

## Appendix A

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

Product Name: LED Lamps

Trade Mark: YAMAO

Test Model: YMDWF BR30 10W 1835-20-50

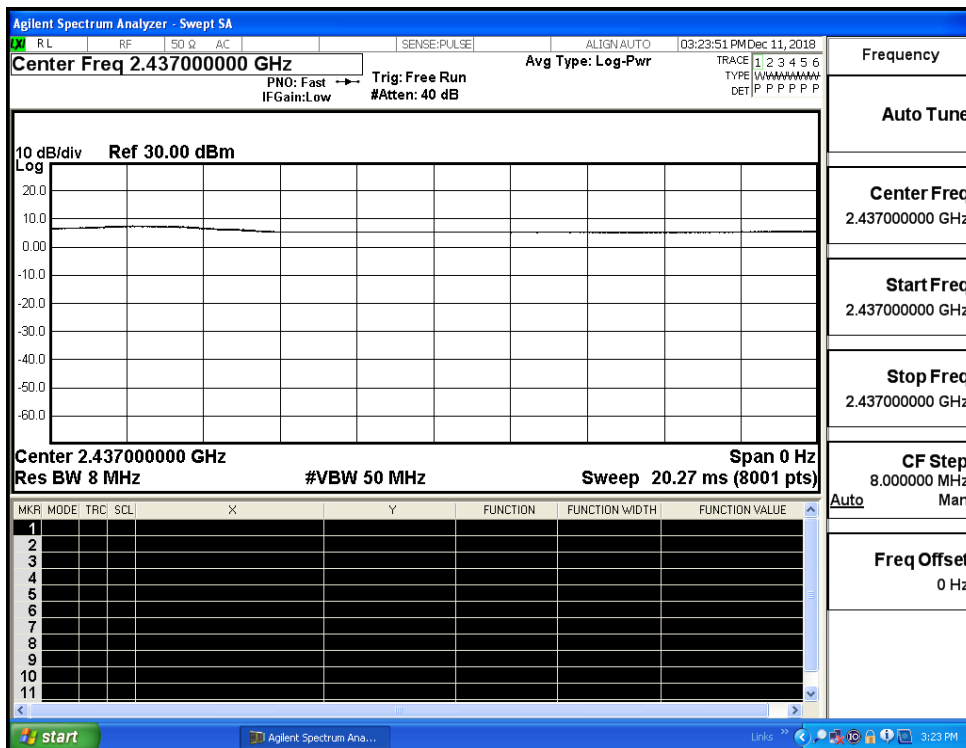
#### Environmental Conditions

Temperature:	24.6 ° C
Relative Humidity:	52.6%
ATM Pressure:	100.0 kPa
Test Engineer:	WANGCHUANG
Supervised by:	Jayden.Zhuo

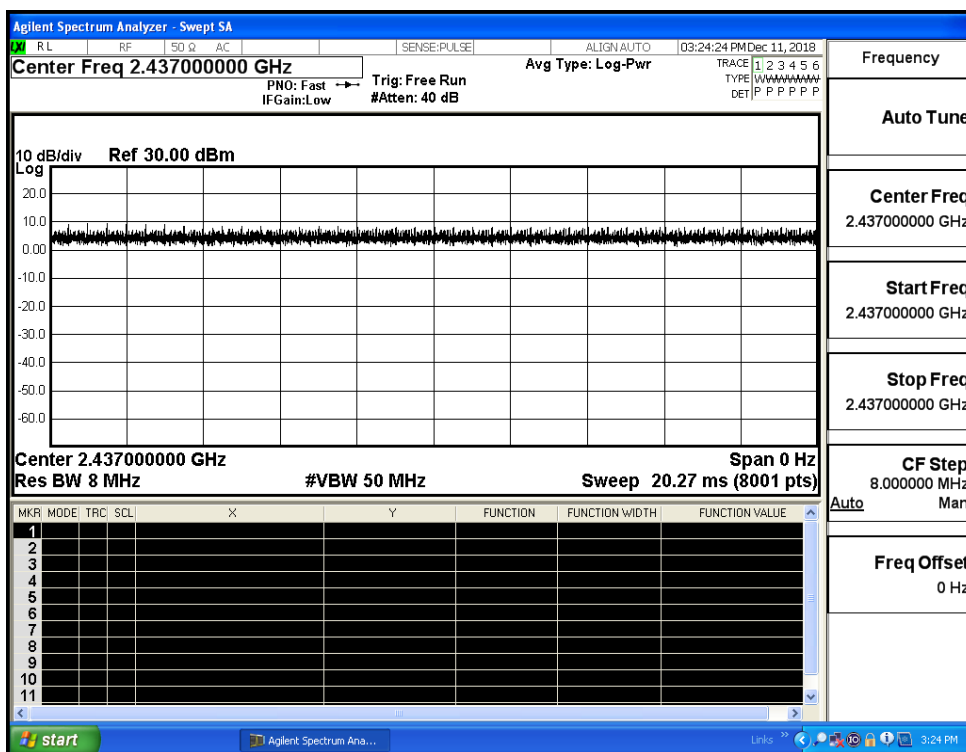
#### A.1 Duty Cycle

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

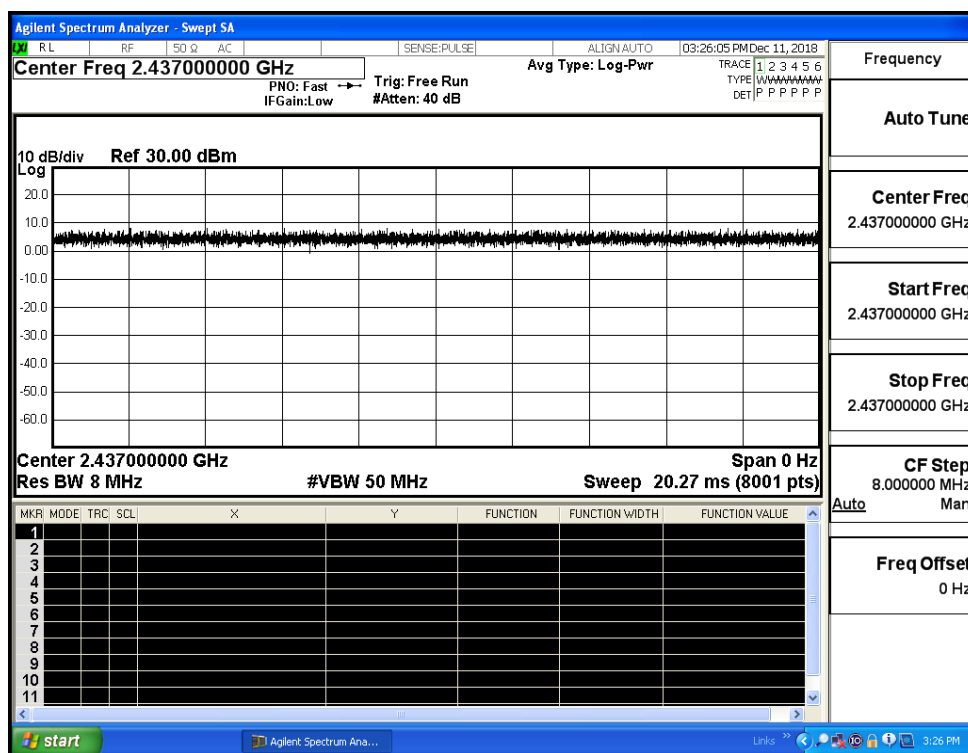
### Duty Cycle\_11B\_2437\_Ant1



### 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	12.03	30	PASS
	MCH	12.71	30	PASS
	HCH	12.67	30	PASS
11G	LCH	12.64	30	PASS
	MCH	12.89	30	PASS
	HCH	12.87	30	PASS
11N20SISO	LCH	12.59	30	PASS
	MCH	13.05	30	PASS
	HCH	13.05	30	PASS

### A.3 Maximum Power Spectral Density

Mode	Channel	Meas.Level [dBm/30KHz]	Limit [dBm/3KHz]	Verdict
11B	LCH	-5.945	8	PASS
	MCH	-5.170	8	PASS
	HCH	-5.242	8	PASS
11G	LCH	-11.918	8	PASS
	MCH	-11.857	8	PASS
	HCH	-11.846	8	PASS
11N20SISO	LCH	-11.984	8	PASS
	MCH	-11.482	8	PASS
	HCH	-11.392	8	PASS

Test Graphs



11B/MCH



Frequency

Auto Tune

Center Freq  
2.437000000 GHz

Start Freq  
2.422000000 GHz

Stop Freq  
2.452000000 GHz

CF Step  
3.000000 MHz  
Auto Man

Freq Offset  
0 Hz

11B/HCH



Frequency

Auto Tune

Center Freq  
2.462000000 GHz

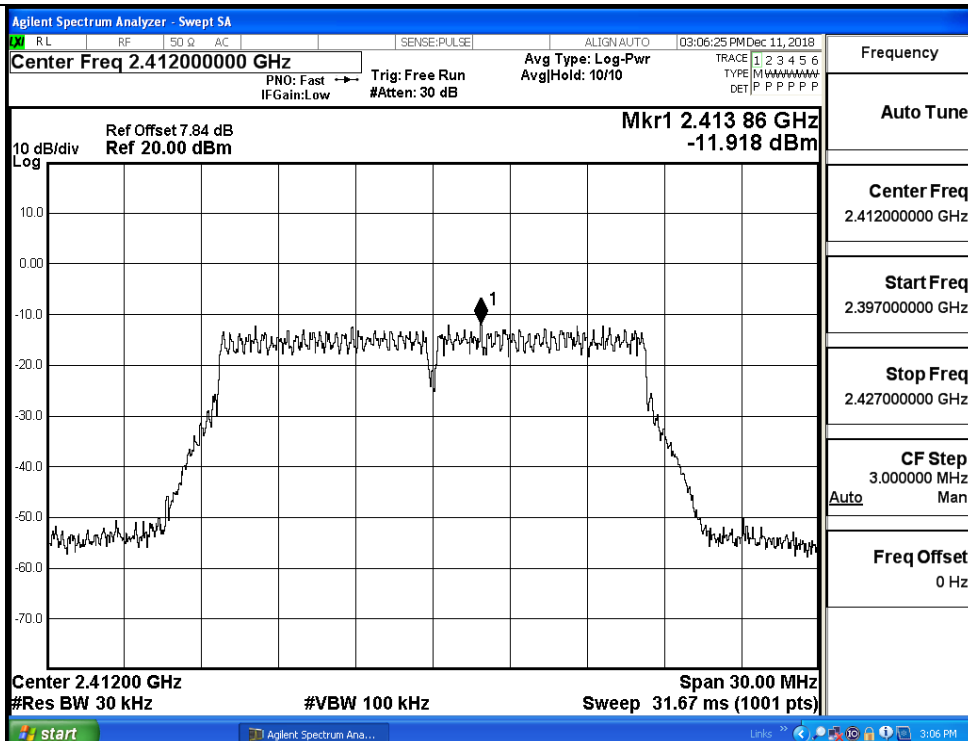
Start Freq  
2.447000000 GHz

Stop Freq  
2.477000000 GHz

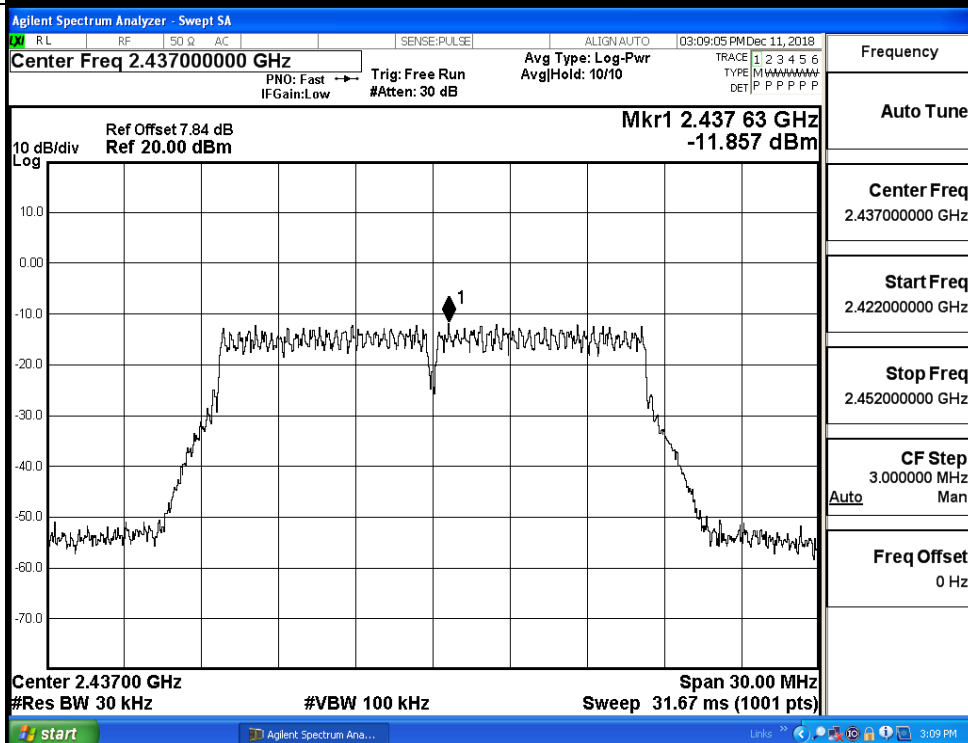
CF Step  
3.000000 MHz  
Auto Man

Freq Offset  
0 Hz

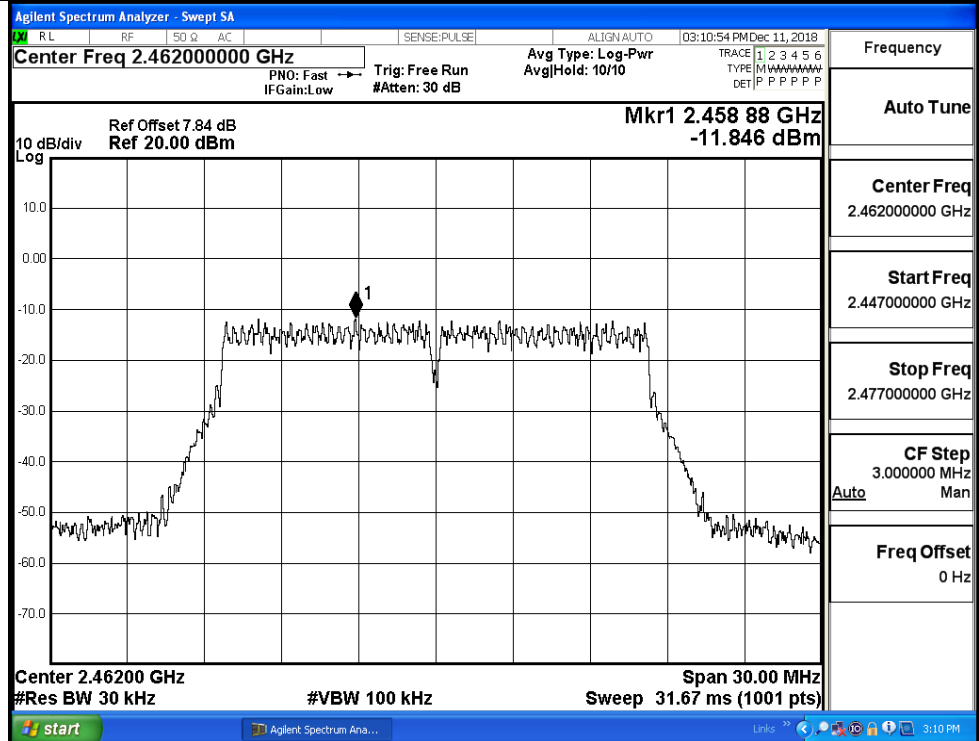
11G/LCH



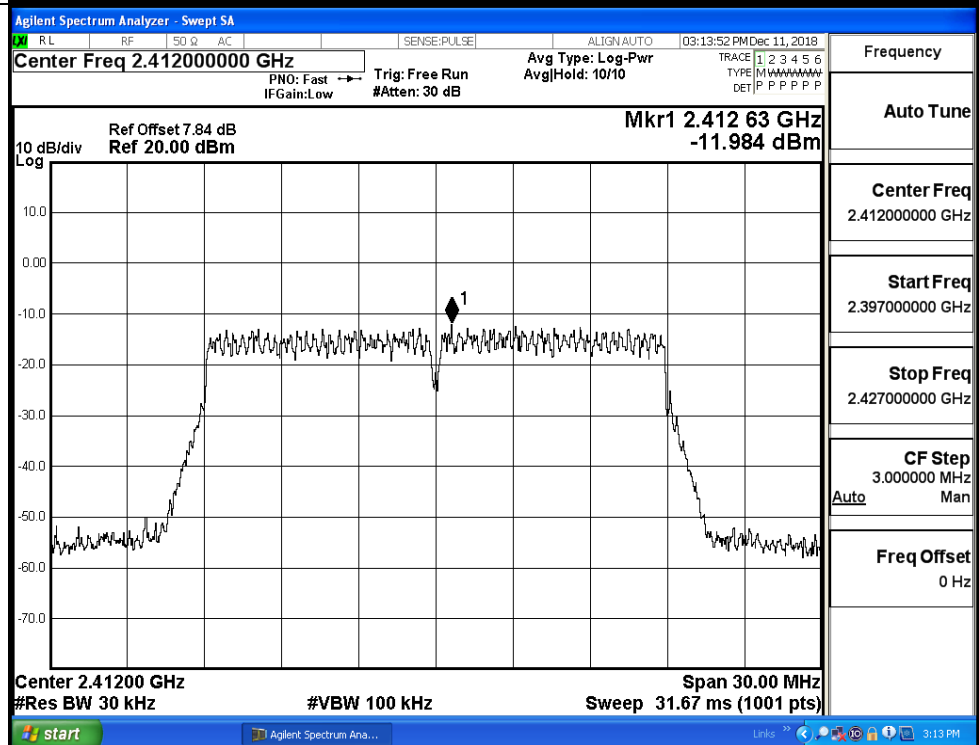
11G/MCH



11G/HCH

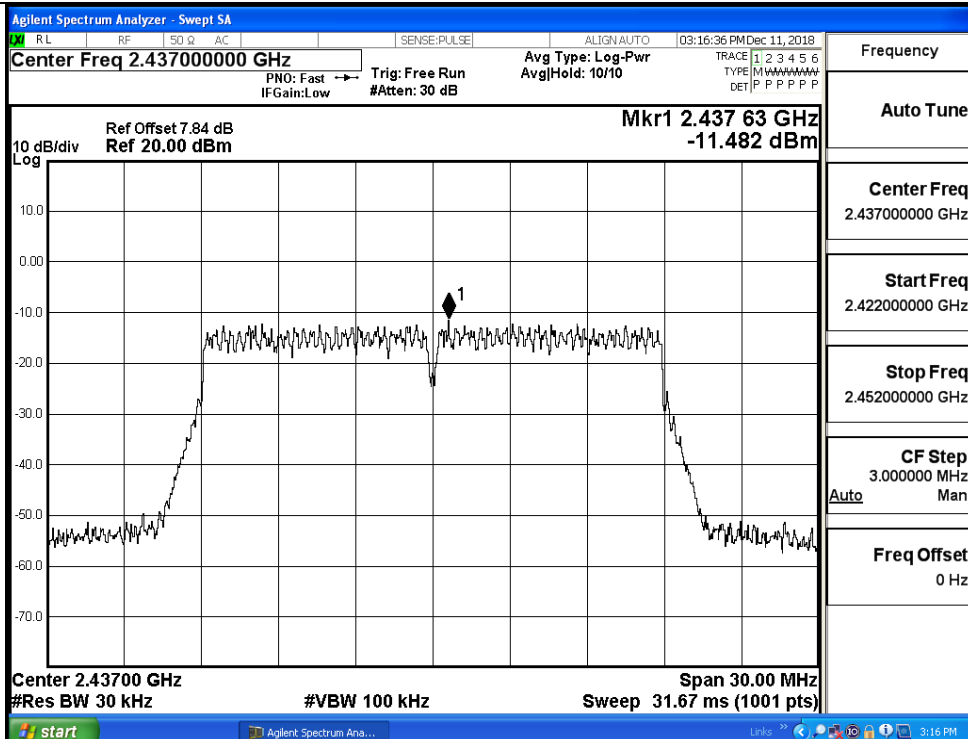


11N20SISO/LCH

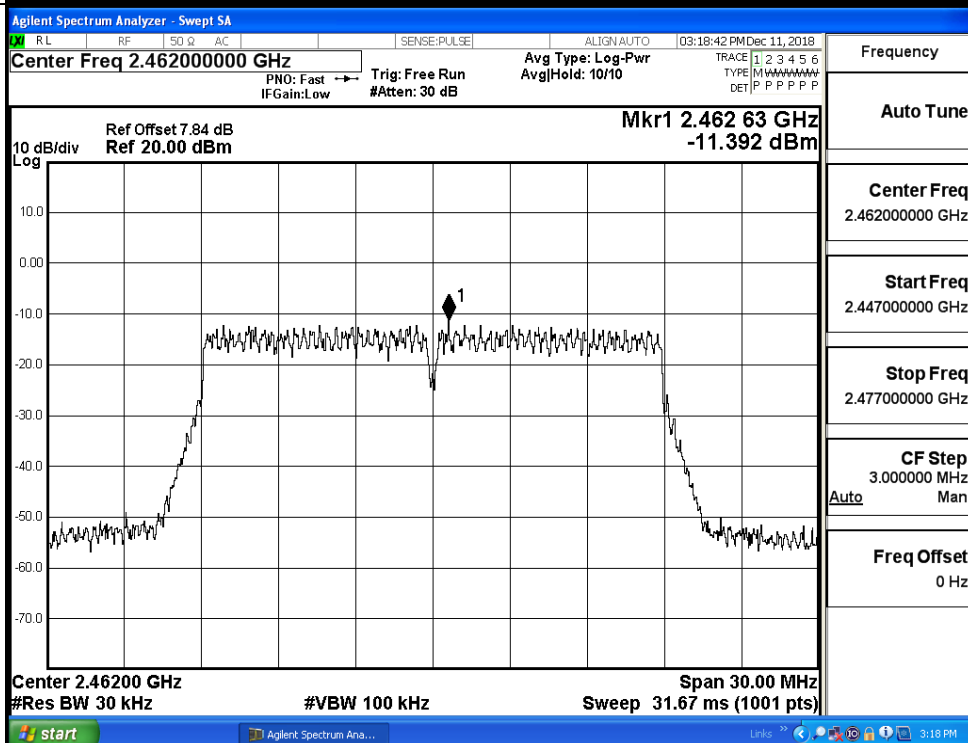




11N20SISO/MCH



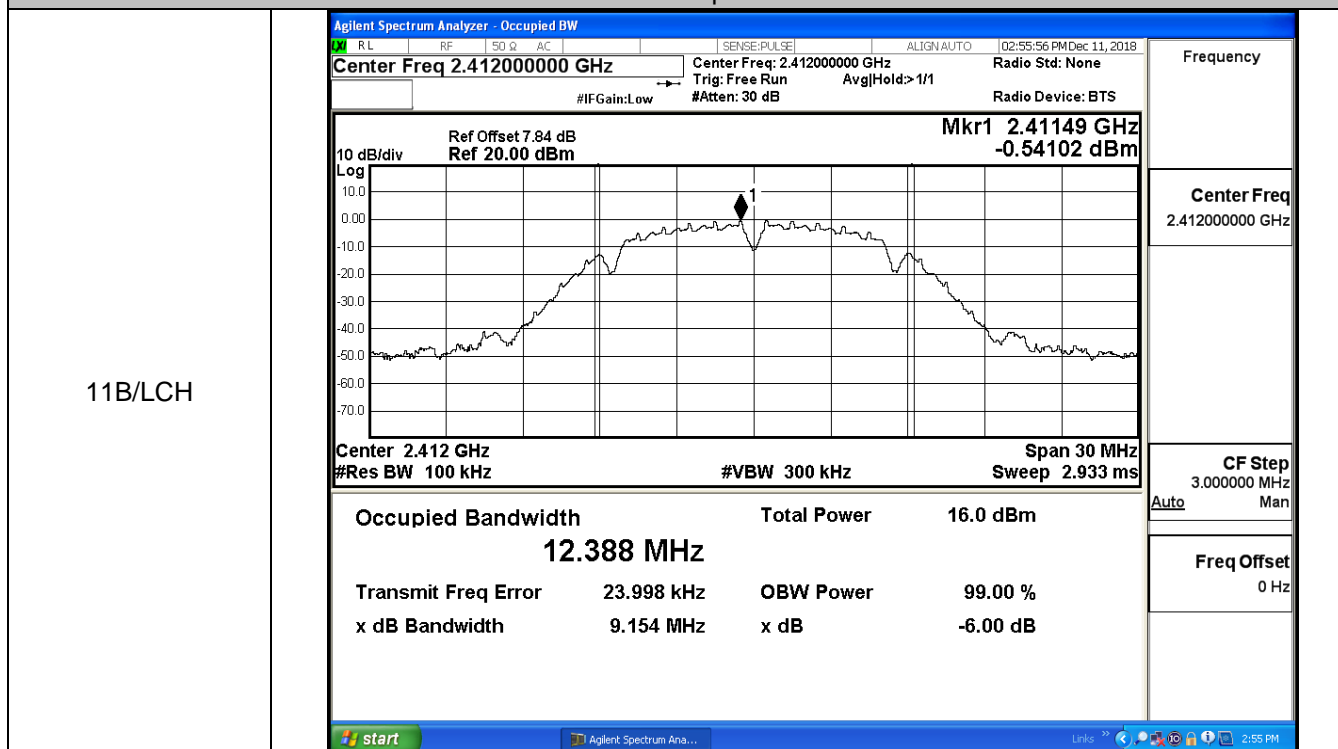
11N20SISO/HCH



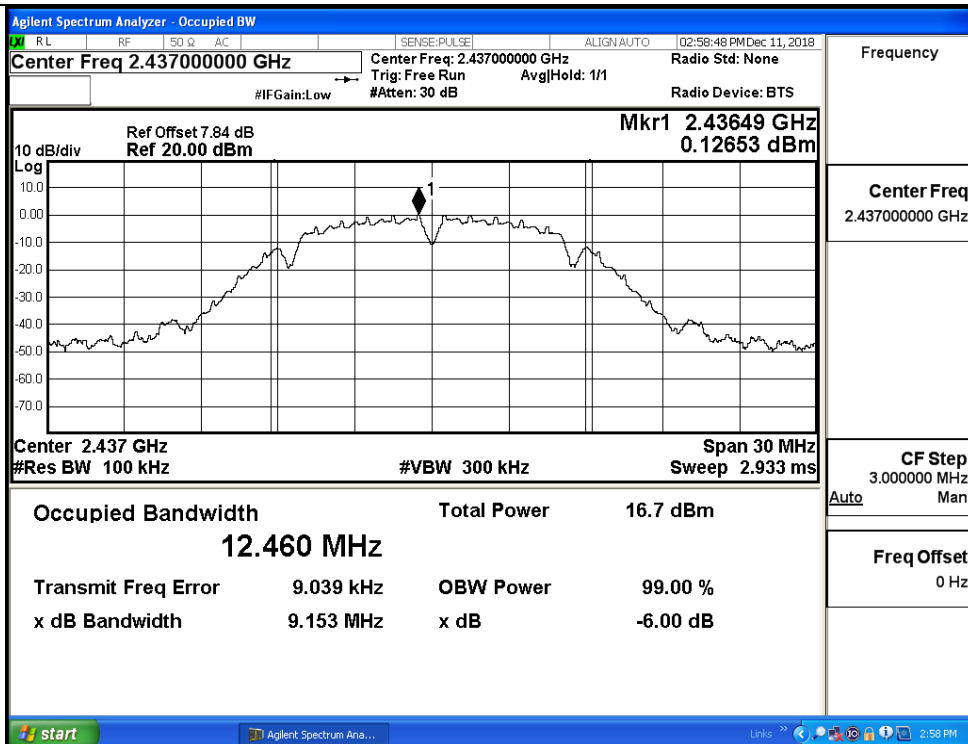
## A.4 6dB Bandwidth

Mode	Channel	6dB Bandwidth [MHz]	Limit [MHz]	Verdict
11B	LCH	9.154	$\geq 0.5$	PASS
	MCH	9.153	$\geq 0.5$	PASS
	HCH	9.155	$\geq 0.5$	PASS
11G	LCH	16.60	$\geq 0.5$	PASS
	MCH	16.61	$\geq 0.5$	PASS
	HCH	16.61	$\geq 0.5$	PASS
11N20SISO	LCH	17.83	$\geq 0.5$	PASS
	MCH	17.82	$\geq 0.5$	PASS
	HCH	17.82	$\geq 0.5$	PASS

## Test Graphs



11B/MCH



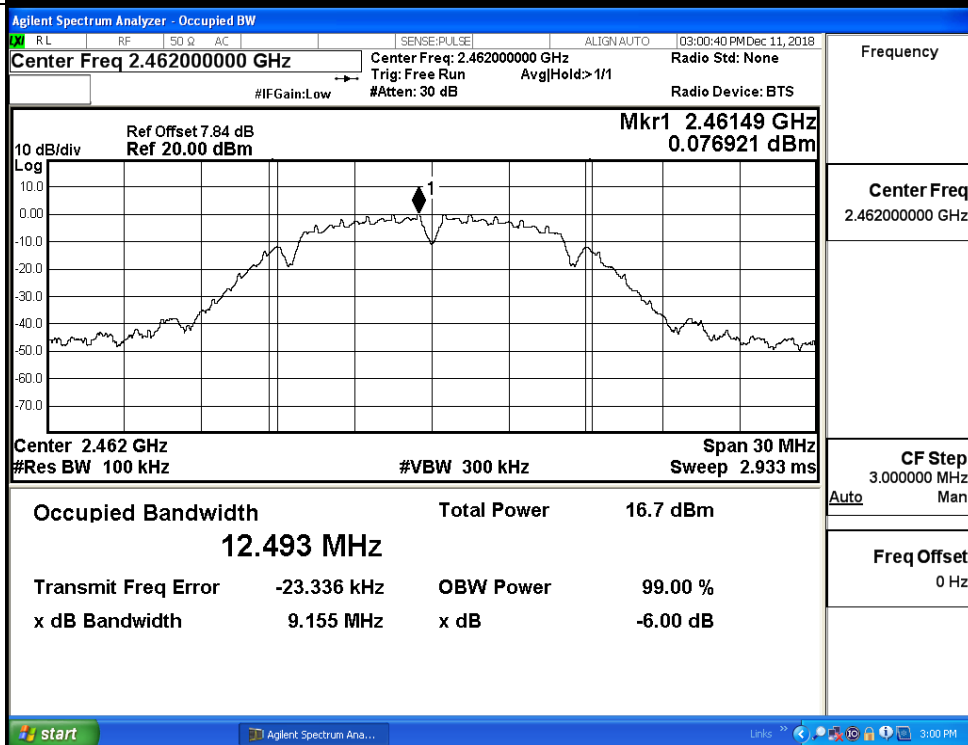
Frequency

Center Freq  
2.437000000 GHz

CF Step  
3.000000 MHz  
Auto Man

Freq Offset  
0 Hz

11B/HCH



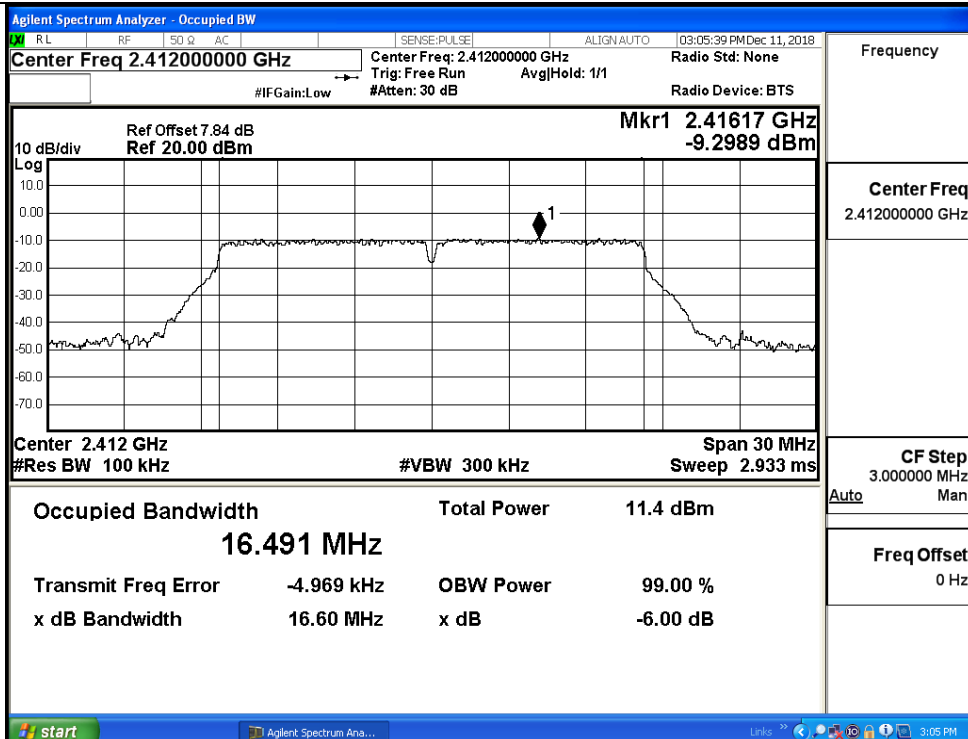
Frequency

Center Freq  
2.462000000 GHz

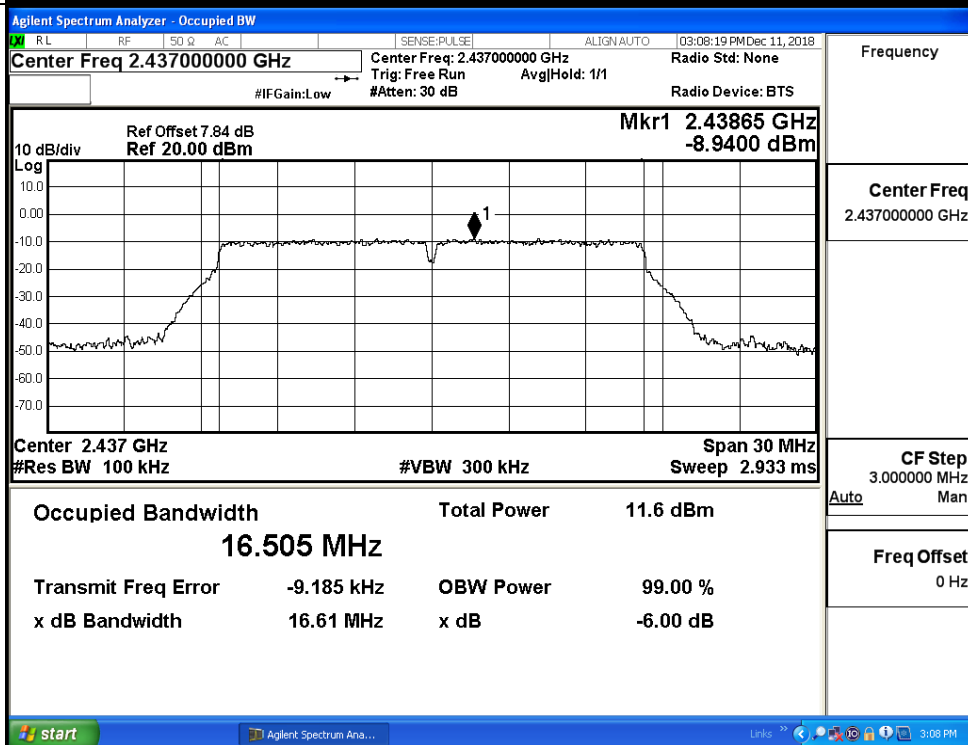
CF Step  
3.000000 MHz  
Auto Man

Freq Offset  
0 Hz

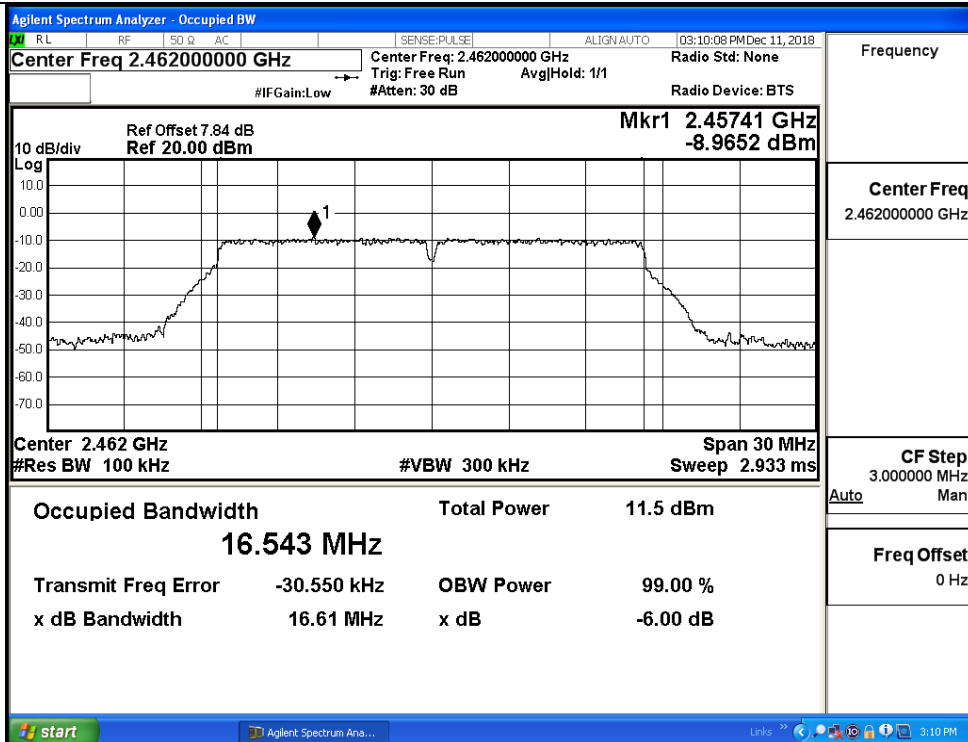
11G/LCH



11G/MCH



11G/HCH



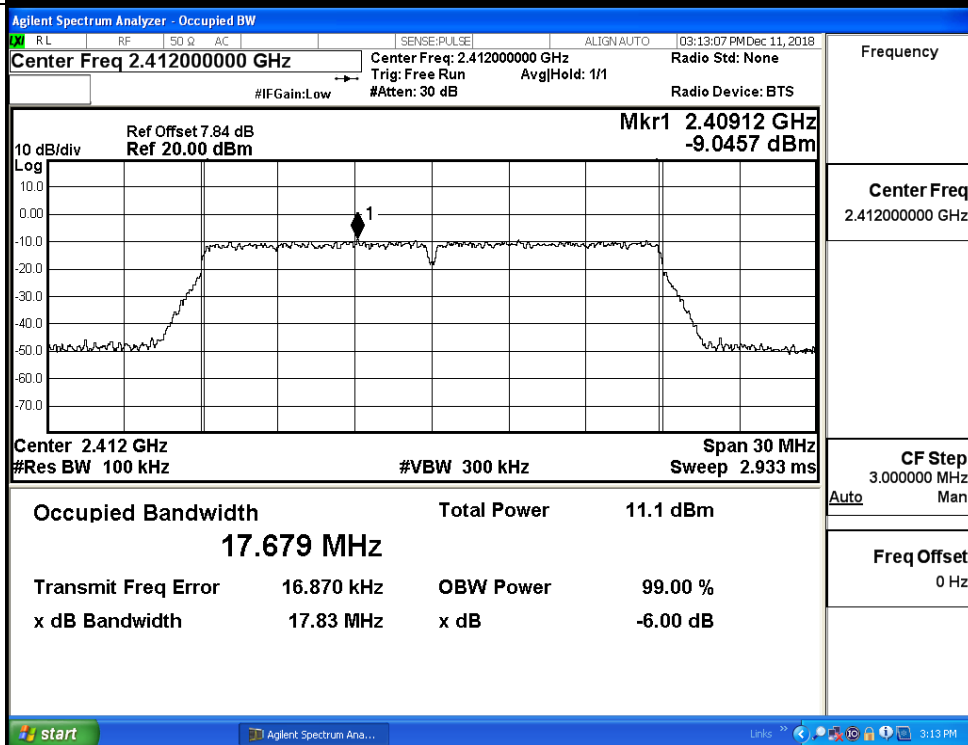
Frequency

Center Freq  
2.462000000 GHz

CF Step  
3.000000 MHz  
Auto Man

Freq Offset  
0 Hz

11N20SISO/LCH

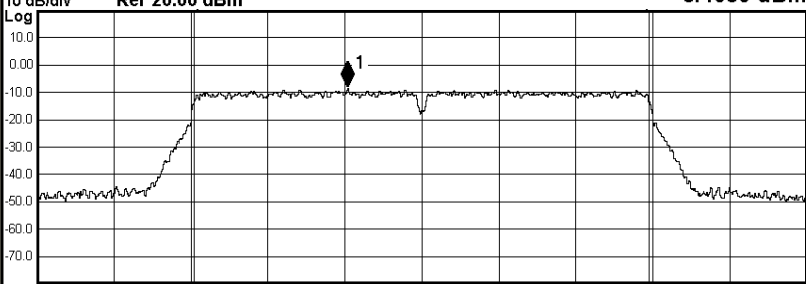
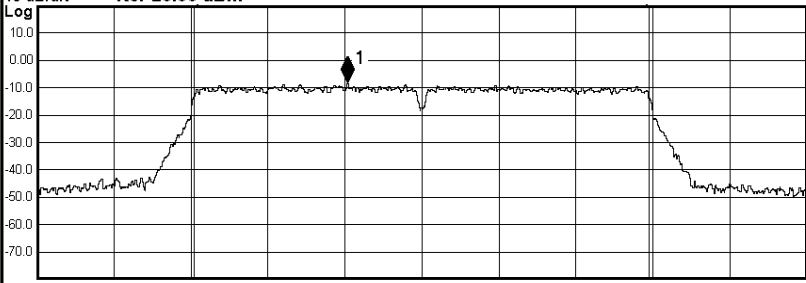


Frequency

Center Freq  
2.412000000 GHz

CF Step  
3.000000 MHz  
Auto Man

Freq Offset  
0 Hz

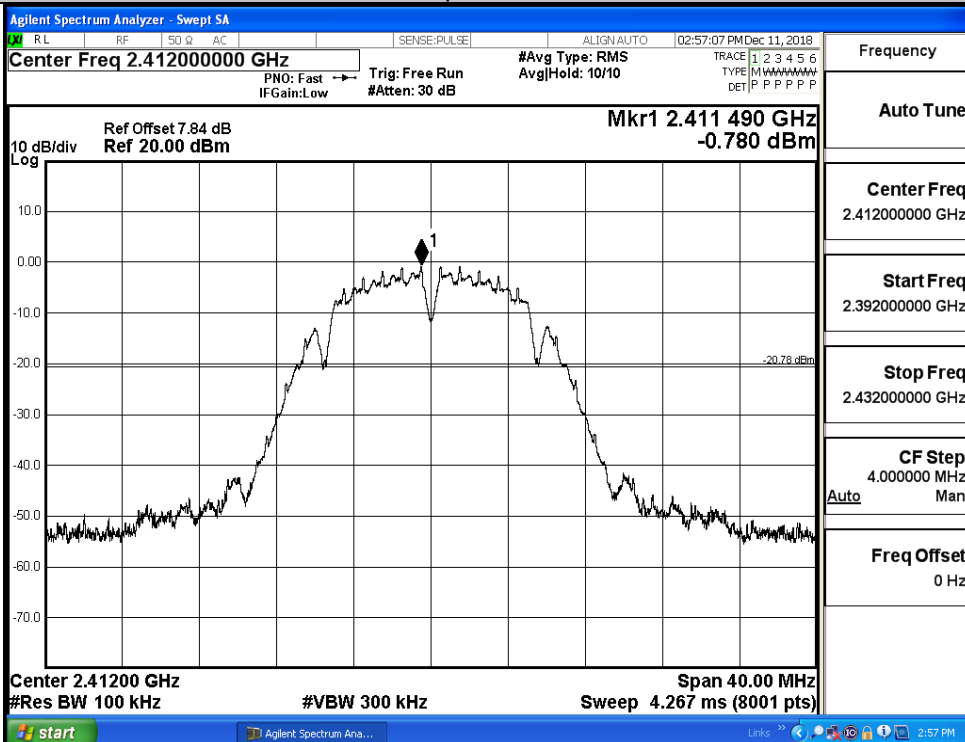
11N20SISO/MCH	<div data-bbox="443 143 1417 875"> <p>Agilent Spectrum Analyzer - Occupied BW</p> <p>RL RF 50 Q AC SENSE:PULSE ALIGN: AUTO 03:15:50 PM Dec 11, 2018</p> <p>Center Freq 2.437000000 GHz Center Freq: 2.437000000 GHz Radio Std: None</p> <p>#IFGain: Low Trig: Free Run AvgHold: 1/1 Radio Device: BTS</p> <p>#Atten: 30 dB</p> <p>Ref Offset 7.84 dB Mkr1 2.43412 GHz</p> <p>Ref 20.00 dBm -8.4583 dBm</p>  <p>Center 2.437 GHz Span 30 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 2.933 ms</p> <p>Occupied Bandwidth Total Power 11.6 dBm</p> <p>17.670 MHz</p> <p>Transmit Freq Error 6.248 kHz OBW Power 99.00 %</p> <p>x dB Bandwidth 17.82 MHz x dB -6.00 dB</p> <p>start Agilent Spectrum Ana... 3:15 PM</p> </div> <div data-bbox="1267 165 1417 846"> <p>Frequency</p> <p>Center Freq 2.437000000 GHz</p> <p>CF Step 3.000000 MHz Auto Man</p> <p>Freq Offset 0 Hz</p> </div>
11N20SISO/HCH	<div data-bbox="443 893 1417 1621"> <p>Agilent Spectrum Analyzer - Occupied BW</p> <p>RL RF 50 Q AC SENSE:PULSE ALIGN: AUTO 03:17:57 PM Dec 11, 2018</p> <p>Center Freq 2.462000000 GHz Center Freq: 2.462000000 GHz Radio Std: None</p> <p>#IFGain: Low Trig: Free Run AvgHold: 1/1 Radio Device: BTS</p> <p>#Atten: 30 dB</p> <p>Ref Offset 7.84 dB Mkr1 2.45912 GHz</p> <p>Ref 20.00 dBm -8.2671 dBm</p>  <p>Center 2.462 GHz Span 30 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 2.933 ms</p> <p>Occupied Bandwidth Total Power 11.6 dBm</p> <p>17.677 MHz</p> <p>Transmit Freq Error -343 Hz OBW Power 99.00 %</p> <p>x dB Bandwidth 17.82 MHz x dB -6.00 dB</p> <p>start Agilent Spectrum Ana... 3:17 PM</p> </div> <div data-bbox="1267 920 1417 1489"> <p>Frequency</p> <p>Center Freq 2.462000000 GHz</p> <p>CF Step 3.000000 MHz Auto Man</p> <p>Freq Offset 0 Hz</p> </div>

**A.5 RF Conducted Spurious Emissions**

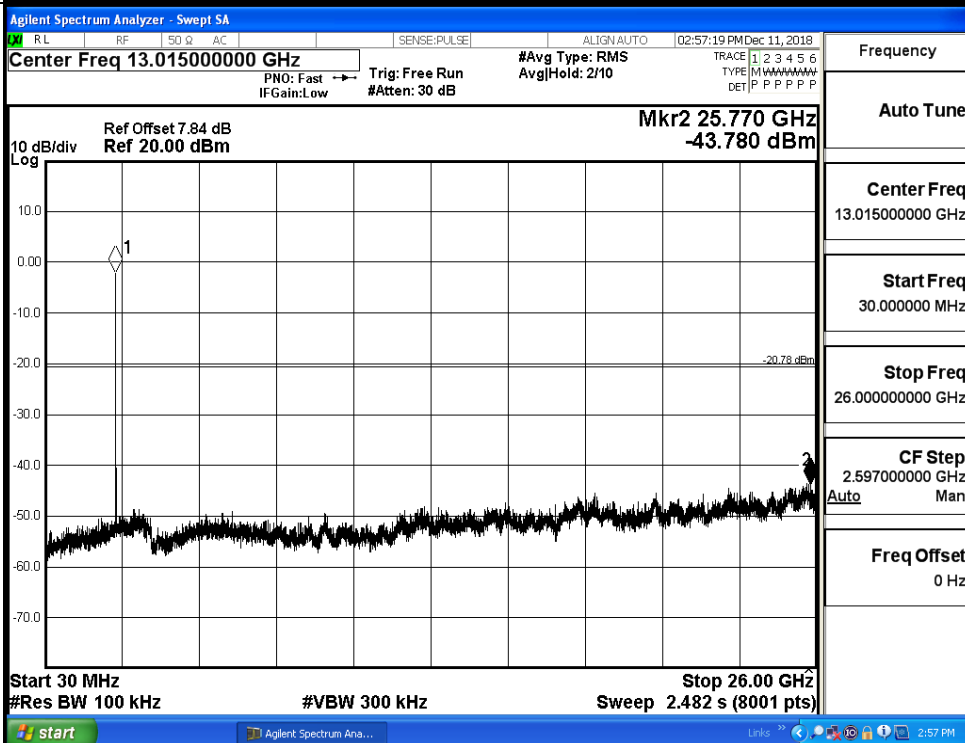
Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
11B	LCH	-0.78	-43.780	-20.780	PASS
	MCH	-0.057	-43.101	-20.057	PASS
	HCH	-0.055	-43.433	-20.055	PASS
11G	LCH	-9.367	-43.683	-29.367	PASS
	MCH	-9.083	-42.778	-29.083	PASS
	HCH	-9.186	-43.598	-29.186	PASS
11N20SISO	LCH	-9.287	-43.666	-29.287	PASS
	MCH	-8.84	-43.856	-28.840	PASS
	HCH	-9.062	-42.861	-29.062	PASS

### 11B\_LCH\_Graphs

Pref/11B/LCH



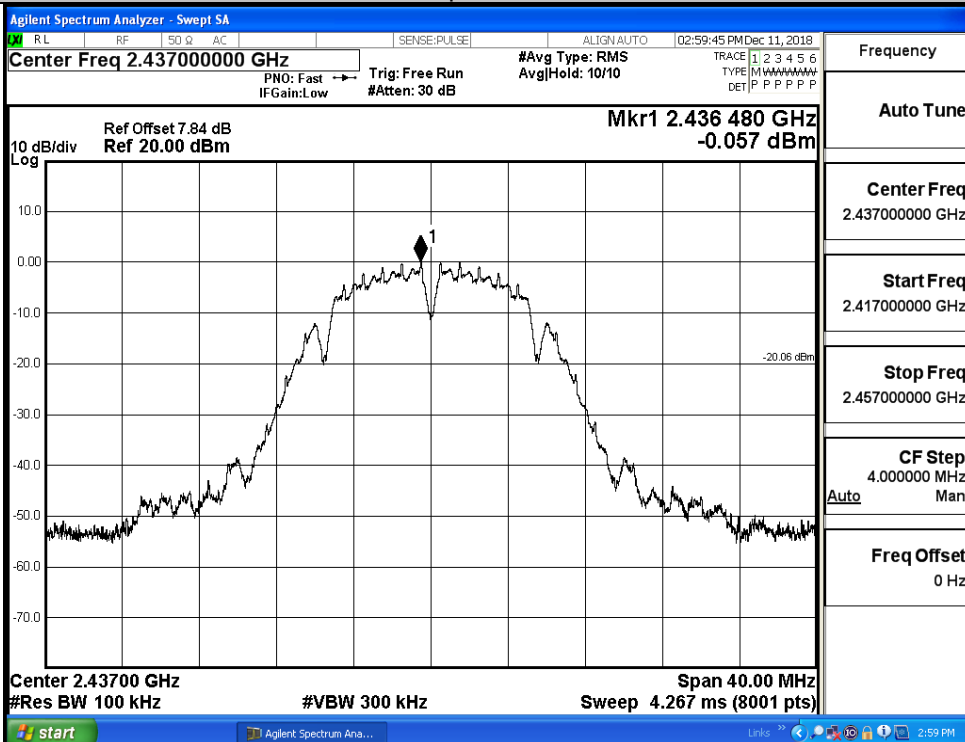
Puw/11B/LCH



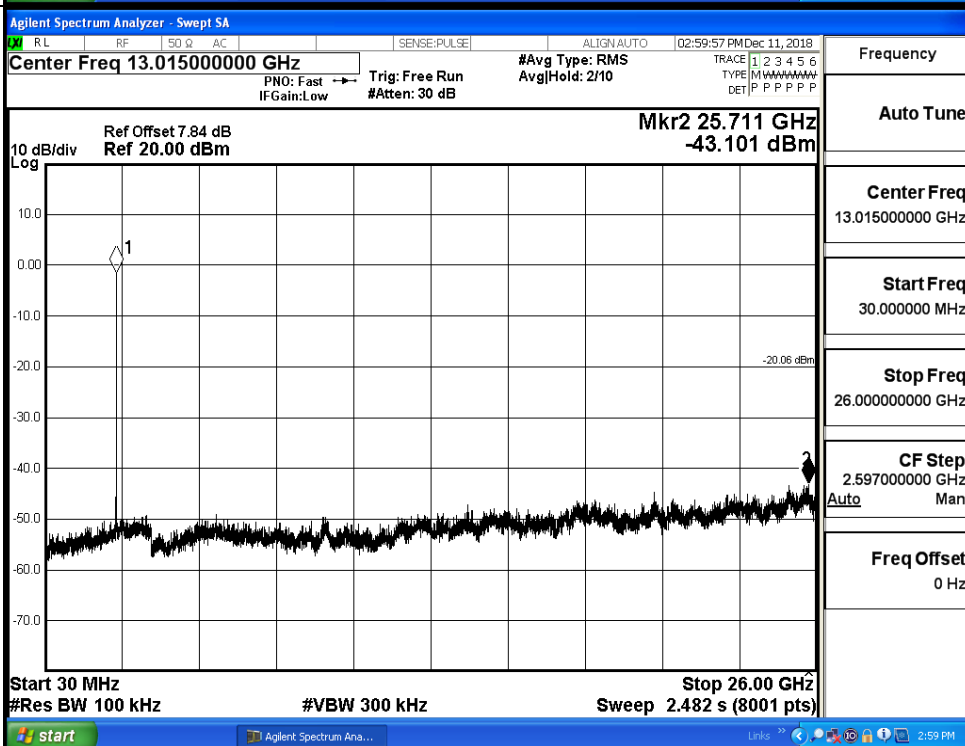


# 11B\_MCH\_Graphs

Pref/11B/MCH

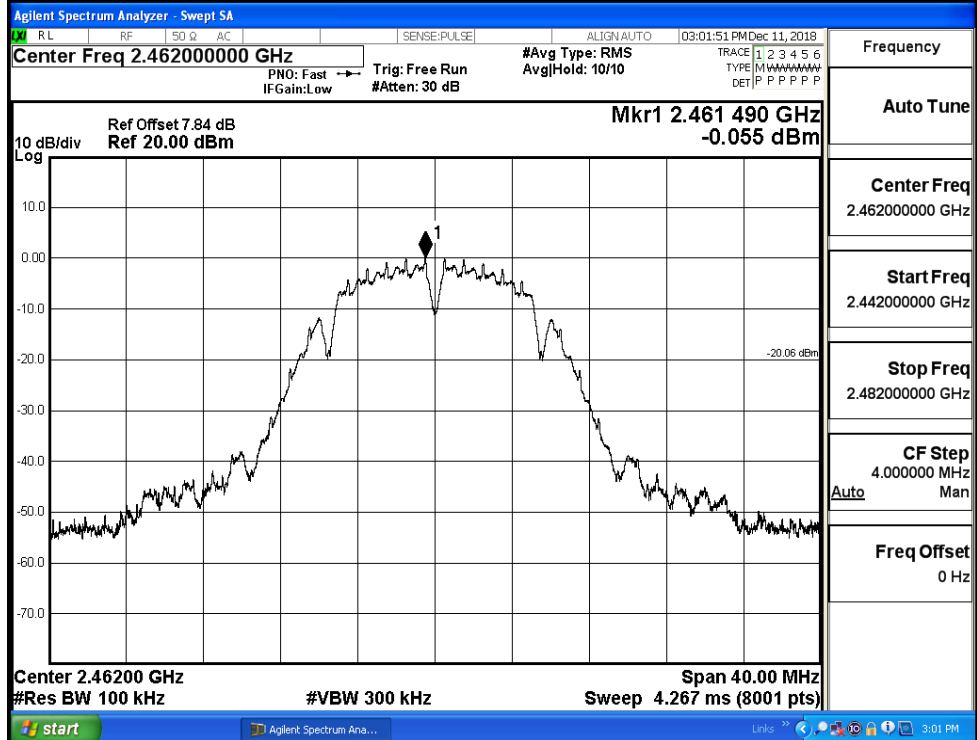


Puw/11B/MCH

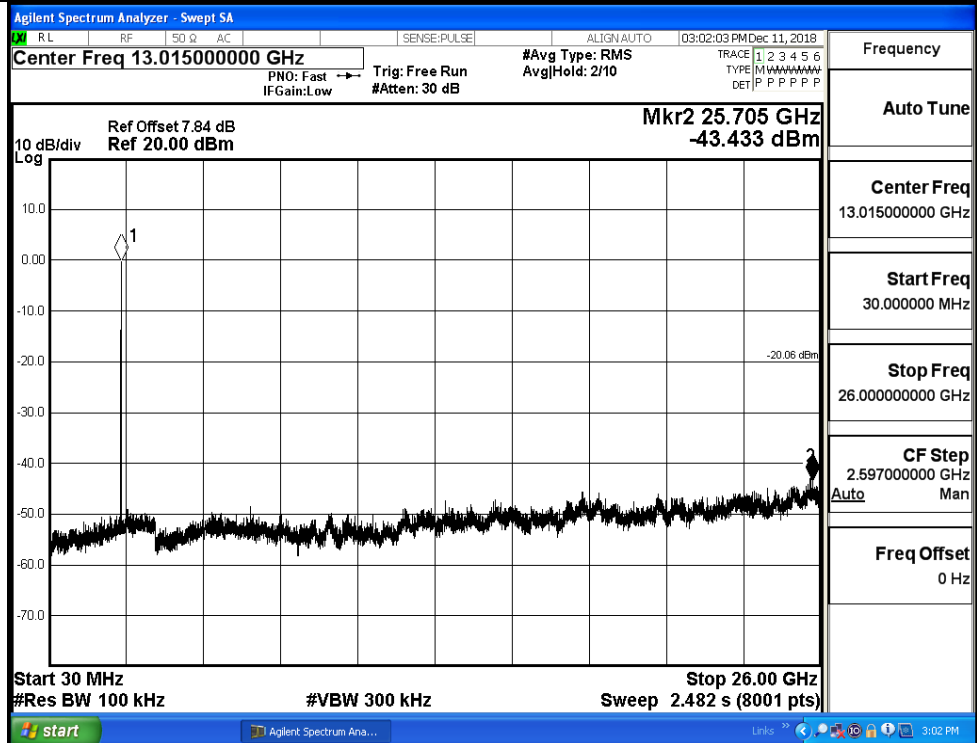


### 11B\_HCH\_Graphs

Pref/11B/HCH

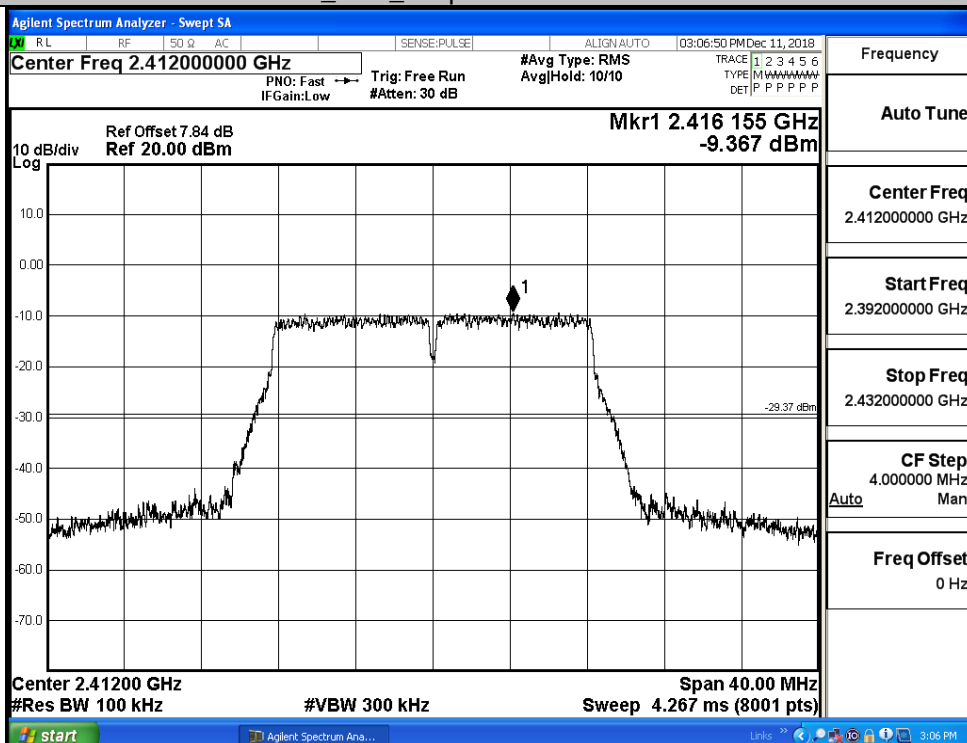


Puw/11B/HCH

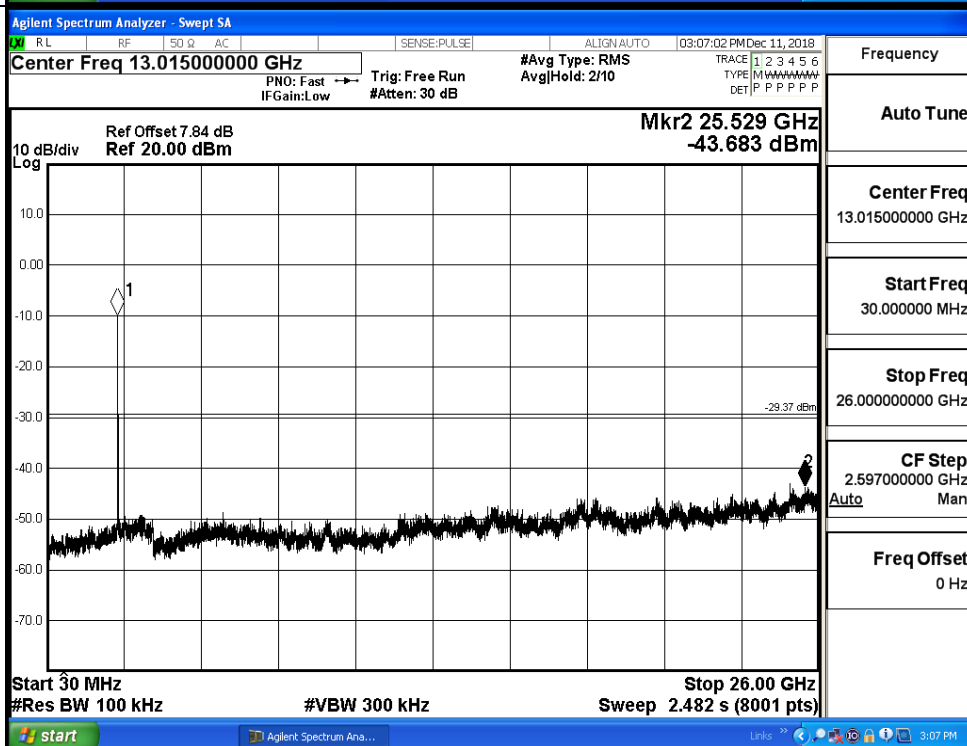


# 11G\_LCH\_Graphs

Pref/11G/LCH

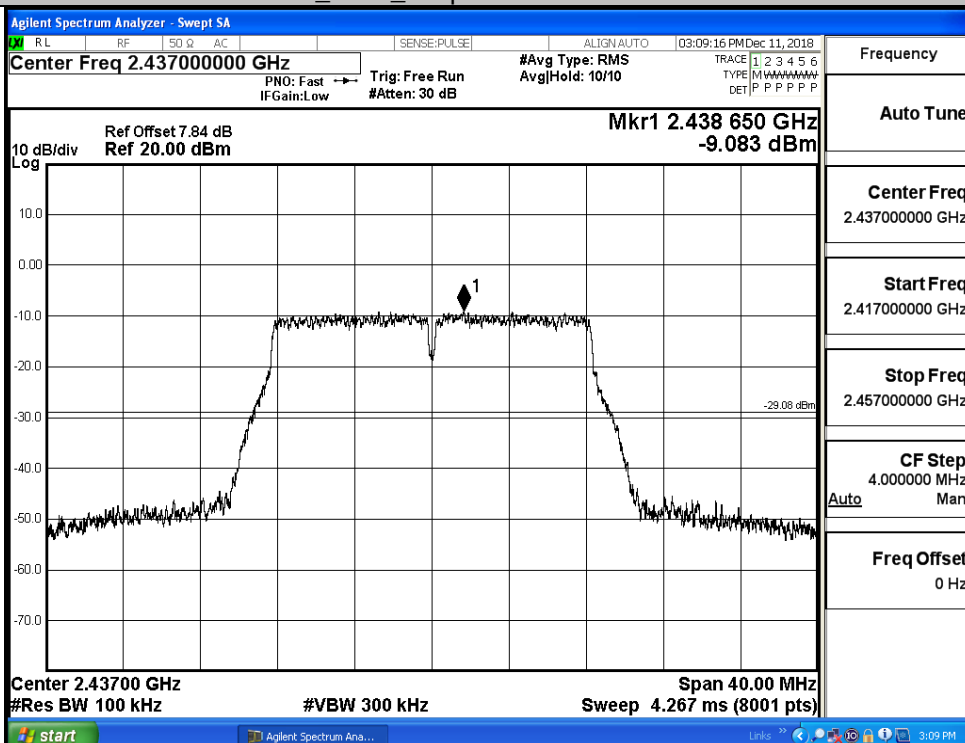


Puw/11G/LCH

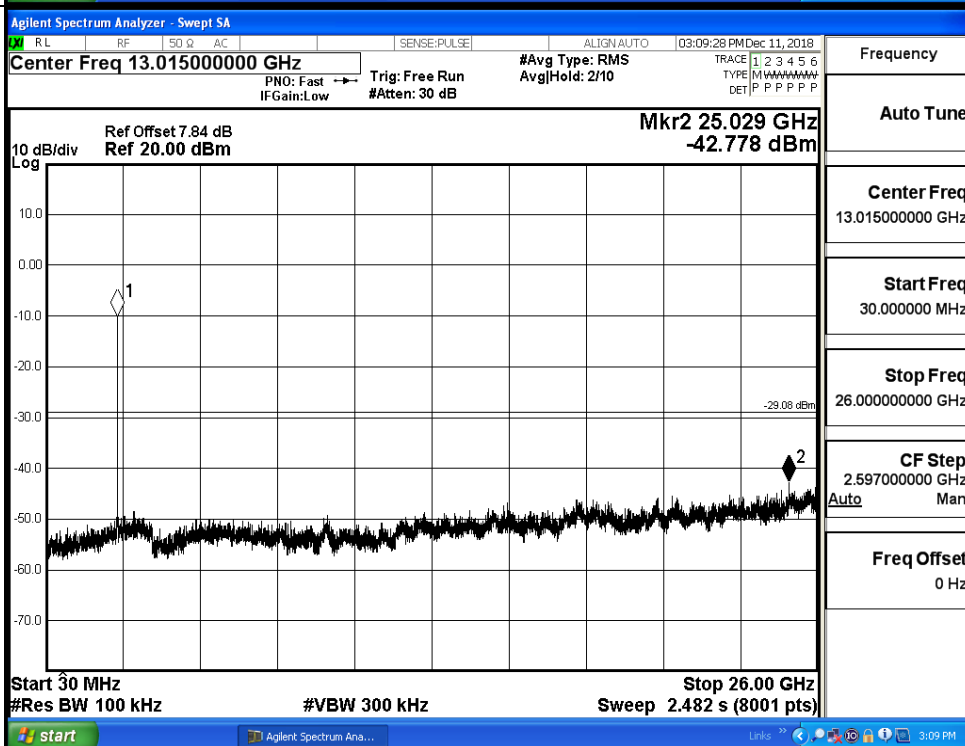


# 11G\_MCH\_Graphs

Pref/11G/MCH

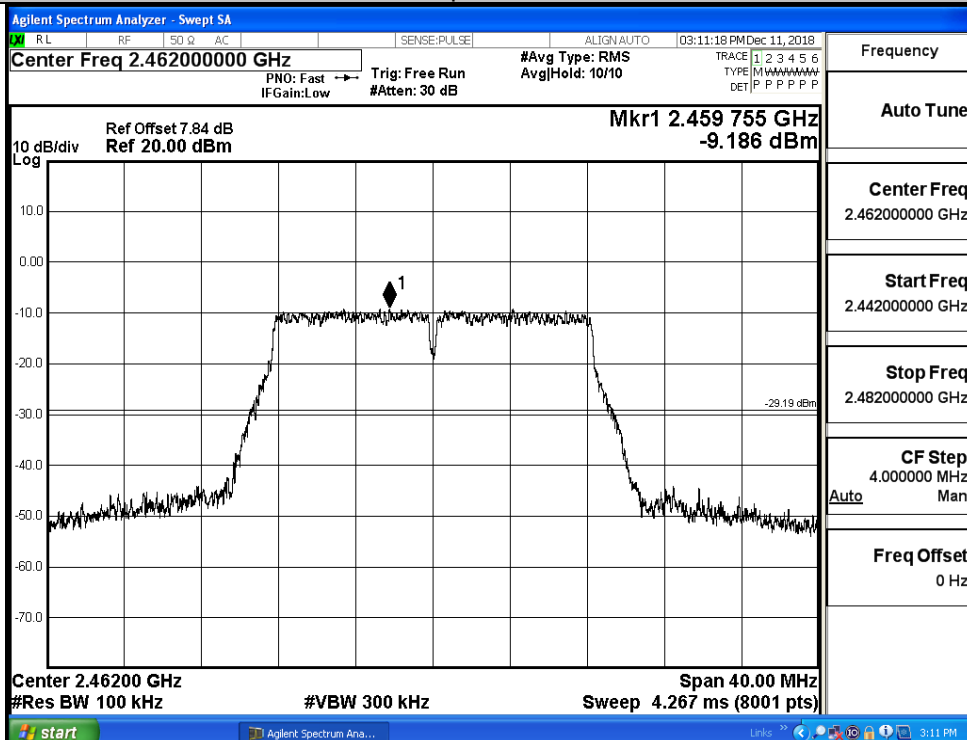


Puw/11G/MCH

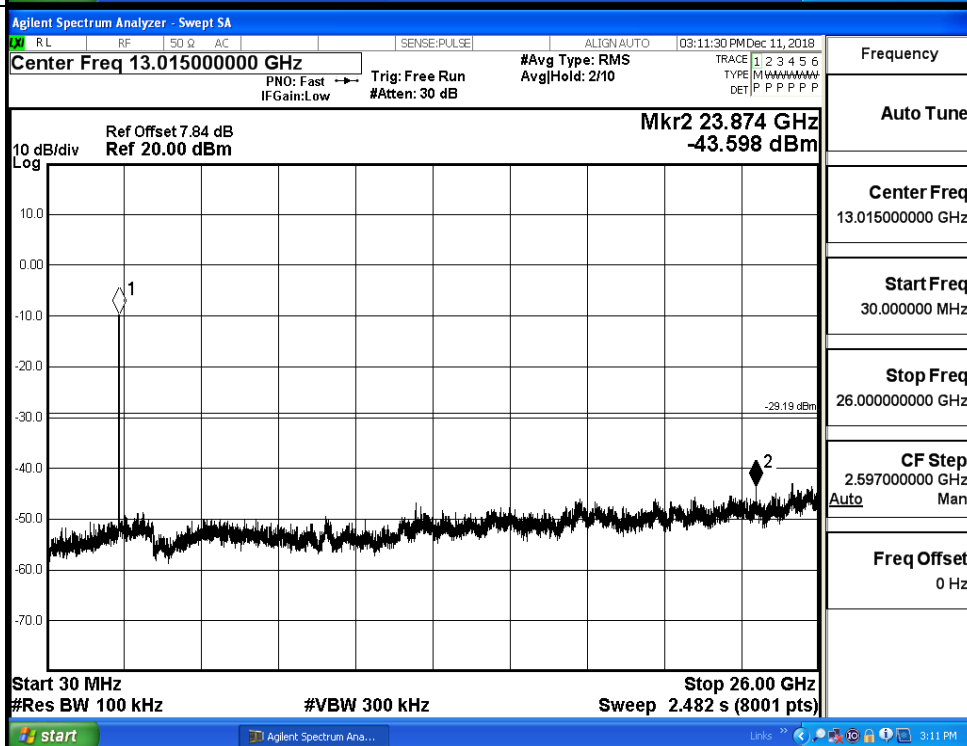


### 11G\_HCH\_Graphs

Pref/11G/HCH

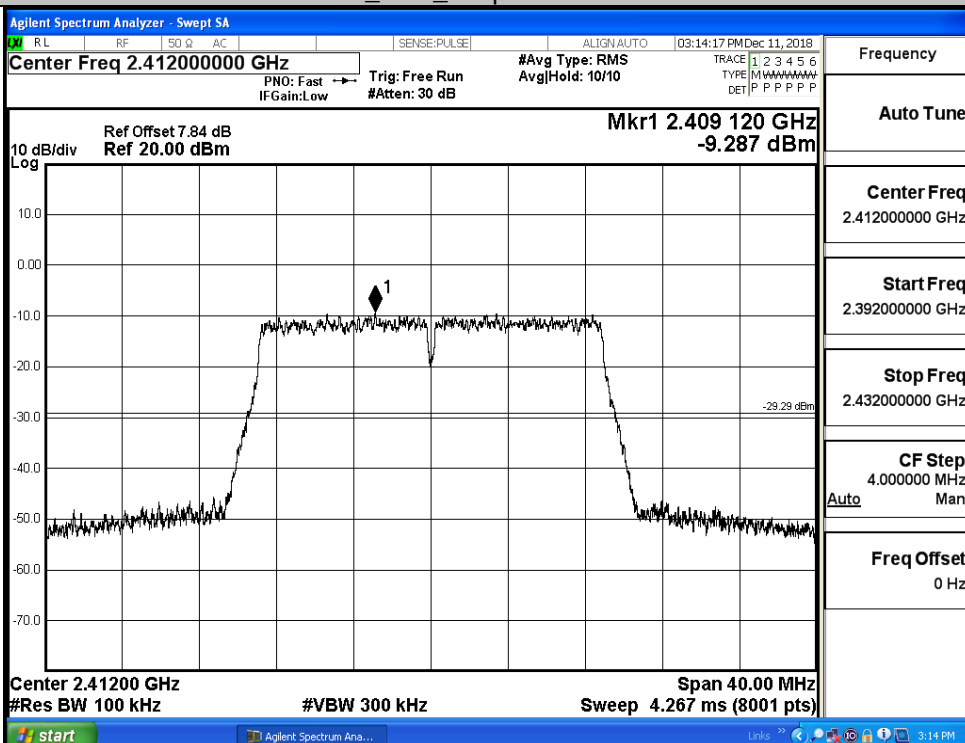


Puw/11G/HCH

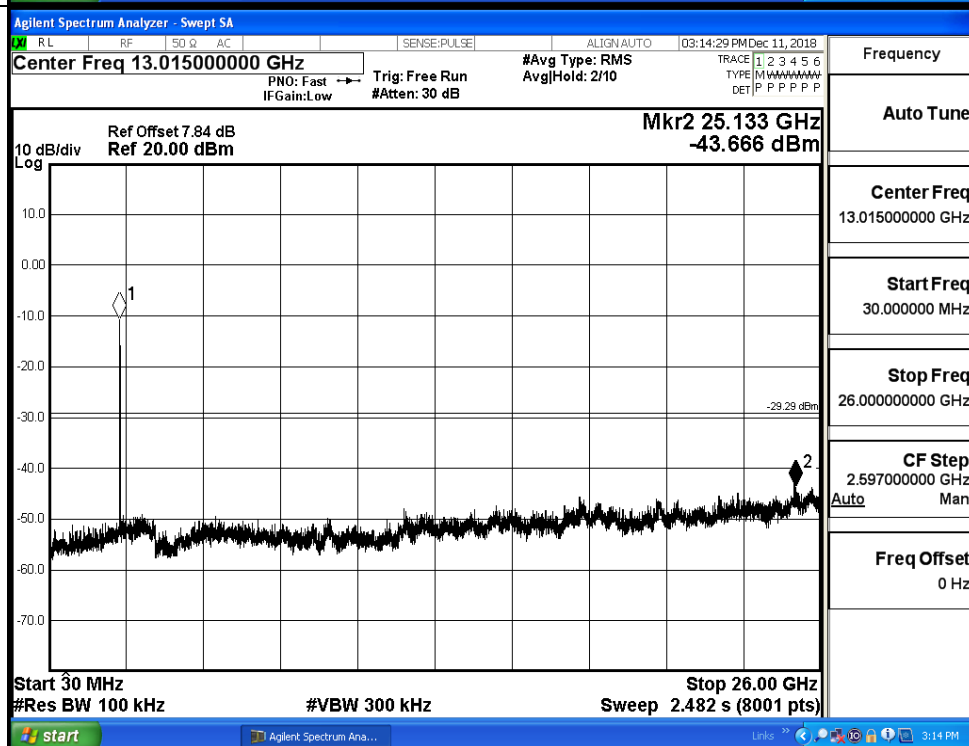


# 11N20SISO\_LCH\_Graphs

Pref/11N20SIS  
O/LCH

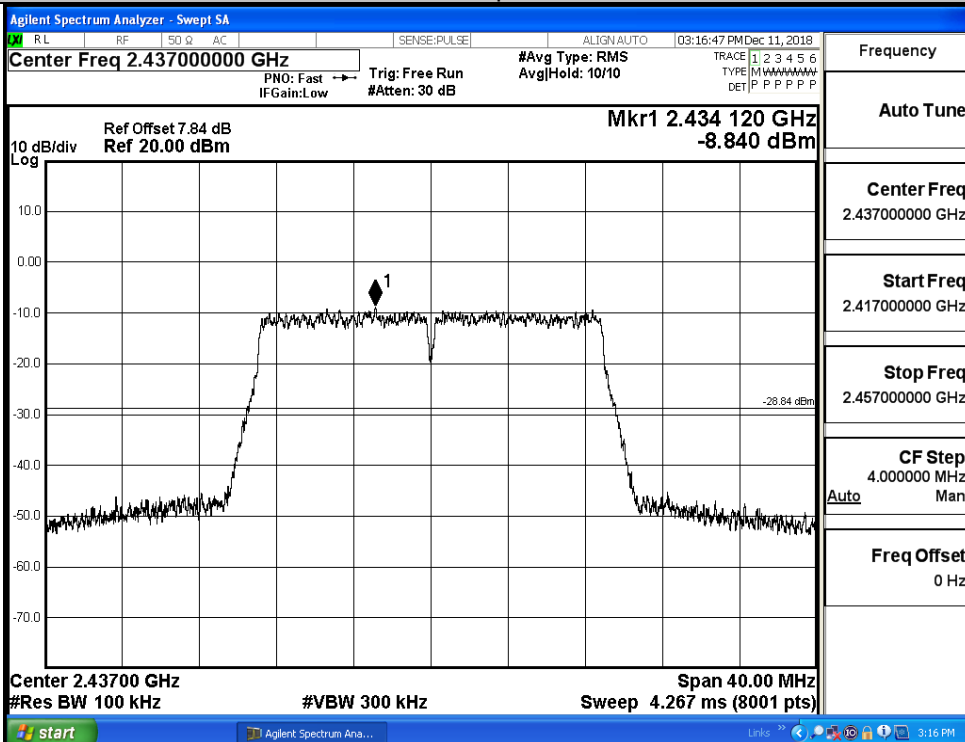


Puw/11N20  
SISO/LCH

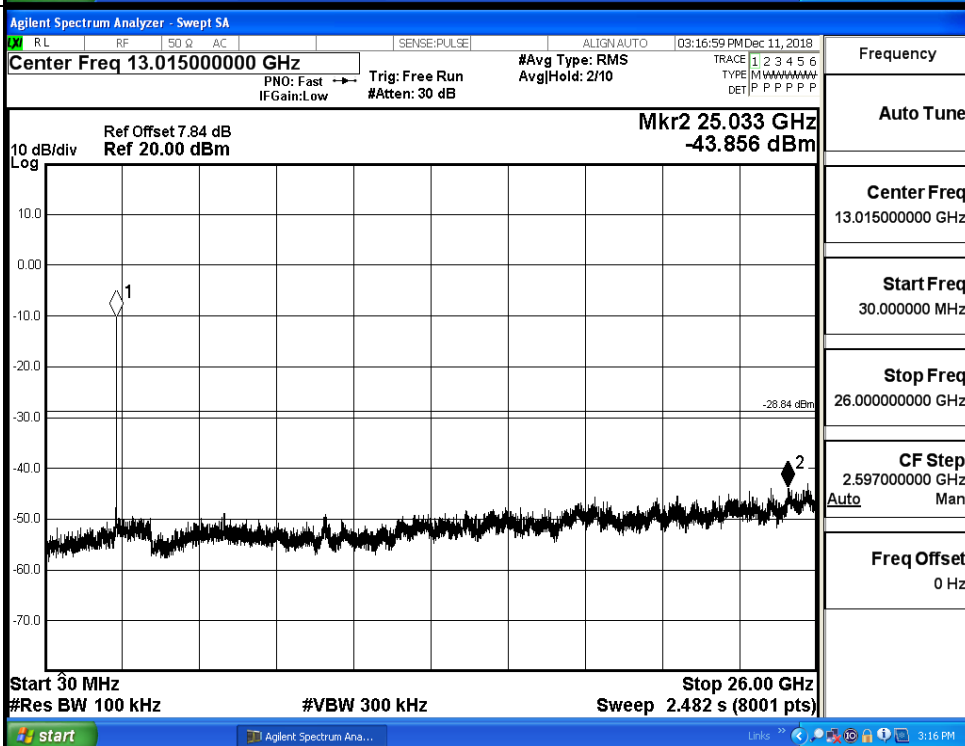


# 11N20SISO\_MCH\_Graphs

Pref/11N20  
SISO/MCH

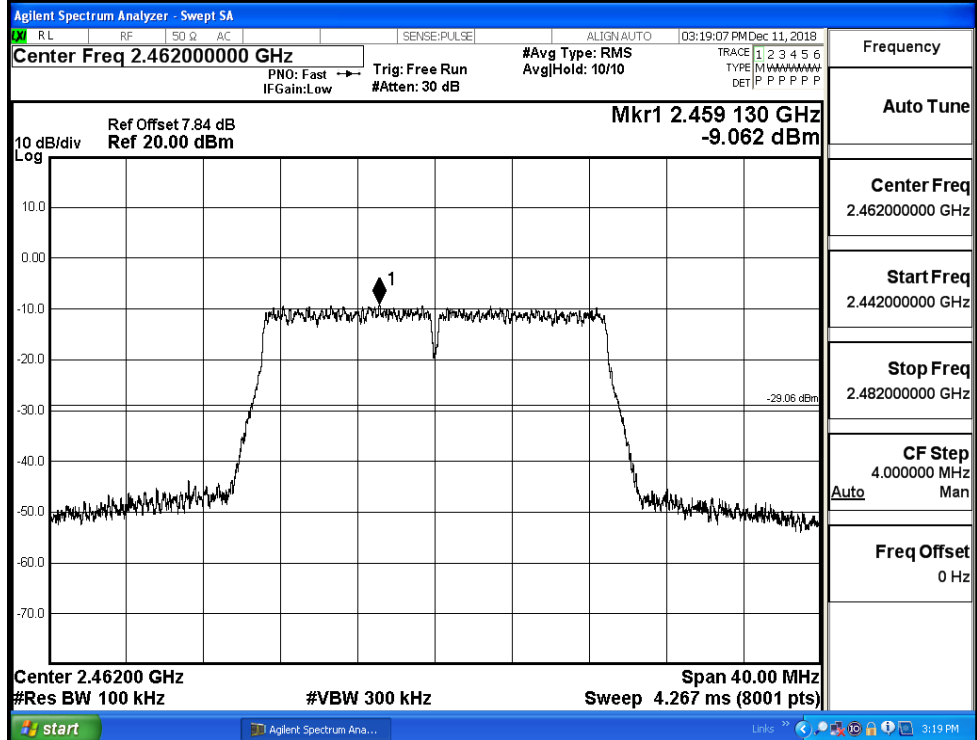


Puw/11N20  
SISO/MCH

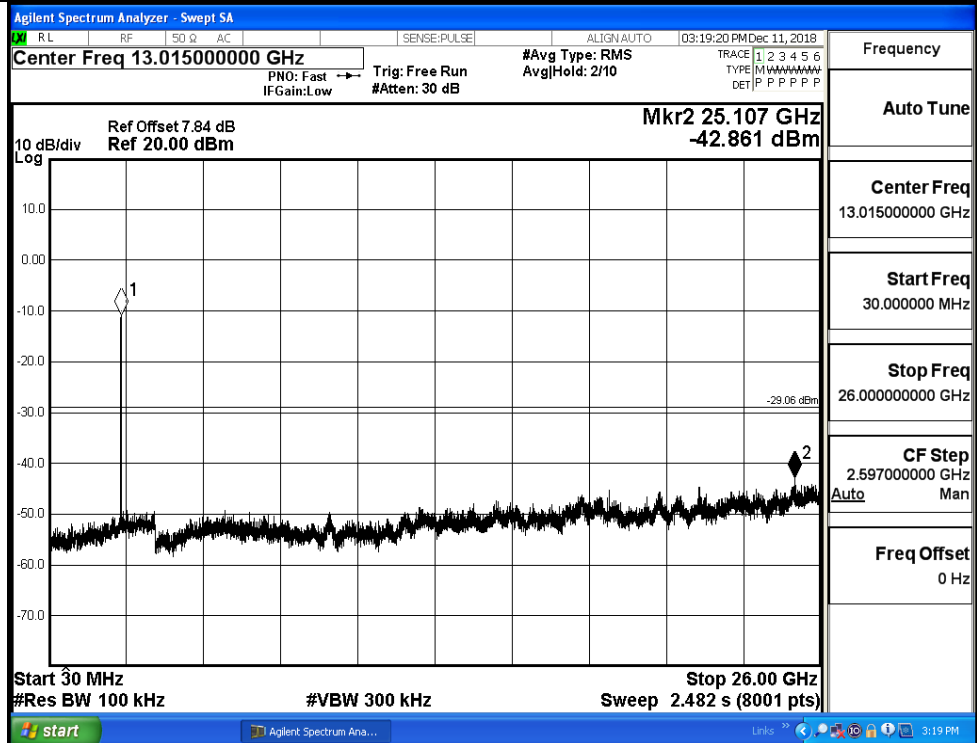


### 11N20ISO\_HCH\_Graphs

Pref/11N20  
SISO/HCH



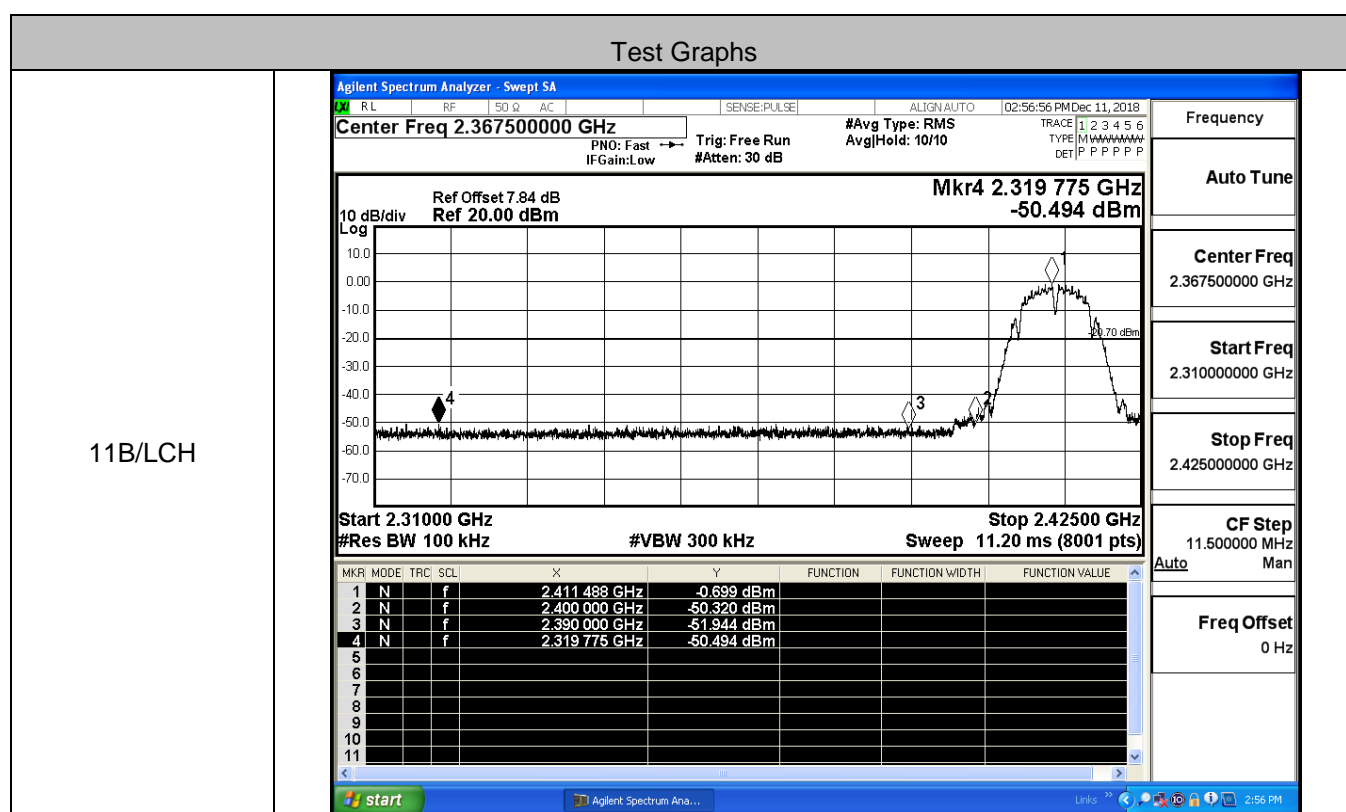
Puw/11N20  
SISO/HCH



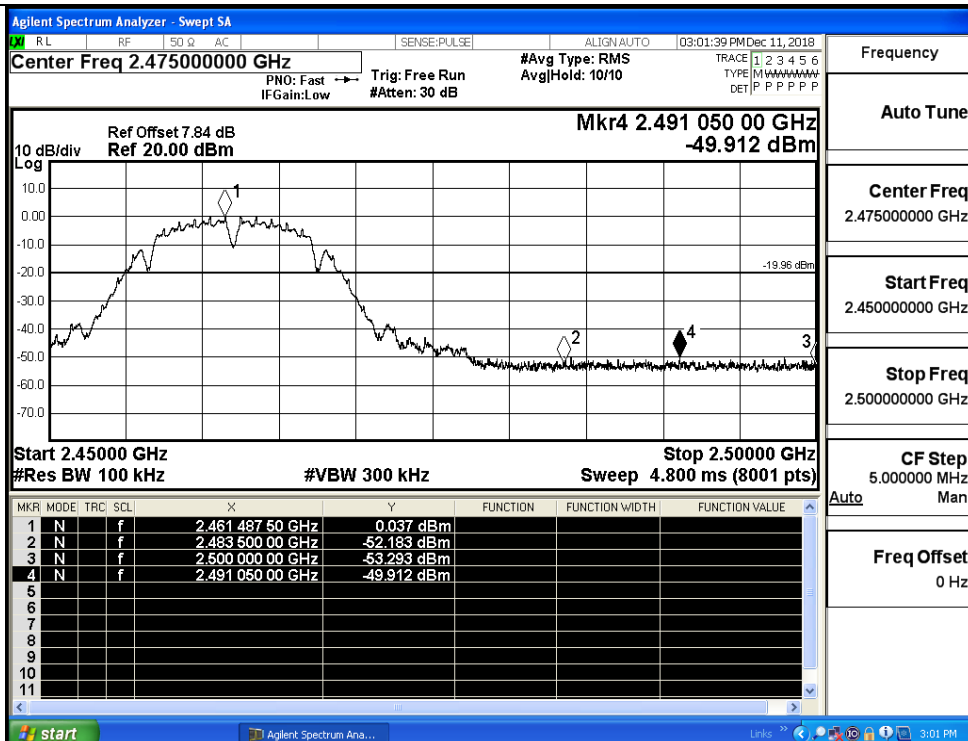


## A.6 Band-edge for RF Conducted Emissions

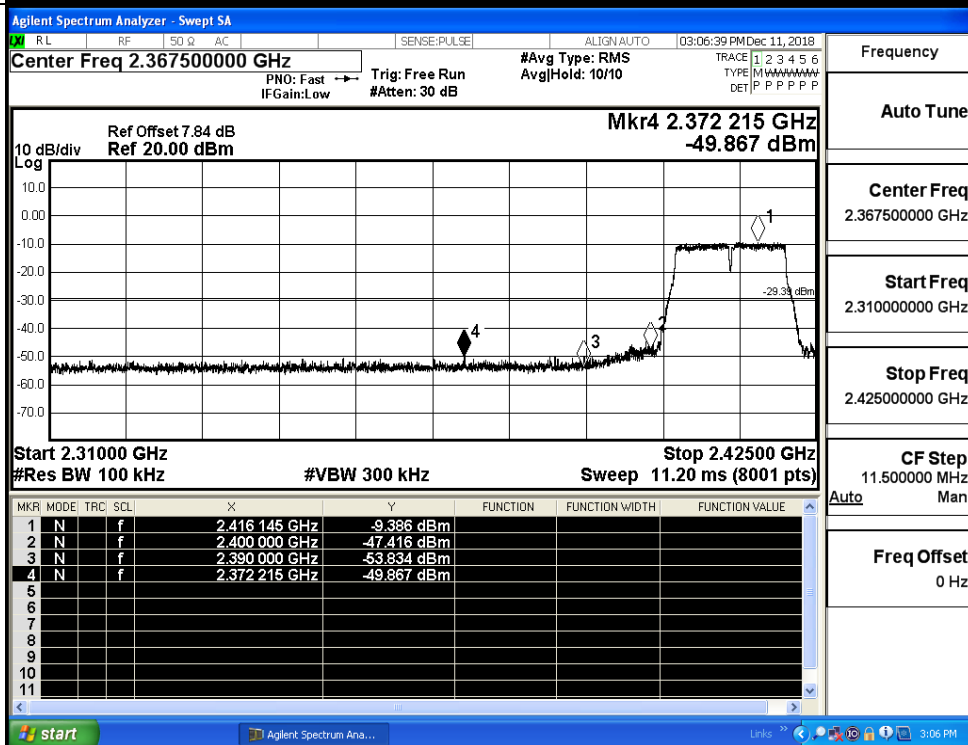
Mode	Channel	Carrier Power[dBm]	Max.Spurious Level [dBm]	Limit [dBm]	Verdict
11B	LCH	-0.699	-50.494	-20.7	PASS
	HCH	0.037	-49.912	-19.96	PASS
11G	LCH	-9.386	-49.867	-29.39	PASS
	HCH	-9.114	-48.852	-29.11	PASS
11N20SISO	LCH	-9.267	-50.005	-29.27	PASS
	HCH	-8.630	-49.750	-28.63	PASS



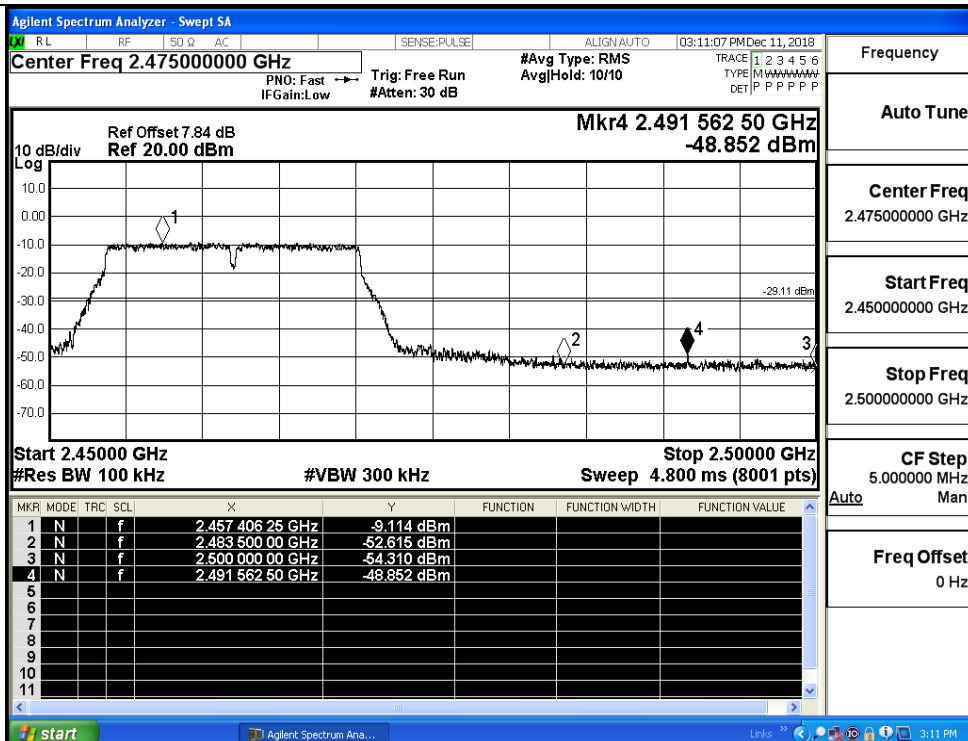
11B/HCH



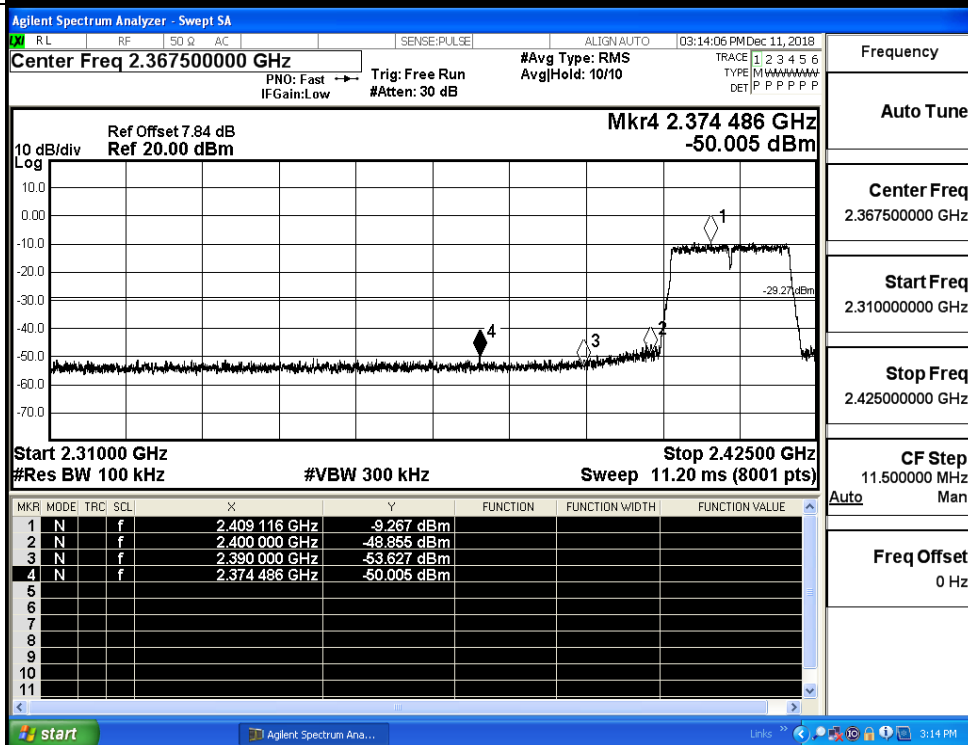
11G/LCH



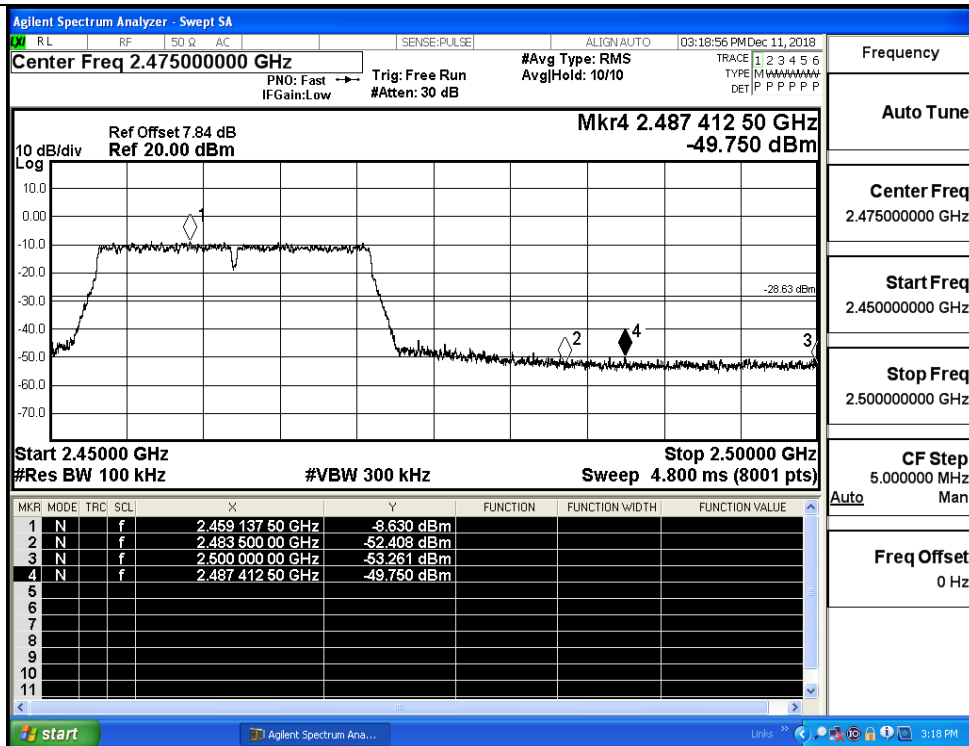
11G/HCH



11N20SISO/LCH



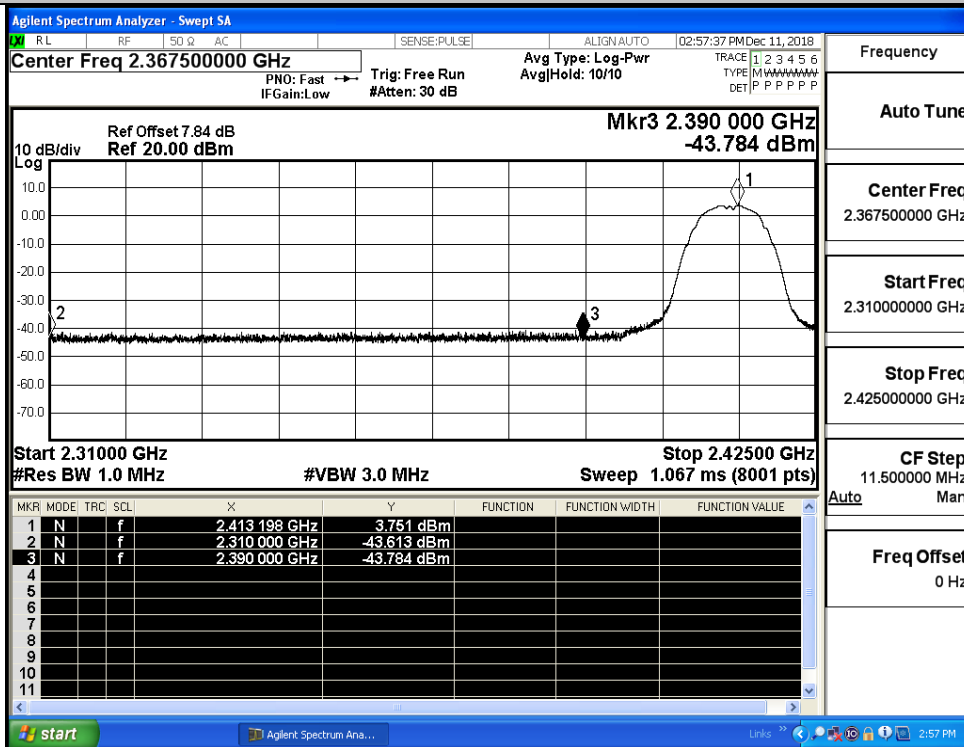
11N20SISO/HCH



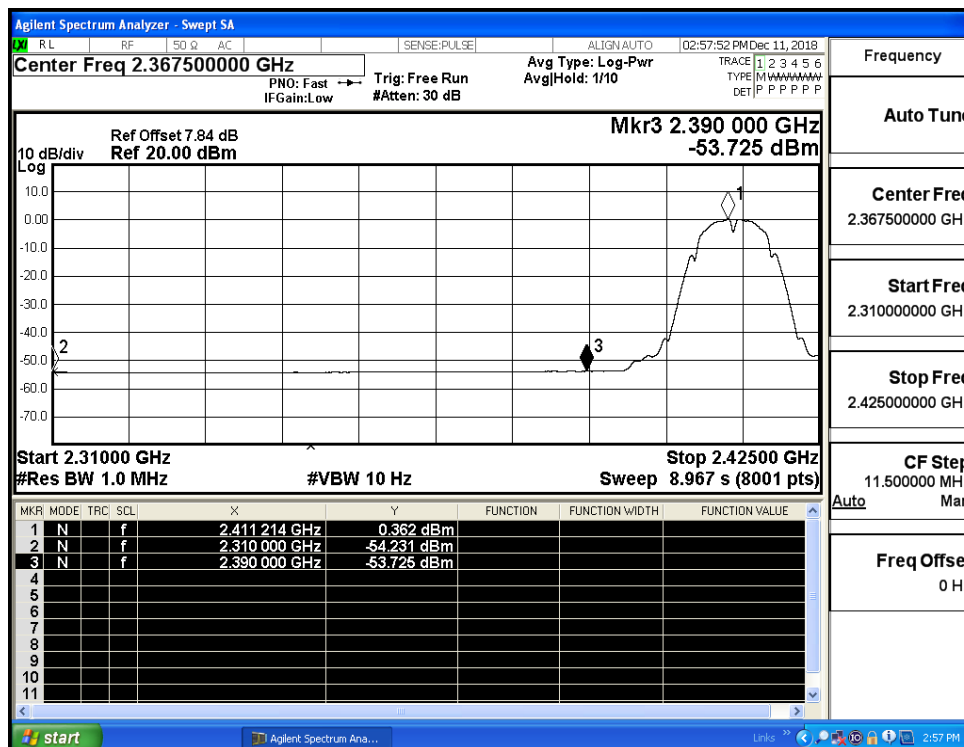
## A.7 Restrict-band band-edge measurements

Test Mode	Test Channel	Ant	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
11B	2412	Ant1	2310.0	-43.613	3.00	0	54.615	PEAK	74	PASS
	2412	Ant1	2310.0	-54.231	3.00	0	43.997	AV	54	PASS
	2412	Ant1	2390.0	-43.784	3.00	0	54.444	PEAK	74	PASS
	2412	Ant1	2390.0	-53.725	3.00	0	44.503	AV	54	PASS
	2462	Ant1	2483.5	-42.568	3.00	0	55.660	PEAK	74	PASS
	2462	Ant1	2483.5	-53.312	3.00	0	44.916	AV	54	PASS
	2462	Ant1	2500.0	-42.819	3.00	0	55.409	PEAK	74	PASS
	2462	Ant1	2500.0	-53.462	3.00	0	44.766	AV	54	PASS
11G	2412	Ant1	2310.0	-42.792	3.00	0	55.436	PEAK	74	PASS
	2412	Ant1	2310.0	-54.267	3.00	0	43.961	AV	54	PASS
	2412	Ant1	2390.0	-41.561	3.00	0	56.667	PEAK	74	PASS
	2412	Ant1	2390.0	-53.223	3.00	0	45.005	AV	54	PASS
	2462	Ant1	2483.5	-42.467	3.00	0	55.761	PEAK	74	PASS
	2462	Ant1	2483.5	-52.921	3.00	0	45.307	AV	54	PASS
	2462	Ant1	2500.0	-41.993	3.00	0	56.235	PEAK	74	PASS
	2462	Ant1	2500.0	-53.307	3.00	0	44.921	AV	54	PASS
11N20 SISO	2412	Ant1	2310.0	-44.432	3.00	0	53.796	PEAK	74	PASS
	2412	Ant1	2310.0	-54.255	3.00	0	43.973	AV	54	PASS
	2412	Ant1	2390.0	-41.535	3.00	0	56.693	PEAK	74	PASS
	2412	Ant1	2390.0	-53.048	3.00	0	45.180	AV	54	PASS
	2462	Ant1	2483.5	-42.224	3.00	0	56.004	PEAK	74	PASS
	2462	Ant1	2483.5	-52.705	3.00	0	45.523	AV	54	PASS
	2462	Ant1	2500.0	-43.117	3.00	0	55.111	PEAK	74	PASS
	2462	Ant1	2500.0	-53.316	3.00	0	44.912	AV	54	PASS

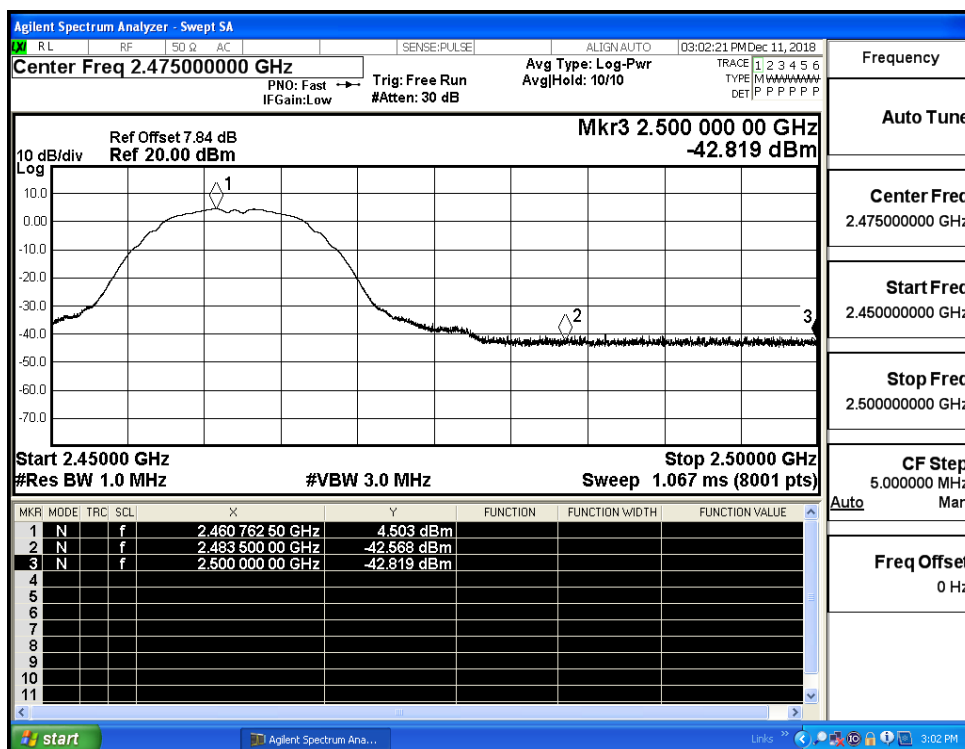
Restrict-band band-edge measurements\_11B\_2412\_Ant1\_PEAK



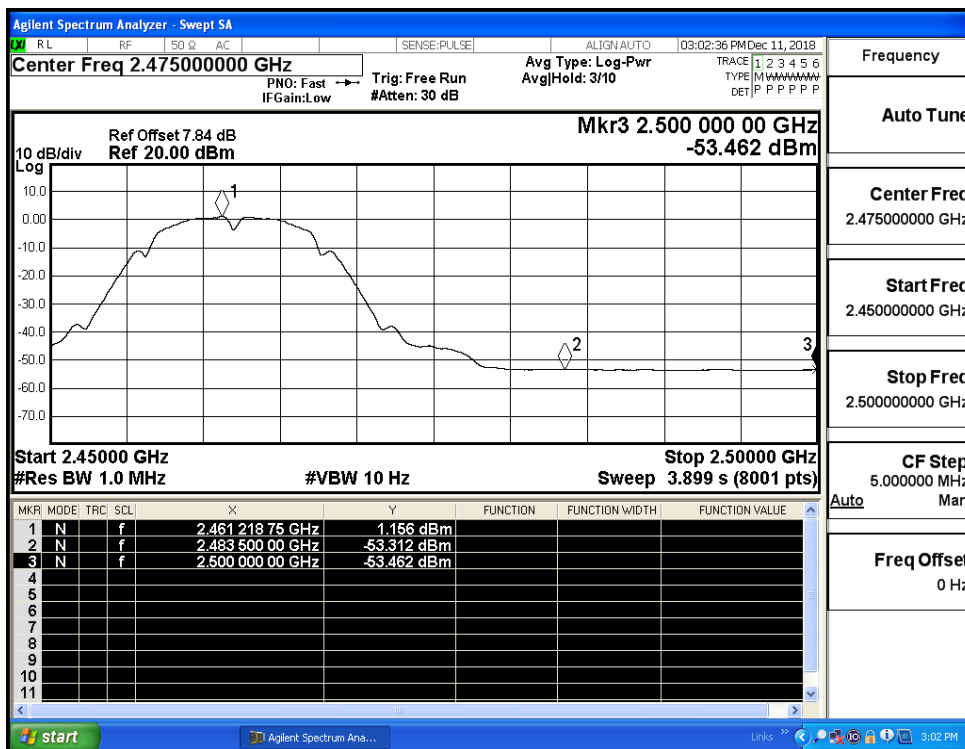
Restrict-band band-edge measurements\_11B\_2412\_Ant1\_AV



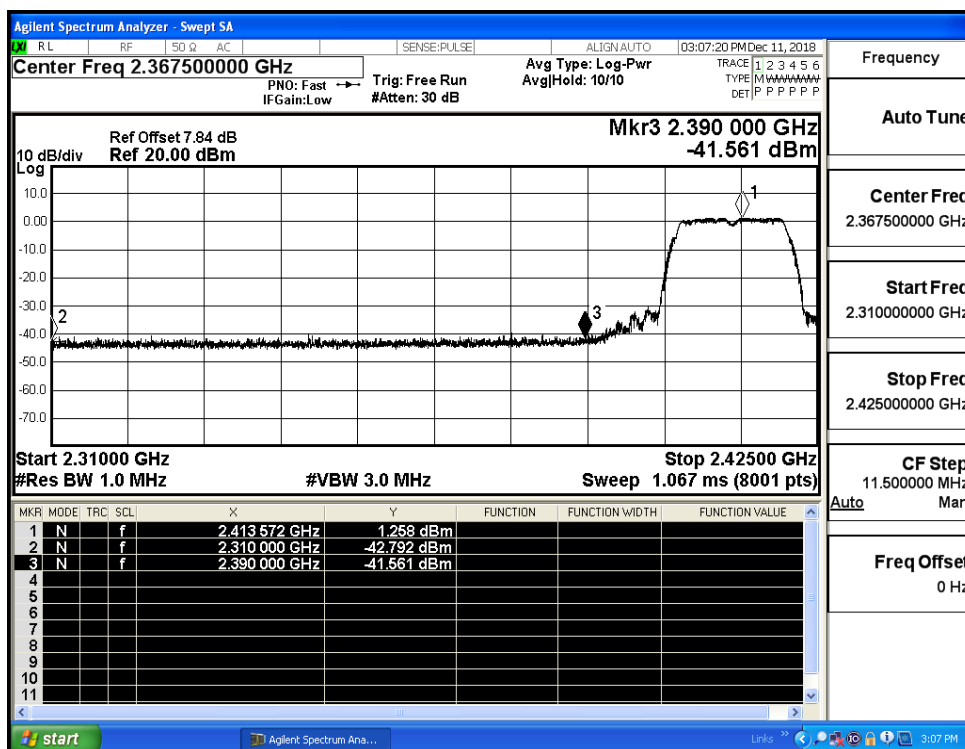
Restrict-band band-edge measurements\_11B\_2462\_Ant1\_PEAK



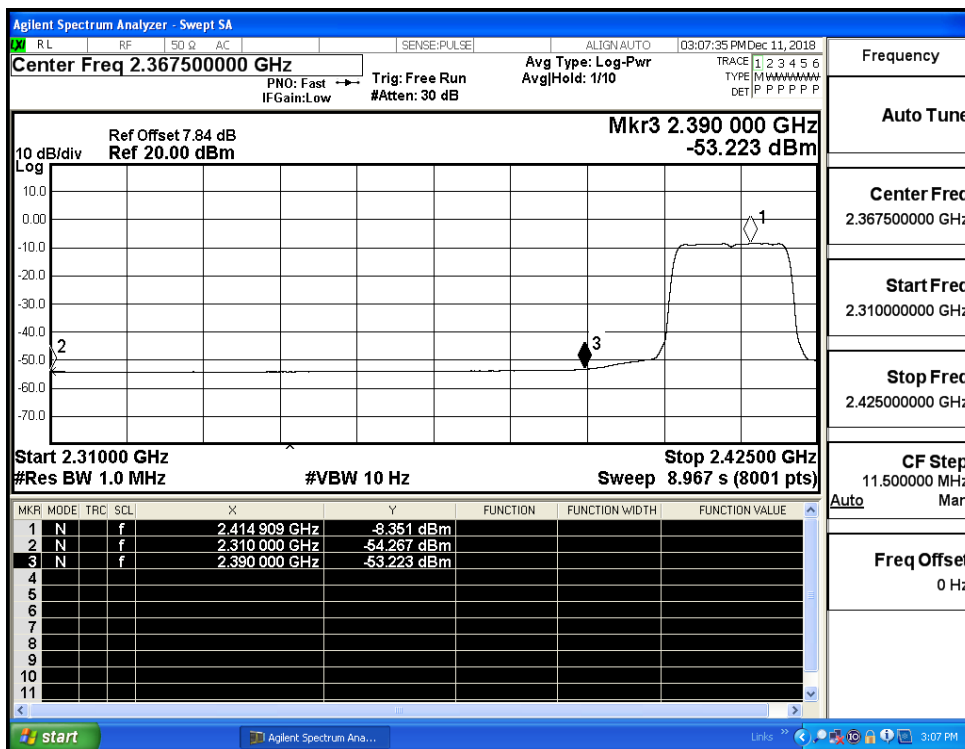
Restrict-band band-edge measurements\_11B\_2462\_Ant1\_AV



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

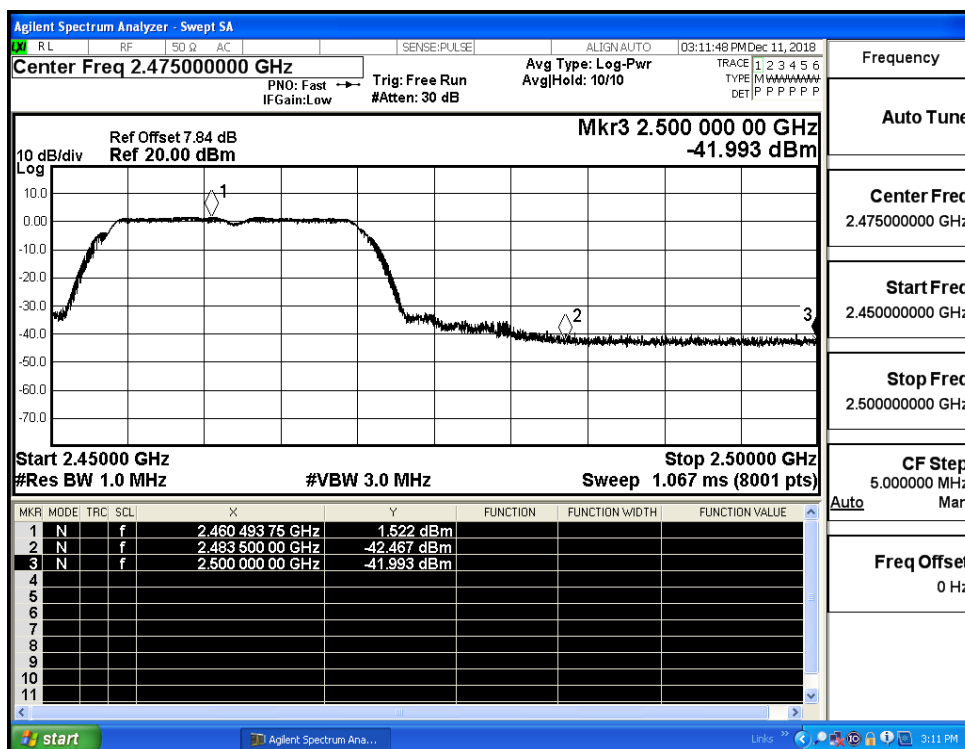


Restrict-band band-edge measurements\_11G\_2412\_Ant1\_AV

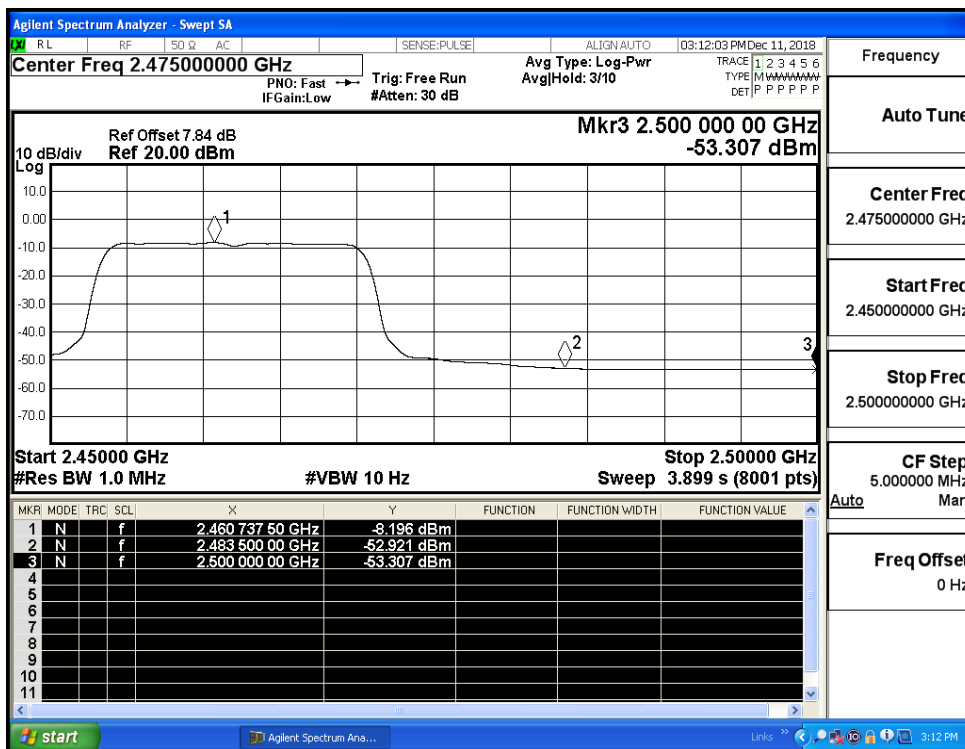




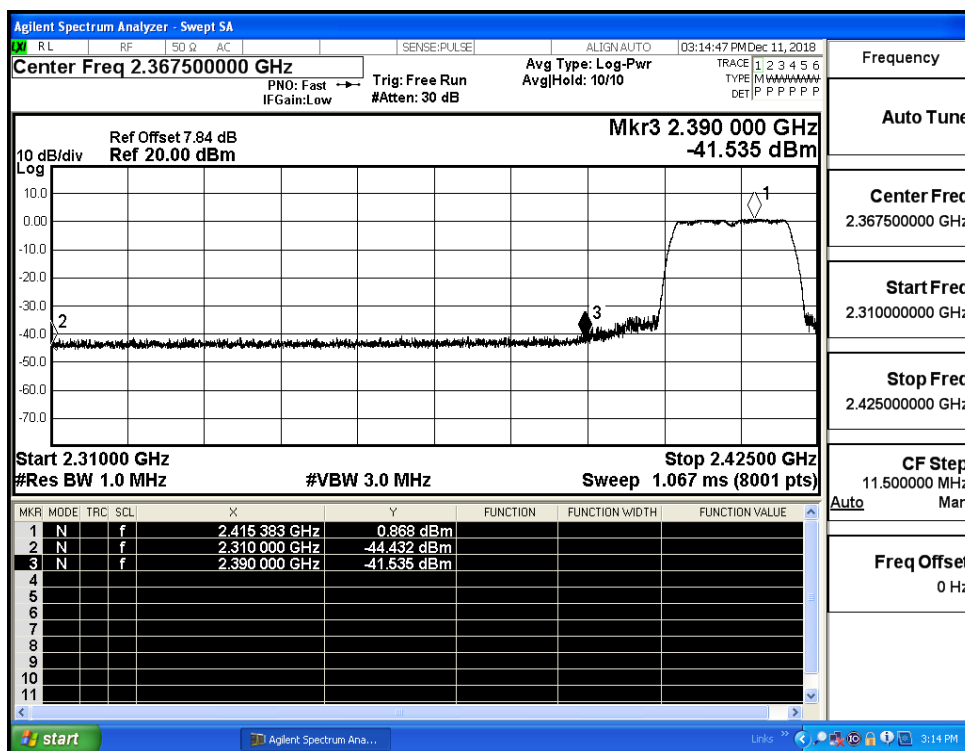
Restrict-band band-edge measurements\_11G\_2462\_Ant1\_PEAK



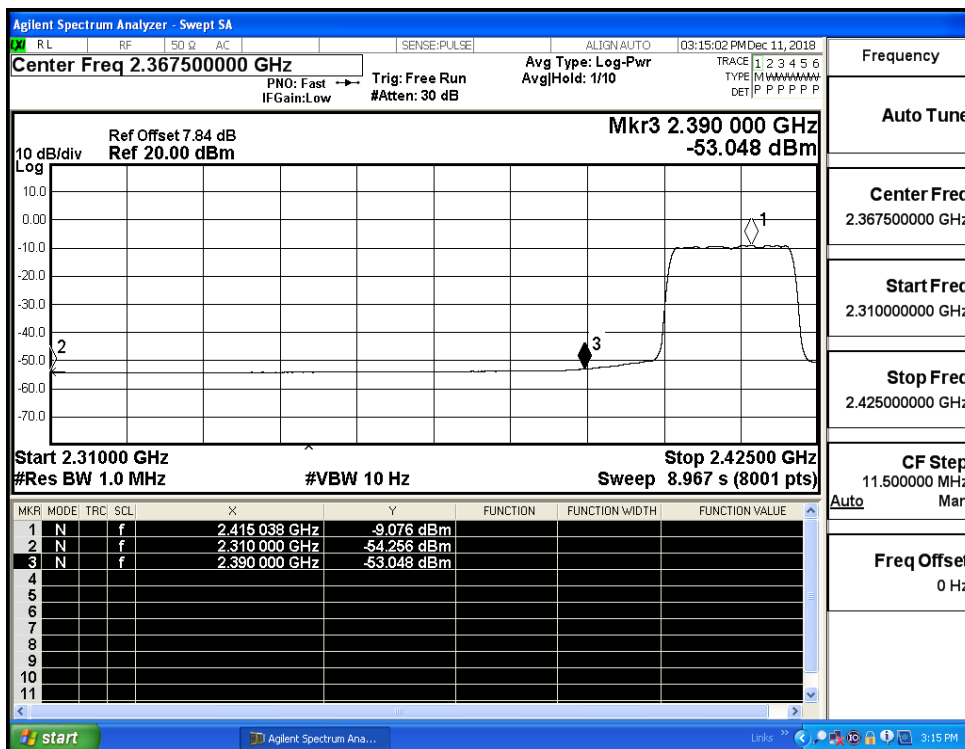
Restrict-band band-edge measurements\_11G\_2462\_Ant1\_AV



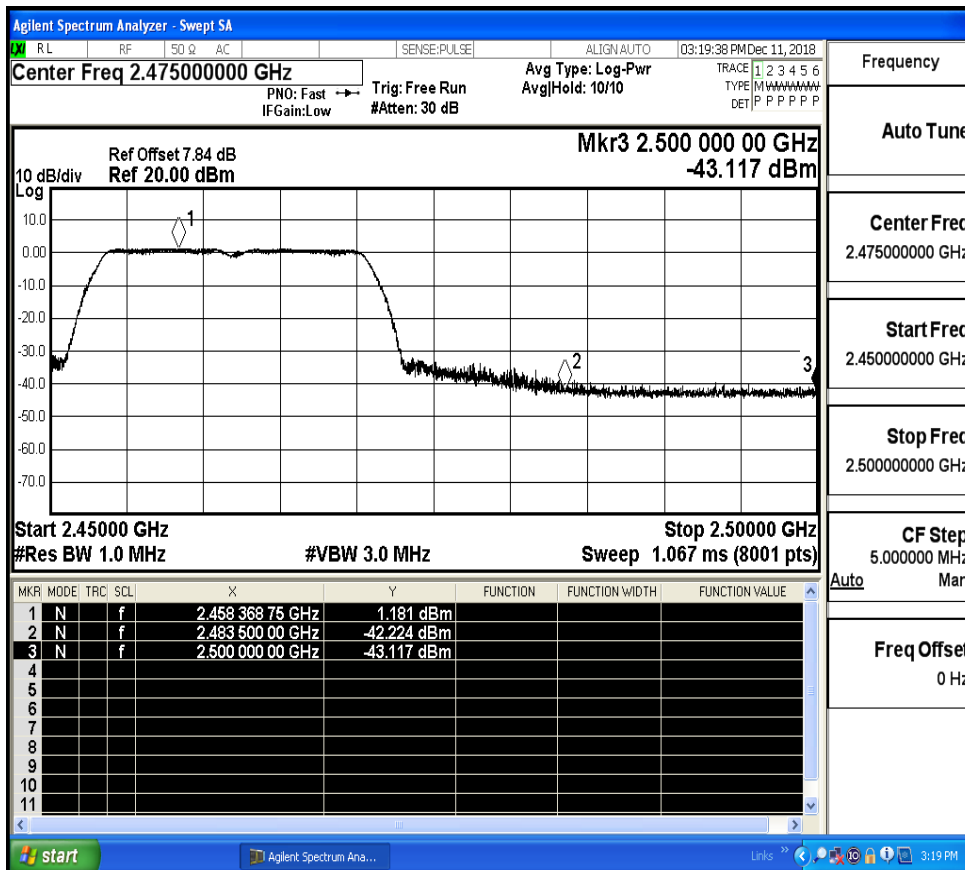
Restrict-band band-edge measurements\_11N20SISO\_2412\_Ant1\_PEAK



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

