

Appendix A

RF Test Data for 2.4G WIFI (Conducted Measurement)

Product Name: LED Lamps

Trade Mark: YAMAO

Test Model: YMDWF A19 10W 1834-RGB20-50

Environmental Conditions

Temperature:	24.6 ° C
Relative Humidity:	52.6%
ATM Pressure:	100.0 kPa
Test Engineer:	WANGCHUANG
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

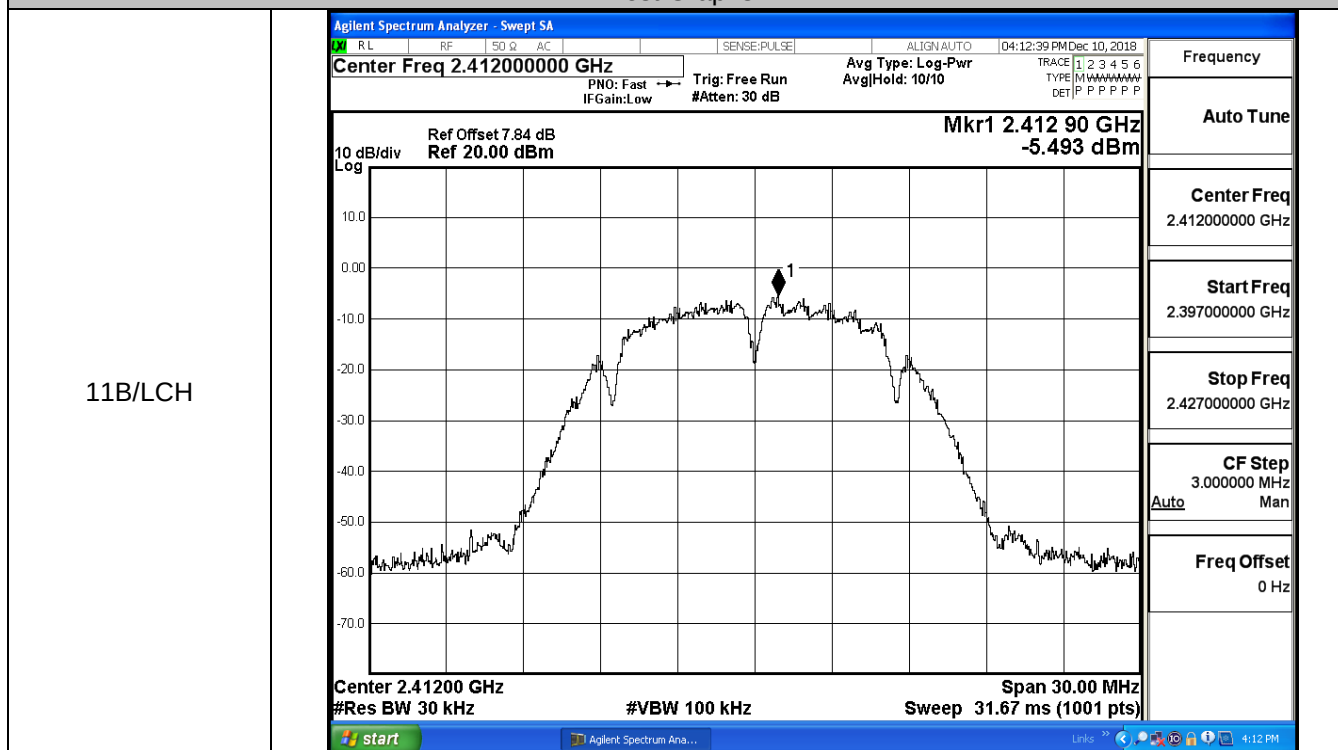
A.2 Maximum Conducted Output Power

Mode	Channel	Meas.Level [dBm]	Limit [dBm]	Verdict
11B	LCH	12.39	30	PASS
	MCH	12.66	30	PASS
	HCH	12.58	30	PASS
11G	LCH	12.49	30	PASS
	MCH	14.56	30	PASS
	HCH	14.47	30	PASS
11N20SISO	LCH	13.69	30	PASS
	MCH	13.76	30	PASS
	HCH	13.93	30	PASS

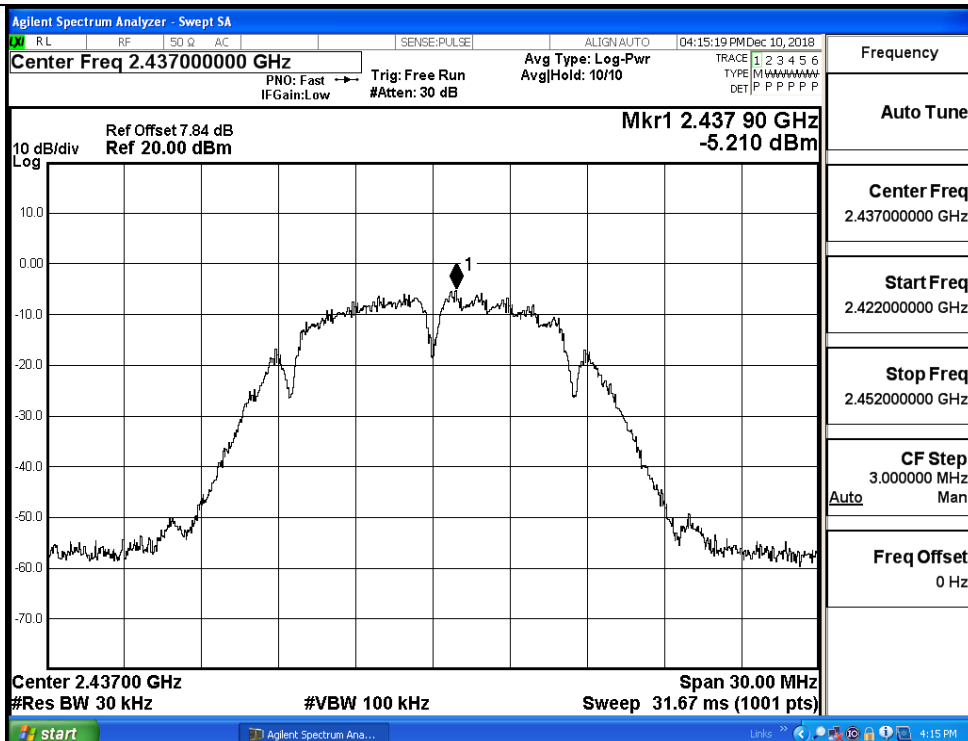
A.3 Maximum Power Spectral Density

Mode	Channel	Meas.Level [dBm/30KHz]	Limit [dBm/3KHz]	Verdict
11B	LCH	-5.493	8	PASS
	MCH	-5.210	8	PASS
	HCH	-5.255	8	PASS
11G	LCH	-12.124	8	PASS
	MCH	-9.408	8	PASS
	HCH	-9.230	8	PASS
11N20SISO	LCH	-10.992	8	PASS
	MCH	-10.553	8	PASS
	HCH	-10.575	8	PASS

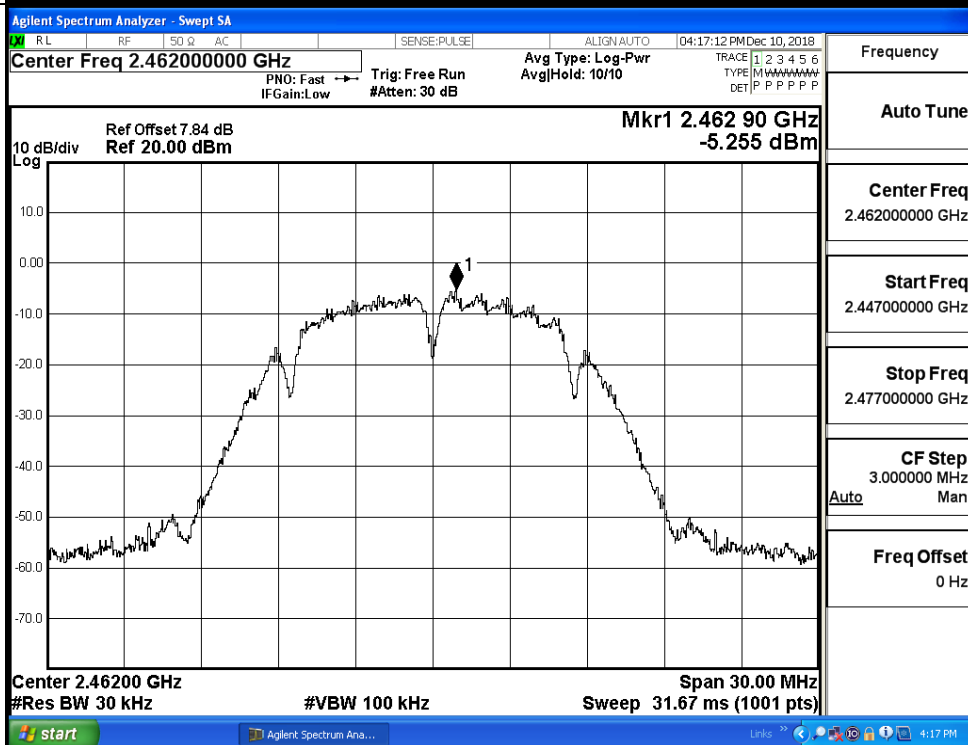
Test Graphs



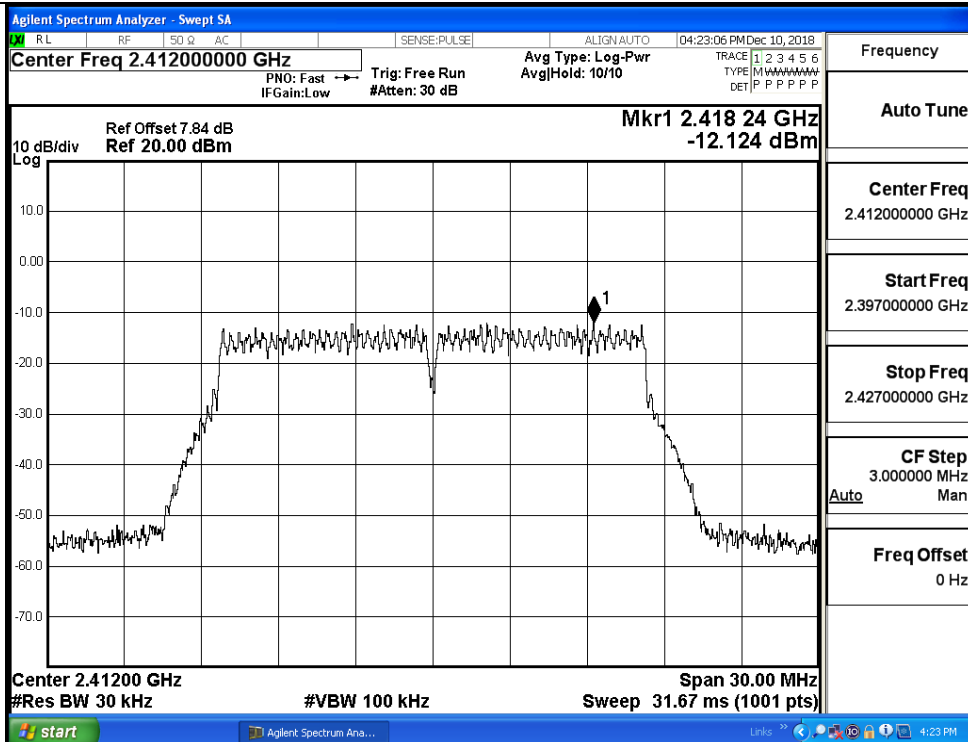
11B/MCH



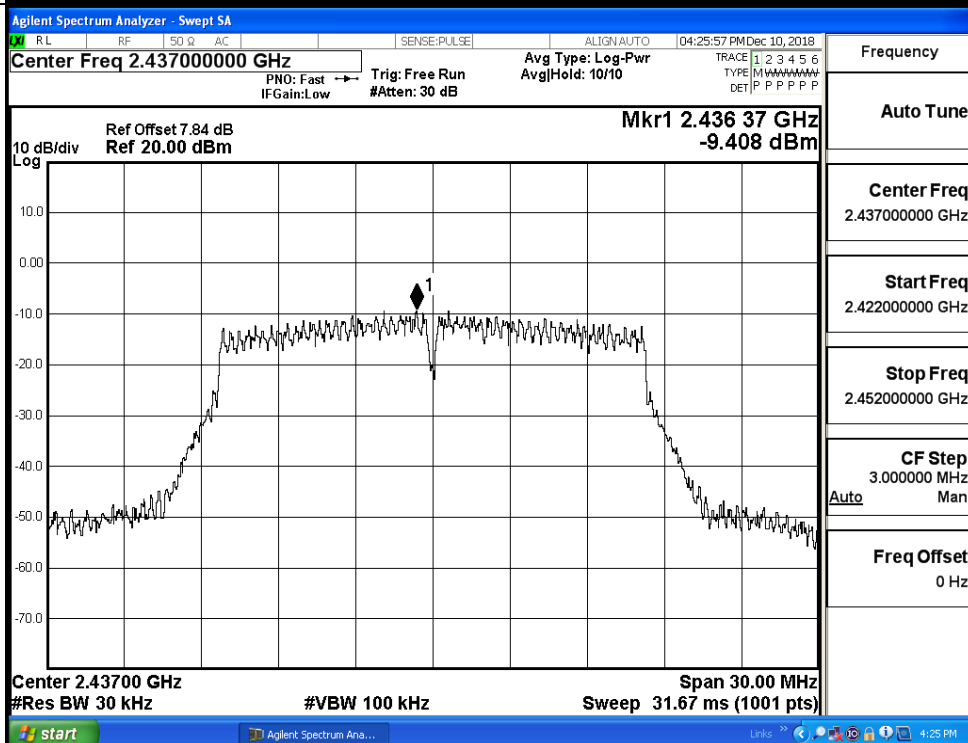
11B/HCH



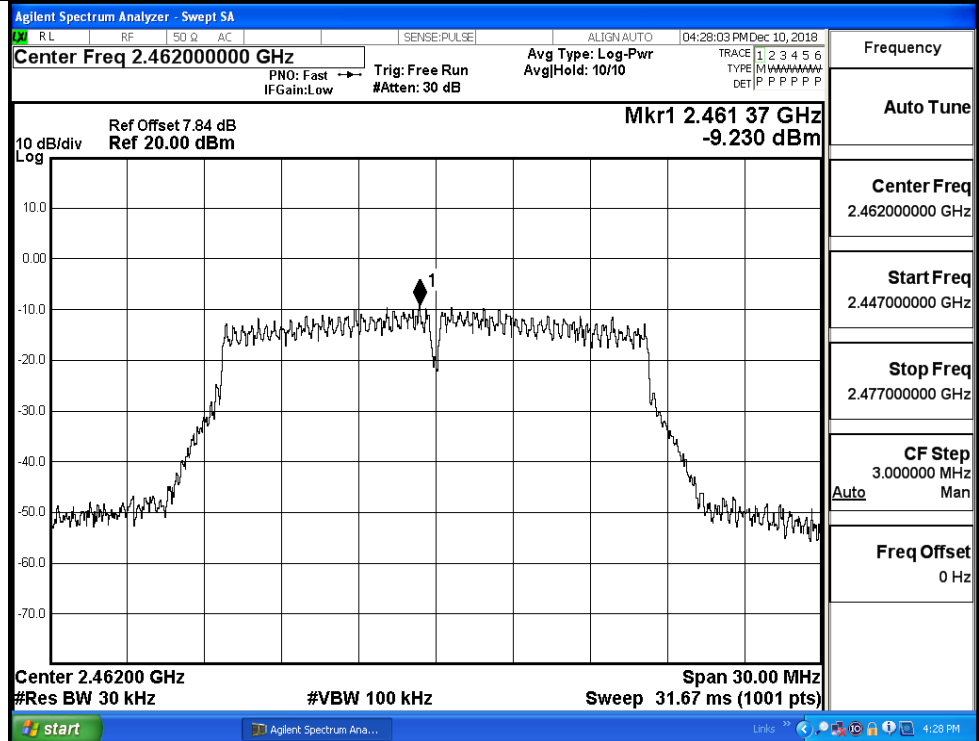
11G/LCH



11G/MCH



11G/HCH



Frequency

Auto Tune

Center Freq
2.46200000 GHz

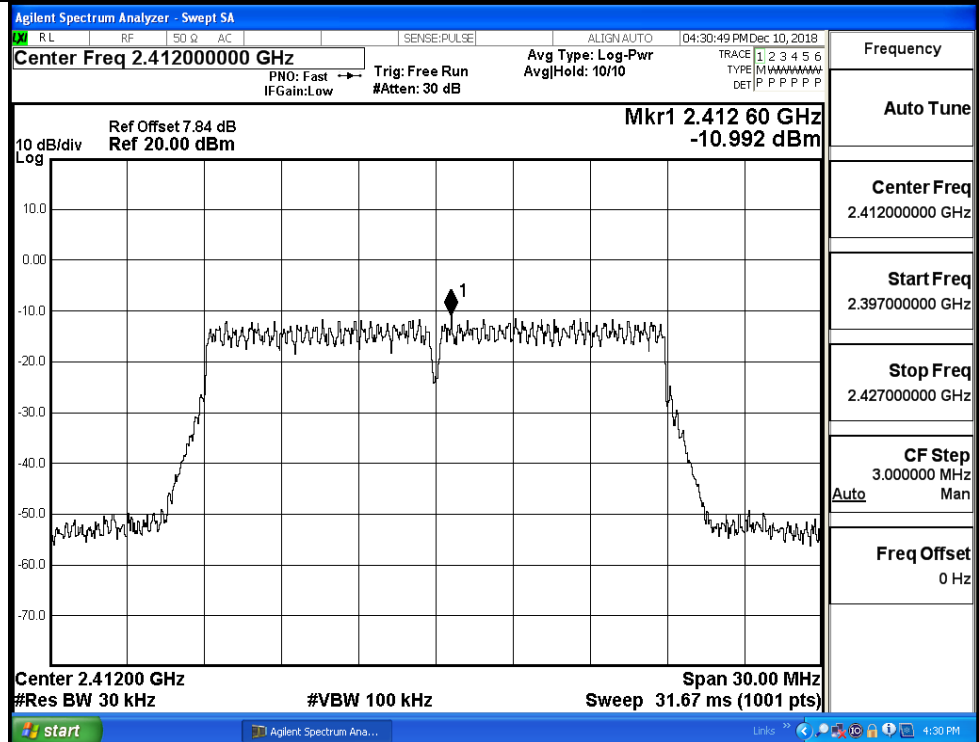
Start Freq
2.447000000 GHz

Stop Freq
2.477000000 GHz

CF Step
3.000000 MHz
Auto Man

Freq Offset
0 Hz

11N20SISO/LCH



Frequency

Auto Tune

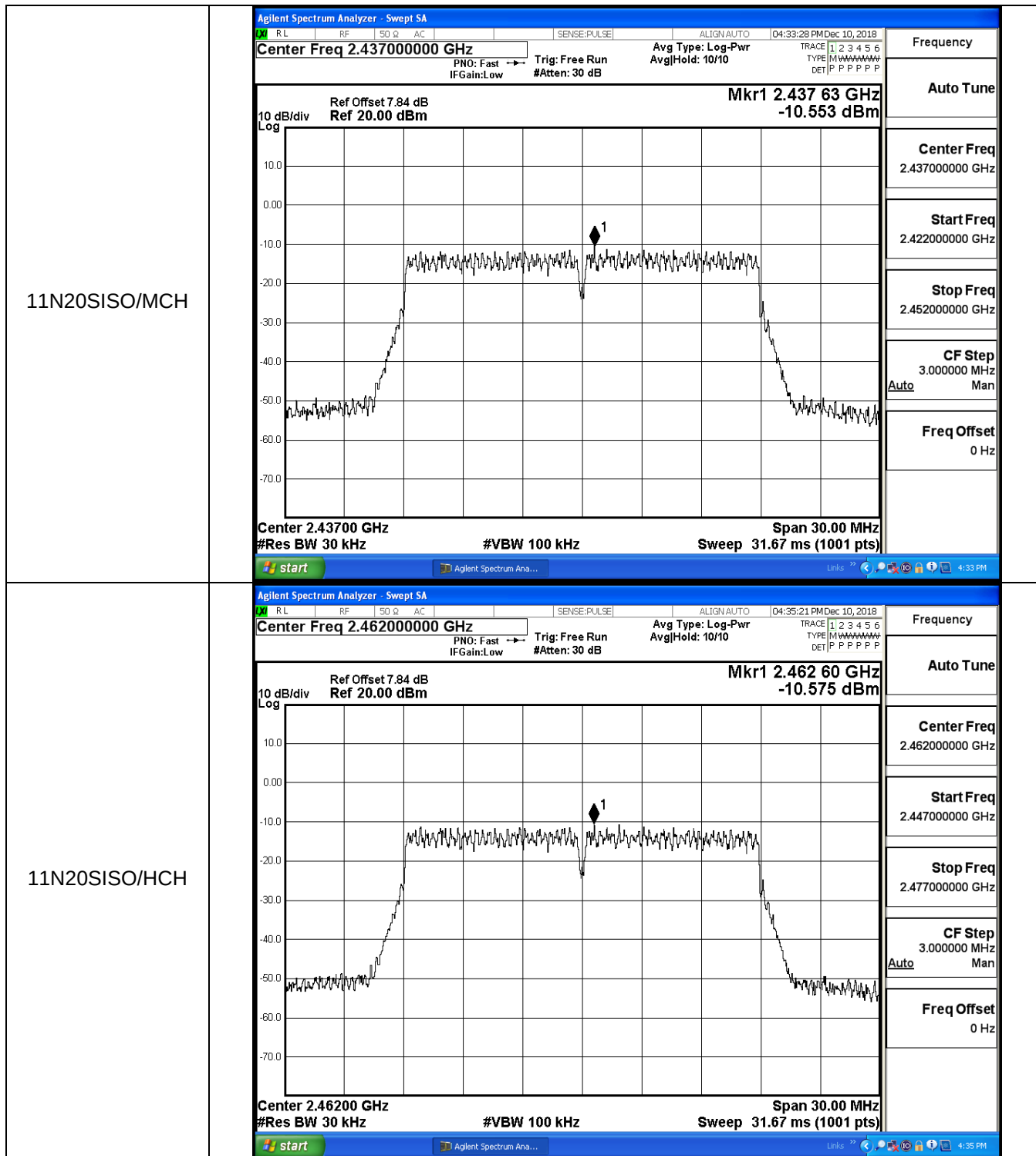
Center Freq
2.41200000 GHz

Start Freq
2.397000000 GHz

Stop Freq
2.427000000 GHz

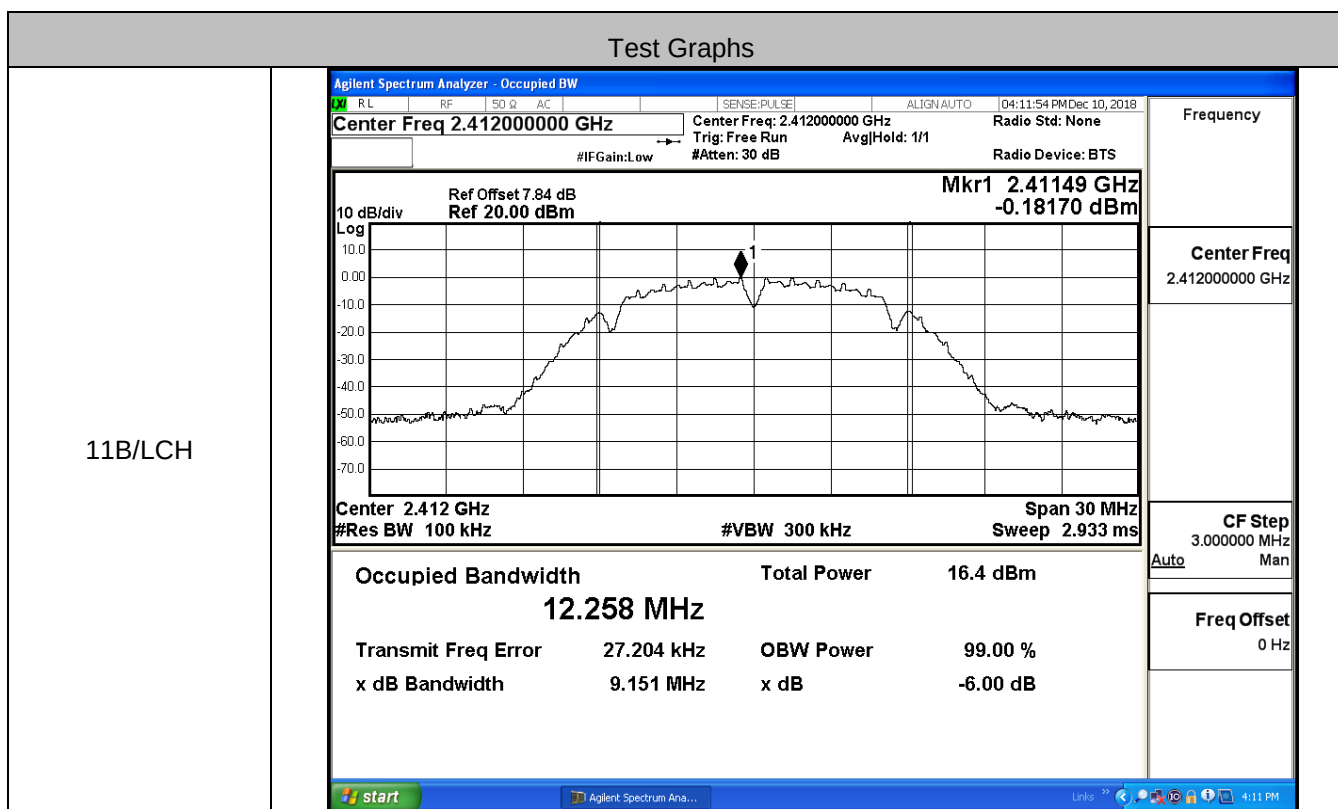
CF Step
3.000000 MHz
Auto Man

Freq Offset
0 Hz

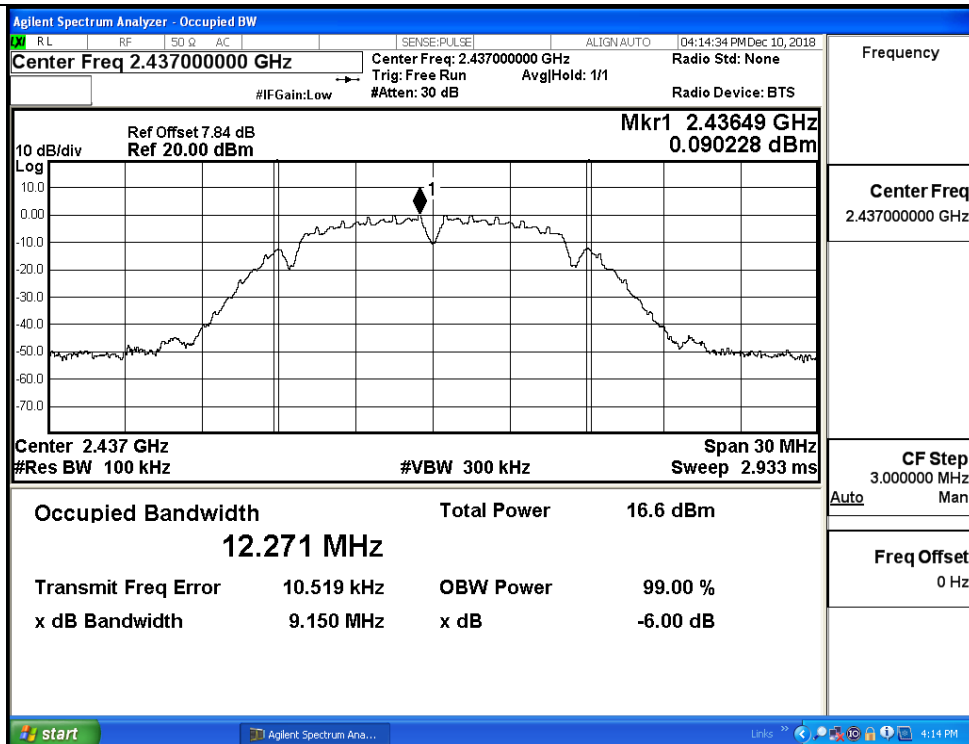


A.4 6dB Bandwidth

Mode	Channel	6dB Bandwidth [MHz]	Limit [MHz]	Verdict
11B	LCH	9.151	≥ 0.5	PASS
	MCH	9.150	≥ 0.5	PASS
	HCH	9.151	≥ 0.5	PASS
11G	LCH	16.61	≥ 0.5	PASS
	MCH	16.43	≥ 0.5	PASS
	HCH	16.41	≥ 0.5	PASS
11N20SISO	LCH	17.82	≥ 0.5	PASS
	MCH	17.84	≥ 0.5	PASS
	HCH	17.84	≥ 0.5	PASS



11B/MCH



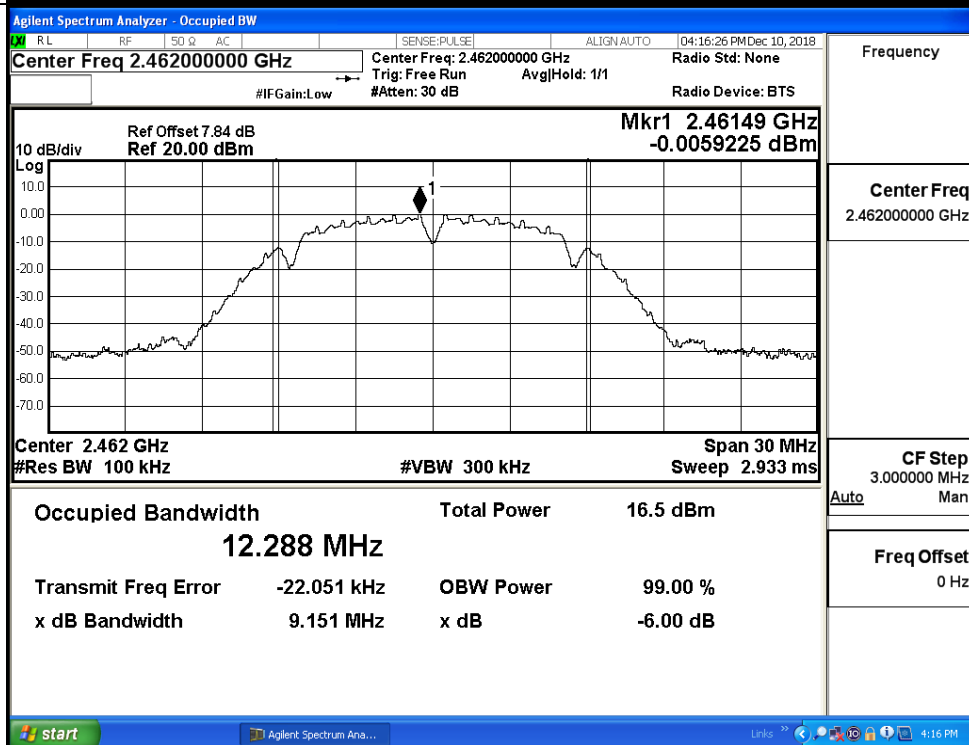
Frequency

Center Freq
2.437000000 GHz

CF Step
3.000000 MHz
Auto Man

Freq Offset
0 Hz

11B/HCH



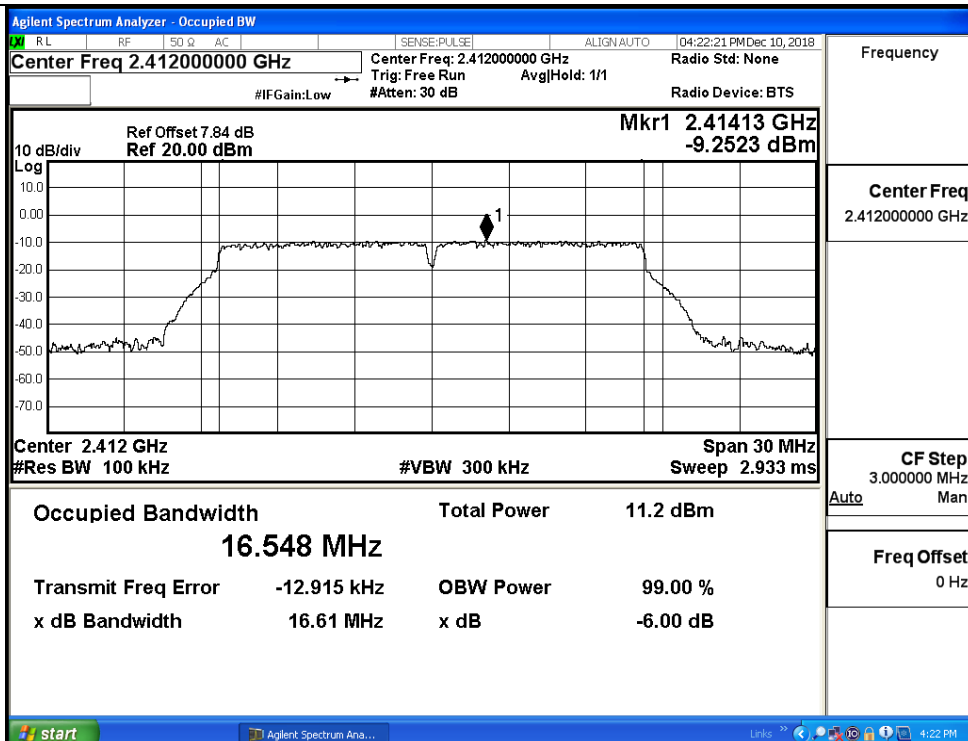
Frequency

Center Freq
2.462000000 GHz

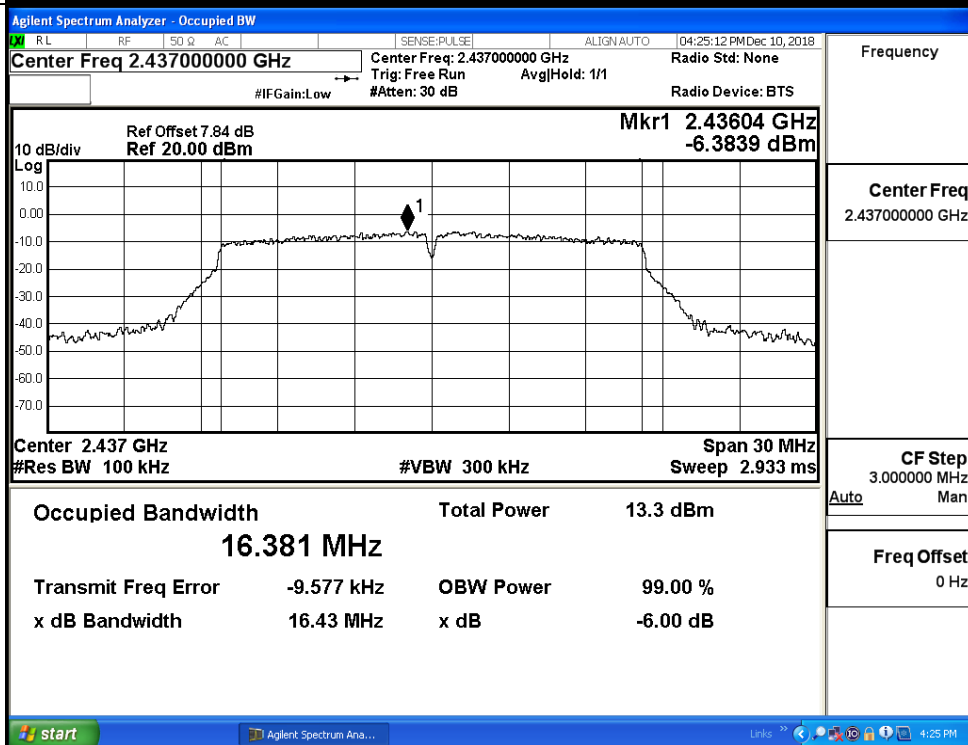
CF Step
3.000000 MHz
Auto Man

Freq Offset
0 Hz

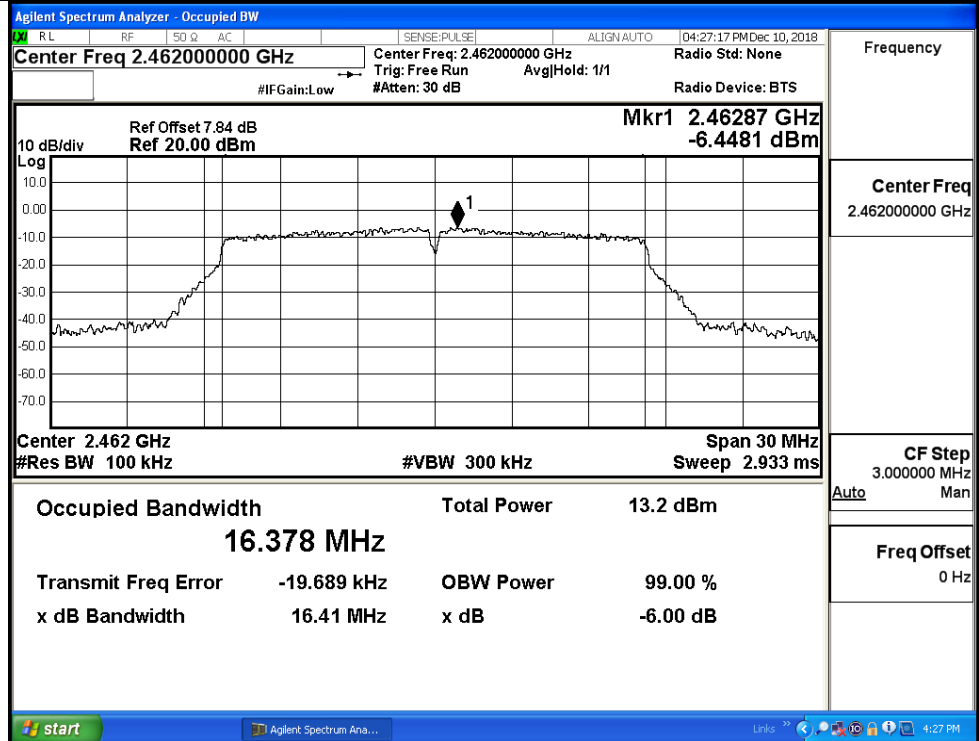
11G/LCH



11G/MCH



11G/HCH



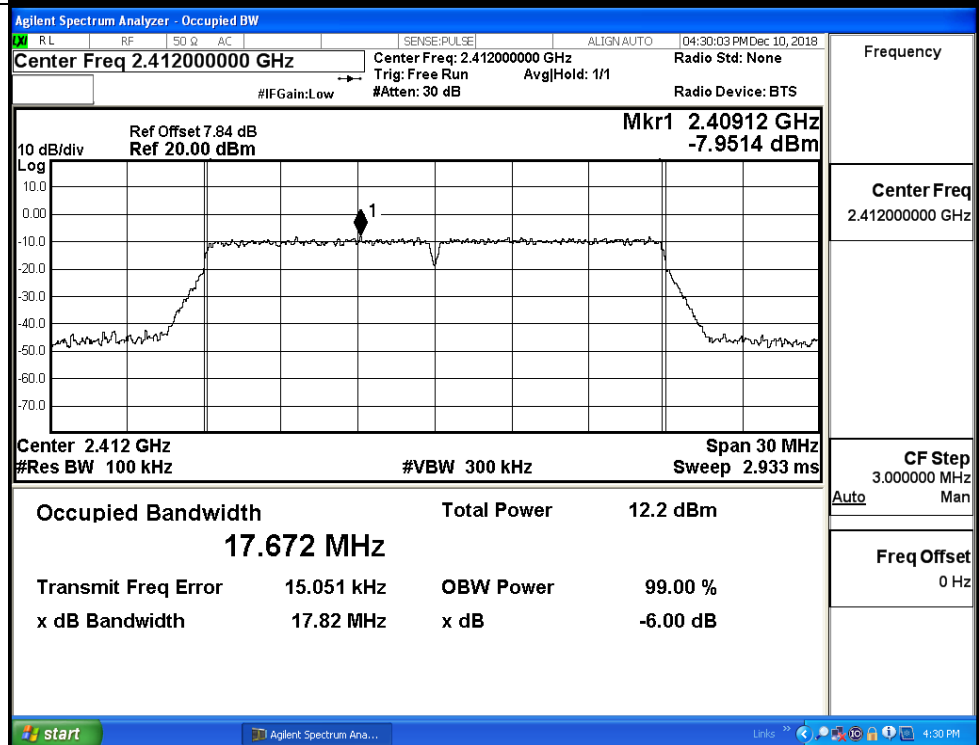
Frequency

Center Freq
2.462000000 GHz

CF Step
3.000000 MHz
Auto Man

Freq Offset
0 Hz

11N20SISO/LCH

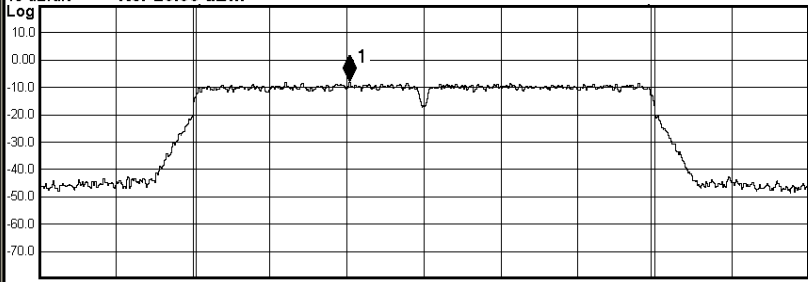
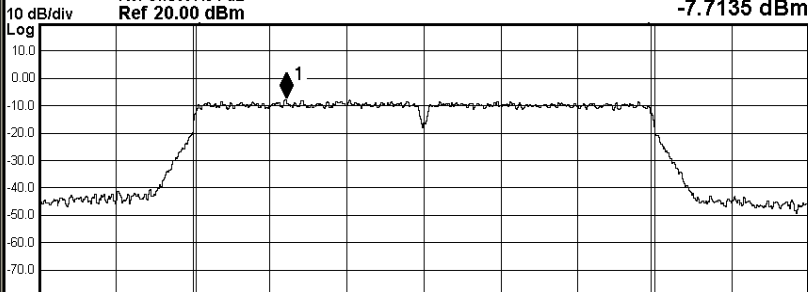


Frequency

Center Freq
2.412000000 GHz

CF Step
3.000000 MHz
Auto Man

Freq Offset
0 Hz

11N20SISO/MCH	Agilent Spectrum Analyzer - Occupied BW RL RF 50 Ω AC SENSE:PULSE ALIGN:AUTO 104:32:43 PM Dec 10, 2018 Center Freq 2.437000000 GHz Center Freq: 2.437000000 GHz Trig: Free Run Avg Hold: 1/1 Radio Std: None #IFGain:Low #Atten: 30 dB Radio Device: BTS 10 dB/div Ref Offset 7.84 dB Ref 20.00 dBm Mkr1 2.43412 GHz -7.9508 dBm  Center 2.437 GHz #Res BW 100 kHz #VBW 300 kHz Span 30 MHz Sweep 2.933 ms Occupied Bandwidth 17.679 MHz Total Power 12.3 dBm Transmit Freq Error 9.015 kHz OBW Power 99.00 % x dB Bandwidth 17.84 MHz x dB -6.00 dB start Agilent Spectrum Ana... Links 4:32 PM Frequency Center Freq 2.437000000 GHz CF Step 3.000000 MHz Auto Man Freq Offset 0 Hz
11N20SISO/HCH	Agilent Spectrum Analyzer - Occupied BW RL RF 50 Ω AC SENSE:PULSE ALIGN:AUTO 104:34:36 PM Dec 10, 2018 Center Freq 2.462000000 GHz Center Freq: 2.462000000 GHz Trig: Free Run Avg Hold: 1/1 Radio Std: None #IFGain:Low #Atten: 30 dB Radio Device: BTS 10 dB/div Ref Offset 7.84 dB Ref 20.00 dBm Mkr1 2.45663 GHz -7.7135 dBm  Center 2.462 GHz #Res BW 100 kHz #VBW 300 kHz Span 30 MHz Sweep 2.933 ms Occupied Bandwidth 17.677 MHz Total Power 12.5 dBm Transmit Freq Error -3.674 kHz OBW Power 99.00 % x dB Bandwidth 17.84 MHz x dB -6.00 dB start Agilent Spectrum Ana... Links 4:34 PM

Frequency

Center Freq

2.462000000 GHz

CF Step

3.000000 MHz

Auto

Man

Freq Offset

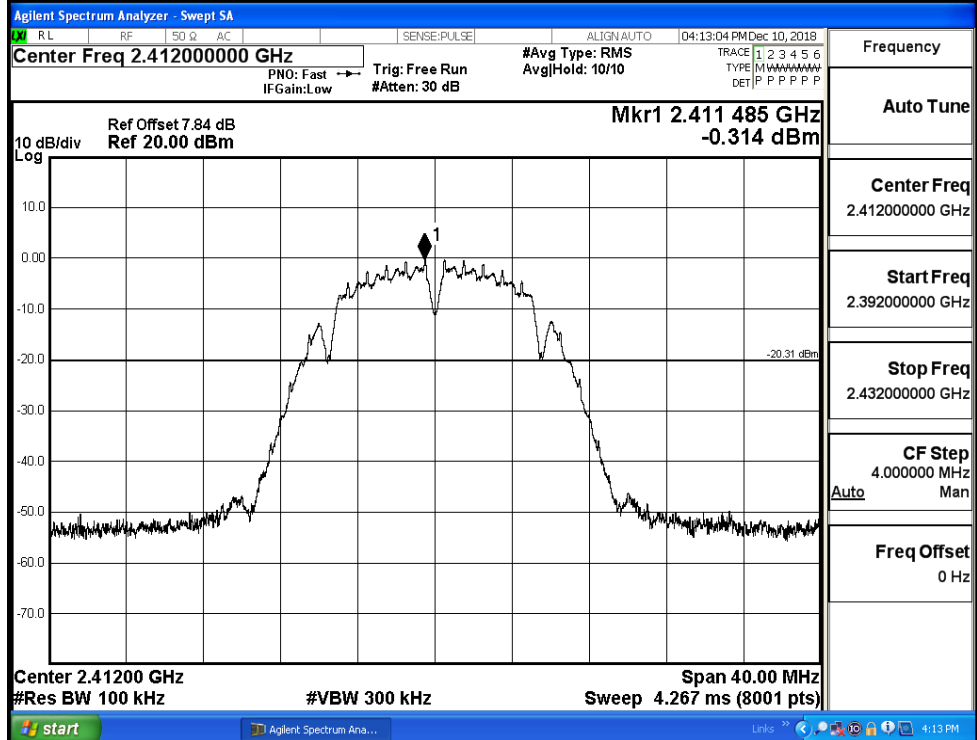
0 Hz

A.5 RF Conducted Spurious Emissions

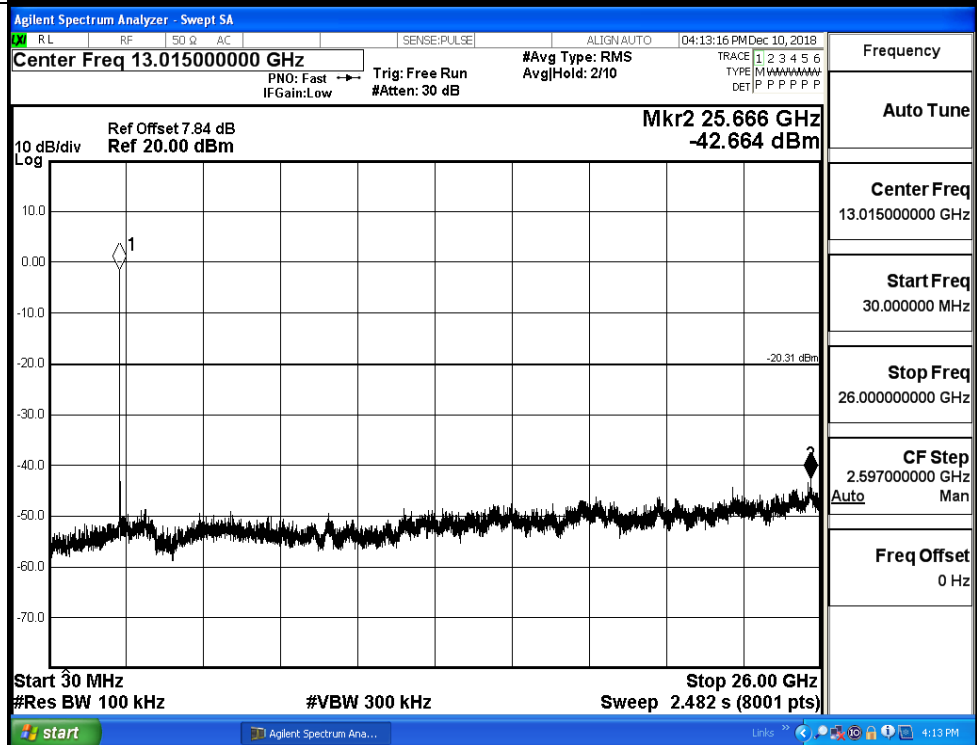
Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
11B	LCH	-0.314	-42.664	-20.314	PASS
	MCH	-0.026	-42.588	-20.026	PASS
	HCH	-0.065	-43.094	-20.065	PASS
11G	LCH	-9.377	-43.850	-29.377	PASS
	MCH	-6.424	-44.172	-26.424	PASS
	HCH	-6.649	-44.497	-26.649	PASS
11N20SISO	LCH	-8.422	-42.610	-28.422	PASS
	MCH	-8.023	-43.960	-28.023	PASS
	HCH	-7.821	-44.369	-27.821	PASS

11B LCH Graphs

Pref/11B/LCH

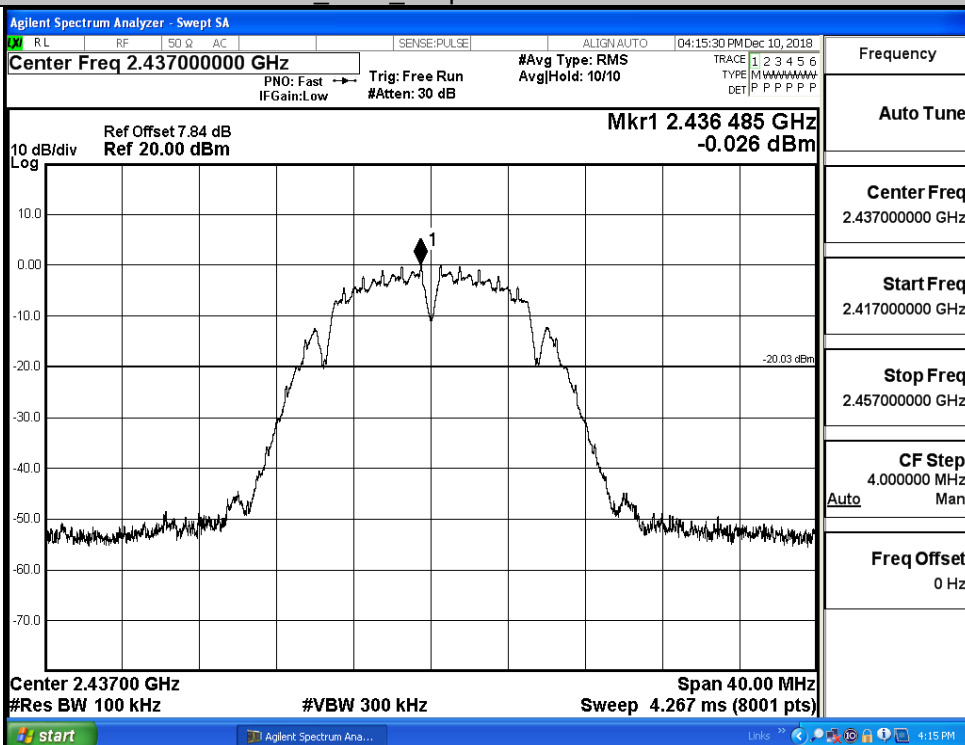


Puw/11B/LCH

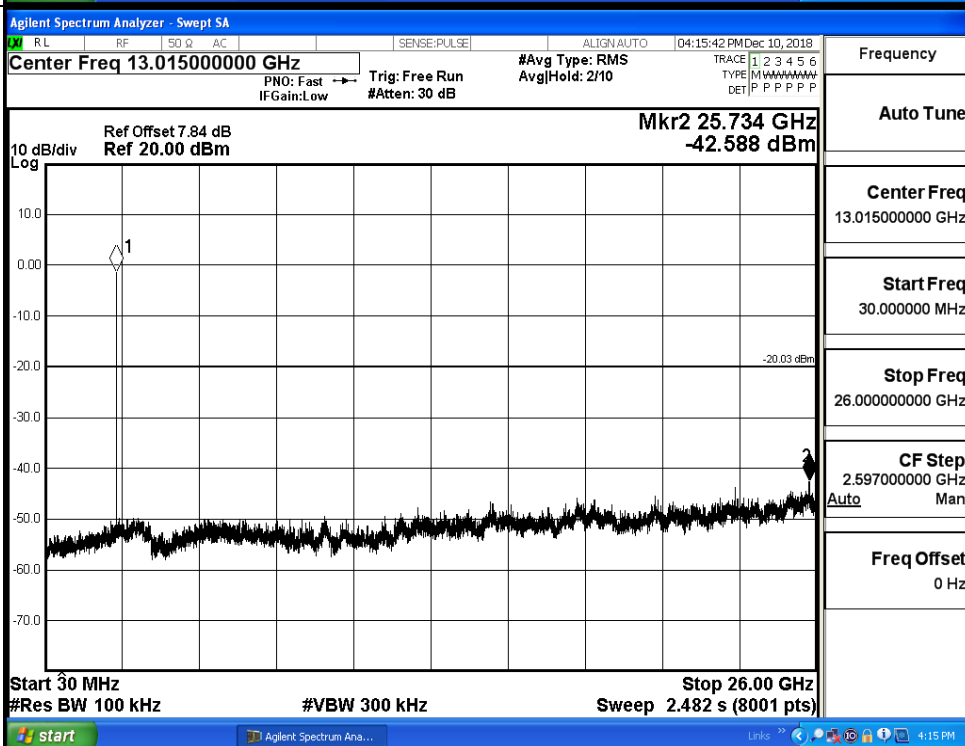


11B MCH Graphs

Pref/11B/MCH

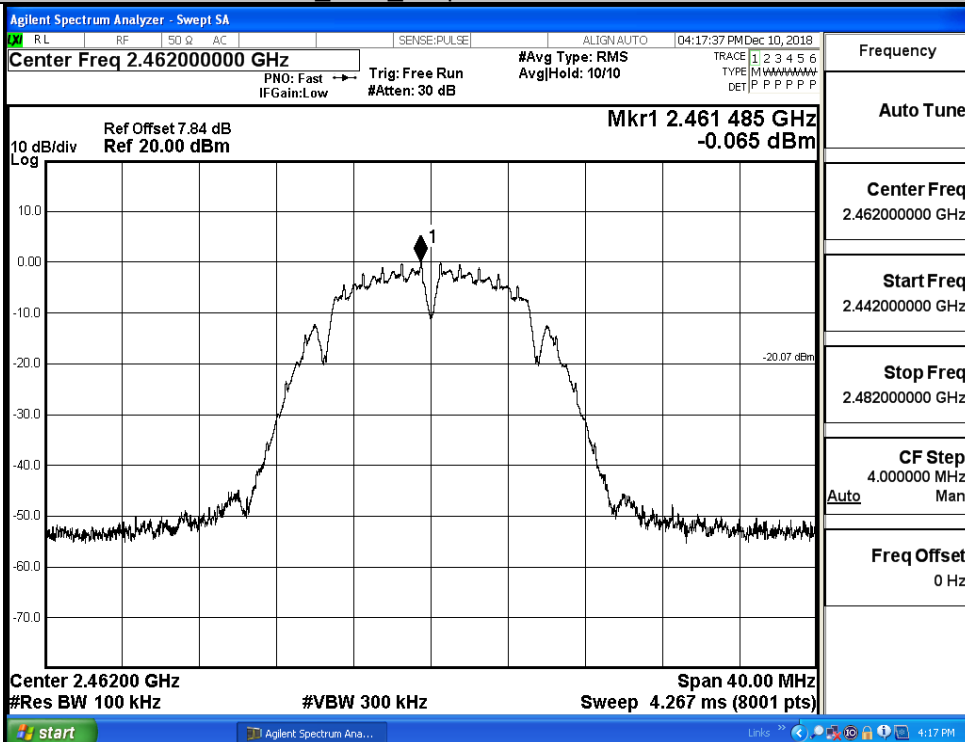


Puw/11B/MCH

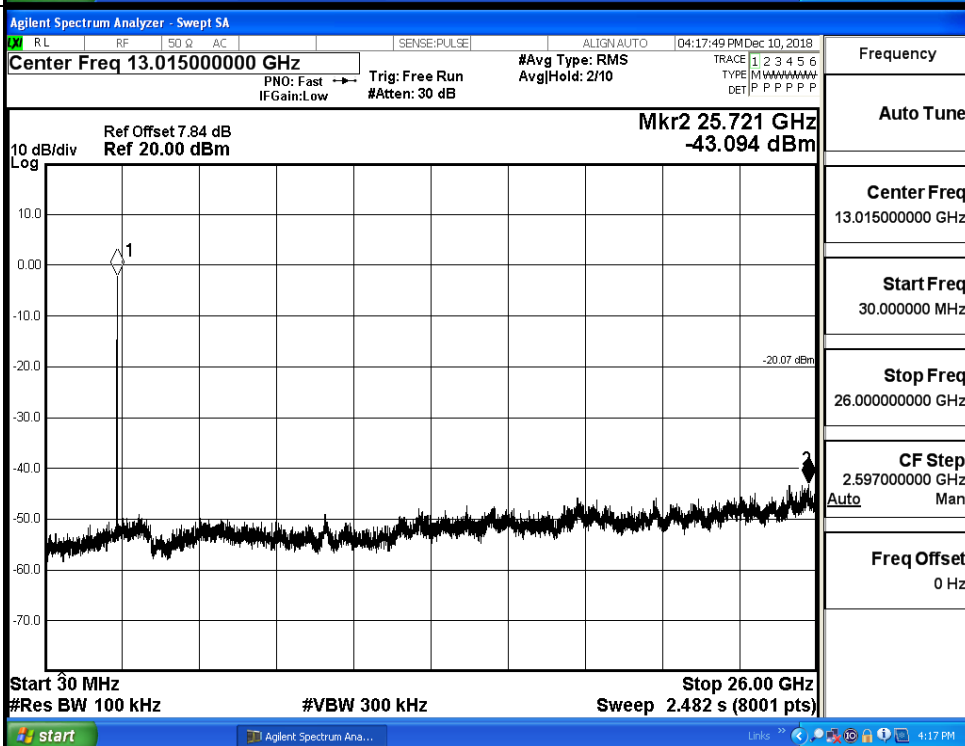


11B HCH Graphs

Pref/11B/HCH

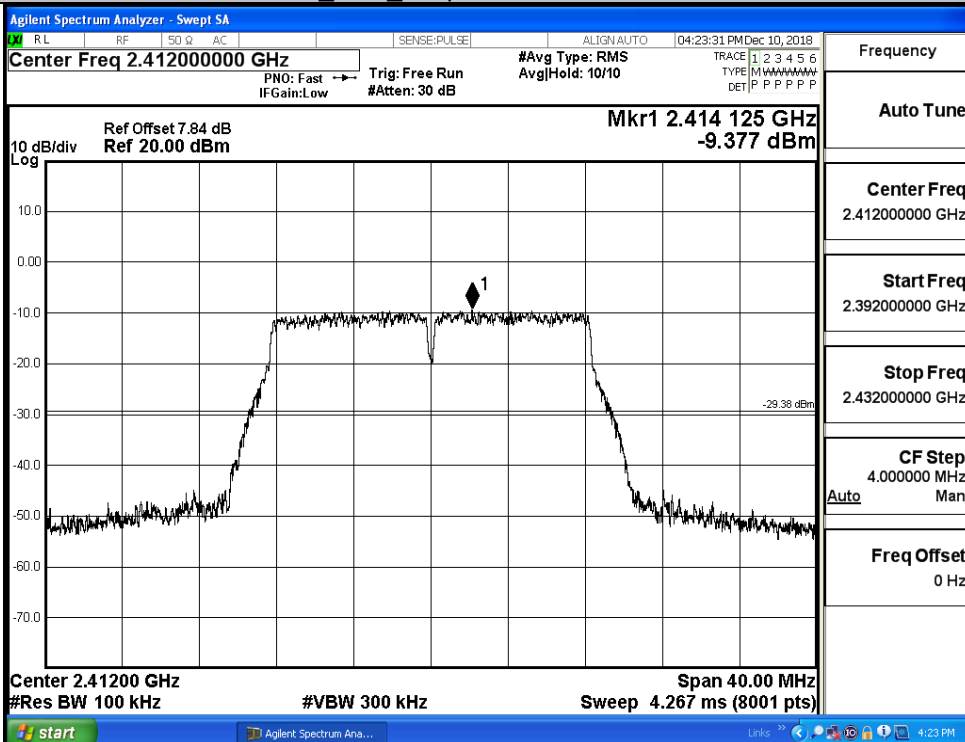


Puw/11B/HCH

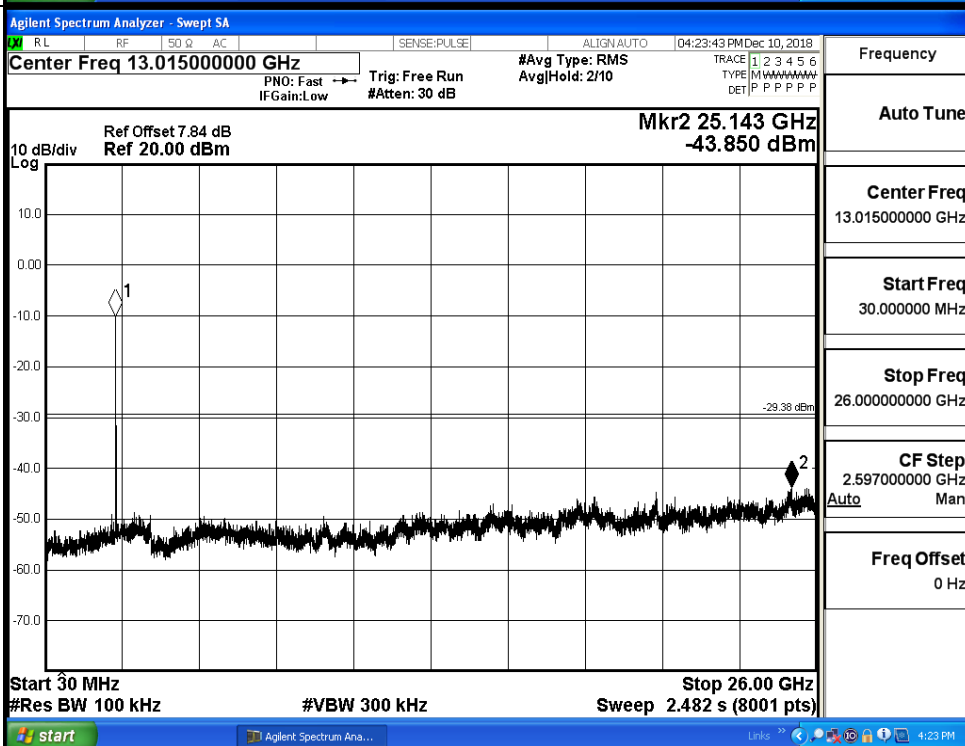


11G LCH Graphs

Pref/11G/LCH

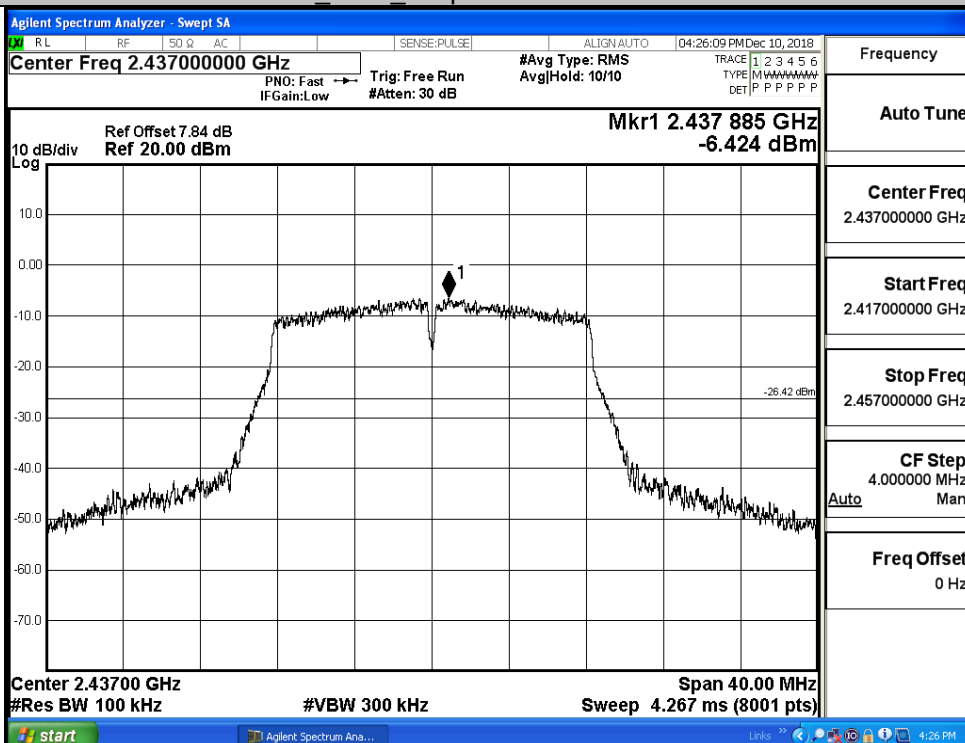


Puw/11G/LCH

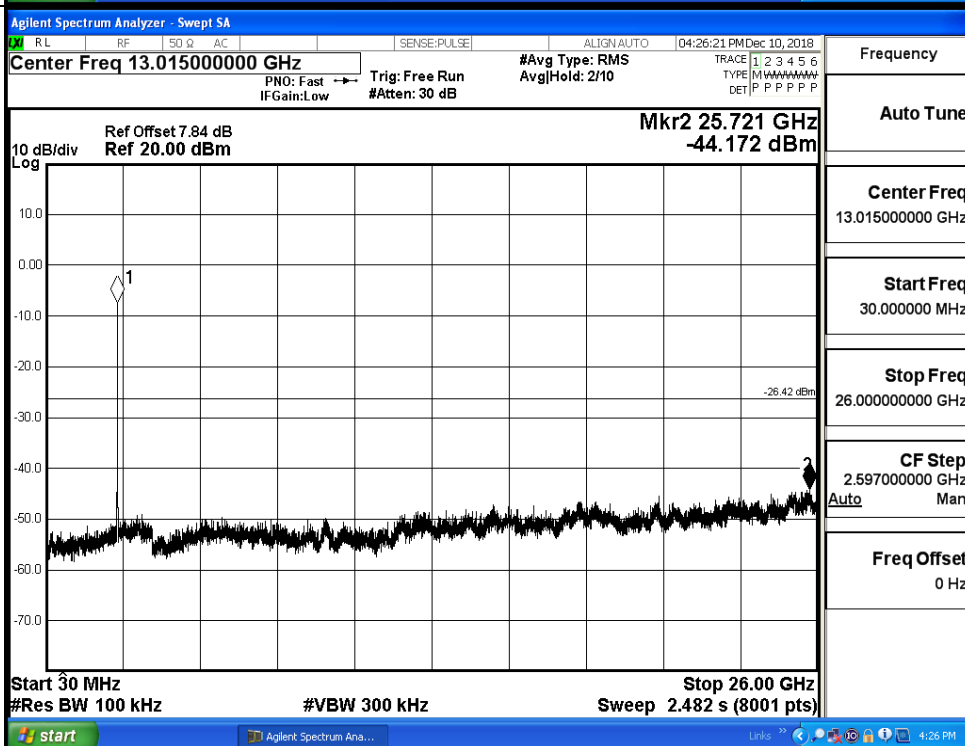


11G MCH Graphs

Pref/11G/MCH

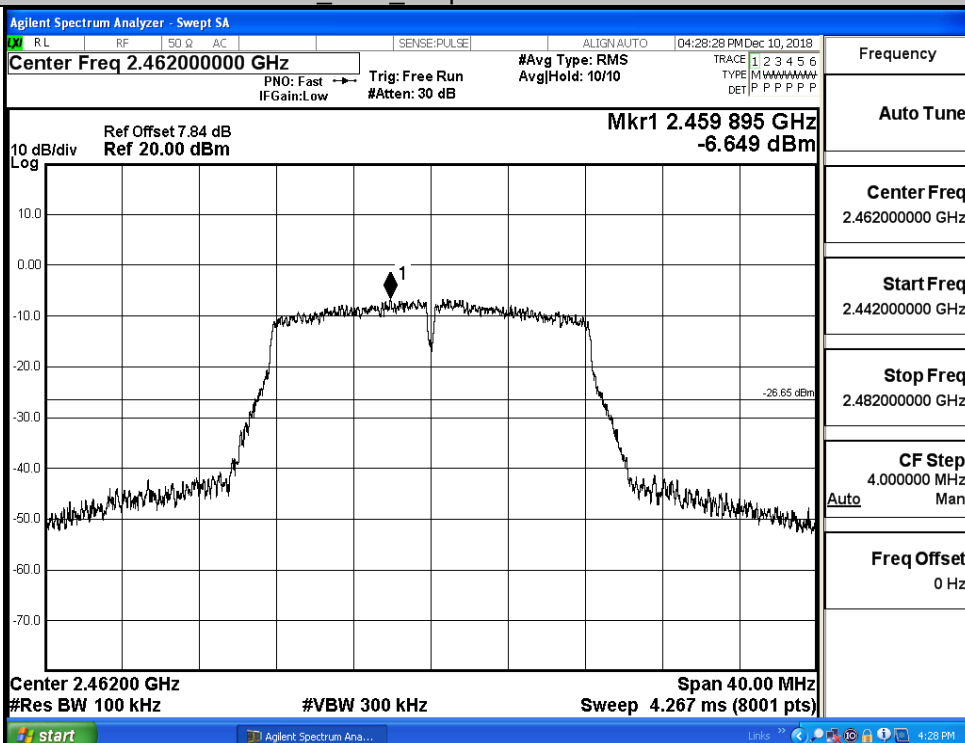


Puw/11G/MCH

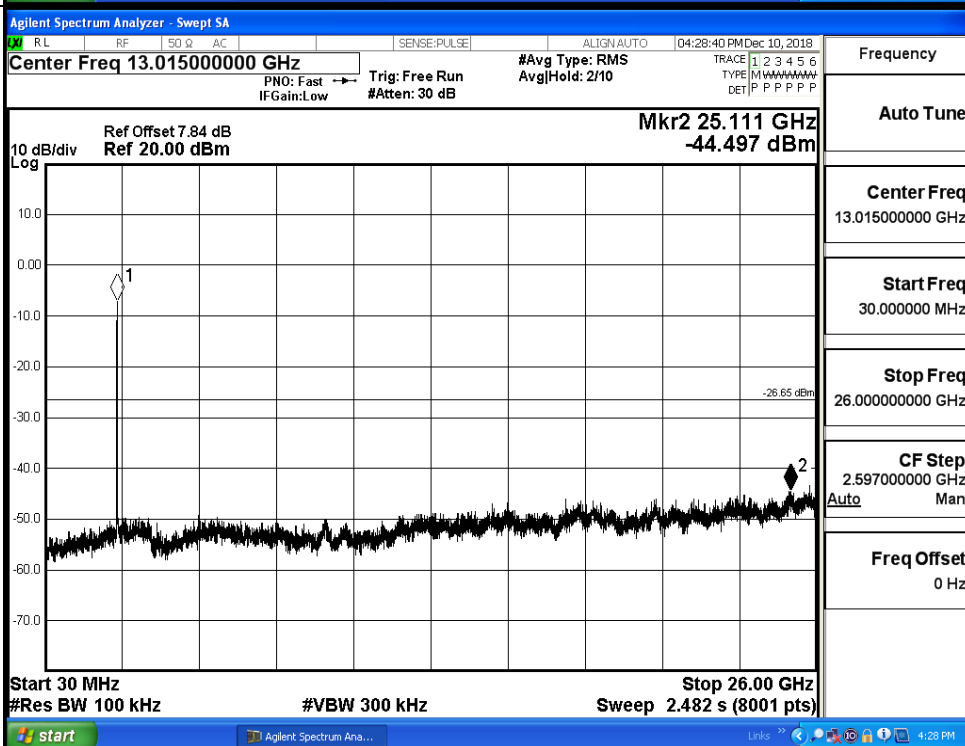


11G HCH Graphs

Pref/11G/HCH

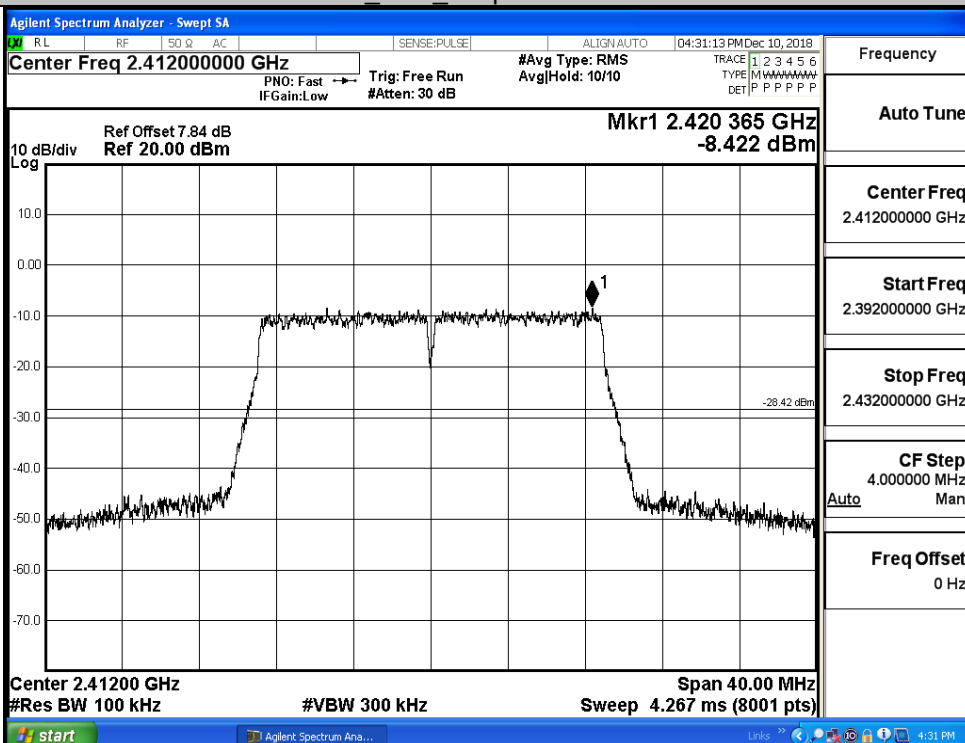


Puw/11G/HCH

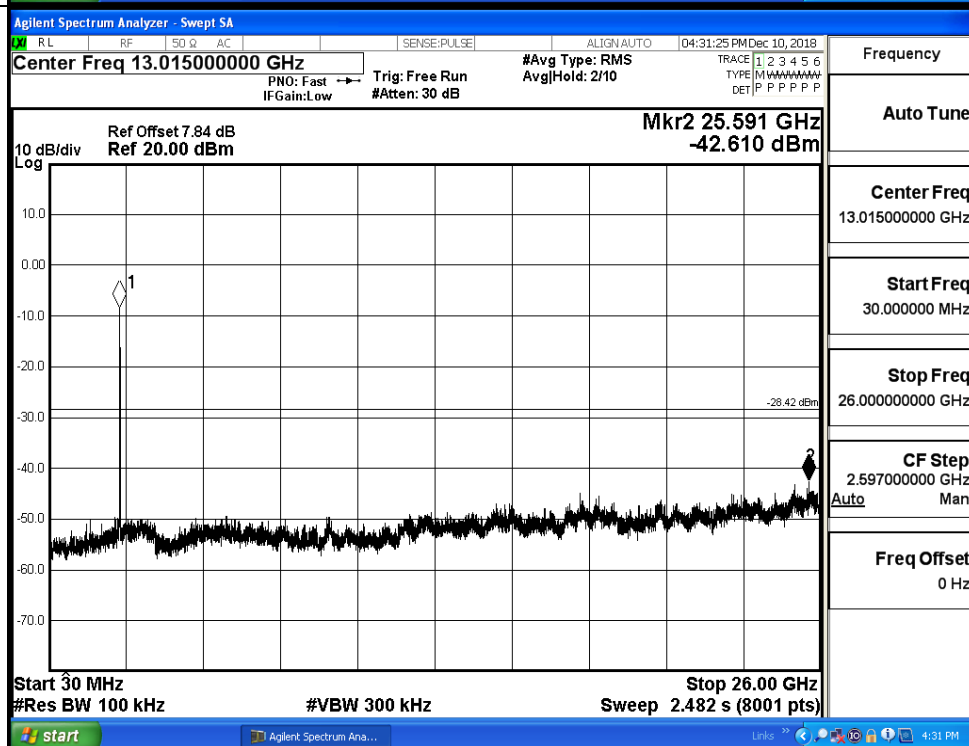


11N20SISO LCH Graphs

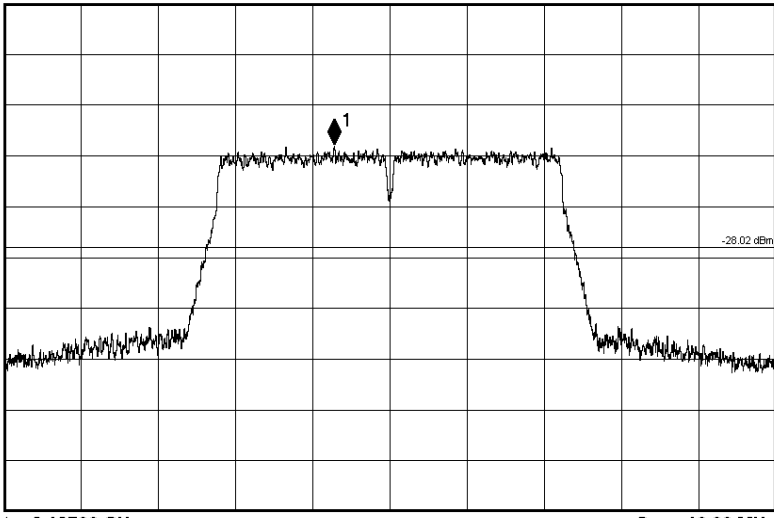
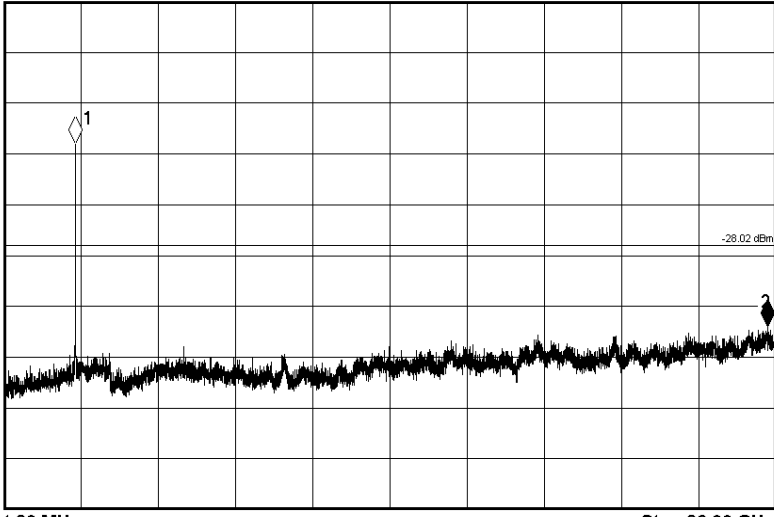
Pref/11N20SIS
O/LCH



Puw/11N20
SISO/LCH

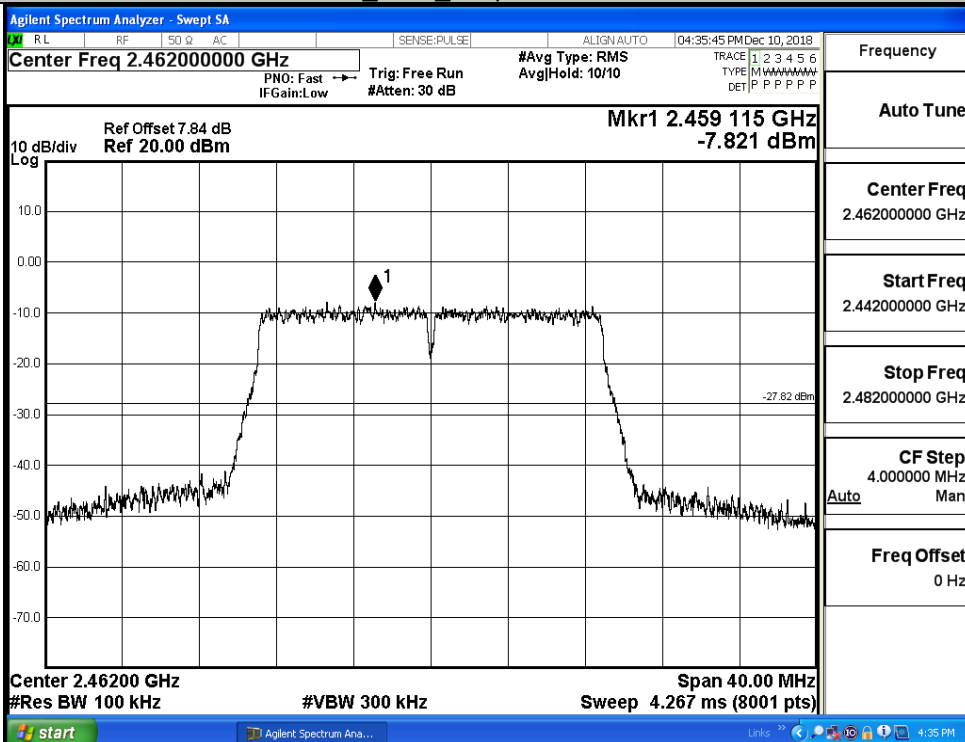


11N20SISO_MCH_Graphs

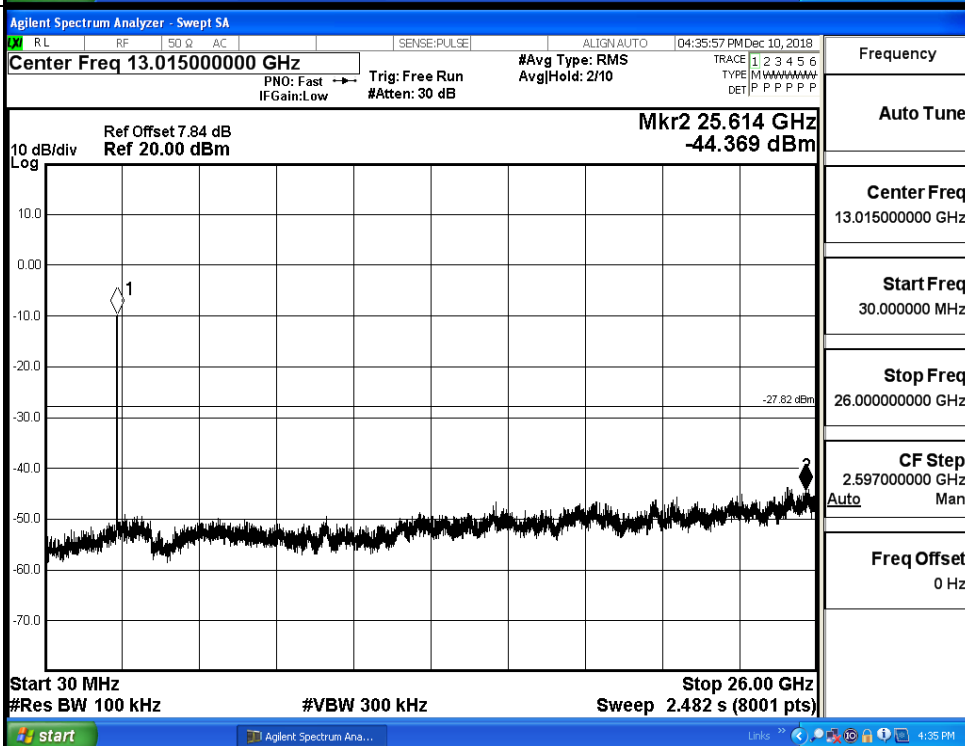
Pref/11N20 SISO/MCH	Agilent Spectrum Analyzer - Swept SA Center Freq 2.437000000 GHz Ref Offset 7.84 dB Ref 20.00 dBm Mkr1 2.434 115 GHz -8.023 dBm  Center 2.43700 GHz #Res BW 100 kHz #VBW 300 kHz Sweep 4.267 ms (8001 pts) Frequency Auto Tune Center Freq 2.437000000 GHz Start Freq 2.417000000 GHz Stop Freq 2.457000000 GHz CF Step 4.000000 MHz Auto Freq Offset 0 Hz
Puw/11N20 SISO/MCH	Agilent Spectrum Analyzer - Swept SA Center Freq 13.015000000 GHz Ref Offset 7.84 dB Ref 20.00 dBm Mkr2 25.727 GHz -43.960 dBm  Start 30 MHz #Res BW 100 kHz #VBW 300 kHz Stop 26.00 GHz Sweep 2.482 s (8001 pts) Frequency Auto Tune Center Freq 13.015000000 GHz Start Freq 30.000000 MHz Stop Freq 26.000000000 GHz CF Step 2.597000000 GHz Auto Freq Offset 0 Hz

11N20SISO HCH Graphs

Pref/11N20
SISO/HCH

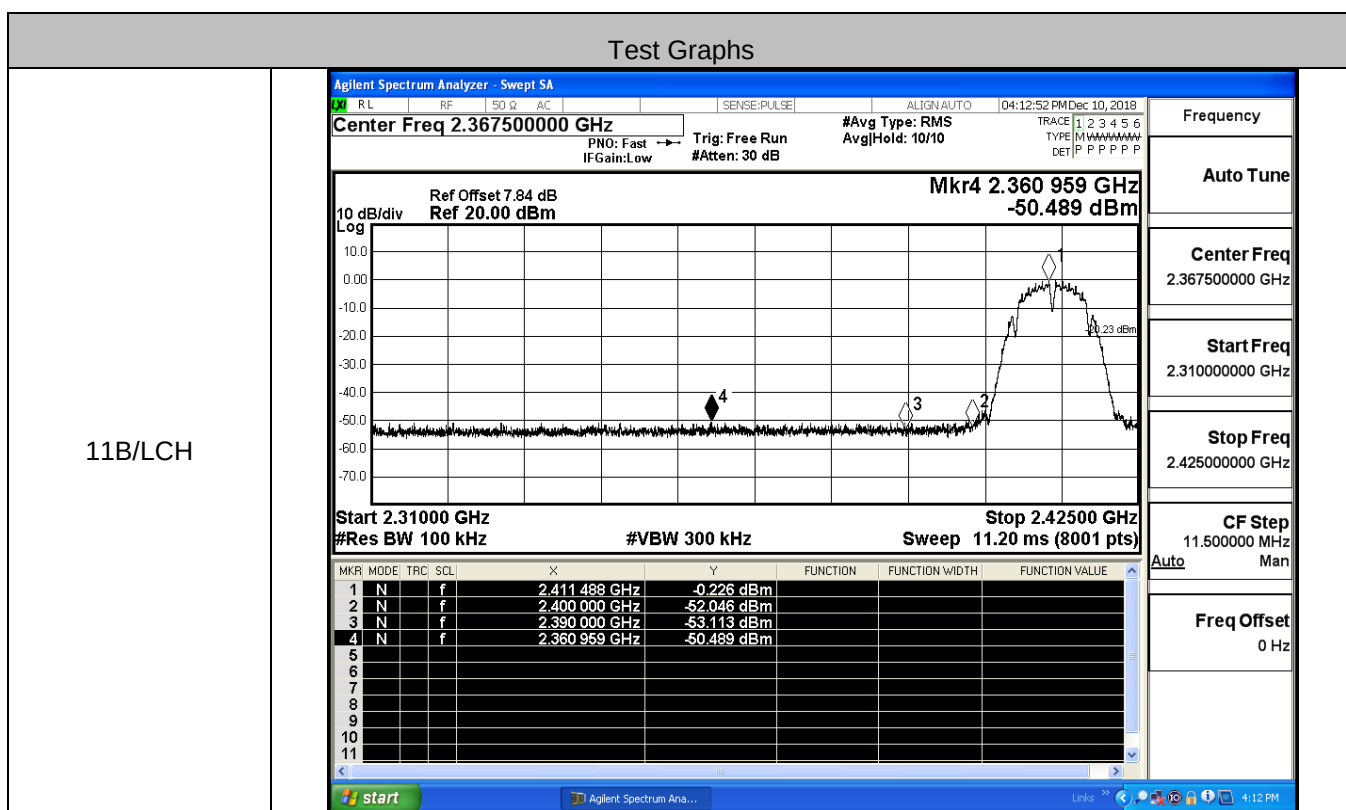


Puw/11N20
SISO/HCH

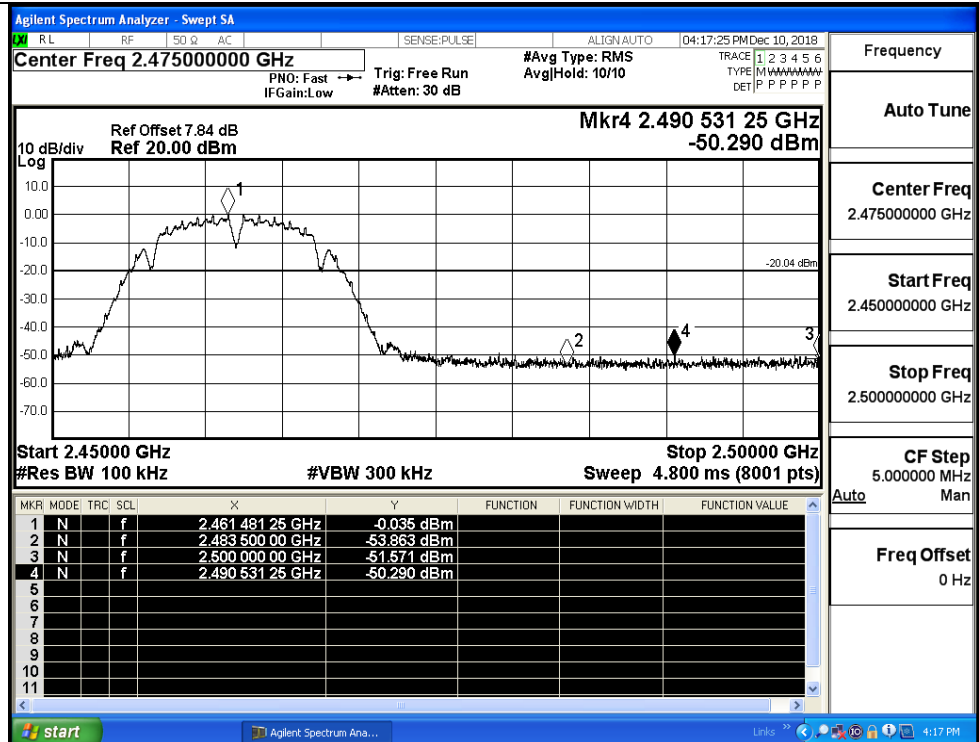


A.6 Band-edge for RF Conducted Emissions

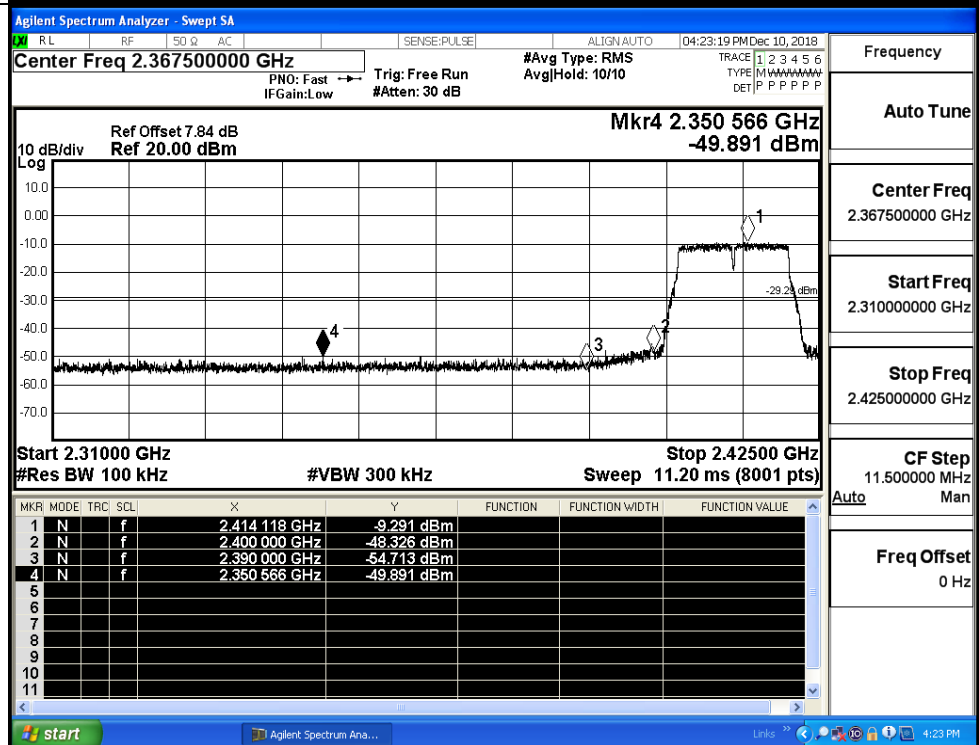
Mode	Channel	Carrier Power[dBm]	Max.Spurious Level [dBm]	Limit [dBm]	Verdict
11B	LCH	-0.226	-50.489	-20.23	PASS
	HCH	-0.035	-50.290	-20.04	PASS
11G	LCH	-9.291	-49.891	-29.29	PASS
	HCH	-6.537	-50.140	-26.54	PASS
11N20SISO	LCH	-8.104	-50.015	-28.1	PASS
	HCH	-7.891	-49.789	-27.89	PASS



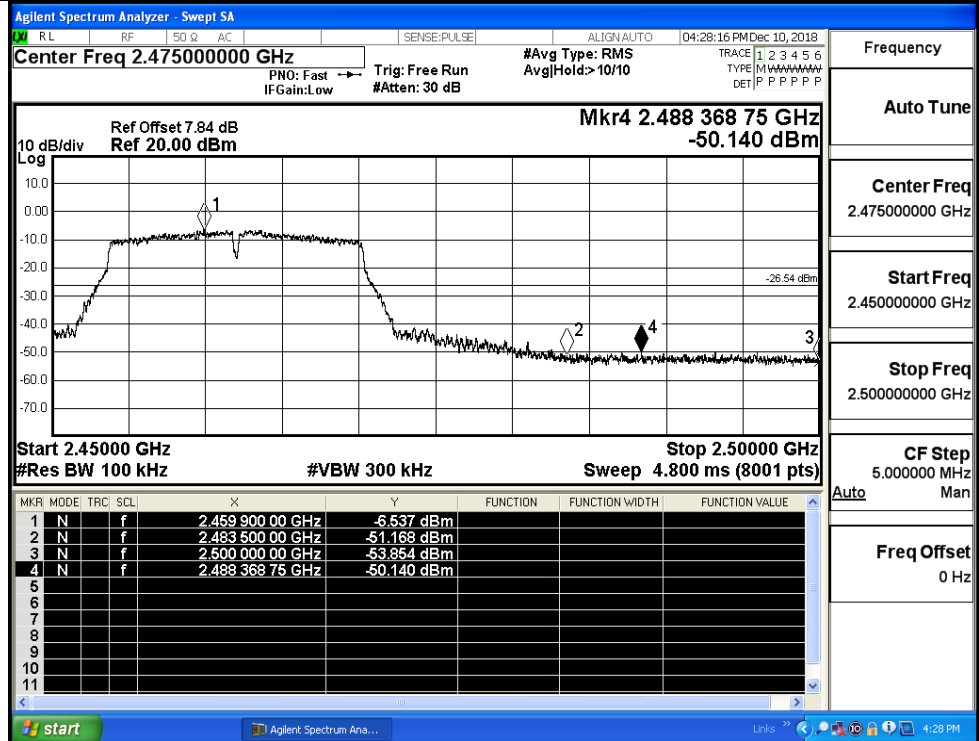
11B/HCH



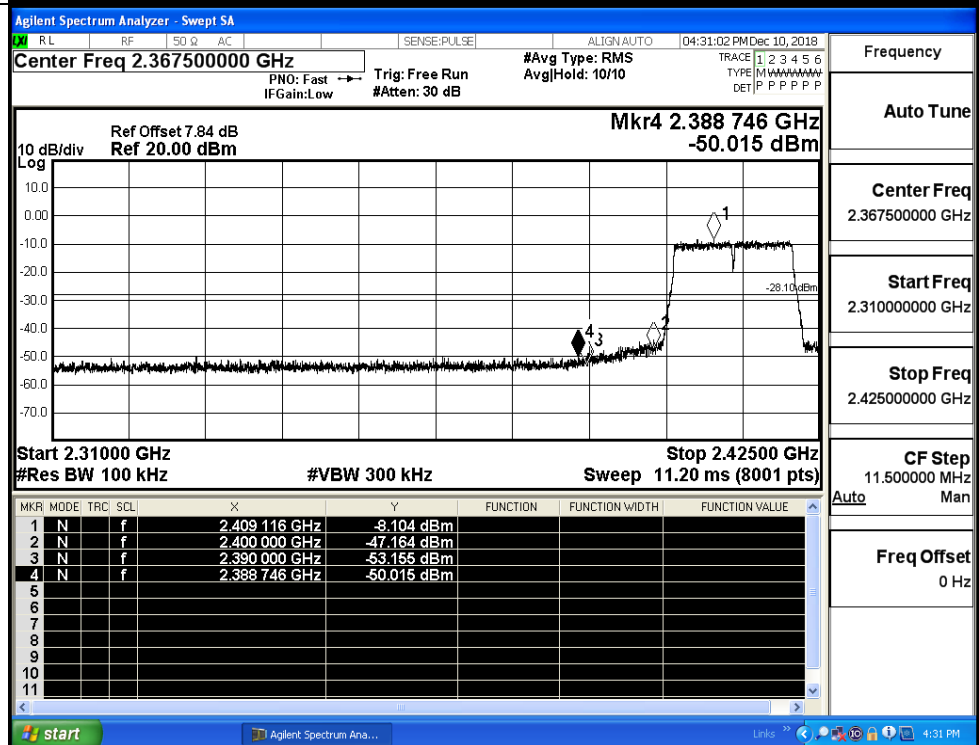
11G/LCH



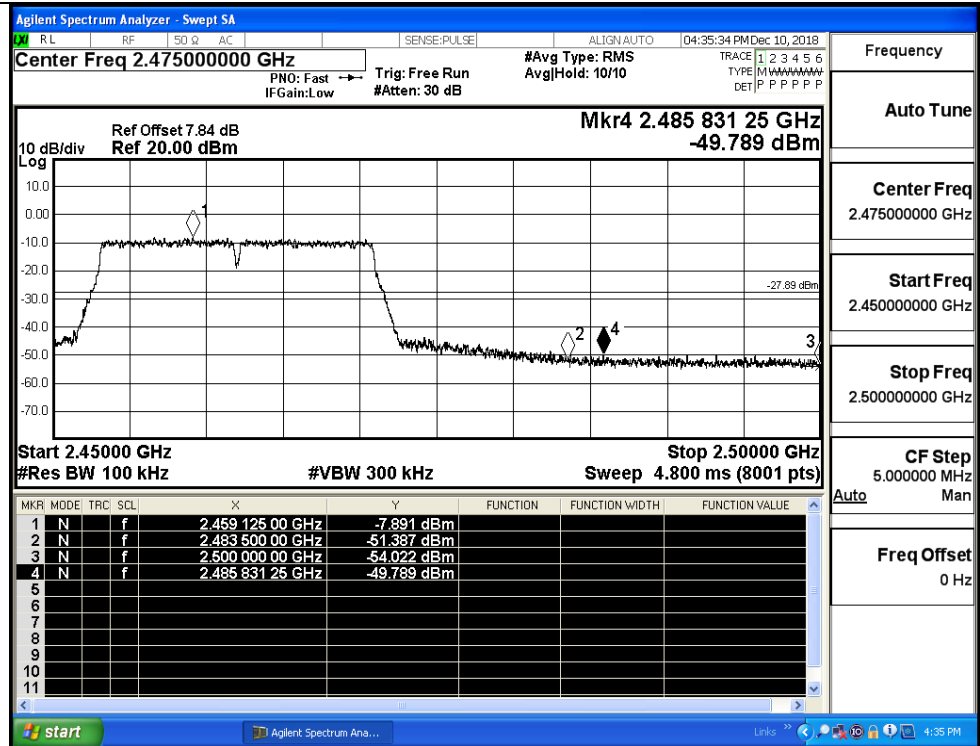
11G/HCH



11N20SISO/LCH



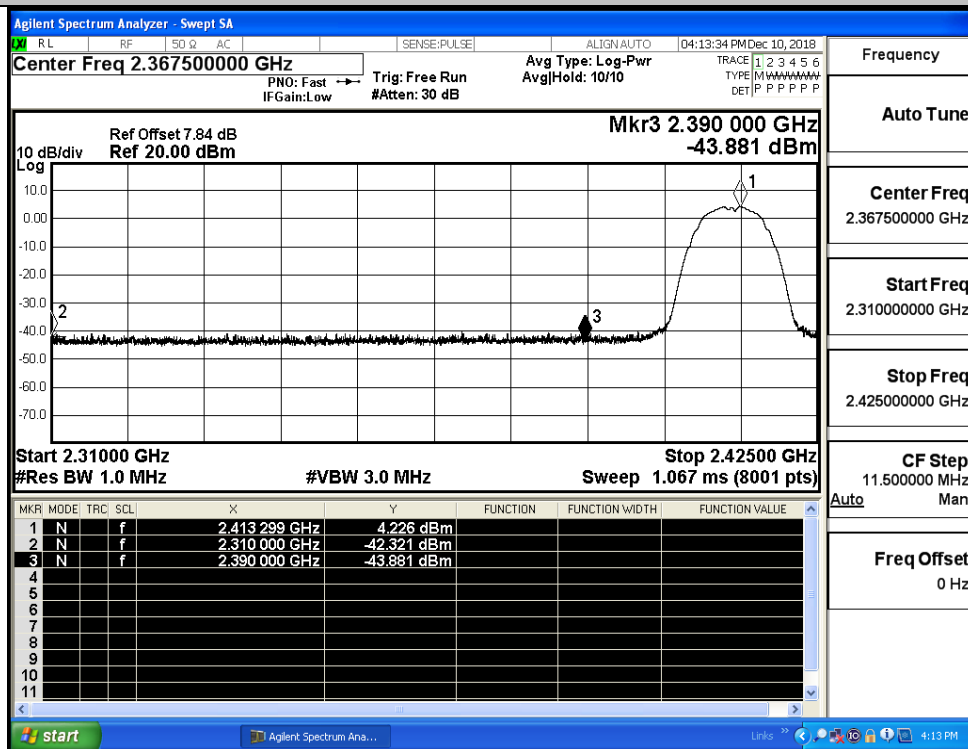
11N20SISO/HCH



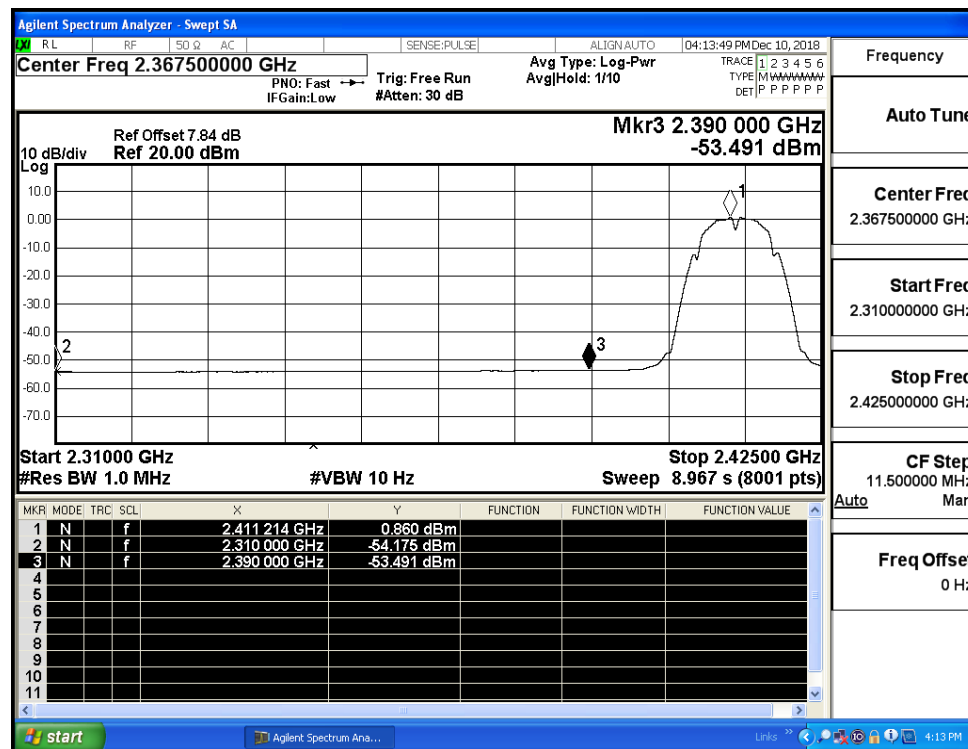
A.7 Restrict-band band-edge measurements

Test Mode	Test Channel	Ant	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
11B	2412	Ant1	2310.0	-42.321	3.00	0	55.907	PEAK	74	PASS
	2412	Ant1	2310.0	-54.175	3.00	0	44.053	AV	54	PASS
	2412	Ant1	2390.0	-43.881	3.00	0	54.347	PEAK	74	PASS
	2412	Ant1	2390.0	-53.491	3.00	0	44.737	AV	54	PASS
	2462	Ant1	2483.5	-42.937	3.00	0	55.291	PEAK	74	PASS
	2462	Ant1	2483.5	-53.209	3.00	0	45.019	AV	54	PASS
	2462	Ant1	2500.0	-43.295	3.00	0	54.933	PEAK	74	PASS
	2462	Ant1	2500.0	-53.370	3.00	0	44.858	AV	54	PASS
11G	2412	Ant1	2310.0	-44.513	3.00	0	53.715	PEAK	74	PASS
	2412	Ant1	2310.0	-54.212	3.00	0	44.016	AV	54	PASS
	2412	Ant1	2390.0	-42.052	3.00	0	56.176	PEAK	74	PASS
	2412	Ant1	2390.0	-53.188	3.00	0	45.040	AV	54	PASS
	2462	Ant1	2483.5	-40.952	3.00	0	57.276	PEAK	74	PASS
	2462	Ant1	2483.5	-52.233	3.00	0	45.995	AV	54	PASS
	2462	Ant1	2500.0	-42.663	3.00	0	55.565	PEAK	74	PASS
	2462	Ant1	2500.0	-52.952	3.00	0	45.276	AV	54	PASS
11N20 SISO	2412	Ant1	2310.0	-44.291	3.00	0	53.937	PEAK	74	PASS
	2412	Ant1	2310.0	-54.201	3.00	0	44.027	AV	54	PASS
	2412	Ant1	2390.0	-39.847	3.00	0	58.381	PEAK	74	PASS
	2412	Ant1	2390.0	-52.338	3.00	0	45.890	AV	54	PASS
	2462	Ant1	2483.5	-41.238	3.00	0	56.990	PEAK	74	PASS
	2462	Ant1	2483.5	-52.159	3.00	0	46.069	AV	54	PASS
	2462	Ant1	2500.0	-42.348	3.00	0	55.880	PEAK	74	PASS
	2462	Ant1	2500.0	-53.103	3.00	0	45.125	AV	54	PASS

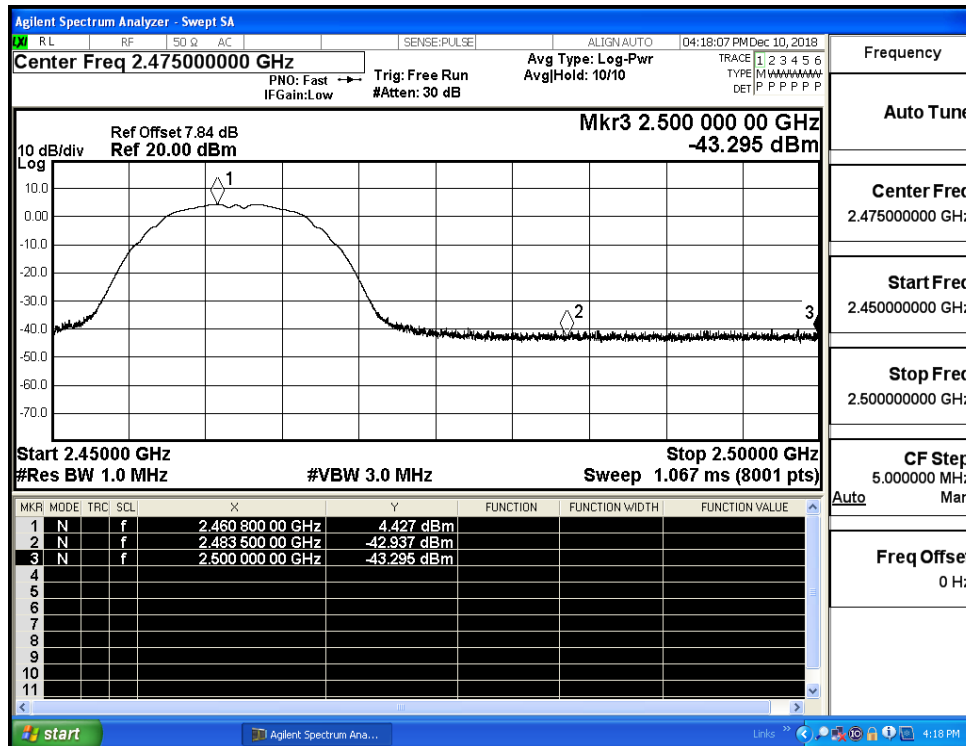
Restrict-band band-edge measurements_11B_2412_Ant1_PEAK



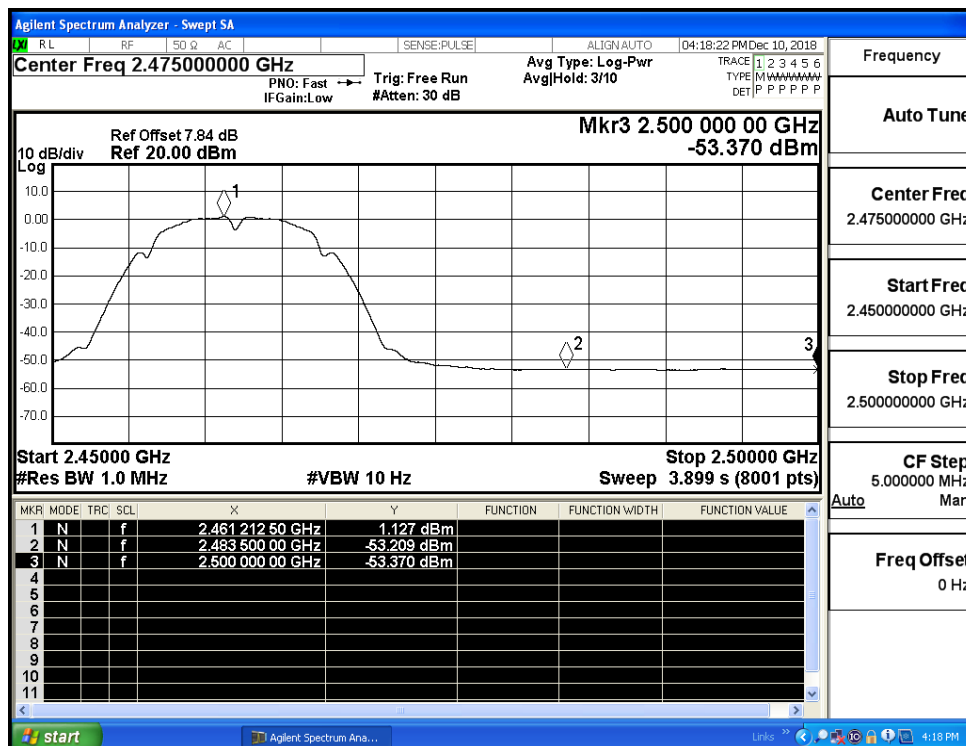
Restrict-band band-edge measurements_11B_2412_Ant1_AV



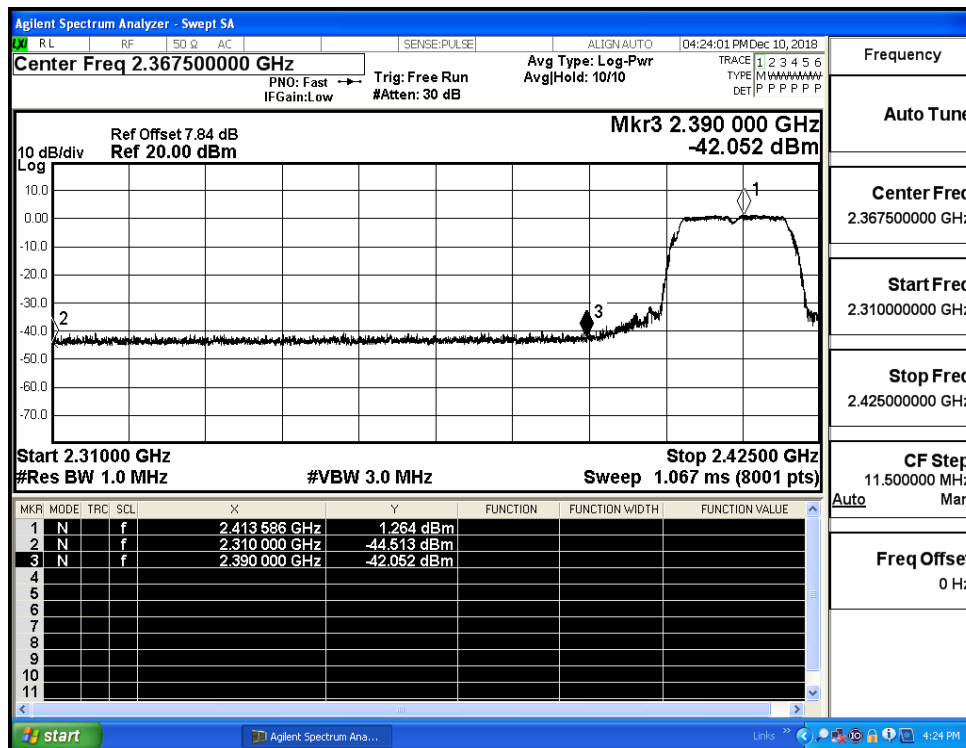
Restrict-band band-edge measurements_11B_2462_Ant1_PEAK



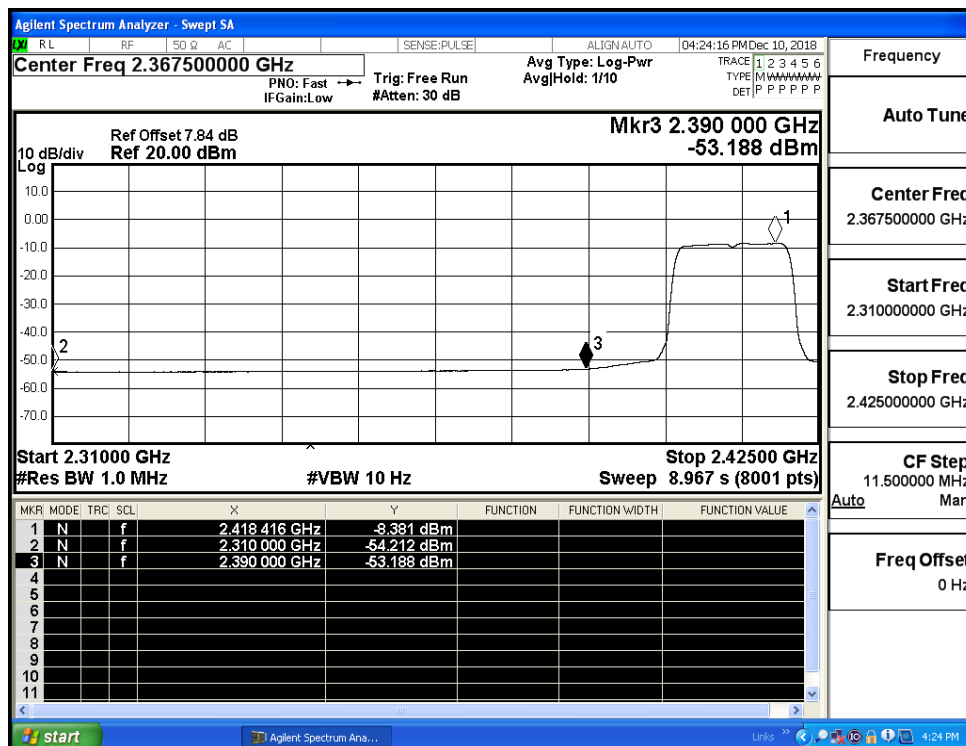
Restrict-band band-edge measurements_11B_2462_Ant1_AV



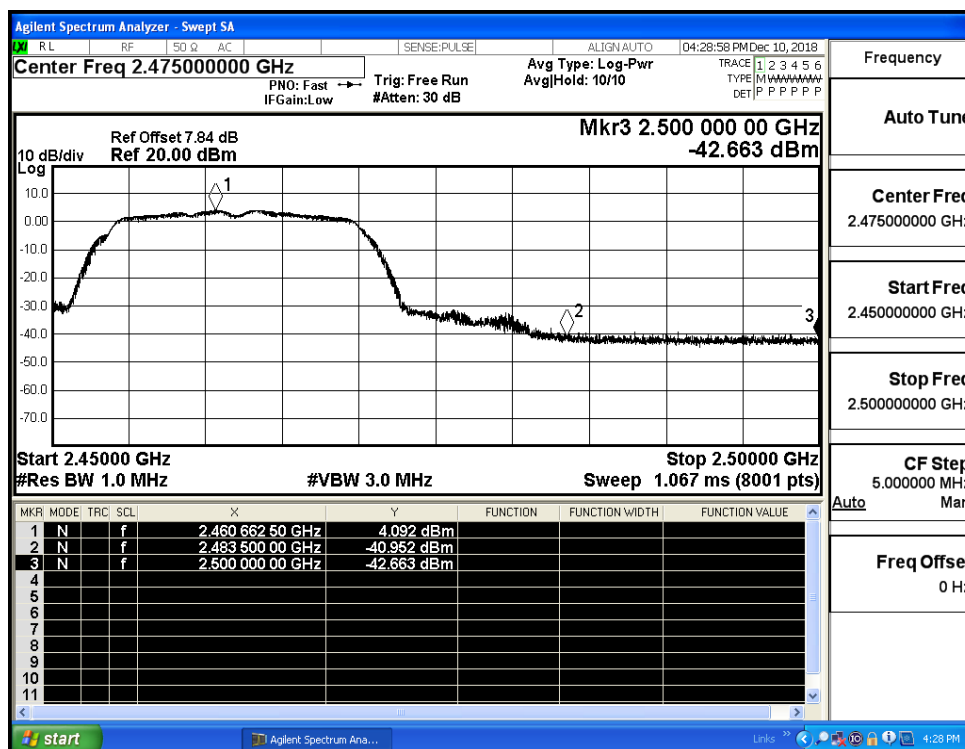
Restrict-band band-edge measurements_11G_2412_Ant1_PEAK



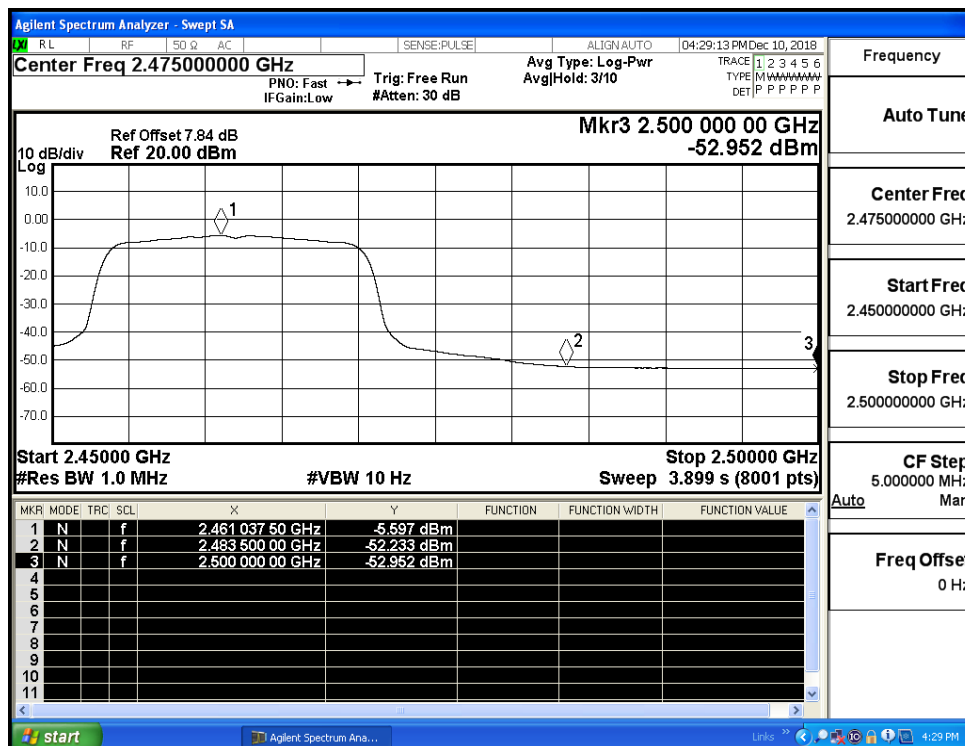
Restrict-band band-edge measurements_11G_2412_Ant1_AV



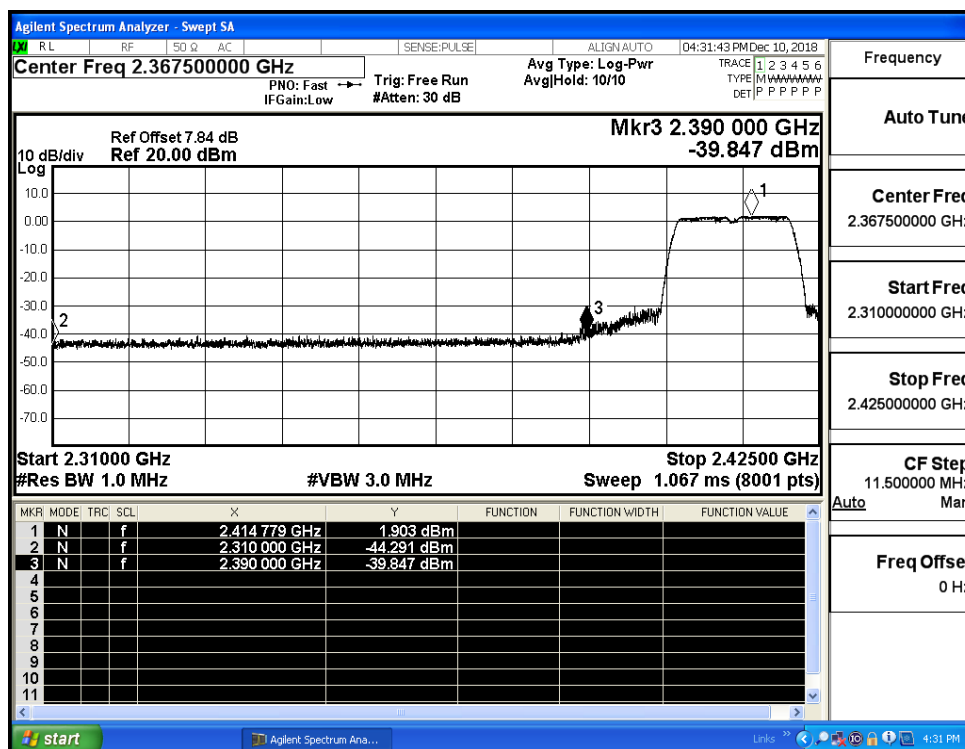
Restrict-band band-edge measurements_11G_2462_Ant1_PEAK



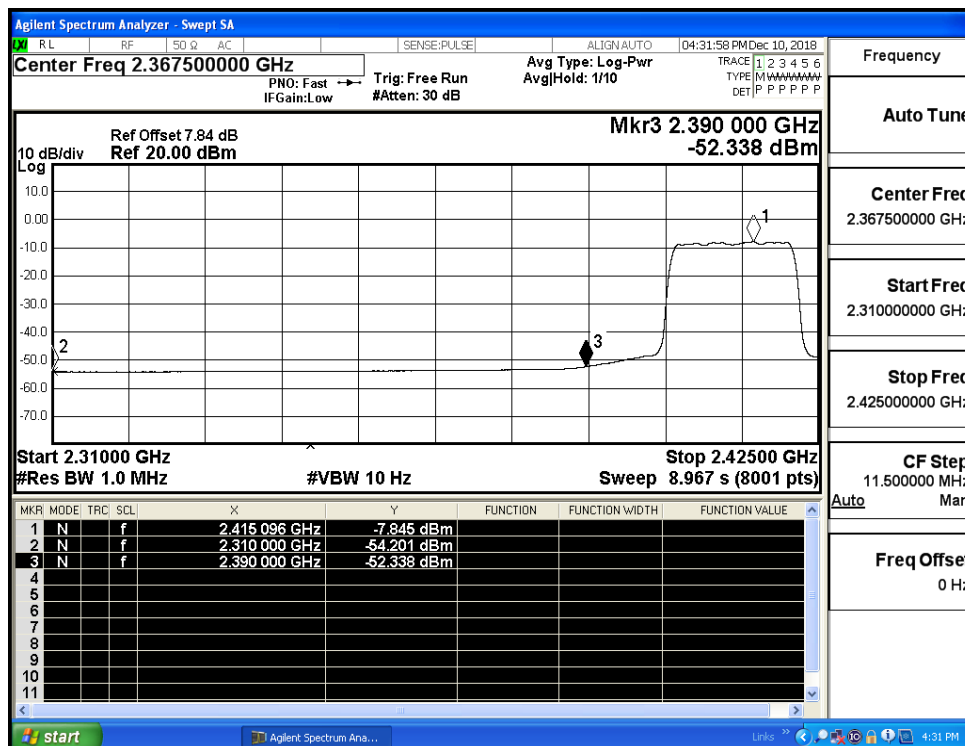
Restrict-band band-edge measurements_11G_2462_Ant1_AV



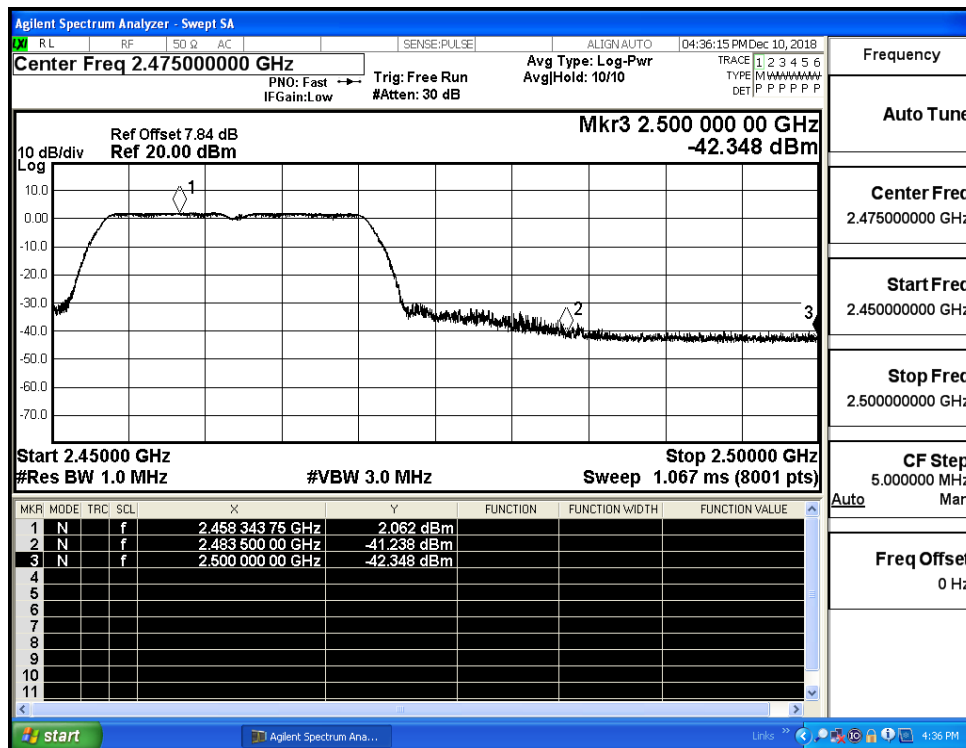
Restrict-band band-edge measurements_11N20SISO_2412_Ant1_PEAK



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

