

Appendix C

RF Test Data for 2.4G WIFI (Conducted Measurement)

Product Name: KIDS WATCH

Test Model: BUBBLE

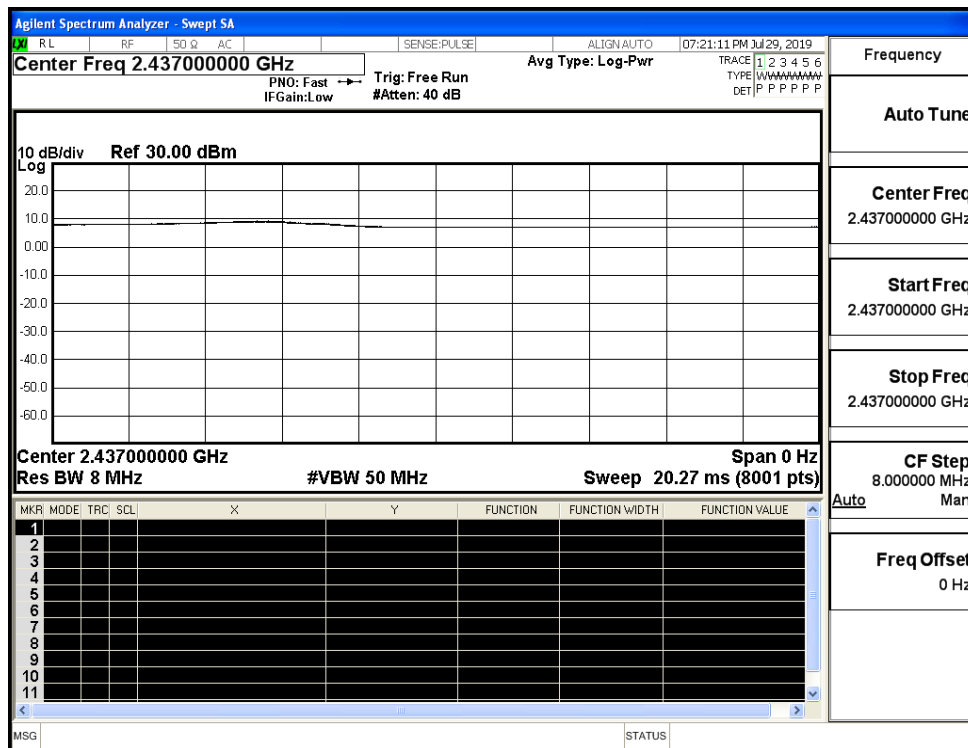
Environmental Conditions

Temperature:	24.1 ° C
Relative Humidity:	54.1%
ATM Pressure:	100.0 kPa
Test Engineer:	Diamond Lu
Supervised by:	Wang Chuang

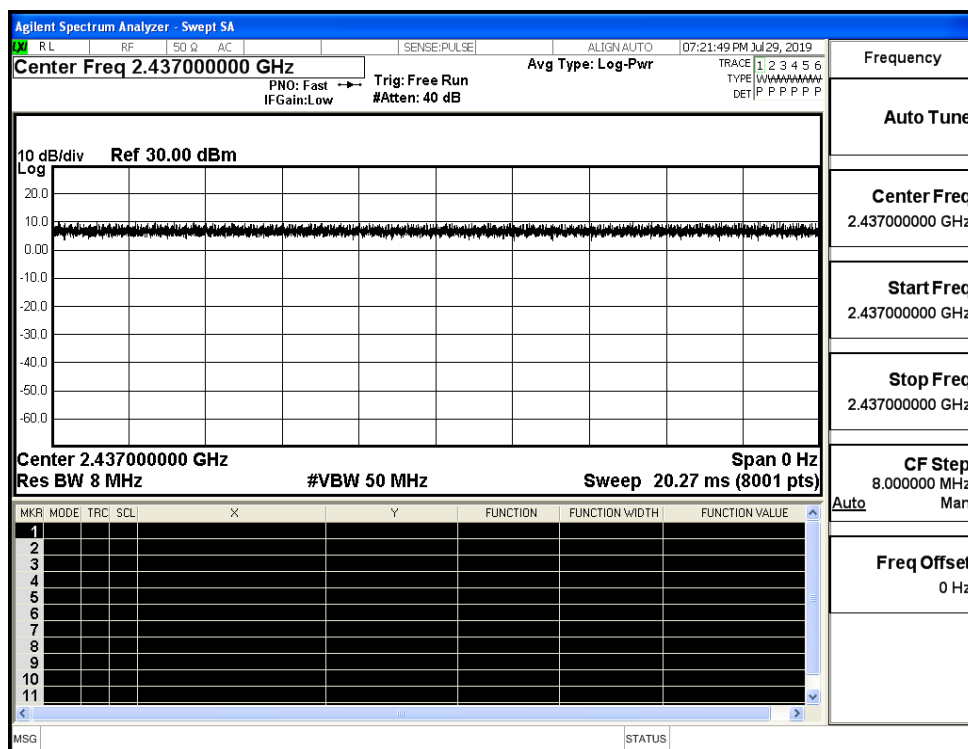
C.1 Duty Cycle

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

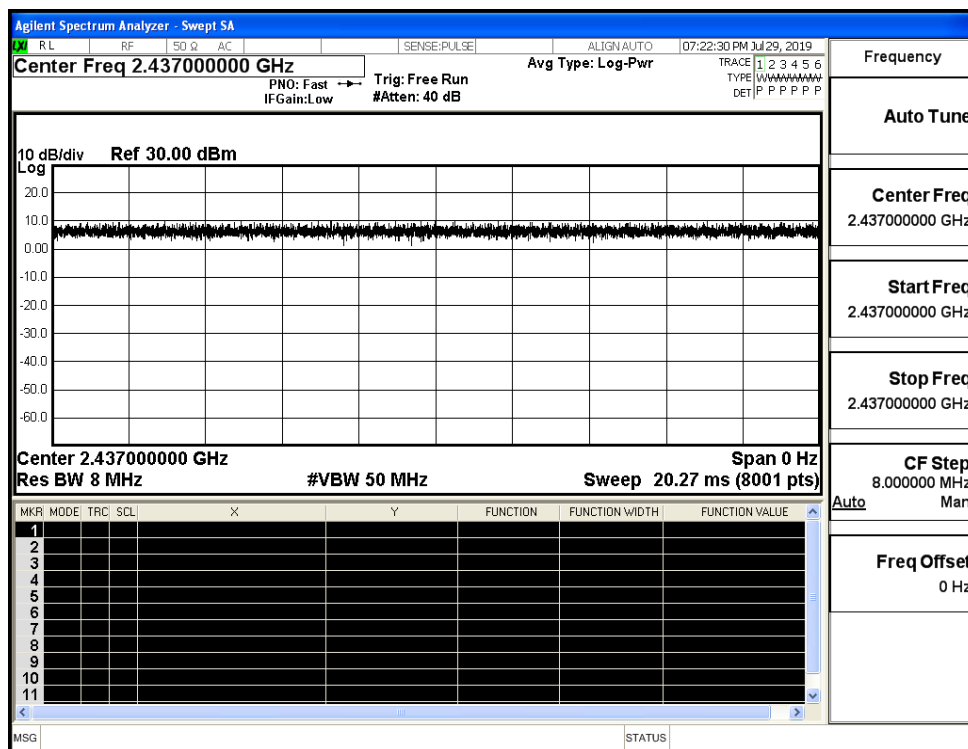
Duty Cycle_11B_2437_Ant1



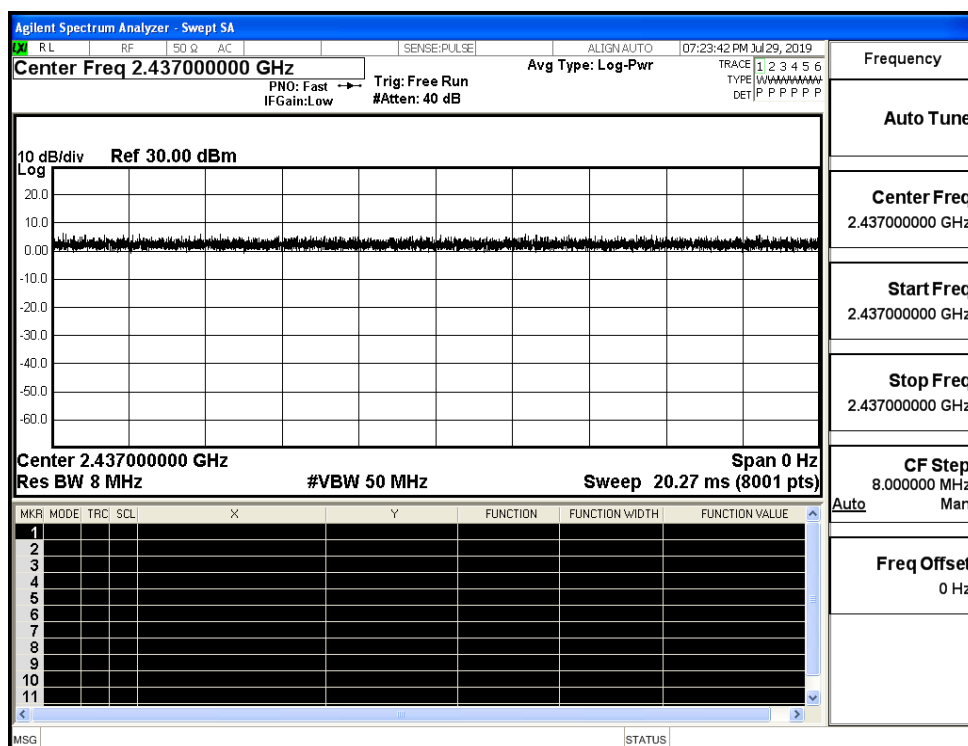
Duty Cycle_11G_2437_Ant1



Duty Cycle_11N20SISO_2437_Ant1



Duty Cycle_11N40SISO_2437_Ant1



C.2 Maximum Conducted Output Power

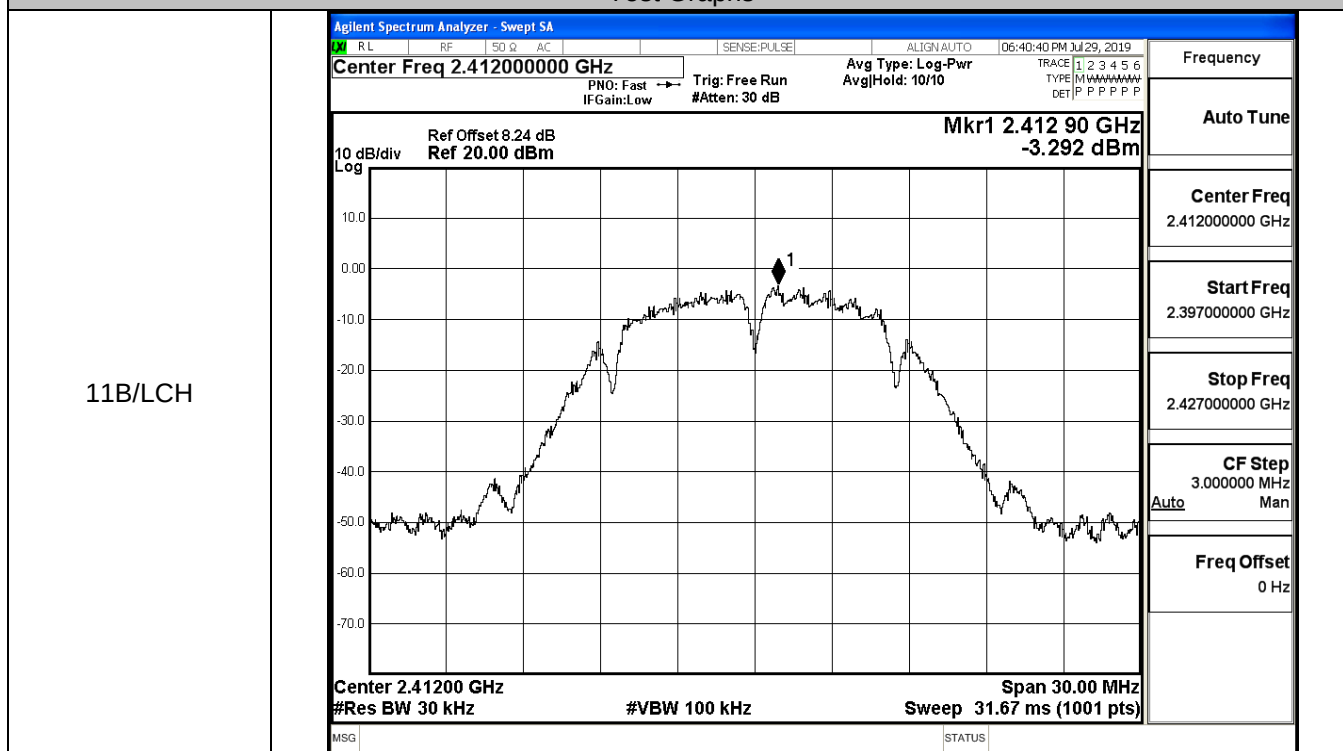
Mode	Channel	Meas. Peak Level [dBm]	Meas. Average Level [dBm]	Limit [dBm]	Verdict
11B	LCH	14.63	12.49	30	PASS
	MCH	15.21	13.08	30	PASS
	HCH	14.91	12.77	30	PASS
11G	LCH	17.30	13.89	30	PASS
	MCH	18.38	14.99	30	PASS
	HCH	18.01	14.57	30	PASS
11N20SISO	LCH	17.05	13.69	30	PASS
	MCH	18.49	14.88	30	PASS
	HCH	17.85	14.30	30	PASS
11N40SISO	LCH	14.59	9.27	30	PASS
	MCH	15.04	9.76	30	PASS
	HCH	14.81	9.47	30	PASS

C.3 Maximum Power Spectral Density

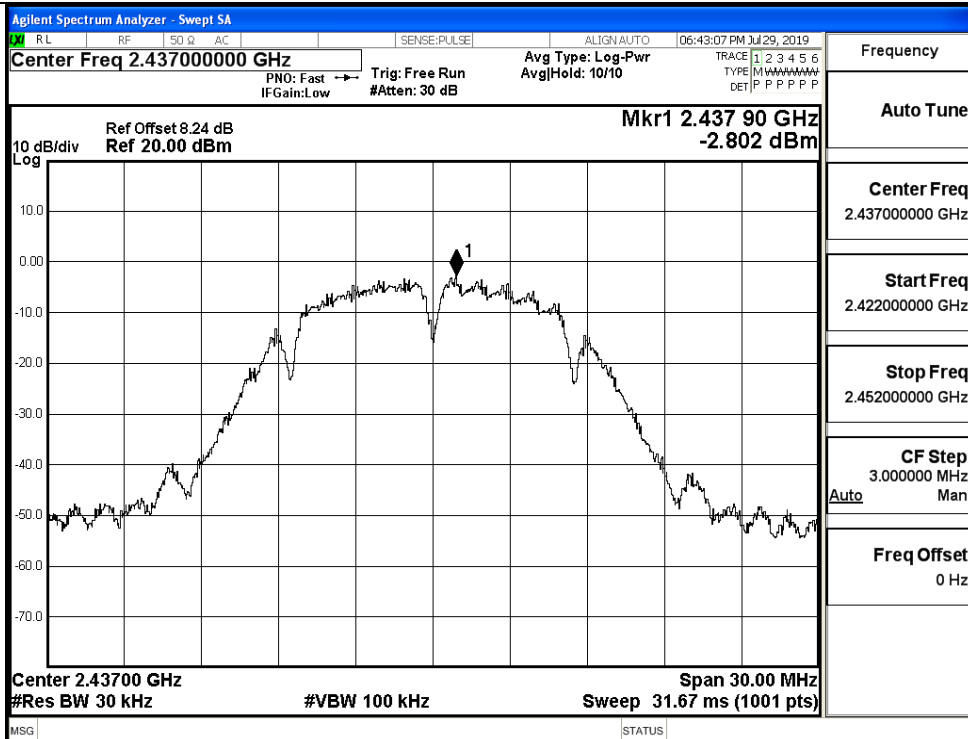
Mode	Channel	Meas.Level [dBm/30KHz]	Convert Factor	Result [dBm/3KHz]	Limit [dBm/3KHz]	Verdict
11B	LCH	-3.292	-10	-13.292	8	PASS
	MCH	-2.802	-10	-12.802	8	PASS
	HCH	-3.106	-10	-13.106	8	PASS
11G	LCH	-7.233	-10	-17.233	8	PASS
	MCH	-5.046	-10	-15.046	8	PASS
	HCH	-4.635	-10	-14.635	8	PASS
11N20SISO	LCH	-6.411	-10	-16.411	8	PASS
	MCH	-5.079	-10	-15.079	8	PASS
	HCH	-3.953	-10	-13.953	8	PASS
11N40SISO	LCH	-12.003	-10	-22.003	8	PASS
	MCH	-12.134	-10	-22.134	8	PASS
	HCH	-12.628	-10	-22.628	8	PASS

***Note: The Convert Factor = $10 \cdot \log(3\text{KHz}/30\text{KHz}) = -10$

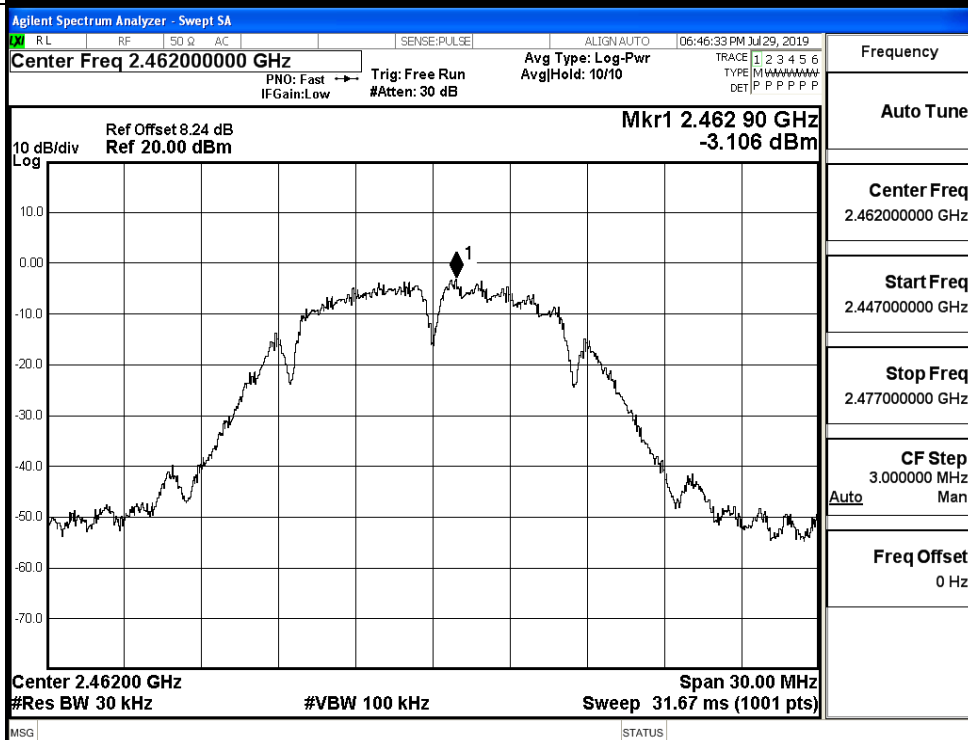
Test Graphs



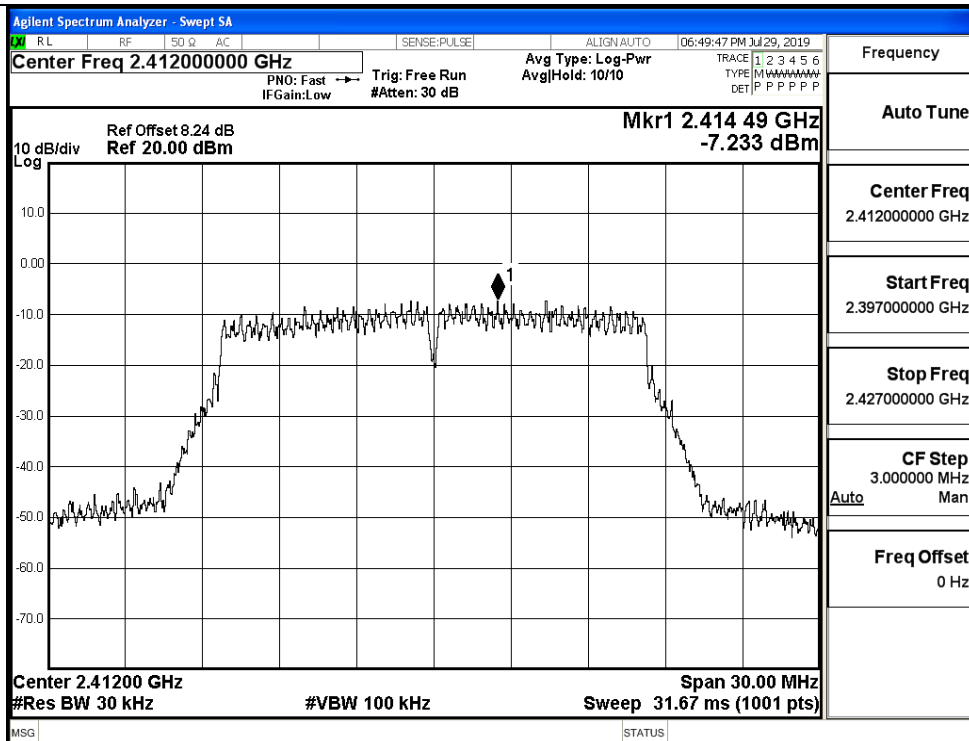
11B/MCH



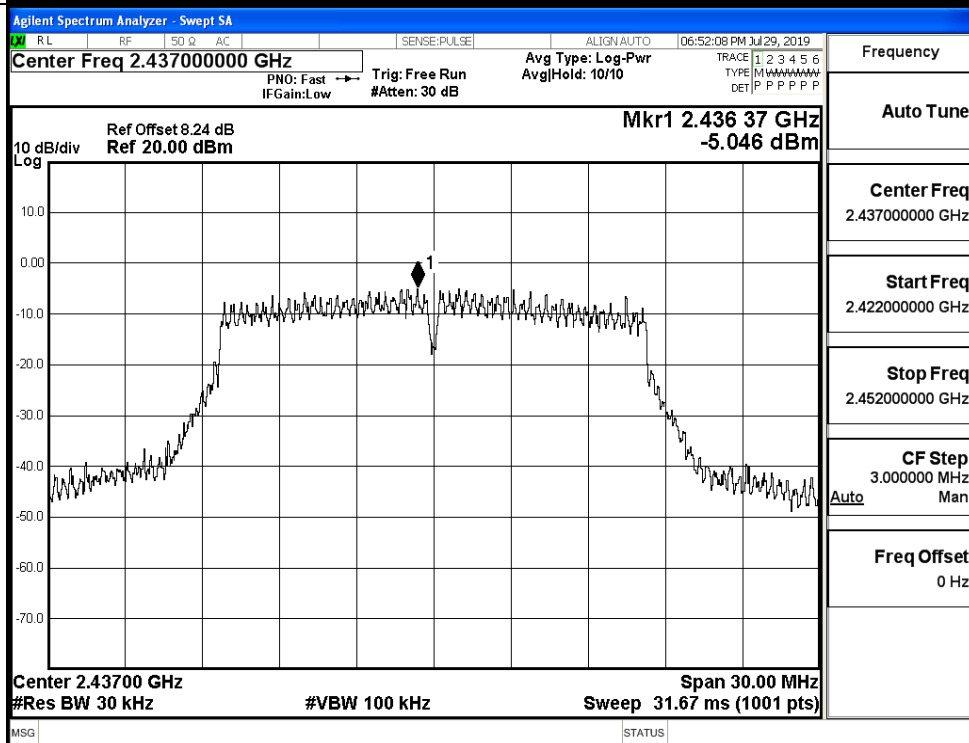
11B/HCH



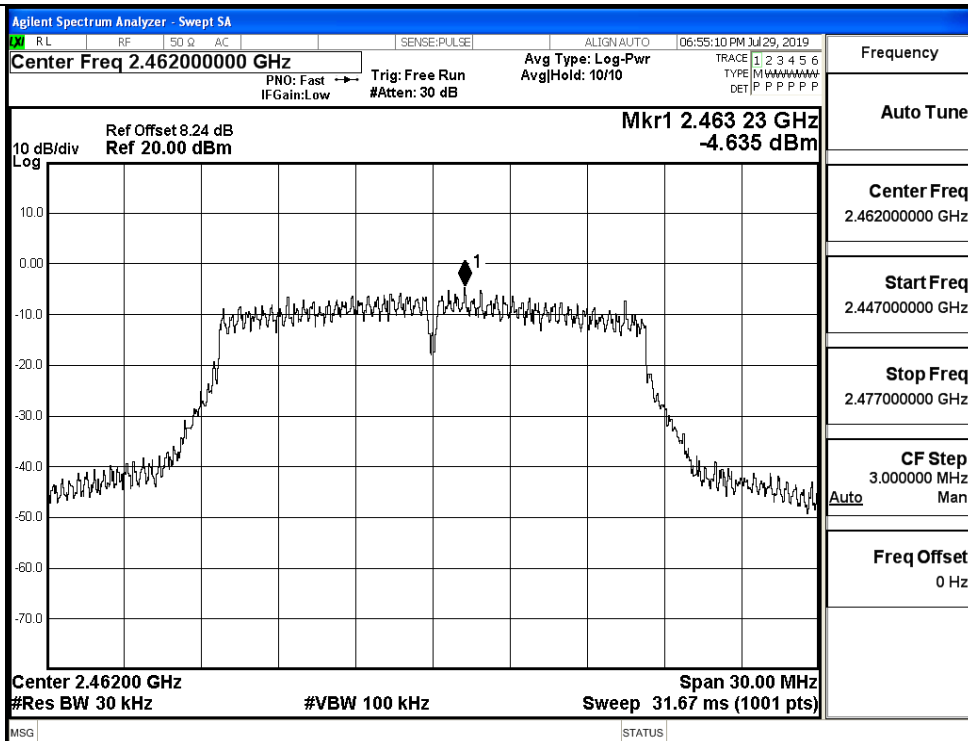
11G/LCH



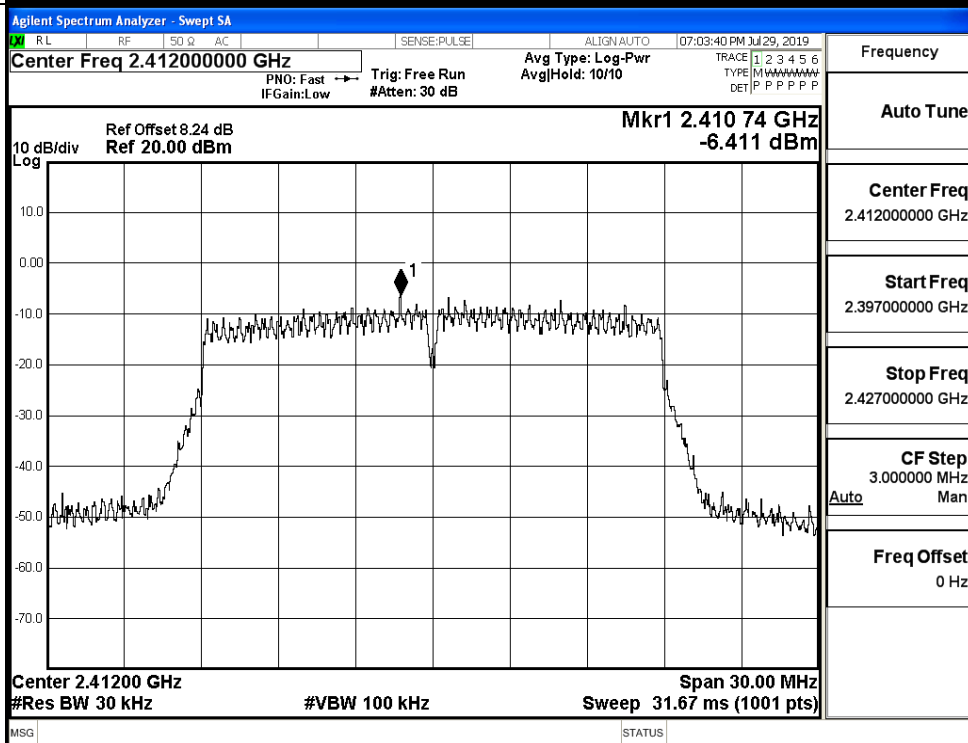
11G/MCH



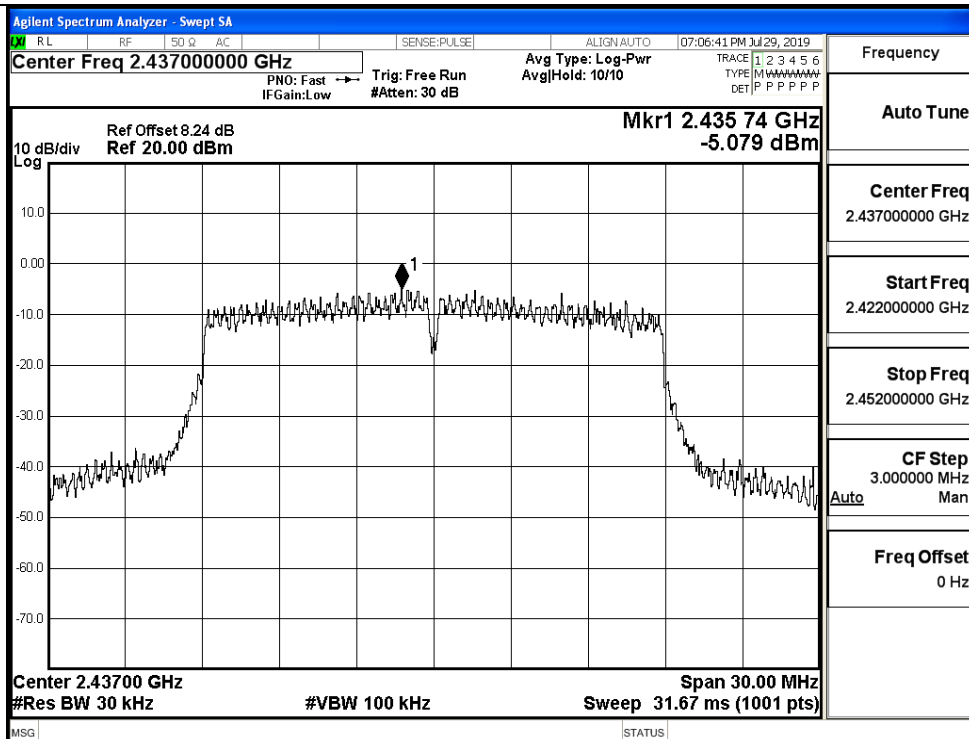
11G/HCH



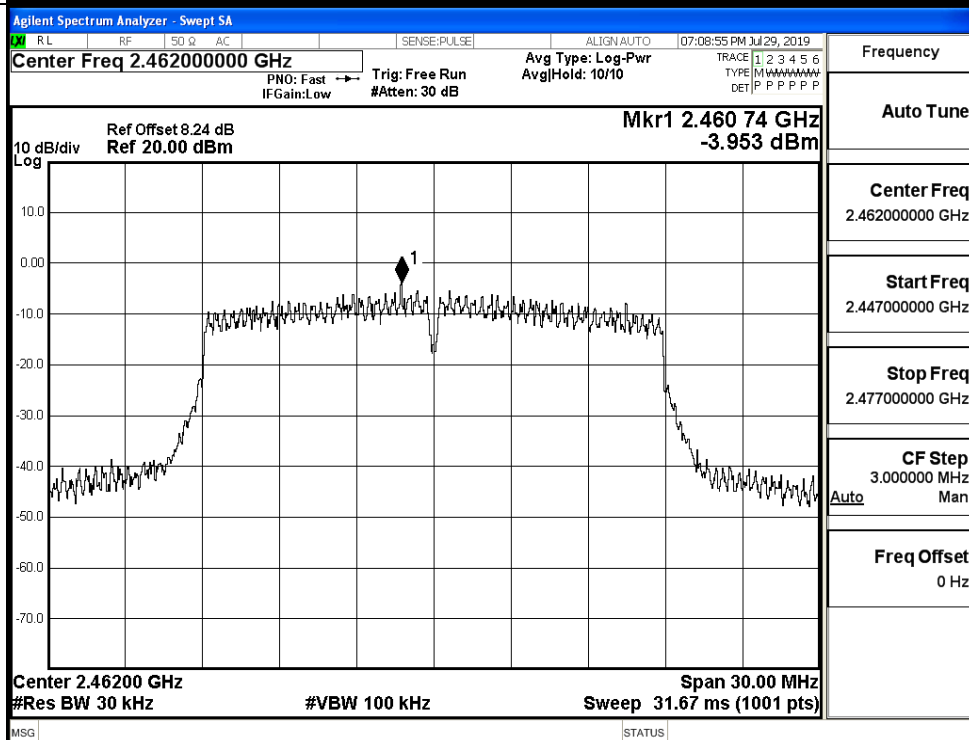
11N20SISO/LCH



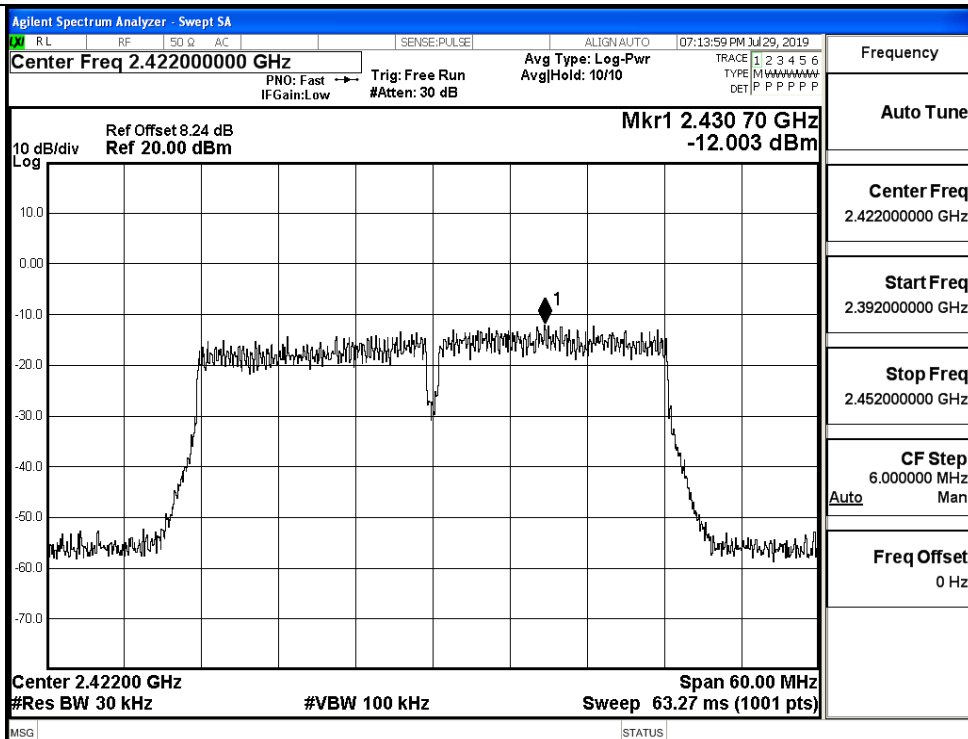
11N20SISO/MCH



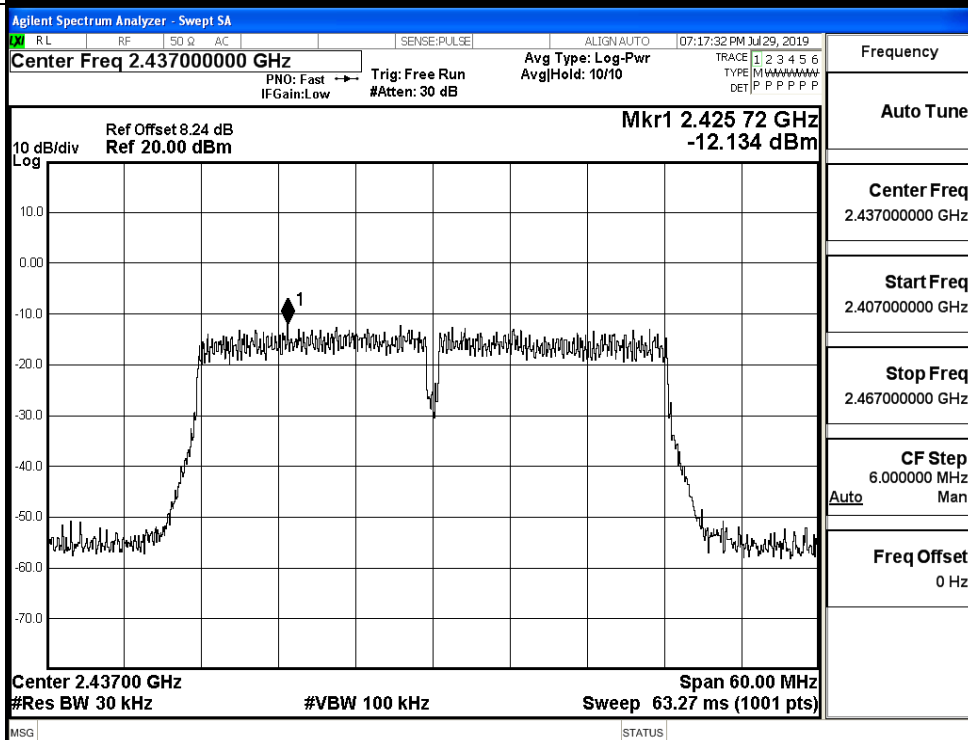
11N20SISO/HCH



11N40SISO/LCH



11N40SISO/MCH



Agilent Spectrum Analyzer - Swept SA

RL RF 50 Ω AC SENSE: PULSE ALIGN: AUTO 07:19:17 PM Jul 29, 2019

Center Freq 2.45200000 GHz PNO: Fast Trg: Free Run Avg Type: Log-Pwr Avg Hold: 10/10 TRACE 1 2 3 4 5 6 TYPE M W M M M M M M M M DET P P P P P P P P

Ref Offset 8.24 dB Mkr1 2.440 72 GHz
 Ref 20.00 dBm -12.628 dBm

10 dB/div
 Log

Center Freq 2.45200000 GHz
 Start Freq 2.422000000 GHz
 Stop Freq 2.482000000 GHz
 CF Step 6.000000 MHz
 Auto Man
 Freq Offset 0 Hz

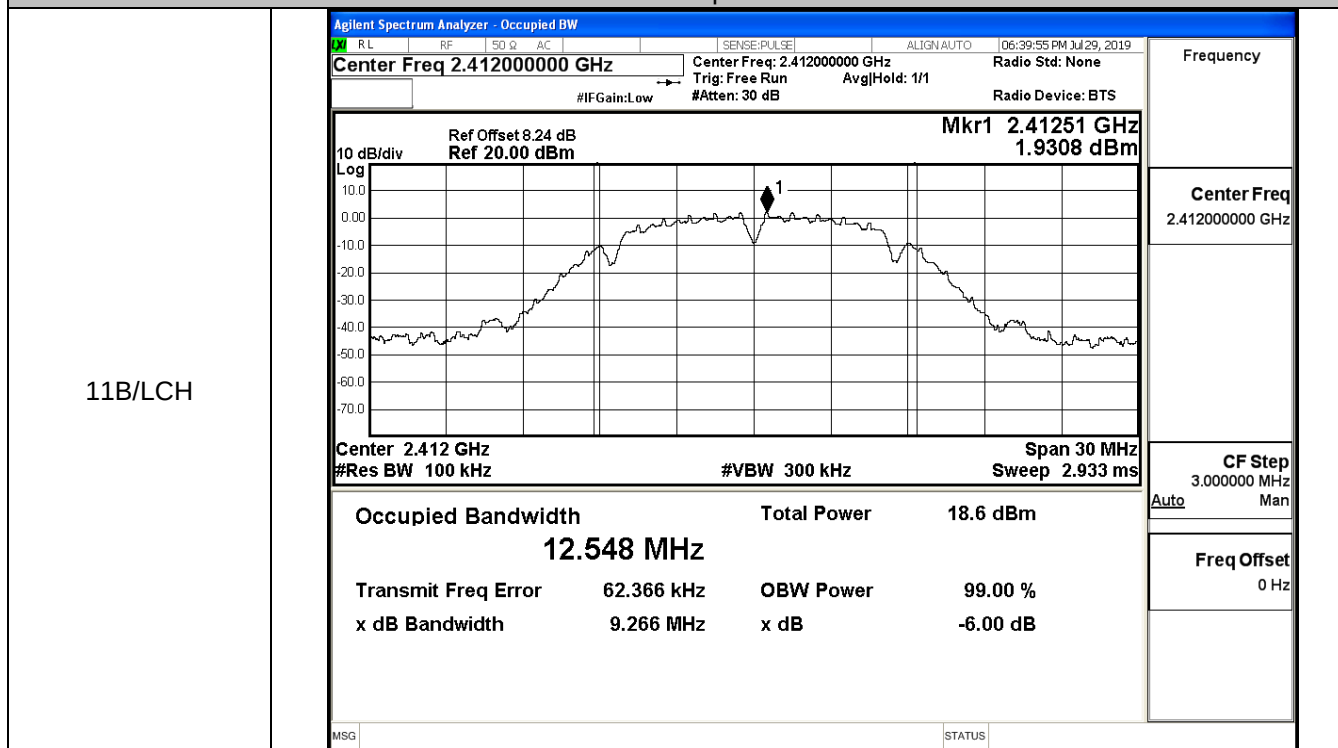
Center 2.45200 GHz Span 60.00 MHz
 #Res BW 30 kHz #VBW 100 kHz Sweep 63.27 ms (1001 pts)

MSG STATUS

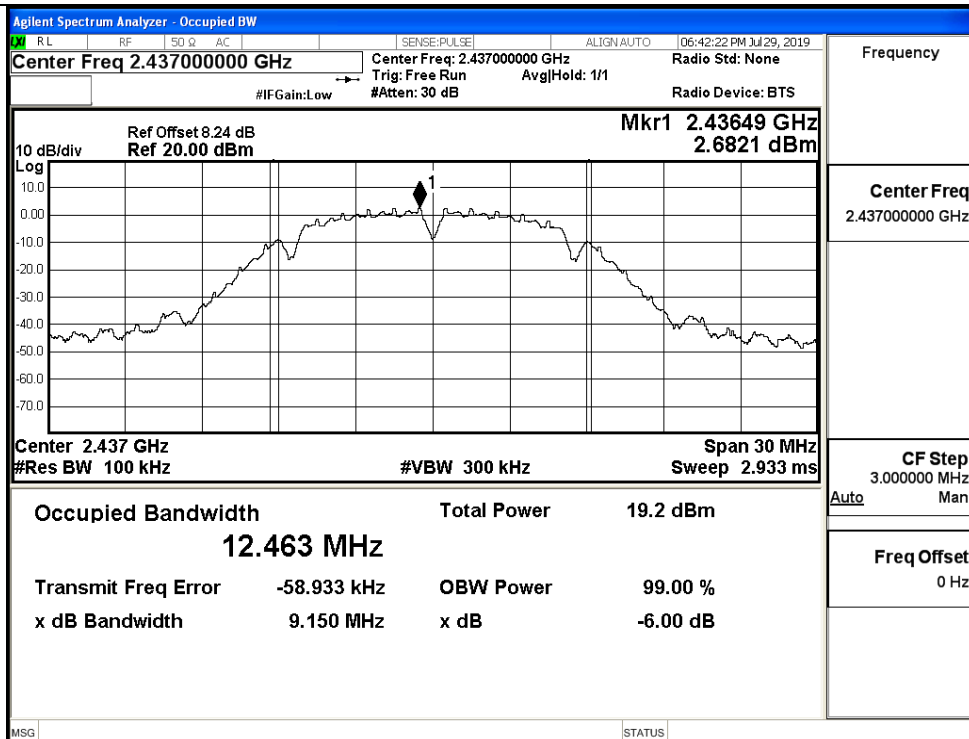
C.4 6dB Bandwidth

Mode	Channel	6dB Bandwidth [MHz]	Limit [MHz]	Verdict
11B	LCH	9.266	≥ 0.5	PASS
	MCH	9.150	≥ 0.5	PASS
	HCH	9.148	≥ 0.5	PASS
11G	LCH	15.72	≥ 0.5	PASS
	MCH	15.16	≥ 0.5	PASS
	HCH	15.12	≥ 0.5	PASS
11N20SISO	LCH	16.13	≥ 0.5	PASS
	MCH	16.42	≥ 0.5	PASS
	HCH	15.16	≥ 0.5	PASS
11N40SISO	LCH	35.21	≥ 0.5	PASS
	MCH	35.70	≥ 0.5	PASS
	HCH	35.96	≥ 0.5	PASS

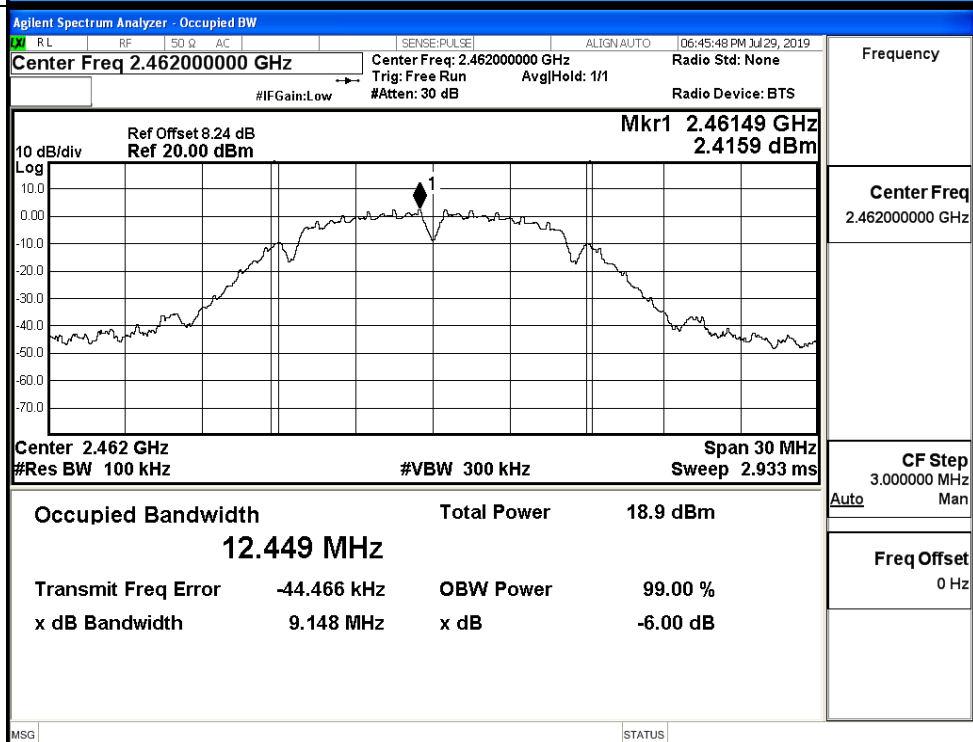
Test Graphs



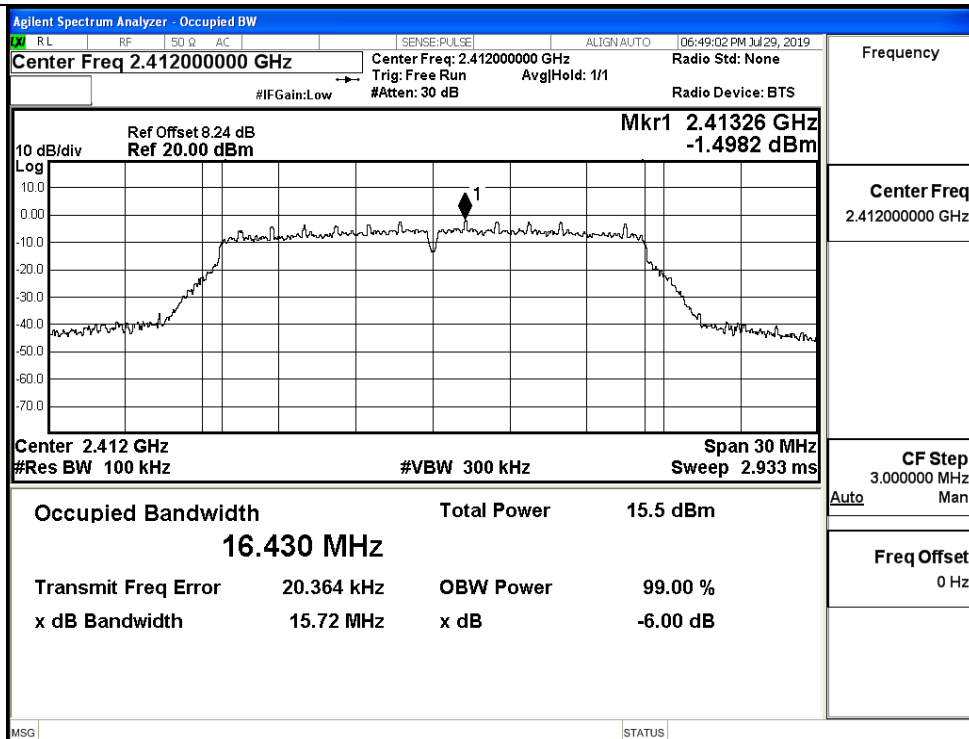
11B/MCH



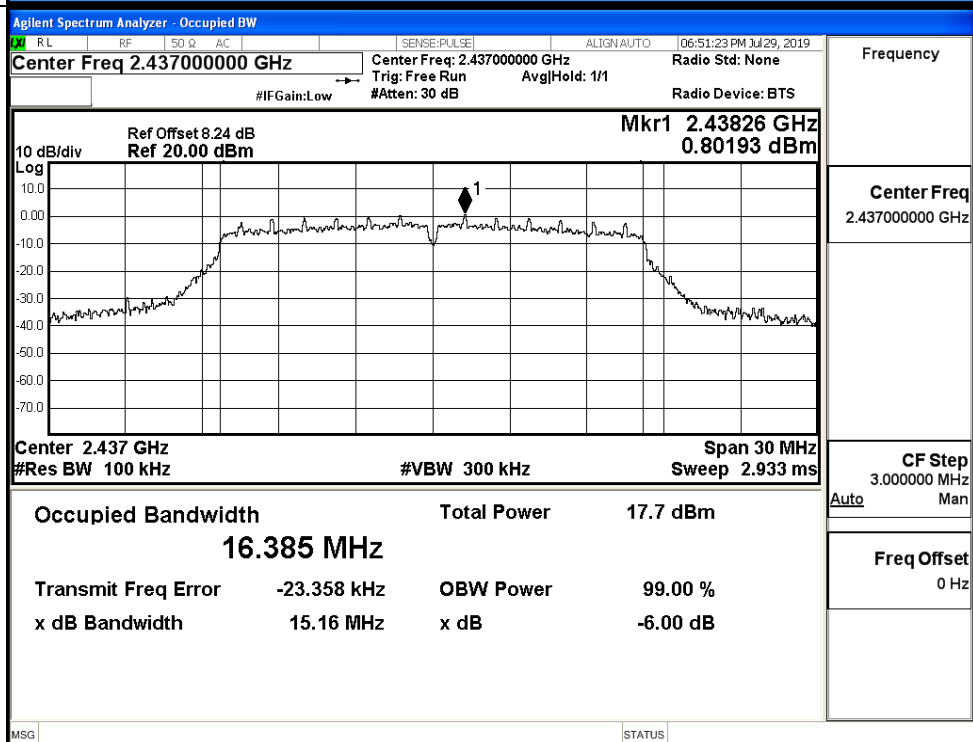
11B/HCH



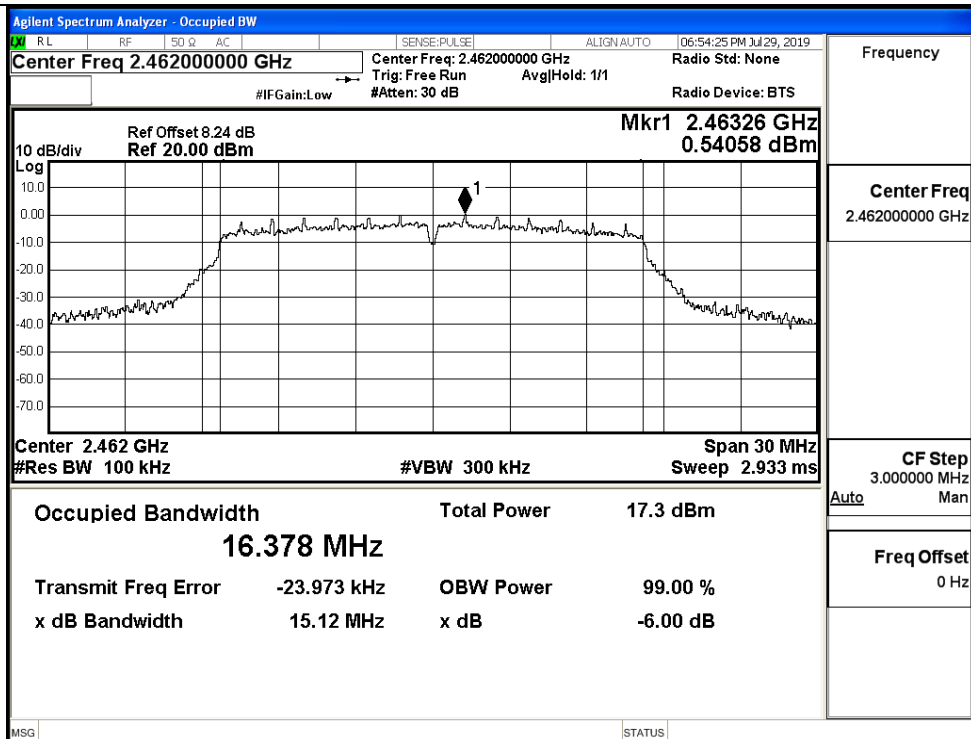
11G/LCH



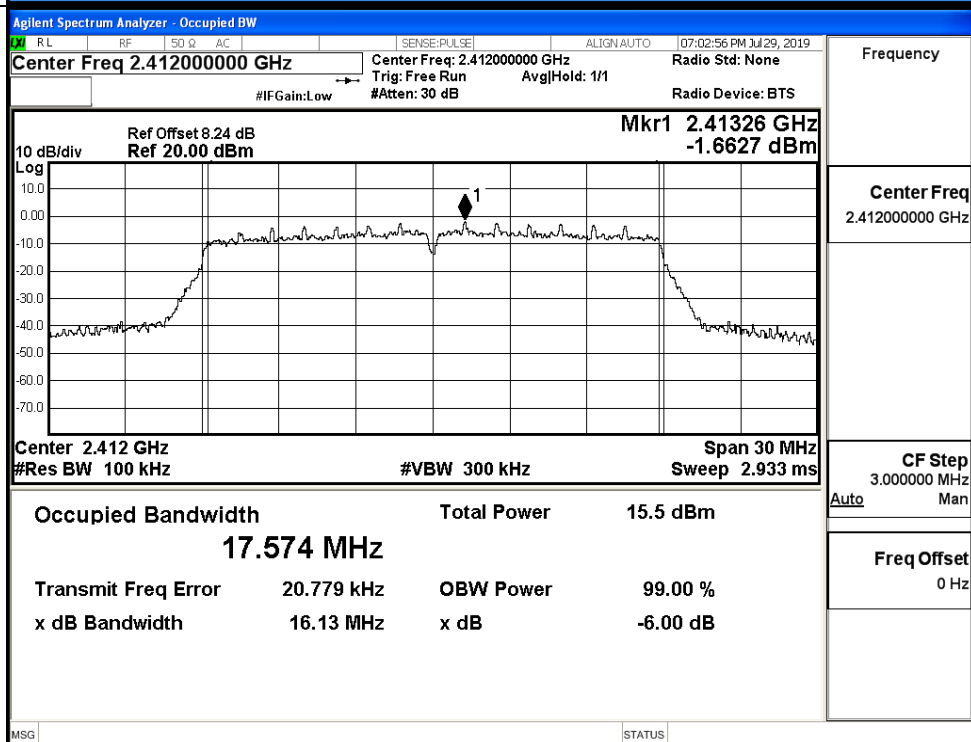
11G/MCH



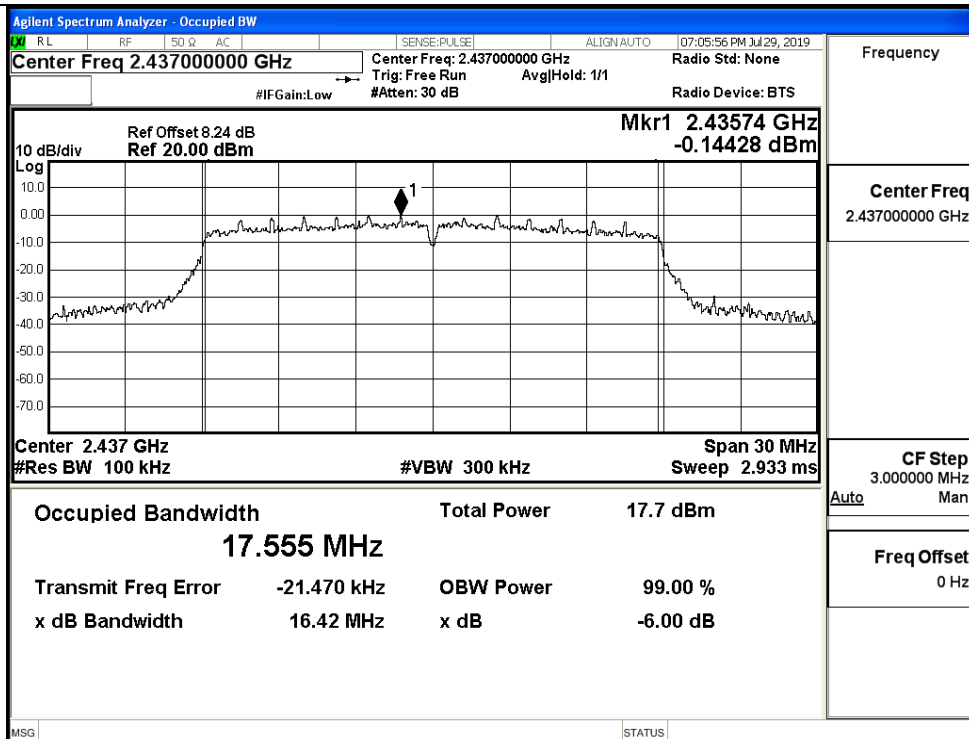
11G/HCH



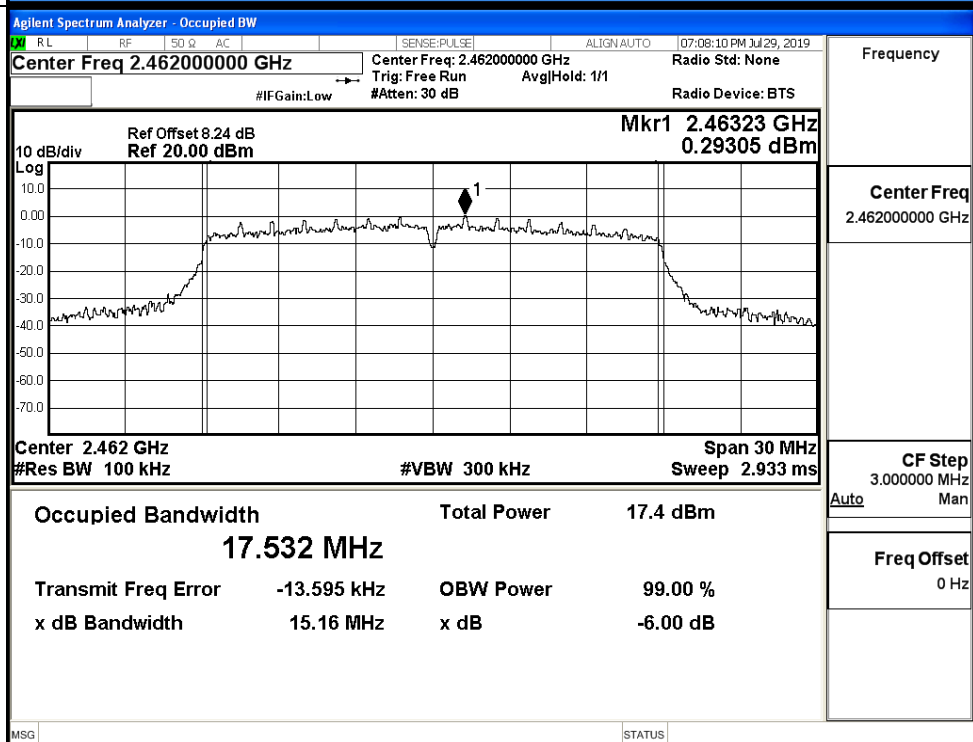
11N20SISO/LCH



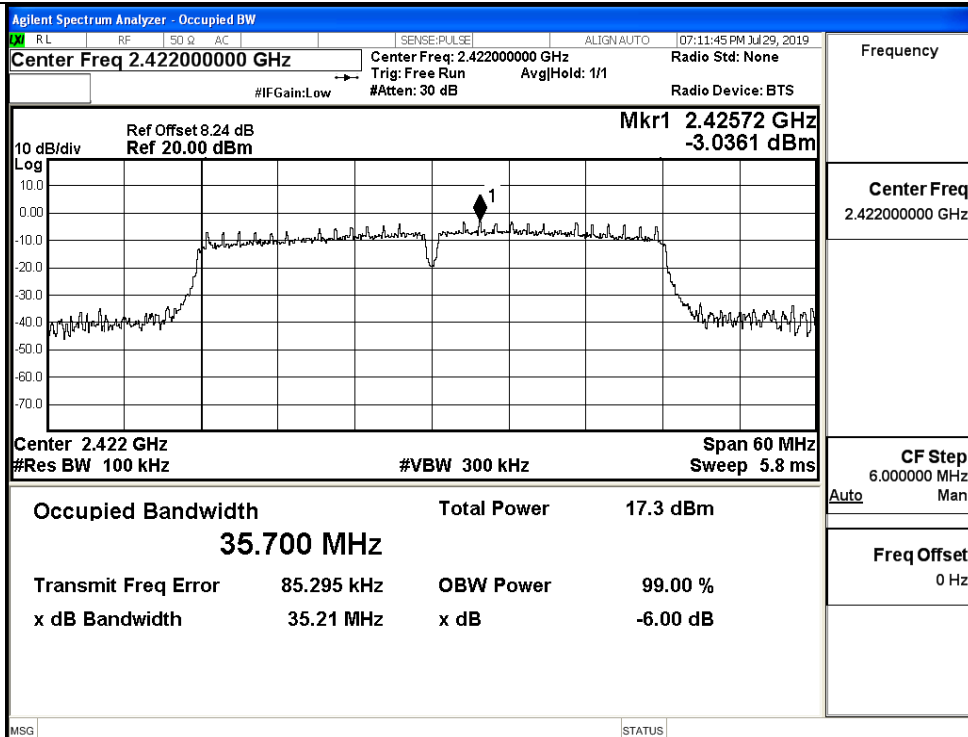
11N20SISO/MCH



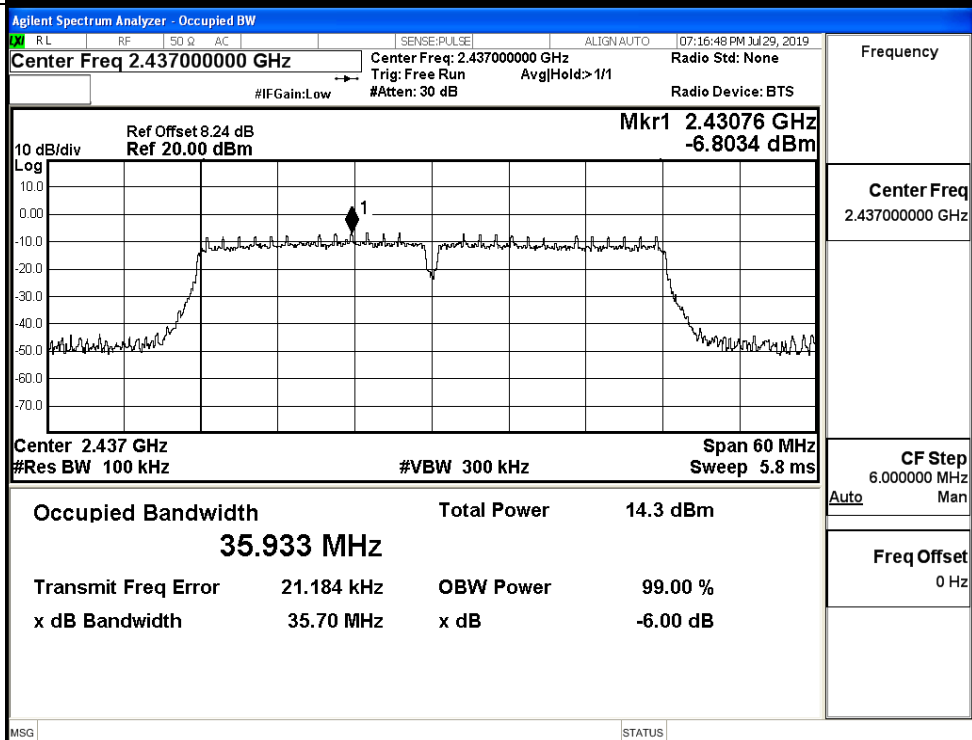
11N20SISO/HCH



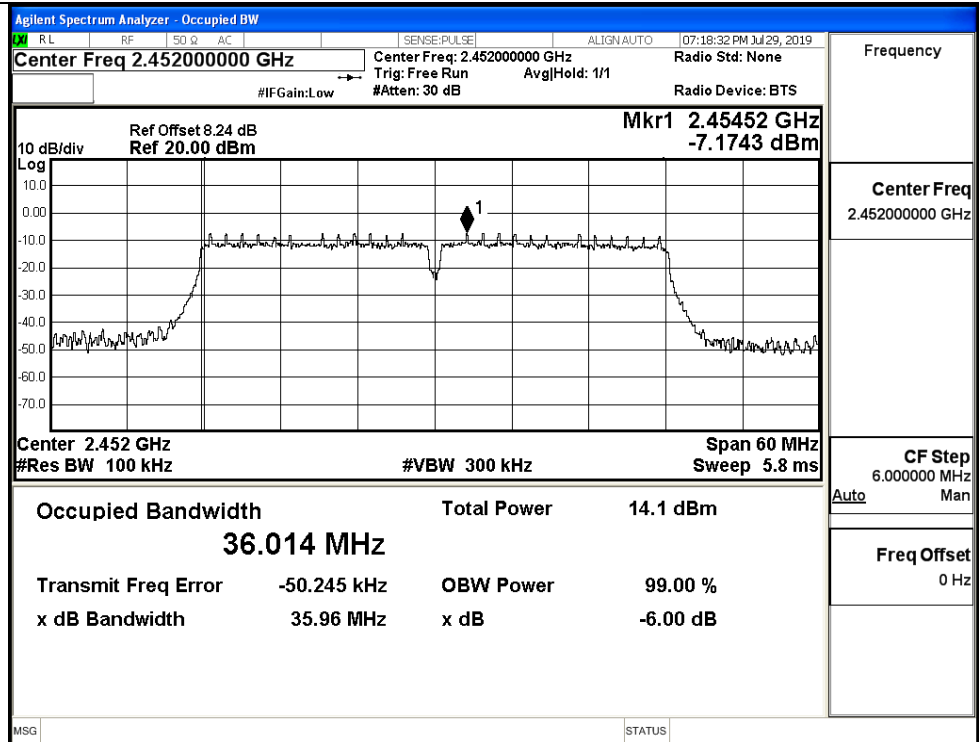
11N40SISO/LCH



11N40SISO/MCH



11N40SISO/HCH

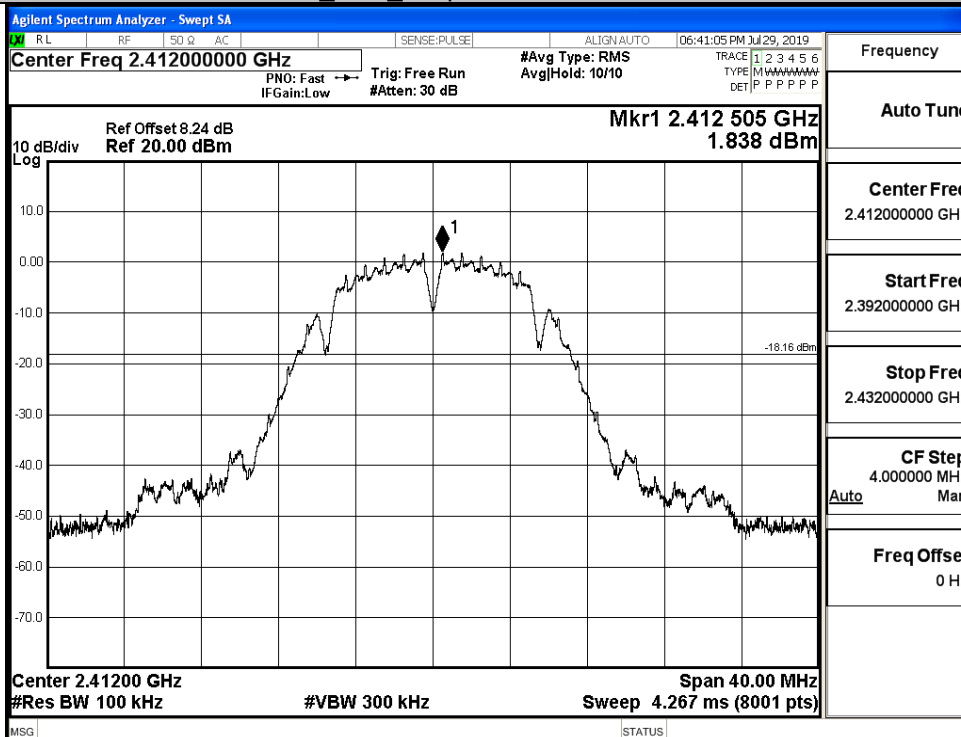


C.5 RF Conducted Spurious Emissions

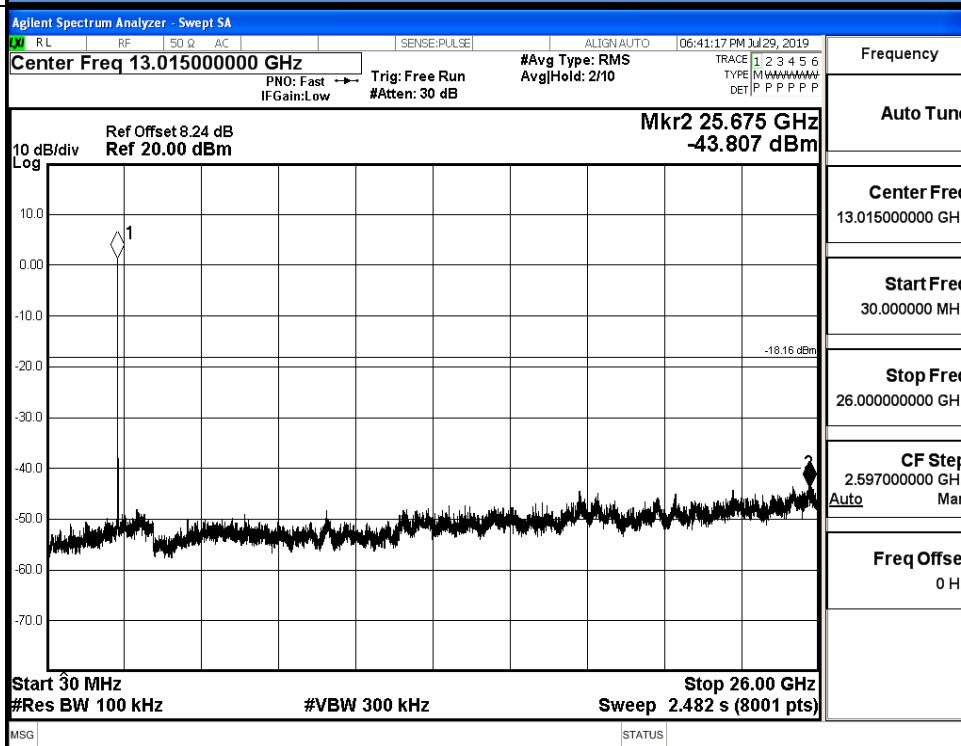
Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
11B	LCH	1.838	-43.807	-18.162	PASS
	MCH	2.59	-43.673	-17.410	PASS
	HCH	2.287	-42.712	-17.713	PASS
11G	LCH	-1.845	-43.099	-21.845	PASS
	MCH	0.682	-43.381	-19.318	PASS
	HCH	0.304	-43.705	-19.696	PASS
11N20 SISO	LCH	-2.519	-43.063	-22.519	PASS
	MCH	0.712	-42.576	-19.288	PASS
	HCH	0.068	-43.370	-19.932	PASS
11N40 SISO	LCH	-6.474	-42.615	-26.474	PASS
	MCH	-6.799	-42.453	-26.799	PASS
	HCH	-7.376	-42.820	-27.376	PASS

11B LCH Graphs

Pref/11B/LCH

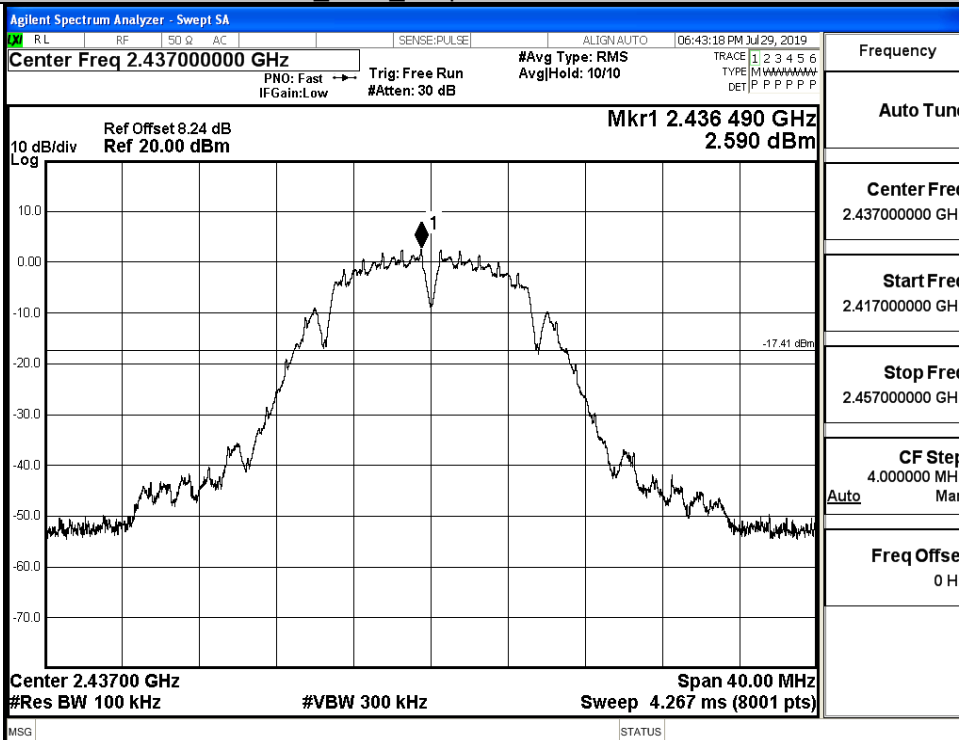


Puw/11B/LCH

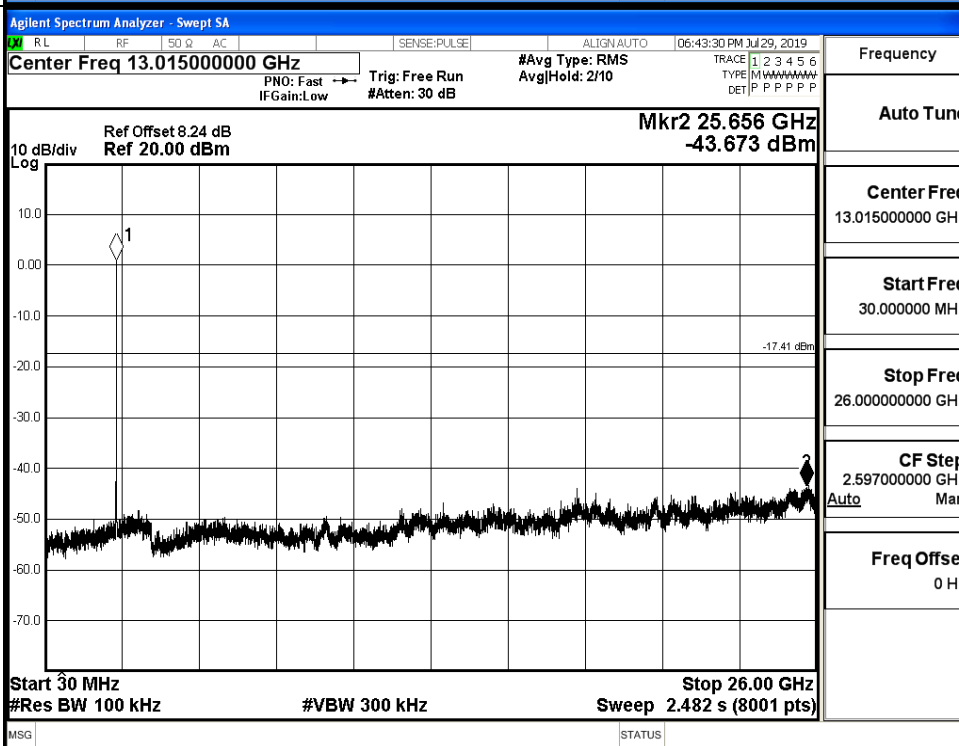


11B MCH Graphs

Pref/11B/MCH

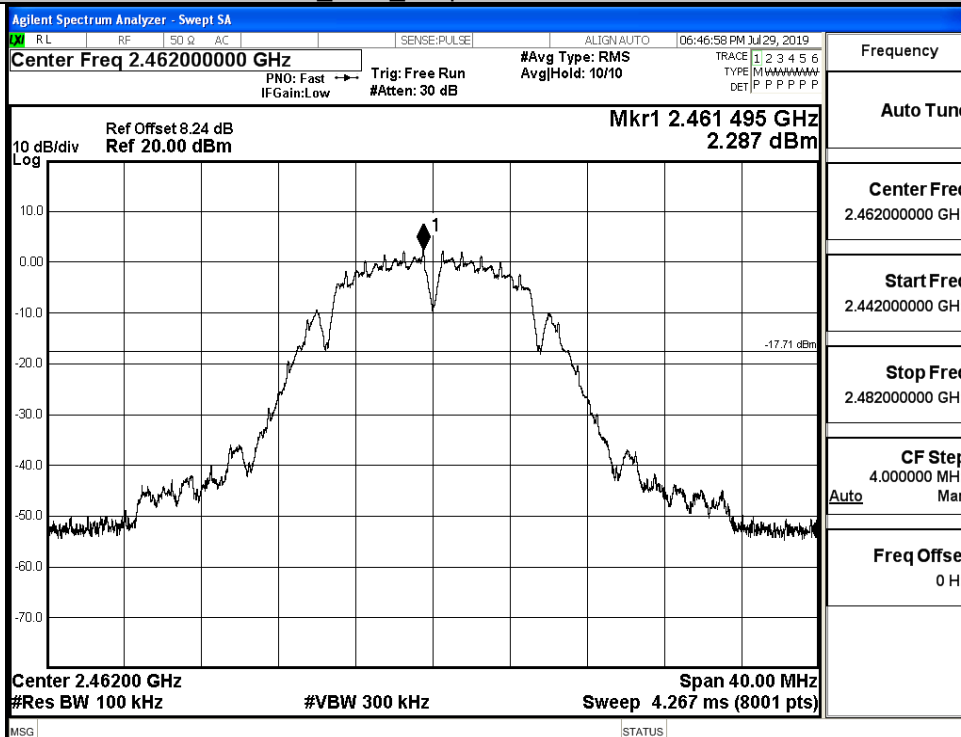


Puw/11B/MCH

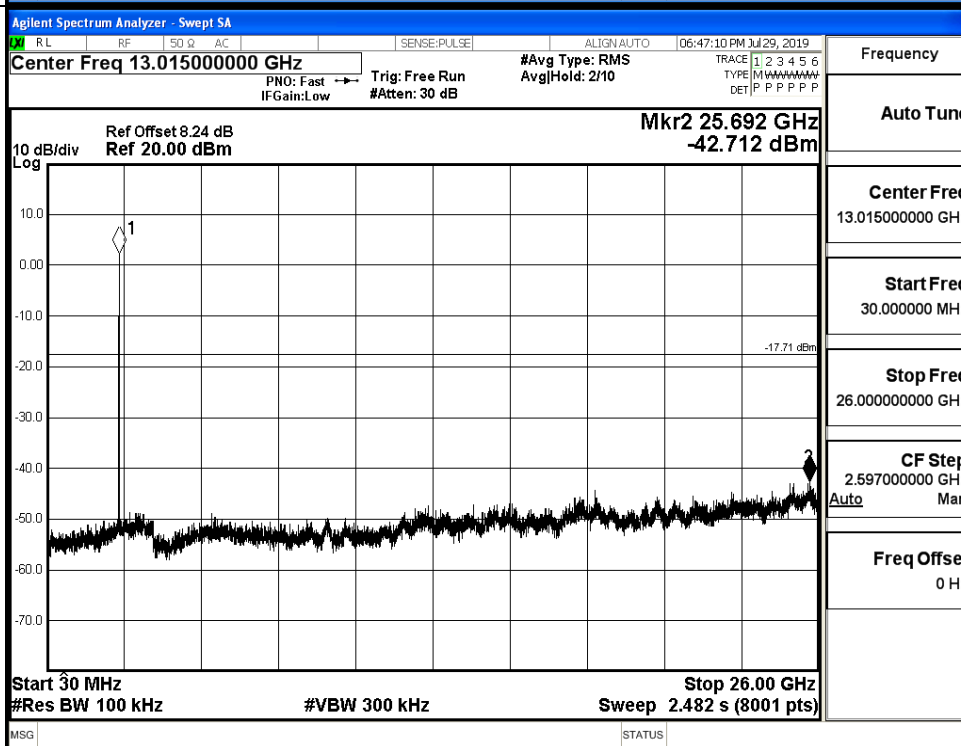


11B HCH Graphs

Pref/11B/HCH

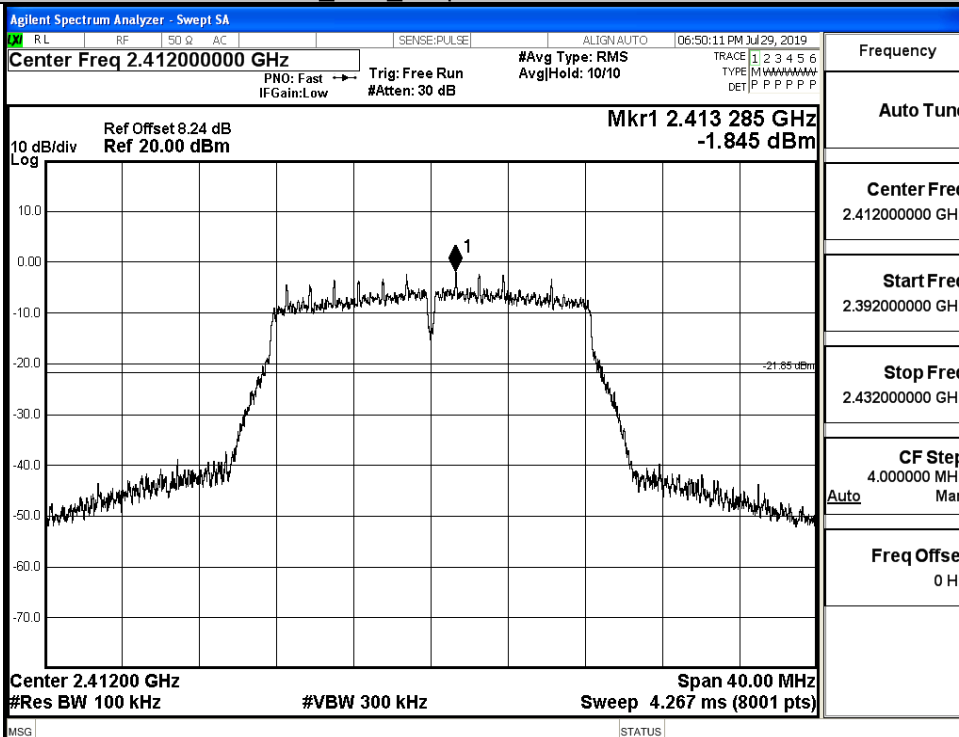


Puw/11B/HCH

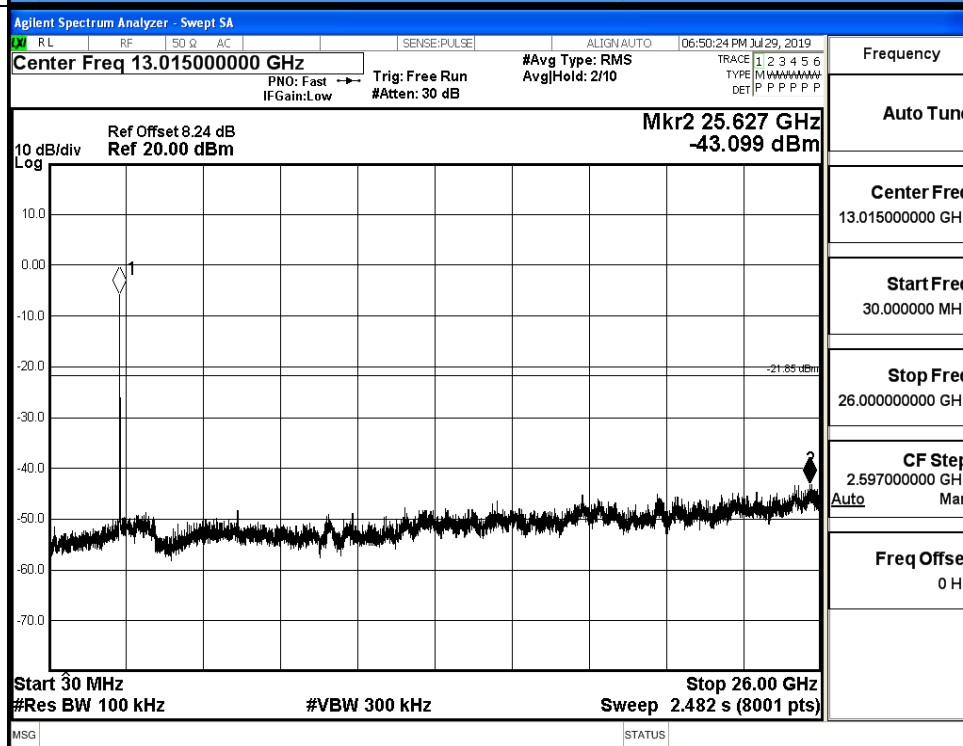


11G_LCH_Graphs

Pref/11G/LCH

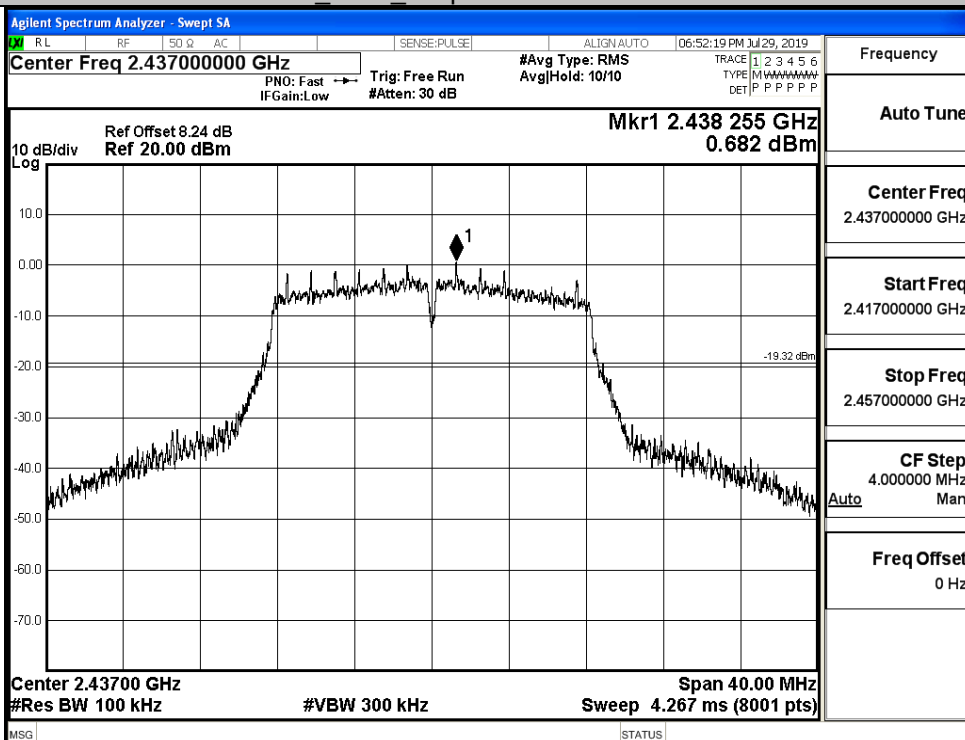


Puw/11G/LCH

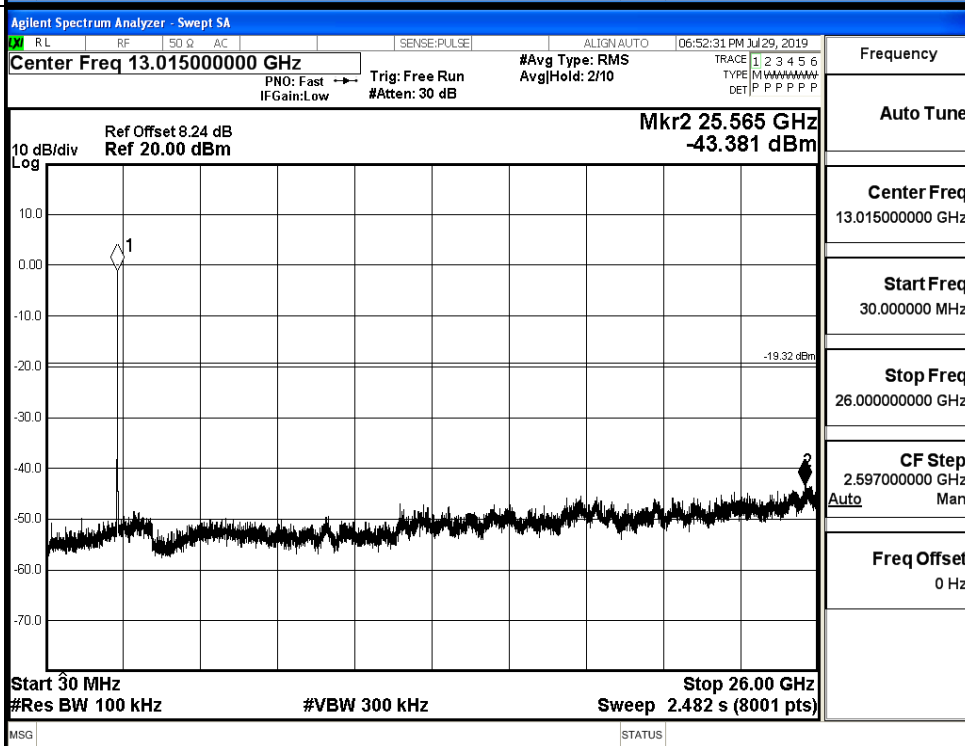


11G MCH Graphs

Pref/11G/MCH

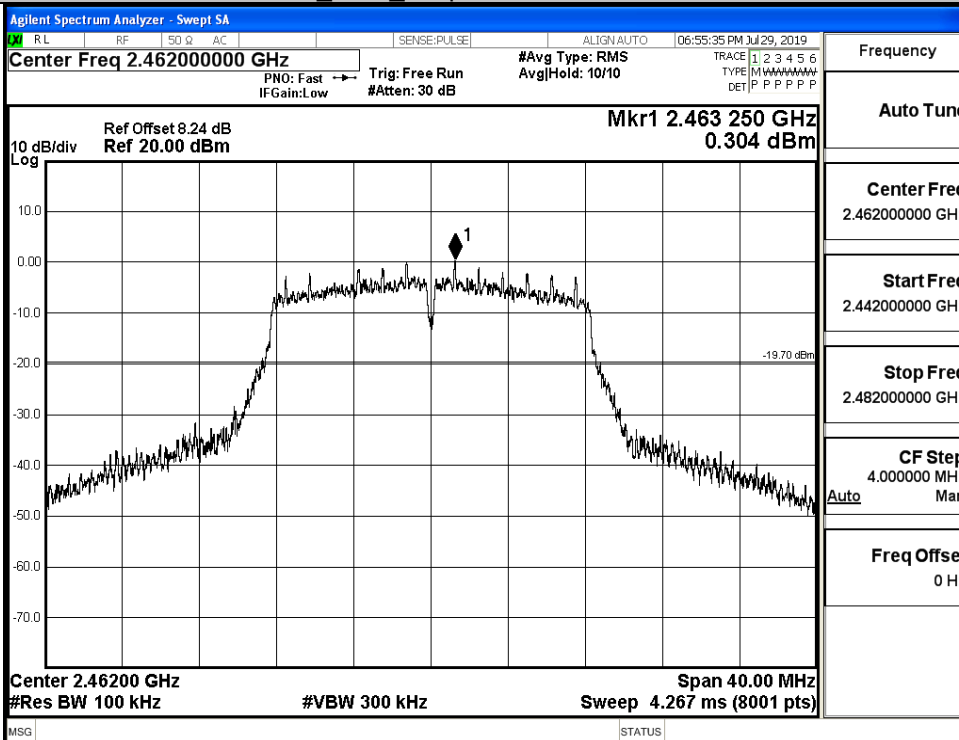


Puw/11G/MCH

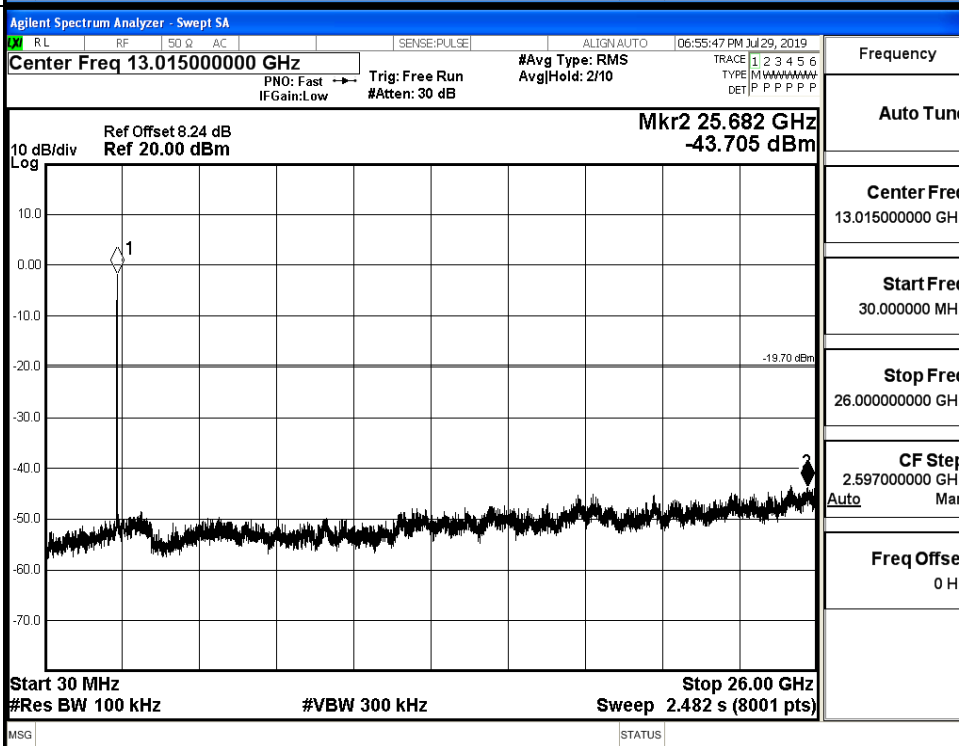


11G HCH Graphs

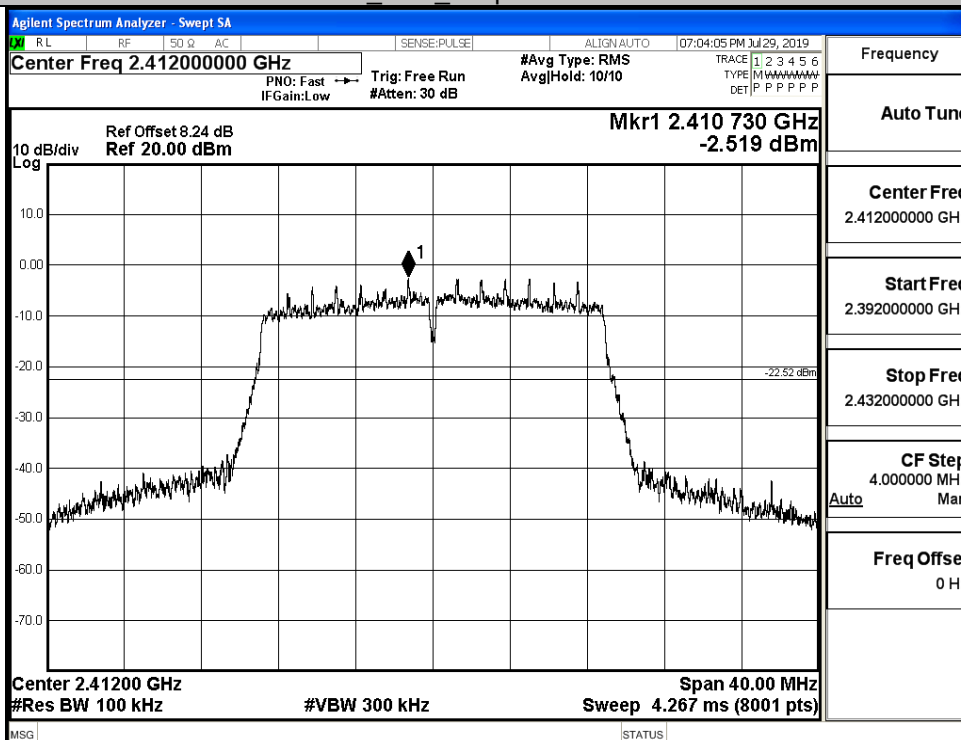
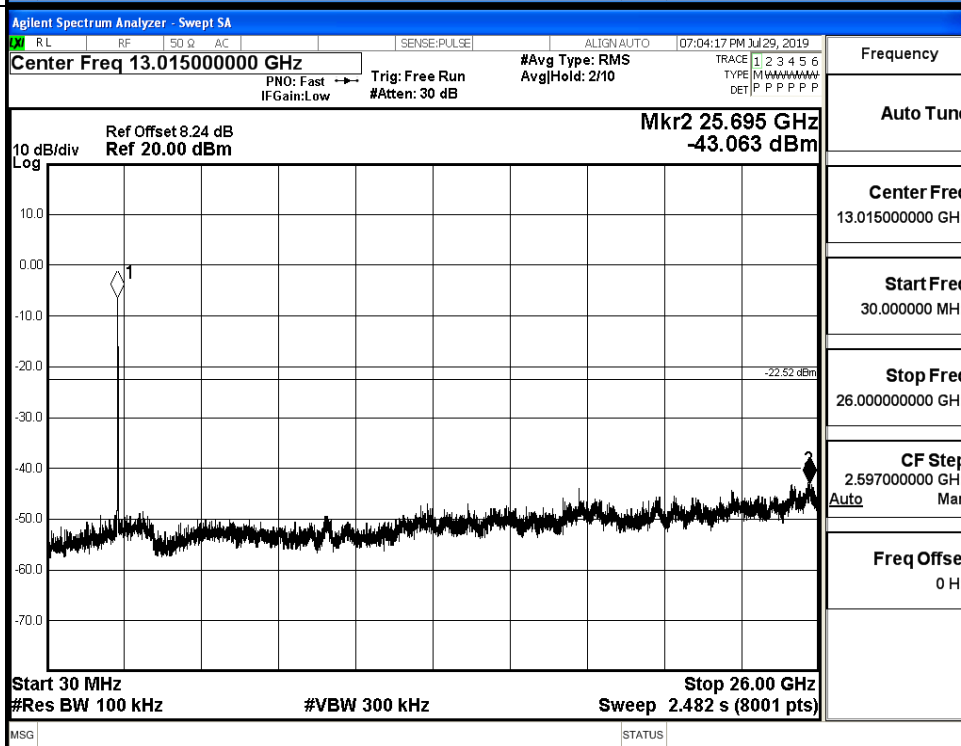
Pref/11G/HCH



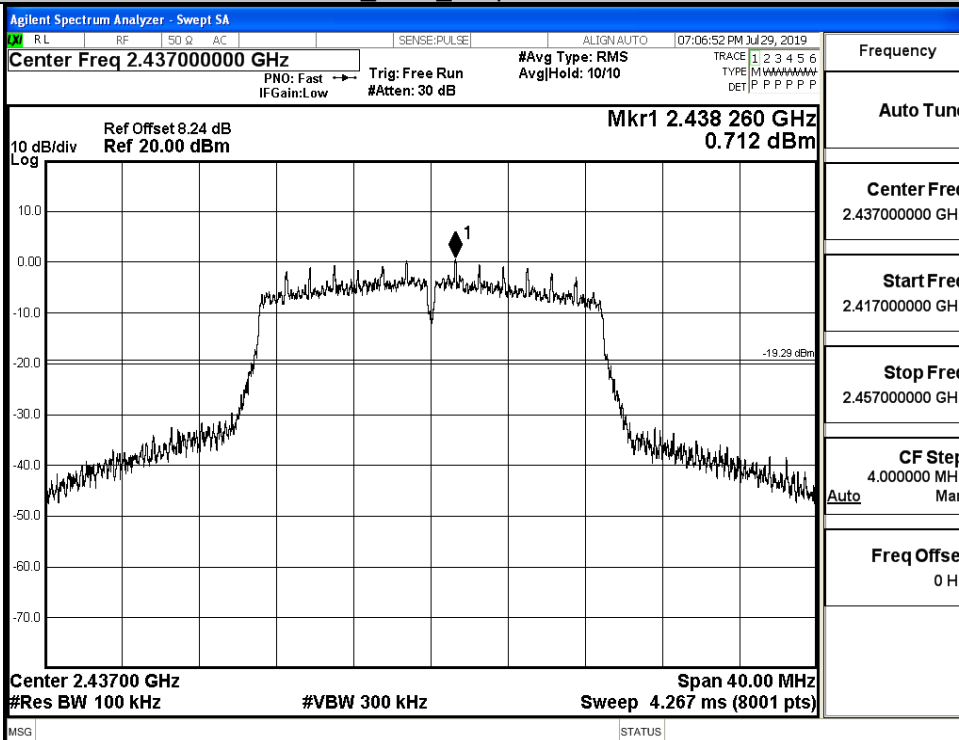
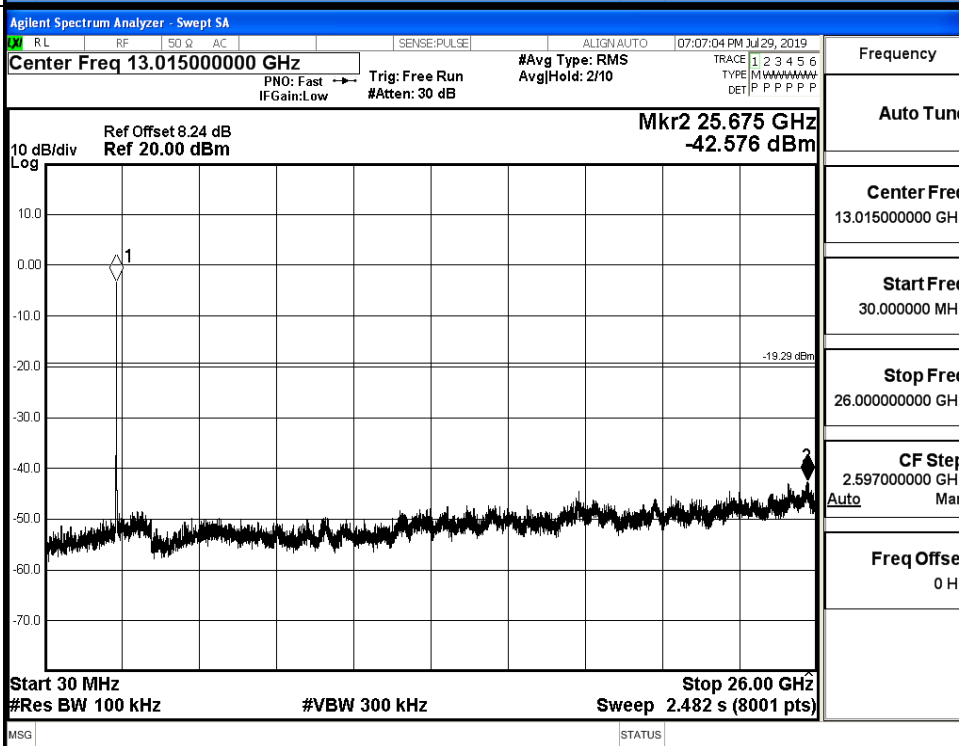
Puw/11G/HCH



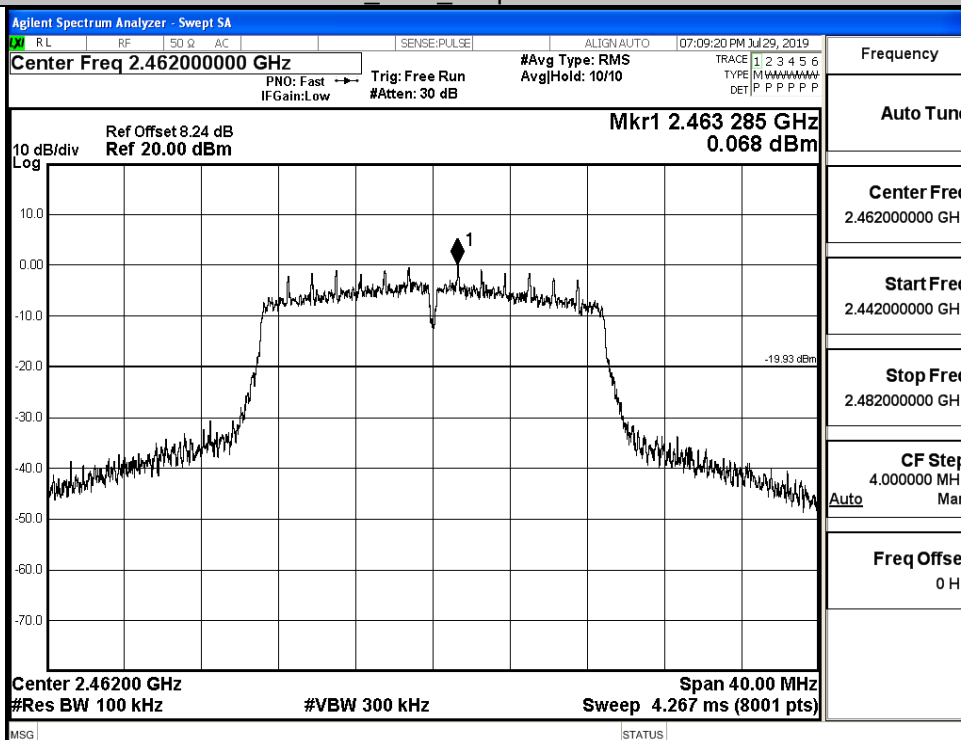
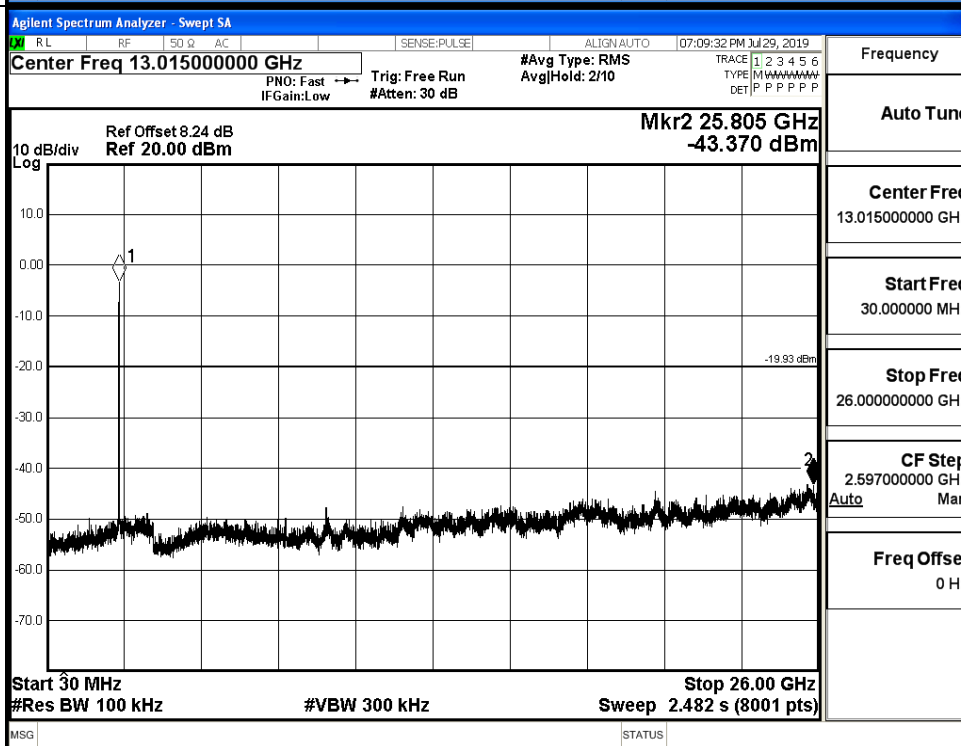
11N20SISO LCH Graphs

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

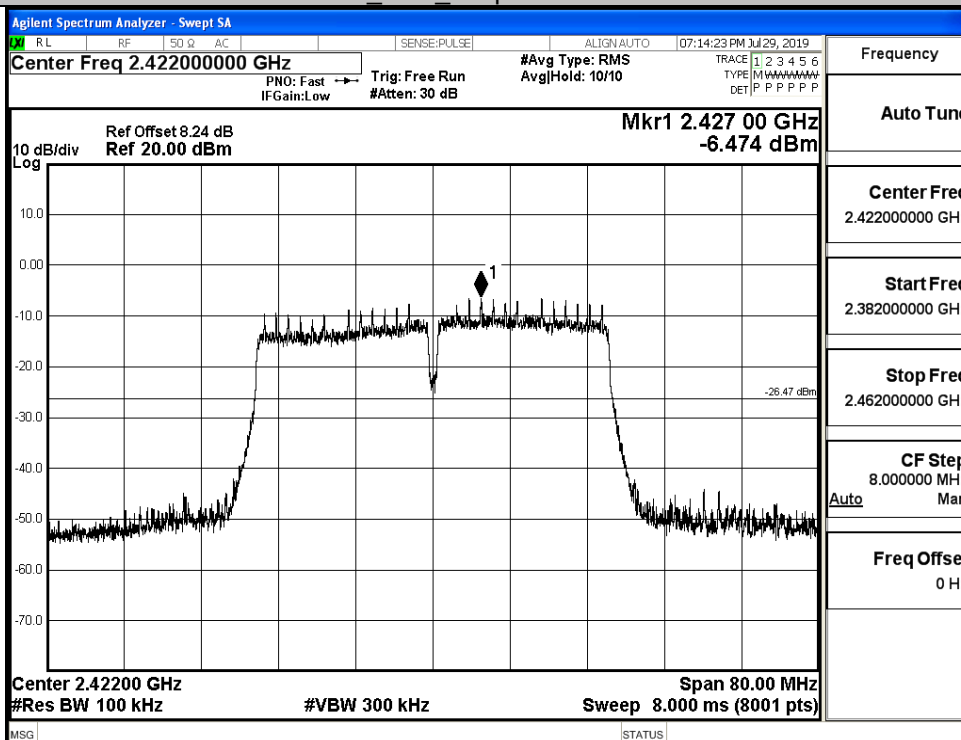
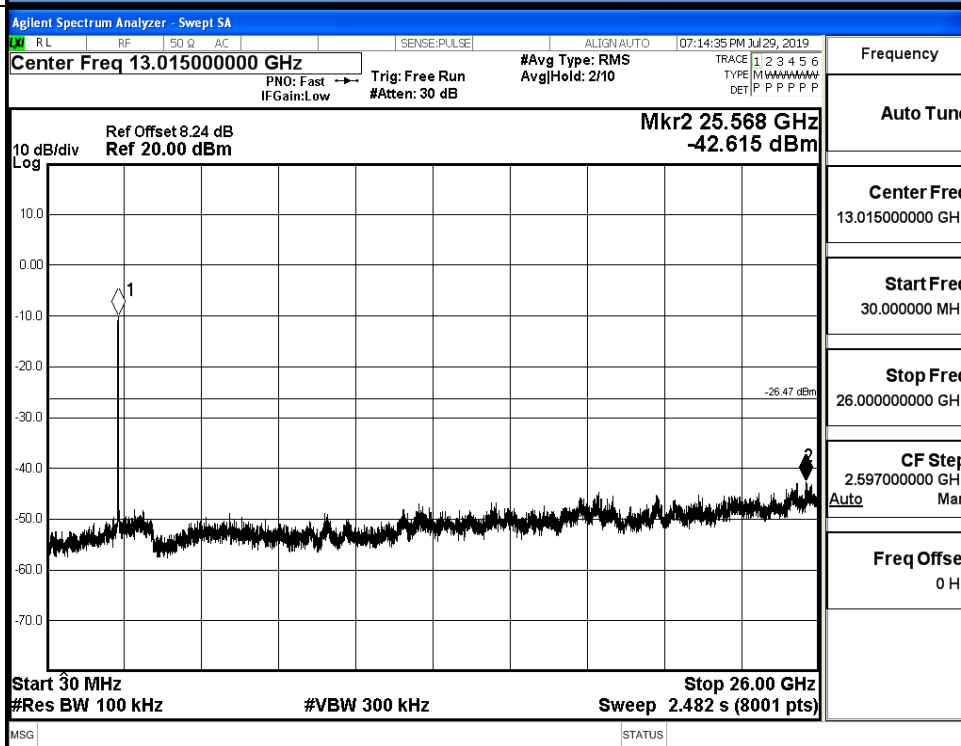
11N20SISO_MCH_Graphs

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

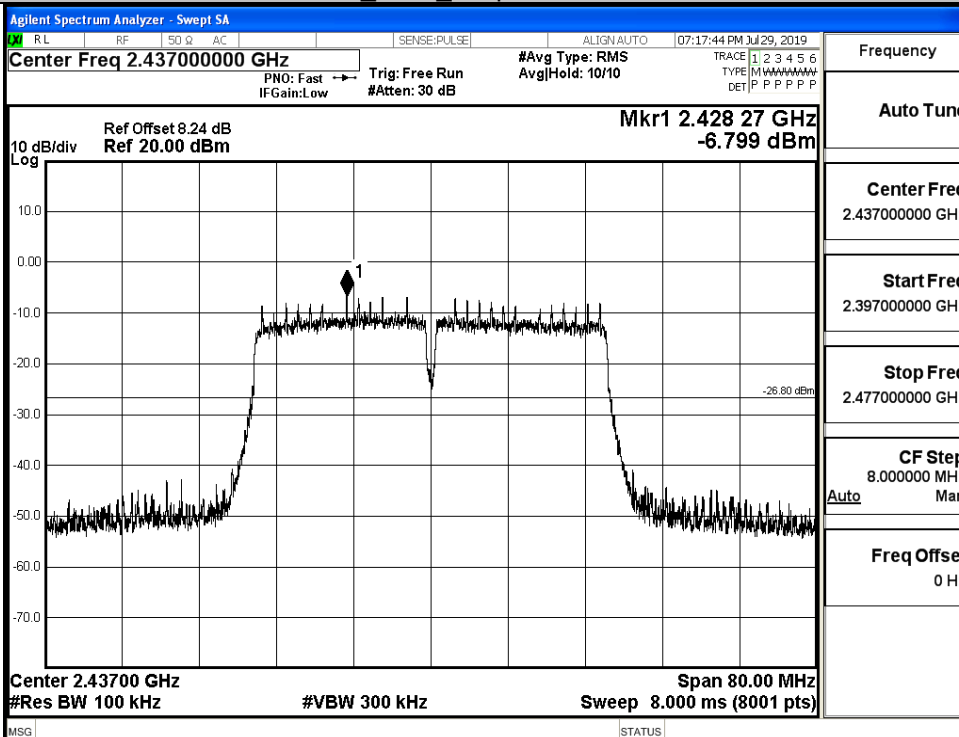
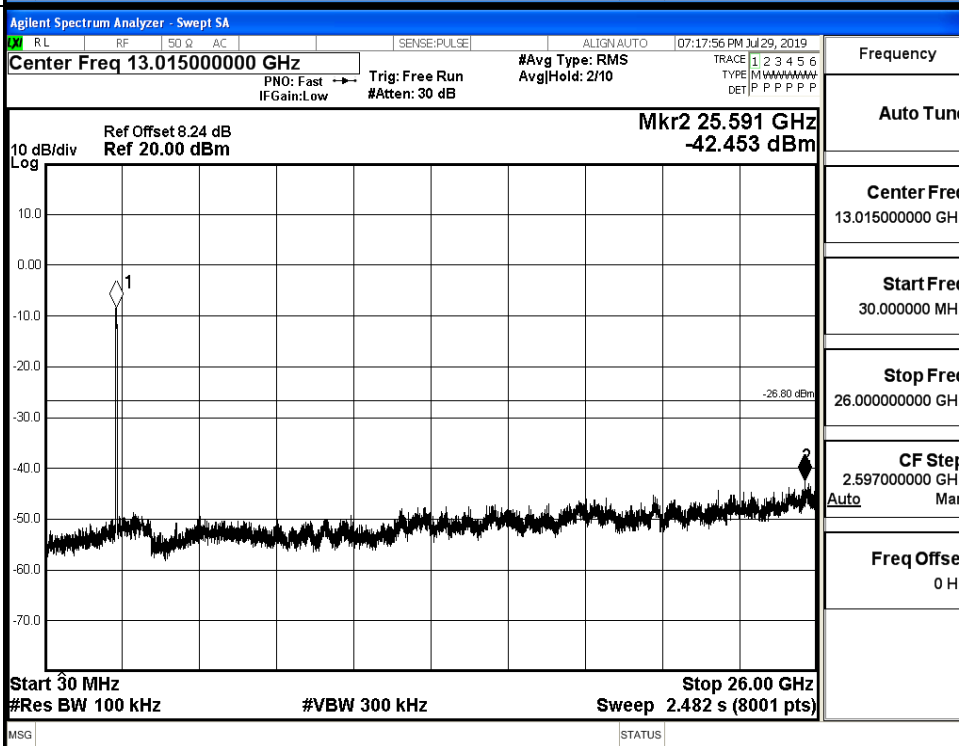
11N20SISO HCH Graphs

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

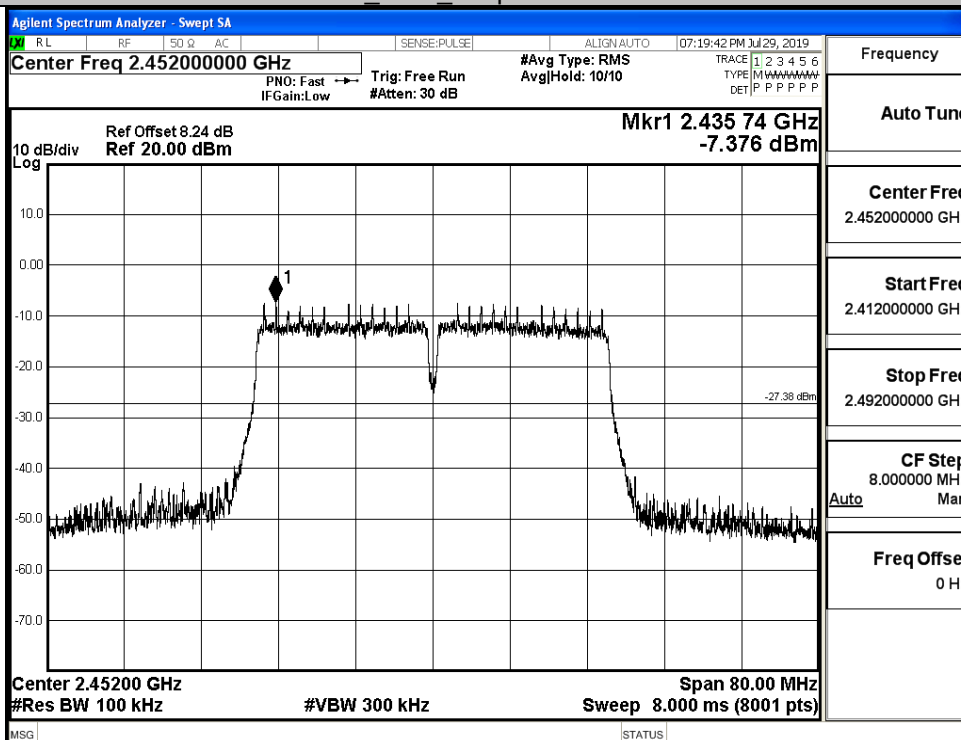
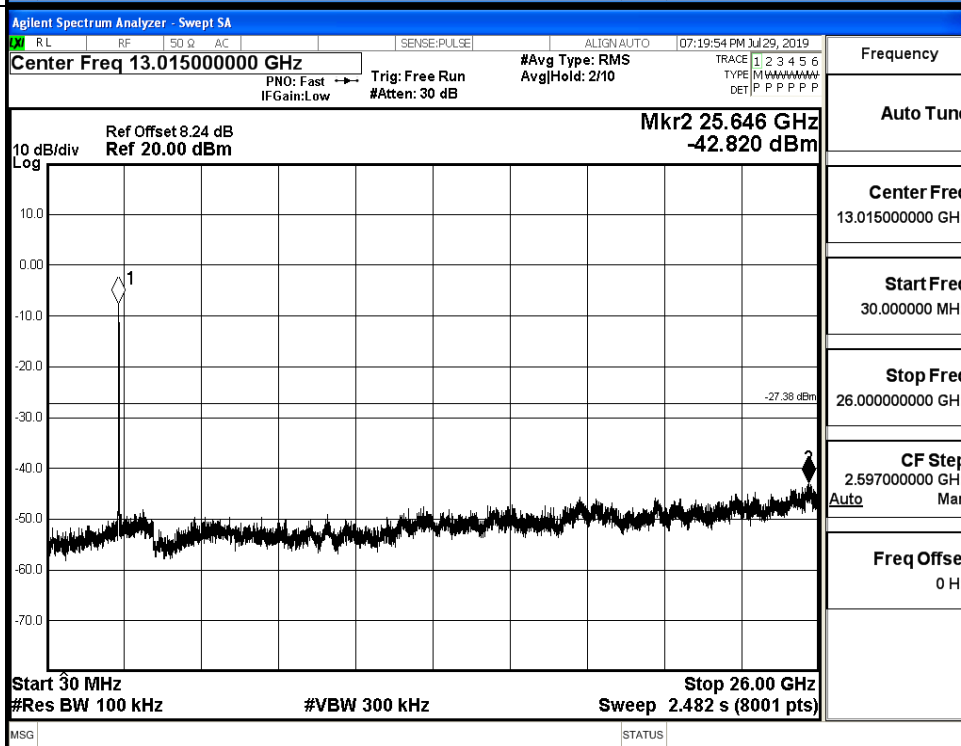
11N40SISO LCH Graphs

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

11N40SISO_MCH_Graphs

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

11N40SISO HCH Graphs

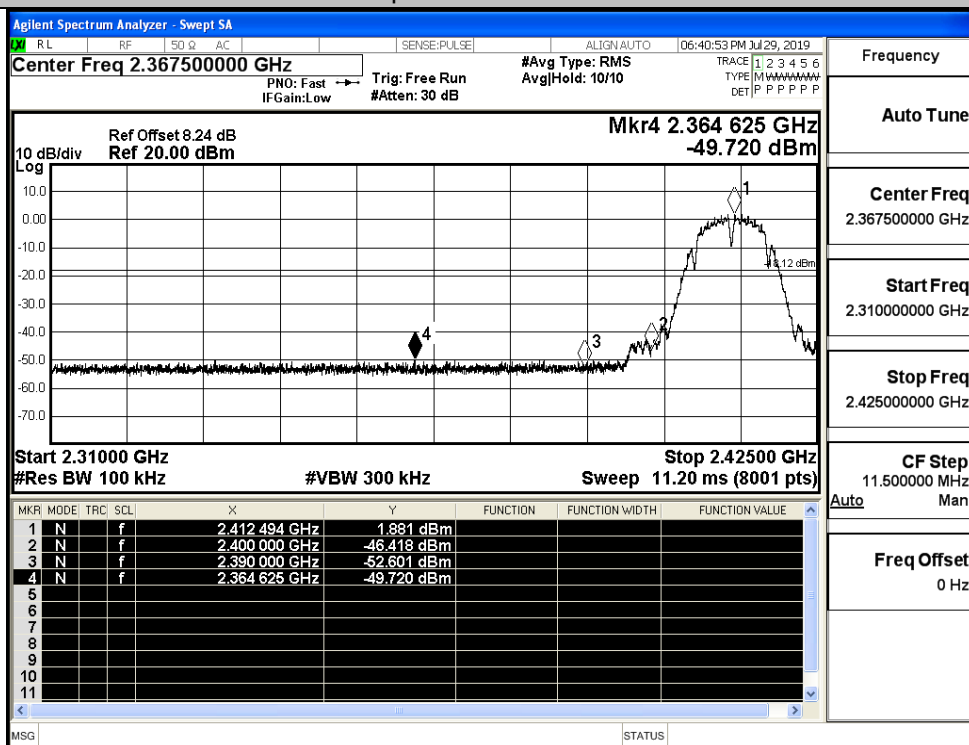
Pref/11N40
SISO/HCHPuw/11N40
SISO/HCH

C.6 Band-edge for RF Conducted Emissions

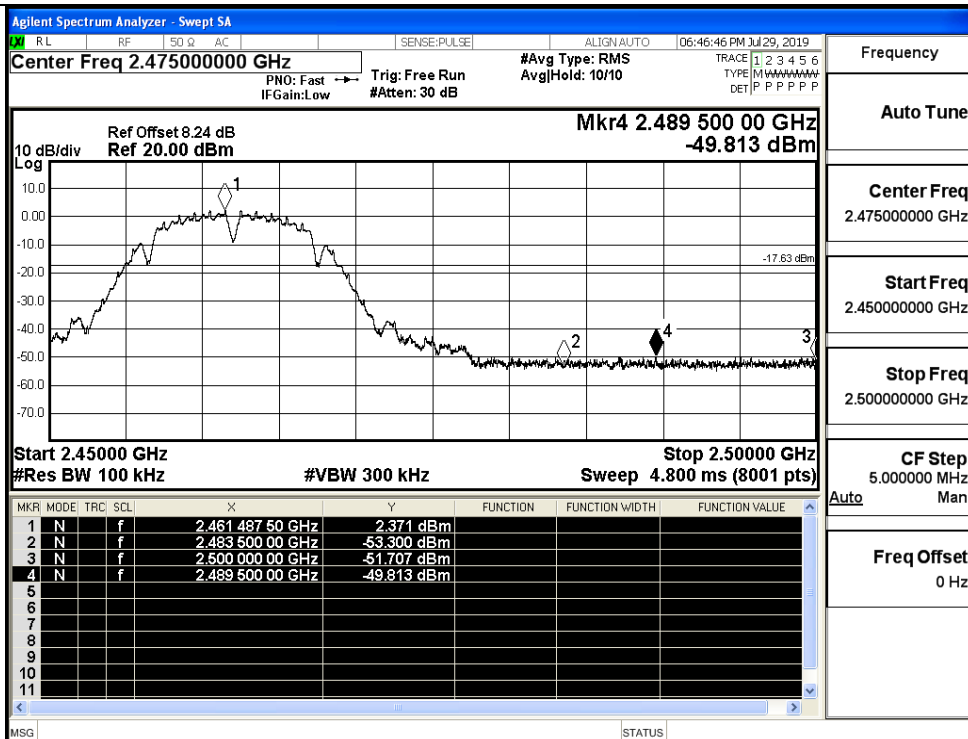
Mode	Channel	Carrier Power[dBm]	Max.Spurious Level [dBm]	Limit [dBm]	Verdict
11B	LCH	1.881	-49.720	-18.12	PASS
	HCH	2.371	-49.813	-17.63	PASS
11G	LCH	-1.501	-49.262	-21.5	PASS
	HCH	0.235	-47.684	-19.77	PASS
11N20SISO	LCH	-2.065	-49.032	-22.07	PASS
	HCH	-0.127	-46.363	-20.13	PASS
11N40SISO	LCH	-6.512	-49.320	-26.51	PASS
	HCH	-7.264	-46.217	-27.26	PASS

Test Graphs

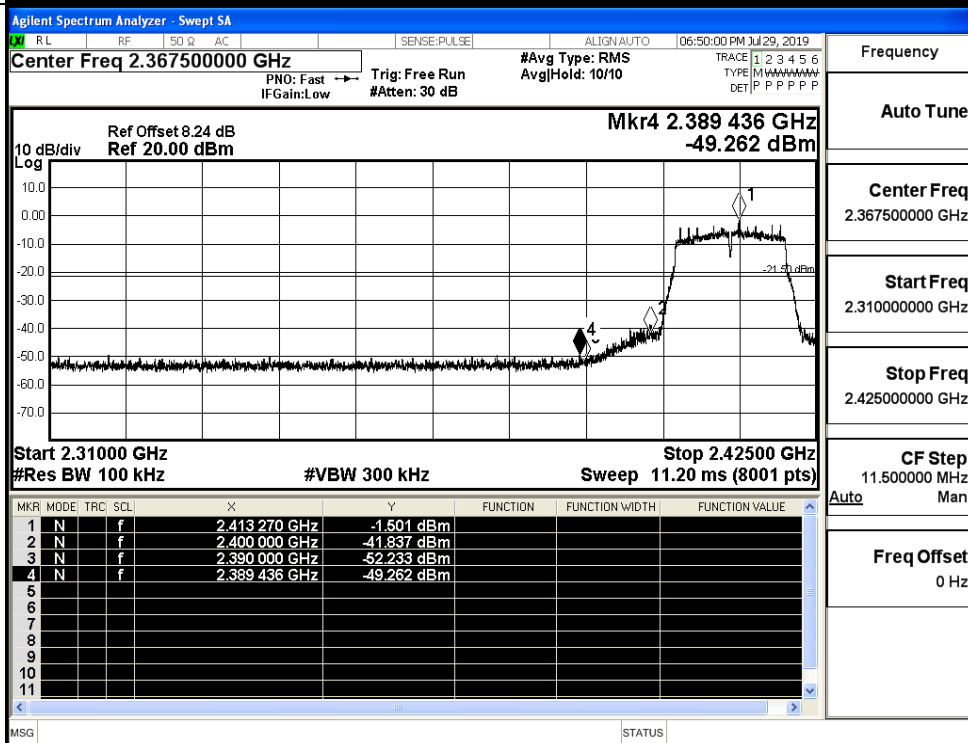
11B/LCH



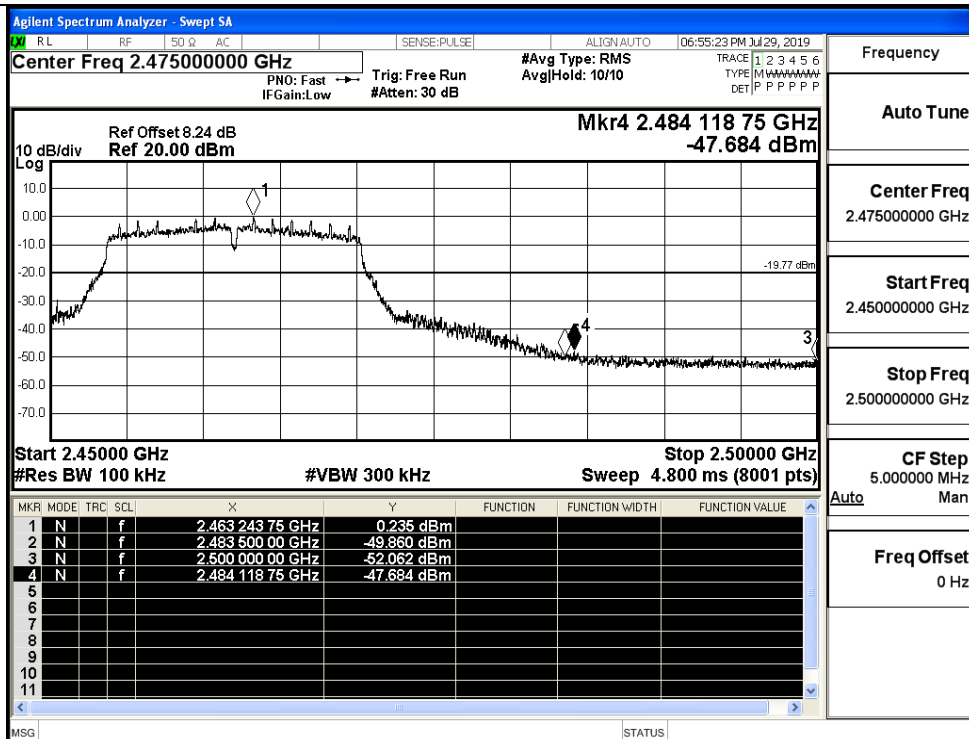
11B/HCH



11G/LCH



11G/HCH



Frequency

Auto Tune

Center Freq
2.475000000 GHz

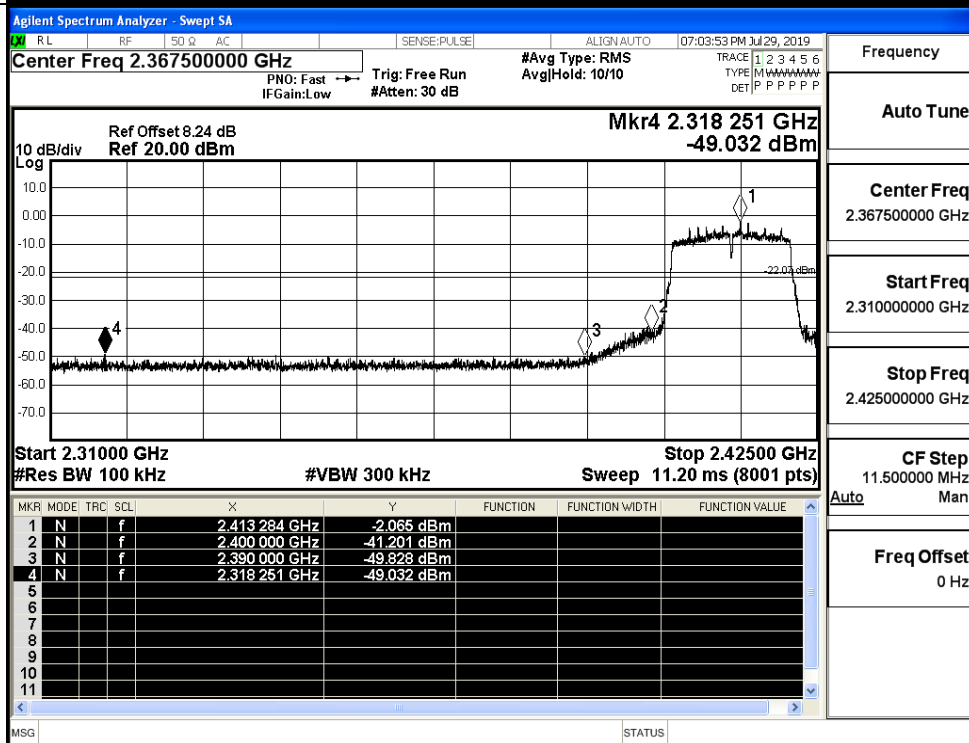
Start Freq
2.450000000 GHz

Stop Freq
2.500000000 GHz

CF Step
5.000000 MHz

Freq Offset
0 Hz

11N20SISO/LCH



Frequency

Auto Tune

Center Freq
2.367500000 GHz

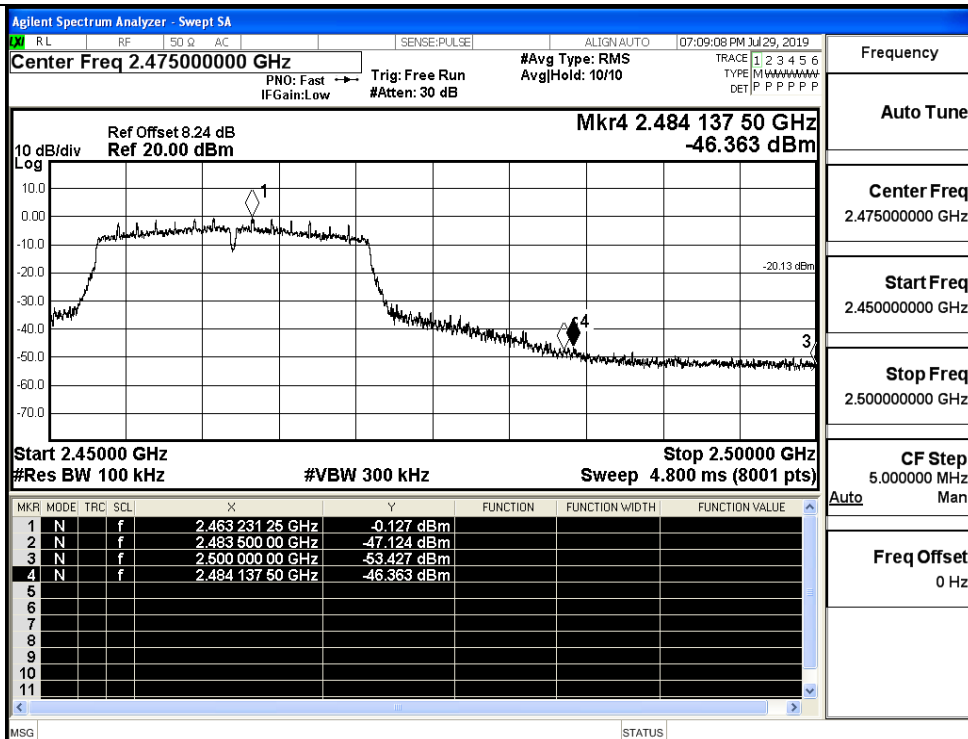
Start Freq
2.310000000 GHz

Stop Freq
2.425000000 GHz

CF Step
11.500000 MHz

Freq Offset
0 Hz

11N20SISO/HCH



Frequency

Auto Tune

Center Freq
2.475000000 GHz

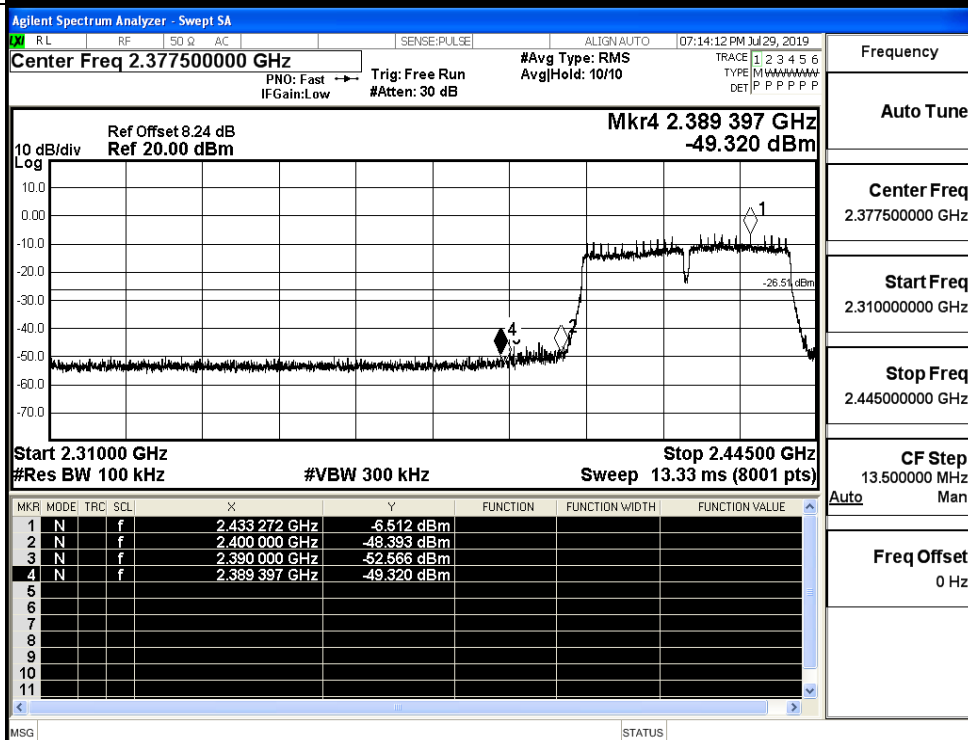
Start Freq
2.450000000 GHz

Stop Freq
2.500000000 GHz

CF Step
5.000000 MHz

Freq Offset
0 Hz

11N40SISO/LCH



Frequency

Auto Tune

Center Freq
2.377500000 GHz

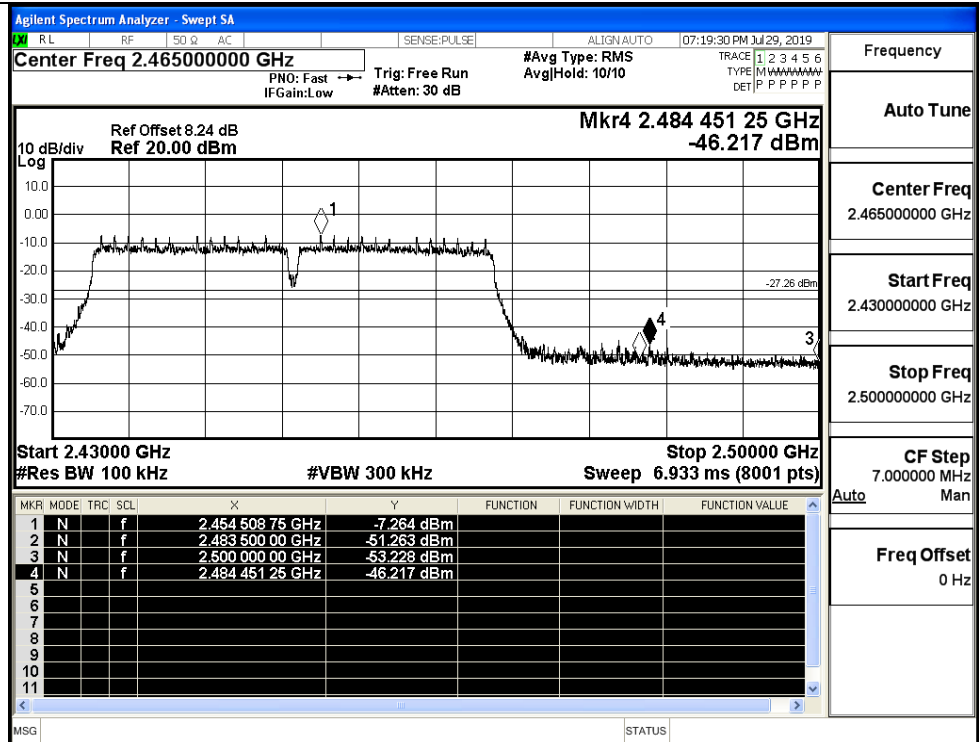
Start Freq
2.310000000 GHz

Stop Freq
2.445000000 GHz

CF Step
13.500000 MHz

Freq Offset
0 Hz

11N40SISO/HCH

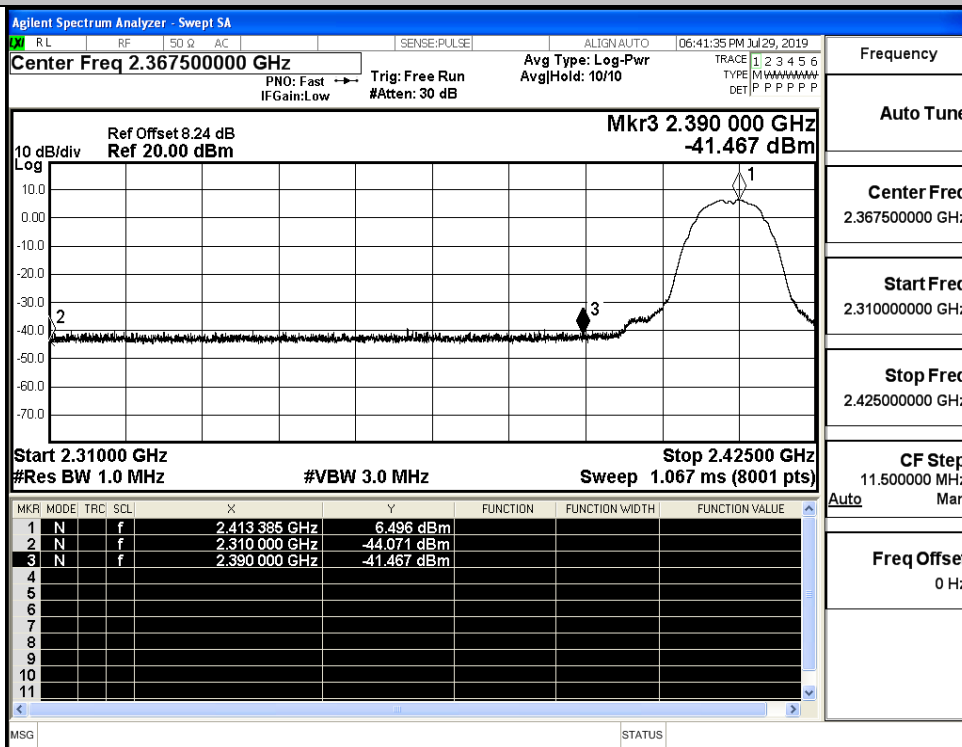


C.7 Restrict-band band-edge measurements

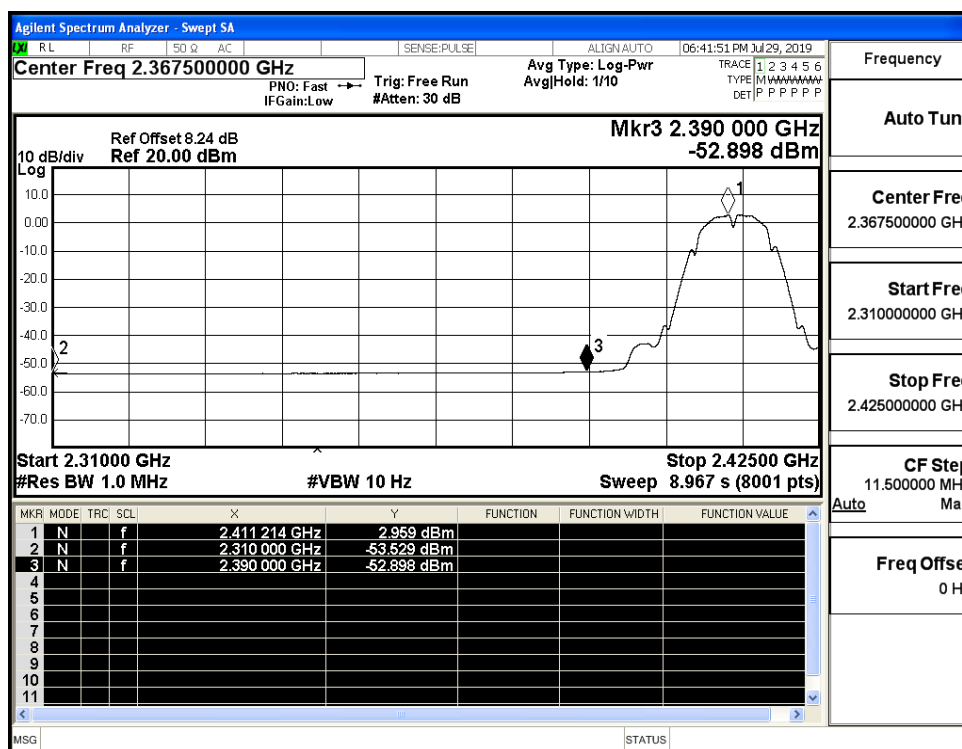
Test Mode	Test Channel	Ant	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
11B	2412	Ant1	2310.0	-44.07	2.0	0	53.19	PEAK	74	PASS
	2412	Ant1	2310.0	-53.53	2.0	0	43.73	AV	54	PASS
	2412	Ant1	2390.0	-41.47	2.0	0	55.79	PEAK	74	PASS
	2412	Ant1	2390.0	-52.90	2.0	0	44.36	AV	54	PASS
	2462	Ant1	2483.5	-42.12	2.0	0	55.14	PEAK	74	PASS
	2462	Ant1	2483.5	-52.60	2.0	0	44.66	AV	54	PASS
	2462	Ant1	2500.0	-43.11	2.0	0	54.15	PEAK	74	PASS
	2462	Ant1	2500.0	-52.92	2.0	0	44.34	AV	54	PASS
11G	2412	Ant1	2310.0	-42.34	2.0	0	54.92	PEAK	74	PASS
	2412	Ant1	2310.0	-53.49	2.0	0	43.77	AV	54	PASS
	2412	Ant1	2390.0	-40.31	2.0	0	56.95	PEAK	74	PASS
	2412	Ant1	2390.0	-52.29	2.0	0	44.97	AV	54	PASS
	2462	Ant1	2483.5	-39.08	2.0	0	58.18	PEAK	74	PASS
	2462	Ant1	2483.5	-50.59	2.0	0	46.67	AV	54	PASS
	2462	Ant1	2500.0	-42.68	2.0	0	54.58	PEAK	74	PASS
	2462	Ant1	2500.0	-52.89	2.0	0	44.37	AV	54	PASS
11N20 SISO	2412	Ant1	2310.0	-42.82	2.0	0	54.44	PEAK	74	PASS
	2412	Ant1	2310.0	-53.52	2.0	0	43.74	AV	54	PASS
	2412	Ant1	2390.0	-41.28	2.0	0	55.98	PEAK	74	PASS
	2412	Ant1	2390.0	-52.02	2.0	0	45.24	AV	54	PASS
	2462	Ant1	2483.5	-36.63	2.0	0	60.63	PEAK	74	PASS
	2462	Ant1	2483.5	-49.71	2.0	0	47.55	AV	54	PASS
	2462	Ant1	2500.0	-41.94	2.0	0	55.32	PEAK	74	PASS
	2462	Ant1	2500.0	-52.89	2.0	0	44.37	AV	54	PASS
11N40 SISO	2422	Ant1	2310.0	-42.72	2.0	0	54.54	PEAK	74	PASS
	2422	Ant1	2310.0	-53.51	2.0	0	43.75	AV	54	PASS

	2422	Ant1	2390.0	-40.87	2.0	0	56.39	PEAK	74	PASS
	2422	Ant1	2390.0	-52.44	2.0	0	44.82	AV	54	PASS
	2452	Ant1	2483.5	-37.27	2.0	0	59.99	PEAK	74	PASS
	2452	Ant1	2483.5	-52.17	2.0	0	45.09	AV	54	PASS
	2452	Ant1	2500.0	-42.47	2.0	0	54.79	PEAK	74	PASS
	2452	Ant1	2500.0	-52.92	2.0	0	44.34	AV	54	PASS

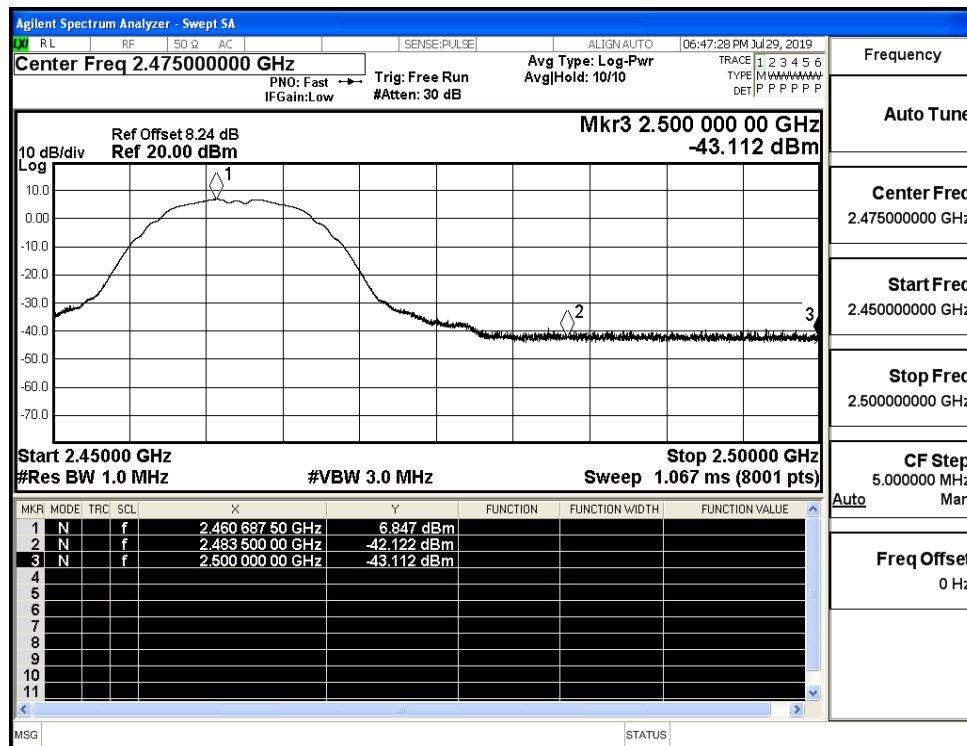
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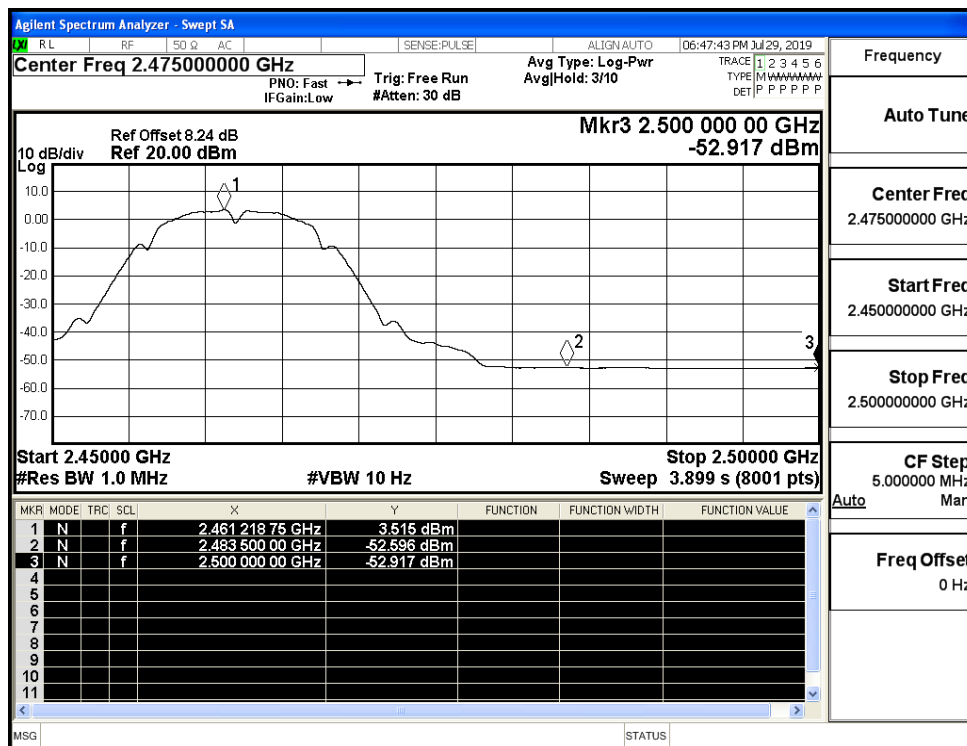
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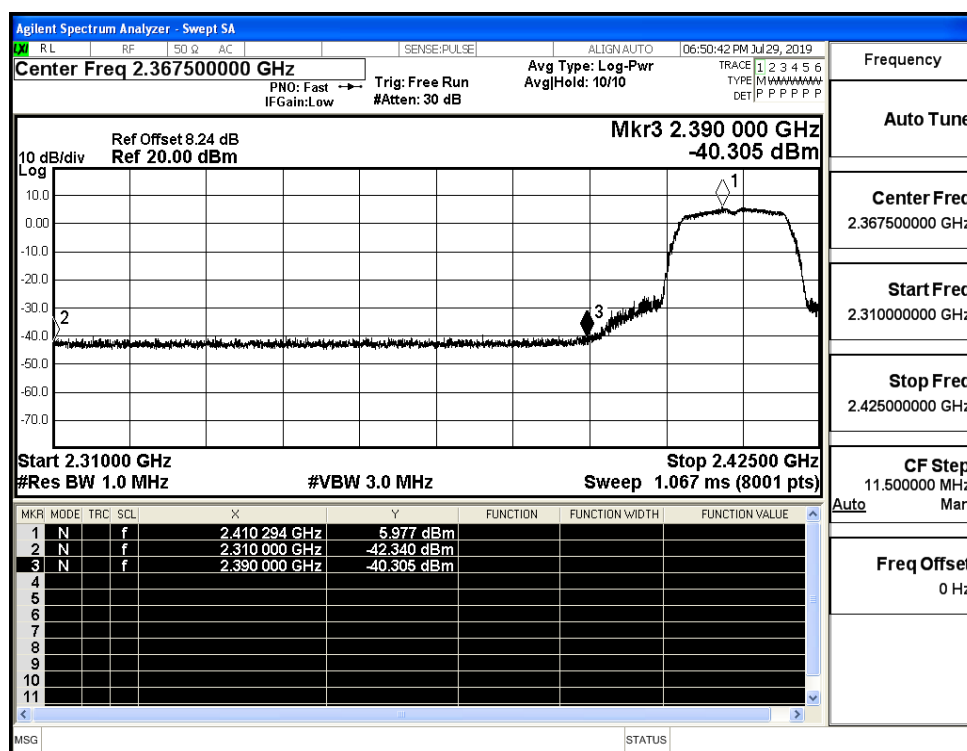
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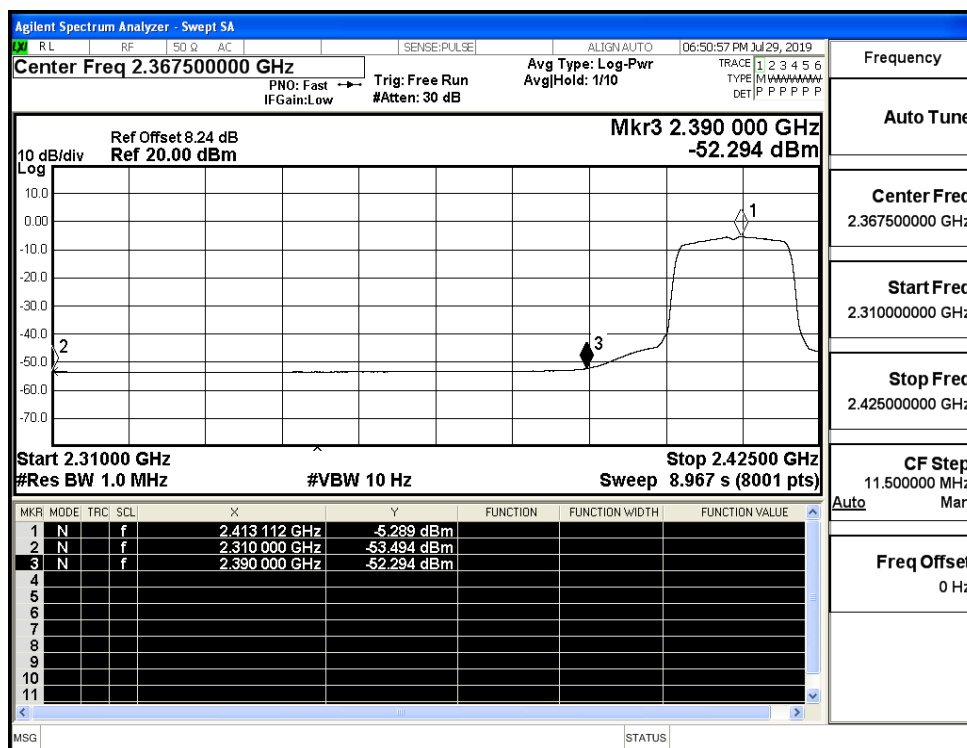
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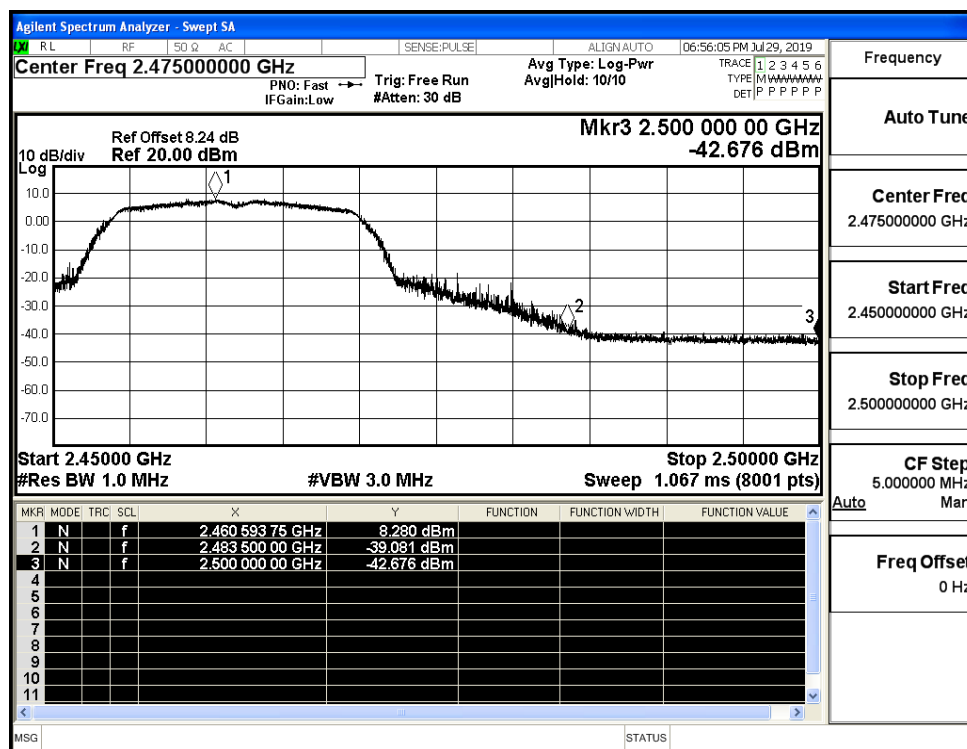
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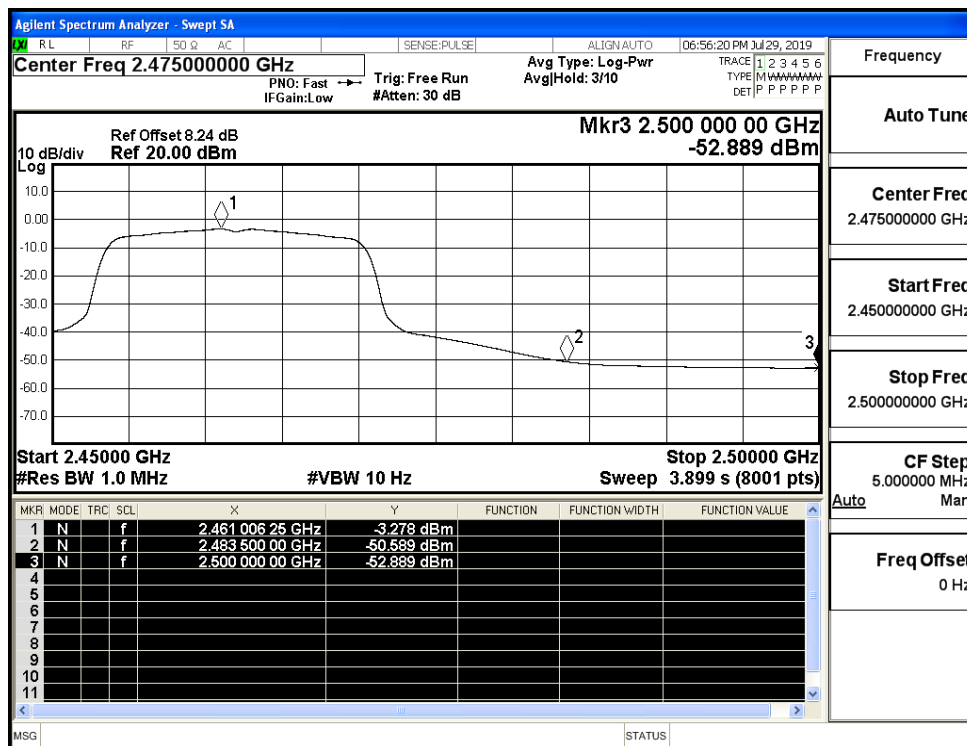
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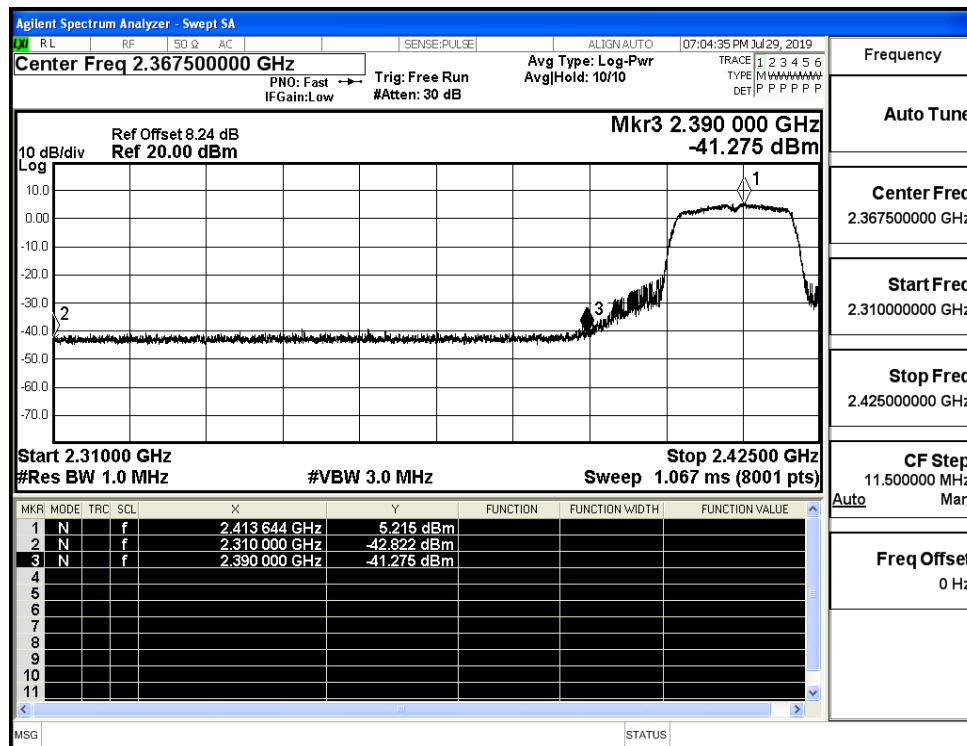
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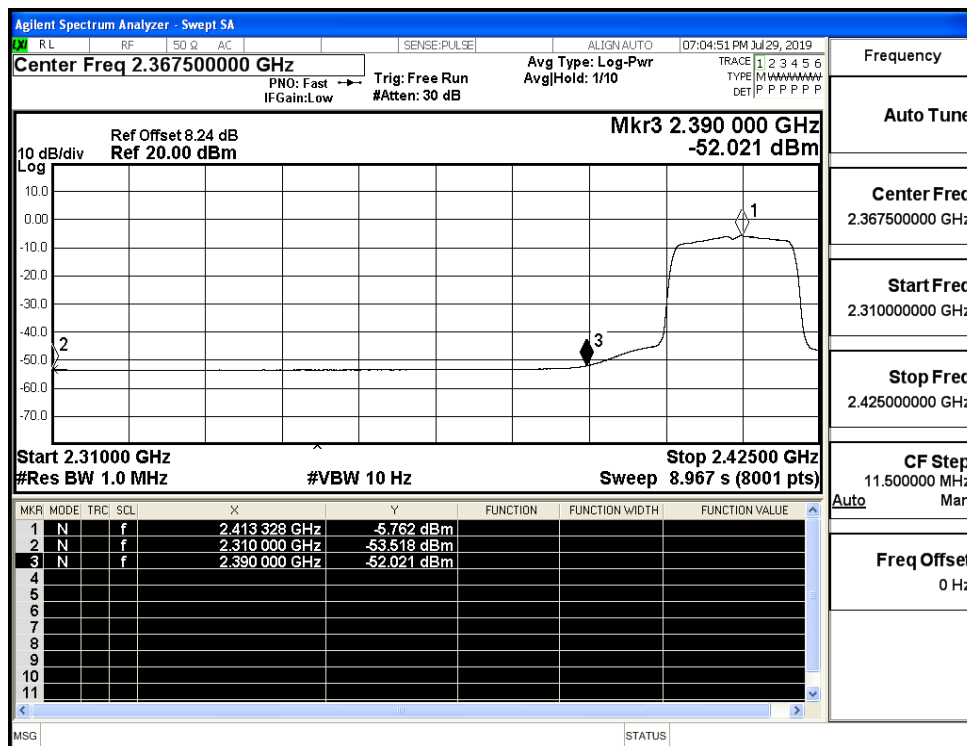
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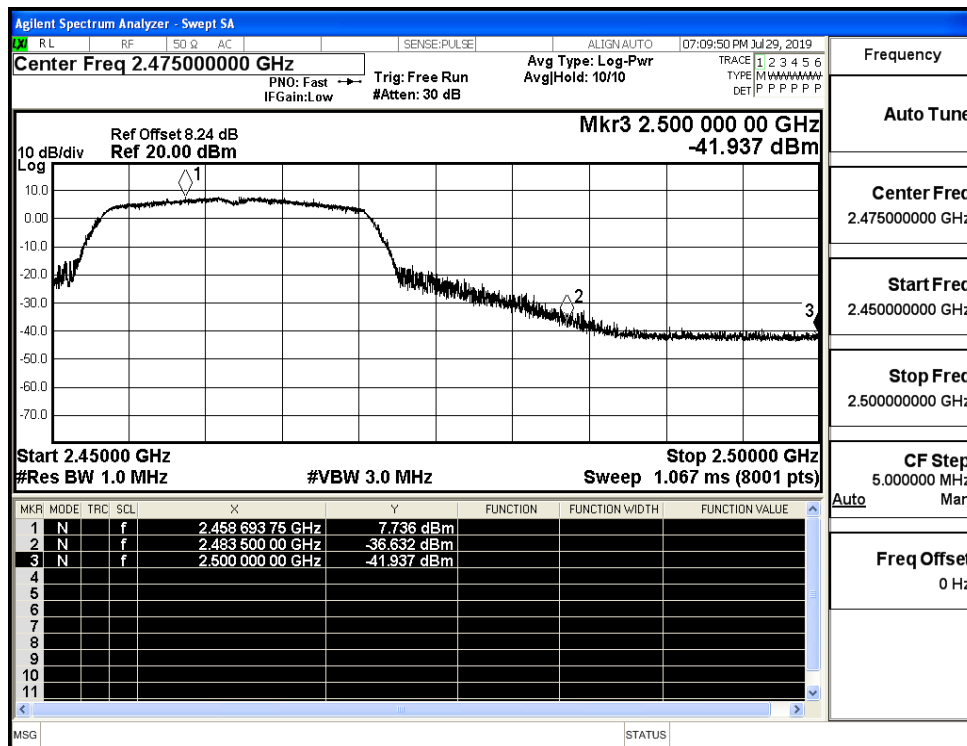
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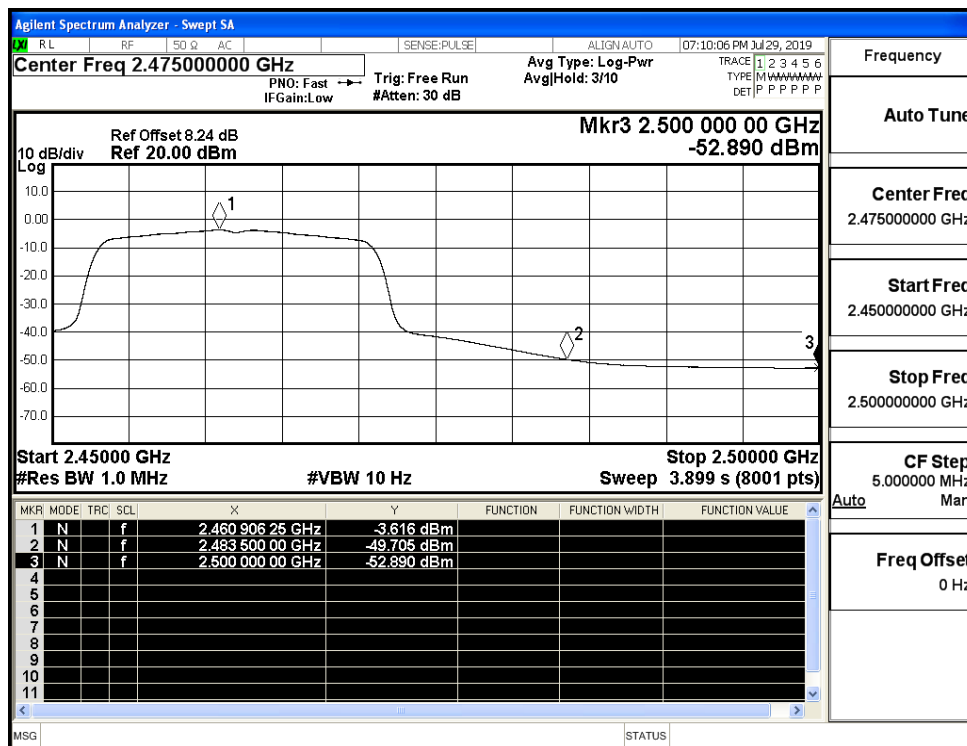
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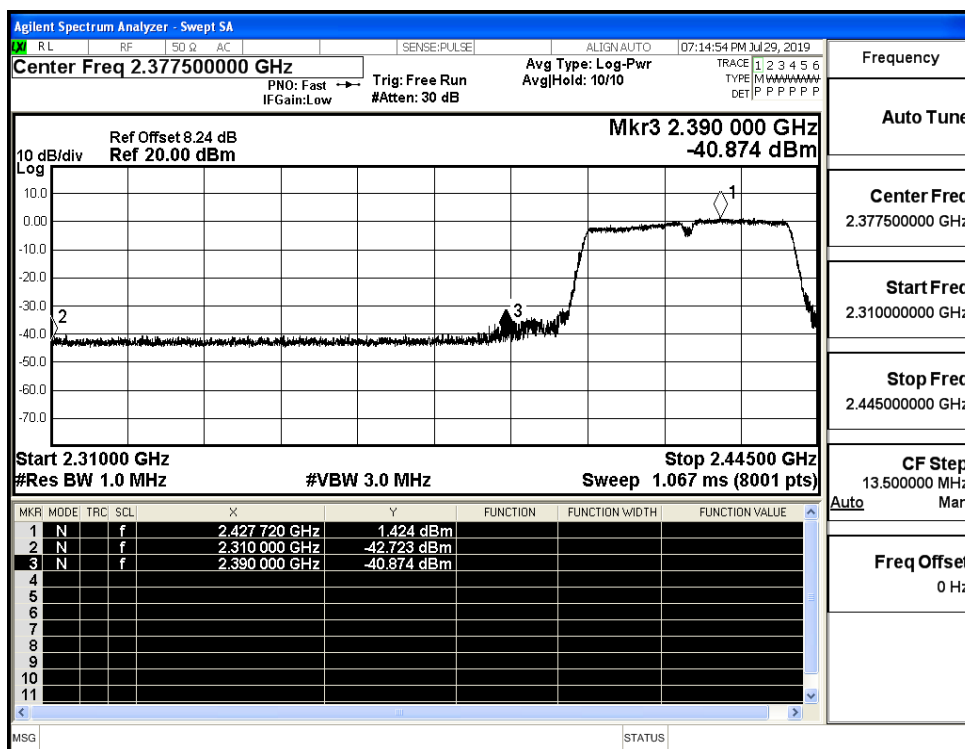
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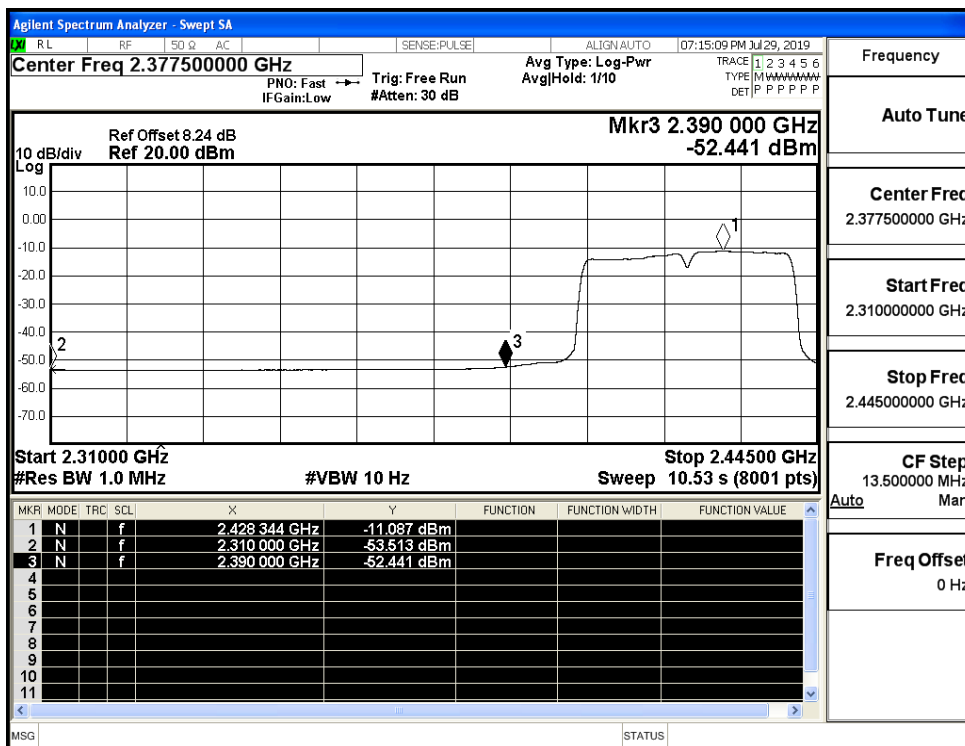
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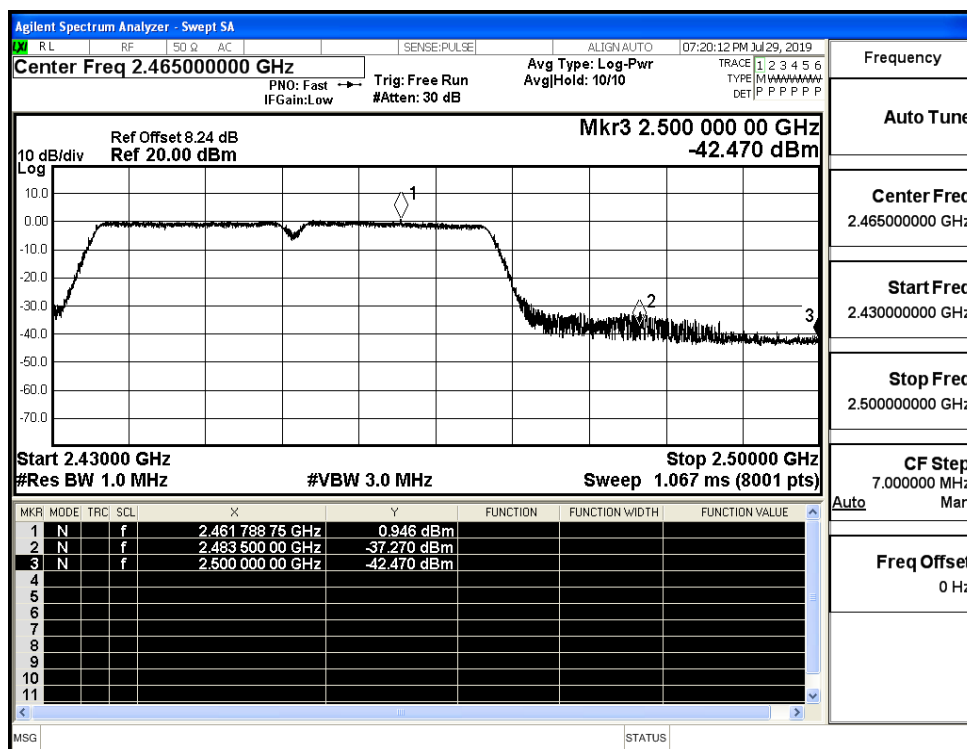
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Restrict-band band-edge measurements_11N40SISO_2422_Ant1_AV



Restrict-band band-edge measurements_11N40SISO_2452_Ant1_PEAK



Restrict-band band-edge measurements_11N40SISO_2452_Ant1_AV

