

## Appendix A

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

**Product Name: WiFi mesh MT1**

**Trade Mark: KING SIGNAL**

**Test Model: MT1**

#### Environmental Conditions

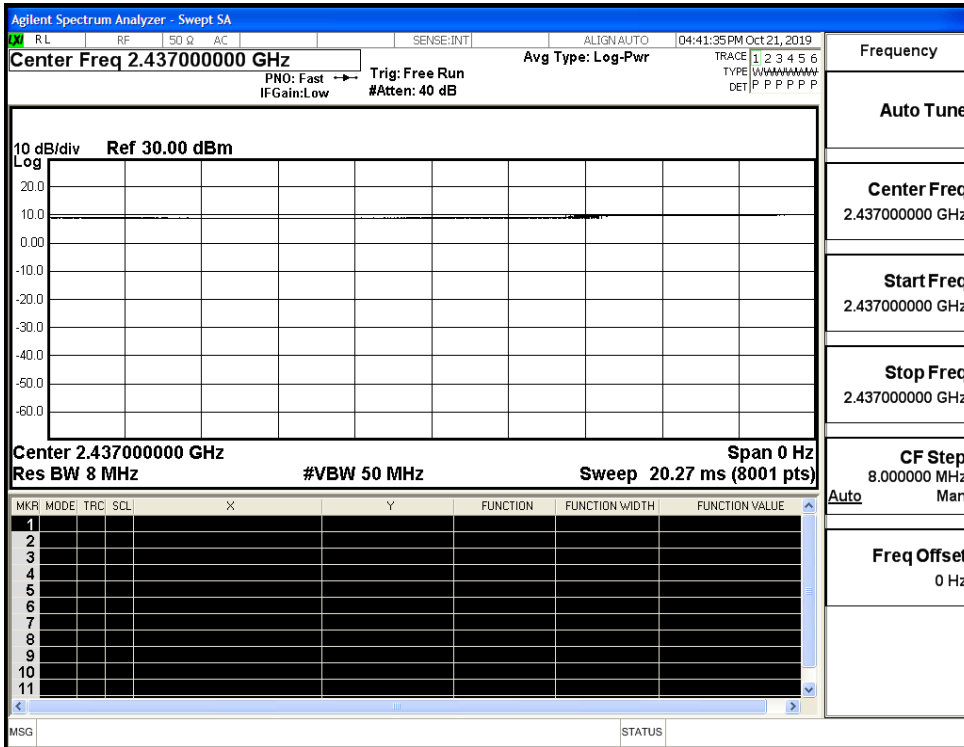
Temperature:	23.5 ° C
Relative Humidity:	52.6%
ATM Pressure:	100.0 kPa
Test Engineer:	Tom.Liu
Supervised by:	Wang.Chuang

#### A.1 Duty Cycle

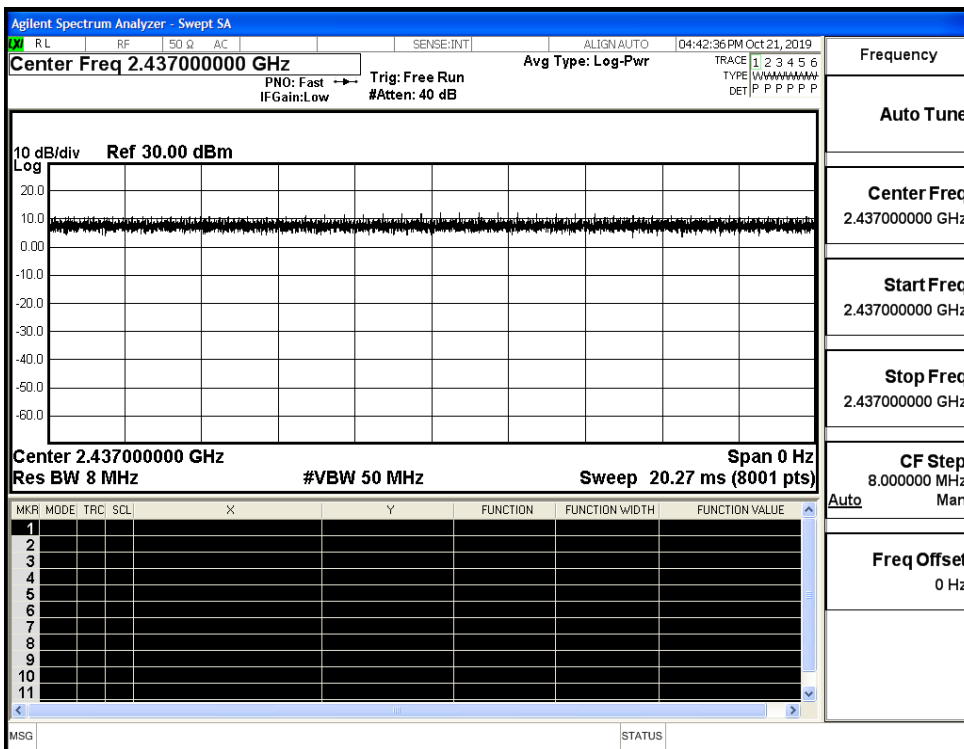
Test Mode	Test Channel	Ant	Duty Cycle[%]	Verdict
11B	2437	Ant1	100	PASS
11G	2437	Ant1	100	PASS
11N20SISO	2437	Ant1	100	PASS
11N40SISO	2437	Ant1	100	PASS

Test Mode	Test Channel	Ant	Duty Cycle[%]	Verdict
11B	2437	Ant2	100	PASS
11G	2437	Ant2	100	PASS
11N20SISO	2437	Ant2	100	PASS
11N40SISO	2437	Ant2	100	PASS

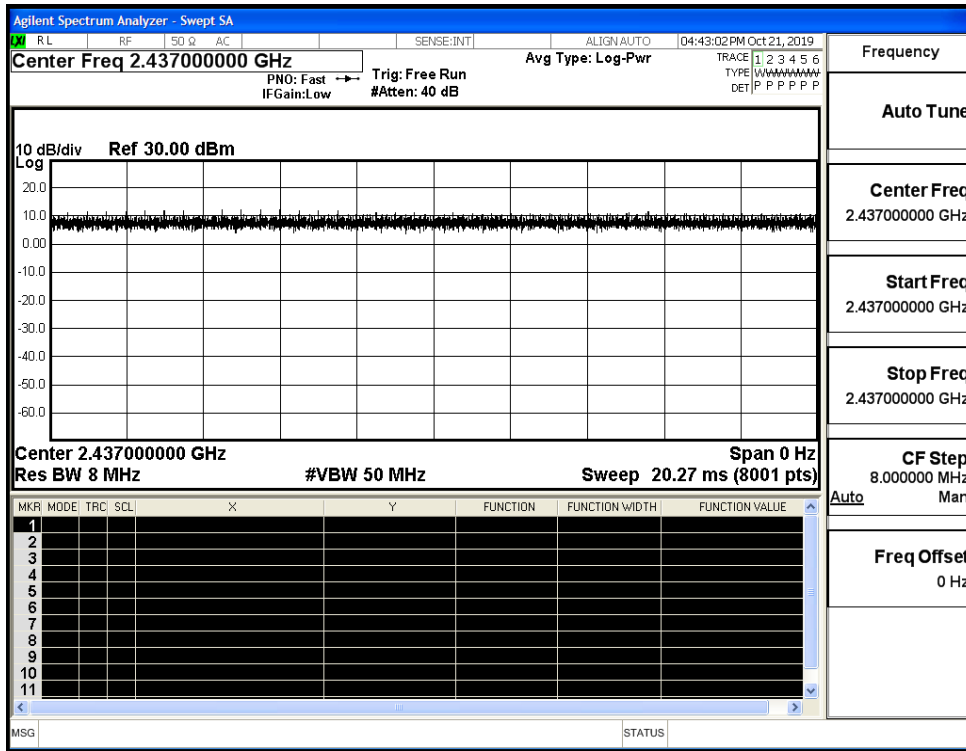
Duty Cycle\_11B\_2437\_Ant1



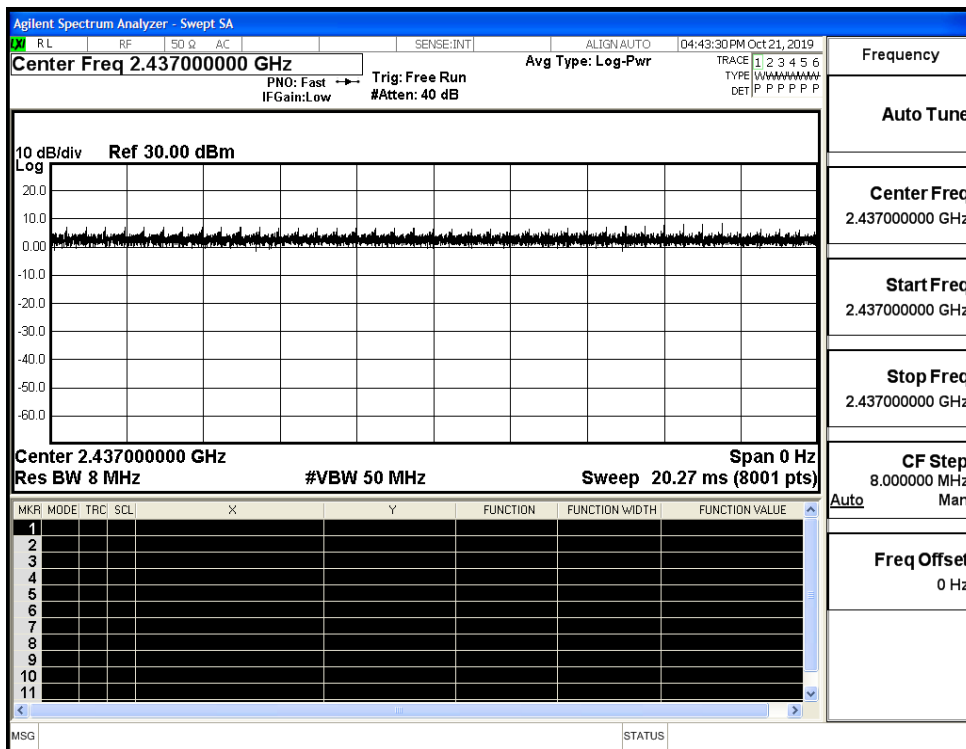
Duty Cycle\_11G\_2437\_Ant1



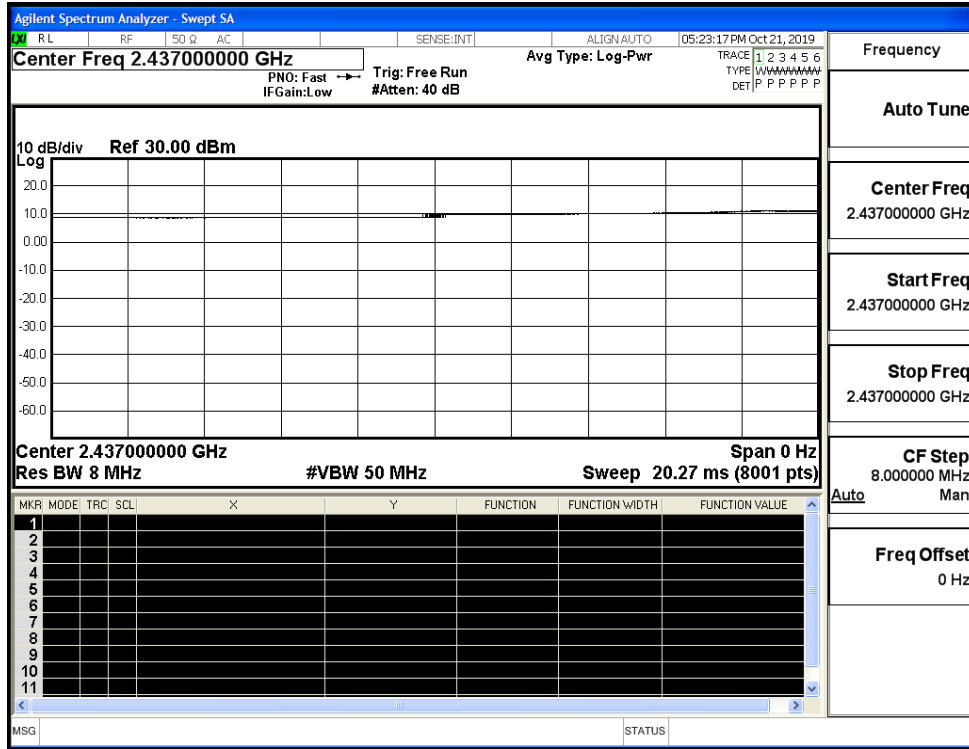
Duty Cycle\_11N20SISO\_2437\_Ant1



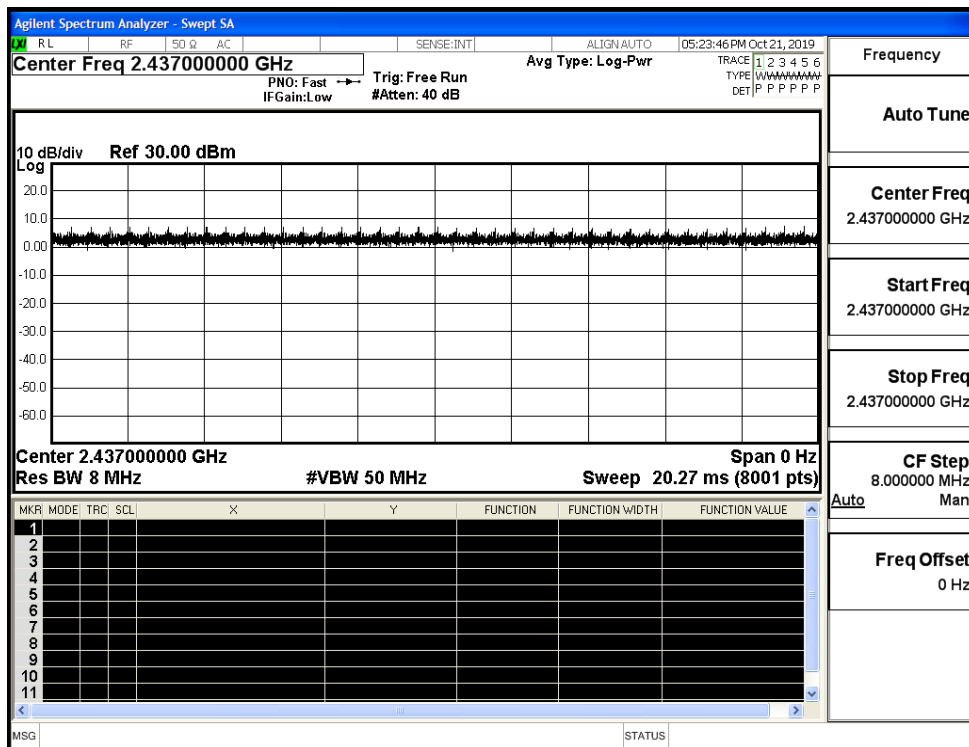
Duty Cycle\_11N40SISO\_2437\_Ant1



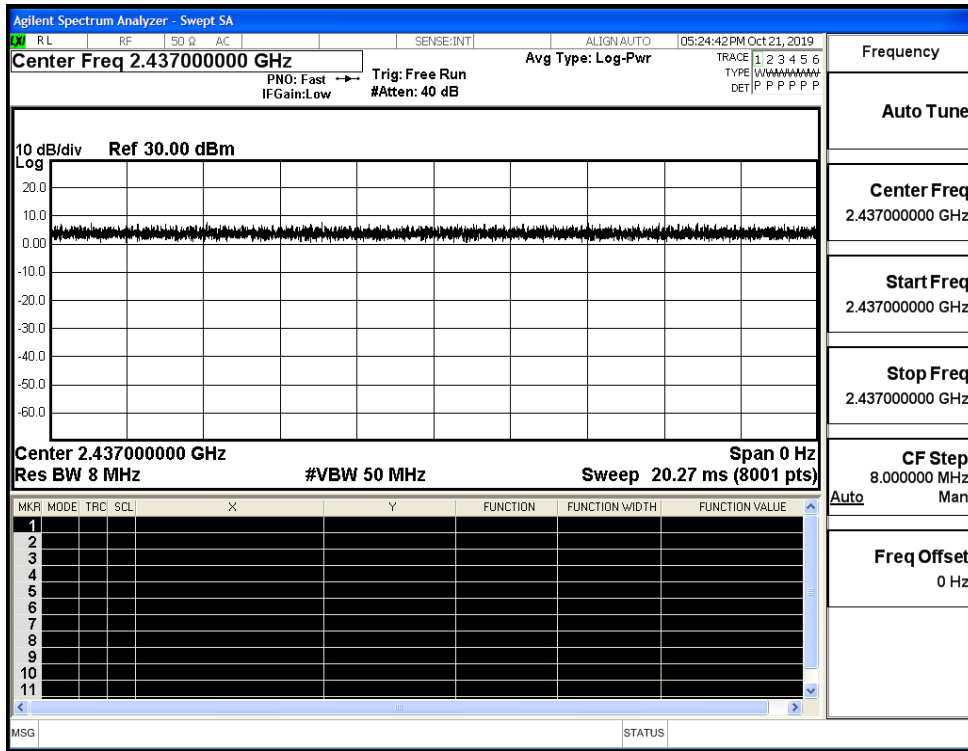
Duty Cycle\_11B\_2437\_Ant2



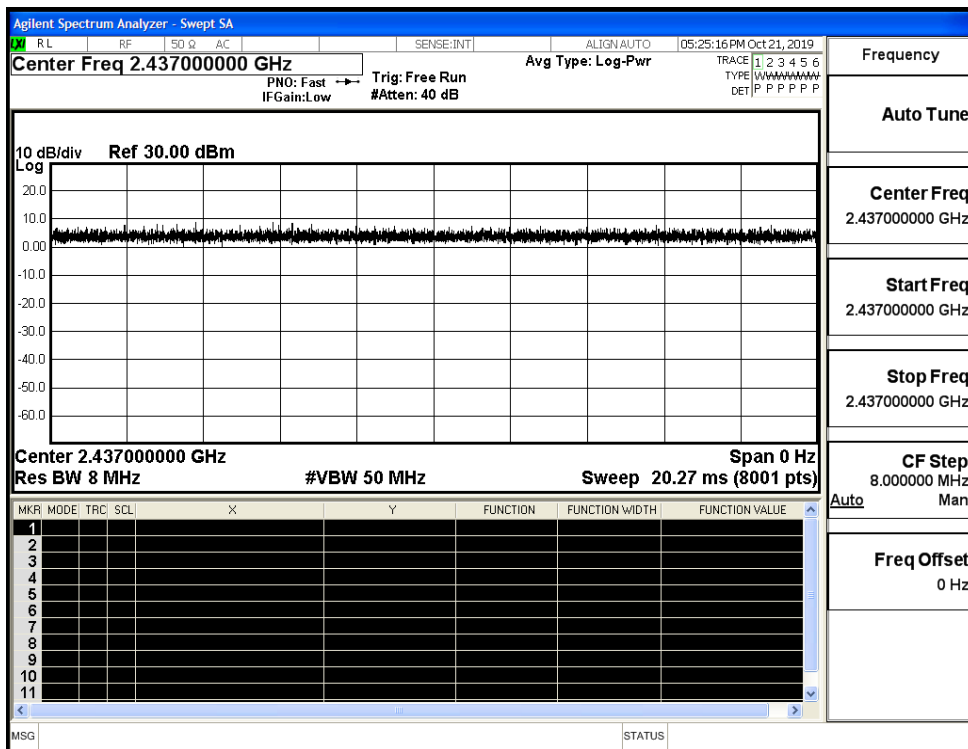
Duty Cycle\_11G\_2437\_Ant2



Duty Cycle\_11N20SISO\_2437\_Ant2



Duty Cycle\_11N40SISO\_2437\_Ant2



**A.2 Maximum Conducted Output Power**

Mode	Channel	Meas.Level [dBm]			Limit [dBm]	Verdict
		Ant_1	Ant_2	Sum		
11B	LCH	13.39	13.52	/	30	PASS
	MCH	13.15	13.55	/	30	PASS
	HCH	13.06	13.68	/	30	PASS
11G	LCH	14.5	14.2	/	30	PASS
	MCH	14.17	13.65	/	30	PASS
	HCH	14.09	13.5	/	30	PASS
11N20	LCH	14.53	13.93	17.25	29.99	PASS
	MCH	14.23	13.86	17.06	29.99	PASS
	HCH	14.11	13.93	17.03	29.99	PASS
11N40	LCH	14.52	13.90	17.23	29.99	PASS
	MCH	14.36	13.71	17.06	29.99	PASS
	HCH	14.33	13.88	17.12	29.99	PASS

### A.3 Maximum Power Spectral Density

#### ANT\_1

Mode	Channel	Meas.Level [dBm/30KHz]	Convert Factor	Result [dBm/3KHz]	Limit [dBm/3KHz]	Verdict
11B	LCH	-4.484	-10	-14.484	8	PASS
	MCH	-4.723	-10	-14.723	8	PASS
	HCH	-4.816	-10	-14.816	8	PASS
11G	LCH	-9.823	-10	-19.823	8	PASS
	MCH	-9.278	-10	-19.278	8	PASS
	HCH	-10.139	-10	-20.139	8	PASS
11N20SISO	LCH	-9.137	-10	-19.137	8	PASS
	MCH	-9.127	-10	-19.127	8	PASS
	HCH	-9.316	-10	-19.316	8	PASS
11N40SISO	LCH	-12.760	-10	-22.760	8	PASS
	MCH	-13.236	-10	-23.236	8	PASS
	HCH	-13.053	-10	-23.053	8	PASS

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

#### ANT\_2

Mode	Channel	Meas.Level [dBm/30KHz]	Convert Factor	Result [dBm/3KHz]	Limit [dBm/3KHz]	Verdict
11B	LCH	-4.347	-10	-14.347	8	PASS
	MCH	-4.342	-10	-14.342	8	PASS
	HCH	-4.171	-10	-14.171	8	PASS
11G	LCH	-10.491	-10	-20.491	8	PASS
	MCH	-11.292	-10	-21.292	8	PASS
	HCH	-11.342	-10	-21.342	8	PASS
11N20SISO	LCH	-10.521	-10	-20.521	8	PASS
	MCH	-10.887	-10	-20.887	8	PASS
	HCH	-10.451	-10	-20.451	8	PASS
11N40SISO	LCH	-14.050	-10	-24.050	8	PASS
	MCH	-14.548	-10	-24.548	8	PASS
	HCH	-13.750	-10	-23.750	8	PASS

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

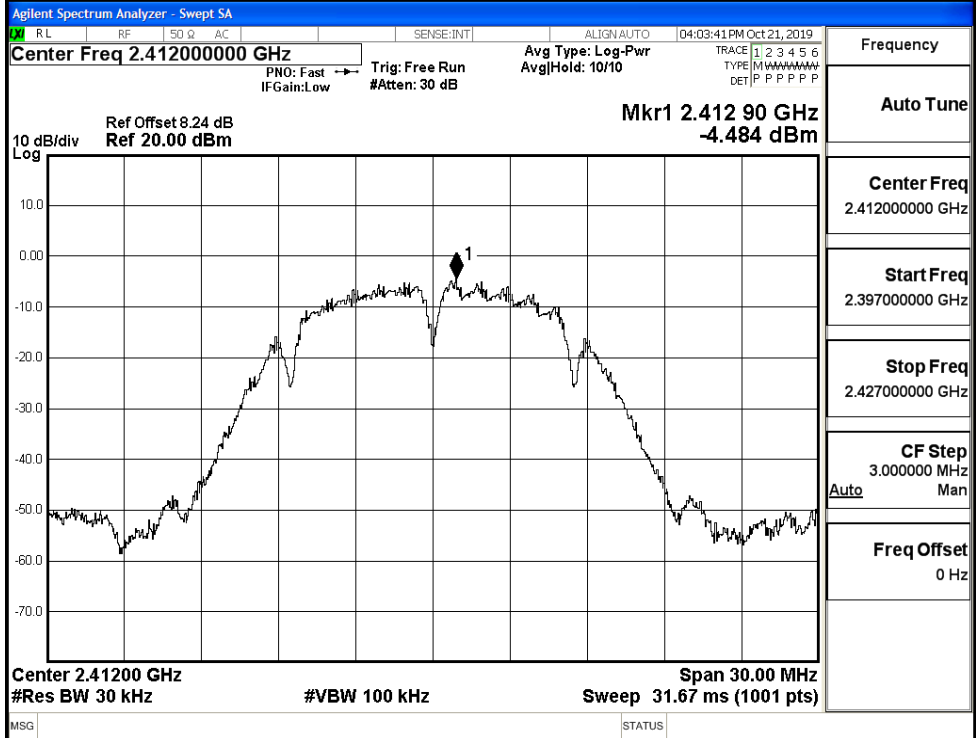
**Combined Ant\_1 and Ant\_2**

Mode	Channel	Result [dBm/3KHz]			Limit [dBm/3KHz]	Verdict
		Ant_1	Ant_2	Sum		
11N20	LCH	-19.137	-20.521	-16.76	7.99	PASS
	MCH	-19.127	-20.887	-16.91	7.99	PASS
	HCH	-19.316	-20.451	-16.84	7.99	PASS
11N40	LCH	-22.760	-24.050	-20.35	7.99	PASS
	MCH	-23.236	-24.548	-20.83	7.99	PASS
	HCH	-23.053	-23.750	-20.38	7.99	PASS

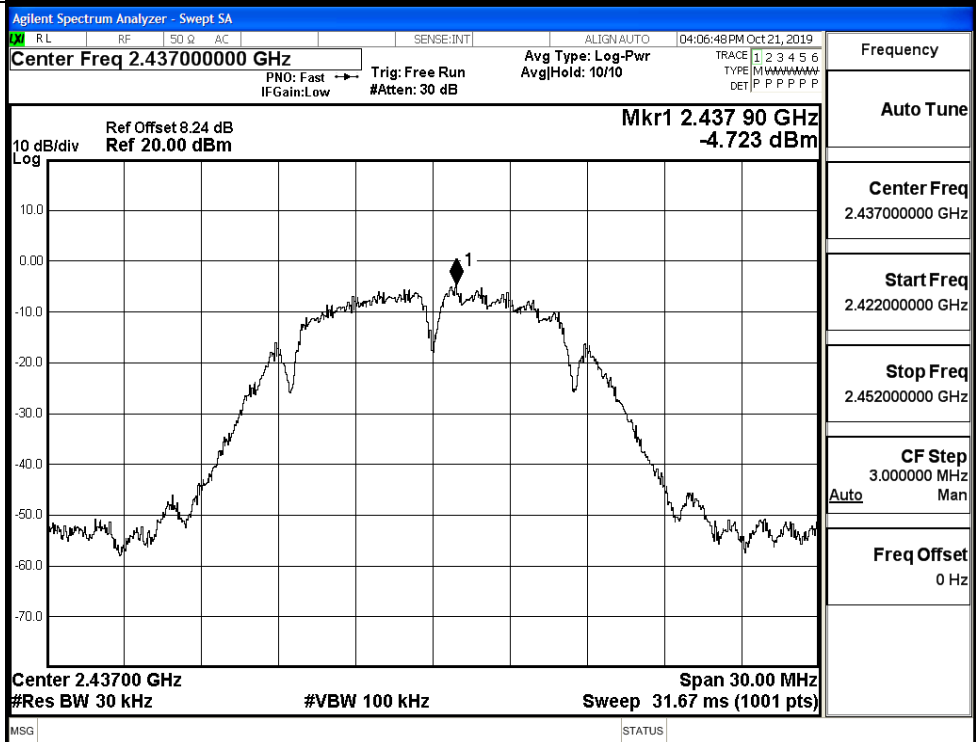


Test Graphs\_ANT\_1

11B/LCH



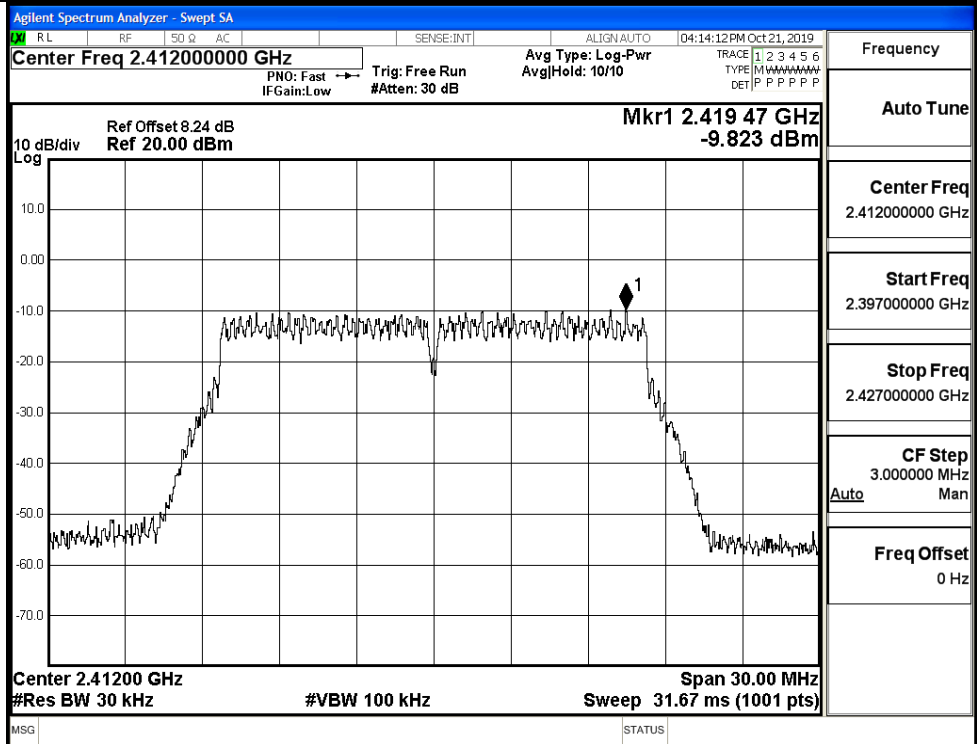
11B/MCH



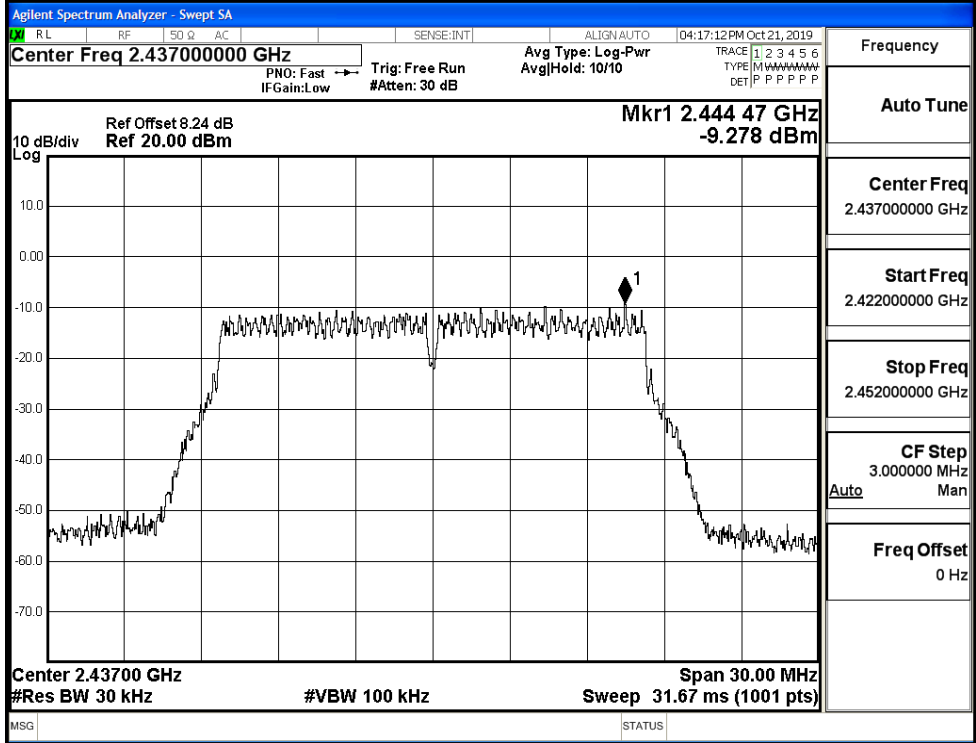
11B/HCH



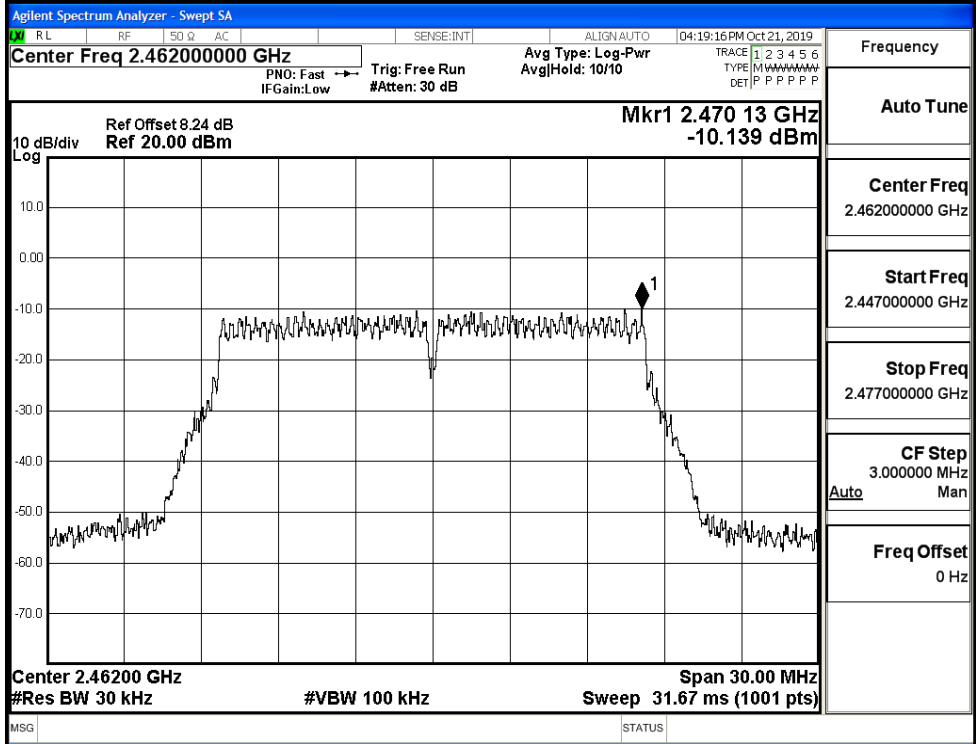
11G/LCH



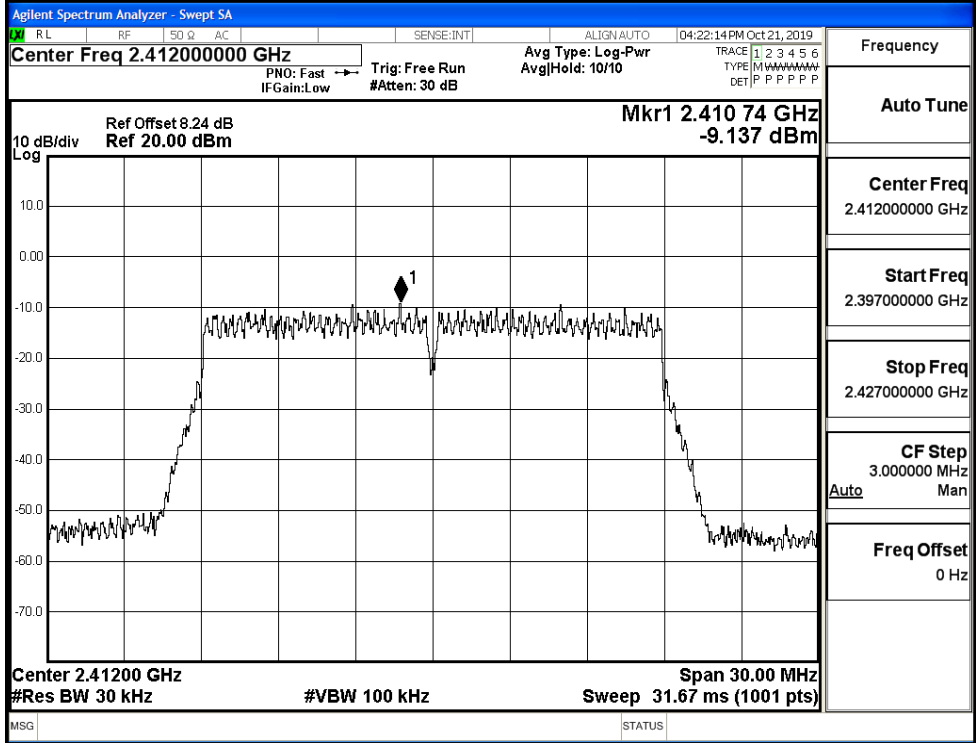
11G/MCH



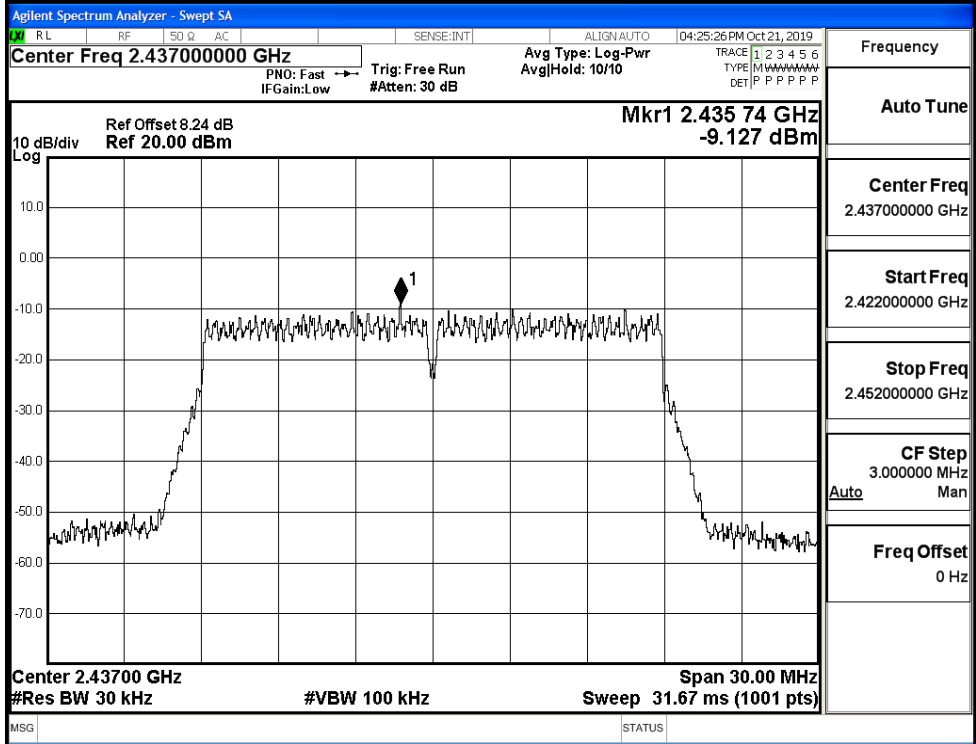
11G/HCH



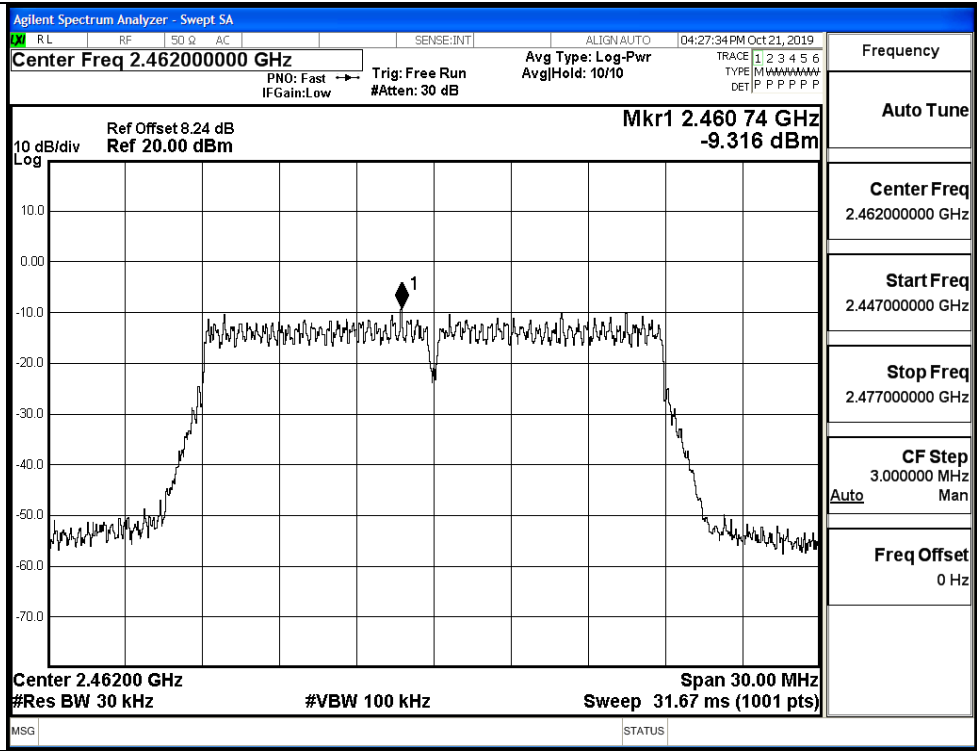
11N20SISO/LCH



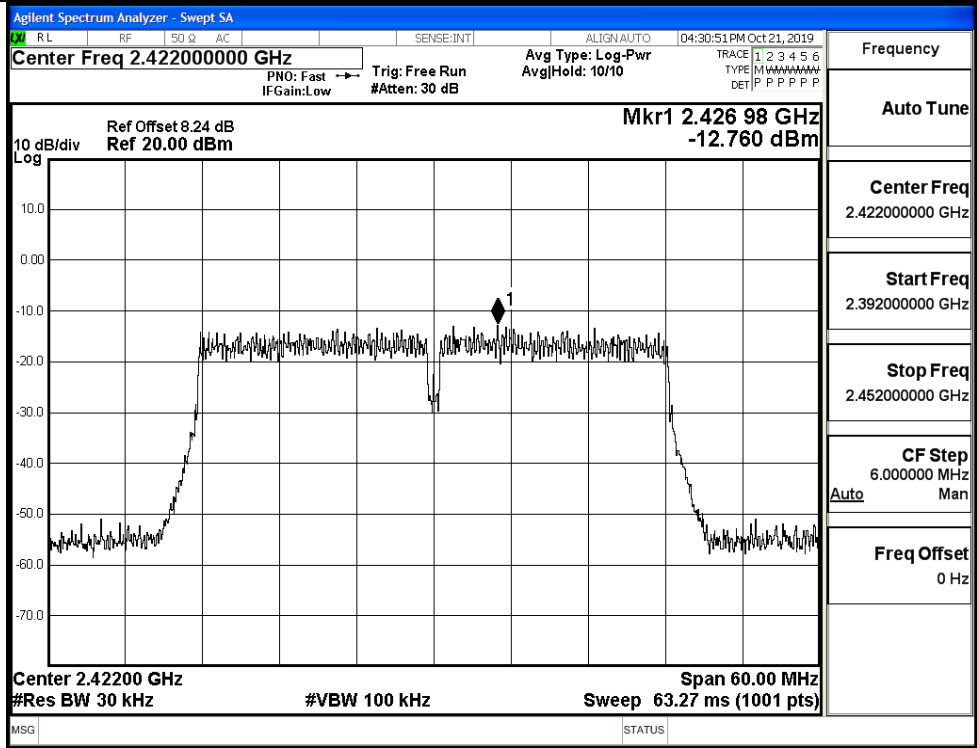
11N20SISO/MCH



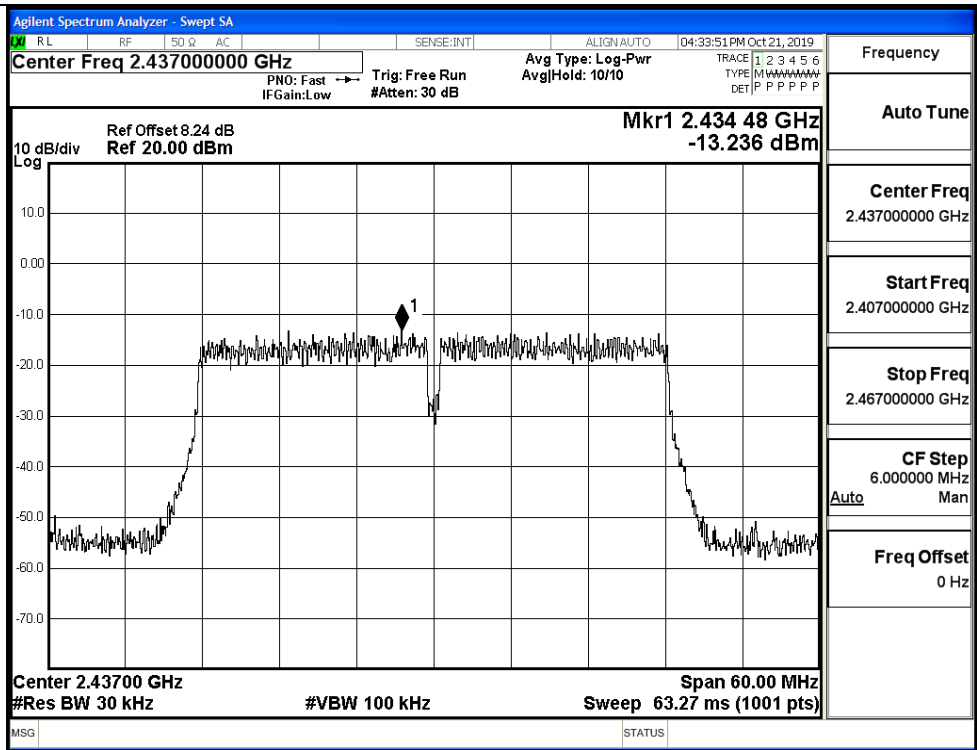
11N20SISO/HCH



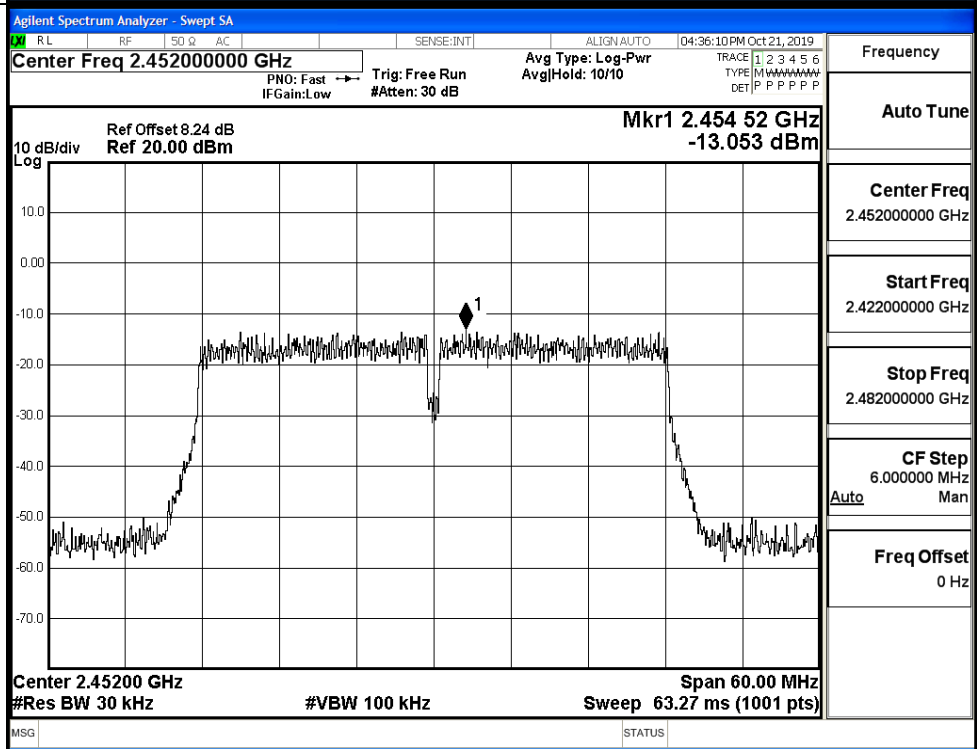
11N40SISO/LCH



11N40SISO/MCH

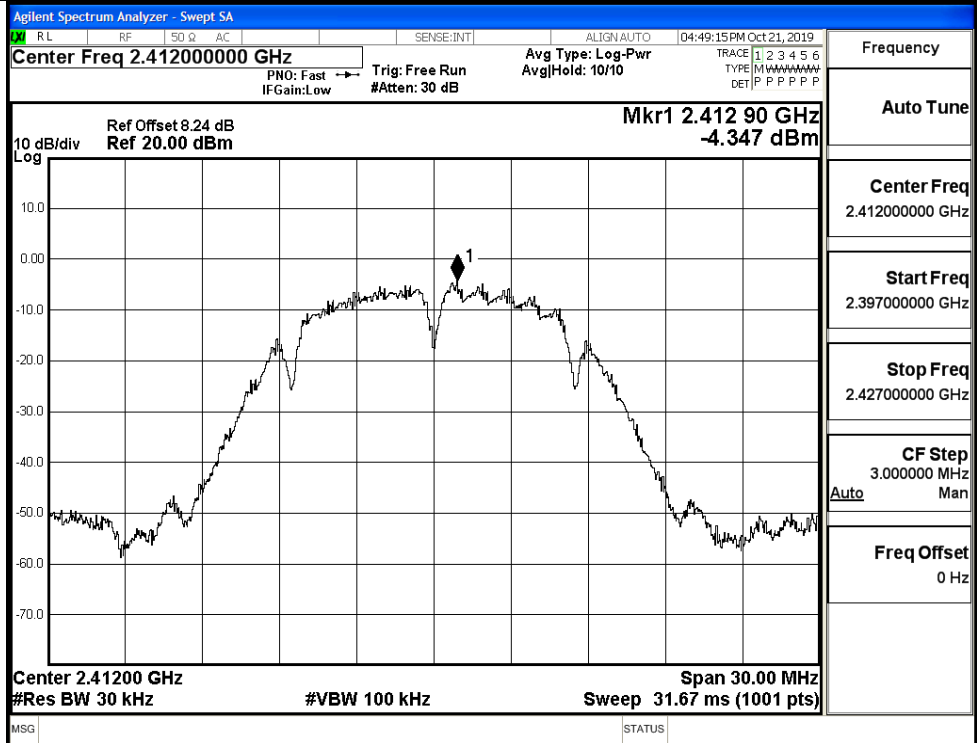


11N40SISO/HCH

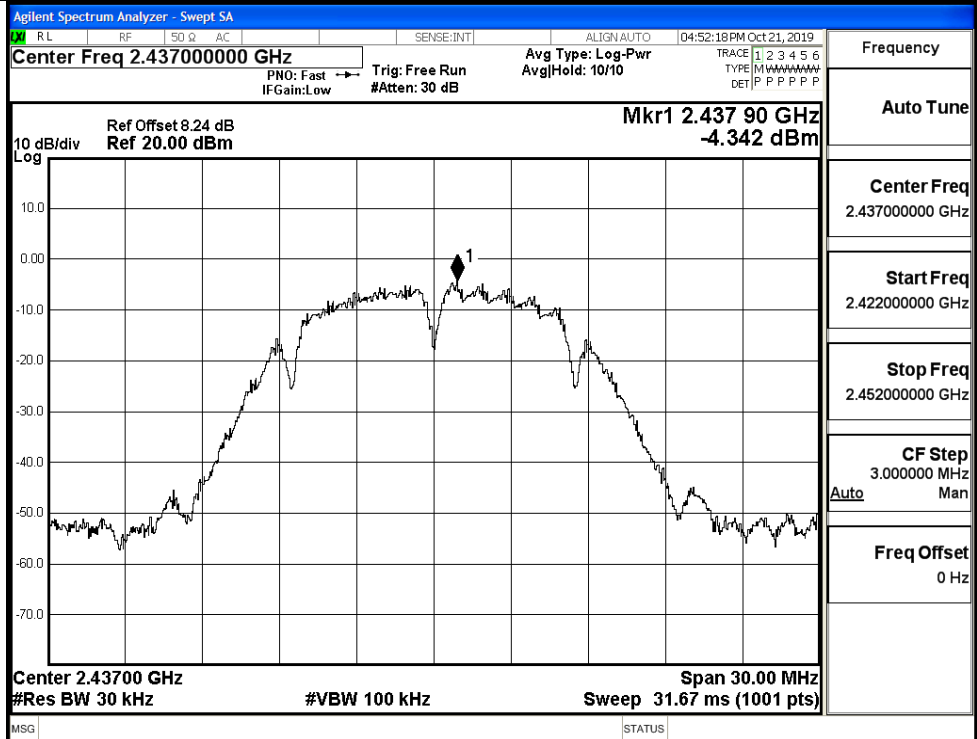


Test Graphs\_ANT\_2

11B/LCH



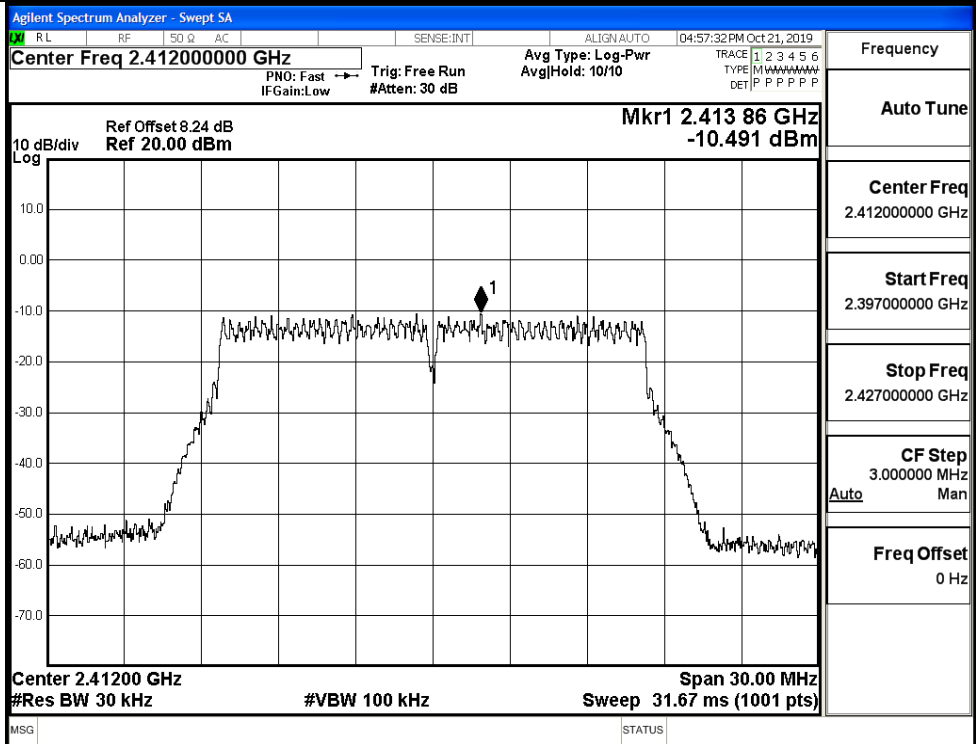
11B/MCH



11B/HCH

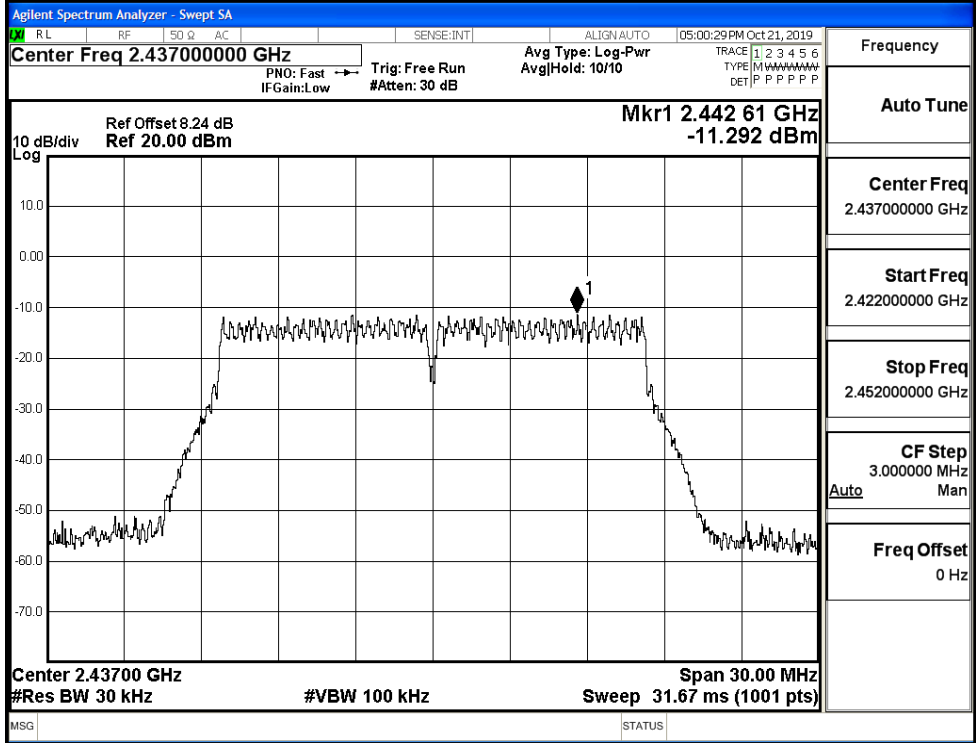


11G/LCH



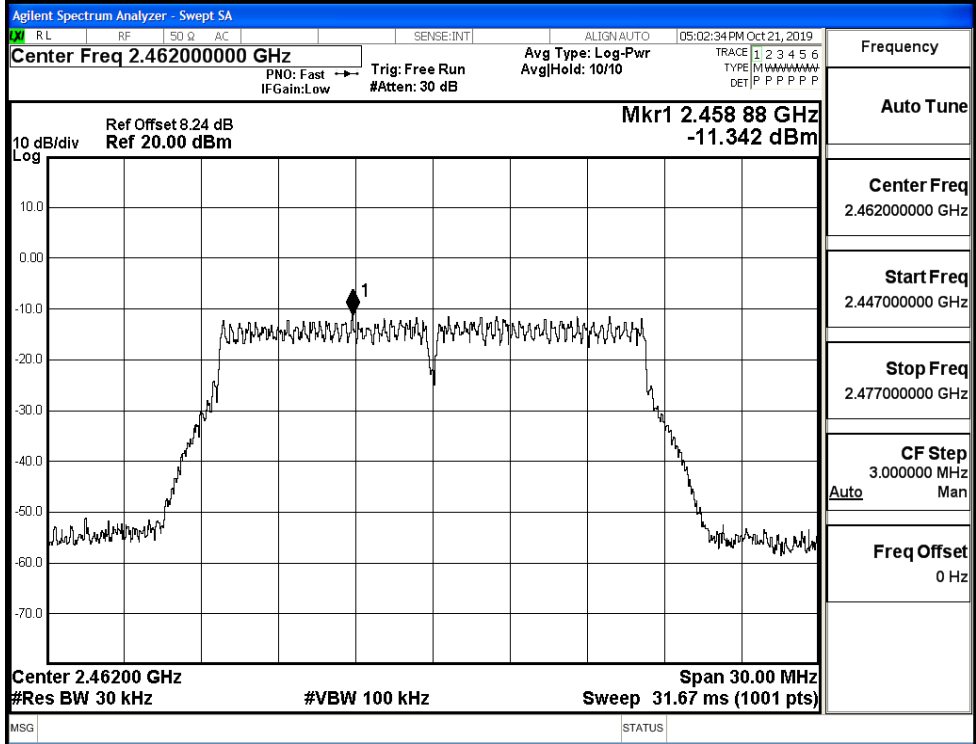


11G/MCH



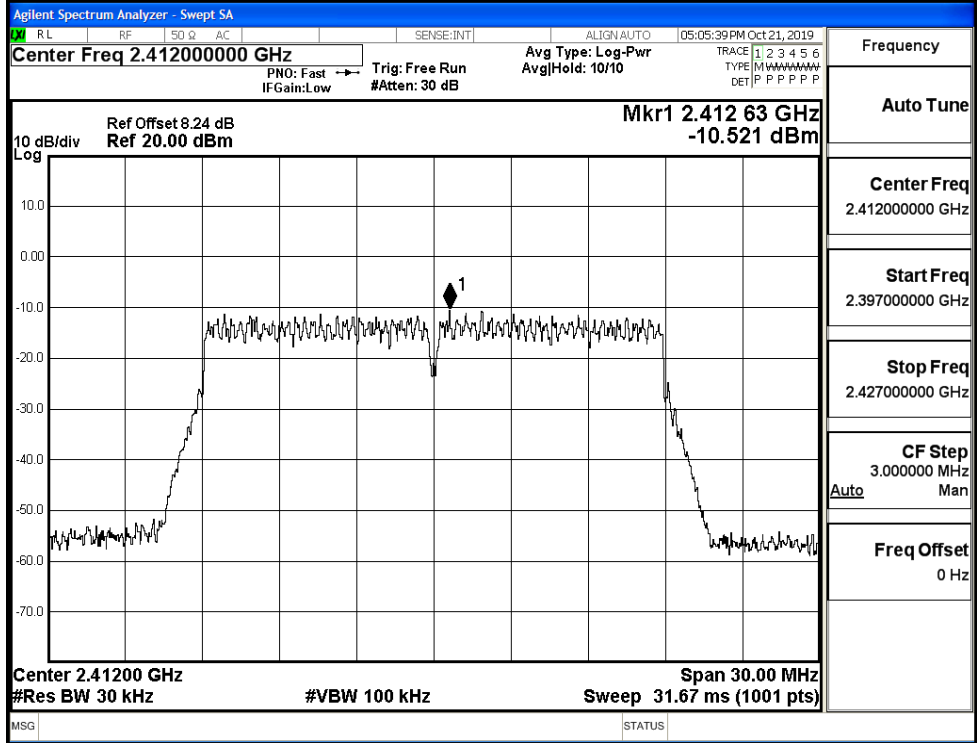
Frequency	2.43700000 GHz
Auto Tune	
Center Freq	2.43700000 GHz
Start Freq	2.42200000 GHz
Stop Freq	2.45200000 GHz
CF Step	3.000000 MHz Auto Man
Freq Offset	0 Hz

11G/HCH

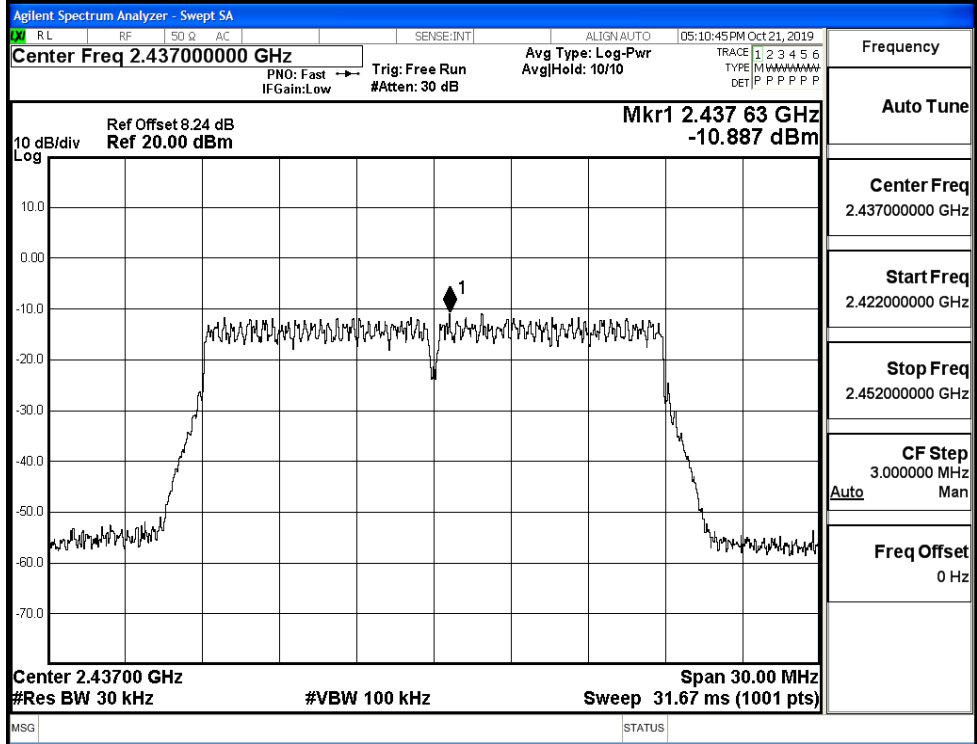


Frequency	2.46200000 GHz
Auto Tune	
Center Freq	2.46200000 GHz
Start Freq	2.44700000 GHz
Stop Freq	2.47700000 GHz
CF Step	3.000000 MHz Auto Man
Freq Offset	0 Hz

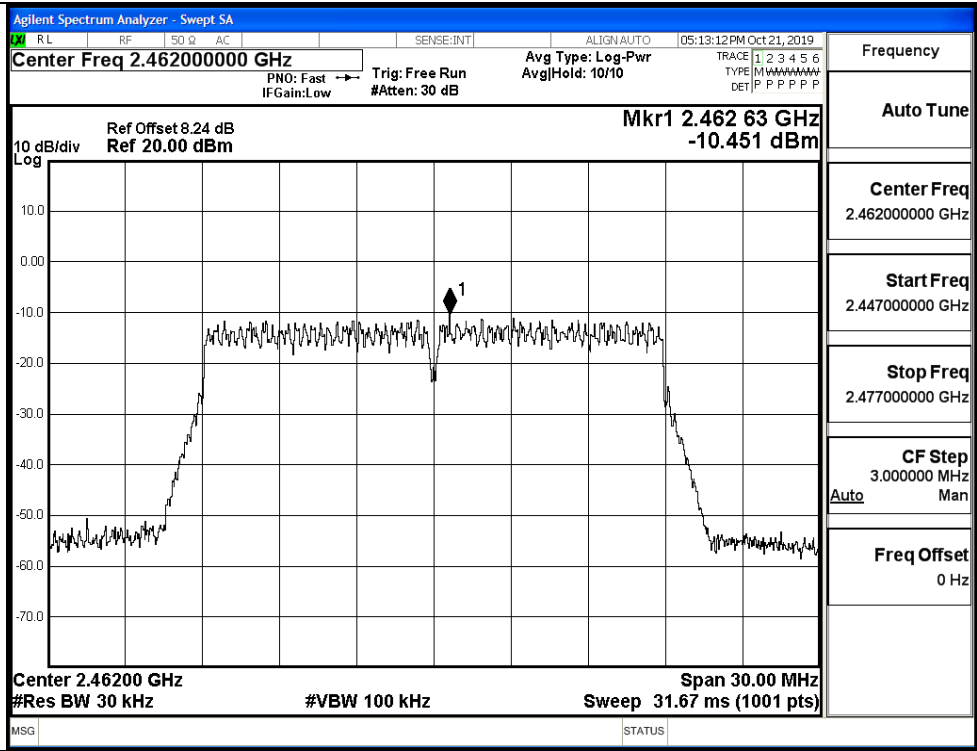
11N20SISO/LCH



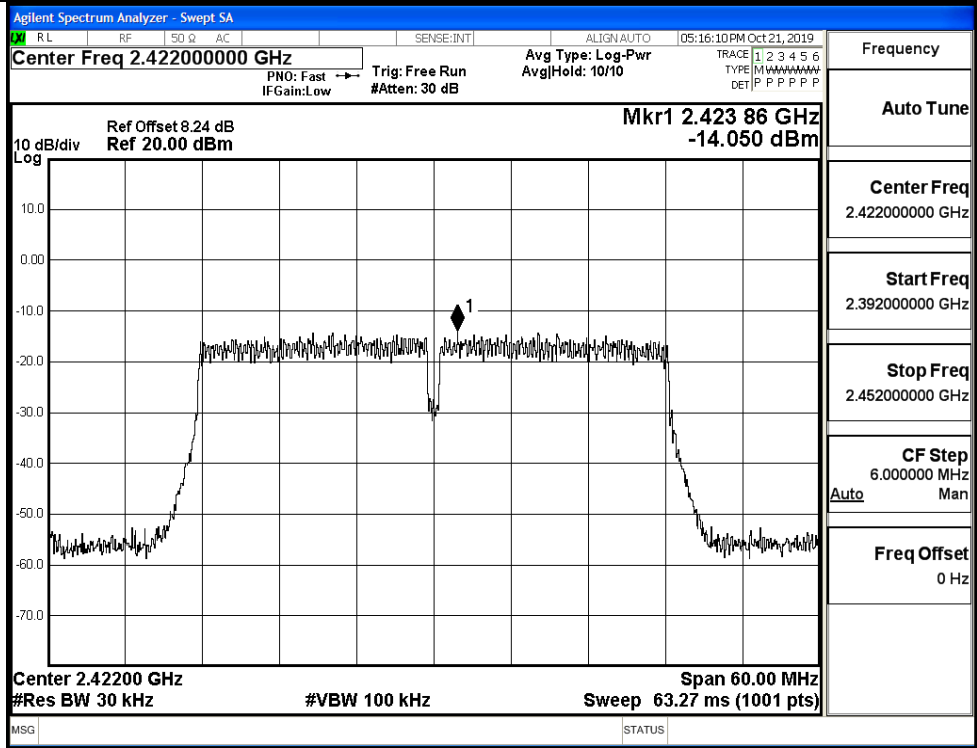
11N20SISO/MCH



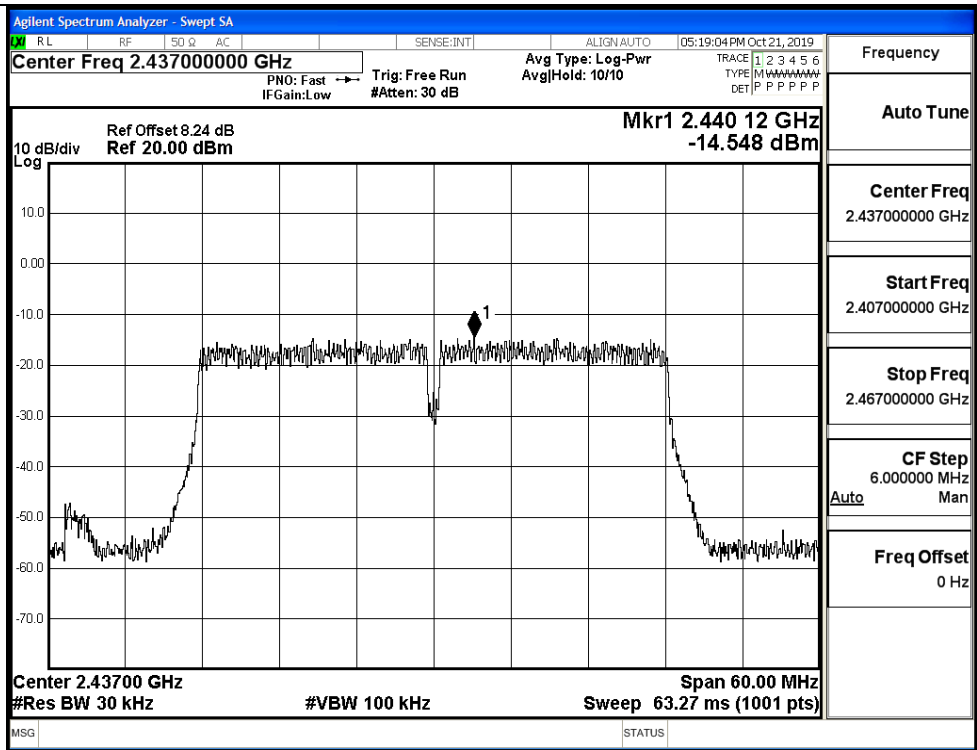
11N20SISO/HCH



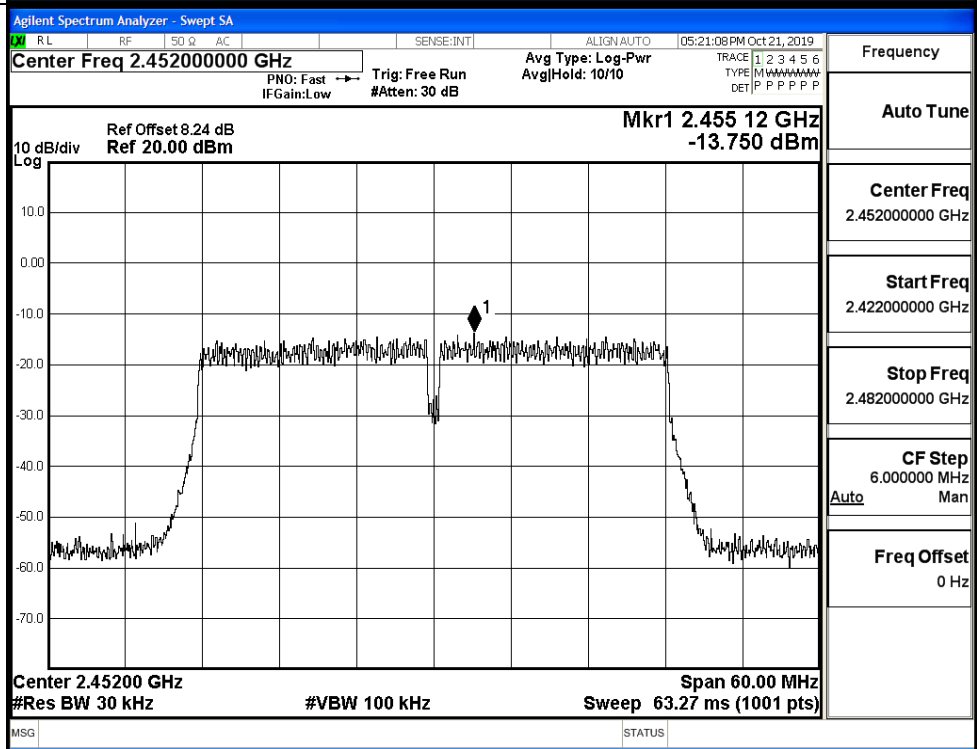
11N40SISO/LCH



11N40SISO/MCH



11N40SISO/HCH

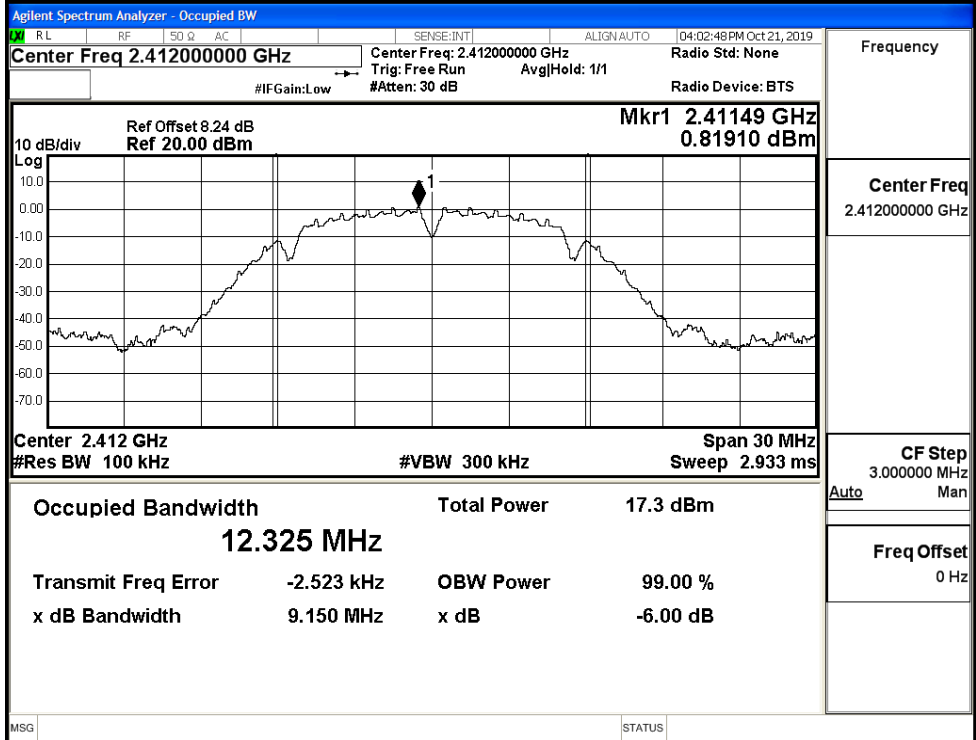


**A.4 6dB Bandwidth**

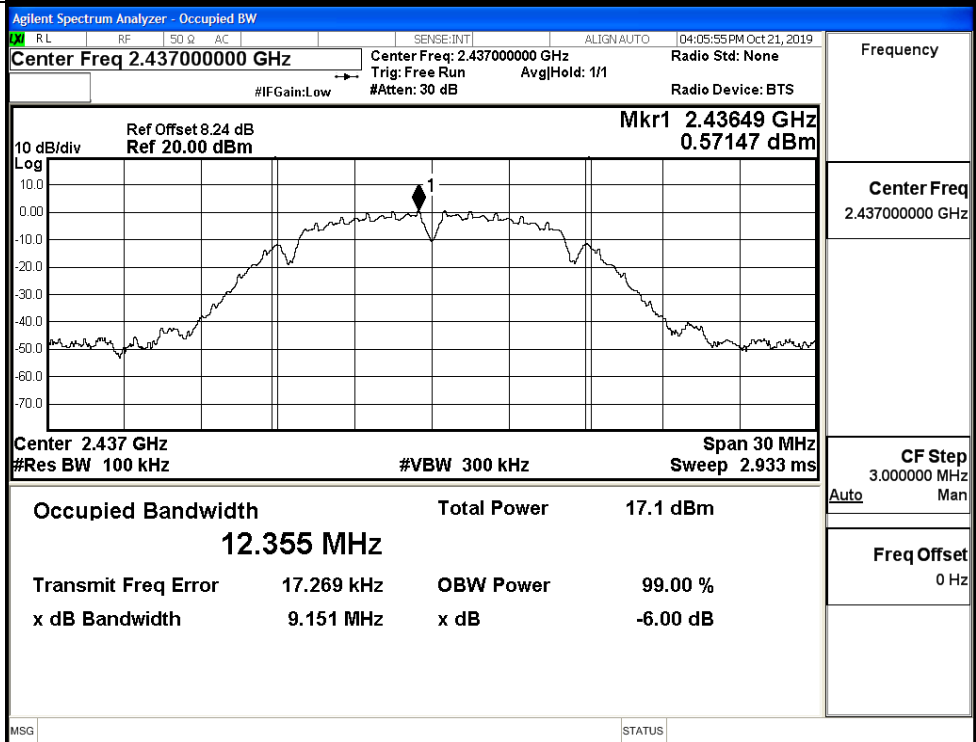
Mode	Channel	6dB Bandwidth [MHz]		Limit [MHz]	Verdict
		Ant_1	Ant_2		
11B	LCH	9.150	9.151	$\geq 0.5$	PASS
	MCH	9.151	9.150	$\geq 0.5$	PASS
	HCH	9.149	9.150	$\geq 0.5$	PASS
11G	LCH	16.39	16.60	$\geq 0.5$	PASS
	MCH	16.39	16.61	$\geq 0.5$	PASS
	HCH	16.39	16.61	$\geq 0.5$	PASS
11N20	LCH	17.61	17.83	$\geq 0.5$	PASS
	MCH	17.63	17.84	$\geq 0.5$	PASS
	HCH	17.63	17.82	$\geq 0.5$	PASS
11N40	LCH	36.02	36.49	$\geq 0.5$	PASS
	MCH	36.14	36.52	$\geq 0.5$	PASS
	HCH	36.04	36.49	$\geq 0.5$	PASS

Test Graphs\_ANT\_1

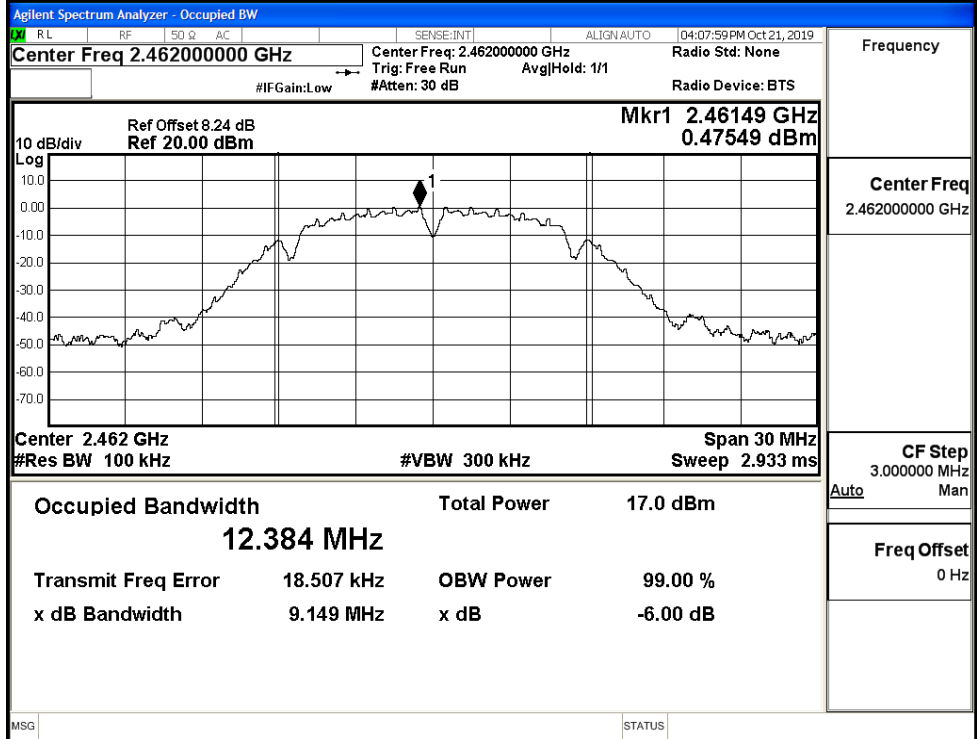
11B/LCH



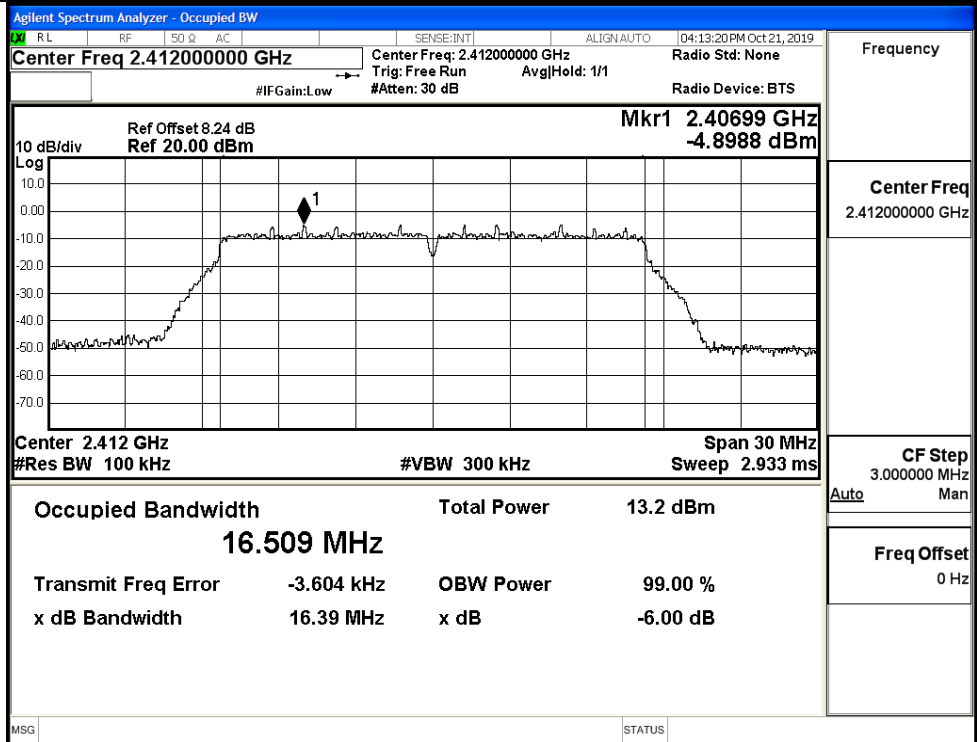
11B/MCH



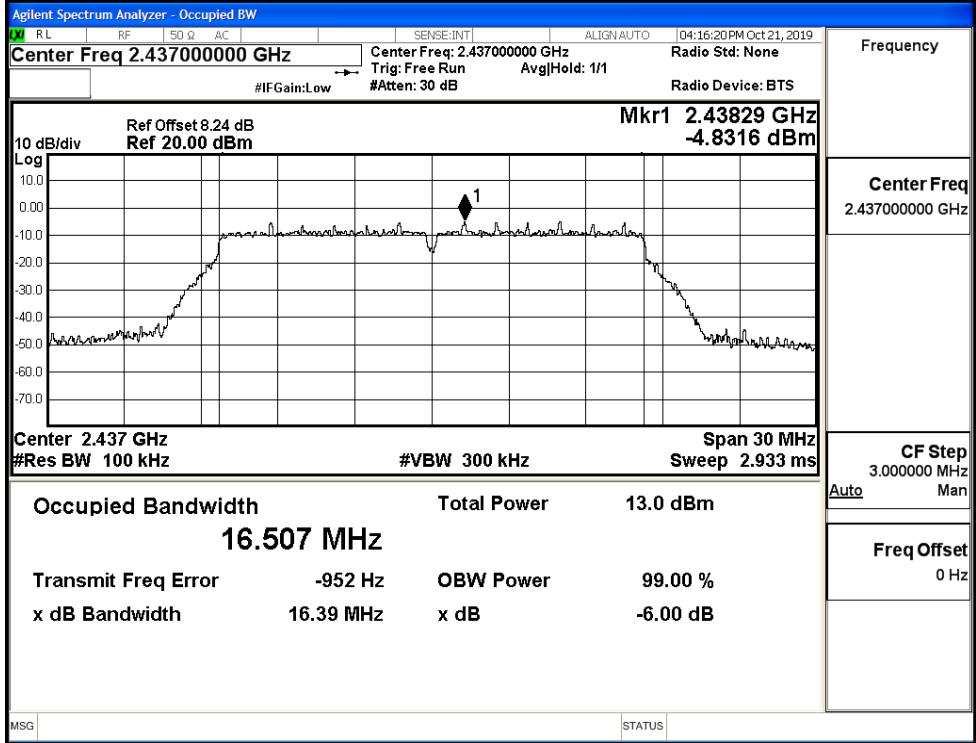
11B/HCH



11G/LCH



11G/MCH



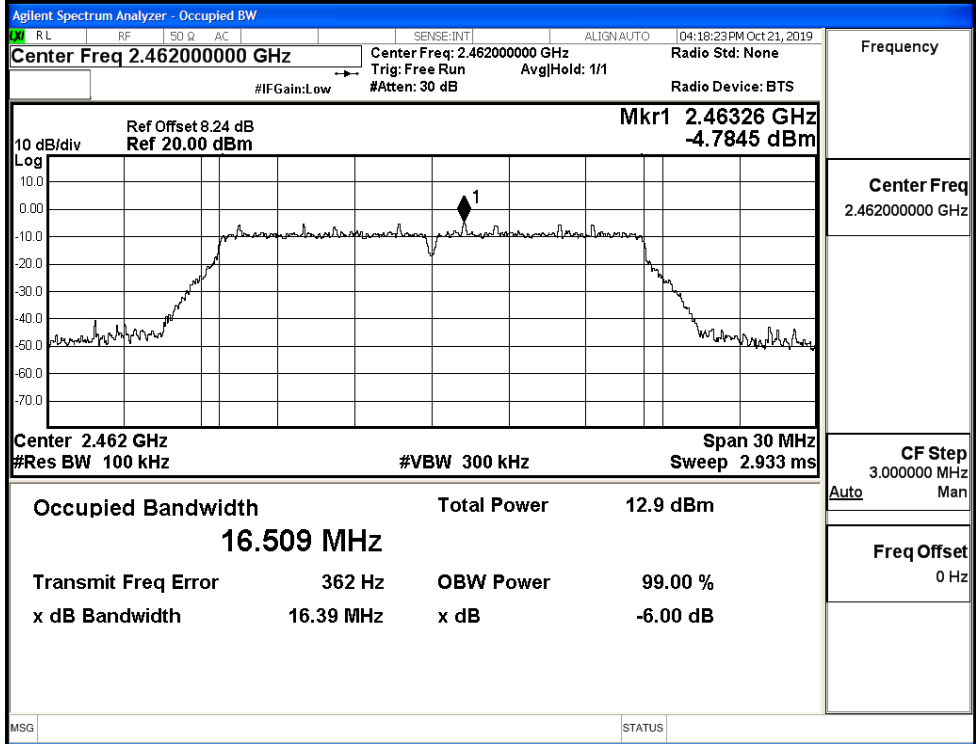
Frequency  
2.43700000 GHz

Center Freq  
2.43700000 GHz

CF Step  
3.000000 MHz  
Auto Man

Freq Offset  
0 Hz

11G/HCH



Frequency  
2.46200000 GHz

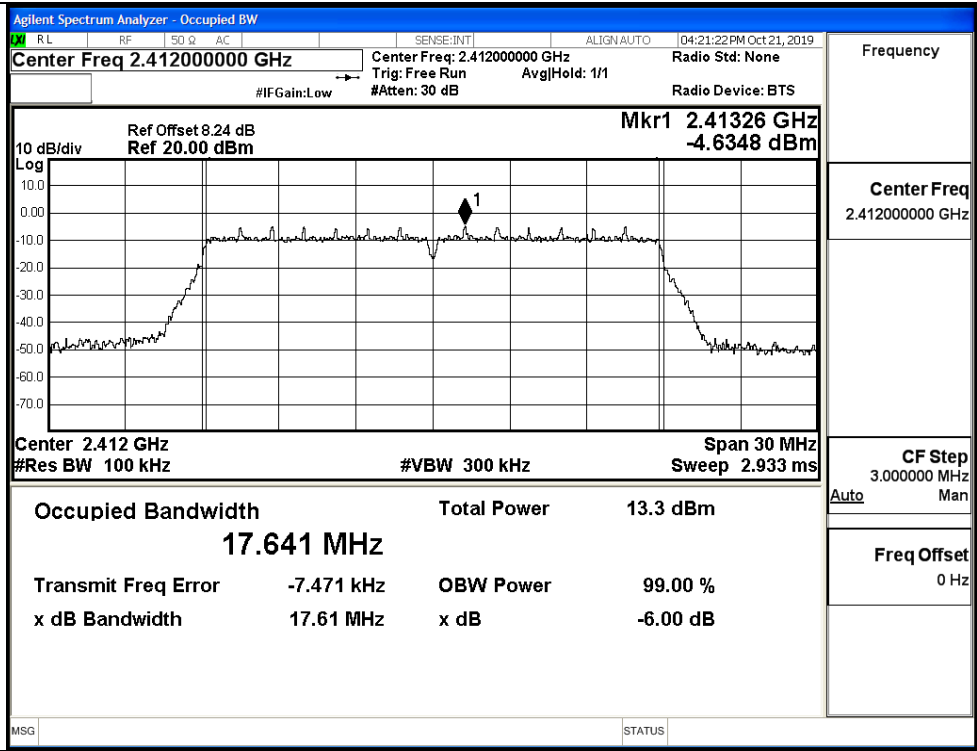
Center Freq  
2.46200000 GHz

CF Step  
3.000000 MHz  
Auto Man

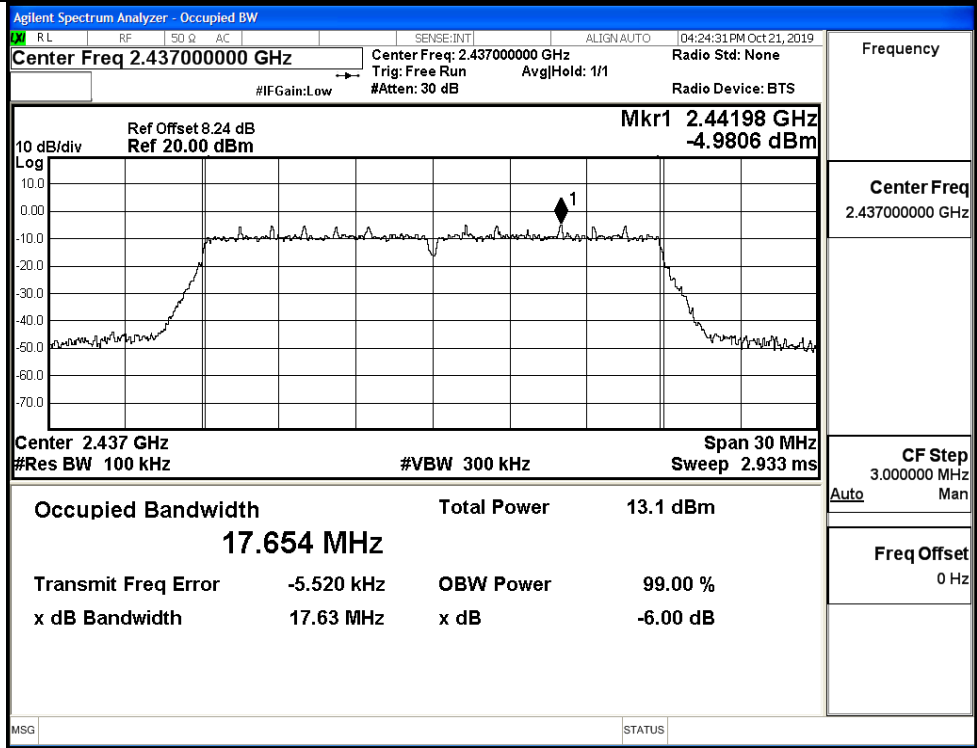
Freq Offset  
0 Hz



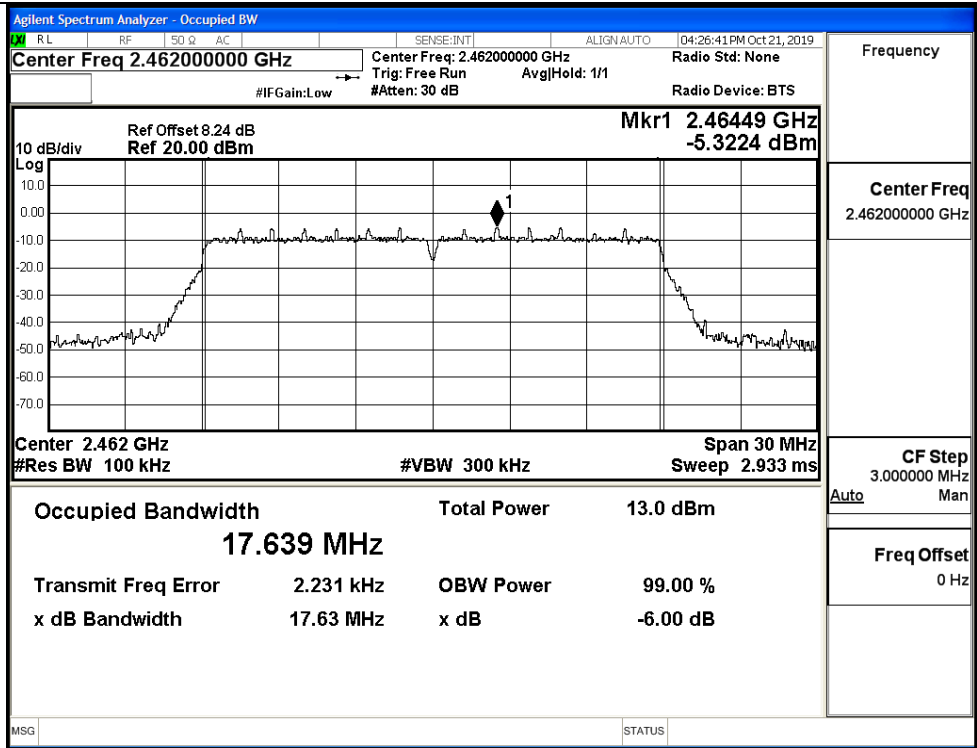
11N20SISO/LCH



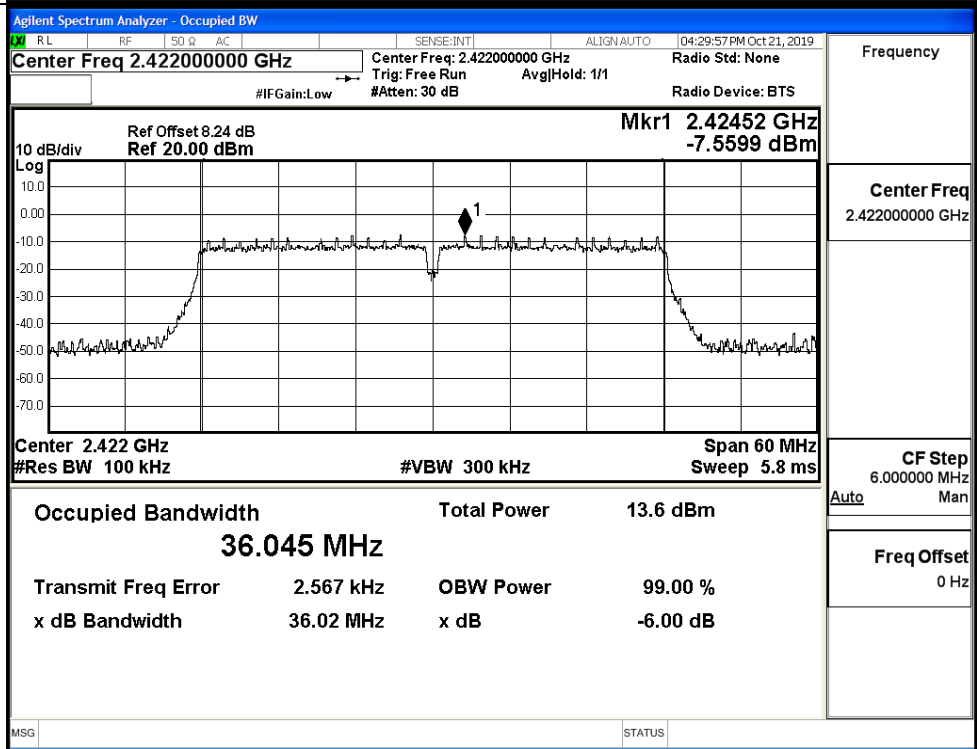
11N20SISO/MCH



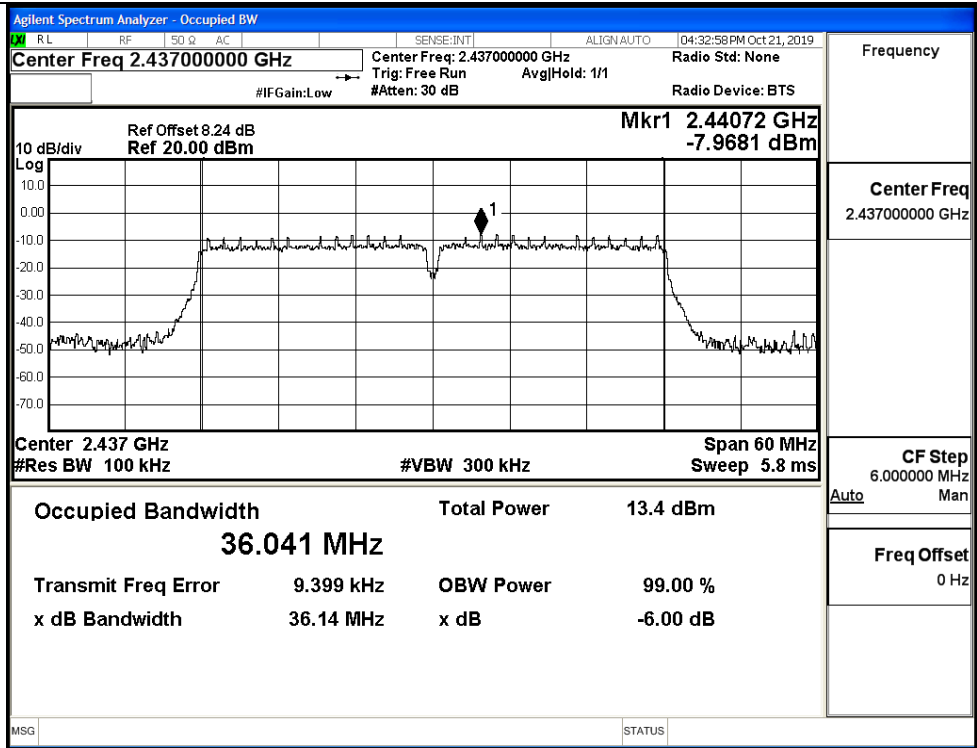
11N20SISO/HCH



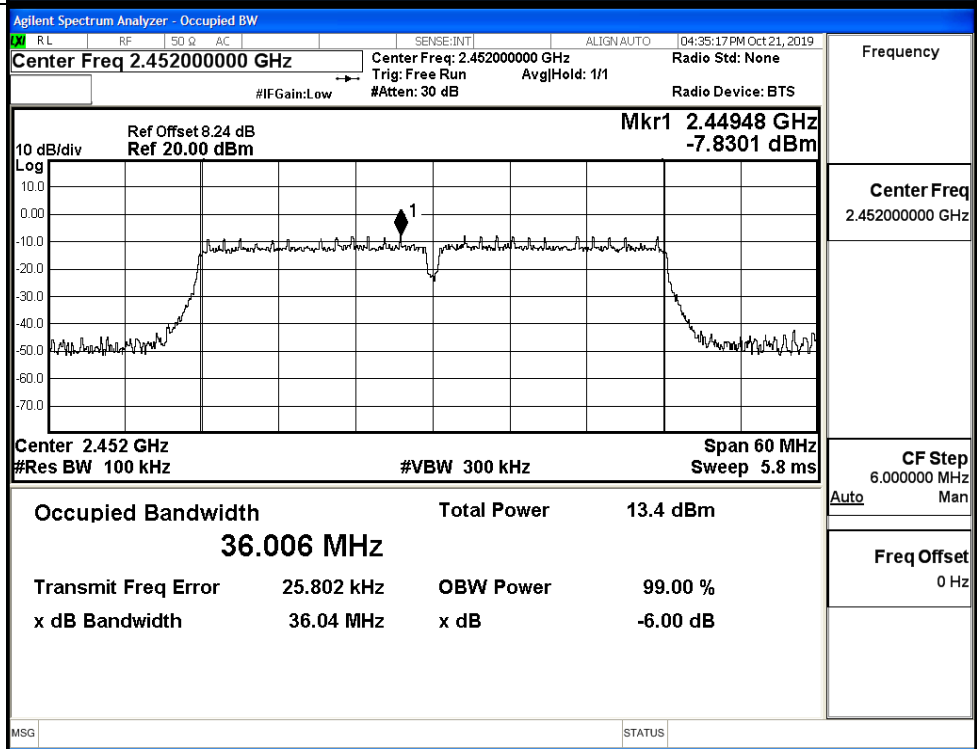
11N40SISO/LCH



11N40SISO/MCH

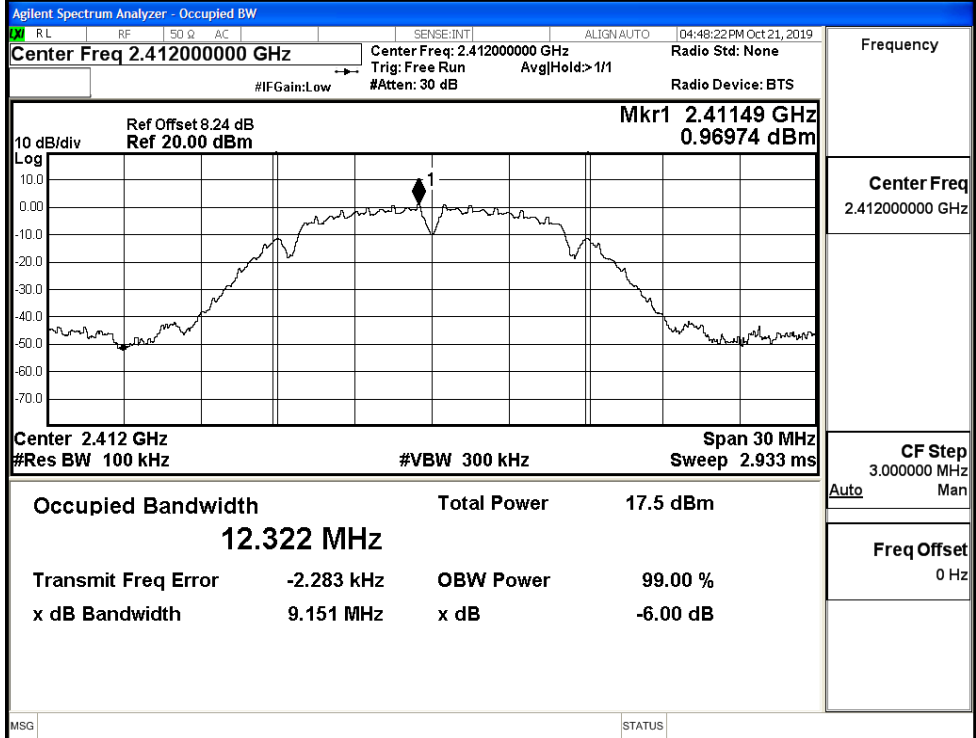


11N40SISO/HCH

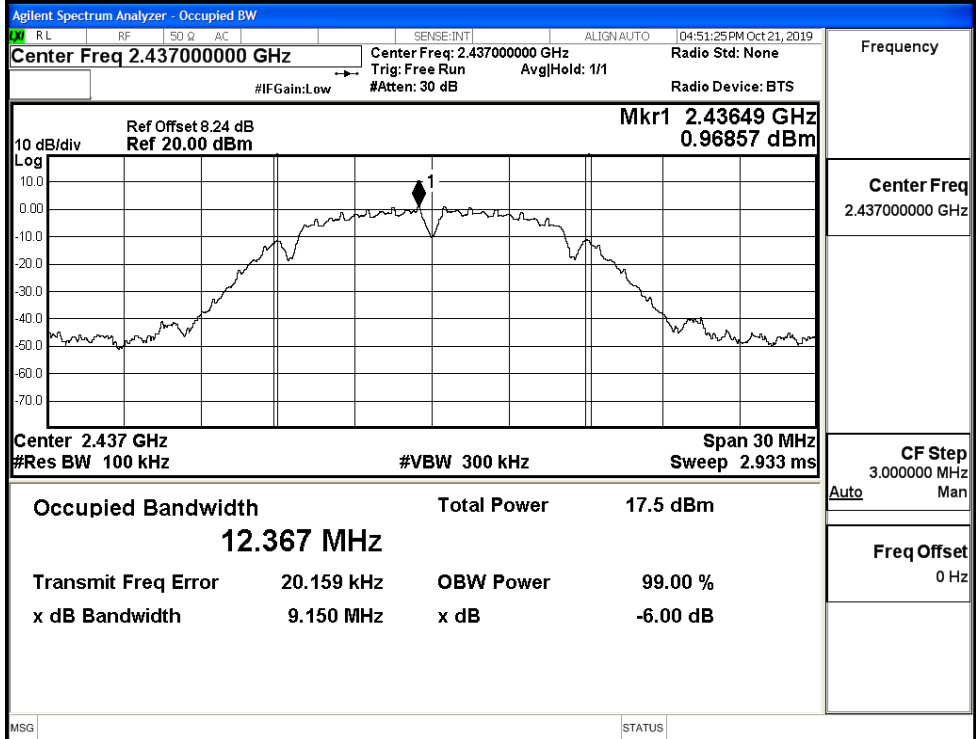


Test Graphs\_ANT\_2

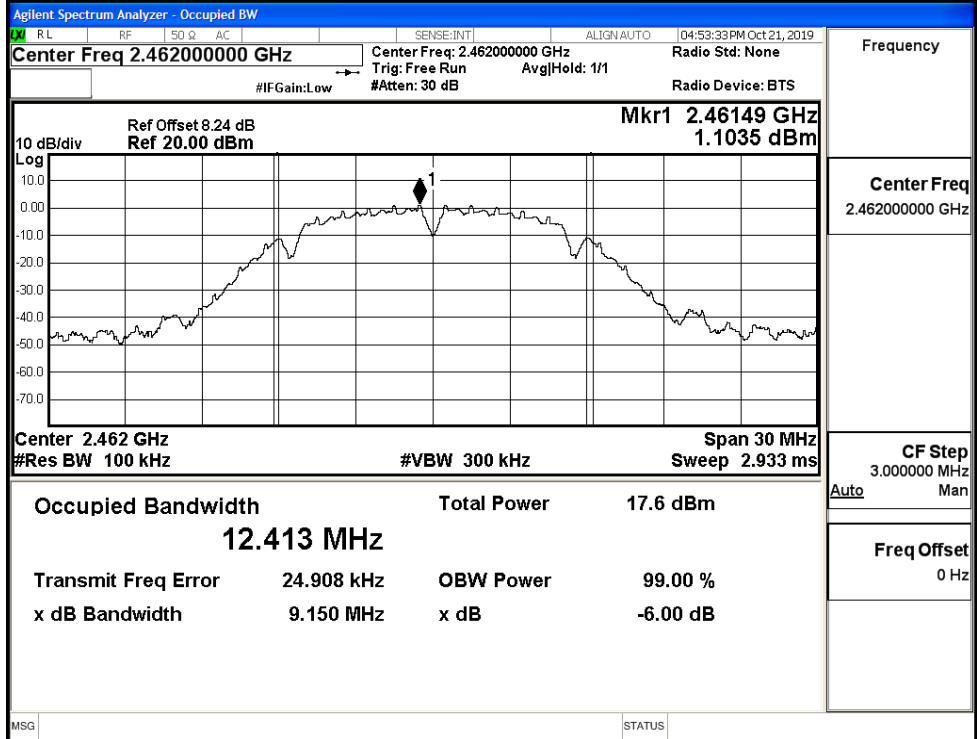
11B/LCH



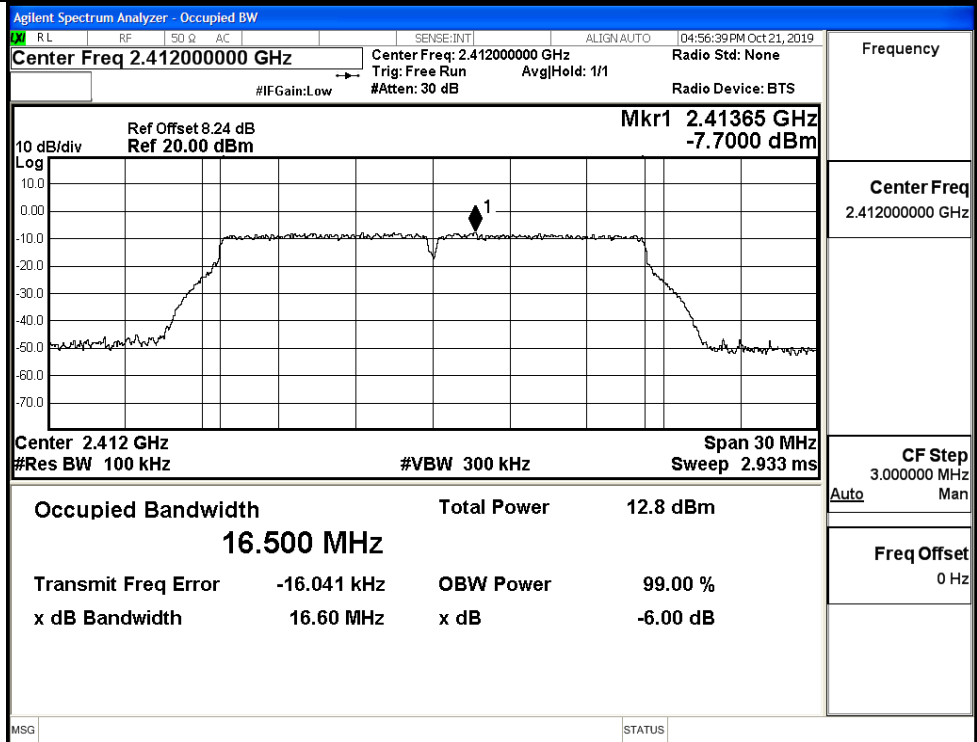
11B/MCH



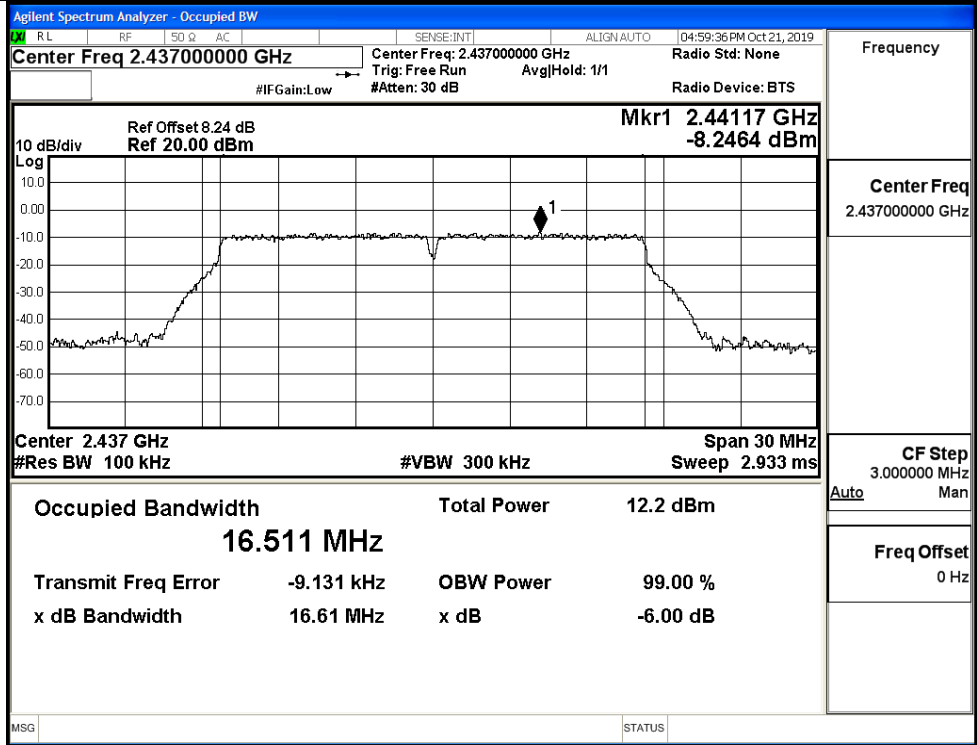
11B/HCH



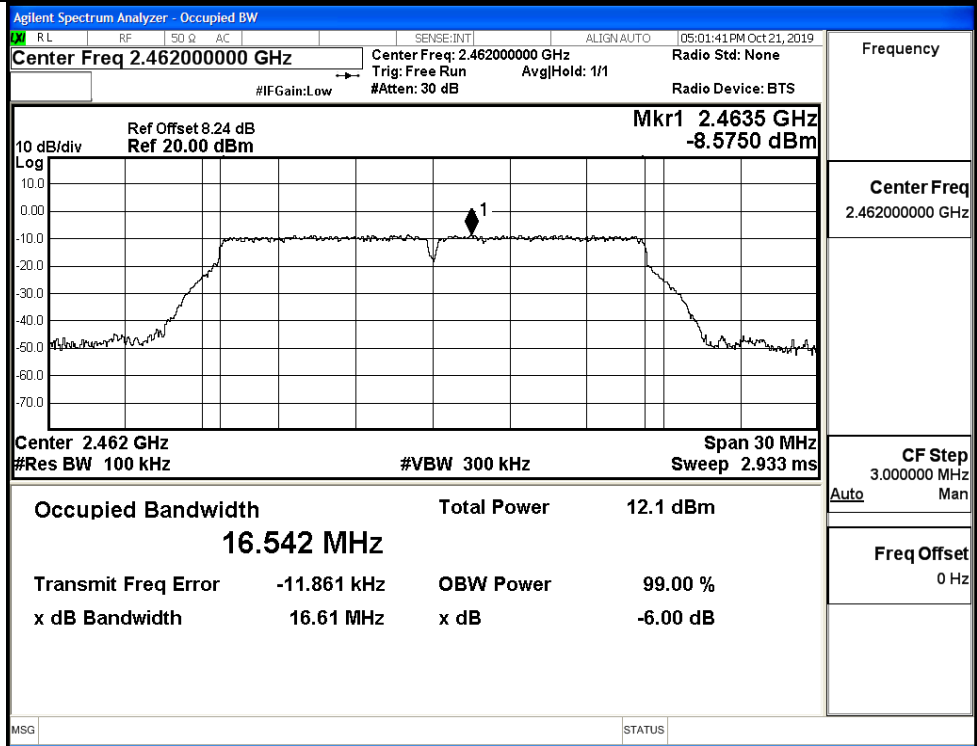
11G/LCH



11G/MCH

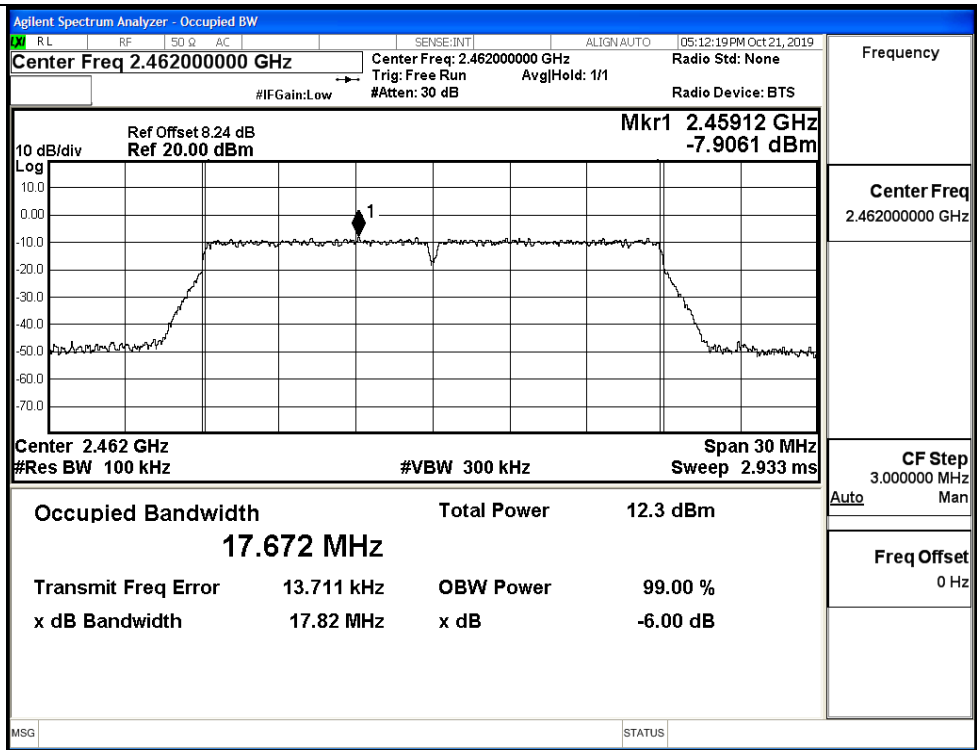


11G/HCH

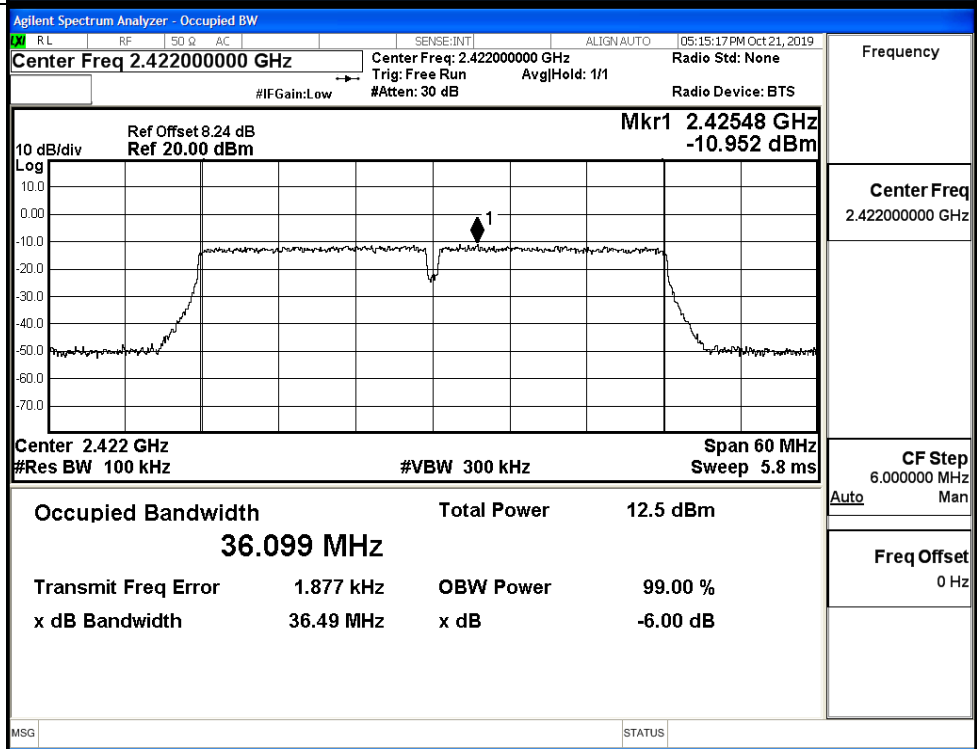


<p>11N20SISO/LCH</p>	<p>Agilent Spectrum Analyzer - Occupied BW</p> <p>RL RF SQ Q AC SENSE:INT ALIGN AUTO 05:04:45 PM Oct 21, 2019</p> <p>Center Freq 2.41200000 GHz Center Freq: 2.41200000 GHz Radio Std: None          Trig: Free Run AvgHold: &gt; 1/1          #IFGain: Low #Atten: 30 dB Radio Device: BTS</p> <p>10 dB/div Ref Offset 8.24 dB Mkr1 2.40912 GHz          Ref 20.00 dBm -7.7401 dBm</p> <p>Center 2.412 GHz Span 30 MHz          #Res BW 100 kHz #VBW 300 kHz Sweep 2.933 ms</p> <p>Occupied Bandwidth 17.674 MHz Total Power 12.3 dBm</p> <p>Transmit Freq Error 10.078 kHz OBW Power 99.00 %          x dB Bandwidth 17.83 MHz x dB -6.00 dB</p> <p>MSG STATUS</p>	<p>Frequency</p> <p>Center Freq 2.41200000 GHz</p> <p>CF Step 3.000000 MHz Auto Man</p> <p>Freq Offset 0 Hz</p>
<p>11N20SISO/MCH</p>	<p>Agilent Spectrum Analyzer - Occupied BW</p> <p>RL RF SQ Q AC SENSE:INT ALIGN AUTO 05:09:52 PM Oct 21, 2019</p> <p>Center Freq 2.43700000 GHz Center Freq: 2.43700000 GHz Radio Std: None          Trig: Free Run AvgHold: 1/1          #IFGain: Low #Atten: 30 dB Radio Device: BTS</p> <p>10 dB/div Ref Offset 8.24 dB Mkr1 2.43415 GHz          Ref 20.00 dBm -8.1476 dBm</p> <p>Center 2.437 GHz Span 30 MHz          #Res BW 100 kHz #VBW 300 kHz Sweep 2.933 ms</p> <p>Occupied Bandwidth 17.678 MHz Total Power 12.2 dBm</p> <p>Transmit Freq Error 10.933 kHz OBW Power 99.00 %          x dB Bandwidth 17.84 MHz x dB -6.00 dB</p> <p>MSG STATUS</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>

11N20SISO/HCH

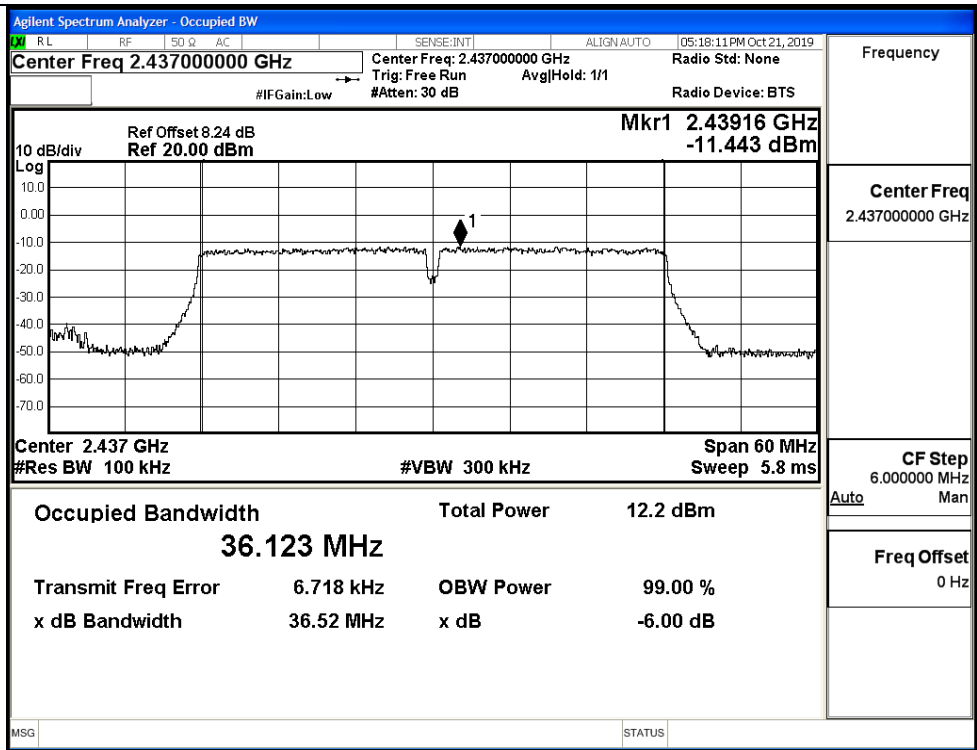


11N40SISO/LCH

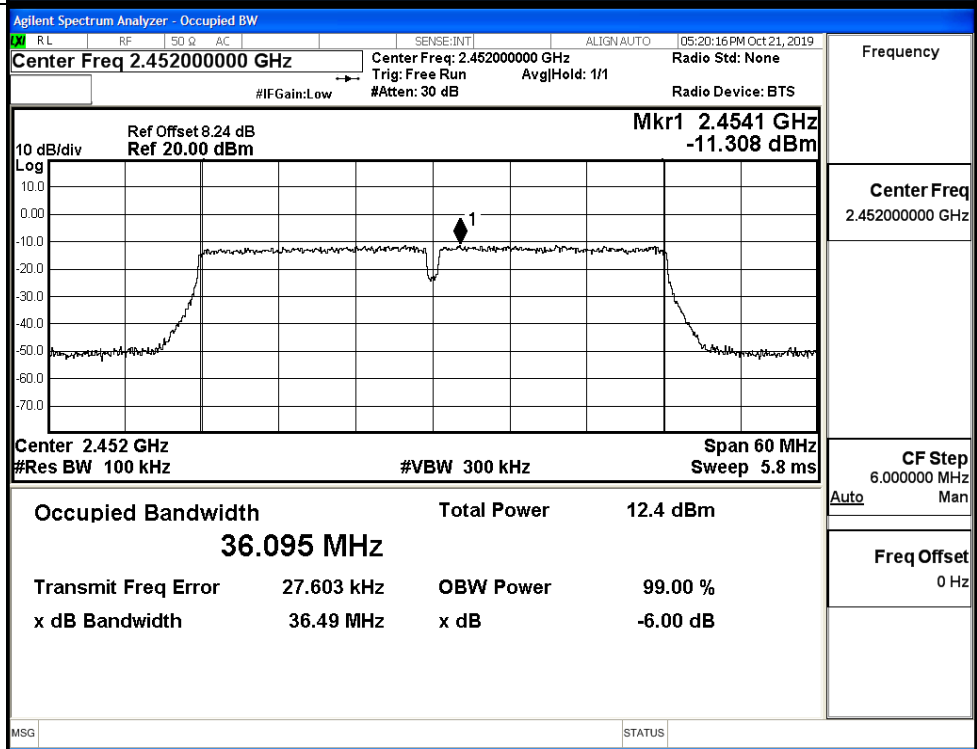




11N40SISO/MCH



11N40SISO/HCH



## A.5 RF Conducted Spurious Emissions

### Ant\_1

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
11B	LCH	0.747	-39.384	-19.253	PASS
	MCH	0.5	-40.574	-19.500	PASS
	HCH	0.418	-39.793	-19.582	PASS
11G	LCH	-4.769	-40.027	-24.769	PASS
	MCH	-5.244	-39.616	-25.244	PASS
	HCH	-5.287	-39.955	-25.287	PASS
11N20 SISO	LCH	-5.072	-39.233	-25.072	PASS
	MCH	-5.23	-40.213	-25.230	PASS
	HCH	-4.826	-40.516	-24.826	PASS
11N40 SISO	LCH	-7.73	-39.533	-27.730	PASS
	MCH	-7.812	-40.498	-27.812	PASS
	HCH	-8.093	-40.139	-28.093	PASS

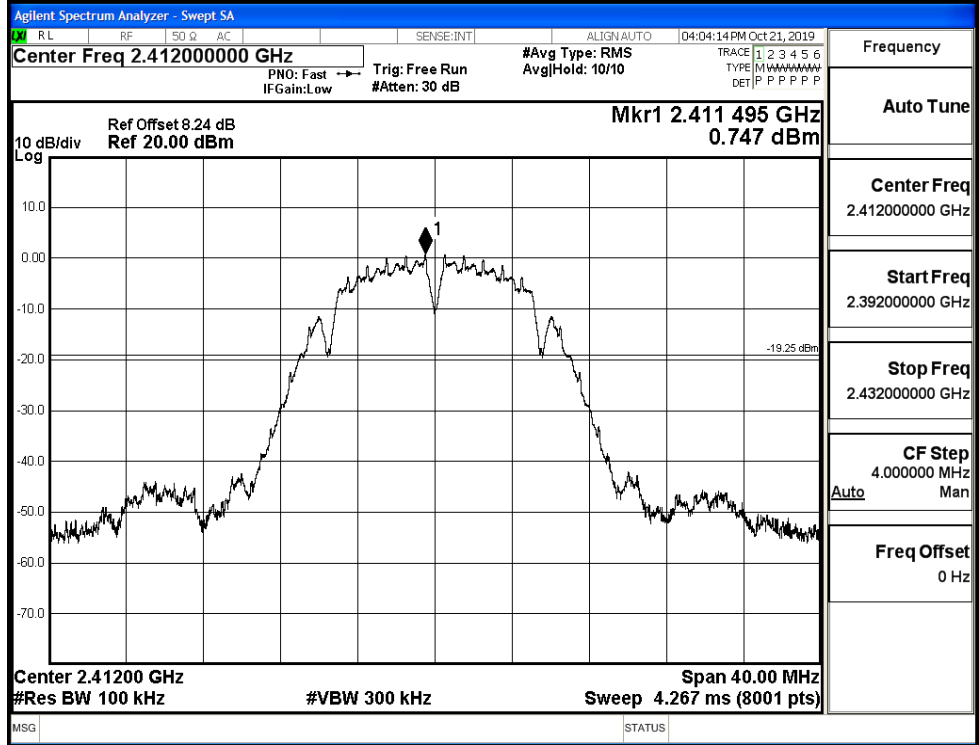
### Ant\_2

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
11B	LCH	0.919	-39.936	-19.081	PASS
	MCH	0.894	-38.940	-19.106	PASS
	HCH	1.025	-39.227	-18.975	PASS
11G	LCH	-7.875	-40.308	-27.875	PASS
	MCH	-8.322	-40.562	-28.322	PASS
	HCH	-8.608	-40.678	-28.608	PASS
11N20 SISO	LCH	-7.806	-38.801	-27.806	PASS
	MCH	-8.035	-39.955	-28.035	PASS
	HCH	-7.817	-39.487	-27.817	PASS
11N40 SISO	LCH	-11.019	-39.232	-31.019	PASS
	MCH	-11.515	-38.963	-31.515	PASS
	HCH	-11.097	-39.767	-31.097	PASS

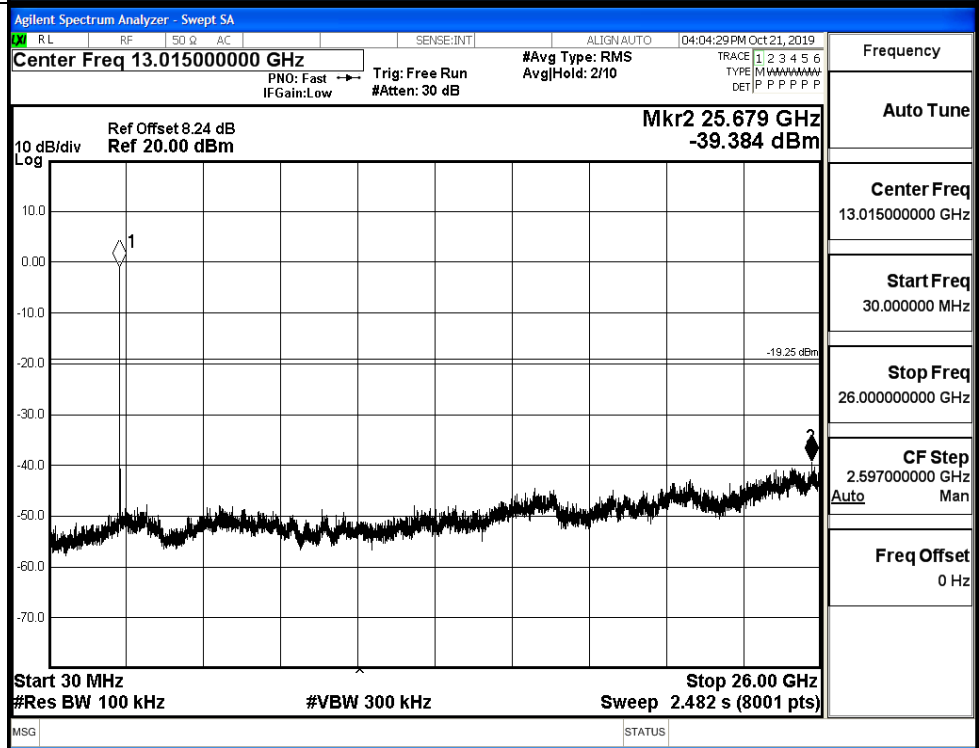
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11B\_LCH\_Graphs

Pref/11B/LCH

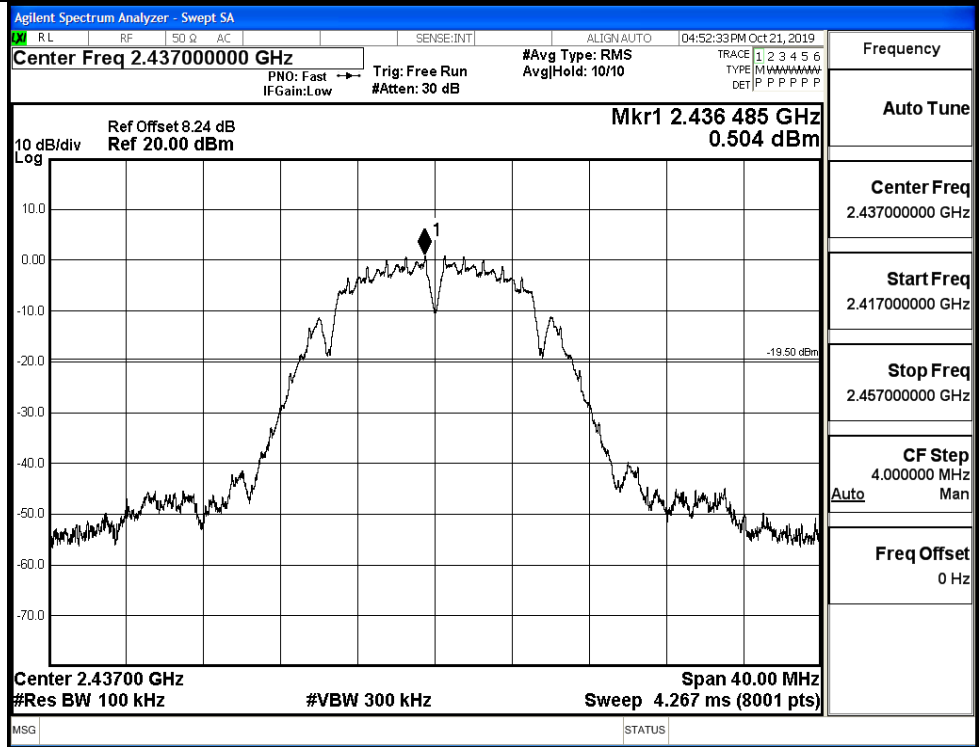


Puw/11B/LCH

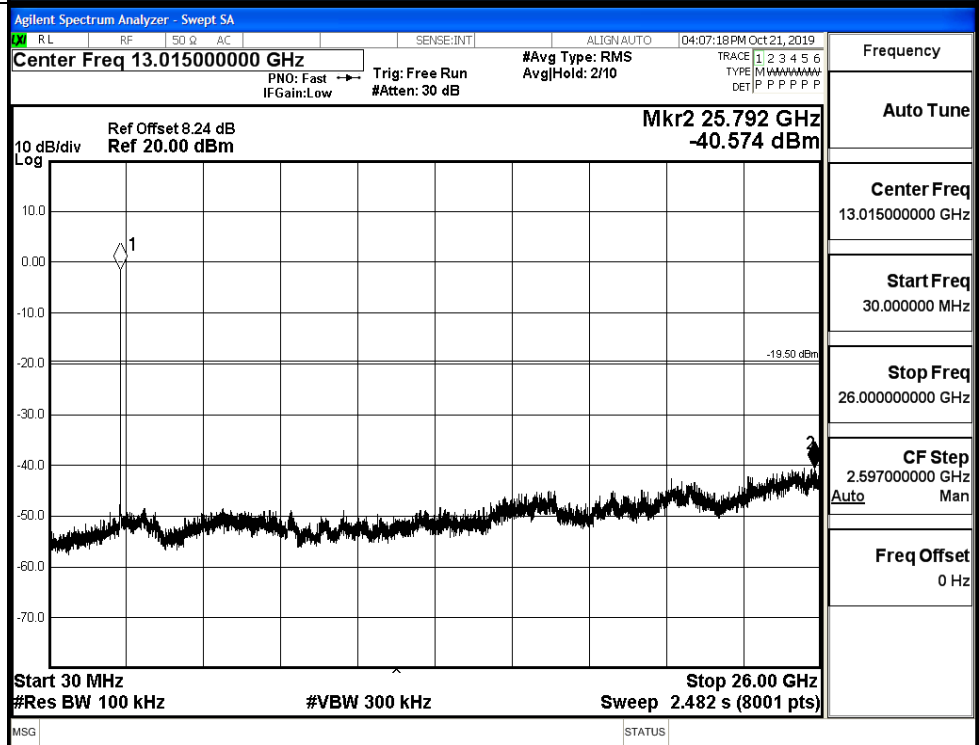


11B\_MCH\_Graphs

Pref/11B/MCH

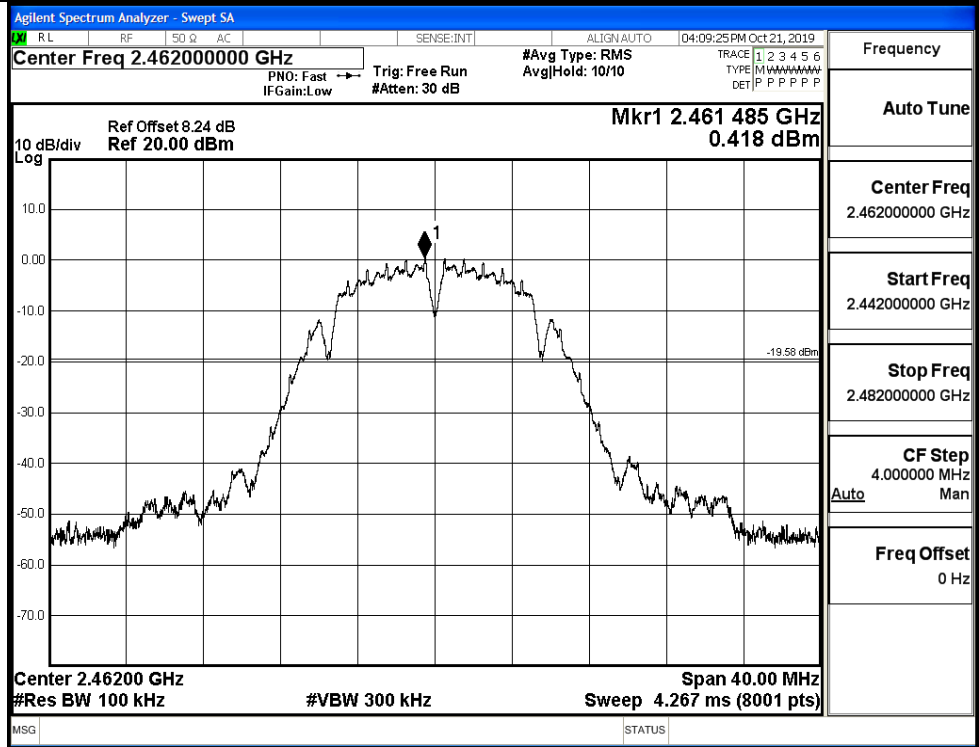


Puw/11B/MCH

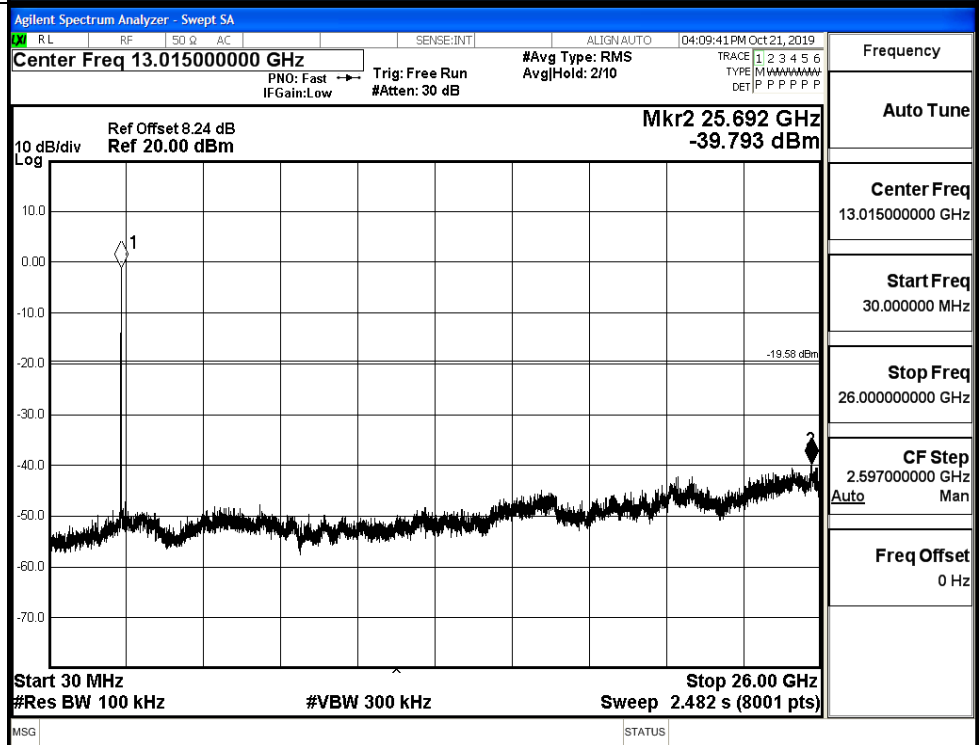


11B\_HCH\_Graphs

Pref/11B/HCH

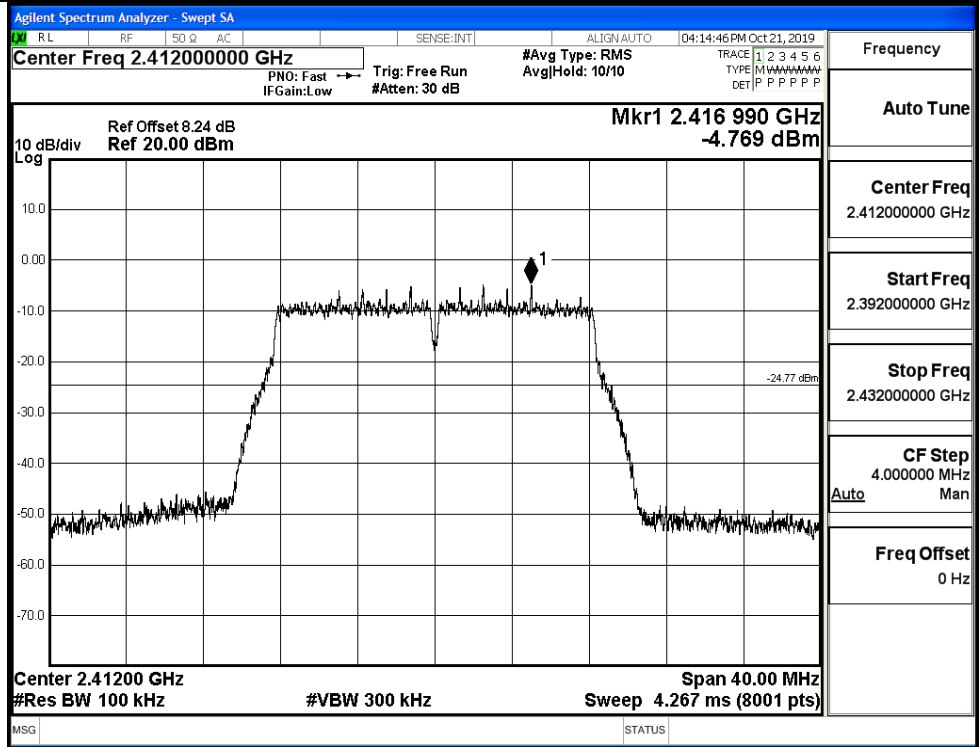


Puw/11B/HCH

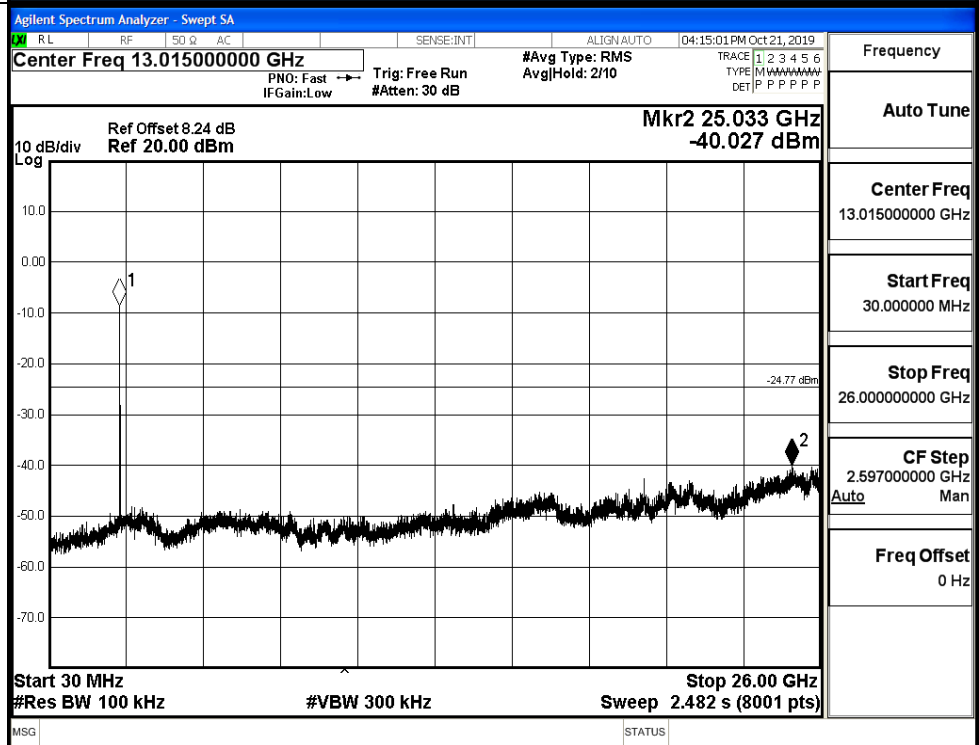


11G\_LCH\_Graphs

Pref/11G/LCH

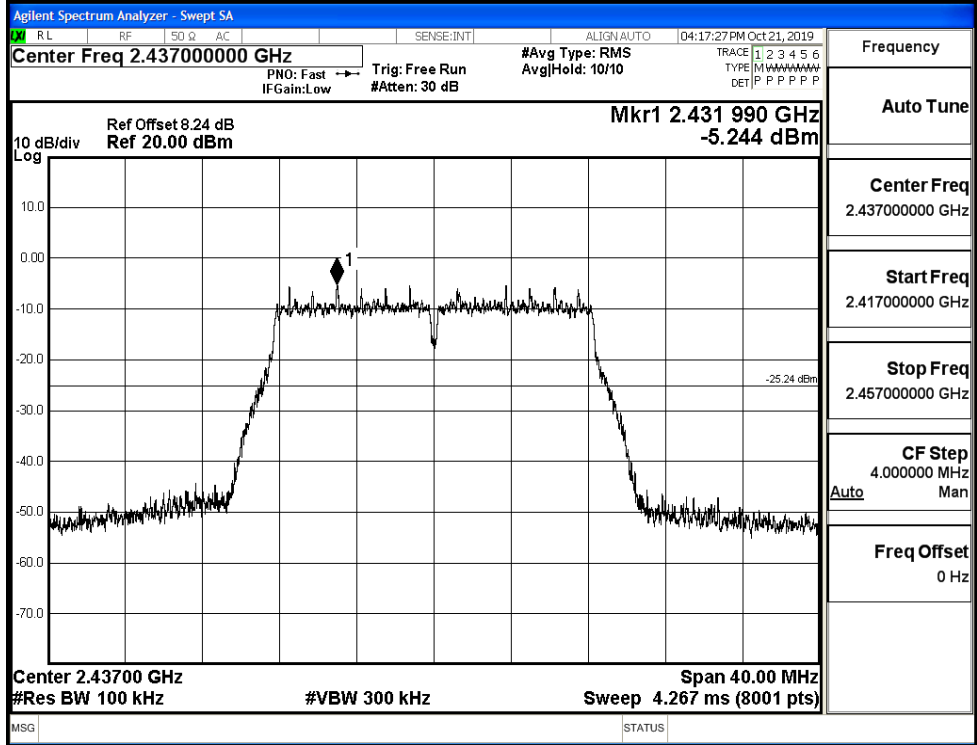


Puw/11G/LCH

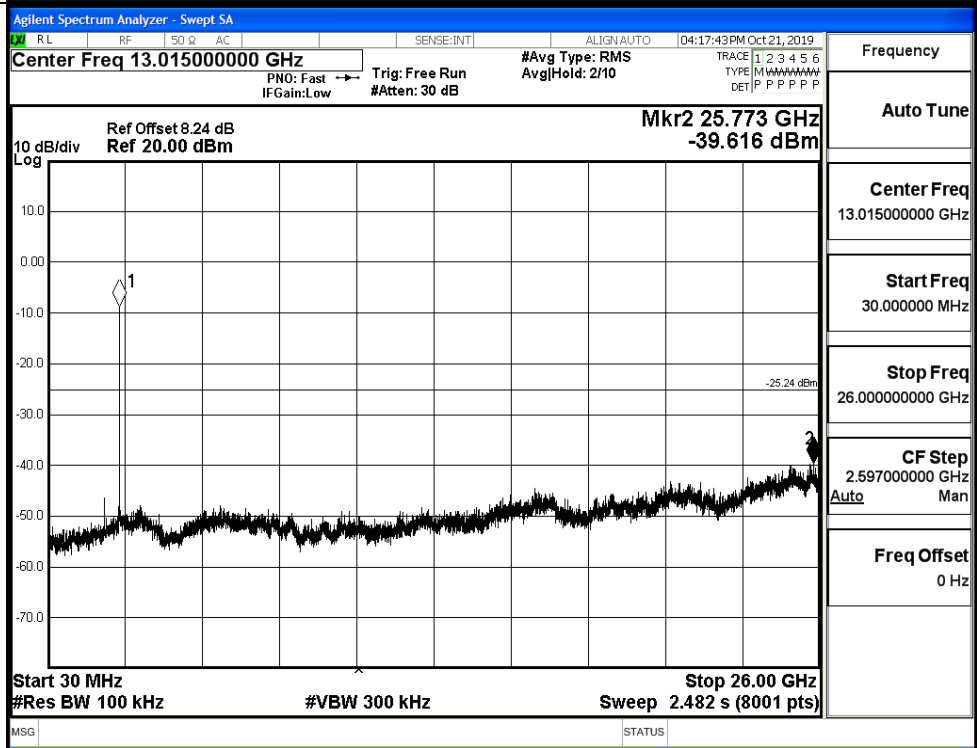


11G\_MCH\_Graphs

Pref/11G/MCH

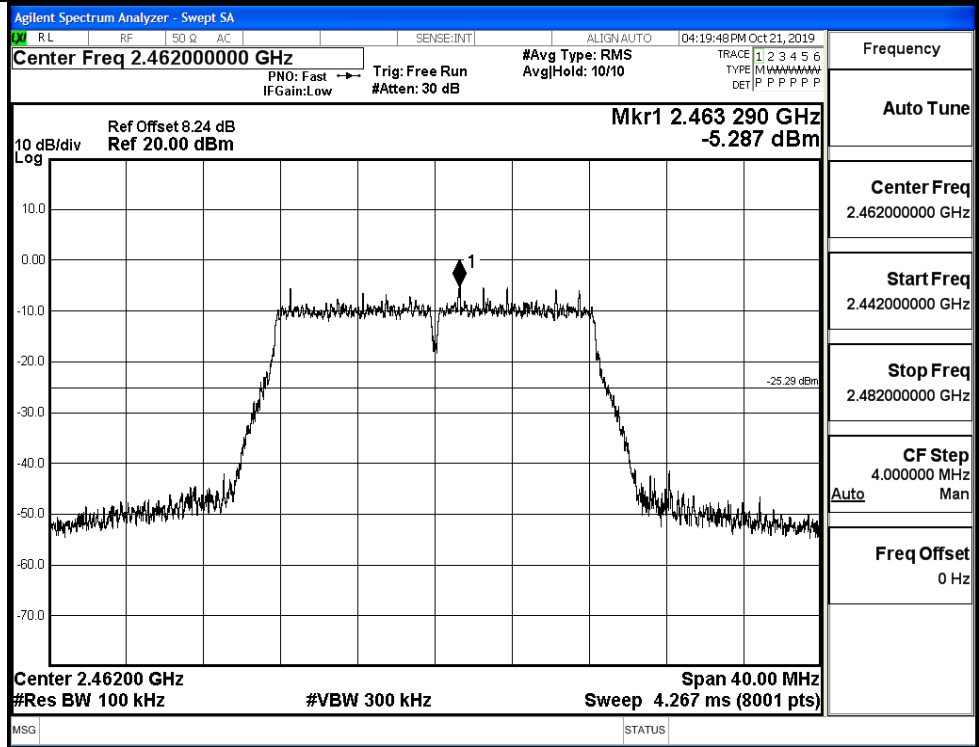


Puw/11G/MCH

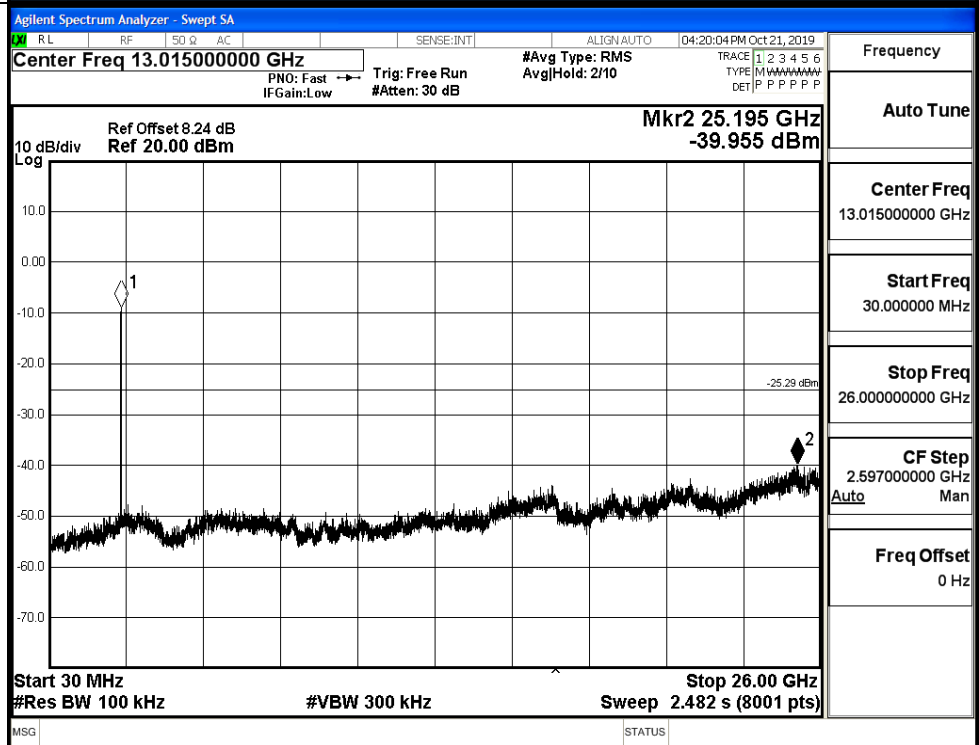


11G\_HCH\_Graphs

Pref/11G/HCH



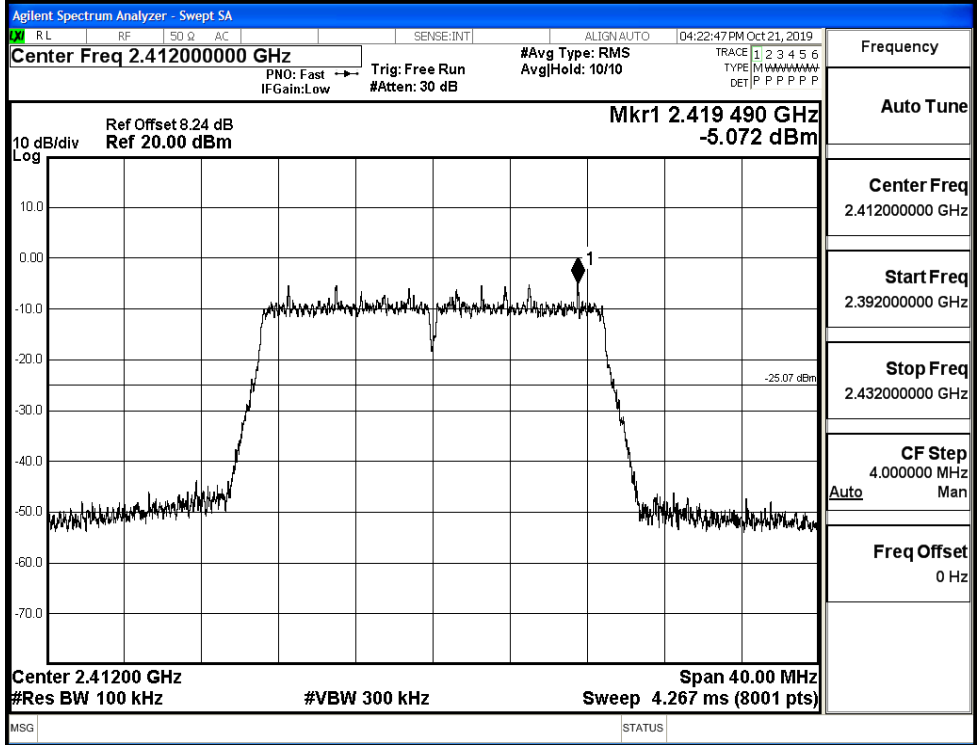
Puw/11G/HCH



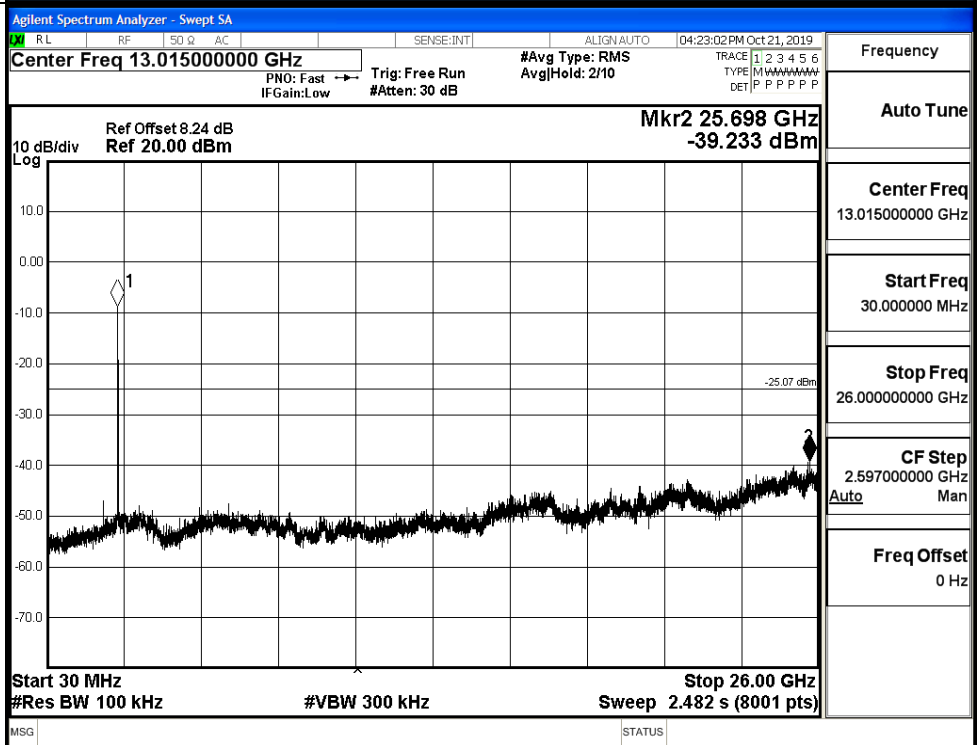


11N20SISO\_LCH\_Graphs

Pref/11N20SIS  
O/LCH

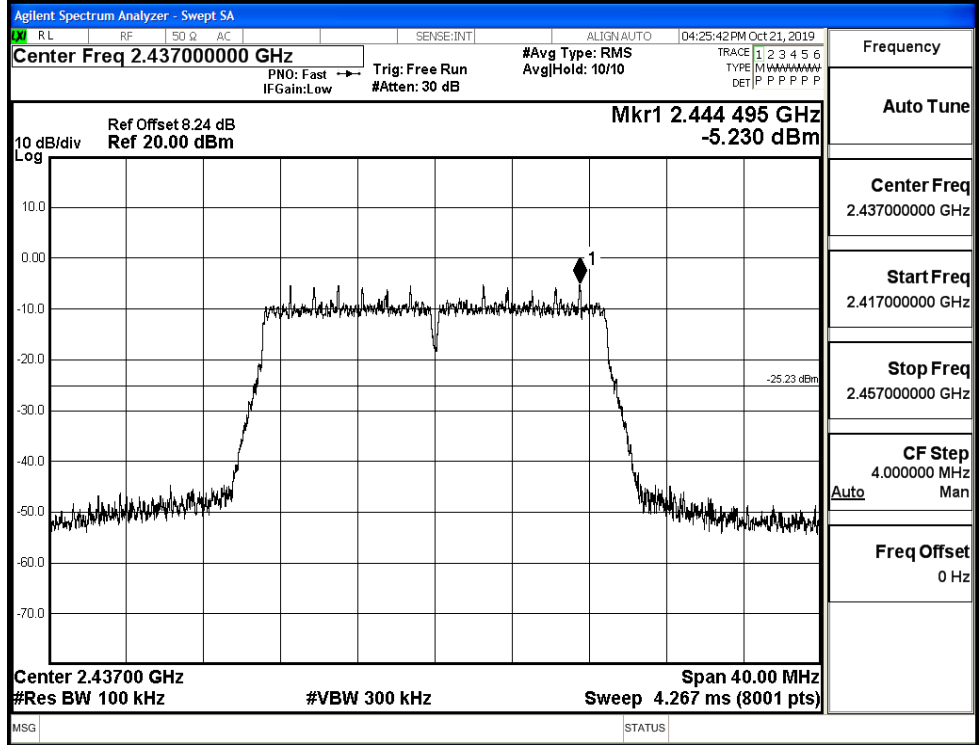


Puw/11N20  
SISO/LCH

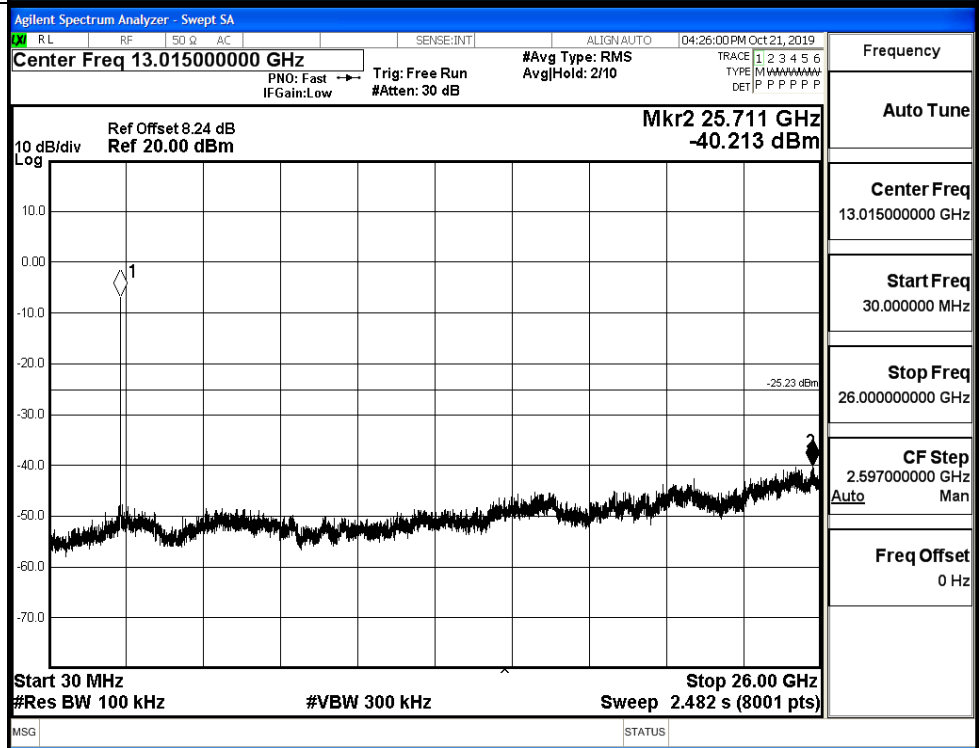


11N20SISO\_MCH\_Graphs

Pref/11N20  
SISO/MCH

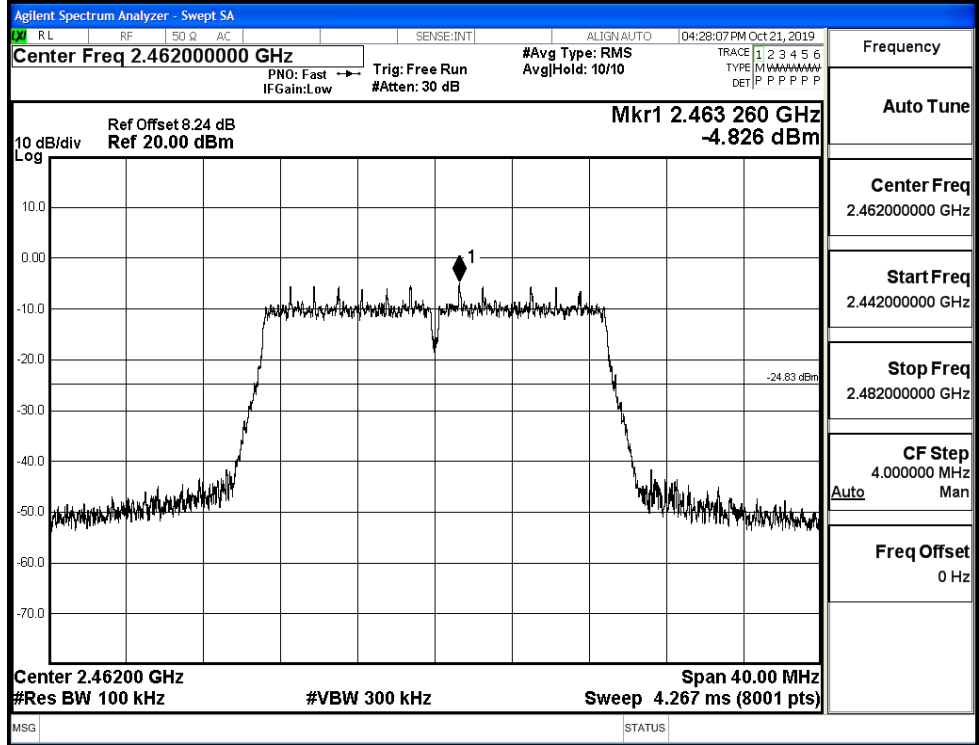


Puw/11N20  
SISO/MCH

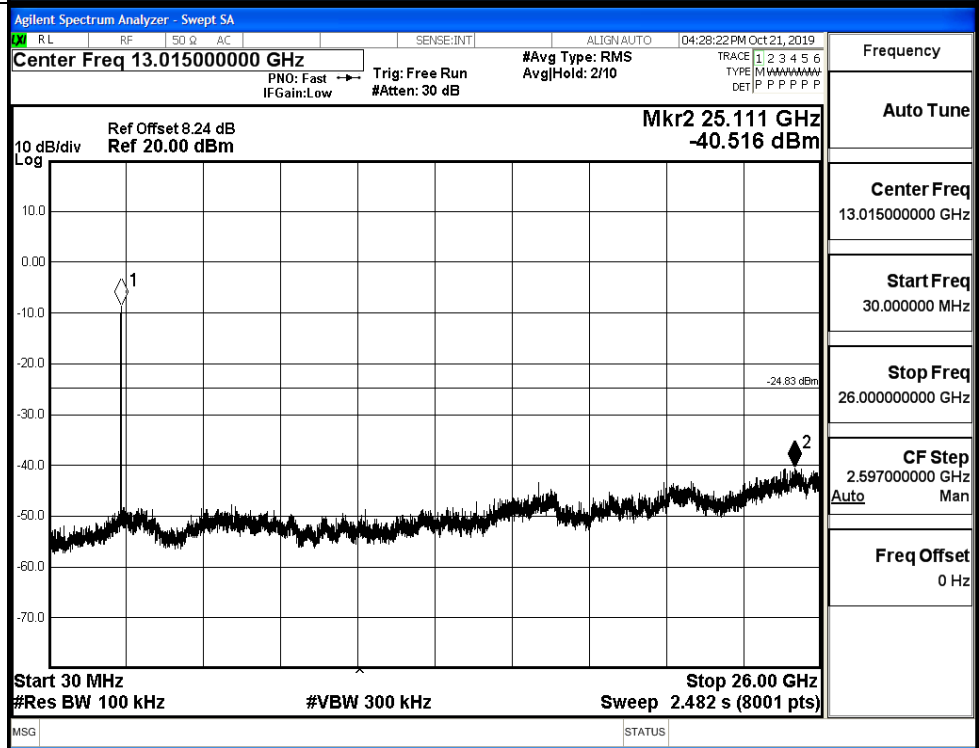


11N20SISO\_HCH\_Graphs

Pref/11N20  
SISO/HCH

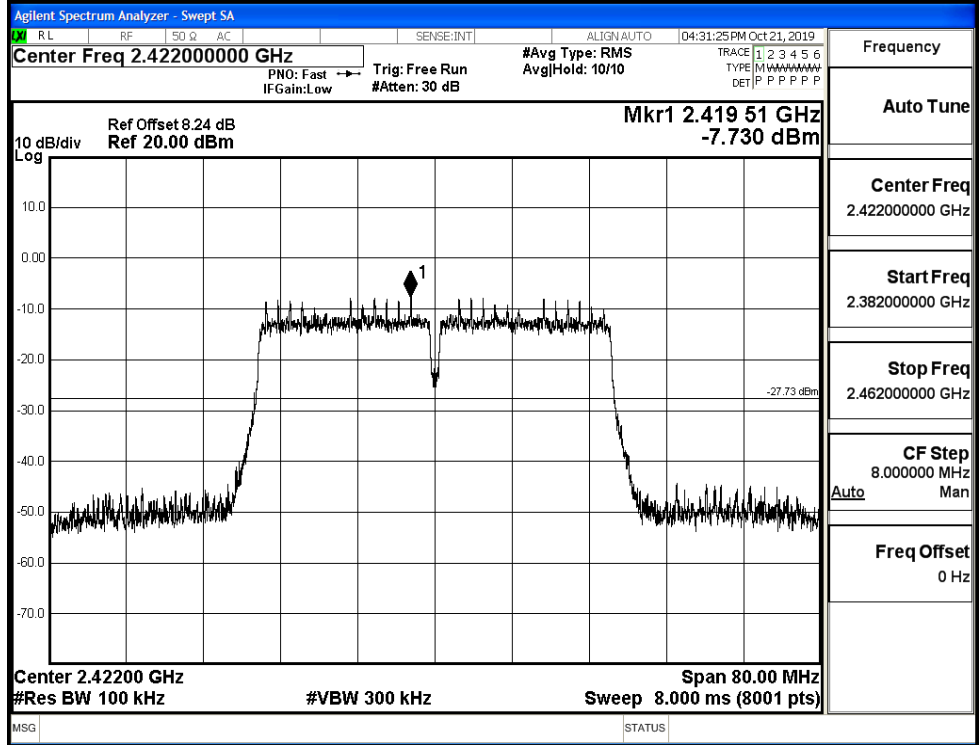


Puw/11N20  
SISO/HCH

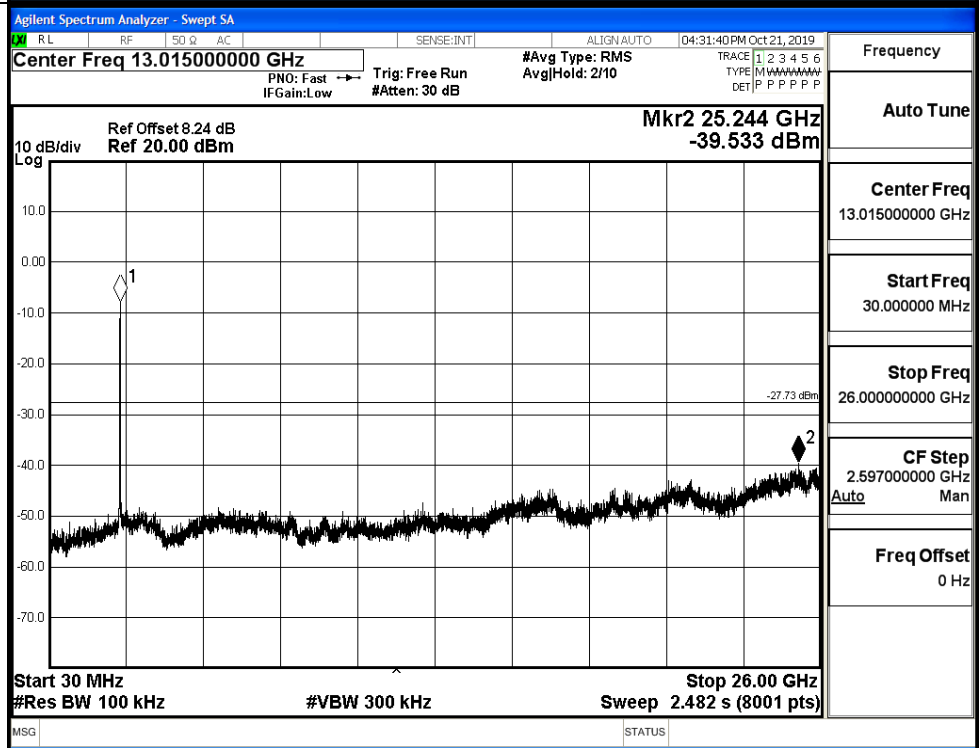


11N40SISO\_LCH\_Graphs

Pref/11N40  
SISO/LCH

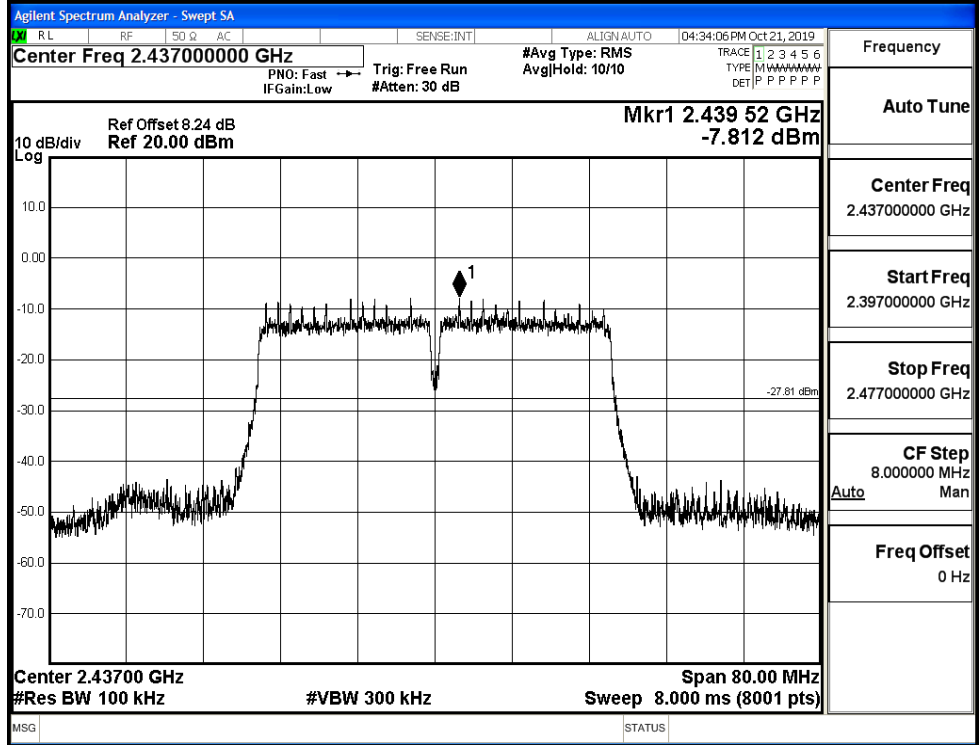


Puw/11N40  
SISO/LCH

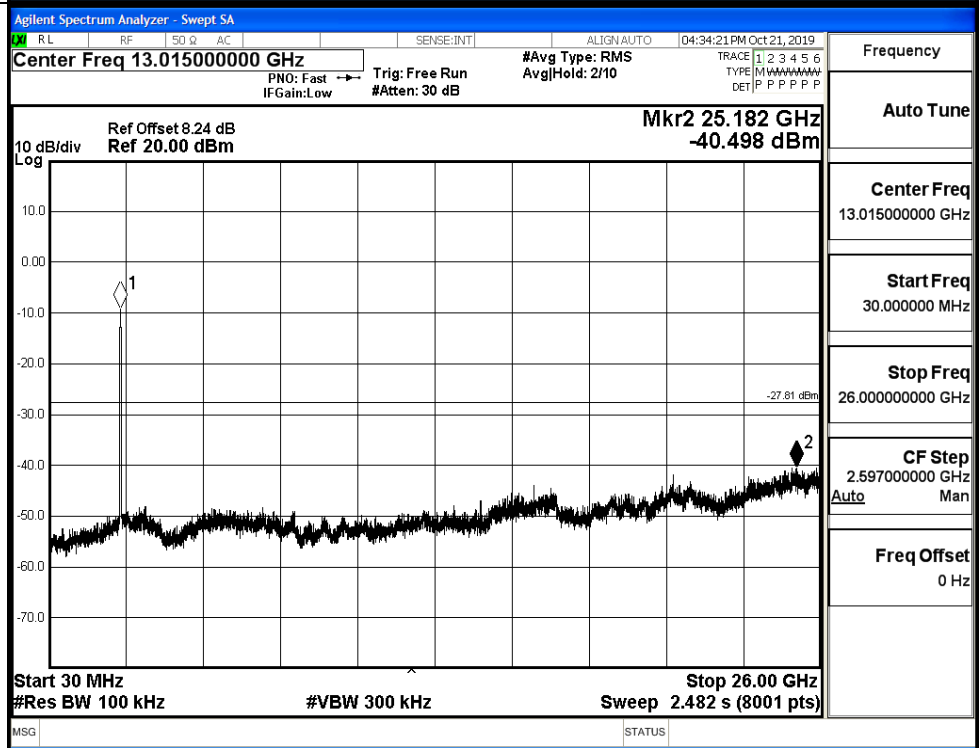


11N40SISO\_MCH\_Graphs

Pref/11N40  
SISO/MCH

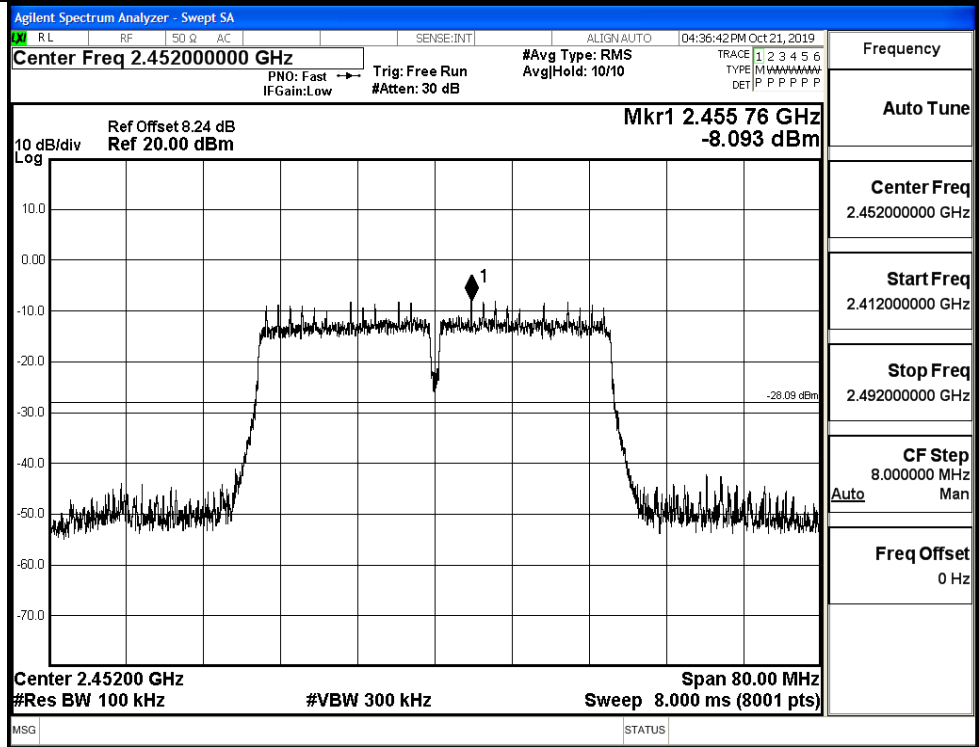


Puw/11N40  
SISO/MCH

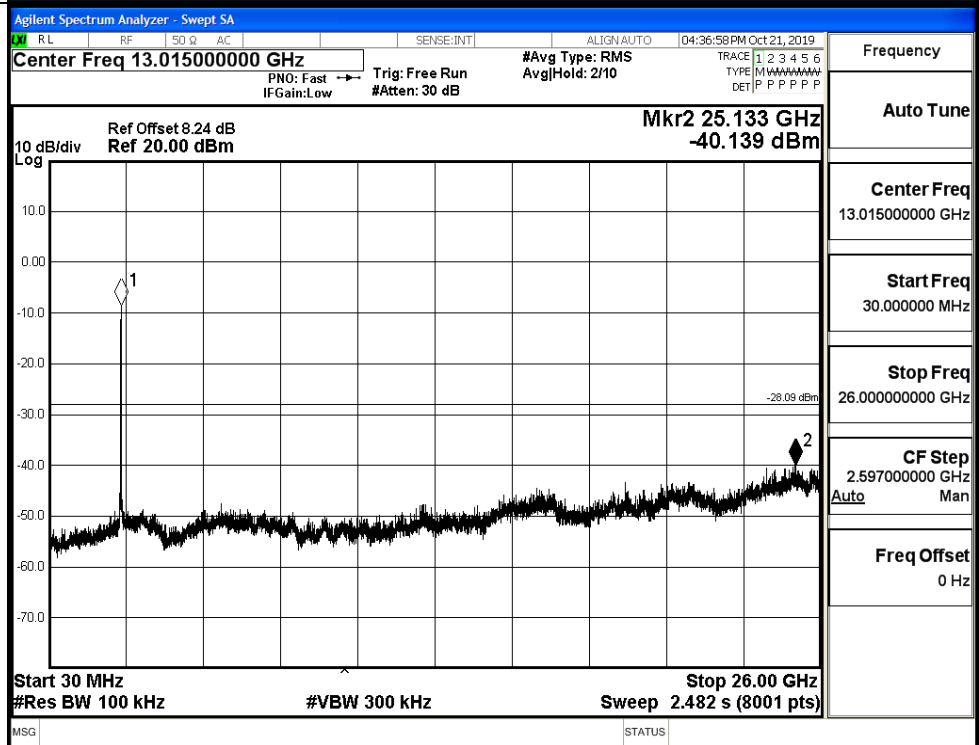


11N40SISO\_HCH\_Graphs

Pref/11N40  
SISO/HCH



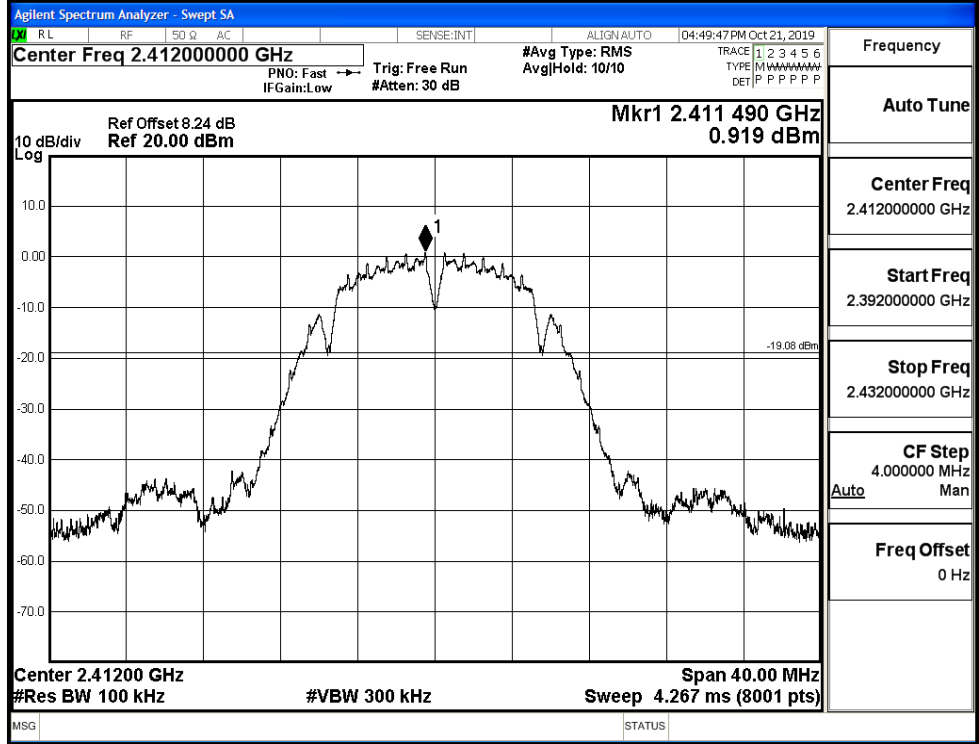
Puw/11N40  
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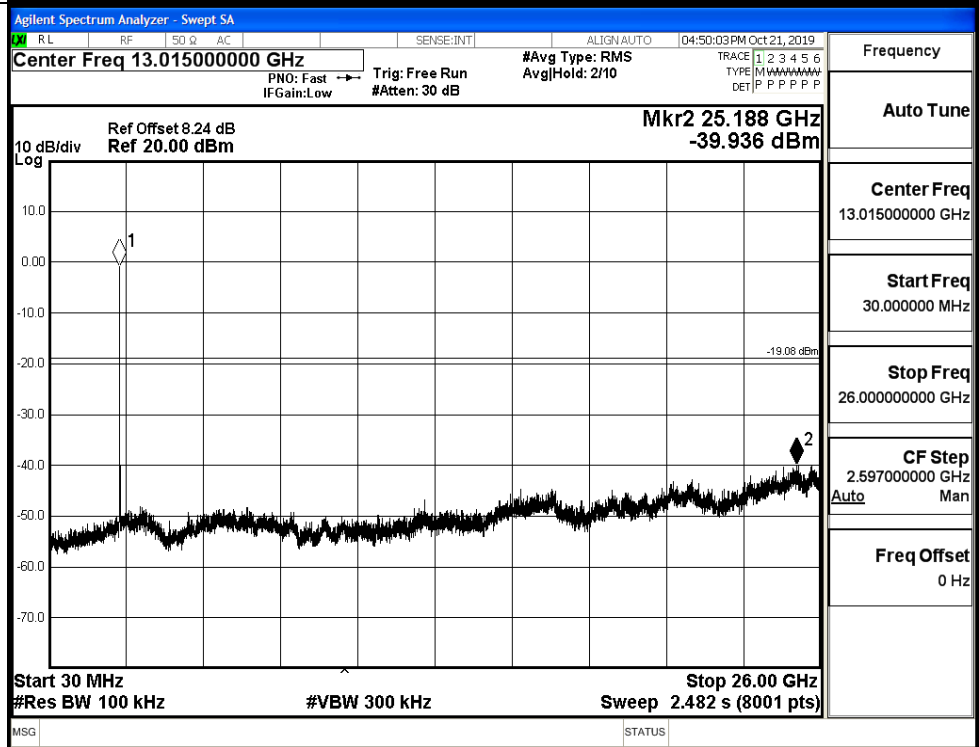
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11B\_LCH\_Graphs

Pref/11B/LCH

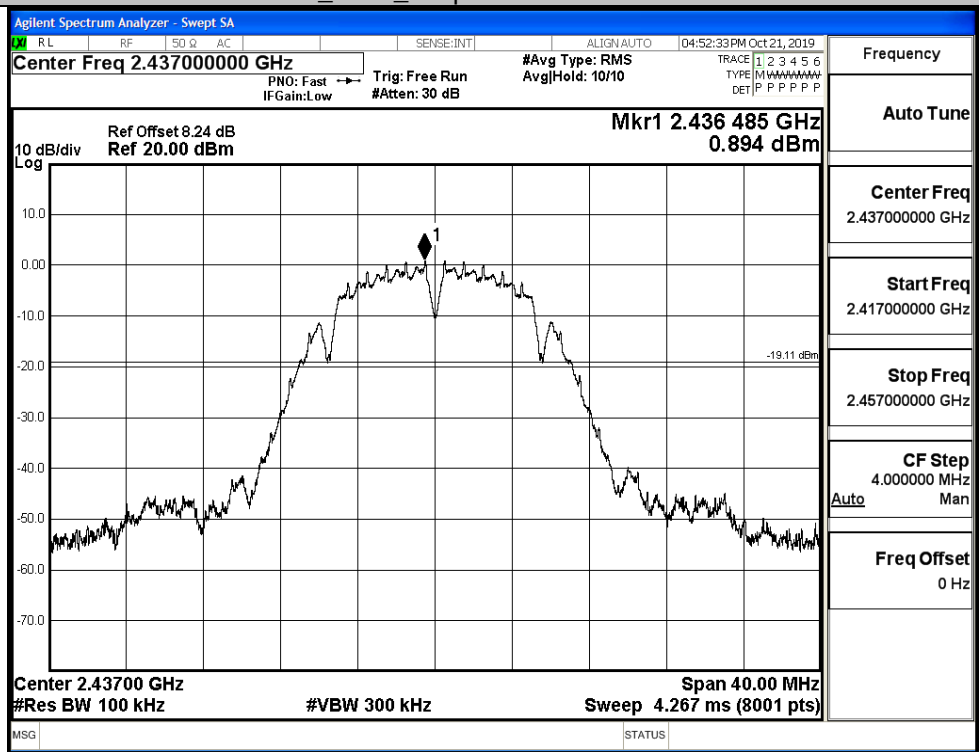


Puw/11B/LCH

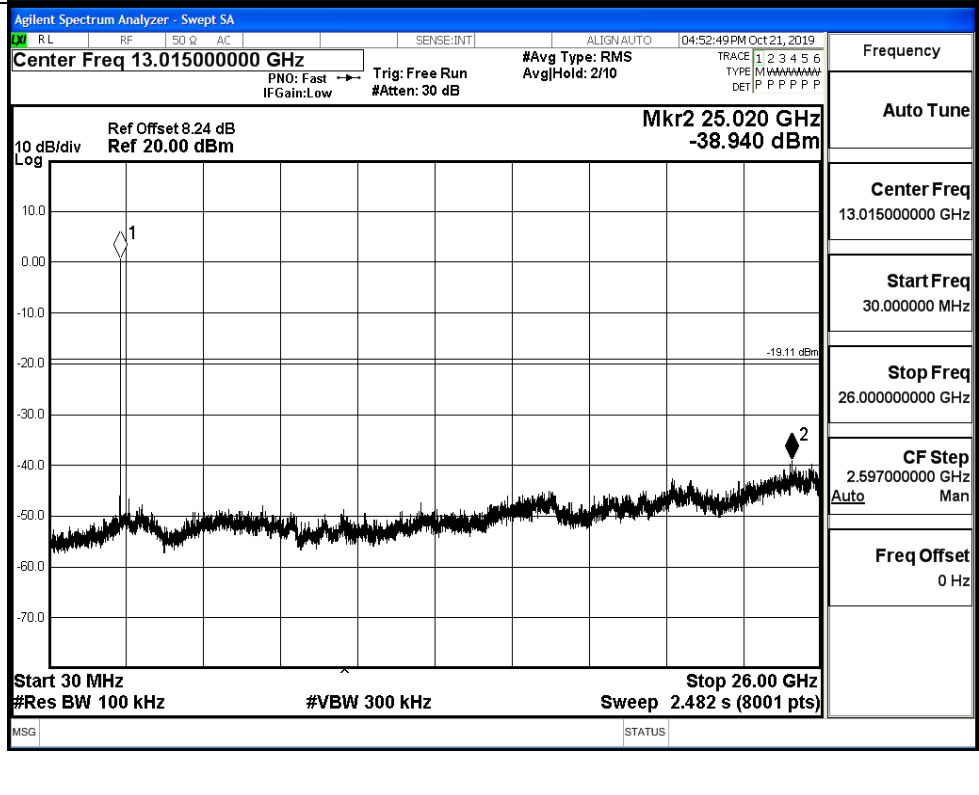


11B\_MCH\_Graphs

Pref/11B/MCH



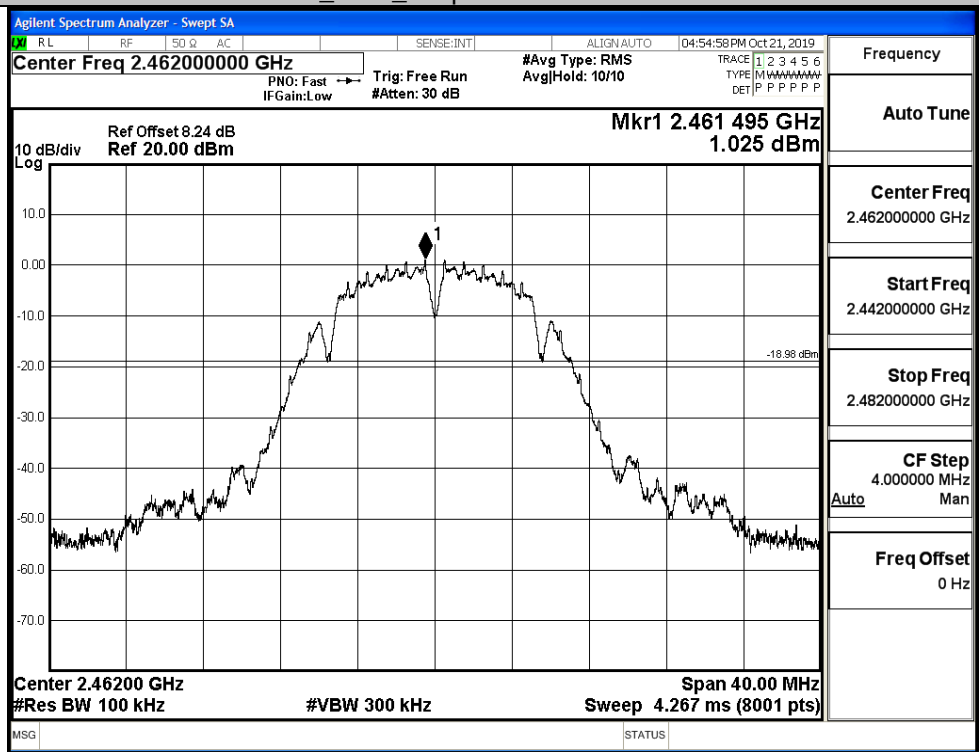
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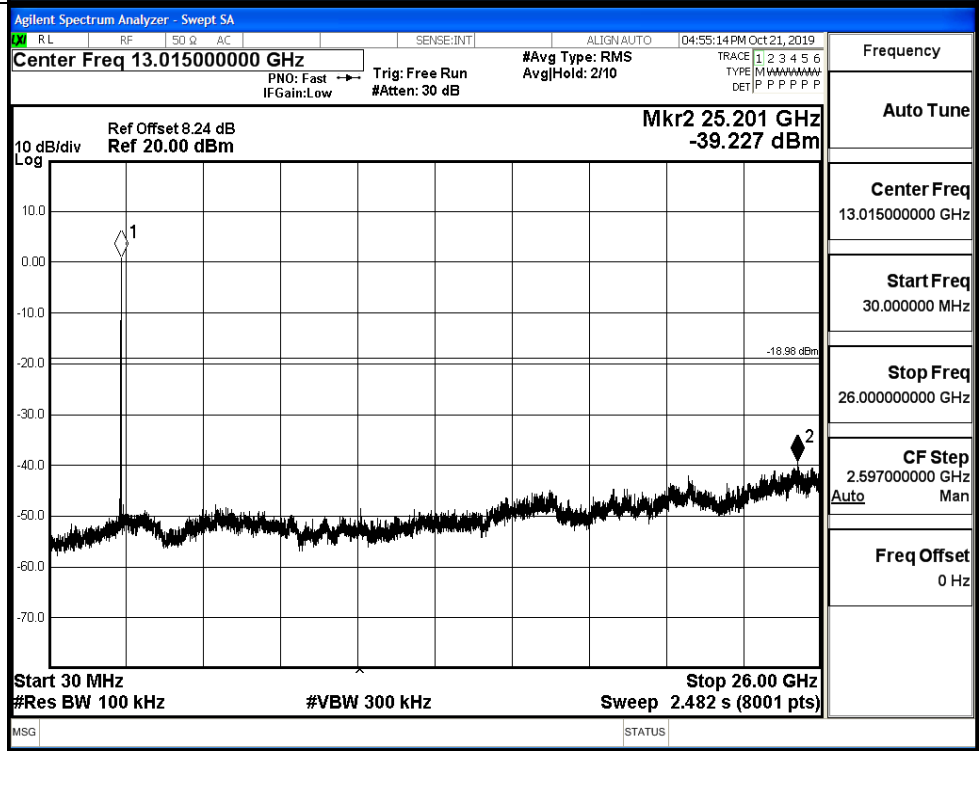


11B\_HCH\_Graphs

Pref/11B/HCH

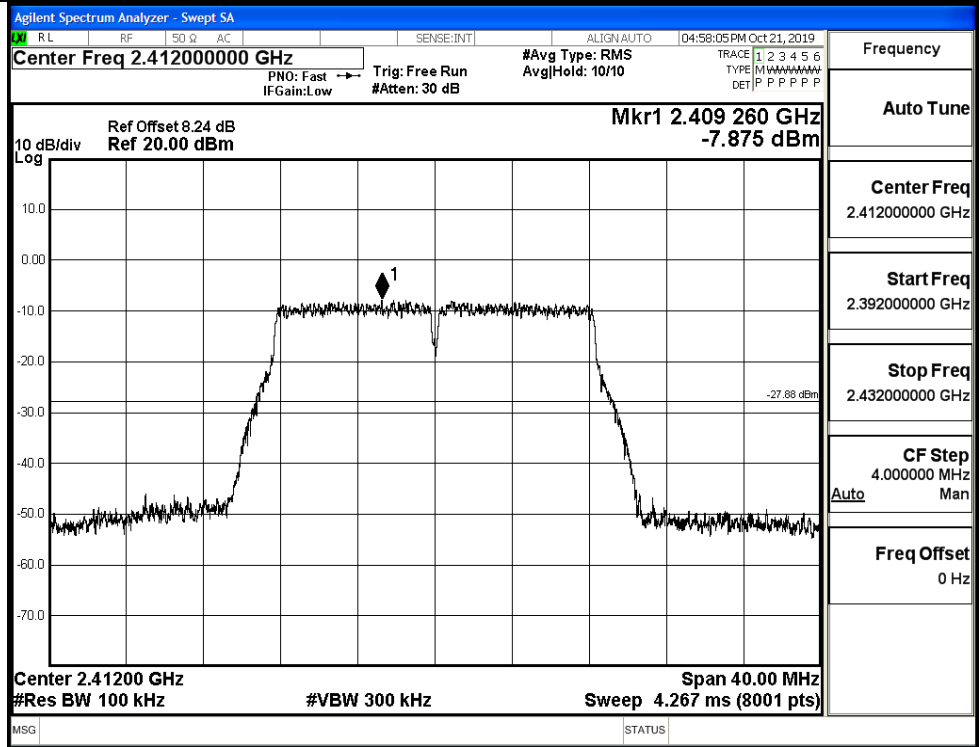


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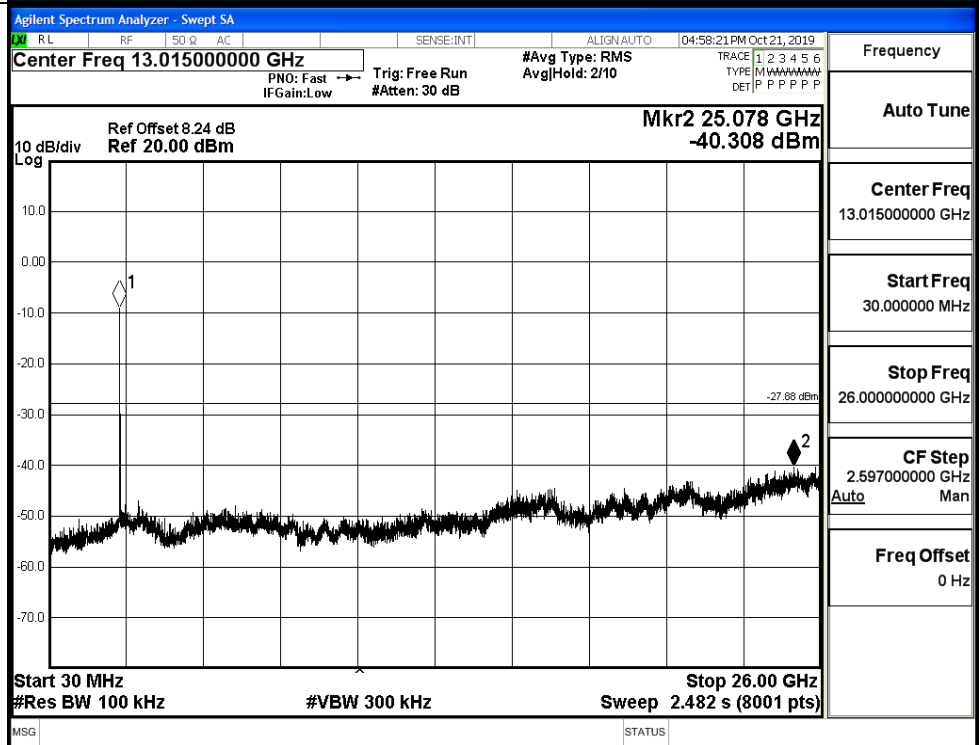


11G\_LCH\_Graphs

Pref/11G/LCH

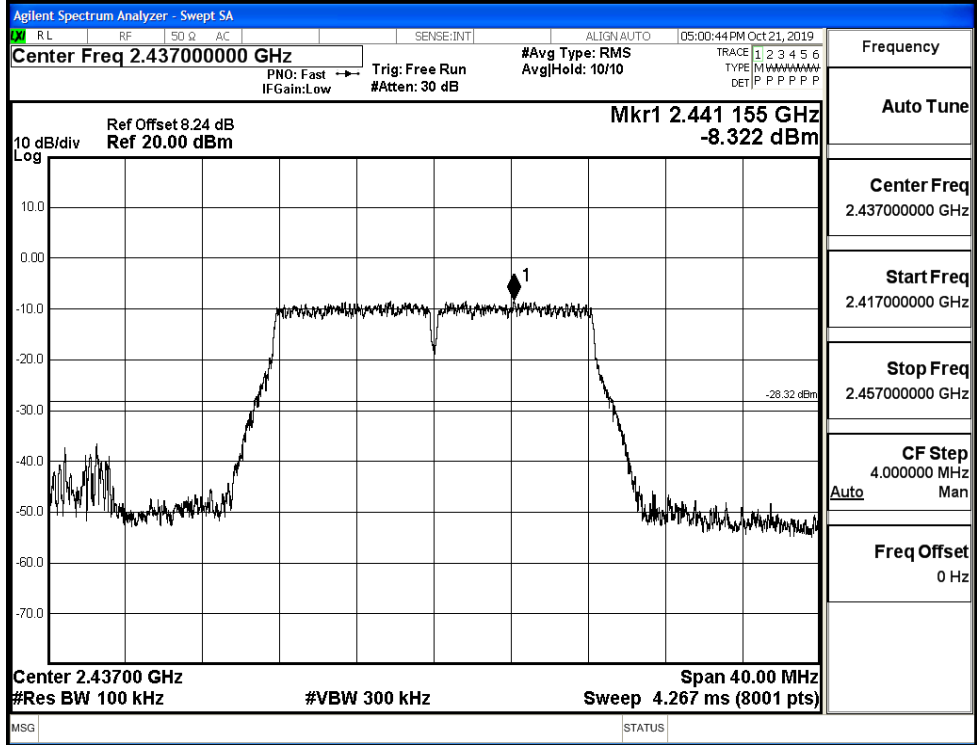


Puw/11G/LCH

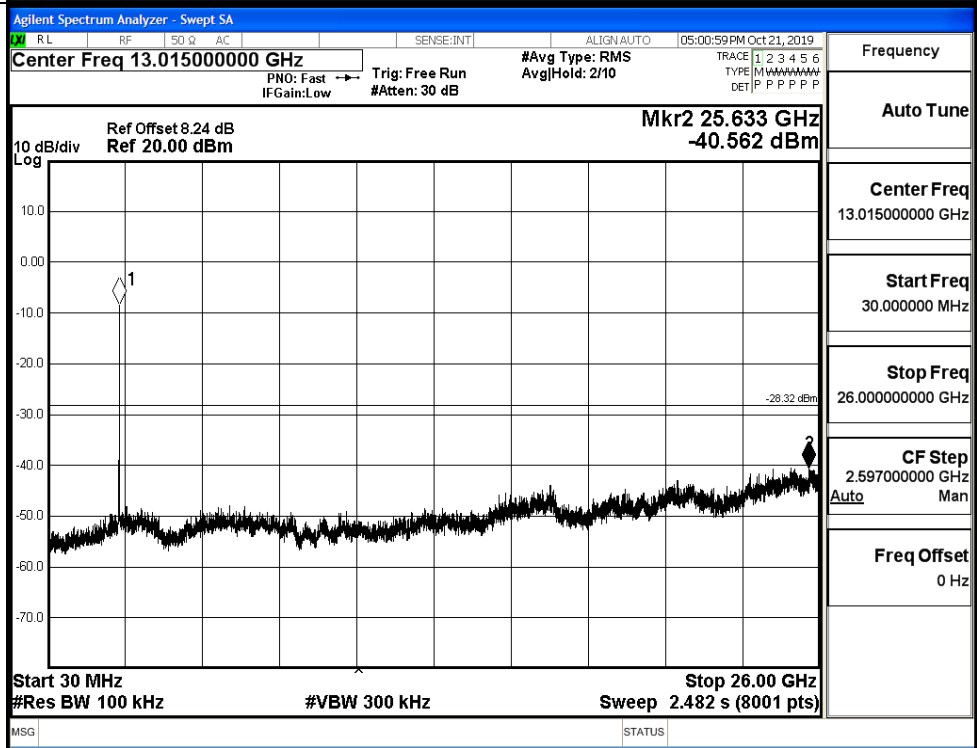


11G\_MCH\_Graphs

Pref/11G/MCH

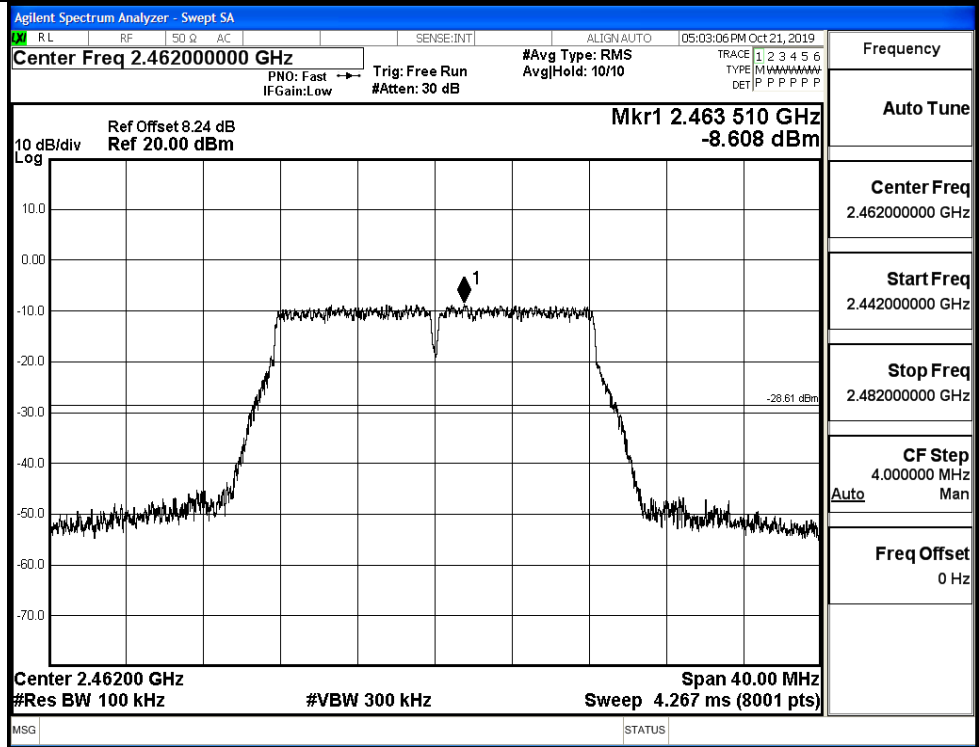


Puw/11G/MCH

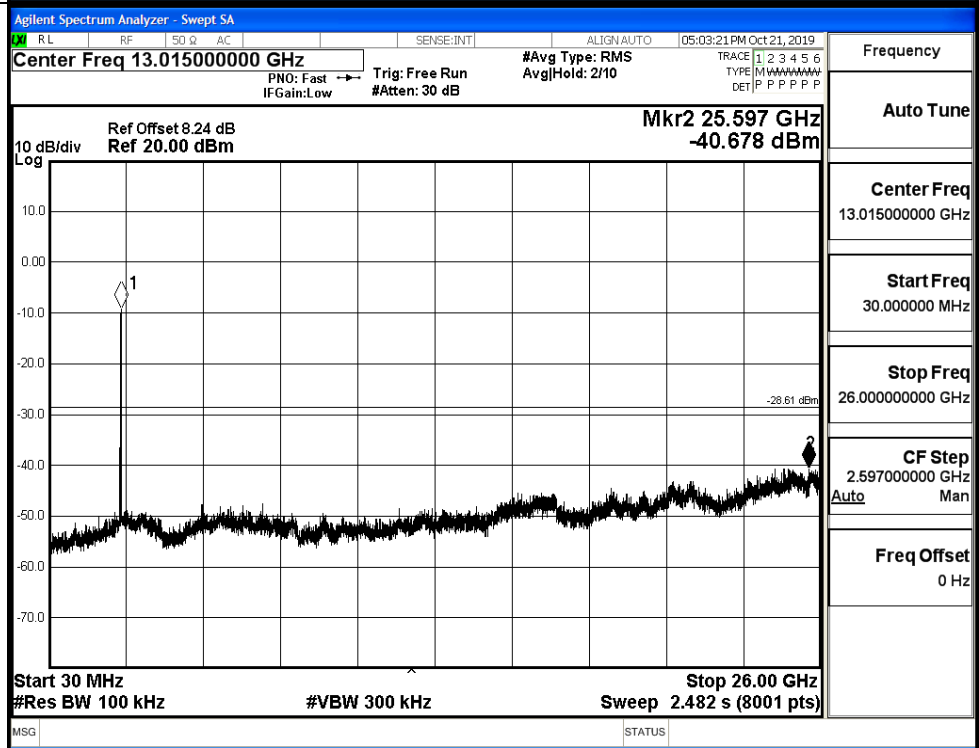


11G\_HCH\_Graphs

Pref/11G/HCH

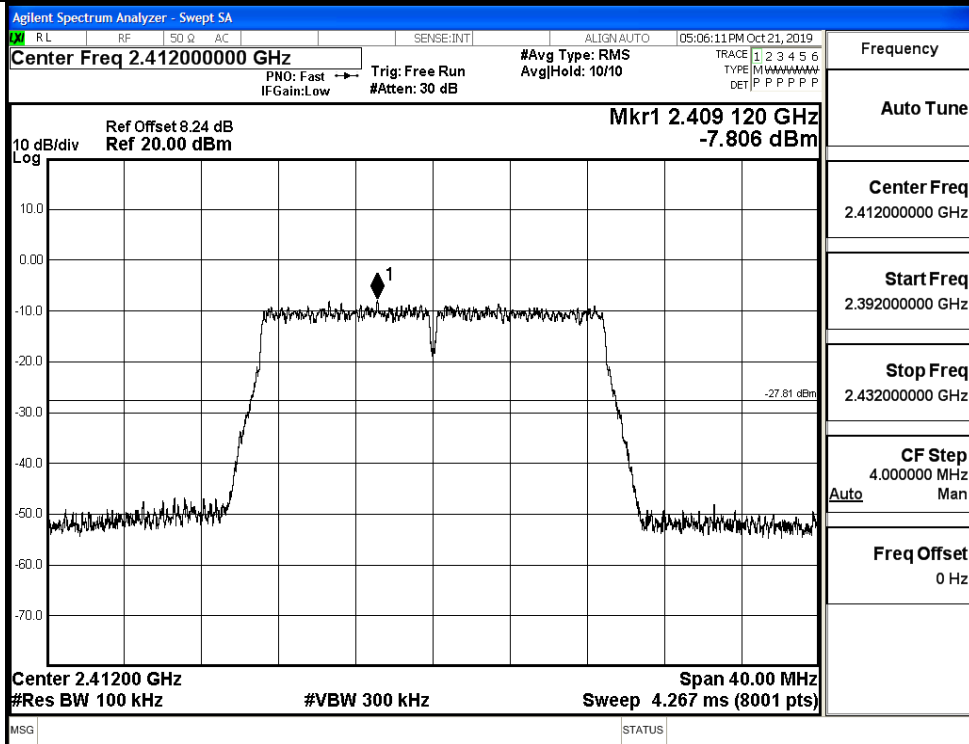


Puw/11G/HCH

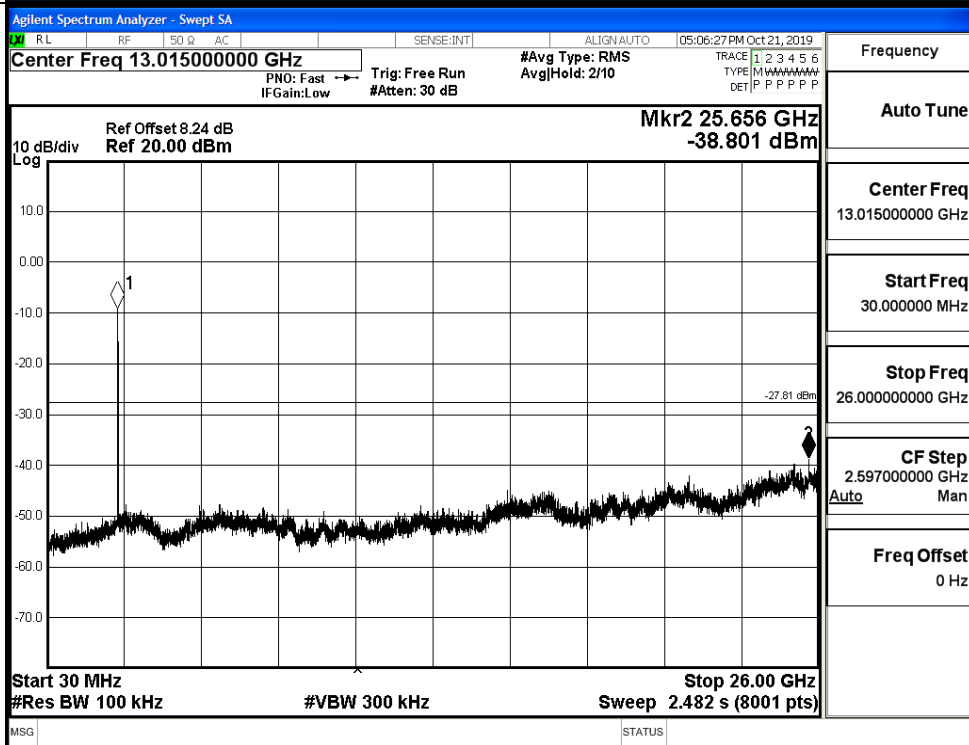


11N20SISO\_LCH\_Graphs

Pref/11N20SIS  
O/LCH

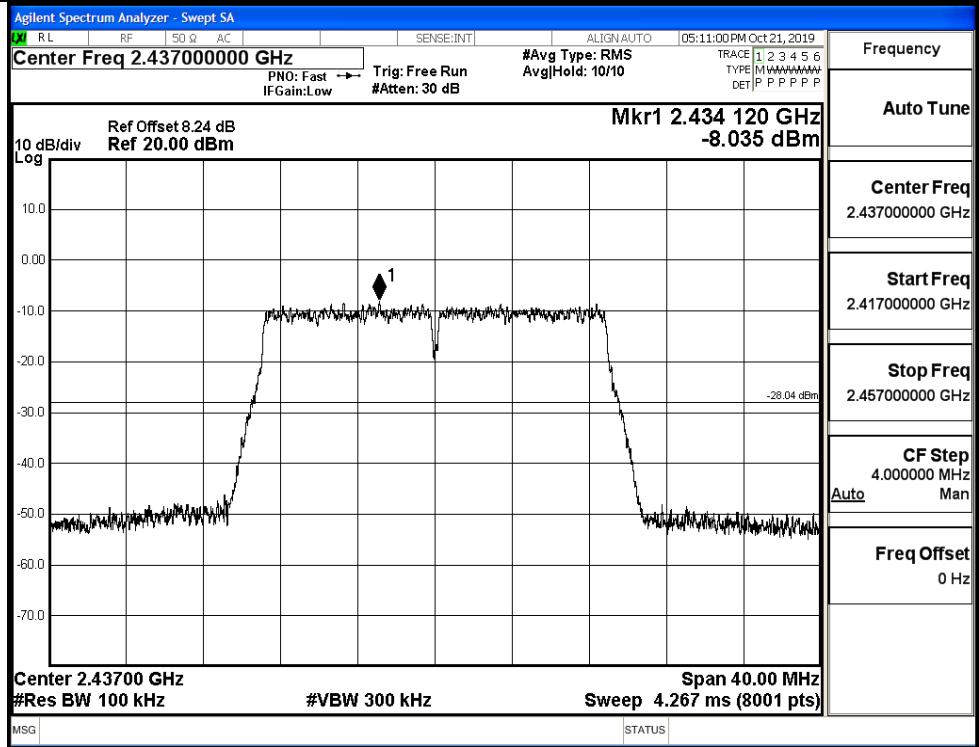


Puw/11N20  
SISO/LCH

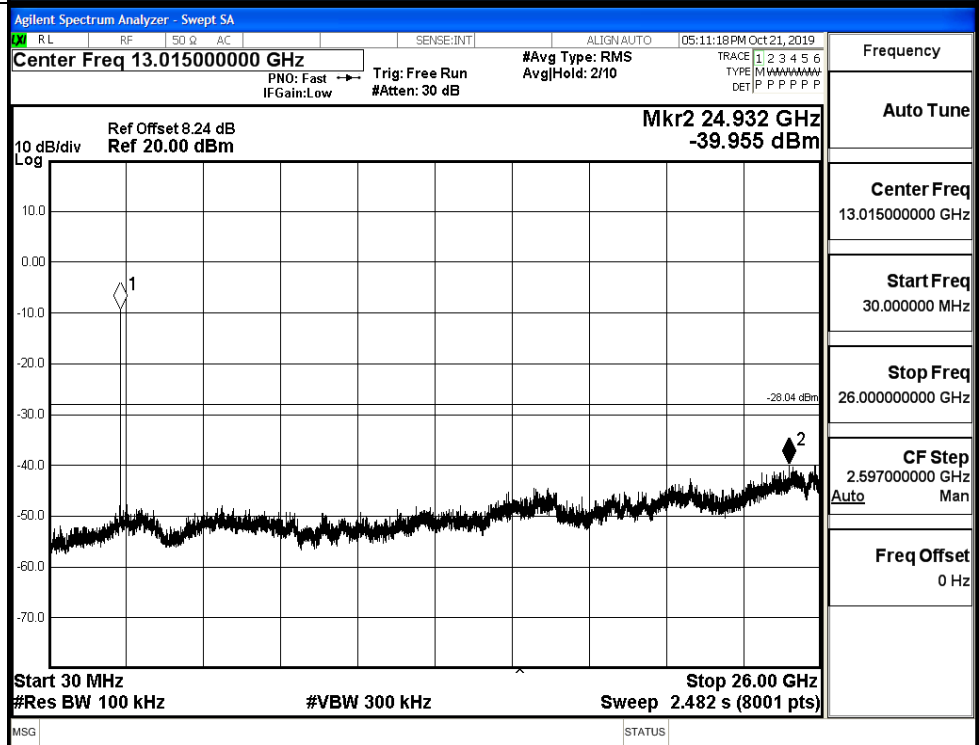


11N20SISO\_MCH\_Graphs

Pref/11N20  
SISO/MCH

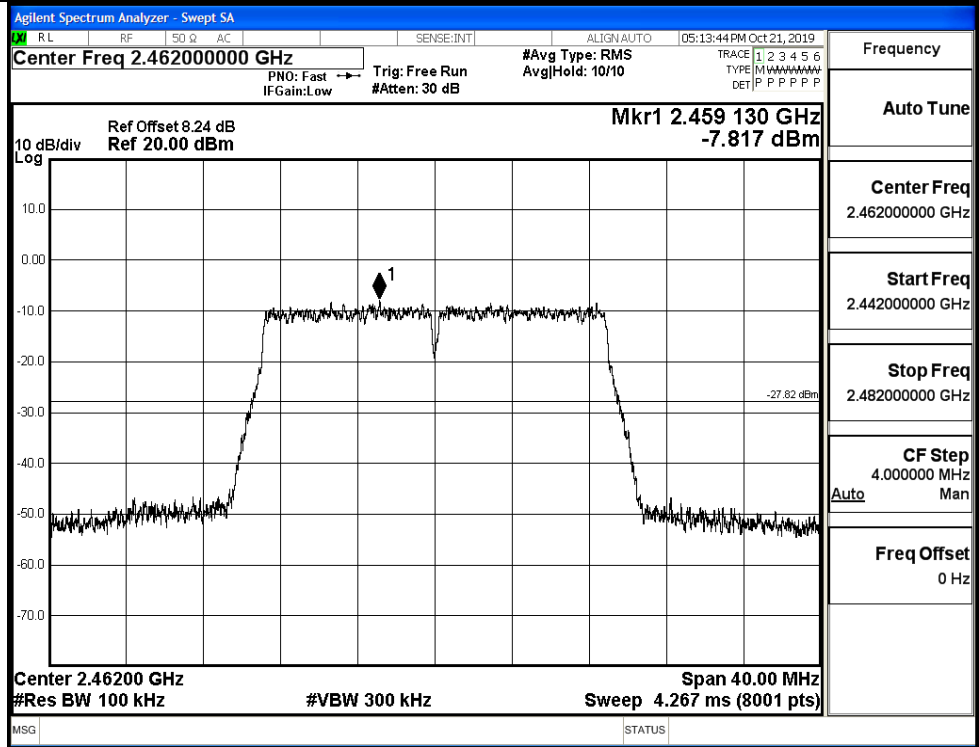


Puw/11N20  
SISO/MCH

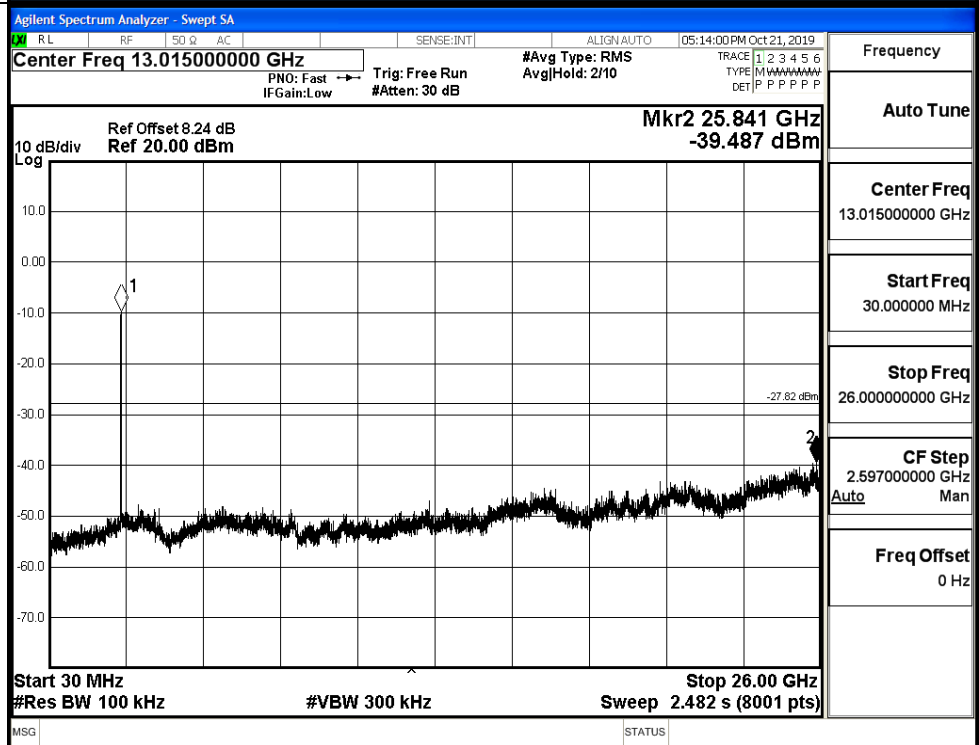


11N20SISO\_HCH\_Graphs

Pref/11N20  
SISO/HCH

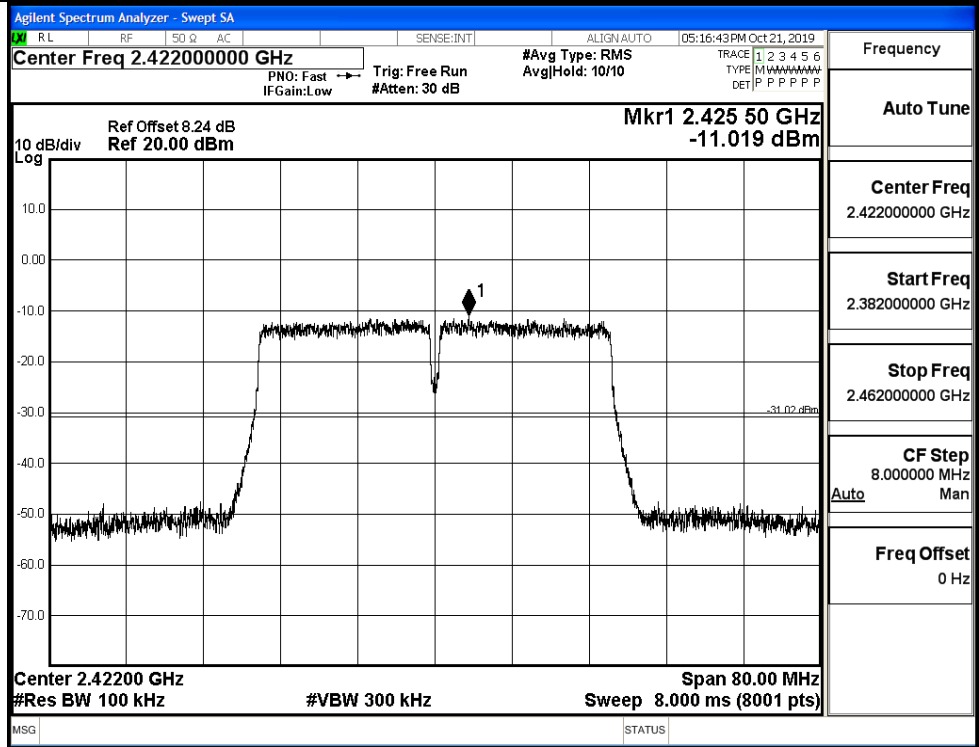


Puw/11N20  
SISO/HCH

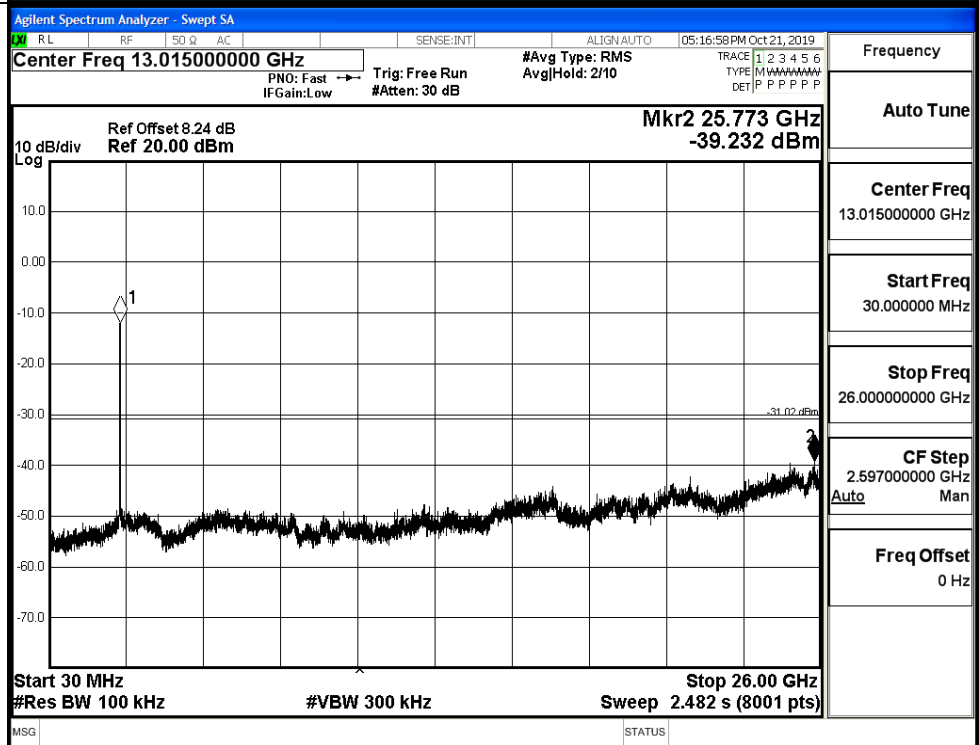


11N40SISO\_LCH\_Graphs

Pref/11N40  
SISO/LCH



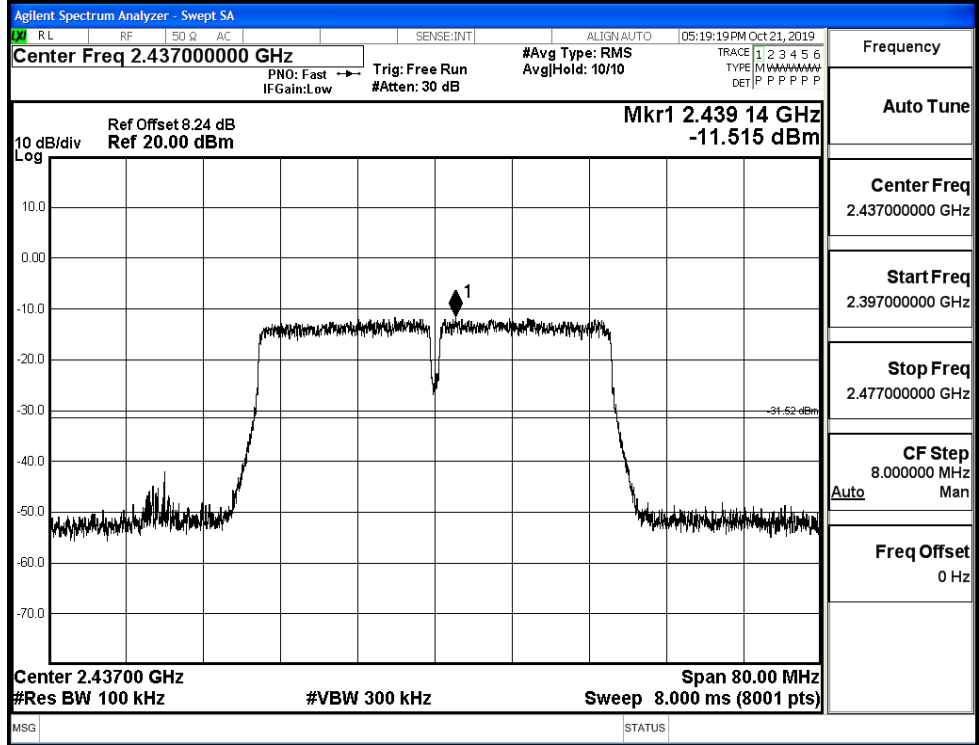
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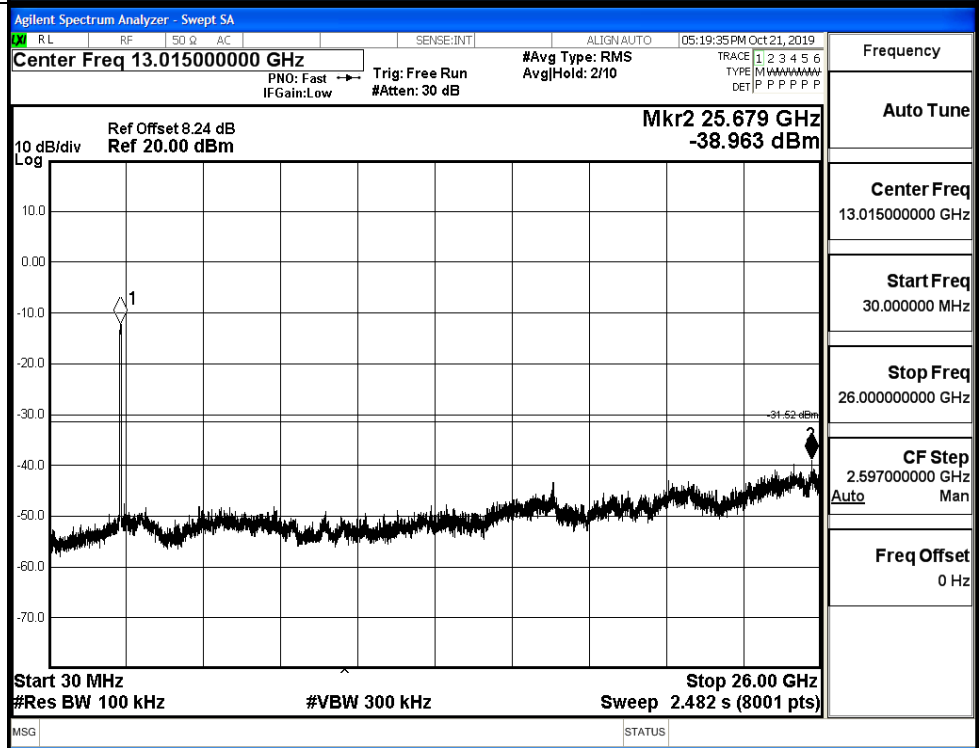


11N40SISO\_MCH\_Graphs

Pref/11N40  
SISO/MCH

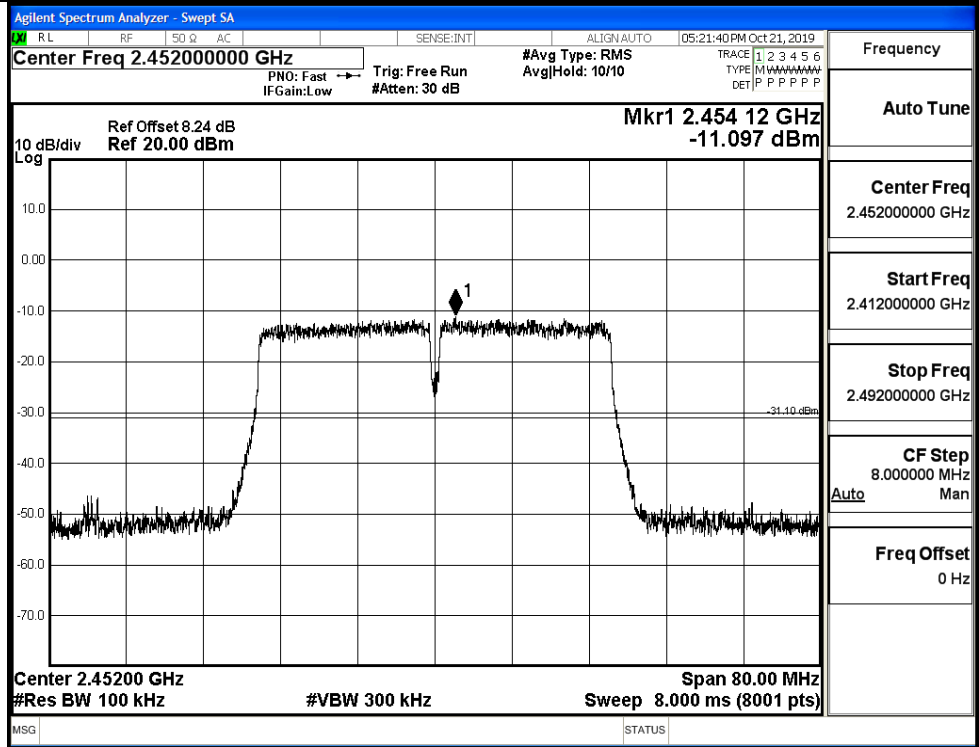


Puw/11N40  
SISO/MCH



11N40SISO\_HCH\_Graphs

Pref/11N40  
SISO/HCH



Puw/11N40  
SISO/HCH

