

Appendix A

RF Test Data for 2.4G WIFI (Conducted Measurement)

Product Name: Smart LED Bulb

Trade Mark: N/A

Test Model: M2M-A60-905

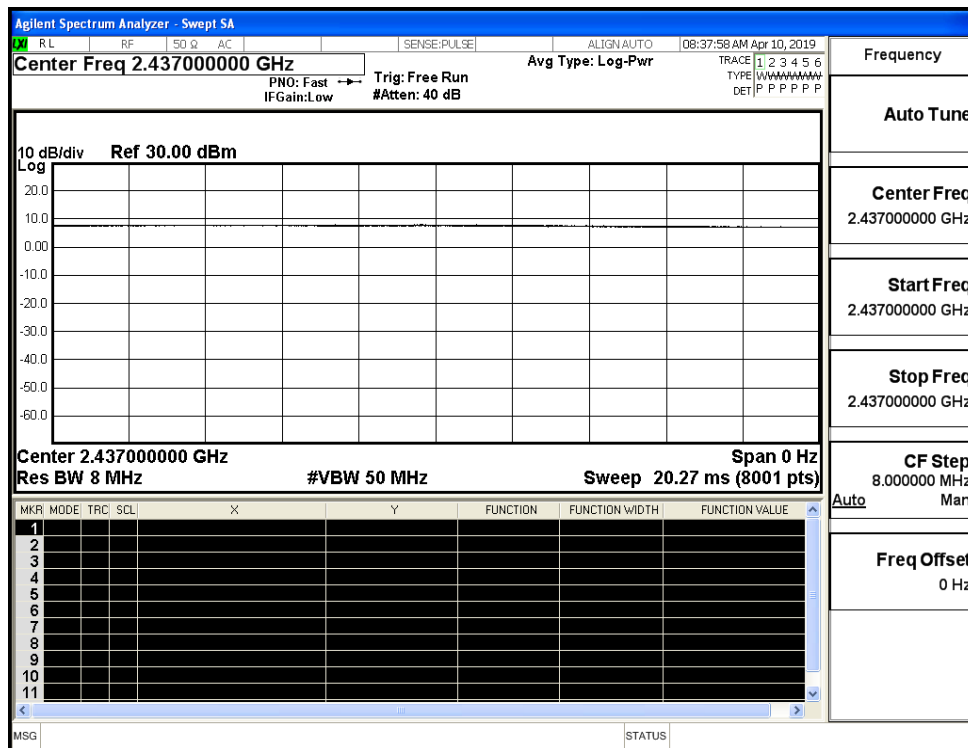
Environmental Conditions

Temperature:	23.9° C
Relative Humidity:	52.6%
ATM Pressure:	100.0 kPa
Test Engineer:	Mina.Xu
Supervised by:	Tom.Liu

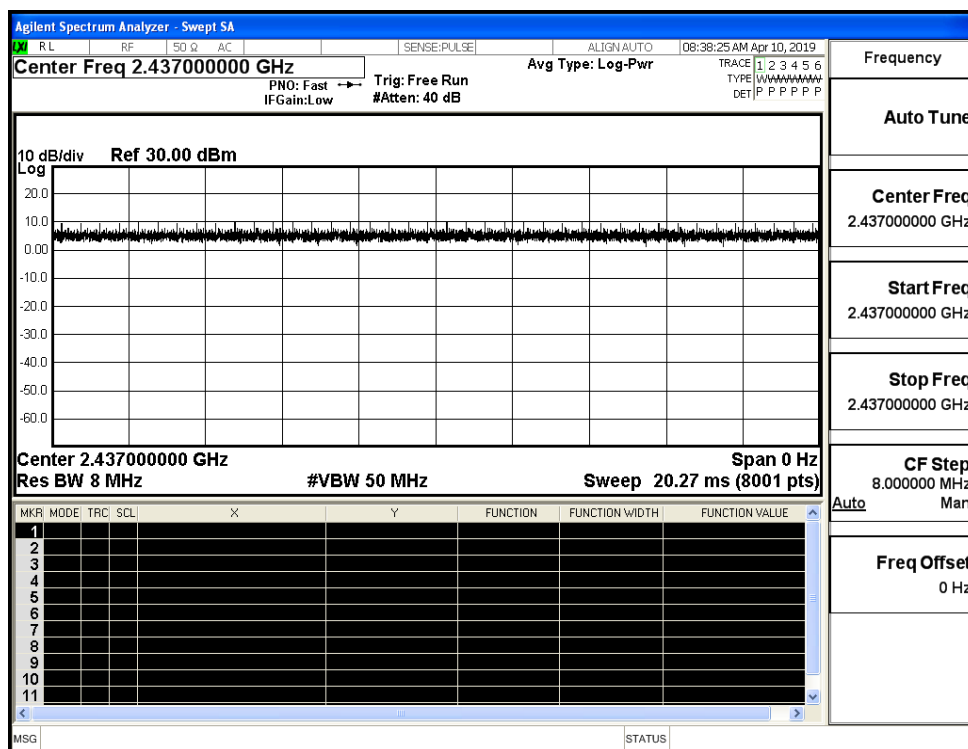
A.1 Duty Cycle

Test Mode	Test Channel	Ant	Duty Cycle[%]	Verdict
11B	2437	Ant1	100	PASS
11G	2437	Ant1	100	PASS
11N20SISO	2437	Ant1	100	PASS

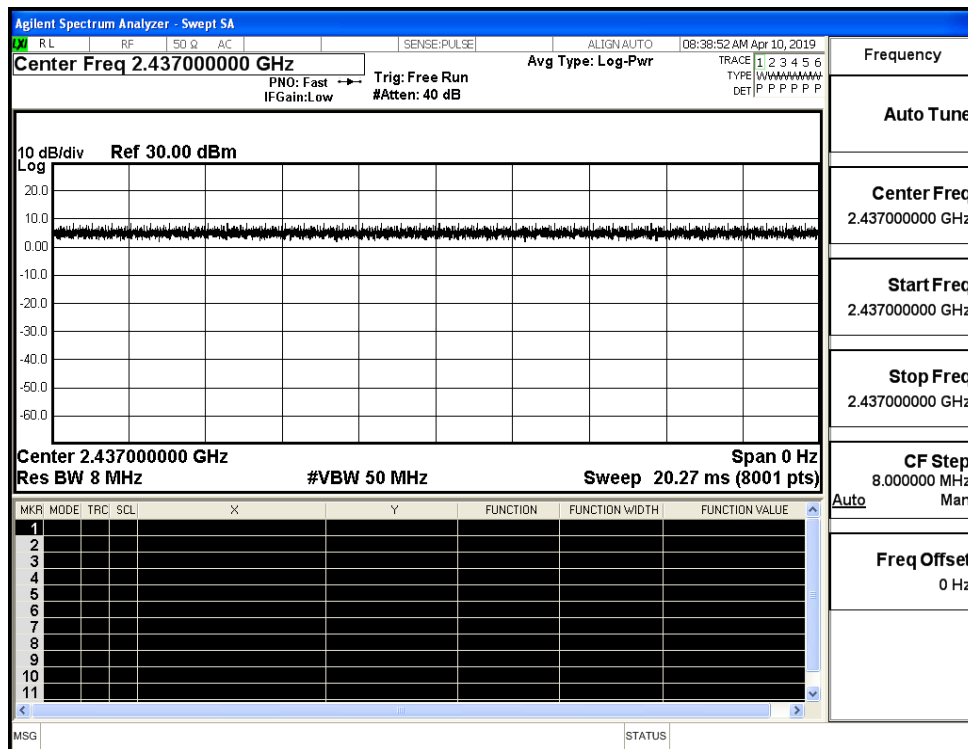
Duty Cycle_11B_2437_Ant1



Duty Cycle_11G_2437_Ant1



Duty Cycle_11N20SISO_2437_Ant1



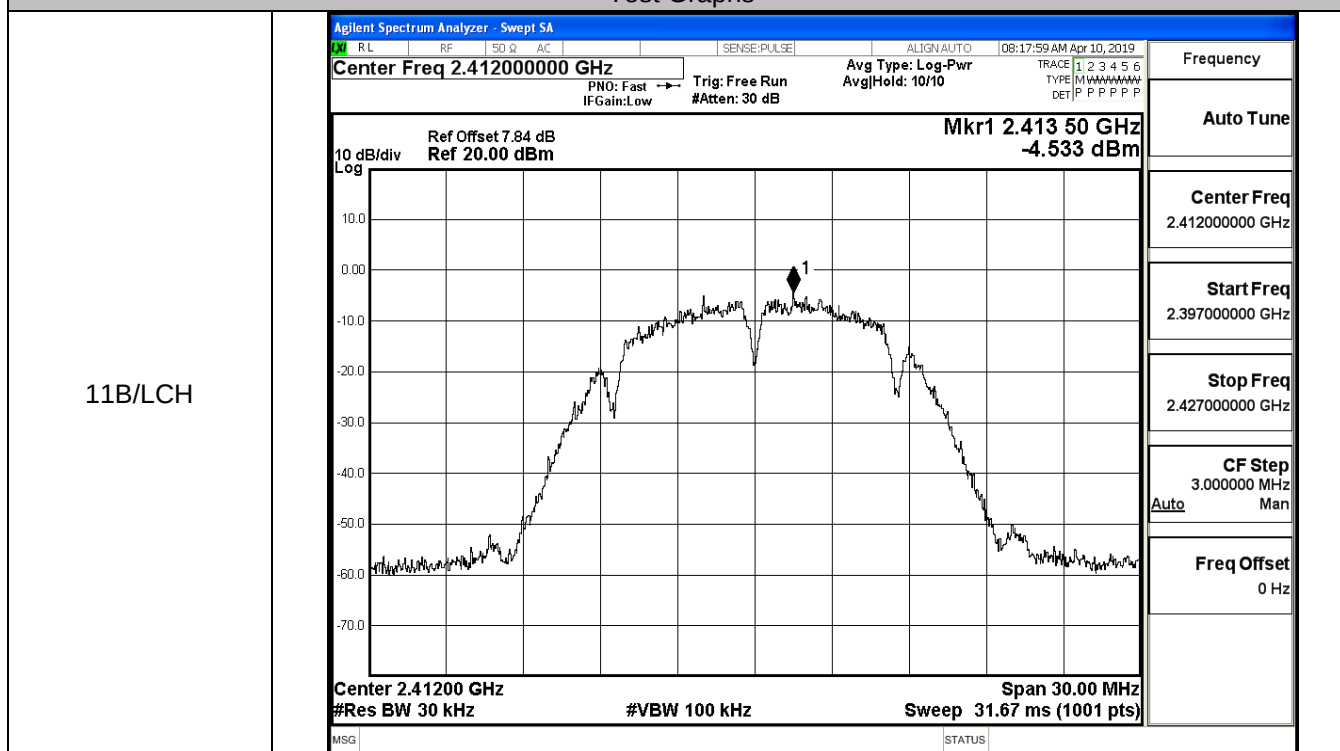
A.2 Maximum Conducted Output Power

Mode	Channel	Meas.Level [dBm]	Limit [dBm]	Verdict
11B	LCH	10.79	30	PASS
	MCH	11.31	30	PASS
	HCH	9.27	30	PASS
11G	LCH	12.49	30	PASS
	MCH	11.84	30	PASS
	HCH	12.13	30	PASS
11N20SISO	LCH	12.39	30	PASS
	MCH	11.68	30	PASS
	HCH	11.99	30	PASS

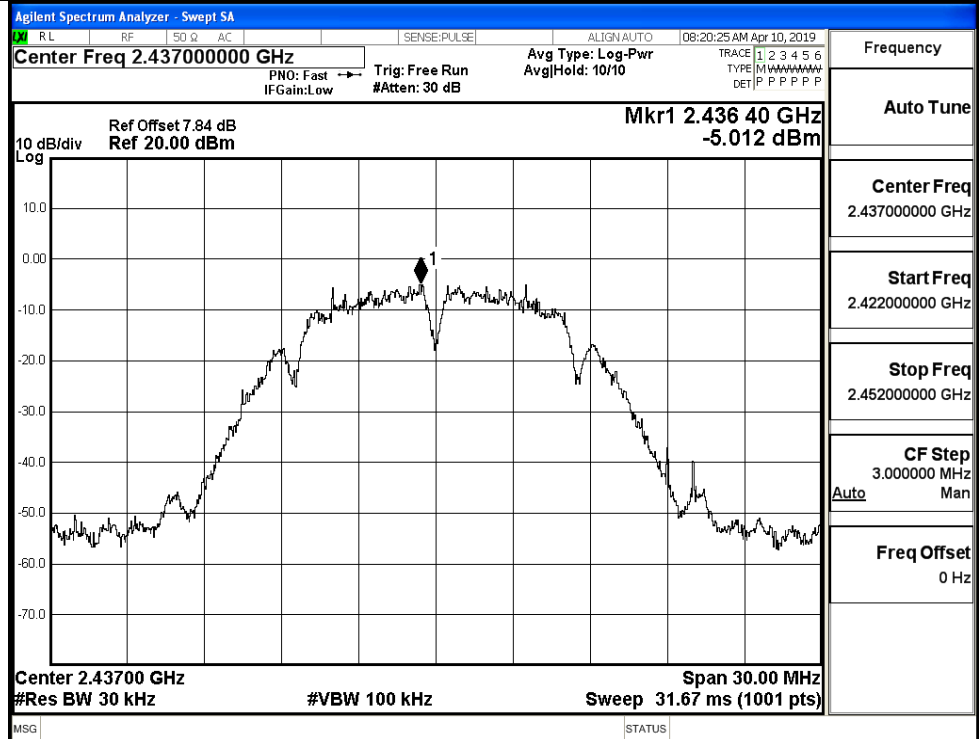
A.3 Maximum Power Spectral Density

Mode	Channel	Meas.Level [dBm/30KHz]	Limit [dBm/3KHz]	Verdict
11B	LCH	-4.533	8	PASS
	MCH	-5.012	8	PASS
	HCH	-8.706	8	PASS
11G	LCH	-10.972	8	PASS
	MCH	-12.227	8	PASS
	HCH	-11.330	8	PASS
11N20SISO	LCH	-11.433	8	PASS
	MCH	-13.090	8	PASS
	HCH	-11.320	8	PASS

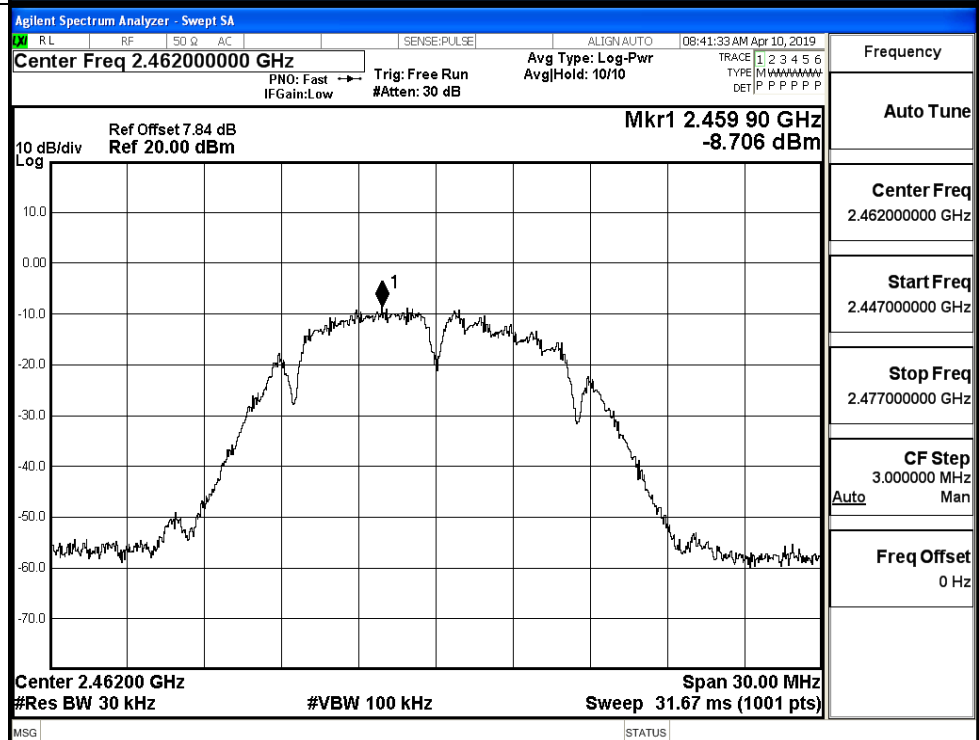
Test Graphs



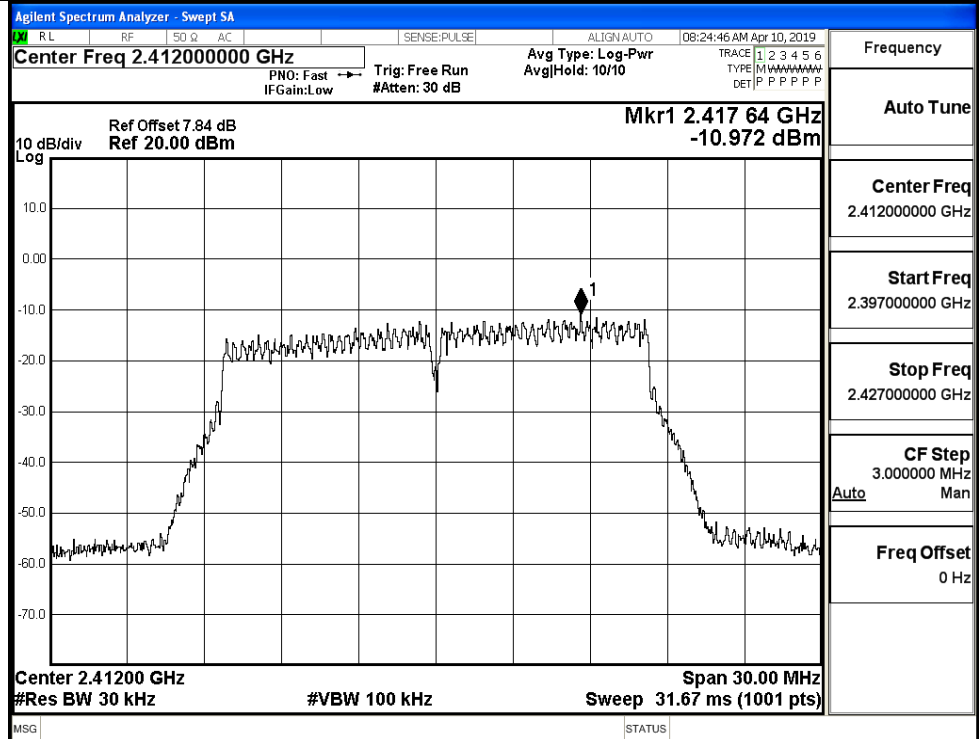
11B/MCH



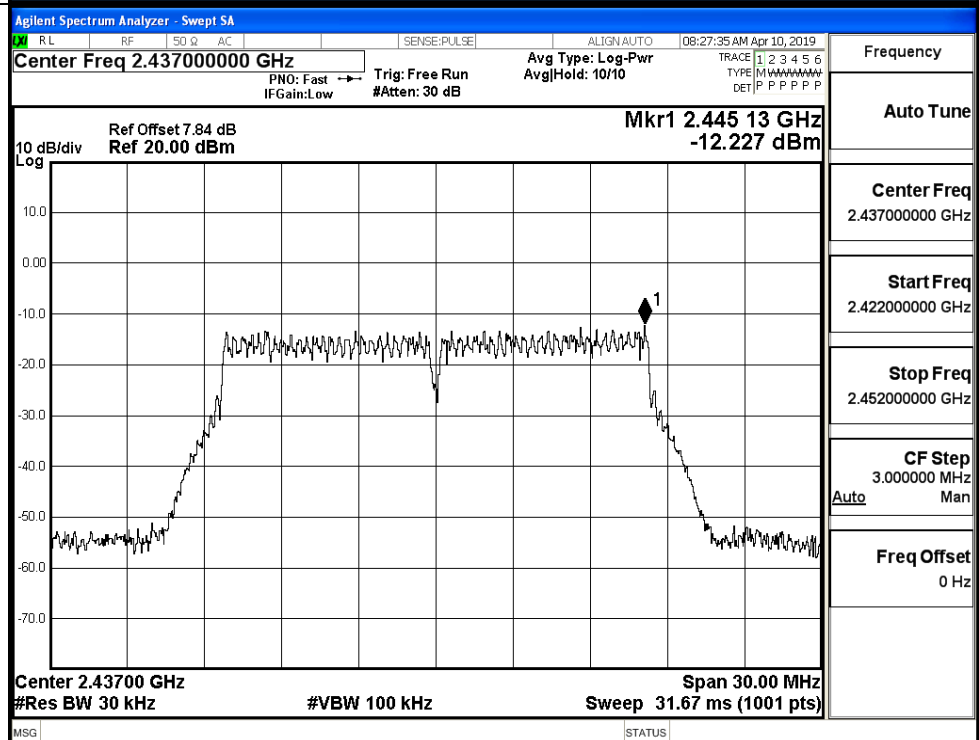
11B/HCH



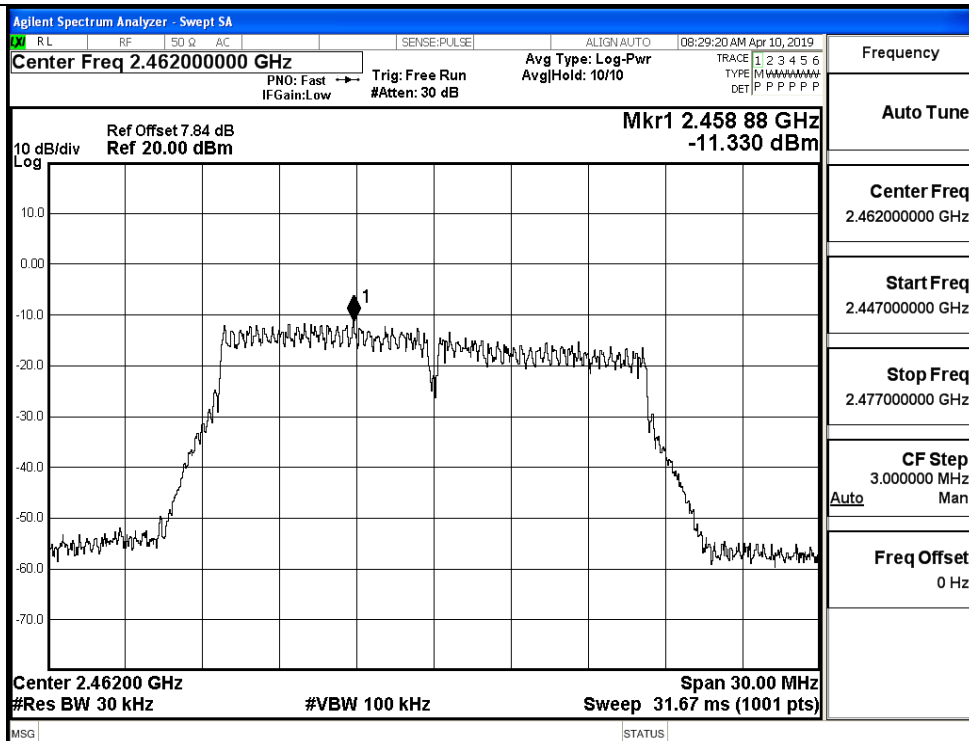
11G/LCH



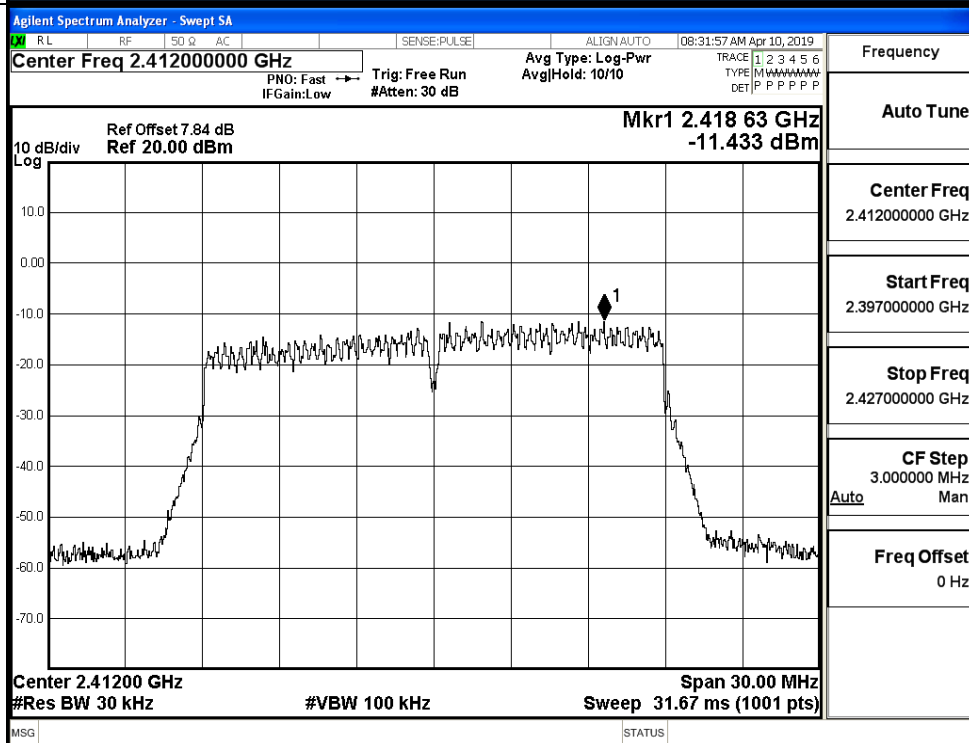
11G/MCH



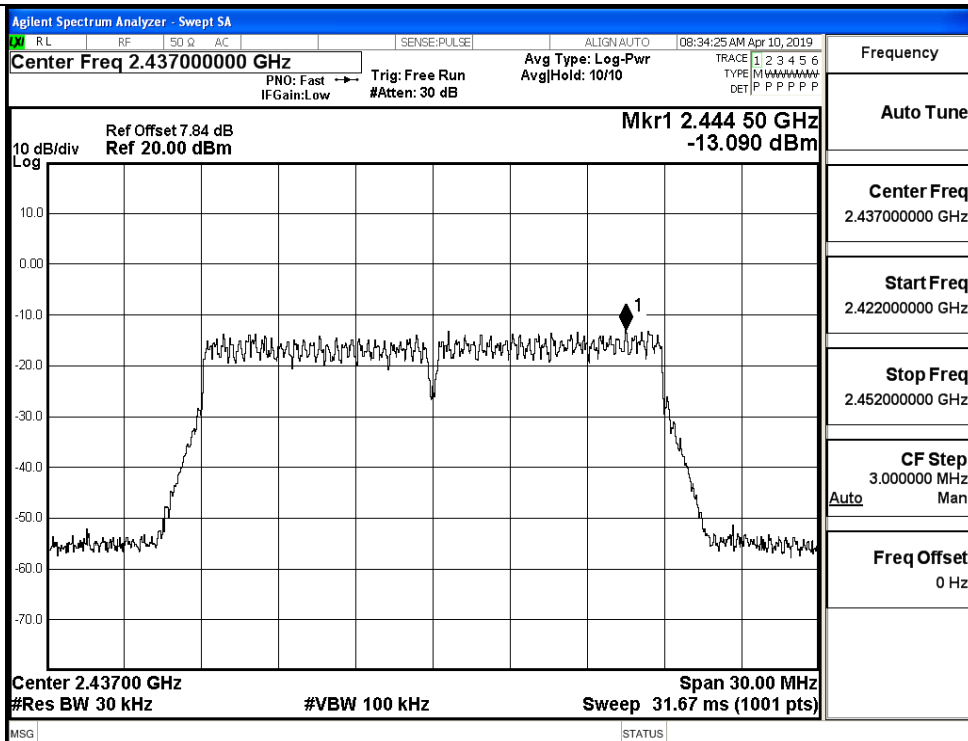
11G/HCH



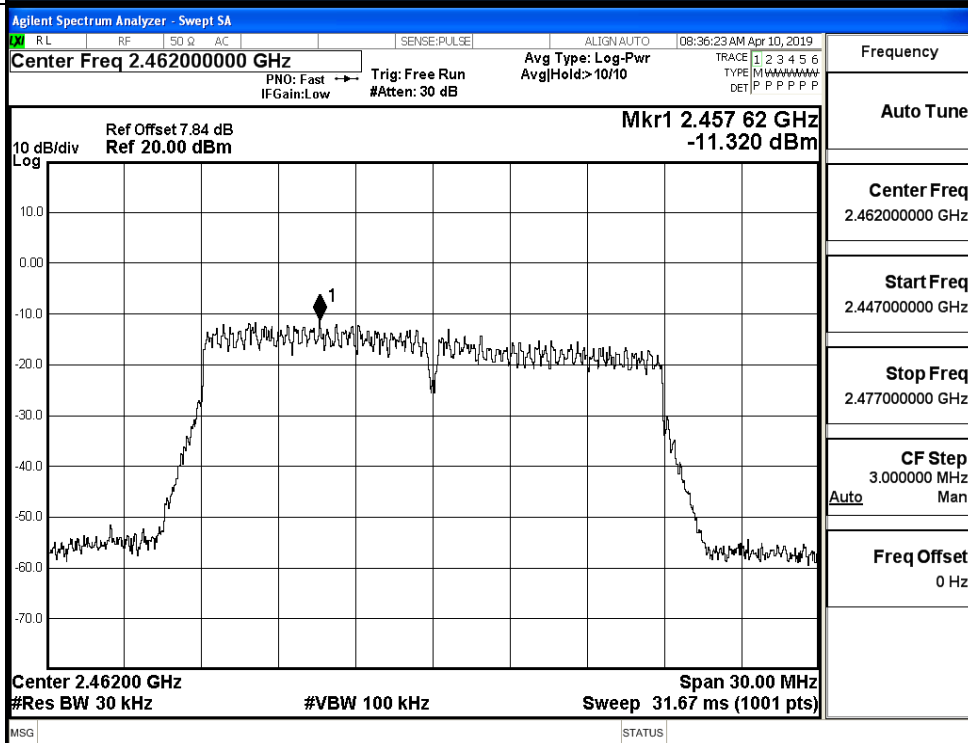
11N20SISO/LCH



11N20SISO/MCH



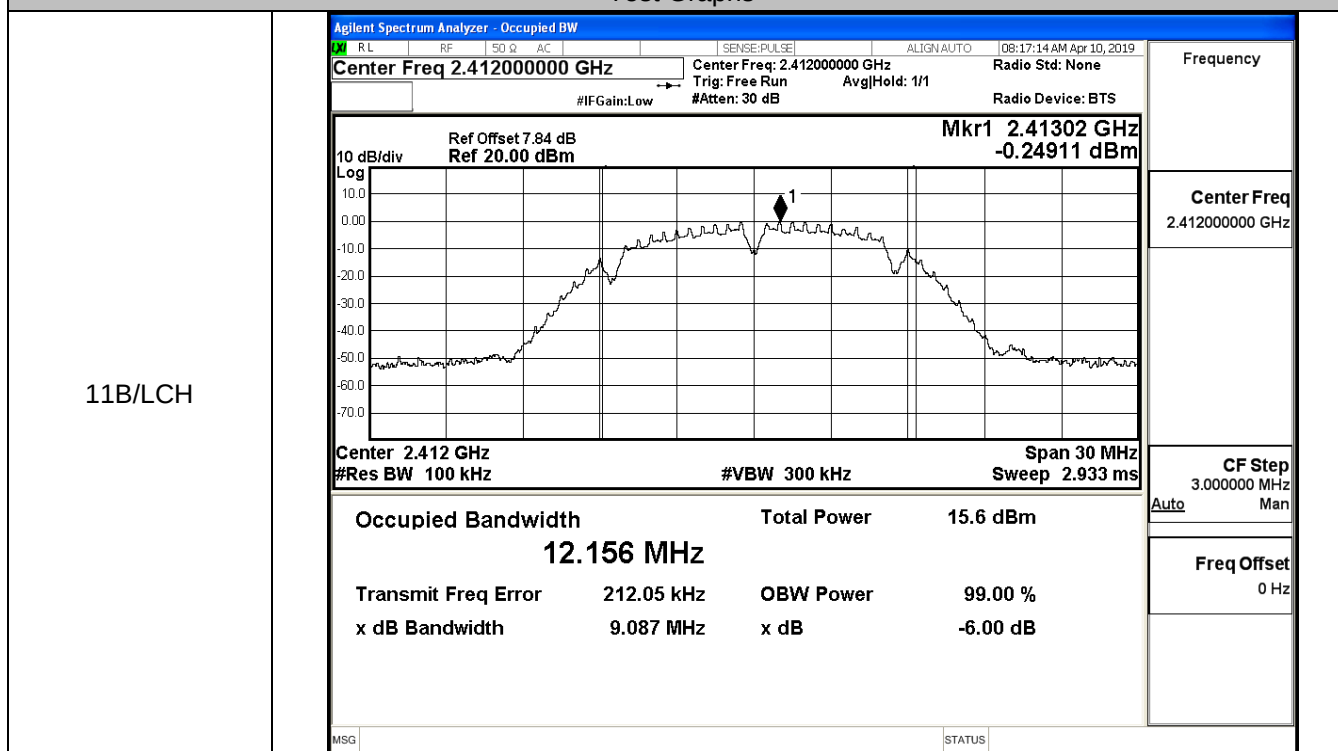
11N20SISO/HCH



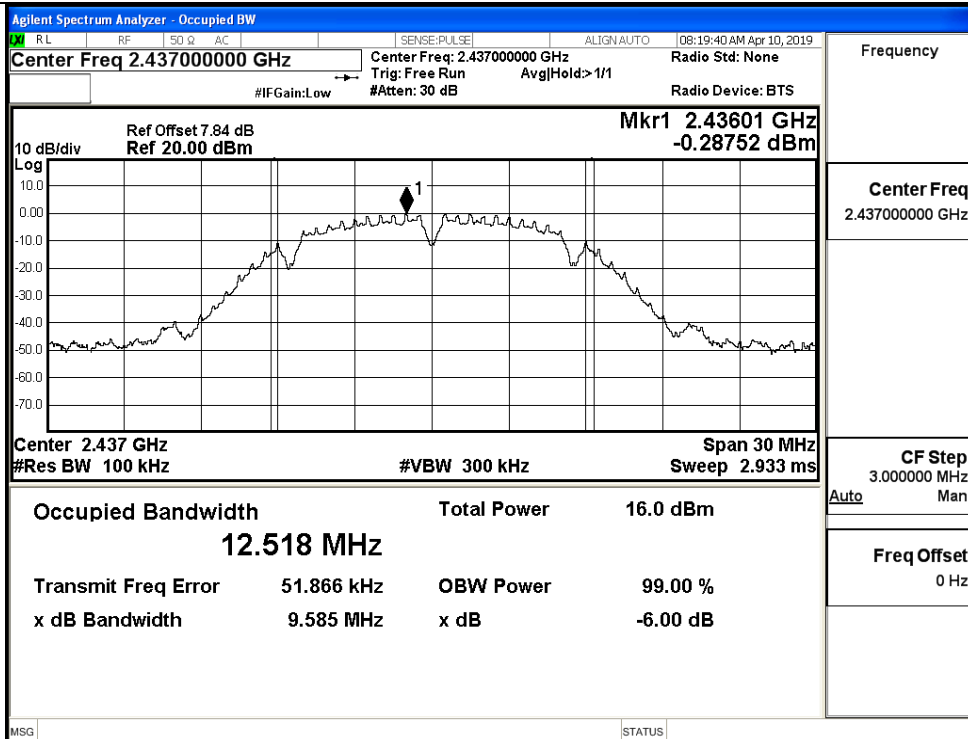
A.4 6dB Bandwidth

Mode	Channel	6dB Bandwidth [MHz]	Limit [MHz]	Verdict
11B	LCH	9.087	≥ 0.5	PASS
	MCH	9.585	≥ 0.5	PASS
	HCH	8.579	≥ 0.5	PASS
11G	LCH	16.47	≥ 0.5	PASS
	MCH	16.62	≥ 0.5	PASS
	HCH	16.25	≥ 0.5	PASS
11N20SISO	LCH	17.72	≥ 0.5	PASS
	MCH	17.82	≥ 0.5	PASS
	HCH	17.31	≥ 0.5	PASS

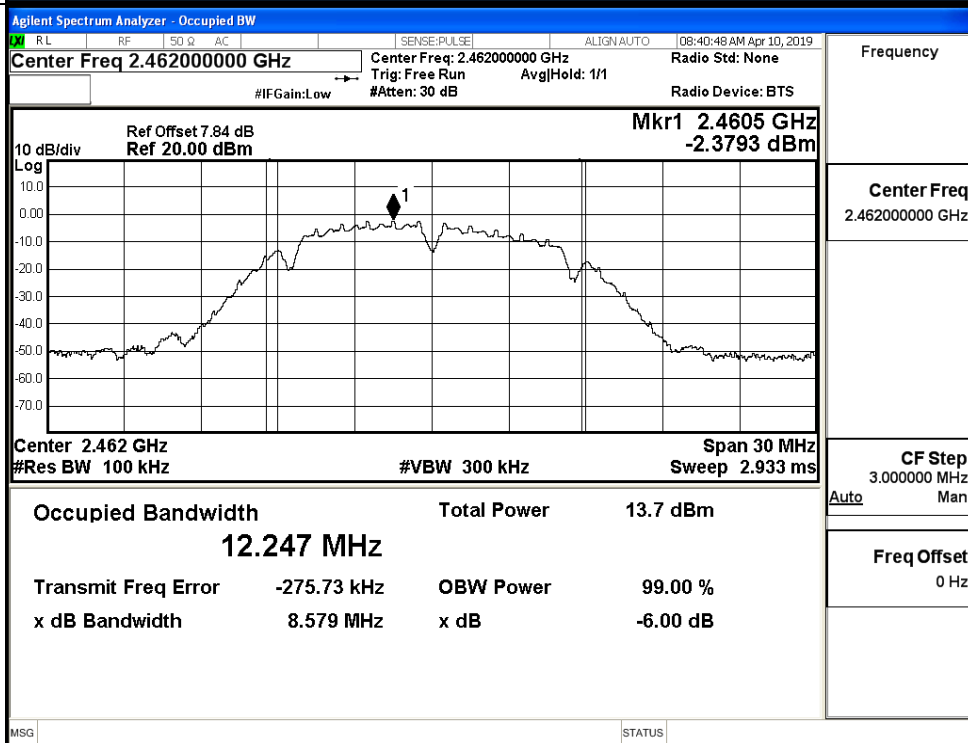
Test Graphs



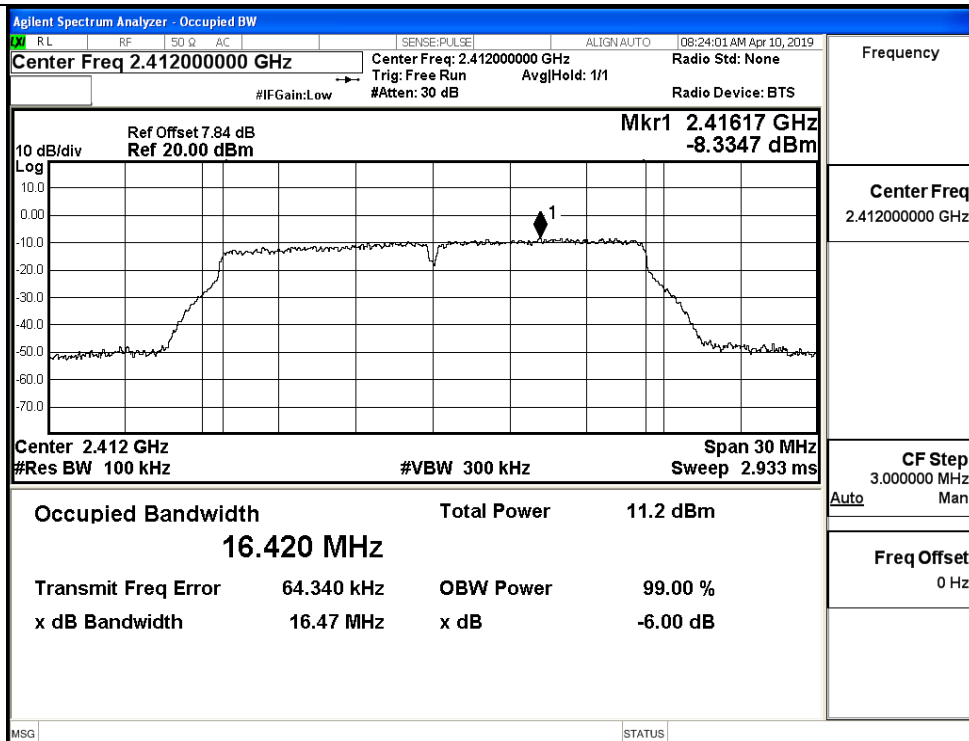
11B/MCH



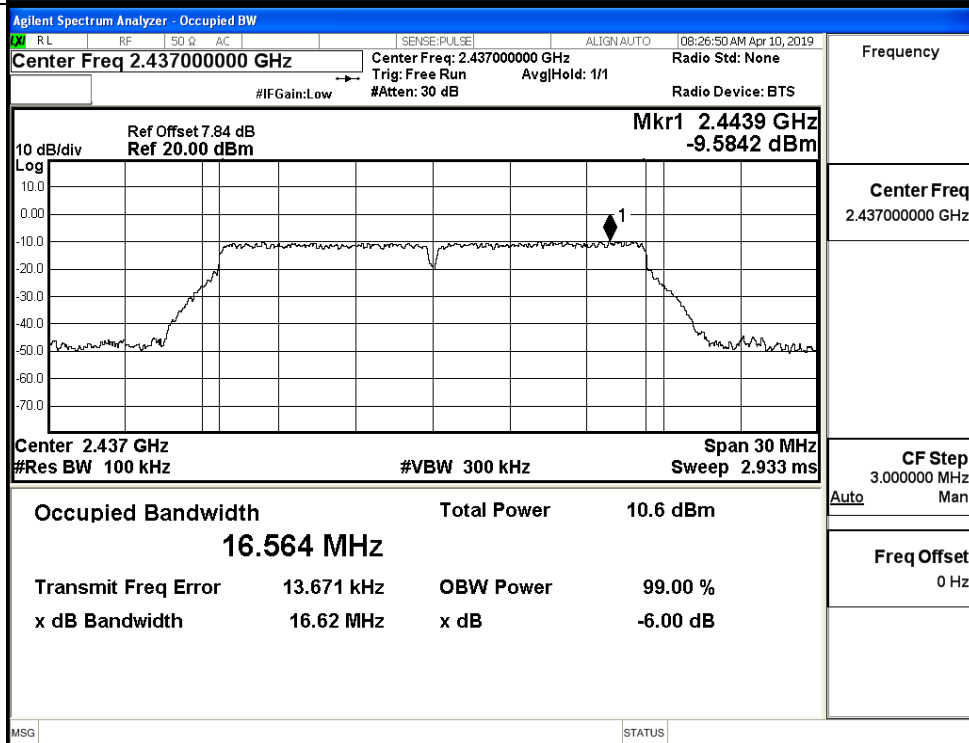
11B/HCH



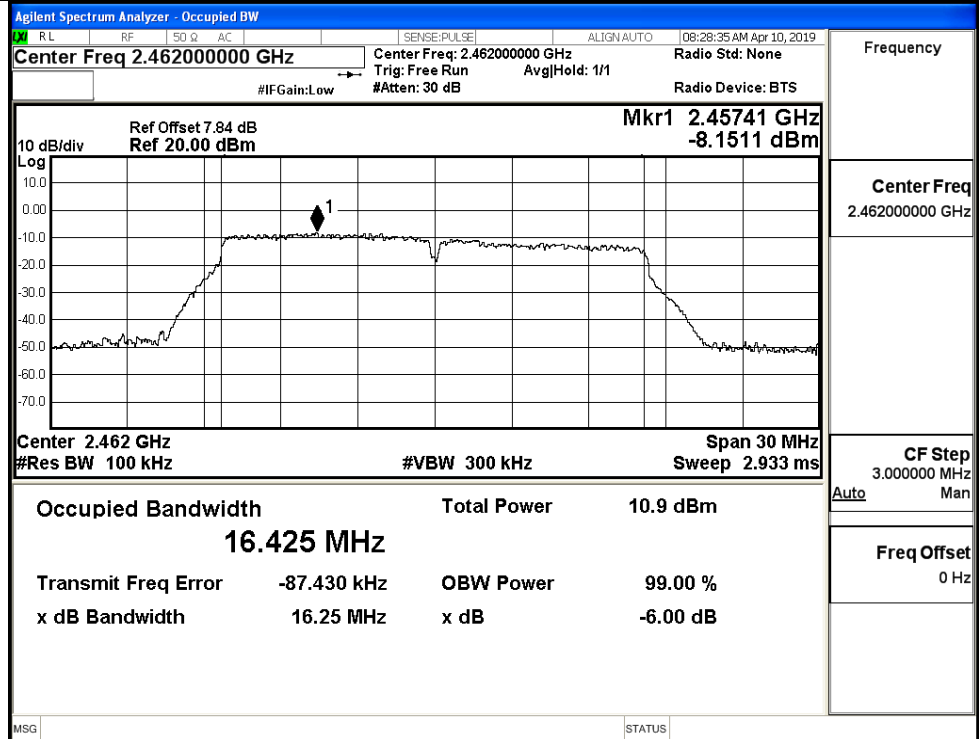
11G/LCH



11G/MCH



11G/HCH



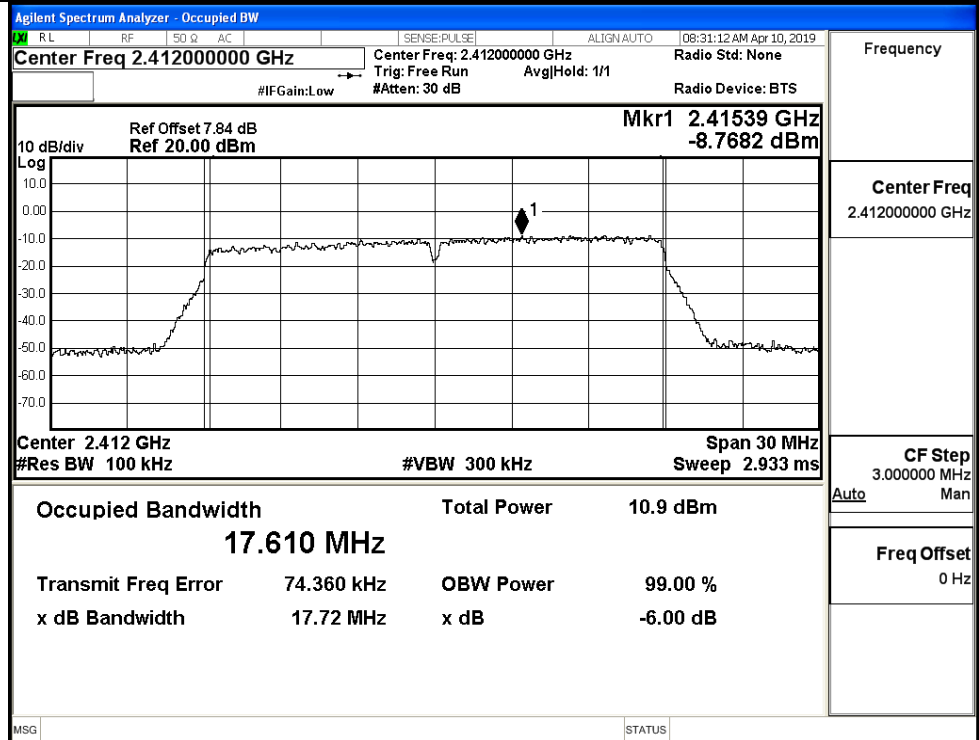
Frequency

Center Freq
2.46200000 GHz

CF Step
3.000000 MHz
Auto Man

Freq Offset
0 Hz

11N20SISO/LCH



Frequency

Center Freq
2.41200000 GHz

CF Step
3.000000 MHz
Auto Man

Freq Offset
0 Hz

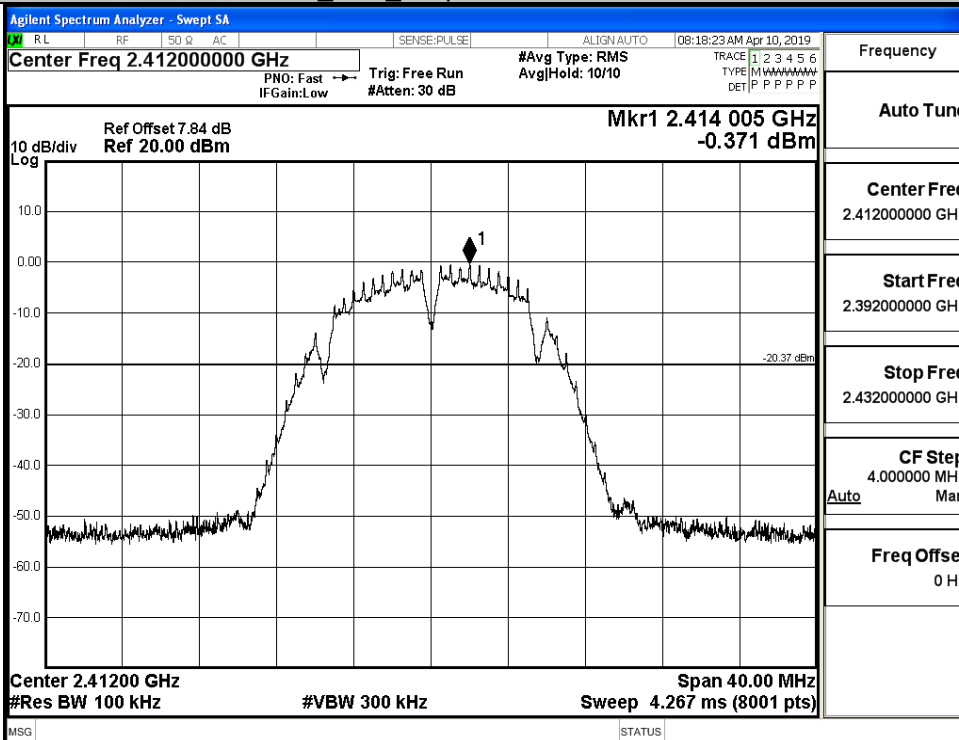
11N20SISO/MCH	Agilent Spectrum Analyzer - Occupied BW Center Freq 2.437000000 GHz Ref Offset 7.84 dB Ref 20.00 dBm 10 dB/div Log Center 2.437 GHz #Res BW 100 kHz Span 30 MHz Sweep 2.933 ms Occupied Bandwidth 17.723 MHz Total Power 10.2 dBm Transmit Freq Error 31.112 kHz OBW Power 99.00 % x dB Bandwidth 17.82 MHz x dB -6.00 dB Frequency Center Freq 2.437000000 GHz CF Step 3.000000 MHz Auto Man Freq Offset 0 Hz
11N20SISO/HCH	Agilent Spectrum Analyzer - Occupied BW Center Freq 2.462000000 GHz Ref Offset 7.84 dB Ref 20.00 dBm 10 dB/div Log Center 2.462 GHz #Res BW 100 kHz Span 30 MHz Sweep 2.933 ms Occupied Bandwidth 17.596 MHz Total Power 10.4 dBm Transmit Freq Error -59.424 kHz OBW Power 99.00 % x dB Bandwidth 17.31 MHz x dB -6.00 dB Frequency Center Freq 2.462000000 GHz CF Step 3.000000 MHz Auto Man Freq Offset 0 Hz

A.5 RF Conducted Spurious Emissions

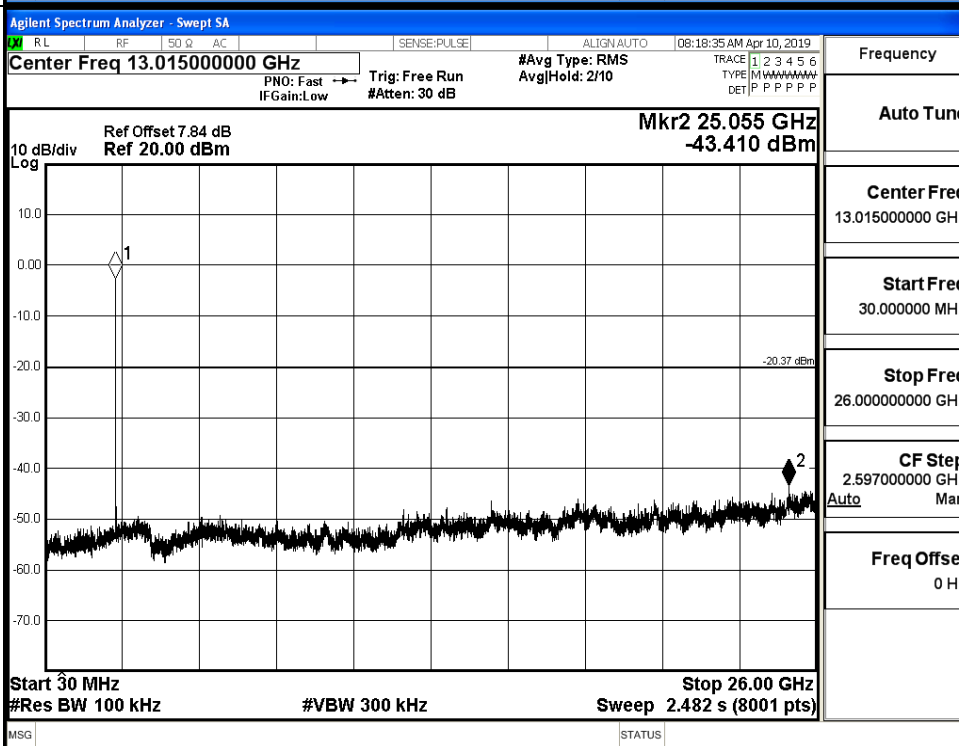
Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
11B	LCH	-0.371	-43.410	-20.371	PASS
	MCH	-0.188	-43.283	-20.188	PASS
	HCH	-2.817	-43.872	-22.817	PASS
11G	LCH	-8.503	-43.940	-28.503	PASS
	MCH	-9.613	-42.857	-29.613	PASS
	HCH	-8.363	-43.598	-28.363	PASS
11N20 SISO	LCH	-8.952	-44.330	-28.952	PASS
	MCH	-9.598	-44.463	-29.598	PASS
	HCH	-8.161	-44.256	-28.161	PASS

11B LCH Graphs

Pref/11B/LCH

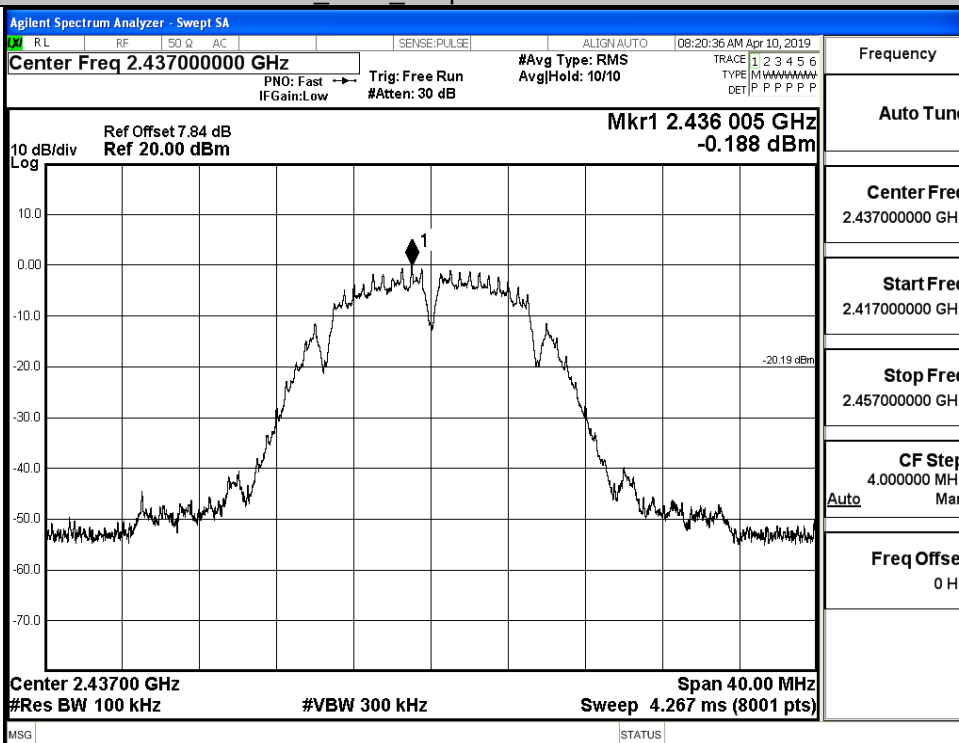


Puw/11B/LCH

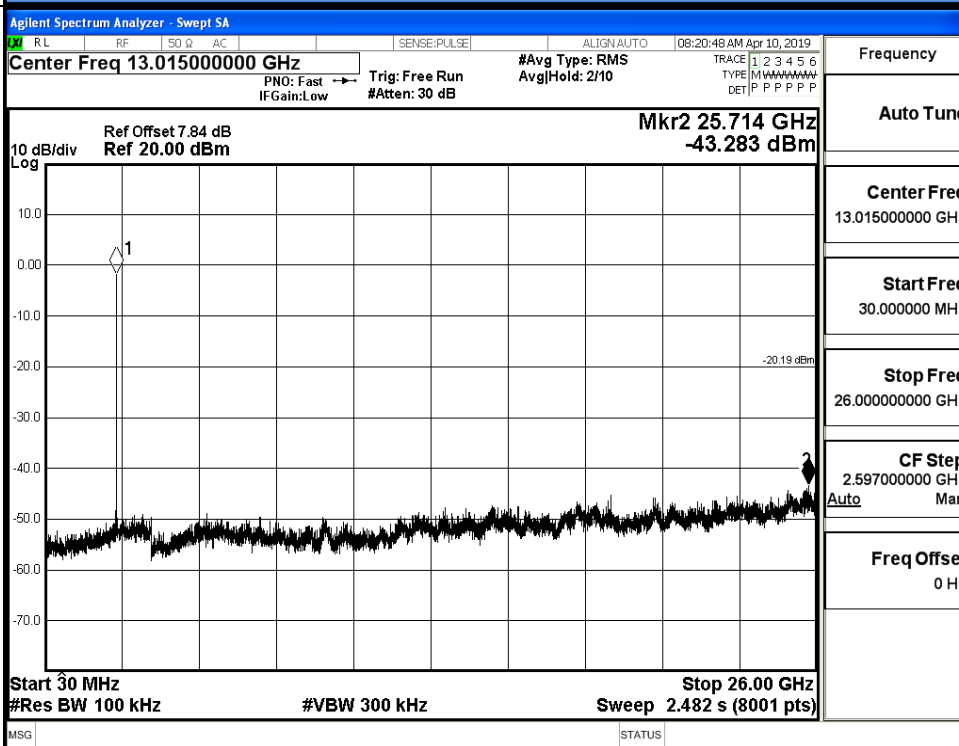


11B MCH Graphs

Pref/11B/MCH

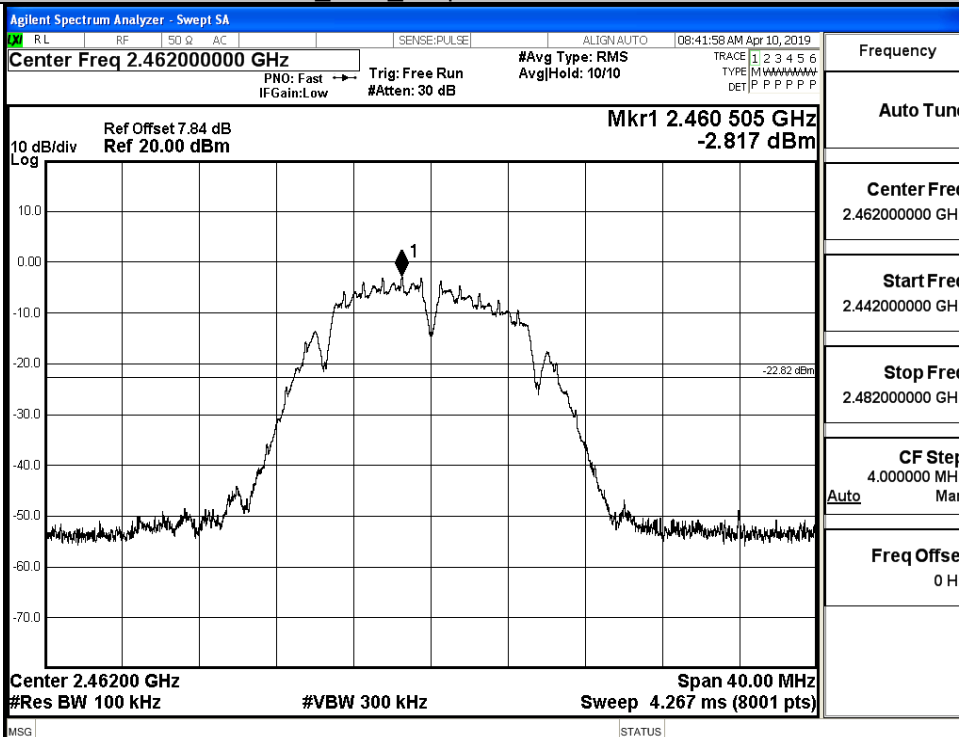


Puw/11B/MCH

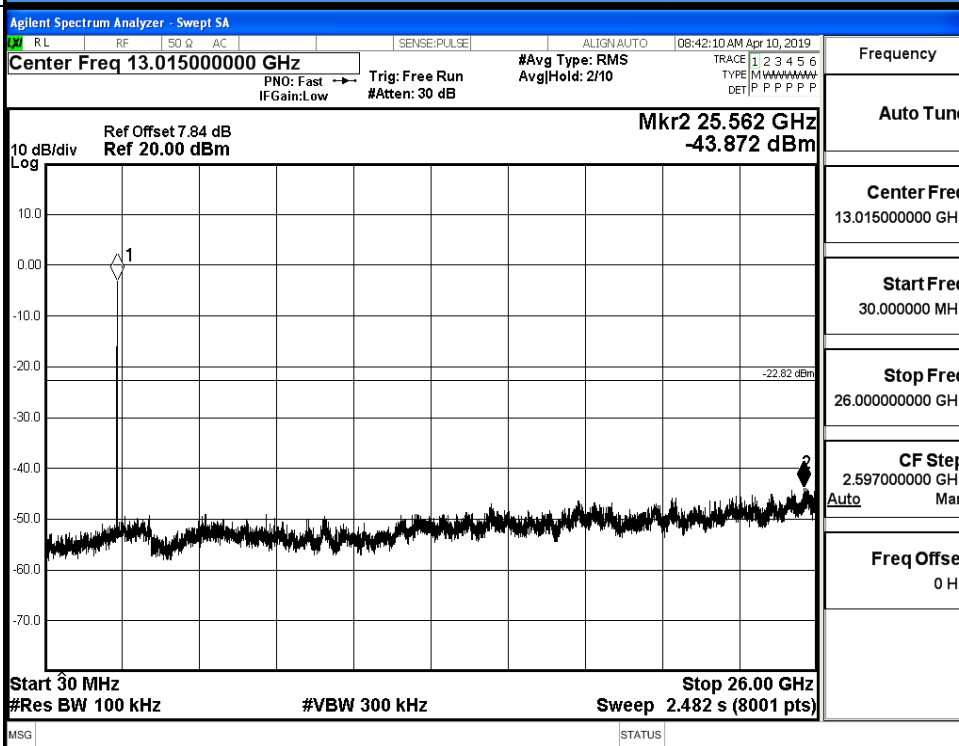


11B HCH Graphs

Pref/11B/HCH

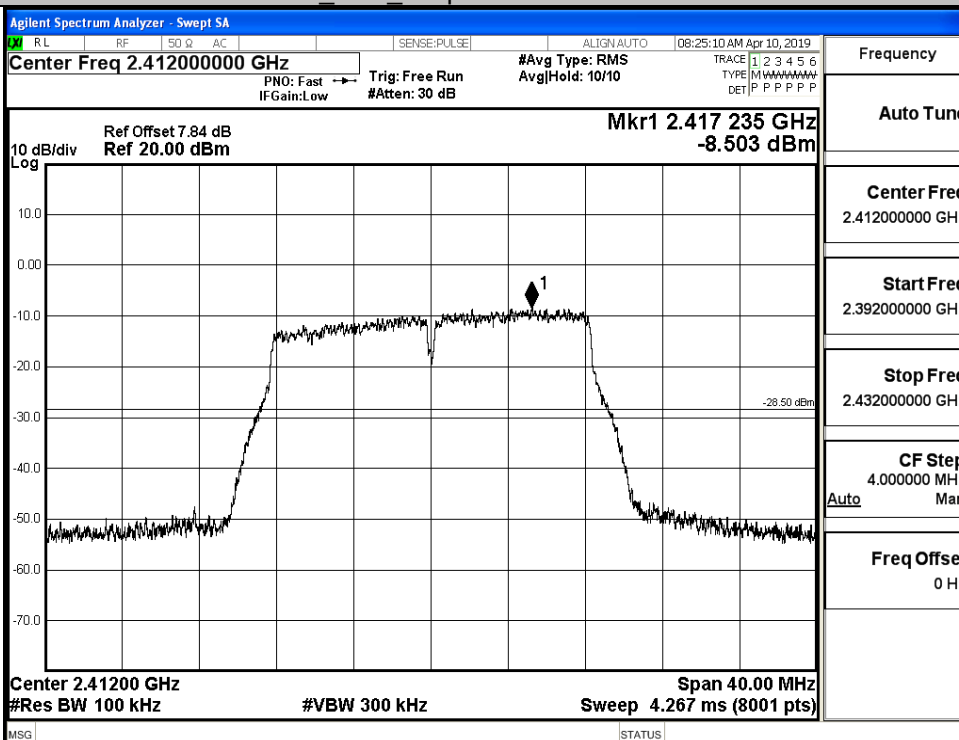


Puw/11B/HCH

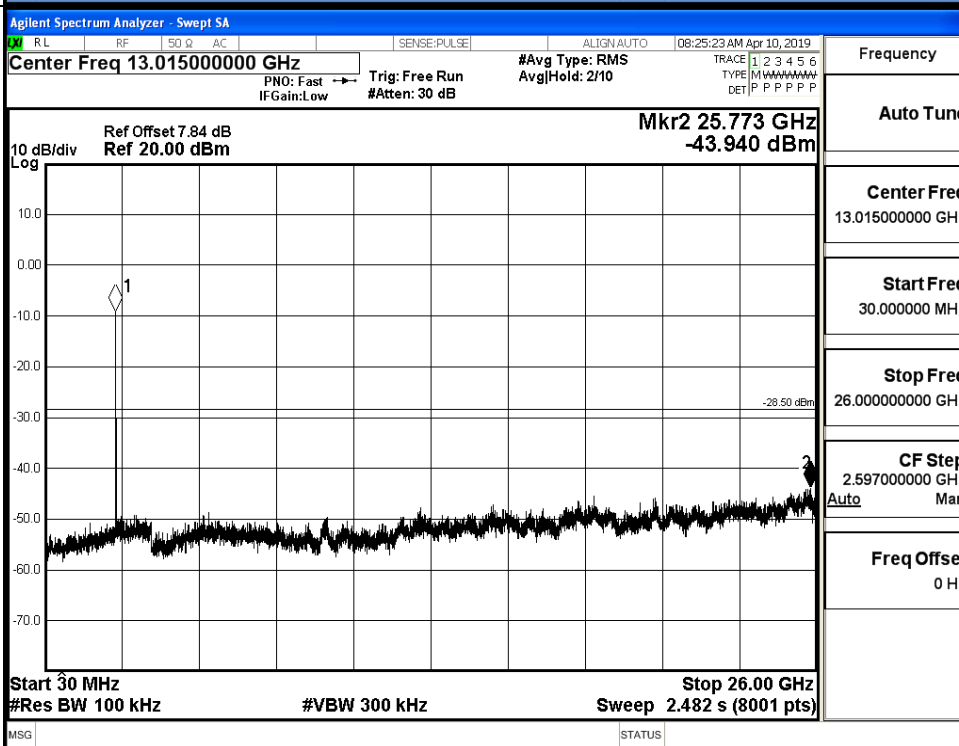


11G LCH Graphs

Pref/11G/LCH

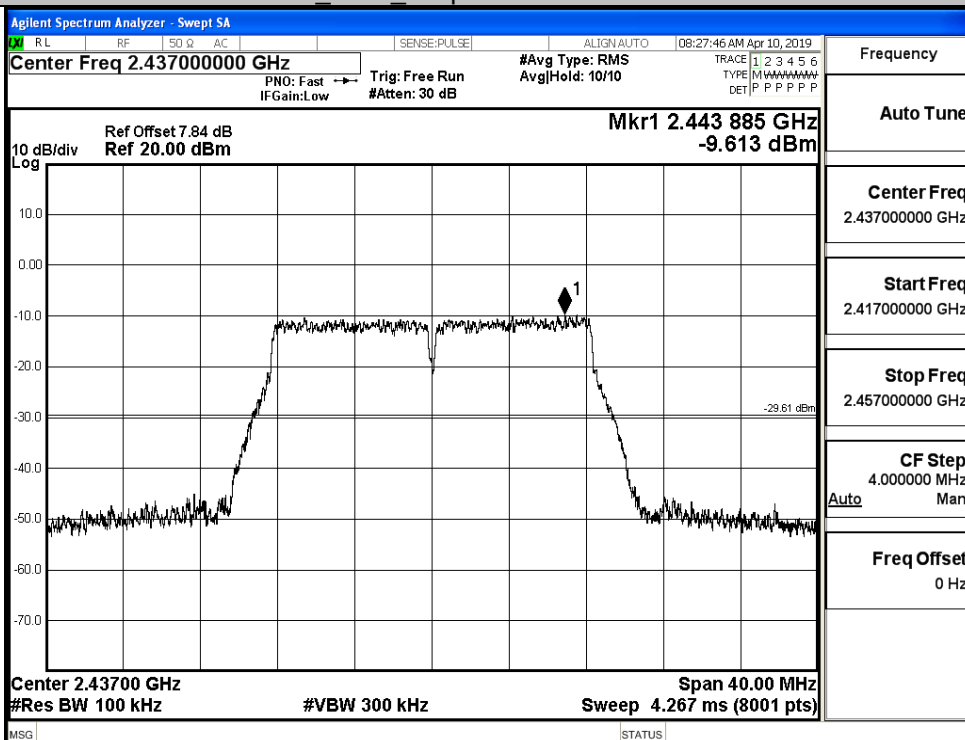


Puw/11G/LCH

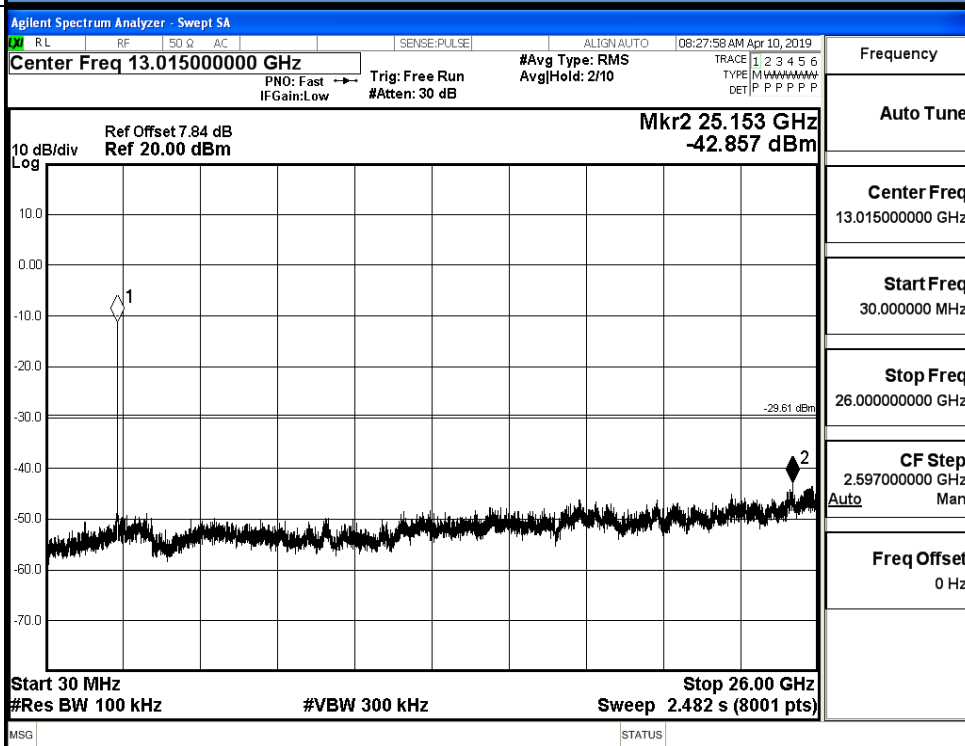


11G MCH Graphs

Pref/11G/MCH

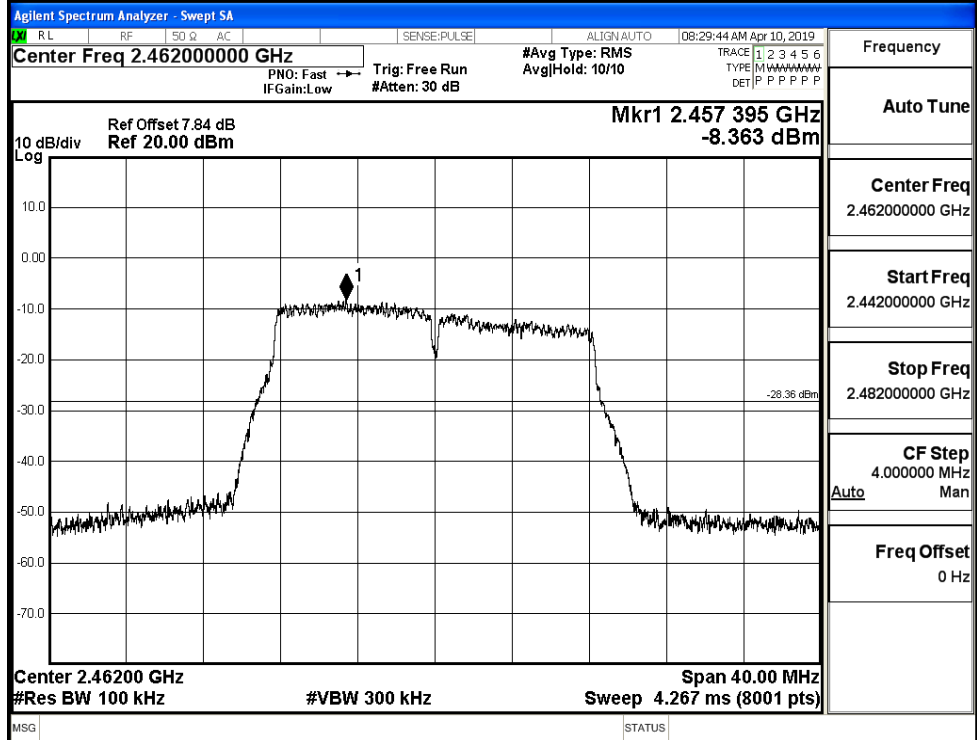


Puw/11G/MCH

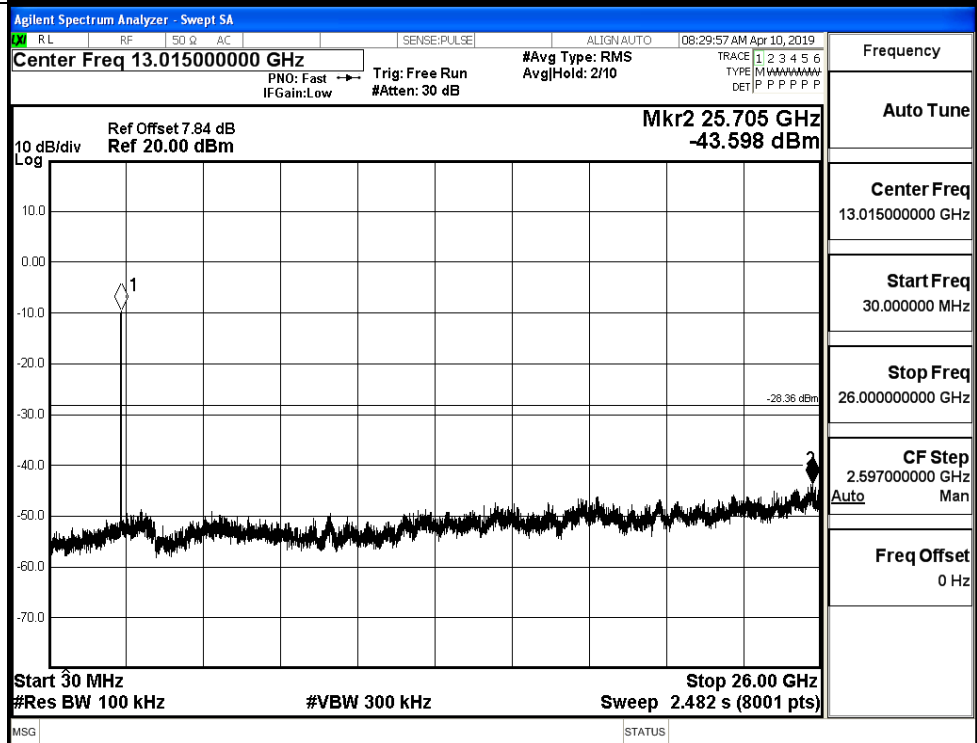


11G HCH Graphs

Pref/11G/HCH

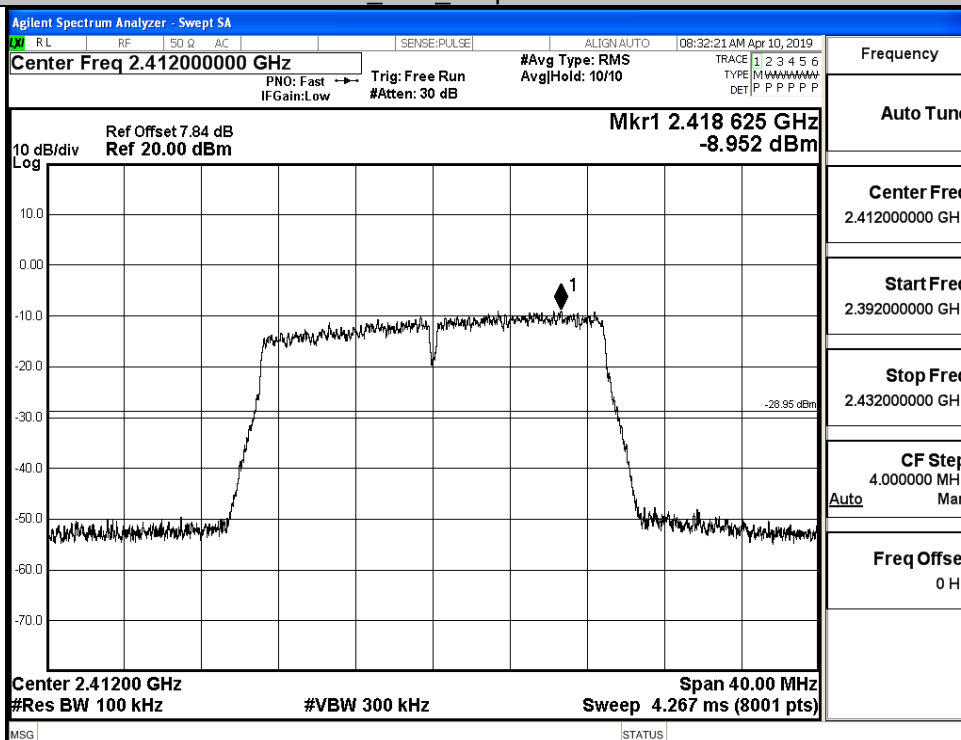


Puw/11G/HCH

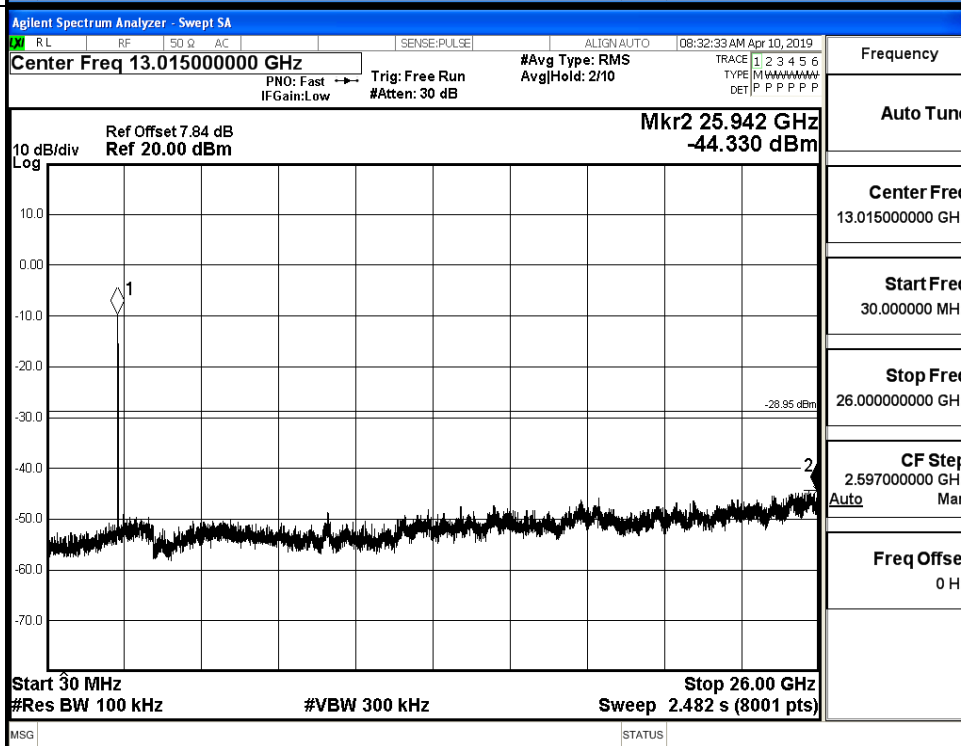


11N20SISO LCH Graphs

Pref/11N20SIS
O/LCH

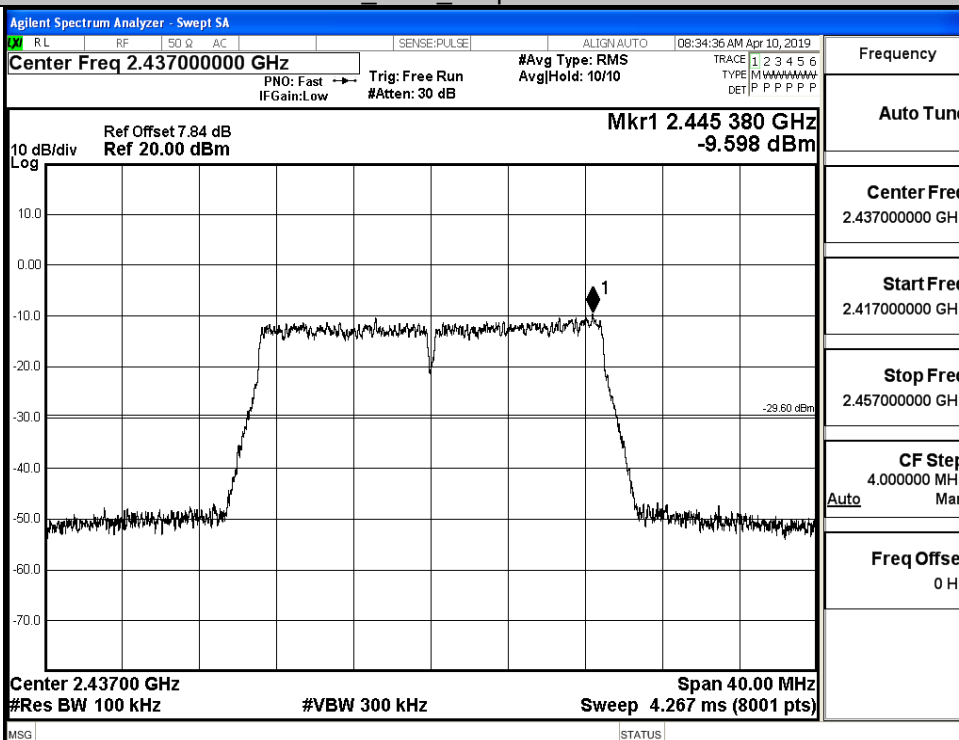


Puw/11N20
SISO/LCH

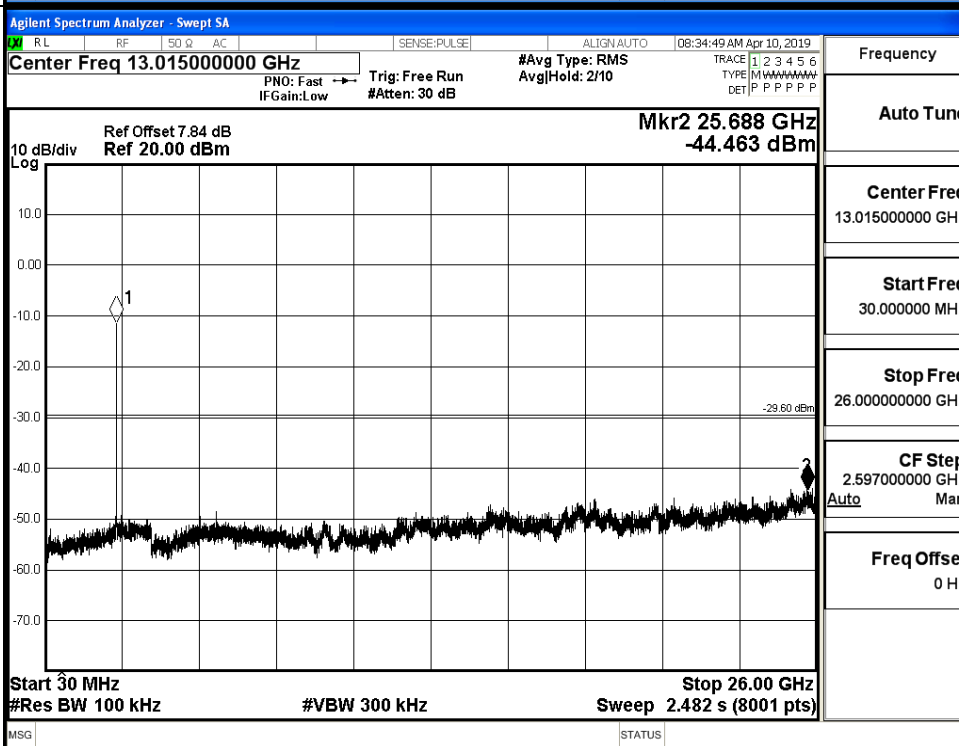


11N20SISO MCH Graphs

Pref/11N20
SISO/MCH

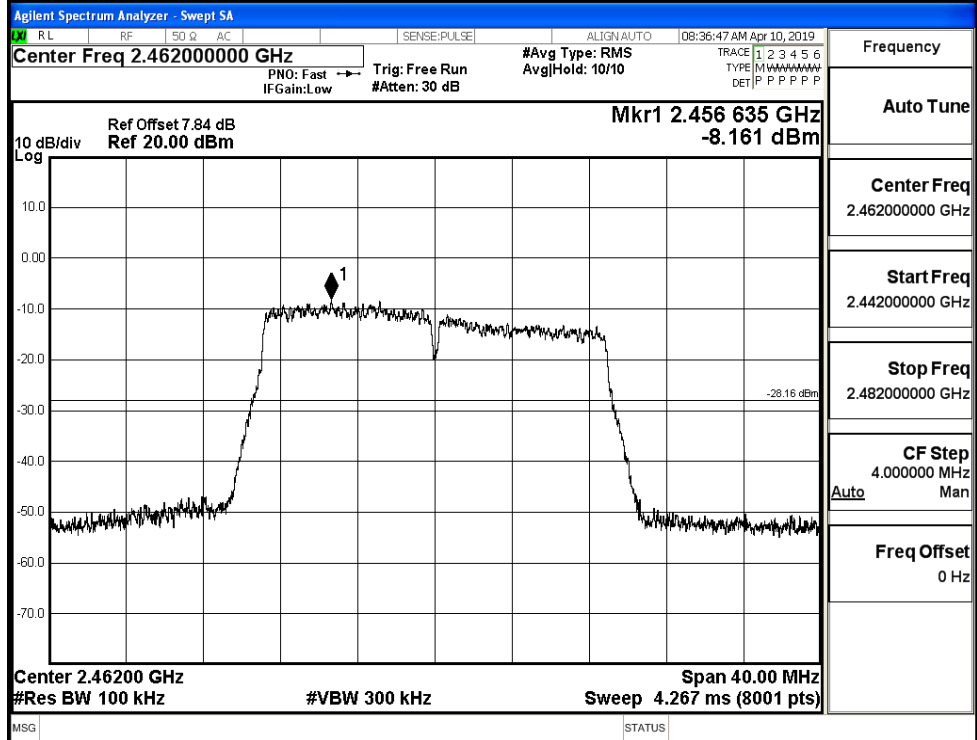


Puw/11N20
SISO/MCH

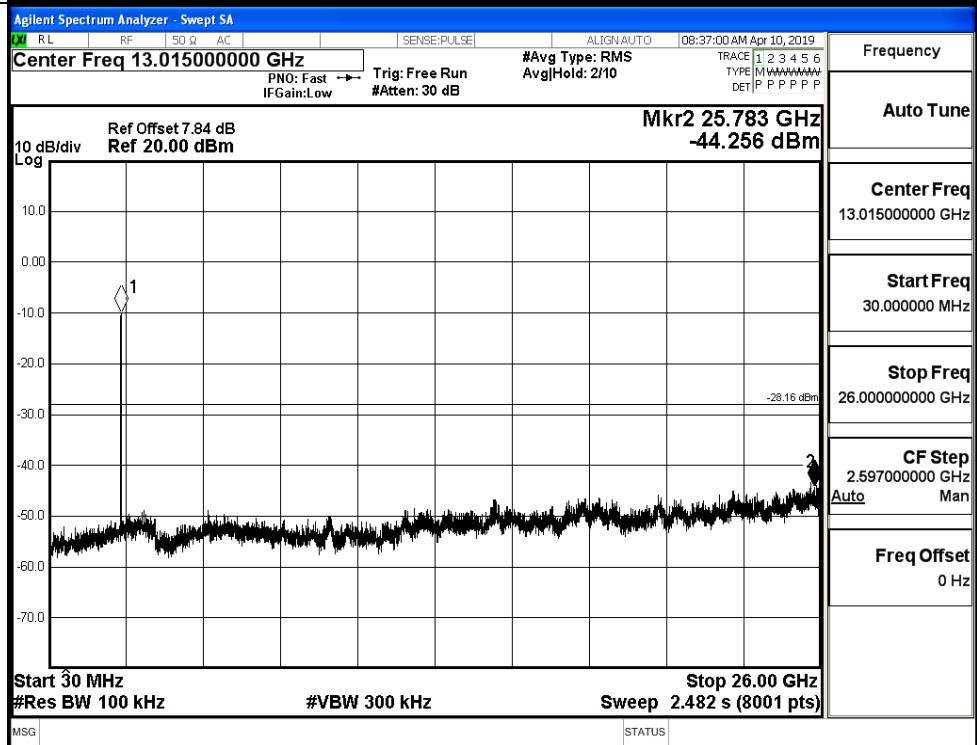


11N20SISO HCH Graphs

Pref/11N20
SISO/HCH

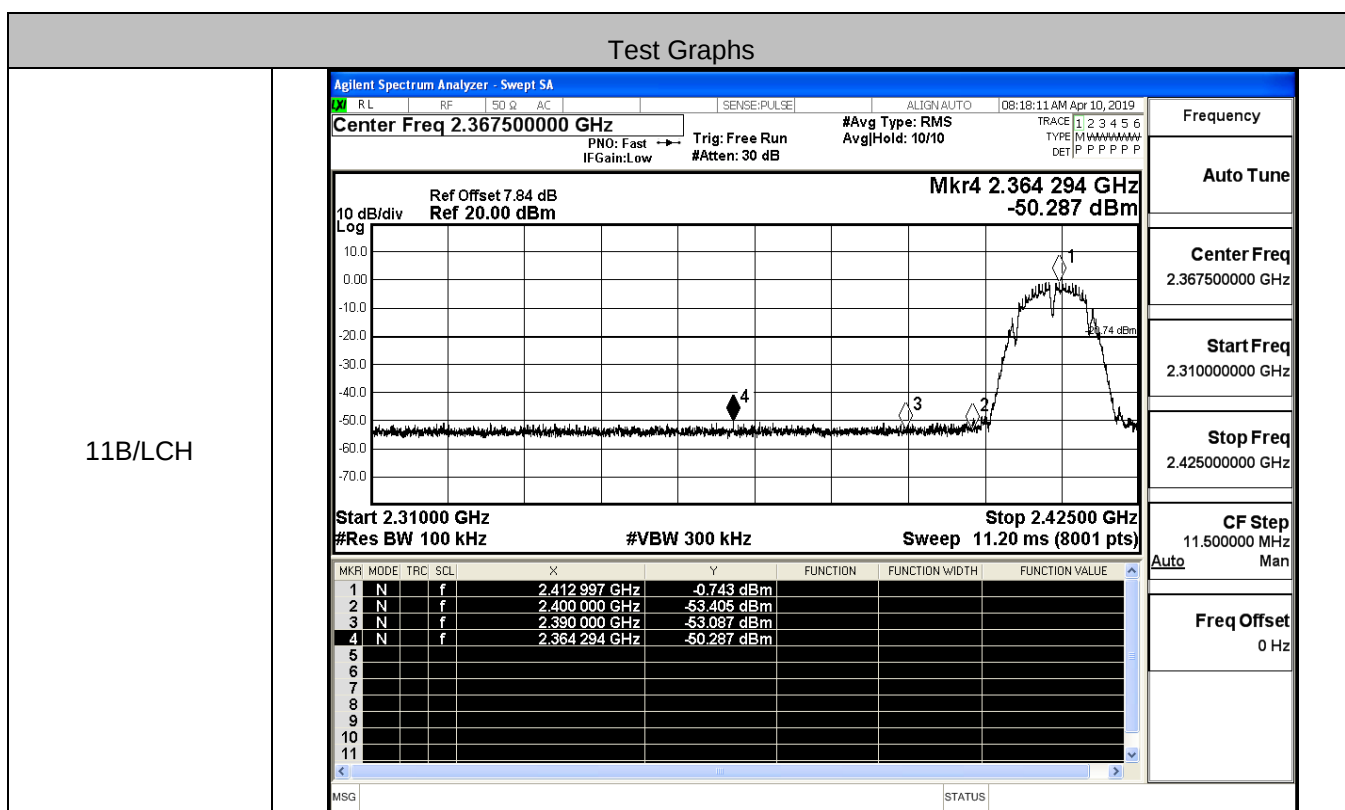


Puw/11N20
SISO/HCH

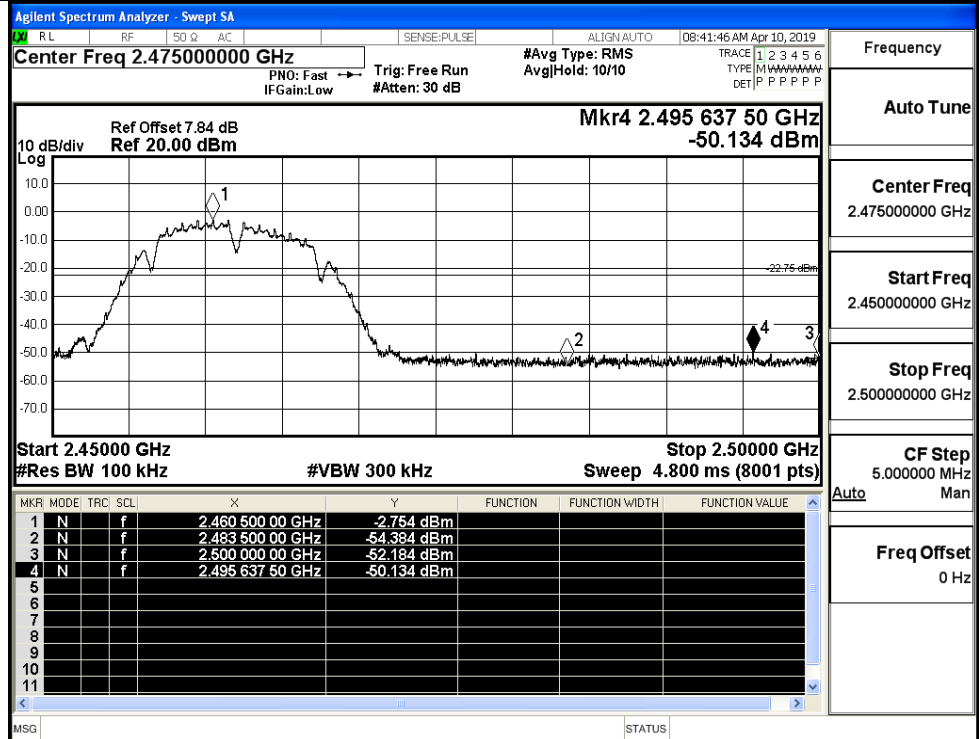


A.6 Band-edge for RF Conducted Emissions

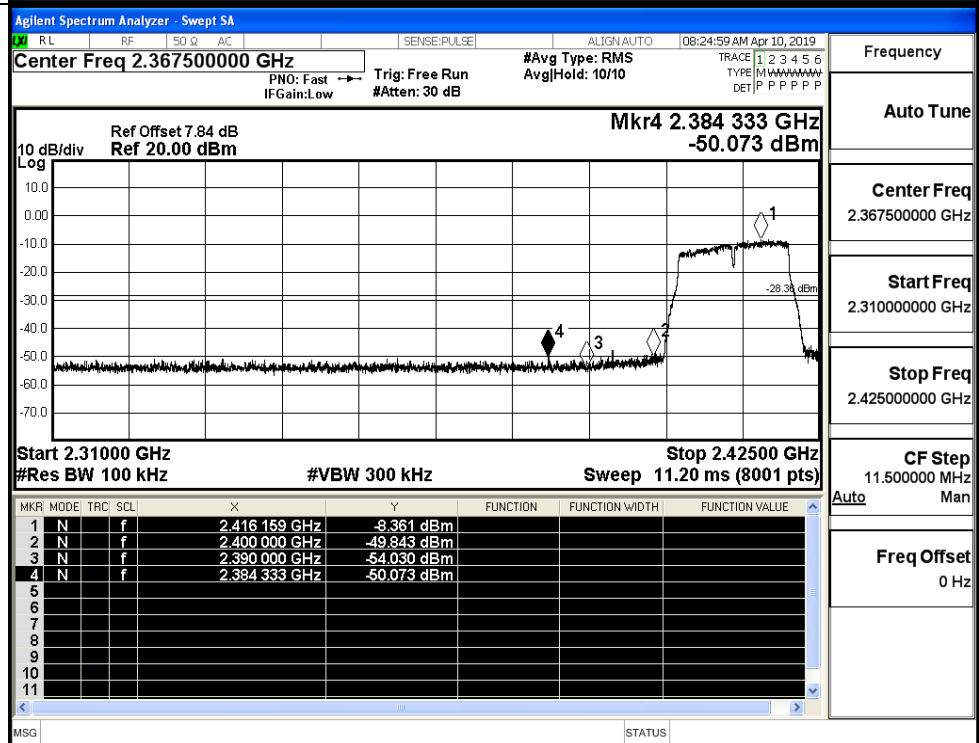
Mode	Channel	Carrier Power[dBm]	Max.Spurious Level [dBm]	Limit [dBm]	Verdict
11B	LCH	-0.743	-50.287	-20.74	PASS
	HCH	-2.754	-50.134	-22.75	PASS
11G	LCH	-8.361	-50.073	-28.36	PASS
	HCH	-8.496	-49.758	-28.5	PASS
11N20SISO	LCH	-9.035	-50.317	-29.04	PASS
	HCH	-8.230	-49.916	-28.23	PASS



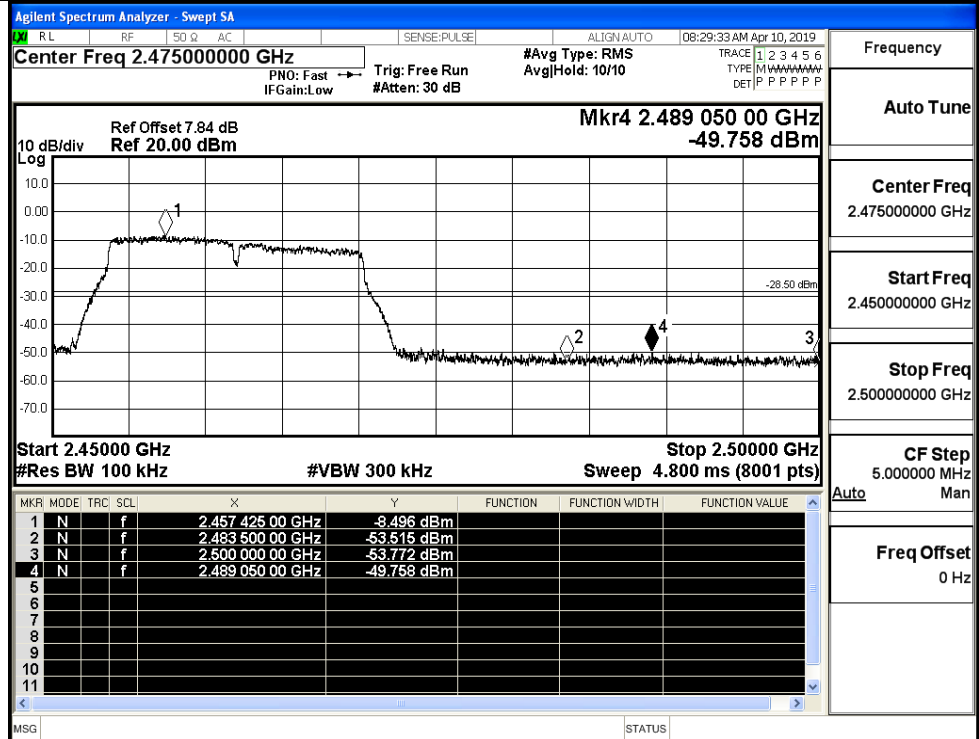
11B/HCH



11G/LCH



11G/HCH



Frequency

Auto Tune

Center Freq
2.475000000 GHz

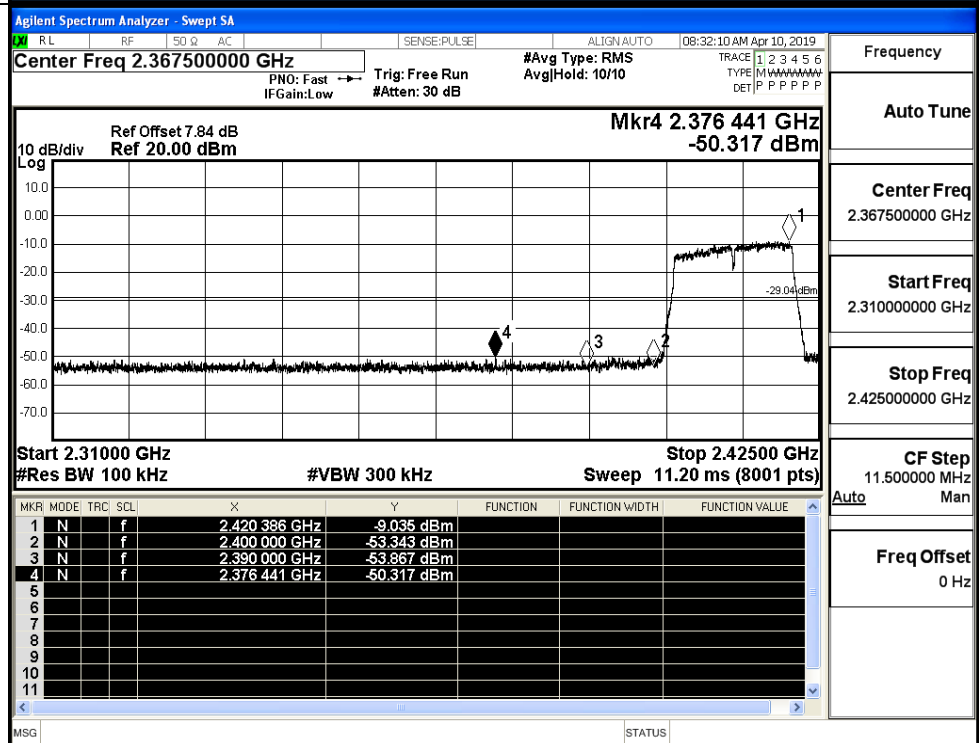
Start Freq
2.450000000 GHz

Stop Freq
2.500000000 GHz

CF Step
5.000000 MHz

Freq Offset
0 Hz

11N20SISO/LCH



Frequency

Auto Tune

Center Freq
2.367500000 GHz

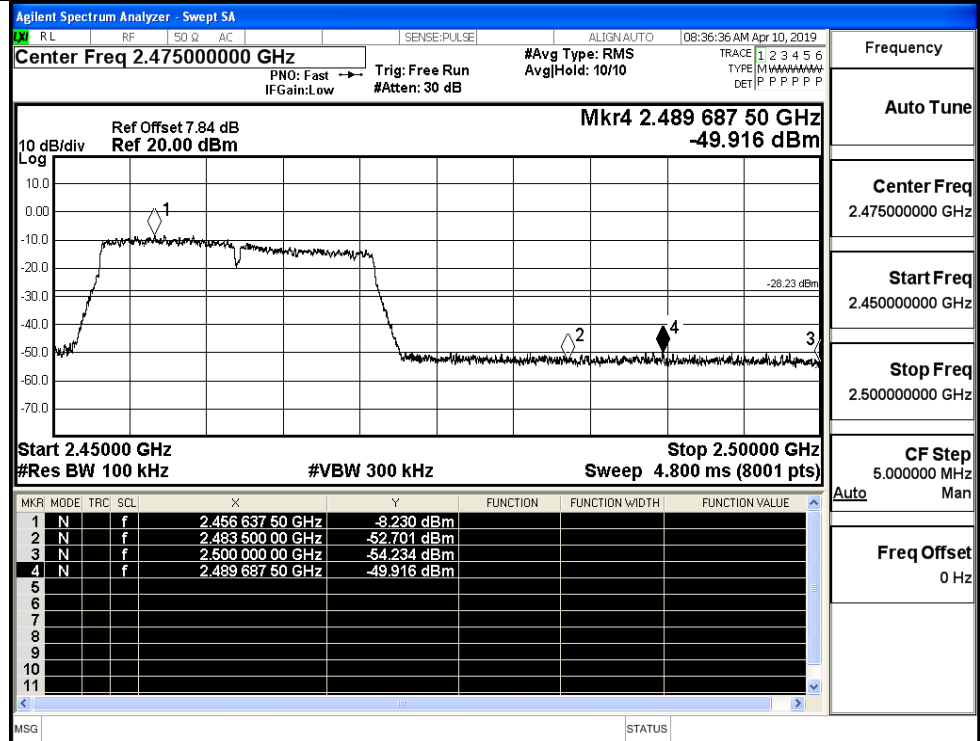
Start Freq
2.310000000 GHz

Stop Freq
2.425000000 GHz

CF Step
11.500000 MHz

Freq Offset
0 Hz

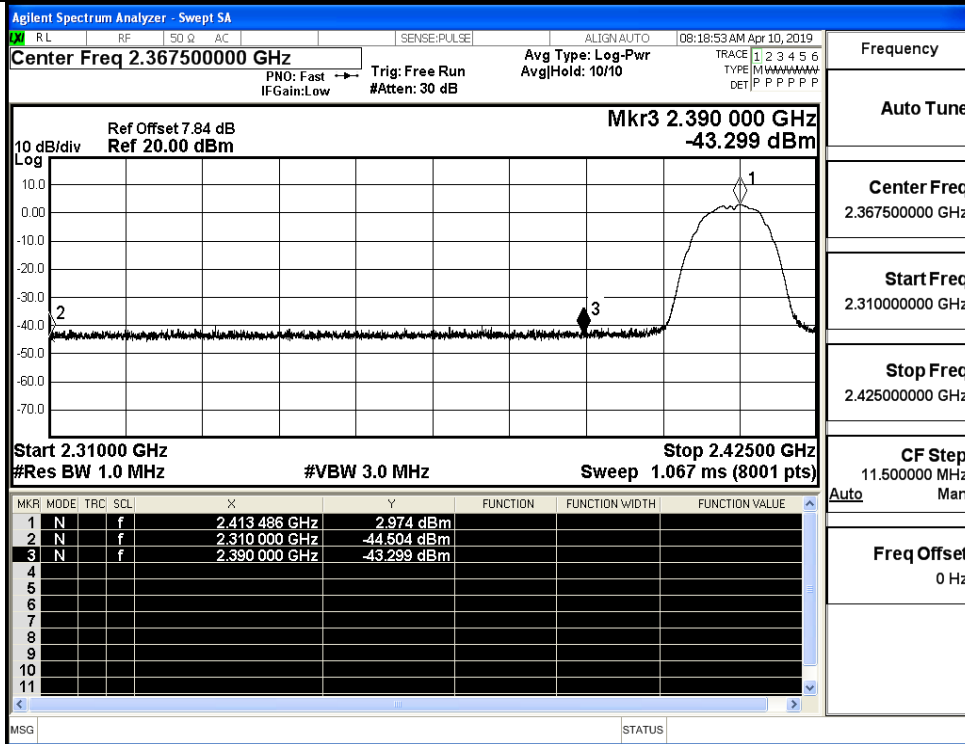
11N20SISO/HCH



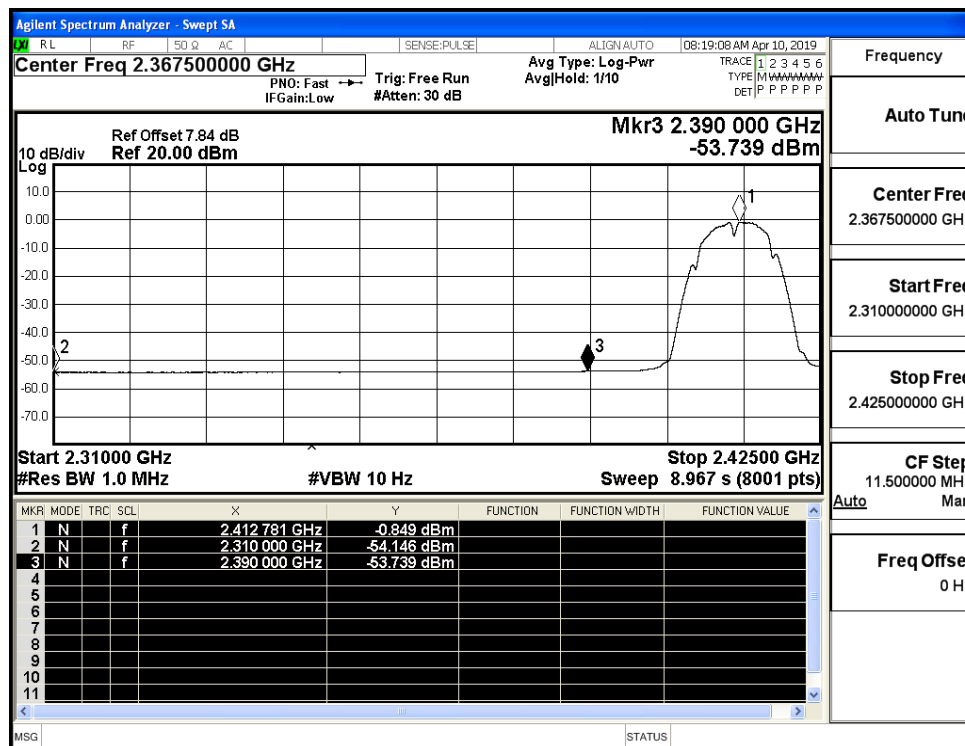
A.7 Restrict-band band-edge measurements

Test Mode	Test Channel	Ant	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
11B	2412	Ant1	2310.0	-44.50	2.0	0	52.75	PEAK	74	PASS
	2412	Ant1	2310.0	-54.15	2.0	0	43.11	AV	54	PASS
	2412	Ant1	2390.0	-43.30	2.0	0	53.96	PEAK	74	PASS
	2412	Ant1	2390.0	-53.74	2.0	0	43.52	AV	54	PASS
	2462	Ant1	2483.5	-41.56	2.0	0	55.70	PEAK	74	PASS
	2462	Ant1	2483.5	-53.60	2.0	0	43.65	AV	54	PASS
	2462	Ant1	2500.0	-41.38	2.0	0	55.88	PEAK	74	PASS
	2462	Ant1	2500.0	-53.55	2.0	0	43.71	AV	54	PASS
11G	2412	Ant1	2310.0	-44.26	2.0	0	53.00	PEAK	74	PASS
	2412	Ant1	2310.0	-54.13	2.0	0	43.13	AV	54	PASS
	2412	Ant1	2390.0	-43.81	2.0	0	53.45	PEAK	74	PASS
	2412	Ant1	2390.0	-53.64	2.0	0	43.62	AV	54	PASS
	2462	Ant1	2483.5	-43.69	2.0	0	53.57	PEAK	74	PASS
	2462	Ant1	2483.5	-53.21	2.0	0	44.05	AV	54	PASS
	2462	Ant1	2500.0	-42.20	2.0	0	55.06	PEAK	74	PASS
	2462	Ant1	2500.0	-53.43	2.0	0	43.82	AV	54	PASS
11N20 SISO	2412	Ant1	2310.0	-43.53	2.0	0	53.73	PEAK	74	PASS
	2412	Ant1	2310.0	-54.12	2.0	0	43.13	AV	54	PASS
	2412	Ant1	2390.0	-43.22	2.0	0	54.04	PEAK	74	PASS
	2412	Ant1	2390.0	-53.57	2.0	0	43.68	AV	54	PASS
	2462	Ant1	2483.5	-42.67	2.0	0	54.59	PEAK	74	PASS
	2462	Ant1	2483.5	-53.13	2.0	0	44.12	AV	54	PASS
	2462	Ant1	2500.0	-43.06	2.0	0	54.20	PEAK	74	PASS
	2462	Ant1	2500.0	-53.43	2.0	0	43.83	AV	54	PASS

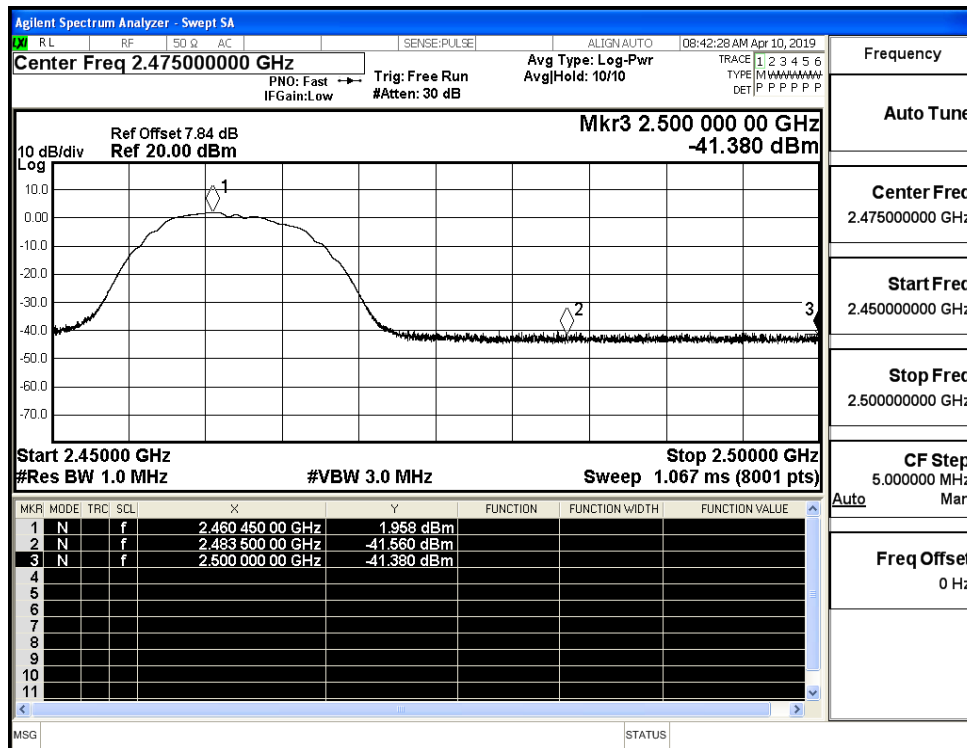
Restrict-band band-edge measurements_11B_2412_Ant1_PEAK



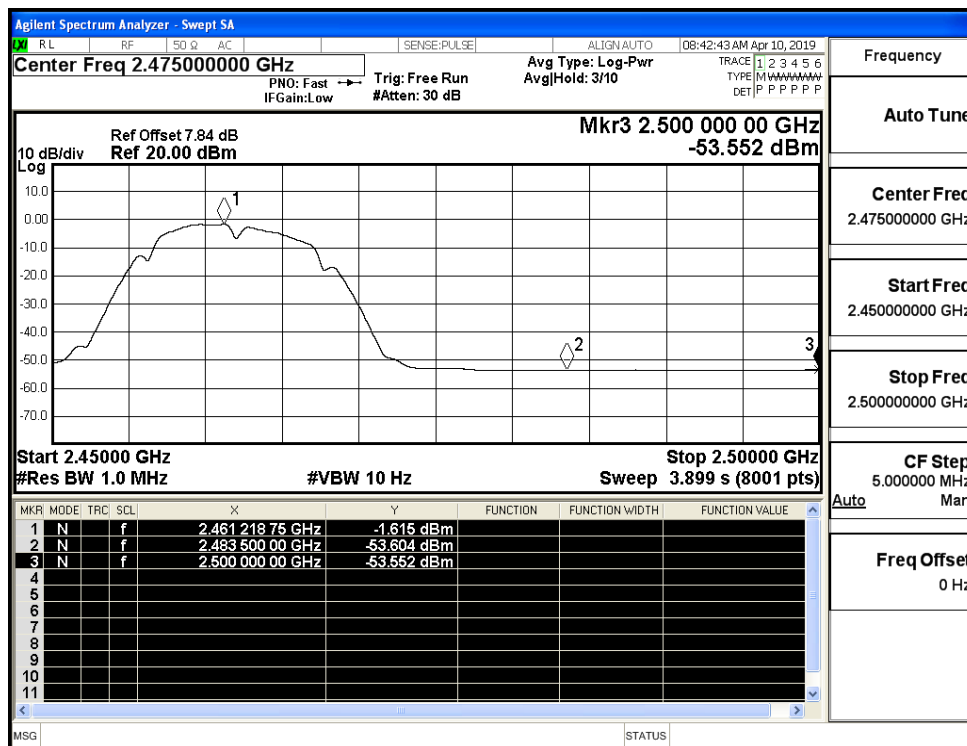
Restrict-band band-edge measurements_11B_2412_Ant1_AV



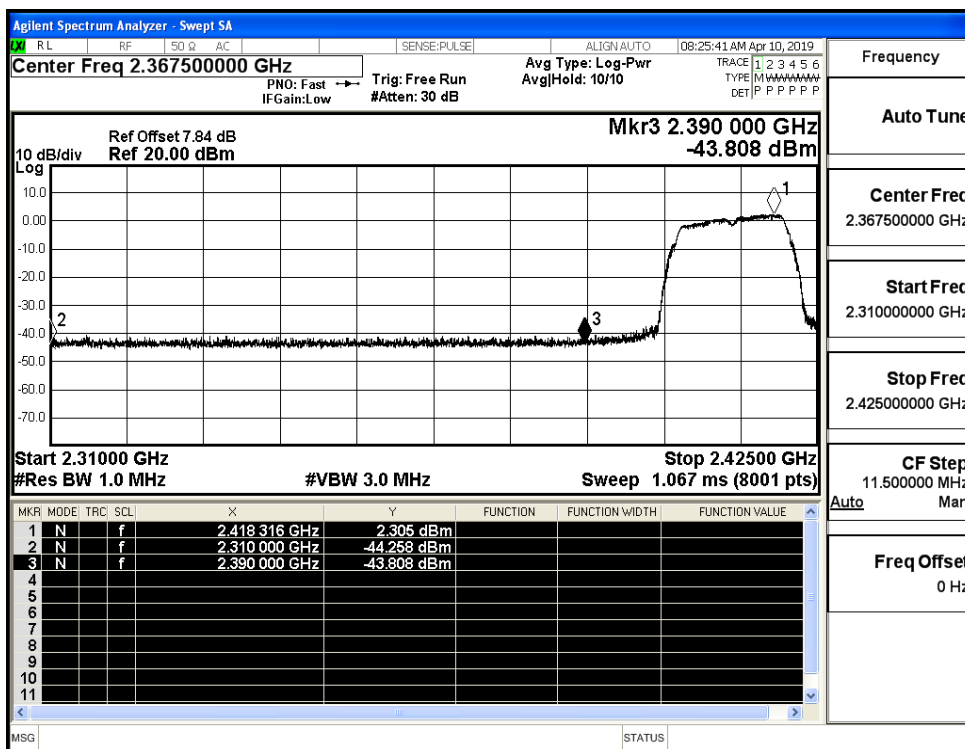
Restrict-band band-edge measurements_11B_2462_Ant1_PEAK



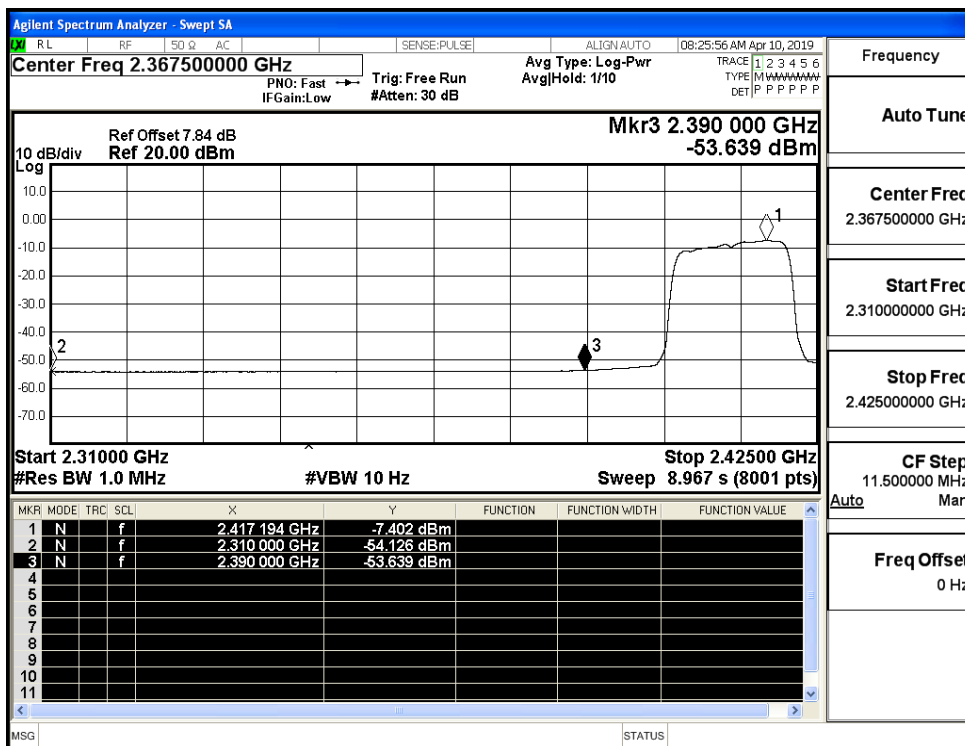
Restrict-band band-edge measurements_11B_2462_Ant1_AV



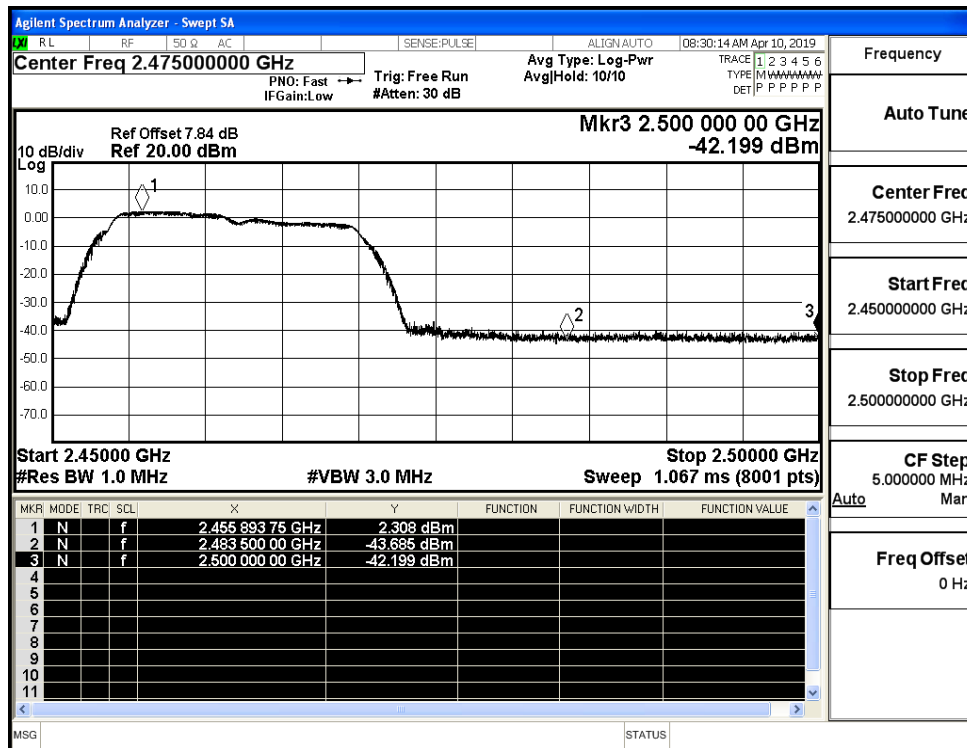
Restrict-band band-edge measurements_11G_2412_Ant1_PEAK



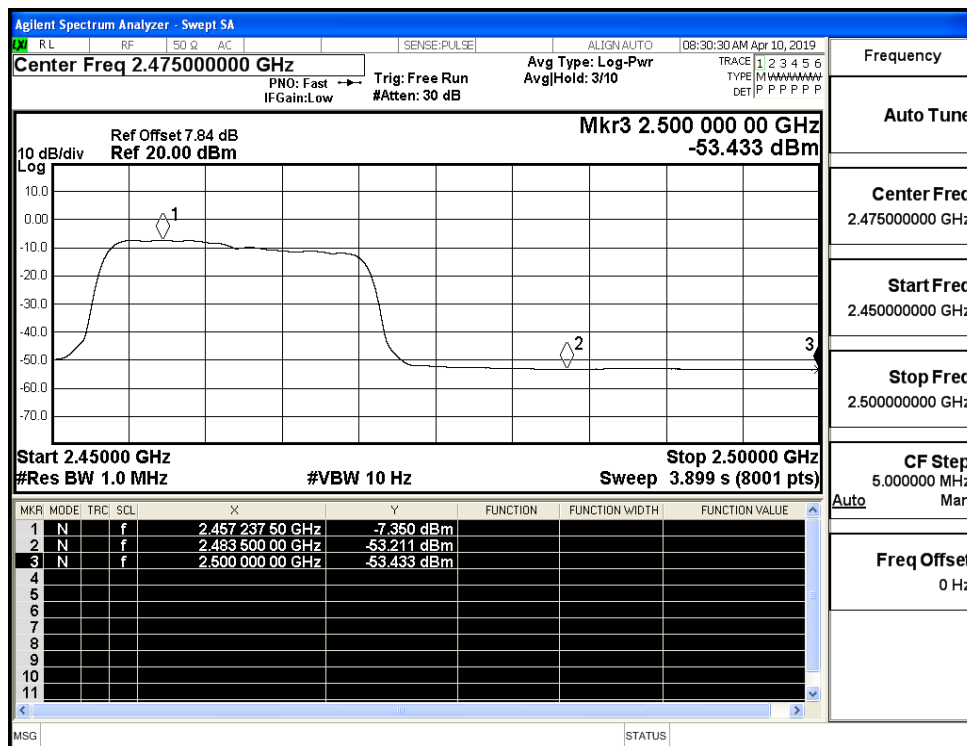
Restrict-band band-edge measurements_11G_2412_Ant1_AV



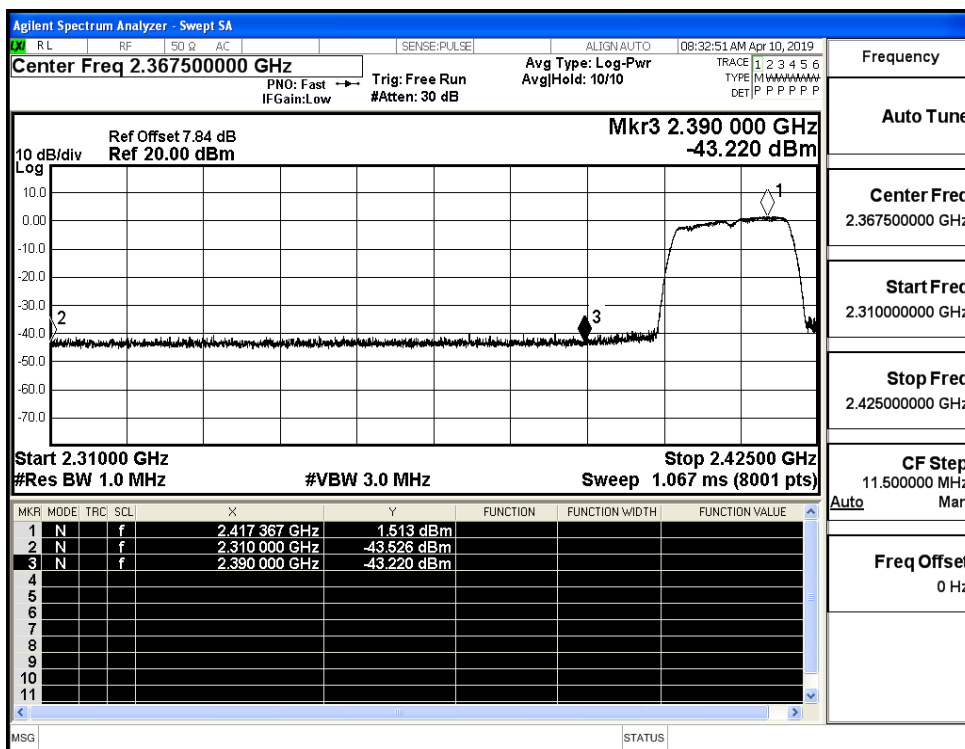
Restrict-band band-edge measurements_11G_2462_Ant1_PEAK



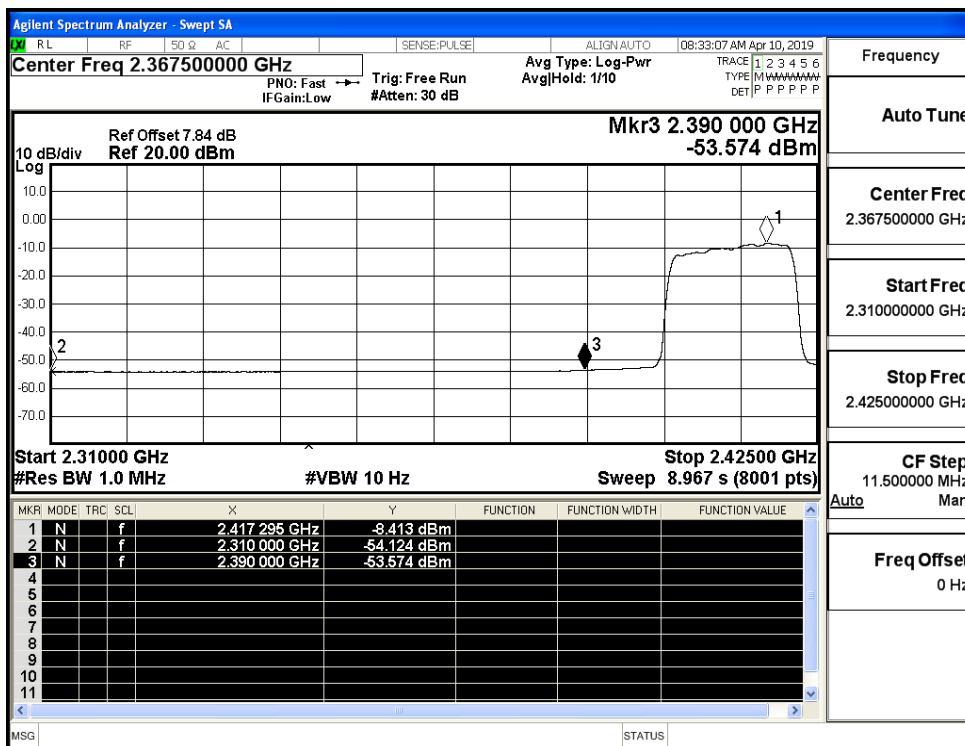
Restrict-band band-edge measurements_11G_2462_Ant1_AV



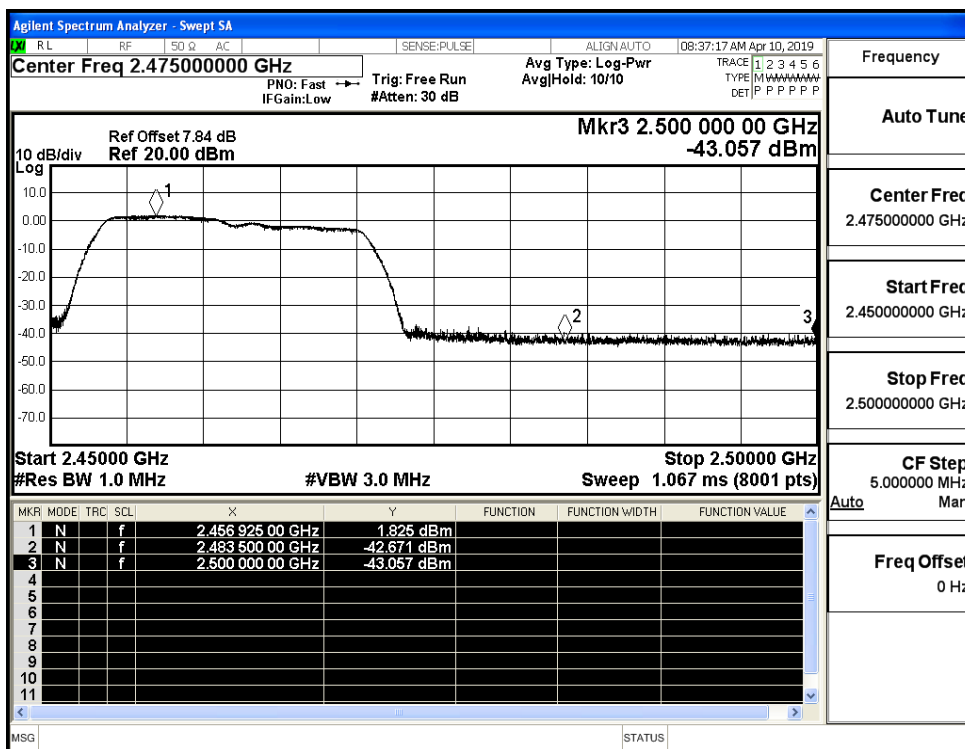
Restrict-band band-edge measurements_11N20SISO_2412_Ant1_PEAK



Restrict-band band-edge measurements_11N20SISO_2412_Ant1_AV



Restrict-band band-edge measurements_11N20SISO_2462_Ant1_PEAK



Restrict-band band-edge measurements_11N20SISO_2462_Ant1_AV

