

Appendix A

RF Test Data for 2.4G WIFI (Conducted Measurement)

Product Name: Digital Signage

Trade Mark: Sannova, Liulink

Test Model: W4303

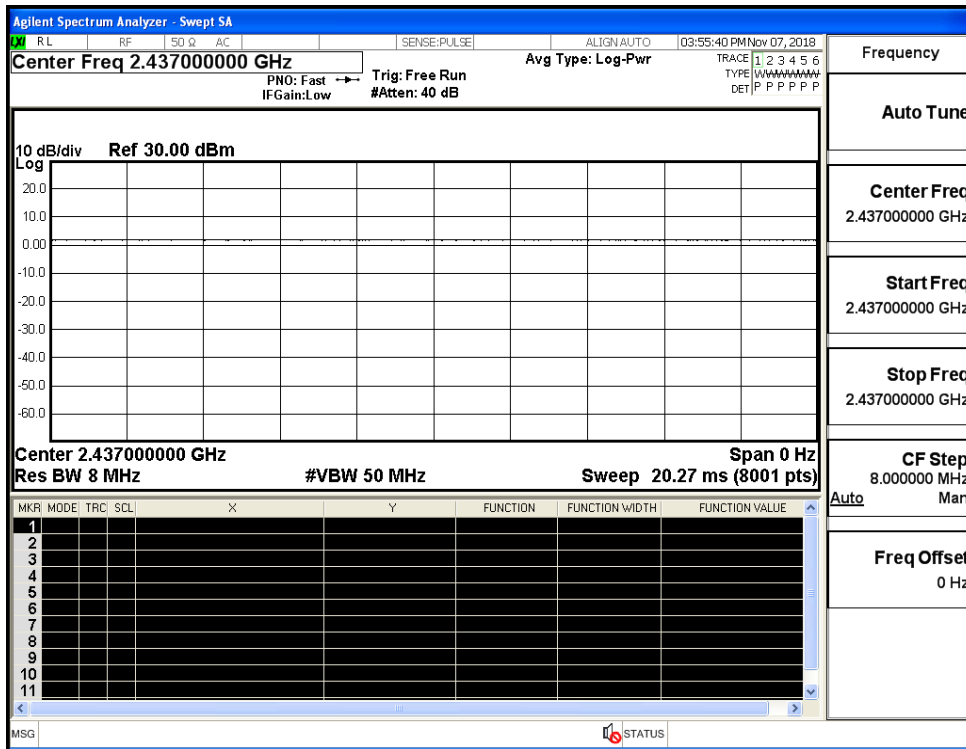
Environmental Conditions

Temperature:	23.5° C
Relative Humidity:	52.6%
ATM Pressure:	100.0 kPa
Test Engineer:	Tom.Liu
Supervised by:	Jayden.Zhuo

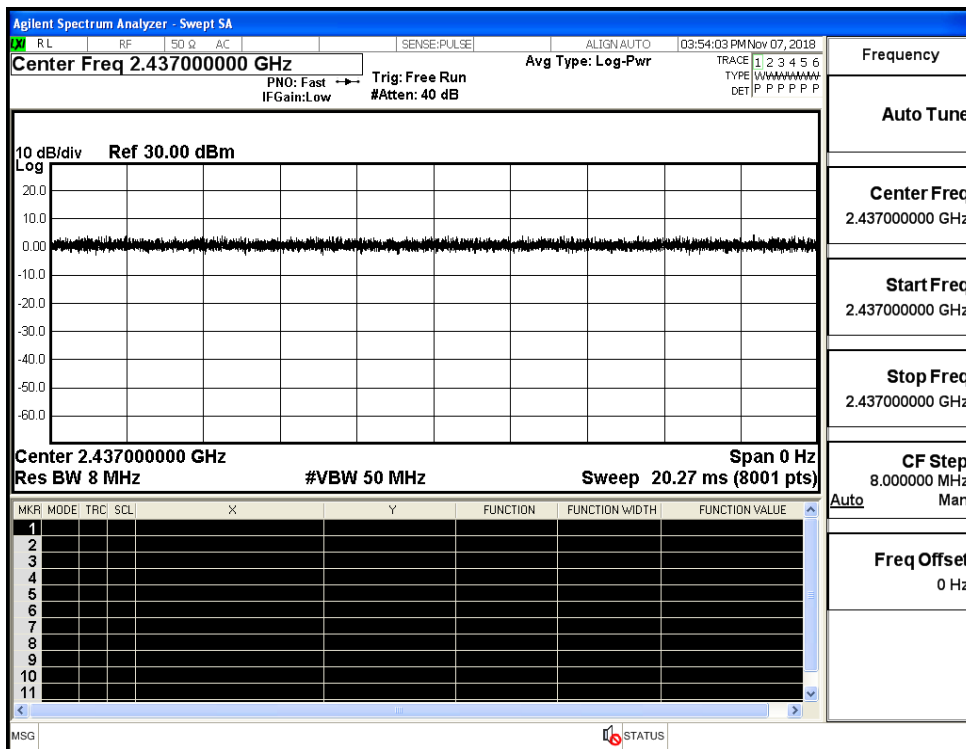
A.1 Duty Cycle

Test Mode	Test Channel	Ant	Duty Cycle[%]	Verdict
11B	2437	Ant1	100	PASS
11G	2437	Ant1	100	PASS
11N20SISO	2437	Ant1	100	PASS
11N40SISO	2437	Ant1	100	PASS

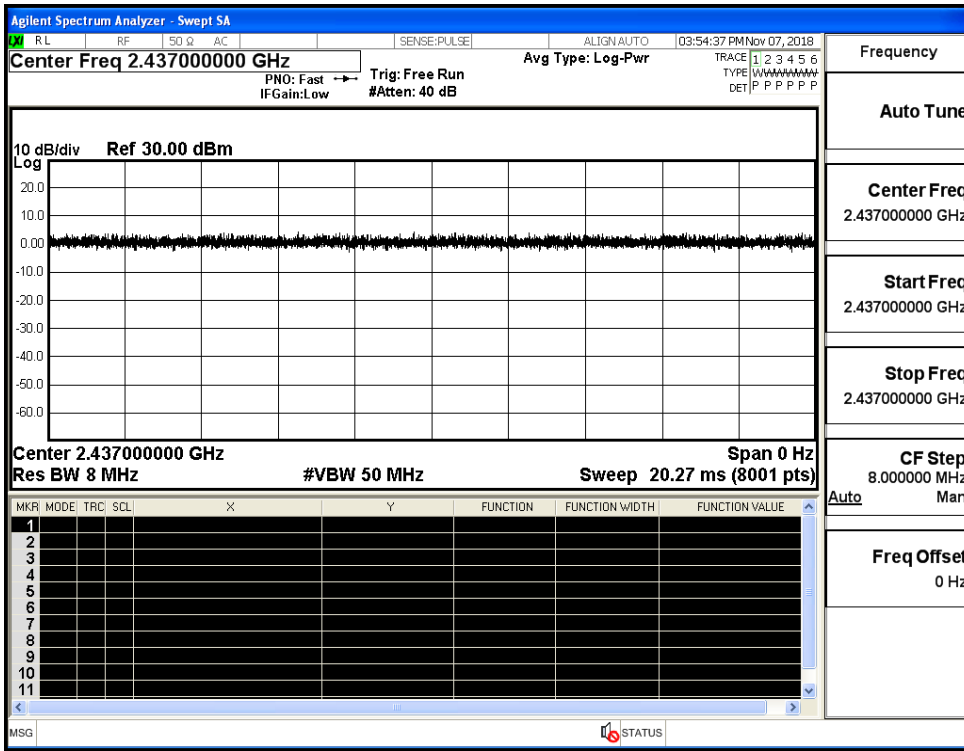
Duty Cycle_11B_2437_Ant1



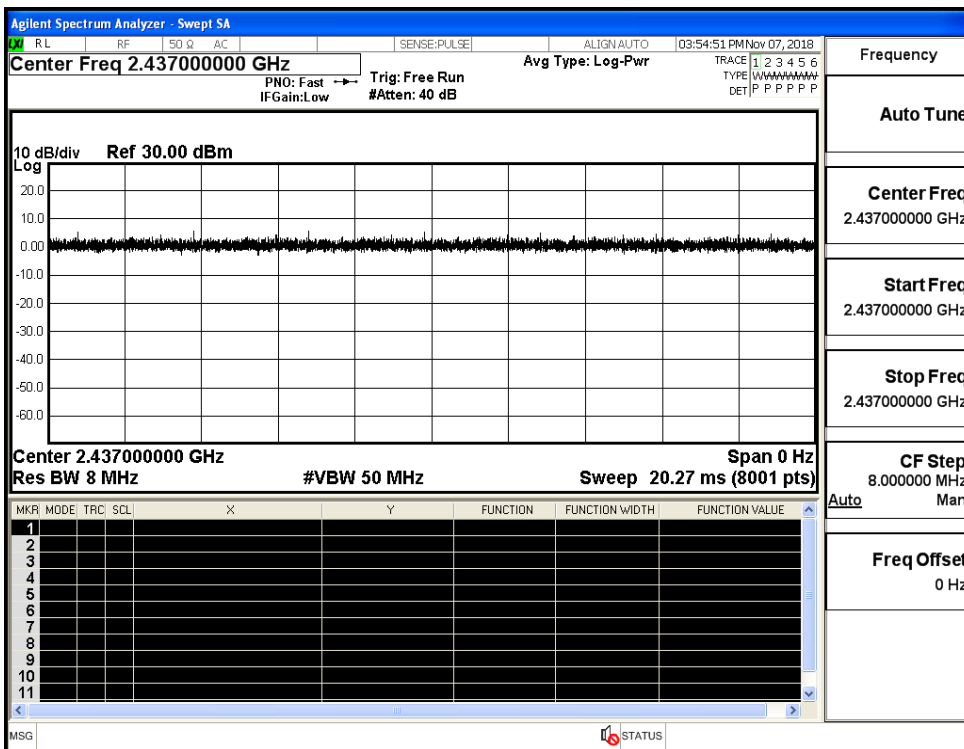
Duty Cycle_11G_2437_Ant1



Duty Cycle_11N20SISO_2437_Ant1



Duty Cycle_11N40SISO_2437_Ant1

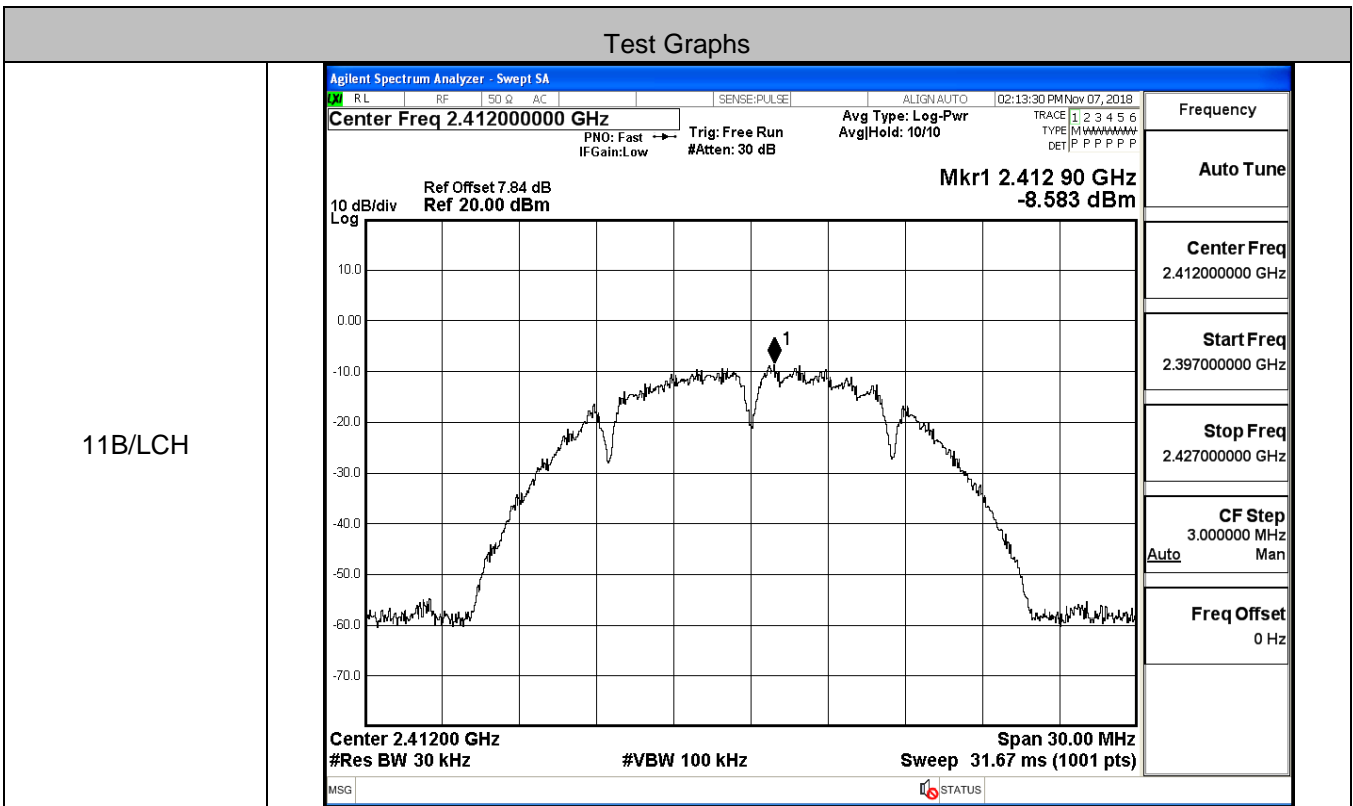


A.2 Maximum Conducted Output Power

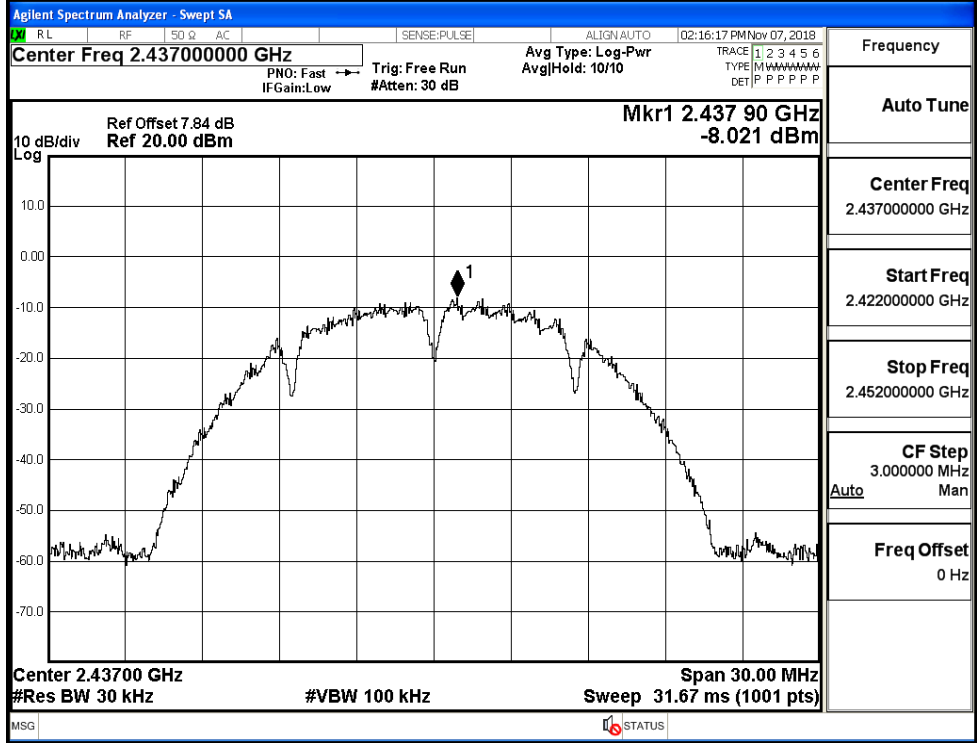
Mode	Channel	Meas.Level [dBm]	Limit [dBm]	Verdict
11B	LCH	11.25	30	PASS
	MCH	12.35	30	PASS
	HCH	11.33	30	PASS
11G	LCH	11.28	30	PASS
	MCH	11.16	30	PASS
	HCH	11.24	30	PASS
11N20SISO	LCH	13.26	30	PASS
	MCH	14.05	30	PASS
	HCH	15.07	30	PASS
11N40SISO	LCH	15.36	30	PASS
	MCH	15.17	30	PASS
	HCH	15.08	30	PASS

A.3 Maximum Power Spectral Density

Mode	Channel	Meas.Level [dBm/30KHz]	Limit [dBm/3KHz]	Verdict
11B	LCH	-8.583	8	PASS
	MCH	-8.021	8	PASS
	HCH	-8.672	8	PASS
11G	LCH	-14.032	8	PASS
	MCH	-13.799	8	PASS
	HCH	-14.688	8	PASS
11N20SISO	LCH	-13.786	8	PASS
	MCH	-12.192	8	PASS
	HCH	-12.113	8	PASS
11N40SISO	LCH	-15.983	8	PASS
	MCH	-15.937	8	PASS
	HCH	-16.510	8	PASS

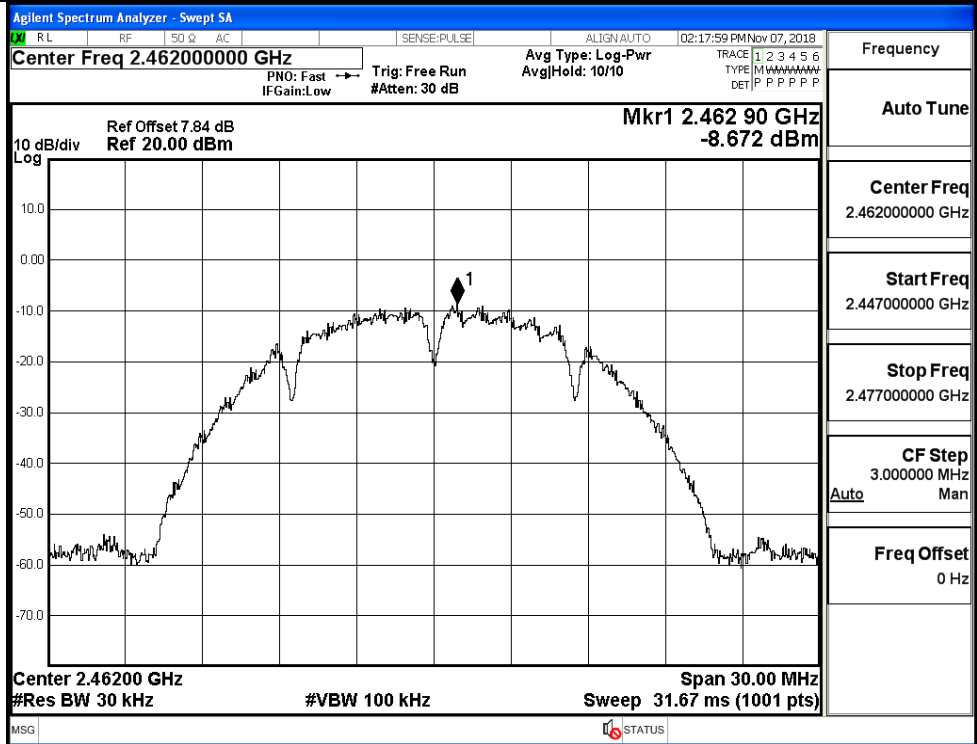


11B/MCH



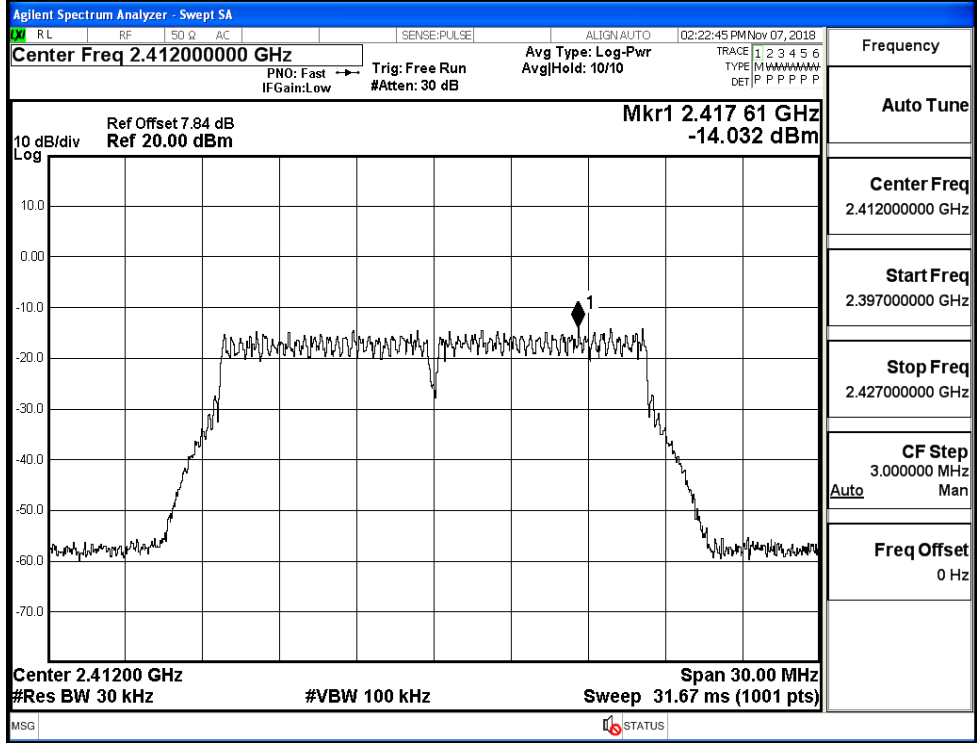
Frequency	
Auto Tune	
Center Freq	2.437000000 GHz
Start Freq	2.422000000 GHz
Stop Freq	2.452000000 GHz
CF Step	3.000000 MHz Auto Man
Freq Offset	0 Hz

11B/HCH

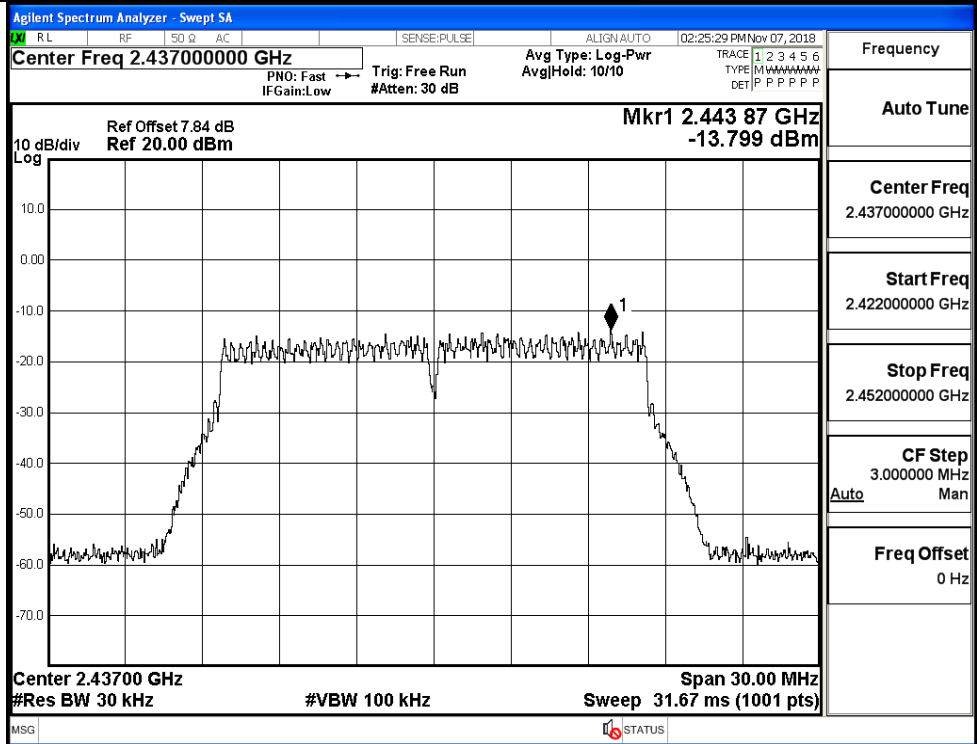


Frequency	
Auto Tune	
Center Freq	2.462000000 GHz
Start Freq	2.447000000 GHz
Stop Freq	2.477000000 GHz
CF Step	3.000000 MHz Auto Man
Freq Offset	0 Hz

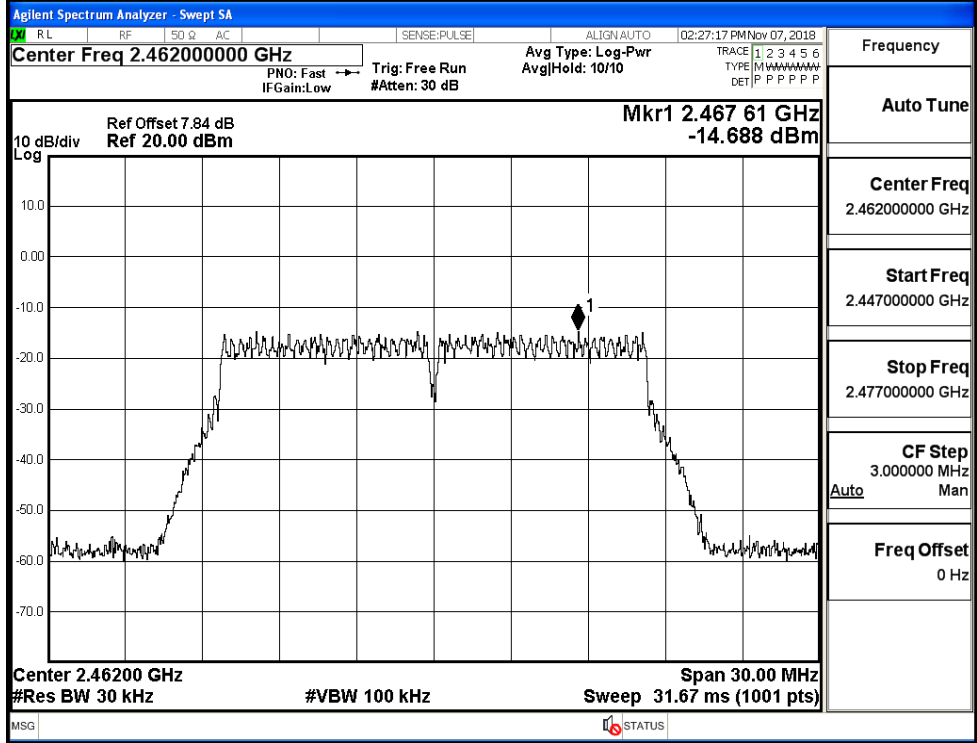
11G/LCH



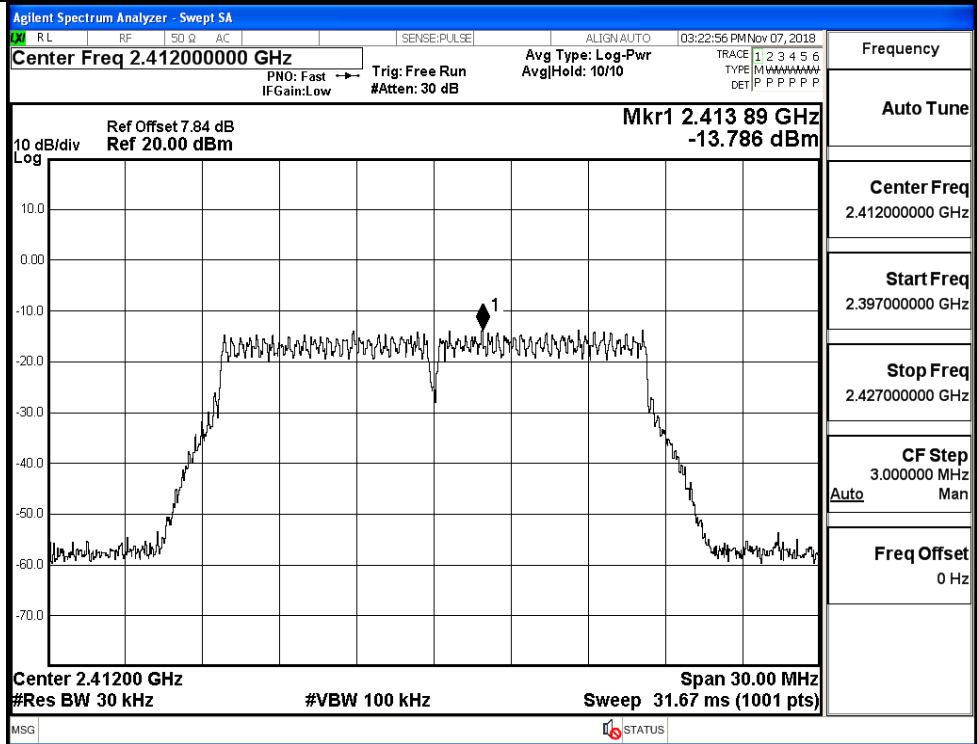
11G/MCH



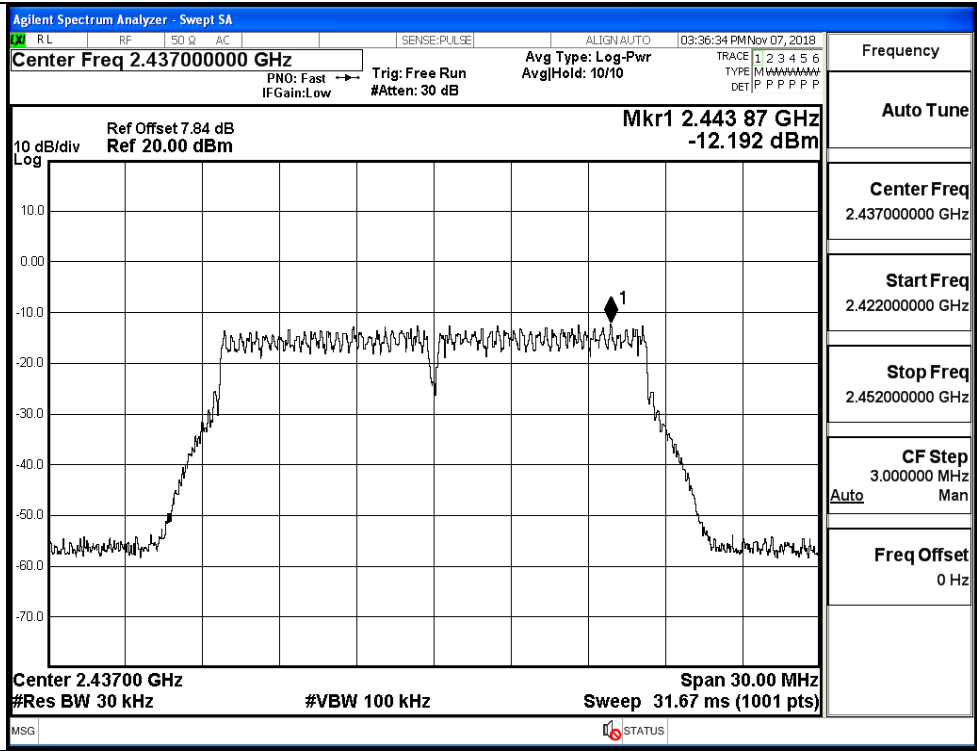
11G/HCH



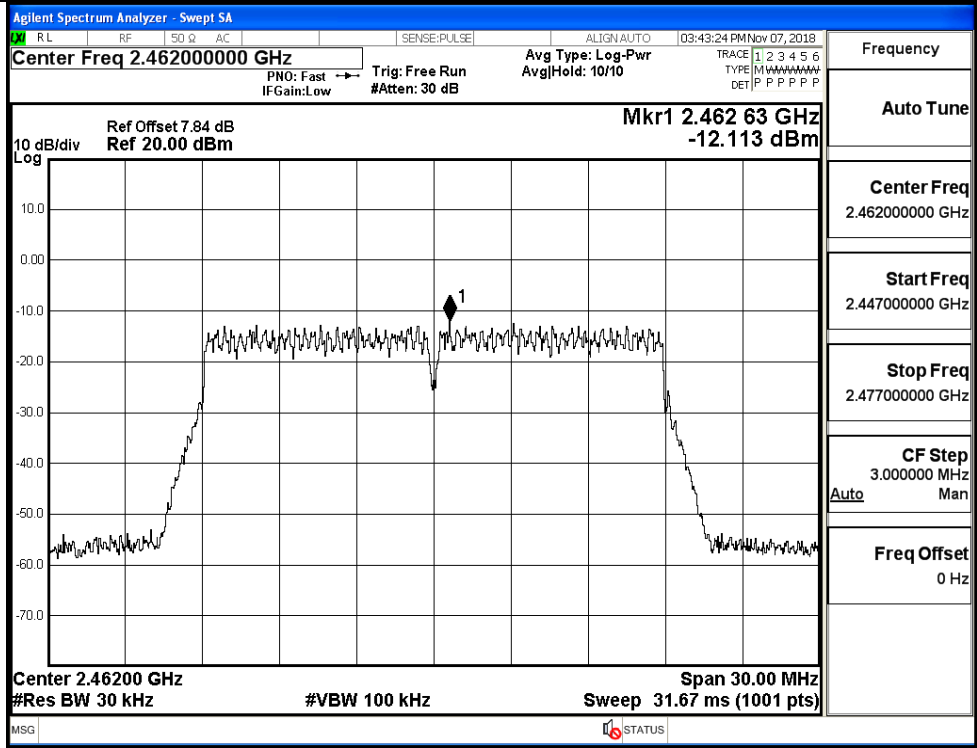
11N20SISO/LCH



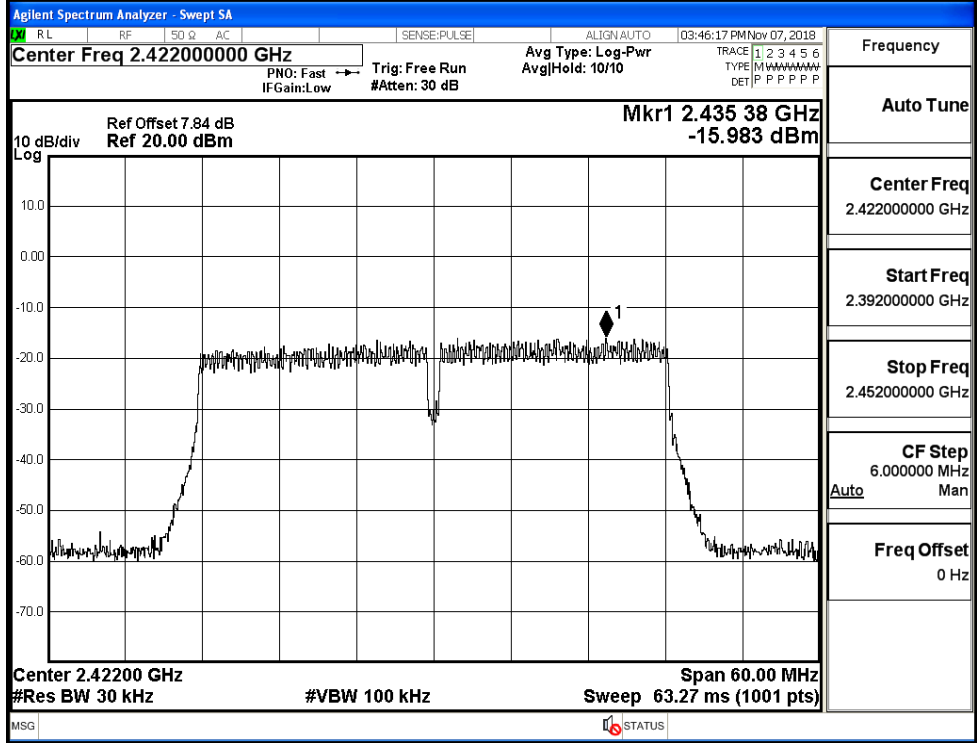
11N20SISO/MCH



11N20SISO/HCH

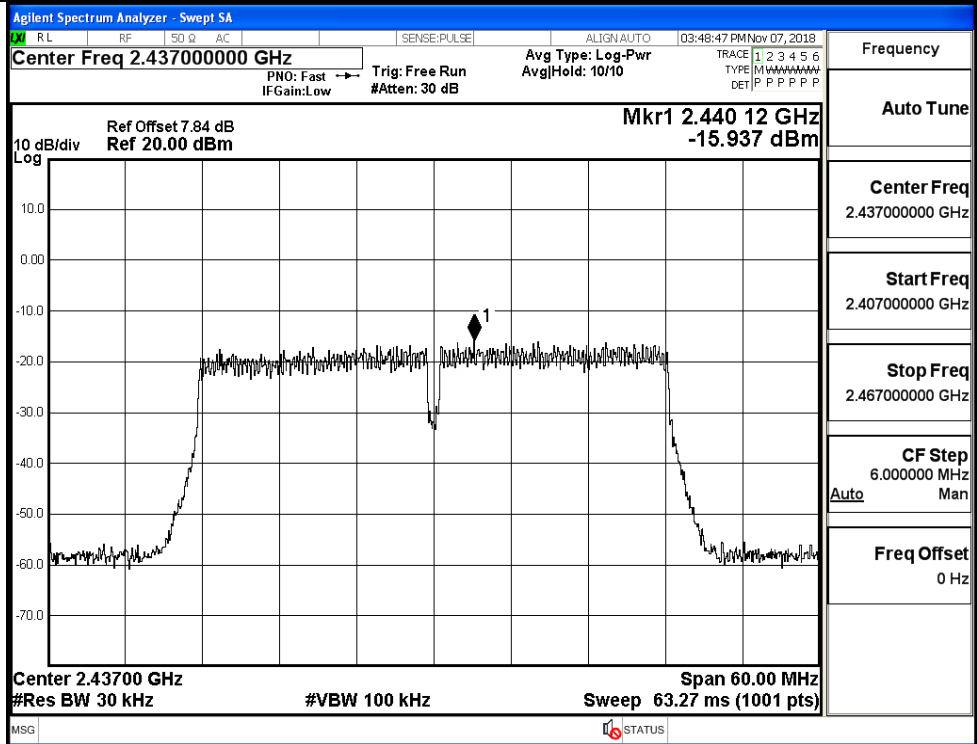


11N40SISO/LCH



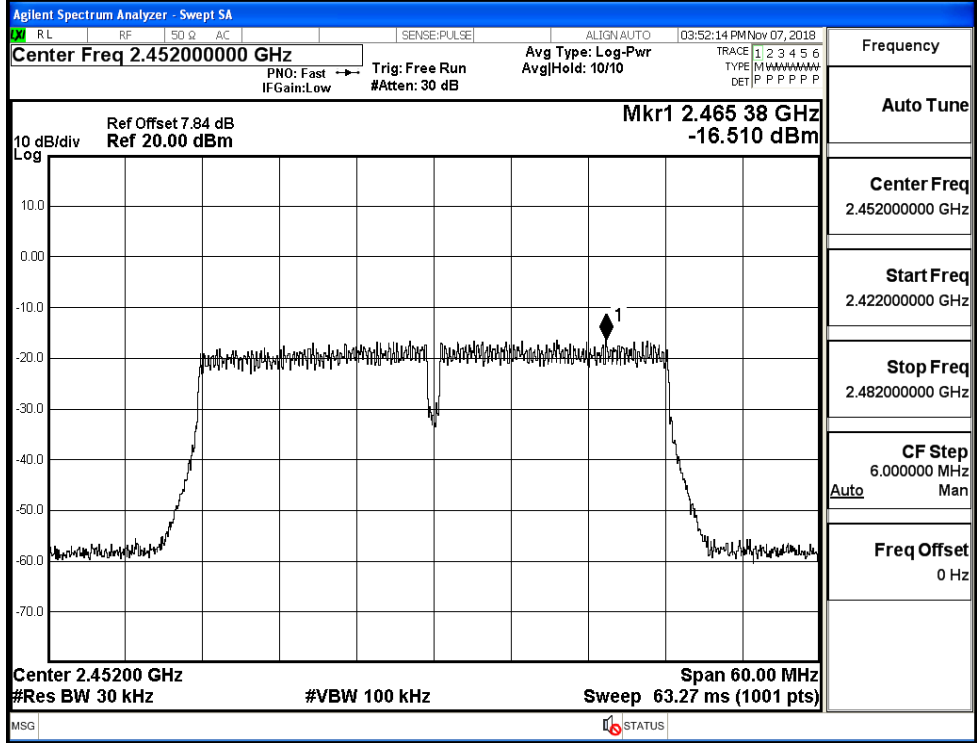
Frequency
Auto Tune
Center Freq 2.42200000 GHz
Start Freq 2.39200000 GHz
Stop Freq 2.45200000 GHz
CF Step 6.000000 MHz Auto Man
Freq Offset 0 Hz

11N40SISO/MCH



Frequency
Auto Tune
Center Freq 2.43700000 GHz
Start Freq 2.40700000 GHz
Stop Freq 2.46700000 GHz
CF Step 6.000000 MHz Auto Man
Freq Offset 0 Hz

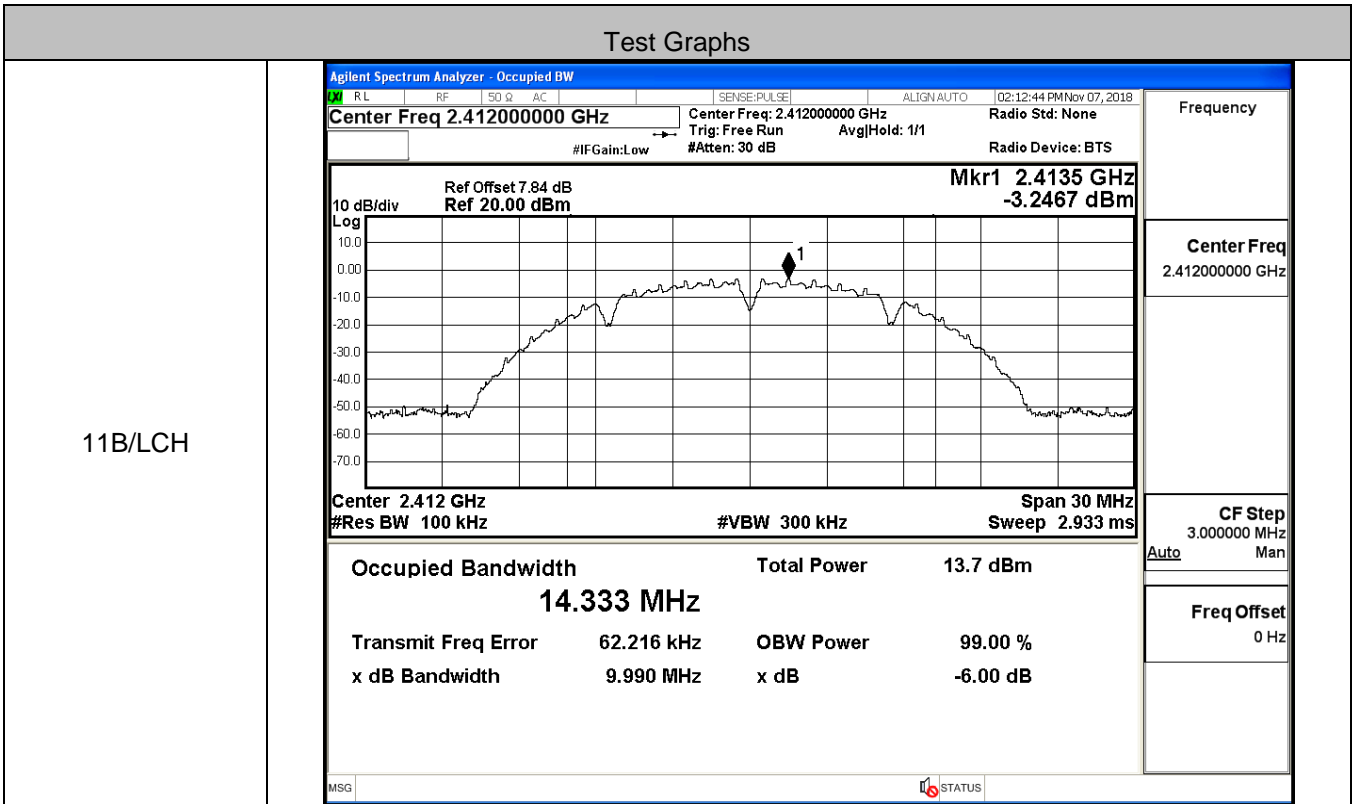
11N40SISO/HCH



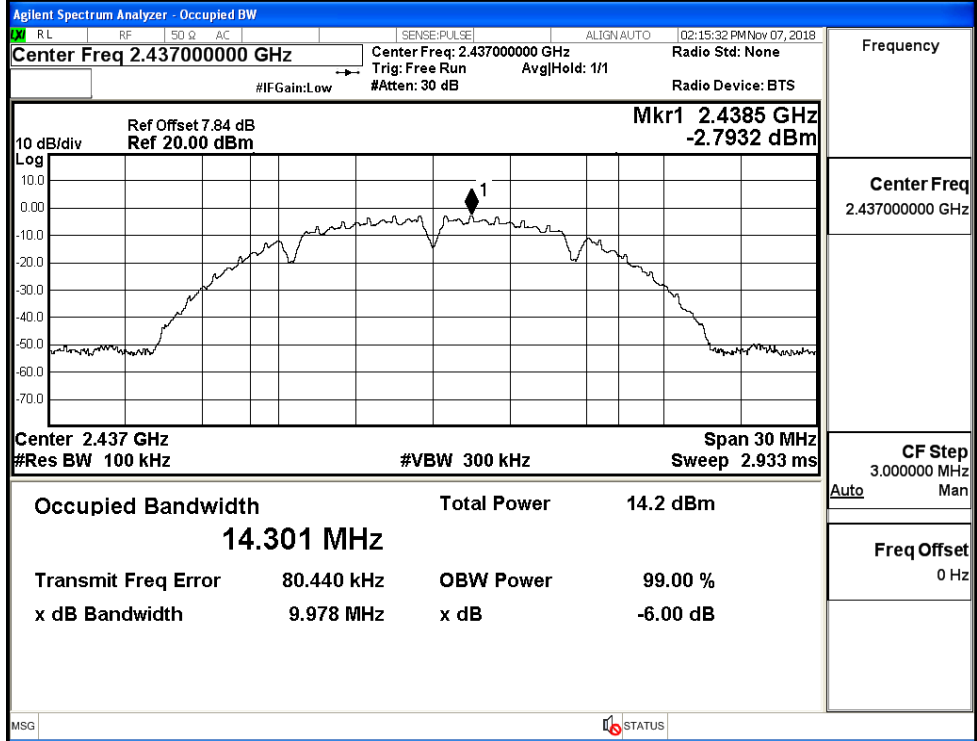
A.4 6dB Bandwidth

Mode	Channel	6dB Bandwidth [MHz]	Limit [MHz]	Verdict
11B	LCH	9.990	≥0.5	PASS
	MCH	9.978	≥0.5	PASS
	HCH	9.986	≥0.5	PASS
11G	LCH	16.62	≥0.5	PASS
	MCH	16.59	≥0.5	PASS
	HCH	16.62	≥0.5	PASS
11N20SISO	LCH	17.84	≥0.5	PASS
	MCH	17.82	≥0.5	PASS
	HCH	17.84	≥0.5	PASS
11N40SISO	LCH	36.51	≥0.5	PASS
	MCH	36.49	≥0.5	PASS
	HCH	36.50	≥0.5	PASS

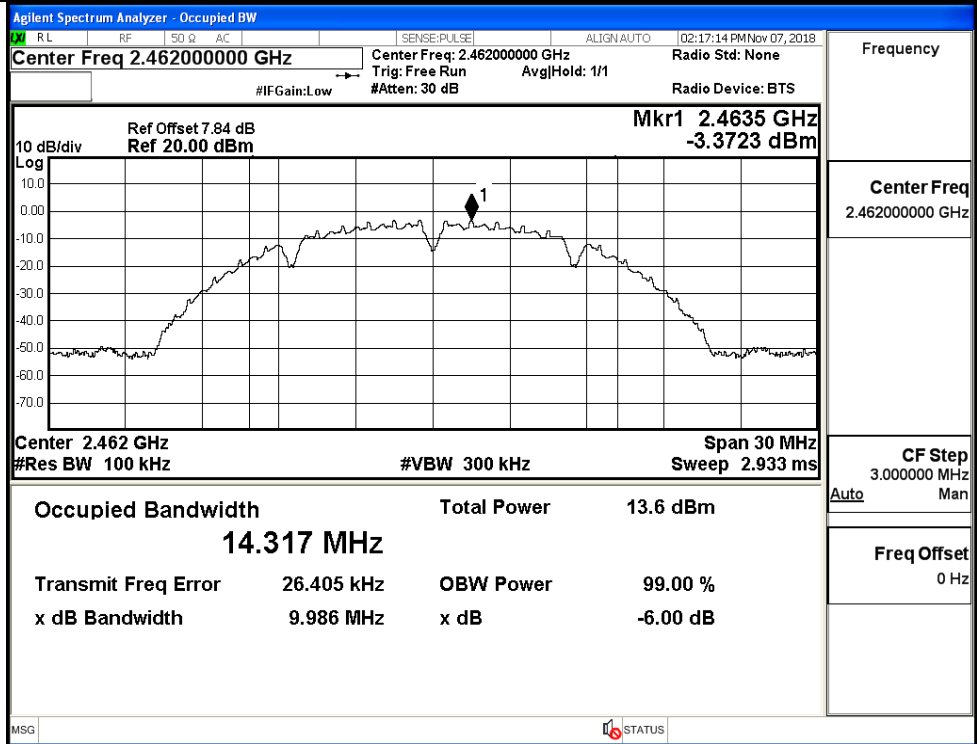
Test Graphs



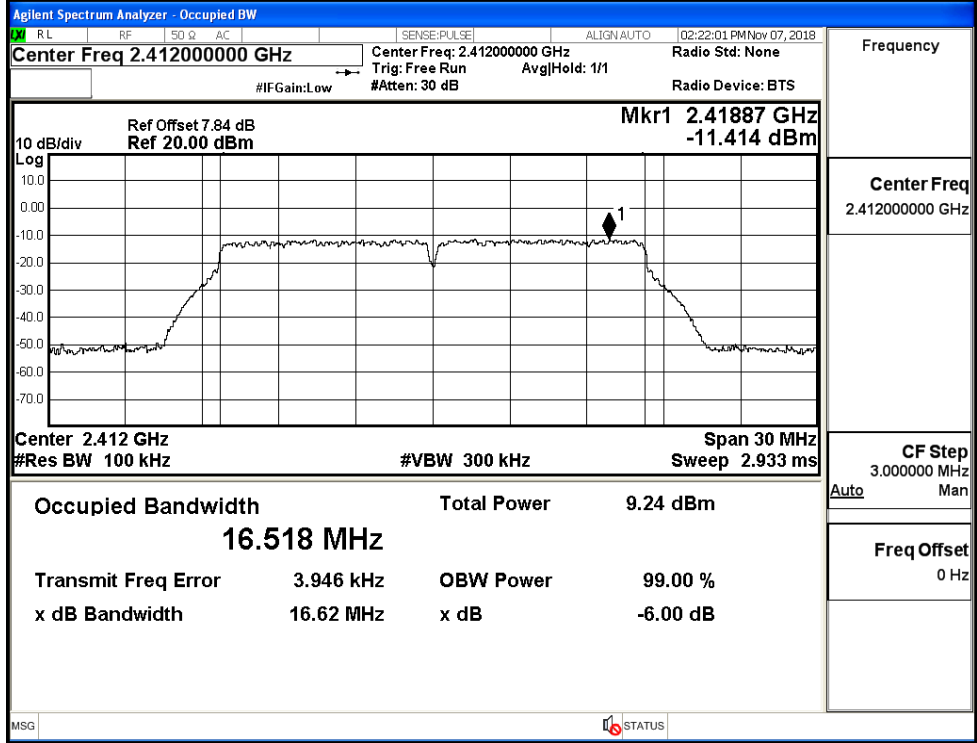
11B/MCH



11B/HCH



11G/LCH



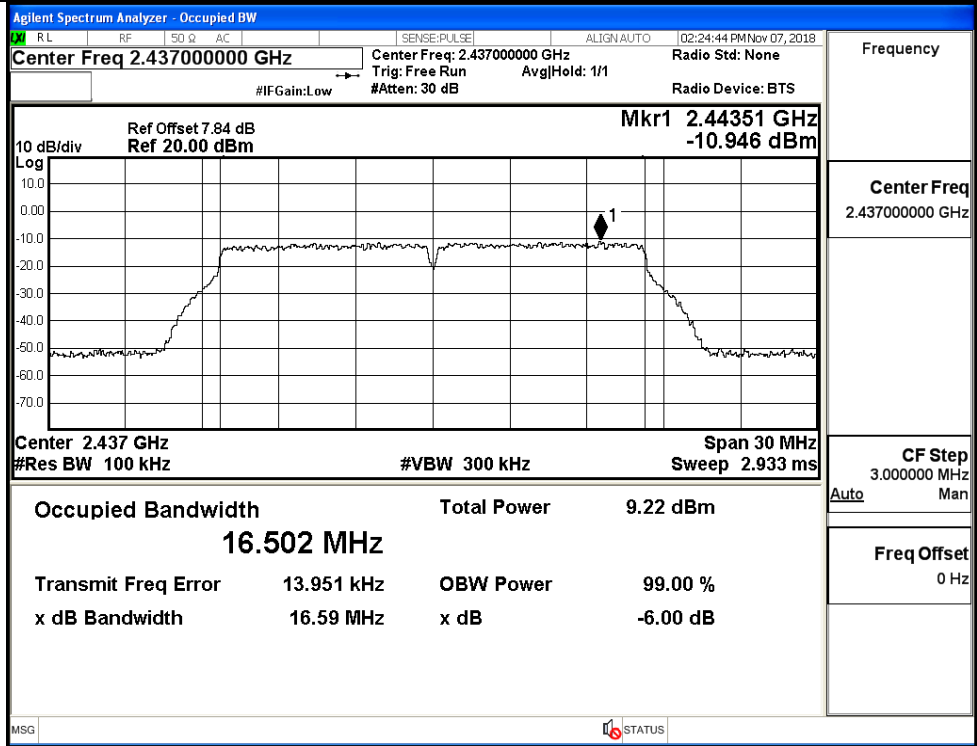
Frequency

Center Freq
2.41200000 GHz

CF Step
3.000000 MHz
Auto Man

Freq Offset
0 Hz

11G/MCH



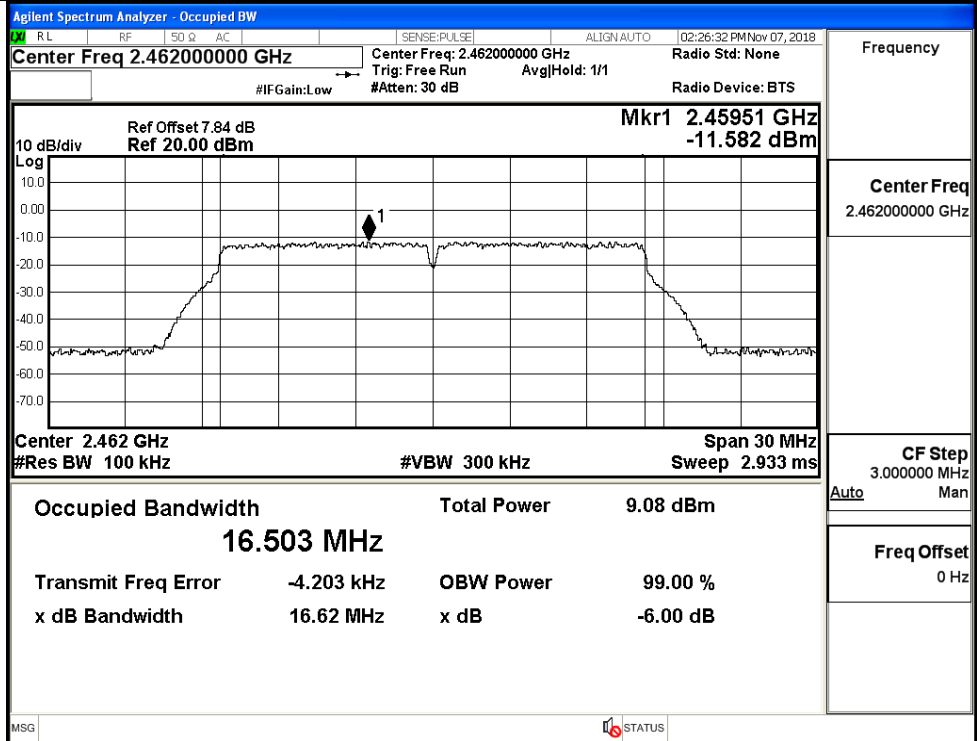
Frequency

Center Freq
2.43700000 GHz

CF Step
3.000000 MHz
Auto Man

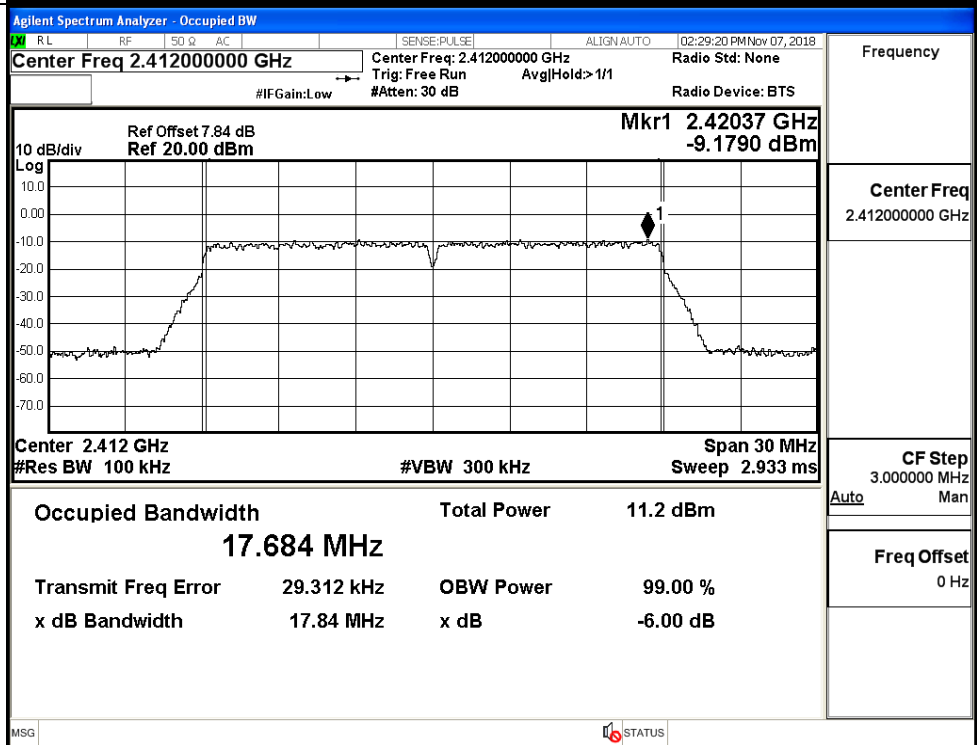
Freq Offset
0 Hz

11G/HCH



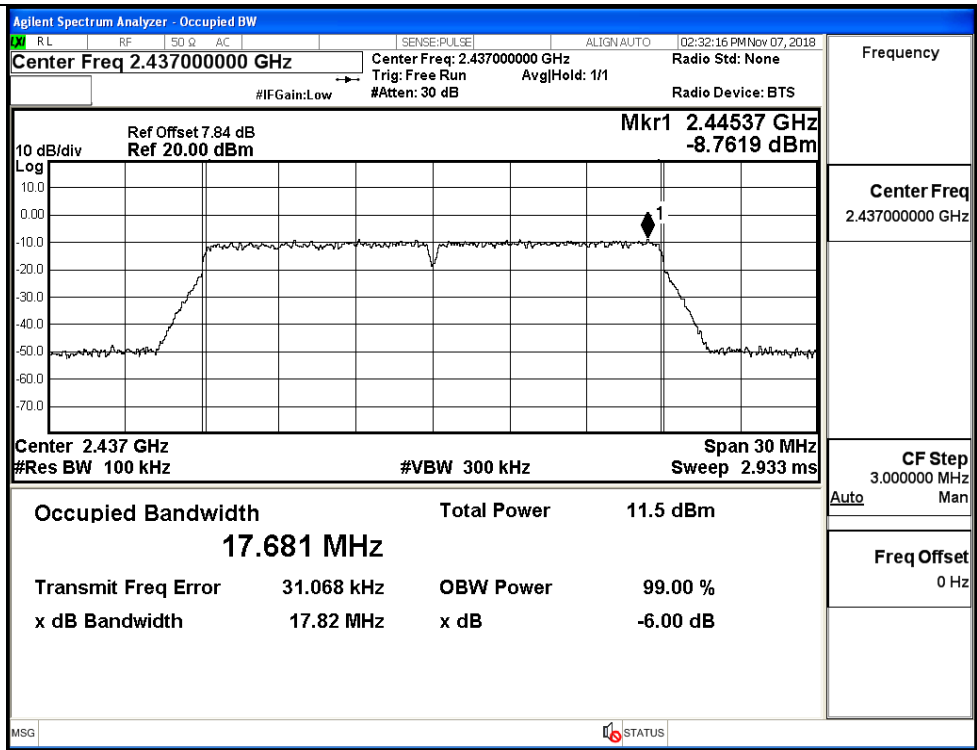
Frequency	2.46200000 GHz
Center Freq	2.46200000 GHz
CF Step	3.000000 MHz
Auto	Man
Freq Offset	0 Hz

11N20SISO/LCH

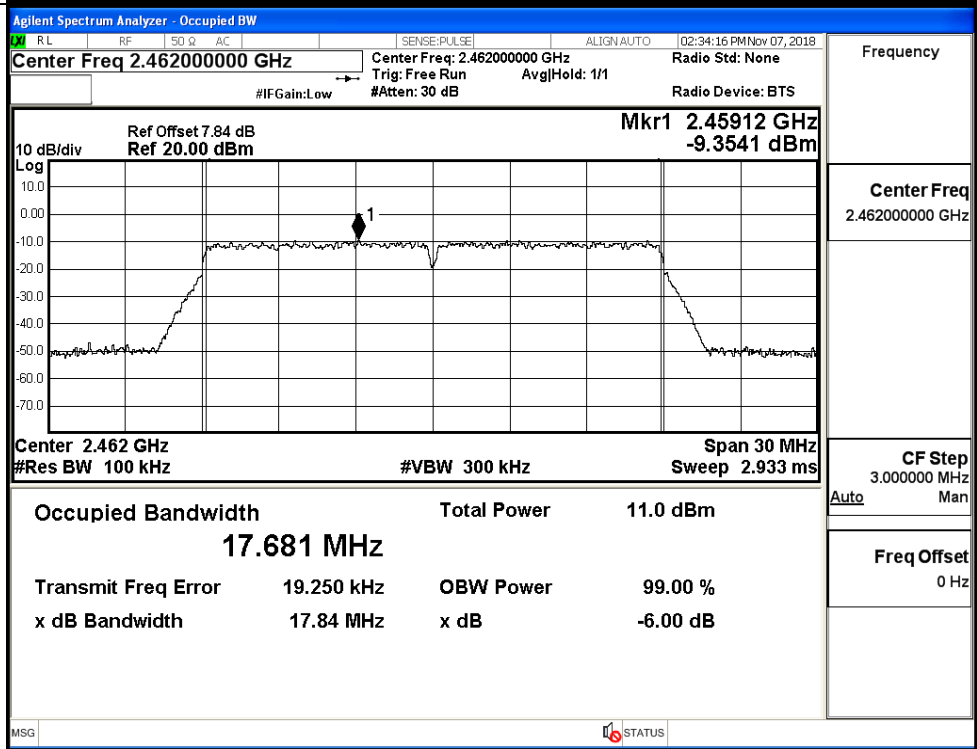


Frequency	2.41200000 GHz
Center Freq	2.41200000 GHz
CF Step	3.000000 MHz
Auto	Man
Freq Offset	0 Hz

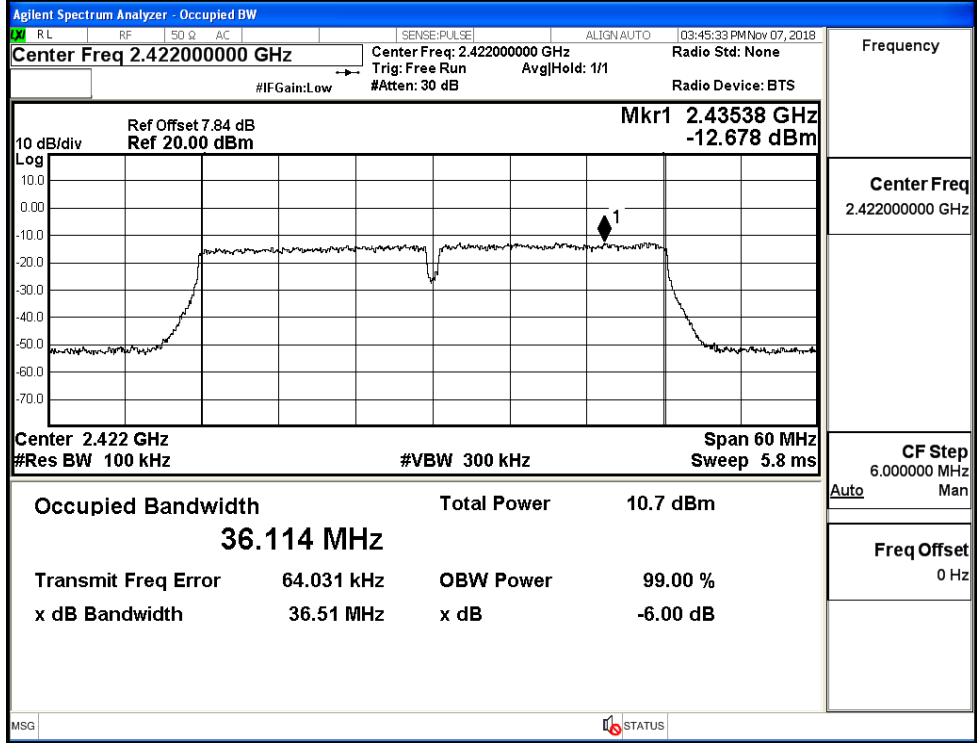
11N20SISO/MCH



11N20SISO/HCH

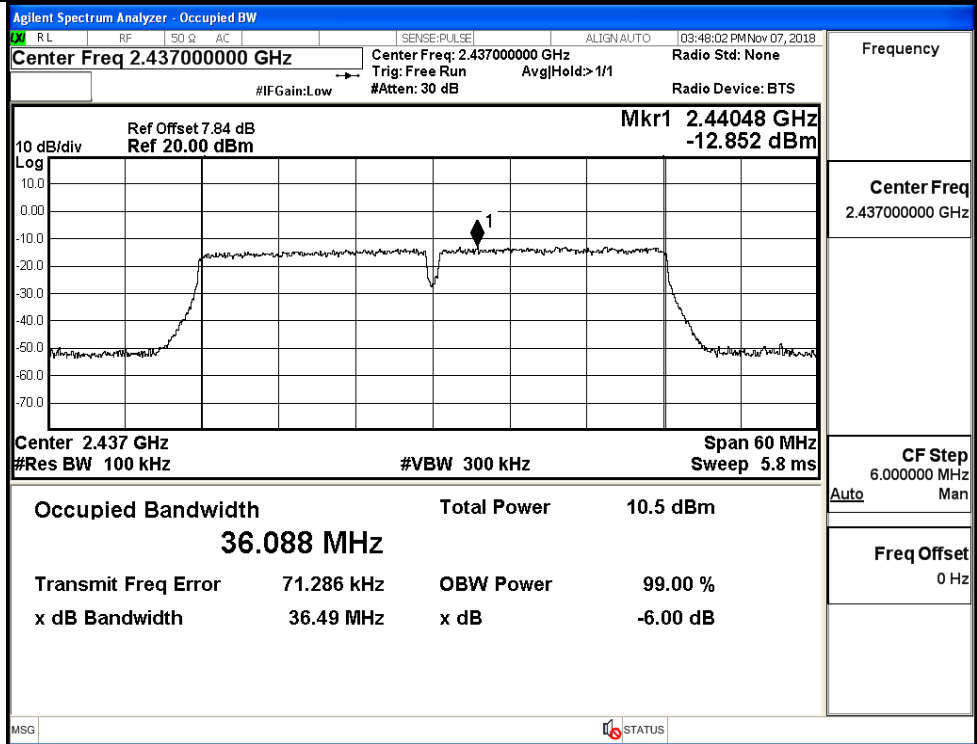


11N40SISO/LCH



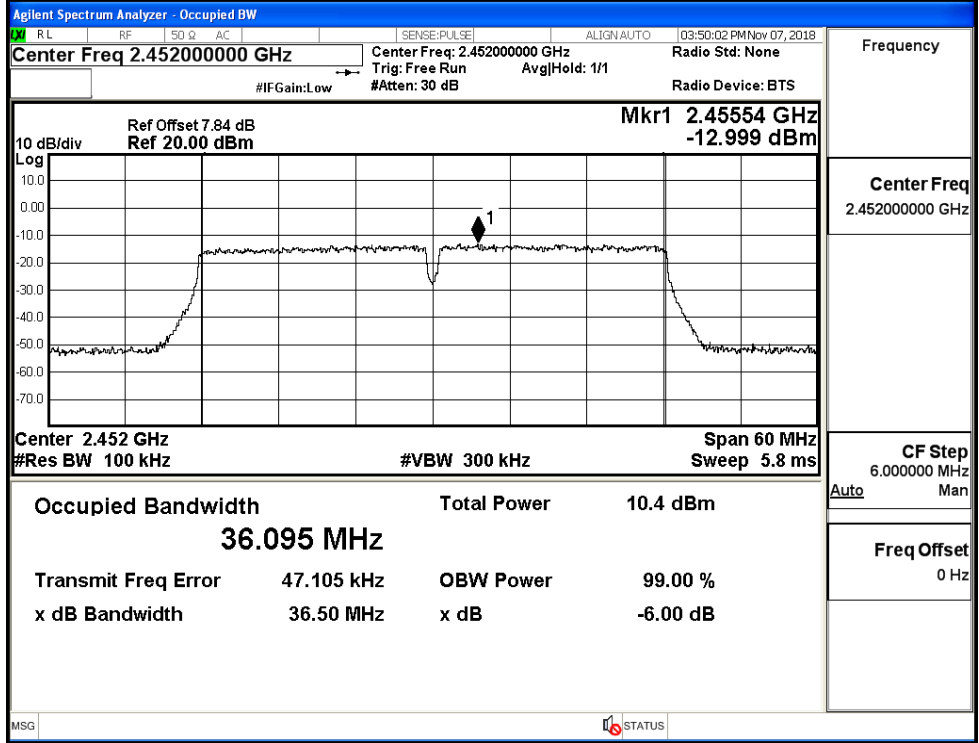
Frequency	2.42200000 GHz
Center Freq	2.42200000 GHz
CF Step	6.000000 MHz
Auto	Man
Freq Offset	0 Hz

11N40SISO/MCH



Frequency	2.43700000 GHz
Center Freq	2.43700000 GHz
CF Step	6.000000 MHz
Auto	Man
Freq Offset	0 Hz

11N40SISO/HCH

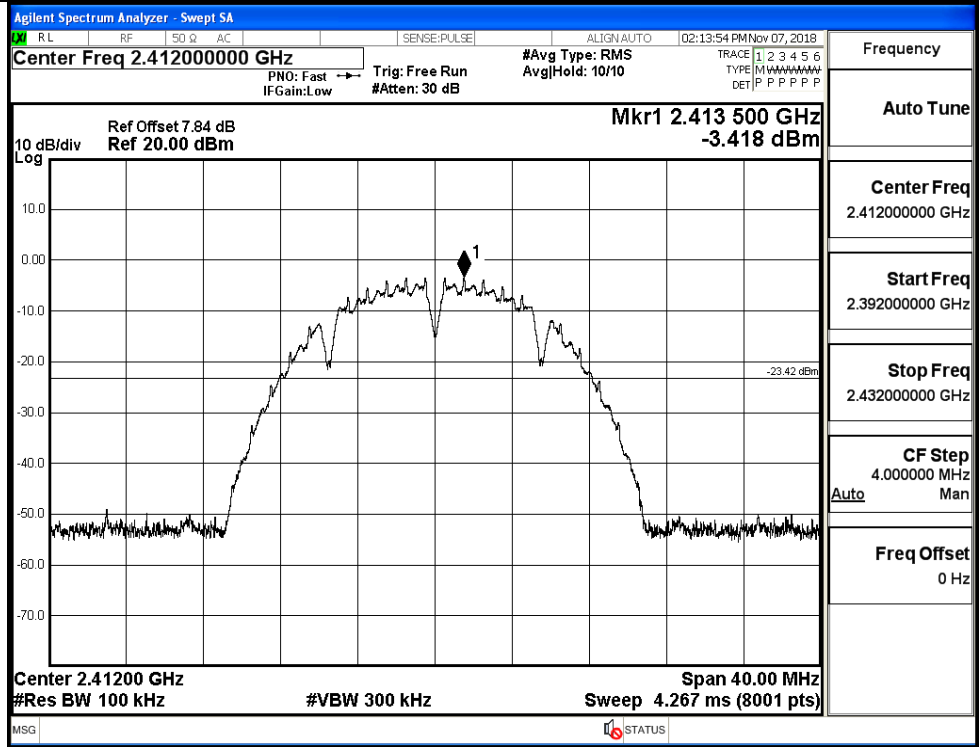


A.5 RF Conducted Spurious Emissions

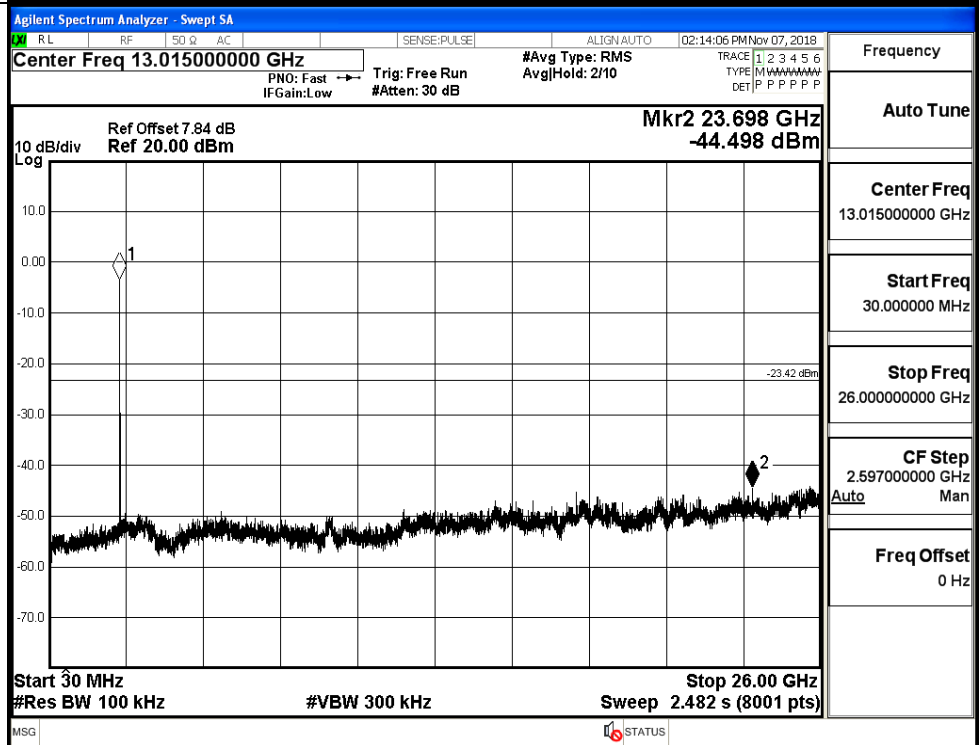
Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
11B	LCH	-3.418	-44.498	-23.418	PASS
	MCH	-2.908	-44.213	-22.908	PASS
	HCH	-3.518	-43.509	-23.518	PASS
11G	LCH	-11.574	-44.303	-31.574	PASS
	MCH	-11.095	-43.655	-31.095	PASS
	HCH	-11.847	-42.910	-31.847	PASS
11N20SISO	LCH	-11.022	-43.560	-31.022	PASS
	MCH	-9.495	-43.942	-29.495	PASS
	HCH	-9.28	-44.875	-29.280	PASS
11N40SISO	LCH	-12.927	-44.251	-32.927	PASS
	MCH	-13.108	-43.568	-33.108	PASS
	HCH	-13.367	-43.977	-33.367	PASS

11B_LCH_Graphs

Pref/11B/LCH

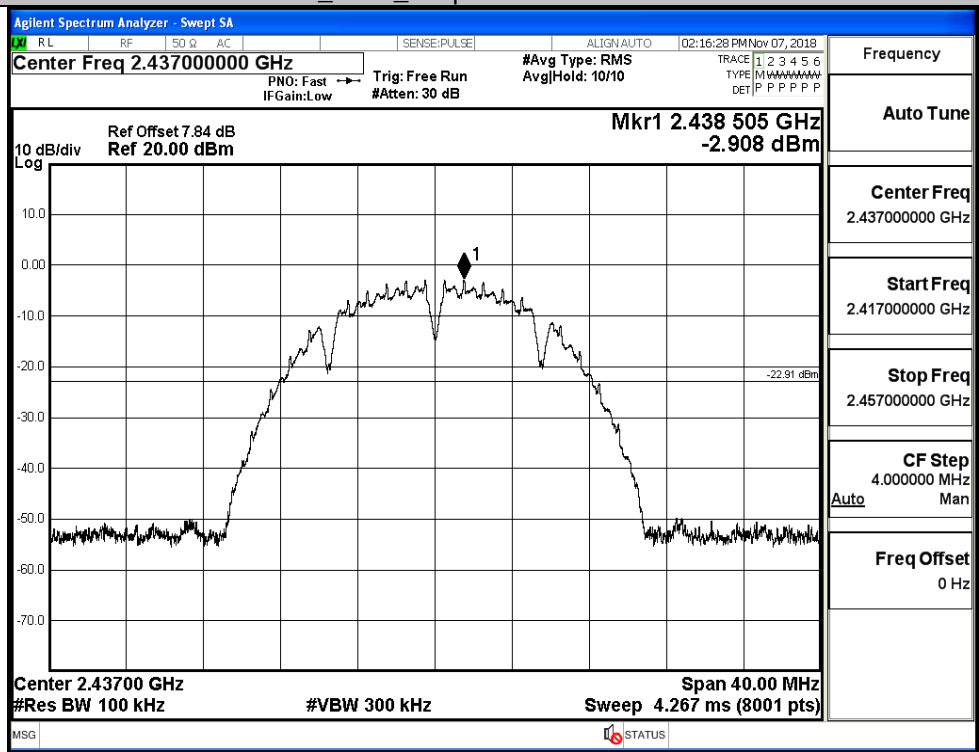


Puw/11B/LCH

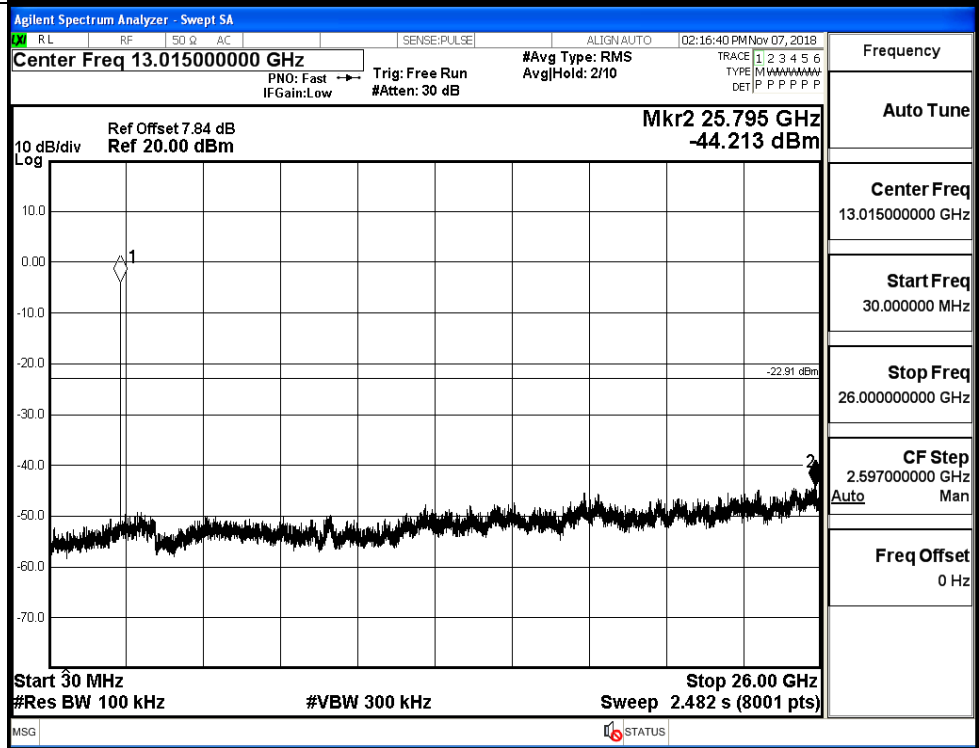


11B_MCH_Graphs

Pref/11B/MCH

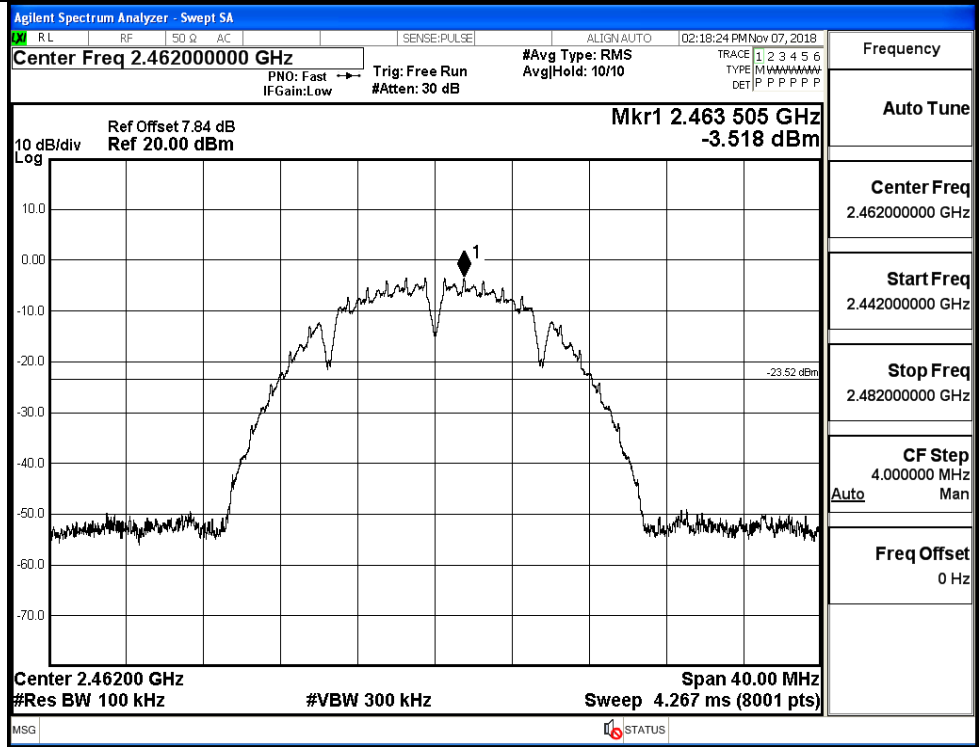


Puw/11B/MCH

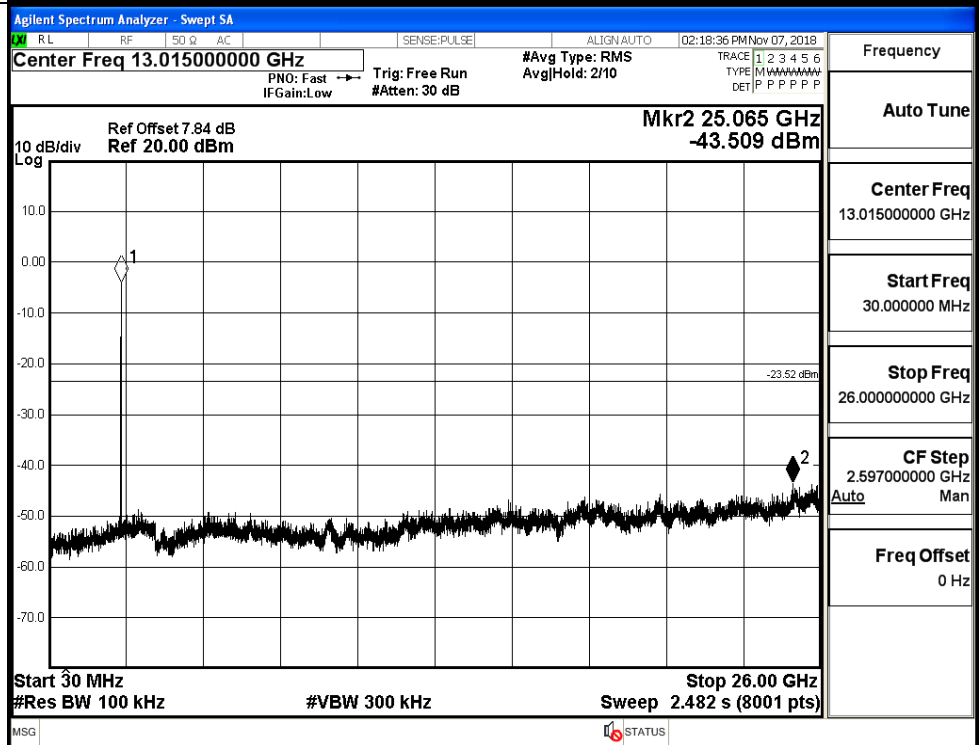


11B_HCH_Graphs

Pref/11B/HCH

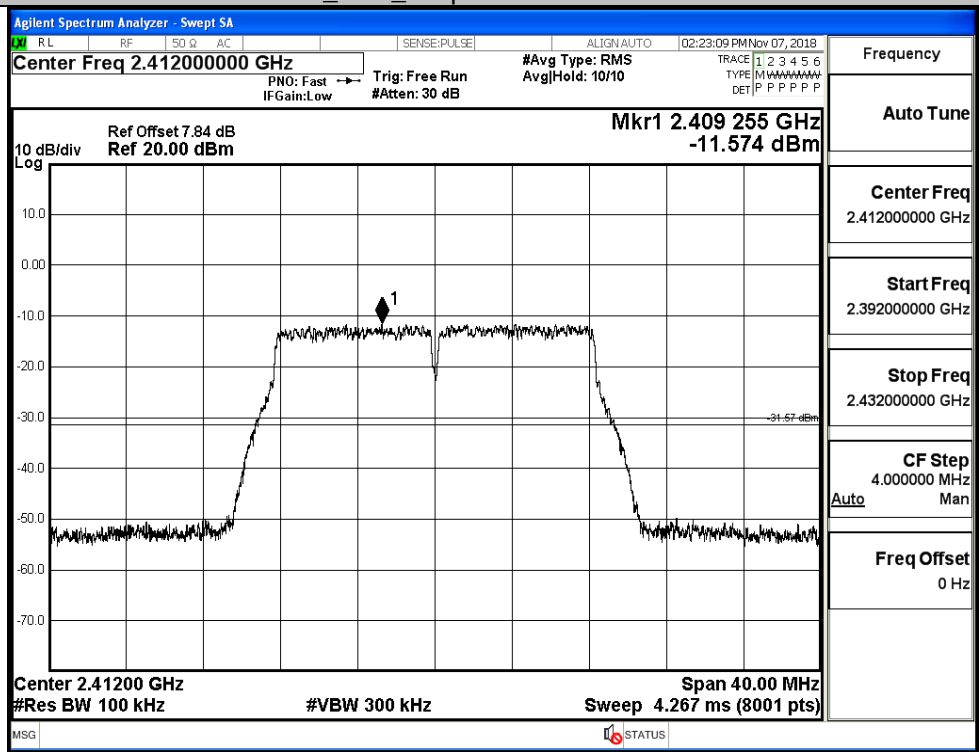


Puw/11B/HCH

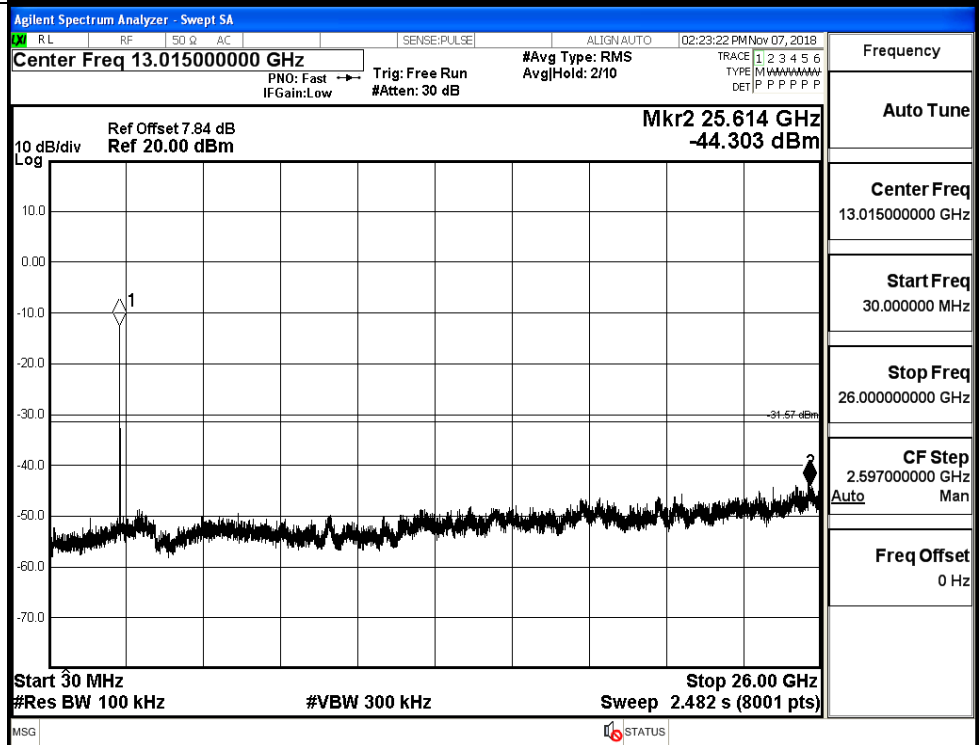


11G_LCH_Graphs

Pref/11G/LCH

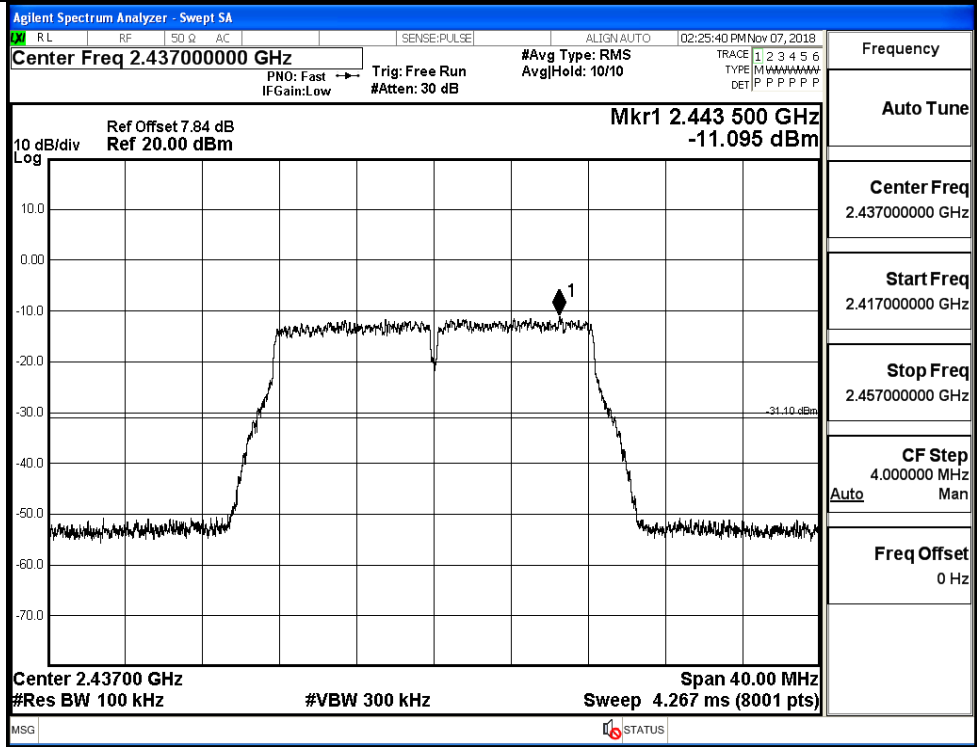


Puw/11G/LCH

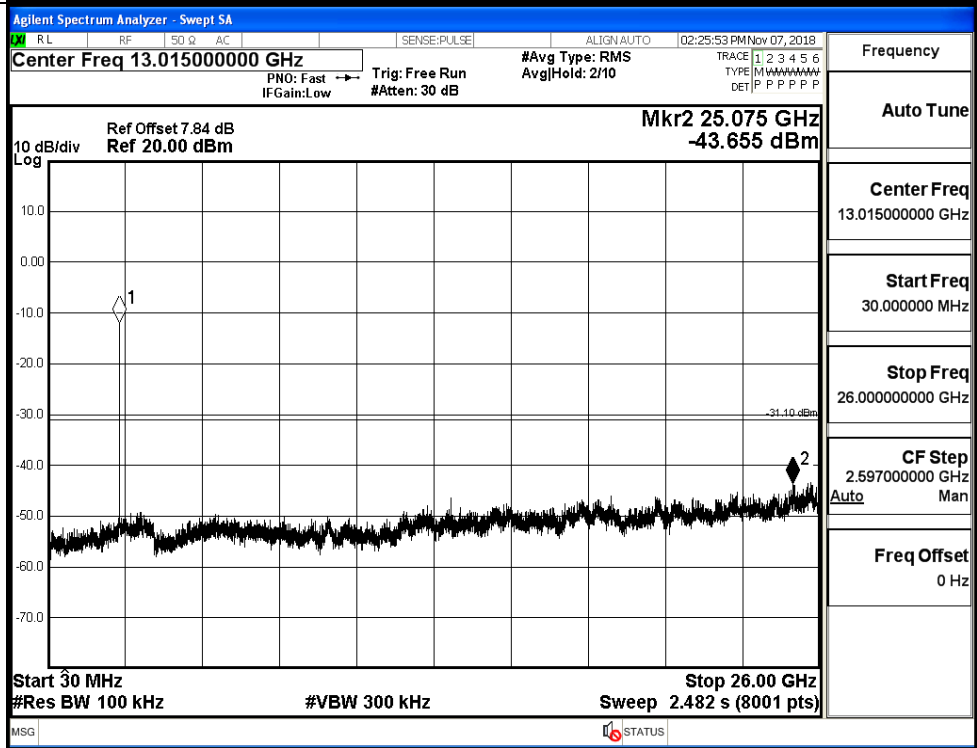


11G_MCH_Graphs

Pref/11G/MCH

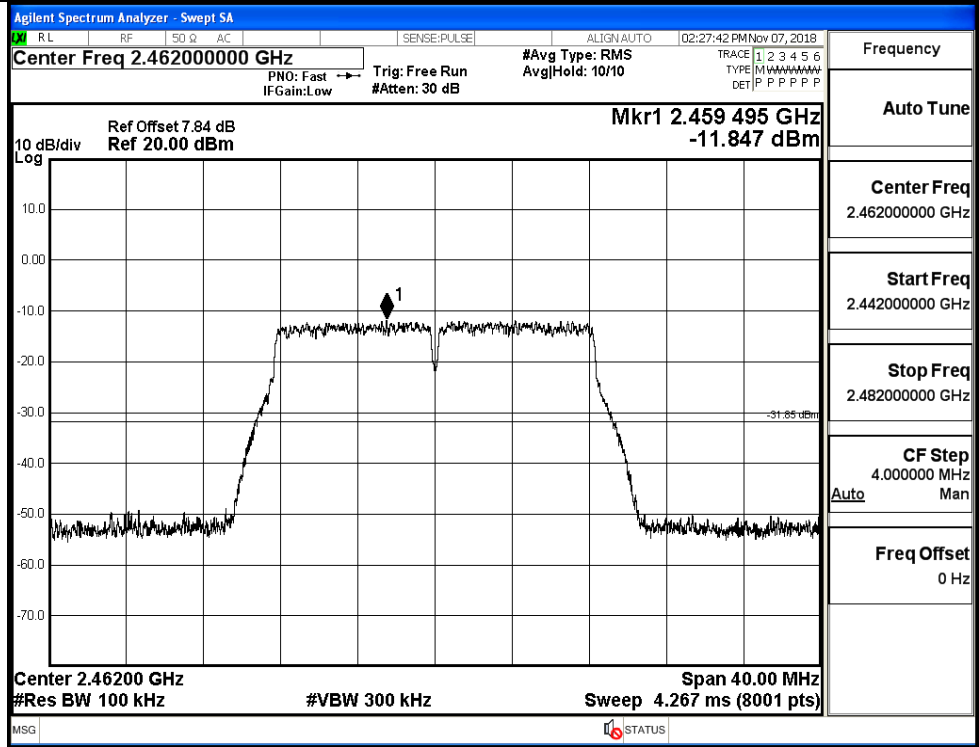


Puw/11G/MCH

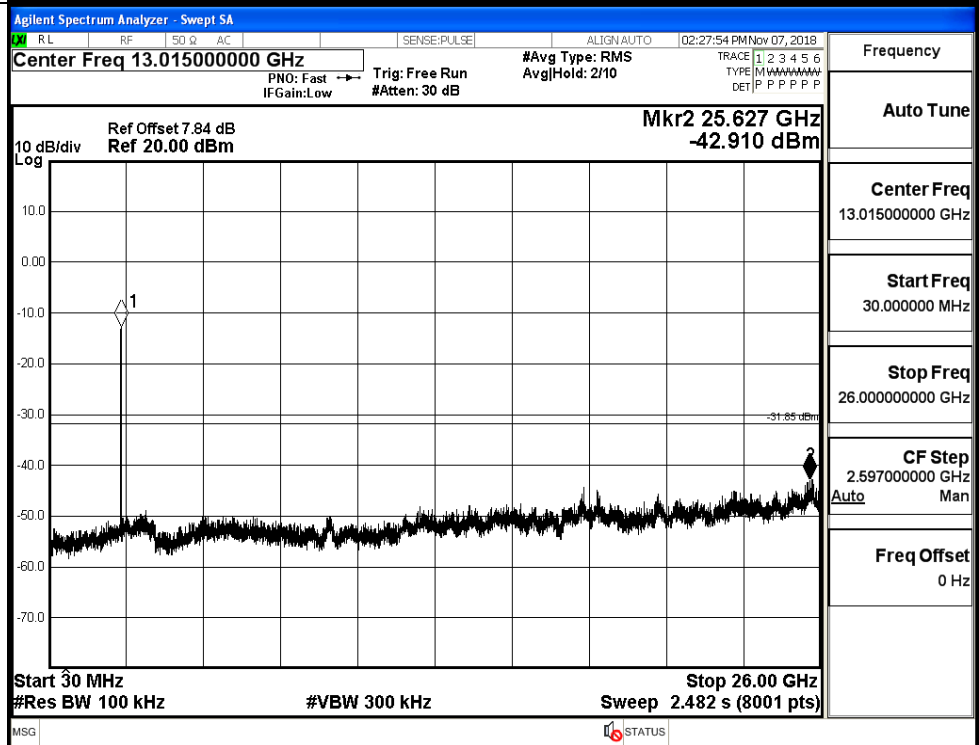


11G_HCH_Graphs

Pref/11G/HCH

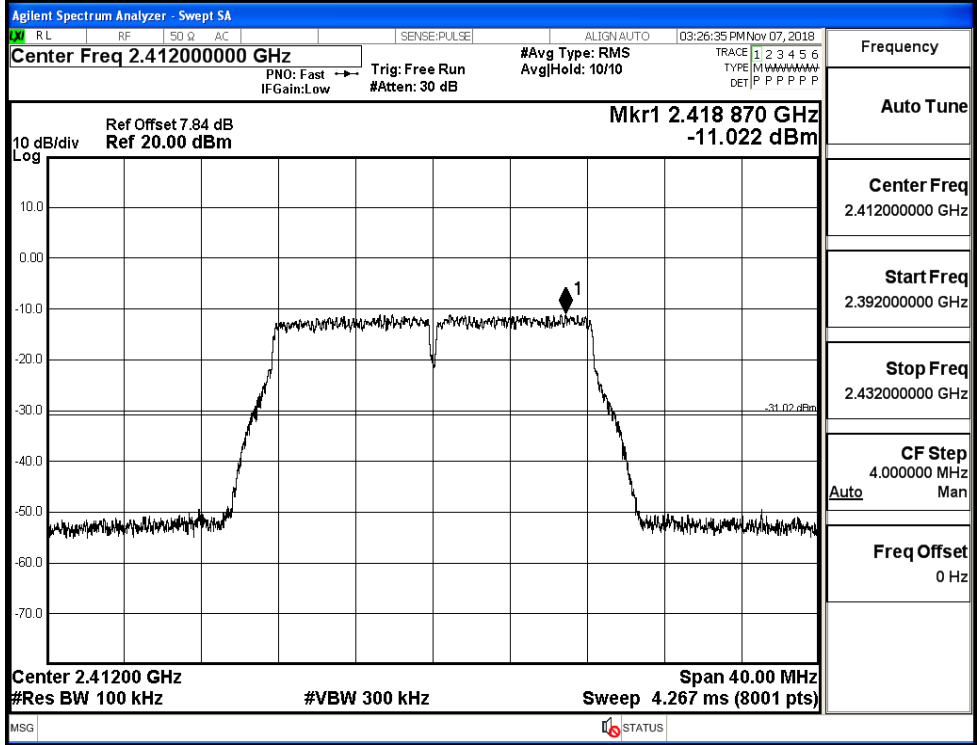


Puw/11G/HCH

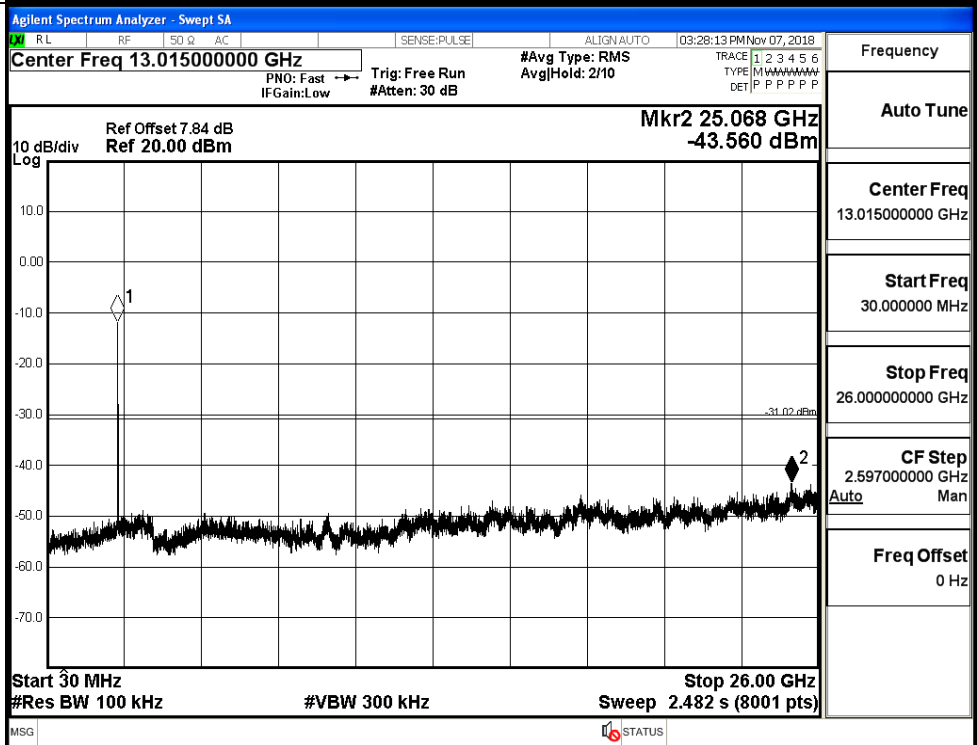


11N20SISO_LCH_Graphs

Pref/11N20SIS
O/LCH

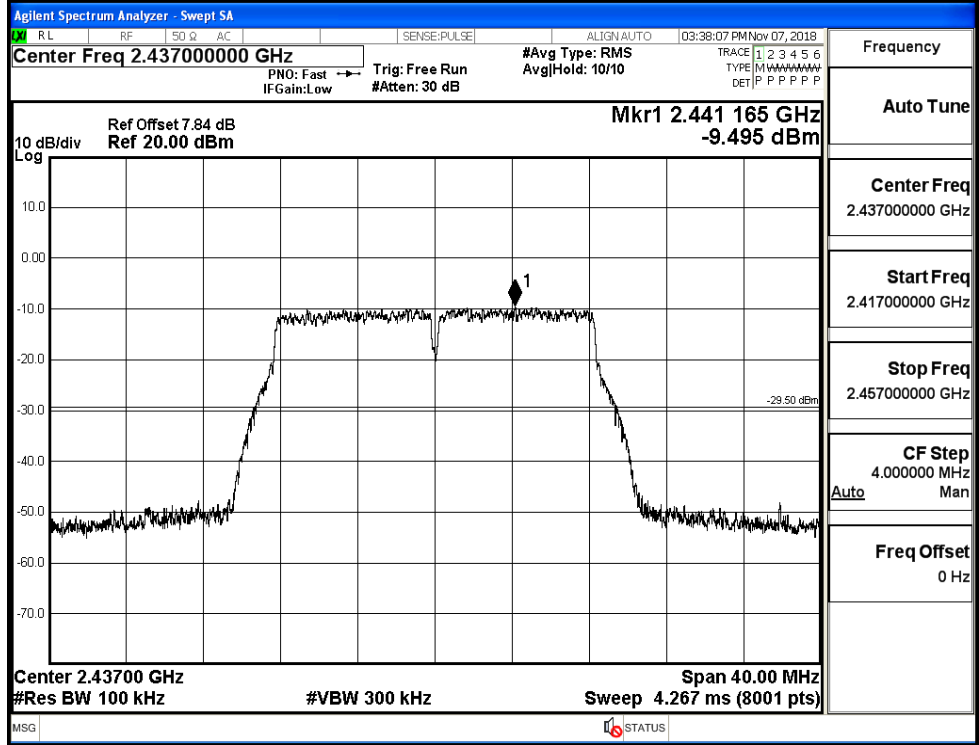


Puw/11N20
SISO/LCH



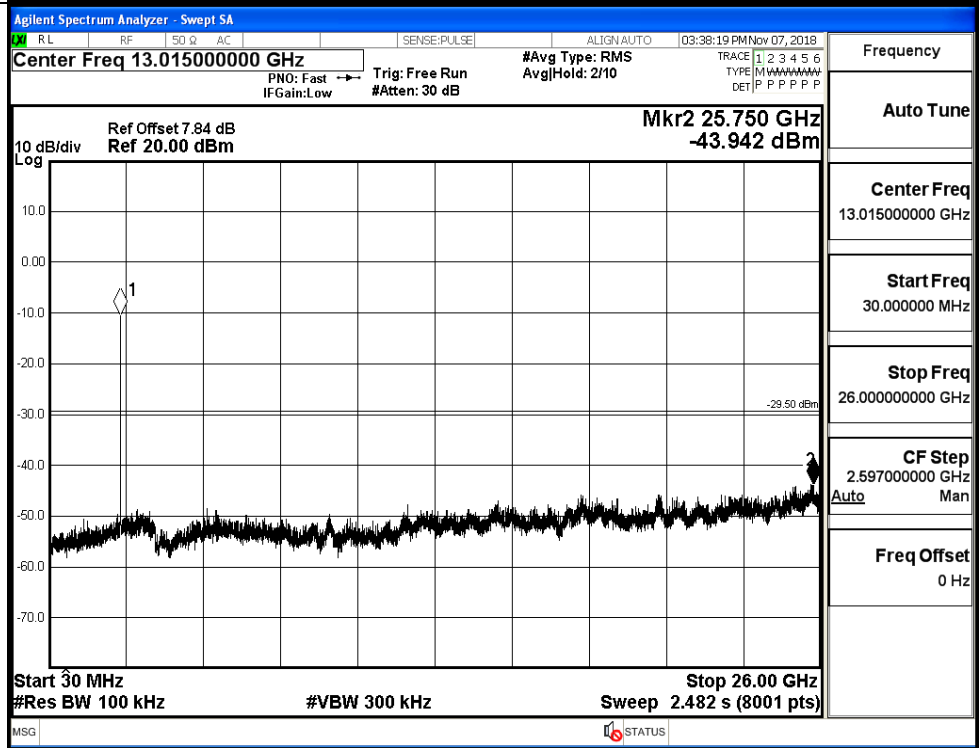
11N20SISO_MCH_Graphs

Pref/11N20
SISO/MCH



Frequency	
Auto Tune	
Center Freq	2.437000000 GHz
Start Freq	2.417000000 GHz
Stop Freq	2.457000000 GHz
CF Step	4.000000 MHz
	Auto Man
Freq Offset	0 Hz

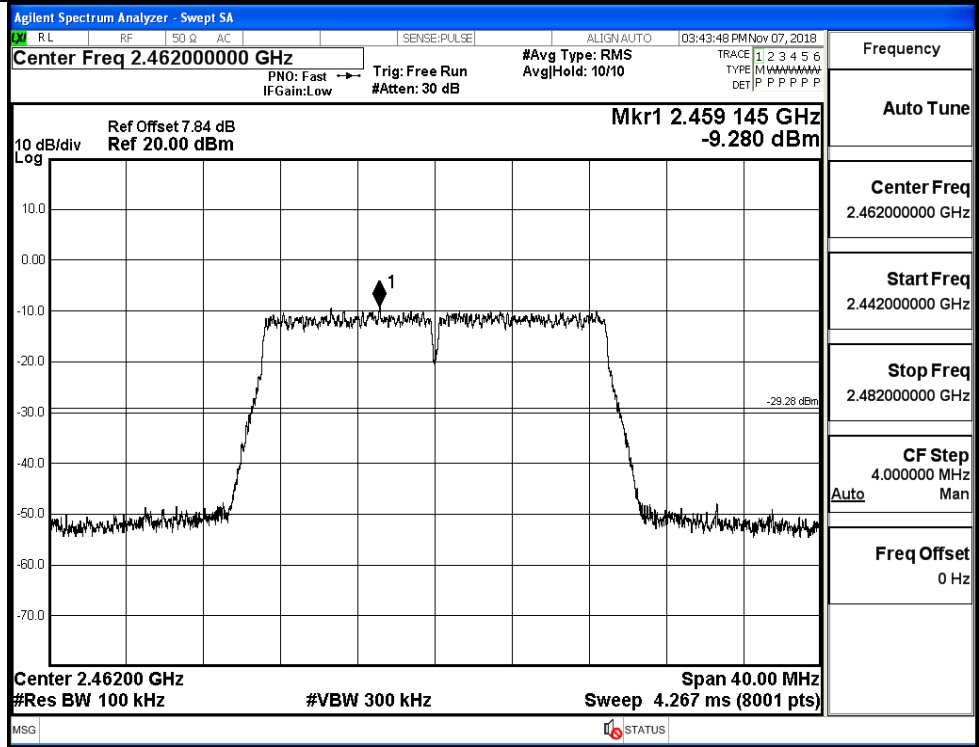
Puw/11N20
SISO/MCH



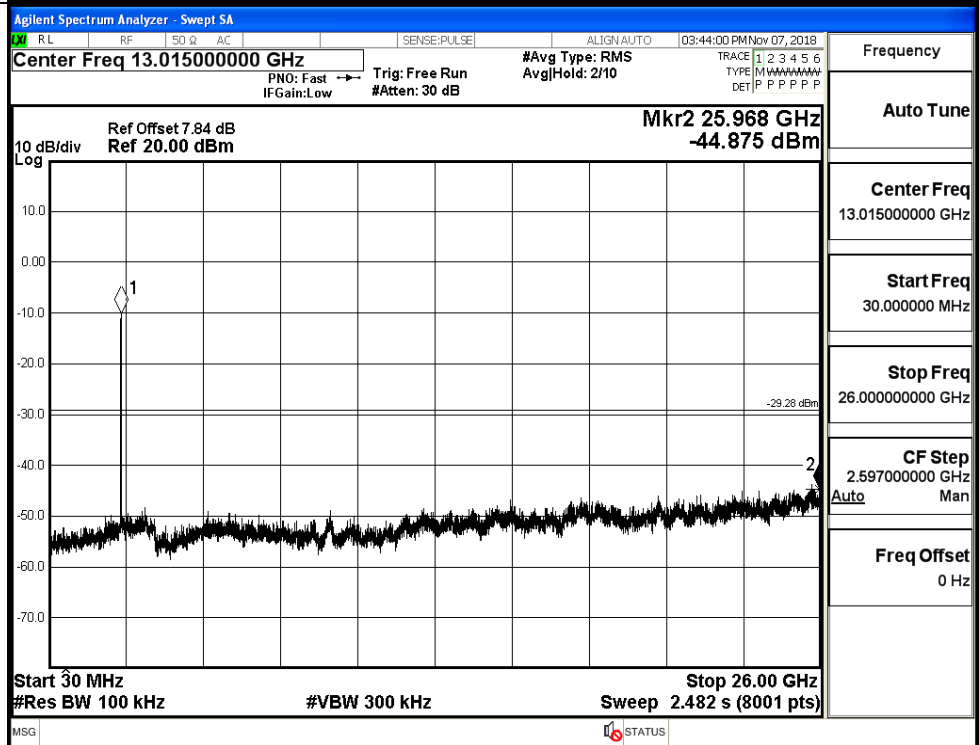
Frequency	
Auto Tune	
Center Freq	13.015000000 GHz
Start Freq	30.000000 MHz
Stop Freq	26.000000000 GHz
CF Step	2.597000000 GHz
	Auto Man
Freq Offset	0 Hz

11N20SISO_HCH_Graphs

Pref/11N20
SISO/HCH

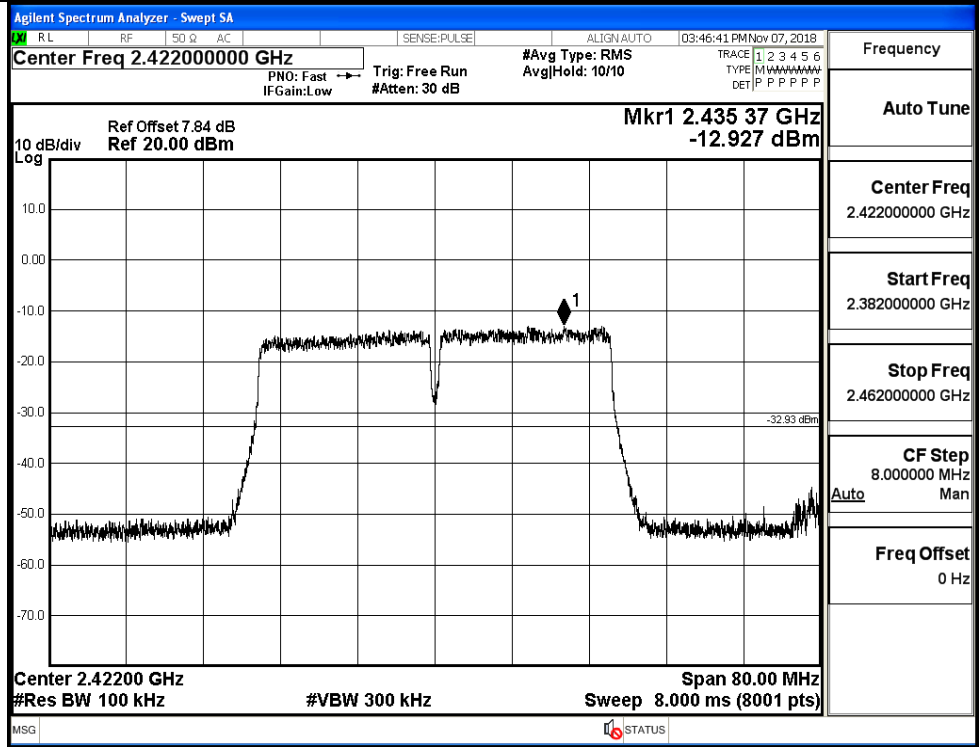


Puw/11N20
SISO/HCH

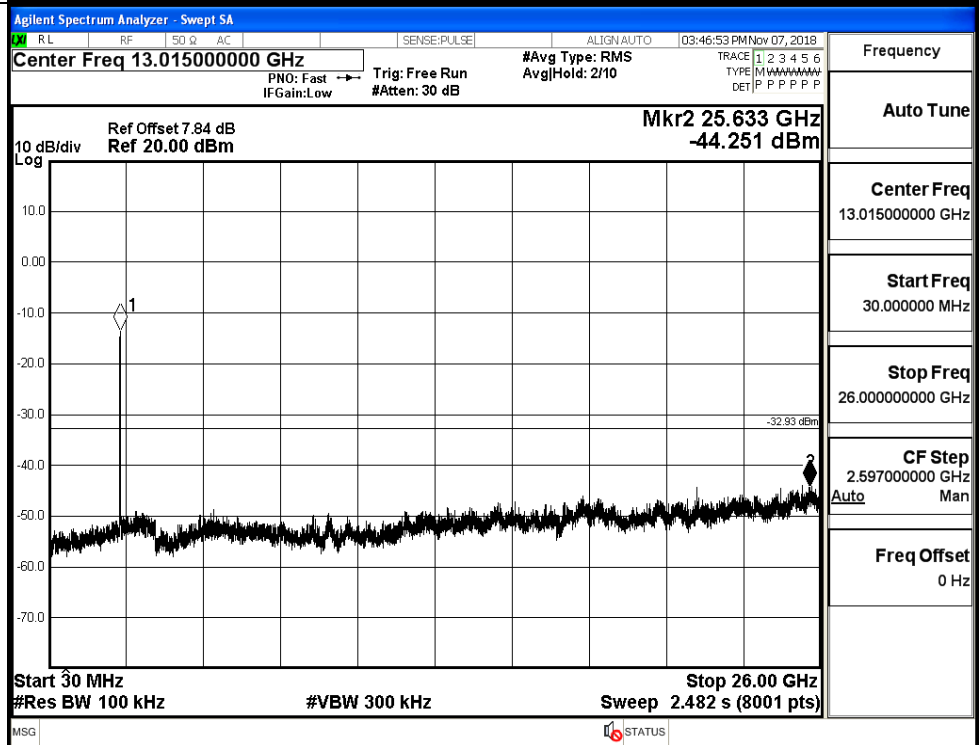


11N40SISO_LCH_Graphs

Pref/11N40
SISO/LCH

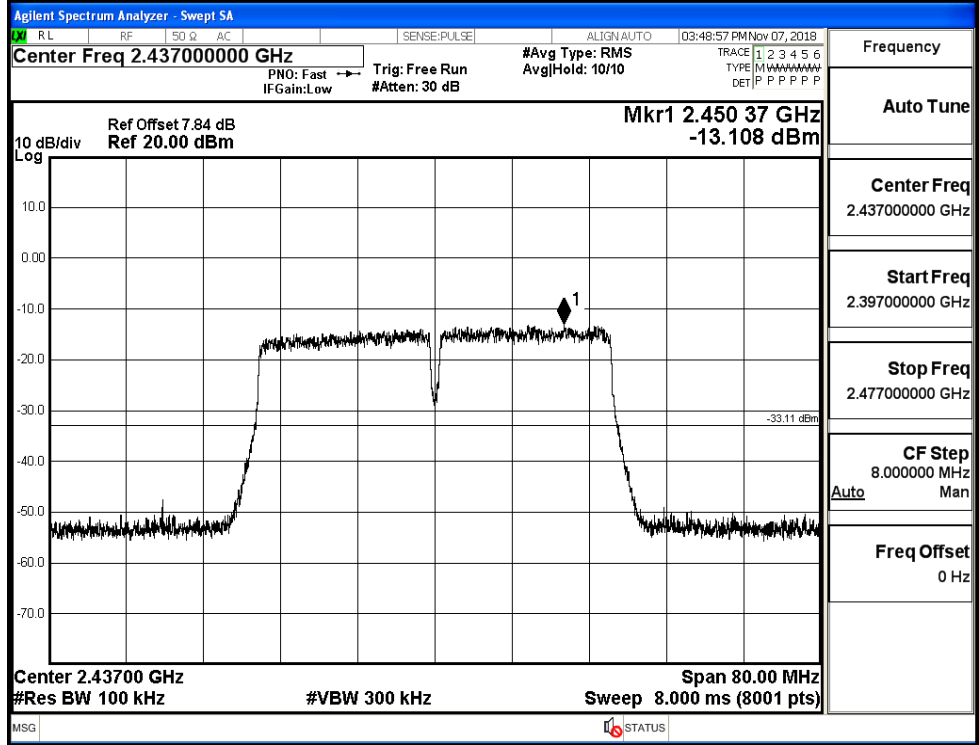


Puw/11N40
SISO/LCH

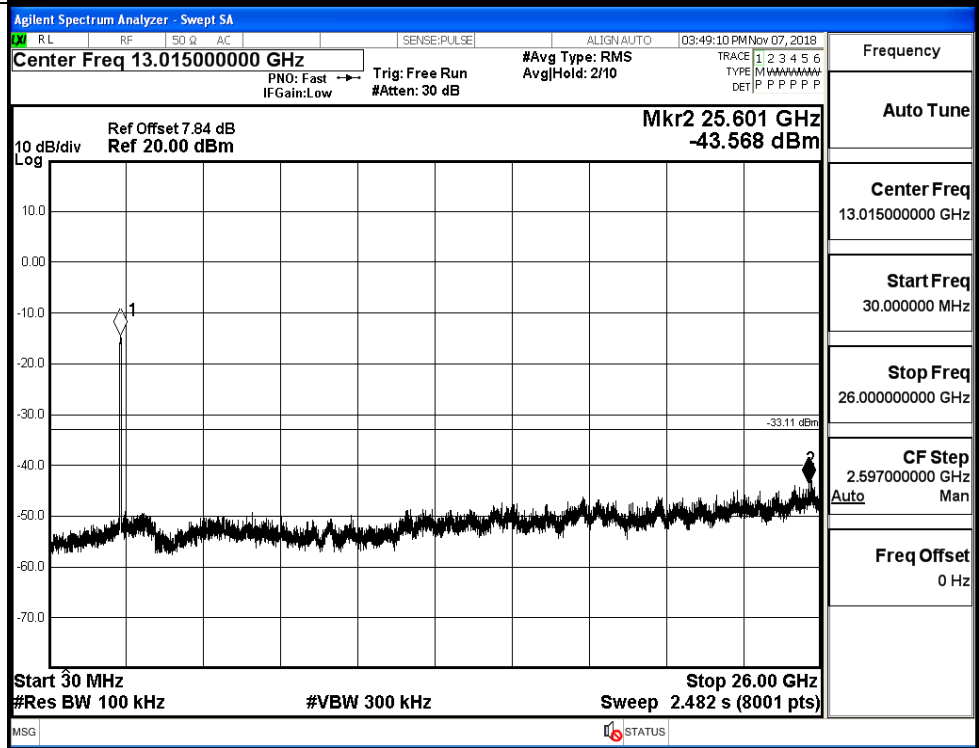


11N40SISO_MCH_Graphs

Pref/11N40
SISO/MCH

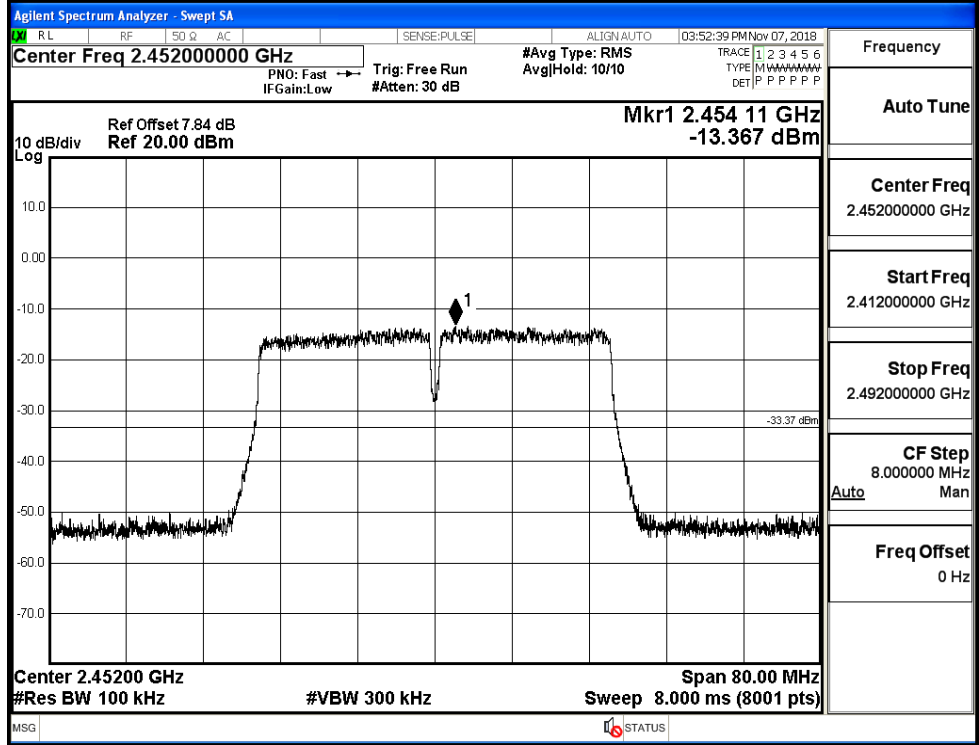


Puw/11N40
SISO/MCH

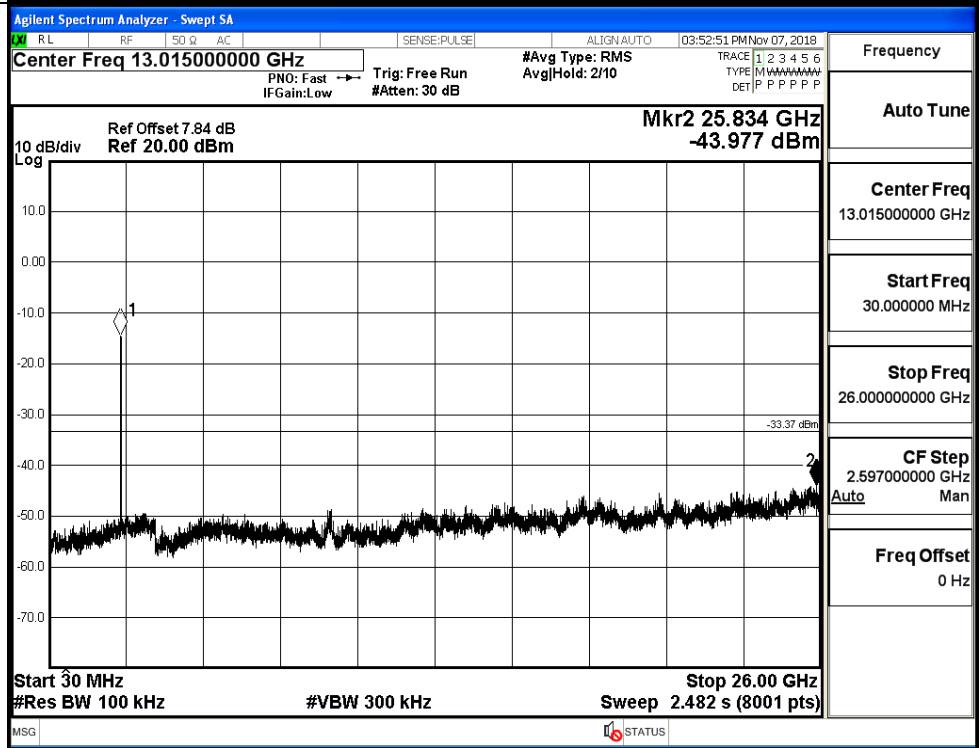


11N40SISO_HCH_Graphs

Pref/11N40
SISO/HCH

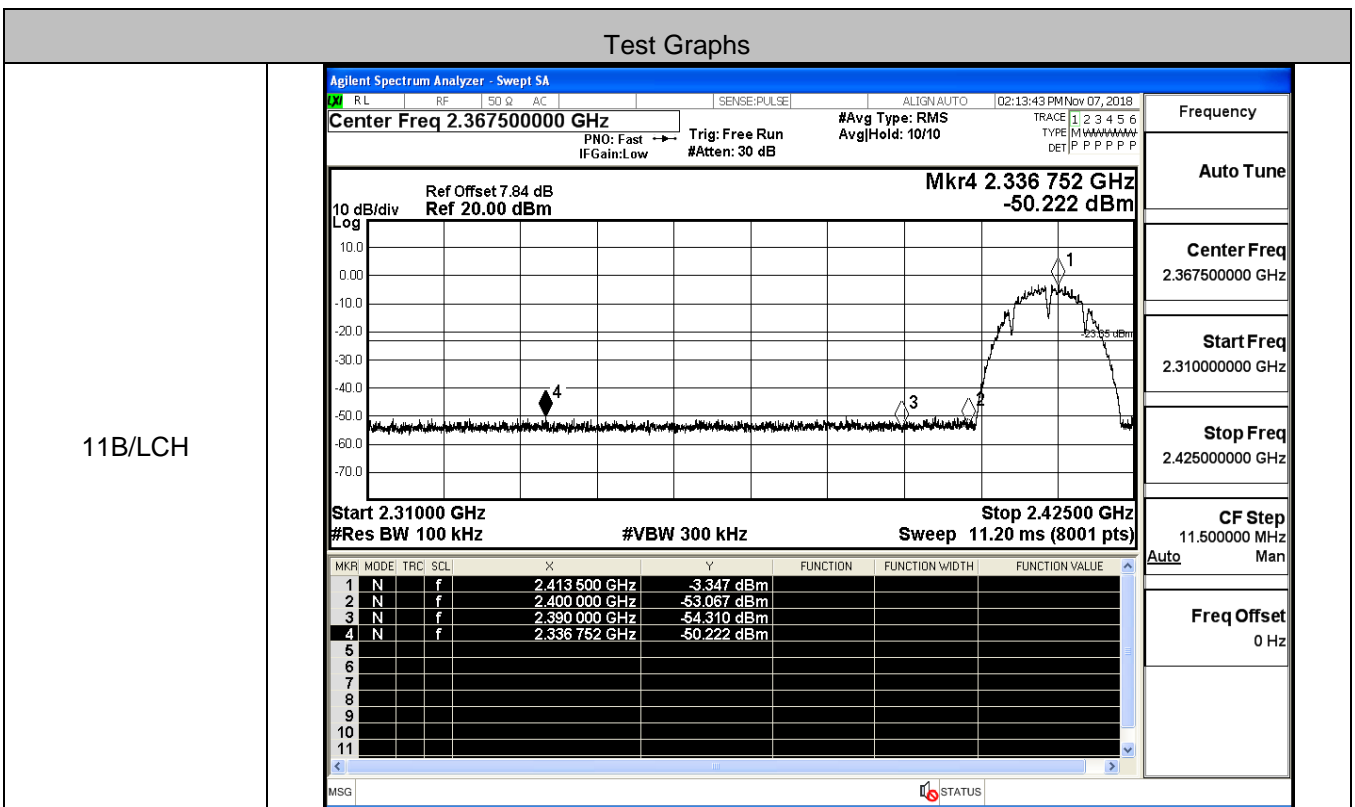


Puw/11N40
SISO/HCH

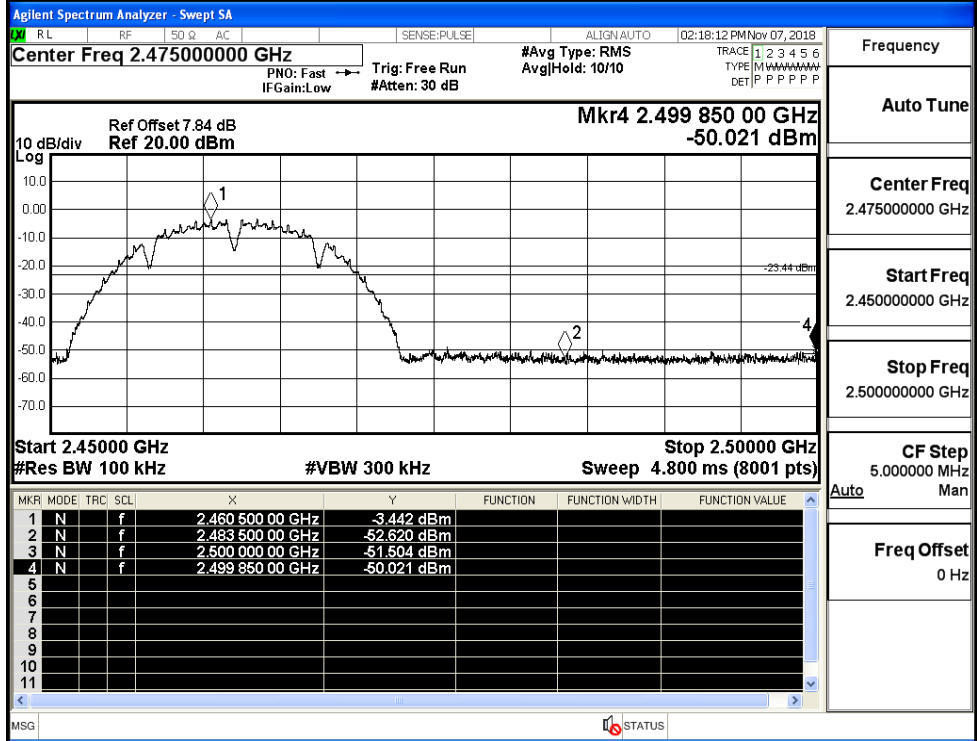


A.6 Band-edge for RF Conducted Emissions

Mode	Channel	Carrier Power[dBm]	Max.Spurious Level [dBm]	Limit [dBm]	Verdict
11B	LCH	-3.347	-50.222	-23.35	PASS
	HCH	-3.442	-50.021	-23.44	PASS
11G	LCH	-11.550	-49.467	-31.55	PASS
	HCH	-11.900	-50.119	-31.9	PASS
11N20SISO	LCH	-10.847	-50.251	-30.85	PASS
	HCH	-9.058	-50.218	-29.06	PASS
11N40SISO	LCH	-13.077	-49.683	-33.08	PASS
	HCH	-13.502	-49.686	-33.5	PASS



11B/HCH



Frequency

Auto Tune

Center Freq
2.47500000 GHz

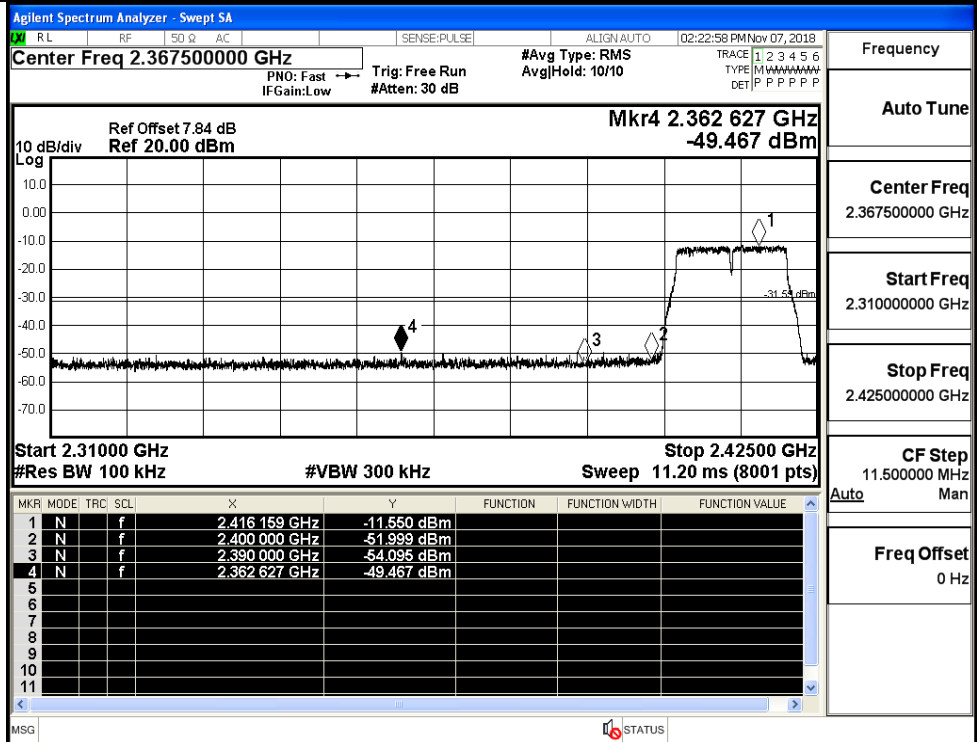
Start Freq
2.45000000 GHz

Stop Freq
2.50000000 GHz

CF Step
5.000000 MHz

Freq Offset
0 Hz

11G/LCH



Frequency

Auto Tune

Center Freq
2.36750000 GHz

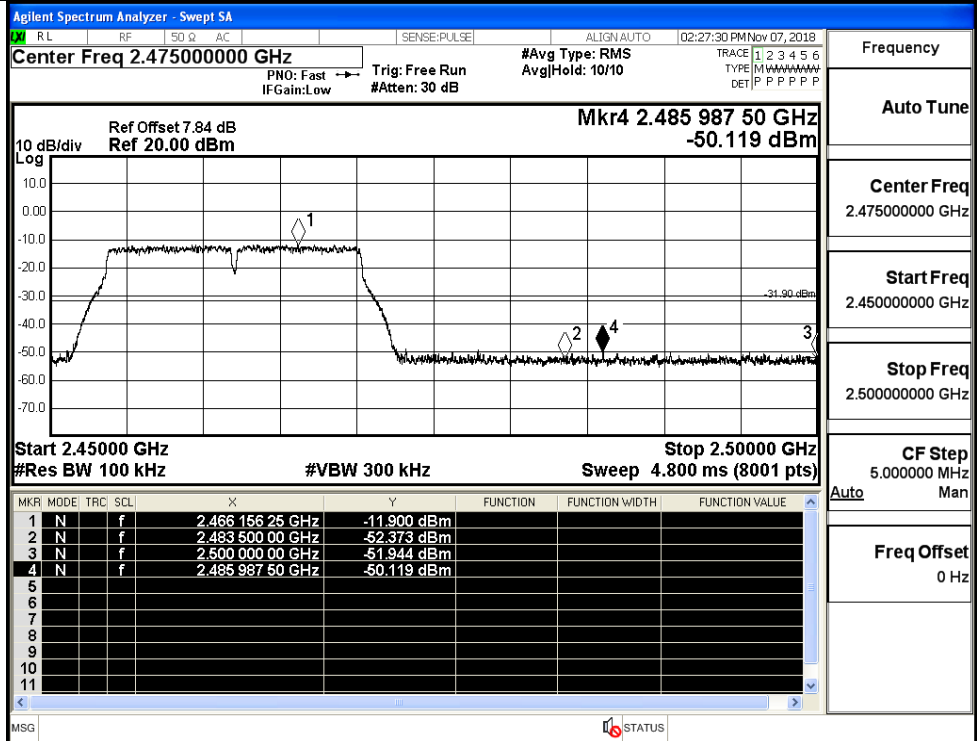
Start Freq
2.31000000 GHz

Stop Freq
2.42500000 GHz

CF Step
11.500000 MHz

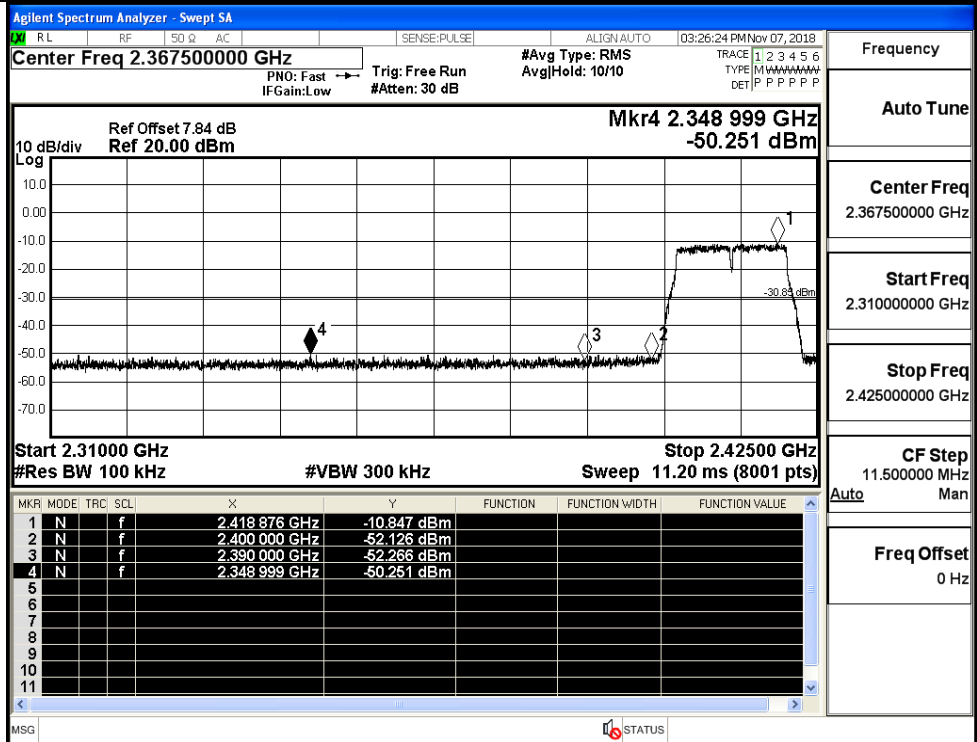
Freq Offset
0 Hz

11G/HCH



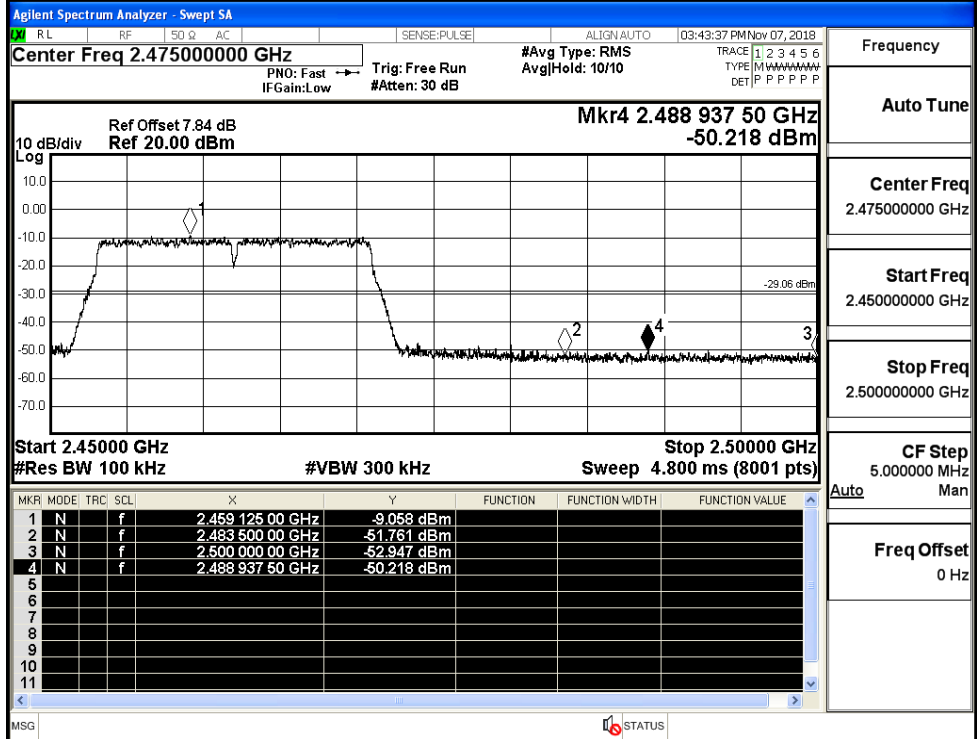
Frequency	
Auto Tune	
Center Freq	2.47500000 GHz
Start Freq	2.45000000 GHz
Stop Freq	2.50000000 GHz
CF Step	5.000000 MHz
Freq Offset	0 Hz

11N20SISO/LCH



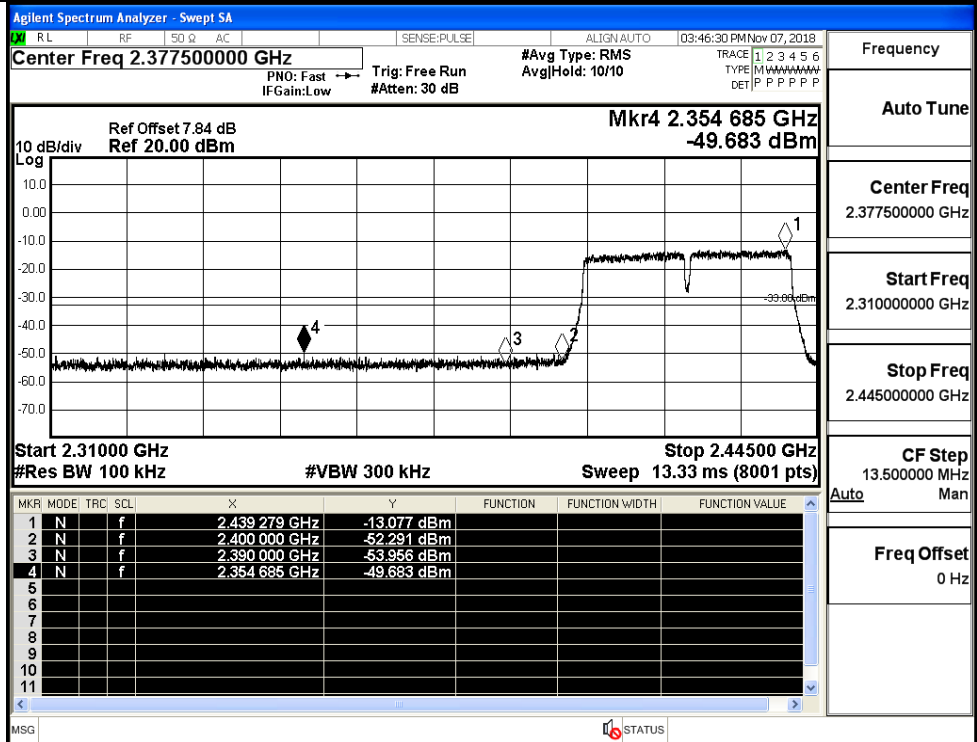
Frequency	
Auto Tune	
Center Freq	2.36750000 GHz
Start Freq	2.31000000 GHz
Stop Freq	2.42500000 GHz
CF Step	11.500000 MHz
Freq Offset	0 Hz

11N20SISO/HCH



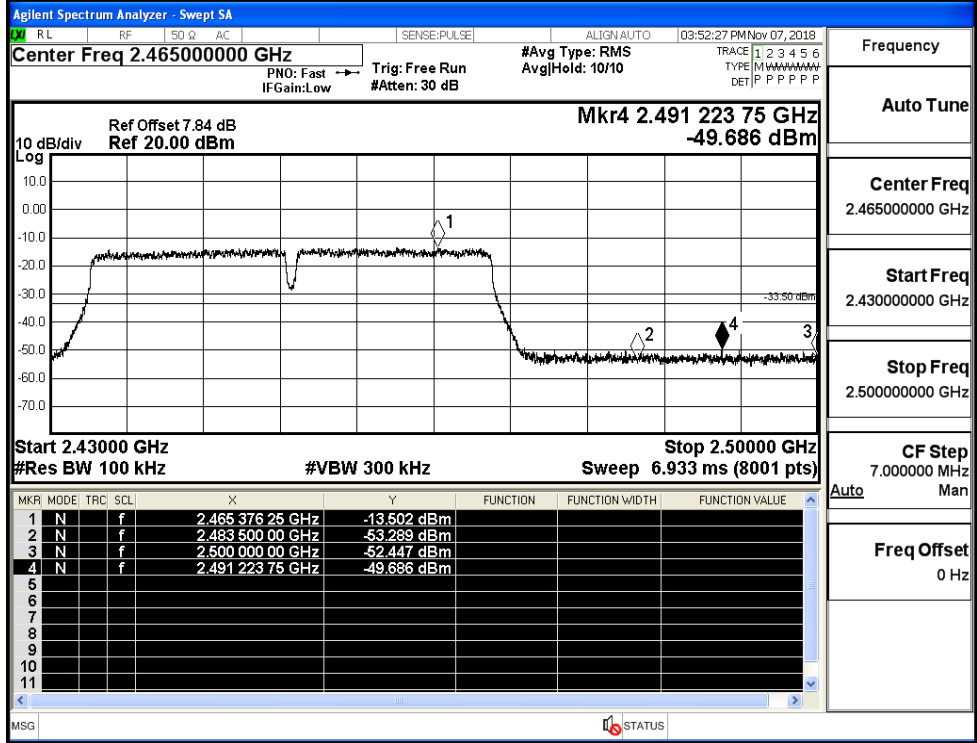
Frequency	
Auto Tune	
Center Freq	2.47500000 GHz
Start Freq	2.45000000 GHz
Stop Freq	2.50000000 GHz
CF Step	5.000000 MHz
Freq Offset	0 Hz

11N40SISO/LCH



Frequency	
Auto Tune	
Center Freq	2.37750000 GHz
Start Freq	2.31000000 GHz
Stop Freq	2.44500000 GHz
CF Step	13.500000 MHz
Freq Offset	0 Hz

11N40SISO/HCH

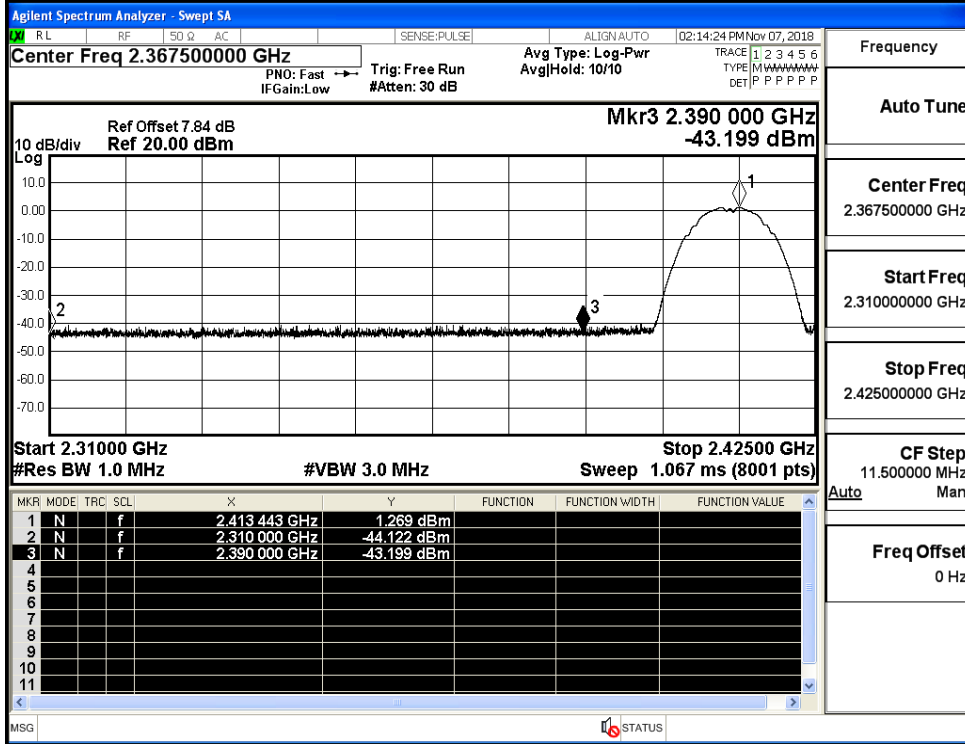


A.7 Restrict-band band-edge measurements

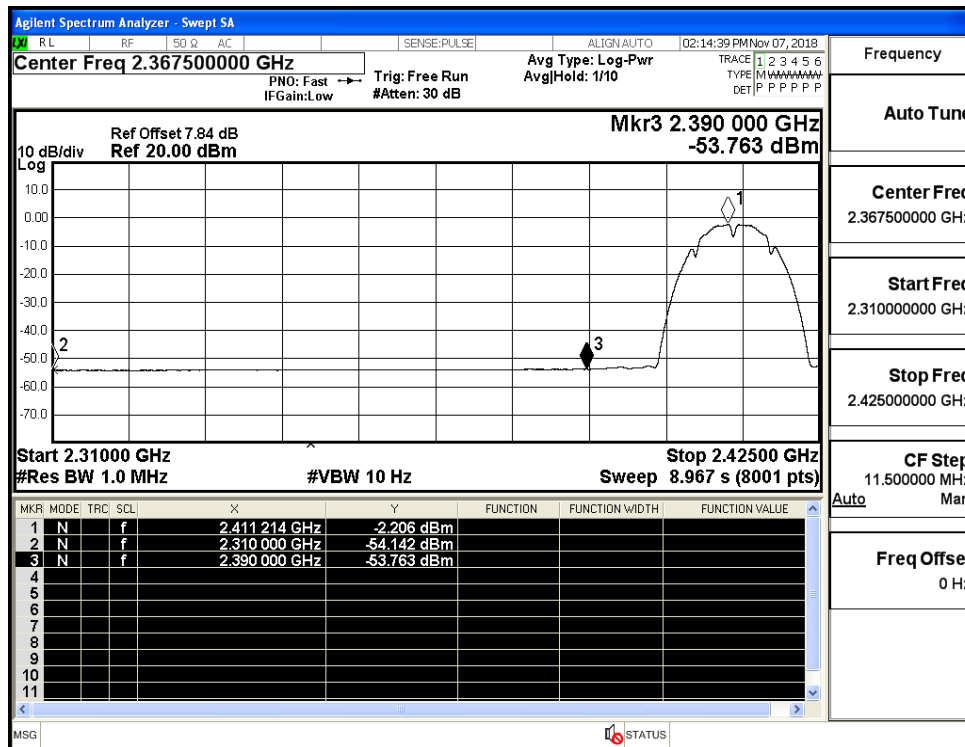
Test Mode	Test Channel	Ant	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBu V/m]	Verdict
11B	2412	Ant1	2310.0	-44.12	2.0	0	53.14	PEAK	74	PASS
	2412	Ant1	2310.0	-54.14	2.0	0	43.12	AV	54	PASS
	2412	Ant1	2390.0	-43.20	2.0	0	54.06	PEAK	74	PASS
	2412	Ant1	2390.0	-53.76	2.0	0	43.49	AV	54	PASS
	2462	Ant1	2483.5	-43.16	2.0	0	54.10	PEAK	74	PASS
	2462	Ant1	2483.5	-53.56	2.0	0	43.70	AV	54	PASS
	2462	Ant1	2500.0	-41.99	2.0	0	55.27	PEAK	74	PASS
	2462	Ant1	2500.0	-53.43	2.0	0	43.83	AV	54	PASS
11G	2412	Ant1	2310.0	-43.59	2.0	0	53.67	PEAK	74	PASS
	2412	Ant1	2310.0	-54.11	2.0	0	43.15	AV	54	PASS
	2412	Ant1	2390.0	-42.84	2.0	0	54.42	PEAK	74	PASS
	2412	Ant1	2390.0	-53.52	2.0	0	43.74	AV	54	PASS
	2462	Ant1	2483.5	-43.51	2.0	0	53.74	PEAK	74	PASS
	2462	Ant1	2483.5	-53.26	2.0	0	44.00	AV	54	PASS
	2462	Ant1	2500.0	-43.03	2.0	0	54.23	PEAK	74	PASS
	2462	Ant1	2500.0	-53.23	2.0	0	44.03	AV	54	PASS
11N20 SISO	2412	Ant1	2310.0	-42.58	2.0	0	54.68	PEAK	74	PASS
	2412	Ant1	2310.0	-54.21	2.0	0	43.05	AV	54	PASS
	2412	Ant1	2390.0	-42.95	2.0	0	54.31	PEAK	74	PASS
	2412	Ant1	2390.0	-53.59	2.0	0	43.67	AV	54	PASS
	2462	Ant1	2483.5	-43.07	2.0	0	54.19	PEAK	74	PASS
	2462	Ant1	2483.5	-52.94	2.0	0	44.31	AV	54	PASS
	2462	Ant1	2500.0	-42.04	2.0	0	55.21	PEAK	74	PASS
	2462	Ant1	2500.0	-53.15	2.0	0	44.11	AV	54	PASS
11N40 SISO	2422	Ant1	2310.0	-44.42	2.0	0	52.84	PEAK	74	PASS
	2422	Ant1	2310.0	-54.19	2.0	0	43.07	AV	54	PASS

	2422	Ant1	2390.0	-41.28	2.0	0	55.98	PEAK	74	PASS
	2422	Ant1	2390.0	-53.40	2.0	0	43.86	AV	54	PASS
	2452	Ant1	2483.5	-41.68	2.0	0	55.57	PEAK	74	PASS
	2452	Ant1	2483.5	-53.11	2.0	0	44.14	AV	54	PASS
	2452	Ant1	2500.0	-42.17	2.0	0	55.09	PEAK	74	PASS
	2452	Ant1	2500.0	-53.20	2.0	0	44.06	AV	54	PASS

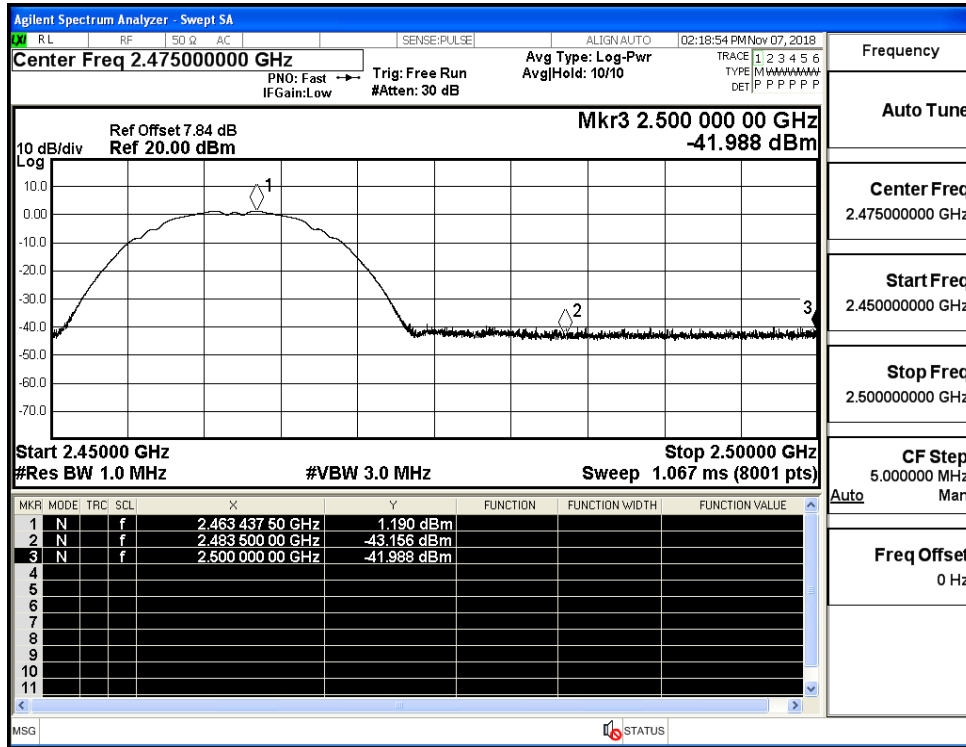
Restrict-band band-edge measurements_11B_2412_Ant1_PEAK



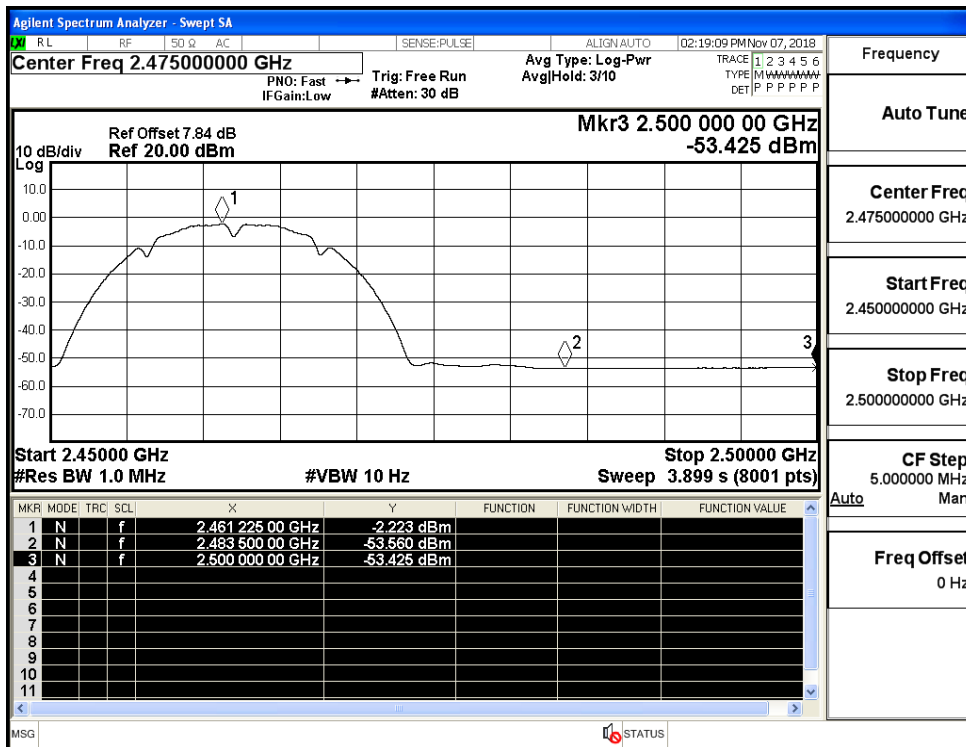
Restrict-band band-edge measurements_11B_2412_Ant1_AV



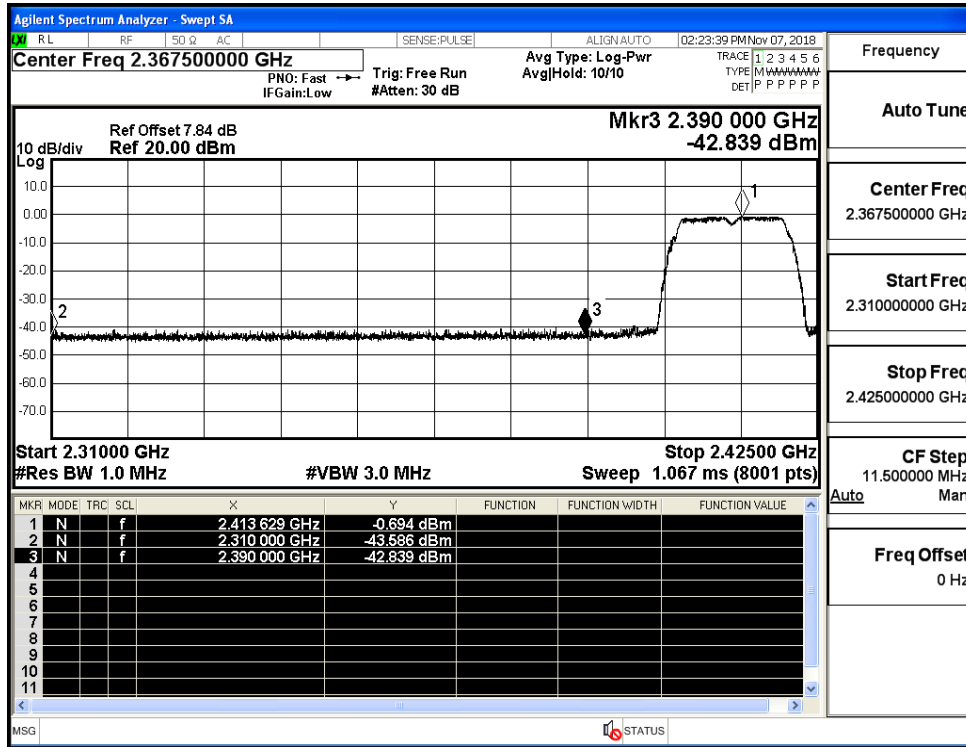
Restrict-band band-edge measurements_11B_2462_Ant1_PEAK



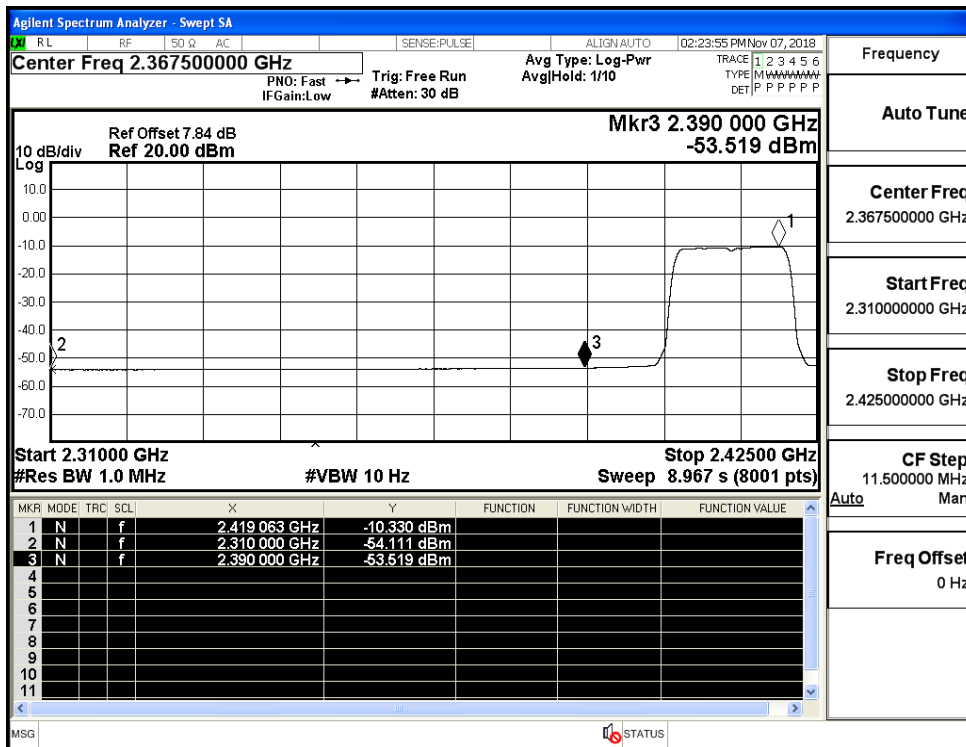
Restrict-band band-edge measurements_11B_2462_Ant1_AV



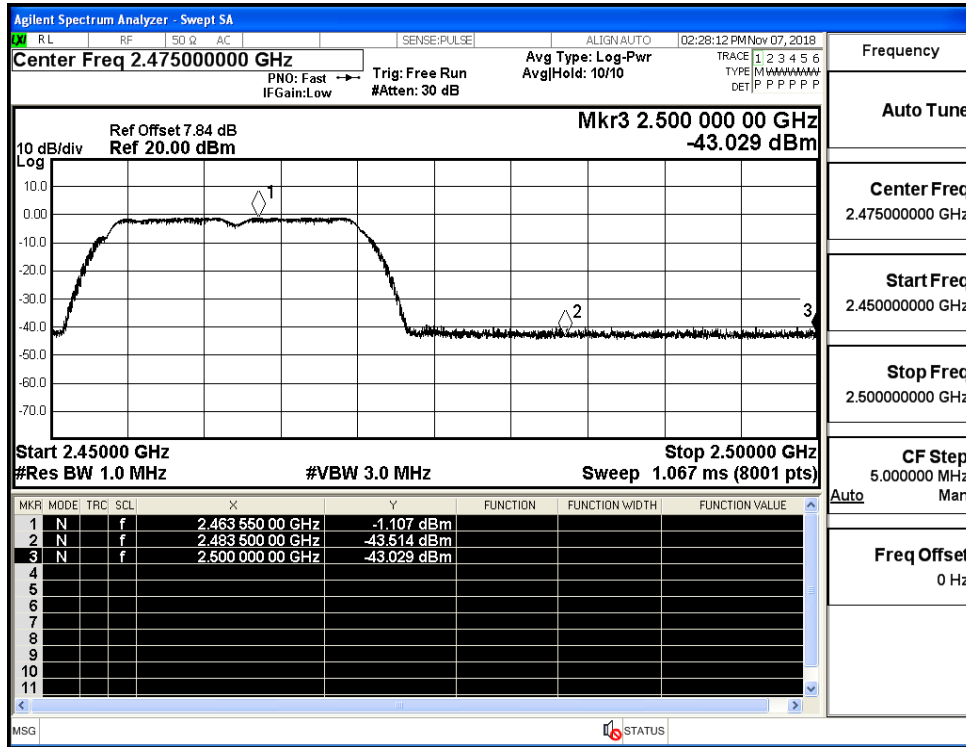
Restrict-band band-edge measurements_11G_2412_Ant1_PEAK



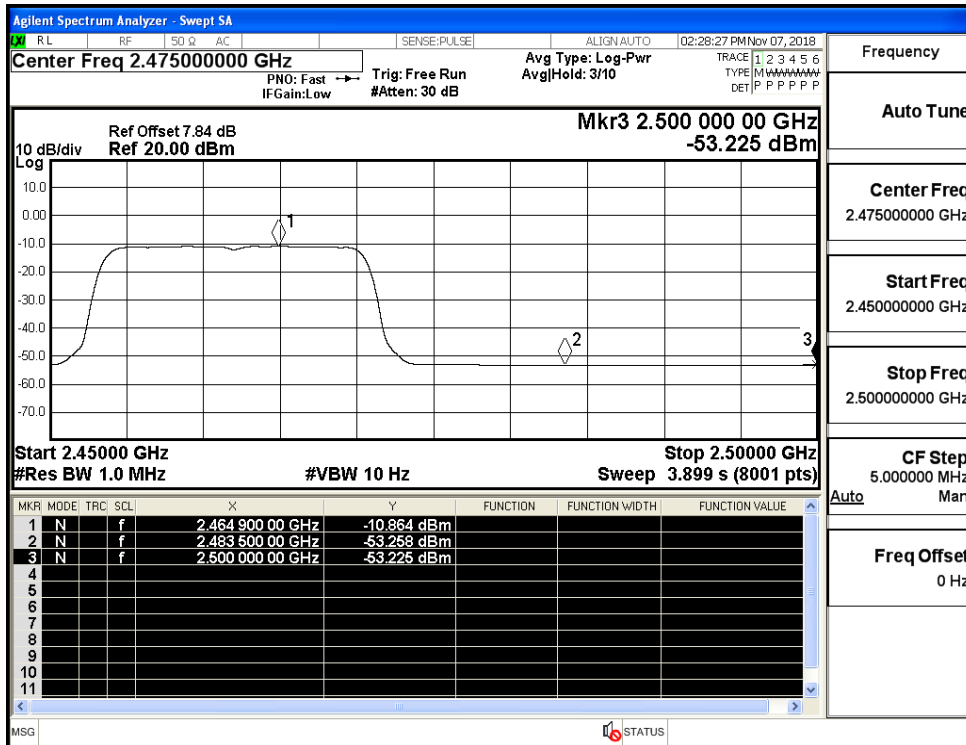
Restrict-band band-edge measurements_11G_2412_Ant1_AV



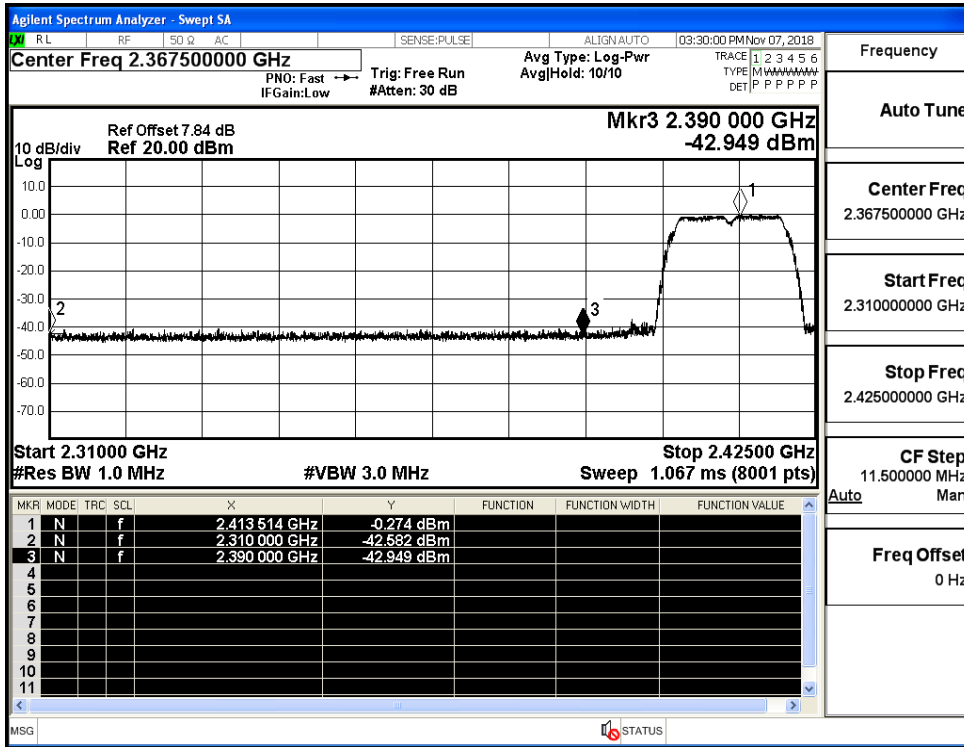
Restrict-band band-edge measurements_11G_2462_Ant1_PEAK



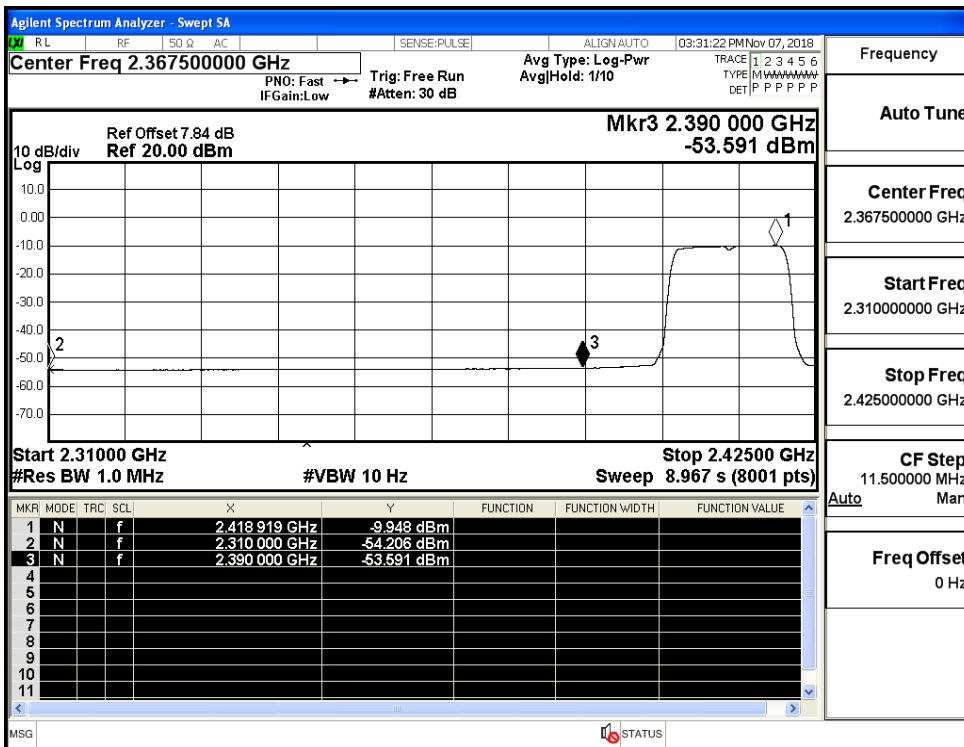
Restrict-band band-edge measurements_11G_2462_Ant1_AV



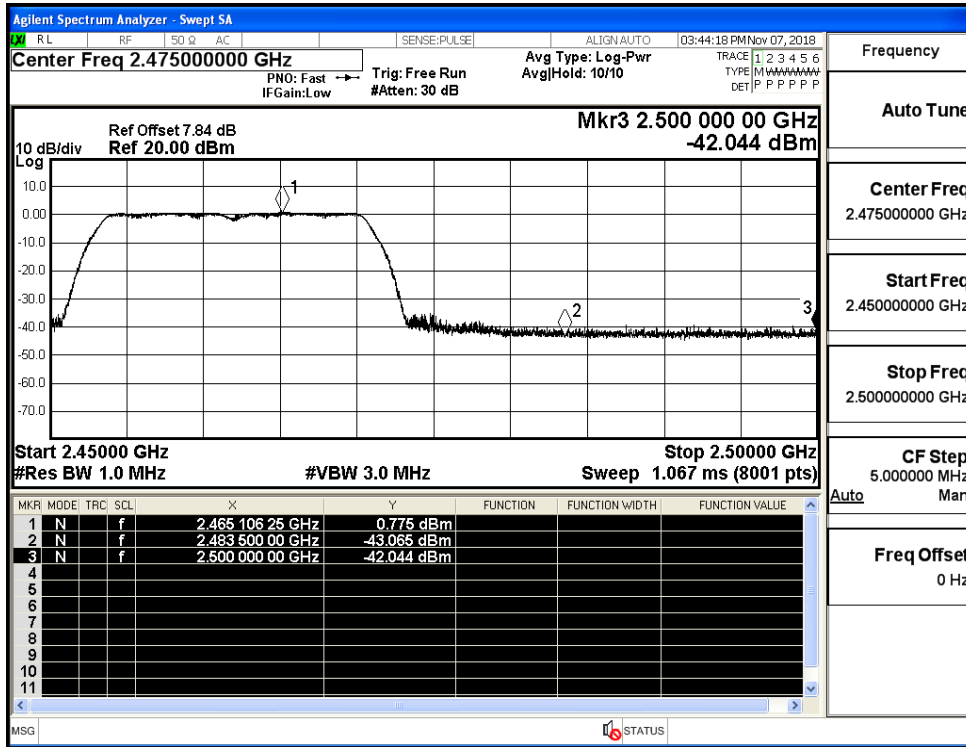
Restrict-band band-edge measurements_11N20SISO_2412_Ant1_PEAK



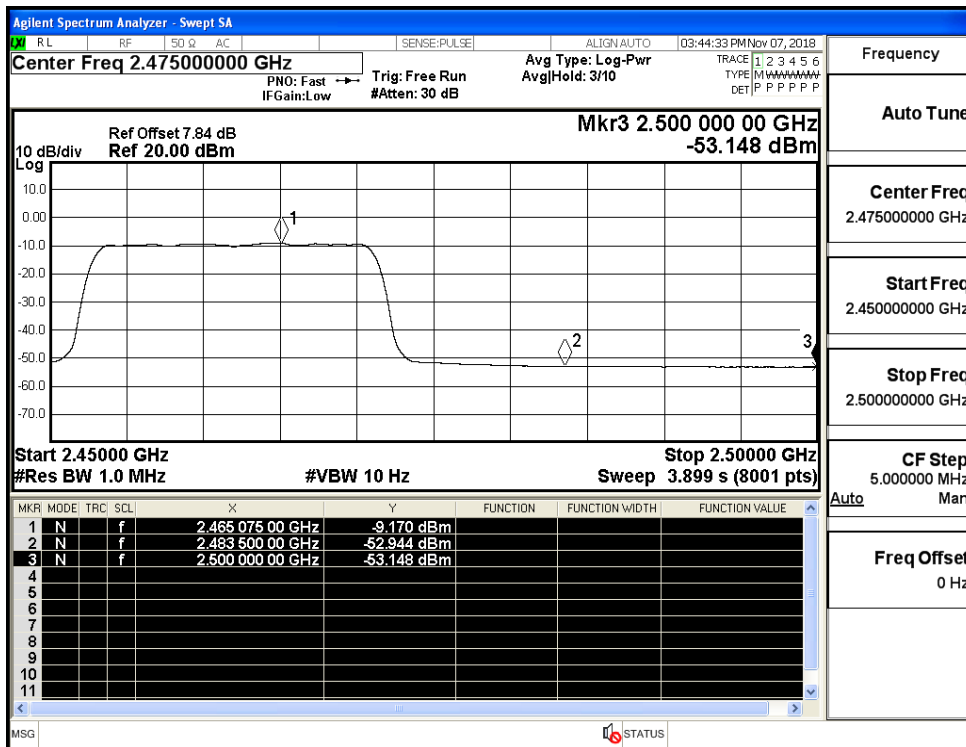
Restrict-band band-edge measurements_11N20SISO_2412_Ant1_AV



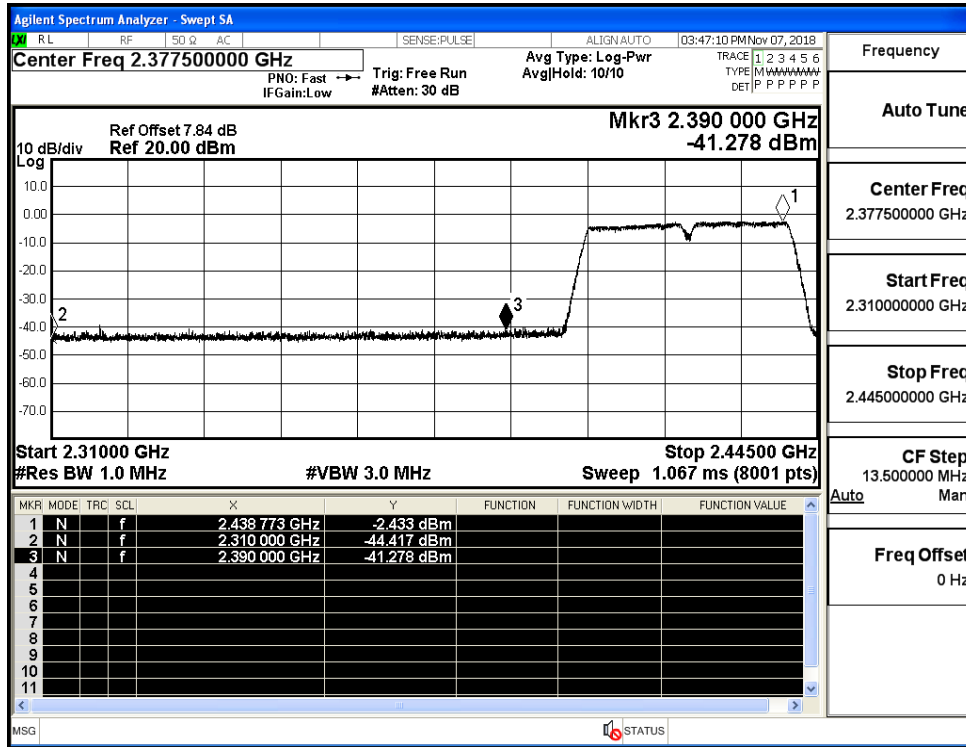
Restrict-band band-edge measurements_11N20SISO_2462_Ant1_PEAK



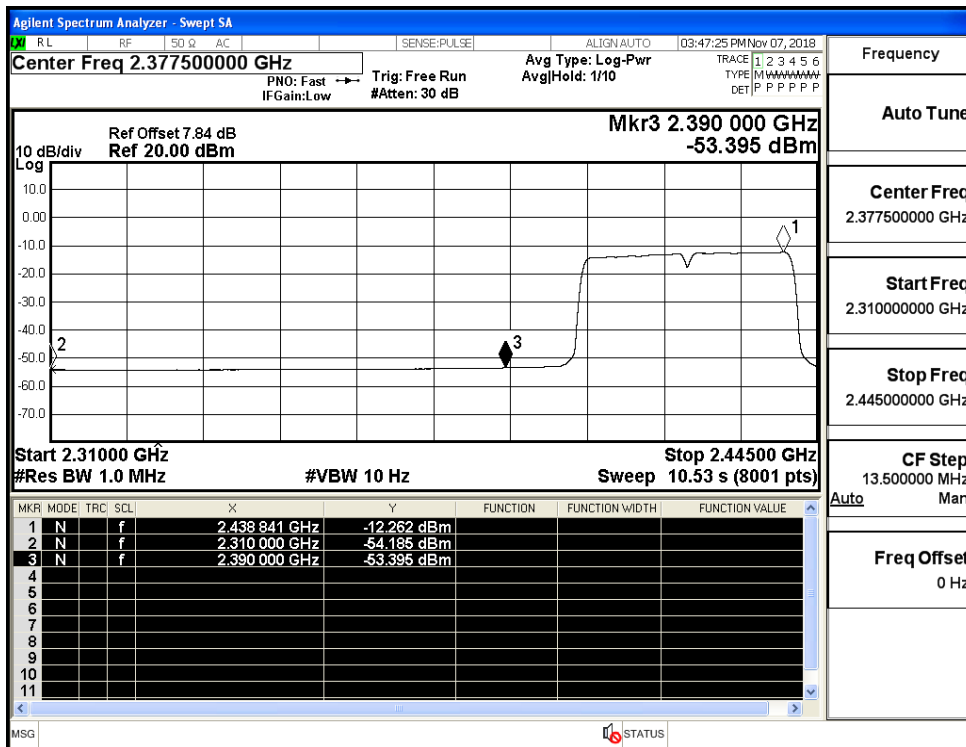
Restrict-band band-edge measurements_11N20SISO_2462_Ant1_AV



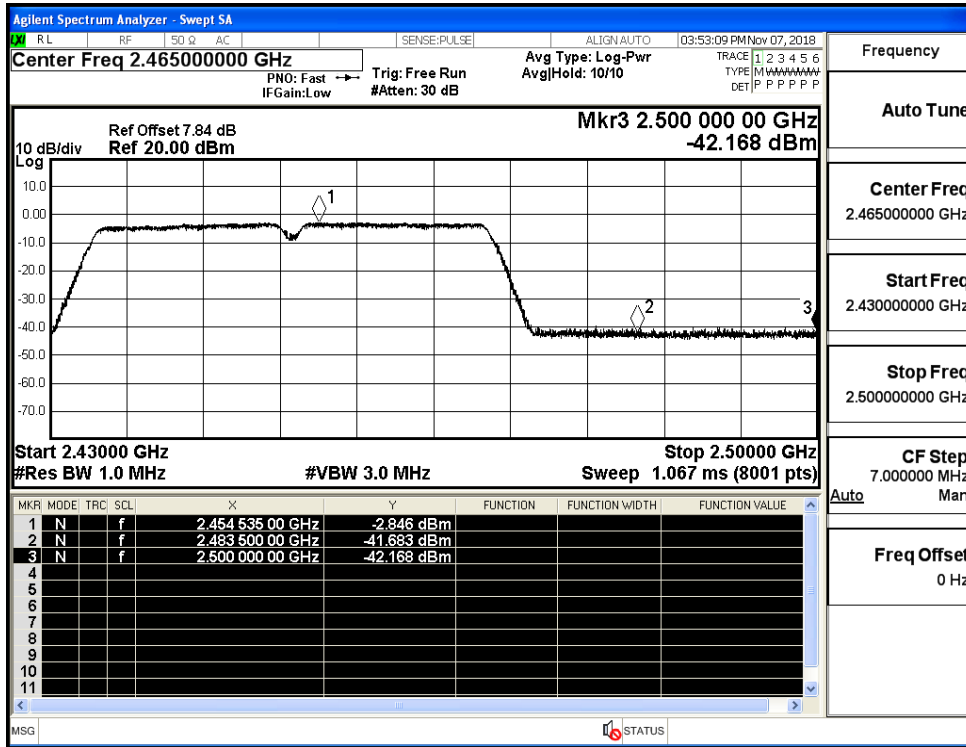
Restrict-band band-edge measurements_11N40SISO_2422_Ant1_PEAK



Restrict-band band-edge measurements_11N40SISO_2422_Ant1_AV



Restrict-band band-edge measurements_11N40SISO_2452_Ant1_PEAK



Restrict-band band-edge measurements_11N40SISO_2452_Ant1_AV

