

## Appendix E

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

Product Name: Portable Data Collector

Trade Mark: Newland

Test Model: NLS-NFT10

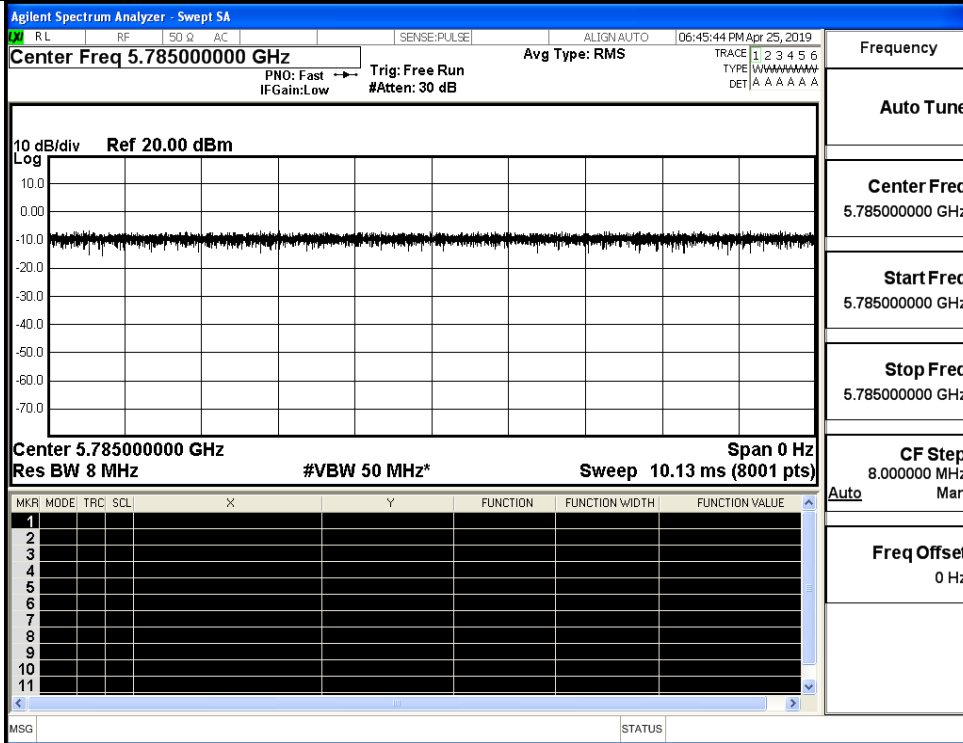
#### Environmental Conditions

Temperature:	24.6 ° C
Relative Humidity:	52.6%
ATM Pressure:	100.0 kPa
Test Engineer:	WANGCHUANG
Supervised by:	Tom.Liu

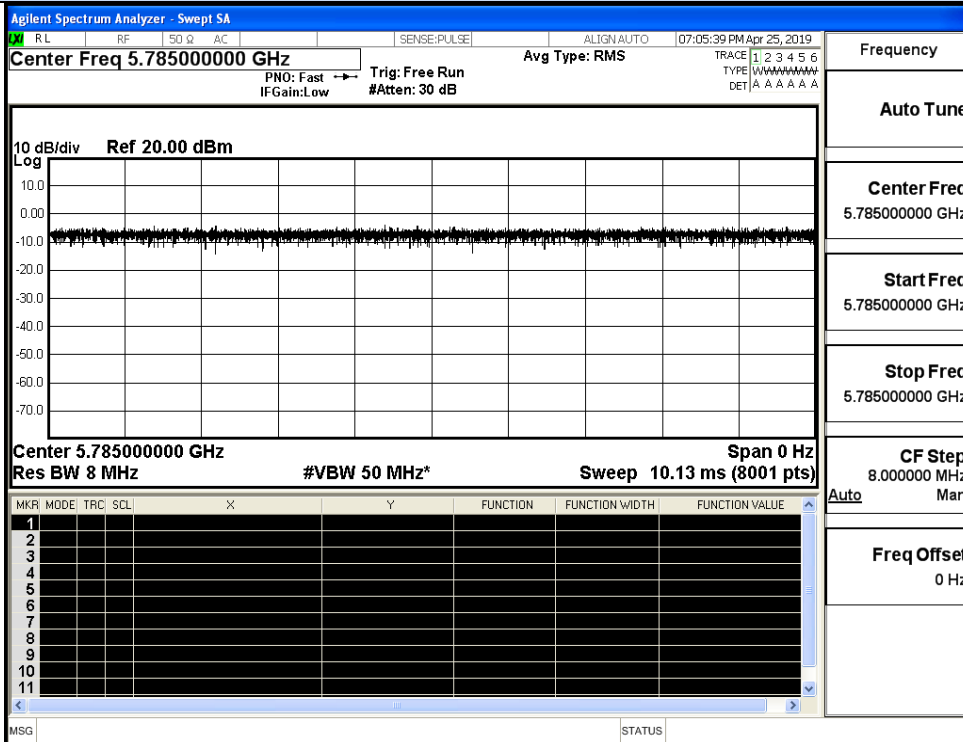
#### E.1 Duty Cycle

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

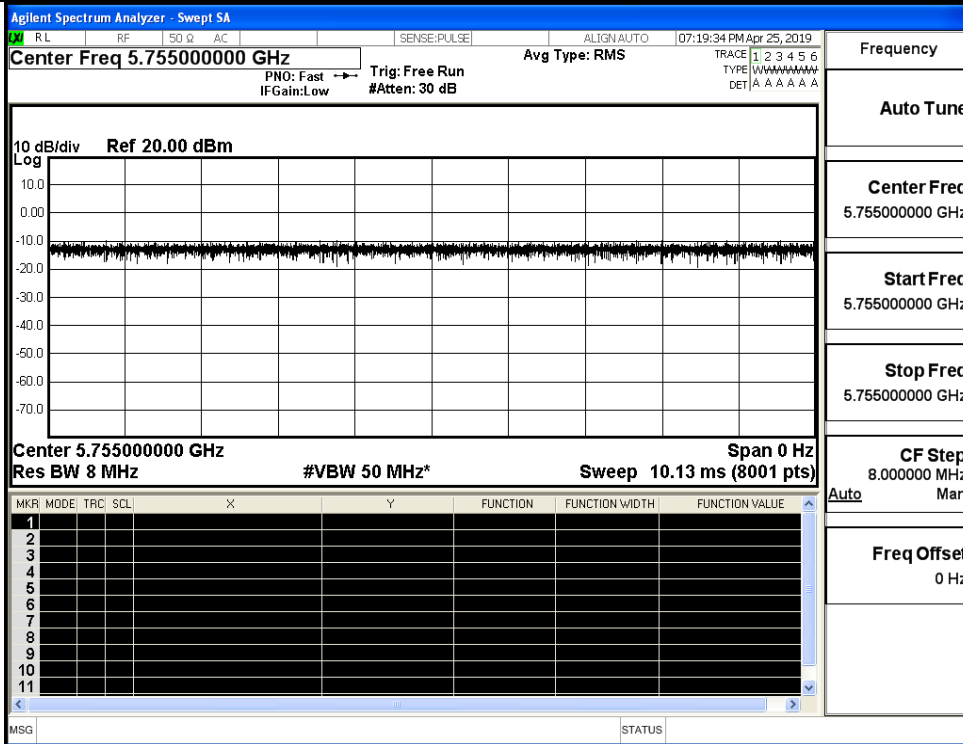
On Time and Duty Cycle



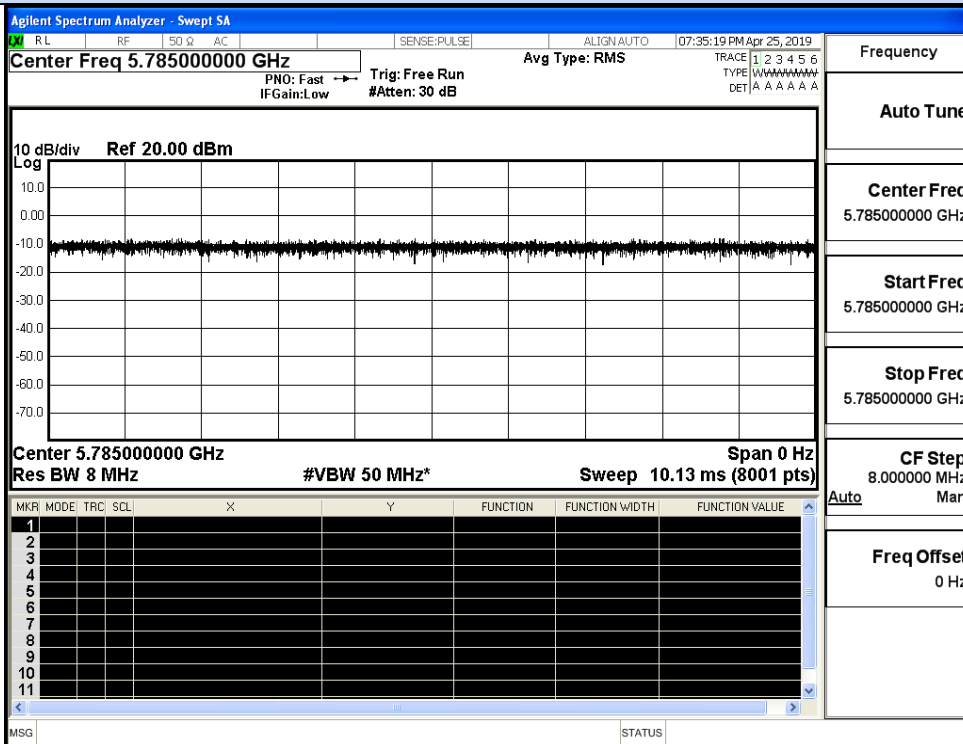
IEEE 802.11a



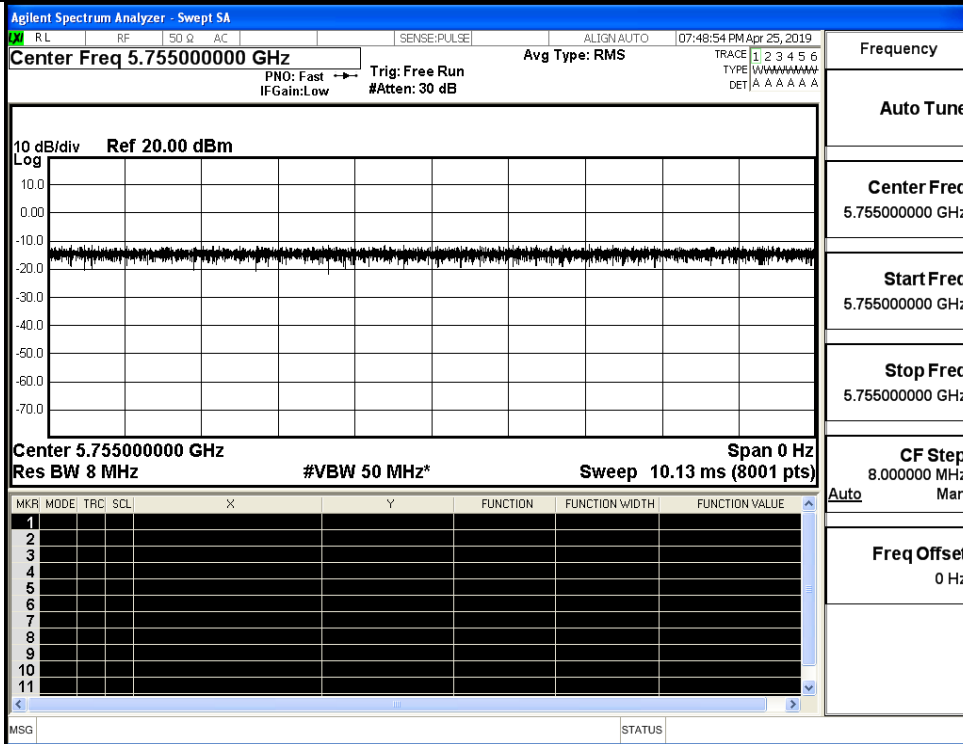
IEEE 802.11n HT20



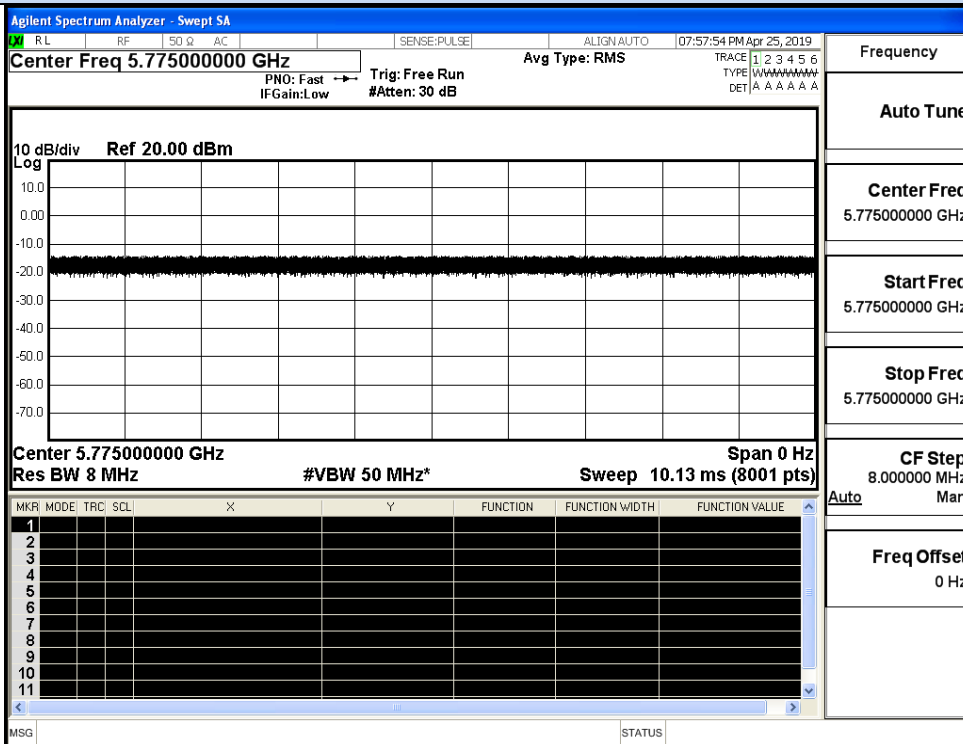
IEEE 802.11n HT40



IEEE 802.11AC20



IEEE 802.11AC40



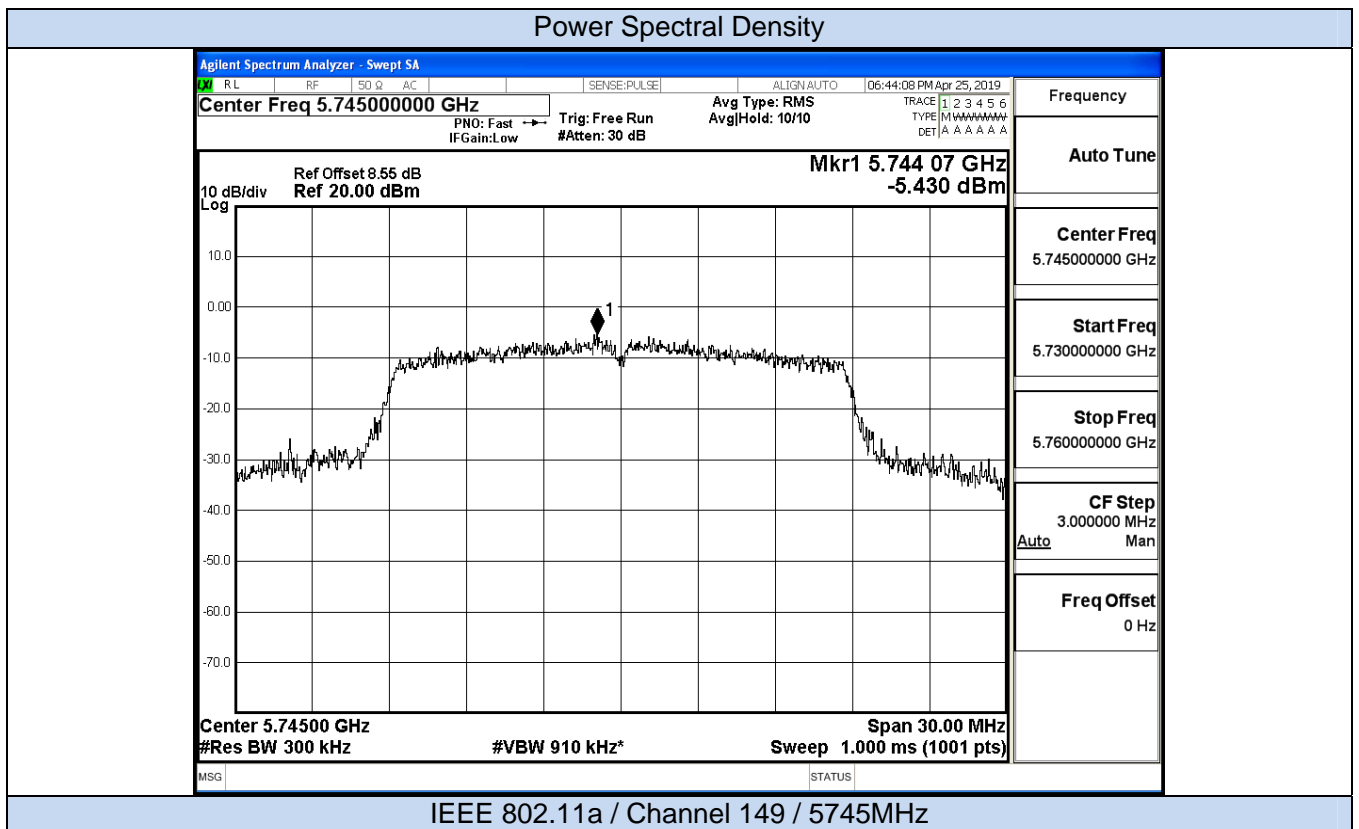
IEEE 802.11AC80

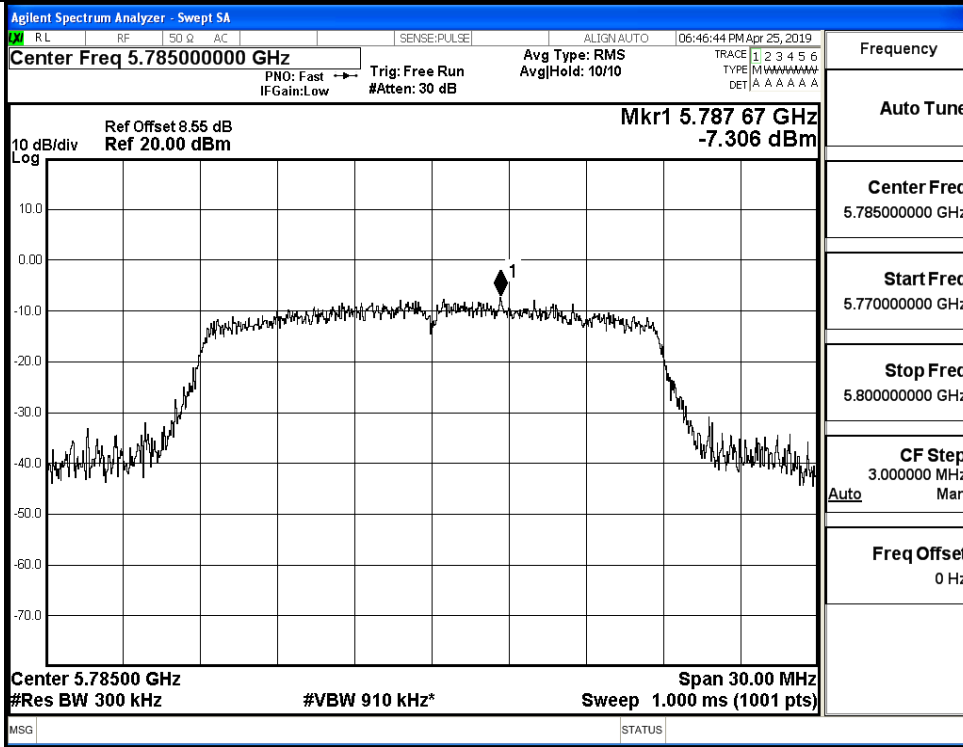
**E.2 Maximum Conduct Output Power**

Test Mode	Channel	Frequency (MHz)	AVG Conducted Power (dBm)	Duty Cycle Factor(dB)	Report Conducted Power(dBm)	Limit (dBm)	Verdict
11A	149	5745	15.26	0	15.26	30	Pass
	157	5785	15.55	0	15.55		Pass
	165	5825	15.74	0	15.74		Pass
11N20 SISO	149	5745	15.04	0	15.04	30	Pass
	157	5785	14.98	0	14.98		Pass
	165	5825	14.57	0	14.57		Pass
11N40 SISO	151	5755	15.13	0	15.13	30	Pass
	159	5795	14.85	0	14.85		Pass
11AC20 SISO	149	5745	14.81	0	14.81	30	Pass
	157	5785	15.36	0	15.36		Pass
	165	5825	15.82	0	15.82		Pass
11AC40 SISO	151	5755	14.87	0	14.87	30	Pass
	159	5795	14.48	0	14.48		Pass
11AC80 SISO	155	5775	13.42	0	13.42	30	Pass

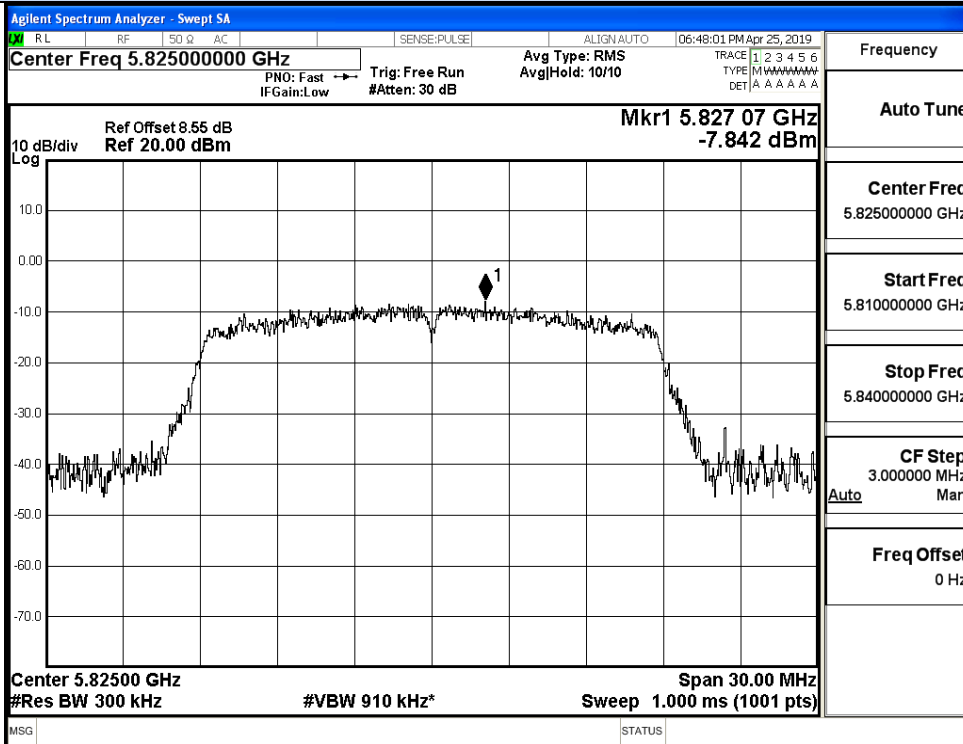
### E.3 Power Spectral Density

Test Mode	Channel	Frequency (MHz)	Power Density (dBm/500KHz)	Duty Cycle Factor (dB)	RBW Factor (dB)	Report Power Density (dBm/500KHz)	Limit (dBm/500KHz)	Verdict
11A	149	5745	-5.43	0	0	-3.21	30	Pass
	157	5785	-7.31	0	0	-5.09		Pass
	165	5825	-7.84	0	0	-5.62		Pass
11N20 SISO	149	5745	-6.29	0	0	-4.07	30	Pass
	157	5785	-8.13	0	0	-5.91		Pass
	165	5825	-9.47	0	0	-7.25		Pass
11N40 SISO	151	5755	-11.03	0	0	-8.82	30	Pass
	159	5795	-9.30	0	0	-7.08		Pass
11AC20 SISO	149	5745	-9.68	0	0	-7.46	30	Pass
	157	5785	-8.02	0	0	-5.80		Pass
	165	5825	-7.61	0	0	-5.39		Pass
11AC40 SISO	151	5755	-12.16	0	0	-9.94	30	Pass
	159	5795	-12.52	0	0	-10.30		Pass
11AC80 SISO	155	5775	-14.50	0	0	-12.28	30	Pass



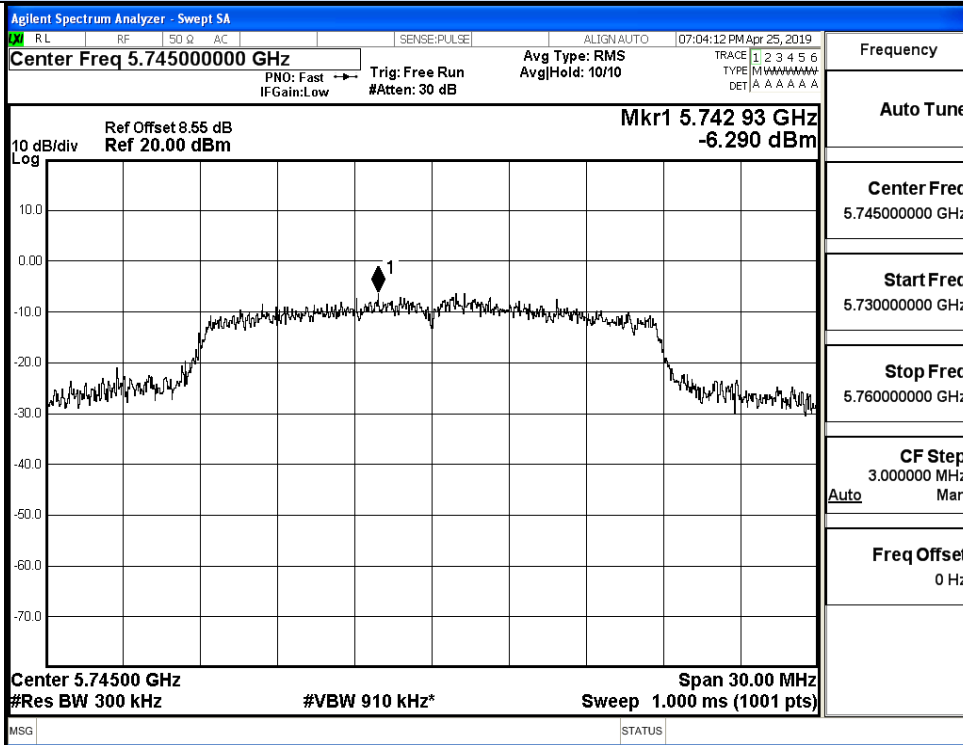


IEEE 802.11a / Channel 157 / 5785MHz

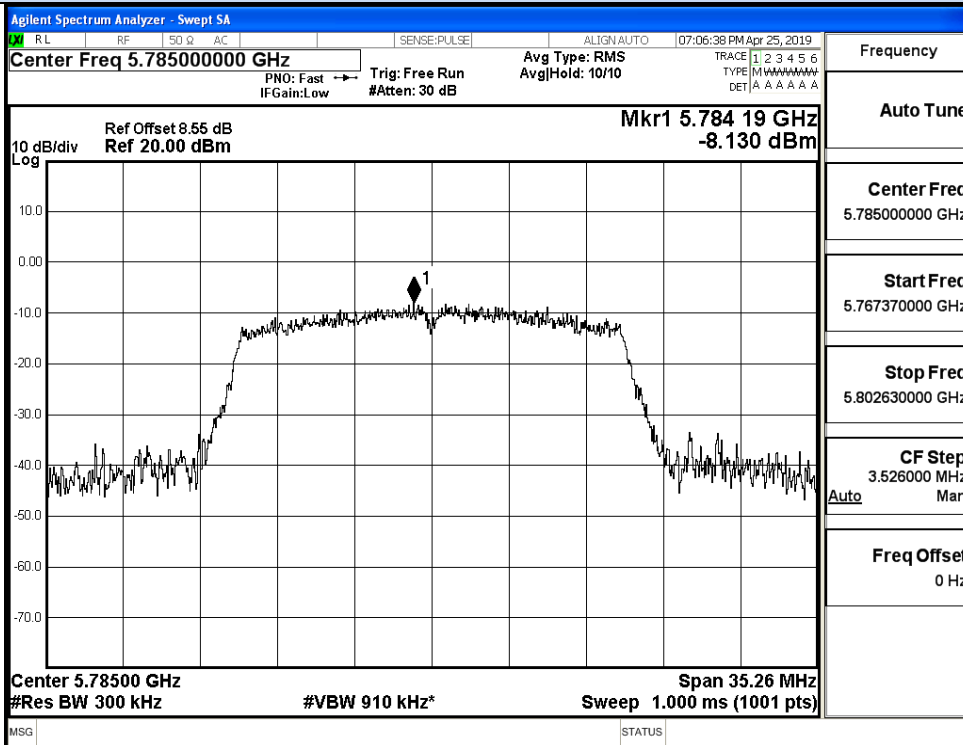


IEEE 802.11a / Channel 165 / 5825MHz

Power Spectral Density

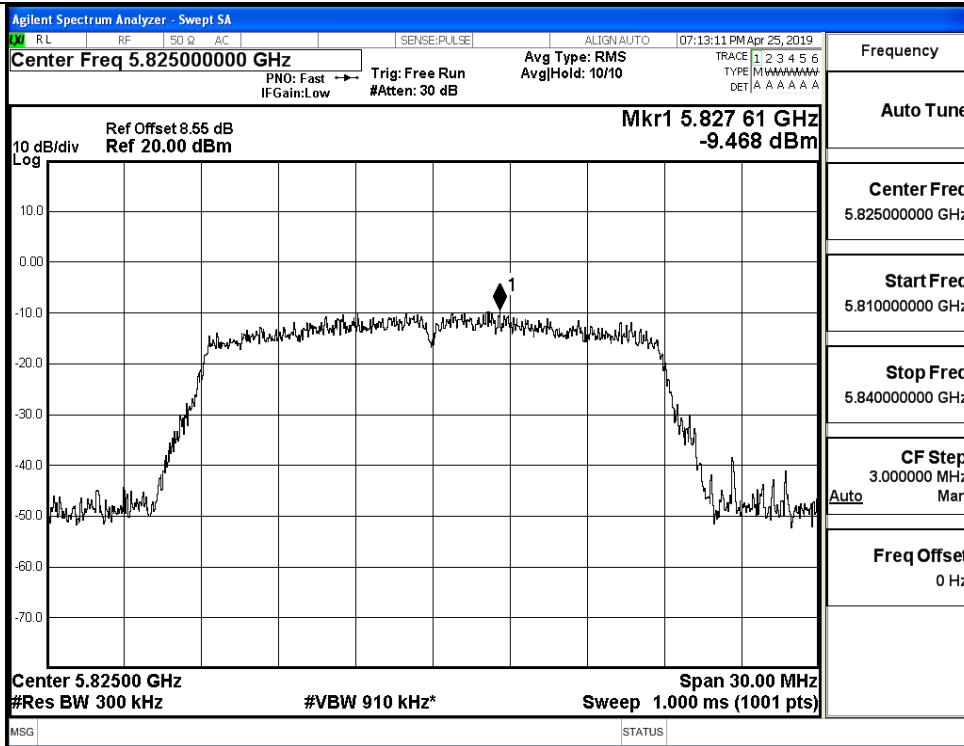


IEEE 802.11n20 / Channel 149 / 5745MHz



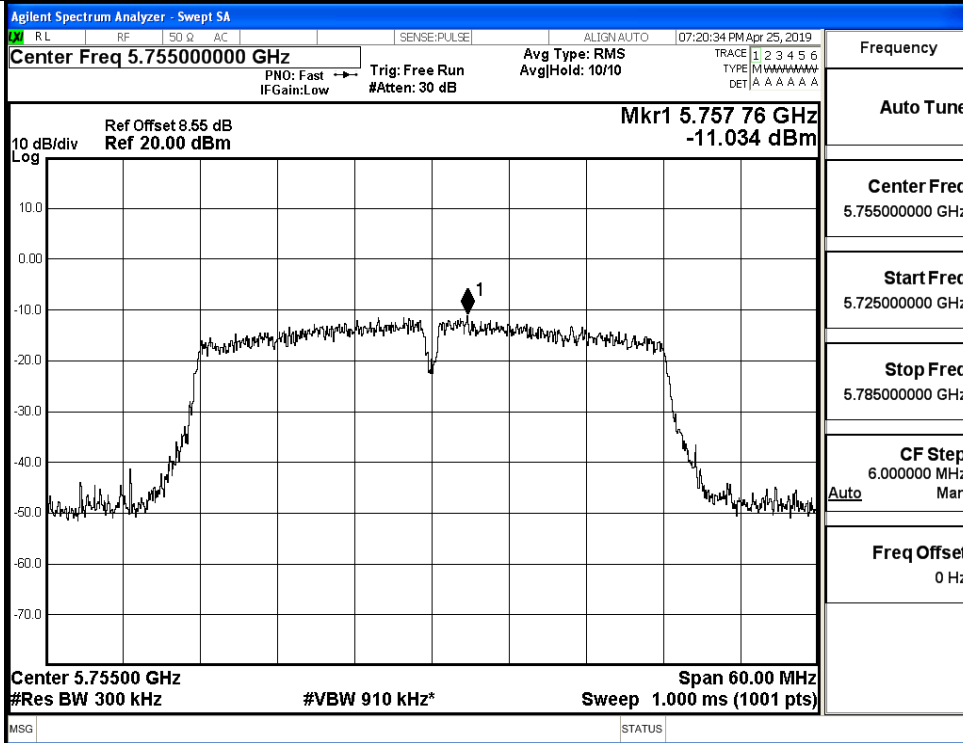
IEEE 802.11n20 / Channel 157 / 5785MHz



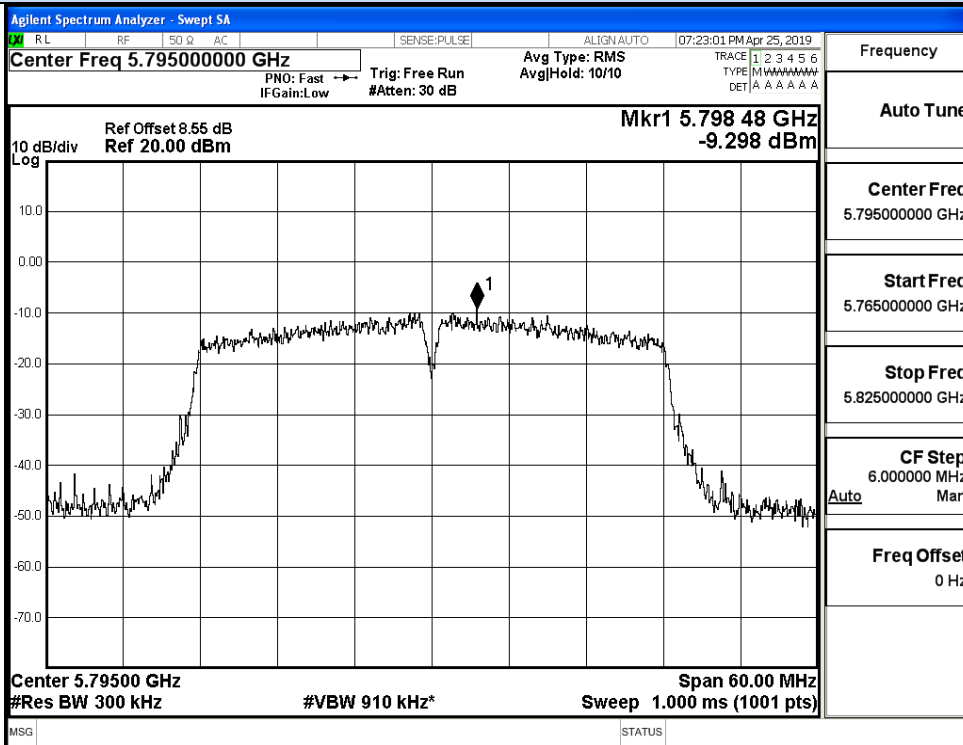


IEEE 802.11n20 / Channel 165 / 5825MHz

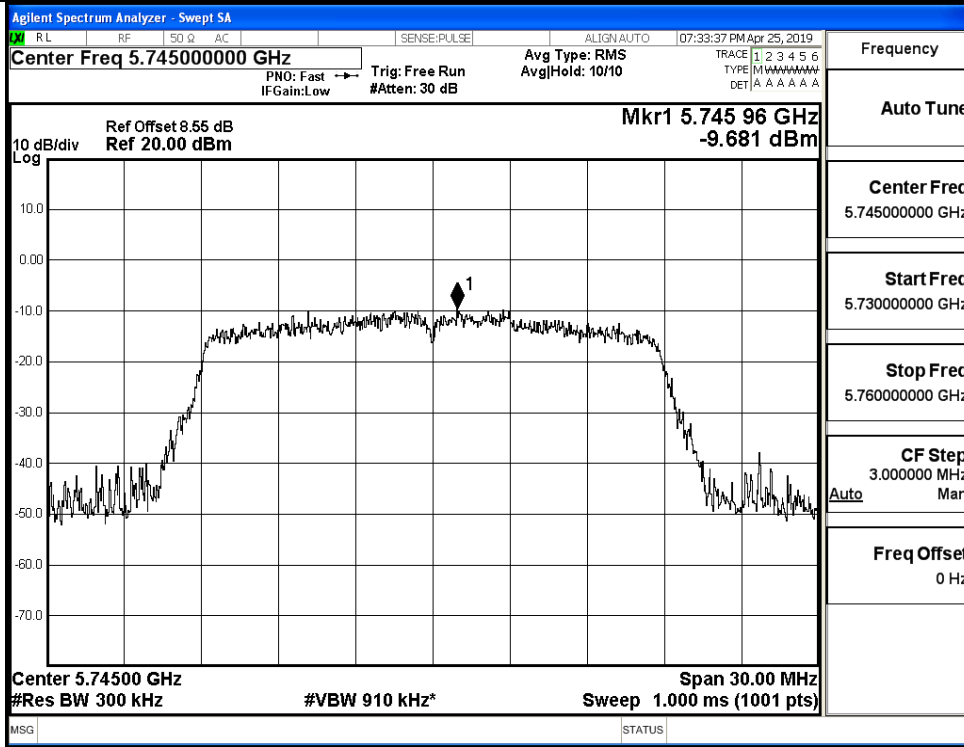
Power Spectral Density



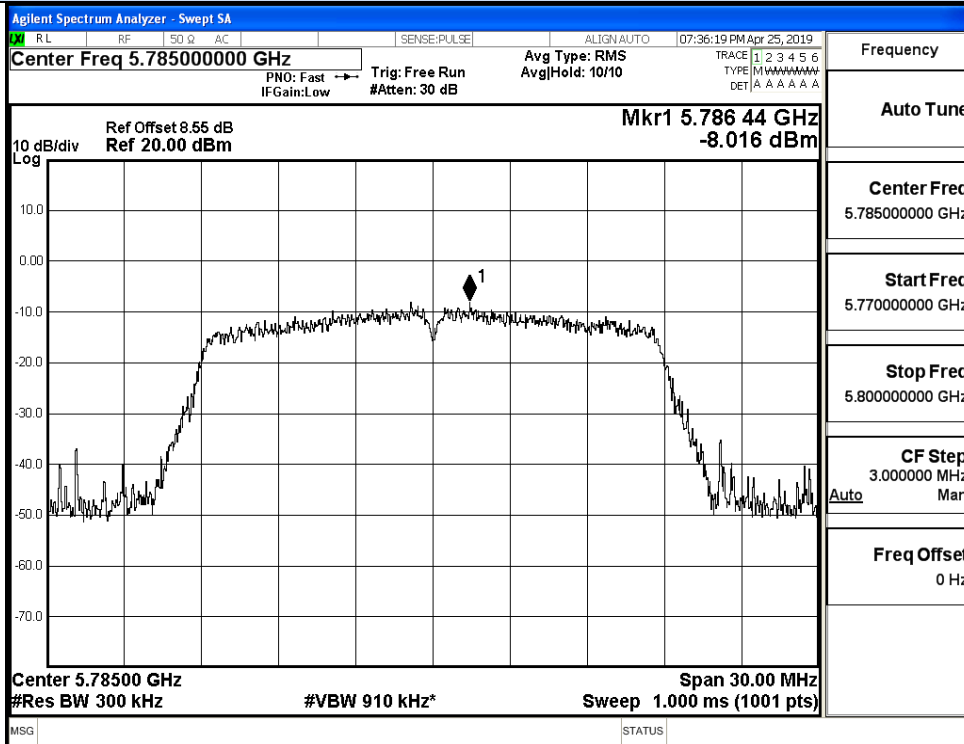
IEEE 802.11n40 / Channel 151 / 5755MHz



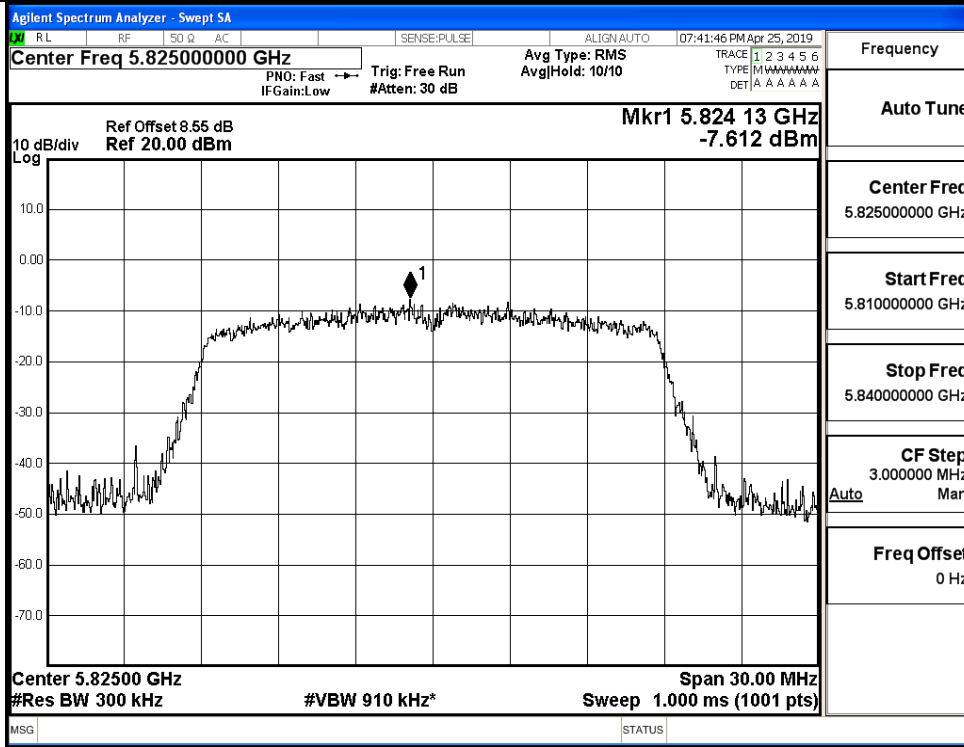
IEEE 802.11n40 / Channel 159 / 5795MHz



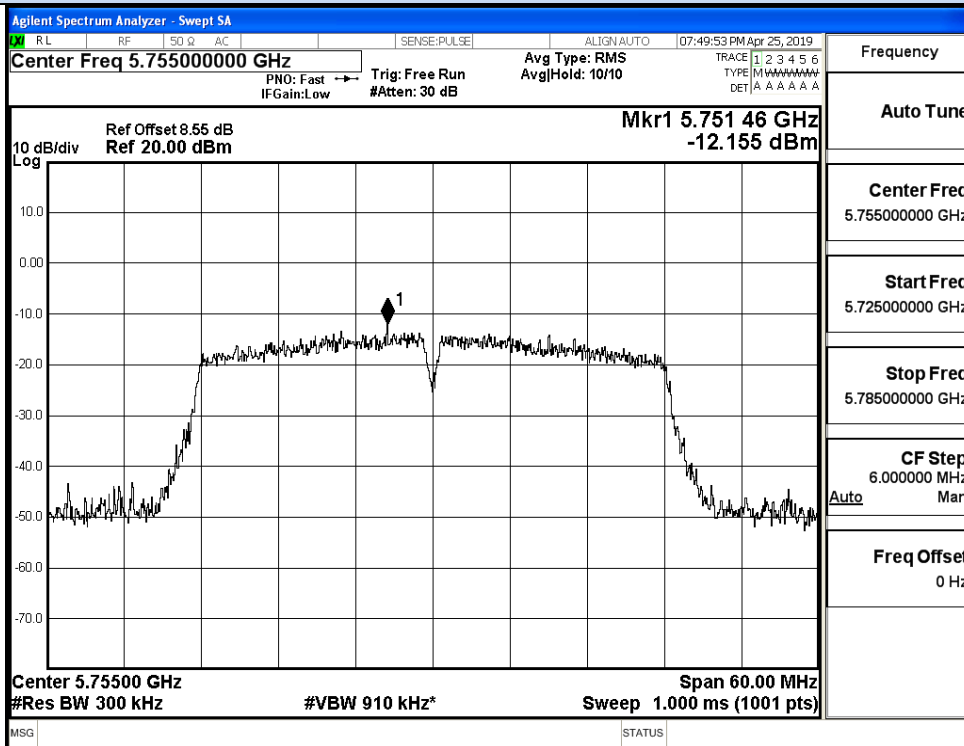
IEEE 802.11ac20 / Channel 149 / 5745MHz



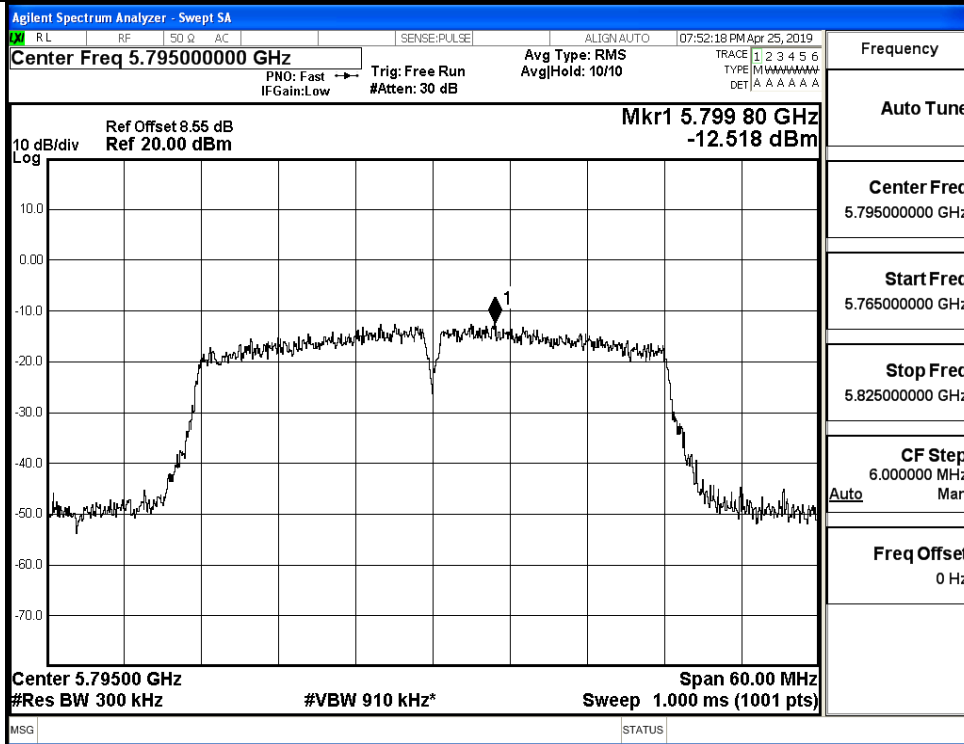
IEEE 802.11ac20 / Channel 157 / 5785MHz



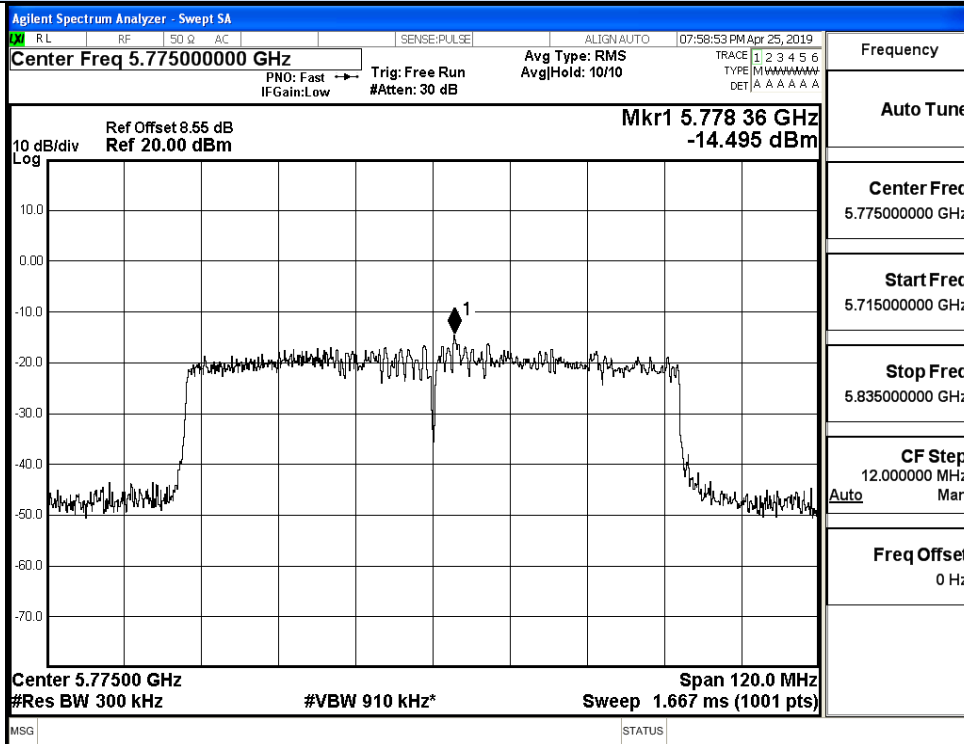
IEEE 802.11ac20 / Channel 165 / 5825MHz



IEEE 802.11ac40 / Channel 151 / 5755MHz



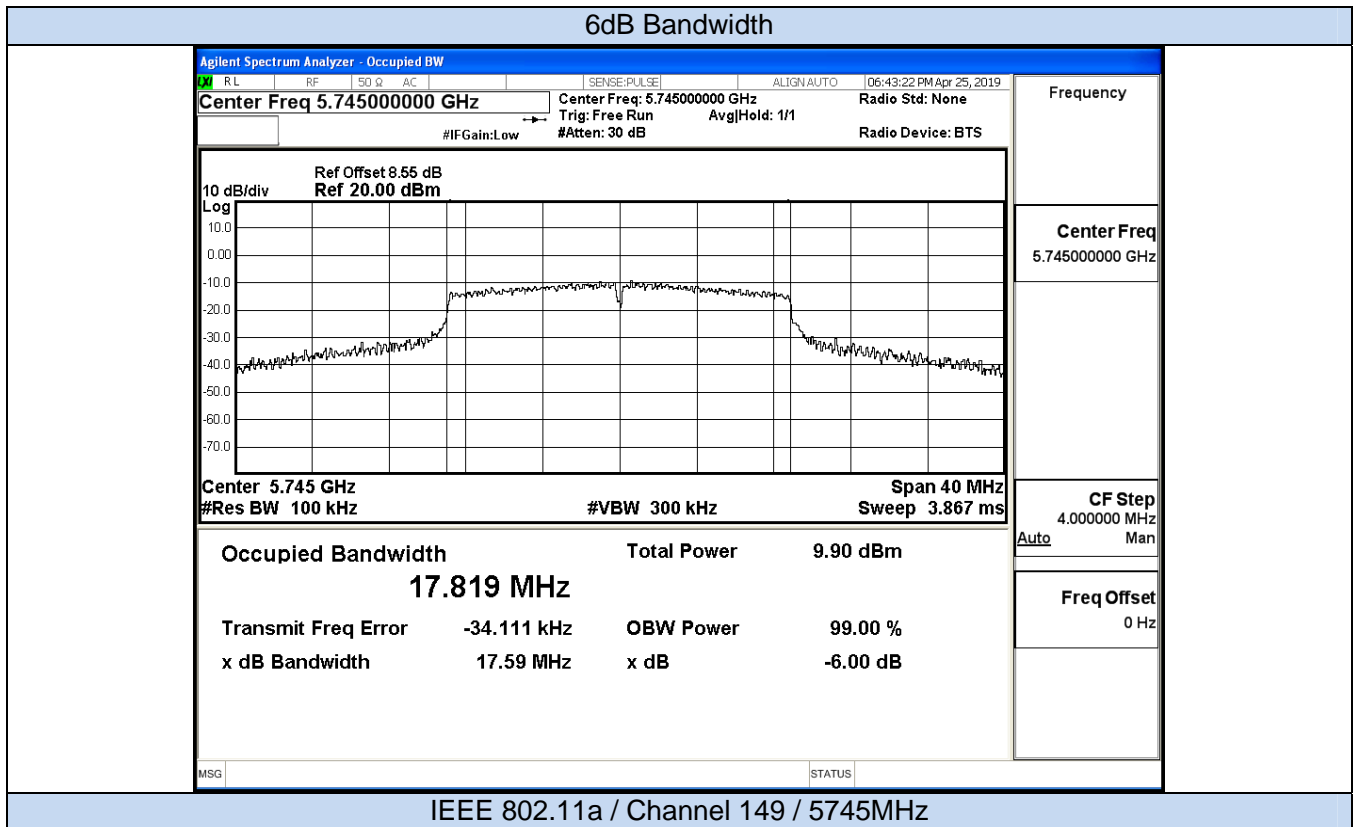
IEEE 802.11ac40 / Channel 159 / 5795MHz

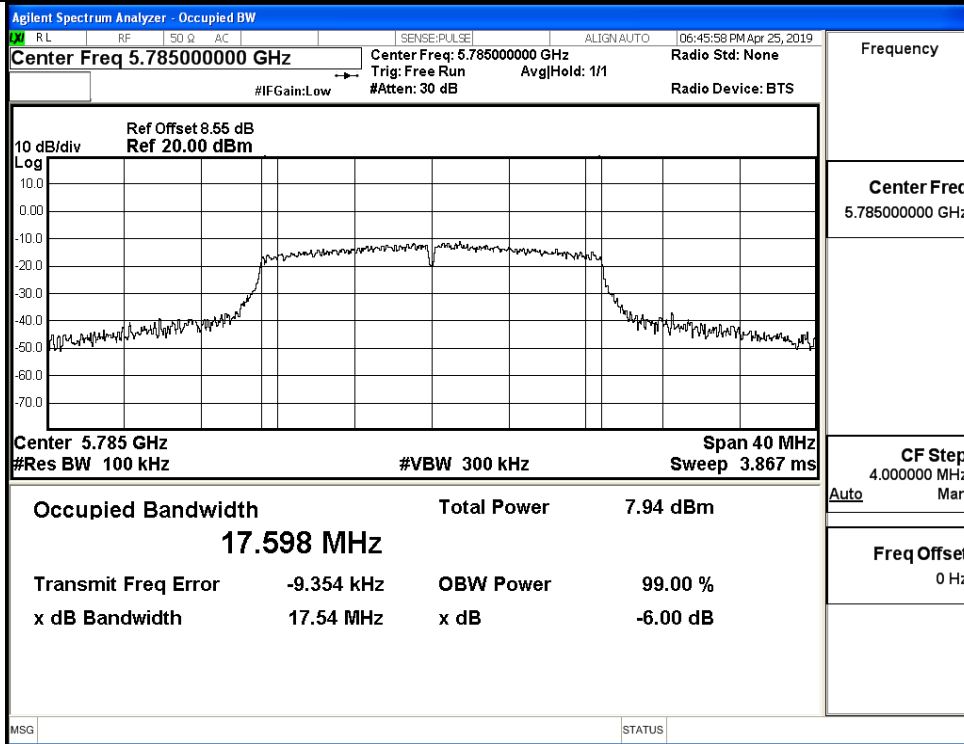


IEEE 802.11ac80 / Channel 155/ 5775MHz

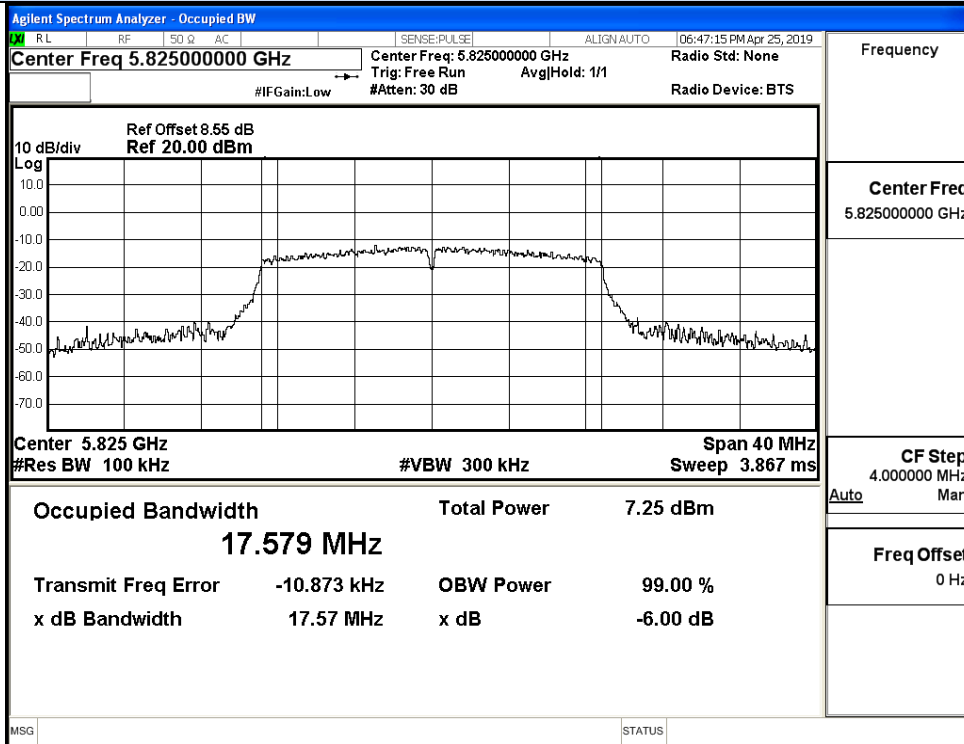
### E.4 Emission Bandwidth

Test Mode	Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)	Verdict
11A	149	5745	17.59	>=0.5	Pass
	157	5785	17.54		Pass
	165	5825	17.57		Pass
11N20 SISO	149	5745	17.63	>=0.5	Pass
	157	5785	17.63		Pass
	165	5825	17.63		Pass
11N40 SISO	151	5755	35.80	>=0.5	Pass
	159	5795	36.37		Pass
11AC20S ISO	149	5745	17.60	>=0.5	Pass
	157	5785	17.58		Pass
	165	5825	17.62		Pass
11AC40S ISO	151	5755	36.35	>=0.5	Pass
	159	5795	35.72		Pass
11AC80S ISO	155	5775	76.50	>=0.5	Pass



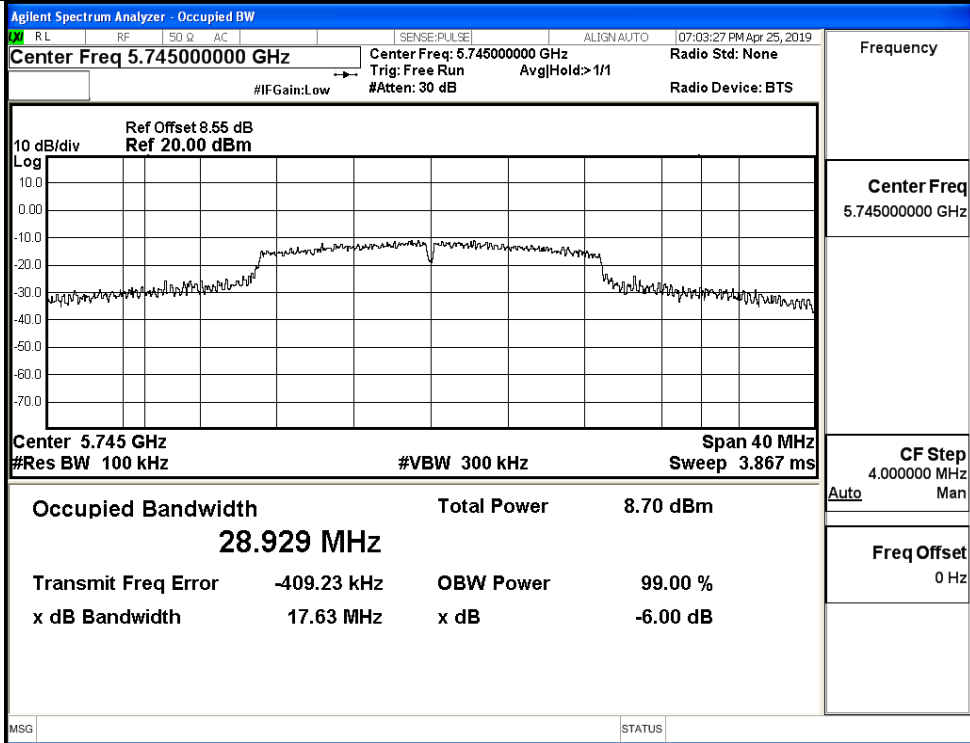


IEEE 802.11a / Channel 157 / 5785MHz

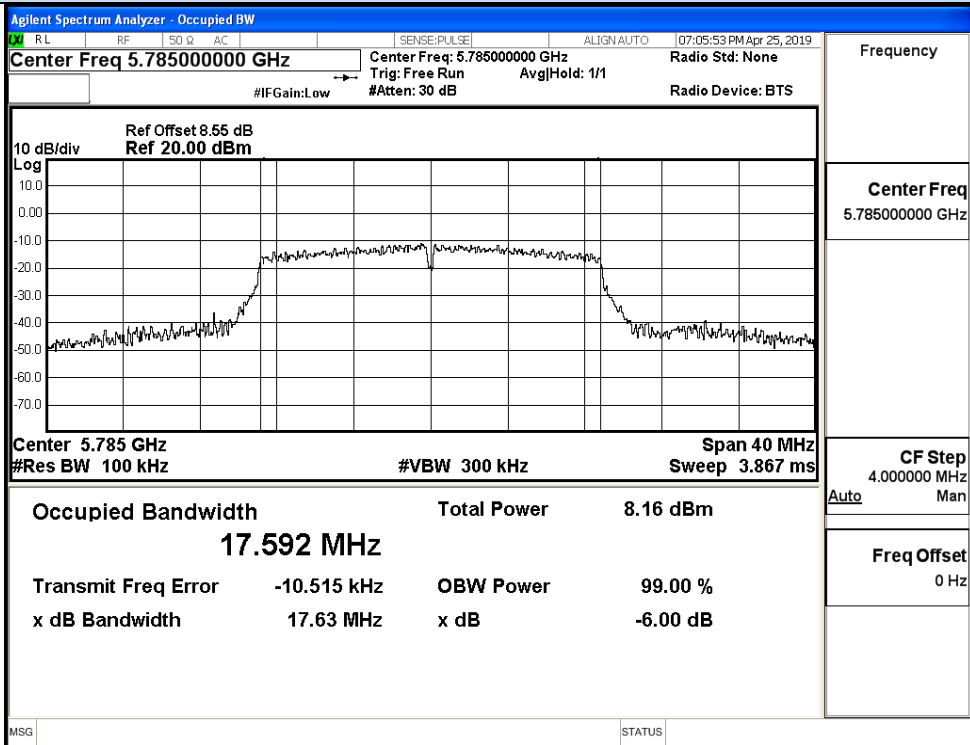


IEEE 802.11a / Channel 165 / 5825MHz

6dB Bandwidth

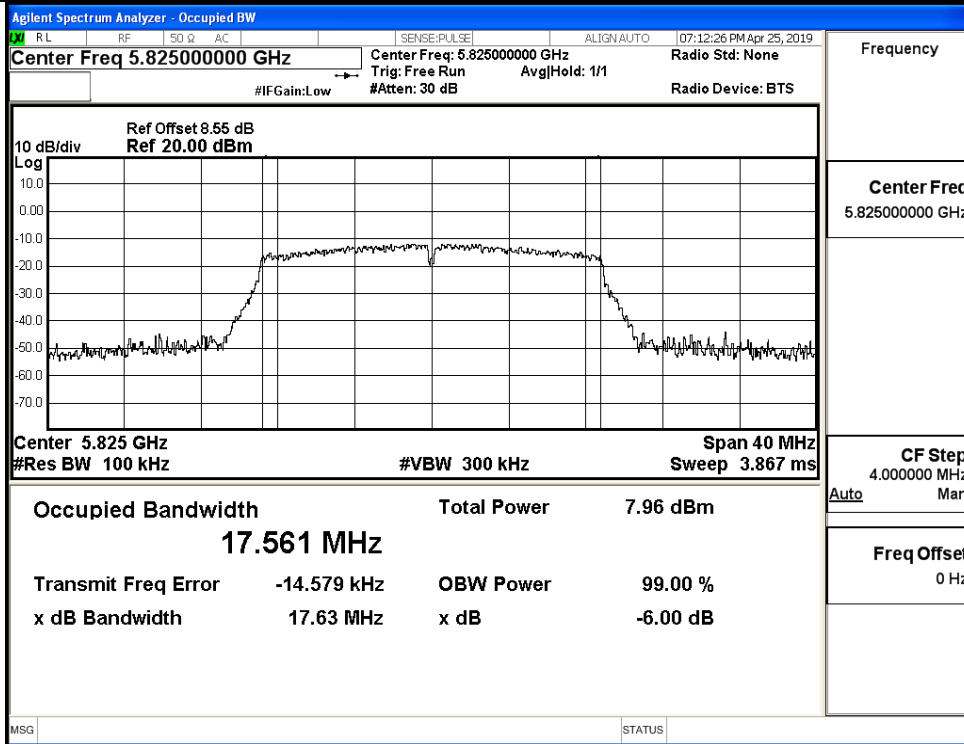


IEEE 802.11n20 / Channel 149 / 5745MHz



IEEE 802.11n20 / Channel 157 / 5785MHz





IEEE 802.11n20 / Channel 165 / 5825MHz

26dB Bandwidth

Agilent Spectrum Analyzer - Occupied BW

RL	RF	50 Ω	AC	SENSE:PULSE	ALIGN:AUTO	07:19:48 PM Apr 25, 2019
Center Freq 5.755000000 GHz				Center Freq: 5.755000000 GHz	Radio Std: None	Frequency
#IFGain:Low				Trig: Free Run	AvglHold: 1/1	Radio Device: BTS
#Atten: 30 dB						

Ref Offset 8.55 dB  
Ref 20.00 dBm

Center 5.755 GHz Span 80 MHz  
#Res BW 100 kHz #VBW 300 kHz Sweep 7.667 ms

Occupied Bandwidth	Total Power	7.71 dBm
<b>35.937 MHz</b>		
Transmit Freq Error	-2.838 kHz	OBW Power 99.00 %
x dB Bandwidth	35.80 MHz	x dB -6.00 dB

CF Step 8.000000 MHz  
Auto Man  
Freq Offset 0 Hz

IEEE 802.11n40 / Channel 151 / 5755MHz

Agilent Spectrum Analyzer - Occupied BW

RL	RF	50 Ω	AC	SENSE:PULSE	ALIGN:AUTO	07:22:15 PM Apr 25, 2019
Center Freq 5.795000000 GHz				Center Freq: 5.795000000 GHz	Radio Std: None	Frequency
#IFGain:Low				Trig: Free Run	AvglHold: 1/1	Radio Device: BTS
#Atten: 30 dB						

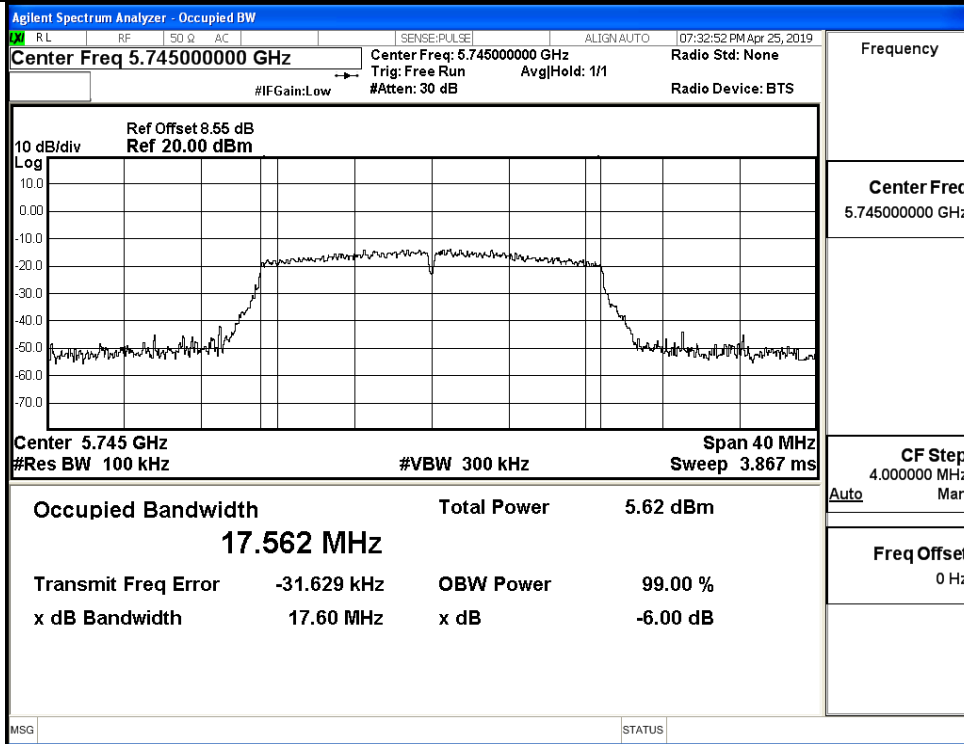
Ref Offset 8.55 dB  
Ref 20.00 dBm

Center 5.795 GHz Span 80 MHz  
#Res BW 100 kHz #VBW 300 kHz Sweep 7.667 ms

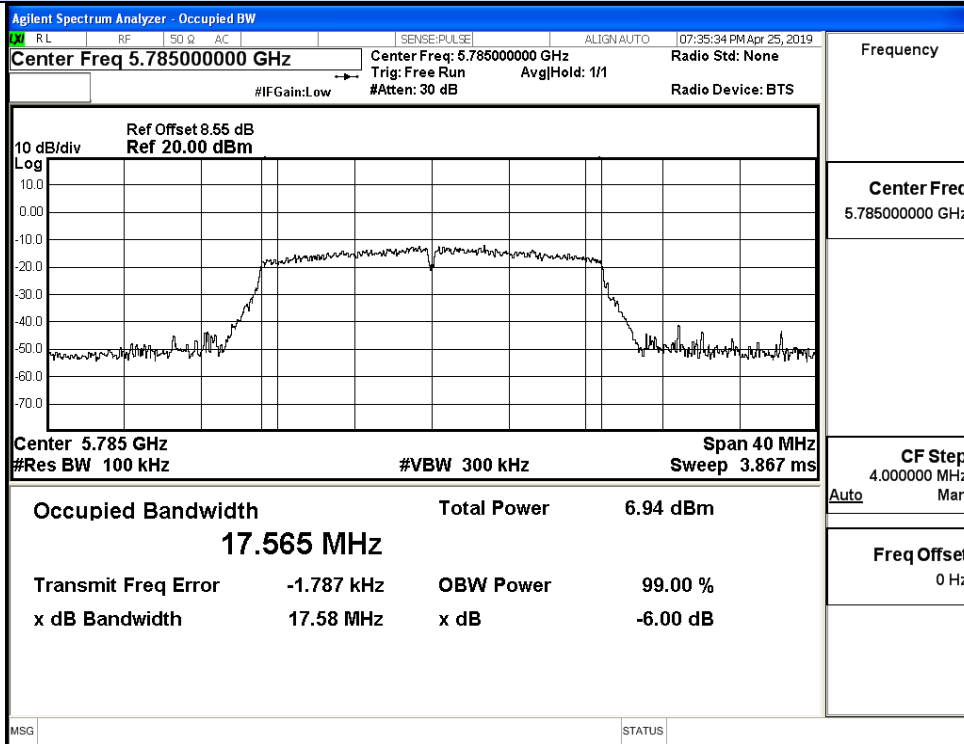
Occupied Bandwidth	Total Power	8.80 dBm
<b>35.969 MHz</b>		
Transmit Freq Error	12.685 kHz	OBW Power 99.00 %
x dB Bandwidth	36.37 MHz	x dB -6.00 dB

CF Step 8.000000 MHz  
Auto Man  
Freq Offset 0 Hz

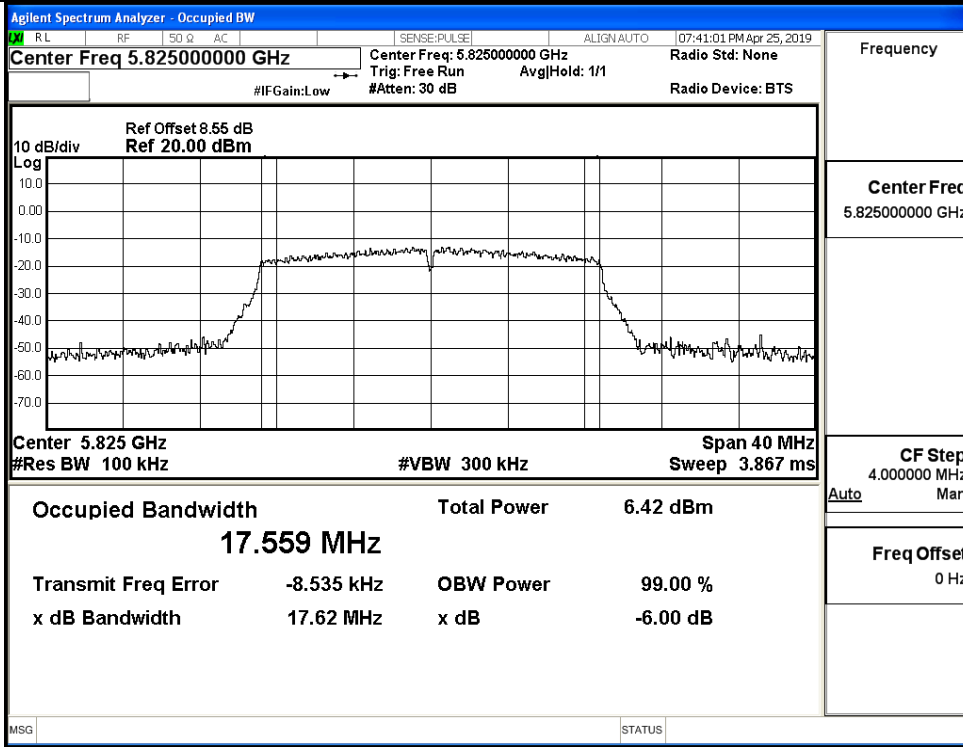
IEEE 802.11n40 / Channel 159 / 5795MHz



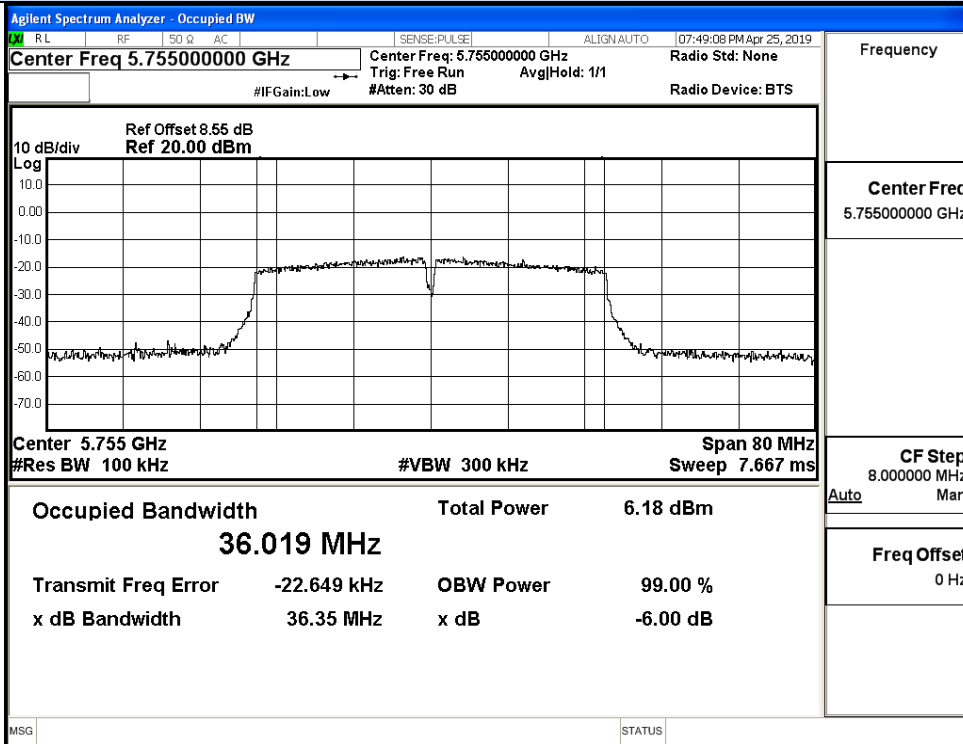
IEEE 802.11ac20 / Channel 149 / 5745MHz



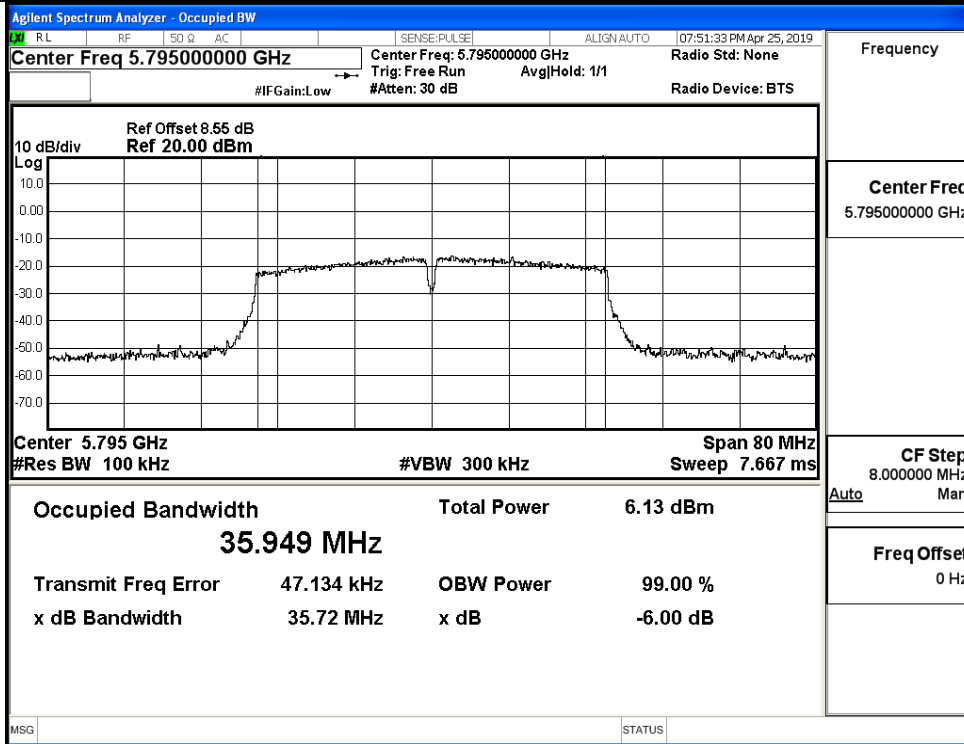
IEEE 802.11ac20 / Channel 157 / 5785MHz



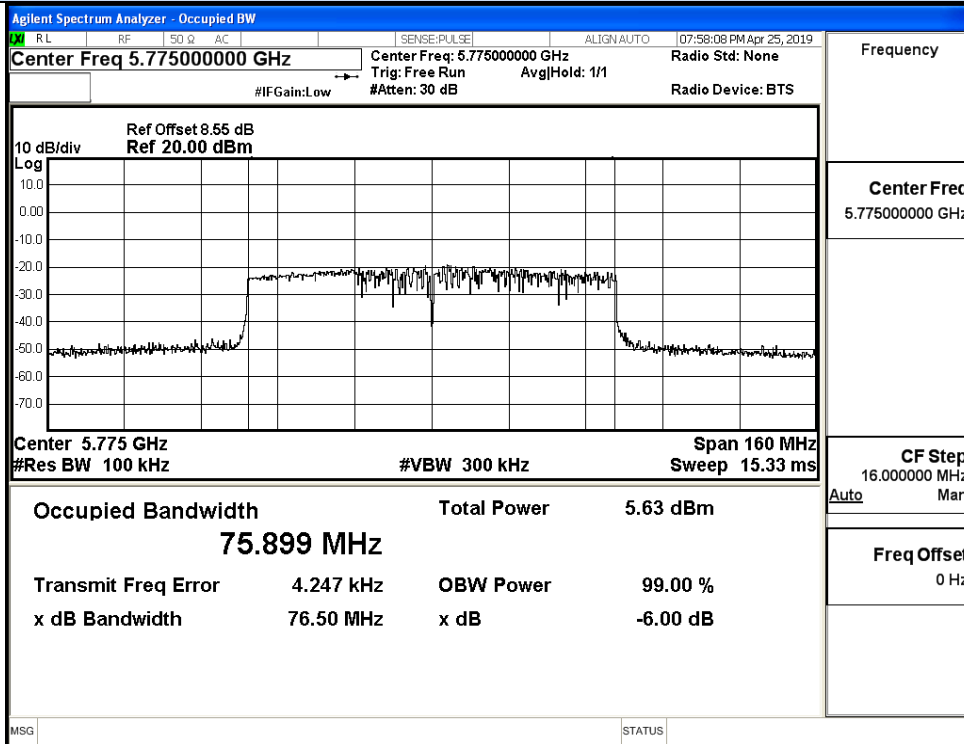
IEEE 802.11ac20 / Channel 165 / 5825MHz



IEEE 802.11ac40 / Channel 151 / 5755MHz



IEEE 802.11ac40 / Channel 159 / 5795MHz



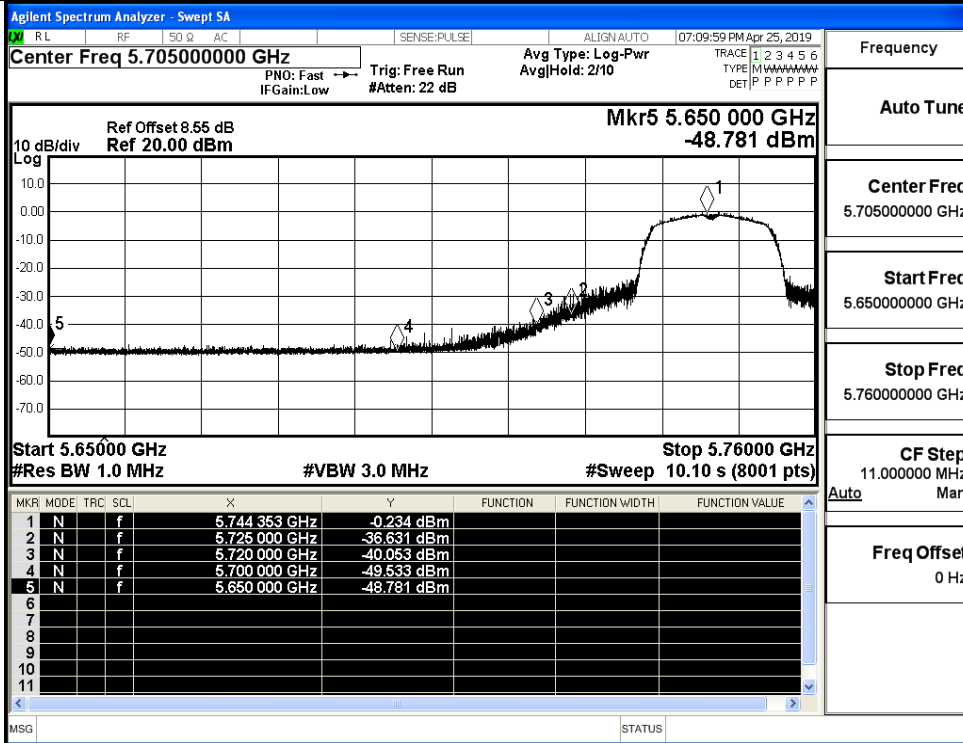
IEEE 802.11ac80 / Channel 155 / 5775MHz

### E.5 Undesirable Emissions Measurement

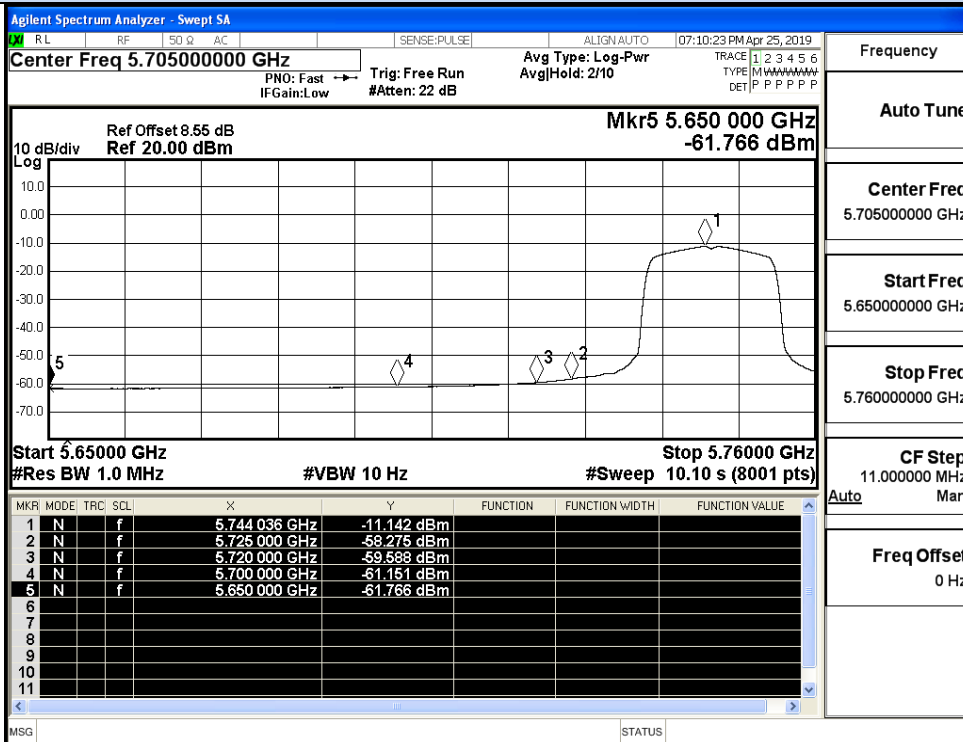
Test Mode	Channel	Frequency (MHz)	Conducted Power (dBm)	Antenna Gain (dBi)	EIRP (dBm/MHz)	Detector	Limit (dBm/MHz)	Verdict
11A	149	5650.0	-48.78	2.00	-48.78	Peak	-27.0	Pass
		5650.0	-61.77	2.00	-61.77	Average	-27.0	Pass
		5700.0	-49.53	2.00	-49.53	Peak	10	Pass
		5700.0	-61.15	2.00	-61.15	Average	10	Pass
		5720.0	-40.05	2.00	-40.05	Peak	15.6	Pass
		5720.0	-59.59	2.00	-59.59	Average	15.6	Pass
		5725.0	-36.63	2.00	-36.63	Peak	27.0	Pass
	5725.0	-58.28	2.00	-58.28	Average	27.0	Pass	
	165	5850.0	-37.95	2.00	-37.95	Peak	27.0	Pass
		5850.0	-57.82	2.00	-57.82	Average	27.0	Pass
		5855.0	-40.48	2.00	-40.48	Peak	15.6	Pass
		5855.0	-59.25	2.00	-59.25	Average	15.6	Pass
		5875.0	-48.73	2.00	-48.73	Peak	10	Pass
		5875.0	-61.24	2.00	-61.24	Average	10	Pass
5925.0		-49.95	2.00	-49.95	Peak	-27.0	Pass	
5925.0	-61.71	2.00	-61.71	Average	-27.0	Pass		
11N20 SISO	149	5650.0	-50.05	2.00	-50.05	Peak	-27.0	Pass
		5650.0	-61.74	2.00	-61.74	Average	-27.0	Pass
		5700.0	-49.41	2.00	-49.41	Peak	10	Pass
		5700.0	-59.59	2.00	-59.59	Average	10	Pass
		5720.0	-37.00	2.00	-37.00	Peak	15.6	Pass
		5720.0	-61.10	2.00	-61.10	Average	15.6	Pass
		5725.0	-34.59	2.00	-34.59	Peak	27.0	Pass
	5725.0	-58.30	2.00	-58.30	Average	27.0	Pass	
	165	5850.0	-36.85	2.00	-36.85	Peak	27.0	Pass
		5850.0	-58.79	2.00	-58.79	Average	27.0	Pass
		5855.0	-44.38	2.00	-44.38	Peak	15.6	Pass
		5855.0	-59.58	2.00	-59.58	Average	15.6	Pass
		5875.0	-47.77	2.00	-47.77	Peak	10	Pass
		5875.0	-60.76	2.00	-60.76	Average	10	Pass
5925.0		-50.03	2.00	-50.03	Peak	-27.0	Pass	
5925.0	-61.28	2.00	-61.28	Average	-27.0	Pass		
11N40 SISO	151	5650.0	-50.24	2.00	-50.24	Peak	-27.0	Pass
		5650.0	-61.72	2.00	-61.72	Average	-27.0	Pass
		5700.0	-48.53	2.00	-48.53	Peak	10	Pass
		5700.0	-60.71	2.00	-60.71	Average	10	Pass
		5720.0	-36.22	2.00	-36.22	Peak	15.6	Pass
		5720.0	-56.52	2.00	-56.52	Average	15.6	Pass
		5725.0	-34.58	2.00	-34.58	Peak	27.0	Pass
	5725.0	-55.39	2.00	-55.39	Average	27.0	Pass	
	159	5850.0	-43.96	2.00	-43.96	Peak	27.0	Pass
		5850.0	-59.48	2.00	-59.48	Average	27.0	Pass
		5855.0	-44.78	2.00	-44.78	Peak	15.6	Pass
		5855.0	-59.82	2.00	-59.82	Average	15.6	Pass
		5875.0	-47.91	2.00	-47.91	Peak	10	Pass
		5875.0	-60.55	2.00	-60.55	Average	10	Pass
5925.0		-50.81	2.00	-50.81	Peak	-27.0	Pass	
5925.0	-61.11	2.00	-61.11	Average	-27.0	Pass		

Test Mode	Channel	Frequency (MHz)	Conducted Power (dBm)	Antenna Gain (dBi)	EIRP (dBm/MHz)	Detector	Limit (dBm/MHz)	Verdict
11AC20 SISO	149	5650.0	-50.55	2.00	-50.55	Peak	-27.0	Pass
		5650.0	-61.99	2.00	-61.99	Average	-27.0	Pass
		5700.0	-48.97	2.00	-48.97	Peak	10	Pass
		5700.0	-60.10	2.00	-60.10	Average	10	Pass
		5720.0	-41.85	2.00	-41.85	Peak	15.6	Pass
		5720.0	-61.49	2.00	-61.49	Average	15.6	Pass
		5725.0	-35.73	2.00	-35.73	Peak	27.0	Pass
	5725.0	-58.80	2.00	-58.80	Average	27.0	Pass	
	165	5850.0	-39.48	2.00	-39.48	Peak	27.0	Pass
		5850.0	-59.53	2.00	-59.53	Average	27.0	Pass
		5855.0	-45.04	2.00	-45.04	Peak	15.6	Pass
		5855.0	-60.23	2.00	-60.23	Average	15.6	Pass
		5875.0	-49.16	2.00	-49.16	Peak	10	Pass
		5875.0	-61.08	2.00	-61.08	Average	10	Pass
5925.0		-50.04	2.00	-50.04	Peak	-27.0	Pass	
5925.0	-61.45	2.00	-61.45	Average	-27.0	Pass		
11AC40 SISO	151	5650.0	-50.23	2.00	-50.23	Peak	-27.0	Pass
		5650.0	-61.90	2.00	-61.90	Average	-27.0	Pass
		5700.0	-48.57	2.00	-48.57	Peak	10	Pass
		5700.0	-60.92	2.00	-60.92	Average	10	Pass
		5720.0	-39.51	2.00	-39.51	Peak	15.6	Pass
		5720.0	-57.19	2.00	-57.19	Average	15.6	Pass
		5725.0	-39.18	2.00	-39.18	Peak	27.0	Pass
	5725.0	-56.28	2.00	-56.28	Average	27.0	Pass	
	159	5850.0	-45.14	2.00	-45.14	Peak	27.0	Pass
		5850.0	-60.04	2.00	-60.04	Average	27.0	Pass
		5855.0	-45.77	2.00	-45.77	Peak	15.6	Pass
		5855.0	-60.32	2.00	-60.32	Average	15.6	Pass
		5875.0	-49.49	2.00	-49.49	Peak	10	Pass
		5875.0	-60.97	2.00	-60.97	Average	10	Pass
5925.0		-50.26	2.00	-50.26	Peak	-27.0	Pass	
5925.0	-61.29	2.00	-61.29	Average	-27.0	Pass		
11AC80 SISO	155	5725.0	-41.56	2.00	-41.56	Peak	27.0	Pass
		5720.0	-41.65	2.00	-41.65	Peak	15.6	Pass
		5700.0	-44.62	2.00	-44.62	Peak	10	Pass
		5650.0	-48.74	2.00	-48.74	Peak	-27.0	Pass
		5725.0	-55.03	2.00	-55.03	Average	27.0	Pass
		5720.0	-56.18	2.00	-56.18	Average	15.6	Pass
		5700.0	-58.92	2.00	-58.92	Average	10	Pass
		5650.0	-60.65	2.00	-60.65	Average	-27.0	Pass
		5850.0	-41.56	2.00	-41.56	Peak	27.0	Pass
		5855.0	-41.65	2.00	-41.65	Peak	15.6	Pass
		5875.0	-44.62	2.00	-44.62	Peak	10	Pass
		5925.0	-48.74	2.00	-48.74	Peak	-27.0	Pass
		5850.0	-55.03	2.00	-55.03	Average	27.0	Pass
		5855.0	-56.18	2.00	-56.18	Average	15.6	Pass
5875.0	-58.92	2.00	-58.92	Average	10	Pass		
5925.0	-60.65	2.00	-60.65	Average	-27.0	Pass		

Undesirable Emissions Measurement



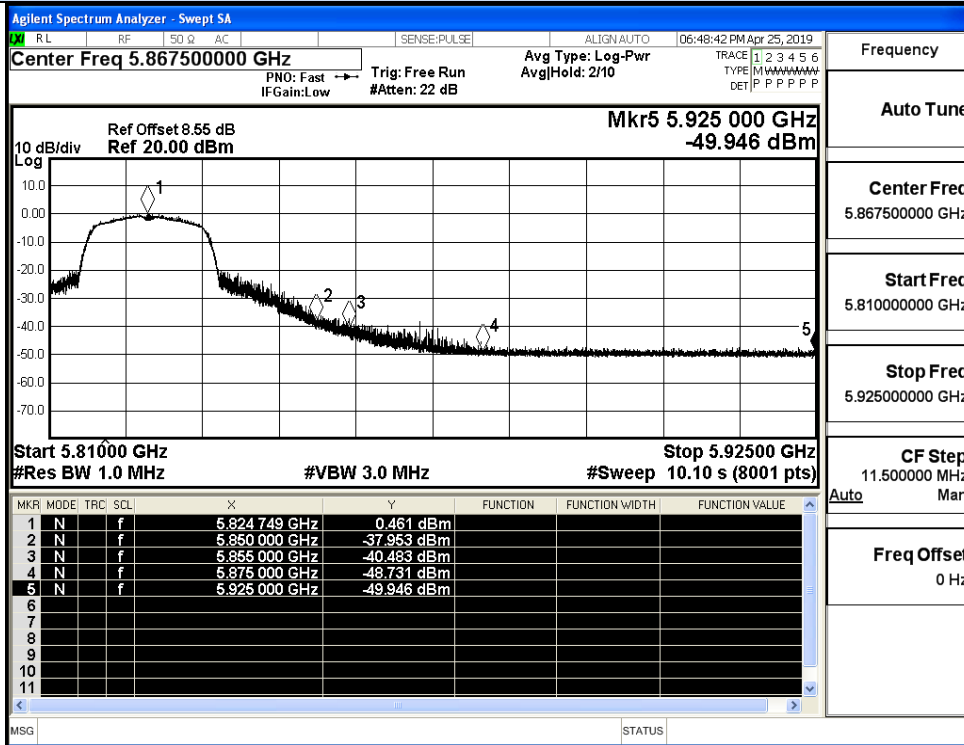
IEEE 802.11a / Channel 149 / 5745MHz / Peak



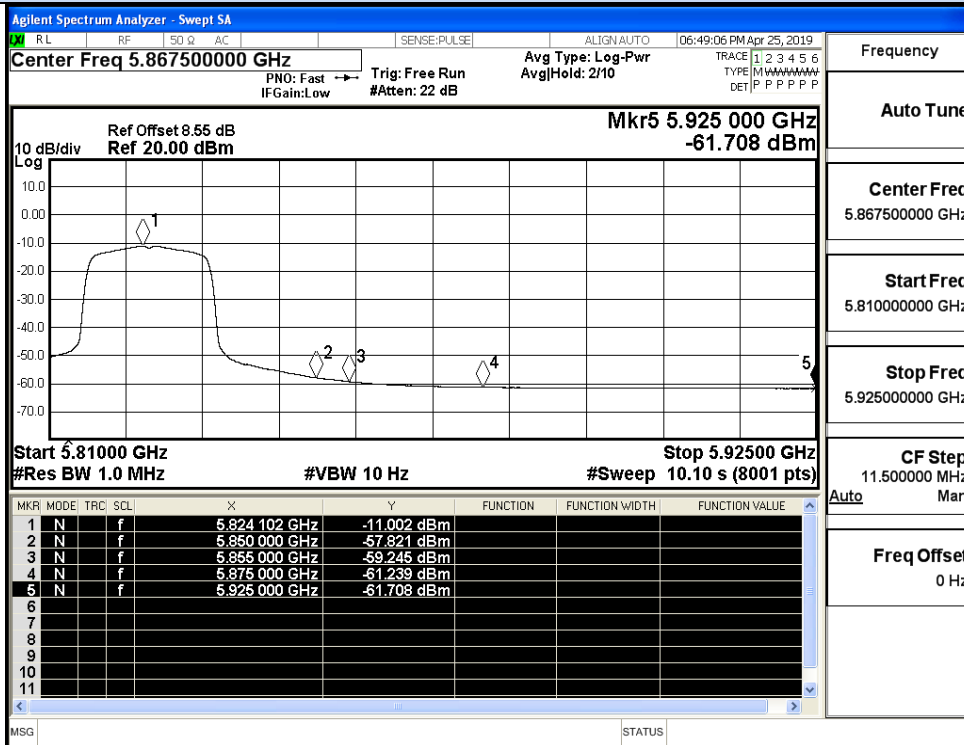
IEEE 802.11a / Channel 148 / 5745MHz / Average



Undesirable Emissions Measurement

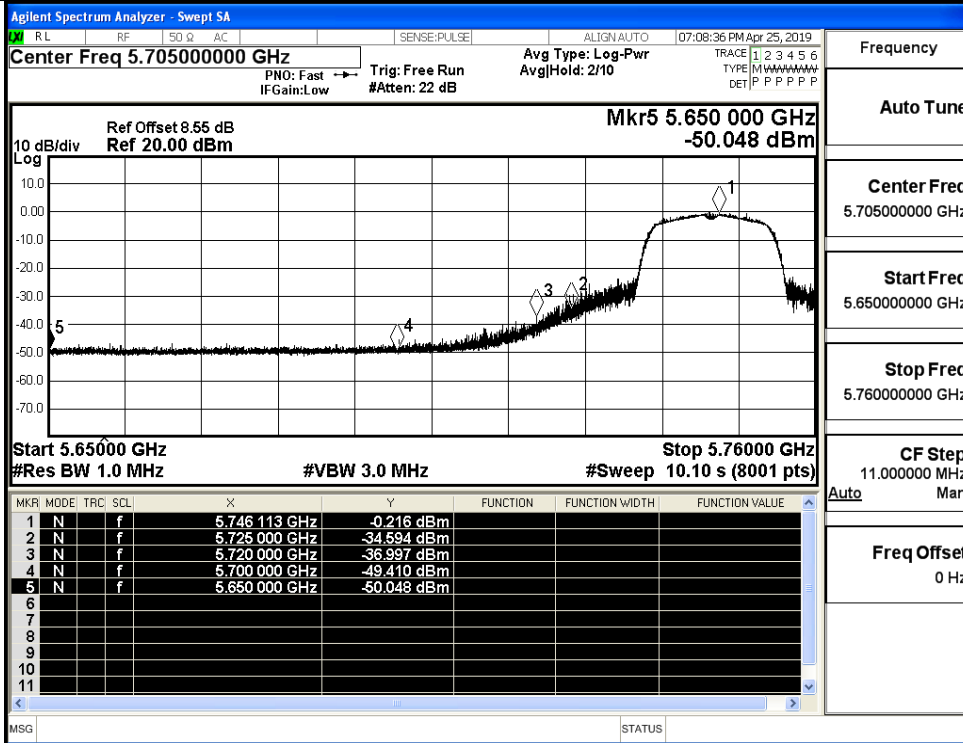


IEEE 802.11a / Channel 165 / 5825MHz / Peak

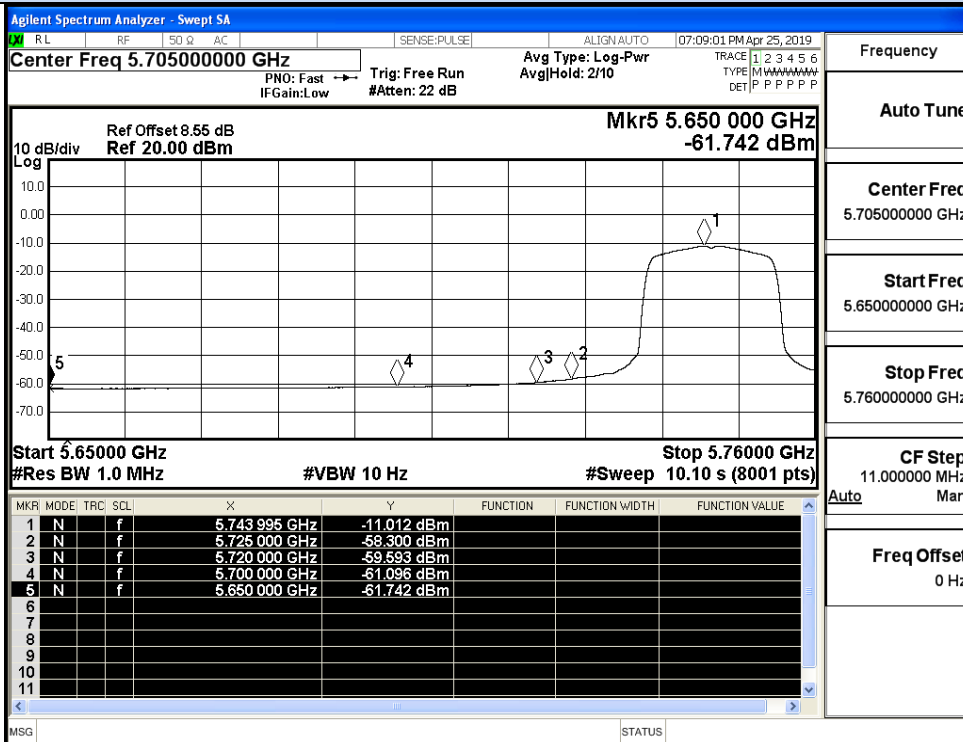


IEEE 802.11a / Channel 165 / 5825MHz / Average

Undesirable Emissions Measurement

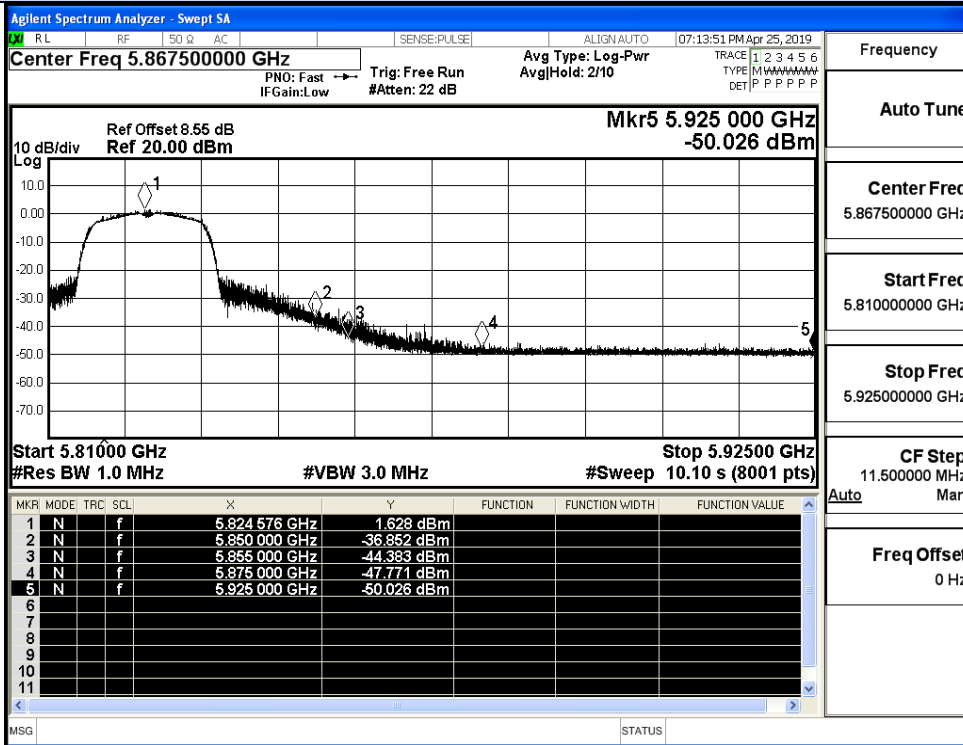


IEEE 802.11n20 / Channel 149 / 5745MHz / Peak

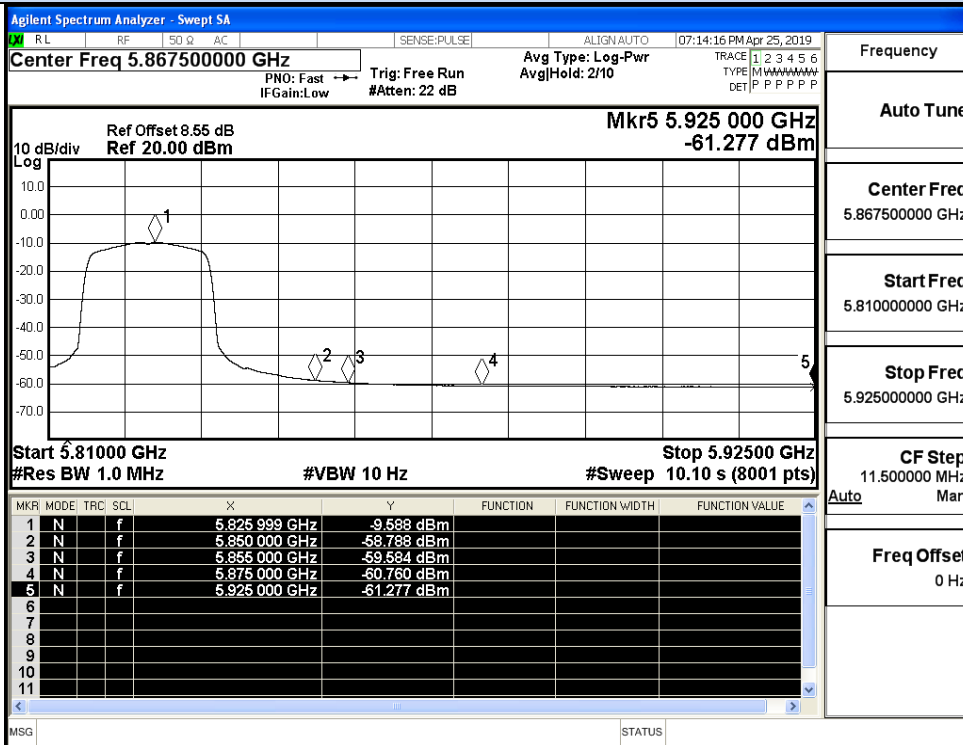


IEEE 802.11n20 / Channel 149 / 5745MHz / Average

Undesirable Emissions Measurement

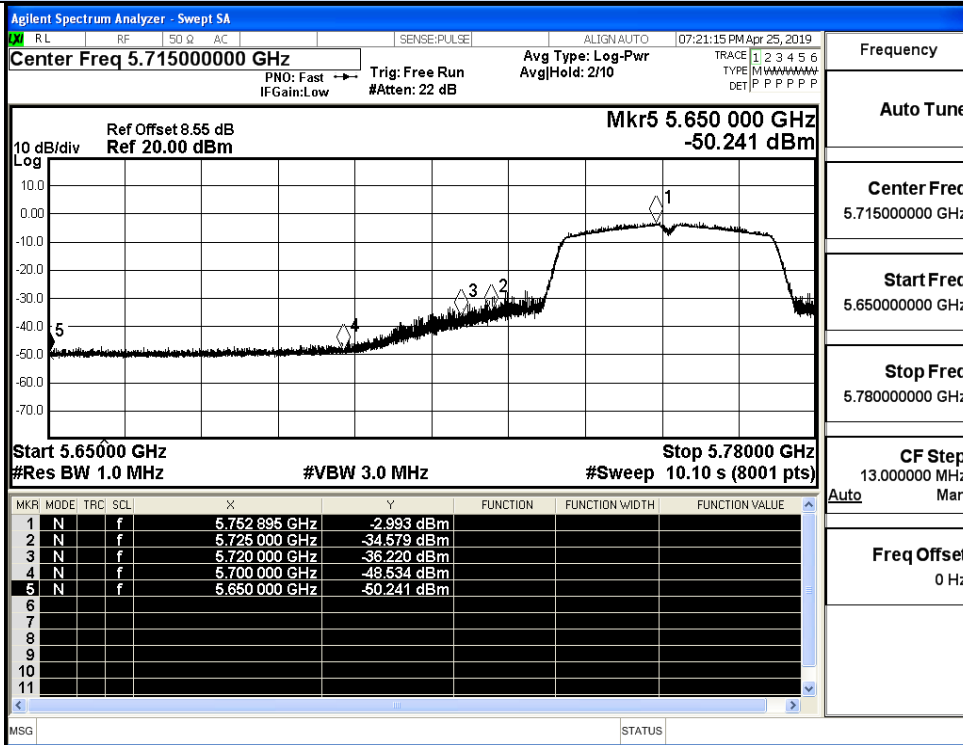


IEEE 802.11n20 / Channel 165 / 5825MHz / Peak

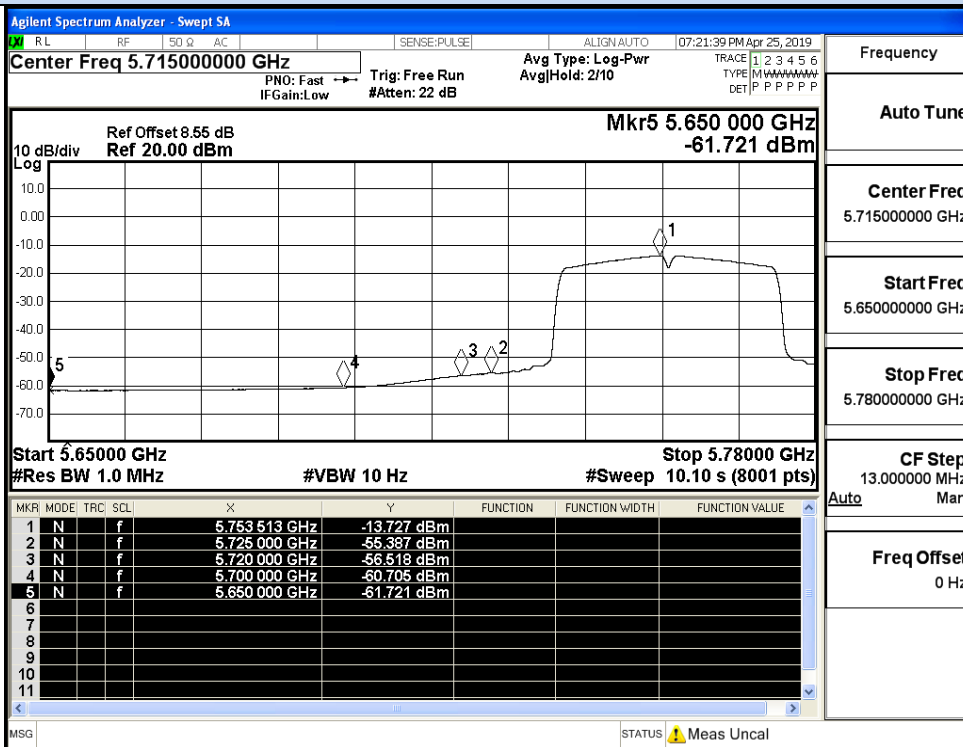


IEEE 802.11n20 / Channel 165 / 5825MHz / Average

Undesirable Emissions Measurement

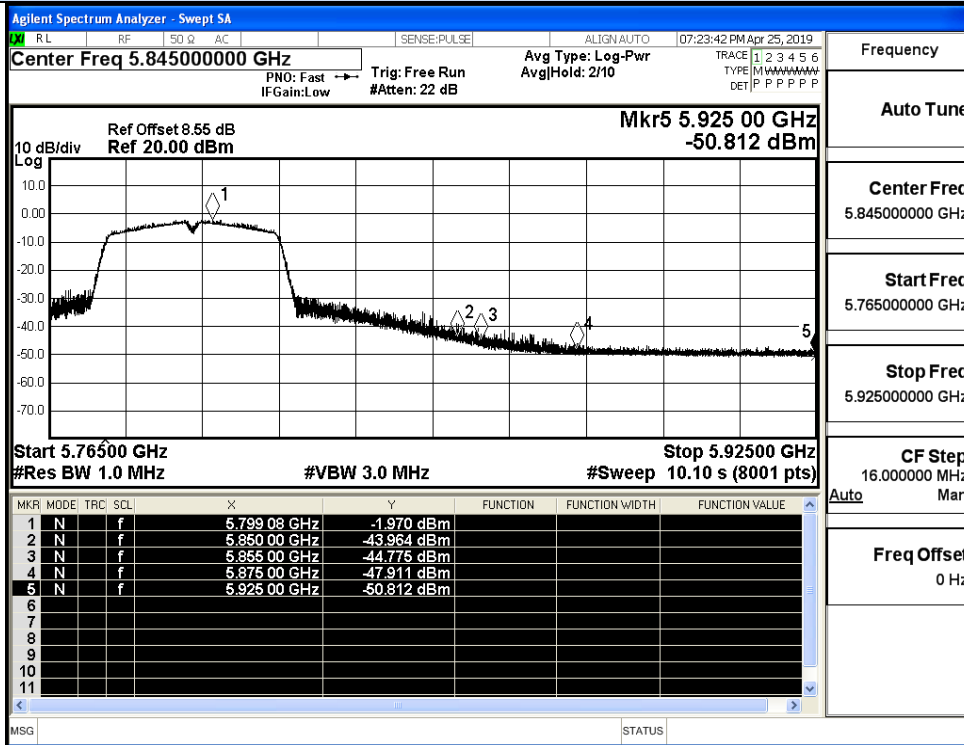


IEEE 802.11n40 / Channel 151 / 5755MHz / Peak

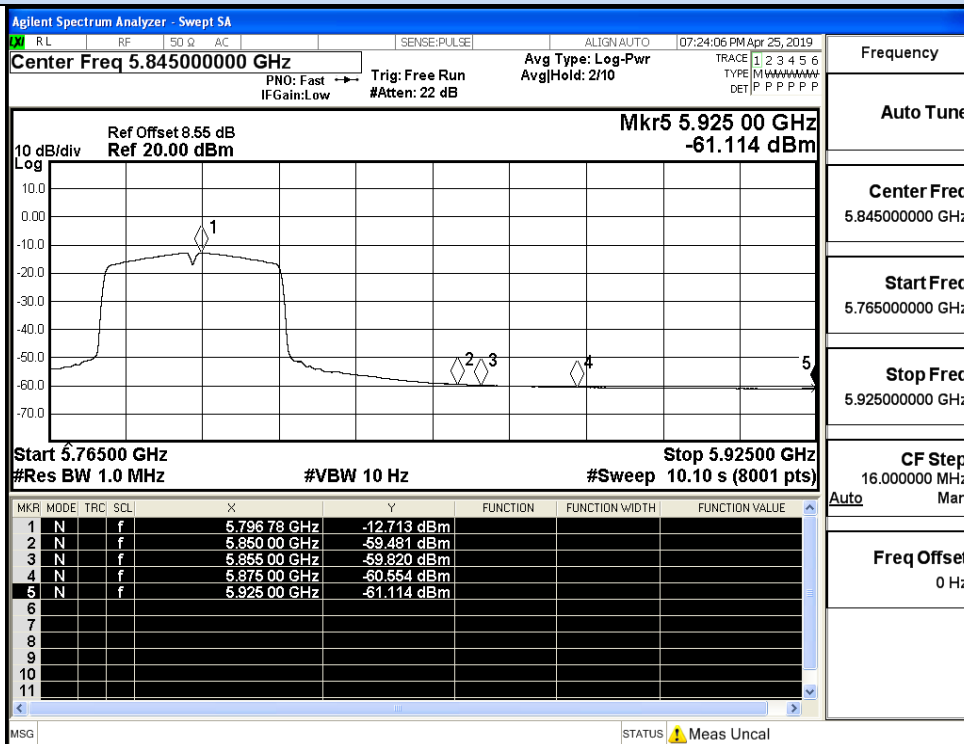


IEEE 802.11n40 / Channel 151 / 5755MHz / Average

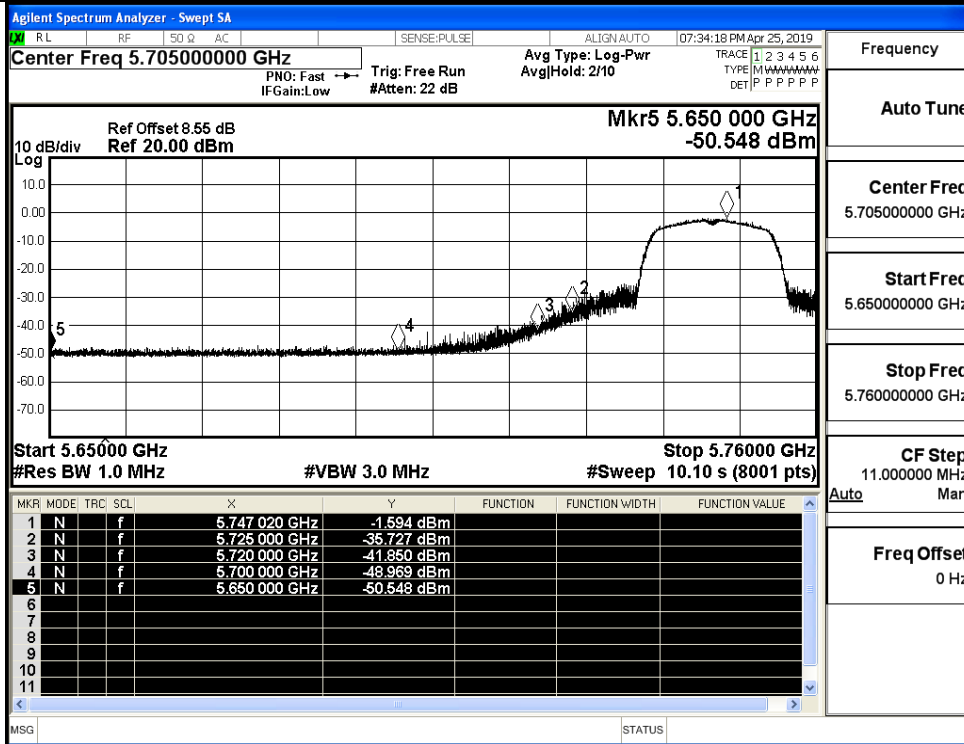
Undesirable Emissions Measurement



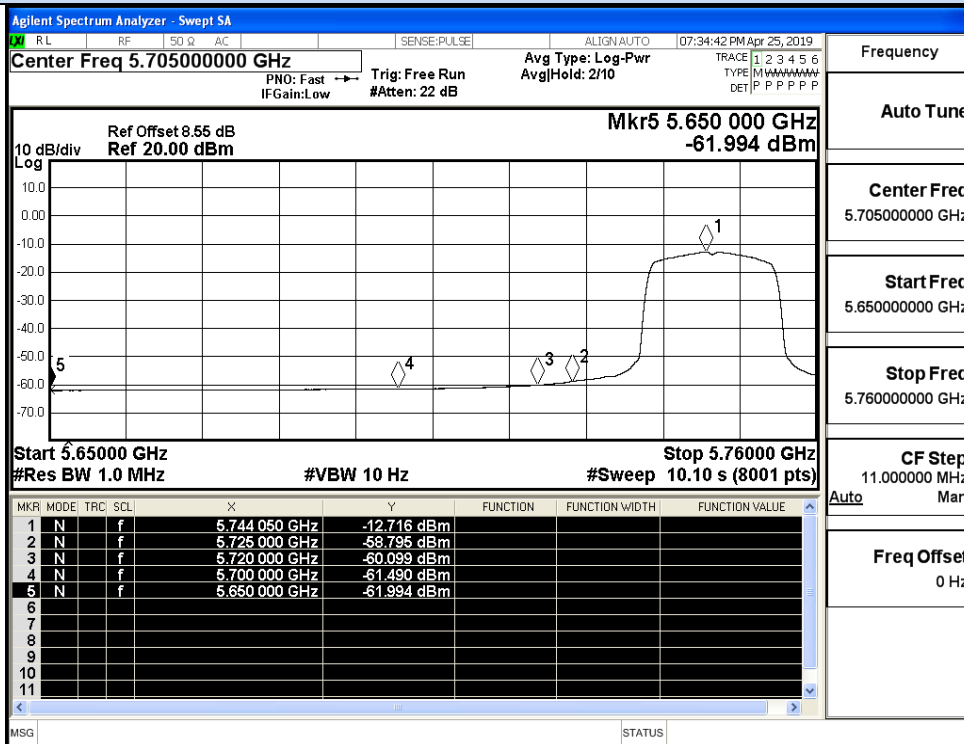
IEEE 802.11n40 / Channel 159 / 5795MHz / Peak



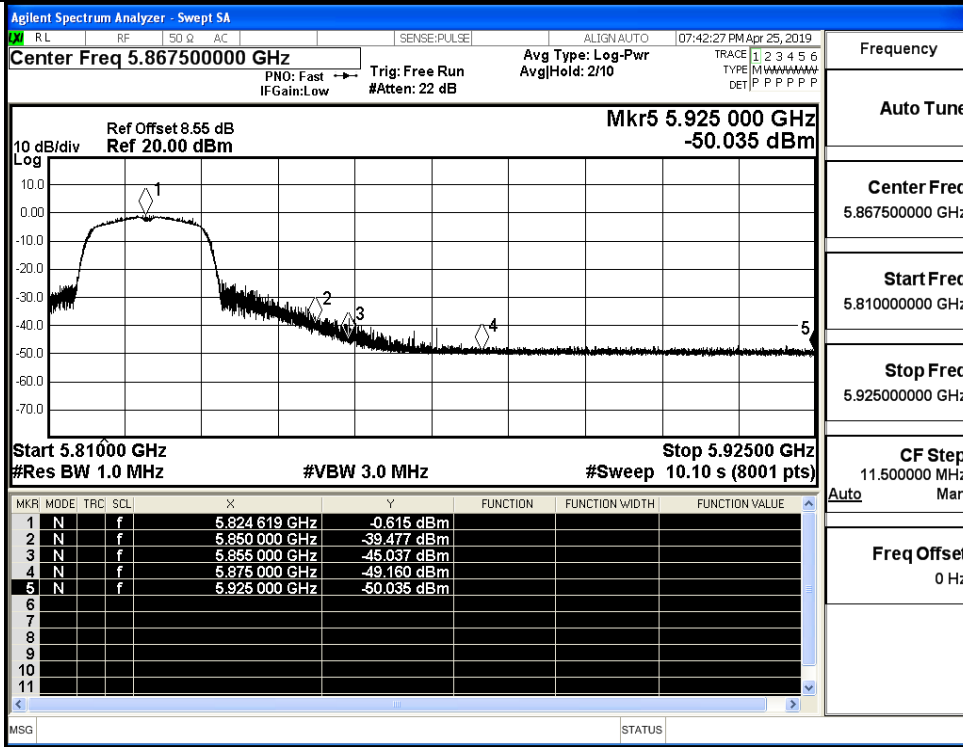
IEEE 802.11n40 / Channel 159 / 5795MHz / Average



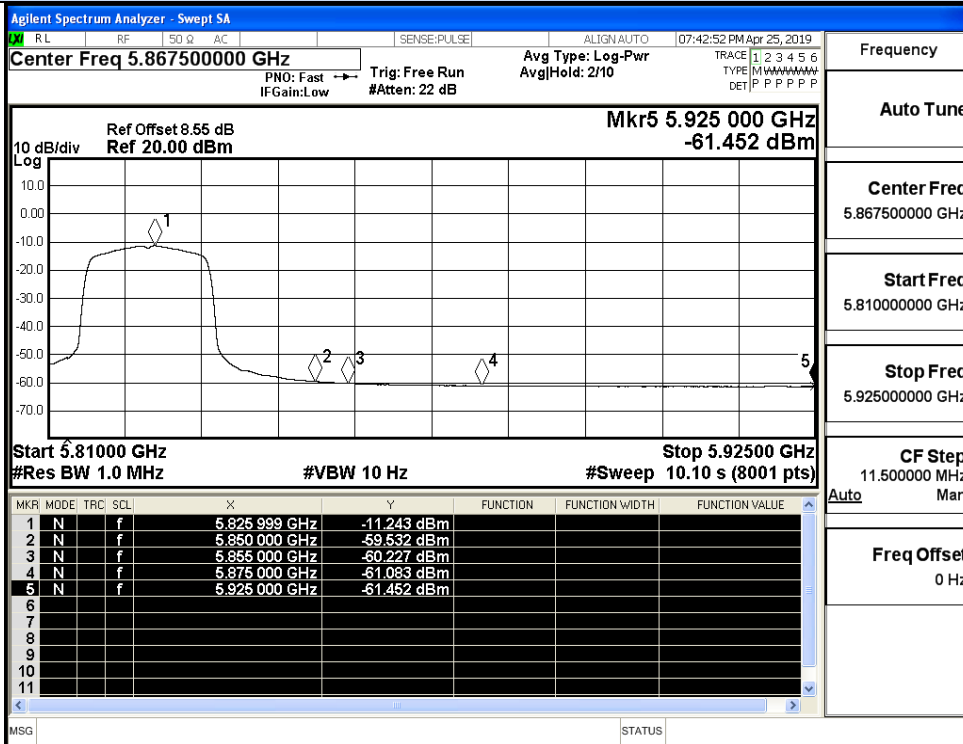
IEEE 802.11ac20 / Channel 149 / 5745MHz / Peak



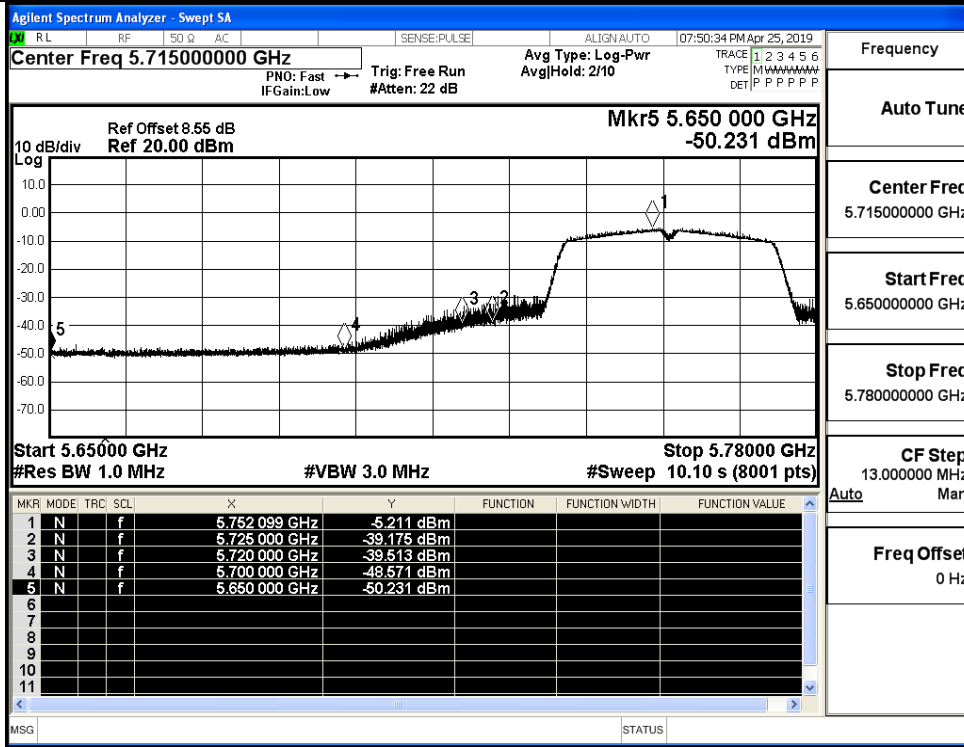
IEEE 802.11ac20 / Channel 149 / 5745MHz / Average



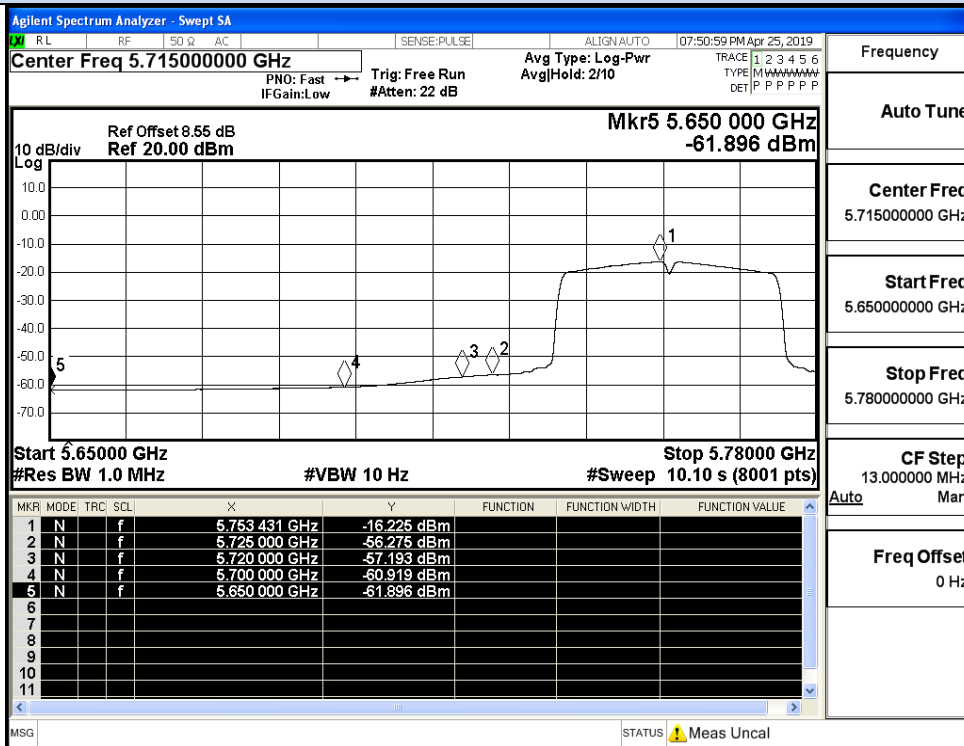
IEEE 802.11ac20 / Channel 165 / 5825MHz / Peak



IEEE 802.11ac20 / Channel 165 / 5825MHz / Average

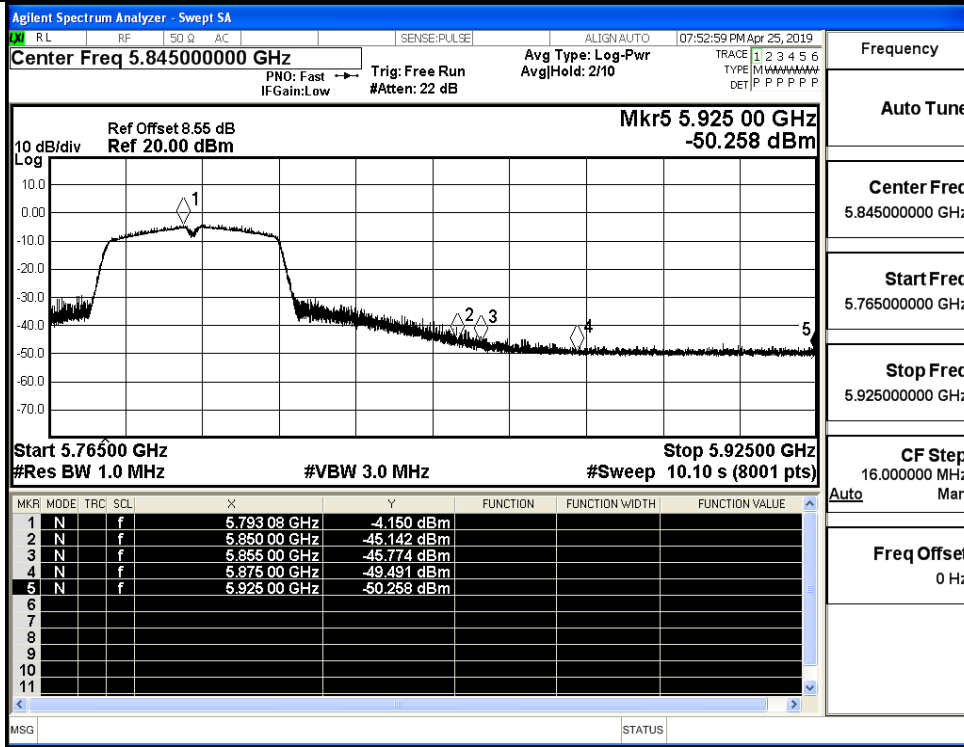


IEEE 802.11ac40 / Channel 151 / 5755MHz / Peak

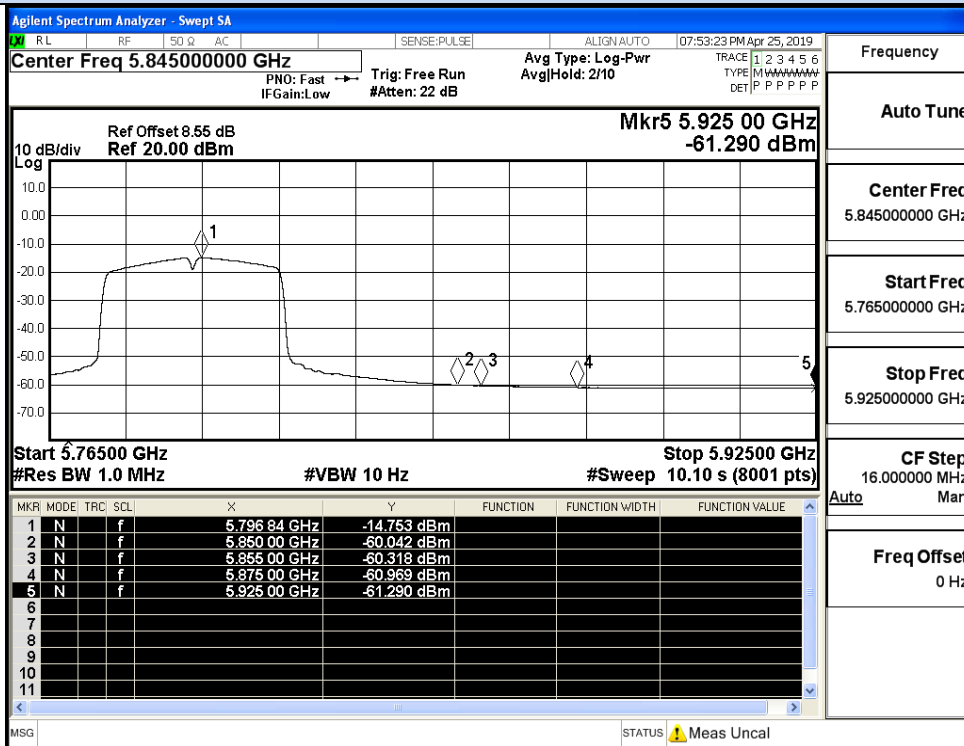


IEEE 802.11ac40 / Channel 151 / 5755MHz / Average

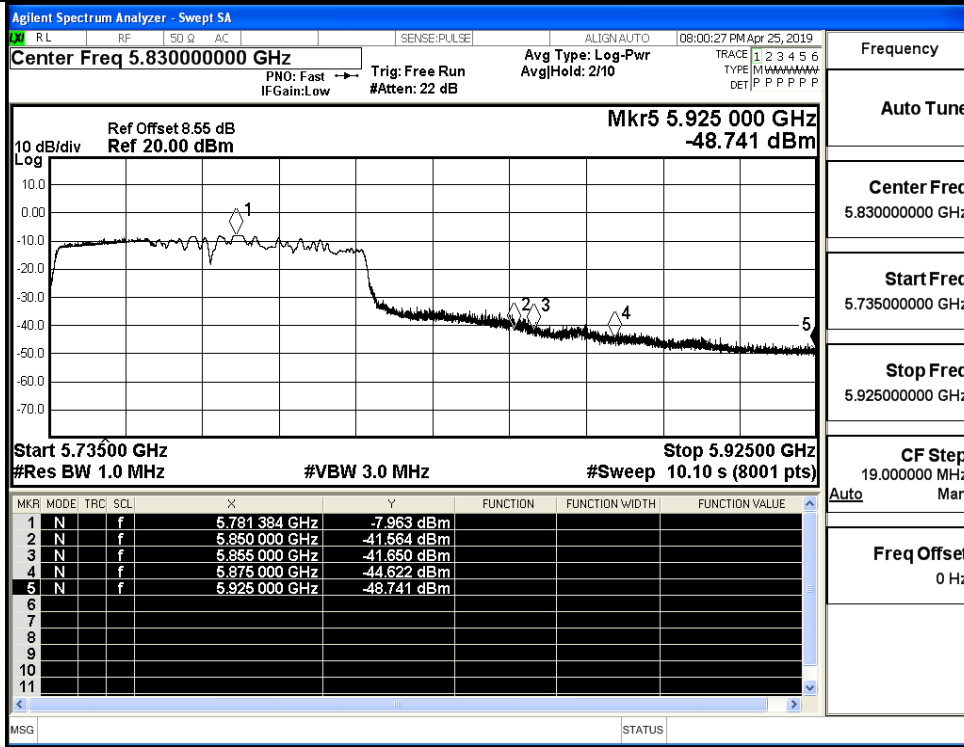




IEEE 802.11ac40 / Channel 159 / 5795MHz / Peak



IEEE 802.11ac40 / Channel 159 / 5795MHz / Average



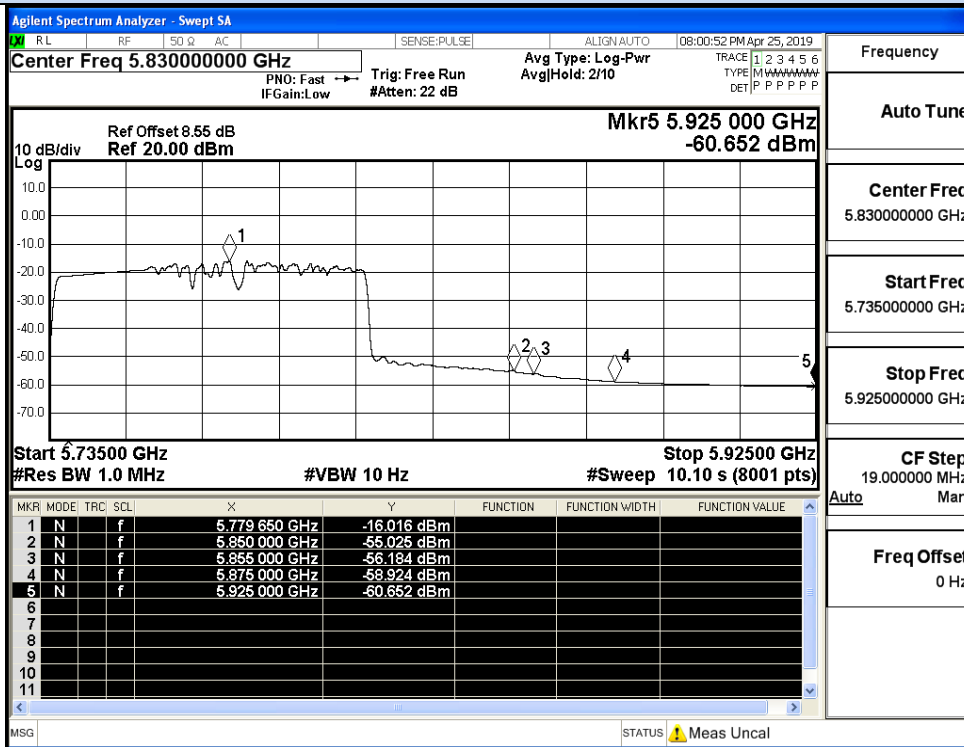
IEEE 802.11ac80 / Channel 155 / 5775MHz / Peak

#imgrb11ac80siso5775nnav

IEEE 802.11ac80 / Channel 155 / 5775MHz / Average

#imgrb11ac80siso15775nnpk

IEEE 802.11ac80 / Channel 155 / 5775MHz / Peak



IEEE 802.11ac80 / Channel 155 / 5775MHz / Average