

Appendix A

RF Test Data for 2.4G WIFI (Conducted Measurement)

Product Name: **Biometric Time Recorder**

Trade Mark: **N/A**

Test Model: **CB4000**

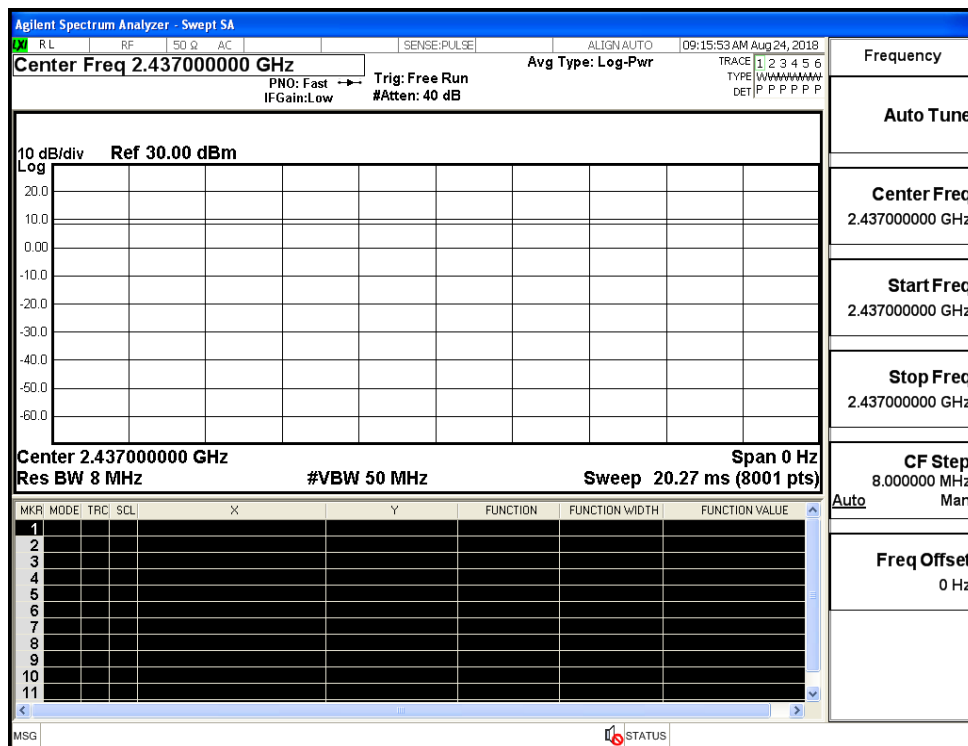
Environmental Conditions

Temperature:	24.3° C
Relative Humidity:	54.2%
ATM Pressure:	100.0 kPa
Test Engineer:	Mina.Xu
Supervised by:	Jayden.Zhuo

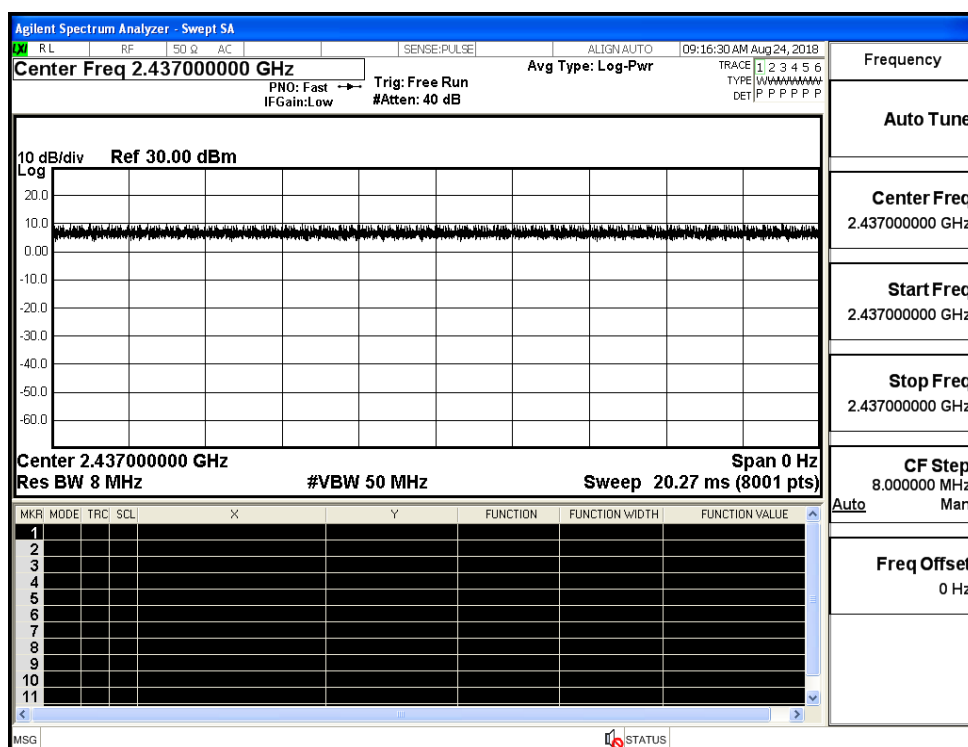
A.1 Duty Cycle

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

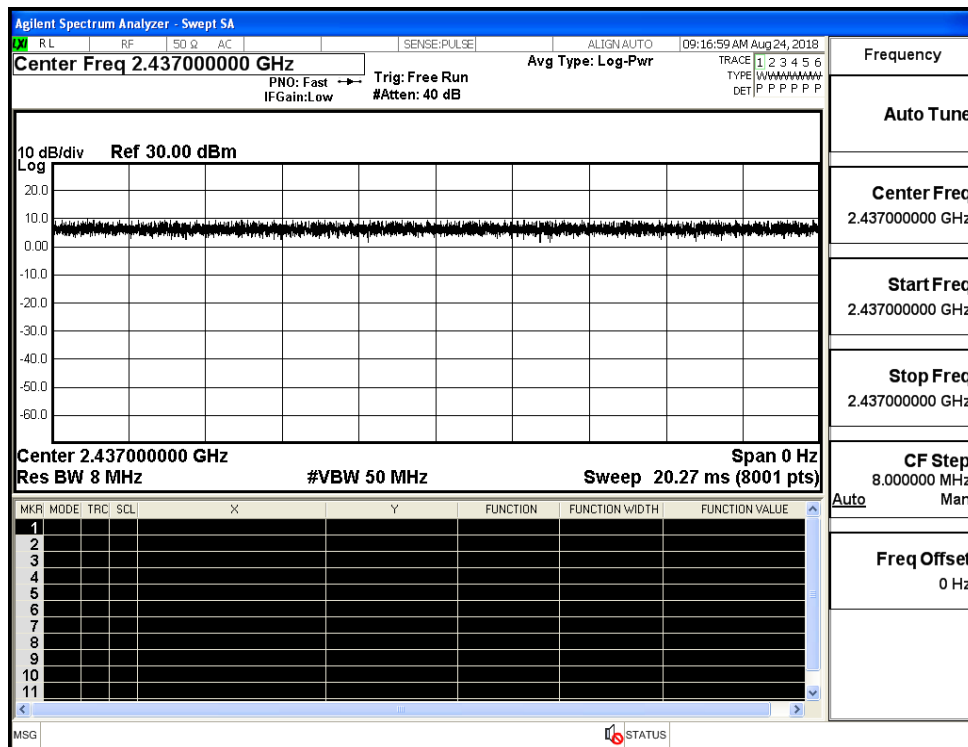
Duty Cycle_11B_2437_Ant1



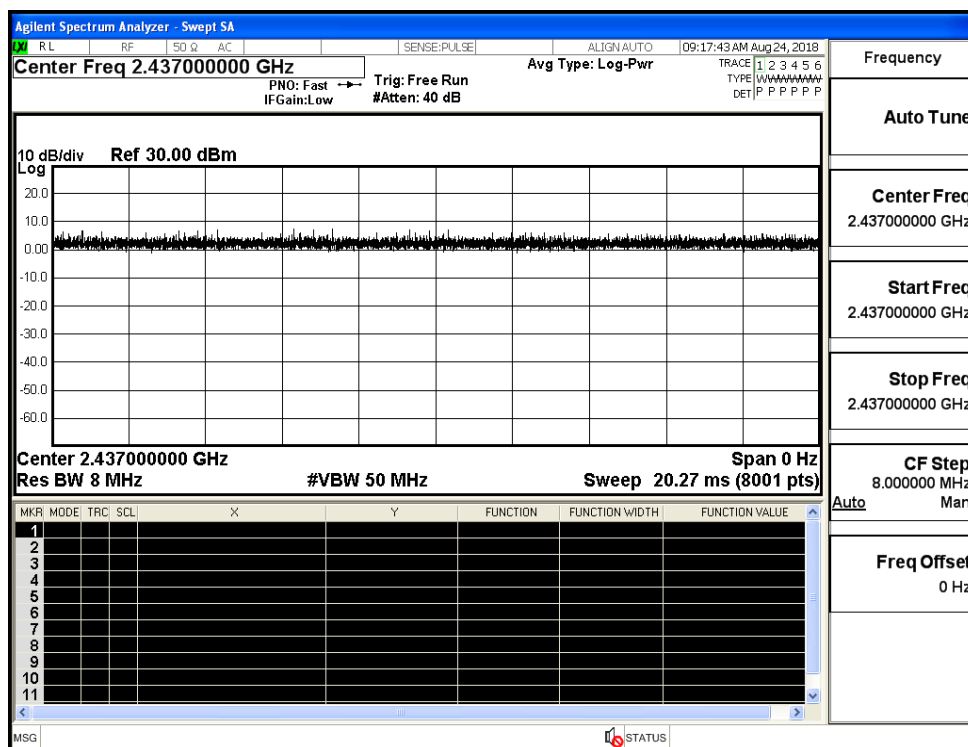
Duty Cycle_11G_2437_Ant1



Duty Cycle_11N20SISO_2437_Ant1



Duty Cycle_11N40SISO_2437_Ant1



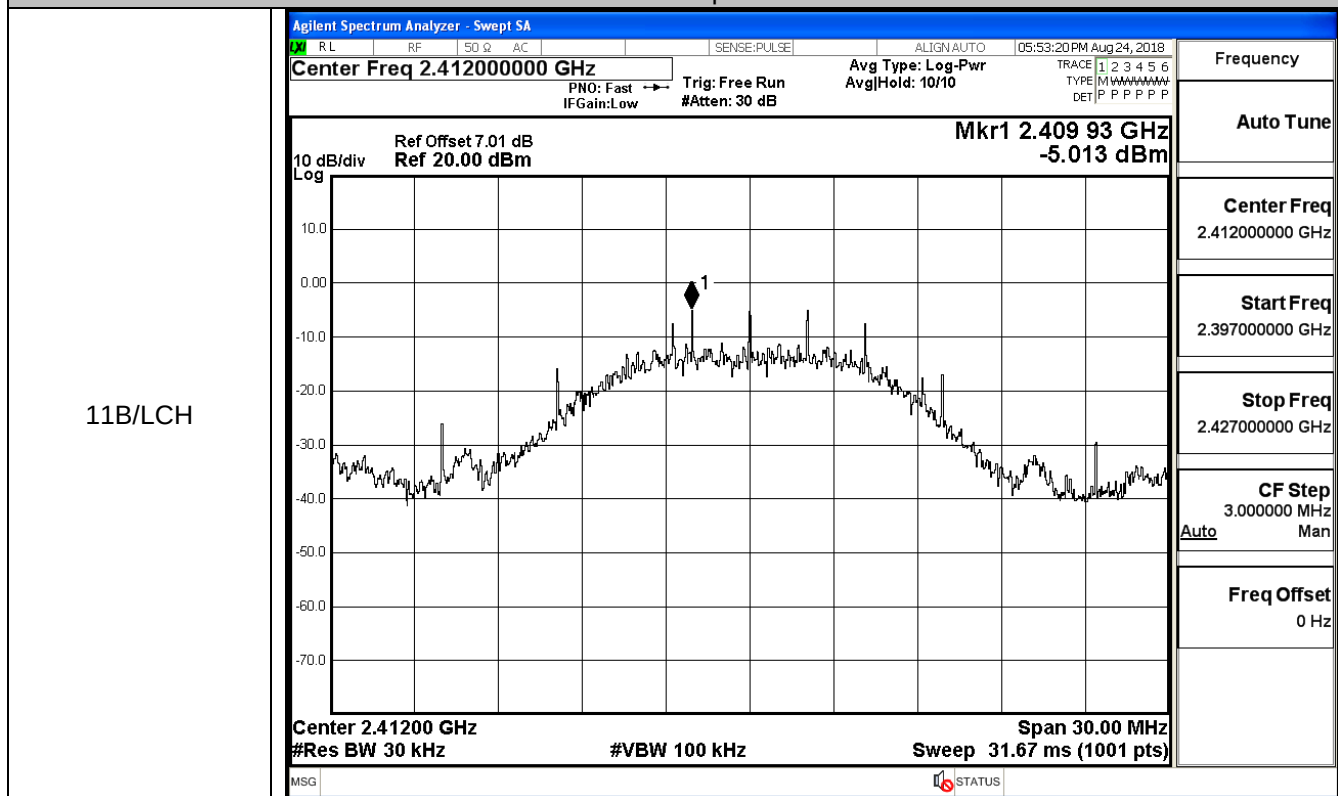
A.2 Maximum Conducted Output Power

Mode	Channel	Meas.Level [dBm]	Limit [dBm]	Verdict
11B	LCH	13.45	30	PASS
	MCH	13.84	30	PASS
	HCH	13.29	30	PASS
11G	LCH	12.98	30	PASS
	MCH	12.64	30	PASS
	HCH	12.43	30	PASS
11N20SISO	LCH	12.41	30	PASS
	MCH	12.87	30	PASS
	HCH	12.64	30	PASS
11N40SISO	LCH	11.21	30	PASS
	MCH	11.39	30	PASS
	HCH	11.41	30	PASS

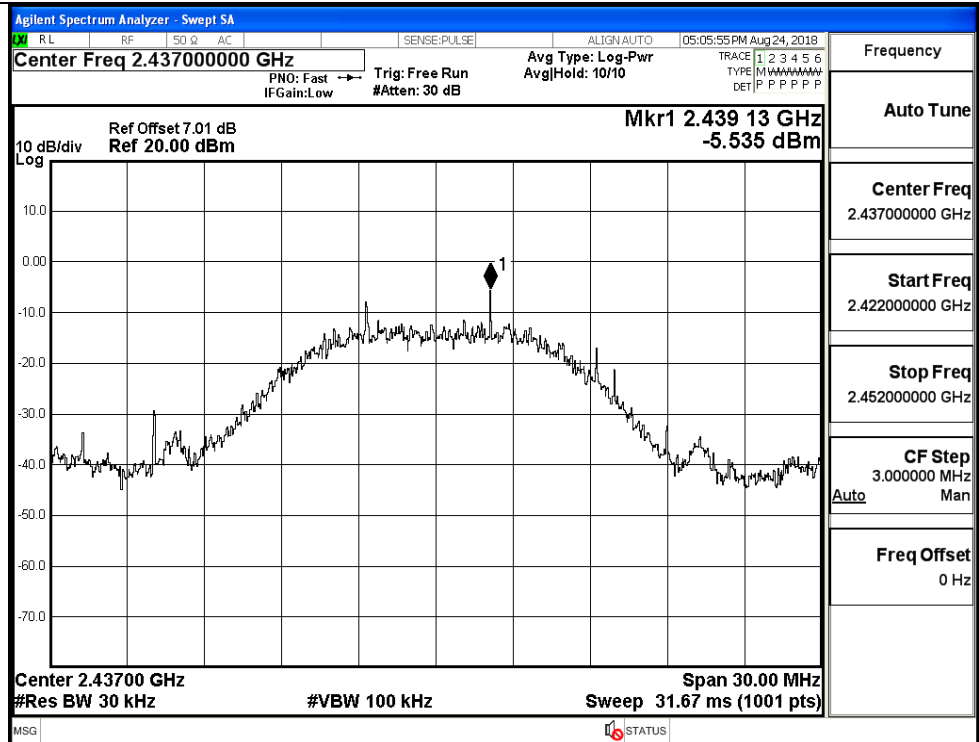
A.3 Maximum Power Spectral Density

Mode	Channel	Meas.Level [dBm/30KHz]	Limit [dBm/3KHz]	Verdict
11B	LCH	-5.013	8	PASS
	MCH	-5.535	8	PASS
	HCH	-5.284	8	PASS
11G	LCH	-13.035	8	PASS
	MCH	-12.906	8	PASS
	HCH	-13.192	8	PASS
11N20SISO	LCH	-12.836	8	PASS
	MCH	-13.119	8	PASS
	HCH	-12.889	8	PASS
11N40SISO	LCH	-16.506	8	PASS
	MCH	-16.709	8	PASS
	HCH	-16.672	8	PASS

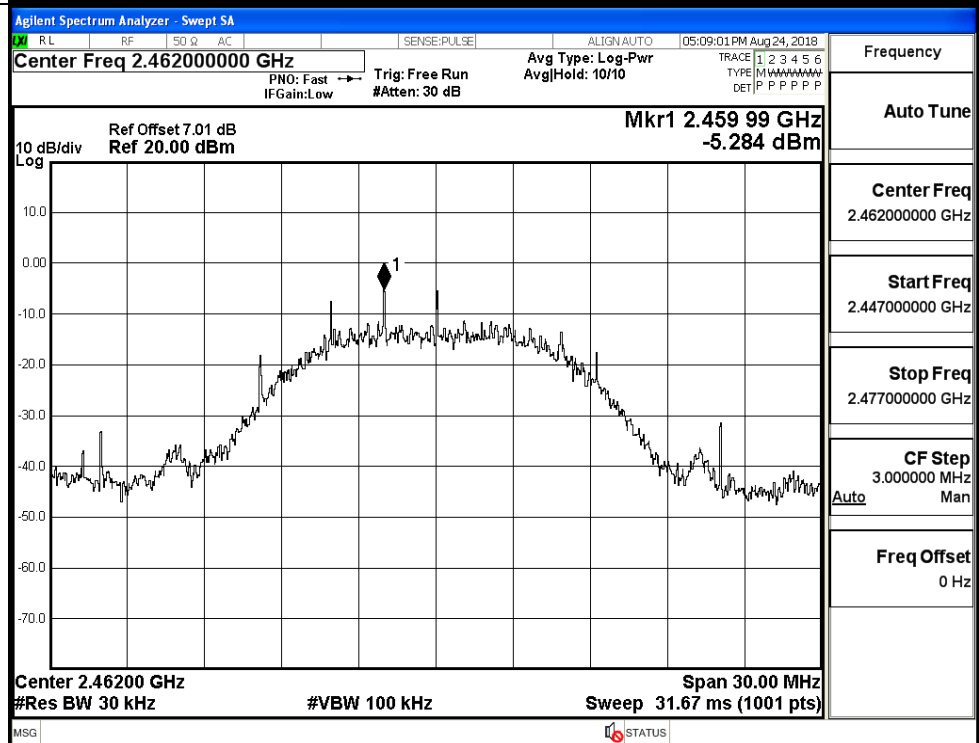
Test Graphs



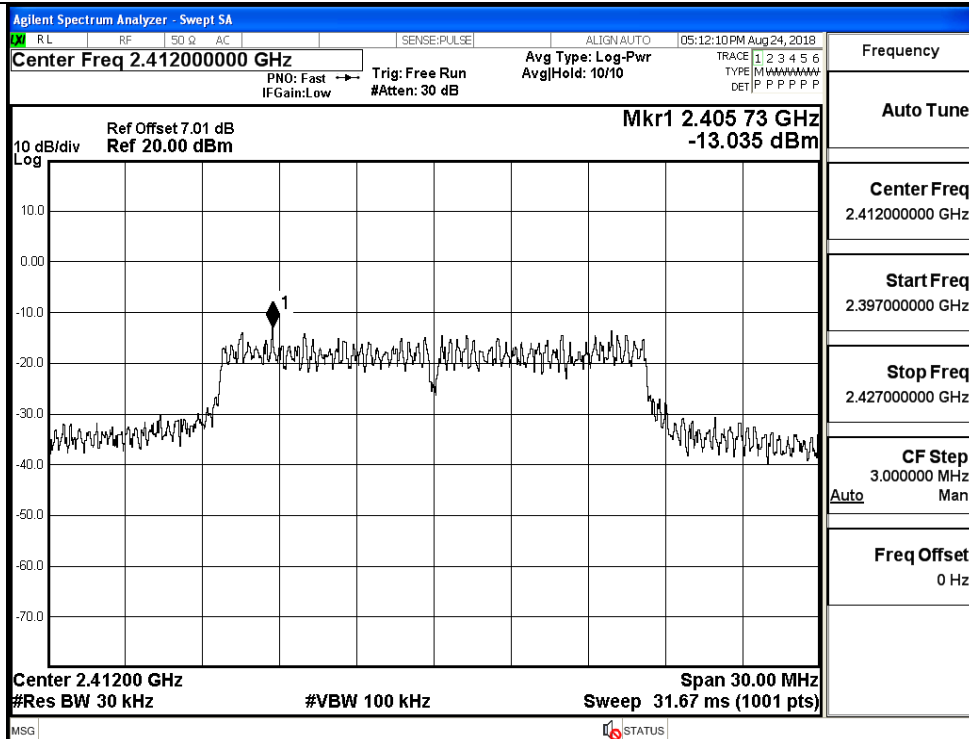
11B/MCH



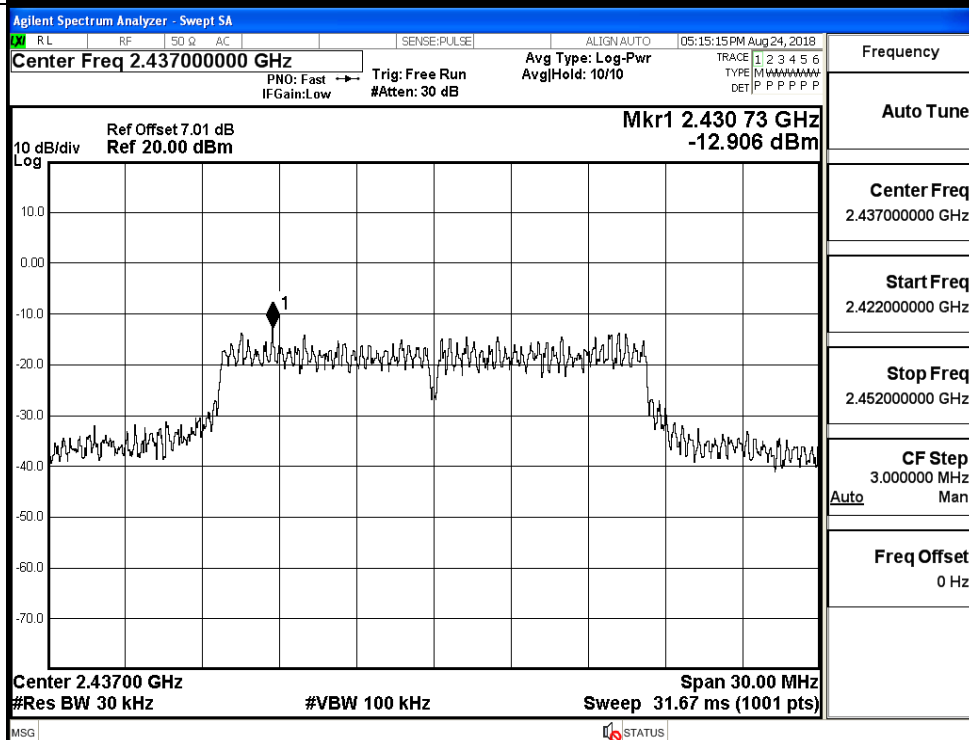
11B/HCH



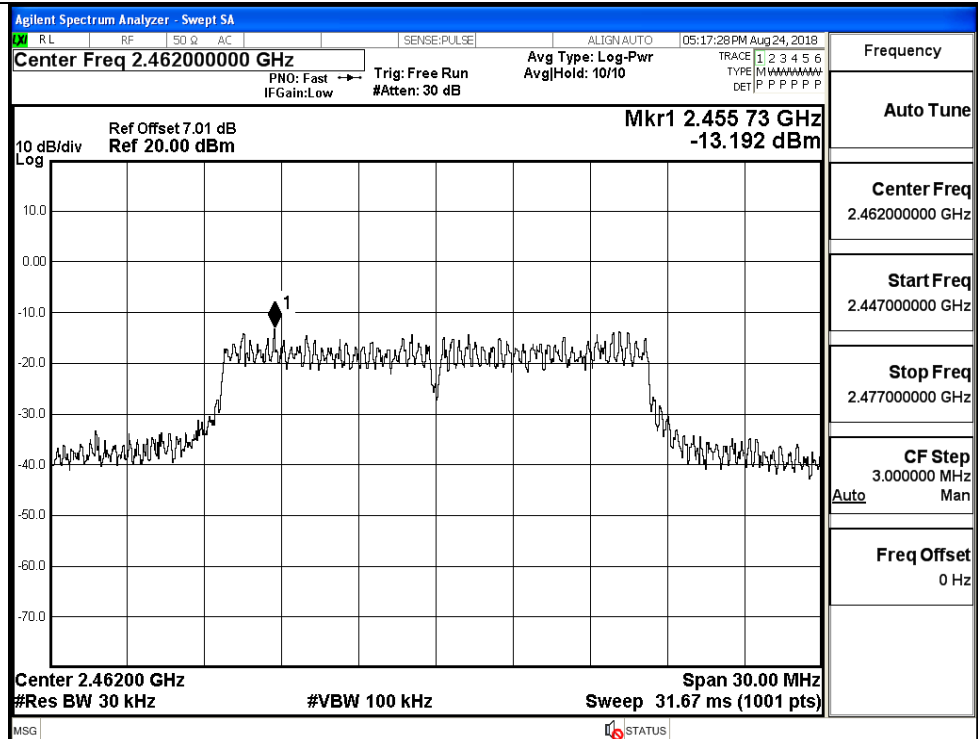
11G/LCH



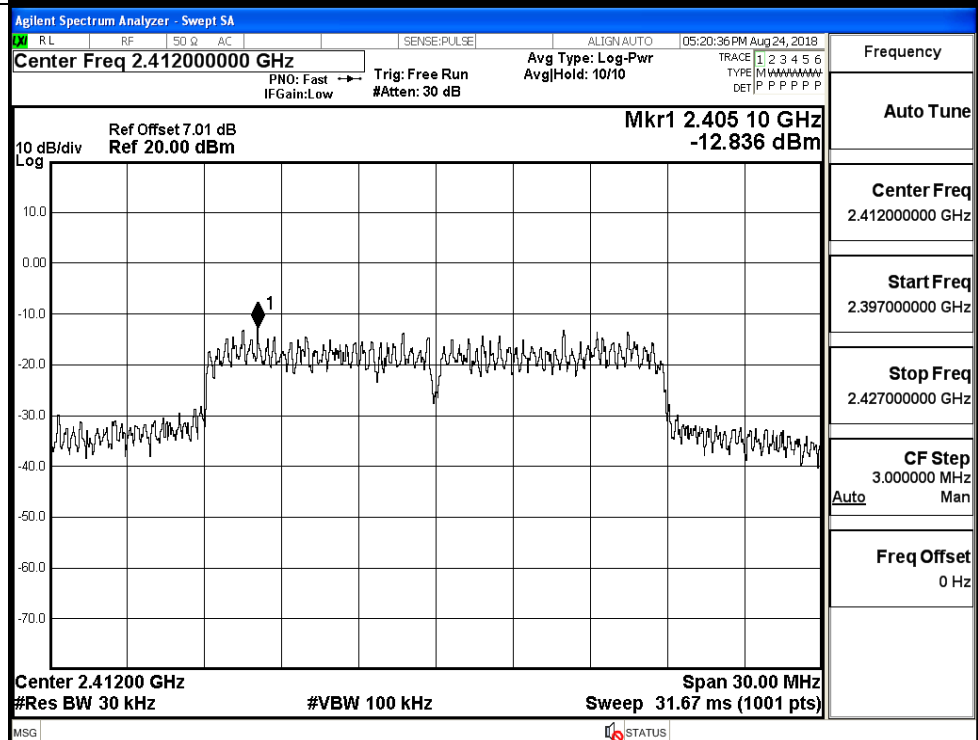
11G/MCH



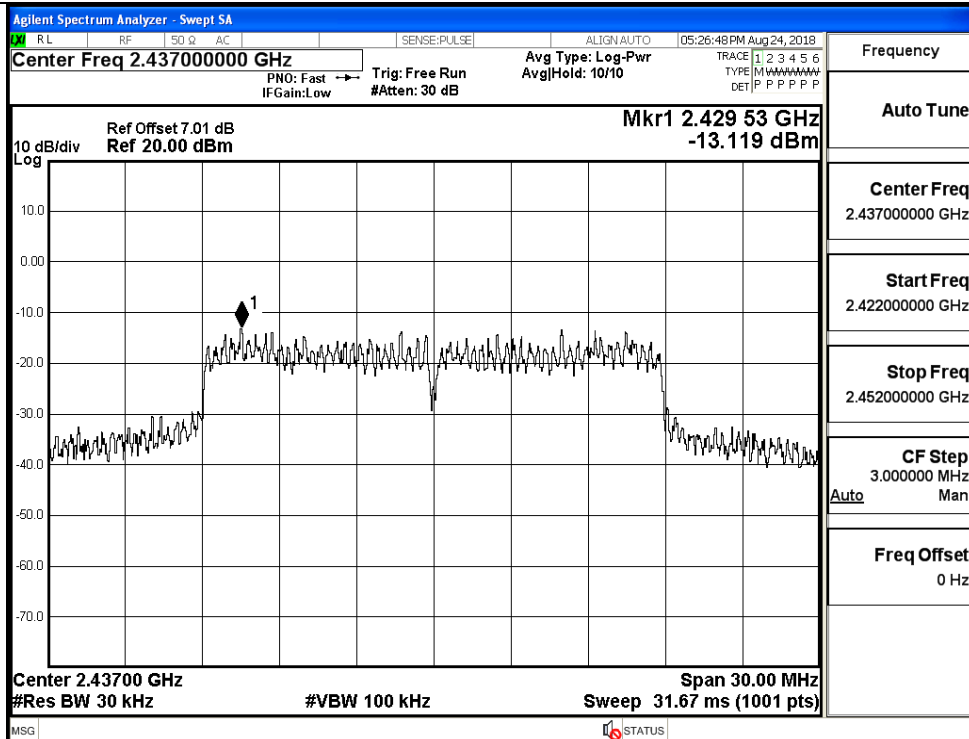
11G/HCH



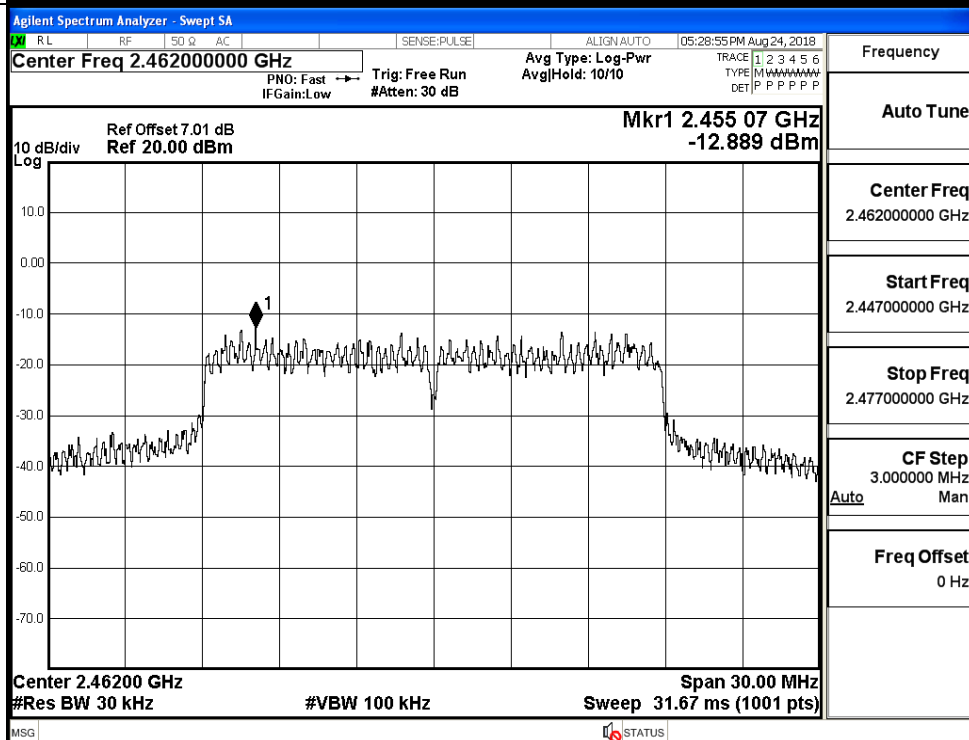
11N20SISO/LCH



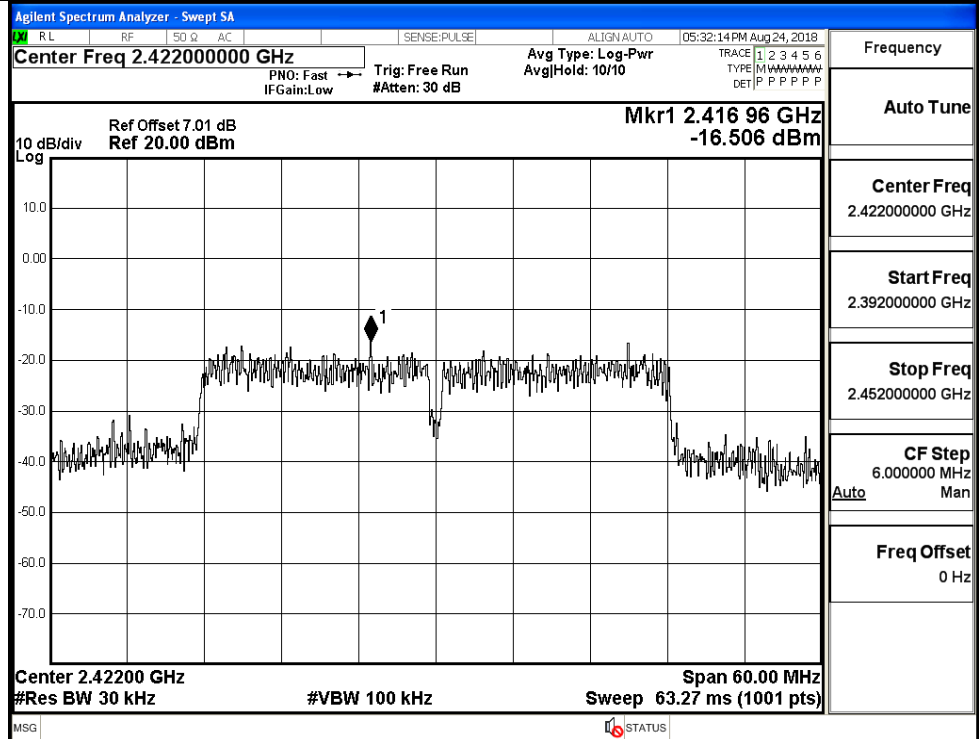
11N20SISO/MCH



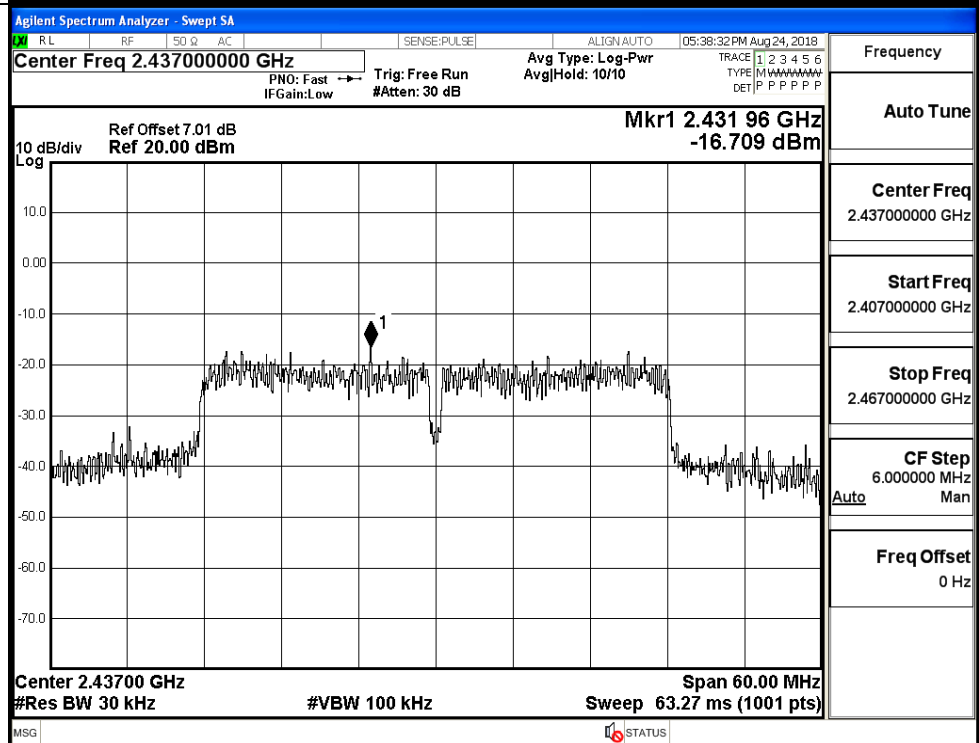
11N20SISO/HCH



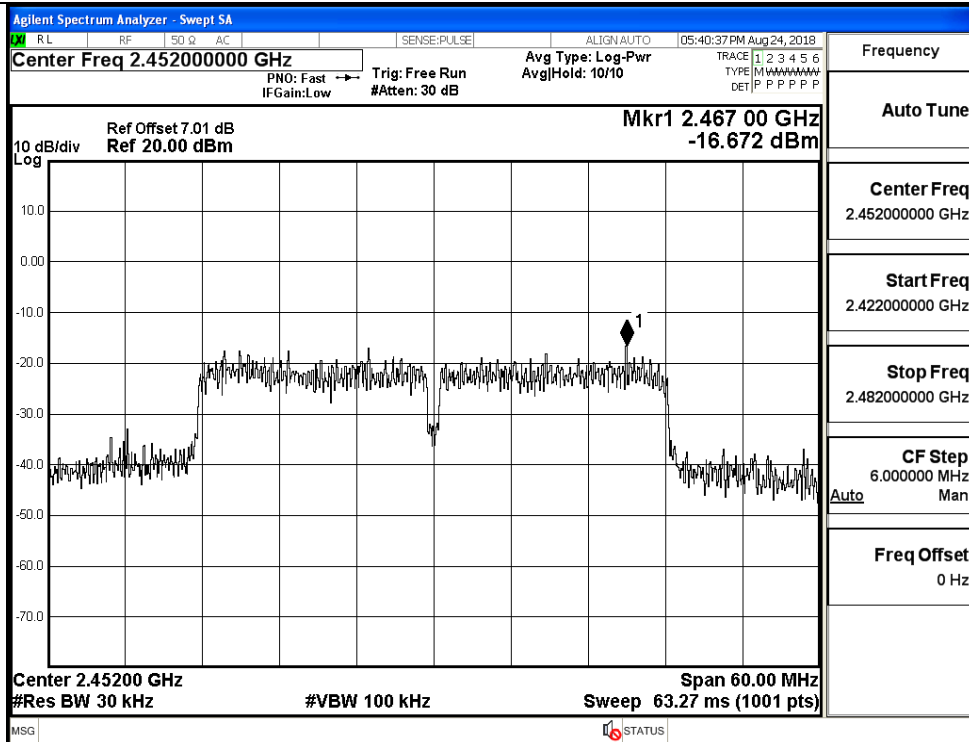
11N40SISO/LCH



11N40SISO/MCH



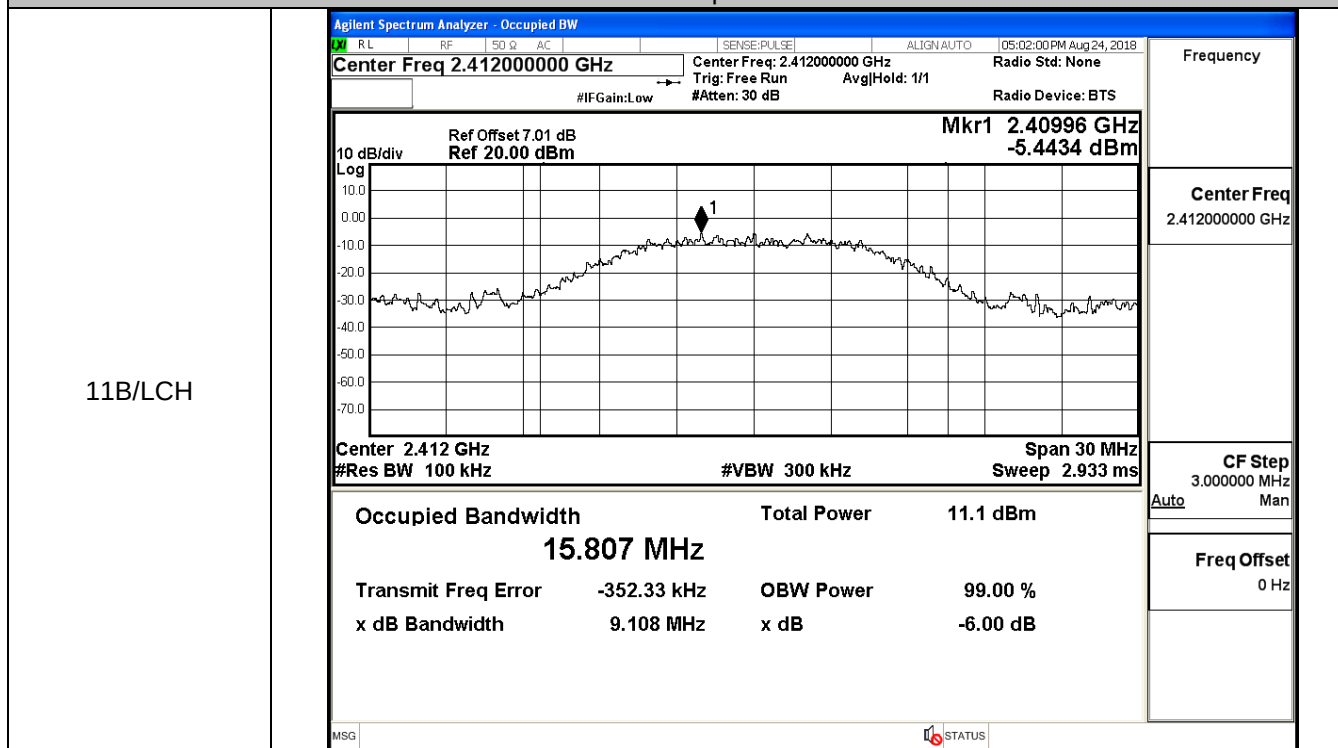
11N40SISO/HCH



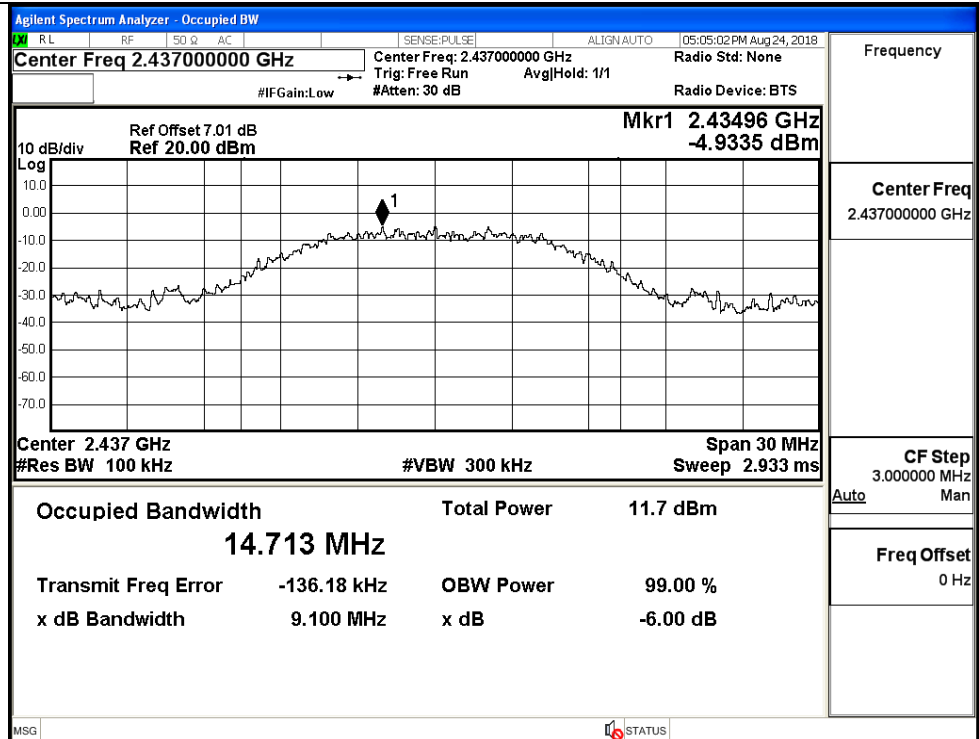
A.4 6dB Bandwidth

Mode	Channel	6dB Bandwidth [MHz]	Limit [MHz]	Verdict
11B	LCH	9.108	≥ 0.5	PASS
	MCH	9.100	≥ 0.5	PASS
	HCH	9.089	≥ 0.5	PASS
11G	LCH	16.48	≥ 0.5	PASS
	MCH	16.50	≥ 0.5	PASS
	HCH	16.48	≥ 0.5	PASS
11N20SISO	LCH	17.48	≥ 0.5	PASS
	MCH	17.44	≥ 0.5	PASS
	HCH	17.54	≥ 0.5	PASS
11N40SISO	LCH	35.71	≥ 0.5	PASS
	MCH	36.00	≥ 0.5	PASS
	HCH	35.70	≥ 0.5	PASS

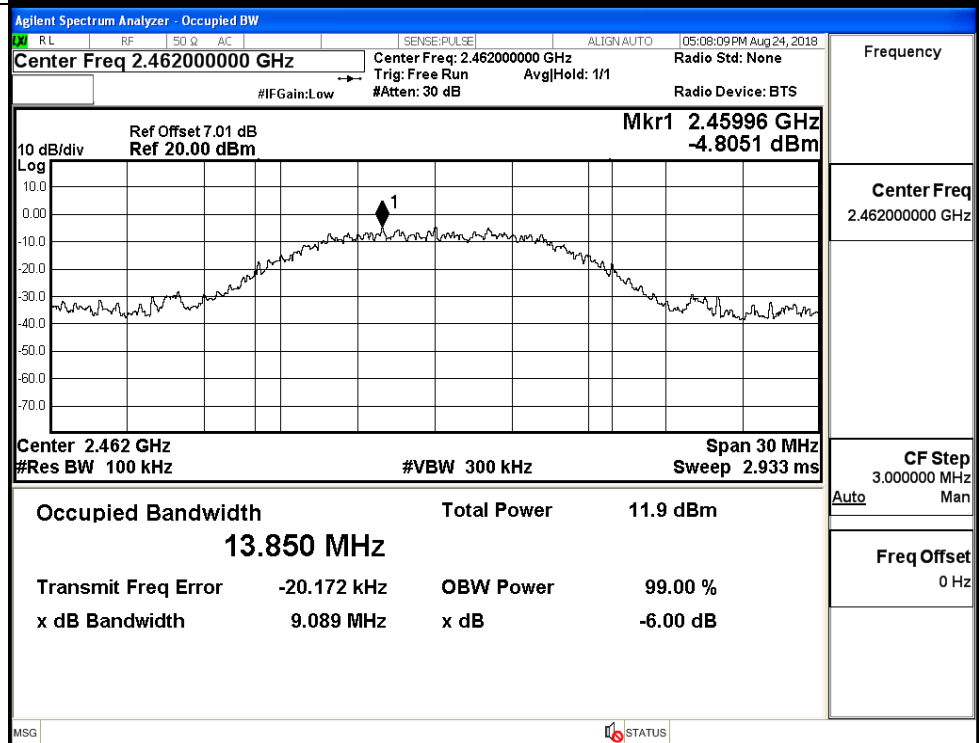
Test Graphs



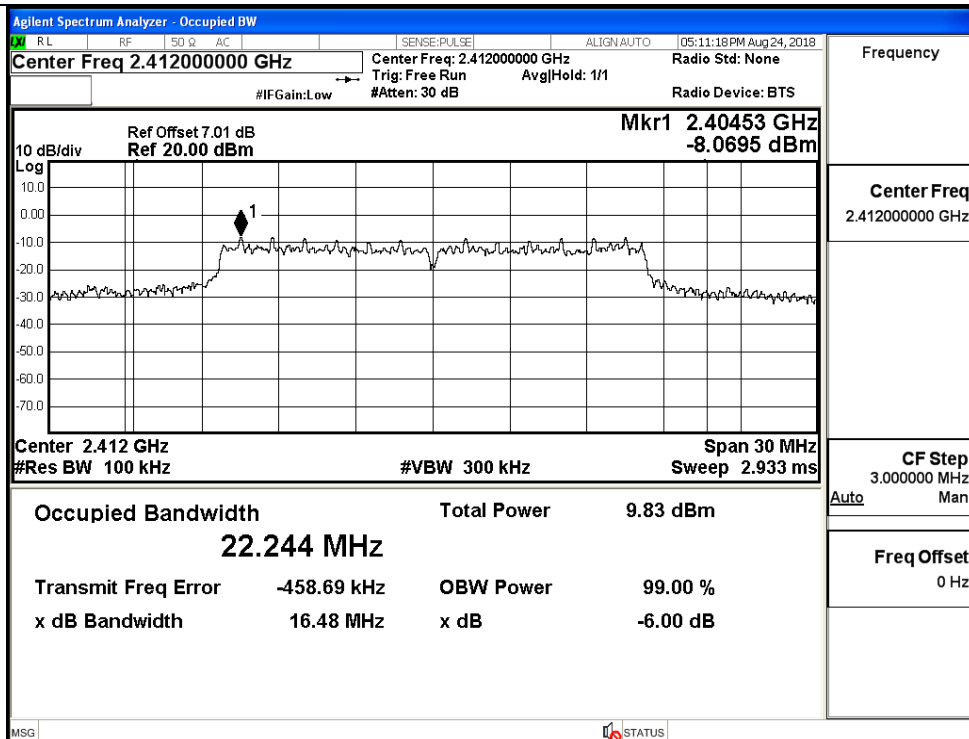
11B/MCH



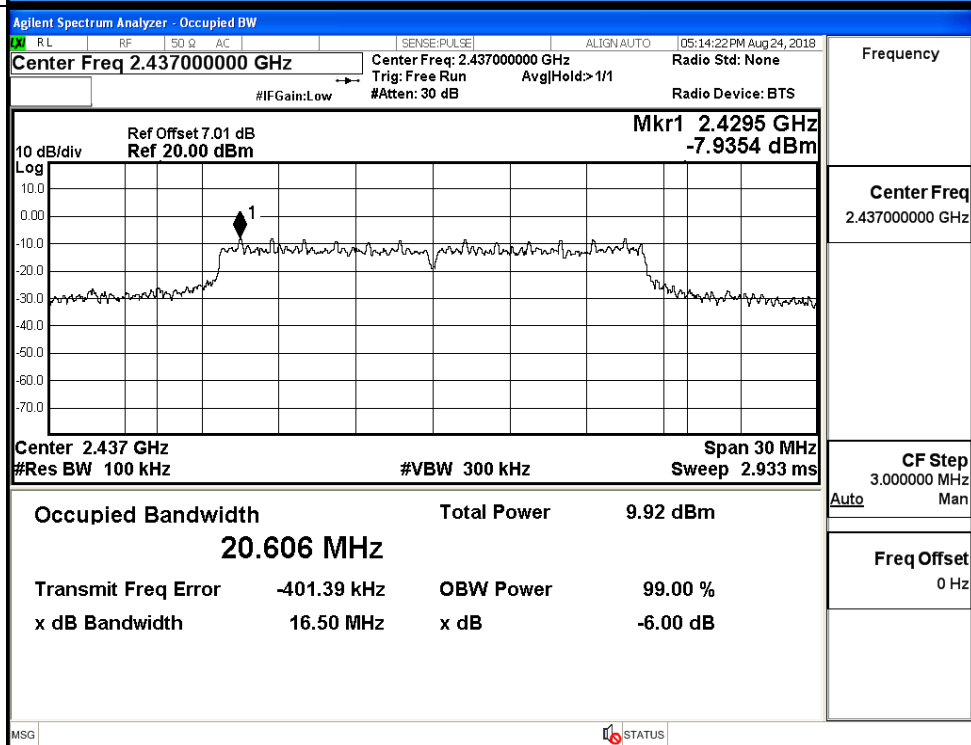
11B/HCH



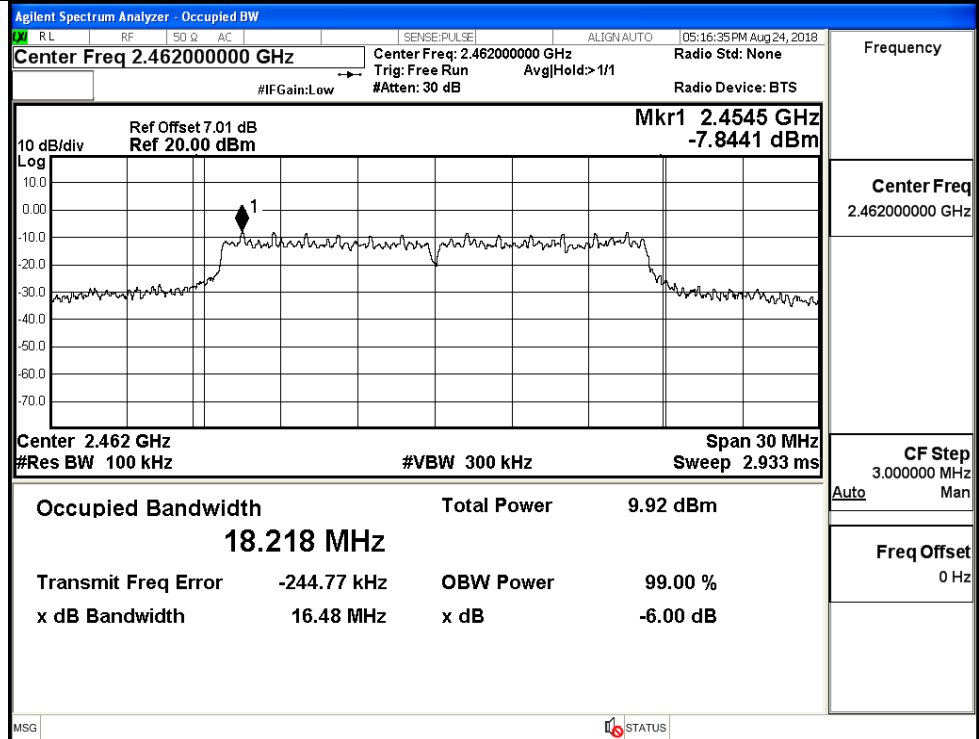
11G/LCH



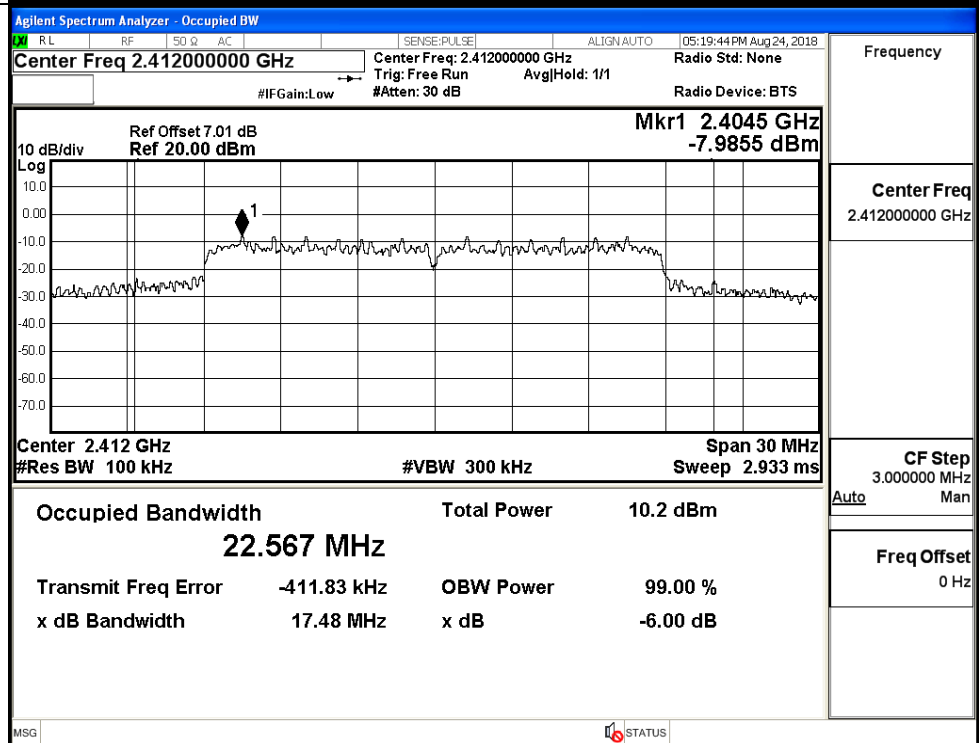
11G/MCH



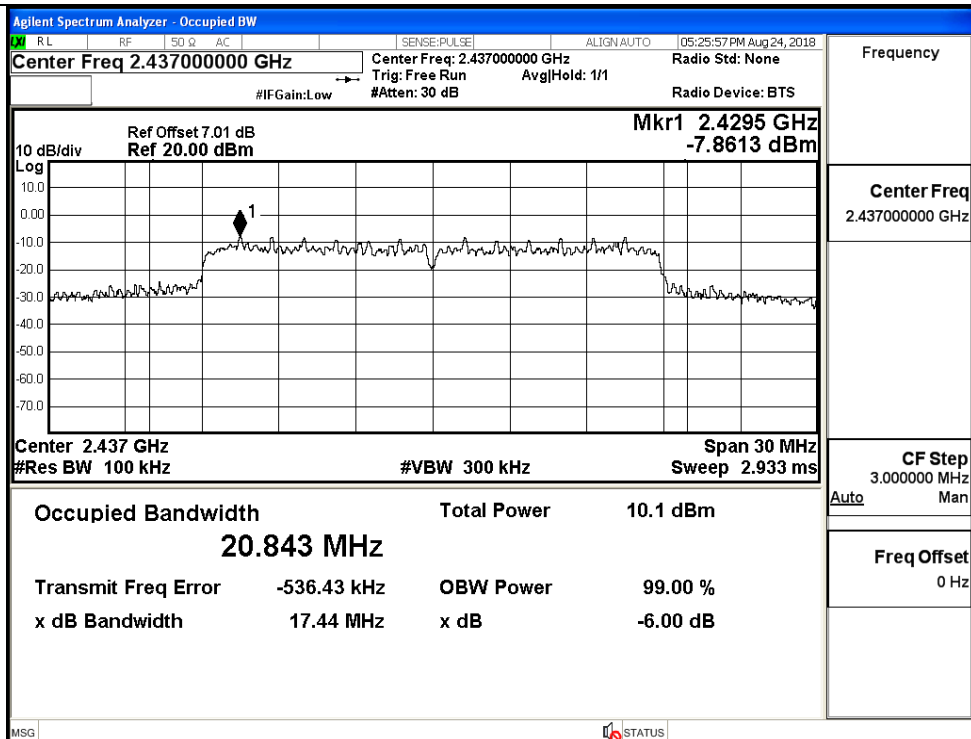
11G/HCH



11N20SISO/LCH



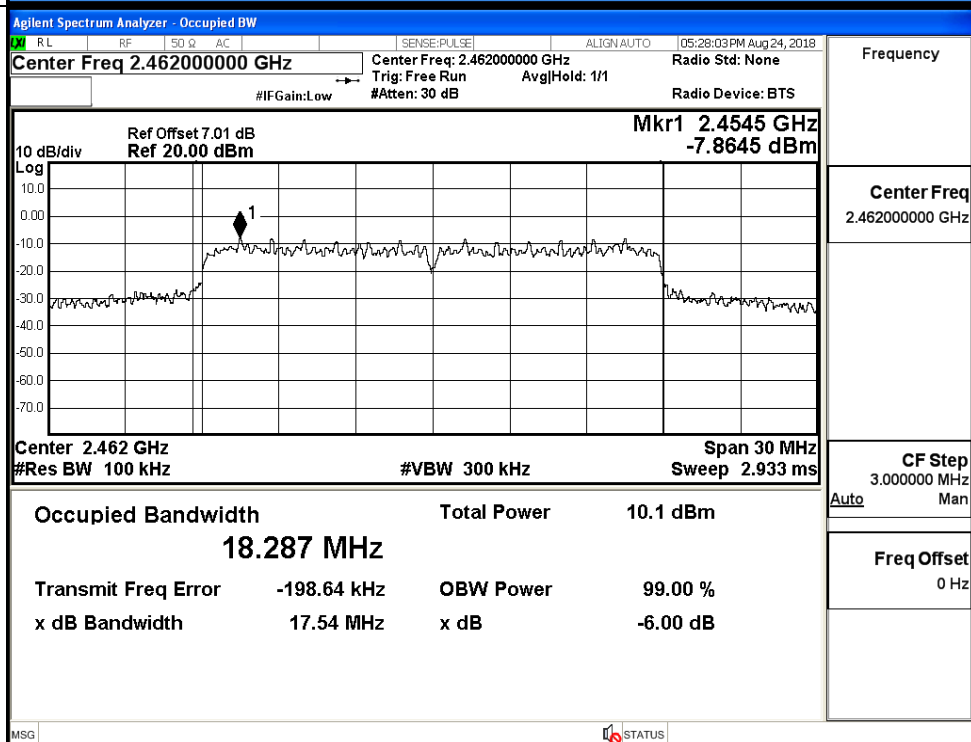
11N20SISO/MCH



Frequency

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

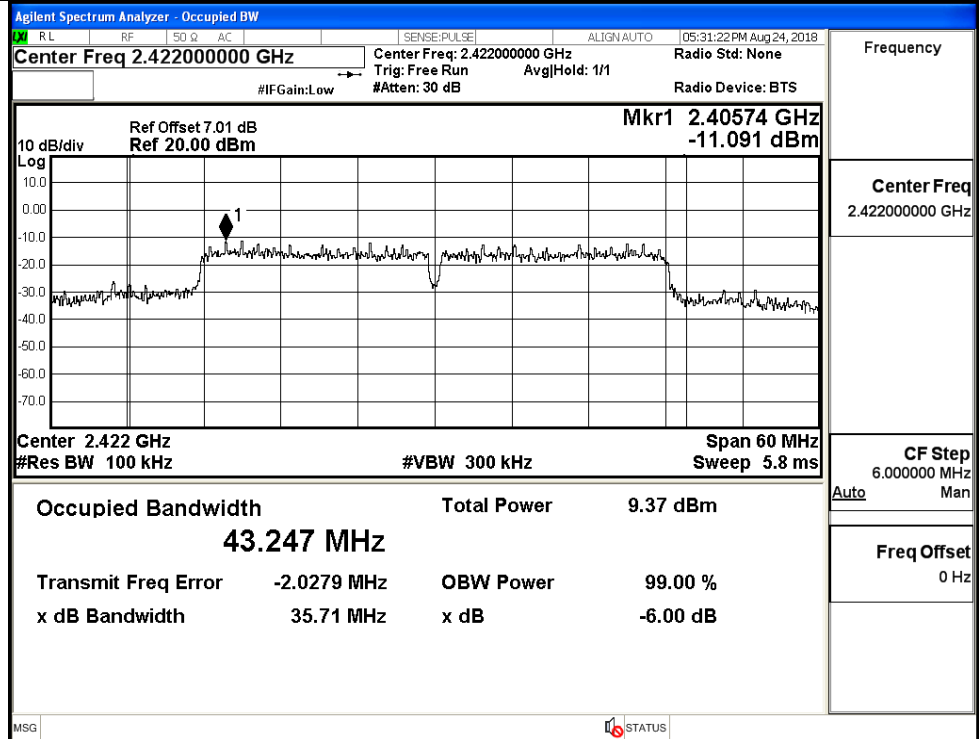
11N20SISO/HCH



Frequency

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

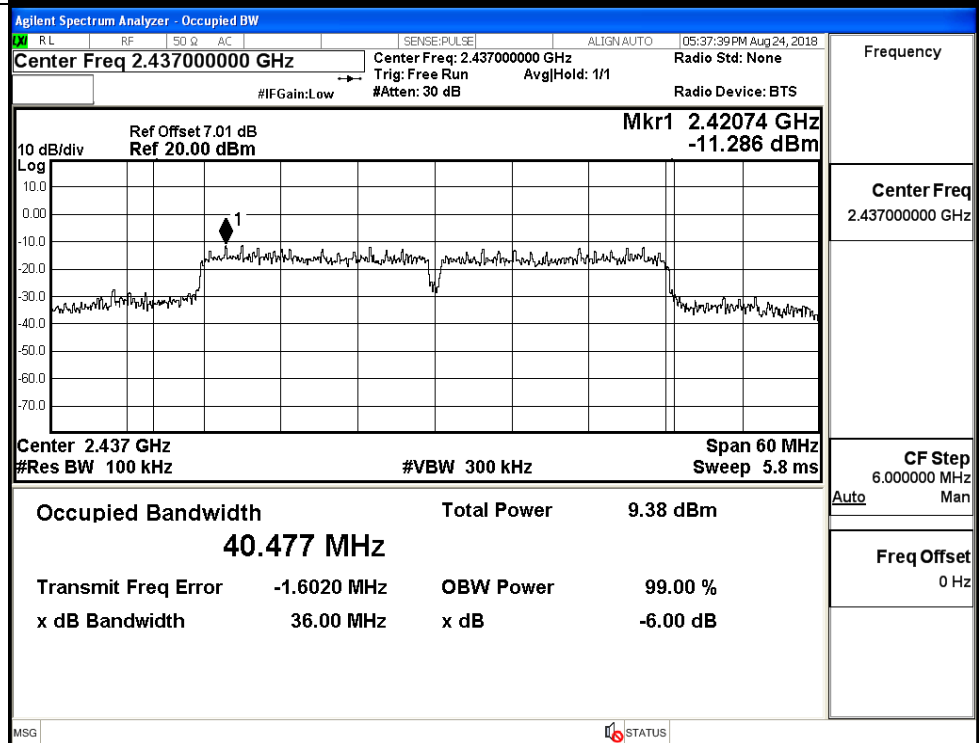
11N40SISO/LCH



Frequency

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

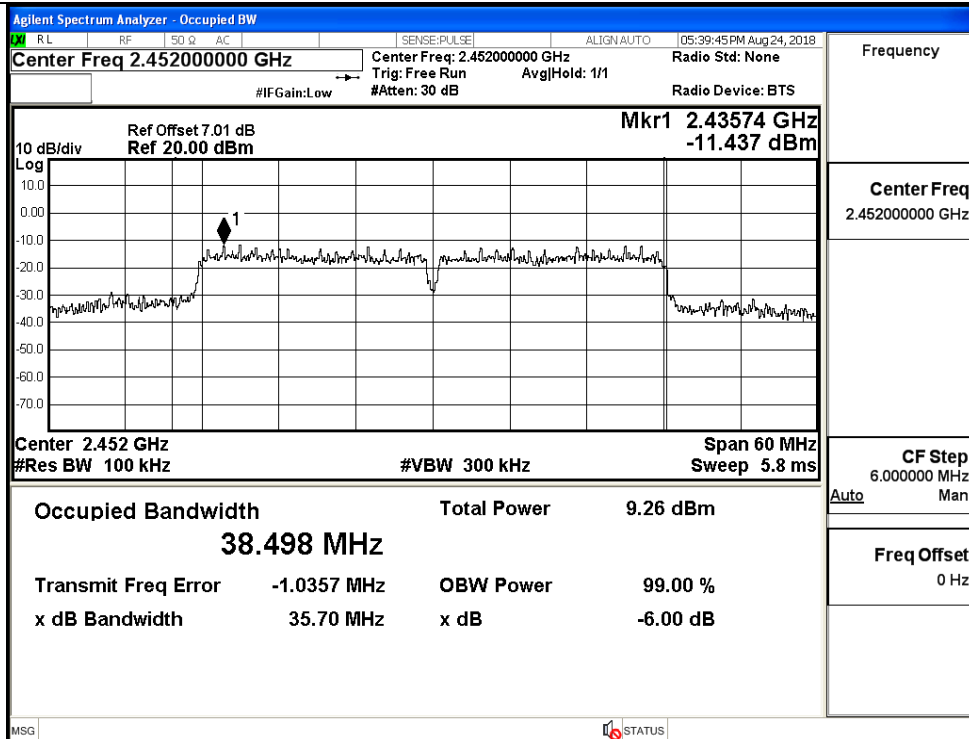
11N40SISO/MCH



Frequency

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

11N40SISO/HCH

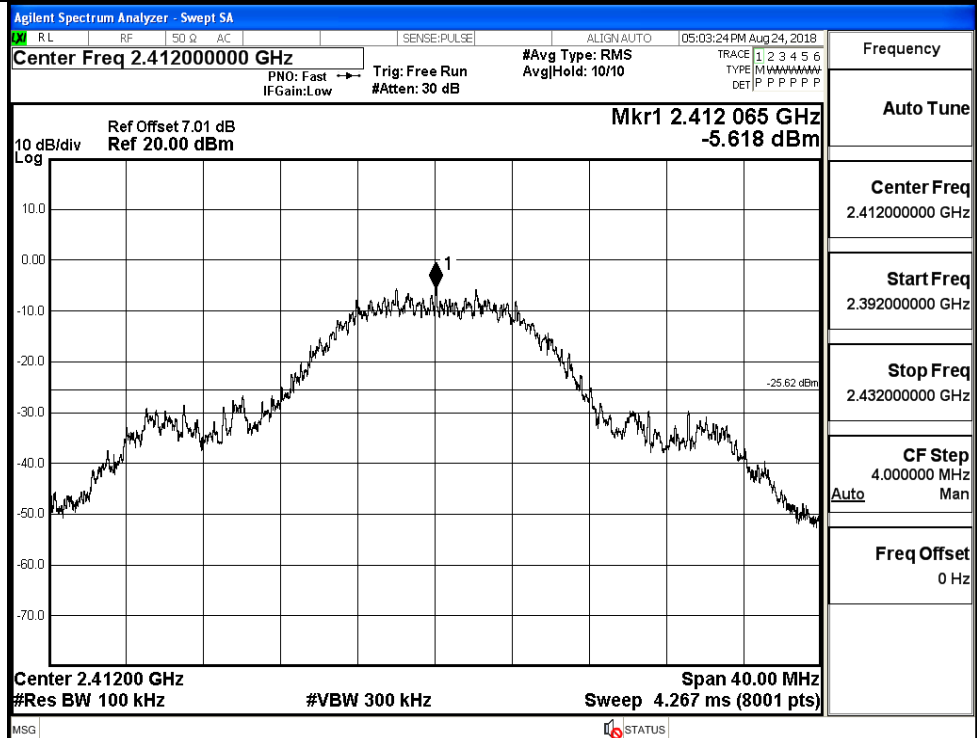


A.5 RF Conducted Spurious Emissions

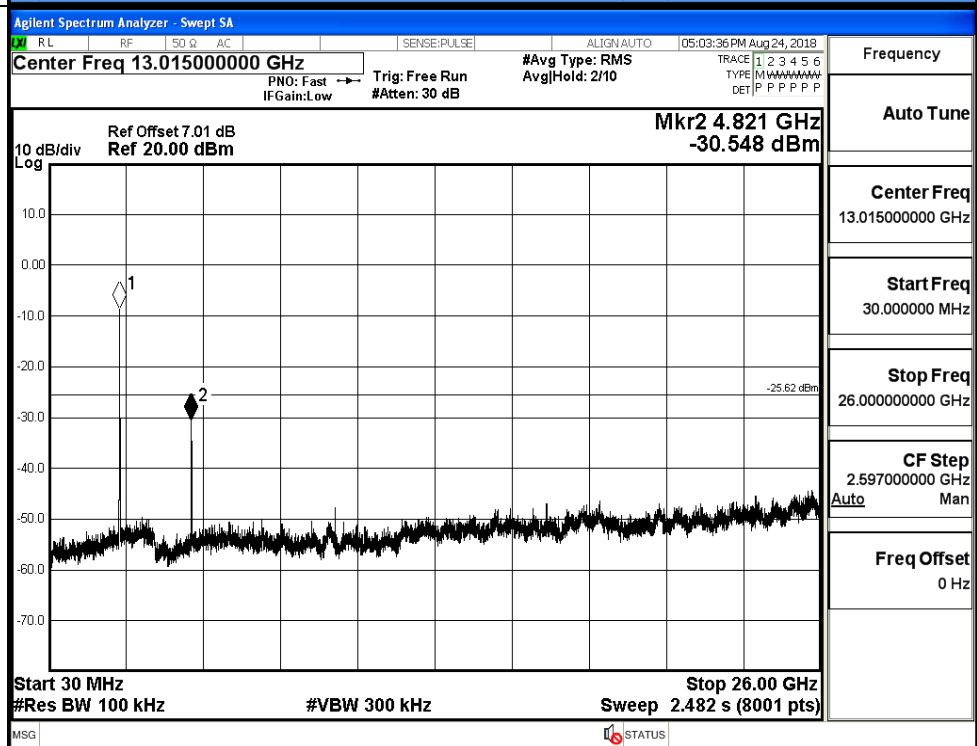
Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
11B	LCH	-5.618	-30.548	-25.618	PASS
	MCH	-5.414	-32.284	-25.414	PASS
	HCH	-5.31	-35.881	-25.310	PASS
11G	LCH	-8.121	-32.269	-28.121	PASS
	MCH	-8.011	-34.790	-28.011	PASS
	HCH	-8.187	-36.865	-28.187	PASS
11N20SISO	LCH	-8.142	-30.846	-28.142	PASS
	MCH	-8.032	-35.157	-28.032	PASS
	HCH	-8.031	-33.394	-28.031	PASS
11N40SISO	LCH	-11.468	-34.920	-31.468	PASS
	MCH	-11.473	-37.890	-31.473	PASS
	HCH	-11.530	-35.635	-31.510	PASS

11B LCH Graphs

Pref/11B/LCH

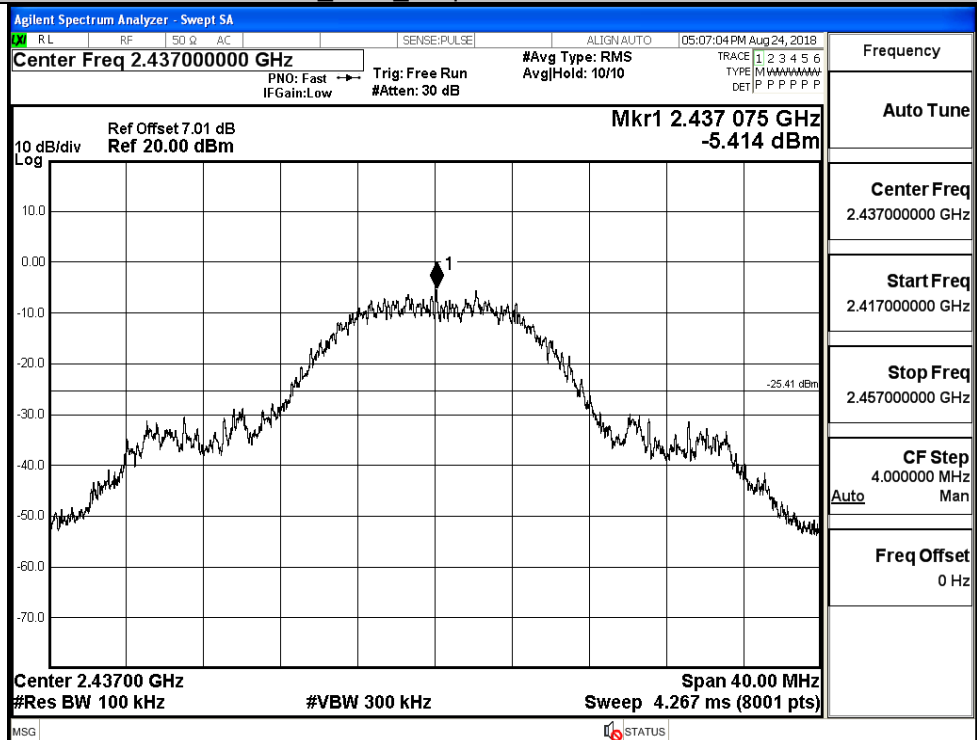


Puw/11B/LCH

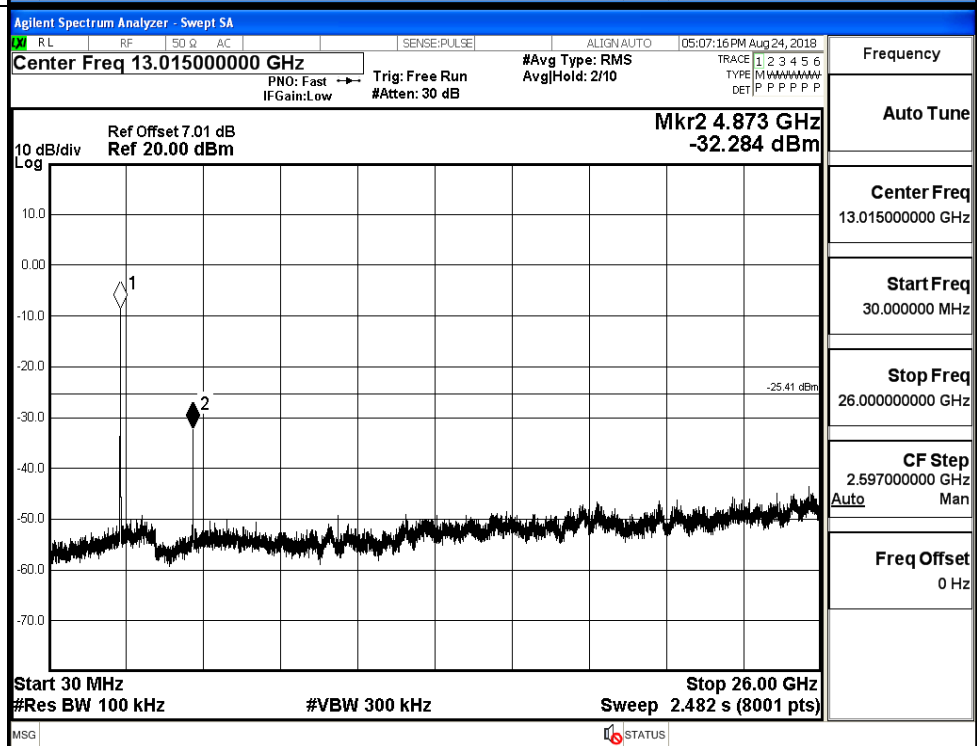


11B MCH Graphs

Pref/11B/MCH

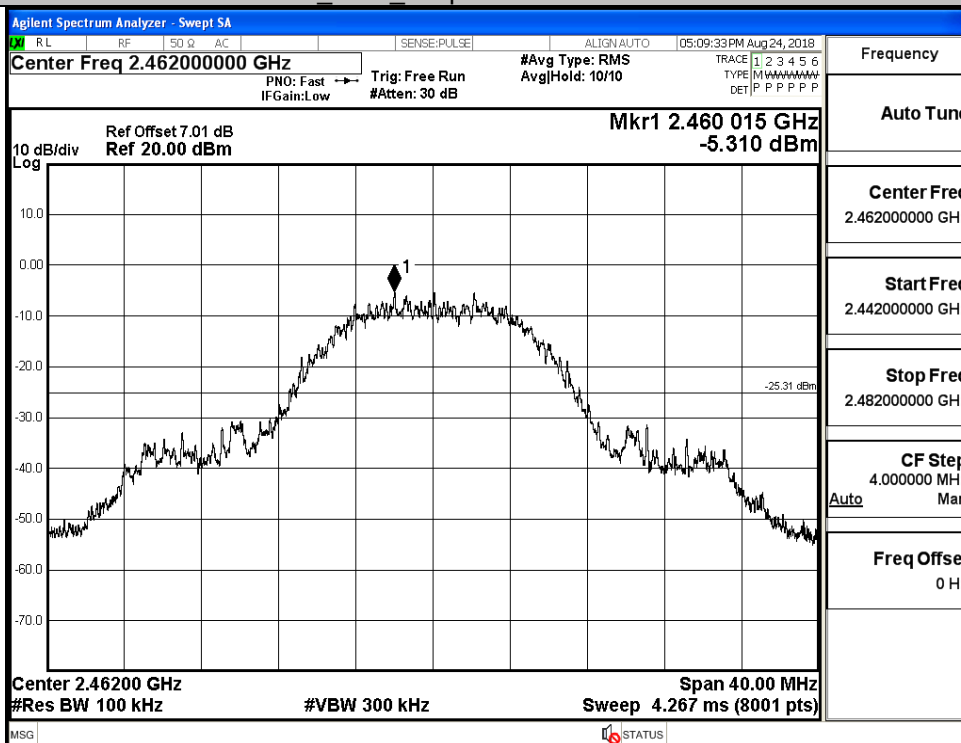


Puw/11B/MCH

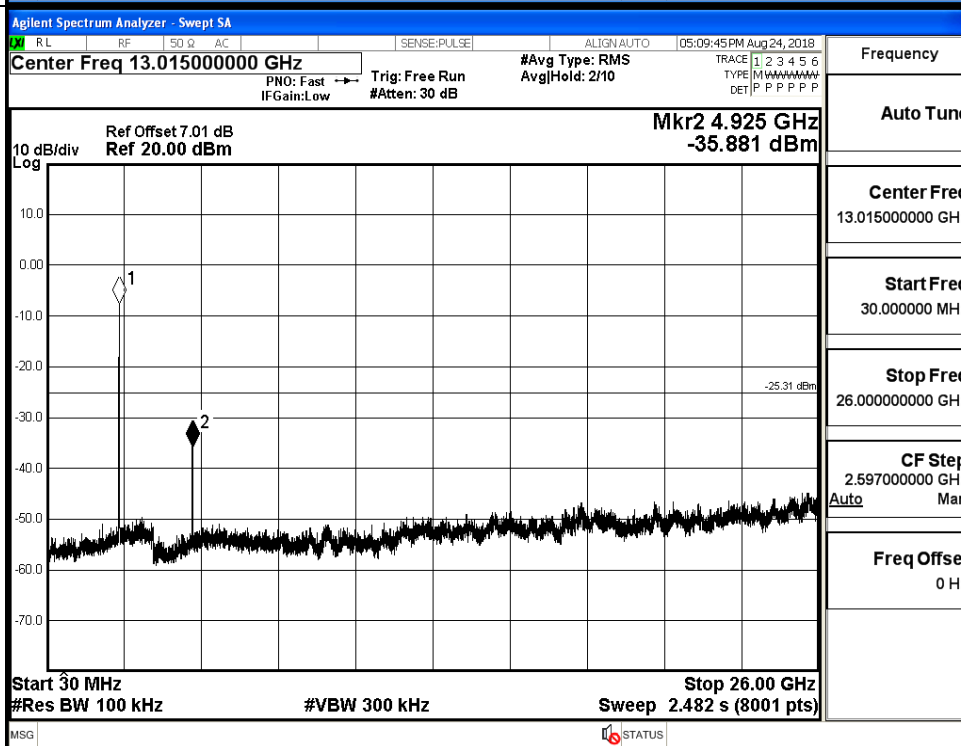


11B HCH Graphs

Pref/11B/HCH

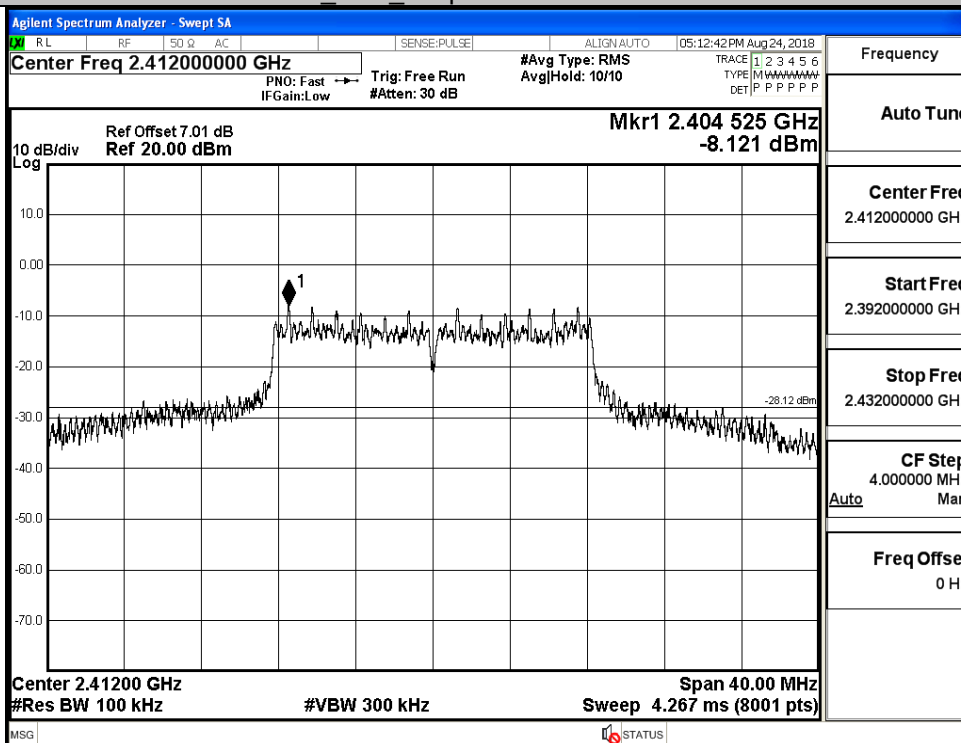


Puw/11B/HCH

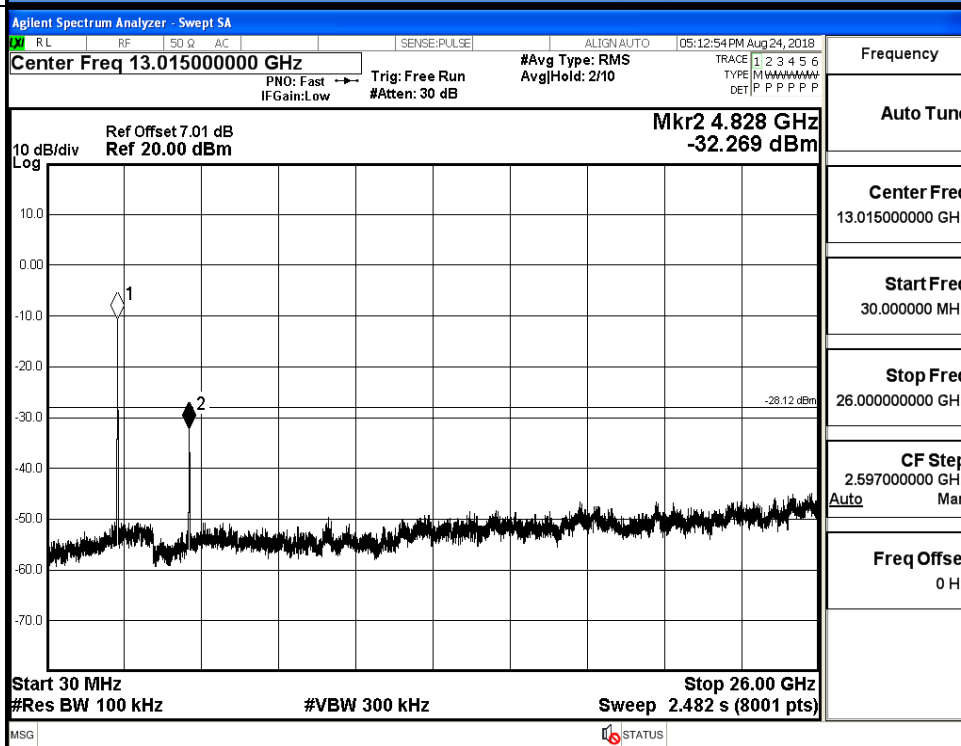


11G LCH Graphs

Pref/11G/LCH

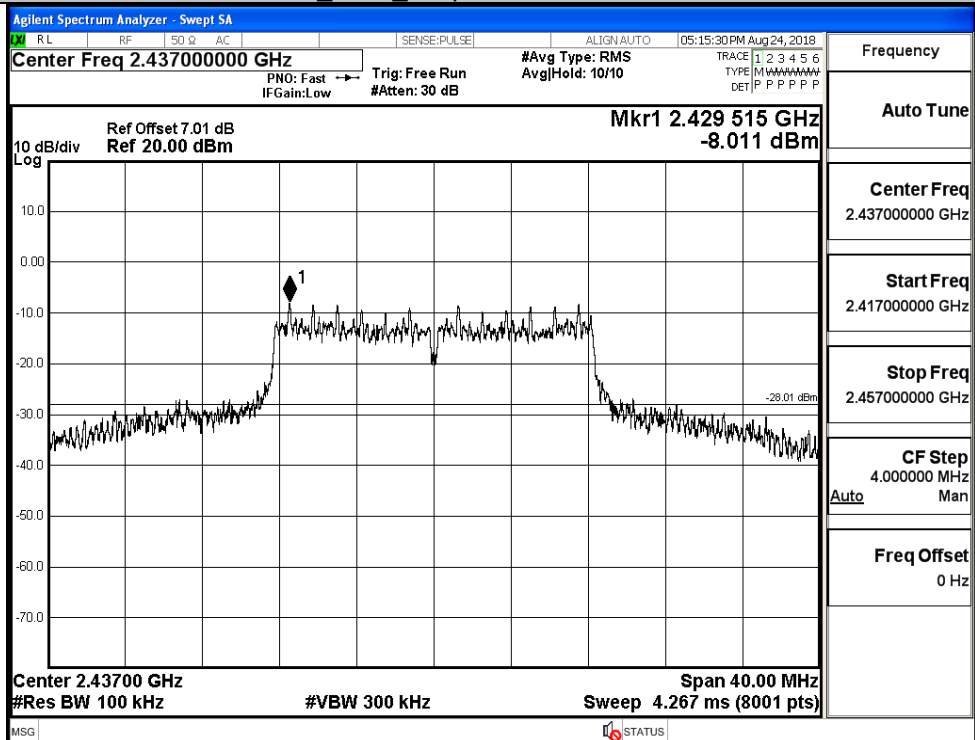


Puw/11G/LCH

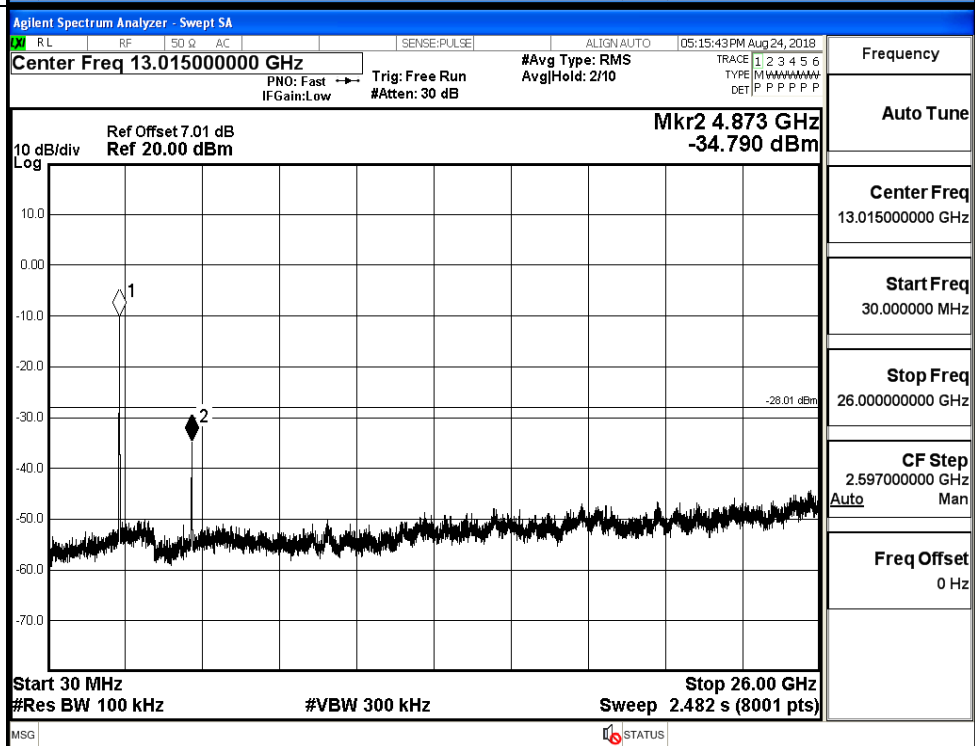


11G MCH Graphs

Pref/11G/MCH

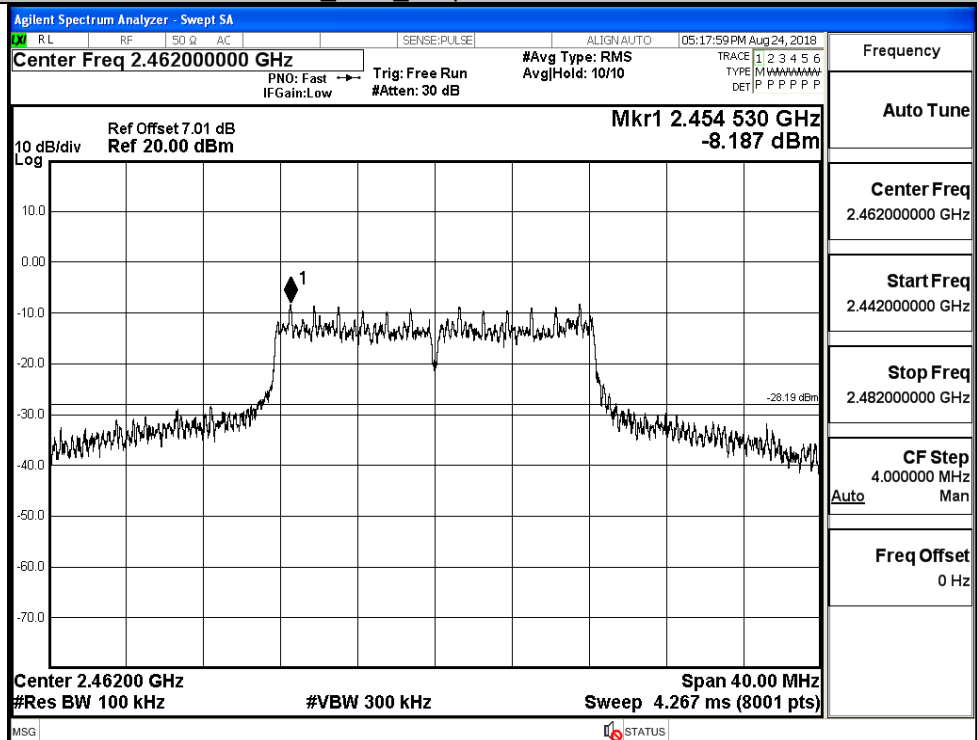


Puw/11G/MCH

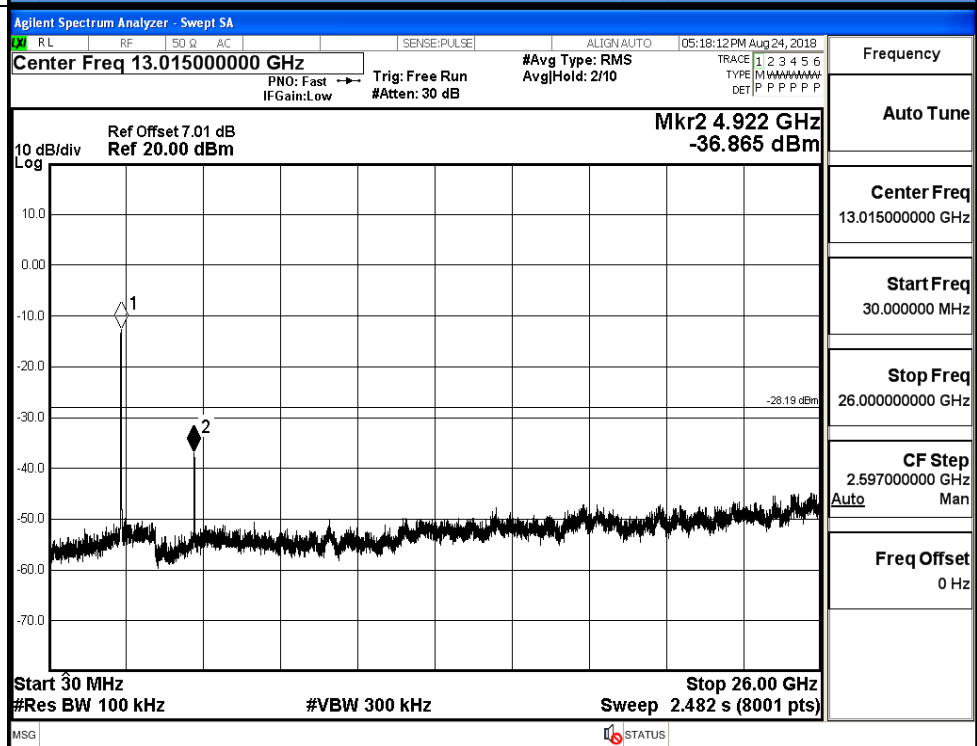


11G HCH Graphs

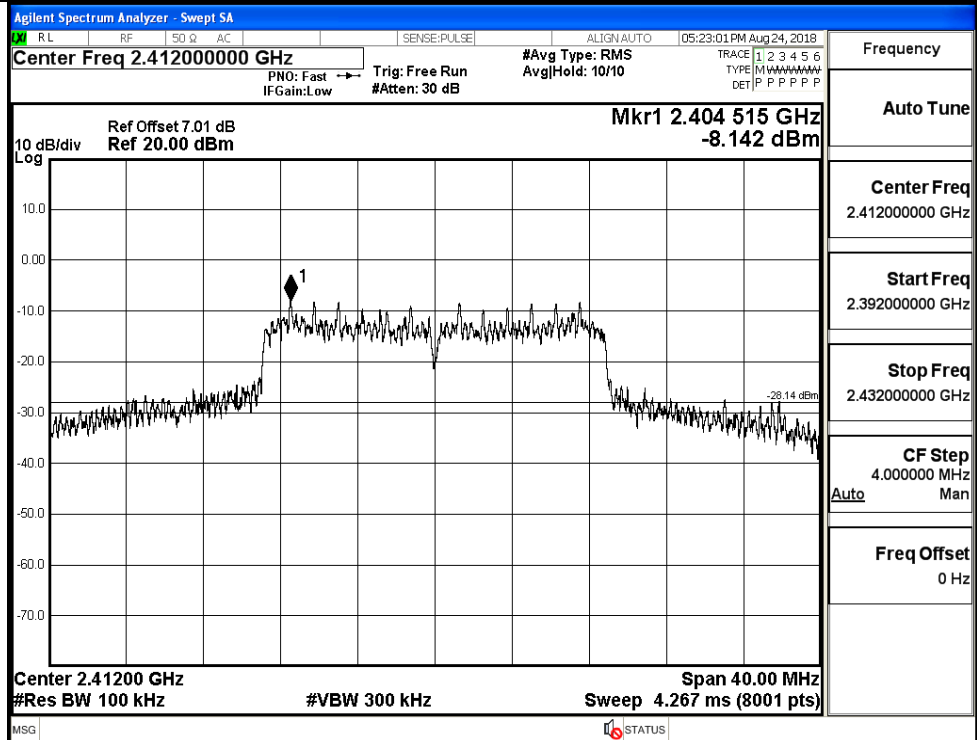
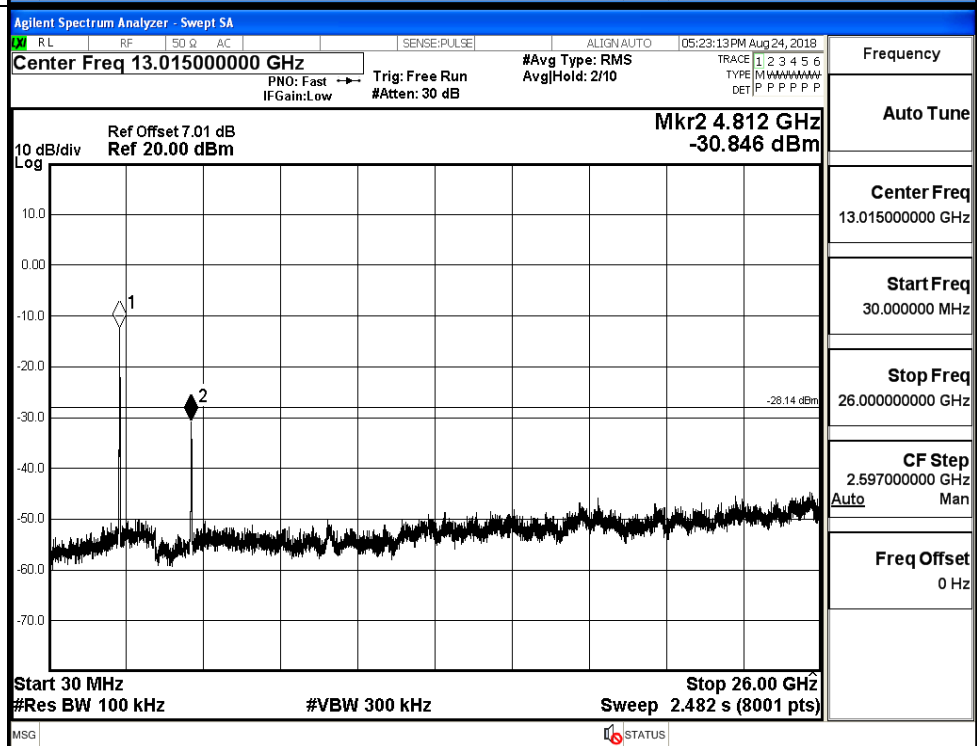
Pref/11G/HCH



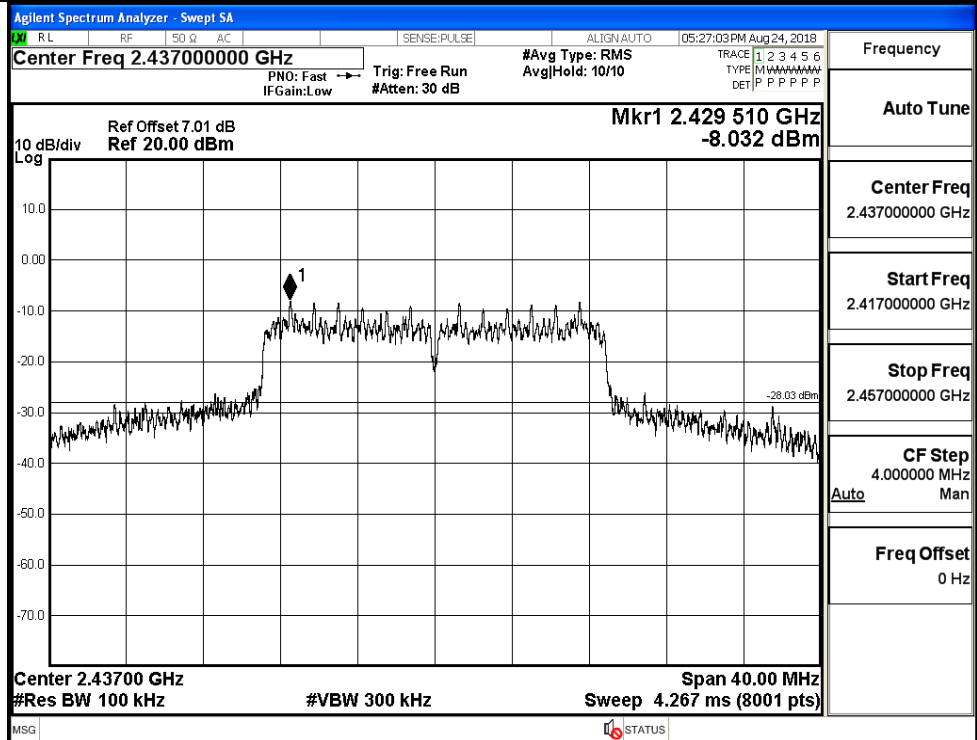
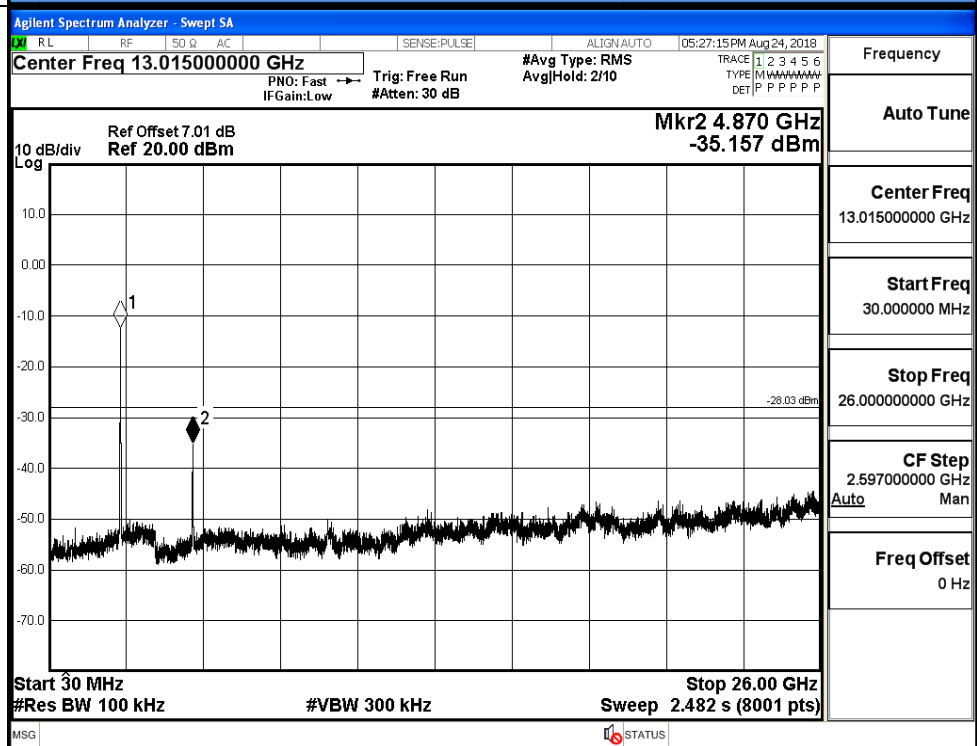
Puw/11G/HCH



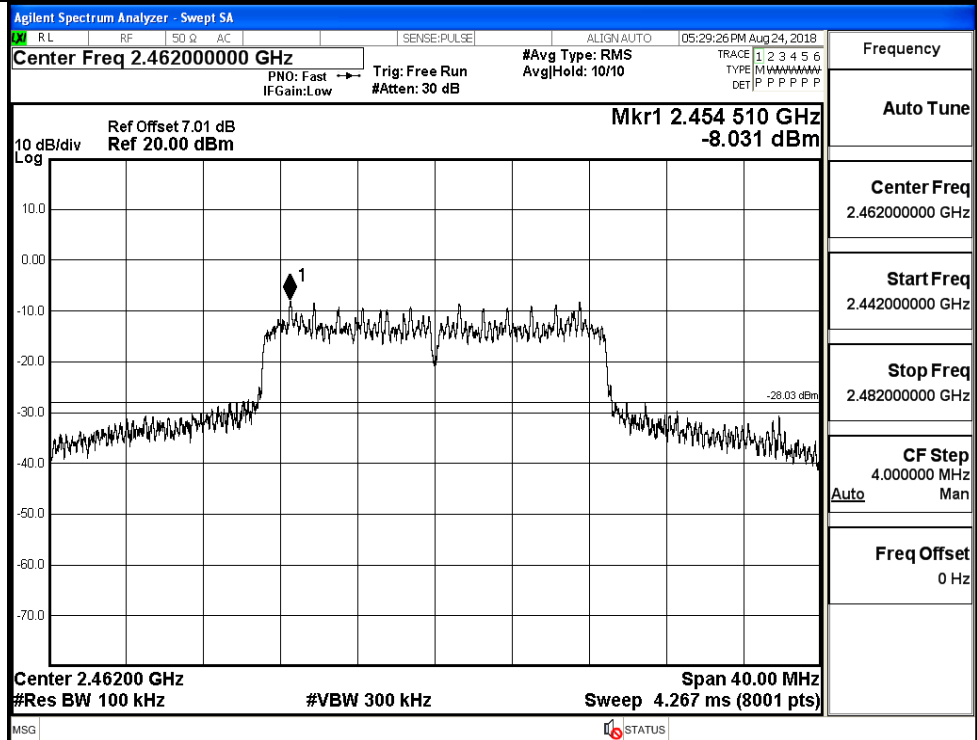
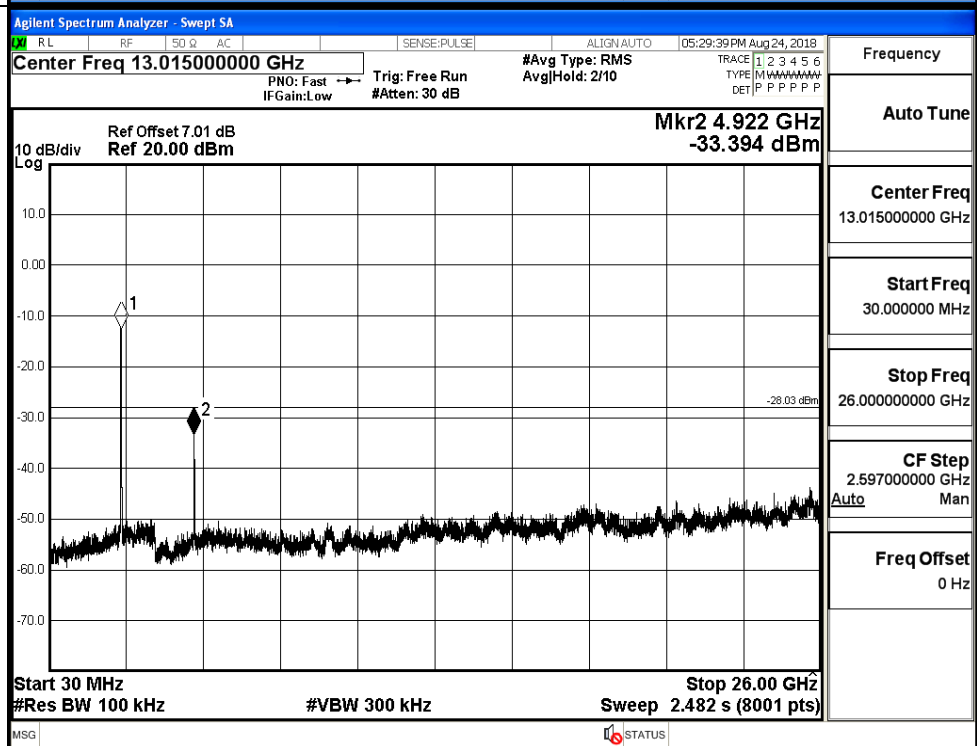
11N20SISO LCH Graphs

Pref/11N20SIS
O/LCHPuw/11N20
SISO/LCH

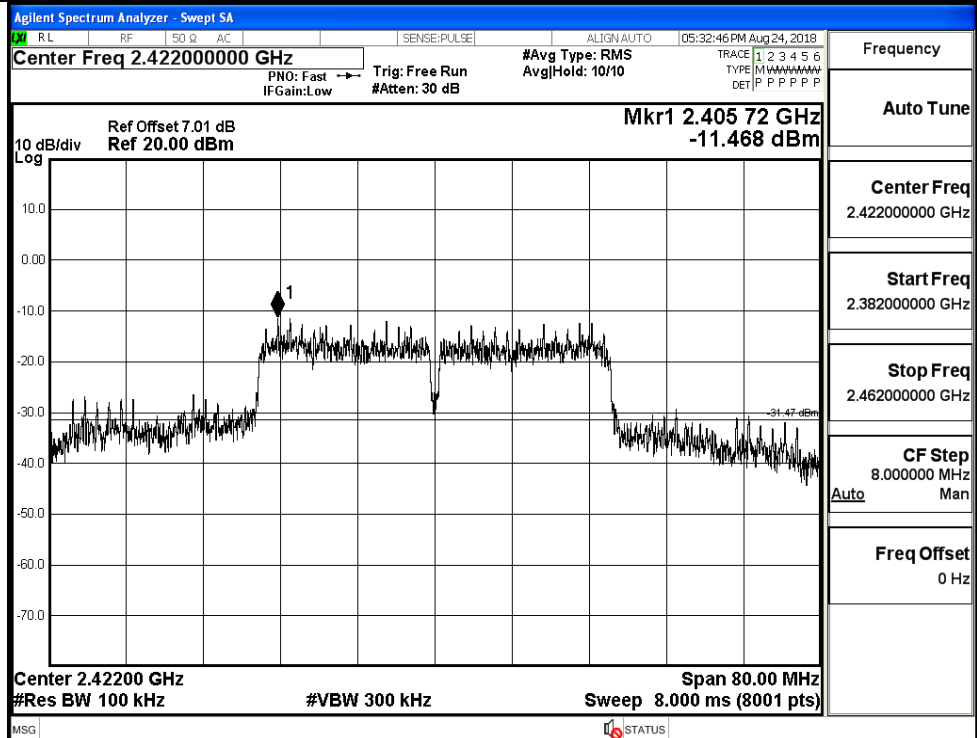
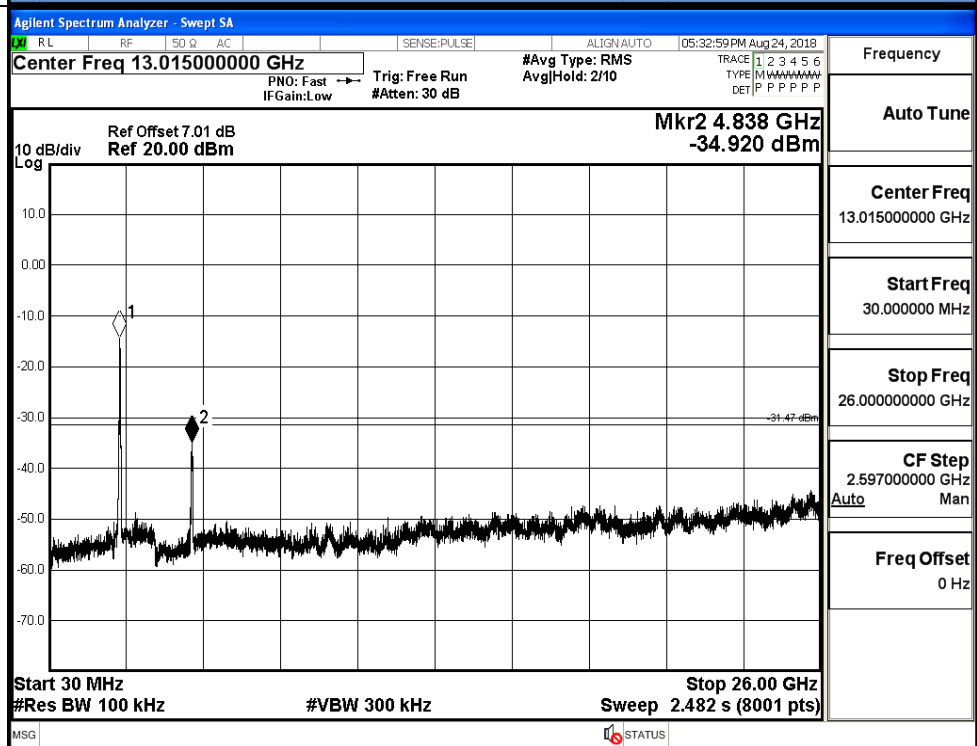
11N20SISO_MCH_Graphs

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

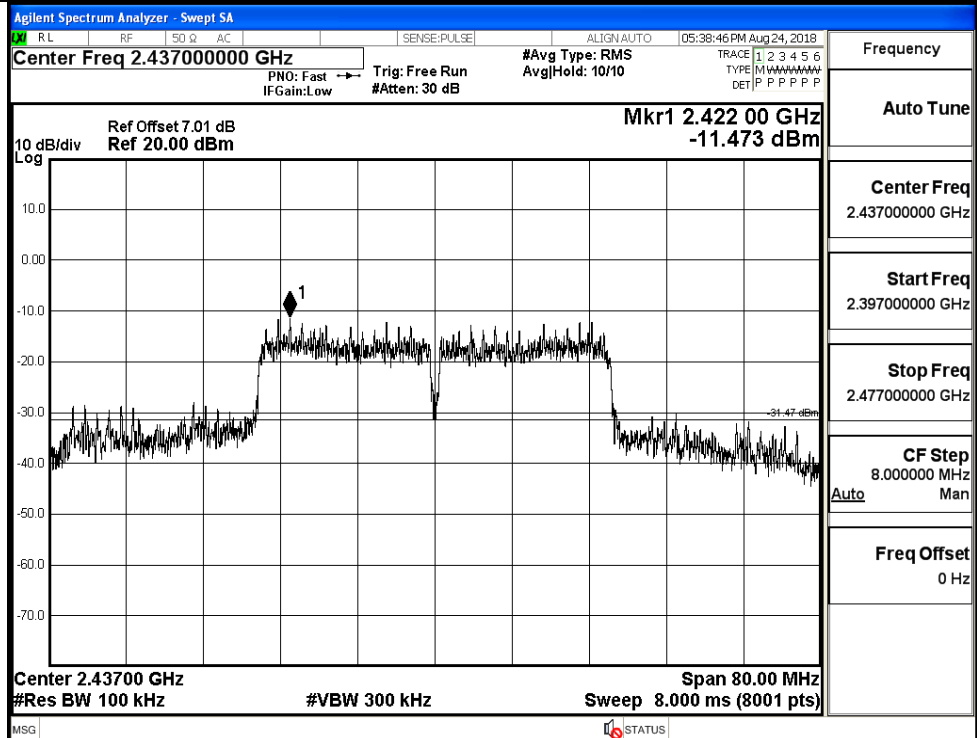
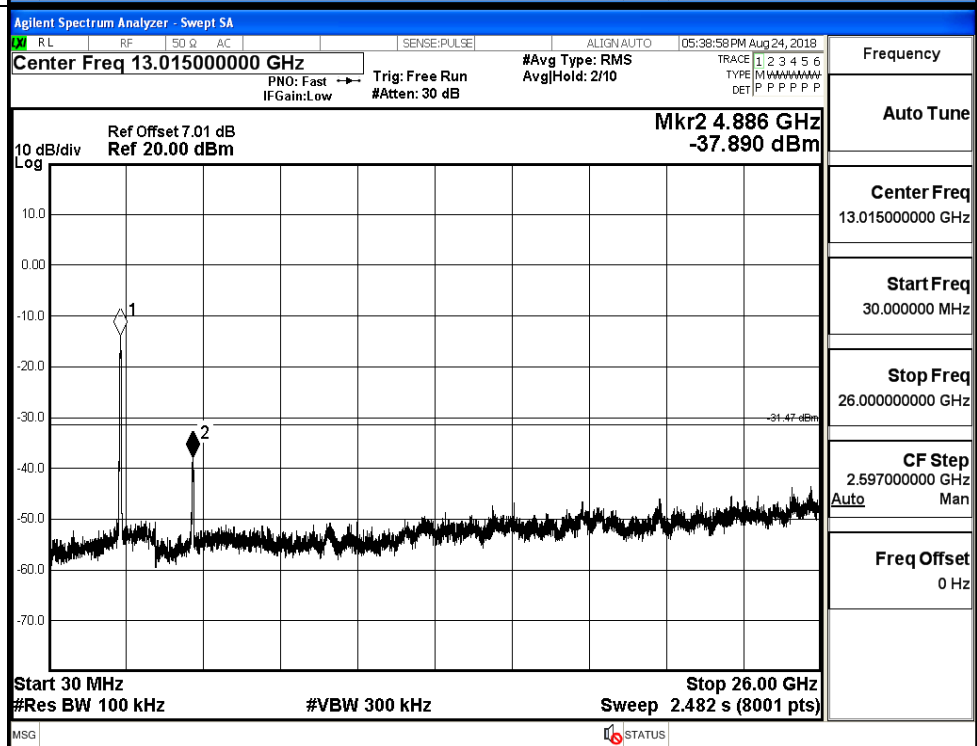
11N20SISO HCH Graphs

Pref/11N20
SISO/HCHPuw/11N20
SISO/HCH

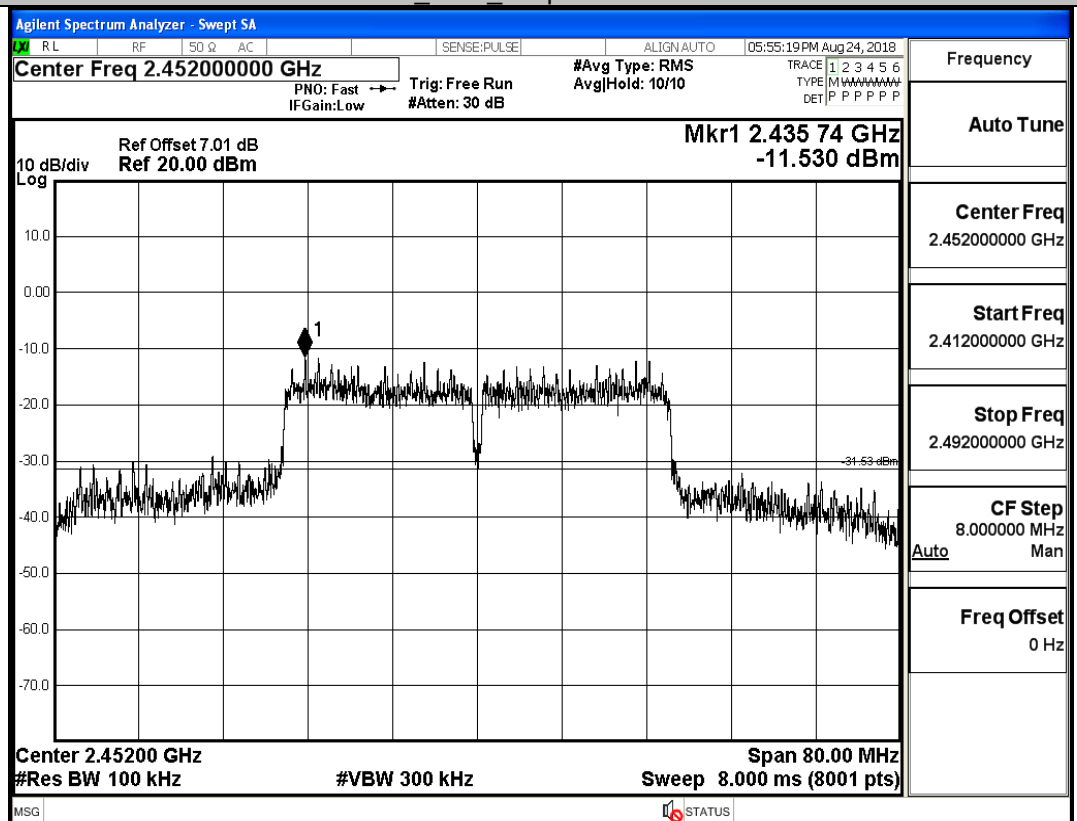
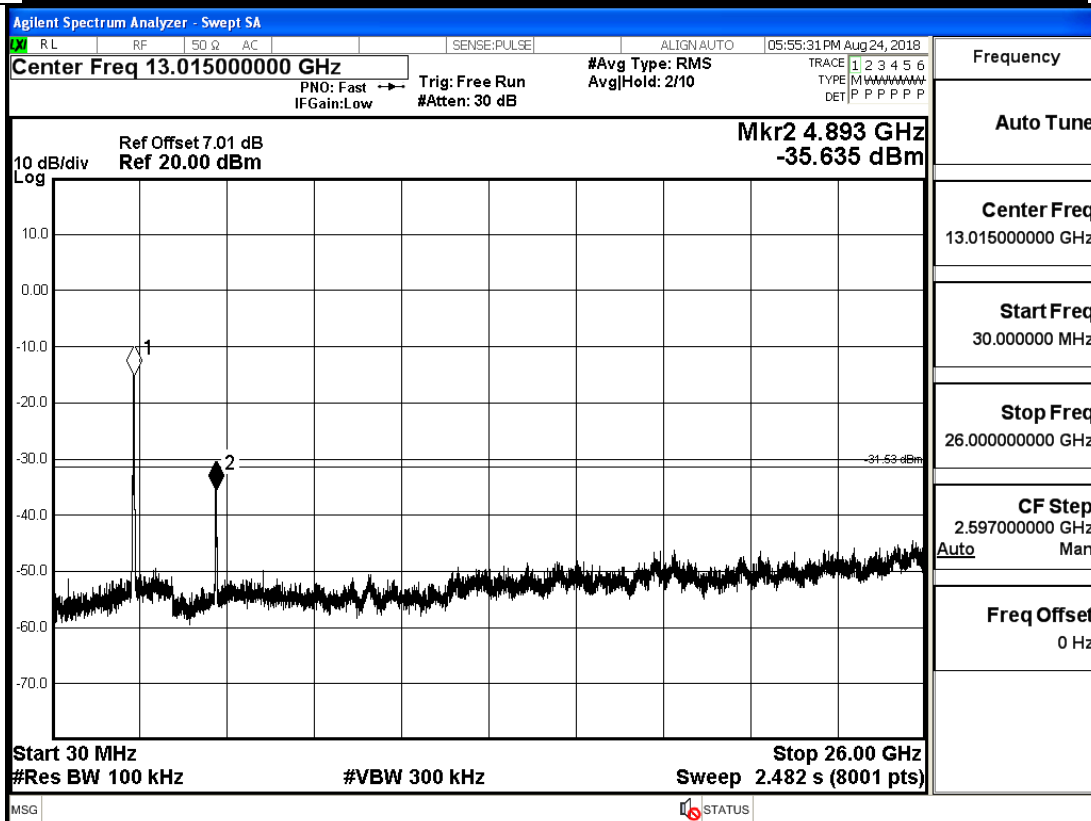
11N40SISO LCH Graphs

Pref/11N40
SISO/LCHPuw/11N40
SISO/LCH

11N40SISO_MCH_Graphs

Pref/11N40
SISO/MCHPuw/11N40
SISO/MCH

11N40SISO HCH Graphs

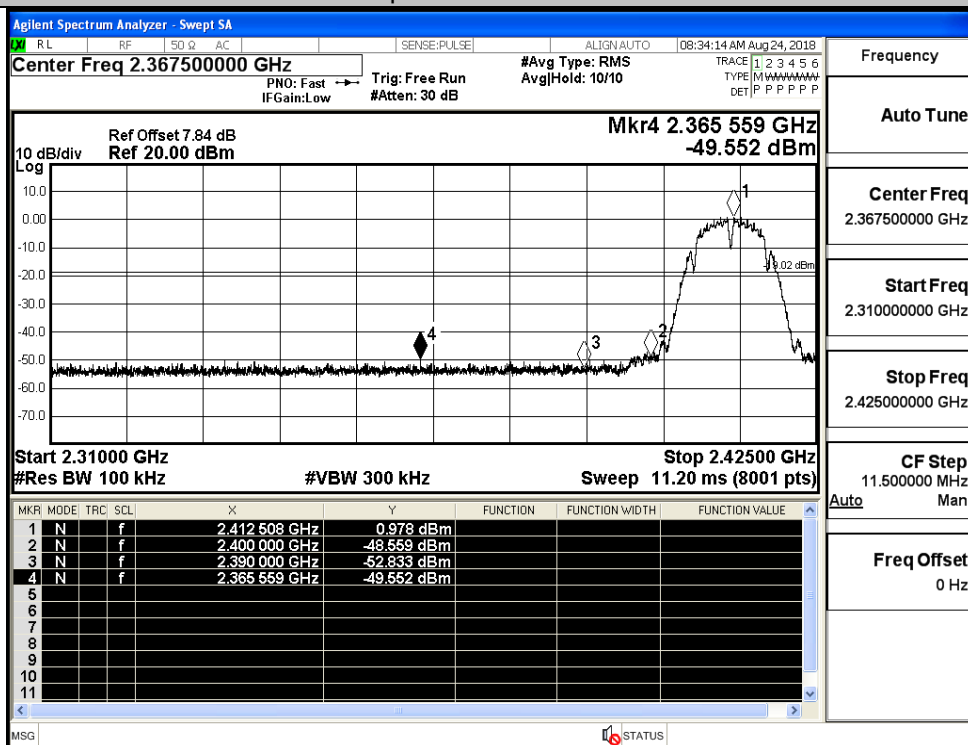
Pref/11N40
SISO/HCHPuw/11N40
SISO/HCH

A.6 Band-edge for RF Conducted Emissions

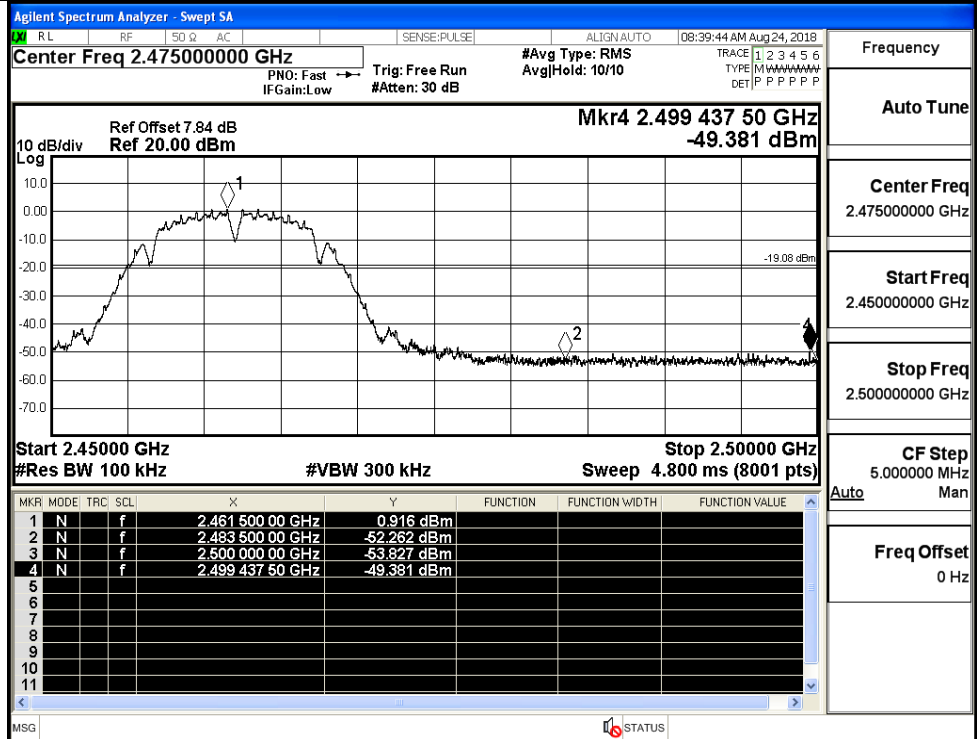
Mode	Channel	Carrier Power[dBm]	Max.Spurious Level [dBm]	Limit [dBm]	Verdict
11B	LCH	0.978	-49.552	-19.02	PASS
	HCH	0.916	-49.381	-19.08	PASS
11G	LCH	-7.492	-49.932	-27.49	PASS
	HCH	-8.805	-49.203	-28.81	PASS
11N20SISO	LCH	-8.054	-49.139	-28.05	PASS
	HCH	-8.771	-49.389	-28.77	PASS
11N40SISO	LCH	-11.121	-49.789	-31.12	PASS
	HCH	-11.338	-50.192	-31.34	PASS

Test Graphs

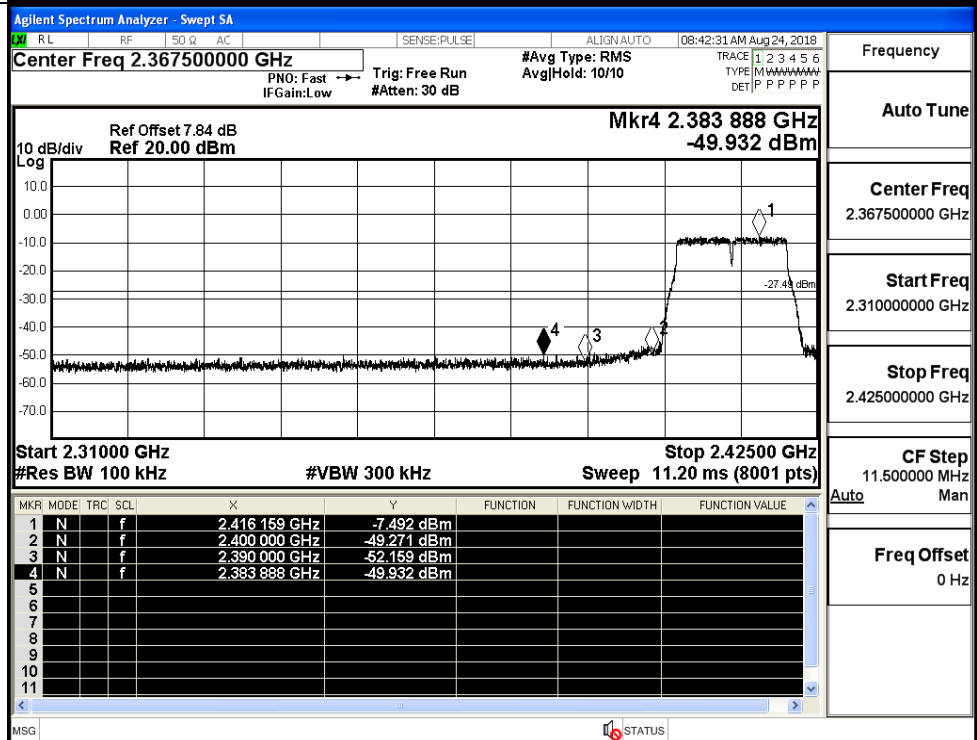
11B/LCH



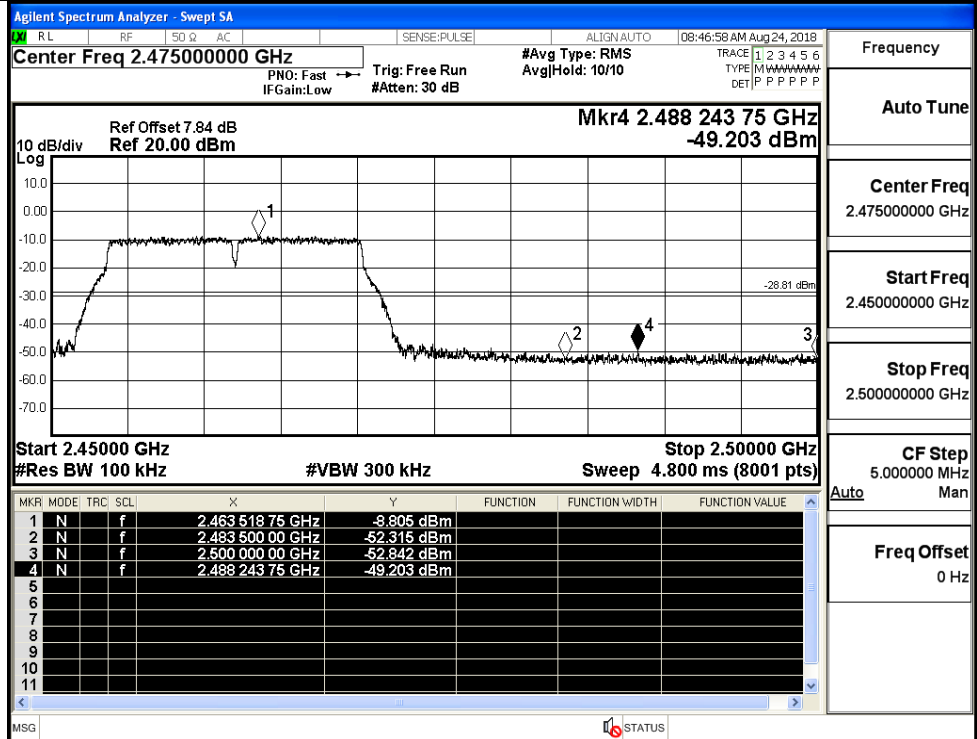
11B/HCH



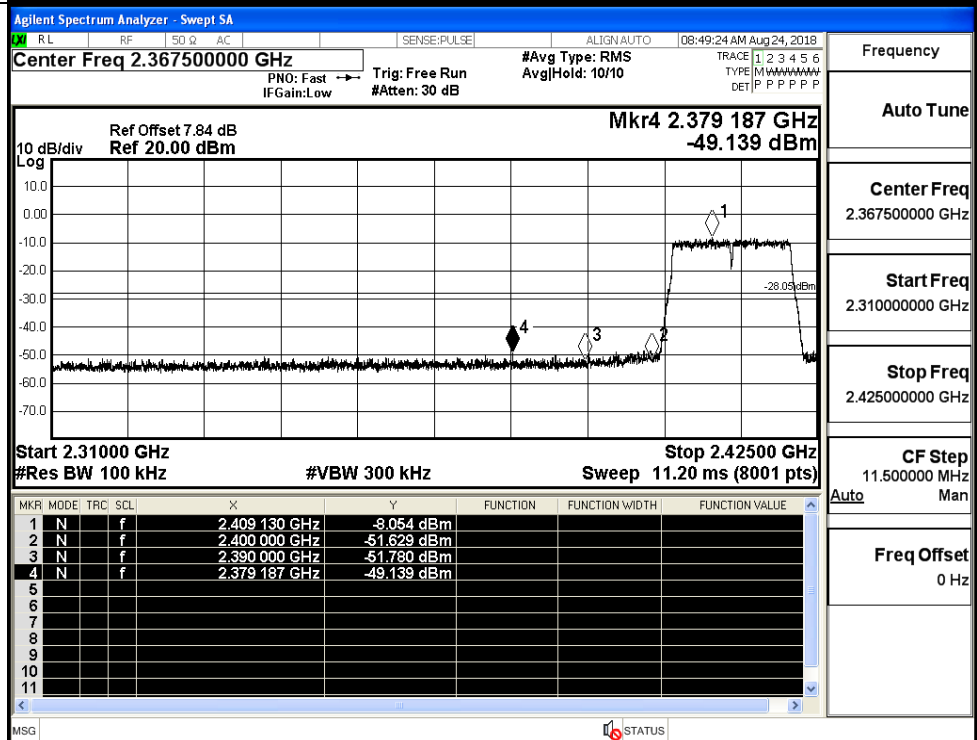
11G/LCH



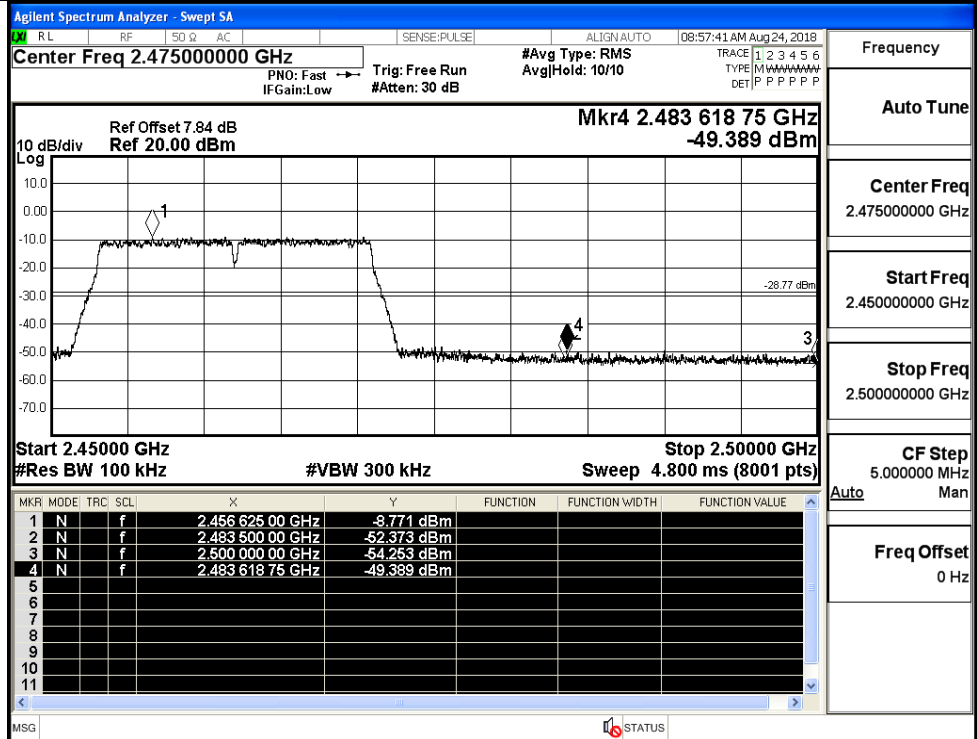
11G/HCH



11N20SISO/LCH



11N20SISO/HCH



Frequency

Auto Tune

Center Freq

2.475000000 GHz

Start Freq

2.450000000 GHz

Stop Freq

2.500000000 GHz

CF Step

5.000000 MHz

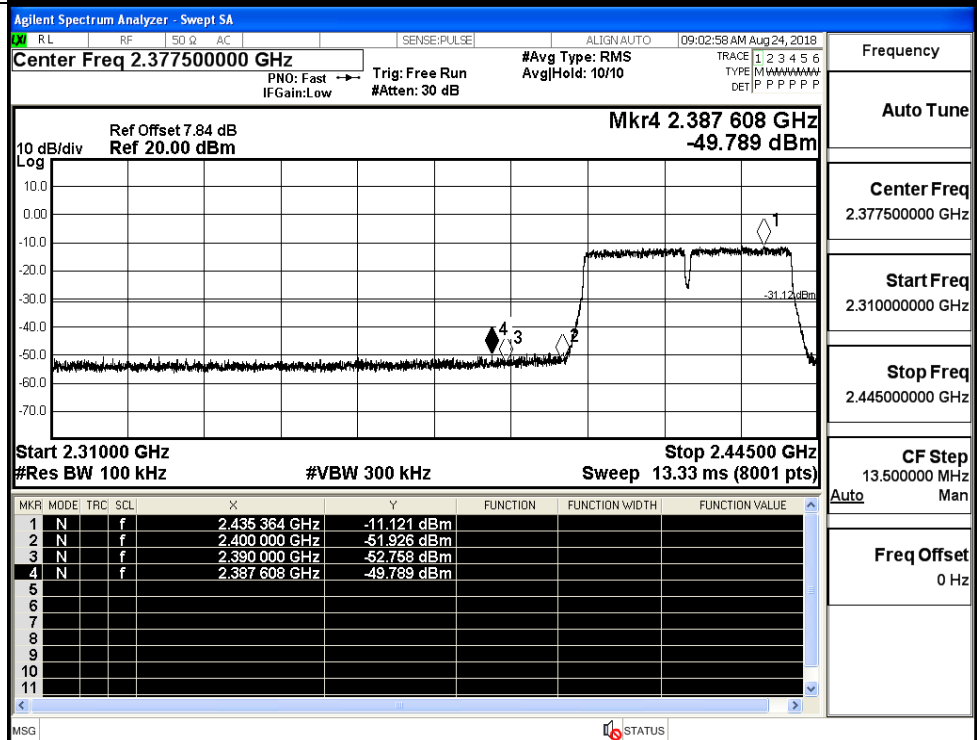
Auto

Man

Freq Offset

0 Hz

11N40SISO/LCH



Frequency

Auto Tune

Center Freq

2.377500000 GHz

Start Freq

2.310000000 GHz

Stop Freq

2.445000000 GHz

CF Step

13.500000 MHz

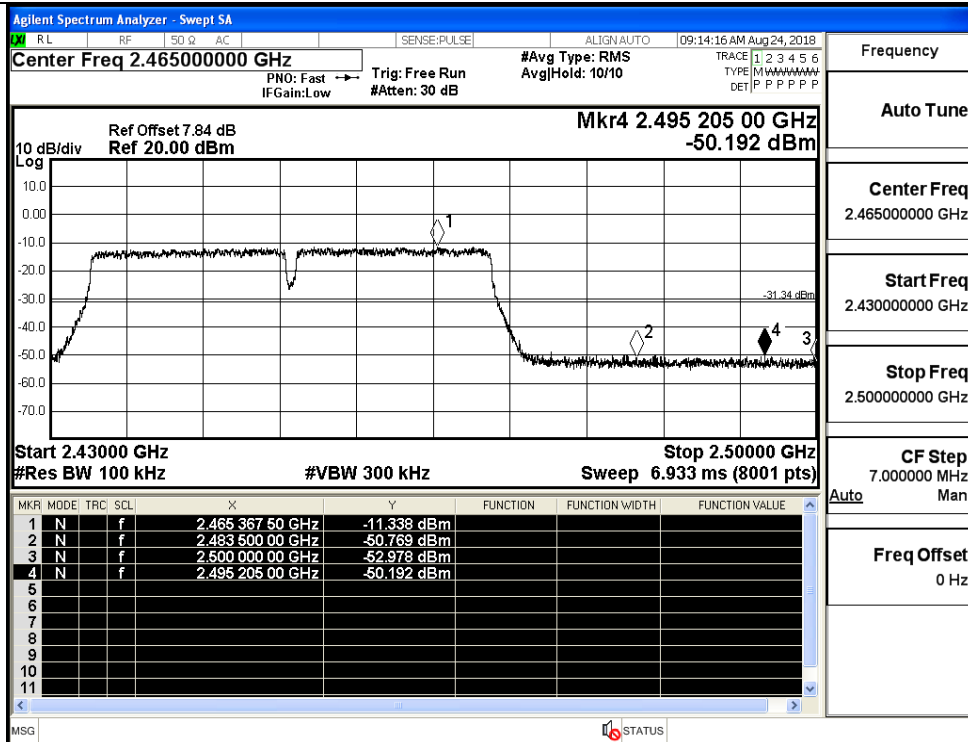
Auto

Man

Freq Offset

0 Hz

11N40SISO/HCH

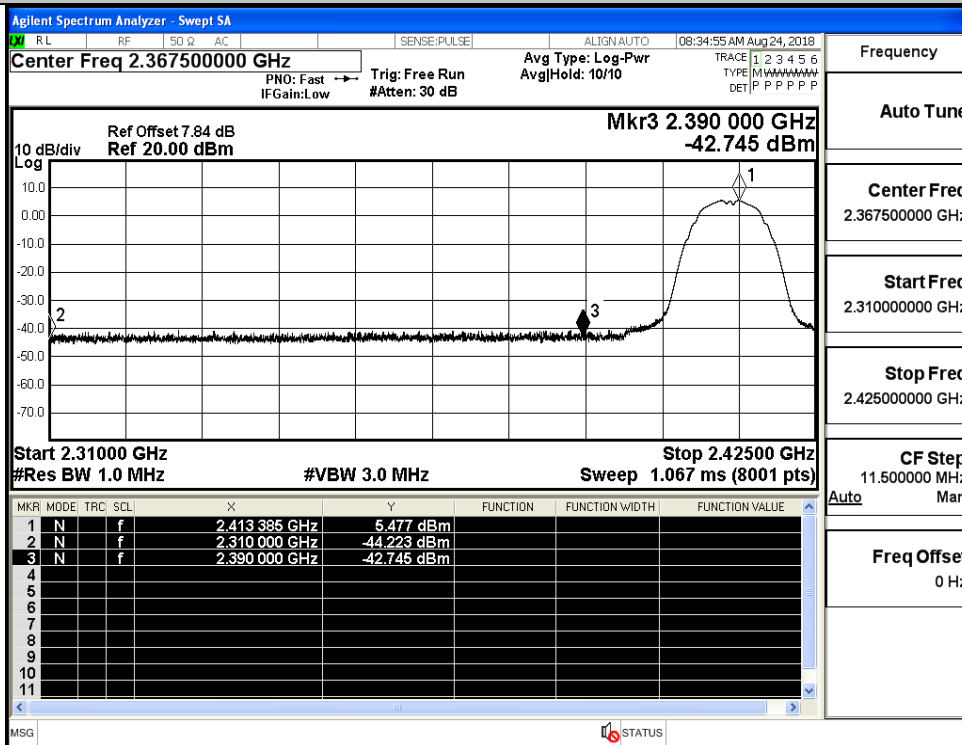


A.7 Restrict-band band-edge measurements

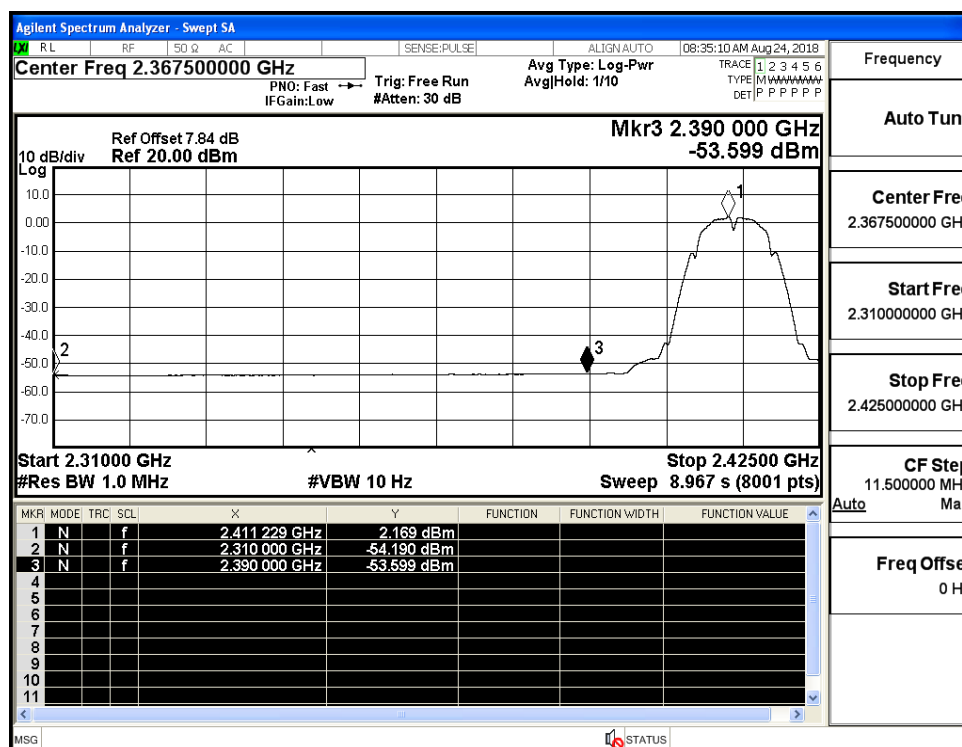
Test Mode	Test Channel	Ant	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
11B	2412	Ant1	2310.0	-44.22	3.0	0	54.04	PEAK	74	PASS
	2412	Ant1	2310.0	-54.19	3.0	0	44.07	AV	54	PASS
	2412	Ant1	2390.0	-42.75	3.0	0	55.51	PEAK	74	PASS
	2412	Ant1	2390.0	-53.60	3.0	0	44.66	AV	54	PASS
	2462	Ant1	2483.5	-43.58	3.0	0	54.68	PEAK	74	PASS
	2462	Ant1	2483.5	-53.28	3.0	0	44.98	AV	54	PASS
	2462	Ant1	2500.0	-43.12	3.0	0	55.14	PEAK	74	PASS
	2462	Ant1	2500.0	-53.38	3.0	0	44.88	AV	54	PASS
11G	2412	Ant1	2310.0	-43.21	3.0	0	55.05	PEAK	74	PASS
	2412	Ant1	2310.0	-54.17	3.0	0	44.09	AV	54	PASS
	2412	Ant1	2390.0	-42.54	3.0	0	55.72	PEAK	74	PASS
	2412	Ant1	2390.0	-52.69	3.0	0	45.57	AV	54	PASS
	2462	Ant1	2483.5	-41.57	3.0	0	56.69	PEAK	74	PASS
	2462	Ant1	2483.5	-52.94	3.0	0	45.32	AV	54	PASS
	2462	Ant1	2500.0	-43.15	3.0	0	55.11	PEAK	74	PASS
	2462	Ant1	2500.0	-53.11	3.0	0	45.15	AV	54	PASS
11N20 SISO	2412	Ant1	2310.0	-43.75	3.0	0	54.51	PEAK	74	PASS
	2412	Ant1	2310.0	-54.17	3.0	0	44.09	AV	54	PASS
	2412	Ant1	2390.0	-42.96	3.0	0	55.3	PEAK	74	PASS
	2412	Ant1	2390.0	-53.02	3.0	0	45.24	AV	54	PASS
	2462	Ant1	2483.5	-41.62	3.0	0	56.64	PEAK	74	PASS
	2462	Ant1	2483.5	-52.89	3.0	0	45.37	AV	54	PASS
	2462	Ant1	2500.0	-42.43	3.0	0	55.83	PEAK	74	PASS
	2462	Ant1	2500.0	-53.03	3.0	0	45.23	AV	54	PASS
11N40 SISO	2422	Ant1	2310.0	-44.41	3.0	0	53.85	PEAK	74	PASS
	2422	Ant1	2310.0	-54.20	3.0	0	44.06	AV	54	PASS

	2422	Ant1	2390.0	-42.27	3.0	0	55.99	PEAK	74	PASS
	2422	Ant1	2390.0	-52.82	3.0	0	45.44	AV	54	PASS
	2452	Ant1	2483.5	-41.35	3.0	0	56.91	PEAK	74	PASS
	2452	Ant1	2483.5	-52.74	3.0	0	45.52	AV	54	PASS
	2452	Ant1	2500.0	-41.71	3.0	0	56.55	PEAK	74	PASS
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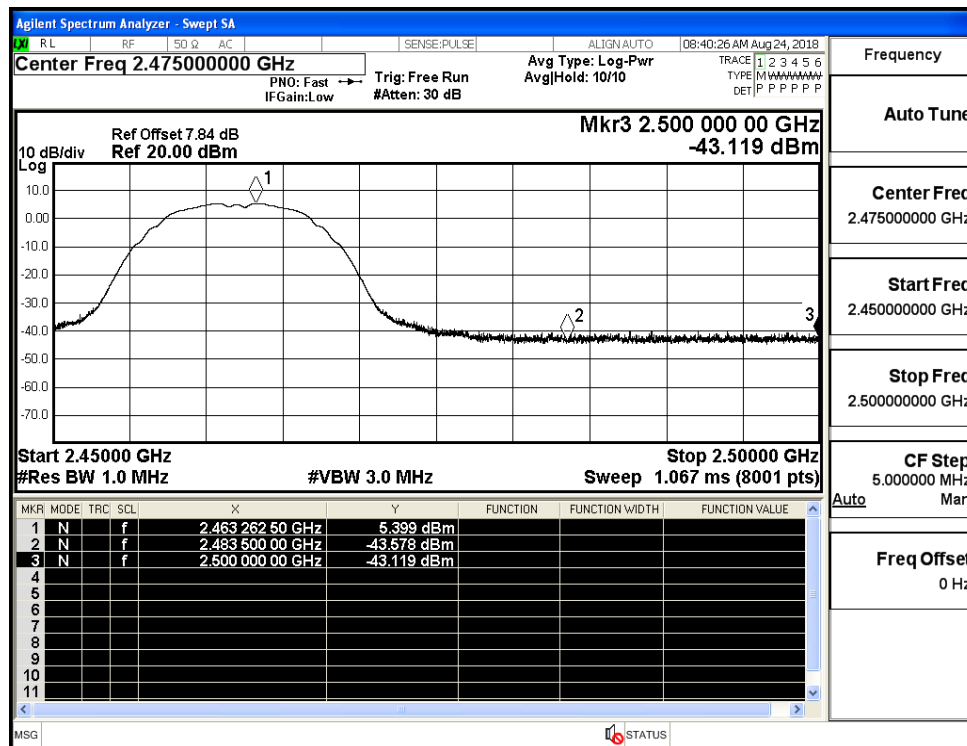
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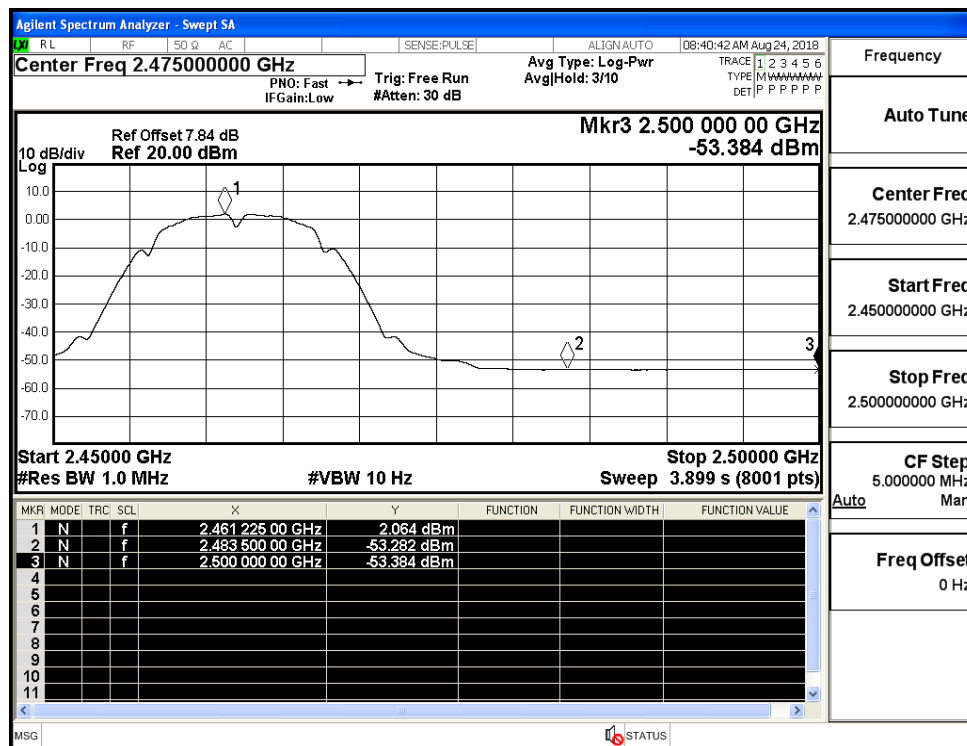
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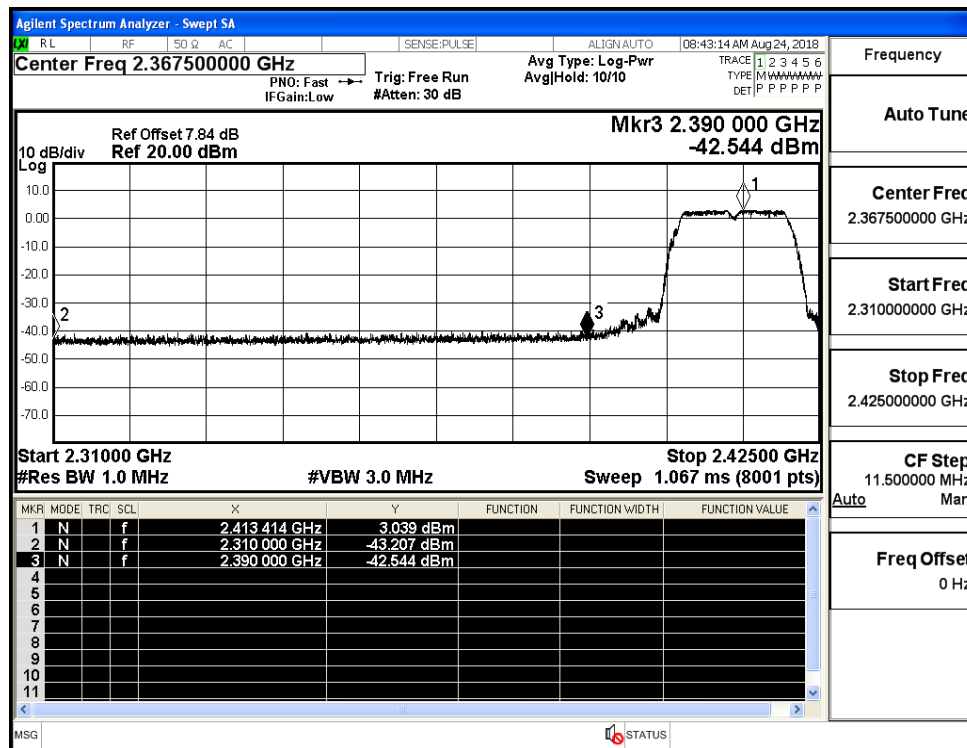
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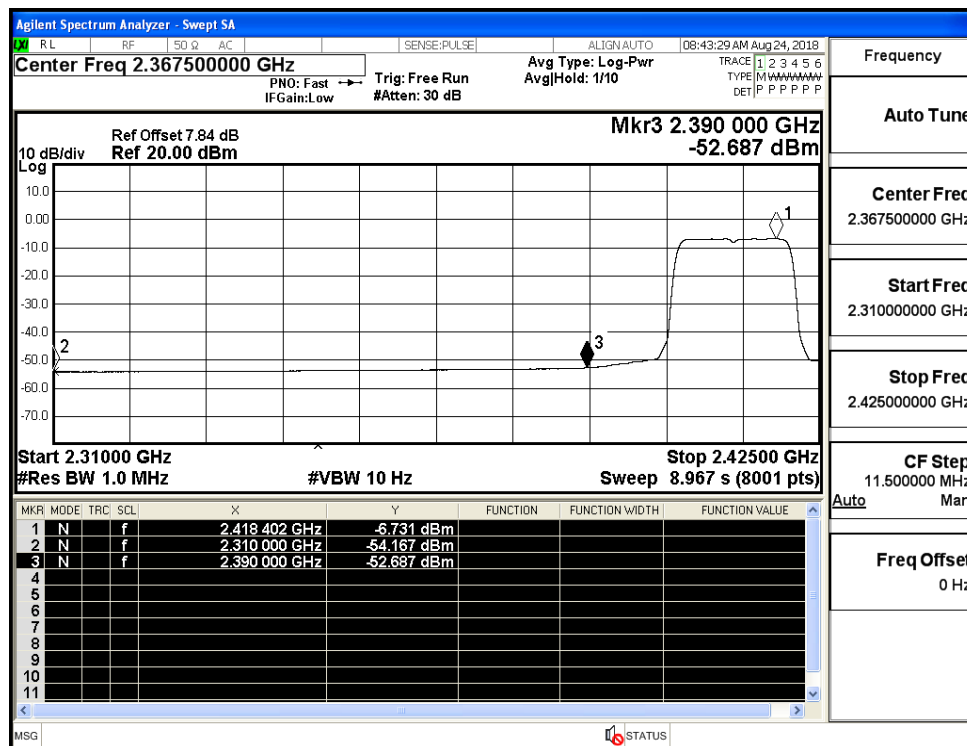
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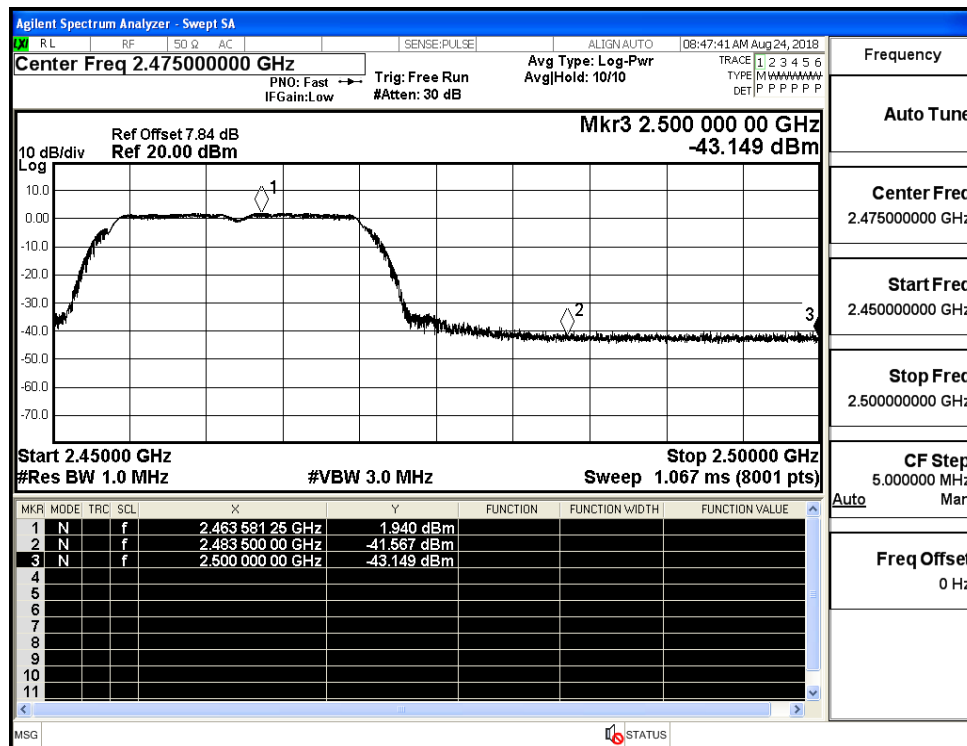
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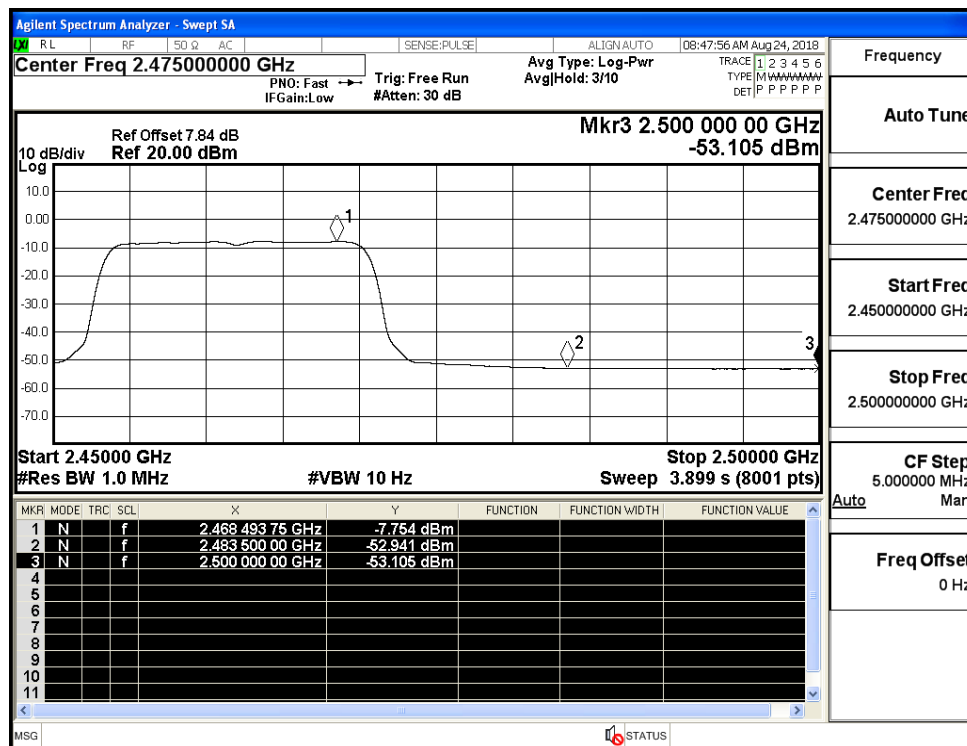
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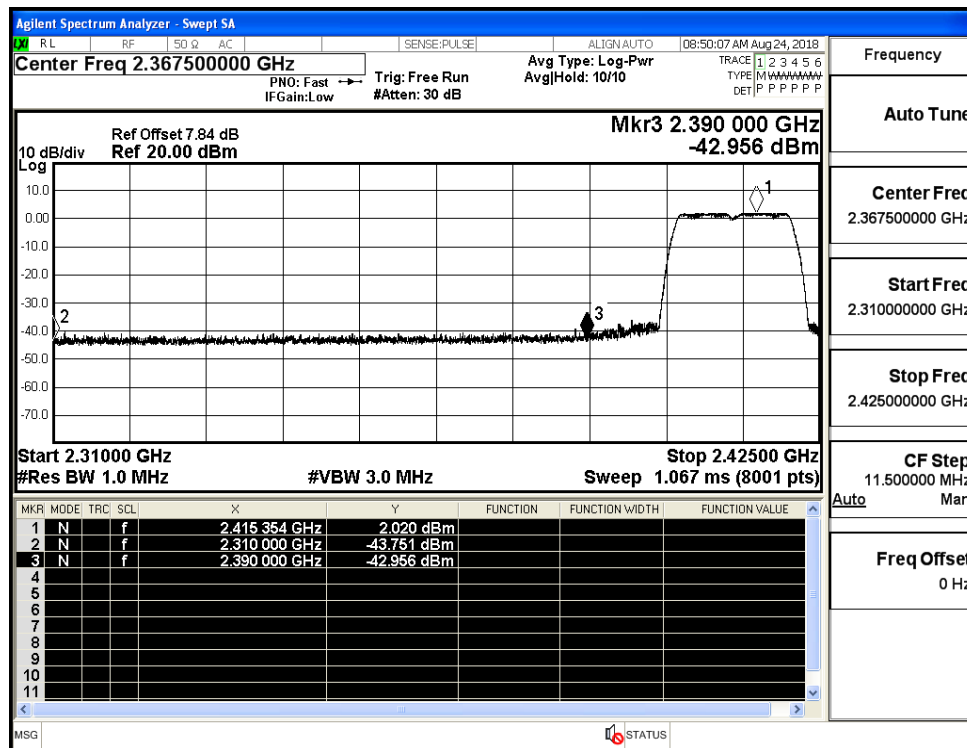
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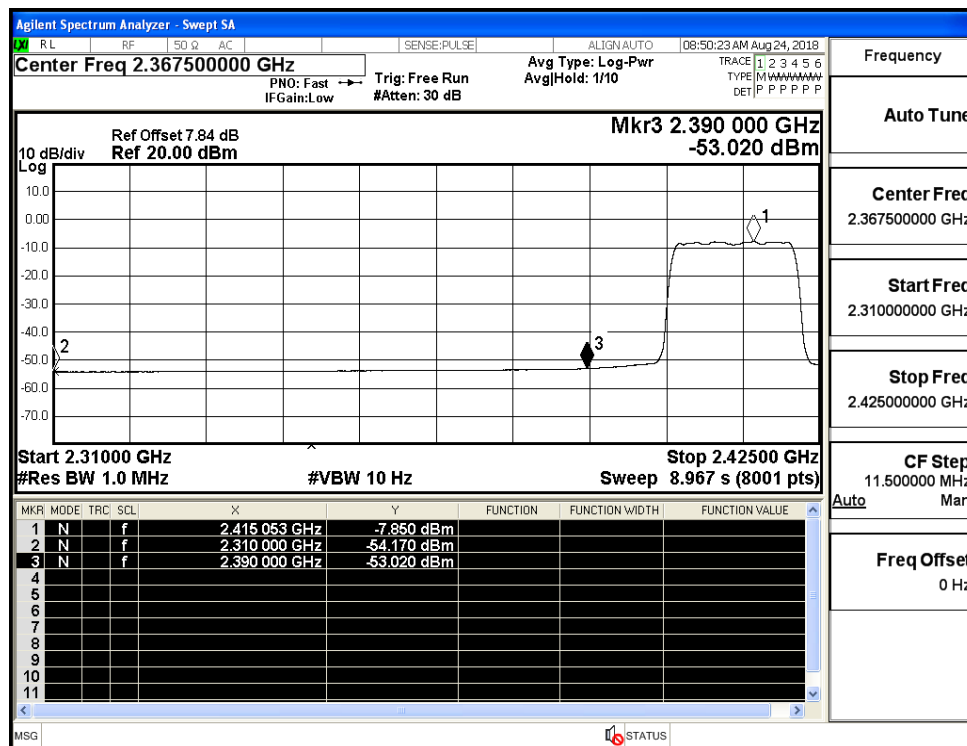
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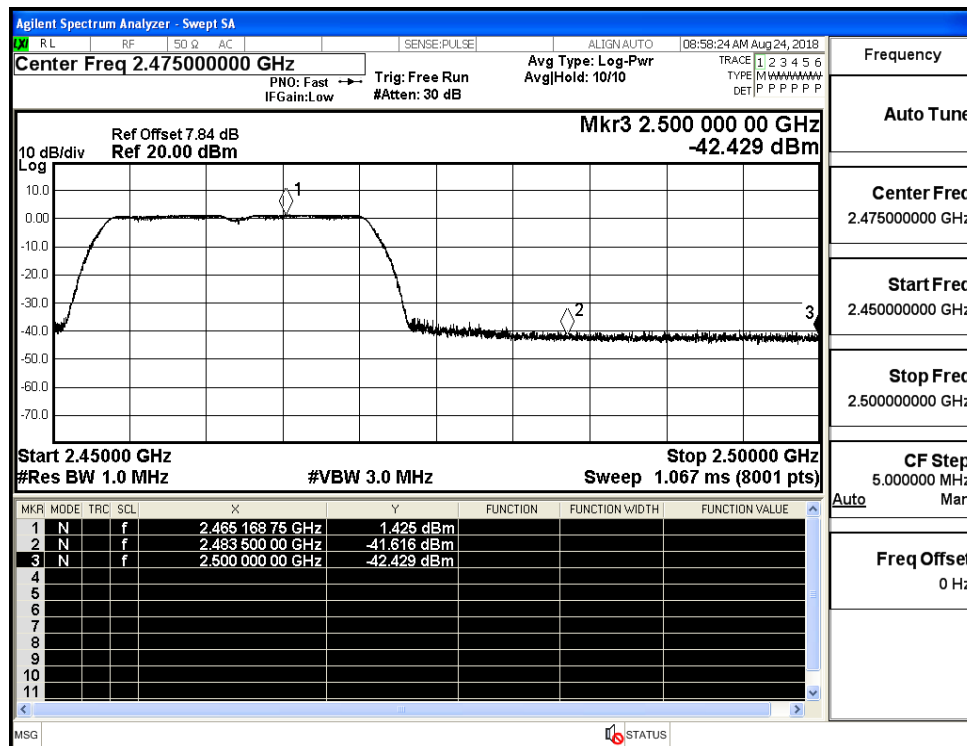
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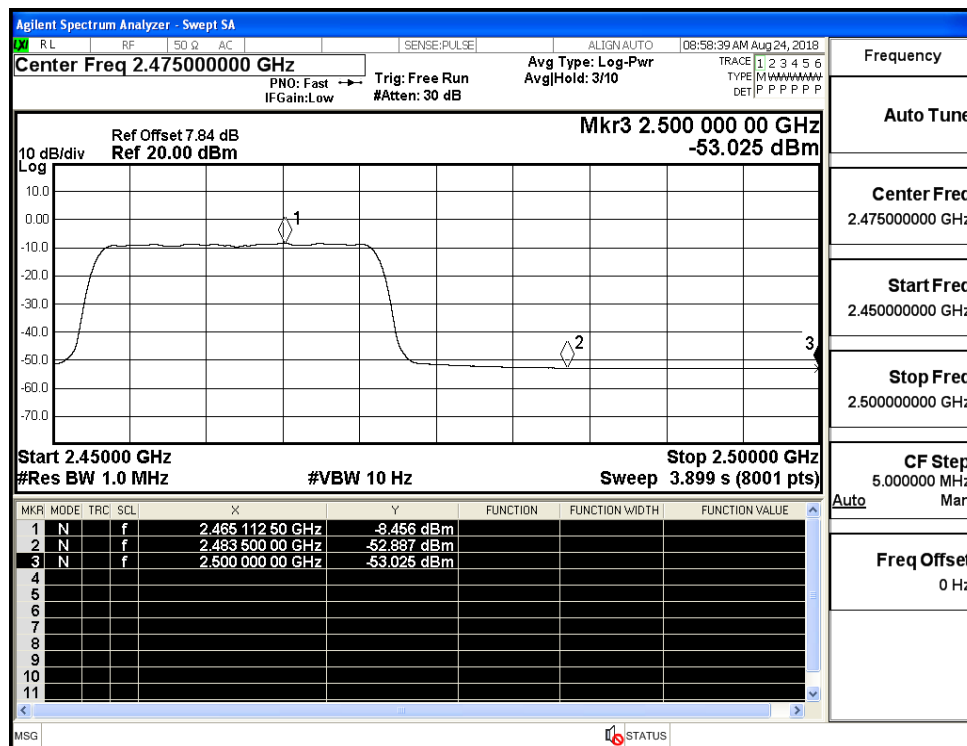
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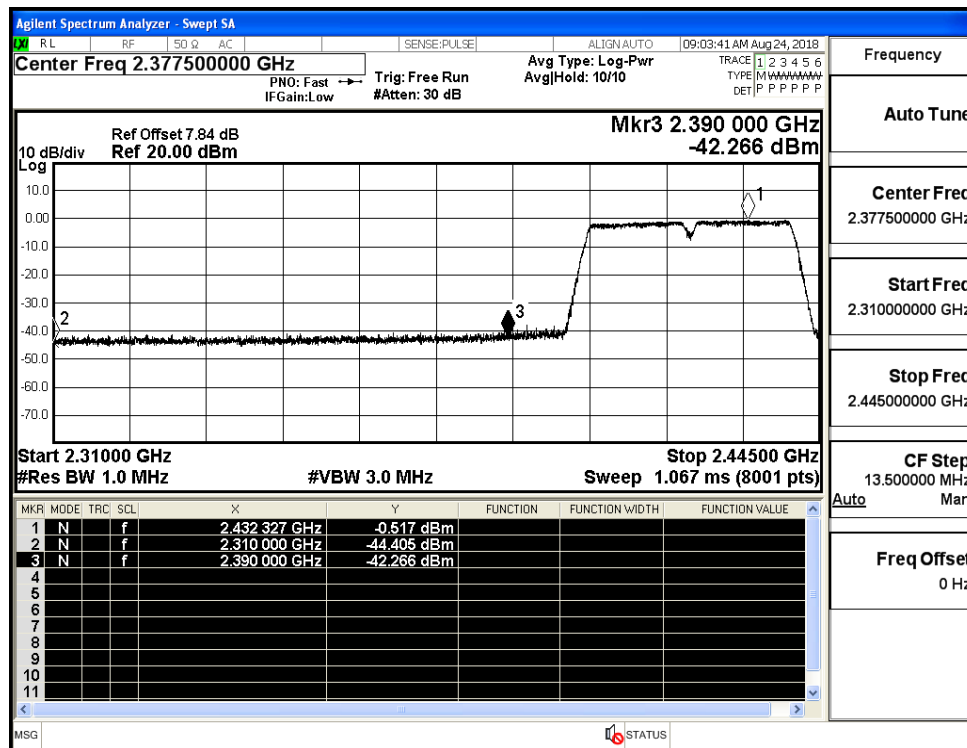
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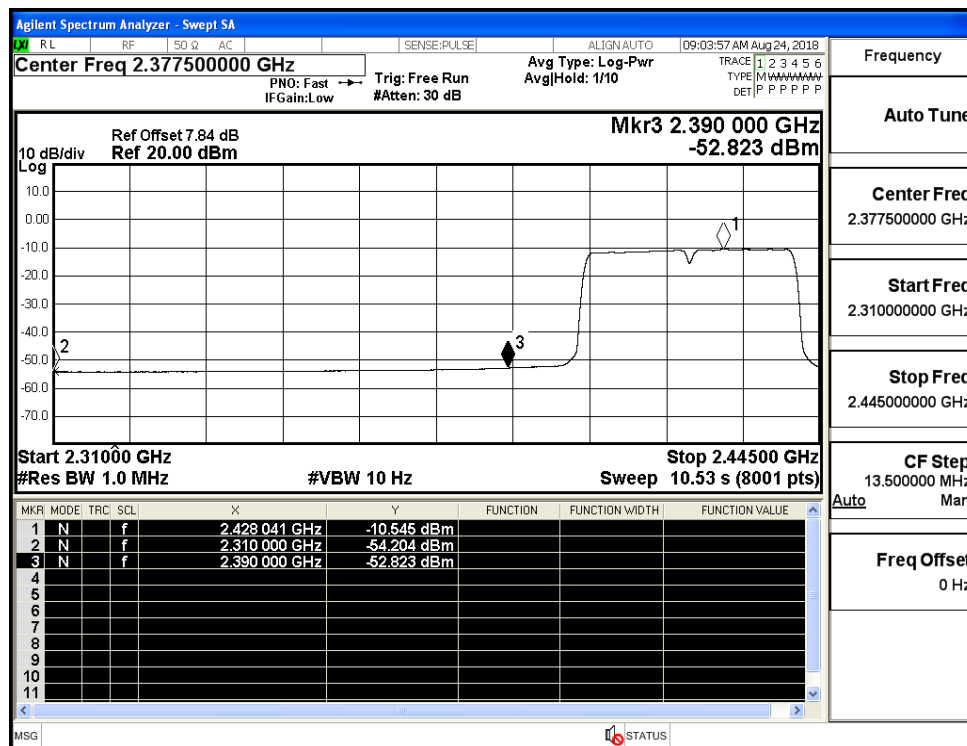
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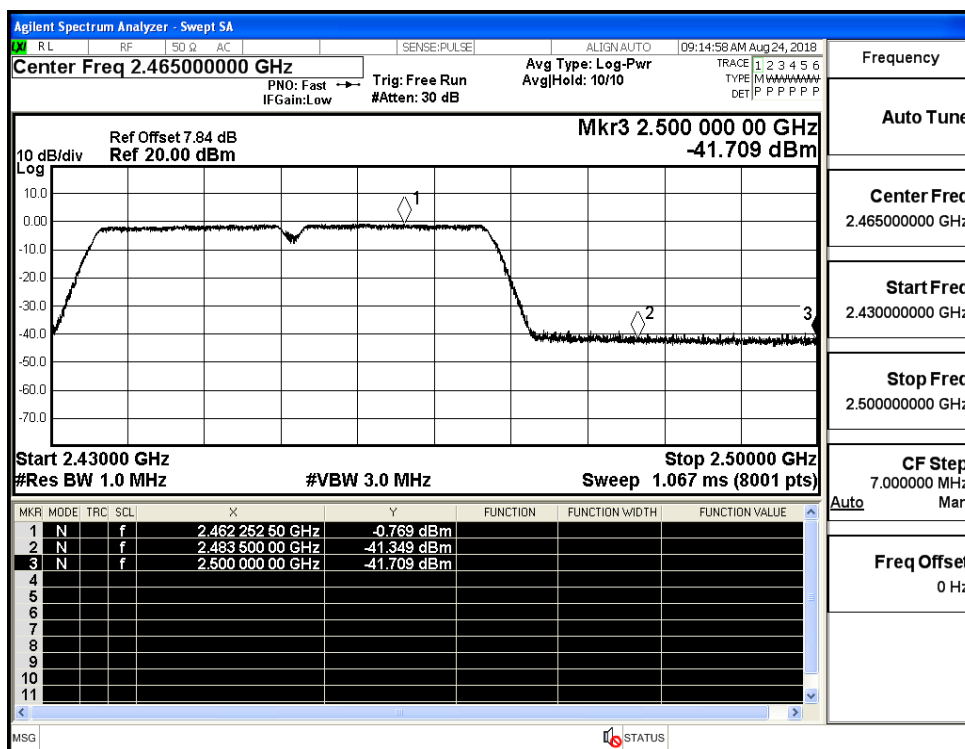
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Restrict-band band-edge measurements_11N40SISO_2422_Ant1_AV



Restrict-band band-edge measurements_11N40SISO_2452_Ant1_PEAK



Restrict-band band-edge measurements_11N40SISO_2452_Ant1_AV

