Appendix C

RF Test Data for 2.4GWIFI (Conducted Measurement)

Product Name: Nybble Q

Trade Mark: N/A

Test Model: Plastic servo

Environmental Conditions

Temperature:	25.3℃
Relative Humidity:	52.2%
ATM Pressure:	101Kpa
Test Engineer:	Emiya lin
Supervised by:	Simba Haung

Contents

Page

COVER PAGE

1 Duty Cycle 3
1.1 Test Result 3
1.2 Test Graphs 4
2 Maximum Conducted Output Power 9
2.1 Test Result 9
3 -6dB Bandwidth 10
3.1 Test Result 10
3.2 Test Graphs 11
4 Maximum Power Spectral Density Level 16
4.1 Test Result 16
4.2 Test Graphs 17
5 Band Edge 22
5.1 Test Result 22
5.2 Test Graphs 23
6 Conducted RF Spurious Emission 29
6.1 Test Result 29
6.2 Test Graphs 30
7 Restrict Band 39
7.1 Test Result 39
7.2 Test Graphs 41

1 Duty Cycle

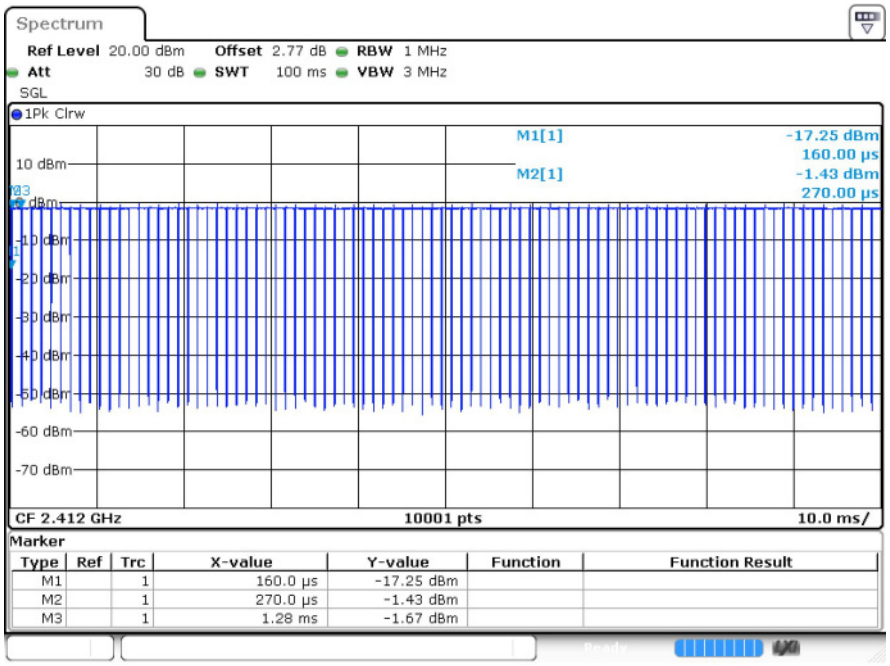
1.1 Test Result

Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	Correction Factor	1/T (kHz)
b	2412	Ant1	90.77	0.42	0.99
b	2437	Ant1	90.74	0.42	0.99
b	2462	Ant1	90.77	0.42	0.99
g	2412	Ant1	91.33	0.39	1.61
g	2437	Ant1	91.32	0.39	1.64
g	2462	Ant1	91.33	0.39	1.64
n20	2412	Ant1	91.24	0.4	1.64
n20	2437	Ant1	91.18	0.4	1.64
n20	2462	Ant1	91.24	0.4	1.64

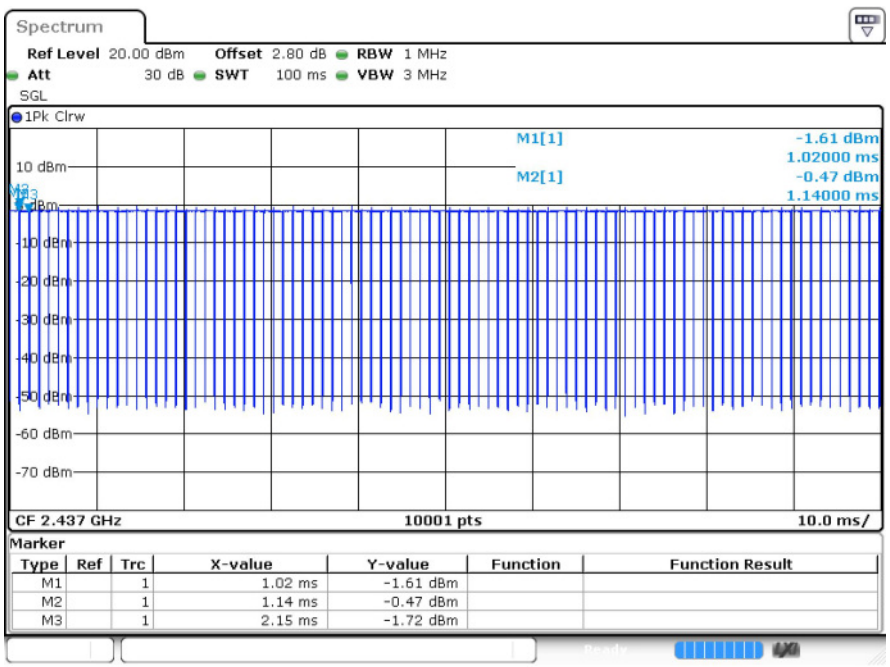
1.2 Test Graphs

Test Graphs

b 2412MHz Ant1

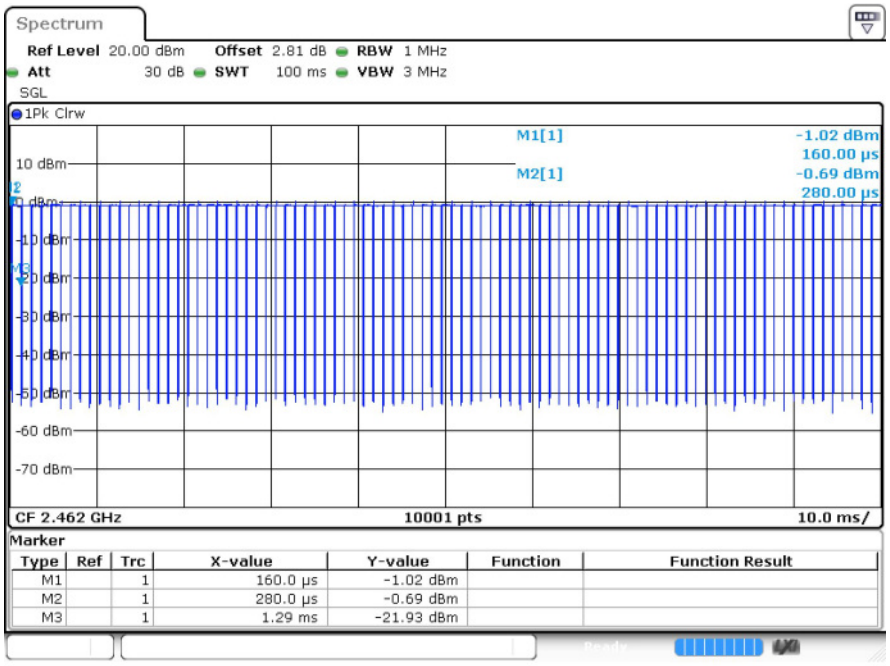


b 2437MHz Ant1

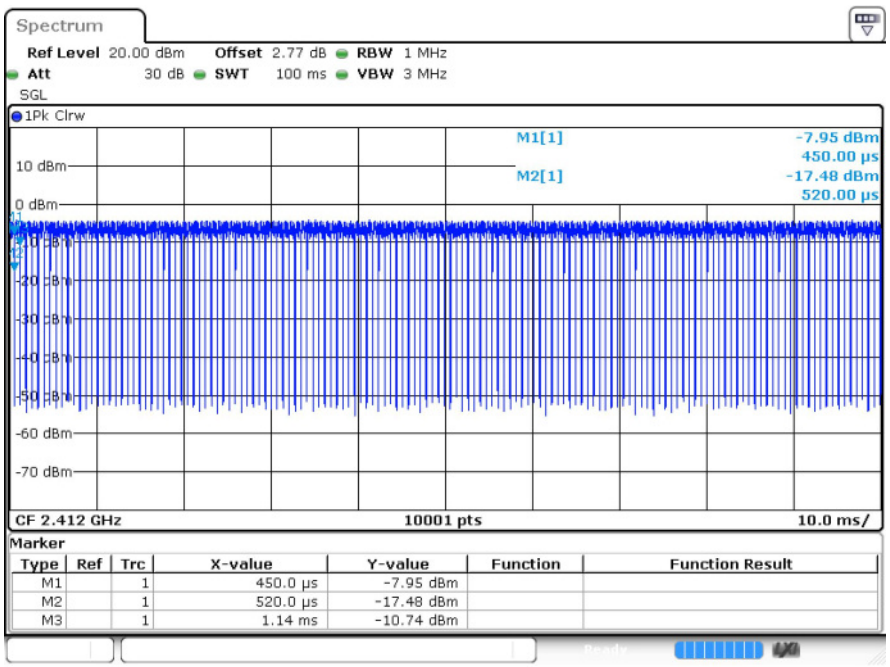


Test Graphs

b 2462MHz Ant1

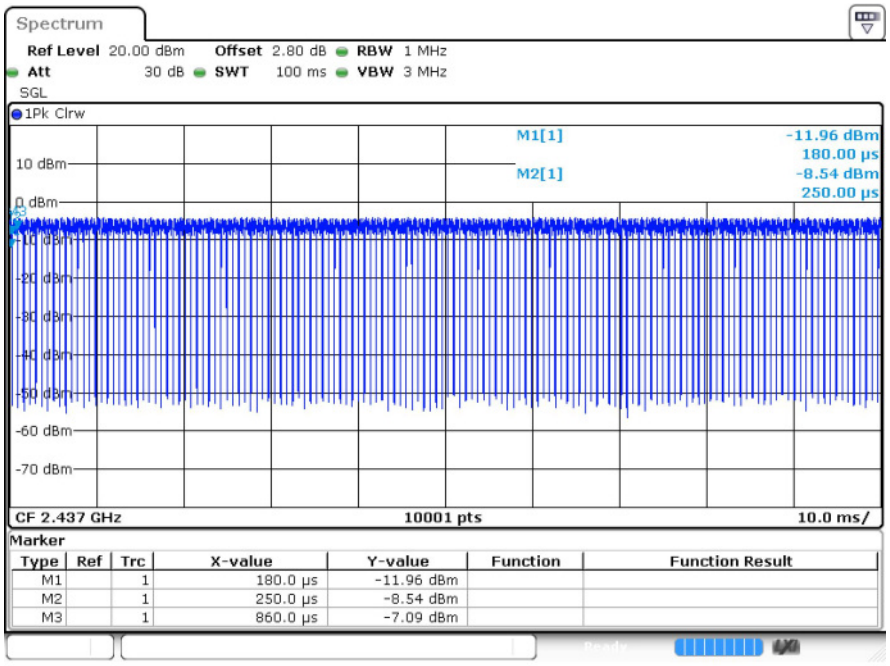


g 2412MHz Ant1

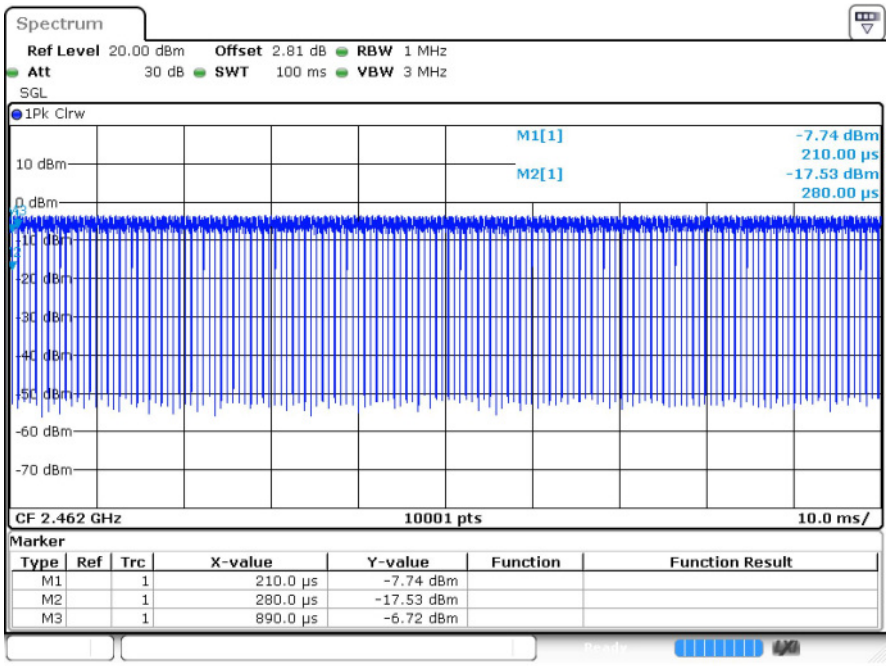


Test Graphs

g 2437MHz Ant1

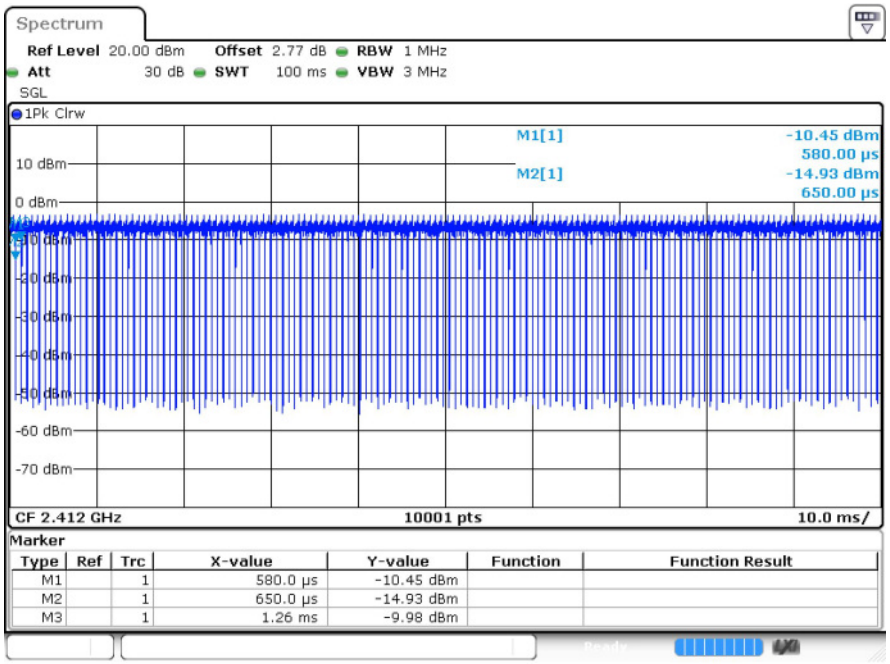


g 2462MHz Ant1

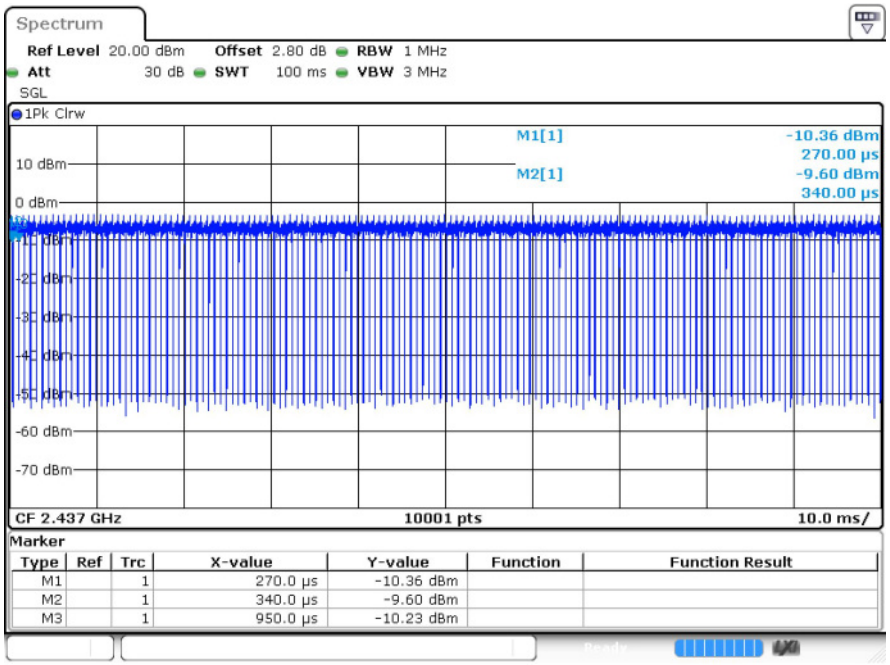


Test Graphs

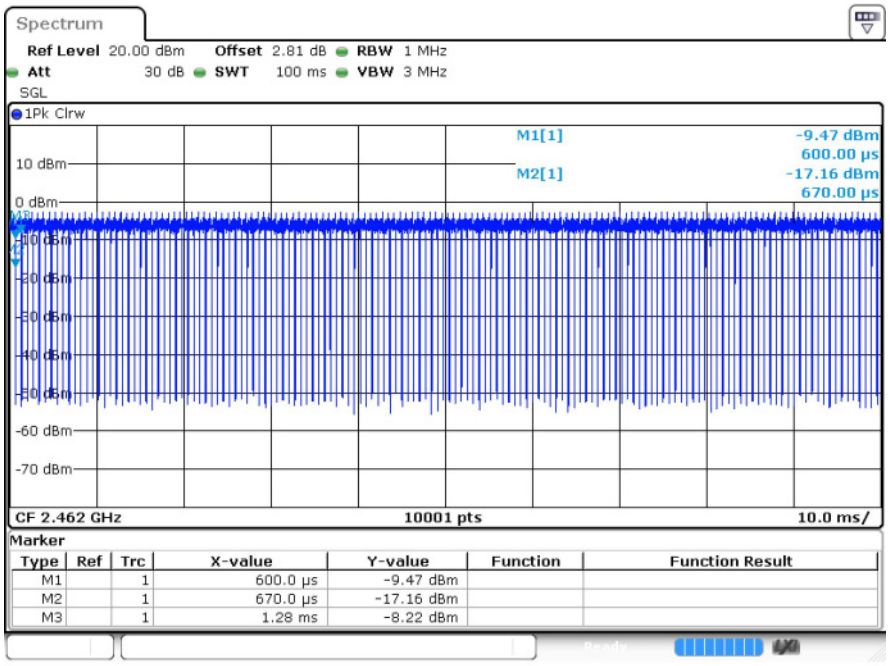
n20 2412MHz Ant1



n20 2437MHz Ant1



Test Graphs
n20 2462MHz Ant1



2 Maximum Conducted Output Power

2.1 Test Result

Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Limit (dBm)	Verdict
b	2412	Ant1	7.74	30	Pass
b	2437	Ant1	7.73	30	Pass
b	2462	Ant1	8.49	30	Pass
g	2412	Ant1	6.95	30	Pass
g	2437	Ant1	7.1	30	Pass
g	2462	Ant1	7.87	30	Pass
n20	2412	Ant1	6.89	30	Pass
n20	2437	Ant1	7.09	30	Pass
n20	2462	Ant1	7.8	30	Pass

3 -6dB Bandwidth

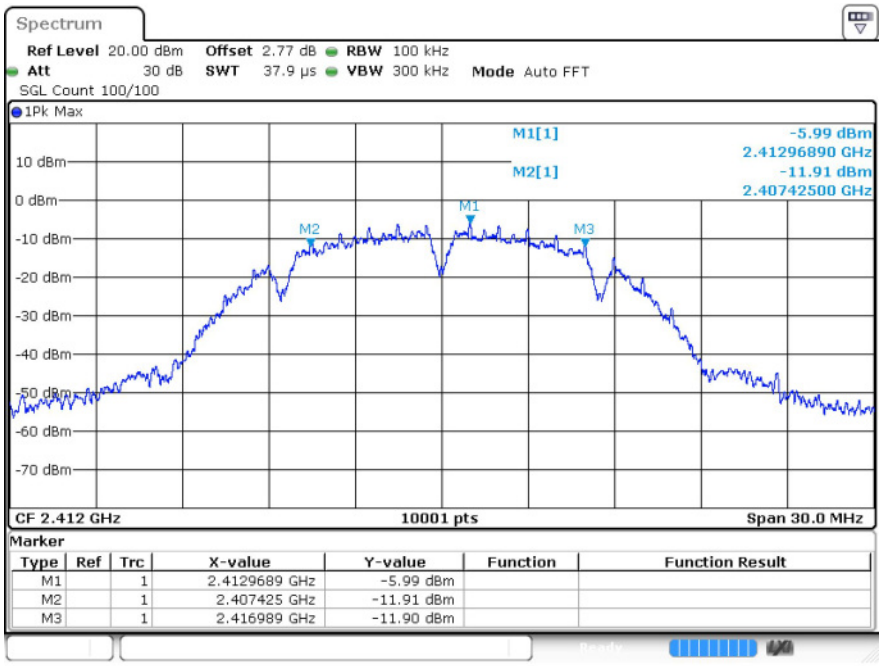
3.1 Test Result

Mode	Frequency (MHz)	Antenna	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
b	2412	Ant1	9.564	0.5	Pass
b	2437	Ant1	9.558	0.5	Pass
b	2462	Ant1	9.567	0.5	Pass
g	2412	Ant1	16.344	0.5	Pass
g	2437	Ant1	16.359	0.5	Pass
g	2462	Ant1	16.56	0.5	Pass
n20	2412	Ant1	17.553	0.5	Pass
n20	2437	Ant1	17.568	0.5	Pass
n20	2462	Ant1	17.568	0.5	Pass

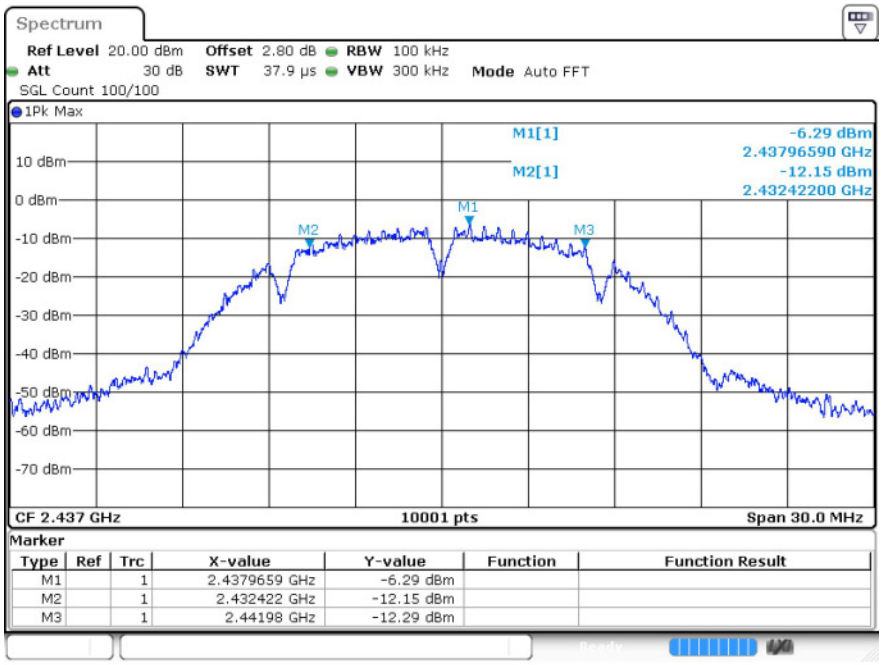
3.2 Test Graphs

Test Graphs

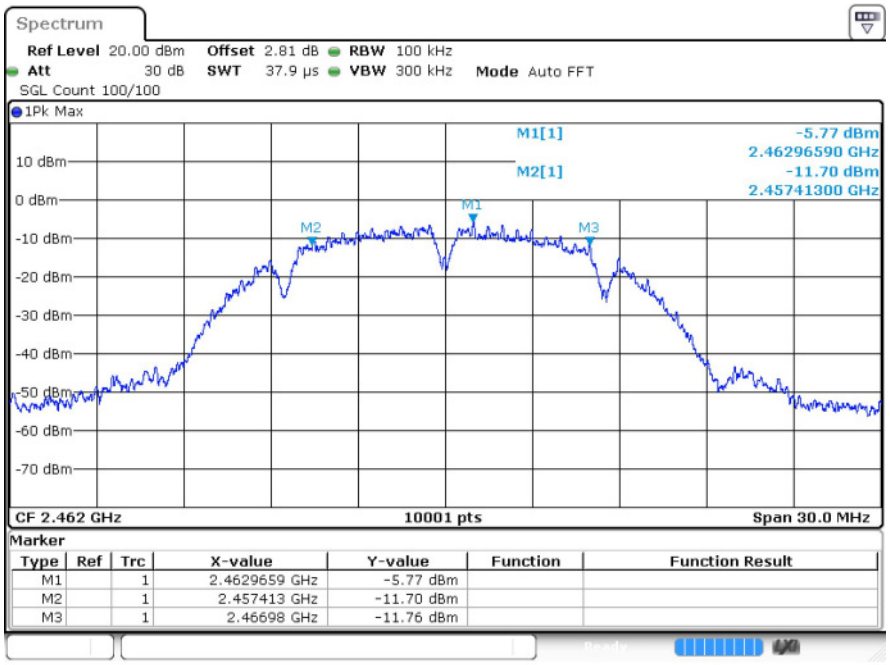
b 2412MHz Ant1



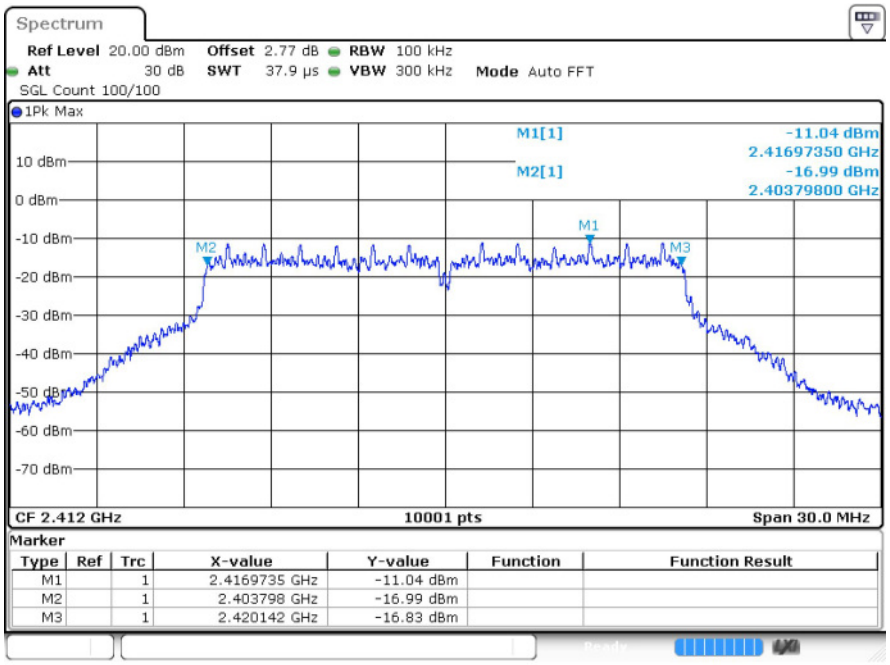
b 2437MHz Ant1



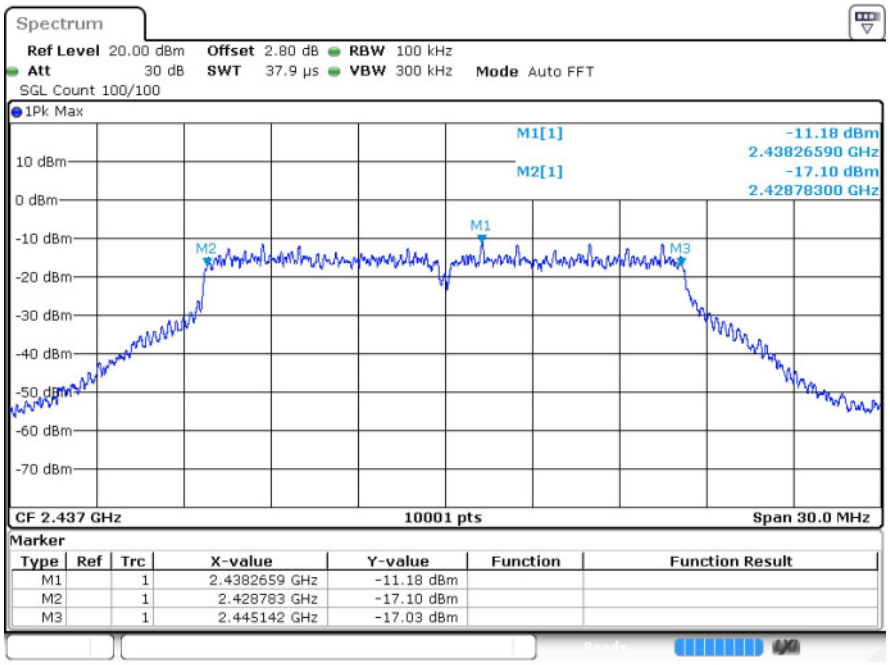
b 2462MHz Ant1



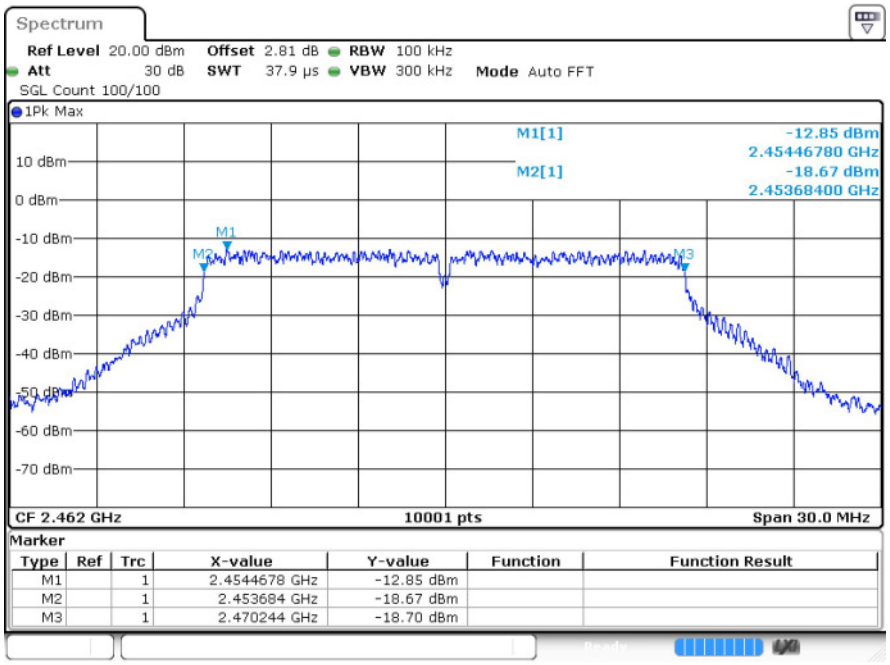
g 2412MHz Ant1



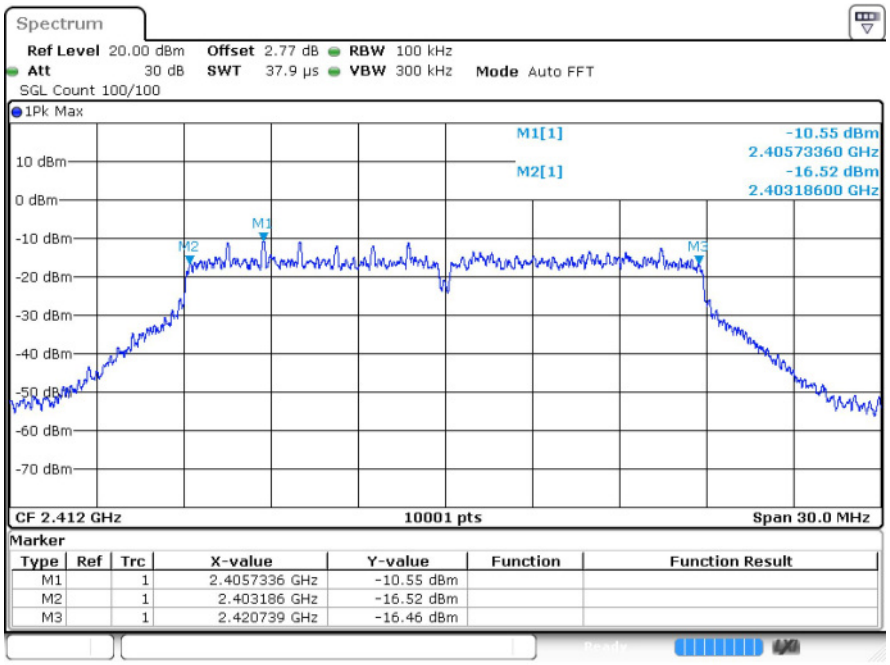
g 2437MHz Ant1



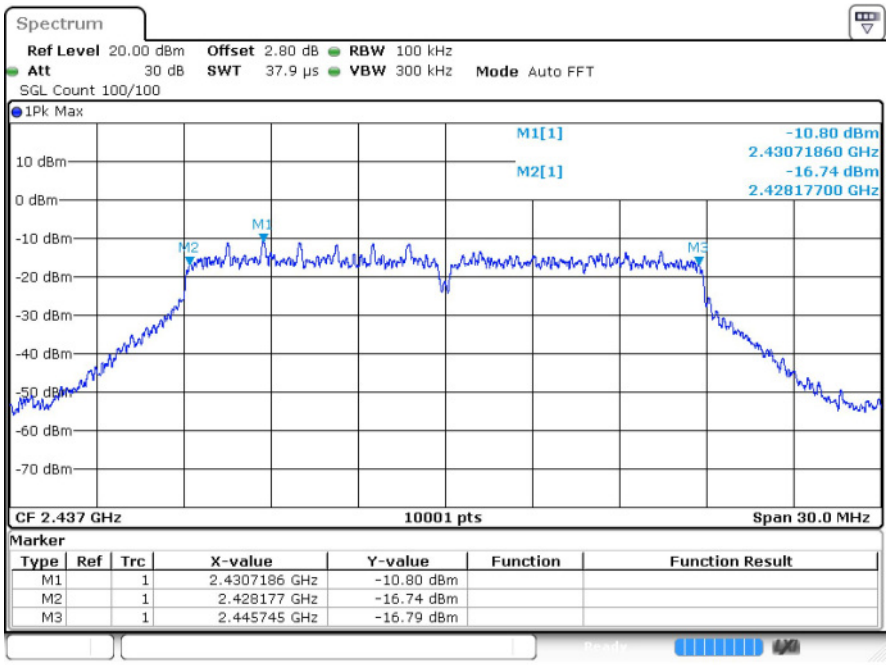
g 2462MHz Ant1



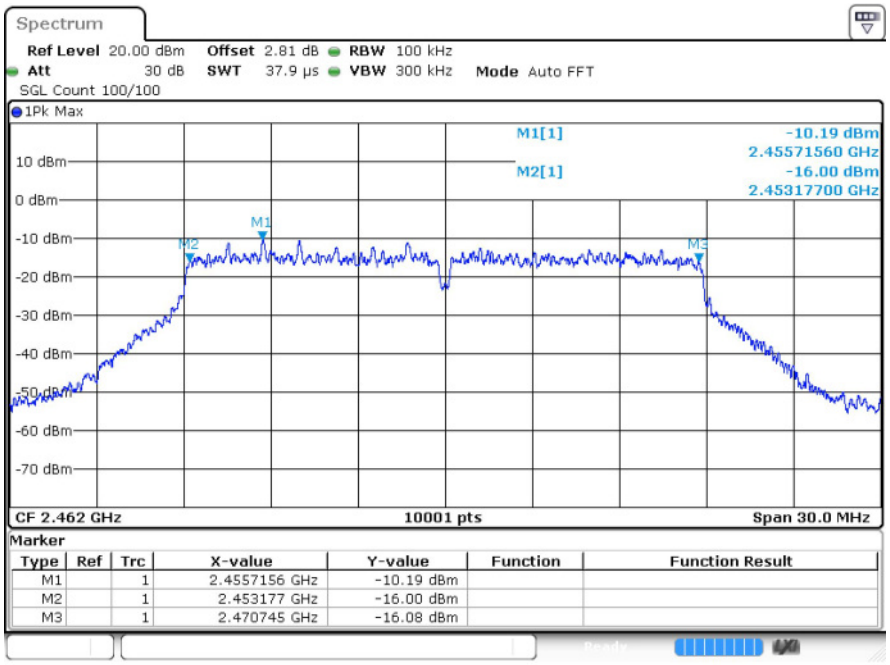
n20 2412MHz Ant1



n20 2437MHz Ant1



n20 2462MHz Ant1

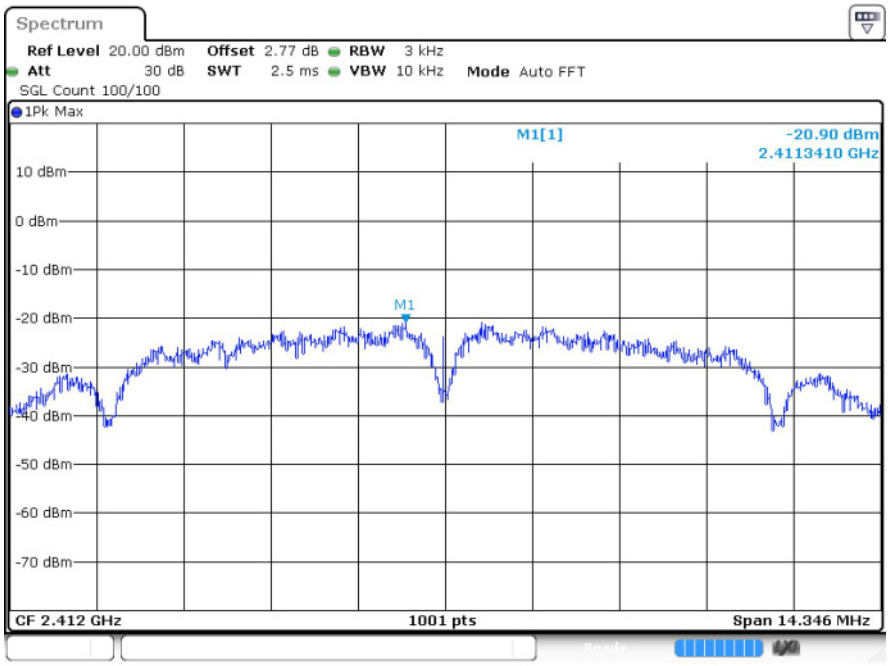
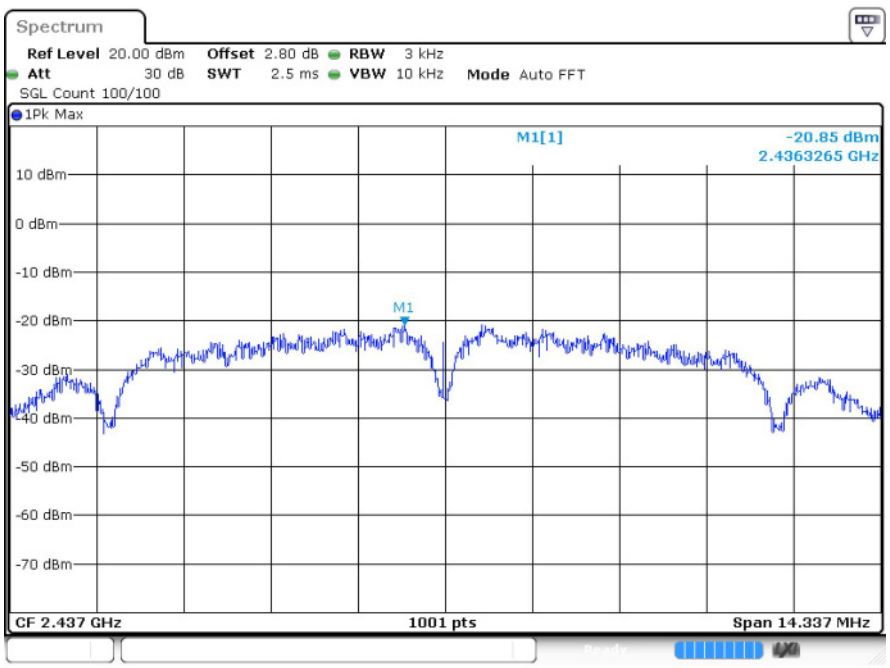


4 Maximum Power Spectral Density Level

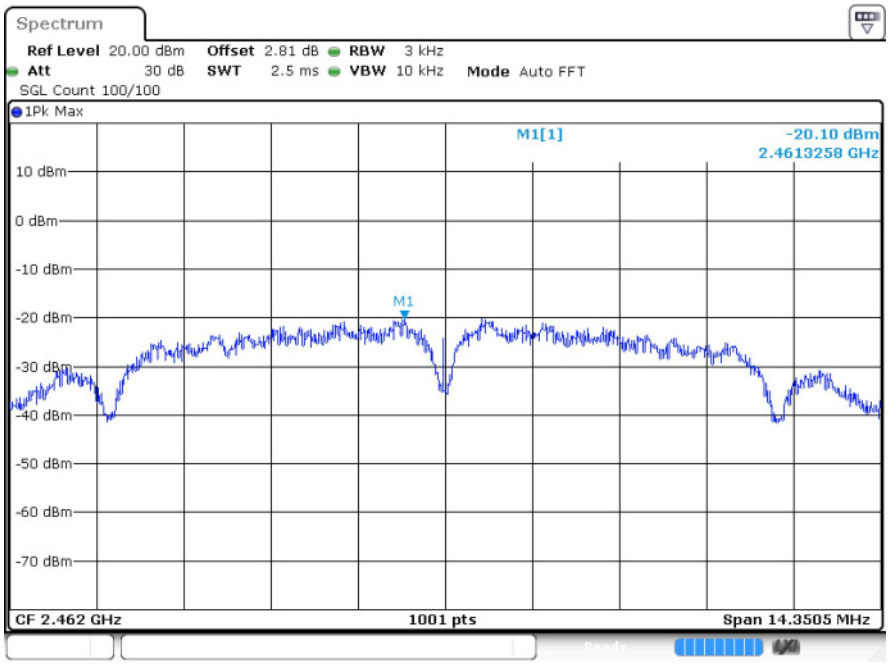
4.1 Test Result

Mode	Frequency (MHz)	Antenna	Conducted PSD (dBm/3-100kHz)	Limit (dBm/3kHz)	Verdict
b	2412	Ant1	-20.9	≤8	Pass
b	2437	Ant1	-20.85	≤8	Pass
b	2462	Ant1	-20.1	≤8	Pass
g	2412	Ant1	-22.9	≤8	Pass
g	2437	Ant1	-24.38	≤8	Pass
g	2462	Ant1	-24.1	≤8	Pass
n20	2412	Ant1	-24.98	≤8	Pass
n20	2437	Ant1	-24.64	≤8	Pass
n20	2462	Ant1	-23.89	≤8	Pass

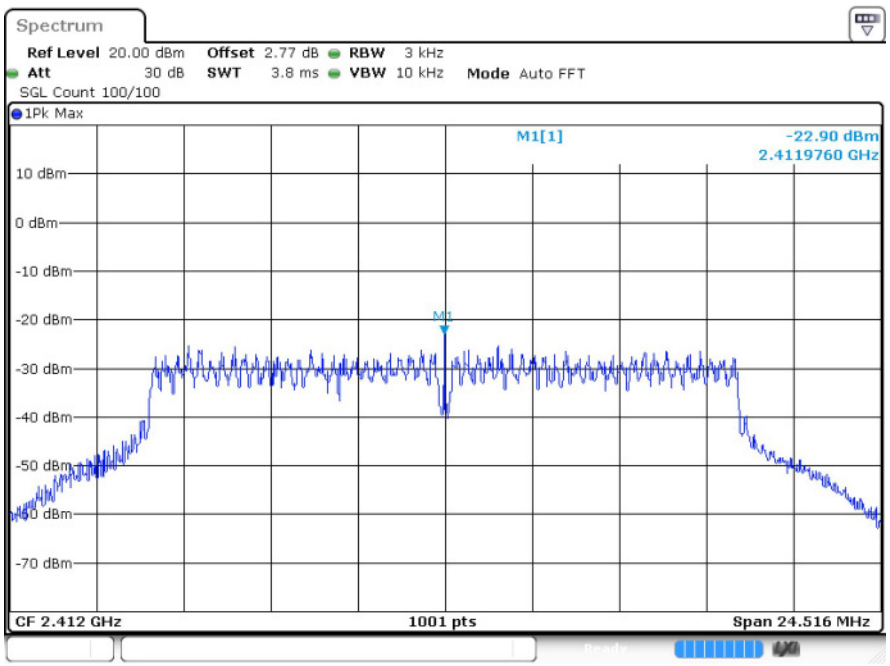
4.2 Test Graphs

Test Graphs
b 2412MHz Ant1

b 2437MHz Ant1


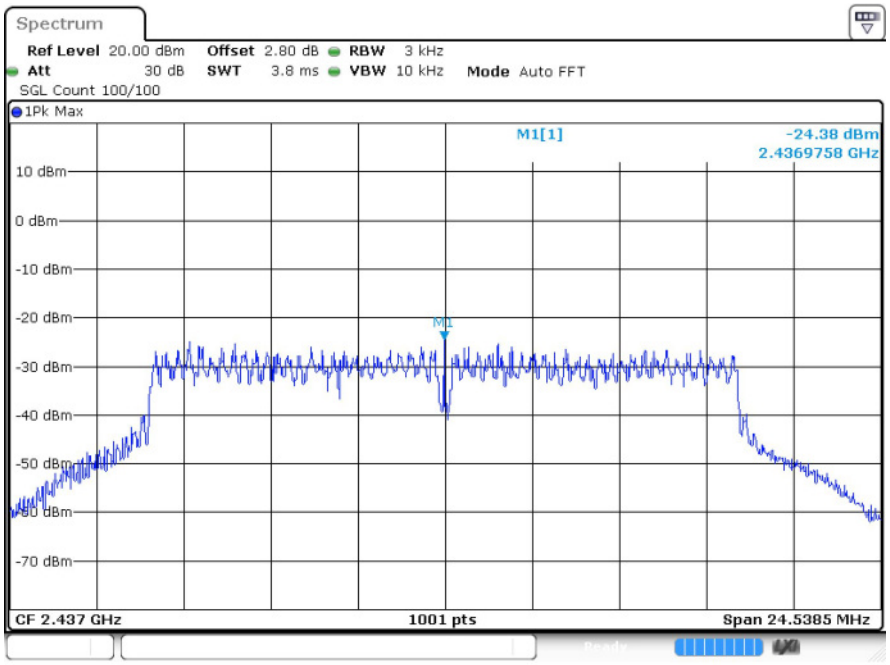
b 2462MHz Ant1



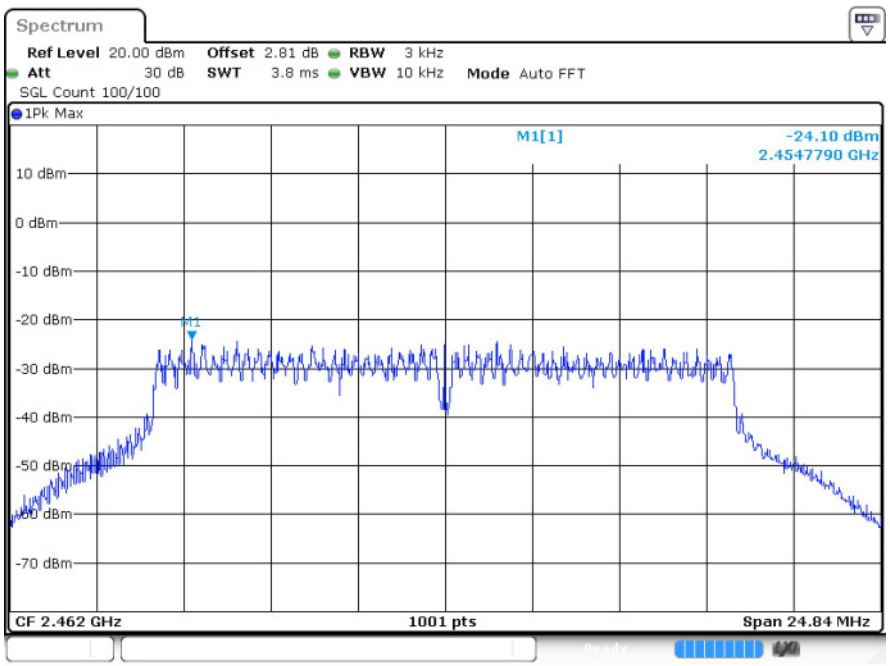
g 2412MHz Ant1



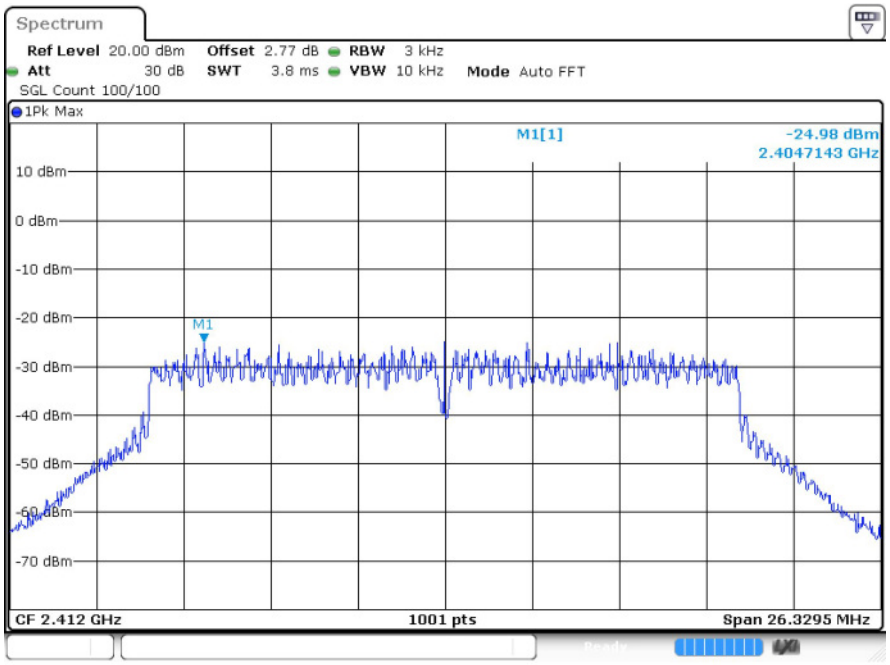
g 2437MHz Ant1



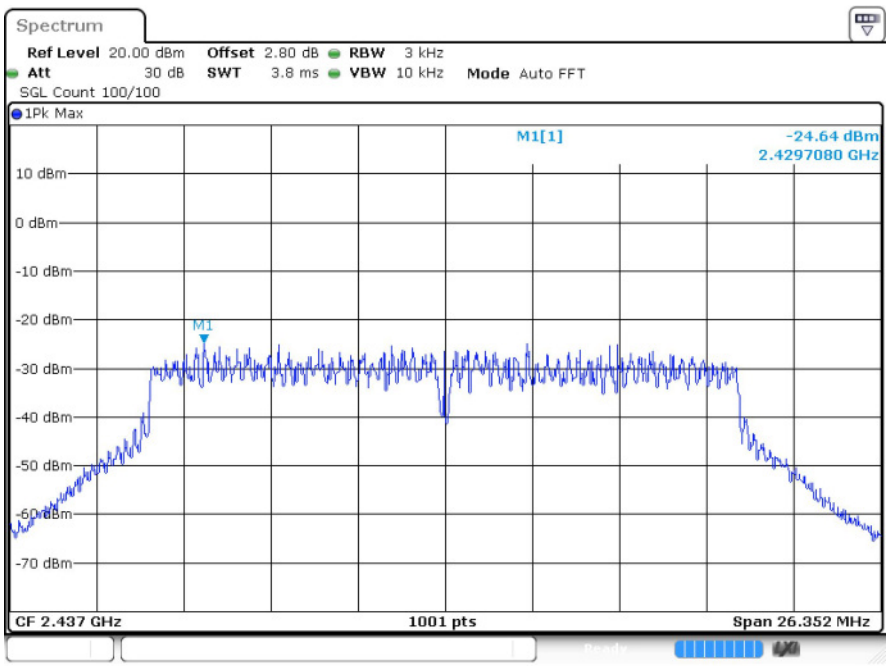
g 2462MHz Ant1



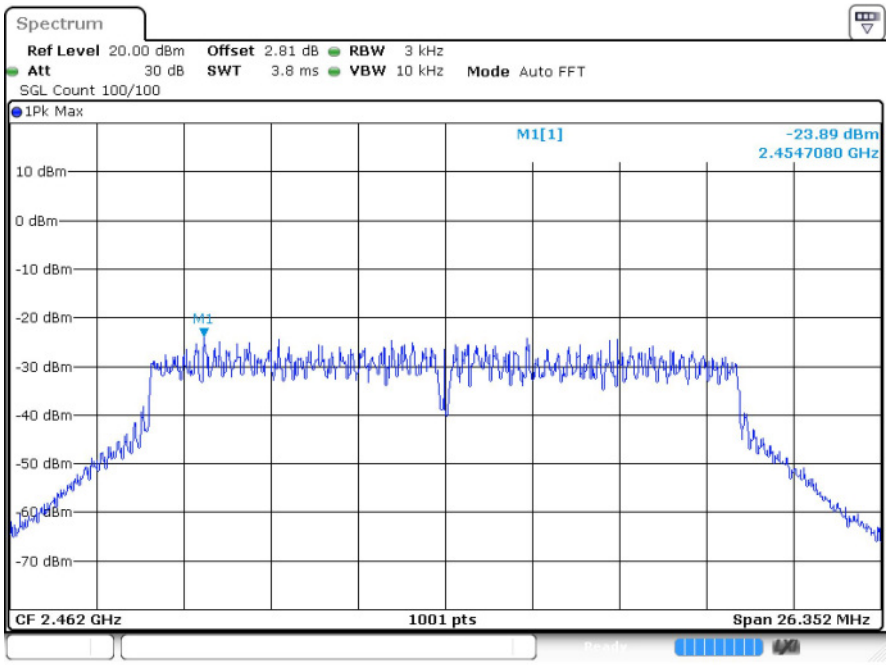
n20 2412MHz Ant1



n20 2437MHz Ant1



n20 2462MHz Ant1



5 Band Edge

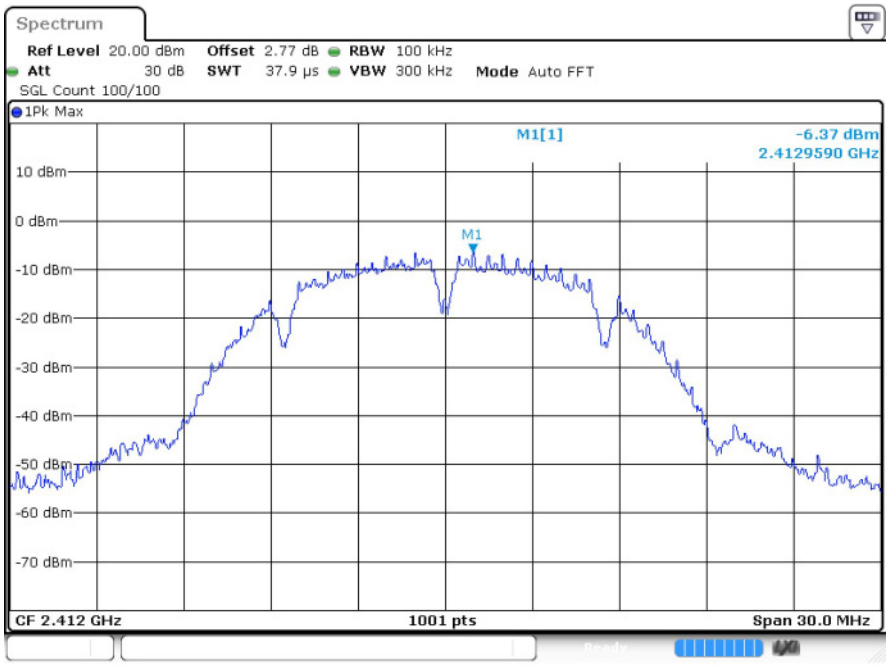
5.1 Test Result

Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
b	2412	Ant1	-46.03	-20	Pass
b	2462	Ant1	-49.63	-20	Pass
g	2412	Ant1	-42.93	-20	Pass
g	2462	Ant1	-43.87	-20	Pass
n20	2412	Ant1	-41.4	-20	Pass
n20	2462	Ant1	-44.47	-20	Pass

5.2 Test Graphs

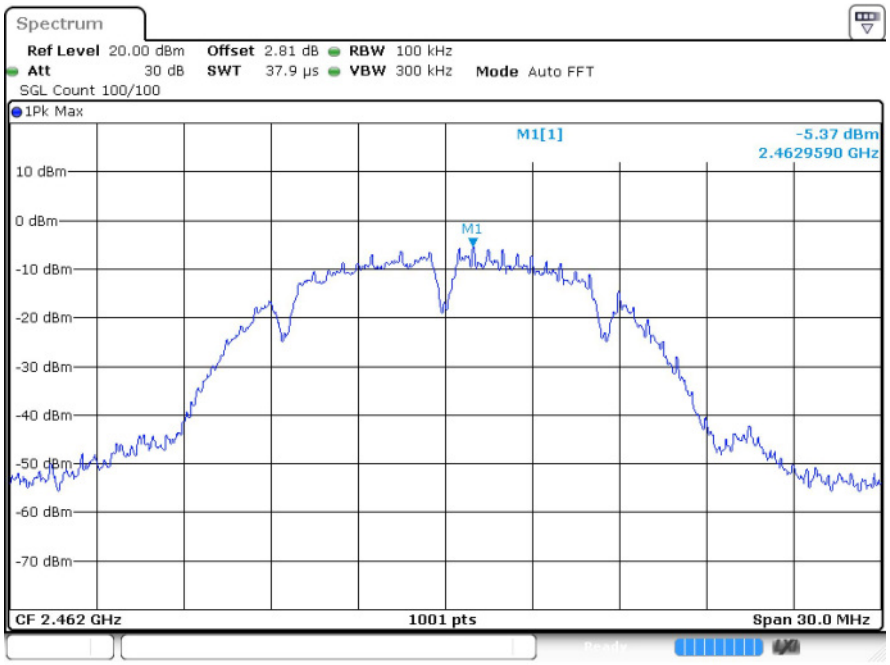
Test Graphs

b 2412MHz Ant1 Ref



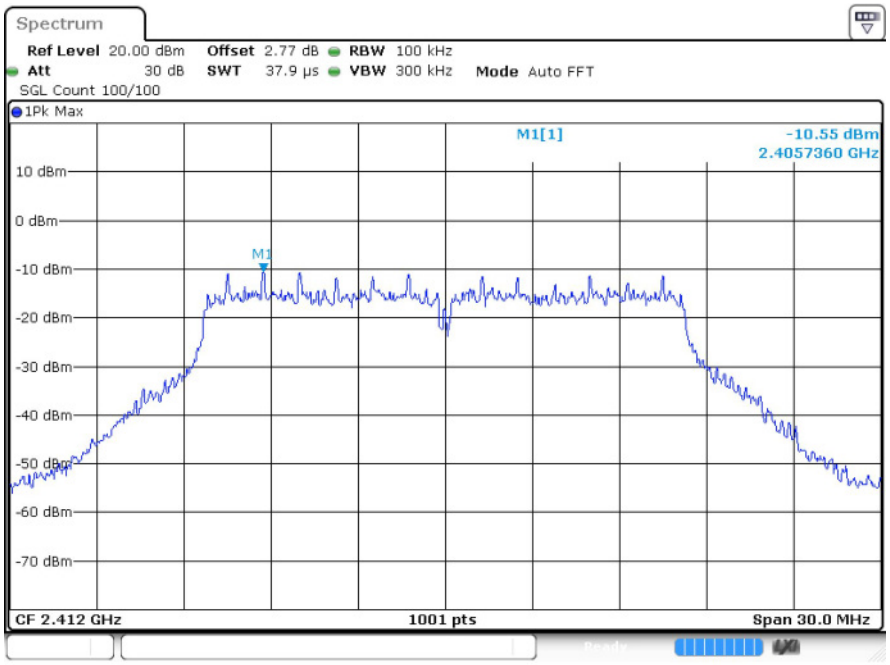
b 2412MHz Ant1 Emission

b 2462MHz Ant1 Ref

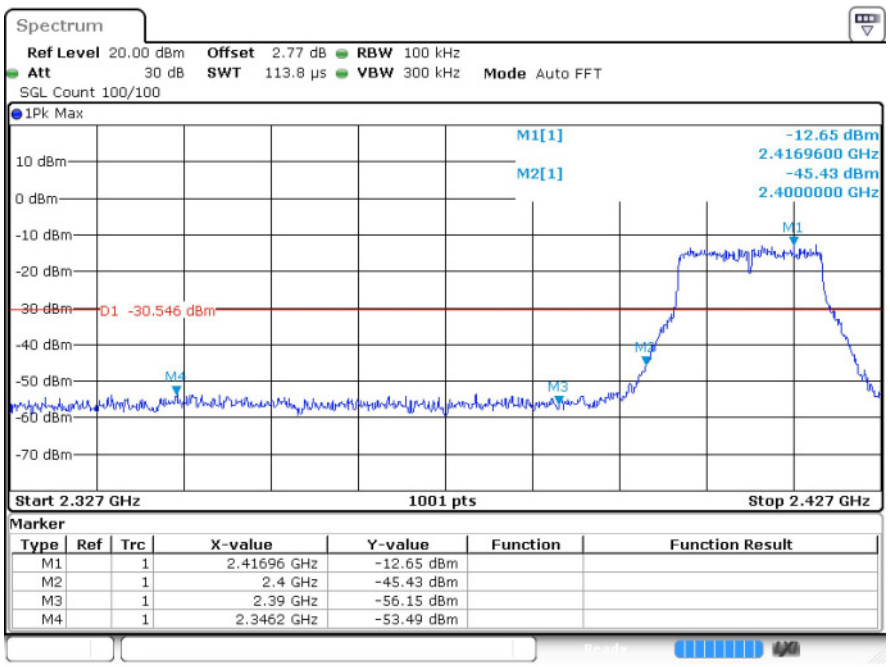


b 2462MHz Ant1 Emission

g 2412MHz Ant1 Ref



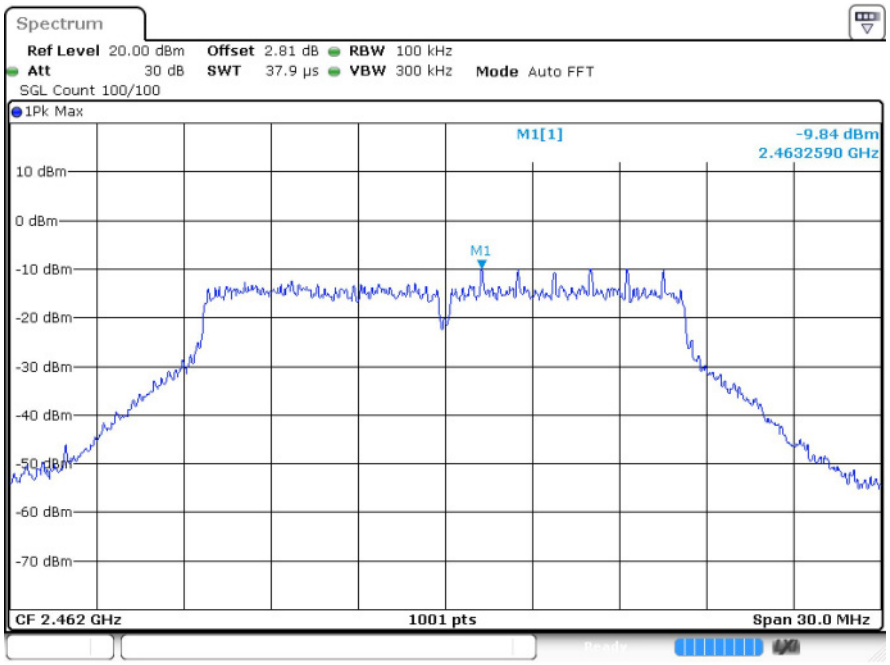
g 2412MHz Ant1 Emission



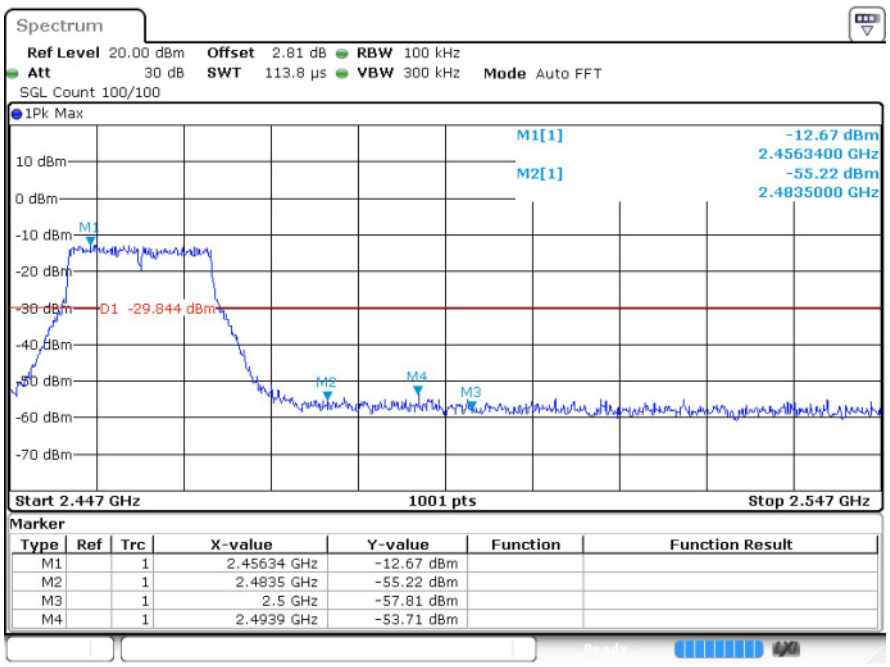
Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.41696 GHz	-12.65 dBm		
M2		1	2.4 GHz	-45.43 dBm		
M3		1	2.39 GHz	-56.15 dBm		
M4		1	2.3462 GHz	-53.49 dBm		

g 2462MHz Ant1 Ref



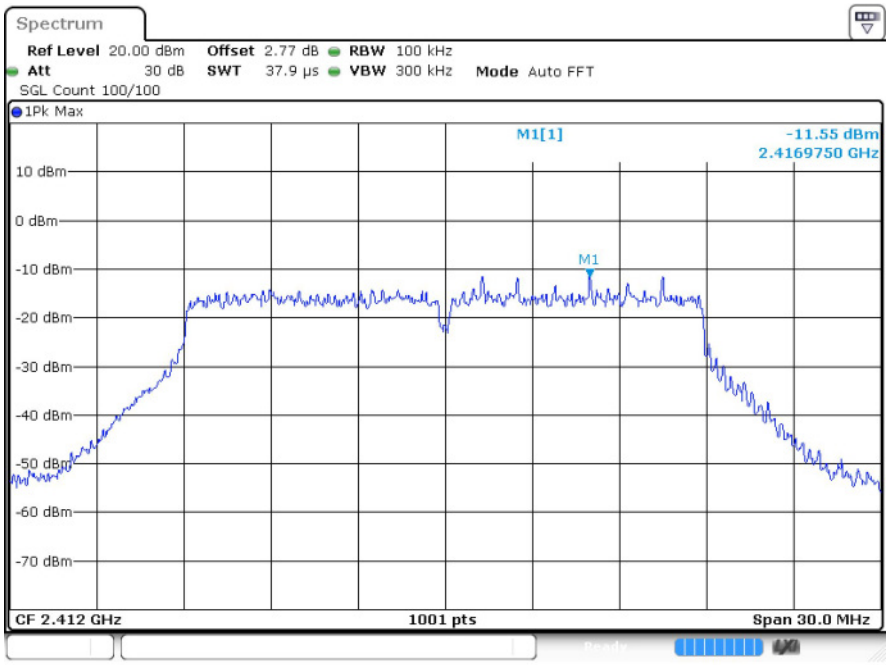
g 2462MHz Ant1 Emission



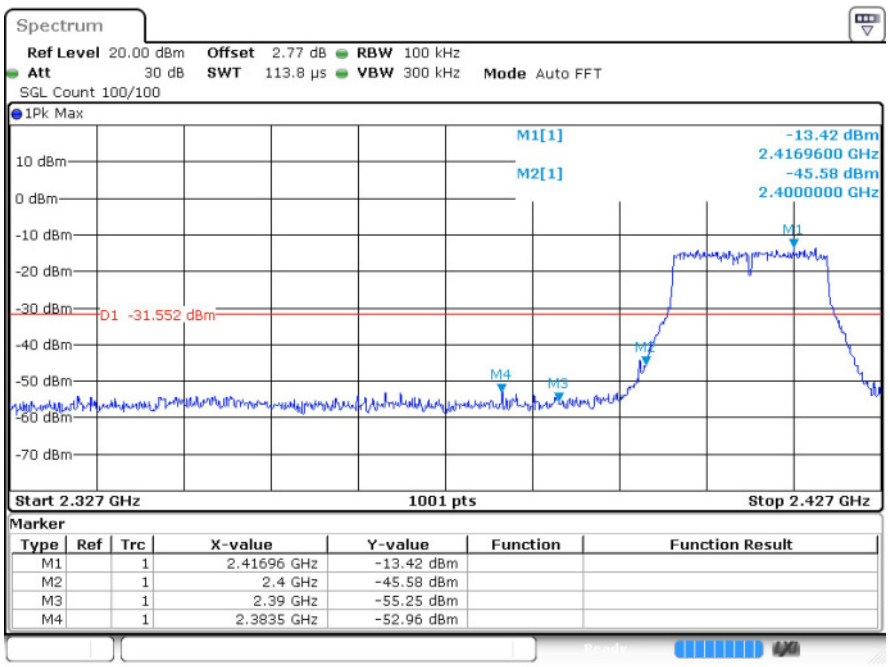
Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.45634 GHz	-12.67 dBm		
M2		1	2.4835 GHz	-55.22 dBm		
M3		1	2.5 GHz	-57.81 dBm		
M4		1	2.4939 GHz	-53.71 dBm		

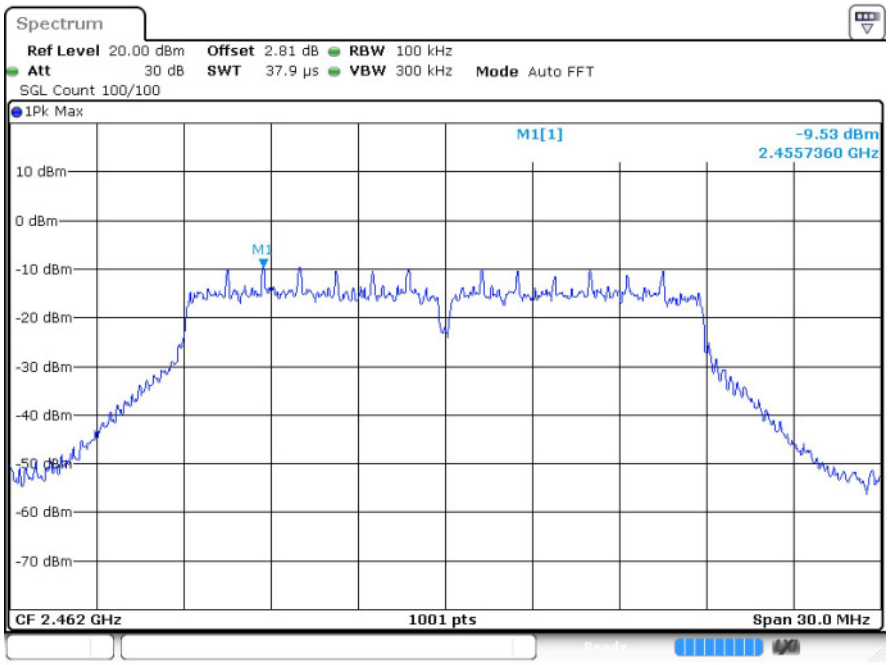
n20 2412MHz Ant1 Ref



n20 2412MHz Ant1 Emission



n20 2462MHz Ant1 Ref



6 Conducted RF Spurious Emission

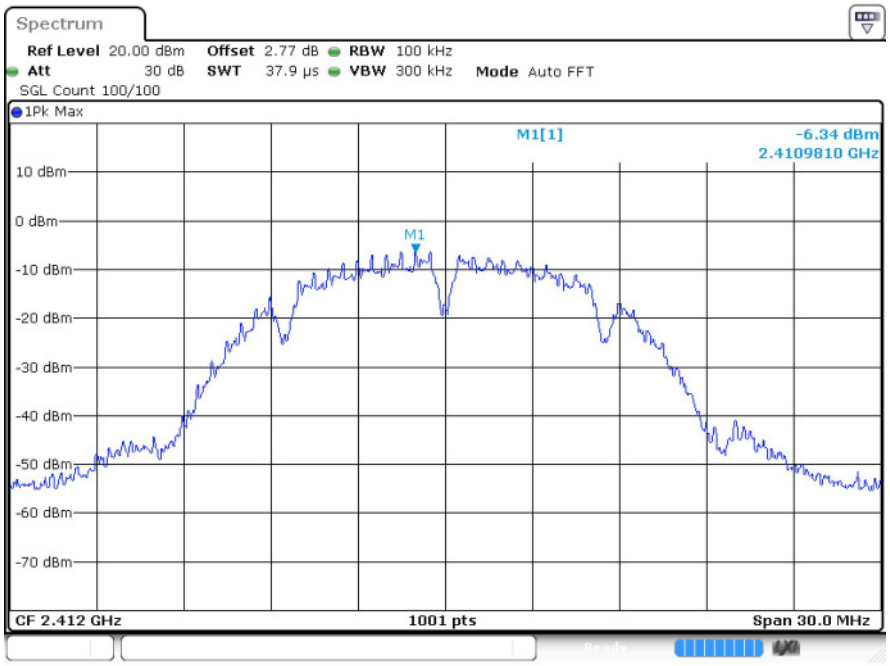
6.1 Test Result

Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
b	2412	Ant1	-36.75	-20	Pass
b	2437	Ant1	-35.65	-20	Pass
b	2462	Ant1	-36.17	-20	Pass
g	2412	Ant1	-32.66	-20	Pass
g	2437	Ant1	-32.88	-20	Pass
g	2462	Ant1	-33.43	-20	Pass
n20	2412	Ant1	-32.69	-20	Pass
n20	2437	Ant1	-32.25	-20	Pass
n20	2462	Ant1	-33.22	-20	Pass

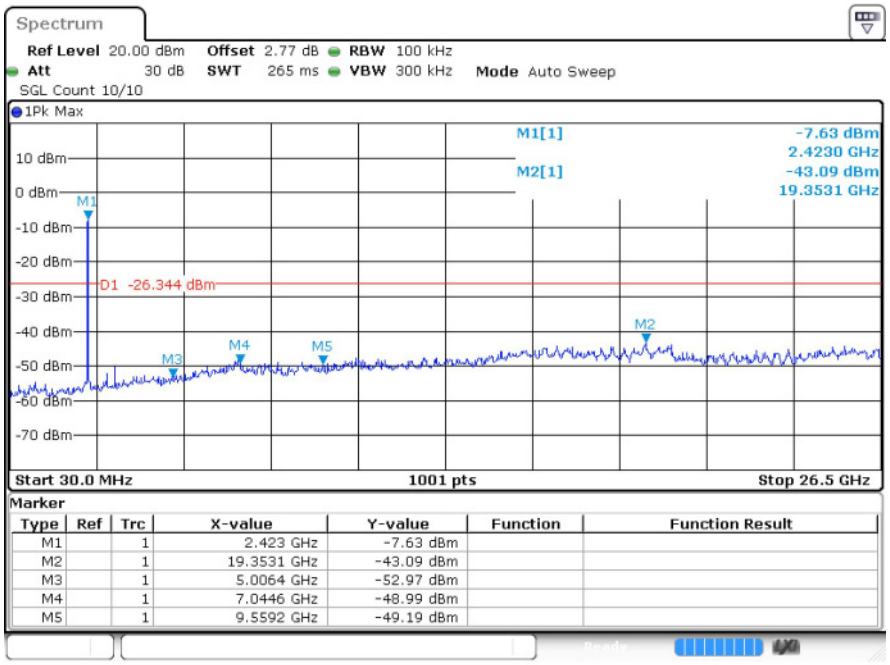
6.2 Test Graphs

Test Graphs

b 2412MHz Ant1 Ref



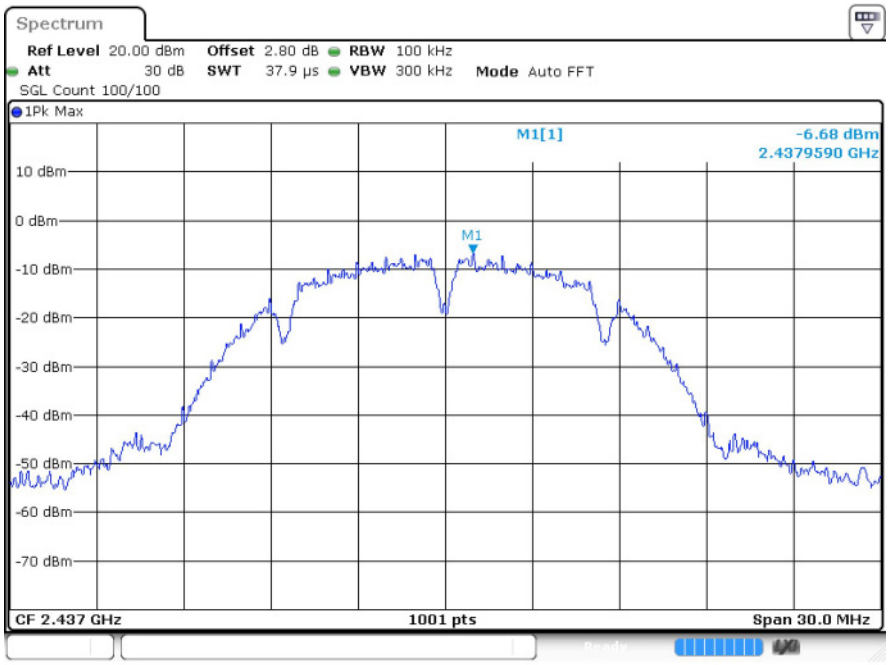
b 2412MHz Ant1 Emission



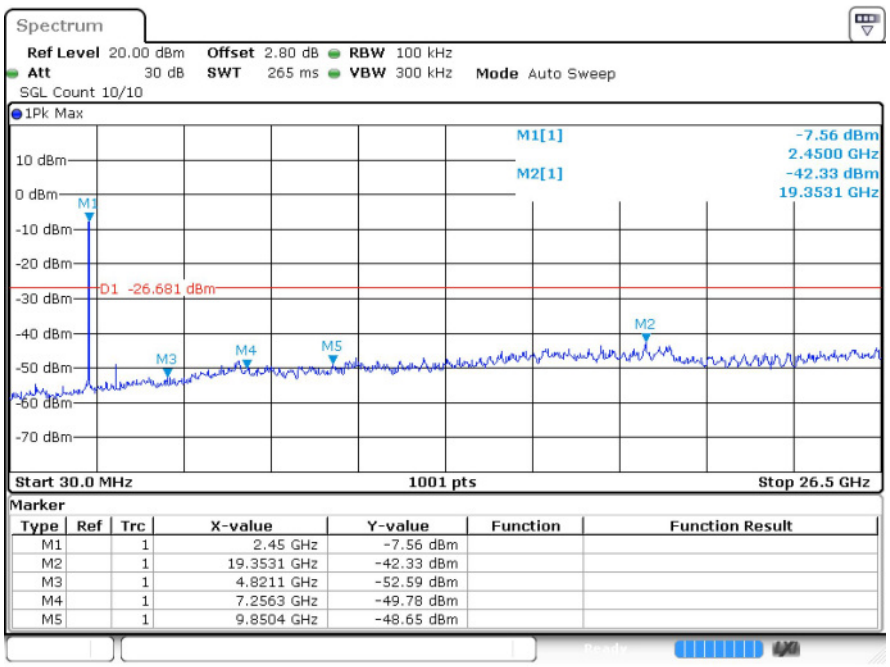
Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.423 GHz	-7.63 dBm		
M2		1	19.3531 GHz	-43.09 dBm		
M3		1	5.0064 GHz	-52.97 dBm		
M4		1	7.0446 GHz	-48.99 dBm		
M5		1	9.5592 GHz	-49.19 dBm		

b 2437MHz Ant1 Ref

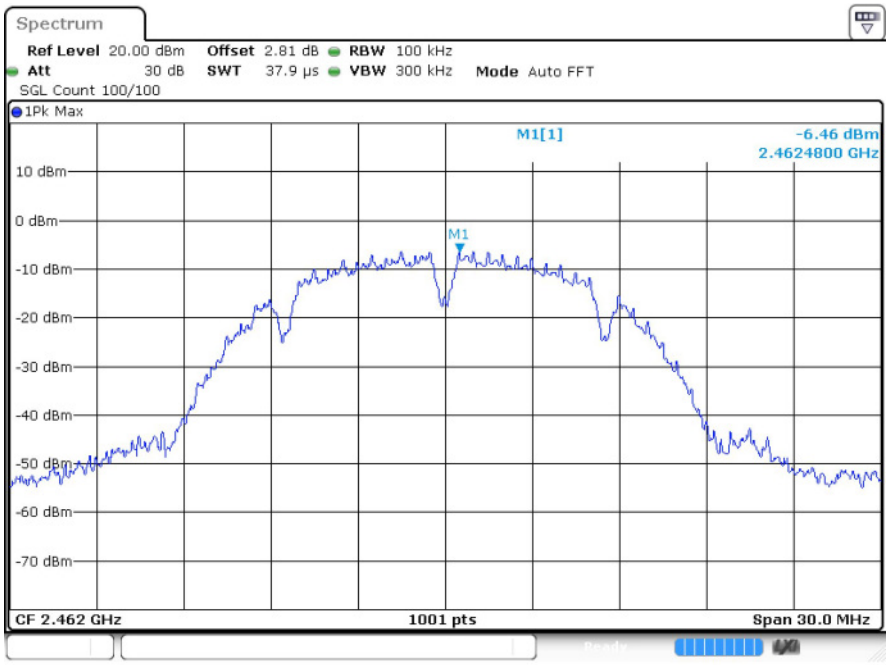


b 2437MHz Ant1 Emission

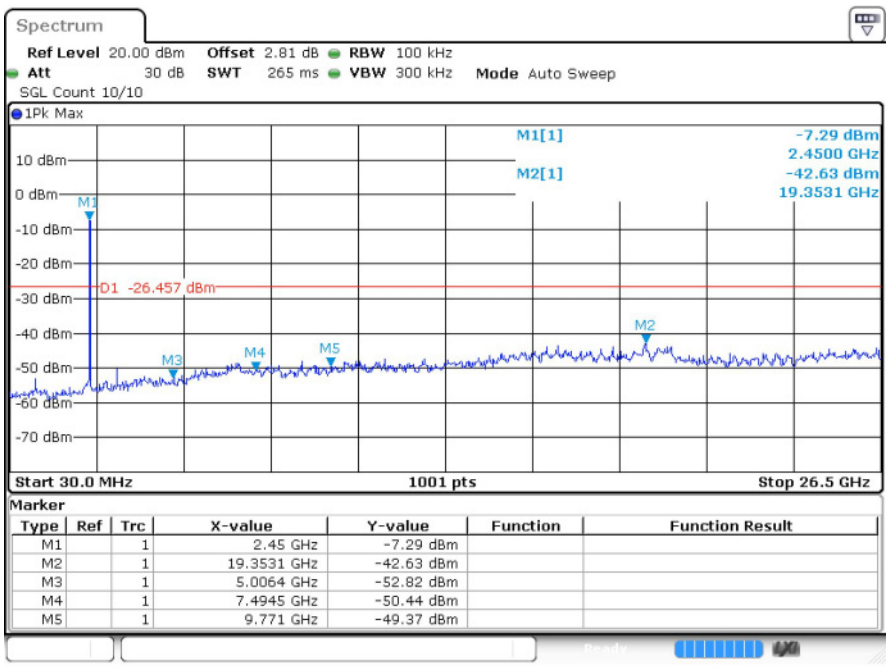


Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.45 GHz	-7.56 dBm		
M2		1	19.3531 GHz	-42.33 dBm		
M3		1	4.8211 GHz	-52.59 dBm		
M4		1	7.2563 GHz	-49.78 dBm		
M5		1	9.8504 GHz	-48.65 dBm		

b 2462MHz Ant1 Ref



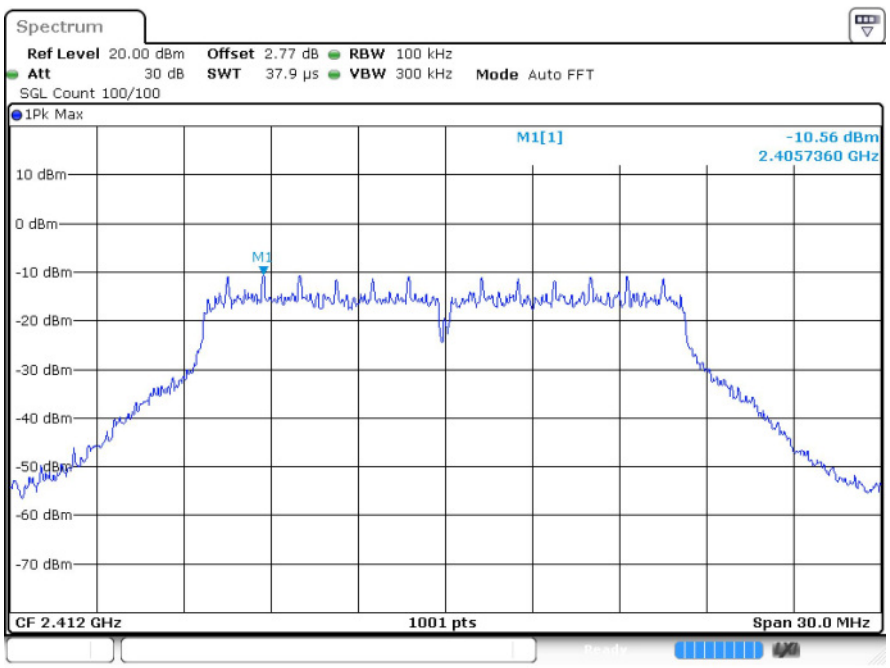
b 2462MHz Ant1 Emission



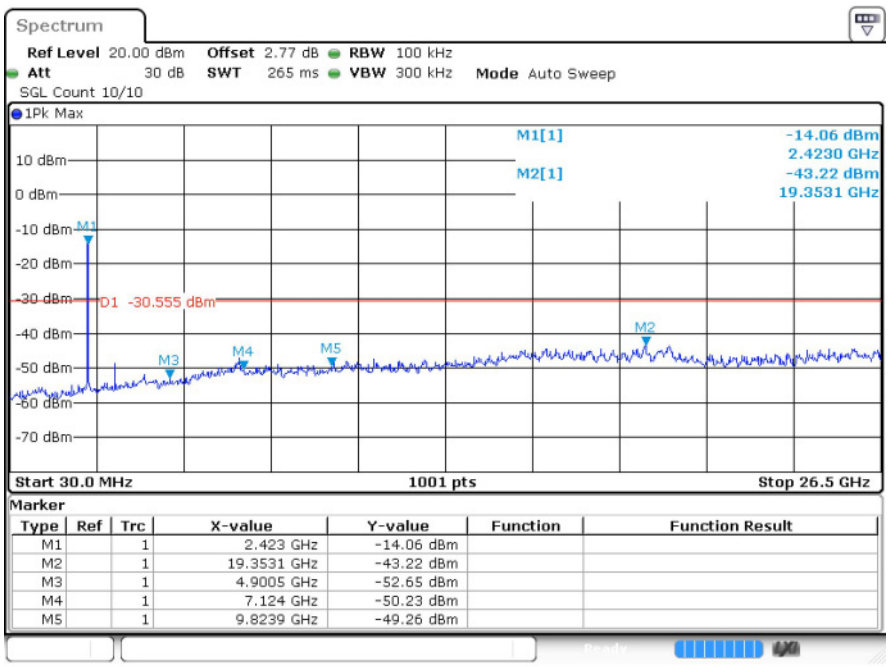
Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.45 GHz	-7.29 dBm		
M2		1	19.3531 GHz	-42.63 dBm		
M3		1	5.0064 GHz	-52.82 dBm		
M4		1	7.4945 GHz	-50.44 dBm		
M5		1	9.771 GHz	-49.37 dBm		

g 2412MHz Ant1 Ref



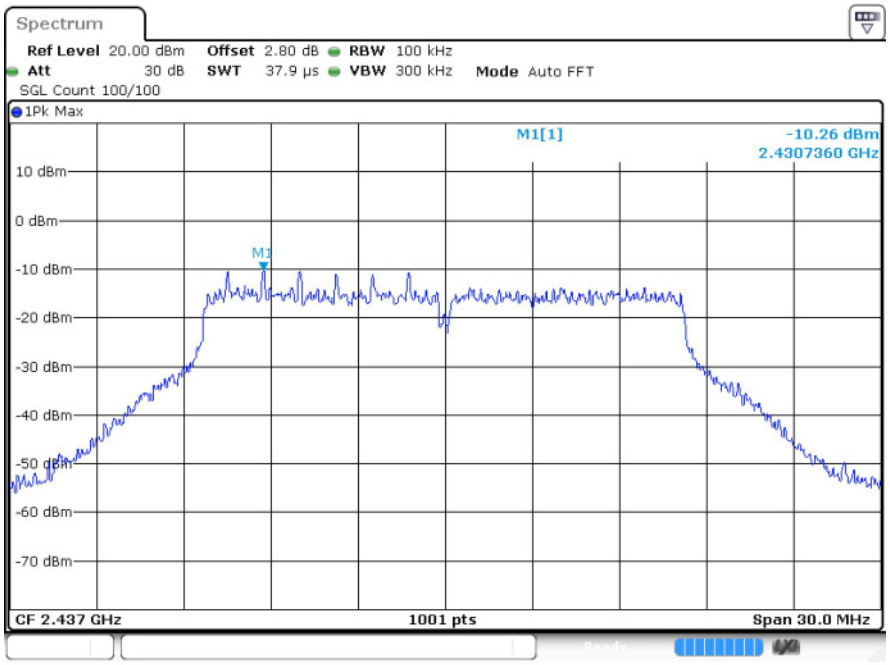
g 2412MHz Ant1 Emission



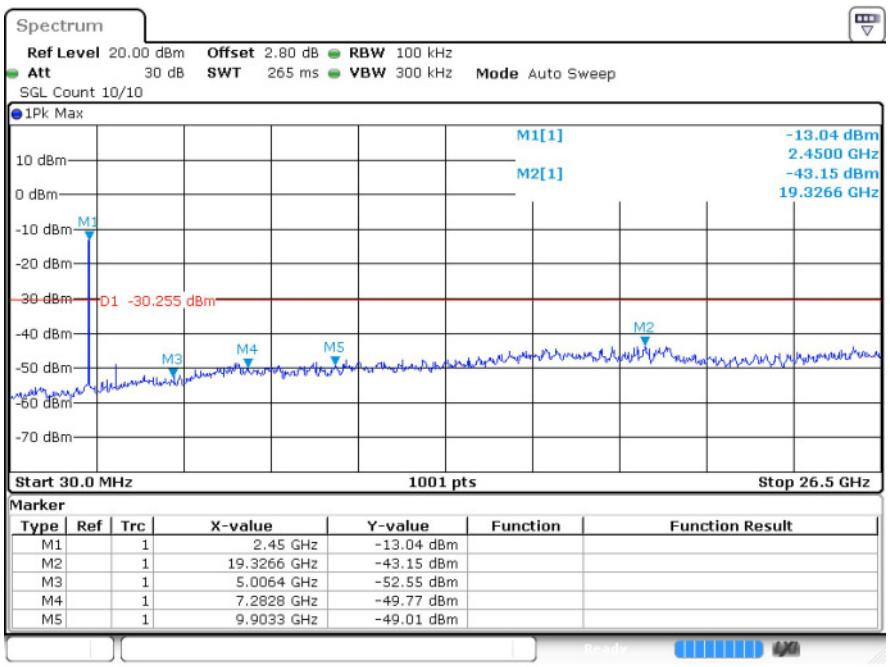
Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.423 GHz	-14.06 dBm		
M2		1	19.3531 GHz	-43.22 dBm		
M3		1	4.9005 GHz	-52.65 dBm		
M4		1	7.124 GHz	-50.23 dBm		
M5		1	9.8239 GHz	-49.26 dBm		

g 2437MHz Ant1 Ref



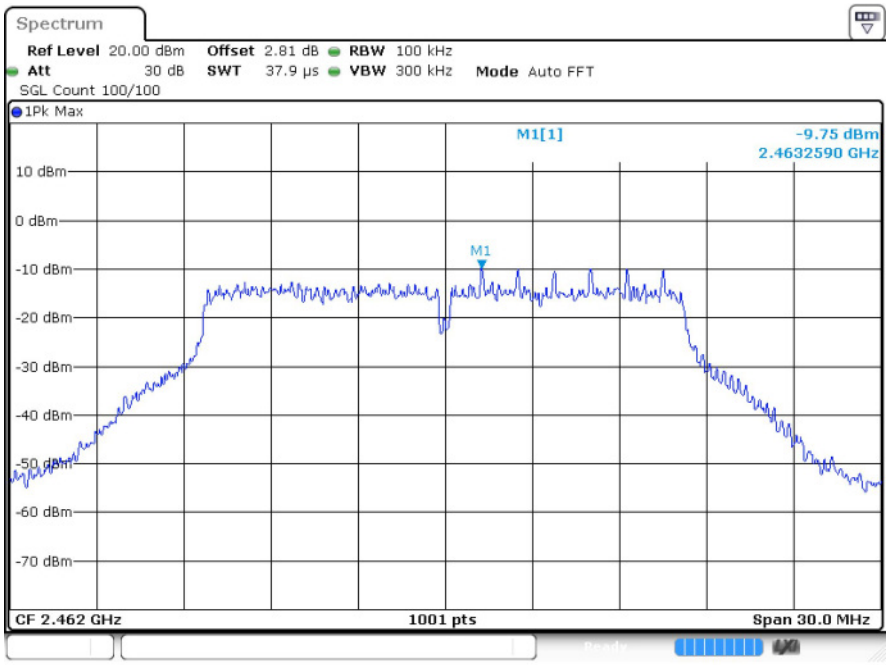
g 2437MHz Ant1 Emission



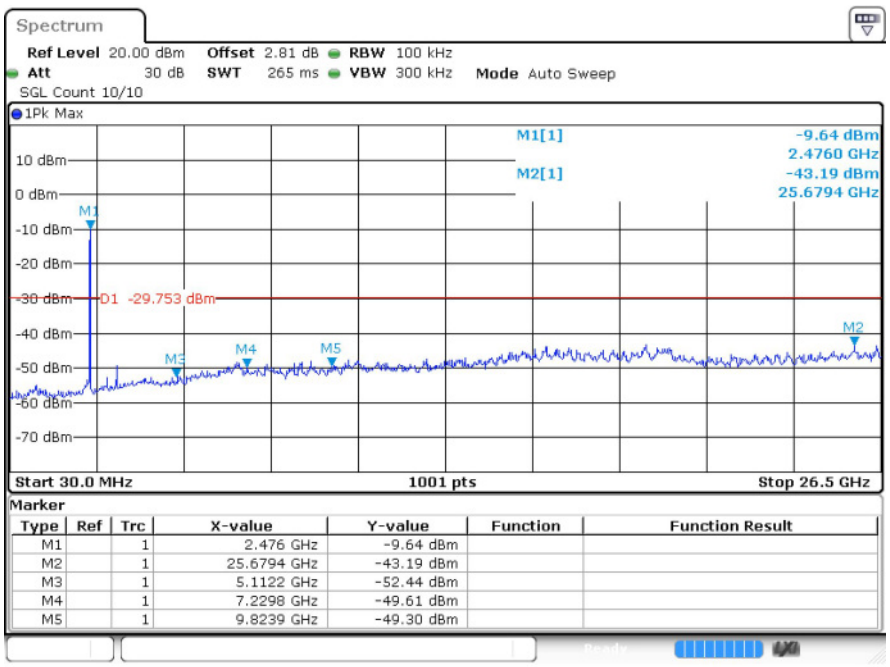
Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.45 GHz	-13.04 dBm		
M2		1	19.3266 GHz	-43.15 dBm		
M3		1	5.0064 GHz	-52.55 dBm		
M4		1	7.2828 GHz	-49.77 dBm		
M5		1	9.9033 GHz	-49.01 dBm		

g 2462MHz Ant1 Ref



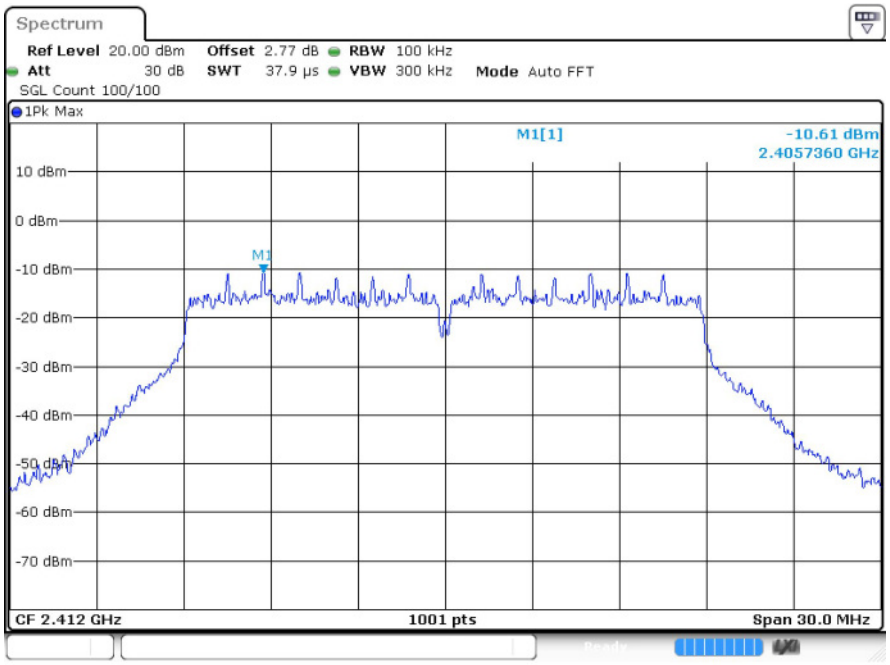
g 2462MHz Ant1 Emission



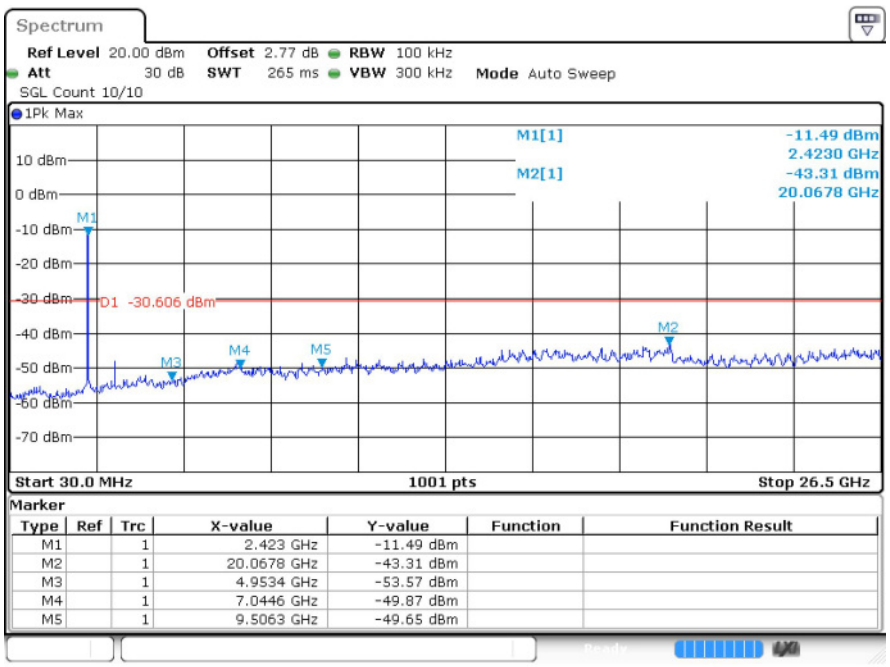
Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.476 GHz	-9.64 dBm		
M2		1	25.6794 GHz	-43.19 dBm		
M3		1	5.1122 GHz	-52.44 dBm		
M4		1	7.2298 GHz	-49.61 dBm		
M5		1	9.8239 GHz	-49.30 dBm		

n20 2412MHz Ant1 Ref



n20 2412MHz Ant1 Emission



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.423 GHz	-11.49 dBm		
M2		1	20.0678 GHz	-43.31 dBm		
M3		1	4.9534 GHz	-53.57 dBm		
M4		1	7.0446 GHz	-49.87 dBm		
M5		1	9.5063 GHz	-49.65 dBm		