

Appendix C

RF Test Data for 2.4G WIFI (Conducted Measurement)

Product Name: 4G SMARTPHONE

Test Model: X7

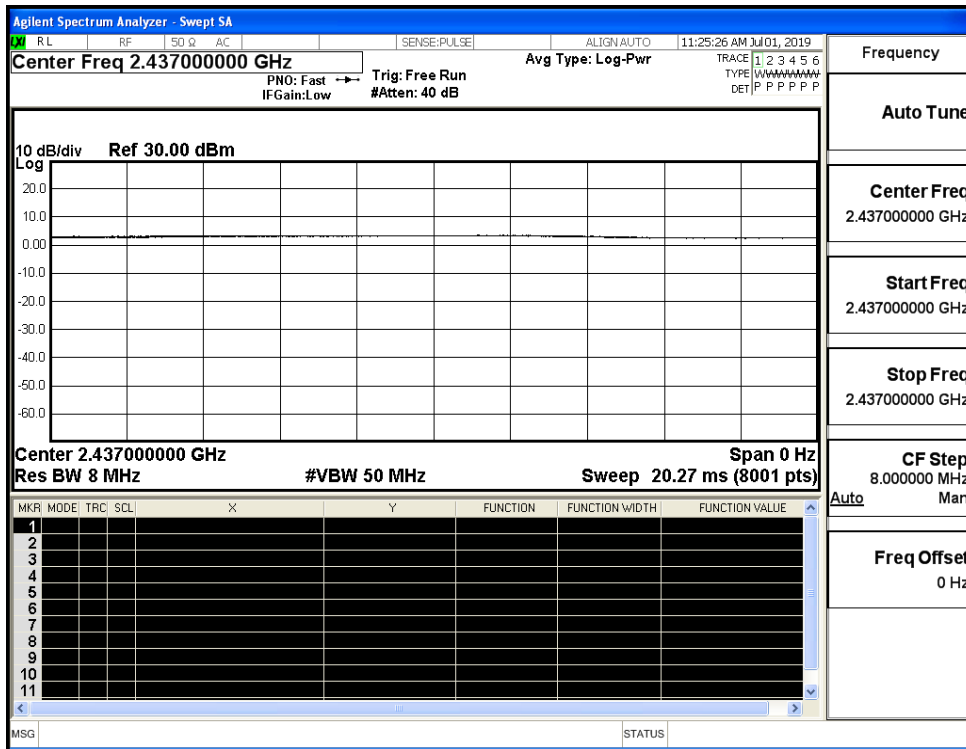
Environmental Conditions

Temperature:	23.9 ° C
Relative Humidity:	53.4%
ATM Pressure:	100.0 kPa
Test Engineer:	Diamond.Lu
Supervised by:	Wang.Chuang

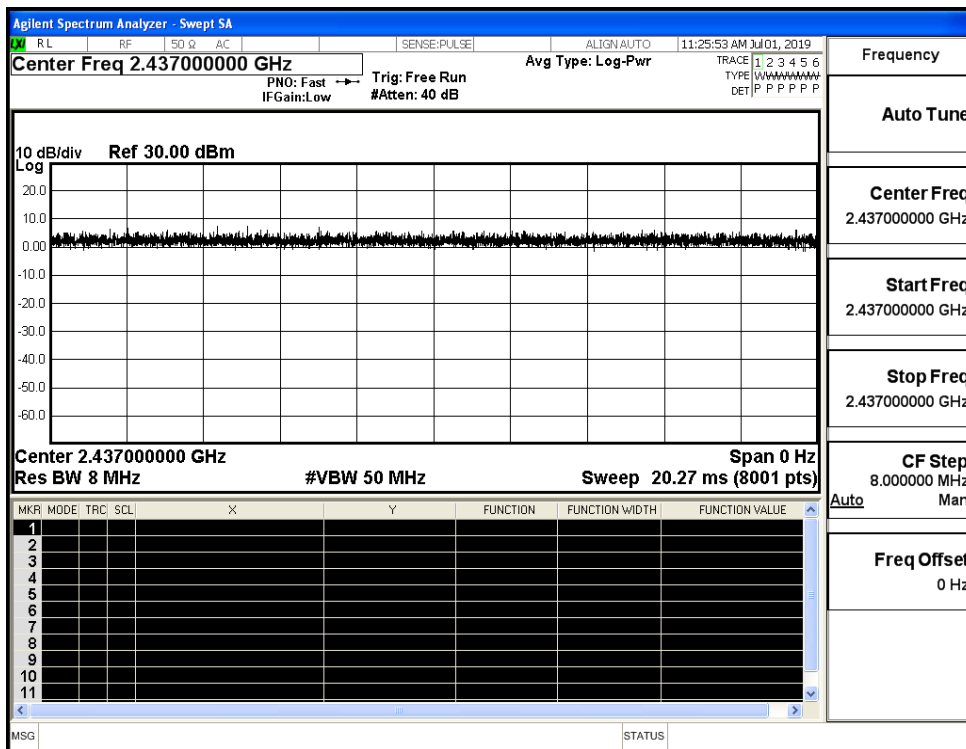
C.1 Duty Cycle

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

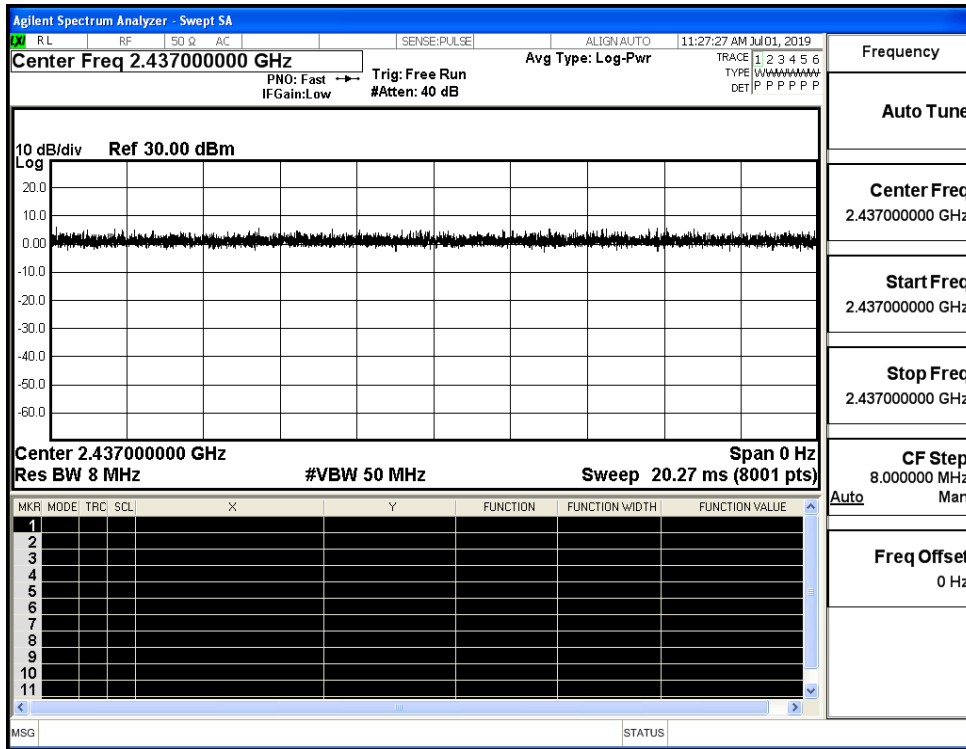
Duty Cycle_11B_2437_Ant1



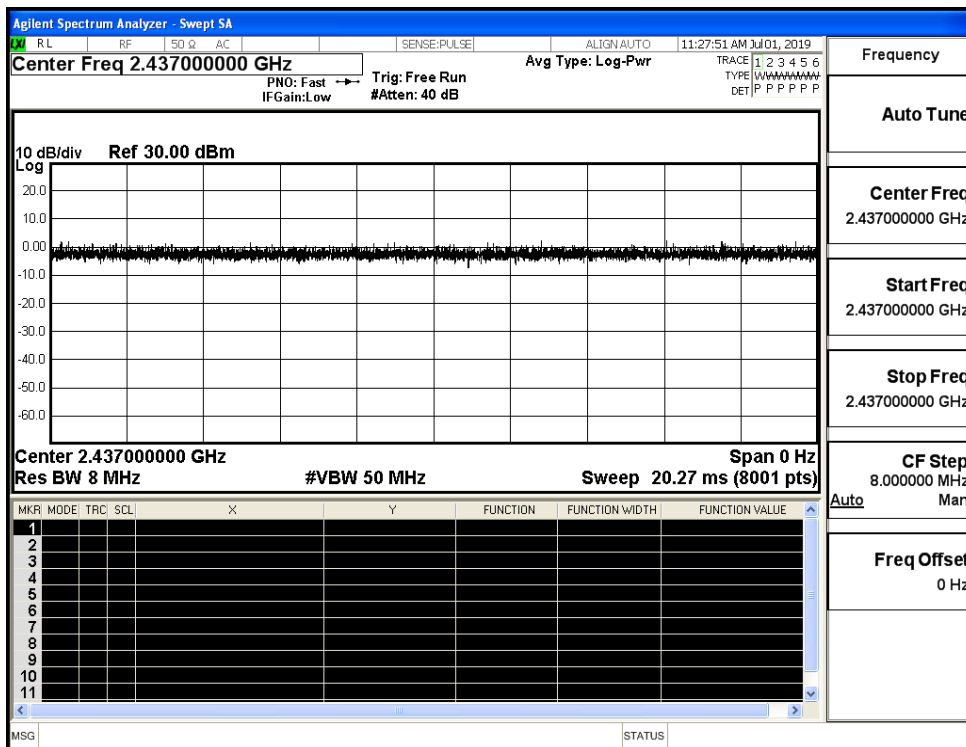
Duty Cycle_11G_2437_Ant1



Duty Cycle_11N20SISO_2437_Ant1



Duty Cycle_11N40SISO_2437_Ant1



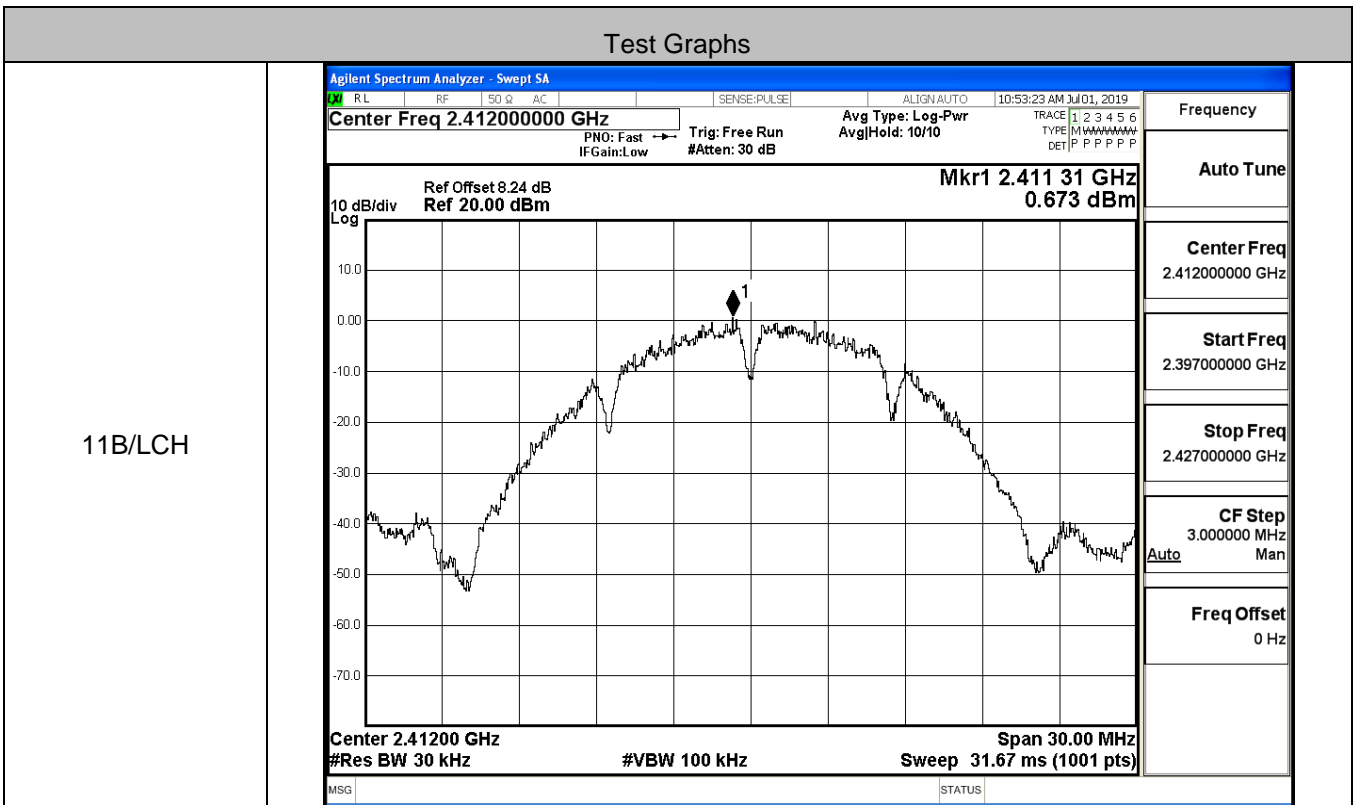
C.2 Maximum Conducted Output Power

Mode	Channel	Meas. Peak Level [dBm]	Meas. Average Level [dBm]	Limit [dBm]	Verdict
11B	LCH	15.66	12.91	30	PASS
	MCH	15.26	12.52	30	PASS
	HCH	15.28	12.54	30	PASS
11G	LCH	14.78	8.46	30	PASS
	MCH	13.62	7.32	30	PASS
	HCH	13.91	7.70	30	PASS
11N20SISO	LCH	15.40	9.25	30	PASS
	MCH	14.39	8.15	30	PASS
	HCH	14.96	8.76	30	PASS
11N40SISO	LCH	15.54	8.81	30	PASS
	MCH	14.25	7.45	30	PASS
	HCH	15.09	8.34	30	PASS

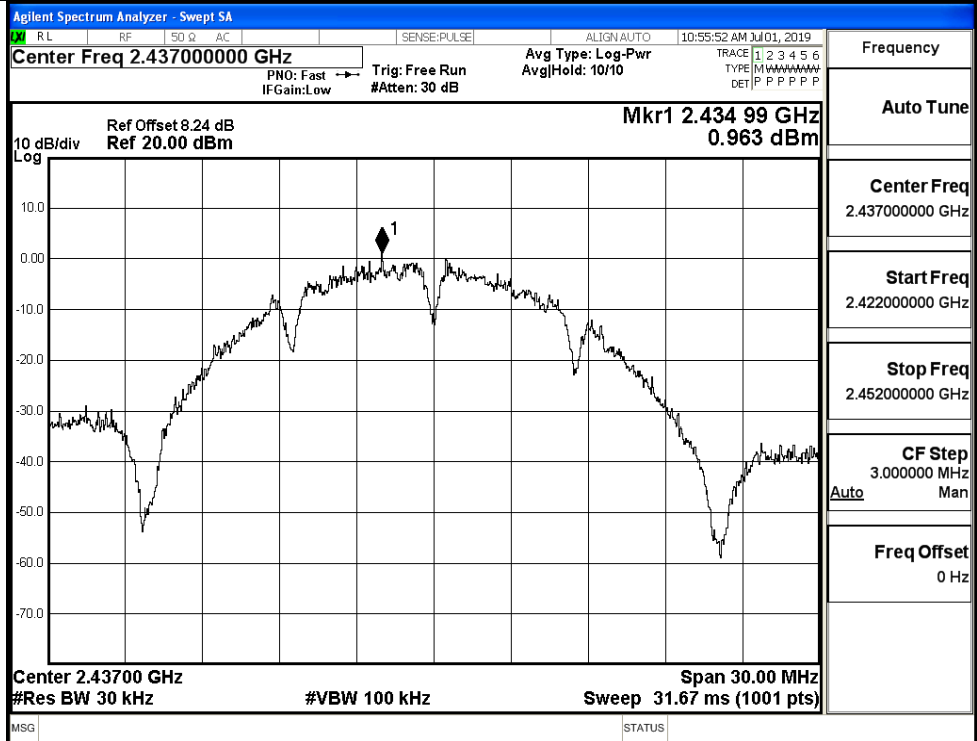
C.3 Maximum Power Spectral Density

Mode	Channel	Meas.Level [dBm/30KHz]	Convert Factor	Result [dBm/3KHz]	Limit [dBm/3KHz]	Verdict
11B	LCH	0.673	-10	-9.327	8	PASS
	MCH	0.963	-10	-9.037	8	PASS
	HCH	0.384	-10	-9.616	8	PASS
11G	LCH	-8.725	-10	-18.725	8	PASS
	MCH	-9.212	-10	-19.212	8	PASS
	HCH	-8.701	-10	-18.701	8	PASS
11N20SISO	LCH	-8.729	-10	-18.729	8	PASS
	MCH	-8.777	-10	-18.777	8	PASS
	HCH	-8.170	-10	-18.170	8	PASS
11N40SISO	LCH	-6.267	-10	-16.267	8	PASS
	MCH	-11.417	-10	-21.417	8	PASS
	HCH	-11.717	-10	-21.717	8	PASS

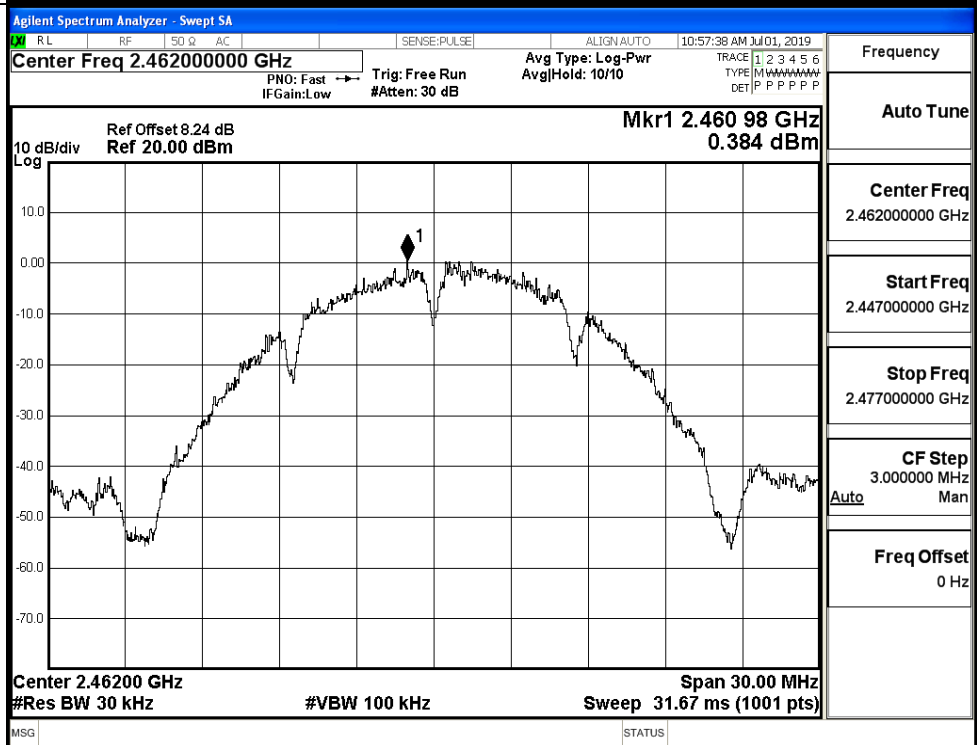
***Note: The Convert Factor = 10*log(3KHz/30KHz) = -10



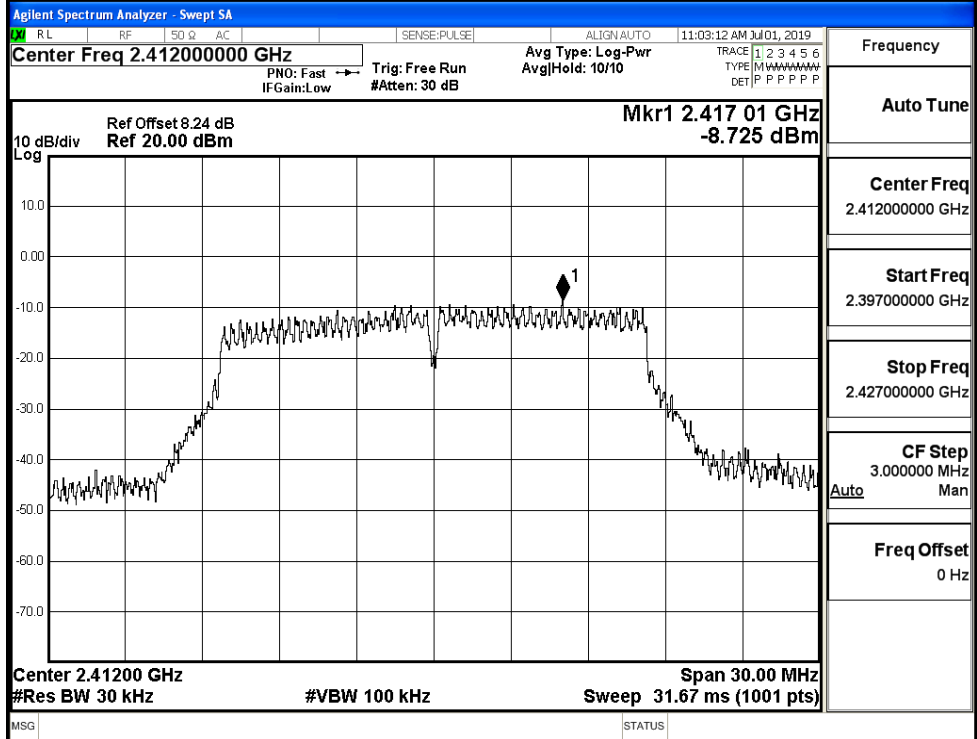
11B/MCH



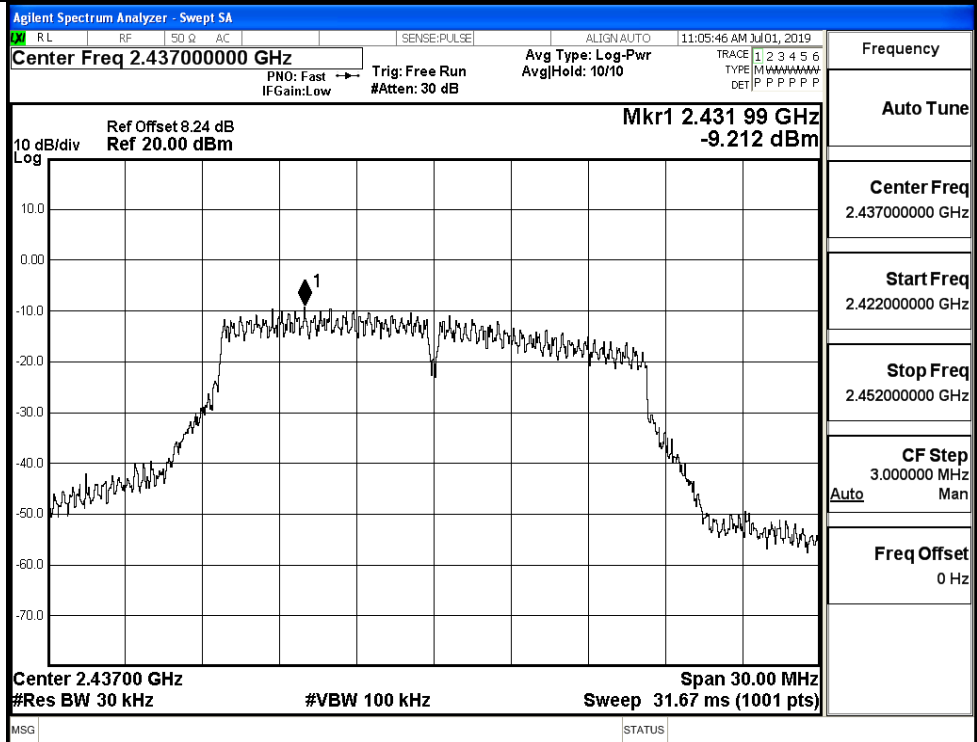
11B/HCH



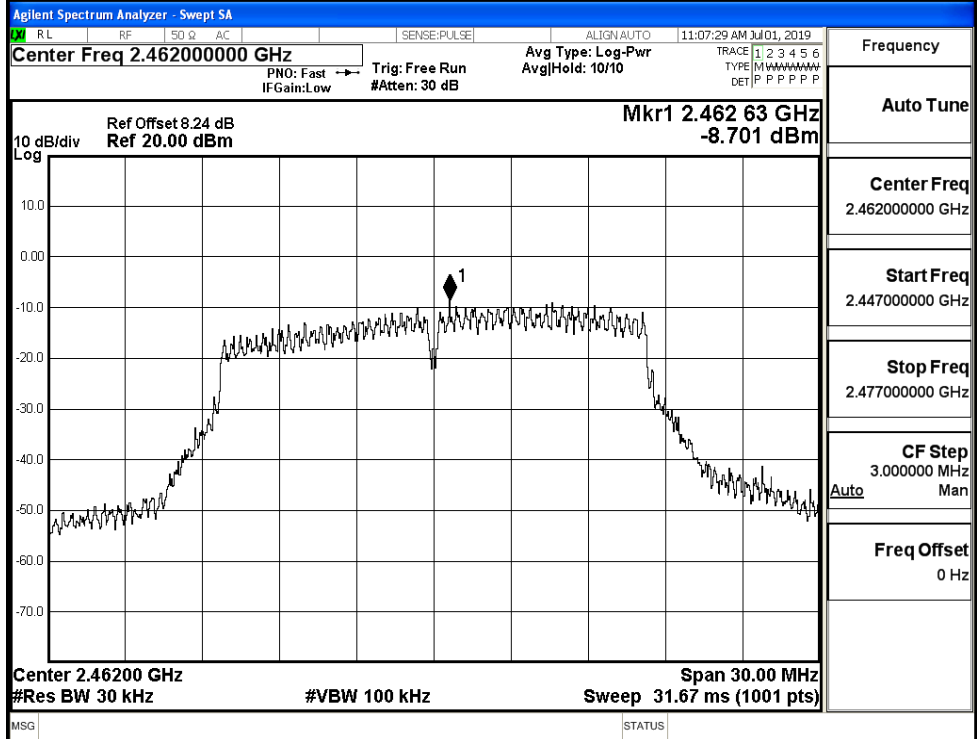
11G/LCH



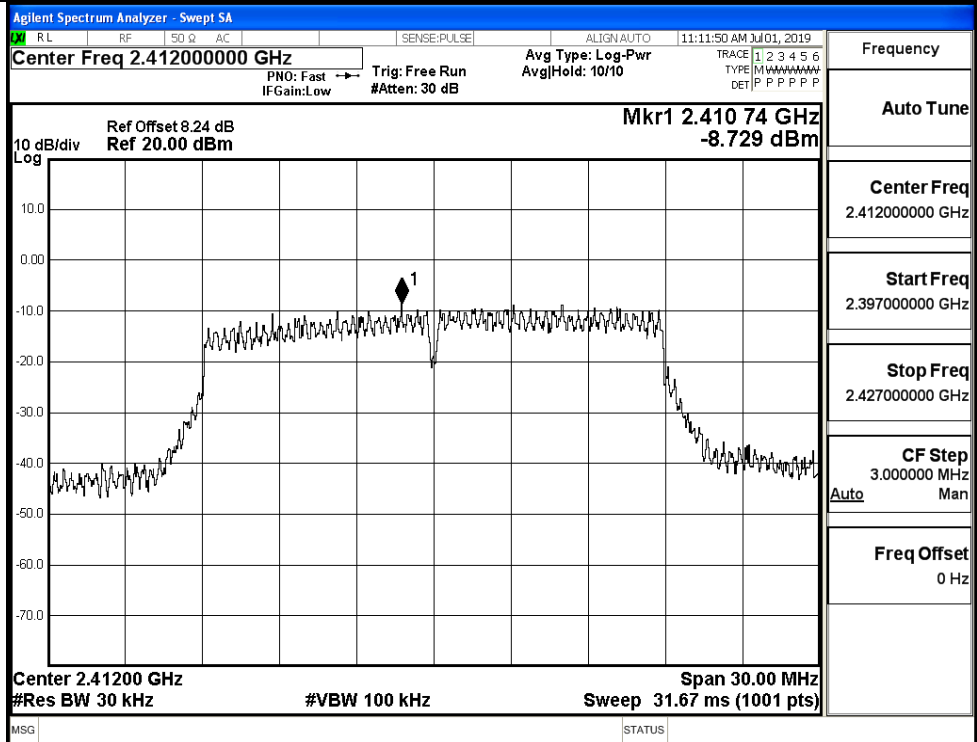
11G/MCH



11G/HCH

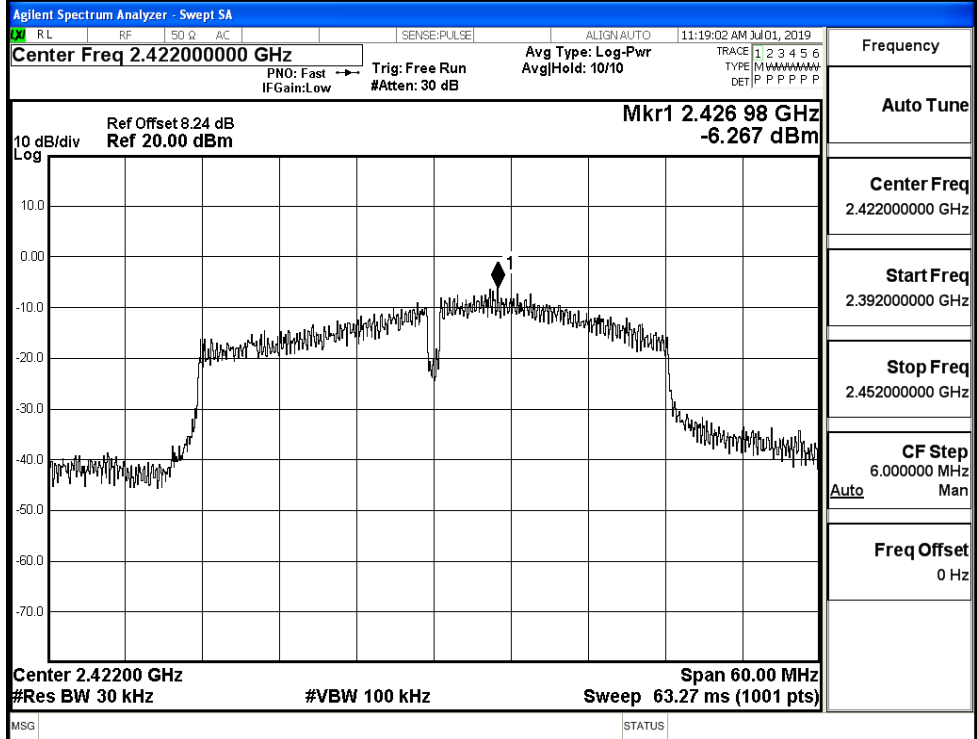


11N20SISO/LCH



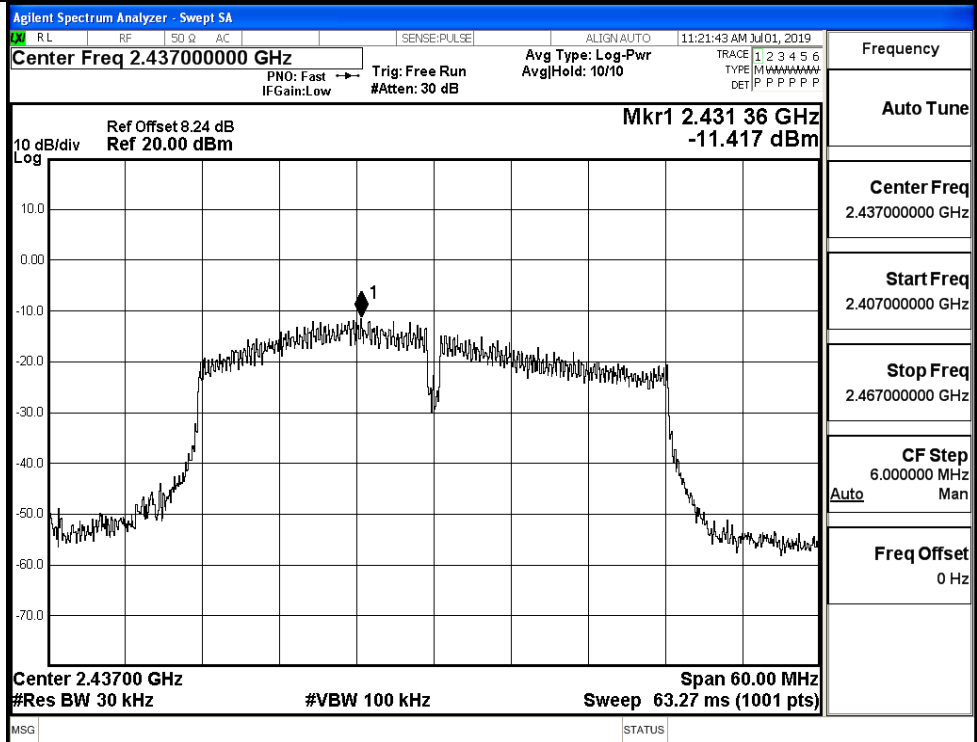
<p>11N20SISO/MCH</p>	<p>Agilent Spectrum Analyzer - Swept SA Center Freq 2.43700000 GHz PNO: Fast IFGain:Low Trig: Free Run #Atten: 30 dB Avg Type: Log-Pwr AvgHold: 10/10 Ref Offset 8.24 dB Ref 20.00 dBm Mkr1 2.433 88 GHz -8.777 dBm 10 dB/div Log Center 2.43700 GHz #Res BW 30 kHz #VBW 100 kHz Span 30.00 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 Ref Offset 8.24 dB Ref 20.00 dBm Mkr1 2.463 62 GHz -8.170 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>

11N40SISO/LCH



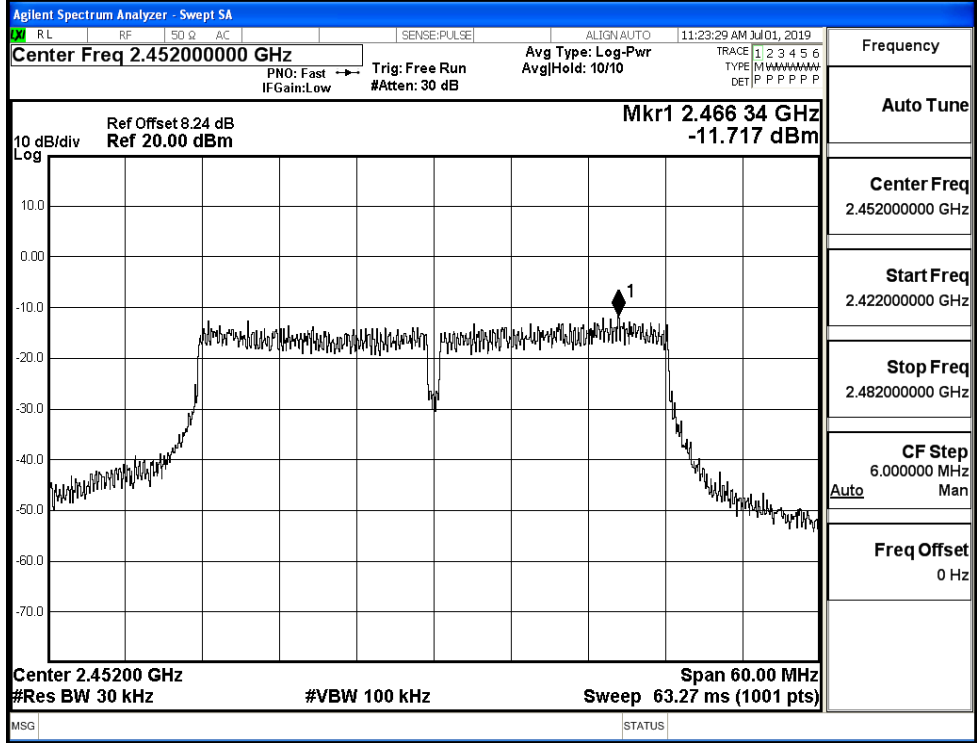
Frequency
Auto Tune
Center Freq 2.42200000 GHz
Start Freq 2.392000000 GHz
Stop Freq 2.452000000 GHz
CF Step 6.000000 MHz Auto Man
Freq Offset 0 Hz

11N40SISO/MCH



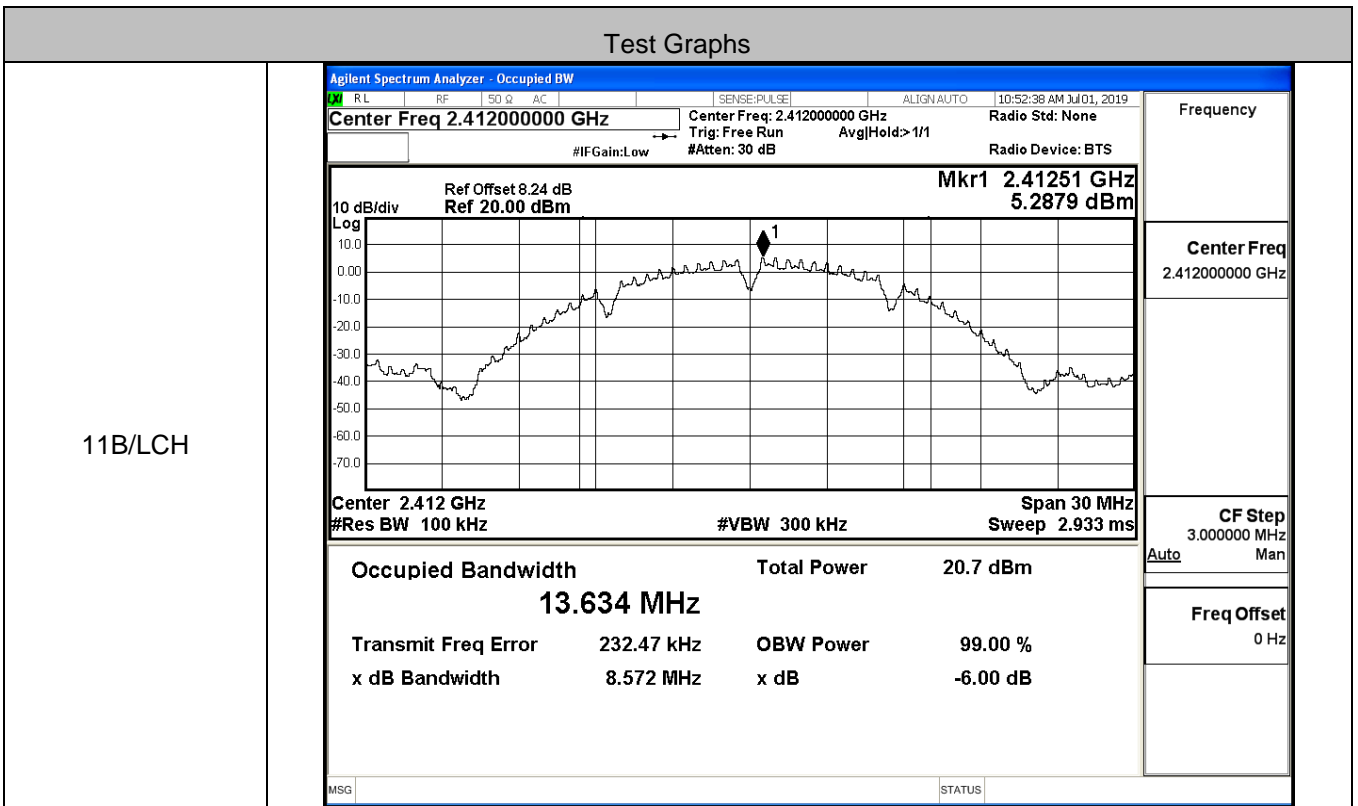
Frequency
Auto Tune
Center Freq 2.437000000 GHz
Start Freq 2.407000000 GHz
Stop Freq 2.467000000 GHz
CF Step 6.000000 MHz Auto Man
Freq Offset 0 Hz

11N40SISO/HCH

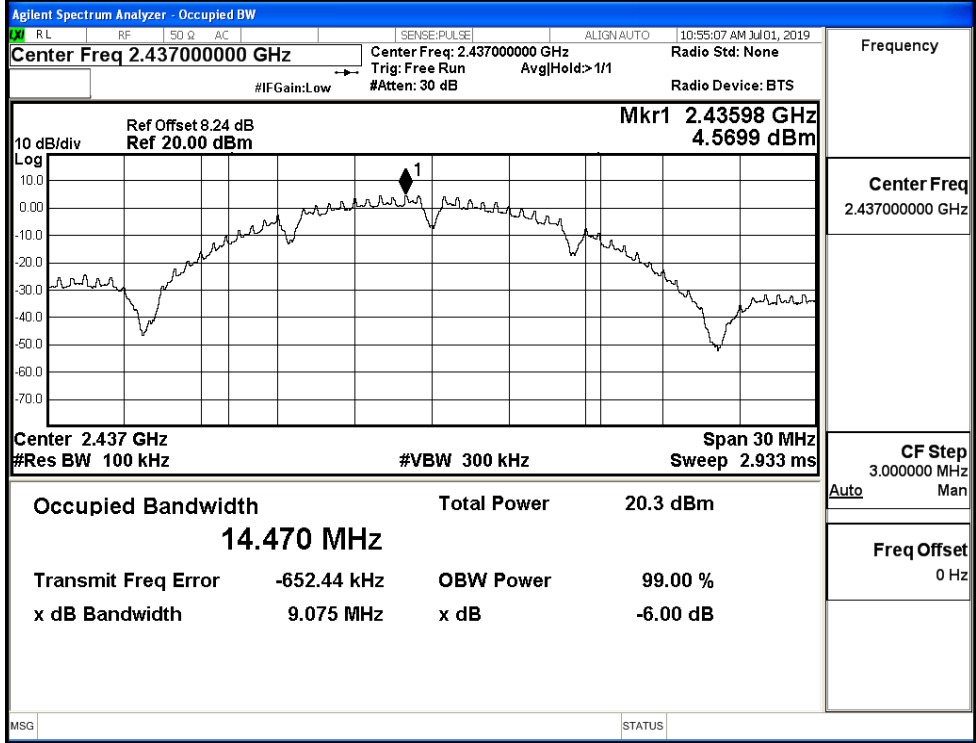


C.4 6dB Bandwidth

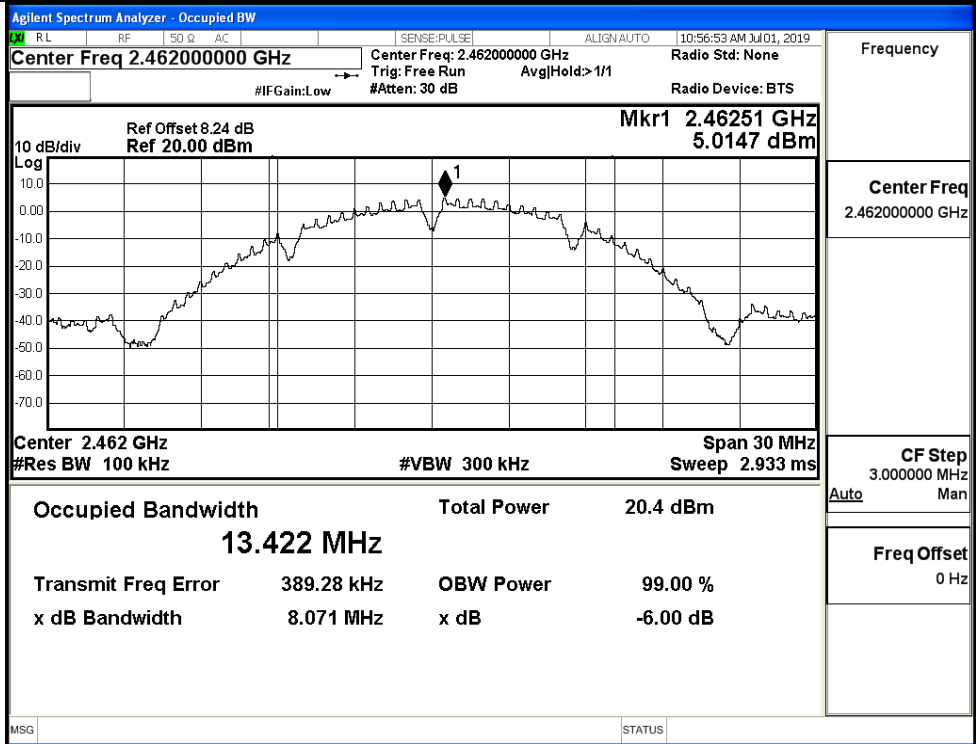
Mode	Channel	6dB Bandwidth [MHz]	Limit [MHz]	Verdict
11B	LCH	8.572	≥0.5	PASS
	MCH	9.075	≥0.5	PASS
	HCH	8.071	≥0.5	PASS
11G	LCH	16.48	≥0.5	PASS
	MCH	13.68	≥0.5	PASS
	HCH	15.43	≥0.5	PASS
11N20SISO	LCH	17.75	≥0.5	PASS
	MCH	15.42	≥0.5	PASS
	HCH	15.49	≥0.5	PASS
11N40SISO	LCH	22.58	≥0.5	PASS
	MCH	21.05	≥0.5	PASS
	HCH	36.61	≥0.5	PASS



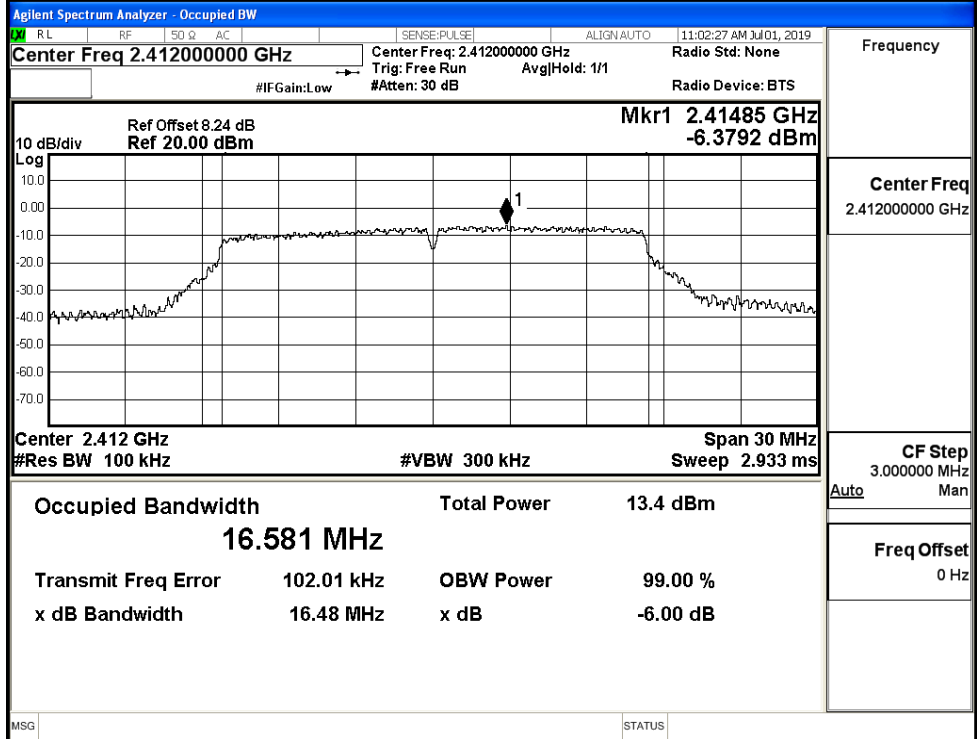
11B/MCH



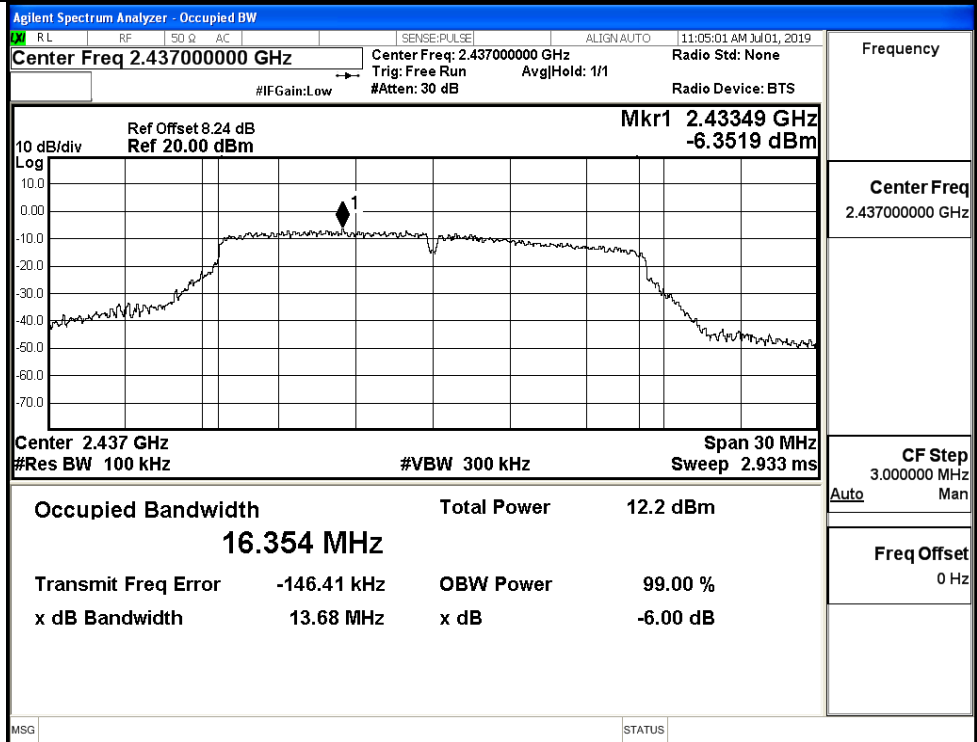
11B/HCH



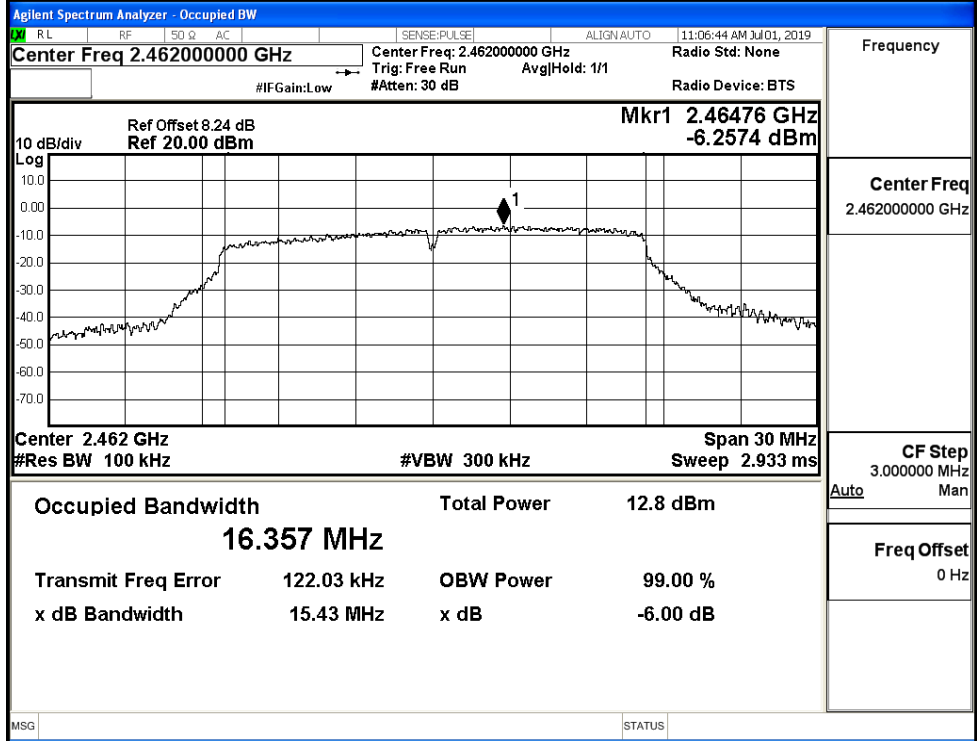
11G/LCH



11G/MCH

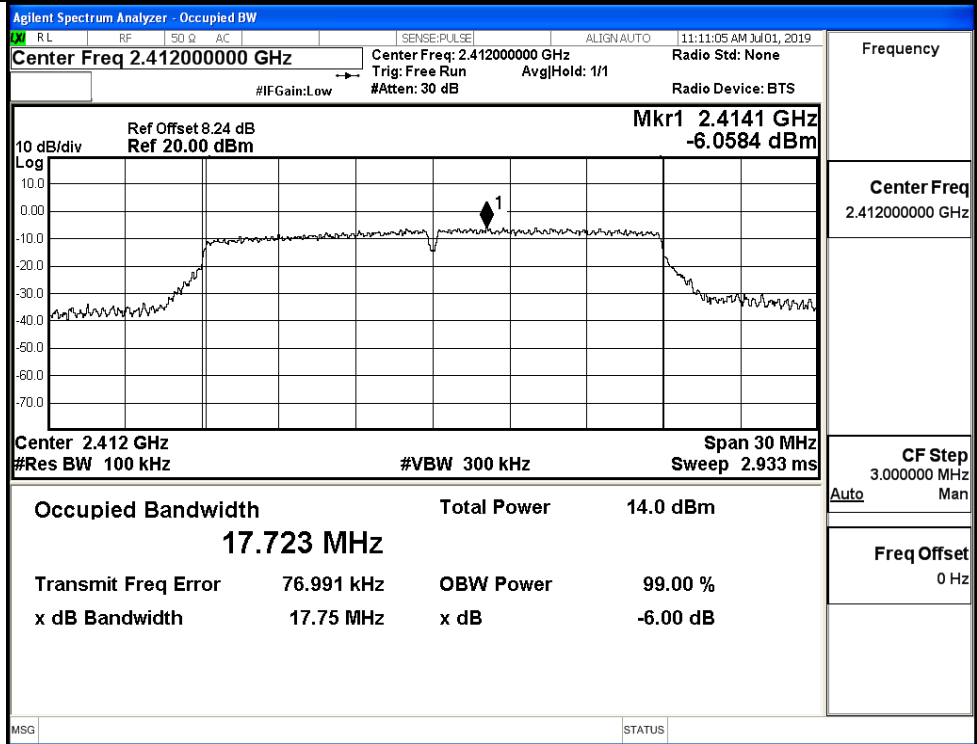


11G/HCH



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

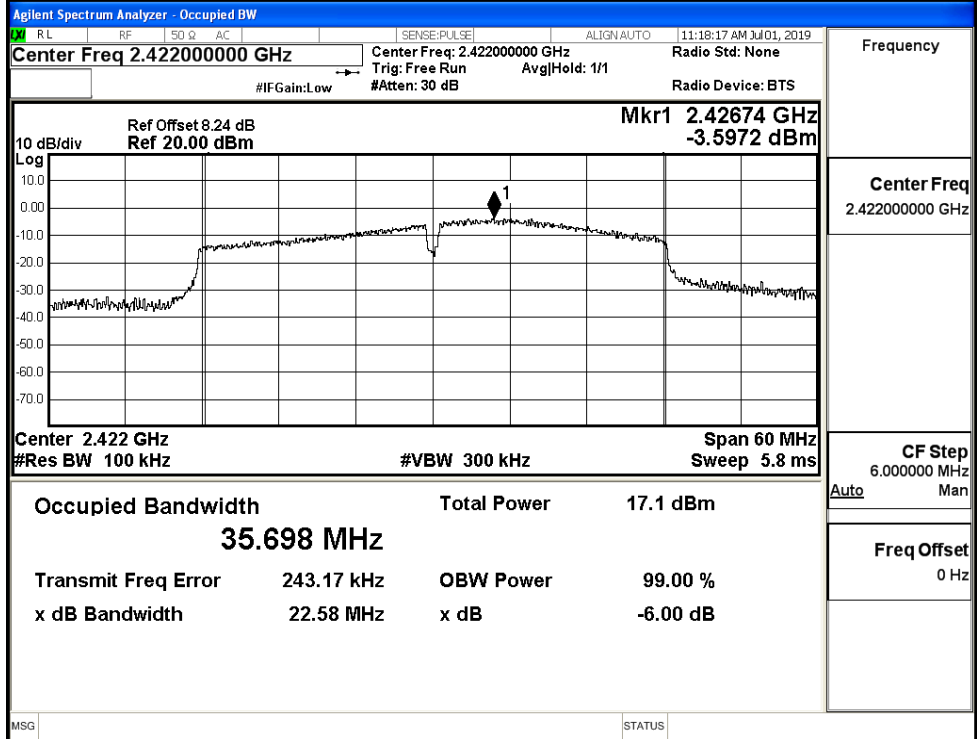
11N20SISO/LCH



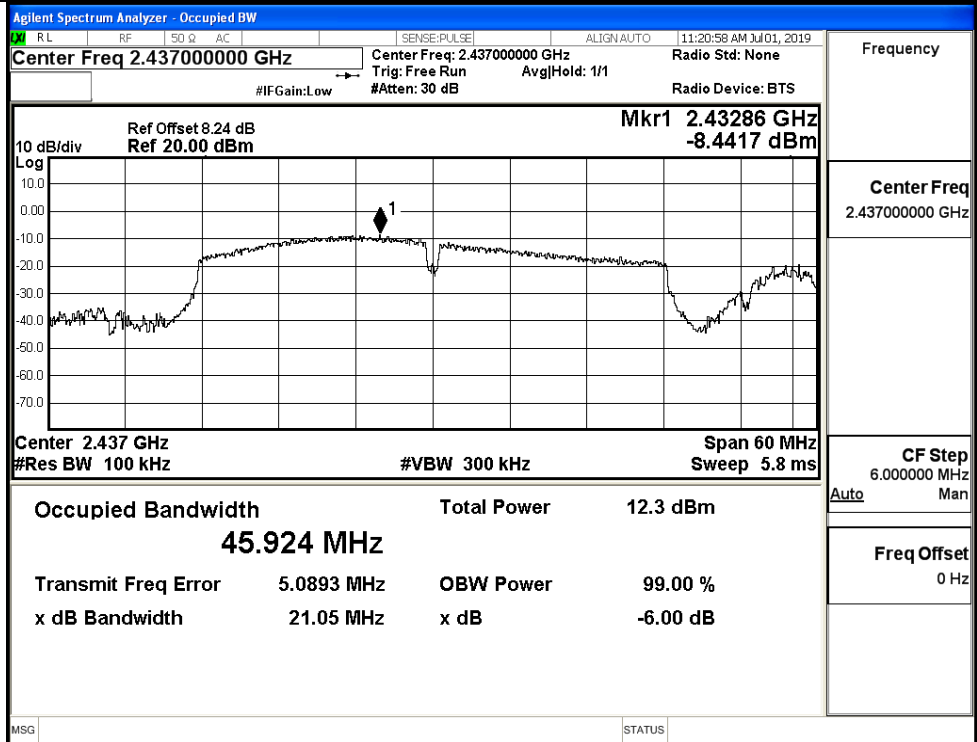
Frequency	2.41200000 GHz
Center Freq	2.41200000 GHz
CF Step	3.000000 MHz
Auto	Man
Freq Offset	0 Hz

<p>11N20SISO/MCH</p>	<p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.43700000 GHz</p> <p>Center Freq: 2.43700000 GHz Trig: Free Run AvgHold: 1/1</p> <p>Radio Std: None Radio Device: BTS</p> <p>10 dB/div Ref Offset 8.24 dB Ref 20.00 dBm</p> <p>Mkr1 2.43289 GHz -5.8311 dBm</p> <p>Center 2.437 GHz #Res BW 100 kHz</p> <p>#VBW 300 kHz</p> <p>Span 30 MHz Sweep 2.933 ms</p> <p>Occupied Bandwidth 17.520 MHz</p> <p>Total Power 13.4 dBm</p> <p>Transmit Freq Error -176.32 kHz</p> <p>OBW Power 99.00 %</p> <p>x dB Bandwidth 15.42 MHz</p> <p>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</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 AvgHold: 1/1</p> <p>Radio Std: None Radio Device: BTS</p> <p>10 dB/div Ref Offset 8.24 dB Ref 20.00 dBm</p> <p>Mkr1 2.46596 GHz -5.7374 dBm</p> <p>Center 2.462 GHz #Res BW 100 kHz</p> <p>#VBW 300 kHz</p> <p>Span 30 MHz Sweep 2.933 ms</p> <p>Occupied Bandwidth 17.505 MHz</p> <p>Total Power 13.8 dBm</p> <p>Transmit Freq Error 109.83 kHz</p> <p>OBW Power 99.00 %</p> <p>x dB Bandwidth 15.49 MHz</p> <p>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</p> <p>Freq Offset 0 Hz</p>

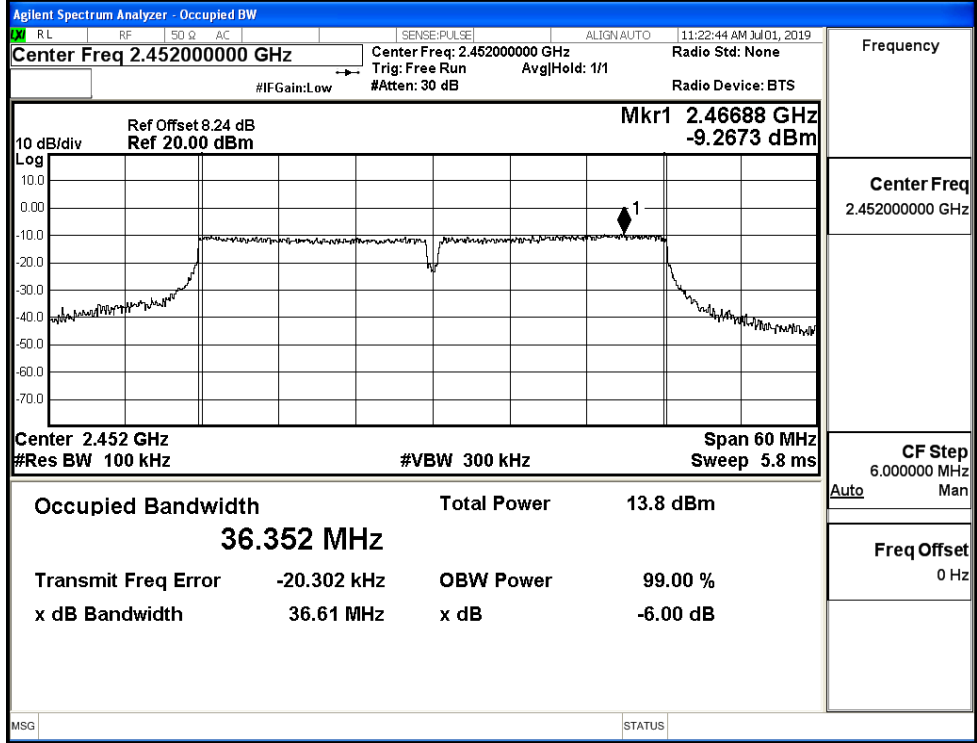
11N40SISO/LCH



11N40SISO/MCH



11N40SISO/HCH



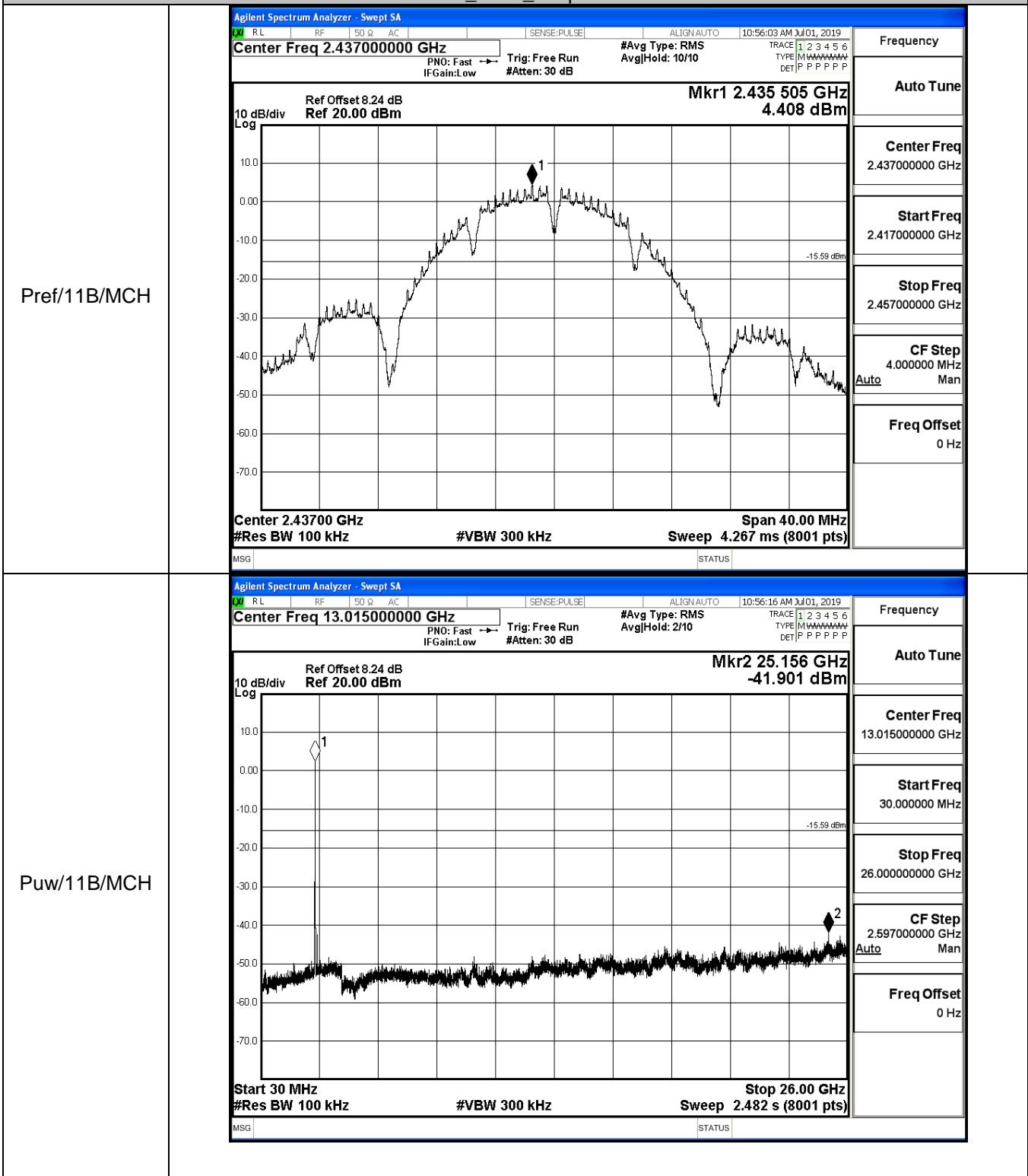
C.5 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
11B	LCH	5.03	-43.746	-14.970	PASS
	MCH	4.408	-41.901	-15.592	PASS
	HCH	5.037	-43.730	-14.963	PASS
11G	LCH	-6.512	-42.192	-26.512	PASS
	MCH	-7.449	-42.568	-27.449	PASS
	HCH	-6.473	-43.066	-26.473	PASS
11N20 SISO	LCH	-6.165	-38.413	-26.165	PASS
	MCH	-5.965	-43.288	-25.965	PASS
	HCH	-5.547	-43.392	-25.547	PASS
11N40 SISO	LCH	-3.774	-39.058	-23.774	PASS
	MCH	-10.747	-43.553	-30.747	PASS
	HCH	-11.794	-43.268	-31.794	PASS

11B_LCH_Graphs

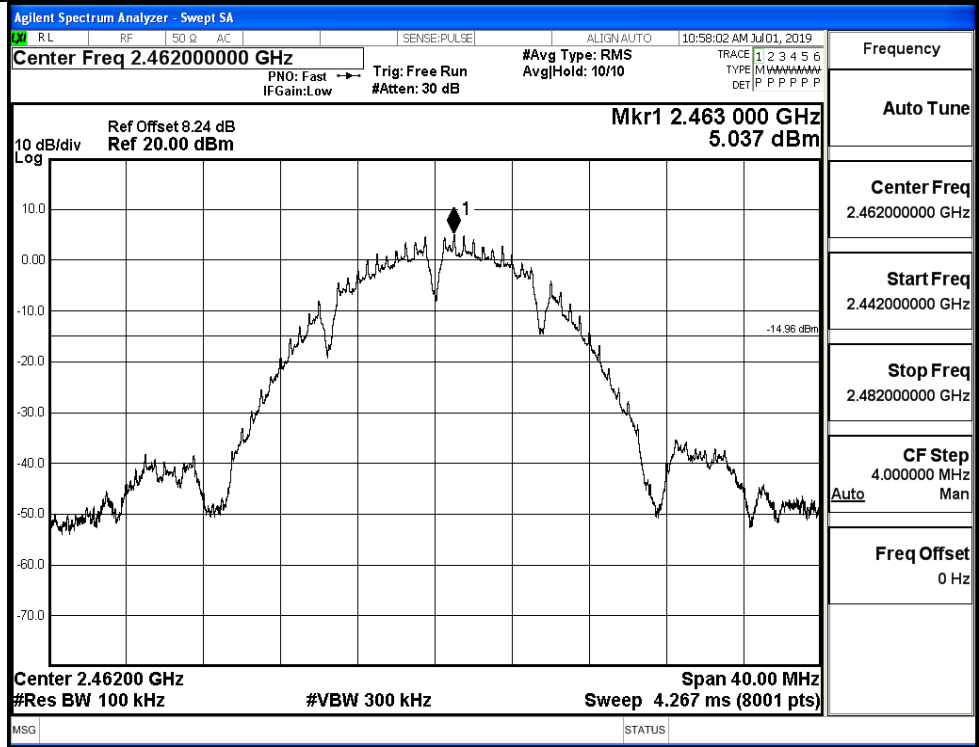
<p>Pref/11B/LCH</p>		<p>Frequency</p> <p>Auto Tune</p> <p>Center Freq 2.412000000 GHz</p> <p>Start Freq 2.392000000 GHz</p> <p>Stop Freq 2.432000000 GHz</p> <p>CF Step 4.000000 MHz Auto Man</p> <p>Freq Offset 0 Hz</p>
	<p>Puw/11B/LCH</p>	

11B_MCH_Graphs

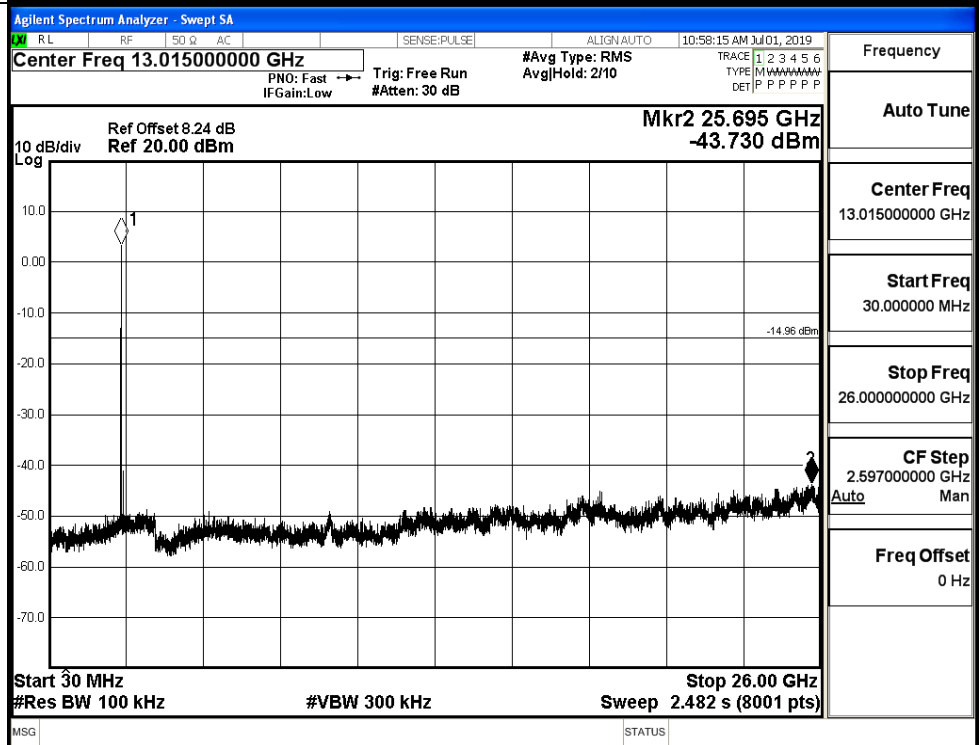


11B_HCH_Graphs

Pref/11B/HCH

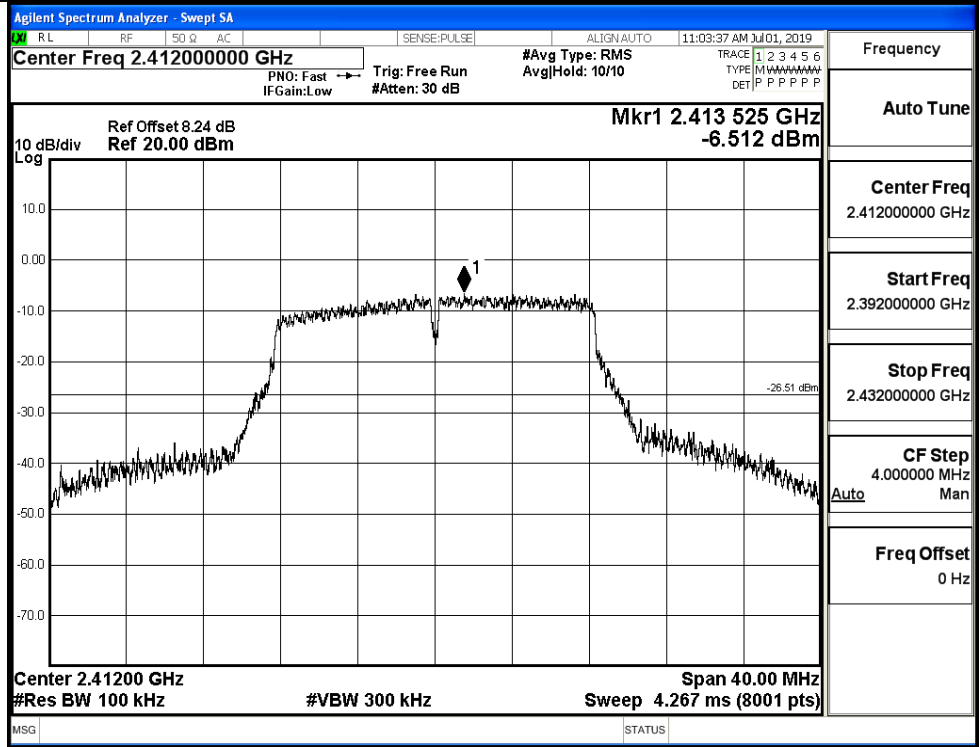


Puw/11B/HCH

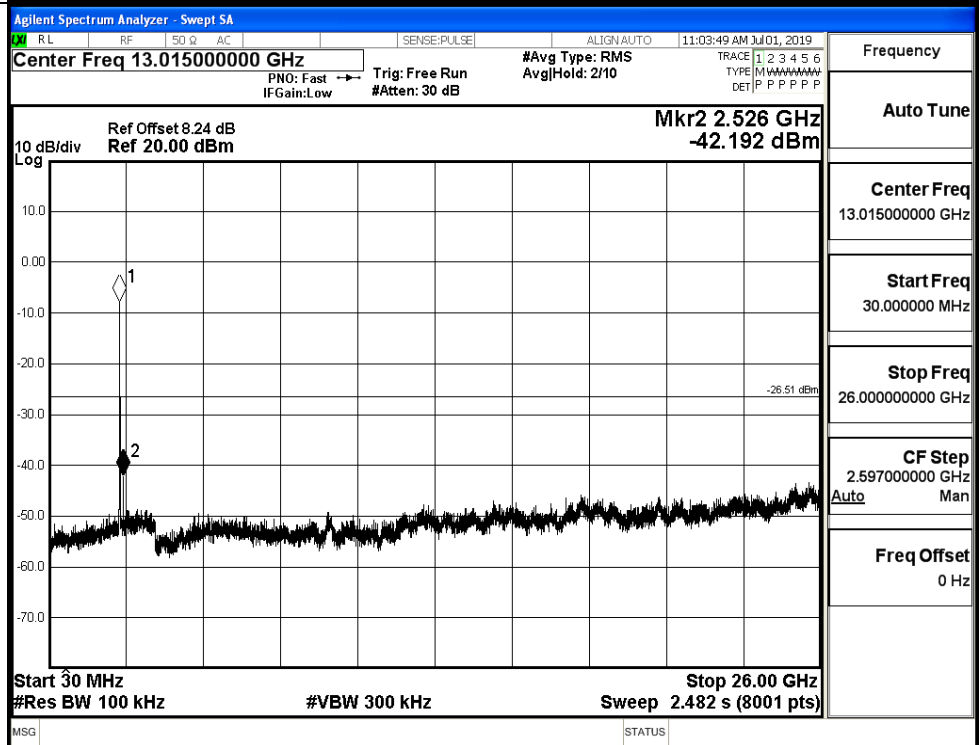


11G_LCH_Graphs

Pref/11G/LCH

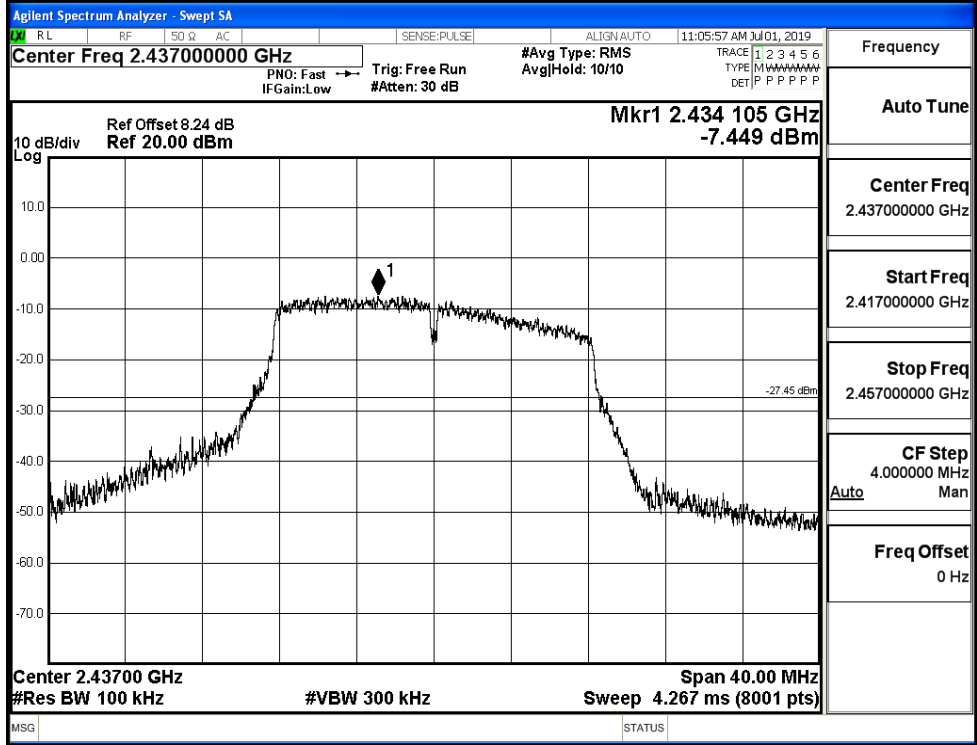


Puw/11G/LCH

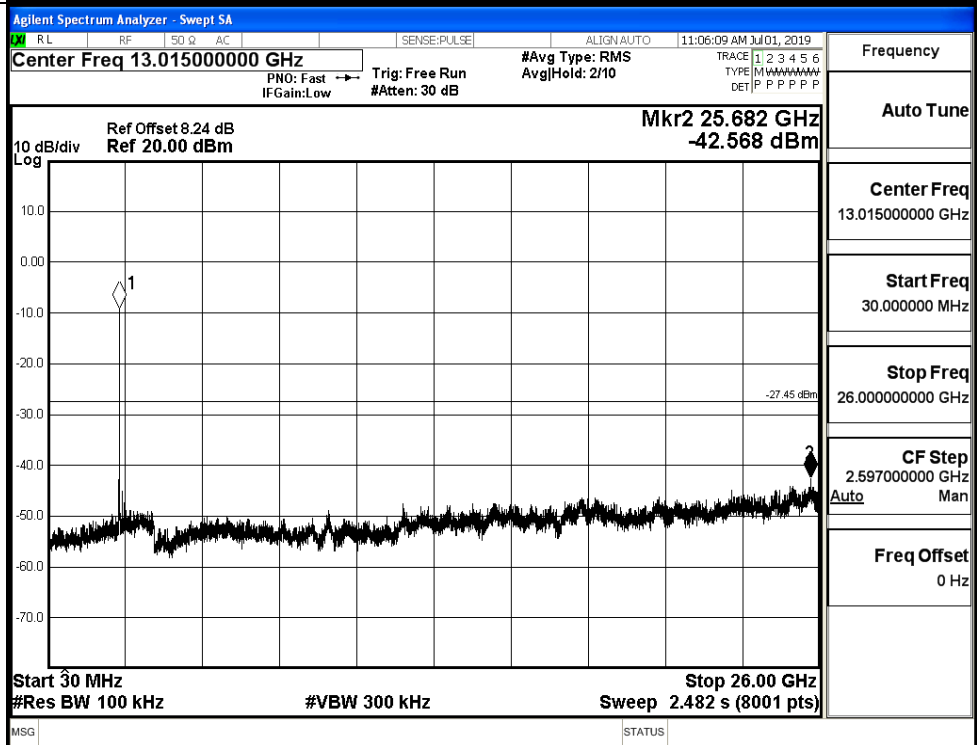


11G_MCH_Graphs

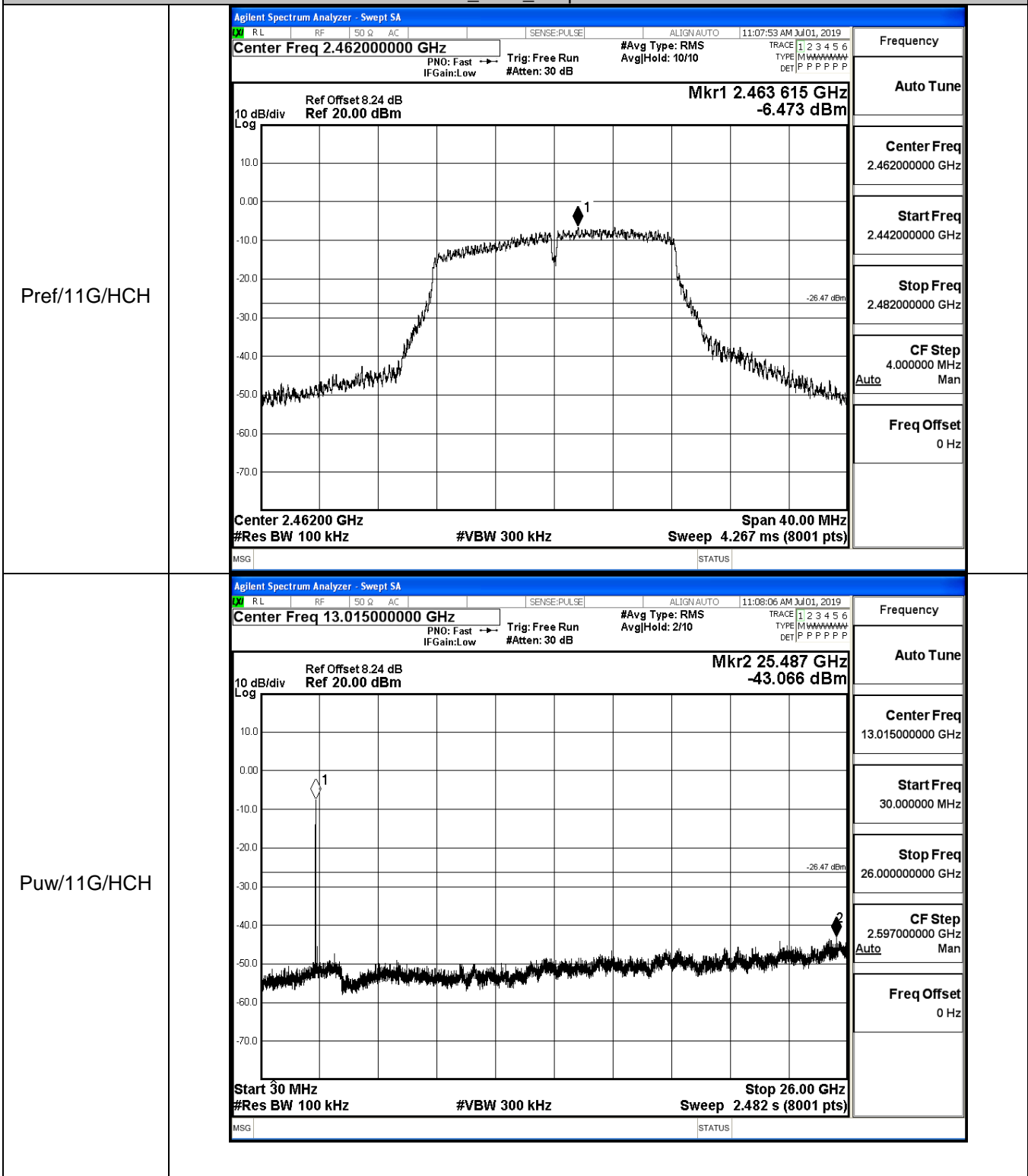
Pref/11G/MCH



Puw/11G/MCH

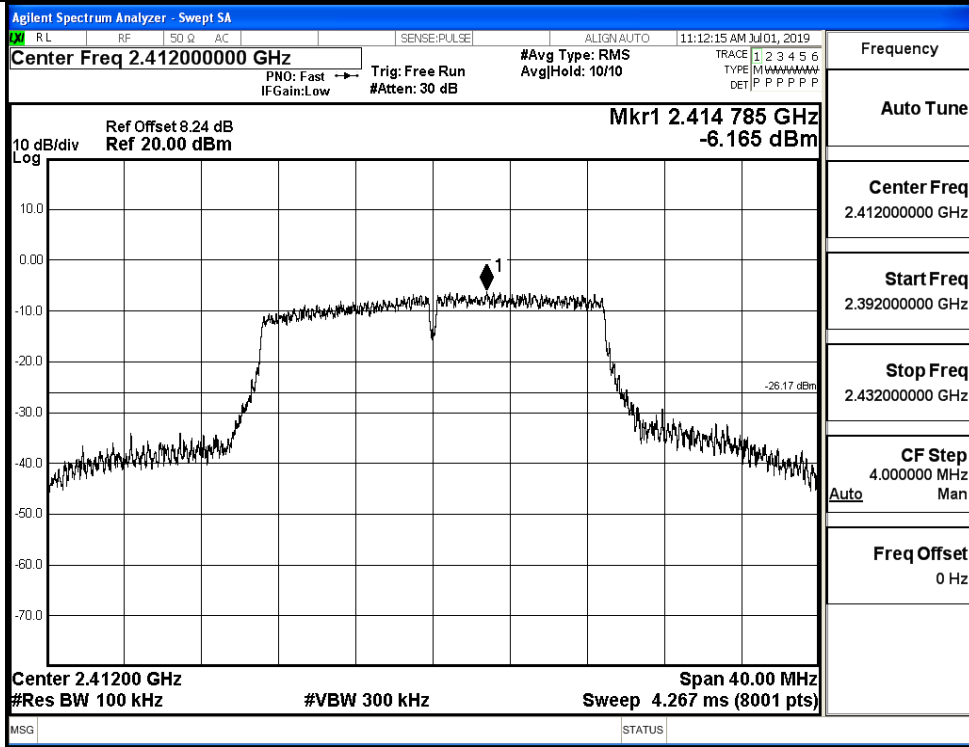


11G_HCH_Graphs

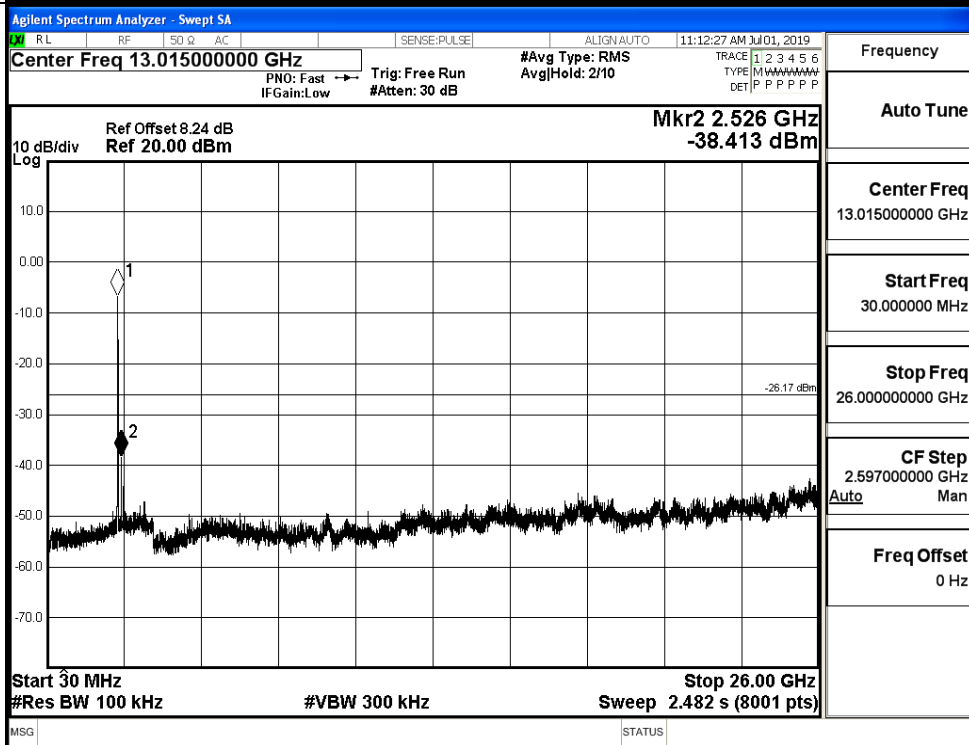


11N20SISO_LCH_Graphs

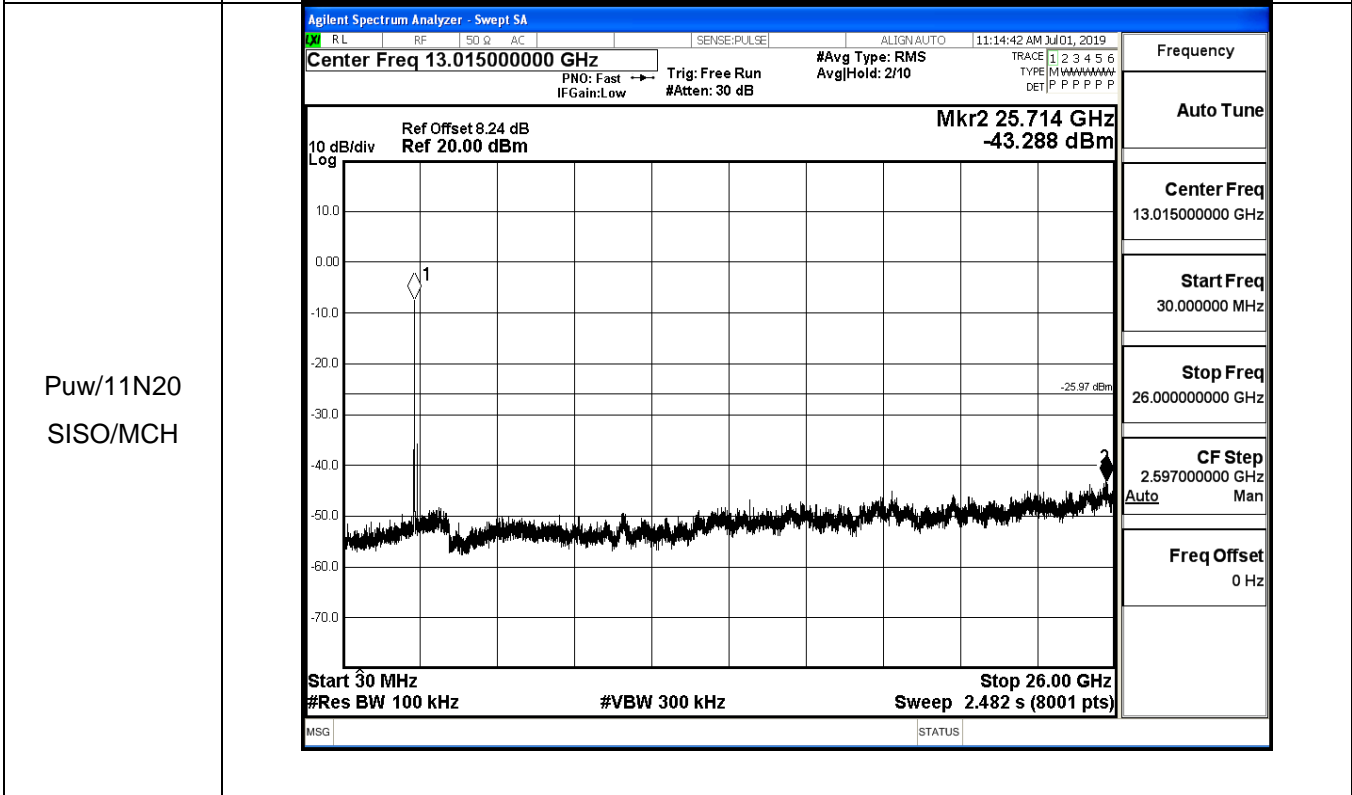
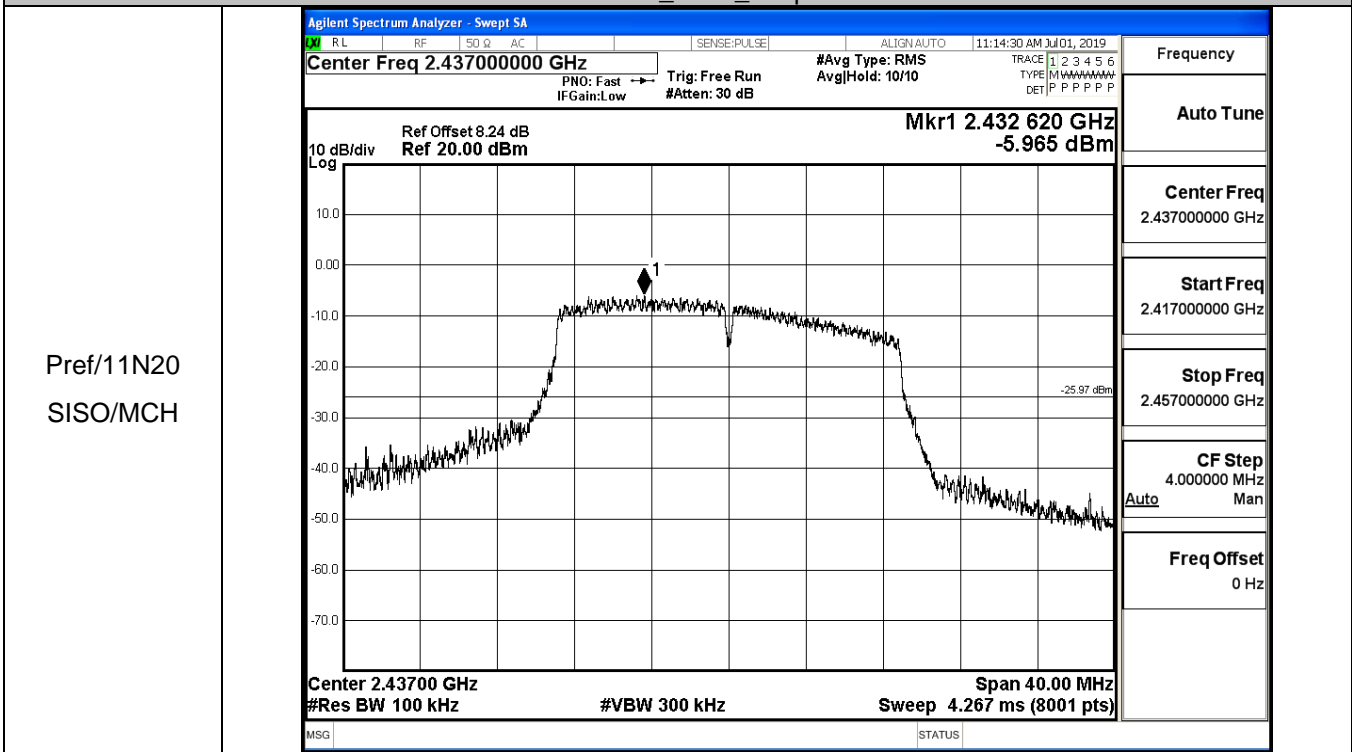
Pref/11N20SIS
O/LCH



Puw/11N20
SISO/LCH

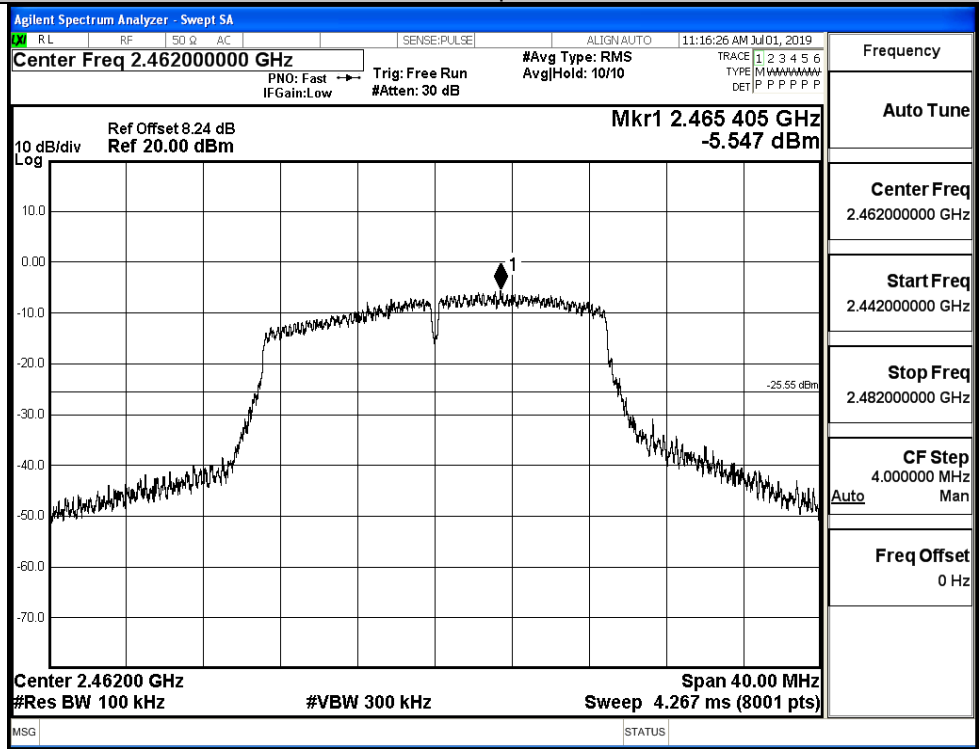


11N20SISO_MCH_Graphs

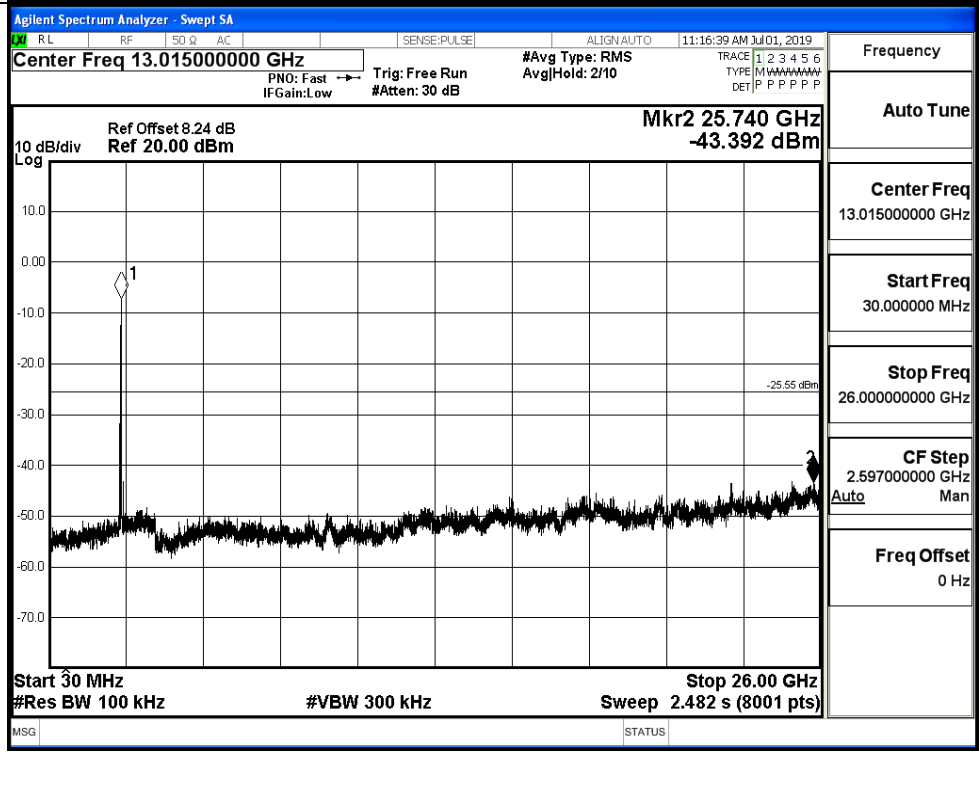


11N20SISO_HCH_Graphs

Pref/11N20
SISO/HCH

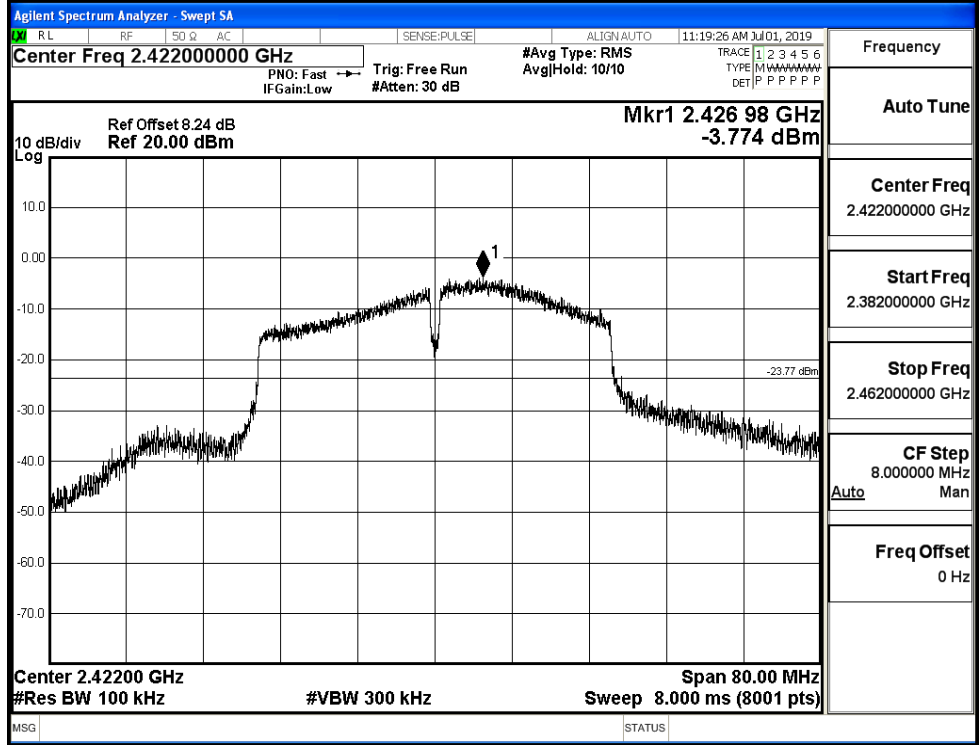


Puw/11N20
SISO/HCH

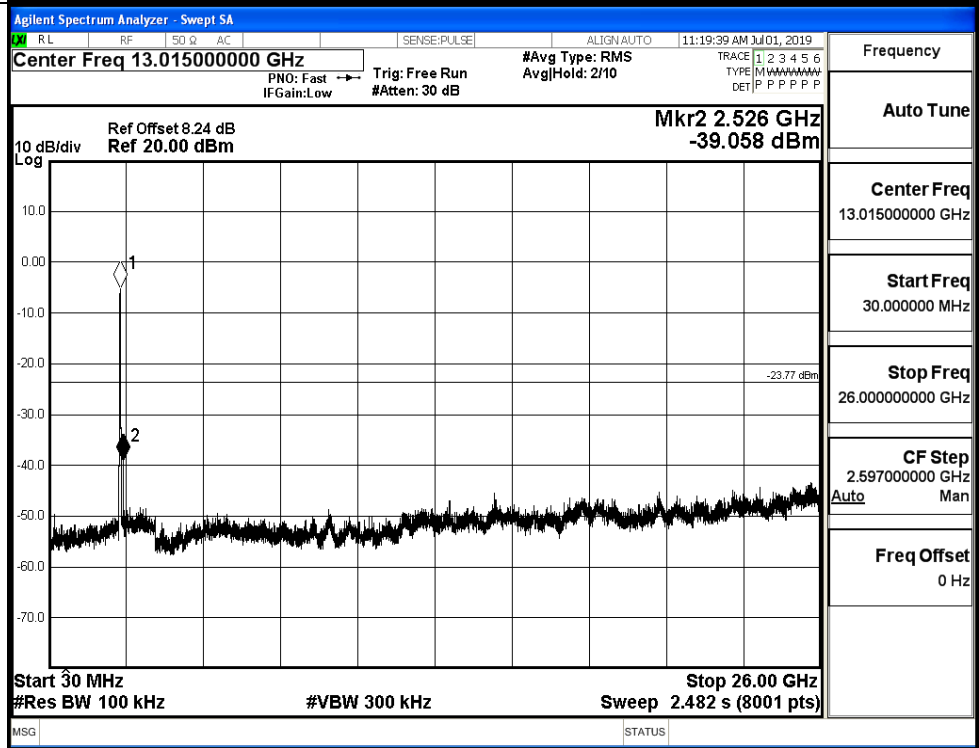


11N40SISO_LCH_Graphs

Pref/11N40
SISO/LCH



Puw/11N40
SISO/LCH

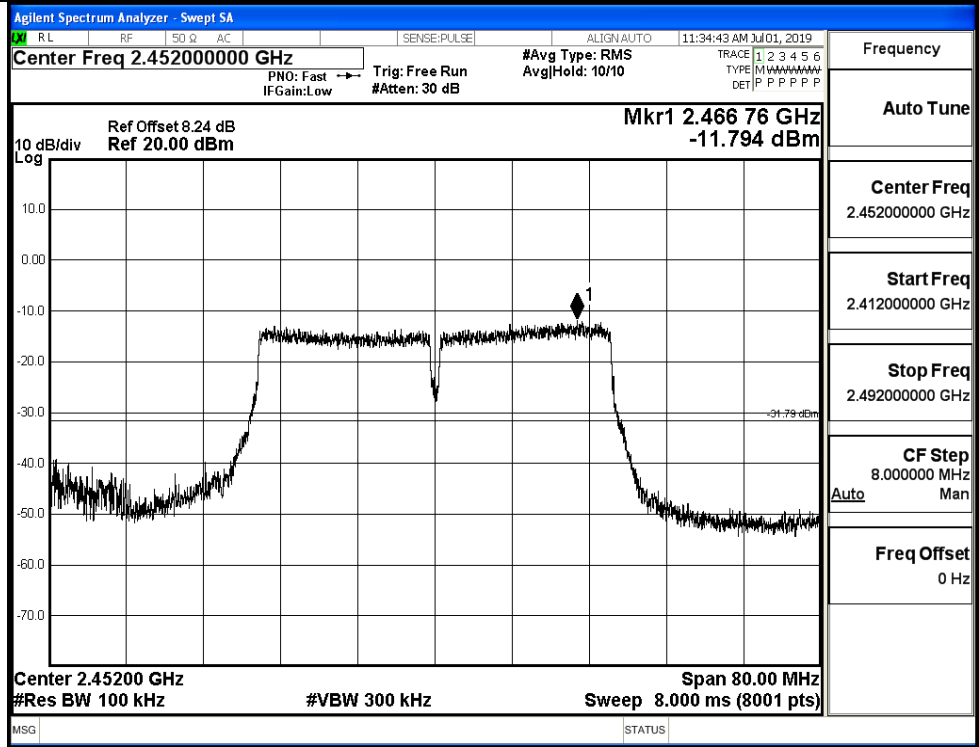


11N40SISO_MCH_Graphs

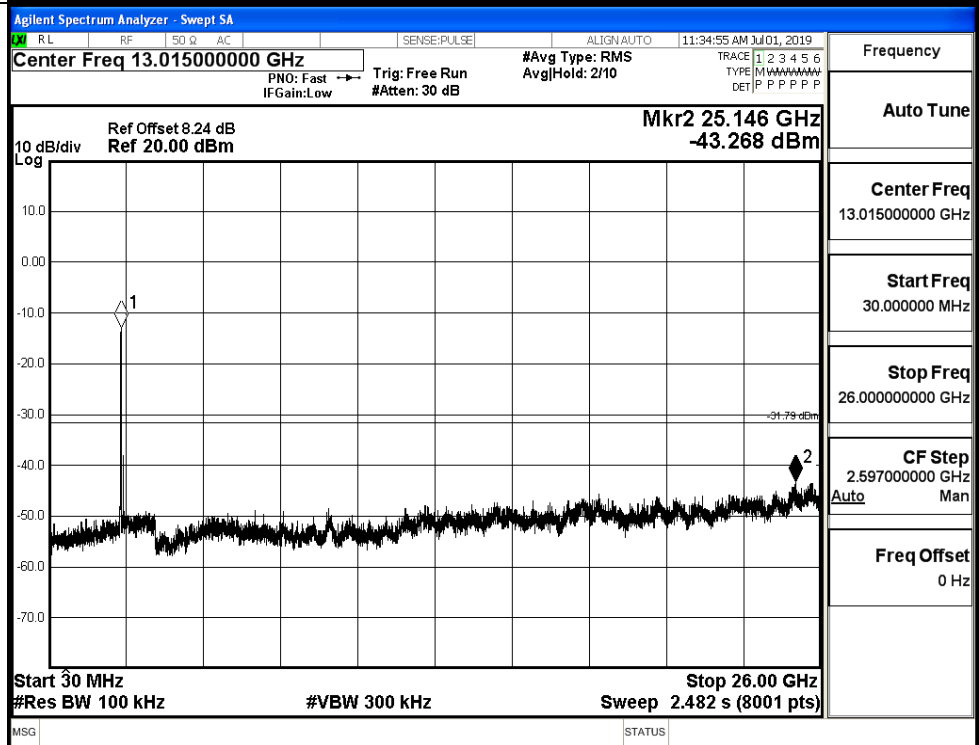
<p>Pref/11N40 SISO/MCH</p>	<p>Agilent Spectrum Analyzer - Swept SA</p> <p>Center Freq 2.43700000 GHz</p> <p>Ref Offset 8.24 dB Ref 20.00 dBm</p> <p>Mkr1 2.430 73 GHz -10.747 dBm</p> <p>10 dB/div Log</p> <p>Center 2.43700 GHz #Res BW 100 kHz #VBW 300 kHz Sweep 8.000 ms (8001 pts)</p> <p>Span 80.00 MHz</p>	<p>Frequency</p> <p>Auto Tune</p> <p>Center Freq 2.437000000 GHz</p> <p>Start Freq 2.397000000 GHz</p> <p>Stop Freq 2.477000000 GHz</p> <p>CF Step 8.000000 MHz Auto Man</p> <p>Freq Offset 0 Hz</p>
	<p>Puw/11N40 SISO/MCH</p>	<p>Agilent Spectrum Analyzer - Swept SA</p> <p>Center Freq 13.01500000 GHz</p> <p>Ref Offset 8.24 dB Ref 20.00 dBm</p> <p>Mkr2 25.675 GHz -43.553 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>

11N40SISO_HCH_Graphs

Pref/11N40
SISO/HCH

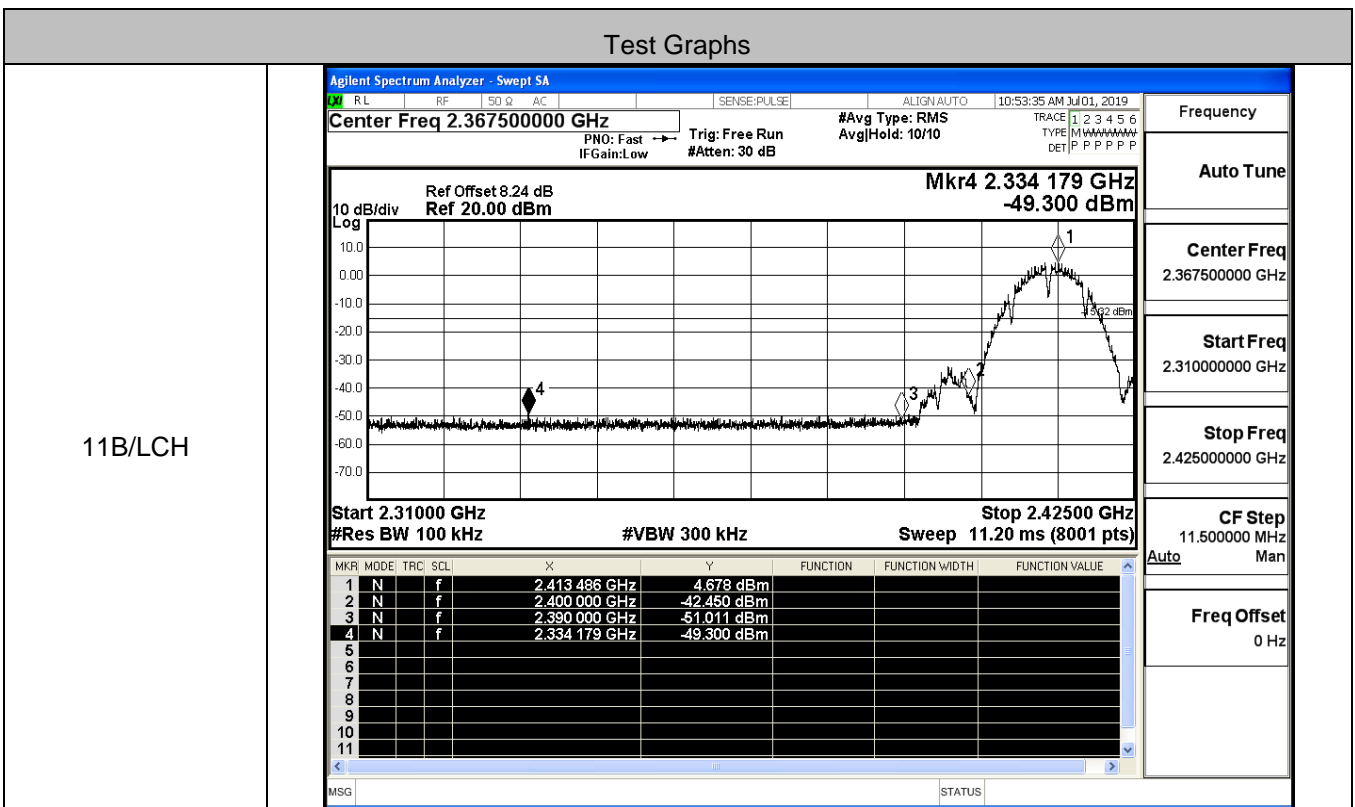


Puw/11N40
SISO/HCH

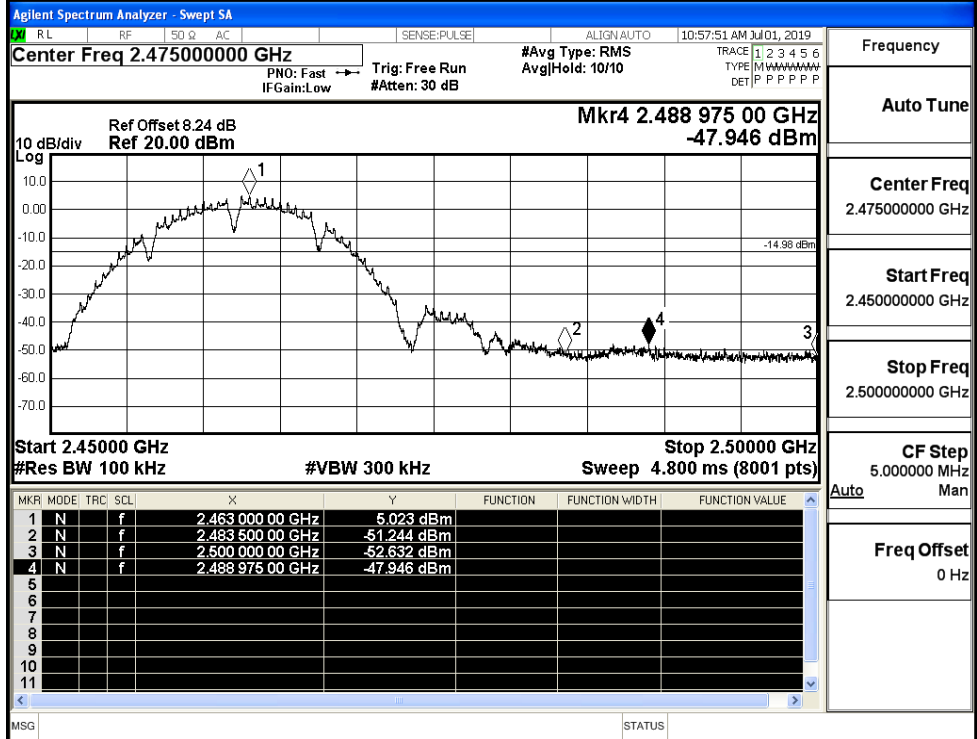


C.6 Band-edge for RF Conducted Emissions

Mode	Channel	Carrier Power[dBm]	Max.Spurious Level [dBm]	Limit [dBm]	Verdict
11B	LCH	4.678	-49.300	-15.32	PASS
	HCH	5.023	-47.946	-14.98	PASS
11G	LCH	-5.986	-48.926	-25.99	PASS
	HCH	-6.745	-49.377	-26.75	PASS
11N20SISO	LCH	-6.089	-45.955	-26.09	PASS
	HCH	-5.618	-48.687	-25.62	PASS
11N40SISO	LCH	-4.003	-38.139	-24	PASS
	HCH	-9.479	-43.786	-29.48	PASS



11B/HCH



Frequency

Auto Tune

Center Freq
2.47500000 GHz

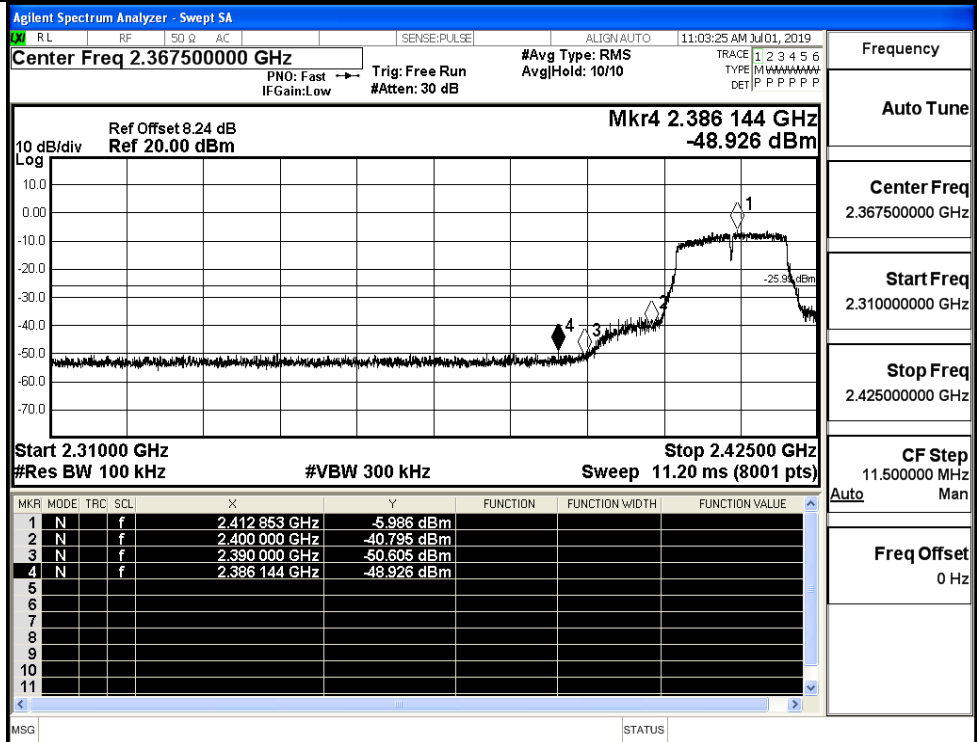
Start Freq
2.45000000 GHz

Stop Freq
2.50000000 GHz

CF Step
5.000000 MHz

Freq Offset
0 Hz

11G/LCH



Frequency

Auto Tune

Center Freq
2.36750000 GHz

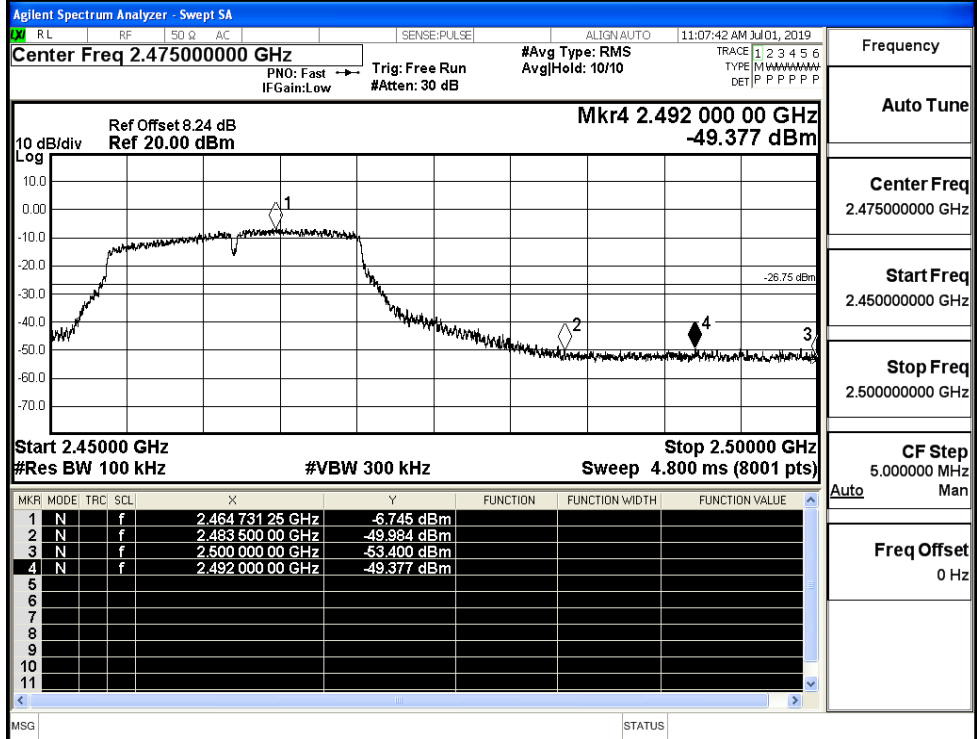
Start Freq
2.31000000 GHz

Stop Freq
2.42500000 GHz

CF Step
11.500000 MHz

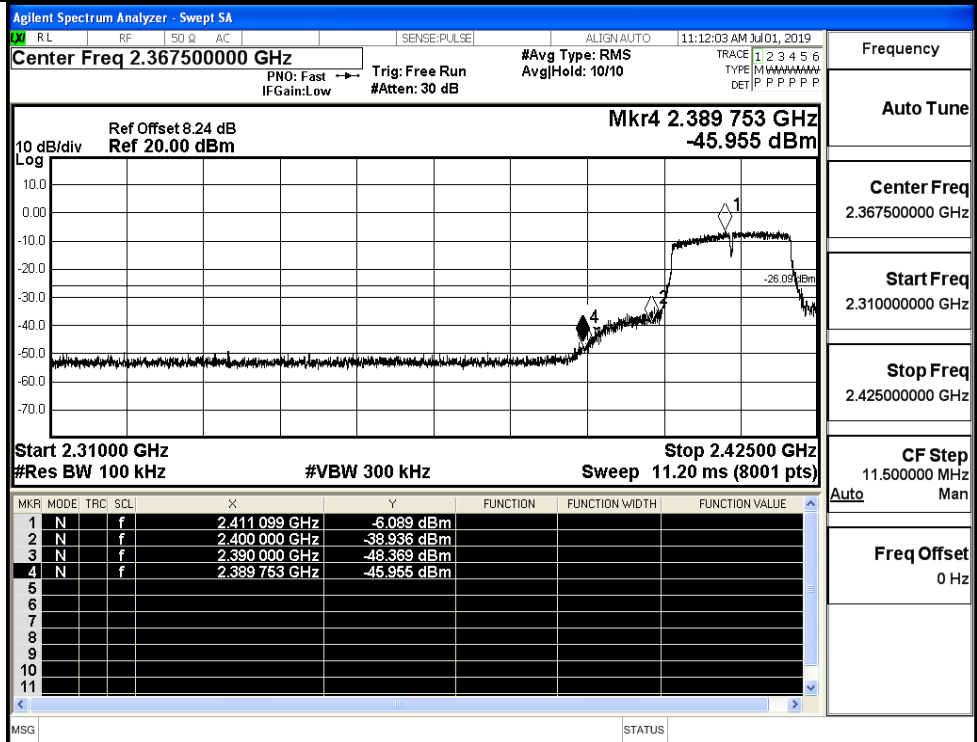
Freq Offset
0 Hz

11G/HCH



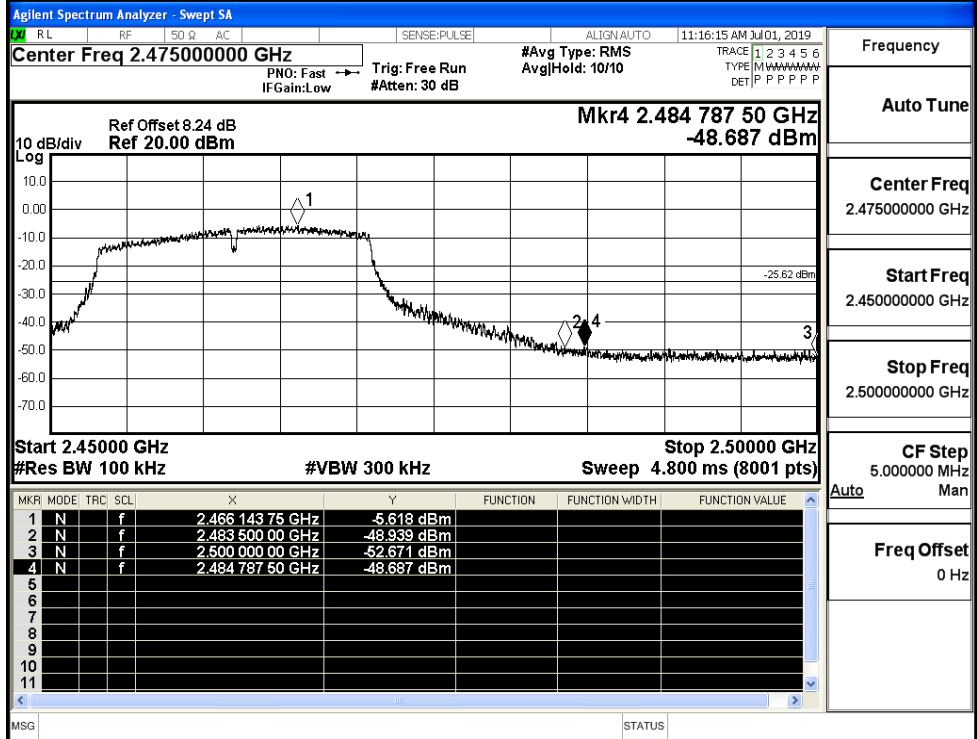
Frequency	2.47500000 GHz
Auto Tune	
Center Freq	2.47500000 GHz
Start Freq	2.45000000 GHz
Stop Freq	2.50000000 GHz
CF Step	5.000000 MHz
Freq Offset	0 Hz

11N20SISO/LCH



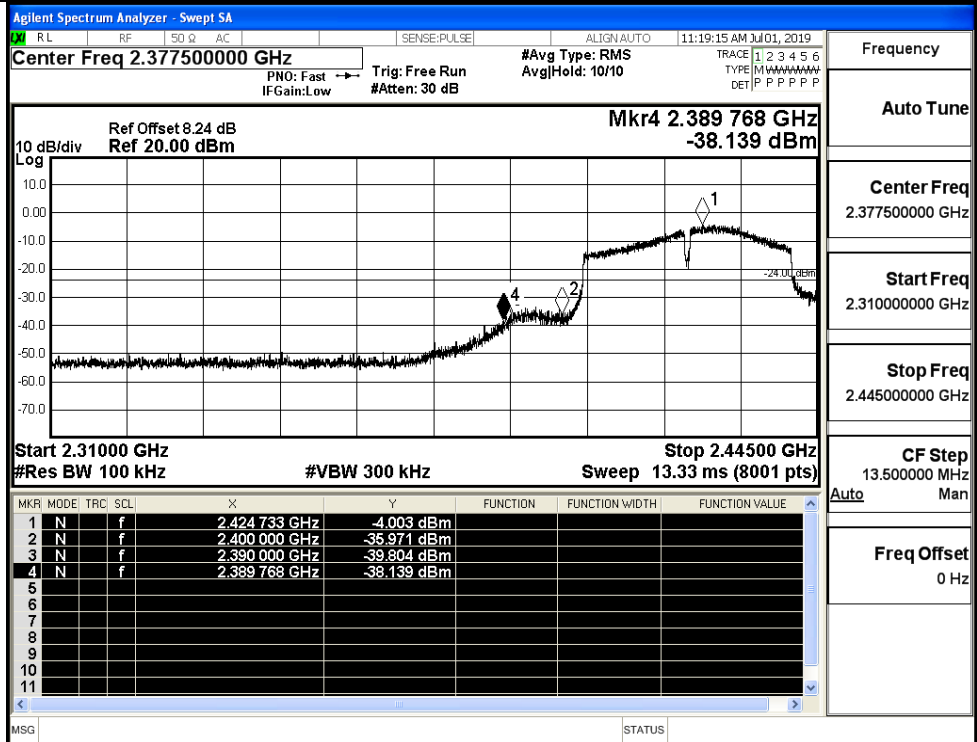
Frequency	2.36750000 GHz
Auto Tune	
Center Freq	2.36750000 GHz
Start Freq	2.31000000 GHz
Stop Freq	2.42500000 GHz
CF Step	11.500000 MHz
Freq Offset	0 Hz

11N20SISO/HCH



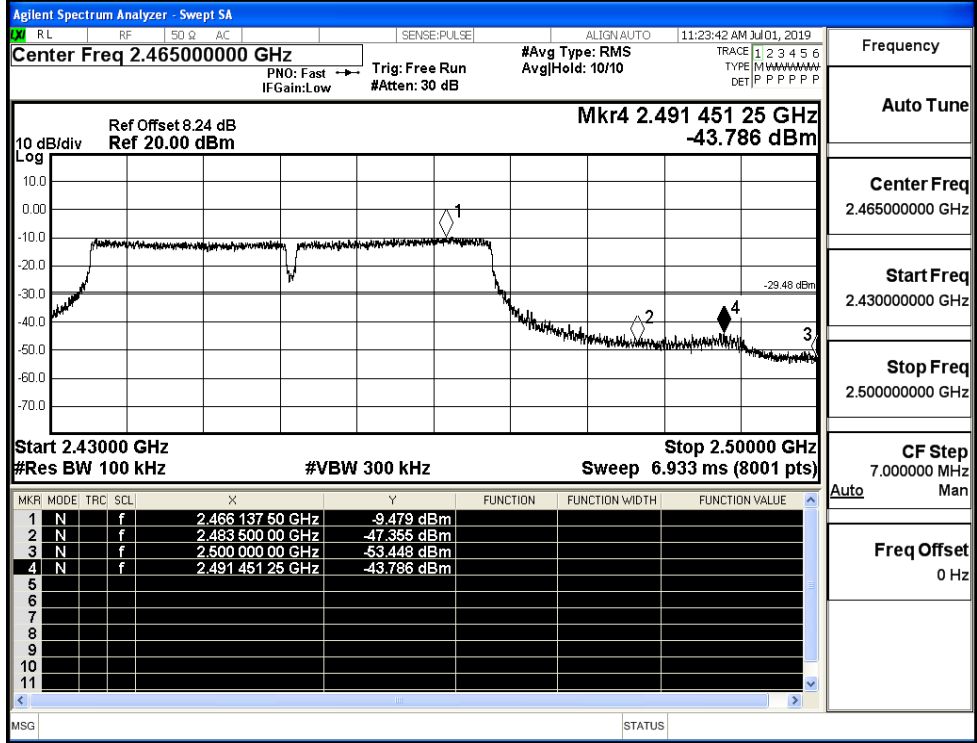
Frequency	2.47500000 GHz
Auto Tune	
Center Freq	2.47500000 GHz
Start Freq	2.45000000 GHz
Stop Freq	2.50000000 GHz
CF Step	5.000000 MHz
Freq Offset	0 Hz

11N40SISO/LCH



Frequency	2.37750000 GHz
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

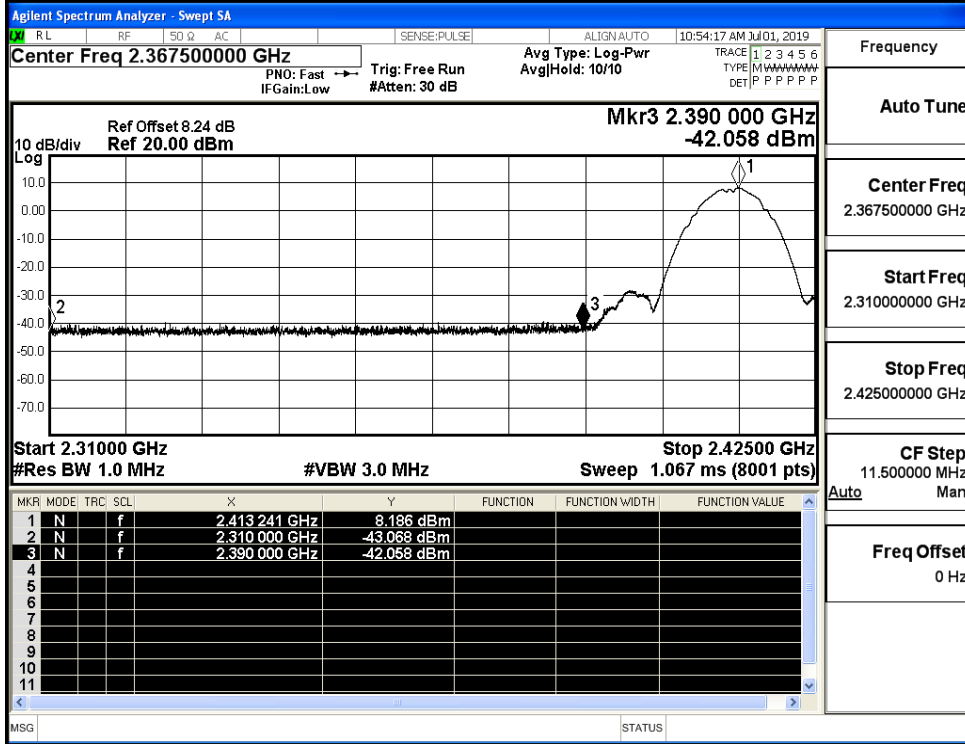


C.7 Restrict-band band-edge measurements

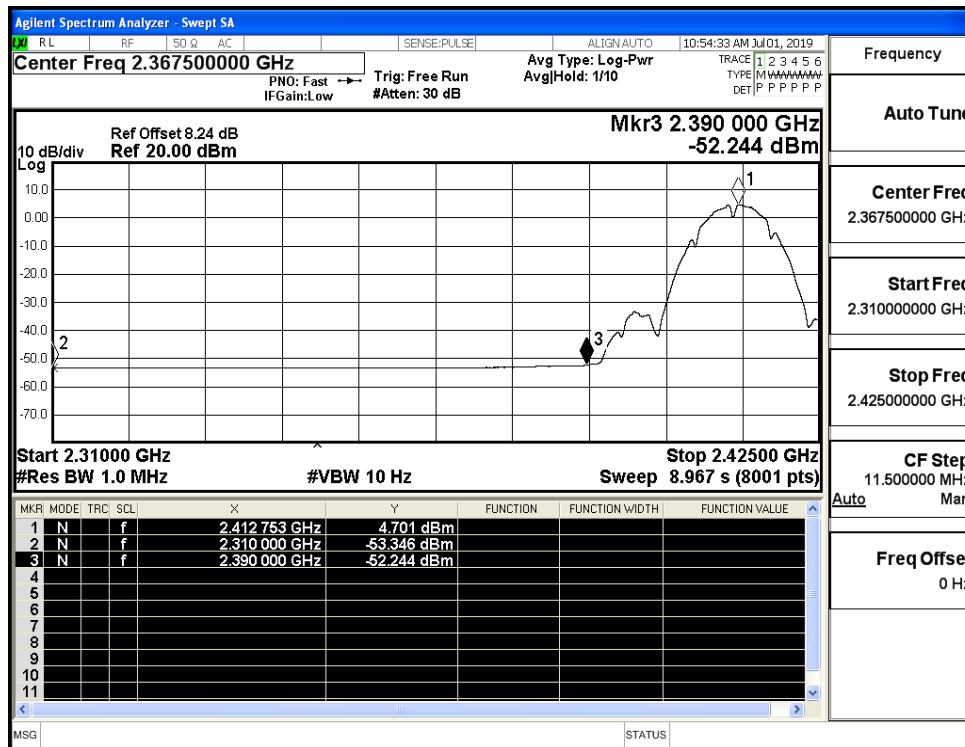
Test Mode	Test Channel	Ant	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBu V/m]	Verdict
11B	2412	Ant1	2310.0	-43.07	2.0	0	52.19	PEAK	74	PASS
	2412	Ant1	2310.0	-53.35	2.0	0	41.91	AV	54	PASS
	2412	Ant1	2390.0	-42.06	2.0	0	53.20	PEAK	74	PASS
	2412	Ant1	2390.0	-52.24	2.0	0	43.01	AV	54	PASS
	2462	Ant1	2483.5	-41.77	2.0	0	53.49	PEAK	74	PASS
	2462	Ant1	2483.5	-51.28	2.0	0	43.98	AV	54	PASS
	2462	Ant1	2500.0	-41.12	2.0	0	54.14	PEAK	74	PASS
	2462	Ant1	2500.0	-52.78	2.0	0	42.48	AV	54	PASS
11G	2412	Ant1	2310.0	-43.43	2.0	0	51.82	PEAK	74	PASS
	2412	Ant1	2310.0	-53.36	2.0	0	41.90	AV	54	PASS
	2412	Ant1	2390.0	-38.30	2.0	0	56.96	PEAK	74	PASS
	2412	Ant1	2390.0	-51.23	2.0	0	44.03	AV	54	PASS
	2462	Ant1	2483.5	-40.71	2.0	0	54.54	PEAK	74	PASS
	2462	Ant1	2483.5	-52.20	2.0	0	43.06	AV	54	PASS
	2462	Ant1	2500.0	-41.69	2.0	0	53.57	PEAK	74	PASS
	2462	Ant1	2500.0	-52.78	2.0	0	42.48	AV	54	PASS
11N20 SISO	2412	Ant1	2310.0	-41.45	2.0	0	53.81	PEAK	74	PASS
	2412	Ant1	2310.0	-53.32	2.0	0	41.94	AV	54	PASS
	2412	Ant1	2390.0	-36.89	2.0	0	58.37	PEAK	74	PASS
	2412	Ant1	2390.0	-49.27	2.0	0	45.99	AV	54	PASS
	2462	Ant1	2483.5	-36.76	2.0	0	58.50	PEAK	74	PASS
	2462	Ant1	2483.5	-50.94	2.0	0	44.31	AV	54	PASS
	2462	Ant1	2500.0	-42.34	2.0	0	52.92	PEAK	74	PASS
	2462	Ant1	2500.0	-52.73	2.0	0	42.53	AV	54	PASS
11N40 SISO	2422	Ant1	2310.0	-42.76	2.0	0	52.50	PEAK	74	PASS
	2422	Ant1	2310.0	-53.37	2.0	0	41.89	AV	54	PASS

	2422	Ant1	2390.0	-34.09	2.0	0	61.17	PEAK	74	PASS
	2422	Ant1	2390.0	-50.27	2.0	0	44.99	AV	54	PASS
	2452	Ant1	2483.5	-36.50	2.0	0	58.75	PEAK	74	PASS
	2452	Ant1	2483.5	-48.22	2.0	0	47.04	AV	54	PASS
	2452	Ant1	2500.0	-43.49	2.0	0	51.77	PEAK	74	PASS
	2452	Ant1	2500.0	-52.78	2.0	0	42.48	AV	54	PASS

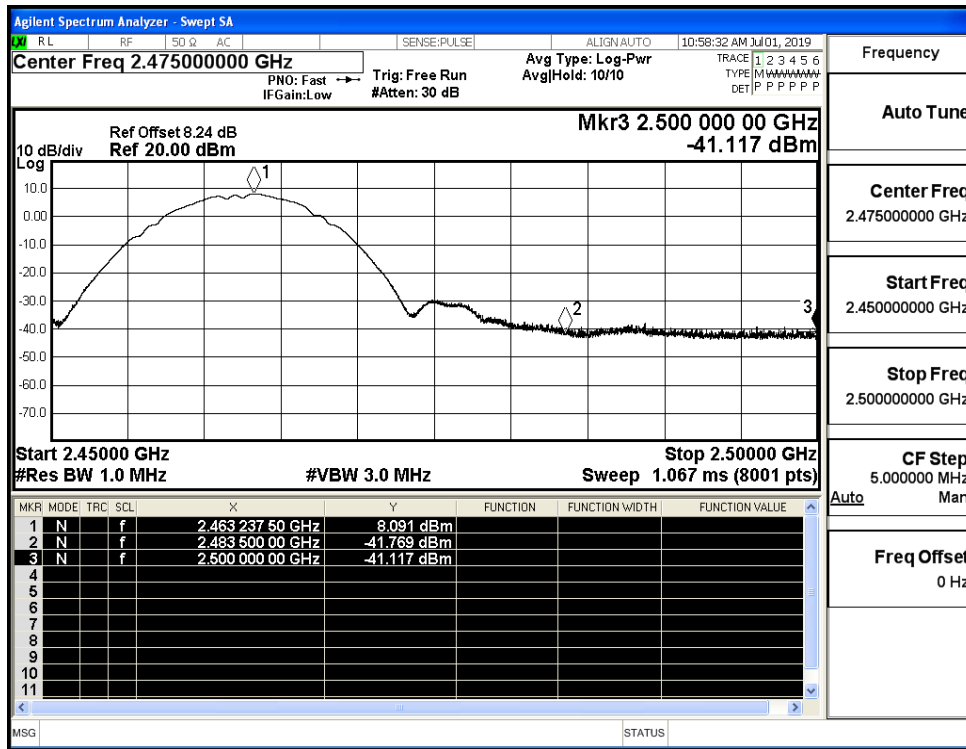
Restrict-band band-edge measurements_11B_2412_Ant1_PEAK



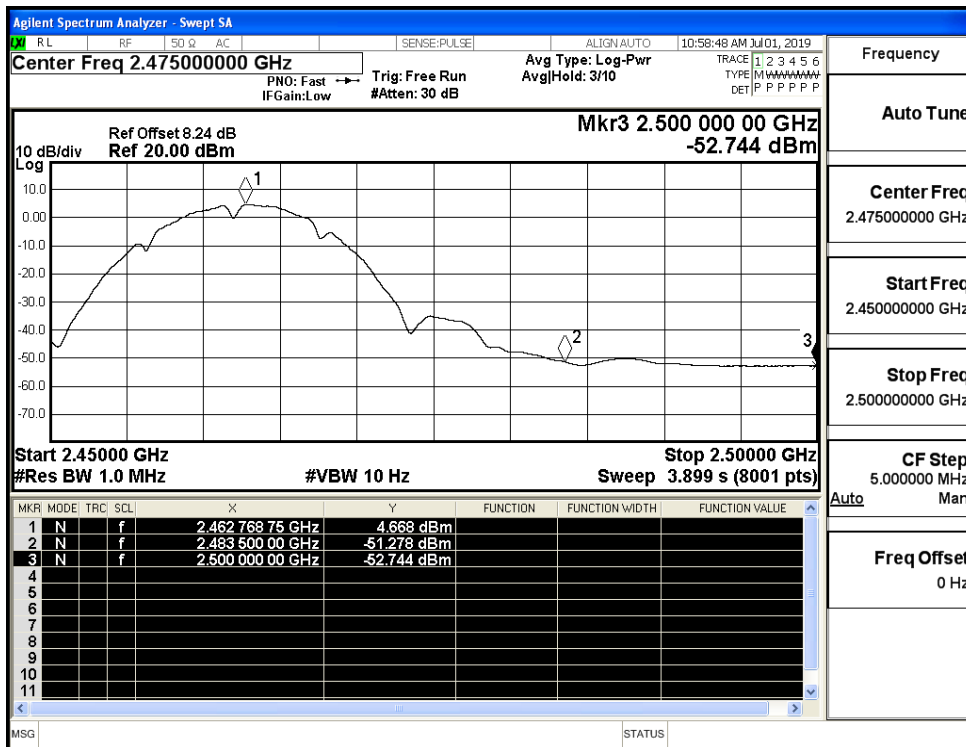
Restrict-band band-edge measurements_11B_2412_Ant1_AV



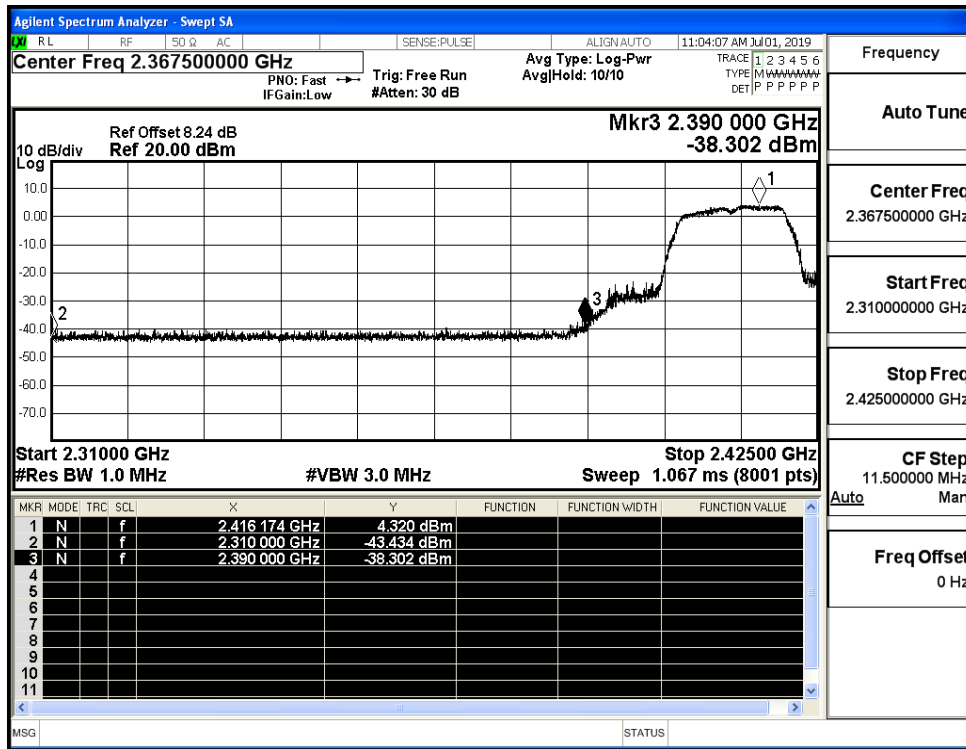
Restrict-band band-edge measurements_11B_2462_Ant1_PEAK



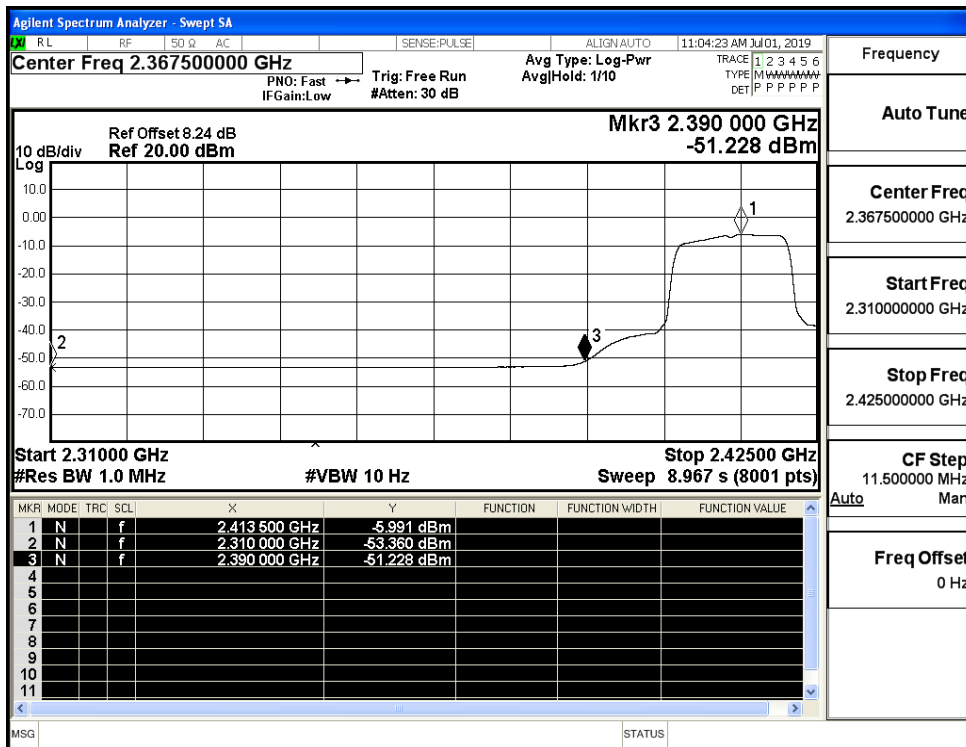
Restrict-band band-edge measurements_11B_2462_Ant1_AV



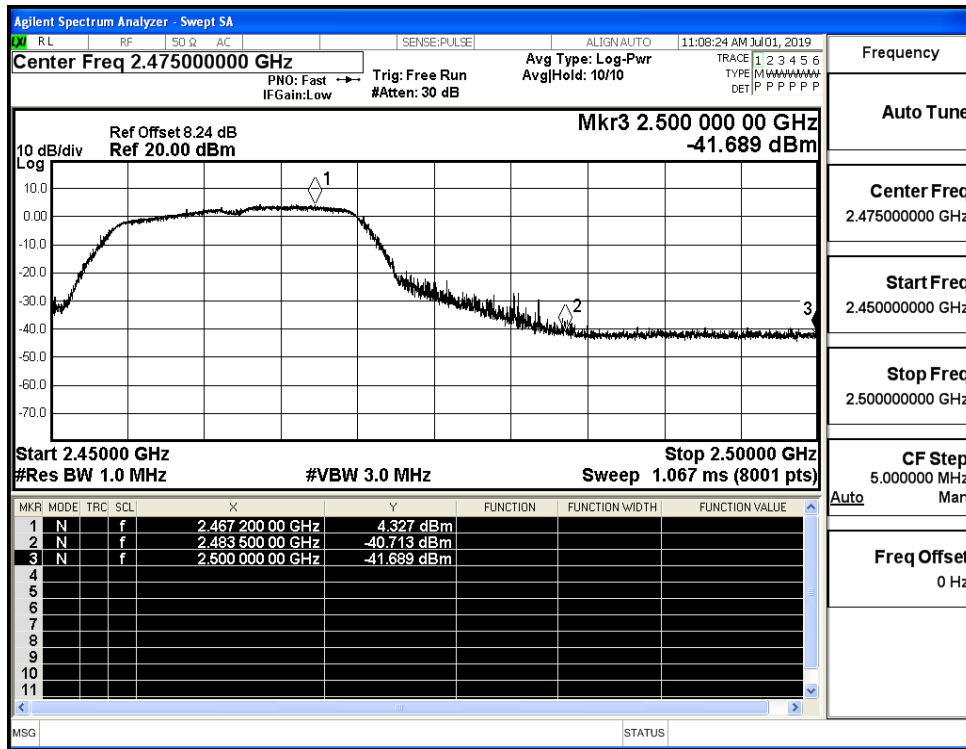
Restrict-band band-edge measurements_11G_2412_Ant1_PEAK



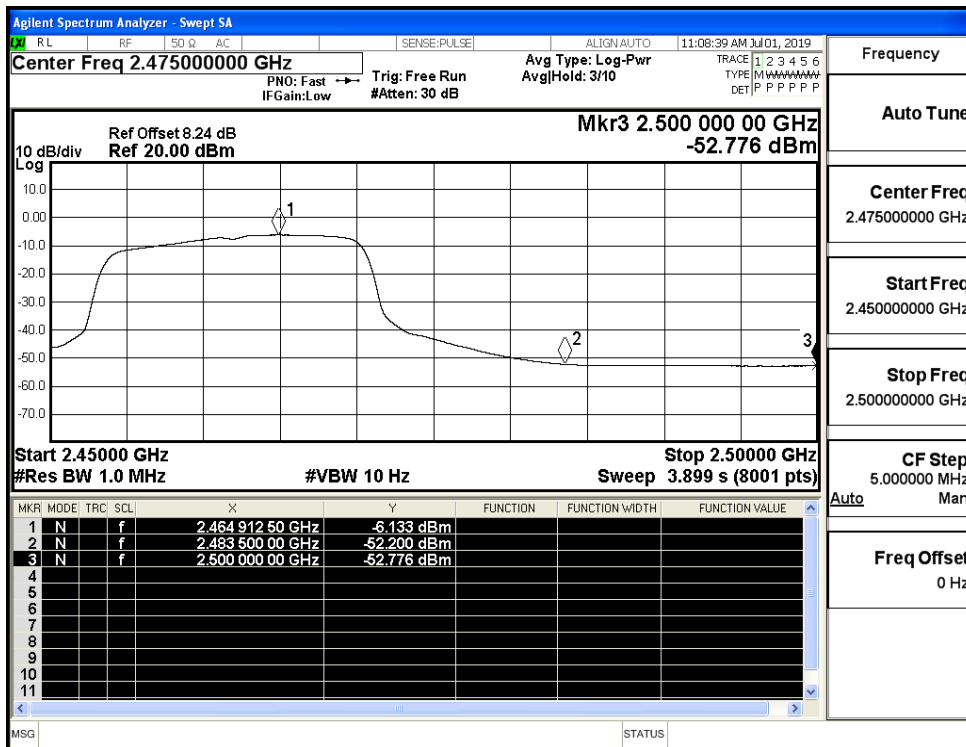
Restrict-band band-edge measurements_11G_2412_Ant1_AV



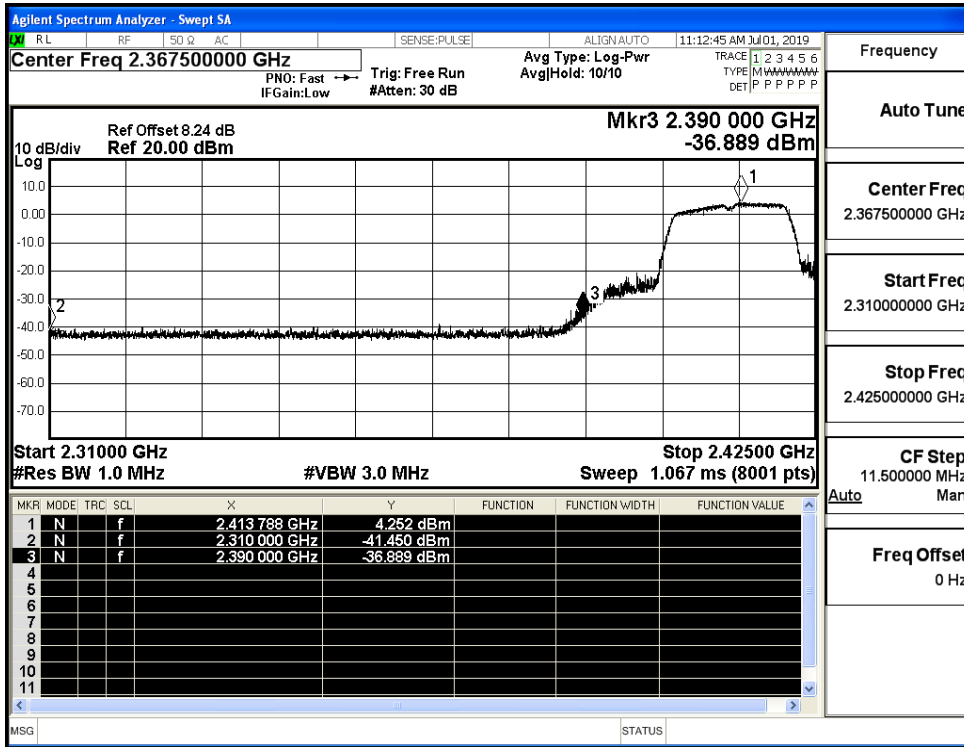
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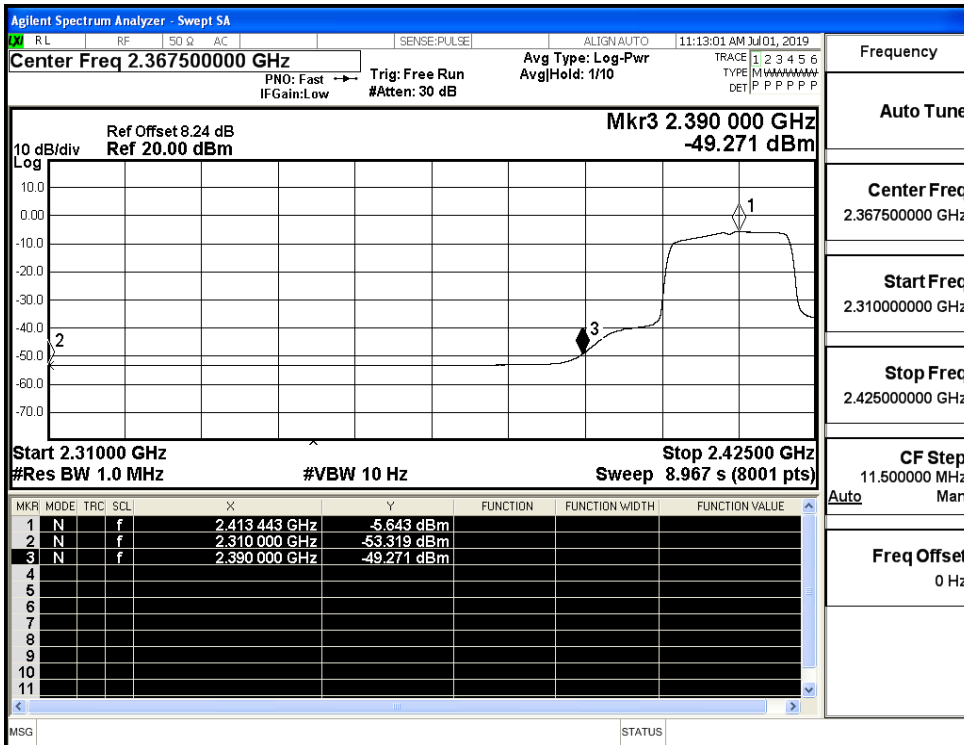
Restrict-band band-edge measurements_11G_2462_Ant1_AV



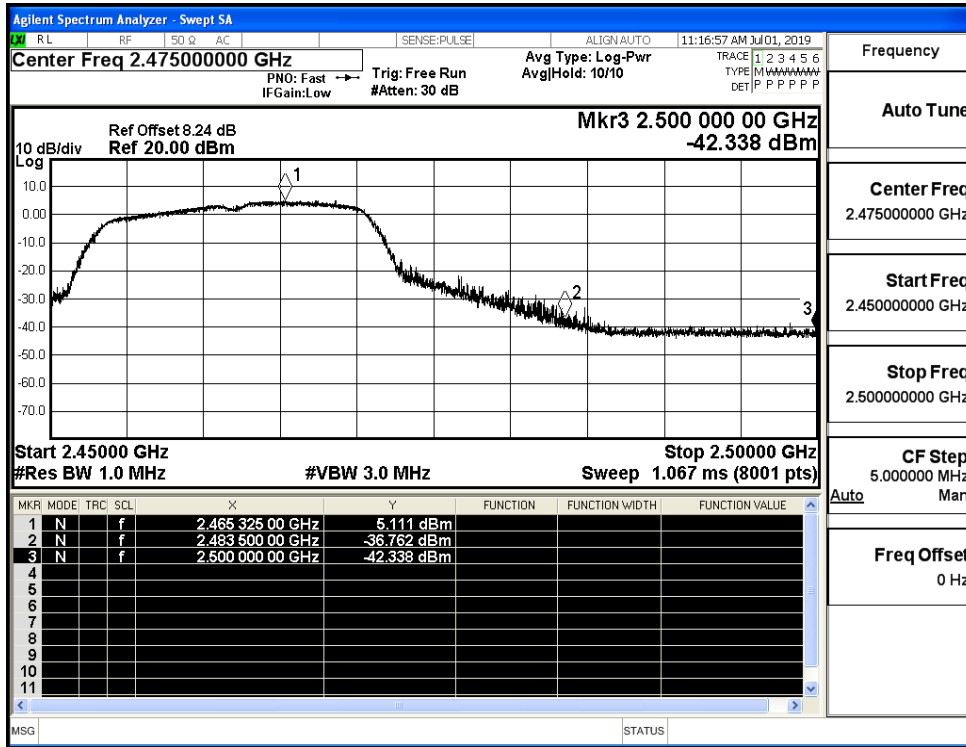
Restrict-band band-edge measurements_11N20SISO_2412_Ant1_PEAK



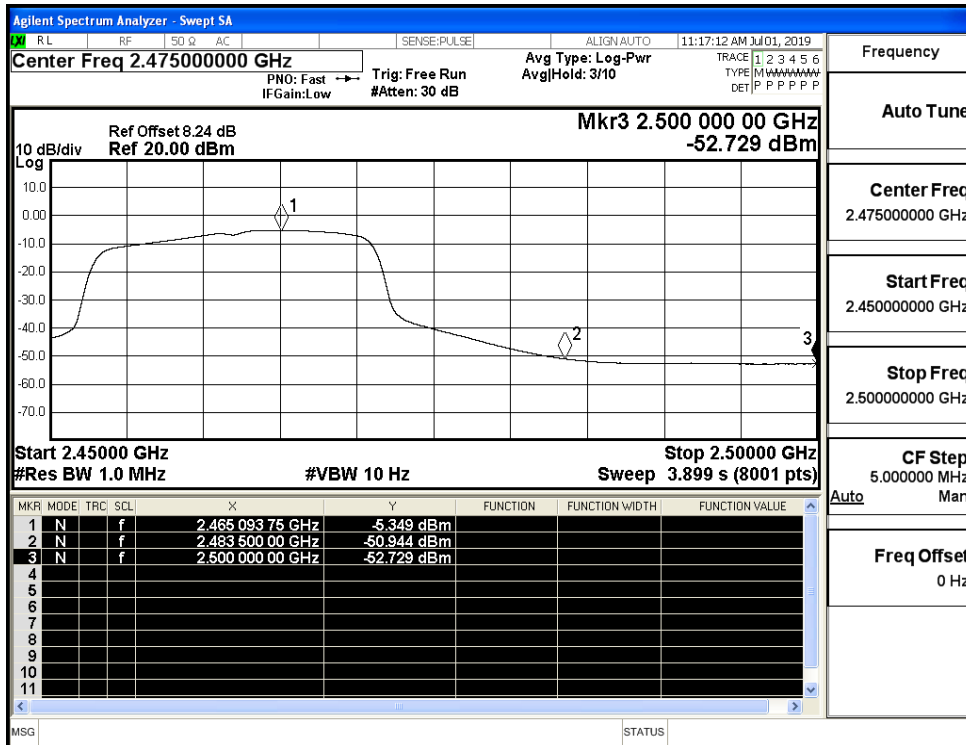
Restrict-band band-edge measurements_11N20SISO_2412_Ant1_AV



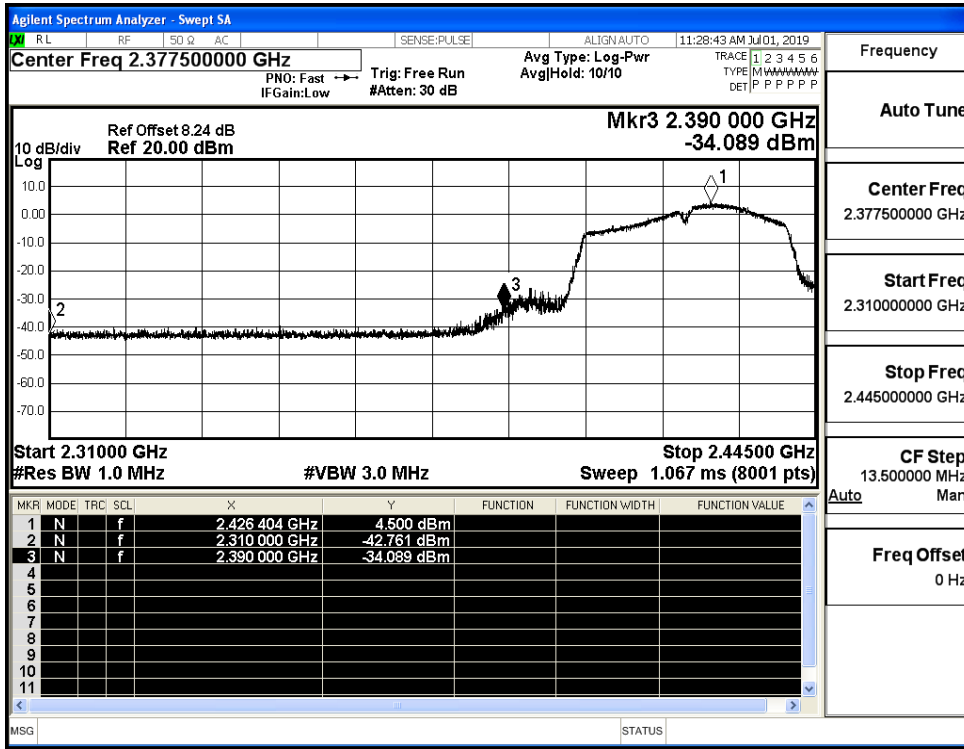
Restrict-band band-edge measurements_11N20SISO_2462_Ant1_PEAK



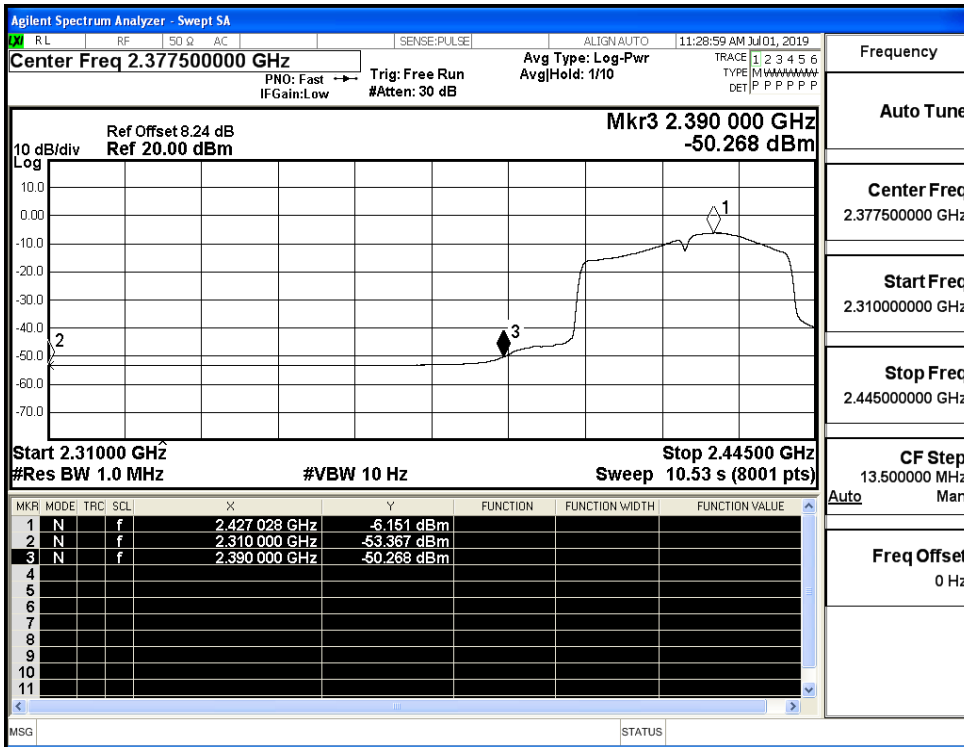
Restrict-band band-edge measurements_11N20SISO_2462_Ant1_AV



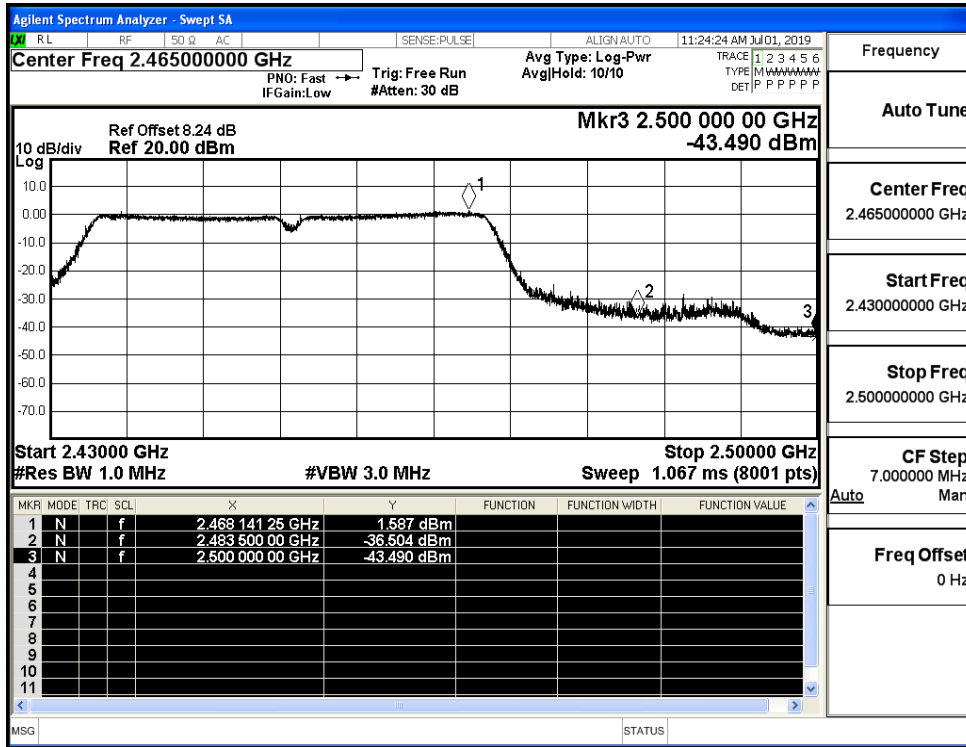
Restrict-band band-edge measurements_11N40SISO_2422_Ant1_PEAK



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

