

Appendix A

RF Test Data for 2.4G WIFI (Conducted Measurement)

Product Name: Sensor

Trade Mark: Feit Electric

Test Model: MOT/DOOR/WIFI/BAT

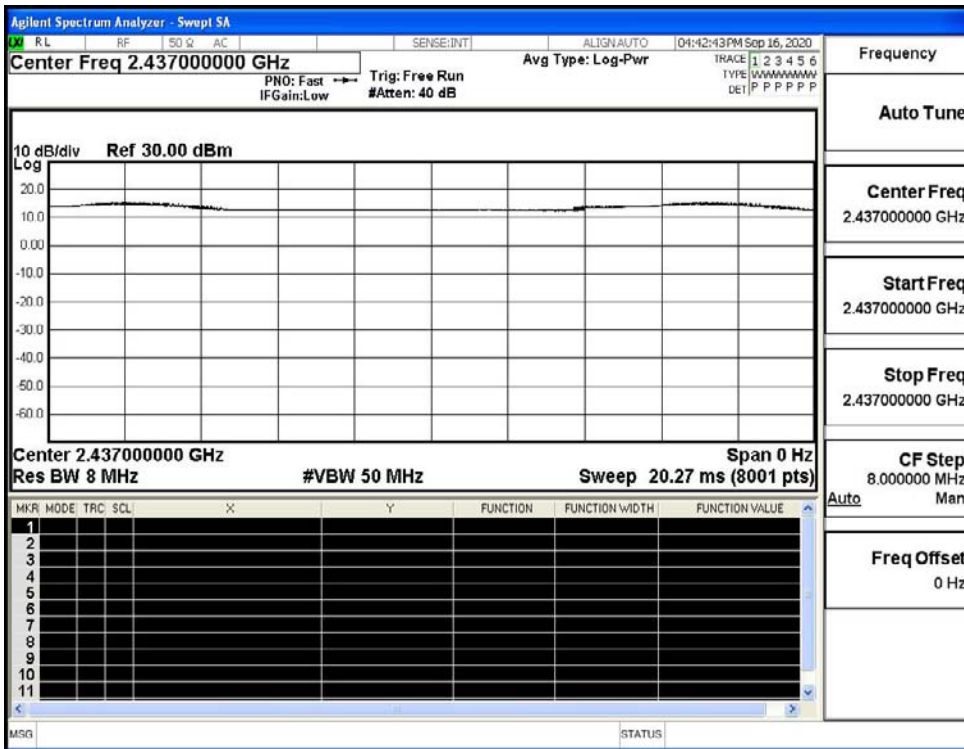
Environmental Conditions

Temperature:	23.1 ° C
Relative Humidity:	54.3%
ATM Pressure:	100.0 kPa
Test Engineer:	Diamond Lu
Supervised by:	Li Huan

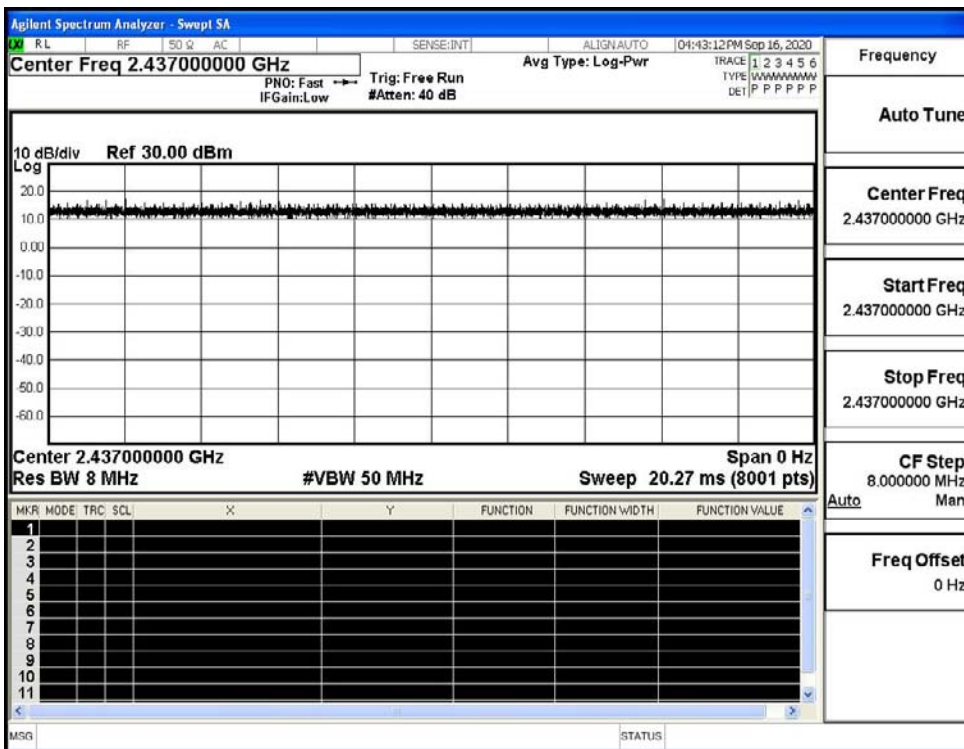
A.1 Duty Cycle

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

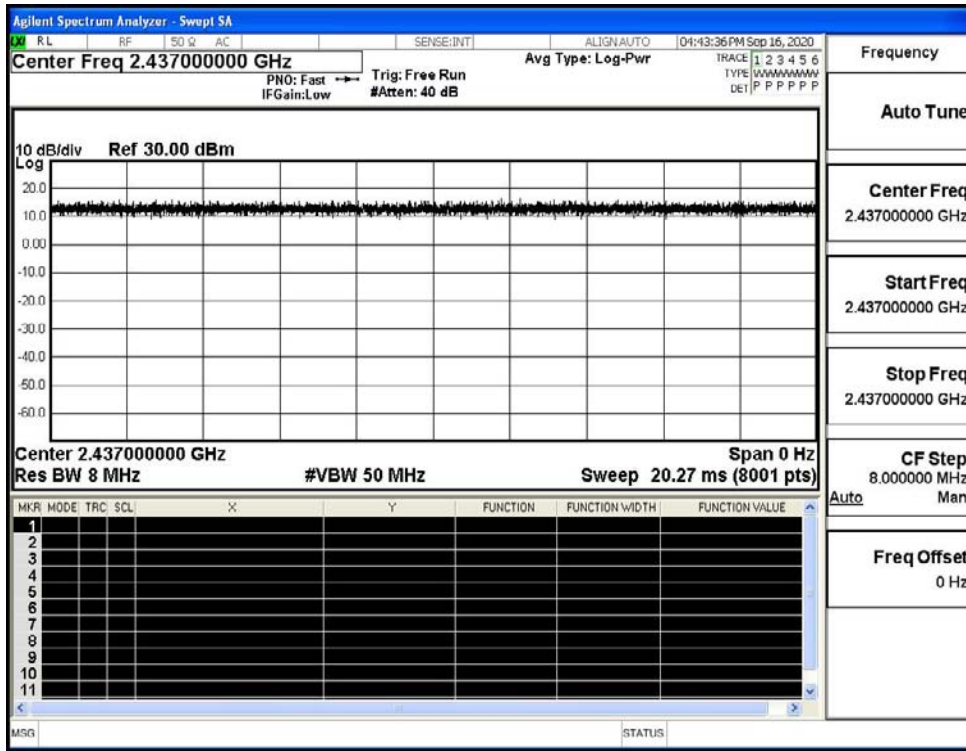
Duty Cycle_11B_2437_Ant1



Duty Cycle_11G_2437_Ant1



Duty Cycle_11N20SISO_2437_Ant1



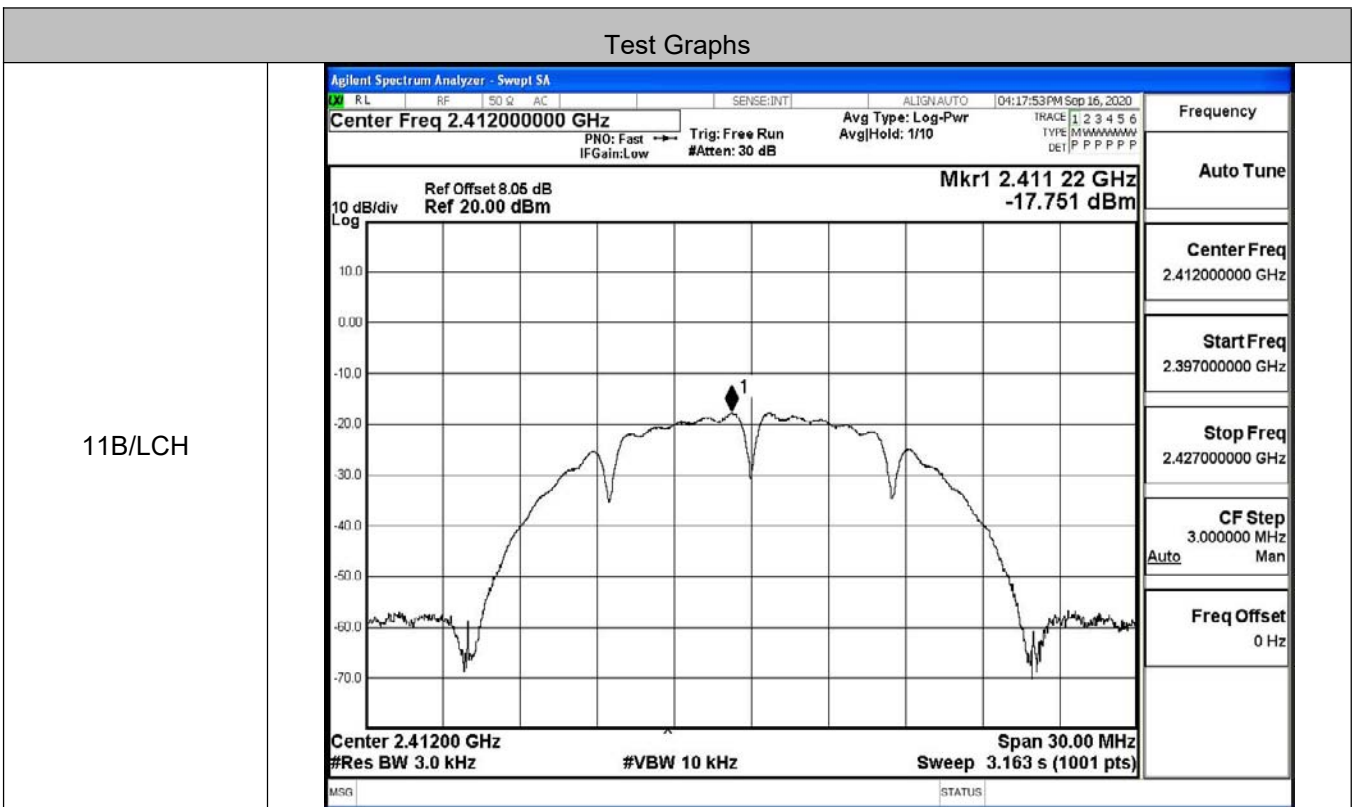
A.2 Maximum Conducted Output Power

Mode	Channel	Meas.Level [dBm]	Limit [dBm]	Verdict
11B	LCH	16.61	30	PASS
	MCH	16.52	30	PASS
	HCH	16.47	30	PASS
11G	LCH	14.86	30	PASS
	MCH	14.74	30	PASS
	HCH	14.28	30	PASS
11N20SISO	LCH	12.63	30	PASS
	MCH	12.42	30	PASS
	HCH	12.27	30	PASS

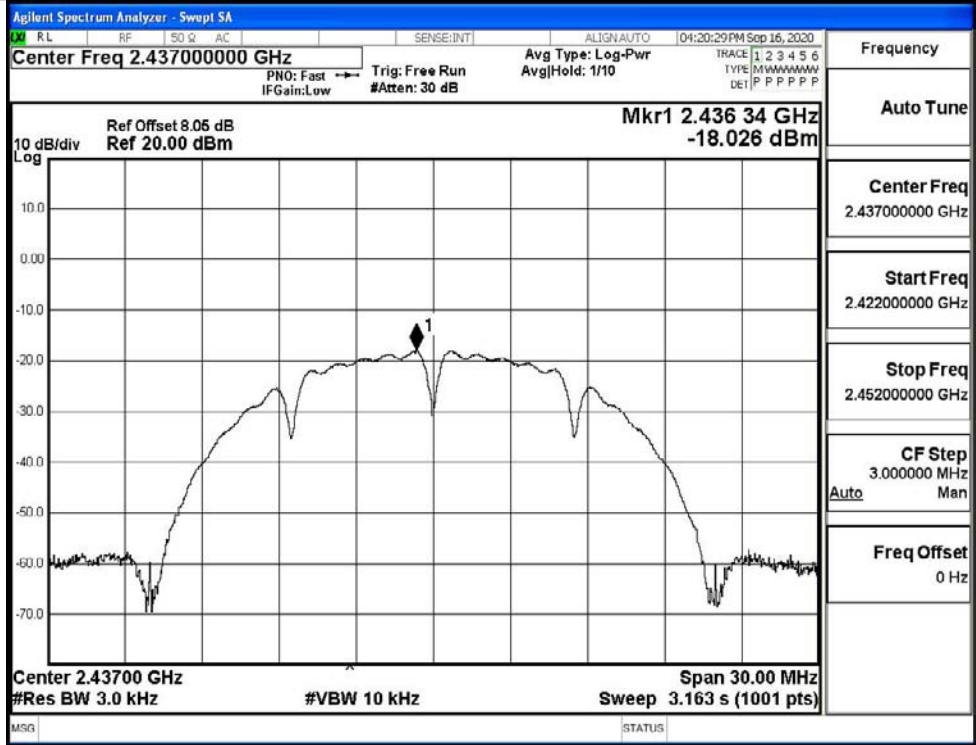
A.3 Maximum Power Spectral Density

Mode	Channel	Meas.Level [dBm/3KHz]	Limit [dBm/3KHz]	Verdict
11B	LCH	-17.751	8	PASS
	MCH	-18.026	8	PASS
	HCH	-17.531	8	PASS
11G	LCH	-21.451	8	PASS
	MCH	-21.362	8	PASS
	HCH	-21.638	8	PASS
11N20SISO	LCH	-20.537	8	PASS
	MCH	-20.882	8	PASS
	HCH	-19.675	8	PASS

Test Graphs

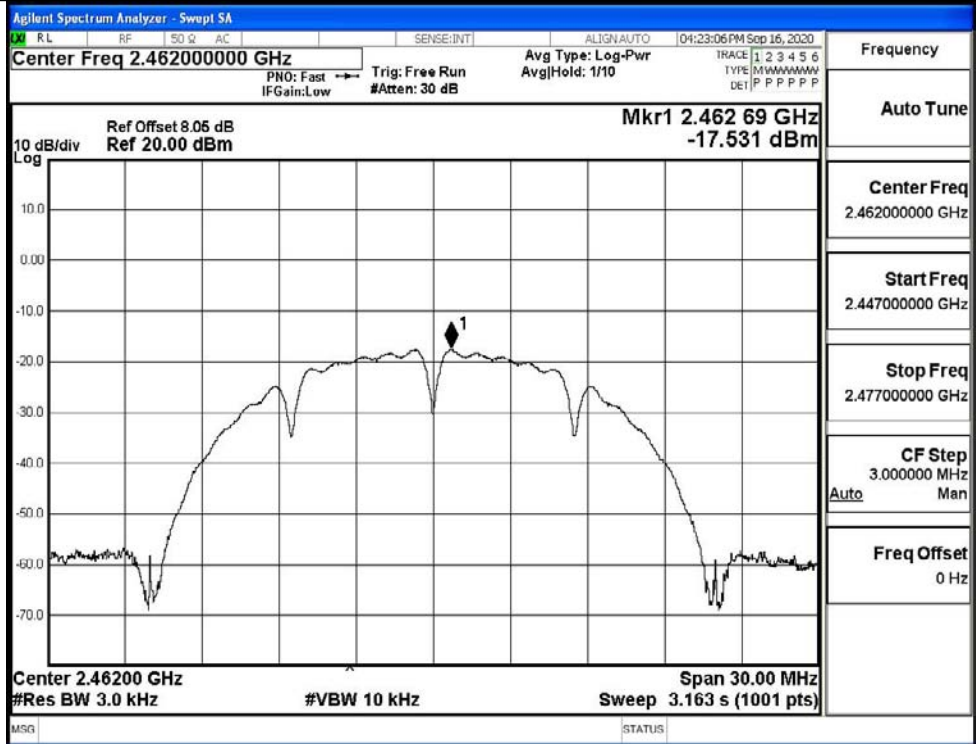


11B/MCH



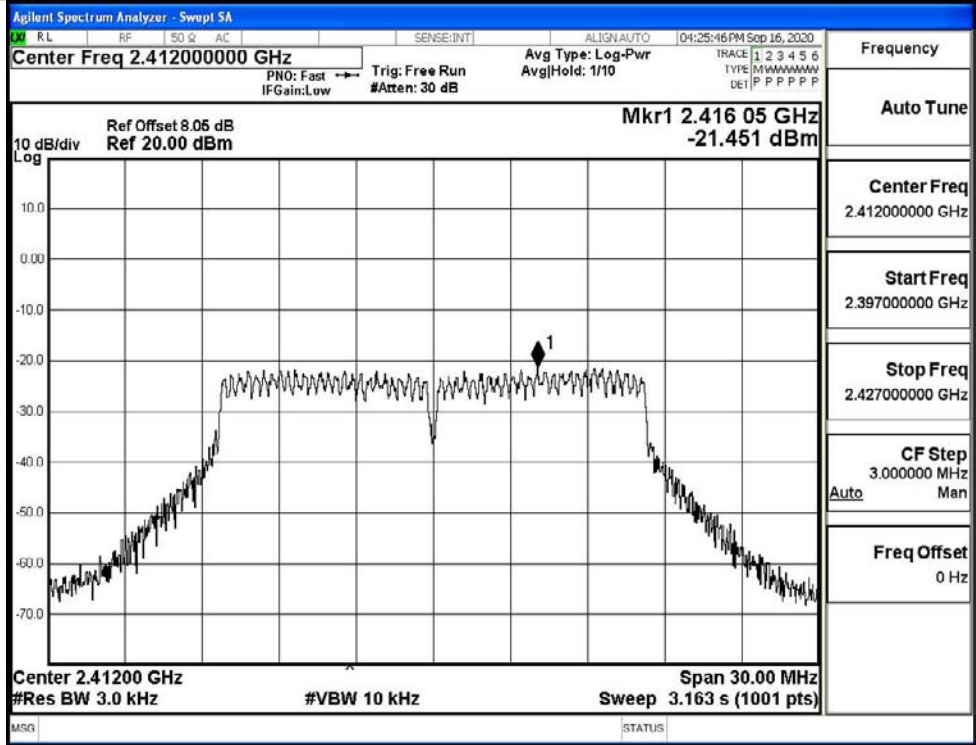
Frequency
Auto Tune
Center Freq 2.437000000 GHz
Start Freq 2.422000000 GHz
Stop Freq 2.452000000 GHz
CF Step 3.000000 MHz Auto Man
Freq Offset 0 Hz

11B/HCH

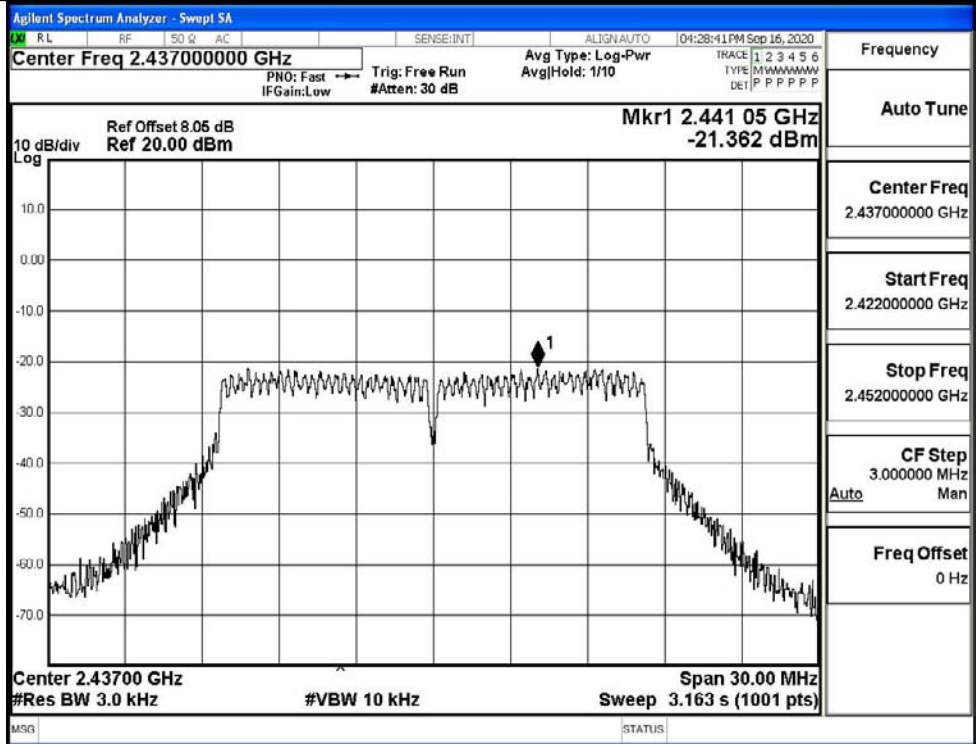


Frequency
Auto Tune
Center Freq 2.462000000 GHz
Start Freq 2.447000000 GHz
Stop Freq 2.477000000 GHz
CF Step 3.000000 MHz Auto Man
Freq Offset 0 Hz

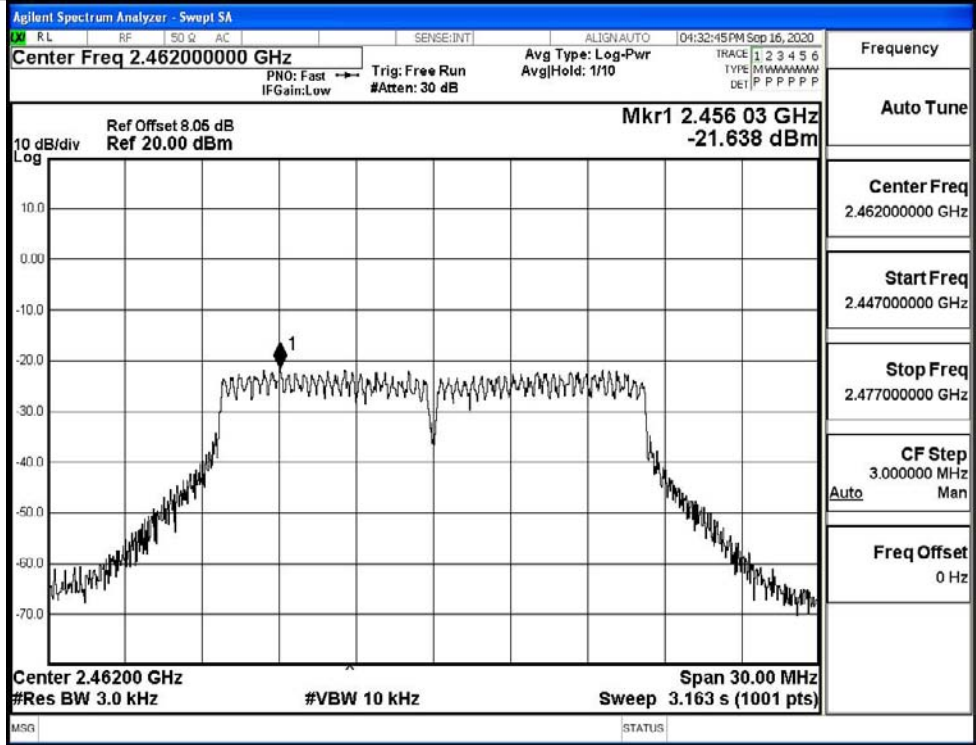
11G/LCH



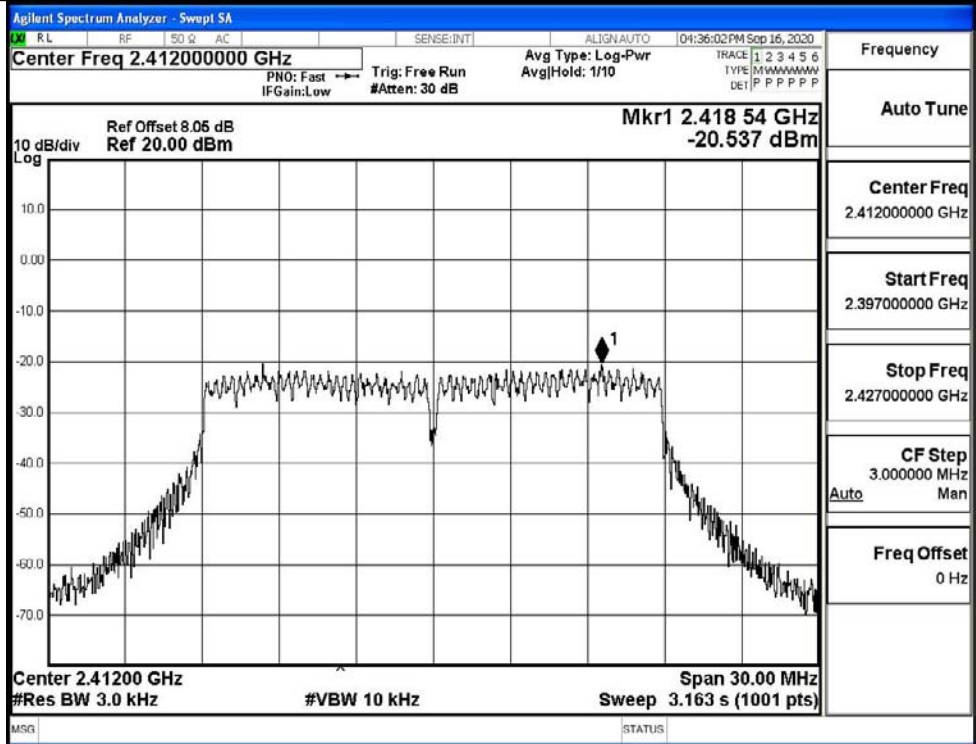
11G/MCH



11G/HCH



11N20SISO/LCH

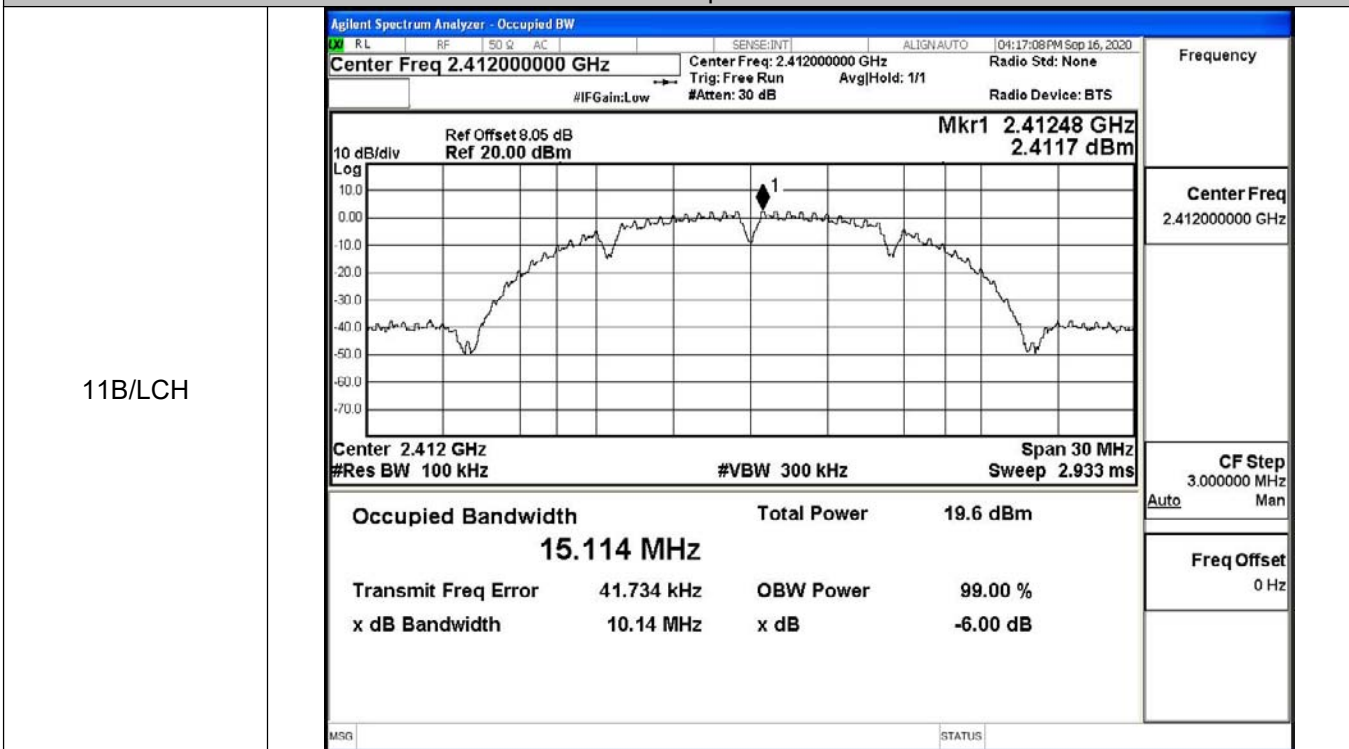


<p>11N20SISO/MCH</p>		<p>Frequency Auto Tune Center Freq 2.437000000 GHz Start Freq 2.422000000 GHz Stop Freq 2.452000000 GHz CF Step 3.000000 MHz Auto Man Freq Offset 0 Hz</p>
<p>11N20SISO/HCH</p>		<p>Frequency Auto Tune Center Freq 2.462000000 GHz Start Freq 2.447000000 GHz Stop Freq 2.477000000 GHz CF Step 3.000000 MHz Auto Man Freq Offset 0 Hz</p>

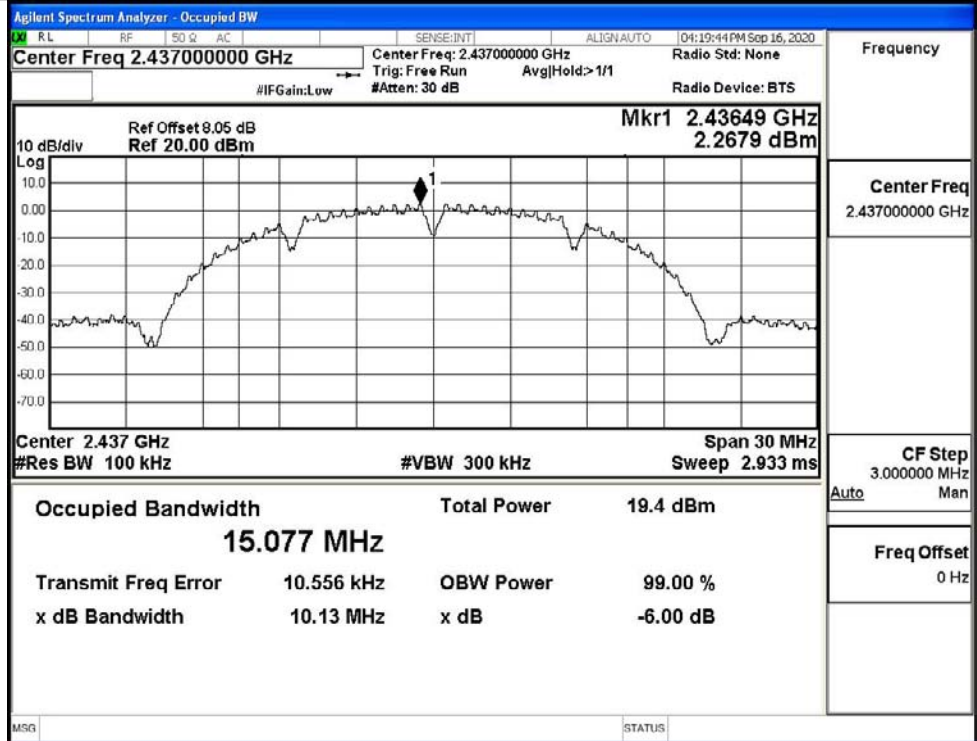
A.4 6dB Bandwidth

Mode	Channel	6dB Bandwidth [MHz]	Limit [MHz]	Verdict
11B	LCH	10.14	≥0.5	PASS
	MCH	10.13	≥0.5	PASS
	HCH	10.13	≥0.5	PASS
11G	LCH	16.55	≥0.5	PASS
	MCH	16.56	≥0.5	PASS
	HCH	16.58	≥0.5	PASS
11N20SISO	LCH	17.77	≥0.5	PASS
	MCH	17.71	≥0.5	PASS
	HCH	17.71	≥0.5	PASS

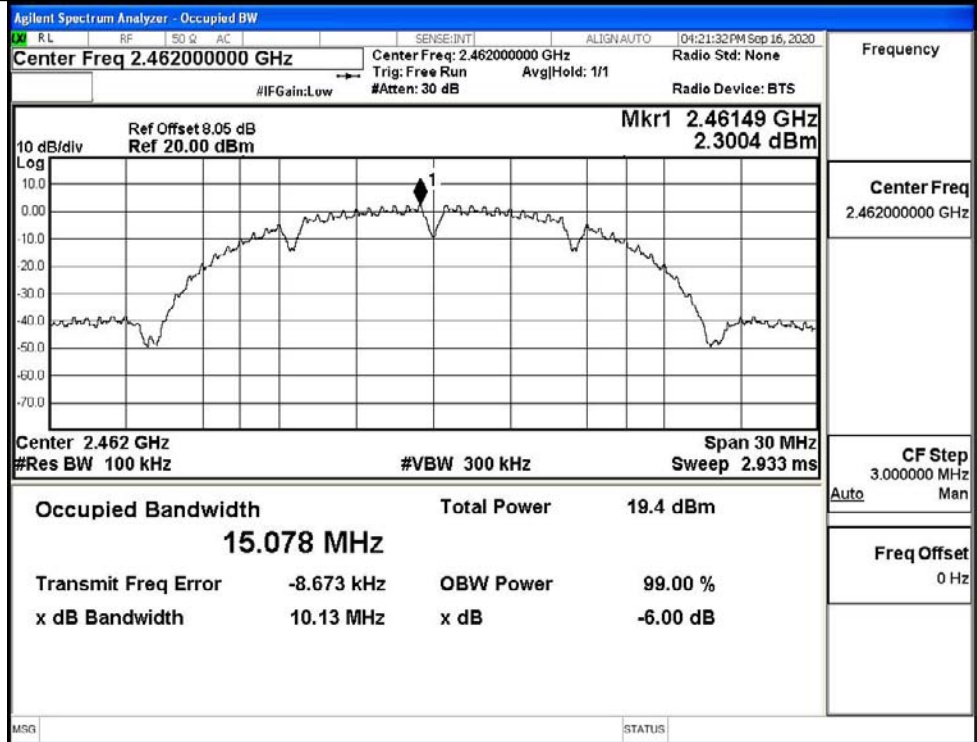
Test Graphs



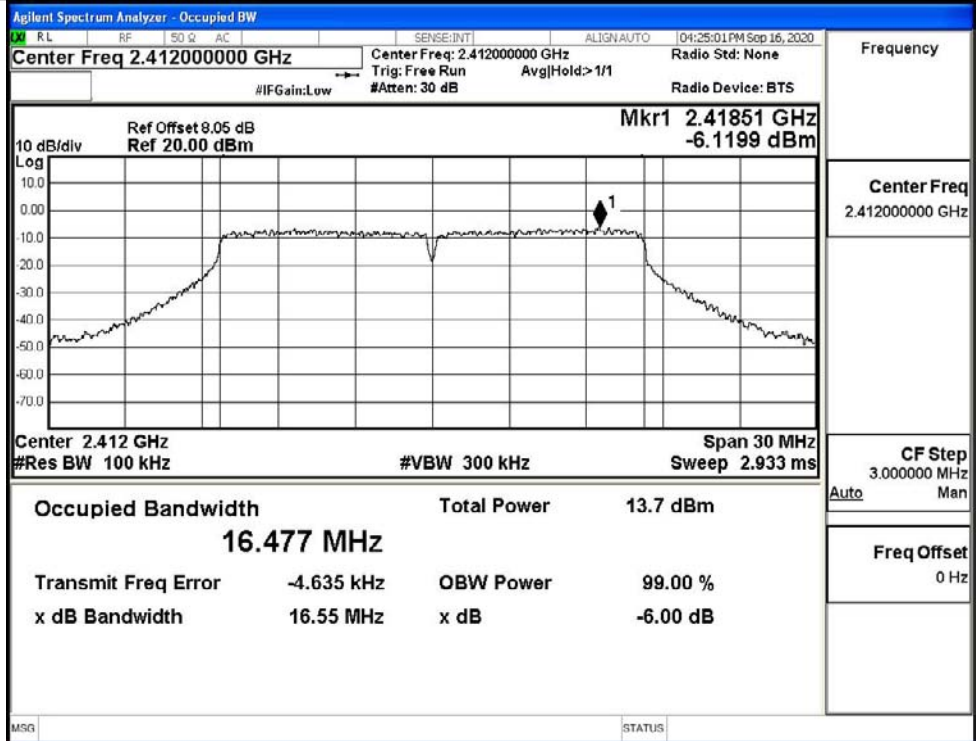
11B/MCH



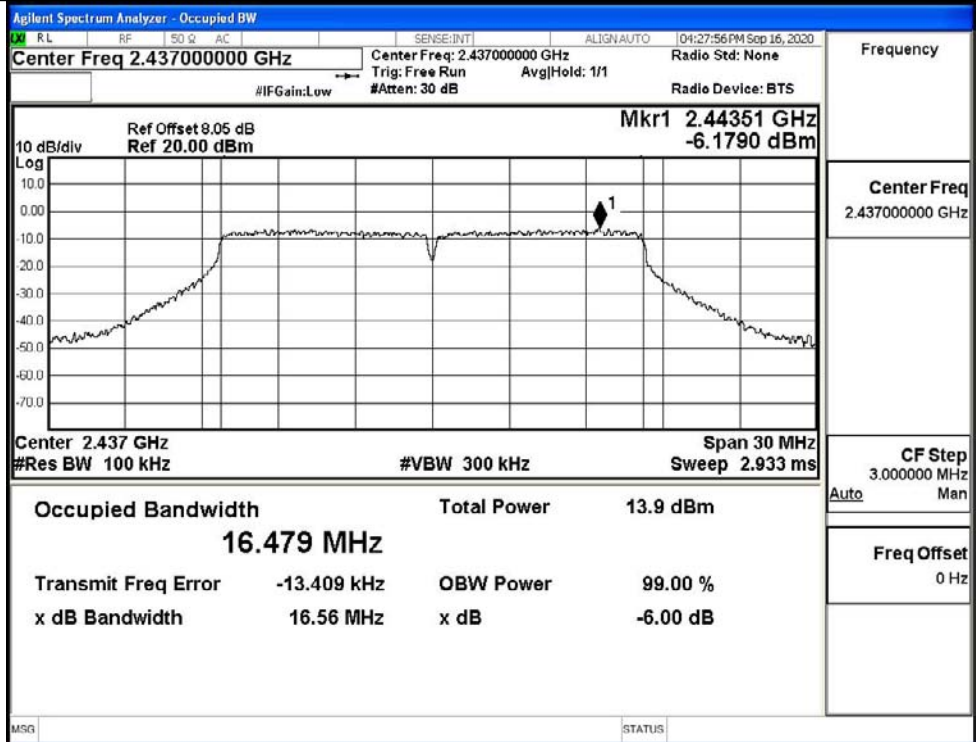
11B/HCH



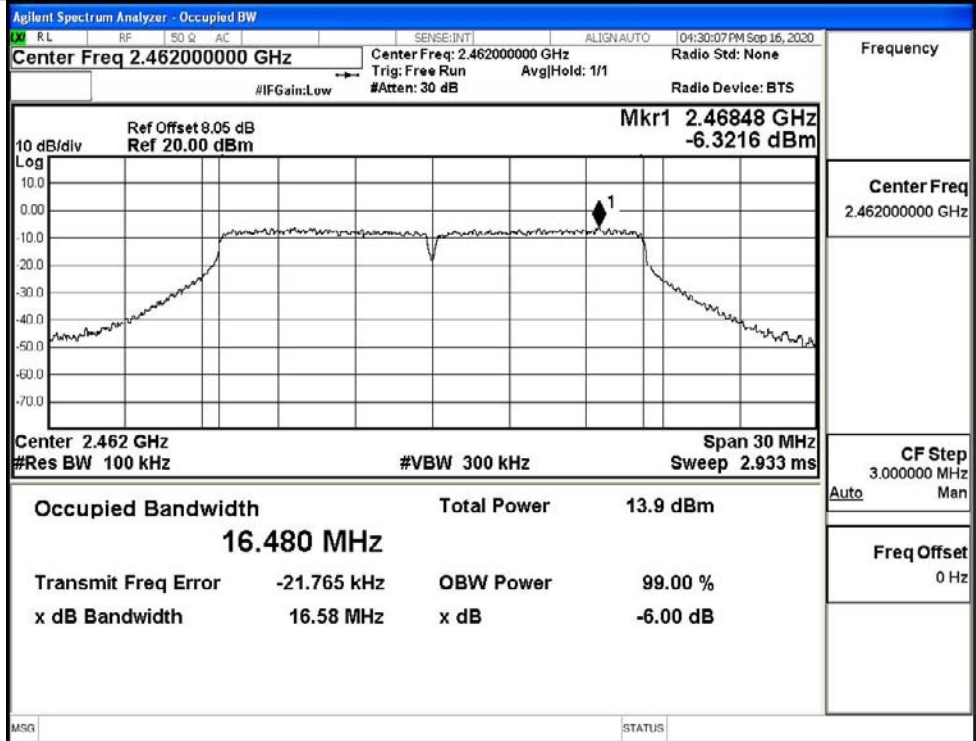
11G/LCH



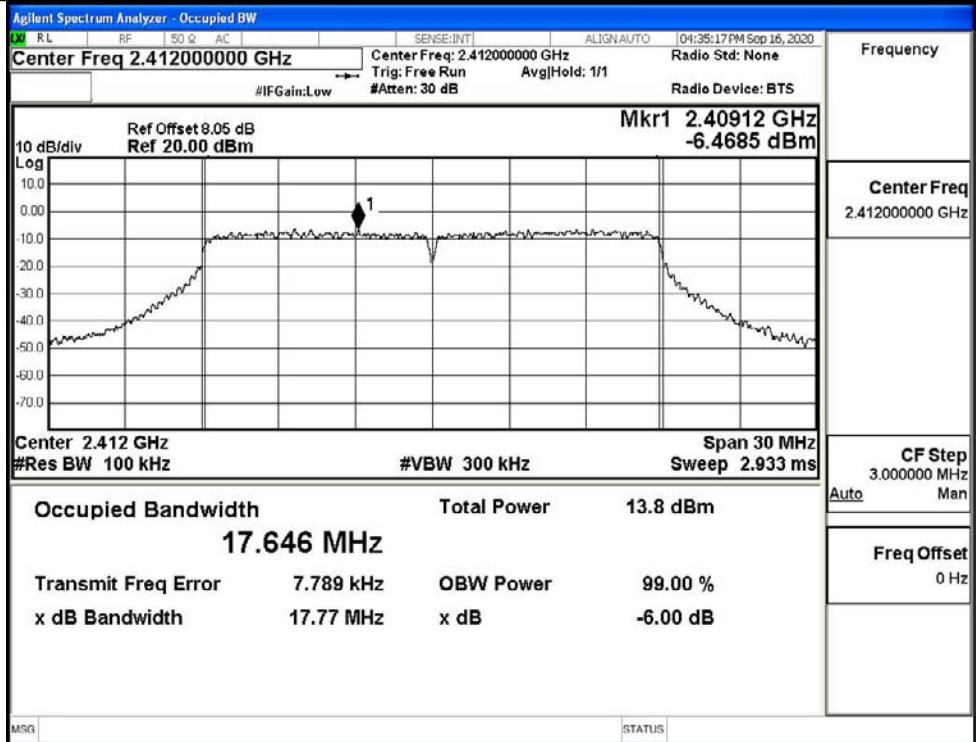
11G/MCH



11G/HCH



11N20SISO/LCH



<p>11N20SISO/MCH</p>	<p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.437000000 GHz Center Freq: 2.437000000 GHz Radio Std: None Trig: Free Run Avg Hold: 1/1 #IFGain:Low #Atten: 30 dB Radio Device: BTS</p> <p>10 dB/div Ref Offset 8.05 dB Mkr1 2.43163 GHz Ref 20.00 dBm -6.4718 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 13.4 dBm 17.645 MHz</p> <p>Transmit Freq Error -1.682 kHz OBW Power 99.00 % x dB Bandwidth 17.71 MHz x dB -6.00 dB</p> <p>MSG STATUS</p>	<p>Frequency</p> <p>Center Freq 2.437000000 GHz</p> <p>CF Step 3.000000 MHz Auto Man</p> <p>Freq Offset 0 Hz</p>
<p>11N20SISO/HCH</p>	<p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.462000000 GHz Center Freq: 2.462000000 GHz Radio Std: None Trig: Free Run Avg Hold: 1/1 #IFGain:Low #Atten: 30 dB Radio Device: BTS</p> <p>10 dB/div Ref Offset 8.05 dB Mkr1 2.45663 GHz Ref 20.00 dBm -5.8900 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 13.8 dBm 17.650 MHz</p> <p>Transmit Freq Error -8.842 kHz OBW Power 99.00 % x dB Bandwidth 17.71 MHz x dB -6.00 dB</p> <p>MSG STATUS</p>	<p>Frequency</p> <p>Center Freq 2.462000000 GHz</p> <p>CF Step 3.000000 MHz Auto Man</p> <p>Freq Offset 0 Hz</p>

A.5 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
11B	LCH	2.292	-36.804	-17.708	PASS
	MCH	2.057	-38.416	-17.943	PASS
	HCH	2.495	-39.155	-17.505	PASS
11G	LCH	-6.329	-38.018	-26.329	PASS
	MCH	-6.269	-37.320	-26.269	PASS
	HCH	-6.968	-38.141	-26.968	PASS
11N20 SISO	LCH	-6.762	-37.137	-26.762	PASS
	MCH	-7.129	-37.786	-27.129	PASS
	HCH	-6.189	-37.924	-26.189	PASS

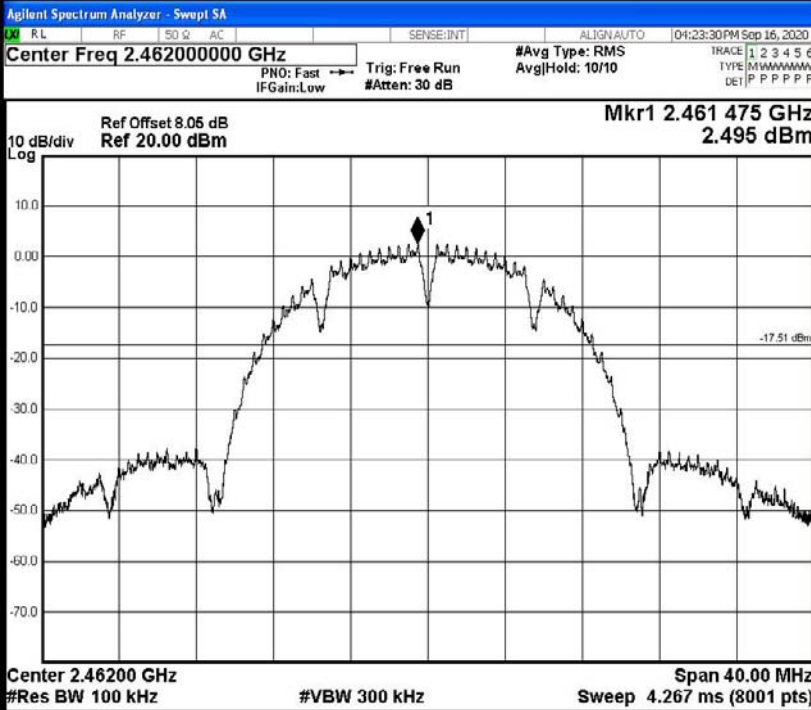
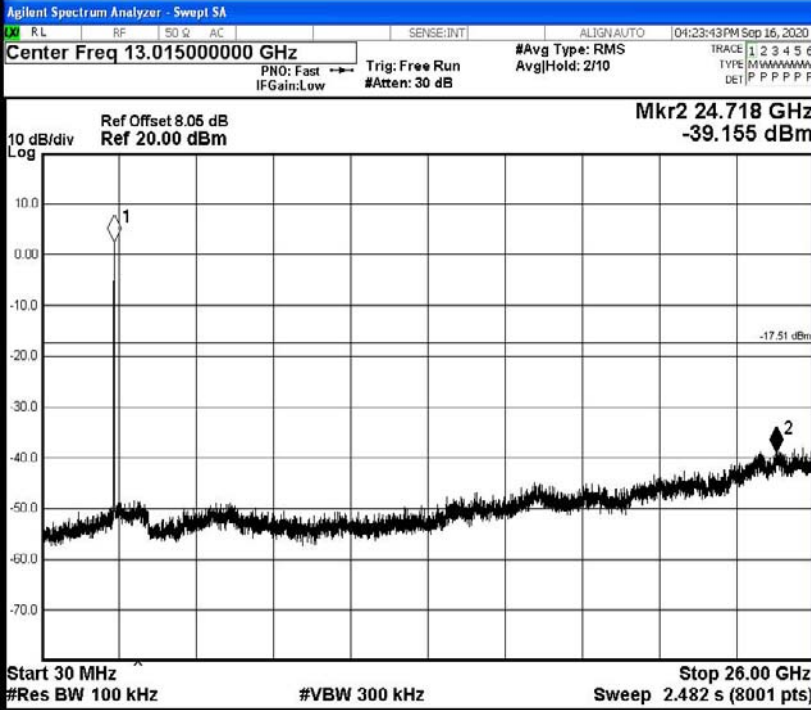
11B LCH Graphs

<p>Pref/11B/LCH</p>		<p>Frequency</p> <p>Auto Tune</p> <p>Center Freq 2.41200000 GHz</p> <p>Start Freq 2.39200000 GHz</p> <p>Stop Freq 2.43200000 GHz</p> <p>CF Step 4.000000 MHz Auto Man</p> <p>Freq Offset 0 Hz</p>
<p>Puw/11B/LCH</p>		<p>Frequency</p> <p>Auto Tune</p> <p>Center Freq 13.01500000 GHz</p> <p>Start Freq 13.00000000 GHz</p> <p>Stop Freq 13.02600000 GHz</p> <p>CF Step 2.59700000 GHz Auto Man</p> <p>Freq Offset 0 Hz</p>

11B MCH Graphs

<p>Pref/11B/MCH</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>Frequency</p> <p>Auto Tune</p> <p>Center Freq 13.015000000 GHz</p> <p>Start Freq 30.000000 MHz</p> <p>Stop Freq 26.000000000 GHz</p> <p>CF Step 2.597000000 GHz Auto Man</p> <p>Freq Offset 0 Hz</p>

11B HCH Graphs

<p>Pref/11B/HCH</p>	 <table border="1" data-bbox="1251 255 1394 949"> <tr><td>Frequency</td></tr> <tr><td>Auto Tune</td></tr> <tr><td>Center Freq 2.462000000 GHz</td></tr> <tr><td>Start Freq 2.442000000 GHz</td></tr> <tr><td>Stop Freq 2.482000000 GHz</td></tr> <tr><td>CF Step 4.000000 MHz Auto Man</td></tr> <tr><td>Freq Offset 0 Hz</td></tr> </table>	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
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>Puw/11B/HCH</p>	 <table border="1" data-bbox="1251 1003 1394 1697"> <tr><td>Frequency</td></tr> <tr><td>Auto Tune</td></tr> <tr><td>Center Freq 13.015000000 GHz</td></tr> <tr><td>Start Freq 30.000000 MHz</td></tr> <tr><td>Stop Freq 26.000000000 GHz</td></tr> <tr><td>CF Step 2.597000000 GHz Auto Man</td></tr> <tr><td>Freq Offset 0 Hz</td></tr> </table>	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
Frequency								
Auto Tune								
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Start Freq 30.000000 MHz								
Stop Freq 26.000000000 GHz								
CF Step 2.597000000 GHz Auto Man								
Freq Offset 0 Hz								

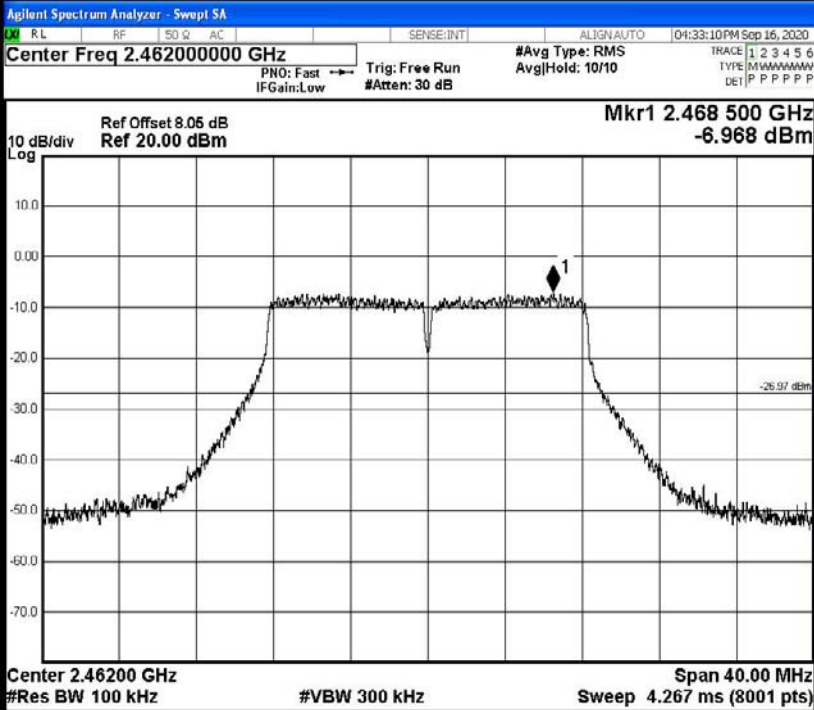
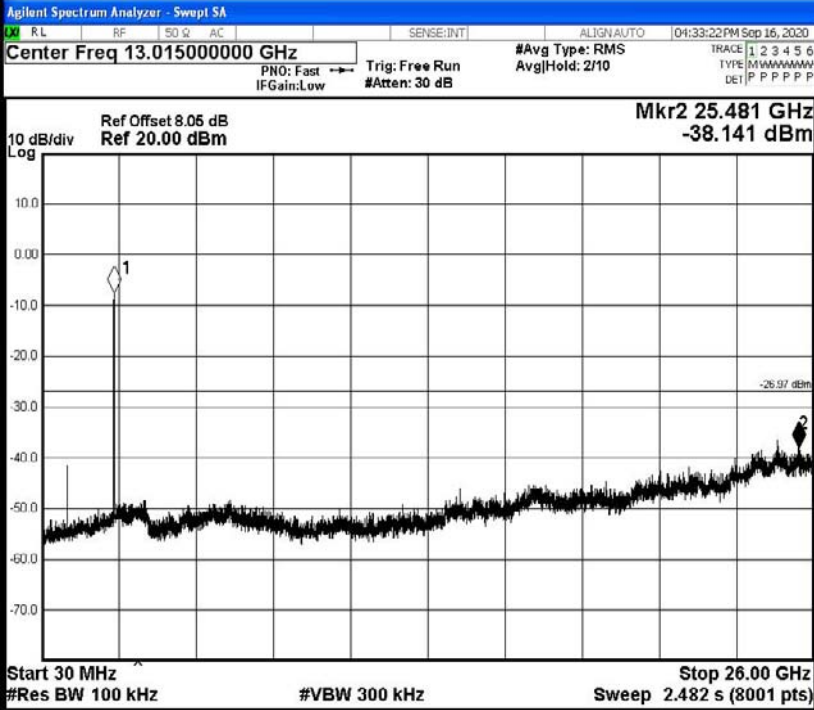
11G LCH Graphs

<p>Pref/11G/LCH</p>	<p>Agilent Spectrum Analyzer - Swept SA</p> <p>Center Freq 2.41200000 GHz</p> <p>Ref Offset 8.06 dB Ref 20.00 dBm</p> <p>Mkr1 2.418 490 GHz -6.329 dBm</p> <p>10 dB/div Log</p> <p>Center 2.41200 GHz #Res BW 100 kHz #VBW 300 kHz Sweep 4.267 ms (8001 pts)</p> <p>Span 40.00 MHz</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/11G/LCH</p>	<p>Agilent Spectrum Analyzer - Swept SA</p> <p>Center Freq 13.01500000 GHz</p> <p>Ref Offset 8.06 dB Ref 20.00 dBm</p> <p>Mkr2 24.844 GHz -38.018 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>	<p>Frequency</p> <p>Auto Tune</p> <p>Center Freq 13.015000000 GHz</p> <p>Start Freq 30.000000 MHz</p> <p>Stop Freq 26.000000000 GHz</p> <p>CF Step 2.597000000 GHz Auto Man</p> <p>Freq Offset 0 Hz</p>

11G MCH Graphs

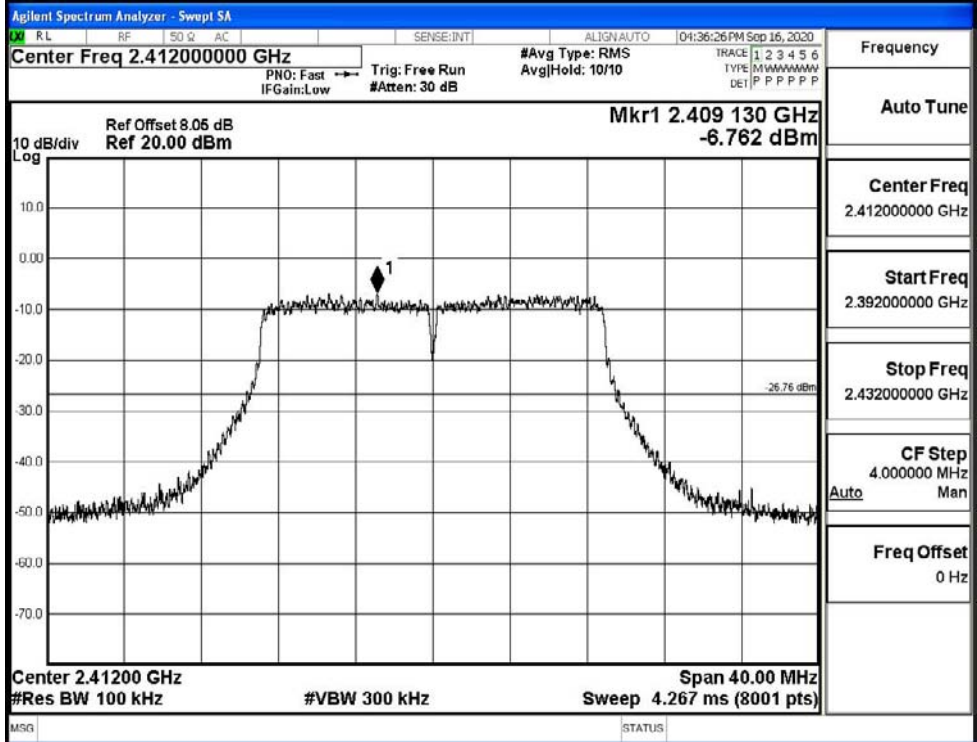
<p>Pref/11G/MCH</p>	<p>Agilent Spectrum Analyzer - Swept SA Center Freq 2.43700000 GHz #Avg Type: RMS AvgHold: 10/10 Mkr1 2.443 495 GHz -6.269 dBm Ref Offset 8.06 dB Ref 20.00 dBm 10 dB/div Log Center 2.43700 GHz #Res BW 100 kHz #VBW 300 kHz Span 40.00 MHz Sweep 4.267 ms (8001 pts)</p>	<p>Frequency</p> <p>Auto Tune</p> <p>Center Freq 2.43700000 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 #Avg Type: RMS AvgHold: 2/10 Mkr2 24.786 GHz -37.320 dBm Ref Offset 8.06 dB Ref 20.00 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</p> <p>Auto Tune</p> <p>Center Freq 13.01500000 GHz</p> <p>Start Freq 30.000000 MHz</p> <p>Stop Freq 26.000000000 GHz</p> <p>CF Step 2.597000000 GHz Auto Man</p> <p>Freq Offset 0 Hz</p>

11G HCH Graphs

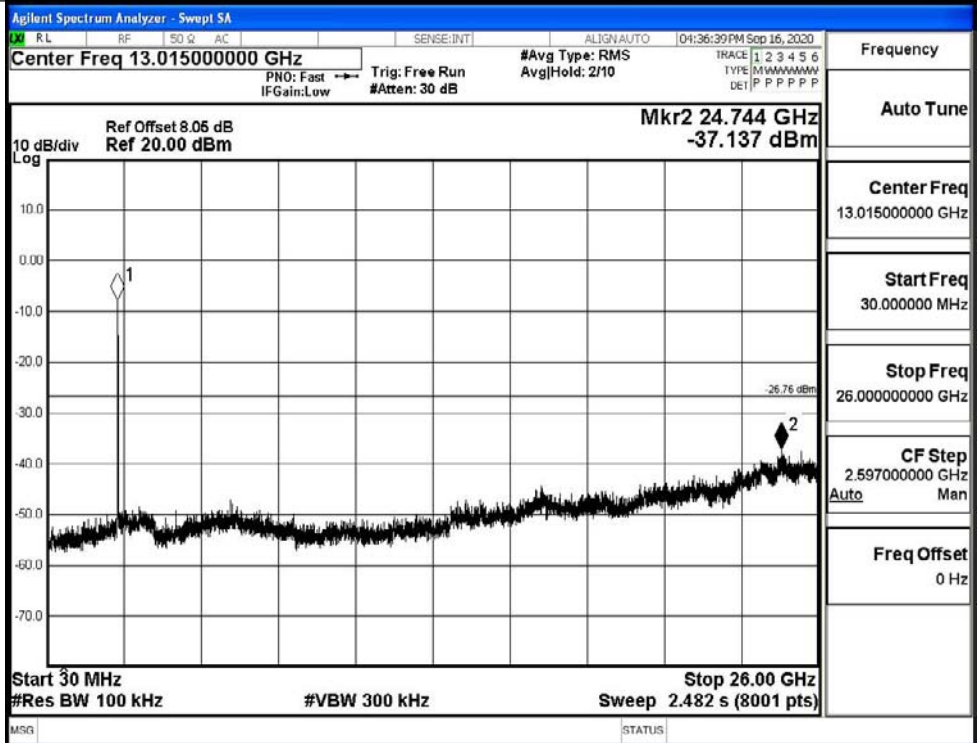
<p>Pref/11G/HCH</p>	 <table border="1" data-bbox="1244 264 1394 949"> <tr><td>Frequency</td></tr> <tr><td>Auto Tune</td></tr> <tr><td>Center Freq 2.462000000 GHz</td></tr> <tr><td>Start Freq 2.442000000 GHz</td></tr> <tr><td>Stop Freq 2.482000000 GHz</td></tr> <tr><td>CF Step 4.000000 MHz Auto Man</td></tr> <tr><td>Freq Offset 0 Hz</td></tr> </table>	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
Frequency								
Auto Tune								
Center Freq 2.462000000 GHz								
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Stop Freq 2.482000000 GHz								
CF Step 4.000000 MHz Auto Man								
Freq Offset 0 Hz								
<p>Puw/11G/HCH</p>	 <table border="1" data-bbox="1244 1012 1394 1697"> <tr><td>Frequency</td></tr> <tr><td>Auto Tune</td></tr> <tr><td>Center Freq 13.015000000 GHz</td></tr> <tr><td>Start Freq 30.000000 MHz</td></tr> <tr><td>Stop Freq 26.000000000 GHz</td></tr> <tr><td>CF Step 2.597000000 GHz Auto Man</td></tr> <tr><td>Freq Offset 0 Hz</td></tr> </table>	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
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								

11N20SISO LCH Graphs

Pref/11N20SIS
O/LCH



Puw/11N20
SISO/LCH



11N20SISO MCH Graphs

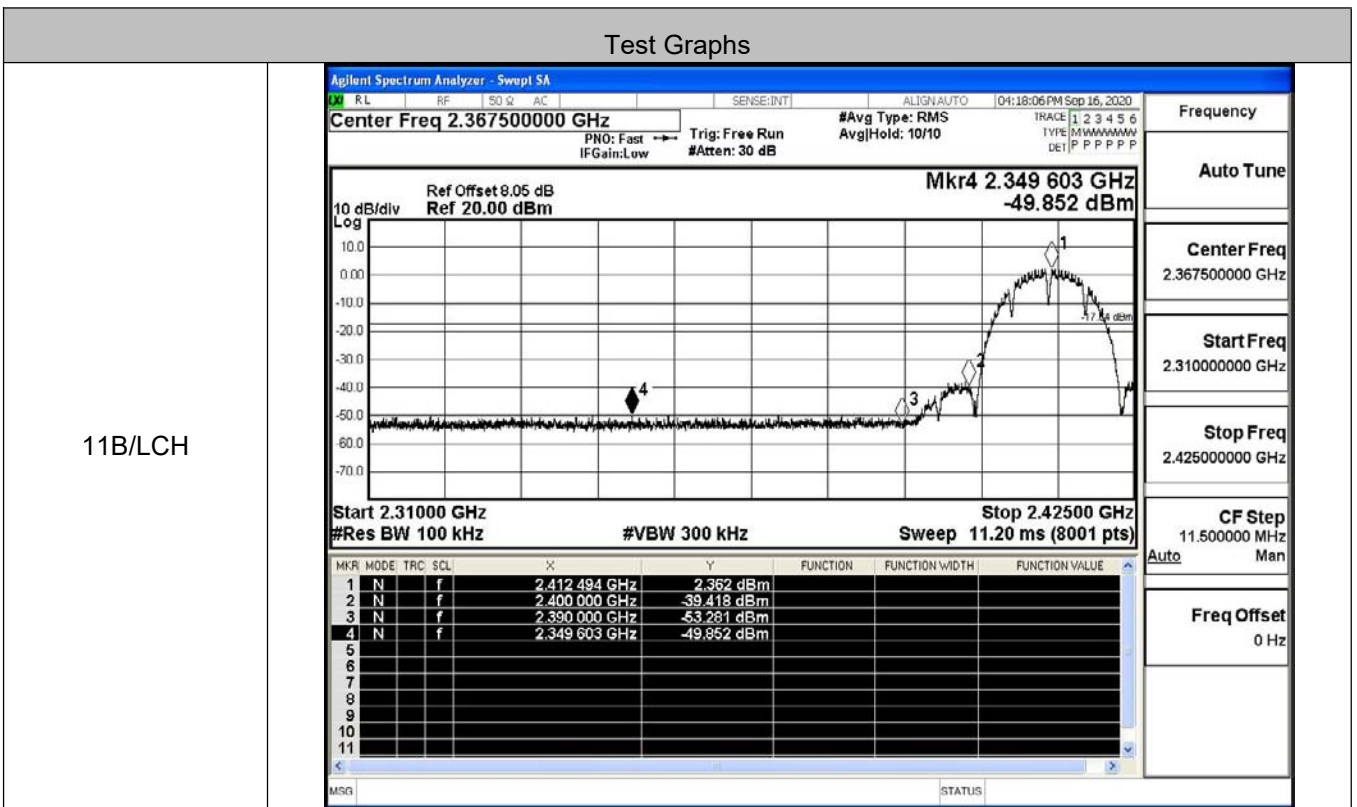
<p>Pref/11N20 SISO/MCH</p>	<p>Agilent Spectrum Analyzer - Swept SA</p> <p>Center Freq 2.43700000 GHz</p> <p>Ref Offset 8.06 dB Ref 20.00 dBm</p> <p>Mkr1 2.431620 GHz -7.129 dBm</p> <p>Center 2.43700 GHz #Res BW 100 kHz #VBW 300 kHz Sweep 4.267 ms (8001 pts)</p>	<p>Frequency</p> <p>Auto Tune</p> <p>Center 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 8.06 dB Ref 20.00 dBm</p> <p>Mkr2 24.877 GHz -37.786 dBm</p> <p>Start 30 MHz #Res BW 100 kHz #VBW 300 kHz Sweep 2.482 s (8001 pts)</p>	<p>Frequency</p> <p>Auto Tune</p> <p>Center Freq 13.015000000 GHz</p> <p>Start Freq 30.000000 MHz</p> <p>Stop Freq 26.000000000 GHz</p> <p>CF Step 2.597000000 GHz Auto Man</p> <p>Freq Offset 0 Hz</p>

11N20SISO HCH Graphs

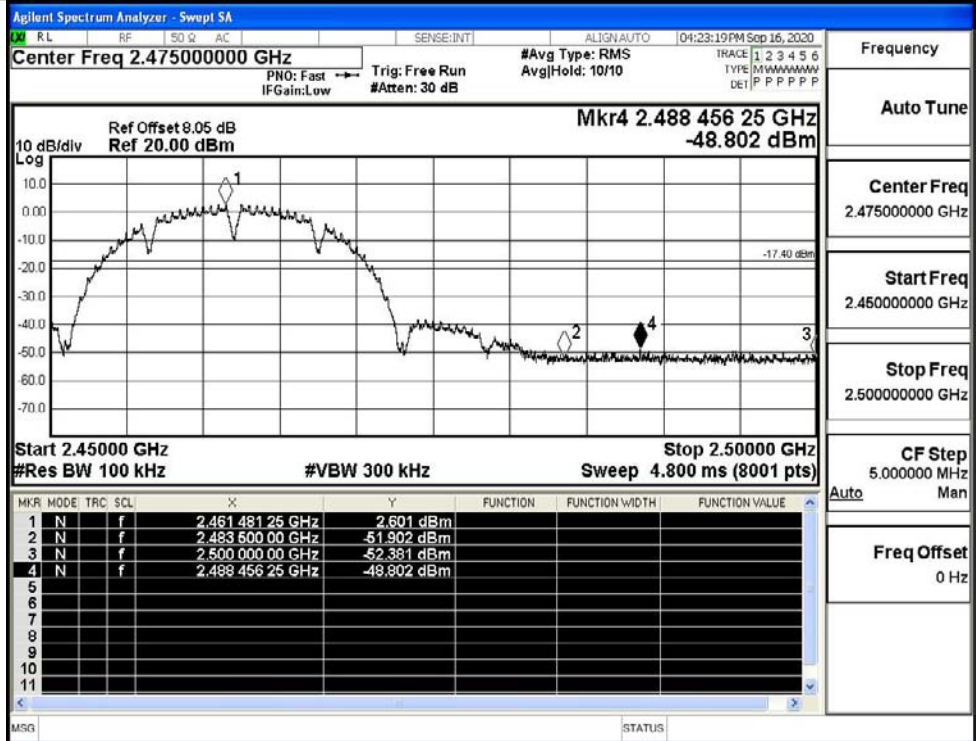
<p>Pref/11N20 SISO/HCH</p>		<p>Frequency Auto Tune Center Freq 2.462000000 GHz Start Freq 2.442000000 GHz Stop Freq 2.482000000 GHz CF Step 4.000000 MHz Auto Man Freq Offset 0 Hz</p>
<p>Puw/11N20 SISO/HCH</p>		<p>Frequency Auto Tune Center Freq 13.015000000 GHz Start Freq 30.000000 MHz Stop Freq 26.000000000 GHz CF Step 2.597000000 GHz Auto Man Freq Offset 0 Hz</p>

A.6 Band-edge for RF Conducted Emissions

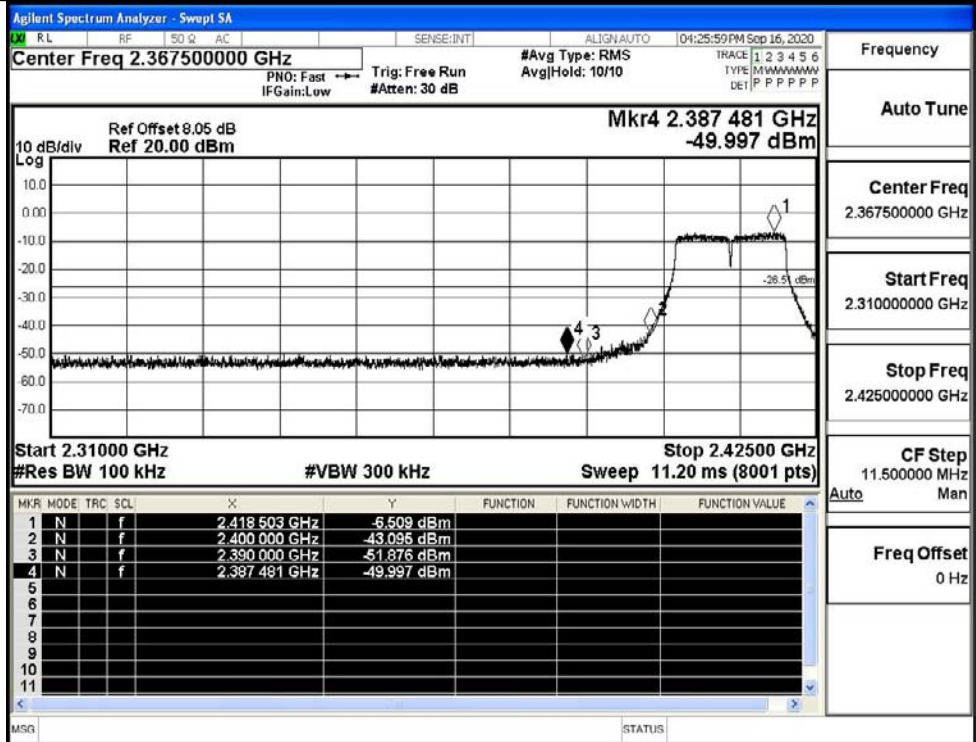
Mode	Channel	Carrier Power[dBm]	Max.Spurious Level [dBm]	Limit [dBm]	Verdict
11B	LCH	2.362	-49.852	-17.64	PASS
	HCH	2.601	-48.802	-17.4	PASS
11G	LCH	-6.509	-49.997	-26.51	PASS
	HCH	-6.953	-49.032	-26.95	PASS
11N20SISO	LCH	-6.421	-49.543	-26.42	PASS
	HCH	-6.624	-49.392	-26.62	PASS



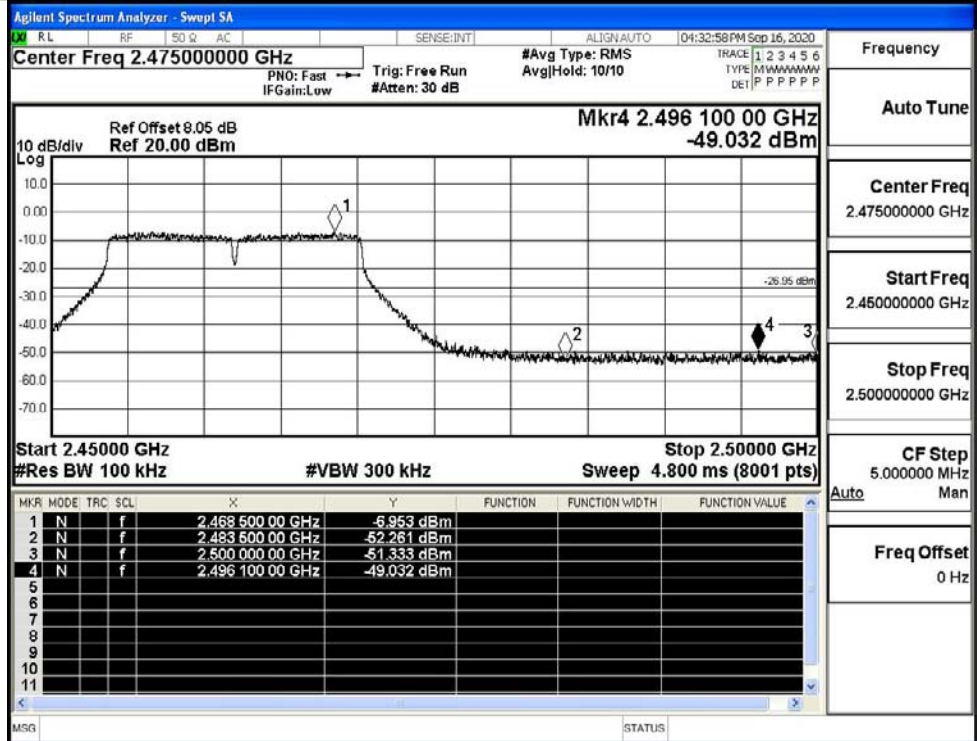
11B/HCH



11G/LCH

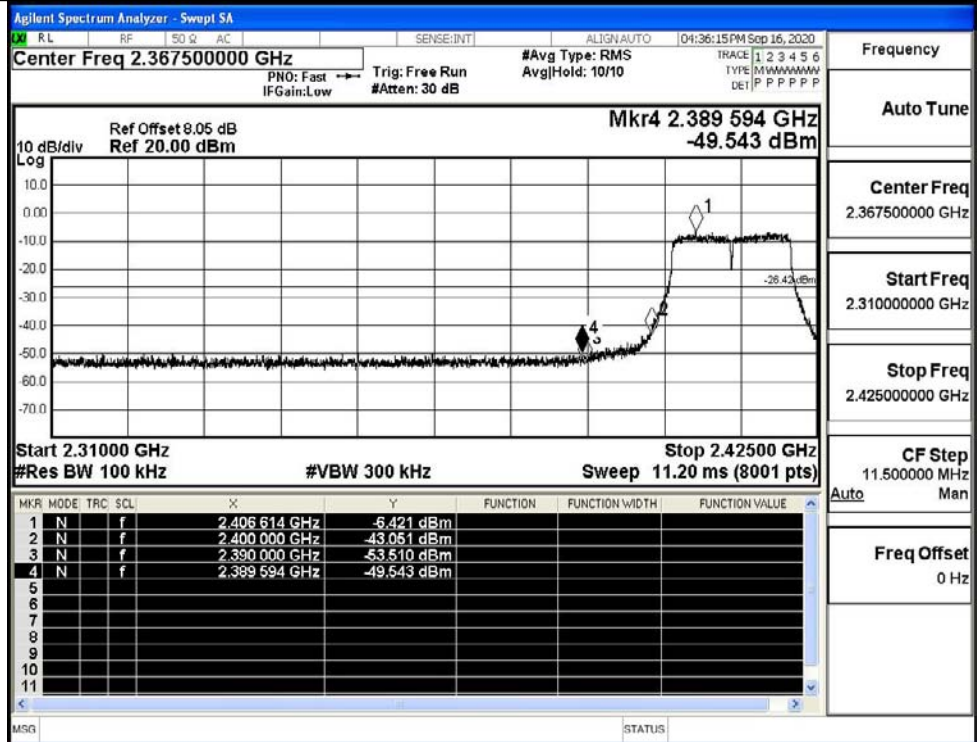


11G/HCH



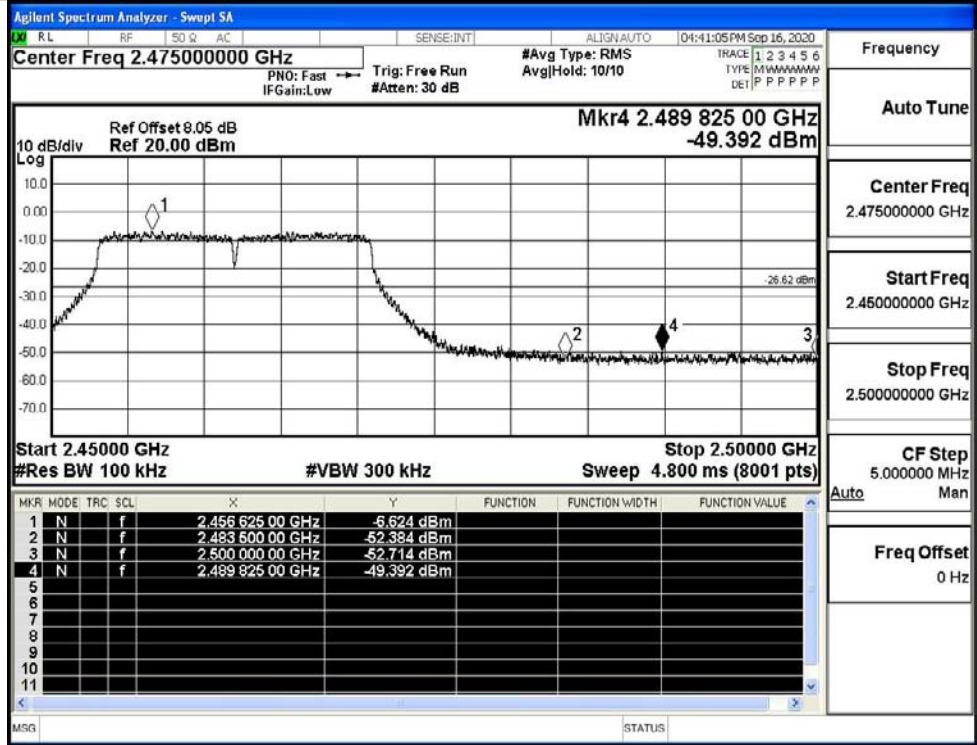
Frequency	2.47500000 GHz
Auto Tune	
Center Freq	2.47500000 GHz
Start Freq	2.45000000 GHz
Stop Freq	2.50000000 GHz
CF Step	5.000000 MHz
Freq Offset	0 Hz

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

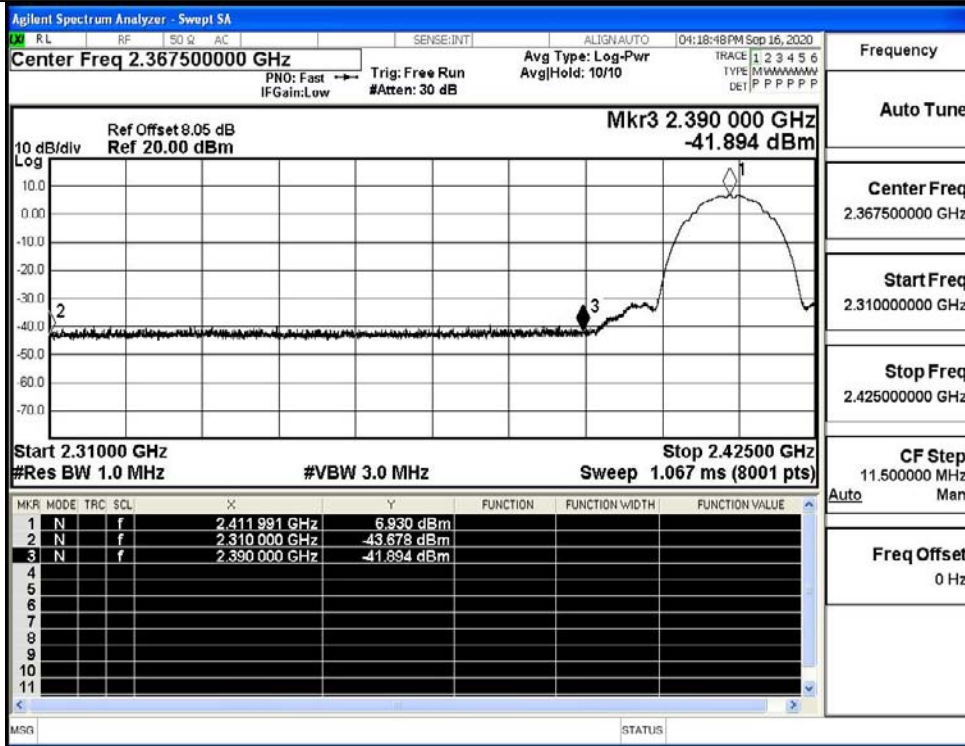
11N20SISO/HCH



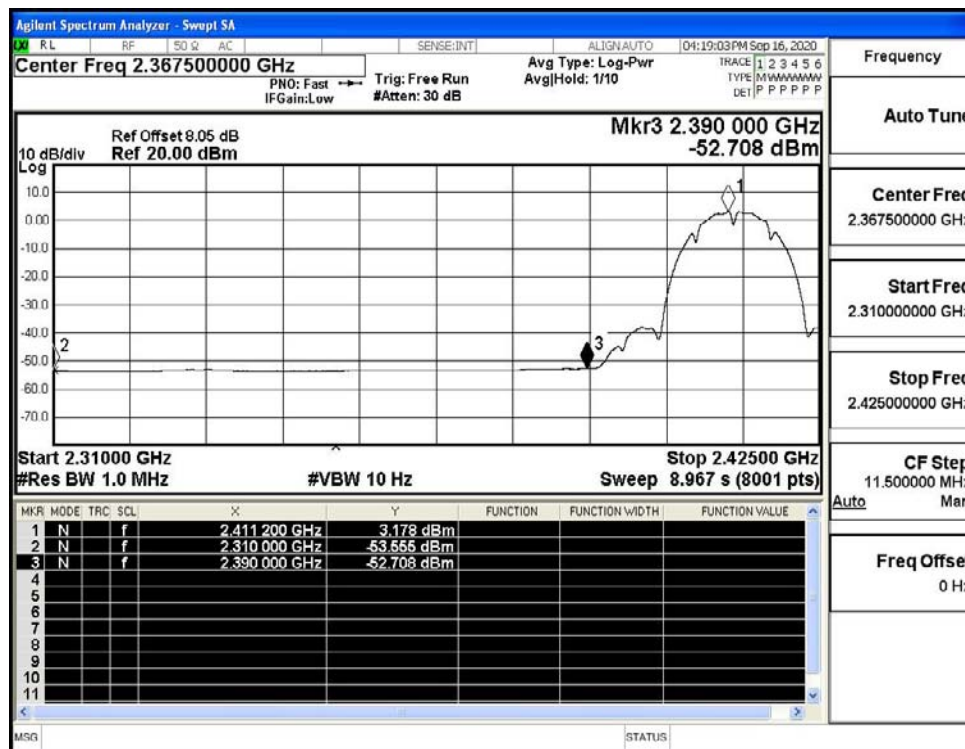
A.7 Restrict-band band-edge measurements

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	-43.68	3.0	0	57.55	PEAK	74	PASS
	2412	Ant1	2310.0	-53.56	3.0	0	47.67	AV	54	PASS
	2412	Ant1	2390.0	-41.89	3.0	0	59.34	PEAK	74	PASS
	2412	Ant1	2390.0	-52.71	3.0	0	48.52	AV	54	PASS
	2462	Ant1	2483.5	-40.91	3.0	0	60.32	PEAK	74	PASS
	2462	Ant1	2483.5	-52.22	3.0	0	49.01	AV	54	PASS
	2462	Ant1	2500.0	-41.41	3.0	0	59.82	PEAK	74	PASS
	2462	Ant1	2500.0	-52.42	3.0	0	48.81	AV	54	PASS
11G	2412	Ant1	2310.0	-43.18	3.0	0	58.05	PEAK	74	PASS
	2412	Ant1	2310.0	-53.56	3.0	0	47.67	AV	54	PASS
	2412	Ant1	2390.0	-41.54	3.0	0	59.69	PEAK	74	PASS
	2412	Ant1	2390.0	-52.62	3.0	0	48.61	AV	54	PASS
	2462	Ant1	2483.5	-41.66	3.0	0	59.57	PEAK	74	PASS
	2462	Ant1	2483.5	-52.30	3.0	0	48.93	AV	54	PASS
	2462	Ant1	2500.0	-42.08	3.0	0	59.15	PEAK	74	PASS
	2462	Ant1	2500.0	-52.51	3.0	0	48.72	AV	54	PASS
11N20 SISO	2412	Ant1	2310.0	-41.44	3.0	0	59.79	PEAK	74	PASS
	2412	Ant1	2310.0	-53.53	3.0	0	47.7	AV	54	PASS
	2412	Ant1	2390.0	-41.08	3.0	0	60.15	PEAK	74	PASS
	2412	Ant1	2390.0	-52.24	3.0	0	48.99	AV	54	PASS
	2462	Ant1	2483.5	-41.86	3.0	0	59.37	PEAK	74	PASS
	2462	Ant1	2483.5	-52.09	3.0	0	49.14	AV	54	PASS
	2462	Ant1	2500.0	-41.44	3.0	0	59.79	PEAK	74	PASS
	2462	Ant1	2500.0	-52.60	3.0	0	48.63	AV	54	PASS

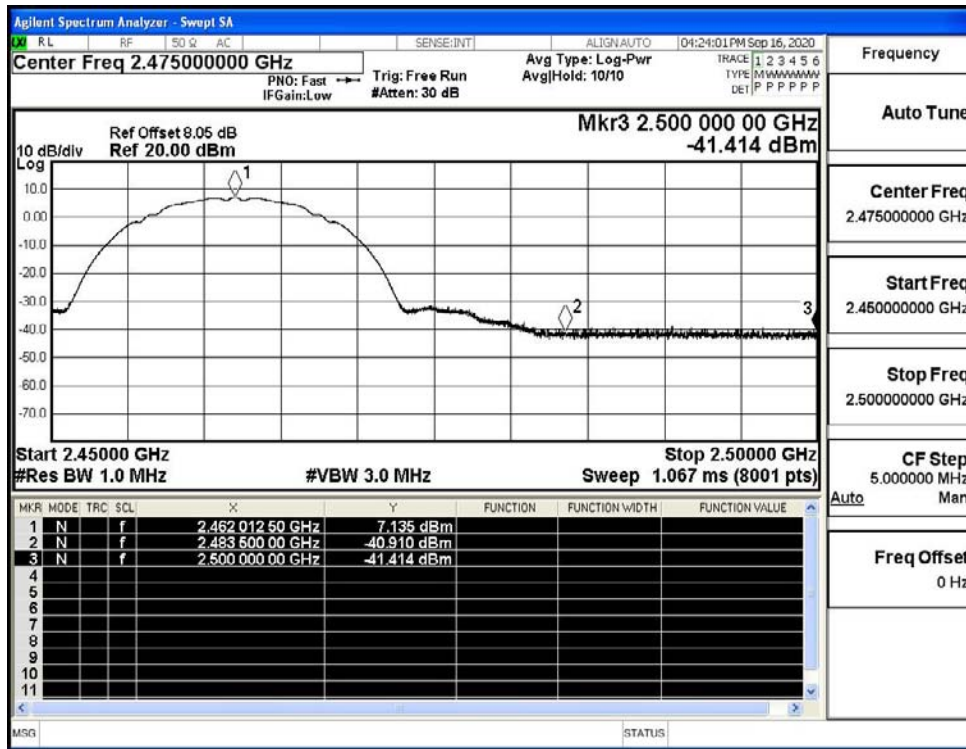
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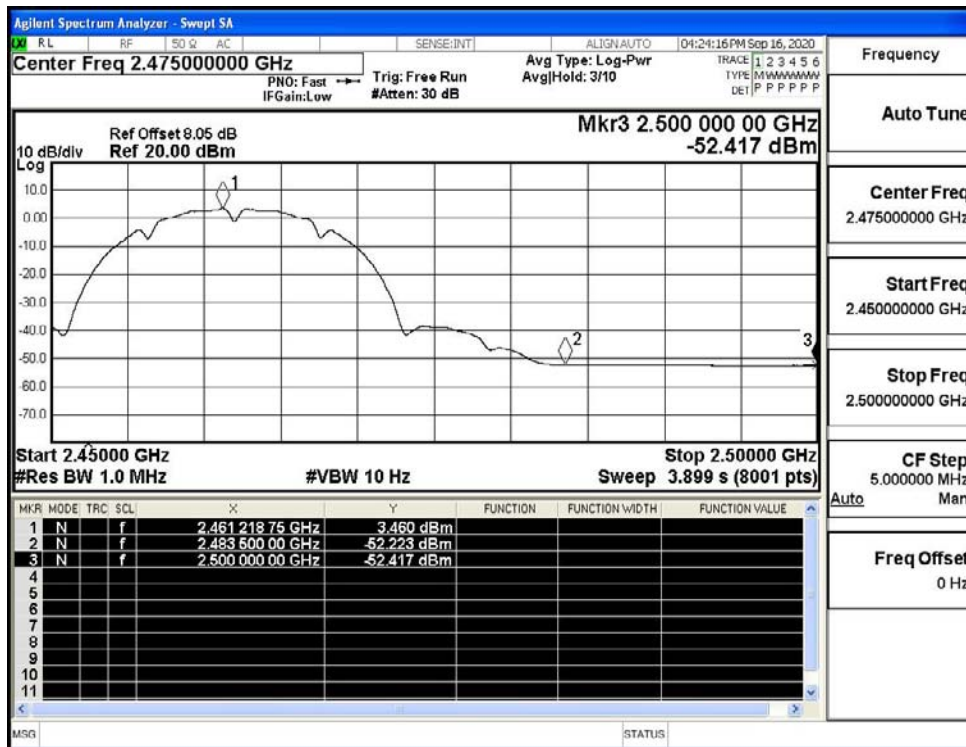
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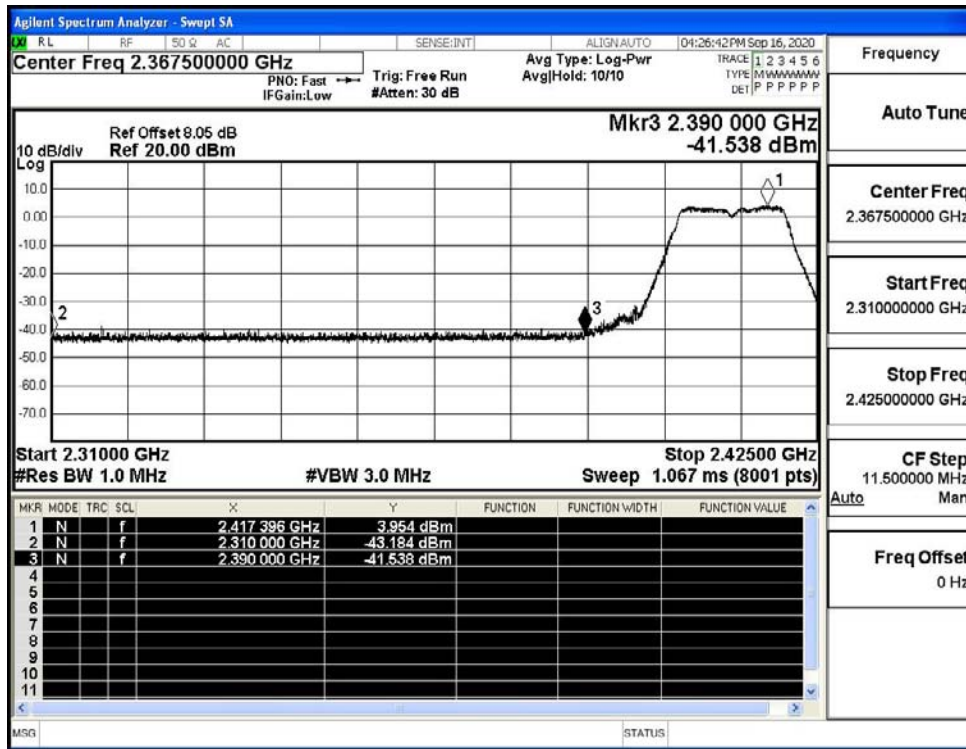
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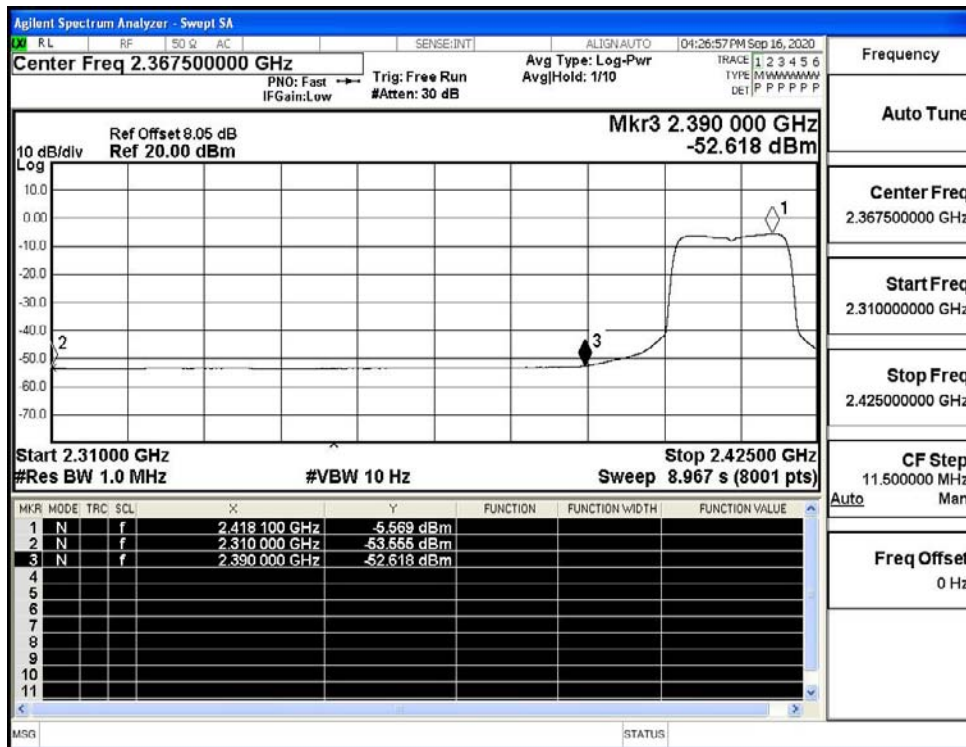
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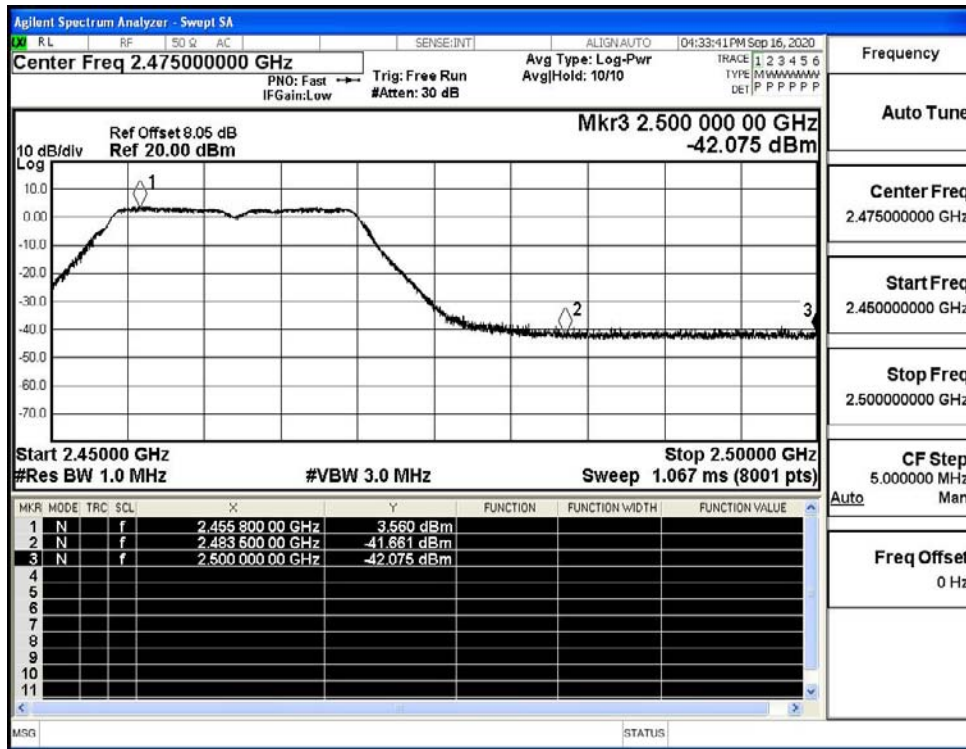
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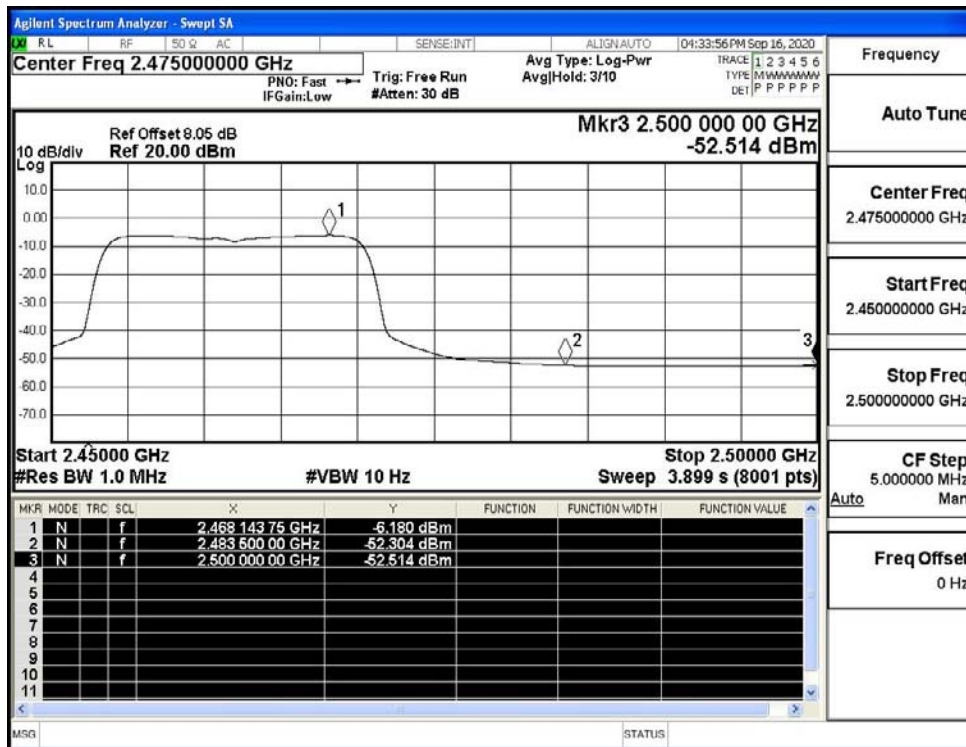
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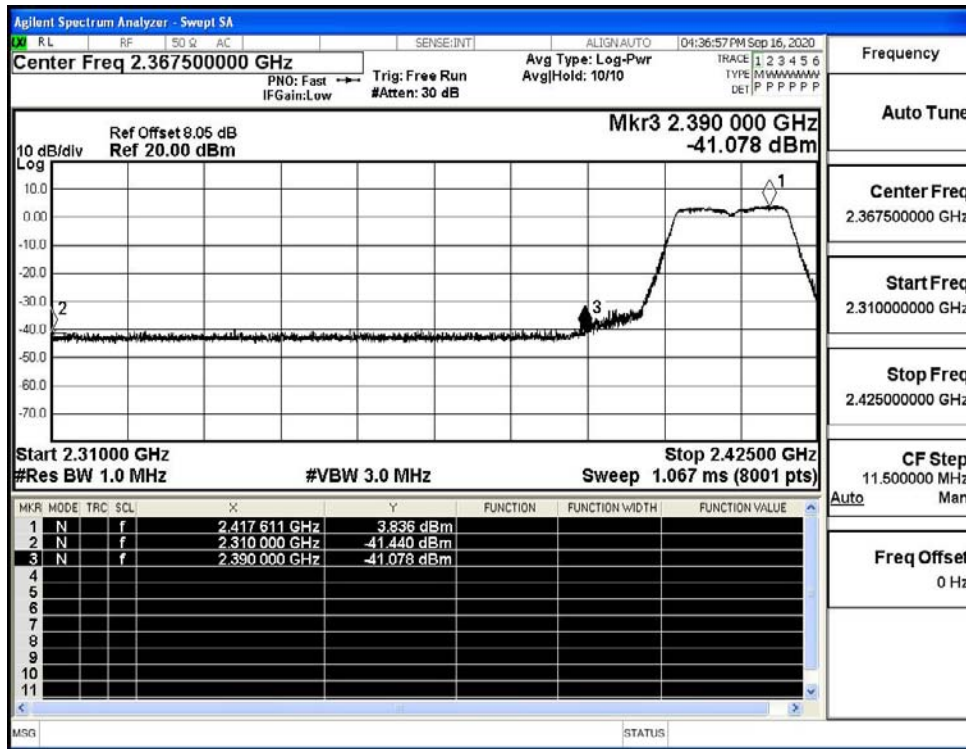
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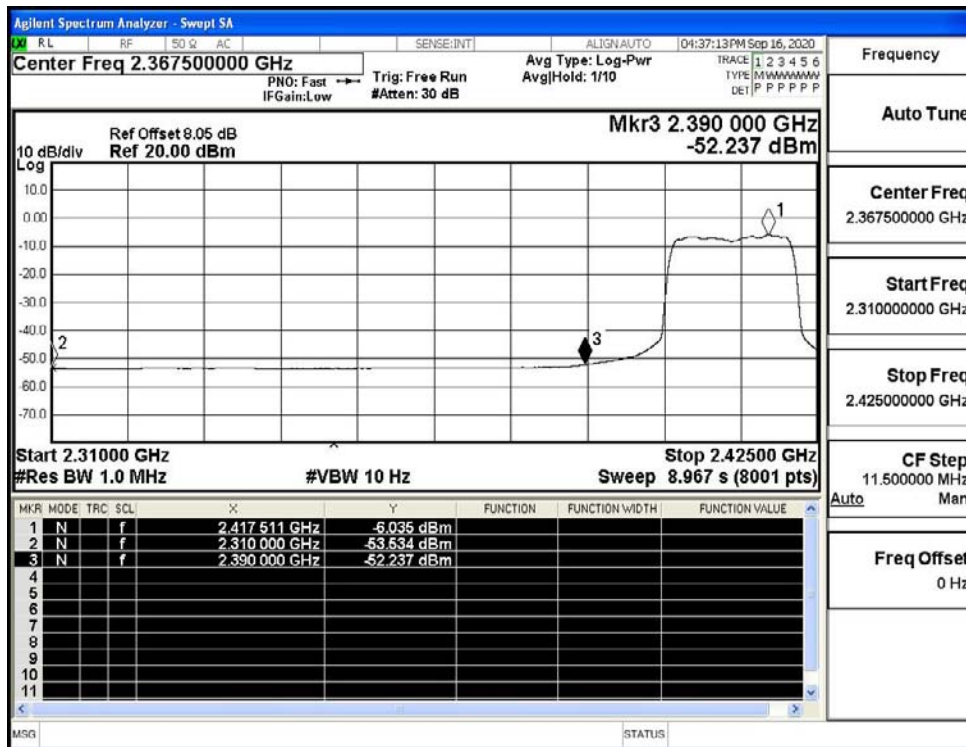
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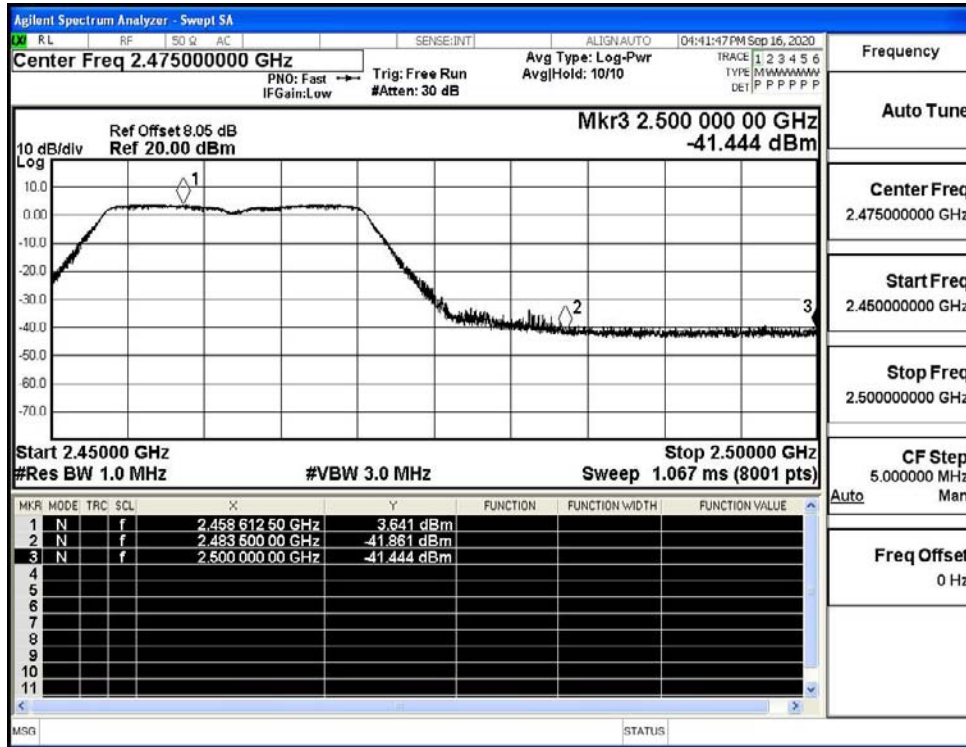
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Restrict-band band-edge measurements_11N20SISO_2412_Ant1_AV



Restrict-band band-edge measurements_11N20SISO_2462_Ant1_PEAK



Restrict-band band-edge measurements_11N20SISO_2462_Ant1_AV

