

Appendix A

RF Test Data for 2.4G WIFI (Conducted Measurement)

Product Name: Battery Camera

Trade Mark: N/A

Test Model: S1

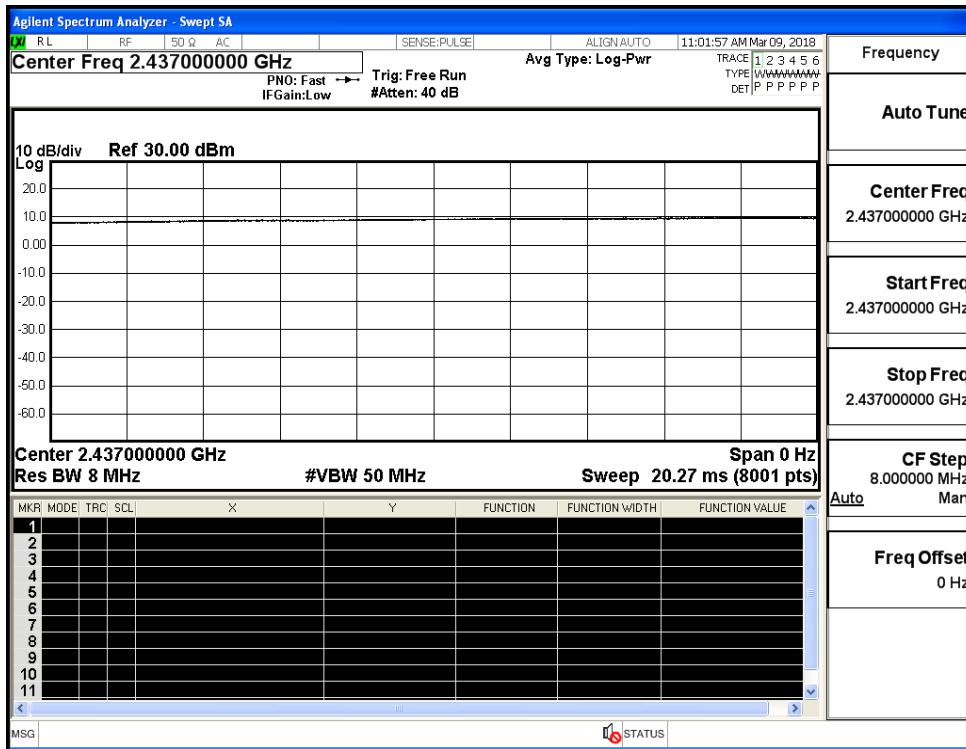
Environmental Conditions

Temperature:	22.5 ° C
Relative Humidity:	52.1%
ATM Pressure:	100.0 kPa
Test Engineer:	Wilson Hong
Supervised by:	Jayden Zhuo

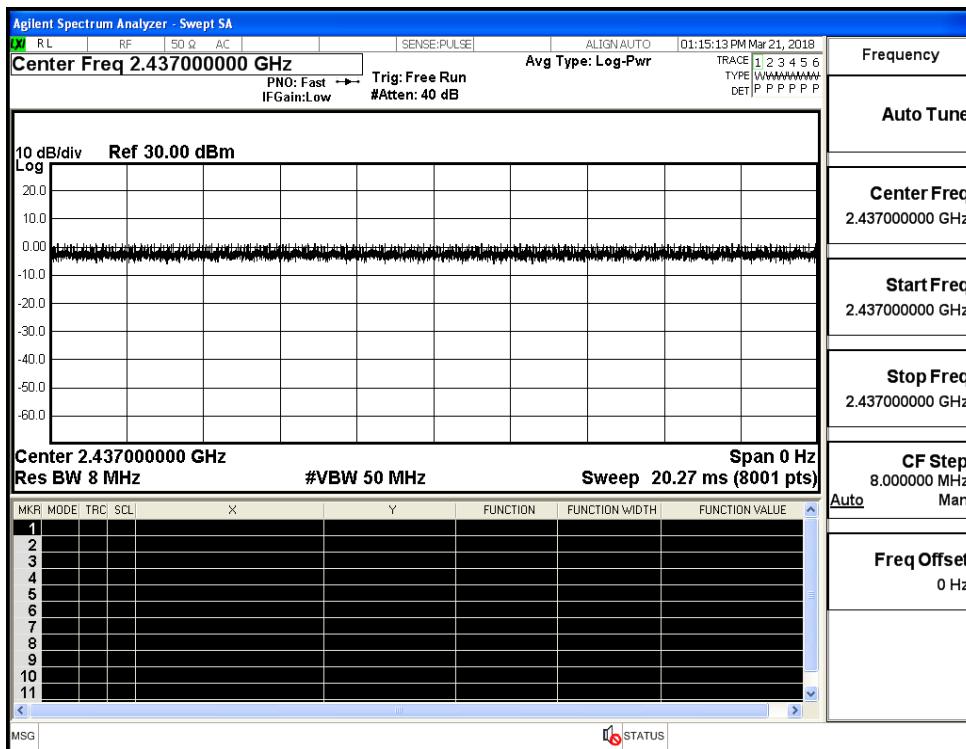
A.1 Duty Cycle

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

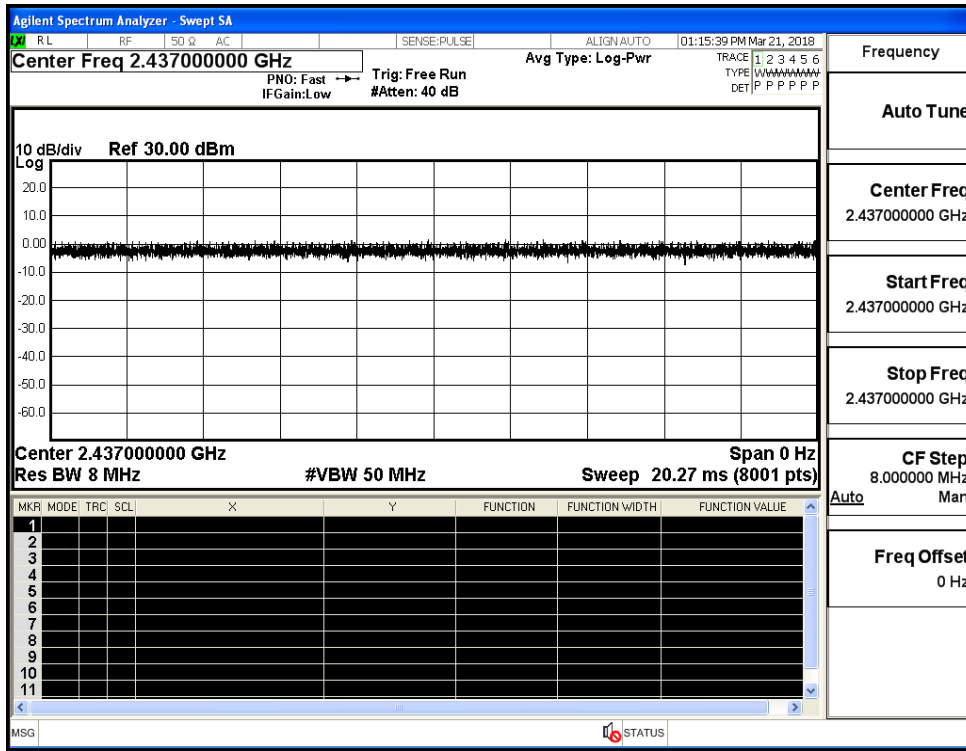
Duty Cycle_11B_2437_Ant1



Duty Cycle_11G_2437_Ant1

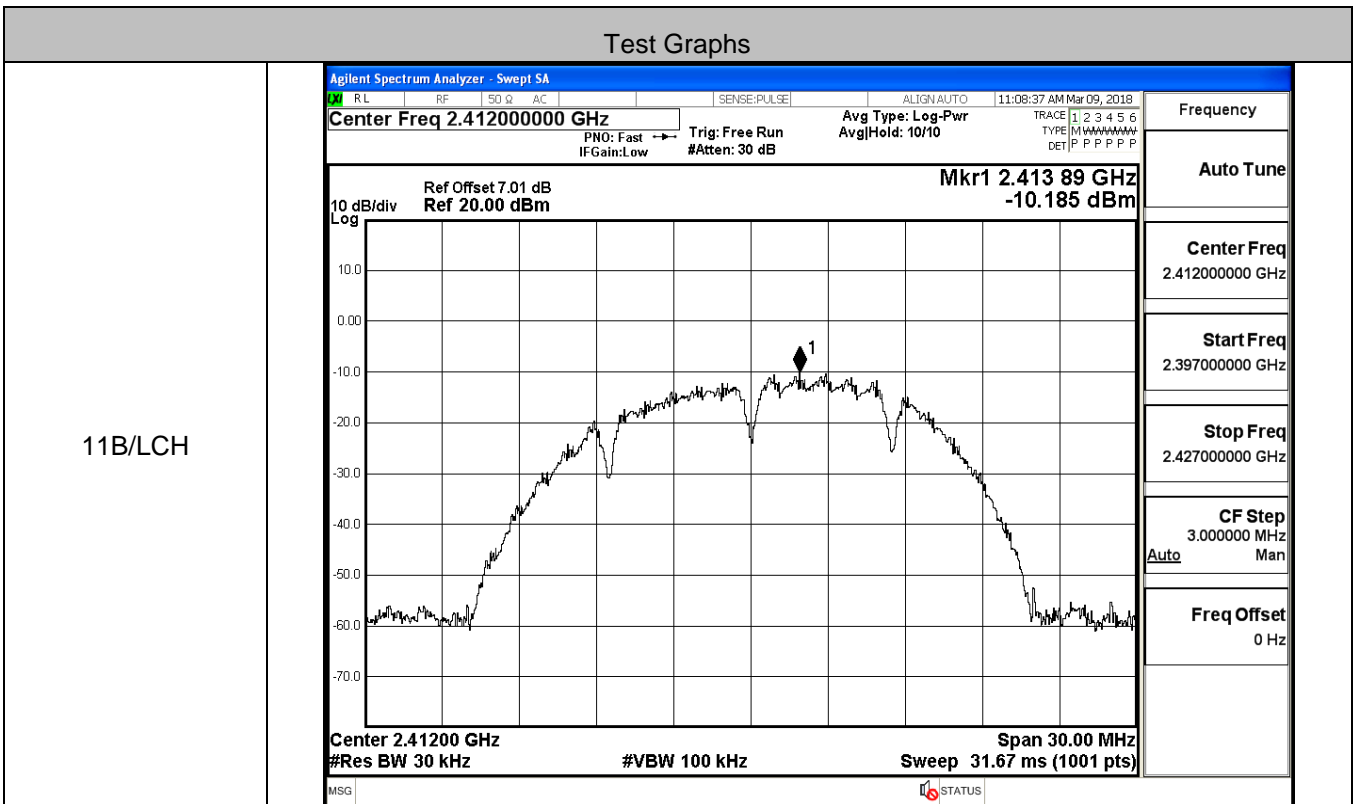


Duty Cycle_11N20SISO_2437_Ant1

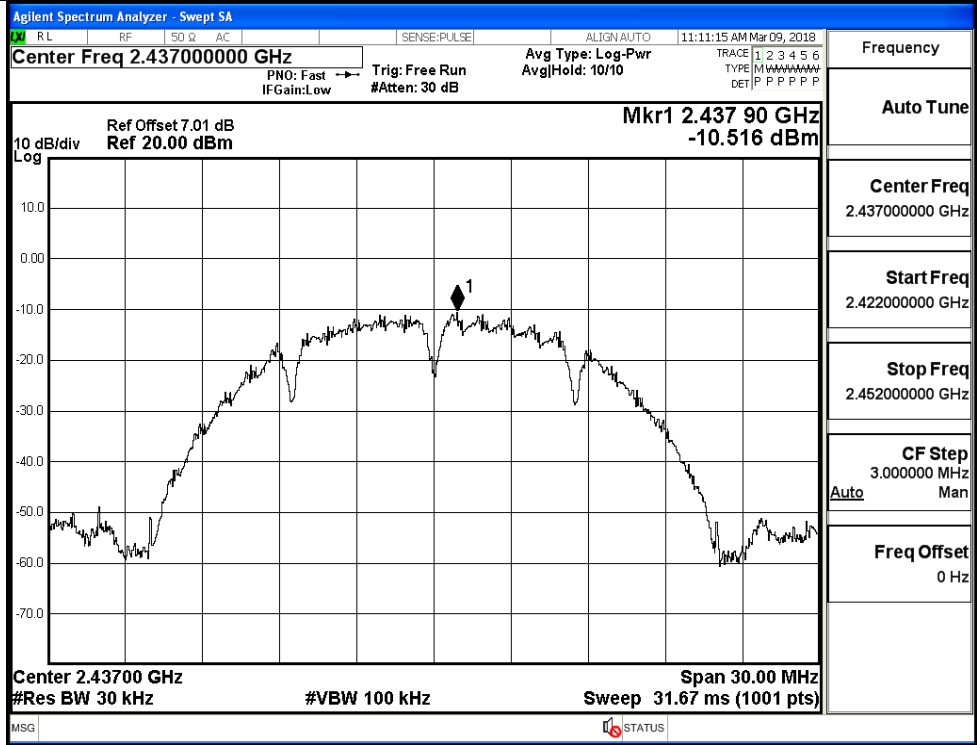


A.2 Maximum Power Spectral Density

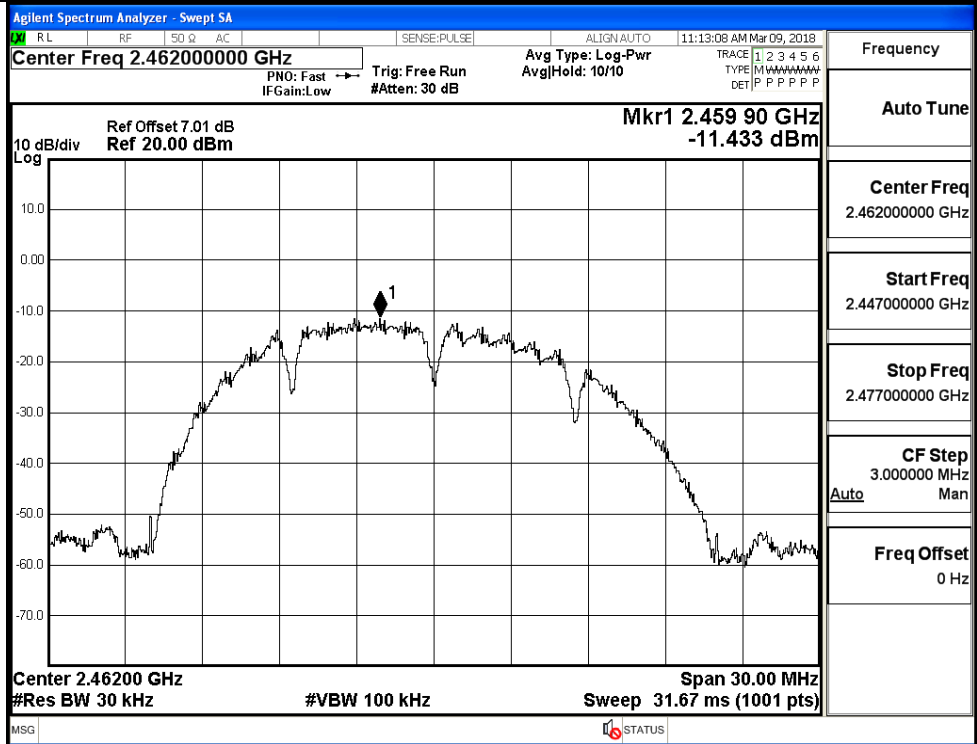
Mode	Channel	Meas.Level [dBm/30KHz]	Limit [dBm/3KHz]	Verdict
11B	LCH	-10.185	8	PASS
	MCH	-10.516	8	PASS
	HCH	-11.433	8	PASS
11G	LCH	-14.719	8	PASS
	MCH	-14.927	8	PASS
	HCH	-14.947	8	PASS
11N20SISO	LCH	-14.602	8	PASS
	MCH	-15.010	8	PASS
	HCH	-14.783	8	PASS



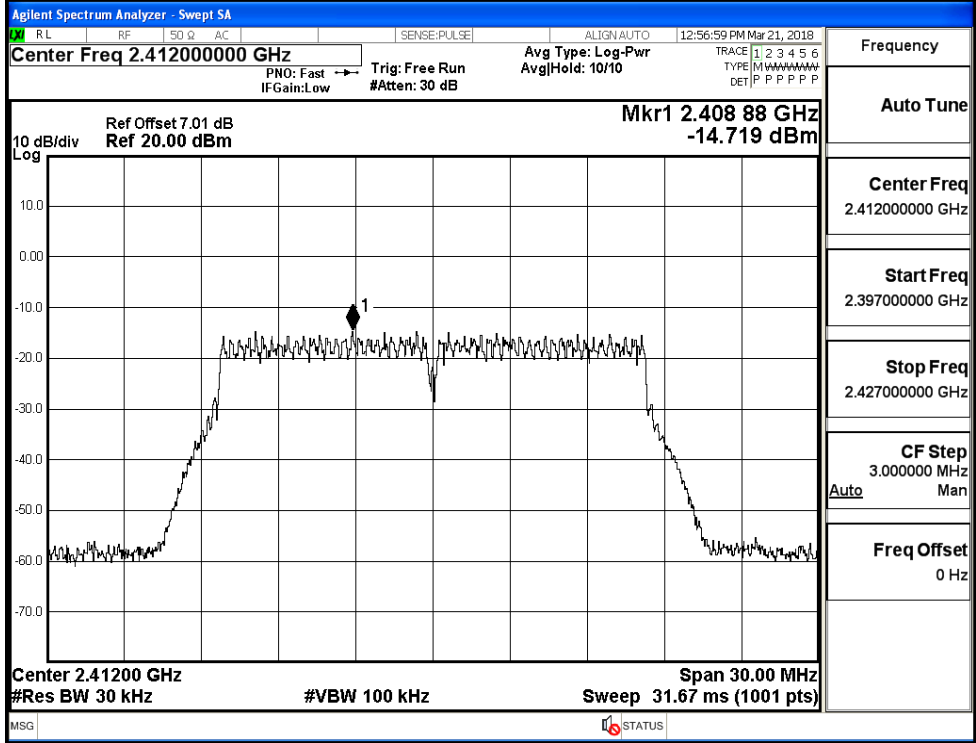
11B/MCH



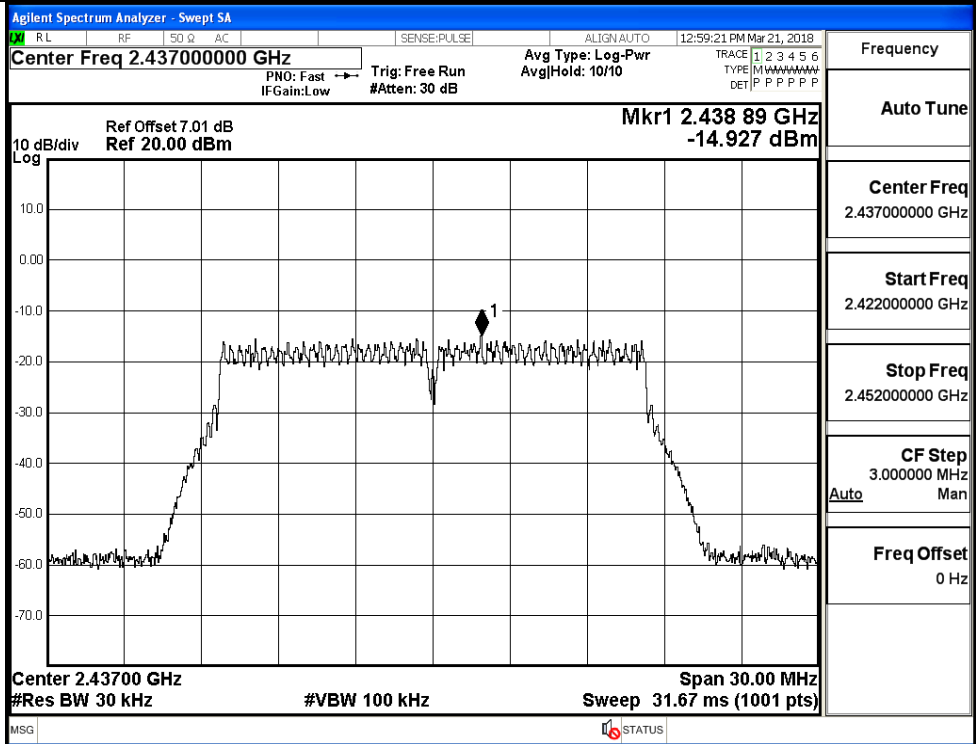
11B/HCH



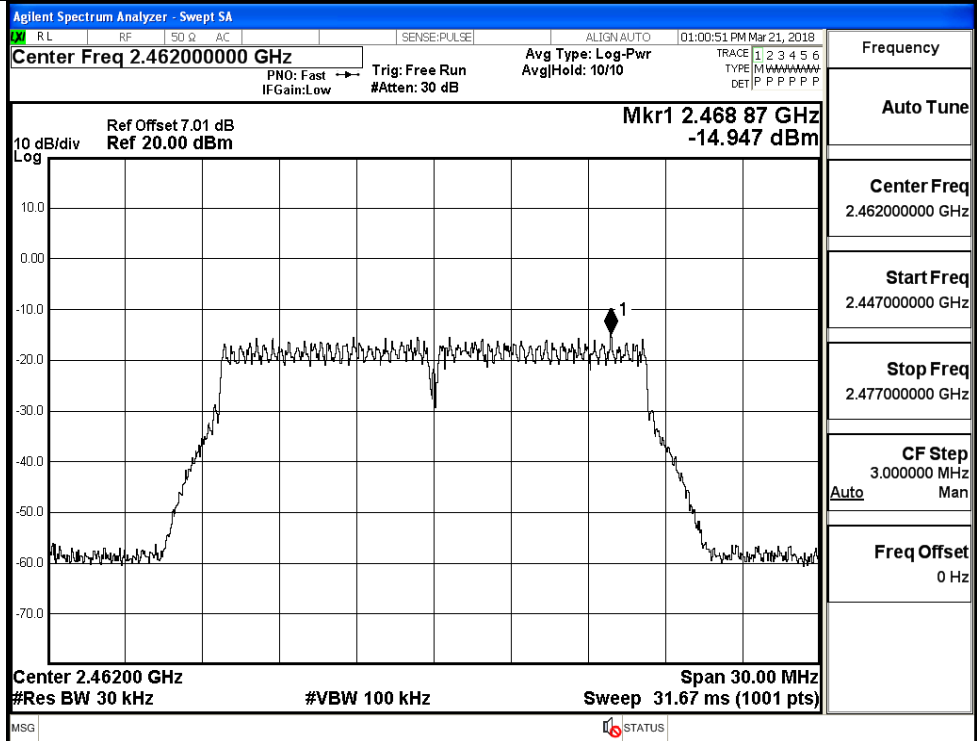
11G/LCH



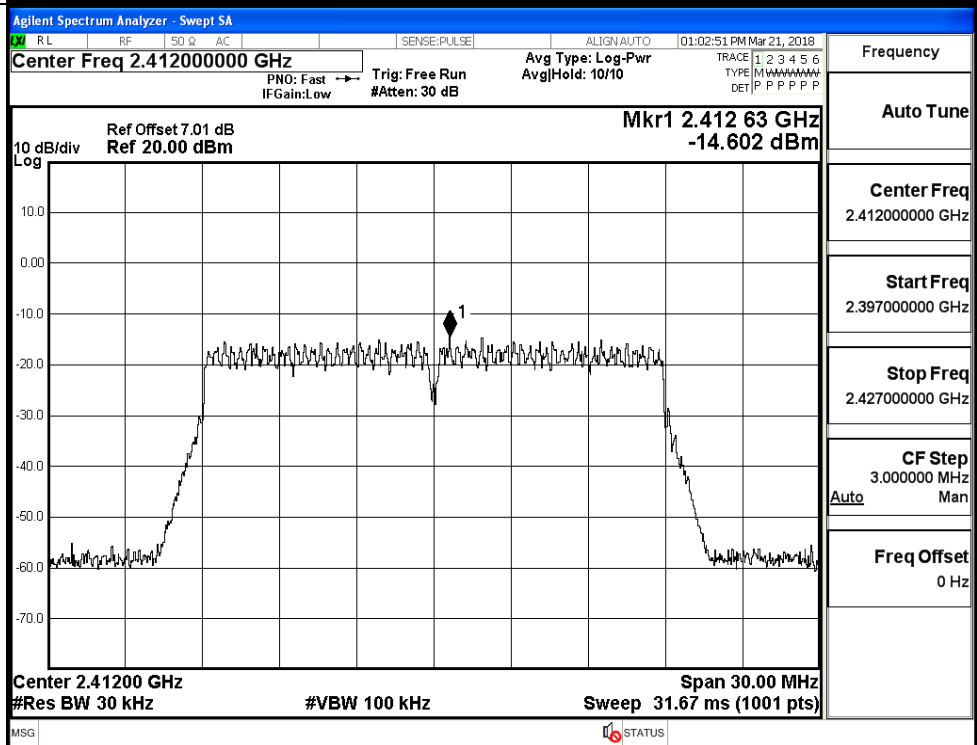
11G/MCH



11G/HCH



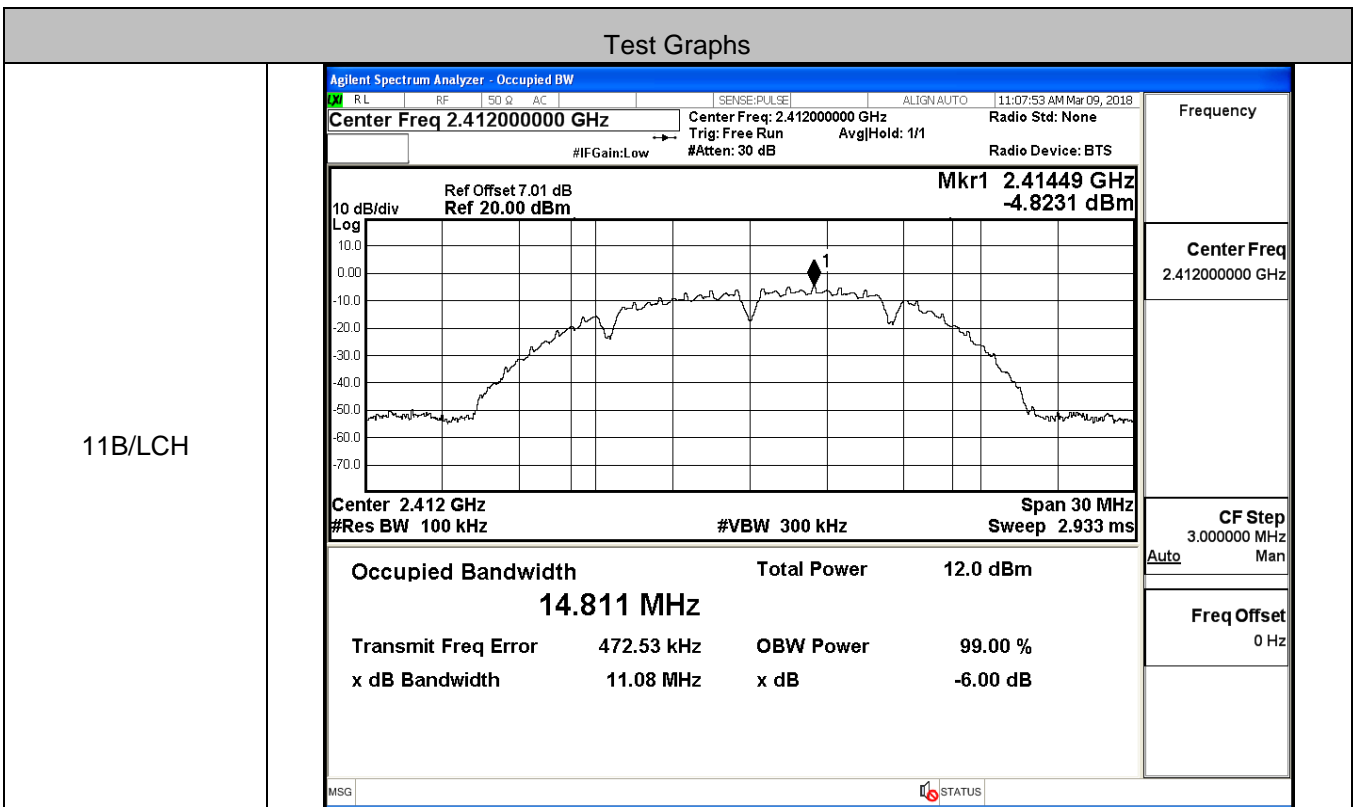
11N20SISO/LCH



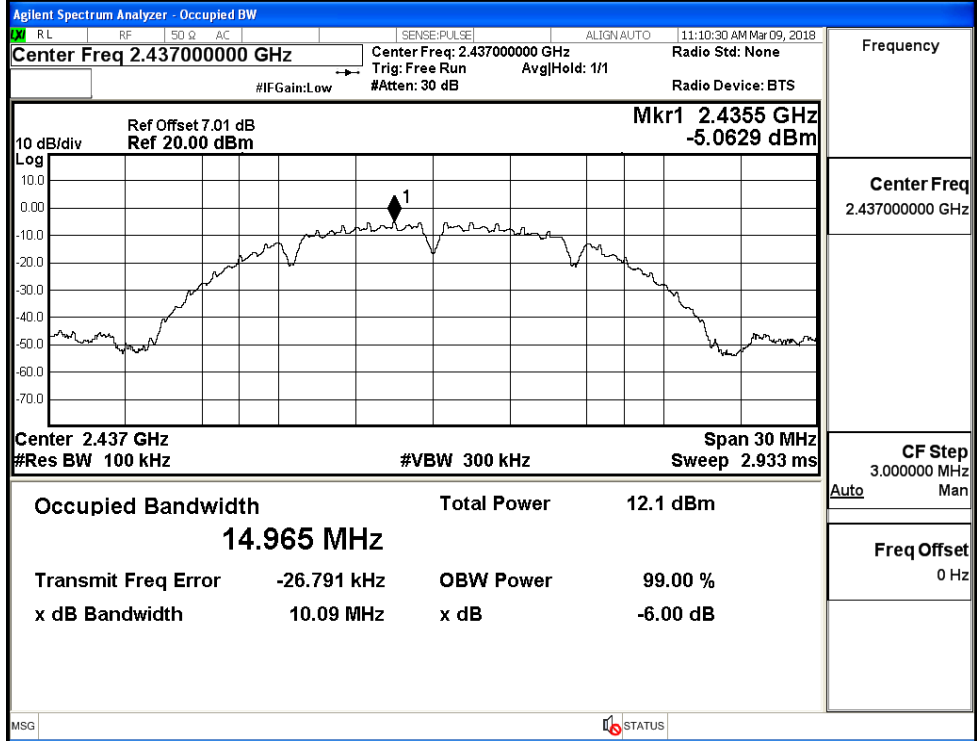
<p>11N20SISO/MCH</p>	<p>Agilent Spectrum Analyzer - Swept SA Center Freq 2.43700000 GHz PNO: Fast IFGain:Low Trig: Free Run #Atten: 30 dB Avg Type: Log-Pwr AvgHold: 10/10 Ref Offset 7.01 dB Ref 20.00 dBm Mkr1 2.437 63 GHz -15.010 dBm 10 dB/div Log Center 2.43700 GHz #Res BW 30 kHz #VBW 100 kHz Span 30.00 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 7.01 dB Ref 20.00 dBm Mkr1 2.462 63 GHz -14.783 dBm 10 dB/div Log Center 2.46200 GHz #Res BW 30 kHz #VBW 100 kHz Span 30.00 MHz Sweep 31.67 ms (1001 pts)</p>	<p>Frequency</p> <p>Auto Tune</p> <p>Center Freq 2.46200000 GHz</p> <p>Start Freq 2.447000000 GHz</p> <p>Stop Freq 2.477000000 GHz</p> <p>CF Step 3.000000 MHz Auto Man</p> <p>Freq Offset 0 Hz</p>

A.3 6dB Bandwidth

Mode	Channel	6dB Bandwidth [MHz]	Limit [MHz]	Verdict
11B	LCH	11.08	≥0.5	PASS
	MCH	10.09	≥0.5	PASS
	HCH	10.15	≥0.5	PASS
11G	LCH	16.61	≥0.5	PASS
	MCH	16.61	≥0.5	PASS
	HCH	16.62	≥0.5	PASS
11N20SISO	LCH	17.82	≥0.5	PASS
	MCH	17.83	≥0.5	PASS
	HCH	17.83	≥0.5	PASS

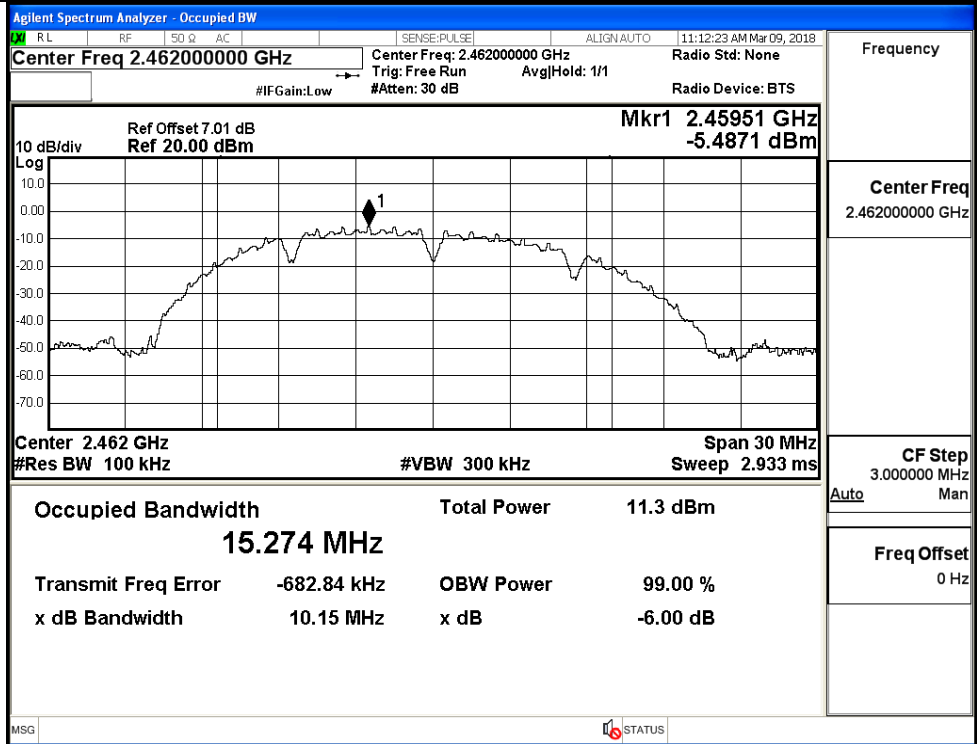


11B/MCH



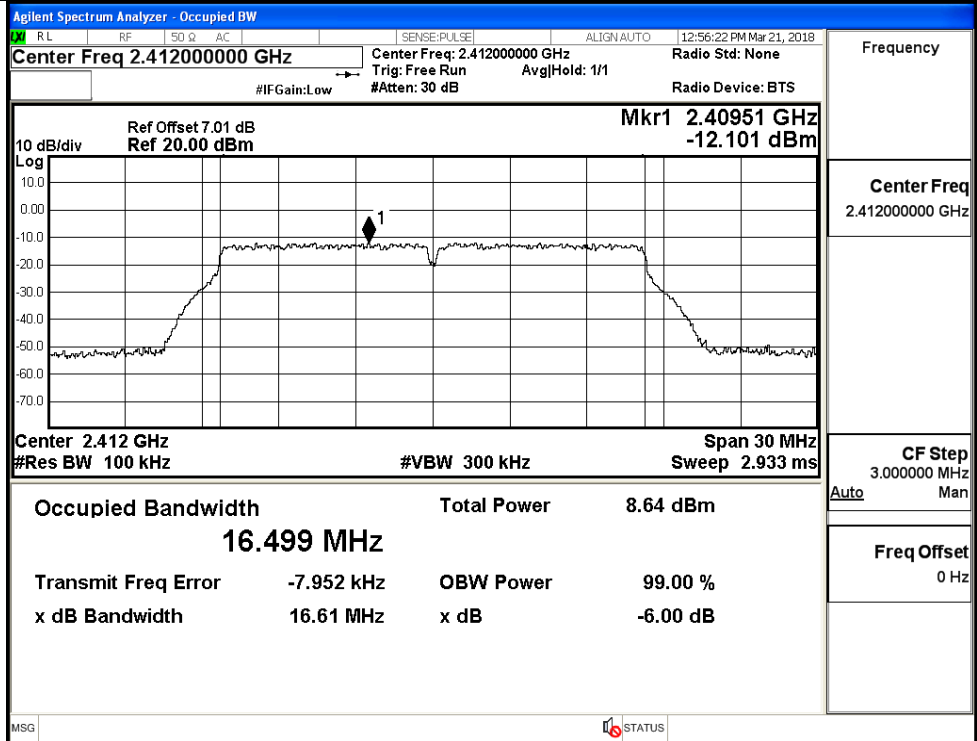
Frequency	2.43700000 GHz
Center Freq	2.43700000 GHz
CF Step	3.000000 MHz
Auto	Man
Freq Offset	0 Hz

11B/HCH



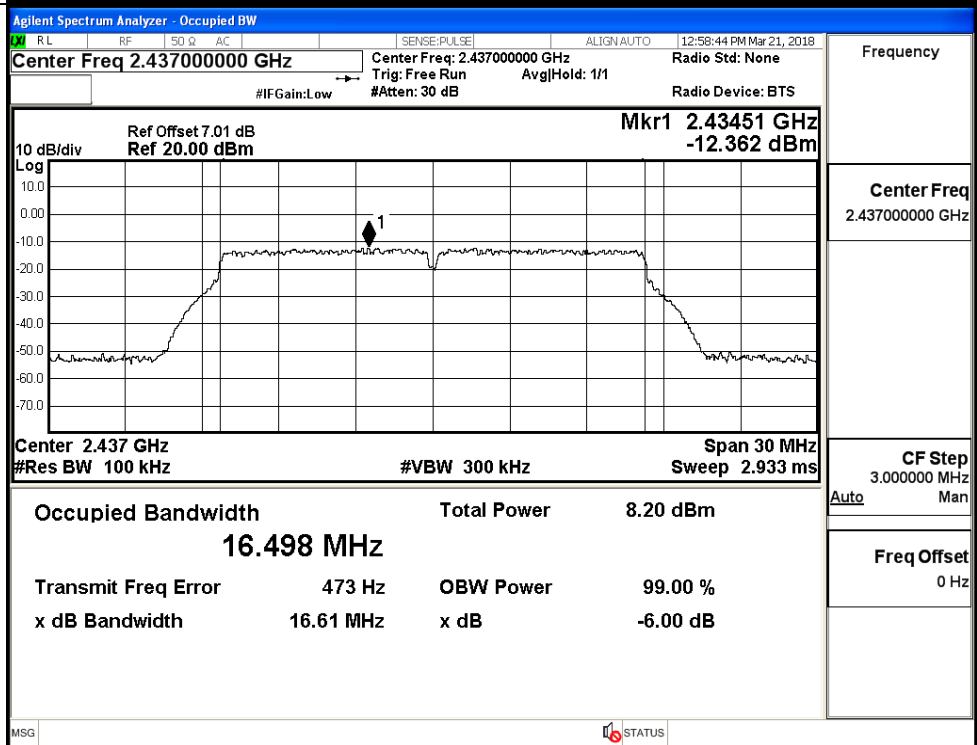
Frequency	2.46200000 GHz
Center Freq	2.46200000 GHz
CF Step	3.000000 MHz
Auto	Man
Freq Offset	0 Hz

11G/LCH



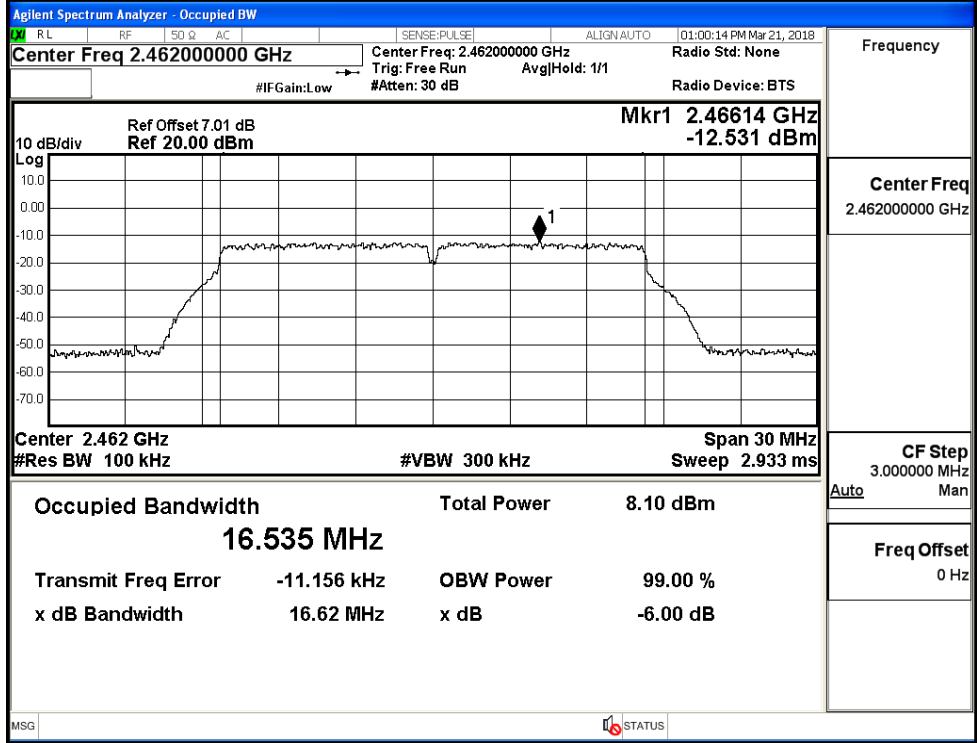
Frequency	2.41200000 GHz
Center Freq	2.41200000 GHz
CF Step	3.000000 MHz
Auto	Man
Freq Offset	0 Hz

11G/MCH



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

11G/HCH



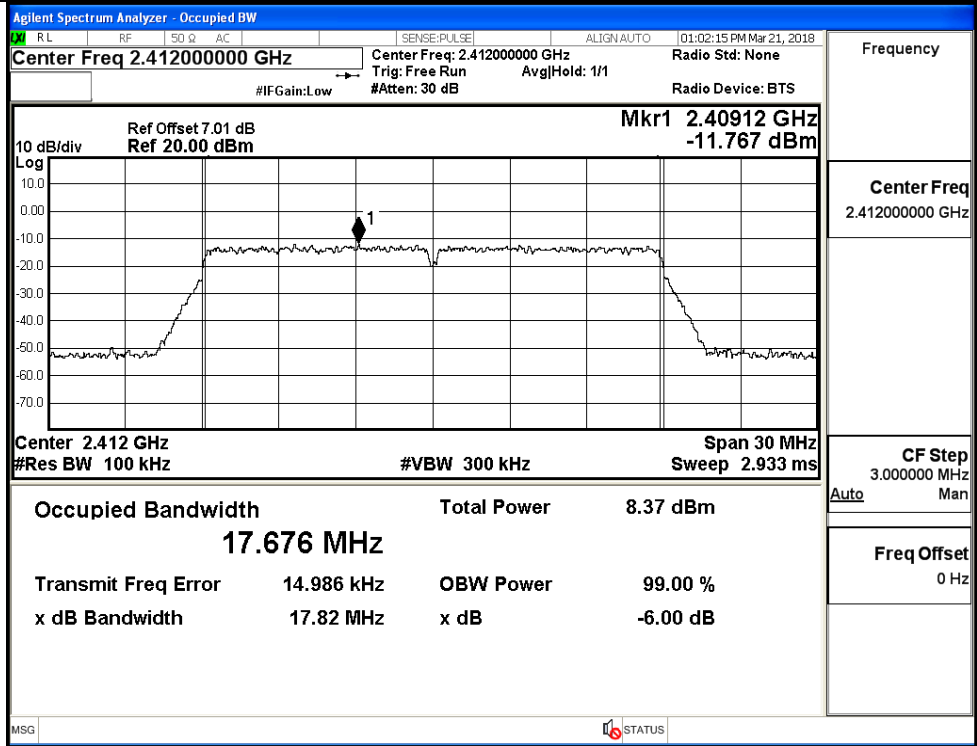
Frequency

Center Freq
2.46200000 GHz

CF Step
3.000000 MHz
Auto Man

Freq Offset
0 Hz

11N20SISO/LCH



Frequency

Center Freq
2.41200000 GHz

CF Step
3.000000 MHz
Auto Man

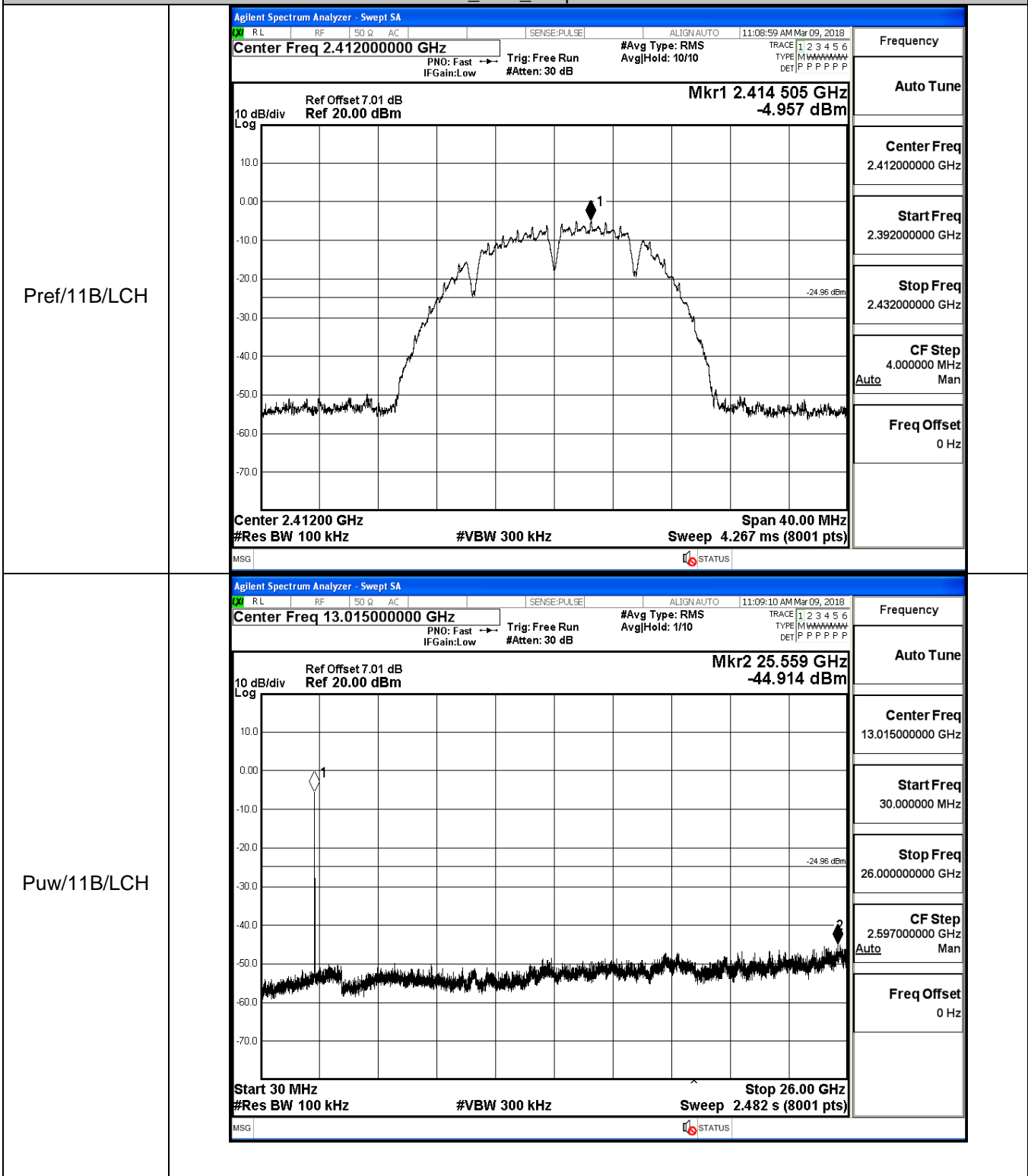
Freq Offset
0 Hz

<p>11N20SISO/MCH</p>	<p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.43700000 GHz</p> <p>Ref Offset 7.01 dB Ref 20.00 dBm</p> <p>Center 2.437 GHz #Res BW 100 kHz #VBW 300 kHz Span 30 MHz Sweep 2.933 ms</p> <p>Occupied Bandwidth 17.675 MHz Total Power 7.98 dBm</p> <table border="1"> <tr> <td>Transmit Freq Error</td> <td>19.677 kHz</td> <td>OBW Power</td> <td>99.00 %</td> </tr> <tr> <td>x dB Bandwidth</td> <td>17.83 MHz</td> <td>x dB</td> <td>-6.00 dB</td> </tr> </table>	Transmit Freq Error	19.677 kHz	OBW Power	99.00 %	x dB Bandwidth	17.83 MHz	x dB	-6.00 dB	<p>Frequency</p> <p>Center Freq 2.43700000 GHz</p> <p>CF Step 3.000000 MHz</p> <p>Freq Offset 0 Hz</p>
Transmit Freq Error	19.677 kHz	OBW Power	99.00 %							
x dB Bandwidth	17.83 MHz	x dB	-6.00 dB							
<p>11N20SISO/HCH</p>	<p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.46200000 GHz</p> <p>Ref Offset 7.01 dB Ref 20.00 dBm</p> <p>Center 2.462 GHz #Res BW 100 kHz #VBW 300 kHz Span 30 MHz Sweep 2.933 ms</p> <p>Occupied Bandwidth 17.673 MHz Total Power 8.04 dBm</p> <table border="1"> <tr> <td>Transmit Freq Error</td> <td>14.698 kHz</td> <td>OBW Power</td> <td>99.00 %</td> </tr> <tr> <td>x dB Bandwidth</td> <td>17.83 MHz</td> <td>x dB</td> <td>-6.00 dB</td> </tr> </table>	Transmit Freq Error	14.698 kHz	OBW Power	99.00 %	x dB Bandwidth	17.83 MHz	x dB	-6.00 dB	<p>Frequency</p> <p>Center Freq 2.46200000 GHz</p> <p>CF Step 3.000000 MHz</p> <p>Freq Offset 0 Hz</p>
Transmit Freq Error	14.698 kHz	OBW Power	99.00 %							
x dB Bandwidth	17.83 MHz	x dB	-6.00 dB							

A.4 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
11B	LCH	-4.957	-44.914	-23.137	PASS
	MCH	-5.19	-45.292	-23.092	PASS
	HCH	-5.664	-44.801	-23.273	PASS
11G	LCH	-12.185	-44.182	-32.185	PASS
	MCH	-12.436	-43.965	-32.436	PASS
	HCH	-12.53	-44.868	-32.530	PASS
11N20 SISO	LCH	-11.839	-44.911	-31.839	PASS
	MCH	-12.516	-42.793	-32.516	PASS
	HCH	-12.366	-44.304	-32.366	PASS

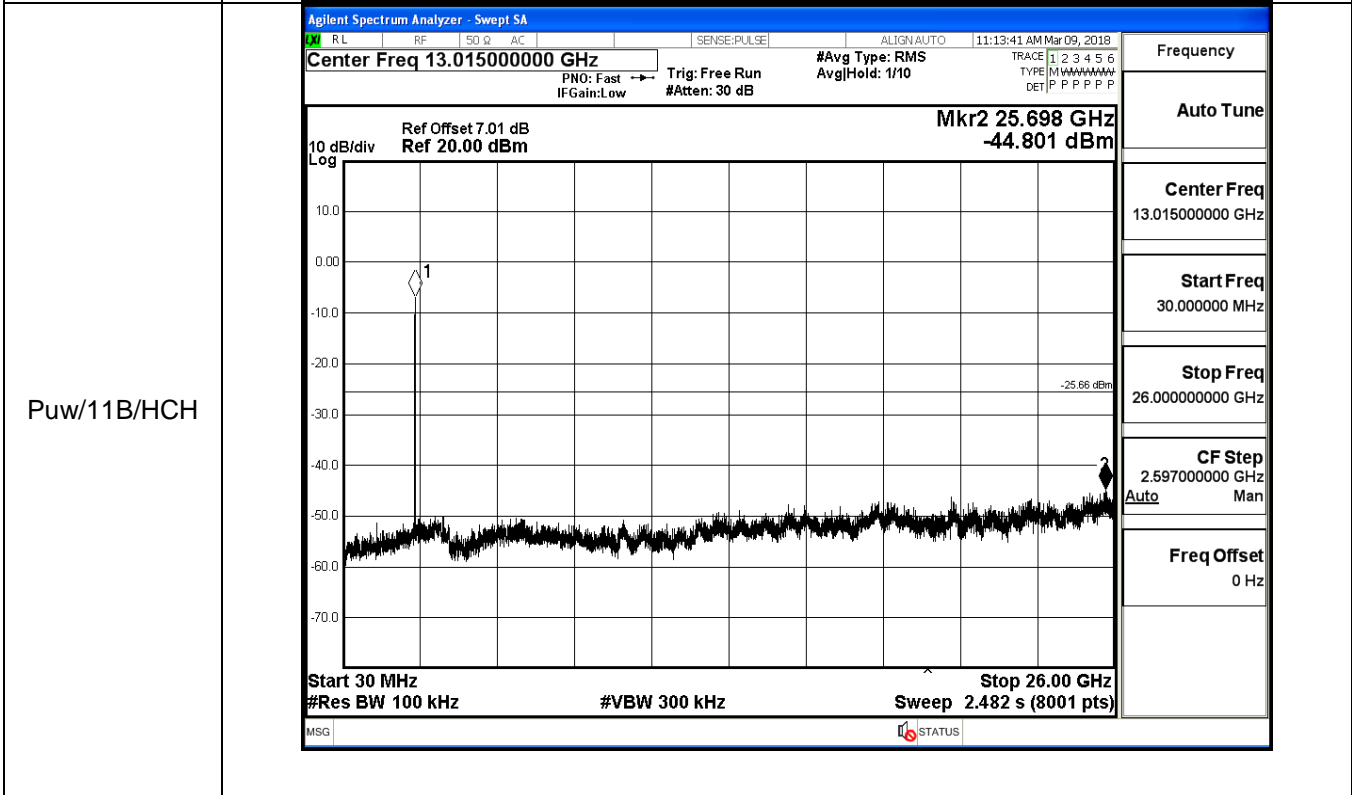
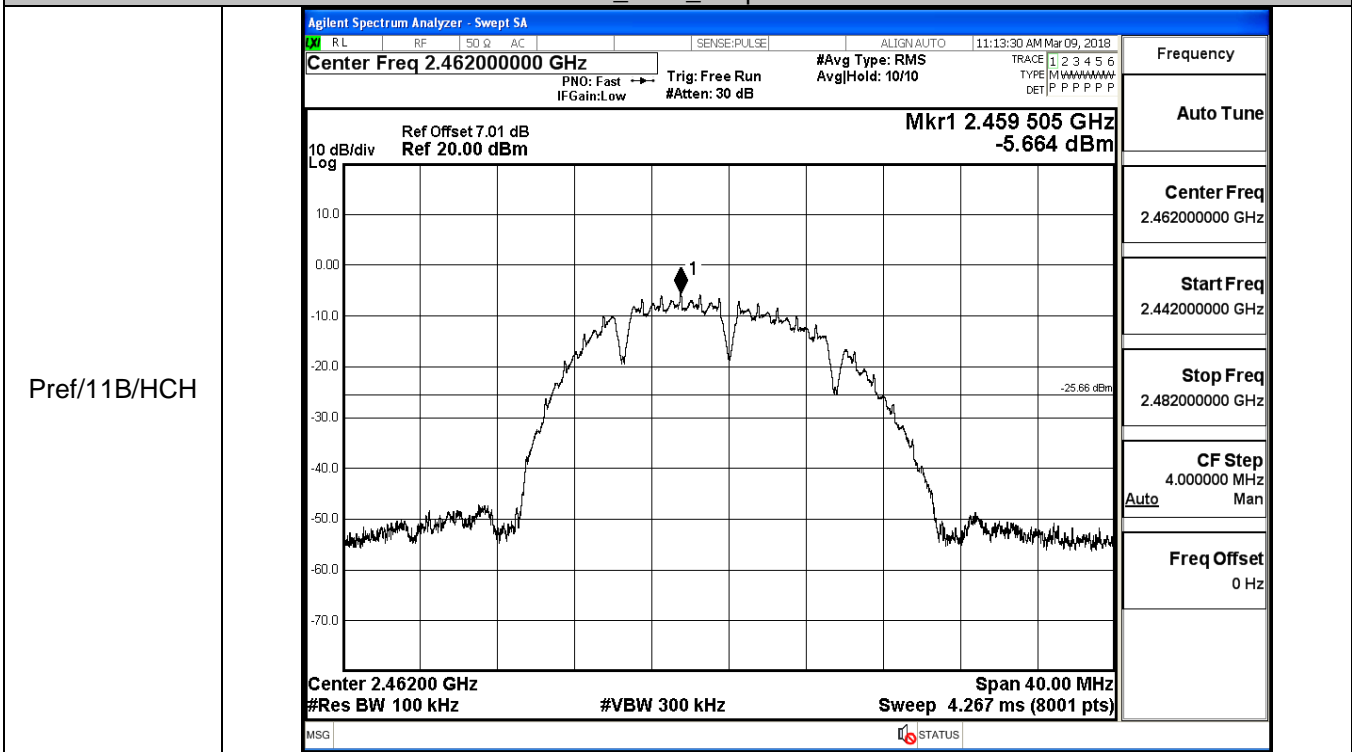
11B_LCH_Graphs



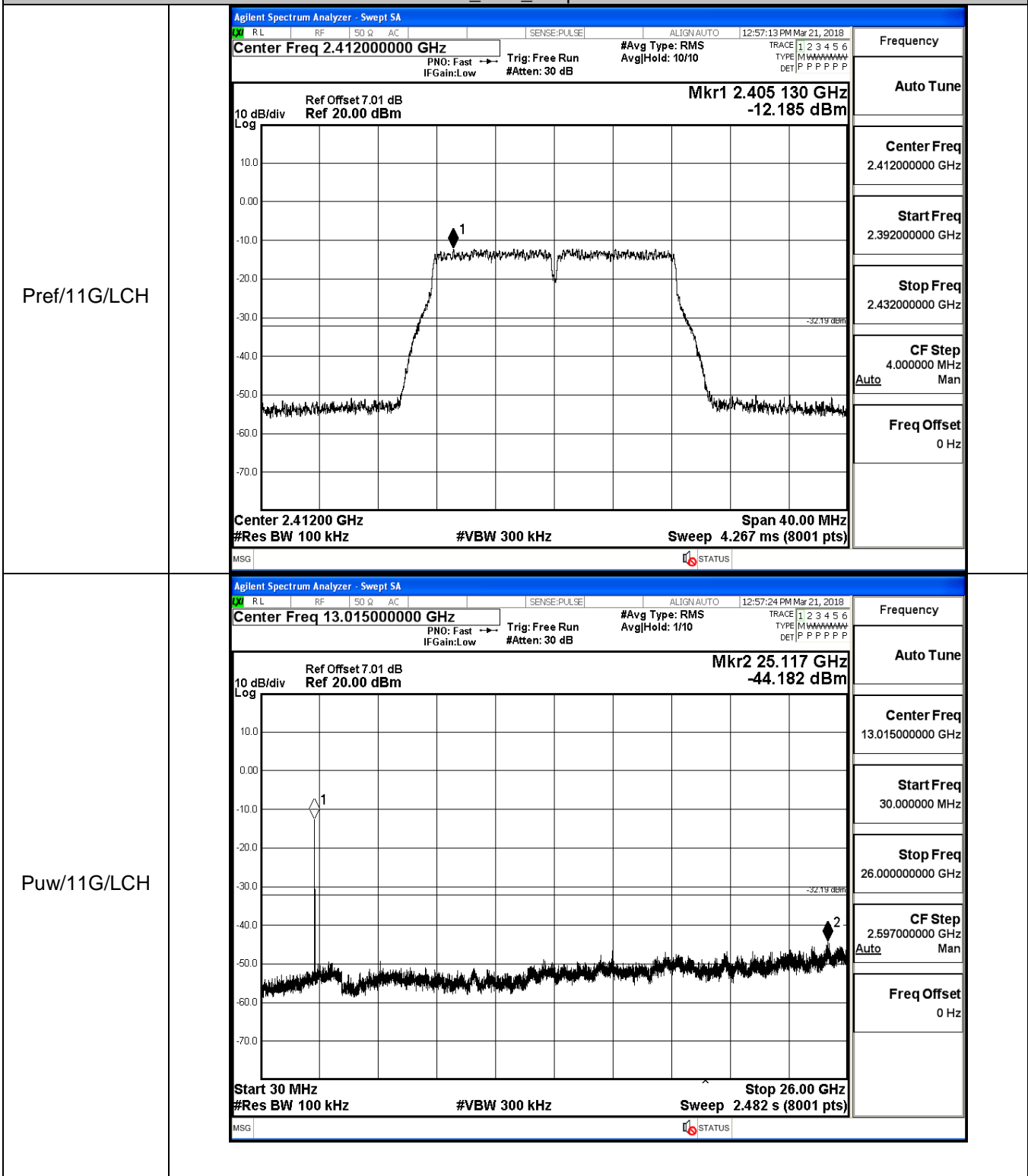
11B_MCH_Graphs

<p>Pref/11B/MCH</p>	<p>Agilent Spectrum Analyzer - Swept SA</p> <p>Center Freq 2.43700000 GHz</p> <p>Mkr1 2.435 505 GHz -5.190 dBm</p> <p>Center 2.4370 GHz #Res BW 100 kHz #VBW 300 kHz Sweep 4.267 ms (8001 pts)</p>	<p>Frequency</p> <p>Auto Tune</p> <p>Center Freq 2.437000000 GHz</p> <p>Start Freq 2.417000000 GHz</p> <p>Stop Freq 2.457000000 GHz</p> <p>CF Step 4.000000 MHz Auto Man</p> <p>Freq Offset 0 Hz</p>
	<p>Puw/11B/MCH</p>	<p>Agilent Spectrum Analyzer - Swept SA</p> <p>Center Freq 13.01500000 GHz</p> <p>Mkr2 25.01 GHz -45.292 dBm</p> <p>Start 30 MHz #Res BW 100 kHz #VBW 300 kHz Sweep 2.482 s (8001 pts)</p>

11B_HCH_Graphs



11G_LCH_Graphs



11G_MCH_Graphs

<p>Pref/11G/MCH</p>	<p>Agilent Spectrum Analyzer - Swept SA Center Freq 2.43700000 GHz #Res BW 100 kHz #VBW 300 kHz Sweep 4.267 ms (8001 pts) Mkr1 2.434 505 GHz -12.436 dBm Ref Offset 7.01 dB Ref 20.00 dBm #Ave Type: RMS AvgHold: 10/10 Trig: Free Run #Atten: 30 dB PNO: Fast IFGain: Low STATUS</p>	<p>Frequency</p> <p>Auto Tune</p> <p>Center Freq 2.437000000 GHz</p> <p>Start Freq 2.417000000 GHz</p> <p>Stop Freq 2.457000000 GHz</p> <p>CF Step 4.000000 MHz Auto Man</p> <p>Freq Offset 0 Hz</p>
	<p>Puw/11G/MCH</p>	<p>Agilent Spectrum Analyzer - Swept SA Center Freq 13.01500000 GHz #Res BW 100 kHz #VBW 300 kHz Sweep 2.482 s (8001 pts) Mkr2 25.688 GHz -43.965 dBm Ref Offset 7.01 dB Ref 20.00 dBm #Ave Type: RMS AvgHold: 1/10 Trig: Free Run #Atten: 30 dB PNO: Fast IFGain: Low STATUS</p>

11G_HCH_Graphs

<p>Pref/11G/HCH</p>	<p>Agilent Spectrum Analyzer - Swept SA Center Freq 2.46200000 GHz Ref Offset 7.01 dB Ref 20.00 dBm Mkr1 2.463 655 GHz -12.530 dBm 10 dB/div Log Center 2.46200 GHz #Res BW 100 kHz #VBW 300 kHz Span 40.00 MHz Sweep 4.267 ms (8001 pts)</p>	<p>Frequency Auto Tune Center Freq 2.462000000 GHz Start Freq 2.442000000 GHz Stop Freq 2.482000000 GHz CF Step 4.000000 MHz Auto Man Freq Offset 0 Hz</p>
<p>Puw/11G/HCH</p>	<p>Agilent Spectrum Analyzer - Swept SA Center Freq 13.01500000 GHz Ref Offset 7.01 dB Ref 20.00 dBm Mkr2 25.851 GHz -44.868 dBm 10 dB/div Log Start 30 MHz #Res BW 100 kHz #VBW 300 kHz Stop 26.00 GHz Sweep 2.482 s (8001 pts)</p>	<p>Frequency Auto Tune Center Freq 13.015000000 GHz Start Freq 30.000000 MHz Stop Freq 26.000000000 GHz CF Step 2.597000000 GHz Auto Man Freq Offset 0 Hz</p>

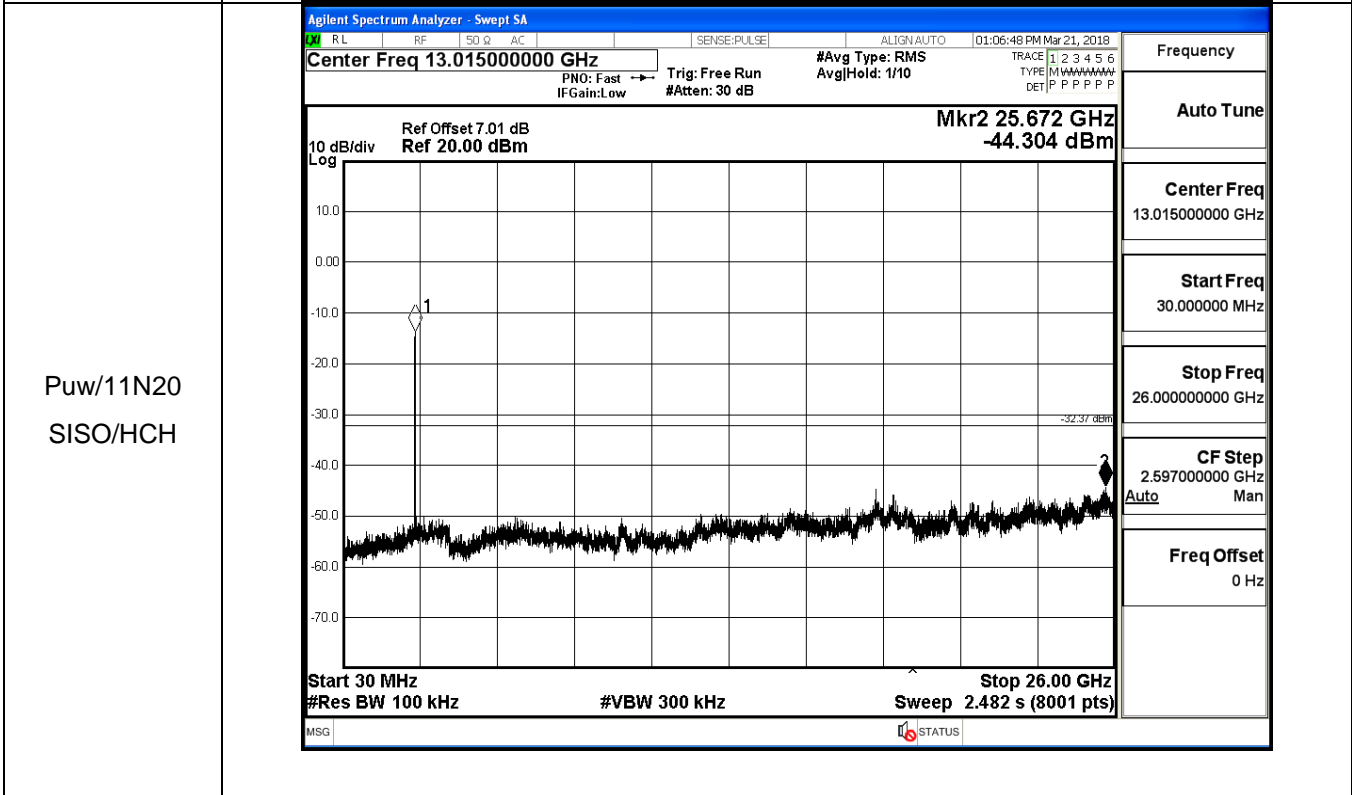
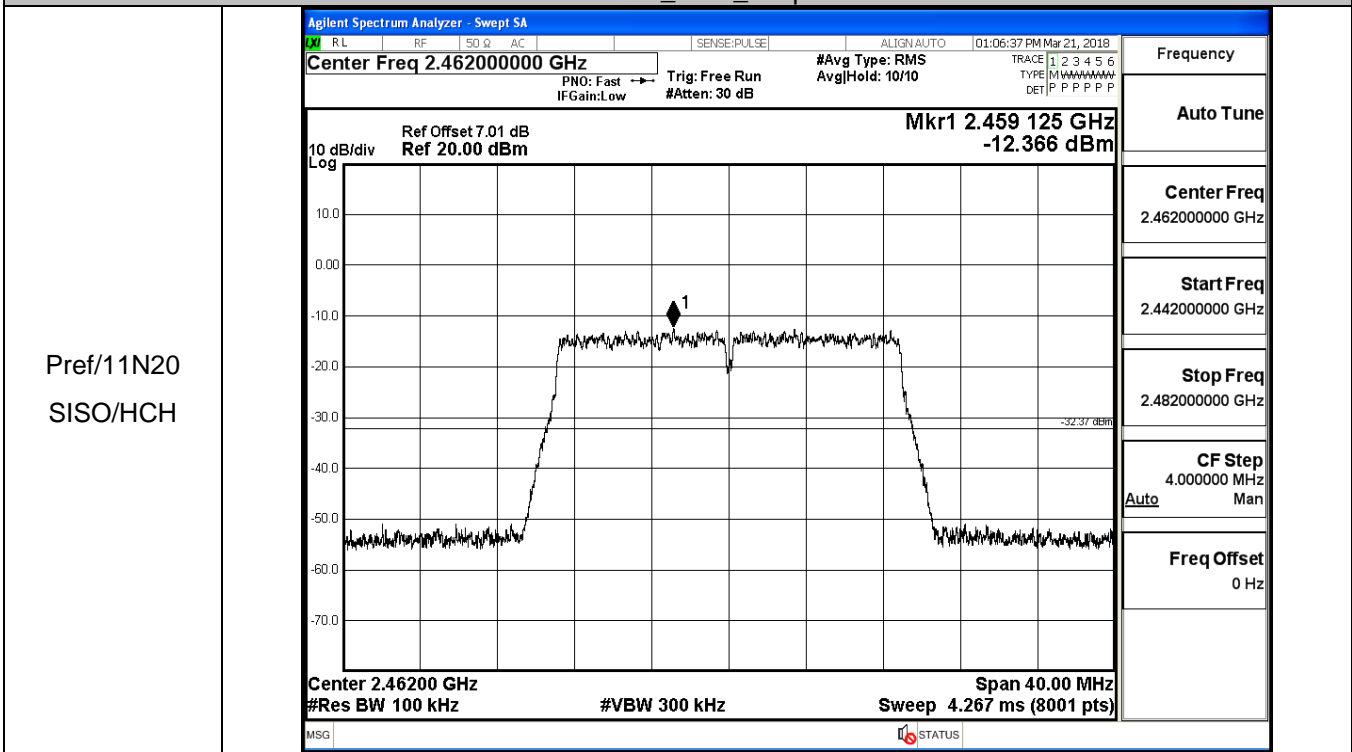
11N20SISO_LCH_Graphs

<p>Pref/11N20SIS O/LCH</p>	<p>Agilent Spectrum Analyzer - Swept SA</p> <p>Center Freq 2.41200000 GHz</p> <p>Mkr1 2.409 130 GHz -11.839 dBm</p> <p>Center 2.41200 GHz #Res BW 100 kHz #VBW 300 kHz Sweep 4.267 ms (8001 pts)</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/11N20 SISO/LCH</p>	<p>Agilent Spectrum Analyzer - Swept SA</p> <p>Center Freq 13.01500000 GHz</p> <p>Mkr2 25.597 GHz -44.911 dBm</p> <p>Start 30 MHz #Res BW 100 kHz #VBW 300 kHz Sweep 2.482 s (8001 pts)</p>

11N20SISO_MCH_Graphs

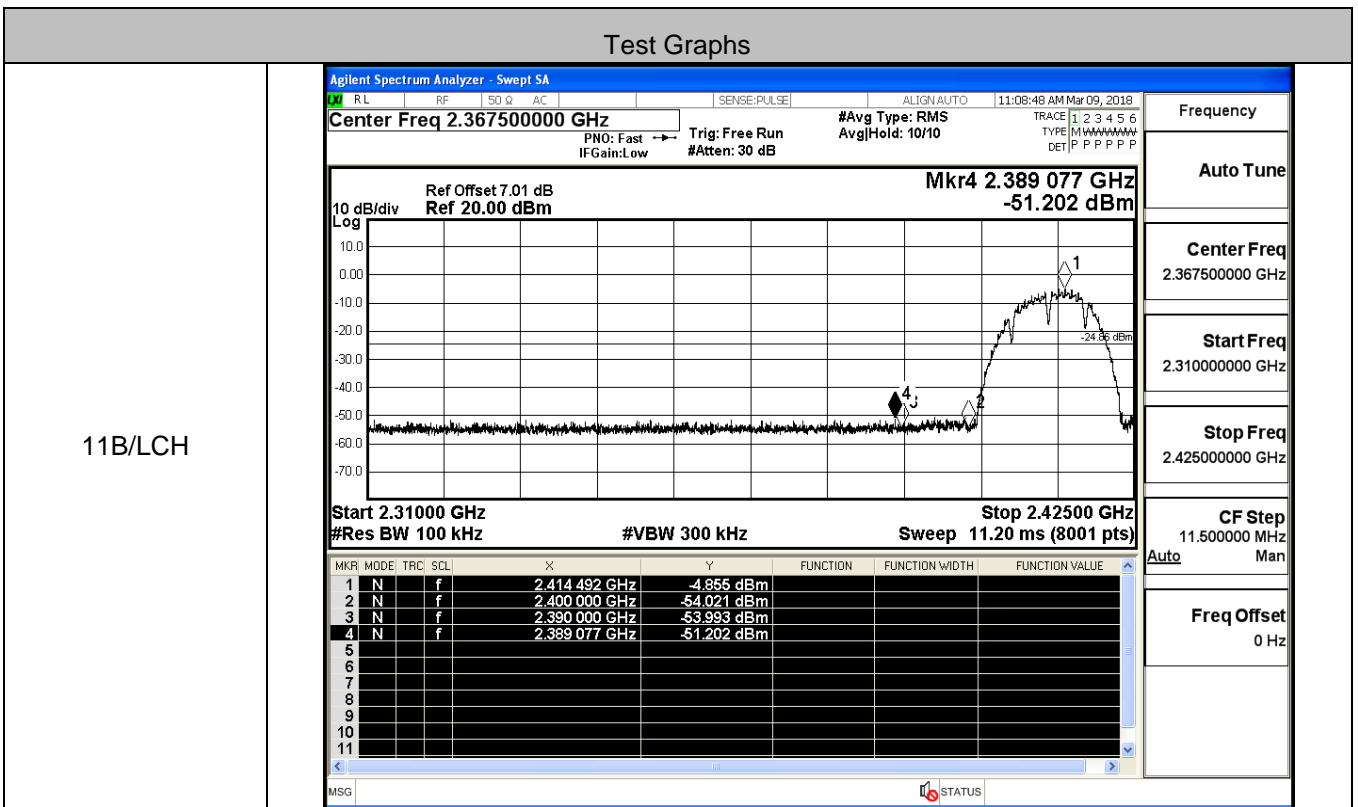
<p>Pref/11N20 SISO/MCH</p>	<p>Agilent Spectrum Analyzer - Swept SA</p> <p>Center Freq 2.43700000 GHz</p> <p>Ref Offset 7.01 dB Ref 20.00 dBm</p> <p>Mkr1 2.434 130 GHz -12.516 dBm</p> <p>Center 2.43700 GHz #Res BW 100 kHz #VBW 300 kHz Sweep 4.267 ms (8001 pts)</p>	<p>Frequency</p> <p>Auto Tune</p> <p>Center Freq 2.437000000 GHz</p> <p>Start Freq 2.417000000 GHz</p> <p>Stop Freq 2.457000000 GHz</p> <p>CF Step 4.000000 MHz Auto Man</p> <p>Freq Offset 0 Hz</p>
	<p>Puw/11N20 SISO/MCH</p>	<p>Agilent Spectrum Analyzer - Swept SA</p> <p>Center Freq 13.01500000 GHz</p> <p>Ref Offset 7.01 dB Ref 20.00 dBm</p> <p>Mkr2 25.734 GHz -42.793 dBm</p> <p>Start 30 MHz #Res BW 100 kHz #VBW 300 kHz Sweep 2.482 s (8001 pts)</p>

11N20SISO_HCH_Graphs

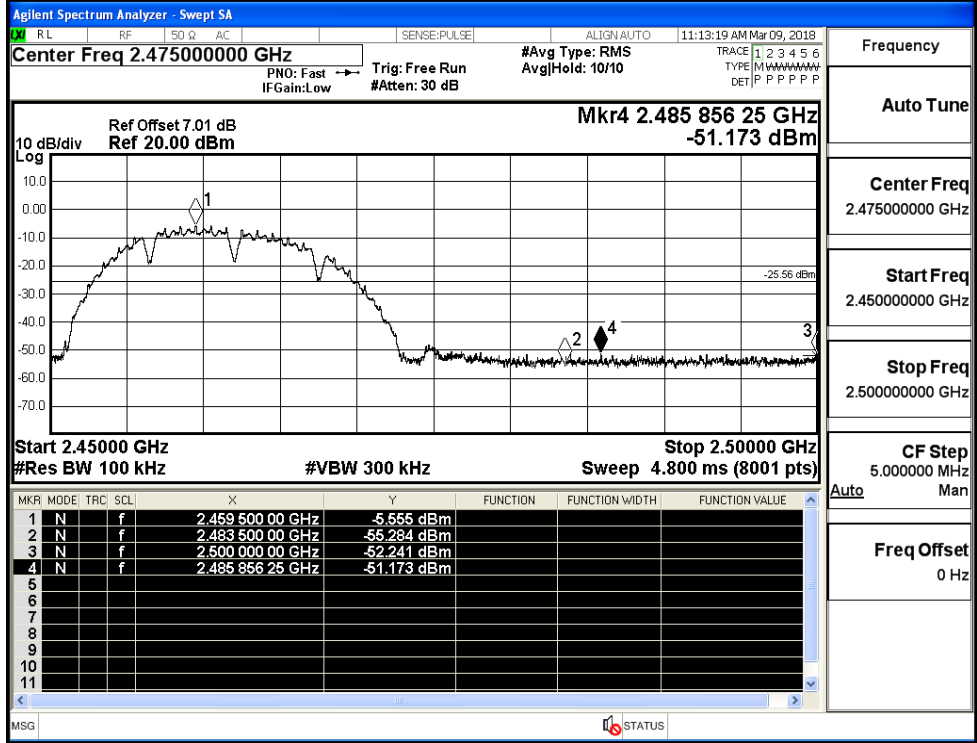


A.5 Band-edge for RF Conducted Emissions

Mode	Channel	Carrier Power[dBm]	Max.Spurious Level [dBm]	Limit [dBm]	Verdict
11B	LCH	-4.855	-51.202	-24.86	PASS
	HCH	-5.555	-51.173	-25.56	PASS
11G	LCH	-12.128	-51.131	-32.13	PASS
	HCH	-12.418	-50.929	-32.42	PASS
11N20SISO	LCH	-12.108	-50.895	-32.11	PASS
	HCH	-12.403	-49.981	-32.4	PASS



11B/HCH



Frequency

Auto Tune

Center Freq
2.47500000 GHz

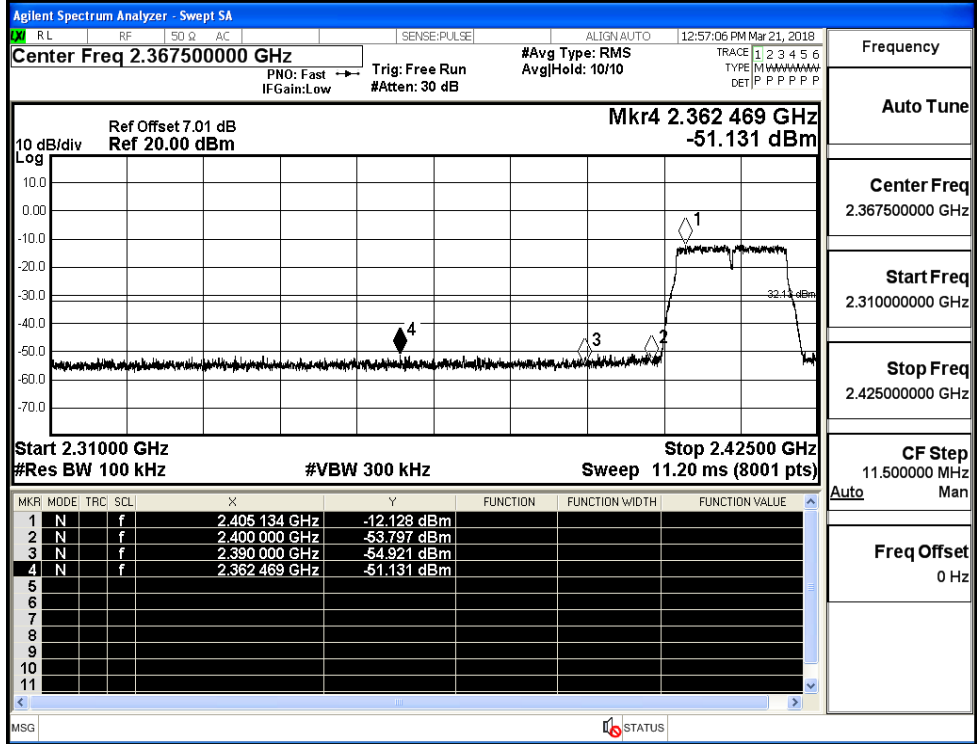
Start Freq
2.45000000 GHz

Stop Freq
2.50000000 GHz

CF Step
5.000000 MHz

Freq Offset
0 Hz

11G/LCH



Frequency

Auto Tune

Center Freq
2.36750000 GHz

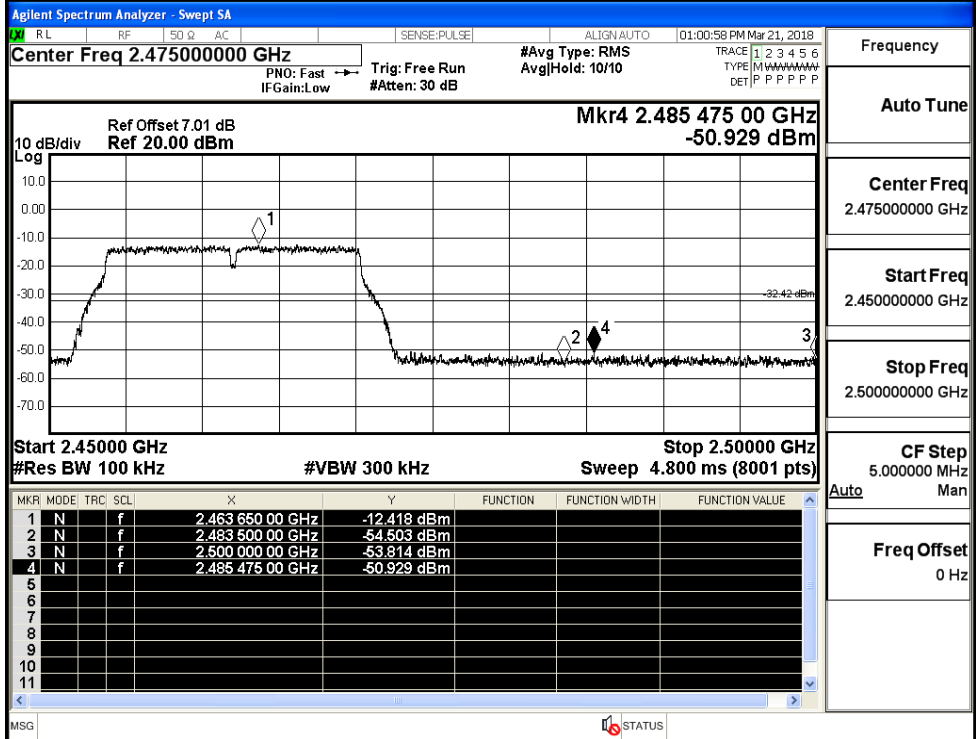
Start Freq
2.31000000 GHz

Stop Freq
2.42500000 GHz

CF Step
11.500000 MHz

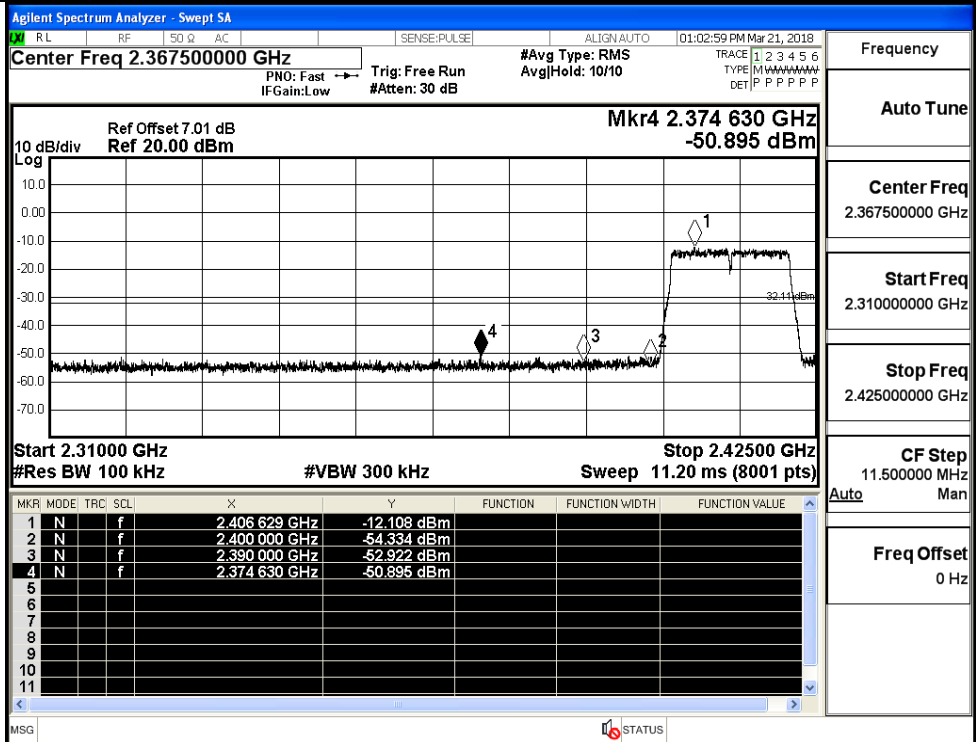
Freq Offset
0 Hz

11G/HCH



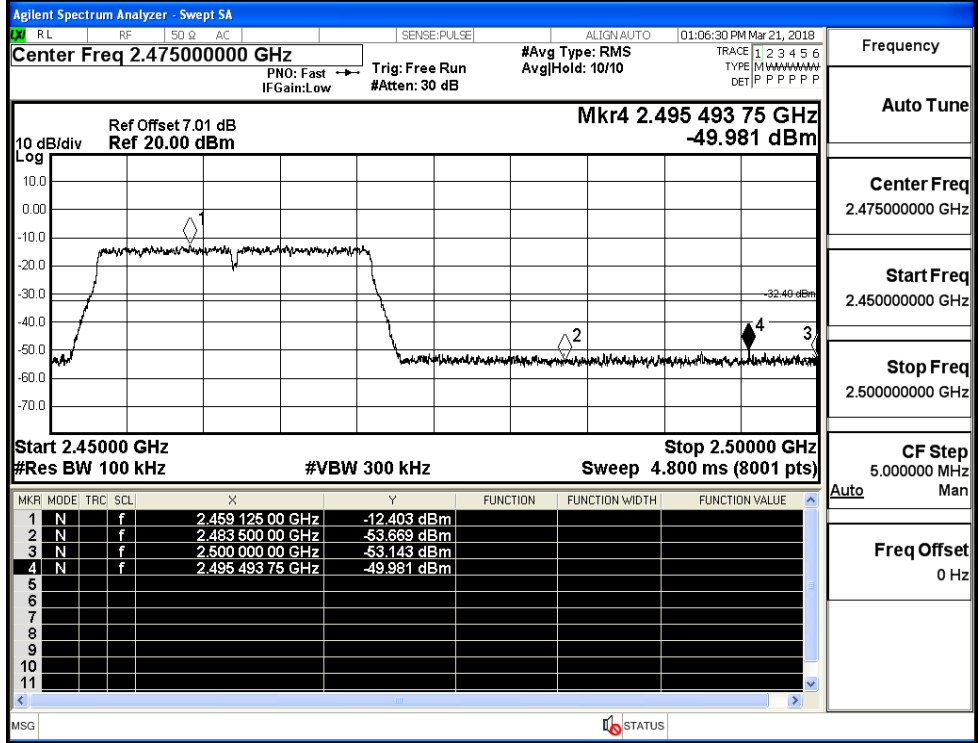
Frequency	2.47500000 GHz
Auto Tune	
Center Freq	2.47500000 GHz
Start Freq	2.45000000 GHz
Stop Freq	2.50000000 GHz
CF Step	5.000000 MHz
Freq Offset	0 Hz

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

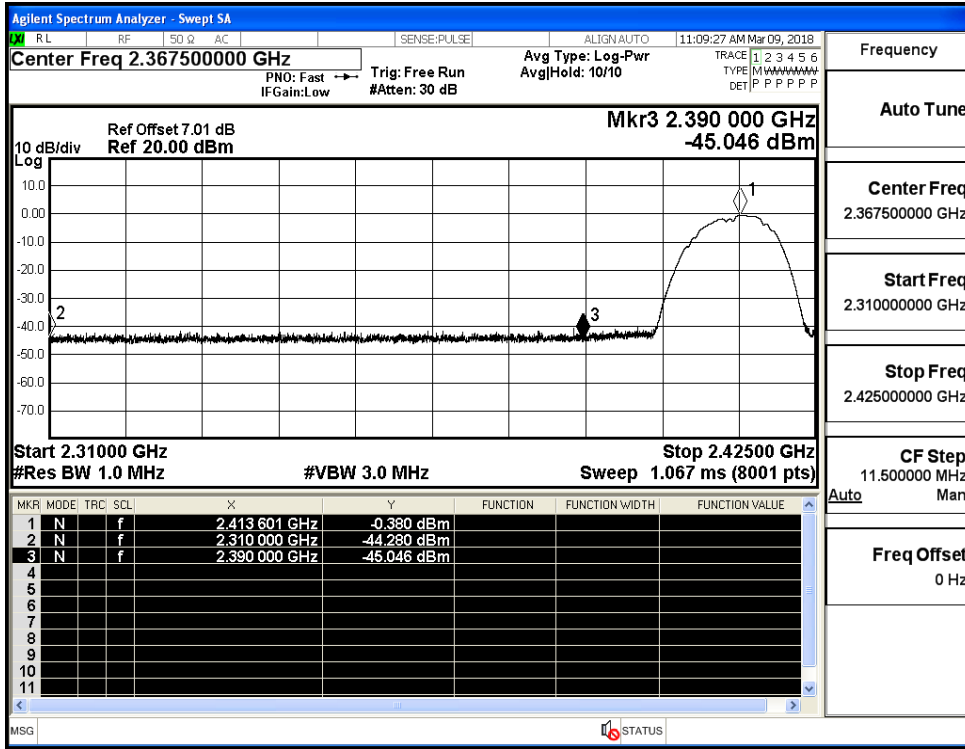
11N20SISO/HCH



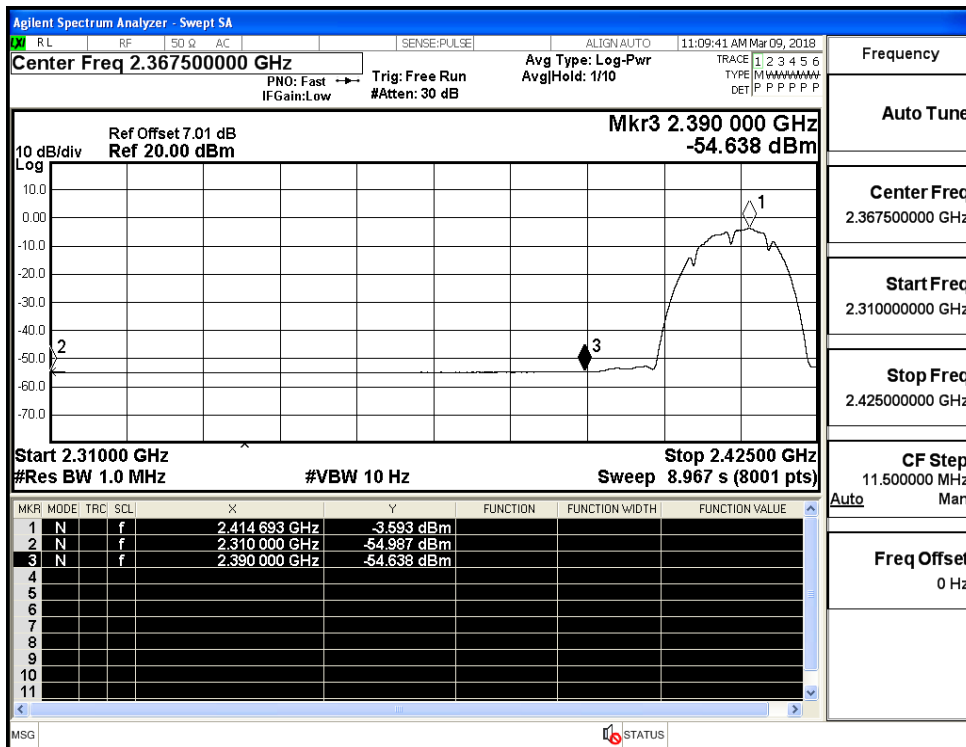
A.6 Restrict-band band-edge measurements

Test Mode	Test Channel	Ant	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBu V/m]	Verdict
11B	2412	Ant1	2310.0	-44.28	2.64	0	53.56	PEAK	74	PASS
	2412	Ant1	2310.0	-54.99	2.64	0	42.85	AV	54	PASS
	2412	Ant1	2390.0	-45.05	2.64	0	52.79	PEAK	74	PASS
	2412	Ant1	2390.0	-54.64	2.64	0	43.20	AV	54	PASS
	2462	Ant1	2483.5	-43.51	2.64	0	54.33	PEAK	74	PASS
	2462	Ant1	2483.5	-54.44	2.64	0	43.40	AV	54	PASS
	2462	Ant1	2500.0	-43.74	2.64	0	54.10	PEAK	74	PASS
	2462	Ant1	2500.0	-54.39	2.64	0	43.45	AV	54	PASS
11G	2412	Ant1	2310.0	-44.84	2.64	0	53.00	PEAK	74	PASS
	2412	Ant1	2310.0	-55.13	2.64	0	42.71	AV	54	PASS
	2412	Ant1	2390.0	-43.41	2.64	0	54.43	PEAK	74	PASS
	2412	Ant1	2390.0	-54.48	2.64	0	43.36	AV	54	PASS
	2462	Ant1	2483.5	-42.76	2.64	0	55.08	PEAK	74	PASS
	2462	Ant1	2483.5	-54.26	2.64	0	43.58	AV	54	PASS
	2462	Ant1	2500.0	-42.55	2.64	0	55.29	PEAK	74	PASS
	2462	Ant1	2500.0	-54.29	2.64	0	43.55	AV	54	PASS
11N20 SISO	2412	Ant1	2310.0	-43.40	2.64	0	54.44	PEAK	74	PASS
	2412	Ant1	2310.0	-55.12	2.64	0	42.72	AV	54	PASS
	2412	Ant1	2390.0	-42.66	2.64	0	55.18	PEAK	74	PASS
	2412	Ant1	2390.0	-54.36	2.64	0	43.48	AV	54	PASS
	2462	Ant1	2483.5	-43.80	2.64	0	54.04	PEAK	74	PASS
	2462	Ant1	2483.5	-54.25	2.64	0	43.59	AV	54	PASS
	2462	Ant1	2500.0	-43.86	2.64	0	53.98	PEAK	74	PASS
	2462	Ant1	2500.0	-54.27	2.64	0	43.57	AV	54	PASS

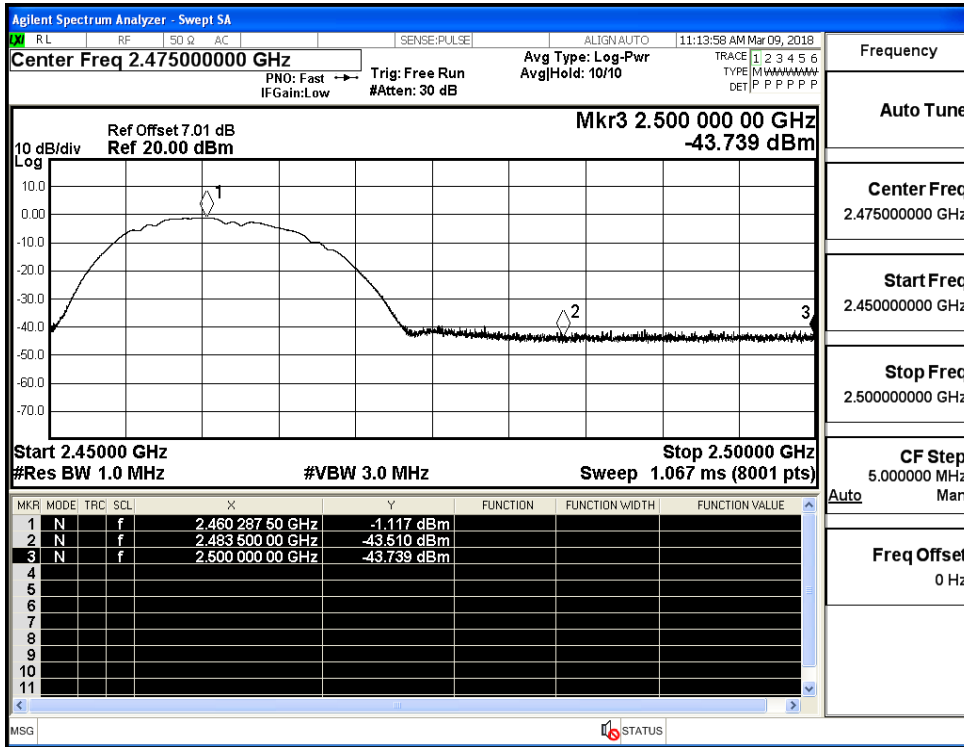
Restrict-band band-edge measurements_11B_2412_Ant1_PEAK



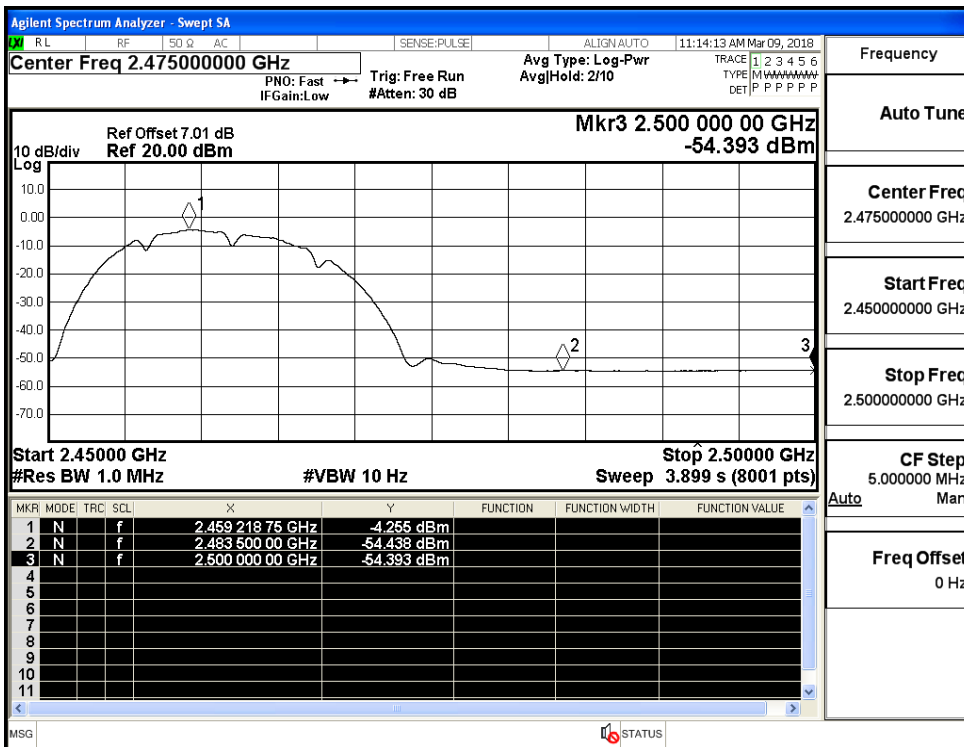
Restrict-band band-edge measurements_11B_2412_Ant1_AV



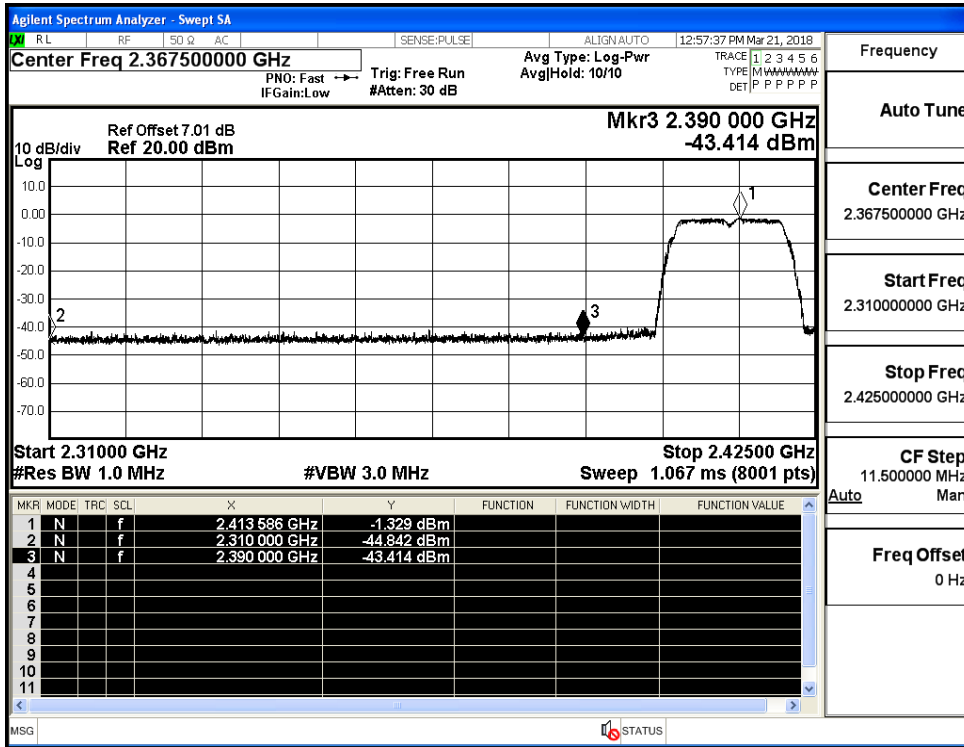
Restrict-band band-edge measurements_11B_2462_Ant1_PEAK



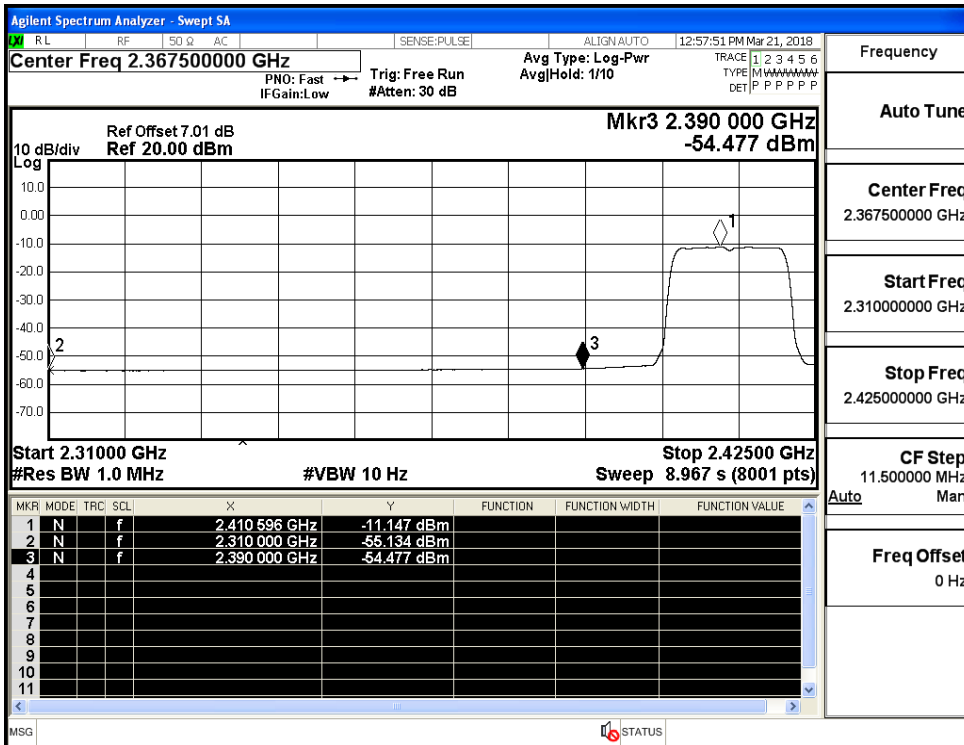
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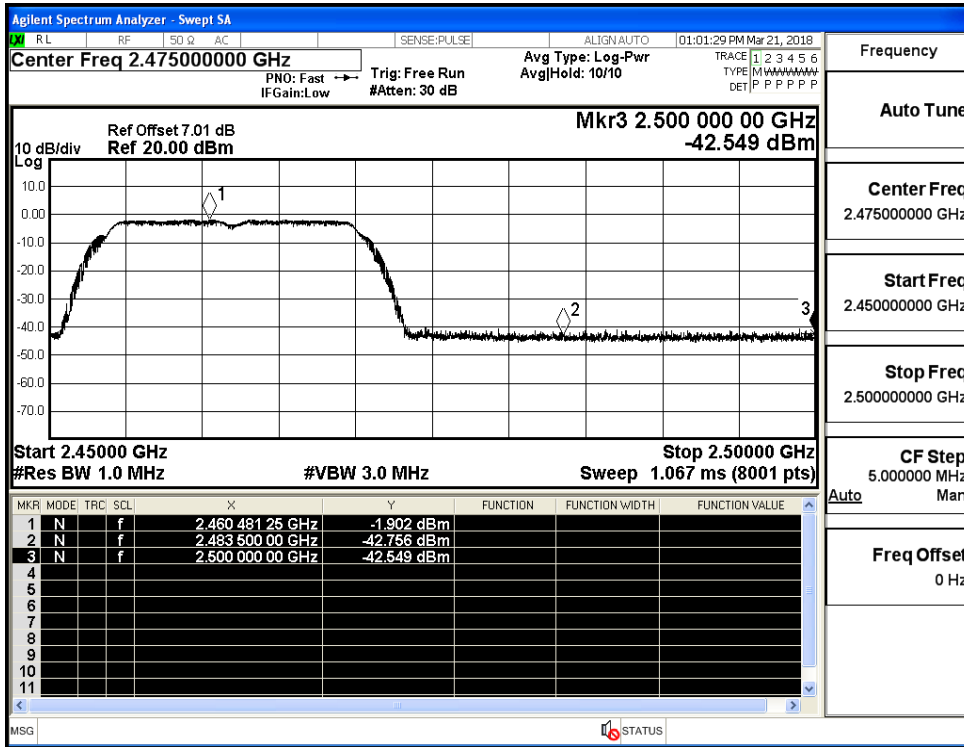
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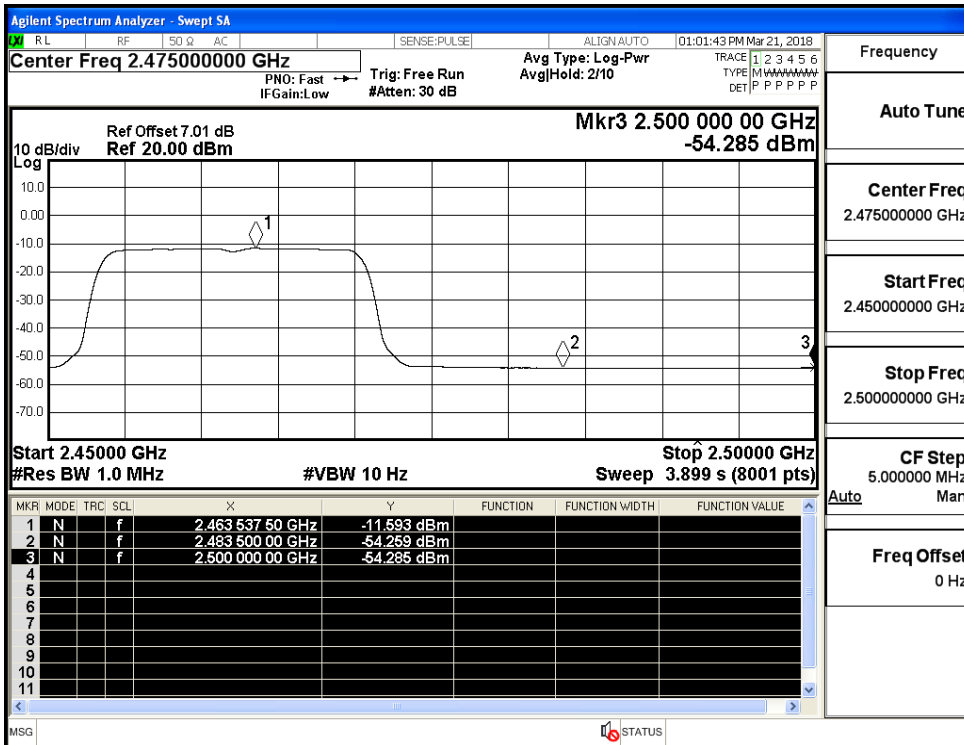
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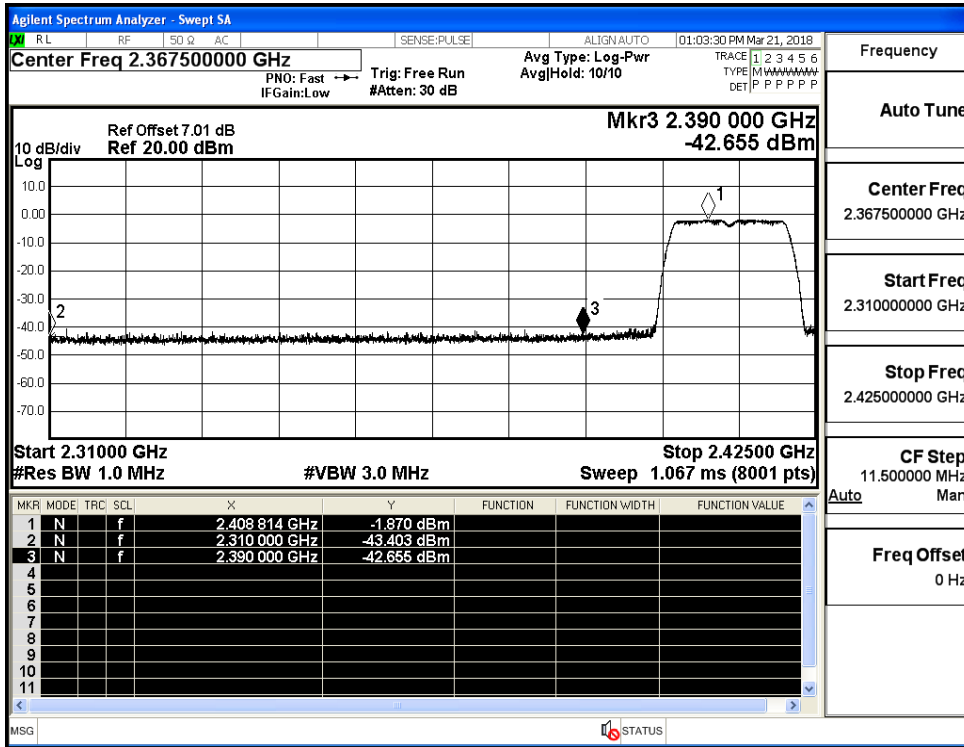
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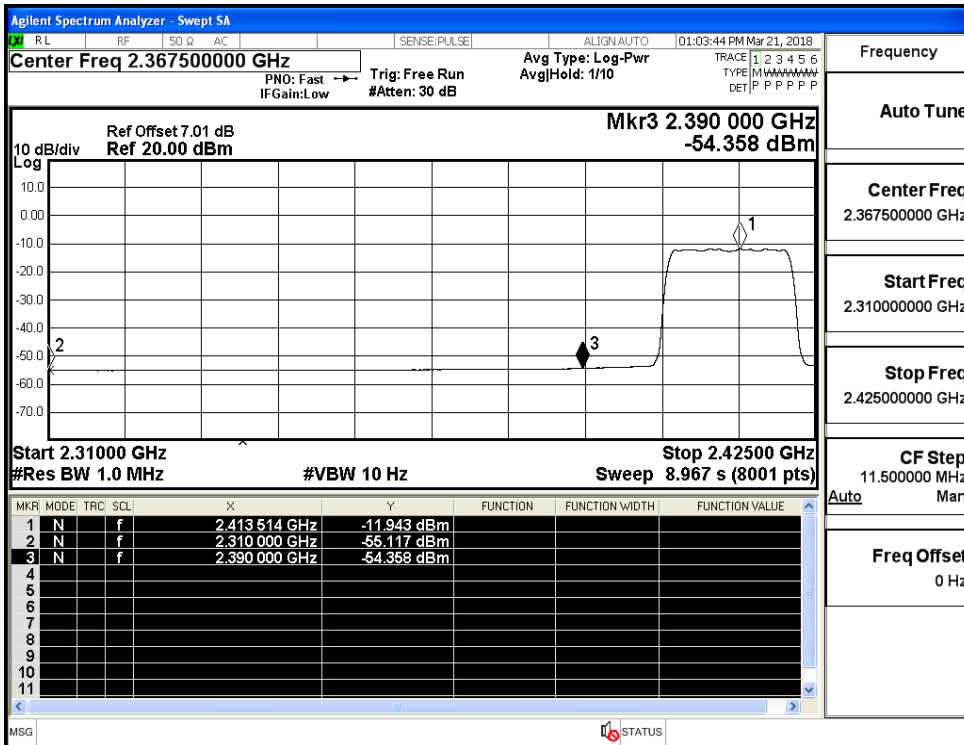
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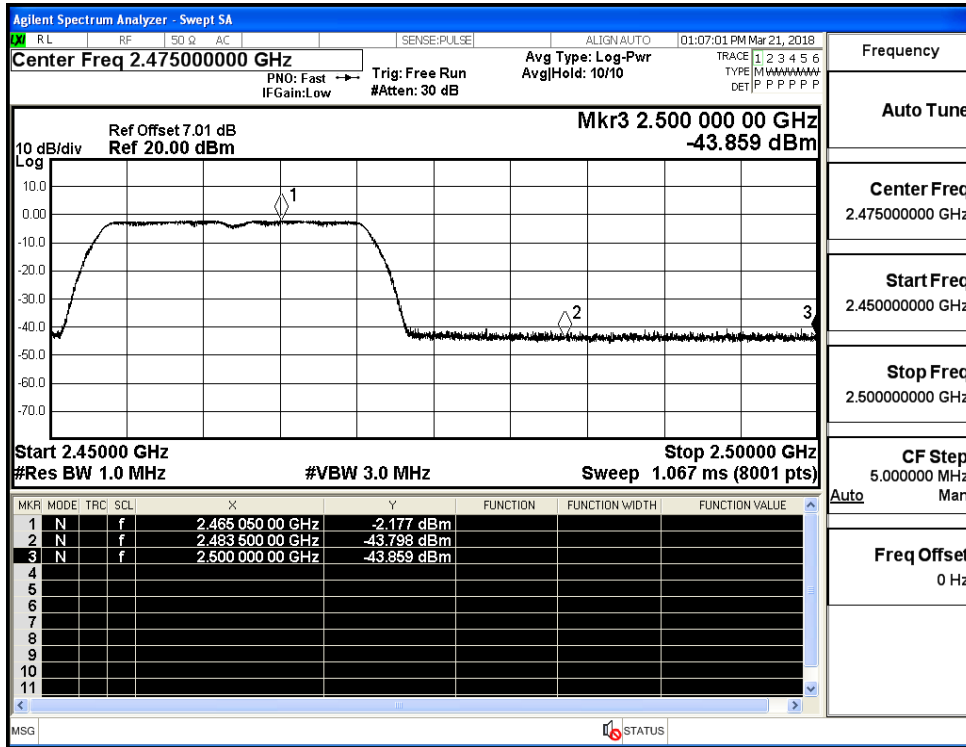
Restrict-band band-edge measurements_11N20SISO_2412_Ant1_PEAK



Restrict-band band-edge measurements_11N20SISO_2412_Ant1_AV



Restrict-band band-edge measurements_11N20SISO_2462_Ant1_PEAK



Restrict-band band-edge measurements_11N20SISO_2462_Ant1_AV

