

Appendix A

RF Test Data for 2.4G WIFI (Conducted Measurement)

Product Name: OTOSCOPE

Trade Mark: DEPSTECH

Test Model: WFE300

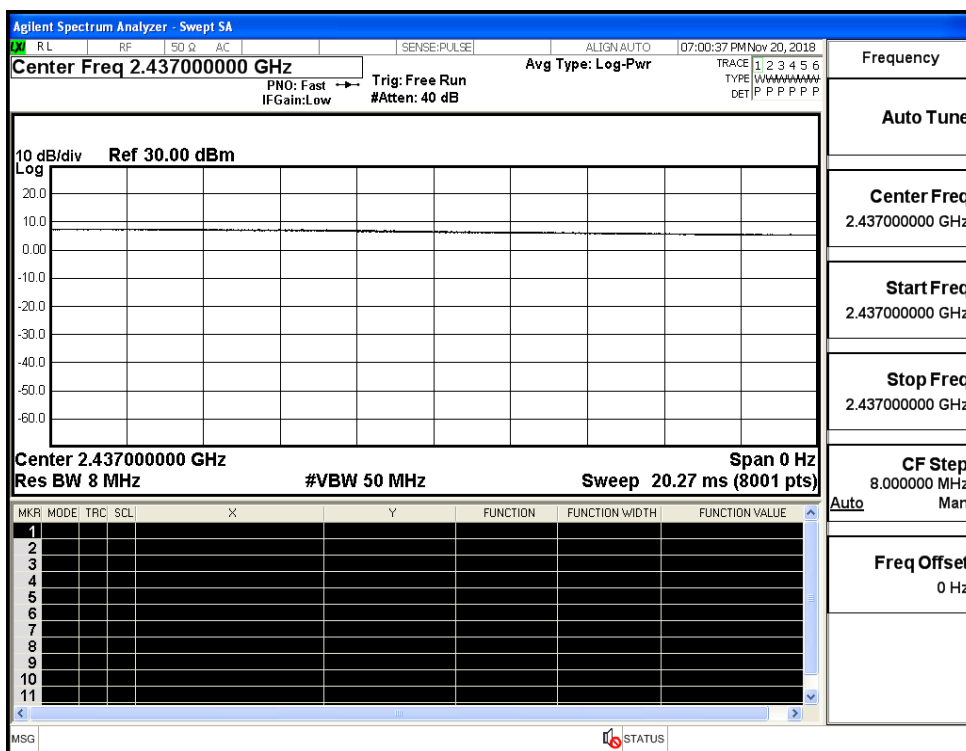
Environmental Conditions

Temperature:	23.8 ° C
Relative Humidity:	53.1%
ATM Pressure:	100.0 kPa
Test Engineer:	Diamond.Lu
Supervised by:	Jayden.Zhuo

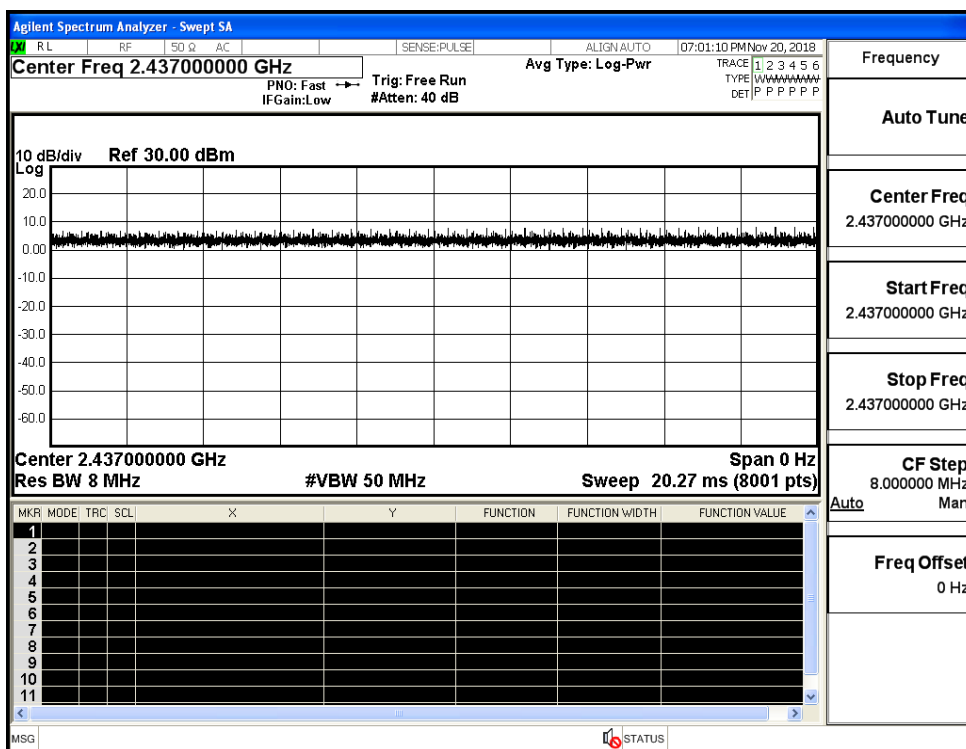
A.1 Duty Cycle

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

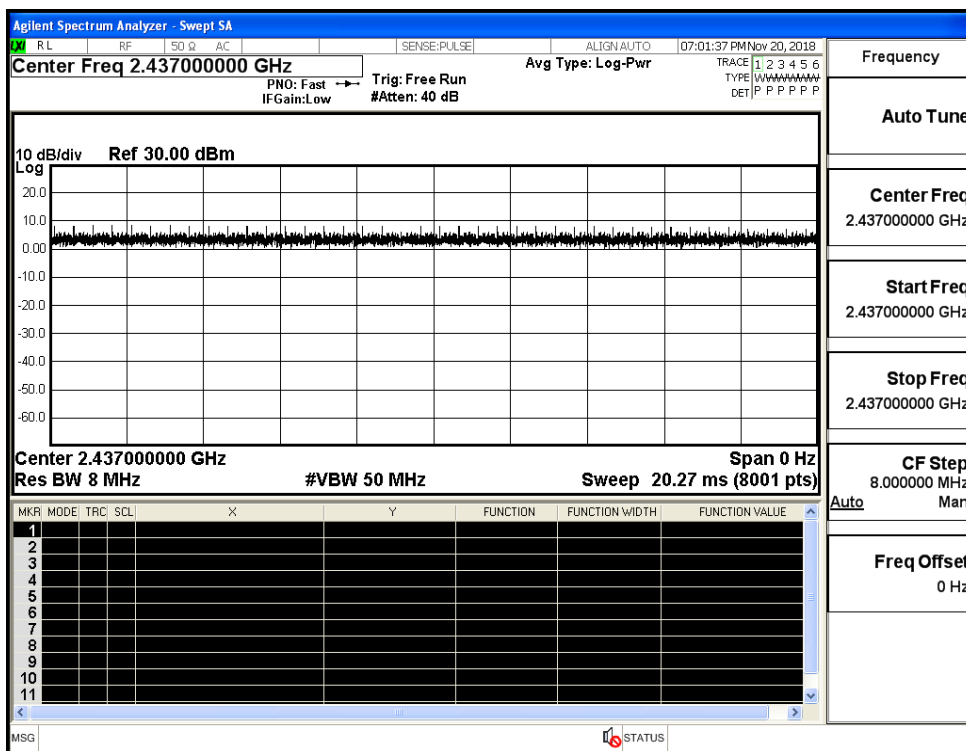
Duty Cycle_11B_2437_Ant1



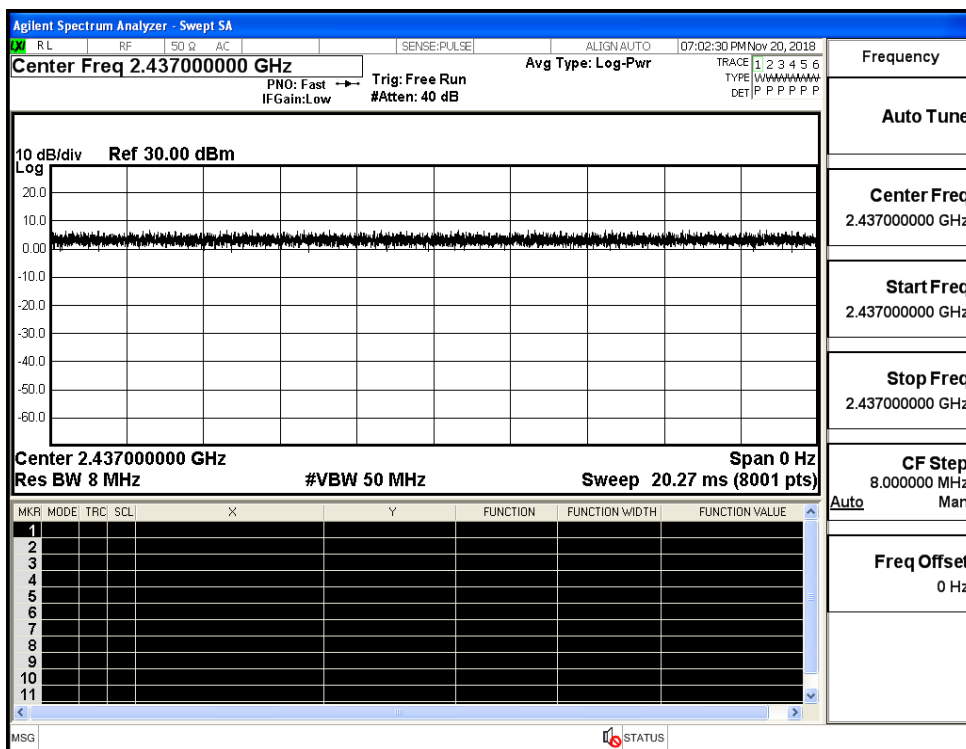
Duty Cycle_11G_2437_Ant1



Duty Cycle_11N20SISO_2437_Ant1



Duty Cycle_11N40SISO_2437_Ant1



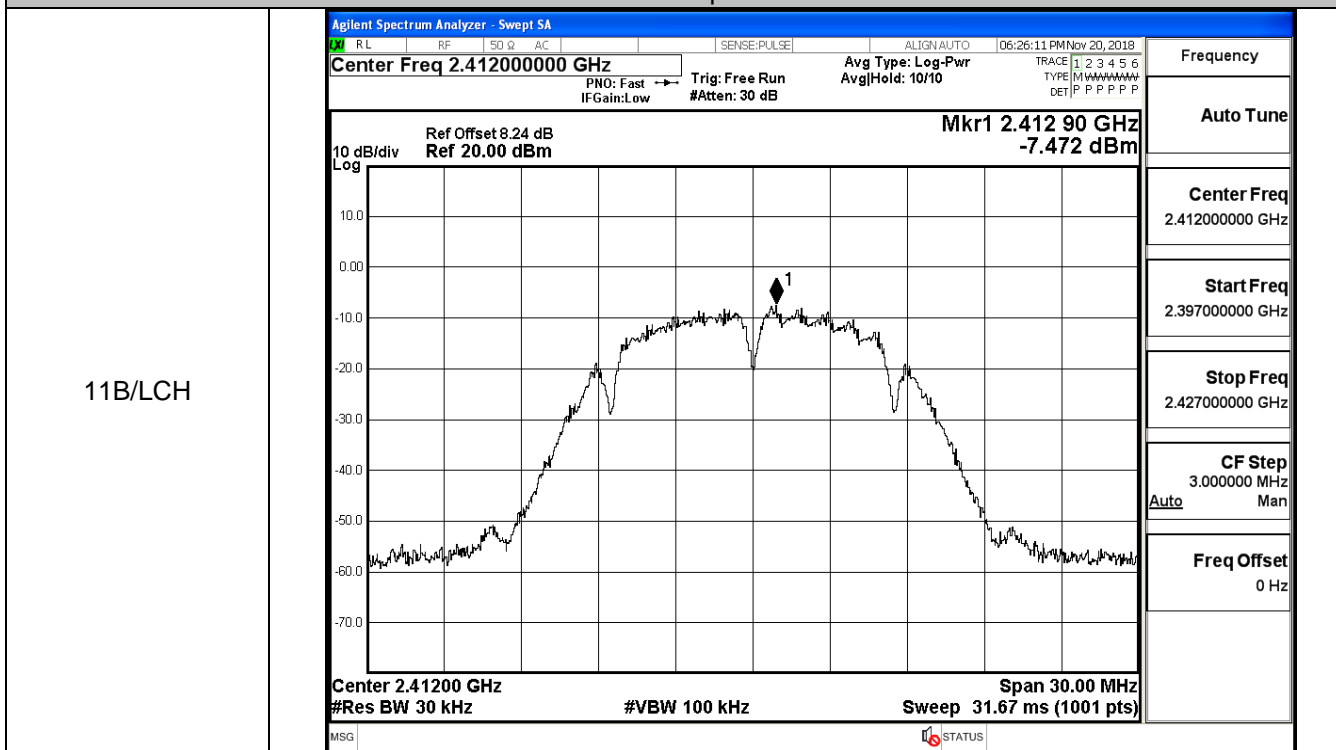
A.2 Maximum Conducted Output Power

Mode	Channel	Meas.Level [dBm]	Limit [dBm]	Verdict
11B	LCH	10.37	30	PASS
	MCH	10.60	30	PASS
	HCH	10.07	30	PASS
11G	LCH	11.00	30	PASS
	MCH	10.98	30	PASS
	HCH	10.28	30	PASS
11N20SISO	LCH	11.10	30	PASS
	MCH	10.99	30	PASS
	HCH	10.57	30	PASS
11N40SISO	LCH	11.14	30	PASS
	MCH	11.24	30	PASS
	HCH	10.93	30	PASS

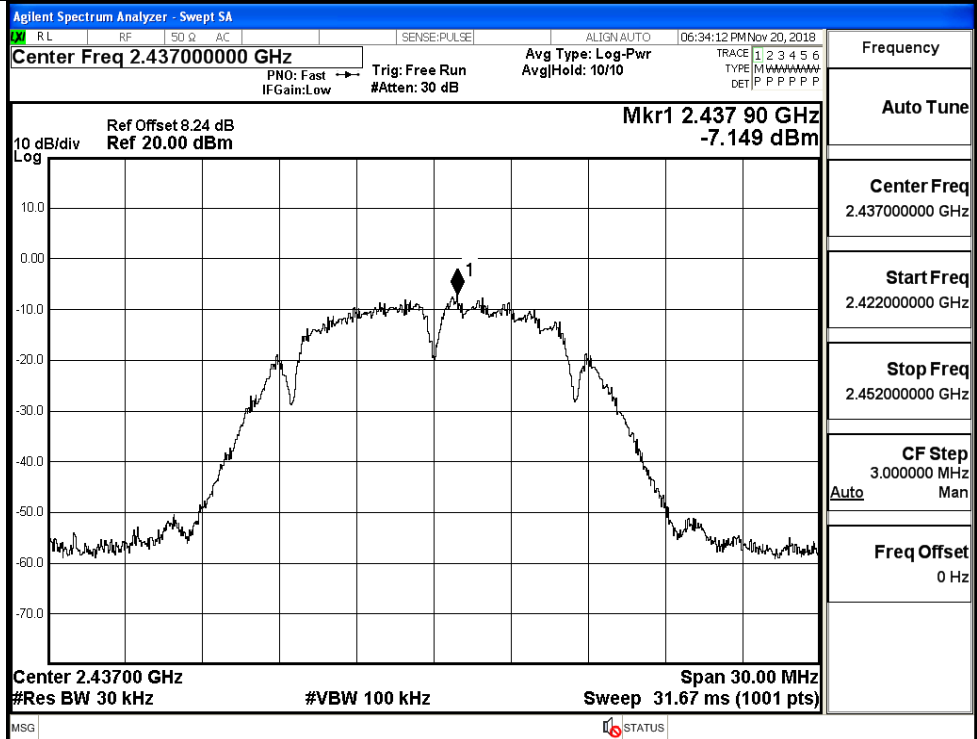
A.3 Maximum Power Spectral Density

Mode	Channel	Meas.Level [dBm/30KHz]	Limit [dBm/3KHz]	Verdict
11B	LCH	-7.472	8	PASS
	MCH	-7.149	8	PASS
	HCH	-7.802	8	PASS
11G	LCH	-12.979	8	PASS
	MCH	-12.594	8	PASS
	HCH	-13.770	8	PASS
11N20SISO	LCH	-12.957	8	PASS
	MCH	-12.457	8	PASS
	HCH	-13.043	8	PASS
11N40SISO	LCH	-15.997	8	PASS
	MCH	-15.738	8	PASS
	HCH	-16.218	8	PASS

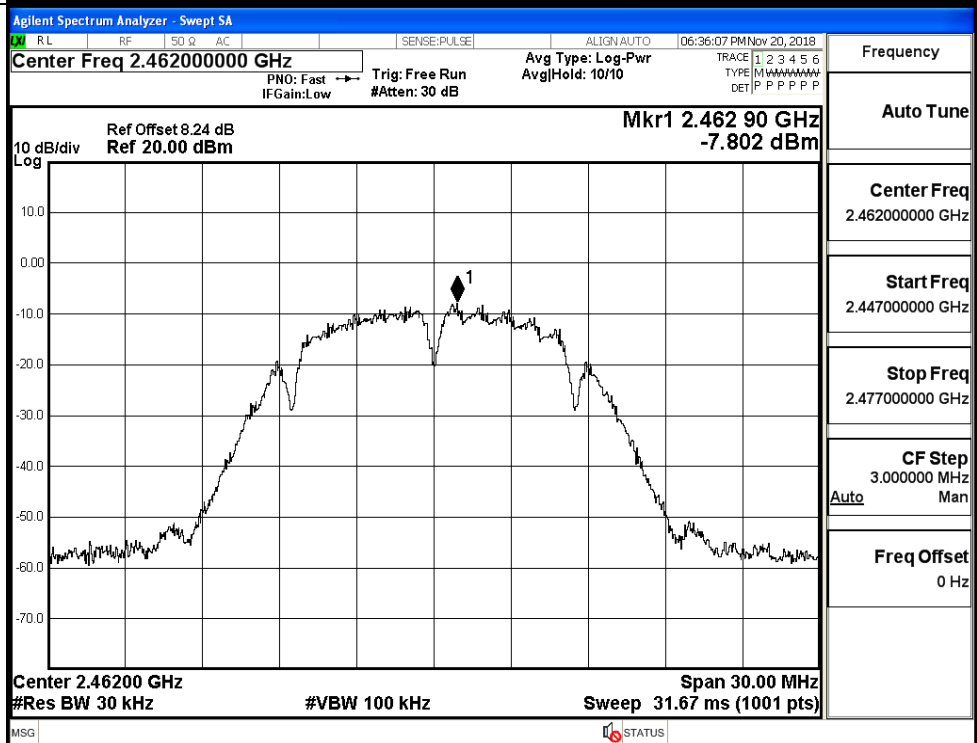
Test Graphs



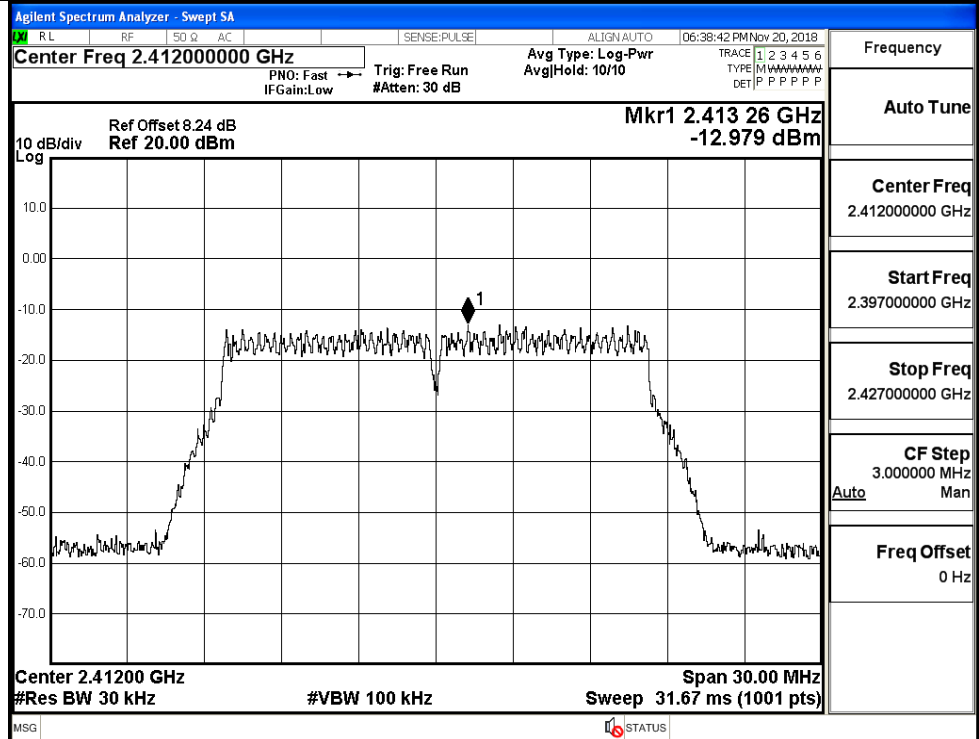
11B/MCH



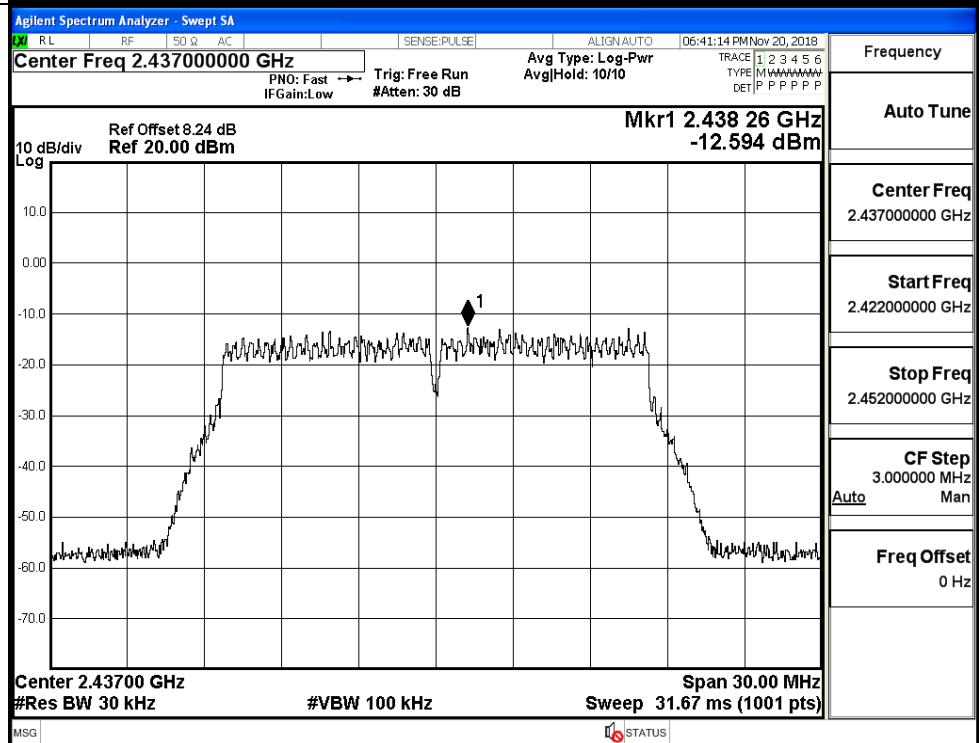
11B/HCH



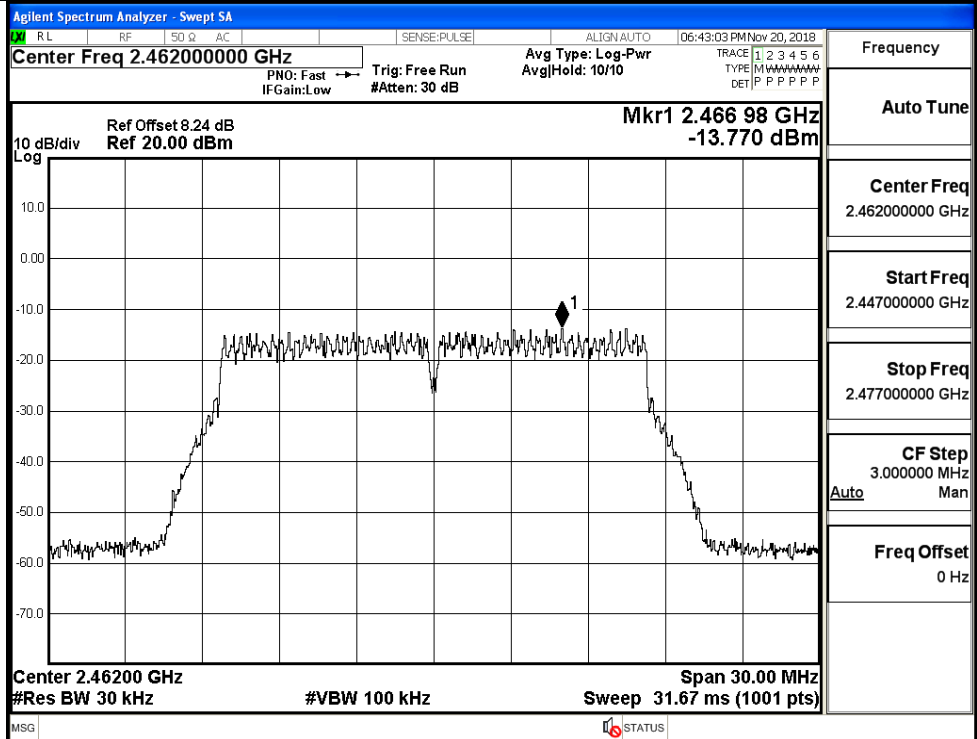
11G/LCH



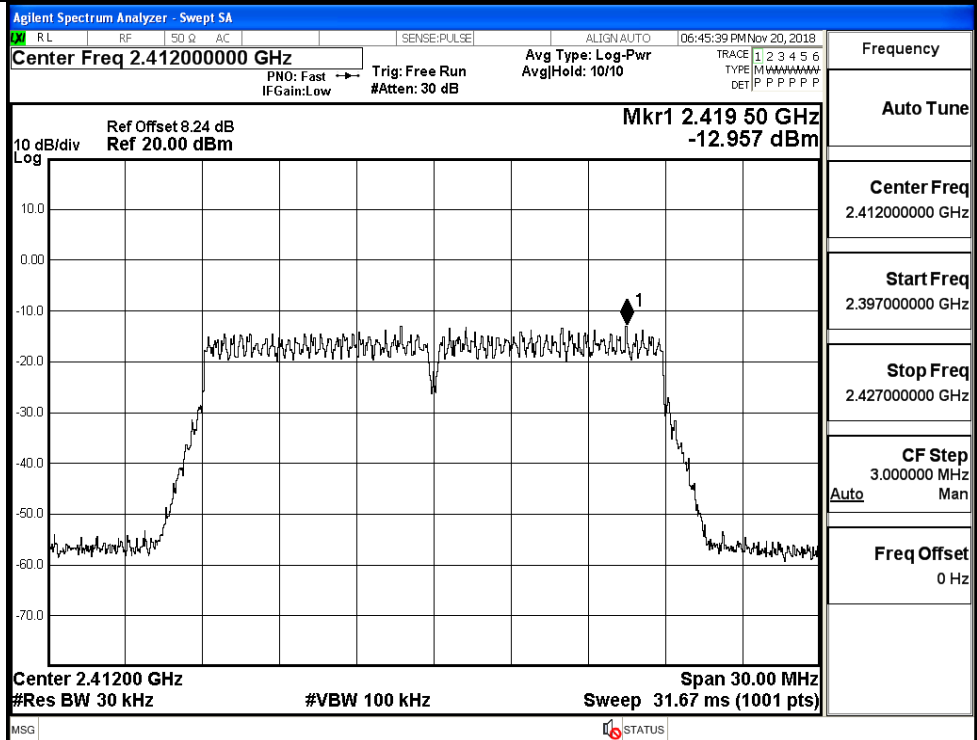
11G/MCH

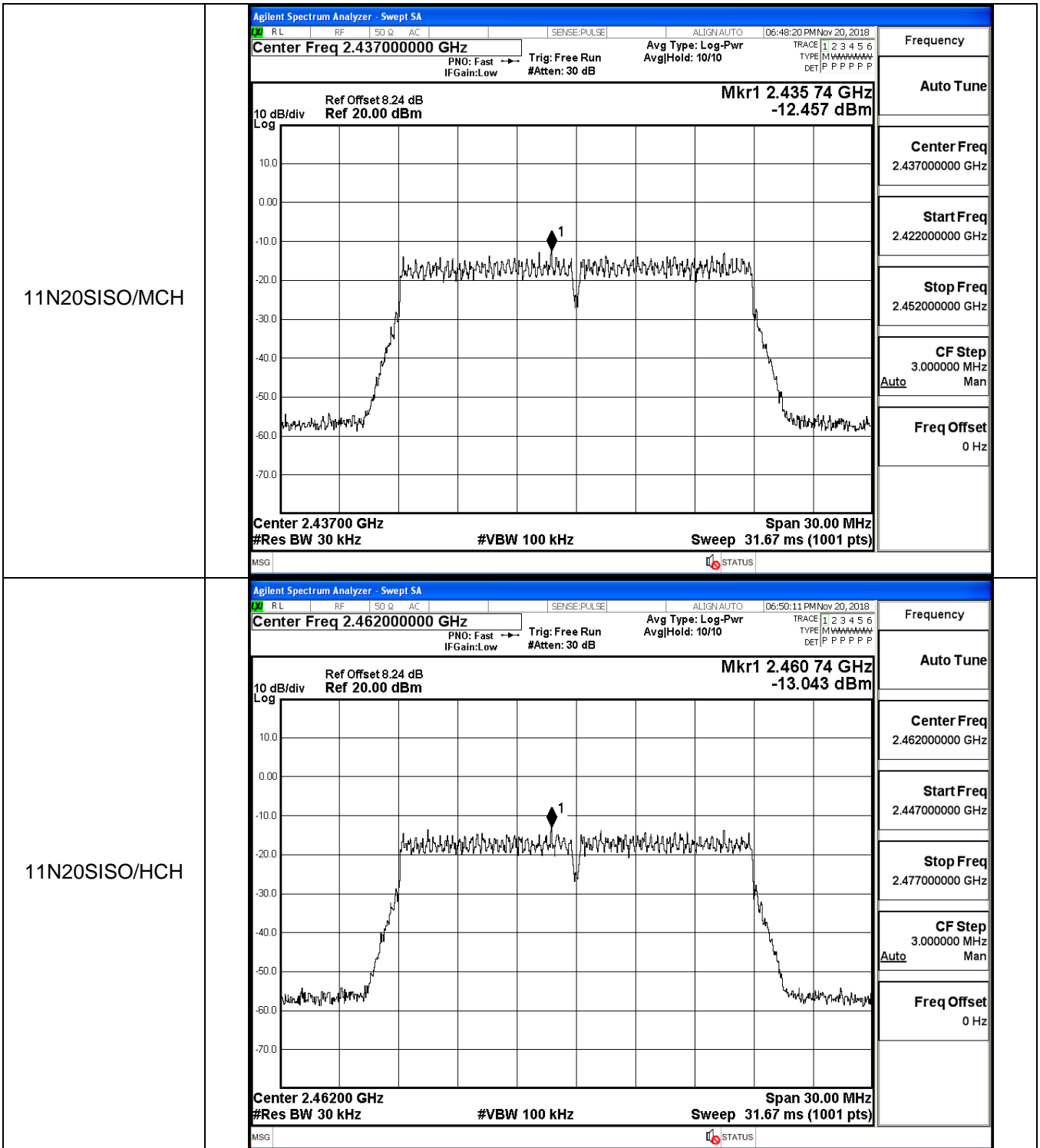


11G/HCH

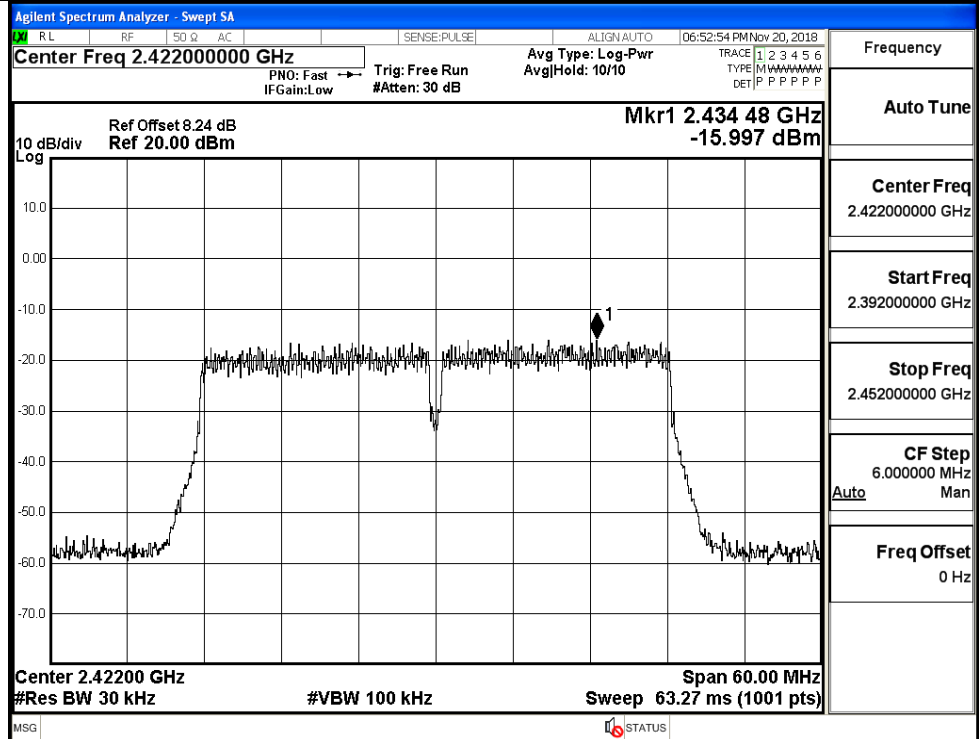


11N20SISO/LCH

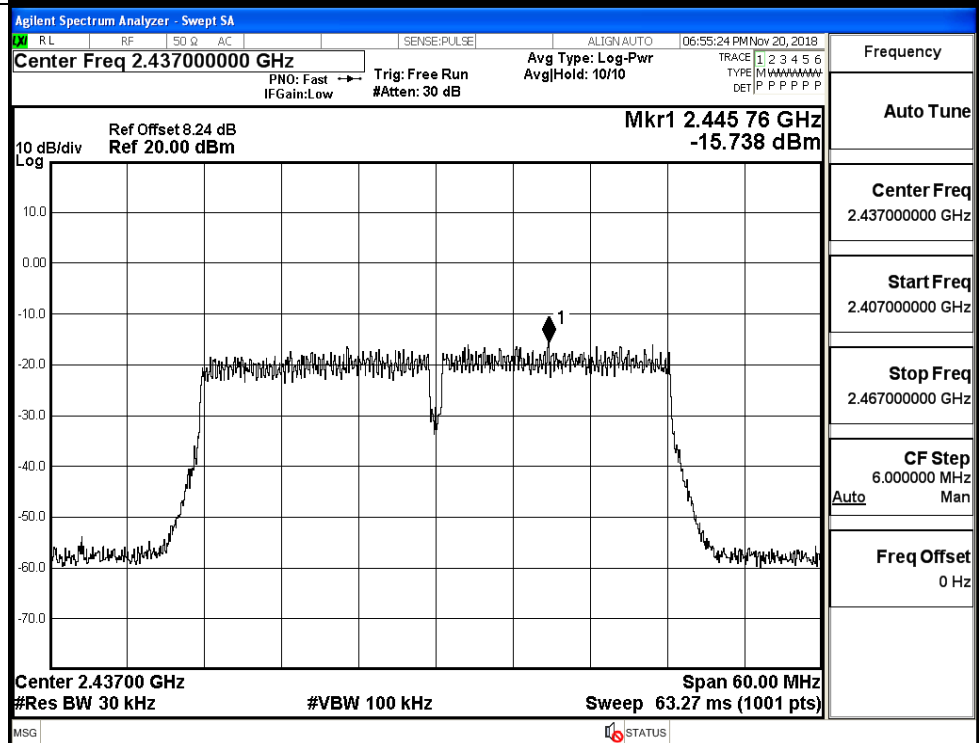


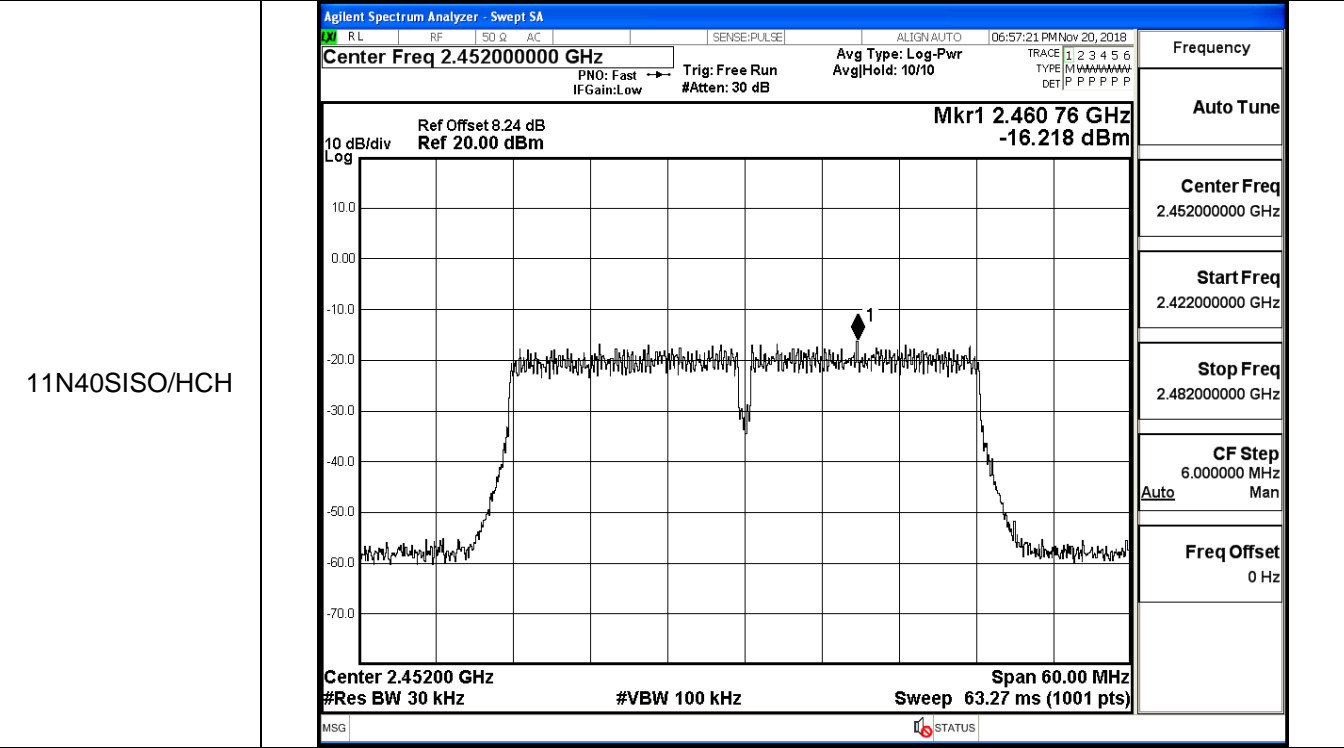


11N40SISO/LCH



11N40SISO/MCH

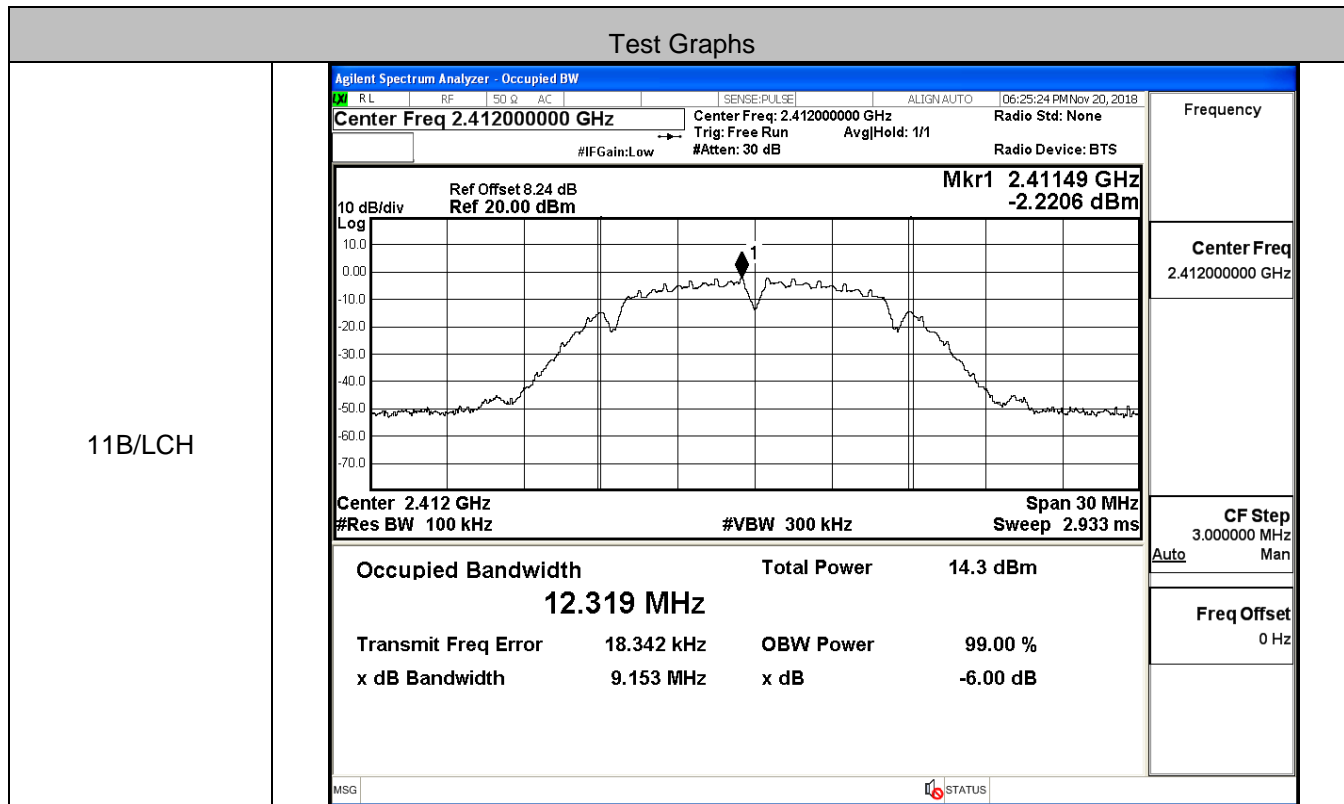




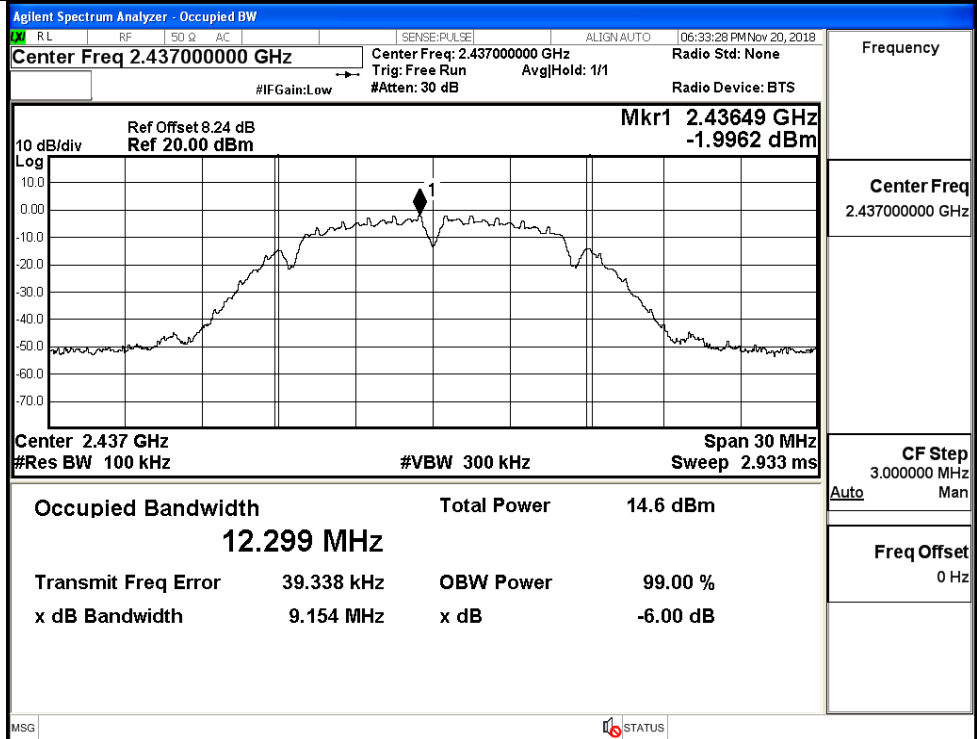
A.4 6dB Bandwidth

Mode	Channel	6dB Bandwidth [MHz]	Limit [MHz]	Verdict
11B	LCH	9.153	≥ 0.5	PASS
	MCH	9.154	≥ 0.5	PASS
	HCH	9.153	≥ 0.5	PASS
11G	LCH	16.39	≥ 0.5	PASS
	MCH	16.40	≥ 0.5	PASS
	HCH	16.38	≥ 0.5	PASS
11N20SISO	LCH	17.63	≥ 0.5	PASS
	MCH	17.60	≥ 0.5	PASS
	HCH	17.62	≥ 0.5	PASS
11N40SISO	LCH	36.11	≥ 0.5	PASS
	MCH	35.81	≥ 0.5	PASS
	HCH	36.09	≥ 0.5	PASS

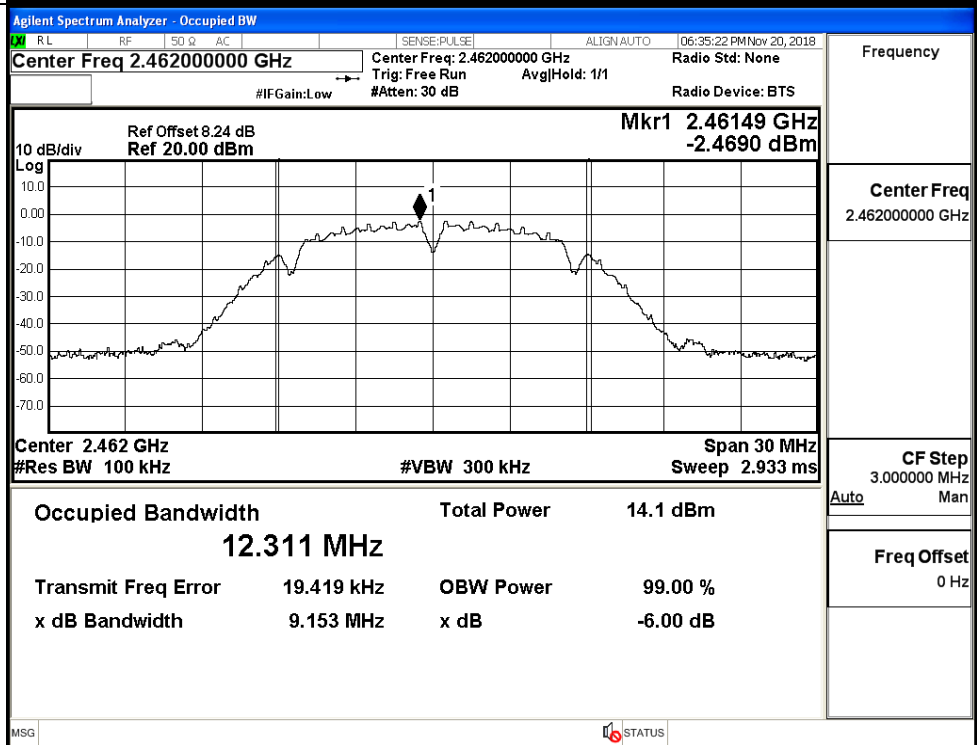
Test Graphs



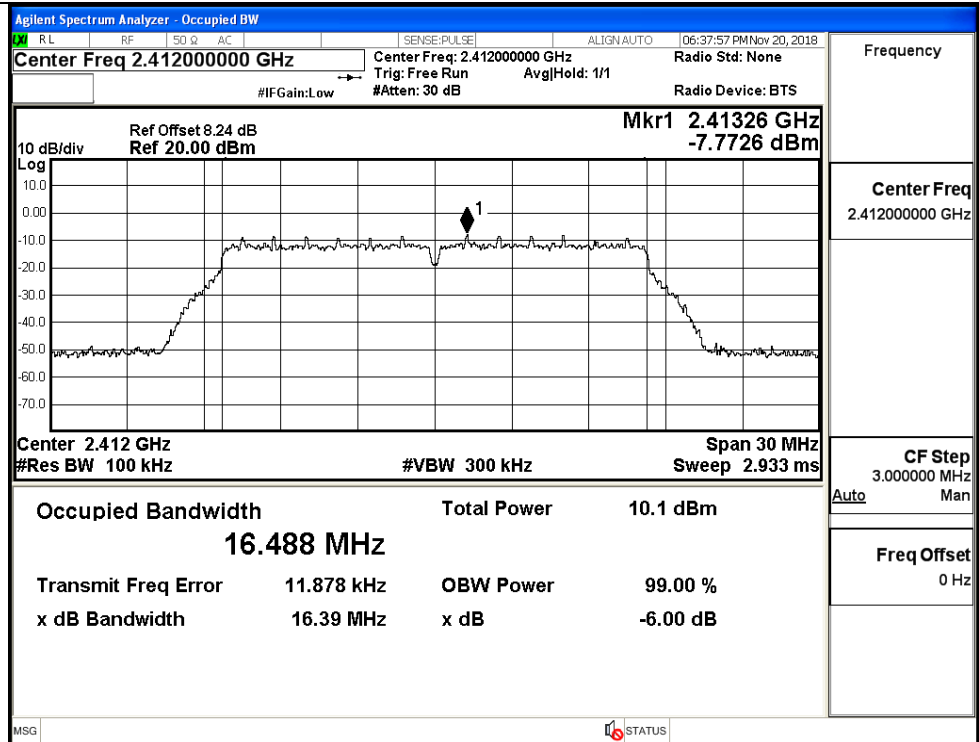
11B/MCH



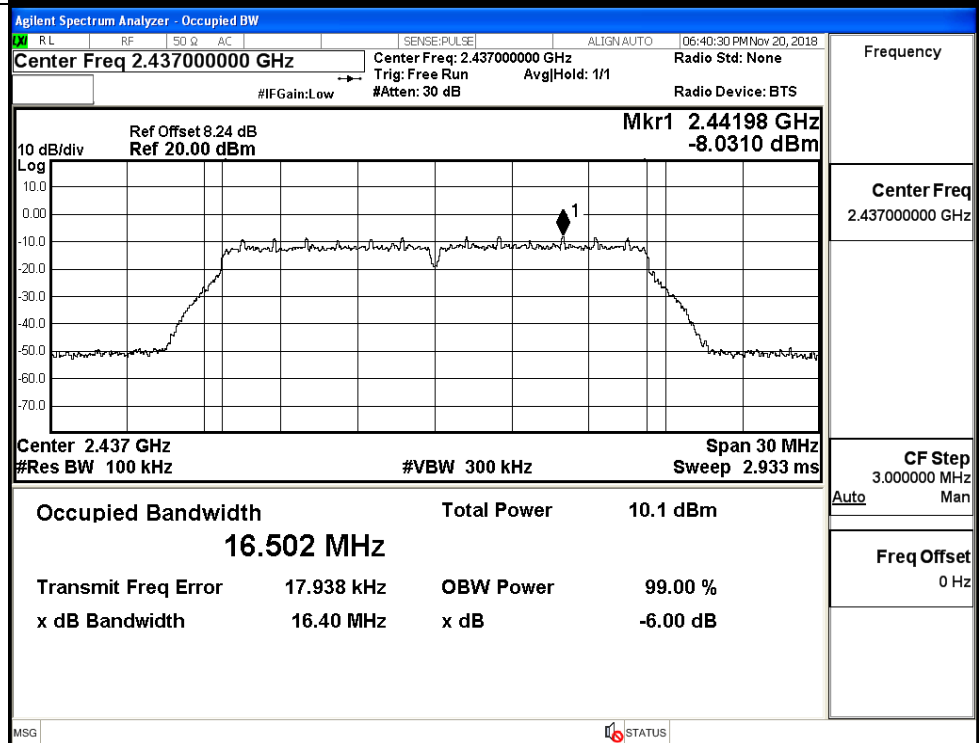
11B/HCH



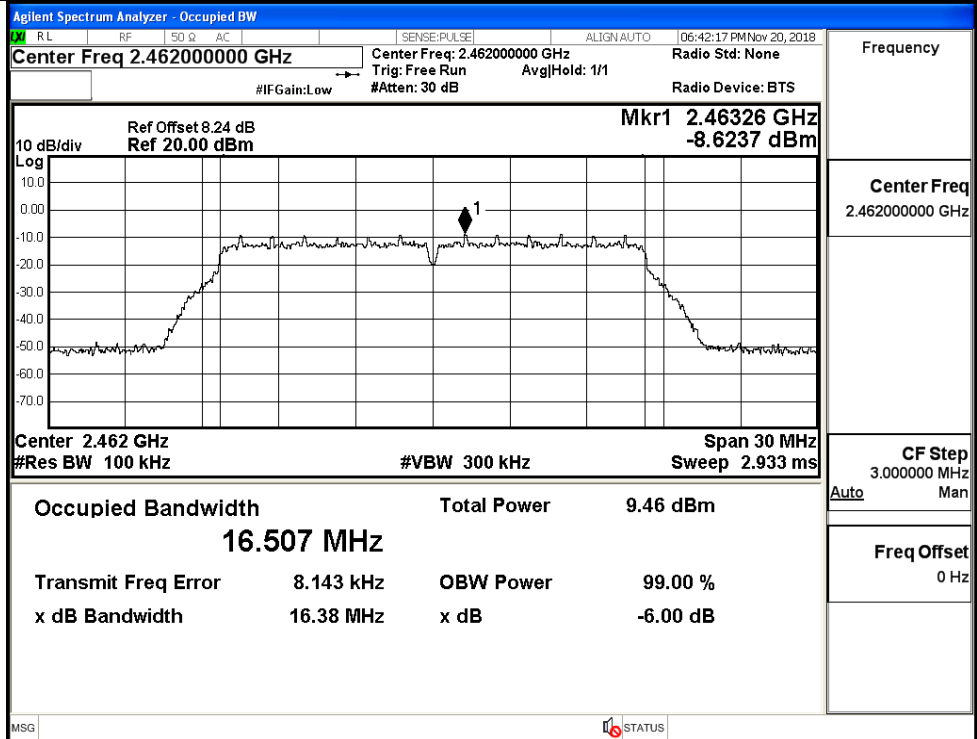
11G/LCH



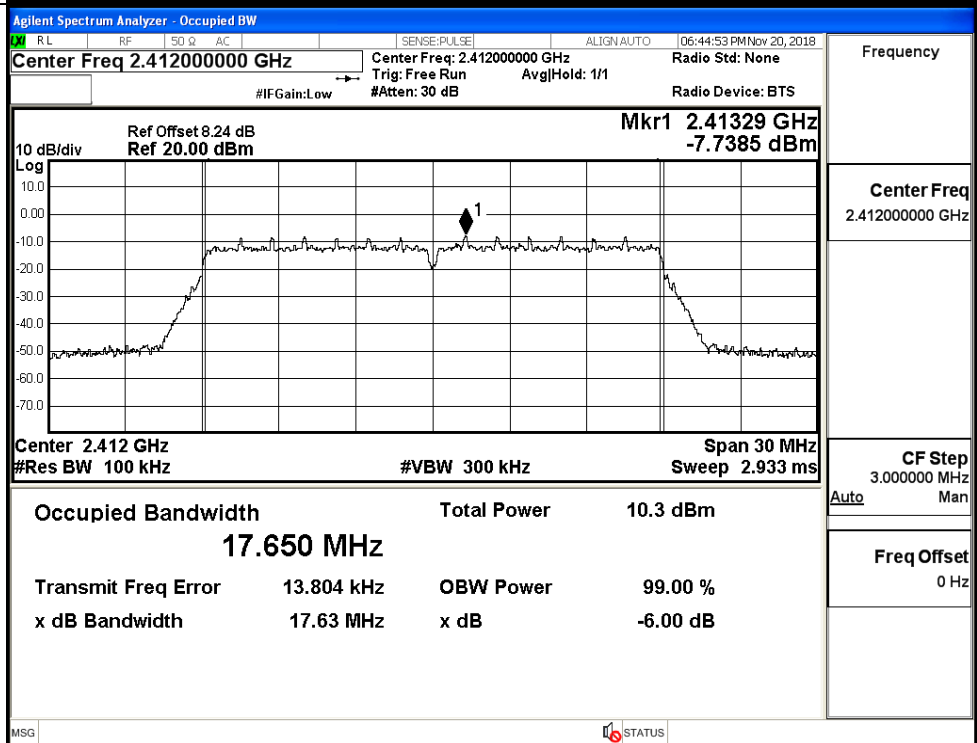
11G/MCH

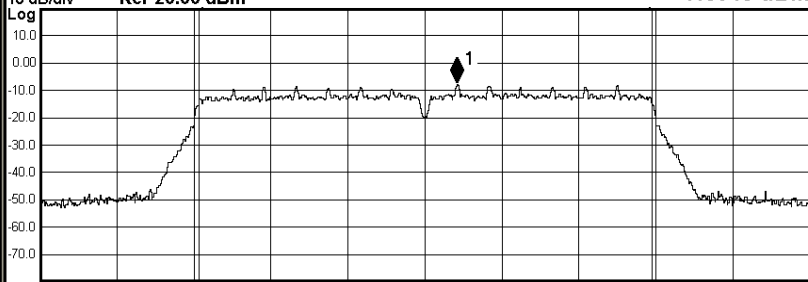
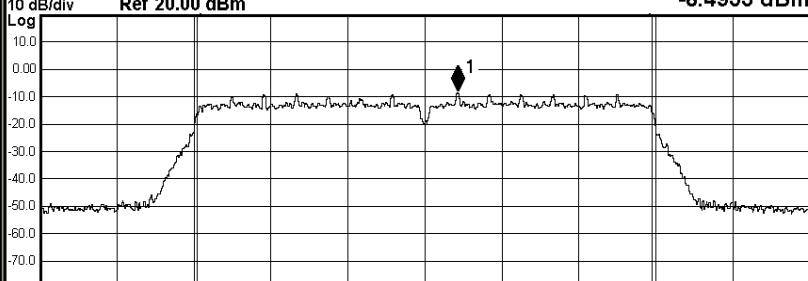


11G/HCH

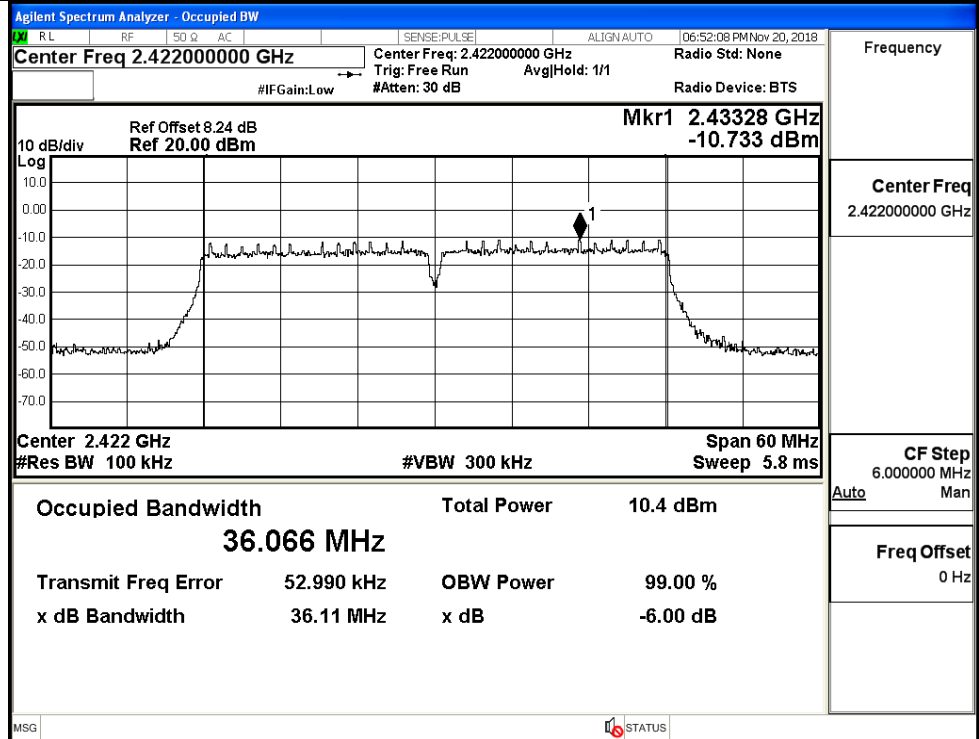


11N20SISO/LCH



11N20SISO/MCH	<div>Agilent Spectrum Analyzer - Occupied BW</div> <div><div><div><div>RL</div><div>RF</div><div>50 Ω</div><div>AC</div></div><div>SENSE:PULSE</div><div>ALIGN: AUTO</div><div>06:47:34 PM Nov 20, 2018</div></div><div><div>Center Freq 2.437000000 GHz</div><div>Center Freq: 2.437000000 GHz</div><div>Trig: Free Run</div><div>Avg Hold: 1/1</div><div>Radio Std: None</div></div><div><div>#IFGain: Low</div><div>#Atten: 30 dB</div><div>Radio Device: BTS</div></div></div> <div><div>10 dB/div</div><div>Ref Offset 8.24 dB</div><div>Ref 20.00 dBm</div><div>Mkr1 2.43826 GHz</div><div>-7.6948 dBm</div></div> <div></div> <div><div>Center 2.437 GHz</div><div>#Res BW 100 kHz</div><div>#VBW 300 kHz</div><div>Span 30 MHz</div><div>Sweep 2.933 ms</div></div> <div><div>Occupied Bandwidth</div><div>17.642 MHz</div><div>Total Power</div><div>10.2 dBm</div></div> <div><div>Transmit Freq Error</div><div>21.984 kHz</div><div>OBW Power</div><div>99.00 %</div></div> <div><div>x dB Bandwidth</div><div>17.60 MHz</div><div>x dB</div><div>-6.00 dB</div></div> <div><div>MSG</div><div>STATUS</div></div>			<div>Frequency</div> <div>Center Freq</div> <div>2.437000000 GHz</div> <div>CF Step</div> <div>3.000000 MHz</div> <div>Auto</div> <div>Man</div> <div>Freq Offset</div> <div>0 Hz</div>	
	11N20SISO/HCH	<div>Agilent Spectrum Analyzer - Occupied BW</div> <div><div><div><div>RL</div><div>RF</div><div>50 Ω</div><div>AC</div></div><div>SENSE:PULSE</div><div>ALIGN: AUTO</div><div>06:49:26 PM Nov 20, 2018</div></div><div><div>Center Freq 2.462000000 GHz</div><div>Center Freq: 2.462000000 GHz</div><div>Trig: Free Run</div><div>Avg Hold: 1/1</div><div>Radio Std: None</div></div><div><div>#IFGain: Low</div><div>#Atten: 30 dB</div><div>Radio Device: BTS</div></div></div> <div><div>10 dB/div</div><div>Ref Offset 8.24 dB</div><div>Ref 20.00 dBm</div><div>Mkr1 2.46329 GHz</div><div>-8.4953 dBm</div></div> <div></div> <div><div>Center 2.462 GHz</div><div>#Res BW 100 kHz</div><div>#VBW 300 kHz</div><div>Span 30 MHz</div><div>Sweep 2.933 ms</div></div> <div><div>Occupied Bandwidth</div><div>17.646 MHz</div><div>Total Power</div><div>9.51 dBm</div></div> <div><div>Transmit Freq Error</div><div>14.162 kHz</div><div>OBW Power</div><div>99.00 %</div></div> <div><div>x dB Bandwidth</div><div>17.62 MHz</div><div>x dB</div><div>-6.00 dB</div></div> <div><div>MSG</div><div>STATUS</div></div>			<div>Frequency</div> <div>Center Freq</div> <div>2.462000000 GHz</div> <div>CF Step</div> <div>3.000000 MHz</div> <div>Auto</div> <div>Man</div> <div>Freq Offset</div> <div>0 Hz</div>

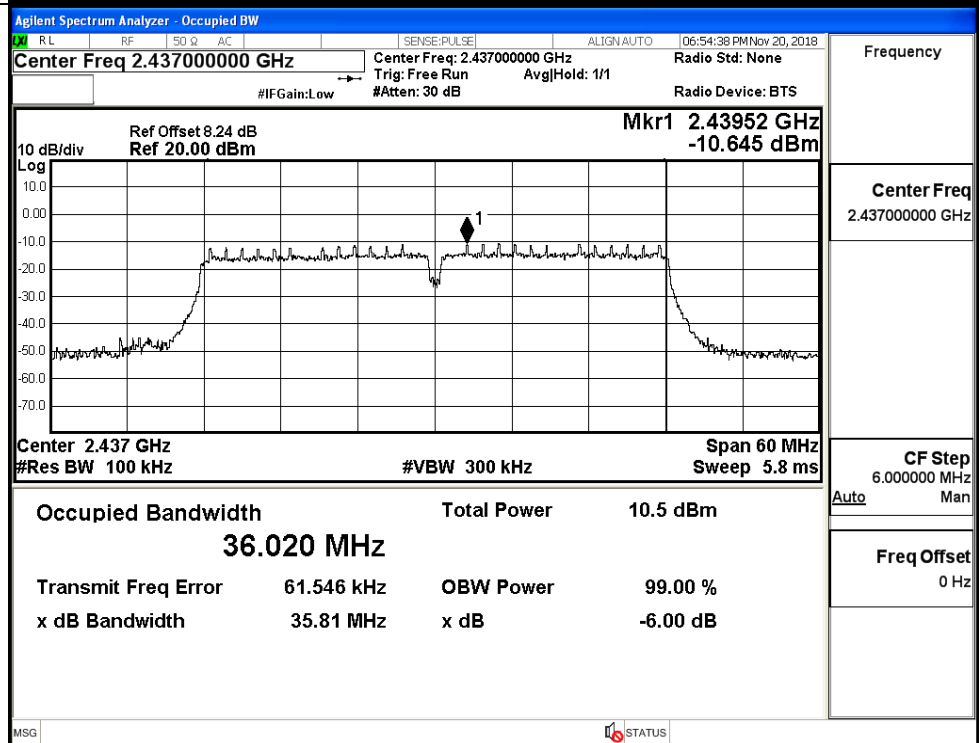
11N40SISO/LCH



Frequency

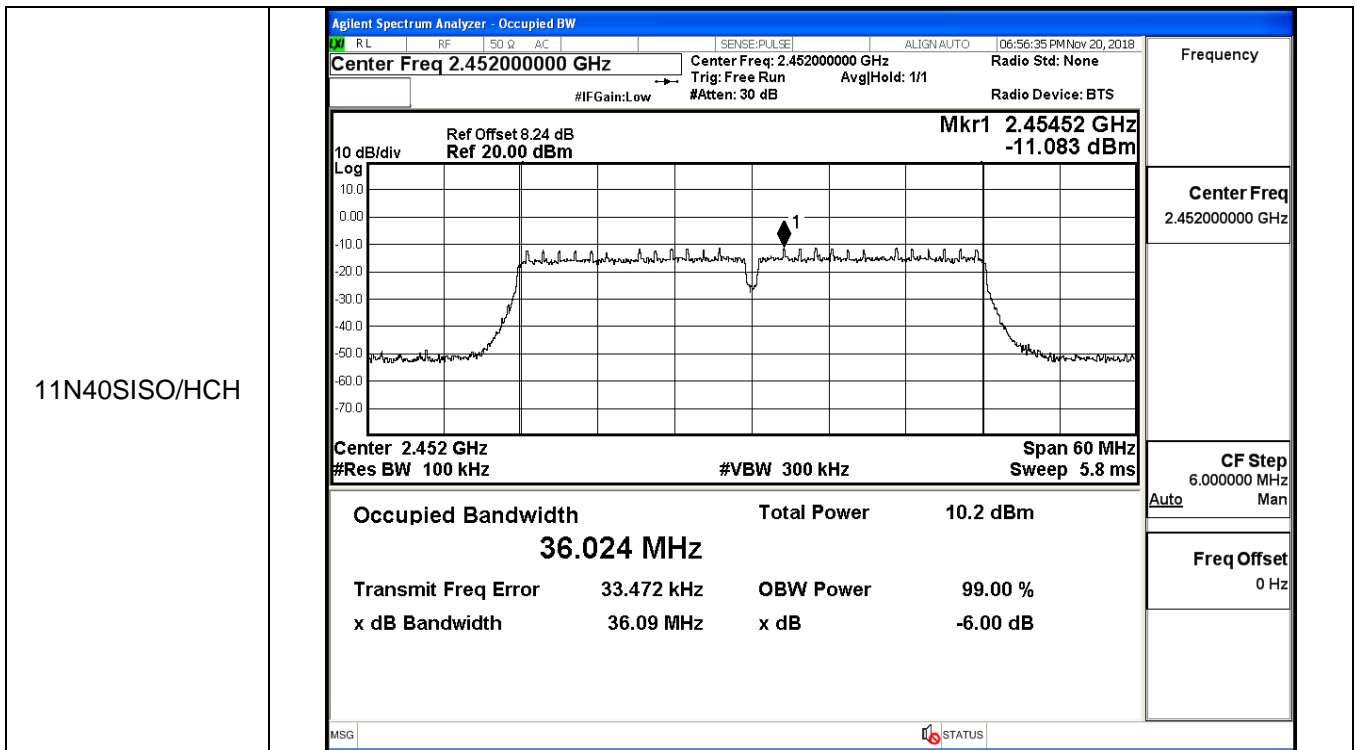
Center Freq
2.422000000 GHzCF Step
6.000000 MHz
Auto ManFreq Offset
0 Hz

11N40SISO/MCH



Frequency

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

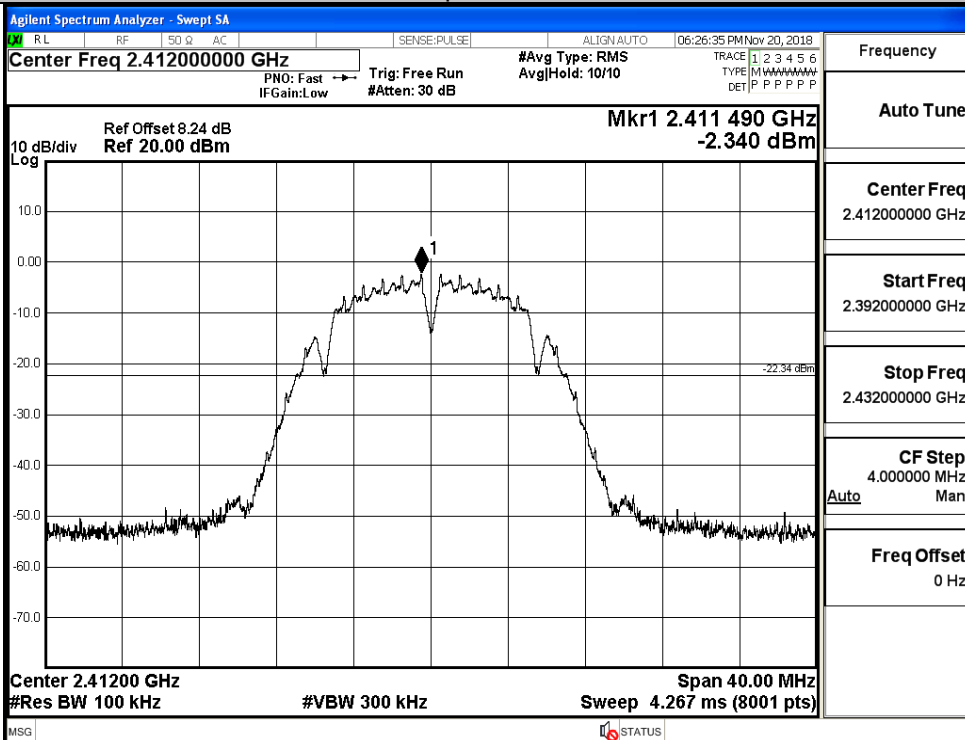


A.5 RF Conducted Spurious Emissions

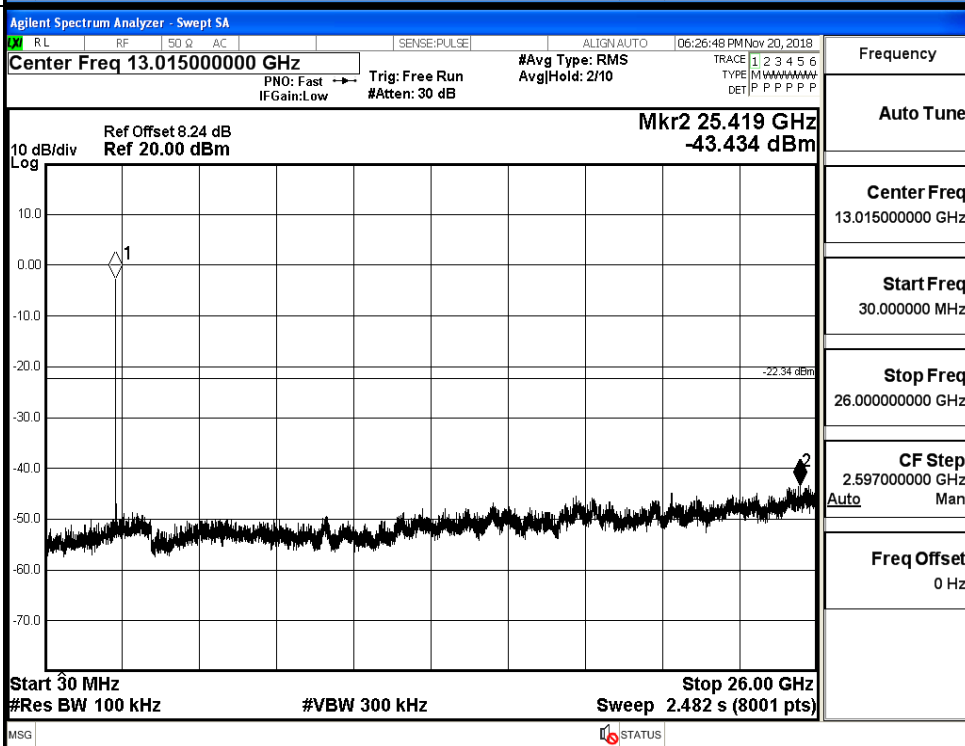
Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
11B	LCH	-2.34	-43.434	-22.340	PASS
	MCH	-2.043	-43.133	-22.043	PASS
	HCH	-2.573	-42.529	-22.573	PASS
11G	LCH	-7.809	-43.955	-27.809	PASS
	MCH	-7.828	-43.263	-27.828	PASS
	HCH	-8.359	-43.199	-28.359	PASS
11N20SISO	LCH	-7.924	-43.748	-27.924	PASS
	MCH	-7.769	-43.841	-27.769	PASS
	HCH	-8.339	-43.982	-28.339	PASS
11N40SISO	LCH	-10.815	-43.689	-30.815	PASS
	MCH	-10.899	-42.494	-30.899	PASS
	HCH	-11.294	-43.123	-31.294	PASS

11B_LCH_Graphs

Pref/11B/LCH

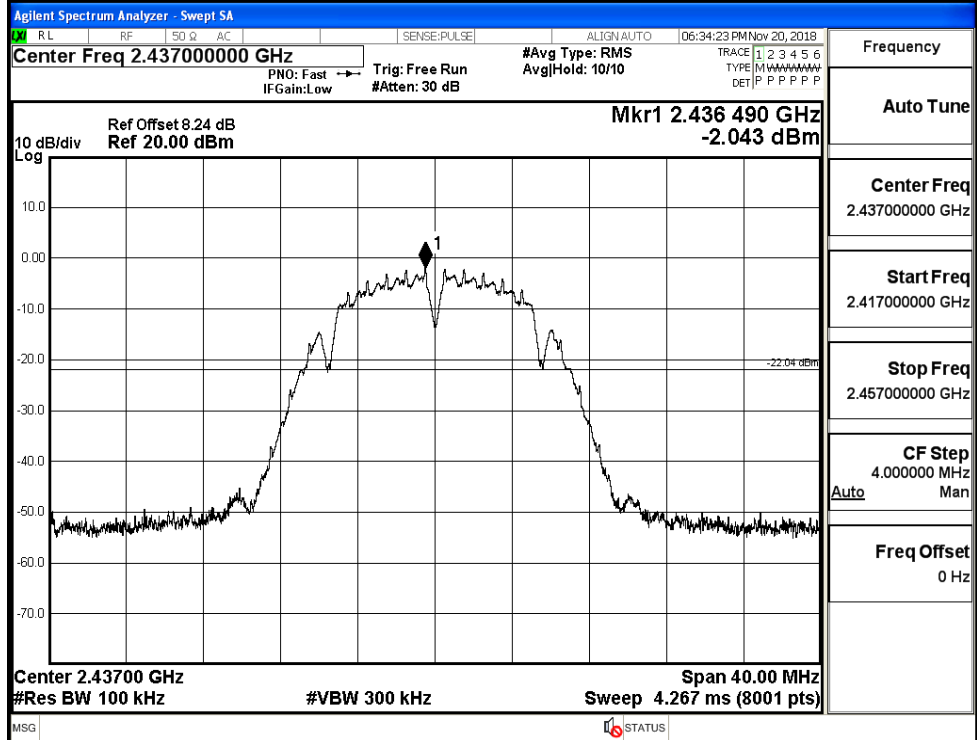


Puw/11B/LCH

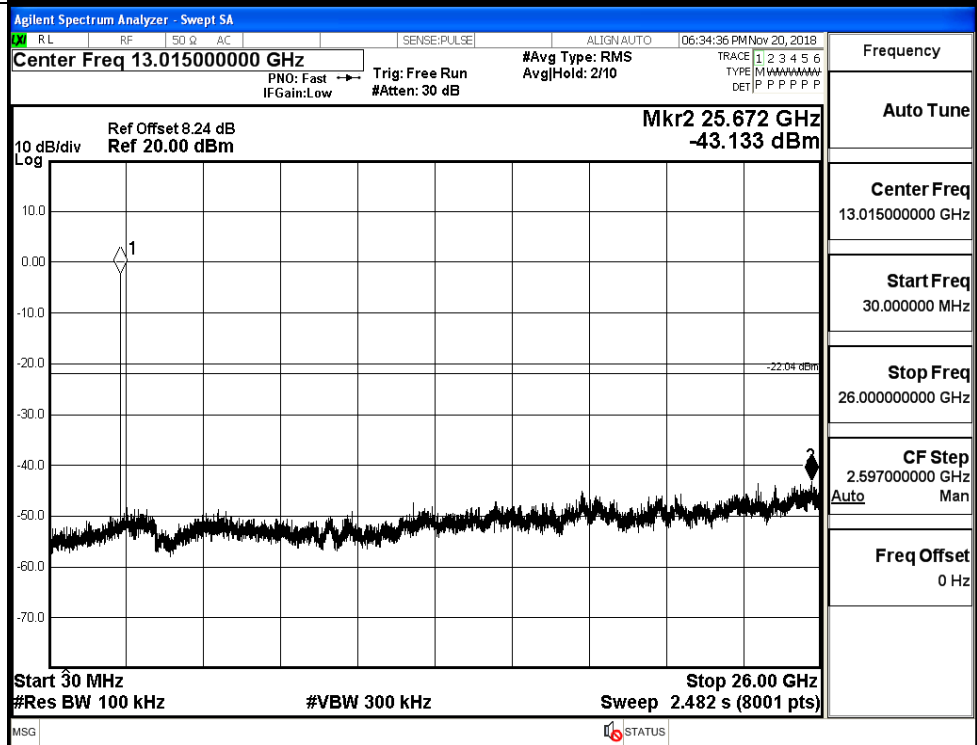


11B_MCH_Graphs

Pref/11B/MCH

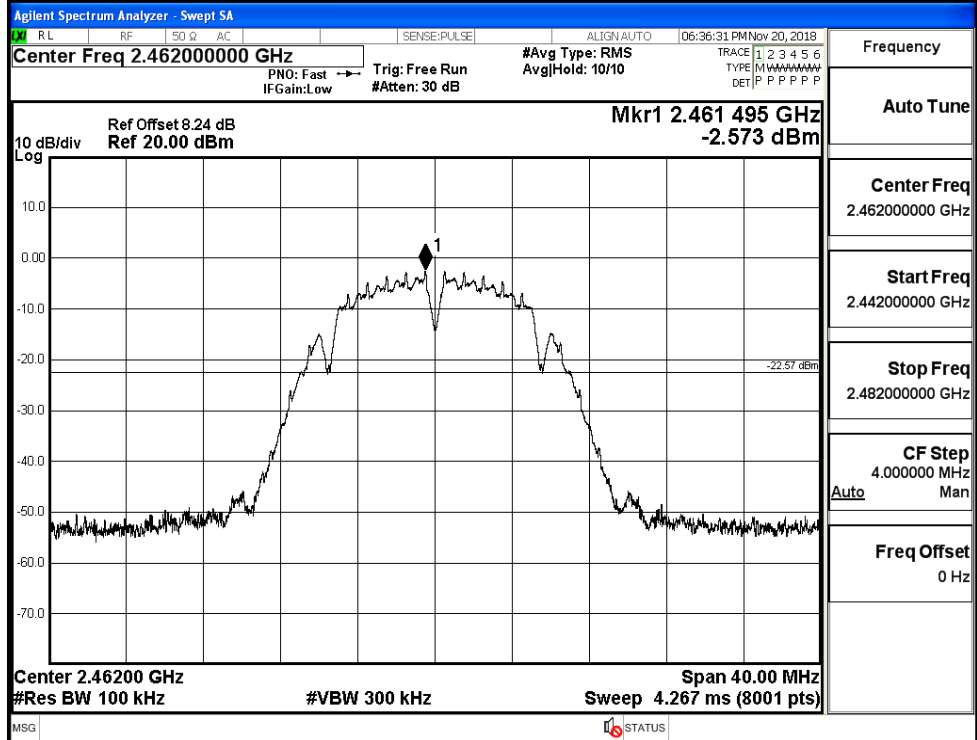


Puw/11B/MCH

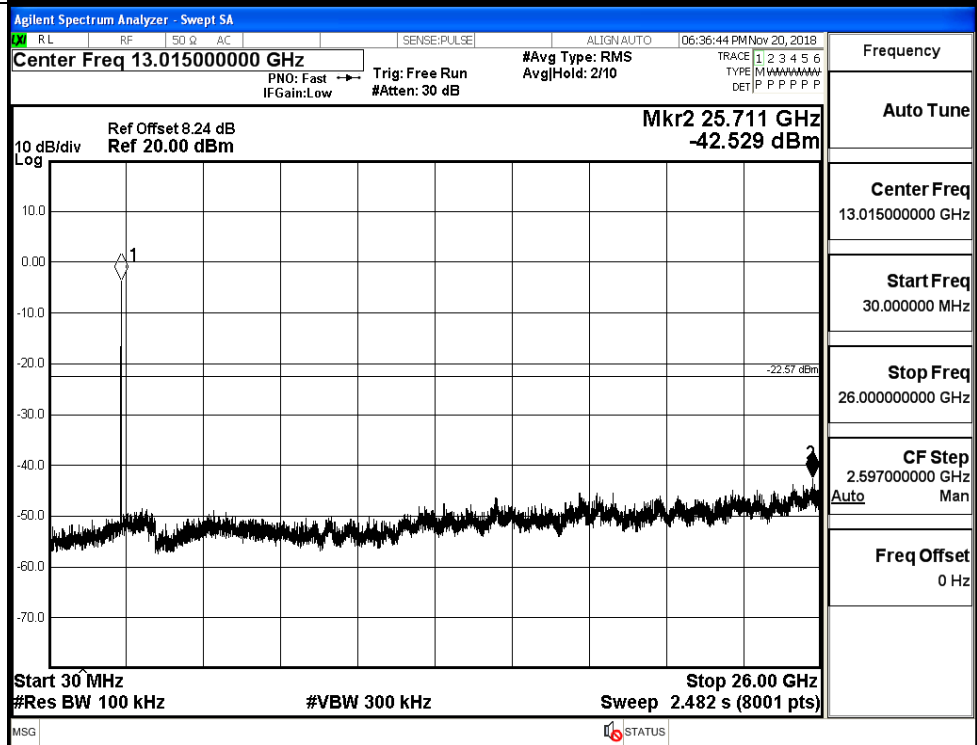


11B_HCH_Graphs

Pref/11B/HCH

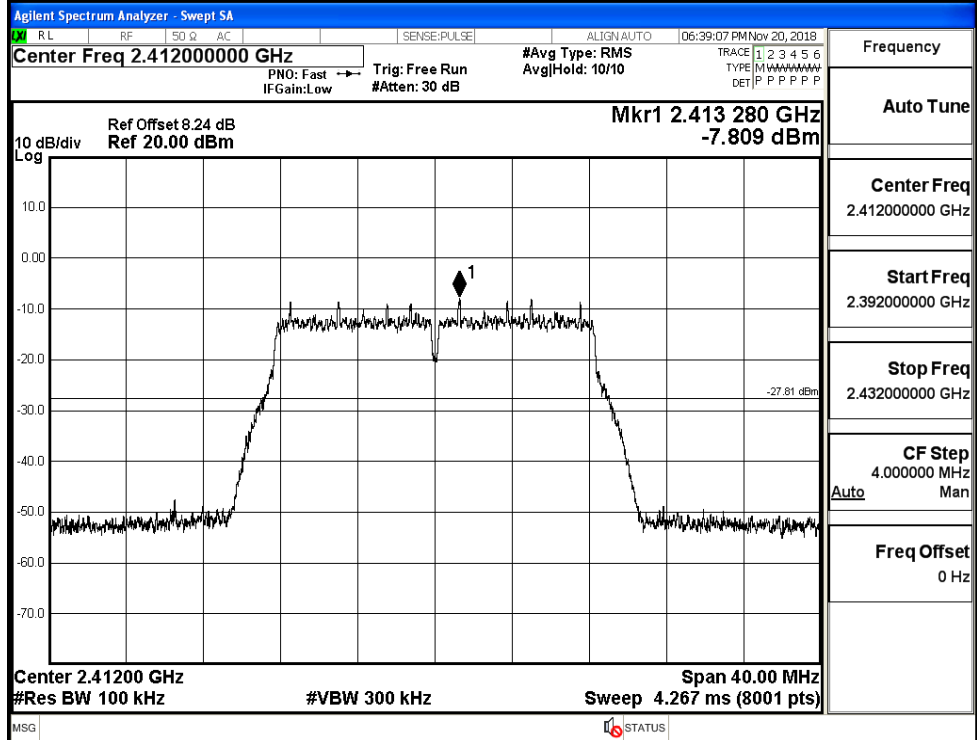


Puw/11B/HCH

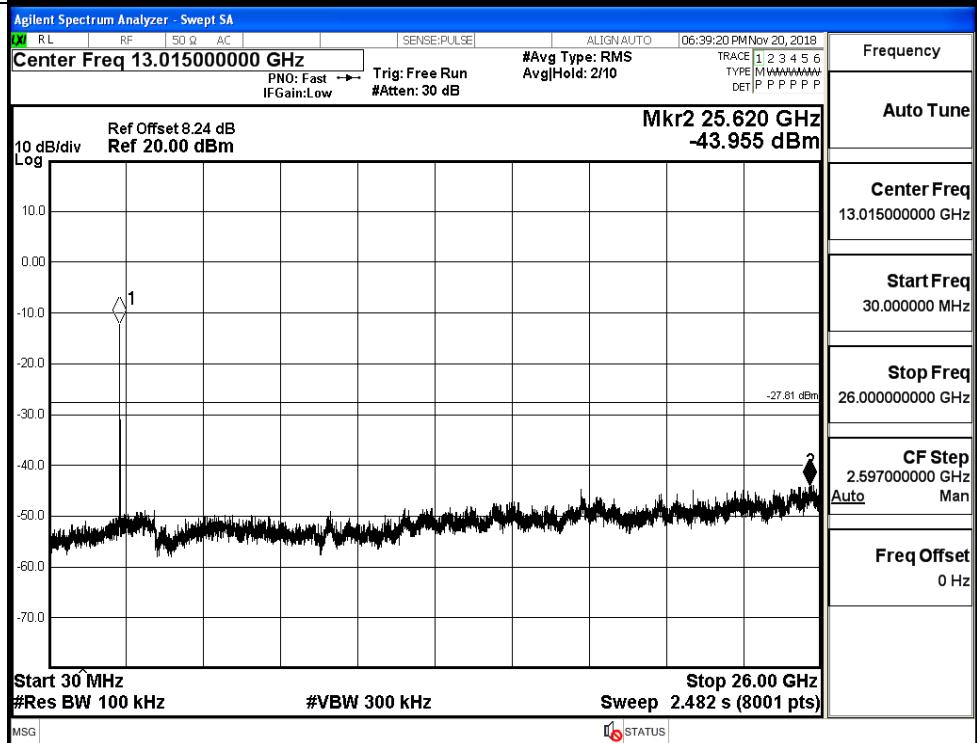


11G_LCH_Graphs

Pref/11G/LCH

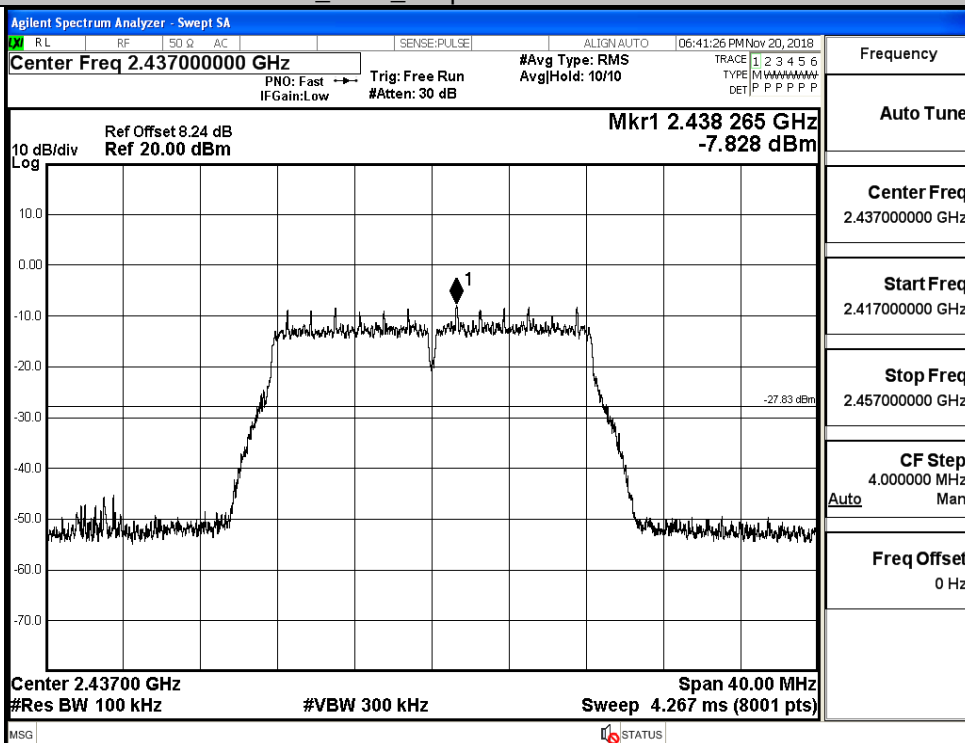


Puw/11G/LCH

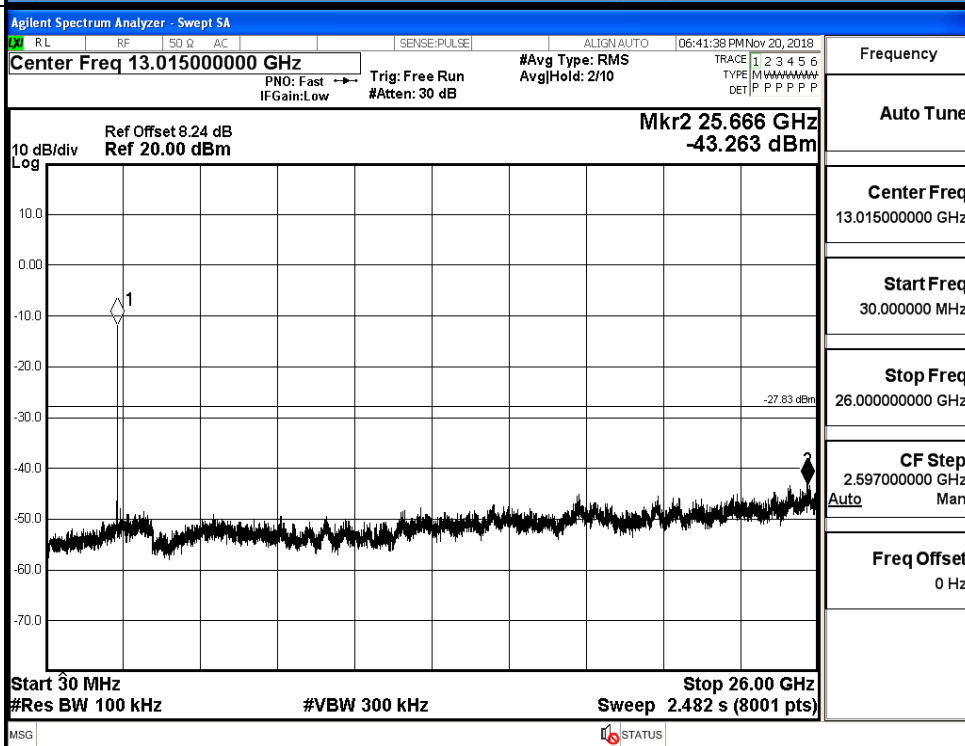


11G_MCH_Graphs

Pref/11G/MCH

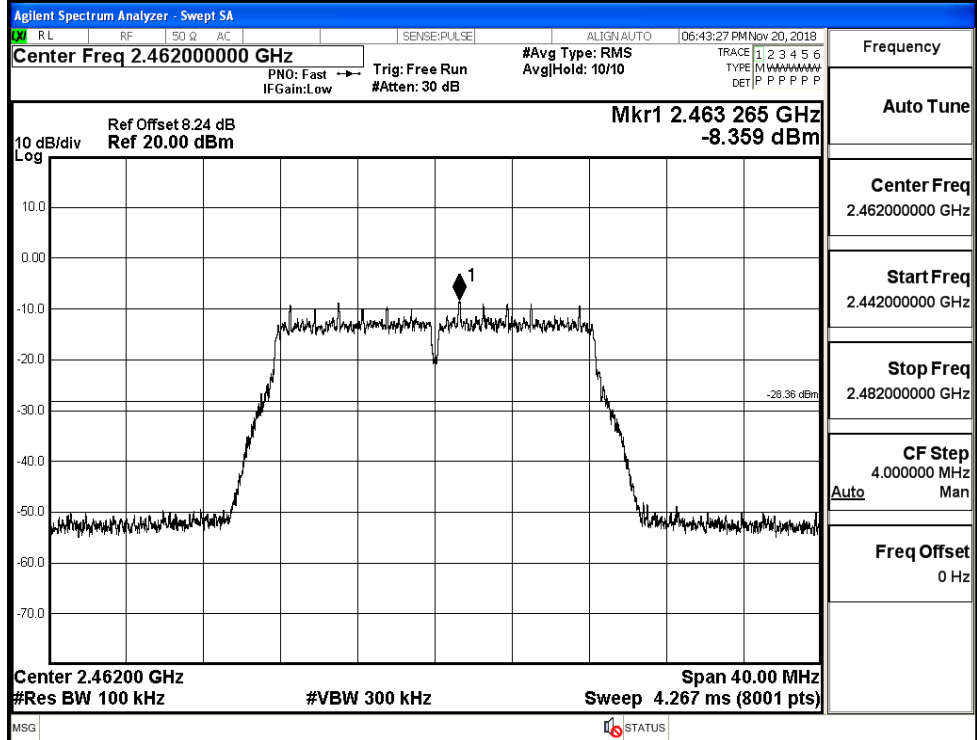


Puw/11G/MCH

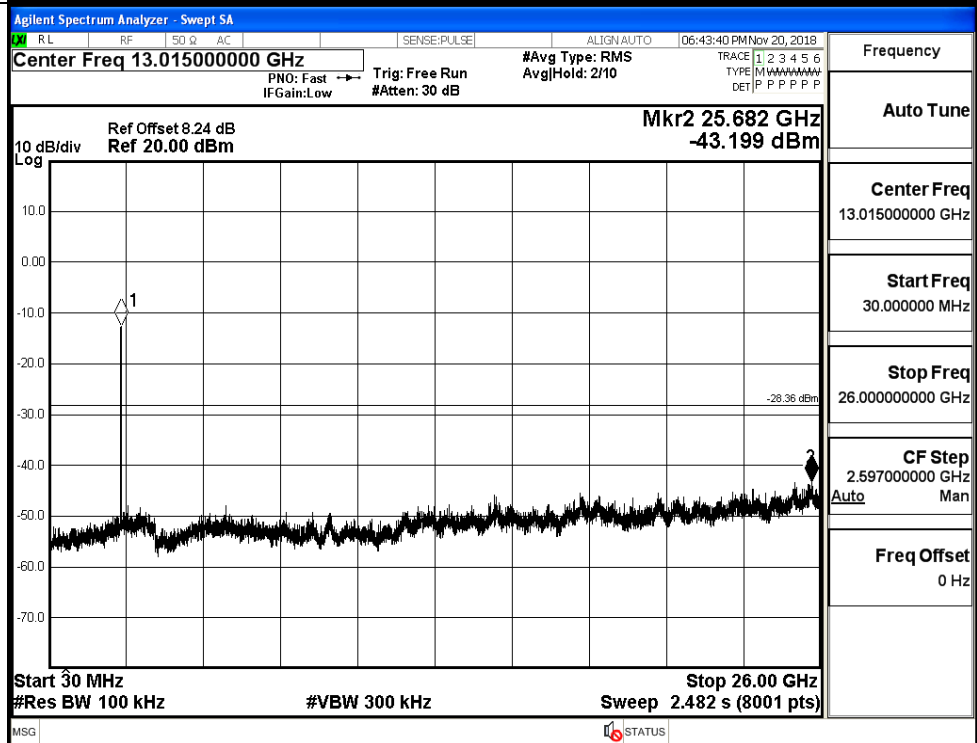


11G_HCH_Graphs

Pref/11G/HCH

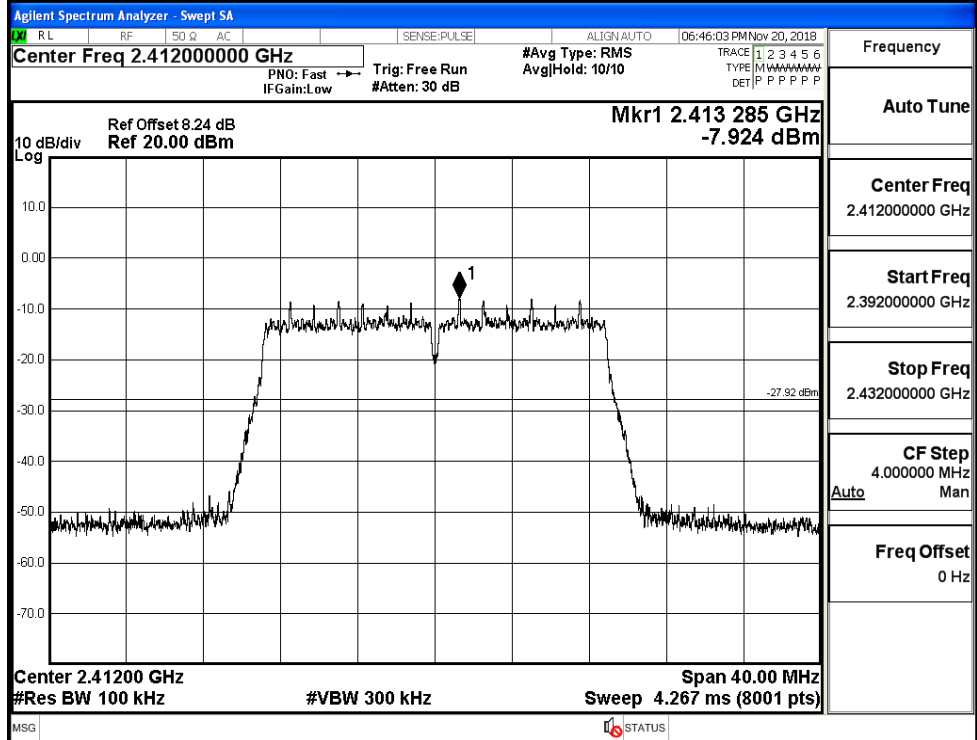


Puw/11G/HCH

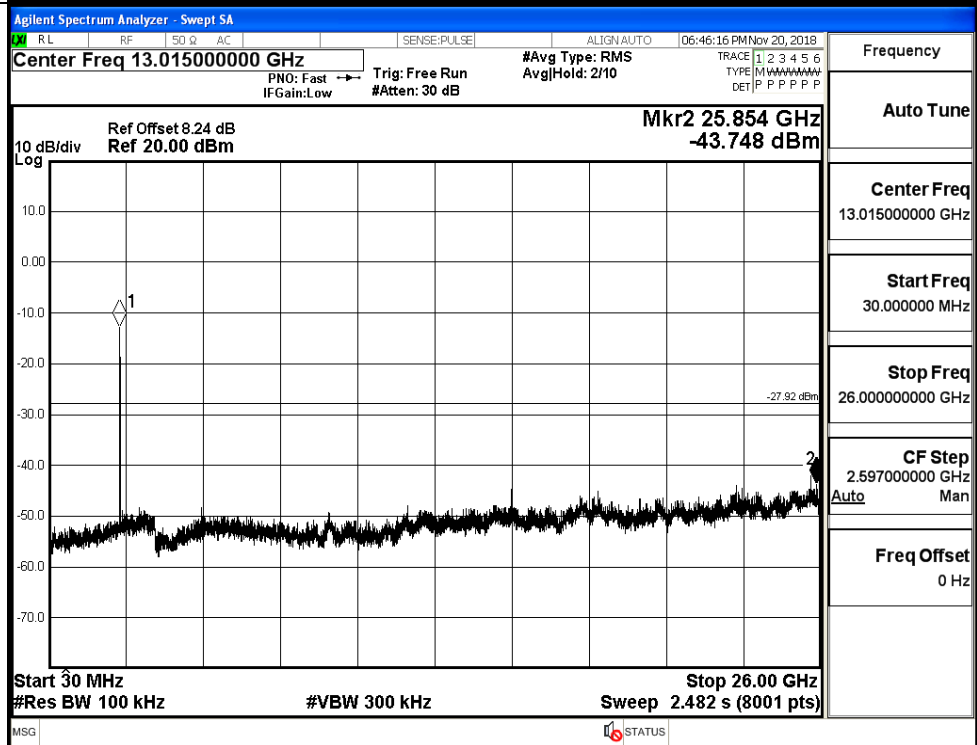


11N20SISO_LCH_Graphs

Pref/11N20SIS
O/LCH

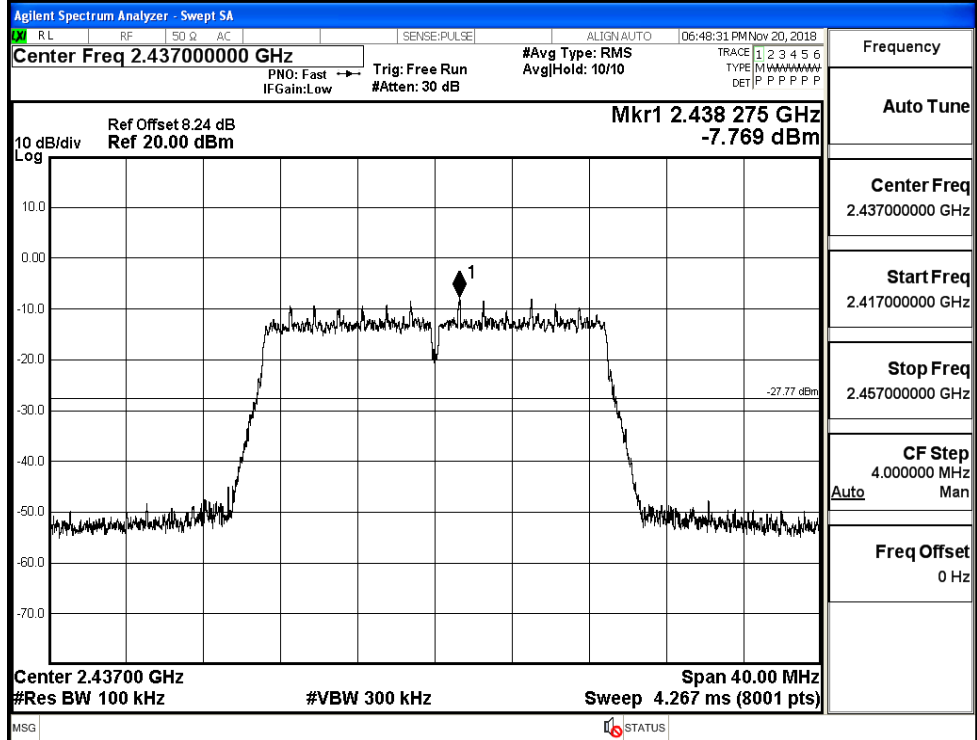


Puw/11N20
SISO/LCH

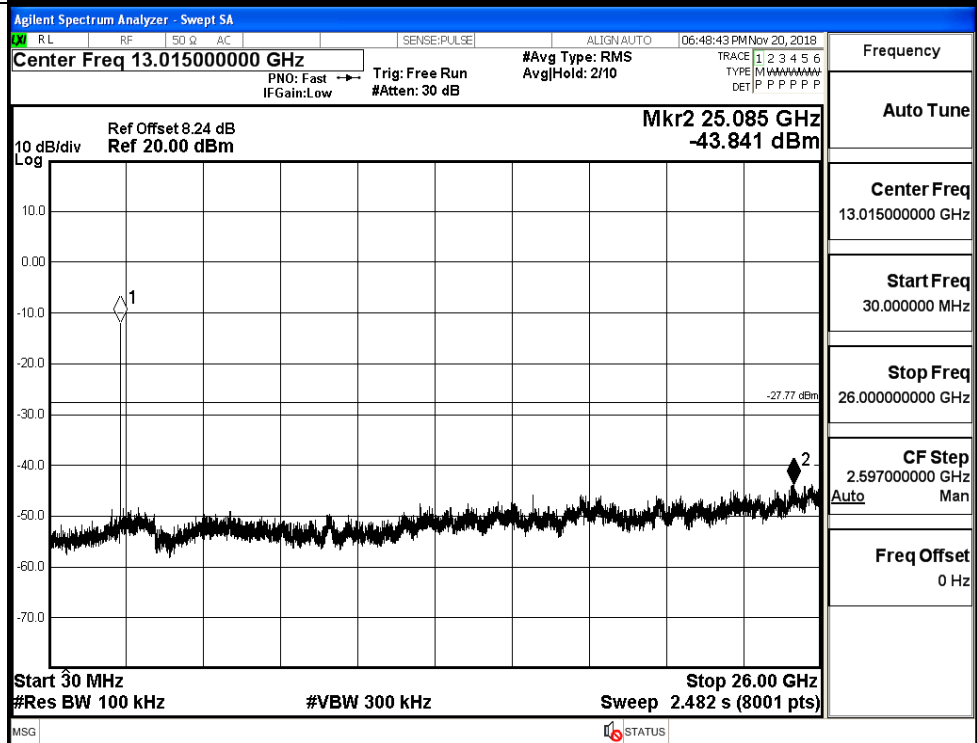


11N20ISO_MCH_Graphs

Pref/11N20
SISO/MCH

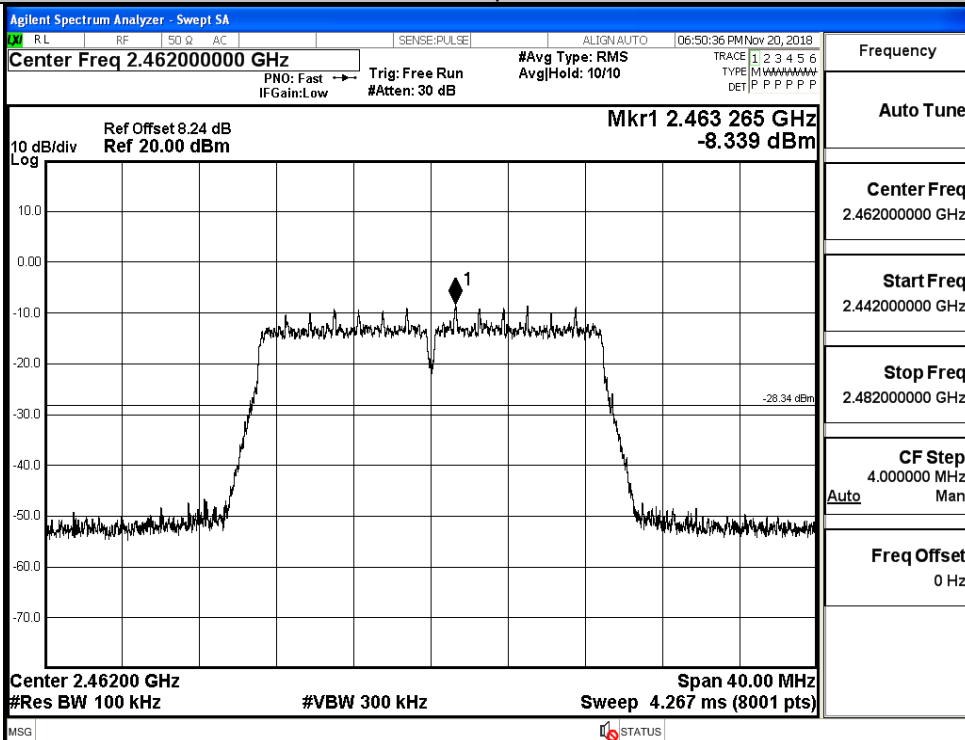


Puw/11N20
SISO/MCH

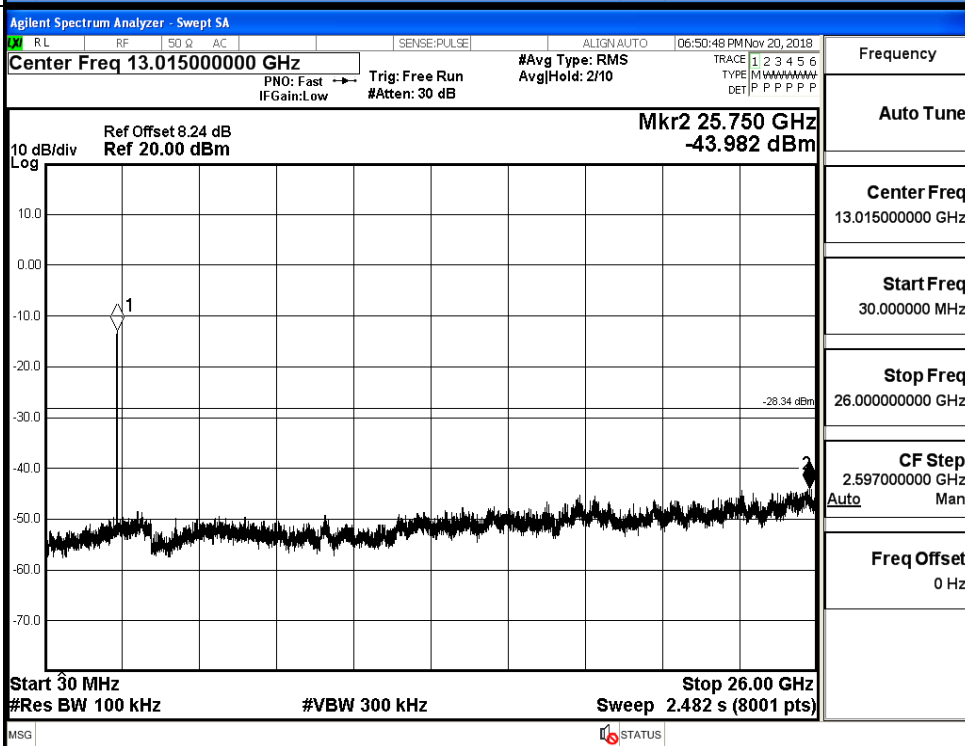


11N20ISO_HCH_Graphs

Pref/11N20
SISO/HCH

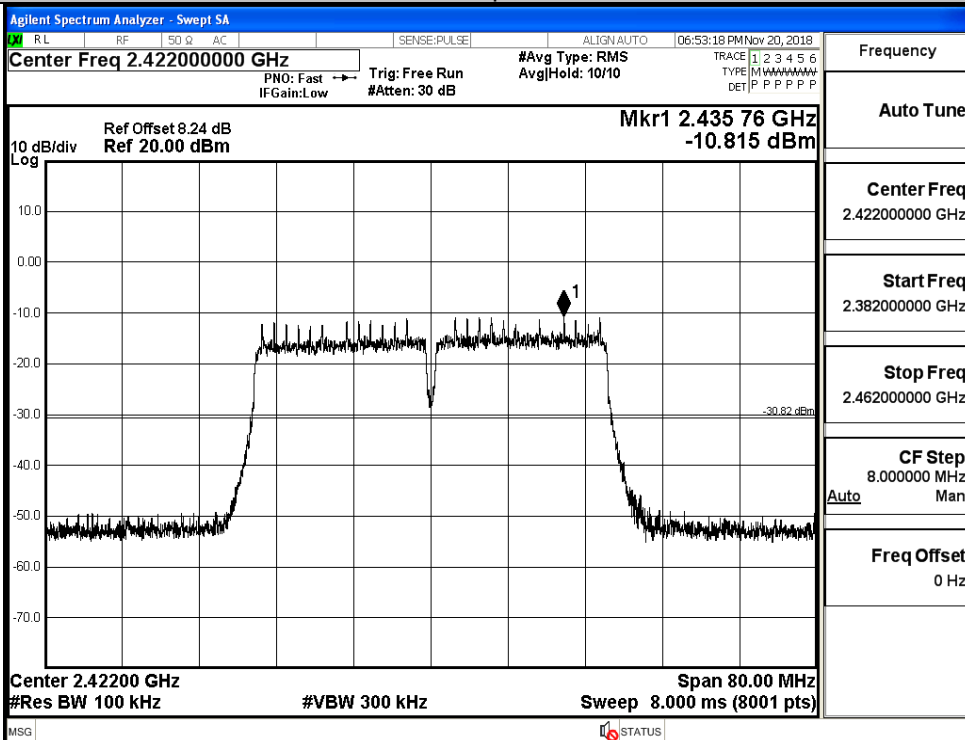


Puw/11N20
SISO/HCH

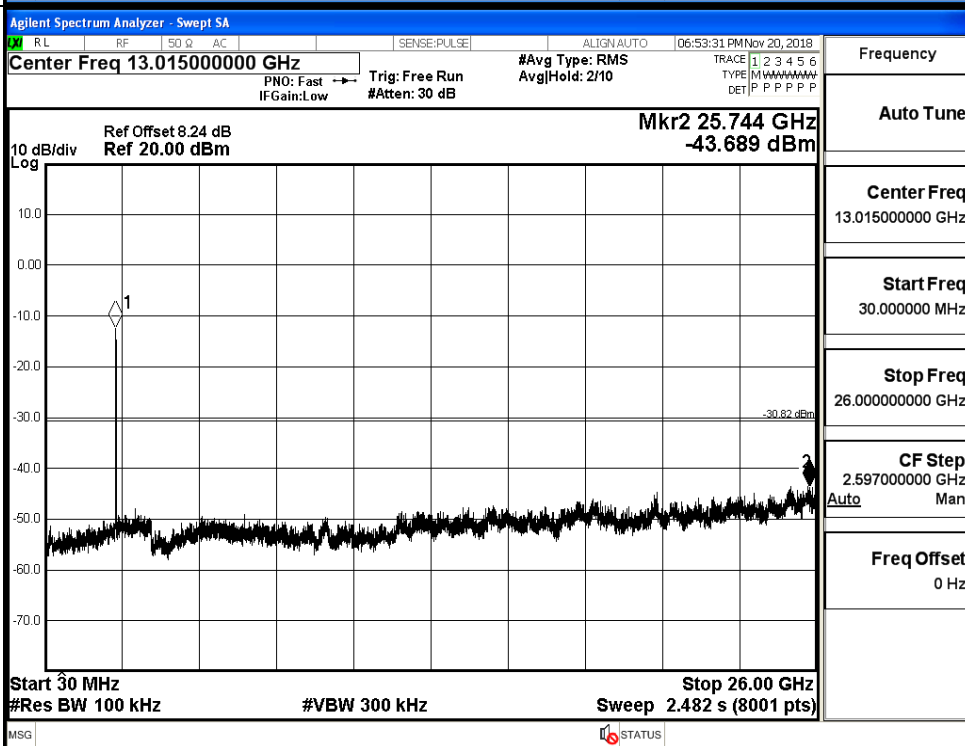


11N40SISO_LCH_Graphs

Pref/11N40
SISO/LCH

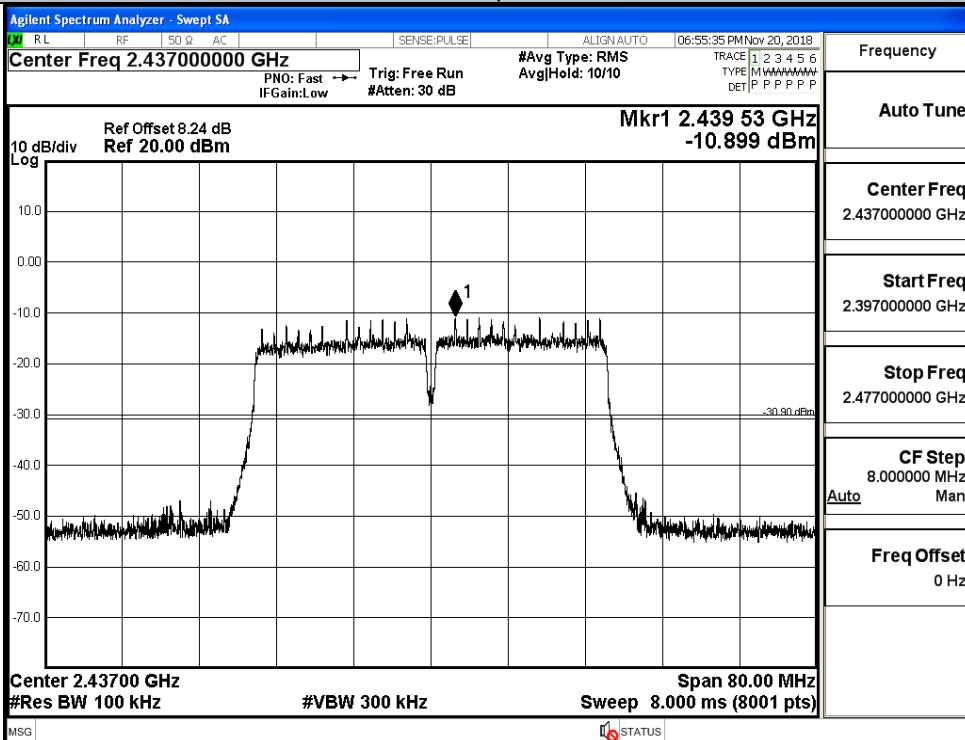


Puw/11N40
SISO/LCH

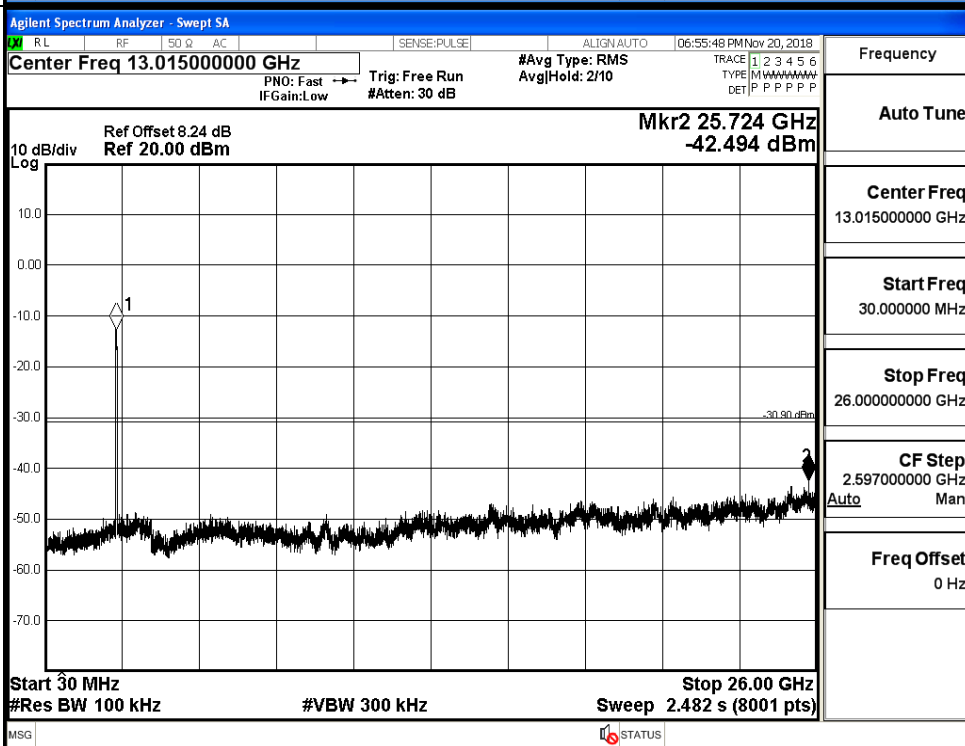


11N40SISO_MCH_Graphs

Pref/11N40
SISO/MCH

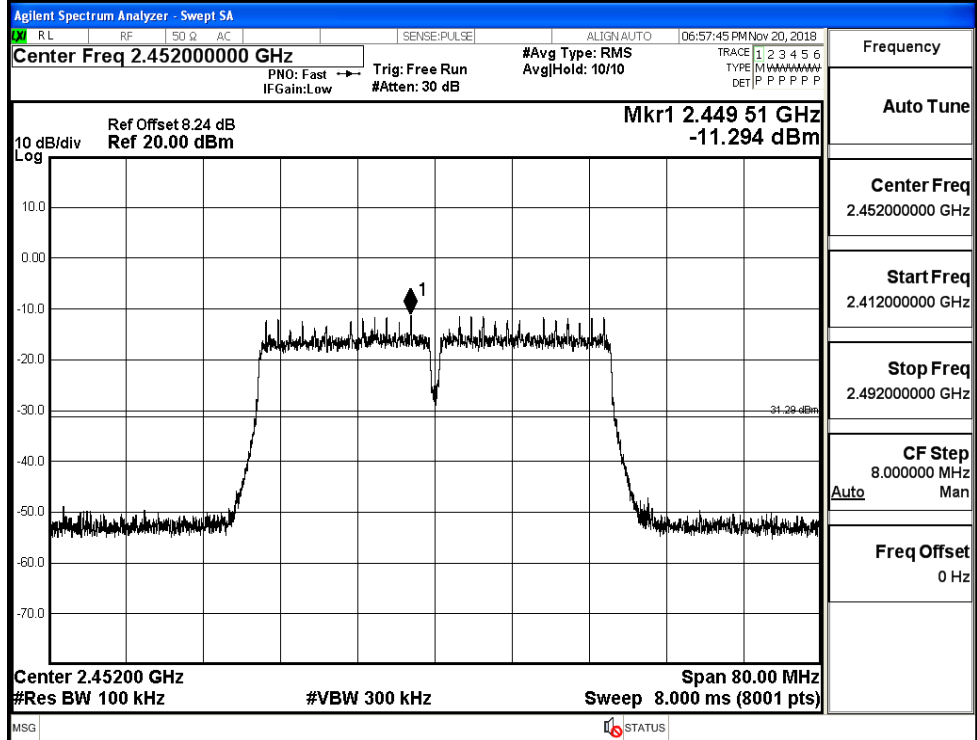


Puw/11N40
SISO/MCH

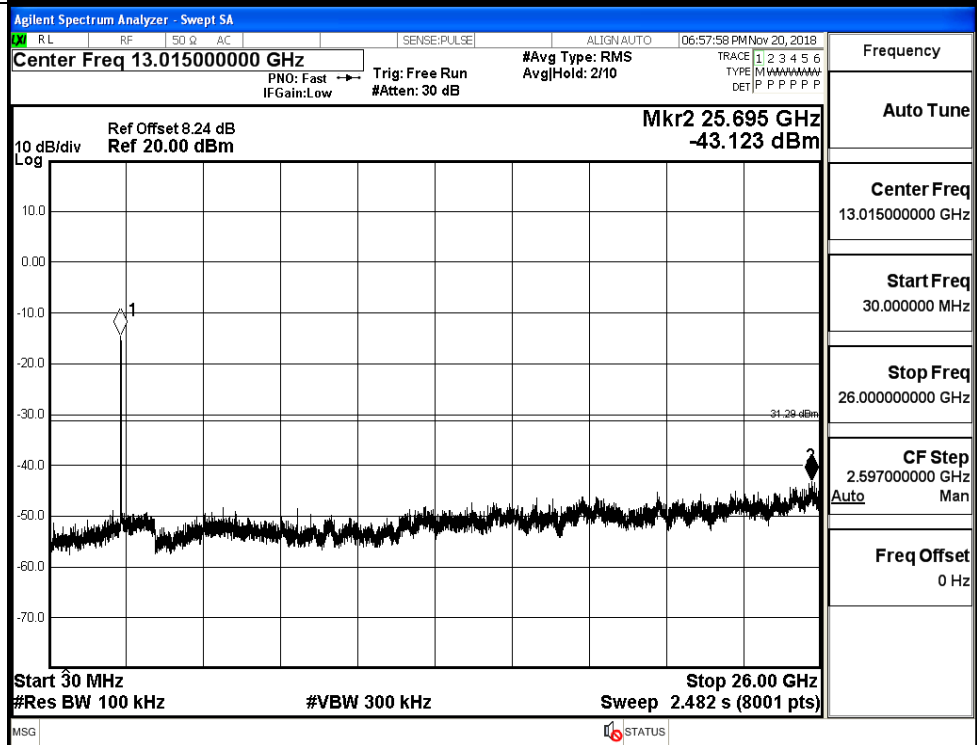


11N40SISO_HCH_Graphs

Pref/11N40
SISO/HCH



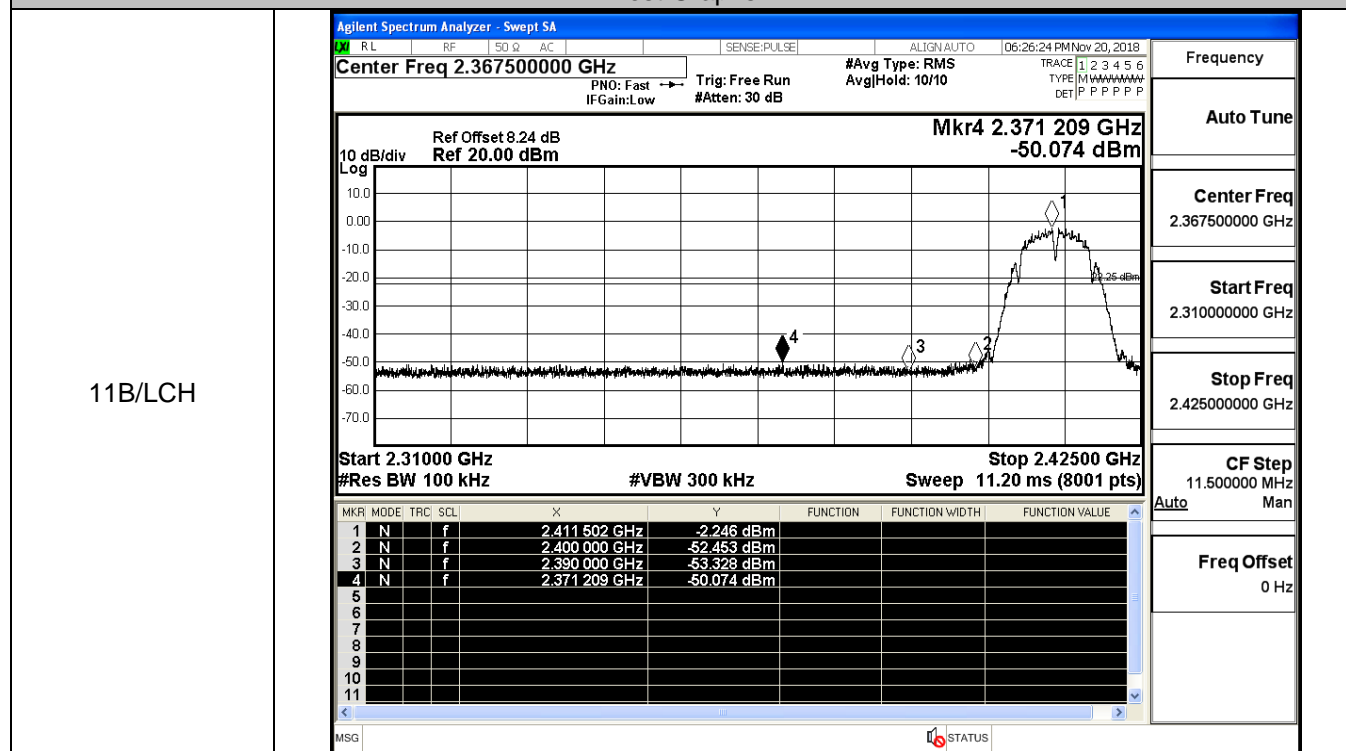
Puw/11N40
SISO/HCH



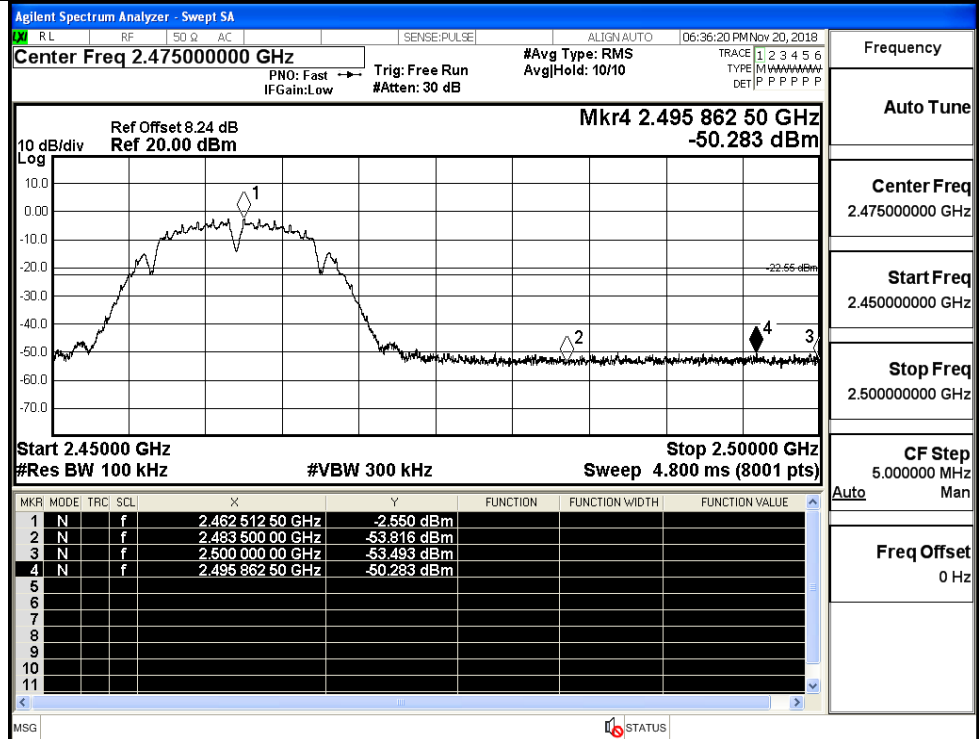
A.6 Band-edge for RF Conducted Emissions

Mode	Channel	Carrier Power[dBm]	Max.Spurious Level [dBm]	Limit [dBm]	Verdict
11B	LCH	-2.246	-50.074	-22.25	PASS
	HCH	-2.550	-50.283	-22.55	PASS
11G	LCH	-8.166	-49.325	-28.17	PASS
	HCH	-8.697	-47.717	-28.7	PASS
11N20SISO	LCH	-8.050	-50.164	-28.05	PASS
	HCH	-8.274	-49.677	-28.27	PASS
11N40SISO	LCH	-10.543	-49.558	-30.54	PASS
	HCH	-11.572	-49.060	-31.57	PASS

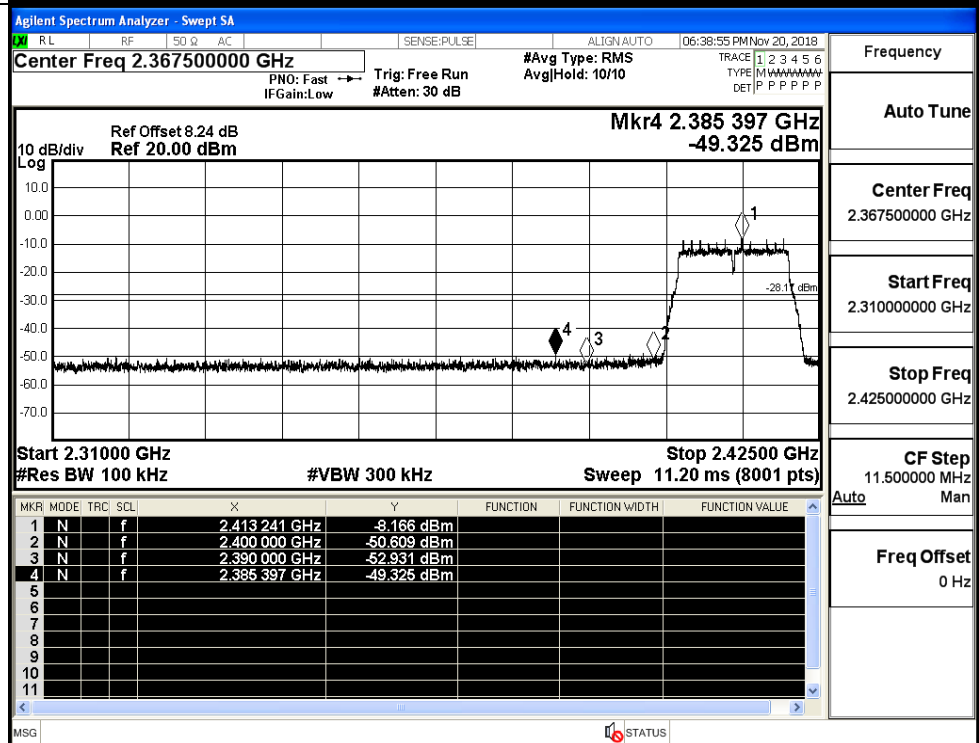
Test Graphs



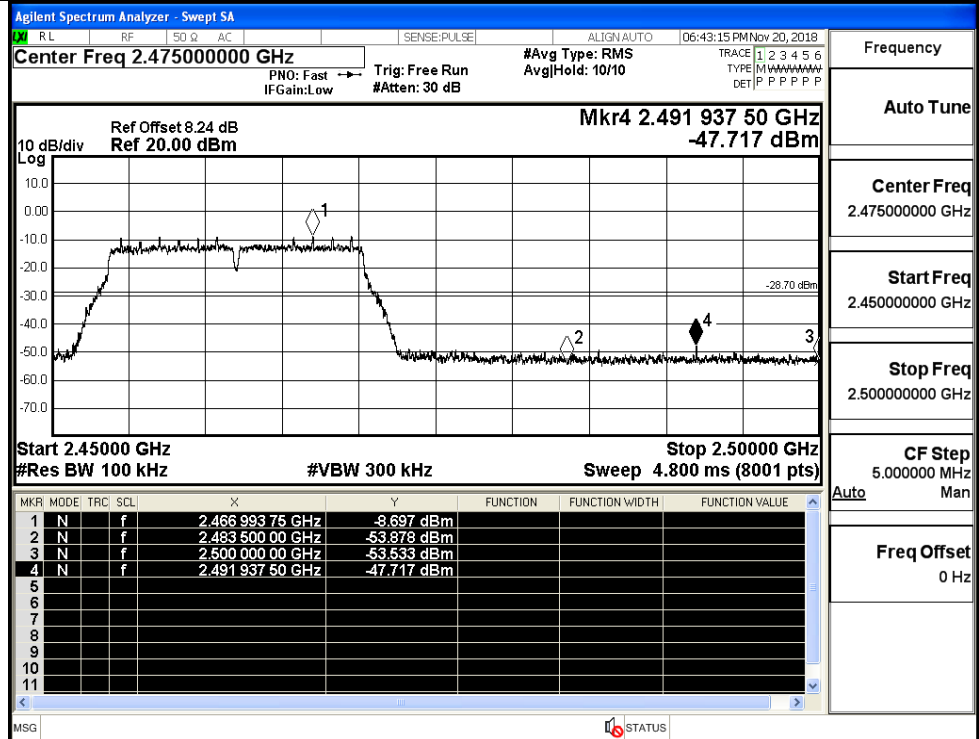
11B/HCH



11G/LCH



11G/HCH



Frequency

Auto Tune

Center Freq
2.475000000 GHz

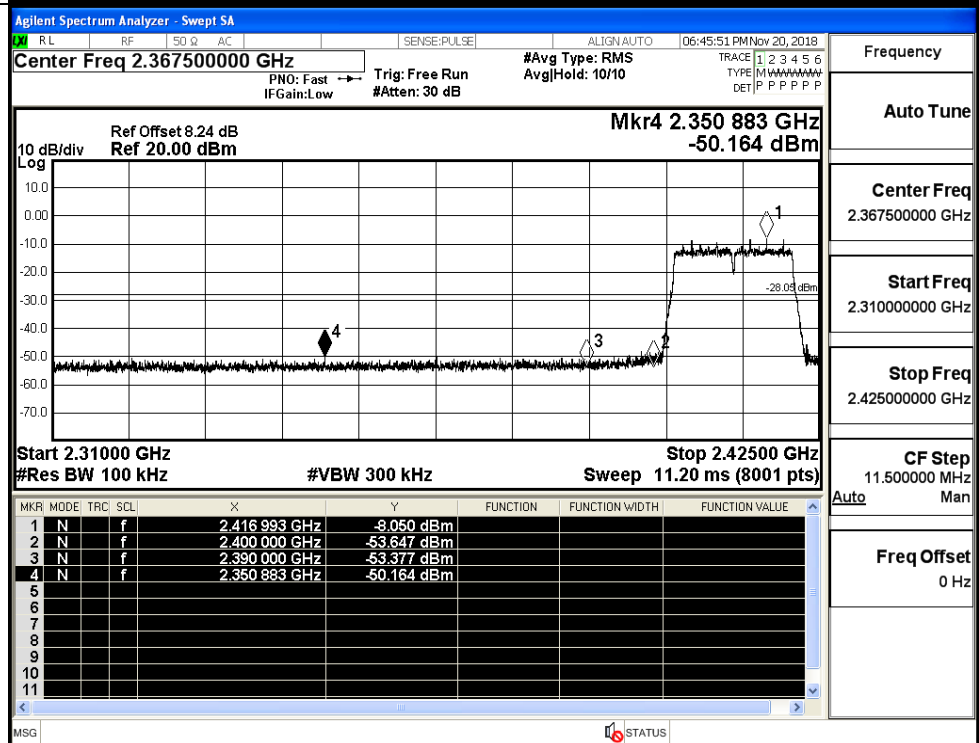
Start Freq
2.450000000 GHz

Stop Freq
2.500000000 GHz

CF Step
5.000000 MHz

Freq Offset
0 Hz

11N20SISO/LCH



Frequency

Auto Tune

Center Freq
2.367500000 GHz

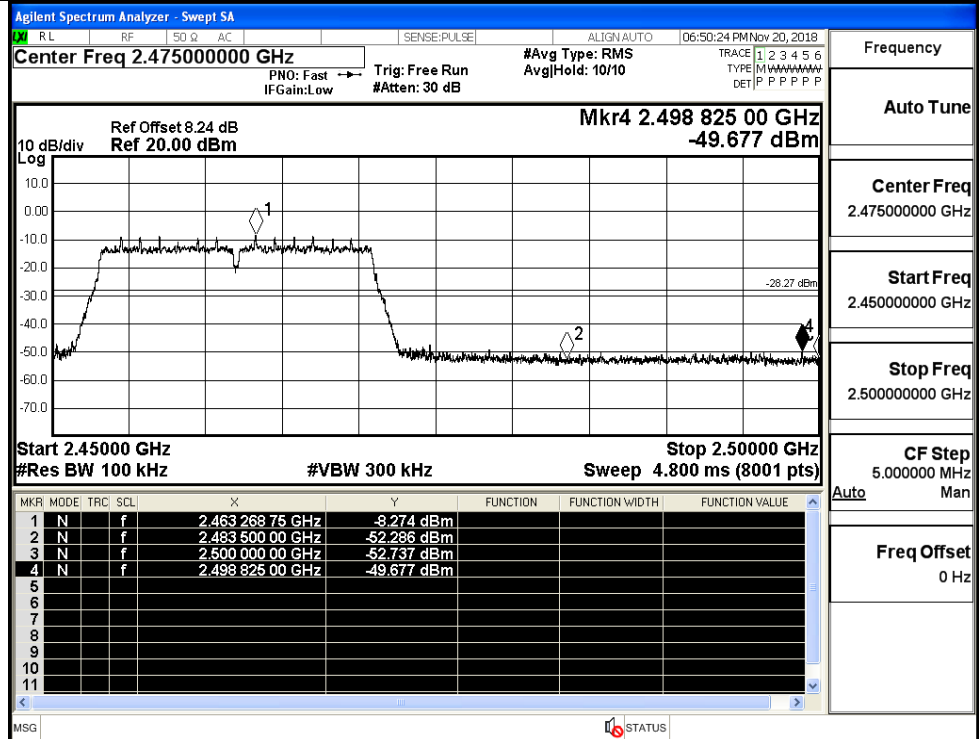
Start Freq
2.310000000 GHz

Stop Freq
2.425000000 GHz

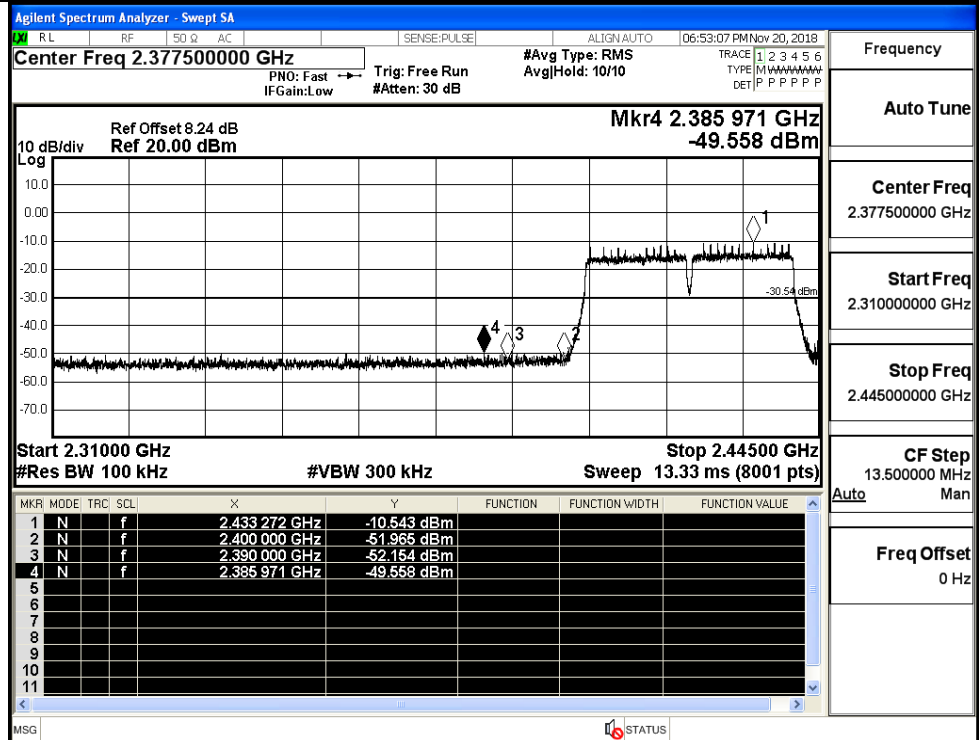
CF Step
11.500000 MHz

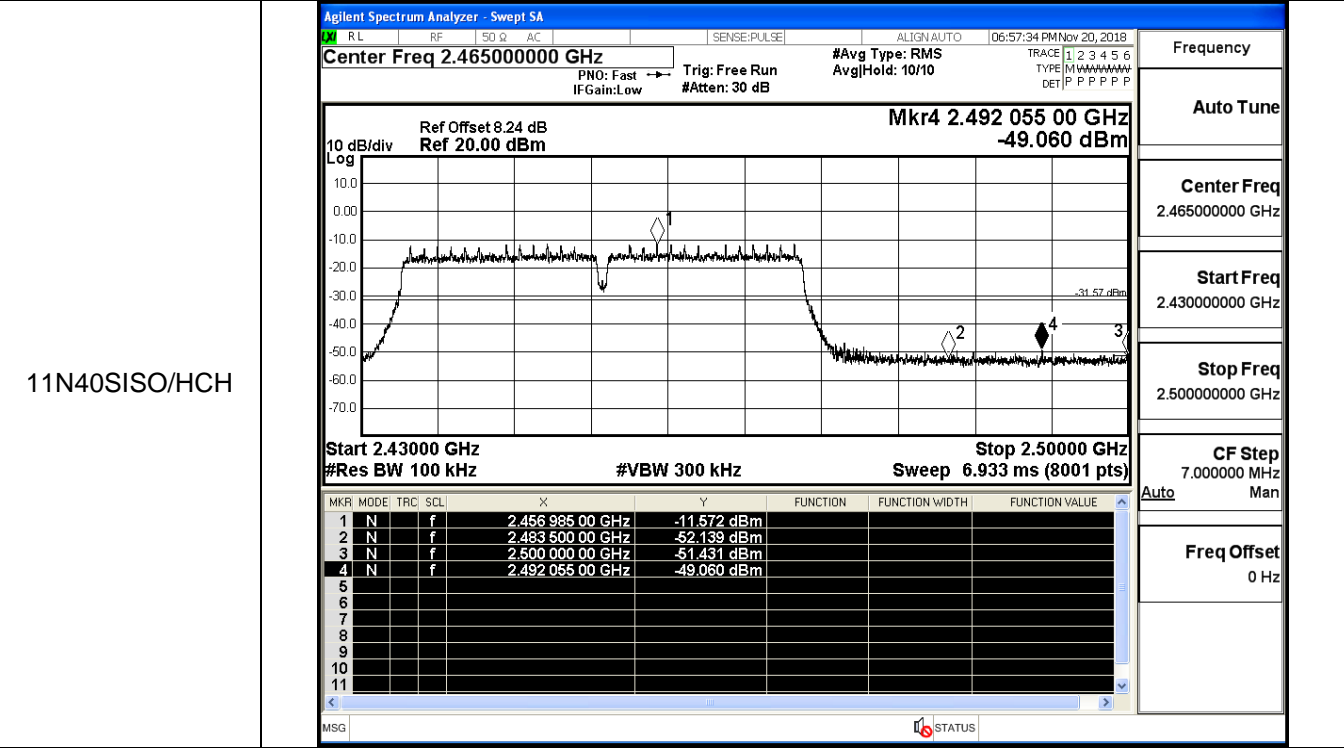
Freq Offset
0 Hz

11N20SISO/HCH



11N40SISO/LCH



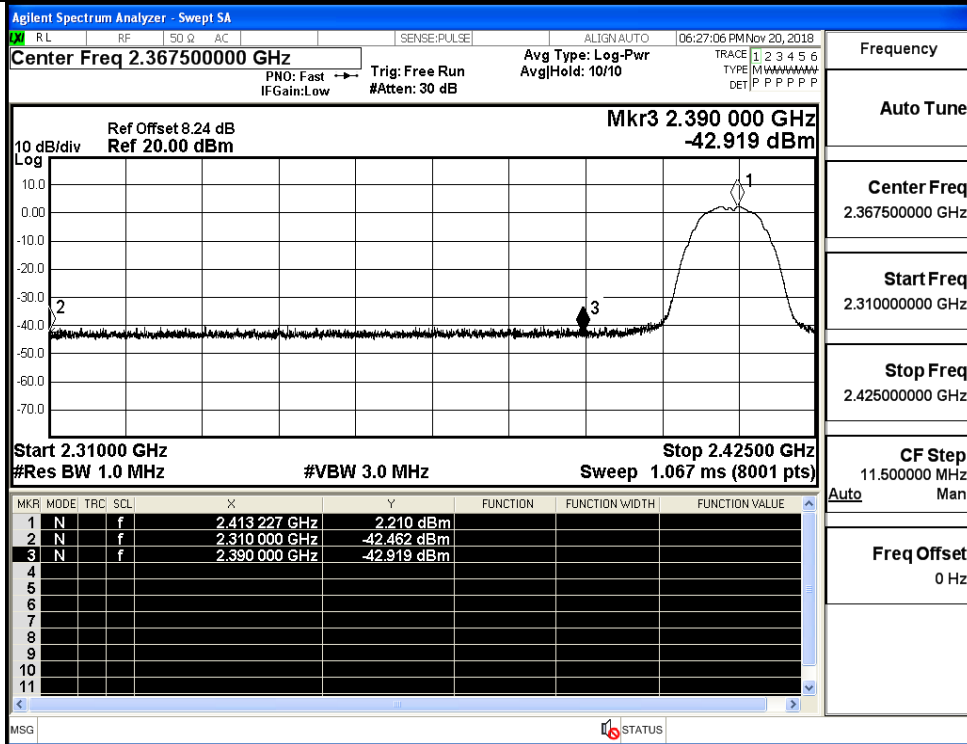


A.7 Restrict-band band-edge measurements

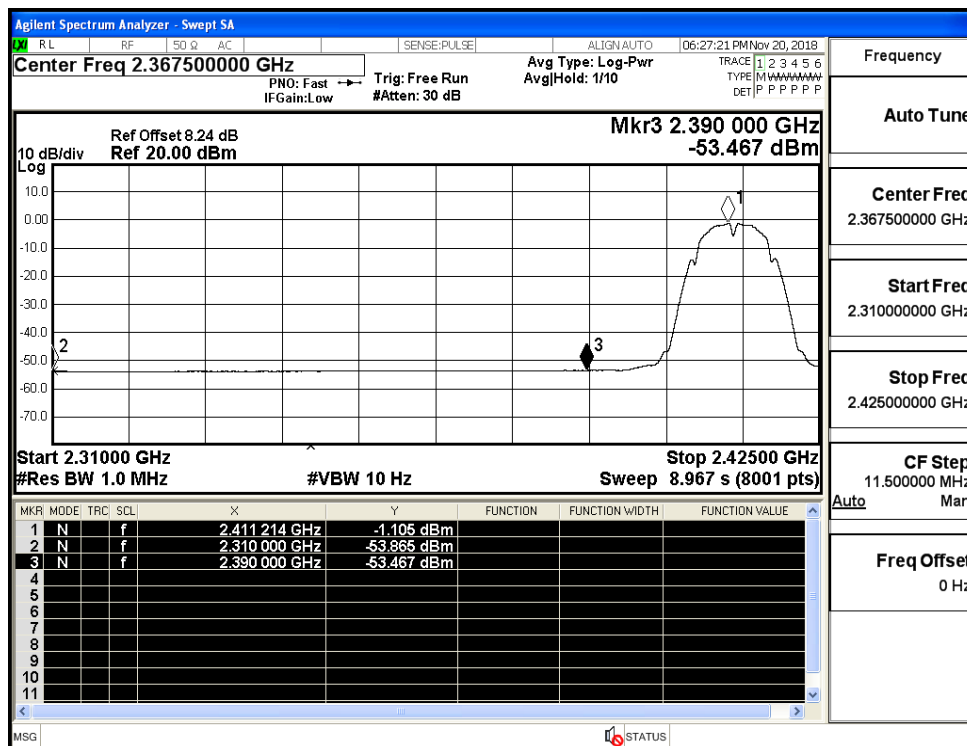
Test Mode	Test Channel	Ant	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
11B	2412	Ant1	2310.0	-42.46	2.0	0	52.80	PEAK	74	PASS
	2412	Ant1	2310.0	-53.87	2.0	0	41.39	AV	54	PASS
	2412	Ant1	2390.0	-42.92	2.0	0	52.34	PEAK	74	PASS
	2412	Ant1	2390.0	-53.47	2.0	0	41.79	AV	54	PASS
	2462	Ant1	2483.5	-42.68	2.0	0	52.58	PEAK	74	PASS
	2462	Ant1	2483.5	-53.34	2.0	0	41.92	AV	54	PASS
	2462	Ant1	2500.0	-43.11	2.0	0	52.15	PEAK	74	PASS
	2462	Ant1	2500.0	-53.09	2.0	0	42.17	AV	54	PASS
11G	2412	Ant1	2310.0	-43.22	2.0	0	52.04	PEAK	74	PASS
	2412	Ant1	2310.0	-53.84	2.0	0	41.42	AV	54	PASS
	2412	Ant1	2390.0	-41.62	2.0	0	53.64	PEAK	74	PASS
	2412	Ant1	2390.0	-53.23	2.0	0	42.03	AV	54	PASS
	2462	Ant1	2483.5	-41.74	2.0	0	53.52	PEAK	74	PASS
	2462	Ant1	2483.5	-53.01	2.0	0	42.25	AV	54	PASS
	2462	Ant1	2500.0	-41.91	2.0	0	53.35	PEAK	74	PASS
	2462	Ant1	2500.0	-52.96	2.0	0	42.30	AV	54	PASS
11N20 SISO	2412	Ant1	2310.0	-41.89	2.0	0	53.37	PEAK	74	PASS
	2412	Ant1	2310.0	-53.83	2.0	0	41.42	AV	54	PASS
	2412	Ant1	2390.0	-41.99	2.0	0	53.26	PEAK	74	PASS
	2412	Ant1	2390.0	-53.16	2.0	0	42.10	AV	54	PASS
	2462	Ant1	2483.5	-41.32	2.0	0	53.93	PEAK	74	PASS
	2462	Ant1	2483.5	-52.95	2.0	0	42.31	AV	54	PASS
	2462	Ant1	2500.0	-41.59	2.0	0	53.66	PEAK	74	PASS
	2462	Ant1	2500.0	-52.97	2.0	0	42.29	AV	54	PASS
11N40 SISO	2422	Ant1	2310.0	-43.32	2.0	0	51.94	PEAK	74	PASS
	2422	Ant1	2310.0	-53.85	2.0	0	41.41	AV	54	PASS

	2422	Ant1	2390.0	-43.00	2.0	0	52.25	PEAK	74	PASS
	2422	Ant1	2390.0	-53.04	2.0	0	42.22	AV	54	PASS
	2452	Ant1	2483.5	-39.16	2.0	0	56.09	PEAK	74	PASS
	2452	Ant1	2483.5	-52.95	2.0	0	42.31	AV	54	PASS
	2452	Ant1	2500.0	-41.60	2.0	0	53.66	PEAK	74	PASS
	2452	Ant1	2500.0	-53.02	2.0	0	42.23	AV	54	PASS

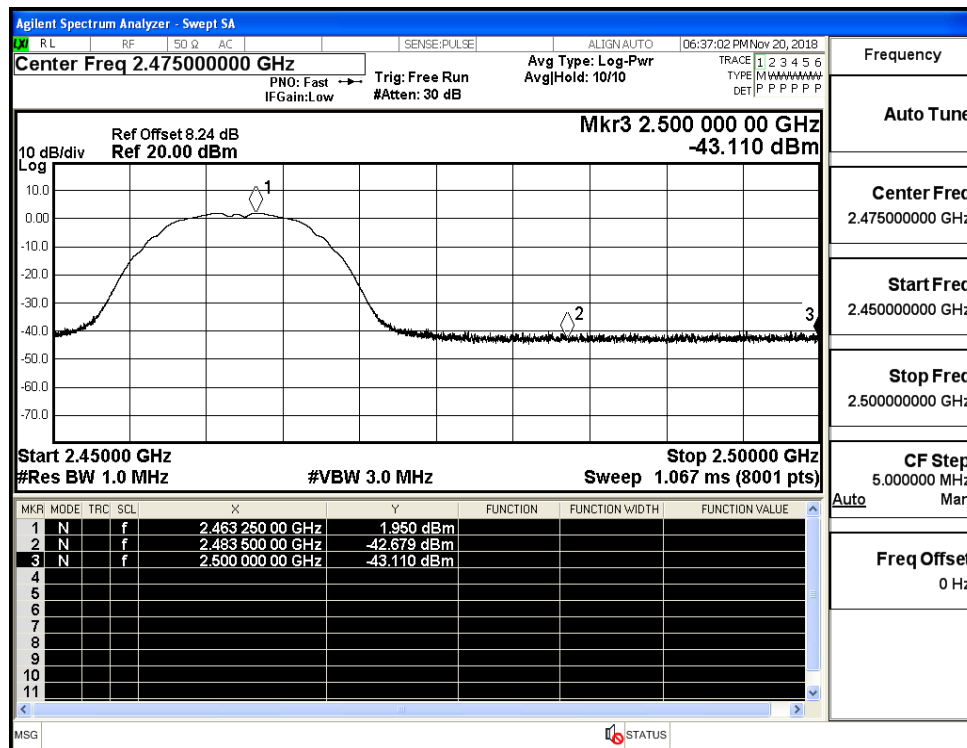
Restrict-band band-edge measurements_11B_2412_Ant1_PEAK



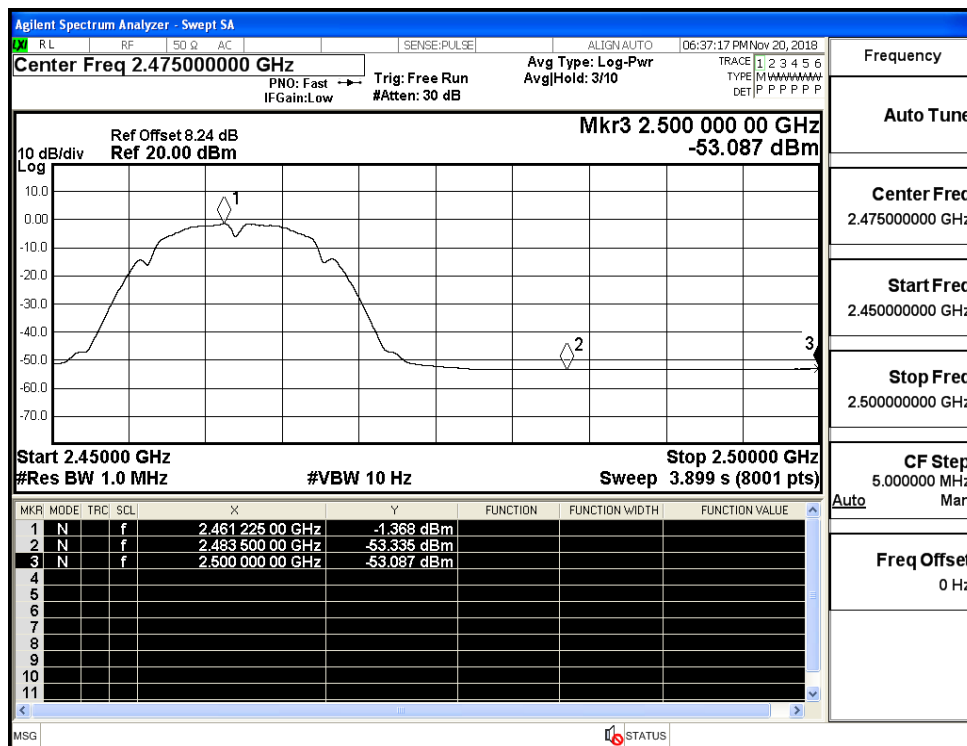
Restrict-band band-edge measurements_11B_2412_Ant1_AV



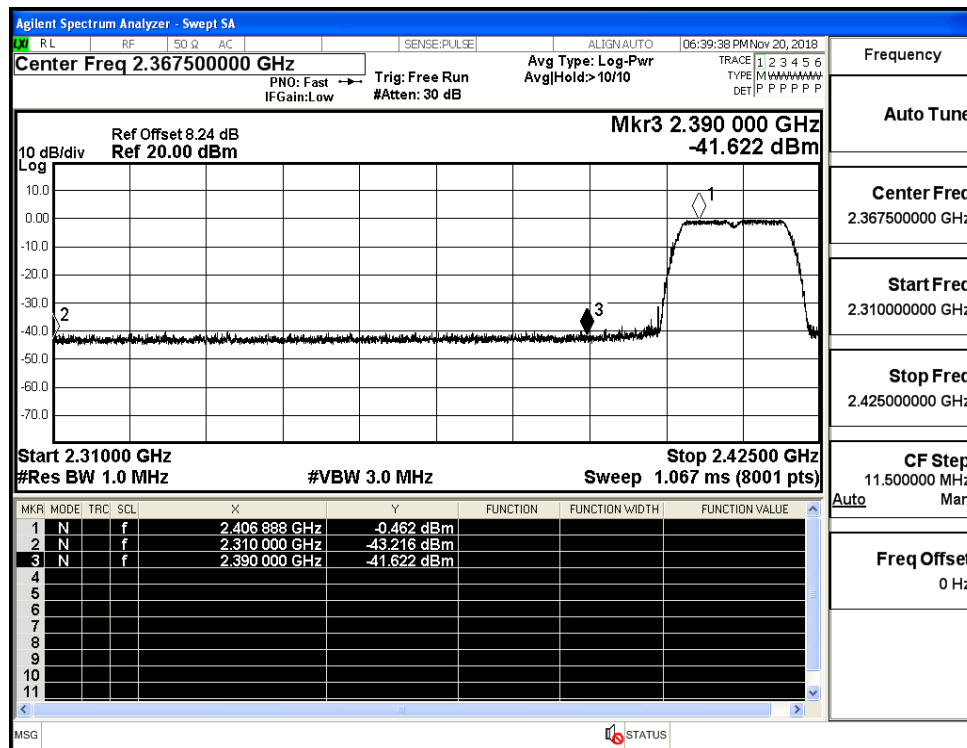
Restrict-band band-edge measurements_11B_2462_Ant1_PEAK



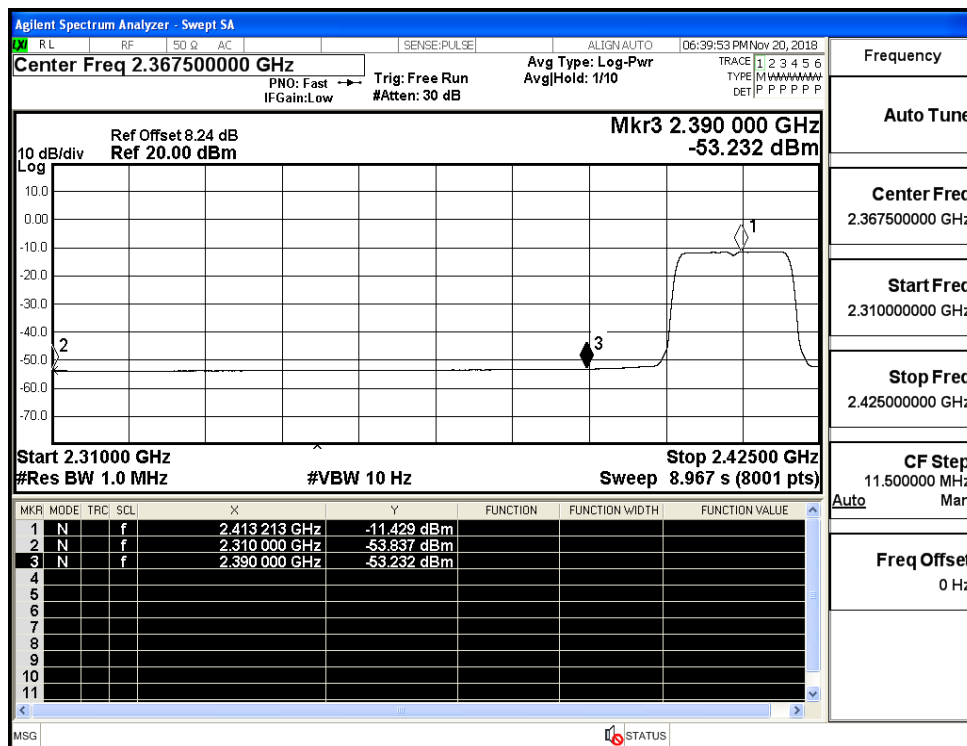
Restrict-band band-edge measurements_11B_2462_Ant1_AV



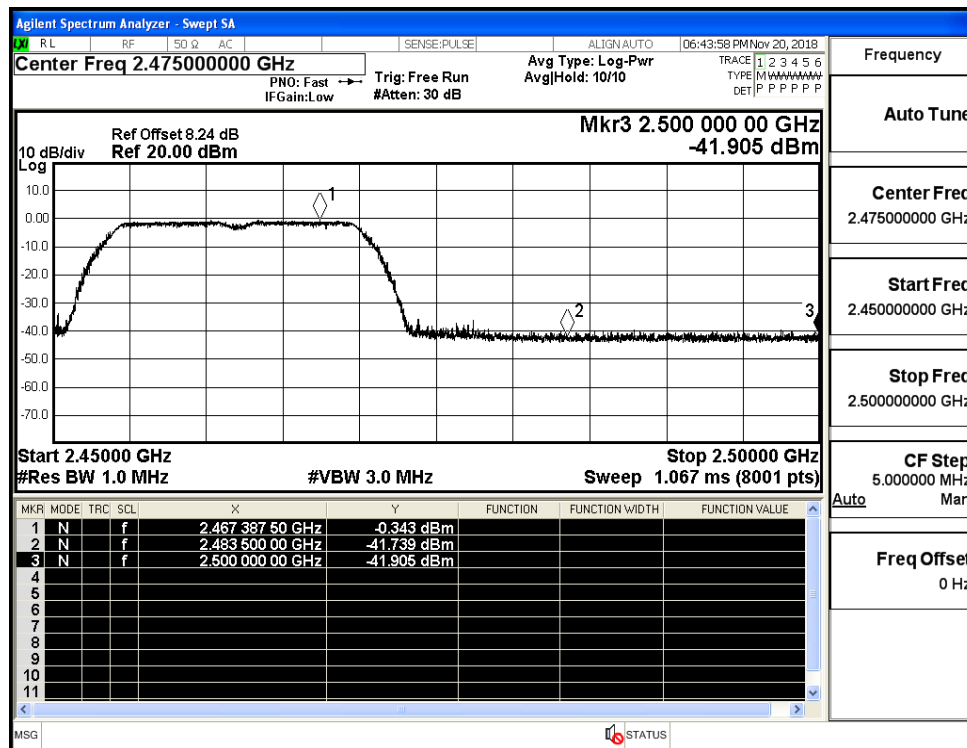
Restrict-band band-edge measurements_11G_2412_Ant1_PEAK



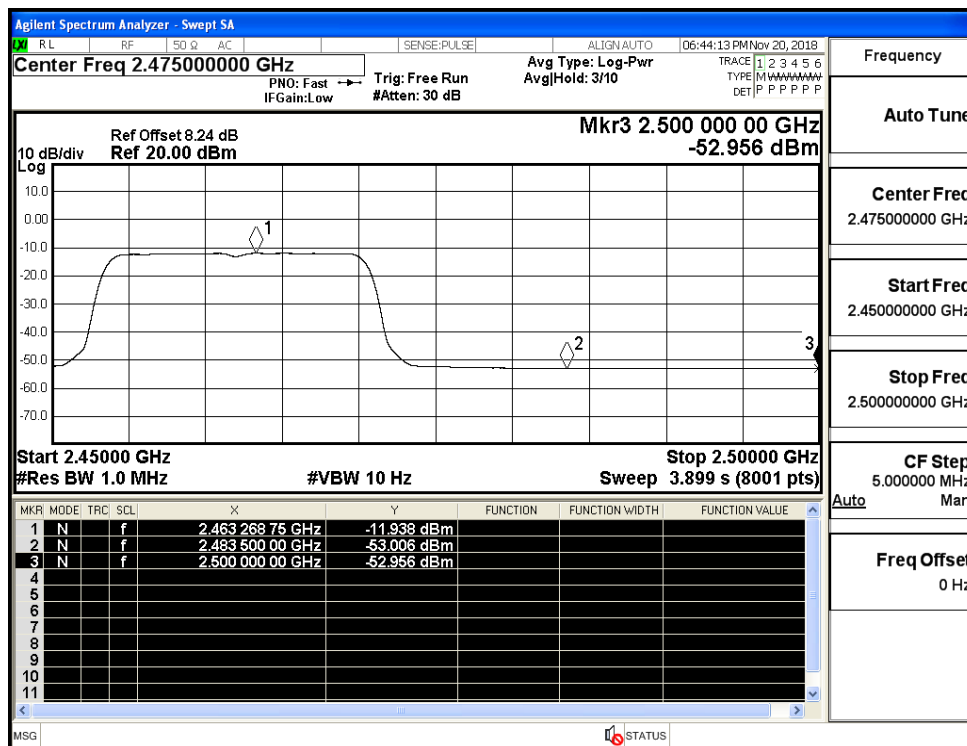
Restrict-band band-edge measurements_11G_2412_Ant1_AV



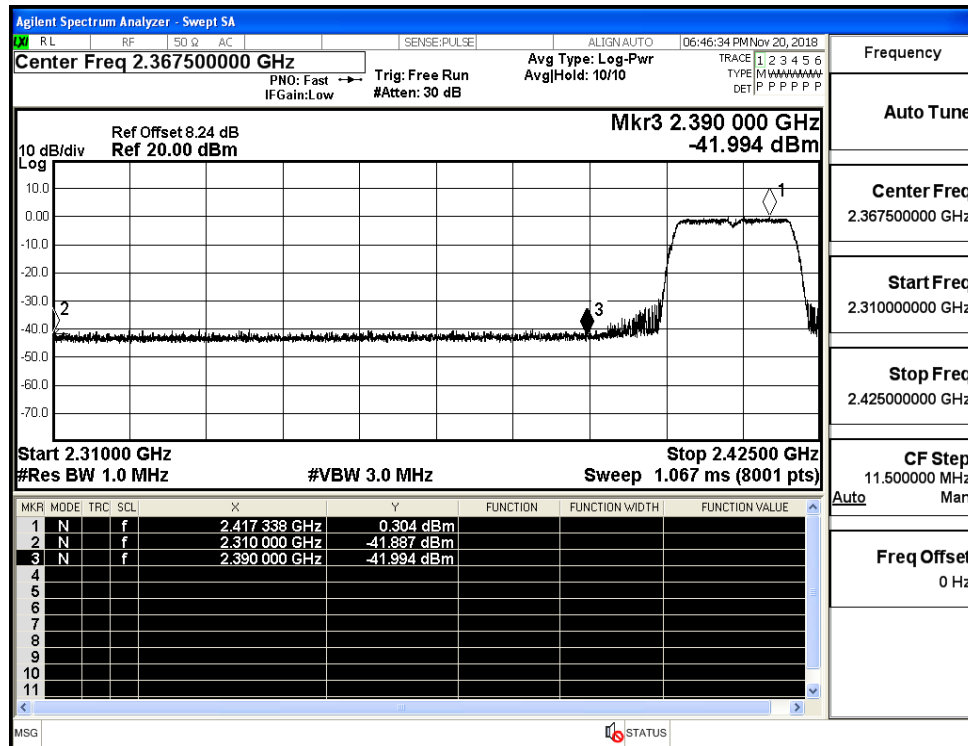
Restrict-band band-edge measurements_11G_2462_Ant1_PEAK



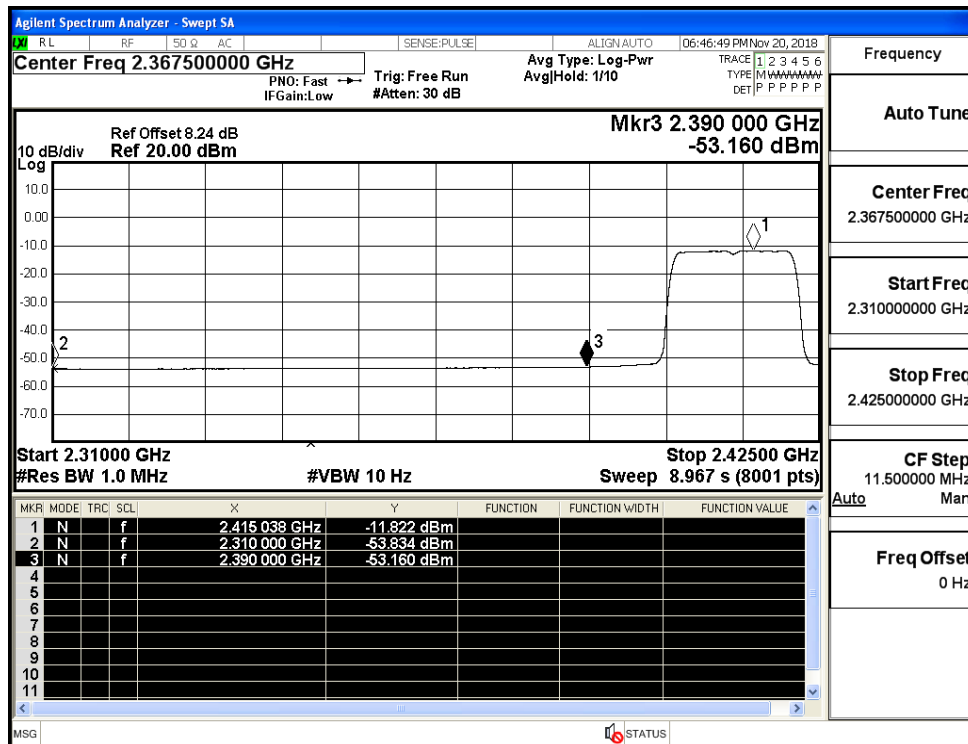
Restrict-band band-edge measurements_11G_2462_Ant1_AV



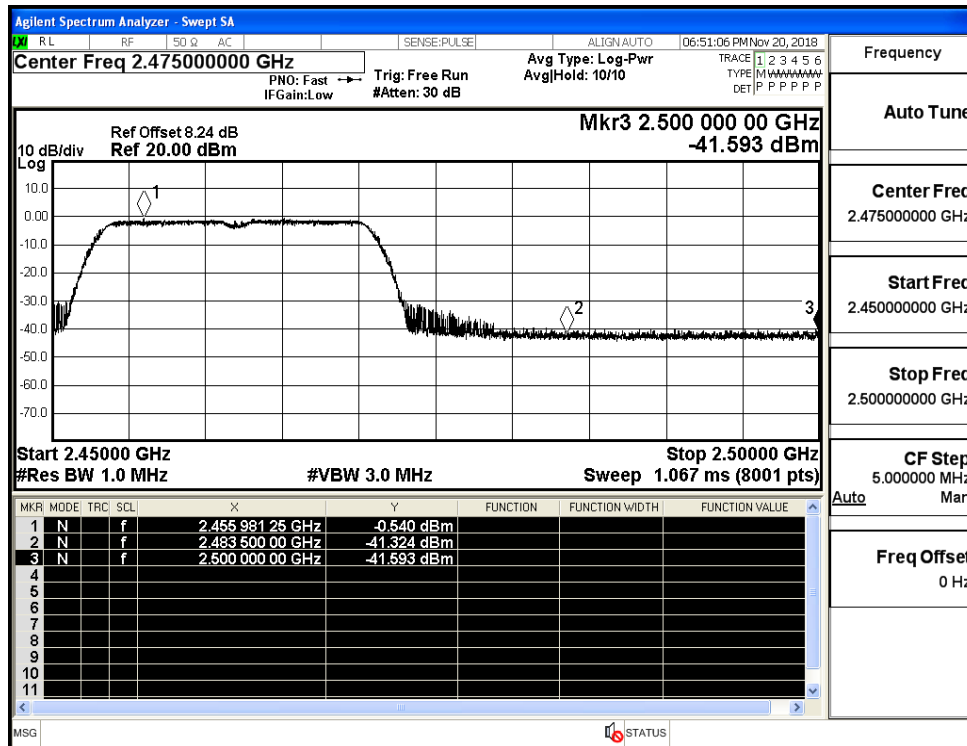
Restrict-band band-edge measurements_11N20SISO_2412_Ant1_PEAK



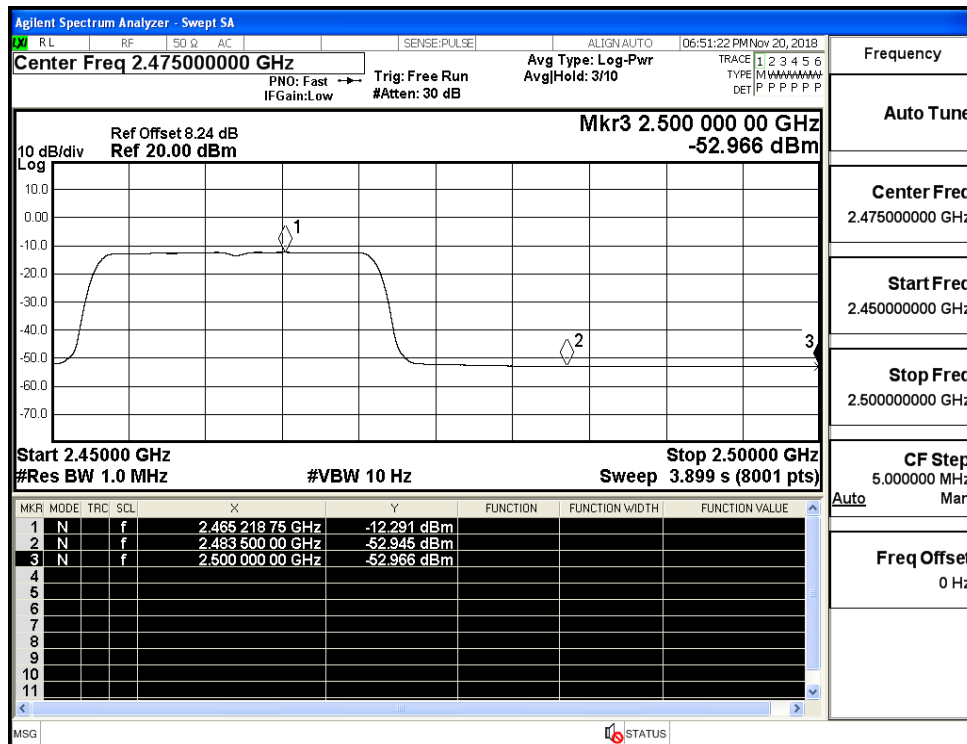
Restrict-band band-edge measurements_11N20SISO_2412_Ant1_AV



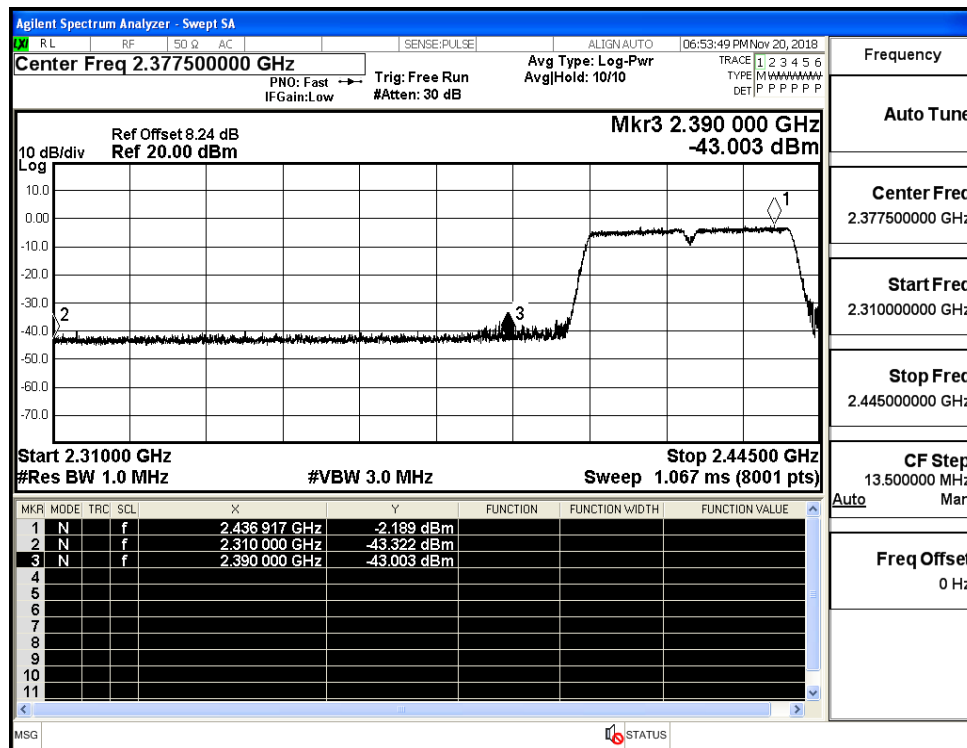
Restrict-band band-edge measurements_11N20SISO_2462_Ant1_PEAK



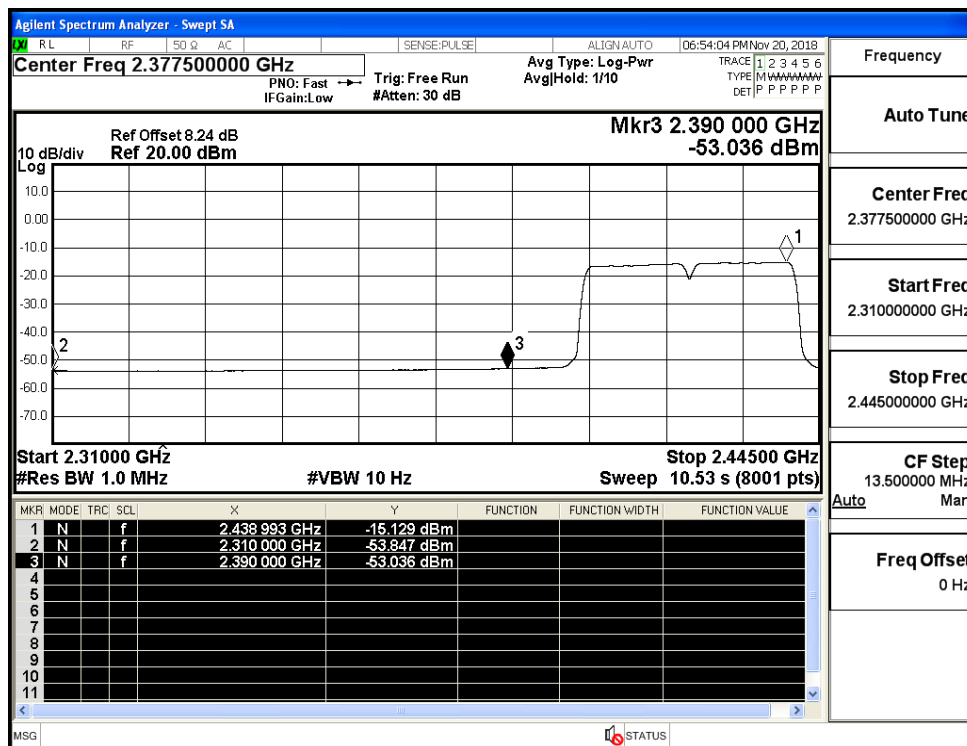
Restrict-band band-edge measurements_11N20SISO_2462_Ant1_AV



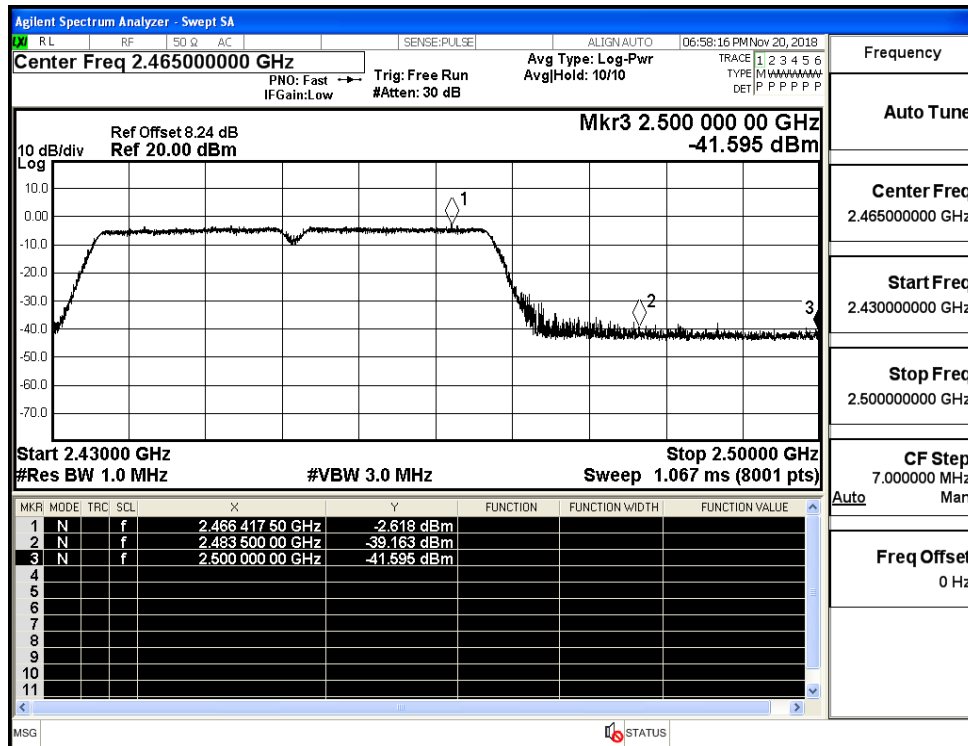
Restrict-band band-edge measurements_11N40SISO_2422_Ant1_PEAK



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

