

Appendix C

RF Test Data for 2.4G WIFI (Conducted Measurement)

Product Name: GNSS RECEIVER

Trade Mark: KOLIDA, SANDING, RUIDE, TIANYU, SOUTH

Test Model: G1Star

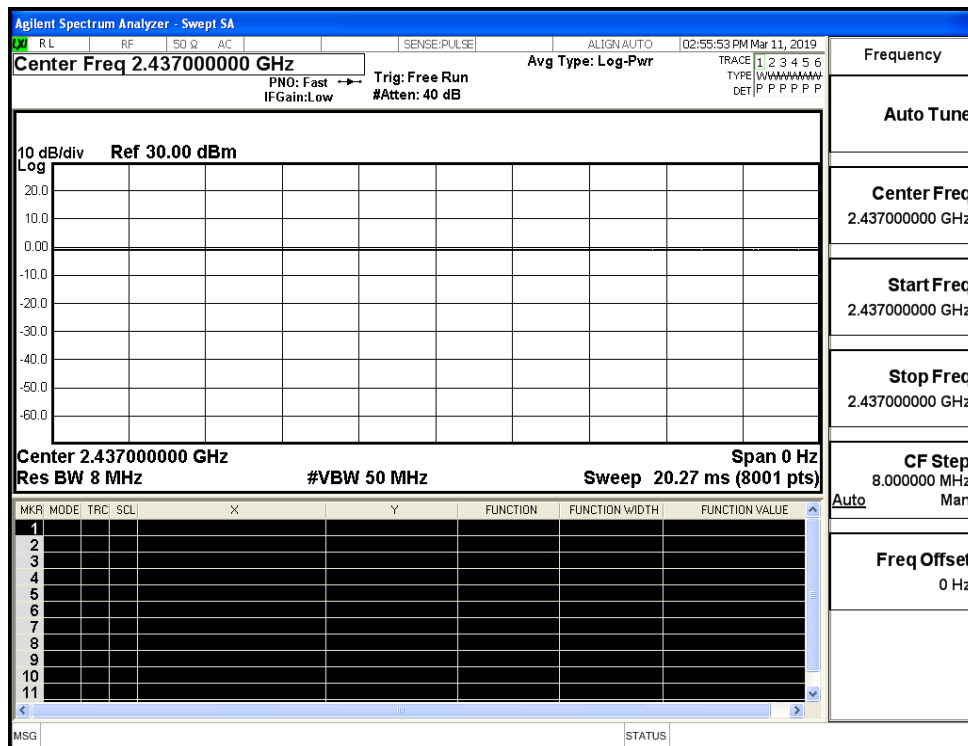
Environmental Conditions

Temperature:	23.2 ° C
Relative Humidity:	53.4%
ATM Pressure:	100.0 kPa
Test Engineer:	Mina.Xu
Supervised by:	Tom.Liu

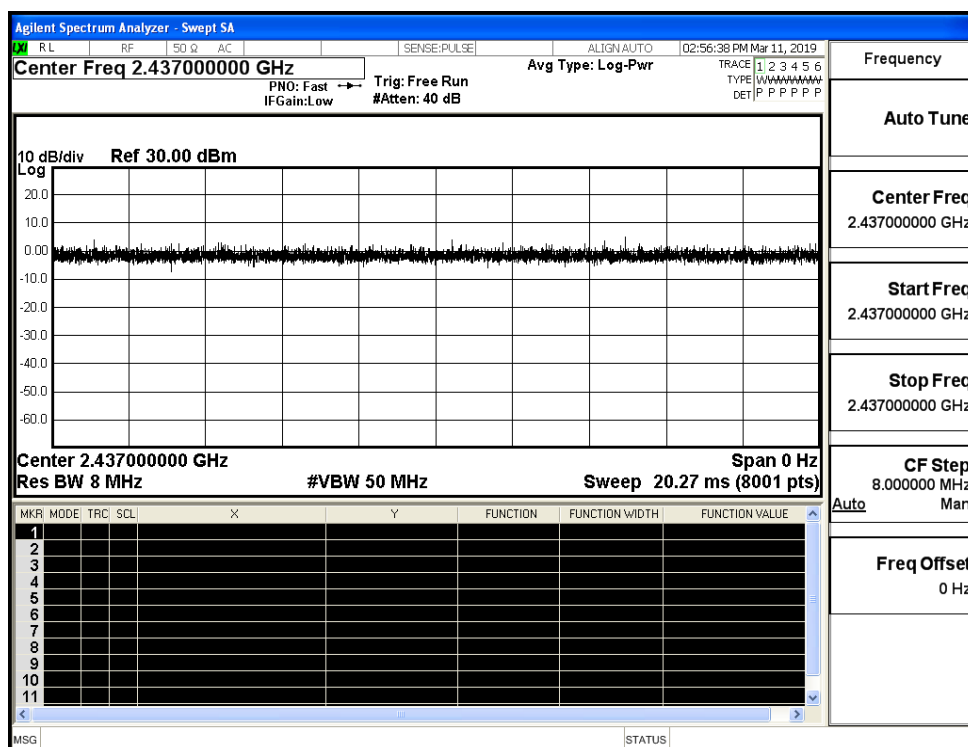
C.1 Duty Cycle

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

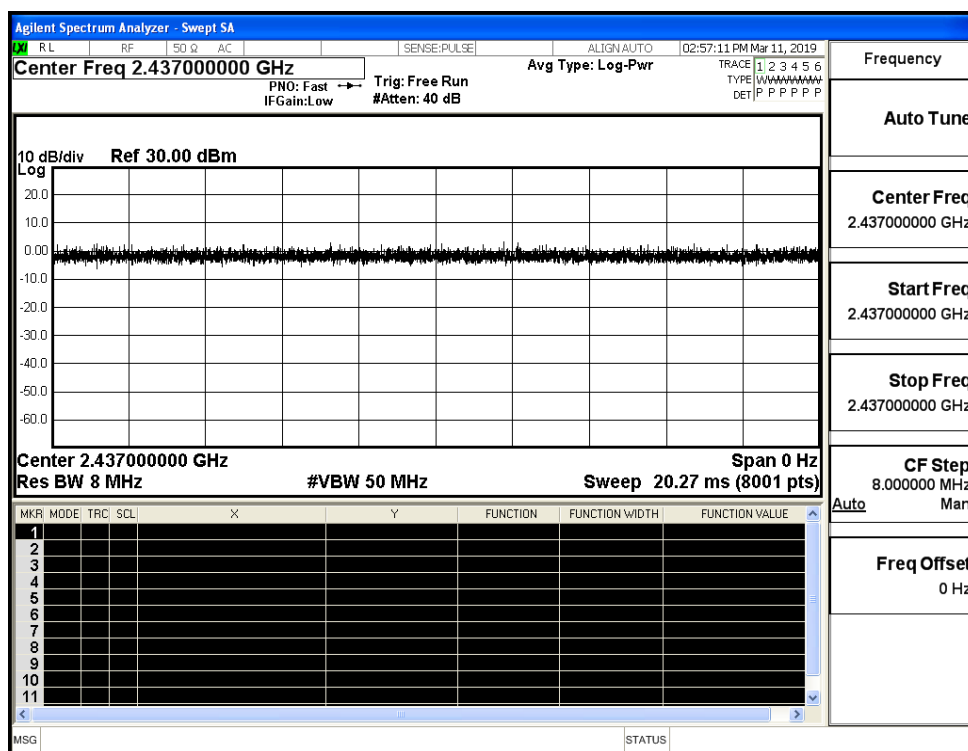
Duty Cycle_11B_2437_Ant1



Duty Cycle_11G_2437_Ant1



Duty Cycle_11N20SISO_2437_Ant1



C.2 Maximum Conducted Output Power

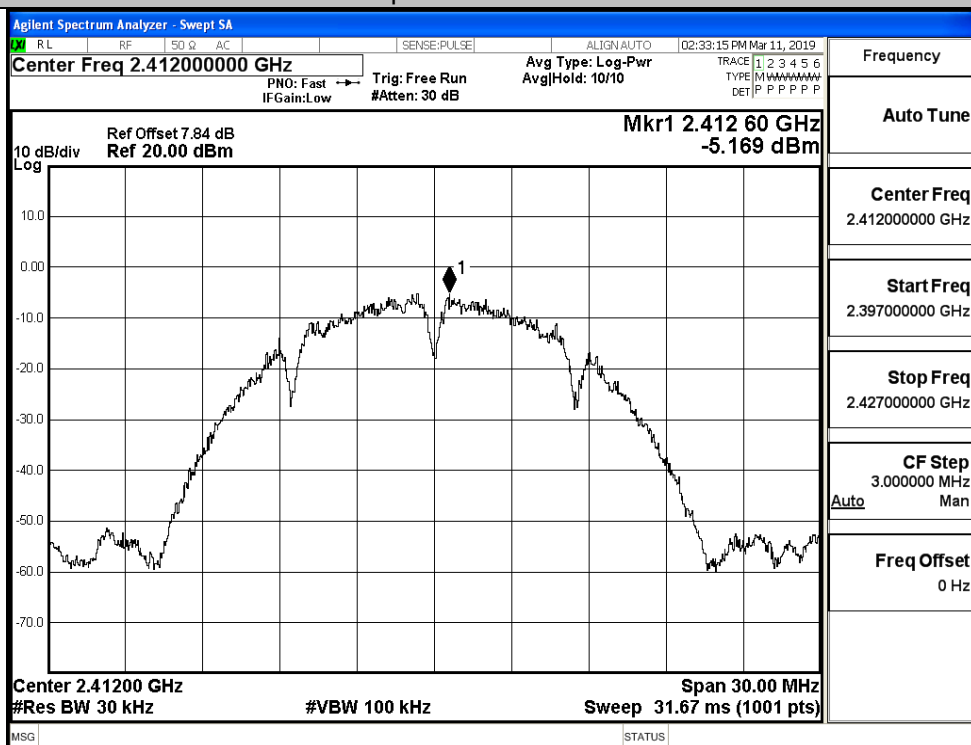
Mode	Channel	Meas.Level [dBm]	Limit [dBm]	Verdict
11B	LCH	17.26	30	PASS
	MCH	17.49	30	PASS
	HCH	17.52	30	PASS
11G	LCH	16.79	30	PASS
	MCH	16.77	30	PASS
	HCH	16.59	30	PASS
11N20SISO	LCH	16.27	30	PASS
	MCH	16.74	30	PASS
	HCH	16.55	30	PASS

C.3 Maximum Power Spectral Density

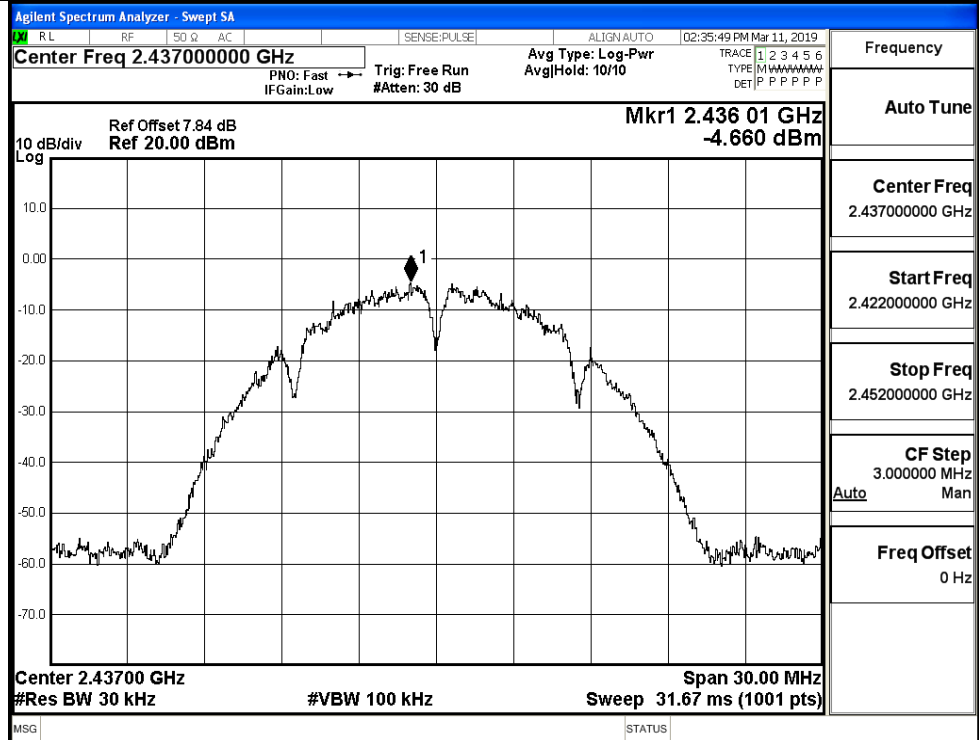
Mode	Channel	Meas.Level [dBm/30KHz]	Limit [dBm/3KHz]	Verdict
11B	LCH	-5.169	8	PASS
	MCH	-4.660	8	PASS
	HCH	-4.529	8	PASS
11G	LCH	-13.048	8	PASS
	MCH	-11.957	8	PASS
	HCH	-13.432	8	PASS
11N20SISO	LCH	-12.988	8	PASS
	MCH	-11.520	8	PASS
	HCH	-12.212	8	PASS

Test Graphs

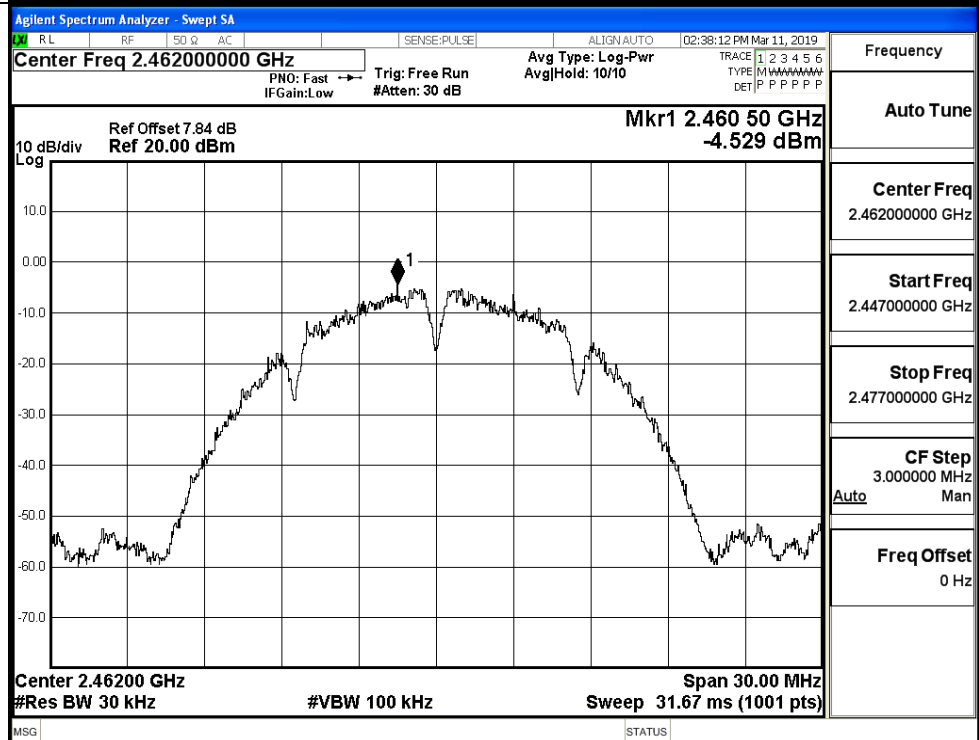
11B/LCH



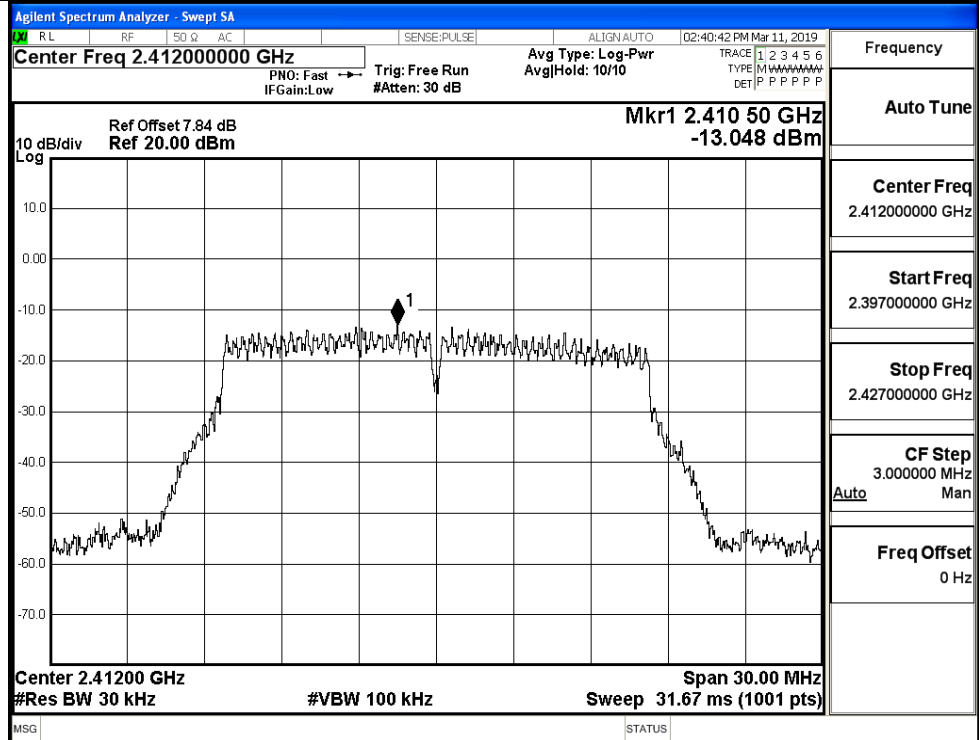
11B/MCH



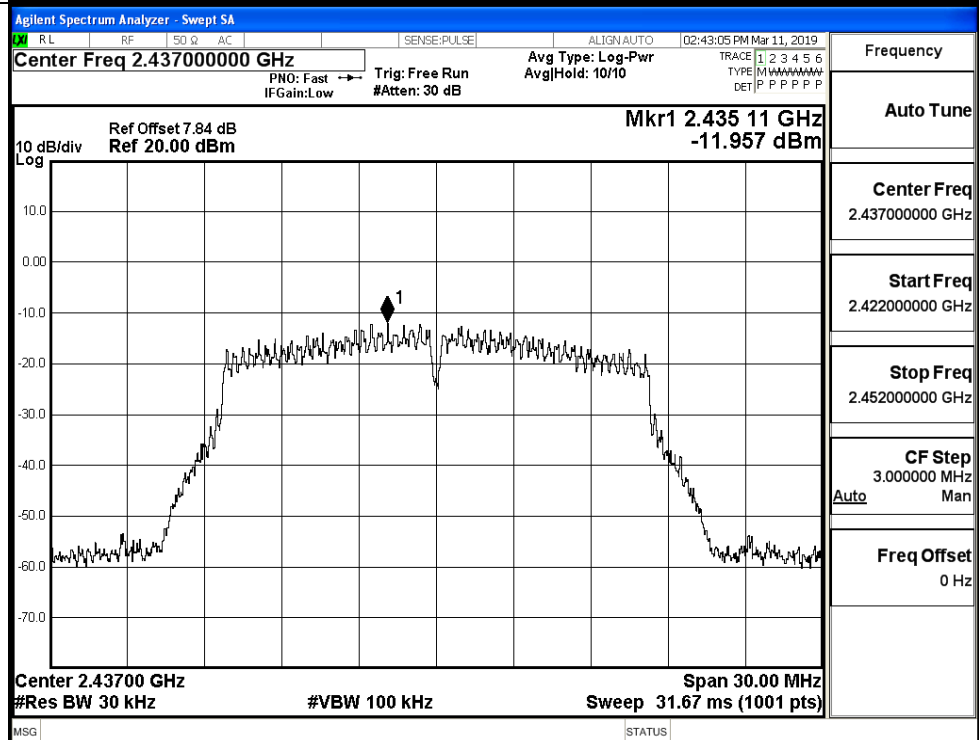
11B/HCH



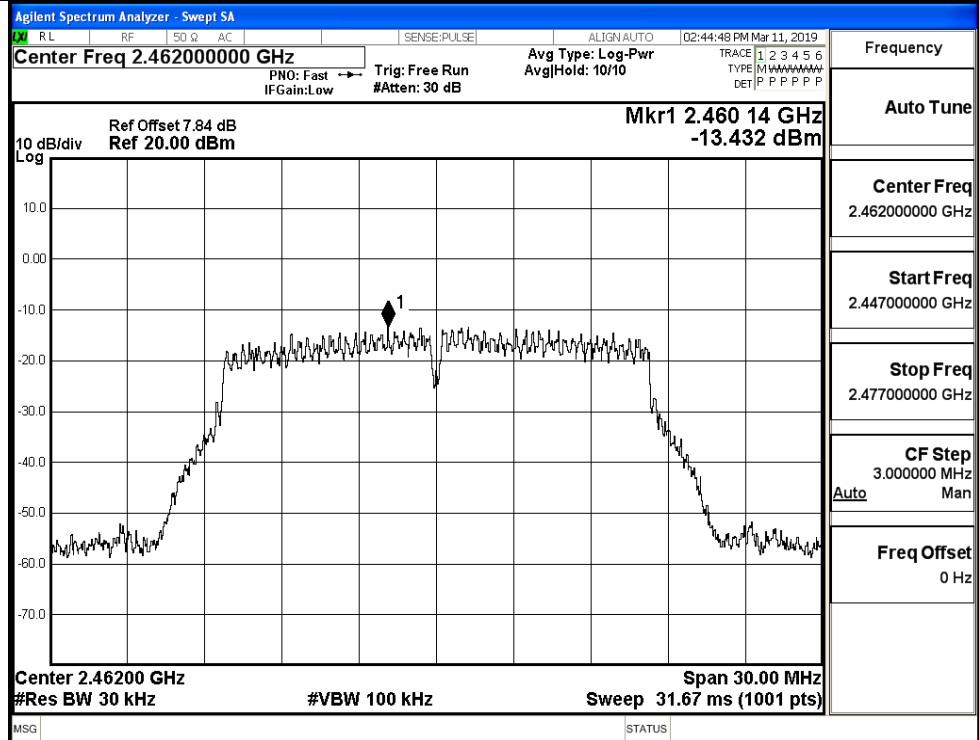
11G/LCH



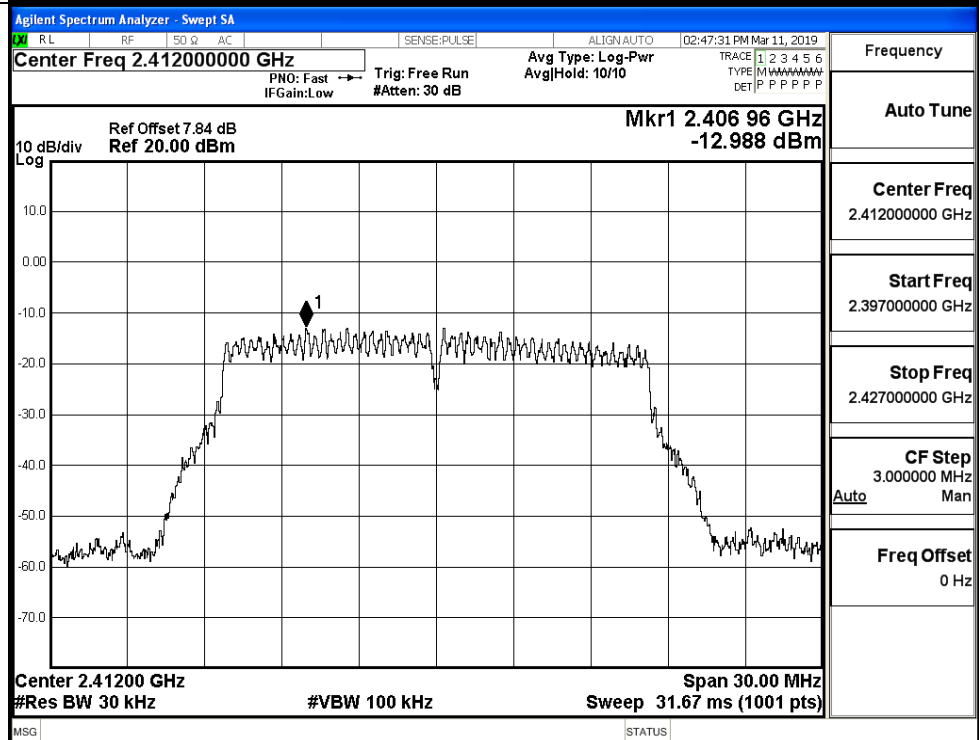
11G/MCH



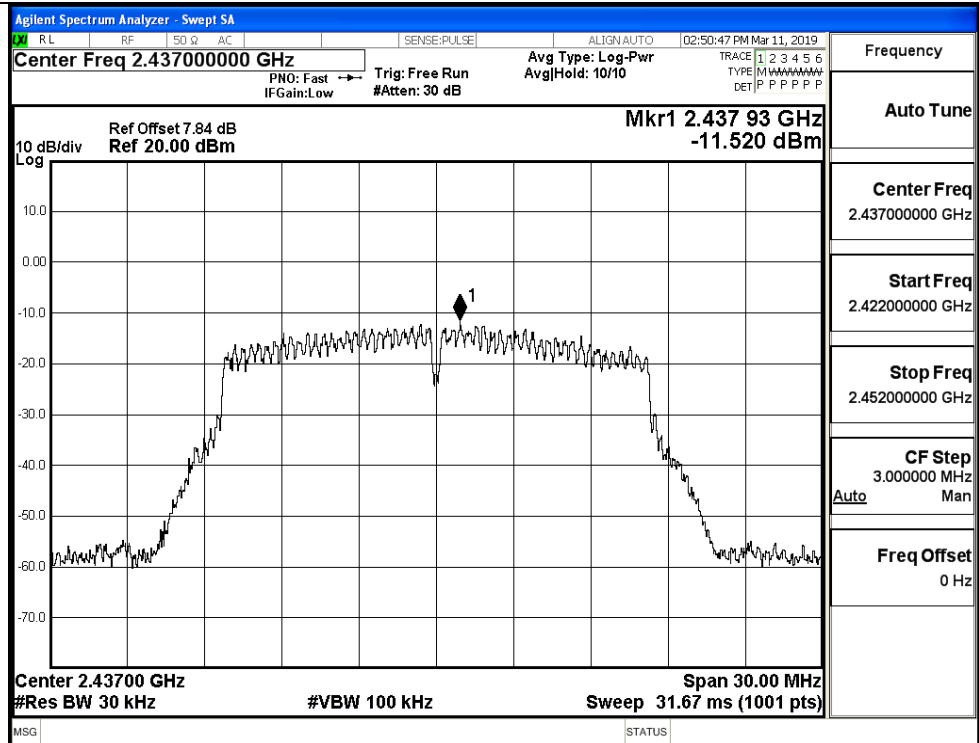
11G/HCH



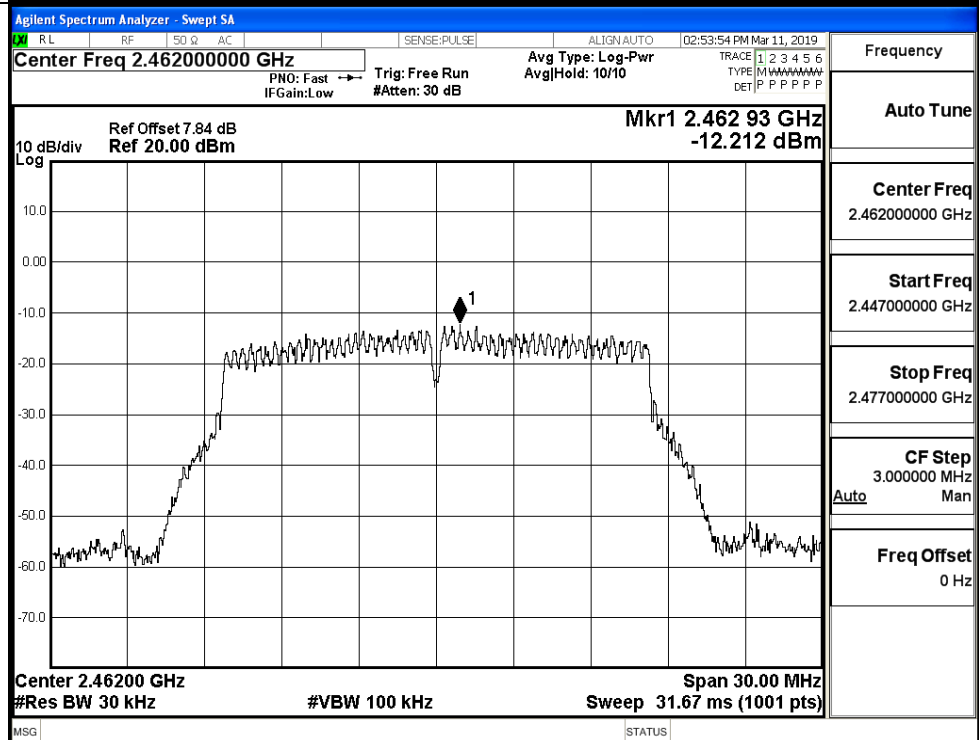
11N20SISO/LCH



11N20SISO/MCH



11N20SISO/HCH

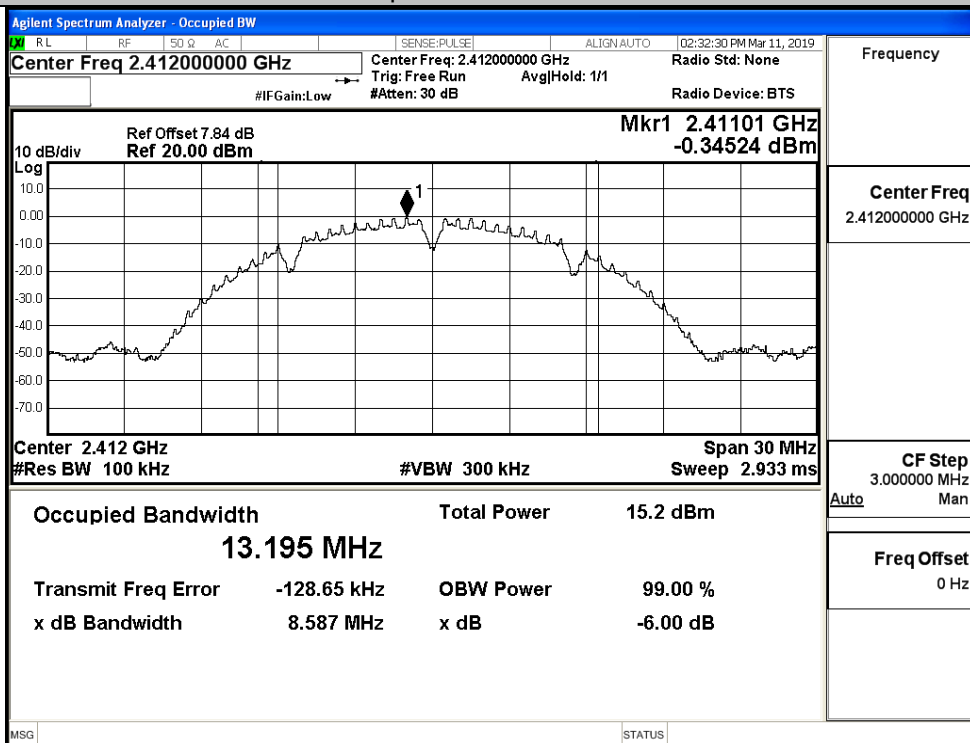


C.4 6dB Bandwidth

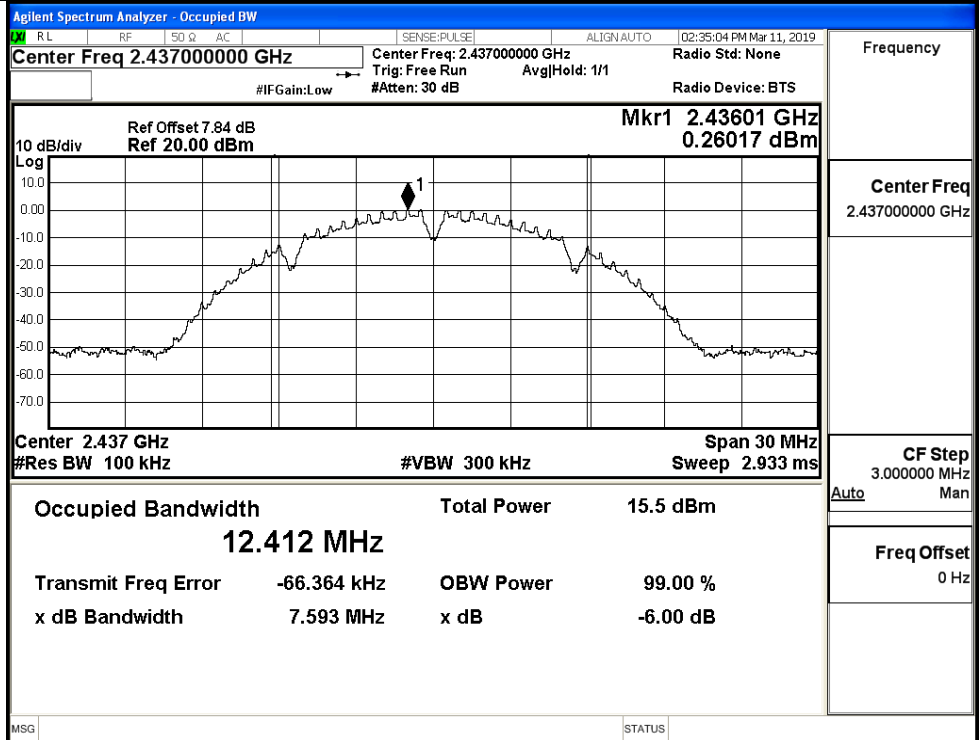
Mode	Channel	6dB Bandwidth [MHz]	Limit [MHz]	Verdict
11B	LCH	8.587	≥ 0.5	PASS
	MCH	7.593	≥ 0.5	PASS
	HCH	8.563	≥ 0.5	PASS
11G	LCH	16.47	≥ 0.5	PASS
	MCH	15.66	≥ 0.5	PASS
	HCH	16.45	≥ 0.5	PASS
11N20SISO	LCH	16.47	≥ 0.5	PASS
	MCH	15.35	≥ 0.5	PASS
	HCH	16.46	≥ 0.5	PASS

Test Graphs

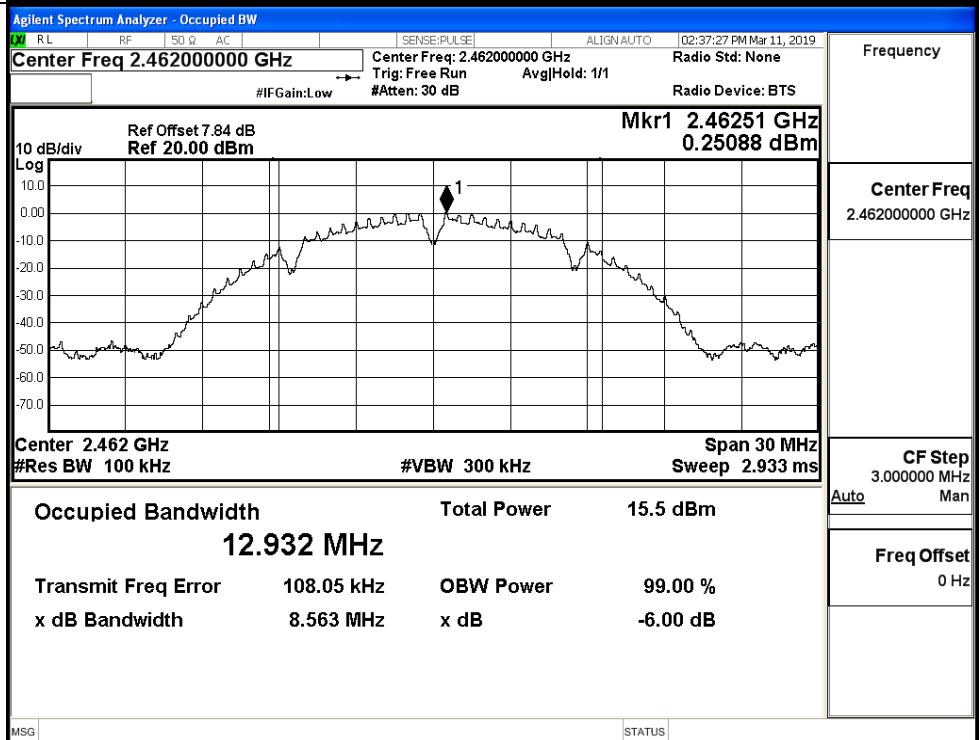
11B/LCH



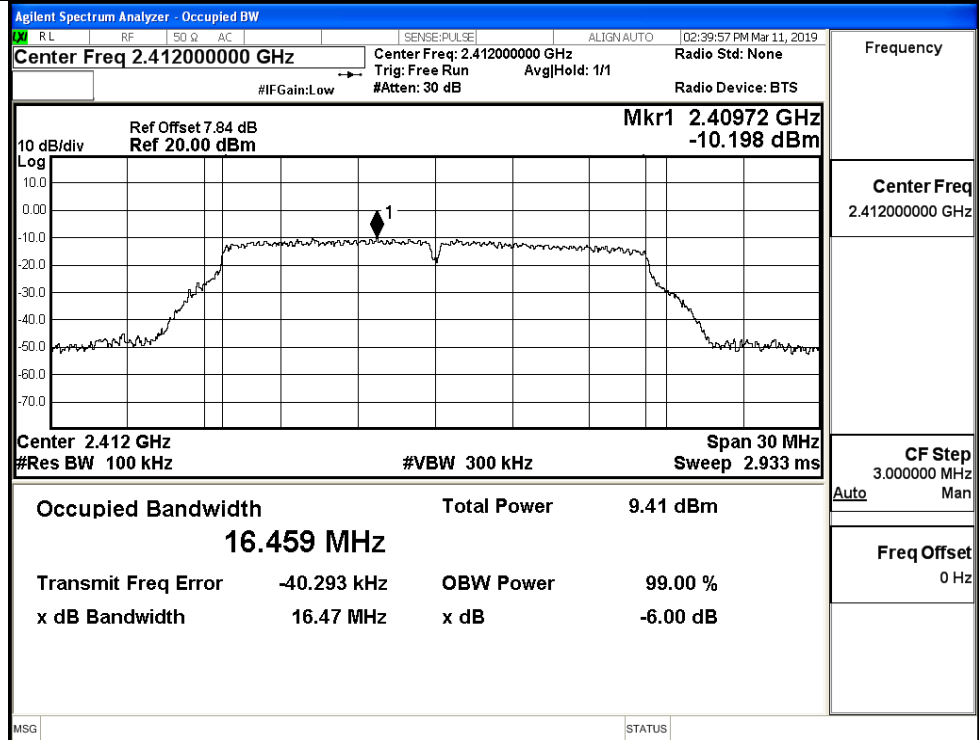
11B/MCH



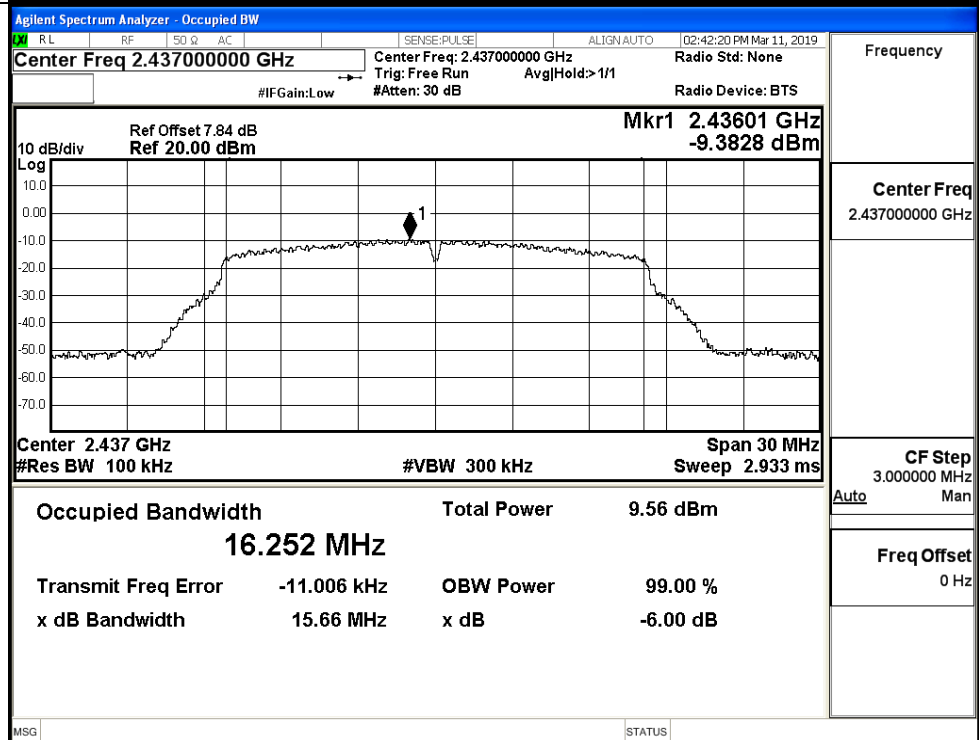
11B/HCH



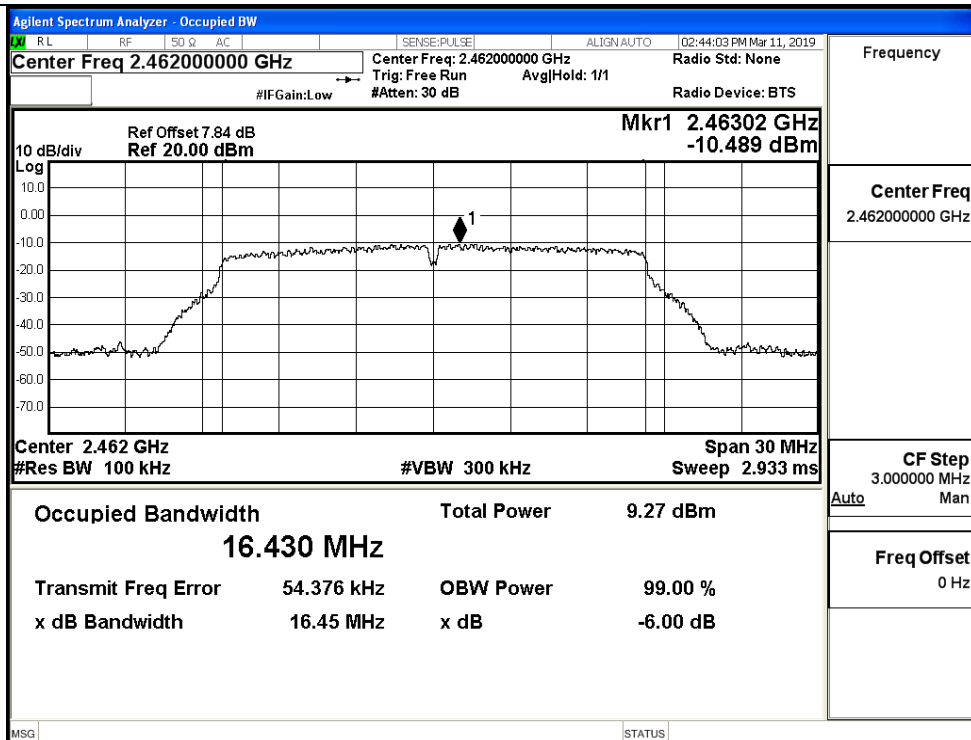
11G/LCH



11G/MCH



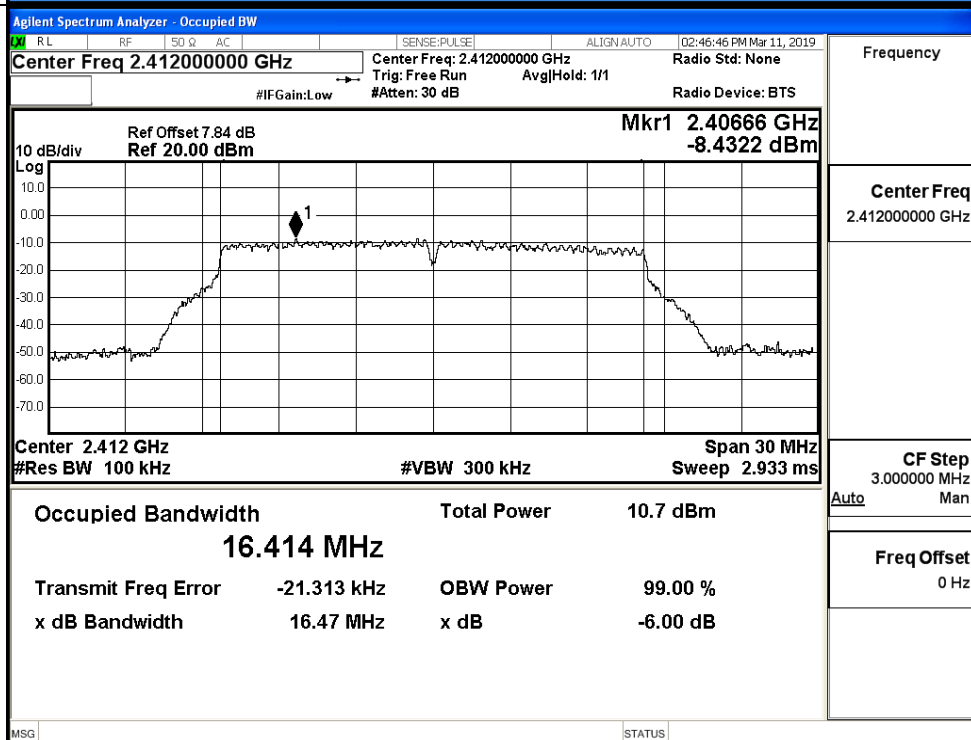
11G/HCH



Frequency

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

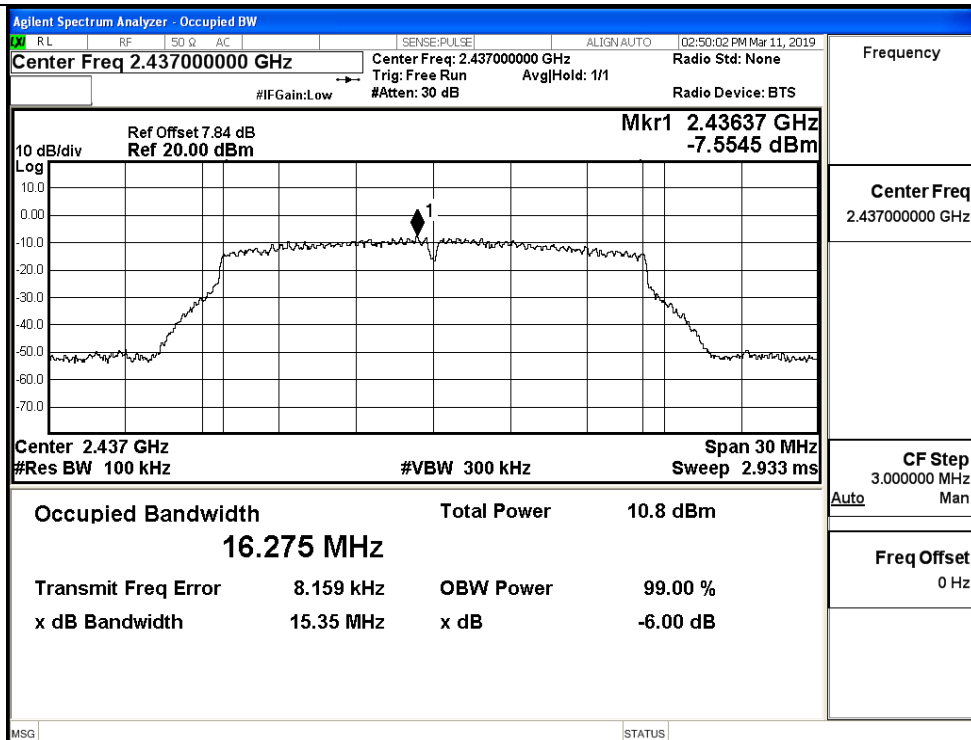
11N20SISO/LCH



Frequency

Center Freq
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Auto ManFreq Offset
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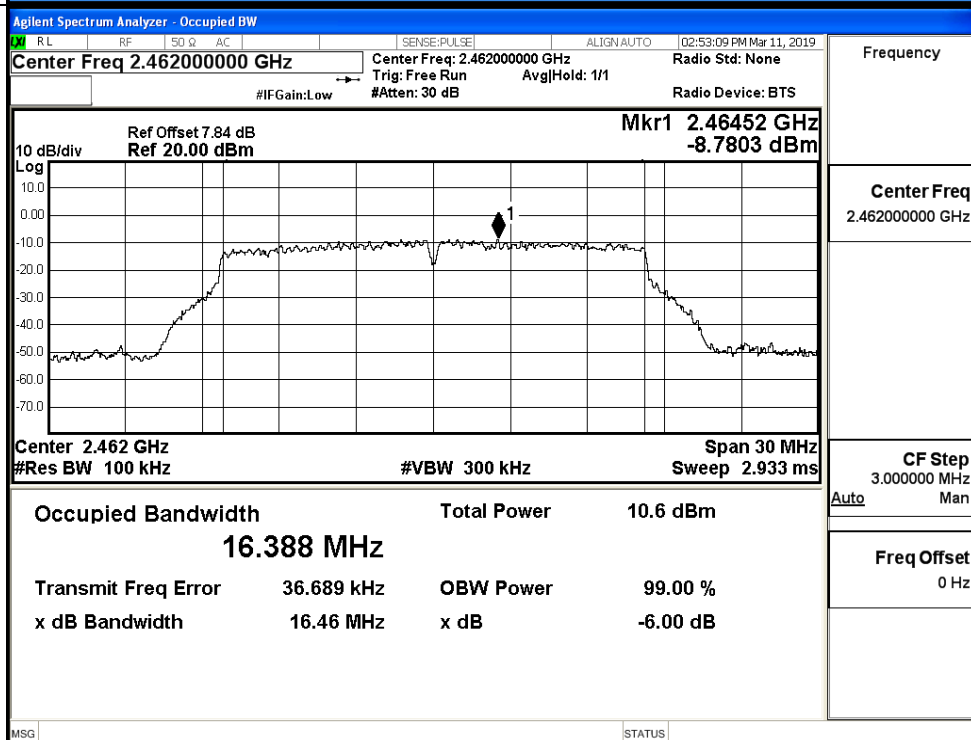
11N20SISO/MCH



Frequency

Center Freq
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3.000000 MHz
Auto ManFreq Offset
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11N20SISO/HCH



Frequency

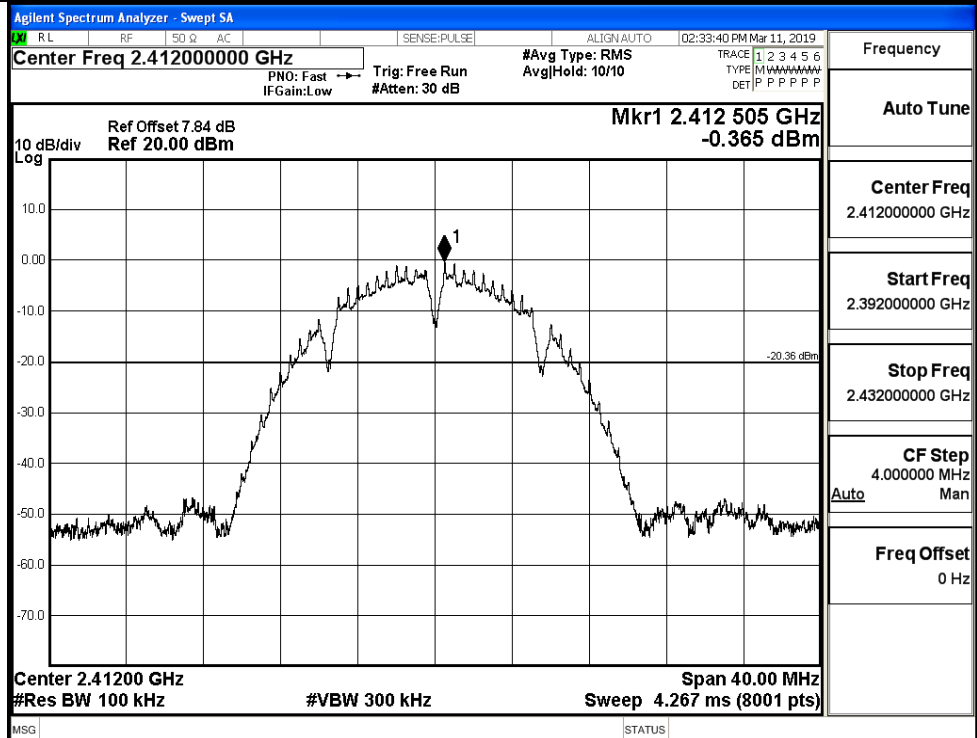
Center Freq
2.462000000 GHzCF Step
3.000000 MHz
Auto ManFreq Offset
0 Hz

C.5 RF Conducted Spurious Emissions

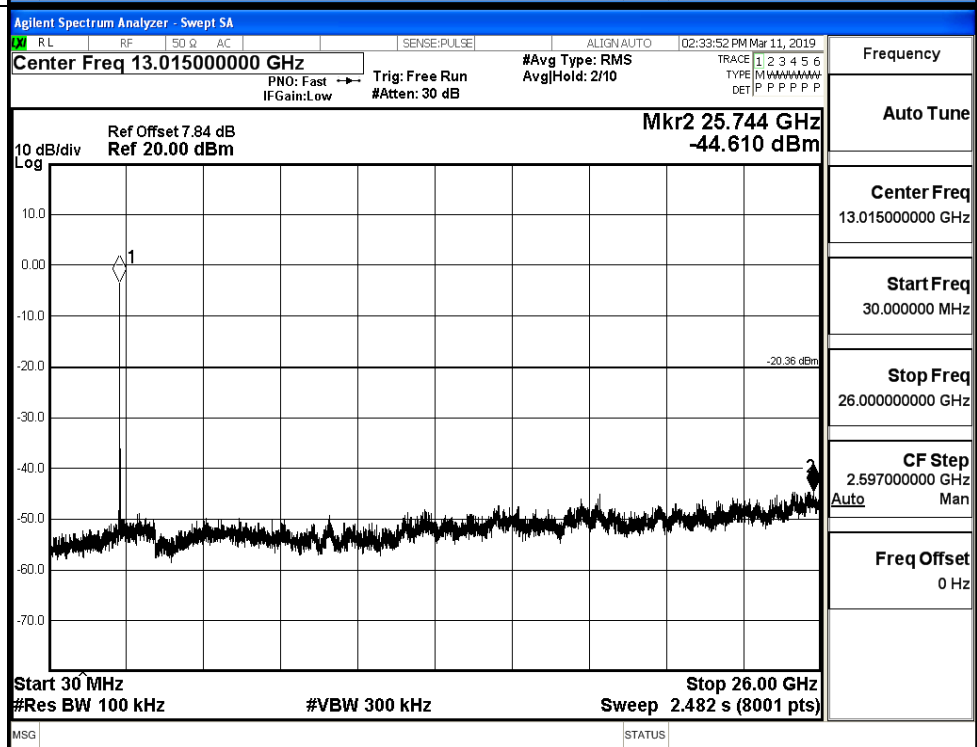
Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
11B	LCH	-0.365	-44.610	-20.365	PASS
	MCH	0.412	-44.239	-19.588	PASS
	HCH	0.187	-44.278	-19.813	PASS
11G	LCH	-10.786	-43.383	-30.786	PASS
	MCH	-9.522	-43.801	-29.522	PASS
	HCH	-10.616	-43.333	-30.616	PASS
11N20 SISO	LCH	-9.058	-44.264	-29.058	PASS
	MCH	-7.901	-43.239	-27.901	PASS
	HCH	-8.835	-44.438	-28.835	PASS

11B LCH Graphs

Pref/11B/LCH

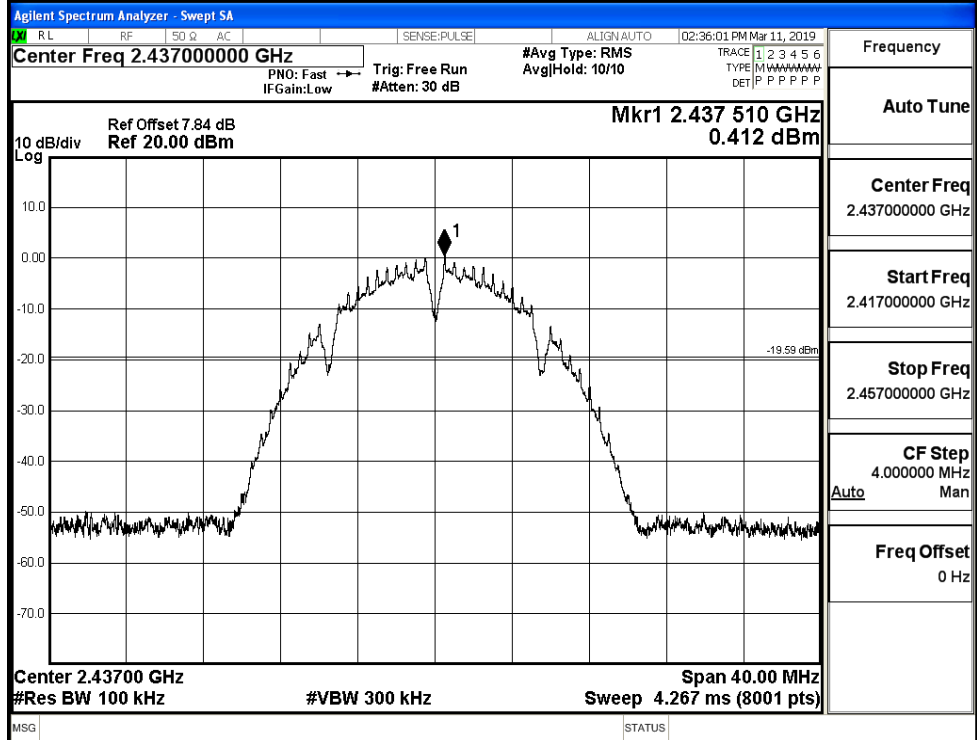


Puw/11B/LCH

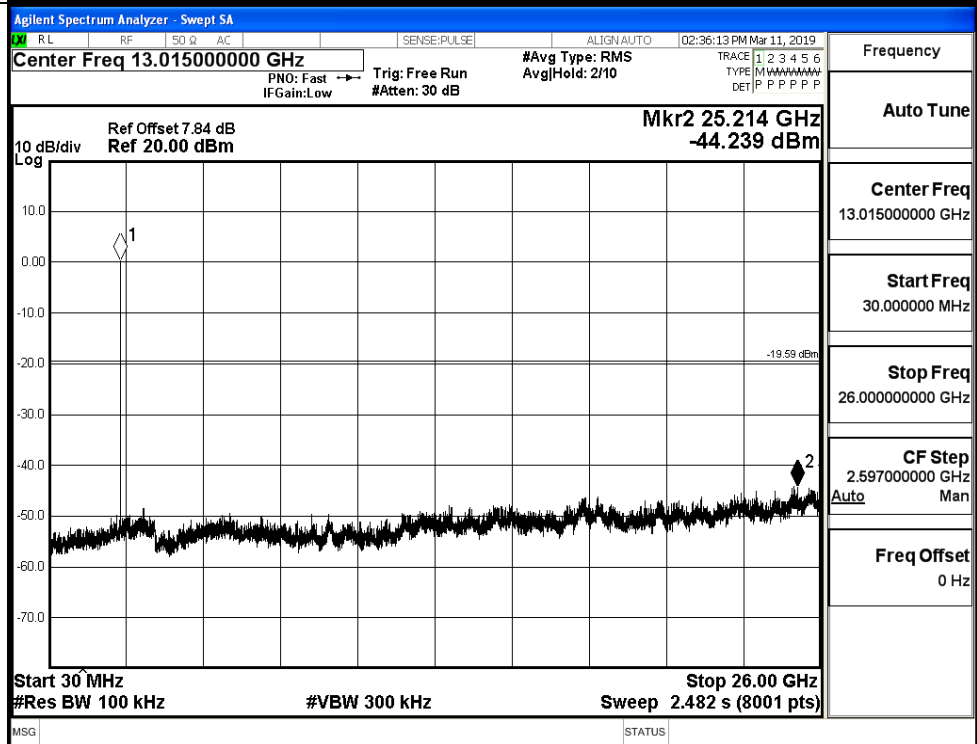


11B MCH Graphs

Pref/11B/MCH

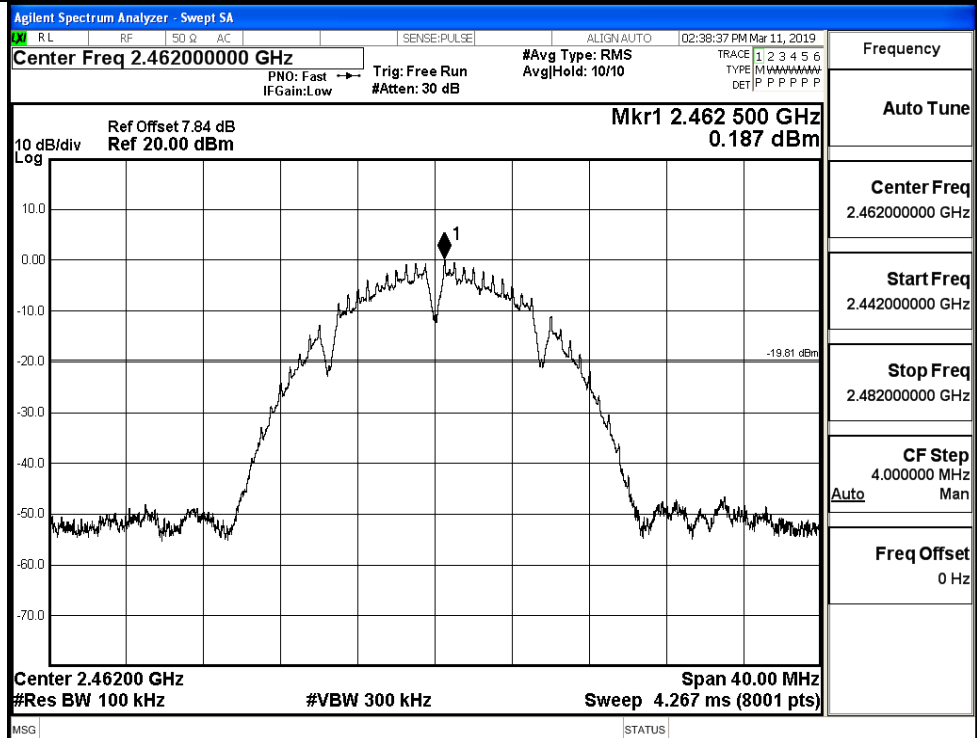


Puw/11B/MCH

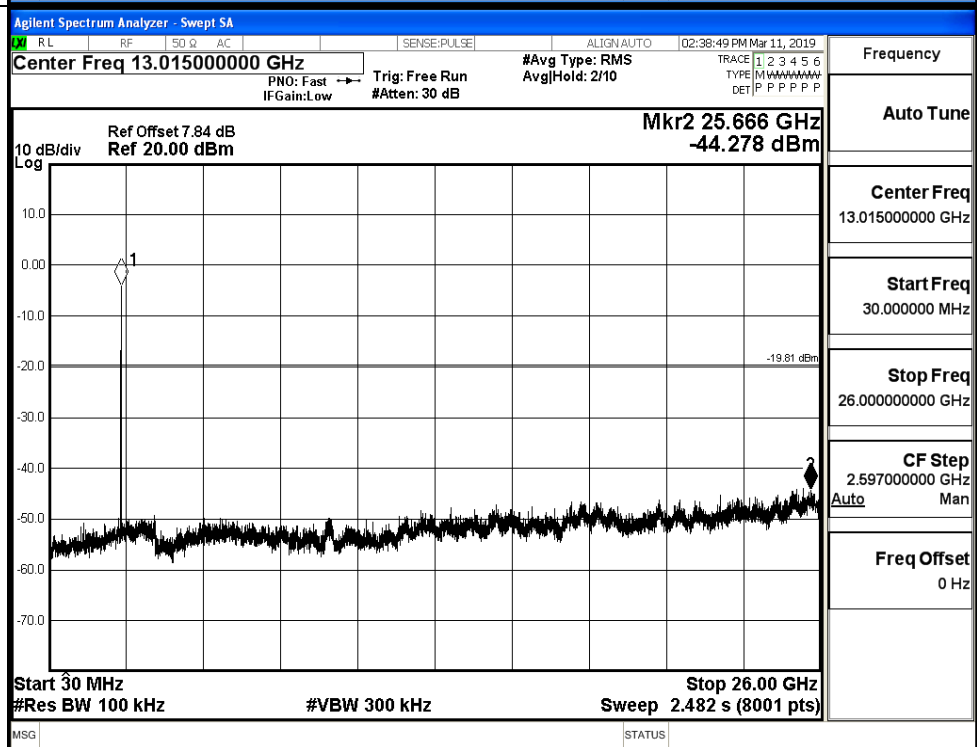


11B HCH Graphs

Pref/11B/HCH

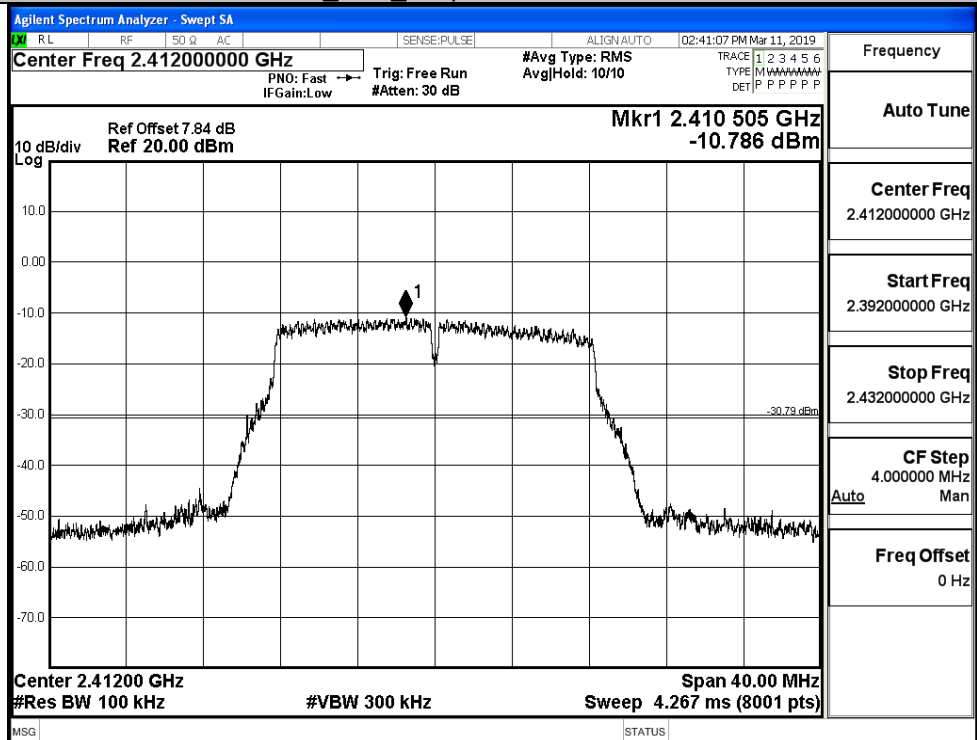


Puw/11B/HCH

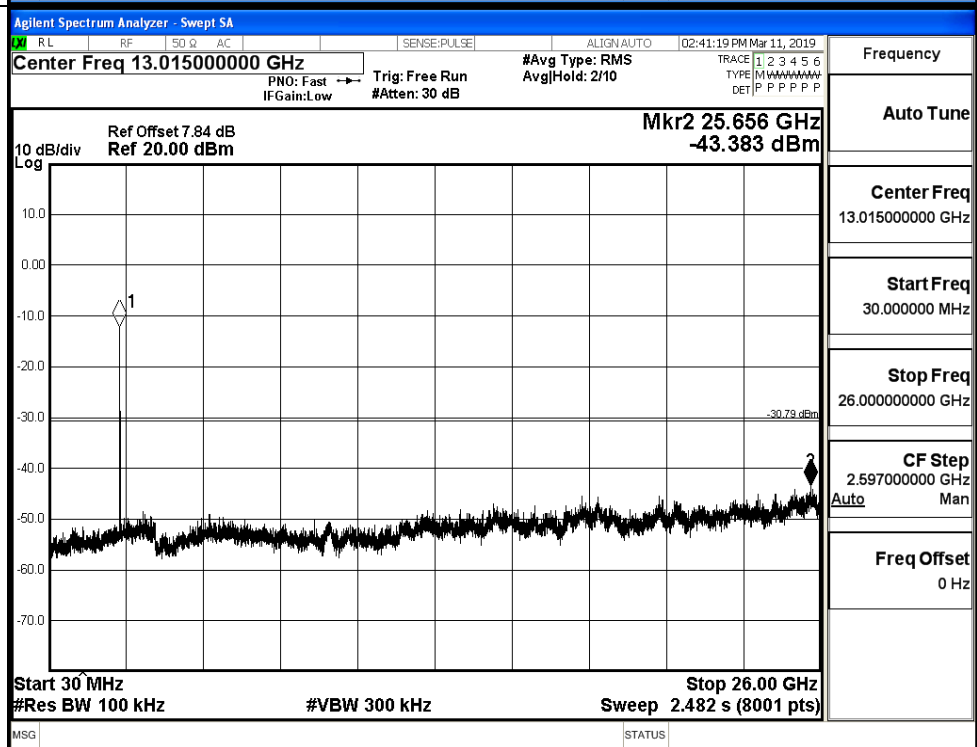


11G LCH Graphs

Pref/11G/LCH

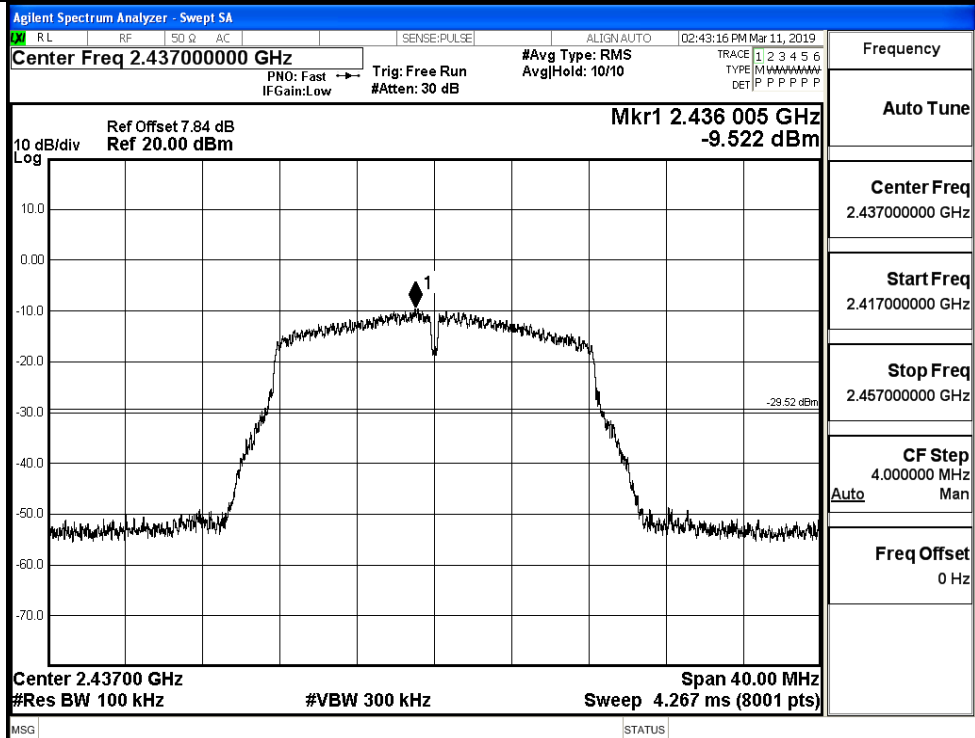


Puw/11G/LCH

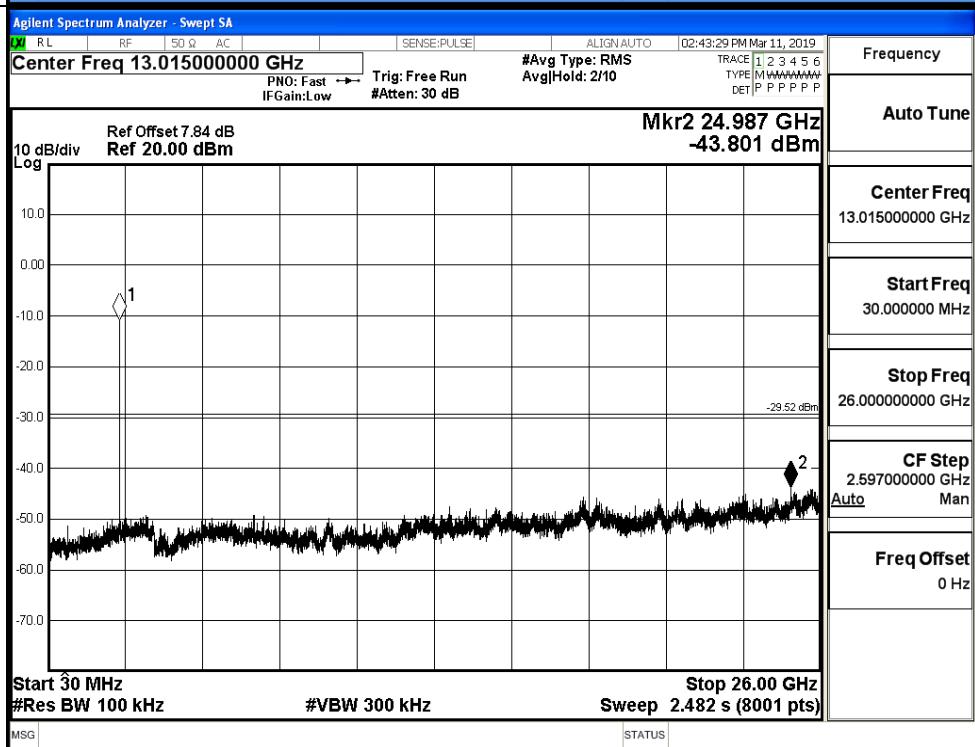


11G MCH Graphs

Pref/11G/MCH

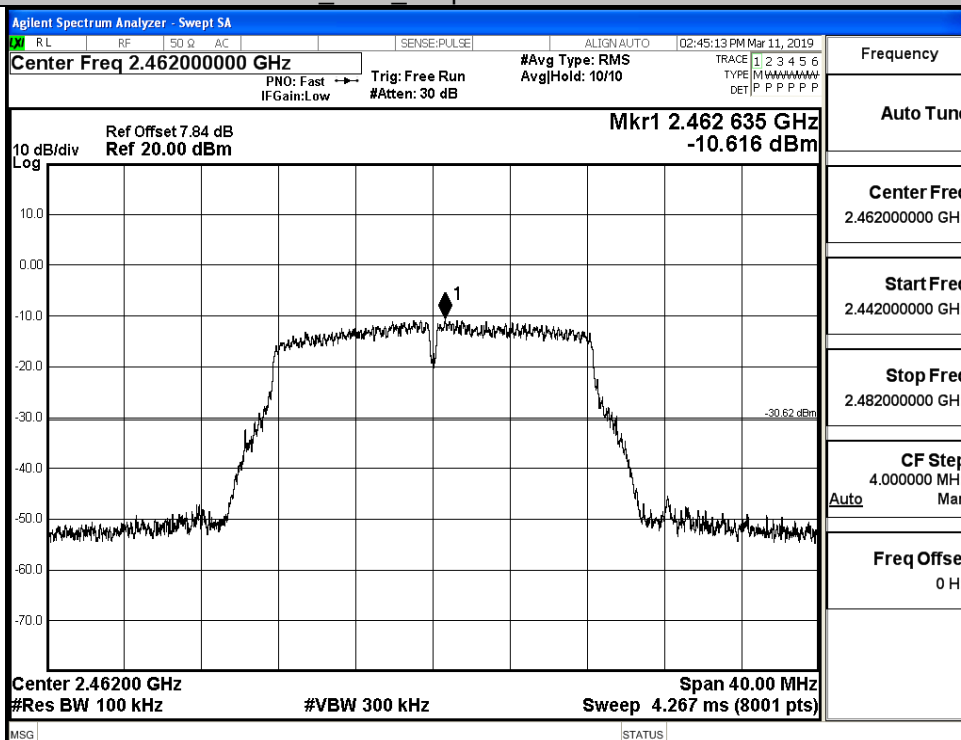


Puw/11G/MCH

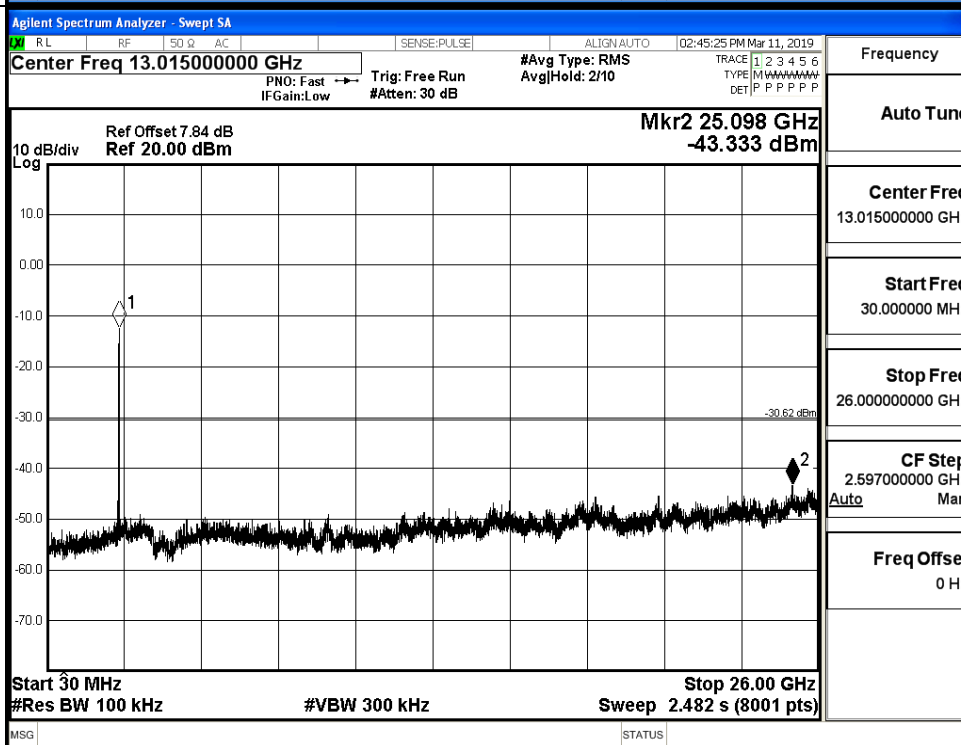


11G HCH Graphs

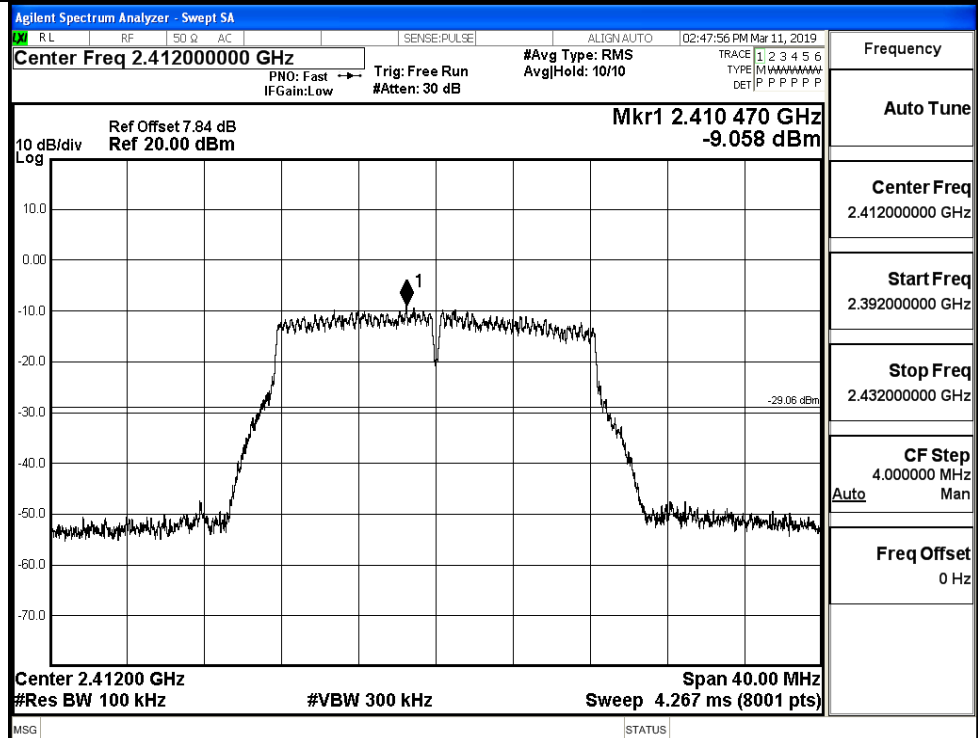
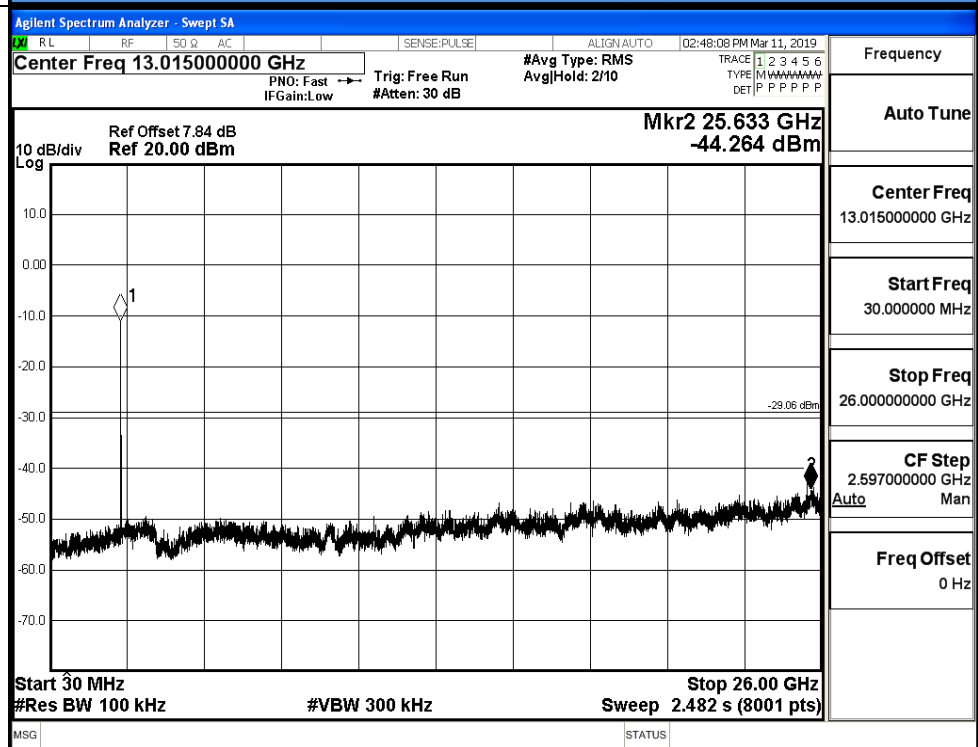
Pref/11G/HCH



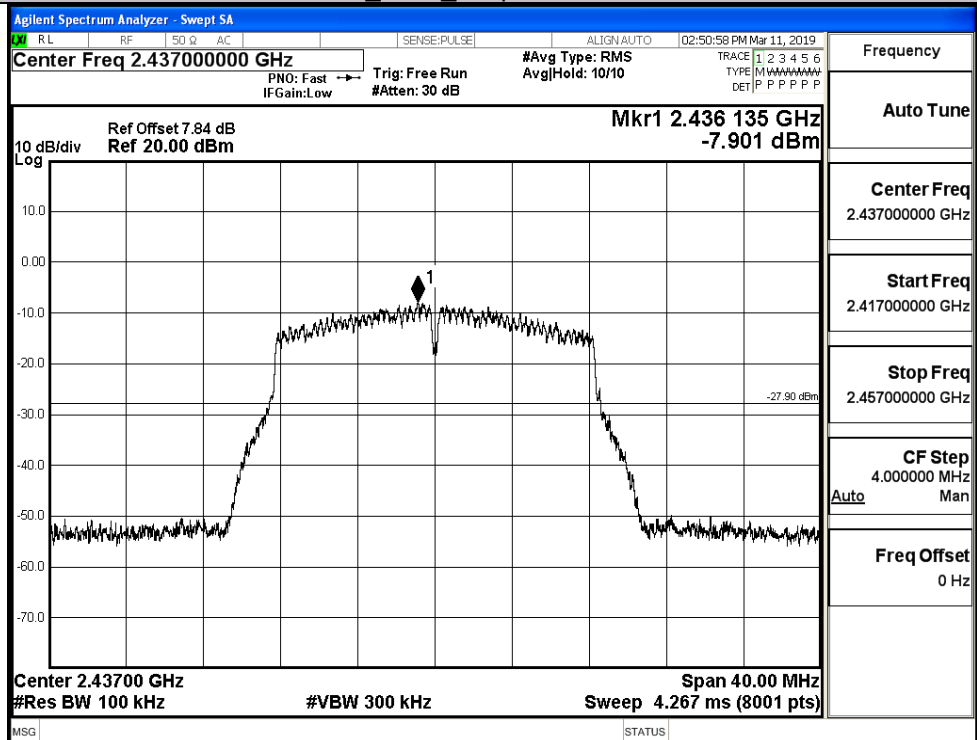
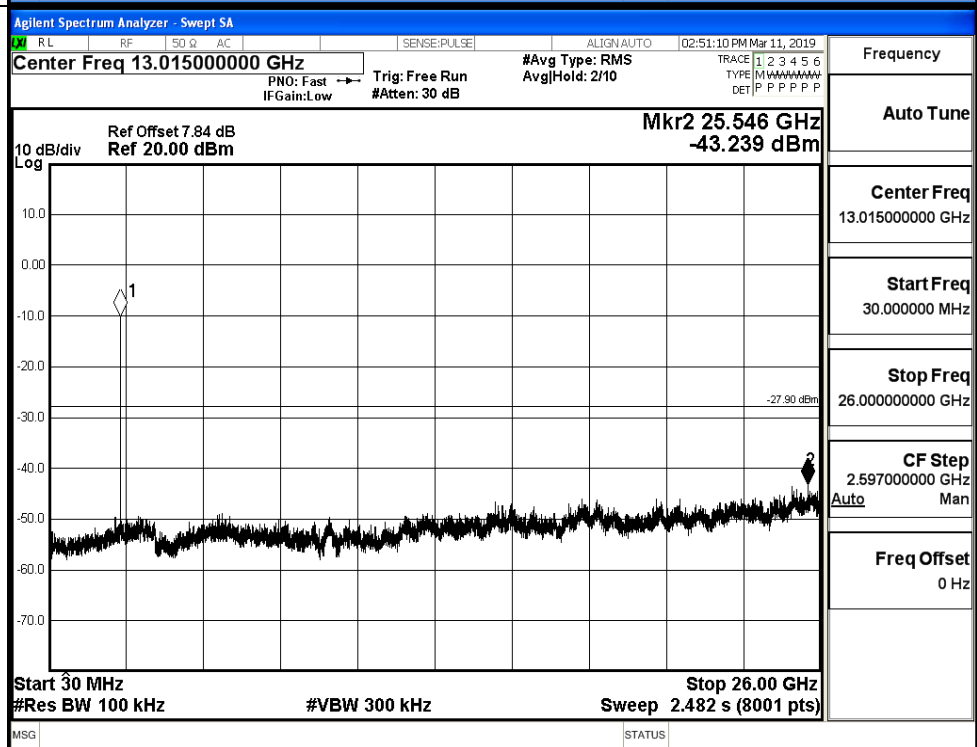
Puw/11G/HCH



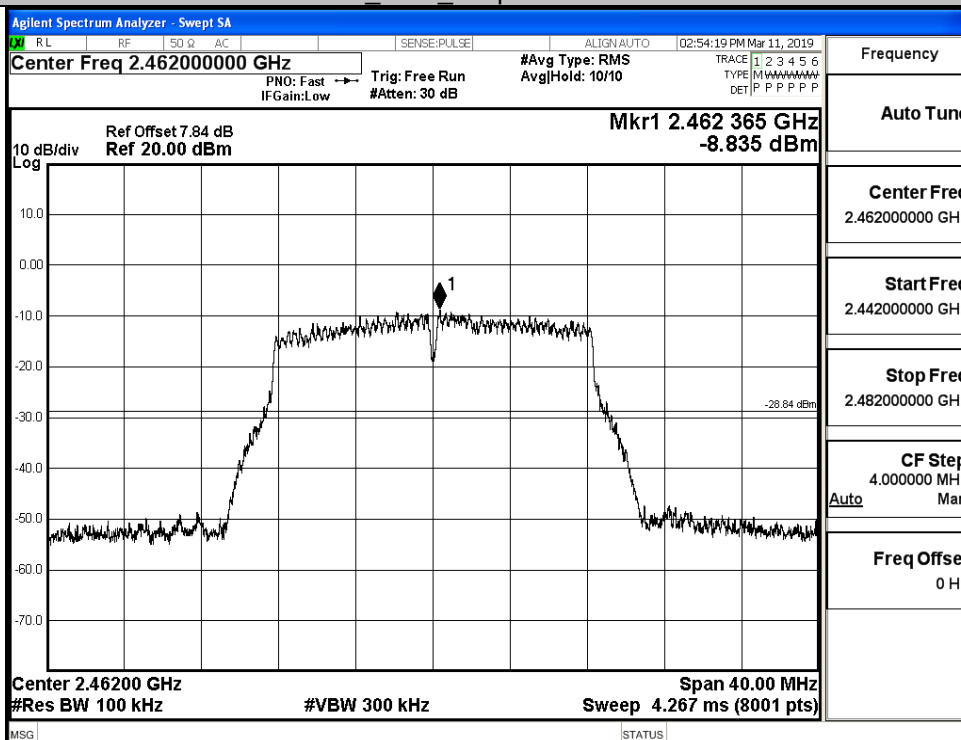
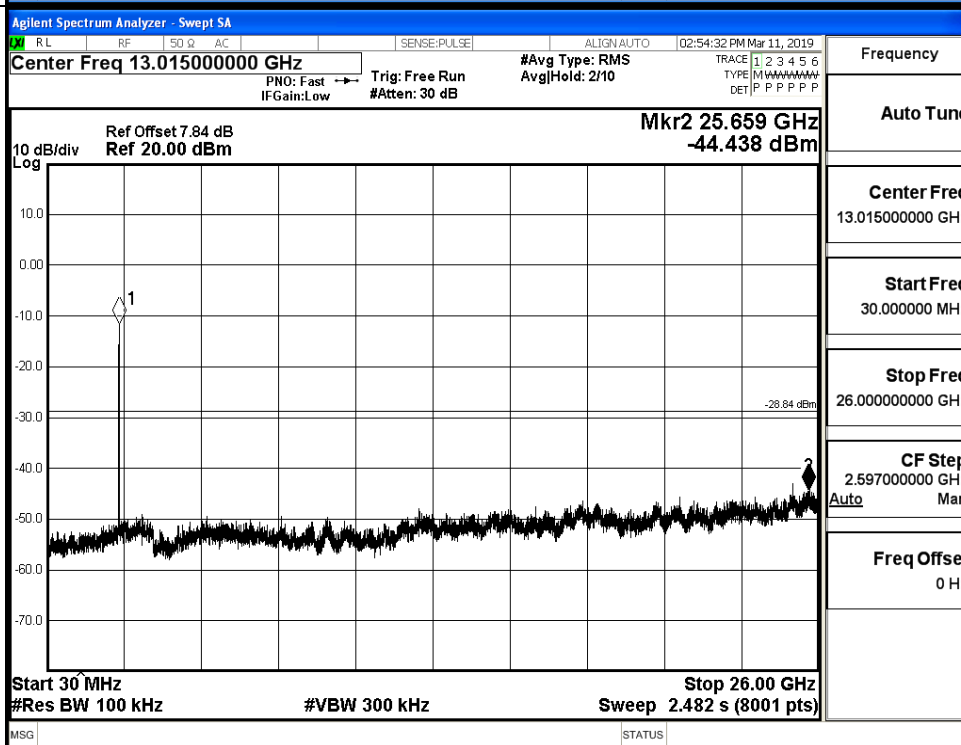
11N20SISO LCH Graphs

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

11N20SISO MCH_Graphs

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

11N20SISO HCH Graphs

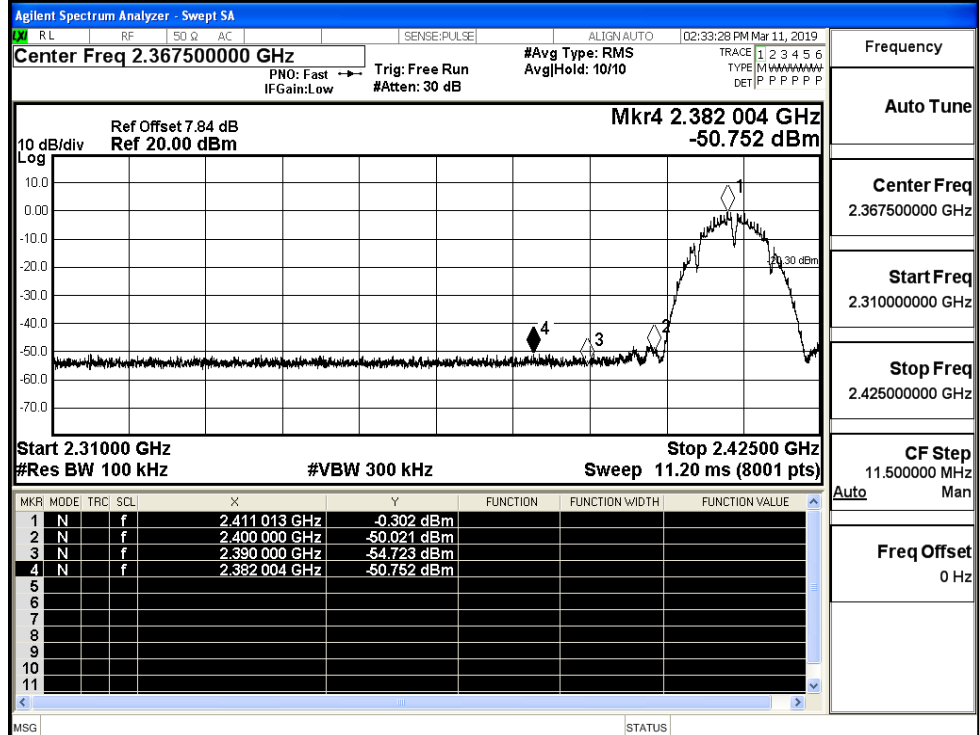
Pref/11N20
SISO/HCHPuw/11N20
SISO/HCH

C.6 Band-edge for RF Conducted Emissions

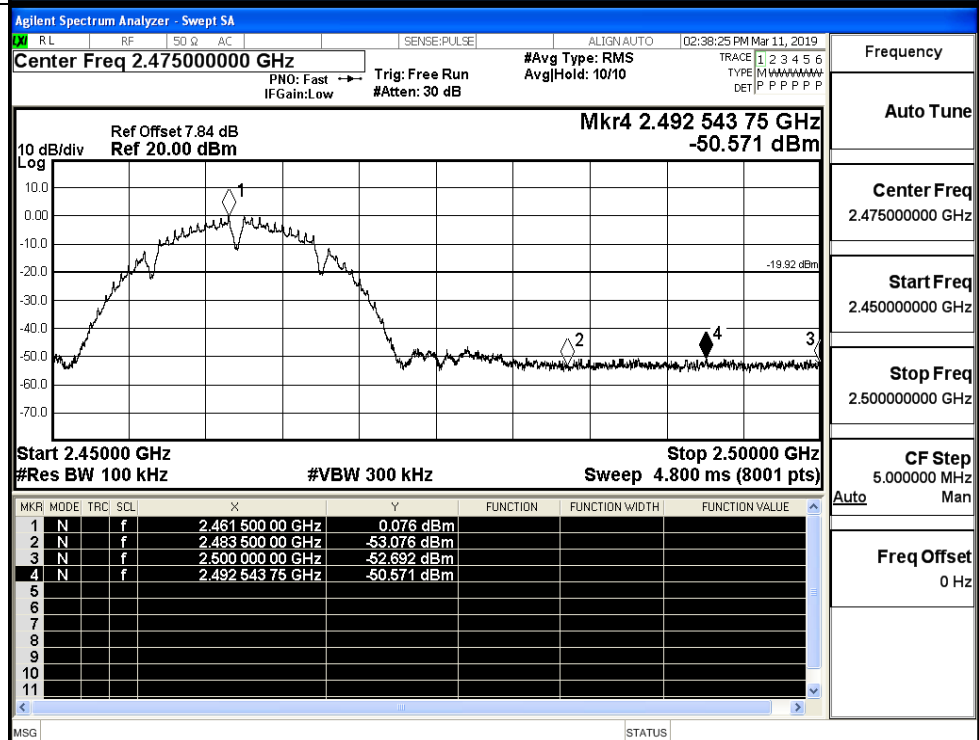
Mode	Channel	Carrier Power[dBm]	Max.Spurious Level [dBm]	Limit [dBm]	Verdict
11B	LCH	-0.302	-50.752	-20.3	PASS
	HCH	0.076	-50.571	-19.92	PASS
11G	LCH	-10.945	-50.029	-30.95	PASS
	HCH	-10.632	-49.697	-30.63	PASS
11N20SISO	LCH	-9.674	-49.998	-29.67	PASS
	HCH	-8.529	-49.997	-28.53	PASS

Test Graphs

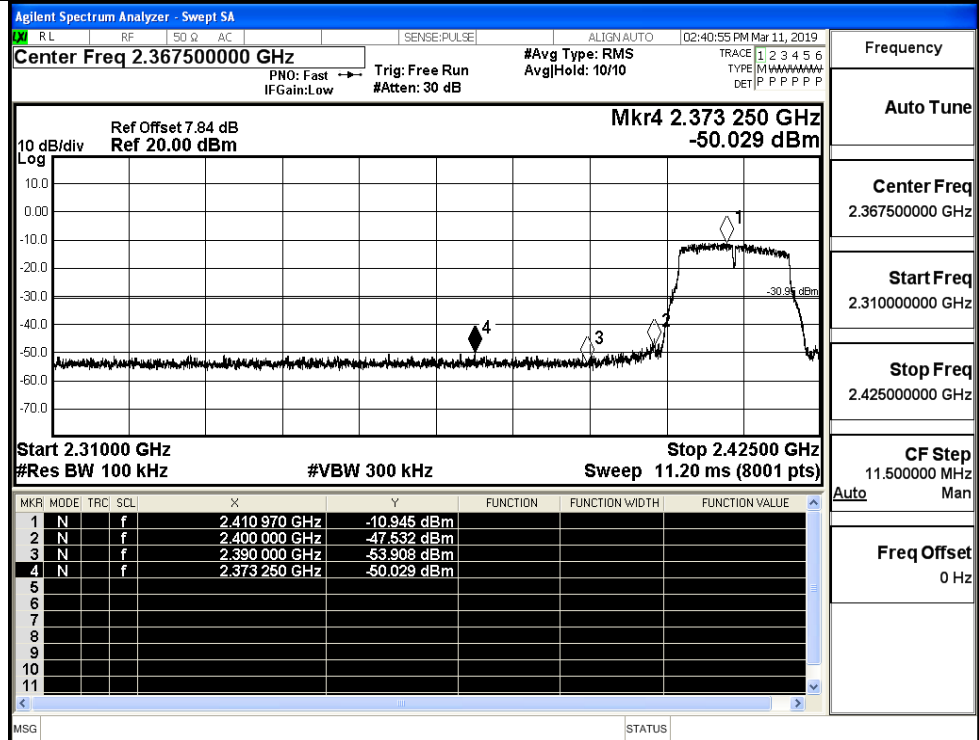
11B/LCH



11B/HCH



11G/LCH

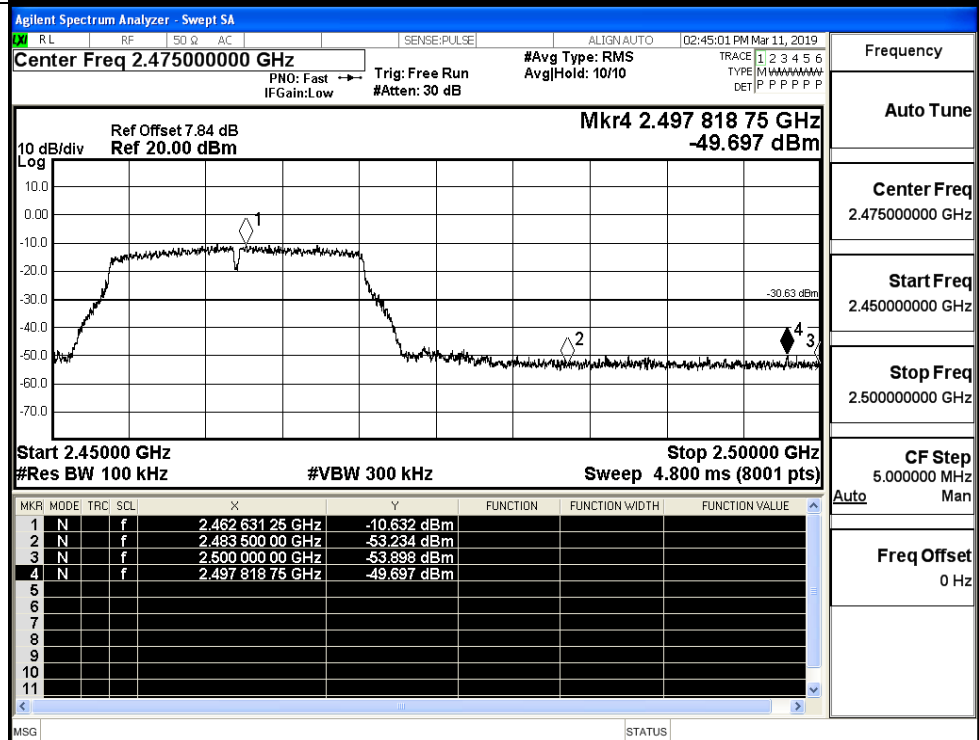


Frequency

Auto Tune

Center Freq
2.367500000 GHzStart Freq
2.310000000 GHzStop Freq
2.425000000 GHzCF Step
11.500000 MHz
Auto ManFreq Offset
0 Hz

11G/HCH

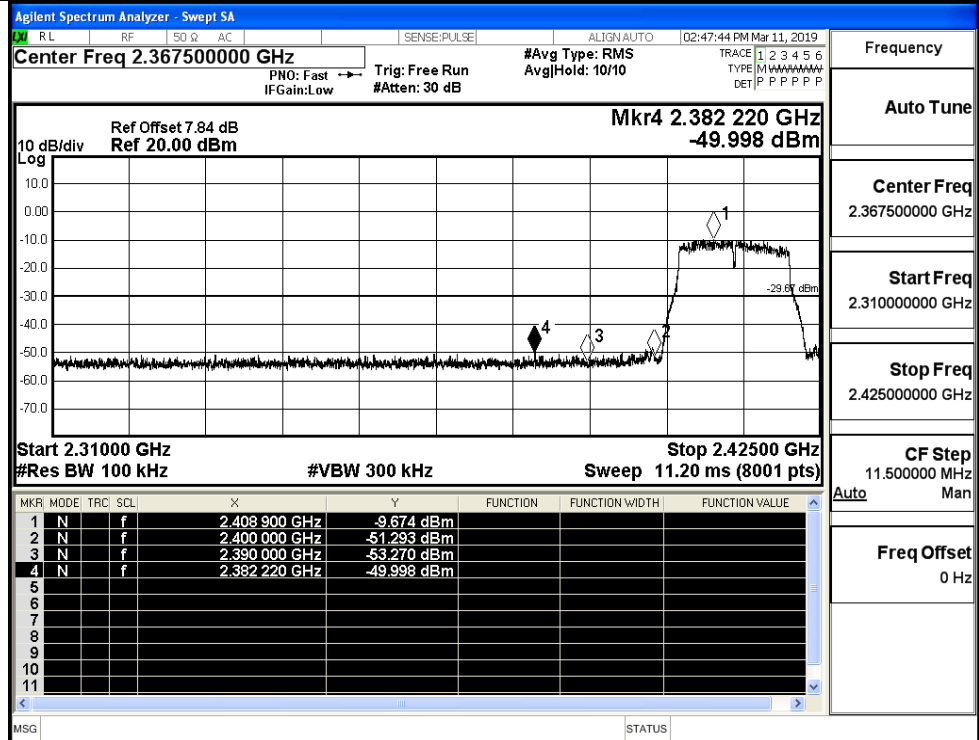


Frequency

Auto Tune

Center Freq
2.475000000 GHzStart Freq
2.450000000 GHzStop Freq
2.500000000 GHzCF Step
5.000000 MHz
Auto ManFreq Offset
0 Hz

11N20SISO/LCH

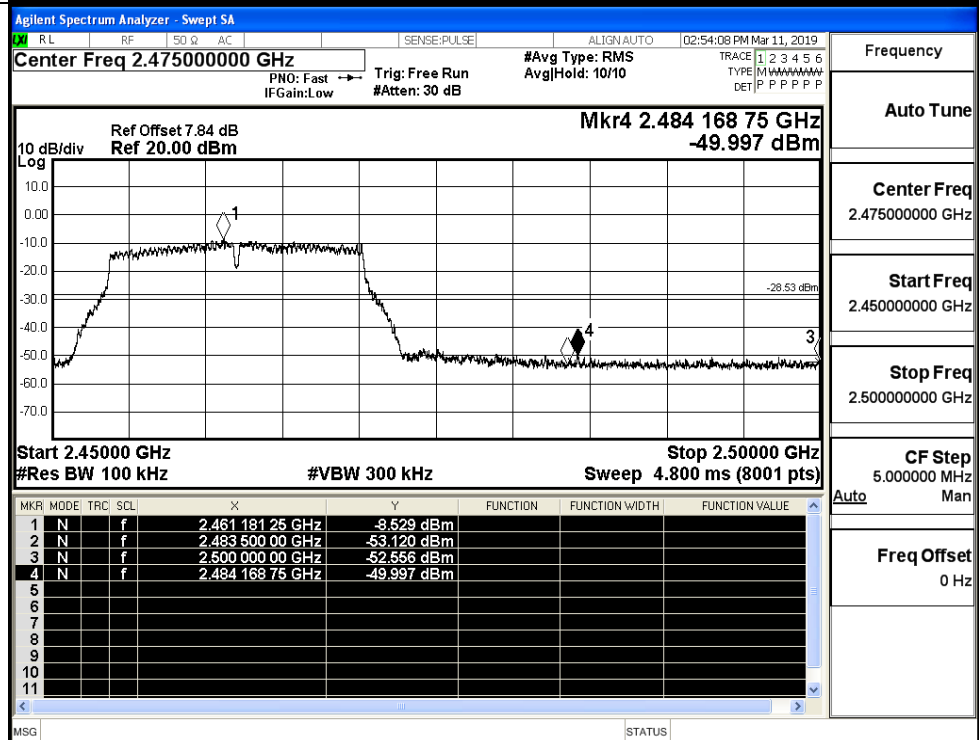


Frequency

Auto Tune

Center Freq
2.367500000 GHzStart Freq
2.310000000 GHzStop Freq
2.425000000 GHzCF Step
11.500000 MHz
Auto ManFreq Offset
0 Hz

11N20SISO/HCH



Frequency

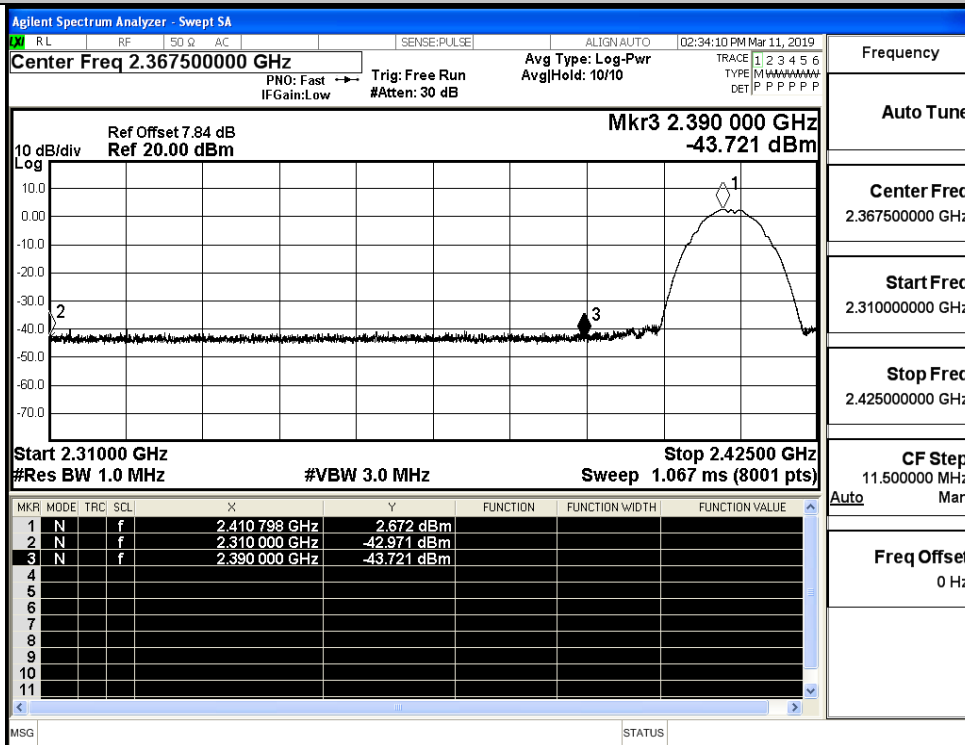
Auto Tune

Center Freq
2.475000000 GHzStart Freq
2.450000000 GHzStop Freq
2.500000000 GHzCF Step
5.000000 MHz
Auto ManFreq Offset
0 Hz

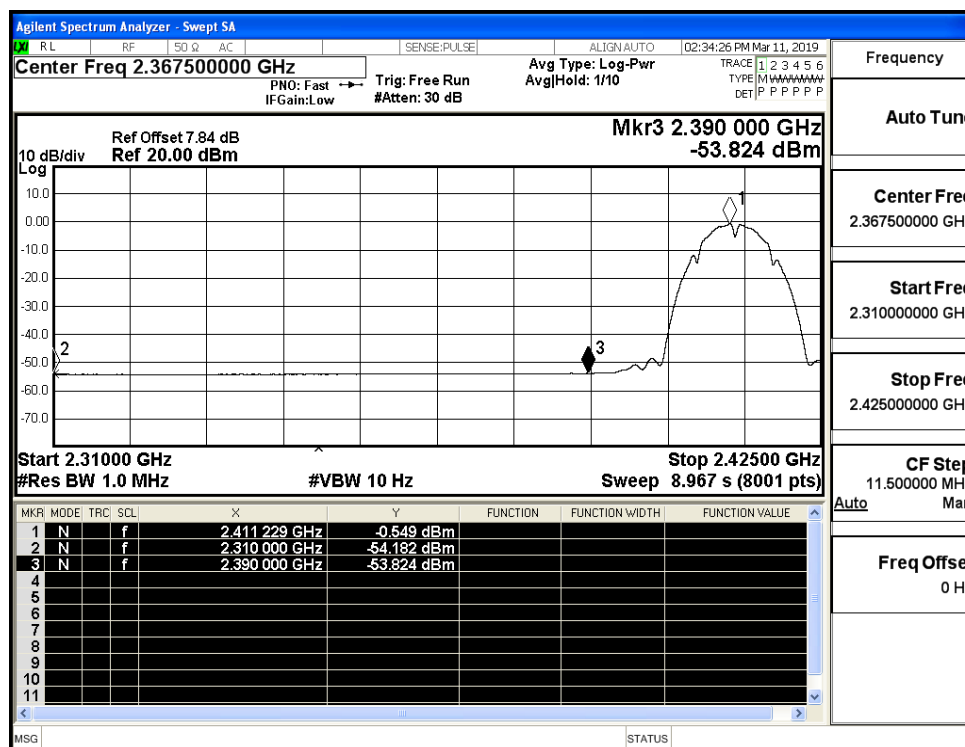
C.7 Restrict-band band-edge measurements

Test Mode	Test Channel	Ant	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
11B	2412	Ant1	2310.0	-42.97	2.0	0	54.29	PEAK	74	PASS
	2412	Ant1	2310.0	-54.18	2.0	0	43.08	AV	54	PASS
	2412	Ant1	2390.0	-43.72	2.0	0	53.54	PEAK	74	PASS
	2412	Ant1	2390.0	-53.82	2.0	0	43.43	AV	54	PASS
	2462	Ant1	2483.5	-41.76	2.0	0	55.49	PEAK	74	PASS
	2462	Ant1	2483.5	-53.45	2.0	0	43.81	AV	54	PASS
	2462	Ant1	2500.0	-43.71	2.0	0	53.55	PEAK	74	PASS
	2462	Ant1	2500.0	-53.42	2.0	0	43.84	AV	54	PASS
11G	2412	Ant1	2310.0	-42.95	2.0	0	54.30	PEAK	74	PASS
	2412	Ant1	2310.0	-54.16	2.0	0	43.10	AV	54	PASS
	2412	Ant1	2390.0	-43.95	2.0	0	53.31	PEAK	74	PASS
	2412	Ant1	2390.0	-53.78	2.0	0	43.48	AV	54	PASS
	2462	Ant1	2483.5	-42.50	2.0	0	54.76	PEAK	74	PASS
	2462	Ant1	2483.5	-53.39	2.0	0	43.87	AV	54	PASS
	2462	Ant1	2500.0	-43.31	2.0	0	53.95	PEAK	74	PASS
	2462	Ant1	2500.0	-53.44	2.0	0	43.81	AV	54	PASS
11N20 SISO	2412	Ant1	2310.0	-43.88	2.0	0	53.38	PEAK	74	PASS
	2412	Ant1	2310.0	-54.15	2.0	0	43.10	AV	54	PASS
	2412	Ant1	2390.0	-41.67	2.0	0	55.58	PEAK	74	PASS
	2412	Ant1	2390.0	-53.78	2.0	0	43.48	AV	54	PASS
	2462	Ant1	2483.5	-42.05	2.0	0	55.21	PEAK	74	PASS
	2462	Ant1	2483.5	-53.22	2.0	0	44.03	AV	54	PASS
	2462	Ant1	2500.0	-43.20	2.0	0	54.06	PEAK	74	PASS
	2462	Ant1	2500.0	-53.41	2.0	0	43.85	AV	54	PASS

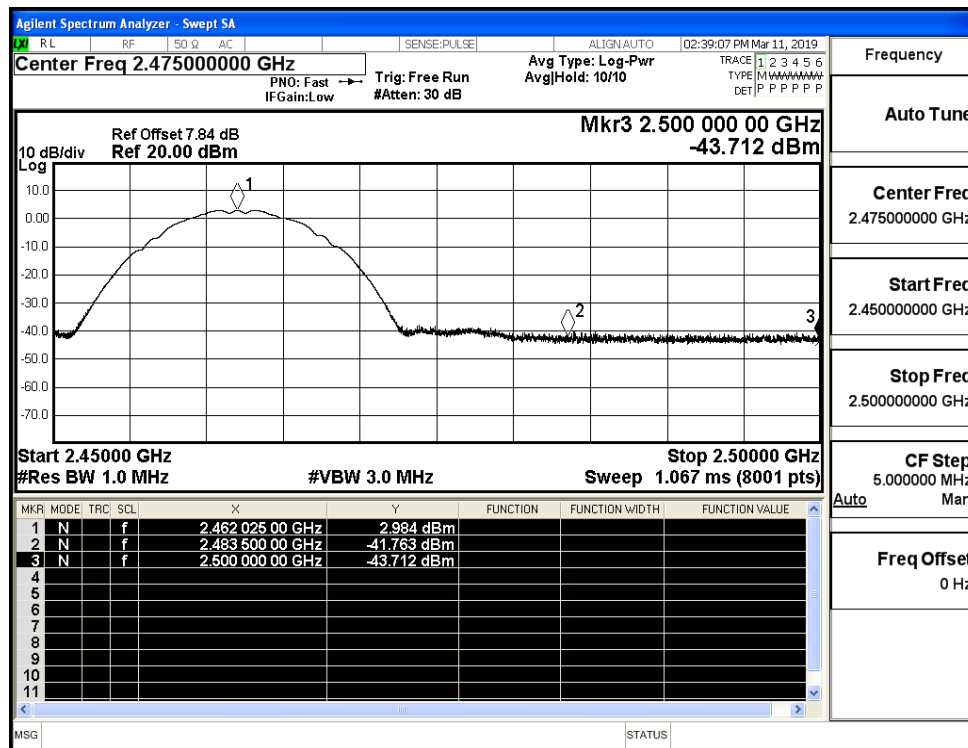
Restrict-band band-edge measurements_11B_2412_Ant1_PEAK



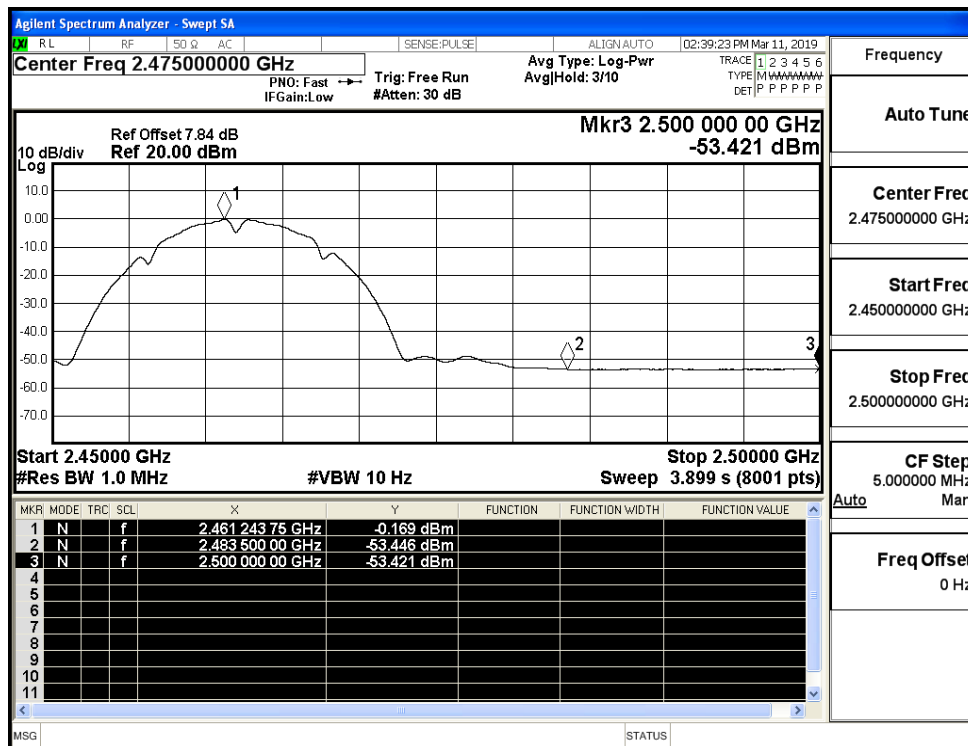
Restrict-band band-edge measurements_11B_2412_Ant1_AV



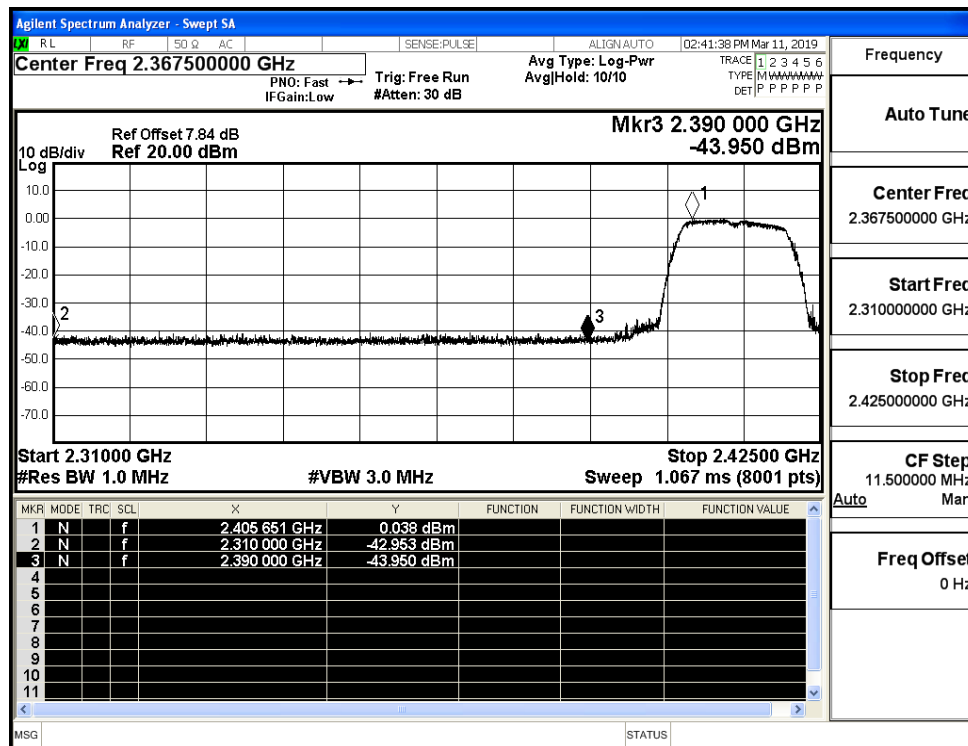
Restrict-band band-edge measurements_11B_2462_Ant1_PEAK



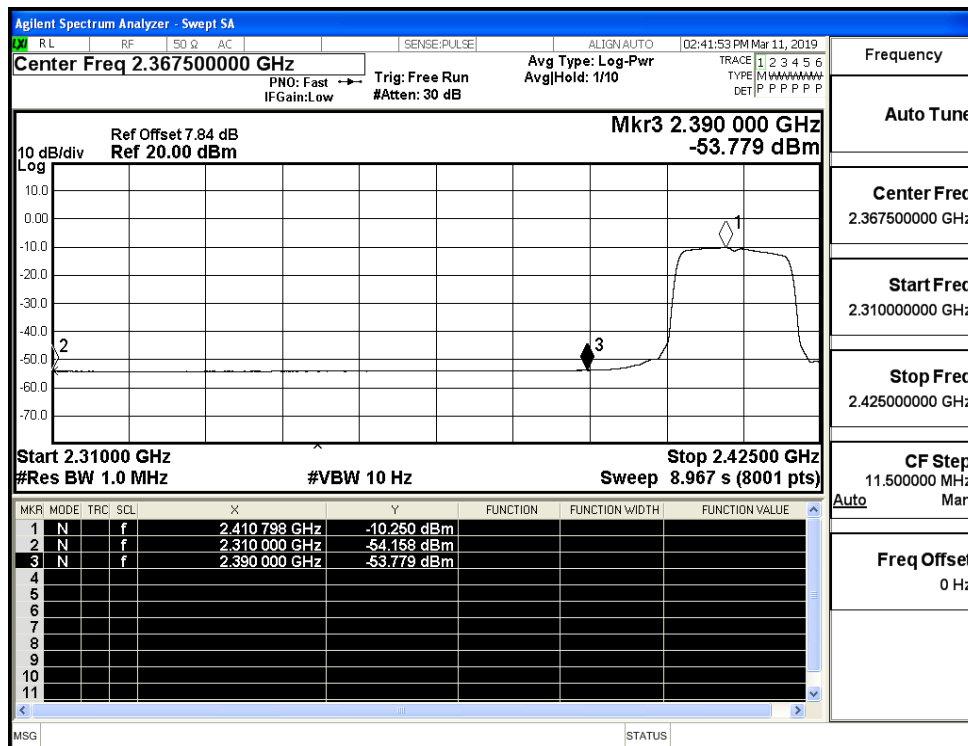
Restrict-band band-edge measurements_11B_2462_Ant1_AV



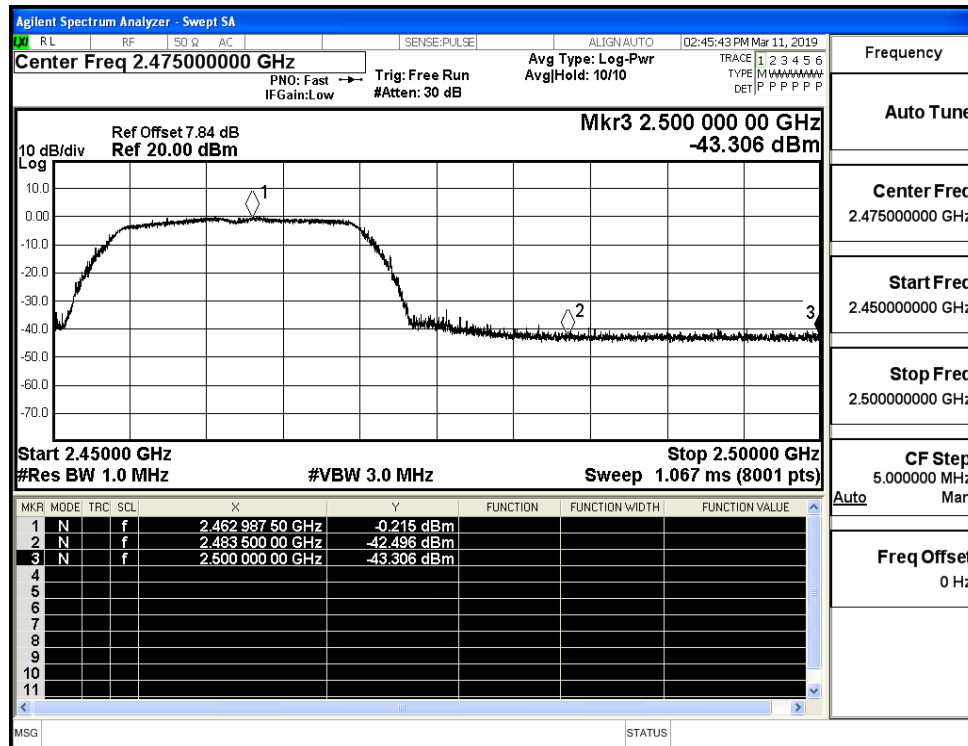
Restrict-band band-edge measurements_11G_2412_Ant1_PEAK



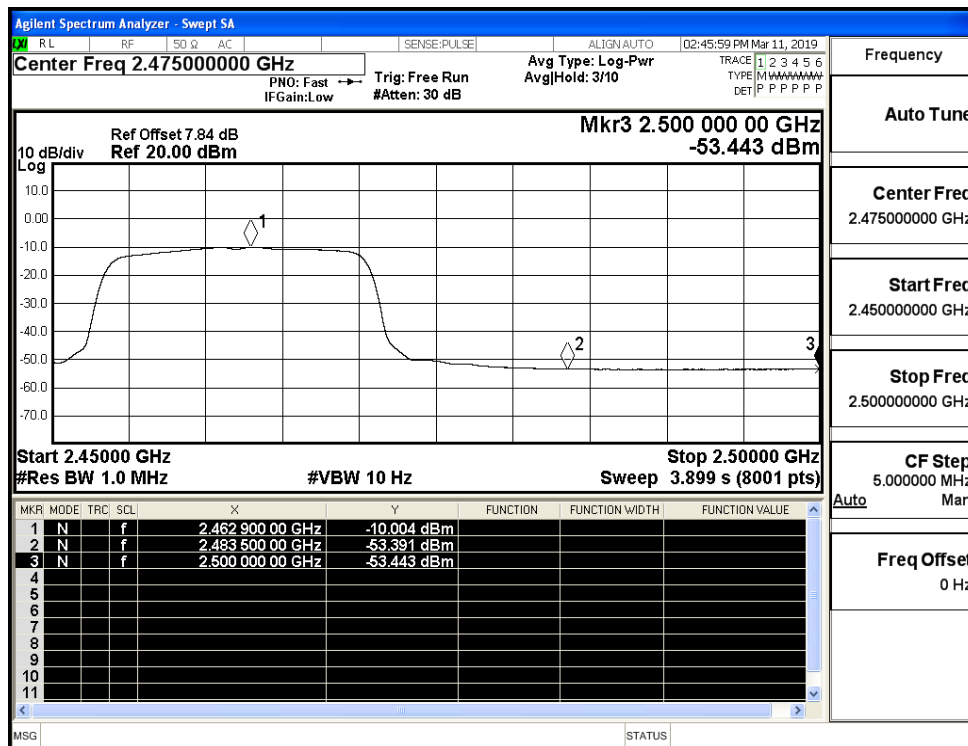
Restrict-band band-edge measurements_11G_2412_Ant1_AV



Restrict-band band-edge measurements_11G_2462_Ant1_PEAK



Restrict-band band-edge measurements_11G_2462_Ant1_AV



Agilent Spectrum Analyzer - Swept SA

RL RF SO Q AC SENSE:PULSE ALIGN: AUTO 02:48:26 PM Mar 11, 2019

Center Freq 2.36750000 GHz PNO: Fast Trig: Free Run Avg Type: Log-Pwr Avg/Hold: 10/10

IF Gain: Low #Atten: 30 dB

TRACE 1 2 3 4 5 6
TYPE M M M M M M M
DET P P P P P P

Ref Offset 7.84 dB
Ref 20.00 dBm

Mkr3 2.390 000 GHz
-41.673 dBm

10 dB/div
Log

Start 2.31000 GHz Stop 2.42500 GHz
#Res BW 1.0 MHz #VBW 3.0 MHz Sweep 1.067 ms (8001 pts)

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	f		2.414 890 GHz	1.059 dBm			
2	N	f		2.310 000 GHz	-43.875 dBm			
3	N	f		2.390 000 GHz	-41.673 dBm			
4								
5								
6								
7								
8								
9								
10								
11								

Auto Tune

Center Freq 2.36750000 GHz

Start Freq 2.31000000 GHz

Stop Freq 2.42500000 GHz

CF Step 11.500000 MHz

Auto

Freq Offset 0 Hz

MSG STATUS

Agilent Spectrum Analyzer - Swept SA

RL RF SO Q AC SENSE:PULSE ALIGN:AUTO 02:48:41 PM Mar 11, 2019

Center Freq 2.36750000 GHz PNO: Fast Trg: Free Run Avg Type: Log-Pwr AvgJHold: 1/10

IFGain:Low #Atten: 30 dB

TRACE 1 1 2 3 4 5 6
TYPE: M W W W W W W W
DET: P P P P P P P

10 dB/div Ref Offset 7.84 dB Mkr3 2.390 000 GHz
Log Ref 20.00 dBM -53.777 dBm

Start 2.31000 GHz Stop 2.42500 GHz
#Res BW 1.0 MHz #VBW 10 Hz Sweep 8.967 s (8001 pts)

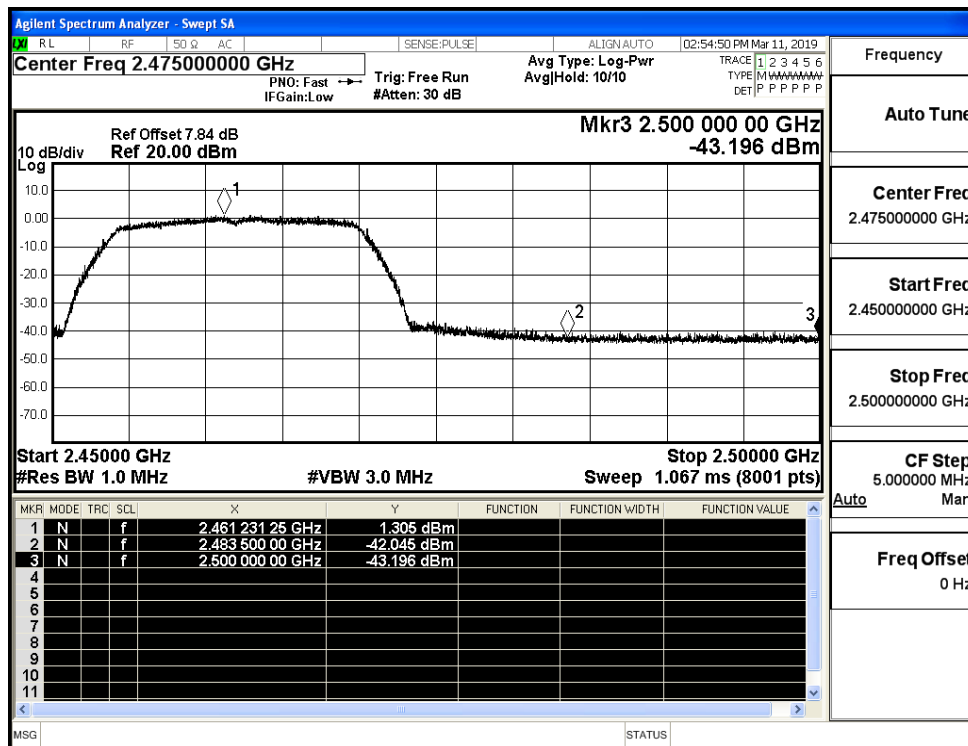
MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	f		2.410 740 GHz	-10.258 dBm			
2	N	f		2.310 000 GHz	-54.153 dBm			
3	N	f		2.390 000 GHz	-53.777 dBm			
4								
5								
6								
7								
8								
9								
10								
11								

Auto

CF Step 11.500000 MHz
Freq Offset 0 Hz

MSG STATUS

Restrict-band band-edge measurements_11N20SISO_2462_Ant1_PEAK



Restrict-band band-edge measurements_11N20SISO_2462_Ant1_AV

