Appendix B
RF Test Data for 5.8G WLAN (Conducted Measurement)
Product Name: VPIXEL Phantom Wireless audio and video transceiver system
Trade Mark: VANXVM
Test Model: Vpixel_S

Environmental Conditions

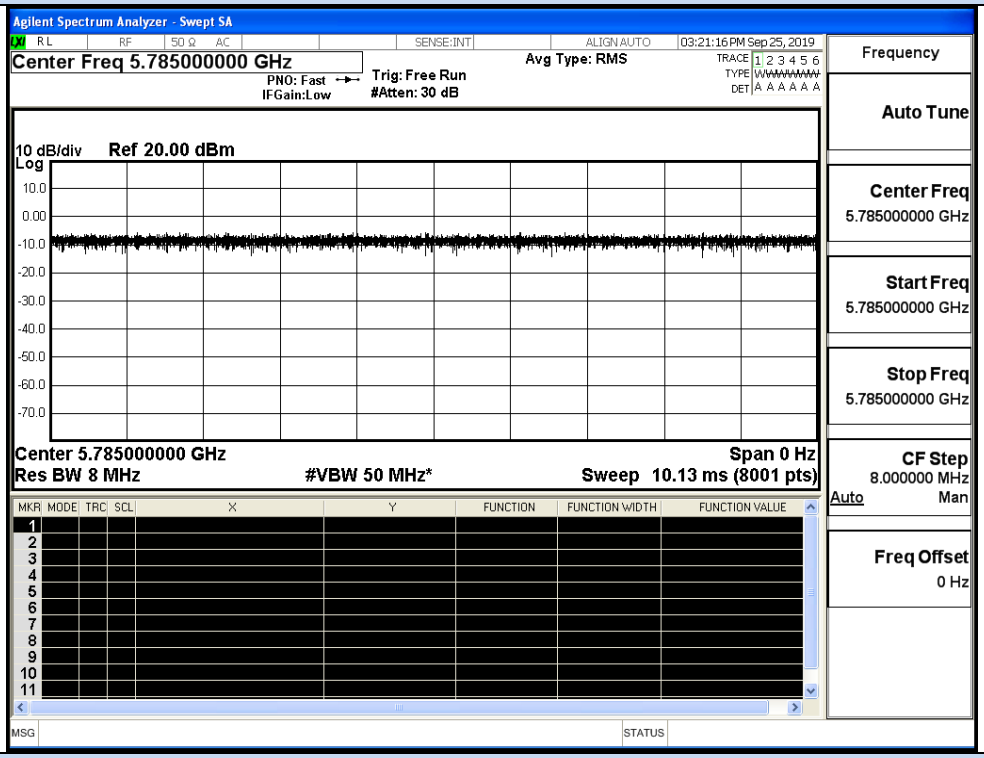
Temperature:	23.2 ° C
Relative Humidity:	52.9%
ATM Pressure:	100.0 kPa
Test Engineer:	JK Zhou
Supervised by:	Wang Chuang

B.1 Duty Cycle

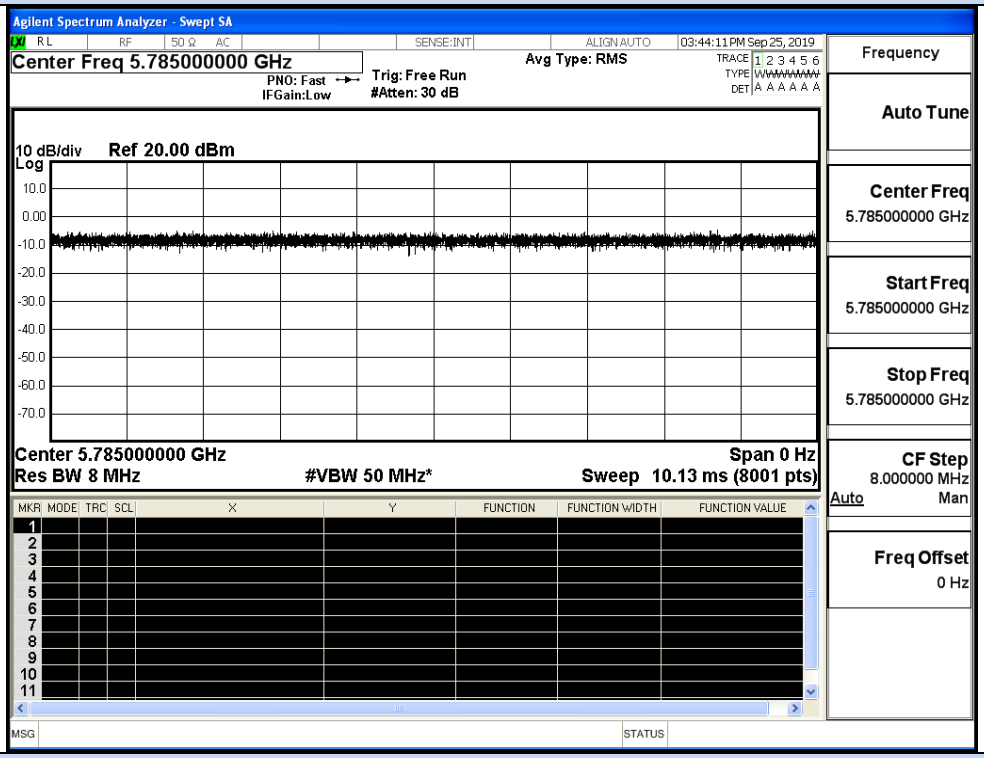
Ant0

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

On Time and Duty Cycle



IEEE 802.11a

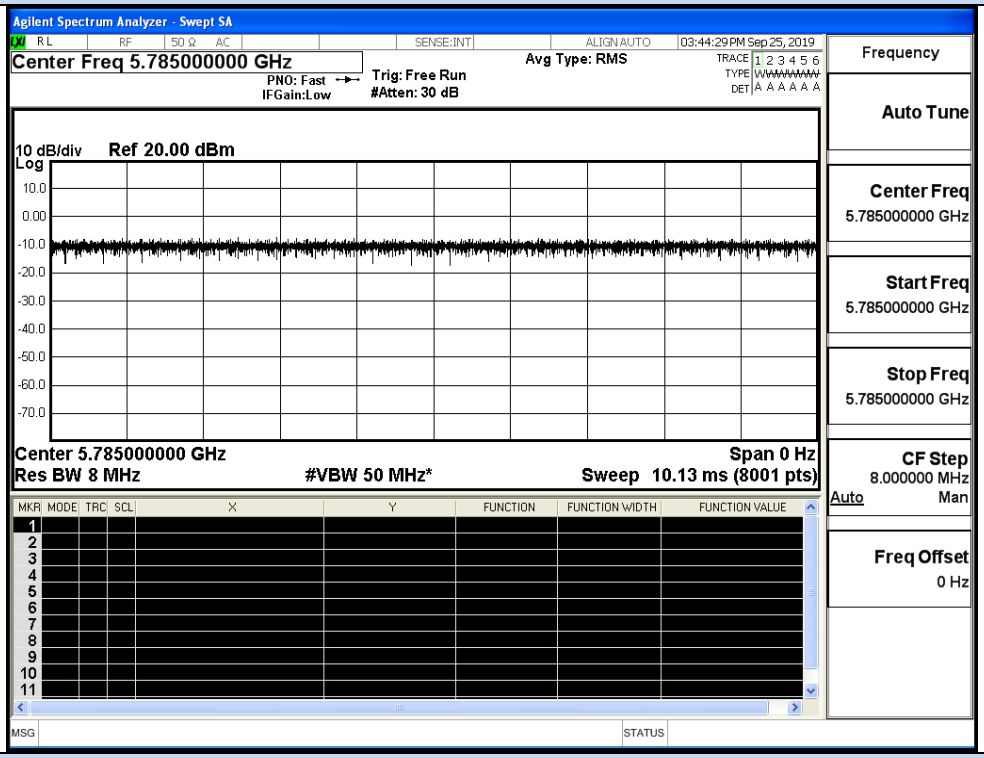


IEEE 802.11n HT20

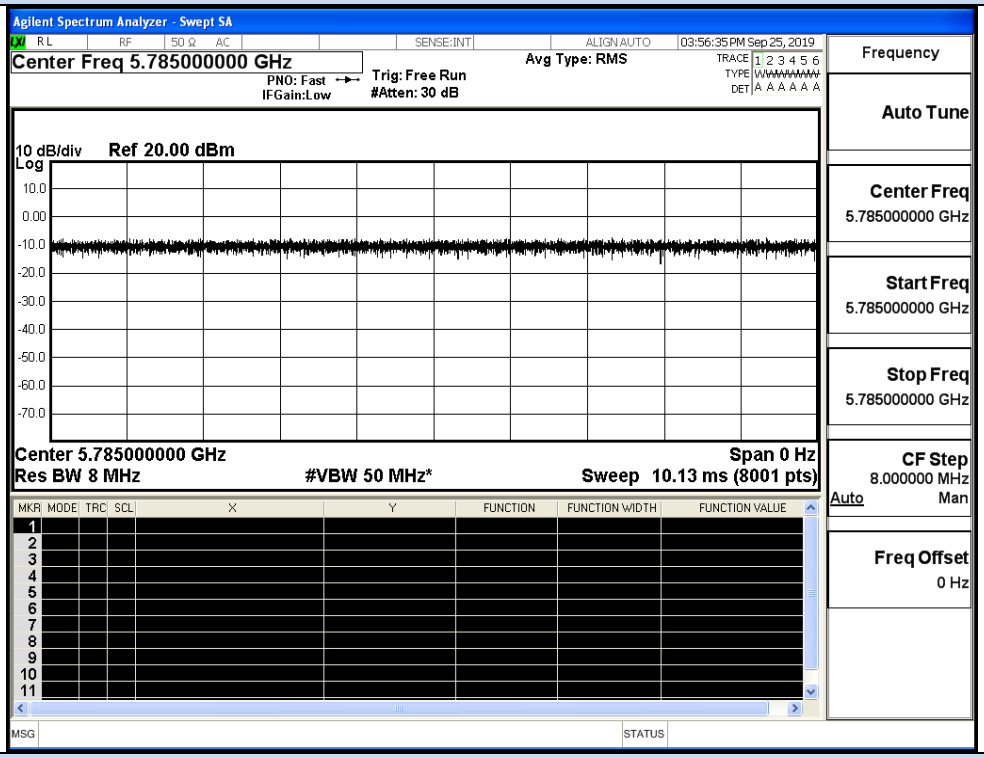
Ant1

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

On Time and Duty Cycle



IEEE 802.11a



IEEE 802.11n HT20

B.2 Maximum Conduct Output Power

Ant0

Test Mode	Channel	Frequency (MHz)	AVG Conducted Power (dBm)	Duty Cycle Factor(dB)	Report Conducted Power(dBm)	Limit (dBm)	Verdict
11A	149	5745	6.87	0	6.87	30.0	Pass
	157	5785	7.25	0	7.25		Pass
	165	5825	6.17	0	6.17		Pass
11N20 SISO	149	5745	7.33	0	7.33	30.0	Pass
	157	5785	6.72	0	6.72		Pass
	165	5825	6.54	0	6.54		Pass

Ant1

Test Mode	Channel	Frequency (MHz)	AVG Conducted Power (dBm)	Duty Cycle Factor(dB)	Report Conducted Power(dBm)	Limit (dBm)	Verdict
11A	149	5745	5.64	0	5.64	30.0	Pass
	157	5785	5.96	0	5.96		Pass
	165	5825	6.29	0	6.29		Pass
11N20 SISO	149	5745	6.54	0	6.54	30.0	Pass
	157	5785	6.55	0	6.55		Pass
	165	5825	6.7	0	6.7		Pass

Ant0+Ant1

Test Mode	Channel	Frequency (MHz)	AVG Conducted Power (dBm)			Duty Cycle Factor(dB)	Report Conducted Power(dBm)			Limit (dBm)	Verdict
			ANT0	ANT1	SUM		ANT0	ANT1	SUM		
11N20 SISO	149	5745	7.33	6.54	9.96	0	7.33	6.54	9.96	29.99	Pass
	157	5785	6.72	6.55	9.65	0	6.72	6.55	9.65		Pass
	165	5825	6.54	6.7	9.63	0	6.54	6.7	9.63		Pass

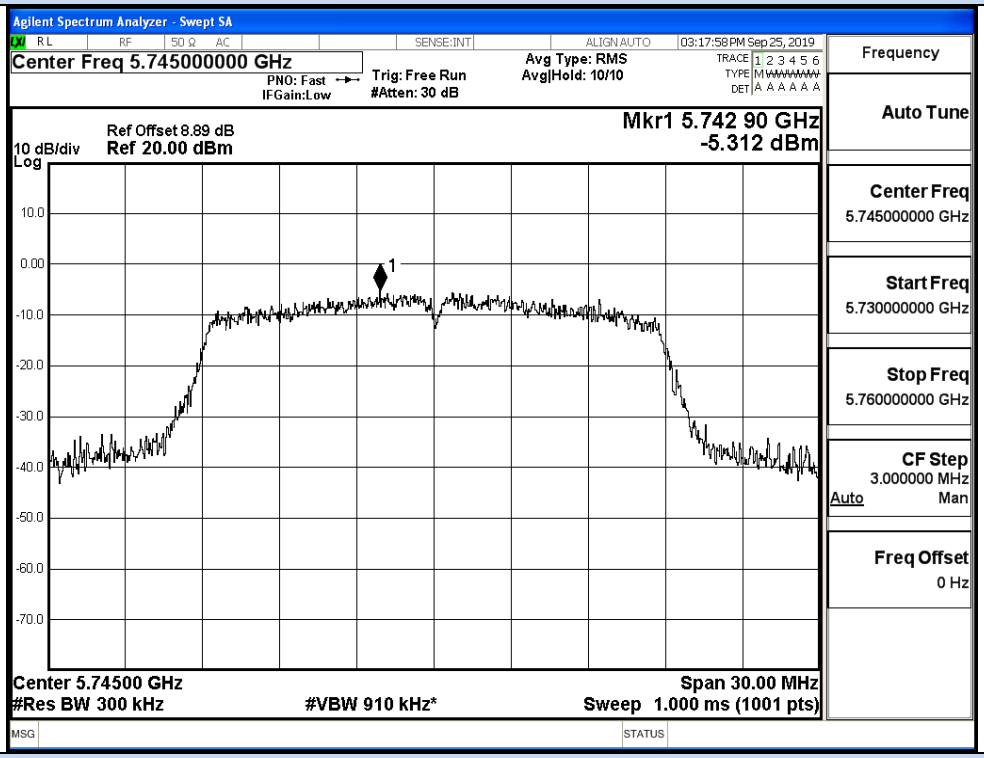
Directional gain=3dBi+10 log (2) = 6.01dBi > 6dBi, So the Conducted Power limit shall be reduced to 30-(6.01-6) = 29.99

B.3 Power Spectral Density

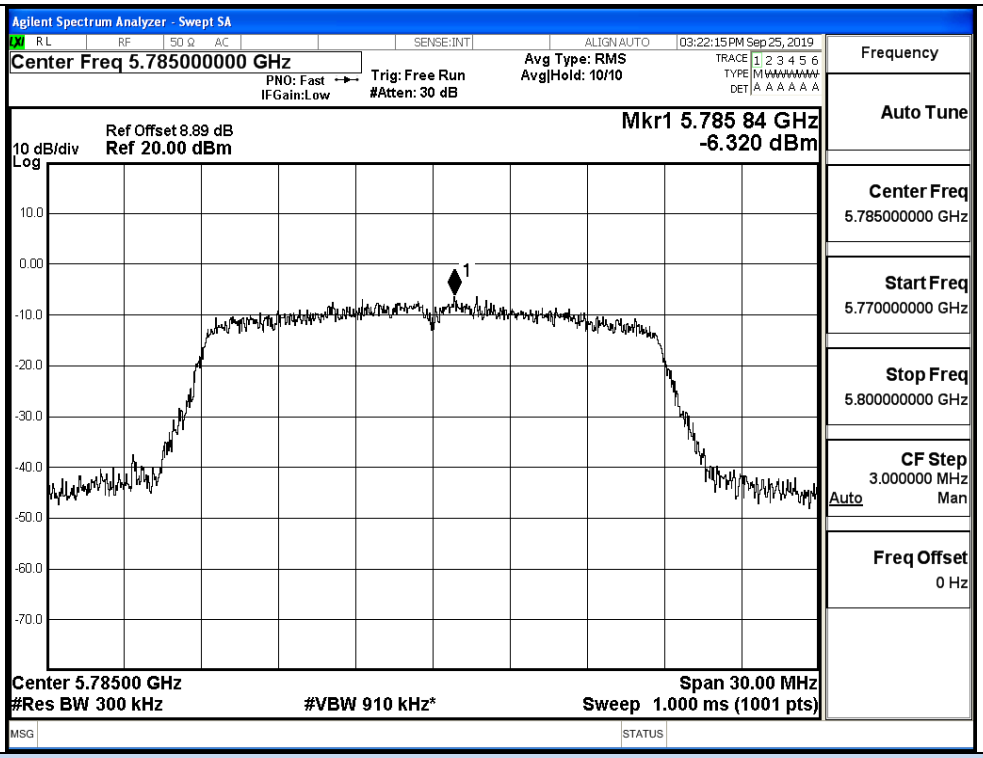
Ant0

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	-5.31	0	2.218	-3.09	30.0	Pass
	157	5785	-6.32	0	2.218	-4.10		Pass
	165	5825	-8.81	0	2.218	-6.59		Pass
11N20 SISO	149	5745	-6.26	0	2.218	-4.04	30.0	Pass
	157	5785	-6.17	0	2.218	-3.96		Pass
	165	5825	-6.51	0	2.218	-4.29		Pass

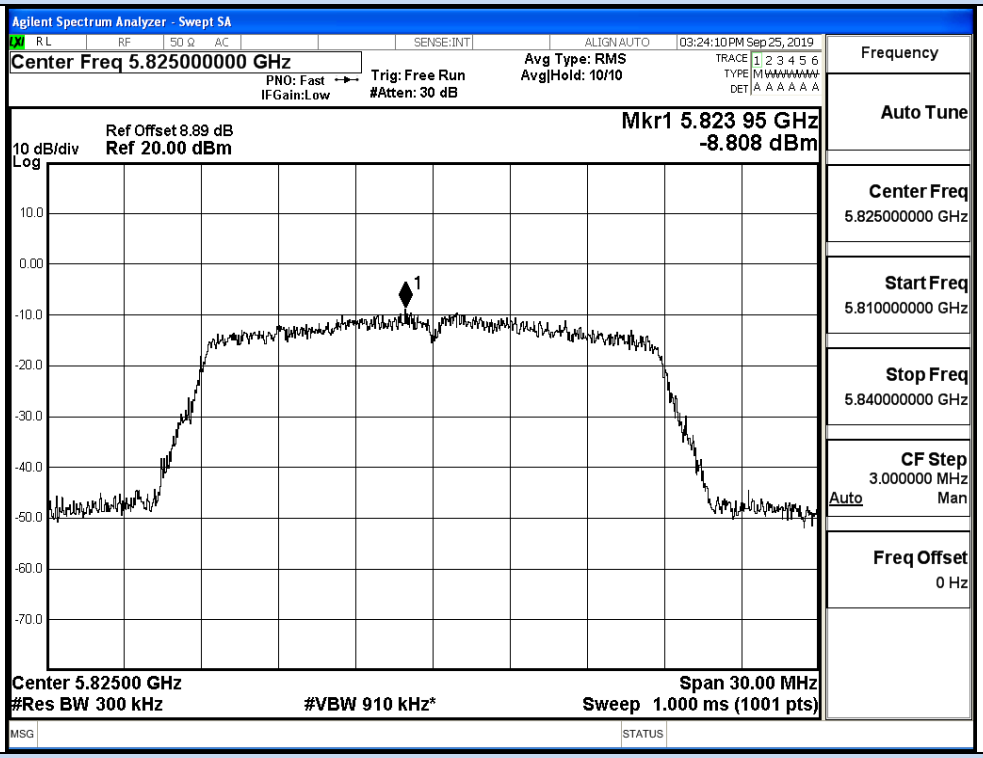
Power Spectral Density



IEEE 802.11a / Channel 149 / 5745MHz

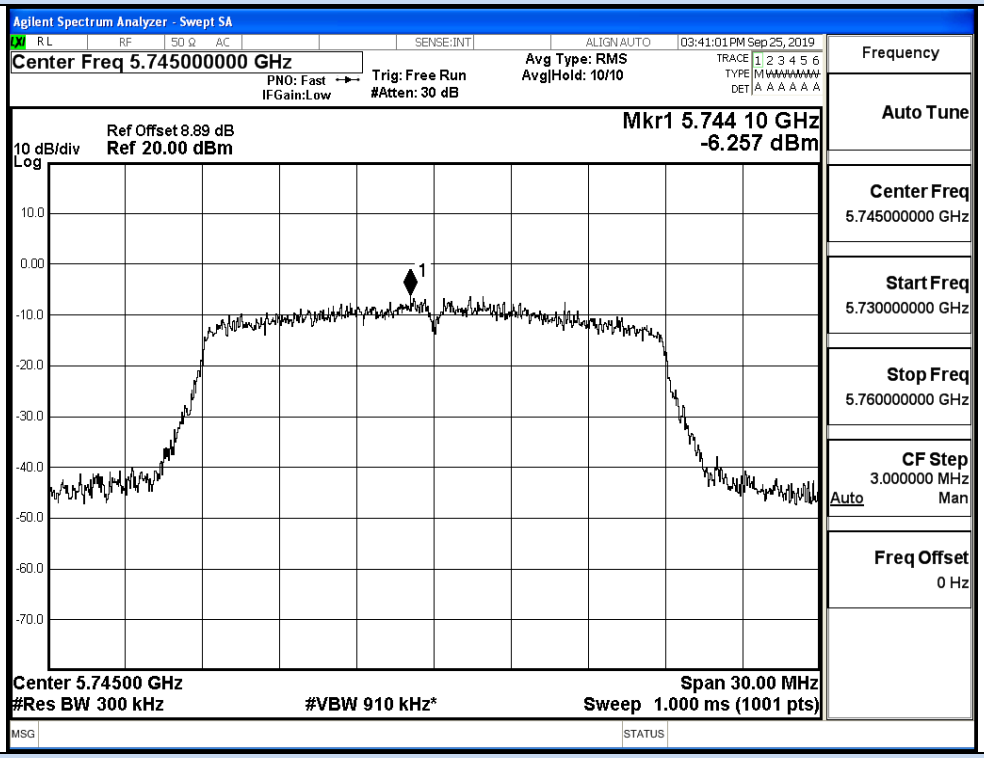


IEEE 802.11na / Channel 157 / 5785MHz

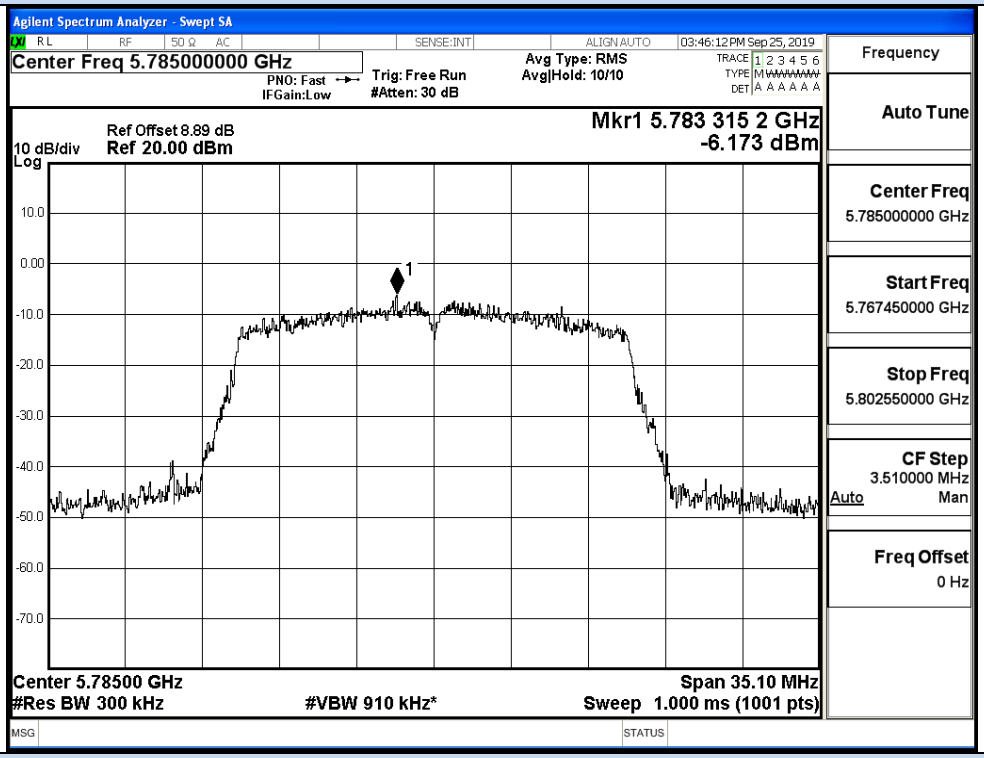


IEEE 802.11na / Channel 165 / 5825MHz

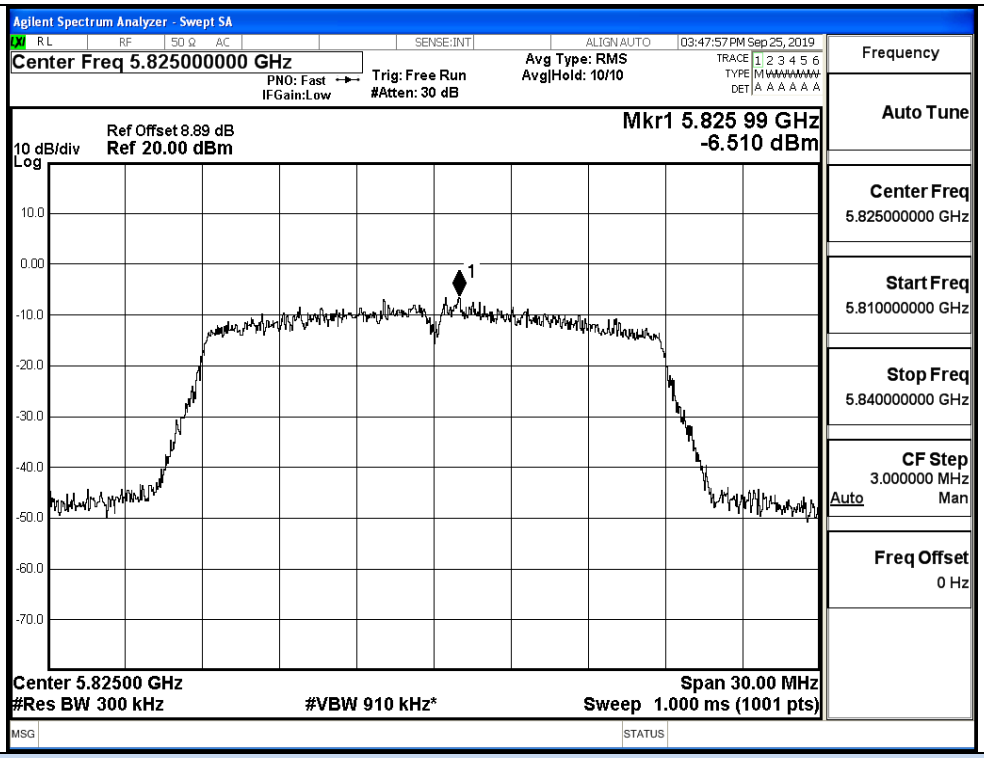
Power Spectral Density



IEEE 802.11n20 / Channel 149 / 5745MHz



IEEE 802.11n20 / Channel 157 / 5785MHz

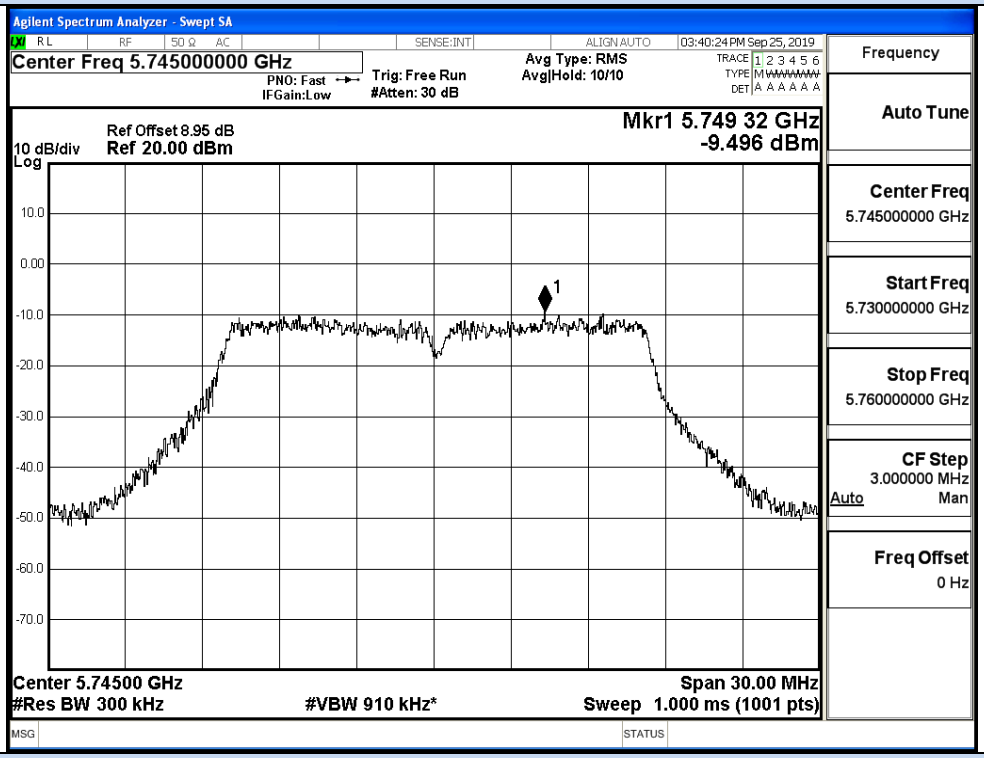


IEEE 802.11n20 / Channel 165 / 5825MHz

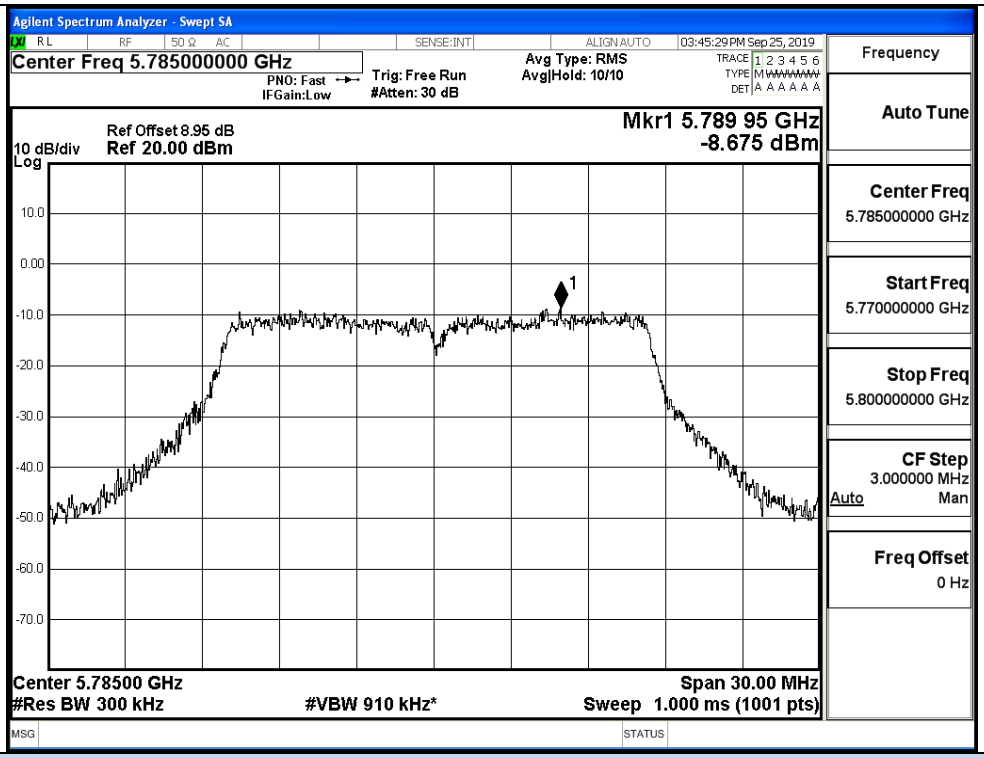
Ant1

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	-9.50	0	2.218	-7.28	30.0	Pass
	157	5785	-8.68	0	2.218	-6.46		Pass
	165	5825	-8.65	0	2.218	-6.43		Pass
11N20 SISO	149	5745	-8.80	0	2.218	-6.58	30.0	Pass
	157	5785	-8.19	0	2.218	-5.97		Pass
	165	5825	-8.43	0	2.218	-6.21		Pass

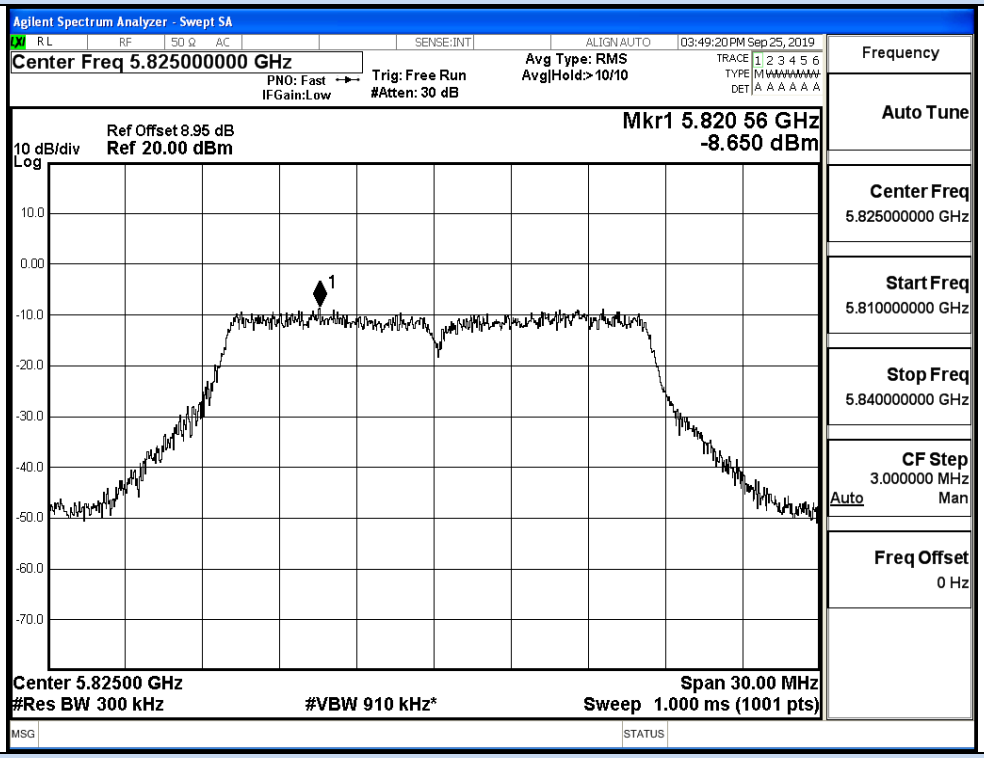
Power Spectral Density



IEEE 802.11a / Channel 149 / 5745MHz

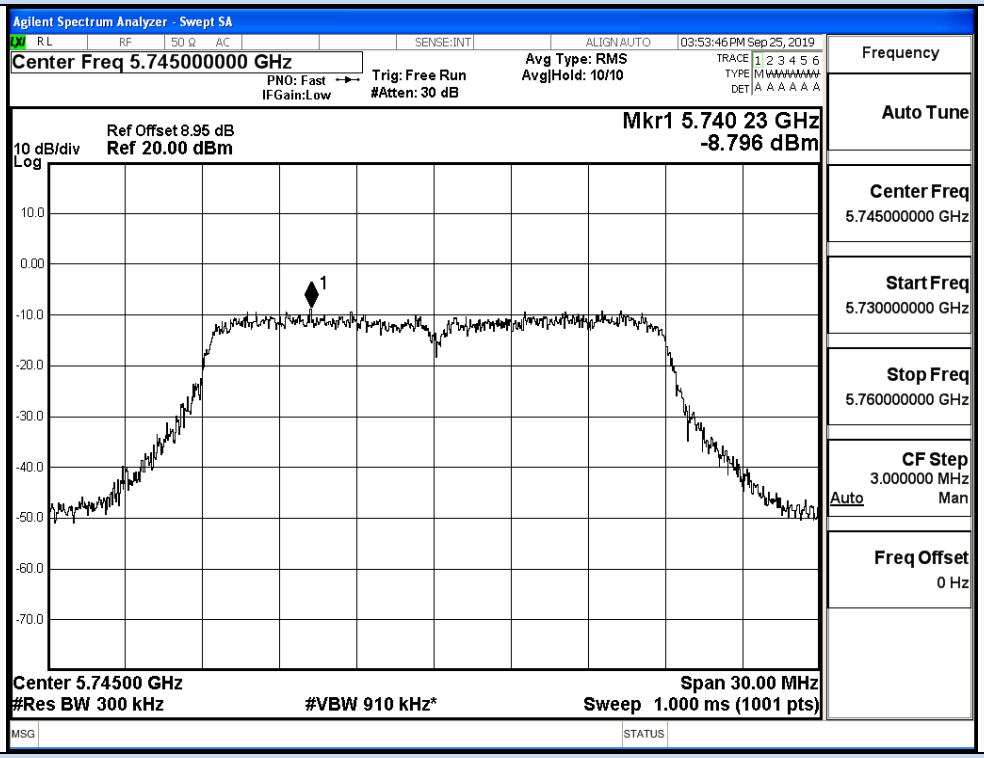


IEEE 802.11na / Channel 157 / 5785MHz

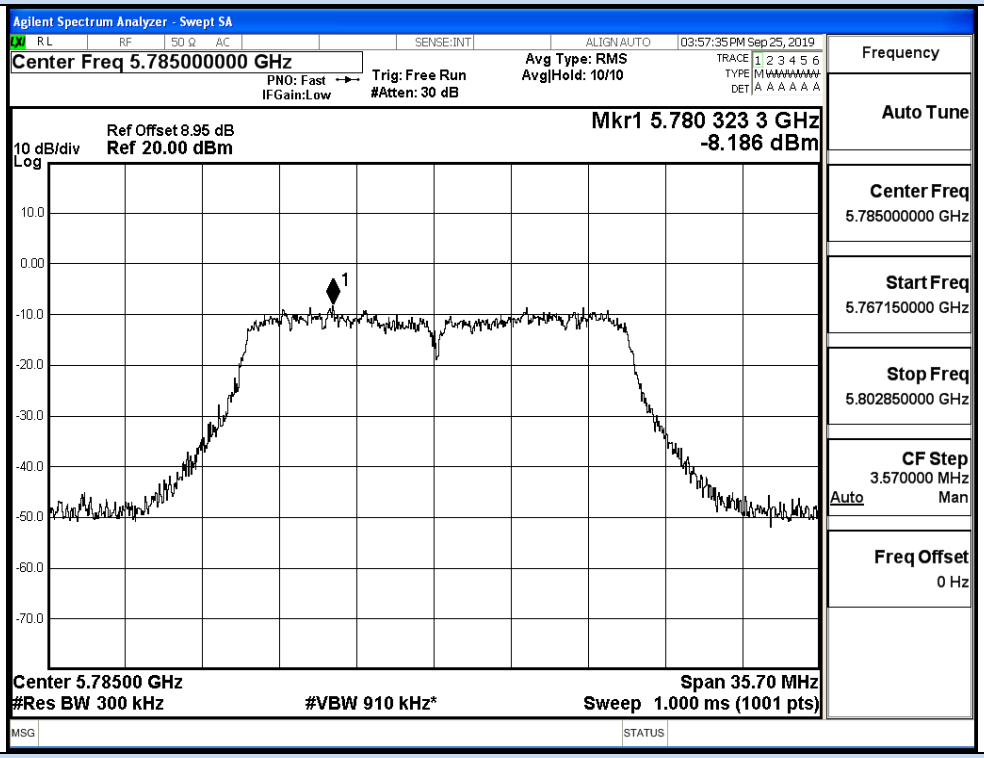


IEEE 802.11na / Channel 165 / 5825MHz

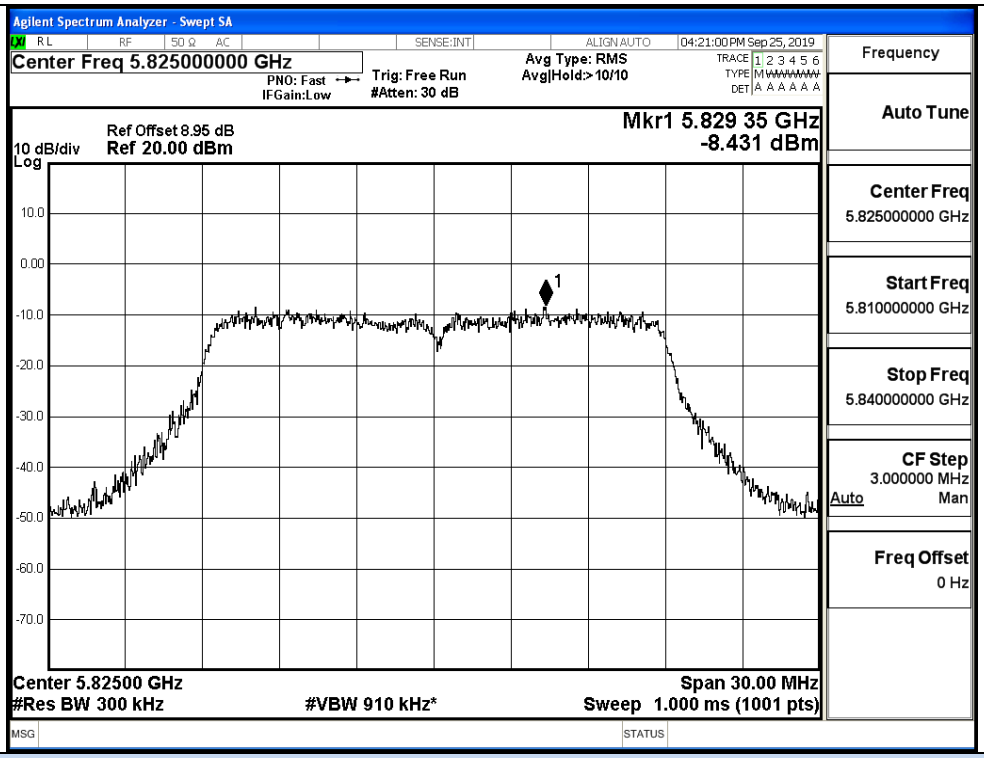
Power Spectral Density



IEEE 802.11n20 / Channel 149 / 5745MHz



IEEE 802.11n20 / Channel 157 / 5785MHz



IEEE 802.11n20 / Channel 165 / 5825MHz

Ant0+Ant1

Test Mode	Channel	Frequency (MHz)	Power Density (dBm/MHz)			Duty Cycle Factor(dB)	RBW Factor (dB)	Report Power Density (dBm/MHz)			Limit (dBm/MHz)	Verdict
			Ant0	Ant1	sum			Ant0	Ant1	sum		
11N20 SISO	149	5745	-6.26	-8.8	-4.34	0	2.218	-4.04	-6.58	-2.12	29.99	Pass
	157	5785	-6.17	-8.19	-4.05	0	2.218	-3.96	-5.97	-1.84		Pass
	165	5825	-6.51	-8.43	-4.35	0	2.218	-4.29	-6.21	-2.13		Pass

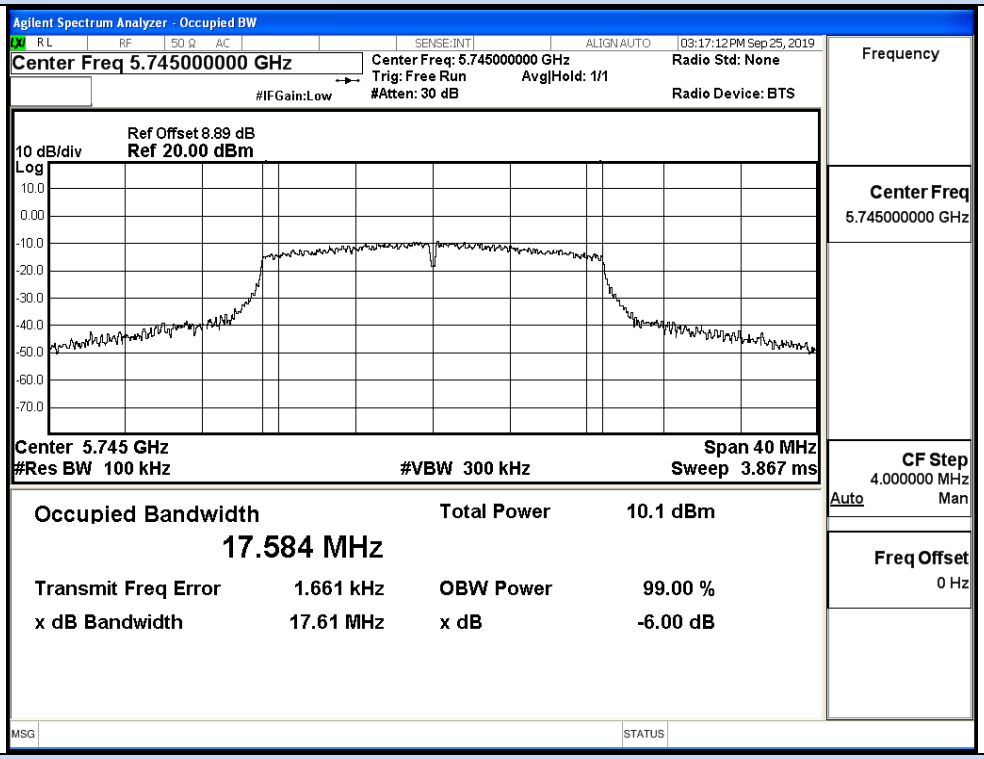
Directional gain=3dBi+10 log (2) = 6.01dBi > 6dBi, So the Conducted Power limit shall be reduced to 30-(6.01-6) = 29.99

B.4 Emission Bandwidth

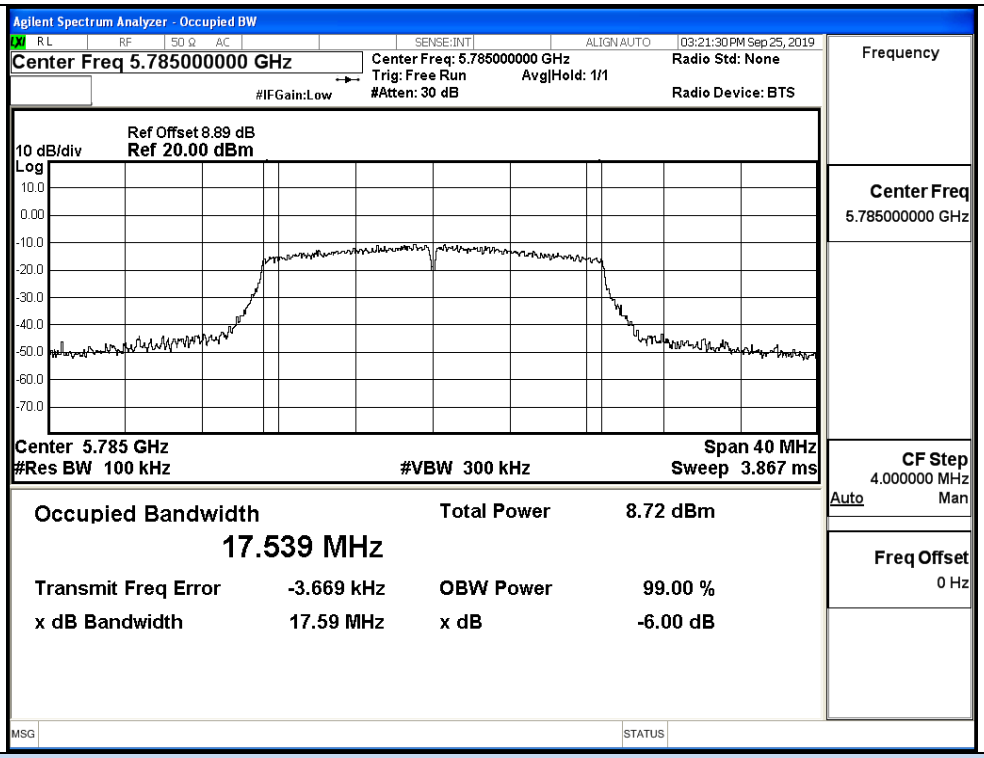
Ant0

Test Mode	Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)	Verdict
11A	149	5745	17.61	>=0.5	Pass
	157	5785	17.59		Pass
	165	5825	17.59		Pass
11N20 SISO	149	5745	17.54	>=0.5	Pass
	157	5785	17.55		Pass
	165	5825	17.22		Pass

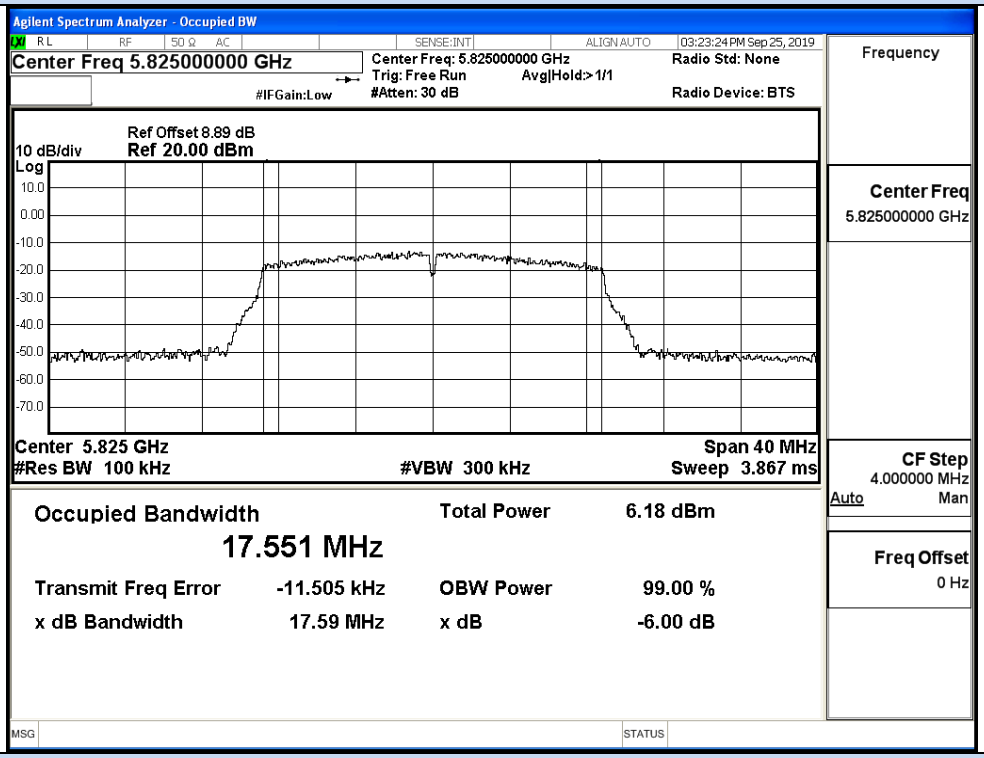
6dB Bandwidth



IEEE 802.11a / Channel 149 / 5745MHz

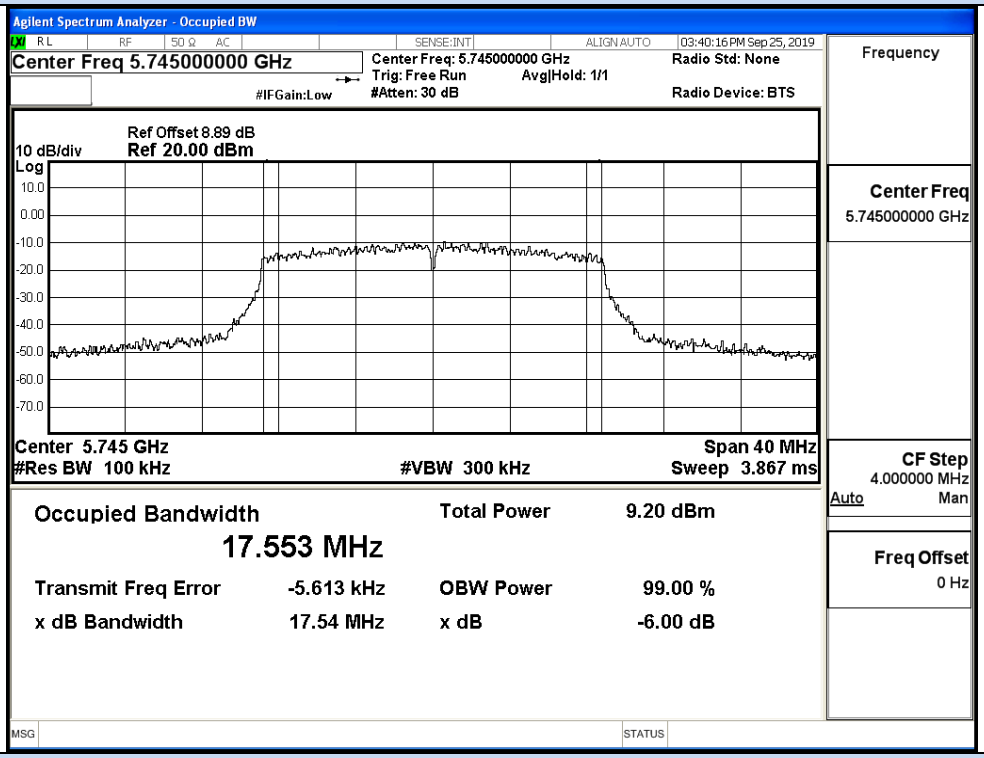


IEEE 802.11a / Channel 157 / 5785MHz

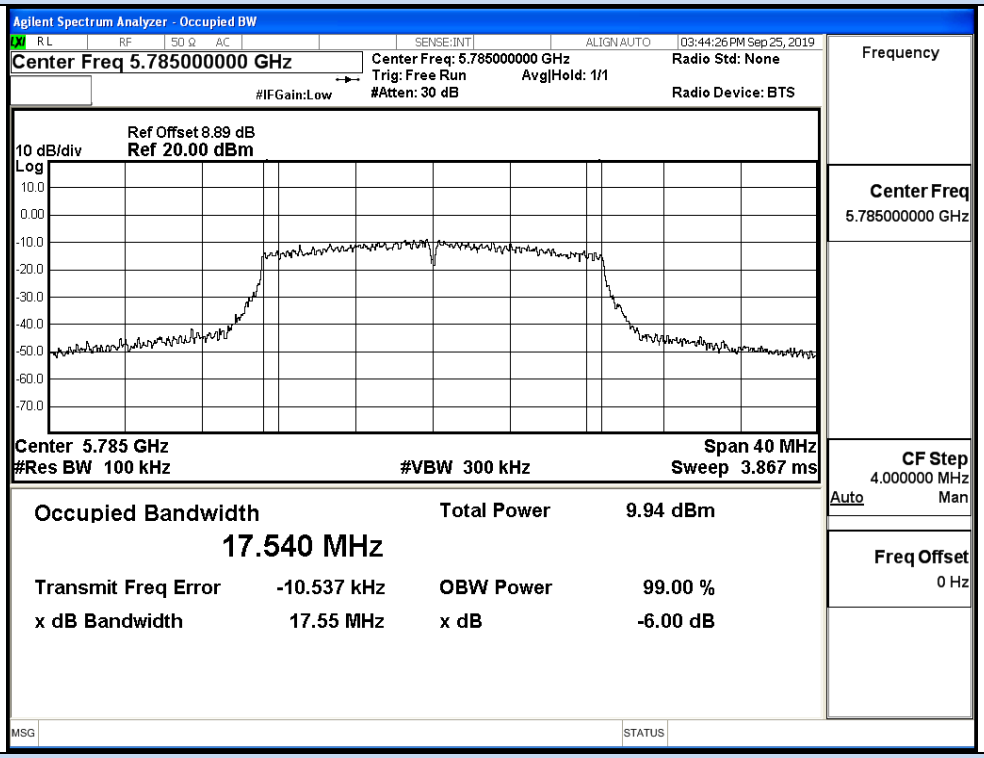


IEEE 802.11a / Channel 165 / 5825MHz

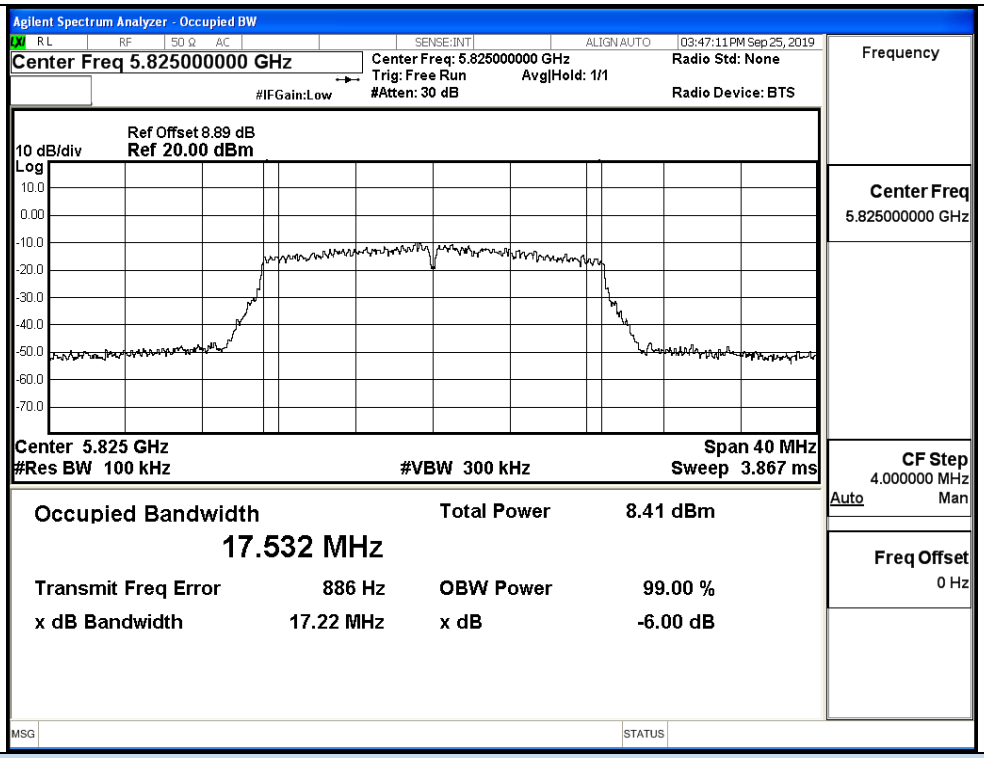
6dB Bandwidth



IEEE 802.11n20 / Channel 149 / 5745MHz



IEEE 802.11n20 / Channel 157 / 5785MHz

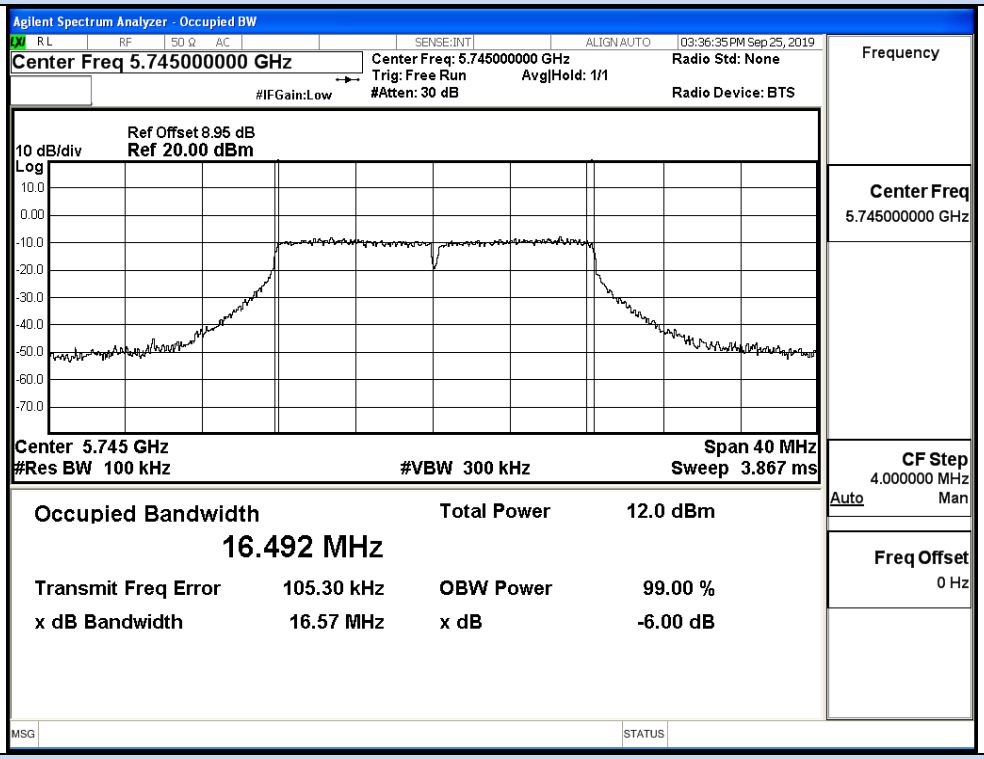


IEEE 802.11n20 / Channel 165 / 5825MHz

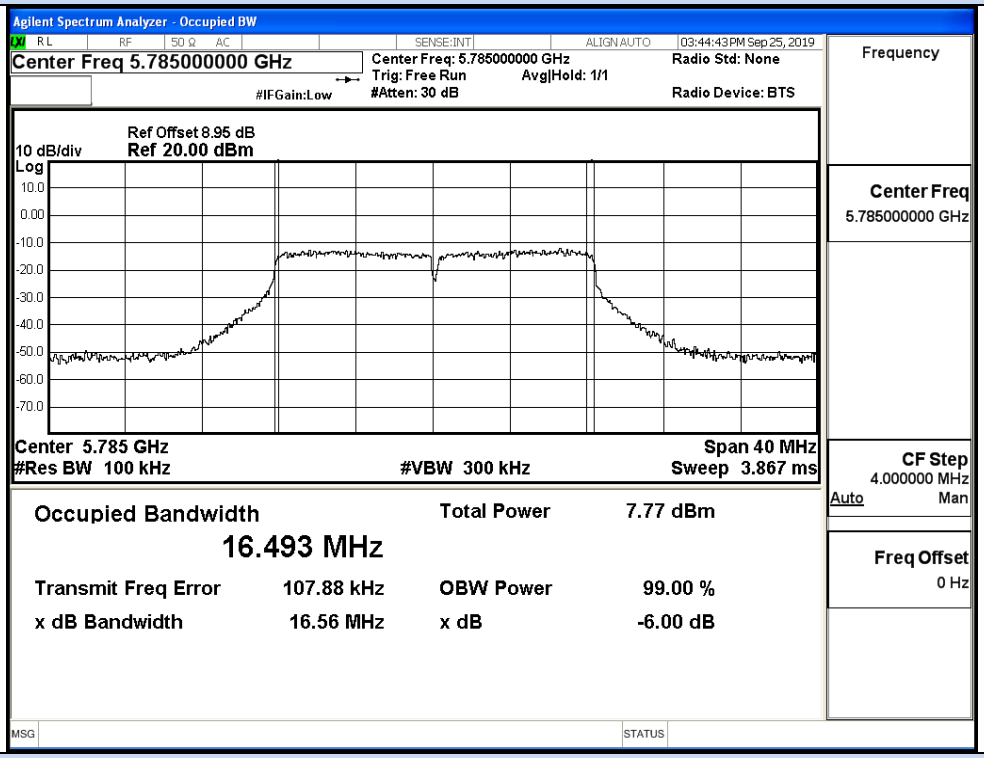
Ant1

Test Mode	Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)	Verdict
11A	149	5745	16.57	>=0.5	Pass
	157	5785	16.56		Pass
	165	5825	16.56		Pass
11N20 SISO	149	5745	17.76	>=0.5	Pass
	157	5785	17.85		Pass
	165	5825	17.78		Pass

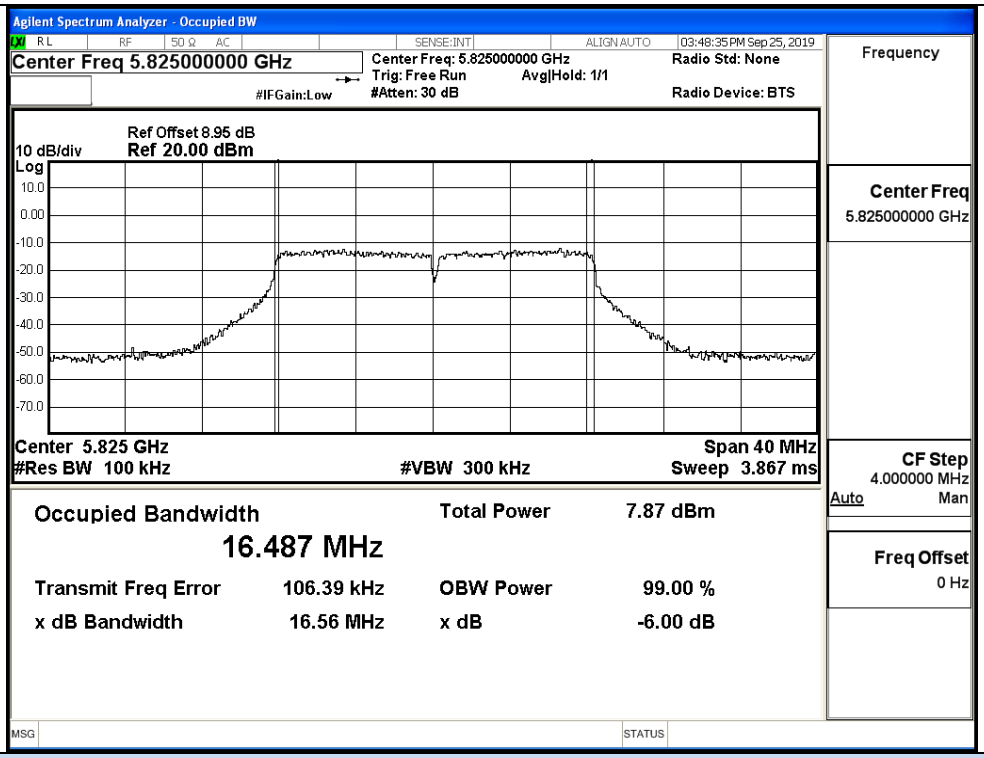
6dB Bandwidth



IEEE 802.11a / Channel 149 / 5745MHz

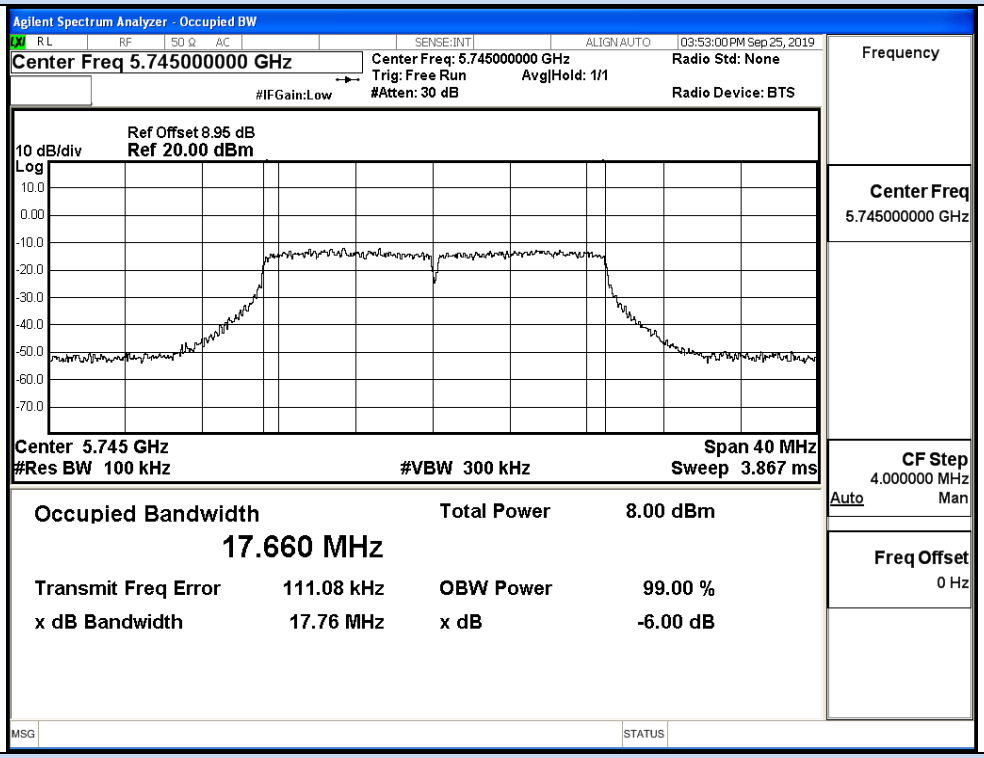


IEEE 802.11a / Channel 157 / 5785MHz

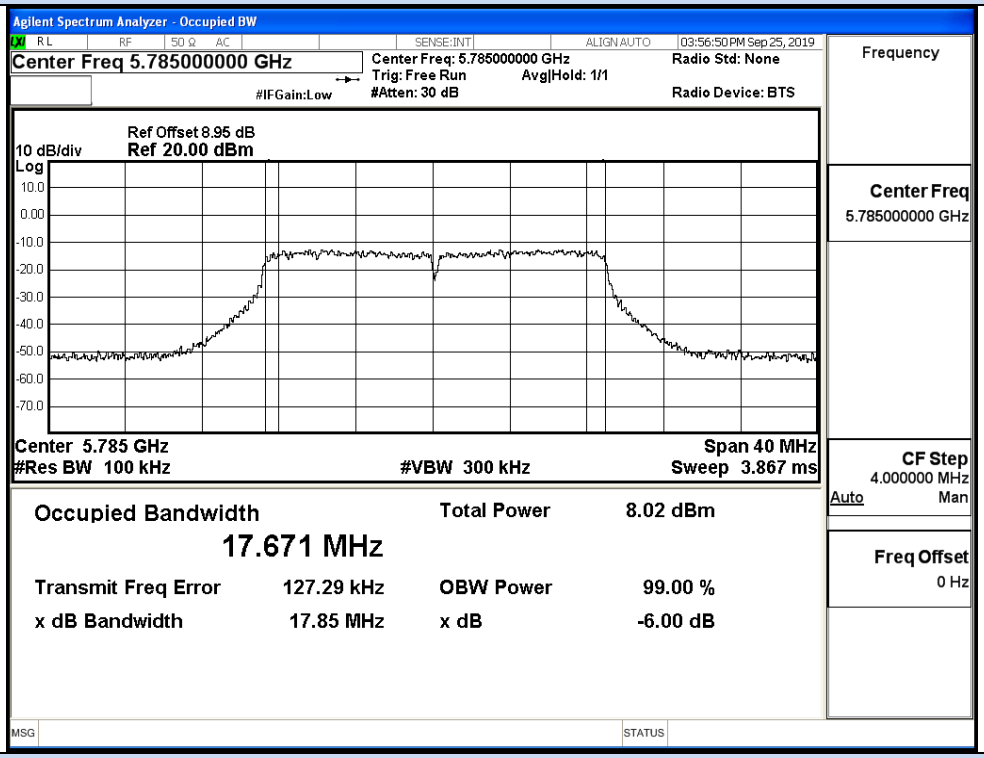


IEEE 802.11a / Channel 165 / 5825MHz

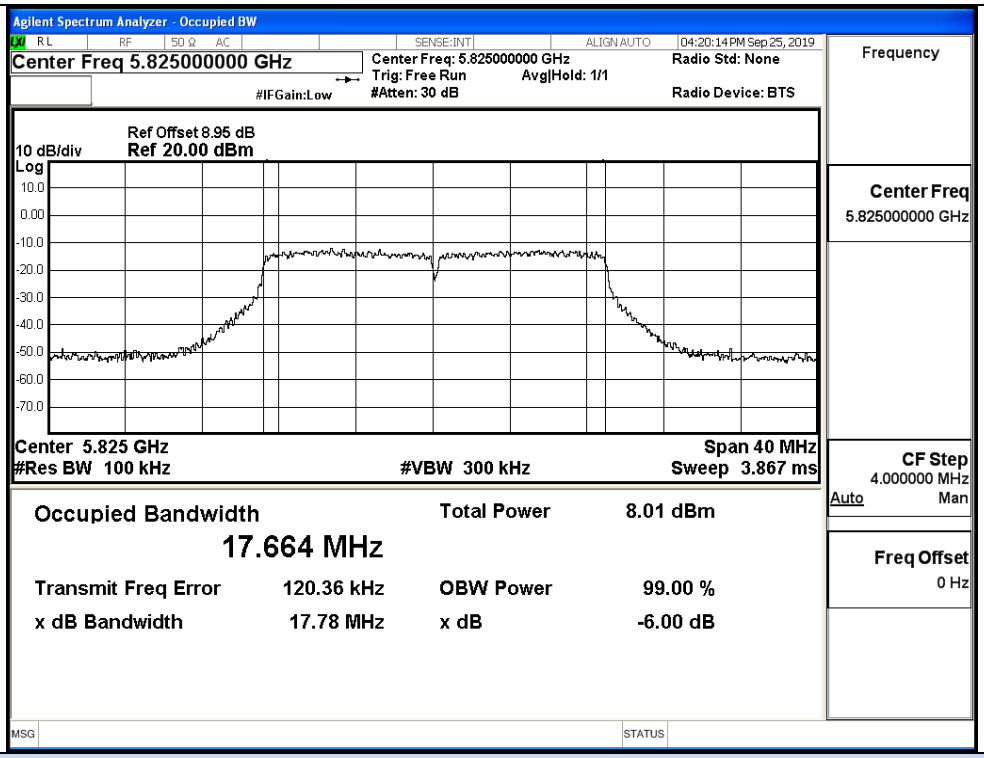
6dB Bandwidth



IEEE 802.11n20 / Channel 149 / 5745MHz



IEEE 802.11n20 / Channel 157 / 5785MHz



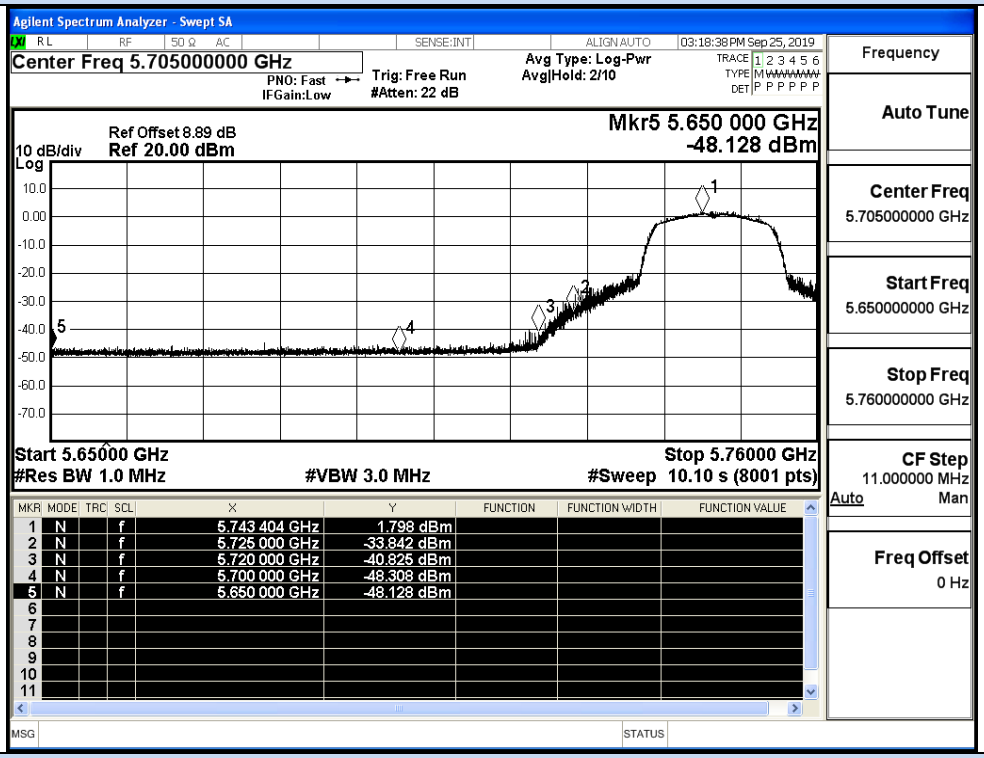
IEEE 802.11n20 / Channel 165 / 5825MHz

B.5 Undesirable Emissions Measurement

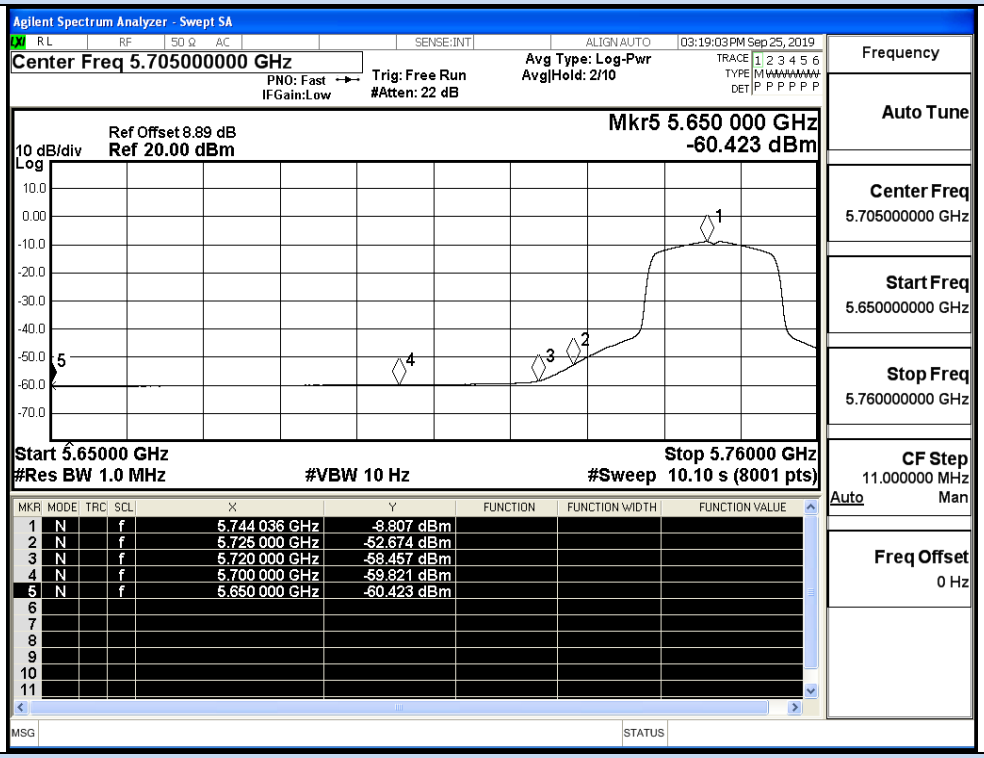
Ant0

Test Mode	Channel	Frequency (MHz)	Conducted Power (dBm)	Antenna Gain (dBi)	EIRP (dBm/MHz)	Detector	Limit (dBm/MHz)	Verdict
11A	149	5650.0	-48.13	3.00	-45.13	Peak	-27.0	Pass
		5650.0	-60.42	3.00	-57.42	Average	-27.0	Pass
		5700.0	-48.31	3.00	-45.31	Peak	10	Pass
		5700.0	-59.82	3.00	-56.82	Average	10	Pass
		5720.0	-40.83	3.00	-37.83	Peak	15.6	Pass
		5720.0	-58.46	3.00	-55.46	Average	15.6	Pass
		5725.0	-33.84	3.00	-30.84	Peak	27.0	Pass
		5725.0	-52.67	3.00	-49.67	Average	27.0	Pass
	165	5850.0	-47.58	3.00	-44.58	Peak	27.0	Pass
		5850.0	-60.02	3.00	-57.02	Average	27.0	Pass
		5855.0	-47.89	3.00	-44.89	Peak	15.6	Pass
		5855.0	-60.13	3.00	-57.13	Average	15.6	Pass
		5875.0	-49.46	3.00	-46.46	Peak	10	Pass
		5875.0	-60.30	3.00	-57.3	Average	10	Pass
		5925.0	-48.97	3.00	-45.97	Peak	-27.0	Pass
		5925.0	-60.71	3.00	-57.71	Average	-27.0	Pass
11N20 SISO	149	5650.0	-47.58	3.00	-44.58	Peak	-27.0	Pass
		5650.0	-60.51	3.00	-57.51	Average	-27.0	Pass
		5700.0	-48.10	3.00	-45.1	Peak	10	Pass
		5700.0	-59.39	3.00	-56.39	Average	10	Pass
		5720.0	-46.15	3.00	-43.15	Peak	15.6	Pass
		5720.0	-60.03	3.00	-57.03	Average	15.6	Pass
		5725.0	-42.48	3.00	-39.48	Peak	27.0	Pass
		5725.0	-56.41	3.00	-53.41	Average	27.0	Pass
	165	5850.0	-48.36	3.00	-45.36	Peak	27.0	Pass
		5850.0	-59.94	3.00	-56.94	Average	27.0	Pass
		5855.0	-48.85	3.00	-45.85	Peak	15.6	Pass
		5855.0	-60.14	3.00	-57.14	Average	15.6	Pass
		5875.0	-49.11	3.00	-46.11	Peak	10	Pass
		5875.0	-60.34	3.00	-57.34	Average	10	Pass
		5925.0	-49.09	3.00	-46.09	Peak	-27.0	Pass
		5925.0	-60.68	3.00	-57.68	Average	-27.0	Pass

Undesirable Emissions Measurement

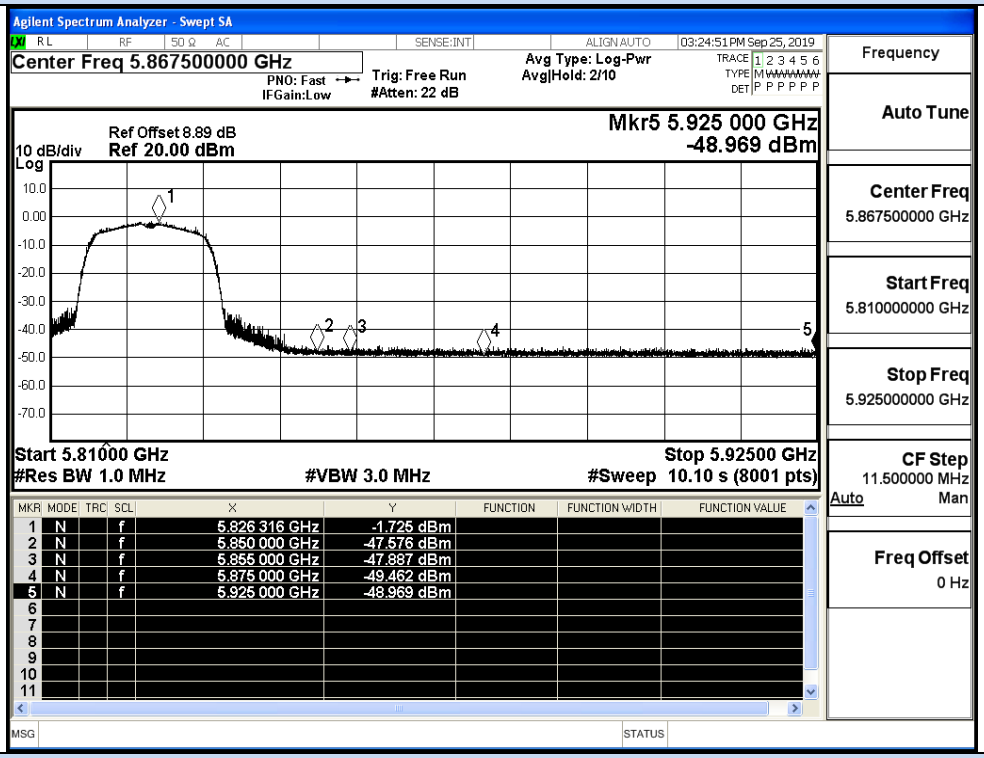


IEEE 802.11a / Channel 149 / 5745MHz / Peak

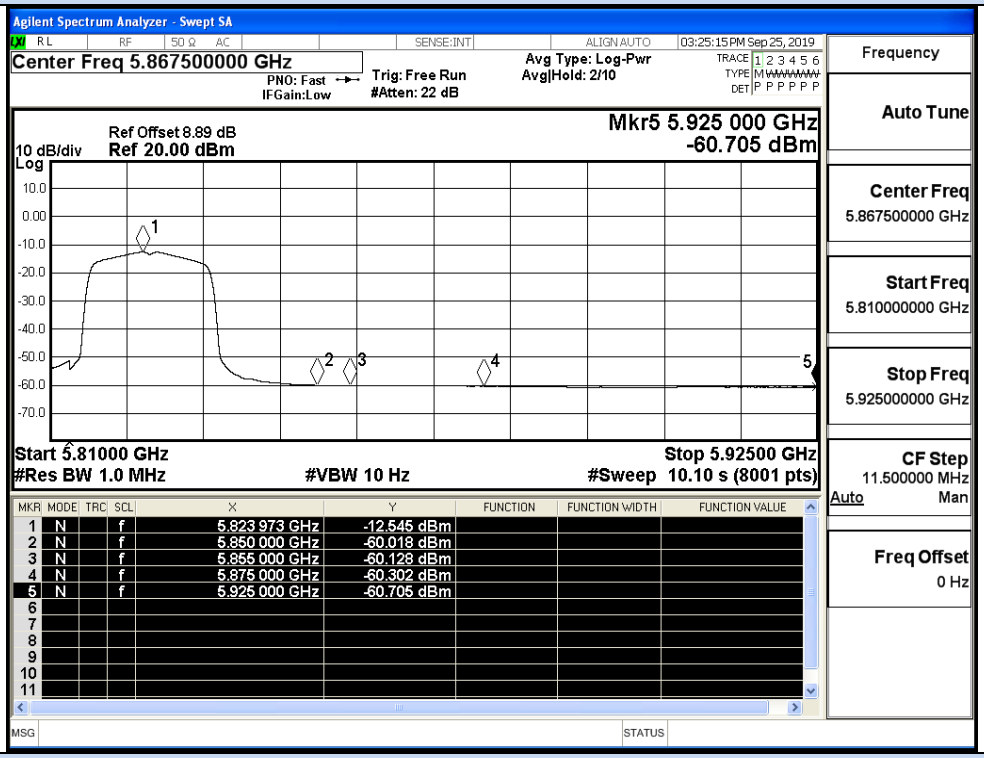


IEEE 802.11a / Channel 148 / 5745MHz / Average

Undesirable Emissions Measurement

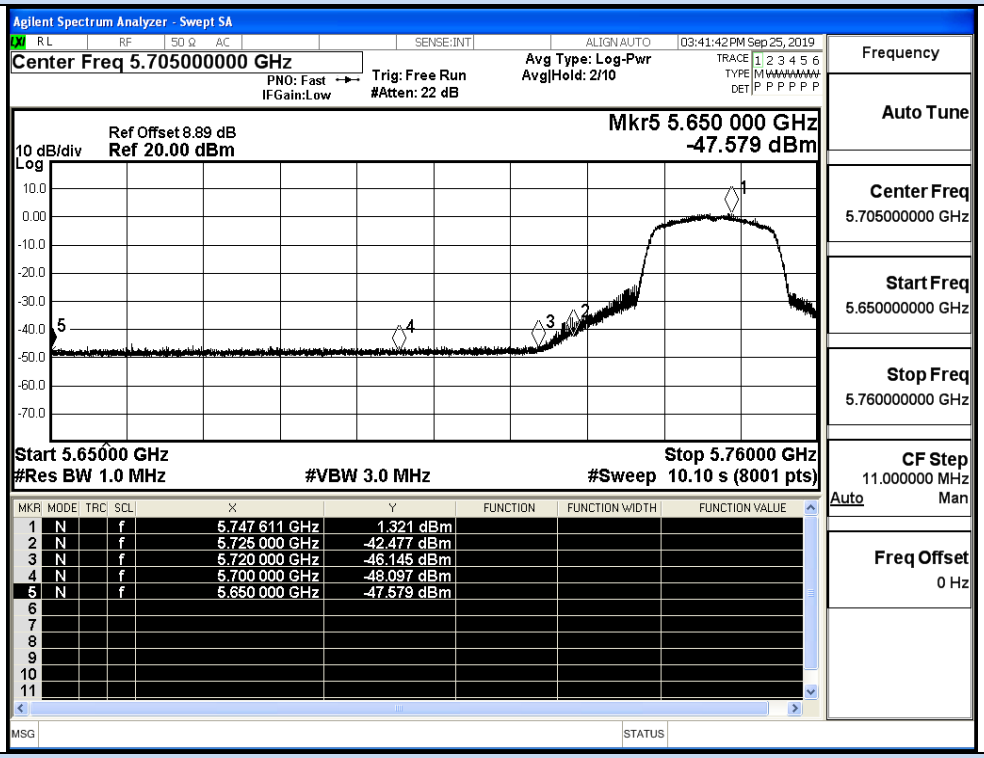


IEEE 802.11a / Channel 165 / 5825MHz / Peak

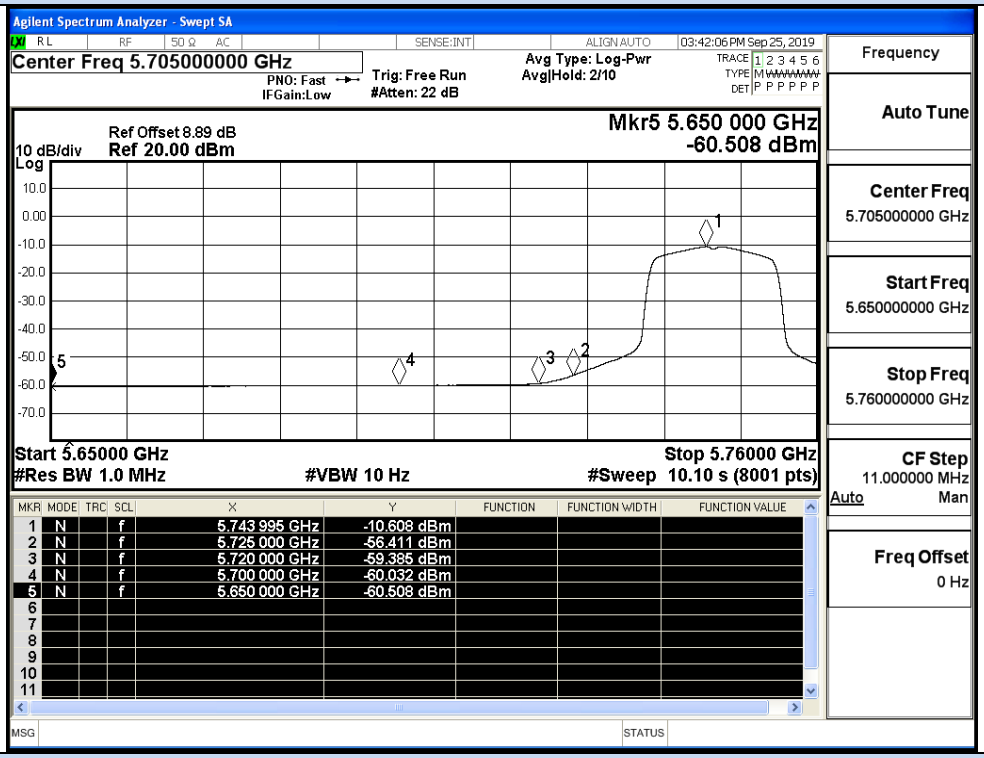


IEEE 802.11a / Channel 165 / 5825MHz / Average

Undesirable Emissions Measurement

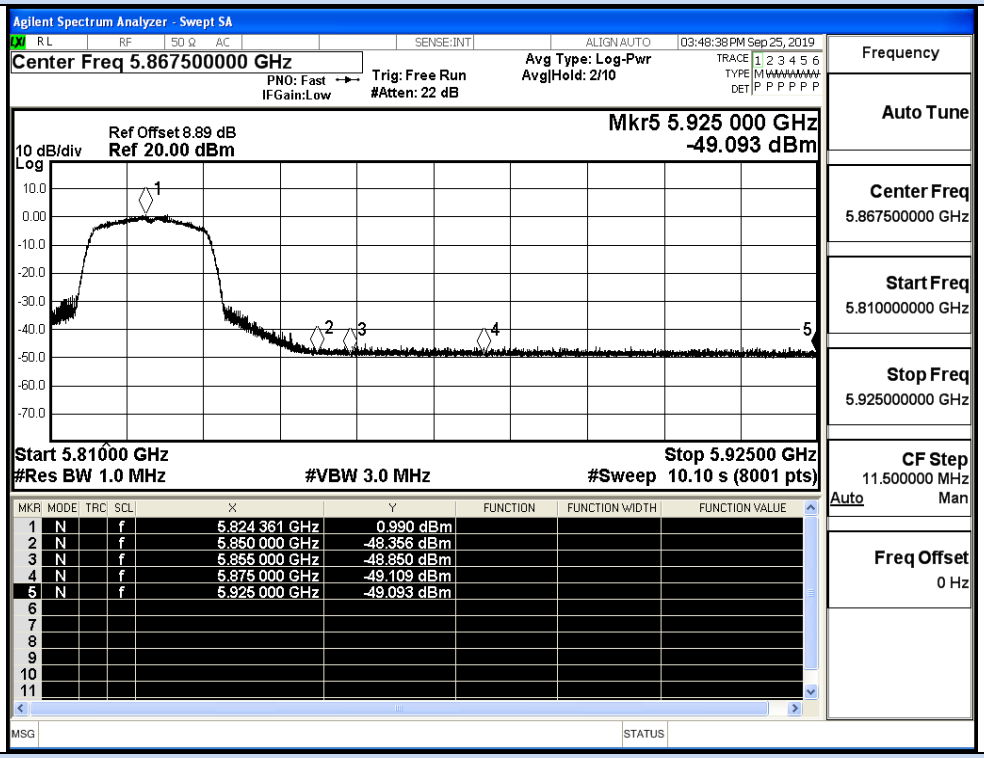


IEEE 802.11n20 / Channel 149 / 5745MHz / Peak

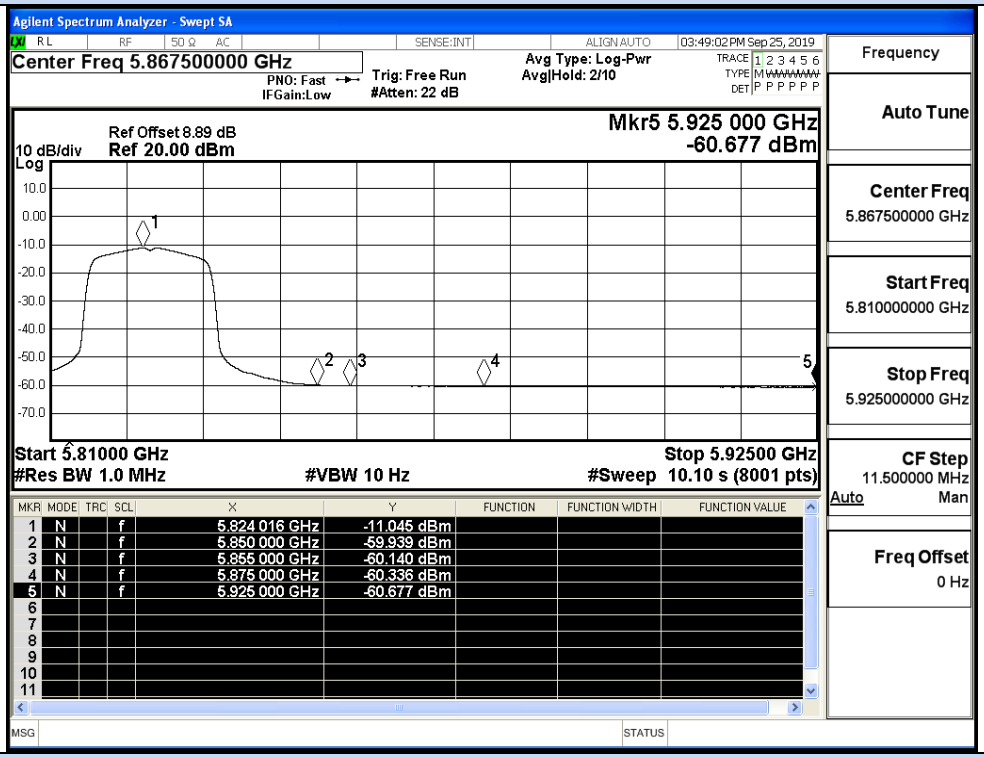


IEEE 802.11n20 / Channel 149 / 5745MHz / Average

Undesirable Emissions Measurement



IEEE 802.11n20 / Channel 165 / 5825MHz / Peak

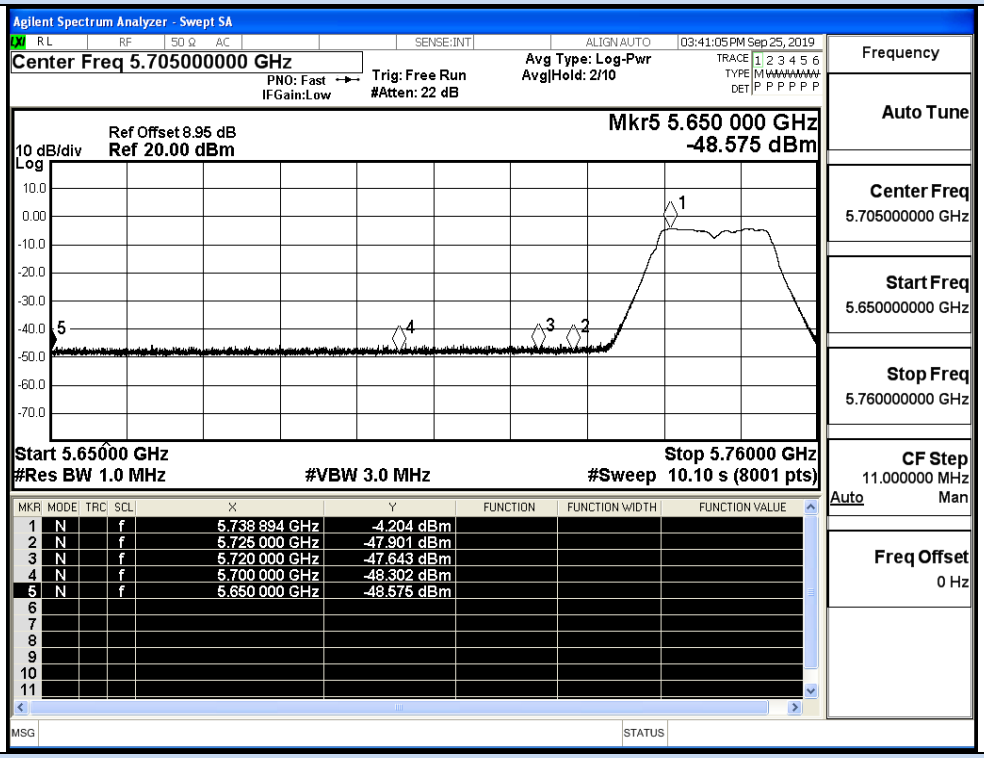


IEEE 802.11n20 / Channel 165 / 5825MHz / Average

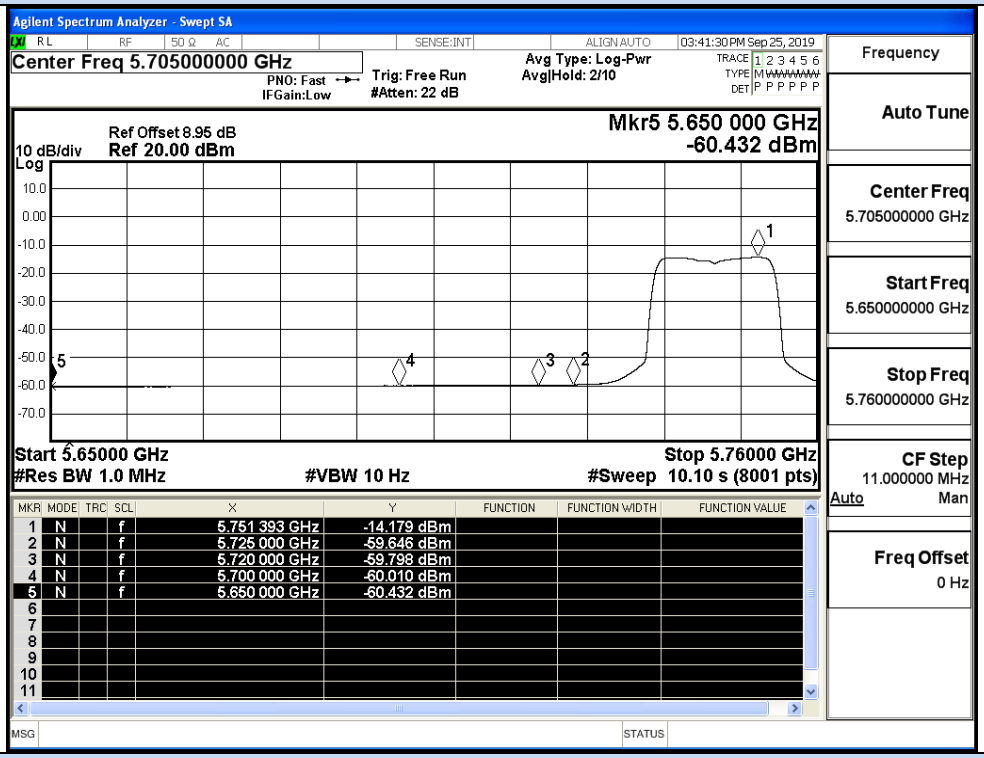
Ant1

Test Mode	Channel	Frequency (MHz)	Conducted Power (dBm)	Antenna Gain (dBi)	EIRP (dBm/MHz)	Detector	Limit (dBm/MHz)	Verdict
11A	149	5650.0	-48.58	3.00	-45.58	Peak	-27.0	Pass
		5650.0	-60.43	3.00	-57.43	Average	-27.0	Pass
		5700.0	-48.30	3.00	-45.3	Peak	10	Pass
		5700.0	-60.01	3.00	-57.01	Average	10	Pass
		5720.0	-47.64	3.00	-44.64	Peak	15.6	Pass
		5720.0	-59.80	3.00	-56.8	Average	15.6	Pass
		5725.0	-47.90	3.00	-44.9	Peak	27.0	Pass
		5725.0	-59.65	3.00	-56.65	Average	27.0	Pass
	165	5850.0	-46.74	3.00	-43.74	Peak	27.0	Pass
		5850.0	-59.16	3.00	-56.16	Average	27.0	Pass
		5855.0	-47.74	3.00	-44.74	Peak	15.6	Pass
		5855.0	-59.26	3.00	-56.26	Average	15.6	Pass
		5875.0	-47.32	3.00	-44.32	Peak	10	Pass
		5875.0	-59.61	3.00	-56.61	Average	10	Pass
		5925.0	-48.40	3.00	-45.4	Peak	-27.0	Pass
		5925.0	-60.09	3.00	-57.09	Average	-27.0	Pass
11N20 SISO	149	5650.0	-48.69	3.00	-45.69	Peak	-27.0	Pass
		5650.0	-60.40	3.00	-57.4	Average	-27.0	Pass
		5700.0	-47.90	3.00	-44.9	Peak	10	Pass
		5700.0	-59.77	3.00	-56.77	Average	10	Pass
		5720.0	-47.89	3.00	-44.89	Peak	15.6	Pass
		5720.0	-60.02	3.00	-57.02	Average	15.6	Pass
		5725.0	-47.64	3.00	-44.64	Peak	27.0	Pass
		5725.0	-59.62	3.00	-56.62	Average	27.0	Pass
	165	5850.0	-47.52	3.00	-44.52	Peak	27.0	Pass
		5850.0	-59.14	3.00	-56.14	Average	27.0	Pass
		5855.0	-47.53	3.00	-44.53	Peak	15.6	Pass
		5855.0	-59.28	3.00	-56.28	Average	15.6	Pass
		5875.0	-46.75	3.00	-43.75	Peak	10	Pass
		5875.0	-59.61	3.00	-56.61	Average	10	Pass
		5925.0	-48.35	3.00	-45.35	Peak	-27.0	Pass
		5925.0	-60.09	3.00	-57.09	Average	-27.0	Pass

Undesirable Emissions Measurement

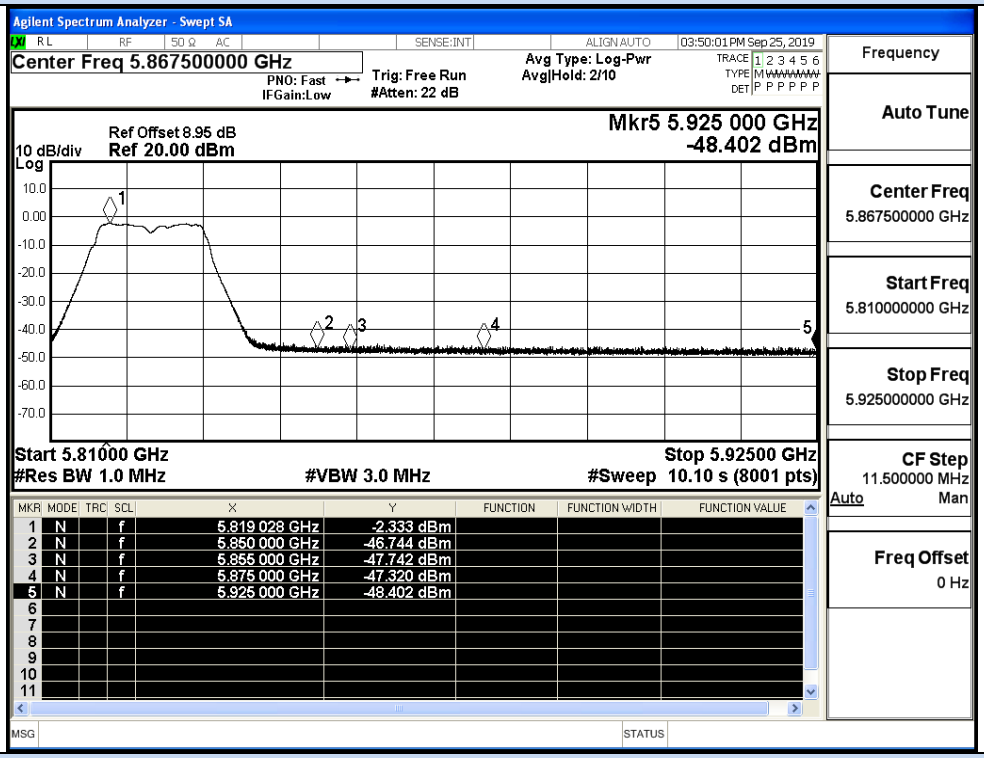


IEEE 802.11a / Channel 149 / 5745MHz / Peak

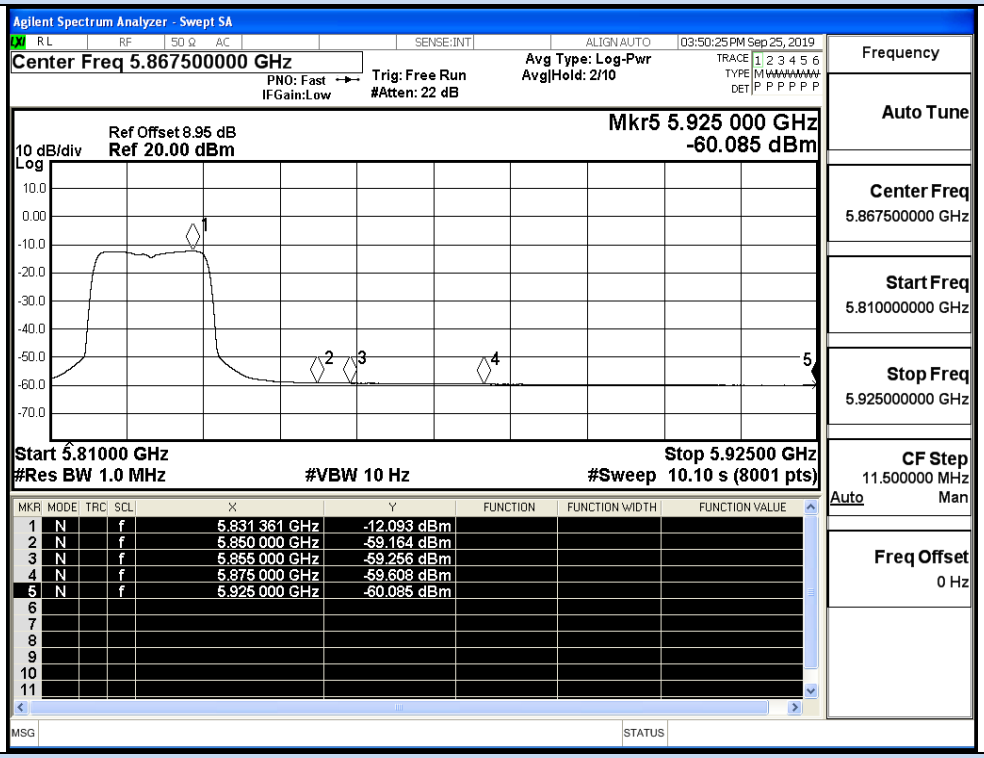


IEEE 802.11a / Channel 148 / 5745MHz / Average

Undesirable Emissions Measurement

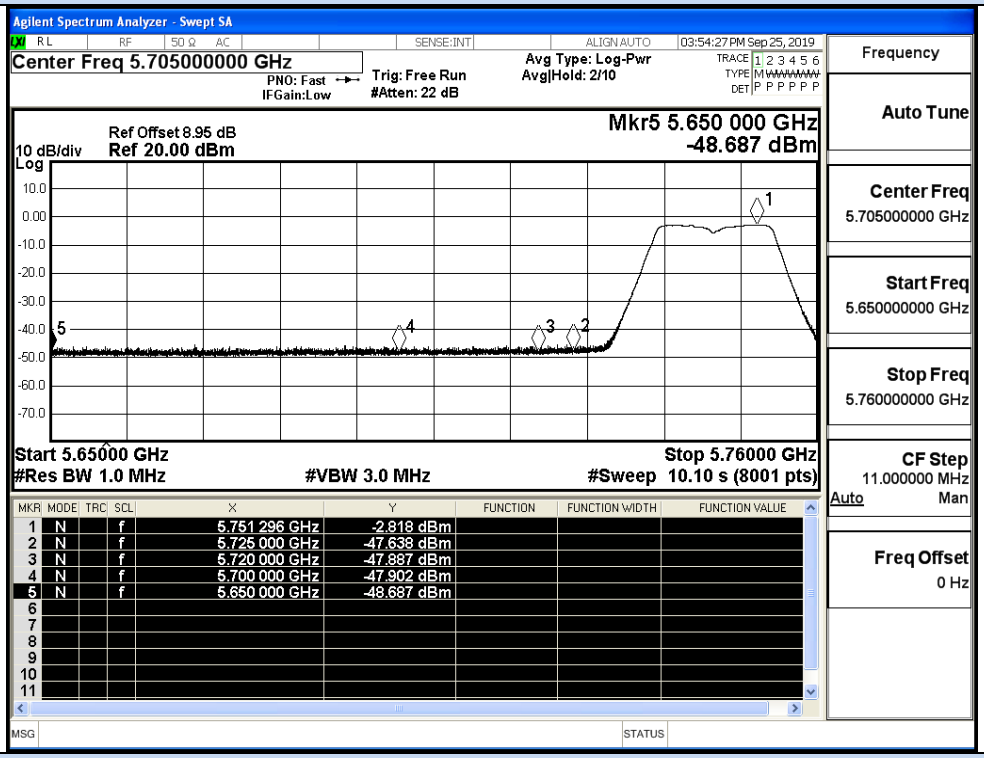


IEEE 802.11a / Channel 165 / 5825MHz / Peak

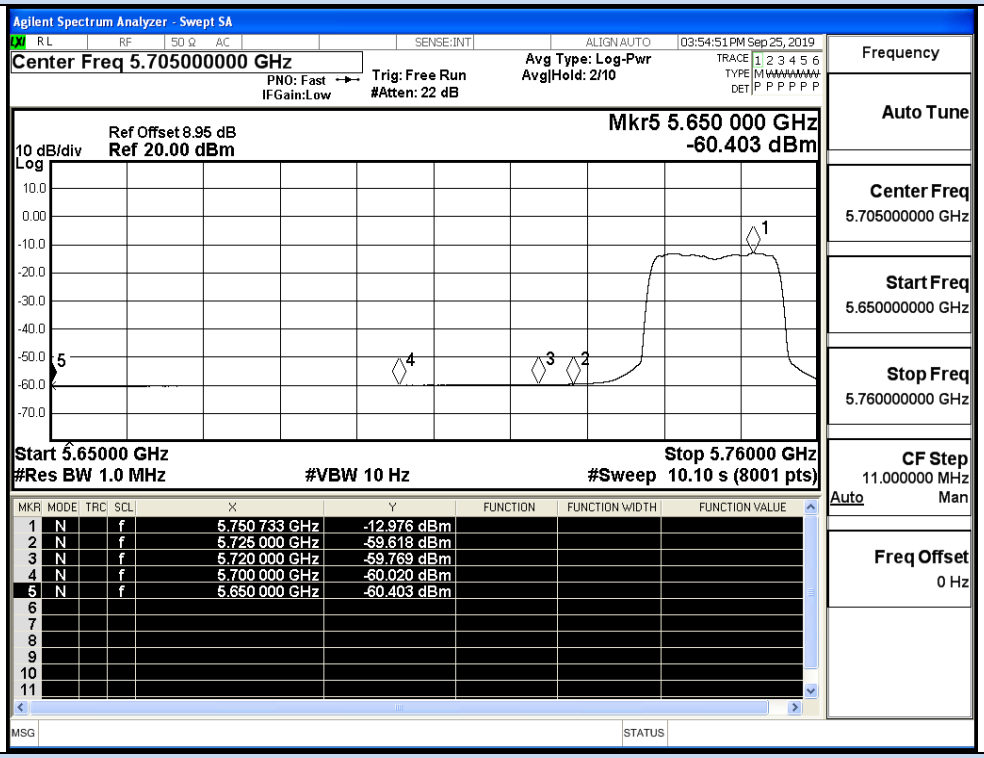


IEEE 802.11a / Channel 165 / 5825MHz / Average

Undesirable Emissions Measurement

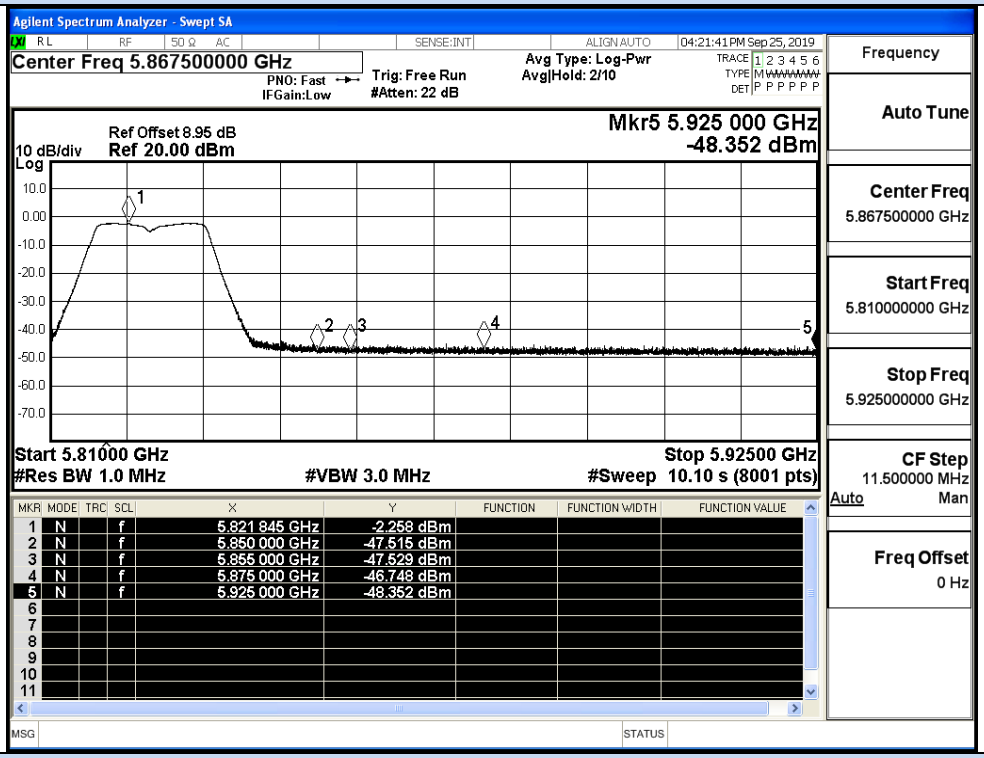


IEEE 802.11n20 / Channel 149 / 5745MHz / Peak

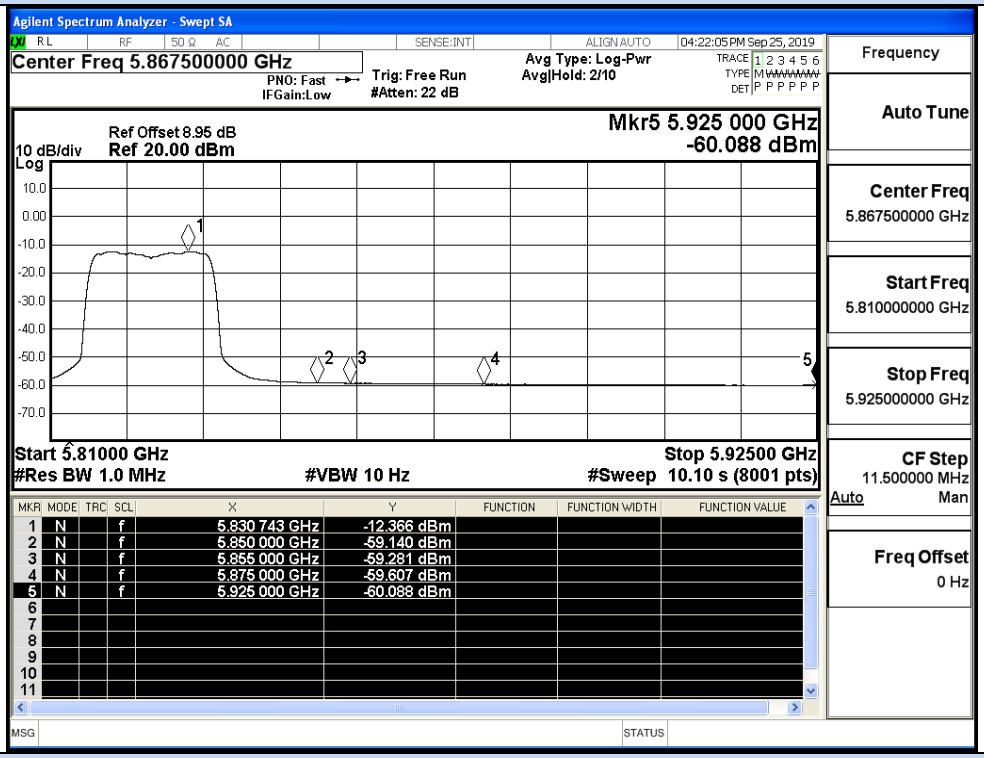


IEEE 802.11n20 / Channel 149 / 5745MHz / Average

Undesirable Emissions Measurement



IEEE 802.11n20 / Channel 165 / 5825MHz / Peak



IEEE 802.11n20 / Channel 165 / 5825MHz / Average

Ant0+1

Test Mode	Channel	Frequency (MHz)	ANT 0 Conducted Power (dBm)	ANT 1 Conducted Power (dBm)	ANT 0-1 Conducted Power (dBm)	Antenna Gain (dBi)	EIRP (dBm/MHz)	Detector	Limit (dBm/MHz)	Verdict
11N20 SISO	149	5650.0	-47.58	-48.69	-45.09	6.01	-39.08	Peak	-27.0	Pass
		5650.0	-60.51	-60.40	-57.44	6.01	-51.43	Average	-27.0	Pass
		5700.0	-48.10	-47.90	-44.99	6.01	-38.98	Peak	10	Pass
		5700.0	-59.39	-59.77	-56.57	6.01	-50.56	Average	10	Pass
		5720.0	-46.15	-47.89	-43.92	6.01	-37.91	Peak	15.6	Pass
		5720.0	-60.03	-60.02	-57.01	6.01	-51.00	Average	15.6	Pass
		5725.0	-42.48	-47.64	-41.32	6.01	-35.31	Peak	27.0	Pass
		5725.0	-56.41	-59.62	-54.71	6.01	-48.70	Average	27.0	Pass
	165	5850.0	-48.36	-47.52	-44.91	6.01	-38.90	Peak	27.0	Pass
		5850.0	-59.94	-59.14	-56.51	6.01	-50.50	Average	27.0	Pass
		5855.0	-48.85	-47.53	-45.13	6.01	-39.12	Peak	15.6	Pass
		5855.0	-60.14	-59.28	-56.68	6.01	-50.67	Average	15.6	Pass
		5875.0	-49.11	-46.75	-44.76	6.01	-38.75	Peak	10	Pass
		5875.0	-60.34	-59.61	-56.95	6.01	-50.94	Average	10	Pass
		5925.0	-49.09	-48.35	-45.69	6.01	-39.68	Peak	-27.0	Pass
		5925.0	-60.68	-60.09	-57.36	6.01	-51.35	Average	-27.0	Pass

EIRP(dBm/MHz)= Conducted Power (dBm) + Antenna Gain (dBi)

The upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands or 3.00dBi, whichever is greater

Directional gain=3.00dBi+10 log (2) = 6.01dBi