

## Appendix A

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

Product Name: 3D Printer

Trade Mark:  **FLASHFORGE<sup>®</sup>**  
**3D PRINTER**

Test Model: Foto 13.3

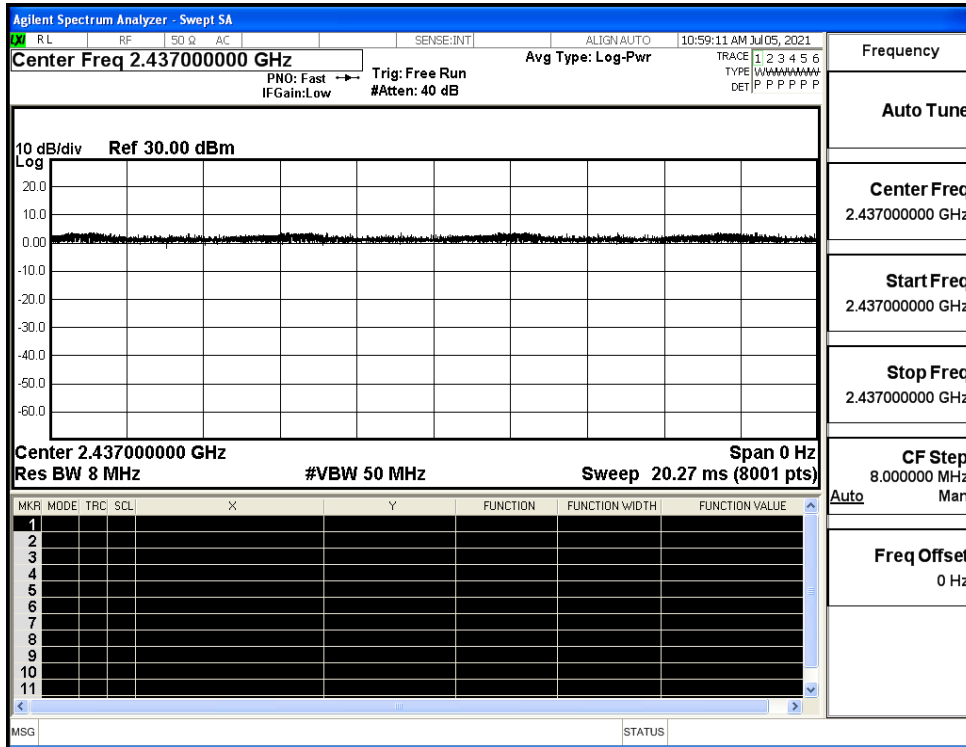
#### Environmental Conditions

Temperature:	24.2° C
Relative Humidity:	57.7%
ATM Pressure:	100.0 kPa
Test Engineer:	Jay Li
Supervised by:	Li Huan

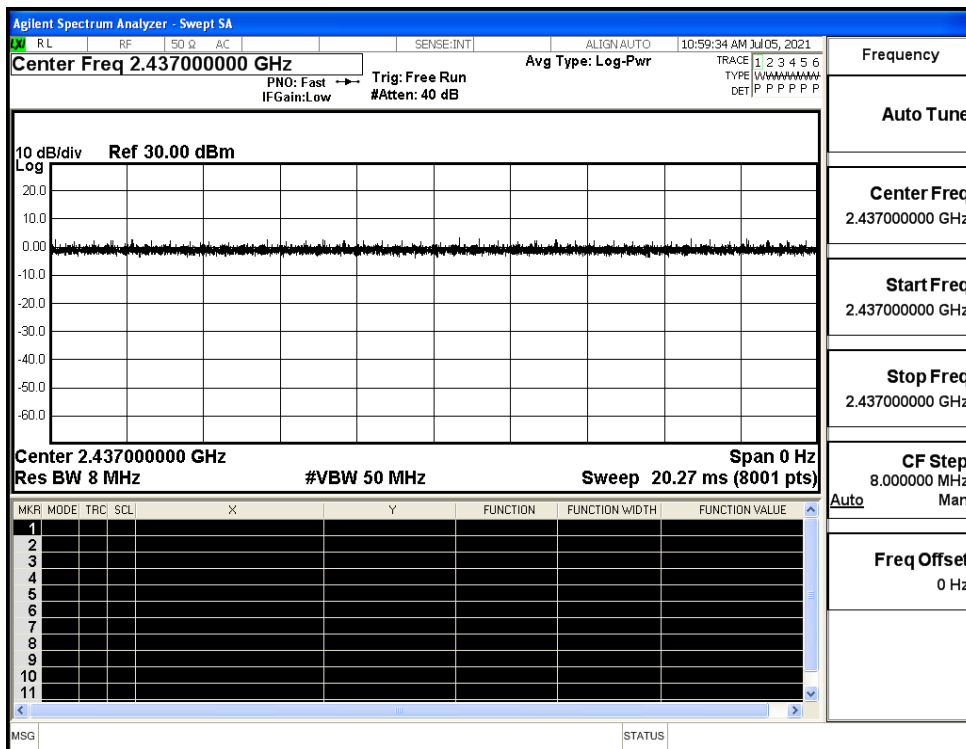
#### A.1 Duty Cycle

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

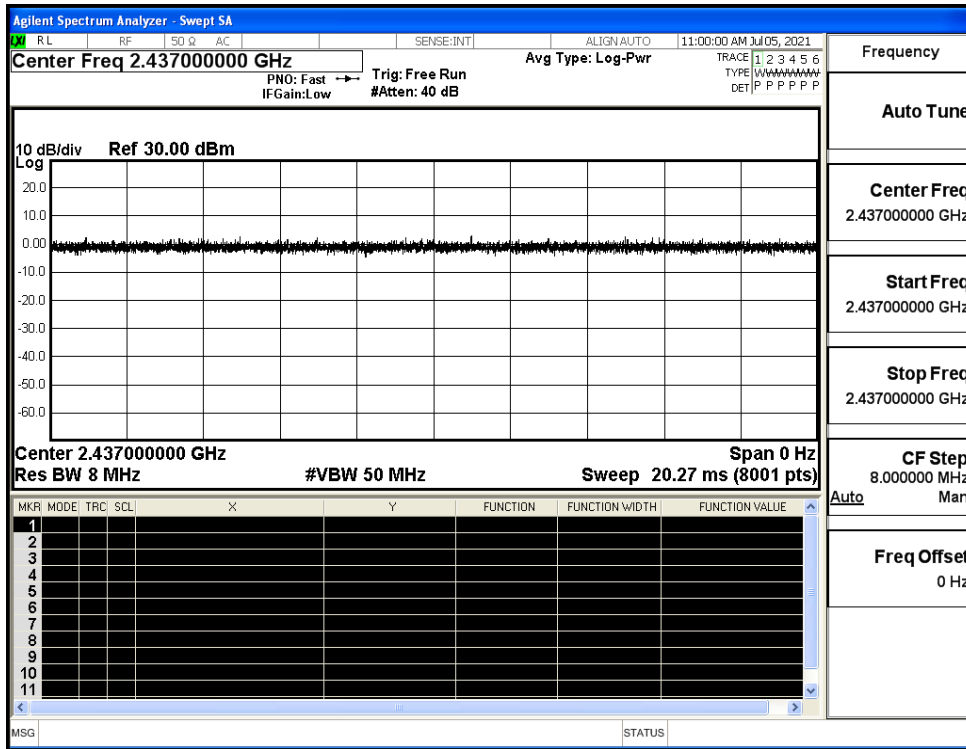
Duty Cycle\_11B\_2437\_Ant1



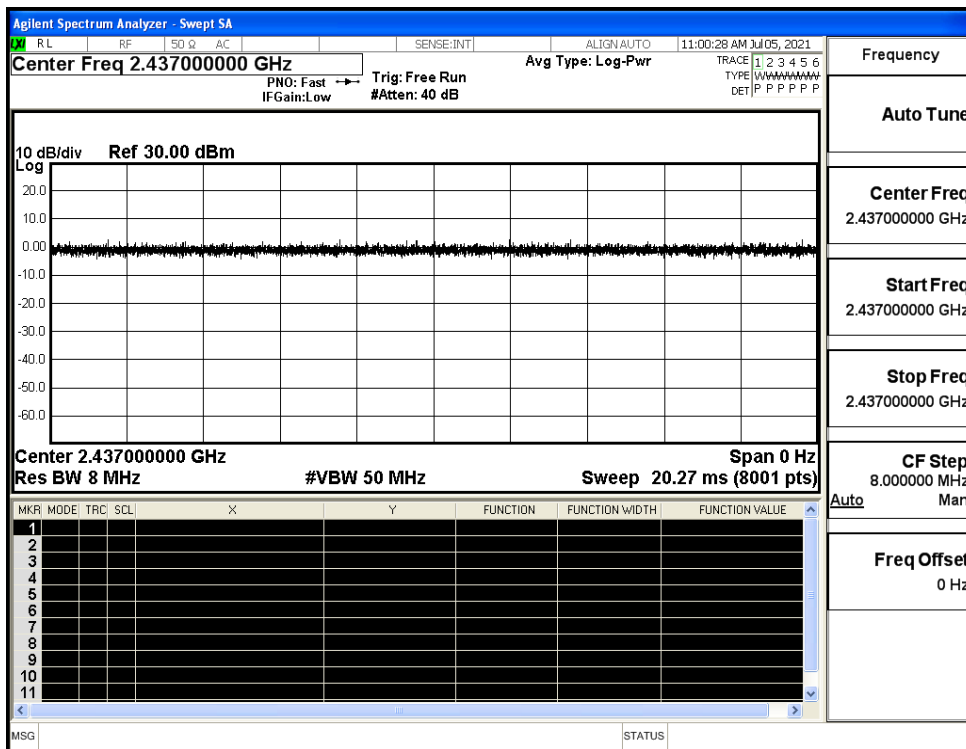
Duty Cycle\_11G\_2437\_Ant1



Duty Cycle\_11N20SISO\_2437\_Ant1



Duty Cycle\_11N40SISO\_2437\_Ant1



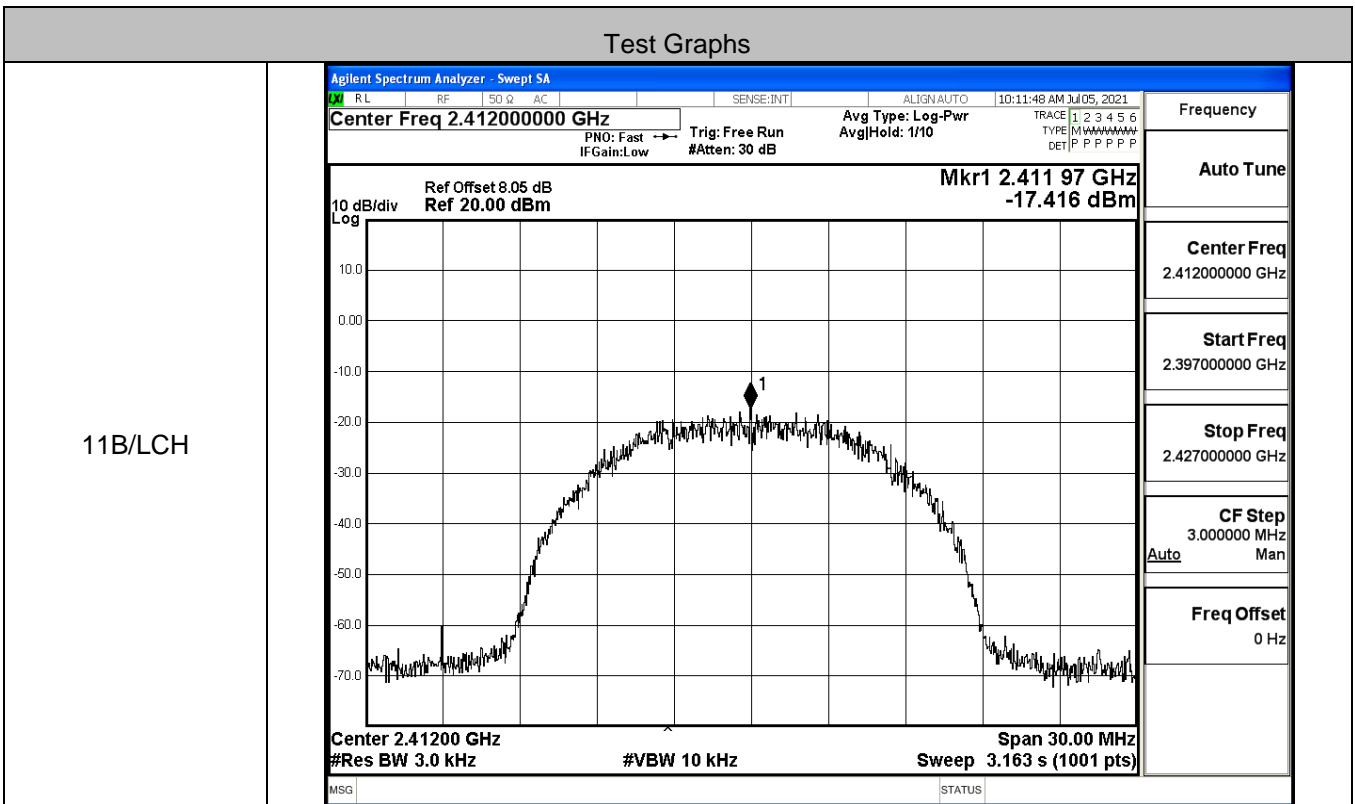
**A.2 Maximum Conducted Output Power**

Mode	Channel	Meas.Level [dBm]	Limit [dBm]	Verdict
11B	LCH	14.22	30	PASS
	MCH	14.66	30	PASS
	HCH	14.57	30	PASS
11G	LCH	14.24	30	PASS
	MCH	14.60	30	PASS
	HCH	14.52	30	PASS
11N20SISO	LCH	14.10	30	PASS
	MCH	14.21	30	PASS
	HCH	14.61	30	PASS
11N40SISO	LCH	13.22	30	PASS
	MCH	13.45	30	PASS
	HCH	13.70	30	PASS

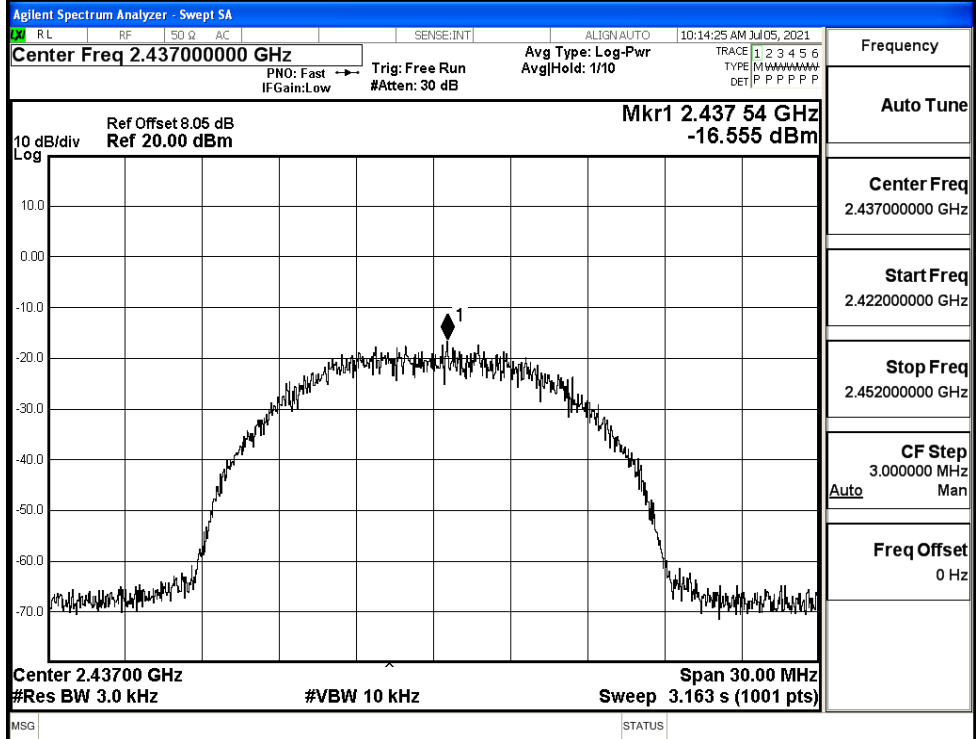
### A.3 Maximum Power Spectral Density

Mode	Channel	Meas.Level [dBm/3KHz]	Limit [dBm/3KHz]	Verdict
11B	LCH	-17.416	8	PASS
	MCH	-16.555	8	PASS
	HCH	-16.961	8	PASS
11G	LCH	-17.193	8	PASS
	MCH	-16.360	8	PASS
	HCH	-16.320	8	PASS
11N20SISO	LCH	-17.795	8	PASS
	MCH	-17.294	8	PASS
	HCH	-16.756	8	PASS
11N40SISO	LCH	-16.809	8	PASS
	MCH	-16.931	8	PASS
	HCH	-16.287	8	PASS

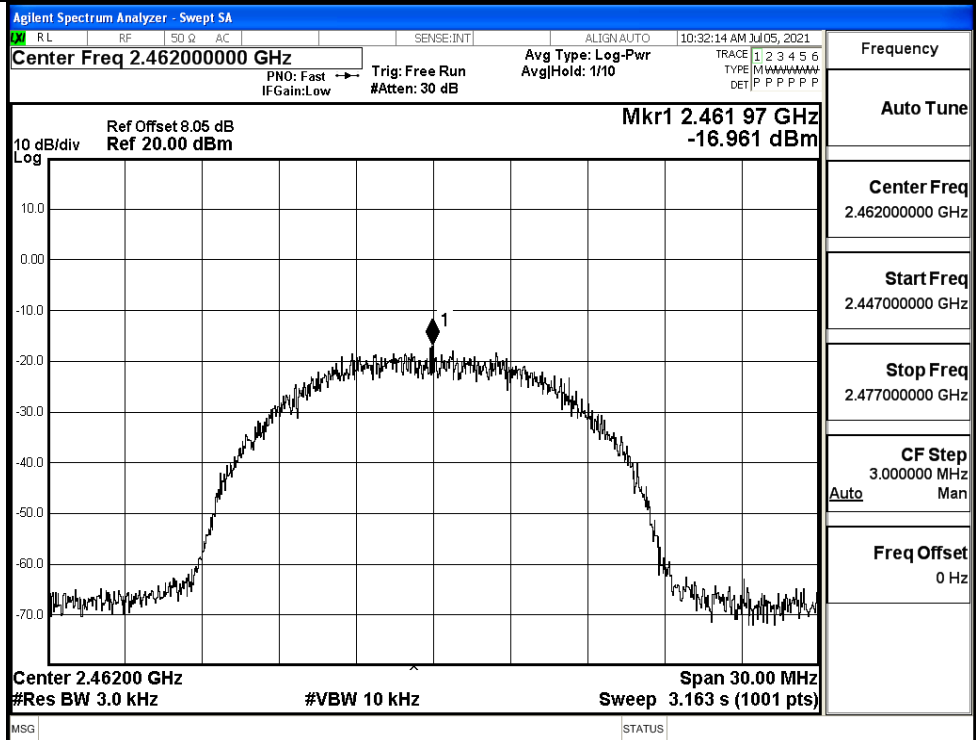
#### Test Graphs



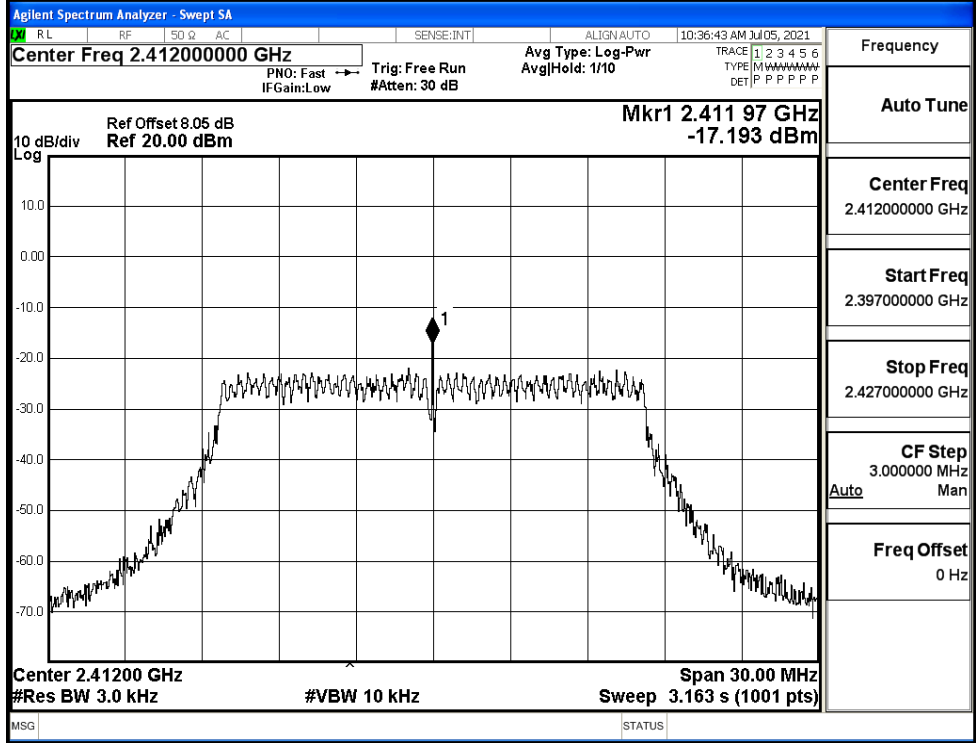
11B/MCH



11B/HCH

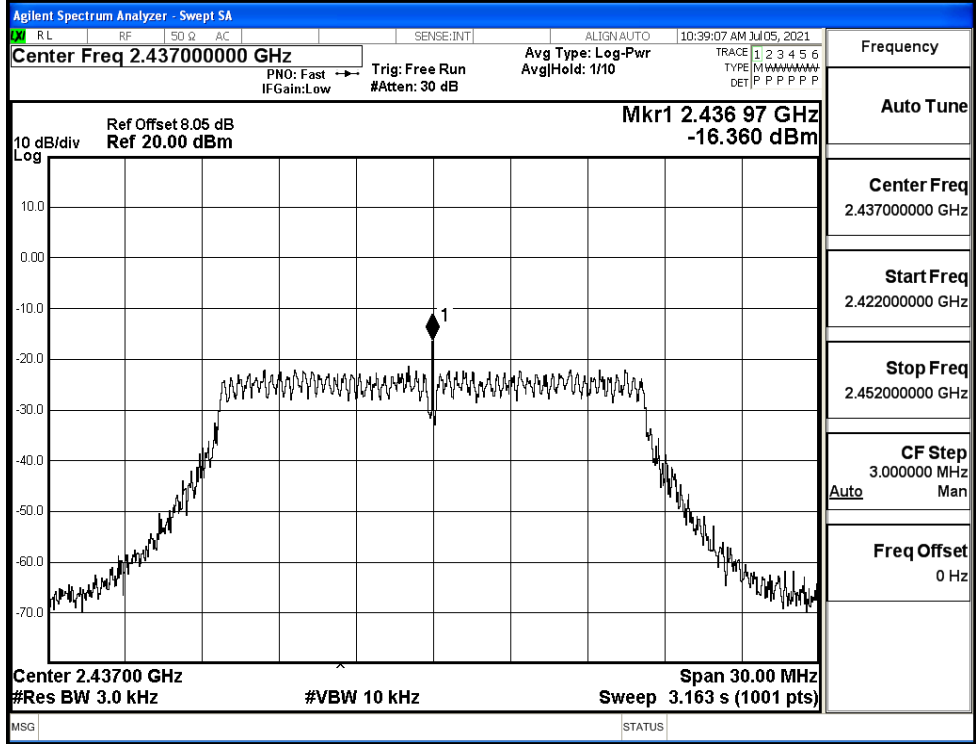


11G/LCH



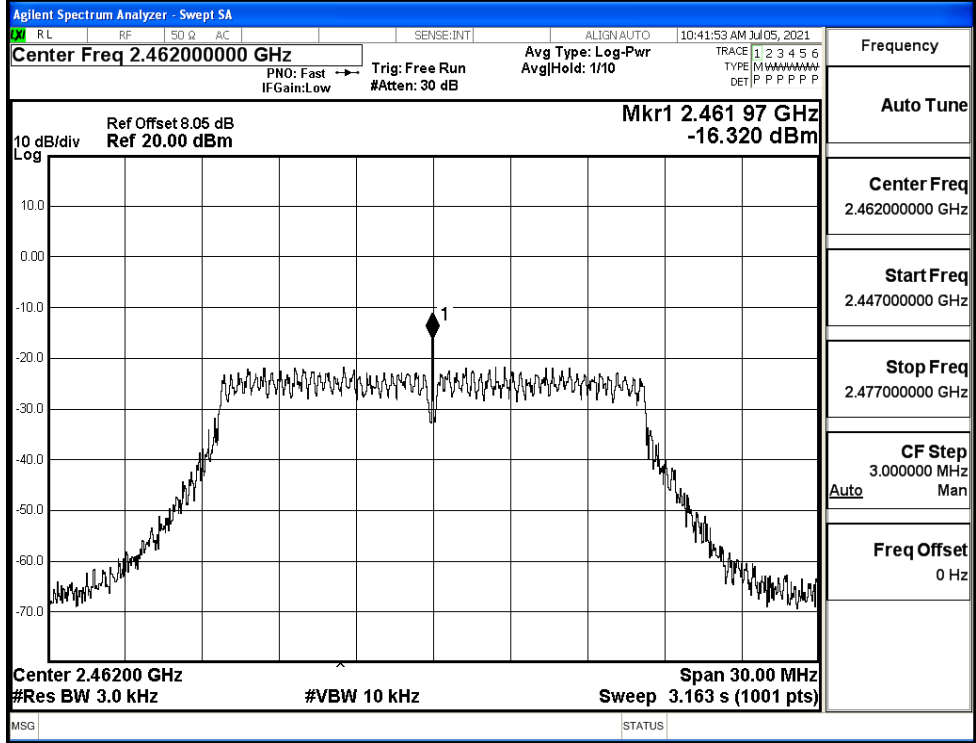
Frequency	2.41200000 GHz
Auto Tune	
Center Freq	2.41200000 GHz
Start Freq	2.397000000 GHz
Stop Freq	2.427000000 GHz
CF Step	3.000000 MHz
	Auto Man
Freq Offset	0 Hz

11G/MCH

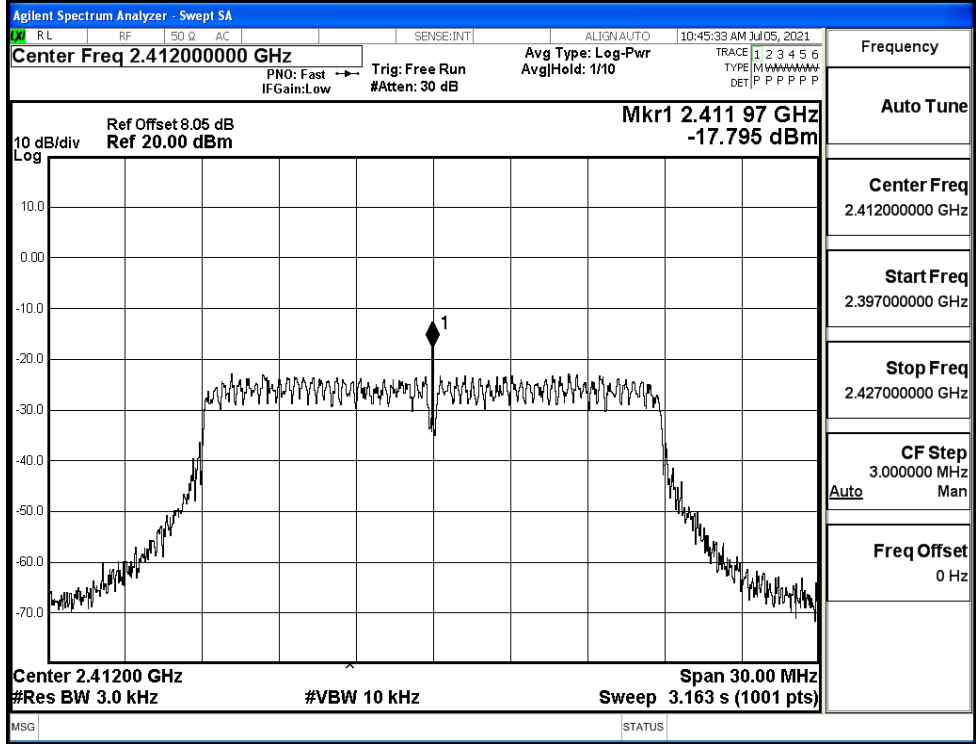


Frequency	2.43700000 GHz
Auto Tune	
Center Freq	2.43700000 GHz
Start Freq	2.422000000 GHz
Stop Freq	2.452000000 GHz
CF Step	3.000000 MHz
	Auto Man
Freq Offset	0 Hz

11G/HCH

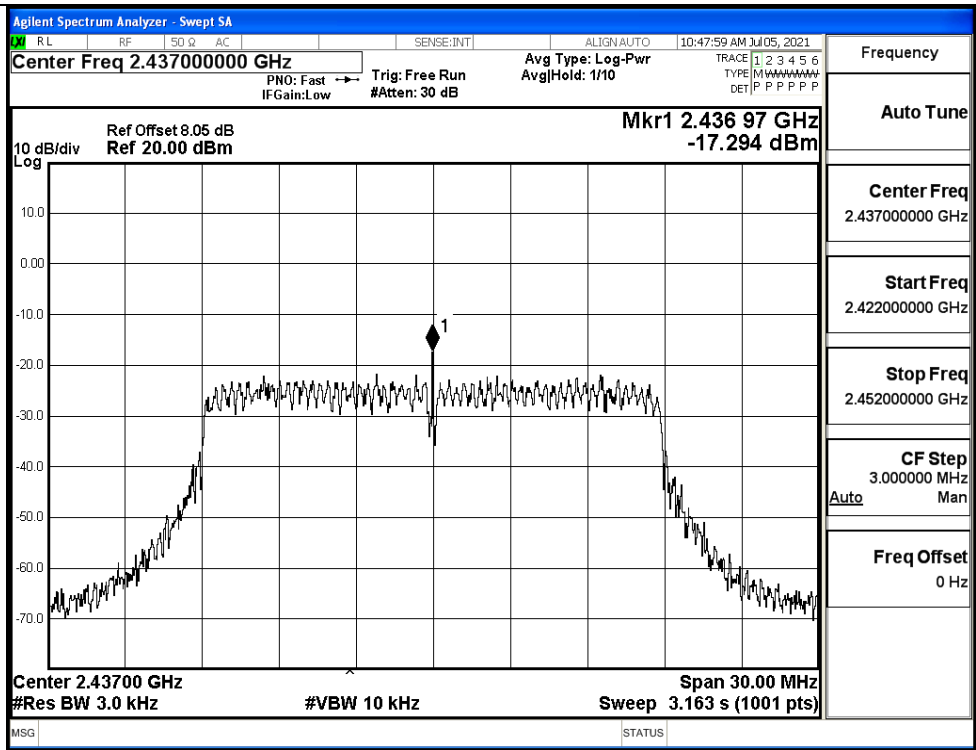


11N20SISO/LCH

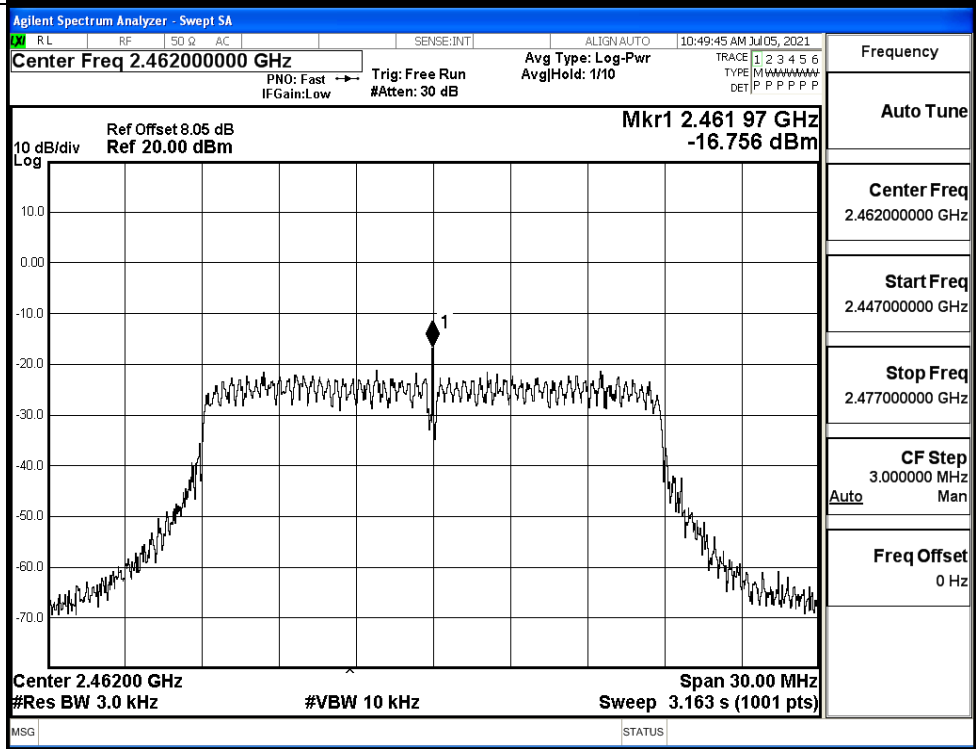




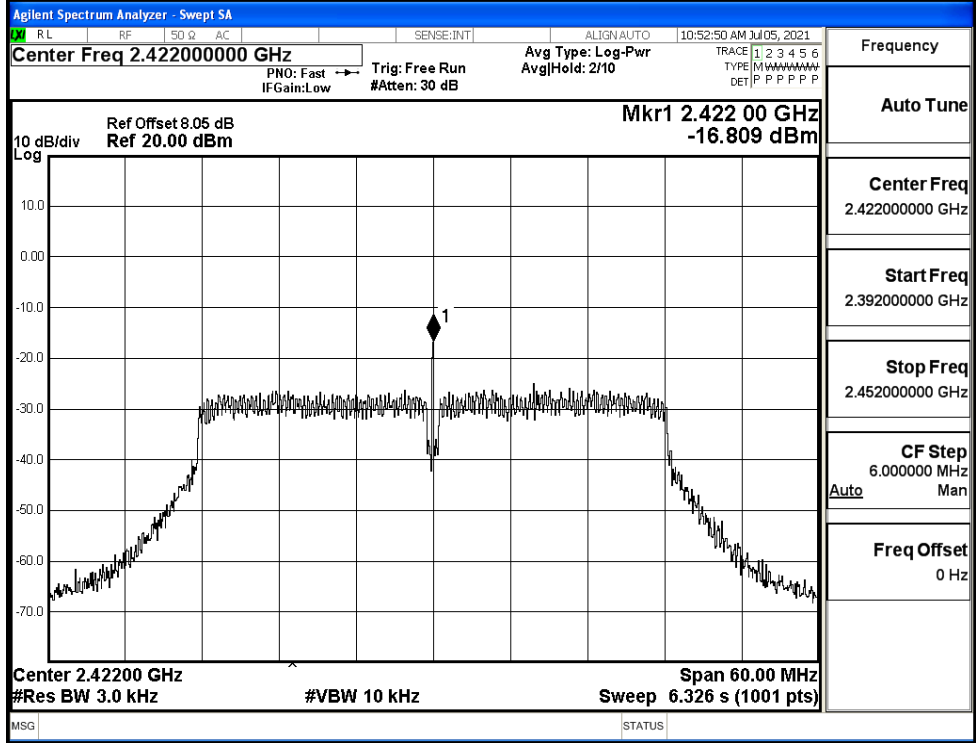
11N20SISO/MCH



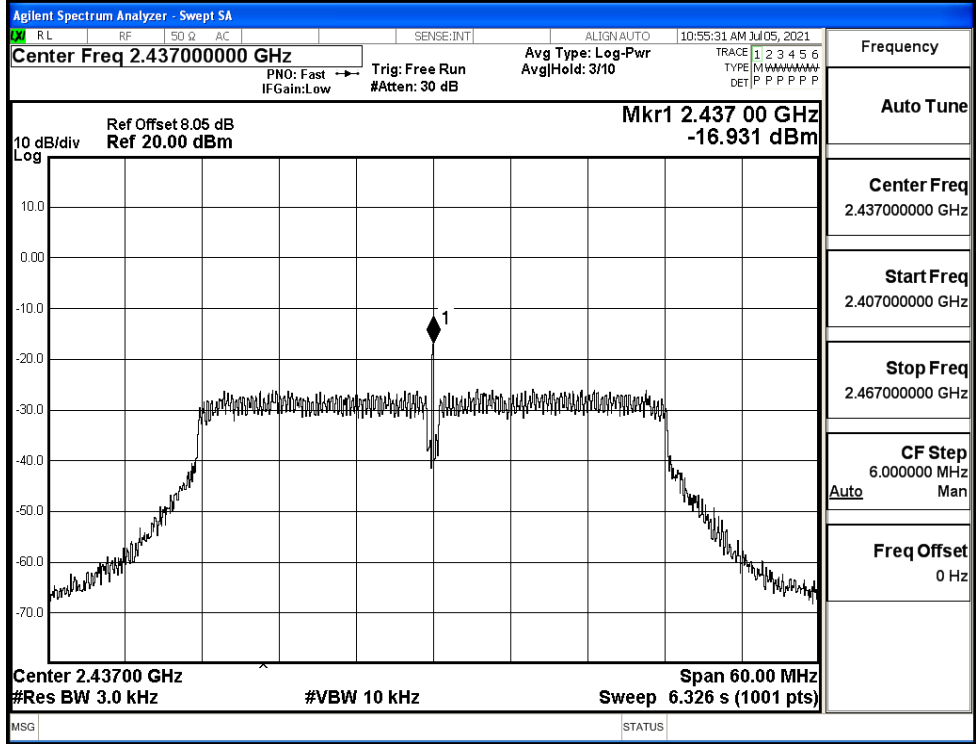
11N20SISO/HCH

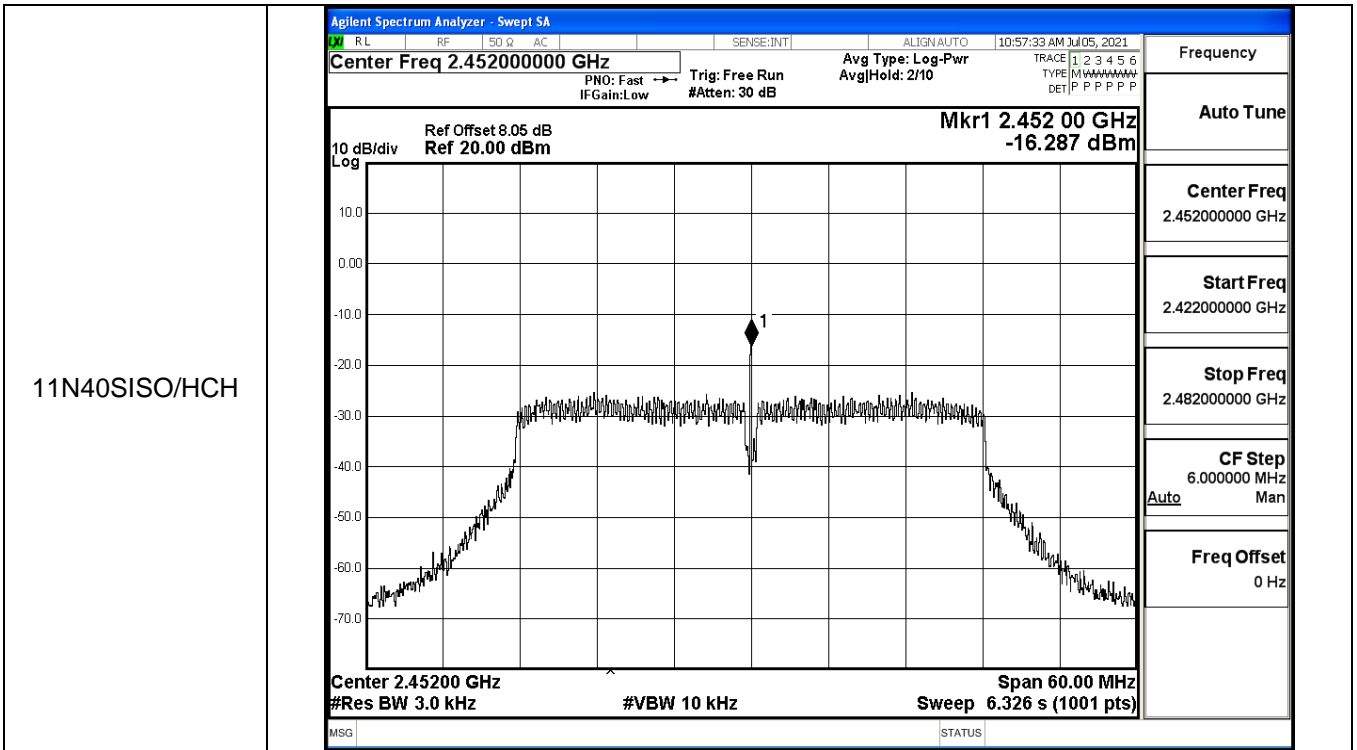


11N40SISO/LCH



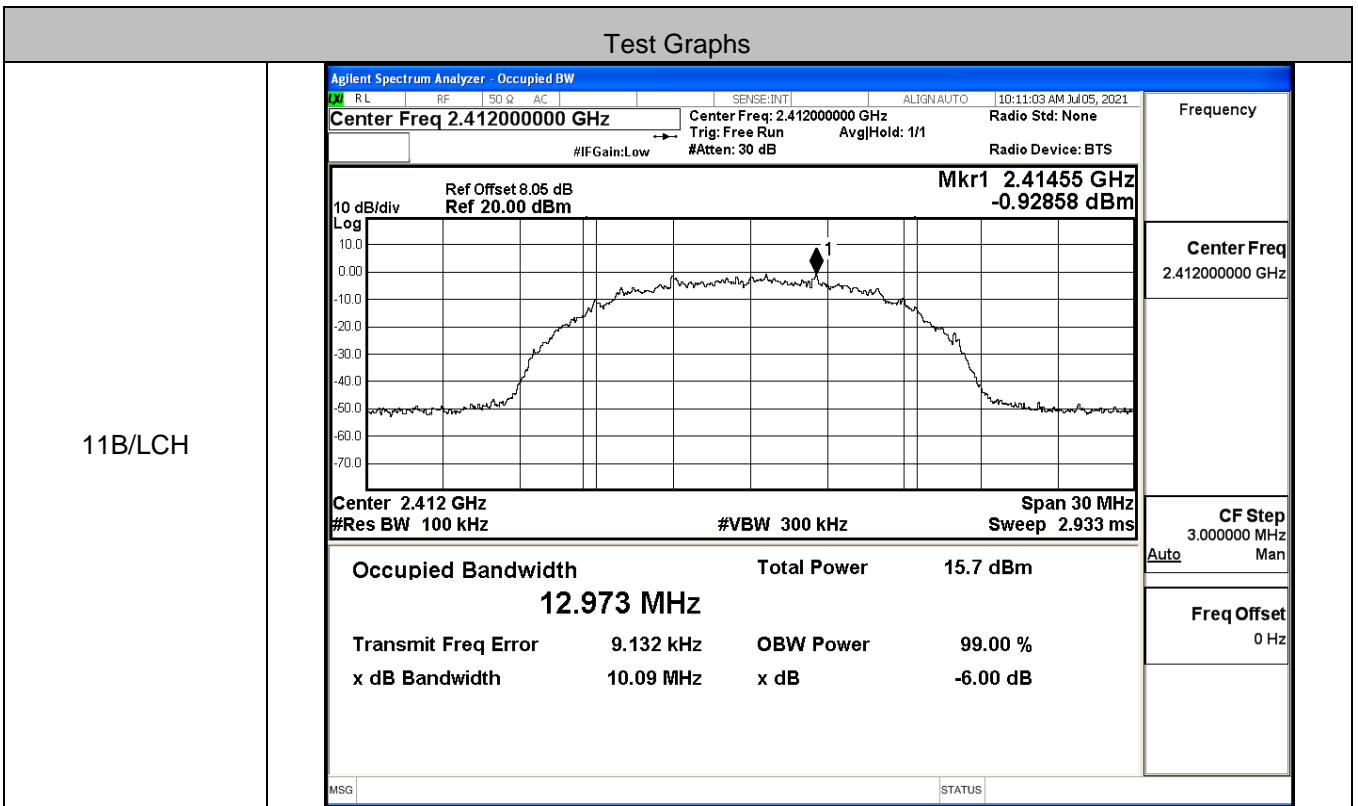
11N40SISO/MCH



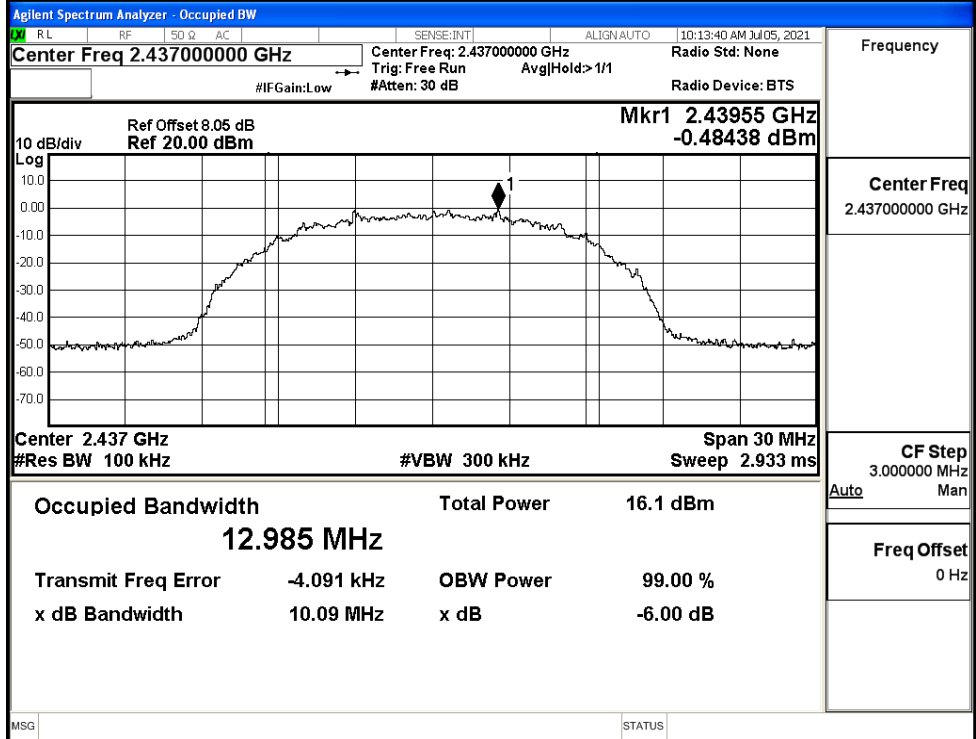


**A.4 6dB Bandwidth**

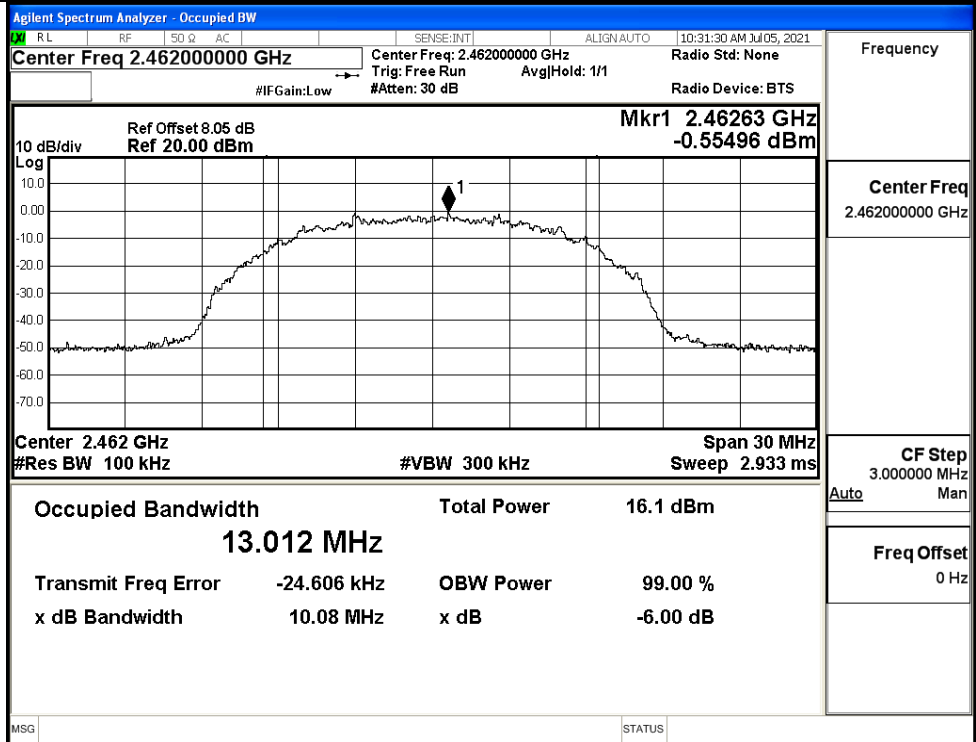
Mode	Channel	6dB Bandwidth [MHz]	Limit [MHz]	Verdict
11B	LCH	10.09	≥0.5	PASS
	MCH	10.09	≥0.5	PASS
	HCH	10.08	≥0.5	PASS
11G	LCH	16.48	≥0.5	PASS
	MCH	16.49	≥0.5	PASS
	HCH	16.49	≥0.5	PASS
11N20SISO	LCH	17.61	≥0.5	PASS
	MCH	17.60	≥0.5	PASS
	HCH	17.62	≥0.5	PASS
11N40SISO	LCH	36.49	≥0.5	PASS
	MCH	36.51	≥0.5	PASS
	HCH	36.52	≥0.5	PASS



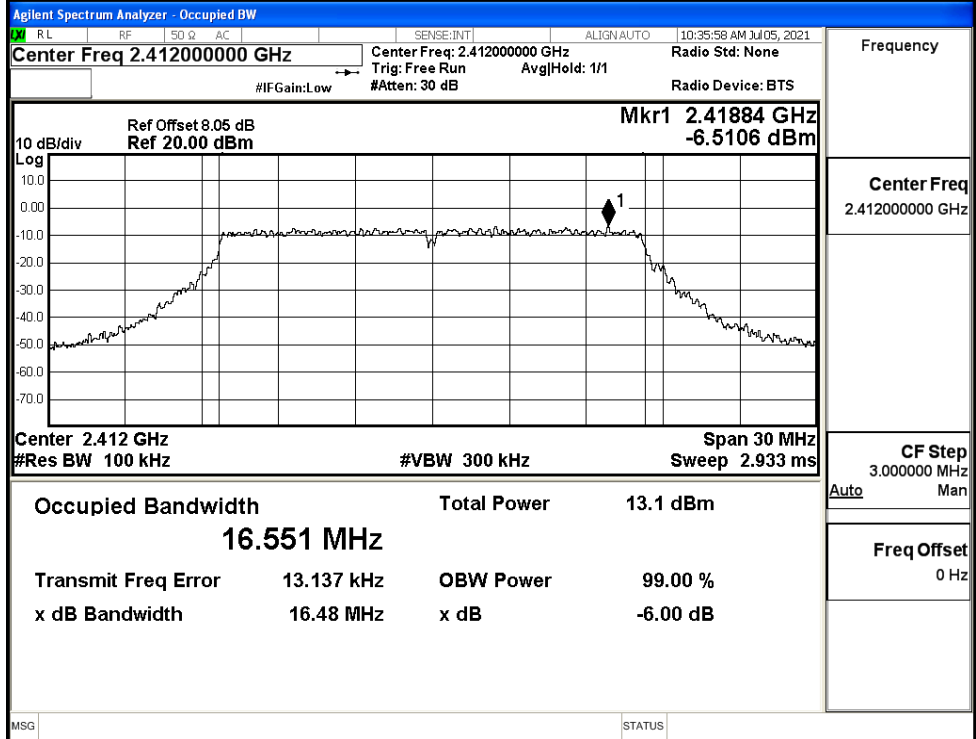
11B/MCH



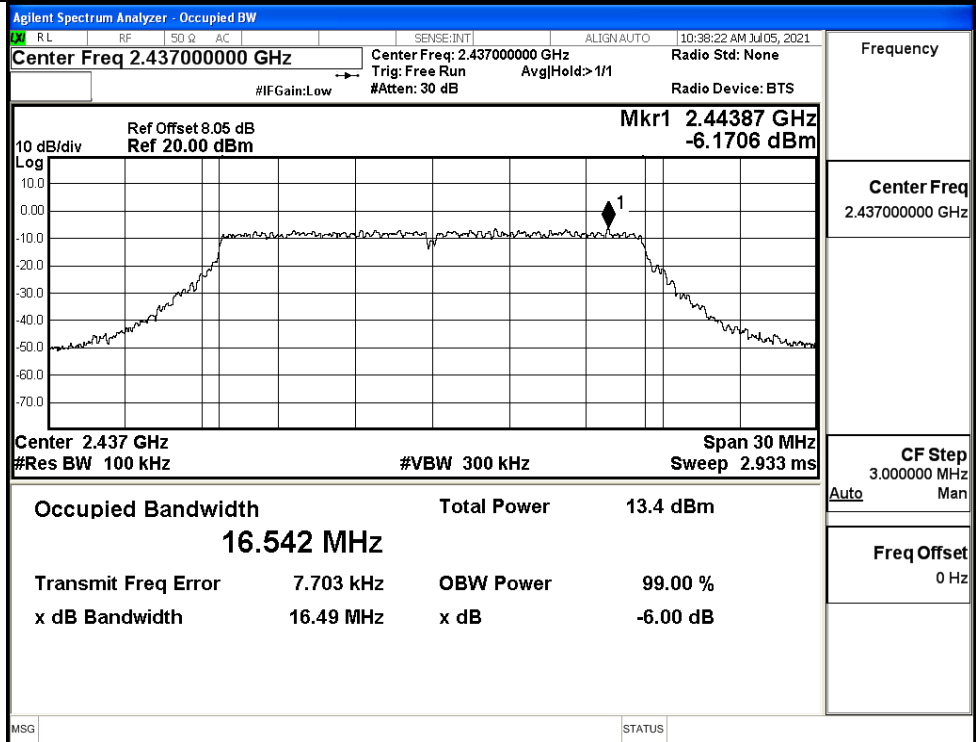
11B/HCH



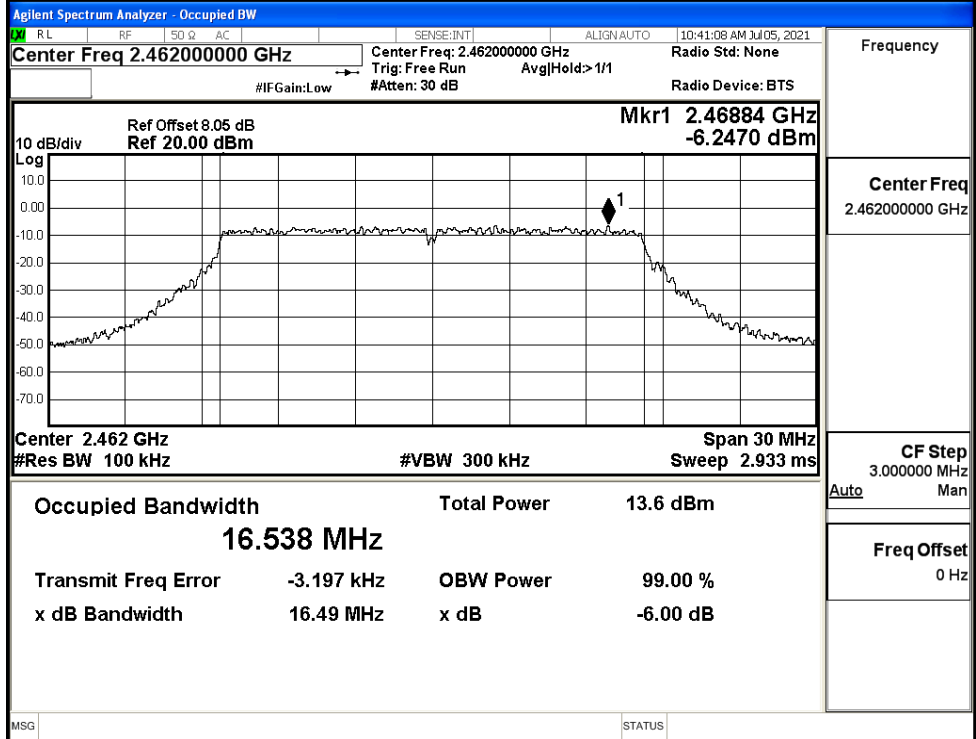
11G/LCH



11G/MCH

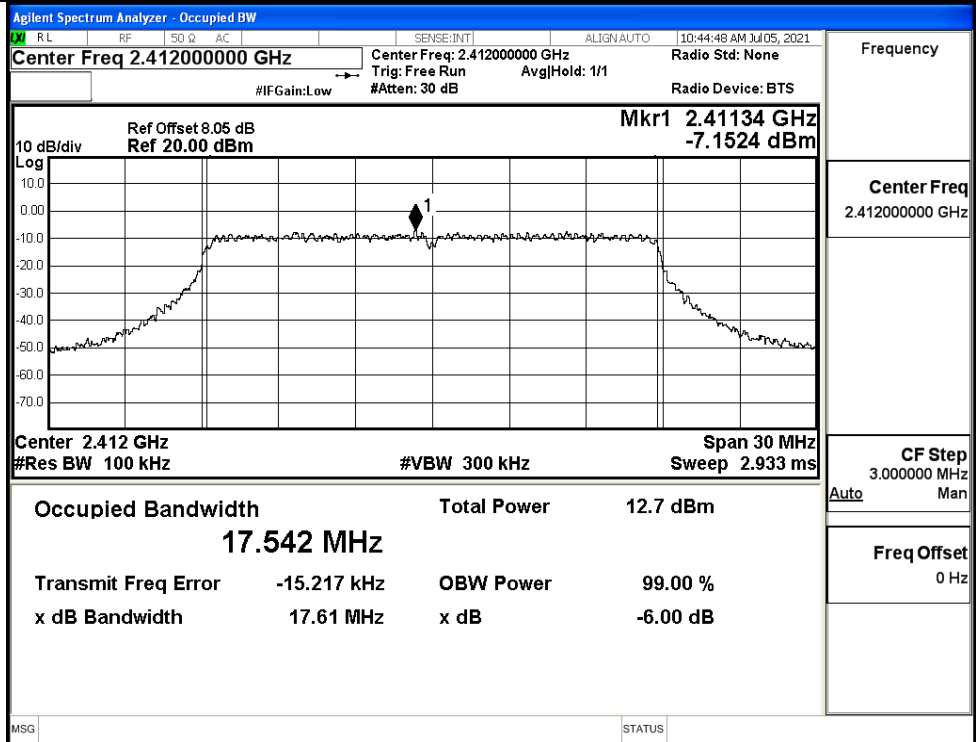


11G/HCH

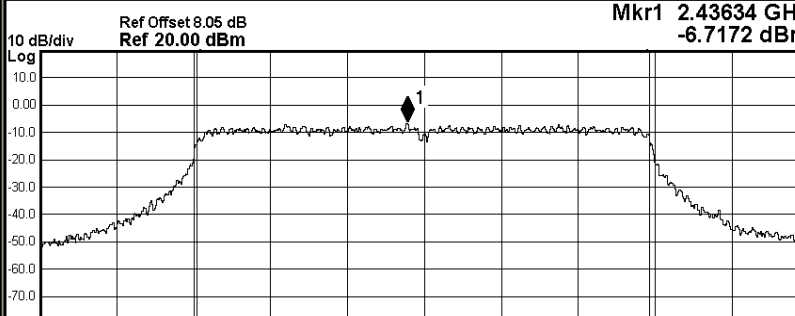
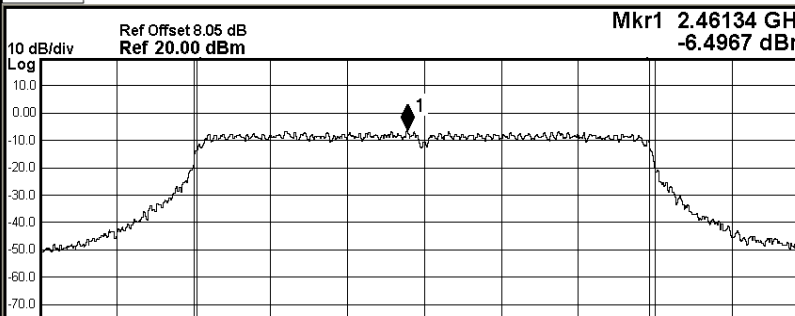


Frequency	2.46200000 GHz
Center Freq	2.46200000 GHz
CF Step	3.000000 MHz
Auto	Man
Freq Offset	0 Hz

11N20SISO/LCH

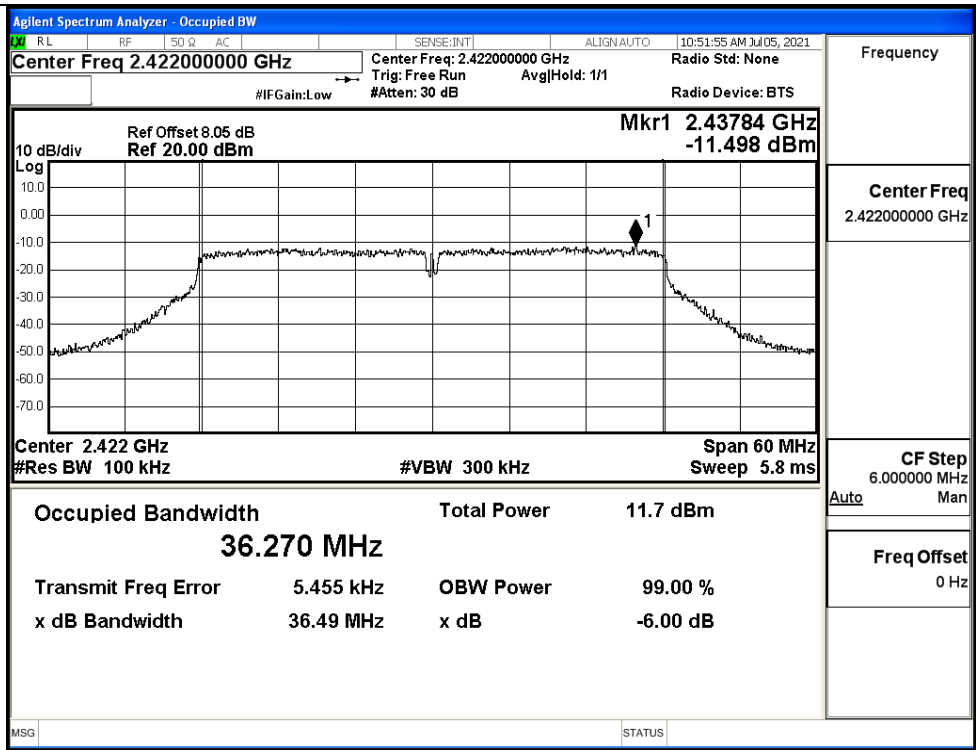


Frequency	2.41200000 GHz
Center Freq	2.41200000 GHz
CF Step	3.000000 MHz
Auto	Man
Freq Offset	0 Hz

<p>11N20SISO/MCH</p>	<p>Agilent Spectrum Analyzer - Occupied BW</p> <p>RL RF SQ Ω AC SENSE:INT ALIGN AUTO 10:47:14 AM JUL05, 2021</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 8.05 dB Mkr1 2.43634 GHz                  Ref 20.00 dBm -6.7172 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 Total Power 13.1 dBm  <b>17.539 MHz</b></p> <p>Transmit Freq Error -20.182 kHz OBW Power 99.00 %                  x dB Bandwidth 17.60 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>
	<p>11N20SISO/HCH</p>	<p>Agilent Spectrum Analyzer - Occupied BW</p> <p>RL RF SQ Ω AC SENSE:INT ALIGN AUTO 10:49:00 AM JUL05, 2021</p> <p>Center Freq 2.46200000 GHz Center Freq: 2.46200000 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 8.05 dB Mkr1 2.46134 GHz                  Ref 20.00 dBm -6.4967 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 Total Power 13.6 dBm  <b>17.540 MHz</b></p> <p>Transmit Freq Error -22.095 kHz OBW Power 99.00 %                  x dB Bandwidth 17.62 MHz x dB -6.00 dB</p> <p>MSG STATUS</p>



11N40SISO/LCH

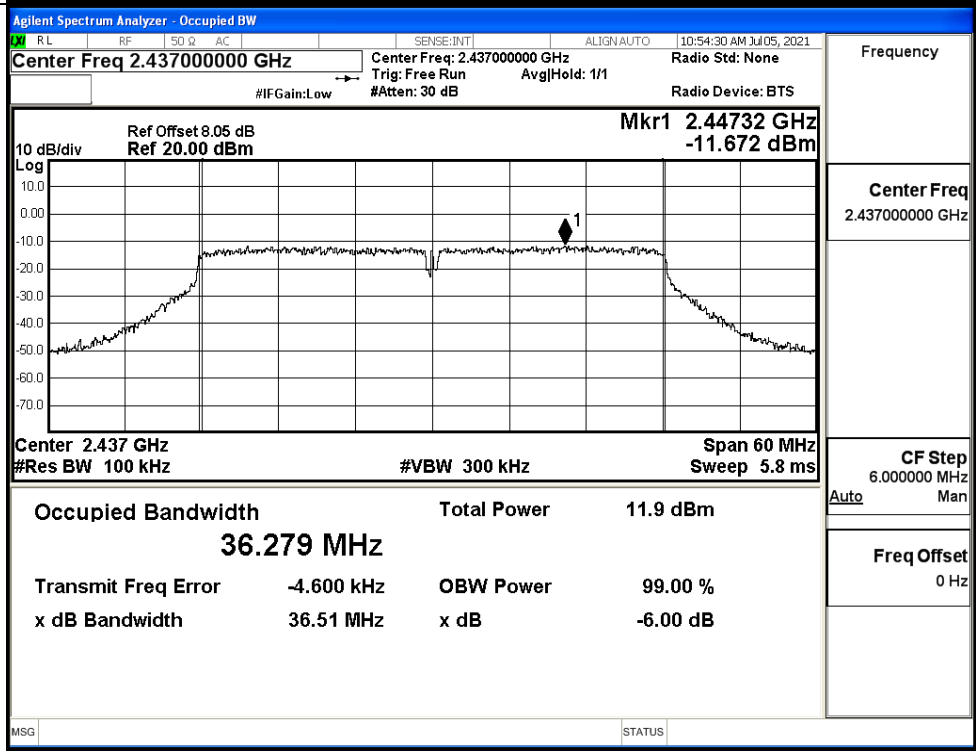


Frequency  
Center Freq  
2.42200000 GHz

CF Step  
6.000000 MHz  
Auto Man

Freq Offset  
0 Hz

11N40SISO/MCH

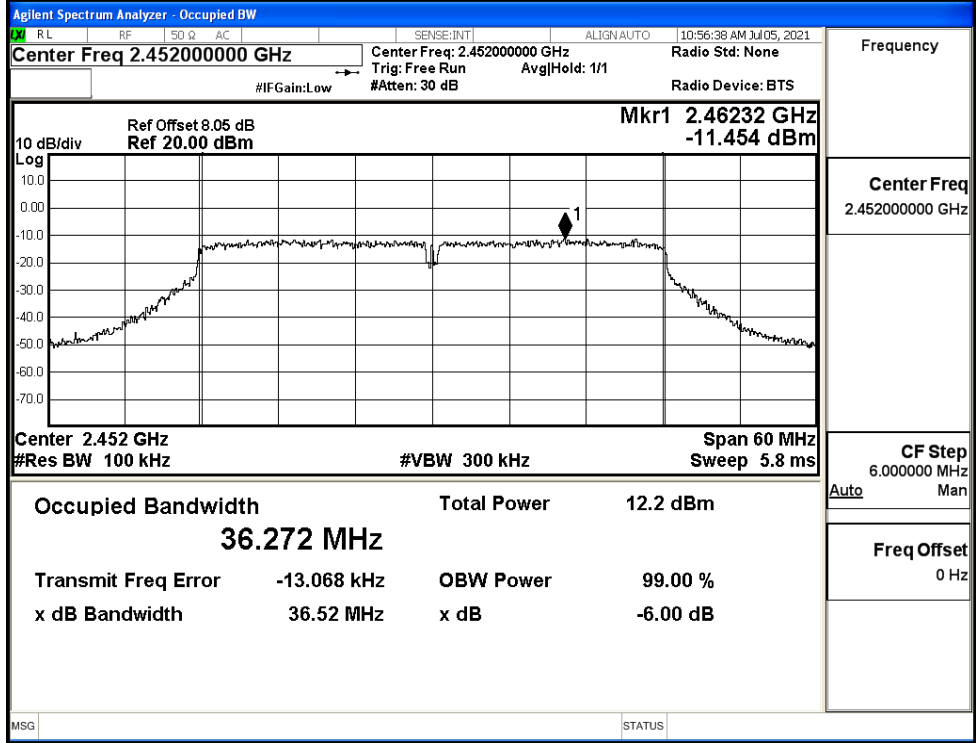


Frequency  
Center Freq  
2.43700000 GHz

CF Step  
6.000000 MHz  
Auto Man

Freq Offset  
0 Hz

11N40SISO/HCH

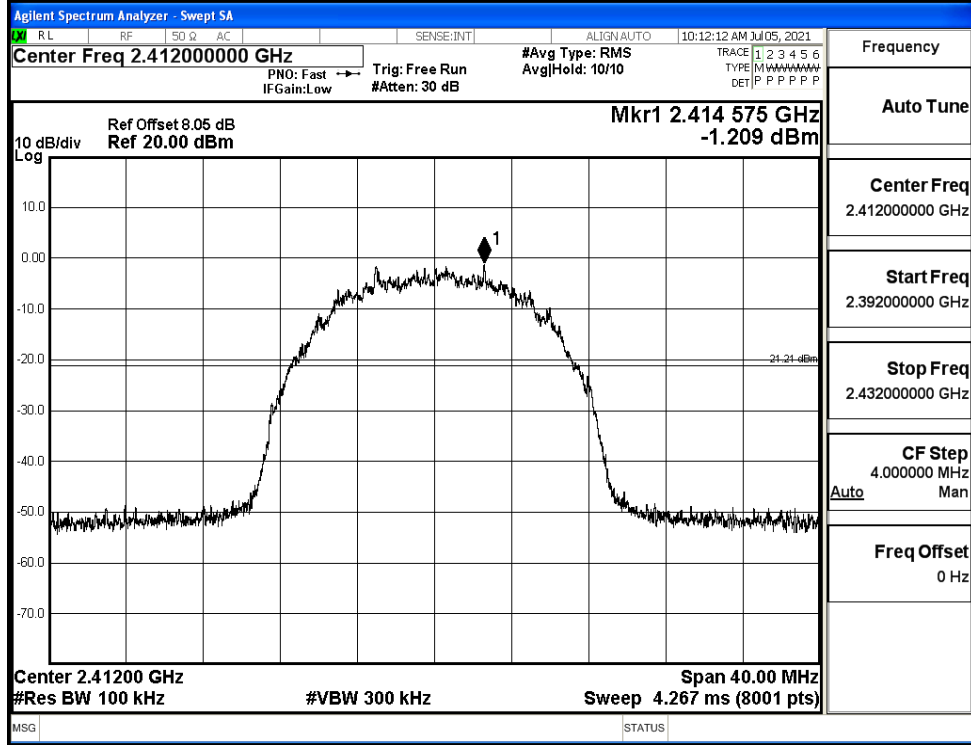


**A.5 RF Conducted Spurious Emissions**

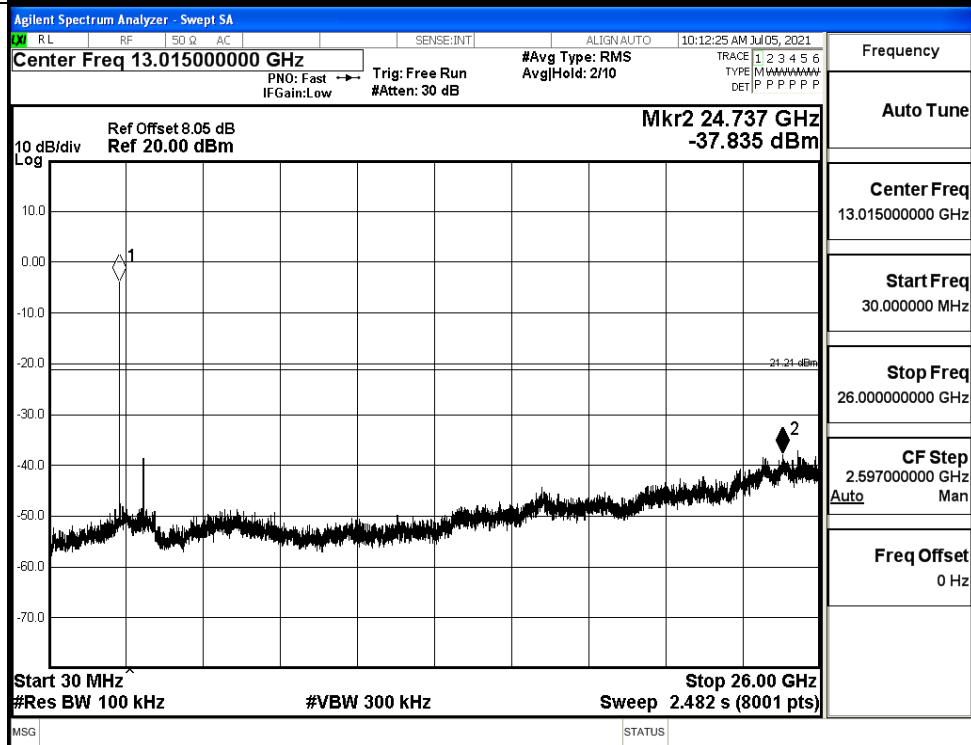
Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
11B	LCH	-1.209	-37.835	-21.209	PASS
	MCH	-0.741	-38.453	-20.741	PASS
	HCH	-0.842	-37.815	-20.842	PASS
11G	LCH	-6.734	-38.198	-26.734	PASS
	MCH	-6.397	-38.676	-26.397	PASS
	HCH	-6.339	-37.629	-26.339	PASS
11N20 SISO	LCH	-7.303	-38.452	-27.303	PASS
	MCH	-7.184	-37.066	-27.184	PASS
	HCH	-6.325	-37.607	-26.325	PASS
11N40 SISO	LCH	-11.947	-38.422	-31.947	PASS
	MCH	-11.691	-37.818	-31.691	PASS
	HCH	-11.247	-38.363	-31.247	PASS

11B\_LCH\_Graphs

Pref/11B/LCH

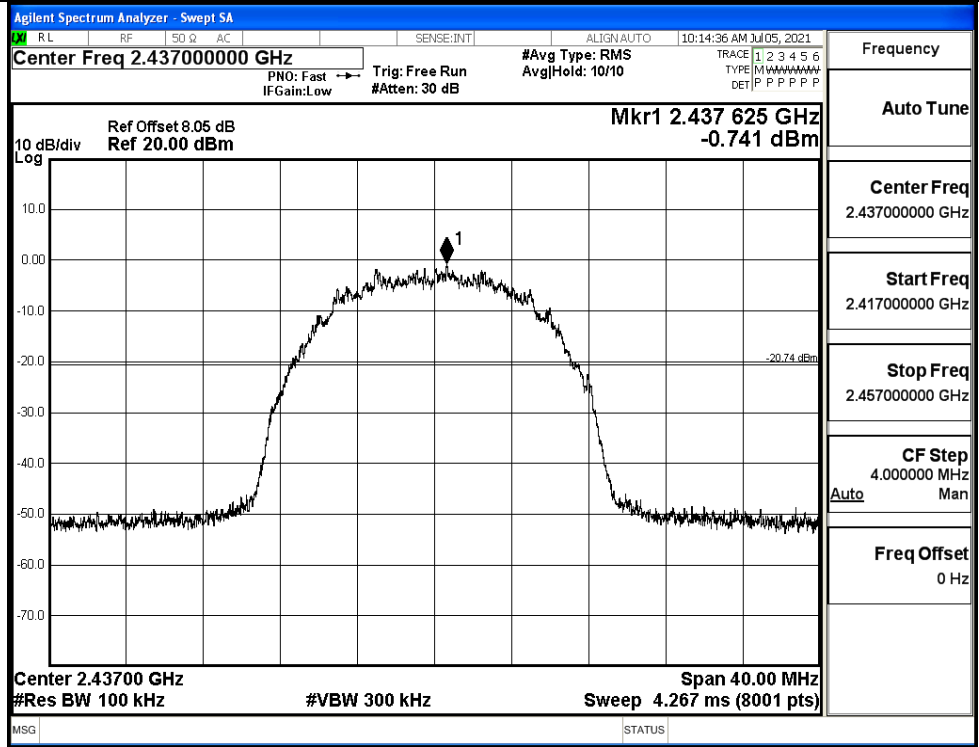


Puw/11B/LCH

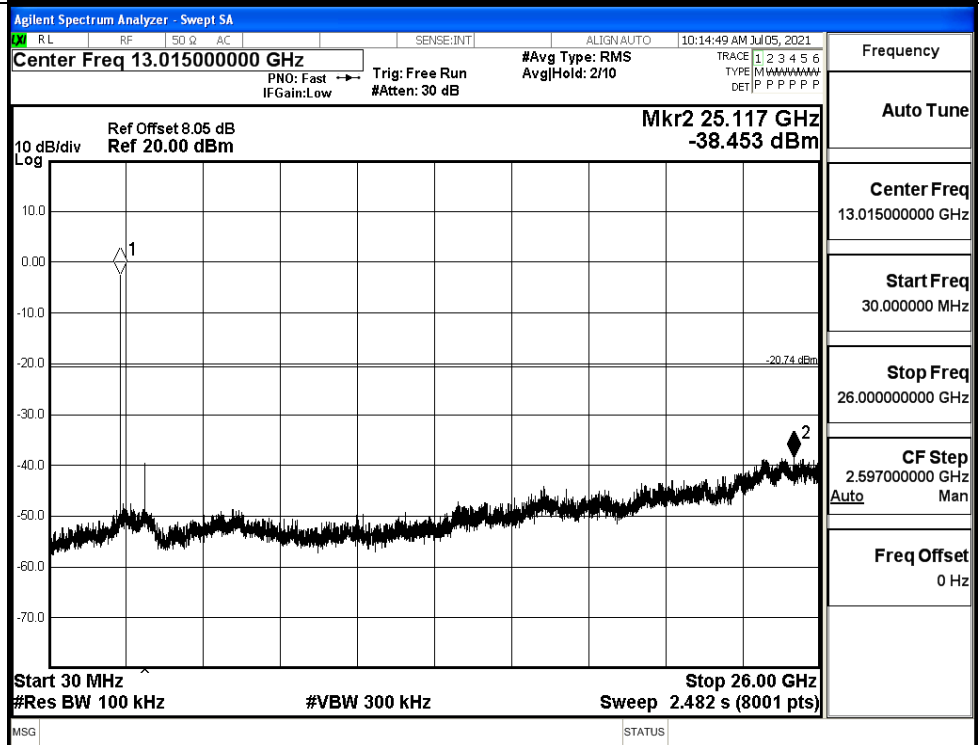


11B\_MCH\_Graphs

Pref/11B/MCH

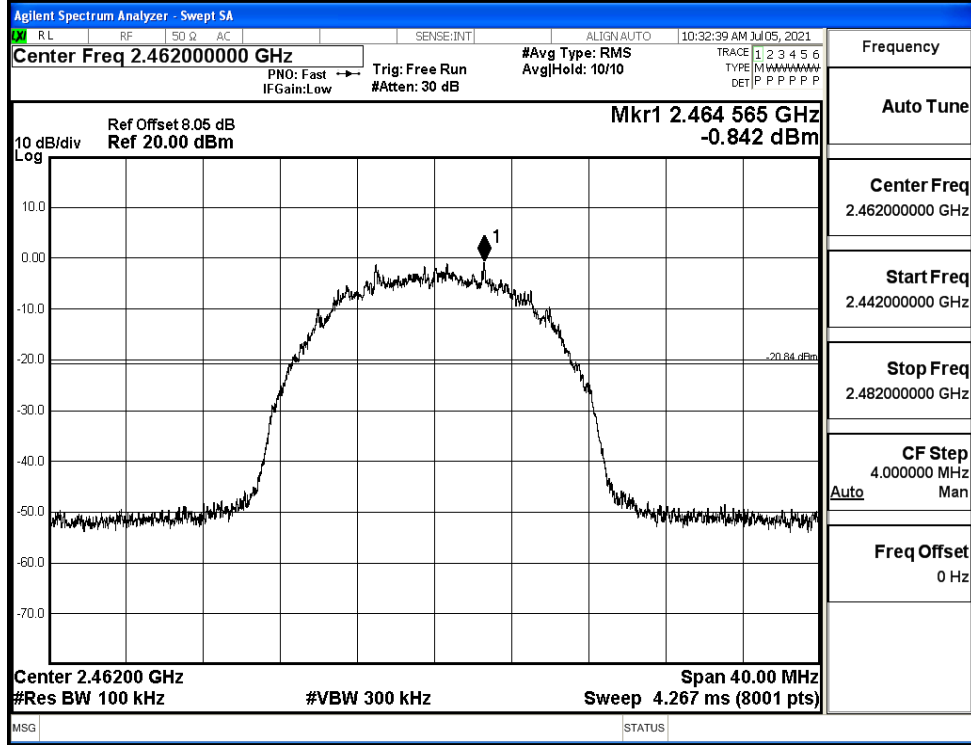


Puw/11B/MCH

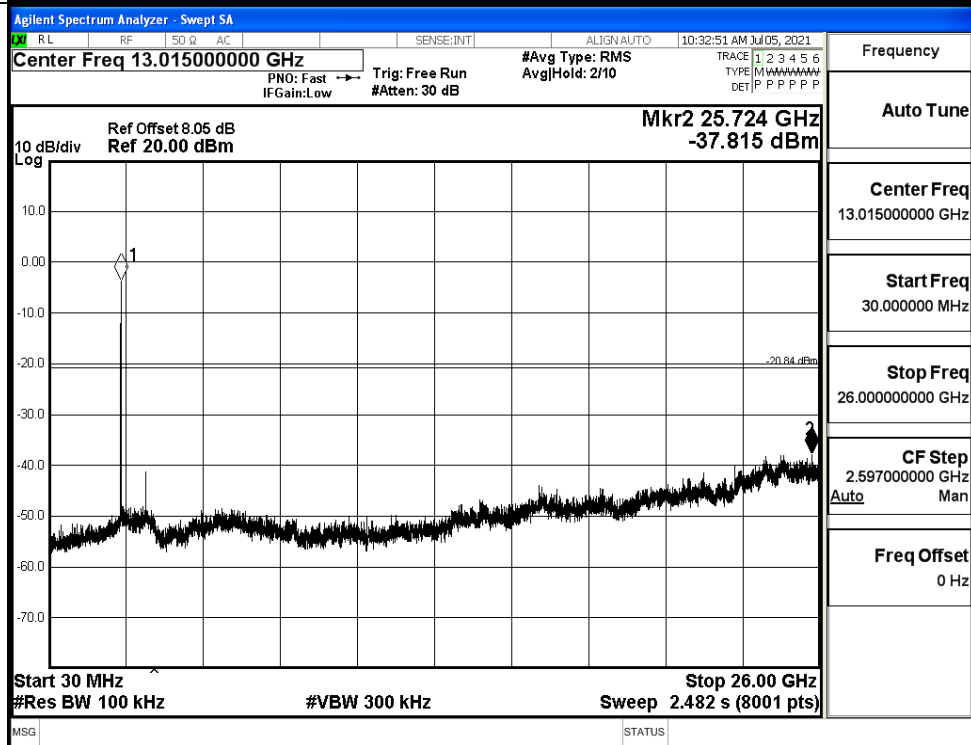


11B\_HCH\_Graphs

Pref/11B/HCH

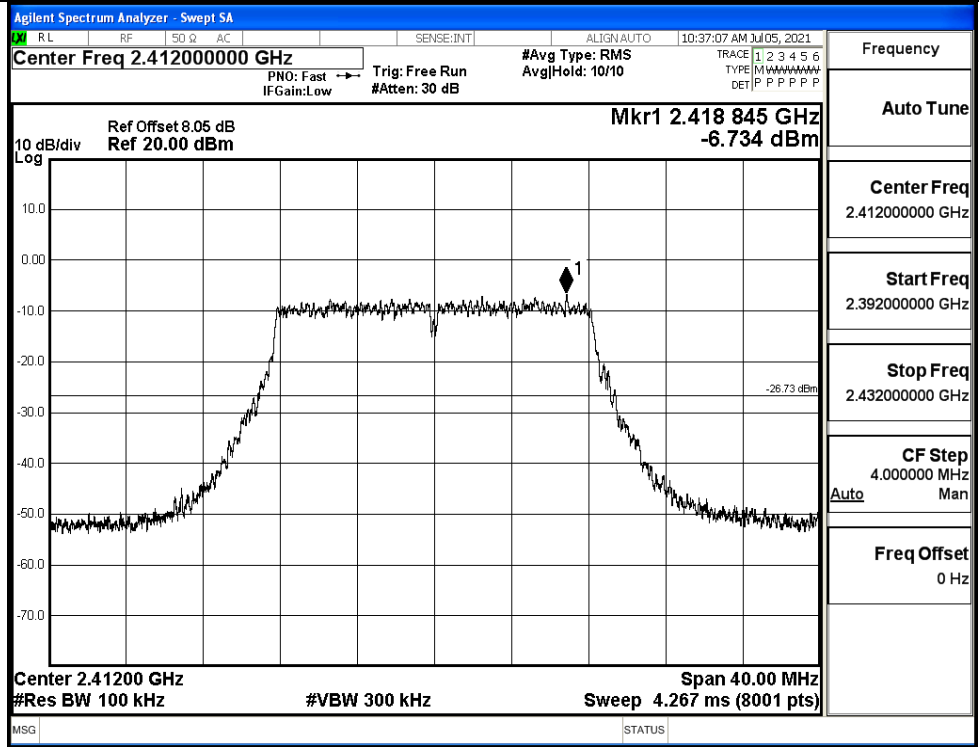


Puw/11B/HCH

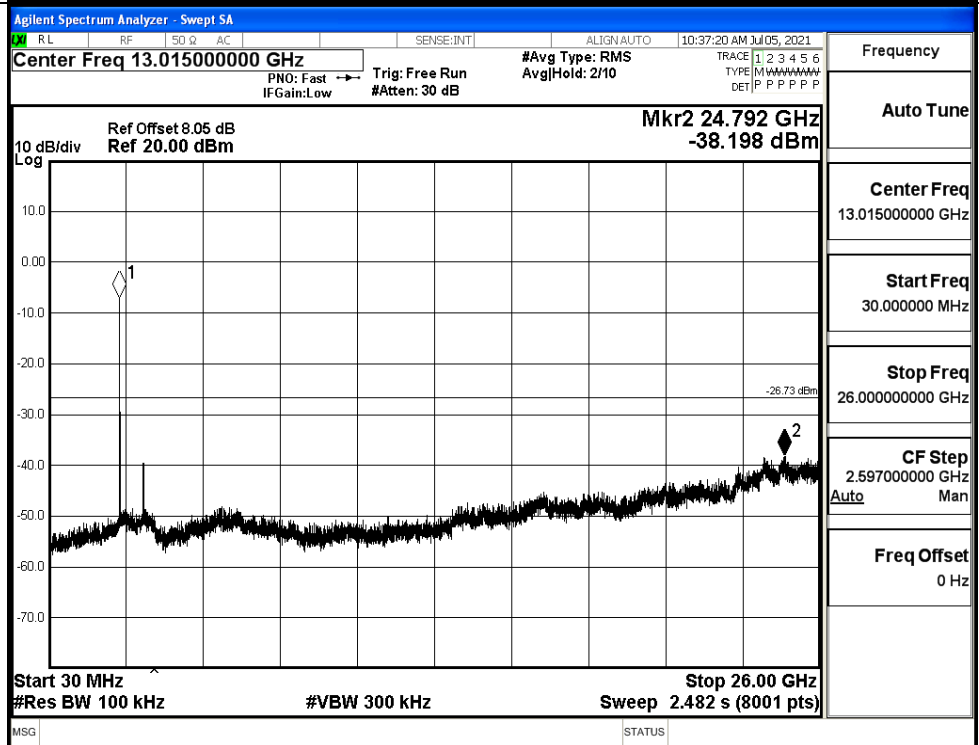


11G\_LCH\_Graphs

Pref/11G/LCH

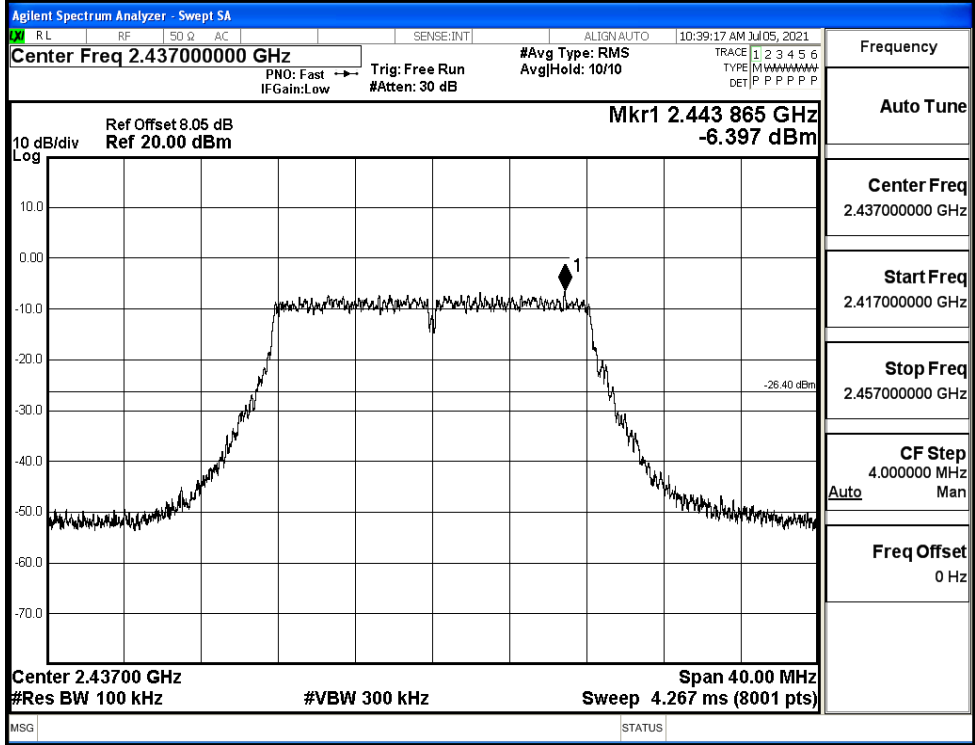


Puw/11G/LCH

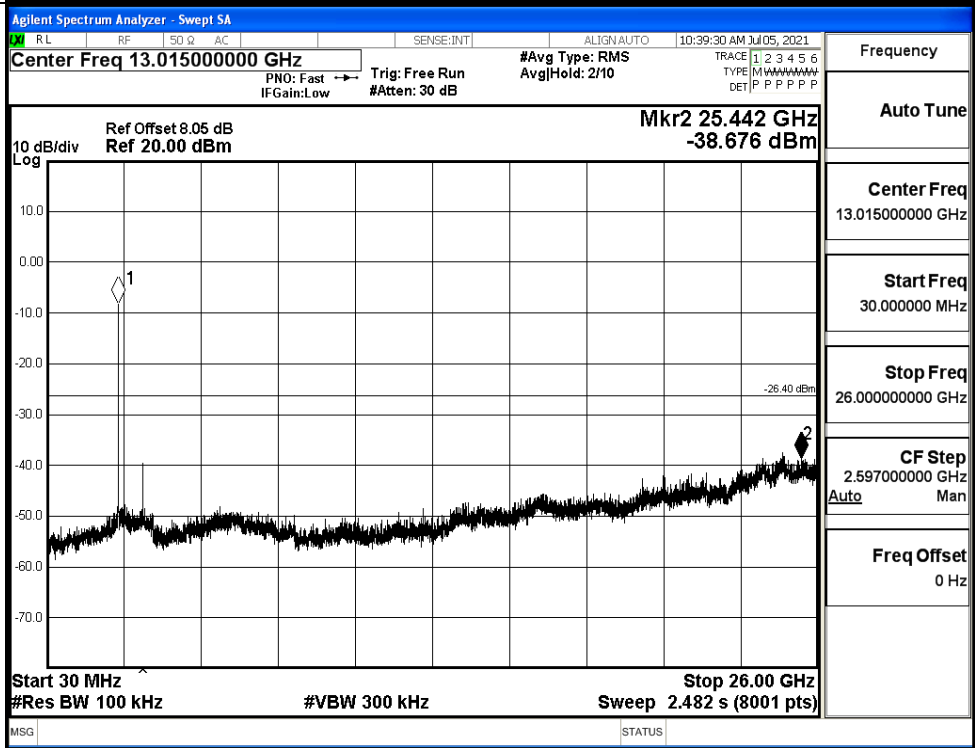


11G\_MCH\_Graphs

Pref/11G/MCH



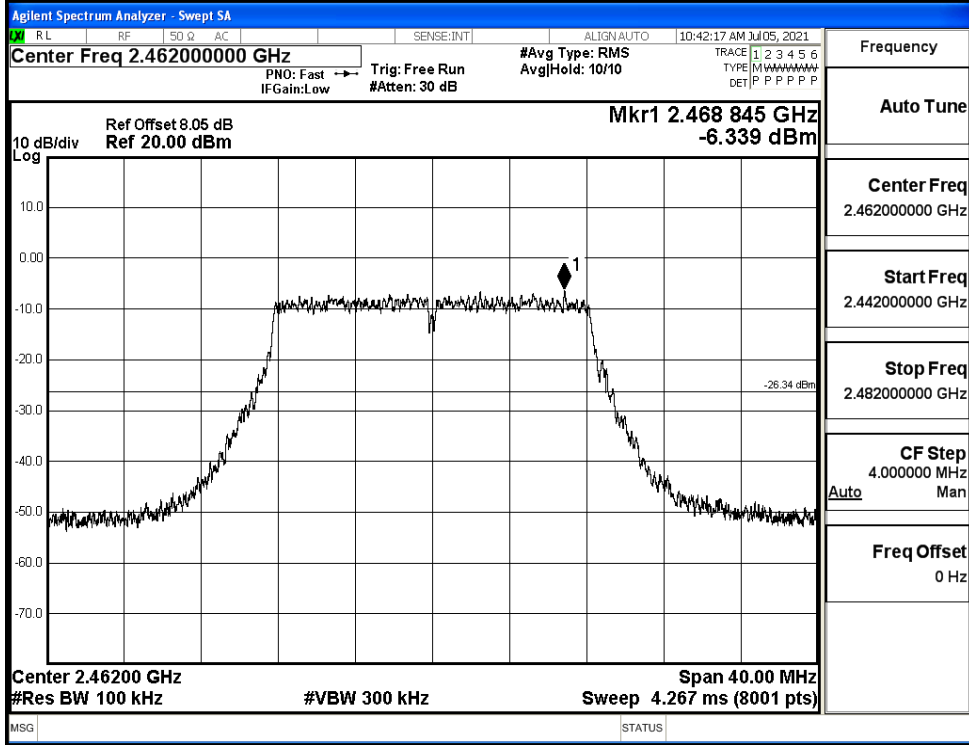
Puw/11G/MCH



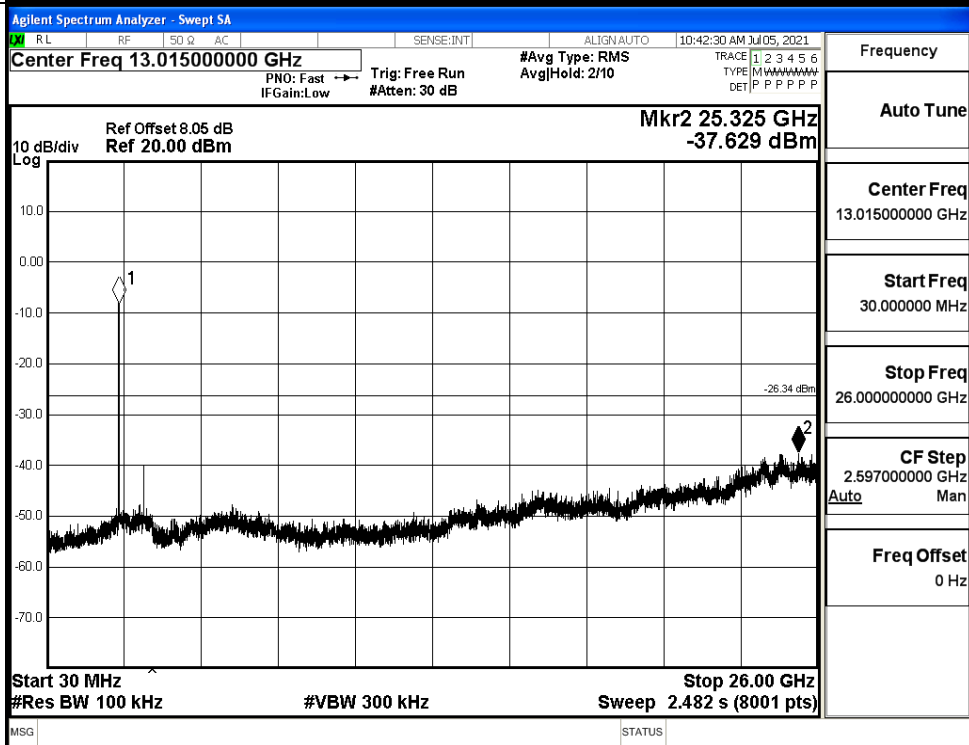


11G\_HCH\_Graphs

Pref/11G/HCH

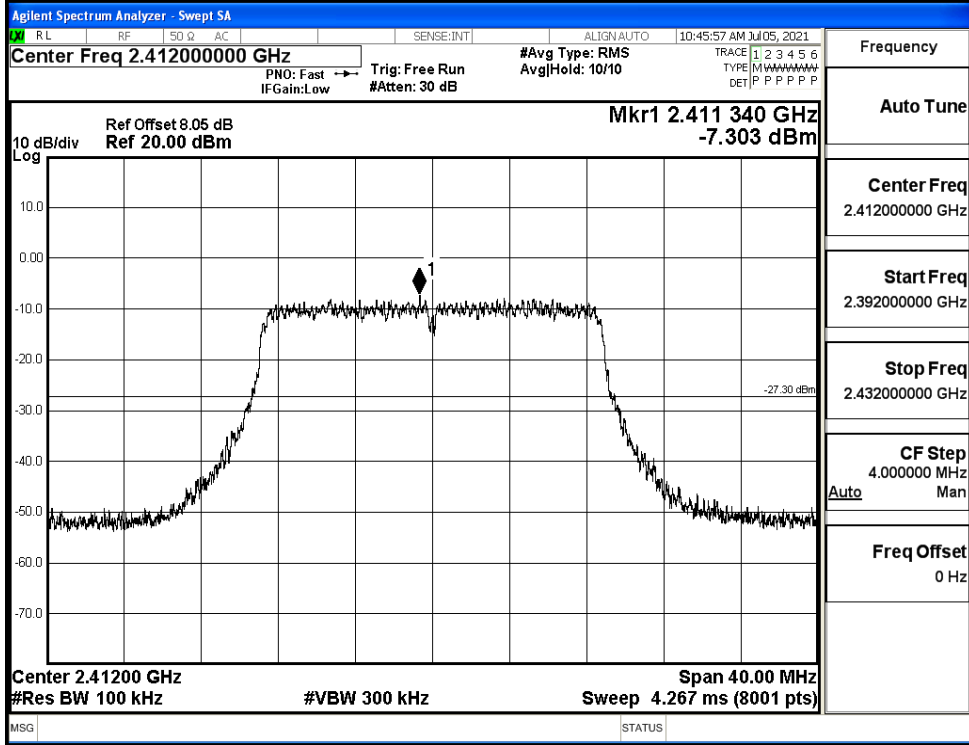


Puw/11G/HCH

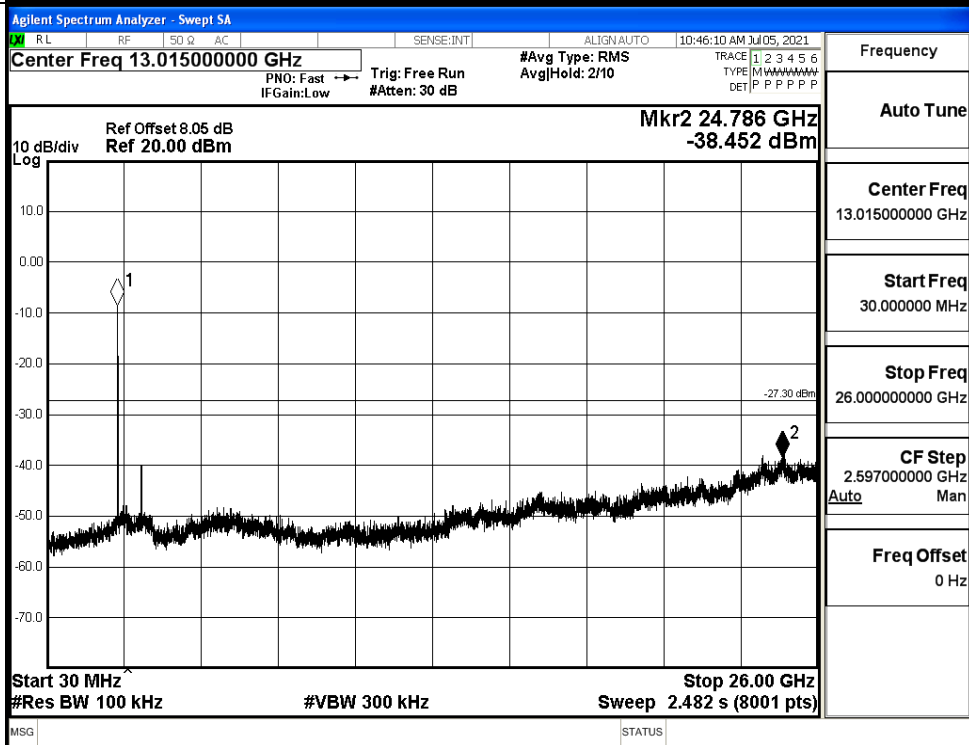


11N20SISO\_LCH\_Graphs

Pref/11N20SIS  
O/LCH

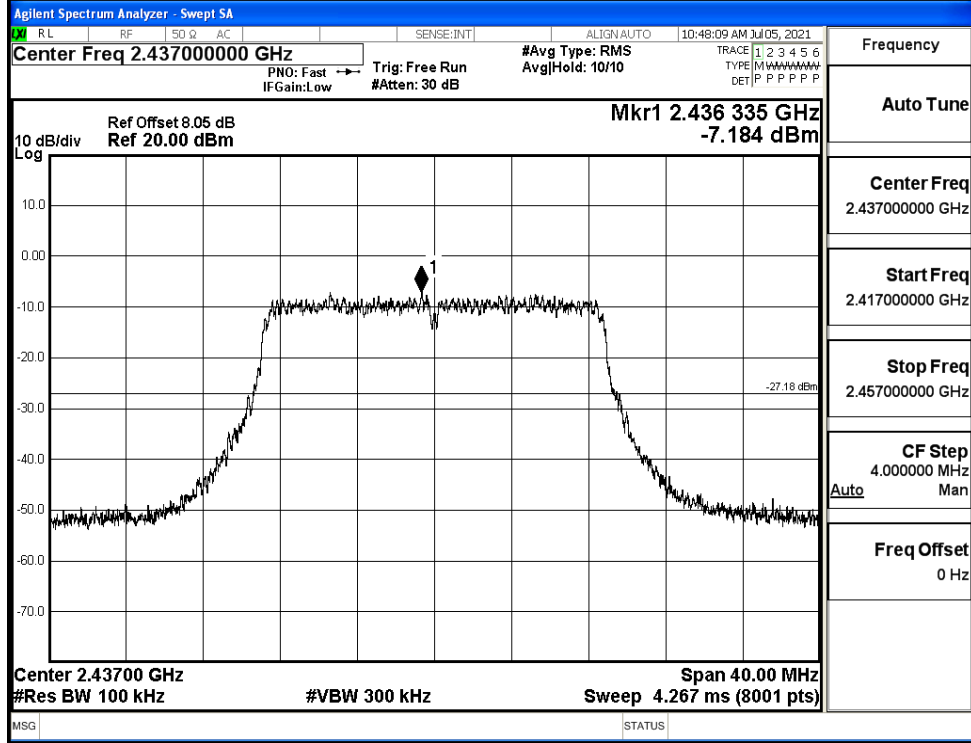


Puw/11N20  
SISO/LCH

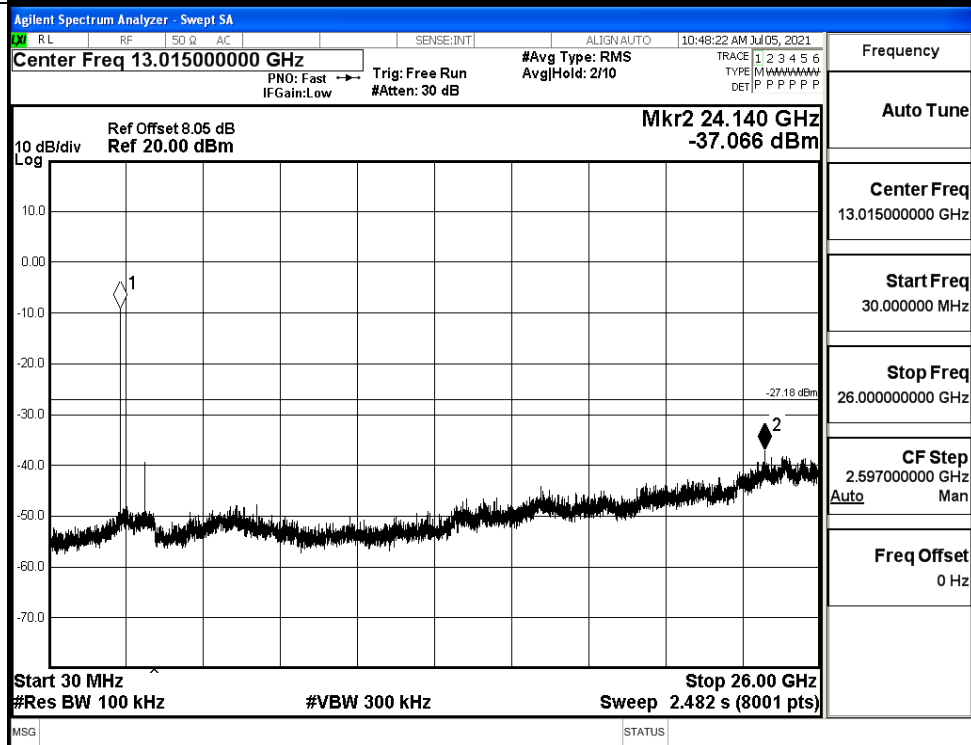


11N20SISO\_MCH\_Graphs

Pref/11N20  
SISO/MCH

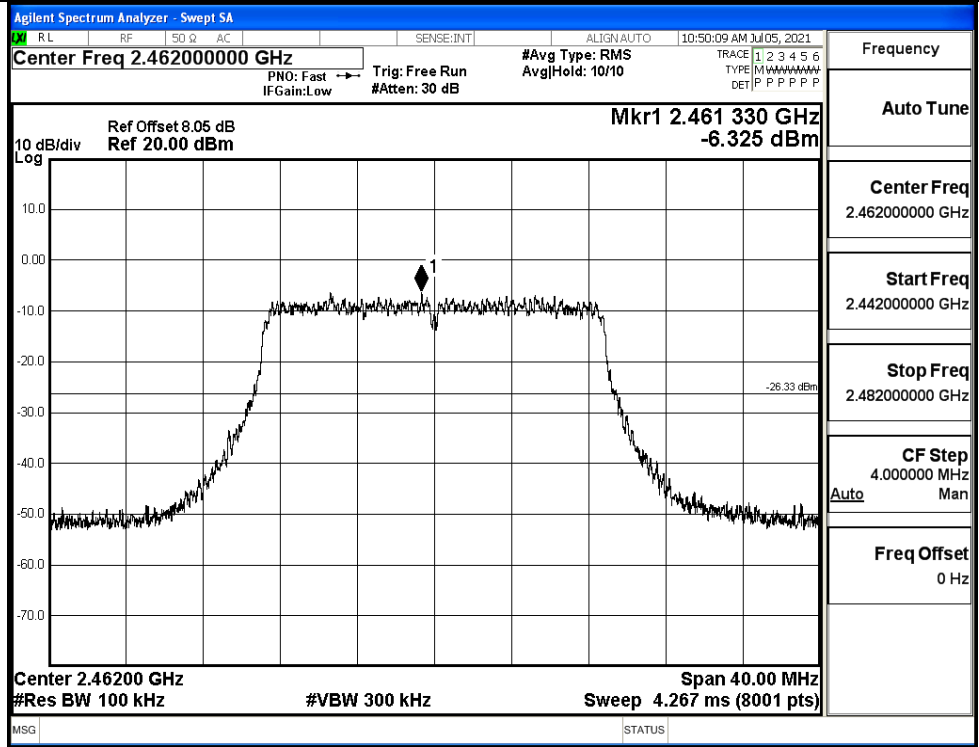


Puw/11N20  
SISO/MCH

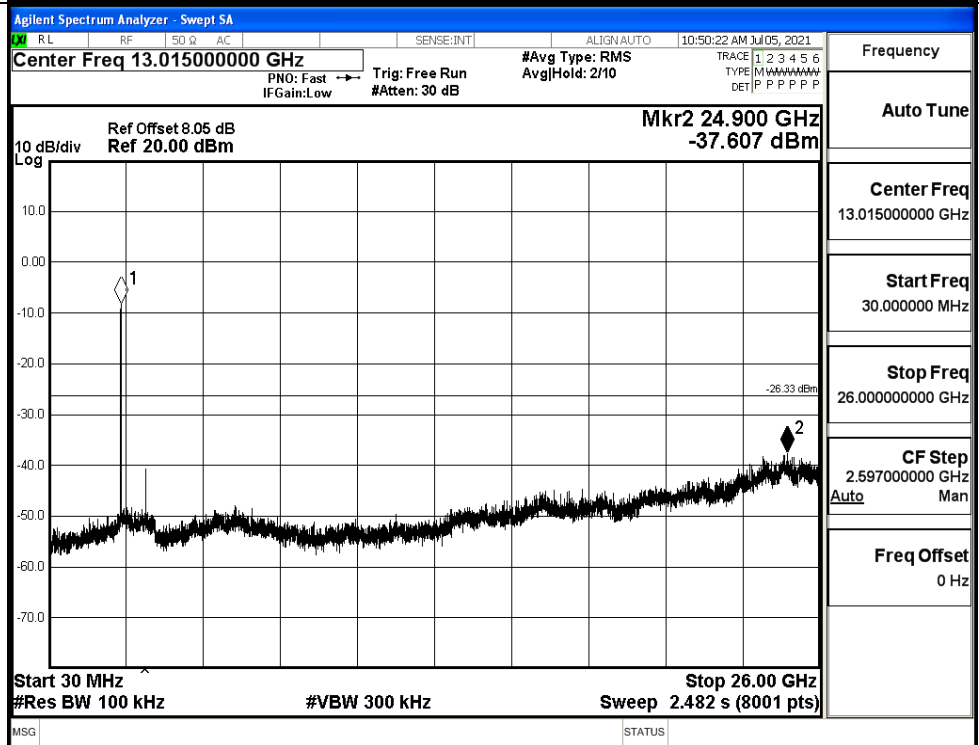


11N20SISO\_HCH\_Graphs

Pref/11N20  
SISO/HCH

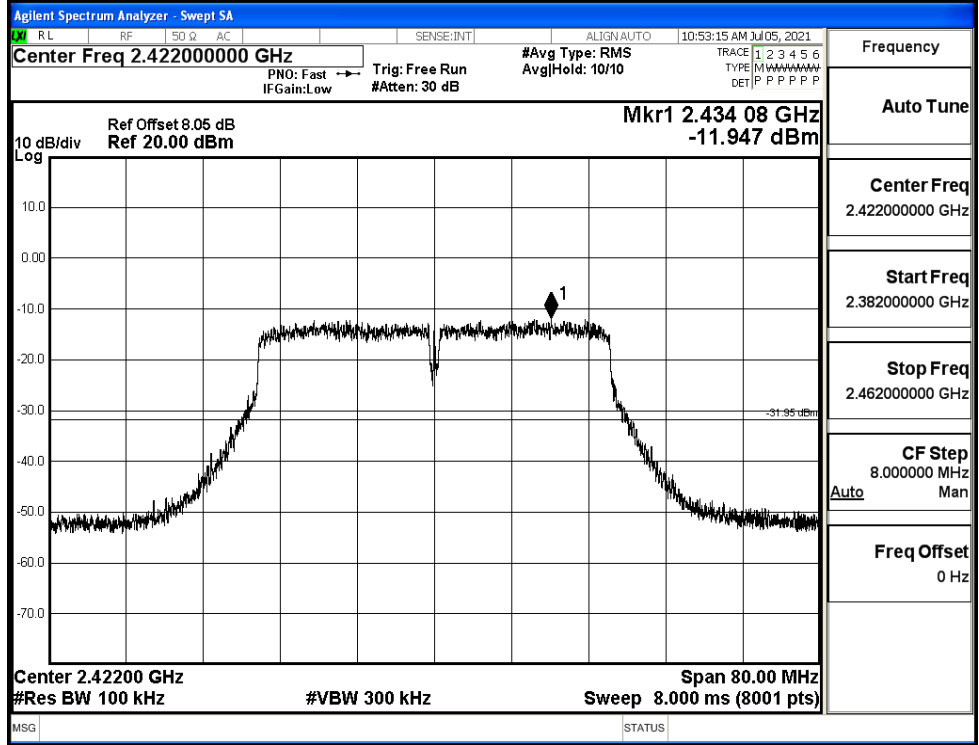


Puw/11N20  
SISO/HCH

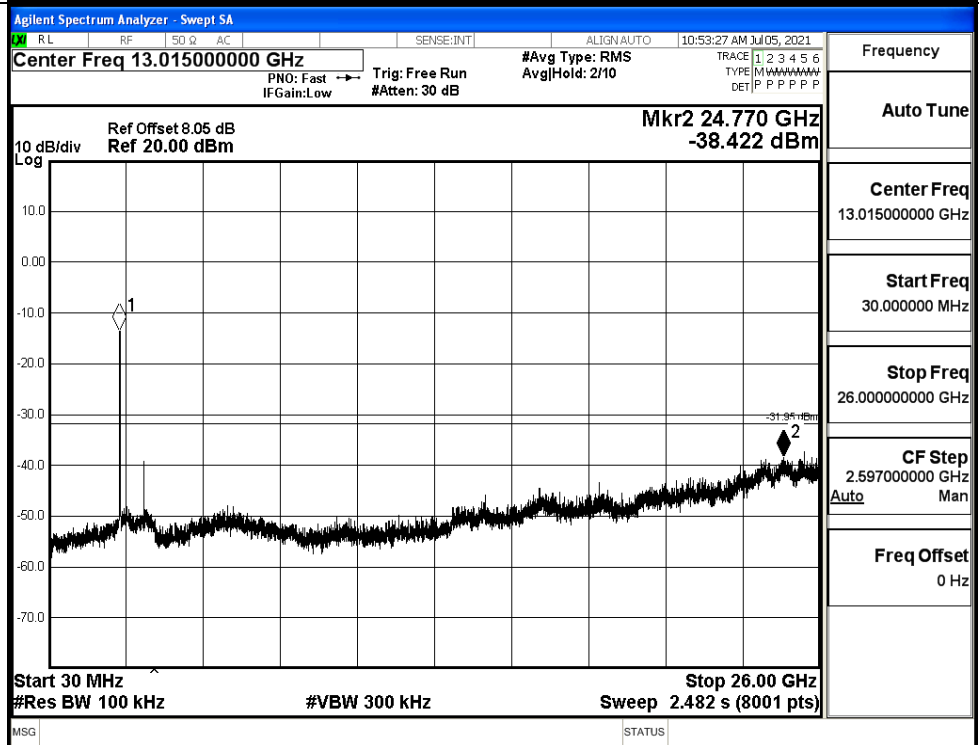


11N40SISO\_LCH\_Graphs

Pref/11N40  
SISO/LCH

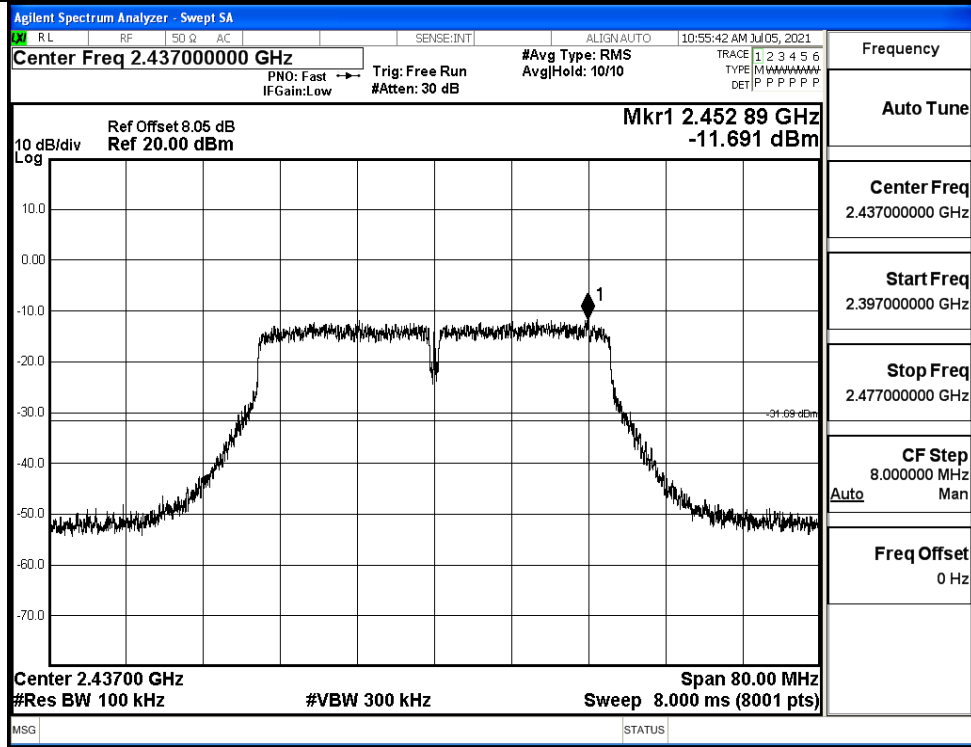


Puw/11N40  
SISO/LCH

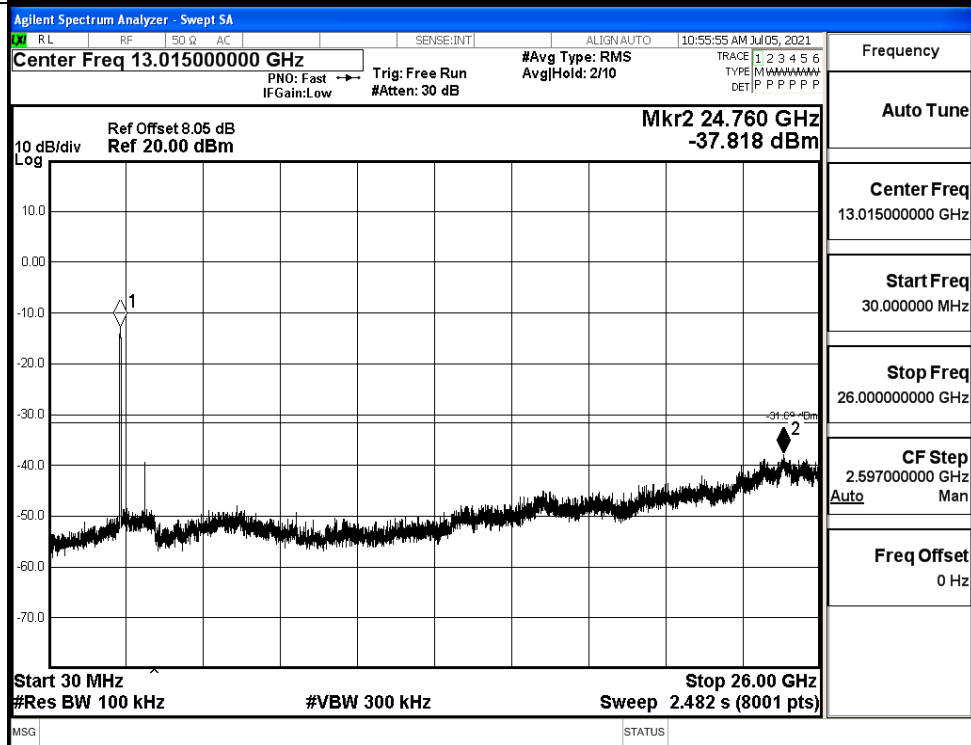


11N40SISO\_MCH\_Graphs

Pref/11N40  
SISO/MCH

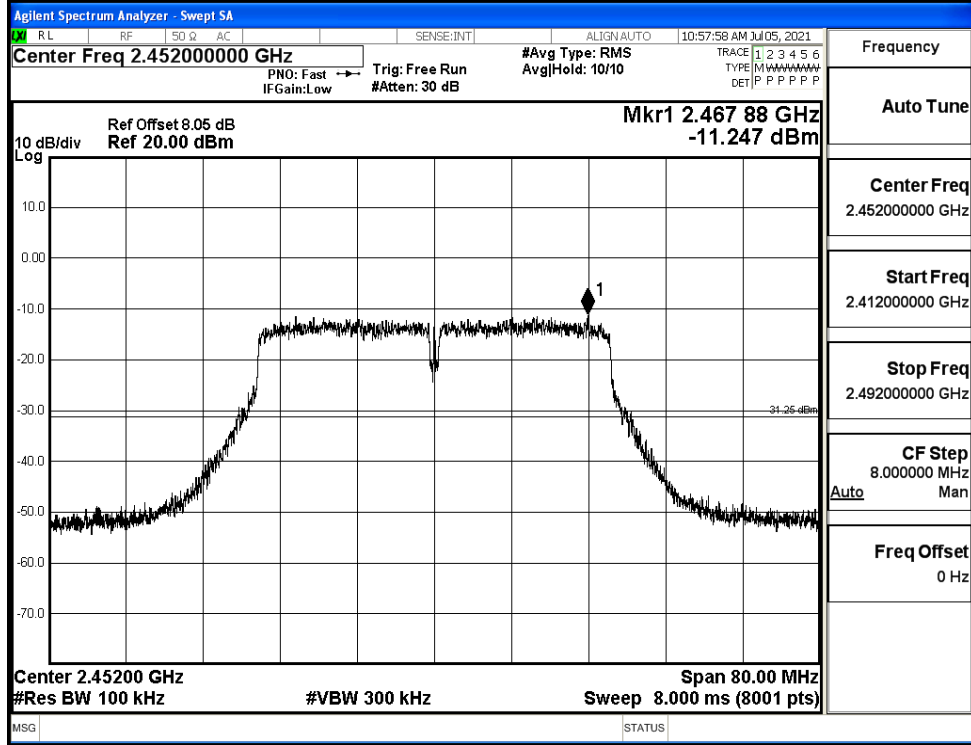


Puw/11N40  
SISO/MCH

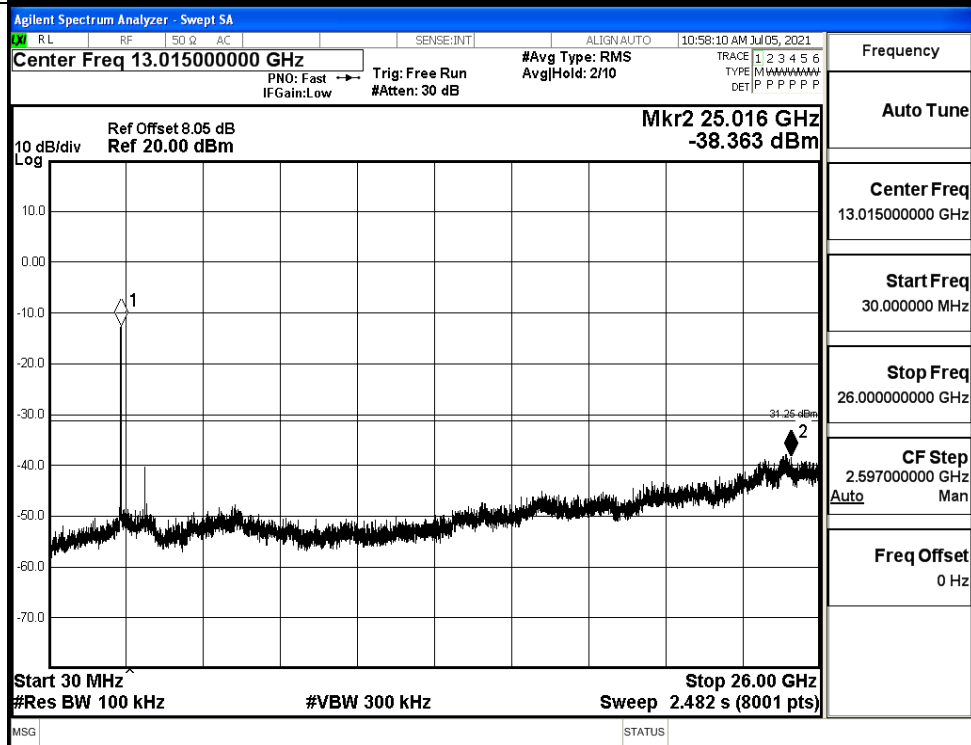


11N40SISO\_HCH\_Graphs

Pref/11N40  
SISO/HCH

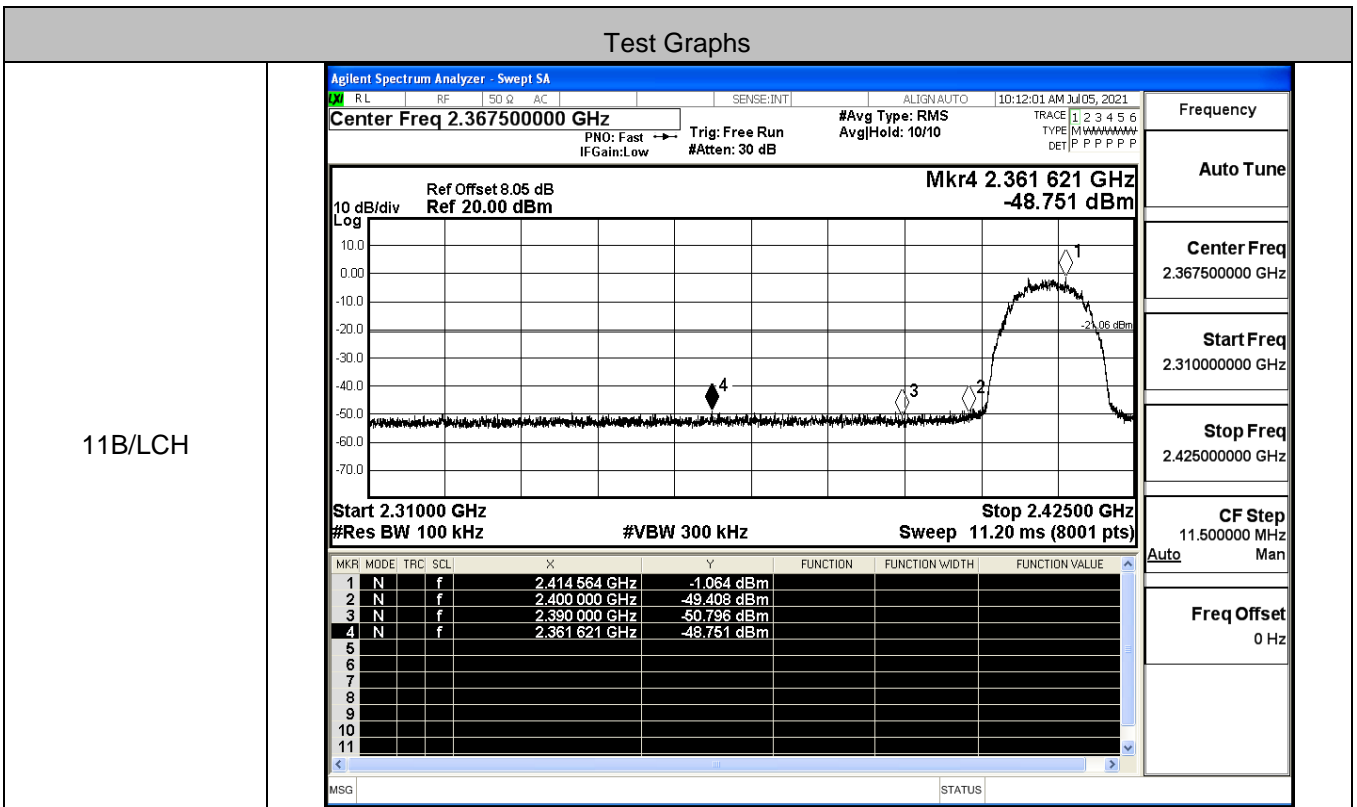


Puw/11N40  
SISO/HCH



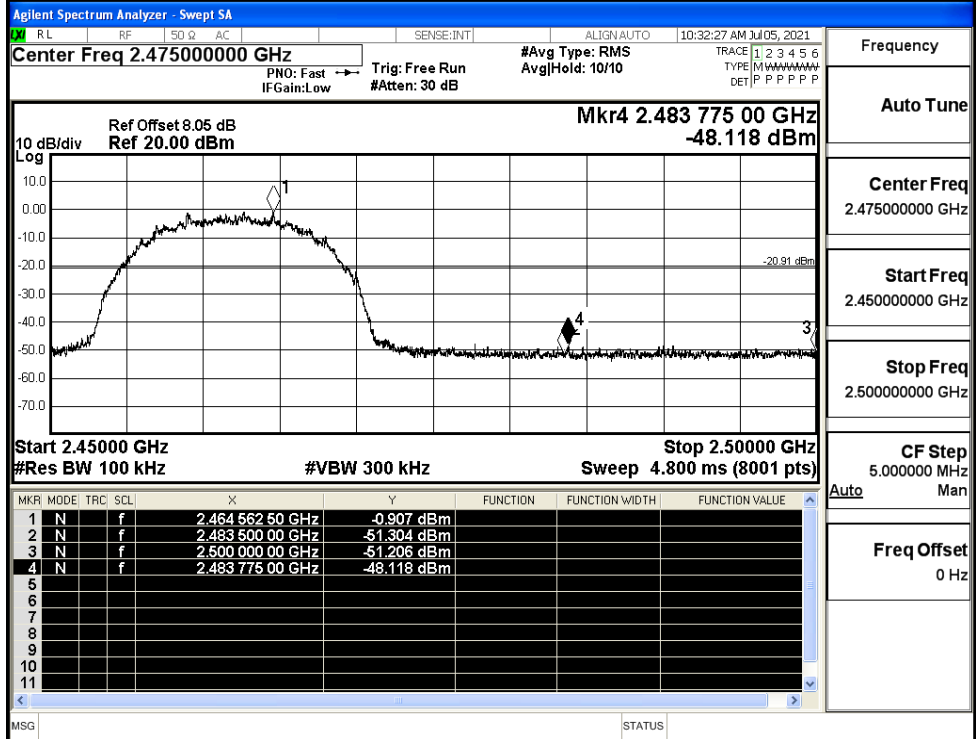
### A.6 Band-edge for RF Conducted Emissions

Mode	Channel	Carrier Power[dBm]	Max.Spurious Level [dBm]	Limit [dBm]	Verdict
11B	LCH	-1.064	-48.751	-21.06	PASS
	HCH	-0.907	-48.118	-20.91	PASS
11G	LCH	-7.288	-48.637	-27.29	PASS
	HCH	-6.284	-48.246	-26.28	PASS
11N20SISO	LCH	-7.320	-48.615	-27.32	PASS
	HCH	-6.265	-48.347	-26.27	PASS
11N40SISO	LCH	-11.760	-49.701	-31.76	PASS
	HCH	-11.338	-47.418	-31.34	PASS



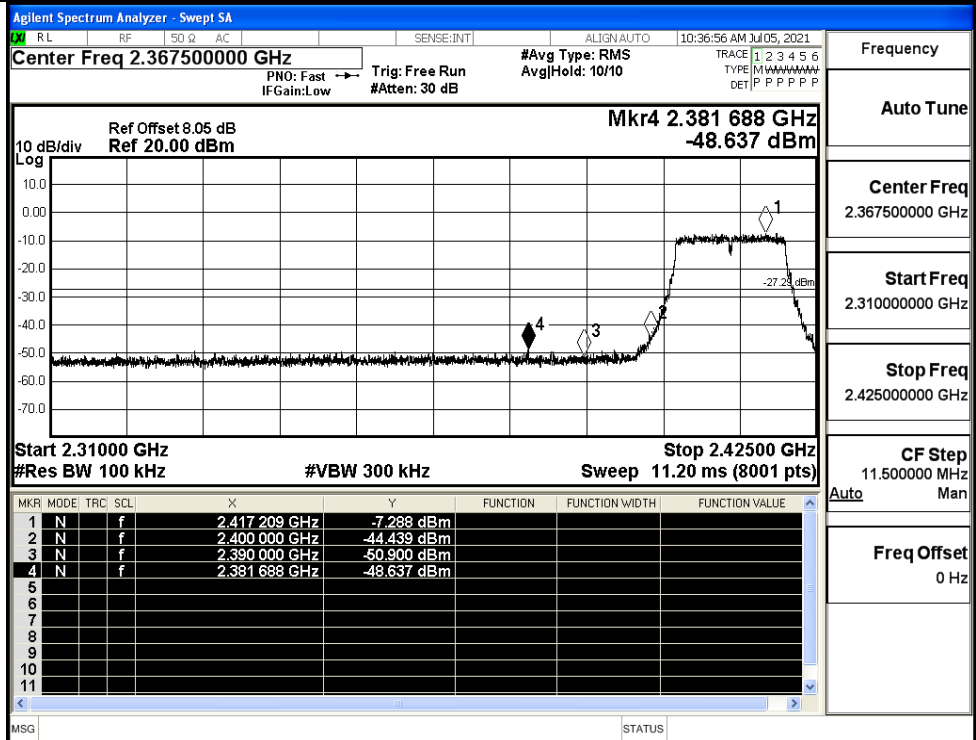


11B/HCH



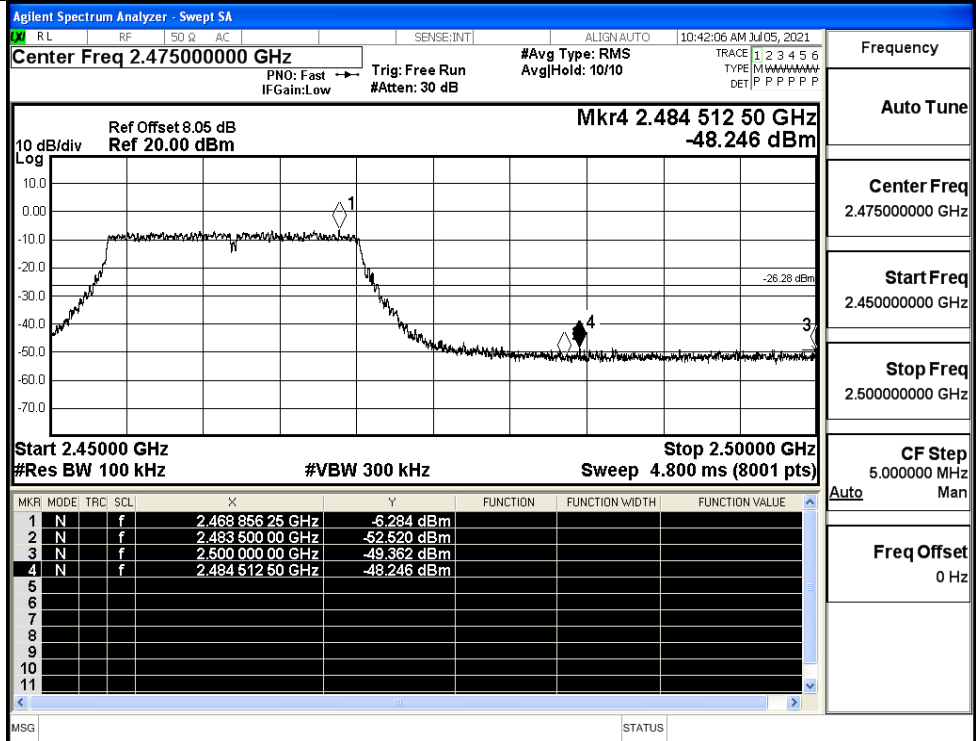
Frequency  
Auto Tune  
Center Freq  
2.47500000 GHz  
Start Freq  
2.45000000 GHz  
Stop Freq  
2.50000000 GHz  
CF Step  
5.000000 MHz  
Auto Man  
Freq Offset  
0 Hz

11G/LCH



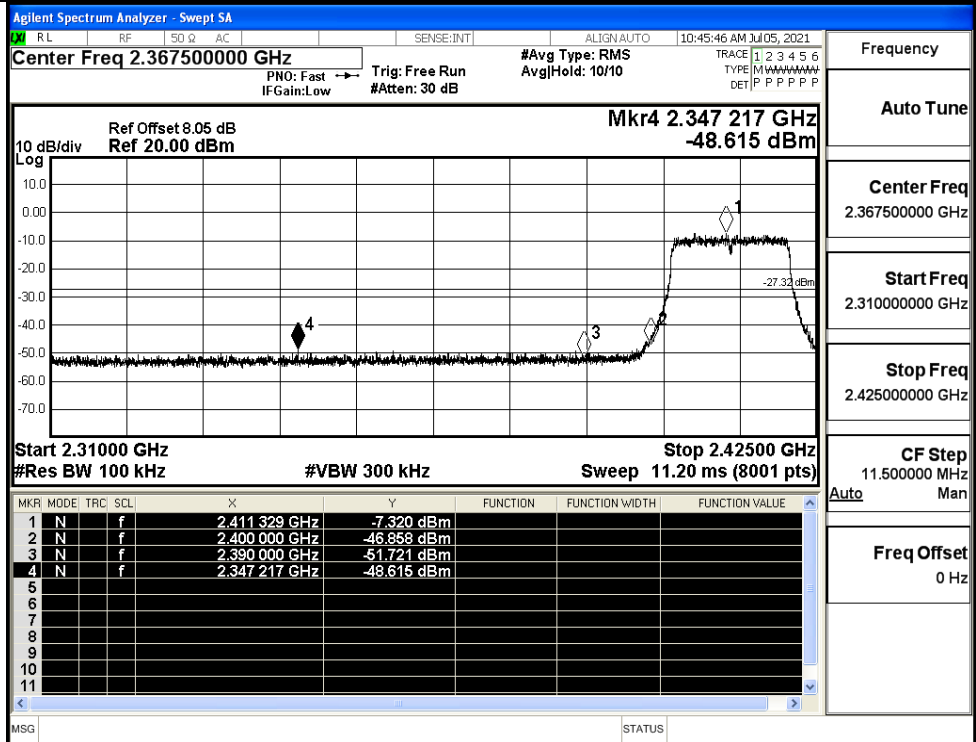
Frequency  
Auto Tune  
Center Freq  
2.36750000 GHz  
Start Freq  
2.31000000 GHz  
Stop Freq  
2.42500000 GHz  
CF Step  
11.500000 MHz  
Auto Man  
Freq Offset  
0 Hz

11G/HCH



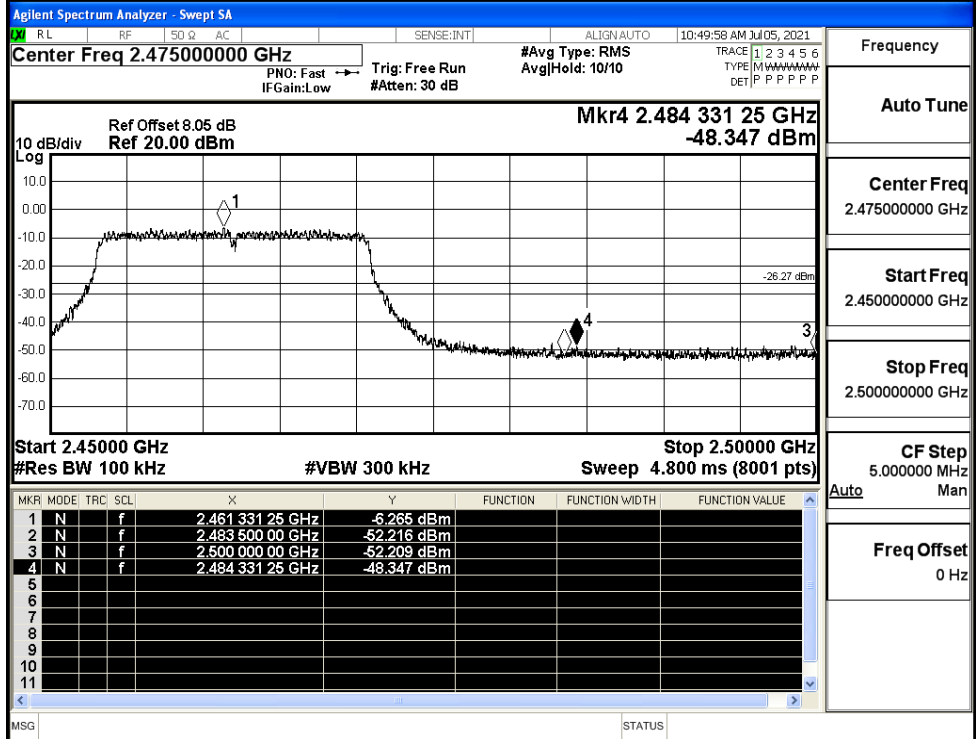
Frequency	2.47500000 GHz
Auto Tune	
Center Freq	2.47500000 GHz
Start Freq	2.45000000 GHz
Stop Freq	2.50000000 GHz
CF Step	5.000000 MHz
Freq Offset	0 Hz

11N20SISO/LCH



Frequency	2.36750000 GHz
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  
2.47500000 GHz

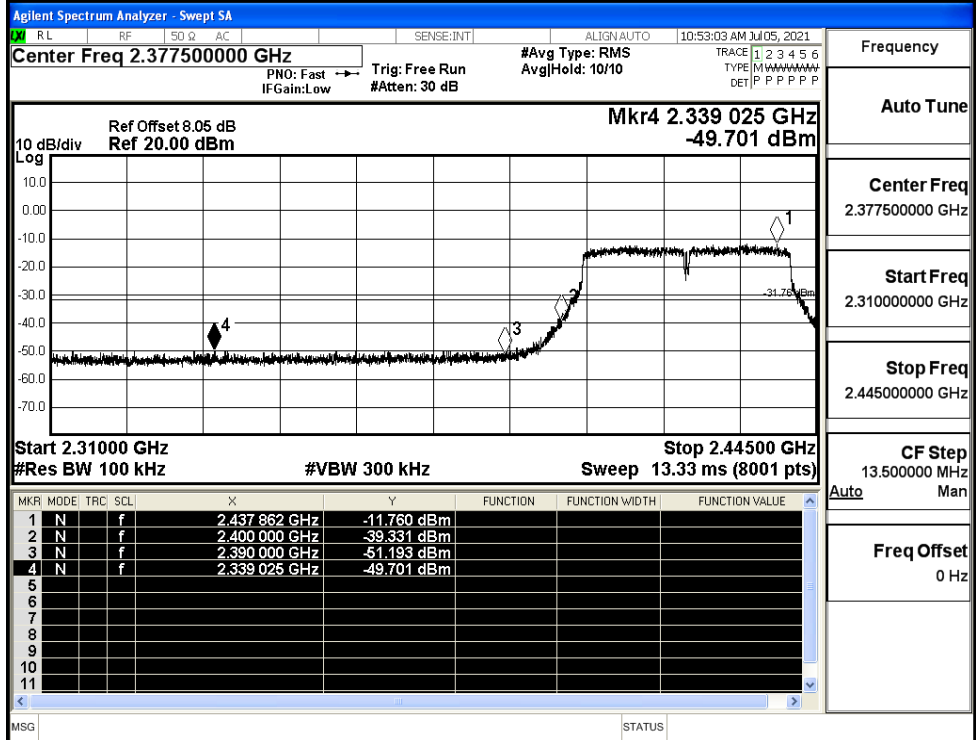
Start Freq  
2.45000000 GHz

Stop Freq  
2.50000000 GHz

CF Step  
5.000000 MHz

Freq Offset  
0 Hz

11N40SISO/LCH



Frequency

Auto Tune

Center Freq  
2.37750000 GHz

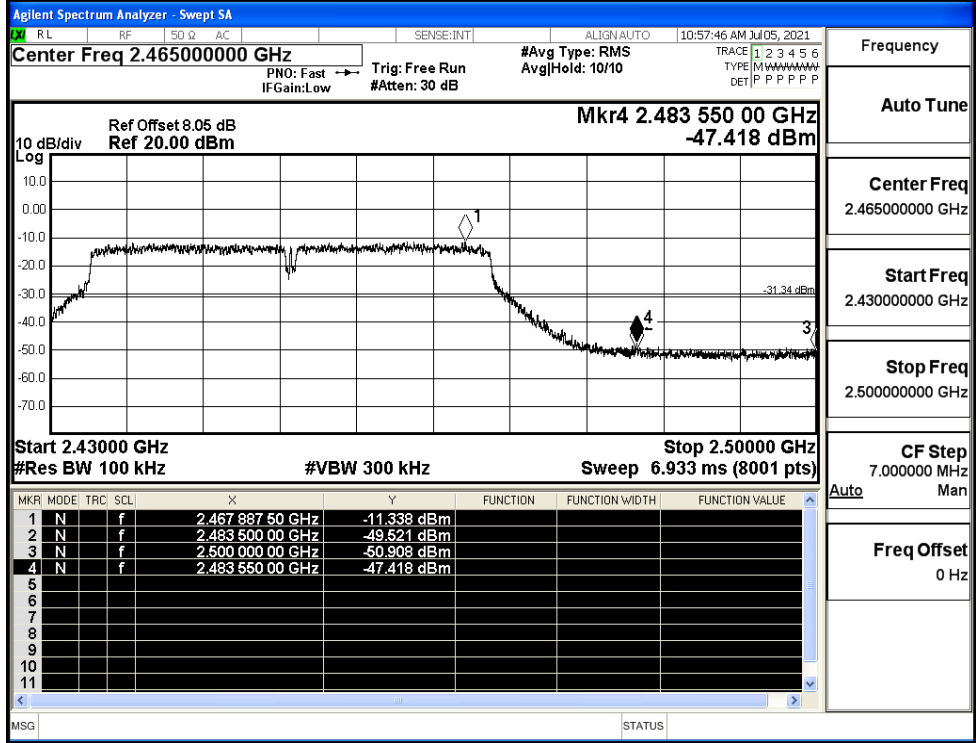
Start Freq  
2.31000000 GHz

Stop Freq  
2.44500000 GHz

CF Step  
13.500000 MHz

Freq Offset  
0 Hz

11N40SISO/HCH

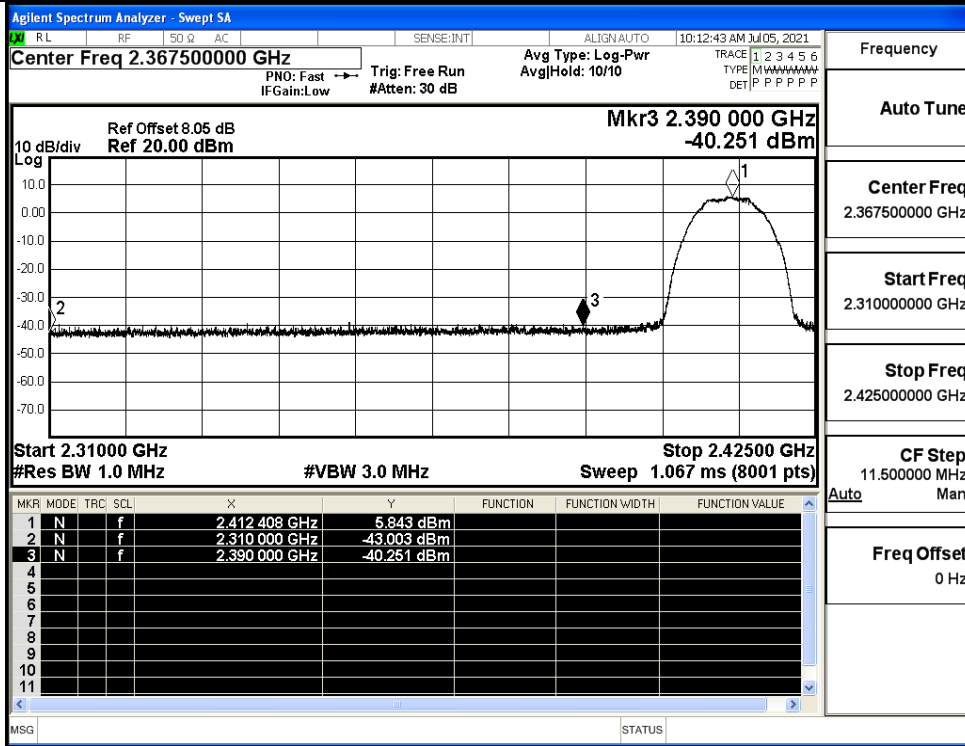


### C.7 Restrict-band band-edge measurements

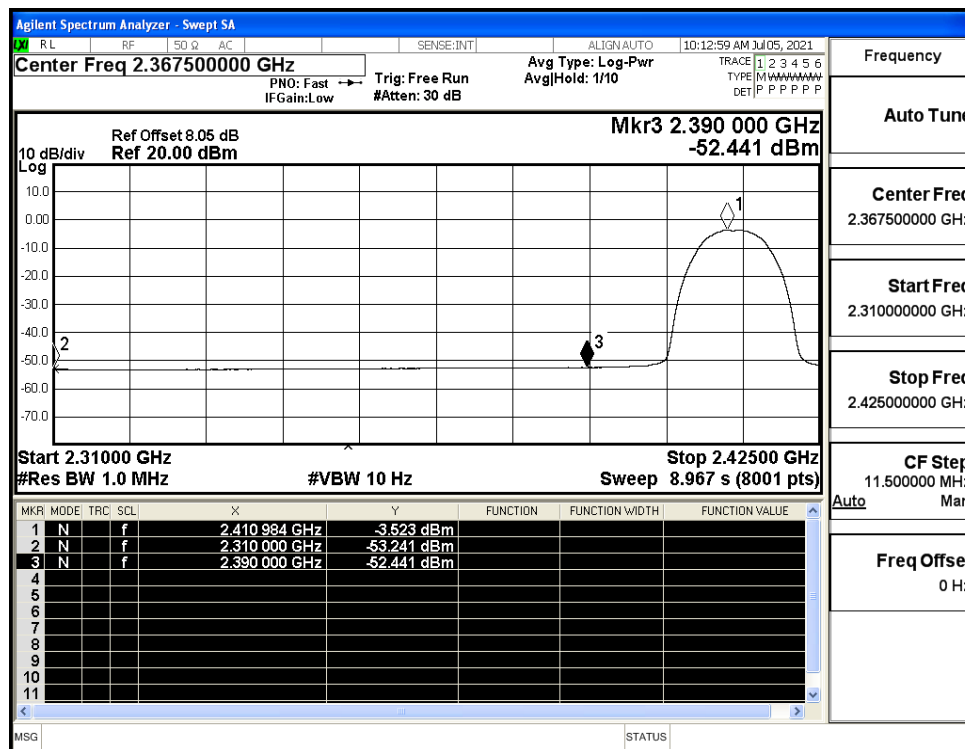
Test Mode	Test Channel	Ant	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
11B	2412	Ant1	2310.0	-43.00	2.0	0	52.25	PEAK	74	PASS
	2412	Ant1	2310.0	-53.24	2.0	0	42.02	AV	54	PASS
	2412	Ant1	2390.0	-40.25	2.0	0	55.01	PEAK	74	PASS
	2412	Ant1	2390.0	-52.44	2.0	0	42.82	AV	54	PASS
	2462	Ant1	2483.5	-41.67	2.0	0	53.59	PEAK	74	PASS
	2462	Ant1	2483.5	-51.90	2.0	0	43.35	AV	54	PASS
	2462	Ant1	2500.0	-40.47	2.0	0	54.79	PEAK	74	PASS
	2462	Ant1	2500.0	-51.70	2.0	0	43.56	AV	54	PASS
11G	2412	Ant1	2310.0	-42.26	2.0	0	53.00	PEAK	74	PASS
	2412	Ant1	2310.0	-53.27	2.0	0	41.99	AV	54	PASS
	2412	Ant1	2390.0	-42.87	2.0	0	52.39	PEAK	74	PASS
	2412	Ant1	2390.0	-52.48	2.0	0	42.78	AV	54	PASS
	2462	Ant1	2483.5	-41.26	2.0	0	54.00	PEAK	74	PASS
	2462	Ant1	2483.5	-51.76	2.0	0	43.50	AV	54	PASS
	2462	Ant1	2500.0	-42.64	2.0	0	52.62	PEAK	74	PASS
	2462	Ant1	2500.0	-51.76	2.0	0	43.50	AV	54	PASS
11N20 SISO	2412	Ant1	2310.0	-42.54	2.0	0	52.72	PEAK	74	PASS
	2412	Ant1	2310.0	-53.25	2.0	0	42.00	AV	54	PASS
	2412	Ant1	2390.0	-42.61	2.0	0	52.65	PEAK	74	PASS
	2412	Ant1	2390.0	-52.39	2.0	0	42.86	AV	54	PASS
	2462	Ant1	2483.5	-40.70	2.0	0	54.56	PEAK	74	PASS
	2462	Ant1	2483.5	-51.63	2.0	0	43.63	AV	54	PASS
	2462	Ant1	2500.0	-40.80	2.0	0	54.46	PEAK	74	PASS
	2462	Ant1	2500.0	-51.75	2.0	0	43.51	AV	54	PASS
11N40 SISO	2422	Ant1	2310.0	-43.09	2.0	0	52.17	PEAK	74	PASS
	2422	Ant1	2310.0	-53.28	2.0	0	41.98	AV	54	PASS
	2422	Ant1	2390.0	-41.25	2.0	0	54.01	PEAK	74	PASS

	2422	Ant1	2390.0	-52.04	2.0	0	43.22	AV	54	PASS
	2452	Ant1	2483.5	-39.99	2.0	0	55.27	PEAK	74	PASS
	2452	Ant1	2483.5	-50.97	2.0	0	44.29	AV	54	PASS
	2452	Ant1	2500.0	-41.65	2.0	0	53.61	PEAK	74	PASS
	2452	Ant1	2500.0	-51.74	2.0	0	43.51	AV	54	PASS

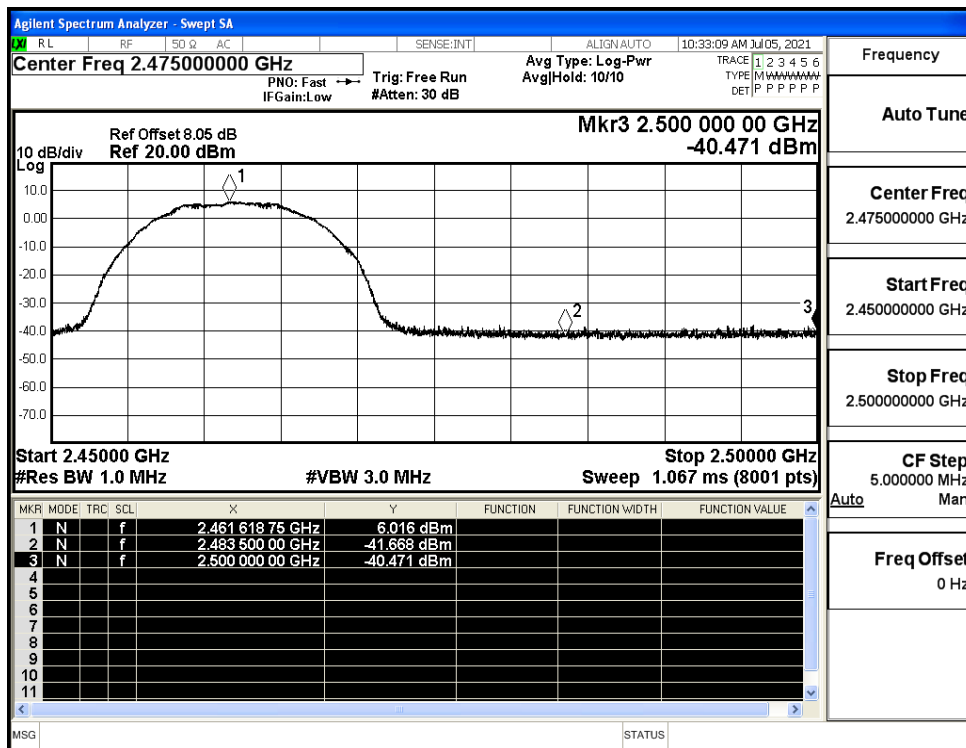
Restrict-band band-edge measurements\_11B\_2412\_Ant1\_PEAK



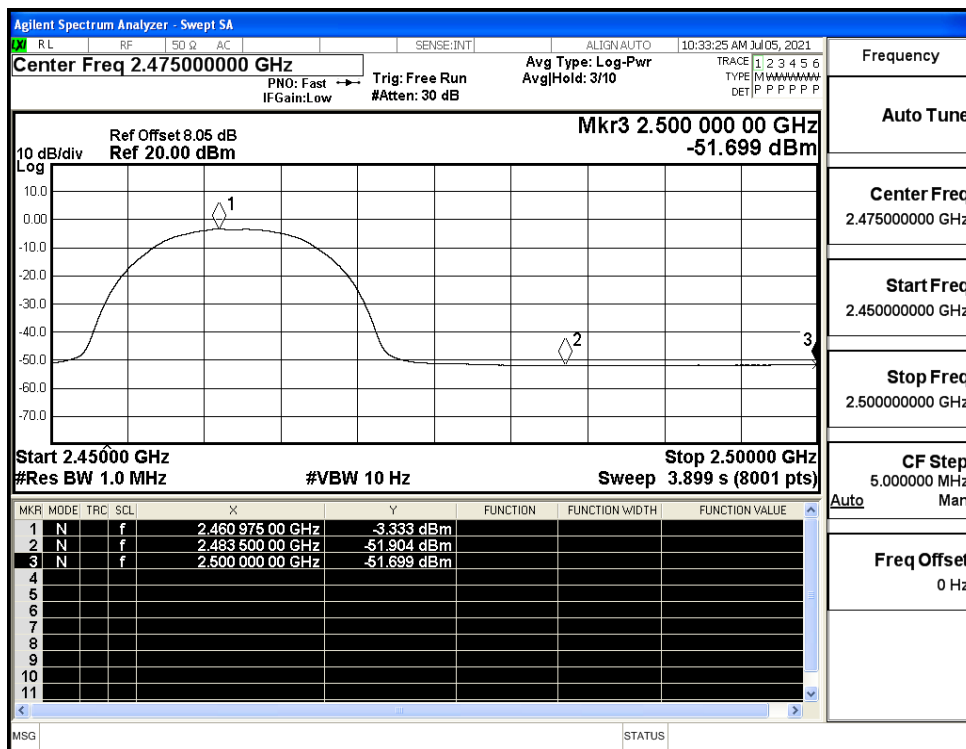
Restrict-band band-edge measurements\_11B\_2412\_Ant1\_AV



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

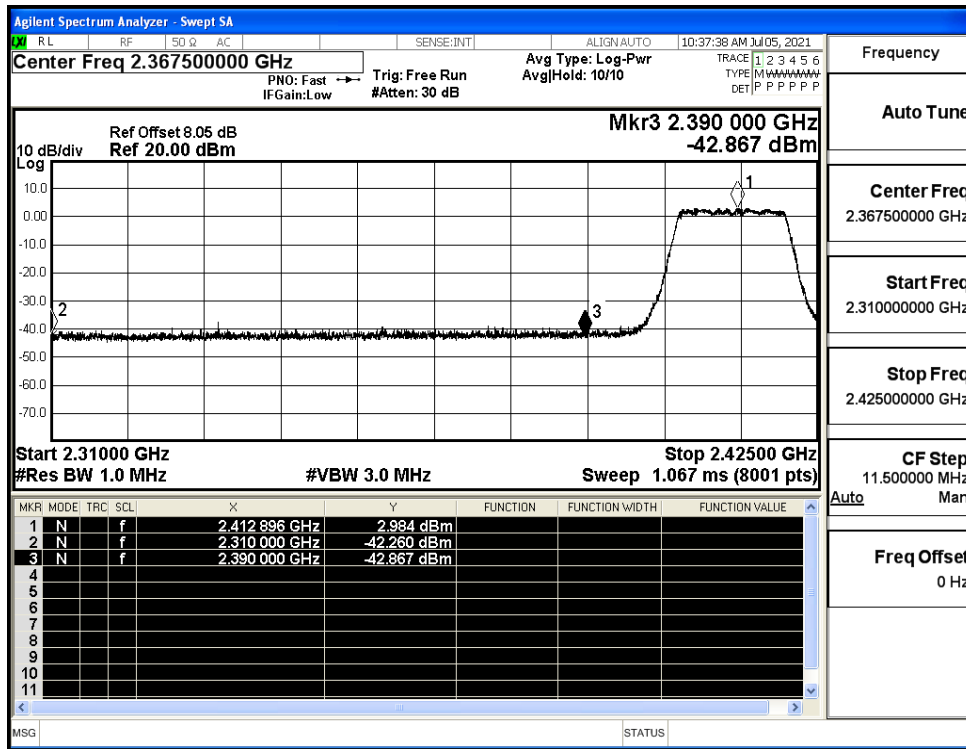


Restrict-band band-edge measurements\_11B\_2462\_Ant1\_AV

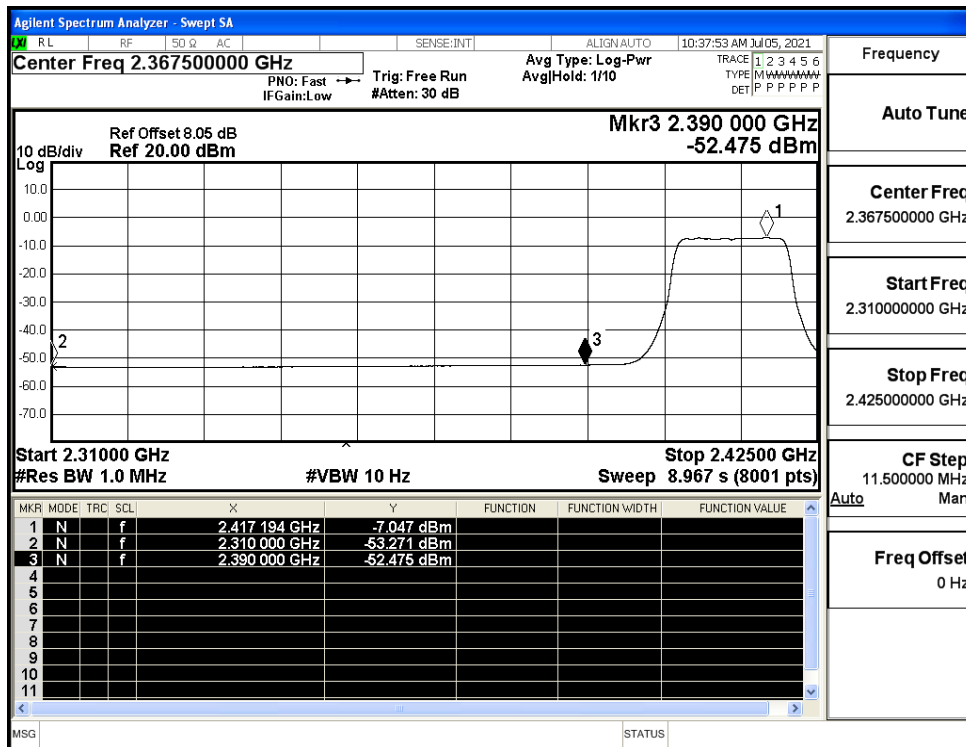




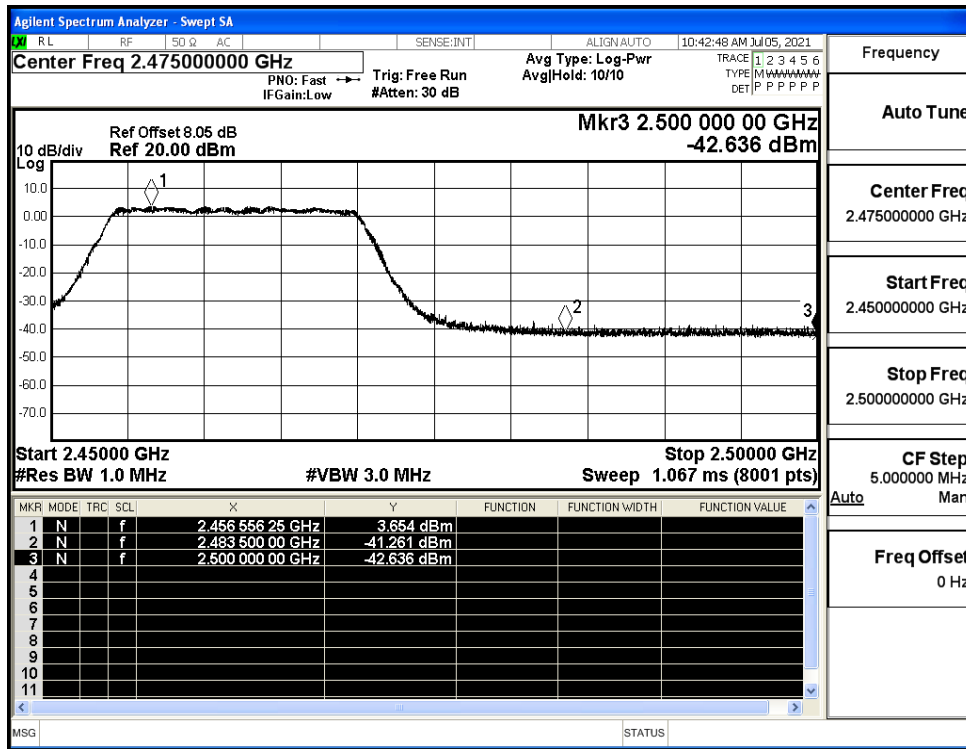
Restrict-band band-edge measurements\_11G\_2412\_Ant1\_PEAK



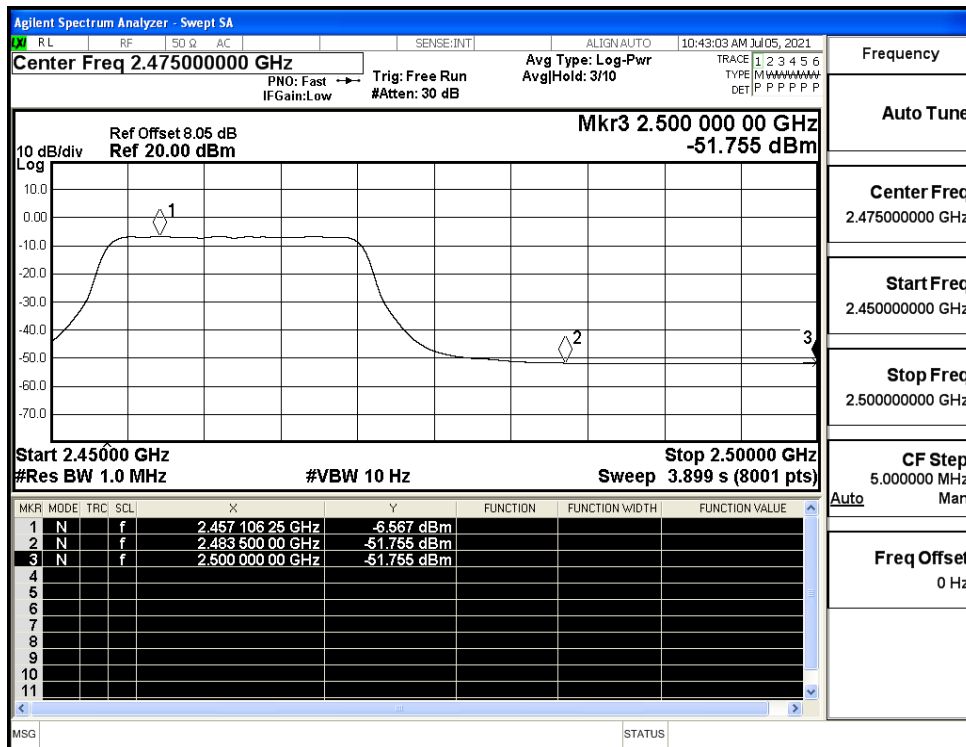
Restrict-band band-edge measurements\_11G\_2412\_Ant1\_AV



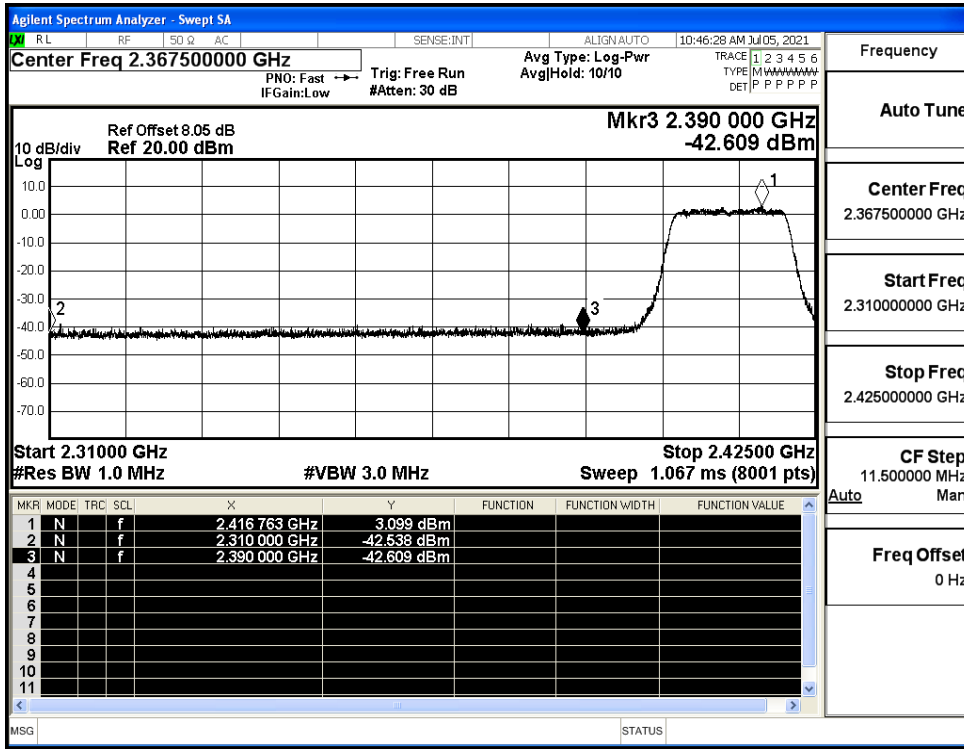
Restrict-band band-edge measurements\_11G\_2462\_Ant1\_PEAK



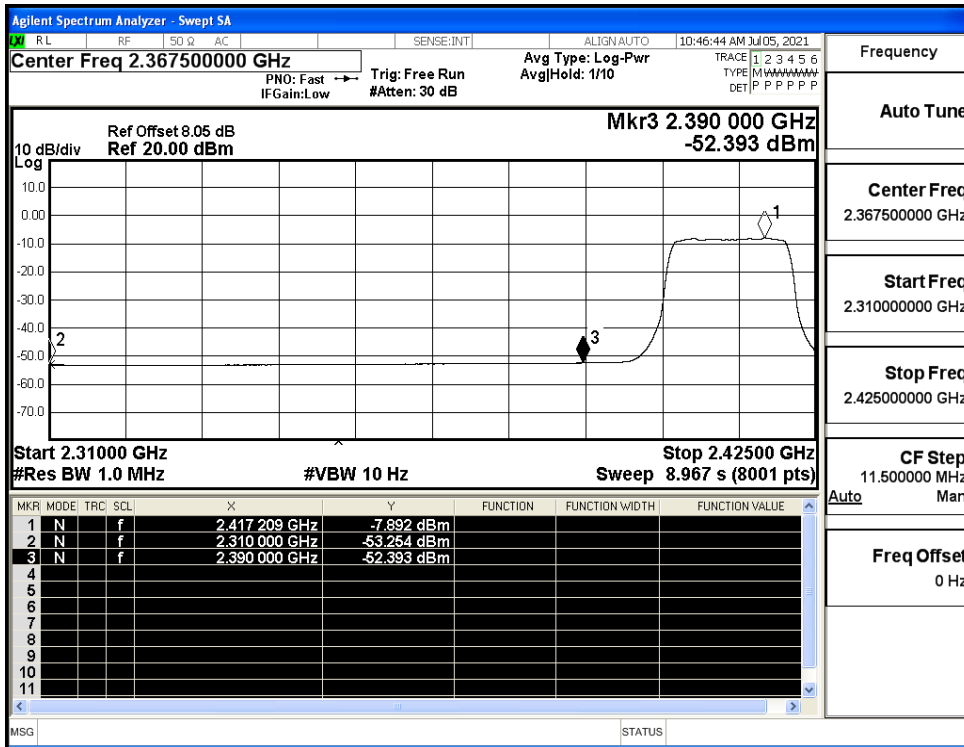
Restrict-band band-edge measurements\_11G\_2462\_Ant1\_AV



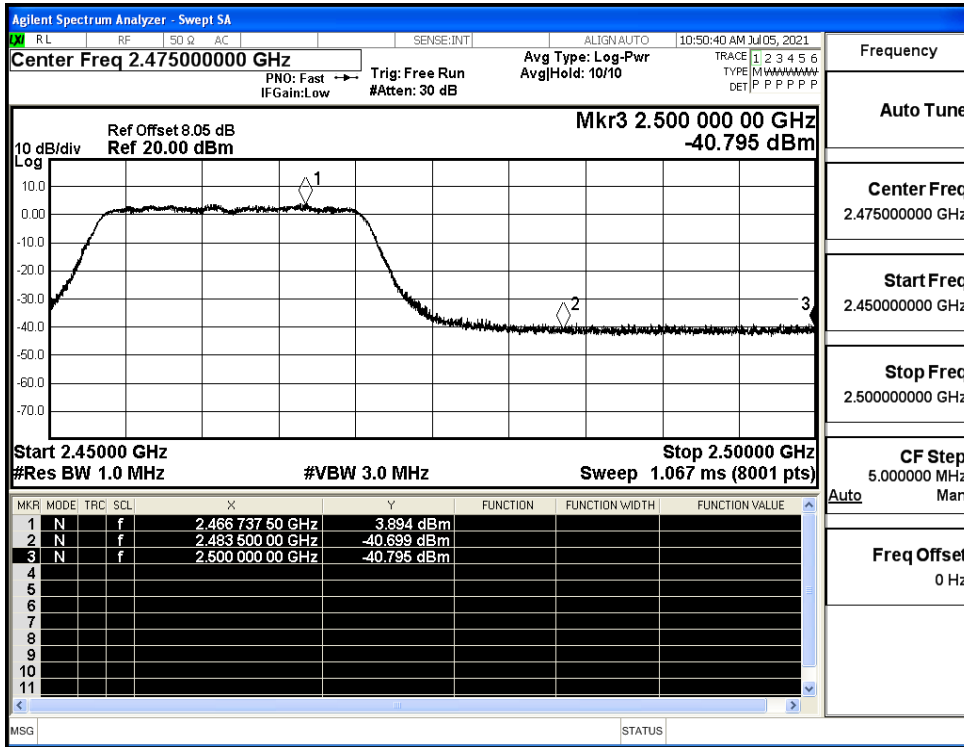
Restrict-band band-edge measurements\_11N20SISO\_2412\_Ant1\_PEAK



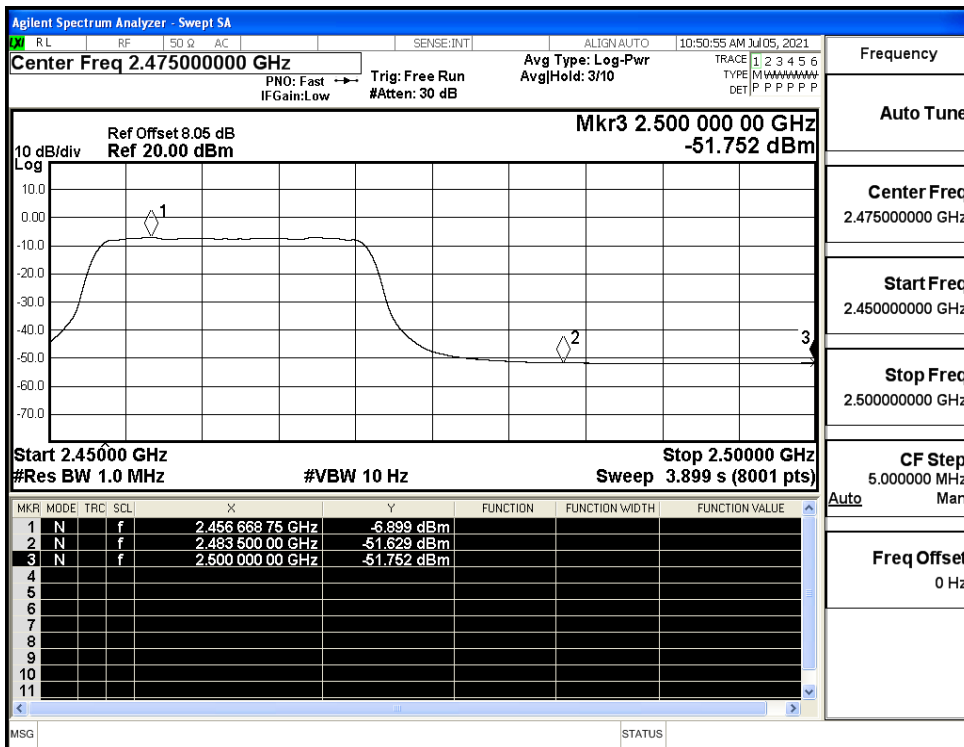
Restrict-band band-edge measurements\_11N20SISO\_2412\_Ant1\_AV



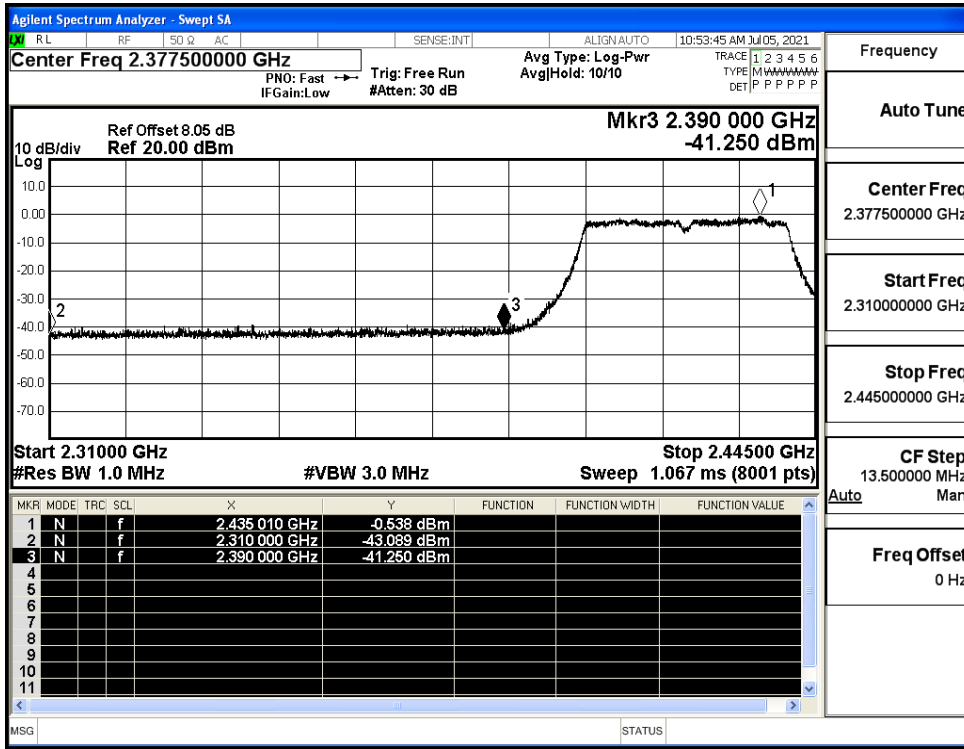
Restrict-band band-edge measurements\_11N20SISO\_2462\_Ant1\_PEAK



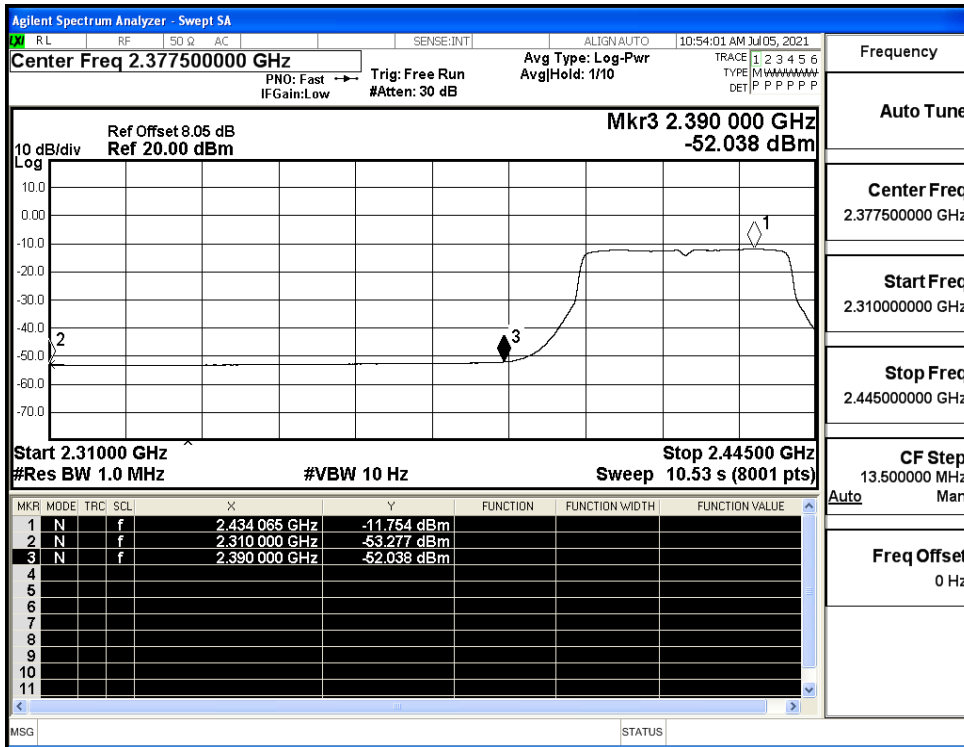
Restrict-band band-edge measurements\_11N20SISO\_2462\_Ant1\_AV



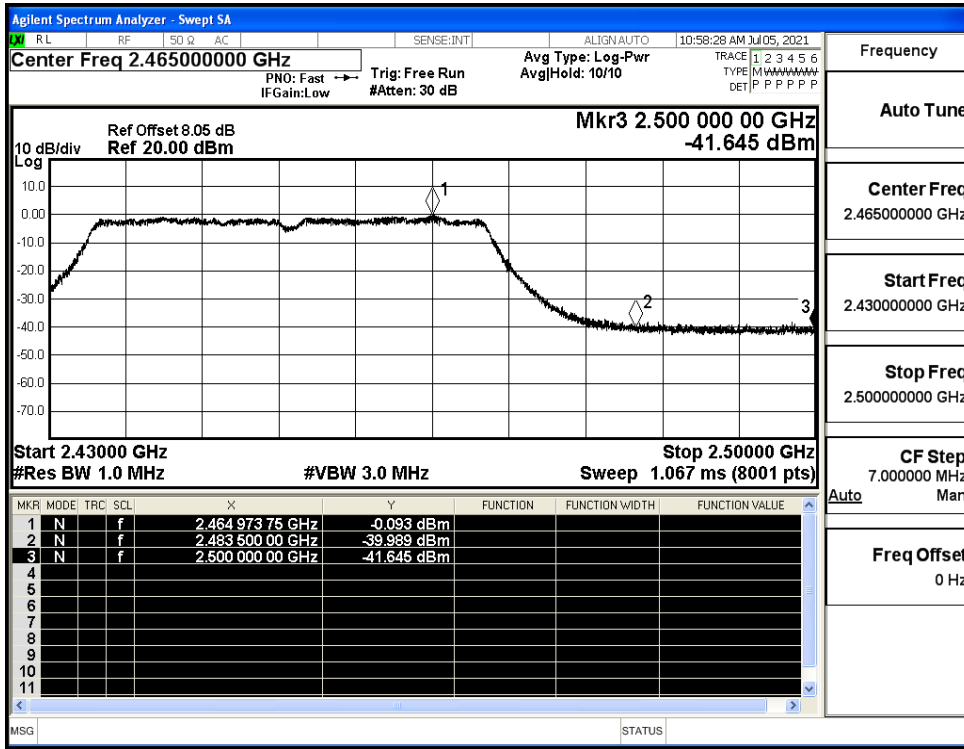
Restrict-band band-edge measurements\_11N40SISO\_2422\_Ant1\_PEAK



Restrict-band band-edge measurements\_11N40SISO\_2422\_Ant1\_AV



Restrict-band band-edge measurements\_11N40SISO\_2452\_Ant1\_PEAK



Restrict-band band-edge measurements\_11N40SISO\_2452\_Ant1\_AV

