

Appendix B

RF Test Data for 2.4G WIFI (Conducted Measurement)

Product Name: Smart Gateway

Trade Mark: HEIMAN

Test Model: HS1GW-E-2

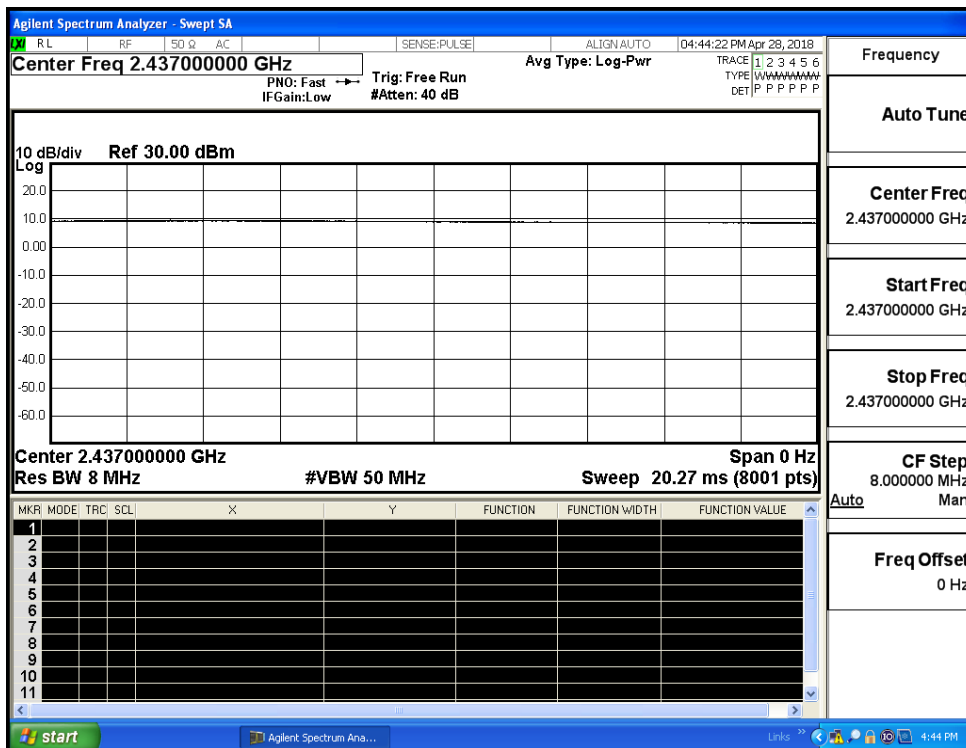
Environmental Conditions

Temperature:	22.6 ° C
Relative Humidity:	51.3%
ATM Pressure:	100.0 kPa
Test Engineer:	Tom.Liu
Supervised by:	Jayden.Zhuo

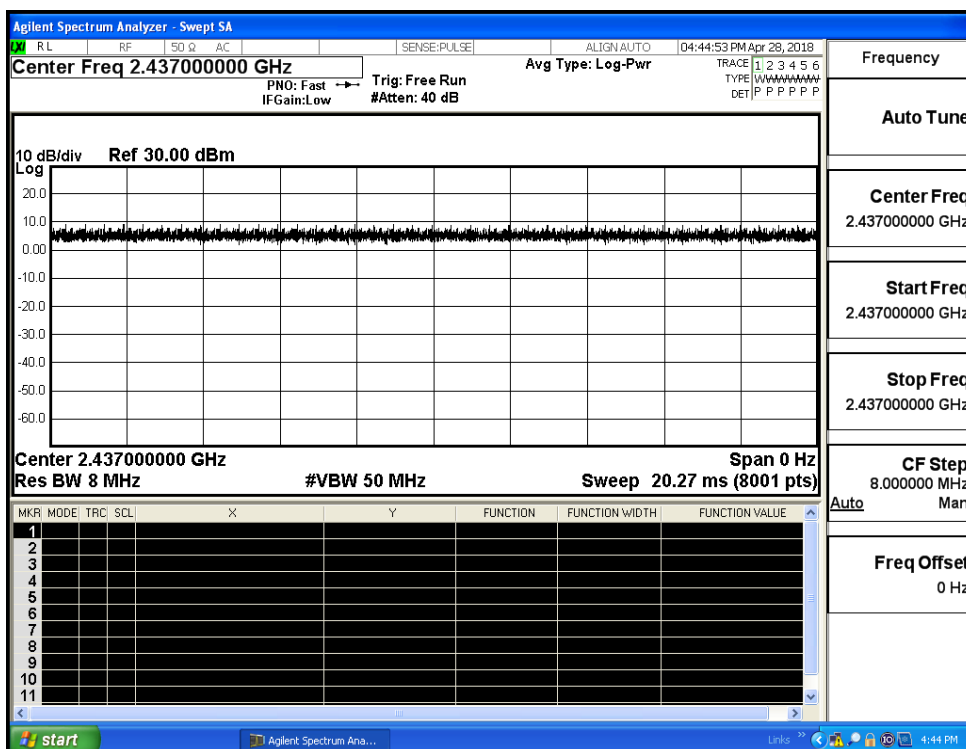
B.1 Duty Cycle

Test Mode	Test Channel	Ant	Duty Cycle[%]	Verdict
11B	2437	Ant0	100	PASS
11G	2437	Ant0	100	PASS
11N20SISO	2437	Ant0	100	PASS
11N40SISO	2437	Ant0	100	PASS

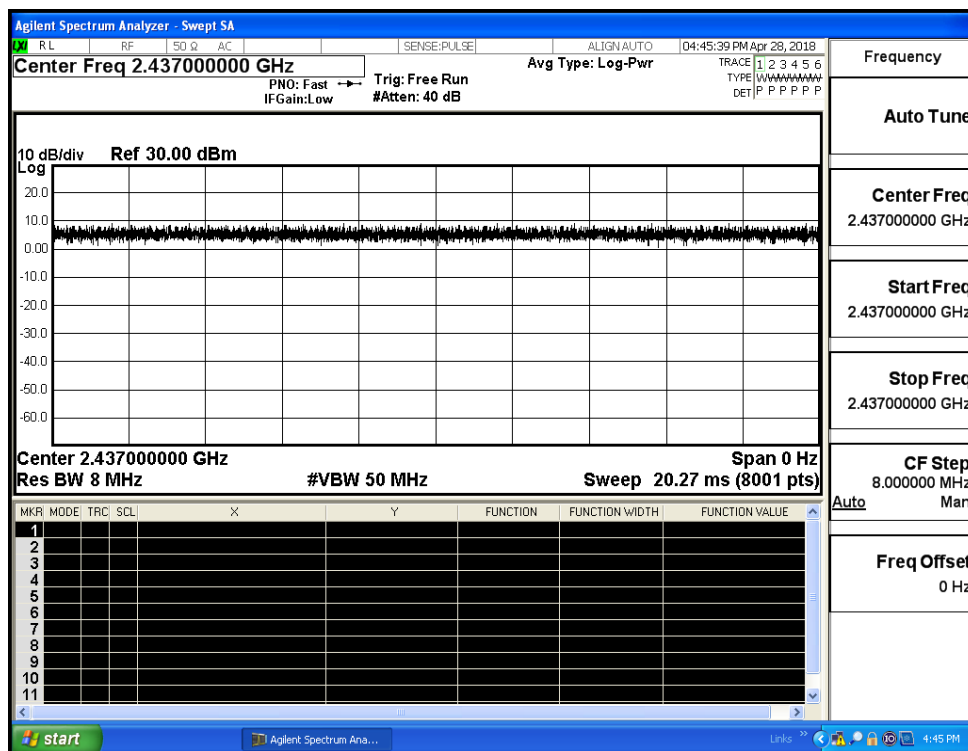
Duty Cycle_11B_2437_Ant0



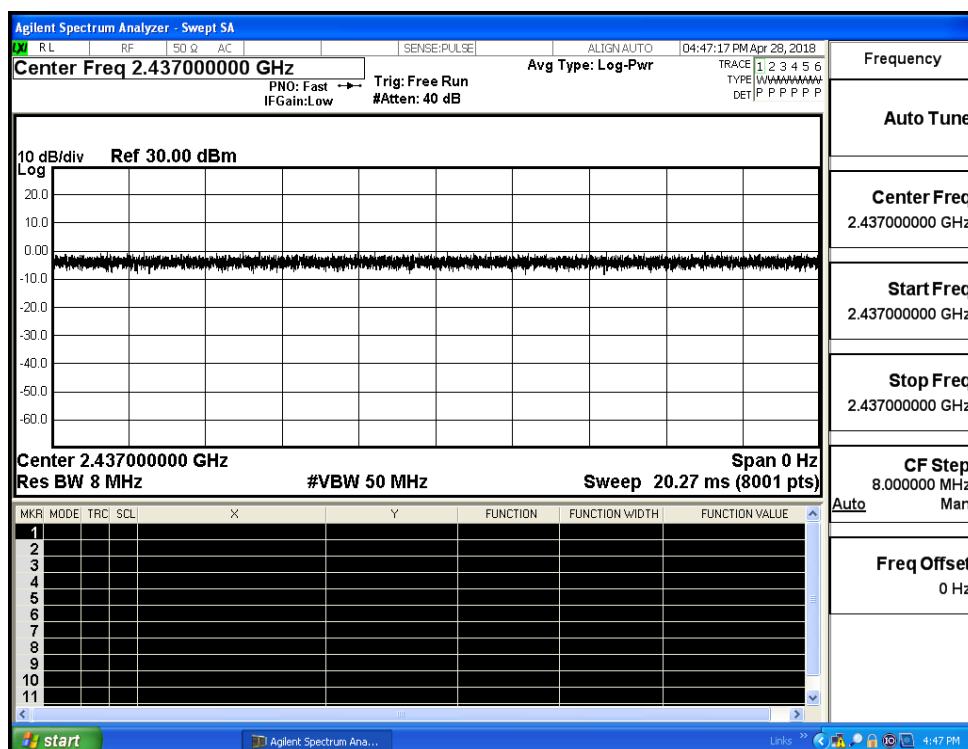
Duty Cycle_11G_2437_Ant0



Duty Cycle_11N20SISO_2437_Ant0



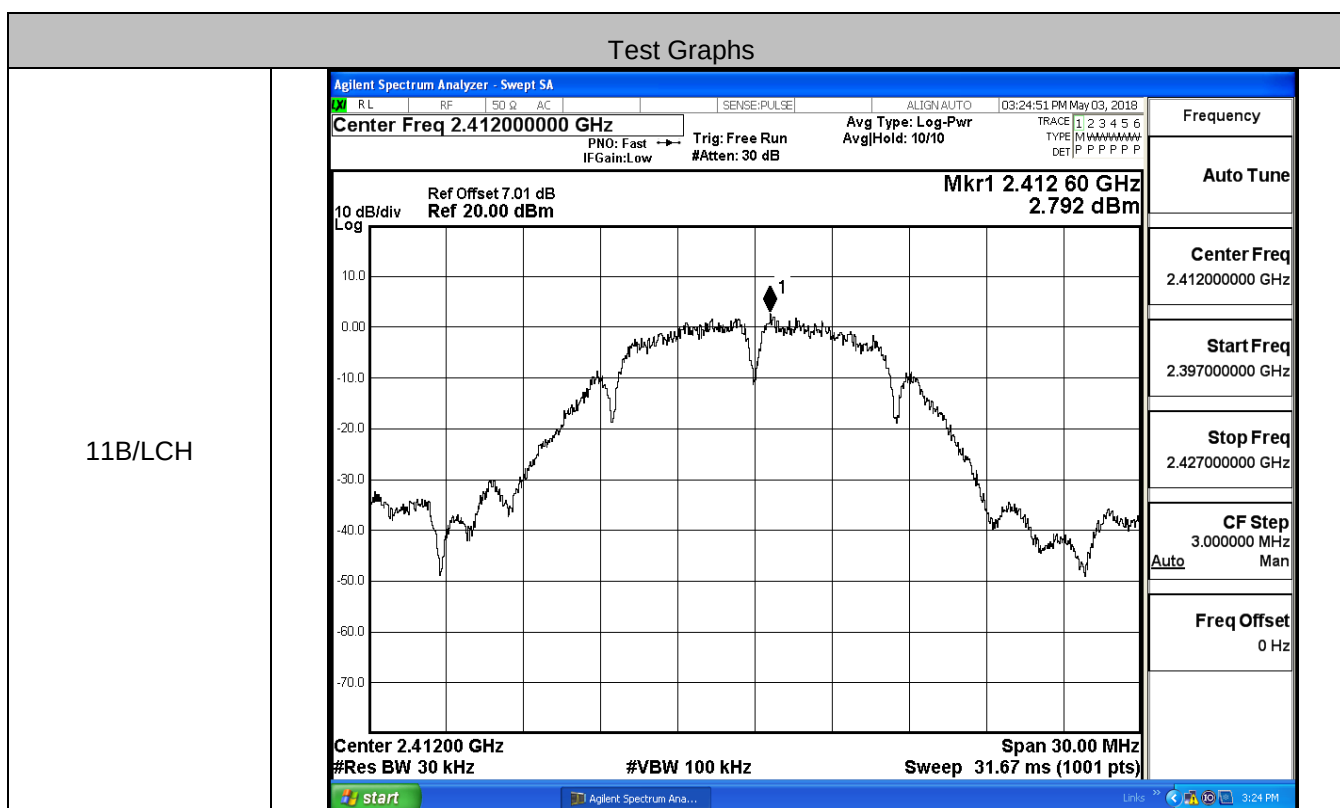
Duty Cycle_11N40SISO_2437_Ant0



B.2 Maximum Conducted Output Power

Mode	Channel	Meas.Level [dBm]	Limit [dBm]	Verdict
11B	LCH	18.65	30	PASS
	MCH	18.77	30	PASS
	HCH	18.62	30	PASS
11G	LCH	18.33	30	PASS
	MCH	18.15	30	PASS
	HCH	18.24	30	PASS
11N20SISO	LCH	17.32	30	PASS
	MCH	17.59	30	PASS
	HCH	17.66	30	PASS
11N40SISO	LCH	16.32	30	PASS
	MCH	16.89	30	PASS
	HCH	16.78	30	PASS

Mode	Channel	Meas.Level [dBm/30KHz]	Limit [dBm/3KHz]	Verdict
11B	LCH	2.792	8	PASS
	MCH	2.423	8	PASS
	HCH	2.818	8	PASS
11G	LCH	-2.014	8	PASS
	MCH	-2.726	8	PASS
	HCH	-1.785	8	PASS
11N20SISO	LCH	-2.403	8	PASS
	MCH	-1.960	8	PASS
	HCH	-1.822	8	PASS
11N40SISO	LCH	-6.189	8	PASS
	MCH	-5.579	8	PASS
	HCH	-5.622	8	PASS



11B/MCH



Frequency

Auto Tune

Center Freq
2.437000000 GHzStart Freq
2.422000000 GHzStop Freq
2.452000000 GHzCF Step
3.000000 MHz
Auto ManFreq Offset
0 Hz

11B/HCH

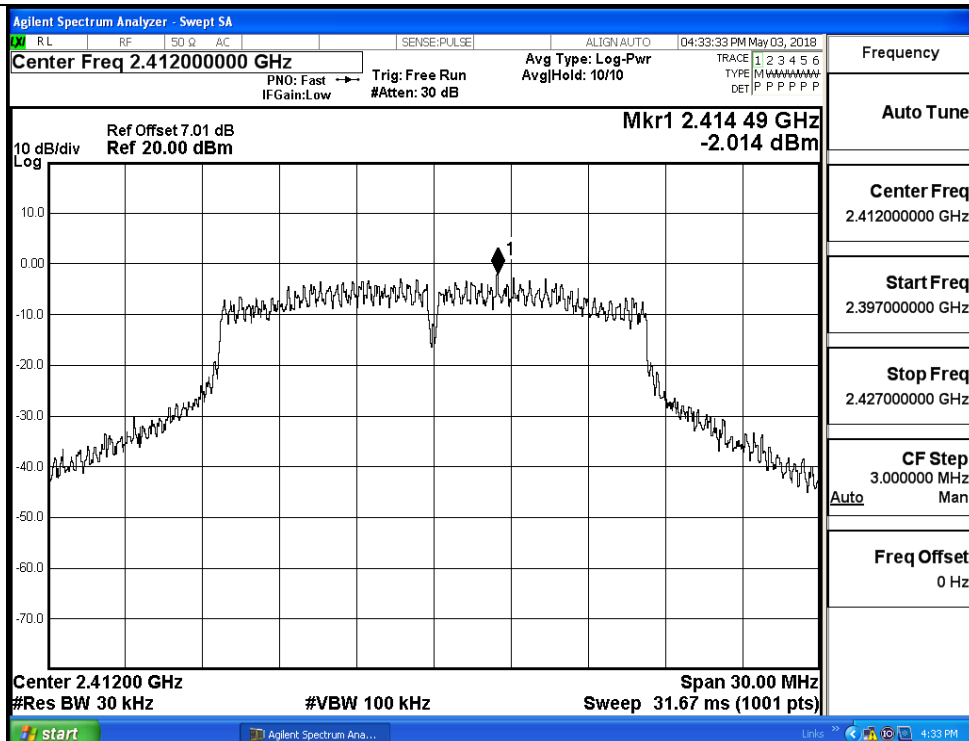


Frequency

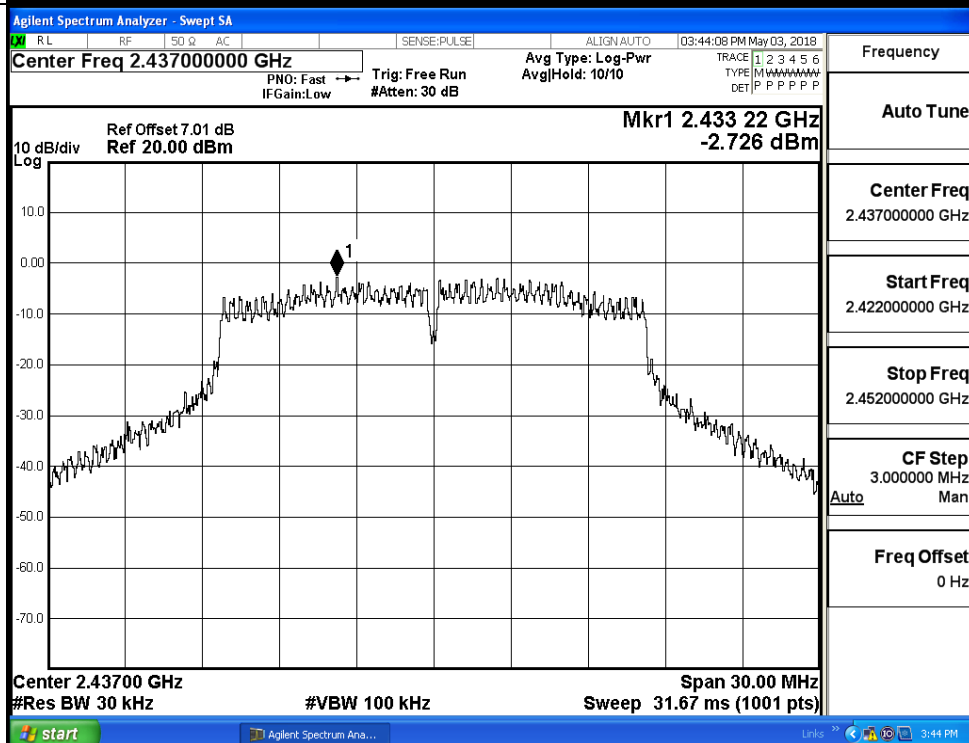
Auto Tune

Center Freq
2.462000000 GHzStart Freq
2.447000000 GHzStop Freq
2.477000000 GHzCF Step
3.000000 MHz
Auto ManFreq Offset
0 Hz

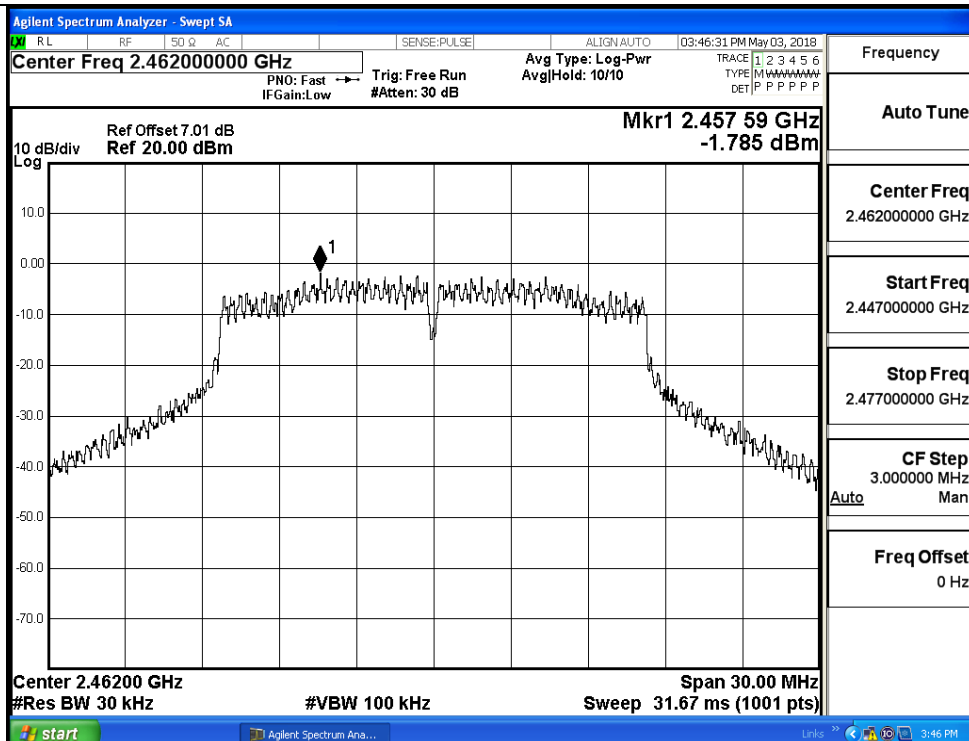
11G/LCH



11G/MCH



11G/HCH

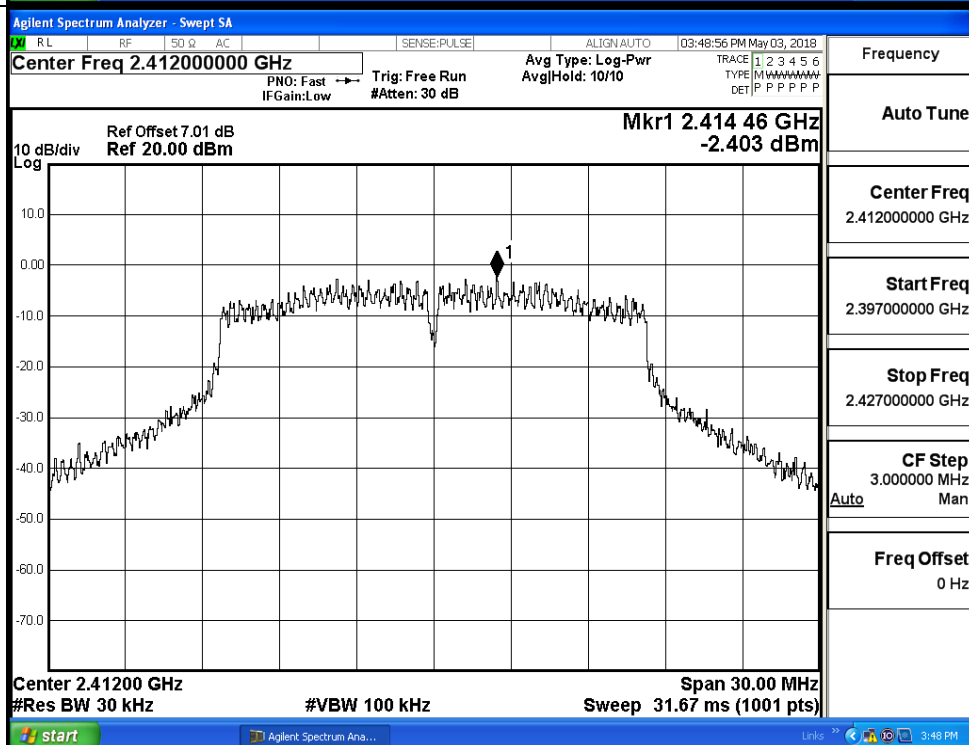


Frequency

Auto Tune

Center Freq
2.46200000 GHzStart Freq
2.447000000 GHzStop Freq
2.477000000 GHzCF Step
3.000000 MHz
Auto ManFreq Offset
0 Hz

11N20SISO/LCH

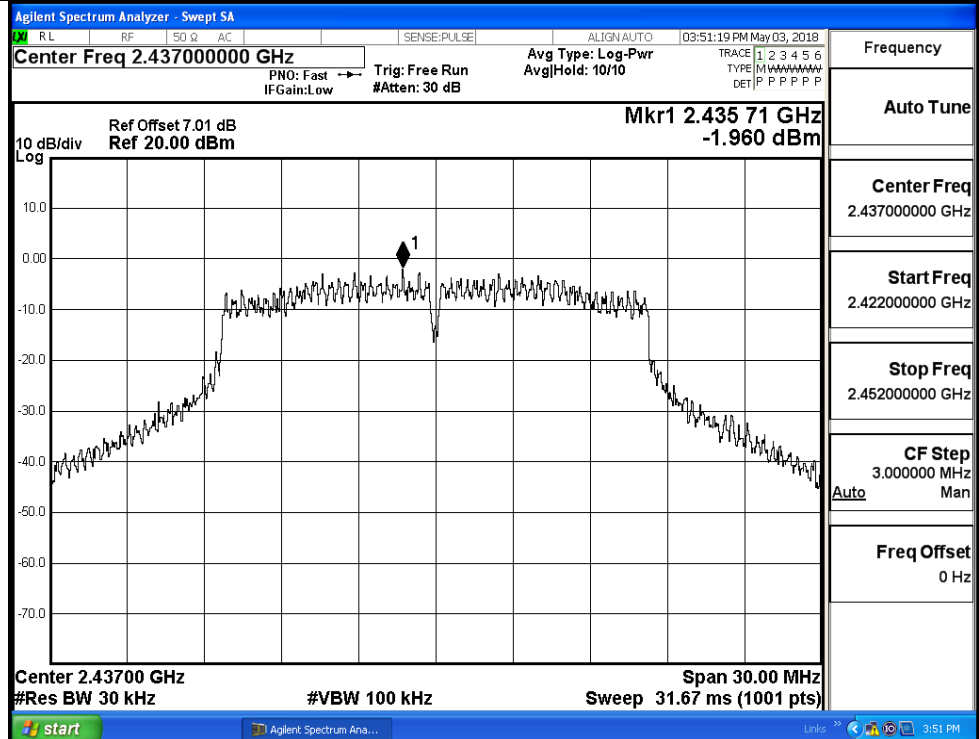


Frequency

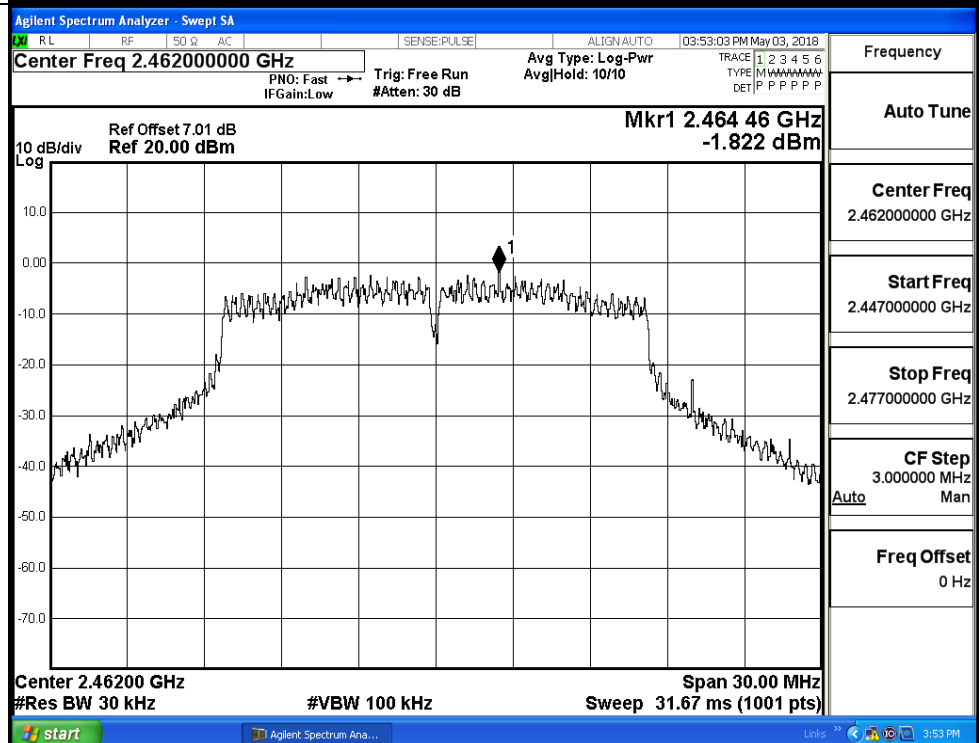
Auto Tune

Center Freq
2.41200000 GHzStart Freq
2.397000000 GHzStop Freq
2.427000000 GHzCF Step
3.000000 MHz
Auto ManFreq Offset
0 Hz

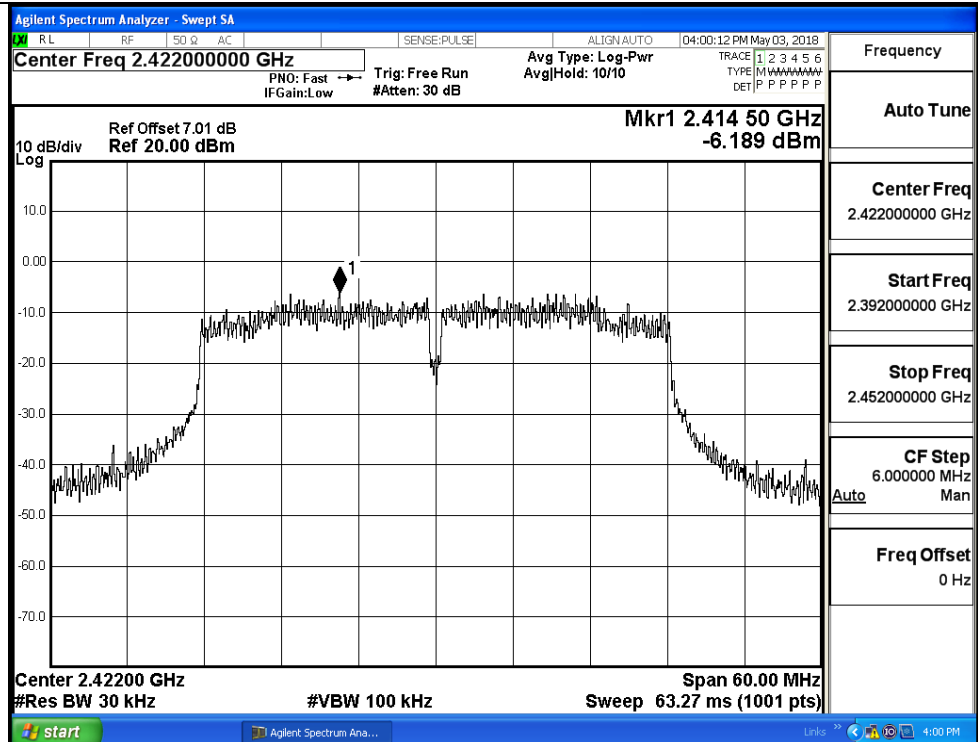
11N20SISO/MCH



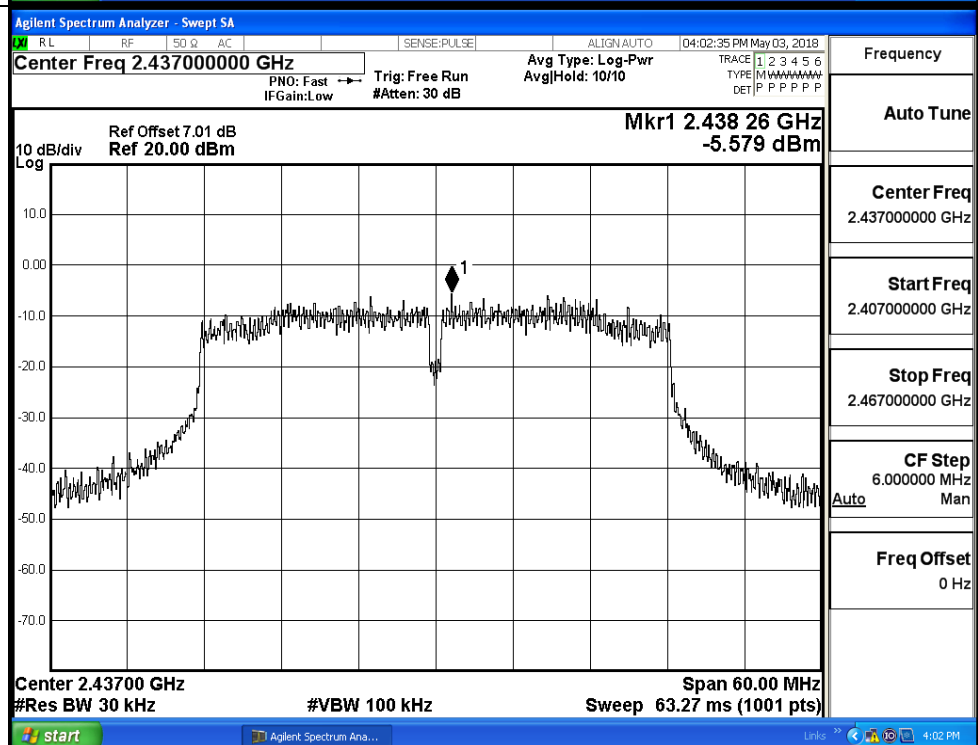
11N20SISO/HCH



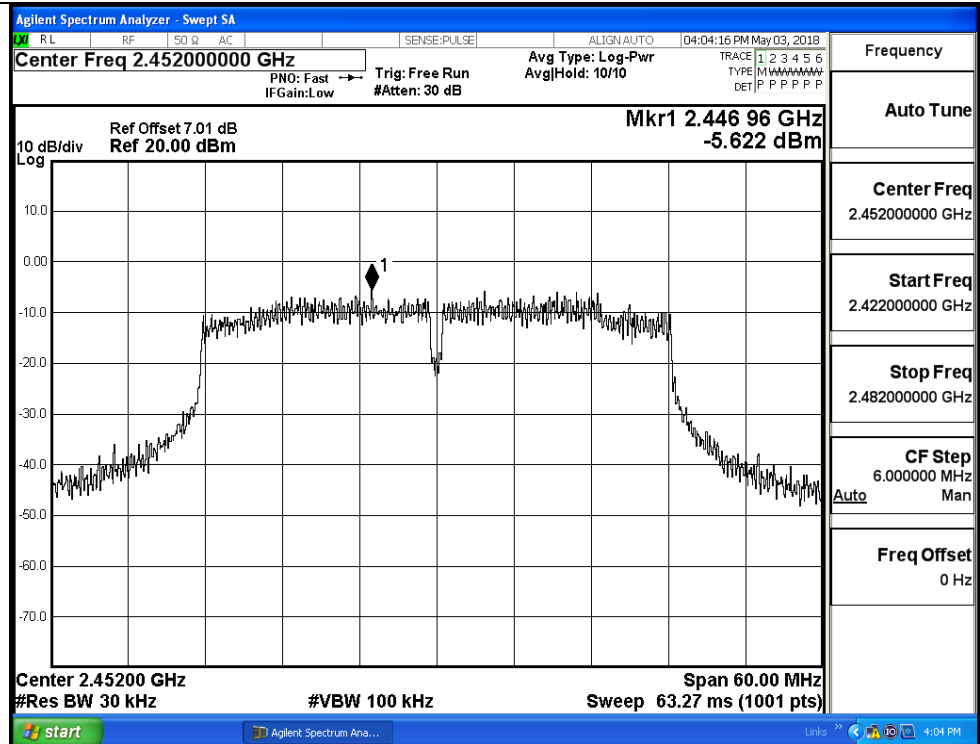
11N40SISO/LCH



11N40SISO/MCH



11N40SISO/HCH

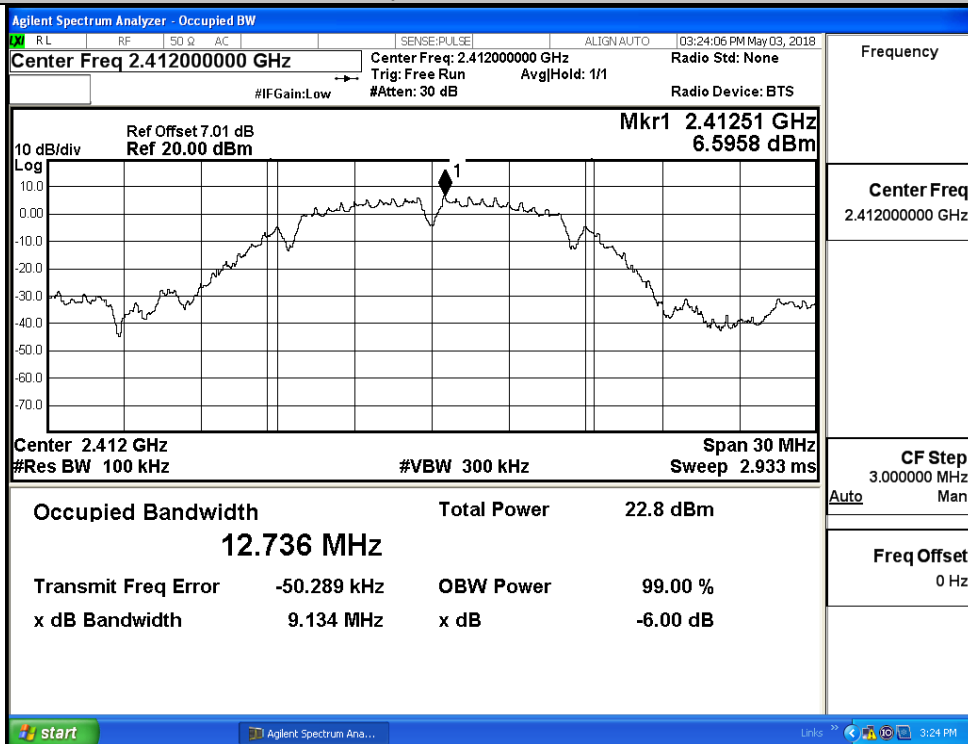


B.4 6dB Bandwidth

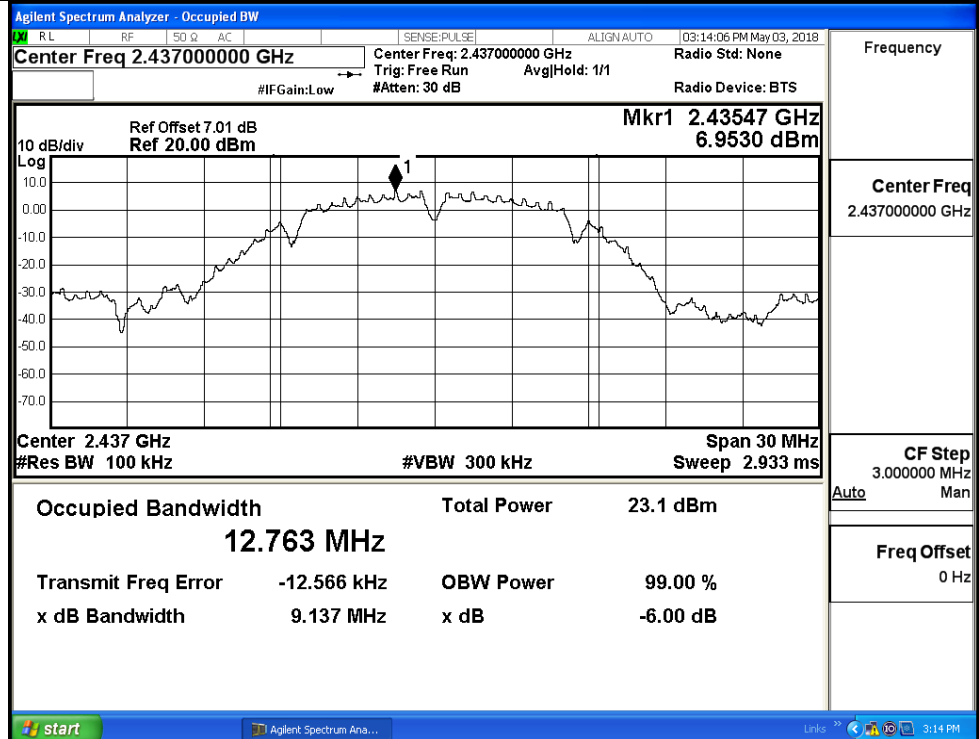
Mode	Channel	6dB Bandwidth [MHz]	Limit [MHz]	Verdict
11B	LCH	9.134	≥ 0.5	PASS
	MCH	9.137	≥ 0.5	PASS
	HCH	9.153	≥ 0.5	PASS
11G	LCH	15.09	≥ 0.5	PASS
	MCH	15.15	≥ 0.5	PASS
	HCH	15.10	≥ 0.5	PASS
11N20SISO	LCH	15.14	≥ 0.5	PASS
	MCH	15.14	≥ 0.5	PASS
	HCH	15.10	≥ 0.5	PASS
11N40SISO	LCH	35.15	≥ 0.5	PASS
	MCH	35.14	≥ 0.5	PASS
	HCH	35.16	≥ 0.5	PASS

Test Graphs

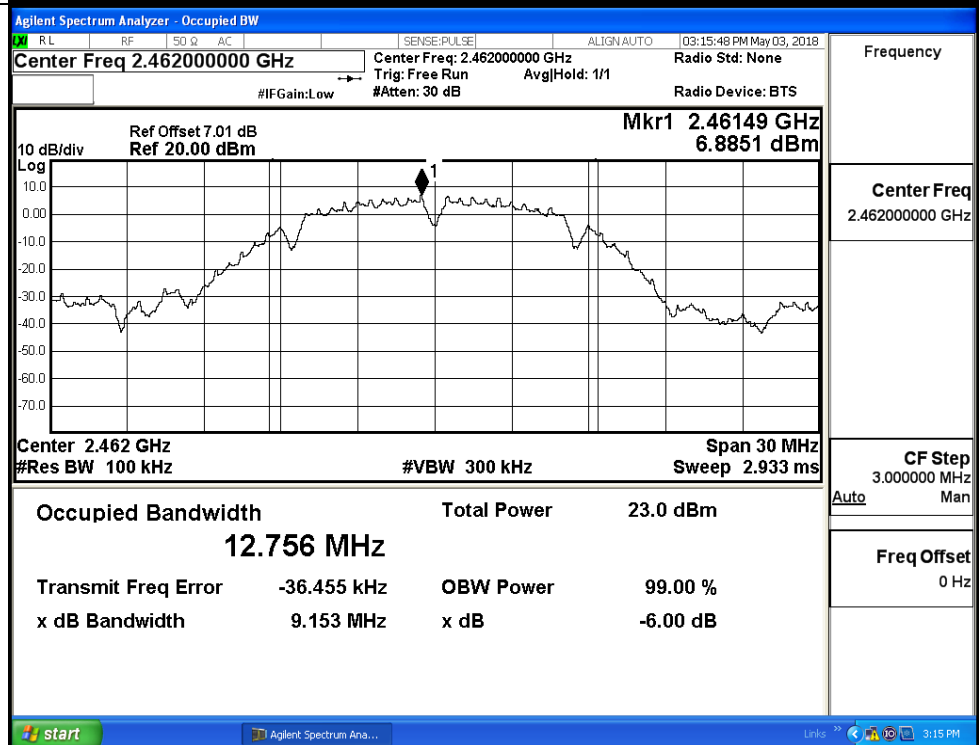
11B/LCH



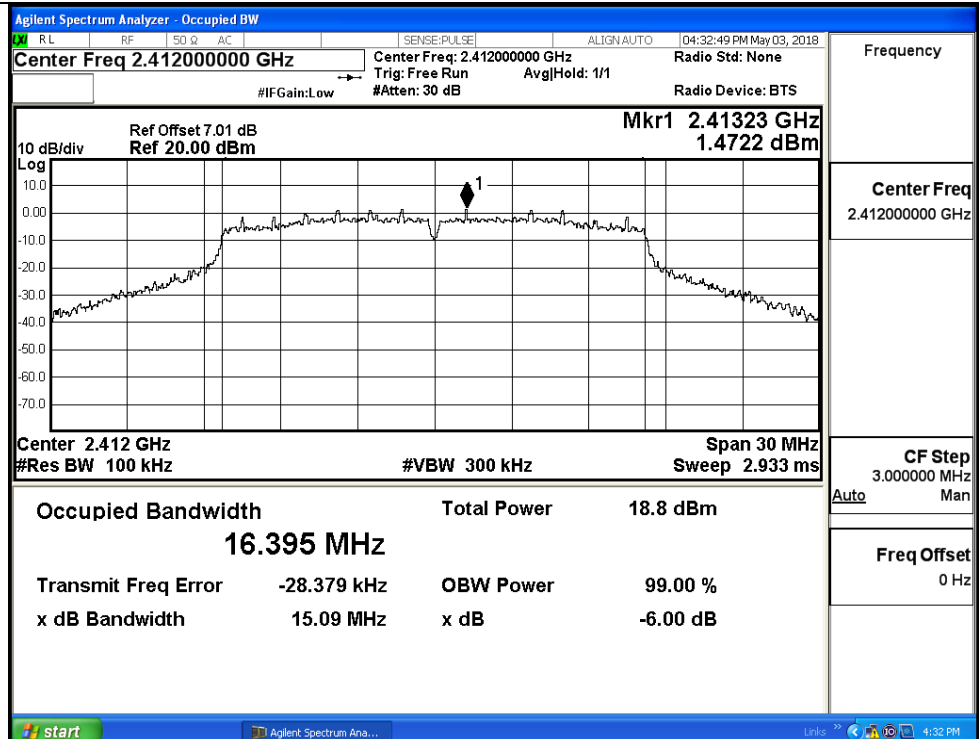
11B/MCH



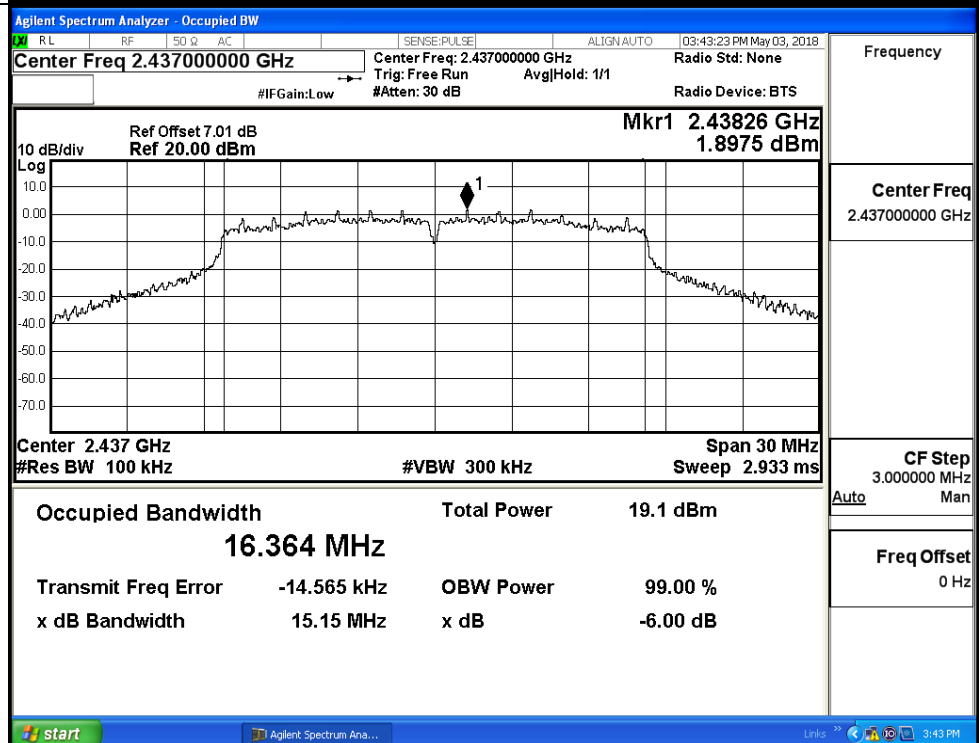
11B/HCH



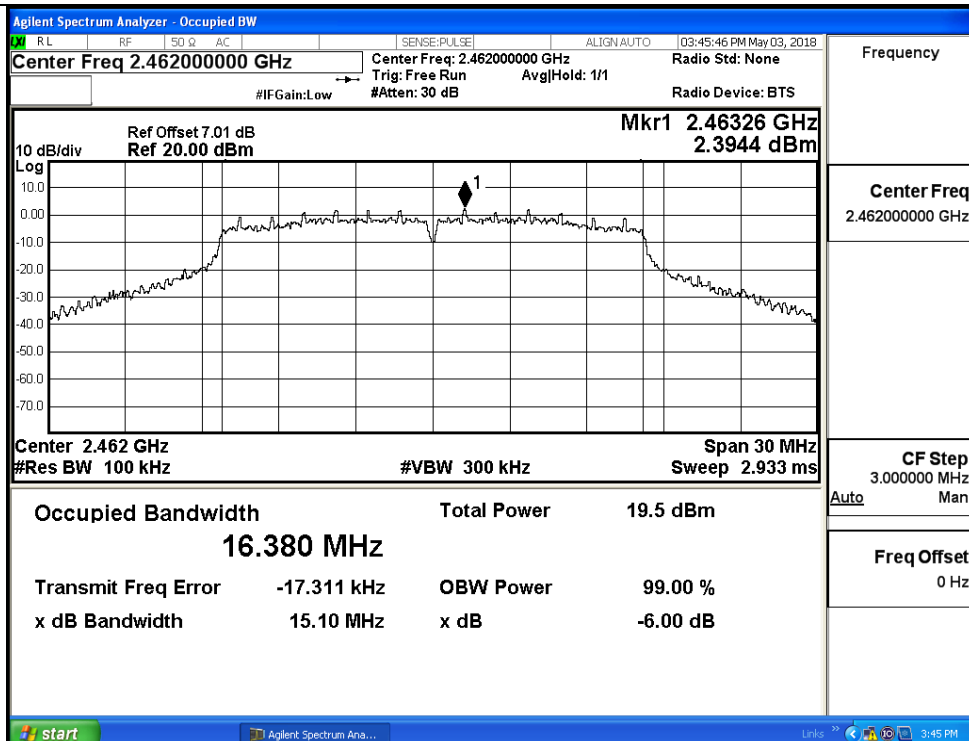
11G/LCH



11G/MCH



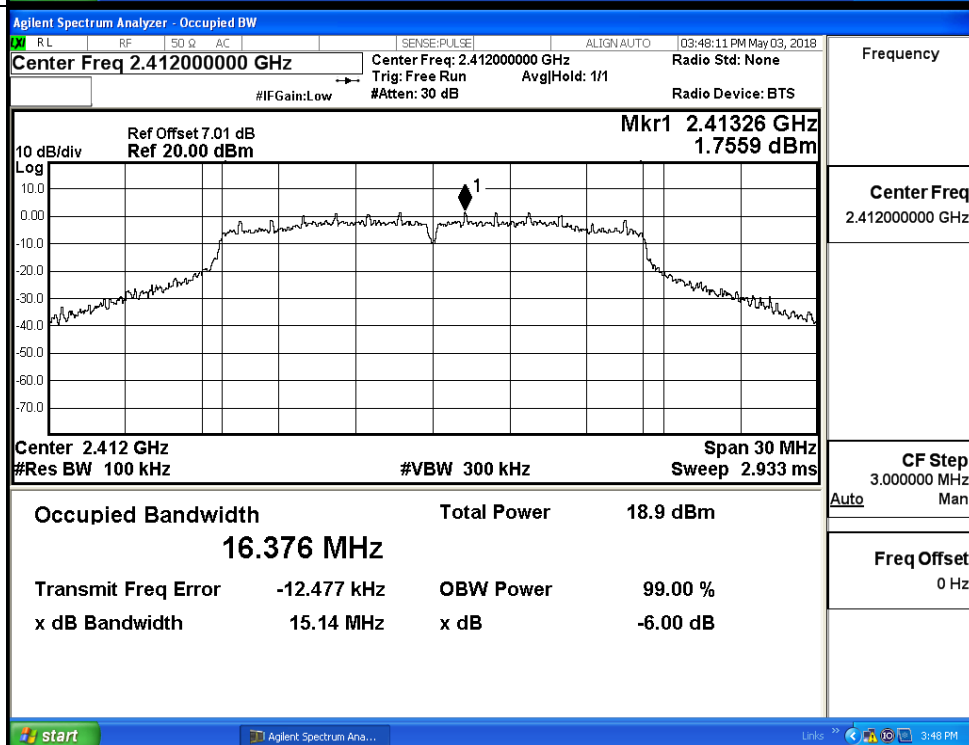
11G/HCH



Frequency

Center Freq
2.462000000 GHzCF Step
3.000000 MHz
Auto ManFreq Offset
0 Hz

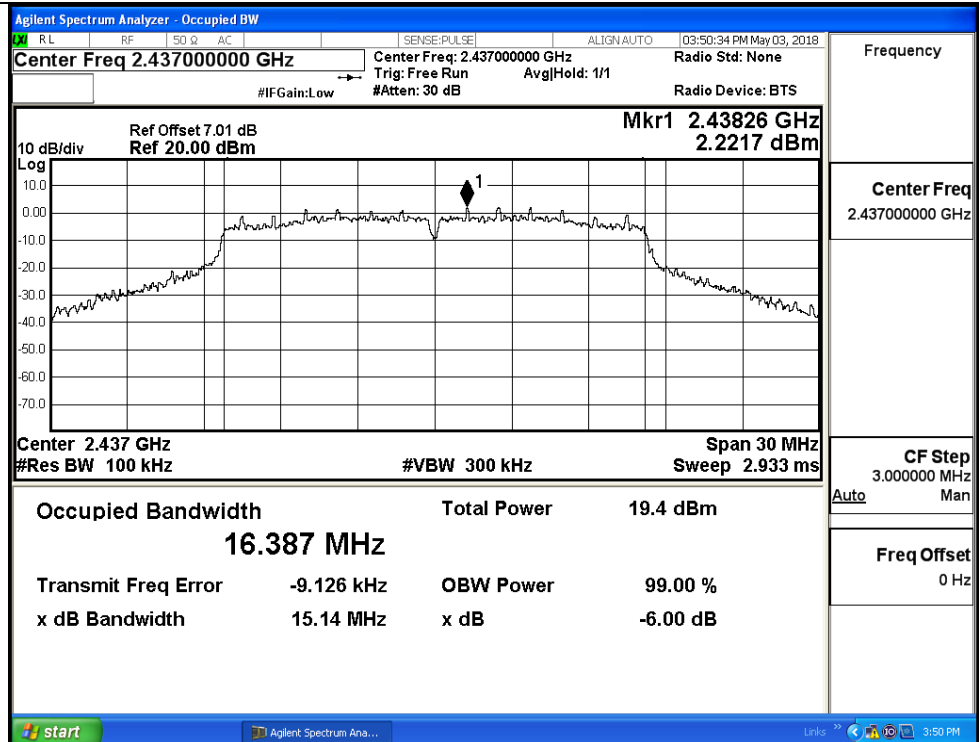
11N20SISO/LCH



Frequency

Center Freq
2.412000000 GHzCF Step
3.000000 MHz
Auto ManFreq Offset
0 Hz

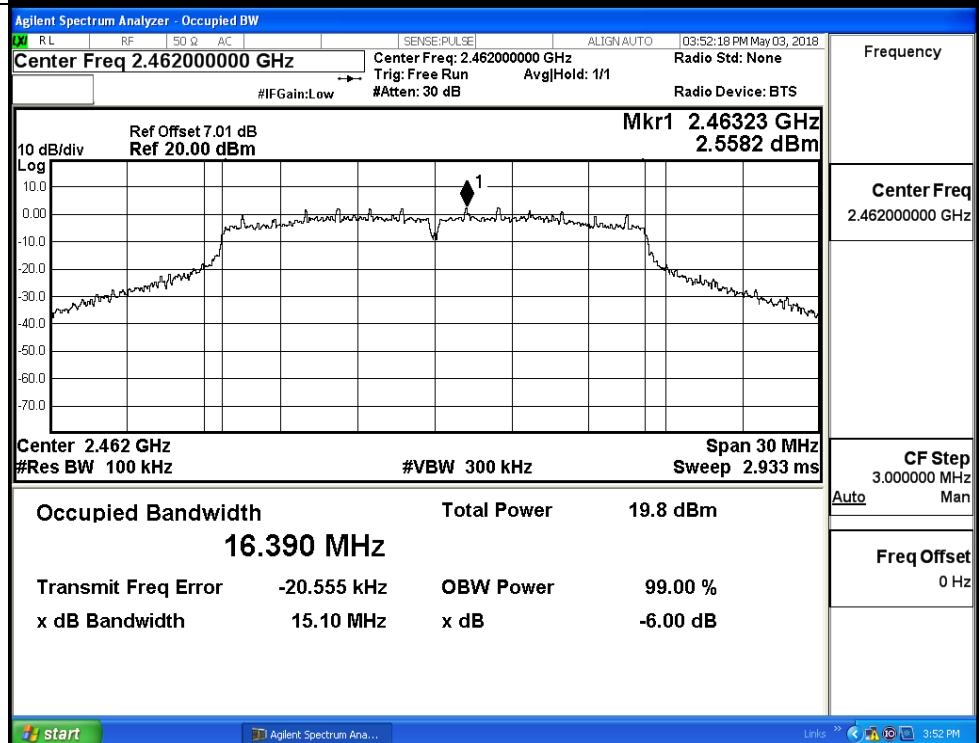
11N20SISO/MCH



Frequency

Center Freq
2.437000000 GHzCF Step
3.000000 MHz
Auto ManFreq Offset
0 Hz

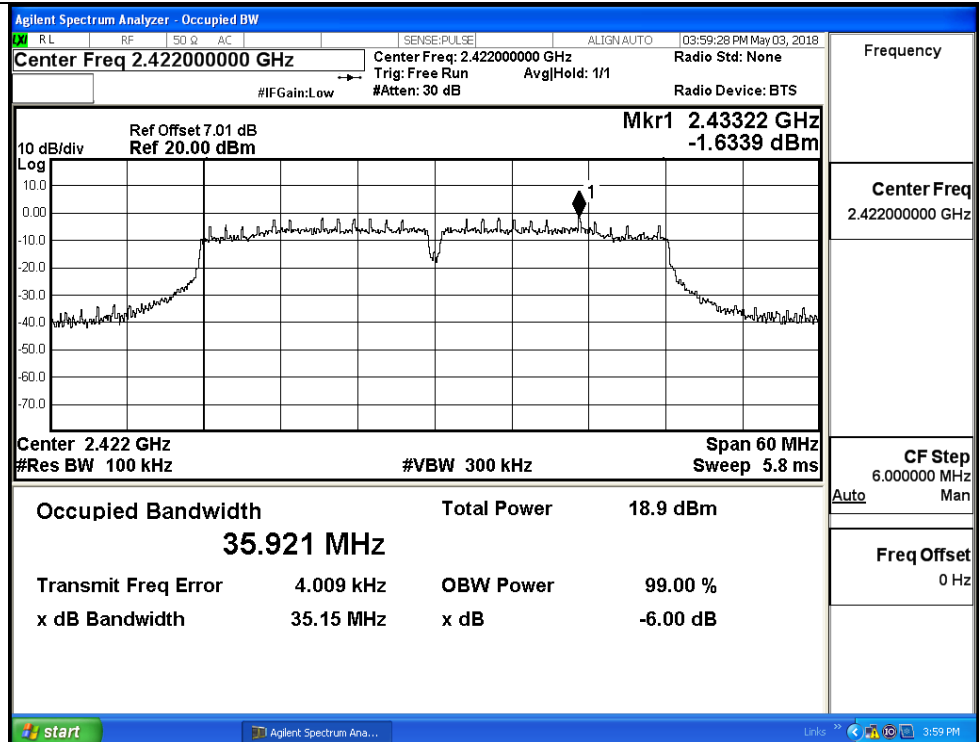
11N20SISO/HCH



Frequency

Center Freq
2.462000000 GHzCF Step
3.000000 MHz
Auto ManFreq Offset
0 Hz

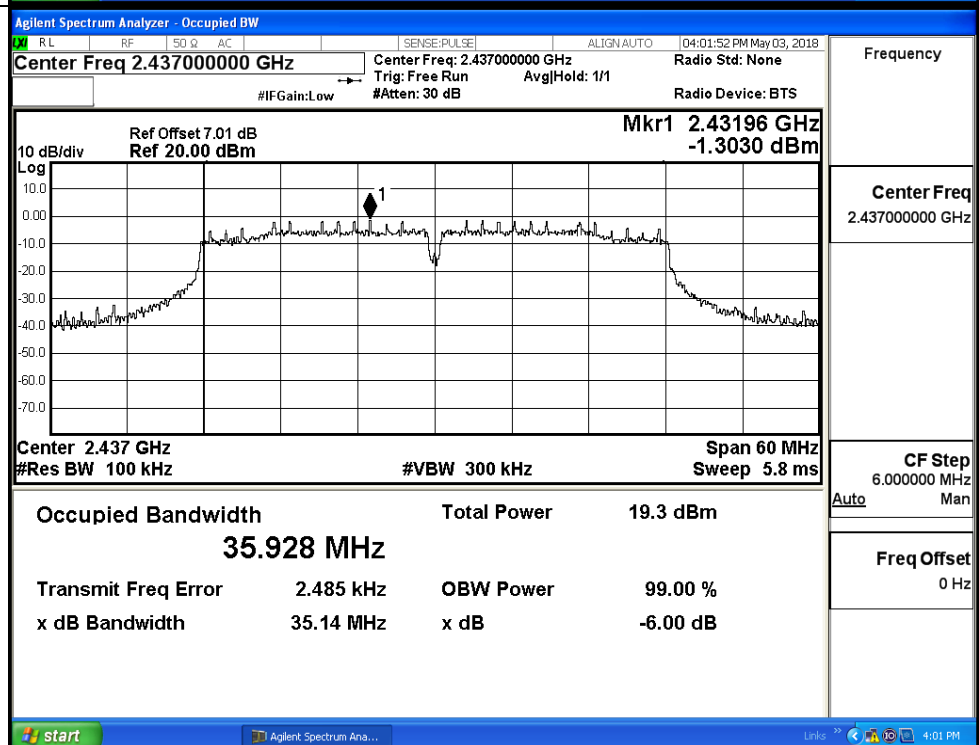
11N40SISO/LCH



Frequency

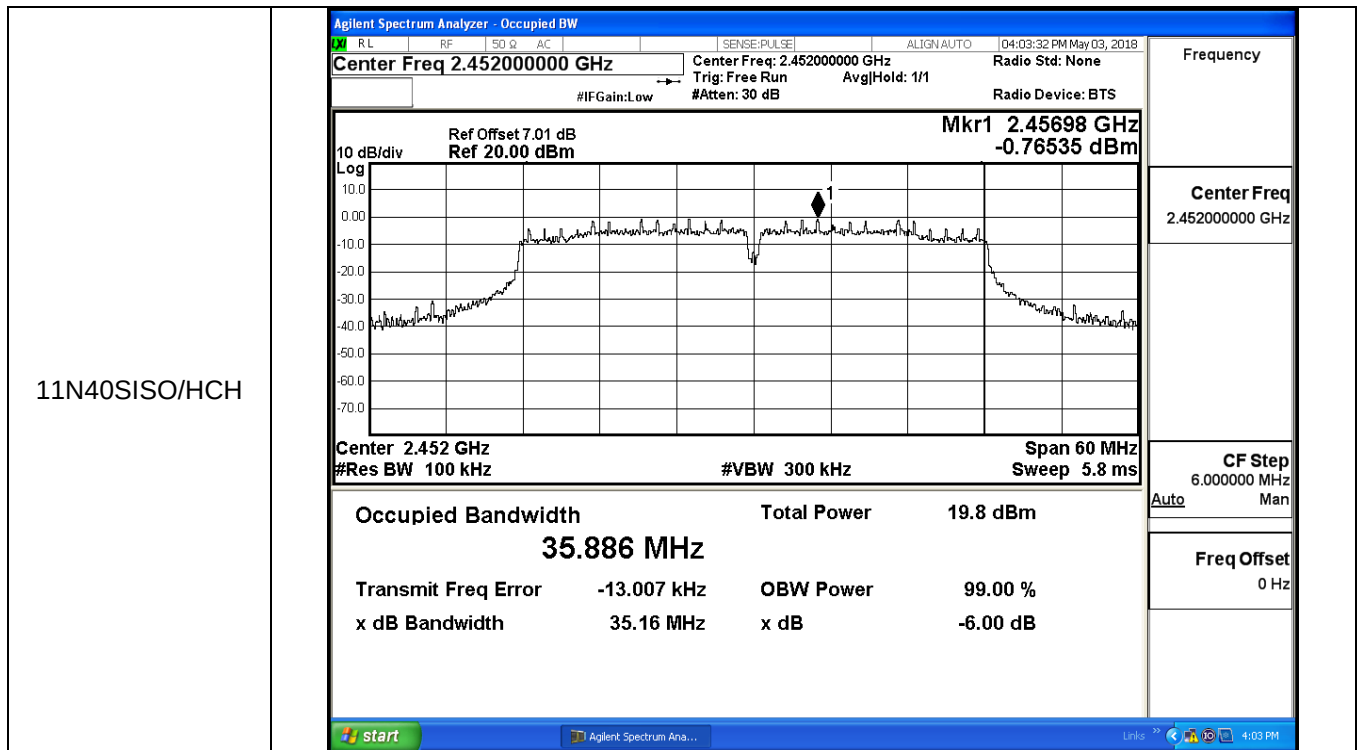
Center Freq
2.422000000 GHzCF Step
6.000000 MHz
Auto ManFreq Offset
0 Hz

11N40SISO/MCH



Frequency

Center Freq
2.437000000 GHzCF Step
6.000000 MHz
Auto ManFreq Offset
0 Hz



B.5 RF Conducted Spurious Emissions

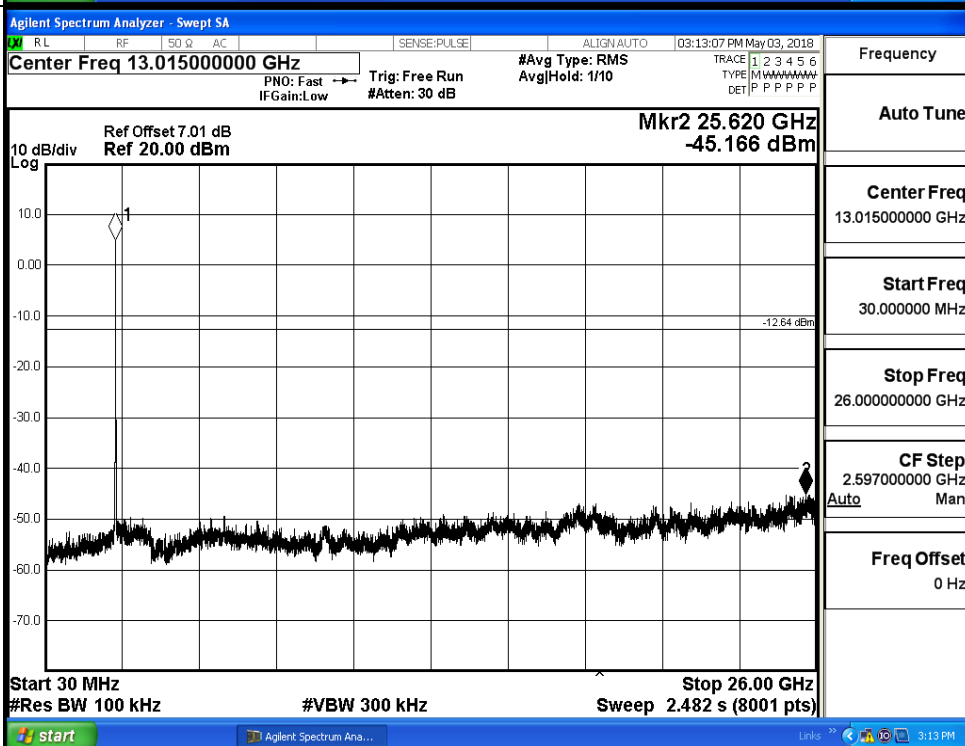
Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
11B	LCH	7.363	-45.166	-12.637	PASS
	MCH	7.407	-43.999	-12.593	PASS
	HCH	7.485	-42.619	-12.515	PASS
11G	LCH	2.542	-43.085	-17.458	PASS
	MCH	2.479	-44.093	-17.521	PASS
	HCH	3.122	-44.717	-16.878	PASS
11N20 SISO	LCH	1.982	-43.993	-18.018	PASS
	MCH	2.266	-44.303	-17.734	PASS
	HCH	2.803	-44.148	-17.197	PASS
11N40 SISO	LCH	-0.877	-44.324	-20.877	PASS
	MCH	-0.784	-44.158	-20.784	PASS
	HCH	-0.257	-44.347	-20.257	PASS

11B LCH Graphs

Pref/11B/LCH



Puw/11B/LCH

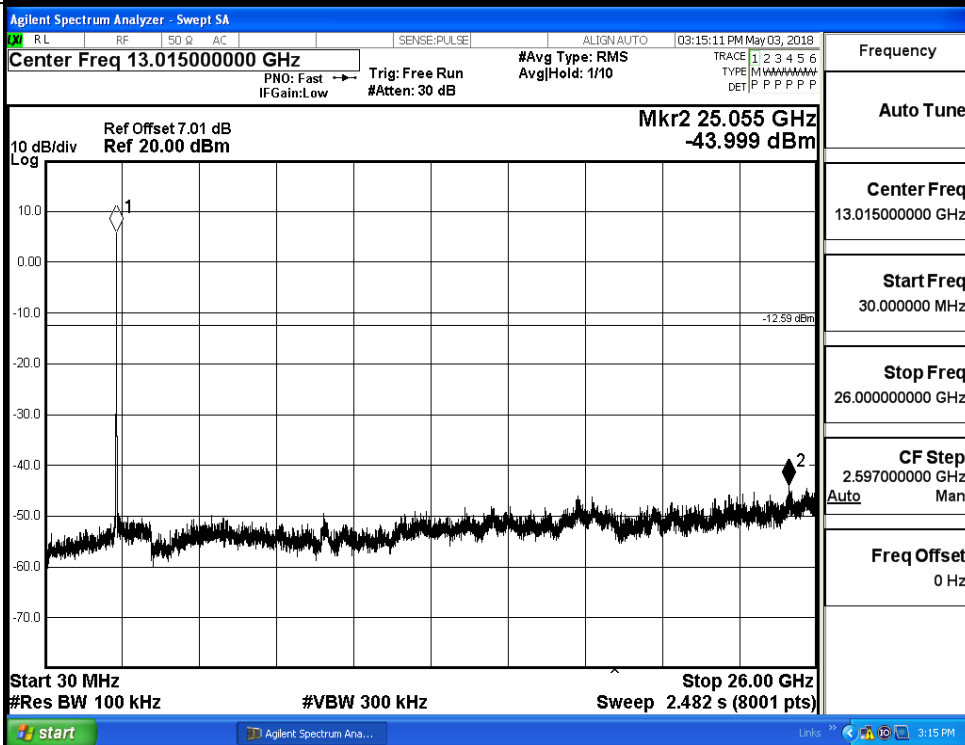


11B MCH Graphs

Pref/11B/MCH



Puw/11B/MCH

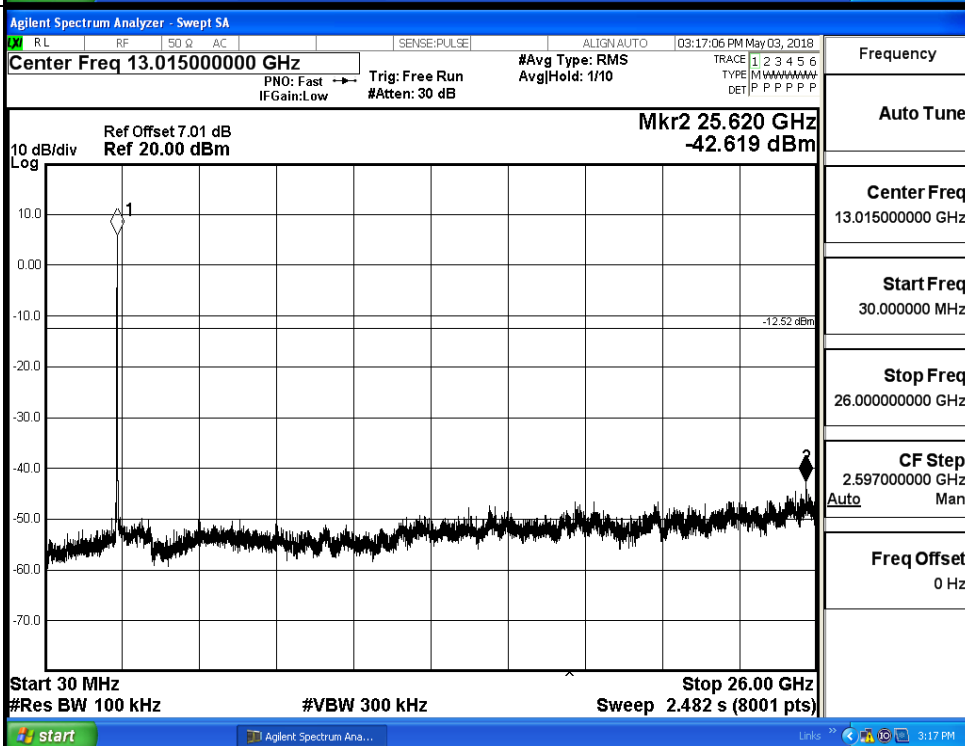


11B HCH Graphs

Pref/11B/HCH

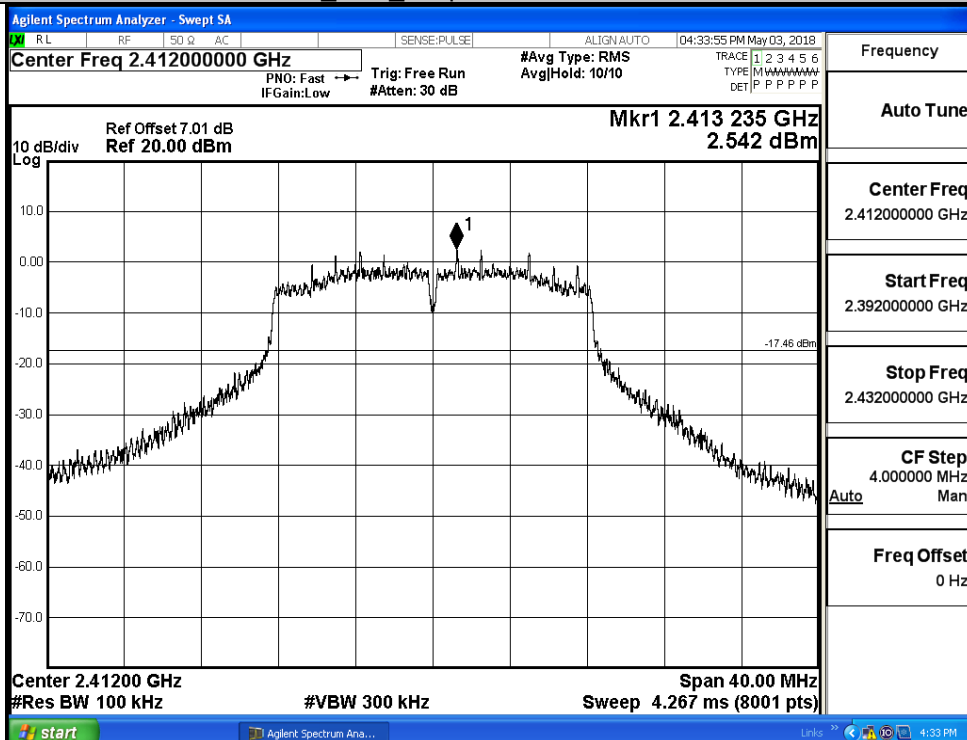


Puw/11B/HCH

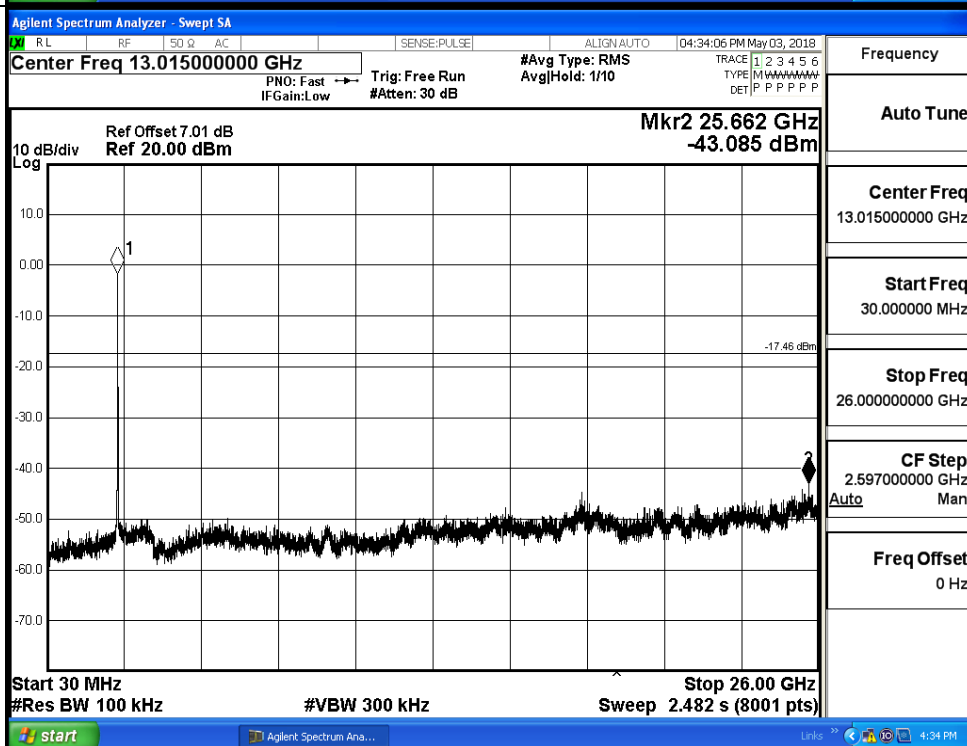


11G LCH Graphs

Pref/11G/LCH

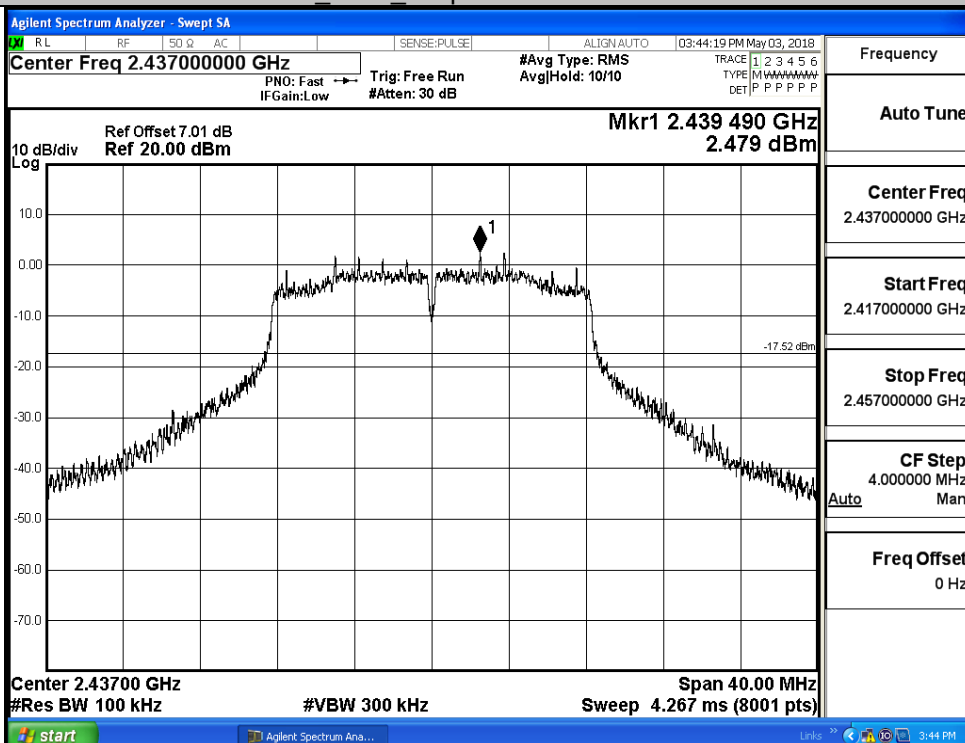


Puw/11G/LCH

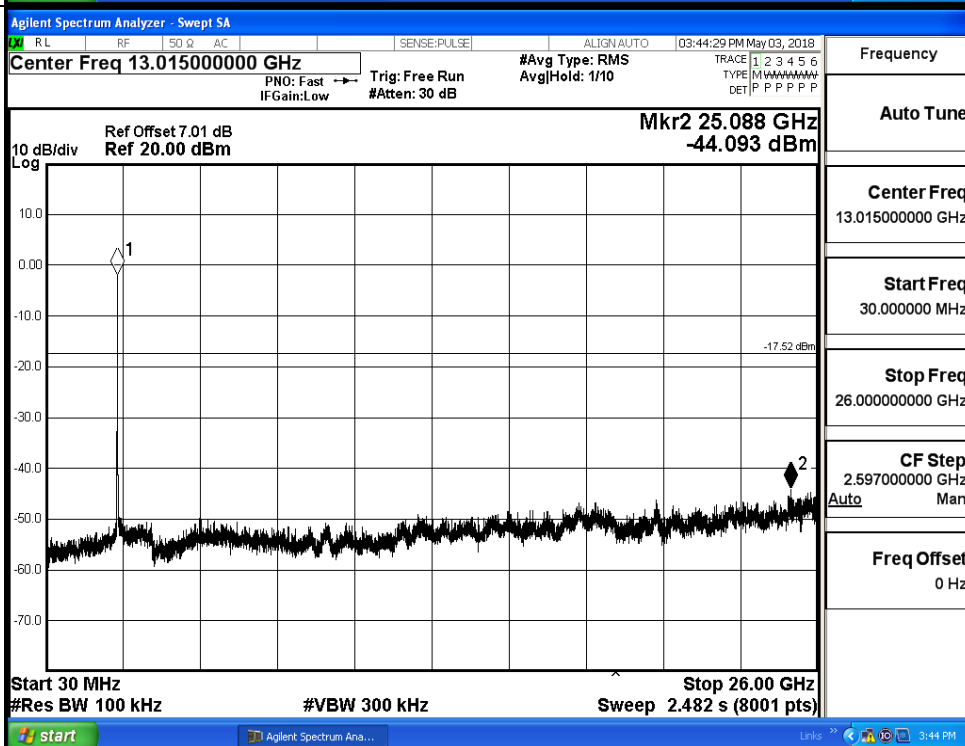


11G MCH Graphs

Pref/11G/MCH

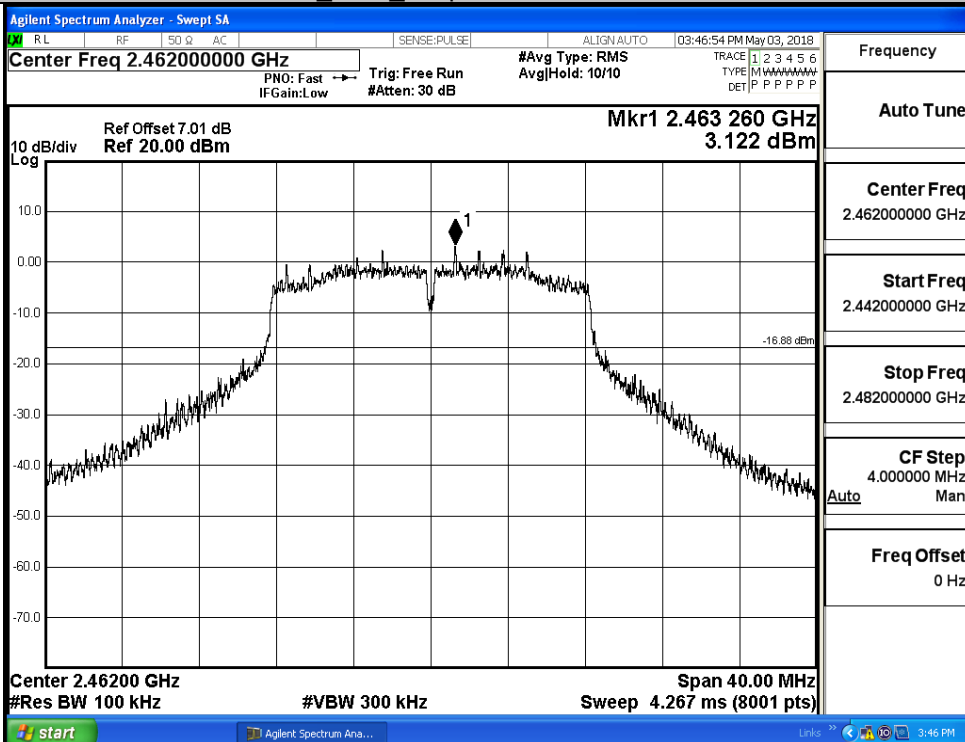


Puw/11G/MCH

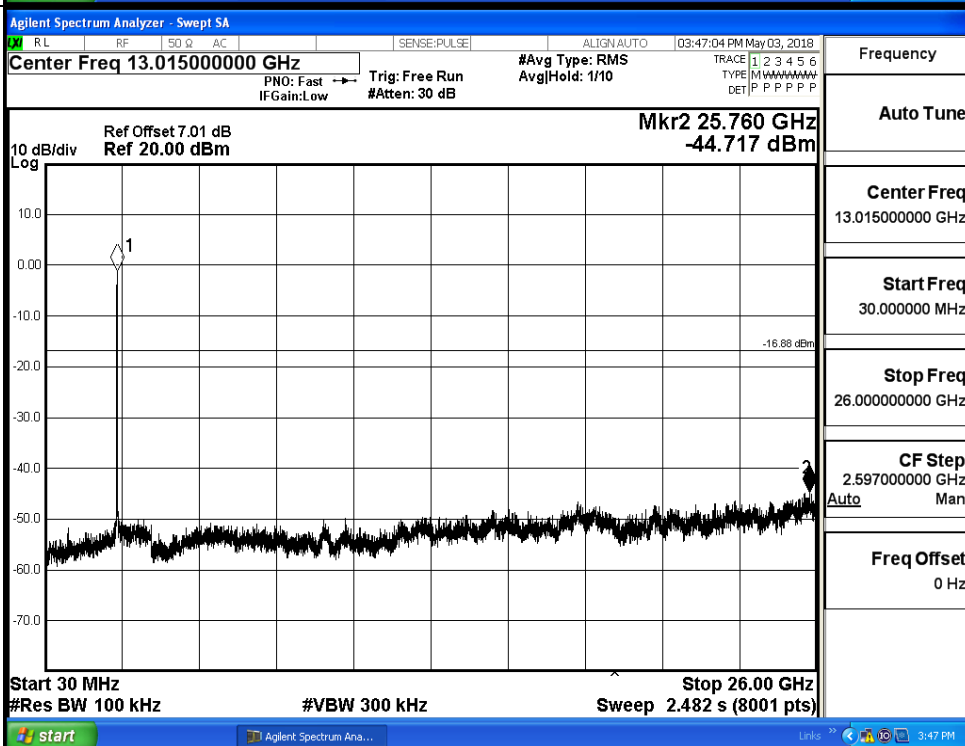


11G HCH Graphs

Pref/11G/HCH

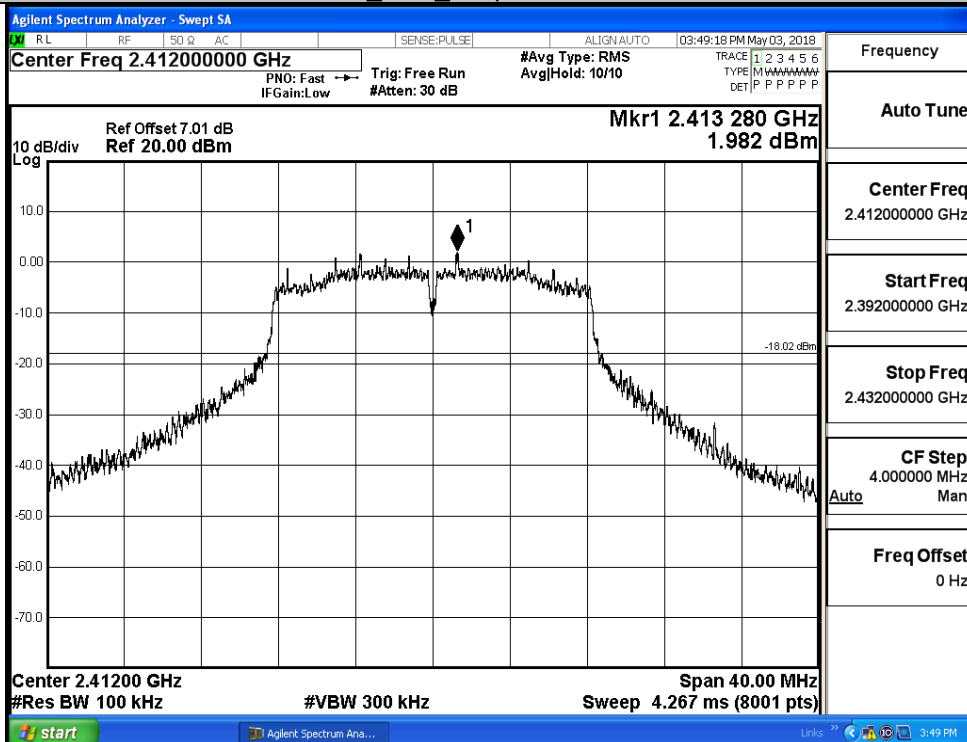


Puw/11G/HCH

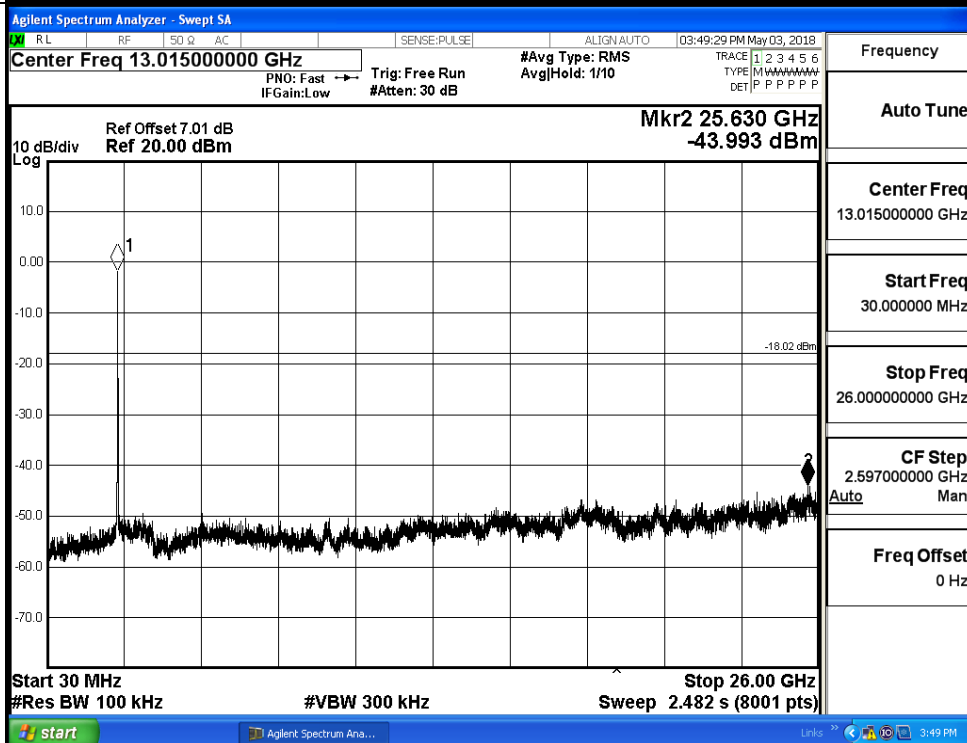


11N20SISO LCH Graphs

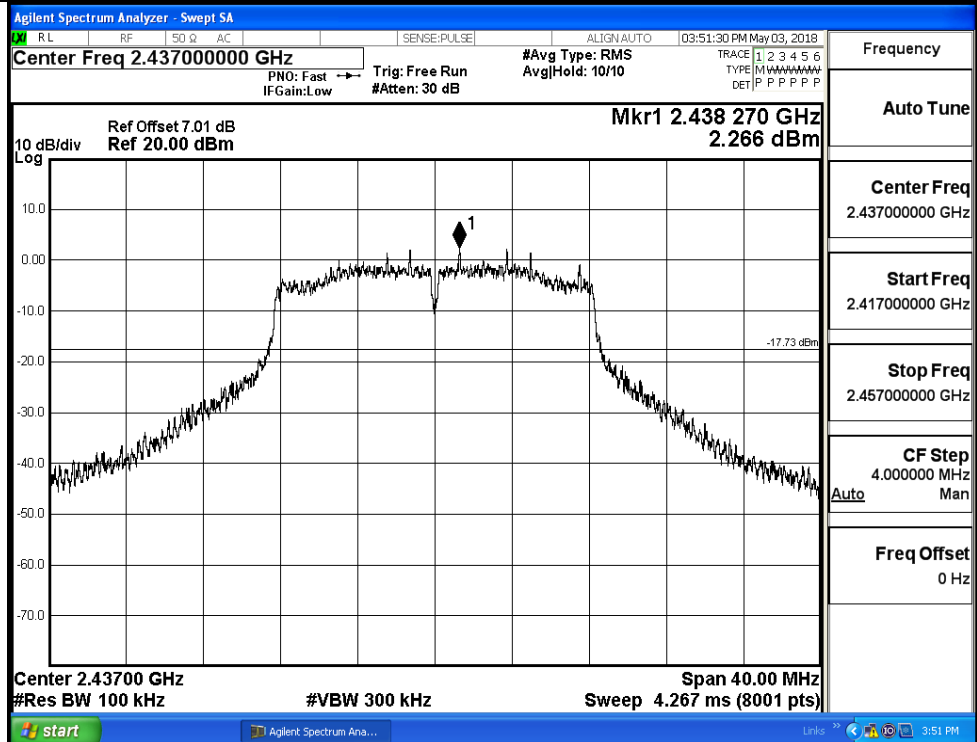
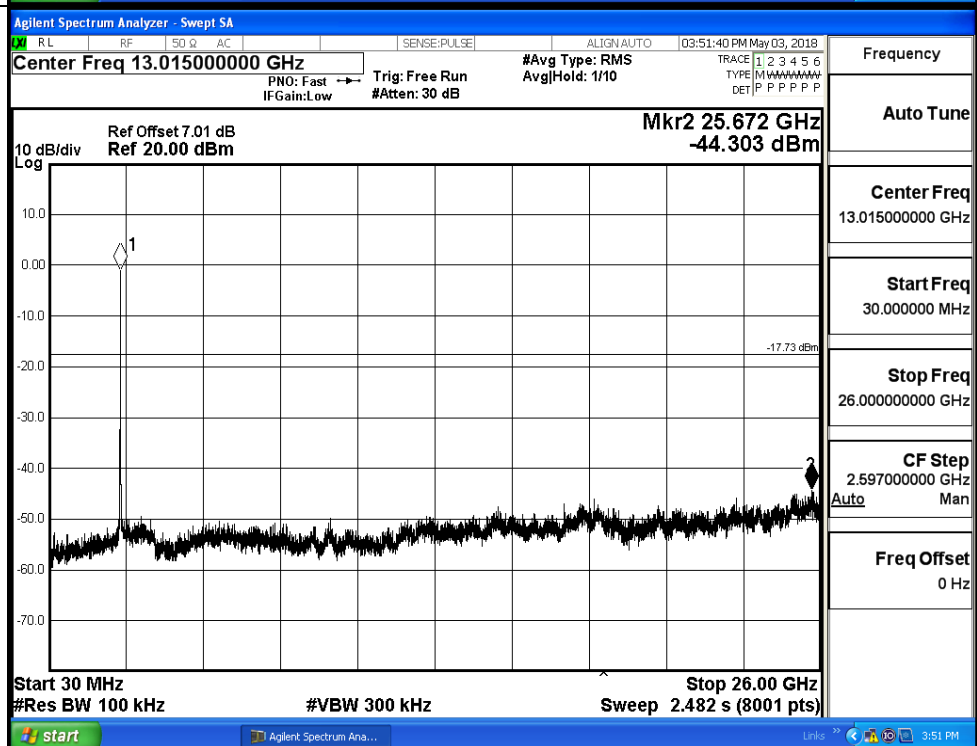
Pref/11N20SIS
O/LCH



Puw/11N20
SISO/LCH

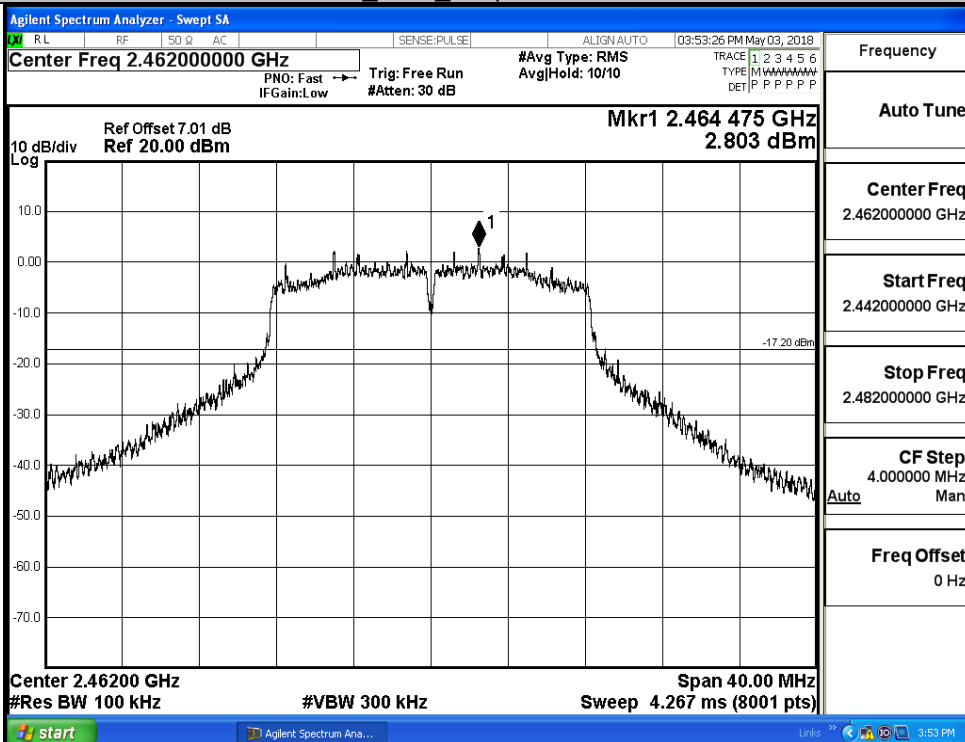


11N20SISO_MCH_Graphs

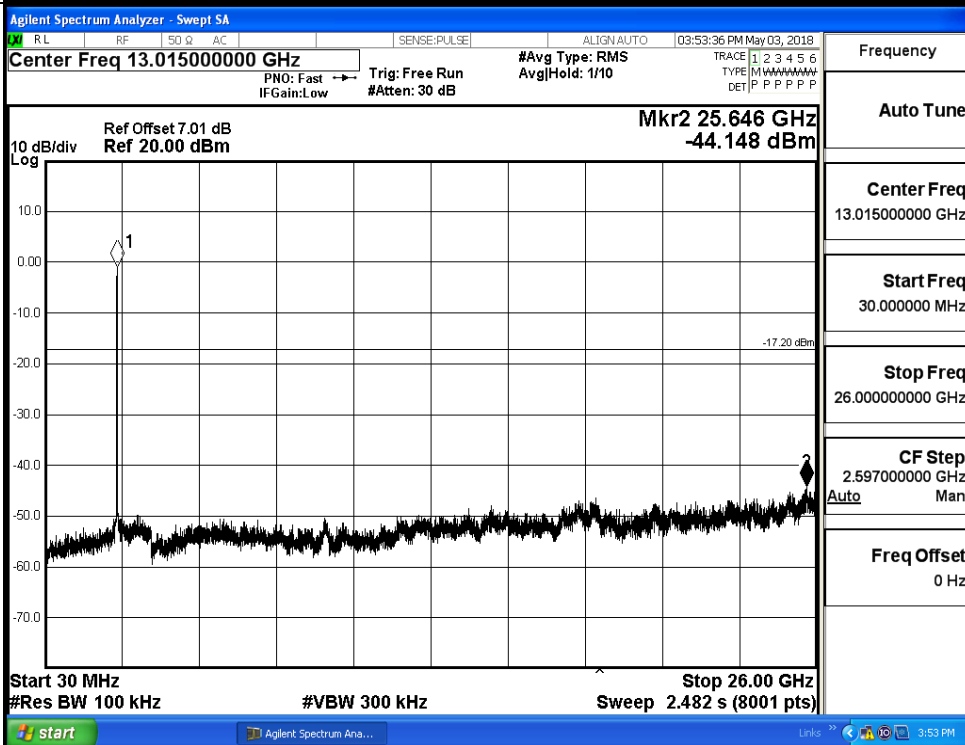
Pref/11N20
SISO/MCHPuw/11N20
SISO/MCH

11N20SISO HCH Graphs

Pref/11N20
SISO/HCH

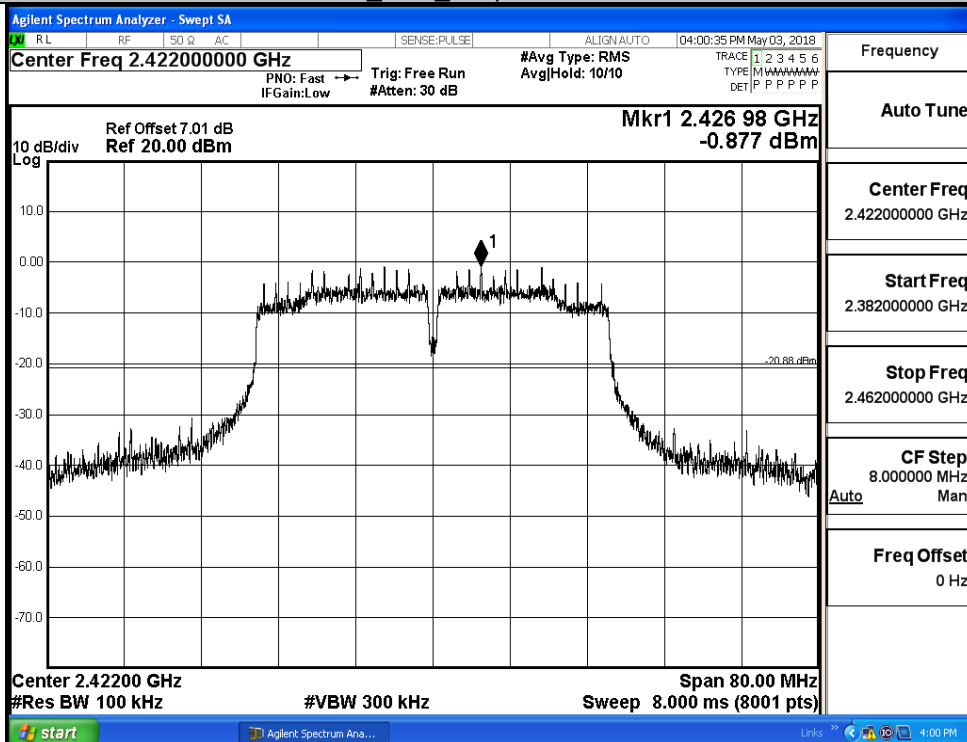


Puw/11N20
SISO/HCH

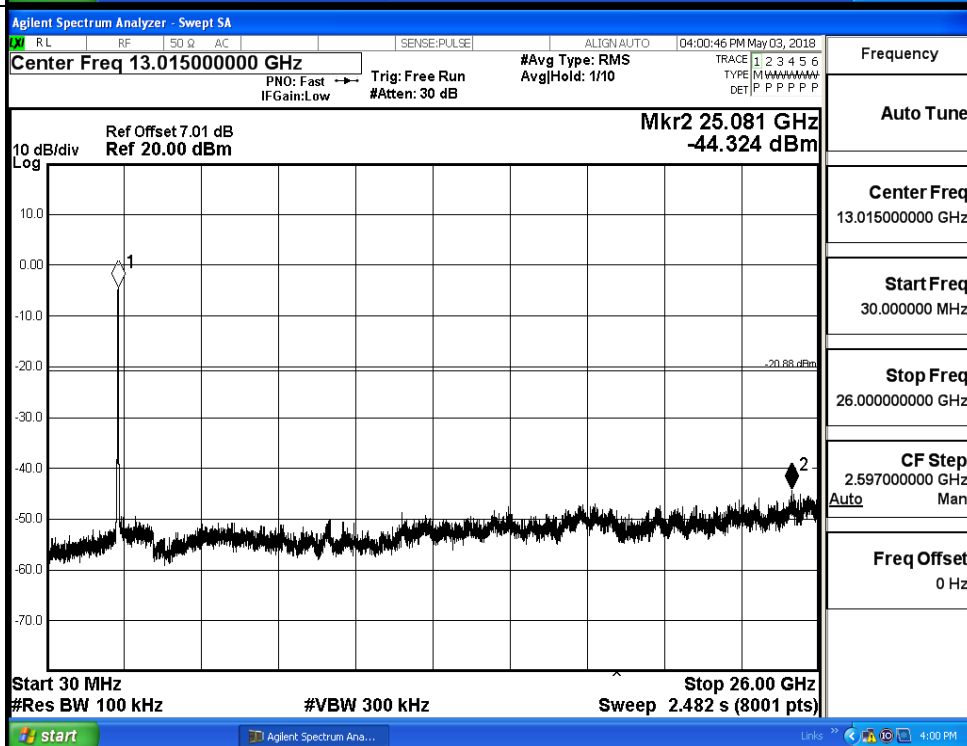


11N40SISO LCH Graphs

Pref/11N40
SISO/LCH

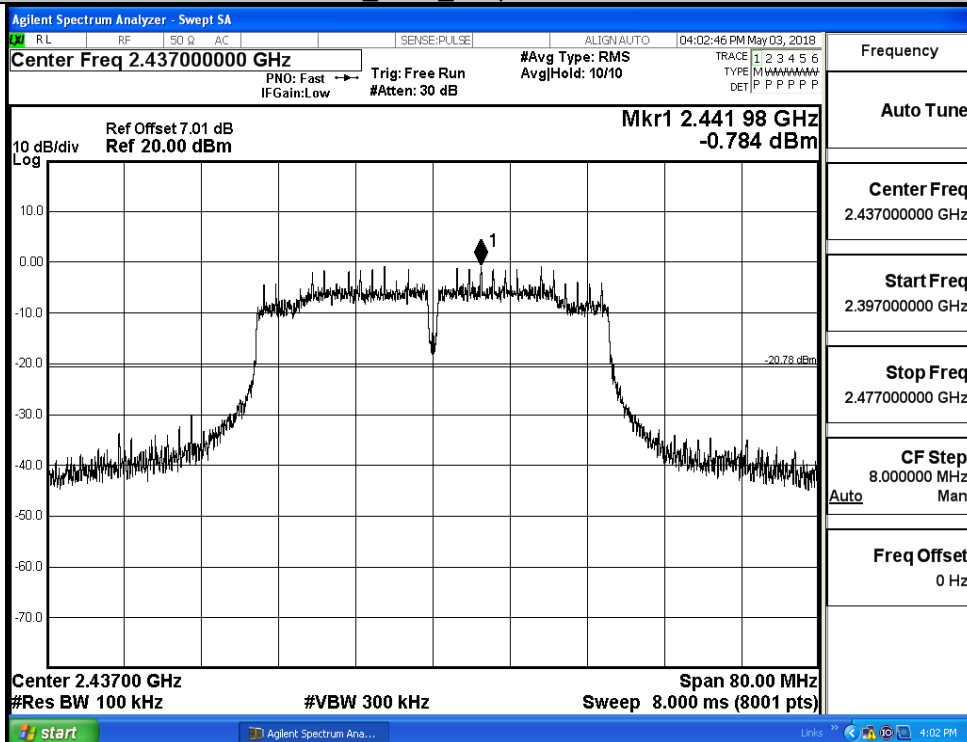


Puw/11N40
SISO/LCH

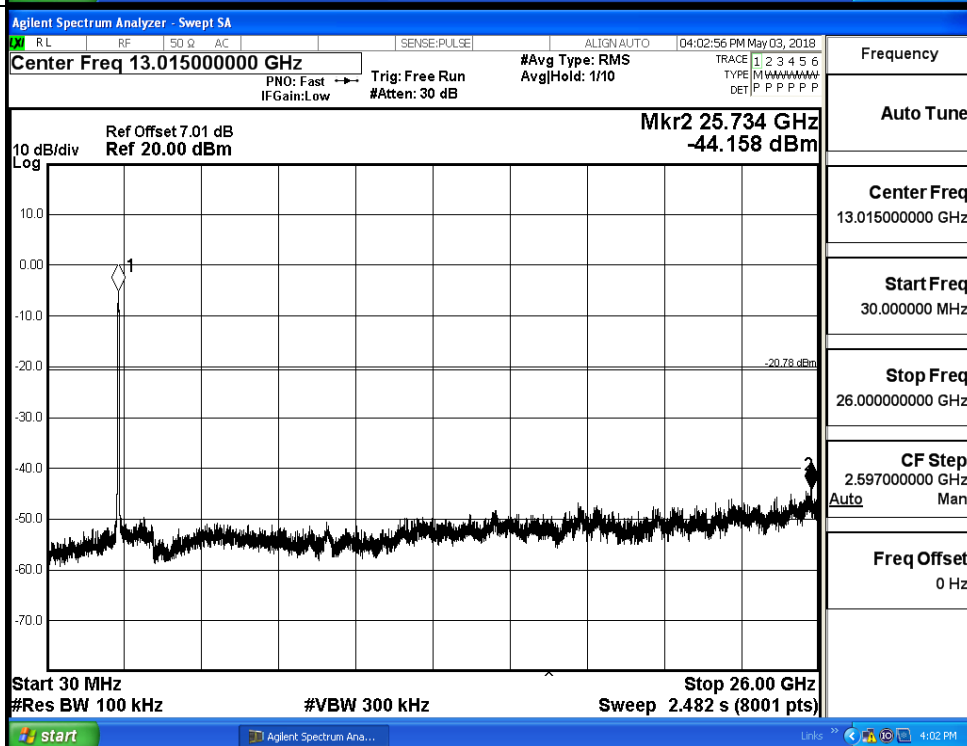


11N40SISO_MCH_Graphs

Pref/11N40
SISO/MCH

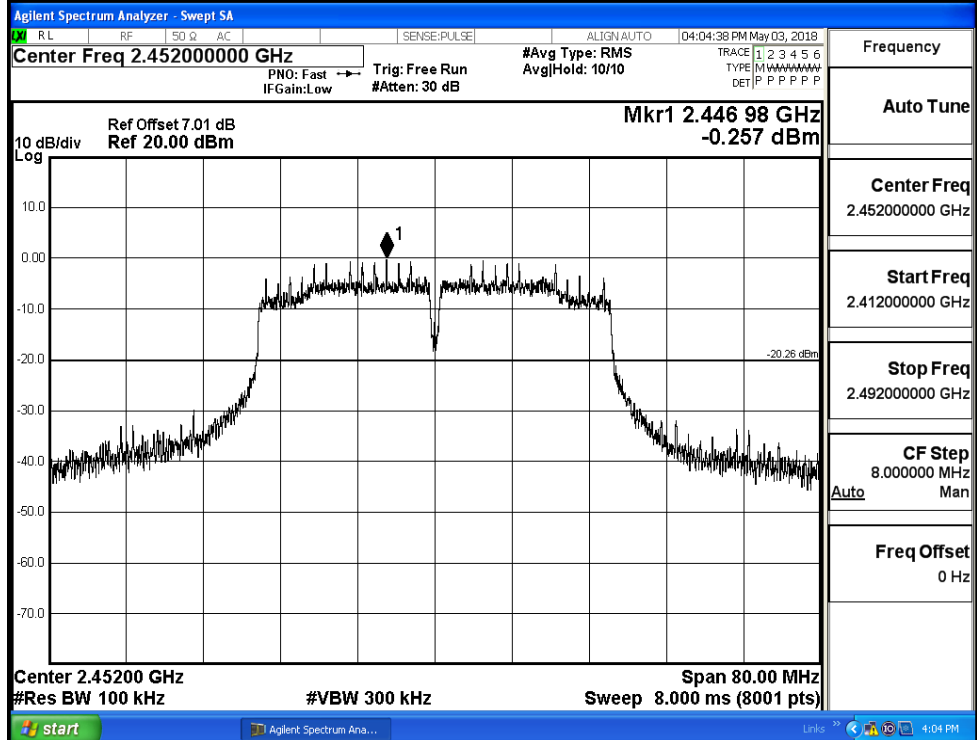


Puw/11N40
SISO/MCH

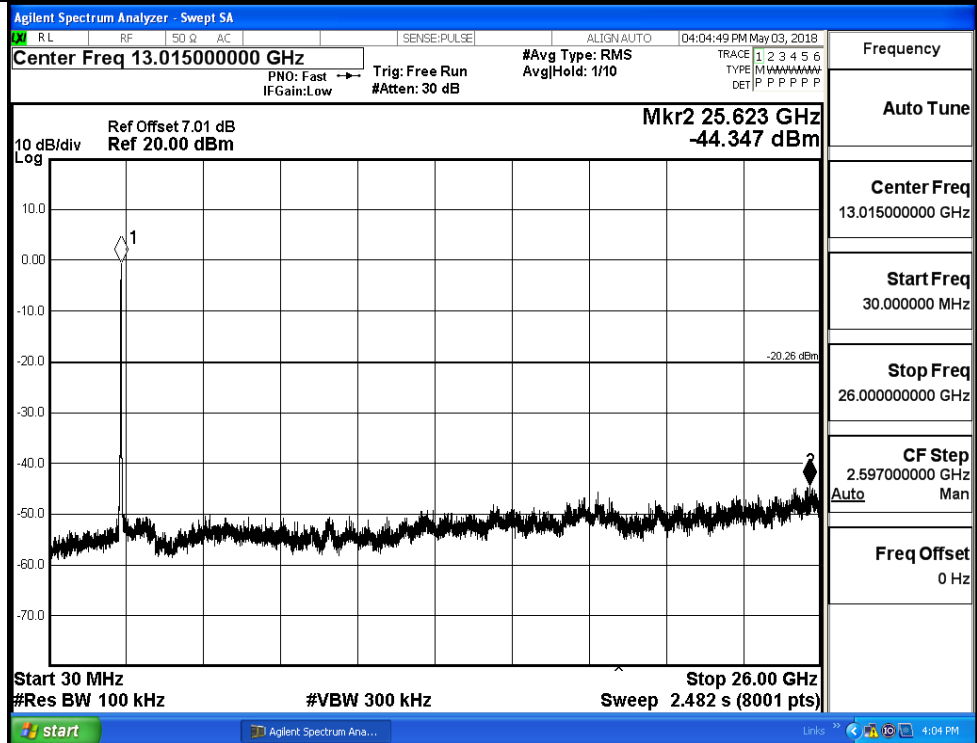


11N40SISO HCH Graphs

Pref/11N40
SISO/HCH



Puw/11N40
SISO/HCH

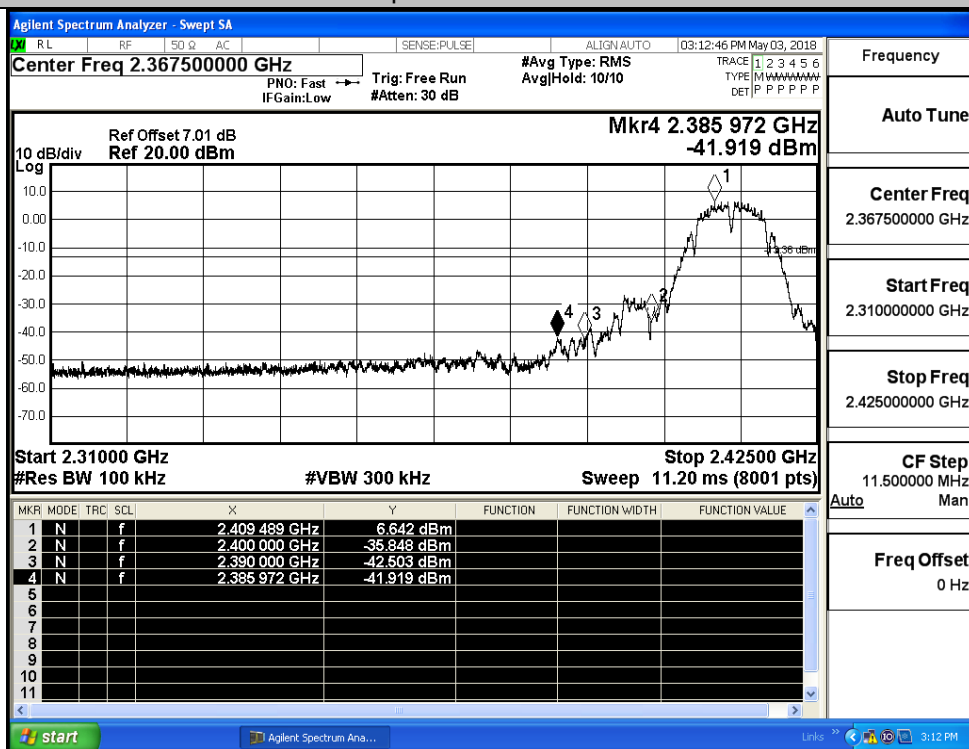


B.6 Band-edge for RF Conducted Emissions

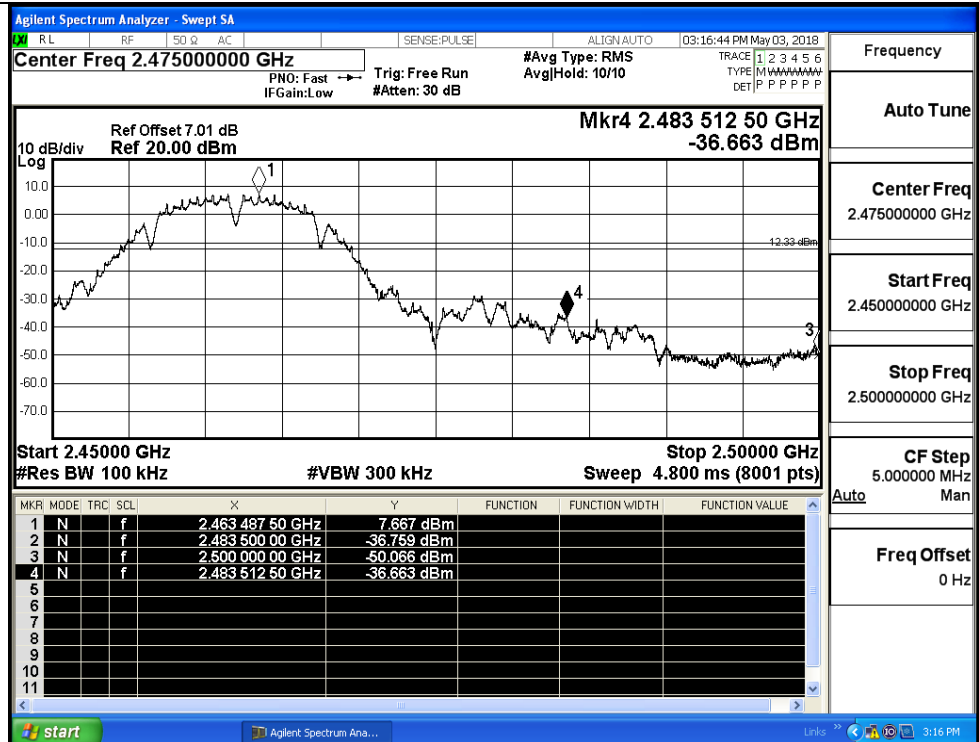
Mode	Channel	Carrier Power[dBm]	Max.Spurious Level [dBm]	Limit [dBm]	Verdict
11B	LCH	6.642	-41.919	-13.36	PASS
	HCH	7.667	-36.663	-12.33	PASS
11G	LCH	2.376	-42.215	-17.62	PASS
	HCH	2.817	-44.425	-17.18	PASS
11N20SISO	LCH	2.080	-42.214	-17.92	PASS
	HCH	3.211	-45.228	-16.79	PASS
11N40SISO	LCH	-0.892	-33.304	-20.89	PASS
	HCH	-0.403	-36.093	-20.4	PASS

Test Graphs

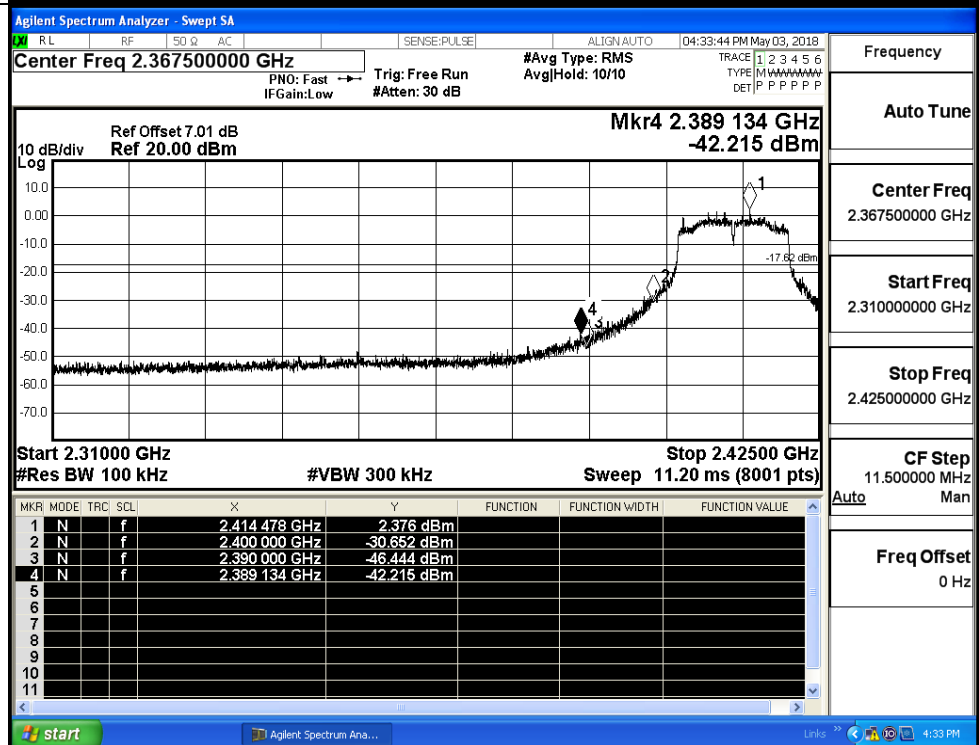
11B/LCH



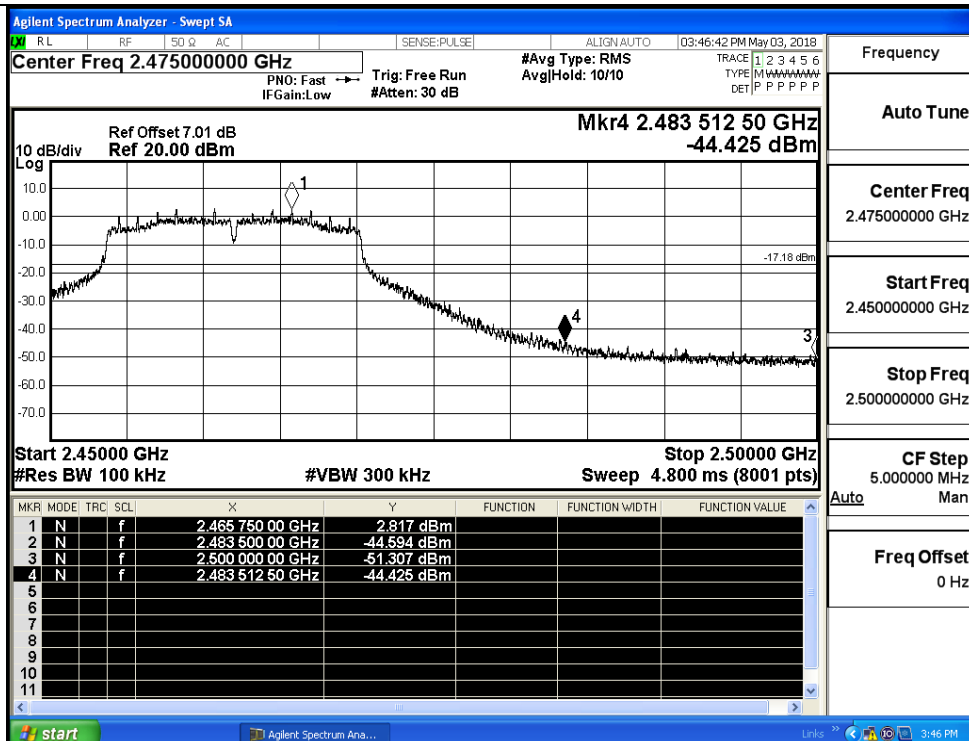
11B/HCH



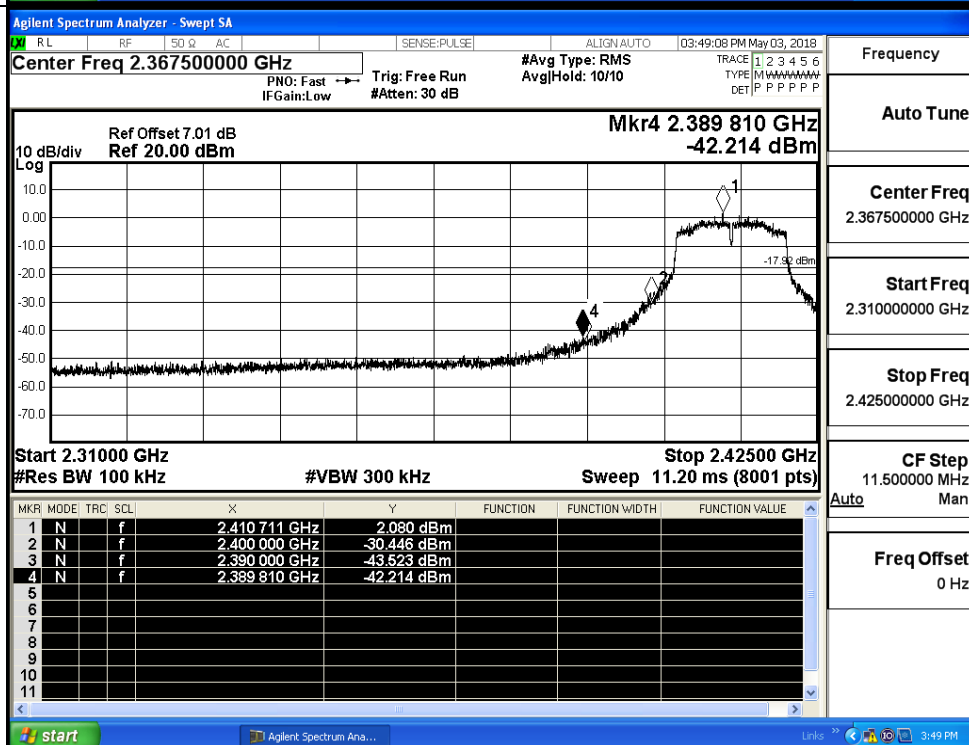
11G/LCH



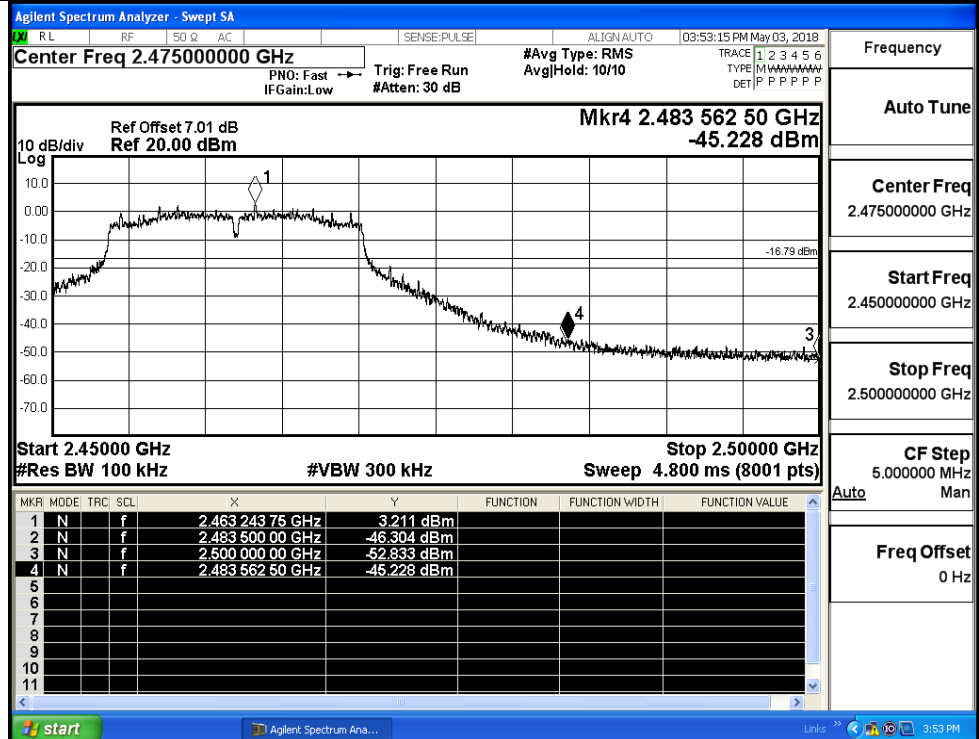
11G/HCH



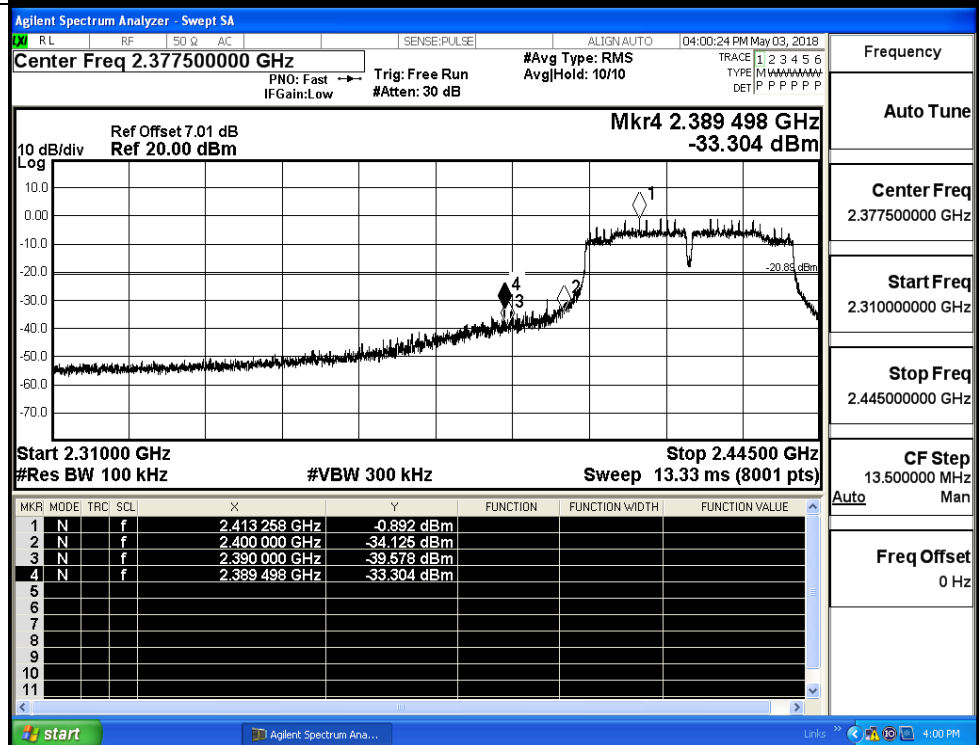
11N20SISO/LCH

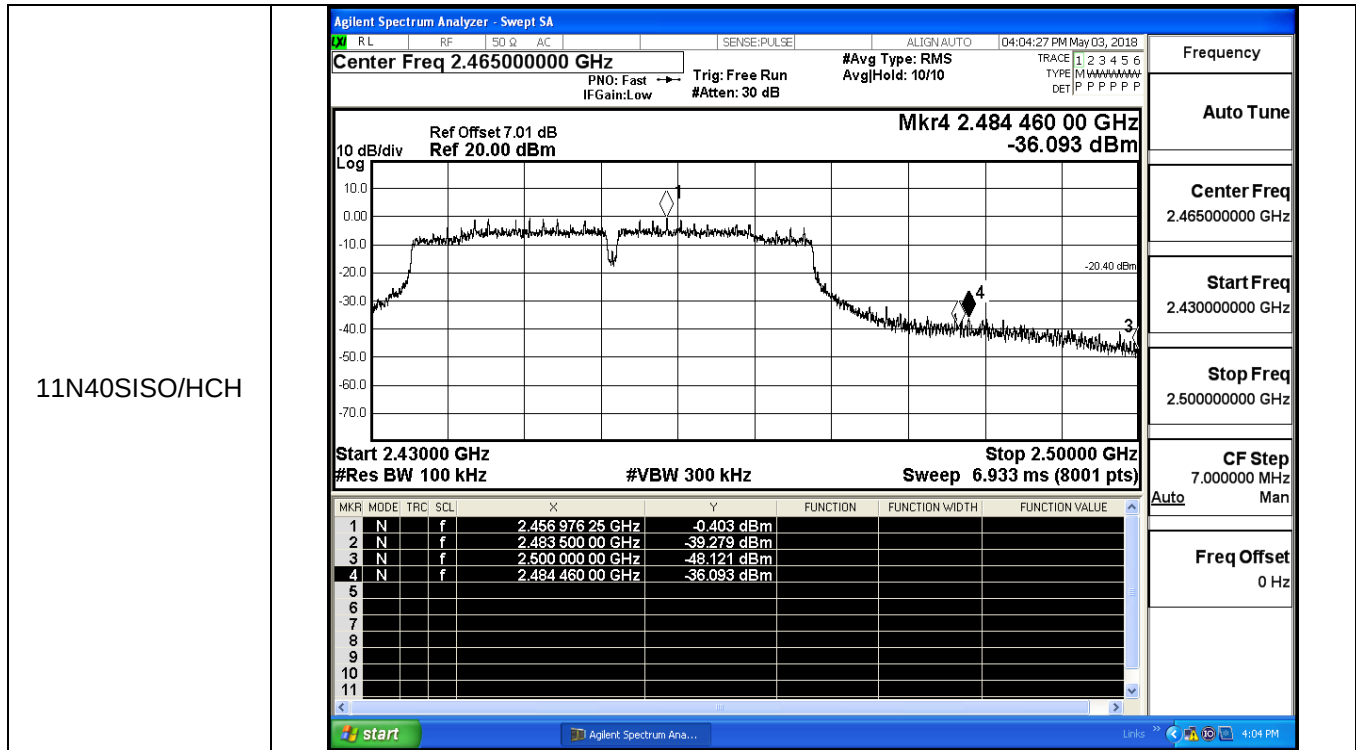


11N20SISO/HCH



11N40SISO/LCH



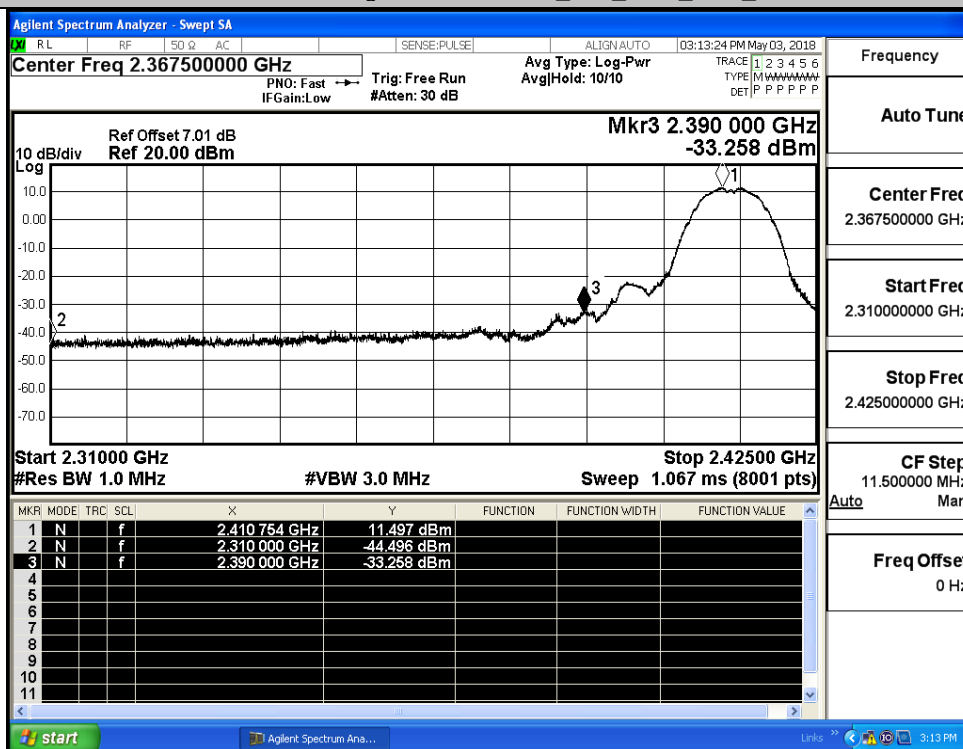


B.7 Restrict-band band-edge measurements

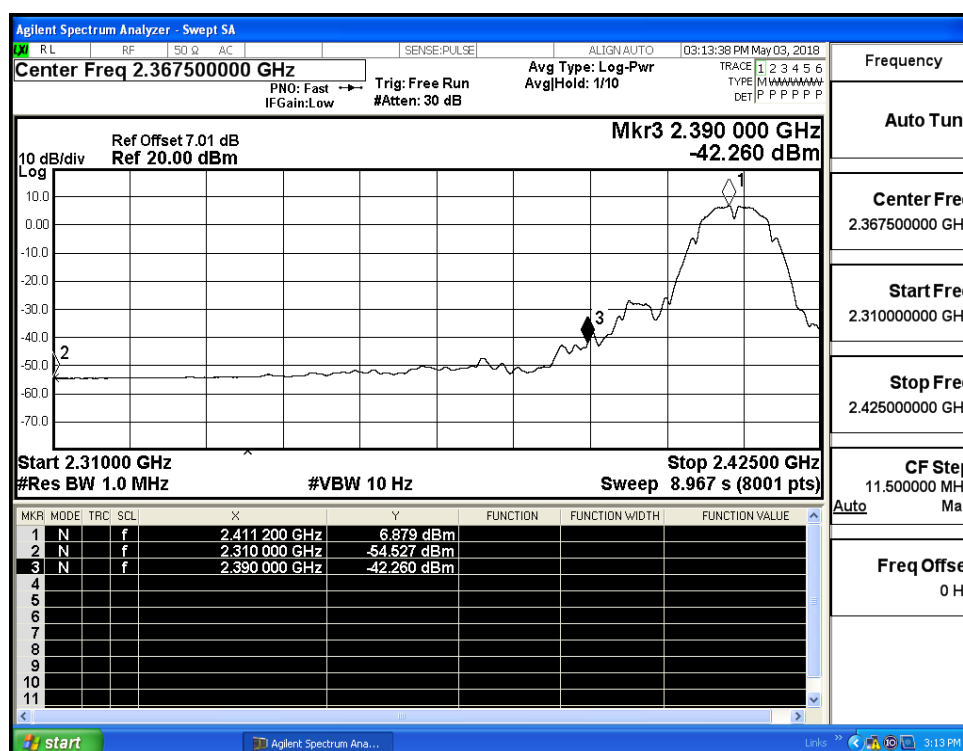
Test Mode	Test Channel	Ant	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
11B	2412	Ant0	2310.0	-44.50	2.0	0	50.76	PEAK	74	PASS
	2412	Ant0	2310.0	-54.53	2.0	0	40.73	AV	54	PASS
	2412	Ant0	2390.0	-33.26	2.0	0	62.00	PEAK	74	PASS
	2412	Ant0	2390.0	-42.26	2.0	0	53.00	AV	54	PASS
	2462	Ant0	2483.5	-42.79	2.0	0	52.47	PEAK	74	PASS
	2462	Ant0	2483.5	-52.05	2.0	0	43.20	AV	54	PASS
	2462	Ant0	2500.0	-43.23	2.0	0	52.03	PEAK	74	PASS
	2462	Ant0	2500.0	-53.49	2.0	0	41.77	AV	54	PASS
11G	2412	Ant0	2310.0	-44.53	2.0	0	50.73	PEAK	74	PASS
	2412	Ant0	2310.0	-54.63	2.0	0	40.62	AV	54	PASS
	2412	Ant0	2390.0	-33.87	2.0	0	61.38	PEAK	74	PASS
	2412	Ant0	2390.0	-45.22	2.0	0	50.04	AV	54	PASS
	2462	Ant0	2483.5	-32.14	2.0	0	63.12	PEAK	74	PASS
	2462	Ant0	2483.5	-47.29	2.0	0	47.96	AV	54	PASS
	2462	Ant0	2500.0	-41.29	2.0	0	53.96	PEAK	74	PASS
	2462	Ant0	2500.0	-51.94	2.0	0	43.32	AV	54	PASS
11N20 SISO	2412	Ant0	2310.0	-43.82	2.0	0	51.44	PEAK	74	PASS
	2412	Ant0	2310.0	-54.58	2.0	0	40.68	AV	54	PASS
	2412	Ant0	2390.0	-32.66	2.0	0	62.60	PEAK	74	PASS
	2412	Ant0	2390.0	-45.68	2.0	0	49.57	AV	54	PASS
	2462	Ant0	2483.5	-34.34	2.0	0	60.92	PEAK	74	PASS
	2462	Ant0	2483.5	-47.37	2.0	0	47.89	AV	54	PASS
	2462	Ant0	2500.0	-42.27	2.0	0	52.99	PEAK	74	PASS
	2462	Ant0	2500.0	-51.91	2.0	0	43.35	AV	54	PASS
11N40 SISO	2422	Ant0	2310.0	-45.09	2.0	0	50.17	PEAK	74	PASS
	2422	Ant0	2310.0	-54.83	2.0	0	40.43	AV	54	PASS

	2422	Ant0	2390.0	-36.41	2.0	0	58.85	PEAK	74	PASS
	2422	Ant0	2390.0	-47.15	2.0	0	48.11	AV	54	PASS
	2452	Ant0	2483.5	-40.21	2.0	0	55.04	PEAK	74	PASS
	2452	Ant0	2483.5	-50.70	2.0	0	44.56	AV	54	PASS
	2452	Ant0	2500.0	-41.92	2.0	0	53.33	PEAK	74	PASS
	2452	Ant0	2500.0	-53.05	2.0	0	42.20	AV	54	PASS

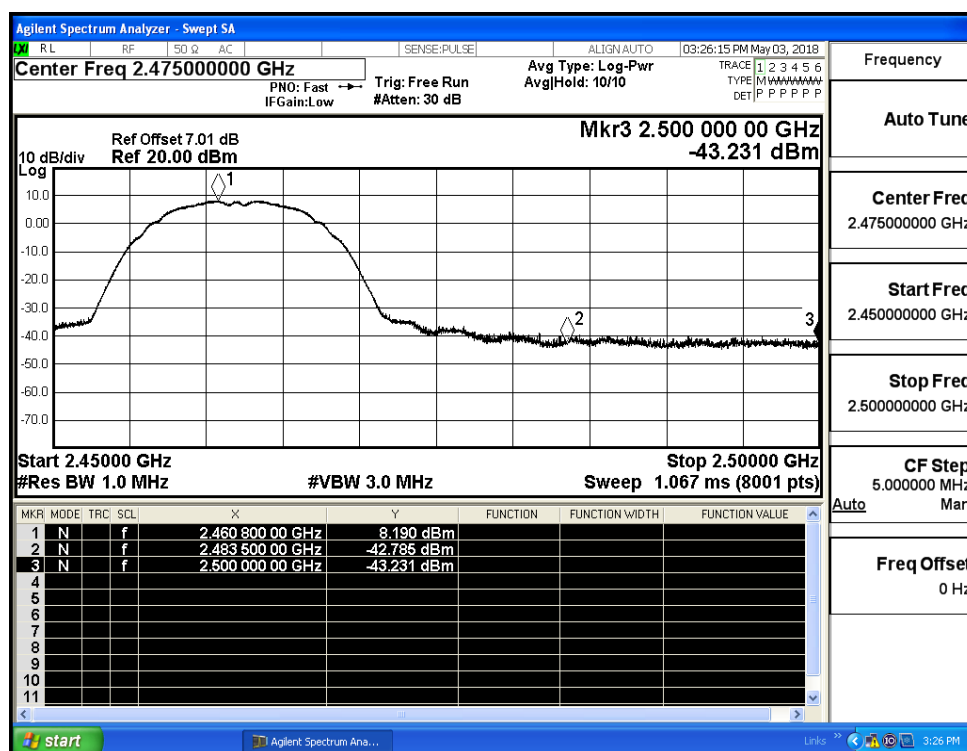
Restrict-band band-edge measurements_11B_2412_Ant0_PEAK



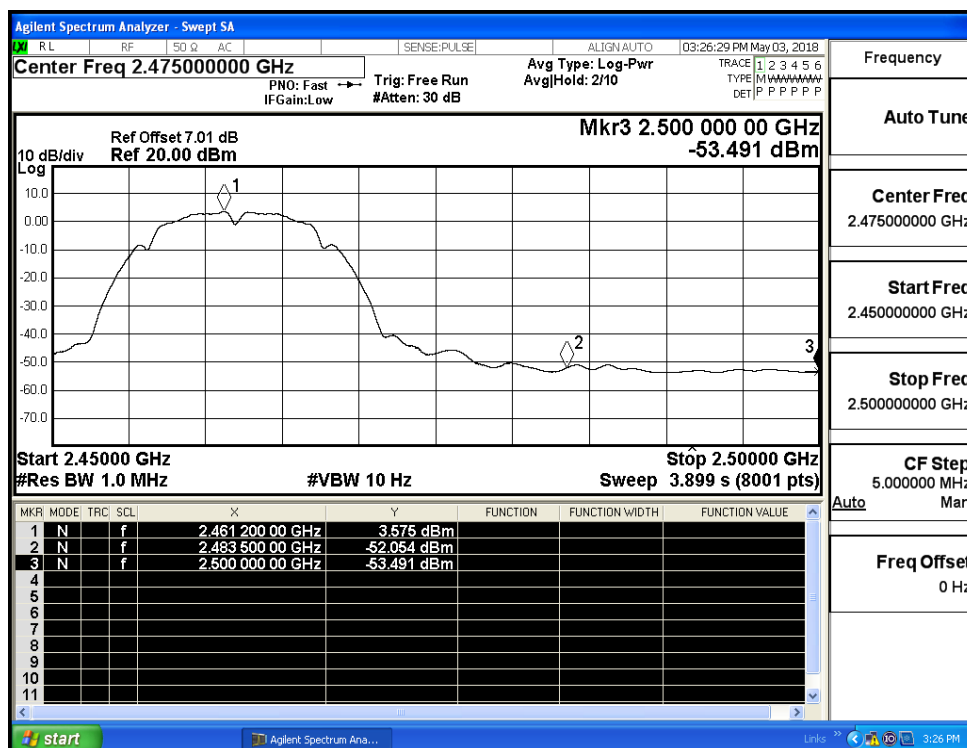
Restrict-band band-edge measurements_11B_2412_Ant0_AV



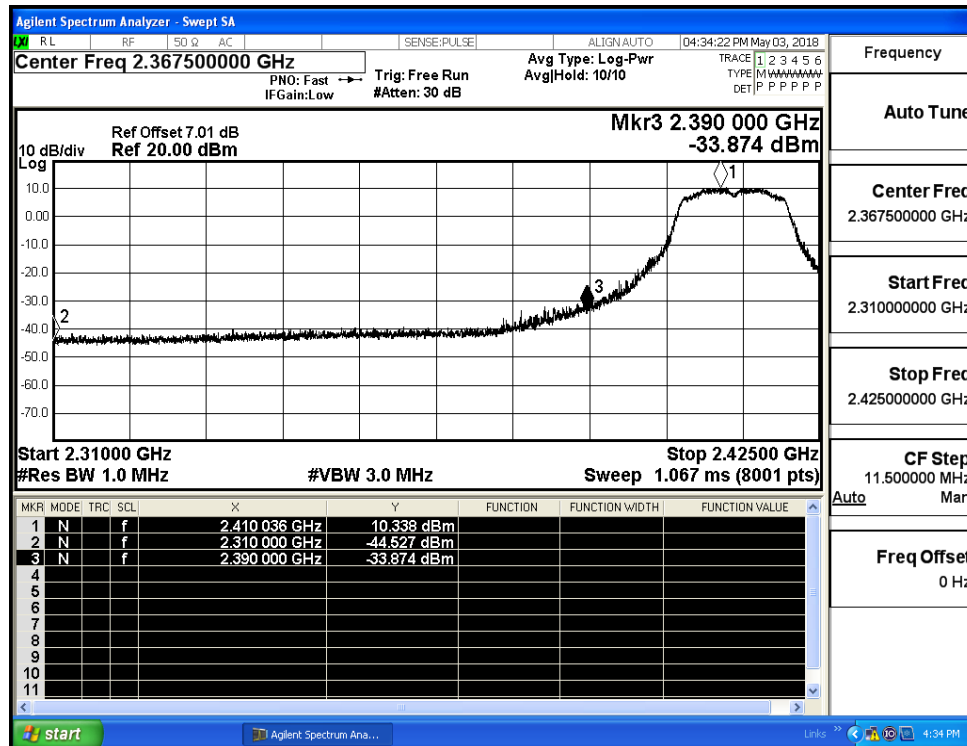
Restrict-band band-edge measurements_11B_2462_Ant0_PEAK



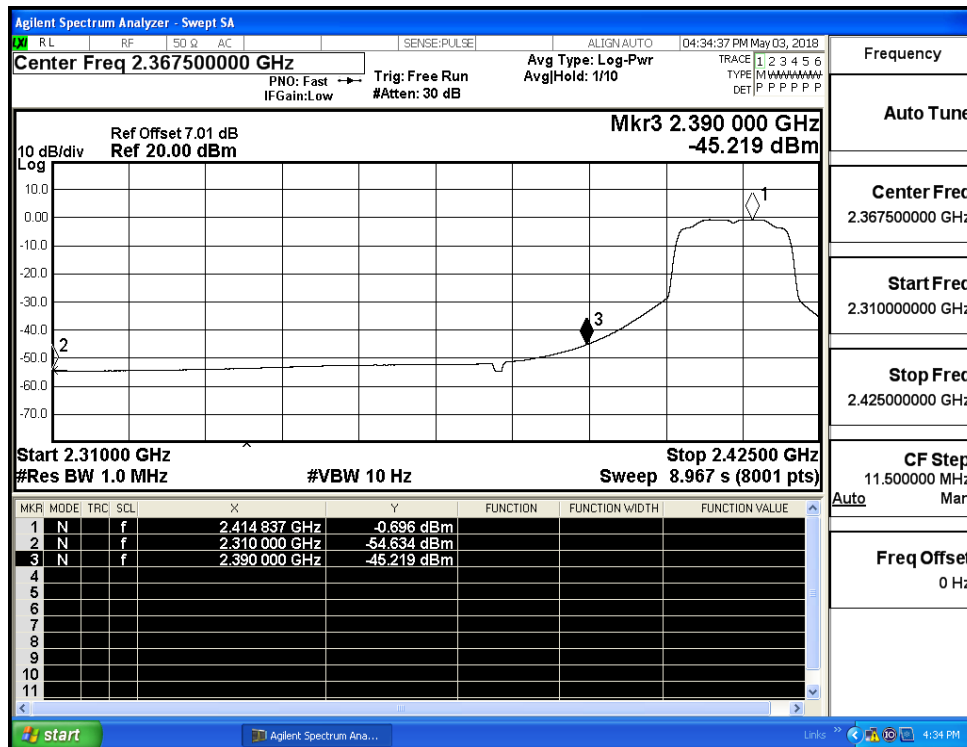
Restrict-band band-edge measurements_11B_2462_Ant0_AV



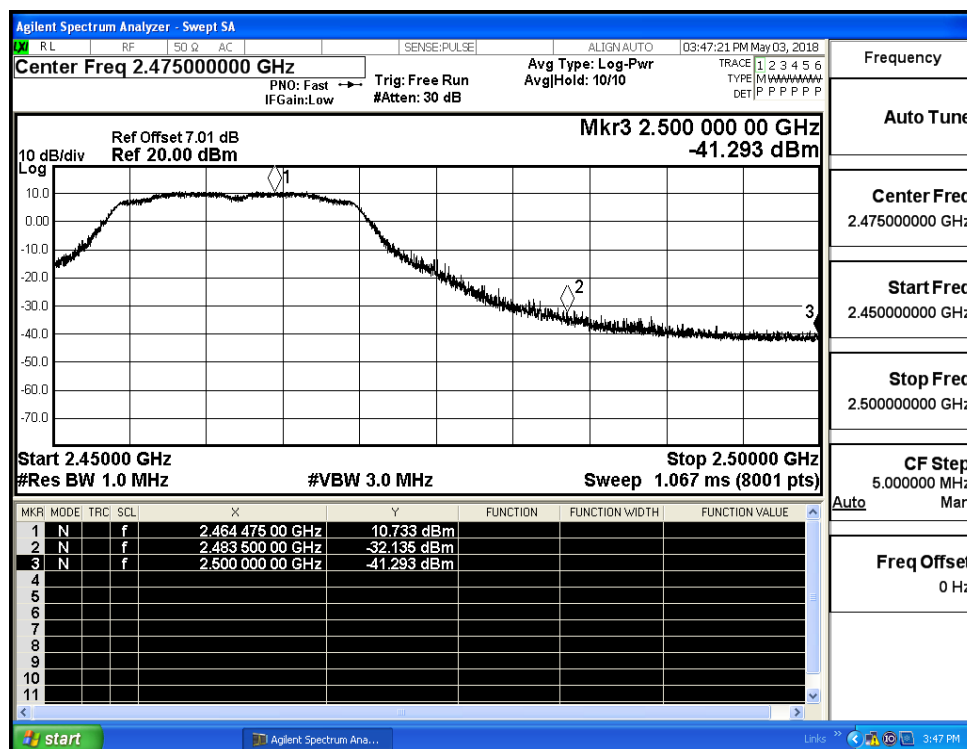
Restrict-band band-edge measurements_11G_2412_Ant0_PEAK



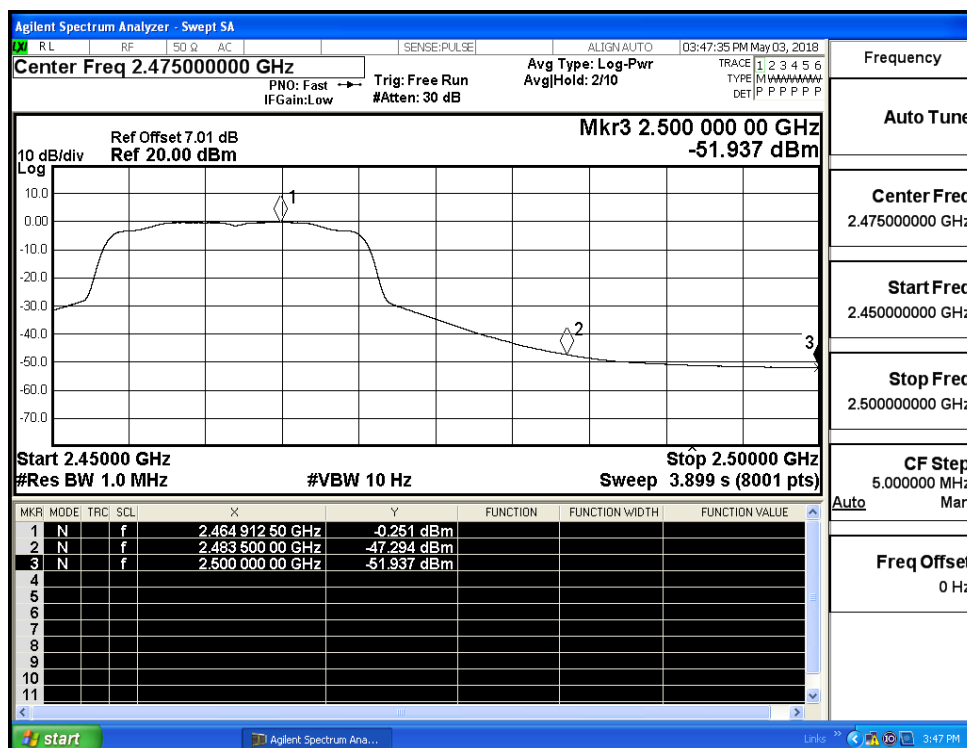
Restrict-band band-edge measurements_11G_2412_Ant0_AV



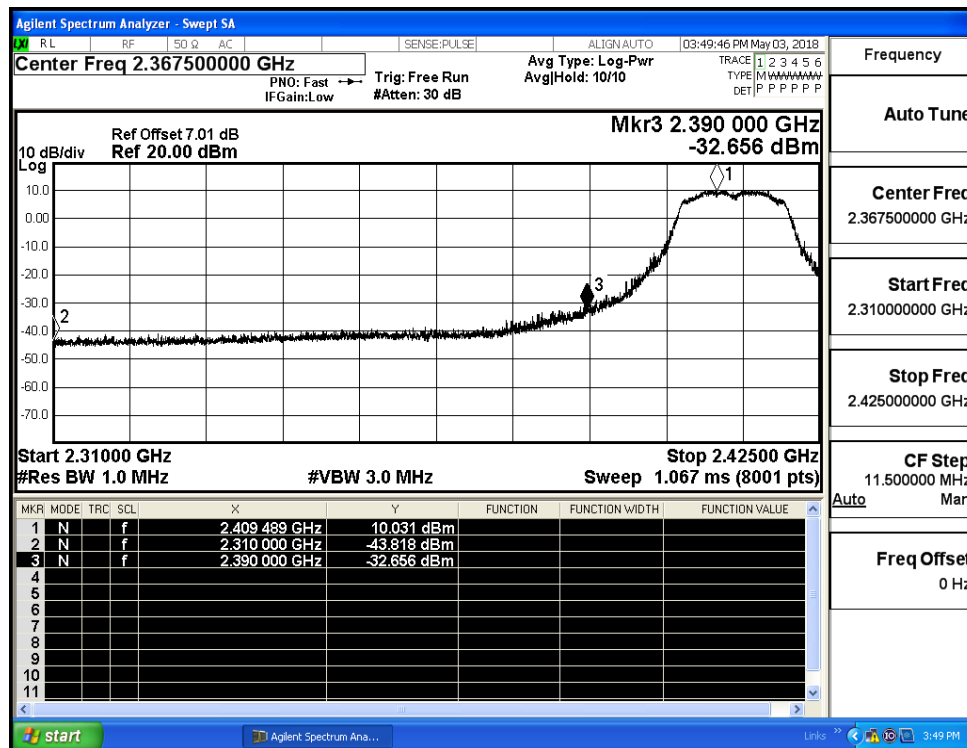
Restrict-band band-edge measurements_11G_2462_Ant0_PEAK



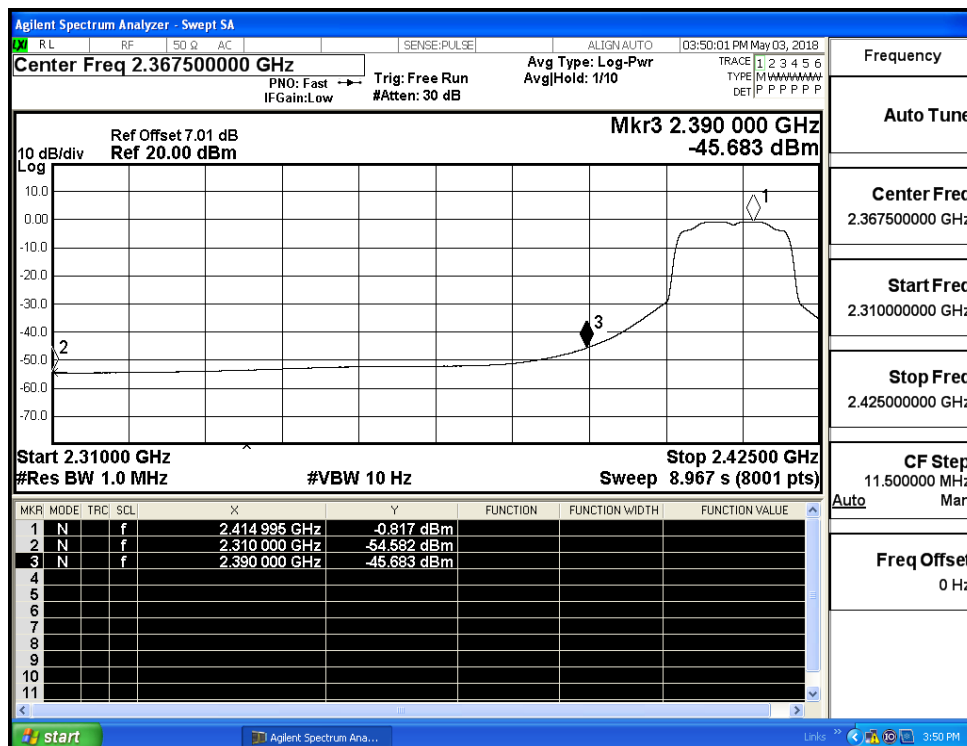
Restrict-band band-edge measurements_11G_2462_Ant0_AV



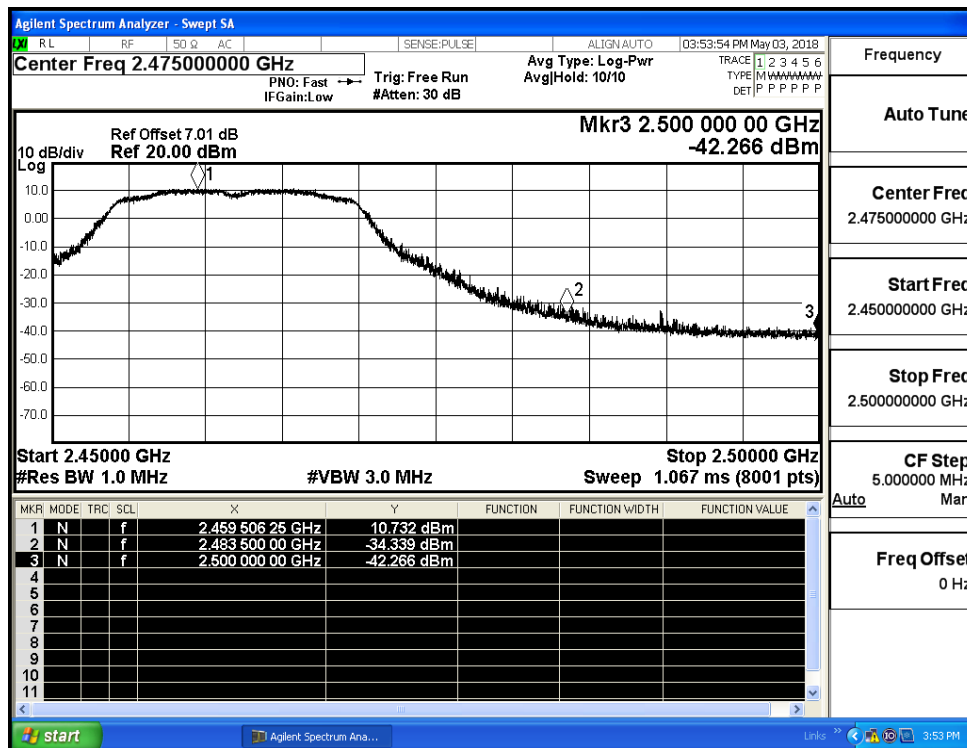
Restrict-band band-edge measurements_11N20SISO_2412_Ant0_PEAK



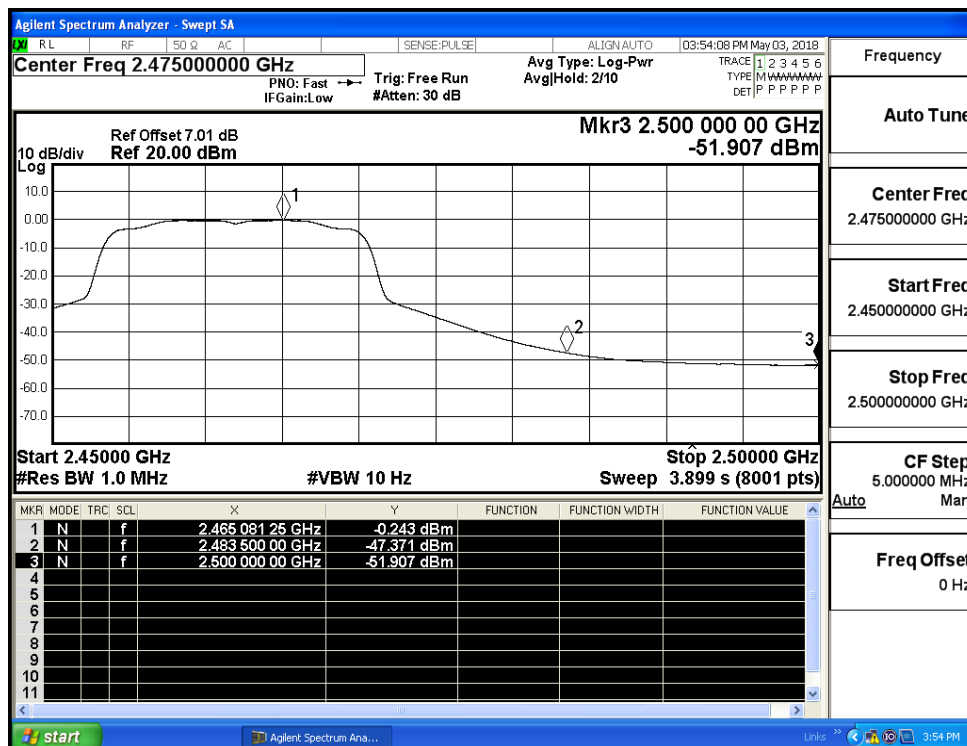
Restrict-band band-edge measurements_11N20SISO_2412_Ant0_AV



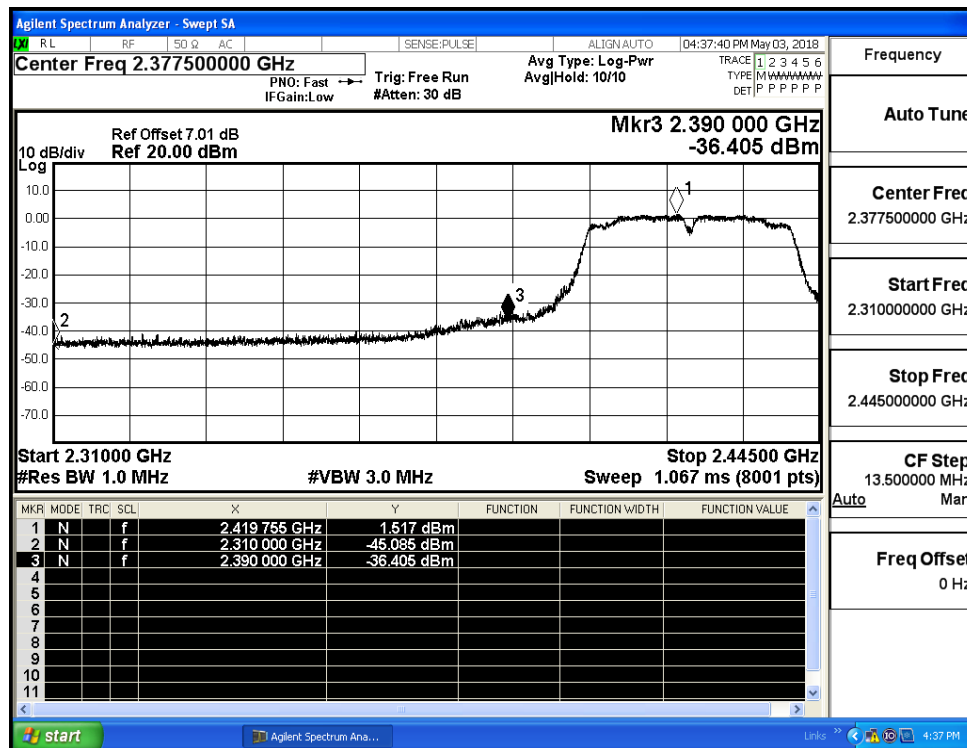
Restrict-band band-edge measurements_11N20SISO_2462_Ant0_PEAK



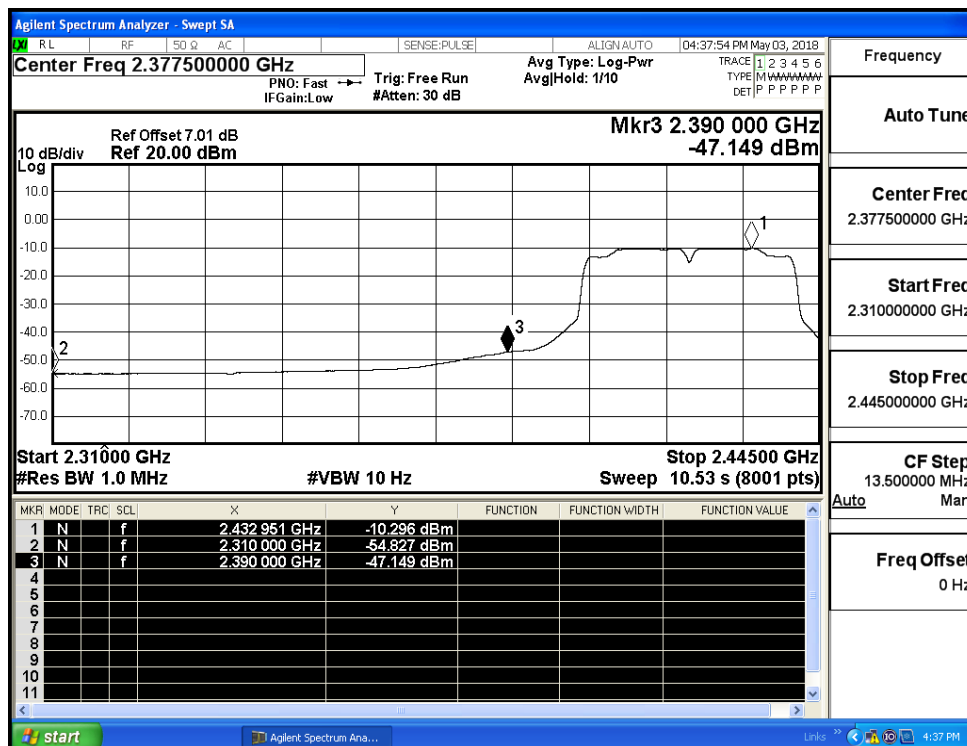
Restrict-band band-edge measurements_11N20SISO_2462_Ant0_AV



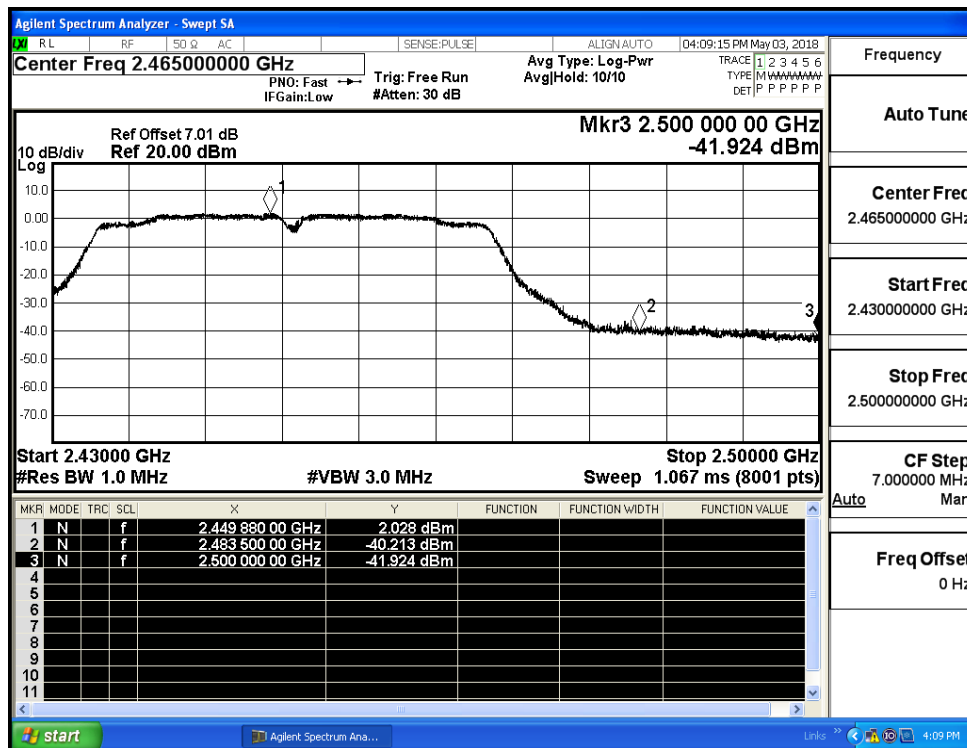
Restrict-band band-edge measurements_11N40SISO_2422_Ant0_PEAK



Restrict-band band-edge measurements_11N40SISO_2422_Ant0_AV



Restrict-band band-edge measurements_11N40SISO_2452_Ant0_PEAK



Restrict-band band-edge measurements_11N40SISO_2452_Ant0_AV

