

## Appendix A

### RF Test Data for 2.4G WIFI (Conducted Measurement)

Product Name: POS Terminal

Test Model: P90

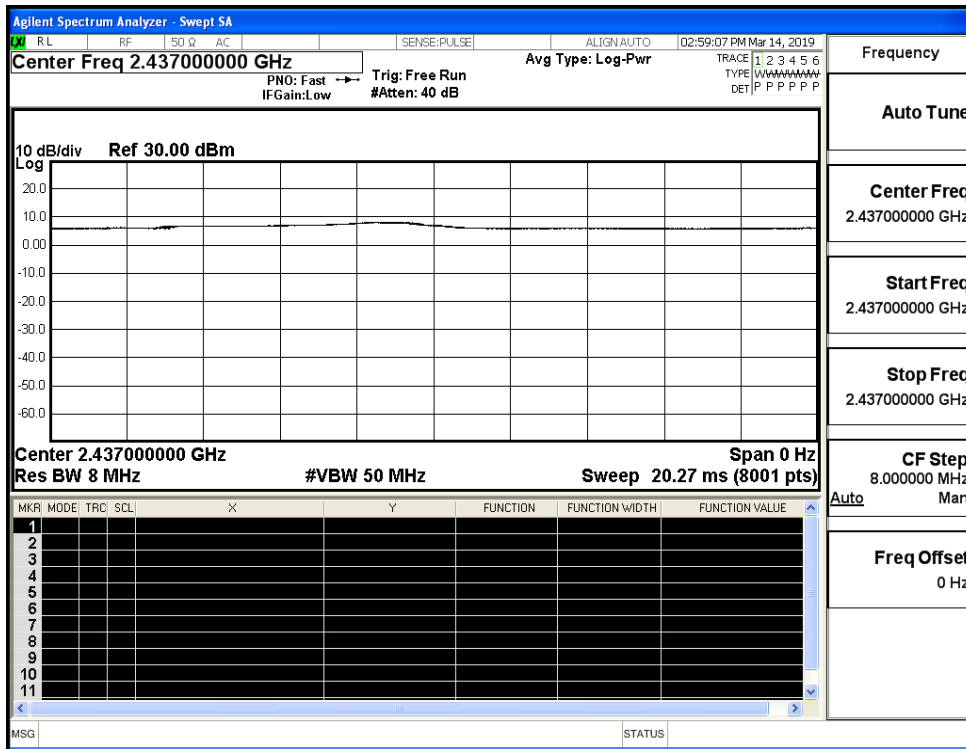
#### Environmental Conditions

Temperature:	24.5 ° C
Relative Humidity:	53.8%
ATM Pressure:	100.0 kPa
Test Engineer:	Mina.Xu
Supervised by:	Tom Liu

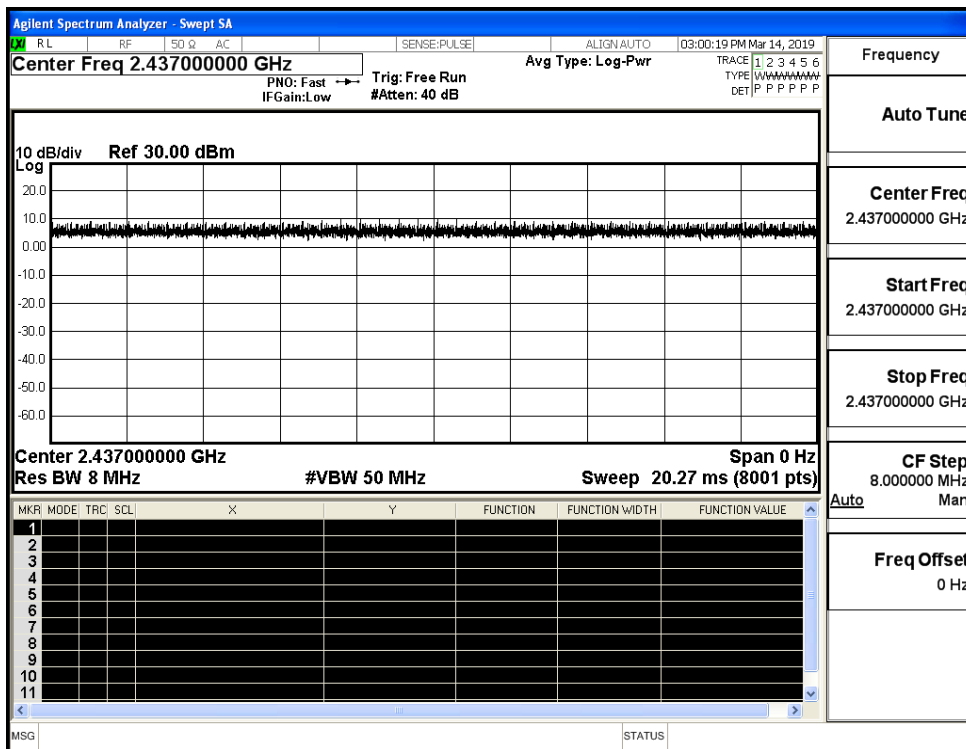
#### A.1 Duty Cycle

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

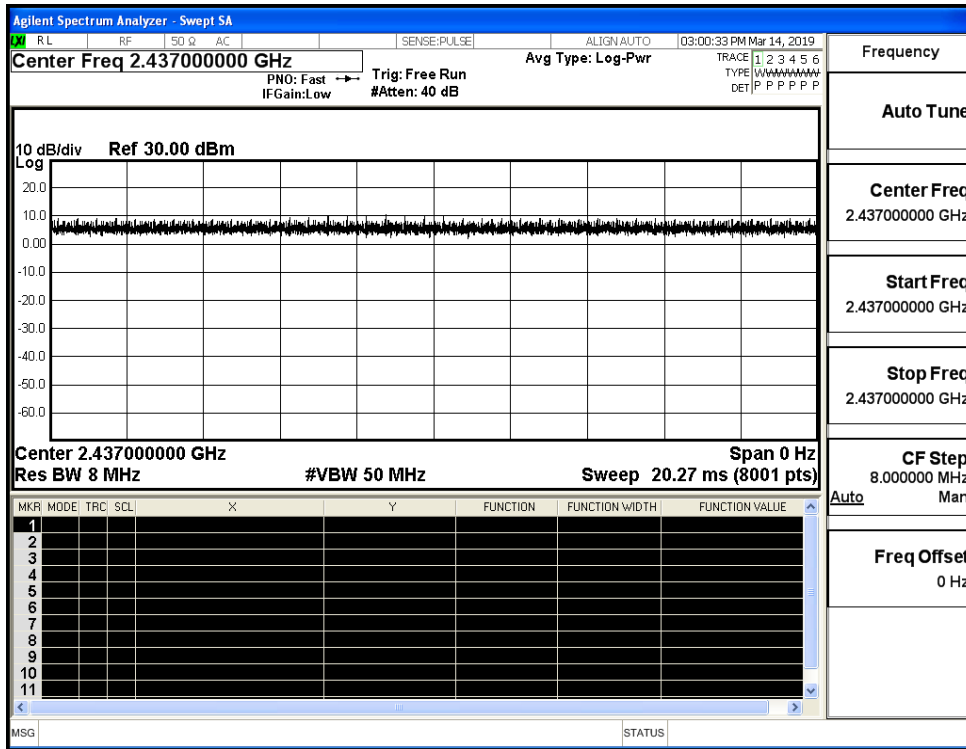
Duty Cycle\_11B\_2437\_Ant1



Duty Cycle\_11G\_2437\_Ant1



Duty Cycle\_11N20SISO\_2437\_Ant1



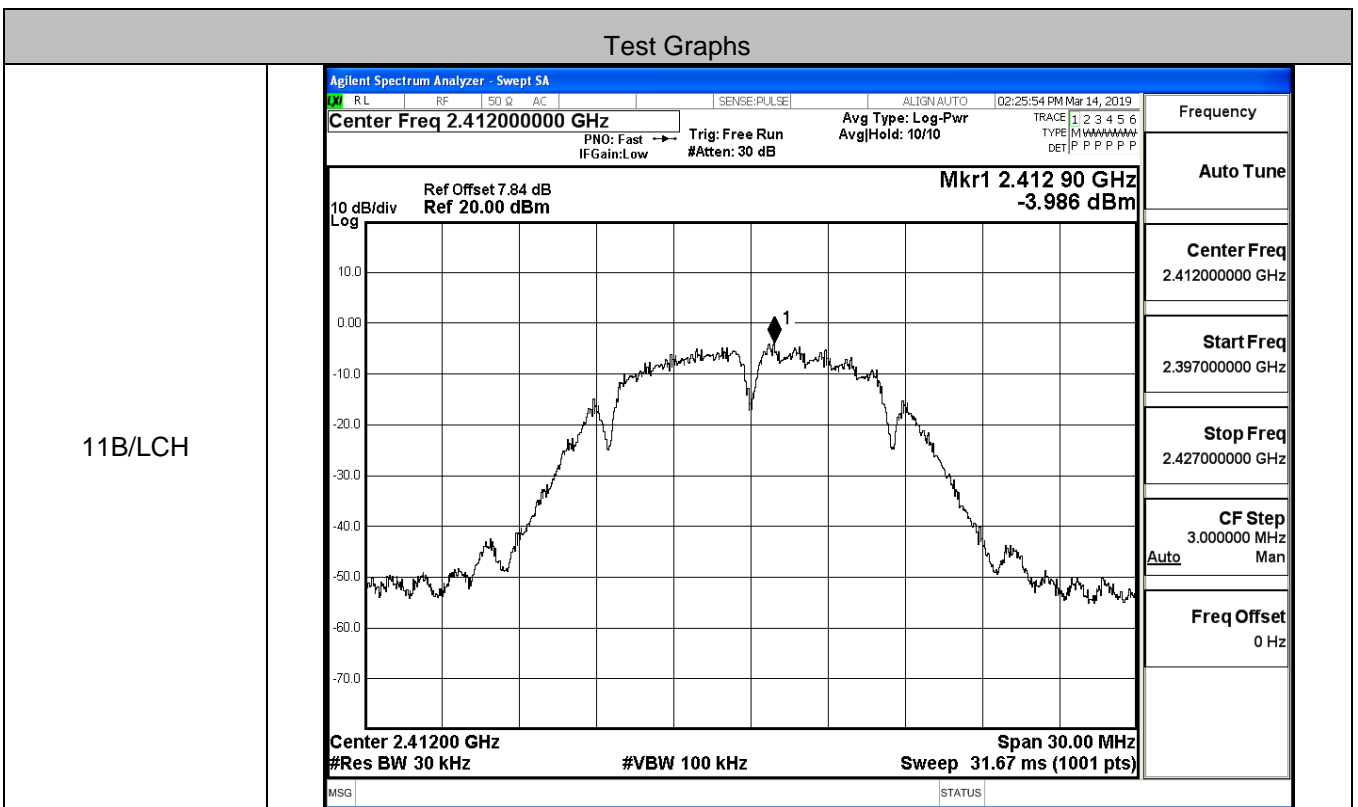
**A.2 Maximum Conducted Output Power**

Mode	Channel	Meas. Peak Level [dBm]	Meas. Average Level [dBm]	Limit [dBm]	Verdict
11B	LCH	14.01	11.86	30	PASS
	MCH	13.85	11.67	30	PASS
	HCH	13.47	11.30	30	PASS
11G	LCH	14.78	11.36	30	PASS
	MCH	13.75	10.41	30	PASS
	HCH	13.67	10.23	30	PASS
11N20SISO	LCH	12.45	8.97	30	PASS
	MCH	12.08	8.60	30	PASS
	HCH	12.14	8.59	30	PASS

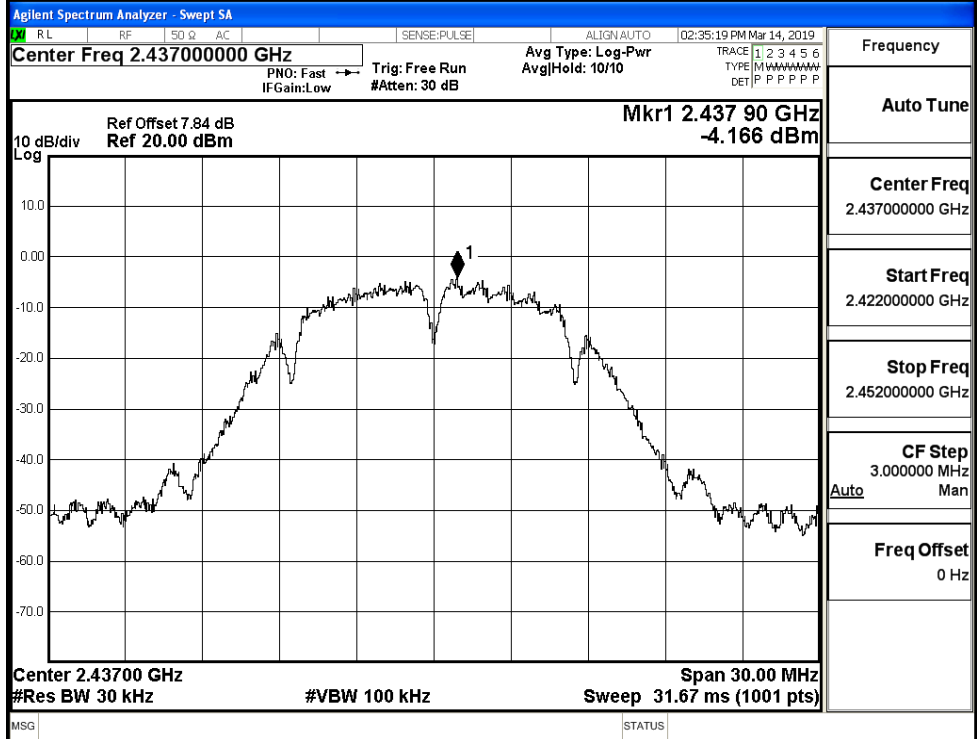
**A.3 Maximum Power Spectral Density**

Mode	Channel	Meas.Level [dBm/30KHz]	Convert Factor	Result [dBm/3KHz]	Limit [dBm/3KHz]	Verdict
11B	LCH	-3.986	-10	-13.986	8	PASS
	MCH	-4.166	-10	-14.166	8	PASS
	HCH	-4.537	-10	-14.537	8	PASS
11G	LCH	-9.924	-10	-19.924	8	PASS
	MCH	-11.160	-10	-21.160	8	PASS
	HCH	-11.159	-10	-21.159	8	PASS
11N20SISO	LCH	-12.109	-10	-22.109	8	PASS
	MCH	-12.599	-10	-22.599	8	PASS
	HCH	-12.492	-10	-22.492	8	PASS

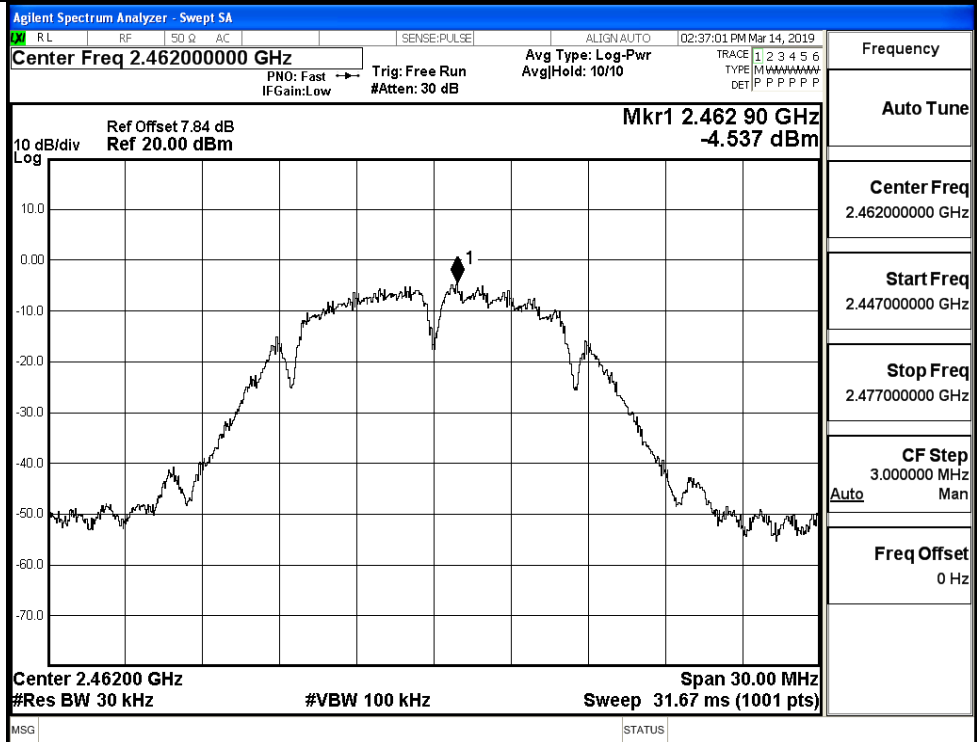
\*\*\*Note: The Convert Factor =  $10 \cdot \log(3\text{KHz}/30\text{KHz}) = -10$



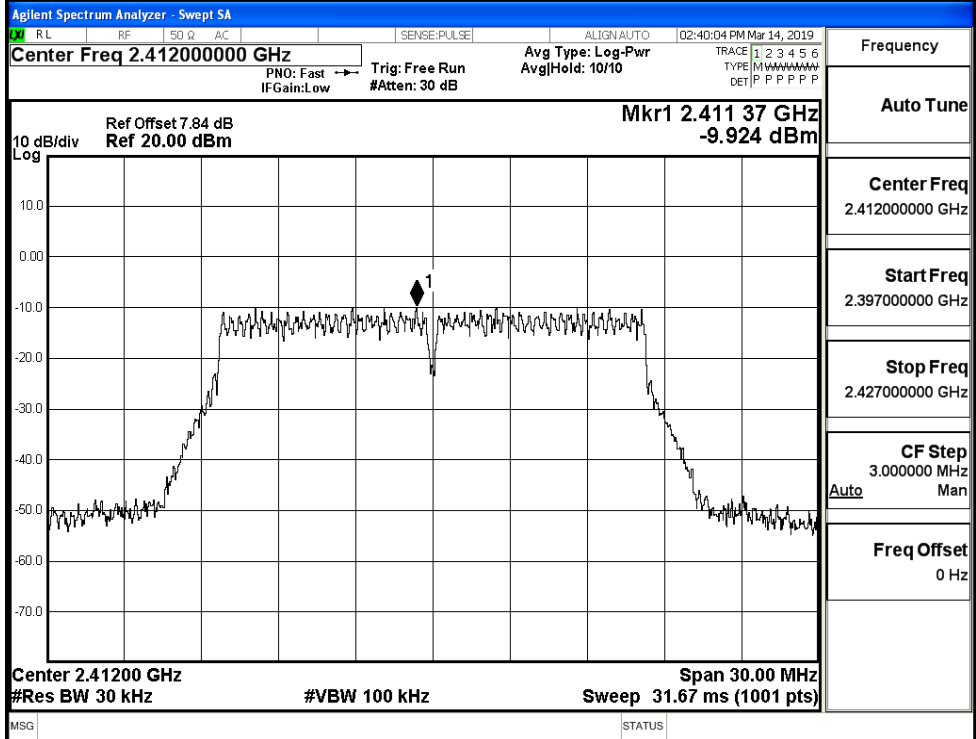
11B/MCH



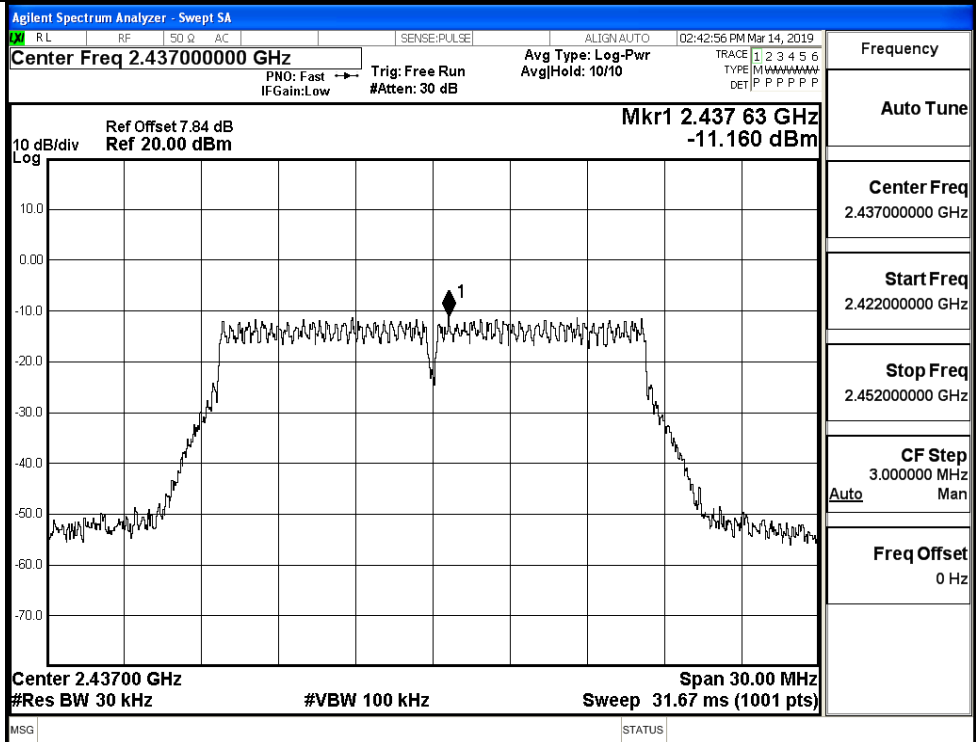
11B/HCH



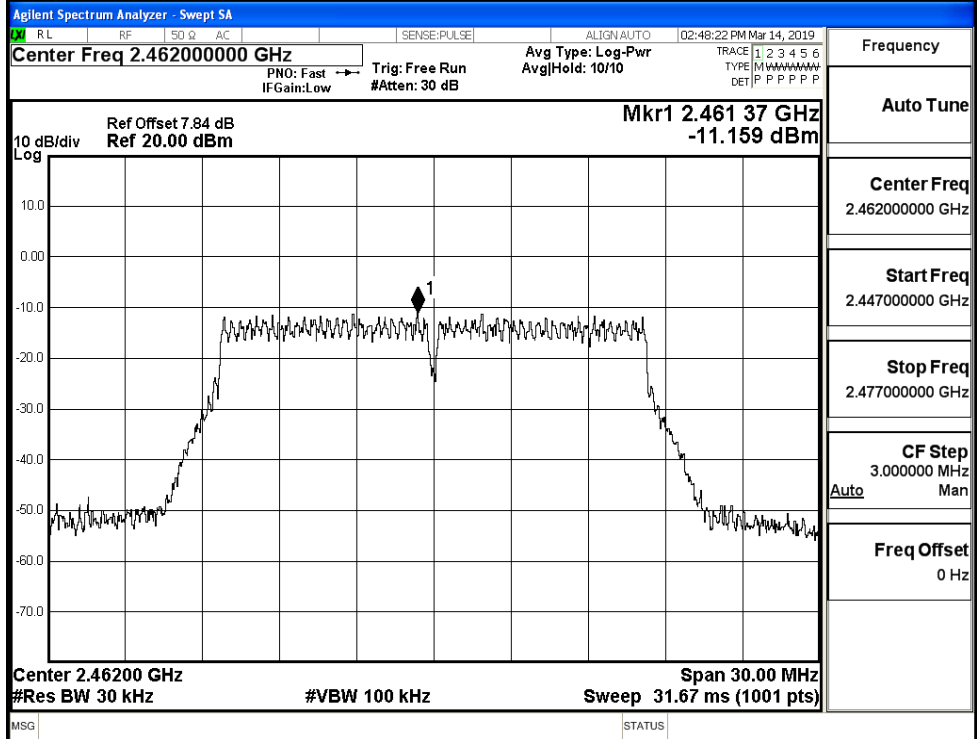
11G/LCH



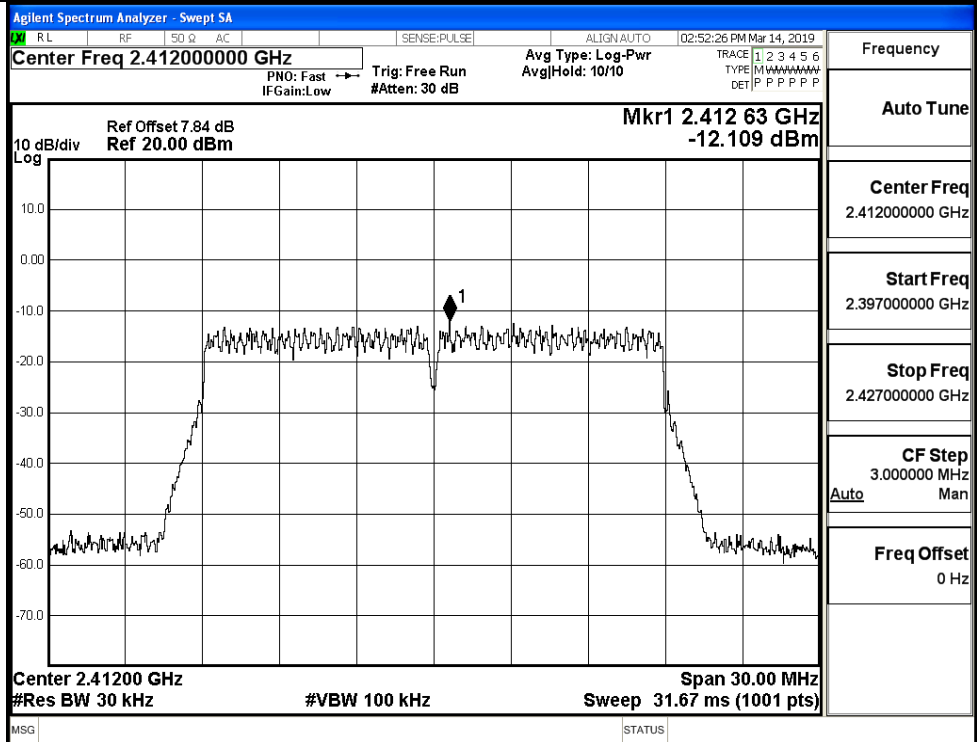
11G/MCH



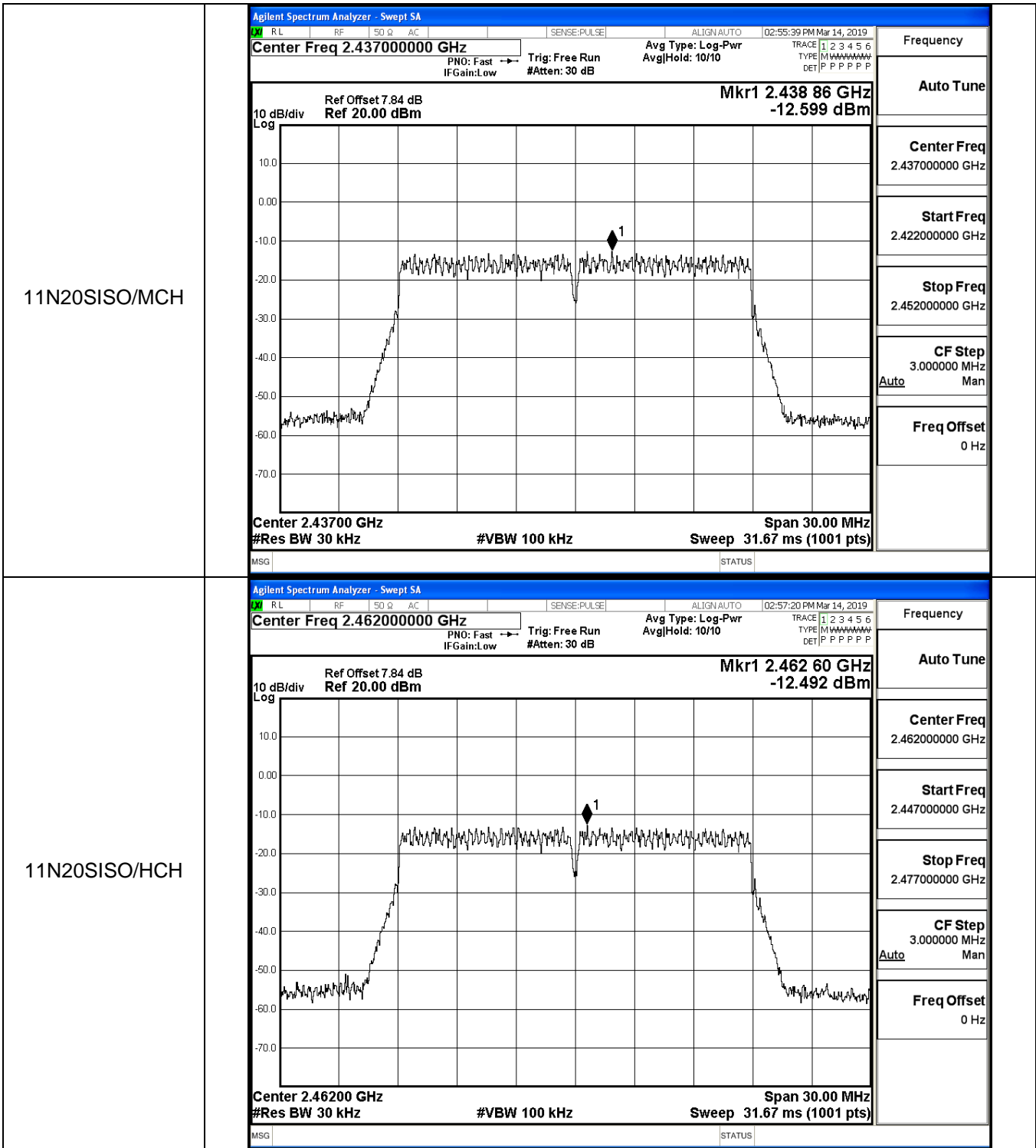
11G/HCH



11N20SISO/LCH

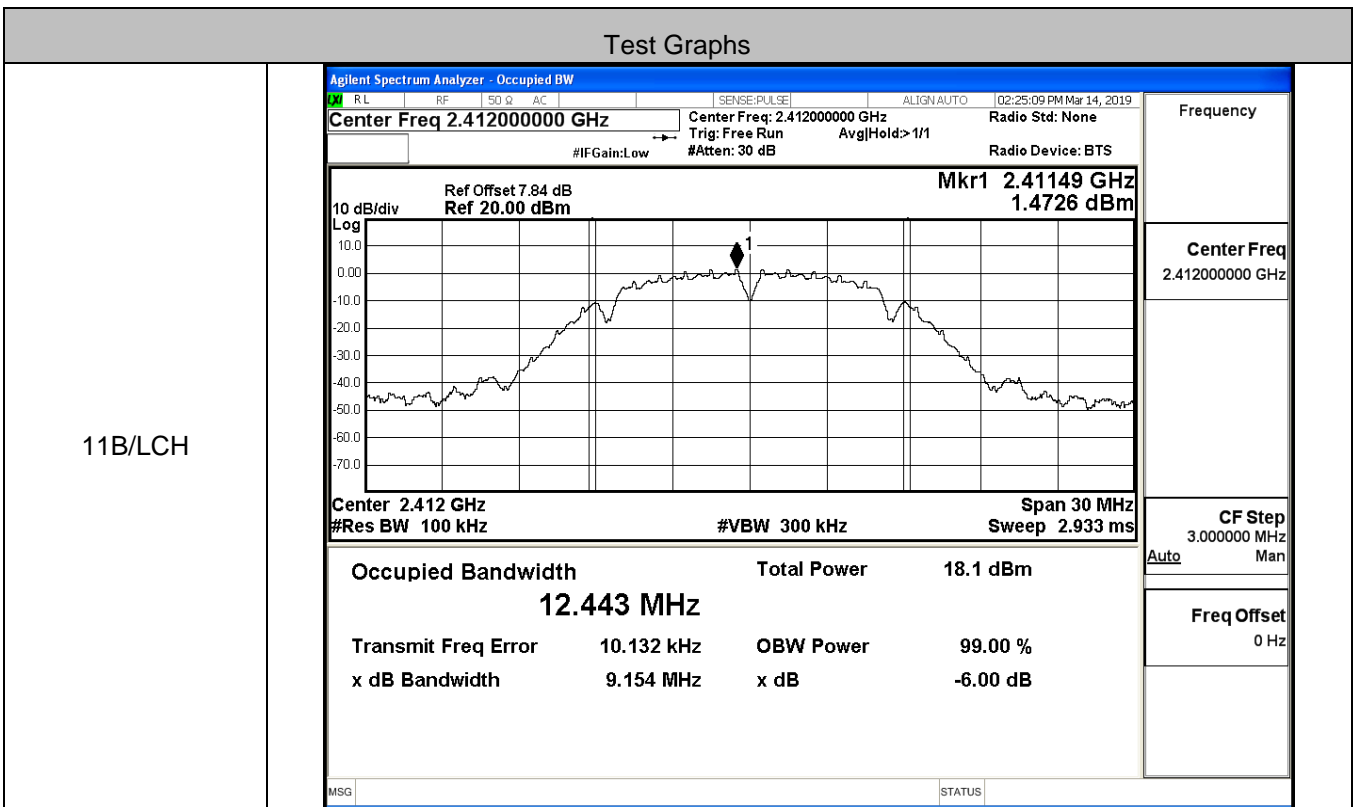




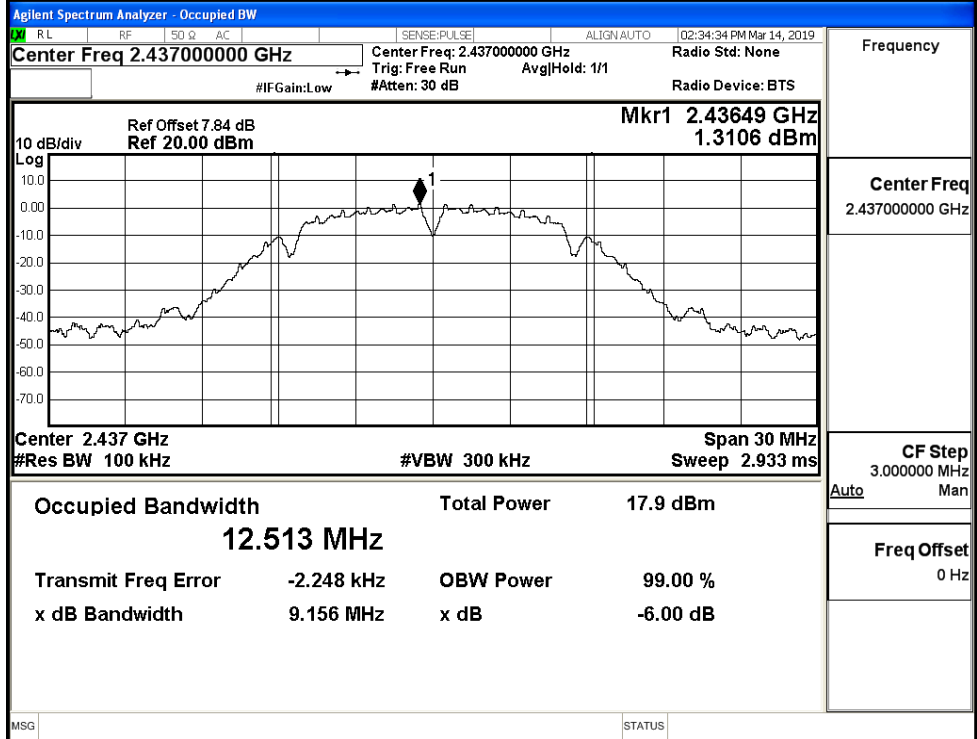


**A.4 6dB Bandwidth**

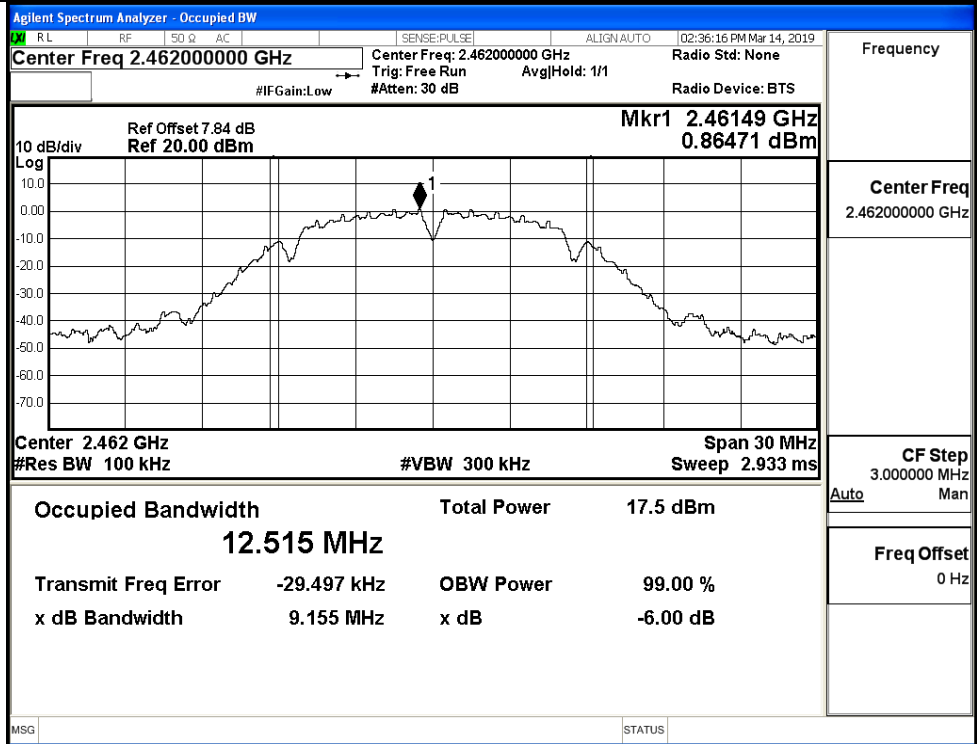
Mode	Channel	6dB Bandwidth [MHz]	Limit [MHz]	Verdict
11B	LCH	9.154	≥0.5	PASS
	MCH	9.156	≥0.5	PASS
	HCH	9.155	≥0.5	PASS
11G	LCH	16.61	≥0.5	PASS
	MCH	16.62	≥0.5	PASS
	HCH	16.61	≥0.5	PASS
11N20SISO	LCH	17.82	≥0.5	PASS
	MCH	17.84	≥0.5	PASS
	HCH	17.83	≥0.5	PASS



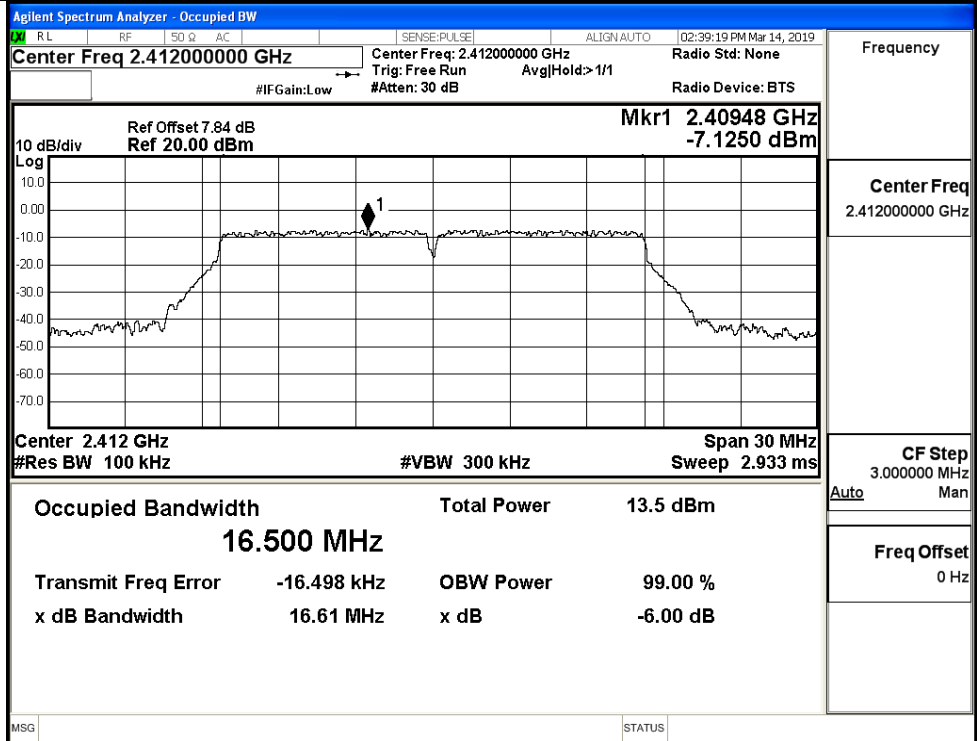
11B/MCH



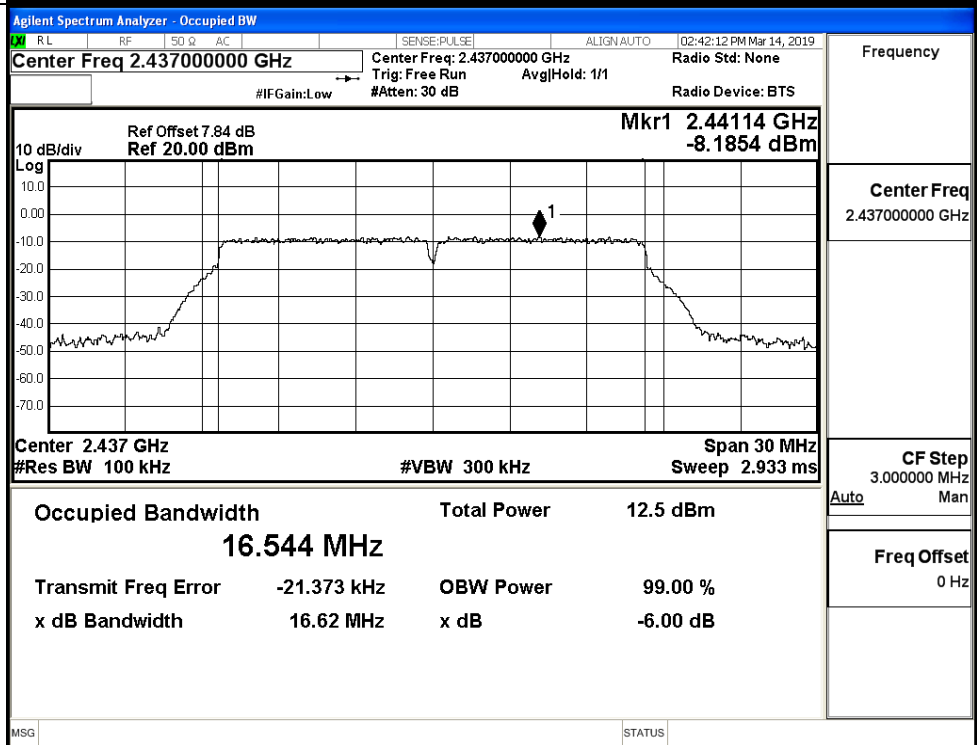
11B/HCH



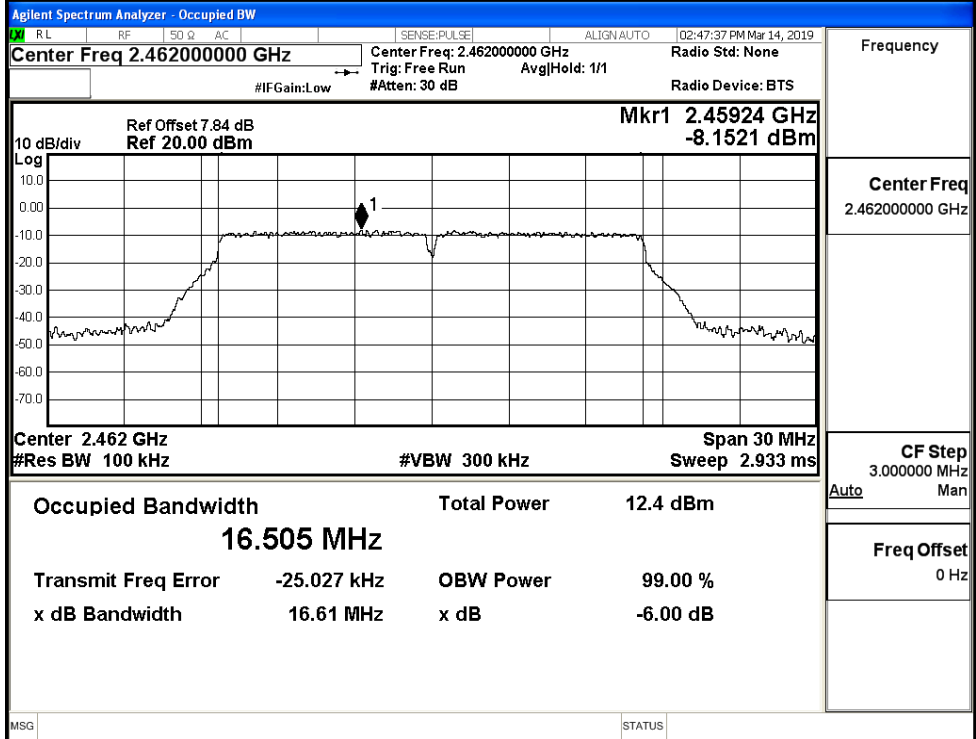
11G/LCH



11G/MCH

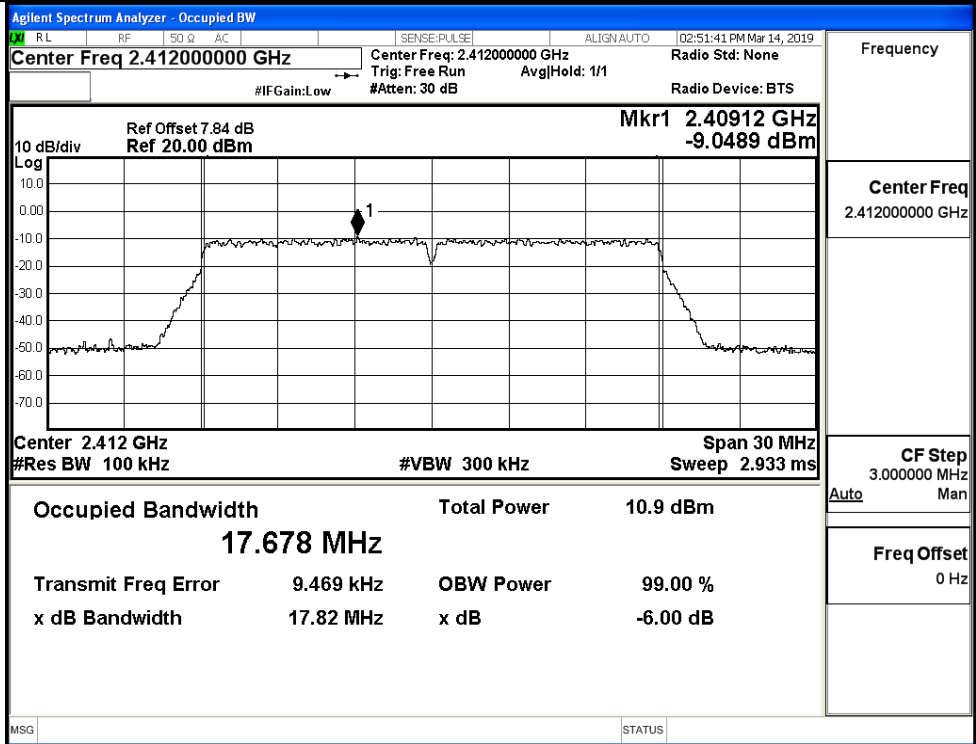


11G/HCH

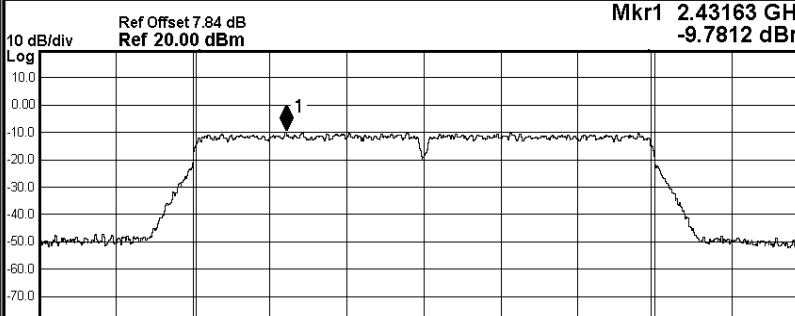
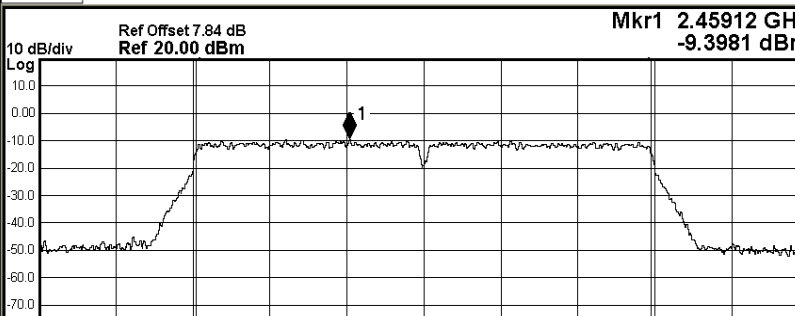


Frequency	2.46200000 GHz
Center Freq	2.46200000 GHz
CF Step	3.000000 MHz
Auto	Man
Freq Offset	0 Hz

11N20SISO/LCH



Frequency	2.41200000 GHz
Center Freq	2.41200000 GHz
CF Step	3.000000 MHz
Auto	Man
Freq Offset	0 Hz

<p>11N20SISO/MCH</p>	<p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq <b>2.43700000 GHz</b></p> <p>Center Freq: 2.43700000 GHz Trig: Free Run #IFGain: Low #Atten: 30 dB</p> <p>Align: AUTO Radio Std: None Avg/Hold: 1/1 Radio Device: BTS</p> <p>10 dB/div Ref Offset 7.84 dB Ref 20.00 dBm</p>  <p>Center <b>2.437 GHz</b> Span <b>30 MHz</b> #Res BW <b>100 kHz</b> #VBW <b>300 kHz</b> Sweep <b>2.933 ms</b></p> <p><b>Occupied Bandwidth</b> <b>17.675 MHz</b> <b>Total Power</b> <b>10.5 dBm</b></p> <p><b>Transmit Freq Error</b> <b>5.601 kHz</b> <b>OBW Power</b> <b>99.00 %</b></p> <p><b>x dB Bandwidth</b> <b>17.84 MHz</b> <b>x dB</b> <b>-6.00 dB</b></p>	<p>Frequency</p> <p>Center Freq 2.43700000 GHz</p> <p>CF Step 3.000000 MHz Auto Man</p> <p>Freq Offset 0 Hz</p>
	<p>11N20SISO/HCH</p>	<p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq <b>2.46200000 GHz</b></p> <p>Center Freq: 2.46200000 GHz Trig: Free Run #IFGain: Low #Atten: 30 dB</p> <p>Align: AUTO Radio Std: None Avg/Hold: 1/1 Radio Device: BTS</p> <p>10 dB/div Ref Offset 7.84 dB Ref 20.00 dBm</p>  <p>Center <b>2.462 GHz</b> Span <b>30 MHz</b> #Res BW <b>100 kHz</b> #VBW <b>300 kHz</b> Sweep <b>2.933 ms</b></p> <p><b>Occupied Bandwidth</b> <b>17.672 MHz</b> <b>Total Power</b> <b>10.7 dBm</b></p> <p><b>Transmit Freq Error</b> <b>-4.983 kHz</b> <b>OBW Power</b> <b>99.00 %</b></p> <p><b>x dB Bandwidth</b> <b>17.83 MHz</b> <b>x dB</b> <b>-6.00 dB</b></p>

**A.5 RF Conducted Spurious Emissions**

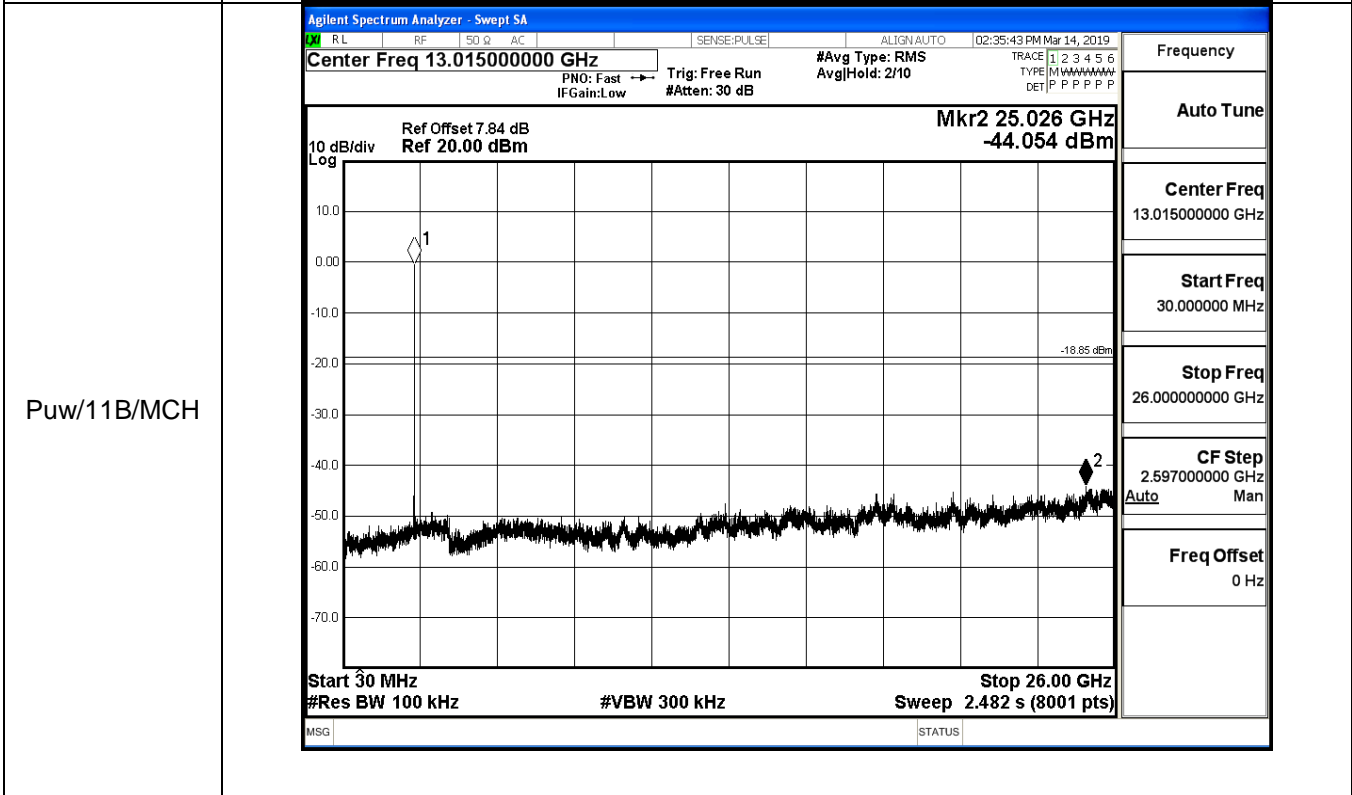
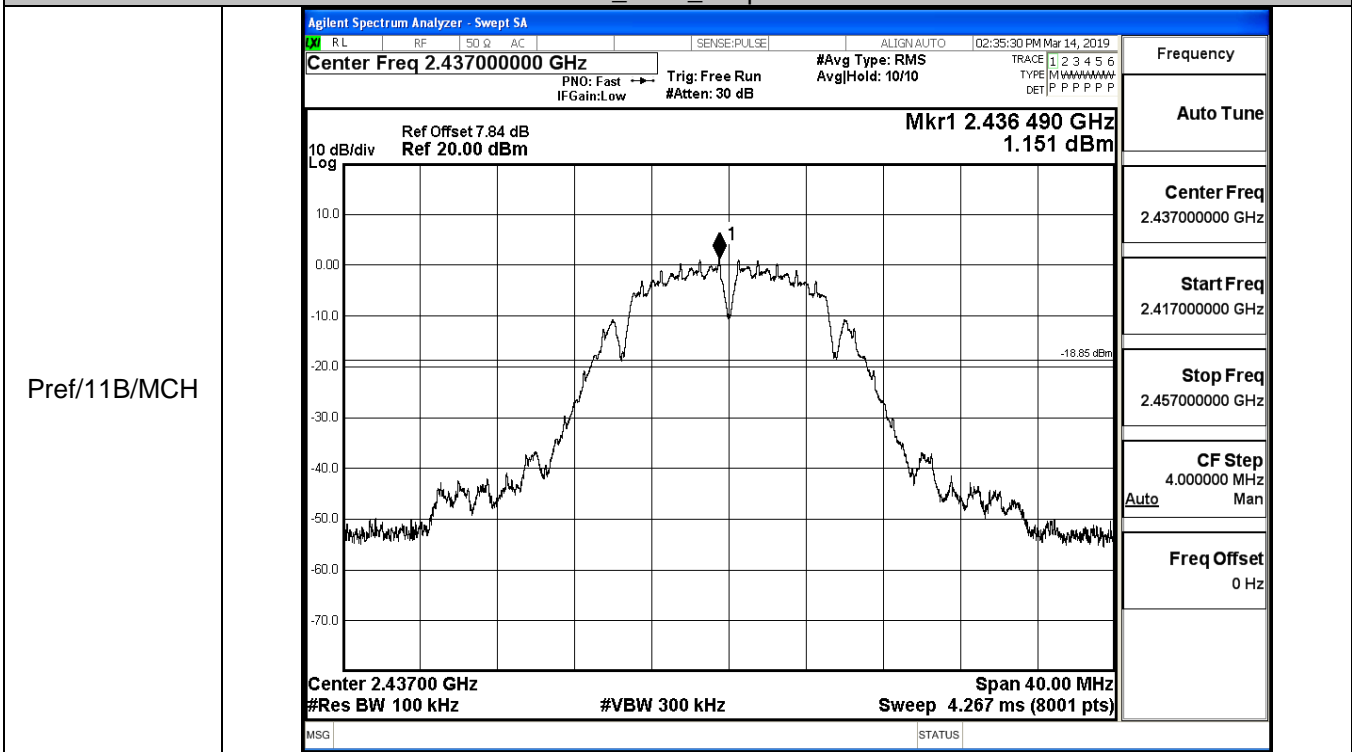
Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
11B	LCH	1.232	-44.100	-18.768	PASS
	MCH	1.151	-44.054	-18.849	PASS
	HCH	0.846	-43.660	-19.154	PASS
11G	LCH	-7.19	-36.850	-27.190	PASS
	MCH	-8.149	-43.943	-28.149	PASS
	HCH	-8.384	-42.995	-28.384	PASS
11N20 SISO	LCH	-9.14	-43.871	-29.140	PASS
	MCH	-9.669	-44.226	-29.669	PASS
	HCH	-9.593	-44.286	-29.593	PASS

11B\_LCH\_Graphs

<p>Pref/11B/LCH</p>	<p>Agilent Spectrum Analyzer - Swept SA</p> <p>Center Freq 2.41200000 GHz</p> <p>Ref Offset 7.84 dB Ref 20.00 dBm</p> <p>Mkr1 2.411 480 GHz 1.232 dBm</p> <p>Center 2.41200 GHz #Res BW 100 kHz #VBW 300 kHz Span 40.00 MHz Sweep 4.267 ms (8001 pts)</p>	<p>Frequency</p> <p>Auto Tune</p> <p>Center Freq 2.412000000 GHz</p> <p>Start Freq 2.392000000 GHz</p> <p>Stop Freq 2.432000000 GHz</p> <p>CF Step 4.000000 MHz Auto Man</p> <p>Freq Offset 0 Hz</p>
	<p>Puw/11B/LCH</p>	<p>Agilent Spectrum Analyzer - Swept SA</p> <p>Center Freq 13.01500000 GHz</p> <p>Ref Offset 7.84 dB Ref 20.00 dBm</p> <p>Mkr2 25.688 GHz -44.100 dBm</p> <p>Start 30 MHz #Res BW 100 kHz #VBW 300 kHz Stop 26.00 GHz Sweep 2.482 s (8001 pts)</p>

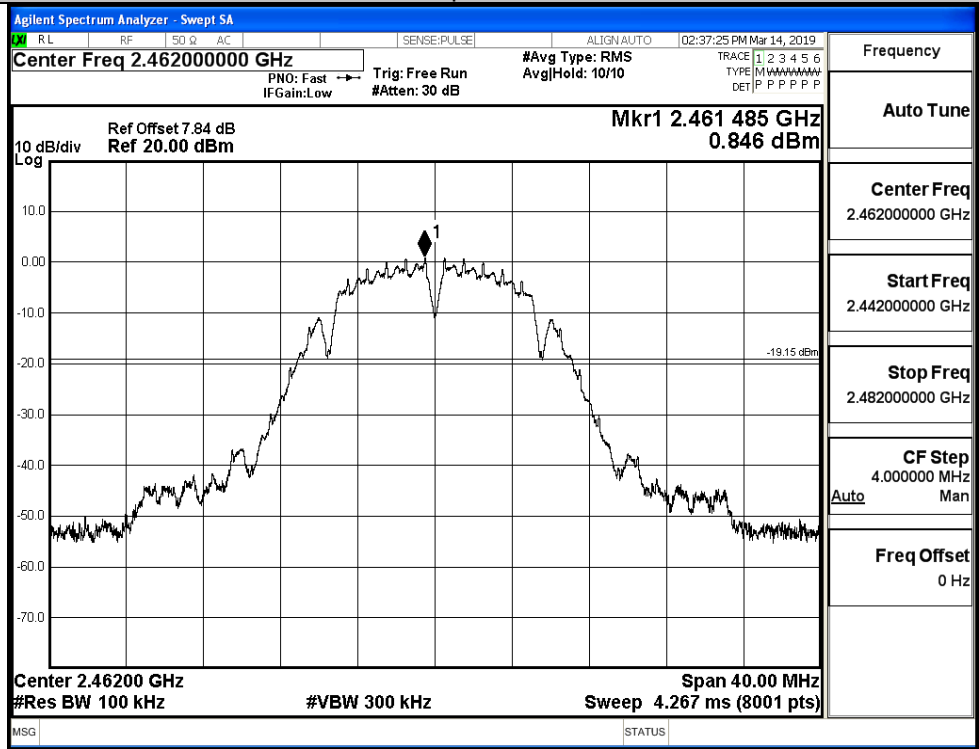


11B\_MCH\_Graphs

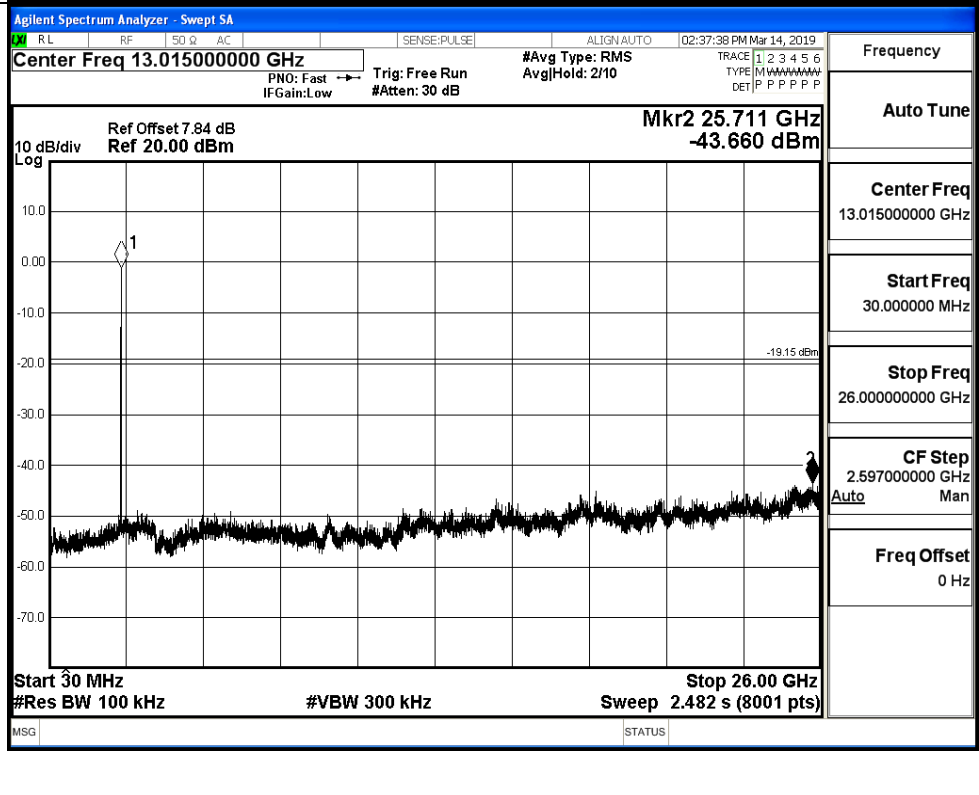


11B\_HCH\_Graphs

Pref/11B/HCH

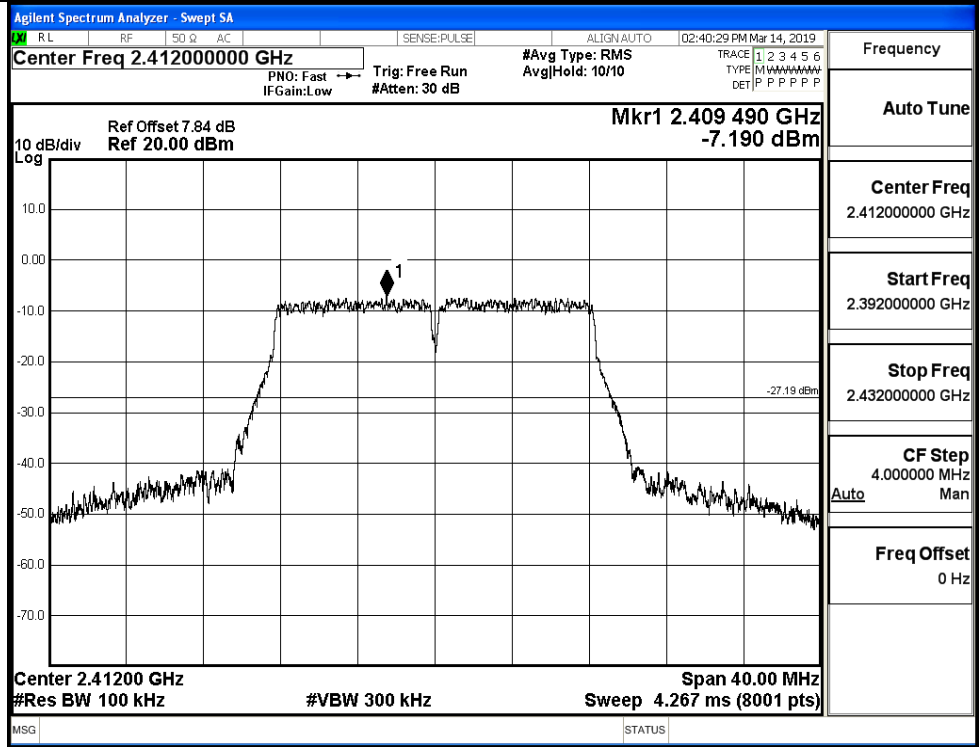


Puw/11B/HCH

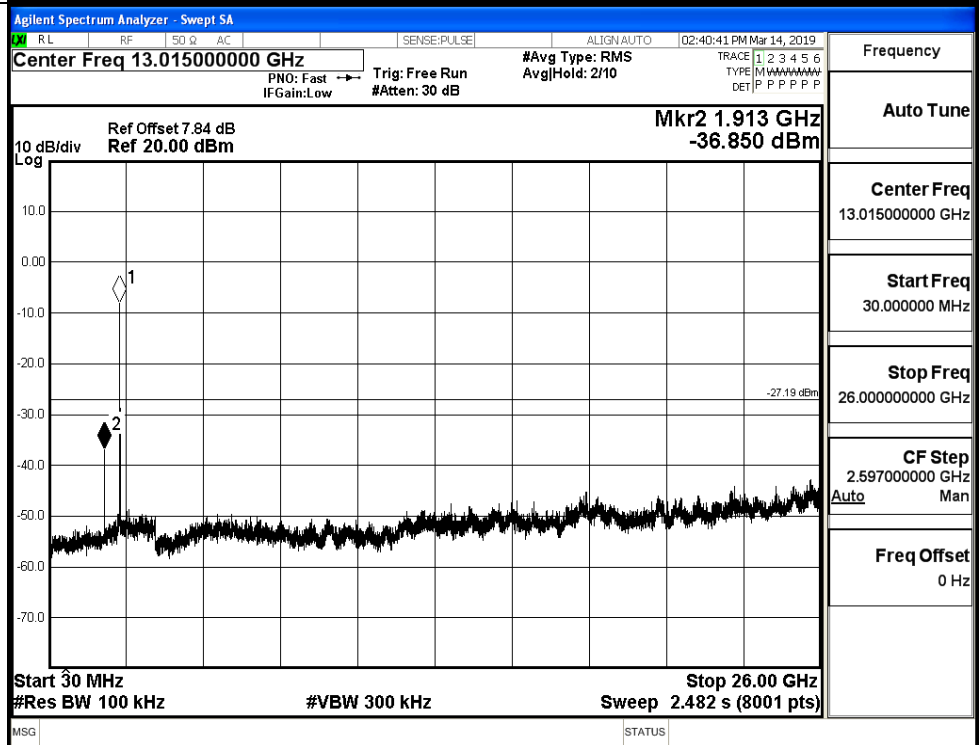


11G\_LCH\_Graphs

Pref/11G/LCH

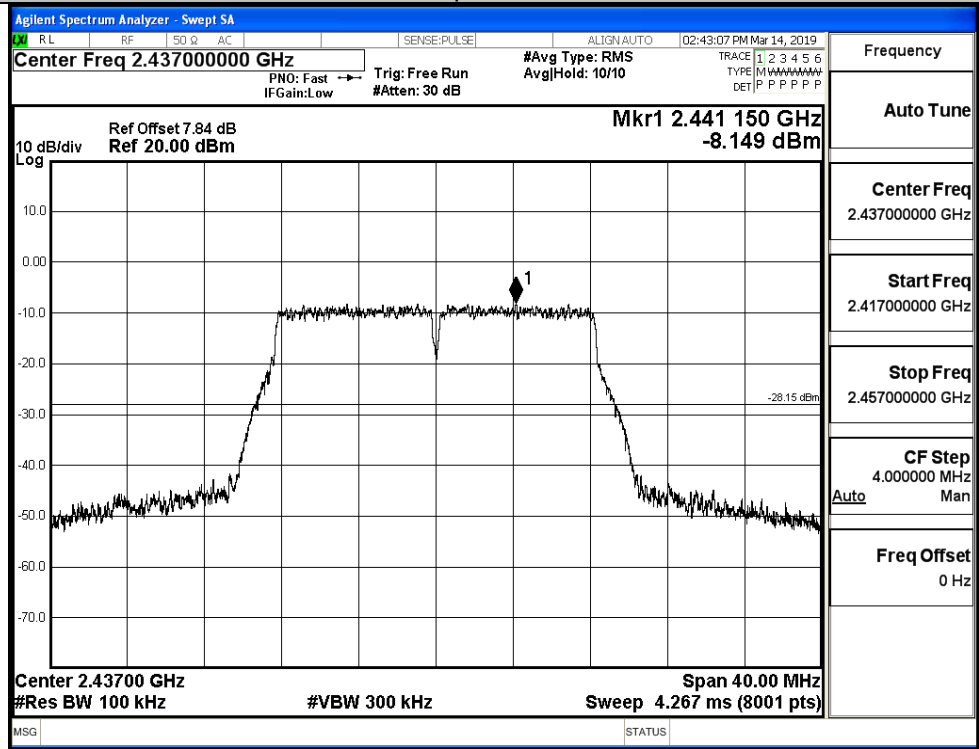


Puw/11G/LCH

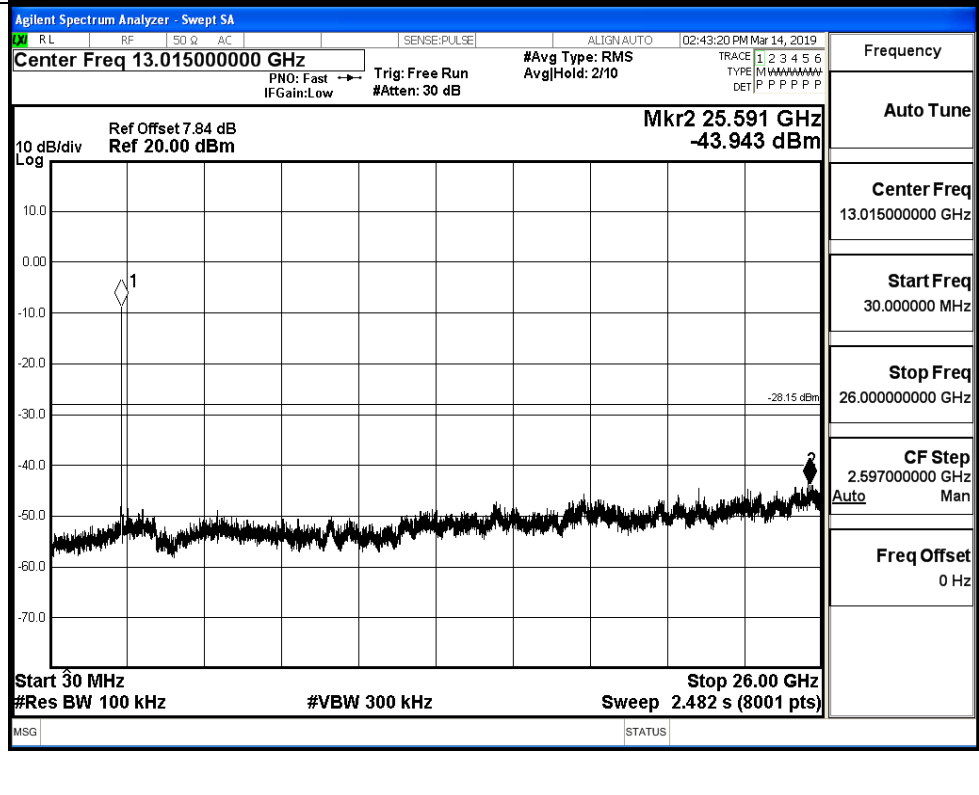


11G\_MCH\_Graphs

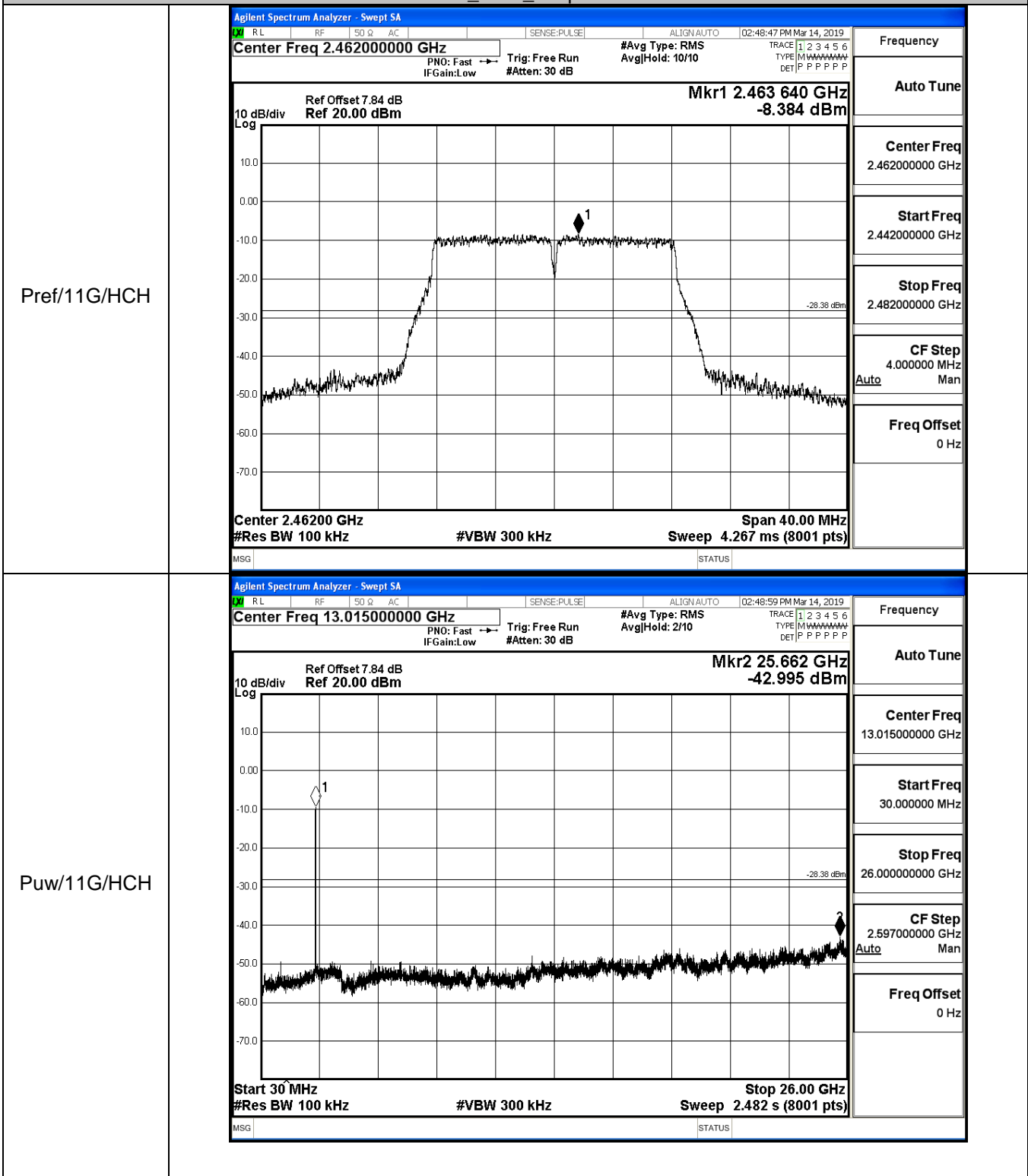
Pref/11G/MCH



Puw/11G/MCH

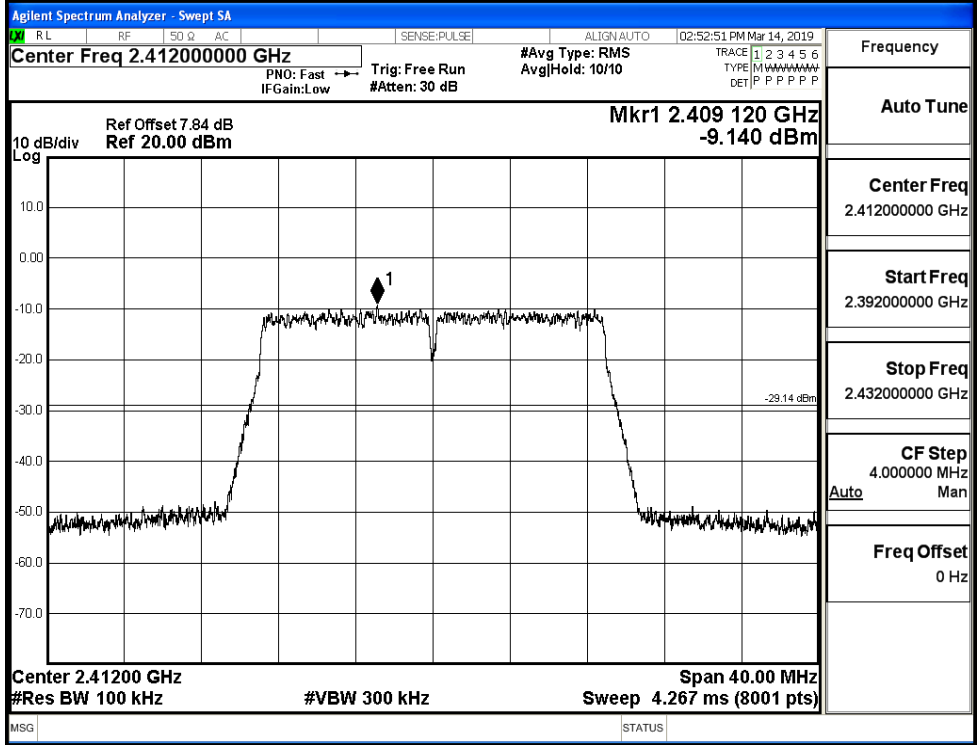


11G\_HCH\_Graphs

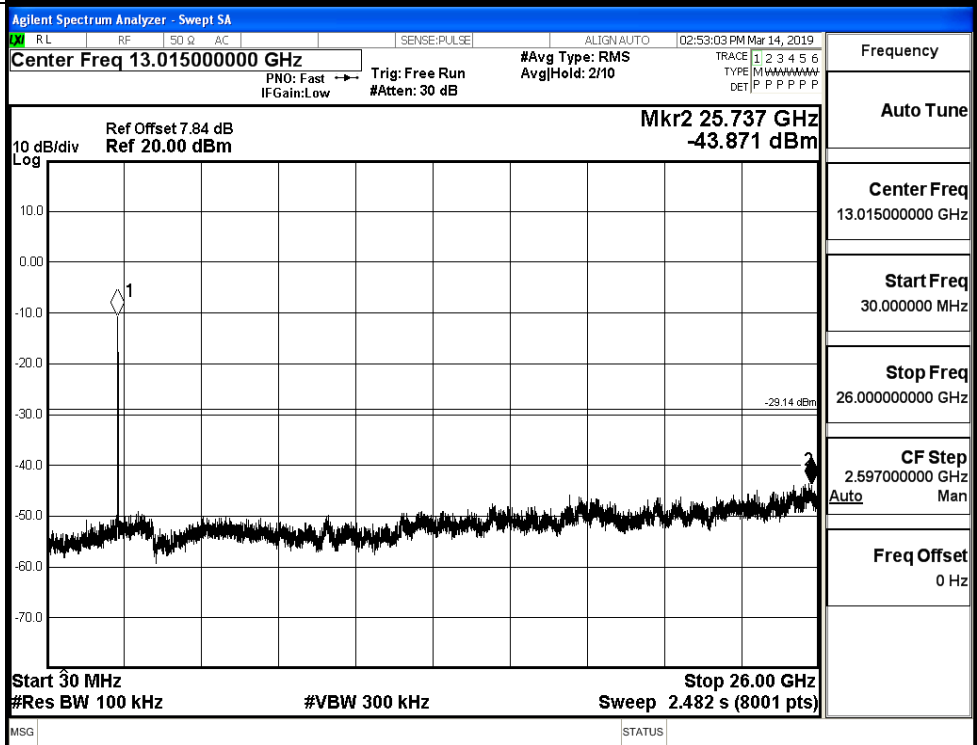


11N20SISO\_LCH\_Graphs

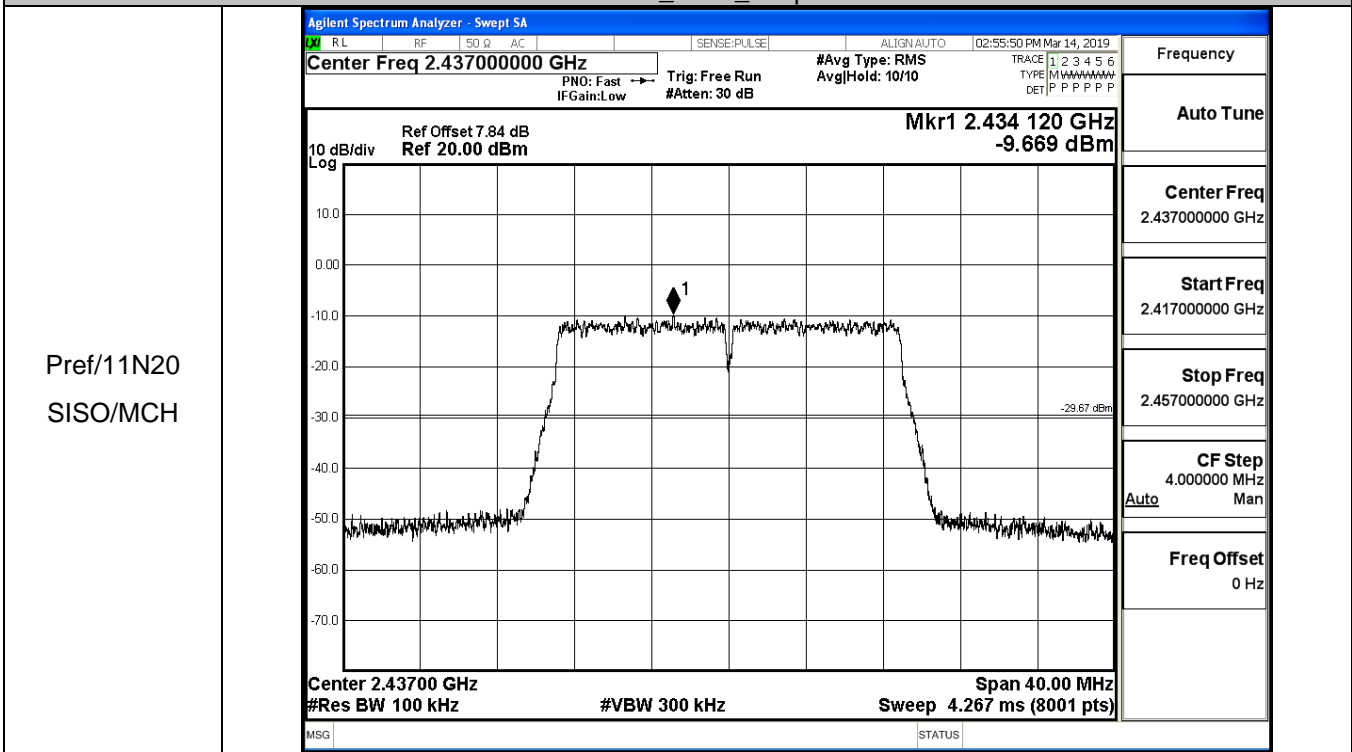
Pref/11N20SIS  
O/LCH



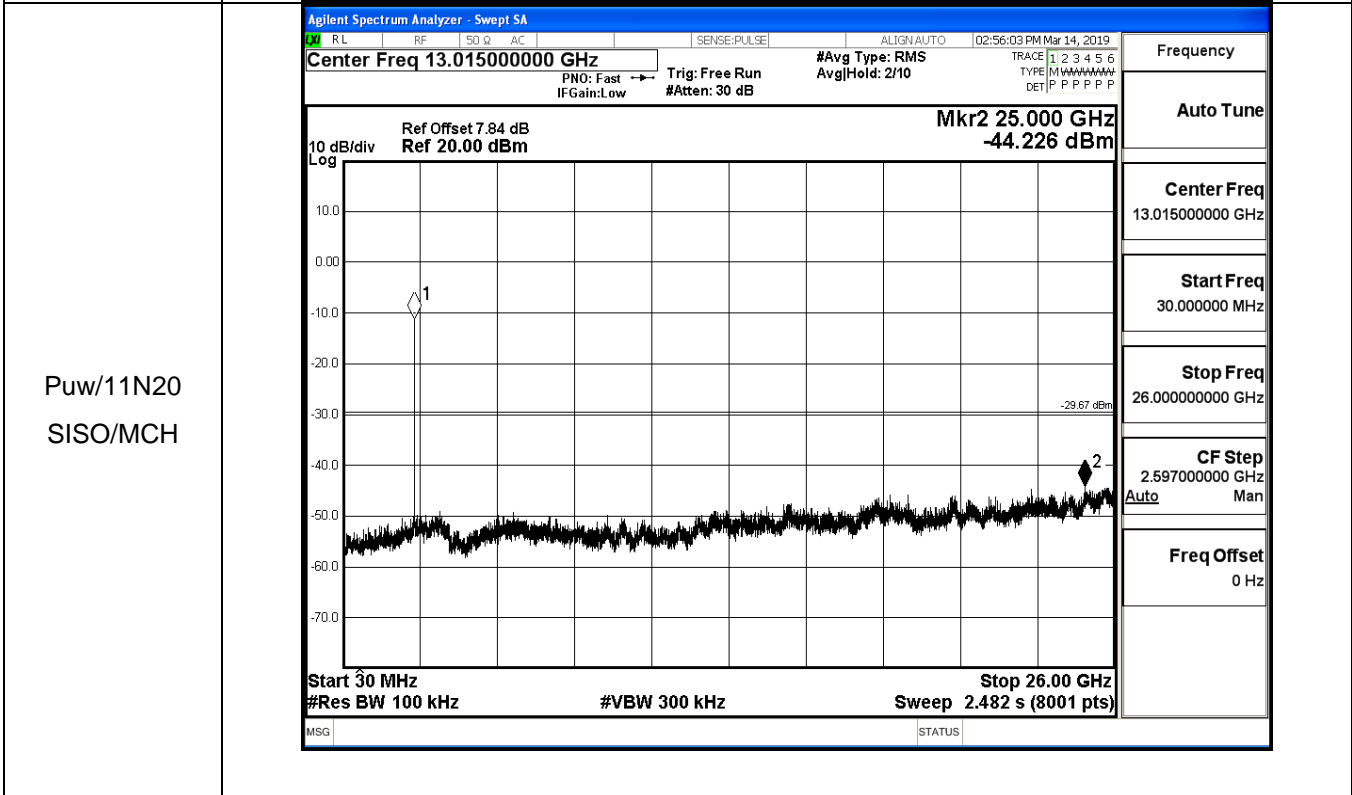
Puw/11N20  
SISO/LCH



11N20SISO\_MCH\_Graphs



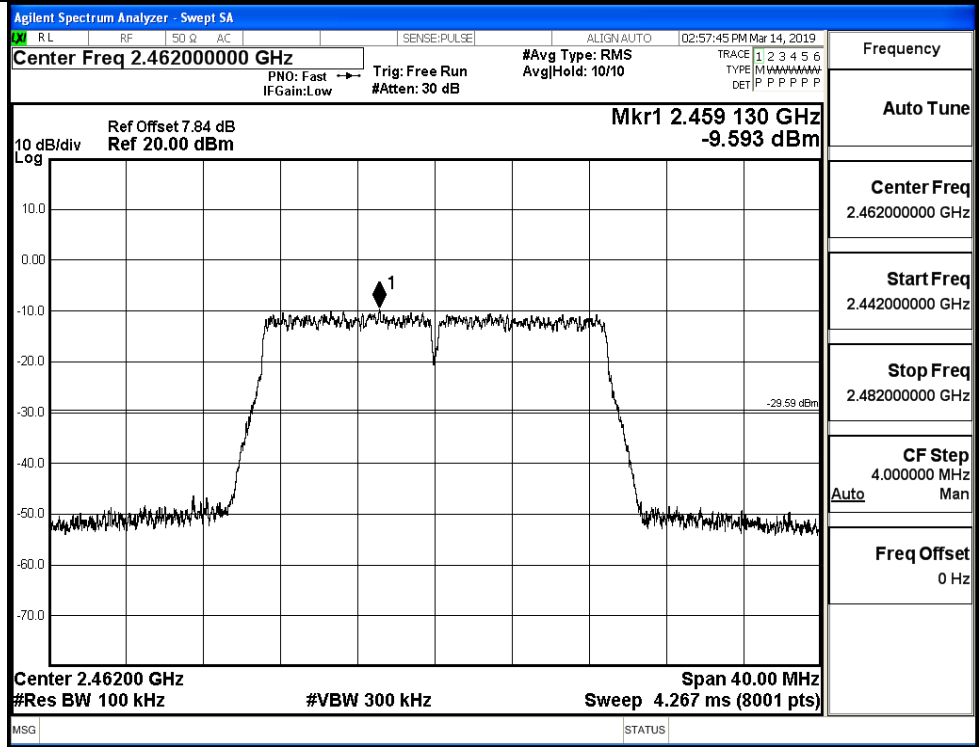
Pref/11N20  
SISO/MCH



Puw/11N20  
SISO/MCH

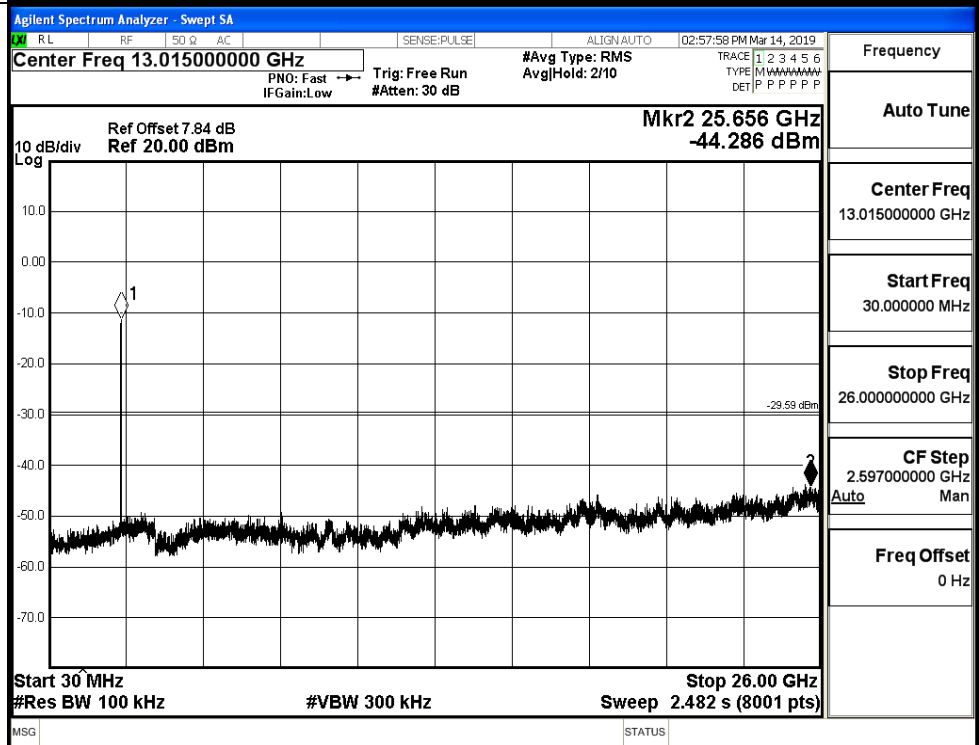
11N20SISO\_HCH\_Graphs

Pref/11N20  
SISO/HCH



Frequency
Auto Tune
Center Freq 2.462000000 GHz
Start Freq 2.442000000 GHz
Stop Freq 2.482000000 GHz
CF Step 4.000000 MHz Auto Man
Freq Offset 0 Hz

Puw/11N20  
SISO/HCH

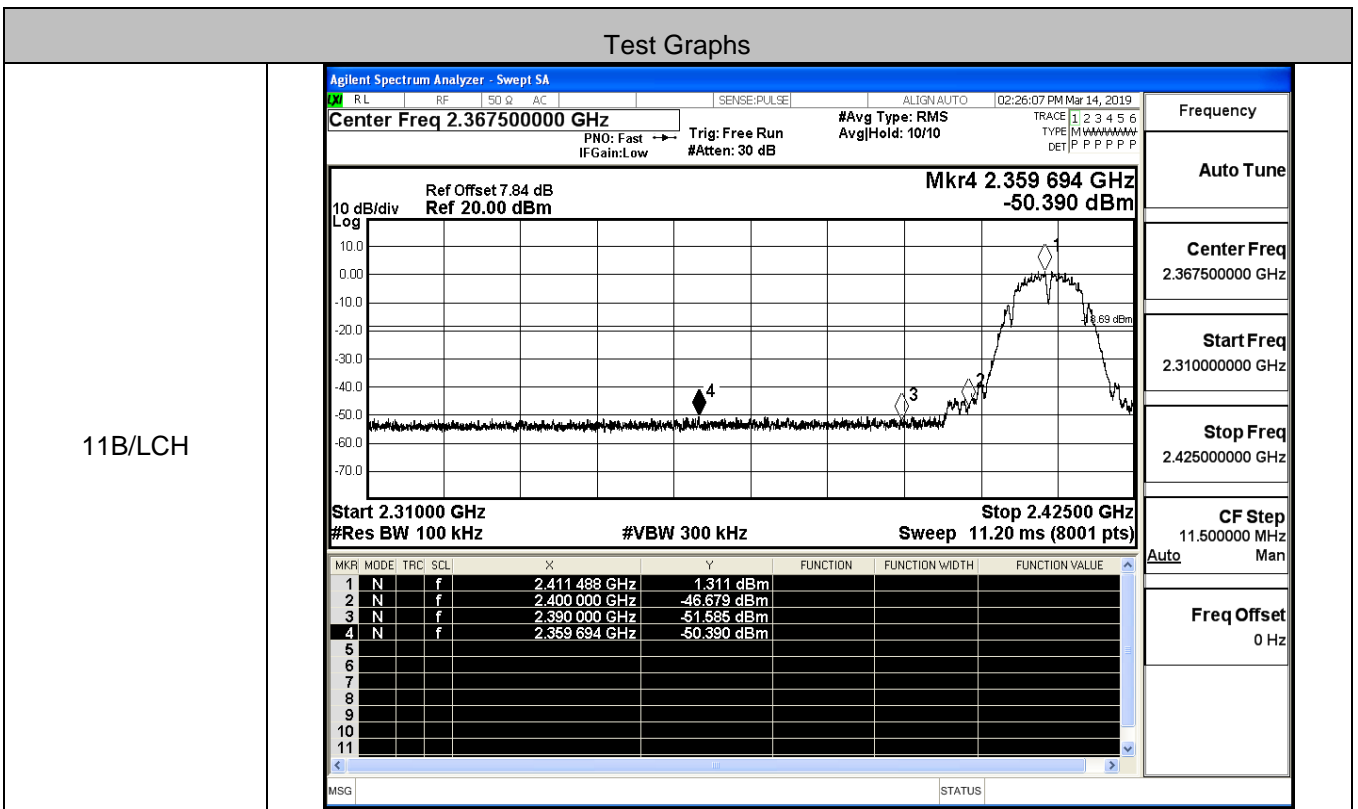


Frequency
Auto Tune
Center Freq 13.015000000 GHz
Start Freq 30.000000 MHz
Stop Freq 26.000000000 GHz
CF Step 2.597000000 GHz Auto Man
Freq Offset 0 Hz

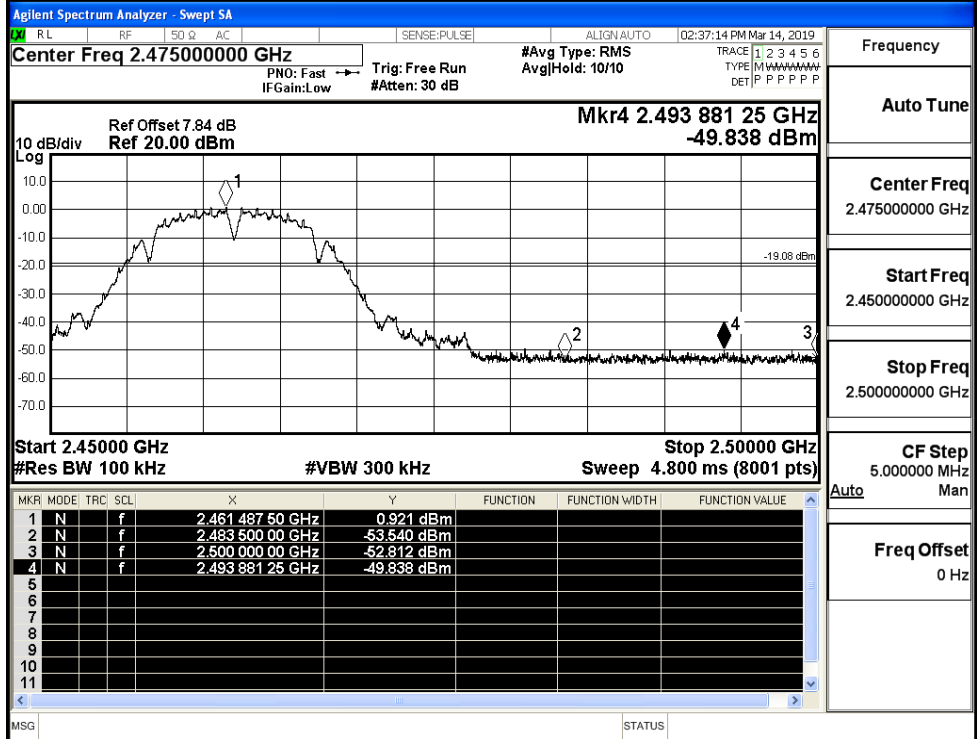


**A.6 Band-edge for RF Conducted Emissions**

Mode	Channel	Carrier Power[dBm]	Max.Spurious Level [dBm]	Limit [dBm]	Verdict
11B	LCH	1.311	-50.390	-18.69	PASS
	HCH	0.921	-49.838	-19.08	PASS
11G	LCH	-7.167	-49.783	-27.17	PASS
	HCH	-8.311	-49.211	-28.31	PASS
11N20SISO	LCH	-9.405	-49.908	-29.41	PASS
	HCH	-9.641	-50.006	-29.64	PASS



11B/HCH



Frequency

Auto Tune

Center Freq  
2.47500000 GHz

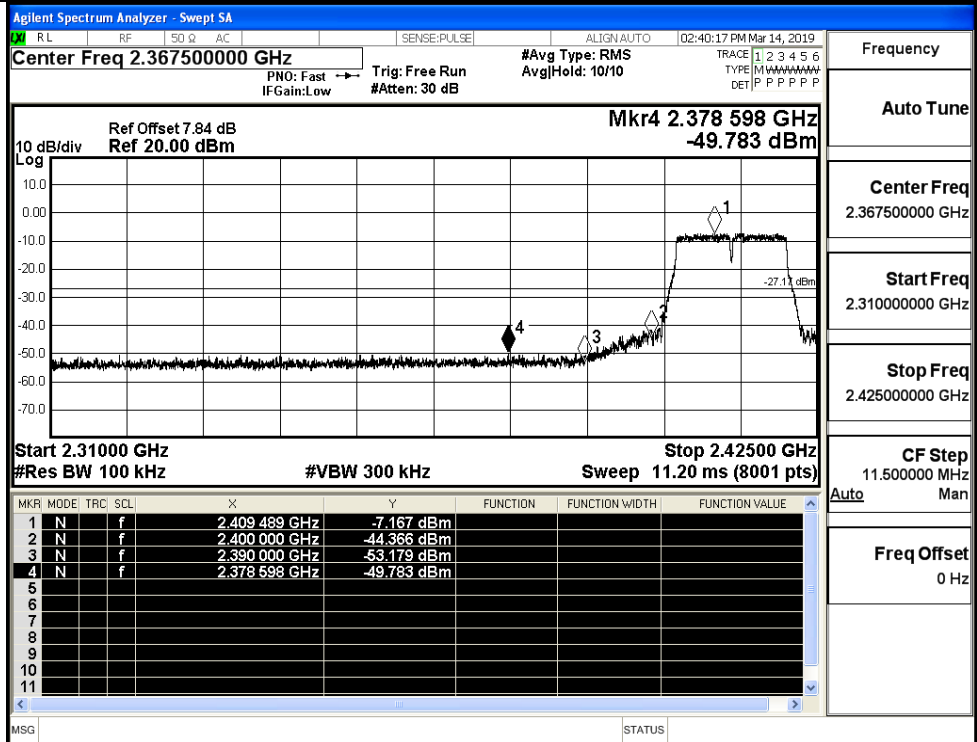
Start Freq  
2.45000000 GHz

Stop Freq  
2.50000000 GHz

CF Step  
5.000000 MHz

Freq Offset  
0 Hz

11G/LCH



Frequency

Auto Tune

Center Freq  
2.36750000 GHz

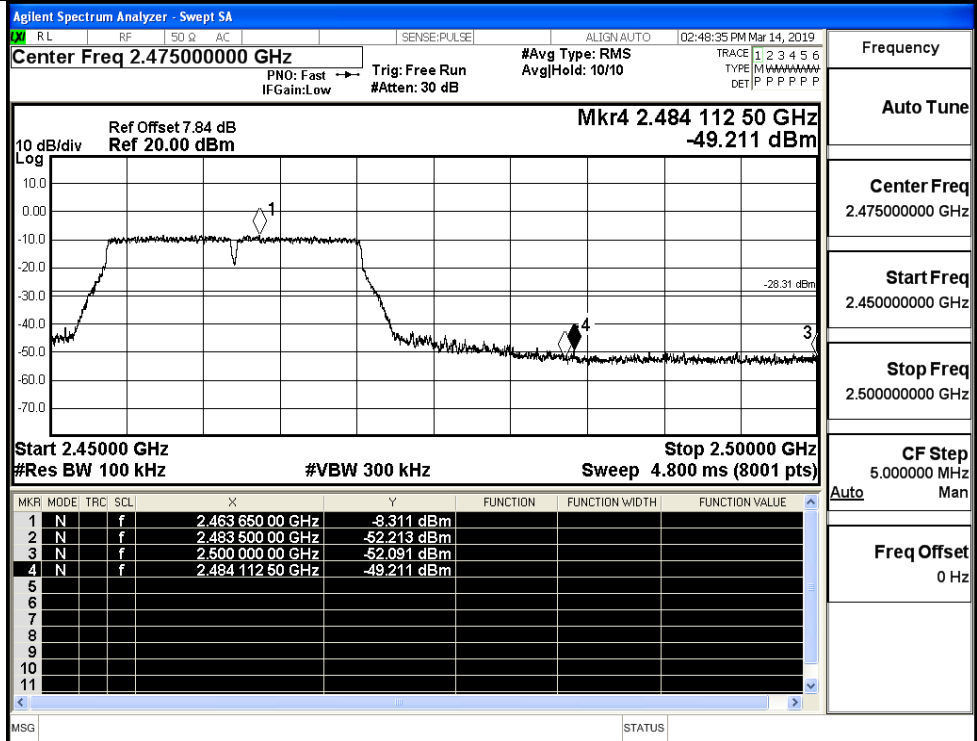
Start Freq  
2.31000000 GHz

Stop Freq  
2.42500000 GHz

CF Step  
11.500000 MHz

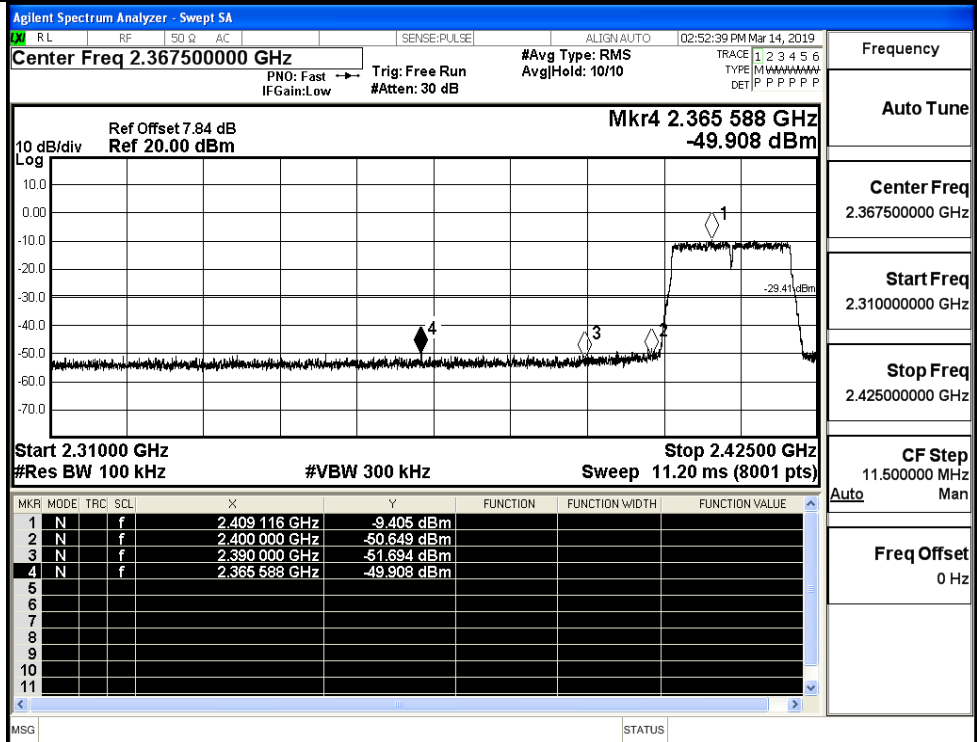
Freq Offset  
0 Hz

11G/HCH



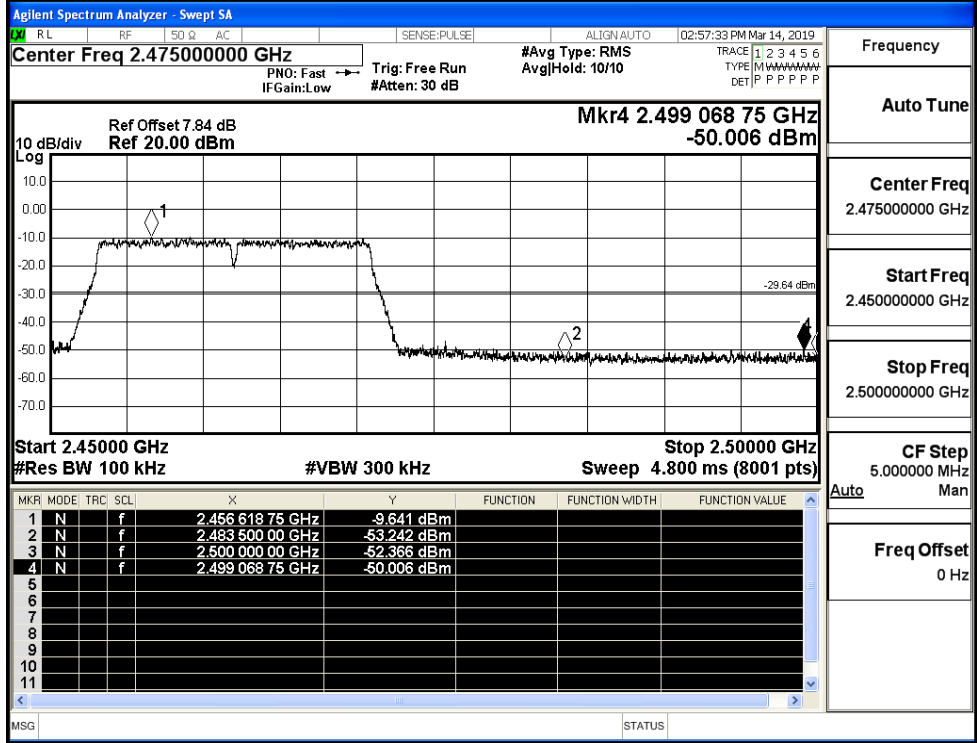
Frequency	
Auto Tune	
Center Freq	2.47500000 GHz
Start Freq	2.45000000 GHz
Stop Freq	2.50000000 GHz
CF Step	5.000000 MHz
Freq Offset	0 Hz

11N20SISO/LCH



Frequency	
Auto Tune	
Center Freq	2.36750000 GHz
Start Freq	2.31000000 GHz
Stop Freq	2.42500000 GHz
CF Step	11.500000 MHz
Freq Offset	0 Hz

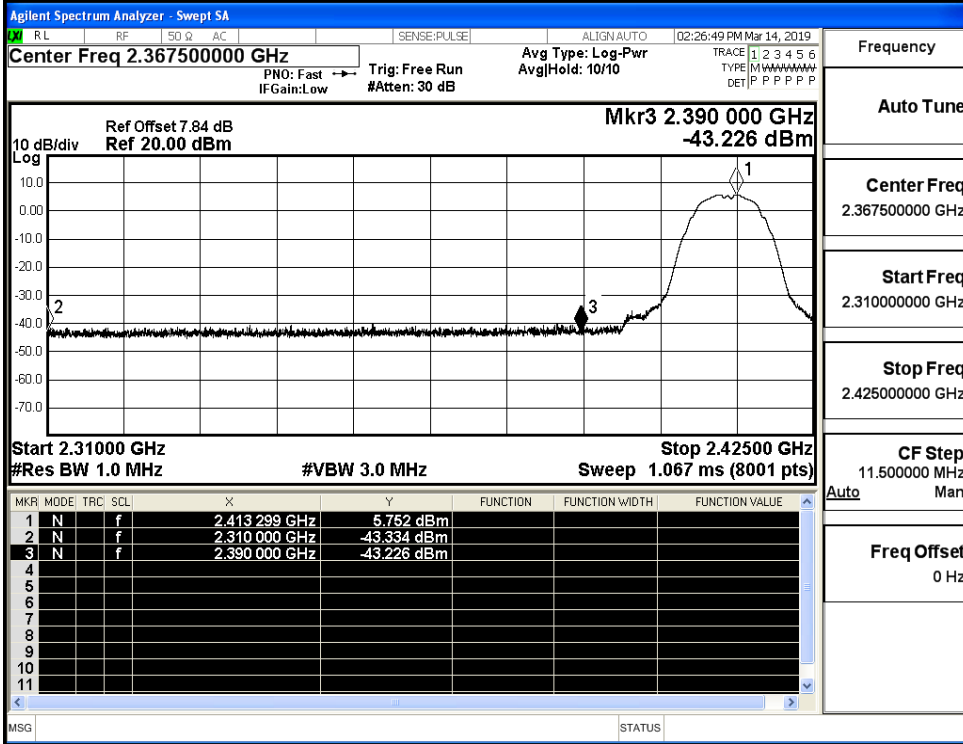
11N20SISO/HCH



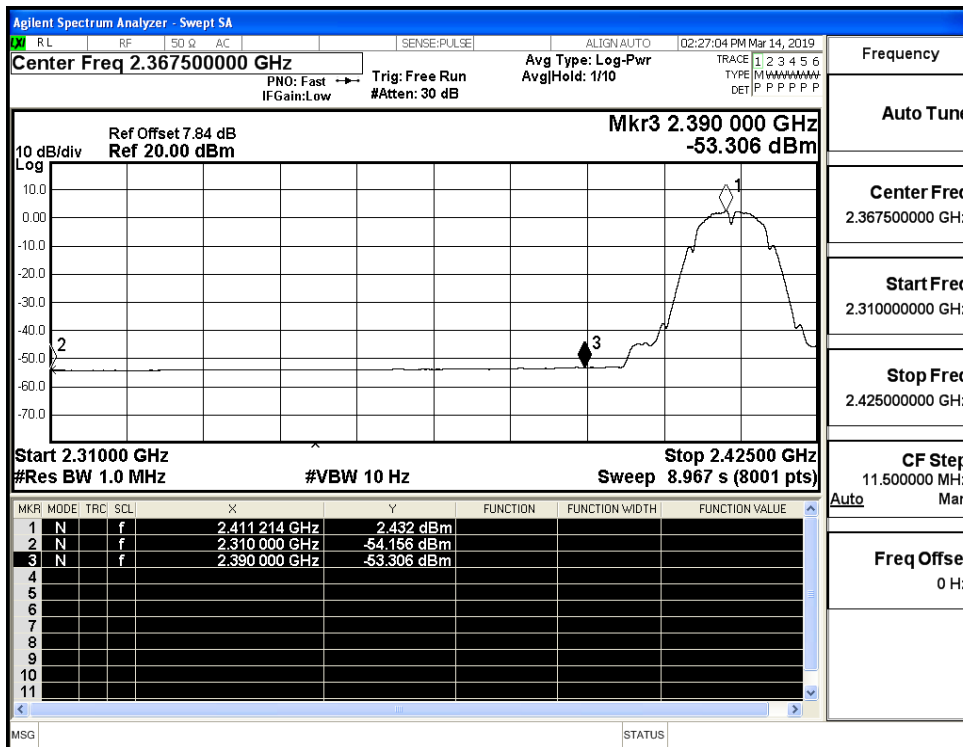
## A.7 Restrict-band band-edge measurements

Test Mode	Test Channel	Ant	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBu V/m]	Verdict
11B	2412	Ant1	2310.0	-43.33	2.0	0	53.92	PEAK	74	PASS
	2412	Ant1	2310.0	-54.16	2.0	0	43.10	AV	54	PASS
	2412	Ant1	2390.0	-43.23	2.0	0	54.03	PEAK	74	PASS
	2412	Ant1	2390.0	-53.31	2.0	0	43.95	AV	54	PASS
	2462	Ant1	2483.5	-42.92	2.0	0	54.33	PEAK	74	PASS
	2462	Ant1	2483.5	-53.26	2.0	0	44.00	AV	54	PASS
	2462	Ant1	2500.0	-41.85	2.0	0	55.41	PEAK	74	PASS
	2462	Ant1	2500.0	-53.42	2.0	0	43.84	AV	54	PASS
11G	2412	Ant1	2310.0	-43.96	2.0	0	53.29	PEAK	74	PASS
	2412	Ant1	2310.0	-54.14	2.0	0	43.12	AV	54	PASS
	2412	Ant1	2390.0	-40.98	2.0	0	56.28	PEAK	74	PASS
	2412	Ant1	2390.0	-52.21	2.0	0	45.05	AV	54	PASS
	2462	Ant1	2483.5	-42.10	2.0	0	55.16	PEAK	74	PASS
	2462	Ant1	2483.5	-52.43	2.0	0	44.82	AV	54	PASS
	2462	Ant1	2500.0	-42.90	2.0	0	54.36	PEAK	74	PASS
	2462	Ant1	2500.0	-53.02	2.0	0	44.24	AV	54	PASS
11N20 SISO	2412	Ant1	2310.0	-43.11	2.0	0	54.15	PEAK	74	PASS
	2412	Ant1	2310.0	-54.20	2.0	0	43.06	AV	54	PASS
	2412	Ant1	2390.0	-43.10	2.0	0	54.16	PEAK	74	PASS
	2412	Ant1	2390.0	-53.18	2.0	0	44.08	AV	54	PASS
	2462	Ant1	2483.5	-42.57	2.0	0	54.69	PEAK	74	PASS
	2462	Ant1	2483.5	-53.02	2.0	0	44.24	AV	54	PASS
	2462	Ant1	2500.0	-42.94	2.0	0	54.32	PEAK	74	PASS
	2462	Ant1	2500.0	-53.25	2.0	0	44.01	AV	54	PASS

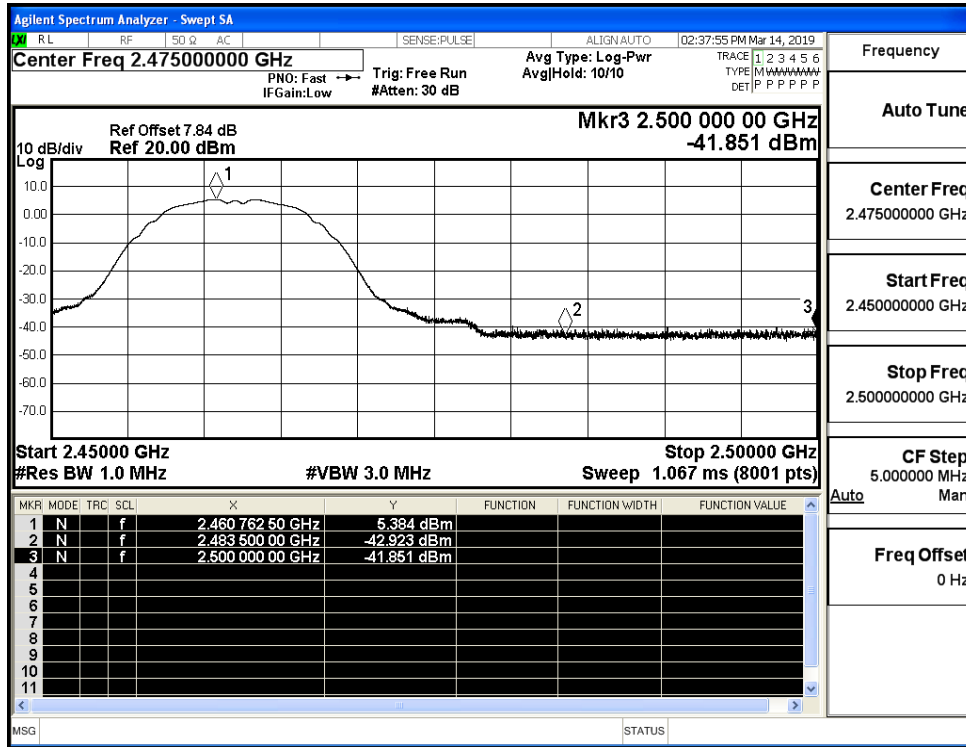
Restrict-band band-edge measurements\_11B\_2412\_Ant1\_PEAK



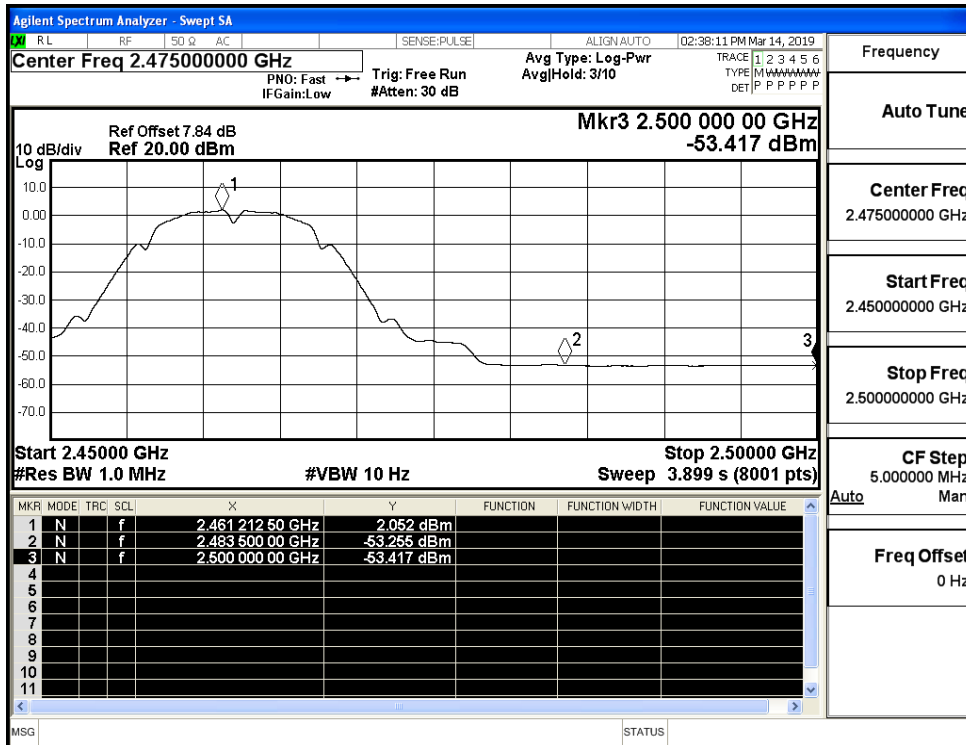
Restrict-band band-edge measurements\_11B\_2412\_Ant1\_AV



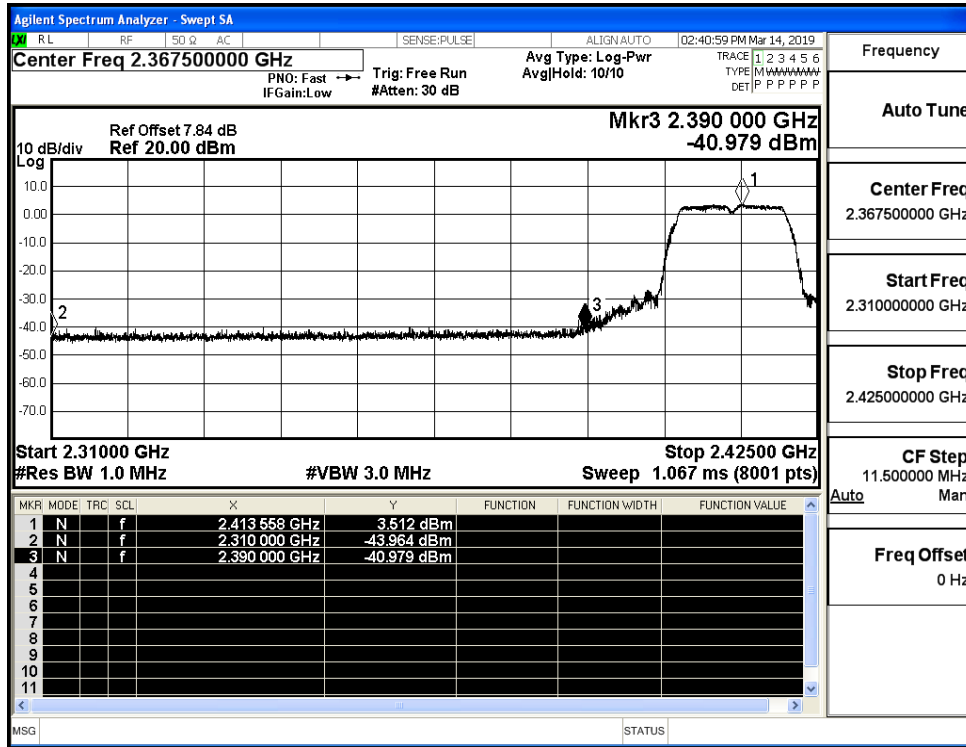
Restrict-band band-edge measurements\_11B\_2462\_Ant1\_PEAK



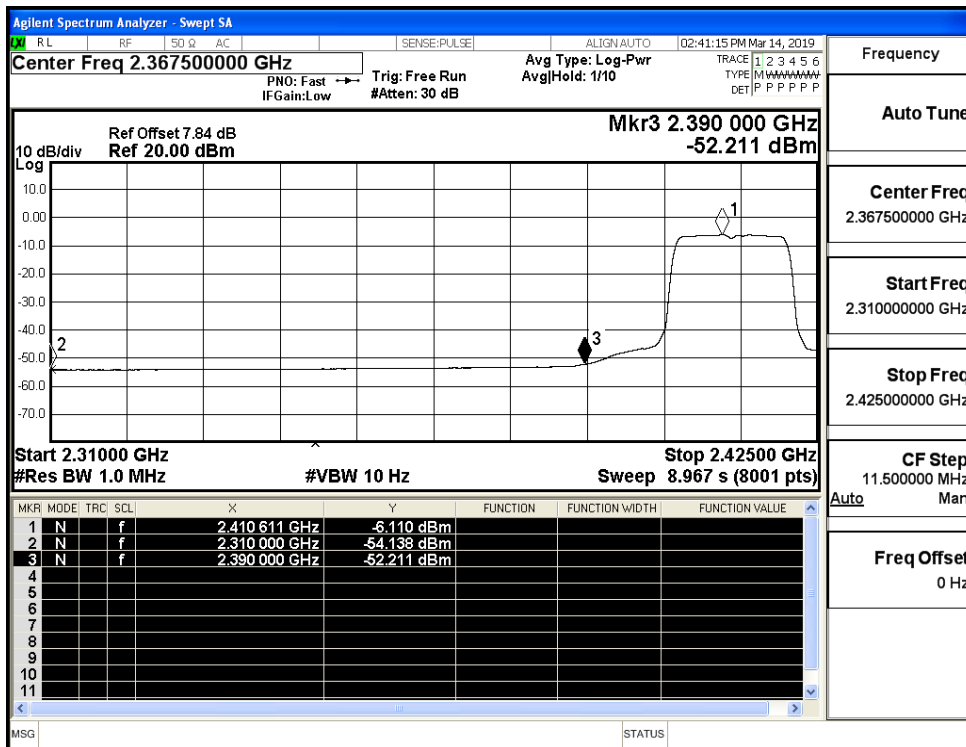
Restrict-band band-edge measurements\_11B\_2462\_Ant1\_AV



Restrict-band band-edge measurements\_11G\_2412\_Ant1\_PEAK

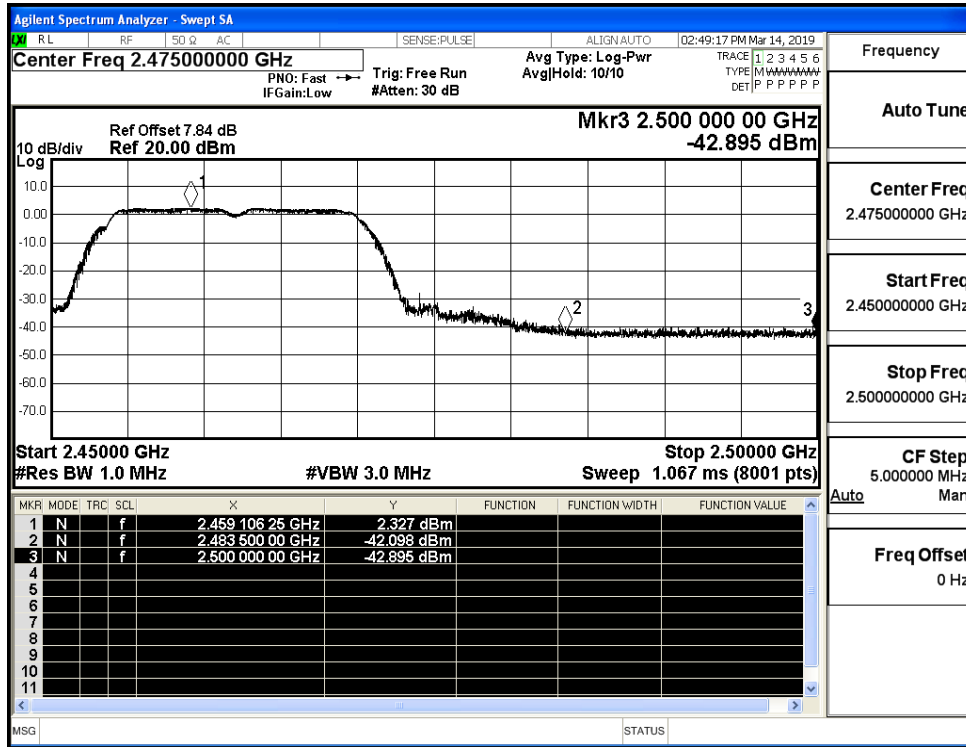


Restrict-band band-edge measurements\_11G\_2412\_Ant1\_AV

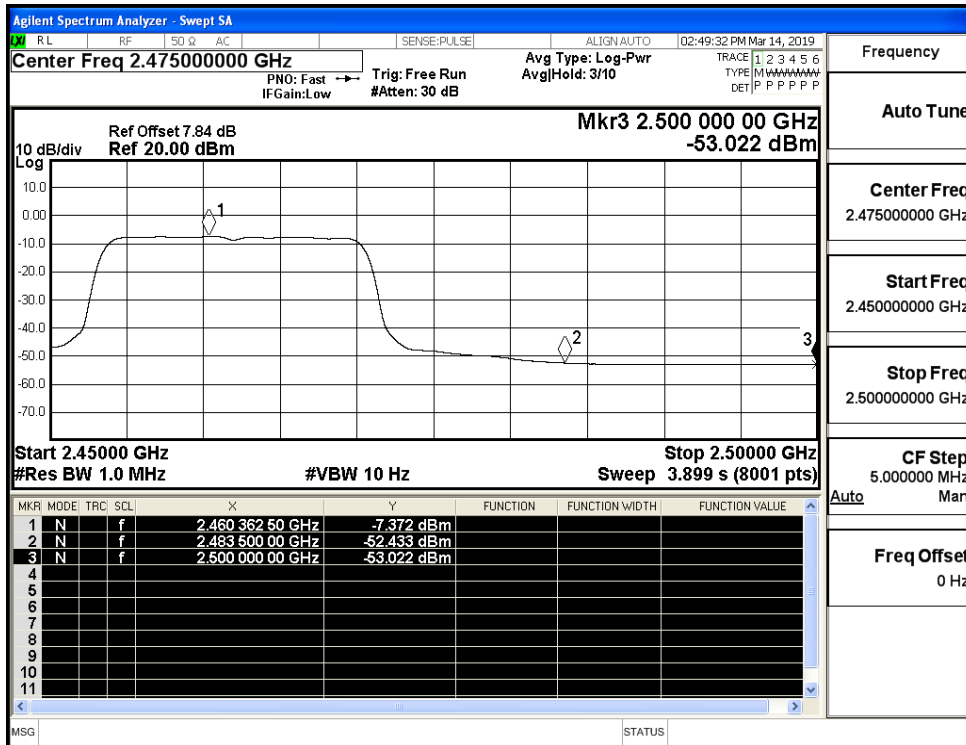




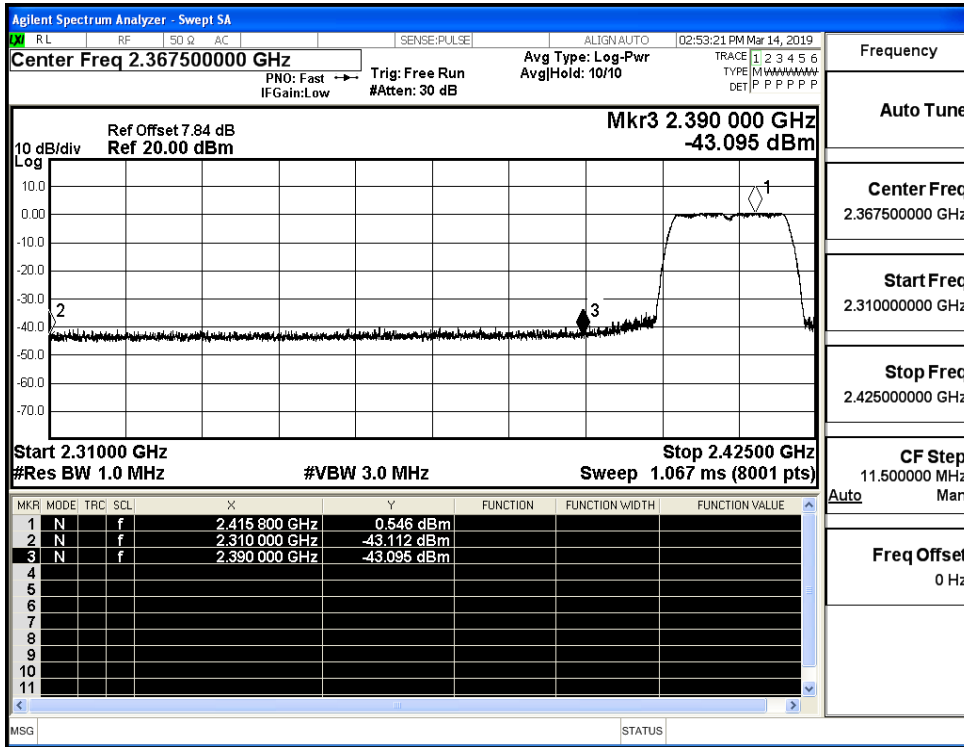
Restrict-band band-edge measurements\_11G\_2462\_Ant1\_PEAK



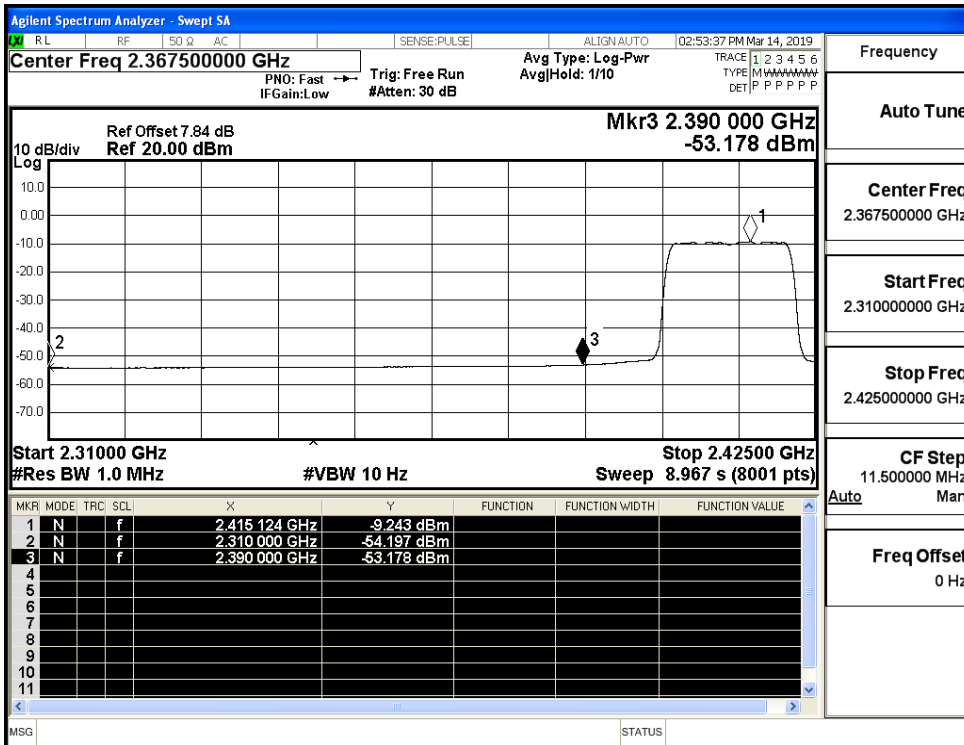
Restrict-band band-edge measurements\_11G\_2462\_Ant1\_AV



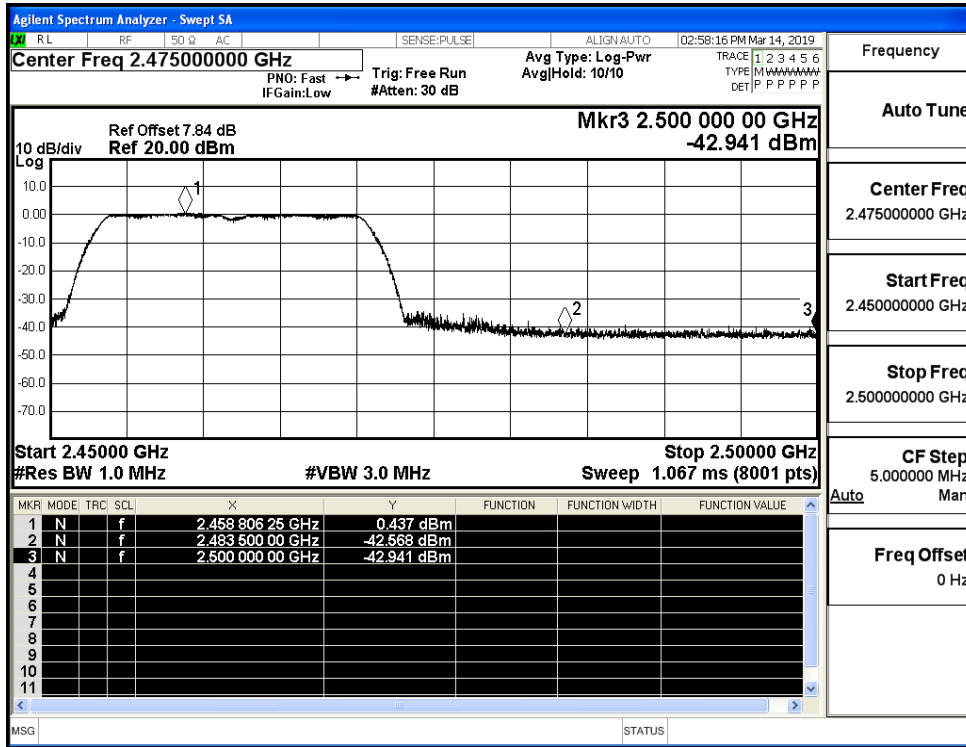
Restrict-band band-edge measurements\_11N20SISO\_2412\_Ant1\_PEAK



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

