

## Appendix B

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

Product Name: HyFlip  
Trade Mark: N/A  
Test Model: HTLF11INC4Z1ES

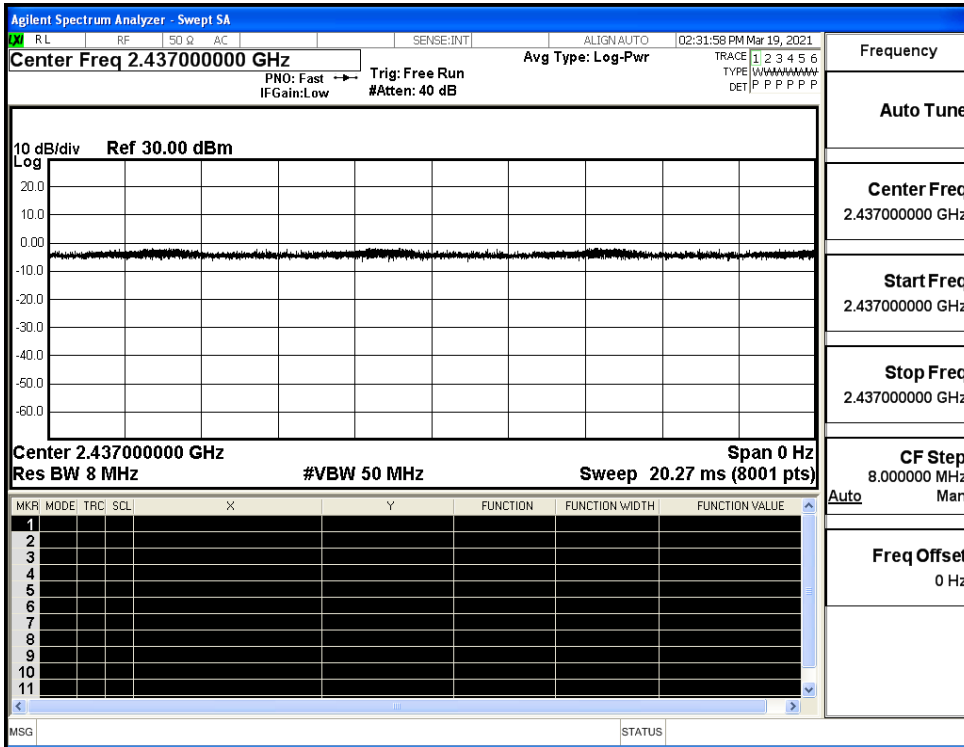
#### Environmental Conditions

Temperature:	24.6 ° C
Relative Humidity:	54.1%
ATM Pressure:	100.0 kPa
Test Engineer:	Carl Fu
Supervised by:	Li Huan

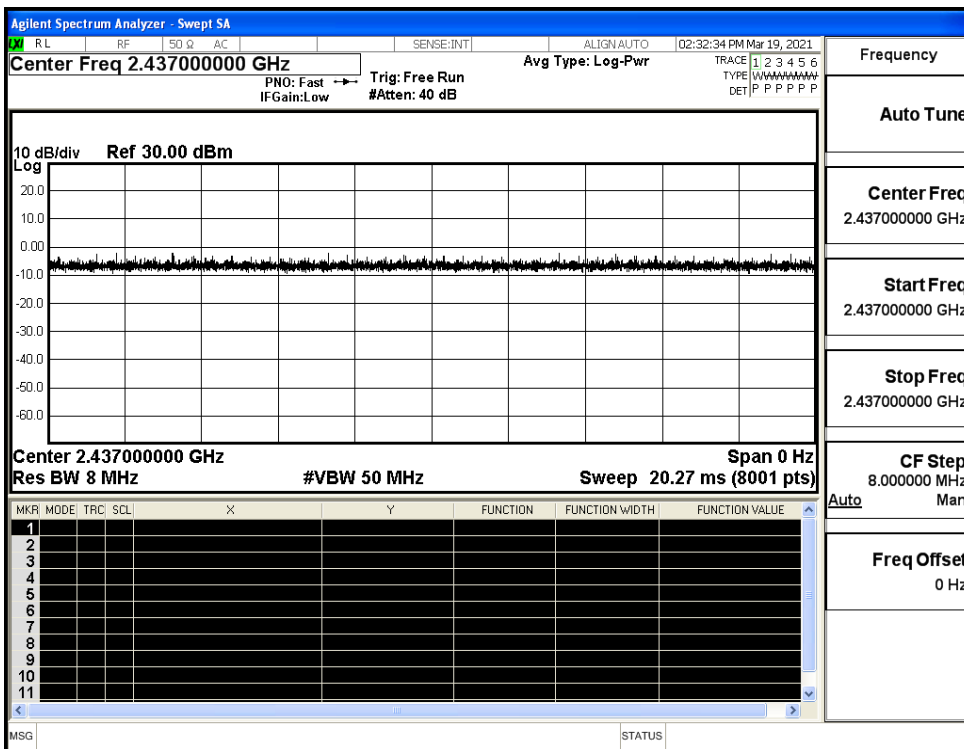
#### B.1 Duty Cycle

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

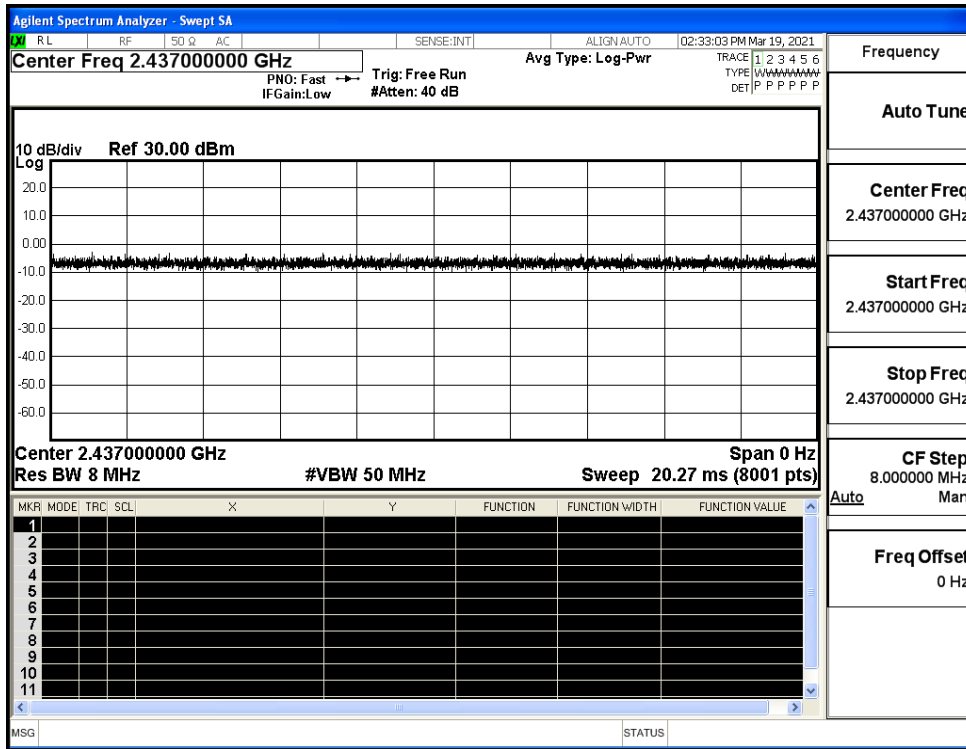
Duty Cycle\_11B\_2437\_Ant1



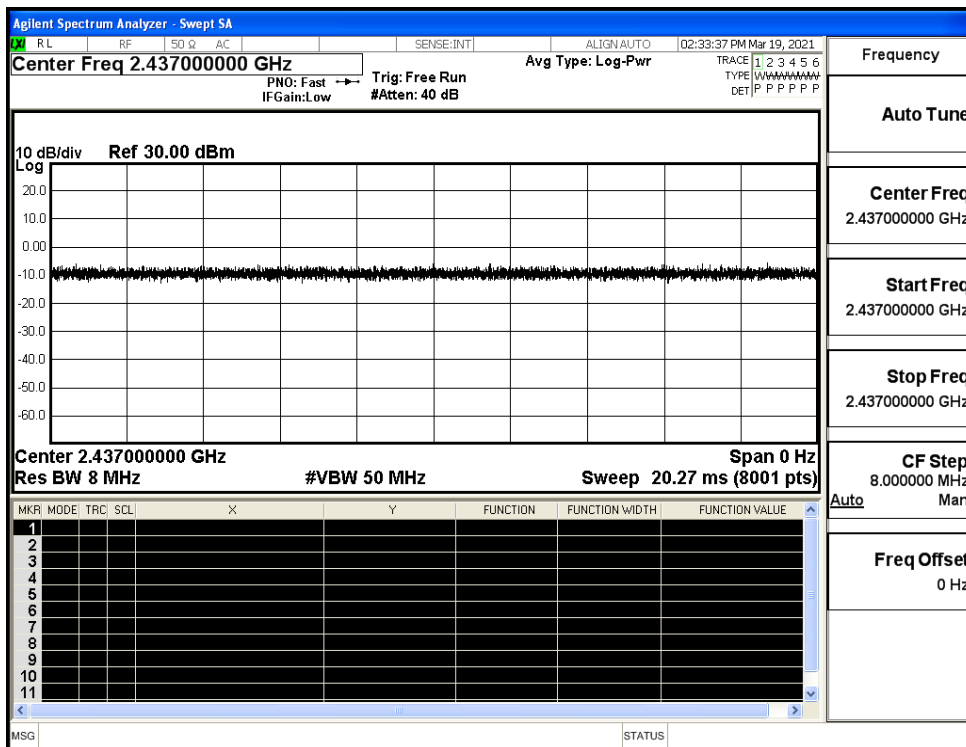
Duty Cycle\_11G\_2437\_Ant1



Duty Cycle\_11N20SISO\_2437\_Ant1



Duty Cycle\_11N40SISO\_2437\_Ant1



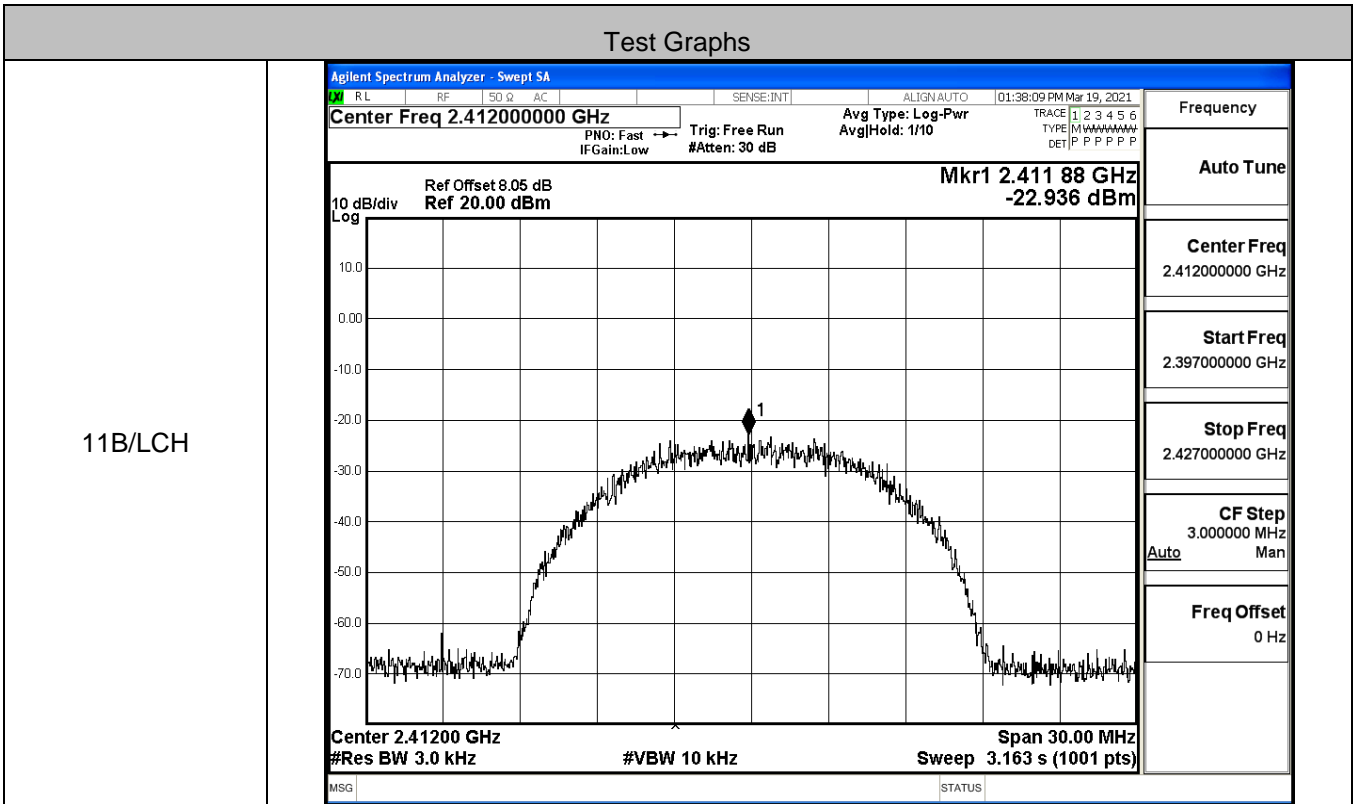
## B.2 Maximum Conducted Output Power

Mode	Channel	Meas.Level [dBm]	Limit [dBm]	Verdict
11B	LCH	8.98	30	PASS
	MCH	8.35	30	PASS
	HCH	8.65	30	PASS
11G	LCH	8.79	30	PASS
	MCH	8.16	30	PASS
	HCH	8.19	30	PASS
11N20SISO	LCH	8.84	30	PASS
	MCH	8.12	30	PASS
	HCH	8.15	30	PASS
11N40SISO	LCH	8.43	30	PASS
	MCH	8.83	30	PASS
	HCH	8.51	30	PASS

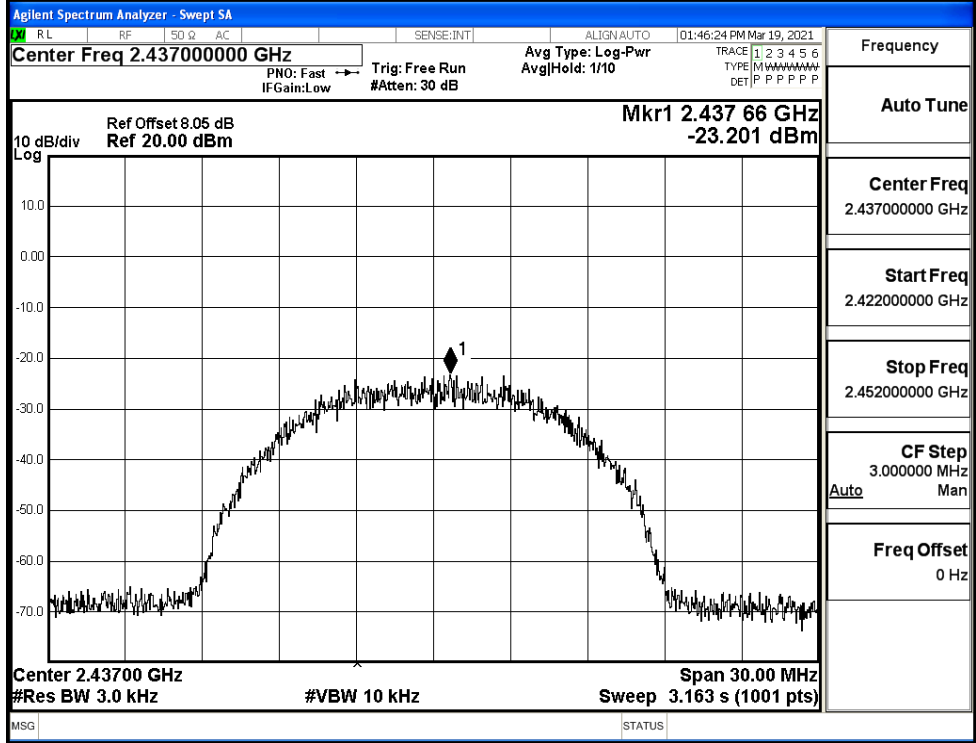
### B.3 Maximum Power Spectral Density

Mode	Channel	Meas.Level [dBm/3KHz]	Limit [dBm/3KHz]	Verdict
11B	LCH	-22.936	8	PASS
	MCH	-23.201	8	PASS
	HCH	-22.509	8	PASS
11G	LCH	-27.037	8	PASS
	MCH	-27.956	8	PASS
	HCH	-25.655	8	PASS
11N20SISO	LCH	-27.142	8	PASS
	MCH	-26.092	8	PASS
	HCH	-25.000	8	PASS
11N40SISO	LCH	-26.557	8	PASS
	MCH	-19.228	8	PASS
	HCH	-19.635	8	PASS

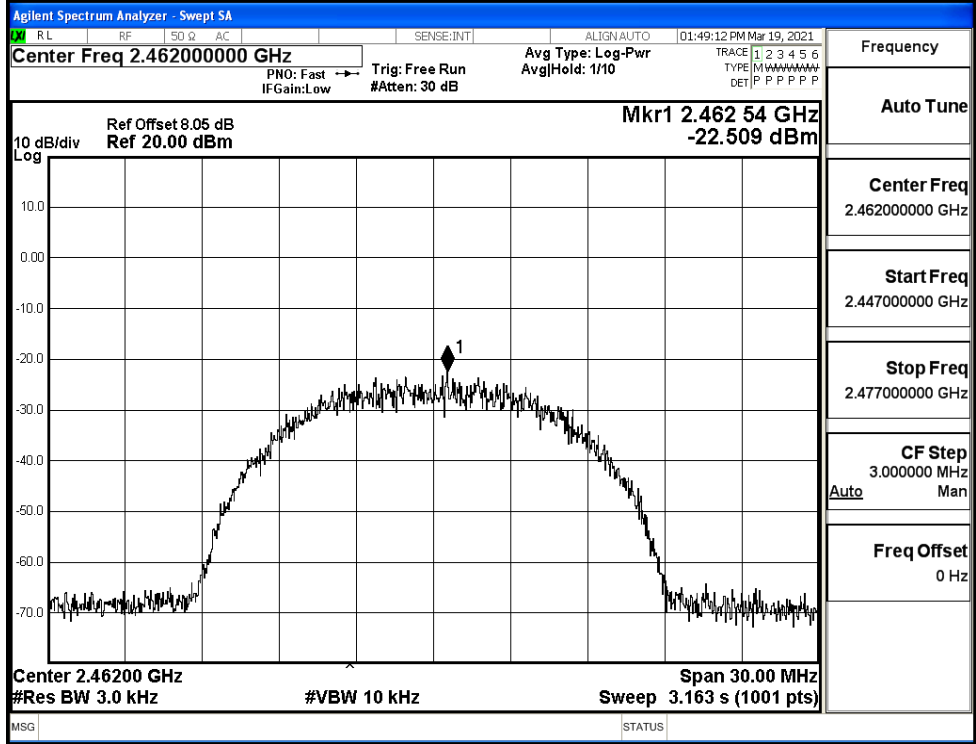
#### Test Graphs



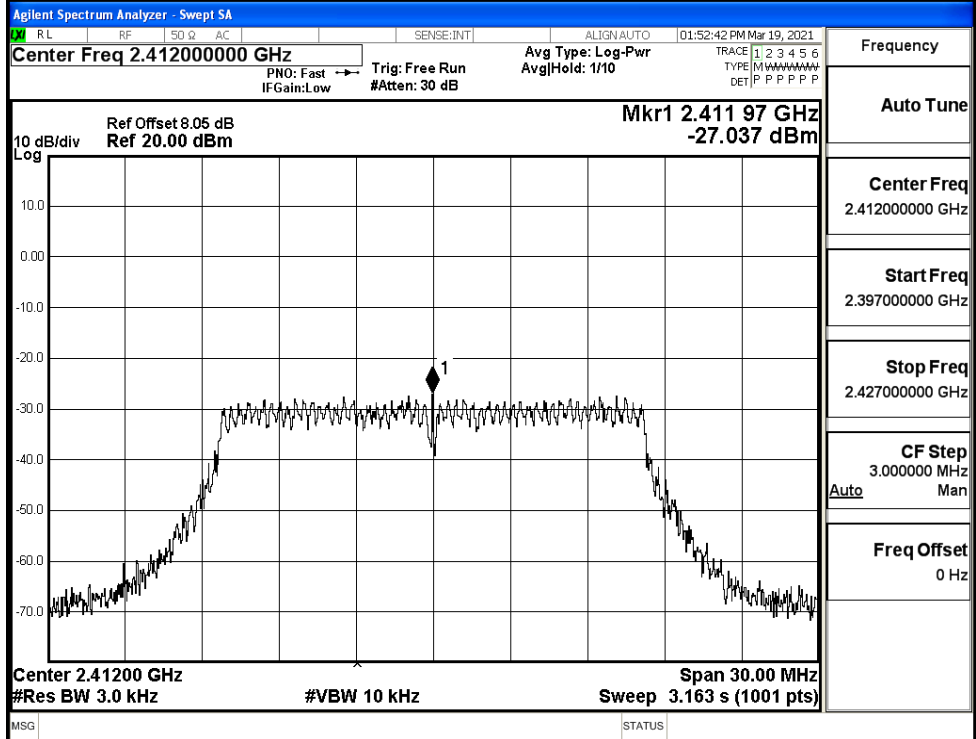
11B/MCH



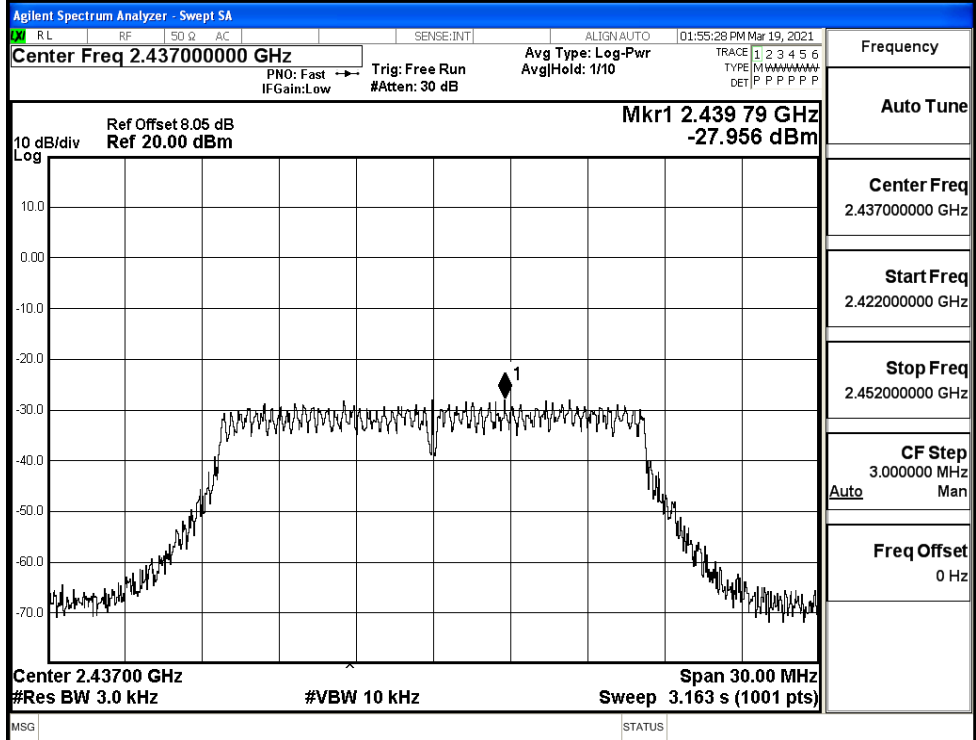
11B/HCH



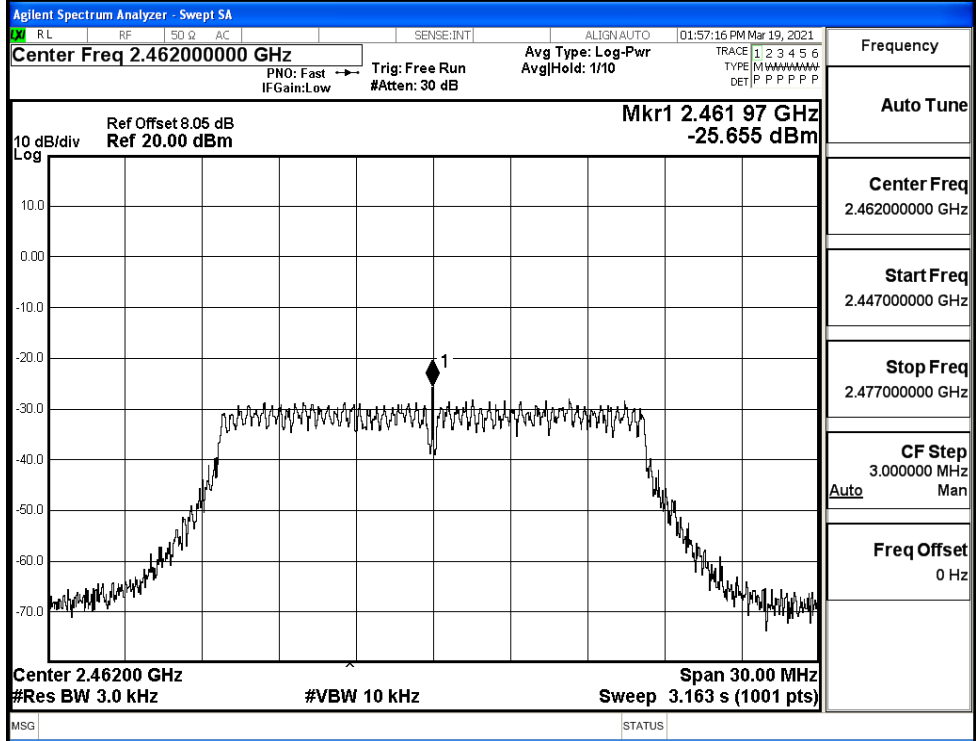
11G/LCH



11G/MCH

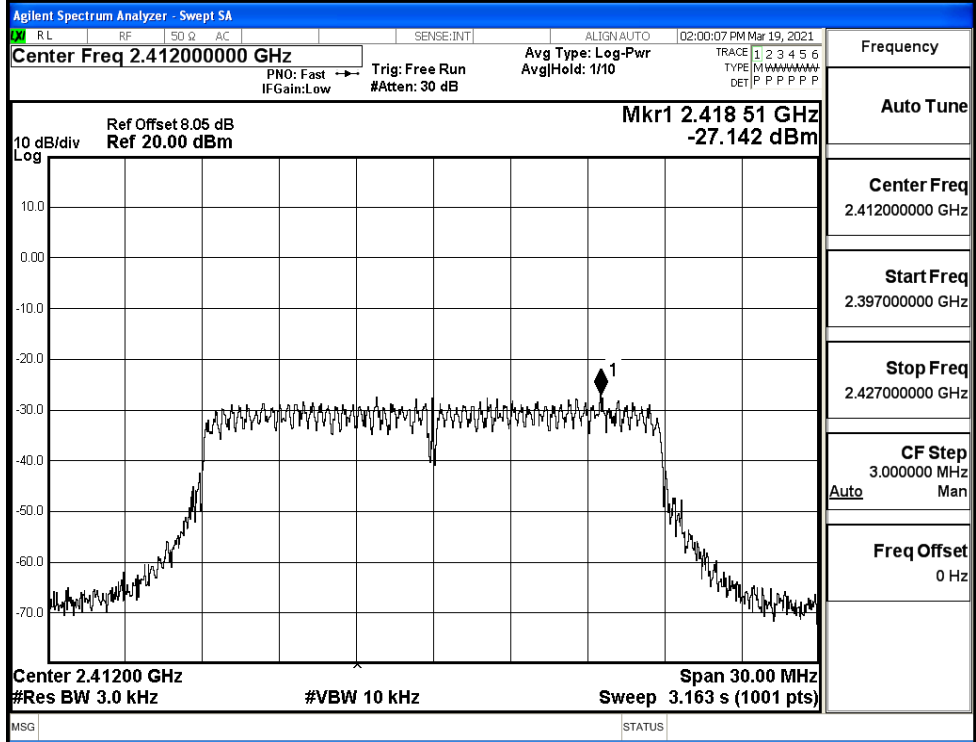


11G/HCH



Frequency
Auto Tune
Center Freq 2.46200000 GHz
Start Freq 2.447000000 GHz
Stop Freq 2.477000000 GHz
CF Step 3.000000 MHz Auto Man
Freq Offset 0 Hz

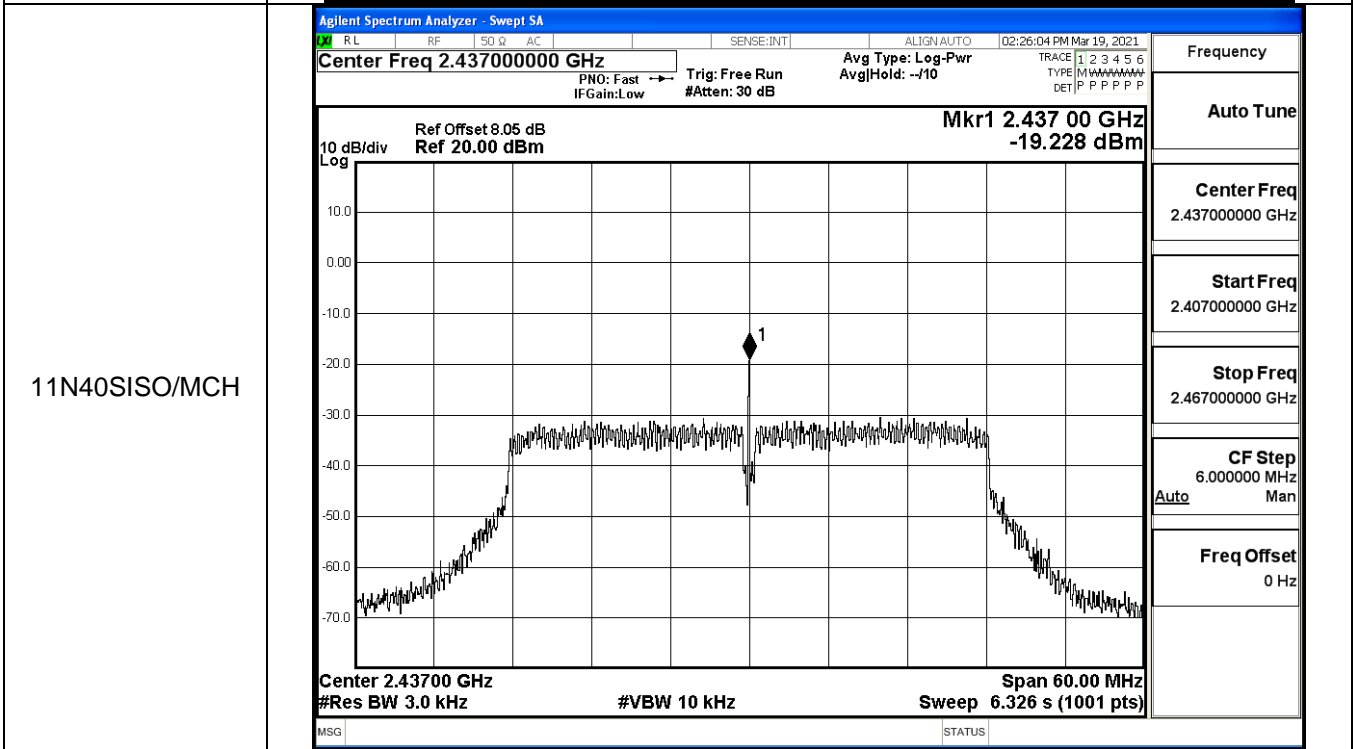
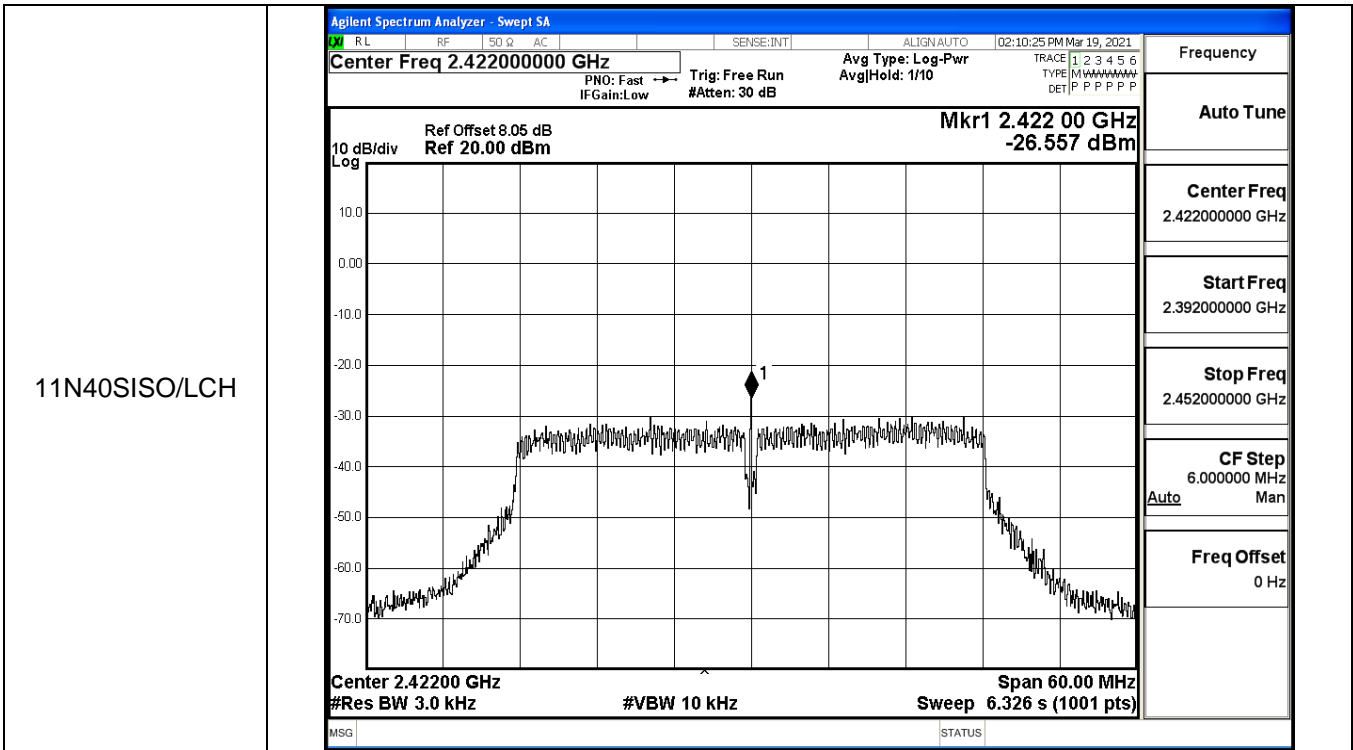
11N20SISO/LCH



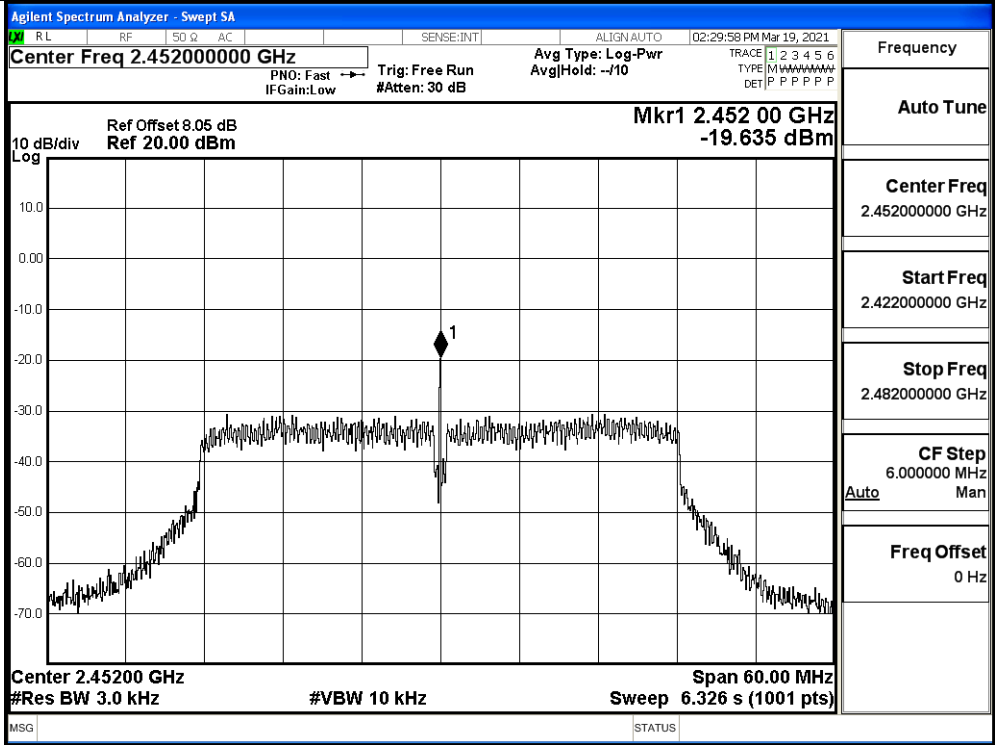
Frequency
Auto Tune
Center Freq 2.412000000 GHz
Start Freq 2.397000000 GHz
Stop Freq 2.427000000 GHz
CF Step 3.000000 MHz Auto Man
Freq Offset 0 Hz



<p>11N20SISO/MCH</p>	<p>Agilent Spectrum Analyzer - Swept SA</p> <p>Center Freq 2.43700000 GHz</p> <p>Ref Offset 8.05 dB Ref 20.00 dBm</p> <p>Mkr1 2.43697 GHz -26.092 dBm</p> <p>10 dB/div Log</p> <p>Center 2.43700 GHz #Res BW 3.0 kHz #VBW 10 kHz Sweep 3.163 s (1001 pts)</p>	<p>Frequency</p> <p>Auto Tune</p> <p>Center Freq 2.43700000 GHz</p> <p>Start Freq 2.42200000 GHz</p> <p>Stop Freq 2.45200000 GHz</p> <p>CF Step 3.00000 MHz Auto Man</p> <p>Freq Offset 0 Hz</p>
<p>11N20SISO/HCH</p>	<p>Agilent Spectrum Analyzer - Swept SA</p> <p>Center Freq 2.46200000 GHz</p> <p>Ref Offset 8.05 dB Ref 20.00 dBm</p> <p>Mkr1 2.46197 GHz -25.000 dBm</p> <p>10 dB/div Log</p> <p>Center 2.46200 GHz #Res BW 3.0 kHz #VBW 10 kHz Sweep 3.163 s (1001 pts)</p>	<p>Frequency</p> <p>Auto Tune</p> <p>Center Freq 2.46200000 GHz</p> <p>Start Freq 2.44700000 GHz</p> <p>Stop Freq 2.47700000 GHz</p> <p>CF Step 3.00000 MHz Auto Man</p> <p>Freq Offset 0 Hz</p>

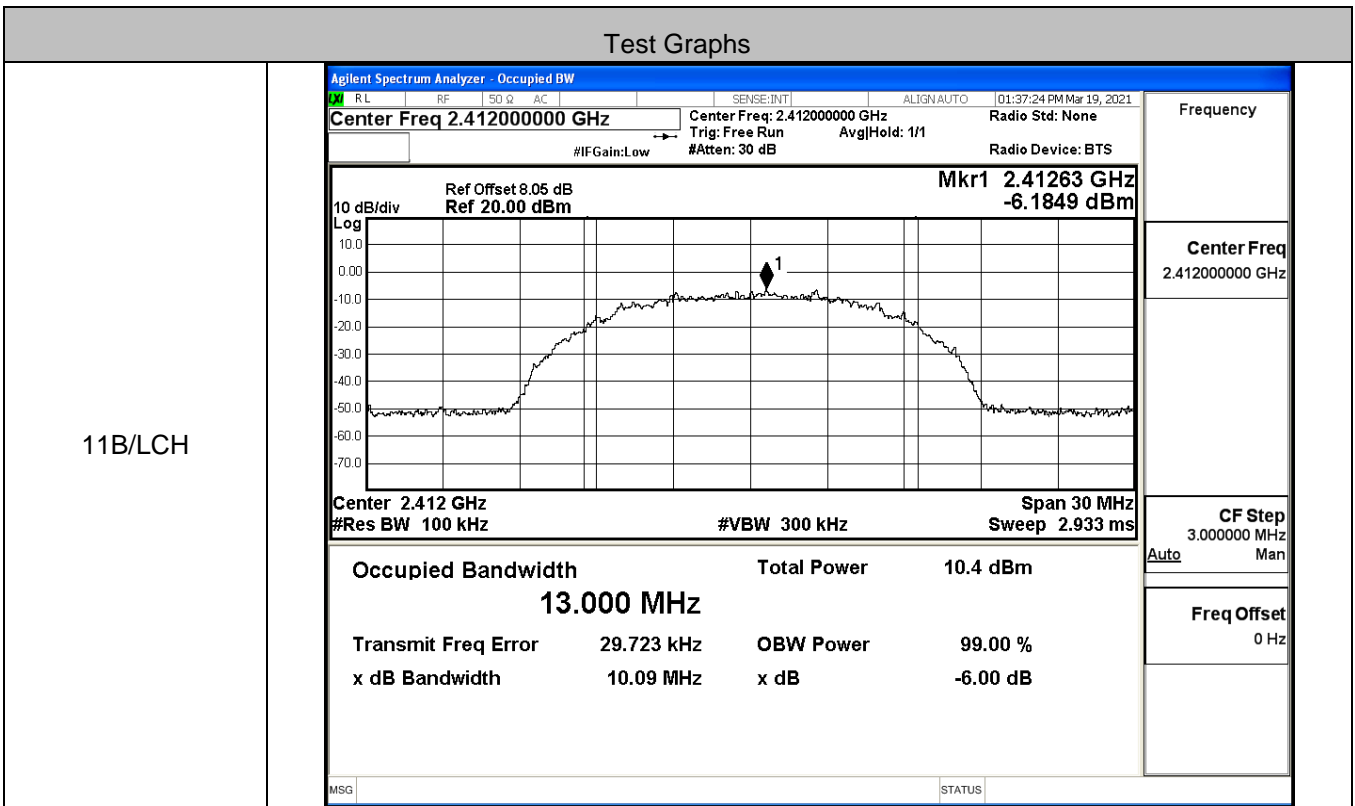


11N40SISO/HCH

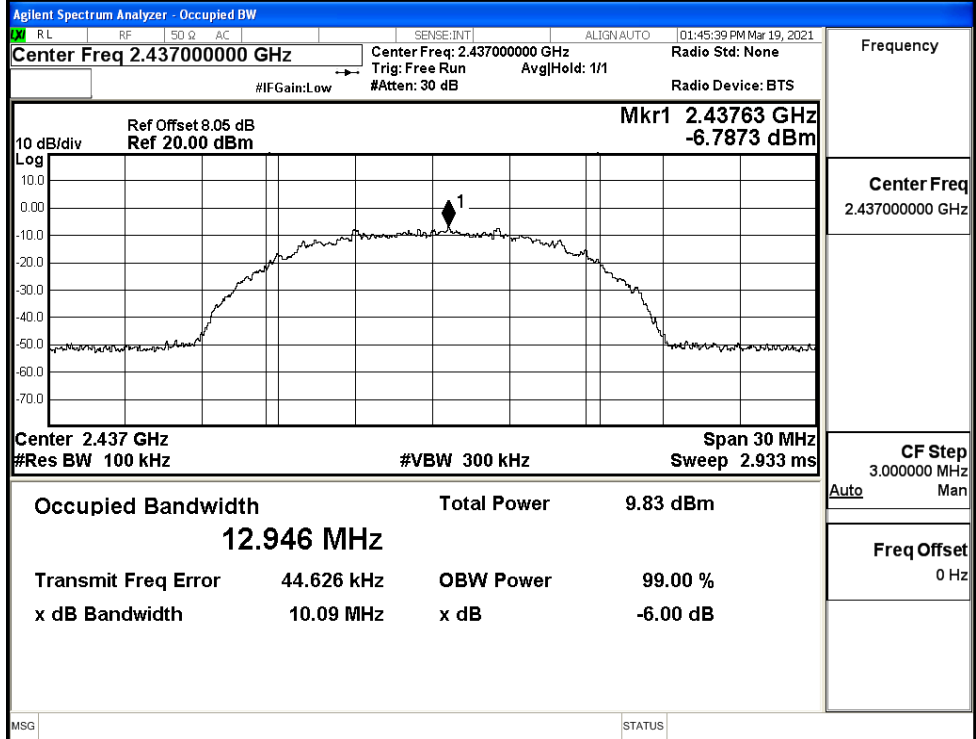


**B.4 6dB Bandwidth**

Mode	Channel	6dB Bandwidth [MHz]	Limit [MHz]	Verdict
11B	LCH	10.09	≥0.5	PASS
	MCH	10.09	≥0.5	PASS
	HCH	10.06	≥0.5	PASS
11G	LCH	16.46	≥0.5	PASS
	MCH	16.47	≥0.5	PASS
	HCH	16.49	≥0.5	PASS
11N20SISO	LCH	17.60	≥0.5	PASS
	MCH	17.60	≥0.5	PASS
	HCH	17.62	≥0.5	PASS
11N40SISO	LCH	36.49	≥0.5	PASS
	MCH	36.47	≥0.5	PASS
	HCH	36.44	≥0.5	PASS

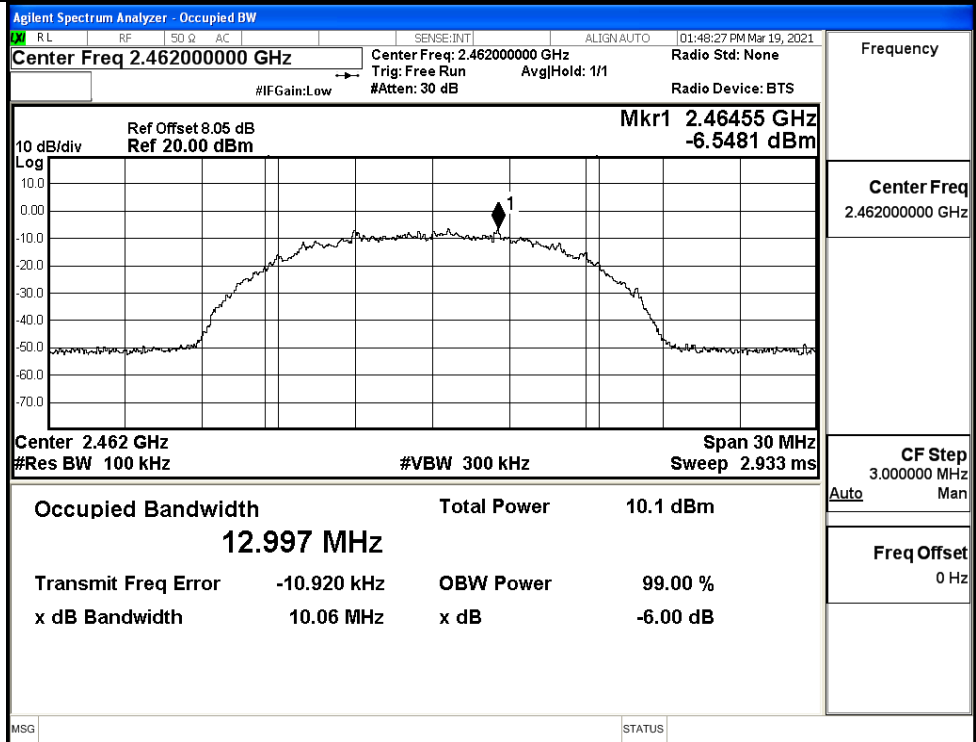


11B/MCH



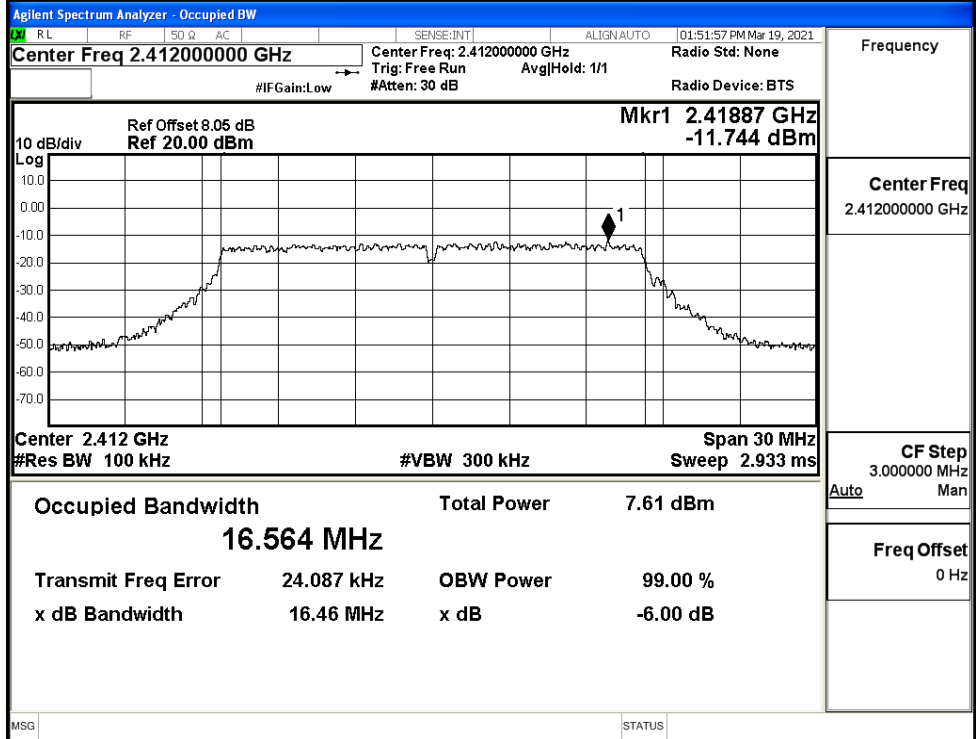
Frequency	2.43700000 GHz
Center Freq	2.43700000 GHz
CF Step	3.000000 MHz
Auto	Man
Freq Offset	0 Hz

11B/HCH



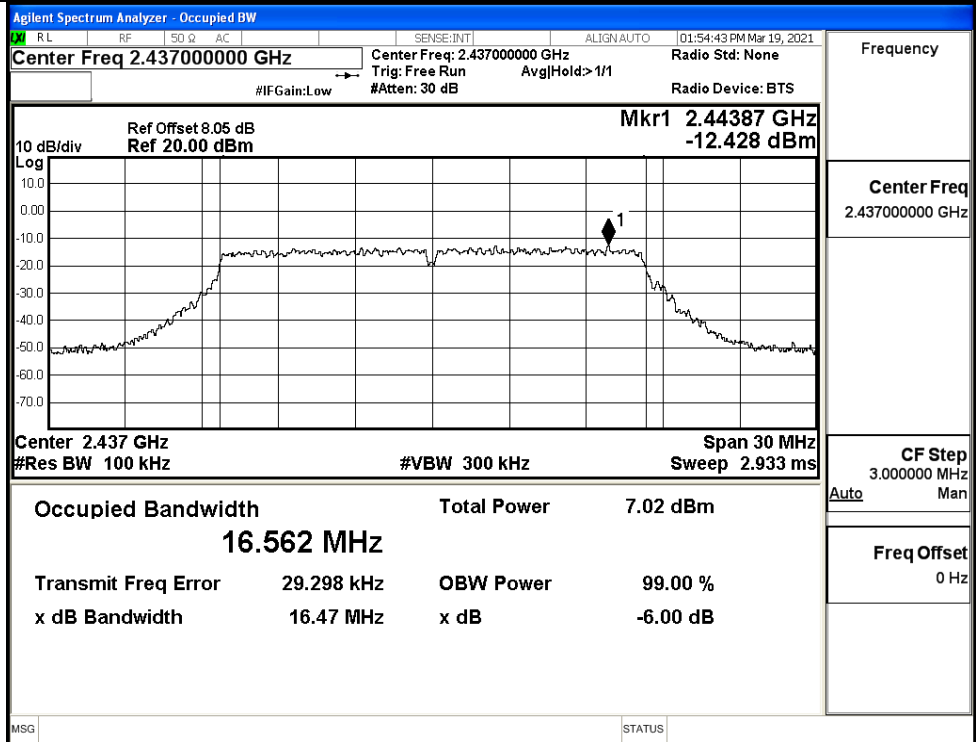
Frequency	2.46200000 GHz
Center Freq	2.46200000 GHz
CF Step	3.000000 MHz
Auto	Man
Freq Offset	0 Hz

11G/LCH



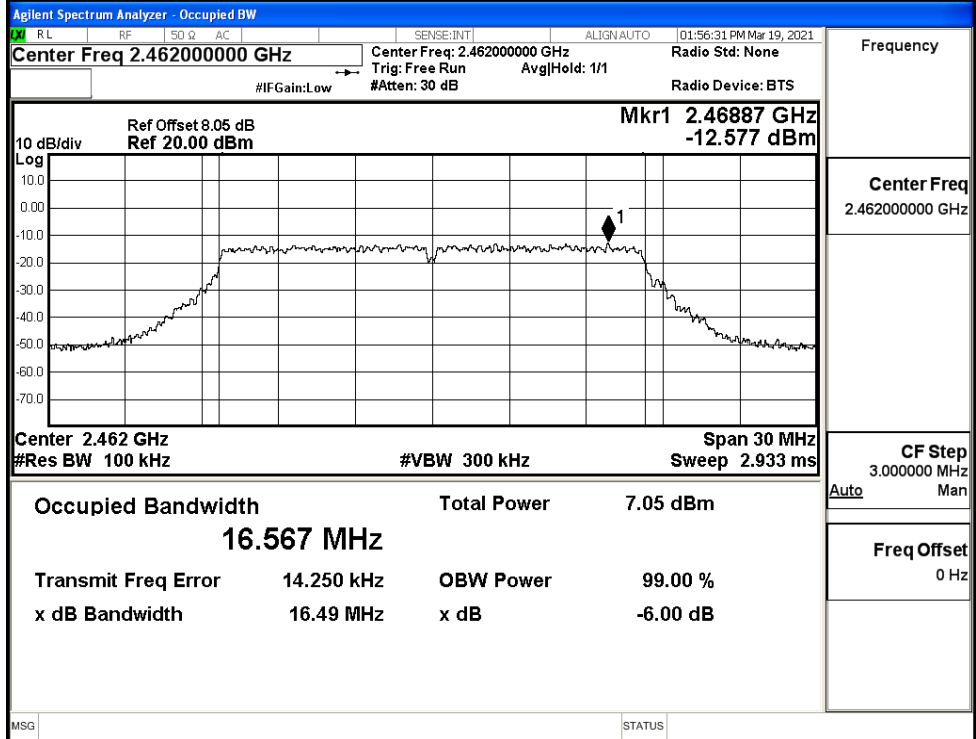
Frequency	2.41200000 GHz
Center Freq	2.41200000 GHz
CF Step	3.000000 MHz
Auto	Man
Freq Offset	0 Hz

11G/MCH

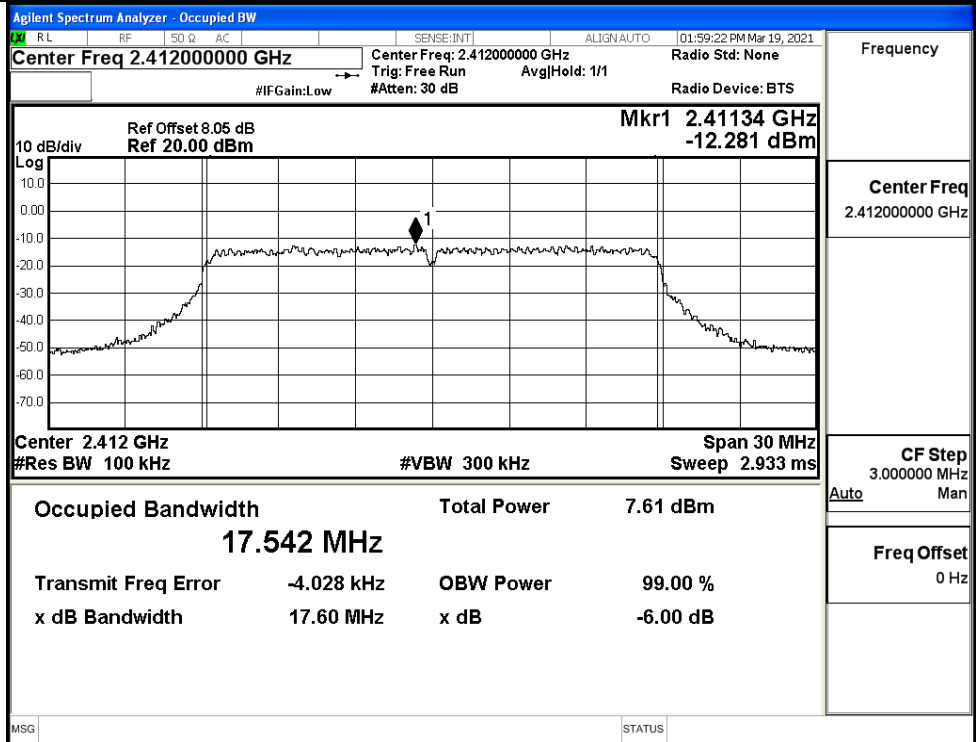


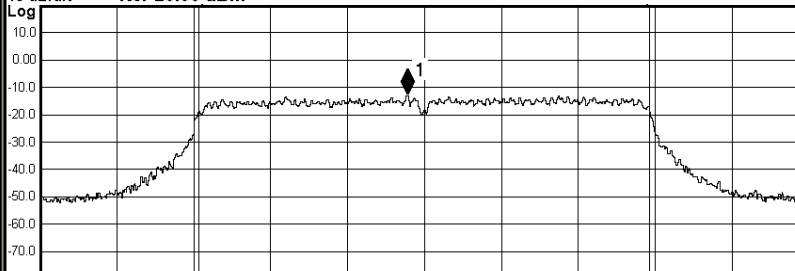
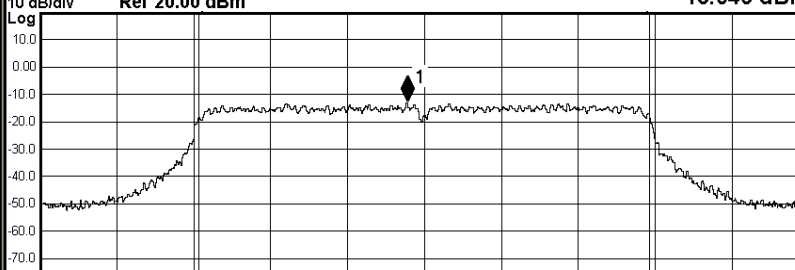
Frequency	2.43700000 GHz
Center Freq	2.43700000 GHz
CF Step	3.000000 MHz
Auto	Man
Freq Offset	0 Hz

11G/HCH



11N20SISO/LCH

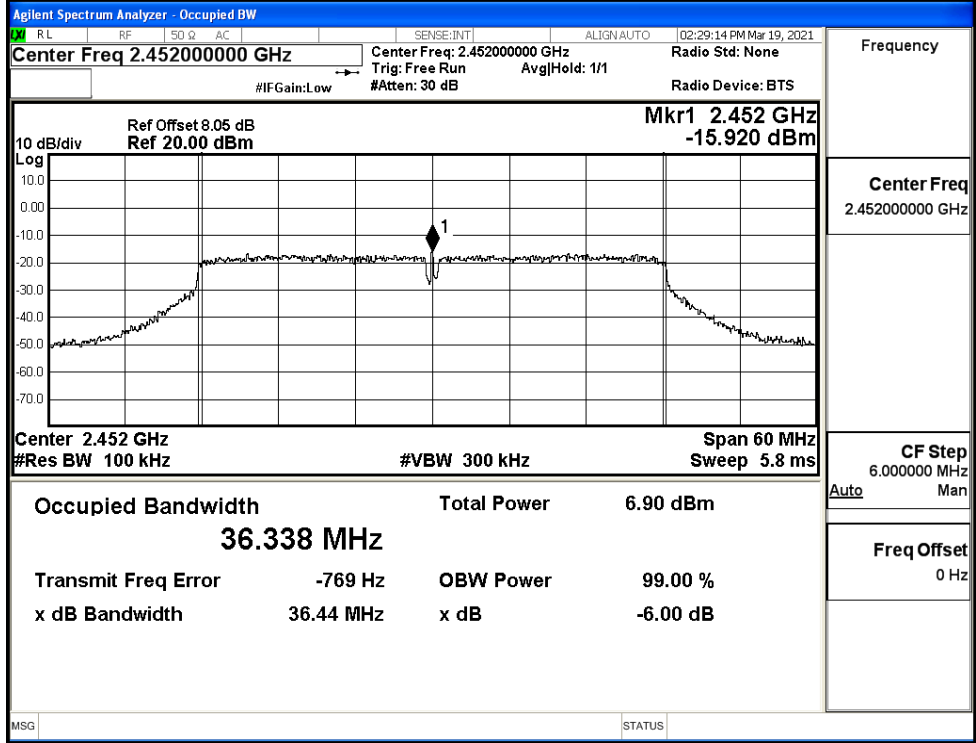


<p>11N20SISO/MCH</p>	<p>Agilent Spectrum Analyzer - Occupied BW</p> <p>RL RF SQ AC SENSE:INT ALIGN AUTO 02:02:00 PM Mar 19, 2021</p> <p>Center Freq 2.43700000 GHz Center Freq: 2.43700000 GHz Radio Std: None          Trig: Free Run AvgHold: 1/1          #IFGain:Low #Atten: 30 dB Radio Device: BTS</p> <p>10 dB/div Ref Offset 8.05 dB Mkr1 2.43634 GHz          Ref 20.00 dBm -12.984 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 17.536 MHz Total Power 6.82 dBm</p> <p>Transmit Freq Error -5.302 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 AC SENSE:INT ALIGN AUTO 02:04:24 PM Mar 19, 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 -13.046 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 17.551 MHz Total Power 6.90 dBm</p> <p>Transmit Freq Error -12.408 kHz OBW Power 99.00 %          x dB Bandwidth 17.62 MHz x dB -6.00 dB</p> <p>MSG STATUS</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>



<p>11N40SISO/LCH</p>	<p>Agilent Spectrum Analyzer - Occupied BW</p> <p>RL RF 50 Ω AC SENSE:INT ALIGN AUTO 02:14:12 PM Mar 19, 2021</p> <p>Center Freq 2.42200000 GHz Center Freq: 2.42200000 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 2.4379 GHz          Ref 20.00 dBm -15.814 dBm</p> <p>Center 2.422 GHz Span 60 MHz          #Res BW 100 kHz #VBW 300 kHz Sweep 5.8 ms</p> <p>Occupied Bandwidth Total Power 7.18 dBm  <b>36.315 MHz</b></p> <p>Transmit Freq Error 41.842 kHz OBW Power 99.00 %          x dB Bandwidth 36.49 MHz x dB -6.00 dB</p> <p>MSG STATUS</p>	<p>Frequency</p> <p>Center Freq 2.42200000 GHz</p> <p>CF Step 6.000000 MHz Auto Man</p> <p>Freq Offset 0 Hz</p>
<p>11N40SISO/MCH</p>	<p>Agilent Spectrum Analyzer - Occupied BW</p> <p>RL RF 50 Ω AC SENSE:INT ALIGN AUTO 02:25:19 PM Mar 19, 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 2.44732 GHz          Ref 20.00 dBm -16.065 dBm</p> <p>Center 2.437 GHz Span 60 MHz          #Res BW 100 kHz #VBW 300 kHz Sweep 5.8 ms</p> <p>Occupied Bandwidth Total Power 7.31 dBm  <b>36.309 MHz</b></p> <p>Transmit Freq Error 13.979 kHz OBW Power 99.00 %          x dB Bandwidth 36.47 MHz x dB -6.00 dB</p> <p>MSG STATUS</p>	<p>Frequency</p> <p>Center Freq 2.43700000 GHz</p> <p>CF Step 6.000000 MHz Auto Man</p> <p>Freq Offset 0 Hz</p>

11N40SISO/HCH

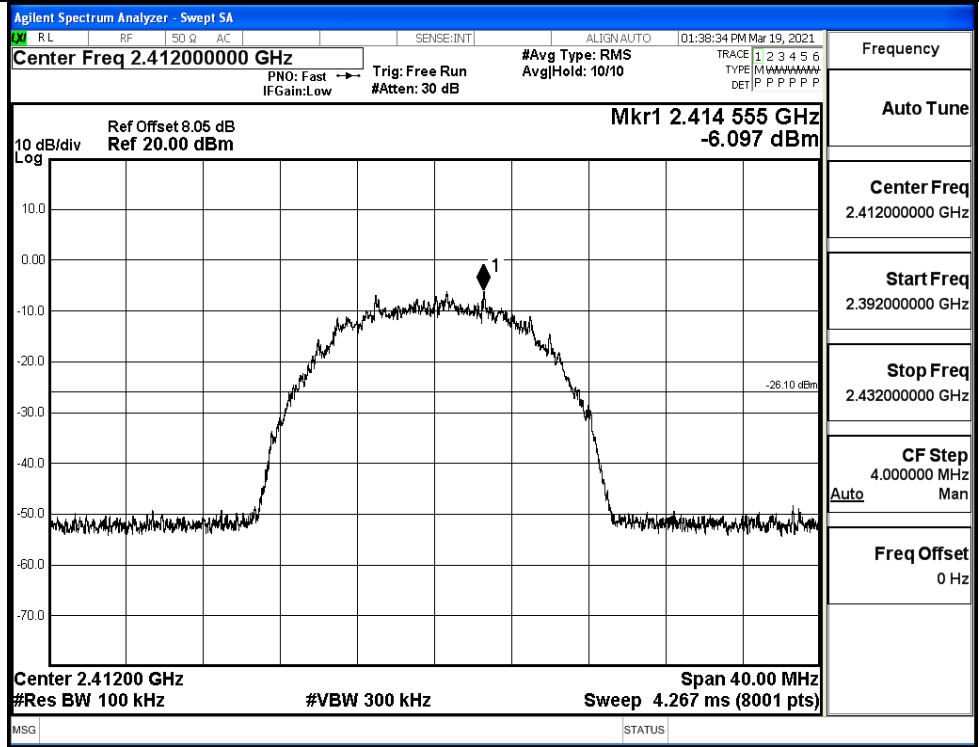


### B.5 RF Conducted Spurious Emissions

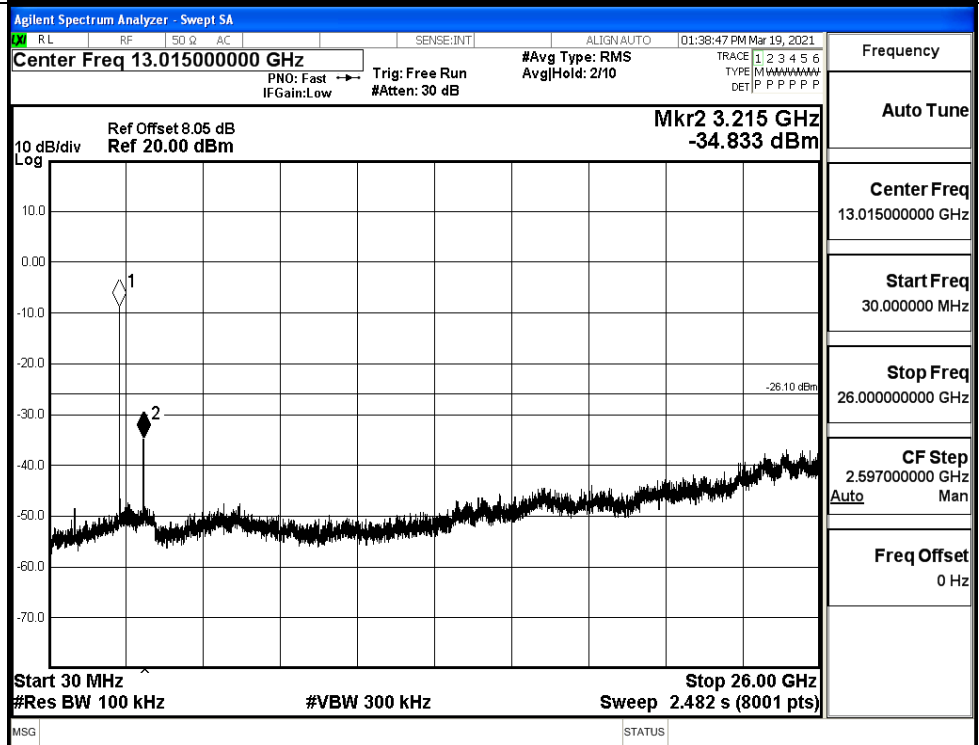
Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
11B	LCH	-6.097	-34.833	-26.097	PASS
	MCH	-6.699	-33.878	-26.699	PASS
	HCH	-6.609	-34.464	-26.609	PASS
11G	LCH	-11.837	-34.081	-31.837	PASS
	MCH	-12.459	-33.528	-32.459	PASS
	HCH	-12.921	-33.647	-32.921	PASS
11N20 SISO	LCH	-12.361	-34.452	-32.361	PASS
	MCH	-13.267	-33.918	-33.267	PASS
	HCH	-13.049	-34.178	-33.049	PASS
11N40 SISO	LCH	0.459	-37.849	-19.541	PASS
	MCH	-16.352	-37.740	-36.352	PASS
	HCH	-16.148	-37.792	-36.148	PASS

11B\_LCH\_Graphs

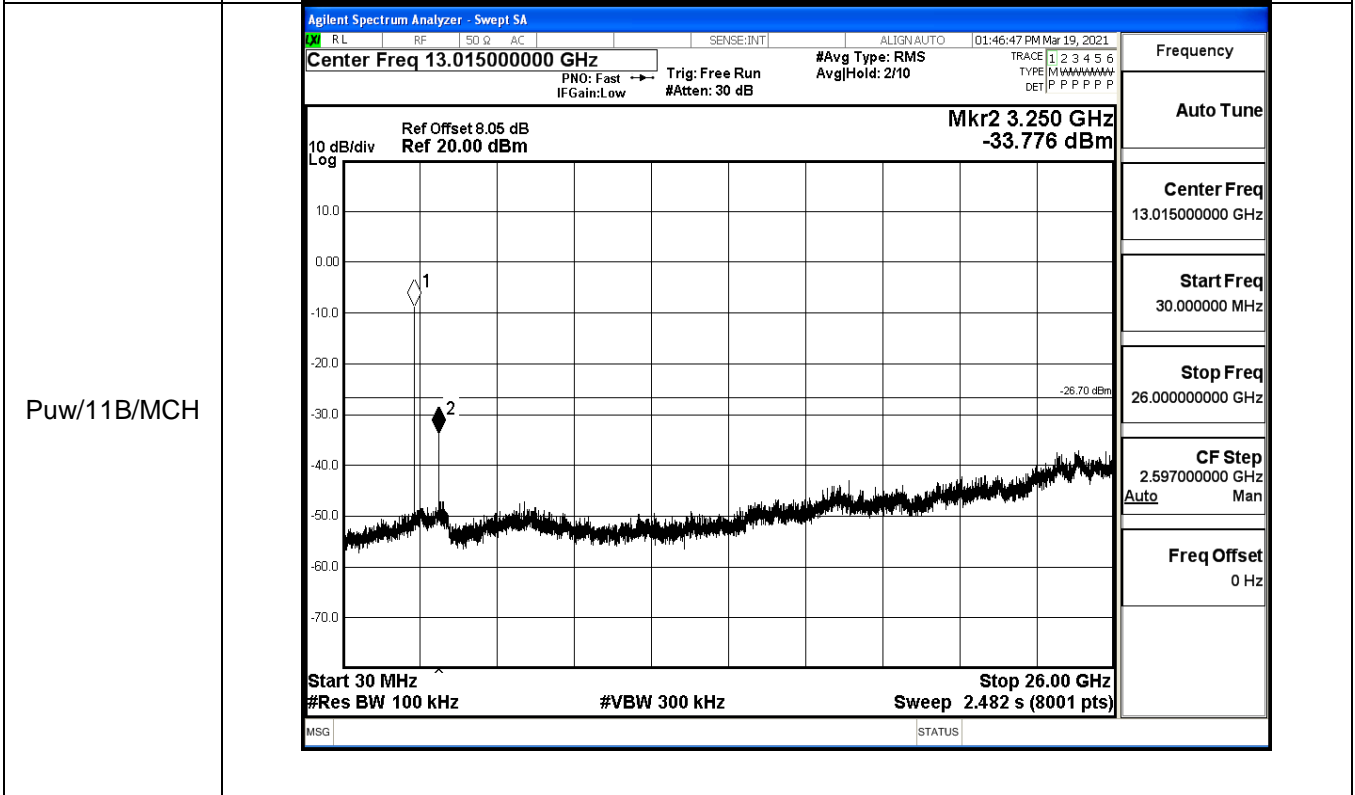
Pref/11B/LCH



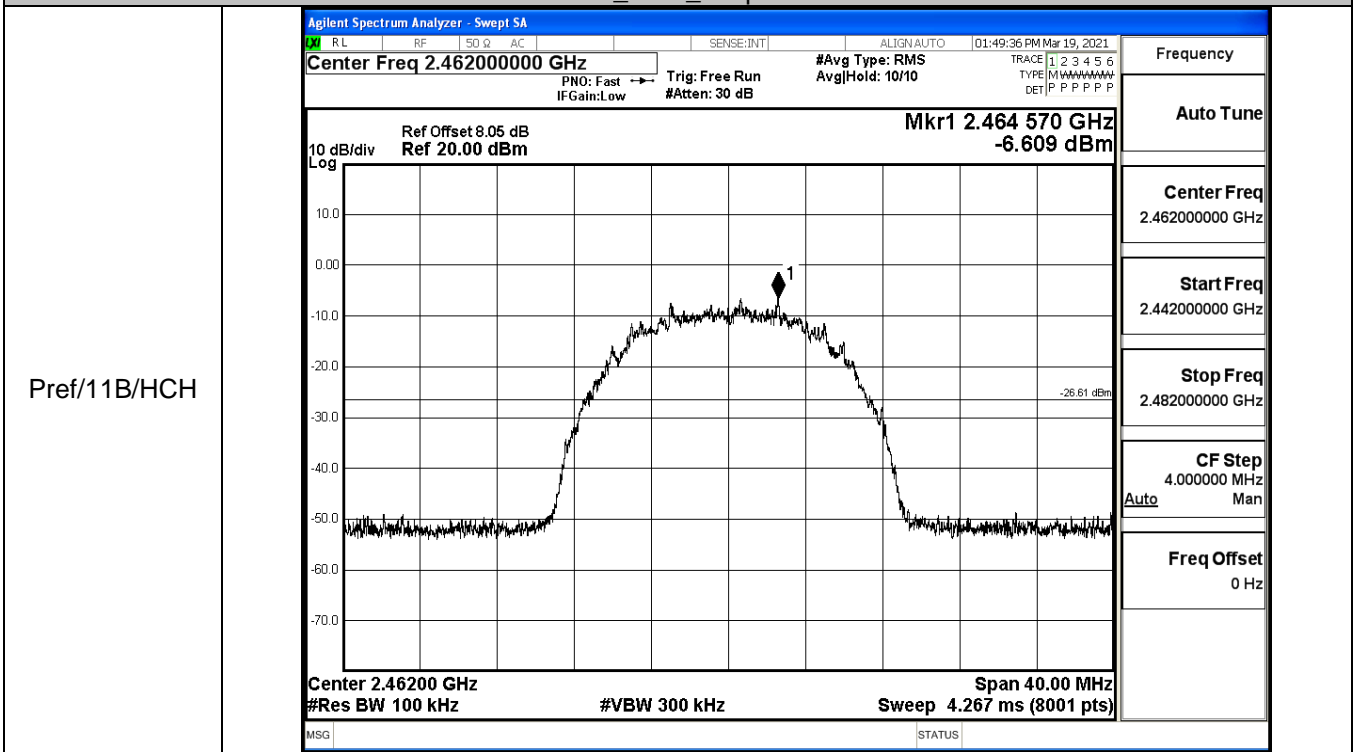
Puw/11B/LCH



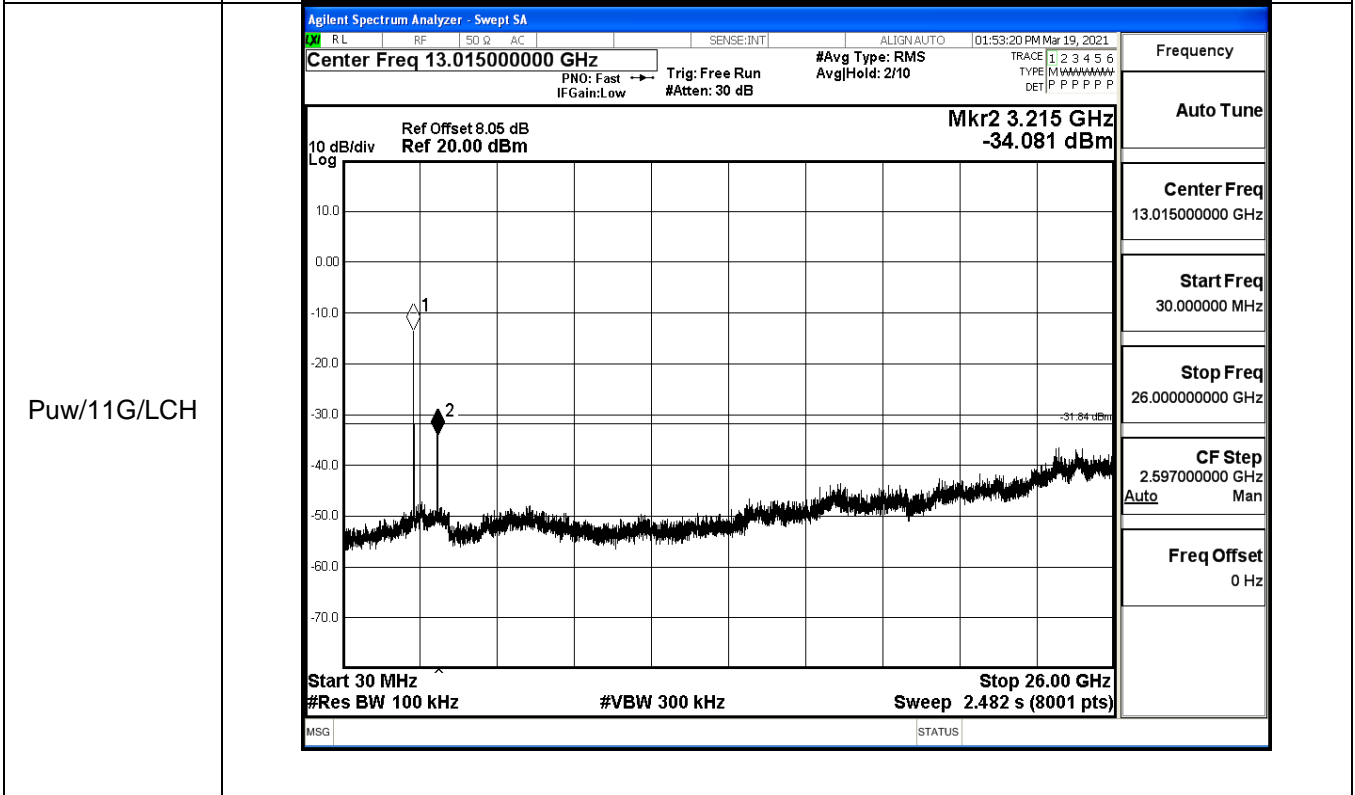
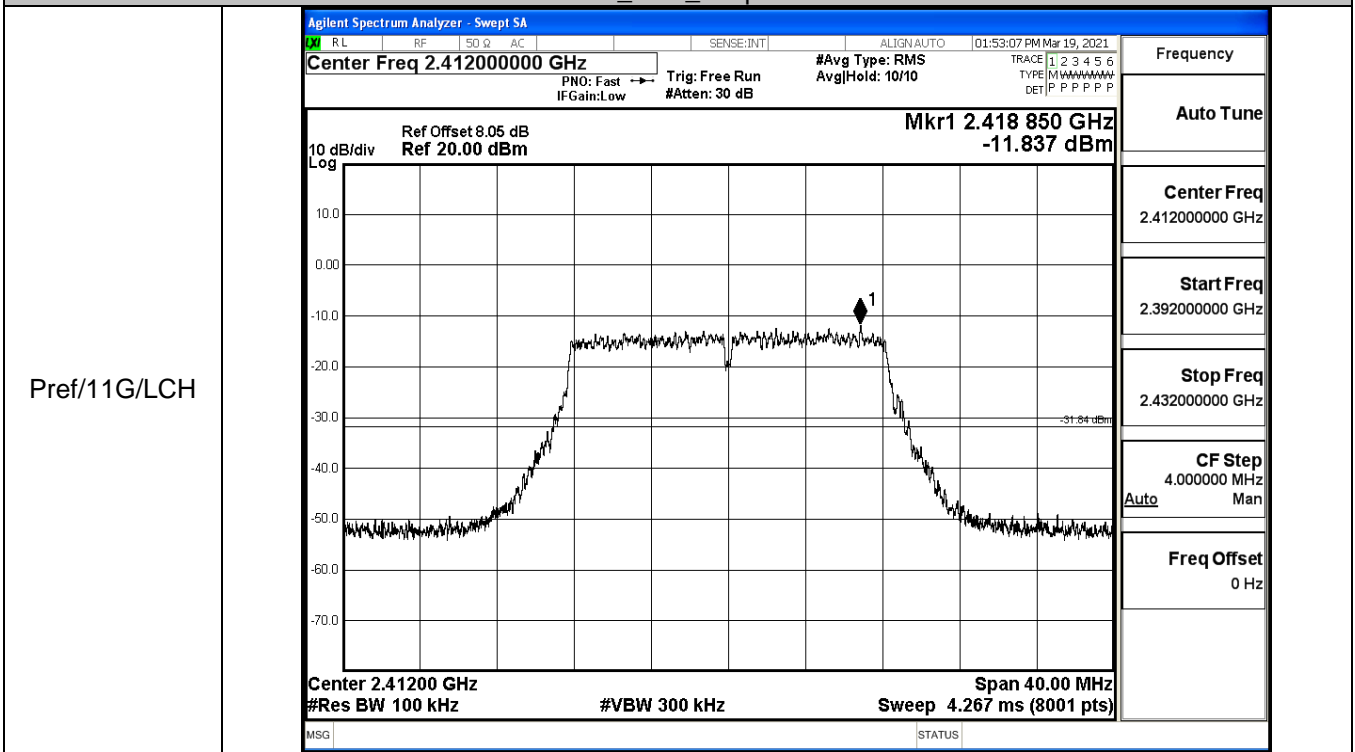
11B\_MCH\_Graphs



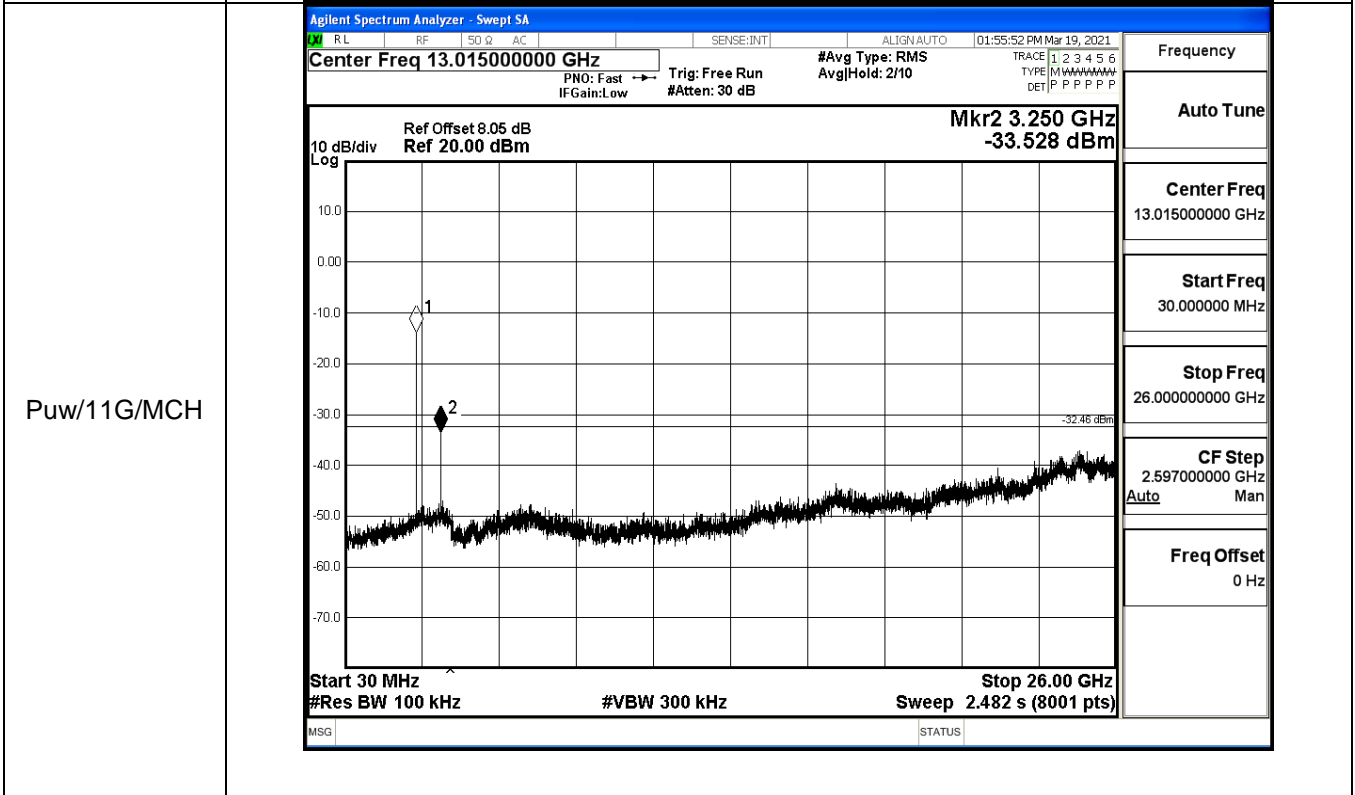
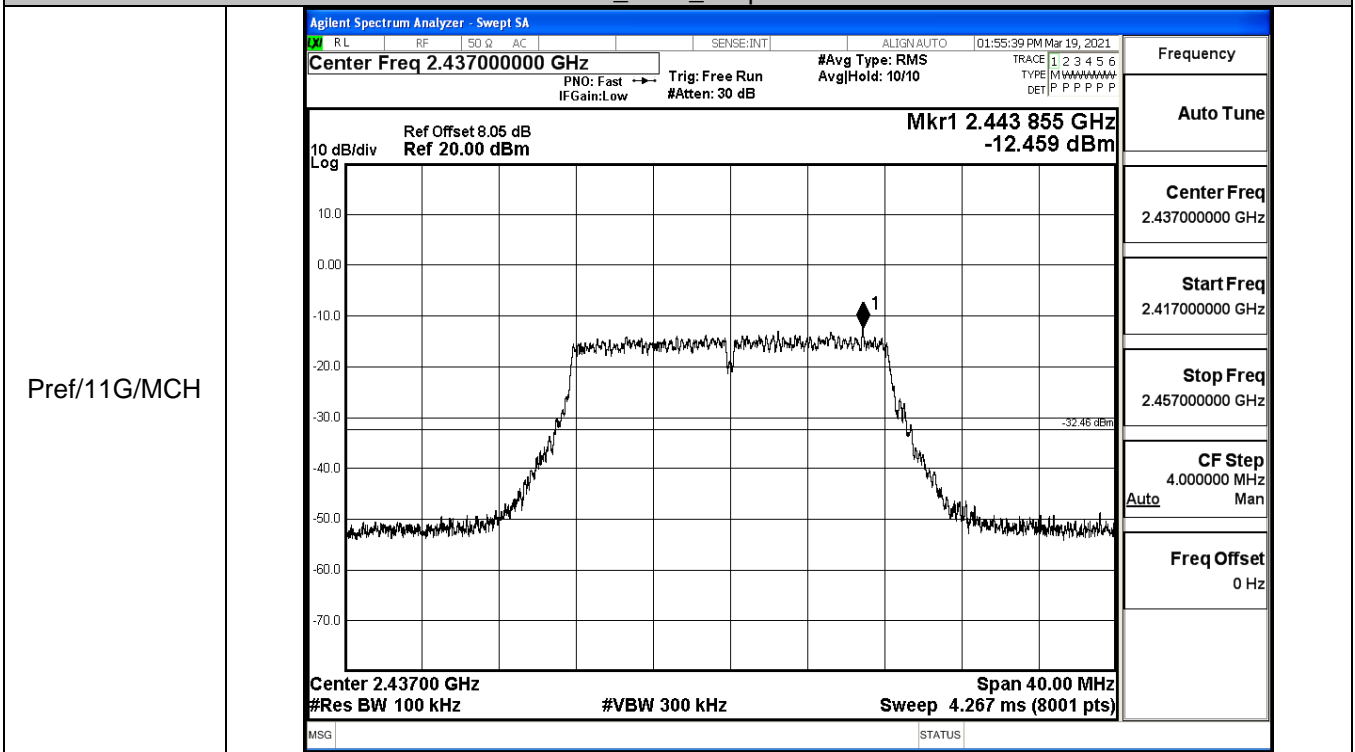
11B\_HCH\_Graphs



11G\_LCH\_Graphs

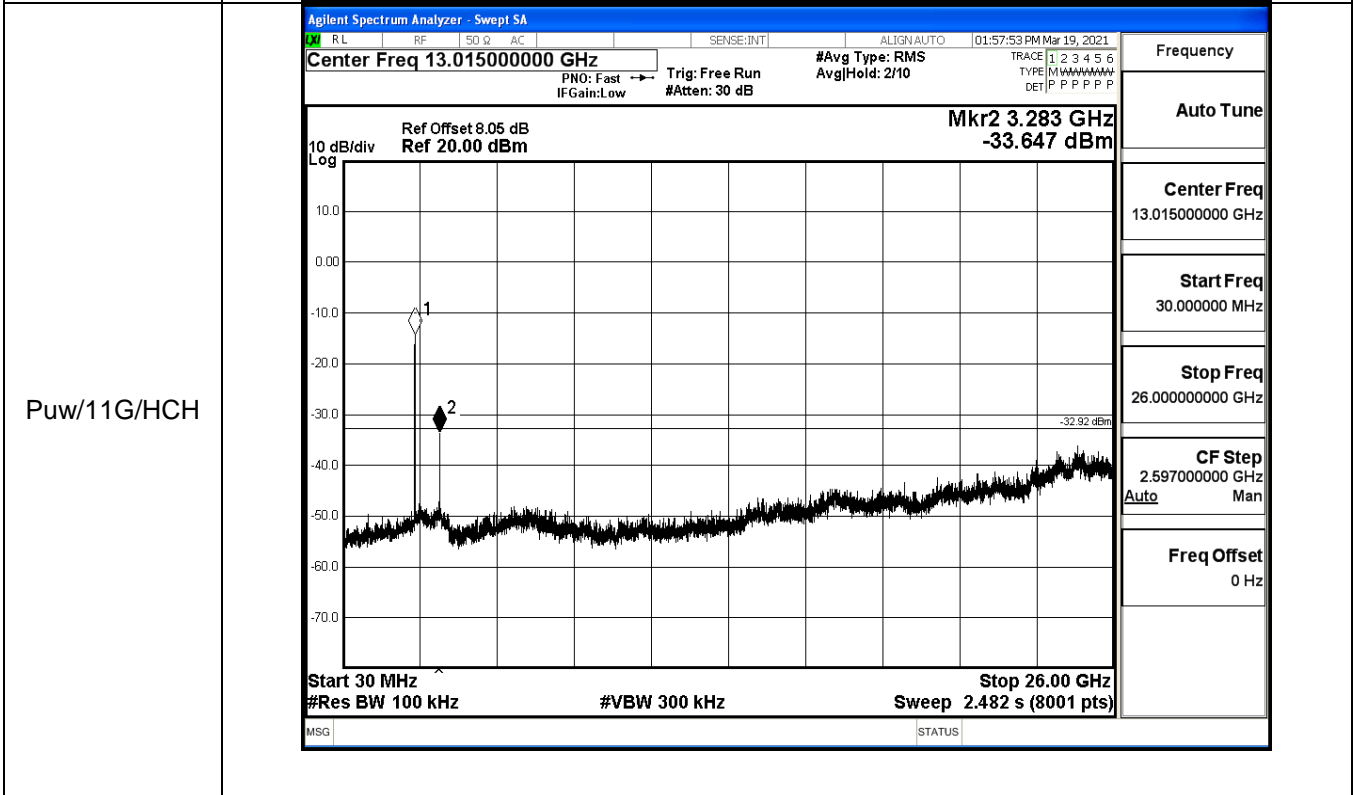
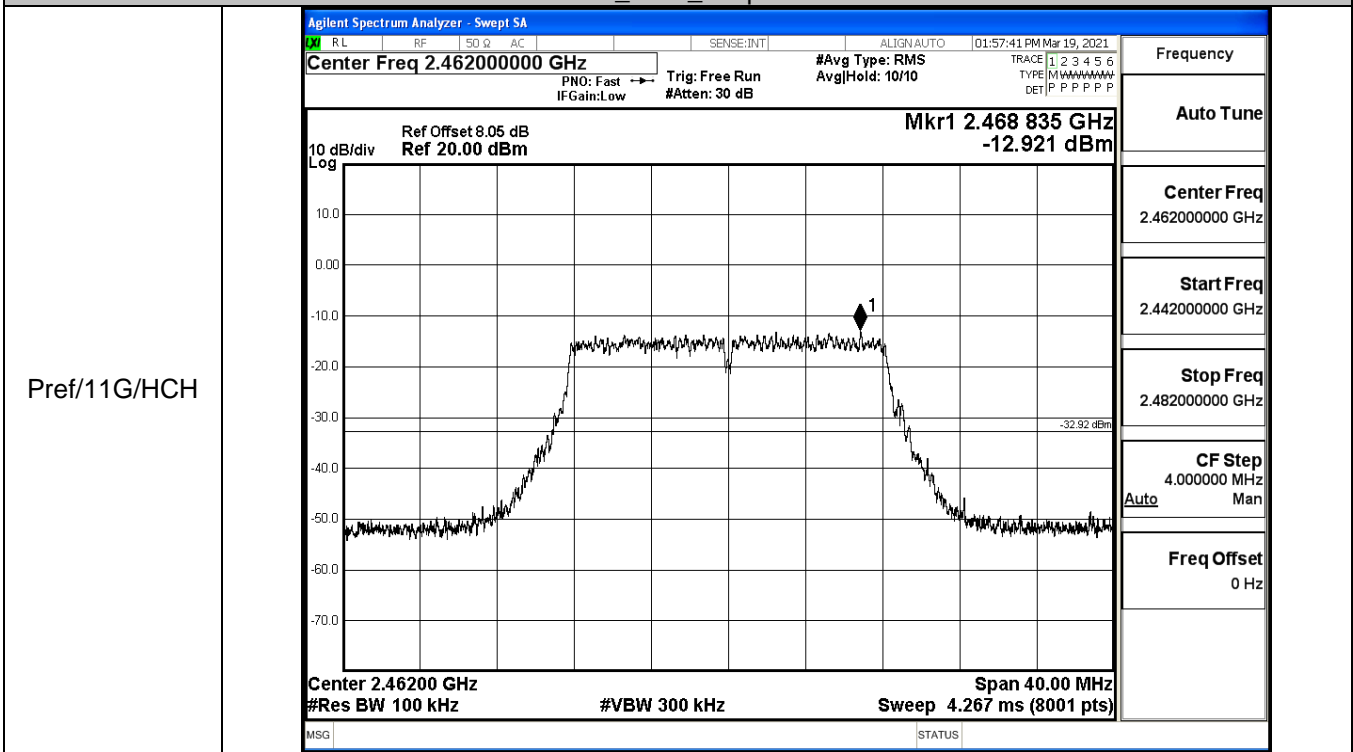


11G\_MCH\_Graphs



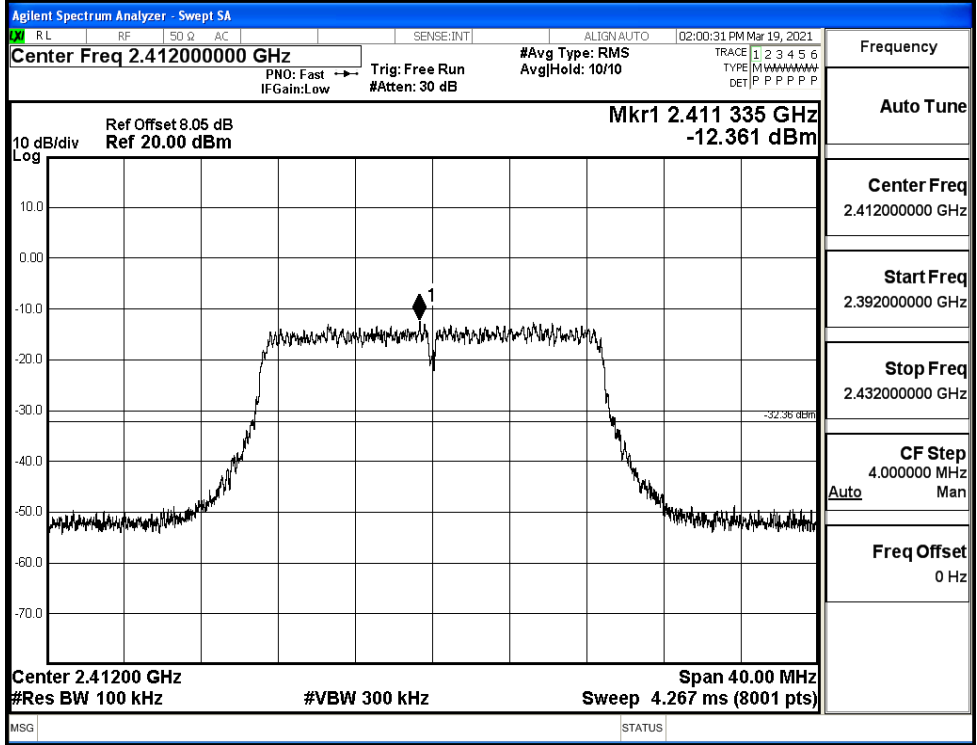


11G\_HCH\_Graphs

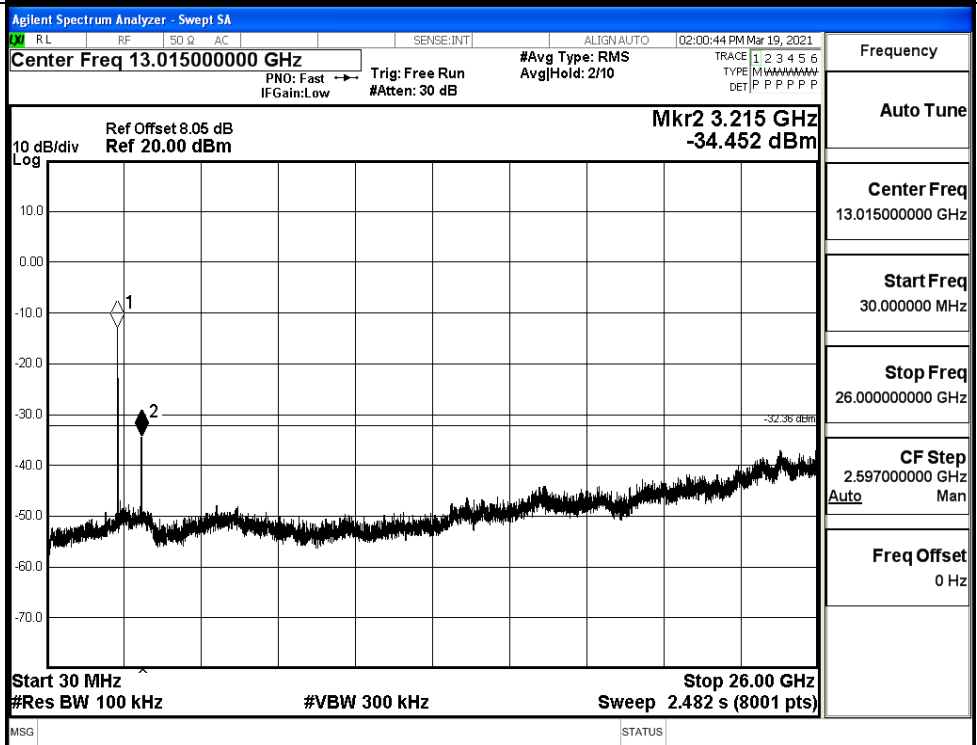


11N20SISO\_LCH\_Graphs

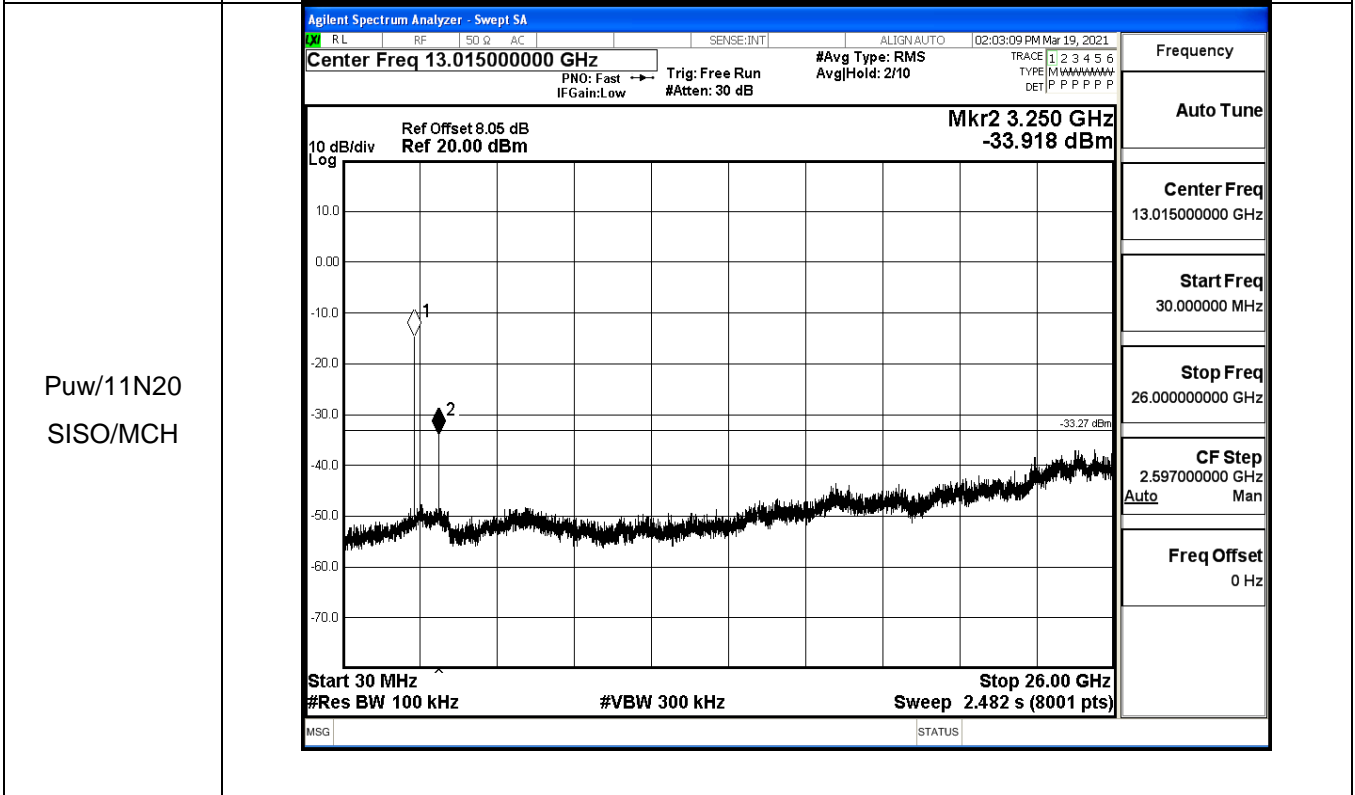
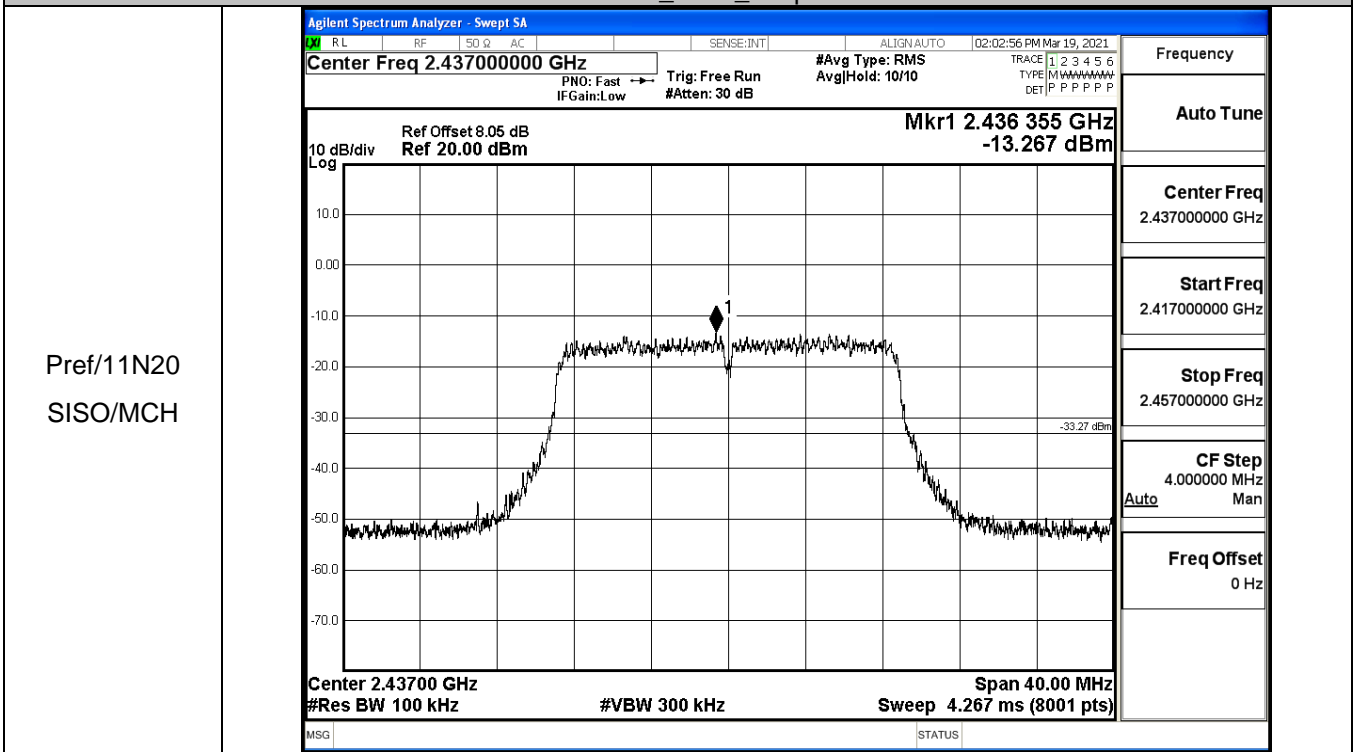
Pref/11N20SIS  
O/LCH



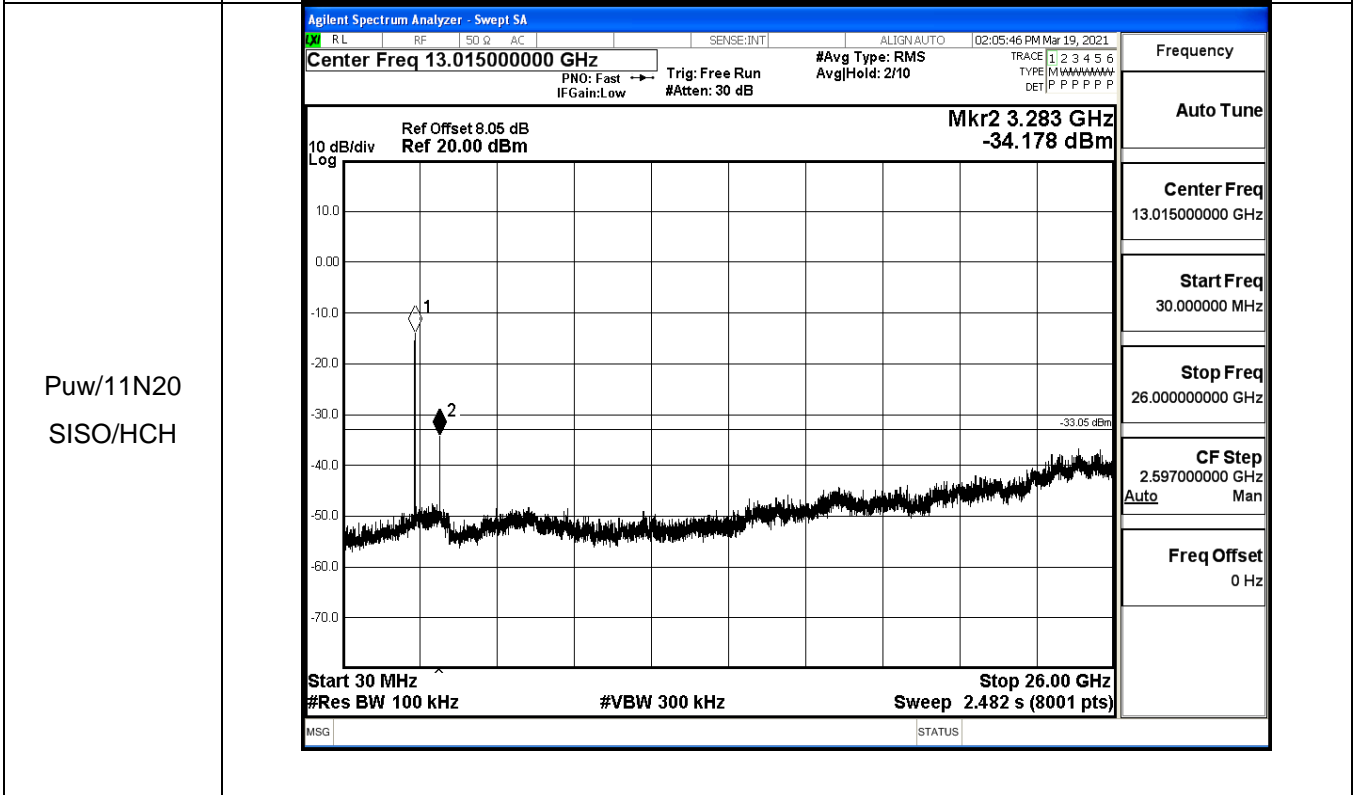
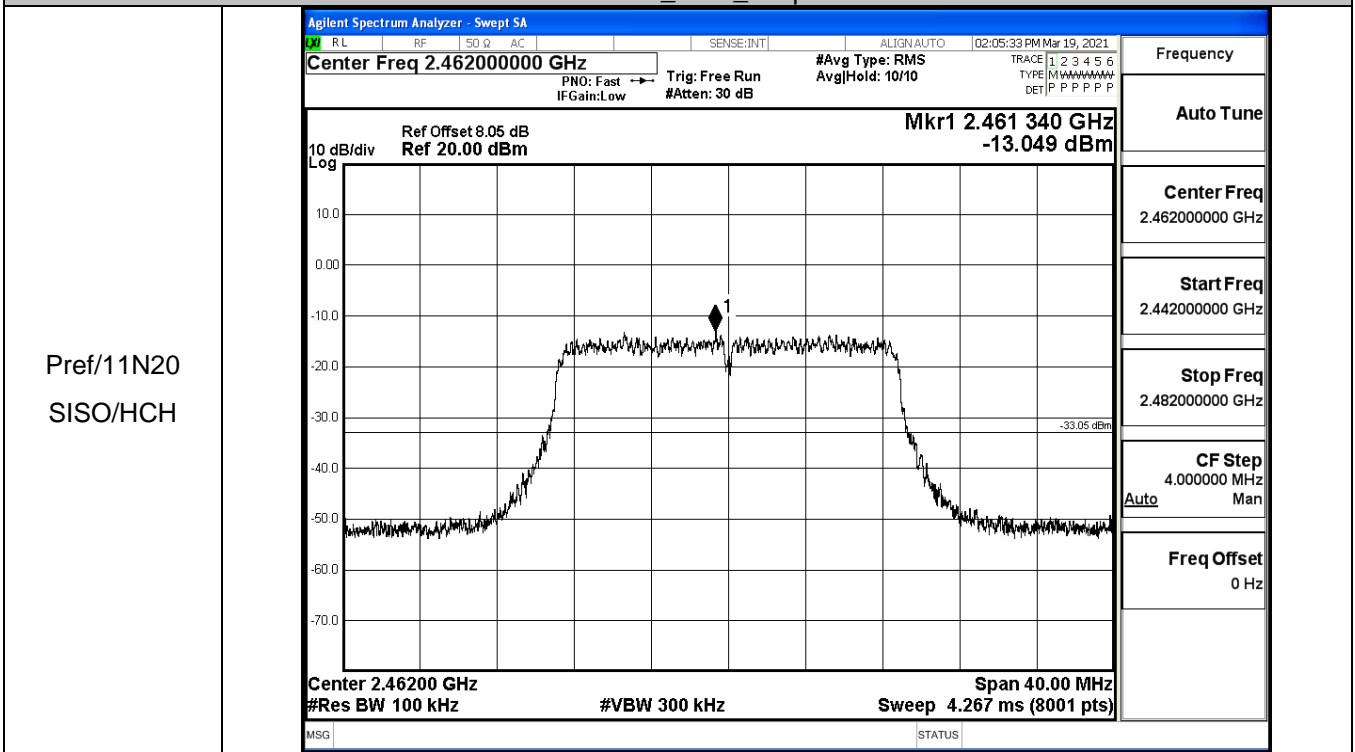
Puw/11N20  
SISO/LCH



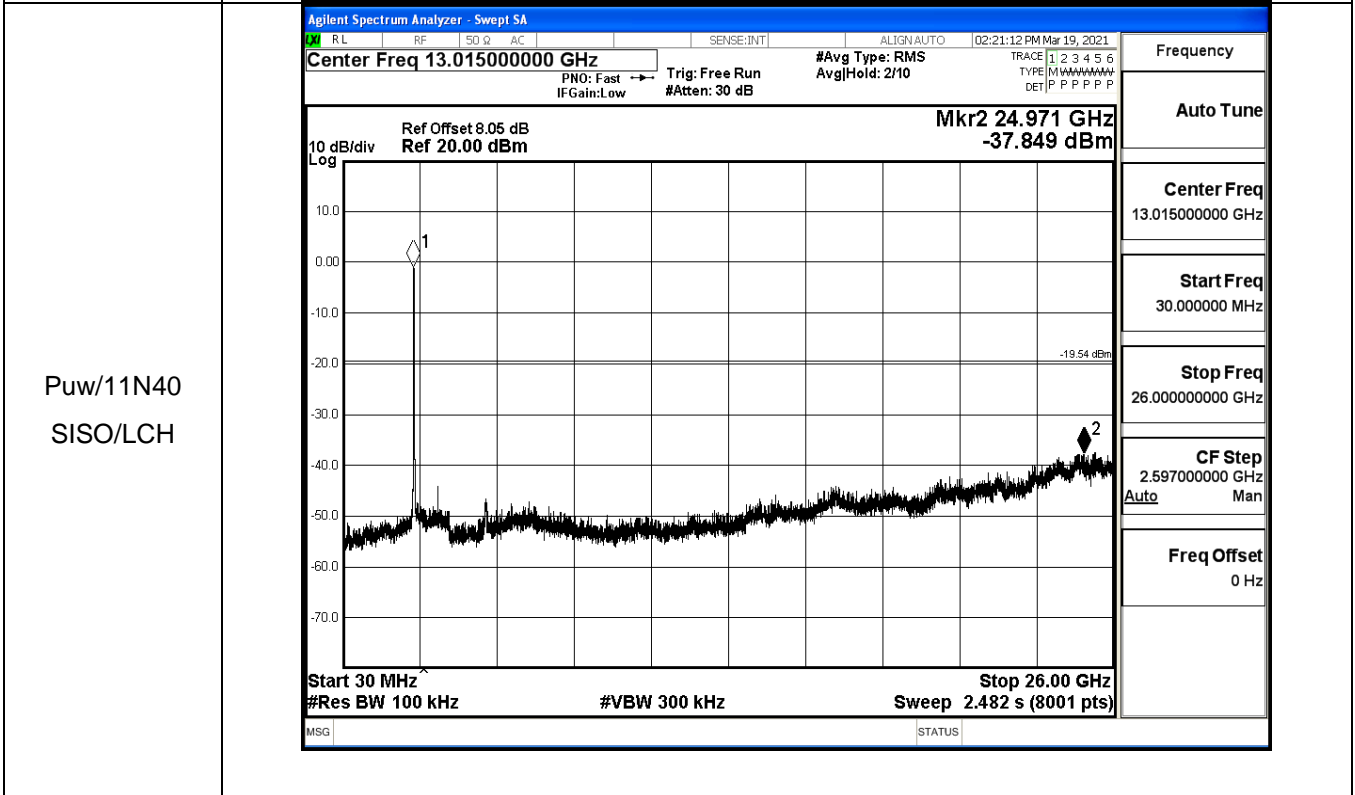
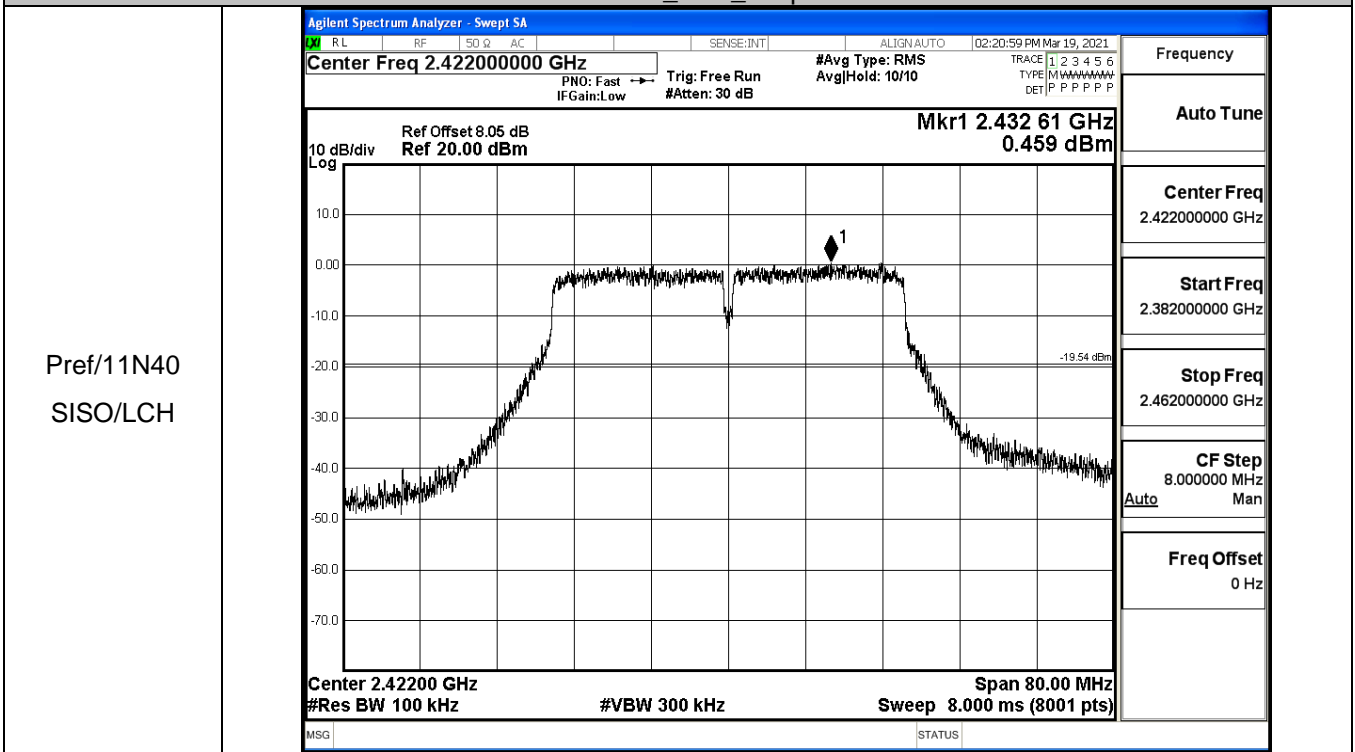
11N20SISO\_MCH\_Graphs



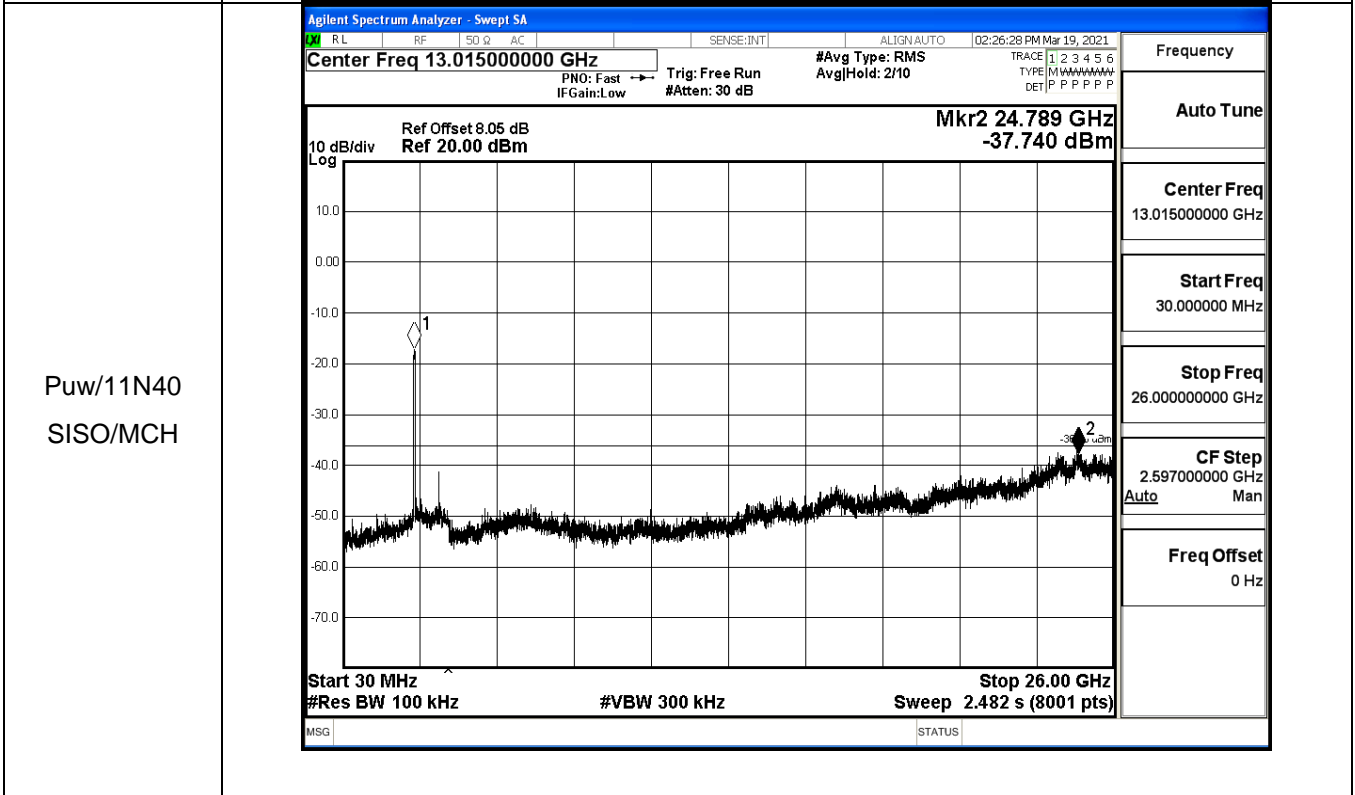
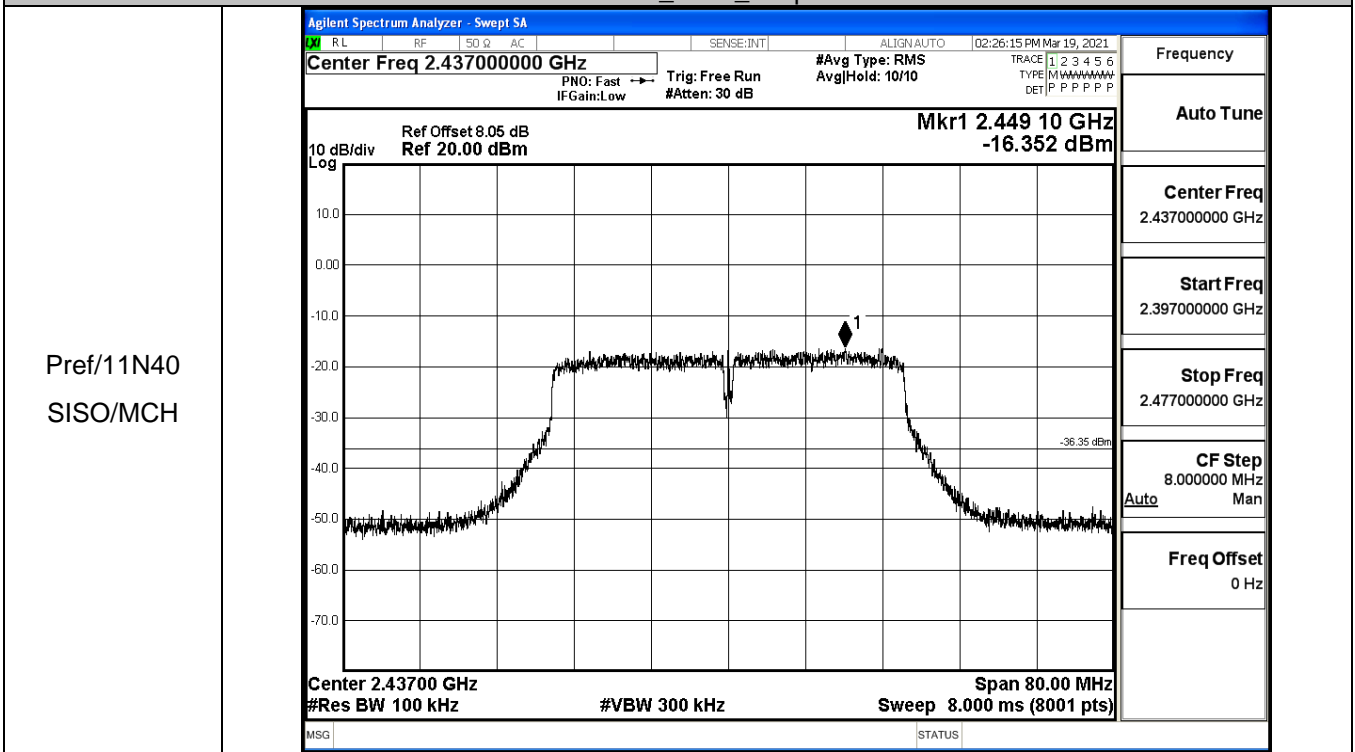
11N20SISO\_HCH\_Graphs



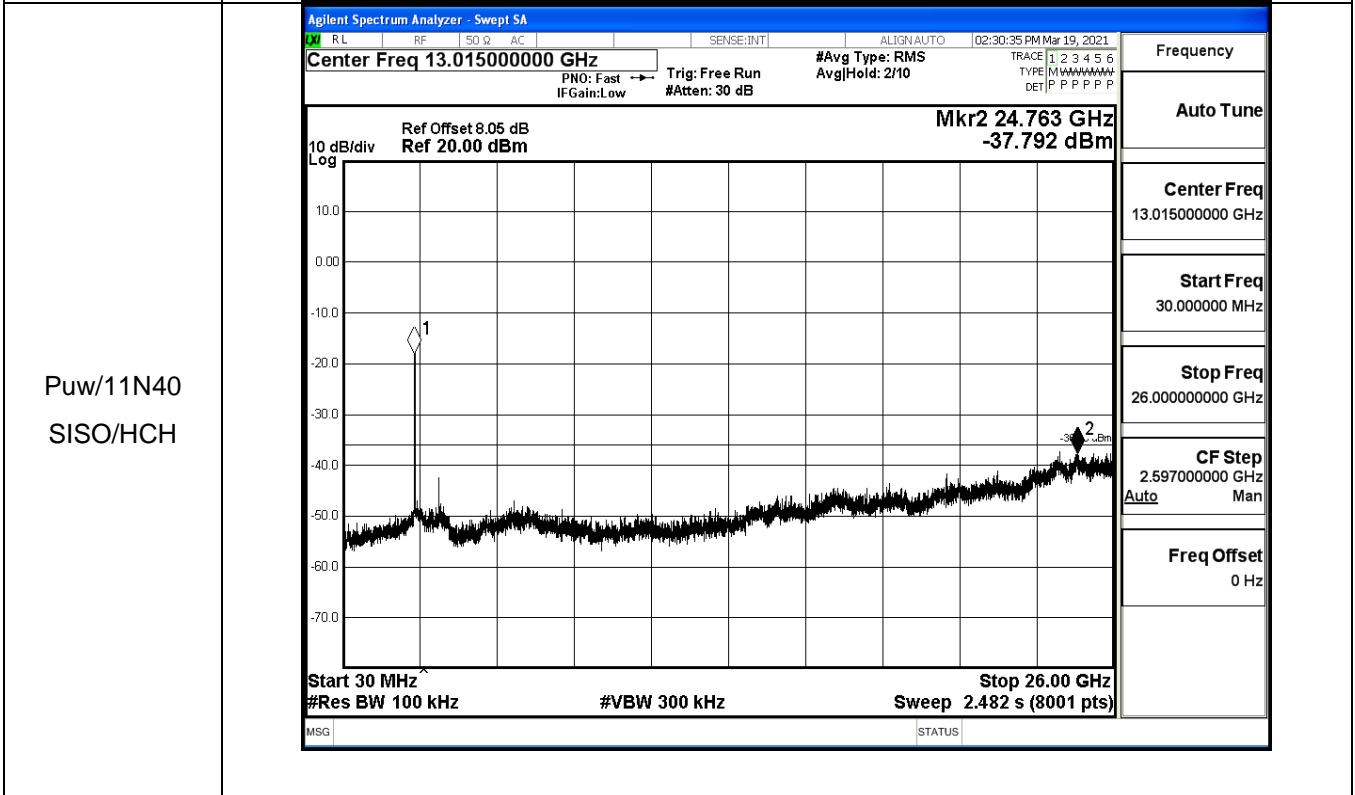
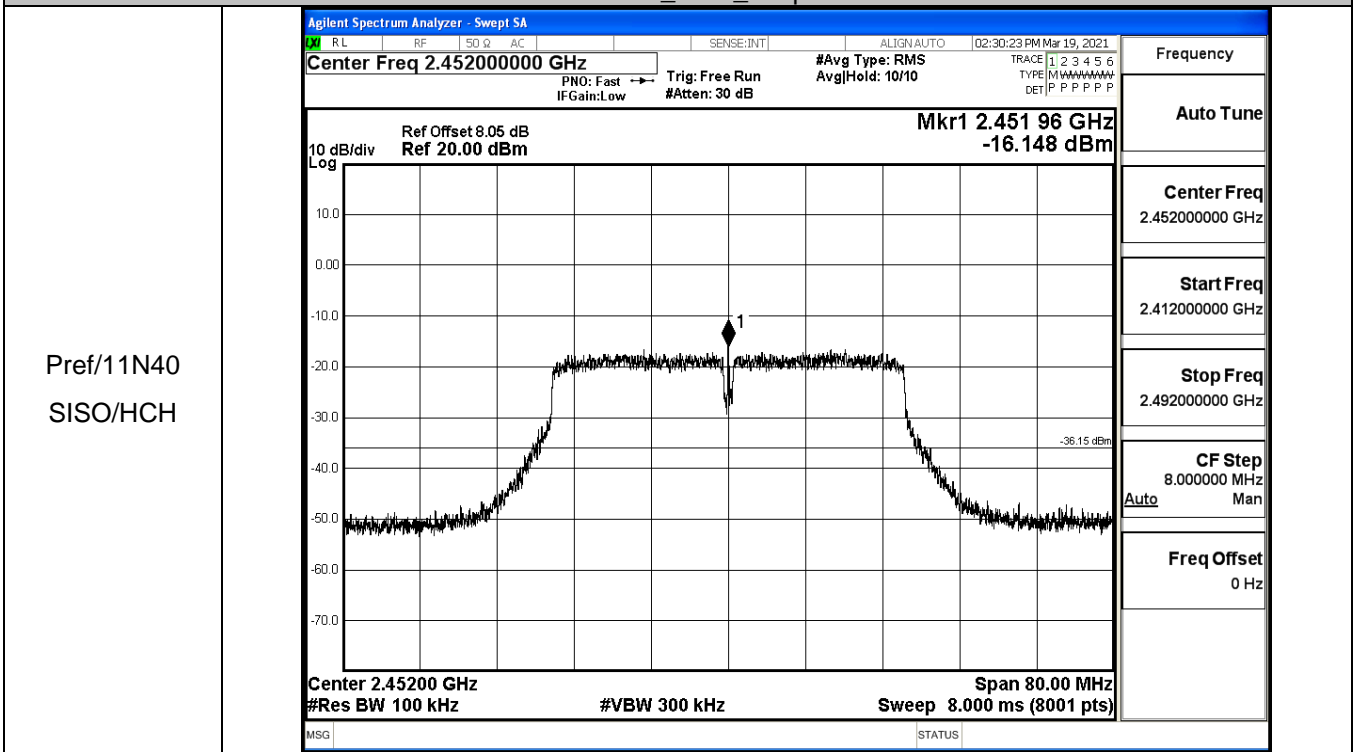
11N40SISO\_LCH\_Graphs



11N40SISO\_MCH\_Graphs

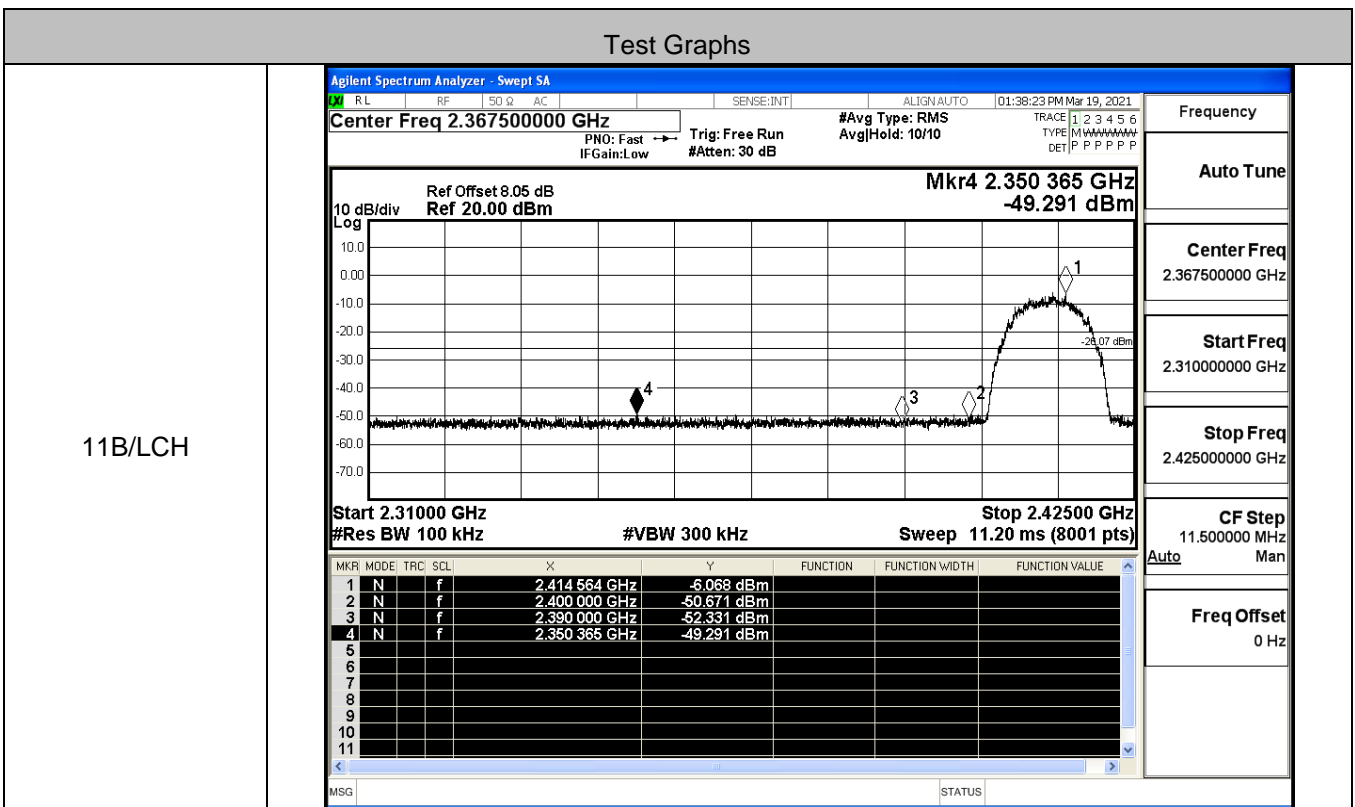


11N40SISO\_HCH\_Graphs



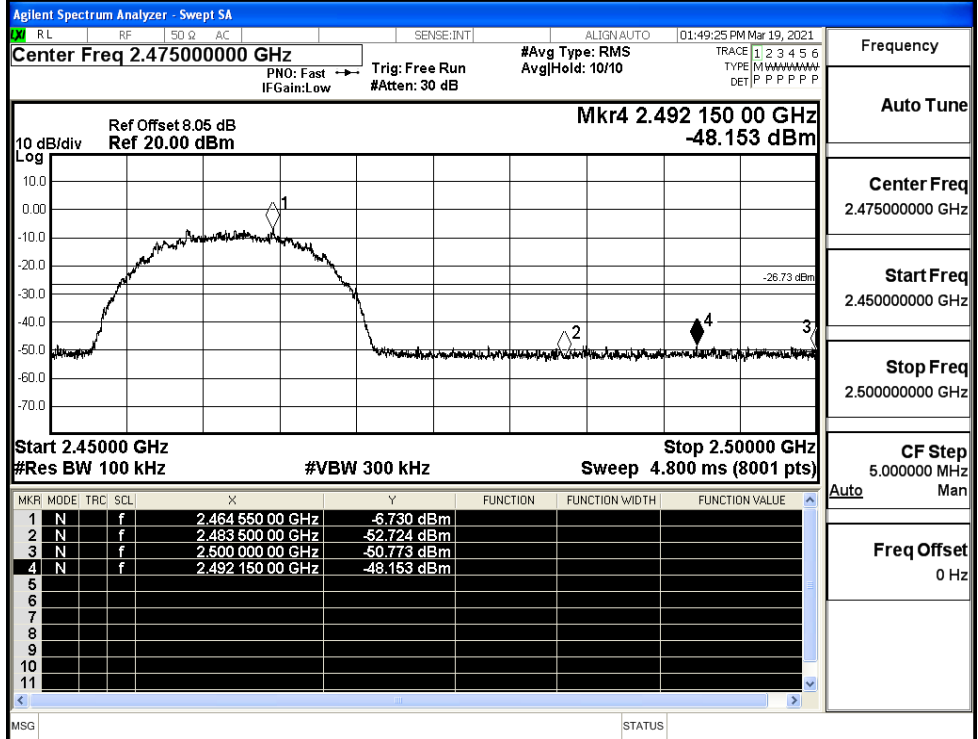
### B.6 Band-edge for RF Conducted Emissions

Mode	Channel	Carrier Power[dBm]	Max.Spurious Level [dBm]	Limit [dBm]	Verdict
11B	LCH	-6.068	-49.291	-26.07	PASS
	HCH	-6.730	-48.153	-26.73	PASS
11G	LCH	-11.826	-48.904	-31.83	PASS
	HCH	-12.574	-48.715	-32.57	PASS
11N20SISO	LCH	-12.443	-49.484	-32.44	PASS
	HCH	-13.040	-48.752	-33.04	PASS
11N40SISO	LCH	-15.966	-48.425	-35.97	PASS
	HCH	-16.377	-47.537	-36.38	PASS





11B/HCH



Frequency

Auto Tune

Center Freq  
2.47500000 GHz

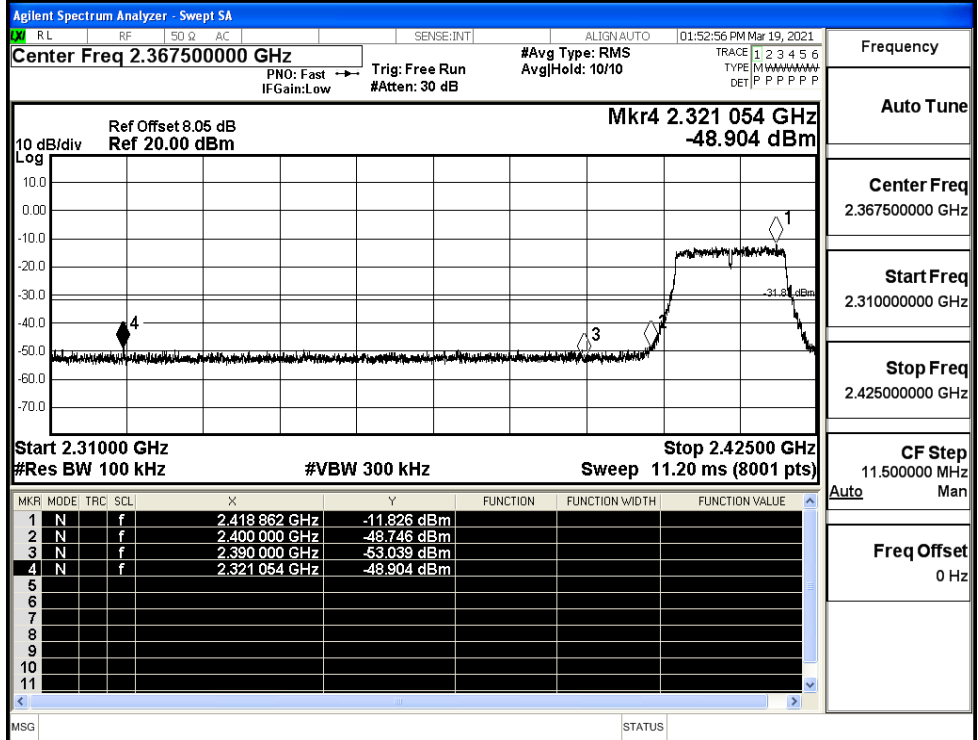
Start Freq  
2.45000000 GHz

Stop Freq  
2.50000000 GHz

CF Step  
5.000000 MHz

Freq Offset  
0 Hz

11G/LCH



Frequency

Auto Tune

Center Freq  
2.36750000 GHz

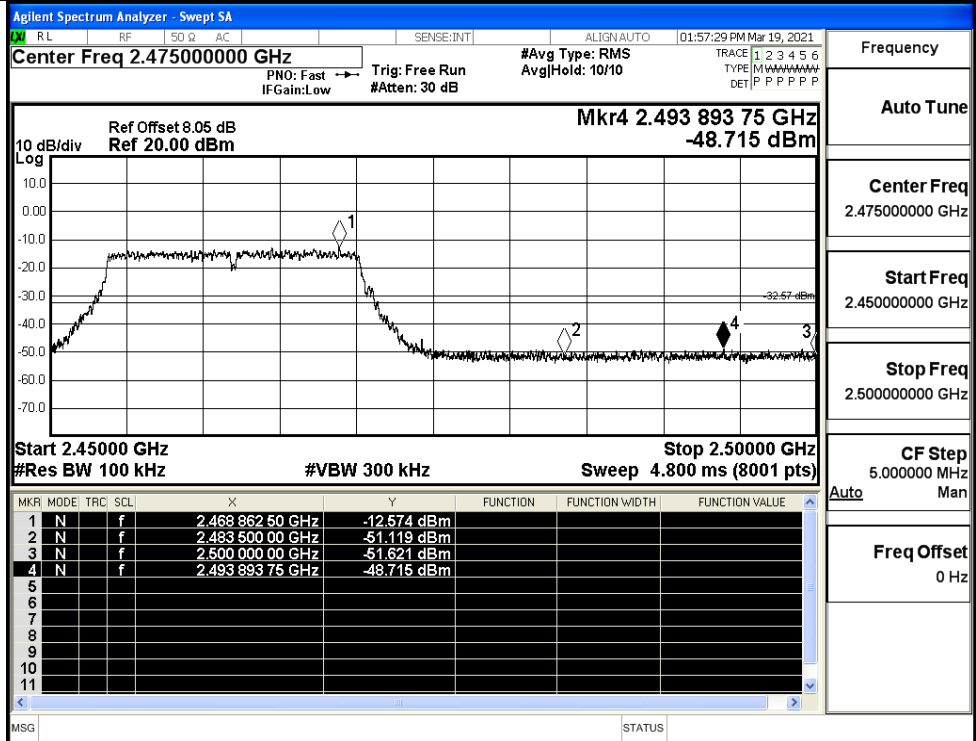
Start Freq  
2.31000000 GHz

Stop Freq  
2.42500000 GHz

CF Step  
11.500000 MHz

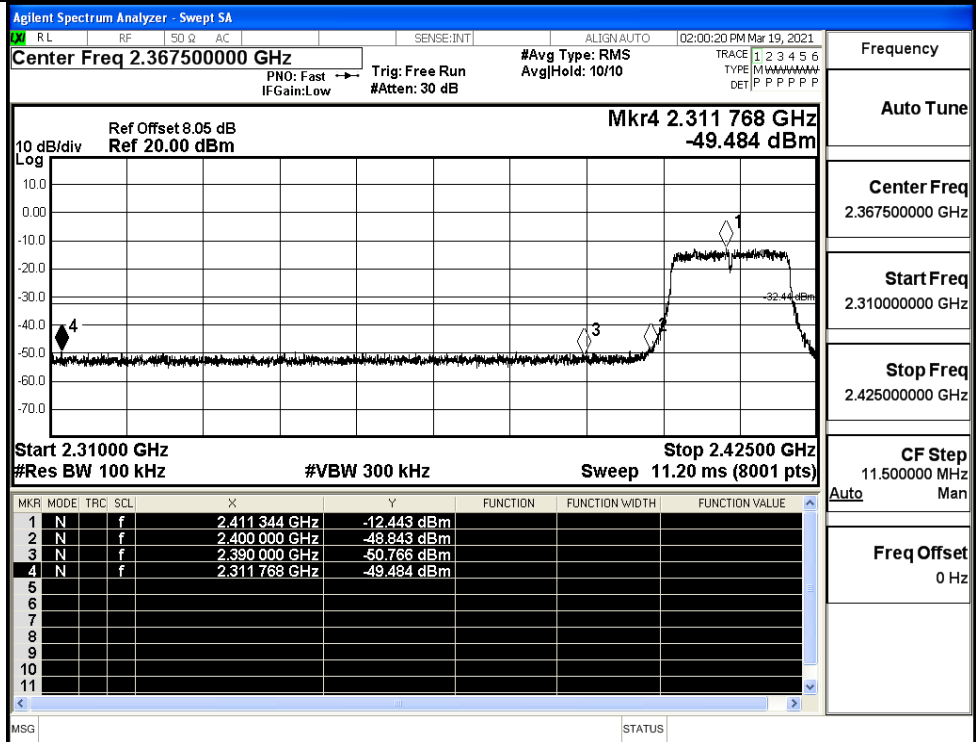
Freq Offset  
0 Hz

11G/HCH



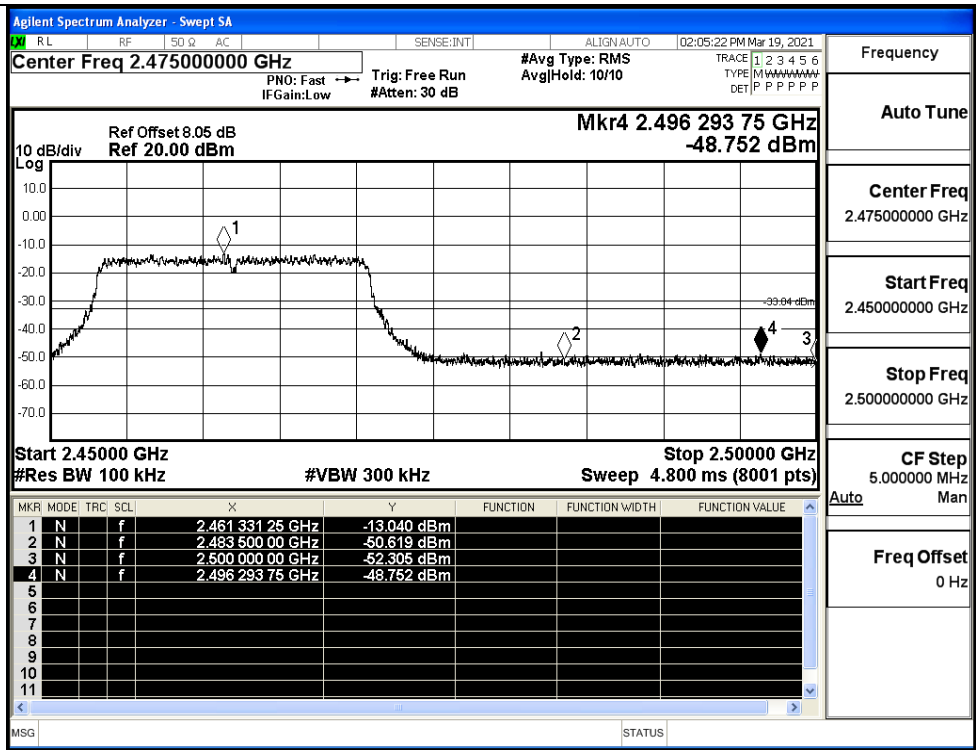
Frequency	2.475000000 GHz
Auto Tune	
Center Freq	2.475000000 GHz
Start Freq	2.450000000 GHz
Stop Freq	2.500000000 GHz
CF Step	5.000000 MHz
Freq Offset	0 Hz

11N20SISO/LCH

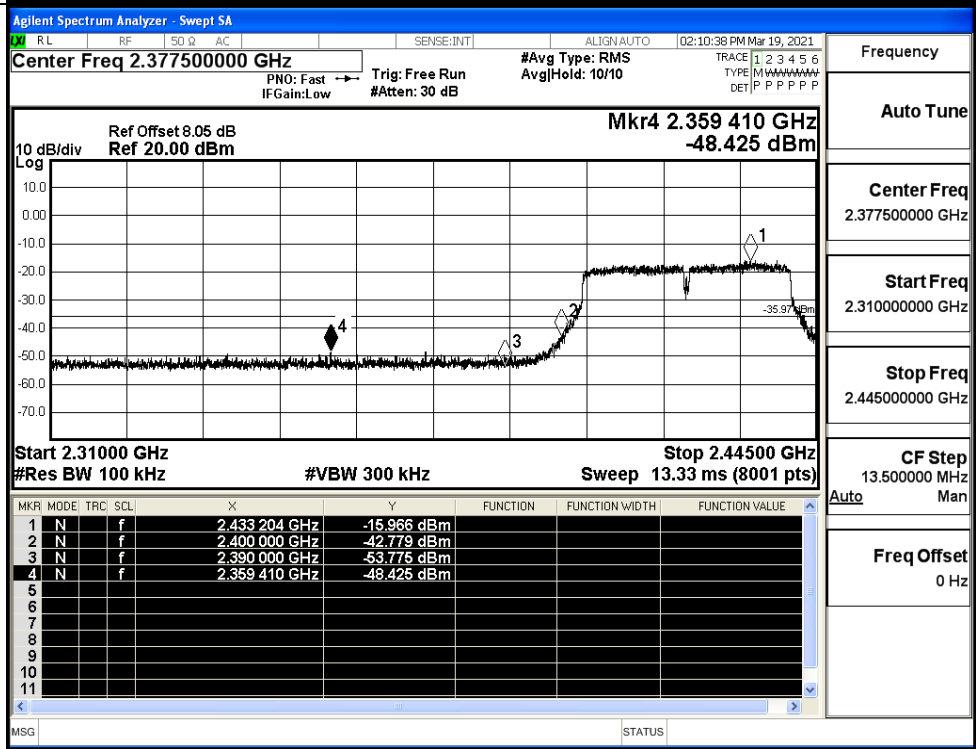


Frequency	2.367500000 GHz
Auto Tune	
Center Freq	2.367500000 GHz
Start Freq	2.310000000 GHz
Stop Freq	2.425000000 GHz
CF Step	11.500000 MHz
Freq Offset	0 Hz

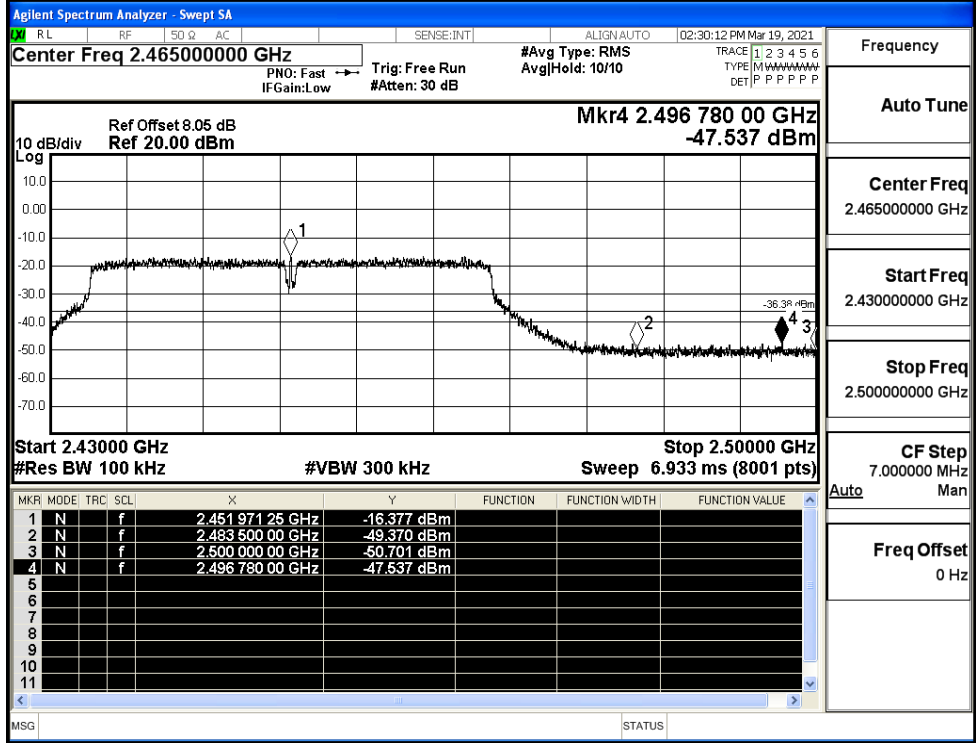
11N20SISO/HCH



11N40SISO/LCH



11N40SISO/HCH



Frequency

Auto Tune

Center Freq  
2.46500000 GHz

Start Freq  
2.43000000 GHz

Stop Freq  
2.50000000 GHz

CF Step  
7.000000 MHz

Auto Man

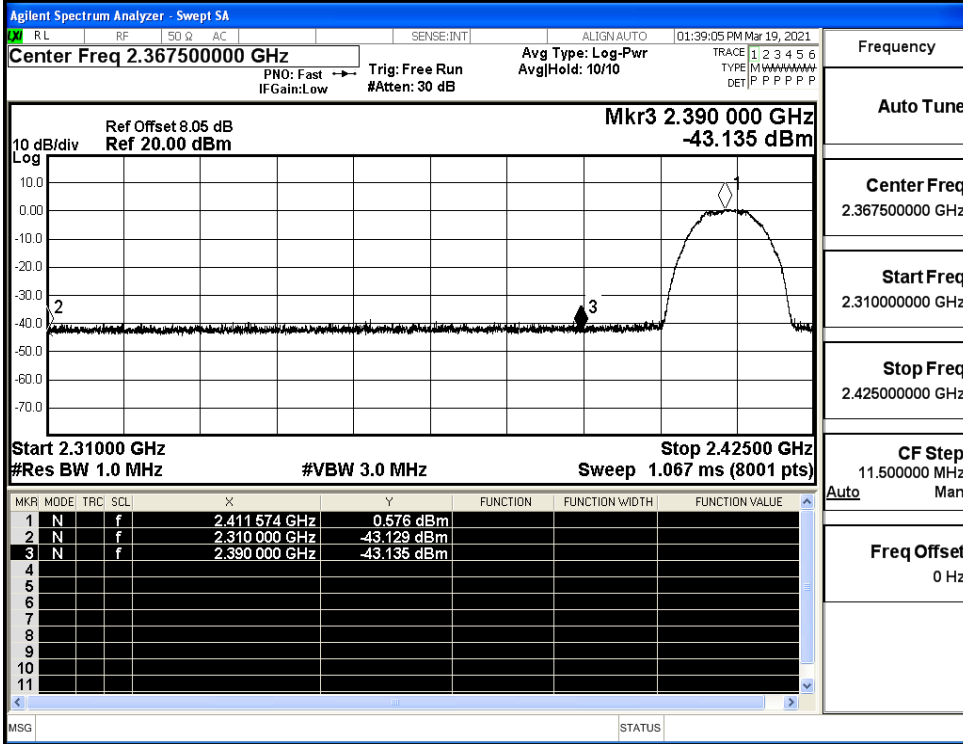
Freq Offset  
0 Hz

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

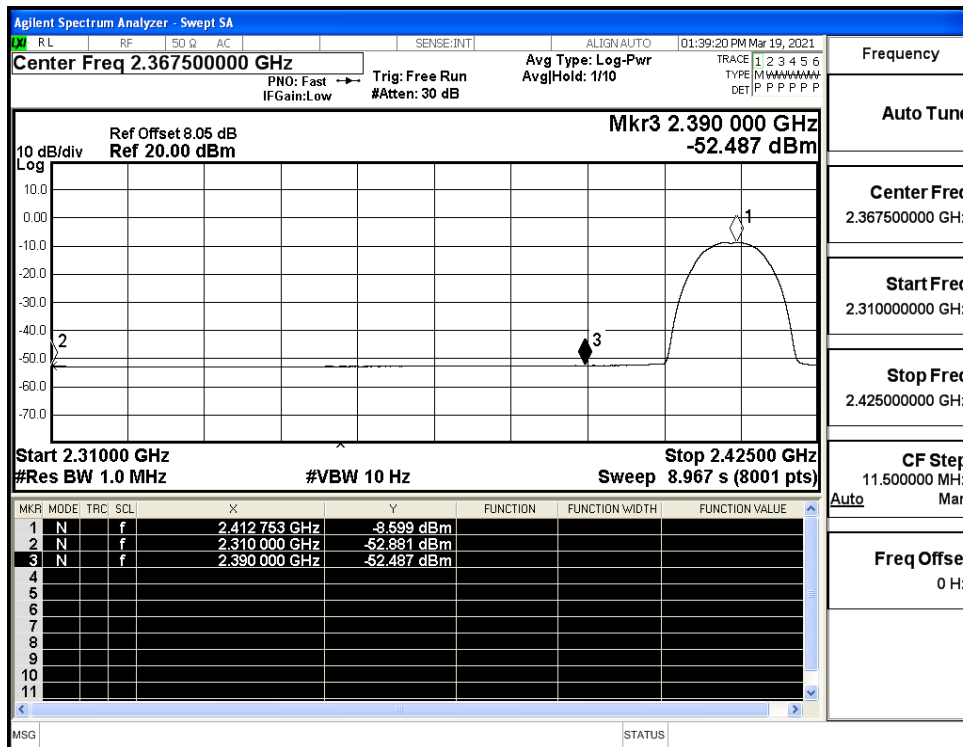
Test Mode	Test Channel	Ant	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBu V/m]	Verdict
11B	2412	Ant1	2310.0	-43.13	2.1	0	54.20	PEAK	74	PASS
	2412	Ant1	2310.0	-52.88	2.1	0	44.45	AV	54	PASS
	2412	Ant1	2390.0	-43.14	2.1	0	54.19	PEAK	74	PASS
	2412	Ant1	2390.0	-52.49	2.1	0	44.84	AV	54	PASS
	2462	Ant1	2483.5	-40.79	2.1	0	56.54	PEAK	74	PASS
	2462	Ant1	2483.5	-52.00	2.1	0	45.33	AV	54	PASS
	2462	Ant1	2500.0	-42.04	2.1	0	55.29	PEAK	74	PASS
	2462	Ant1	2500.0	-51.76	2.1	0	45.57	AV	54	PASS
11G	2412	Ant1	2310.0	-41.75	2.1	0	55.58	PEAK	74	PASS
	2412	Ant1	2310.0	-52.90	2.1	0	44.43	AV	54	PASS
	2412	Ant1	2390.0	-41.80	2.1	0	55.53	PEAK	74	PASS
	2412	Ant1	2390.0	-52.48	2.1	0	44.85	AV	54	PASS
	2462	Ant1	2483.5	-42.82	2.1	0	54.51	PEAK	74	PASS
	2462	Ant1	2483.5	-51.99	2.1	0	45.34	AV	54	PASS
	2462	Ant1	2500.0	-40.19	2.1	0	57.14	PEAK	74	PASS
	2462	Ant1	2500.0	-51.78	2.1	0	45.55	AV	54	PASS
11N20 SISO	2412	Ant1	2310.0	-42.38	2.1	0	54.95	PEAK	74	PASS
	2412	Ant1	2310.0	-52.88	2.1	0	44.45	AV	54	PASS
	2412	Ant1	2390.0	-41.29	2.1	0	56.04	PEAK	74	PASS
	2412	Ant1	2390.0	-52.49	2.1	0	44.84	AV	54	PASS
	2462	Ant1	2483.5	-41.81	2.1	0	55.52	PEAK	74	PASS
	2462	Ant1	2483.5	-51.98	2.1	0	45.35	AV	54	PASS
	2462	Ant1	2500.0	-41.85	2.1	0	55.48	PEAK	74	PASS
	2462	Ant1	2500.0	-51.76	2.1	0	45.57	AV	54	PASS
11N40 SISO	2422	Ant1	2310.0	-43.11	2.1	0	54.22	PEAK	74	PASS
	2422	Ant1	2310.0	-52.90	2.1	0	44.43	AV	54	PASS

	2422	Ant1	2390.0	-41.42	2.1	0	55.91	PEAK	74	PASS
	2422	Ant1	2390.0	-52.39	2.1	0	44.94	AV	54	PASS
	2452	Ant1	2483.5	-39.99	2.1	0	57.34	PEAK	74	PASS
	2452	Ant1	2483.5	-50.45	2.1	0	46.88	AV	54	PASS
	2452	Ant1	2500.0	-39.68	2.1	0	57.65	PEAK	74	PASS
	2452	Ant1	2500.0	-50.71	2.1	0	46.62	AV	54	PASS

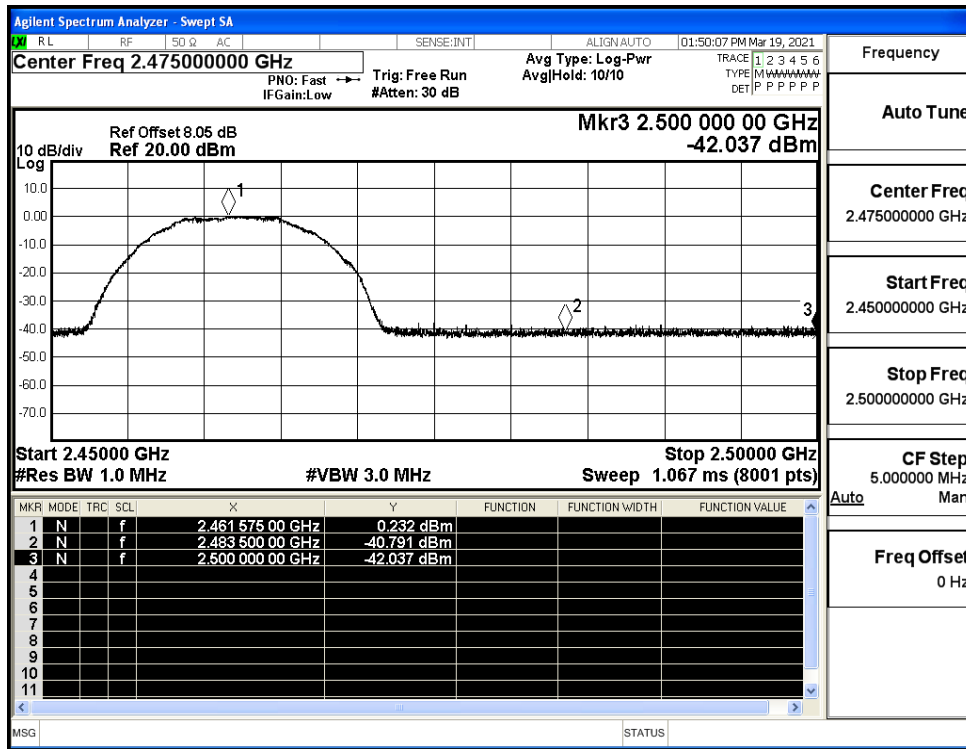
Restrict-band band-edge measurements\_11B\_2412\_Ant1\_PEAK



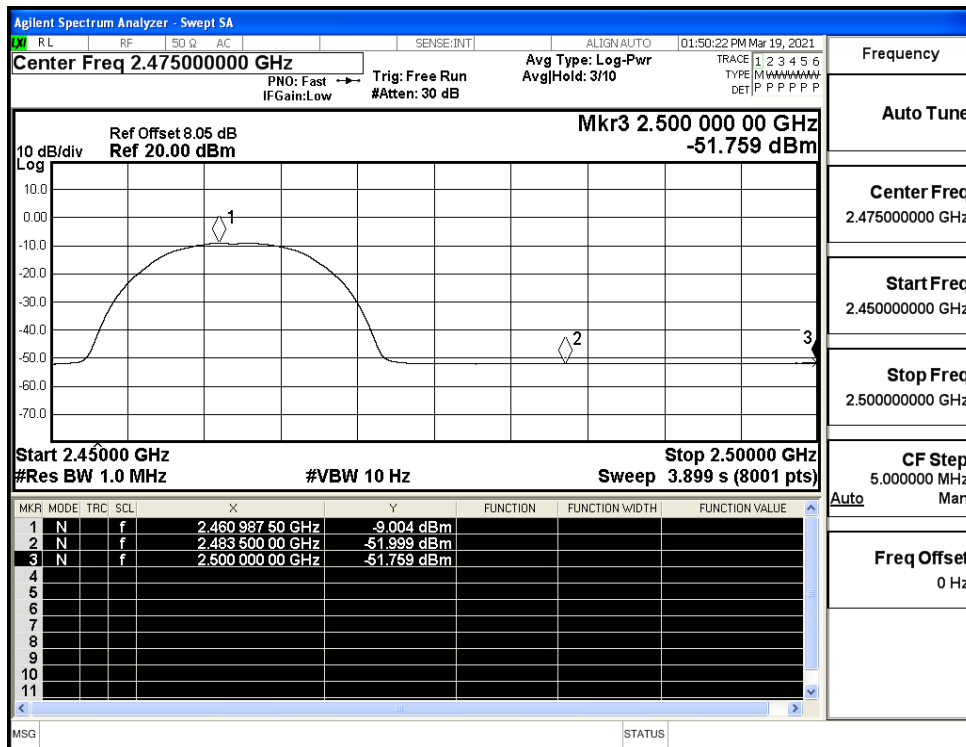
Restrict-band band-edge measurements\_11B\_2412\_Ant1\_AV



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

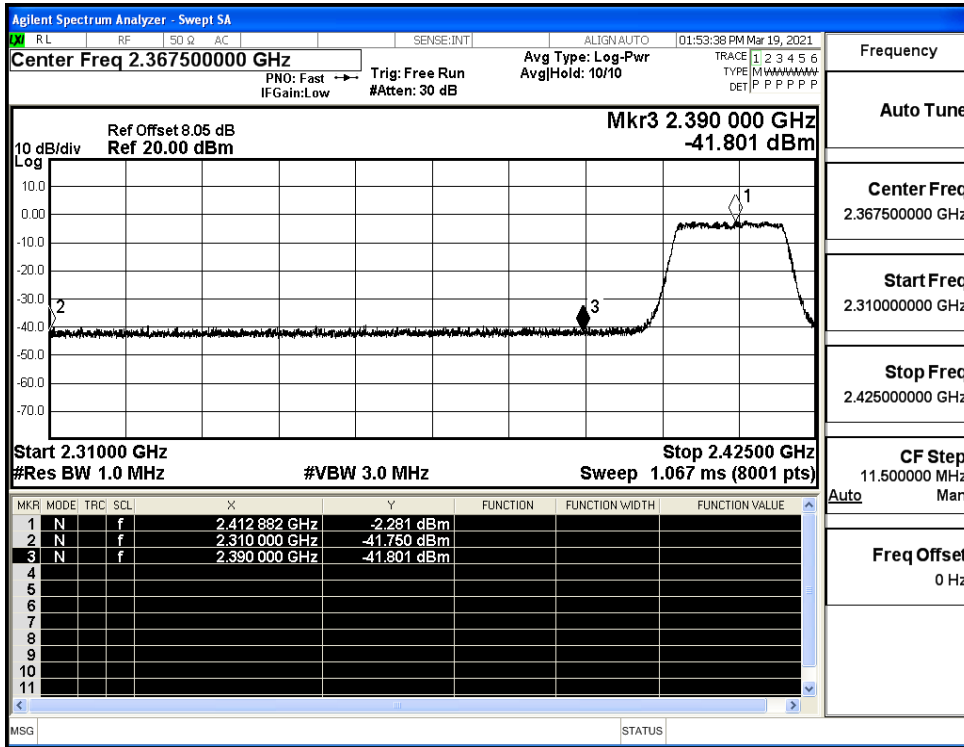


Restrict-band band-edge measurements\_11B\_2462\_Ant1\_AV

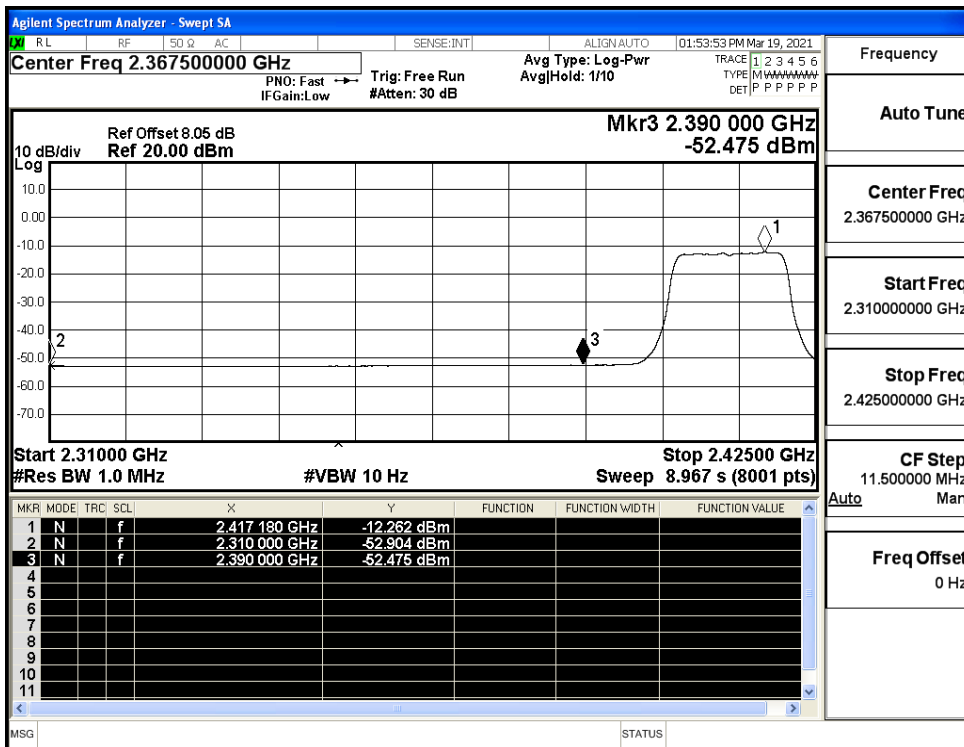




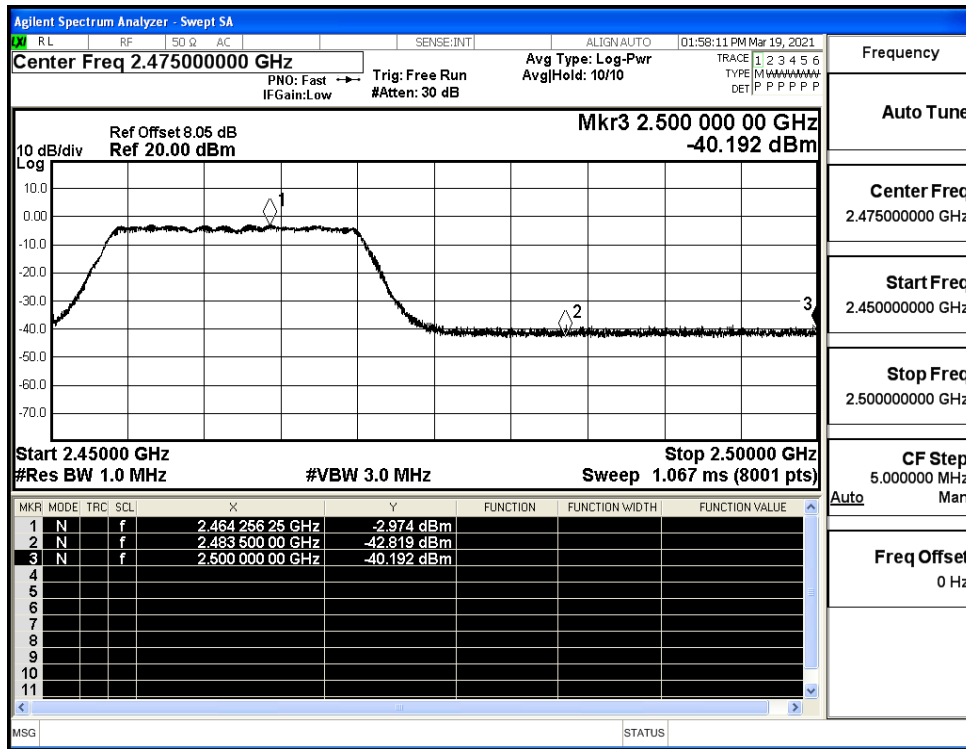
Restrict-band band-edge measurements\_11G\_2412\_Ant1\_PEAK



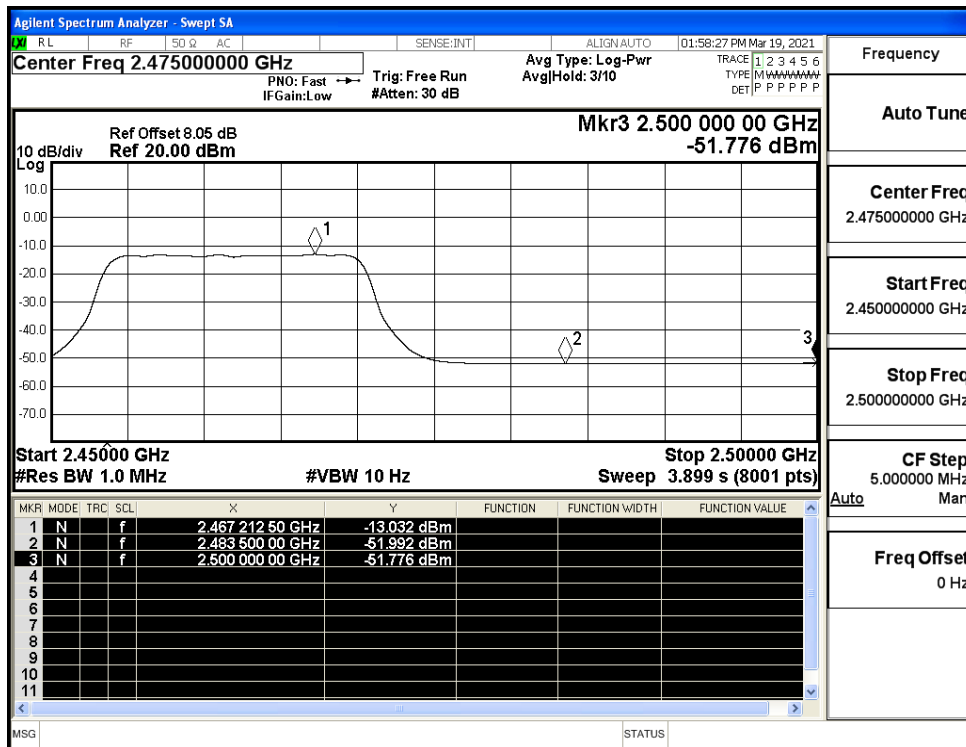
Restrict-band band-edge measurements\_11G\_2412\_Ant1\_AV



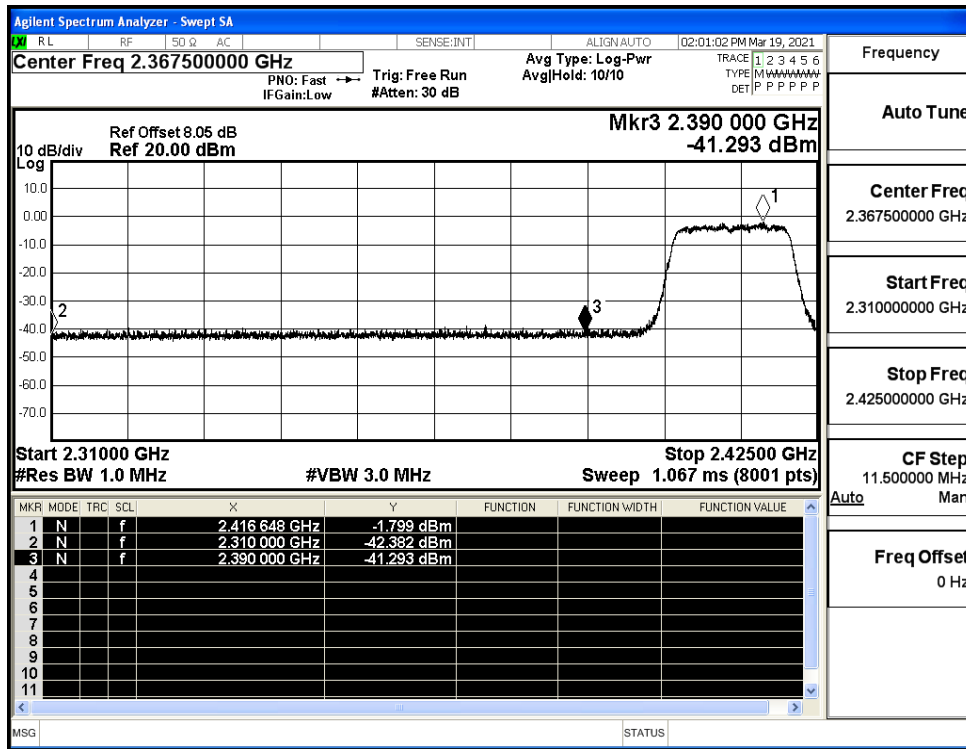
Restrict-band band-edge measurements\_11G\_2462\_Ant1\_PEAK



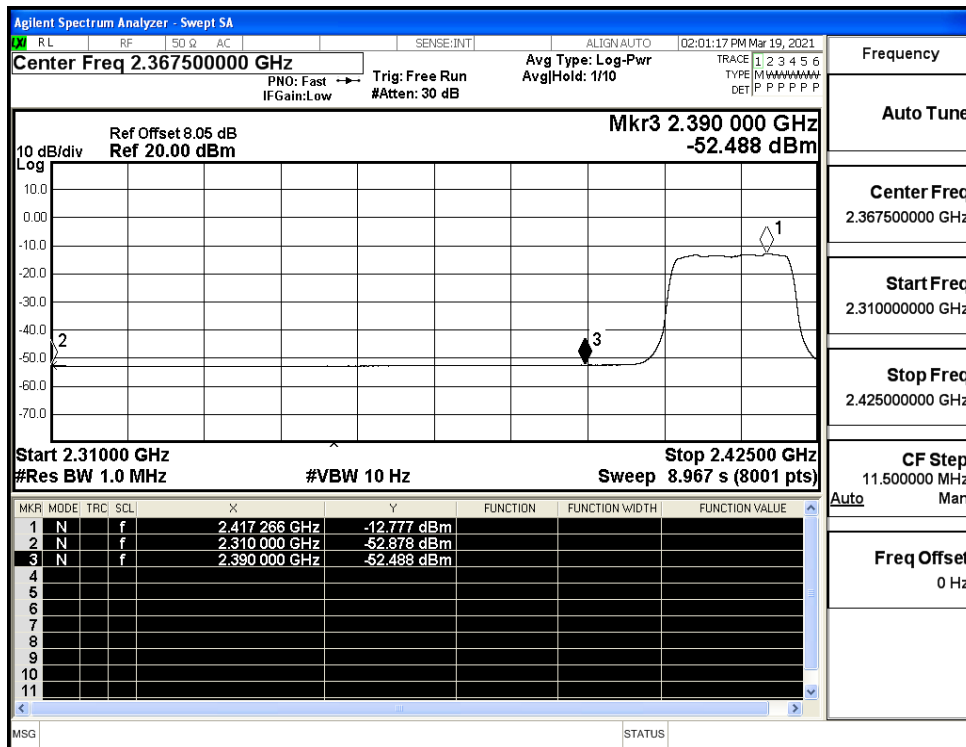
Restrict-band band-edge measurements\_11G\_2462\_Ant1\_AV



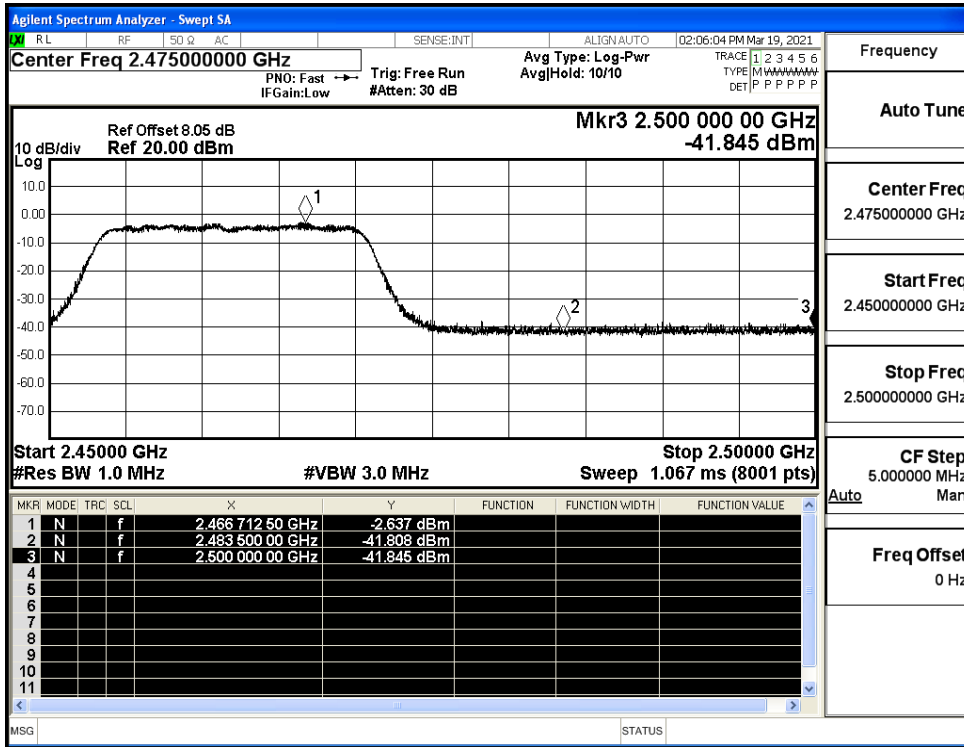
Restrict-band band-edge measurements\_11N20SISO\_2412\_Ant1\_PEAK



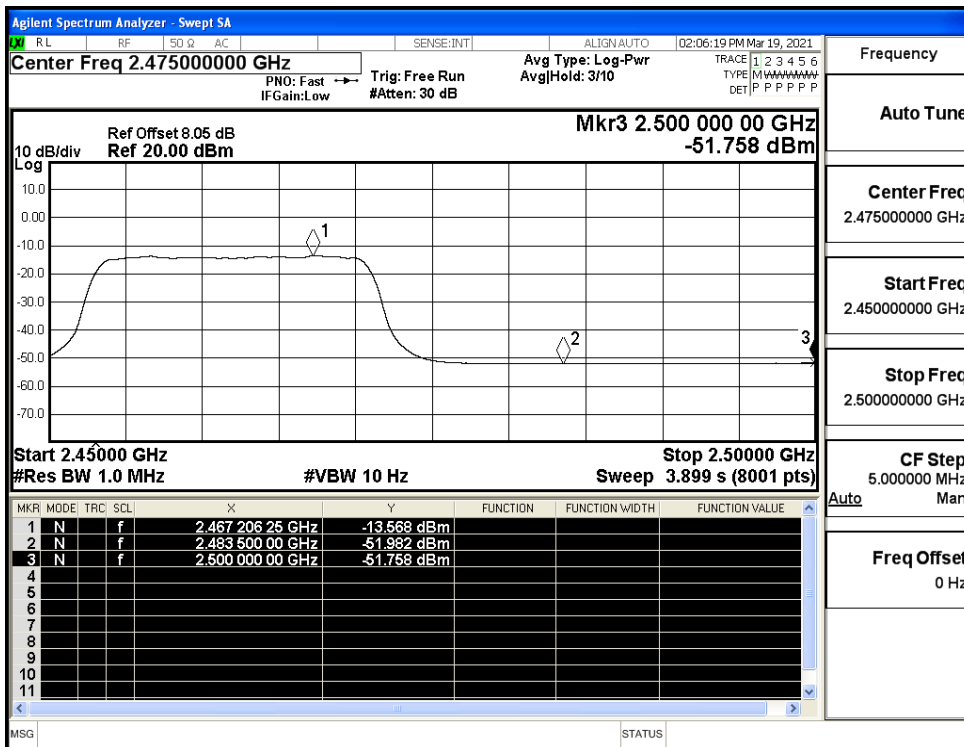
Restrict-band band-edge measurements\_11N20SISO\_2412\_Ant1\_AV



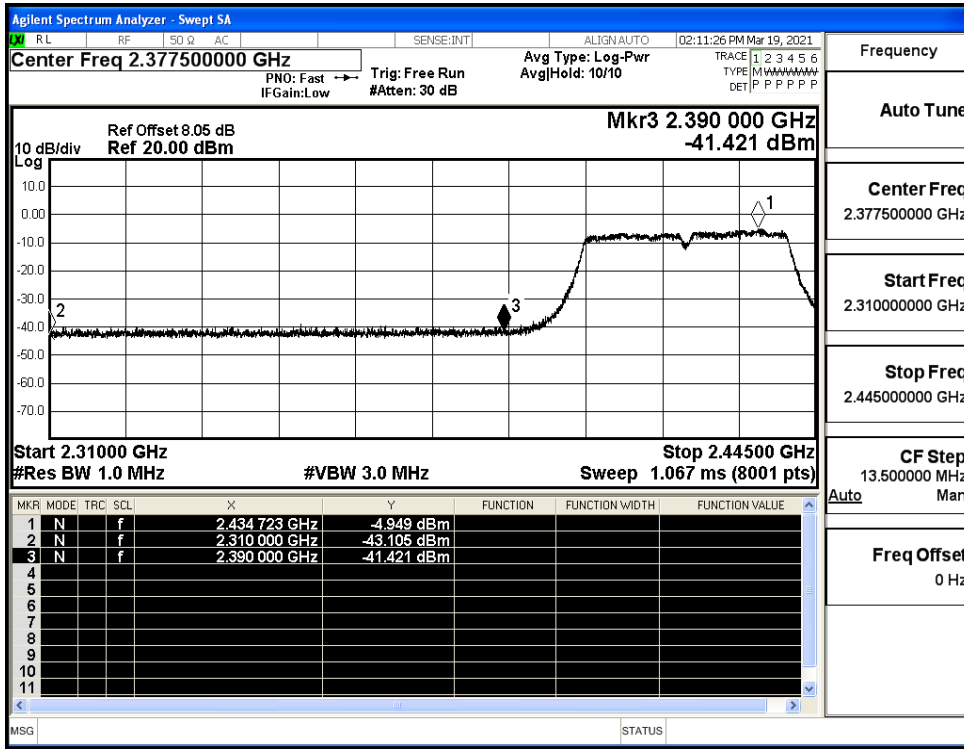
Restrict-band band-edge measurements\_11N20SISO\_2462\_Ant1\_PEAK



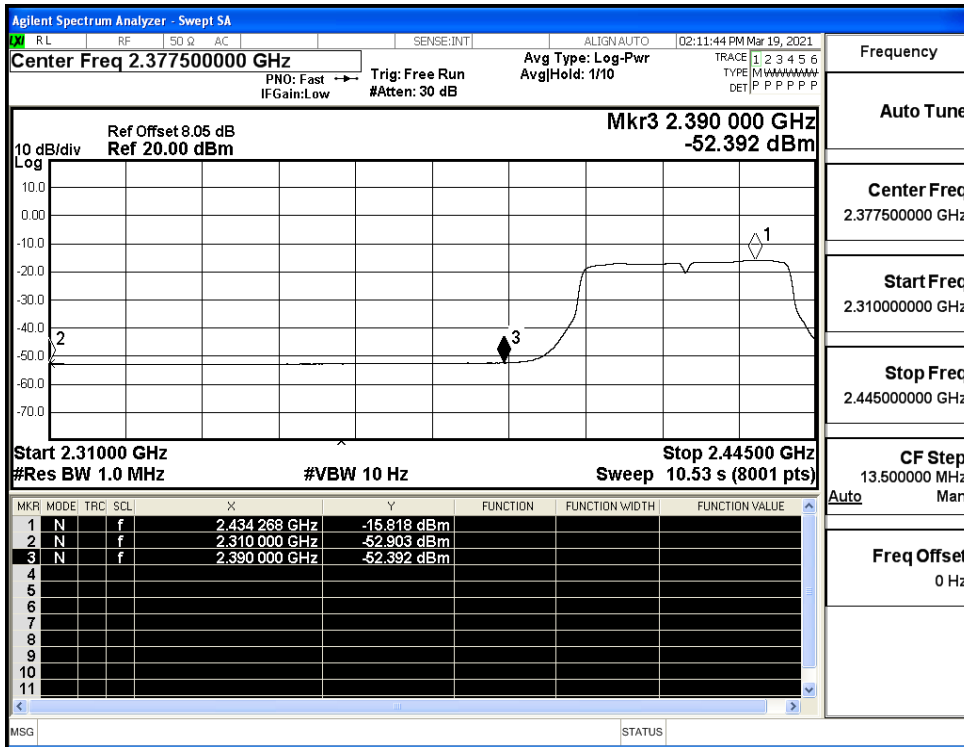
Restrict-band band-edge measurements\_11N20SISO\_2462\_Ant1\_AV



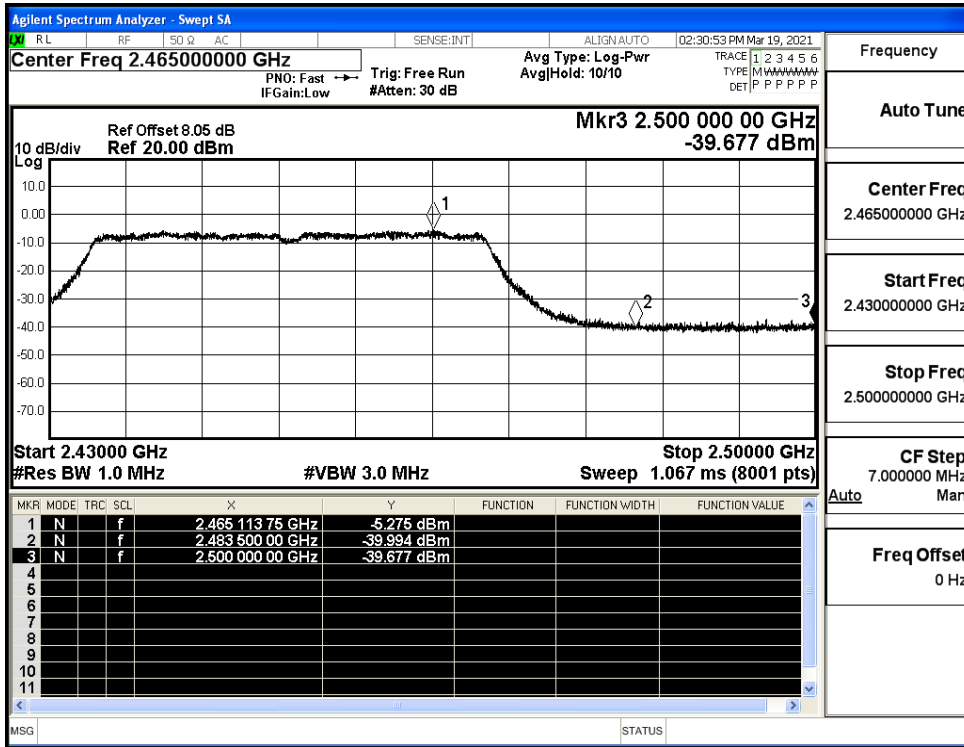
Restrict-band band-edge measurements\_11N40SISO\_2422\_Ant1\_PEAK



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

