

## Appendix E

### RF Test Data for 5.8G WLAN (Conducted Measurement)

Product Name: Formuler CC

Trade Mark: FORMULER

Test Model: CC (US)

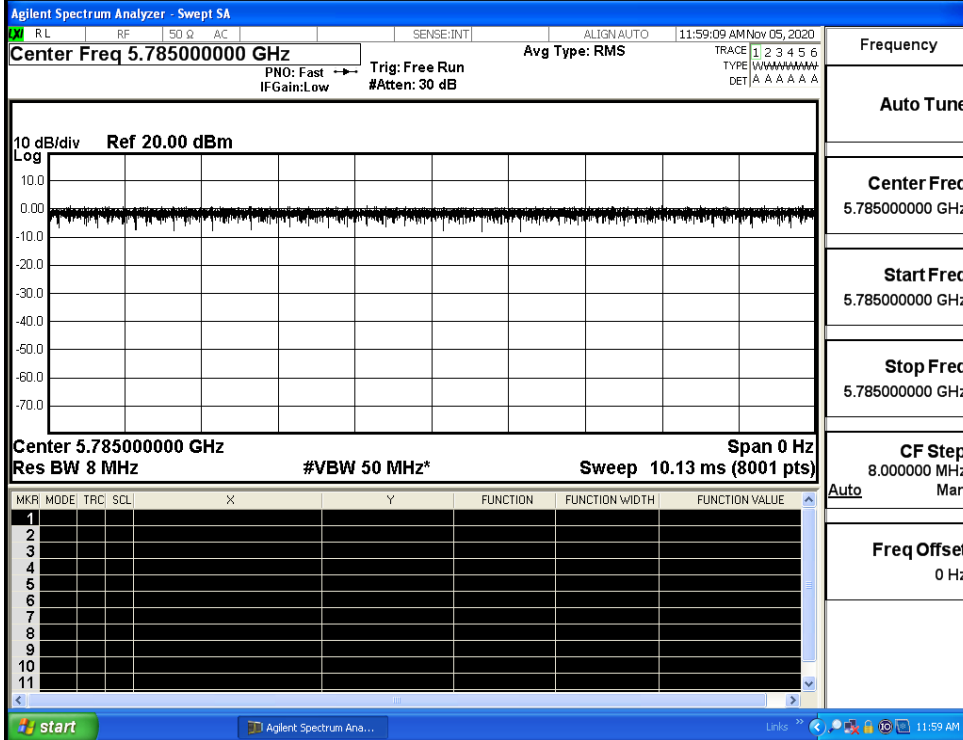
#### Environmental Conditions

Temperature:	25 ° C
Relative Humidity:	50%
ATM Pressure:	100.0 kPa
Test Engineer:	Ken Hu
Supervised by:	Tom.Liu

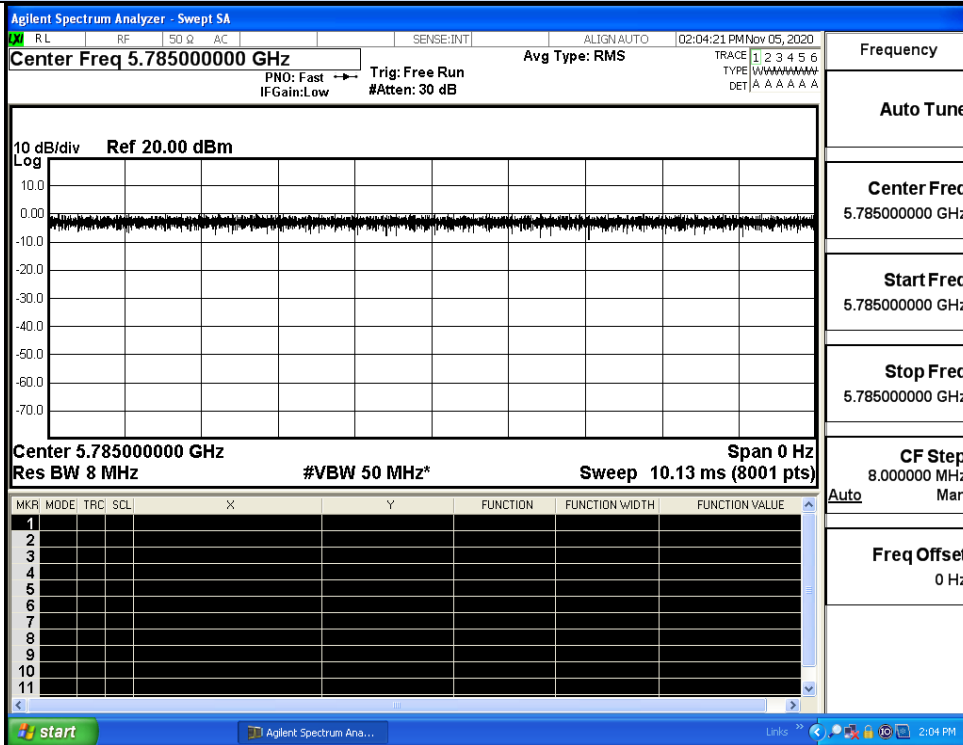
#### C.1 Duty Cycle

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

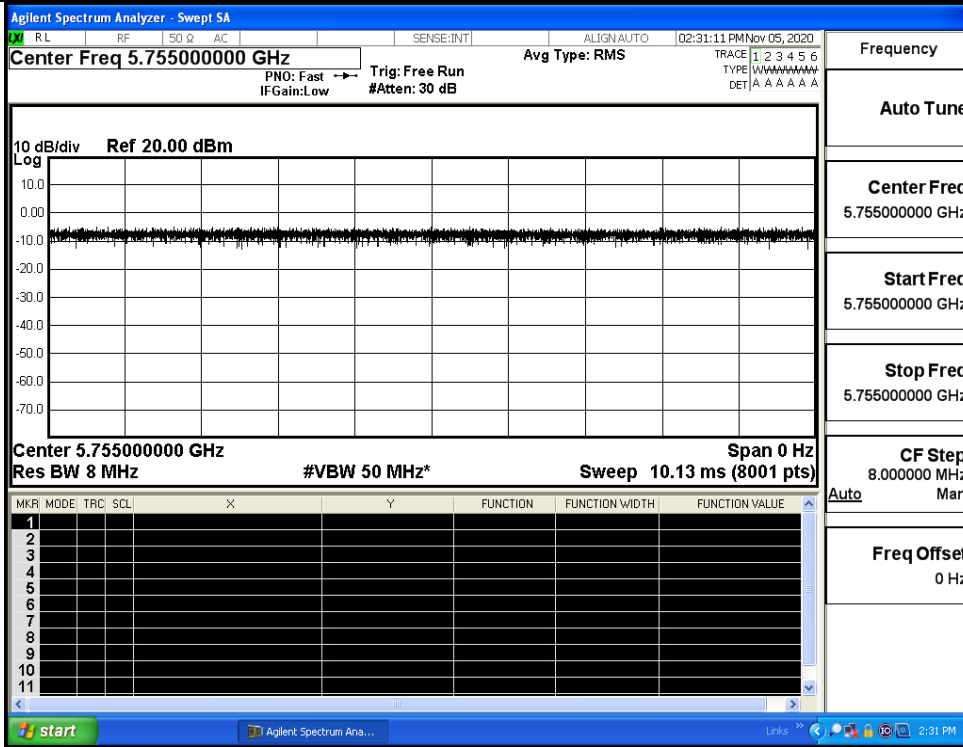
On Time and Duty Cycle



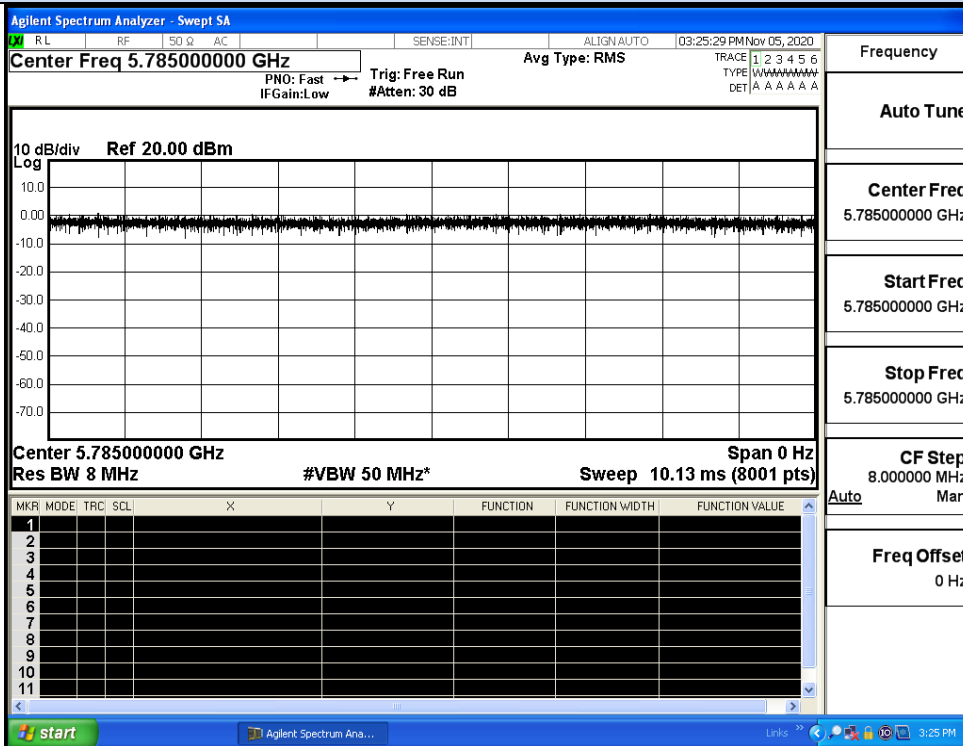
IEEE 802.11a



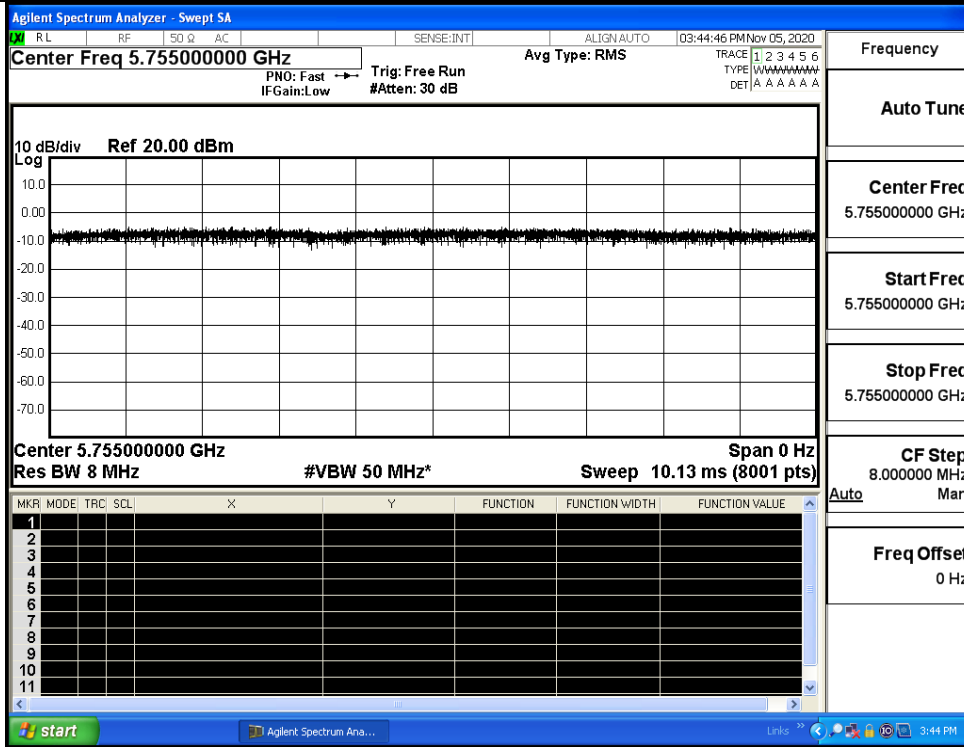
IEEE 802.11n HT20



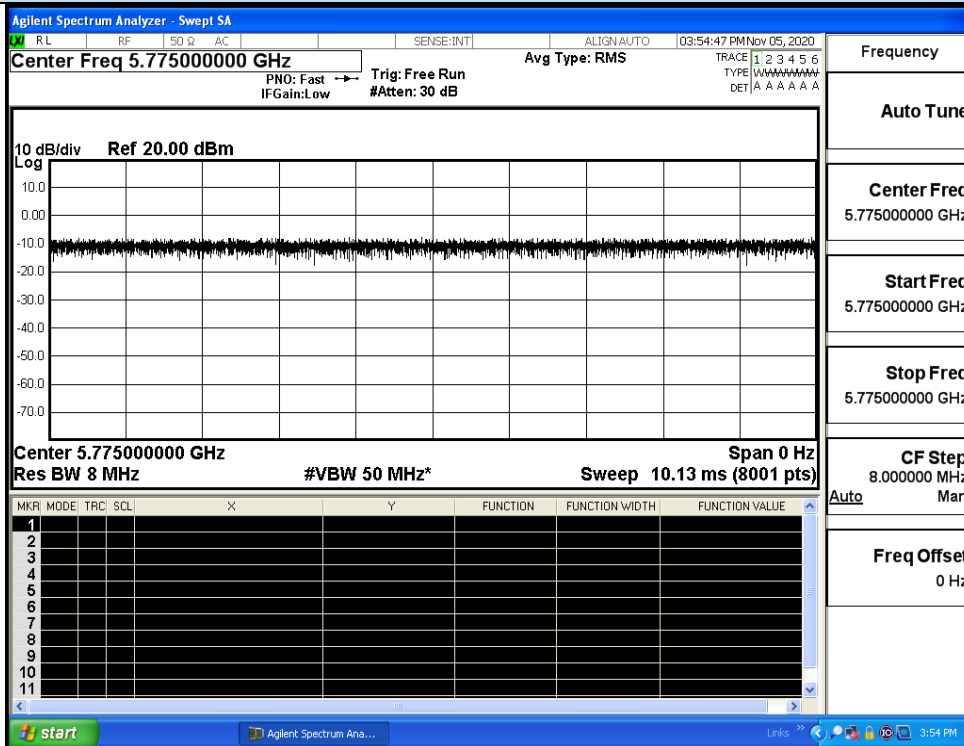
IEEE 802.11n HT40



IEEE 802.11AC20



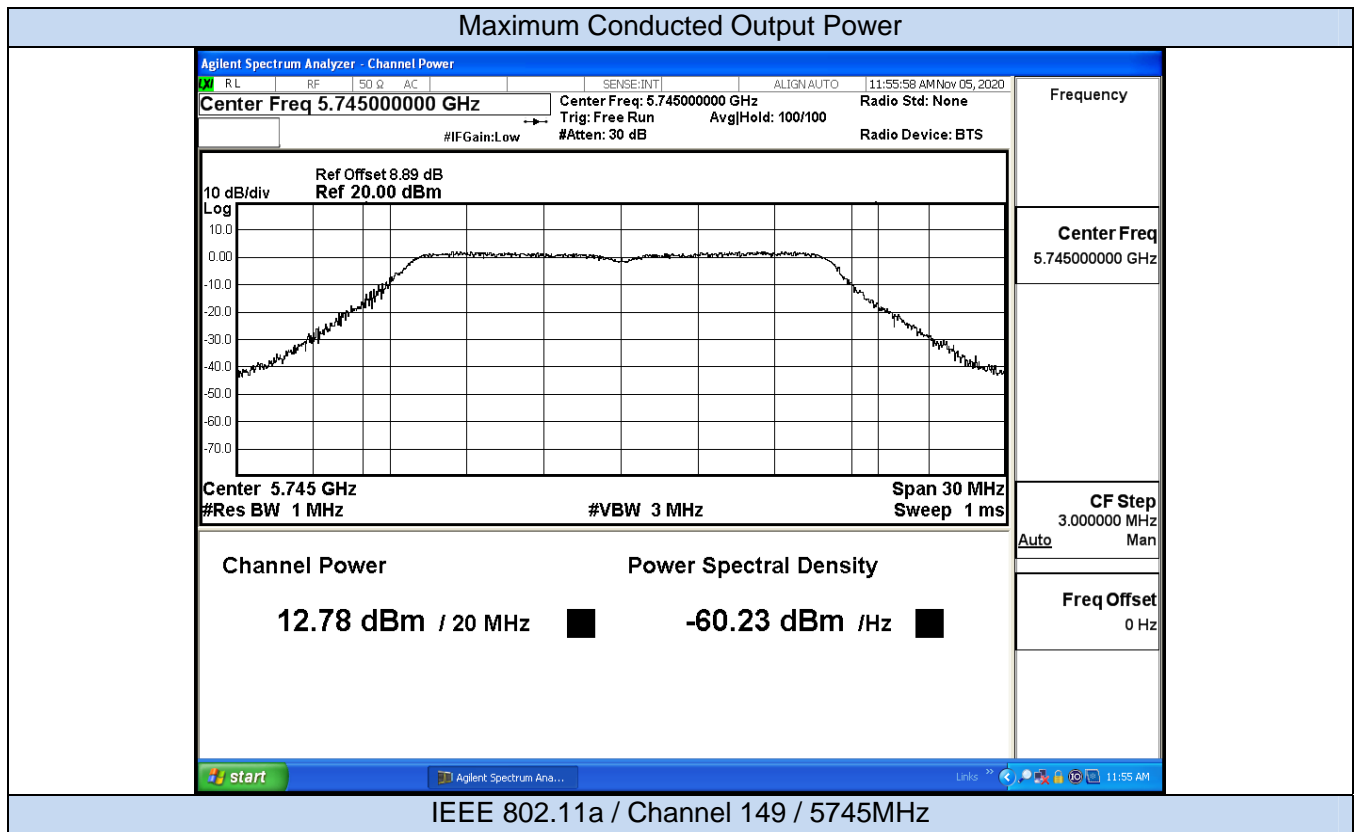
IEEE 802.11AC40

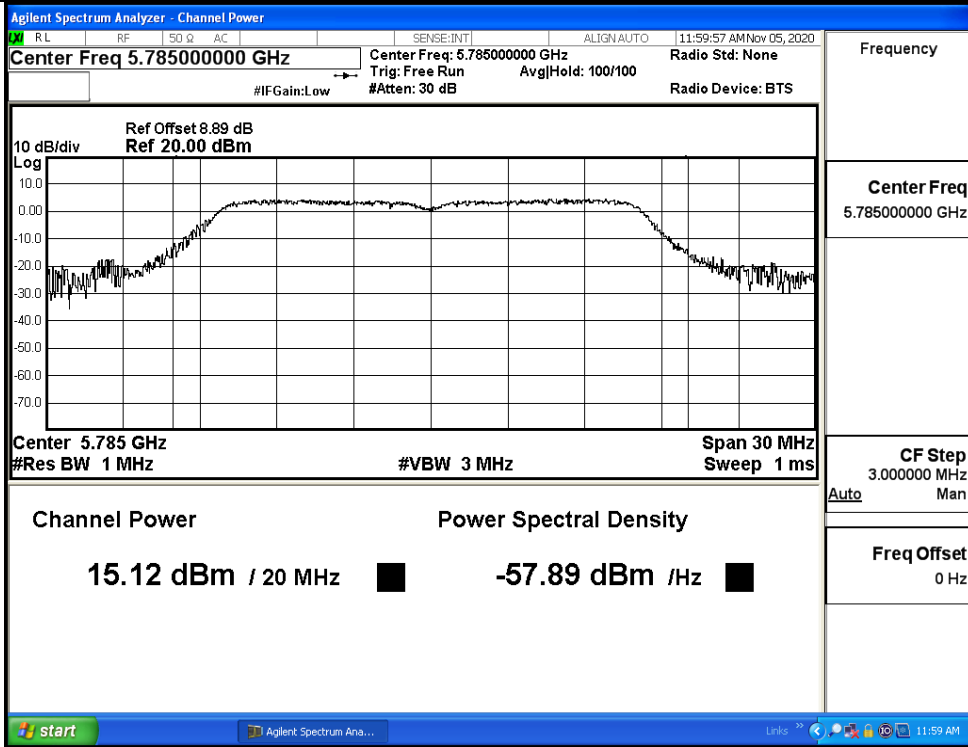


IEEE 802.11AC80

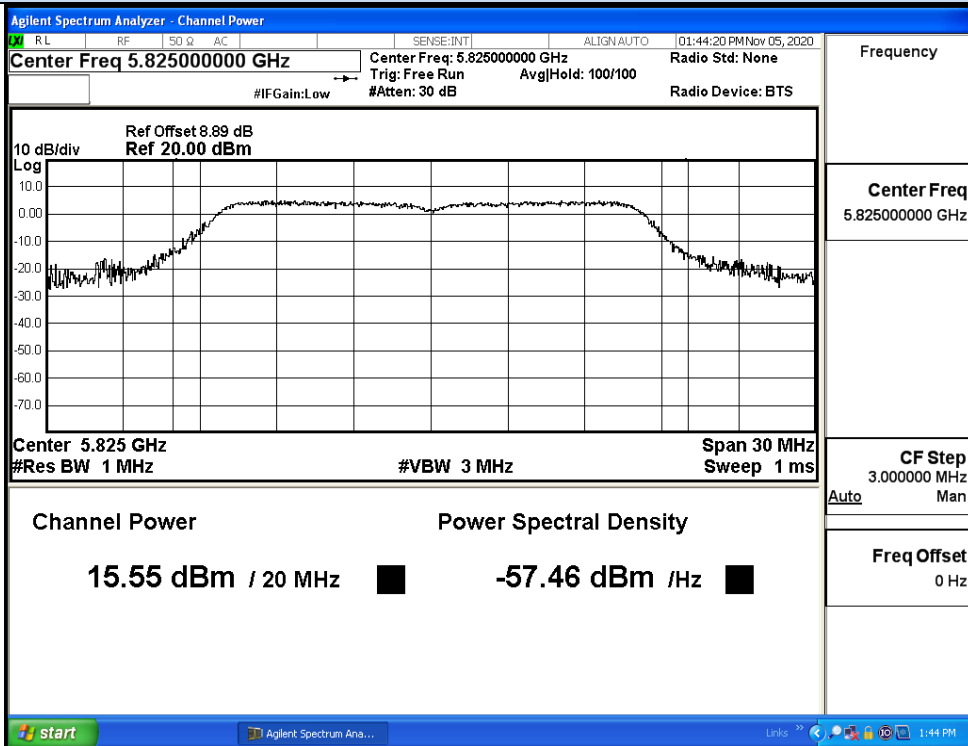
### C.2 Maximum Conduct Output Power

Test Mode	Channel I	Frequency (MHz)	AVG Conducted Power (dBm)	Duty Cycle Factor(dB)	Report Conducted Power(dBm)	Limit (dBm)	Verdict
11A	149	5745	12.78	0	12.78	30	Pass
	157	5785	15.12	0	15.12		Pass
	165	5825	15.55	0	15.55		Pass
11N20 SISO	149	5745	13.94	0	13.94	30	Pass
	157	5785	14.62	0	14.62		Pass
	165	5825	15.56	0	15.56		Pass
11N40 SISO	151	5755	12.74	0	12.74	30	Pass
	159	5795	13.88	0	13.88		Pass
11AC20 SISO	149	5745	14.01	0	14.01	30	Pass
	157	5785	14.91	0	14.91		Pass
	165	5825	14.81	0	14.81		Pass
11AC40 SISO	151	5755	13.06	0	13.06	30	Pass
	159	5795	14.07	0	14.07		Pass
11AC80 SISO	155	5775	12.74	0	12.74	30	Pass



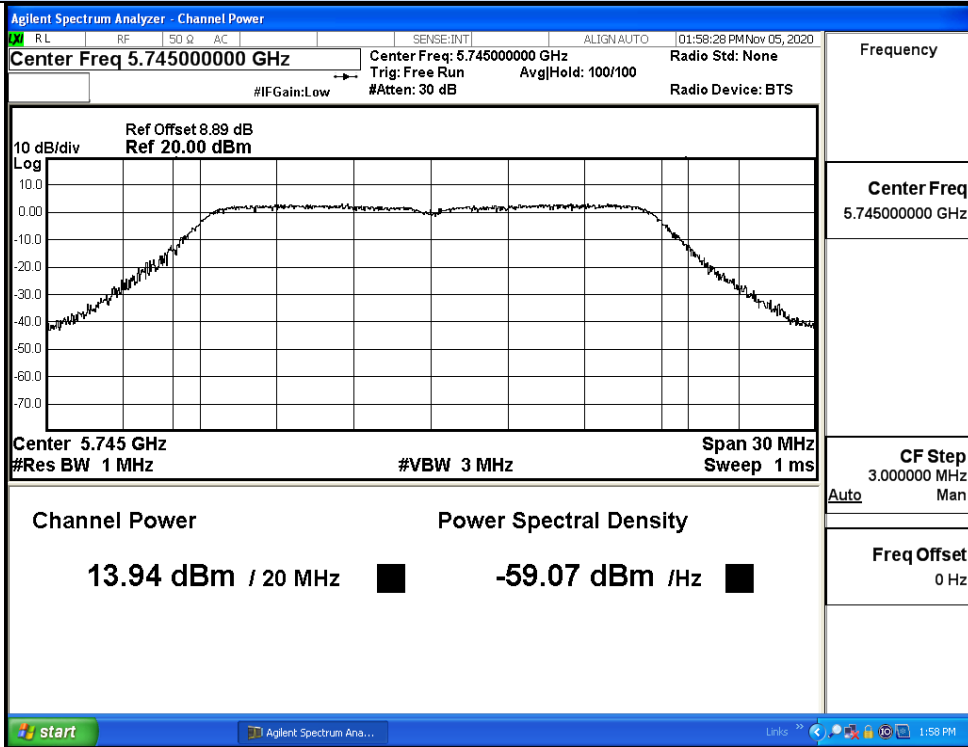


IEEE 802.11a / Channel 157 / 5785MHz

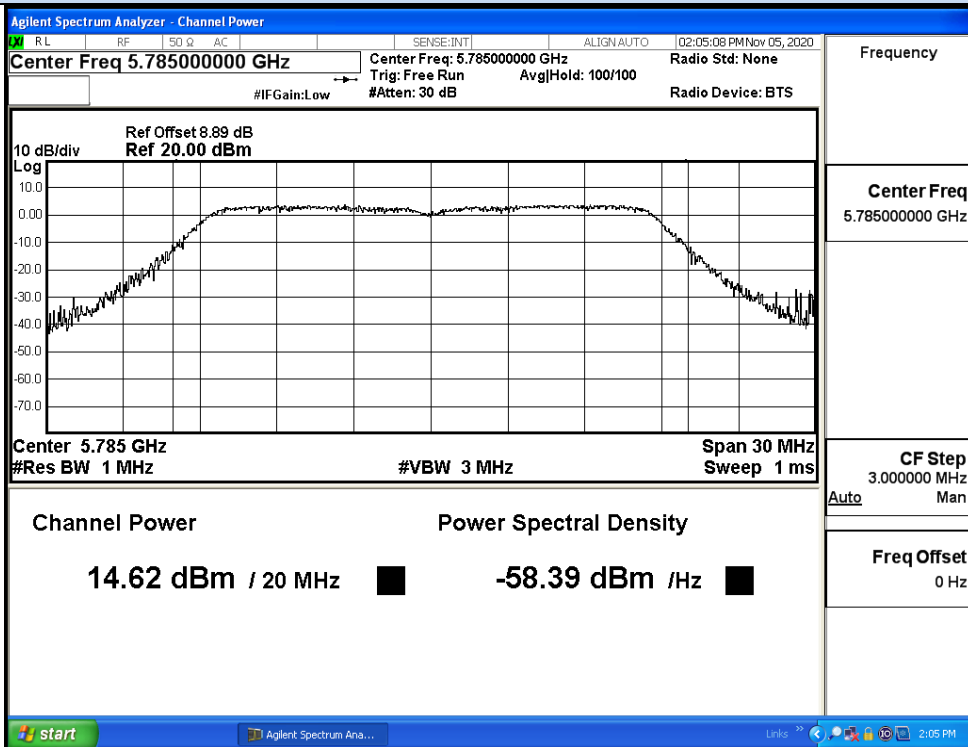


IEEE 802.11a / Channel 165 / 5825MHz

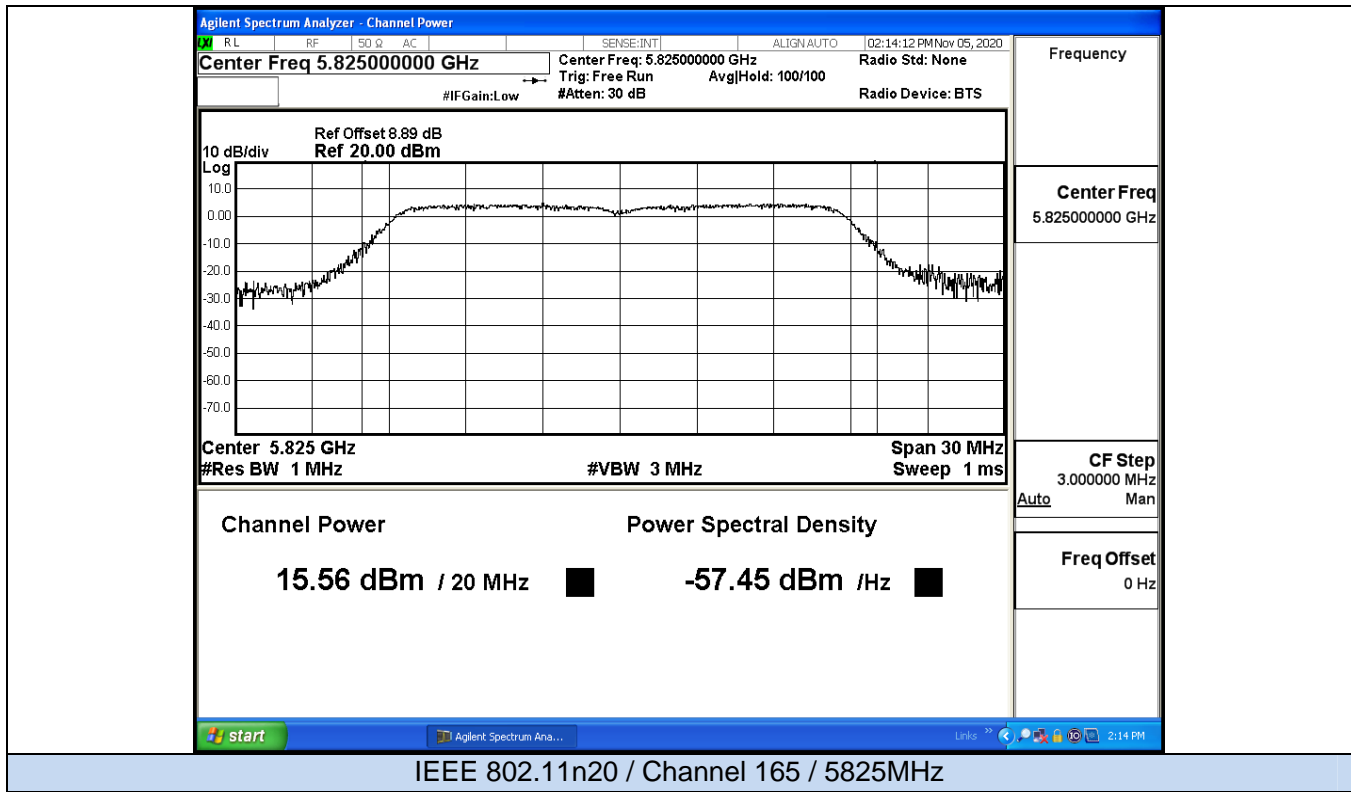
Maximum Conducted Output Power



IEEE 802.11n20 / Channel 149 / 5745MHz

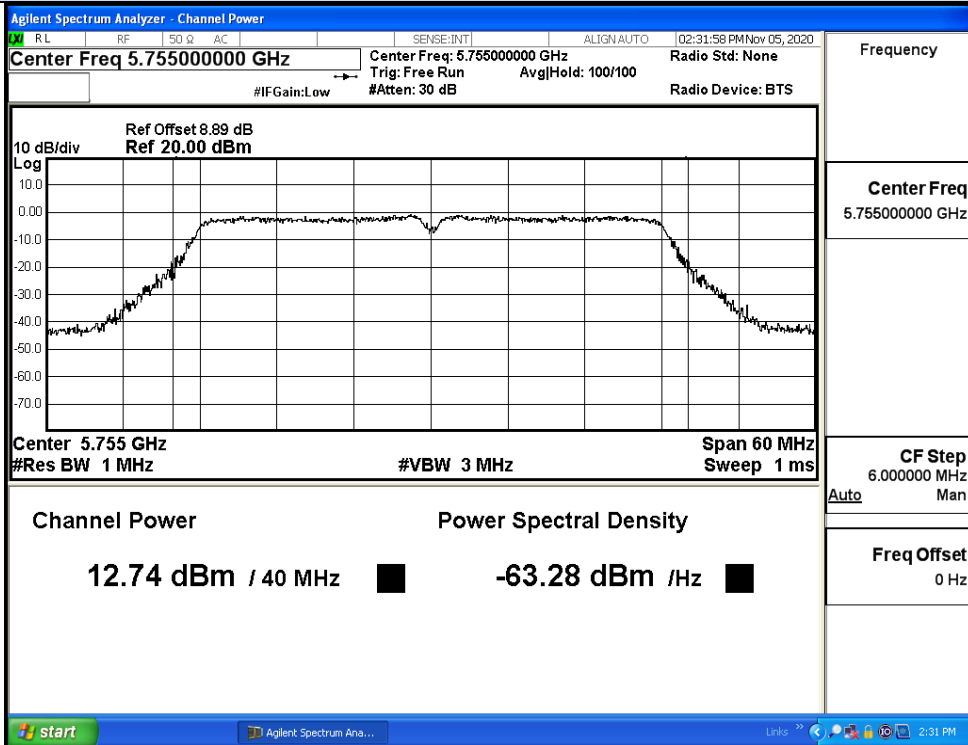


IEEE 802.11n20 / Channel 157 / 5785MHz

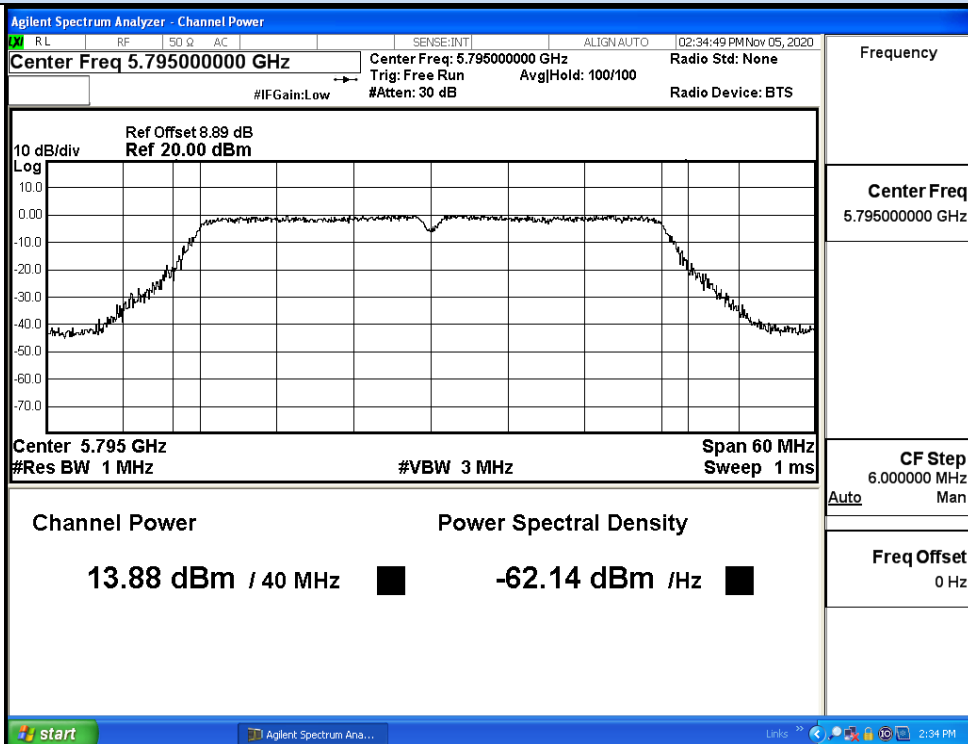




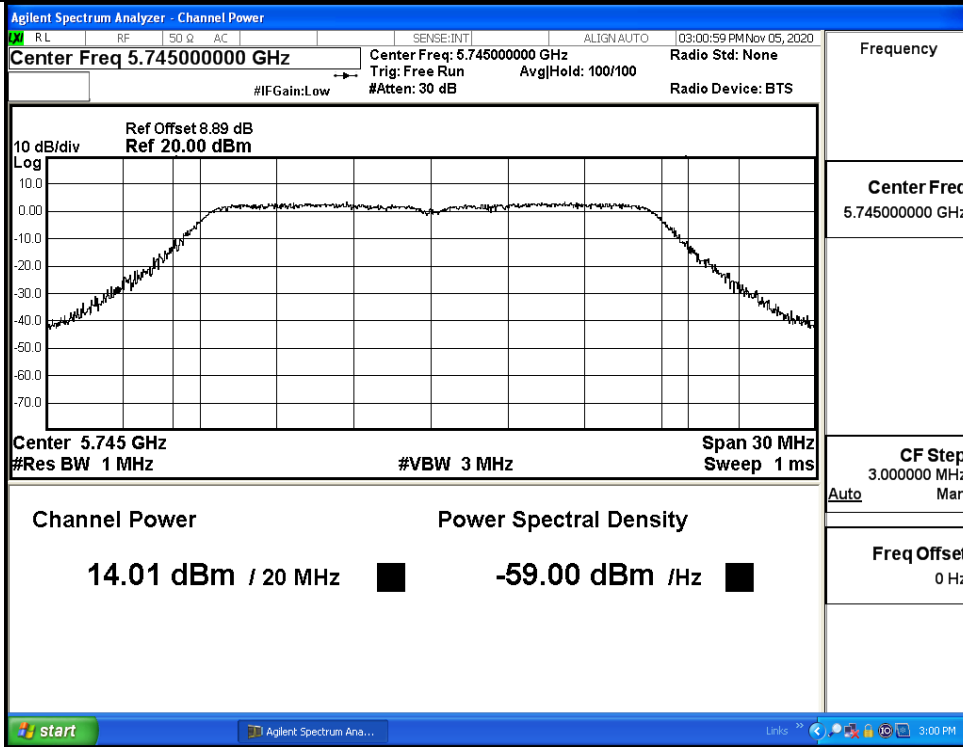
Maximum Conducted Output Power



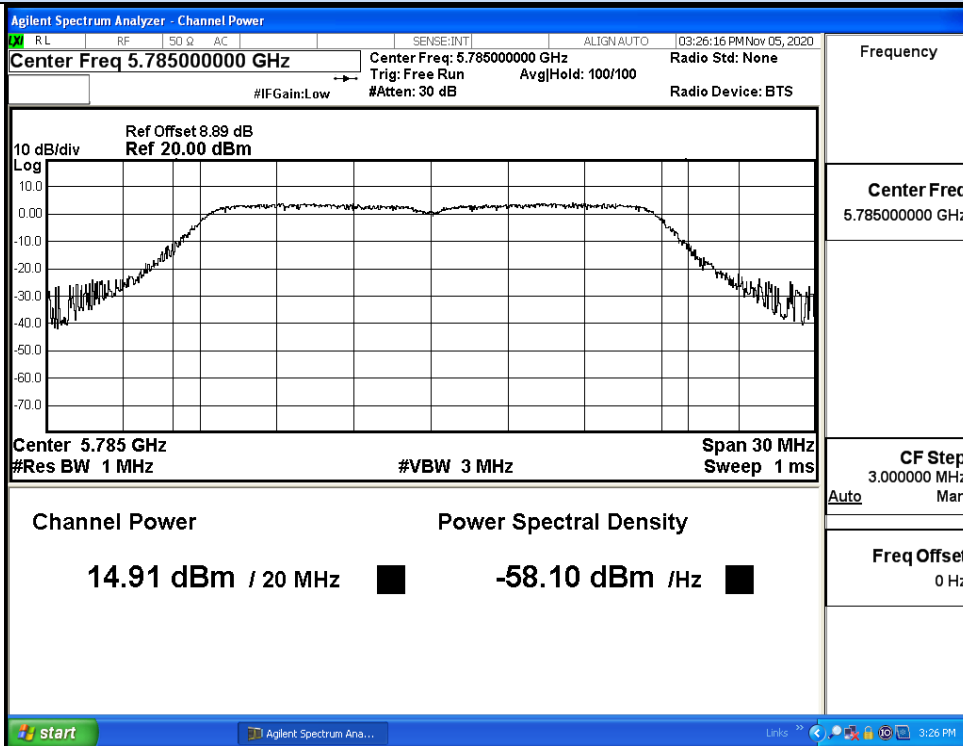
IEEE 802.11n40 / Channel 151 / 5755MHz



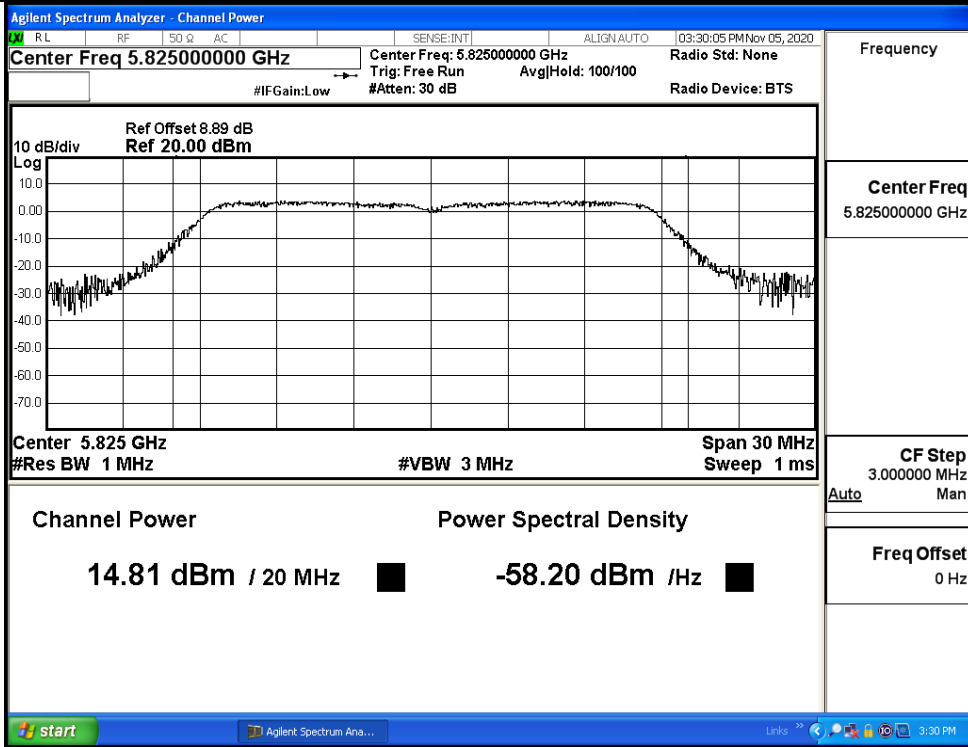
IEEE 802.11n40 / Channel 159 / 5795MHz



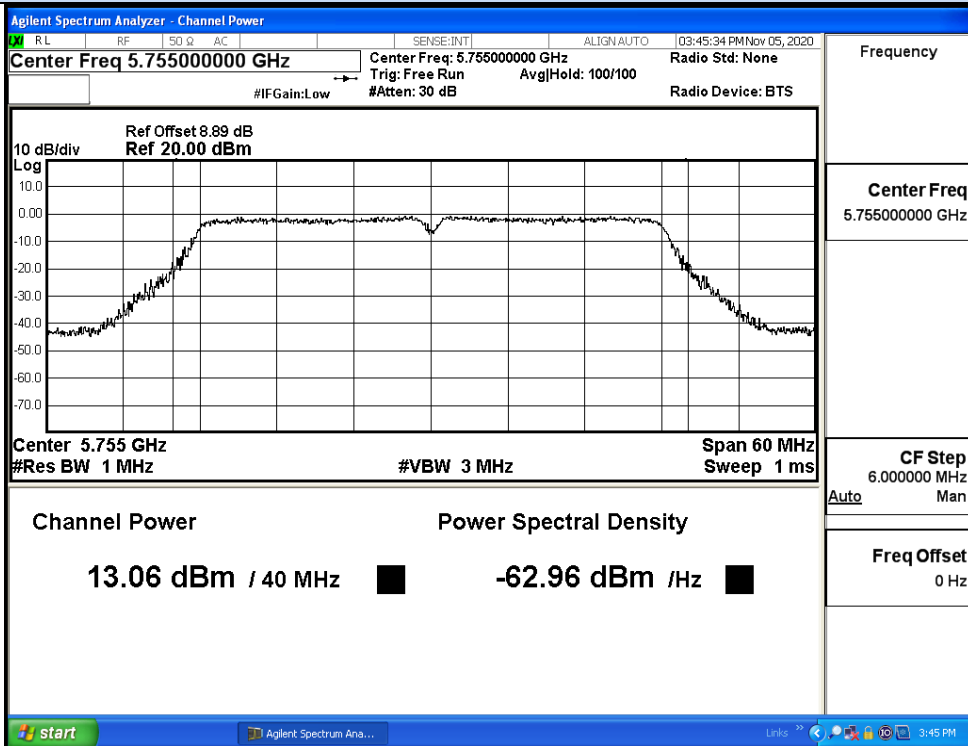
IEEE 802.11ac20 / Channel 149 / 5745MHz



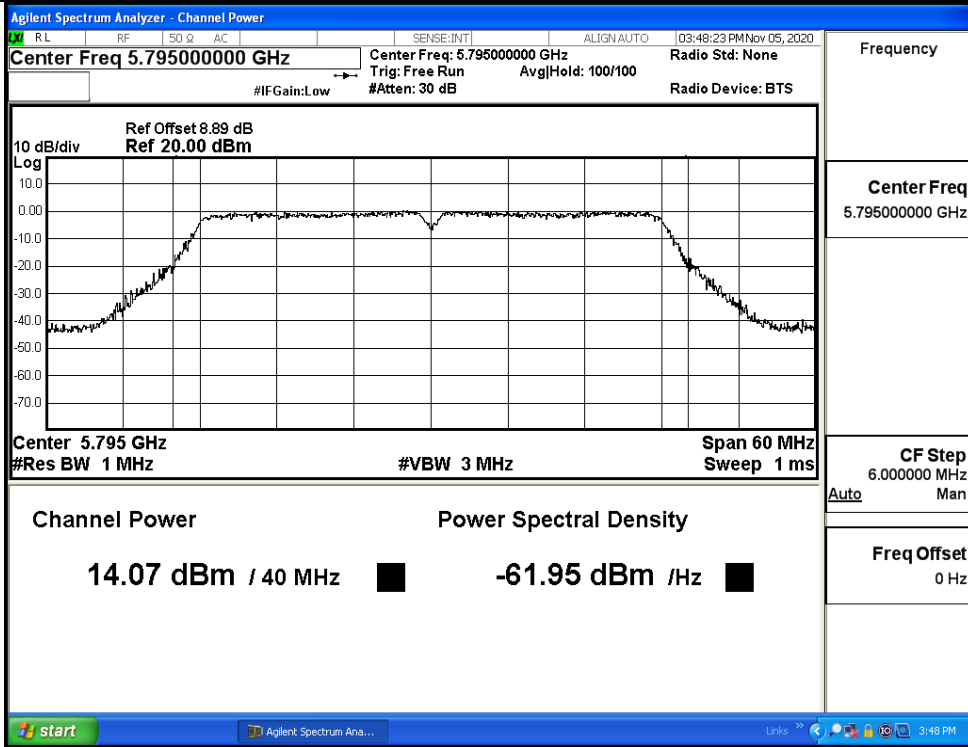
IEEE 802.11ac20 / Channel 157 / 5785MHz



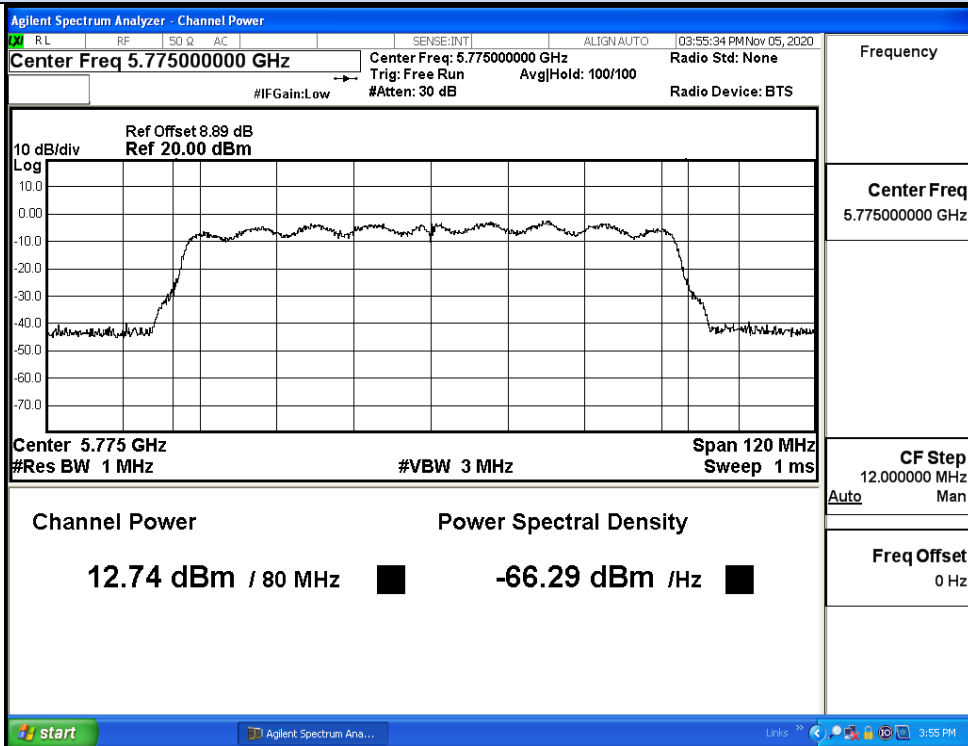
IEEE 802.11ac20 / Channel 165/ 5825MHz



IEEE 802.11ac40 / Channel 151 / 5755MHz



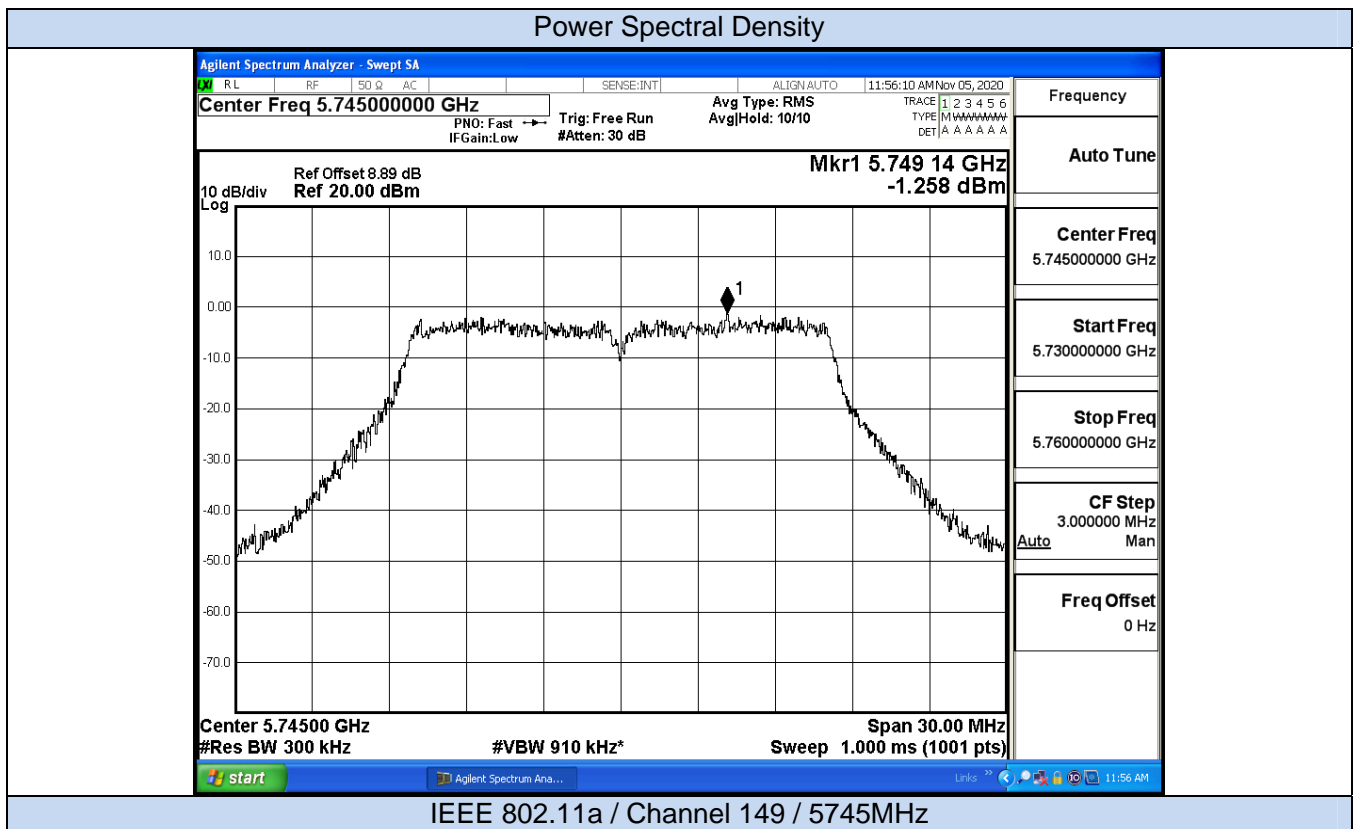
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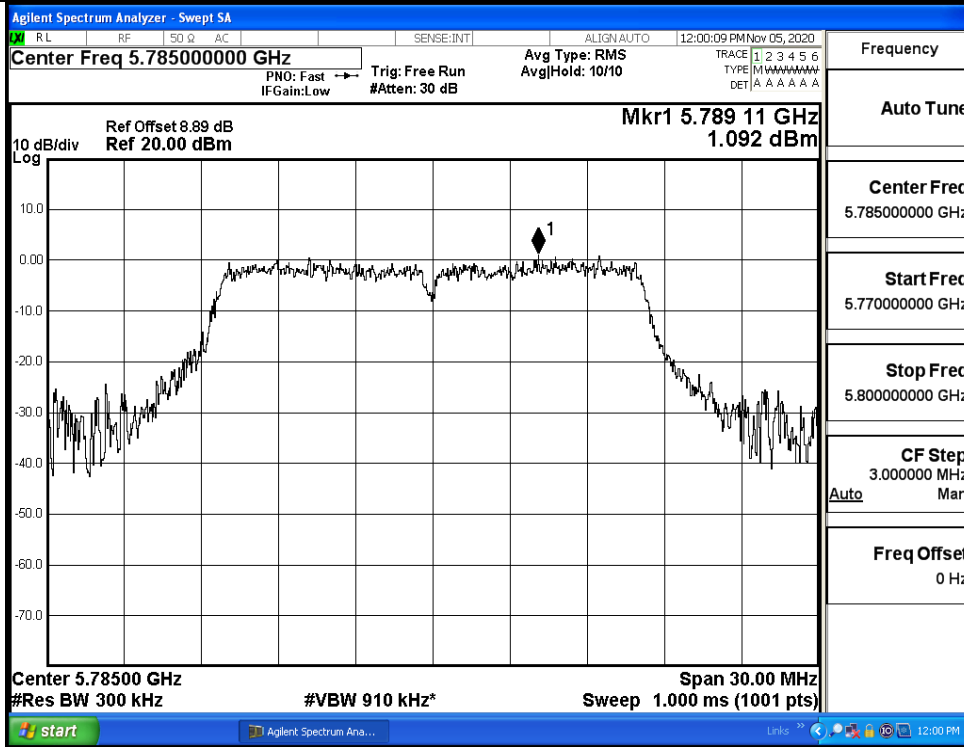


IEEE 802.11ac80 / Channel 155 / 5775MHz

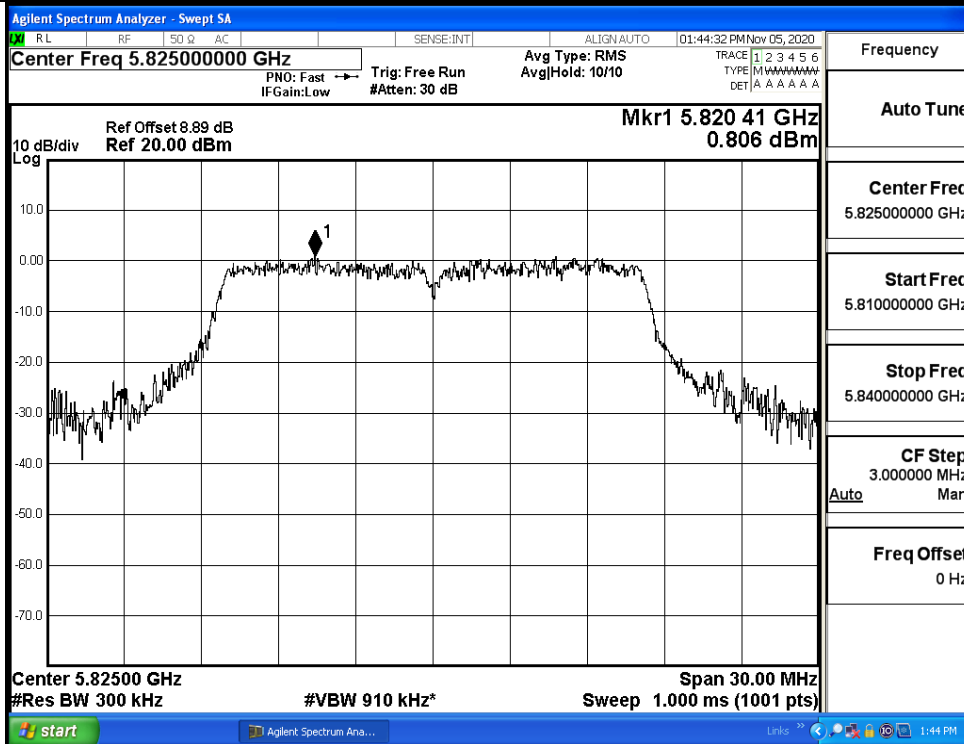
### C.3 Power Spectral Density

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	-1.26	0	2.218	0.96	30	Pass
	157	5785	1.09	0	2.218	3.31		Pass
	165	5825	0.81	0	2.218	3.02		Pass
11N20 SISO	149	5745	-0.97	0	2.218	1.25	30	Pass
	157	5785	-0.37	0	2.218	1.85		Pass
	165	5825	0.95	0	2.218	3.17		Pass
11N40 SISO	151	5755	-4.35	0	2.218	-2.13	30	Pass
	159	5795	-5.13	0	2.218	-2.91		Pass
11AC20 SISO	149	5745	-0.92	0	2.218	1.30	30	Pass
	157	5785	-0.27	0	2.218	1.95		Pass
	165	5825	-0.04	0	2.218	2.18		Pass
11AC40 SISO	151	5755	-5.06	0	2.218	-2.84	30	Pass
	159	5795	-3.84	0	2.218	-1.62		Pass
11AC80 SISO	155	5775	-7.41	0	2.218	-5.19	30	Pass



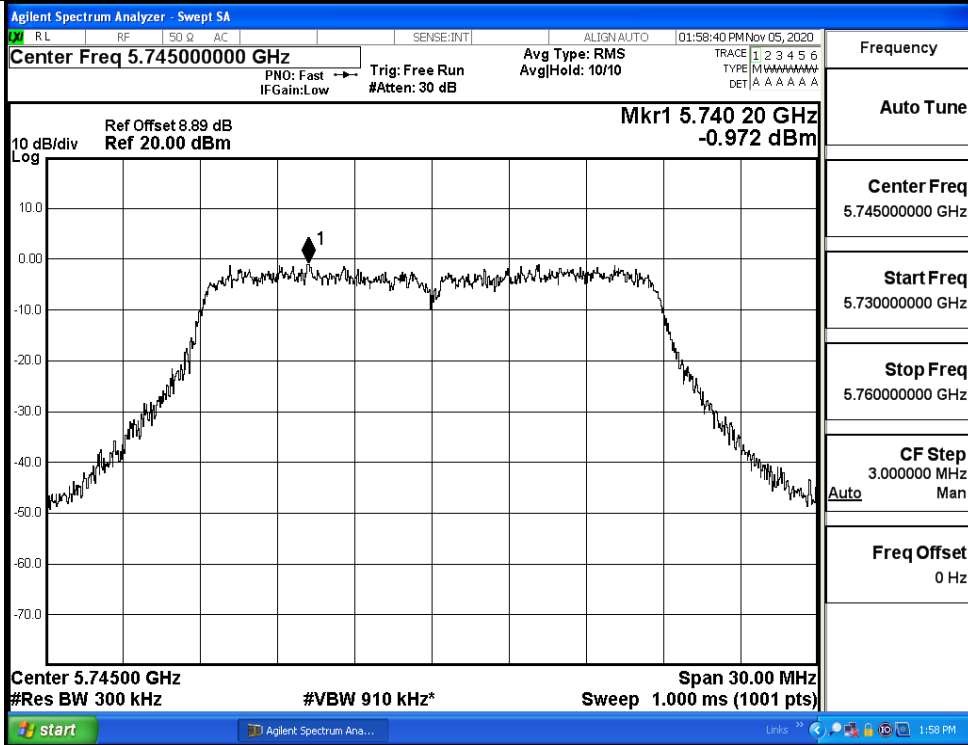


IEEE 802.11na / Channel 157 / 5785MHz

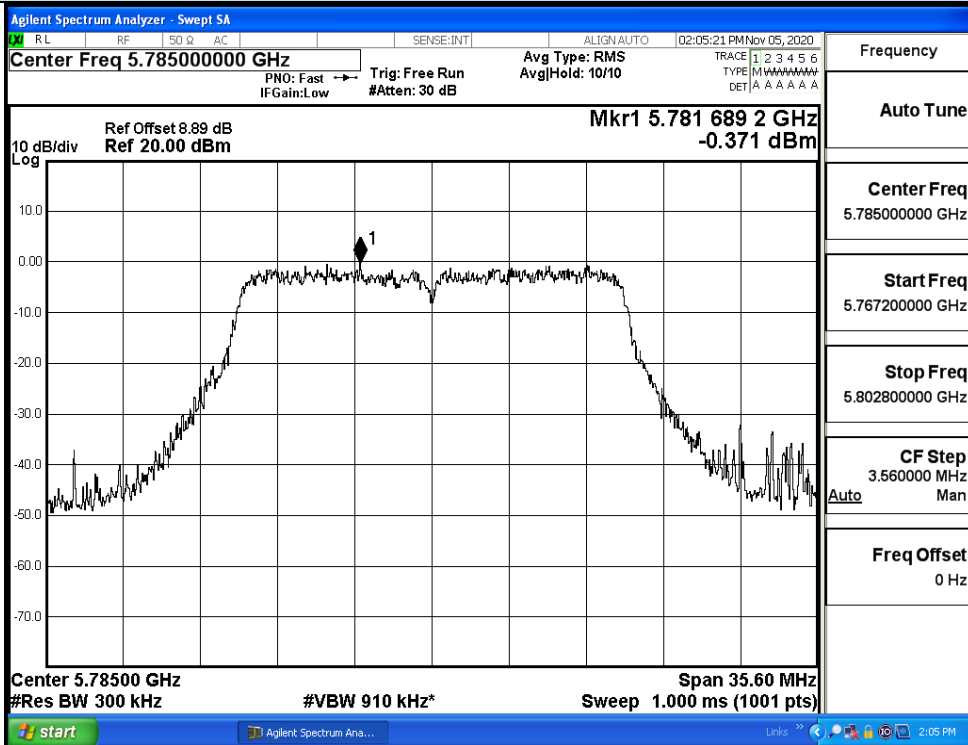


IEEE 802.11na / Channel 165 / 5825MHz

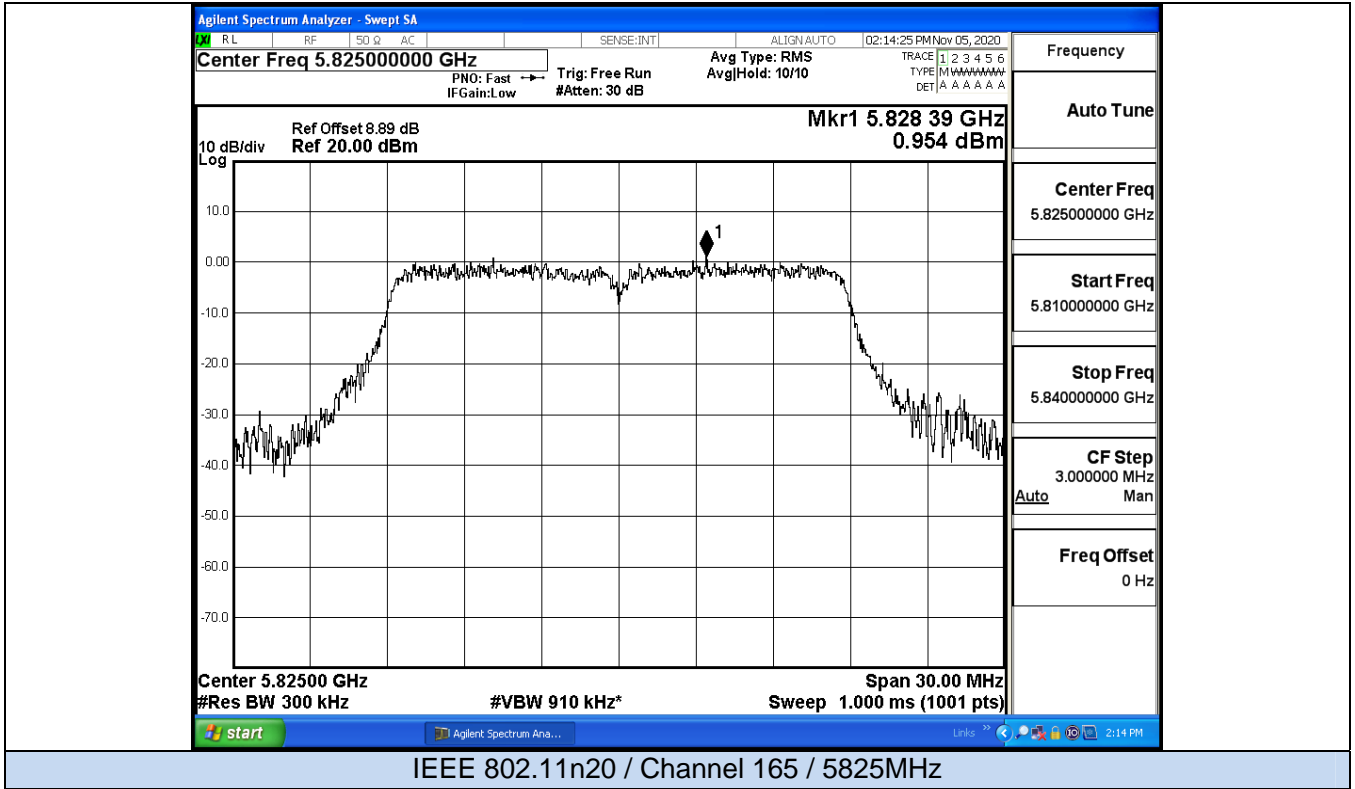
### Power Spectral Density



### IEEE 802.11n20 / Channel 149 / 5745MHz

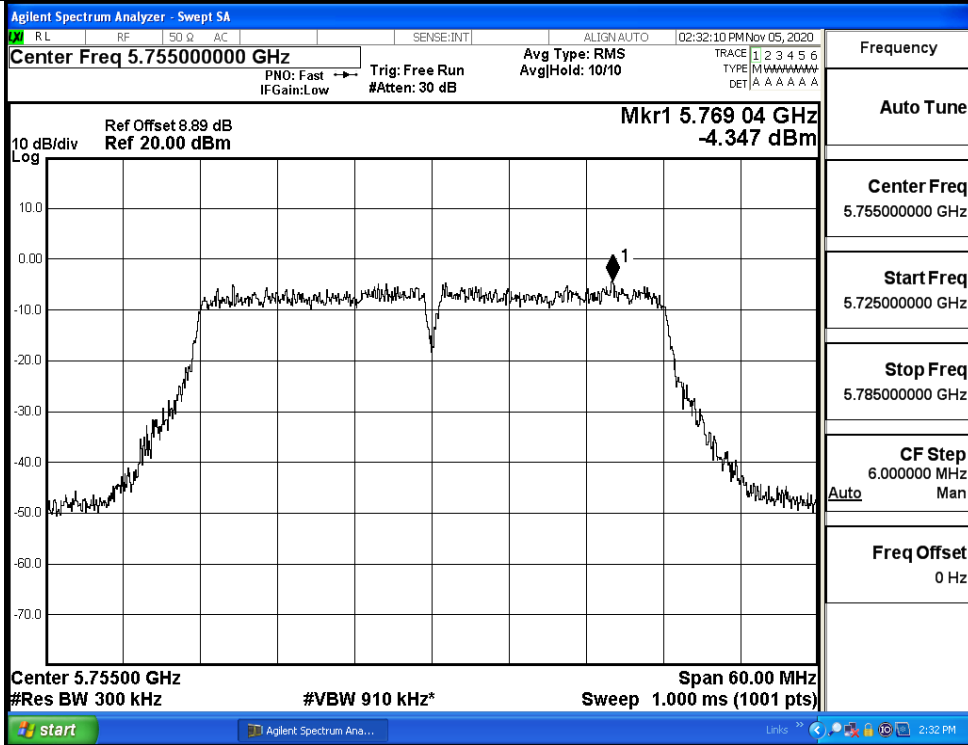


### IEEE 802.11n20 / Channel 157 / 5785MHz

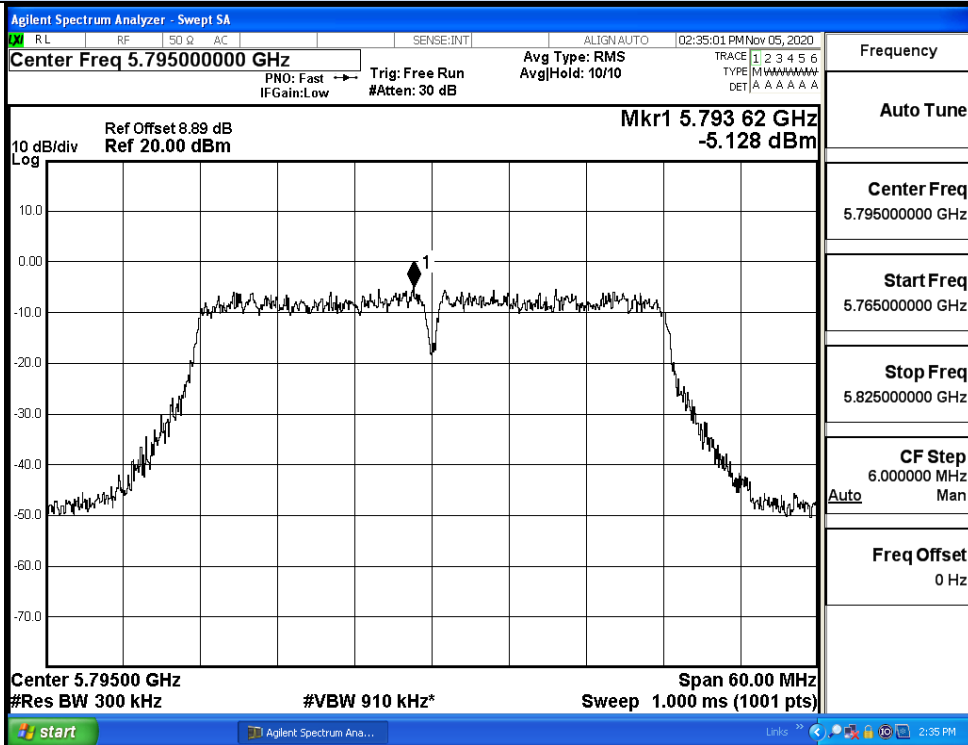




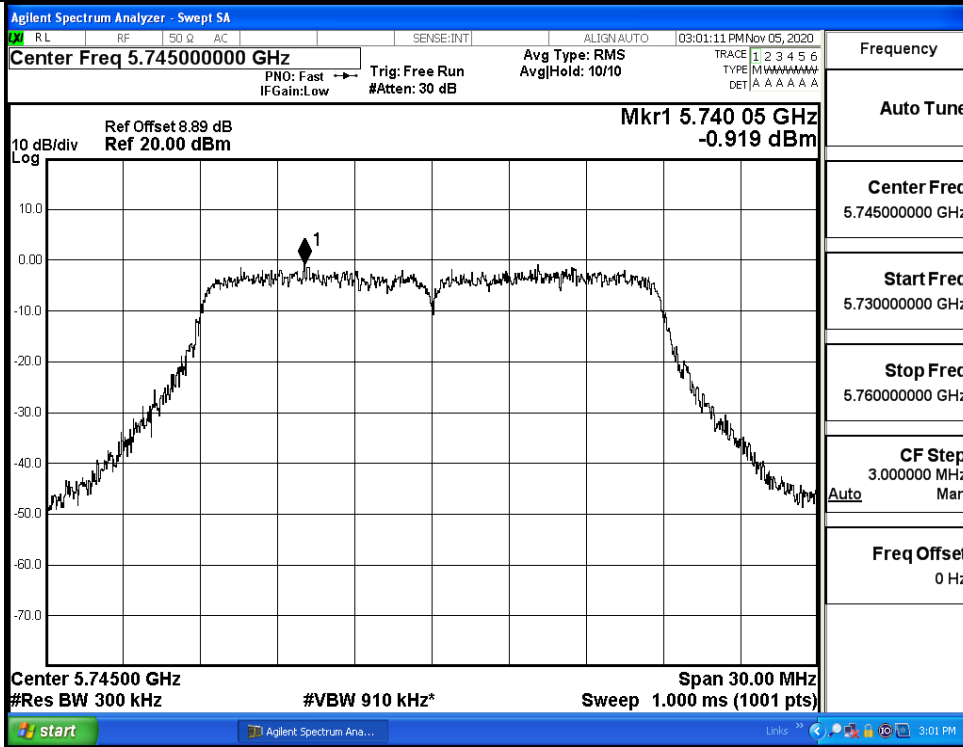
### Power Spectral Density



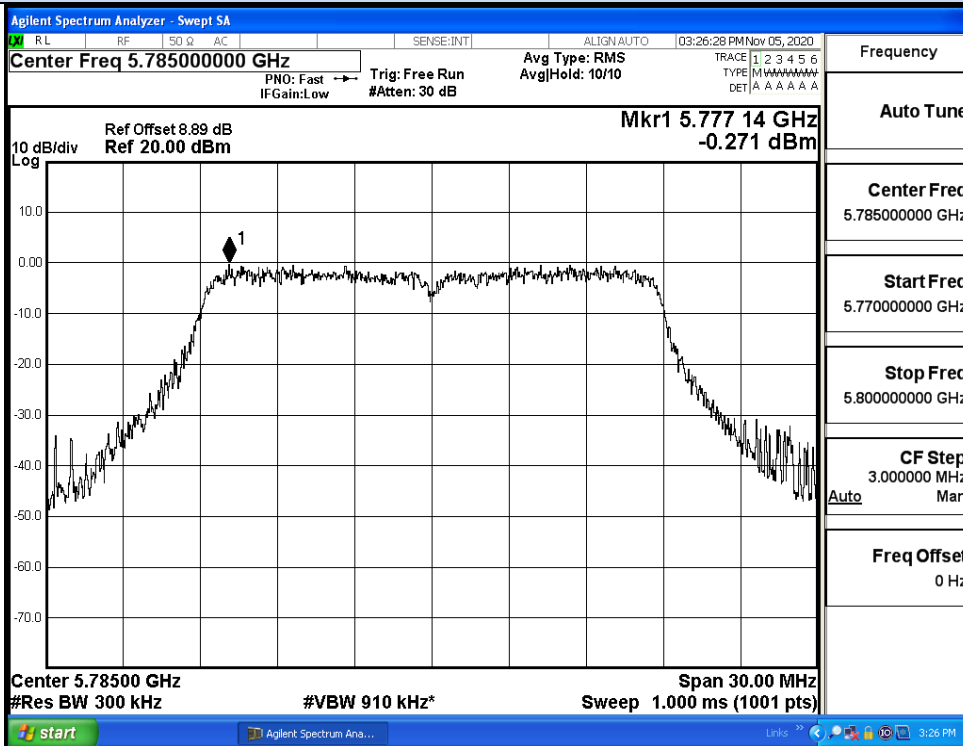
### IEEE 802.11n40 / Channel 151 / 5755MHz



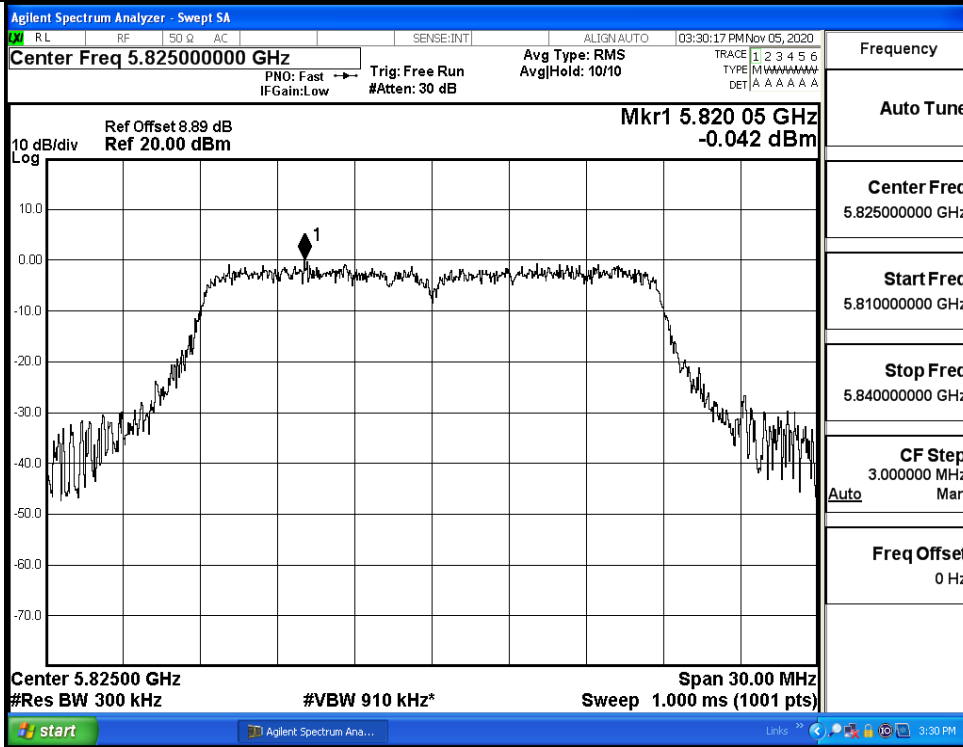
### IEEE 802.11n40 / Channel 159 / 5795MHz



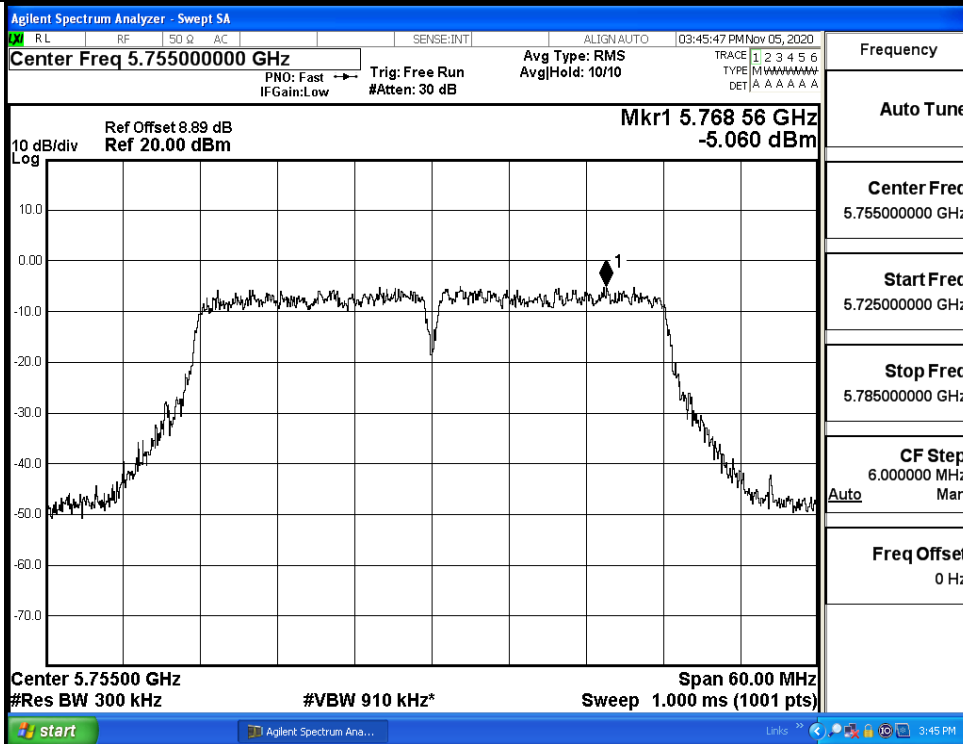
IEEE 802.11ac20 / Channel 149 / 5745MHz



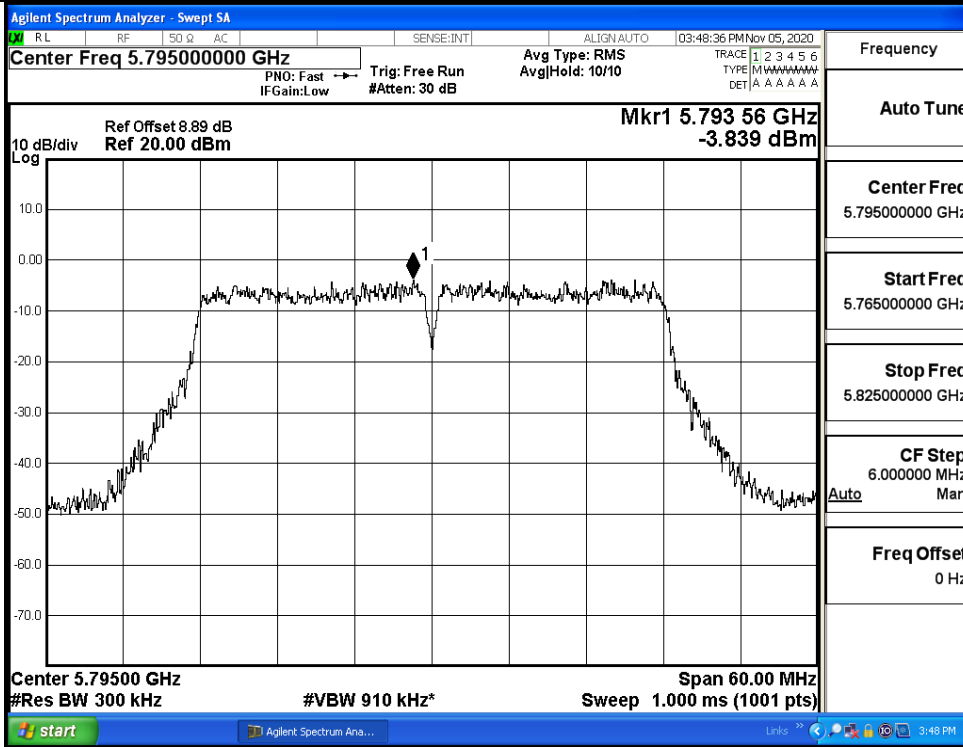
IEEE 802.11ac20 / Channel 157 / 5785MHz



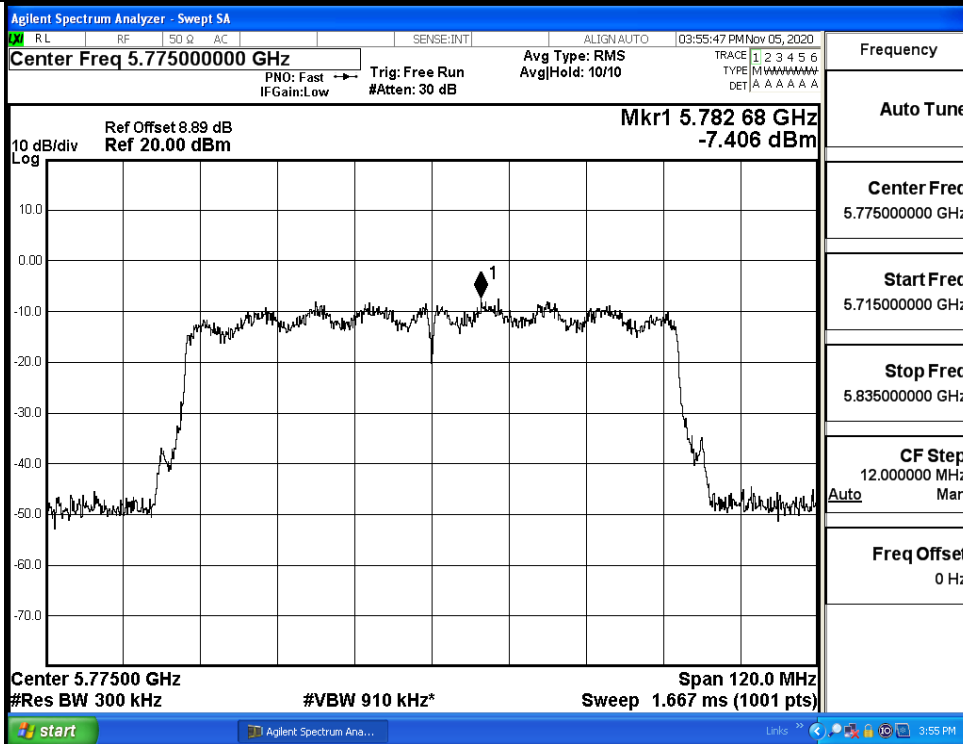
IEEE 802.11ac20 / Channel 165 / 5825MHz



IEEE 802.11ac40 / Channel 151 / 5755MHz



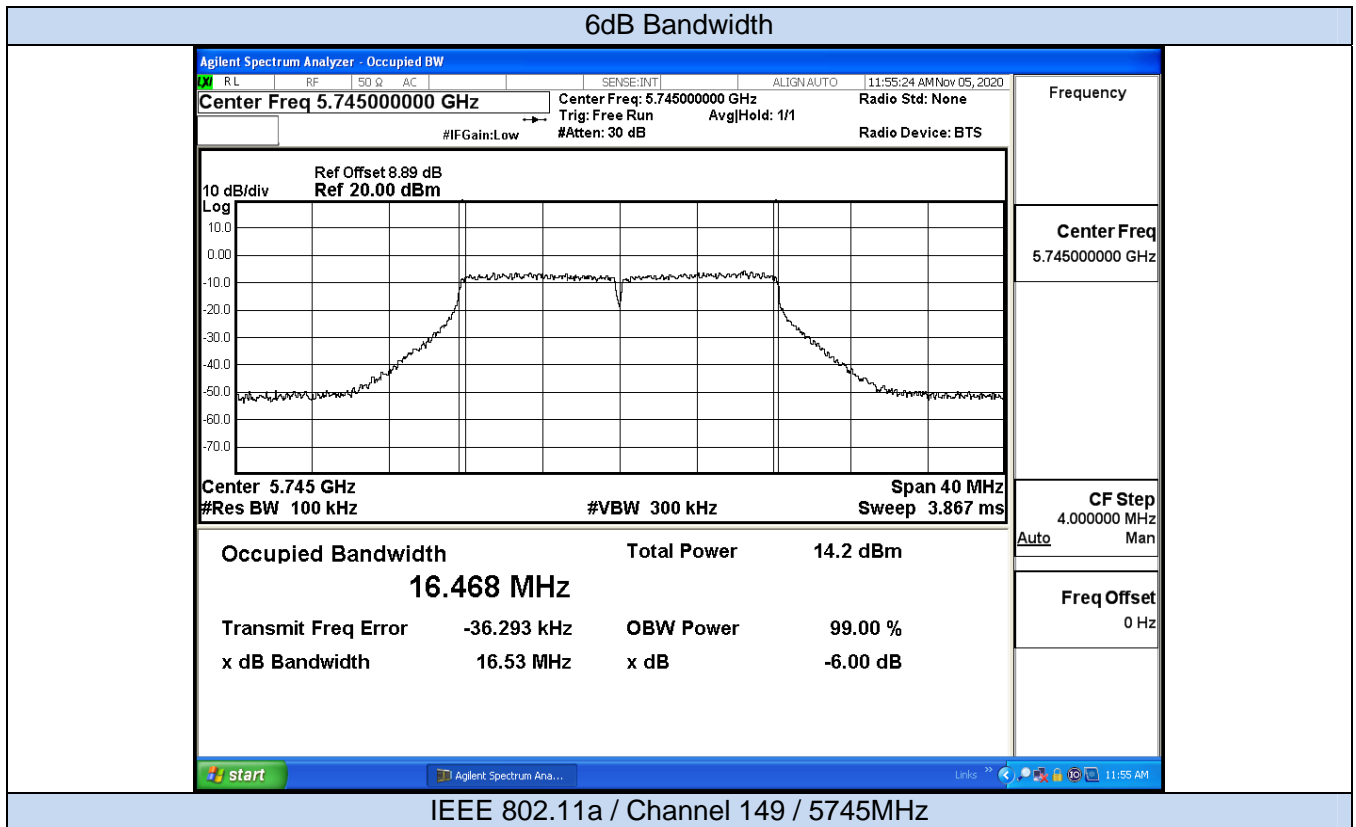
IEEE 802.11ac40 / Channel 159 / 5795MHz

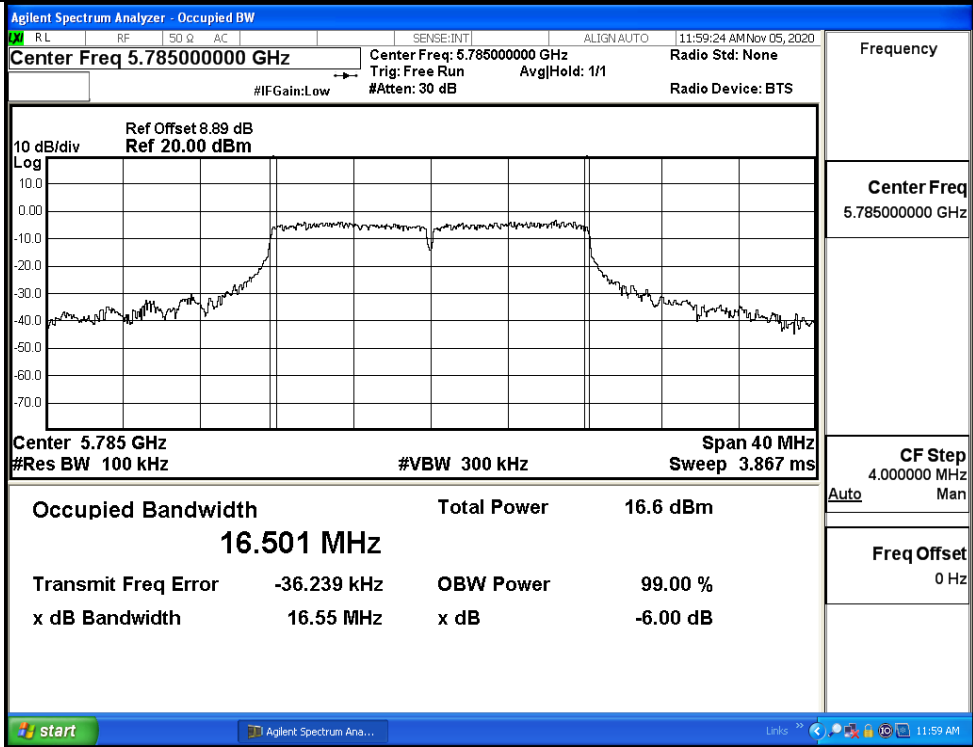


IEEE 802.11ac80 / Channel 155/ 5775MHz

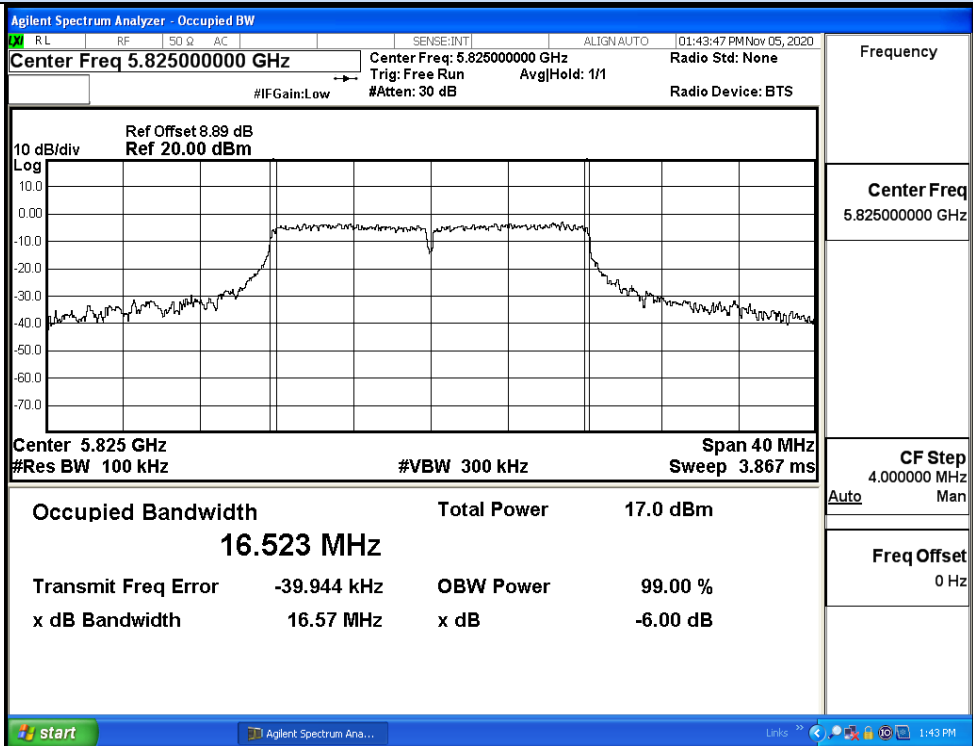
### C.4 Emission Bandwidth

Test Mode	Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)	Verdict
11A	149	5745	16.53	>=0.5	Pass
	157	5785	16.55		Pass
	165	5825	16.57		Pass
11N20 SISO	149	5745	17.72	>=0.5	Pass
	157	5785	17.80		Pass
	165	5825	17.69		Pass
11N40 SISO	151	5755	36.54	>=0.5	Pass
	159	5795	36.54		Pass
11AC20S ISO	149	5745	17.74	>=0.5	Pass
	157	5785	17.76		Pass
	165	5825	17.77		Pass
11AC40S ISO	151	5755	36.54	>=0.5	Pass
	159	5795	36.53		Pass
11AC80S ISO	155	5775	75.47	>=0.5	Pass



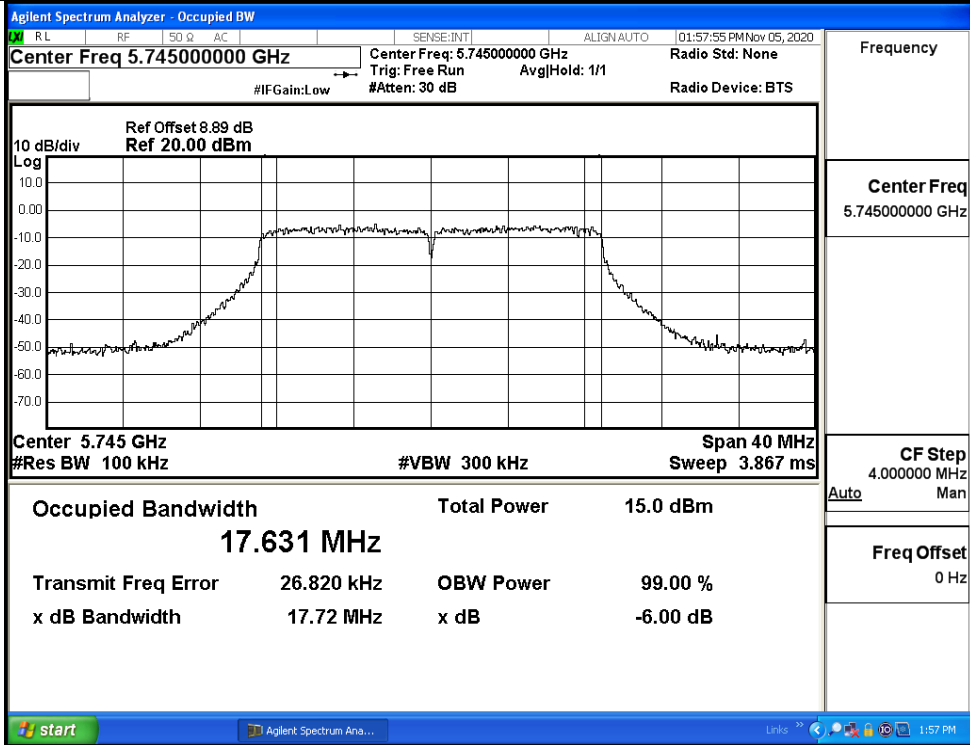


IEEE 802.11a / Channel 157 / 5785MHz

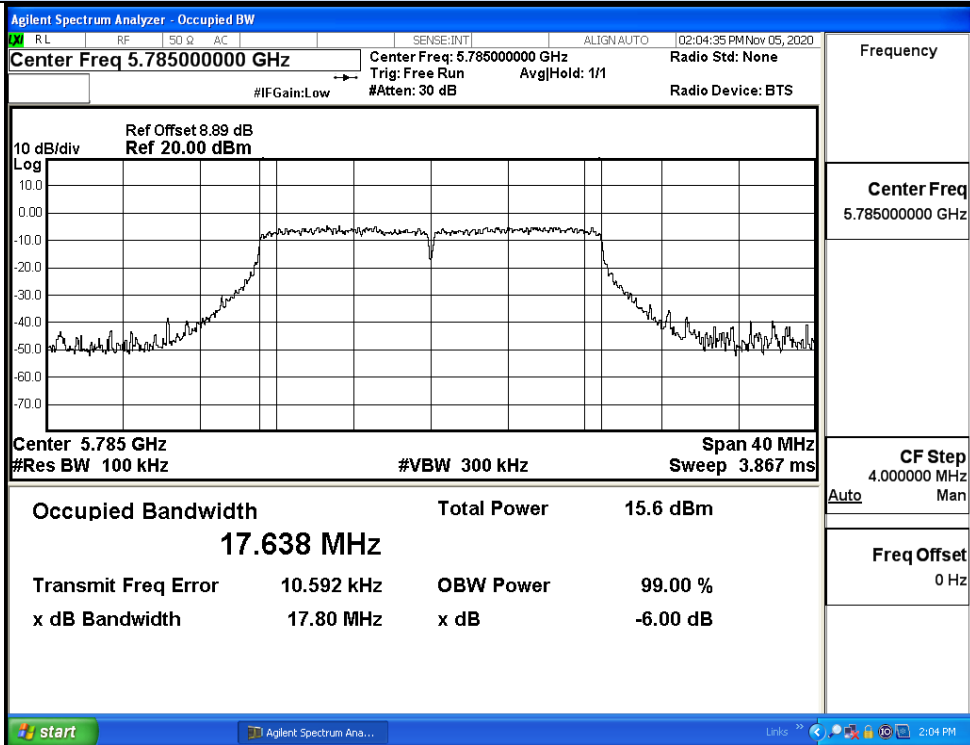


IEEE 802.11a / Channel 165 / 5825MHz

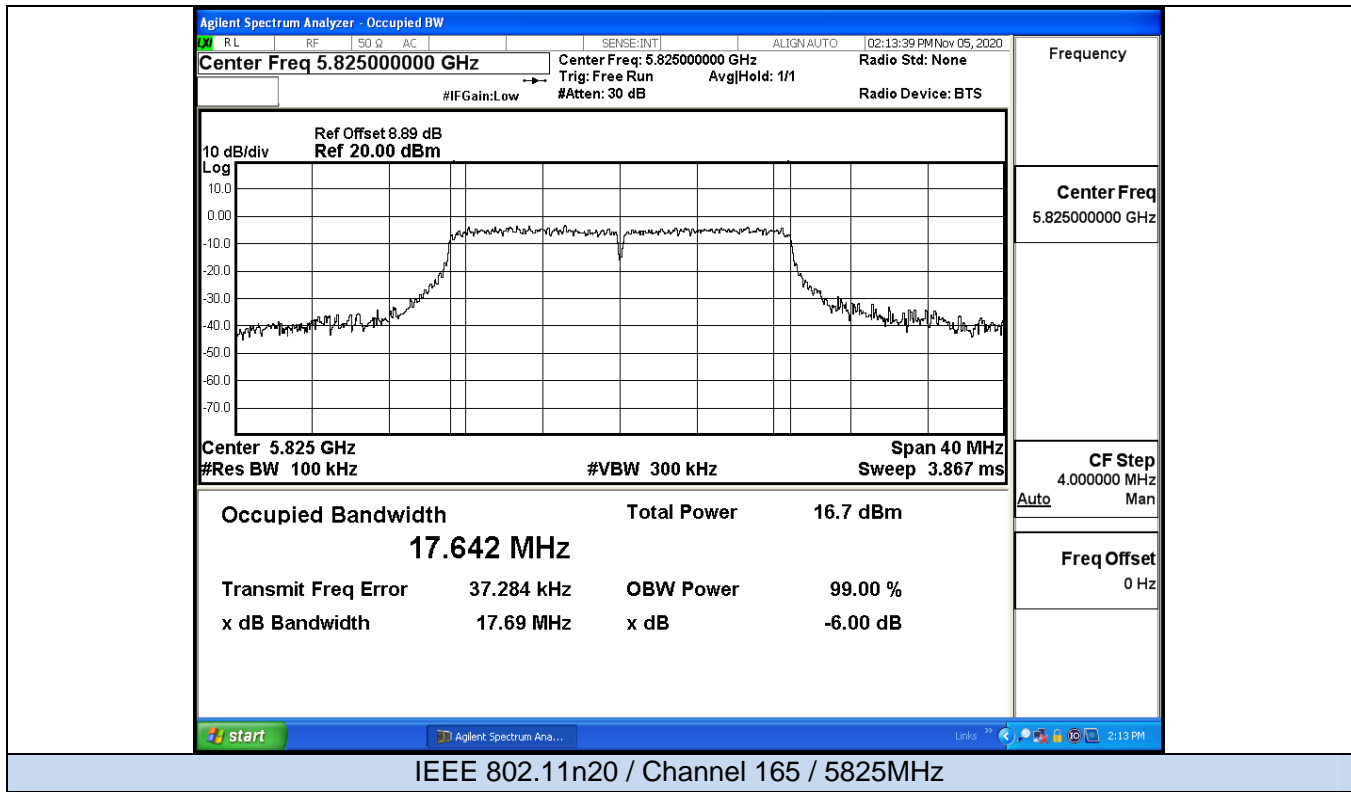
6dB Bandwidth



IEEE 802.11n20 / Channel 149 / 5745MHz

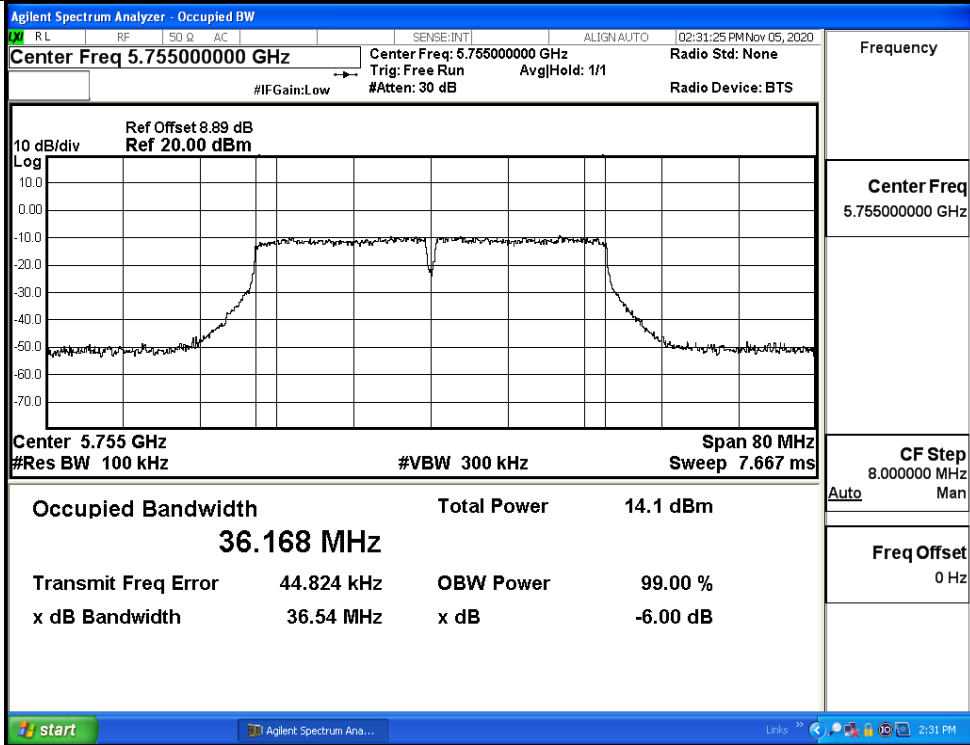


IEEE 802.11n20 / Channel 157 / 5785MHz

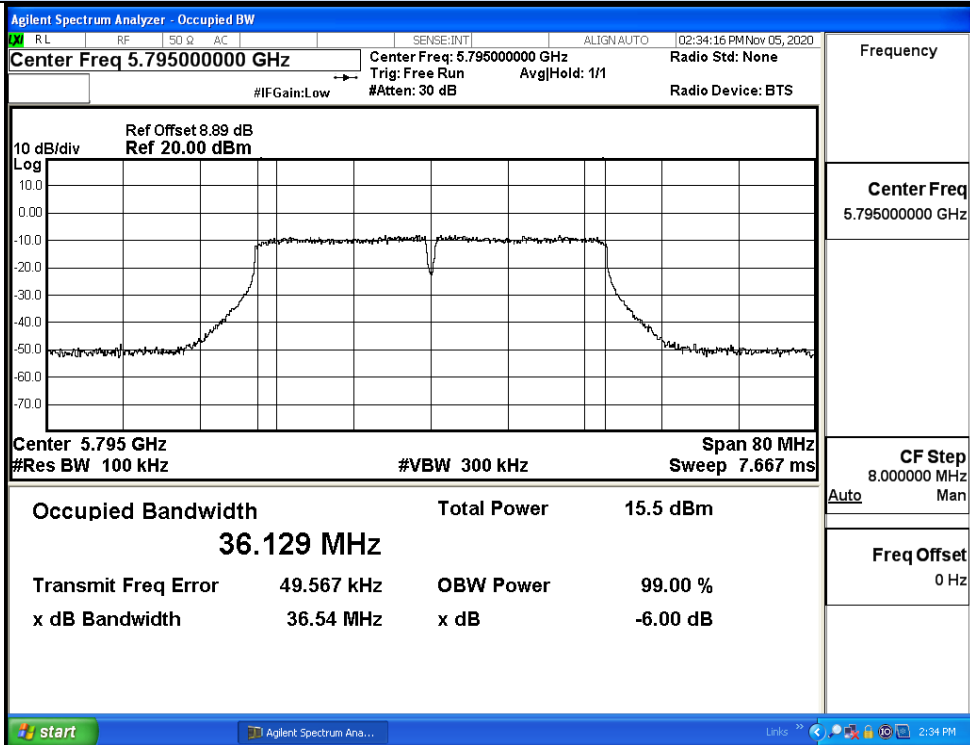




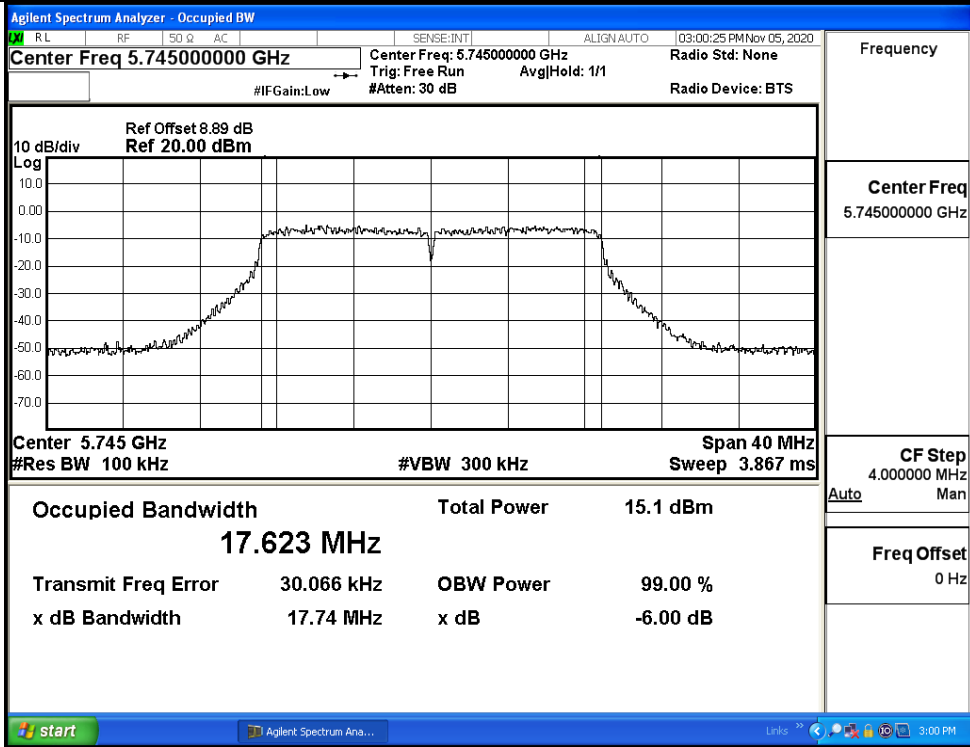
26dB Bandwidth



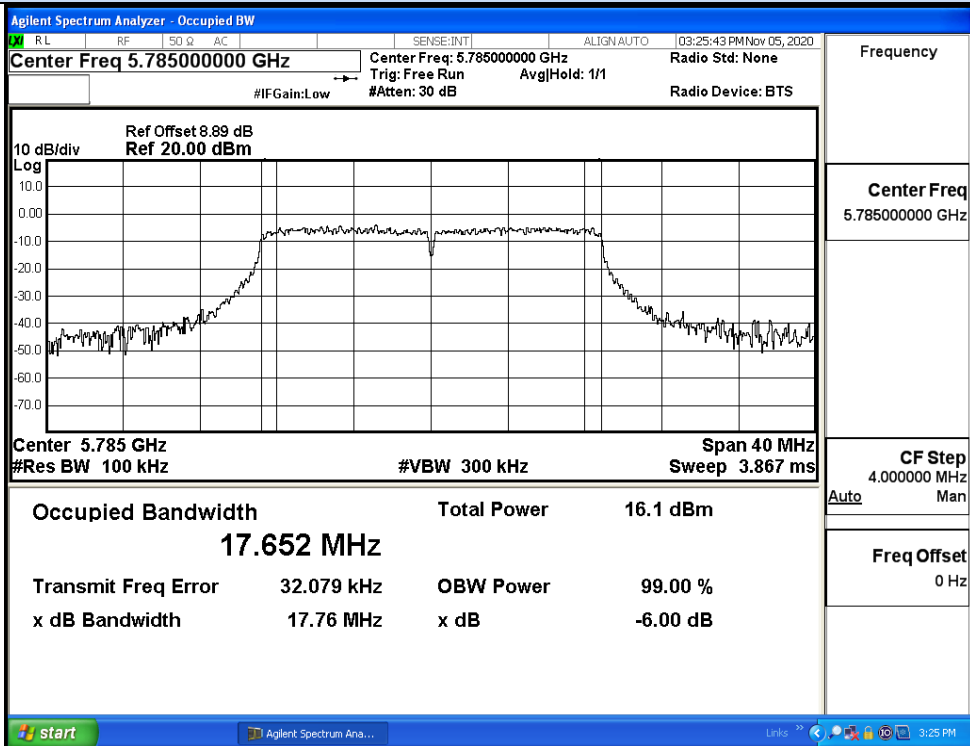
IEEE 802.11n40 / Channel 151 / 5755MHz



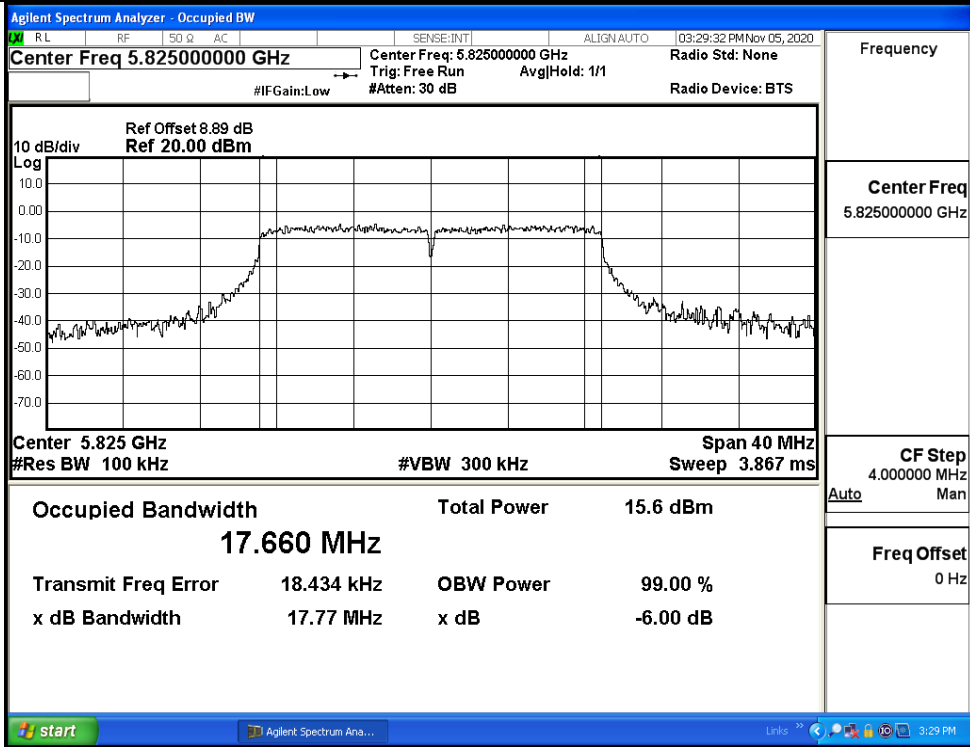
IEEE 802.11n40 / Channel 159 / 5795MHz



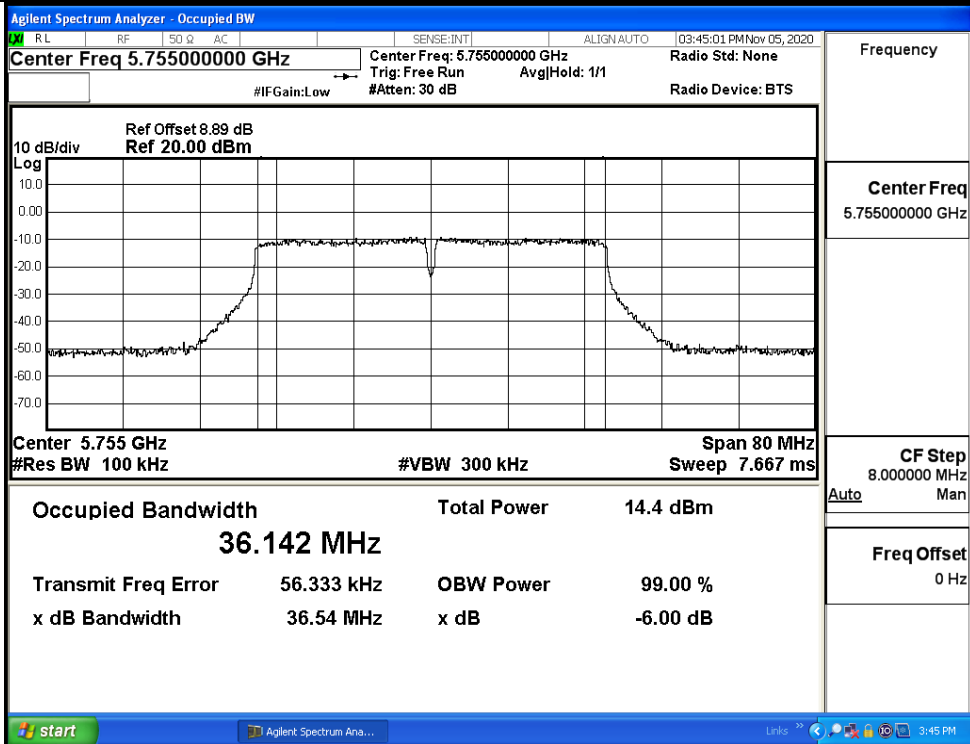
IEEE 802.11ac20 / Channel 149 / 5745MHz



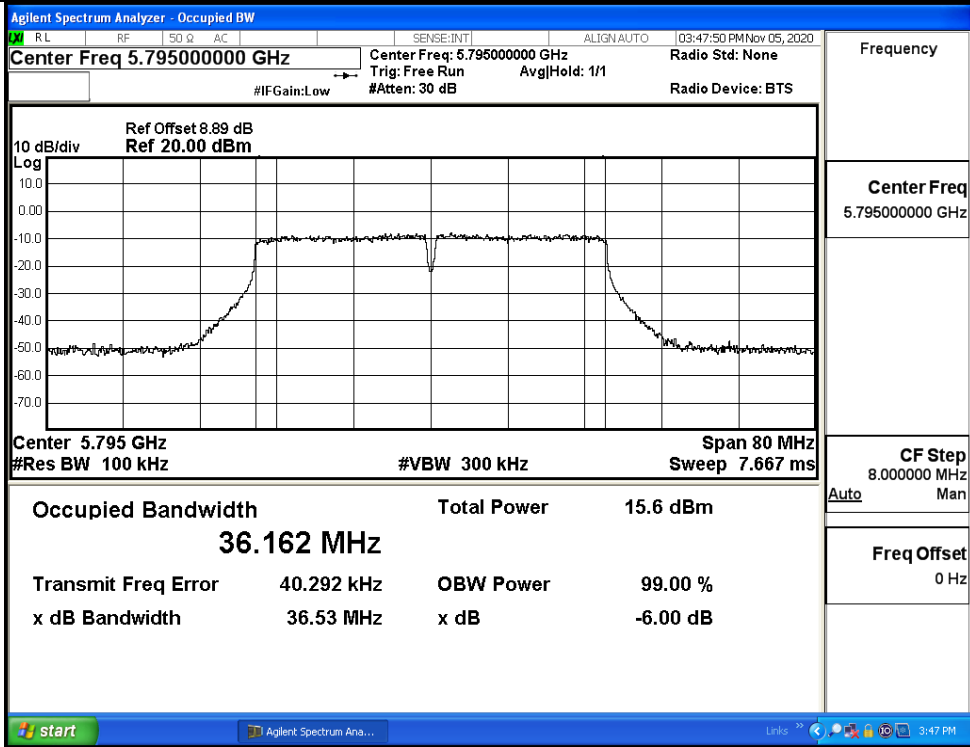
IEEE 802.11ac20 / Channel 157 / 5785MHz



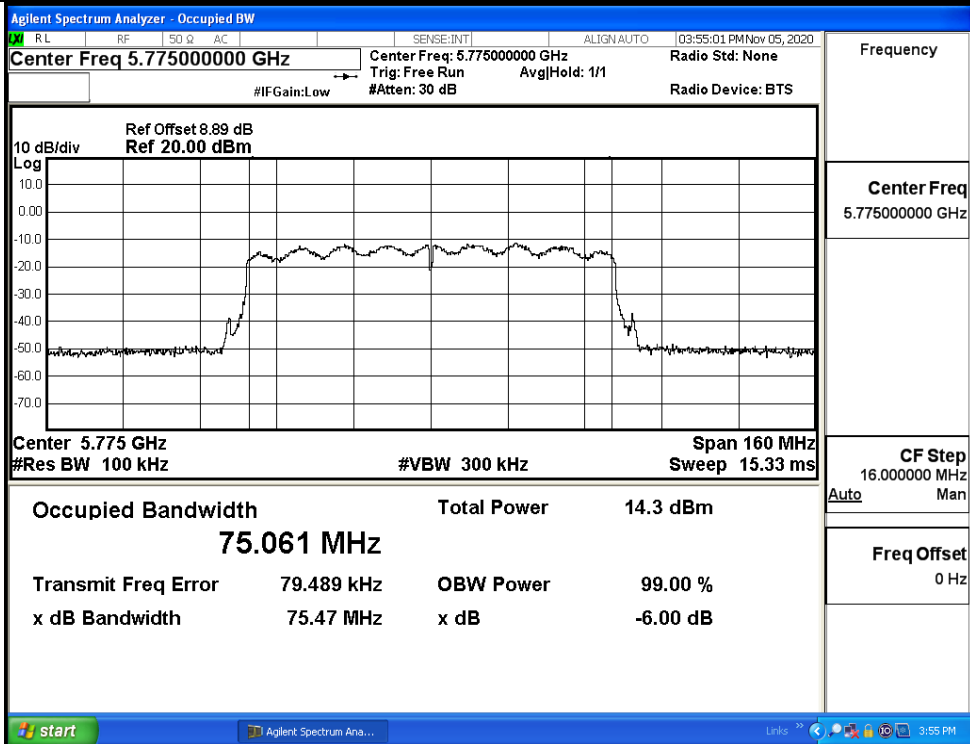
IEEE 802.11ac20 / Channel 165 / 5825MHz



IEEE 802.11ac40 / Channel 151 / 5755MHz



IEEE 802.11ac40 / Channel 159 / 5795MHz



IEEE 802.11ac80 / Channel 155 / 5775MHz

**C.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	-48.49	2.00	-48.49	Peak	-27.0	Pass
		5650.0	-60.11	2.00	-60.11	Average	-27.0	Pass
		5700.0	-48.26	2.00	-48.26	Peak	10	Pass
		5700.0	-59.23	2.00	-59.23	Average	10	Pass
		5720.0	-45.81	2.00	-45.81	Peak	15.6	Pass
		5720.0	-57.90	2.00	-57.90	Average	15.6	Pass
		5725.0	-43.49	2.00	-43.49	Peak	27.0	Pass
	5725.0	-56.73	2.00	-56.73	Average	27.0	Pass	
	165	5850.0	-27.73	2.00	-27.73	Peak	27.0	Pass
		5850.0	-53.93	2.00	-53.93	Average	27.0	Pass
		5855.0	-30.30	2.00	-30.30	Peak	15.6	Pass
		5855.0	-55.43	2.00	-55.43	Average	15.6	Pass
		5875.0	-36.74	2.00	-36.74	Peak	10	Pass
		5875.0	-57.98	2.00	-57.98	Average	10	Pass
5925.0		-45.88	2.00	-45.88	Peak	-27.0	Pass	
5925.0	-58.87	2.00	-58.87	Average	-27.0	Pass		
11N20 SISO	149	5650.0	-47.07	2.00	-47.07	Peak	-27.0	Pass
		5650.0	-60.13	2.00	-60.13	Average	-27.0	Pass
		5700.0	-46.60	2.00	-46.60	Peak	10	Pass
		5700.0	-57.54	2.00	-57.54	Average	10	Pass
		5720.0	-45.42	2.00	-45.42	Peak	15.6	Pass
		5720.0	-59.18	2.00	-59.18	Average	15.6	Pass
		5725.0	-44.13	2.00	-44.13	Peak	27.0	Pass
	5725.0	-56.26	2.00	-56.26	Average	27.0	Pass	
	165	5850.0	-27.45	2.00	-27.45	Peak	27.0	Pass
		5850.0	-54.52	2.00	-54.52	Average	27.0	Pass
		5855.0	-32.16	2.00	-32.16	Peak	15.6	Pass
		5855.0	-56.00	2.00	-56.00	Average	15.6	Pass
		5875.0	-40.18	2.00	-40.18	Peak	10	Pass
		5875.0	-58.27	2.00	-58.27	Average	10	Pass

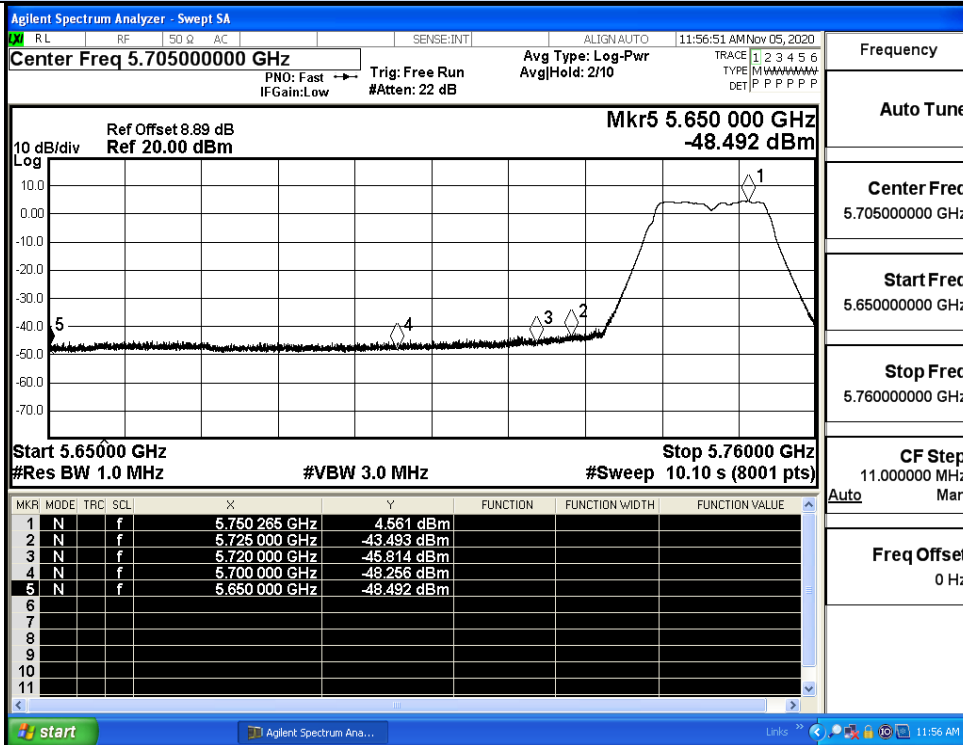
		5925.0	-45.93	2.00	-45.93	Peak	-27.0	Pass
		5925.0	-58.97	2.00	-58.97	Average	-27.0	Pass

Test Mode	Channel	Frequency (MHz)	Conducted Power (dBm)	Antenna Gain (dBi)	EIRP (dBm/MHz)	Detector	Limit (dBm/MHz)	Verdict
11N40 SISO	151	5650.0	-48.03	2.00	-48.03	Peak	-27.0	Pass
		5650.0	-59.91	2.00	-59.91	Average	-27.0	Pass
		5700.0	-47.01	2.00	-47.01	Peak	10	Pass
		5700.0	-58.62	2.00	-58.62	Average	10	Pass
		5720.0	-44.99	2.00	-44.99	Peak	15.6	Pass
		5720.0	-56.91	2.00	-56.91	Average	15.6	Pass
	159	5725.0	-43.73	2.00	-43.73	Peak	27.0	Pass
		5725.0	-56.31	2.00	-56.31	Average	27.0	Pass
		5850.0	-46.90	2.00	-46.90	Peak	27.0	Pass
		5850.0	-57.81	2.00	-57.81	Average	27.0	Pass
		5855.0	-47.39	2.00	-47.39	Peak	15.6	Pass
		5855.0	-58.29	2.00	-58.29	Average	15.6	Pass
		5875.0	-46.61	2.00	-46.61	Peak	10	Pass
		5875.0	-58.63	2.00	-58.63	Average	10	Pass
11AC2 0 SISO	149	5925.0	-48.49	2.00	-48.49	Peak	-27.0	Pass
		5925.0	-59.36	2.00	-59.36	Average	-27.0	Pass
		5650.0	-47.94	2.00	-47.94	Peak	-27.0	Pass
		5650.0	-60.03	2.00	-60.03	Average	-27.0	Pass
		5700.0	-46.64	2.00	-46.64	Peak	10	Pass
		5700.0	-57.43	2.00	-57.43	Average	10	Pass
	165	5720.0	-43.94	2.00	-43.94	Peak	15.6	Pass
		5720.0	-59.04	2.00	-59.04	Average	15.6	Pass
		5725.0	-42.88	2.00	-42.88	Peak	27.0	Pass
		5725.0	-56.22	2.00	-56.22	Average	27.0	Pass
		5850.0	-30.44	2.00	-30.44	Peak	27.0	Pass
		5850.0	-55.35	2.00	-55.35	Average	27.0	Pass
		5855.0	-32.27	2.00	-32.27	Peak	15.6	Pass
		5855.0	-56.72	2.00	-56.72	Average	15.6	Pass
11AC4 0 SISO	151	5875.0	-39.62	2.00	-39.62	Peak	10	Pass
		5875.0	-58.75	2.00	-58.75	Average	10	Pass
		5925.0	-47.13	2.00	-47.13	Peak	-27.0	Pass
		5925.0	-59.34	2.00	-59.34	Average	-27.0	Pass
		5650.0	-47.95	2.00	-47.95	Peak	-27.0	Pass
		5650.0	-60.00	2.00	-60.00	Average	-27.0	Pass
	159	5700.0	-47.16	2.00	-47.16	Peak	10	Pass
		5700.0	-58.83	2.00	-58.83	Average	10	Pass
		5720.0	-45.44	2.00	-45.44	Peak	15.6	Pass
		5720.0	-57.26	2.00	-57.26	Average	15.6	Pass
		5725.0	-44.44	2.00	-44.44	Peak	27.0	Pass
		5725.0	-56.72	2.00	-56.72	Average	27.0	Pass
		5850.0	-44.48	2.00	-44.48	Peak	27.0	Pass
		5850.0	-57.07	2.00	-57.07	Average	27.0	Pass
11AC8 0 SISO	155	5855.0	-46.31	2.00	-46.31	Peak	15.6	Pass
		5855.0	-57.70	2.00	-57.70	Average	15.6	Pass
		5875.0	-47.02	2.00	-47.02	Peak	10	Pass
		5875.0	-58.08	2.00	-58.08	Average	10	Pass
		5925.0	-47.07	2.00	-47.07	Peak	-27.0	Pass
		5925.0	-59.09	2.00	-59.09	Average	-27.0	Pass
		5725.0	-48.32	2.00	-46.32	Peak	27.0	Pass
5720.0	-47.63	2.00	-45.63	Peak	15.6	Pass		
5700.0	-48.12	2.00	-46.12	Peak	10	Pass		
5650.0	-48.65	2.00	-46.65	Peak	-27.0	Pass		
5725.0	-58.69	2.00	-56.69	Average	27.0	Pass		
5720.0	-58.79	2.00	-56.79	Average	15.6	Pass		
5700.0	-59.32	2.00	-57.32	Average	10	Pass		

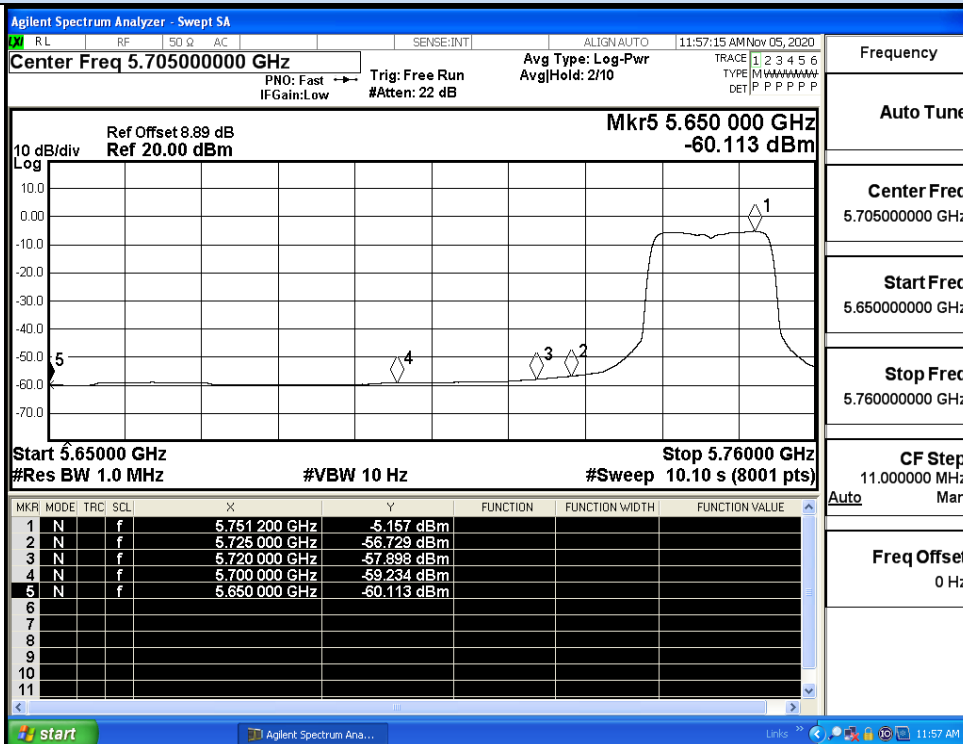
		5650.0	-59.87	2.00	-57.87	Average	-27.0	Pass
		5850.0	-44.25	2.00	-44.25	Peak	27.0	Pass
		5855.0	-43.43	2.00	-43.43	Peak	15.6	Pass
		5875.0	-46.24	2.00	-46.24	Peak	10	Pass
		5925.0	-47.90	2.00	-47.90	Peak	-27.0	Pass
		5850.0	-56.84	2.00	-56.84	Average	27.0	Pass
		5855.0	-57.25	2.00	-57.25	Average	15.6	Pass
		5875.0	-58.36	2.00	-58.36	Average	10	Pass
		5925.0	-59.15	2.00	-59.15	Average	-27.0	Pass



Undesirable Emissions Measurement

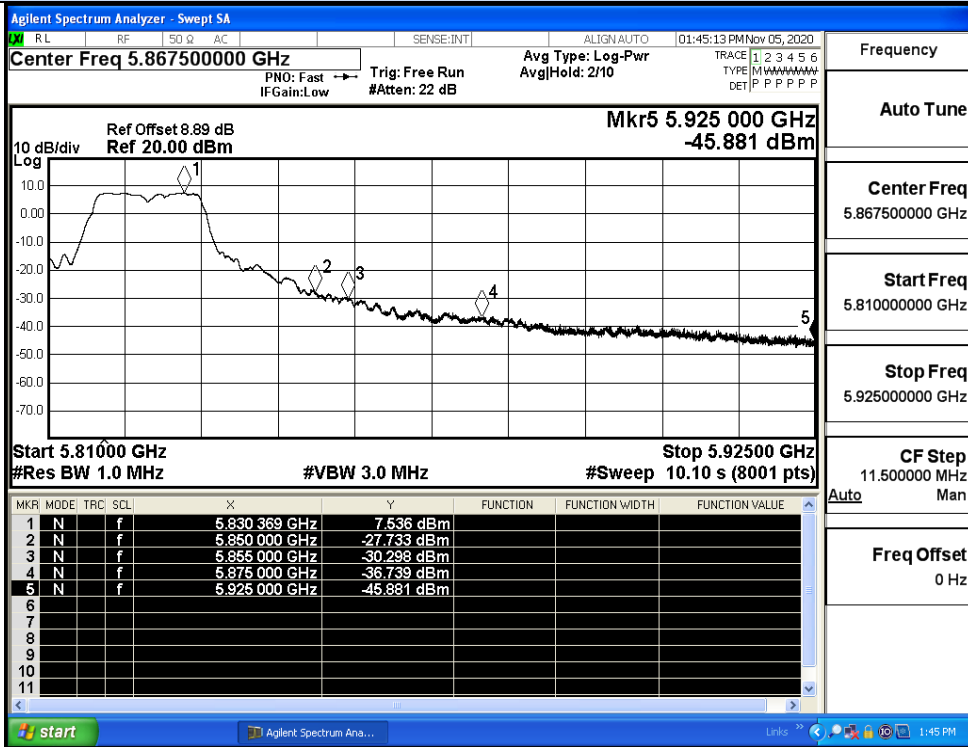


IEEE 802.11a / Channel 149 / 5745MHz / Peak

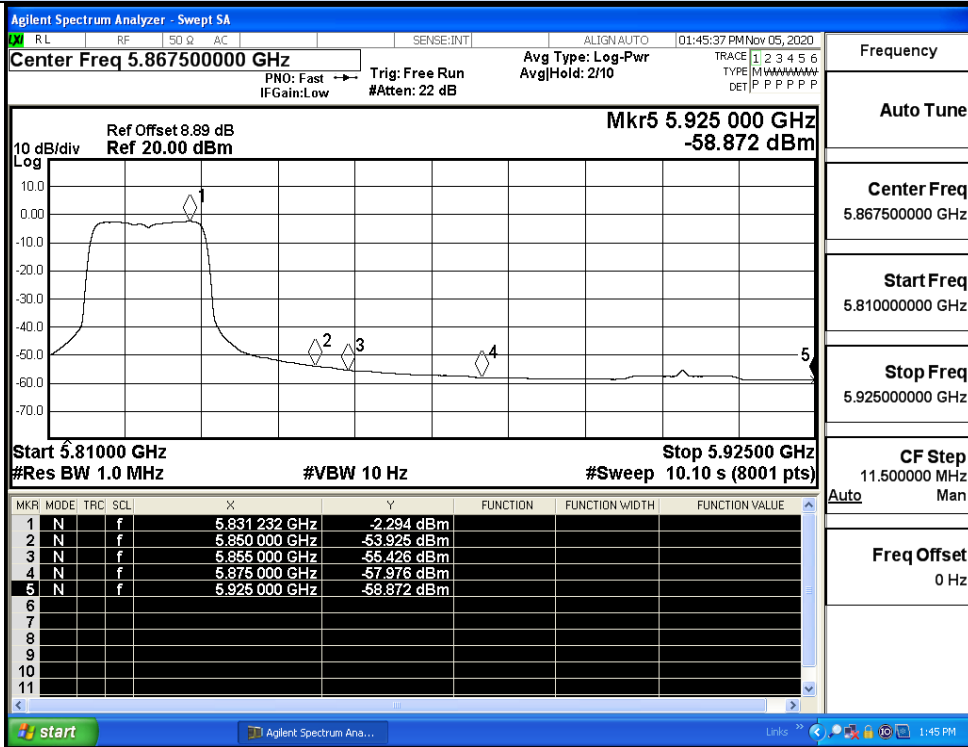


IEEE 802.11a / Channel 148 / 5745MHz / Average

Undesirable Emissions Measurement

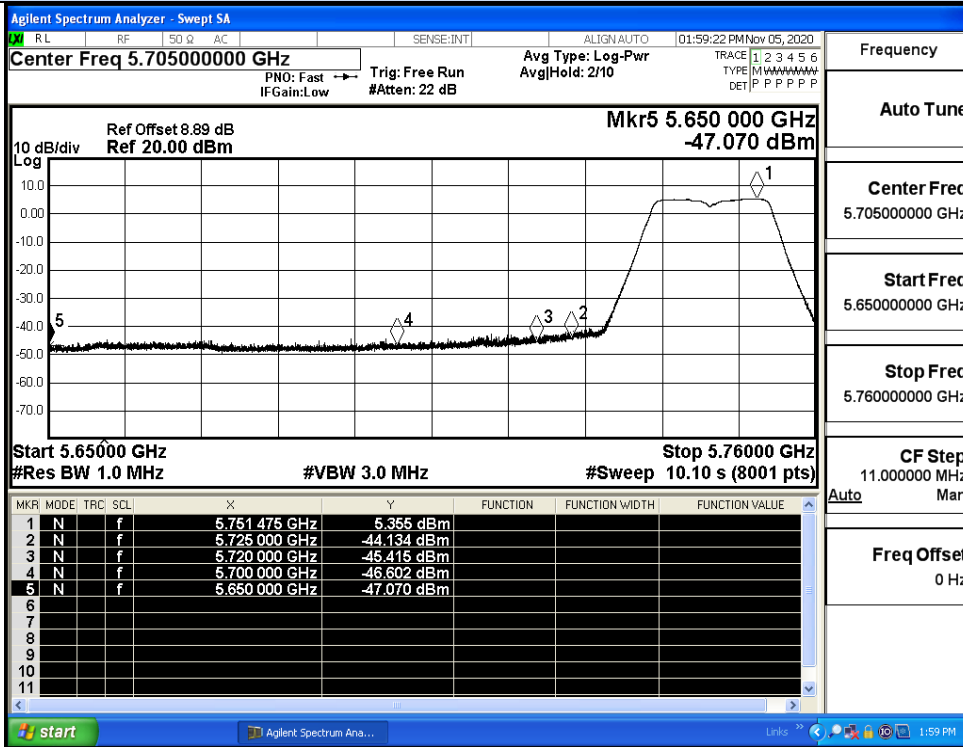


IEEE 802.11a / Channel 165 / 5825MHz / Peak

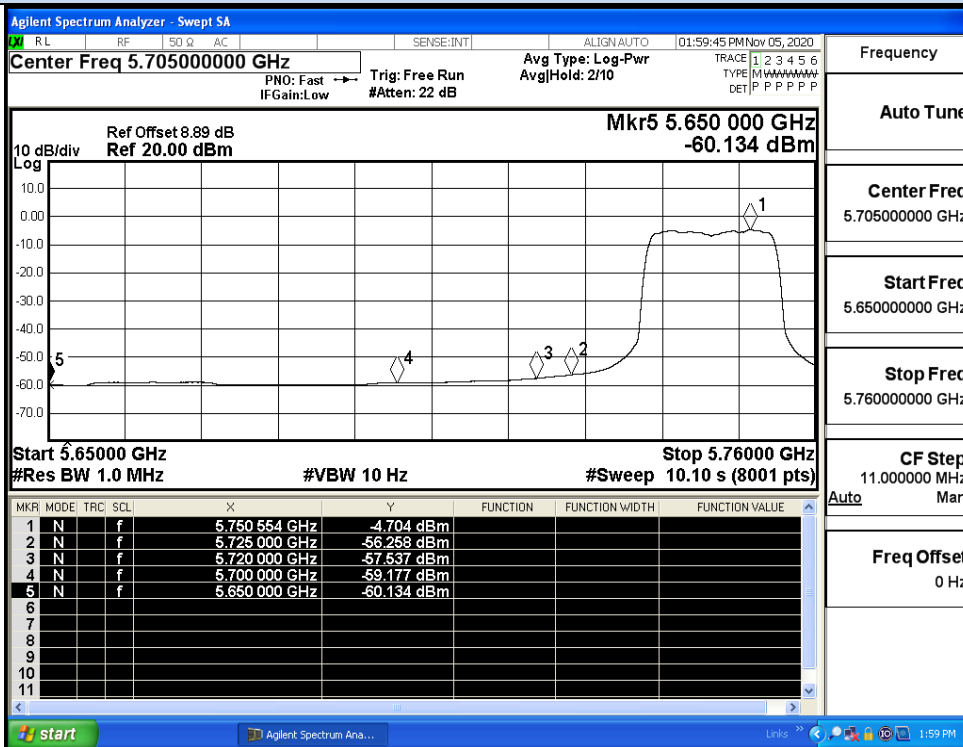


IEEE 802.11a / Channel 165 / 5825MHz / Average

Undesirable Emissions Measurement

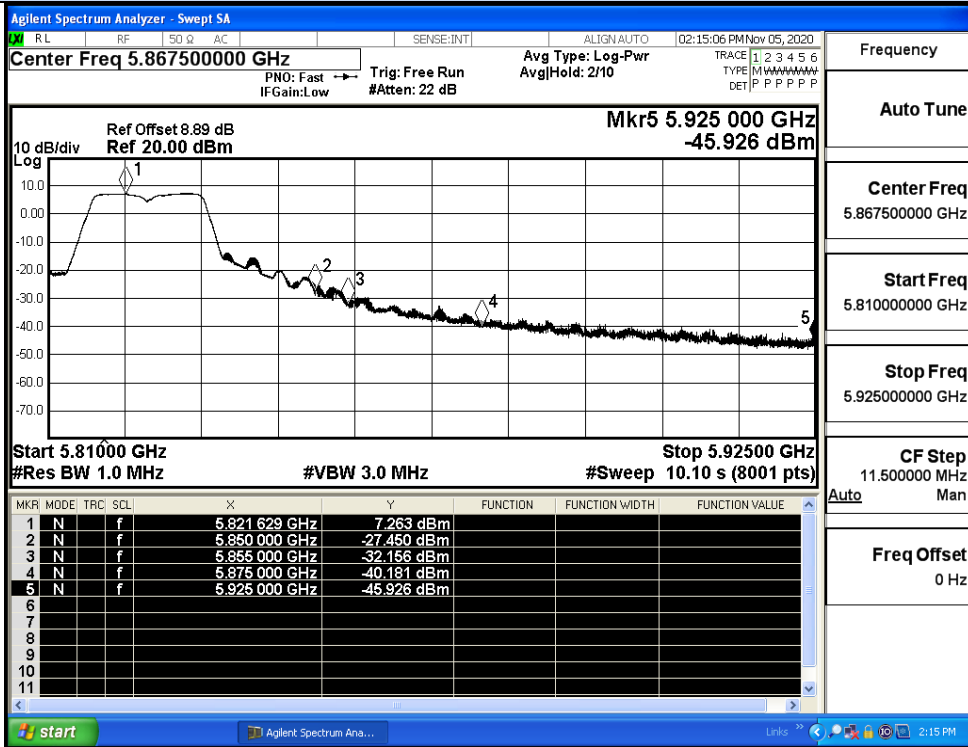


IEEE 802.11n20 / Channel 149 / 5745MHz / Peak

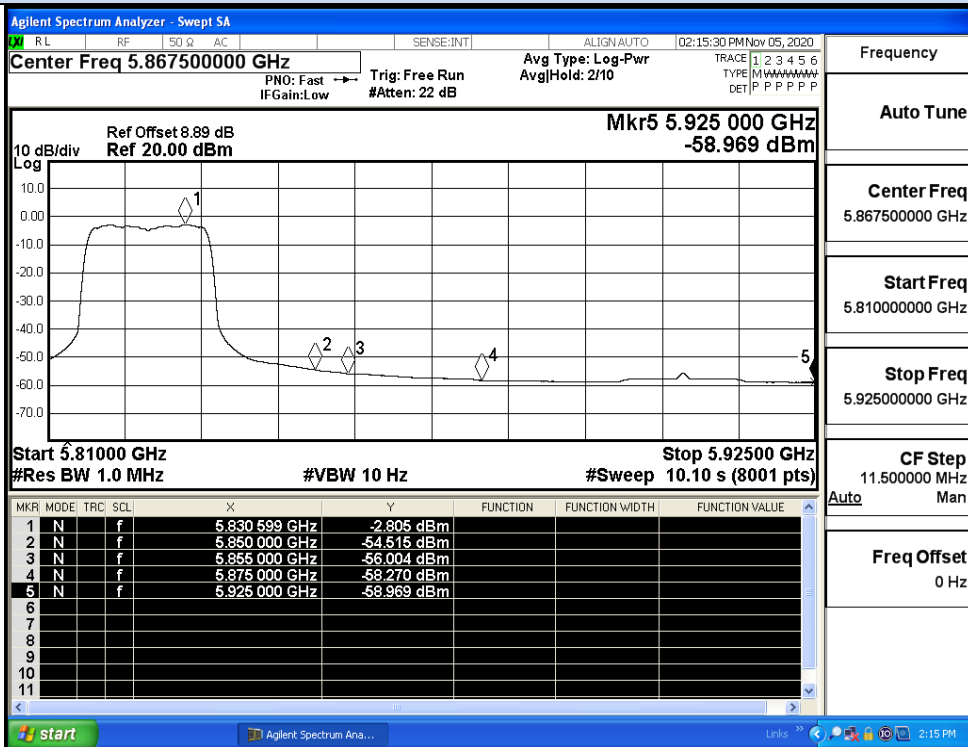


IEEE 802.11n20 / Channel 149 / 5745MHz / Average

Undesirable Emissions Measurement

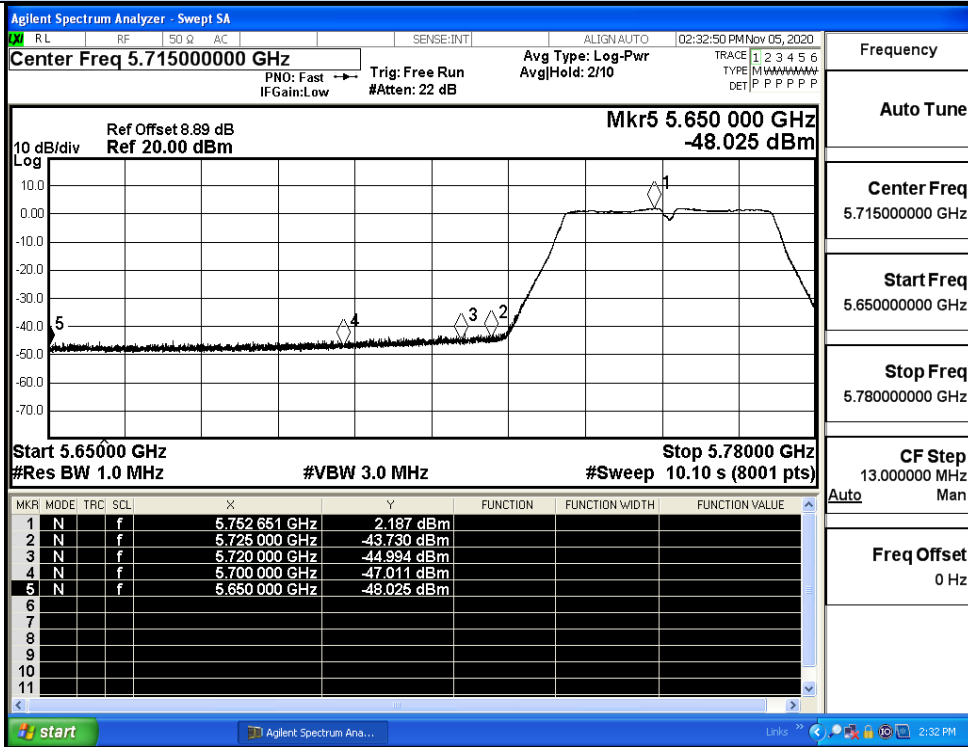


IEEE 802.11n20 / Channel 165 / 5825MHz / Peak

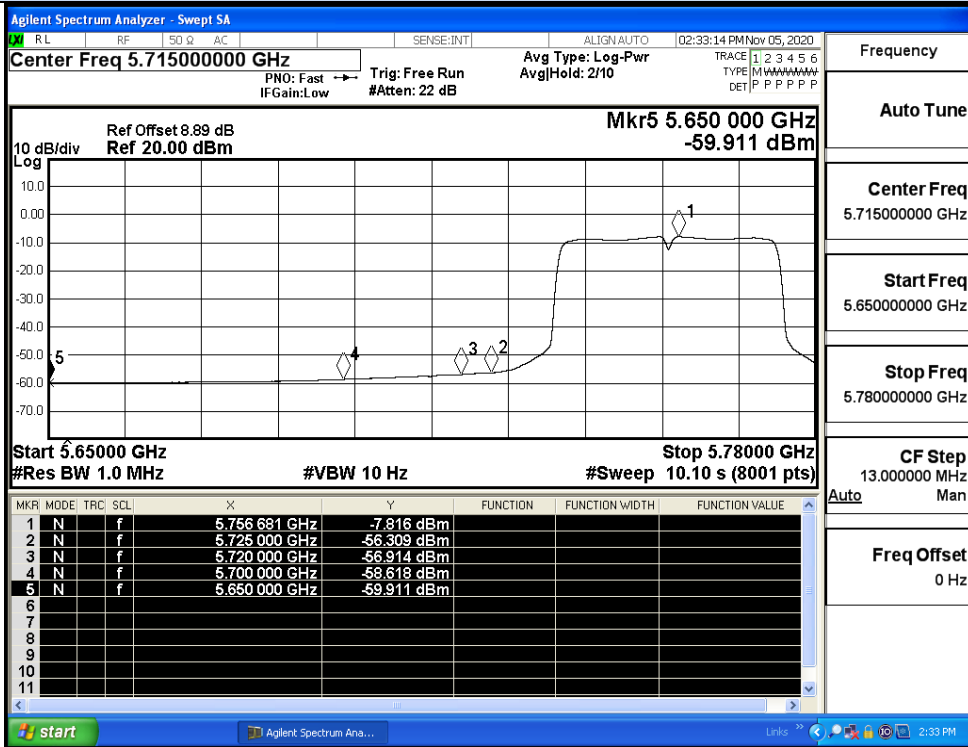


IEEE 802.11n20 / Channel 165 / 5825MHz / Average

Undesirable Emissions Measurement

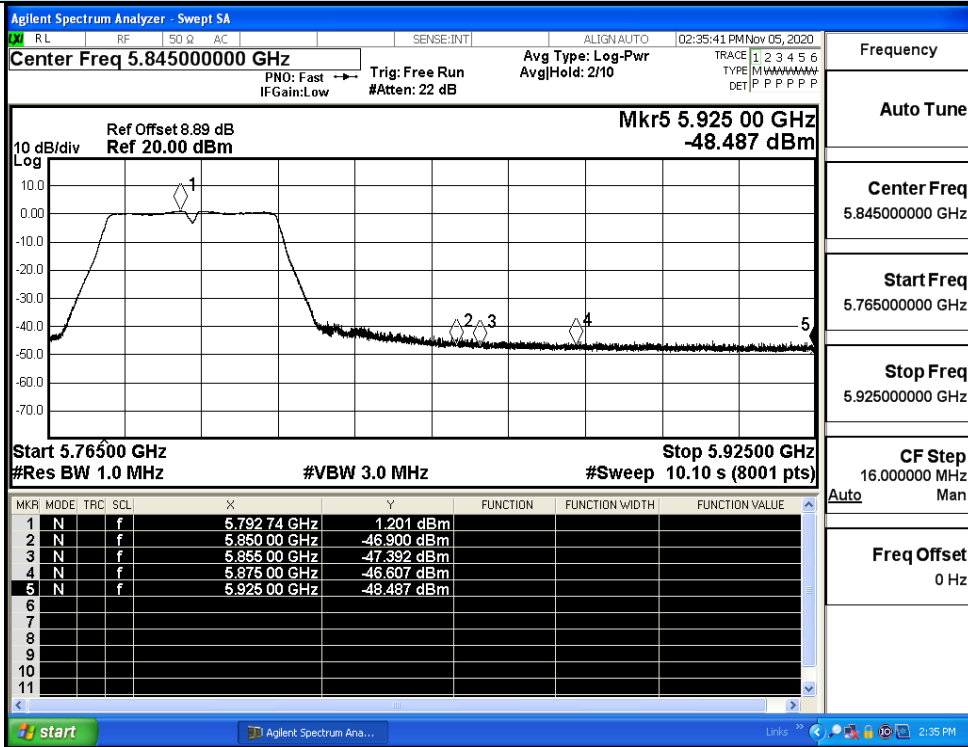


IEEE 802.11n40 / Channel 151 / 5755MHz / Peak

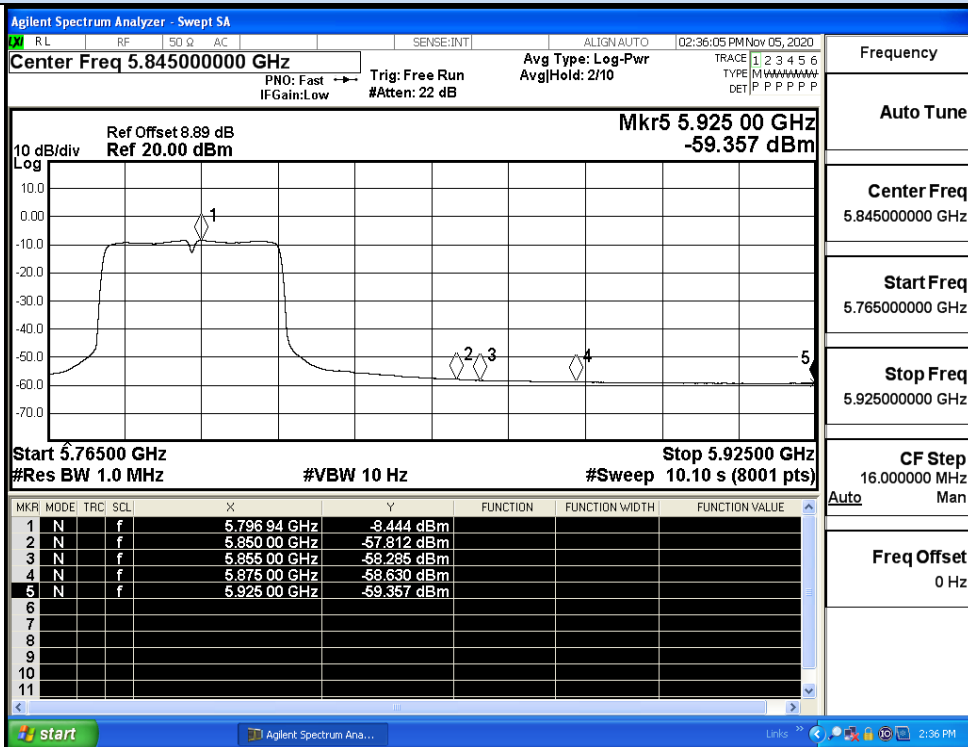


IEEE 802.11n40 / Channel 151 / 5755MHz / Average

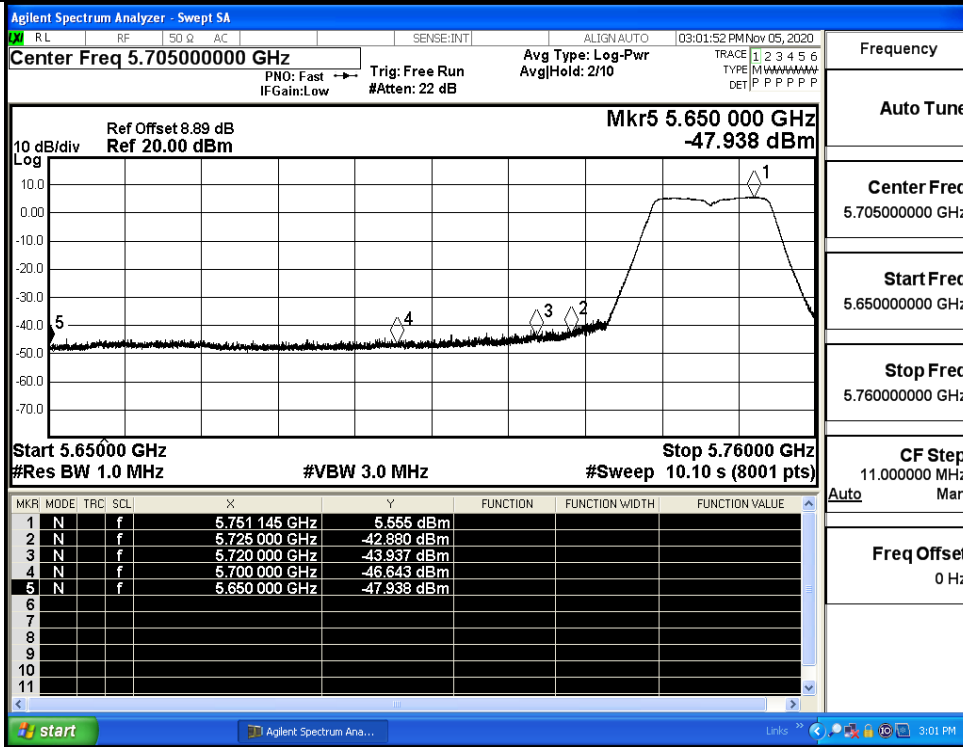
Undesirable Emissions Measurement



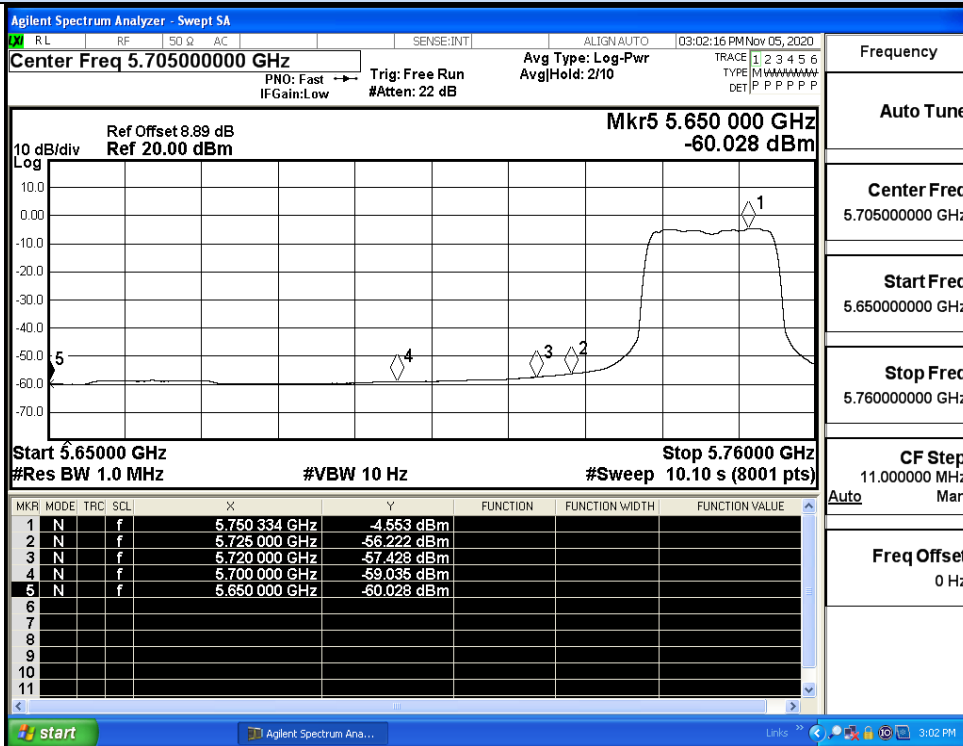
IEEE 802.11n40 / Channel 159 / 5795MHz / Peak



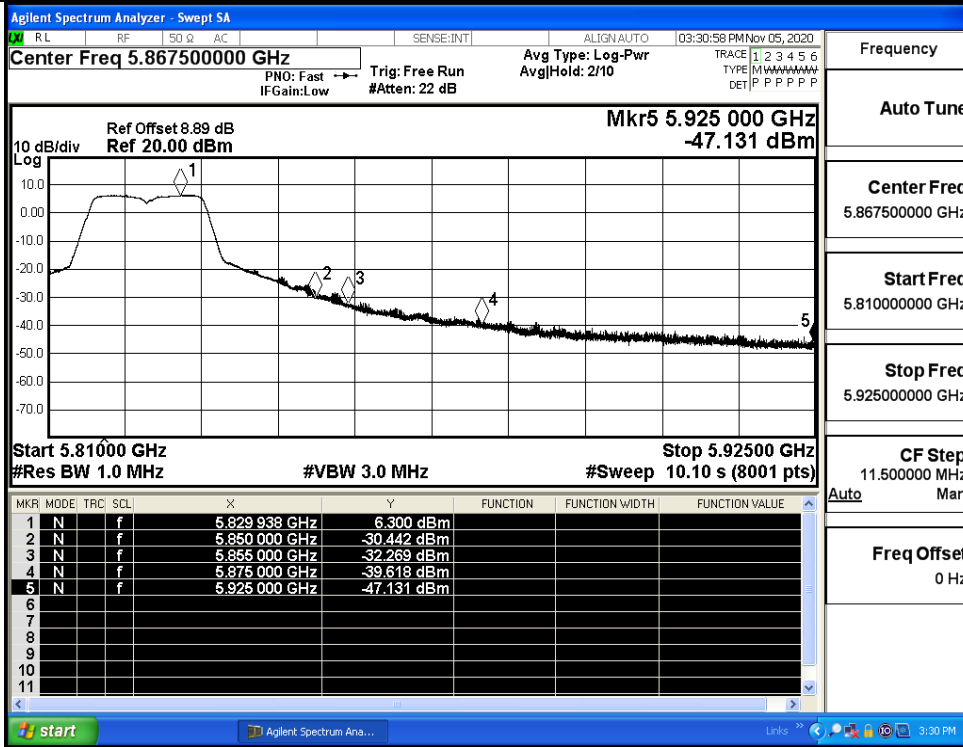
IEEE 802.11n40 / Channel 159 / 5795MHz / Average



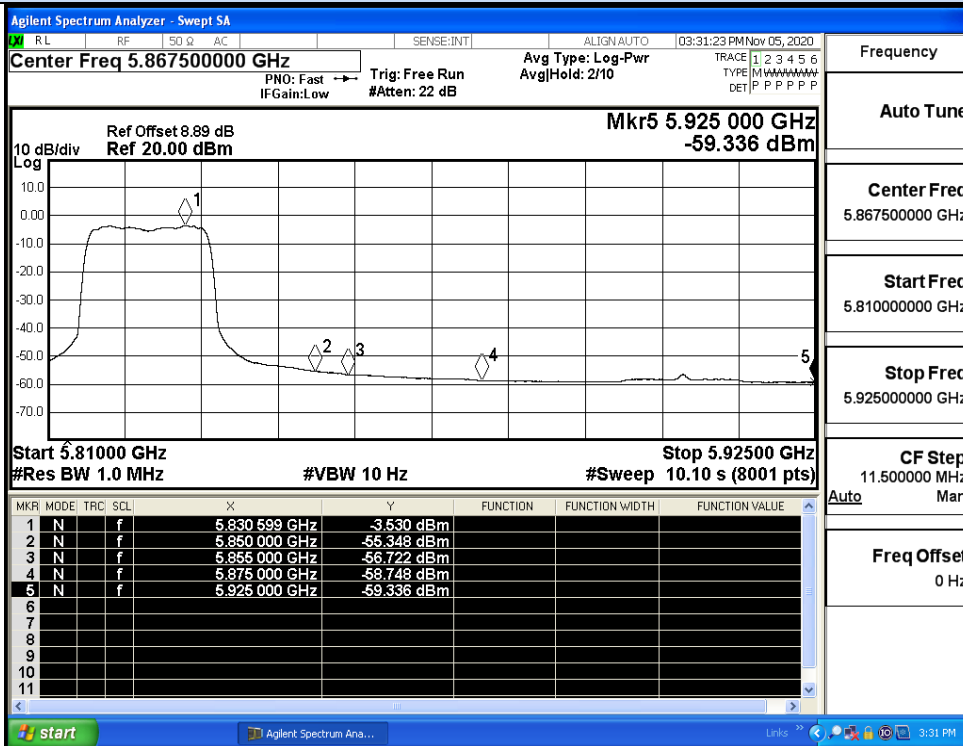
IEEE 802.11ac20 / Channel 149 / 5745MHz / Peak



IEEE 802.11ac20 / Channel 149 / 5745MHz / Average

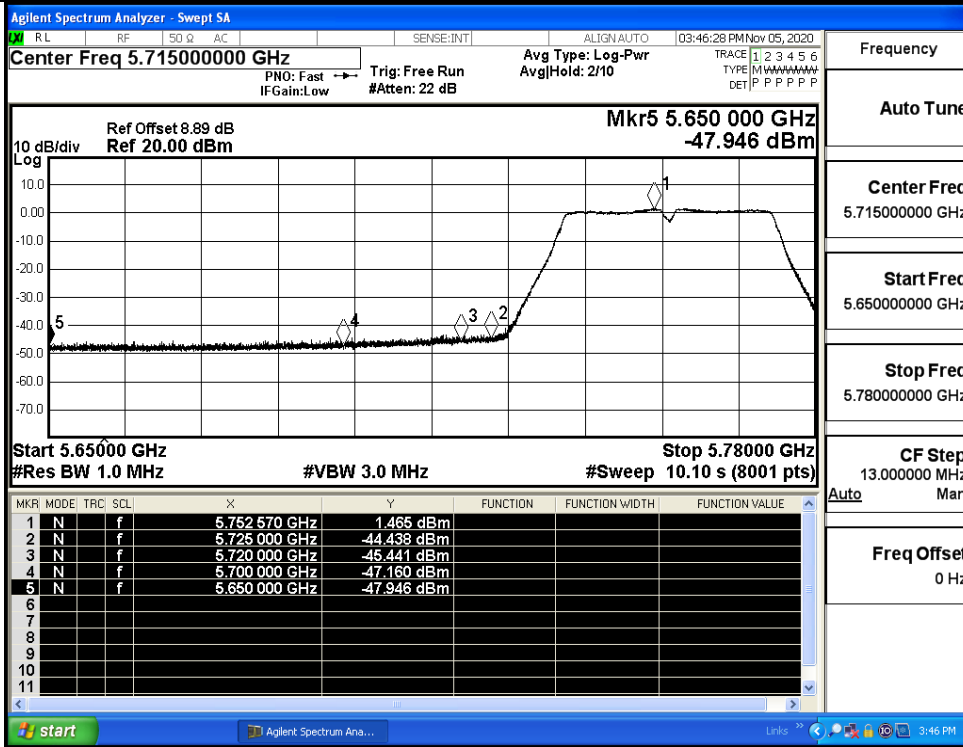


IEEE 802.11ac20 / Channel 165 / 5825MHz / Peak

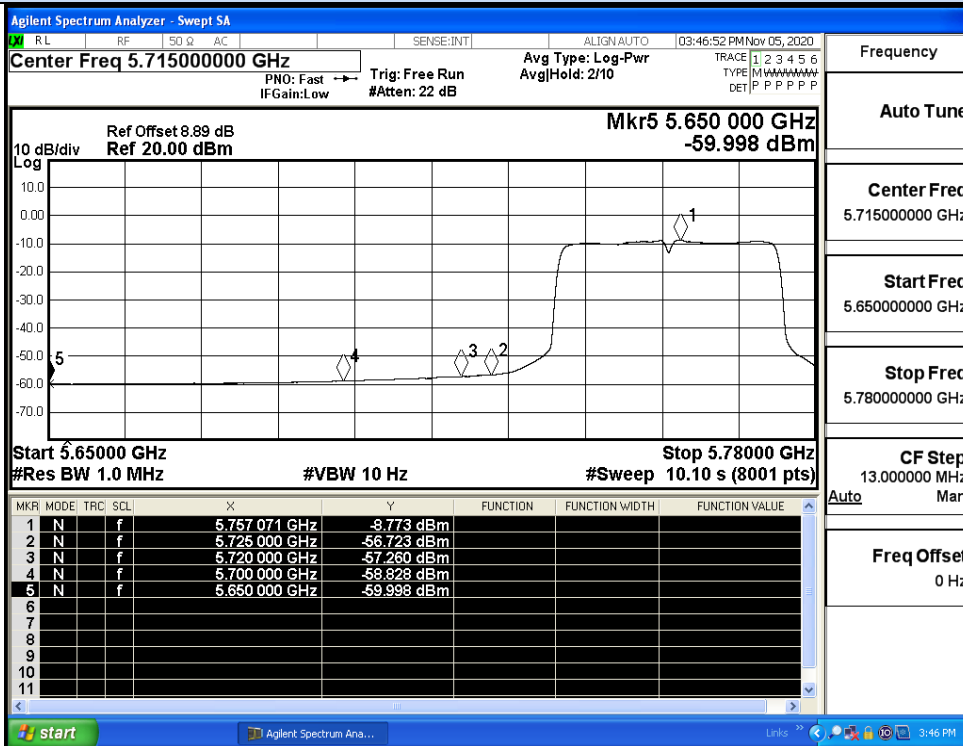


IEEE 802.11ac20 / Channel 165 / 5825MHz / Average

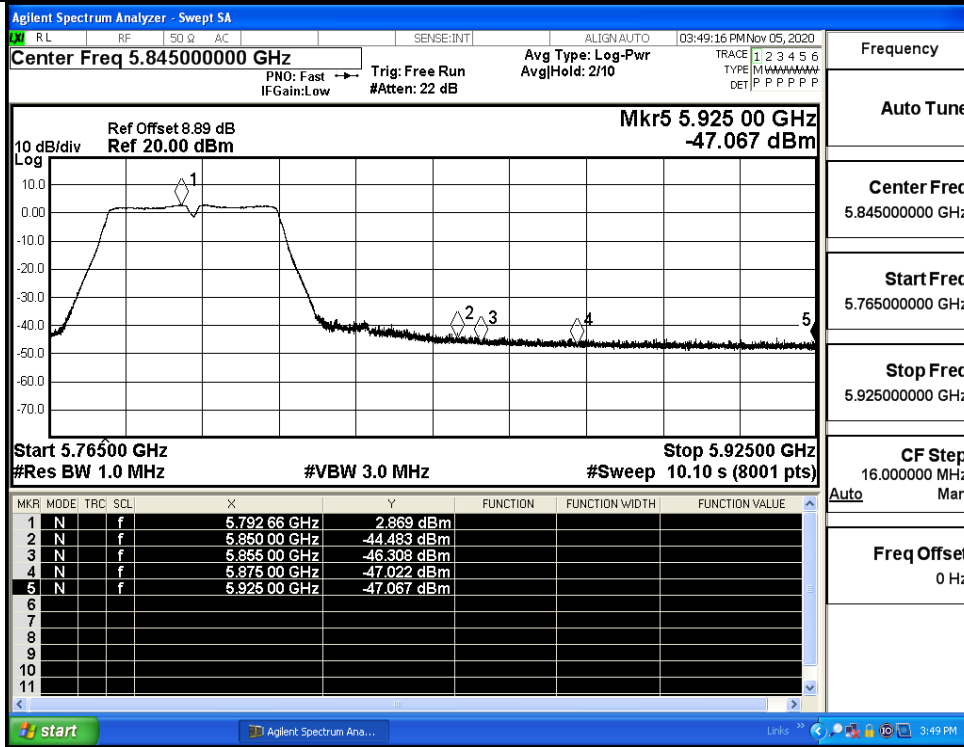




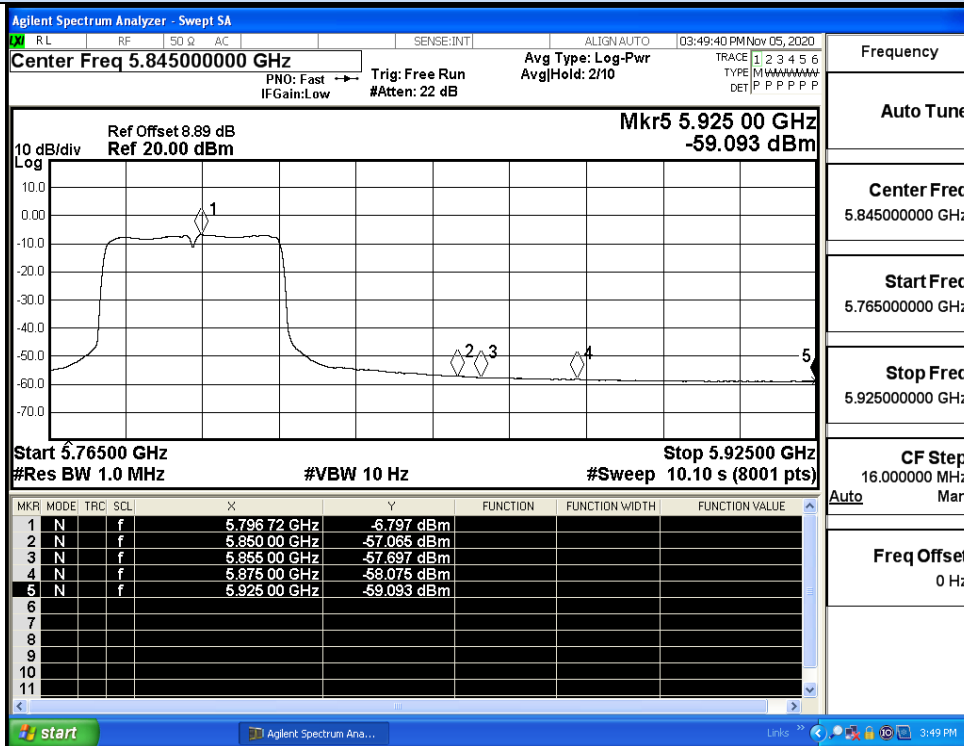
IEEE 802.11ac40 / Channel 151 / 5755MHz / Peak



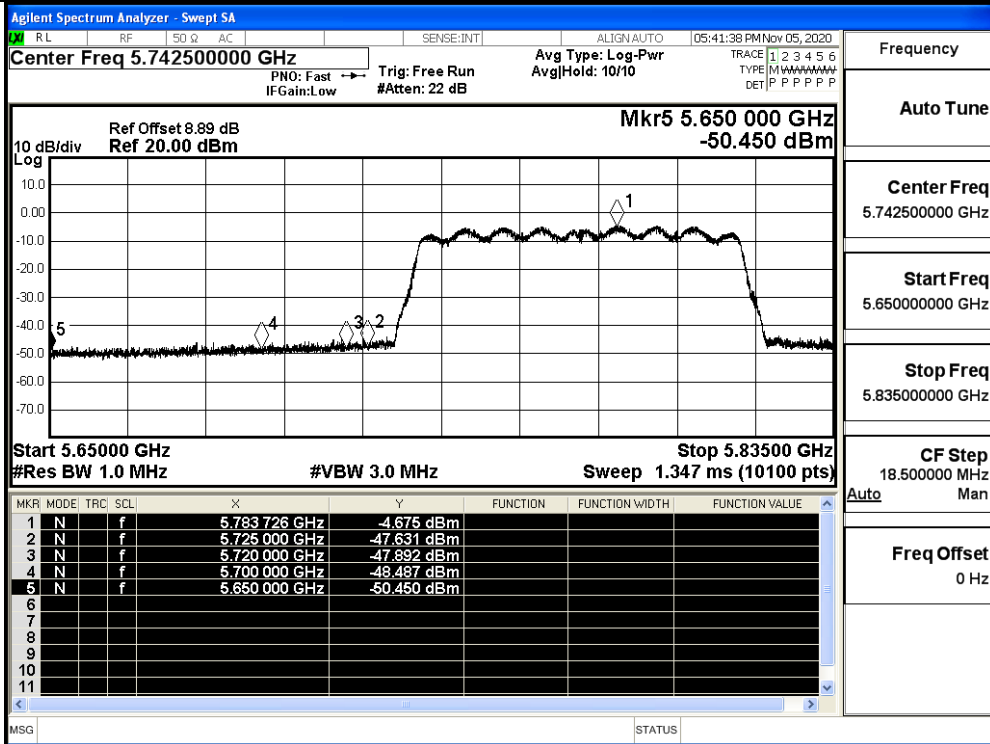
IEEE 802.11ac40 / Channel 151 / 5755MHz / Average



IEEE 802.11ac40 / Channel 159 / 5795MHz / Peak

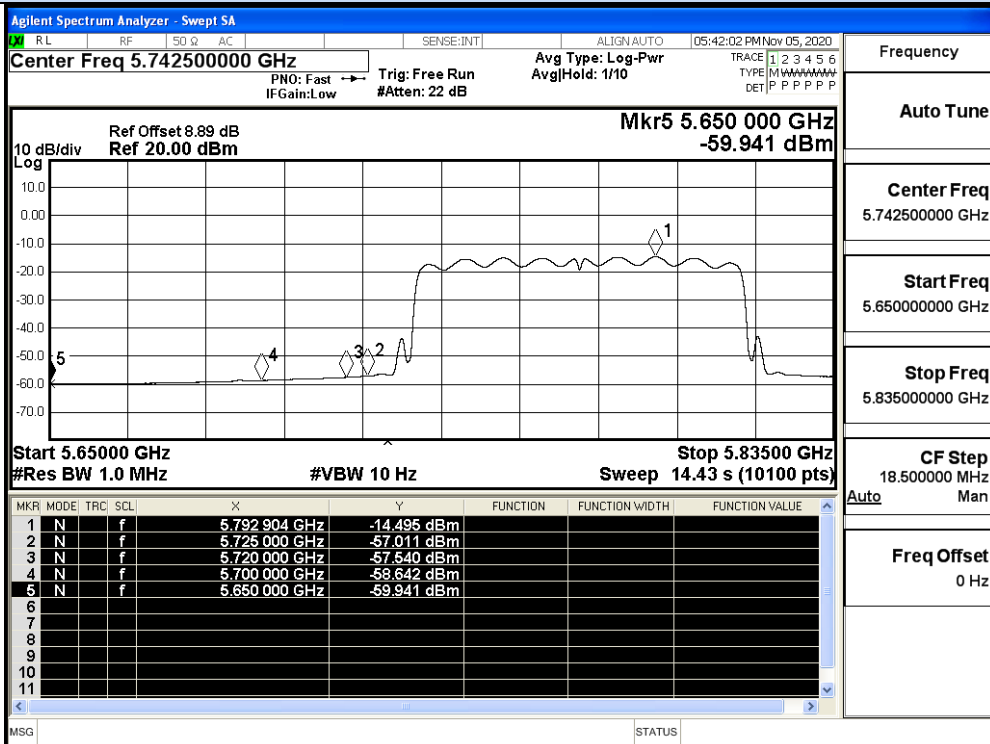


IEEE 802.11ac40 / Channel 159 / 5795MHz / Average



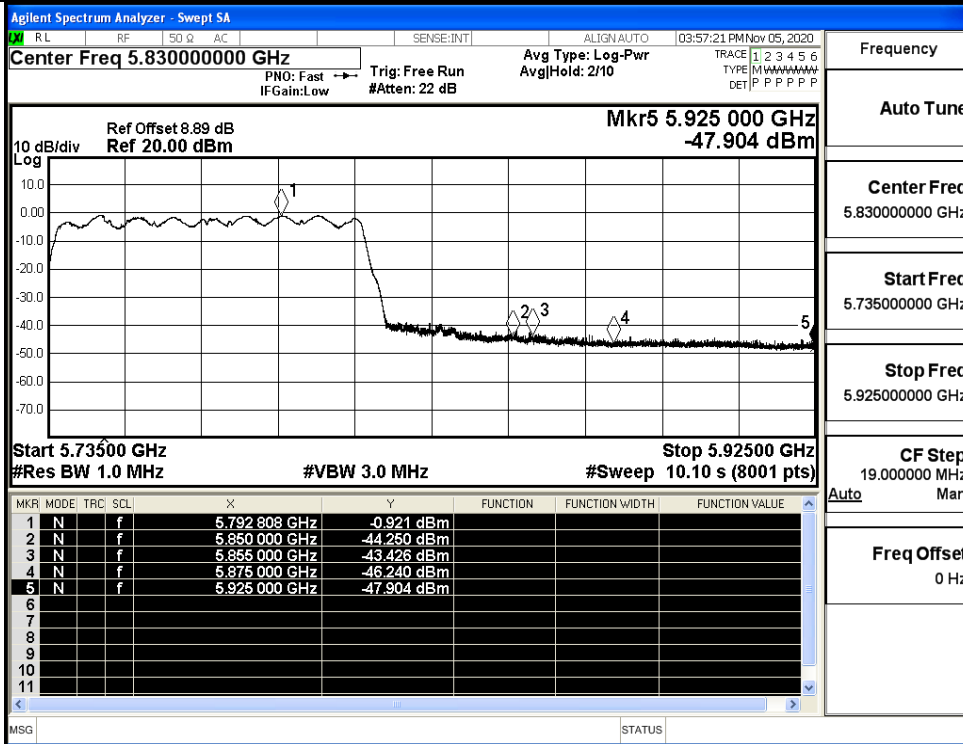
Frequency	
Auto Tune	
Center Freq	5.742500000 GHz
Start Freq	5.650000000 GHz
Stop Freq	5.835000000 GHz
CF Step	18.500000 MHz
Auto	Man
Freq Offset	0 Hz

IEEE 802.11ac80 / Channel 155 / 5775MHz / Peak



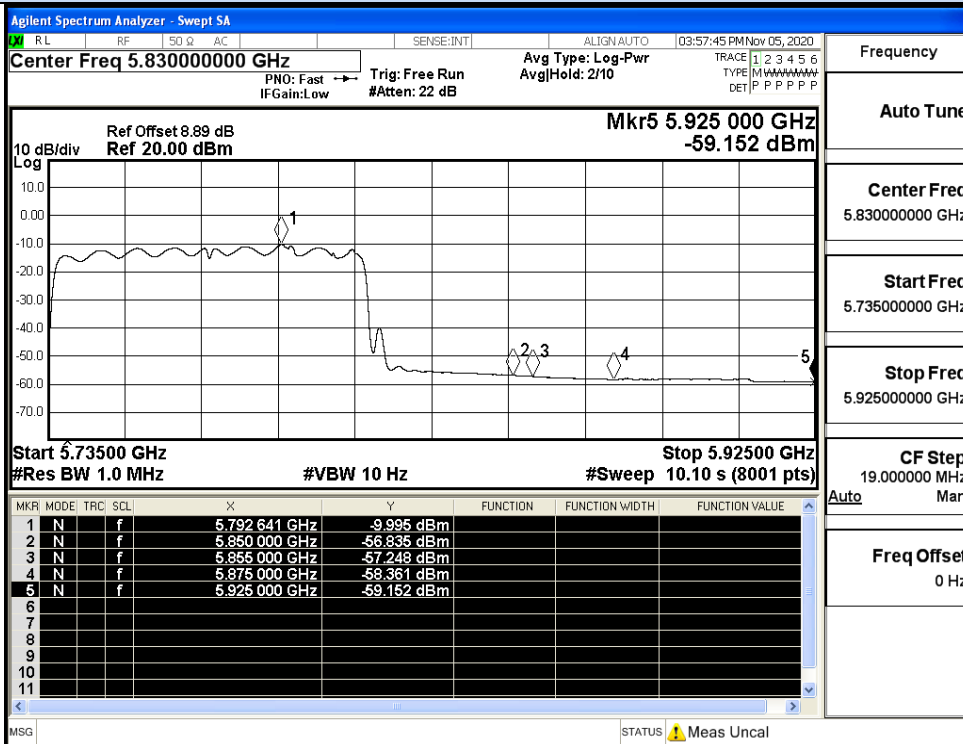
Frequency	
Auto Tune	
Center Freq	5.742500000 GHz
Start Freq	5.650000000 GHz
Stop Freq	5.835000000 GHz
CF Step	18.500000 MHz
Auto	Man
Freq Offset	0 Hz

IEEE 802.11ac80 / Channel 155 / 5775MHz / Average



Frequency	
Auto Tune	
Center Freq	5.830000000 GHz
Start Freq	5.735000000 GHz
Stop Freq	5.925000000 GHz
CF Step	19.000000 MHz
Auto	Man
Freq Offset	0 Hz

IEEE 802.11ac80 / Channel 155 / 5775MHz / Peak



Frequency	
Auto Tune	
Center Freq	5.830000000 GHz
Start Freq	5.735000000 GHz
Stop Freq	5.925000000 GHz
CF Step	19.000000 MHz
Auto	Man
Freq Offset	0 Hz

IEEE 802.11ac80 / Channel 155 / 5775MHz / Average