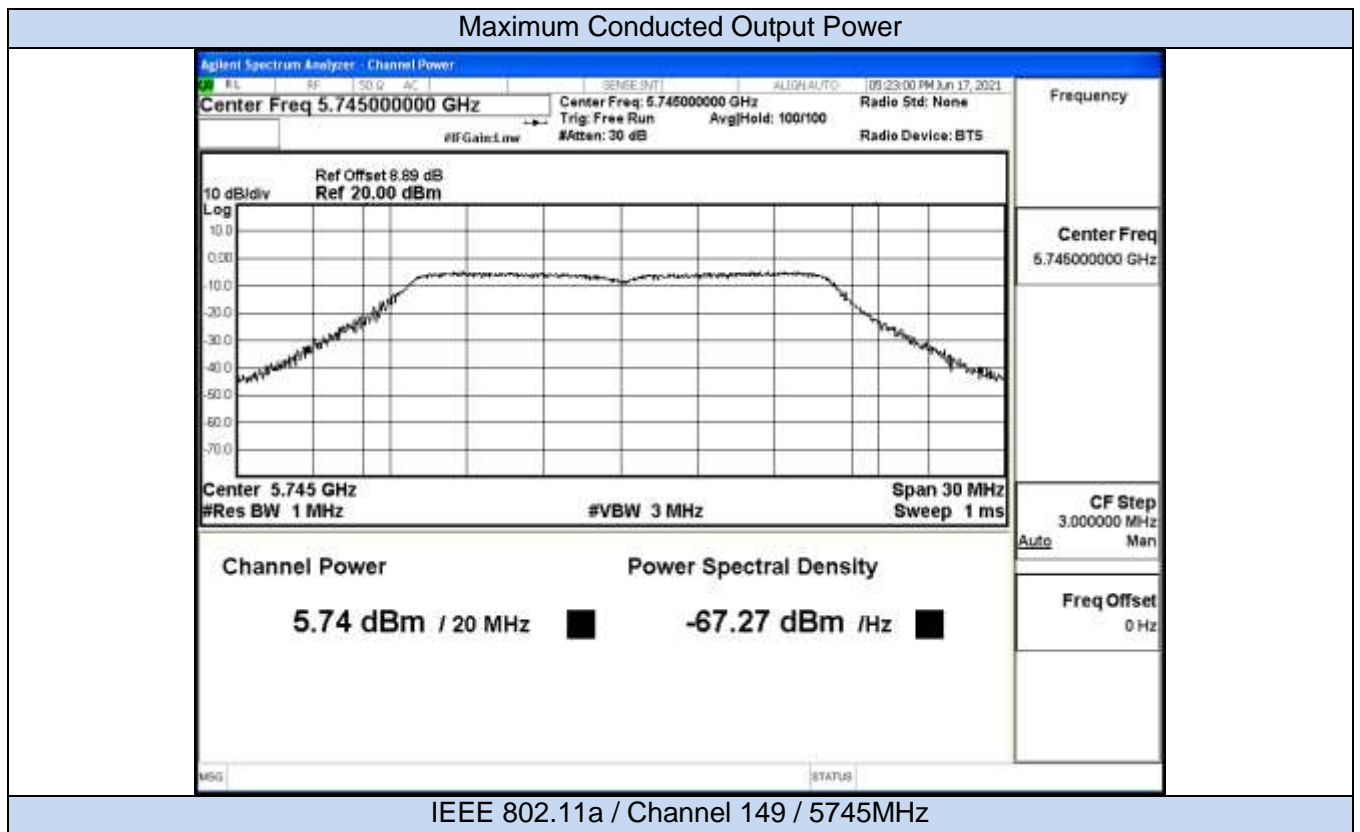
IEEE 802.11AC40

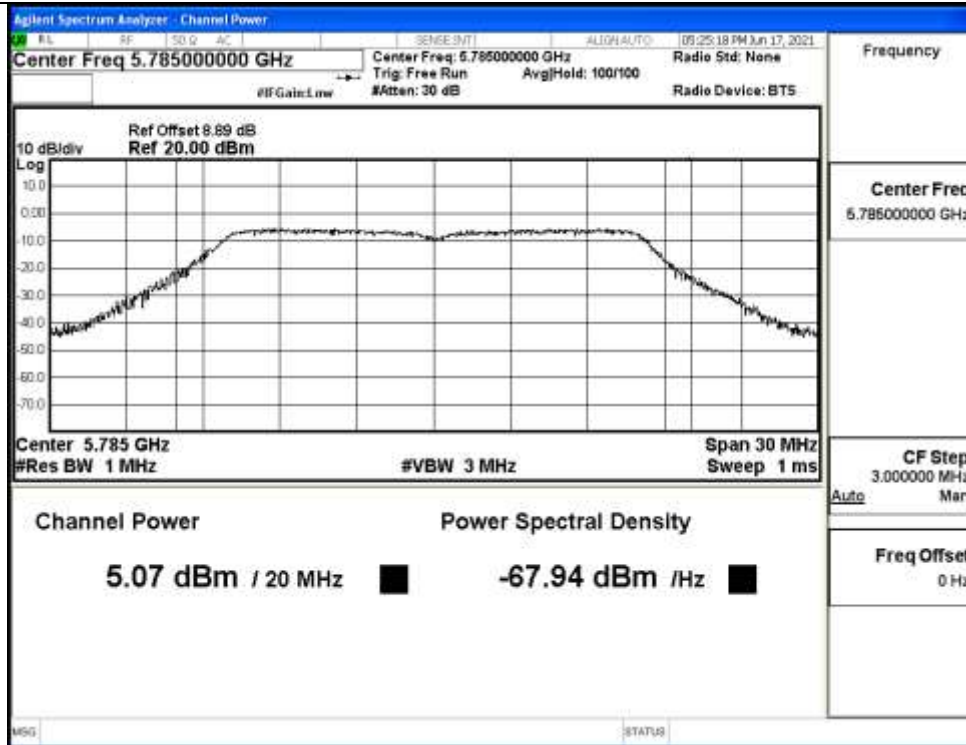


IEEE 802.11AC80

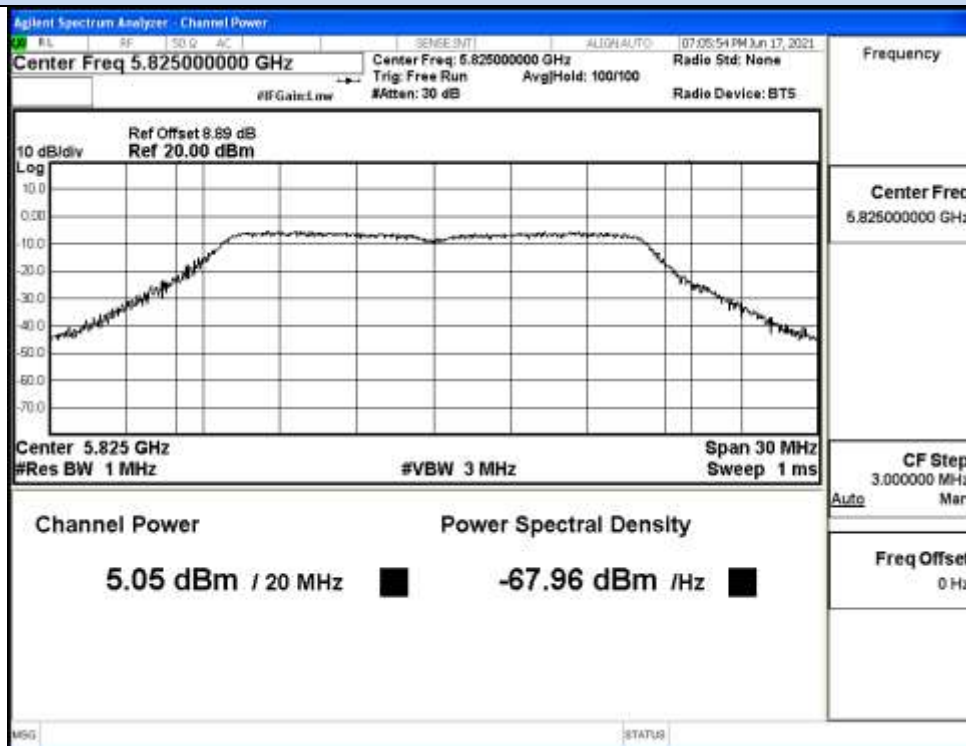
E.2 Maximum Conduct Output Power

| Test Mode | Channel I | Frequency (MHz) | AVG Conducted Power (dBm) | Duty Cycle Factor(dB) | Report Conducted Power(dBm) | Limit (dBm) | Verdict |
|-------------|-----------|-----------------|---------------------------|-----------------------|-----------------------------|-------------|---------|
| 11A | 149 | 5745 | 5.74 | 0 | 5.74 | 30 | Pass |
| | 157 | 5785 | 5.07 | 0 | 5.07 | | Pass |
| | 165 | 5825 | 5.05 | 0 | 5.05 | | Pass |
| 11N20 SISO | 149 | 5745 | 6 | 0 | 6 | 30 | Pass |
| | 157 | 5785 | 5.36 | 0 | 5.36 | | Pass |
| | 165 | 5825 | 5.22 | 0 | 5.22 | | Pass |
| 11N40 SISO | 151 | 5755 | 5.17 | 0 | 5.17 | 30 | Pass |
| | 159 | 5795 | 5.83 | 0 | 5.83 | | Pass |
| 11AC20 SISO | 149 | 5745 | 5.08 | 0 | 5.08 | 30 | Pass |
| | 157 | 5785 | 5.48 | 0 | 5.48 | | Pass |
| | 165 | 5825 | 6 | 0 | 6 | | Pass |
| 11AC40 SISO | 151 | 5755 | 5.84 | 0 | 5.84 | 30 | Pass |
| | 159 | 5795 | 5.5 | 0 | 5.5 | | Pass |
| 11AC80 SISO | 155 | 5775 | 5.05 | 0 | 5.05 | 30 | Pass |



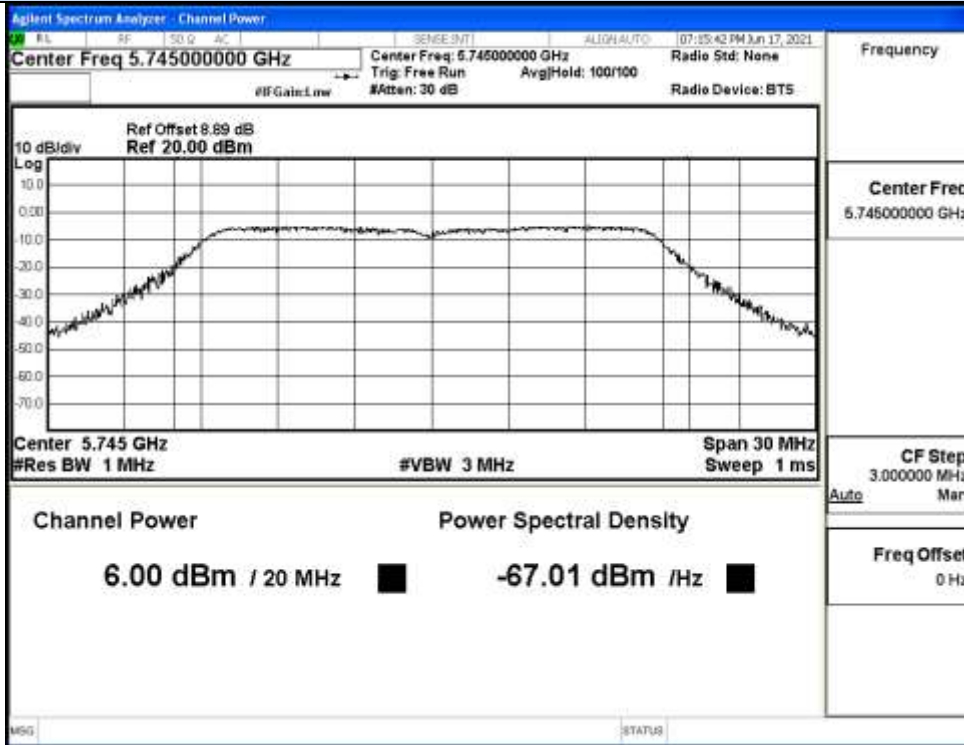


IEEE 802.11a / Channel 157 / 5785MHz

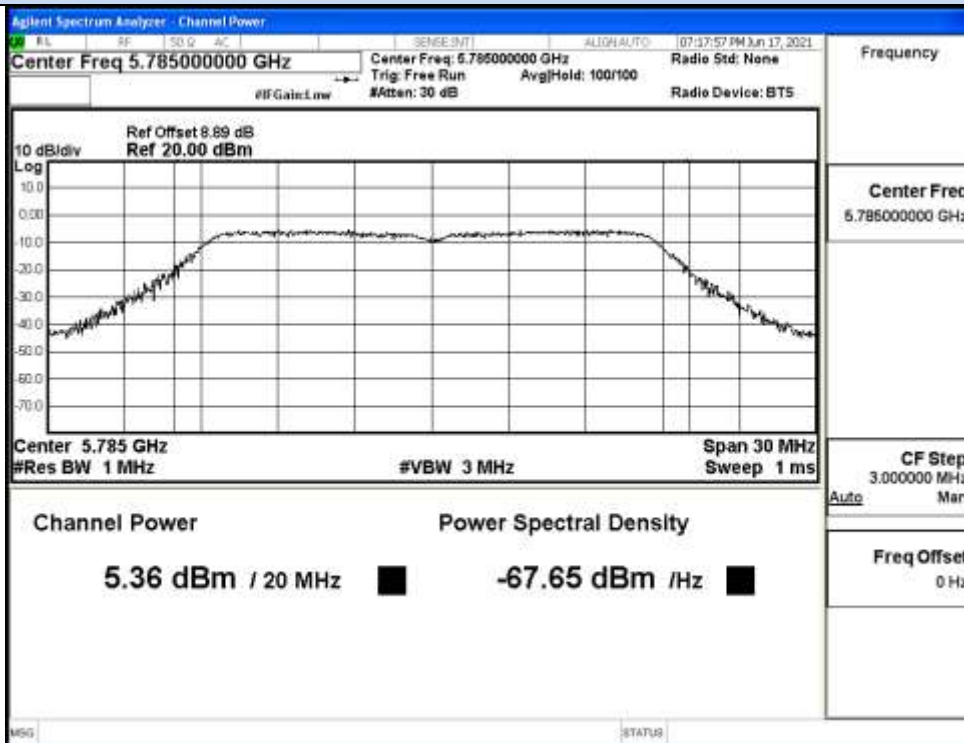


IEEE 802.11a / Channel 165 / 5825MHz

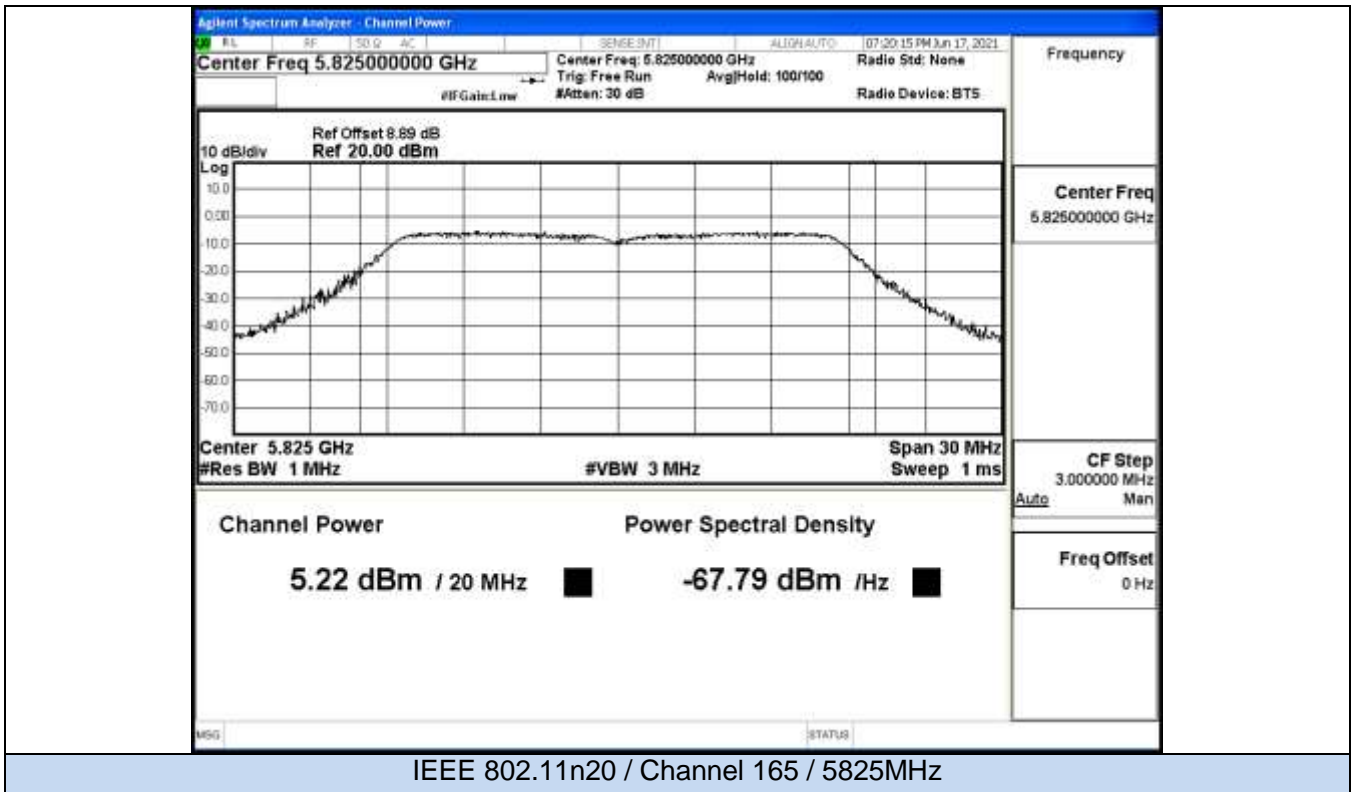
Maximum Conducted Output Power



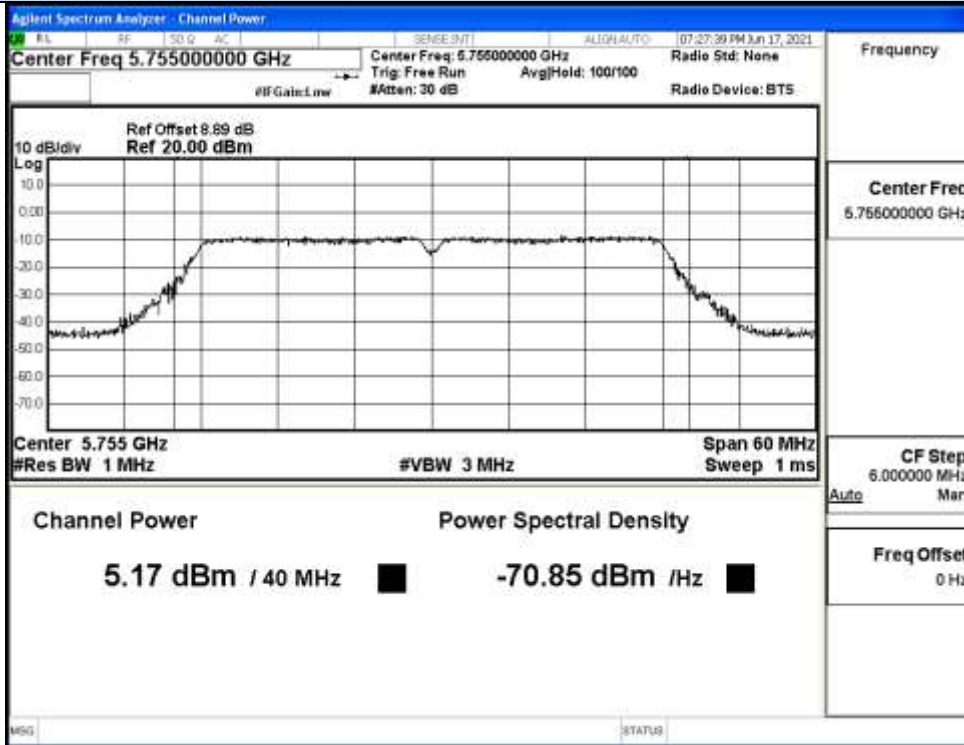
IEEE 802.11n20 / Channel 149 / 5745MHz



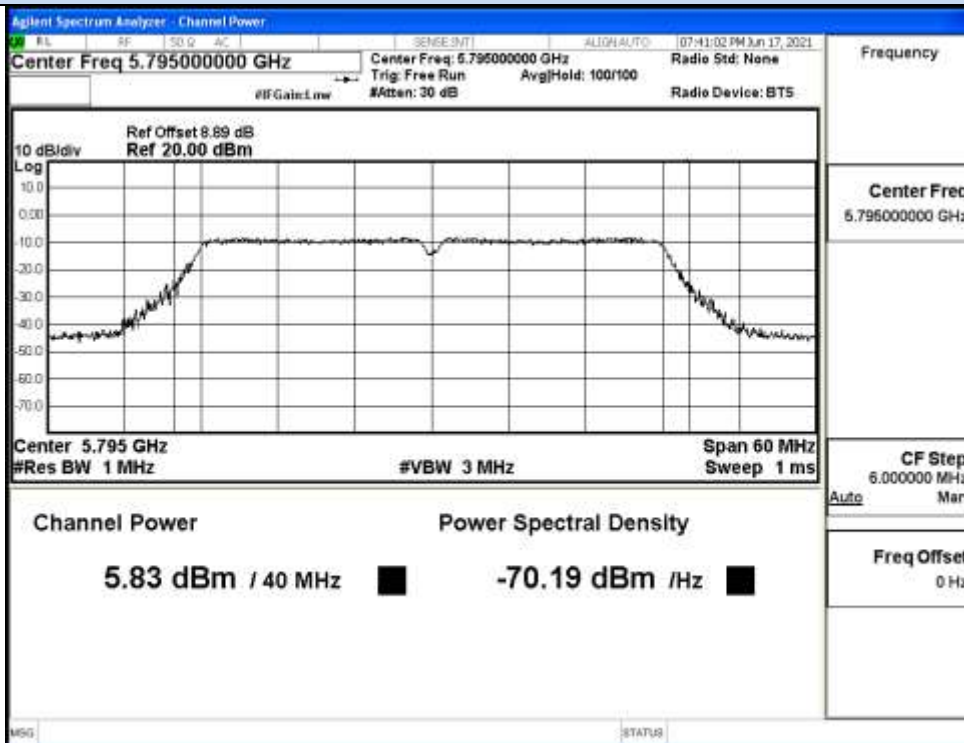
IEEE 802.11n20 / Channel 157 / 5785MHz



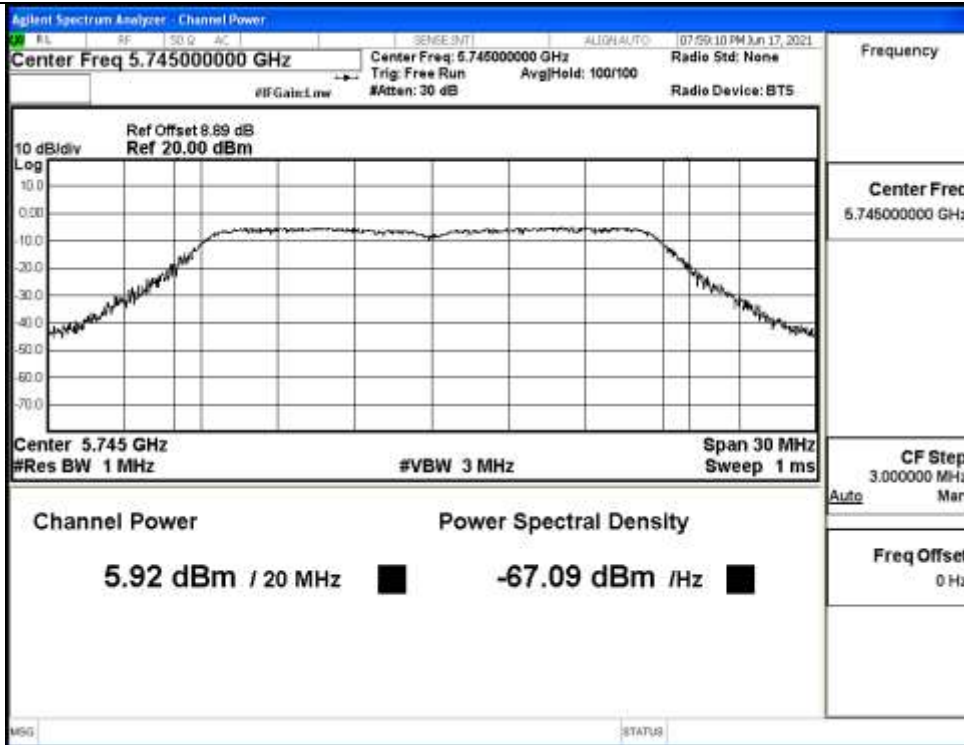
Maximum Conducted Output Power



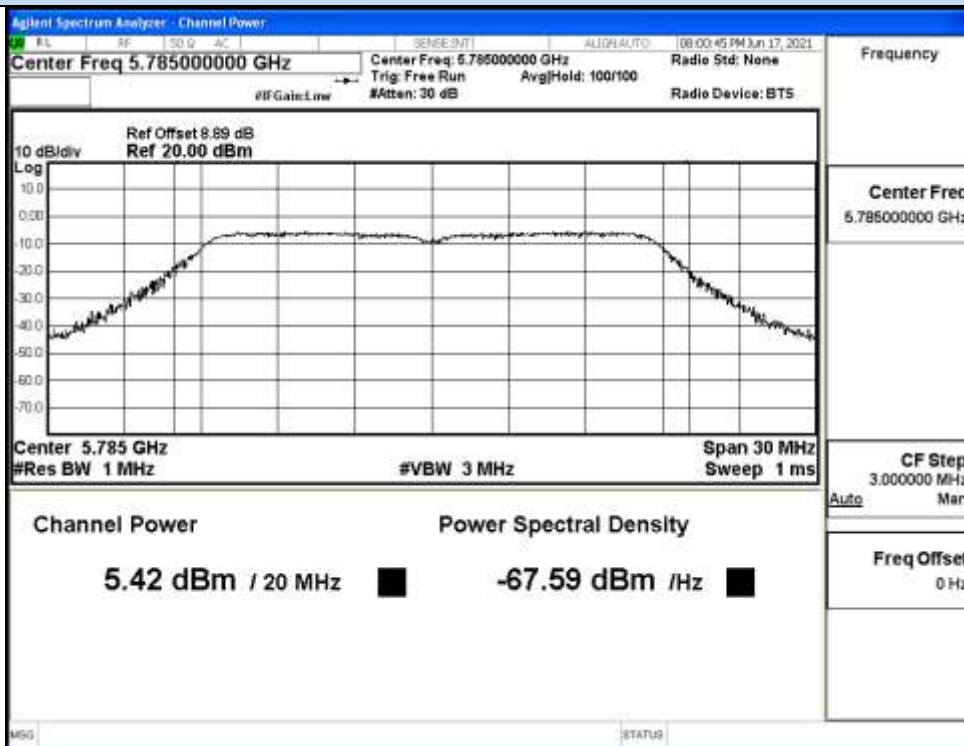
IEEE 802.11n40 / Channel 151 / 5755MHz



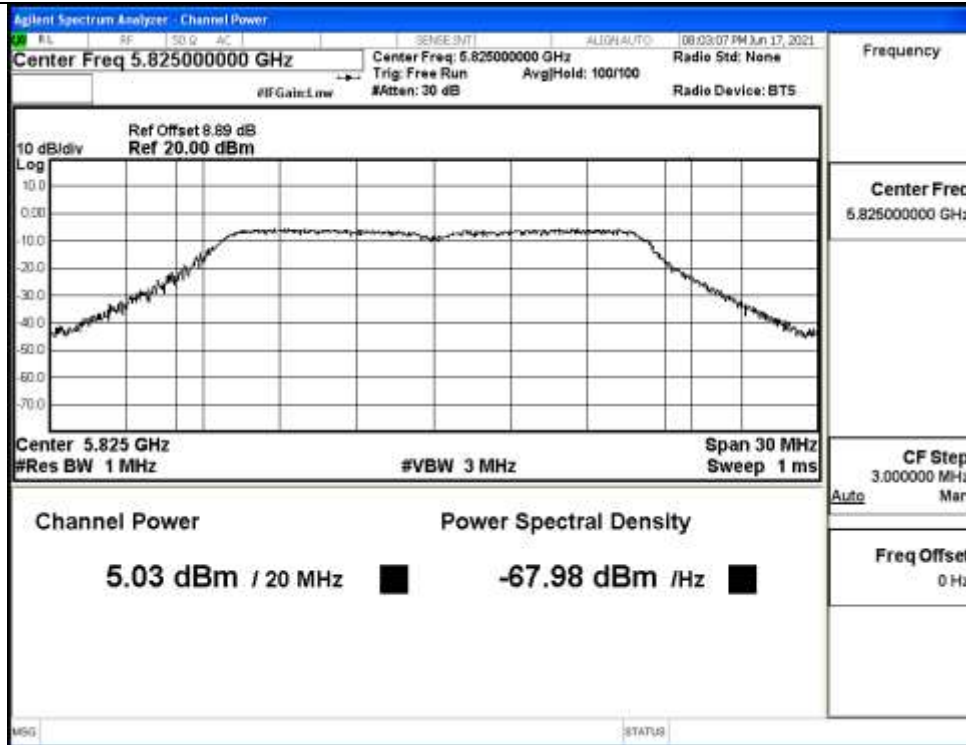
IEEE 802.11n40 / Channel 159 / 5795MHz



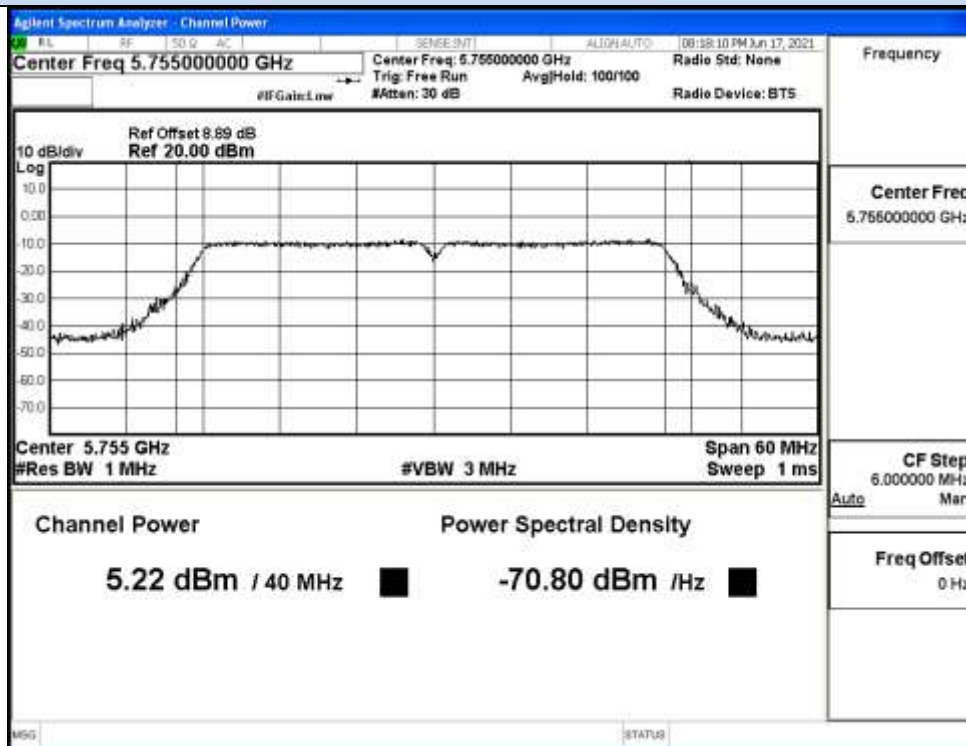
IEEE 802.11ac20 / Channel 149 / 5745MHz



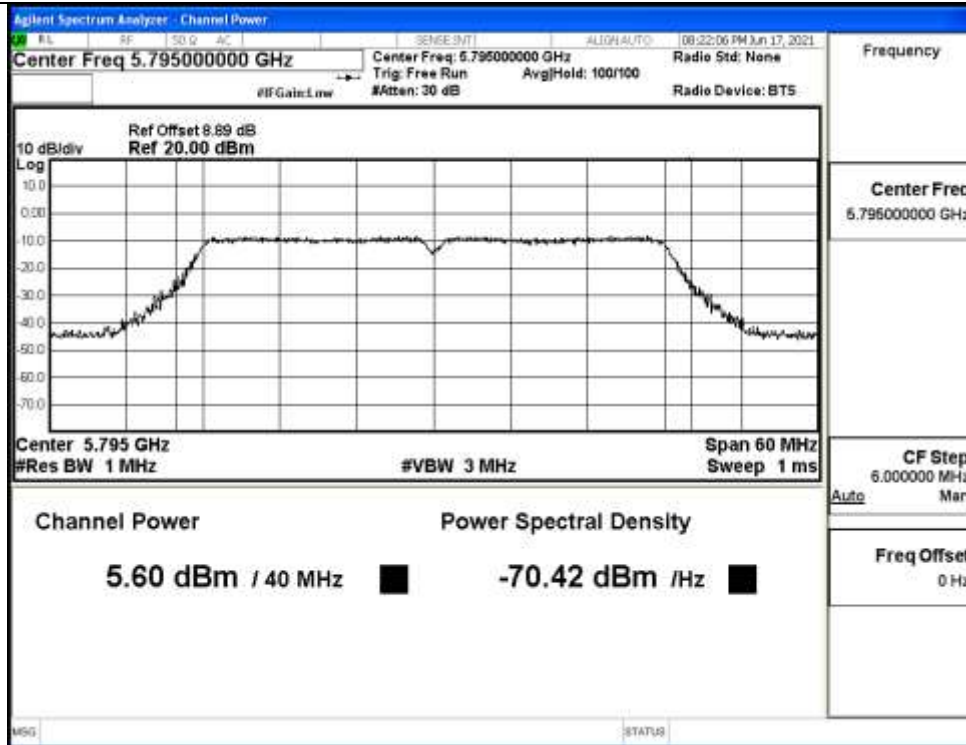
IEEE 802.11ac20 / Channel 157 / 5785MHz



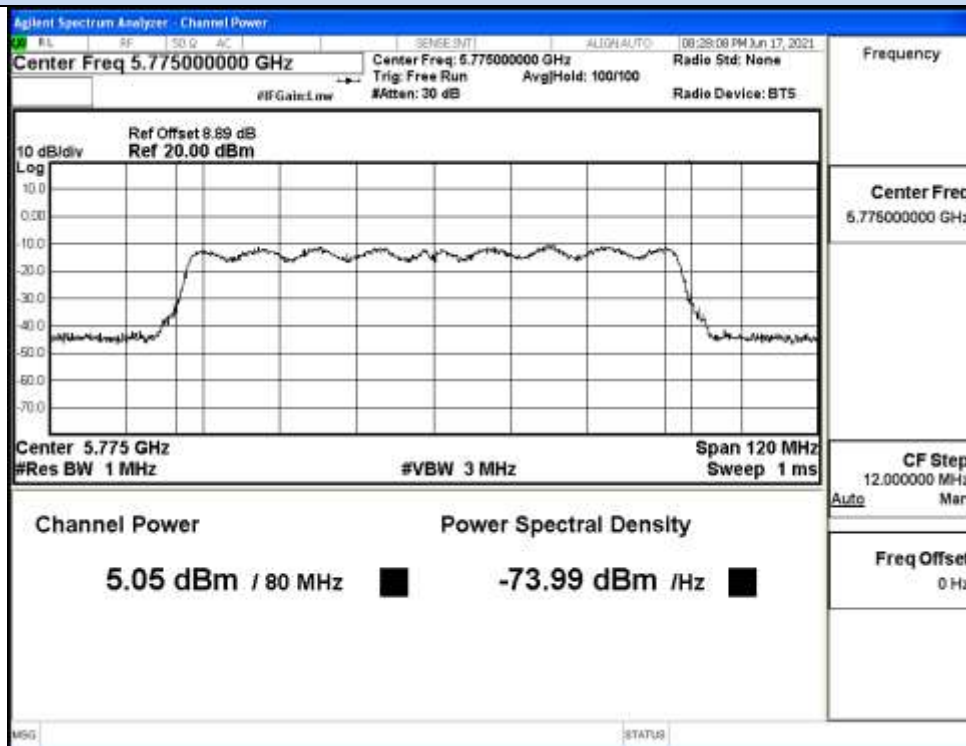
IEEE 802.11ac20 / Channel 165/ 5825MHz



IEEE 802.11ac40 / Channel 151 / 5755MHz



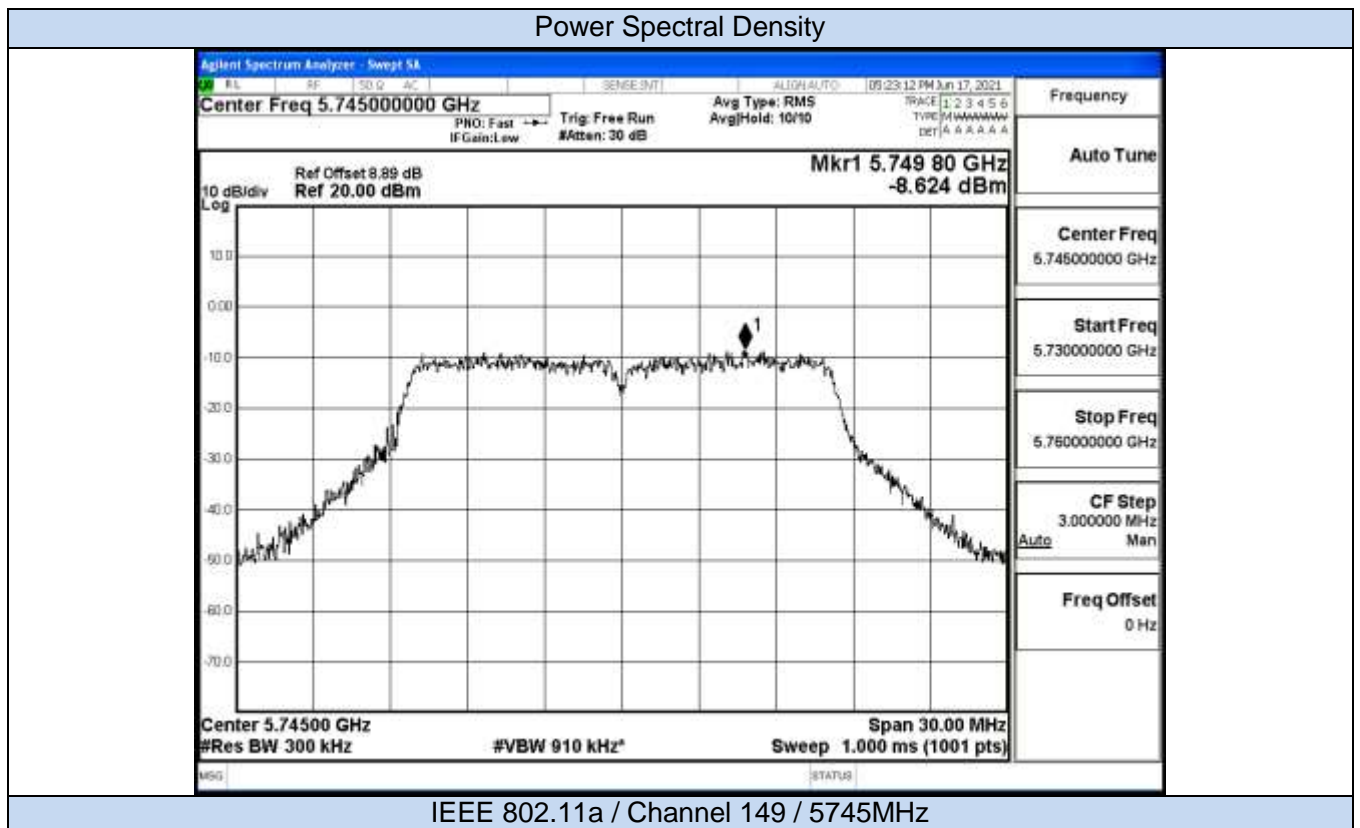
IEEE 802.11ac40 / Channel 159 / 5795MHz

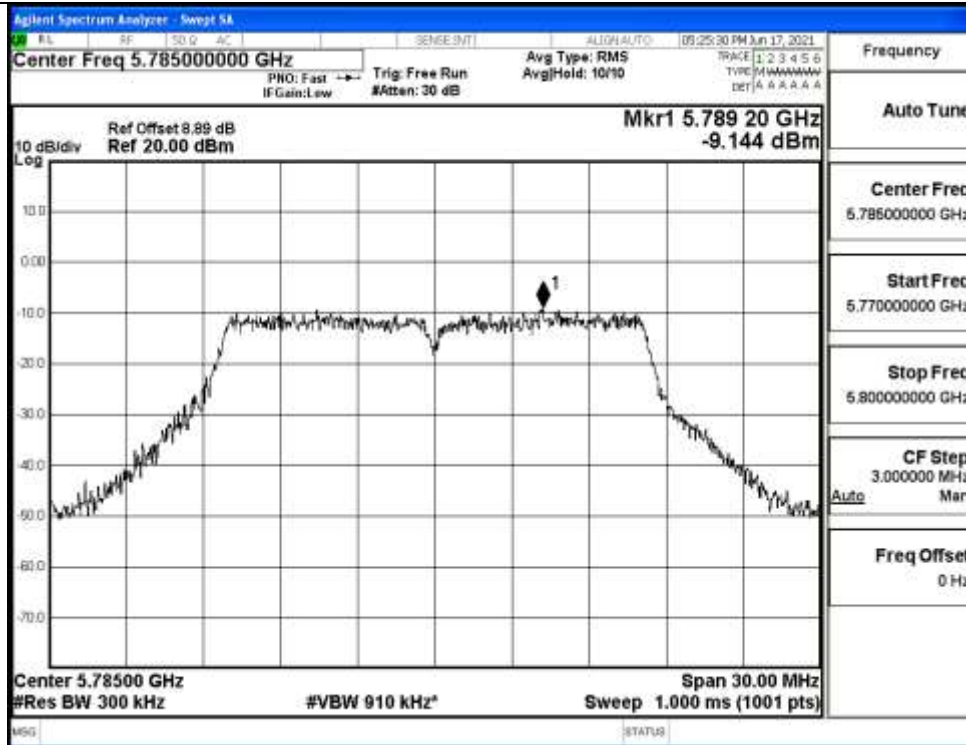


IEEE 802.11ac80 / Channel 155 / 5775MHz

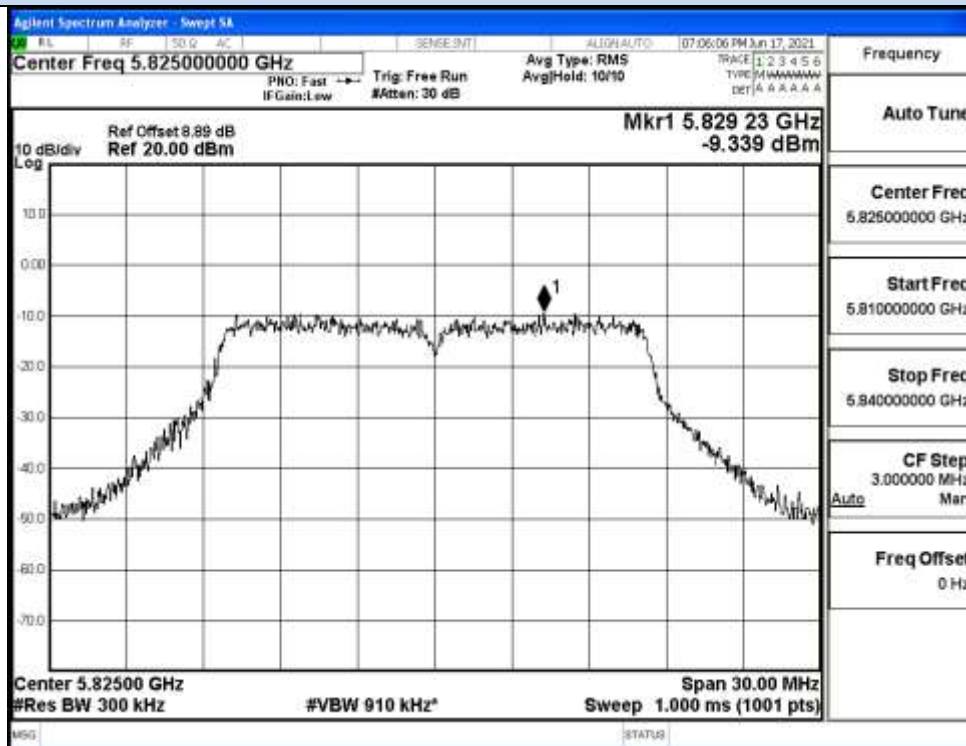
E.3 Power Spectral Density

| Test Mode | Channel | Frequency (MHz) | Power Density (dBm/300KHz) | Duty Cycle Factor (dB) | RBW Factor (dB) | Report Power Density (dBm/500KHz) | Limit (dBm/500KHz) | Verdict |
|-------------|---------|-----------------|----------------------------|------------------------|-----------------|-----------------------------------|--------------------|---------|
| 11A | 149 | 5745 | -8.62 | 0 | 2.218 | -6.41 | 30 | Pass |
| | 157 | 5785 | -9.14 | 0 | 2.218 | -6.93 | | Pass |
| | 165 | 5825 | -9.34 | 0 | 2.218 | -7.12 | | Pass |
| 11N20 SISO | 149 | 5745 | -8.82 | 0 | 2.218 | -6.60 | 30 | Pass |
| | 157 | 5785 | -9.18 | 0 | 2.218 | -6.96 | | Pass |
| | 165 | 5825 | -9.41 | 0 | 2.218 | -7.19 | | Pass |
| 11N40 SISO | 151 | 5755 | -12.65 | 0 | 2.218 | -10.43 | 30 | Pass |
| | 159 | 5795 | -11.90 | 0 | 2.218 | -9.68 | | Pass |
| 11AC20 SISO | 149 | 5745 | -8.65 | 0 | 2.218 | -6.43 | 30 | Pass |
| | 157 | 5785 | -9.76 | 0 | 2.218 | -7.54 | | Pass |
| | 165 | 5825 | -9.58 | 0 | 2.218 | -7.36 | | Pass |
| 11AC40 SISO | 151 | 5755 | -11.78 | 0 | 2.218 | -9.57 | 30 | Pass |
| | 159 | 5795 | -11.96 | 0 | 2.218 | -9.74 | | Pass |
| 11AC80 SISO | 155 | 5775 | -15.01 | 0 | 2.218 | -12.79 | 30 | Pass |



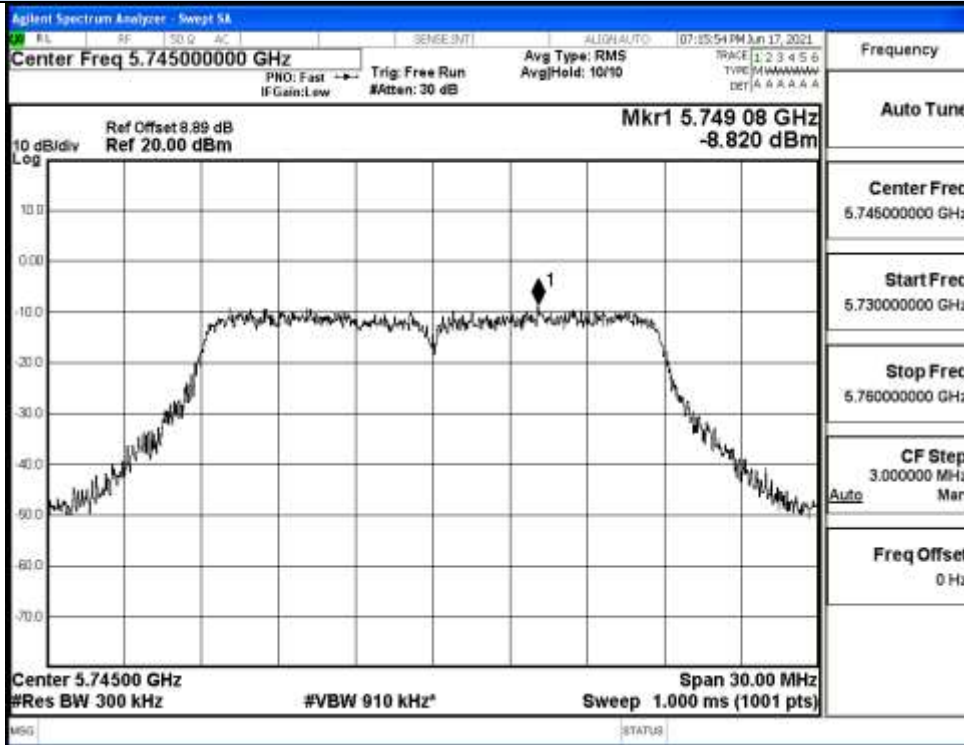


IEEE 802.11na / Channel 157 / 5785MHz

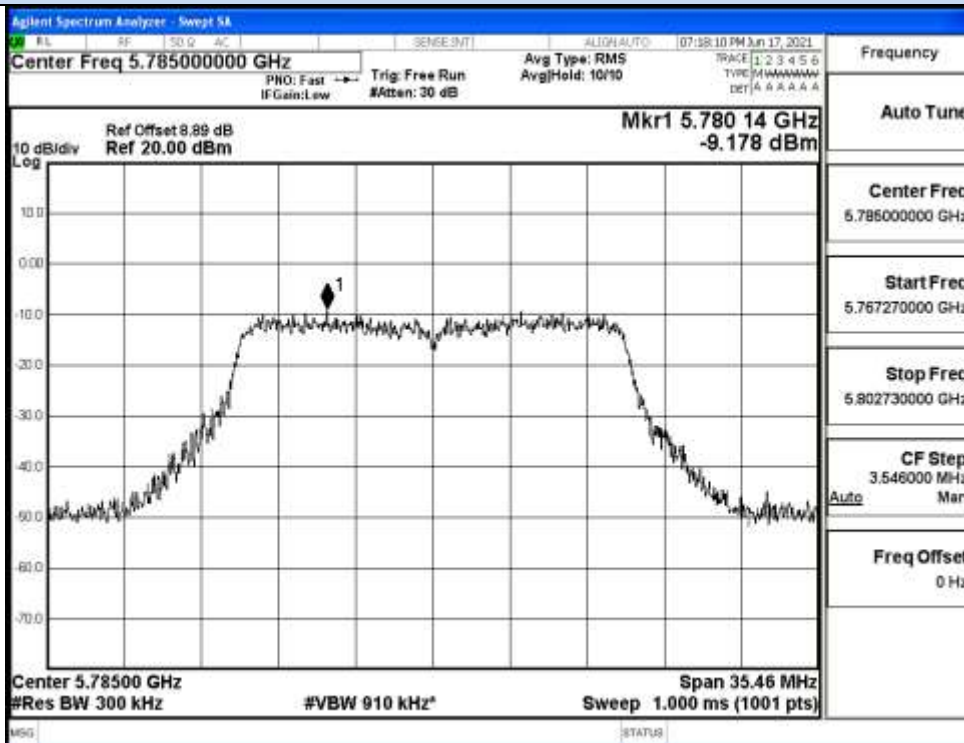


IEEE 802.11na / Channel 165 / 5825MHz

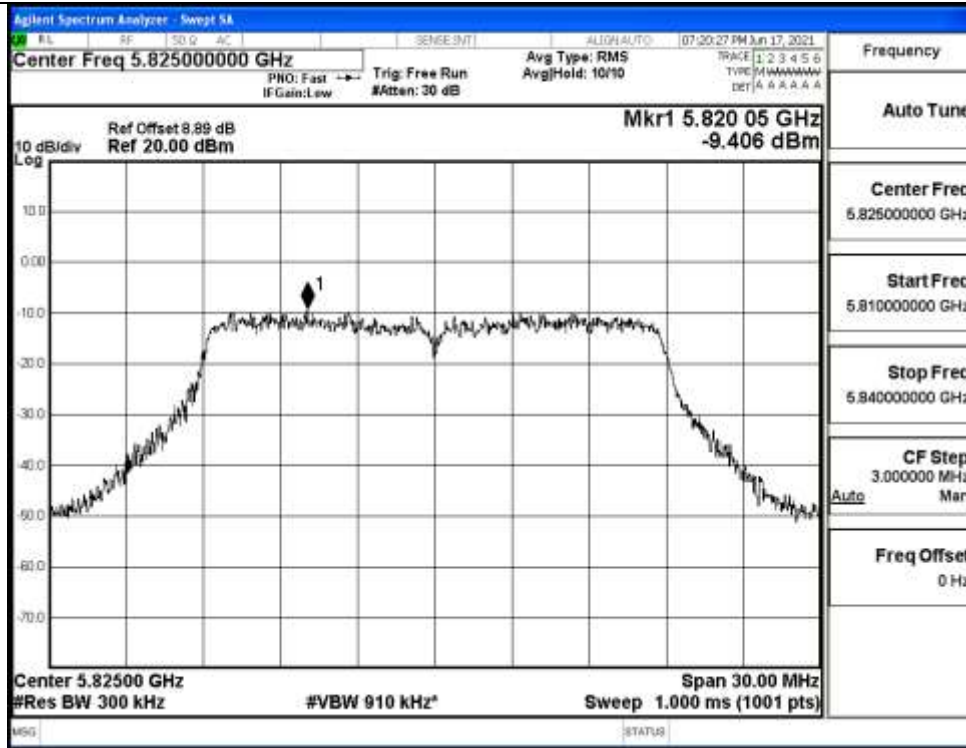
Power Spectral Density



IEEE 802.11n20 / Channel 149 / 5745MHz

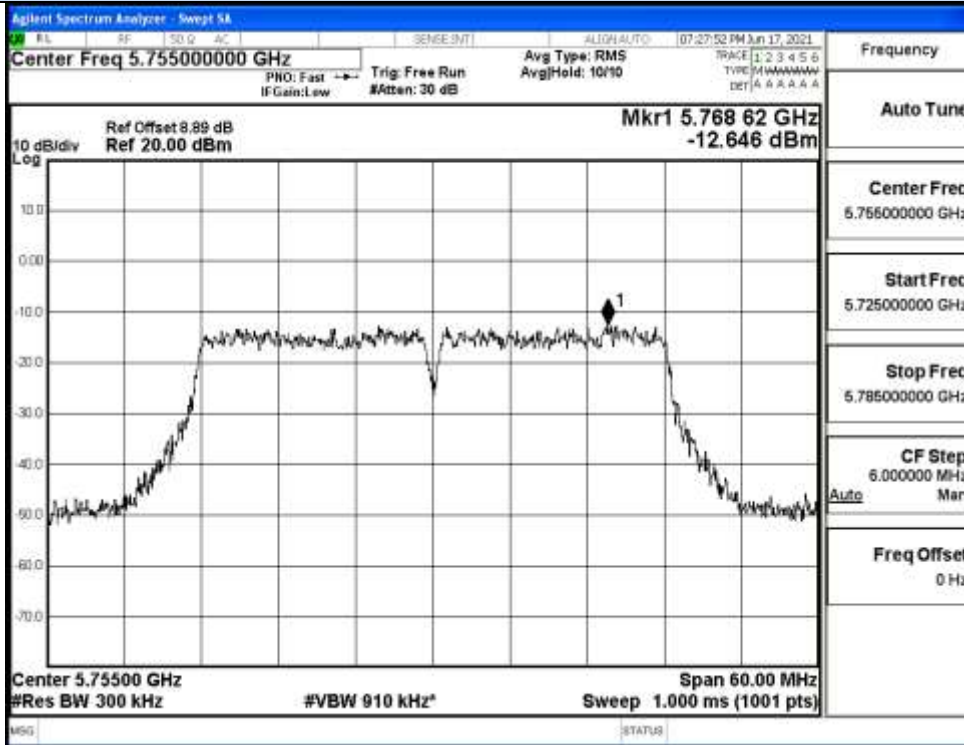


IEEE 802.11n20 / Channel 157 / 5785MHz

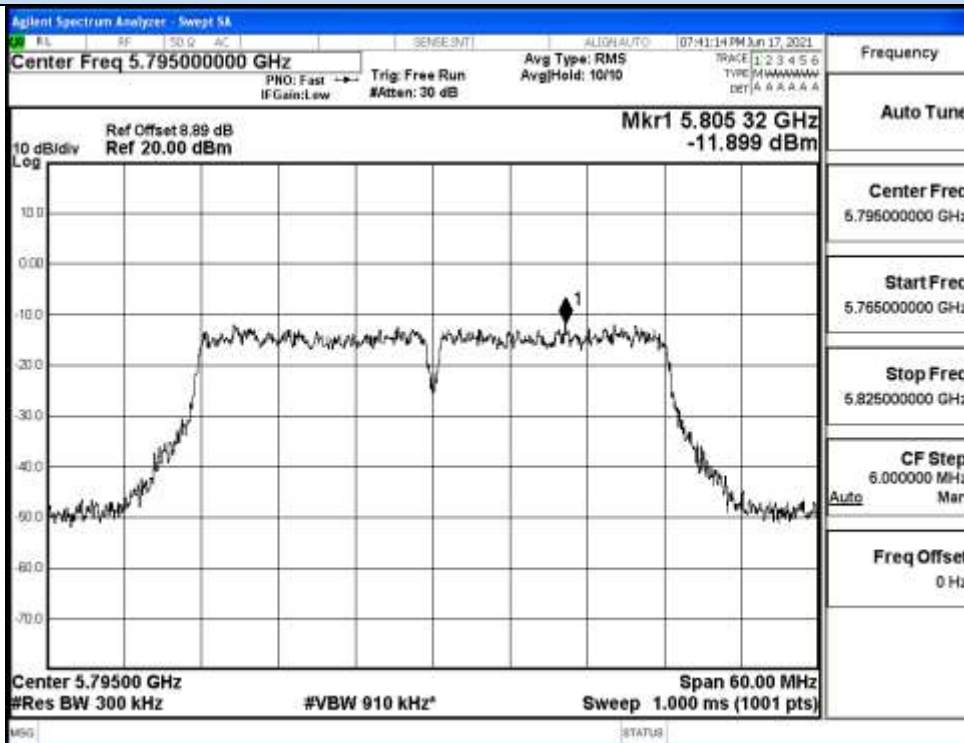


IEEE 802.11n20 / Channel 165 / 5825MHz

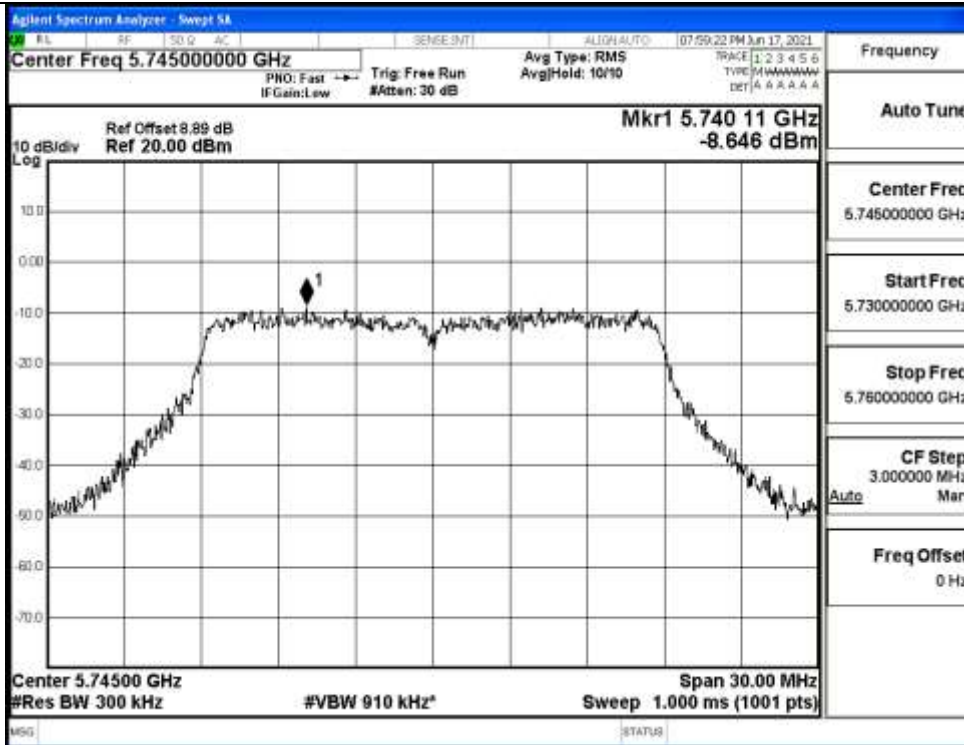
Power Spectral Density



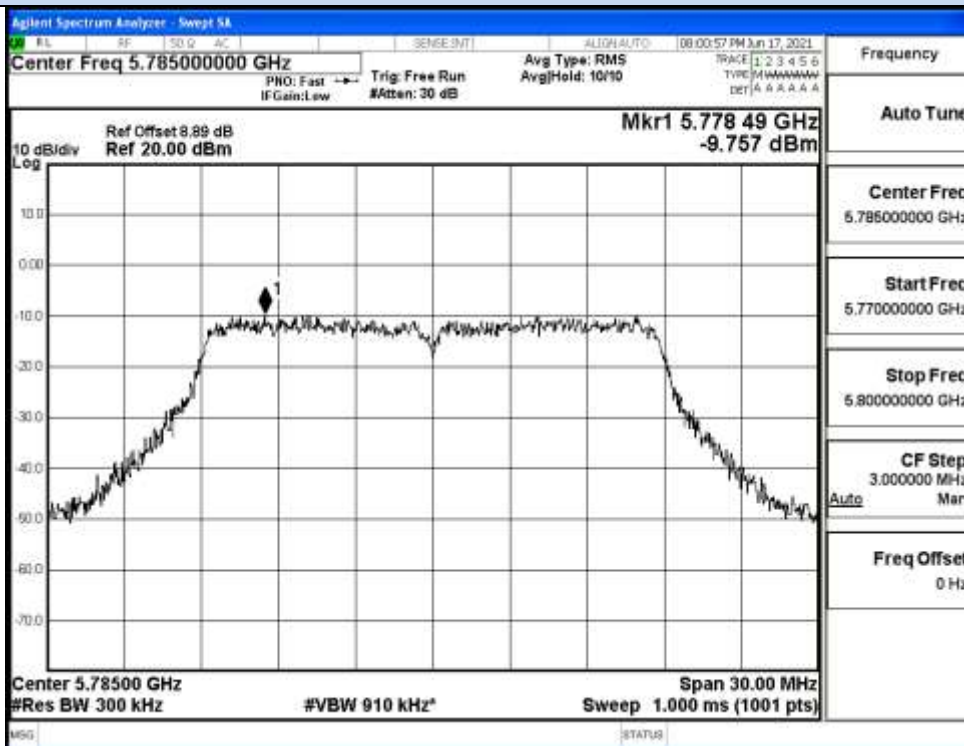
IEEE 802.11n40 / Channel 151 / 5755MHz



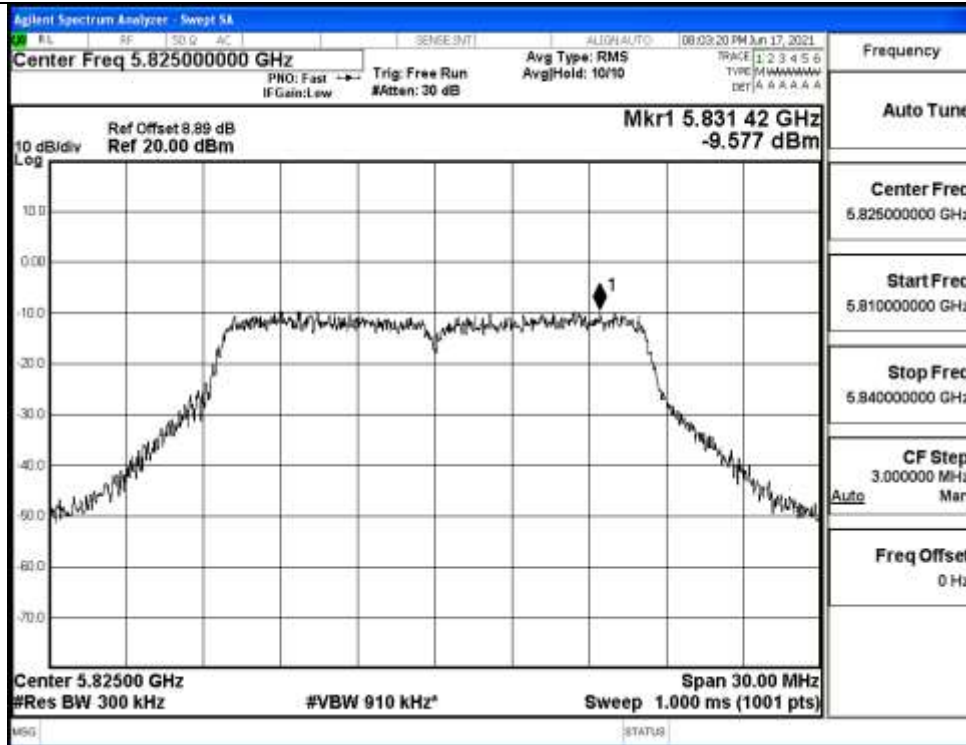
IEEE 802.11n40 / Channel 159 / 5795MHz



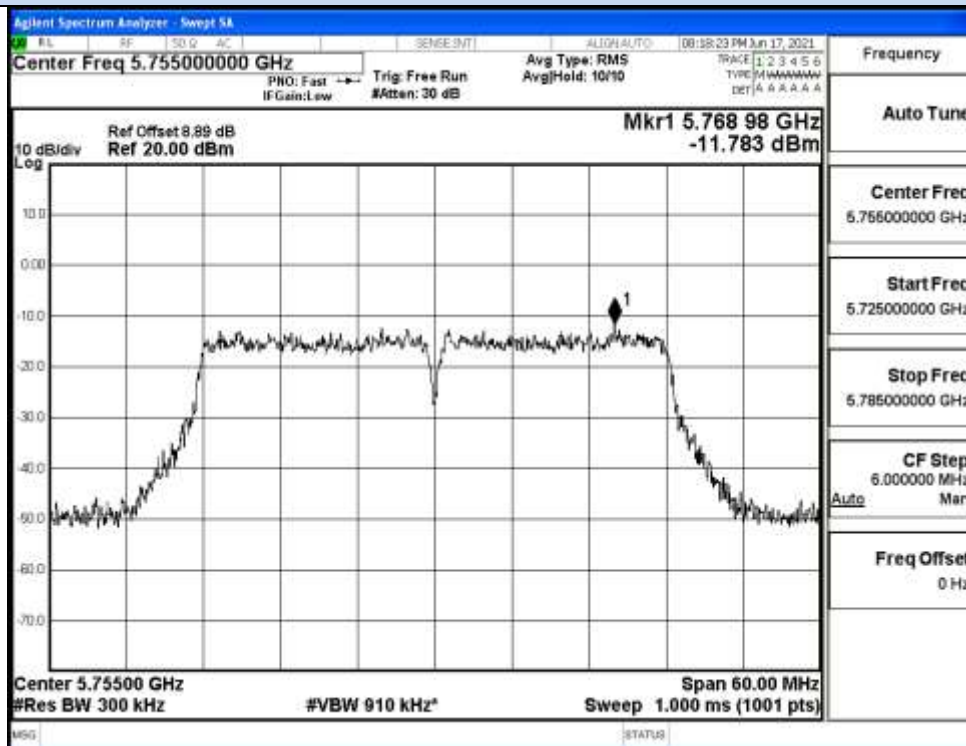
IEEE 802.11ac20 / Channel 149 / 5745MHz



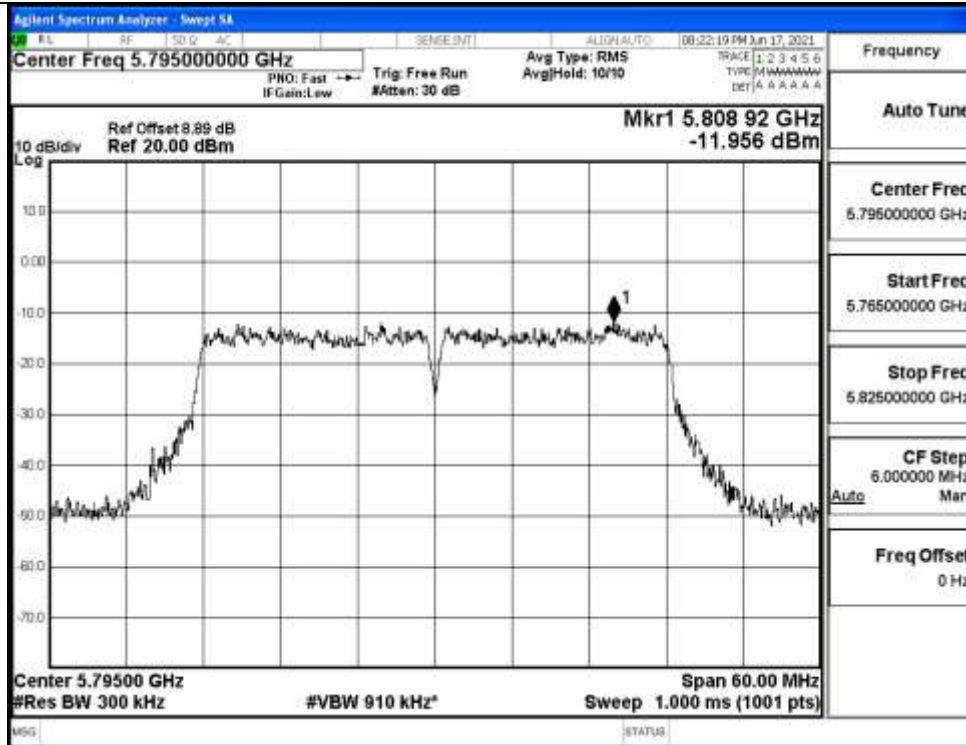
IEEE 802.11ac20 / Channel 157 / 5785MHz



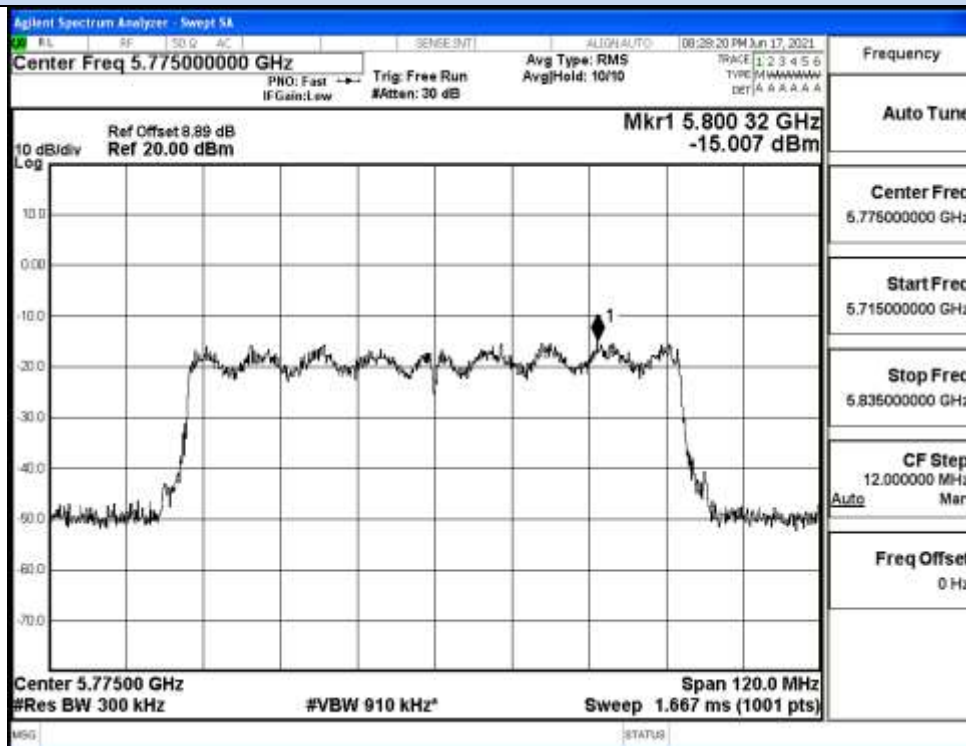
IEEE 802.11ac20 / Channel 165 / 5825MHz



IEEE 802.11ac40 / Channel 151 / 5755MHz



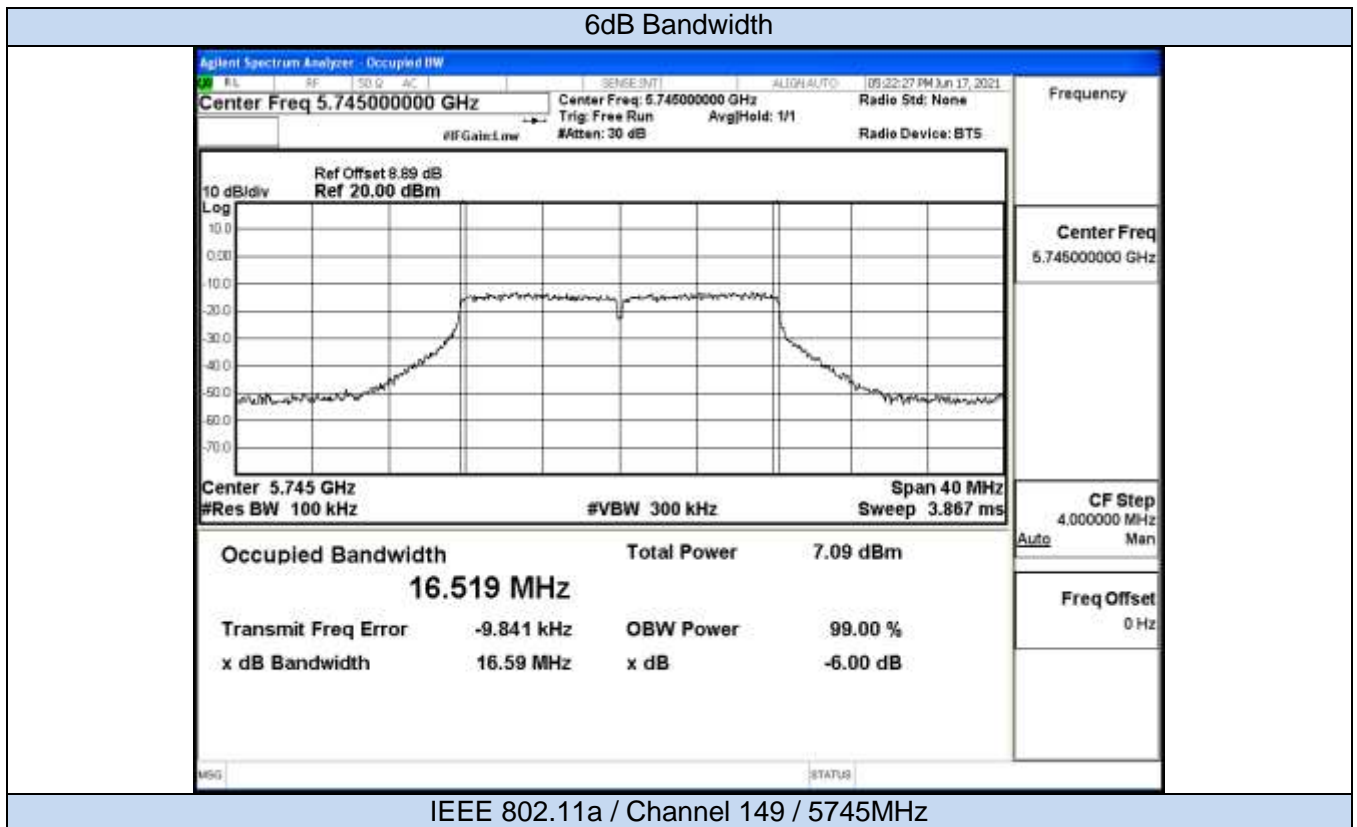
IEEE 802.11ac40 / Channel 159 / 5795MHz

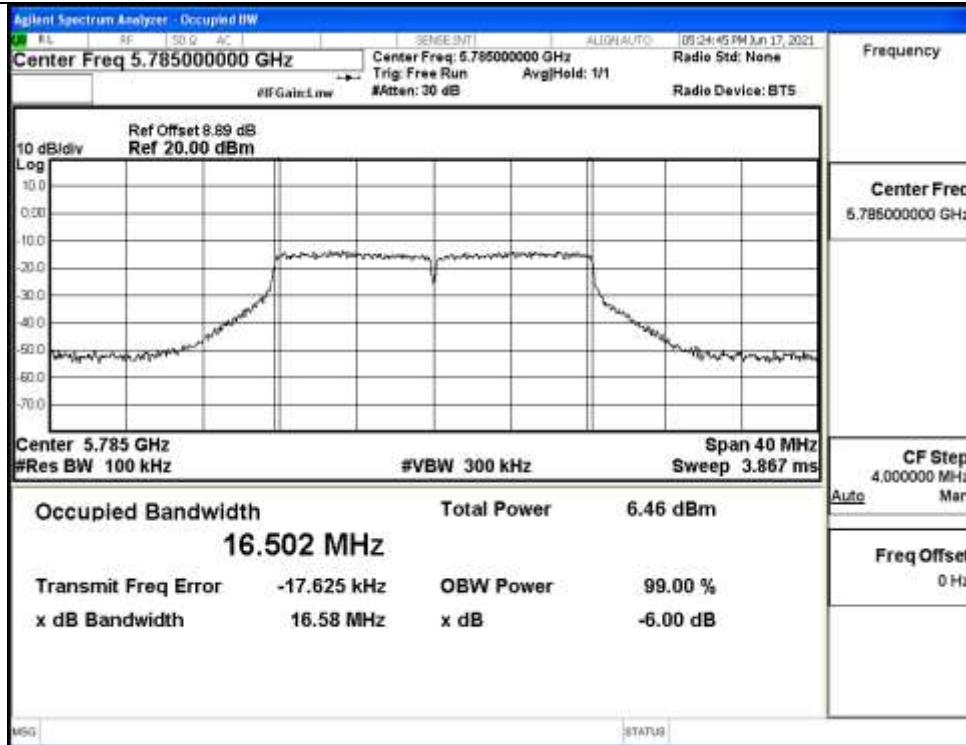


IEEE 802.11ac80 / Channel 155/ 5775MHz

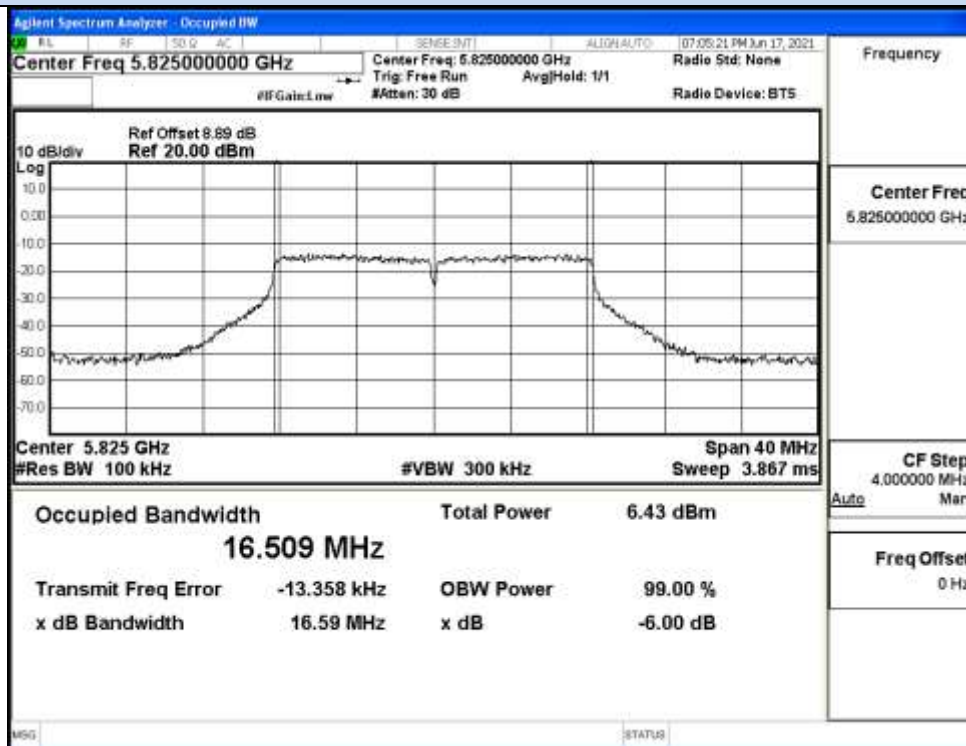
E.4 Emission Bandwidth

| Test Mode | Channel | Frequency (MHz) | 6dB Bandwidth (MHz) | Limit (MHz) | Verdict |
|-------------|---------|-----------------|---------------------|-------------|---------|
| 11A | 149 | 5745 | 16.59 | >=0.5 | Pass |
| | 157 | 5785 | 16.58 | | Pass |
| | 165 | 5825 | 16.59 | | Pass |
| 11N20 SISO | 149 | 5745 | 17.81 | >=0.5 | Pass |
| | 157 | 5785 | 17.73 | | Pass |
| | 165 | 5825 | 17.74 | | Pass |
| 11N40 SISO | 151 | 5755 | 36.59 | >=0.5 | Pass |
| | 159 | 5795 | 36.58 | | Pass |
| 11AC20S ISO | 149 | 5745 | 17.82 | >=0.5 | Pass |
| | 157 | 5785 | 17.80 | | Pass |
| | 165 | 5825 | 16.55 | | Pass |
| 11AC40S ISO | 151 | 5755 | 36.58 | >=0.5 | Pass |
| | 159 | 5795 | 36.53 | | Pass |
| 11AC80S ISO | 155 | 5775 | 76.53 | >=0.5 | Pass |



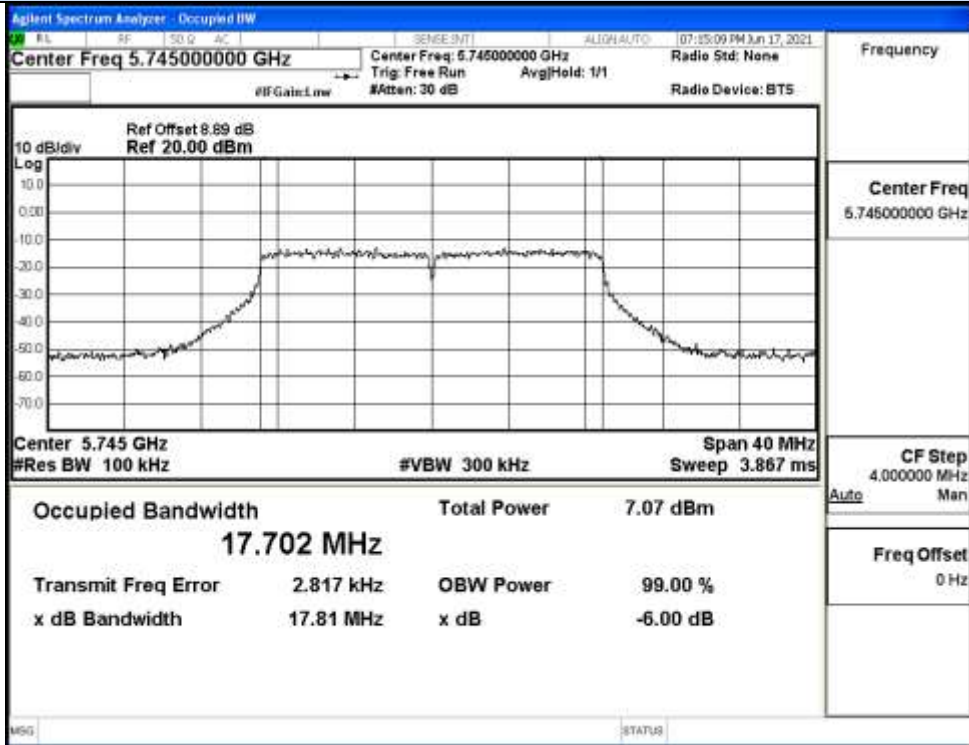


IEEE 802.11a / Channel 157 / 5785MHz

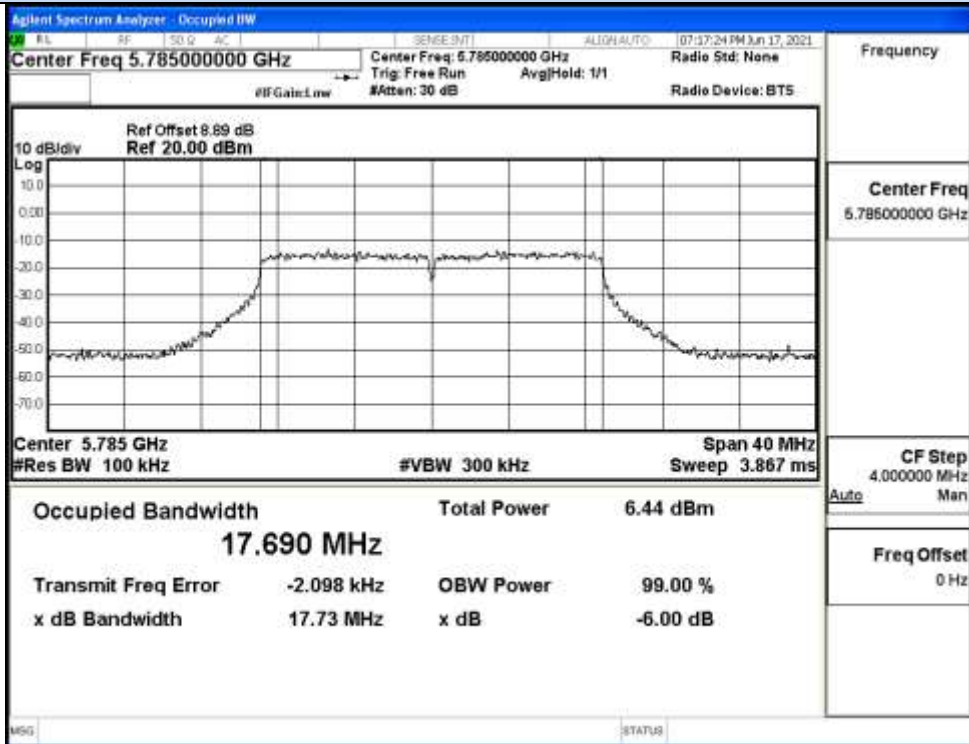


IEEE 802.11a / Channel 165 / 5825MHz

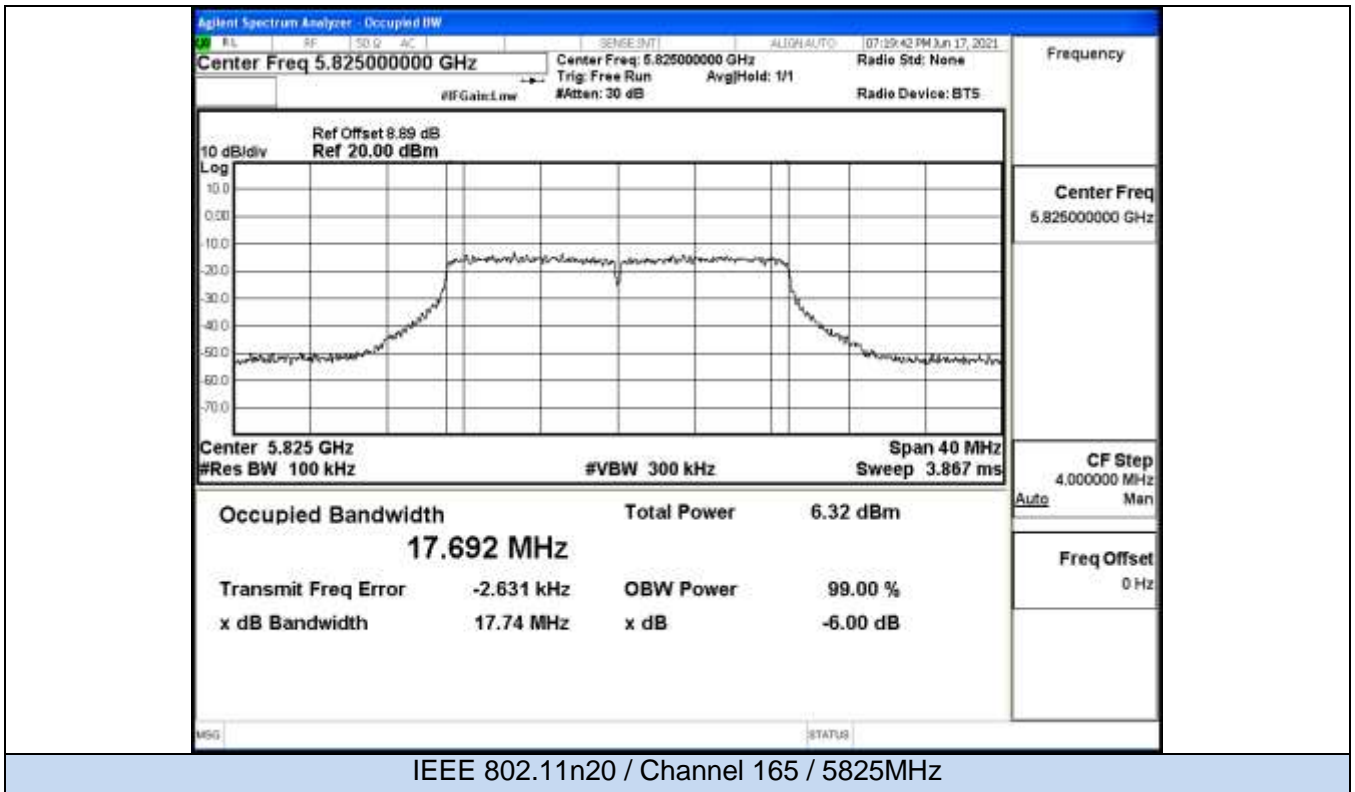
6dB Bandwidth



IEEE 802.11n20 / Channel 149 / 5745MHz

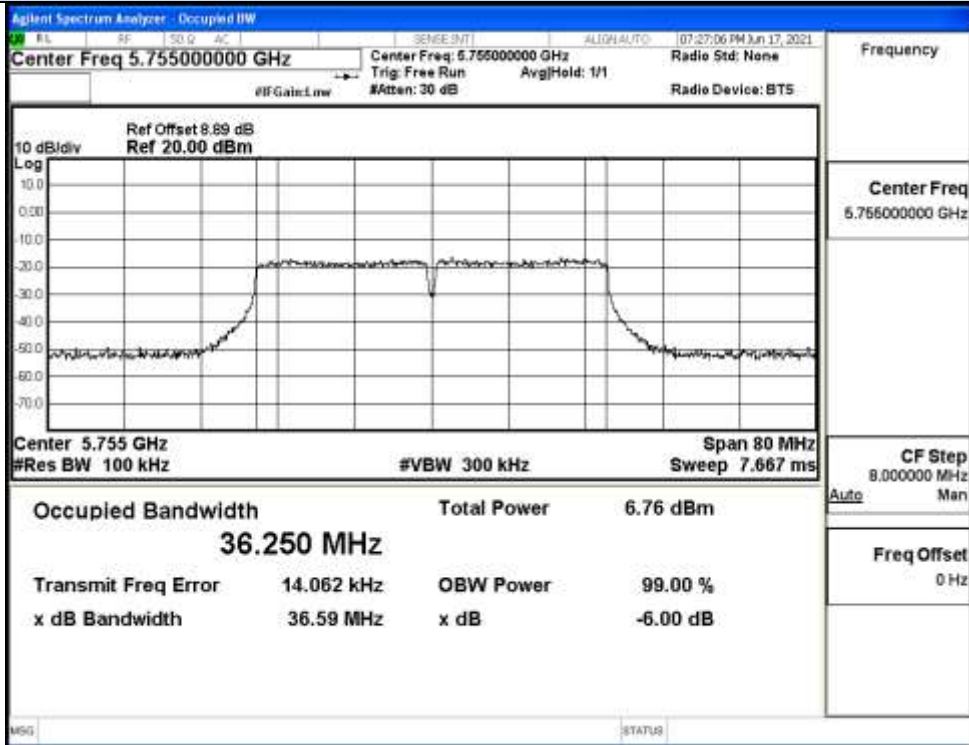


IEEE 802.11n20 / Channel 157 / 5785MHz

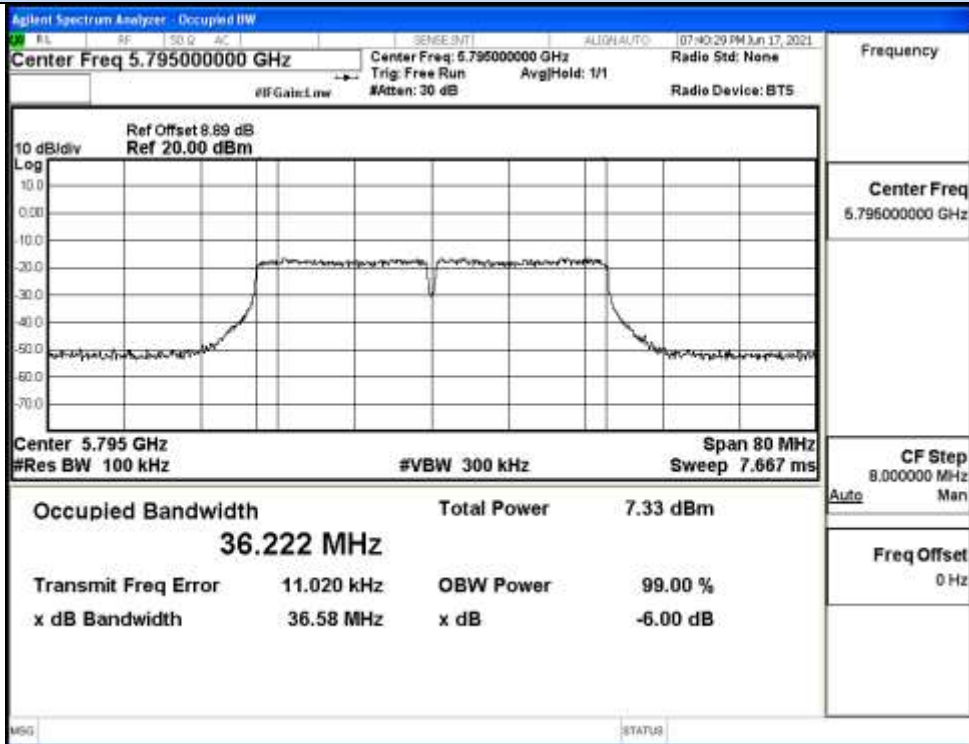


IEEE 802.11n20 / Channel 165 / 5825MHz

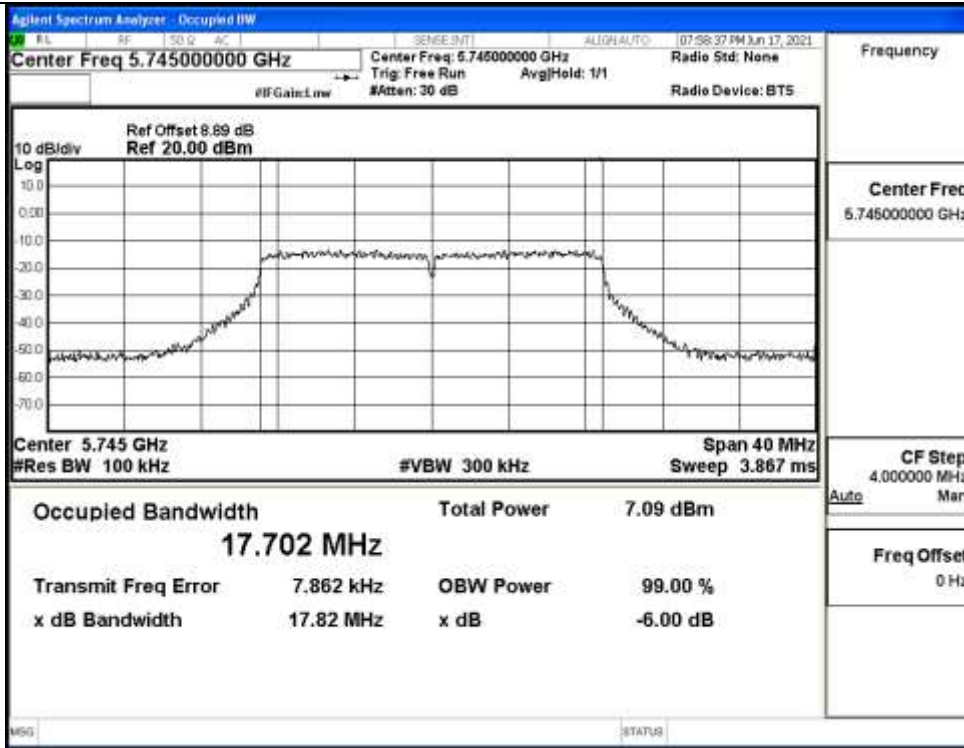
26dB Bandwidth



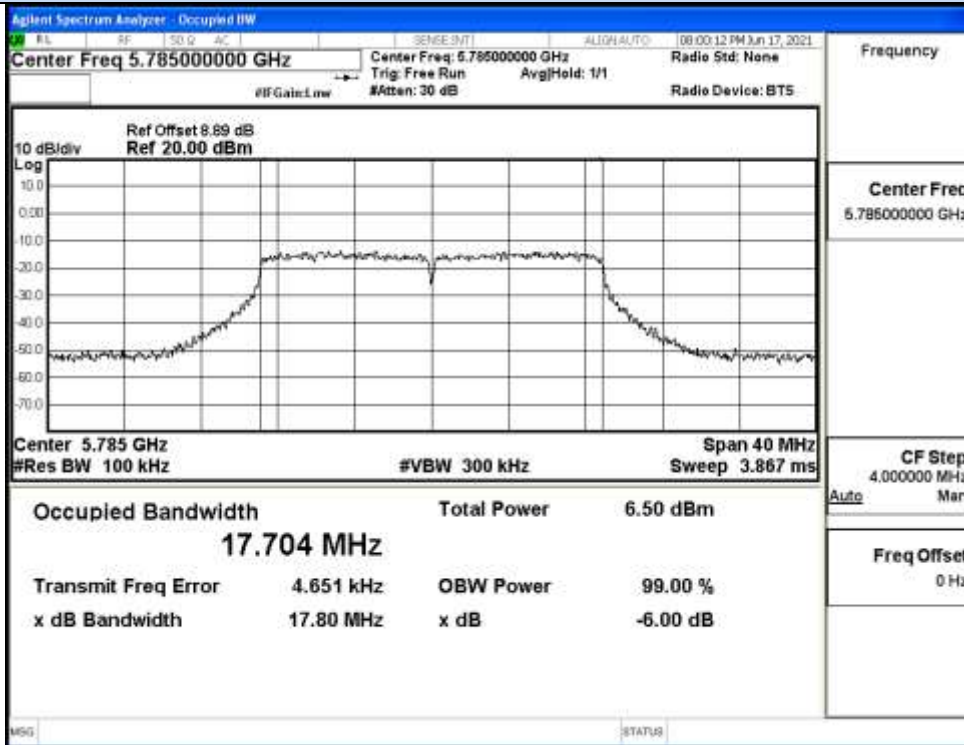
IEEE 802.11n40 / Channel 151 / 5755MHz



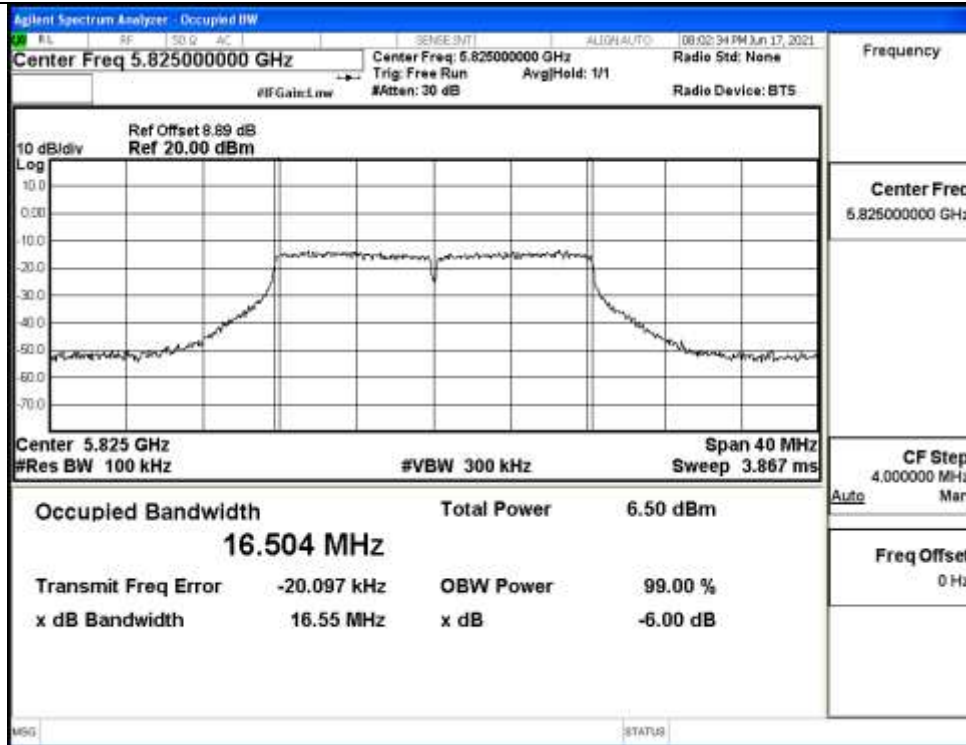
IEEE 802.11n40 / Channel 159 / 5795MHz



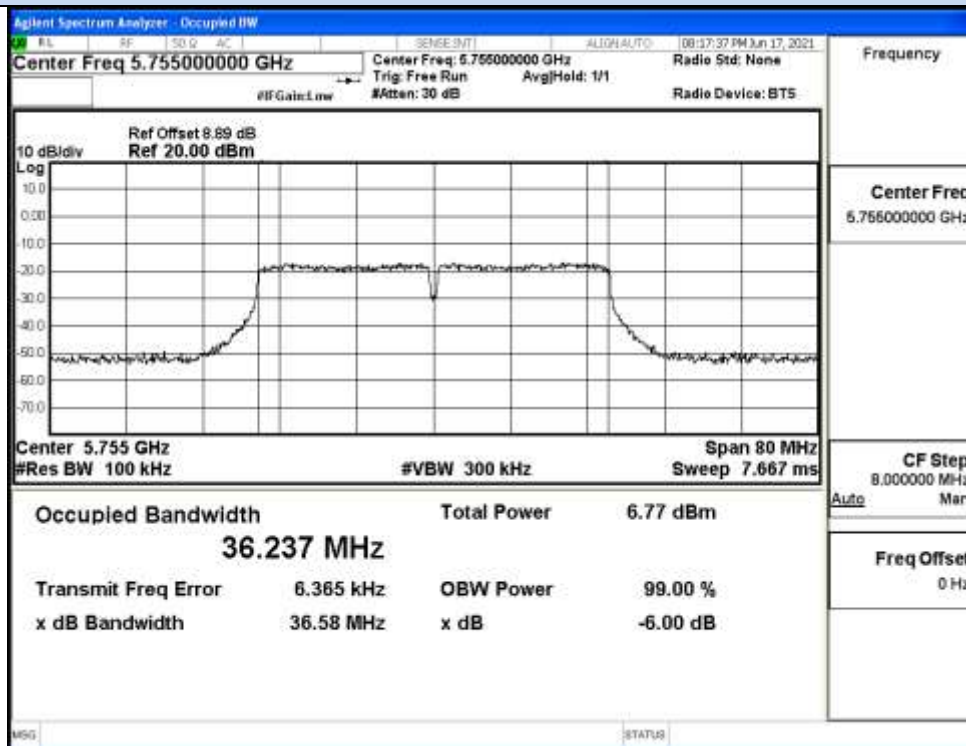
IEEE 802.11ac20 / Channel 149 / 5745MHz



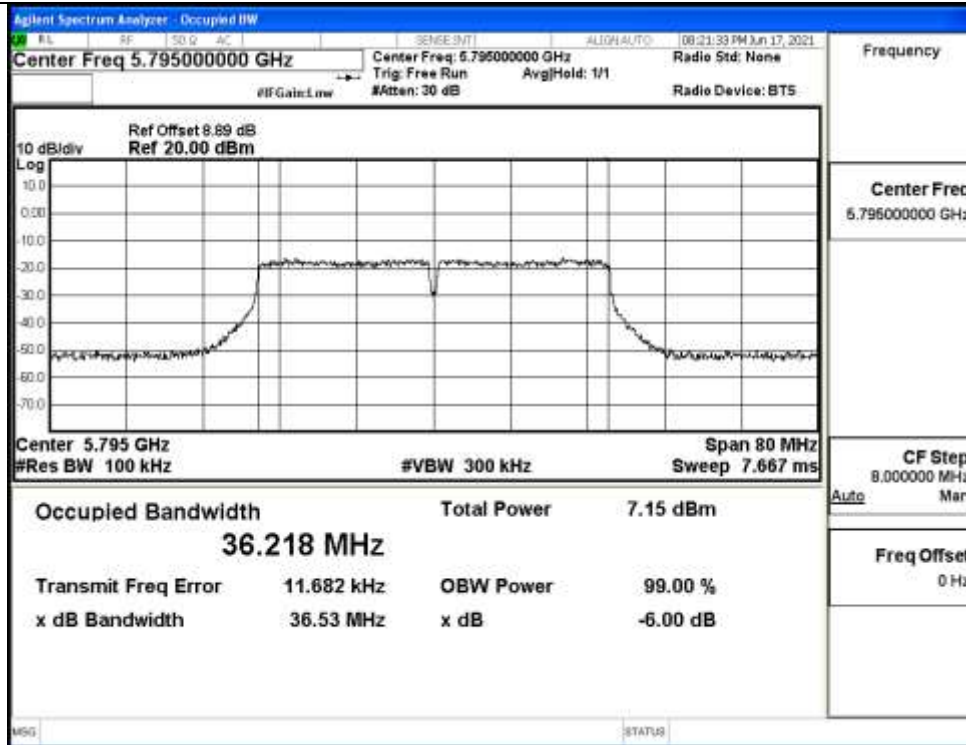
IEEE 802.11ac20 / Channel 157 / 5785MHz



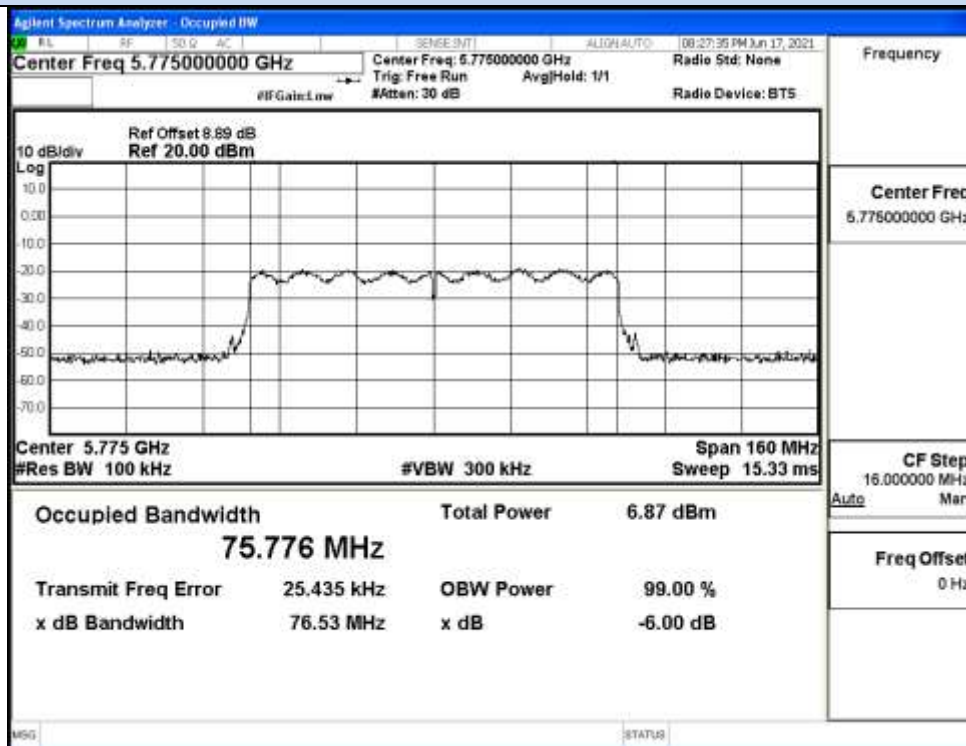
IEEE 802.11ac20 / Channel 165 / 5825MHz



IEEE 802.11ac40 / Channel 151 / 5755MHz



IEEE 802.11ac40 / Channel 159 / 5795MHz



IEEE 802.11ac80 / Channel 155 / 5775MHz

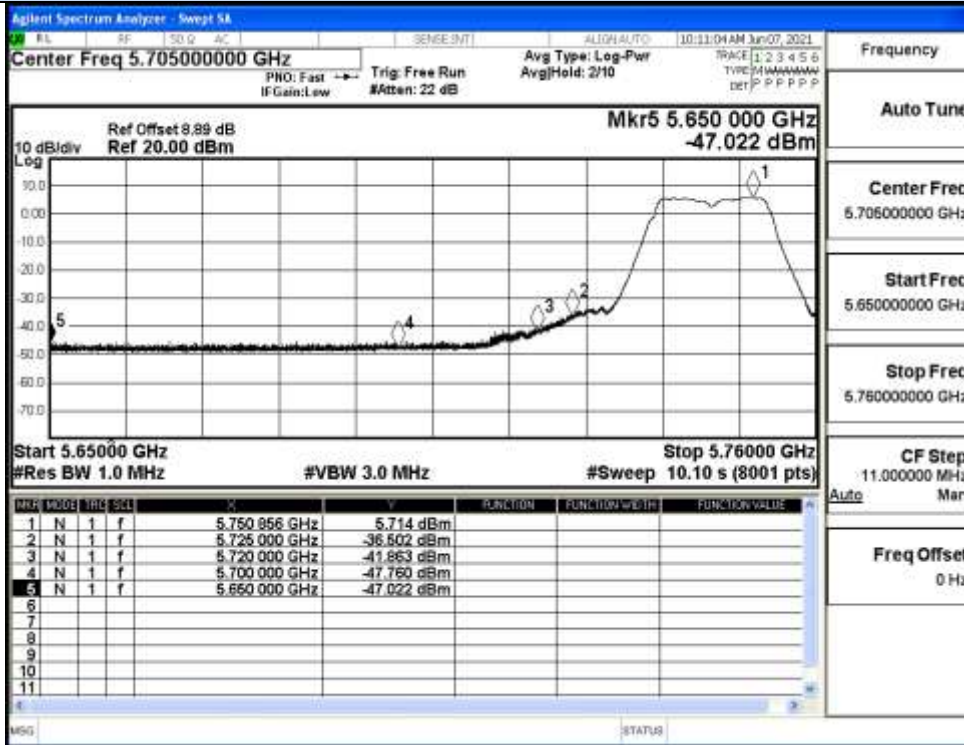
E.5 Undesirable Emissions Measurement

| Test Mode | Channel | Frequency (MHz) | Conducted Power (dBm) | Antenna Gain (dBi) | EIRP (dBm/MHz) | Detector | Limit (dBm/MHz) | Verdict |
|------------|---------|-----------------|-----------------------|--------------------|----------------|----------|-----------------|---------|
| 11A | 149 | 5650.0 | -47.02 | 2.00 | -45.02 | Peak | -27.0 | Pass |
| | | 5650.0 | -60.00 | 2.00 | -58.00 | Average | -27.0 | Pass |
| | | 5700.0 | -47.76 | 2.00 | -45.76 | Peak | 10 | Pass |
| | | 5700.0 | -59.36 | 2.00 | -57.36 | Average | 10 | Pass |
| | | 5720.0 | -41.86 | 2.00 | -39.86 | Peak | 15.6 | Pass |
| | | 5720.0 | -57.43 | 2.00 | -55.43 | Average | 15.6 | Pass |
| | | 5725.0 | -36.50 | 2.00 | -34.50 | Peak | 27.0 | Pass |
| | 5725.0 | -52.33 | 2.00 | -50.33 | Average | 27.0 | Pass | |
| | 165 | 5850.0 | -43.39 | 2.00 | -41.39 | Peak | 27.0 | Pass |
| | | 5850.0 | -57.71 | 2.00 | -55.71 | Average | 27.0 | Pass |
| | | 5855.0 | -46.33 | 2.00 | -44.33 | Peak | 15.6 | Pass |
| | | 5855.0 | -58.75 | 2.00 | -56.75 | Average | 15.6 | Pass |
| | | 5875.0 | -47.78 | 2.00 | -45.78 | Peak | 10 | Pass |
| | | 5875.0 | -59.53 | 2.00 | -57.53 | Average | 10 | Pass |
| 5925.0 | | -48.64 | 2.00 | -46.64 | Peak | -27.0 | Pass | |
| 5925.0 | -59.95 | 2.00 | -57.95 | Average | -27.0 | Pass | | |
| 11N20 SISO | 149 | 5650.0 | -48.29 | 2.00 | -46.29 | Peak | -27.0 | Pass |
| | | 5650.0 | -60.06 | 2.00 | -58.06 | Average | -27.0 | Pass |
| | | 5700.0 | -46.13 | 2.00 | -44.13 | Peak | 10 | Pass |
| | | 5700.0 | -57.01 | 2.00 | -55.01 | Average | 10 | Pass |
| | | 5720.0 | -42.90 | 2.00 | -40.90 | Peak | 15.6 | Pass |
| | | 5720.0 | -59.48 | 2.00 | -57.48 | Average | 15.6 | Pass |
| | | 5725.0 | -35.56 | 2.00 | -33.56 | Peak | 27.0 | Pass |
| | 5725.0 | -51.74 | 2.00 | -49.74 | Average | 27.0 | Pass | |
| | 165 | 5850.0 | -44.78 | 2.00 | -42.78 | Peak | 27.0 | Pass |
| | | 5850.0 | -58.10 | 2.00 | -56.10 | Average | 27.0 | Pass |
| | | 5855.0 | -46.68 | 2.00 | -44.68 | Peak | 15.6 | Pass |
| | | 5855.0 | -58.86 | 2.00 | -56.86 | Average | 15.6 | Pass |
| | | 5875.0 | -47.58 | 2.00 | -45.58 | Peak | 10 | Pass |
| | | 5875.0 | -59.60 | 2.00 | -57.60 | Average | 10 | Pass |
| 5925.0 | | -48.48 | 2.00 | -46.48 | Peak | -27.0 | Pass | |
| 5925.0 | -60.02 | 2.00 | -58.02 | Average | -27.0 | Pass | | |

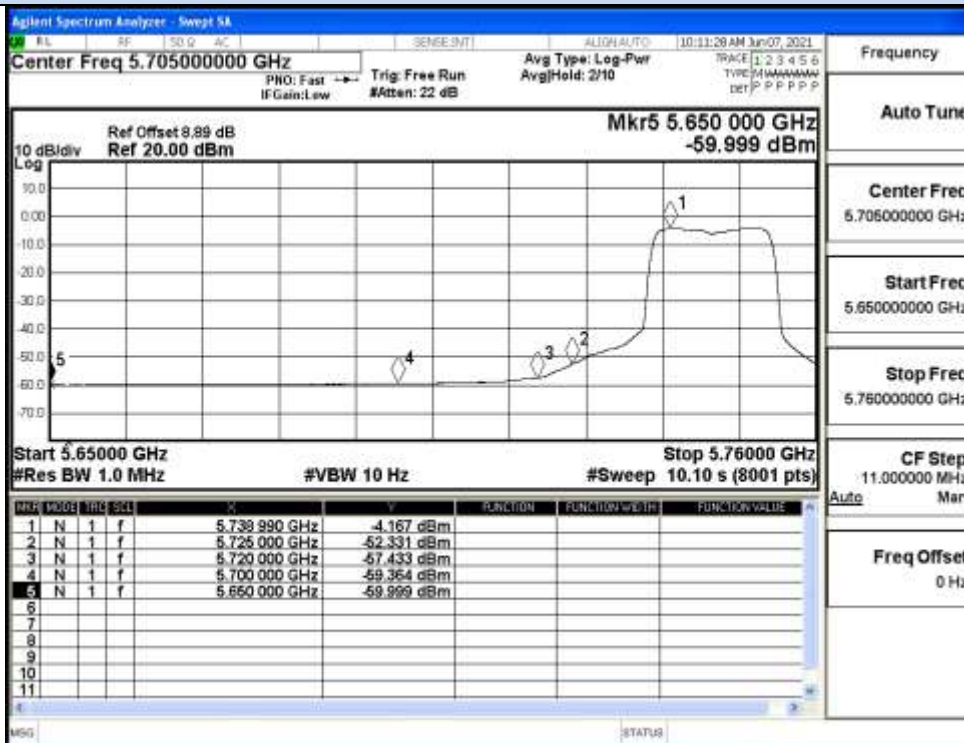
| Test Mode | Channel | Frequency (MHz) | Conducted Power (dBm) | Antenna Gain (dBi) | EIRP (dBm/MHz) | Detector | Limit (dBm/MHz) | Verdict |
|-------------|---------|-----------------|-----------------------|--------------------|----------------|----------|-----------------|---------|
| 11N40 SISO | 151 | 5650.0 | -47.98 | 2.00 | -45.98 | Peak | -27.0 | Pass |
| | | 5650.0 | -59.97 | 2.00 | -57.97 | Average | -27.0 | Pass |
| | | 5700.0 | -41.59 | 2.00 | -39.59 | Peak | 10 | Pass |
| | | 5700.0 | -58.10 | 2.00 | -56.10 | Average | 10 | Pass |
| | | 5720.0 | -34.40 | 2.00 | -32.40 | Peak | 15.6 | Pass |
| | | 5720.0 | -49.19 | 2.00 | -47.19 | Average | 15.6 | Pass |
| | | 5725.0 | -35.03 | 2.00 | -33.03 | Peak | 27.0 | Pass |
| | | 5725.0 | -47.46 | 2.00 | -45.46 | Average | 27.0 | Pass |
| | 159 | 5850.0 | -45.33 | 2.00 | -43.33 | Peak | 27.0 | Pass |
| | | 5850.0 | -58.29 | 2.00 | -56.29 | Average | 27.0 | Pass |
| | | 5855.0 | -46.99 | 2.00 | -44.99 | Peak | 15.6 | Pass |
| | | 5855.0 | -58.77 | 2.00 | -56.77 | Average | 15.6 | Pass |
| | | 5875.0 | -46.36 | 2.00 | -44.36 | Peak | 10 | Pass |
| | | 5875.0 | -59.36 | 2.00 | -57.36 | Average | 10 | Pass |
| | | 5925.0 | -48.50 | 2.00 | -46.50 | Peak | -27.0 | Pass |
| | | 5925.0 | -59.79 | 2.00 | -57.79 | Average | -27.0 | Pass |
| 11AC20 SISO | 149 | 5650.0 | -47.07 | 2.00 | -45.07 | Peak | -27.0 | Pass |
| | | 5650.0 | -59.99 | 2.00 | -57.99 | Average | -27.0 | Pass |
| | | 5700.0 | -46.48 | 2.00 | -44.48 | Peak | 10 | Pass |
| | | 5700.0 | -56.45 | 2.00 | -54.45 | Average | 10 | Pass |
| | | 5720.0 | -39.43 | 2.00 | -37.43 | Peak | 15.6 | Pass |
| | | 5720.0 | -58.69 | 2.00 | -56.69 | Average | 15.6 | Pass |
| | | 5725.0 | -34.84 | 2.00 | -32.84 | Peak | 27.0 | Pass |
| | | 5725.0 | -50.80 | 2.00 | -48.80 | Average | 27.0 | Pass |
| | 165 | 5850.0 | -42.86 | 2.00 | -40.86 | Peak | 27.0 | Pass |
| | | 5850.0 | -58.24 | 2.00 | -56.24 | Average | 27.0 | Pass |
| | | 5855.0 | -46.47 | 2.00 | -44.47 | Peak | 15.6 | Pass |
| | | 5855.0 | -58.99 | 2.00 | -56.99 | Average | 15.6 | Pass |
| | | 5875.0 | -48.68 | 2.00 | -46.68 | Peak | 10 | Pass |
| | | 5875.0 | -59.64 | 2.00 | -57.64 | Average | 10 | Pass |
| | | 5925.0 | -47.93 | 2.00 | -45.93 | Peak | -27.0 | Pass |
| | | 5925.0 | -60.11 | 2.00 | -58.11 | Average | -27.0 | Pass |
| 11AC40 SISO | 151 | 5650.0 | -48.36 | 2.00 | -46.36 | Peak | -27.0 | Pass |
| | | 5650.0 | -59.89 | 2.00 | -57.89 | Average | -27.0 | Pass |
| | | 5700.0 | -42.74 | 2.00 | -40.74 | Peak | 10 | Pass |
| | | 5700.0 | -58.46 | 2.00 | -56.46 | Average | 10 | Pass |
| | | 5720.0 | -35.35 | 2.00 | -33.35 | Peak | 15.6 | Pass |
| | | 5720.0 | -49.71 | 2.00 | -47.71 | Average | 15.6 | Pass |

| | | | | | | | | |
|--------------------|-----|--------|--------|------|--------|---------|-------|------|
| | | 5725.0 | -34.94 | 2.00 | -32.94 | Peak | 27.0 | Pass |
| | | 5725.0 | -47.88 | 2.00 | -45.88 | Average | 27.0 | Pass |
| | 159 | 5850.0 | -44.51 | 2.00 | -42.51 | Peak | 27.0 | Pass |
| | | 5850.0 | -58.52 | 2.00 | -56.52 | Average | 27.0 | Pass |
| | | 5855.0 | -48.07 | 2.00 | -46.07 | Peak | 15.6 | Pass |
| | | 5855.0 | -58.85 | 2.00 | -56.85 | Average | 15.6 | Pass |
| | | 5875.0 | -48.30 | 2.00 | -46.30 | Peak | 10 | Pass |
| | | 5875.0 | -59.37 | 2.00 | -57.37 | Average | 10 | Pass |
| | | 5925.0 | -48.47 | 2.00 | -46.47 | Peak | -27.0 | Pass |
| | | 5925.0 | -59.81 | 2.00 | -57.81 | Average | -27.0 | Pass |
| 11AC8 0 SISO | 155 | 5725.0 | -36.80 | 2.00 | -34.80 | Peak | 27.0 | Pass |
| | | 5720.0 | -48.22 | 2.00 | -46.22 | Peak | 15.6 | Pass |
| | | 5700.0 | -38.57 | 2.00 | -36.57 | Peak | 10 | Pass |
| | | 5650.0 | -48.95 | 2.00 | -46.95 | Peak | -27.0 | Pass |
| | | 5725.0 | -40.24 | 2.00 | -38.24 | Average | 27.0 | Pass |
| | | 5720.0 | -50.93 | 2.00 | -48.93 | Average | 15.6 | Pass |
| | | 5700.0 | -49.41 | 2.00 | -47.41 | Average | 10 | Pass |
| | | 5650.0 | -59.14 | 2.00 | -57.14 | Average | -27.0 | Pass |
| | | 5850.0 | -41.48 | 2.00 | -39.48 | Peak | 27.0 | Pass |
| | | 5855.0 | -55.37 | 2.00 | -53.37 | Peak | 15.6 | Pass |
| | | 5875.0 | -42.26 | 2.00 | -40.26 | Peak | 10 | Pass |
| | | 5925.0 | -55.79 | 2.00 | -53.79 | Peak | -27.0 | Pass |
| | | 5850.0 | -45.06 | 2.00 | -43.06 | Average | 27.0 | Pass |
| | | 5855.0 | -57.95 | 2.00 | -55.95 | Average | 15.6 | Pass |
| | | 5875.0 | -47.89 | 2.00 | -45.89 | Average | 10 | Pass |
| | | 5925.0 | -59.44 | 2.00 | -57.44 | Average | -27.0 | Pass |

Undesirable Emissions Measurement

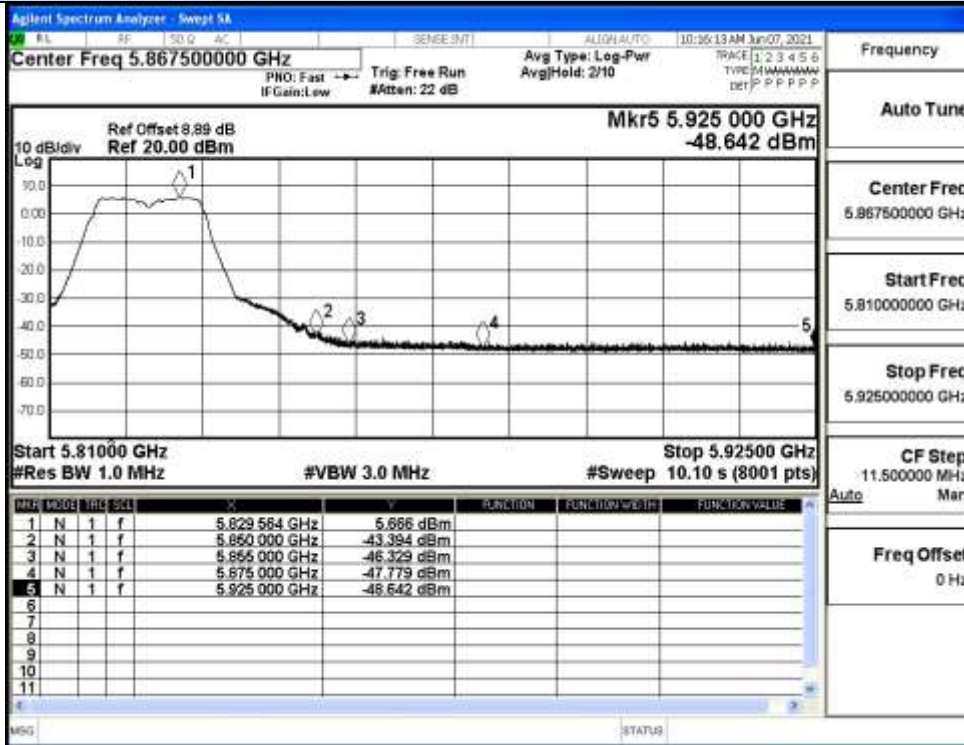


IEEE 802.11a / Channel 149 / 5745MHz / Peak

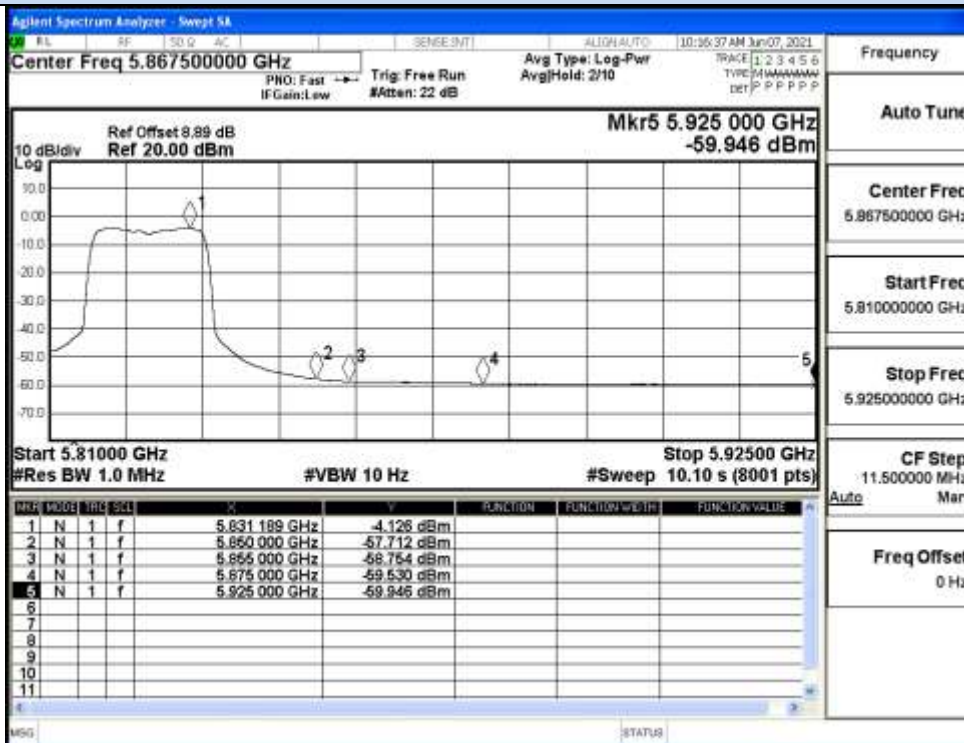


IEEE 802.11a / Channel 148 / 5745MHz / Average

Undesirable Emissions Measurement

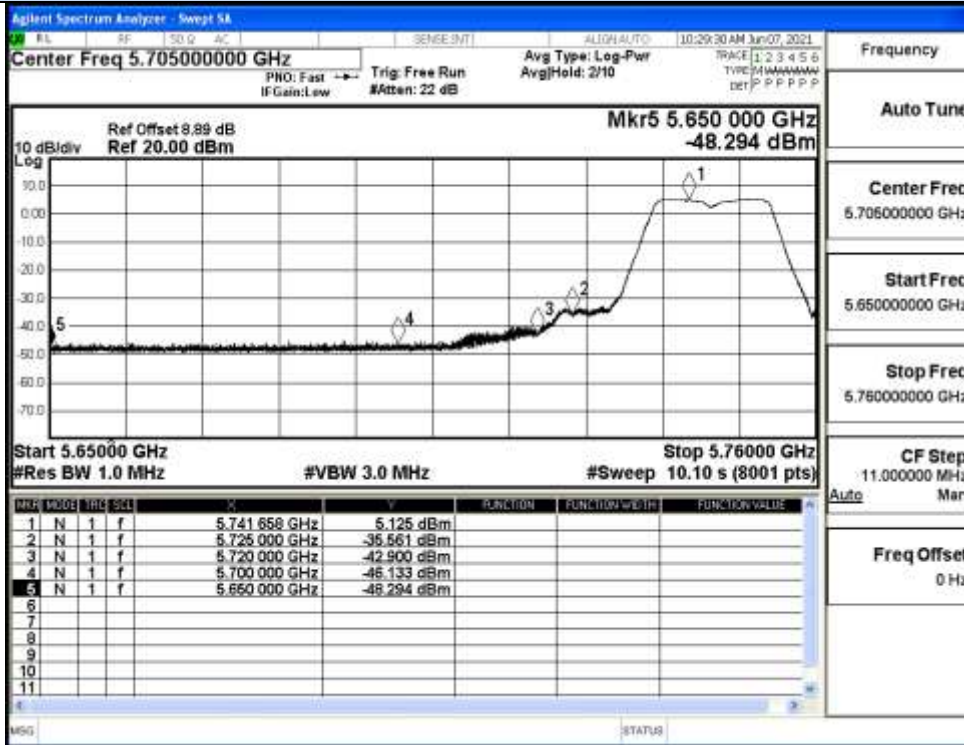


IEEE 802.11a / Channel 165 / 5825MHz / Peak

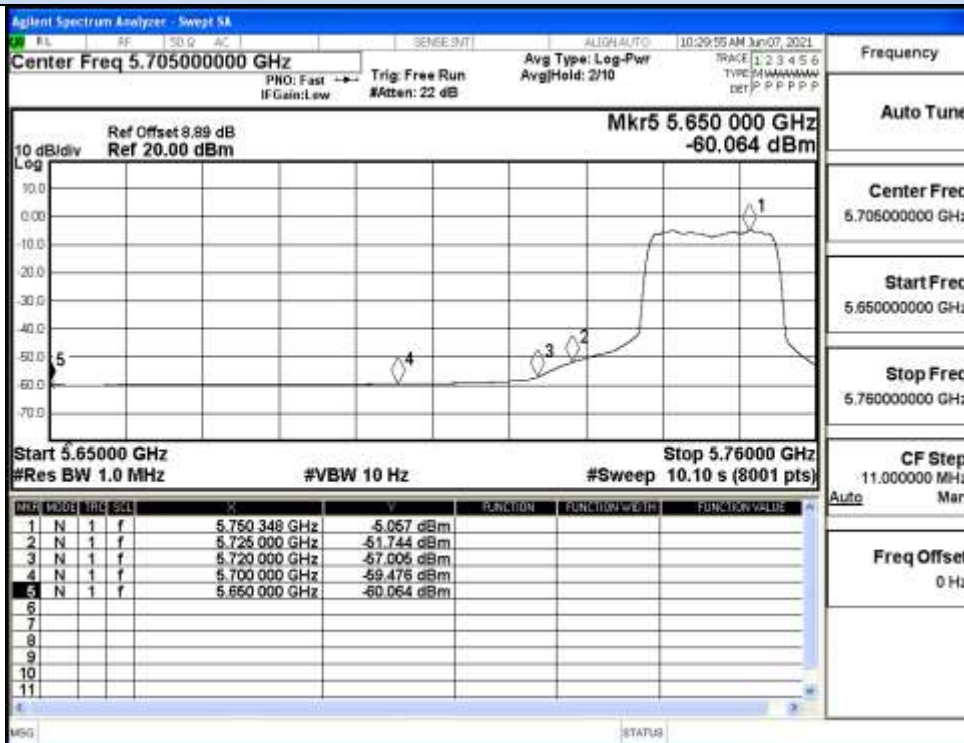


IEEE 802.11a / Channel 165 / 5825MHz / Average

Undesirable Emissions Measurement

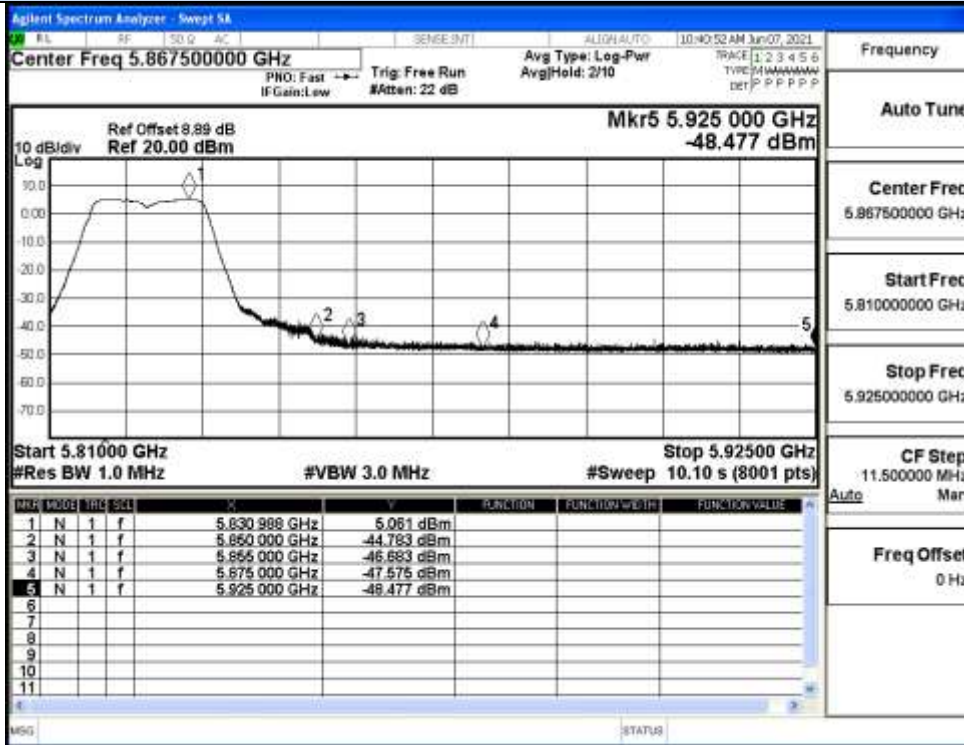


IEEE 802.11n20 / Channel 149 / 5745MHz / Peak

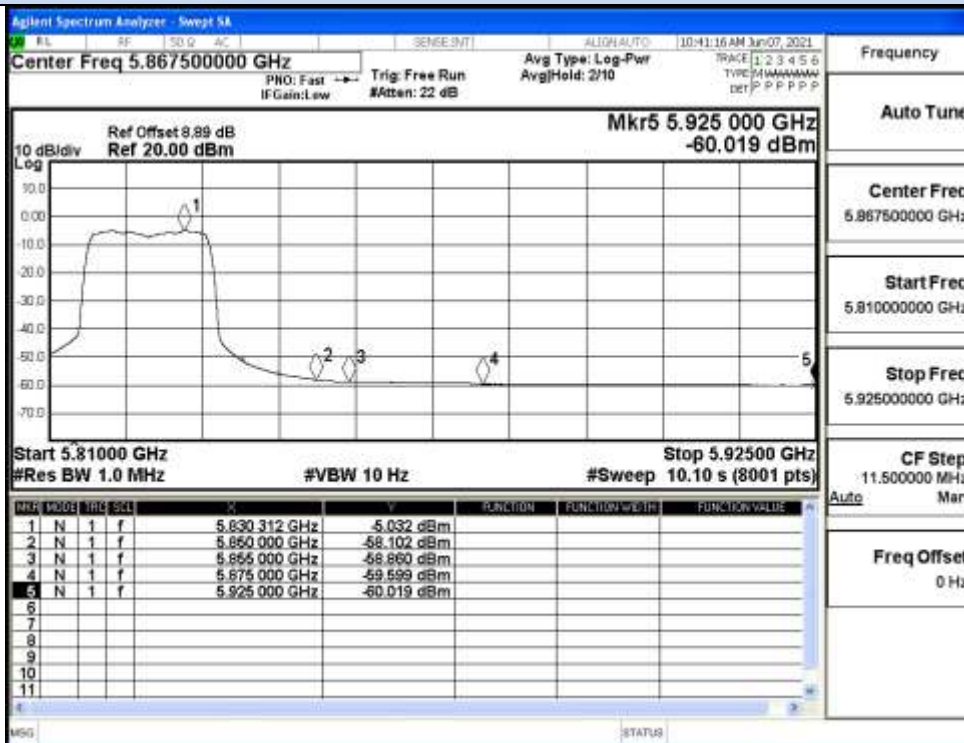


IEEE 802.11n20 / Channel 149 / 5745MHz / Average

Undesirable Emissions Measurement

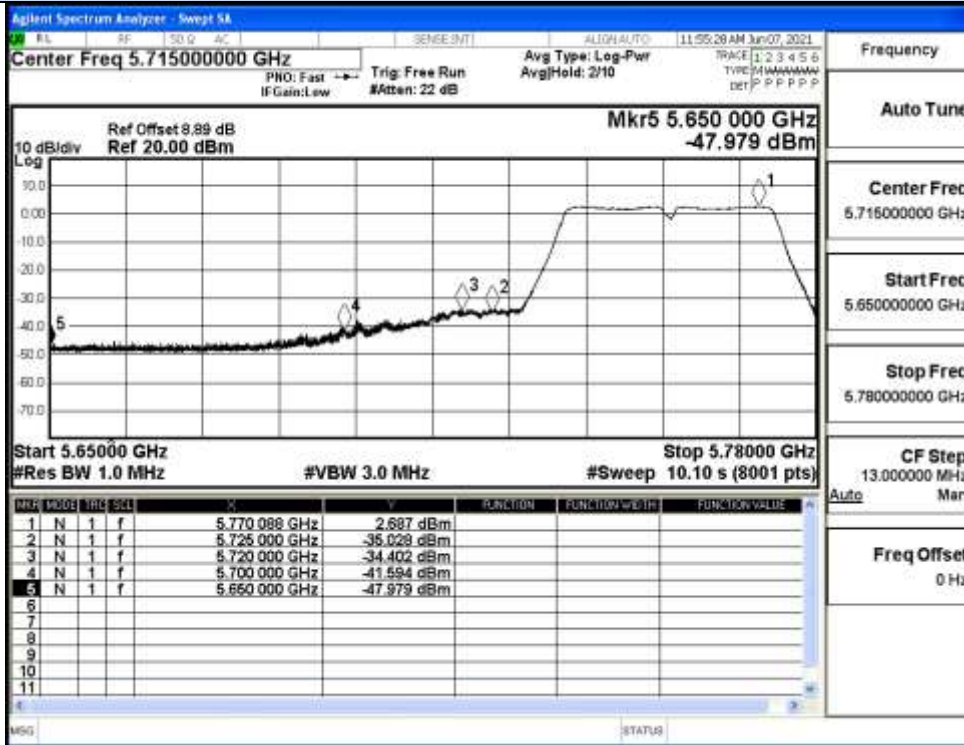


IEEE 802.11n20 / Channel 165 / 5825MHz / Peak

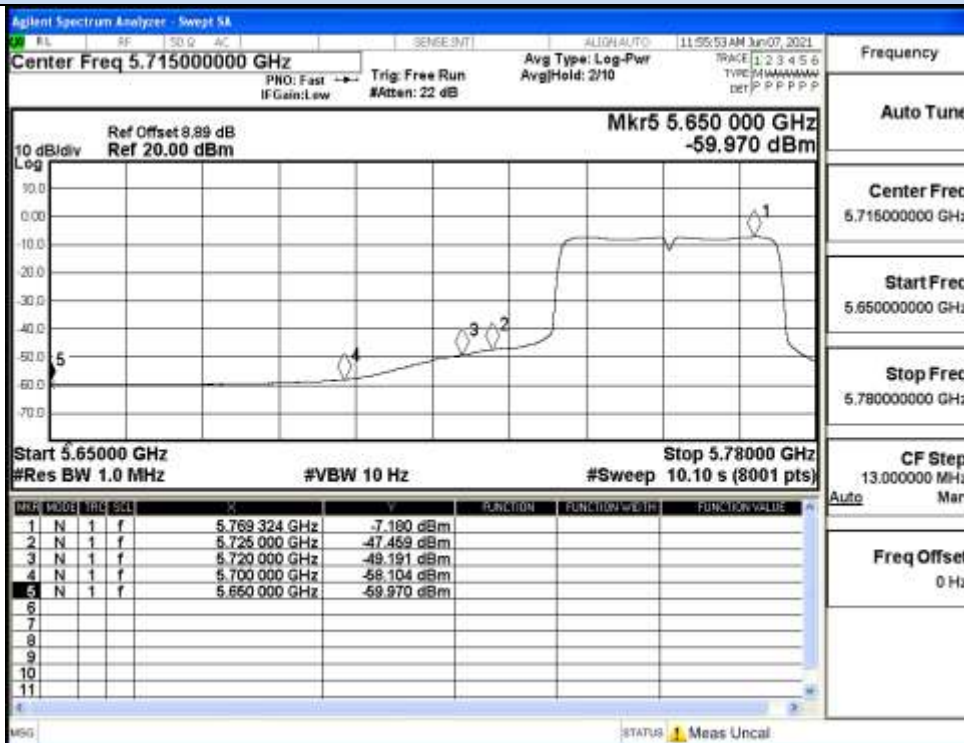


IEEE 802.11n20 / Channel 165 / 5825MHz / Average

Undesirable Emissions Measurement

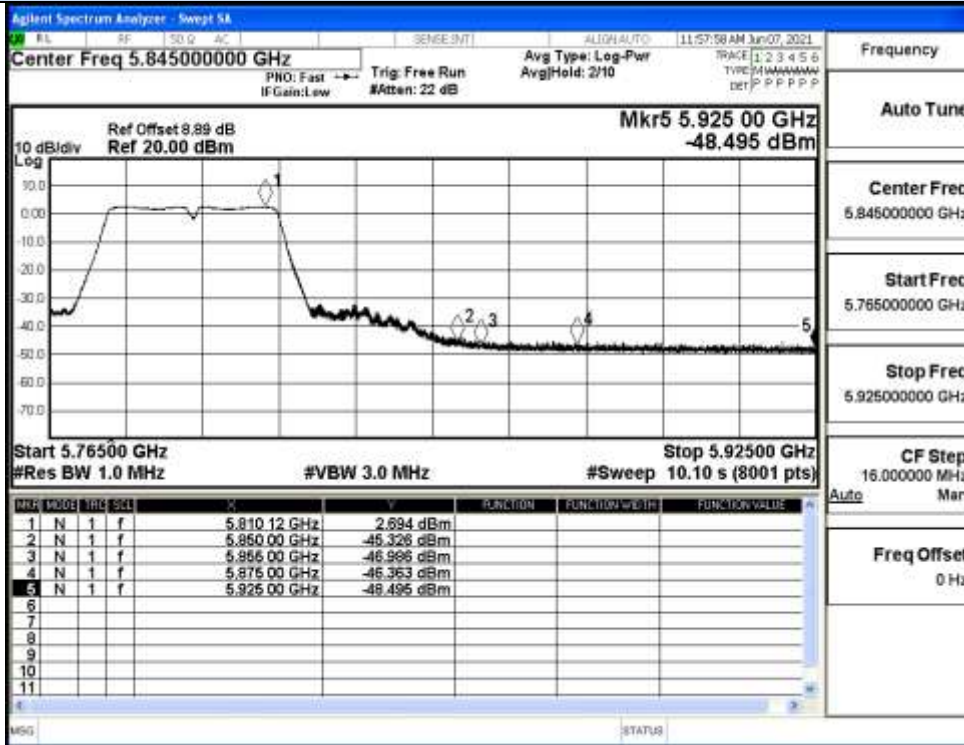


IEEE 802.11n40 / Channel 151 / 5755MHz / Peak

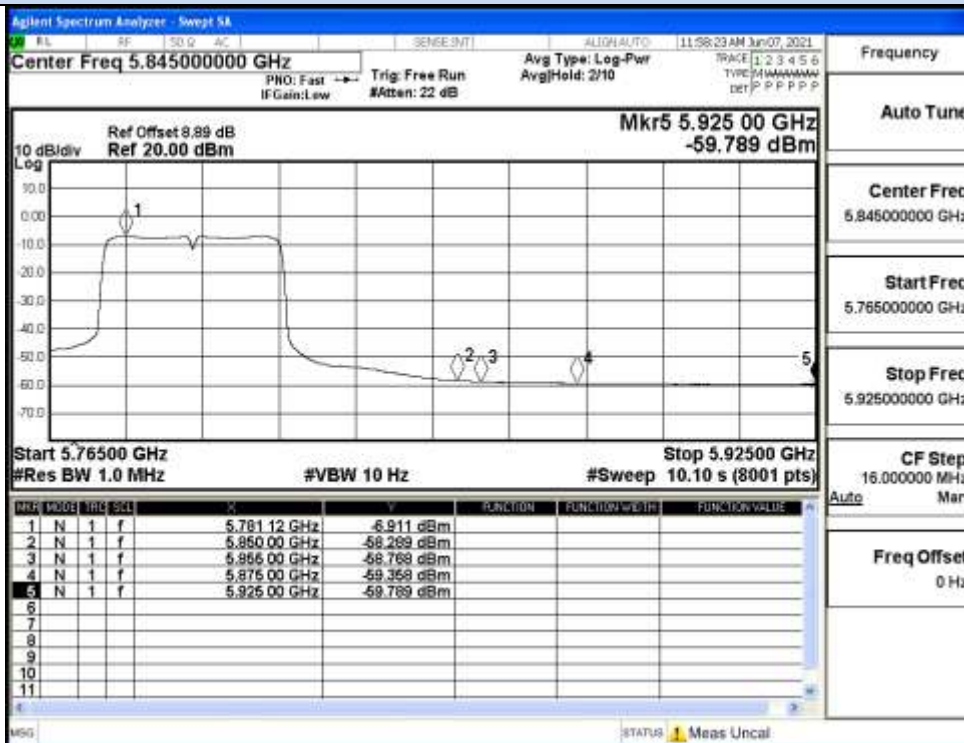


IEEE 802.11n40 / Channel 151 / 5755MHz / Average

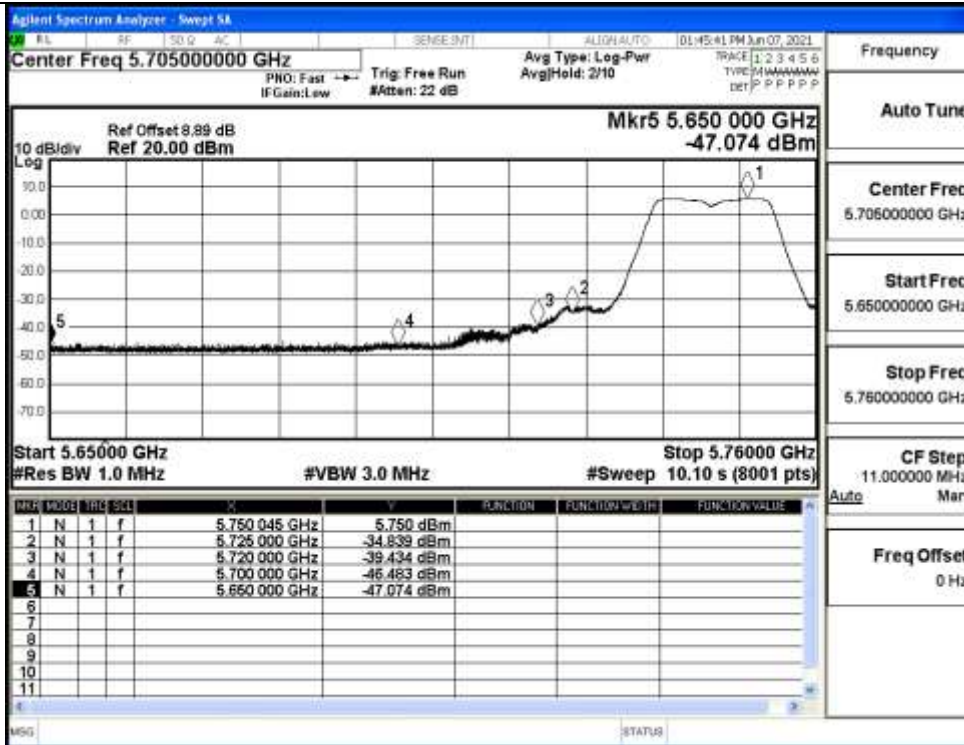
Undesirable Emissions Measurement



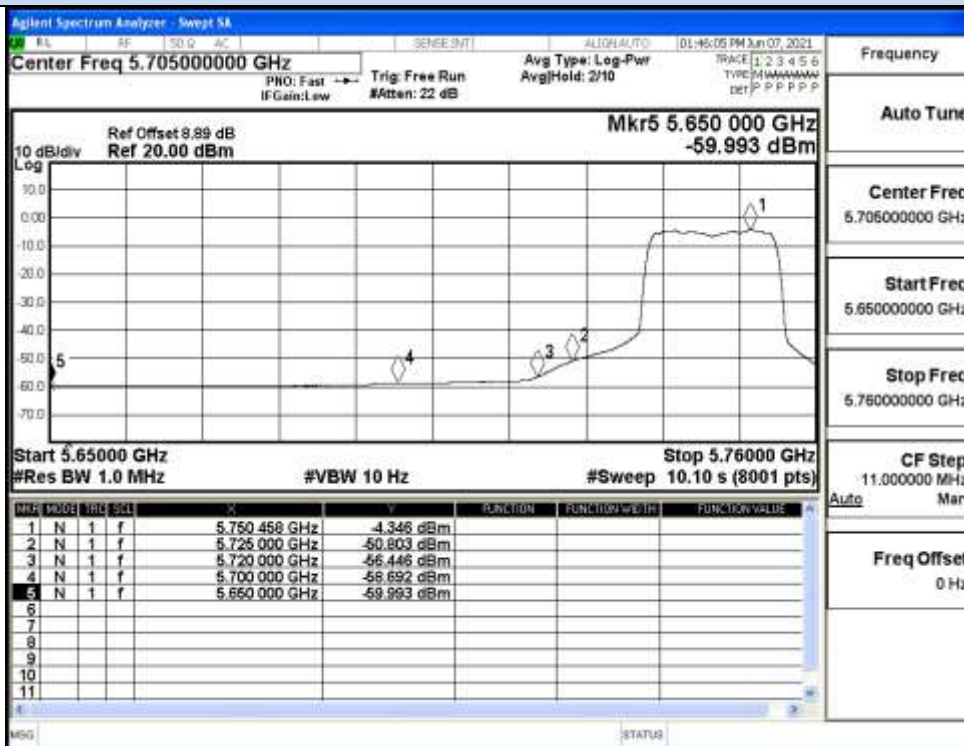
IEEE 802.11n40 / Channel 159 / 5795MHz / Peak



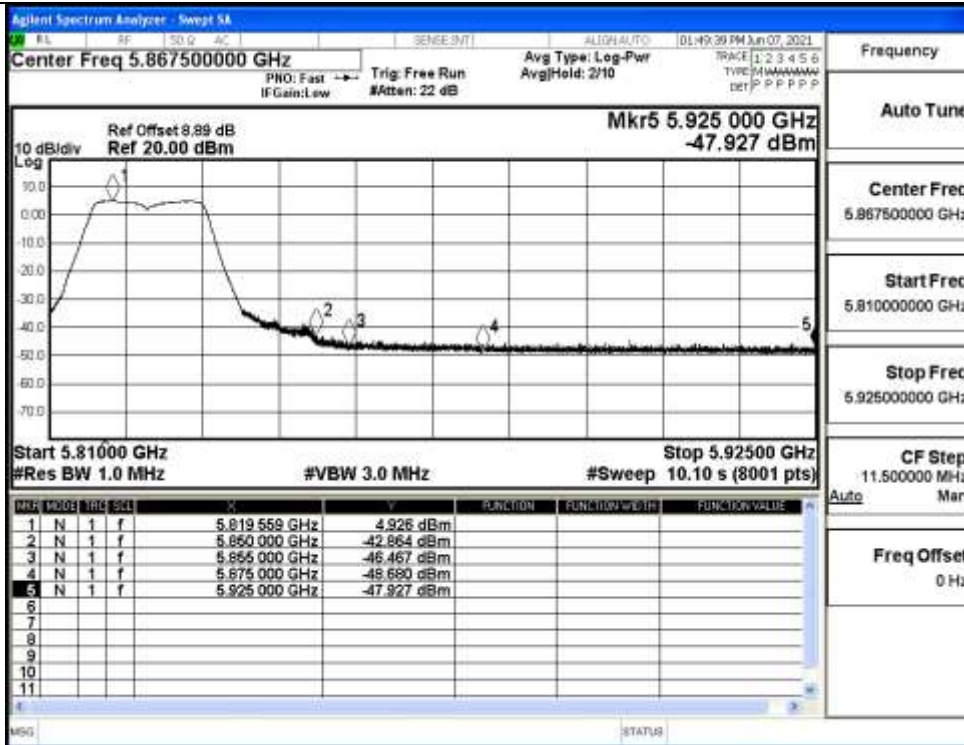
IEEE 802.11n40 / Channel 159 / 5795MHz / Average



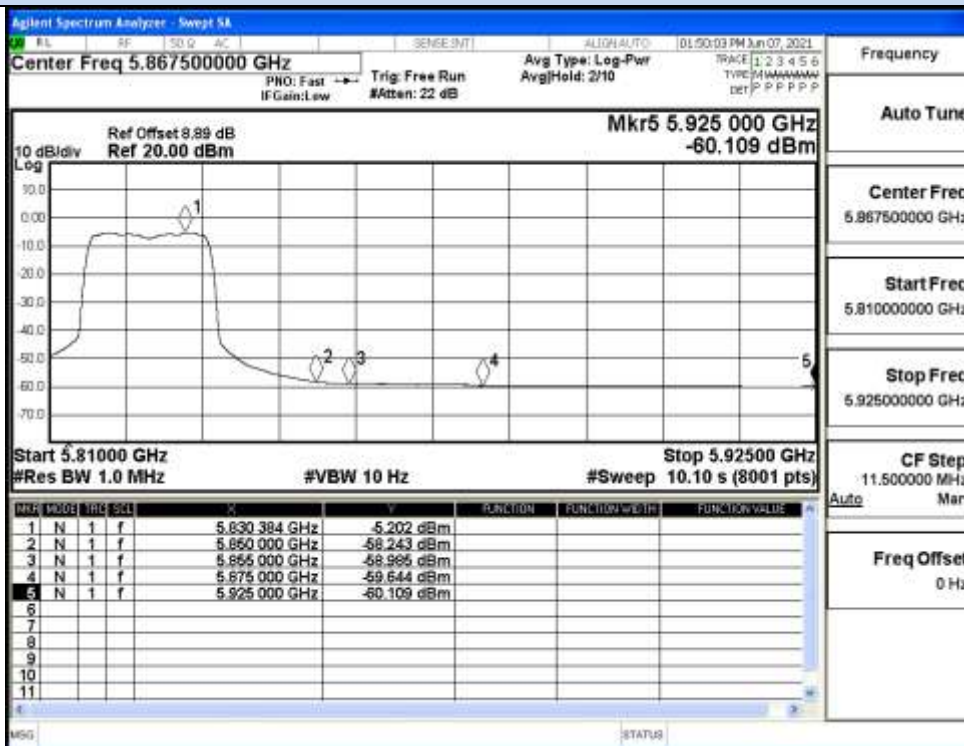
IEEE 802.11ac20 / Channel 149 / 5745MHz / Peak



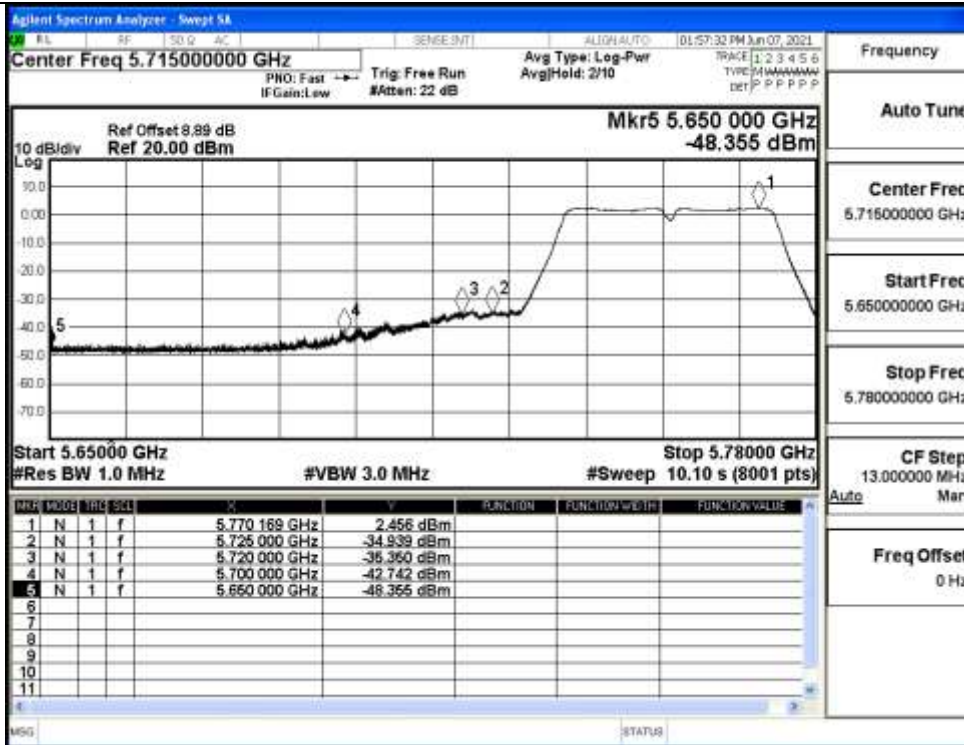
IEEE 802.11ac20 / Channel 149 / 5745MHz / Average



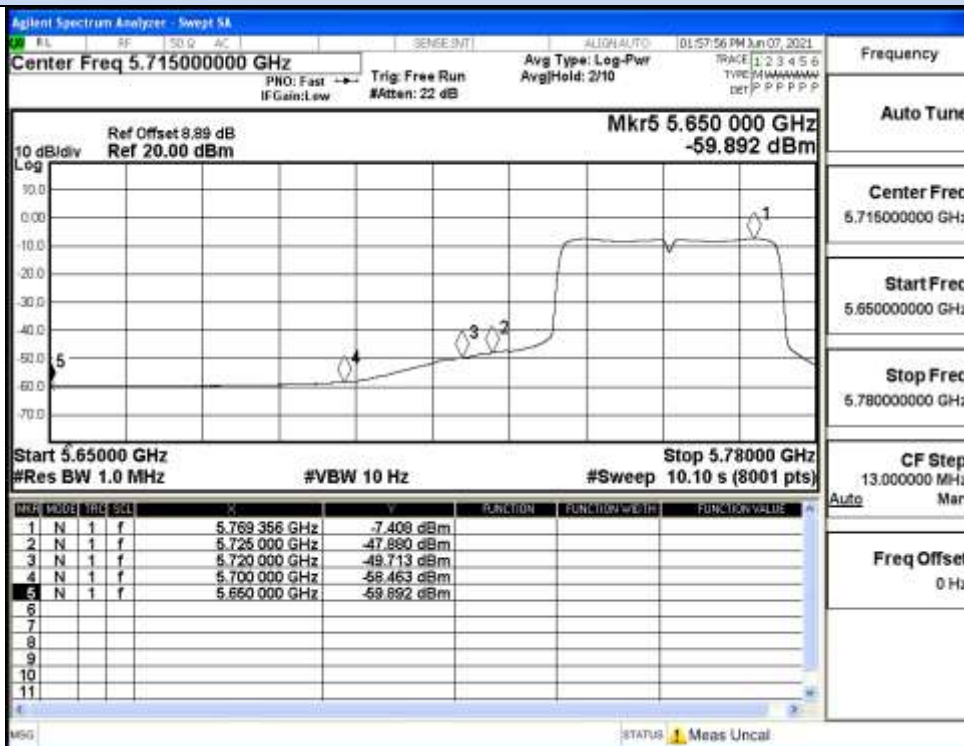
IEEE 802.11ac20 / Channel 165 / 5825MHz / Peak



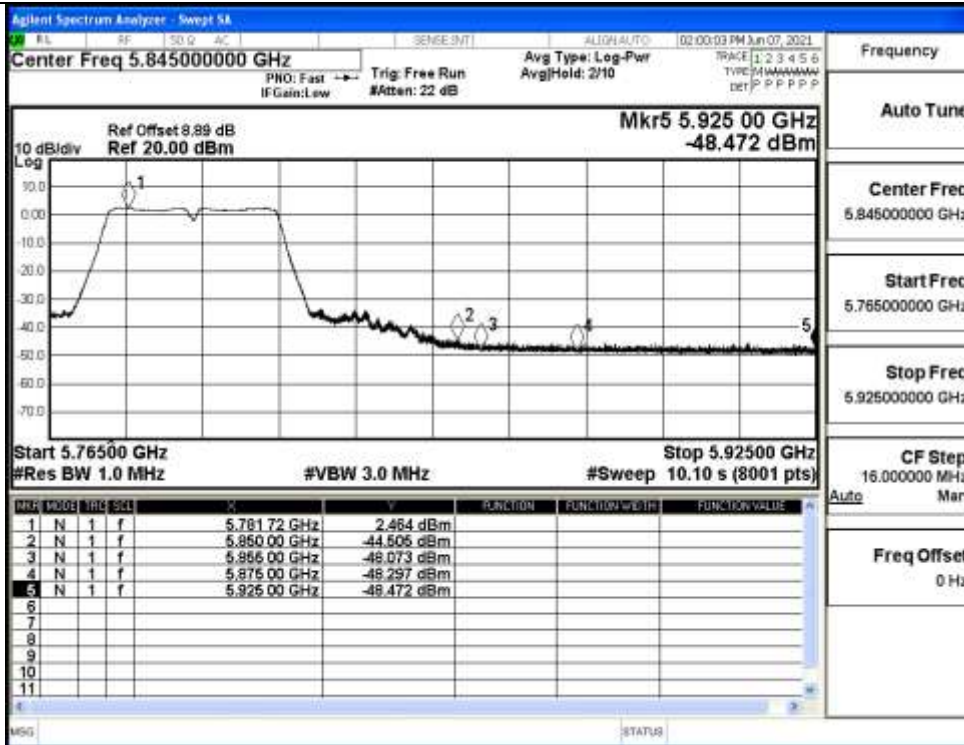
IEEE 802.11ac20 / Channel 165 / 5825MHz / Average



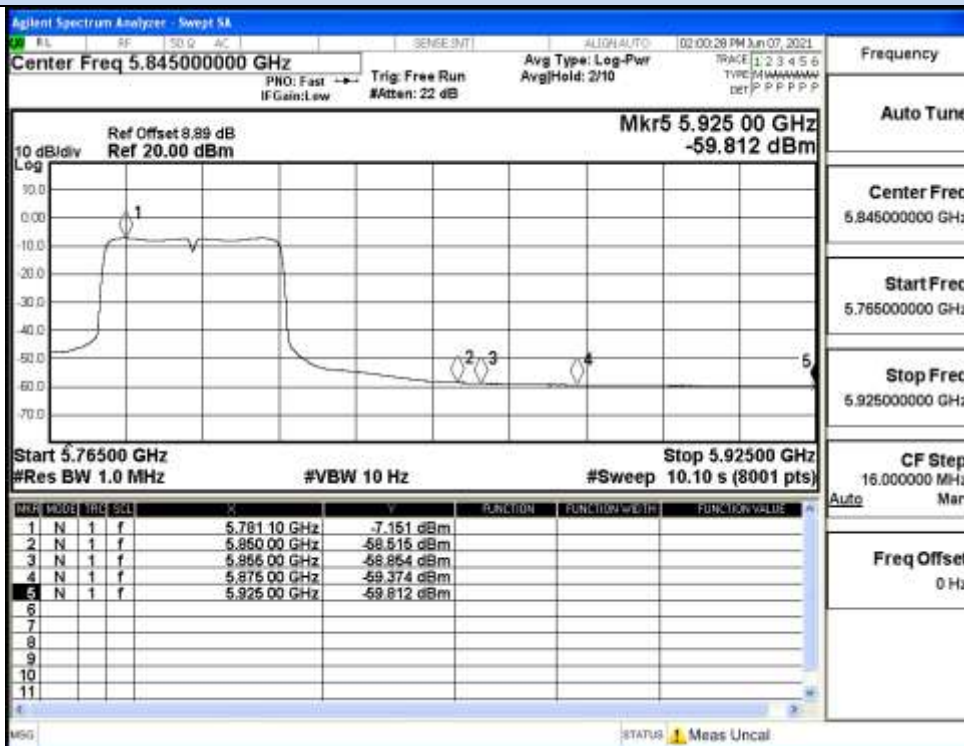
IEEE 802.11ac40 / Channel 151 / 5755MHz / Peak



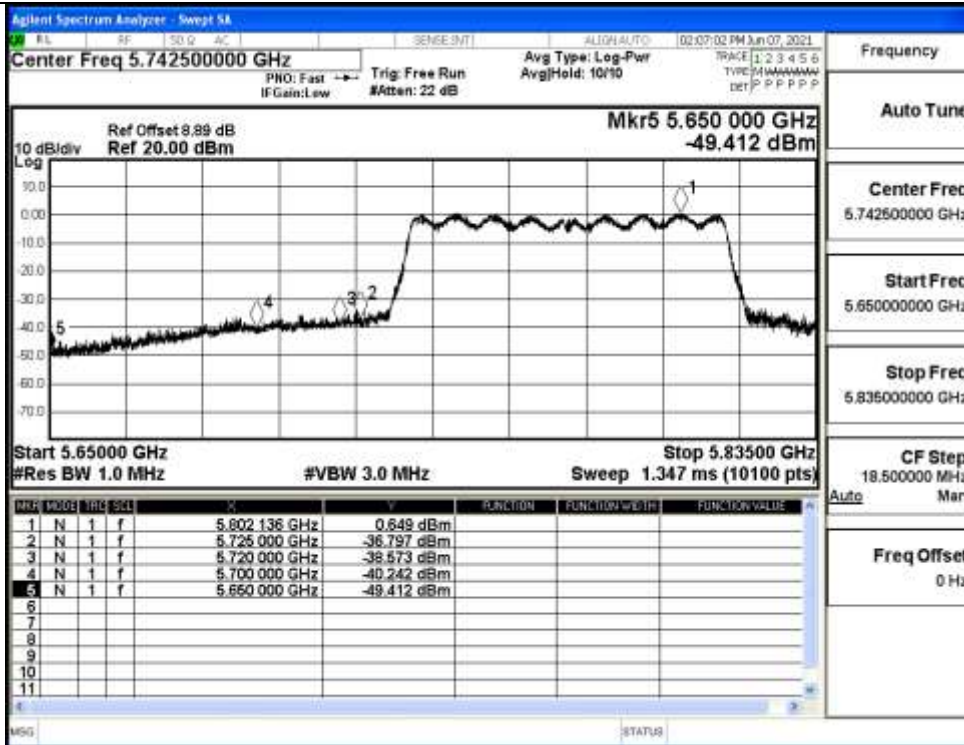
IEEE 802.11ac40 / Channel 151 / 5755MHz / Average



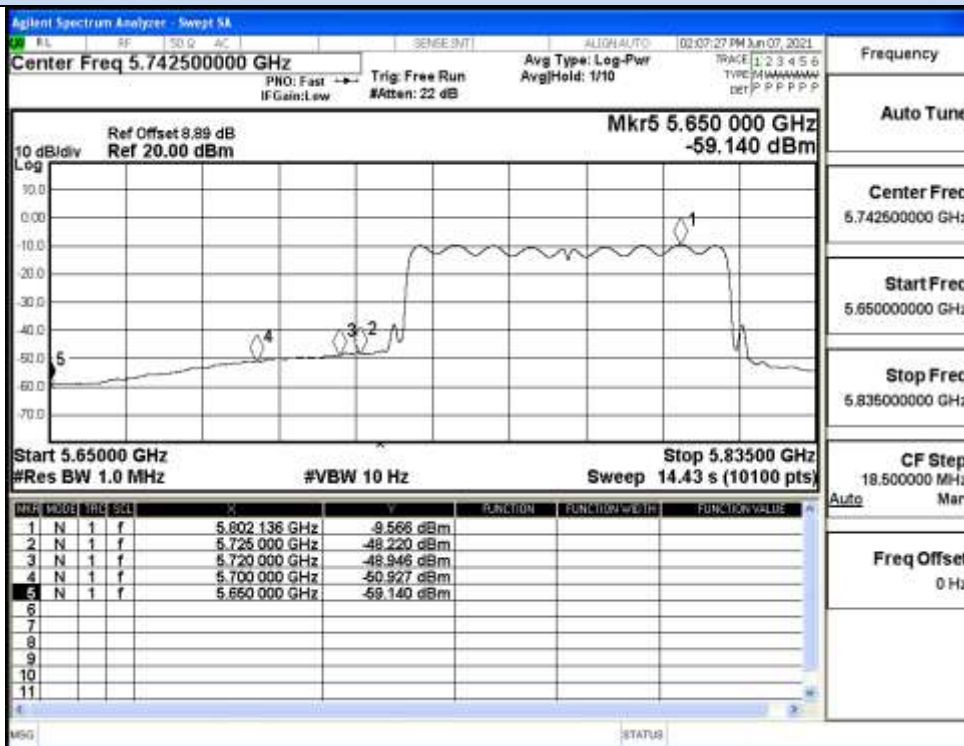
IEEE 802.11ac40 / Channel 159 / 5795MHz / Peak



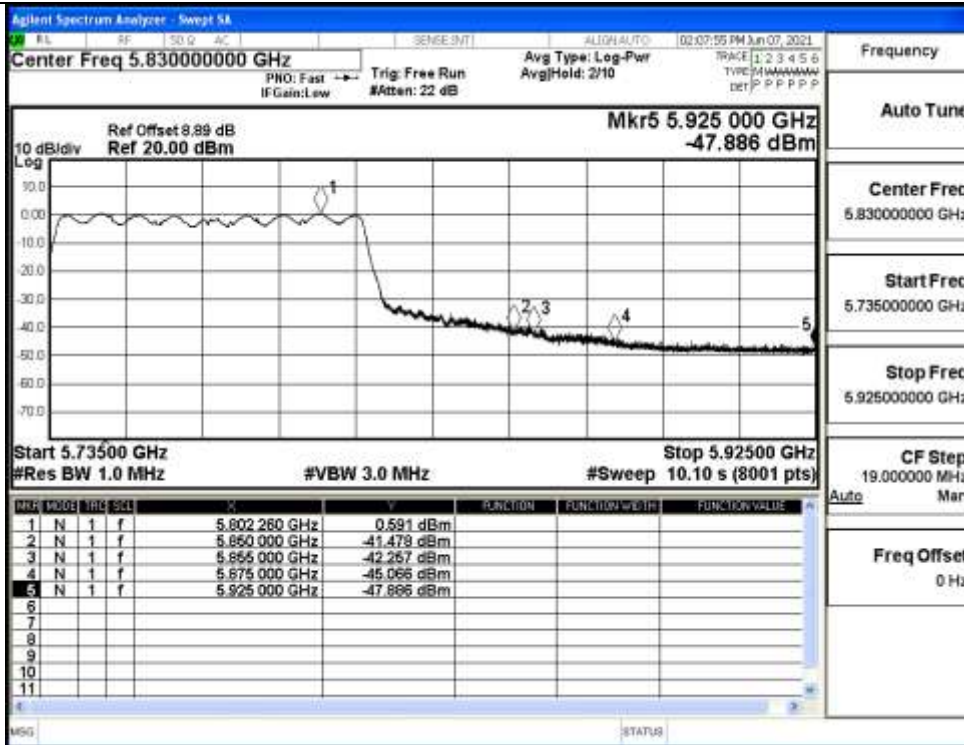
IEEE 802.11ac40 / Channel 159 / 5795MHz / Average



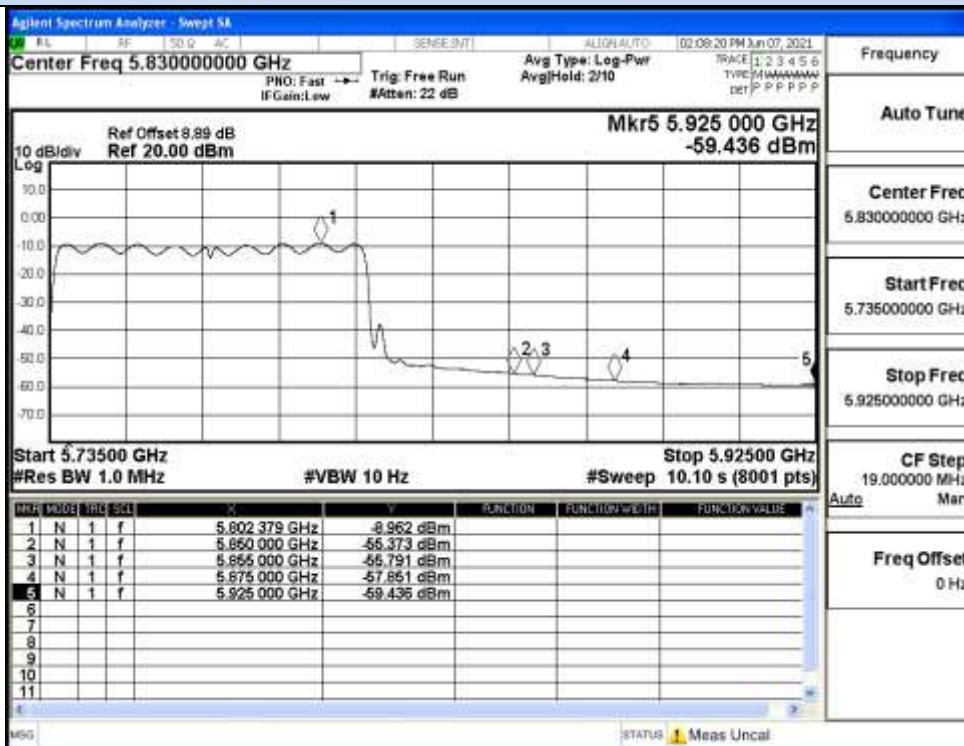
IEEE 802.11ac80 / Channel 155 / 5775MHz / Peak



IEEE 802.11ac80 / Channel 155 / 5775MHz / Average



IEEE 802.11ac80 / Channel 155/ 5775MHz / Peak



IEEE 802.11ac80 / Channel 155 / 5775MHz / Average