

## Appendix A

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

Product Name: Smart Power Plug

Trade Mark: Xenon/Jinvoov

Test Model: SM-PW712U-A

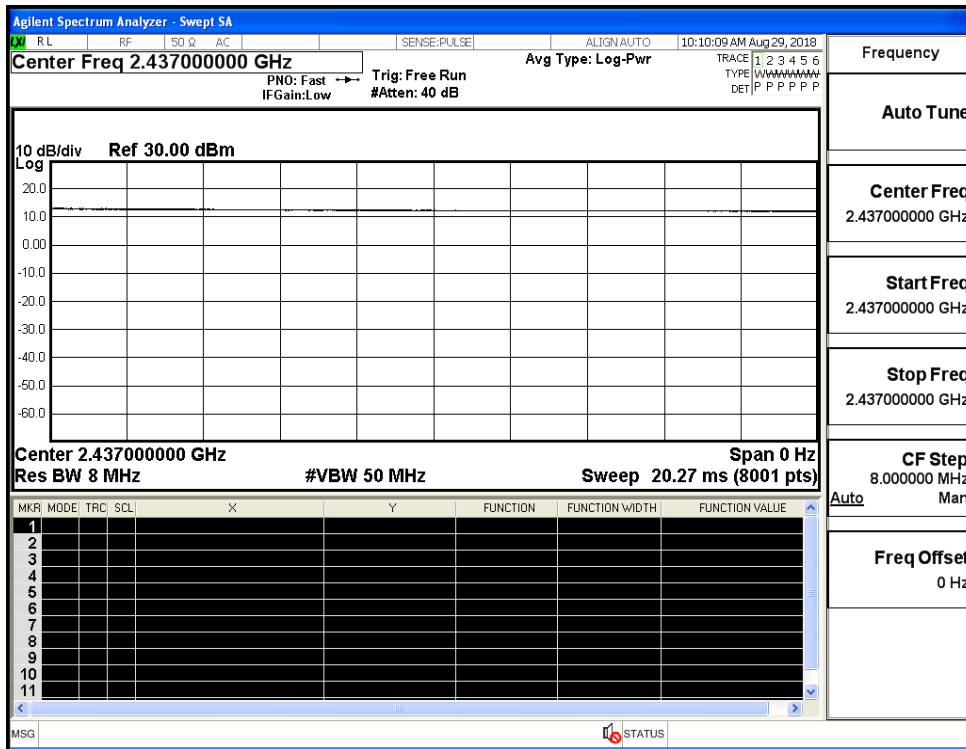
#### Environmental Conditions

Temperature:	24.3 ° C
Relative Humidity:	52.8%
ATM Pressure:	100.0 kPa
Test Engineer:	Diamond.Lu
Supervised by:	Jayden.Zhuo

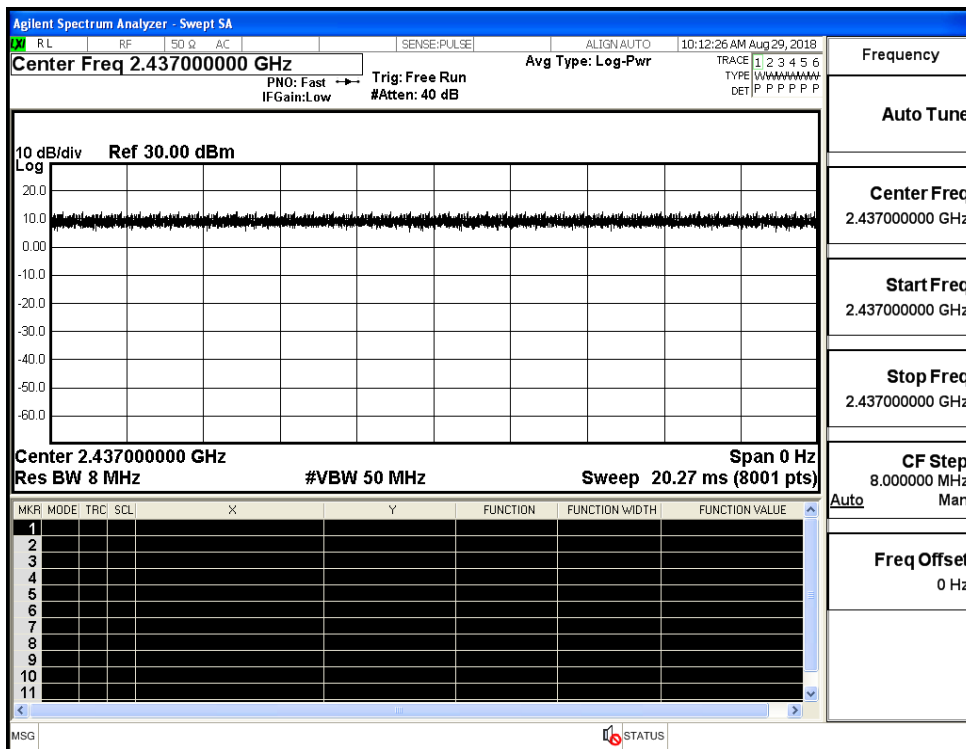
#### A.1 Duty Cycle

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

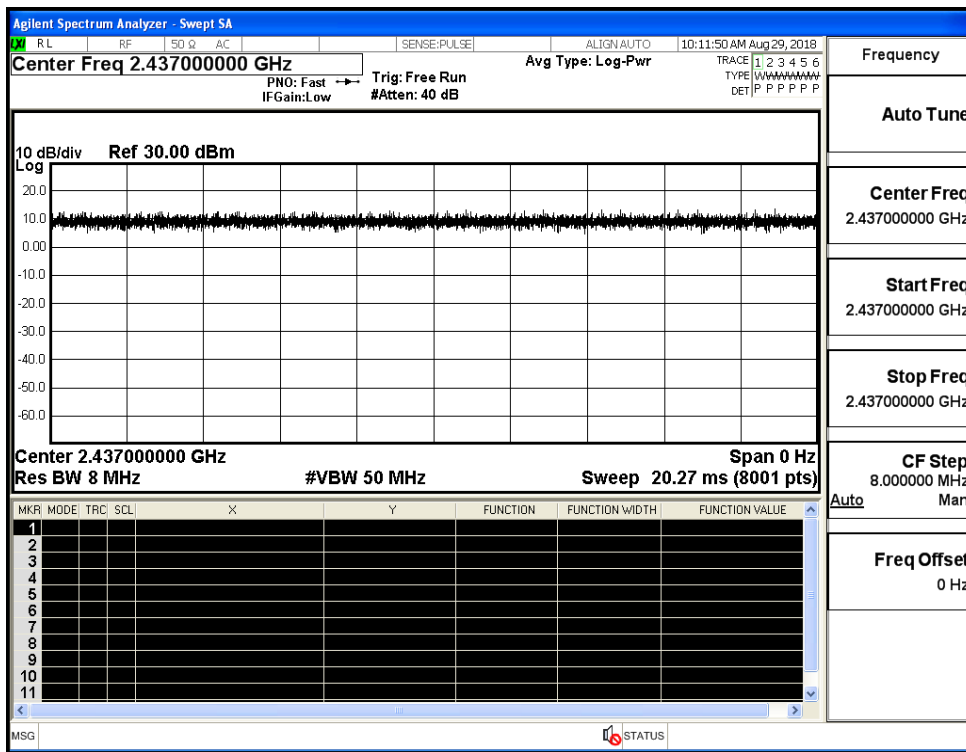
Duty Cycle\_11B\_2437\_Ant1



Duty Cycle\_11G\_2437\_Ant1



Duty Cycle\_11N20SISO\_2437\_Ant1

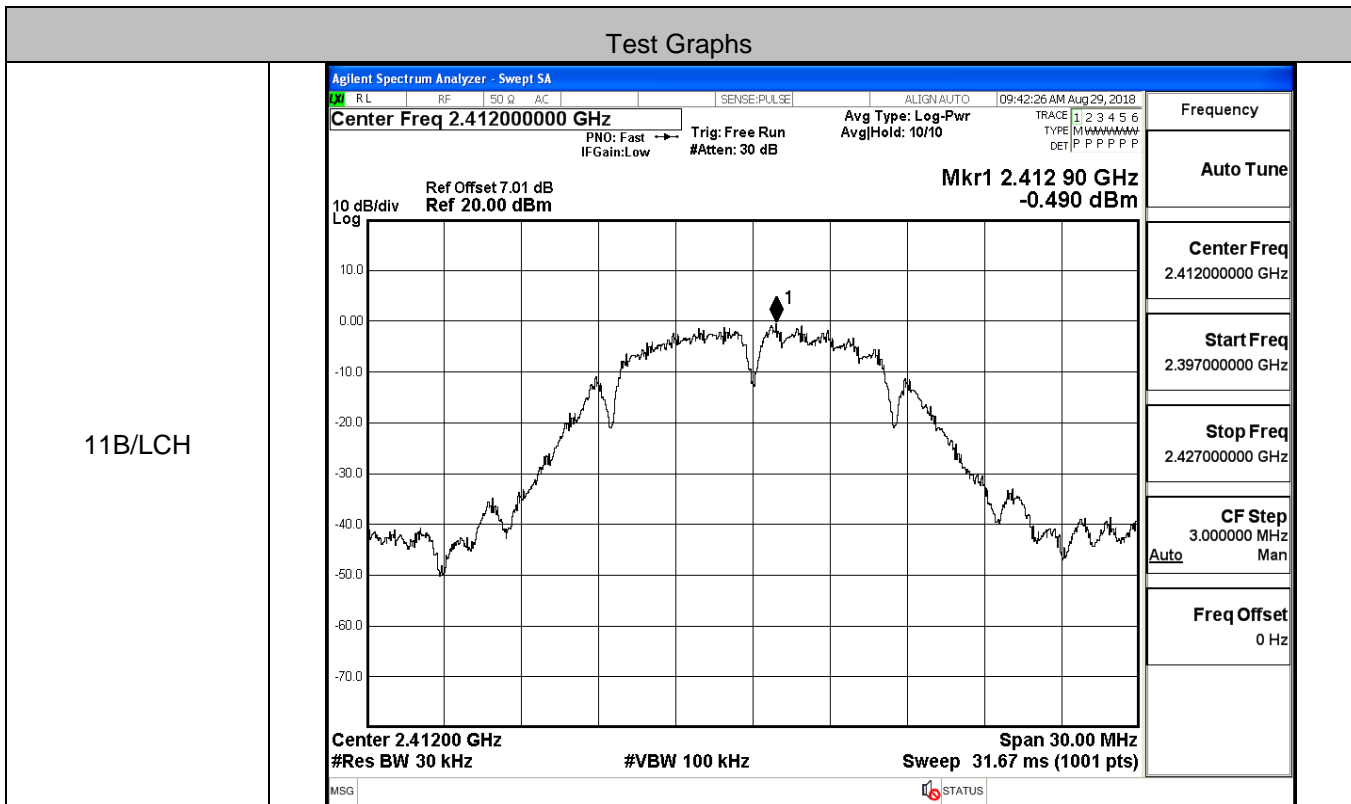


## A.2 Maximum Conducted Output Power

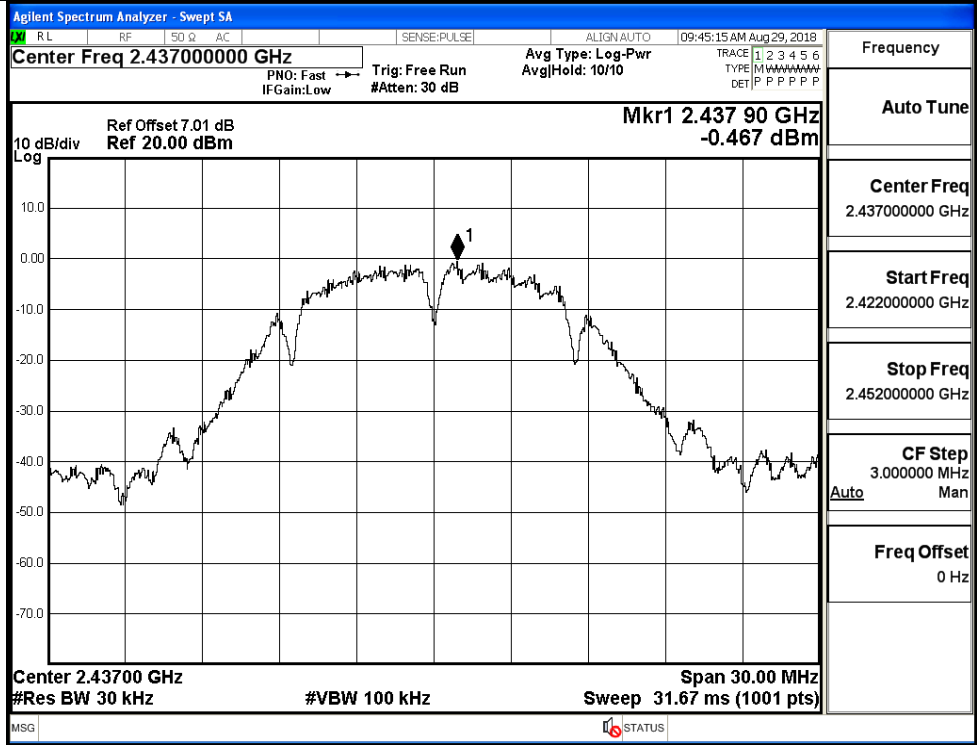
Mode	Channel	Meas.Level [dBm]	Limit [dBm]	Verdict
11B	LCH	17.52	30	PASS
	MCH	17.61	30	PASS
	HCH	17.12	30	PASS
11G	LCH	17.29	30	PASS
	MCH	17.48	30	PASS
	HCH	17.16	30	PASS
11N20SISO	LCH	17.43	30	PASS
	MCH	17.64	30	PASS
	HCH	16.82	30	PASS

### A.3 Maximum Power Spectral Density

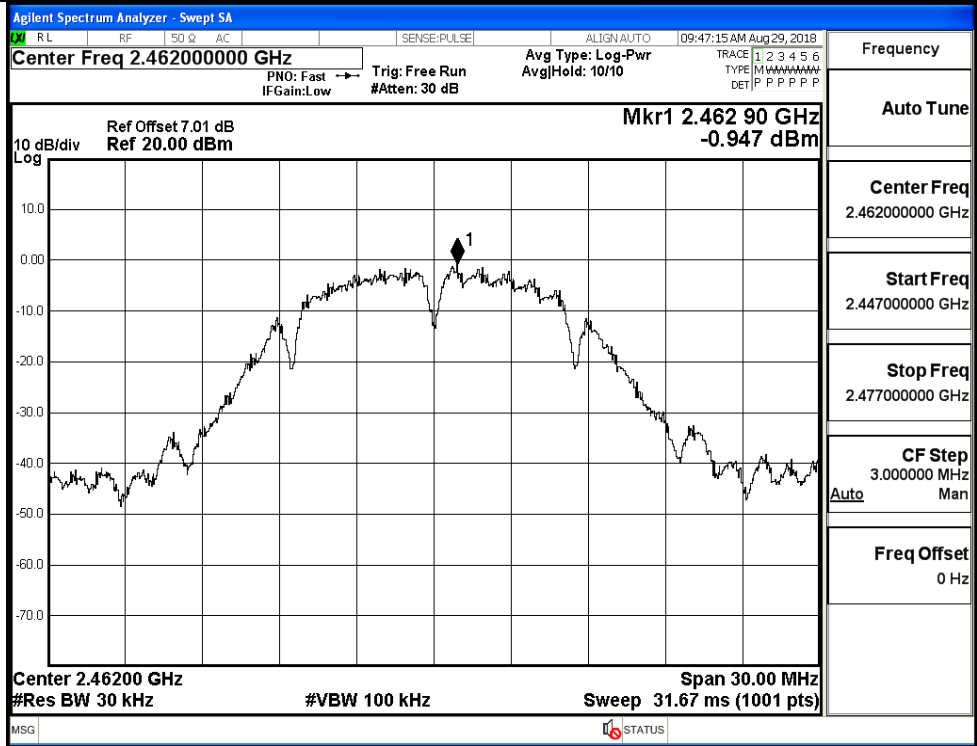
Mode	Channel	Meas.Level [dBm/30KHz]	Limit [dBm/3KHz]	Verdict
11B	LCH	-0.490	8	PASS
	MCH	-0.467	8	PASS
	HCH	-0.947	8	PASS
11G	LCH	-6.695	8	PASS
	MCH	-6.414	8	PASS
	HCH	-6.774	8	PASS
11N20SISO	LCH	-5.680	8	PASS
	MCH	-5.284	8	PASS
	HCH	-6.307	8	PASS



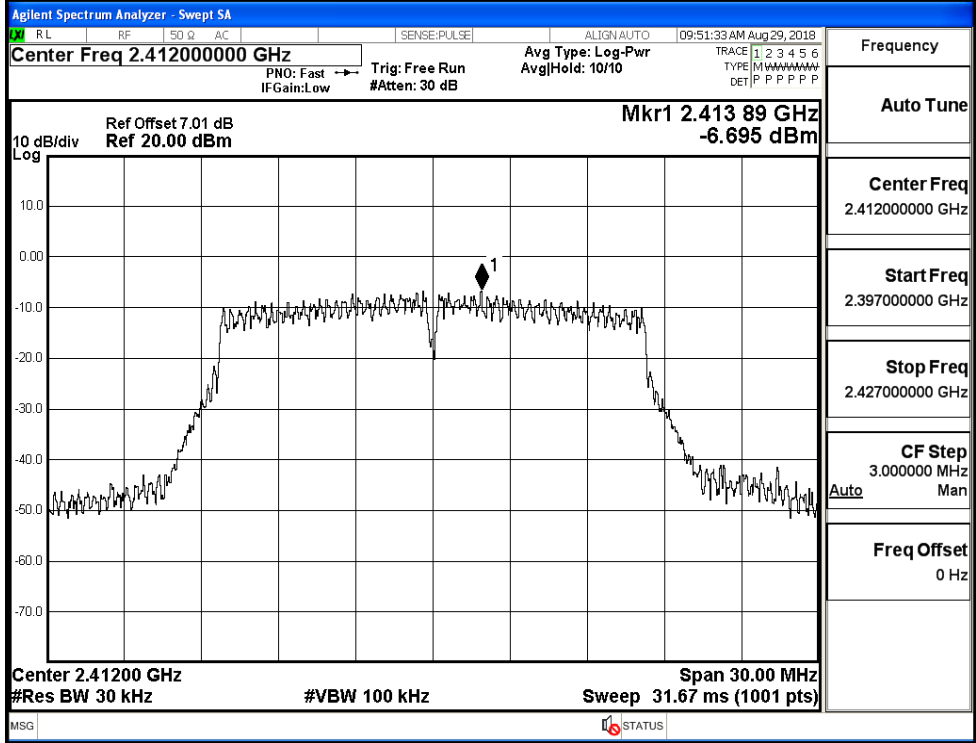
11B/MCH



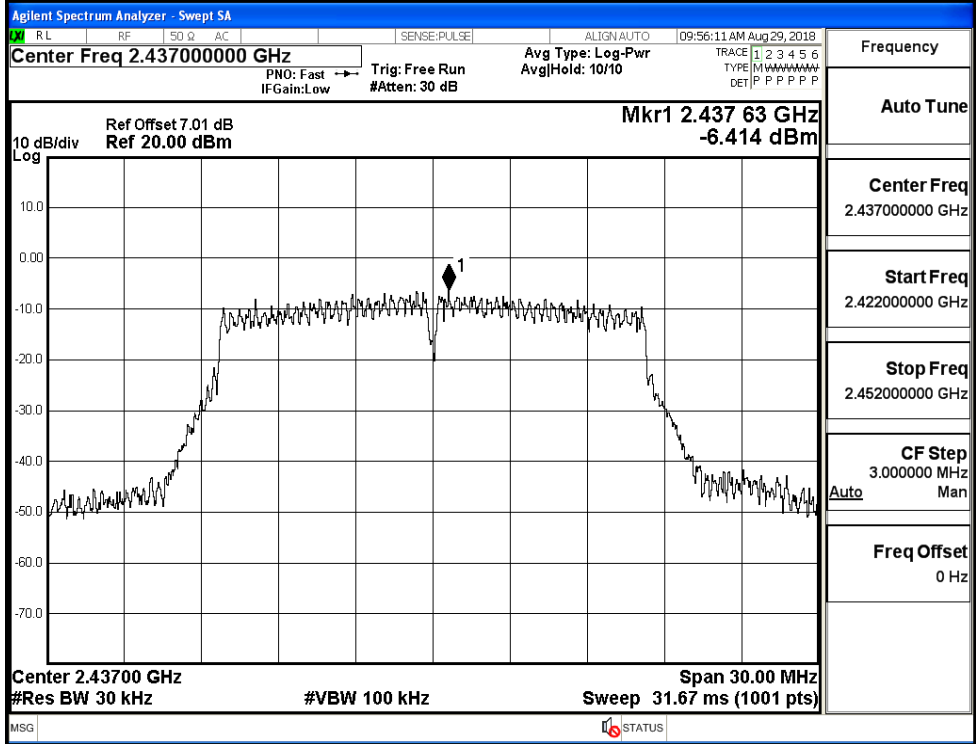
11B/HCH



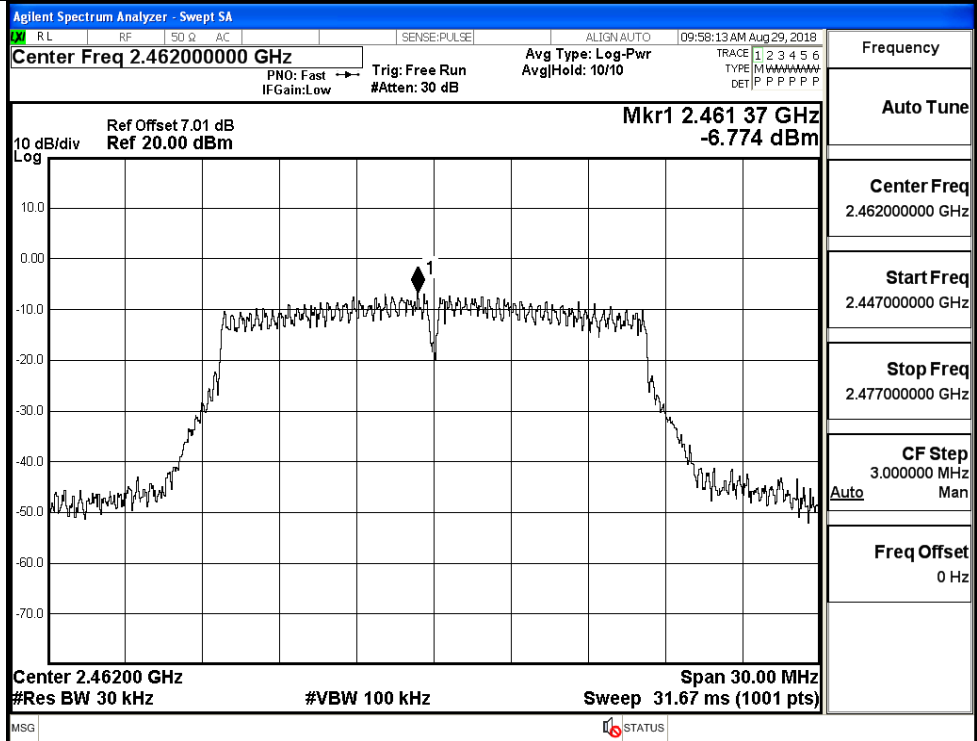
11G/LCH



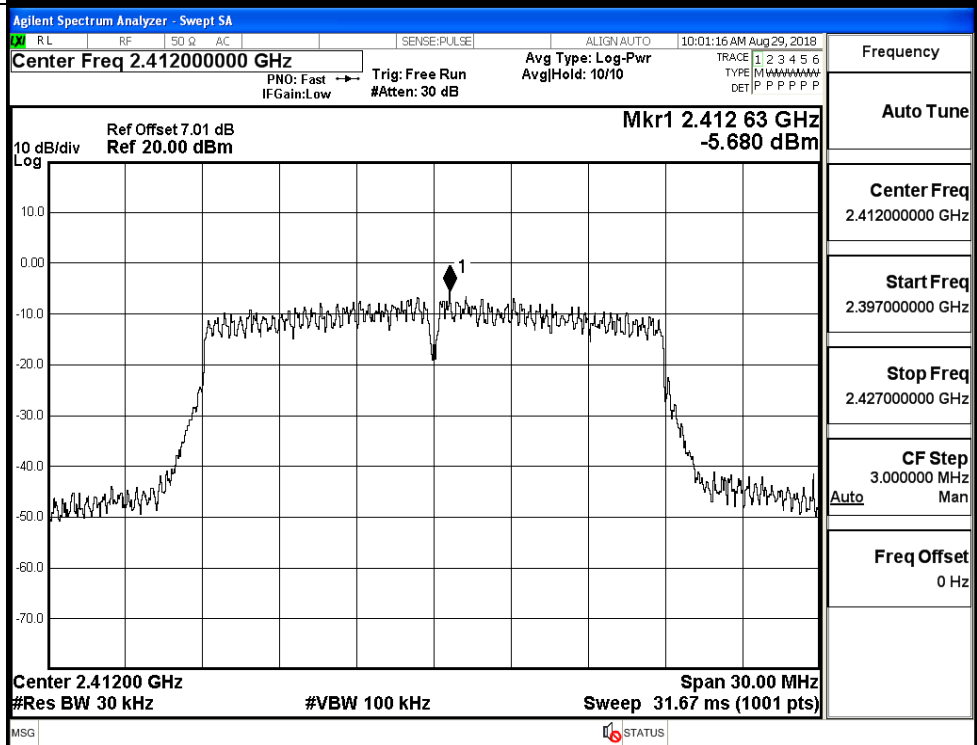
11G/MCH



11G/HCH



11N20SISO/LCH

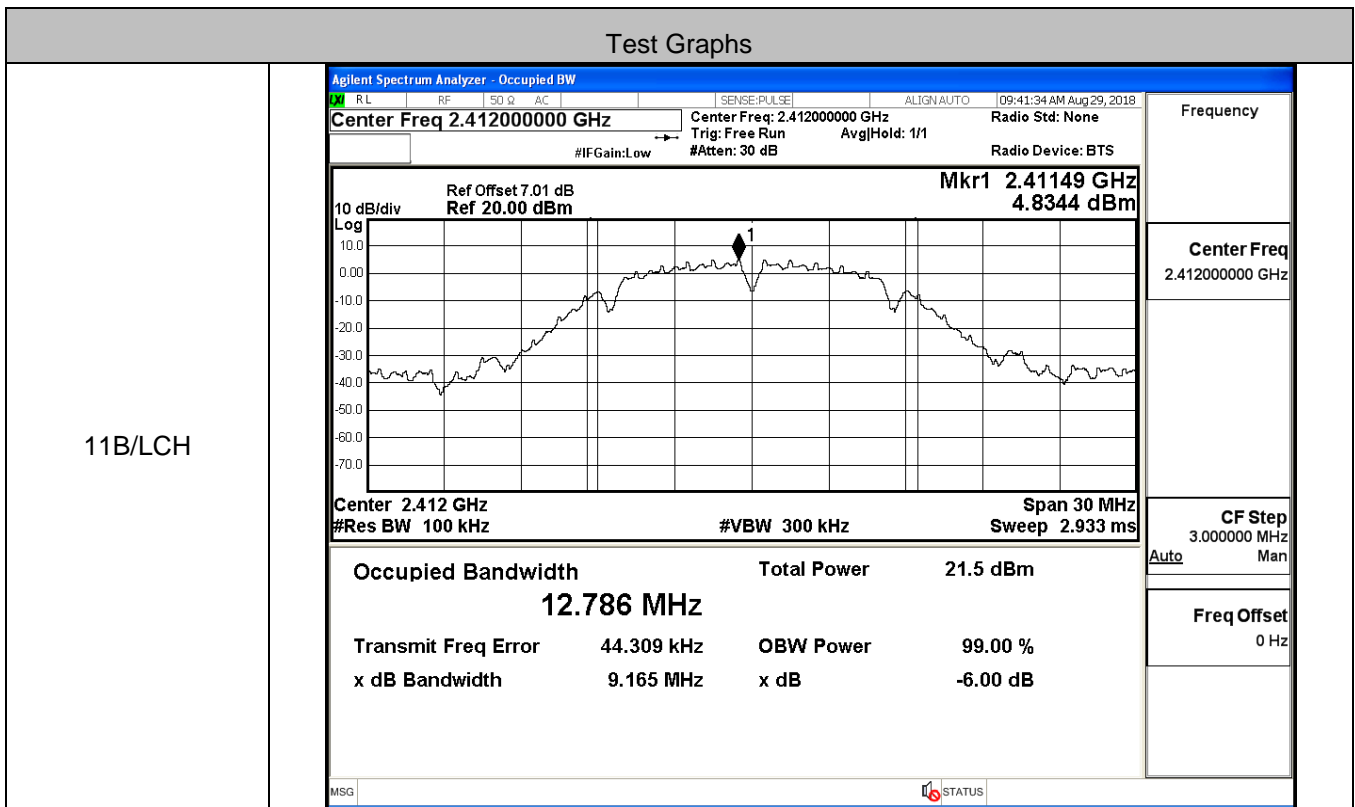




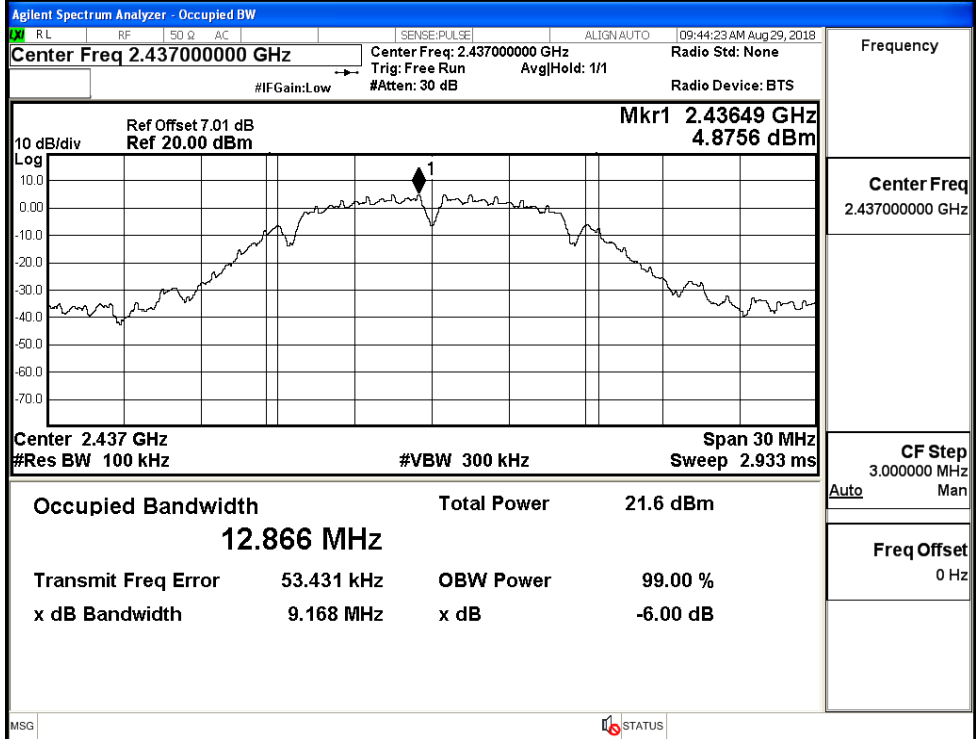
<p>11N20SISO/MCH</p>	<p>Agilent Spectrum Analyzer - Swept SA          Center Freq 2.43700000 GHz          PNO: Fast IFGain:Low Trig: Free Run #Atten: 30 dB          Avg Type: Log-Pwr AvgHold: 10/10          Mkr1 2.437 63 GHz -5.284 dBm          Ref Offset 7.01 dB Ref 20.00 dBm          10 dB/div Log          Center 2.43700 GHz #Res BW 30 kHz #VBW 100 kHz Span 30.00 MHz Sweep 31.67 ms (1001 pts)</p>	<p>Frequency</p> <p>Auto Tune</p> <p>Center Freq 2.43700000 GHz</p> <p>Start Freq 2.422000000 GHz</p> <p>Stop Freq 2.452000000 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 - Swept SA          Center Freq 2.46200000 GHz          PNO: Fast IFGain:Low Trig: Free Run #Atten: 30 dB          Avg Type: Log-Pwr AvgHold: 10/10          Mkr1 2.462 63 GHz -6.307 dBm          Ref Offset 7.01 dB Ref 20.00 dBm          10 dB/div Log          Center 2.46200 GHz #Res BW 30 kHz #VBW 100 kHz Span 30.00 MHz Sweep 31.67 ms (1001 pts)</p>	<p>Frequency</p> <p>Auto Tune</p> <p>Center Freq 2.46200000 GHz</p> <p>Start Freq 2.447000000 GHz</p> <p>Stop Freq 2.477000000 GHz</p> <p>CF Step 3.000000 MHz Auto Man</p> <p>Freq Offset 0 Hz</p>

### A.4 6dB Bandwidth

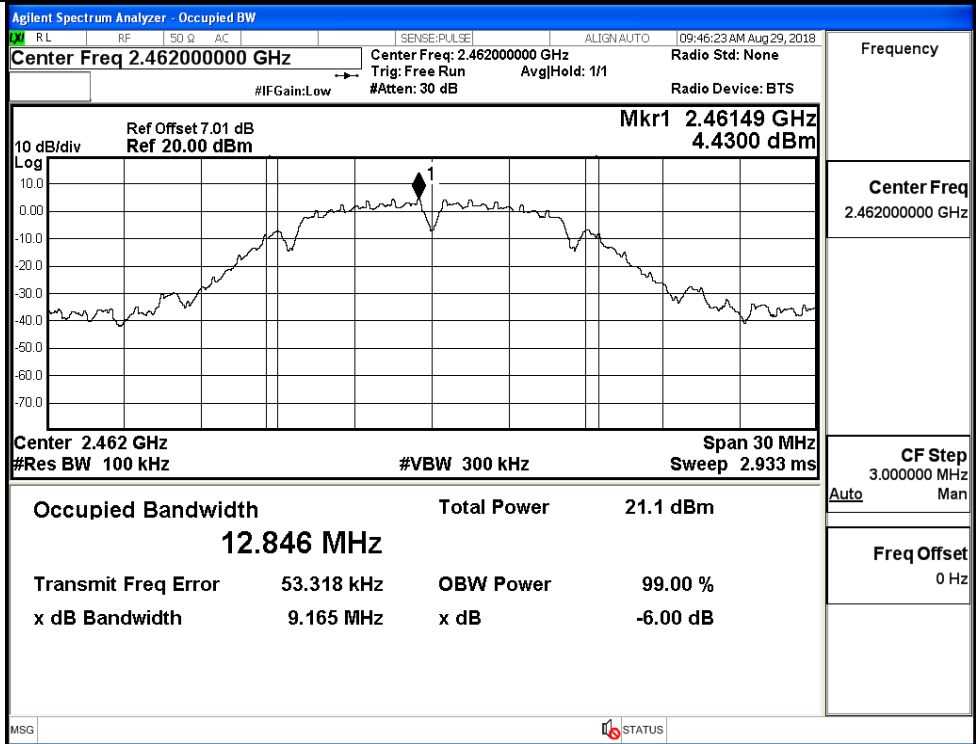
Mode	Channel	6dB Bandwidth [MHz]	Limit [MHz]	Verdict
11B	LCH	9.165	≥0.5	PASS
	MCH	9.168	≥0.5	PASS
	HCH	9.165	≥0.5	PASS
11G	LCH	16.41	≥0.5	PASS
	MCH	16.41	≥0.5	PASS
	HCH	16.39	≥0.5	PASS
11N20SISO	LCH	17.63	≥0.5	PASS
	MCH	17.63	≥0.5	PASS
	HCH	17.64	≥0.5	PASS



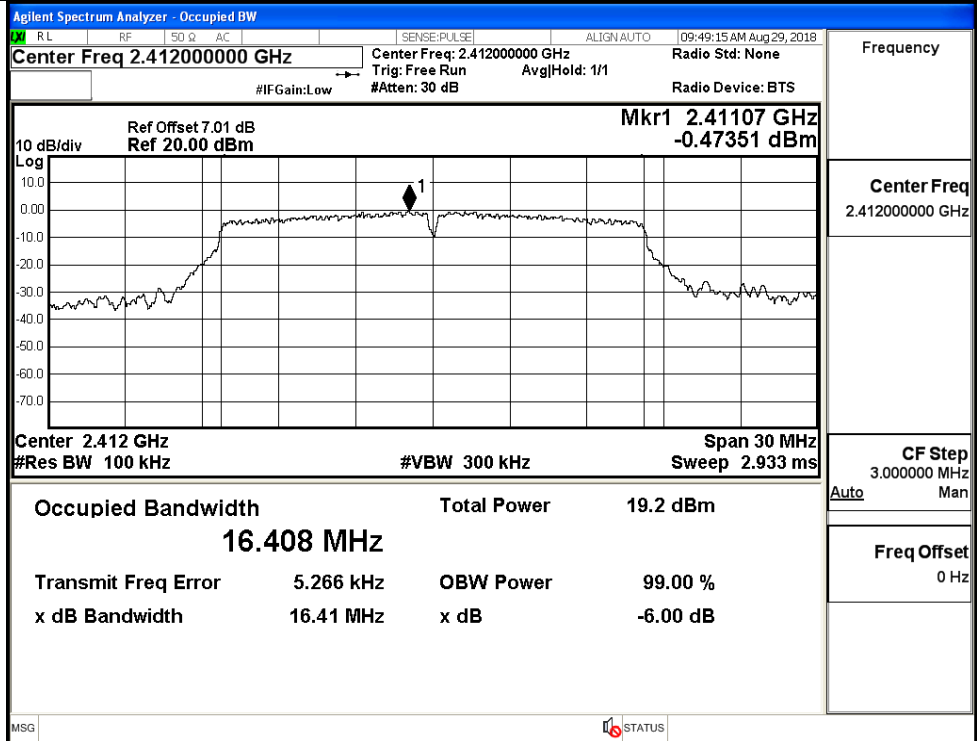
11B/MCH



11B/HCH

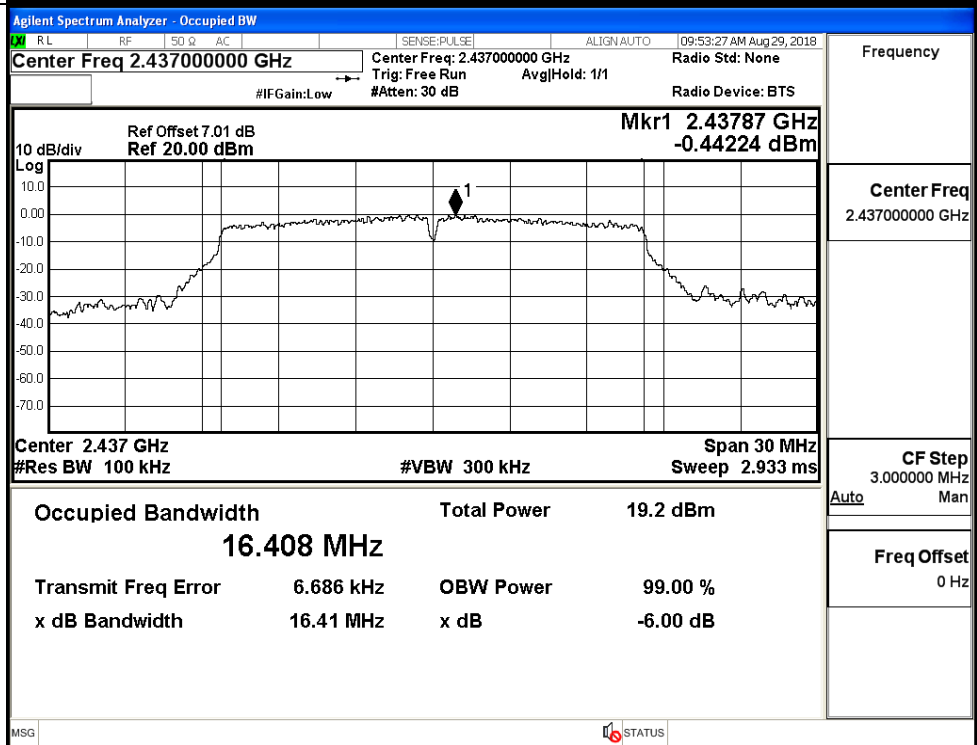


11G/LCH



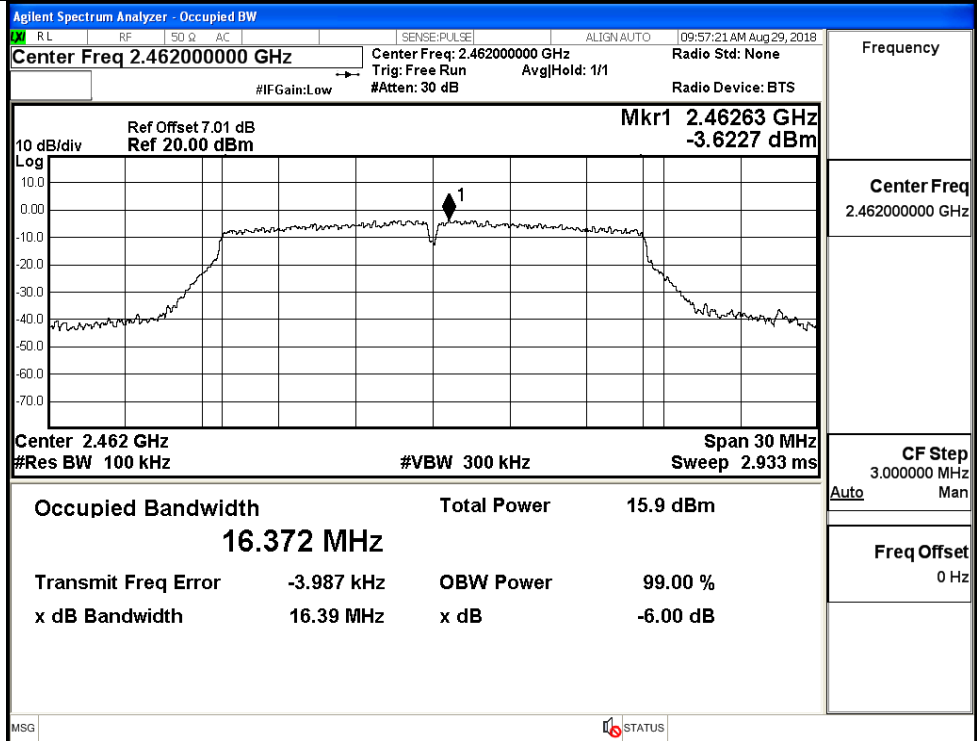
Frequency	2.41200000 GHz
Center Freq	2.41200000 GHz
CF Step	3.000000 MHz
Auto	Man
Freq Offset	0 Hz

11G/MCH



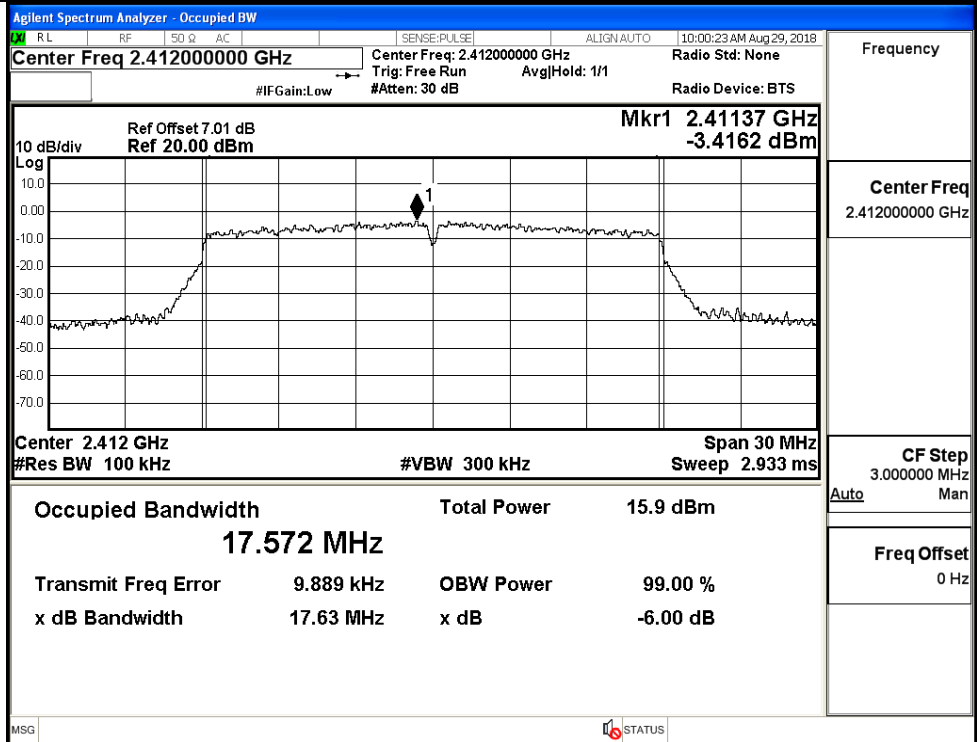
Frequency	2.43700000 GHz
Center Freq	2.43700000 GHz
CF Step	3.000000 MHz
Auto	Man
Freq Offset	0 Hz

11G/HCH



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

11N20SISO/LCH



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 2.43700000 GHz</p> <p>Center Freq: 2.43700000 GHz Trig: Free Run Avg/Hold: 1/1 Radio Std: None Radio Device: BTS</p> <p>10 dB/div Ref Offset 7.01 dB Ref 20.00 dBm</p> <p>Mkr1 2.43637 GHz -3.2994 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 17.565 MHz Total Power 16.1 dBm</p> <p>Transmit Freq Error 12.512 kHz OBW Power 99.00 % x dB Bandwidth 17.63 MHz x dB -6.00 dB</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 2.46200000 GHz</p> <p>Center Freq: 2.46200000 GHz Trig: Free Run Avg/Hold: 1/1 Radio Std: None Radio Device: BTS</p> <p>10 dB/div Ref Offset 7.01 dB Ref 20.00 dBm</p> <p>Mkr1 2.46137 GHz -4.2629 dBm</p> <p>Center 2.462 GHz Span 30 MHz #Res BW 100 kHz #VBW 300 kHz Sweep 2.933 ms</p> <p>Occupied Bandwidth 17.566 MHz Total Power 15.3 dBm</p> <p>Transmit Freq Error 12.620 kHz OBW Power 99.00 % x dB Bandwidth 17.64 MHz x dB -6.00 dB</p>	<p>Frequency</p> <p>Center Freq 2.46200000 GHz</p> <p>CF Step 3.000000 MHz Auto Man</p> <p>Freq Offset 0 Hz</p>

### A.5 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
11B	LCH	4.69	-45.258	-15.310	PASS
	MCH	4.815	-44.958	-15.185	PASS
	HCH	4.348	-45.199	-15.652	PASS
11G	LCH	-3.56	-44.236	-23.560	PASS
	MCH	-3.42	-43.713	-23.420	PASS
	HCH	-3.652	-44.862	-23.652	PASS
11N20 SISO	LCH	-3.749	-43.950	-23.749	PASS
	MCH	-3.596	-45.362	-23.596	PASS
	HCH	-4.356	-45.056	-24.356	PASS

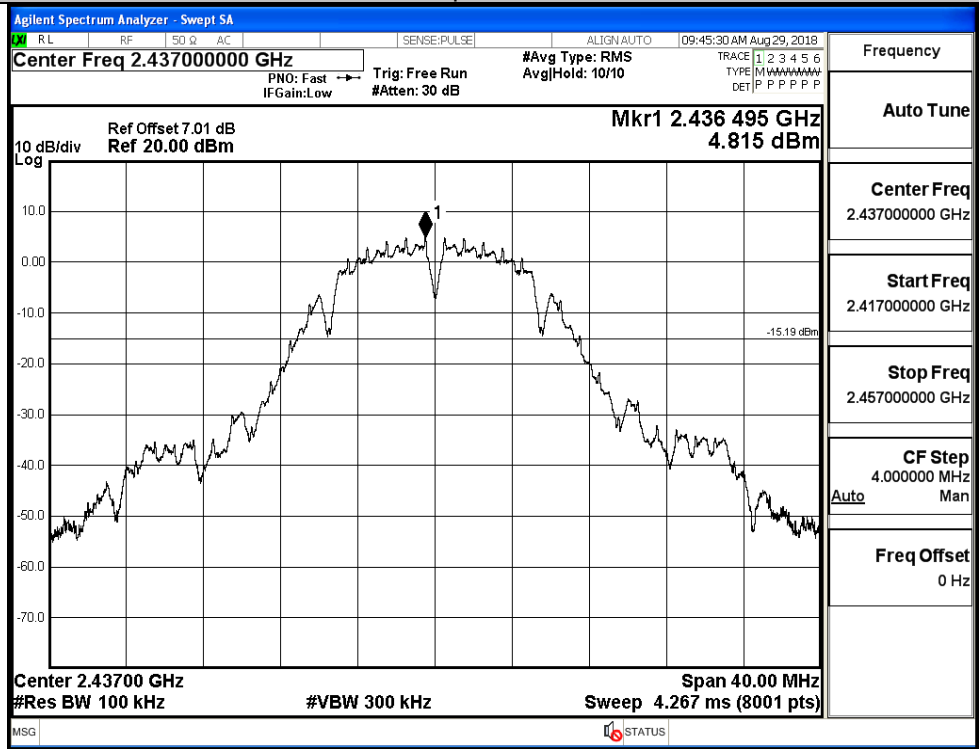
11B\_LCH\_Graphs

<p>Pref/11B/LCH</p>	<p>Agilent Spectrum Analyzer - Swept SA</p> <p>Center Freq 2.41200000 GHz</p> <p>Ref Offset 7.01 dB Ref 20.00 dBm</p> <p>Mkr1 2.411 490 GHz 4.690 dBm</p> <p>10 dB/div Log</p> <p>Center 2.41200 GHz #Res BW 100 kHz #VBW 300 kHz Sweep 4.267 ms (8001 pts)</p> <p>Span 40.00 MHz</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 7.01 dB Ref 20.00 dBm</p> <p>Mkr2 25.649 GHz -45.258 dBm</p> <p>10 dB/div Log</p> <p>Start 30 MHz #Res BW 100 kHz #VBW 300 kHz Sweep 2.482 s (8001 pts)</p> <p>Stop 26.00 GHz</p>

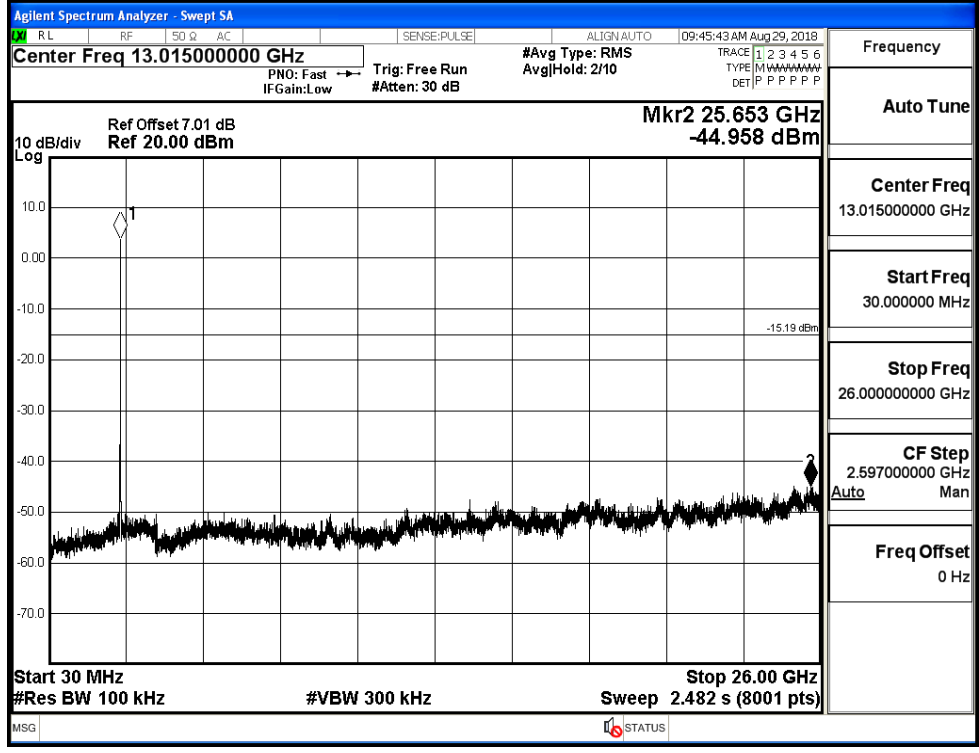


11B\_MCH\_Graphs

Pref/11B/MCH



Puw/11B/MCH

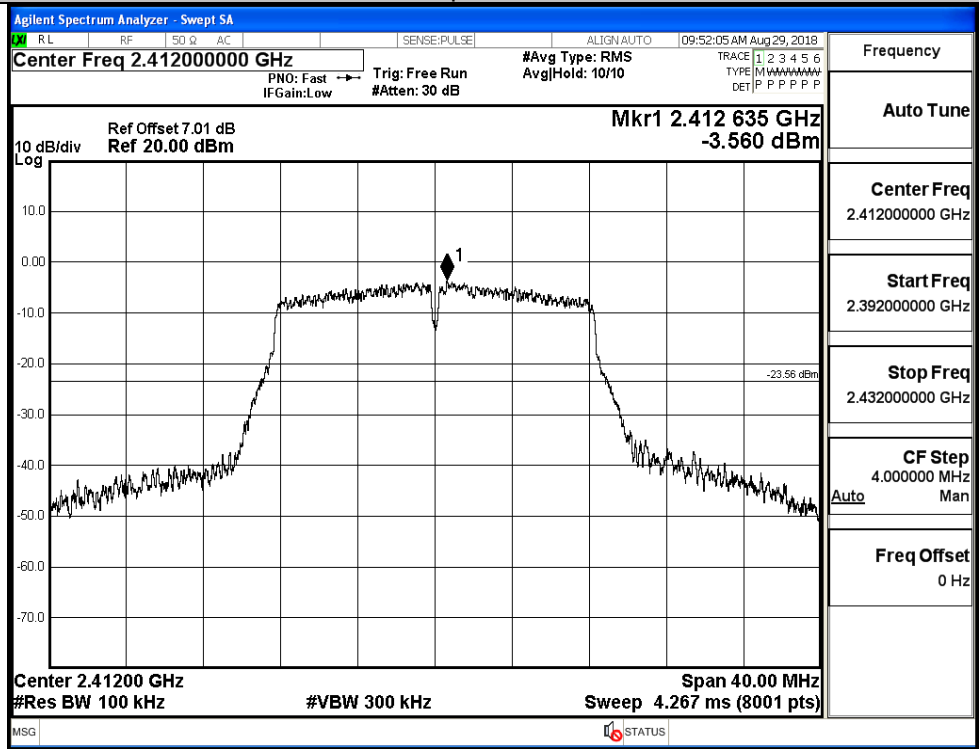


11B\_HCH\_Graphs

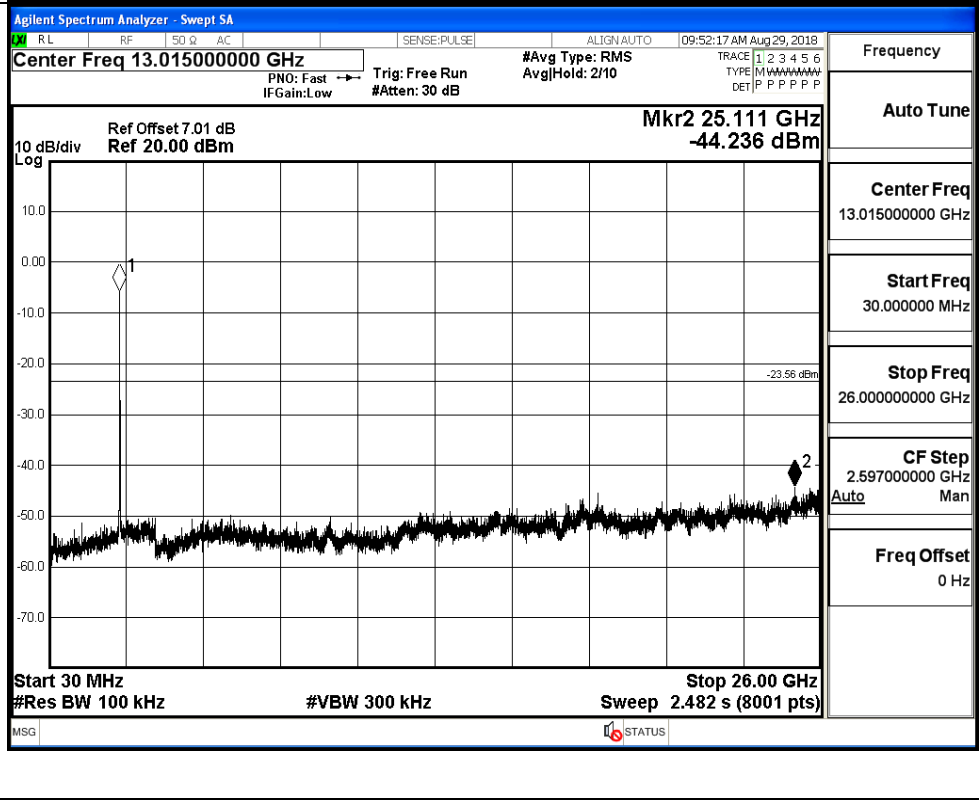
<p>Pref/11B/HCH</p>		<p>Frequency</p> <p>Auto Tune</p> <p>Center Freq 2.462000000 GHz</p> <p>Start Freq 2.442000000 GHz</p> <p>Stop Freq 2.482000000 GHz</p> <p>CF Step 4.000000 MHz Auto Man</p> <p>Freq Offset 0 Hz</p>
<p>Puw/11B/HCH</p>		<p>Frequency</p> <p>Auto Tune</p> <p>Center Freq 13.015000000 GHz</p> <p>Start Freq 30.000000 MHz</p> <p>Stop Freq 26.000000000 GHz</p> <p>CF Step 2.597000000 GHz Auto Man</p> <p>Freq Offset 0 Hz</p>

11G\_LCH\_Graphs

Pref/11G/LCH

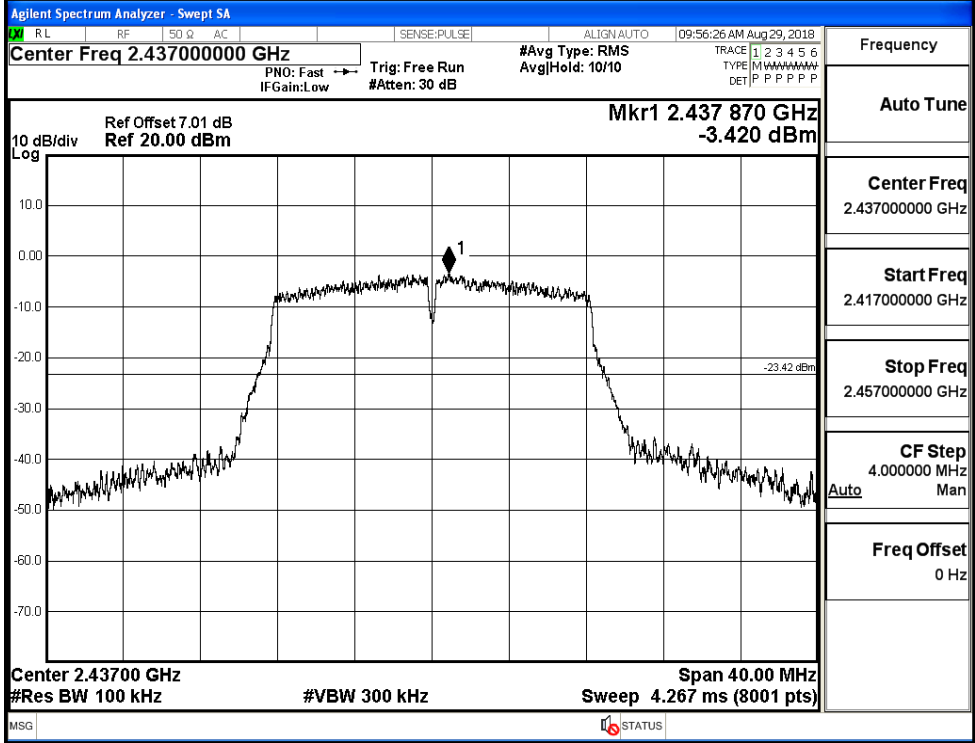


Puw/11G/LCH

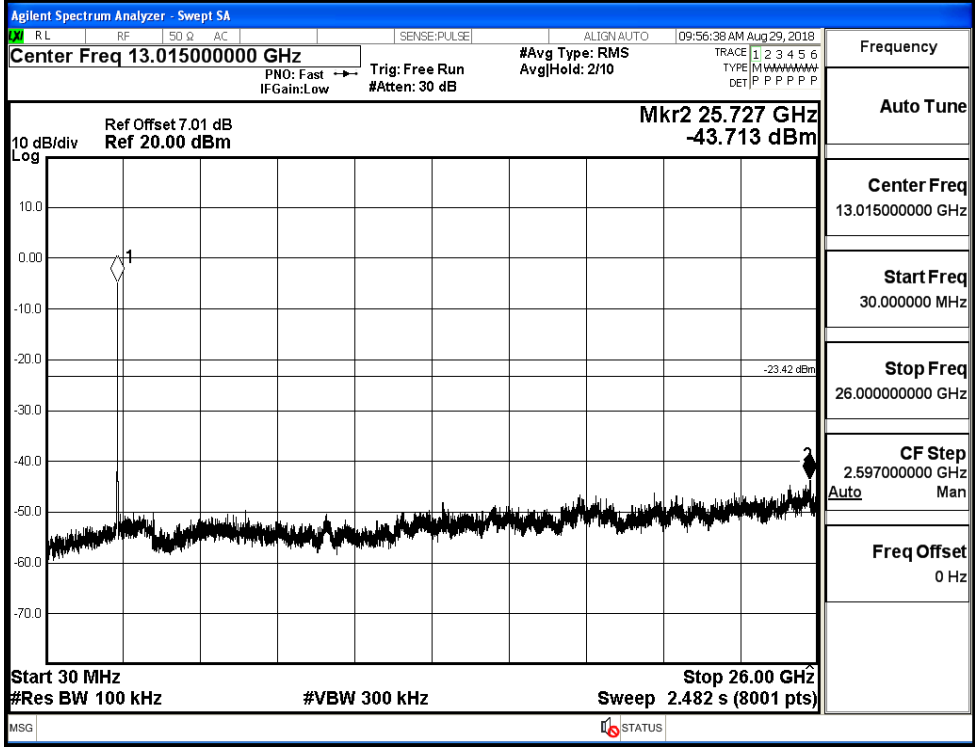


11G\_MCH\_Graphs

Pref/11G/MCH

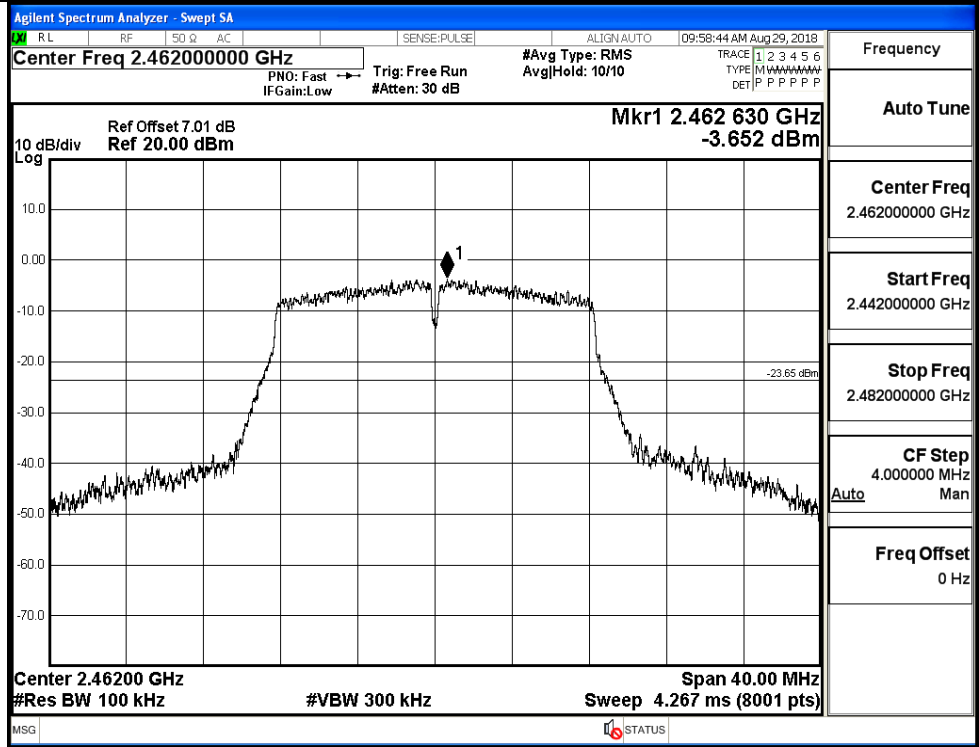


Puw/11G/MCH

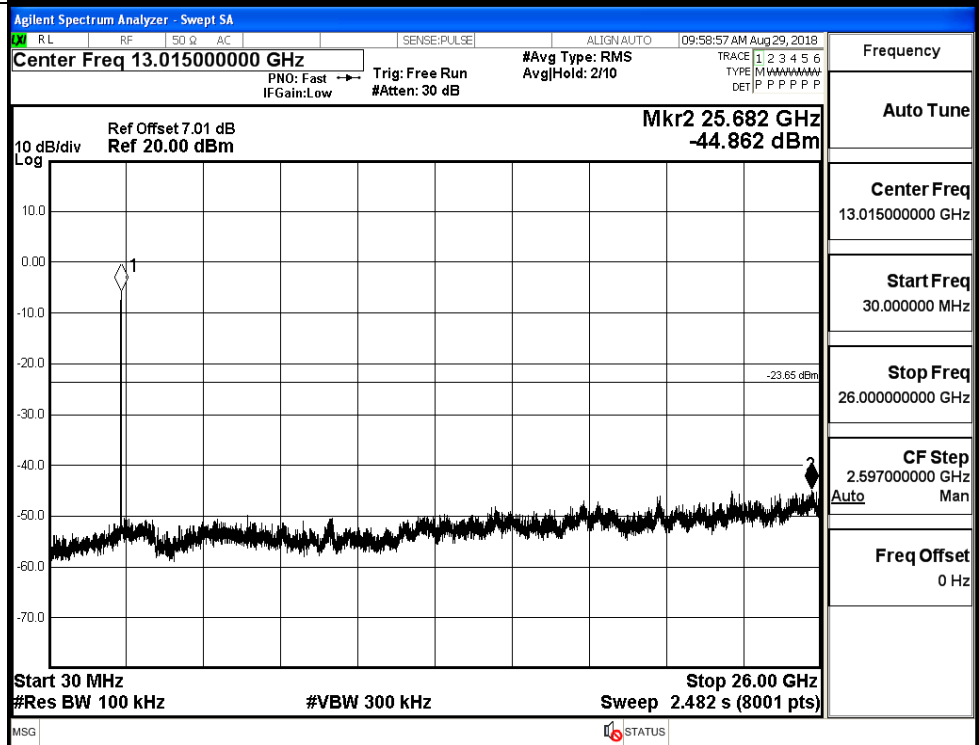


11G\_HCH\_Graphs

Pref/11G/HCH

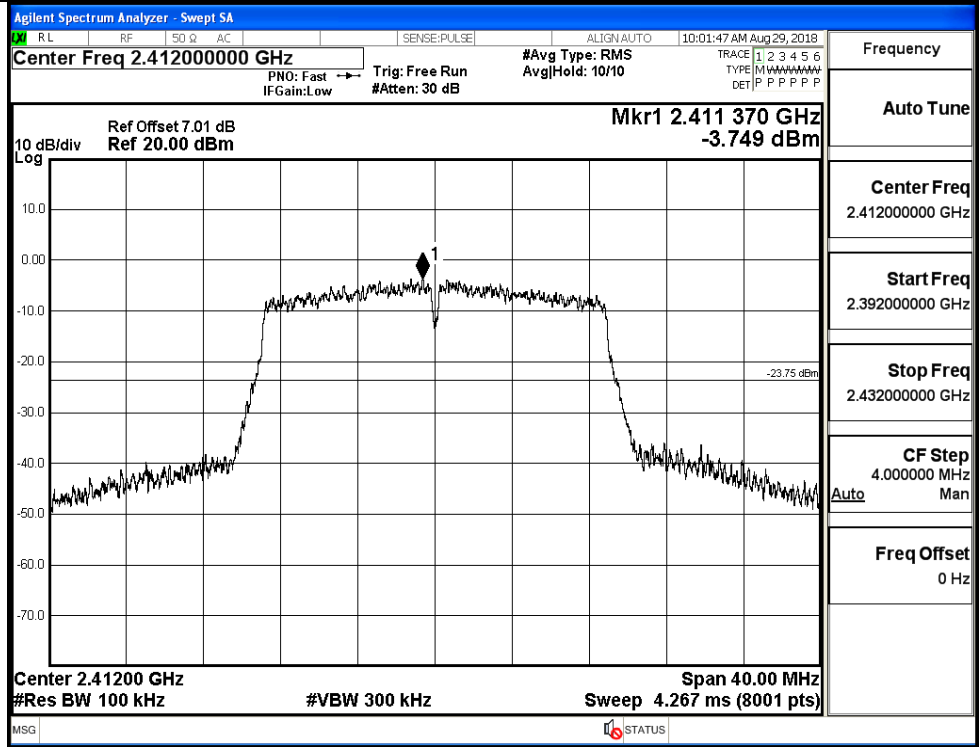


Puw/11G/HCH

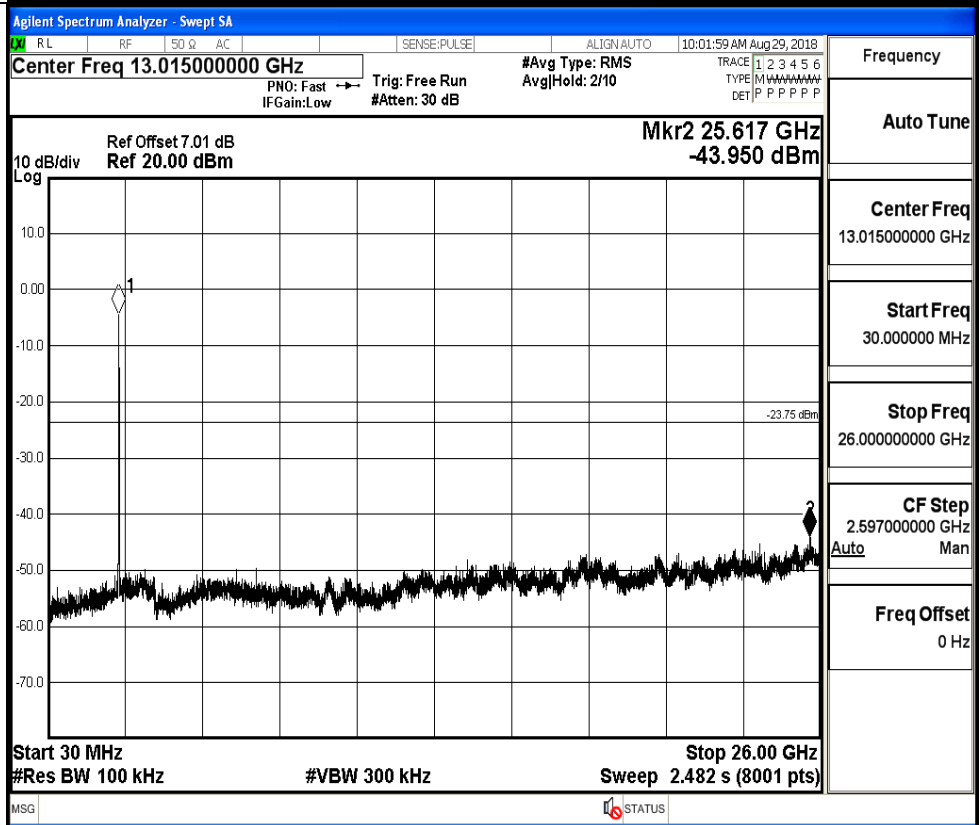


11N20SISO\_LCH\_Graphs

Pref/11N20SIS  
O/LCH

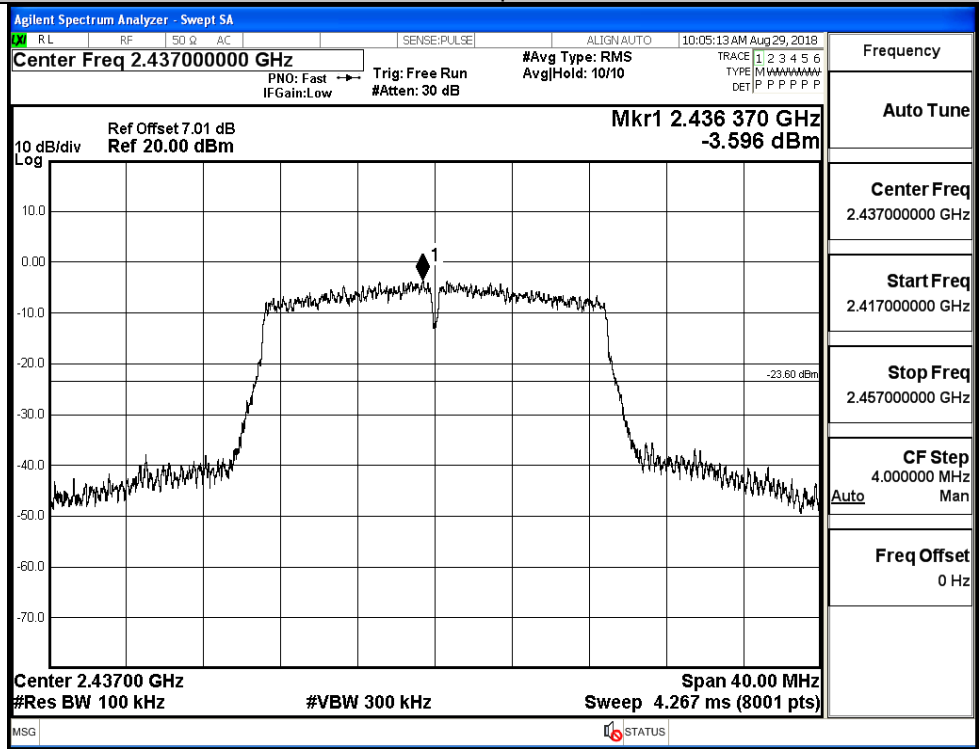


Puw/11N20  
SISO/LCH

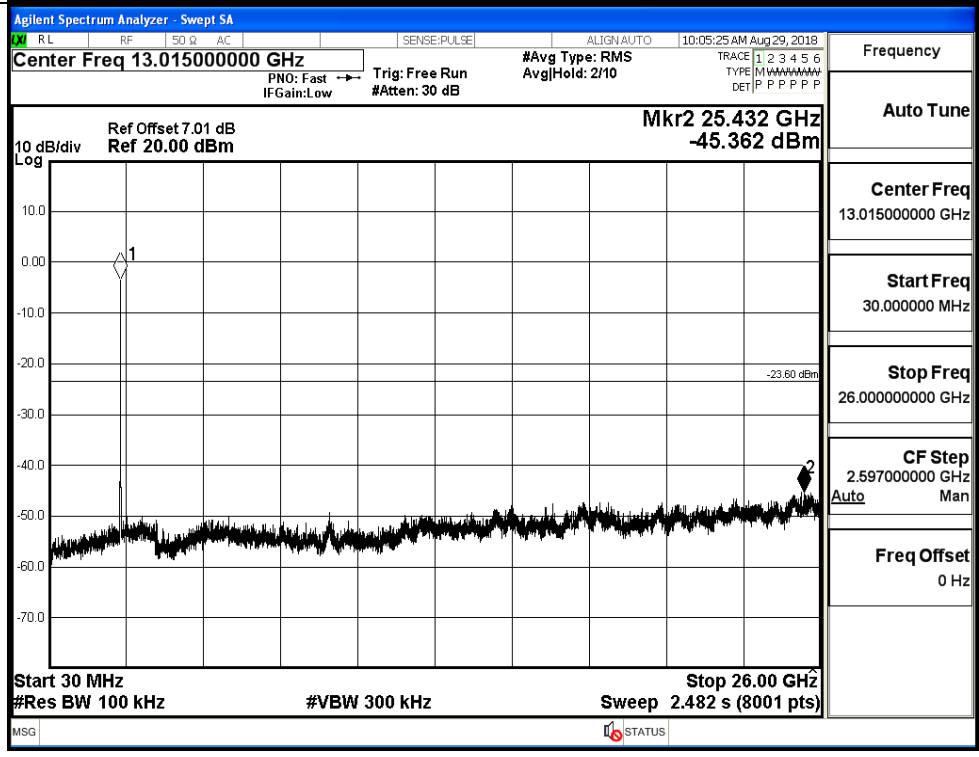


11N20SISO\_MCH\_Graphs

Pref/11N20  
SISO/MCH

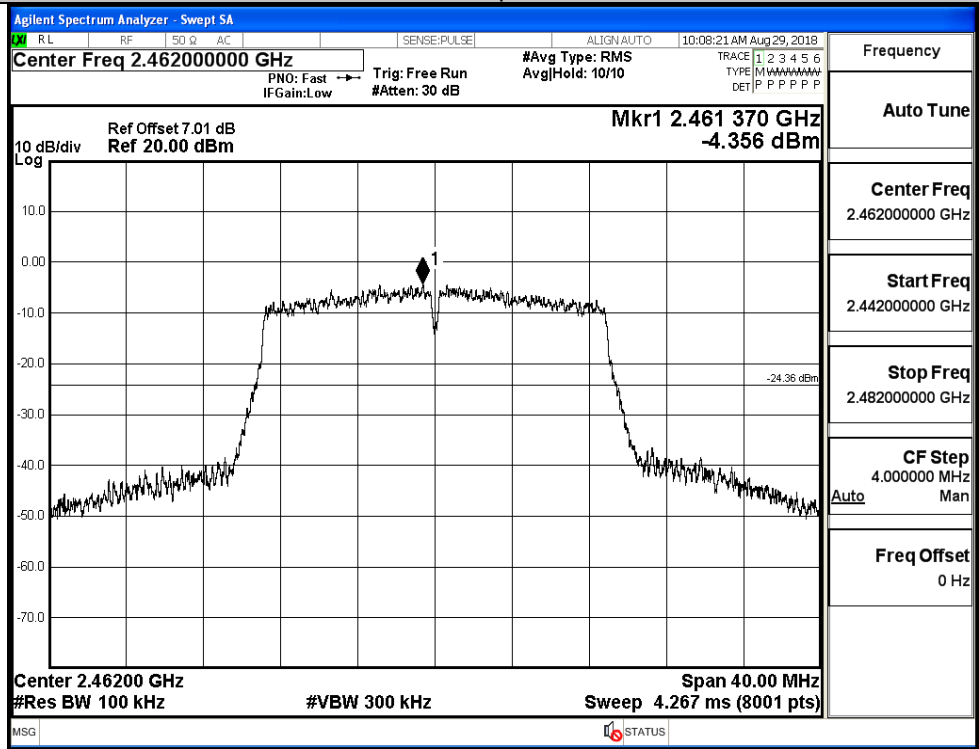


Puw/11N20  
SISO/MCH

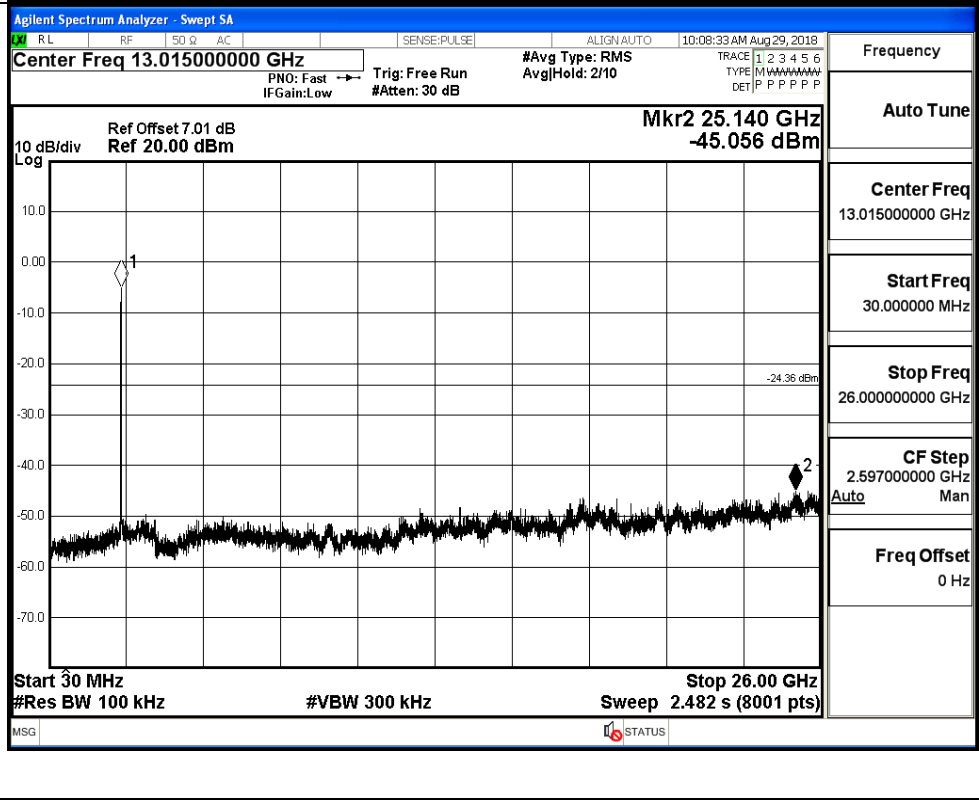


11N20SISO\_HCH\_Graphs

Pref/11N20  
SISO/HCH



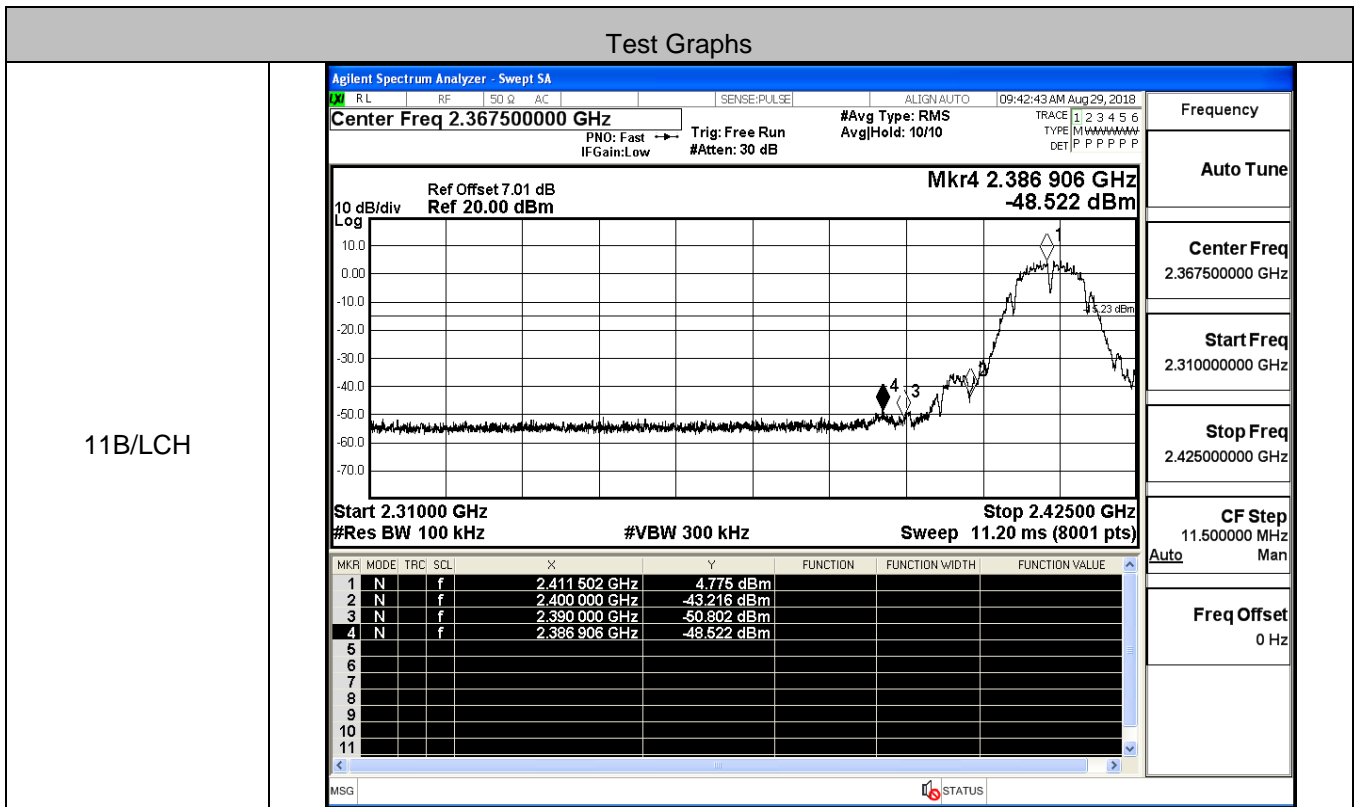
Puw/11N20  
SISO/HCH



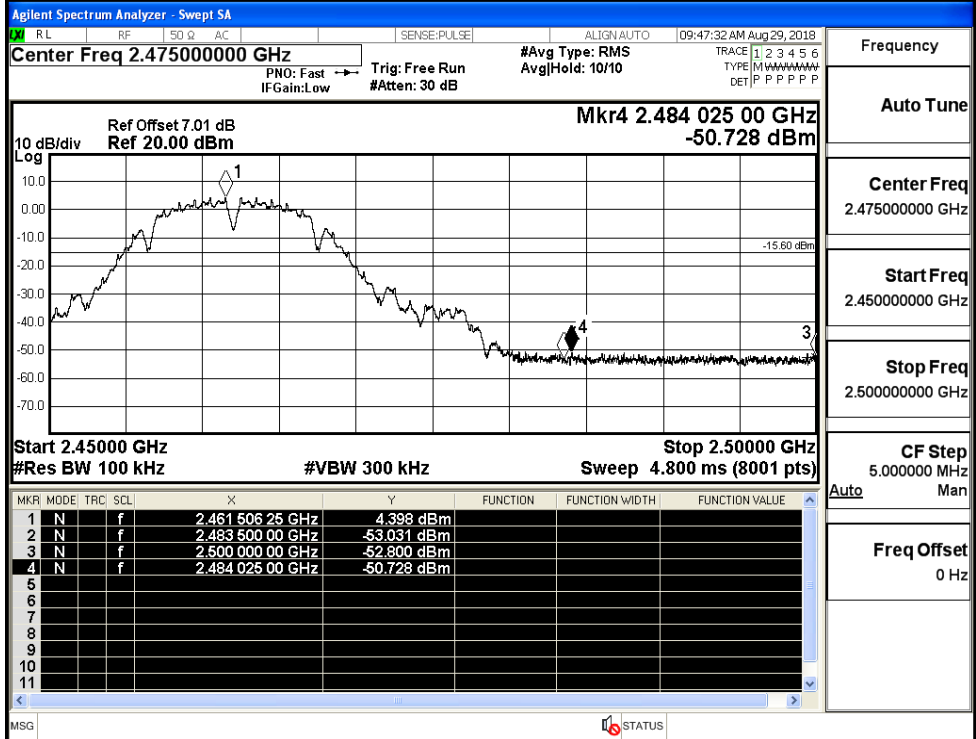


### A.6 Band-edge for RF Conducted Emissions

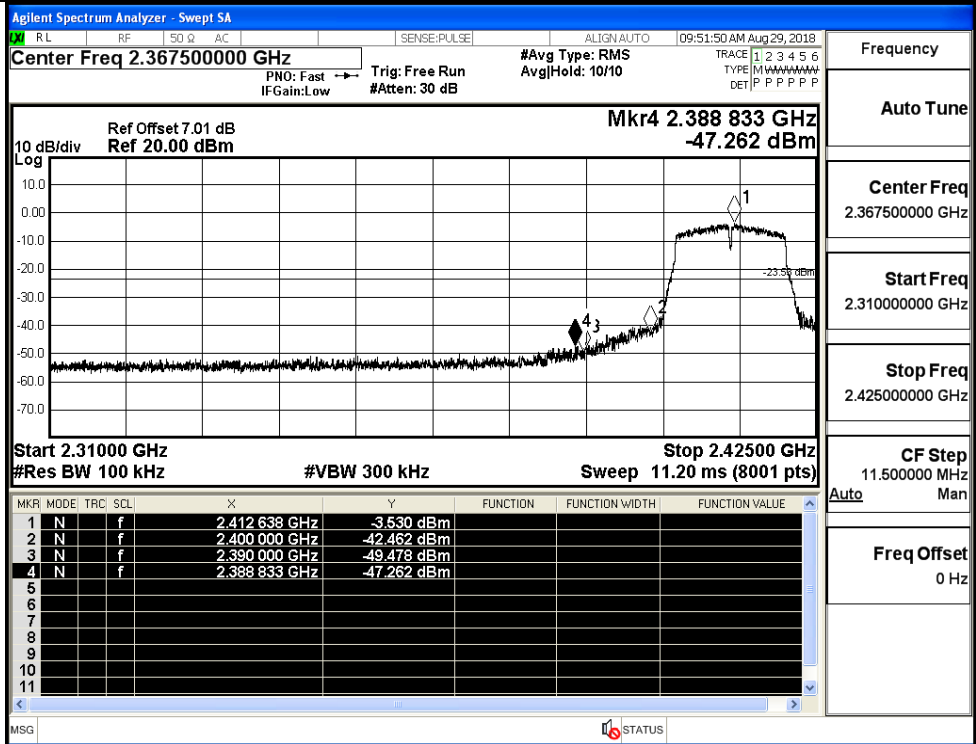
Mode	Channel	Carrier Power[dBm]	Max.Spurious Level [dBm]	Limit [dBm]	Verdict
11B	LCH	4.775	-48.522	-15.23	PASS
	HCH	4.398	-50.728	-15.6	PASS
11G	LCH	-3.530	-47.262	-23.53	PASS
	HCH	-3.607	-48.087	-23.61	PASS
11N20SISO	LCH	-3.652	-48.139	-23.65	PASS
	HCH	-4.142	-48.270	-24.14	PASS



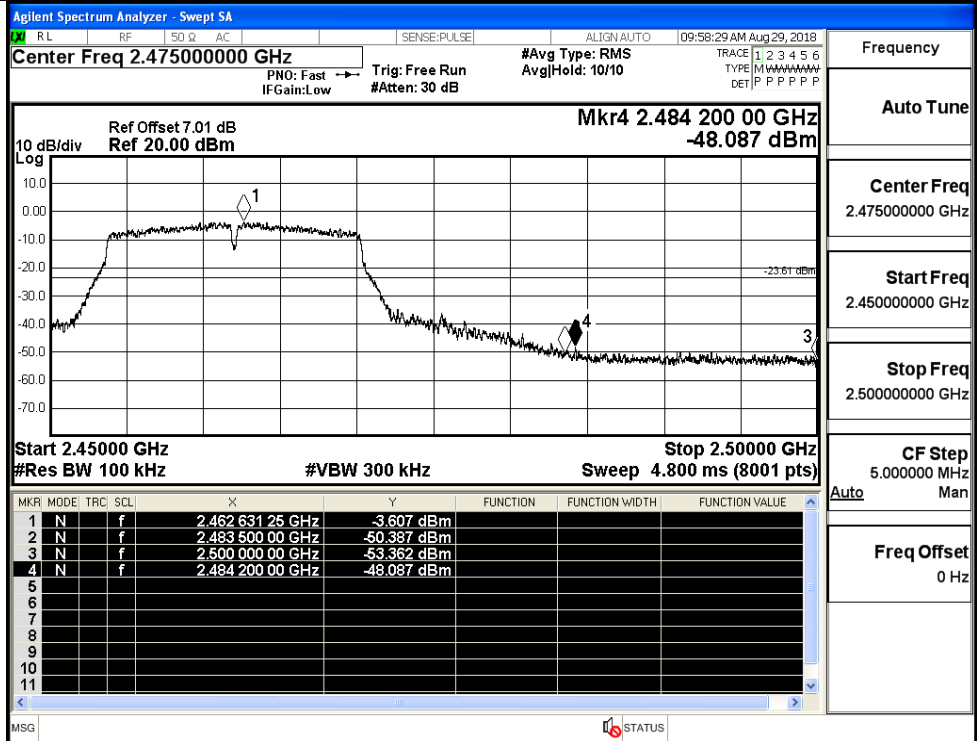
11B/HCH



11G/LCH

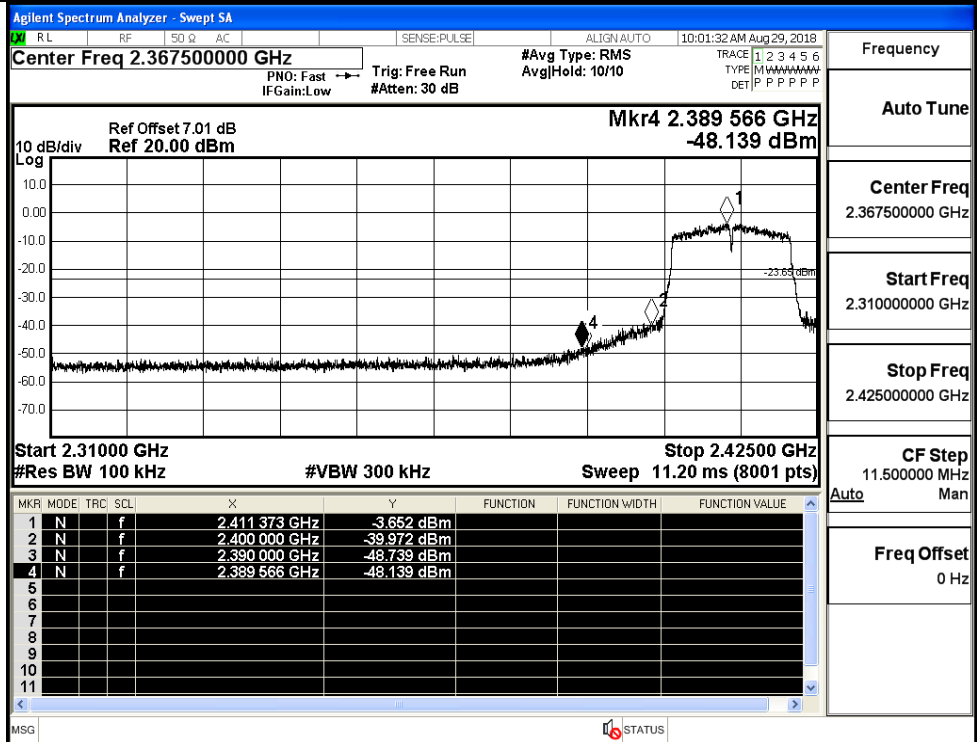


11G/HCH



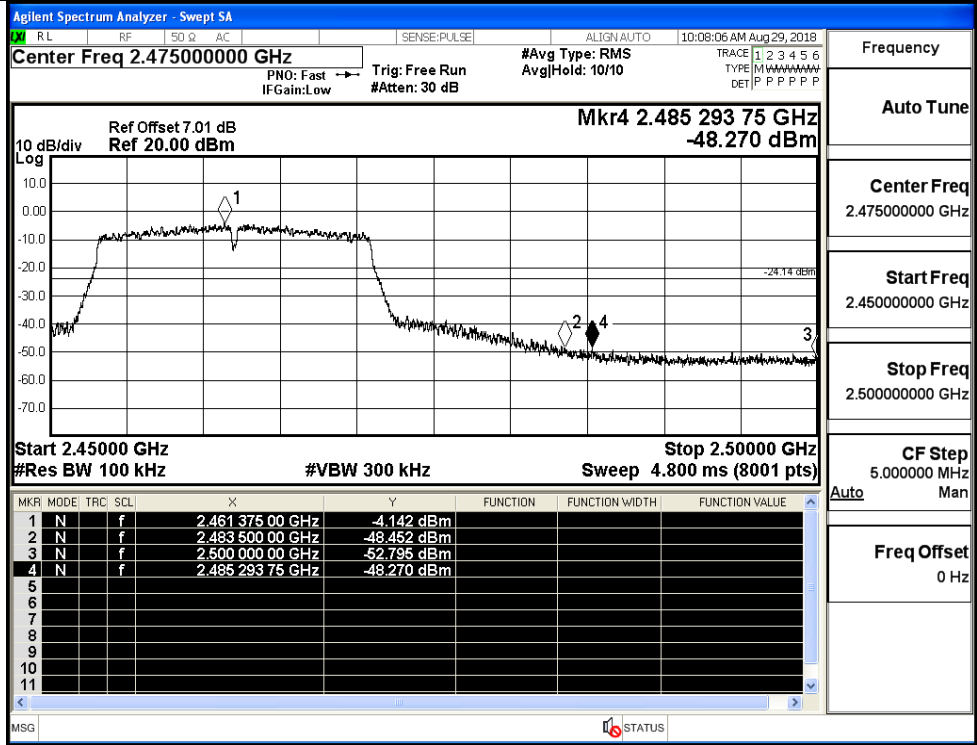
Frequency	
Auto Tune	
Center Freq	2.47500000 GHz
Start Freq	2.45000000 GHz
Stop Freq	2.50000000 GHz
CF Step	5.000000 MHz
Freq Offset	0 Hz

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

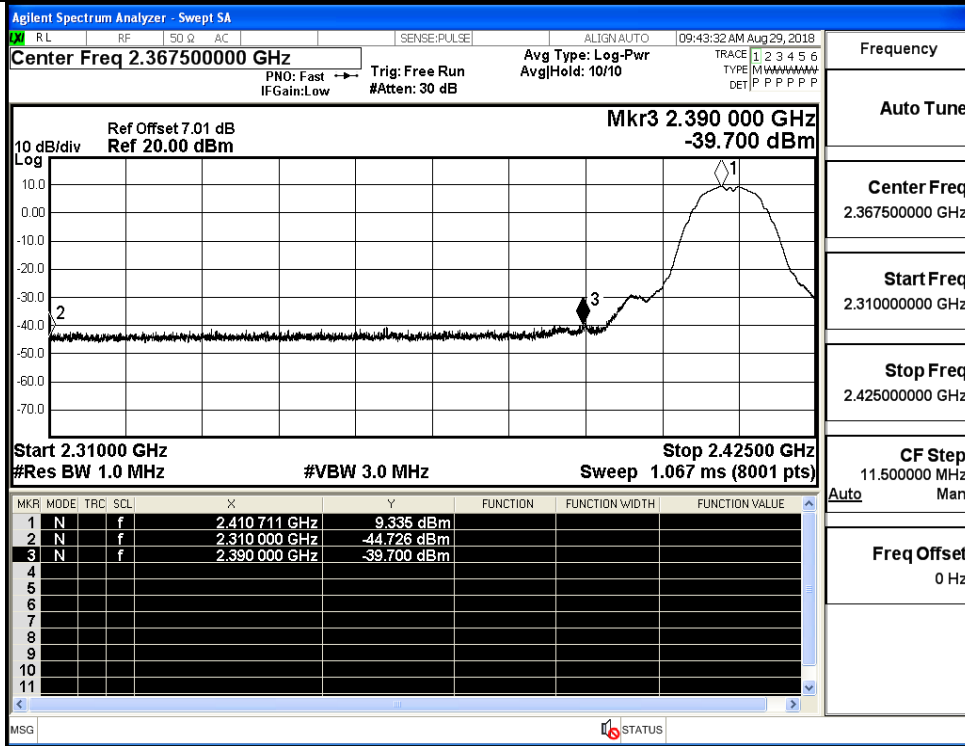


Frequency
Auto Tune
Center Freq 2.475000000 GHz
Start Freq 2.450000000 GHz
Stop Freq 2.500000000 GHz
CF Step 5.000000 MHz Auto Man
Freq Offset 0 Hz

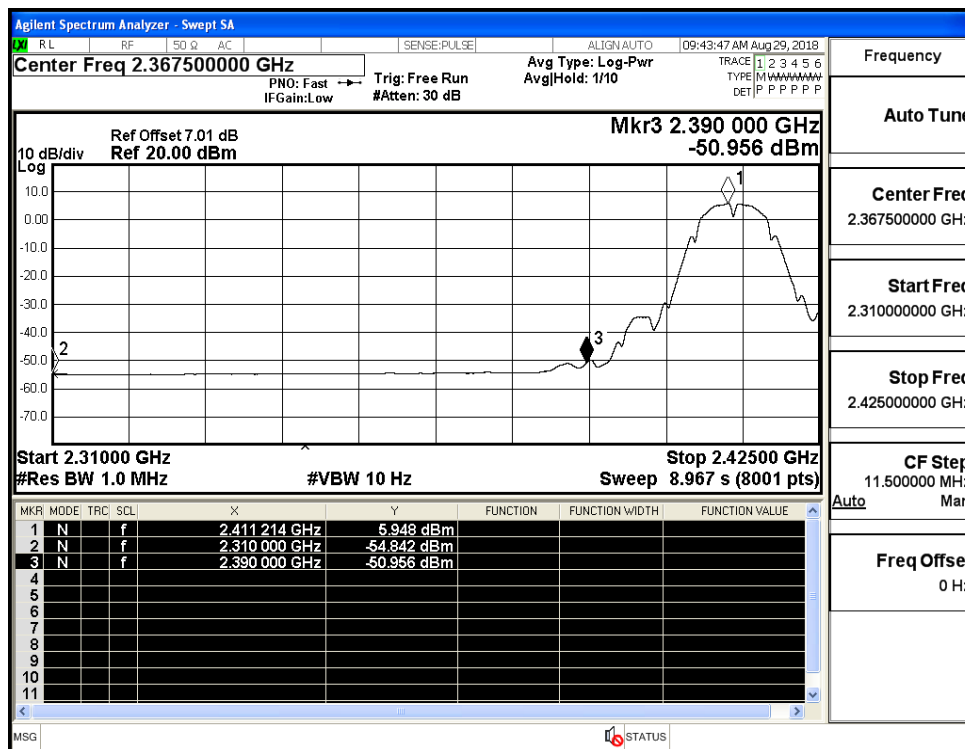
**A.7 Restrict-band band-edge measurements**

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	-44.726	2.50	0	53.002	PEAK	74	PASS
	2412	Ant1	2310.0	-54.842	2.50	0	42.886	AV	54	PASS
	2412	Ant1	2390.0	-39.700	2.50	0	58.028	PEAK	74	PASS
	2412	Ant1	2390.0	-50.956	2.50	0	46.772	AV	54	PASS
	2462	Ant1	2483.5	-43.441	2.50	0	54.287	PEAK	74	PASS
	2462	Ant1	2483.5	-53.328	2.50	0	44.400	AV	54	PASS
	2462	Ant1	2500.0	-44.058	2.50	0	53.670	PEAK	74	PASS
	2462	Ant1	2500.0	-53.707	2.50	0	44.021	AV	54	PASS
11G	2412	Ant1	2310.0	-43.559	2.50	0	54.169	PEAK	74	PASS
	2412	Ant1	2310.0	-54.892	2.50	0	42.836	AV	54	PASS
	2412	Ant1	2390.0	-36.491	2.50	0	61.237	PEAK	74	PASS
	2412	Ant1	2390.0	-51.219	2.50	0	46.509	AV	54	PASS
	2462	Ant1	2483.5	-39.729	2.50	0	57.999	PEAK	74	PASS
	2462	Ant1	2483.5	-51.390	2.50	0	46.338	AV	54	PASS
	2462	Ant1	2500.0	-42.705	2.50	0	55.023	PEAK	74	PASS
	2462	Ant1	2500.0	-53.323	2.50	0	44.405	AV	54	PASS
11N20 SISO	2412	Ant1	2310.0	-45.308	2.50	0	52.420	PEAK	74	PASS
	2412	Ant1	2310.0	-54.835	2.50	0	42.893	AV	54	PASS
	2412	Ant1	2390.0	-33.591	2.50	0	64.137	PEAK	74	PASS
	2412	Ant1	2390.0	-50.078	2.50	0	47.650	AV	54	PASS
	2462	Ant1	2483.5	-37.623	2.50	0	60.105	PEAK	74	PASS
	2462	Ant1	2483.5	-50.779	2.50	0	46.949	AV	54	PASS
	2462	Ant1	2500.0	-41.997	2.50	0	55.731	PEAK	74	PASS
	2462	Ant1	2500.0	-53.334	2.50	0	44.394	AV	54	PASS

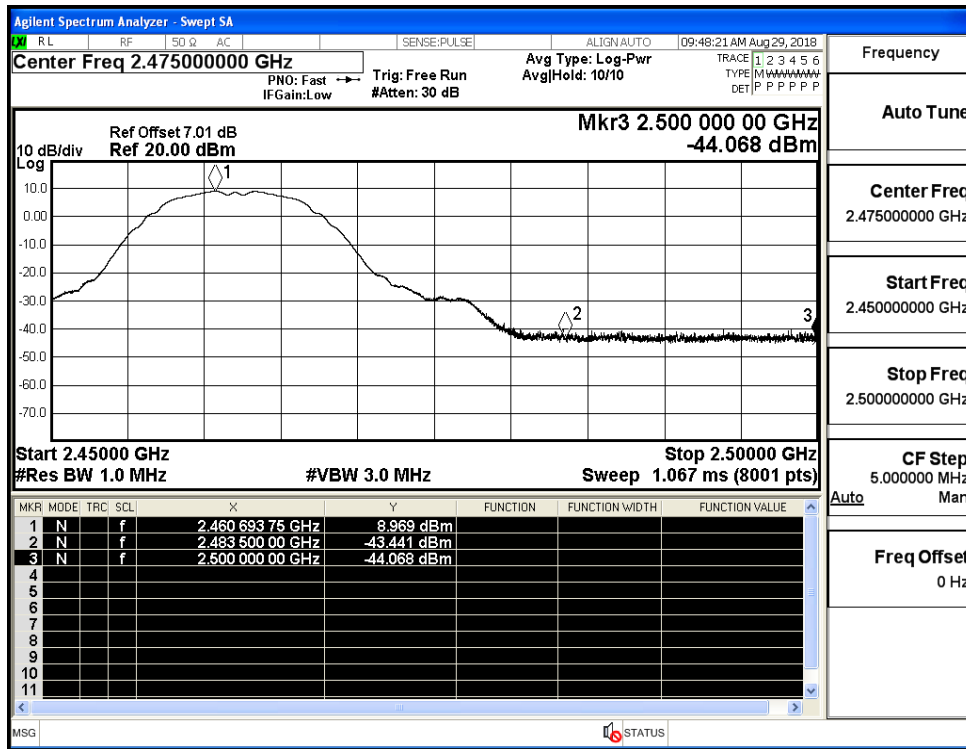
Restrict-band band-edge measurements\_11B\_2412\_Ant1\_PEAK



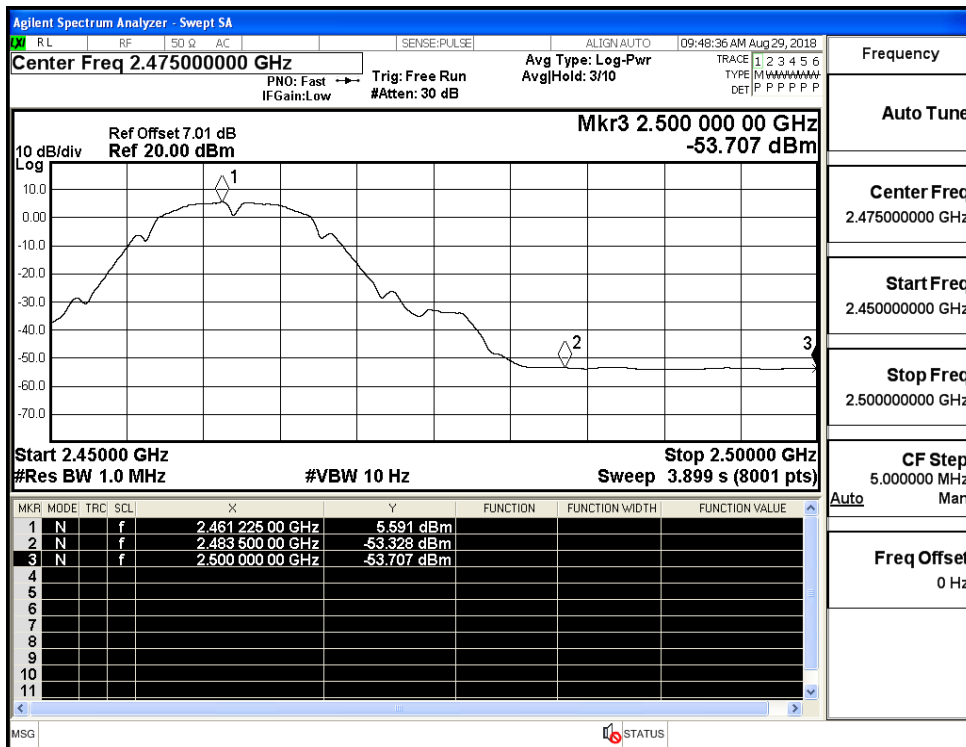
Restrict-band band-edge measurements\_11B\_2412\_Ant1\_AV



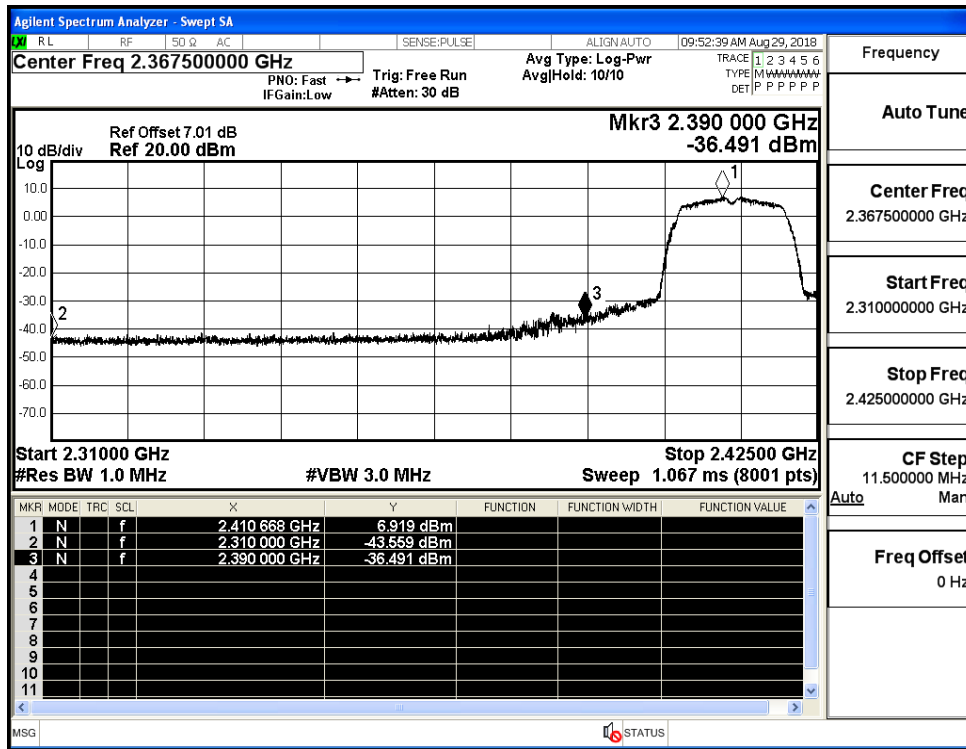
Restrict-band band-edge measurements\_11B\_2462\_Ant1\_PEAK



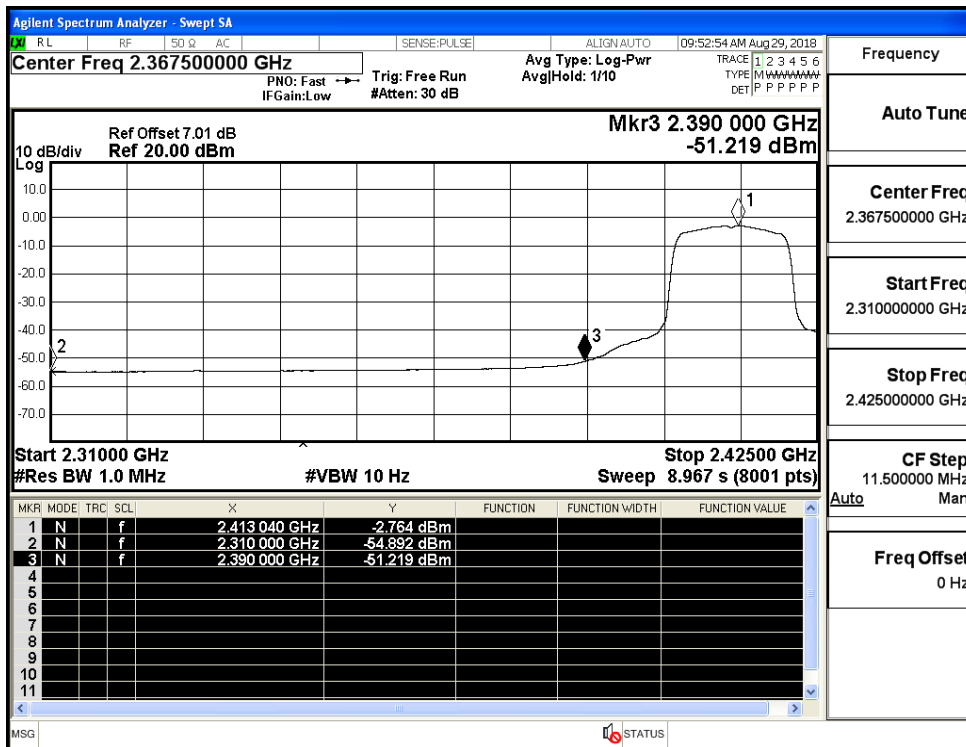
Restrict-band band-edge measurements\_11B\_2462\_Ant1\_AV



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

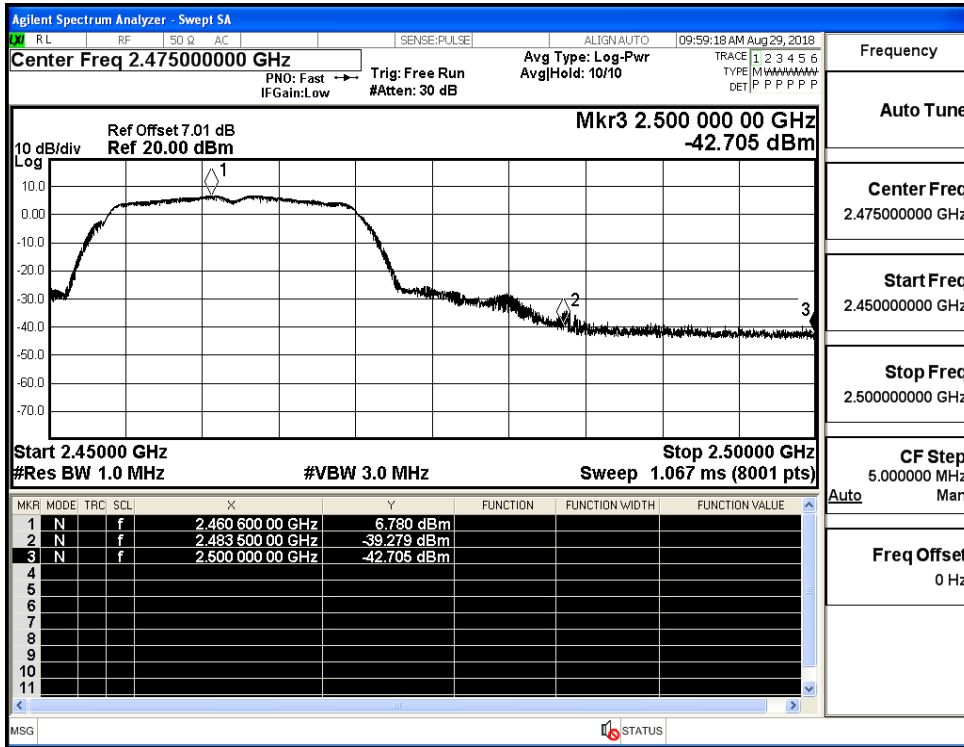


Restrict-band band-edge measurements\_11G\_2412\_Ant1\_AV

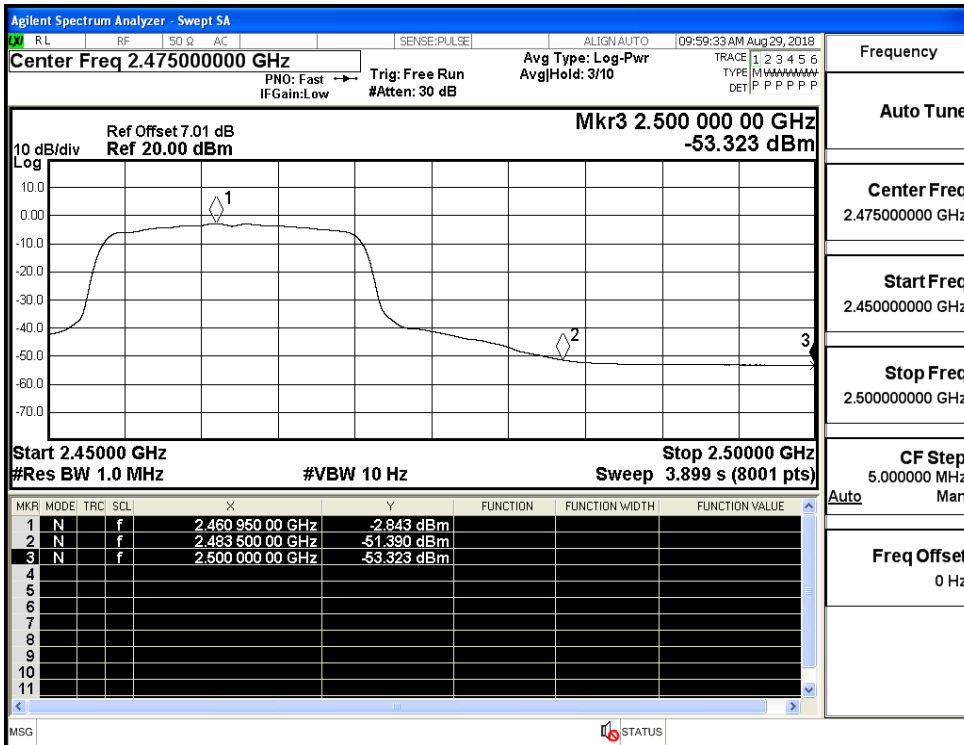




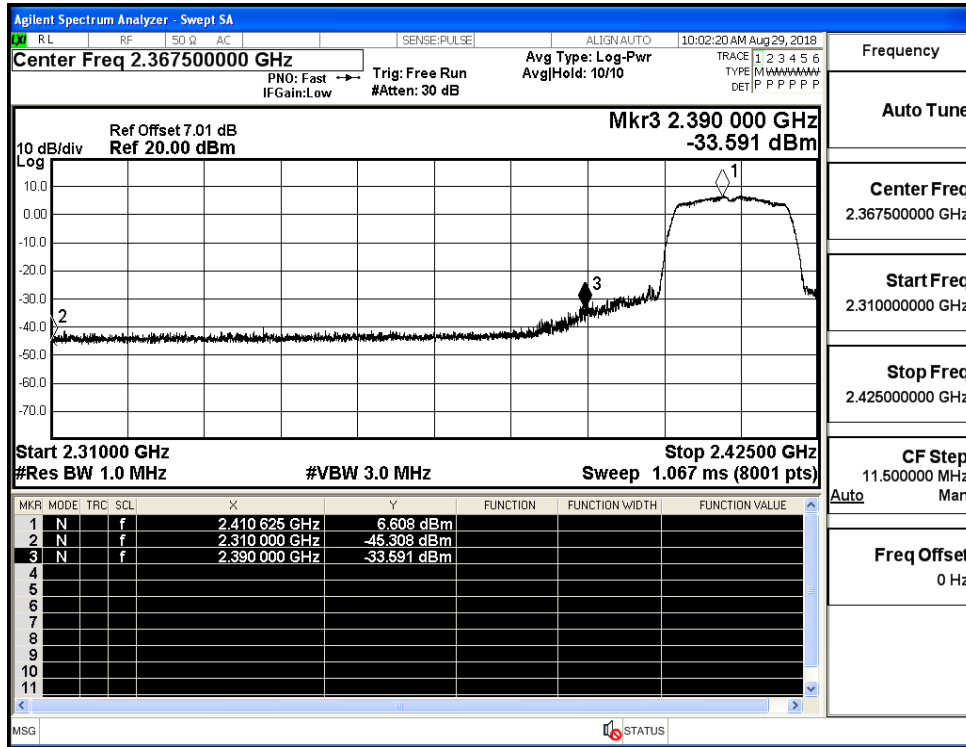
Restrict-band band-edge measurements\_11G\_2462\_Ant1\_PEAK



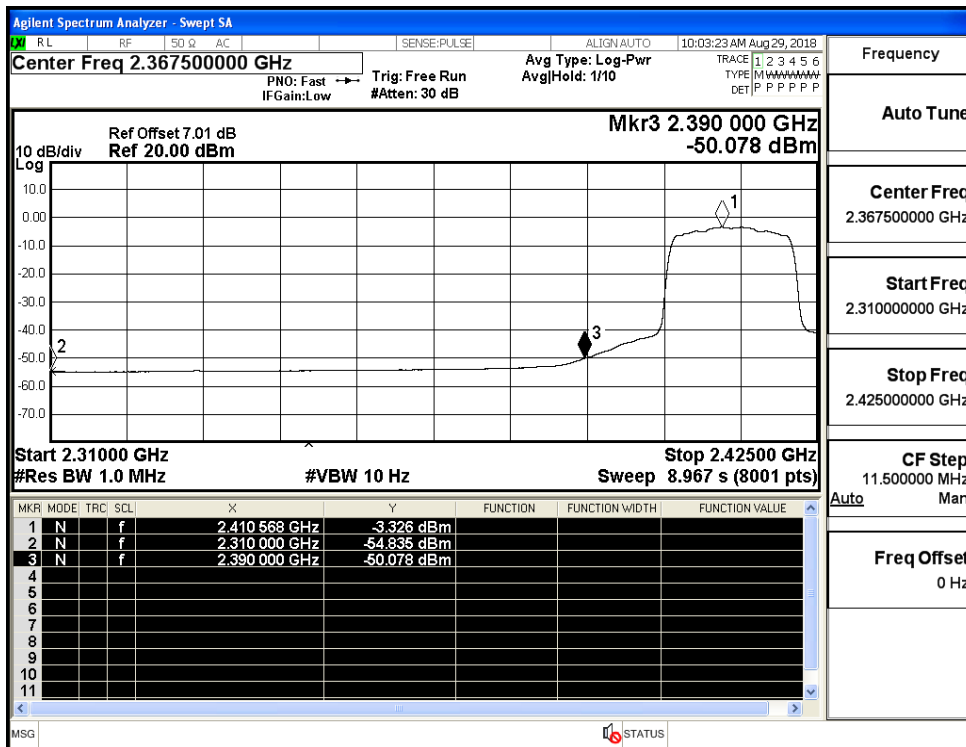
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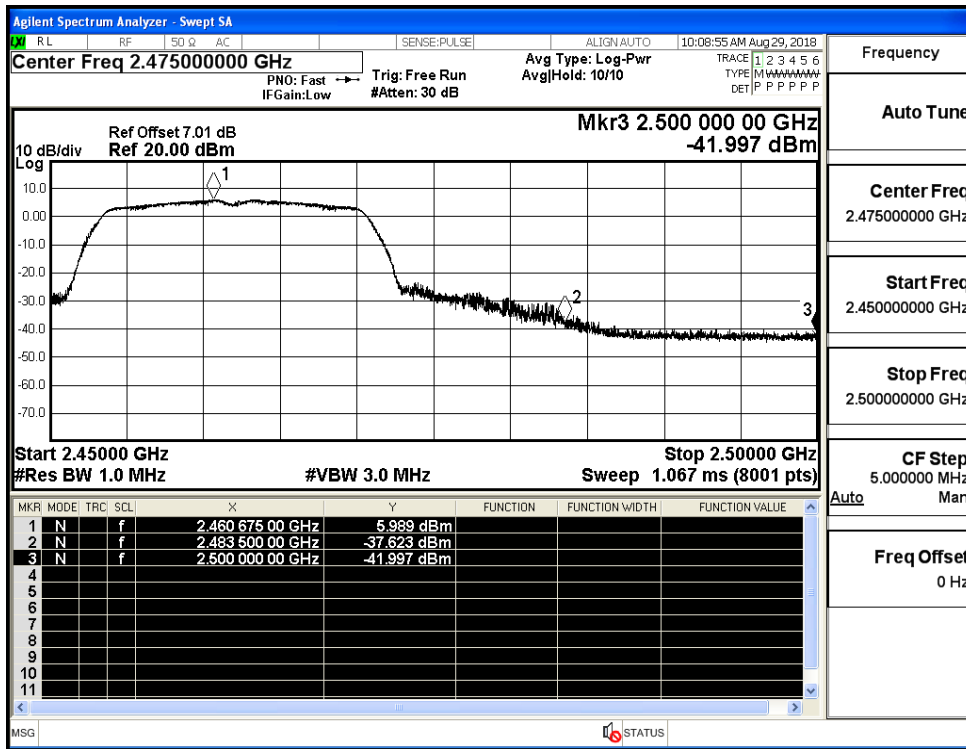
Restrict-band band-edge measurements\_11N20SISO\_2412\_Ant1\_PEAK



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

