

Appendix E

RF Test Data for 5.8G WLAN (Conducted Measurement)

Product Name: Portable Data Collector

Trade Mark: Newland

Test Model: NLS-N7

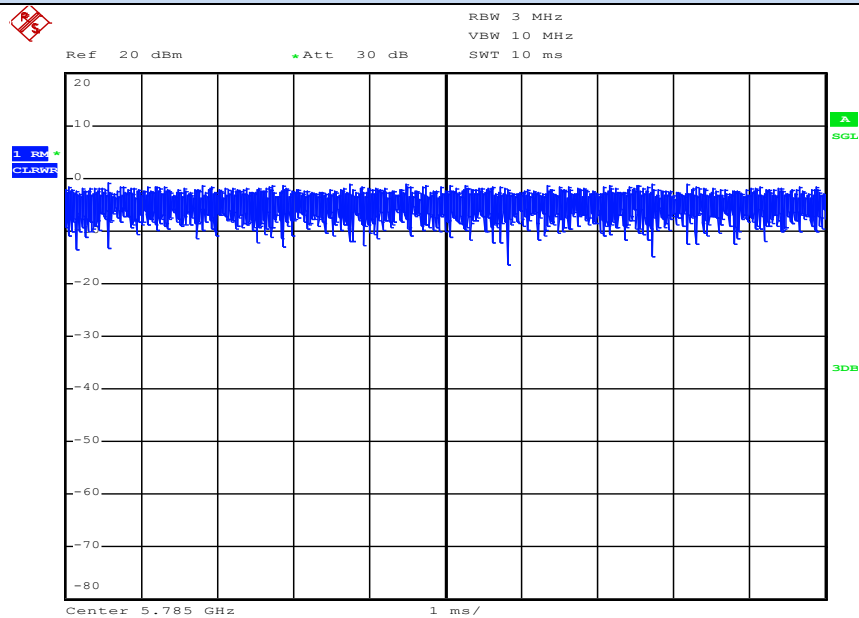
Environmental Conditions

Temperature:	24.7 ° C
Relative Humidity:	53.8%
ATM Pressure:	100.0 kPa
Test Engineer:	JK ZHOU
Supervised by:	Wang.Chuang

E.1 Duty Cycle

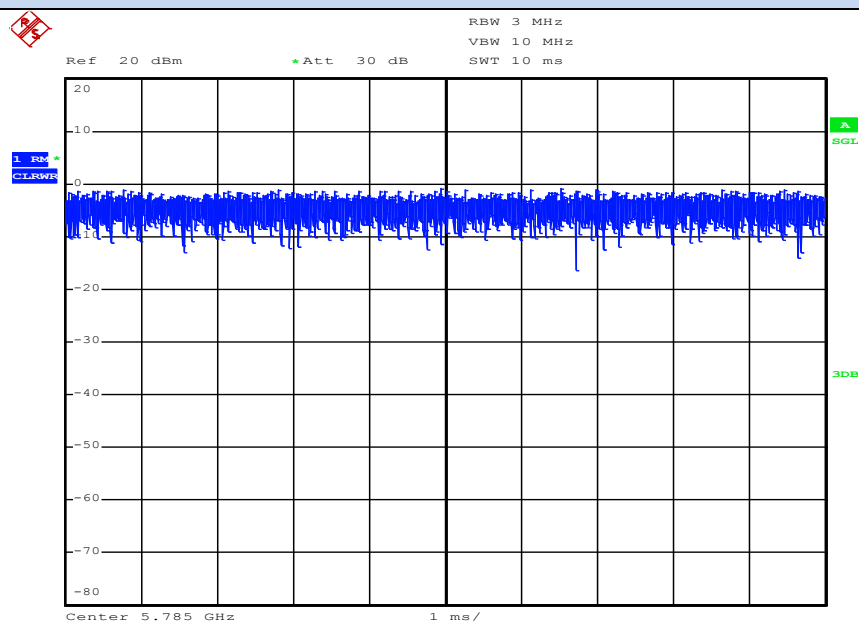
Test Mode	Test Frequency (MHz)	Duty Cycle (%)	10log(1/x) Factor (dB)	1/B Minimum VBW(KHz)
11A	5785	100	0.00	0.01
11N20 SISO	5785	100	0.00	0.01
11N40 SISO	5755	100	0.00	0.01
11AC20 SISO	5785	100	0.00	0.01
11AC40 SISO	5755	100	0.00	0.01
11AC80 SISO	5775	100	0.00	0.01

On Time and Duty Cycle



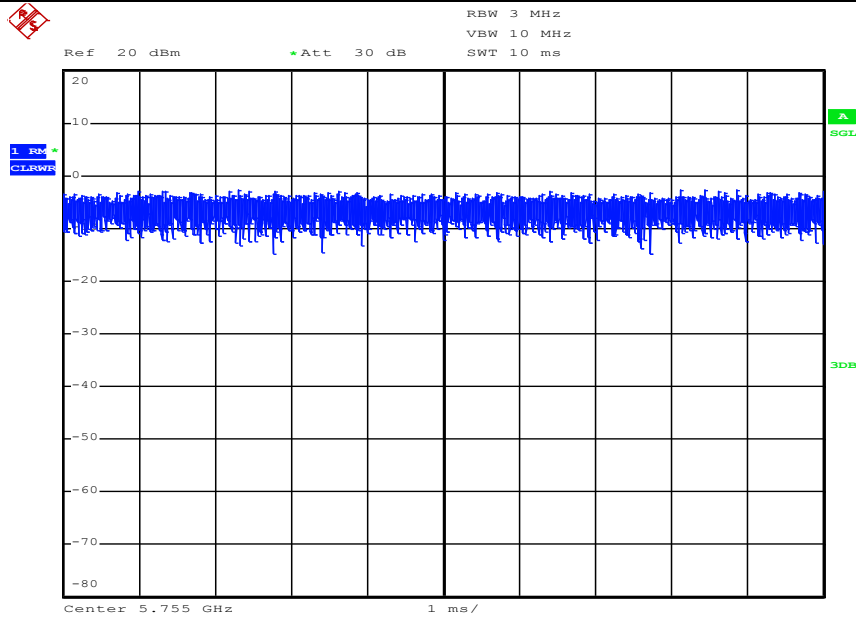
Date: 23.SEP.2019 16:07:32

IEEE 802.11a



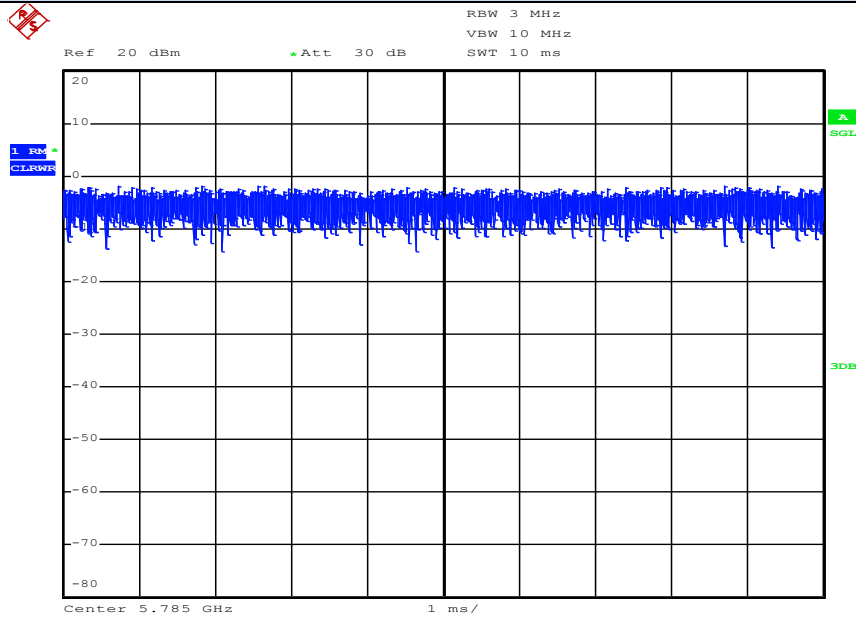
Date: 23.SEP.2019 16:27:56

IEEE 802.11n HT20



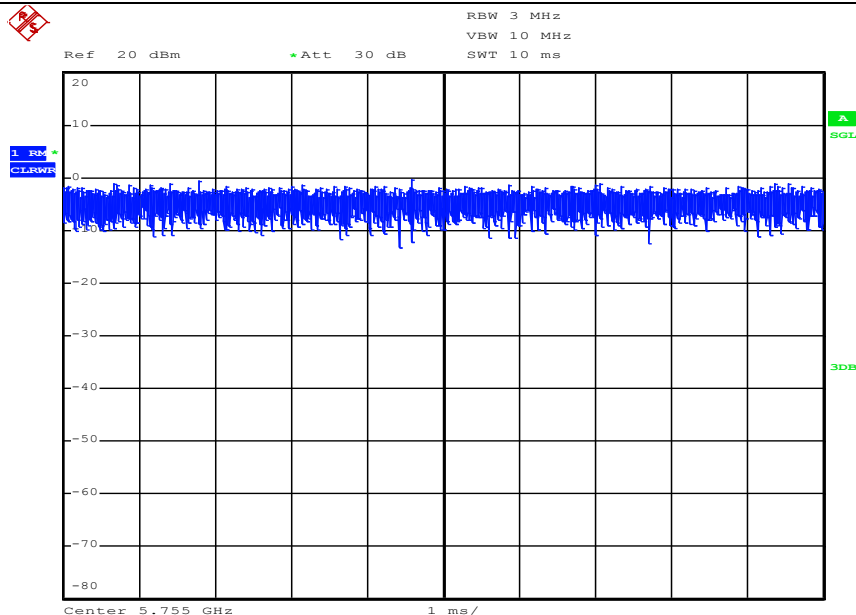
Date: 23.SEP.2019 16:53:26

IEEE 802.11n HT40



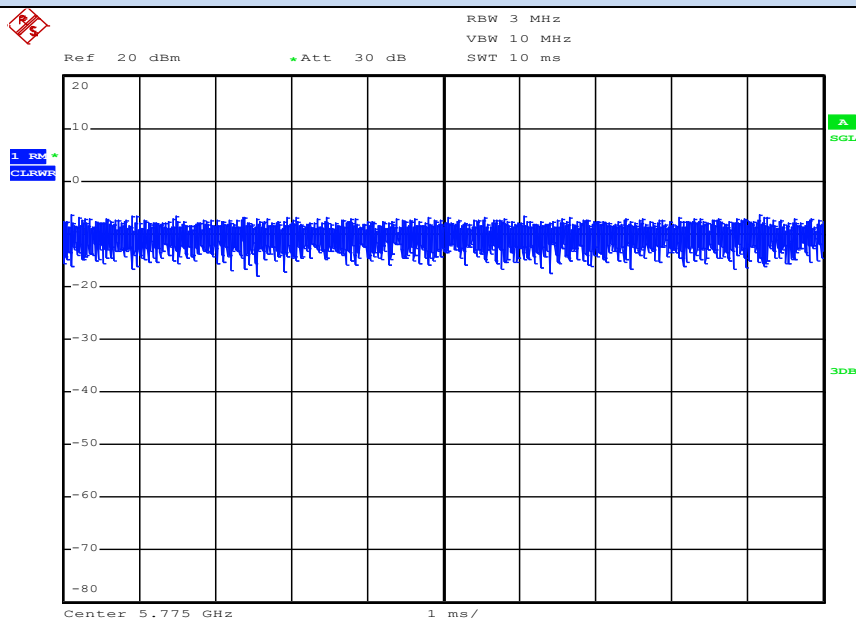
Date: 23.SEP.2019 17:21:12

IEEE 802.11AC20



Date: 23.SEP.2019 19:25:28

IEEE 802.11AC40



Date: 23.SEP.2019 19:53:40

IEEE 802.11AC80

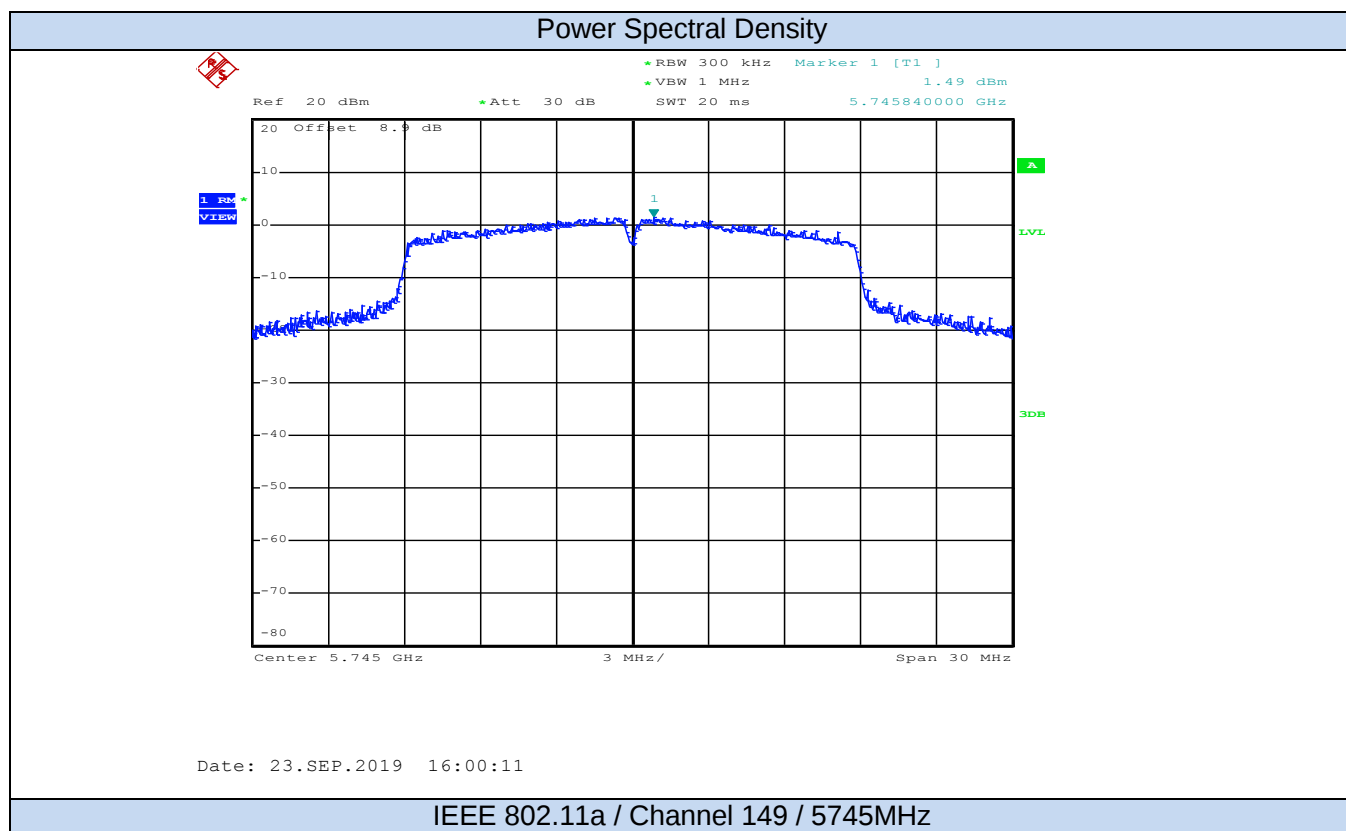
E.2 Maximum Conduct Output Power

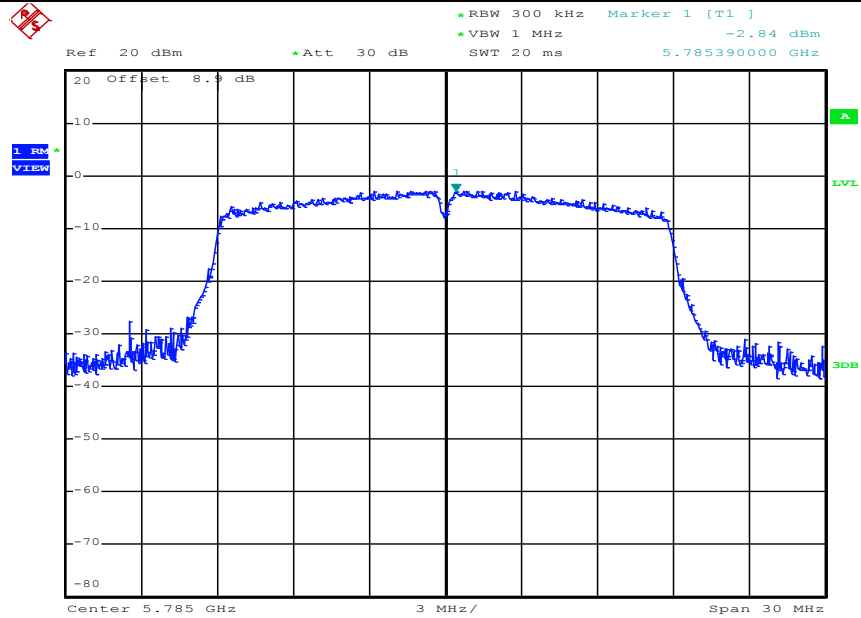
Test Mode	Channel	Frequency (MHz)	Conducted Power (dBm)	Duty Cycle Factor(dB)	Report Conducted Power(dBm)	Limit (dBm)	Verdict
11A	149	5745	14.10	0	14.10	30	Pass
	157	5785	11.06	0	11.06		Pass
	165	5825	10.27	0	10.27		Pass
11N20 SISO	149	5745	11.38	0	11.38	30	Pass
	157	5785	11.26	0	11.26		Pass
	165	5825	10.44	0	10.44		Pass
11N40 SISO	151	5755	10.77	0	10.77	30	Pass
	159	5795	11.29	0	11.29		Pass
11AC20 SISO	149	5745	11.02	0	11.02	30	Pass
	157	5785	10.36	0	10.36		Pass
	165	5825	10.47	0	10.47		Pass
11AC40 SISO	151	5755	11.47	0	11.47	30	Pass
	159	5795	10.96	0	10.96		Pass
11AC80 SISO	155	5775	12.64	0	12.64	30	Pass

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	1.49	0	2.22	3.71	30	Pass
	157	5785	-2.84	0	2.22	-0.62		Pass
	165	5825	-2.73	0	2.22	-0.51		Pass
11N20 SISO	149	5745	-1.79	0	2.22	0.43	30	Pass
	157	5785	-2.40	0	2.22	-0.18		Pass
	165	5825	-3.04	0	2.22	-0.82		Pass
11N40 SISO	151	5755	-5.47	0	2.22	-3.25	30	Pass
	159	5795	-5.06	0	2.22	-2.84		Pass
11AC20 SISO	149	5745	-2.75	0	2.22	-0.53	30	Pass
	157	5785	-3.30	0	2.22	-1.08		Pass
	165	5825	-3.06	0	2.22	-0.84		Pass
11AC40 SISO	151	5755	-3.82	0	2.22	-1.60	30	Pass
	159	5795	-5.64	0	2.22	-3.42		Pass
11AC80 SISO	155	5775	-7.06	0	2.22	-4.84	30	Pass

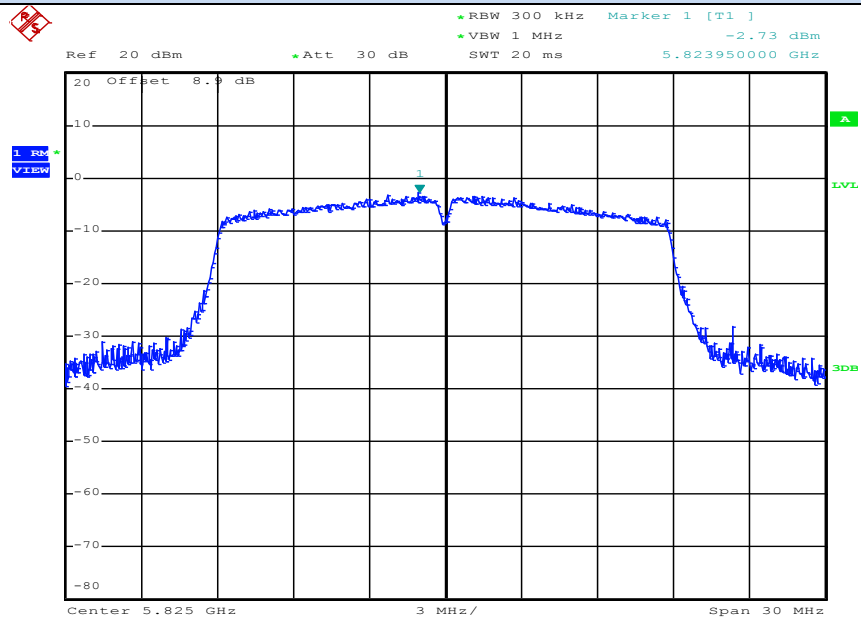
Note: $RBW\ Factor = 10\log(500kHz/300kHz) = 2.22$





Date: 23.SEP.2019 16:08:35

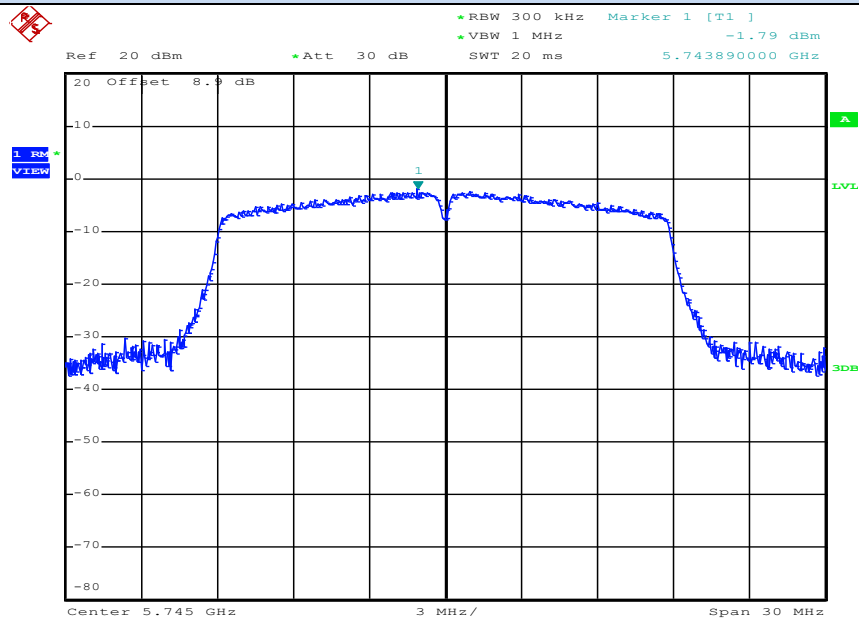
IEEE 802.11na / Channel 157 / 5785MHz



Date: 23.SEP.2019 16:09:57

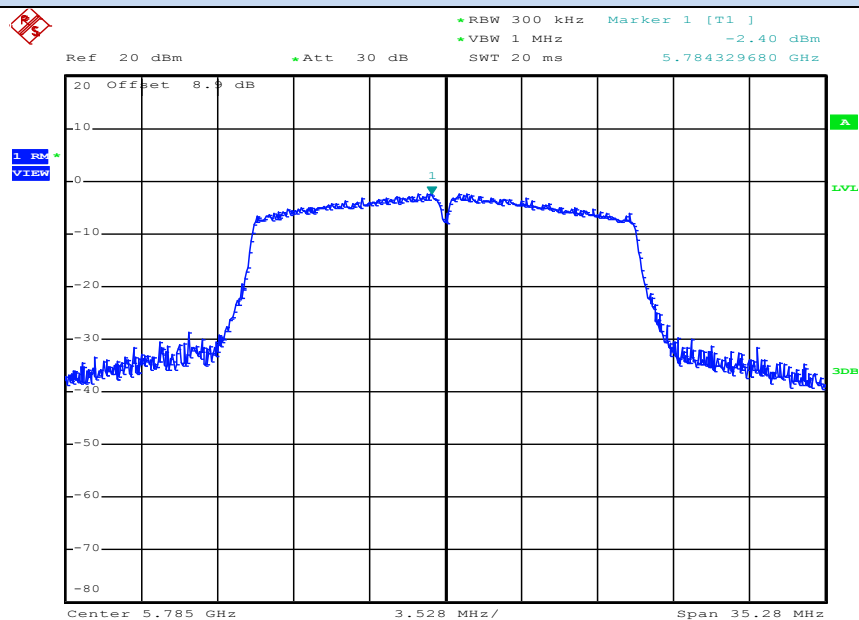
IEEE 802.11na / Channel 165 / 5825MHz

Power Spectral Density



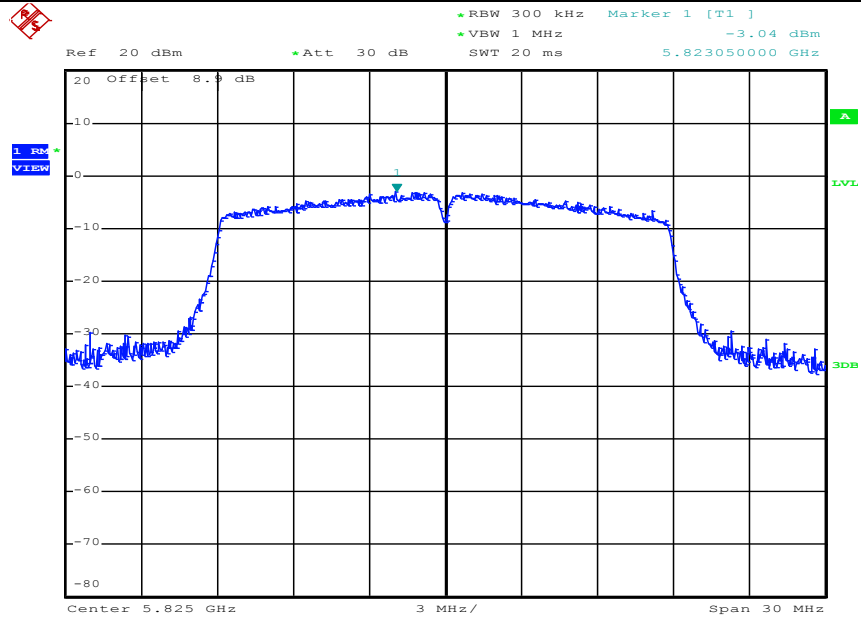
Date: 23.SEP.2019 16:24:29

IEEE 802.11n20 / Channel 149 / 5745MHz



Date: 23.SEP.2019 16:29:00

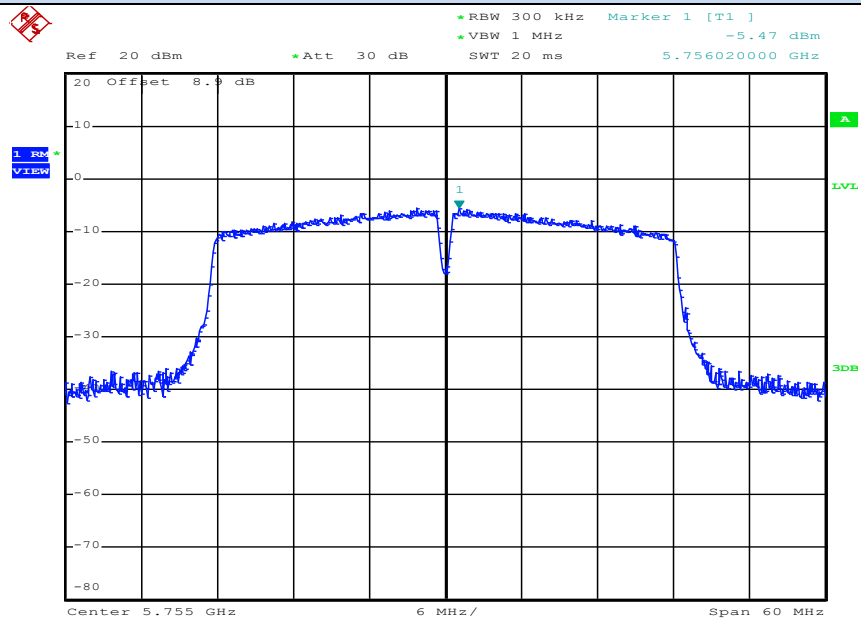
IEEE 802.11n20 / Channel 157 / 5785MHz



Date: 23.SEP.2019 16:30:44

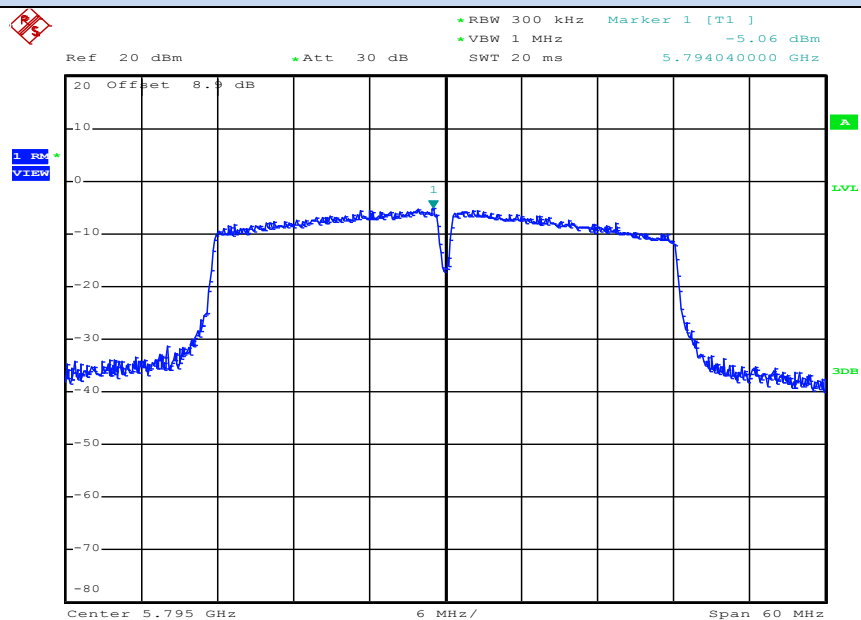
IEEE 802.11n20 / Channel 165 / 5825MHz

Power Spectral Density



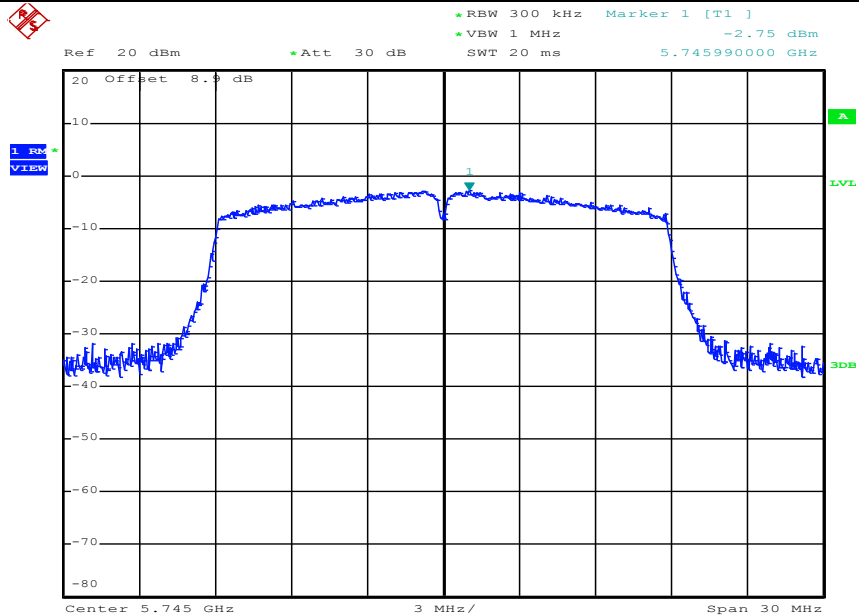
Date: 23.SEP.2019 16:54:54

IEEE 802.11n40 / Channel 151 / 5755MHz



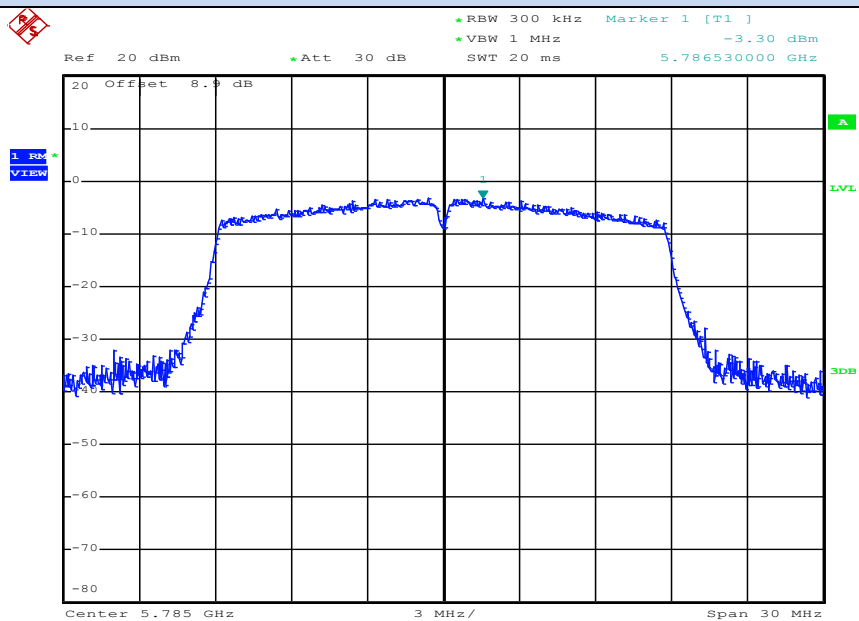
Date: 23.SEP.2019 17:00:49

IEEE 802.11n40 / Channel 159 / 5795MHz



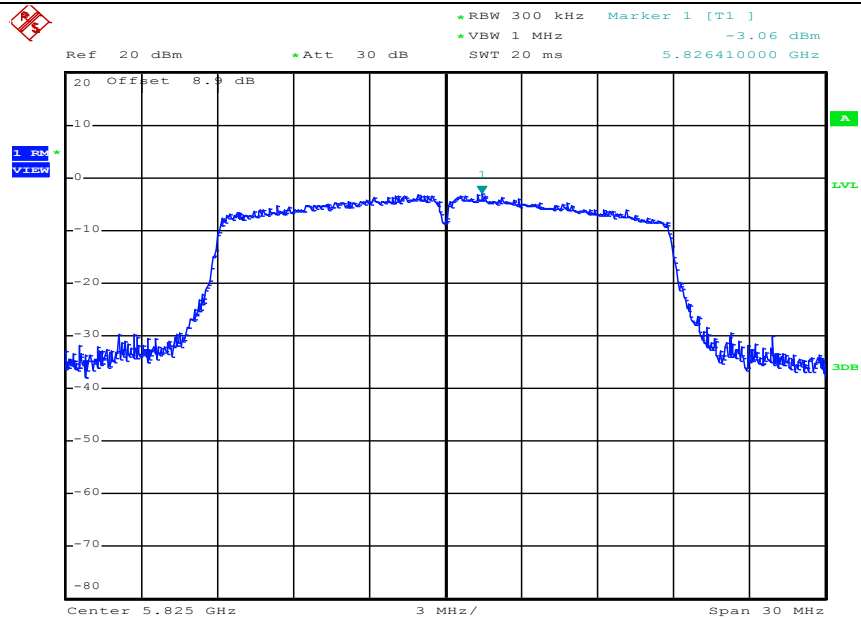
Date: 23.SEP.2019 17:16:40

IEEE 802.11ac20 / Channel 149 / 5745MHz



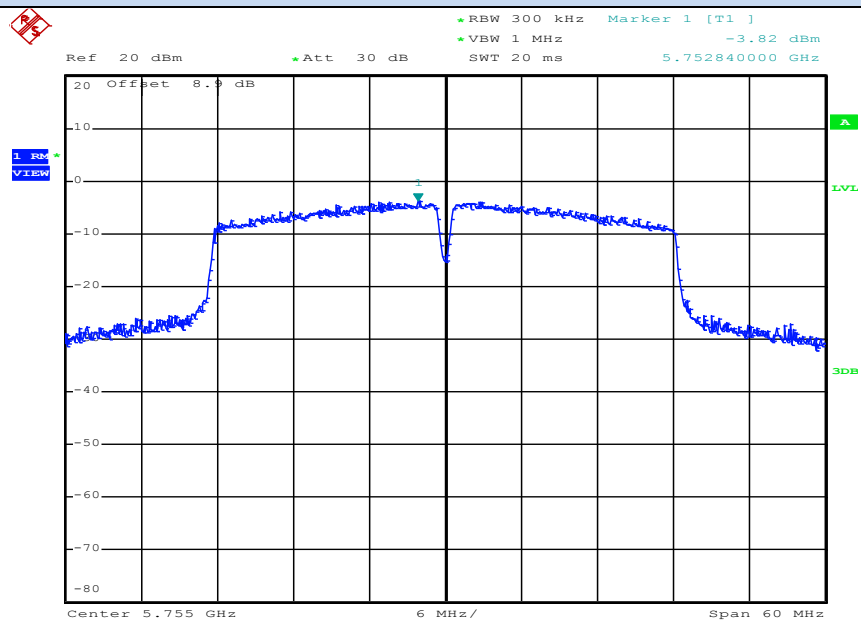
Date: 23.SEP.2019 17:22:16

IEEE 802.11ac20 / Channel 157 / 5785MHz



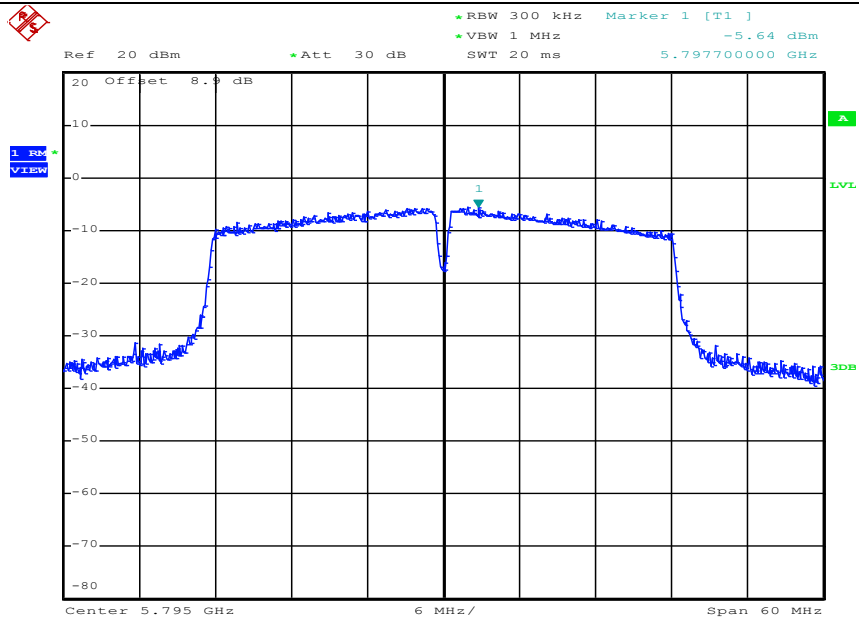
Date: 23.SEP.2019 17:28:03

IEEE 802.11ac20 / Channel 165 / 5825MHz



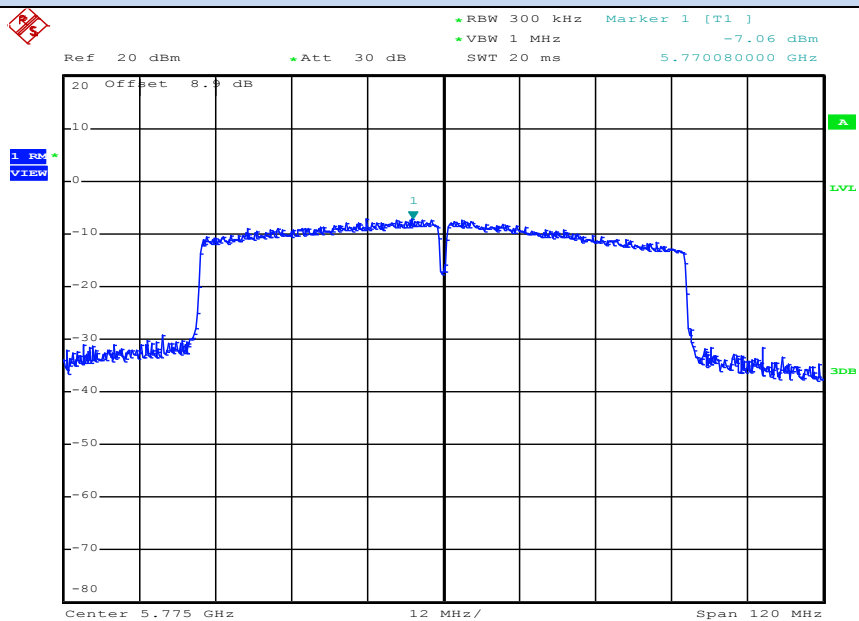
Date: 23.SEP.2019 19:27:40

IEEE 802.11ac40 / Channel 151 / 5755MHz



Date: 23.SEP.2019 19:32:50

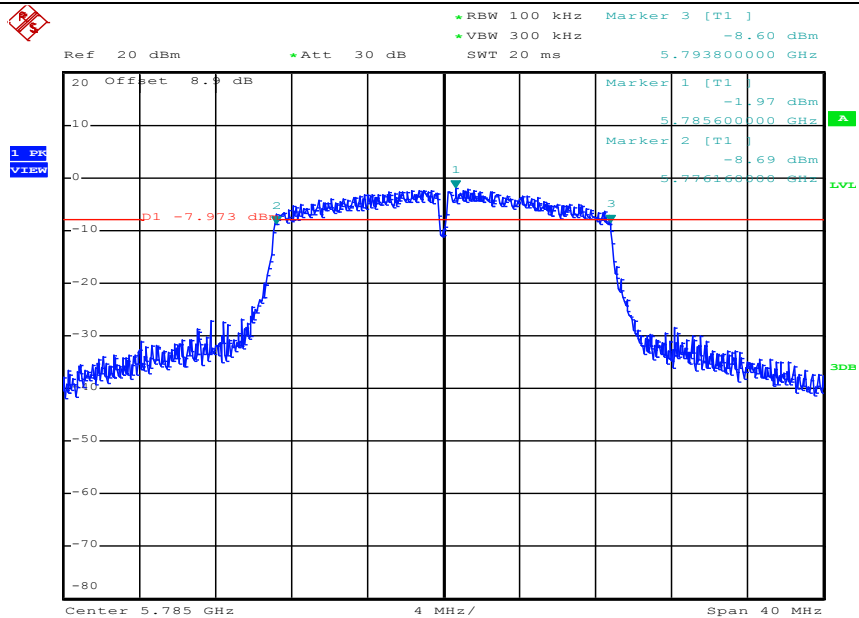
IEEE 802.11ac40 / Channel 159 / 5795MHz



Date: 23.SEP.2019 19:55:16

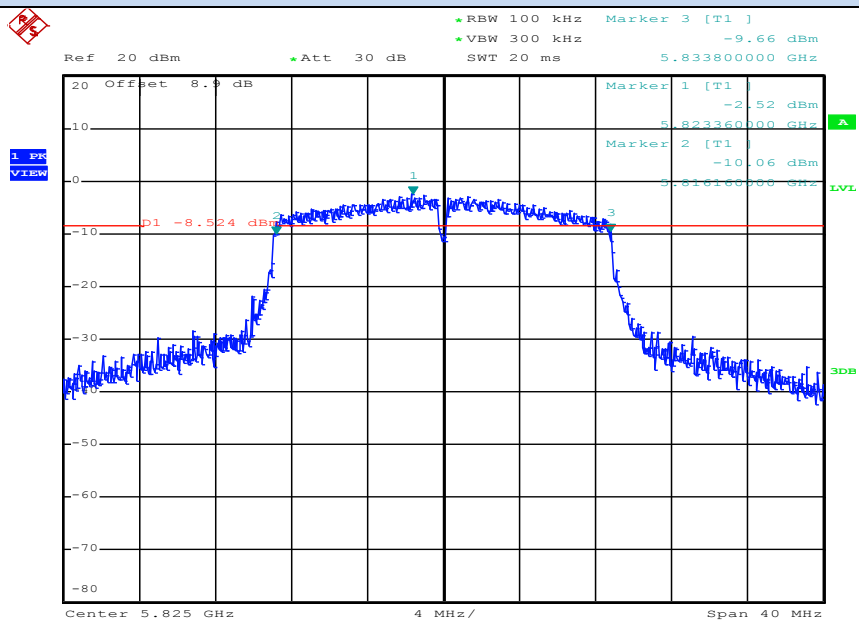
IEEE 802.11ac80 / Channel 155/ 5775MHz

Test Mode	Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)	Verdict
11A	149	5745	17.680	>=0.5	Pass
	157	5785	17.640		Pass
	165	5825	17.640		Pass
11N20 SISO	149	5745	17.640	>=0.5	Pass
	157	5785	17.640		Pass
	165	5825	17.640		Pass
11N40 SISO	151	5755	36.080	>=0.5	Pass
	159	5795	35.840		Pass
11AC20S ISO	149	5745	17.640	>=0.5	Pass
	157	5785	17.640		Pass
	165	5825	17.640		Pass
11AC40S ISO	151	5755	36.160	>=0.5	Pass
	159	5795	36.160		Pass
11AC80S ISO	155	5775	75.520	>=0.5	Pass



Date: 23.SEP.2019 16:07:48

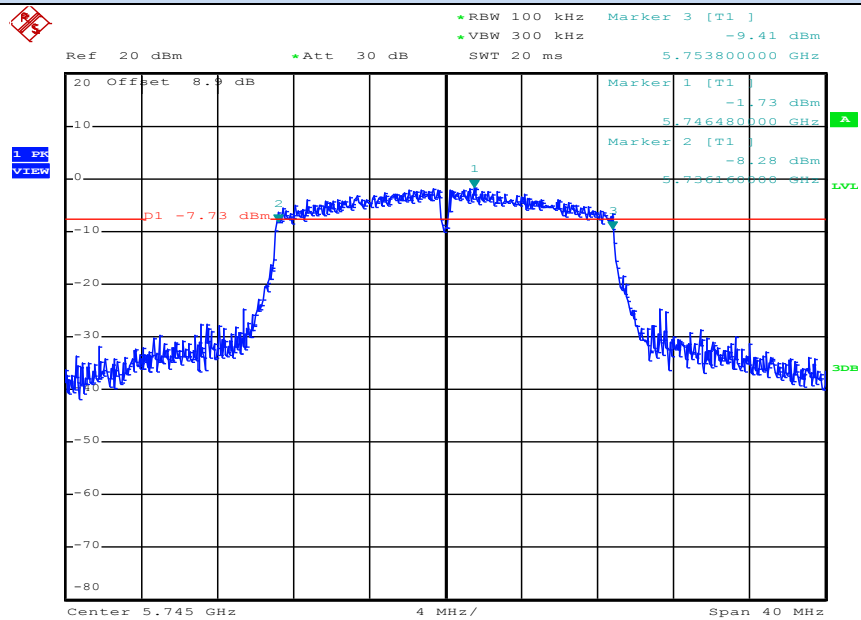
IEEE 802.11a / Channel 157 / 5785MHz



Date: 23.SEP.2019 16:09:09

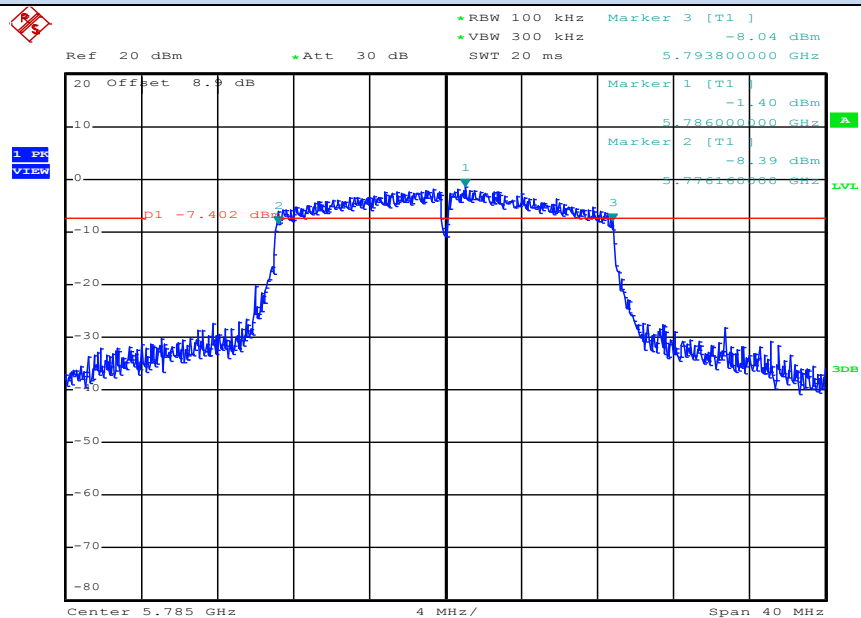
IEEE 802.11a / Channel 165 / 5825MHz

6dB Bandwidth



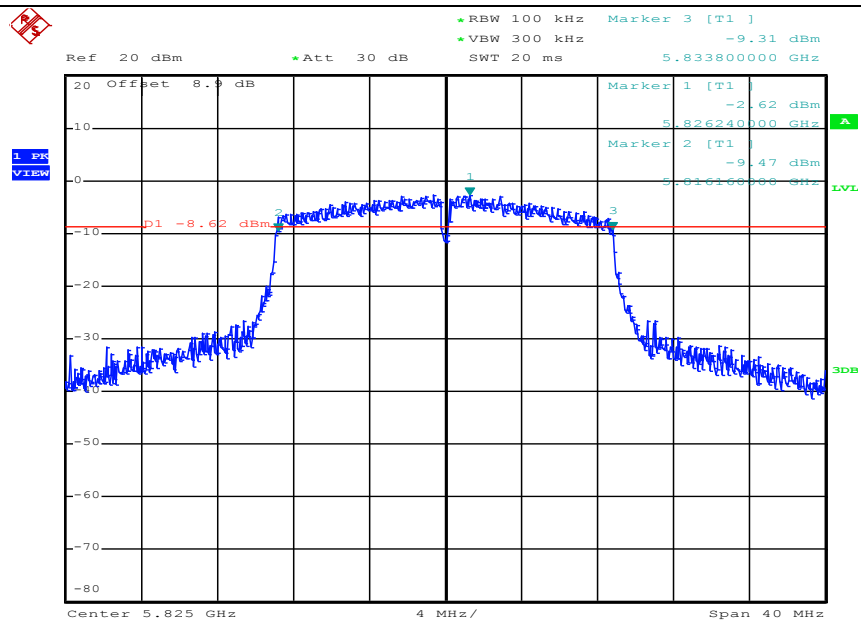
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IEEE 802.11n20 / Channel 149 / 5745MHz



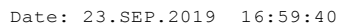
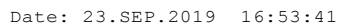
Date: 23.SEP.2019 16:28:12

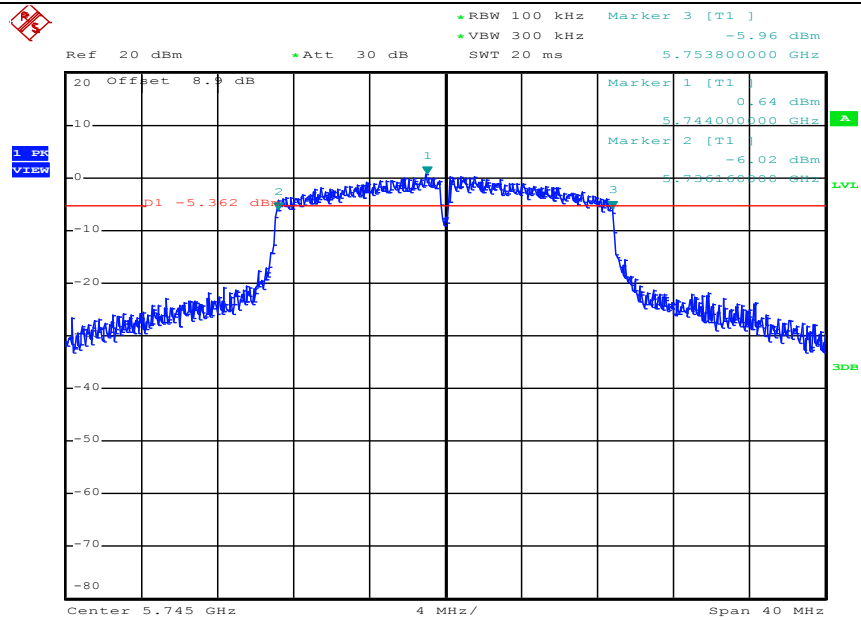
IEEE 802.11n20 / Channel 157 / 5785MHz



Date: 23.SEP.2019 16:29:57

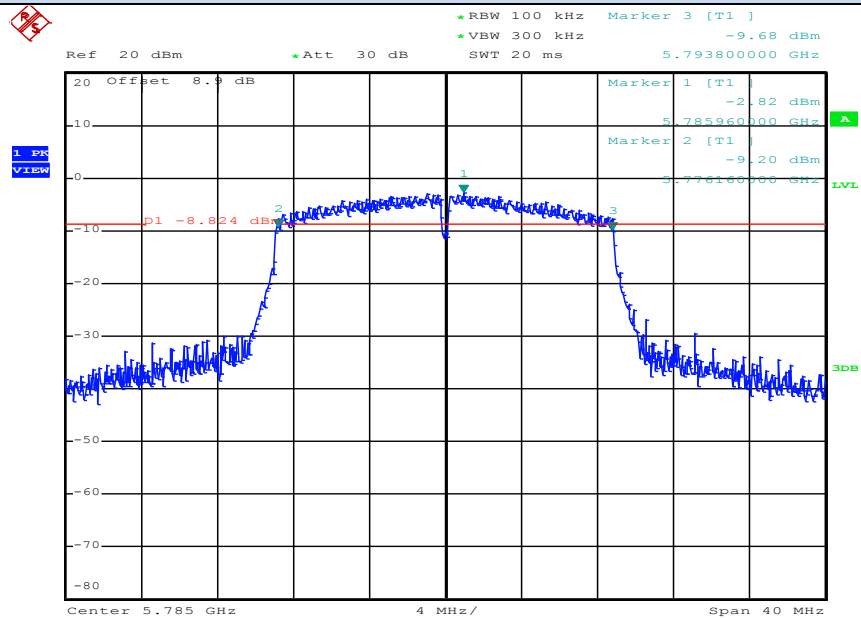
IEEE 802.11n20 / Channel 165 / 5825MHz





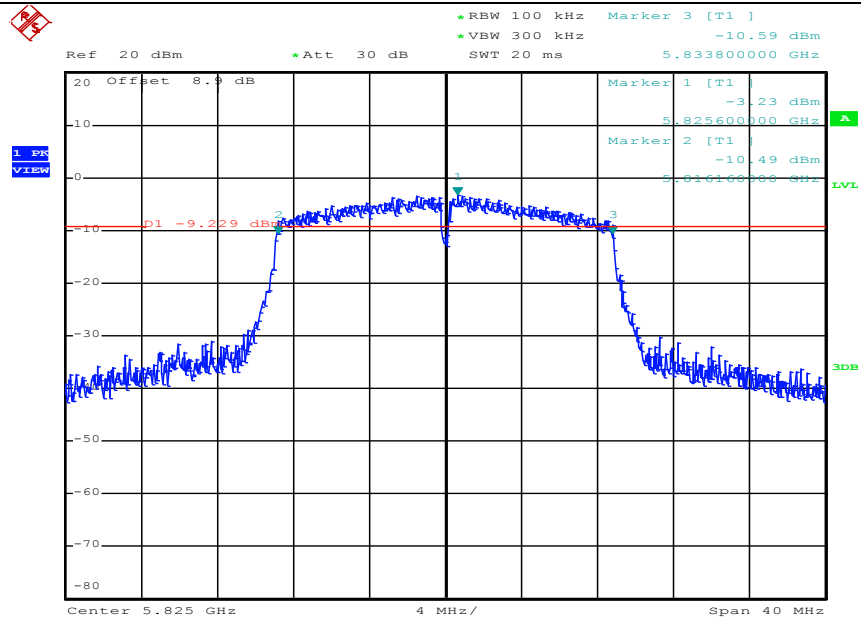
Date: 23.SEP.2019 17:15:27

IEEE 802.11ac20 / Channel 149 / 5745MHz



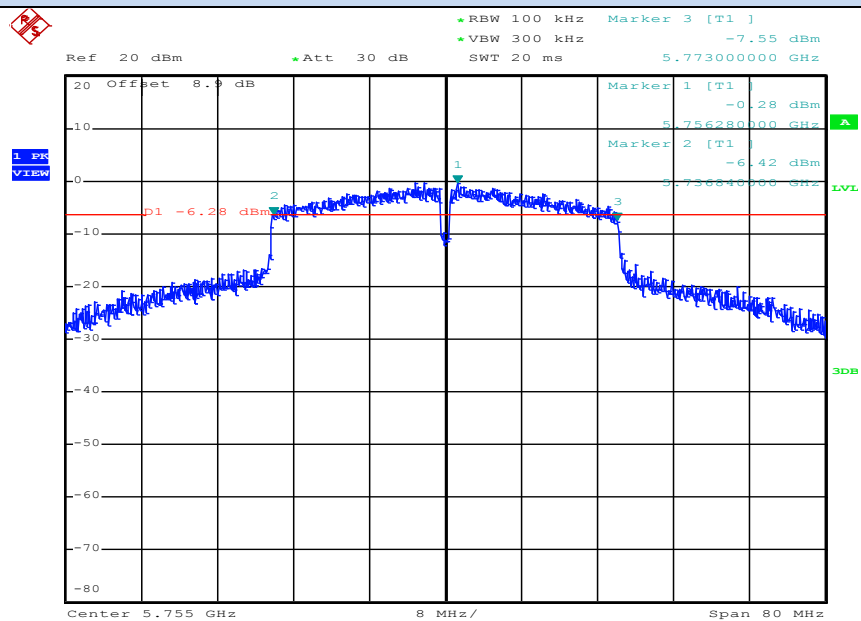
Date: 23.SEP.2019 17:21:28

IEEE 802.11ac20 / Channel 157 / 5785MHz



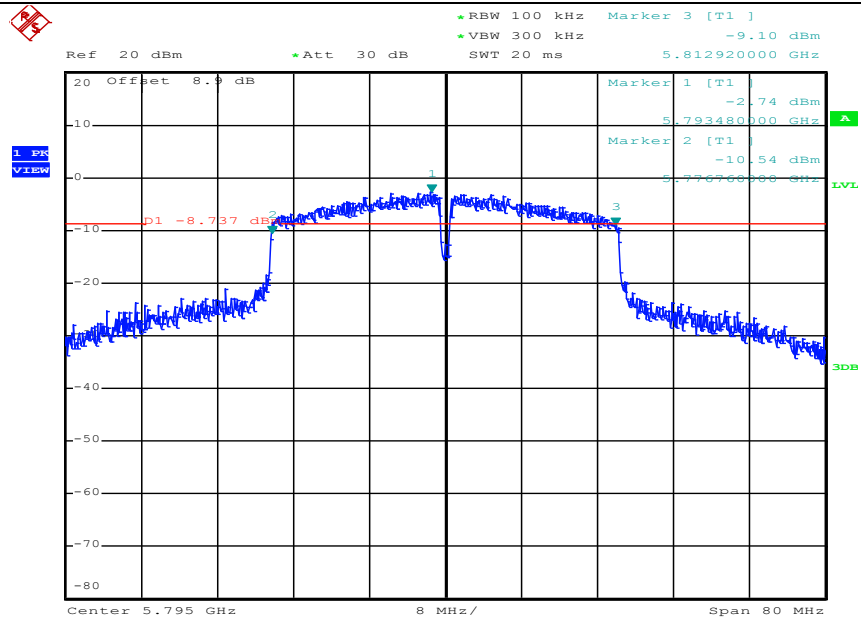
Date: 23.SEP.2019 17:26:48

IEEE 802.11ac20 / Channel 165 / 5825MHz



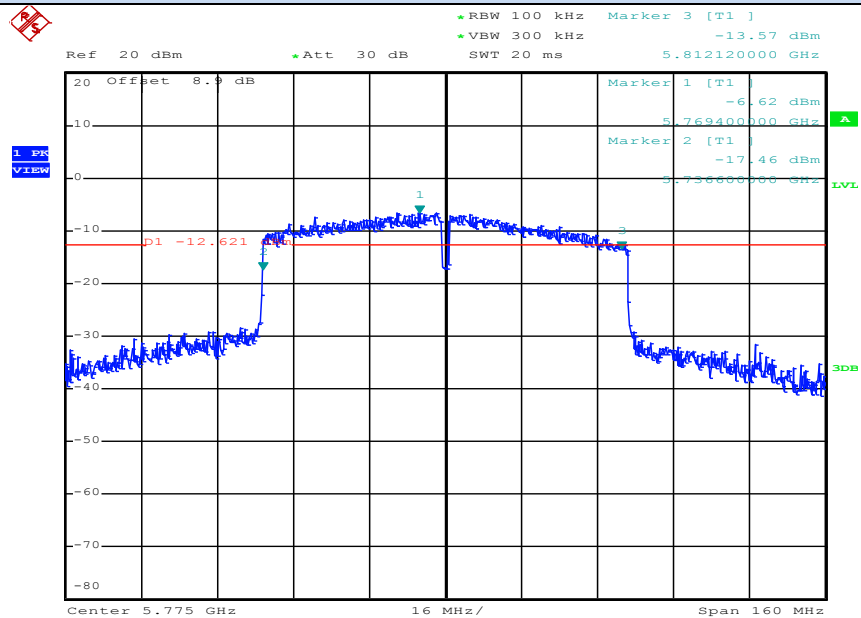
Date: 23.SEP.2019 19:25:44

IEEE 802.11ac40 / Channel 151 / 5755MHz



Date: 23.SEP.2019 19:31:26

IEEE 802.11ac40 / Channel 159 / 5795MHz



Date: 23.SEP.2019 19:53:55

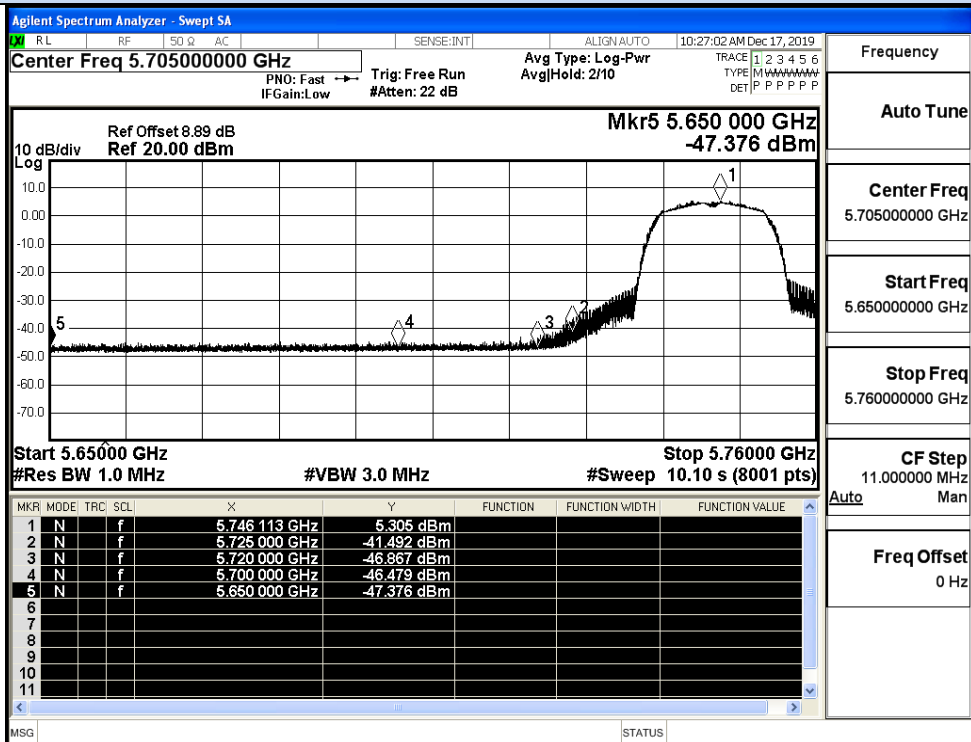
IEEE 802.11ac80 / Channel 155 / 5775MHz

E.5 Undesirable Emissions Measurement

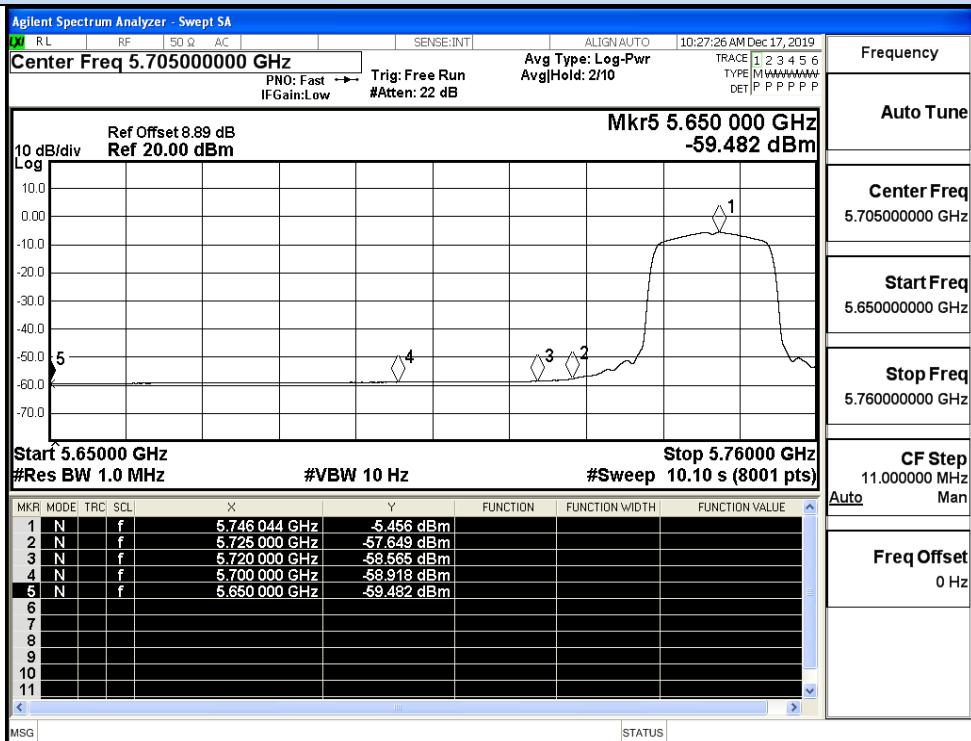
Test Mode	Channel	Frequency (MHz)	Conducted Power (dBm)	Antenna Gain (dBi)	EIRP (dBm/MHz)	Detector	Limit (dBm/MHz)	Verdict
11A	149	5650.0	-47.38	2.00	-45.38	Peak	-27.0	Pass
		5650.0	-59.48	2.00	-57.48	Average	-27.0	Pass
		5700.0	-46.48	2.00	-44.48	Peak	10	Pass
		5700.0	-58.92	2.00	-56.92	Average	10	Pass
		5720.0	-46.87	2.00	-44.87	Peak	15.6	Pass
		5720.0	-58.57	2.00	-56.57	Average	15.6	Pass
		5725.0	-41.49	2.00	-39.49	Peak	27.0	Pass
		5725.0	-57.65	2.00	-55.65	Average	27.0	Pass
	165	5850.0	-43.95	2.00	-41.95	Peak	27.0	Pass
		5850.0	-56.09	2.00	-54.09	Average	27.0	Pass
		5855.0	-45.44	2.00	-43.44	Peak	15.6	Pass
		5855.0	-56.85	2.00	-54.85	Average	15.6	Pass
		5875.0	-44.72	2.00	-42.72	Peak	10	Pass
		5875.0	-57.19	2.00	-55.19	Average	10	Pass
		5925.0	-46.60	2.00	-44.60	Peak	-27.0	Pass
		5925.0	-58.07	2.00	-56.07	Average	-27.0	Pass
11N20 SISO	149	5650.0	-47.98	2.00	-45.98	Peak	-27.0	Pass
		5650.0	-59.51	2.00	-57.51	Average	-27.0	Pass
		5700.0	-47.23	2.00	-45.23	Peak	10	Pass
		5700.0	-58.62	2.00	-56.62	Average	10	Pass
		5720.0	-45.20	2.00	-43.20	Peak	15.6	Pass
		5720.0	-58.96	2.00	-56.96	Average	15.6	Pass
		5725.0	-43.79	2.00	-41.79	Peak	27.0	Pass
		5725.0	-57.69	2.00	-55.69	Average	27.0	Pass
	165	5850.0	-40.95	2.00	-38.95	Peak	27.0	Pass
		5850.0	-55.71	2.00	-53.71	Average	27.0	Pass
		5855.0	-44.14	2.00	-42.14	Peak	15.6	Pass
		5855.0	-56.90	2.00	-54.90	Average	15.6	Pass
		5875.0	-44.56	2.00	-42.56	Peak	10	Pass
		5875.0	-57.34	2.00	-55.34	Average	10	Pass
		5925.0	-46.45	2.00	-44.45	Peak	-27.0	Pass
		5925.0	-58.14	2.00	-56.14	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	-47.73	2.00	-45.73	Peak	-27.0	Pass
		5650.0	-59.39	2.00	-57.39	Average	-27.0	Pass
		5700.0	-46.50	2.00	-44.50	Peak	10	Pass
		5700.0	-58.81	2.00	-56.81	Average	10	Pass
		5720.0	-43.42	2.00	-41.42	Peak	15.6	Pass
		5720.0	-57.58	2.00	-55.58	Average	15.6	Pass
		5725.0	-41.12	2.00	-39.12	Peak	27.0	Pass
		5725.0	-55.57	2.00	-53.57	Average	27.0	Pass
	159	5850.0	-45.97	2.00	-43.97	Peak	27.0	Pass
		5850.0	-56.66	2.00	-54.66	Average	27.0	Pass
		5855.0	-43.78	2.00	-41.78	Peak	15.6	Pass
		5855.0	-56.82	2.00	-54.82	Average	15.6	Pass
		5875.0	-45.09	2.00	-43.09	Peak	10	Pass
		5875.0	-57.09	2.00	-55.09	Average	10	Pass
		5925.0	-46.40	2.00	-44.40	Peak	-27.0	Pass
		5925.0	-58.06	2.00	-56.06	Average	-27.0	Pass
11AC20 SISO	149	5650.0	-47.33	2.00	-45.33	Peak	-27.0	Pass
		5650.0	-59.52	2.00	-57.52	Average	-27.0	Pass
		5700.0	-47.04	2.00	-45.04	Peak	10	Pass
		5700.0	-58.69	2.00	-56.69	Average	10	Pass
		5720.0	-45.21	2.00	-43.21	Peak	15.6	Pass
		5720.0	-58.97	2.00	-56.97	Average	15.6	Pass
		5725.0	-44.65	2.00	-42.65	Peak	27.0	Pass
		5725.0	-57.80	2.00	-55.80	Average	27.0	Pass
	165	5850.0	-40.17	2.00	-38.17	Peak	27.0	Pass
		5850.0	-56.28	2.00	-54.28	Average	27.0	Pass
		5855.0	-45.17	2.00	-43.17	Peak	15.6	Pass
		5855.0	-57.00	2.00	-55.00	Average	15.6	Pass
		5875.0	-45.05	2.00	-43.05	Peak	10	Pass
		5875.0	-57.34	2.00	-55.34	Average	10	Pass
		5925.0	-46.60	2.00	-44.60	Peak	-27.0	Pass
		5925.0	-58.14	2.00	-56.14	Average	-27.0	Pass
11AC40 SISO	151	5650.0	-47.13	2.00	-45.13	Peak	-27.0	Pass
		5650.0	-59.40	2.00	-57.40	Average	-27.0	Pass
		5700.0	-46.27	2.00	-44.27	Peak	10	Pass
		5700.0	-58.78	2.00	-56.78	Average	10	Pass
		5720.0	-40.49	2.00	-38.49	Peak	15.6	Pass
		5720.0	-57.58	2.00	-55.58	Average	15.6	Pass
		5725.0	-37.64	2.00	-35.64	Peak	27.0	Pass
		5725.0	-55.56	2.00	-53.56	Average	27.0	Pass
	159	5850.0	-46.00	2.00	-44.00	Peak	27.0	Pass
		5850.0	-56.68	2.00	-54.68	Average	27.0	Pass
		5855.0	-45.12	2.00	-43.12	Peak	15.6	Pass
		5855.0	-56.82	2.00	-54.82	Average	15.6	Pass
		5875.0	-45.83	2.00	-43.83	Peak	10	Pass
		5875.0	-57.08	2.00	-55.08	Average	10	Pass
		5925.0	-45.68	2.00	-43.68	Peak	-27.0	Pass
		5925.0	-57.99	2.00	-55.99	Average	-27.0	Pass
11AC80 SISO	155	5725.0	-39.26	2.00	-37.26	Peak	27.0	Pass
		5720.0	-40.27	2.00	-38.27	Peak	15.6	Pass
		5700.0	-44.67	2.00	-42.67	Peak	10	Pass
		5650.0	-46.10	2.00	-44.10	Peak	-27.0	Pass
		5725.0	-53.01	2.00	-51.01	Average	27.0	Pass
		5720.0	-53.83	2.00	-51.83	Average	15.6	Pass
		5700.0	-55.98	2.00	-53.98	Average	10	Pass
		5650.0	-57.94	2.00	-55.94	Average	-27.0	Pass
		5850.0	-39.26	2.00	-37.26	Peak	27.0	Pass
		5855.0	-40.27	2.00	-38.27	Peak	15.6	Pass
		5875.0	-44.67	2.00	-42.67	Peak	10	Pass
		5925.0	-46.10	2.00	-44.10	Peak	-27.0	Pass
		5850.0	-53.01	2.00	-51.01	Average	27.0	Pass
		5855.0	-53.83	2.00	-51.83	Average	15.6	Pass
		5875.0	-55.98	2.00	-53.98	Average	10	Pass
		5925.0	-57.94	2.00	-55.94	Average	-27.0	Pass

Undesirable Emissions Measurement

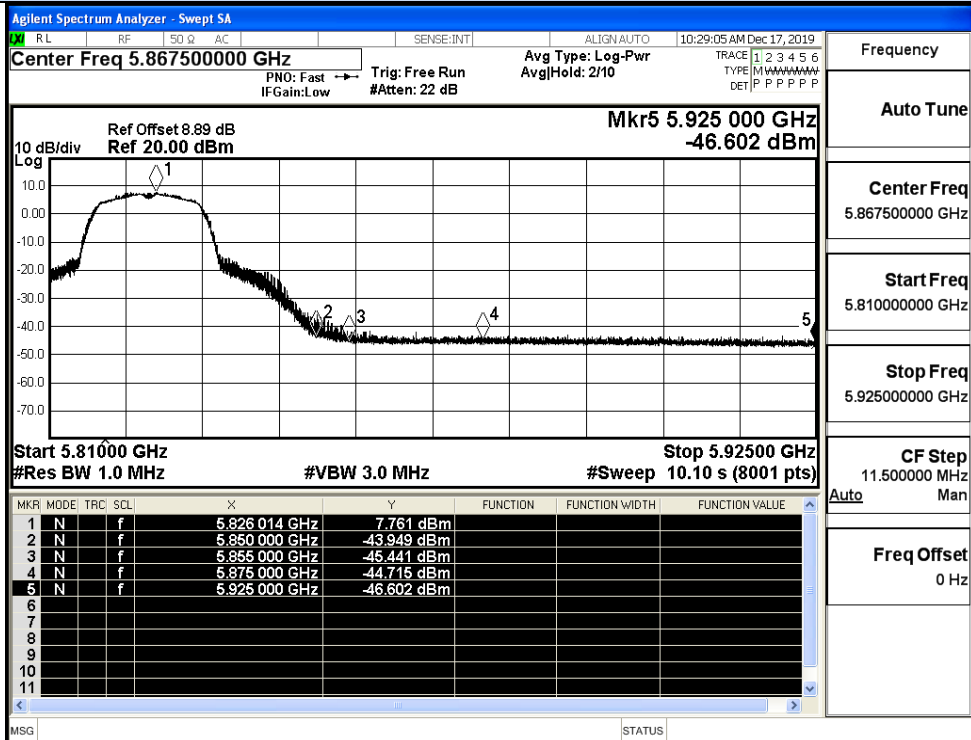


IEEE 802.11a / Channel 149 / 5745MHz / Peak

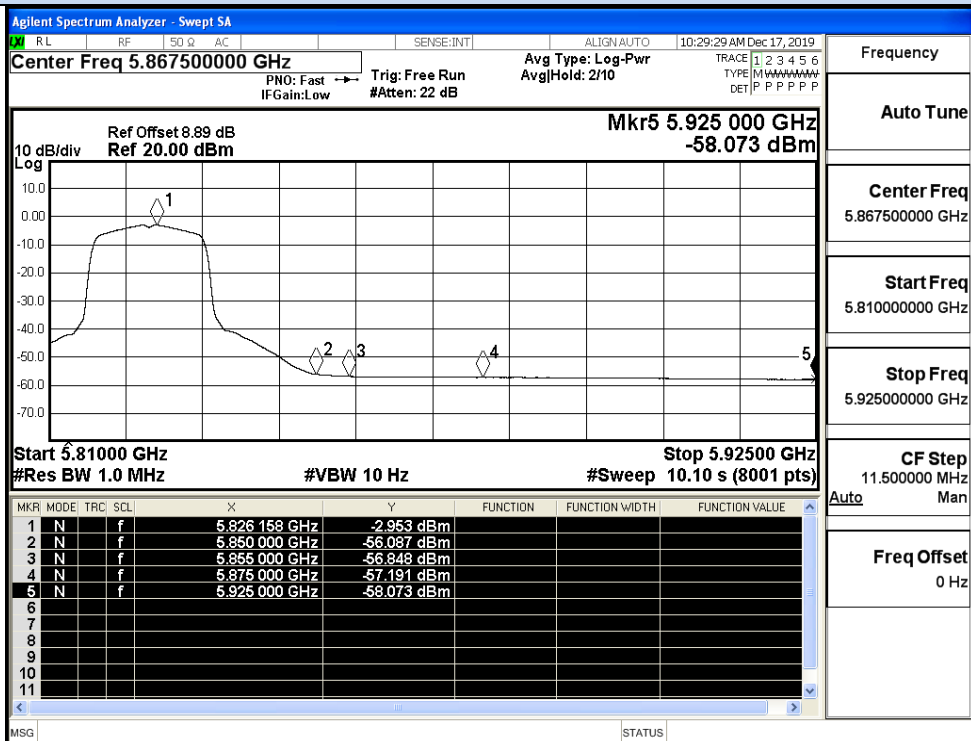


IEEE 802.11a / Channel 148 / 5745MHz / Average

Undesirable Emissions Measurement

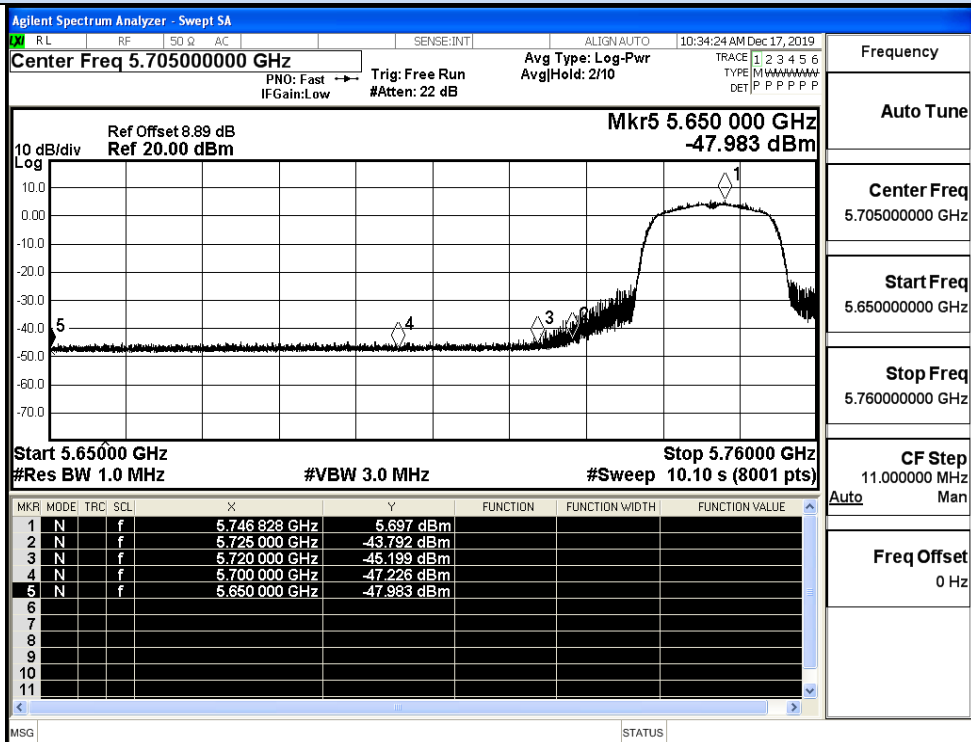


IEEE 802.11a / Channel 165 / 5825MHz / Peak

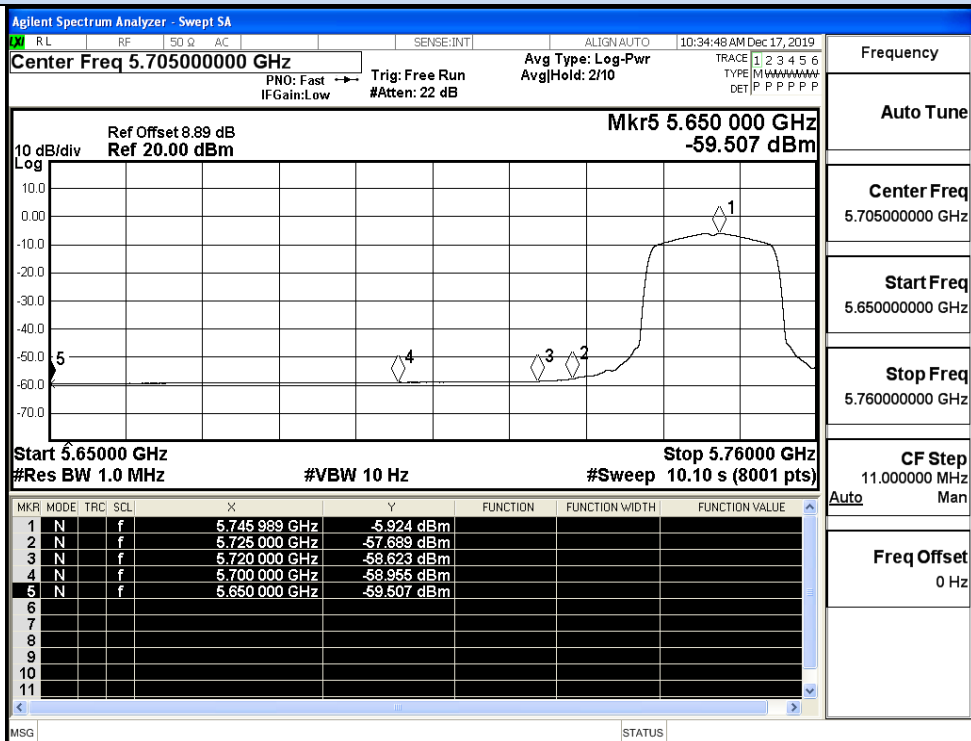


IEEE 802.11a / Channel 165 / 5825MHz / Average

Undesirable Emissions Measurement

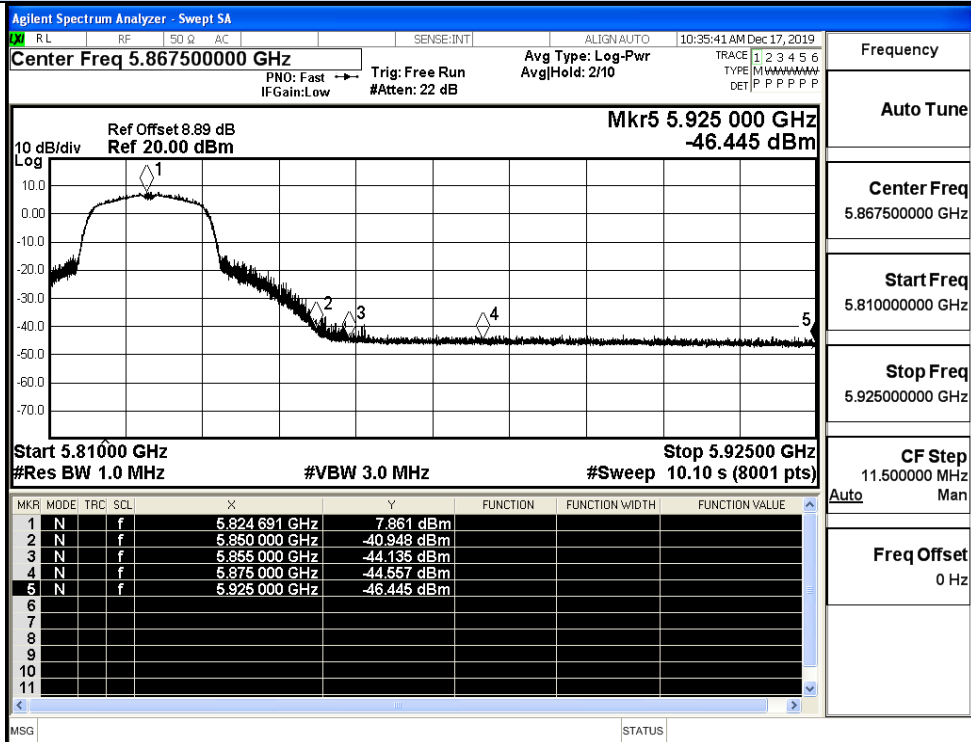


IEEE 802.11n20 / Channel 149 / 5745MHz / Peak

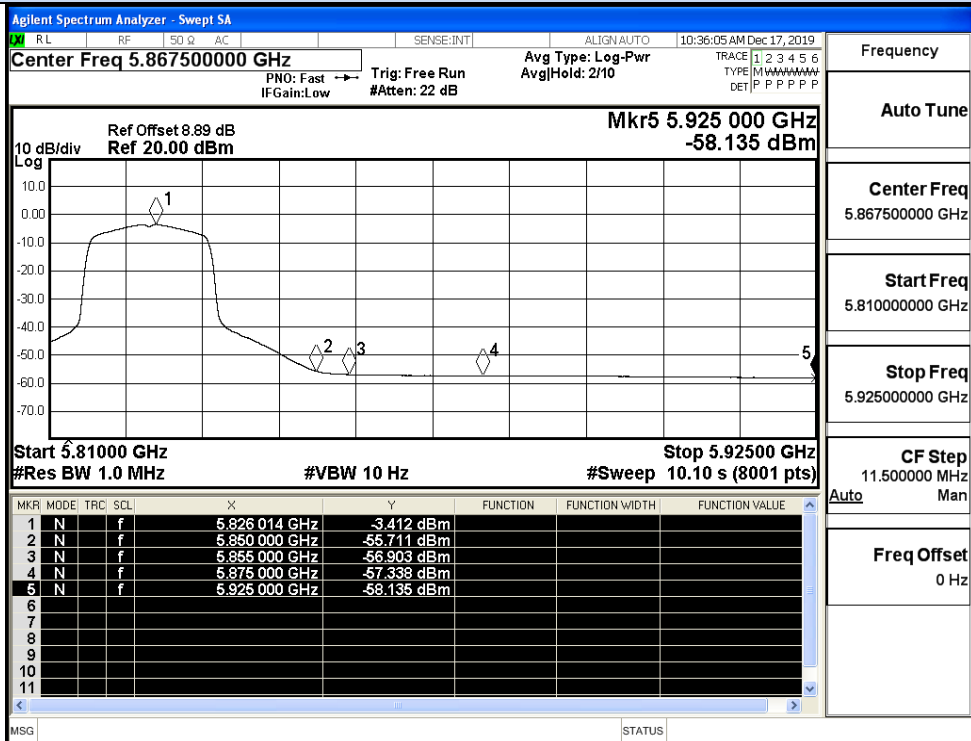


IEEE 802.11n20 / Channel 149 / 5745MHz / Average

Undesirable Emissions Measurement

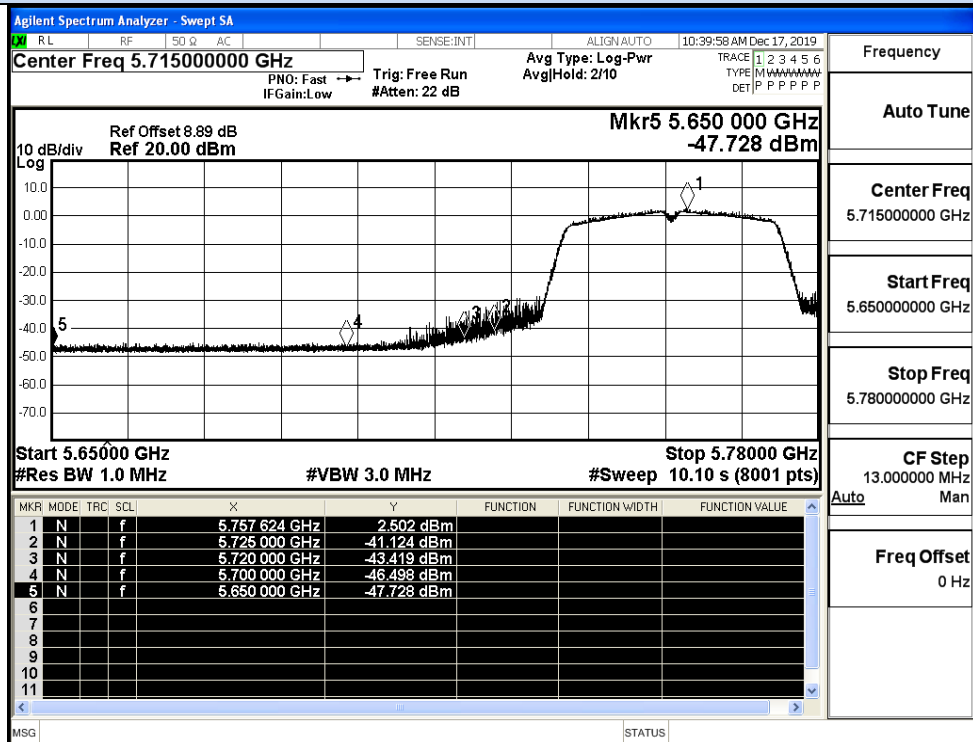


IEEE 802.11n20 / Channel 165 / 5825MHz / Peak

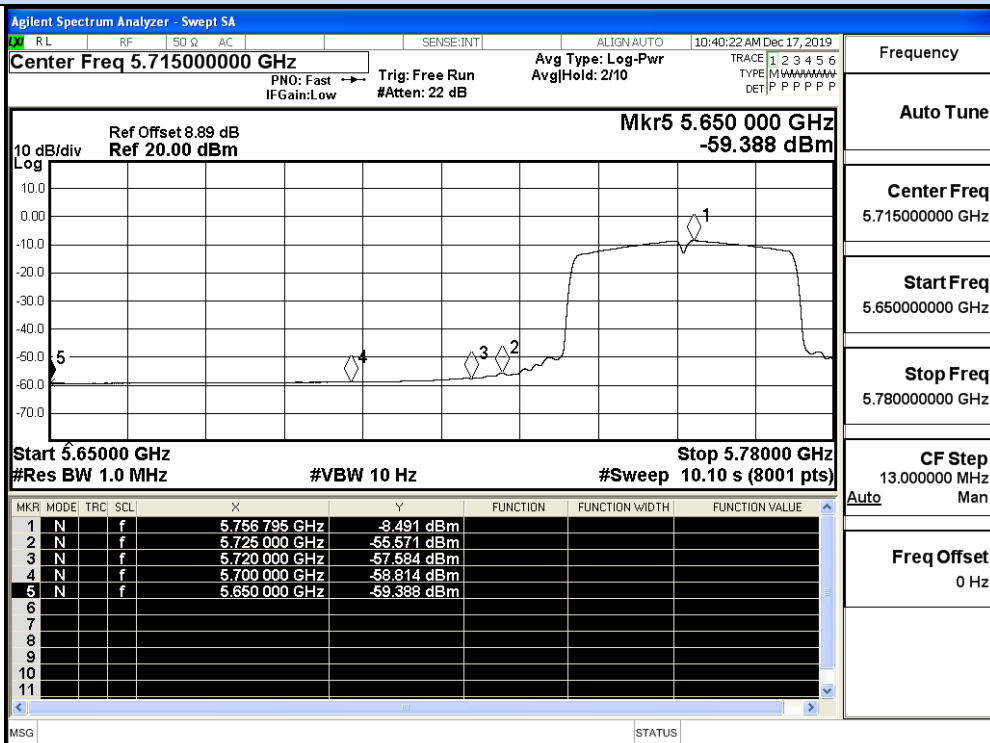


IEEE 802.11n20 / Channel 165 / 5825MHz / Average

Undesirable Emissions Measurement

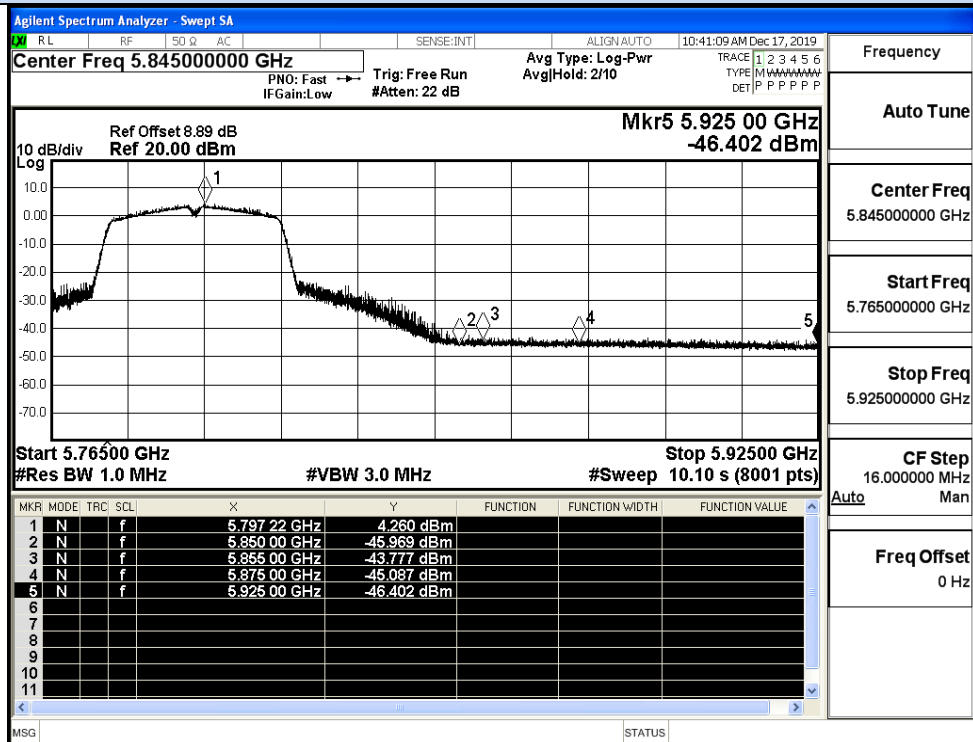


IEEE 802.11n40 / Channel 151 / 5755MHz / Peak

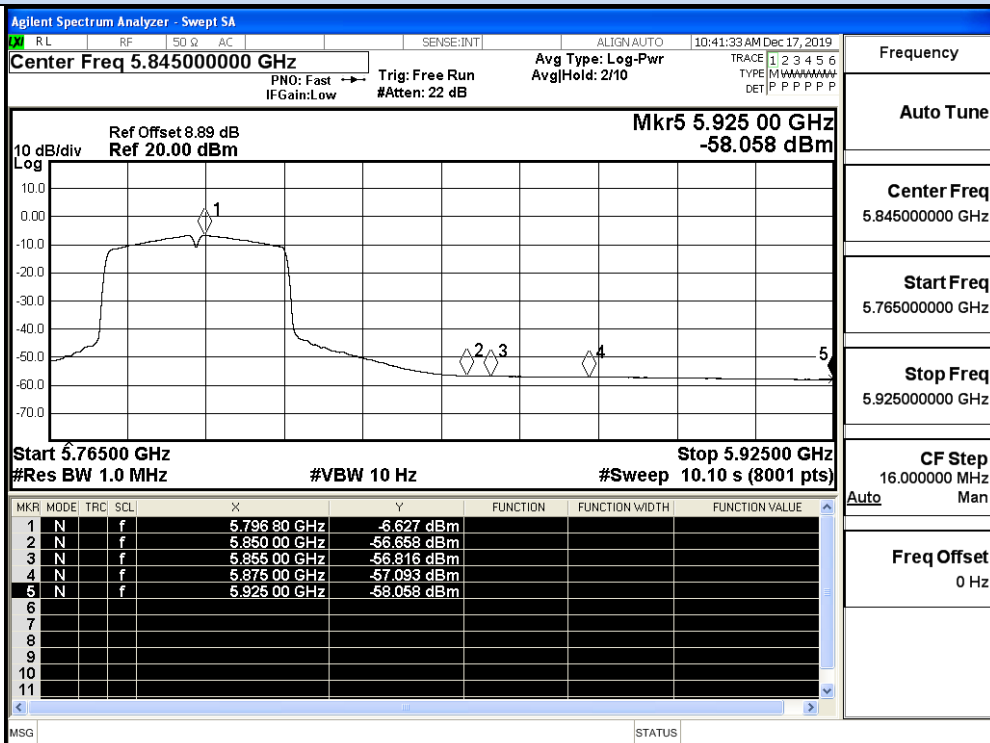


IEEE 802.11n40 / Channel 151 / 5755MHz / Average

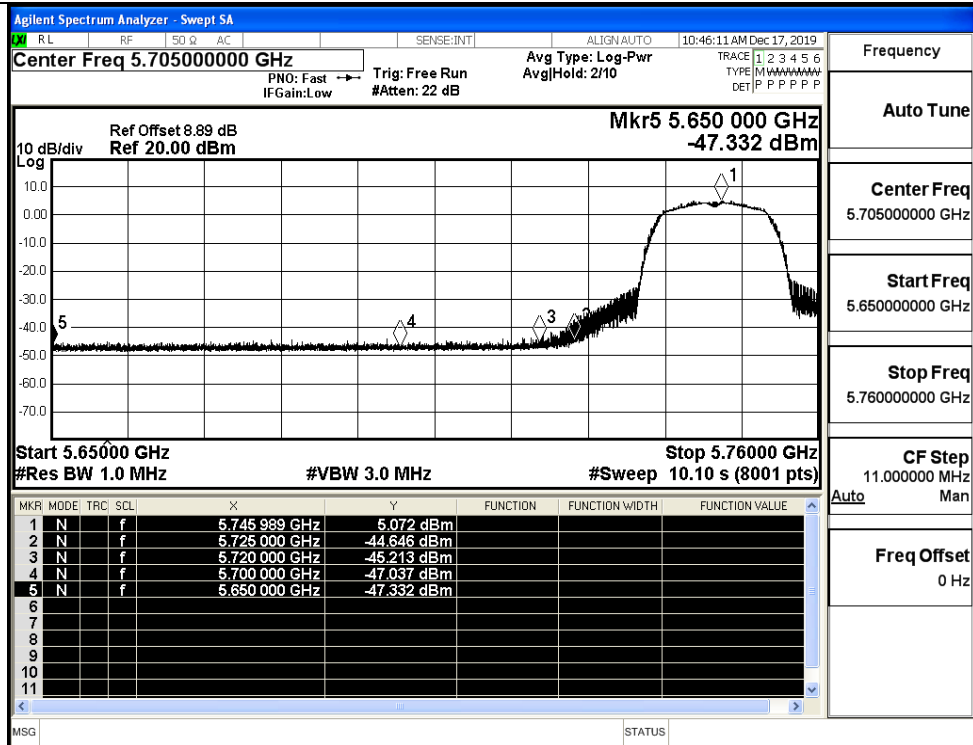
Undesirable Emissions Measurement



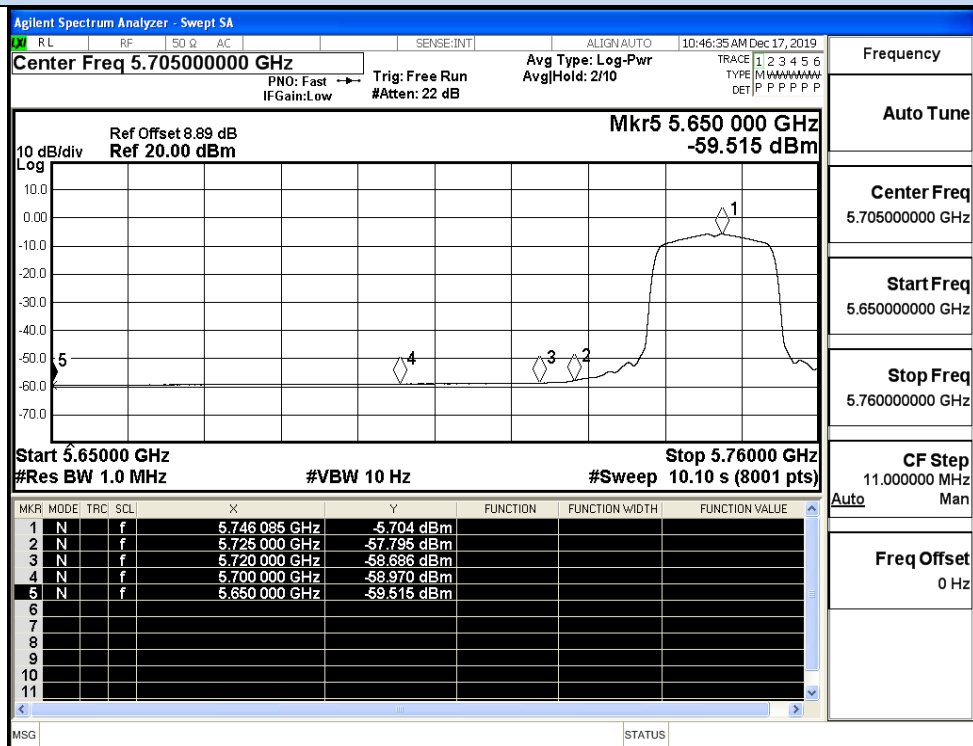
IEEE 802.11n40 / Channel 159 / 5795MHz / Peak



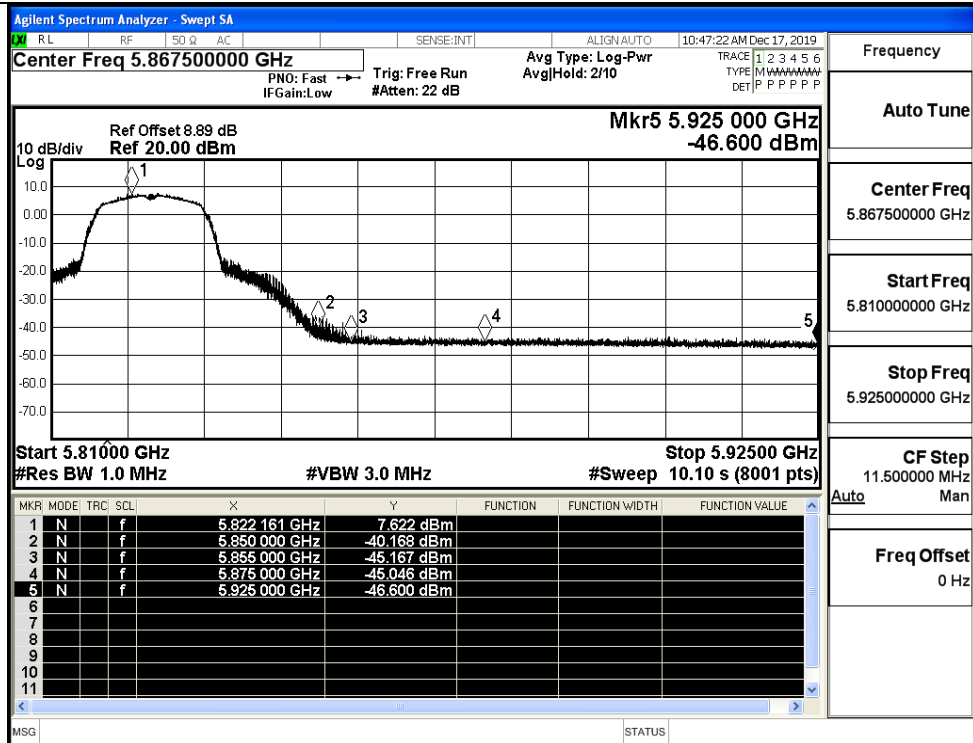
IEEE 802.11n40 / Channel 159 / 5795MHz / Average



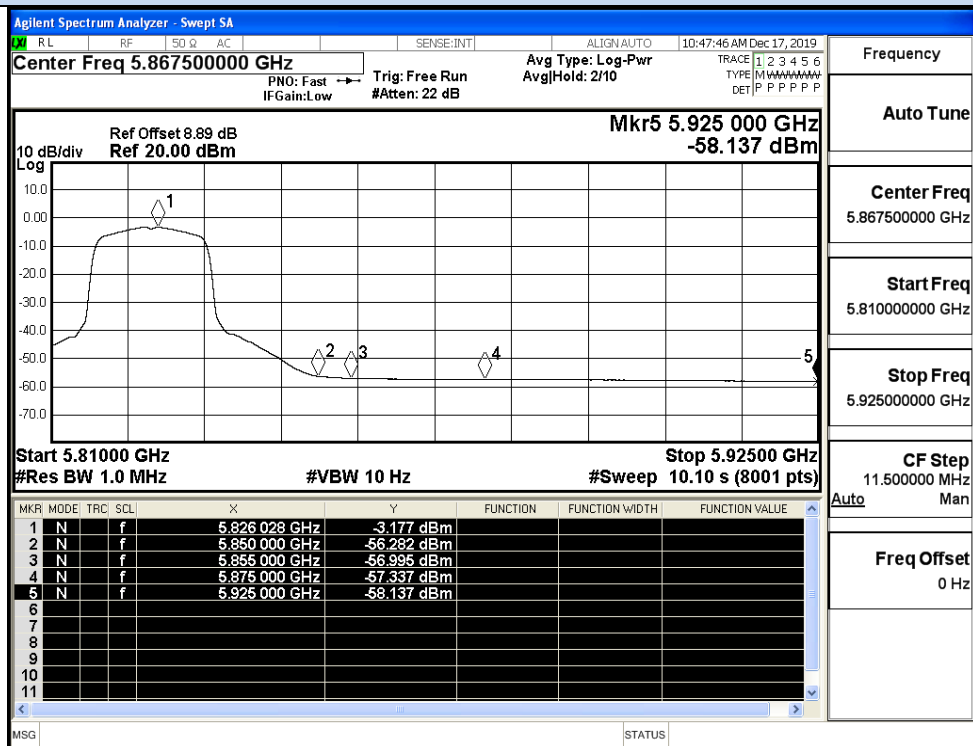
IEEE 802.11ac20 / Channel 149 / 5745MHz / Peak



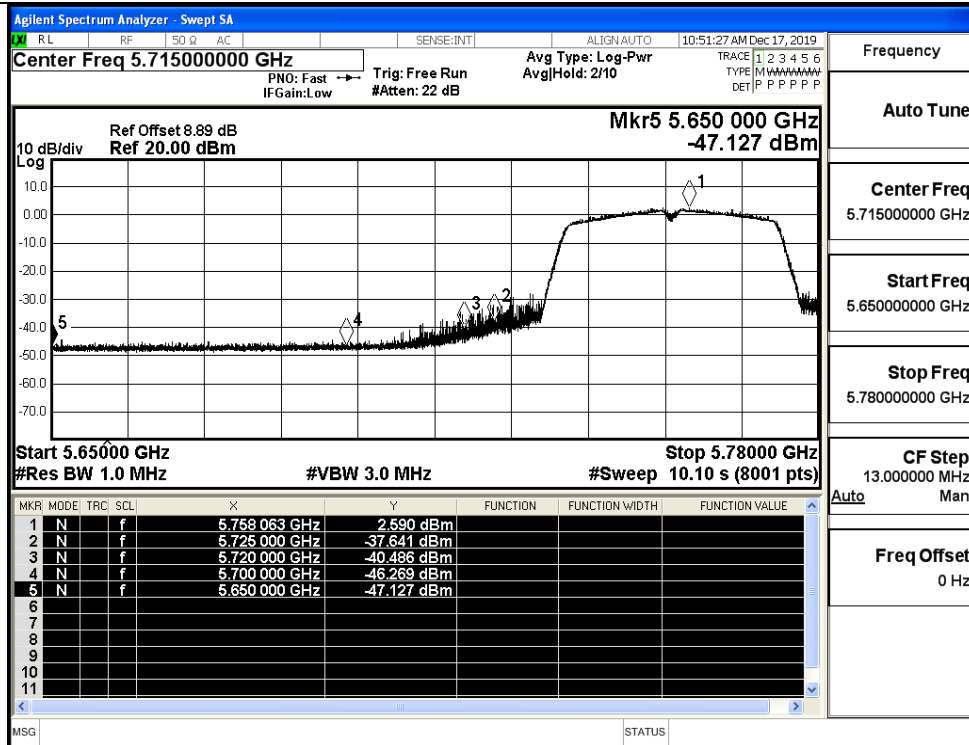
IEEE 802.11ac20 / Channel 149 / 5745MHz / Average



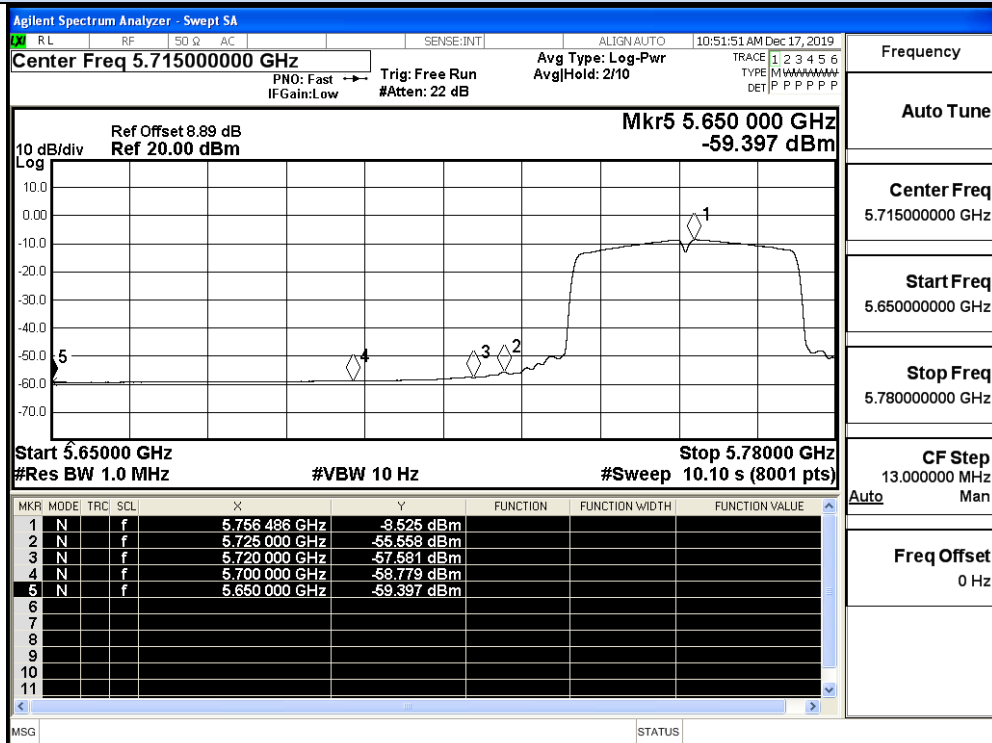
IEEE 802.11ac20 / Channel 165 / 5825MHz / Peak



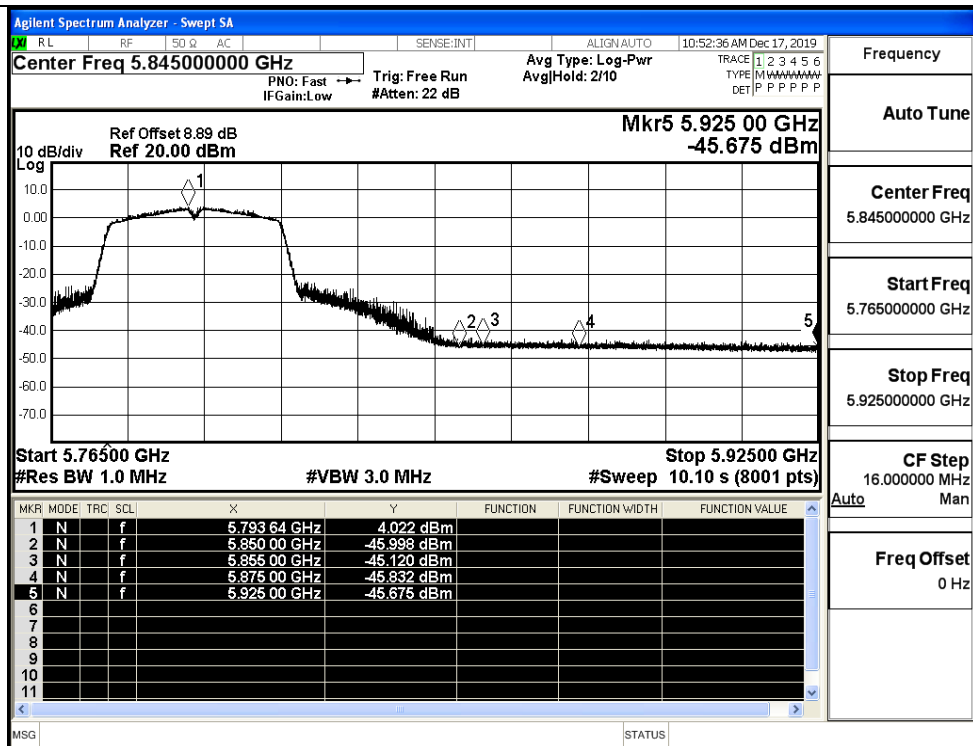
IEEE 802.11ac20 / Channel 165 / 5825MHz / Average



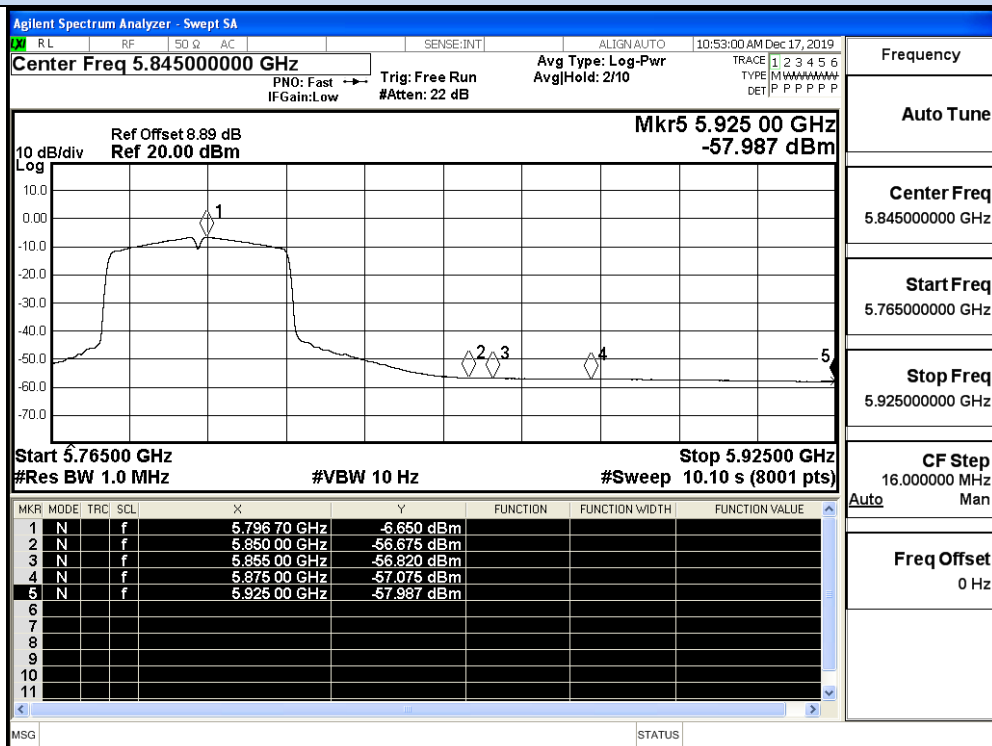
IEEE 802.11ac40 / Channel 151 / 5755MHz / Peak



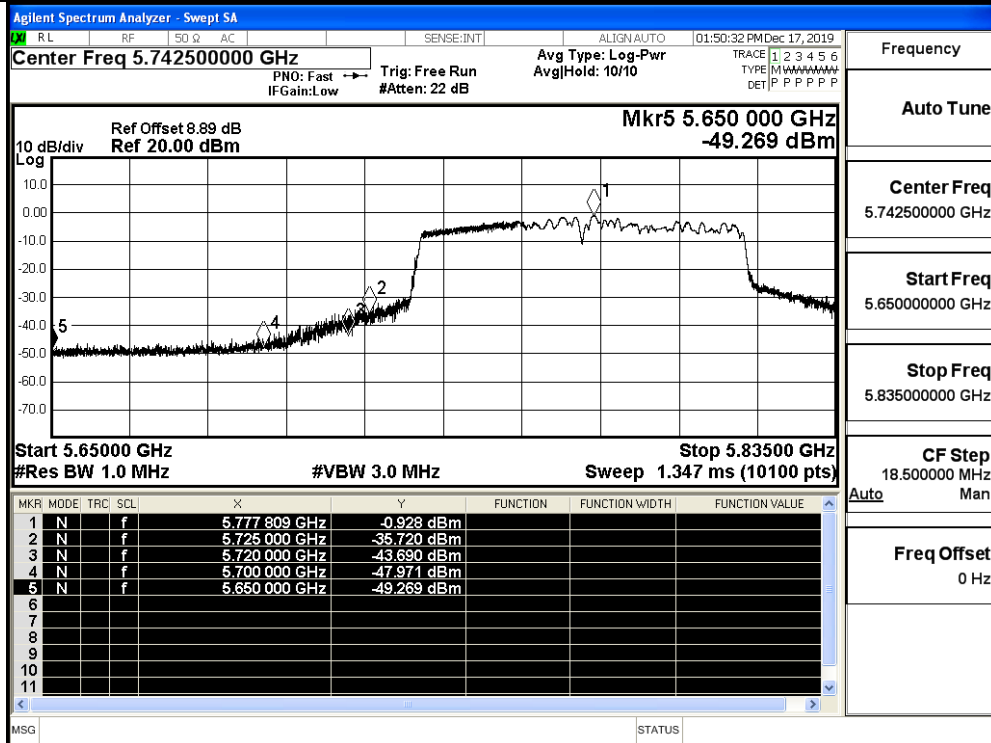
IEEE 802.11ac40 / Channel 151 / 5755MHz / Average



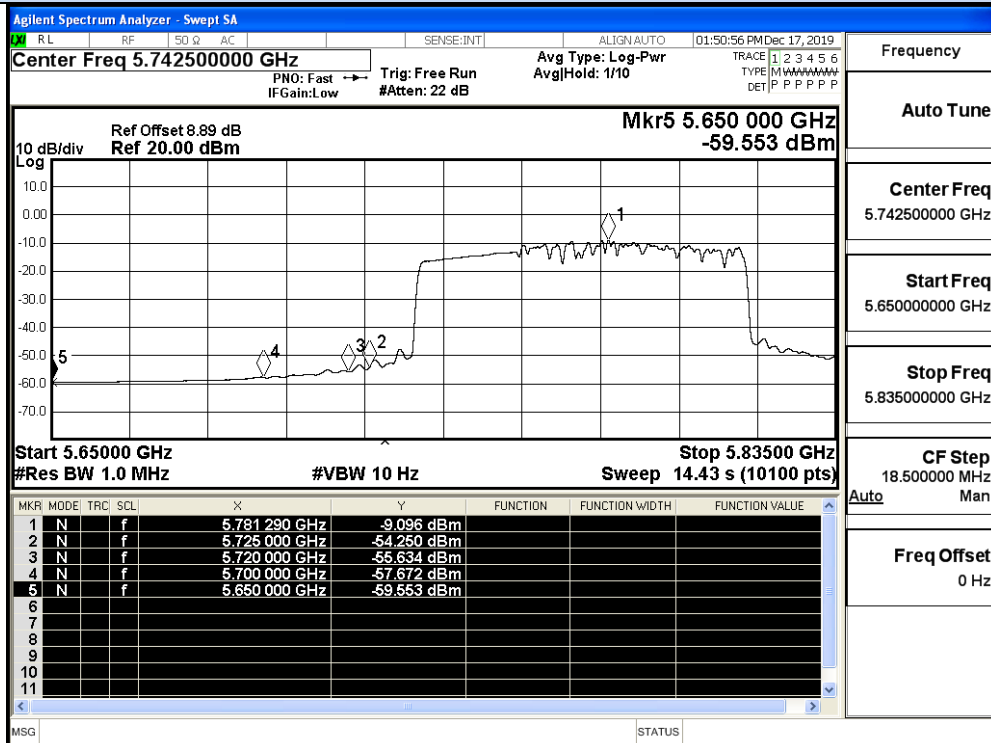
IEEE 802.11ac40 / Channel 159 / 5795MHz / Peak



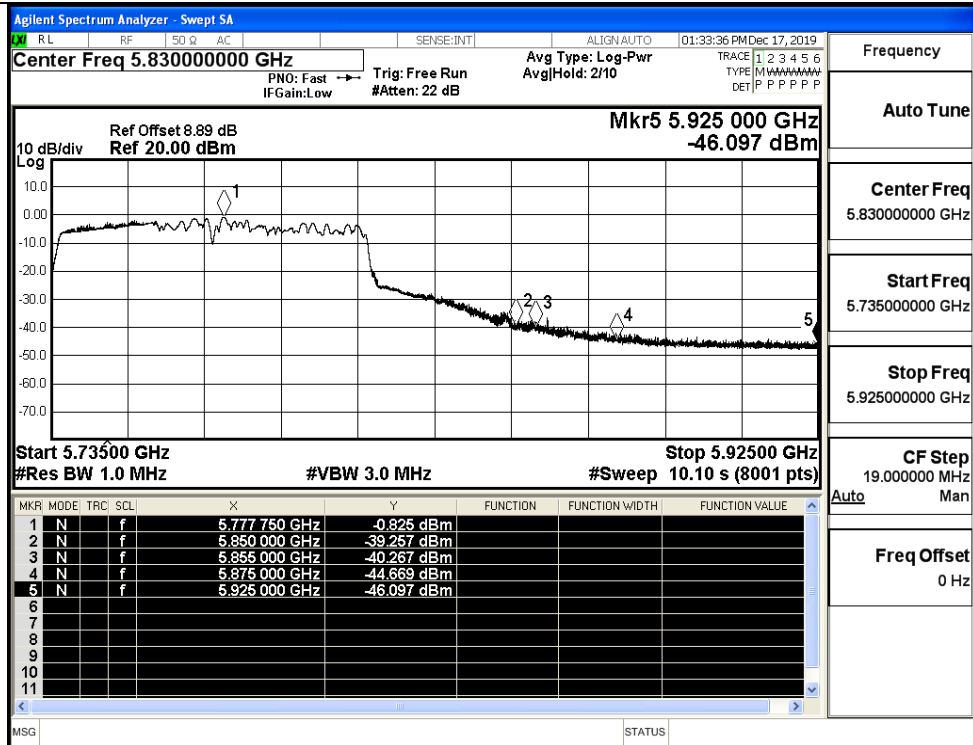
IEEE 802.11ac40 / Channel 159 / 5795MHz / Average



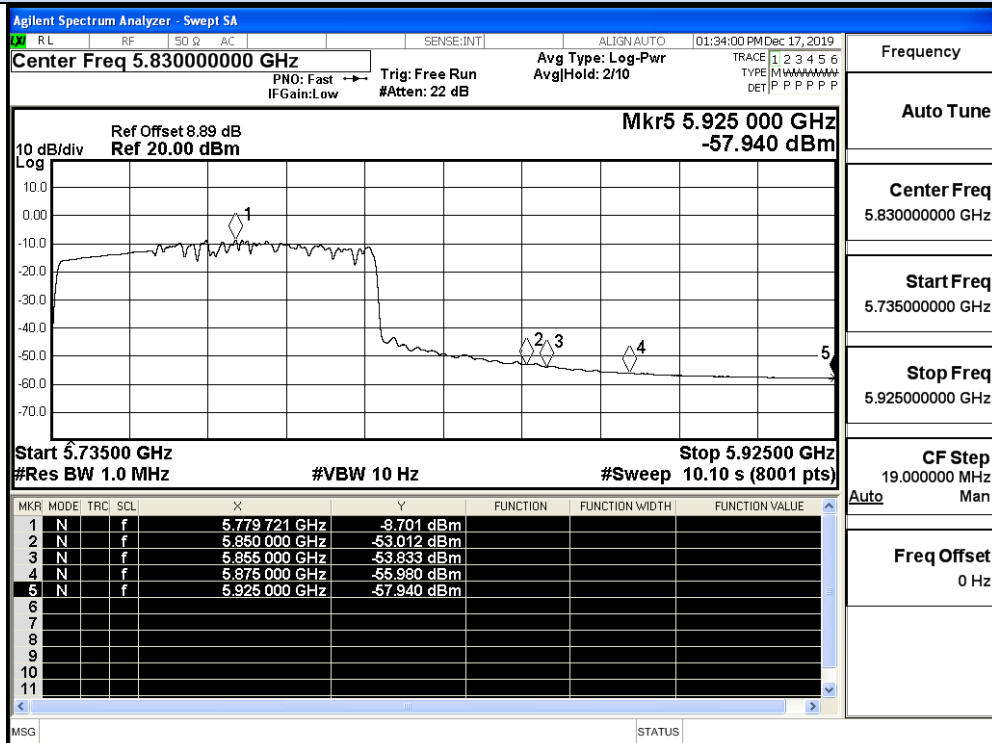
IEEE 802.11ac80 / Channel 155 / 5775MHz / Peak



IEEE 802.11ac80 / Channel 155 / 5775MHz / Average



IEEE 802.11ac80 / Channel 155/ 5775MHz / Peak



IEEE 802.11ac80 / Channel 155 / 5775MHz / Average