Appendix C

RF Test Data for 2.4GWIFI (Conducted Measurement)

Product Name: Smart LED Wall Lights

Trade Mark: N/A

Test Model: PL-006

Environmental Conditions

Temperature:	24.4° C
Relative Humidity:	52.4%
ATM Pressure:	100.0 kPa
Test Engineer:	Simba Huang
Supervised by:	Seal Chen

Contents

Page

COVER PAGE

1 Duty Cycle 3
1.1 Test Result 3
1.2 Test Graphs 4
2 Maximum Conducted Output Power 10
2.1 Test Result 10
3 -6dB Bandwidth 11
3.1 Test Result 11
3.2 Test Graphs 12
4 Maximum Power Spectral Density Level 18
4.1 Test Result 18
4.2 Test Graphs 19
5 Band Edge 25
5.1 Test Result 25
5.2 Test Graphs 26
6 Conducted RF Spurious Emission 34
6.1 Test Result 34
6.2 Test Graphs 35
7 Restrict Band 47
7.1 Test Result 47
7.2 Test Graphs 49

1 Duty Cycle

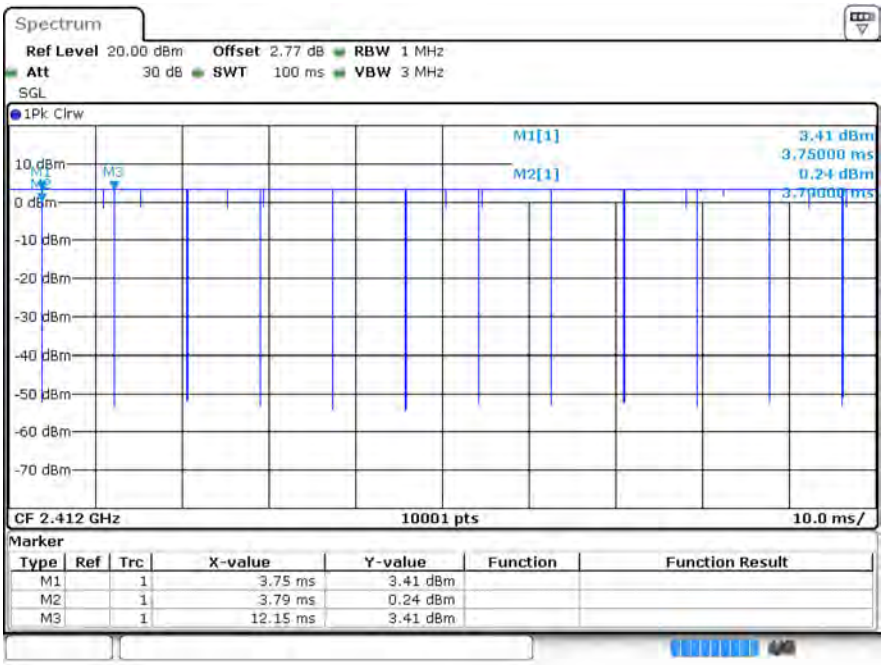
1.1 Test Result

Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	1/T (kHz)
b	2412	Ant1	99.6	0.12
b	2437	Ant1	99.61	0.12
b	2462	Ant1	99.61	0.12
g	2412	Ant1	87	4.76
g	2437	Ant1	86.86	4.76
g	2462	Ant1	86.94	4.76
n20	2412	Ant1	87.6	4.35
n20	2437	Ant1	87.59	4.35
n20	2462	Ant1	87.57	4.35
n40	2422	Ant1	88.02	4.17
n40	2437	Ant1	88.07	4
n40	2452	Ant1	88.01	4.17

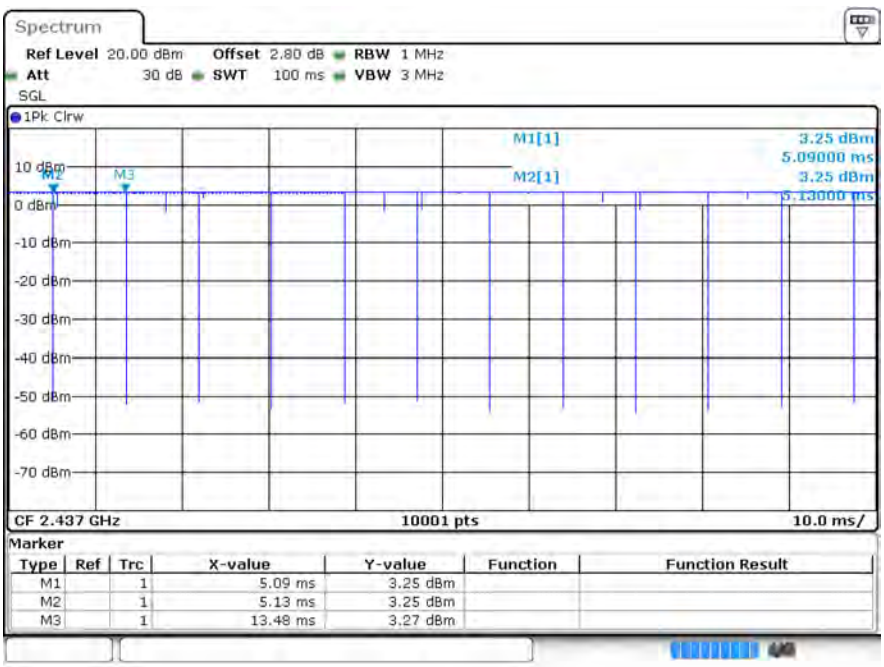
1.2 Test Graphs

Test Graphs

b 2412MHz Ant1

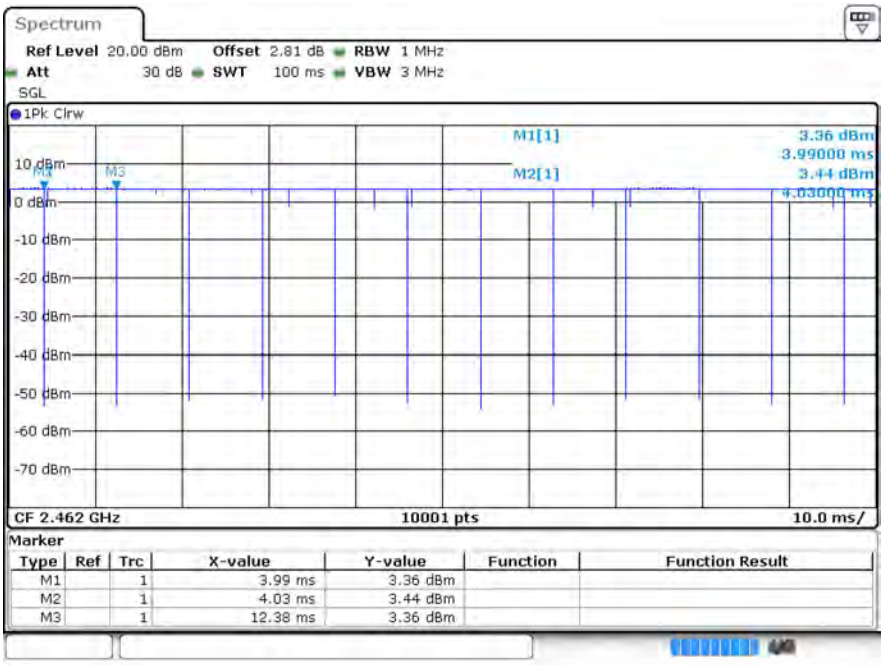


b 2437MHz Ant1

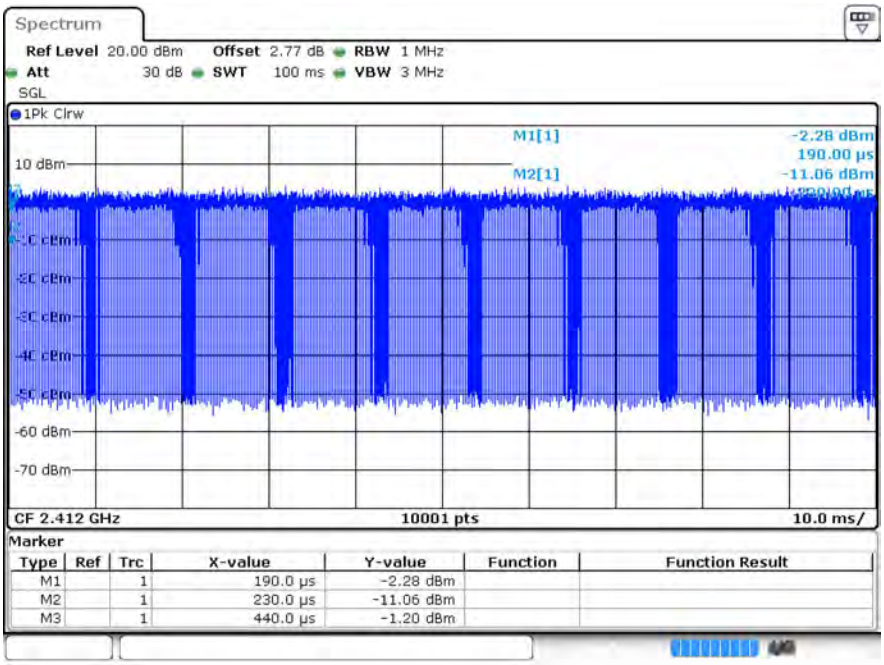


Test Graphs

b 2462MHz Ant1

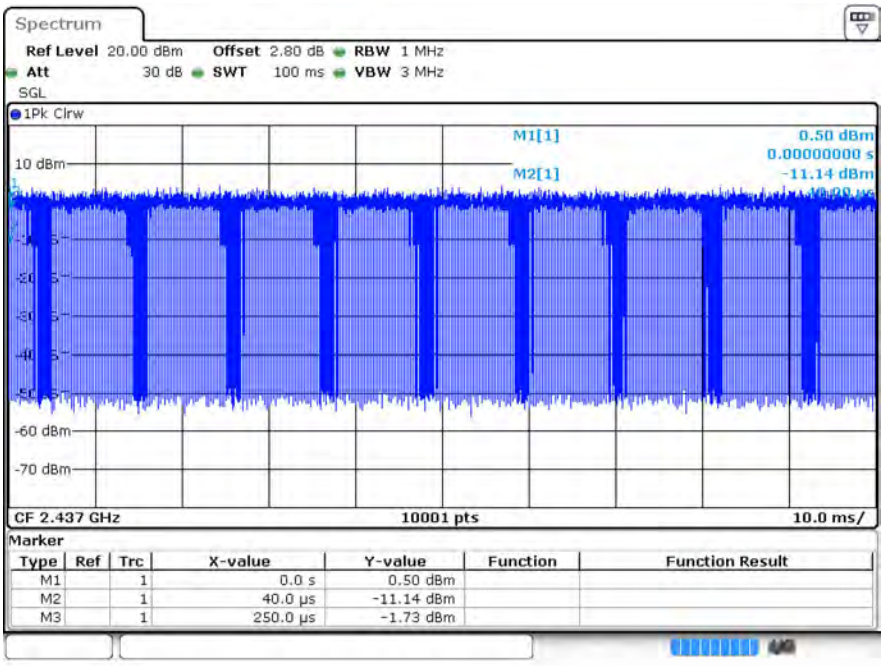


g 2412MHz Ant1



Test Graphs

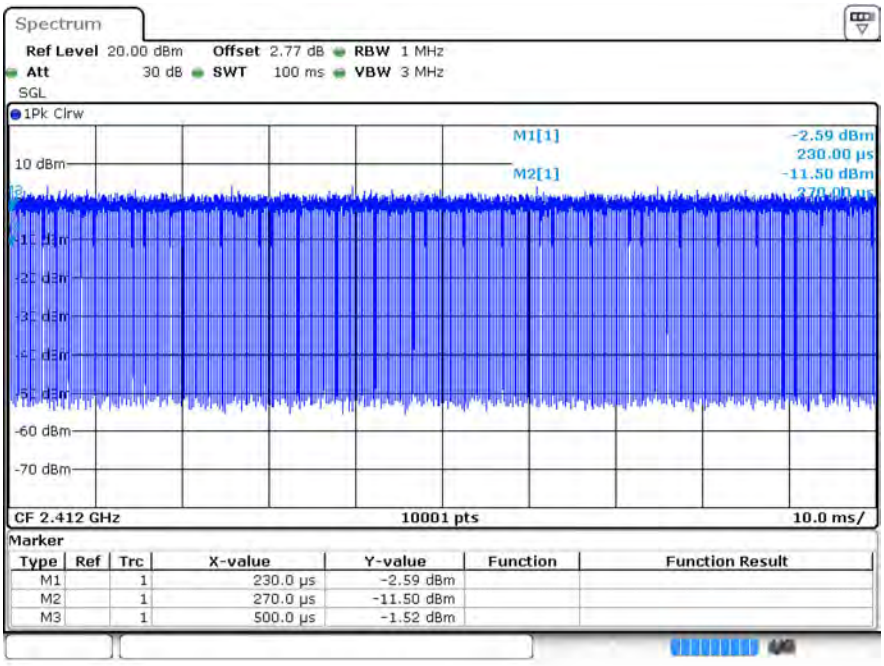
g 2437MHz Ant1



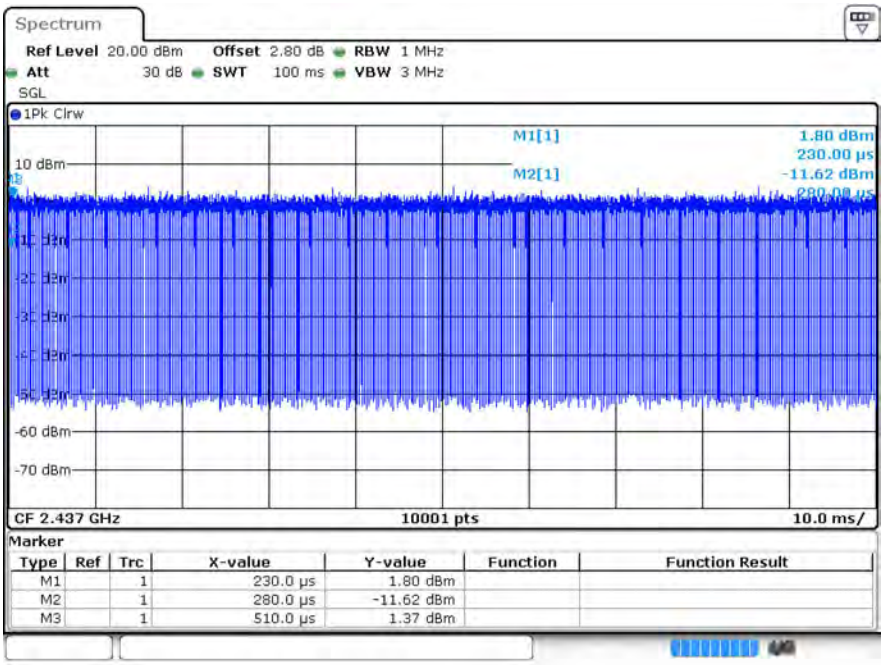
g 2462MHz Ant1

Test Graphs

n20 2412MHz Ant1

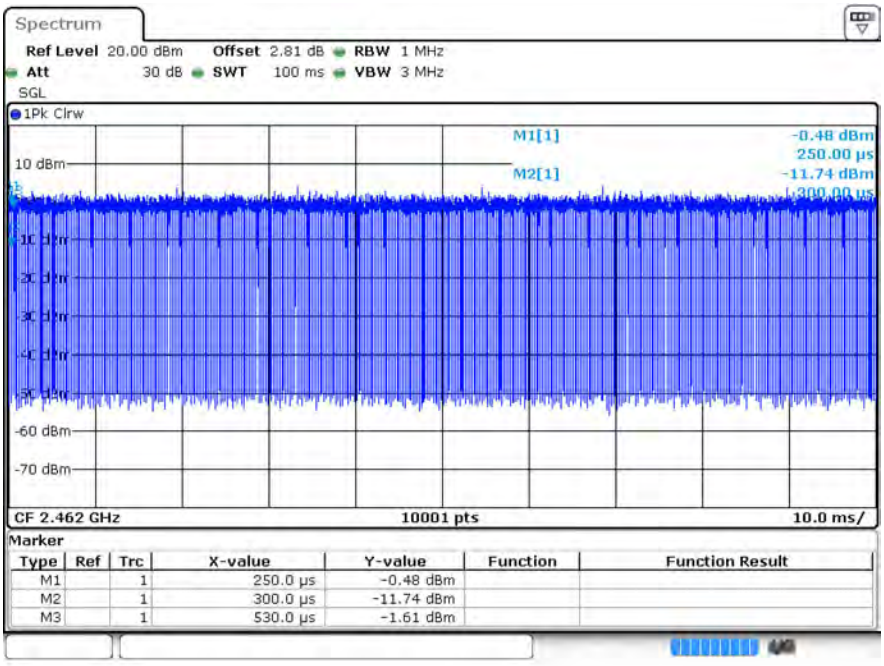


n20 2437MHz Ant1

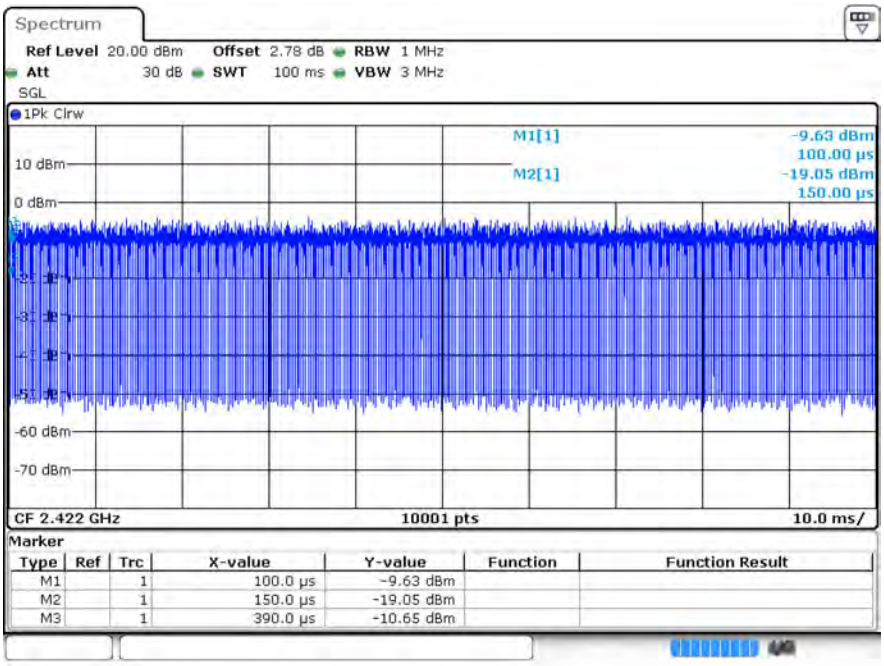


Test Graphs

n20 2462MHz Ant1

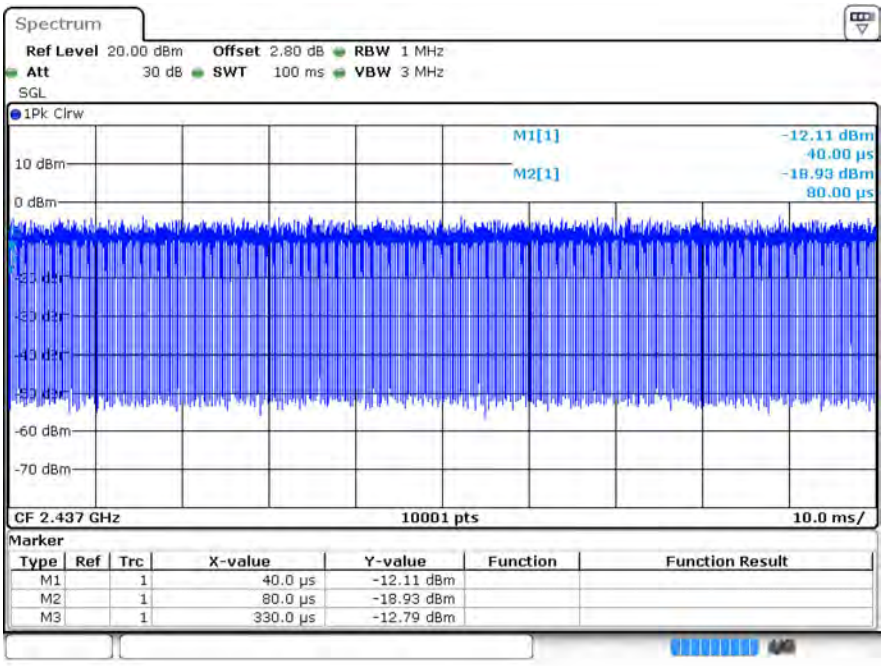


n40 2422MHz Ant1

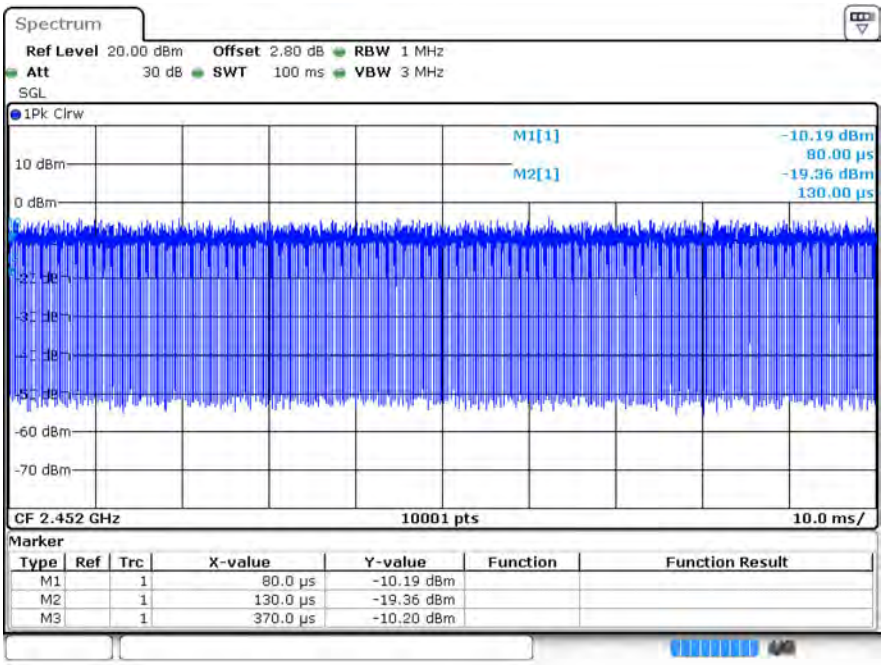


Test Graphs

n40 2437MHz Ant1



n40 2452MHz Ant1



2 Maximum Conducted Output Power

2.1 Test Result

Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Limit (dBm)	Verdict
b	2412	Ant1	13.83	30	Pass
b	2437	Ant1	13.78	30	Pass
b	2462	Ant1	13.71	30	Pass
g	2412	Ant1	13.45	30	Pass
g	2437	Ant1	13.29	30	Pass
g	2462	Ant1	13.28	30	Pass
n20	2412	Ant1	12.93	30	Pass
n20	2437	Ant1	12.81	30	Pass
n20	2462	Ant1	12.77	30	Pass
n40	2422	Ant1	12.28	30	Pass
n40	2437	Ant1	12.38	30	Pass
n40	2452	Ant1	12.29	30	Pass

3 -6dB Bandwidth

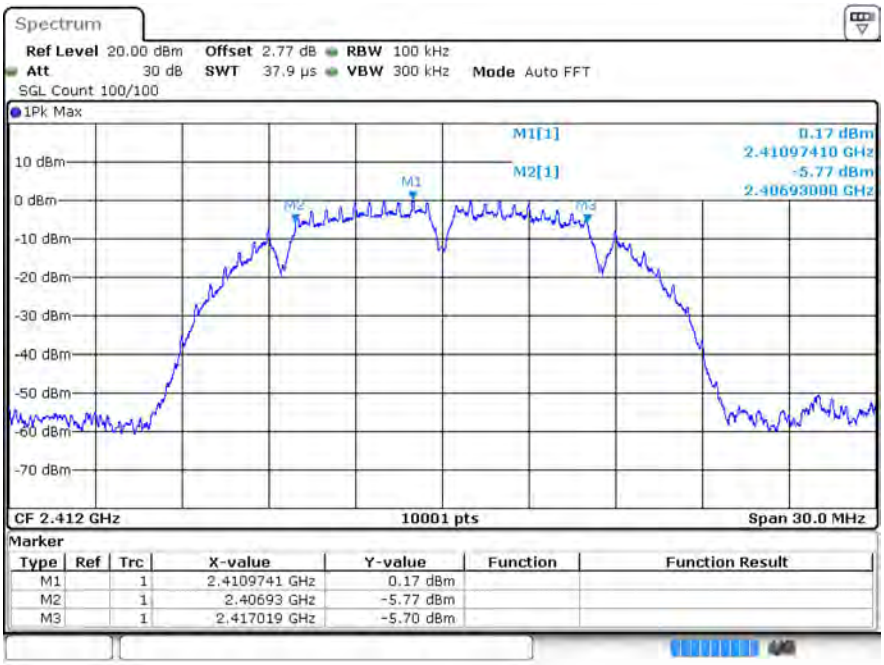
3.1 Test Result

Mode	Frequency (MHz)	Antenna	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
b	2412	Ant1	10.089	0.5	Pass
b	2437	Ant1	10.074	0.5	Pass
b	2462	Ant1	10.065	0.5	Pass
g	2412	Ant1	15.12	0.5	Pass
g	2437	Ant1	15.048	0.5	Pass
g	2462	Ant1	15.123	0.5	Pass
n20	2412	Ant1	15.111	0.5	Pass
n20	2437	Ant1	15.105	0.5	Pass
n20	2462	Ant1	15.282	0.5	Pass
n40	2422	Ant1	35.082	0.5	Pass
n40	2437	Ant1	35.052	0.5	Pass
n40	2452	Ant1	33.84	0.5	Pass

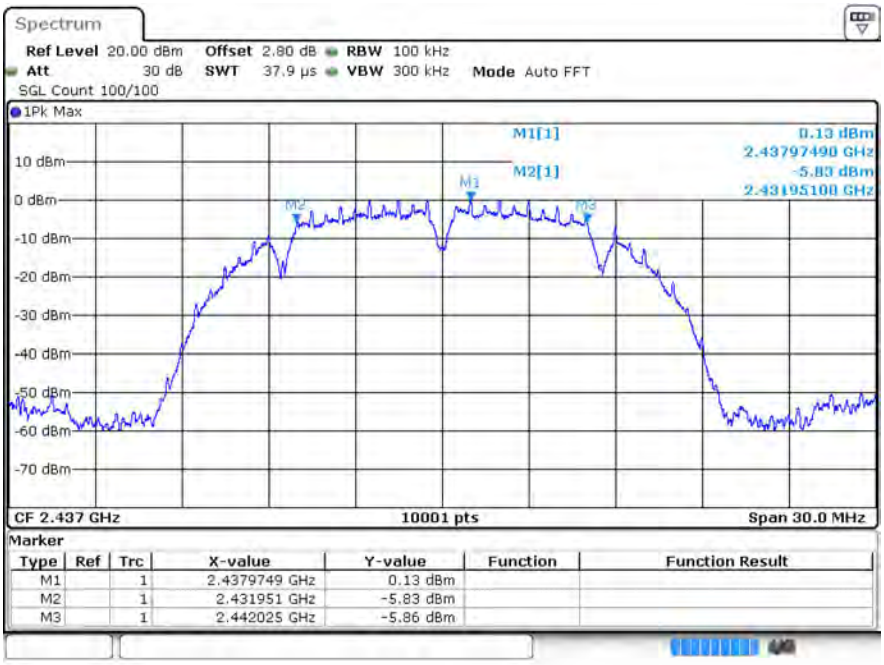
3.2 Test Graphs

Test Graphs

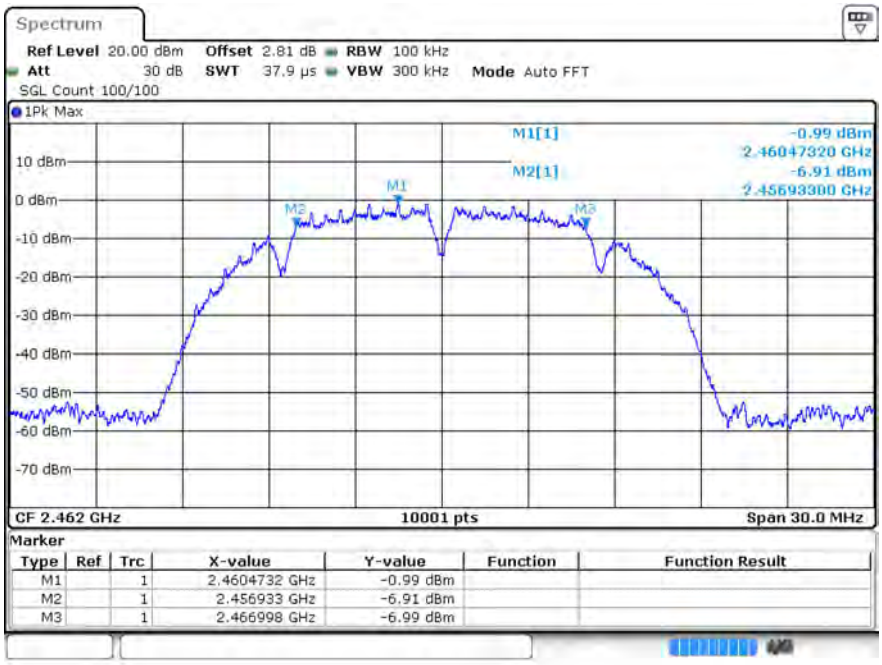
b 2412MHz Ant1



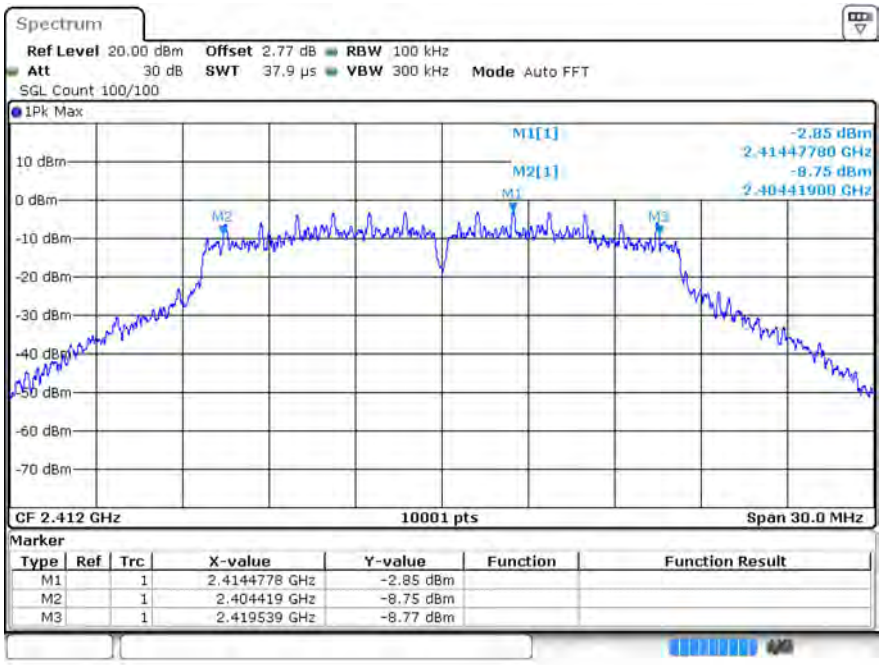
b 2437MHz Ant1



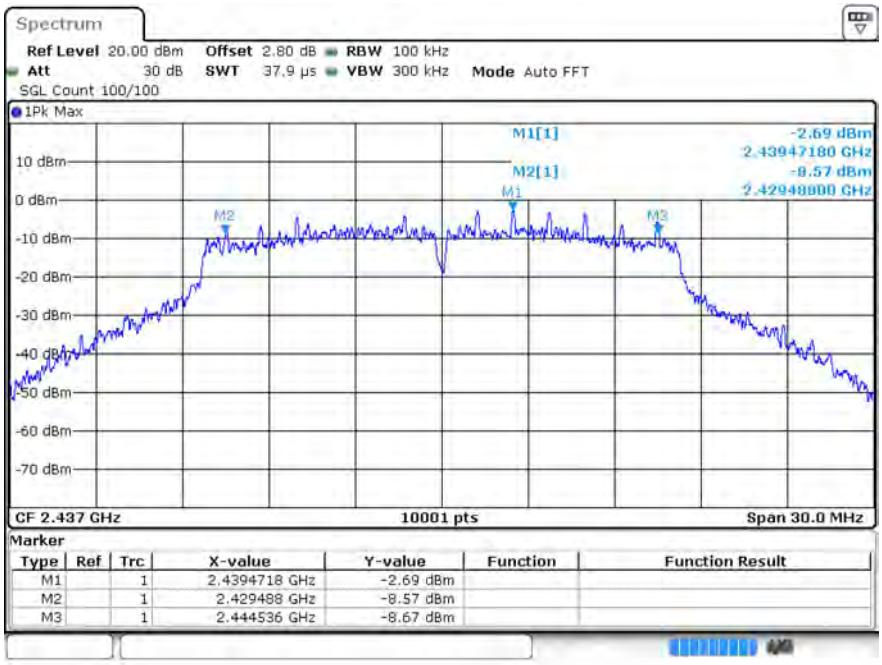
b 2462MHz Ant1



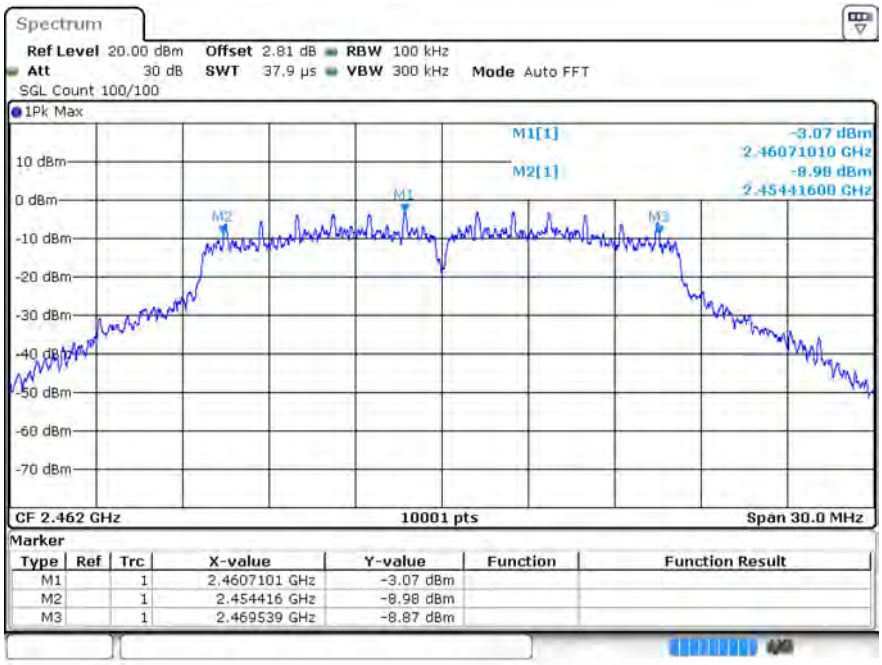
g 2412MHz Ant1



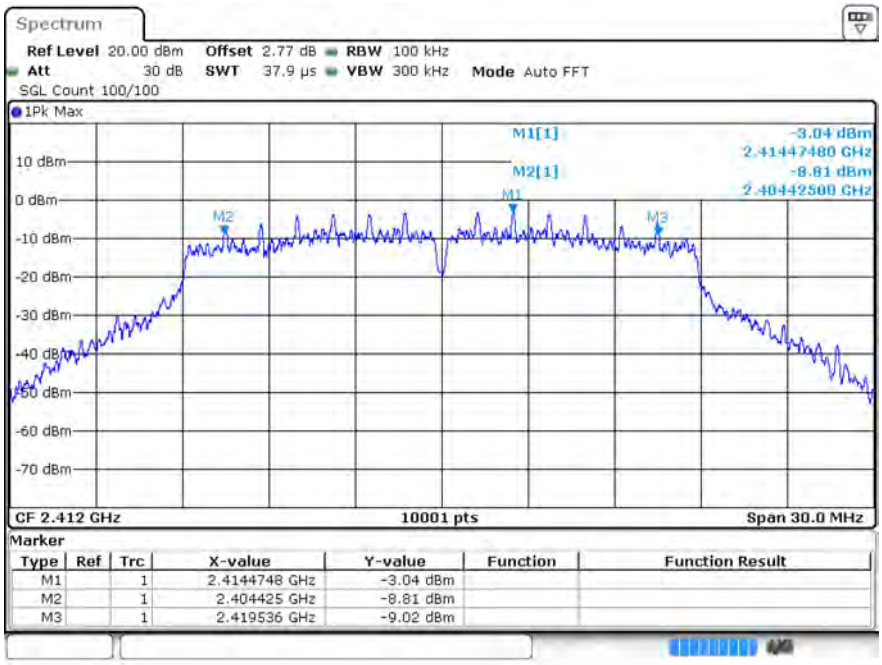
g 2437MHz Ant1



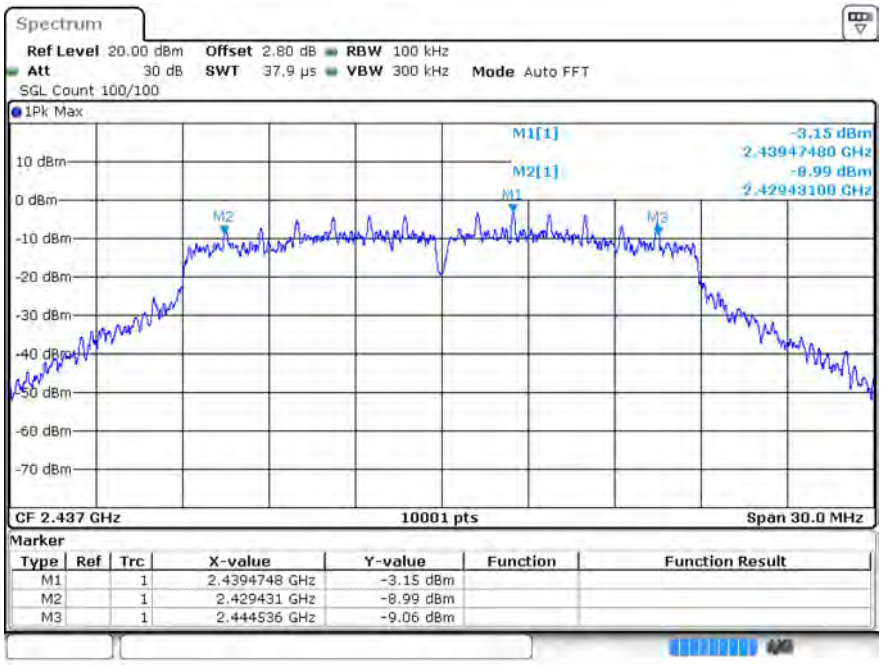
g 2462MHz Ant1



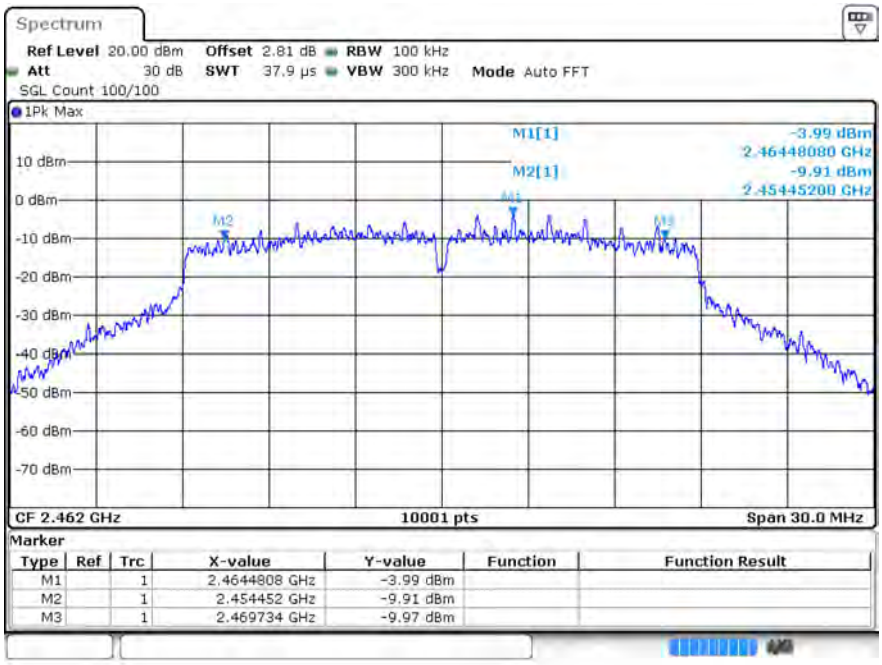
n20 2412MHz Ant1



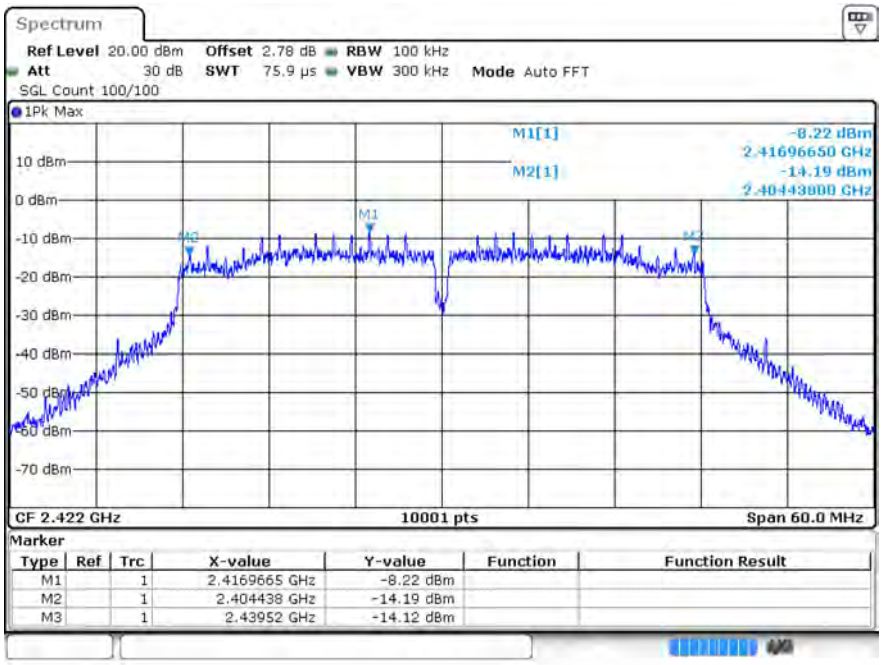
n20 2437MHz Ant1



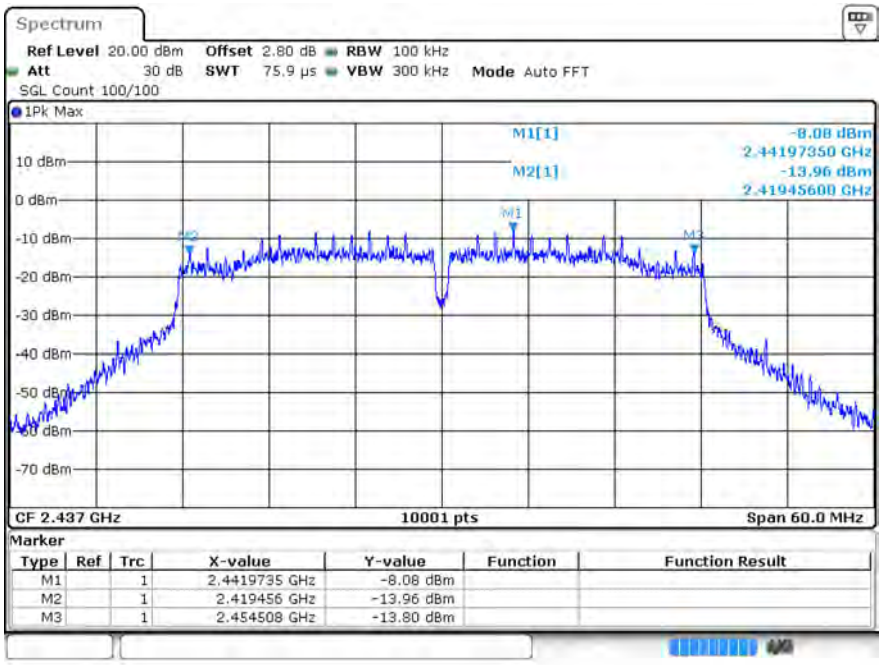
n20 2462MHz Ant1



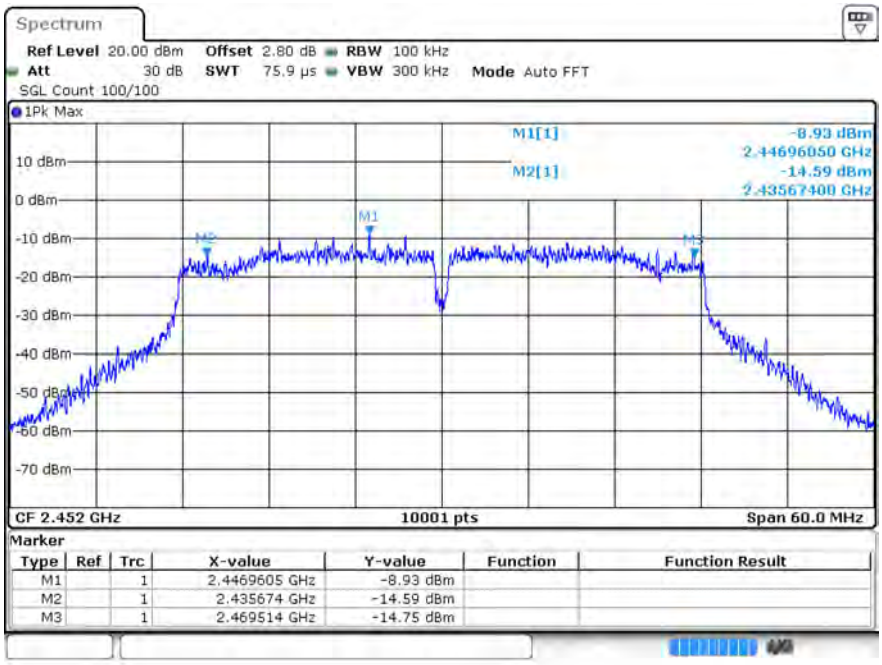
n40 2422MHz Ant1



n40 2437MHz Ant1



n40 2452MHz Ant1

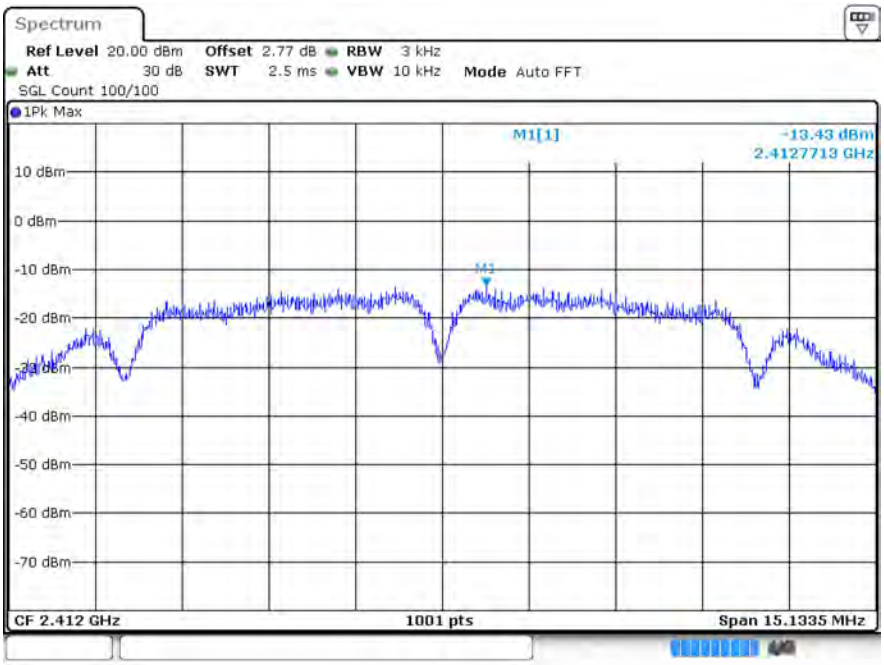
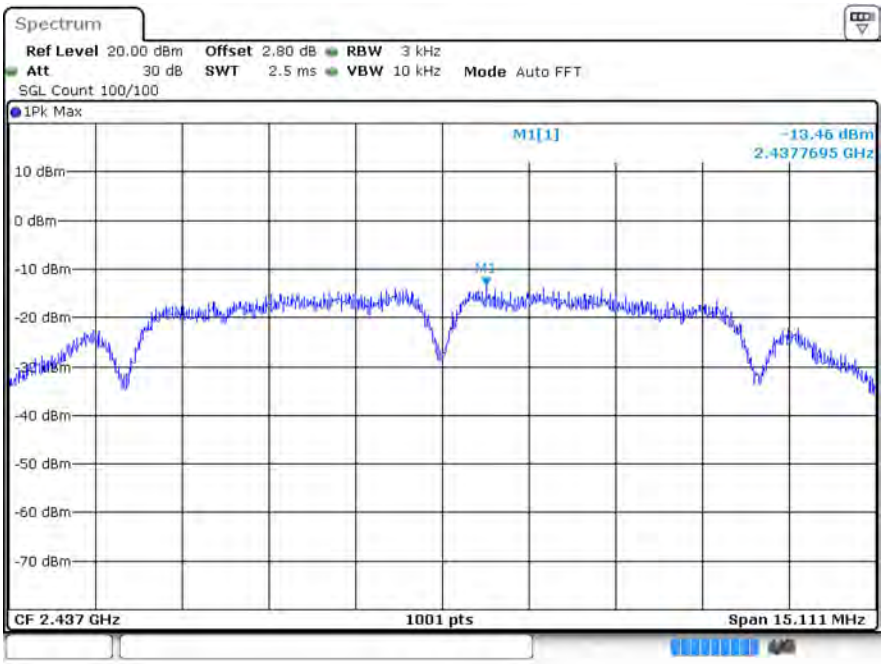


4 Maximum Power Spectral Density Level

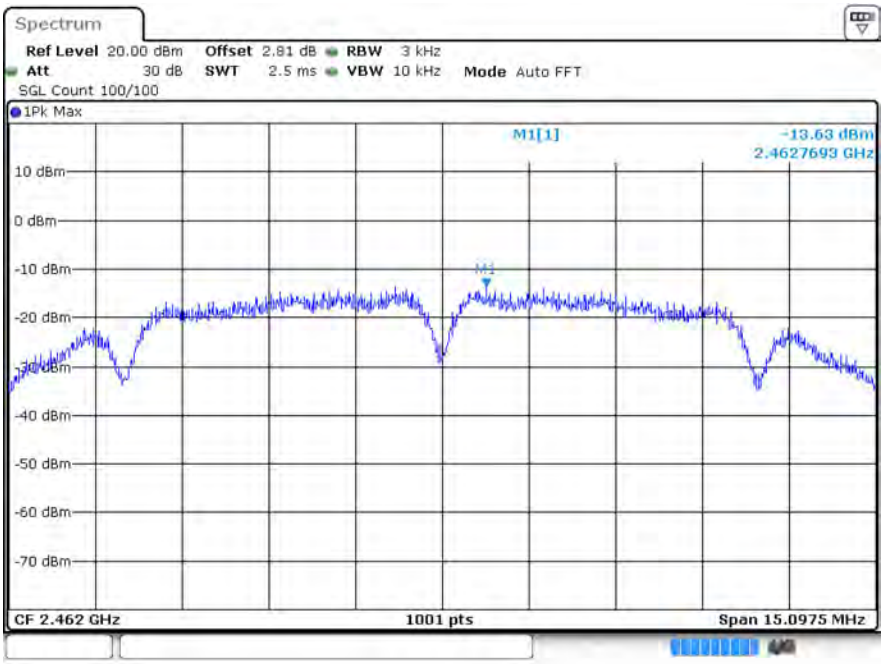
4.1 Test Result

Mode	Frequency (MHz)	Antenna	Conducted PSD (dBm/3-100kHz)	Limit (dBm/3kHz)	Verdict
b	2412	Ant1	-13.43	≤8	Pass
b	2437	Ant1	-13.46	≤8	Pass
b	2462	Ant1	-13.63	≤8	Pass
g	2412	Ant1	-17.51	≤8	Pass
g	2437	Ant1	-17.64	≤8	Pass
g	2462	Ant1	-16.32	≤8	Pass
n20	2412	Ant1	-16.89	≤8	Pass
n20	2437	Ant1	-17.4	≤8	Pass
n20	2462	Ant1	-17.39	≤8	Pass
n40	2422	Ant1	-22.31	≤8	Pass
n40	2437	Ant1	-22.47	≤8	Pass
n40	2452	Ant1	-22.78	≤8	Pass

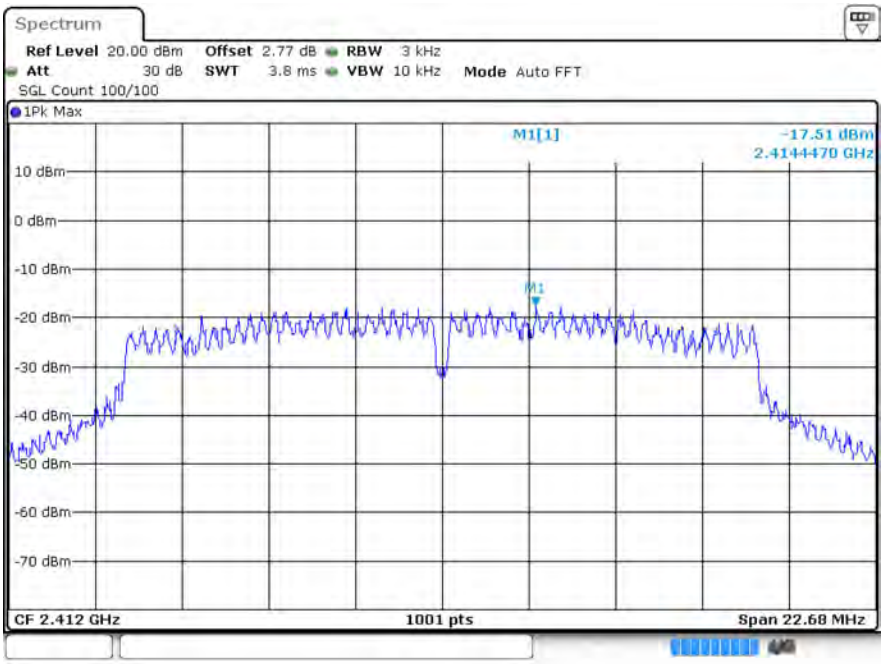
4.2 Test Graphs

Test Graphs
b 2412MHz Ant1

b 2437MHz Ant1


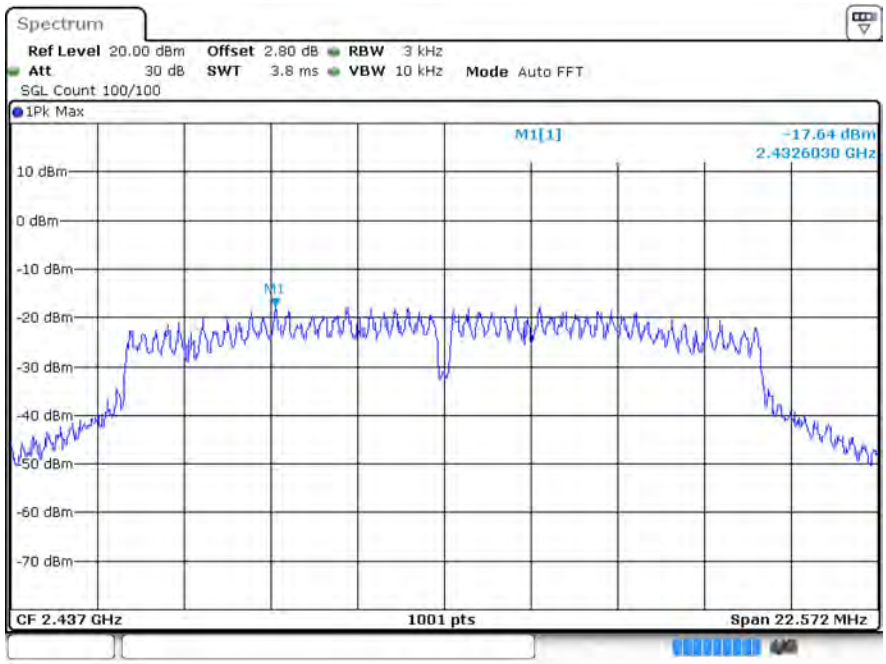
b 2462MHz Ant1



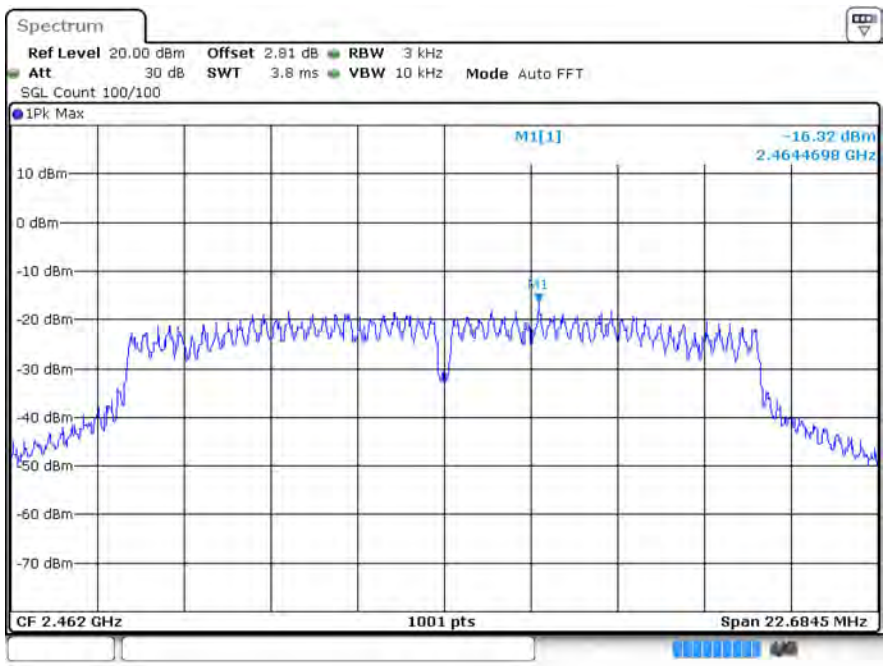
g 2412MHz Ant1



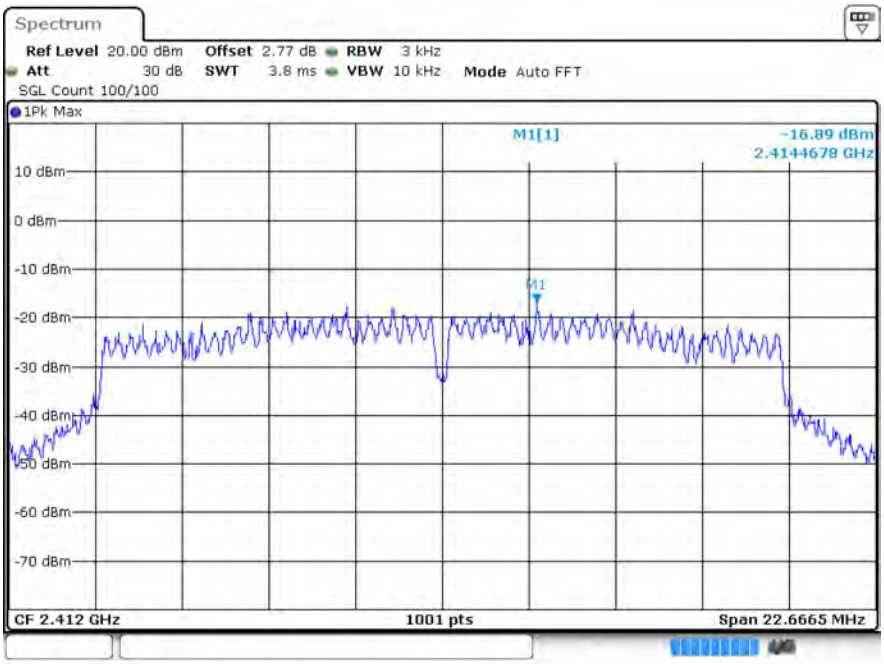
g 2437MHz Ant1



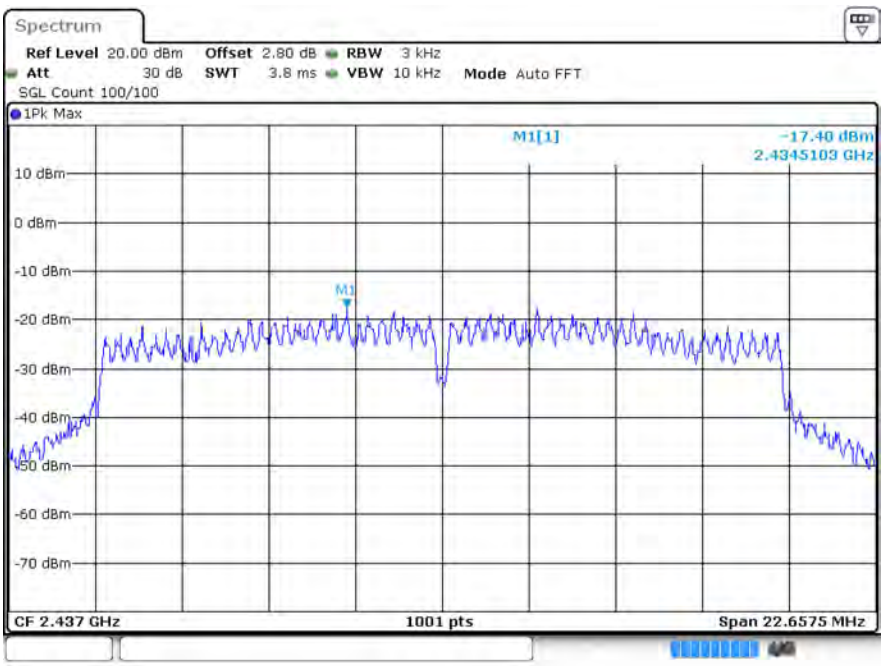
g 2462MHz Ant1



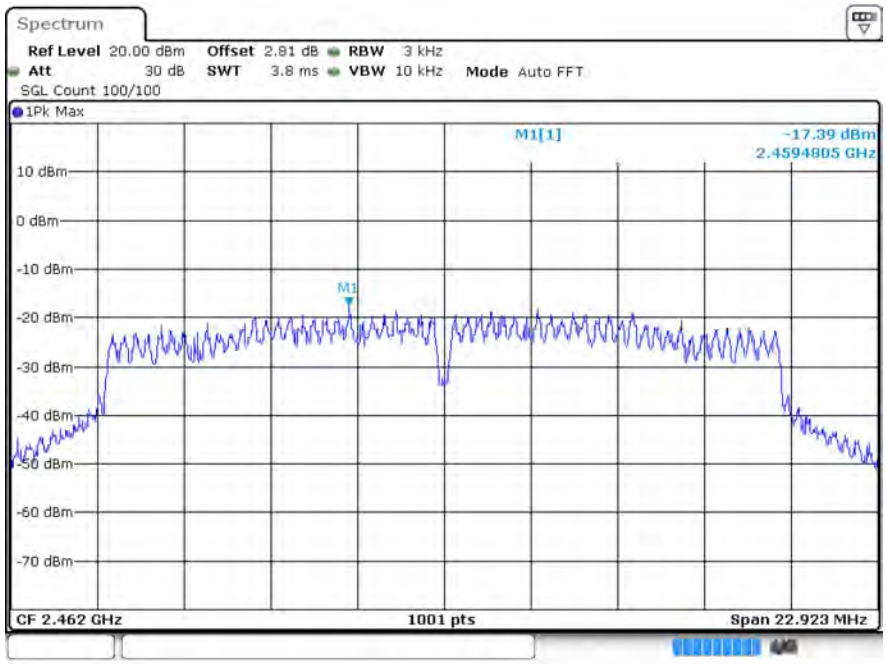
n20 2412MHz Ant1



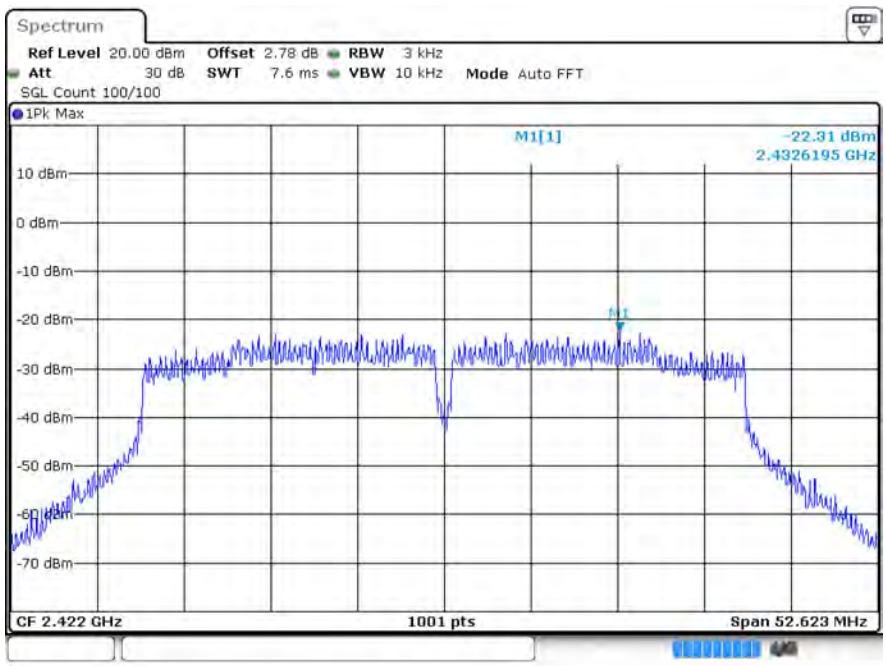
n20 2437MHz Ant1



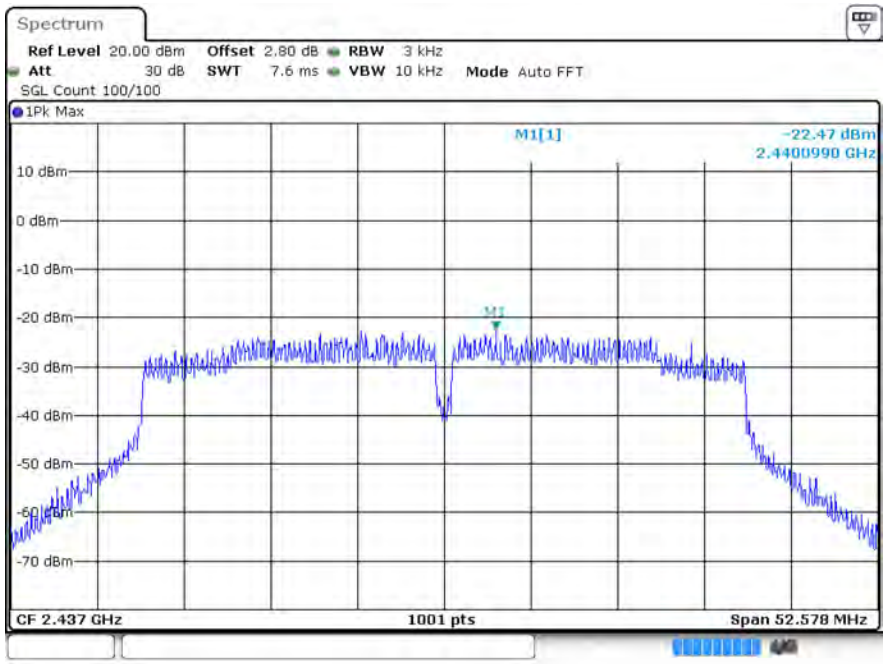
n20 2462MHz Ant1



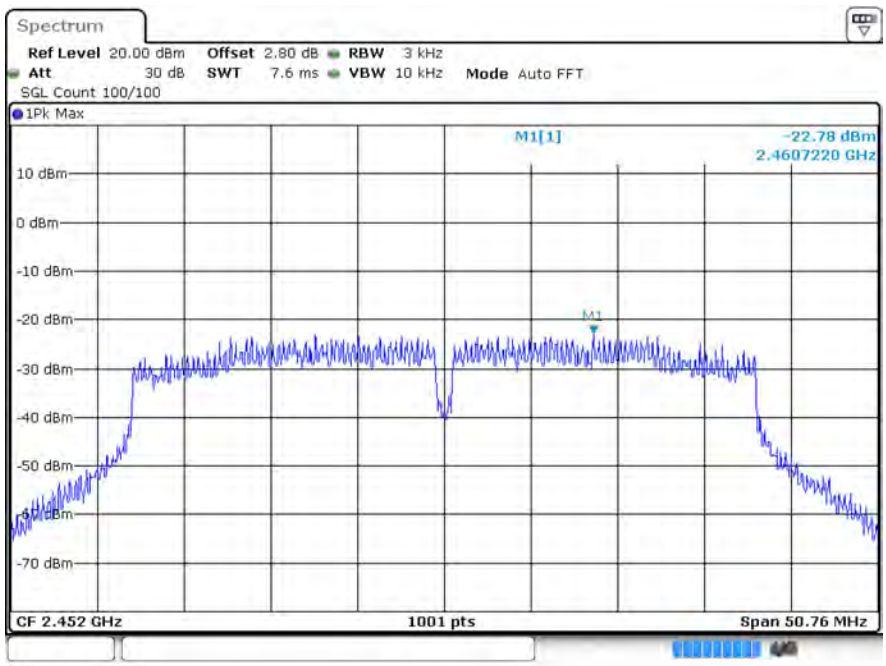
n40 2422MHz Ant1



n40 2437MHz Ant1



n40 2452MHz Ant1



5 Band Edge

5.1 Test Result

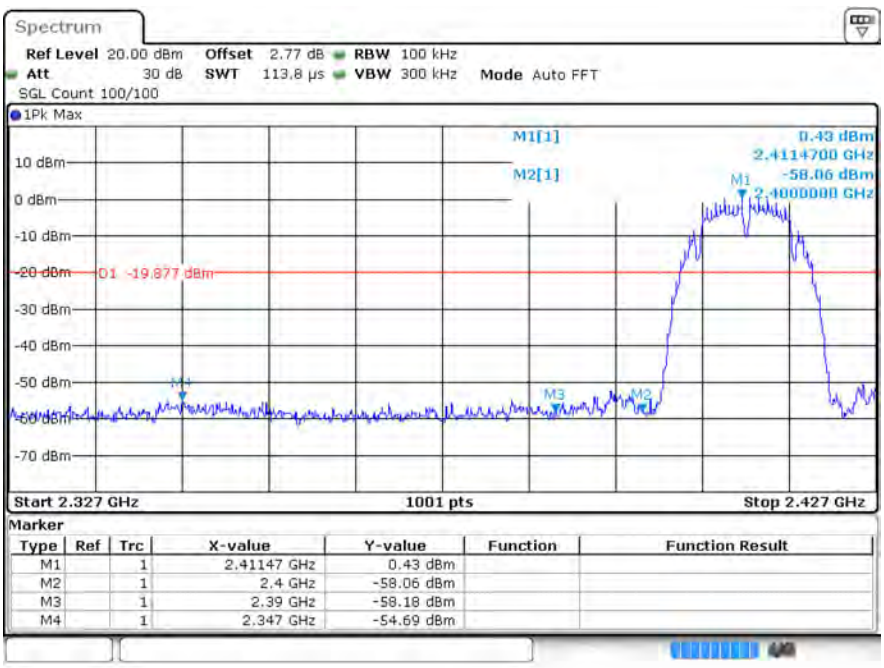
Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
b	2412	Ant1	-54.8	-20	Pass
b	2462	Ant1	-54.98	-20	Pass
g	2412	Ant1	-51.76	-20	Pass
g	2462	Ant1	-52.74	-20	Pass
n20	2412	Ant1	-52.24	-20	Pass
n20	2462	Ant1	-51.87	-20	Pass
n40	2422	Ant1	-48.54	-20	Pass
n40	2452	Ant1	-48	-20	Pass

5.2 Test Graphs

Test Graphs

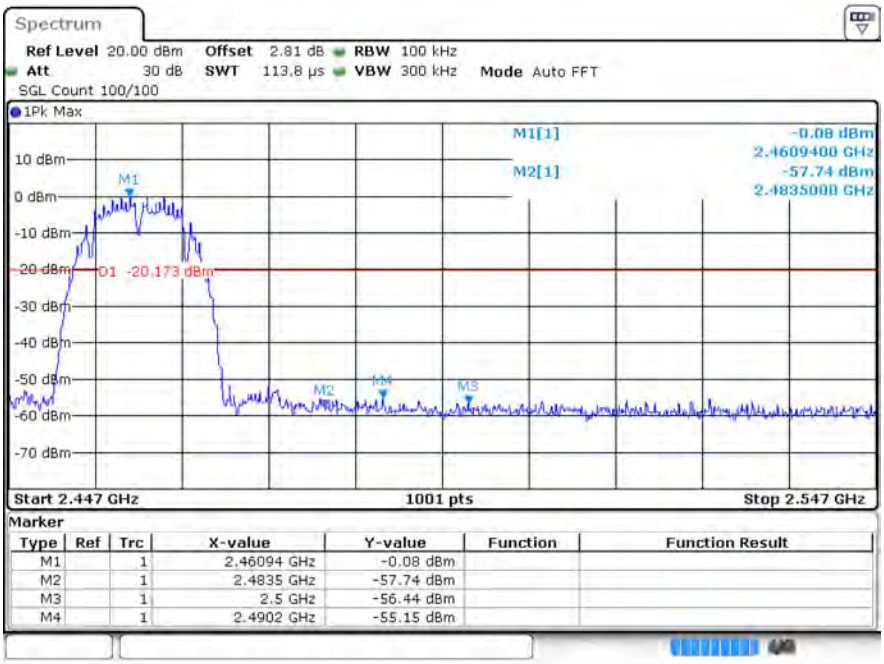
b 2412MHz Ant1 Ref

b 2412MHz Ant1 Emission

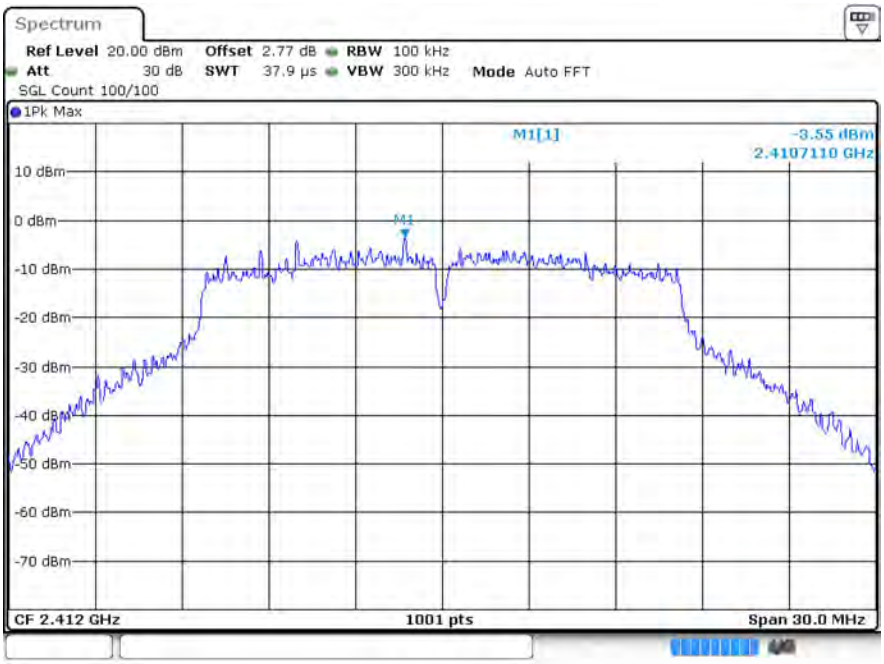


b 2462MHz Ant1 Ref

b 2462MHz Ant1 Emission

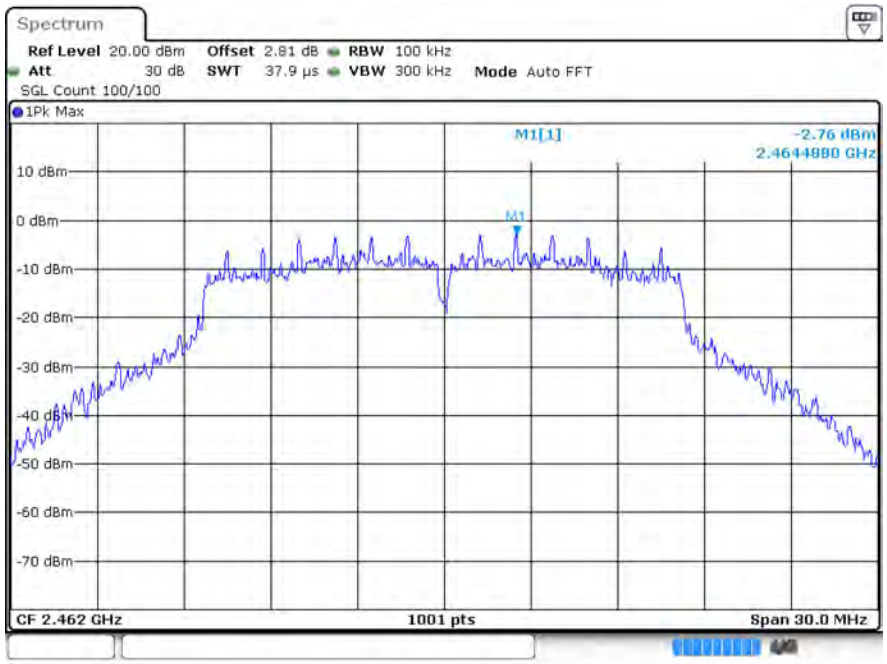


g 2412MHz Ant1 Ref

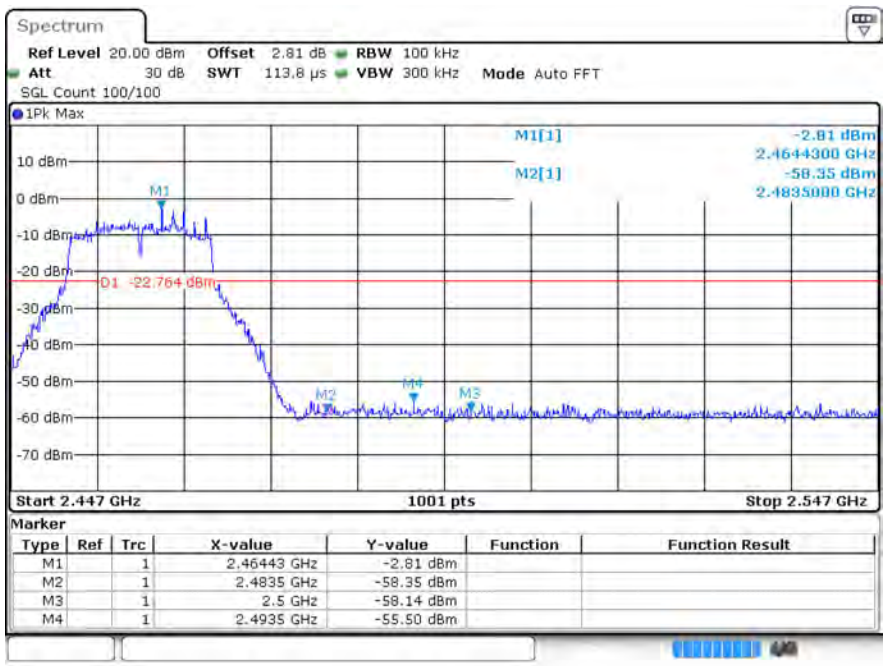


g 2412MHz Ant1 Emission

g 2462MHz Ant1 Ref



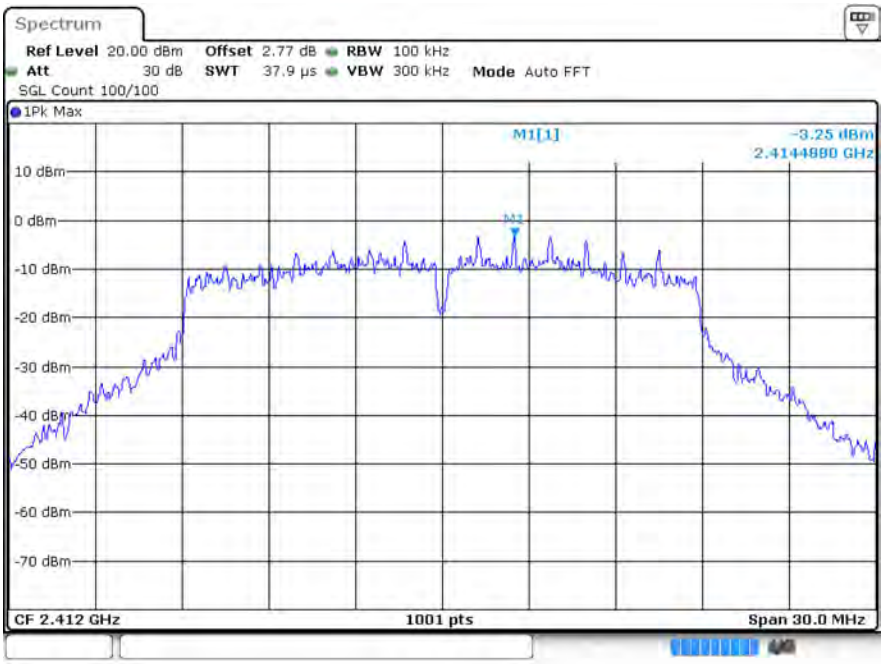
g 2462MHz Ant1 Emission



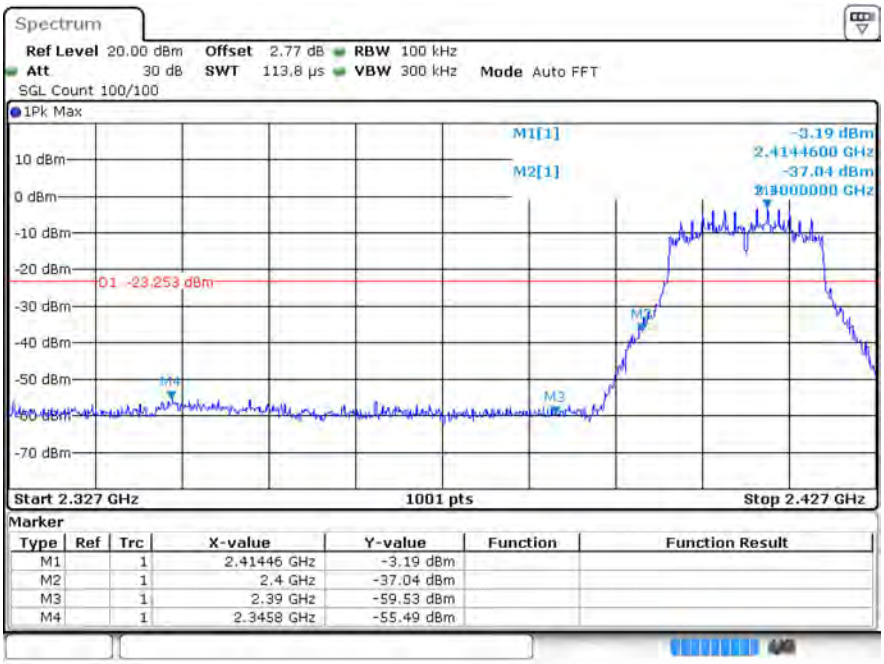
Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.46443 GHz	-2.81 dBm		
M2		1	2.4835 GHz	-58.35 dBm		
M3		1	2.5 GHz	-58.14 dBm		
M4		1	2.4935 GHz	-55.50 dBm		

n20 2412MHz Ant1 Ref



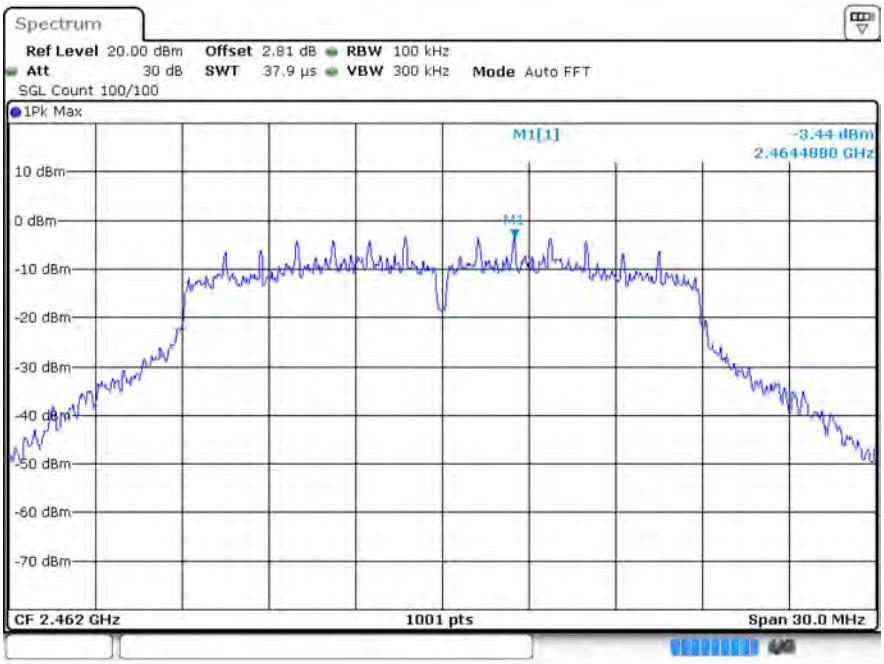
n20 2412MHz Ant1 Emission



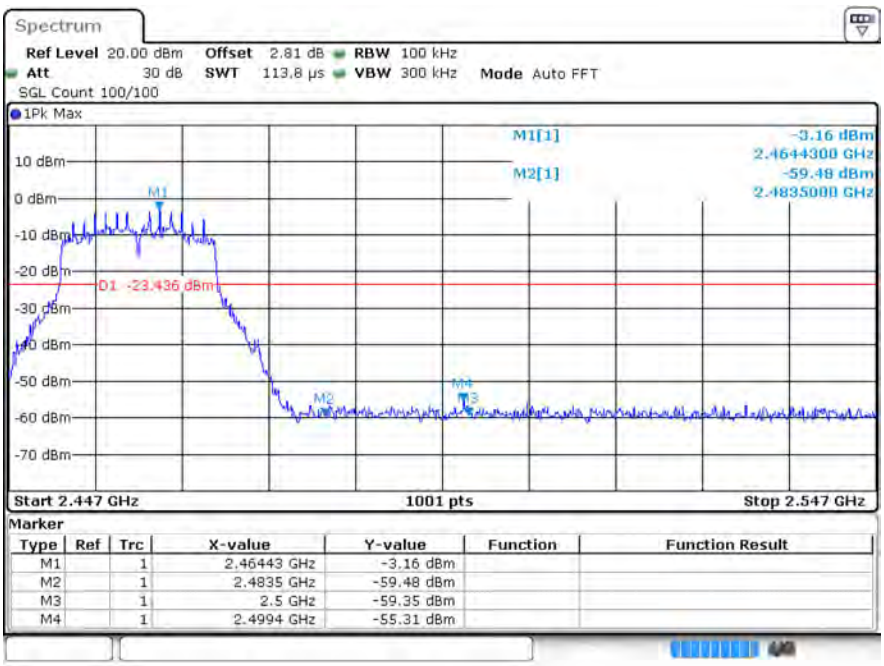
Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.41446 GHz	-3.19 dBm		
M2		1	2.4 GHz	-37.04 dBm		
M3		1	2.39 GHz	-59.53 dBm		
M4		1	2.3458 GHz	-55.49 dBm		

n20 2462MHz Ant1 Ref



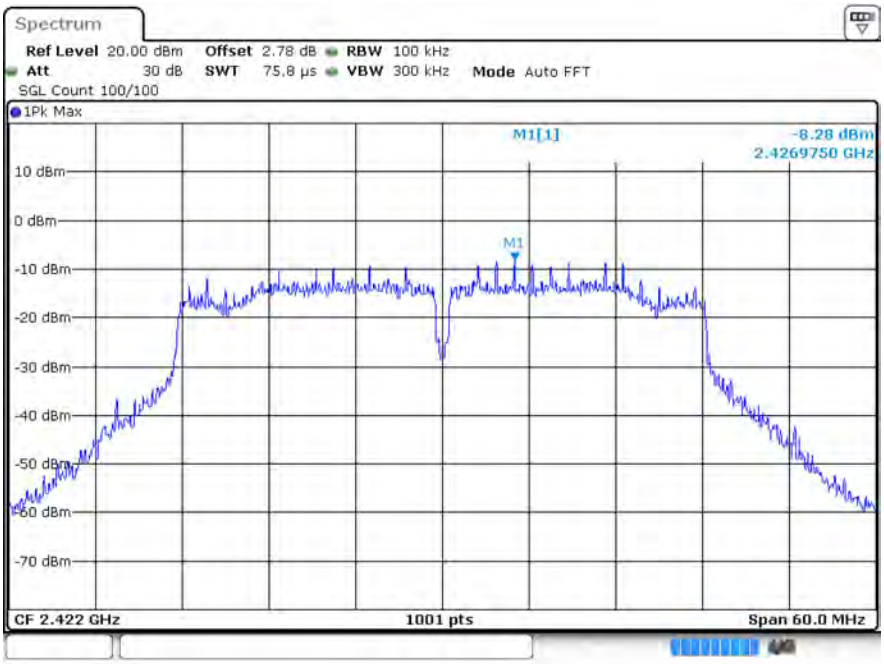
n20 2462MHz Ant1 Emission



Marker

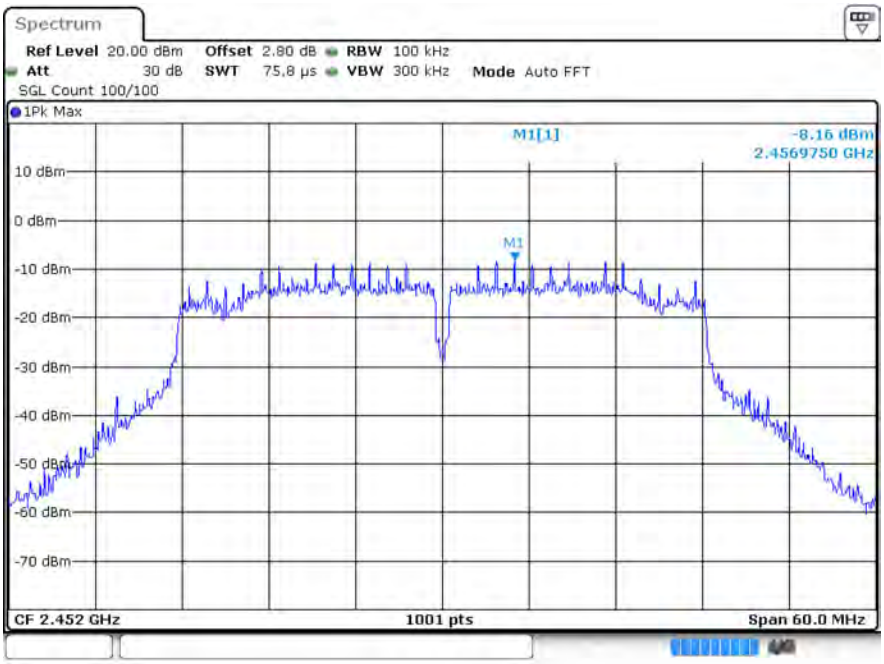
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.46443 GHz	-3.16 dBm		
M2		1	2.4835 GHz	-59.48 dBm		
M3		1	2.5 GHz	-59.35 dBm		
M4		1	2.4994 GHz	-55.31 dBm		

n40 2422MHz Ant1 Ref

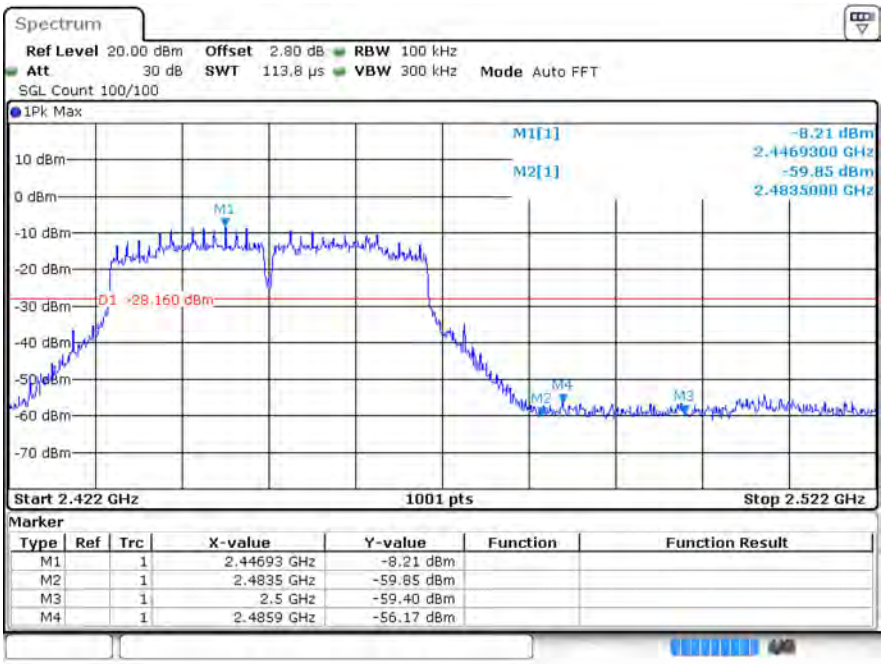


n40 2422MHz Ant1 Emission

n40 2452MHz Ant1 Ref



n40 2452MHz Ant1 Emission



6 Conducted RF Spurious Emission

6.1 Test Result

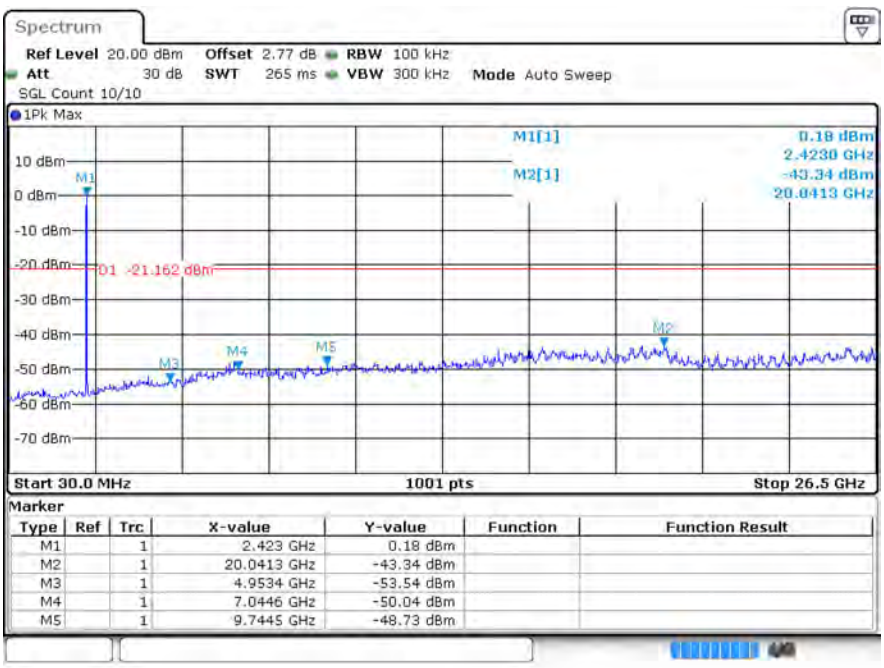
Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
b	2412	Ant1	-42.18	-20	Pass
b	2437	Ant1	-42.89	-20	Pass
b	2462	Ant1	-41.71	-20	Pass
g	2412	Ant1	-40.69	-20	Pass
g	2437	Ant1	-39.91	-20	Pass
g	2462	Ant1	-40.58	-20	Pass
n20	2412	Ant1	-39.97	-20	Pass
n20	2437	Ant1	-38.32	-20	Pass
n20	2462	Ant1	-39.24	-20	Pass
n40	2422	Ant1	-35.18	-20	Pass
n40	2437	Ant1	-35.18	-20	Pass
n40	2452	Ant1	-35.13	-20	Pass

6.2 Test Graphs

Test Graphs

b 2412MHz Ant1 Ref

b 2412MHz Ant1 Emission

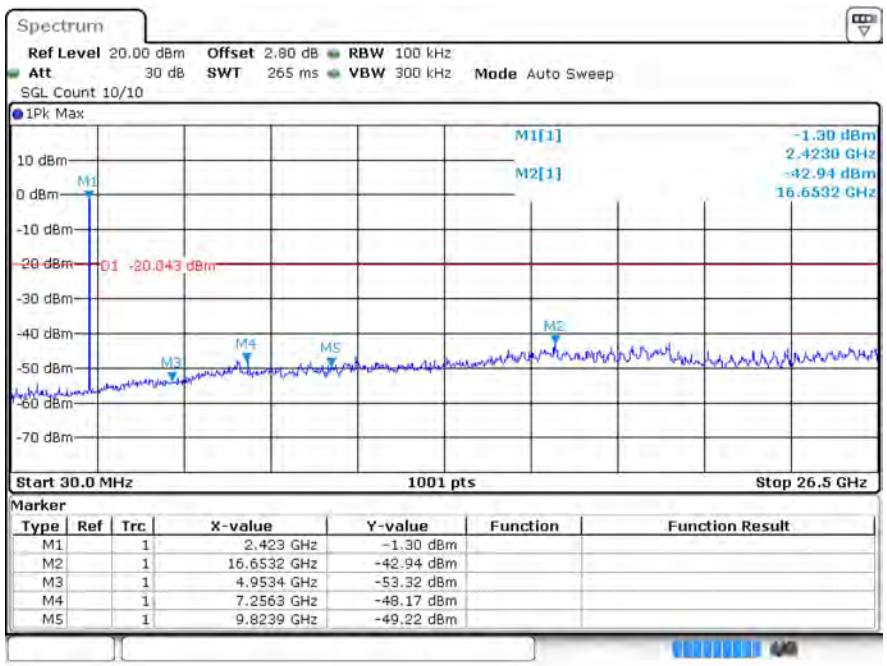


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.423 GHz	0.18 dBm		
M2		1	20.0413 GHz	-43.34 dBm		
M3		1	4.9534 GHz	-53.54 dBm		
M4		1	7.0446 GHz	-50.04 dBm		
M5		1	9.7445 GHz	-48.73 dBm		

b 2437MHz Ant1 Ref

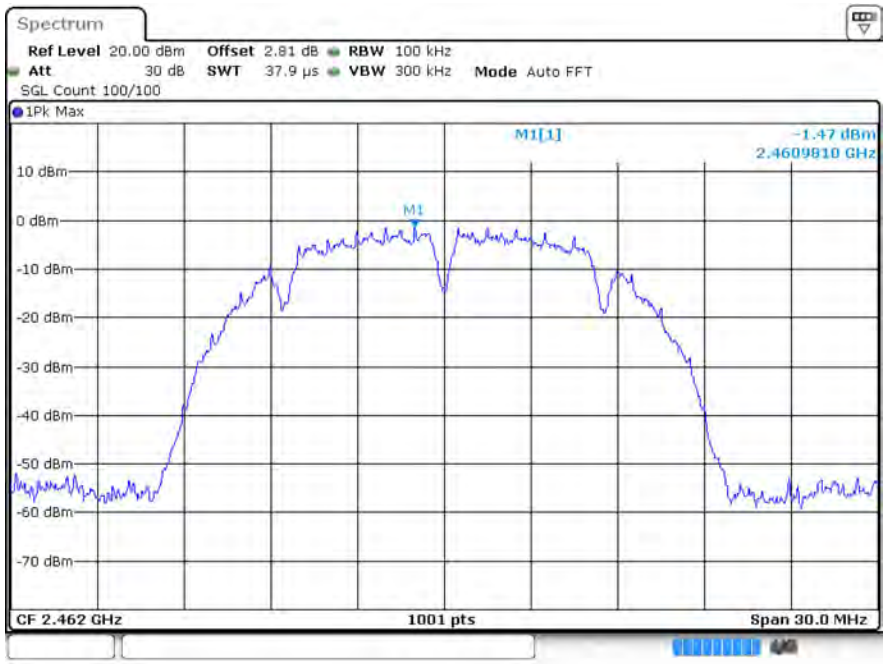
b 2437MHz Ant1 Emission



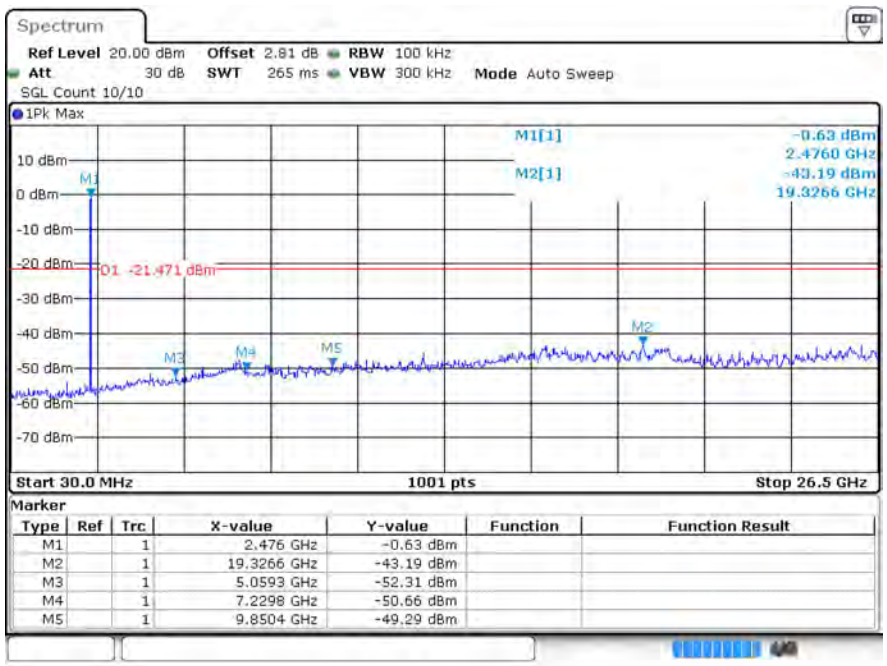
Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.423 GHz	-1.30 dBm		
M2		1	16.6532 GHz	-42.94 dBm		
M3		1	4.9534 GHz	-53.32 dBm		
M4		1	7.2563 GHz	-48.17 dBm		
M5		1	9.8239 GHz	-49.22 dBm		

b 2462MHz Ant1 Ref



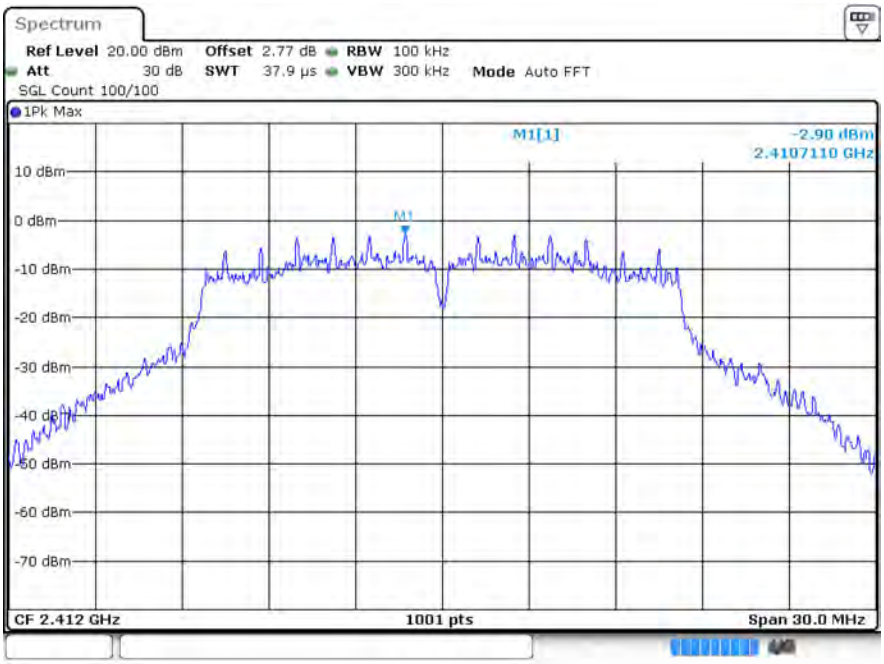
b 2462MHz Ant1 Emission



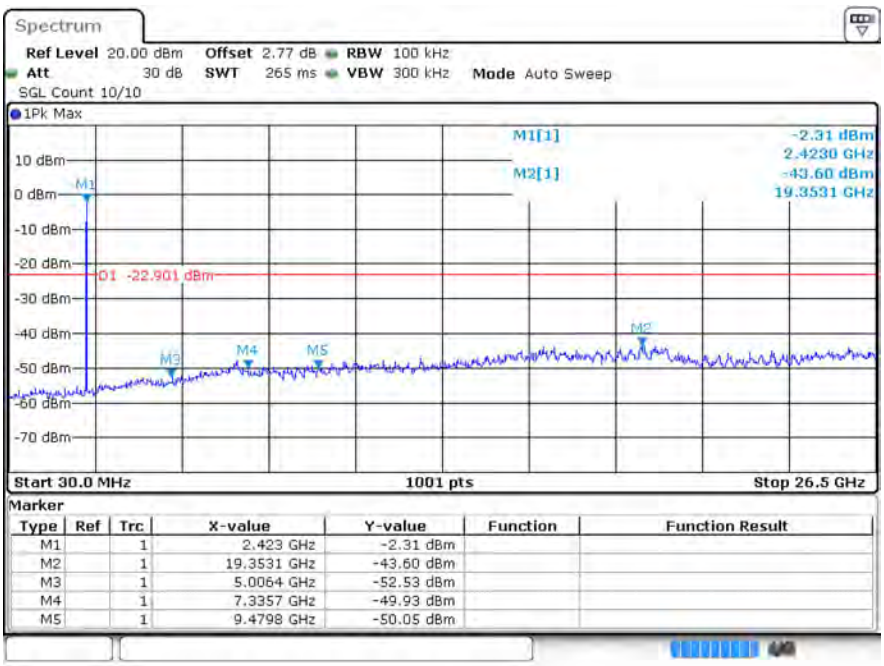
Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.476 GHz	-0.63 dBm		
M2		1	19.3266 GHz	-43.19 dBm		
M3		1	5.0593 GHz	-52.31 dBm		
M4		1	7.2298 GHz	-50.66 dBm		
M5		1	9.8504 GHz	-49.29 dBm		

g 2412MHz Ant1 Ref



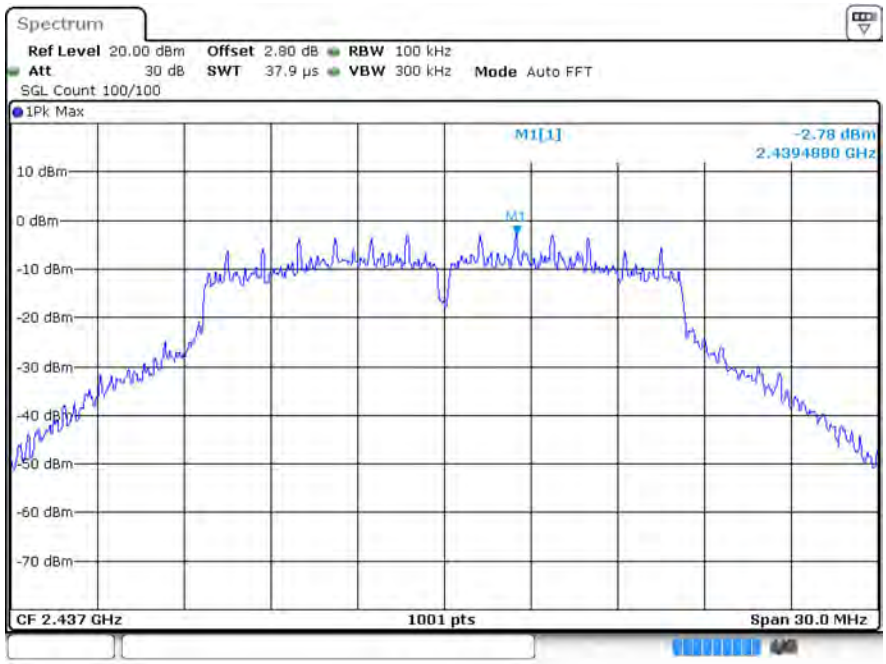
g 2412MHz Ant1 Emission



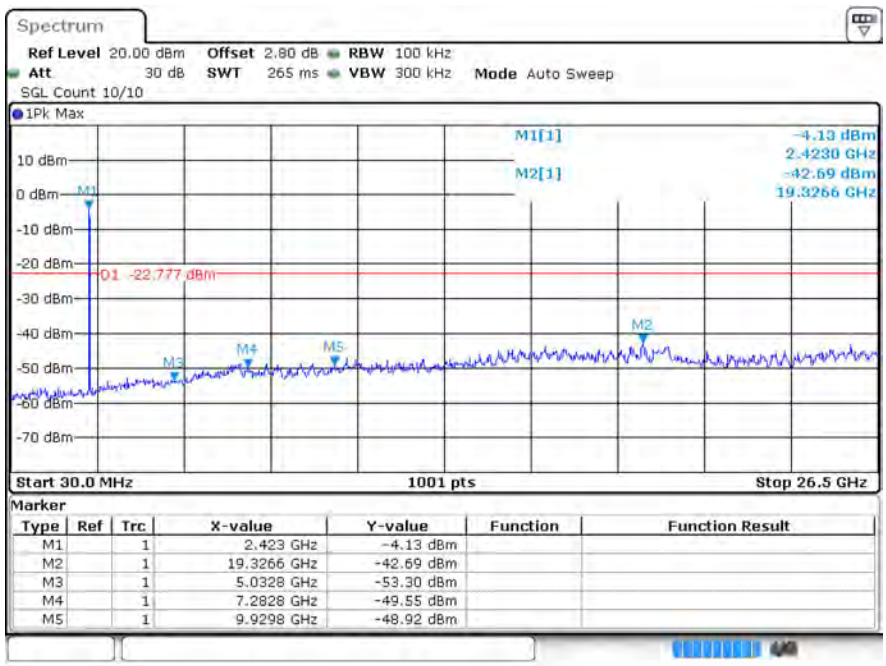
Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.423 GHz	-2.31 dBm		
M2		1	19.3531 GHz	-43.60 dBm		
M3		1	5.0064 GHz	-52.53 dBm		
M4		1	7.3357 GHz	-49.93 dBm		
M5		1	9.4798 GHz	-50.05 dBm		

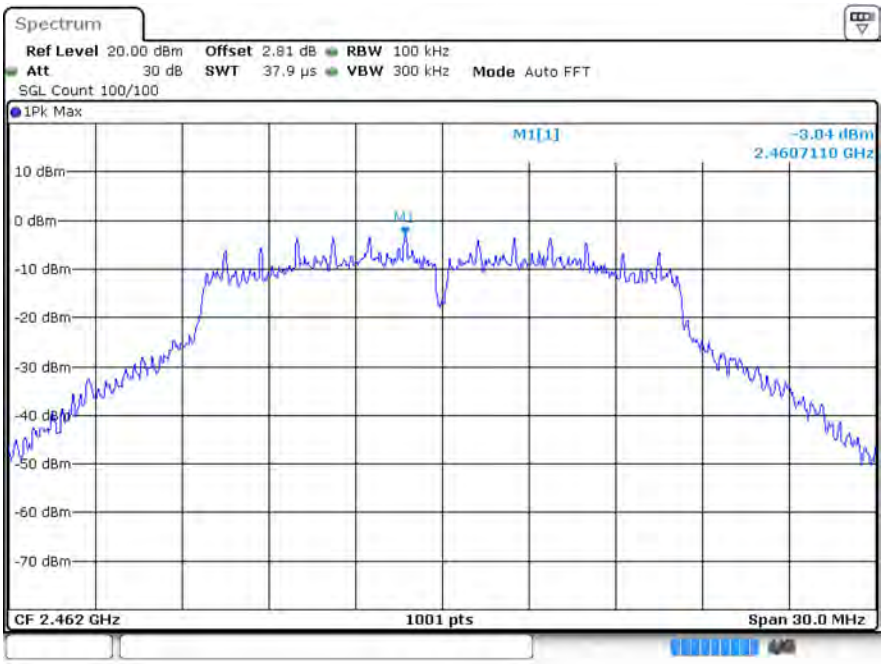
g 2437MHz Ant1 Ref



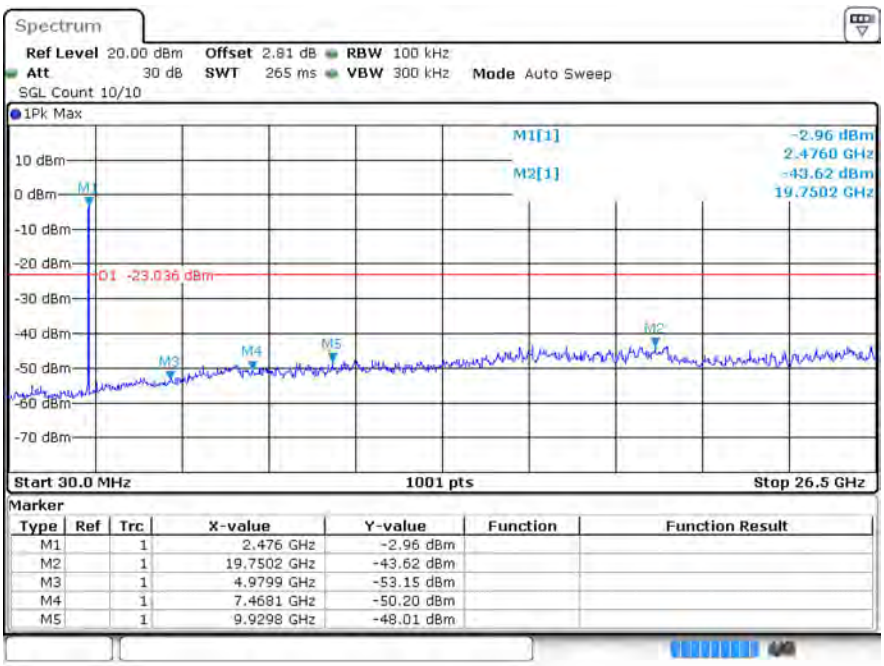
g 2437MHz Ant1 Emission



g 2462MHz Ant1 Ref



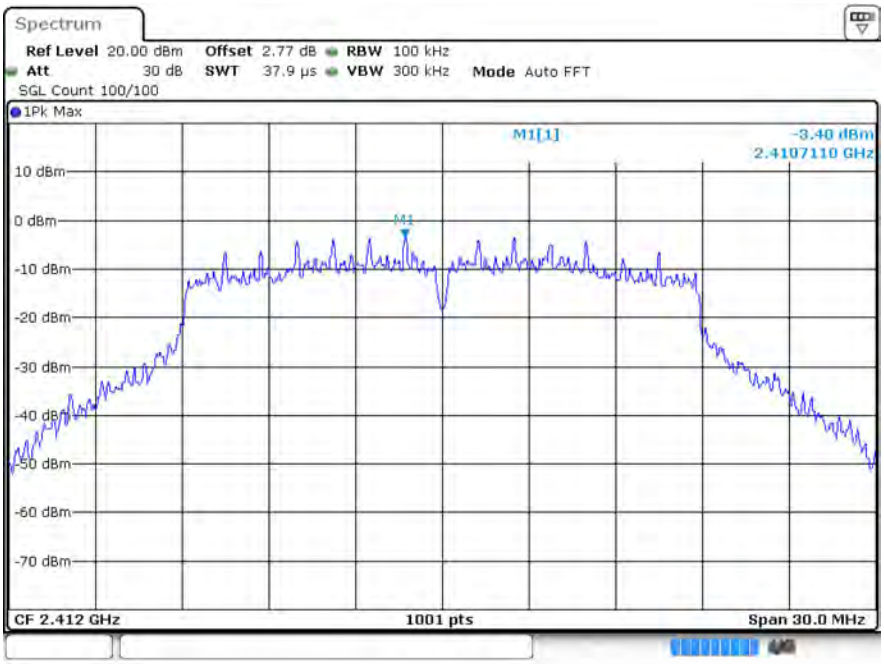
g 2462MHz Ant1 Emission



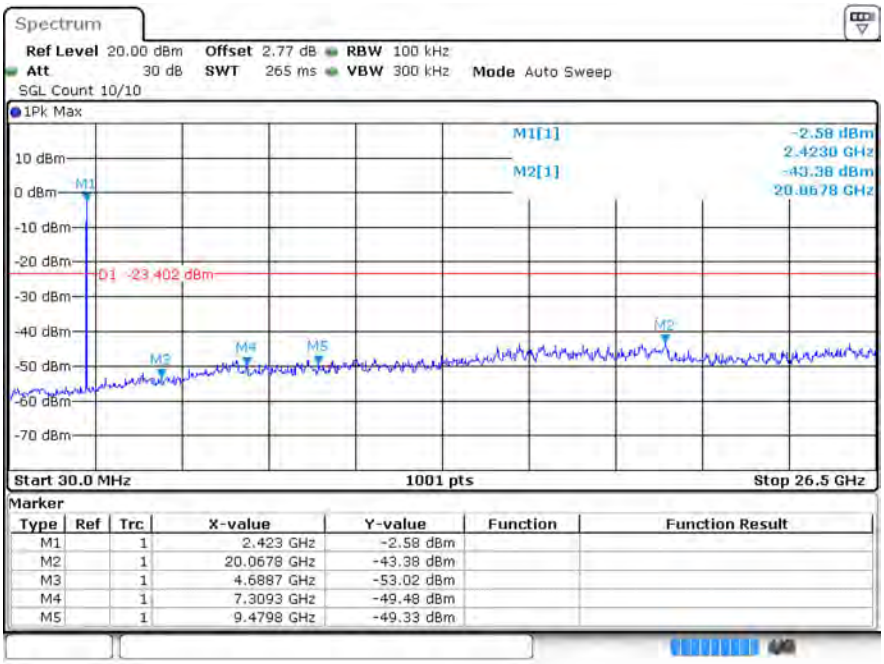
Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.476 GHz	-2.96 dBm		
M2		1	19.7502 GHz	-43.62 dBm		
M3		1	4.9799 GHz	-53.15 dBm		
M4		1	7.4681 GHz	-50.20 dBm		
M5		1	9.9298 GHz	-48.01 dBm		

n20 2412MHz Ant1 Ref



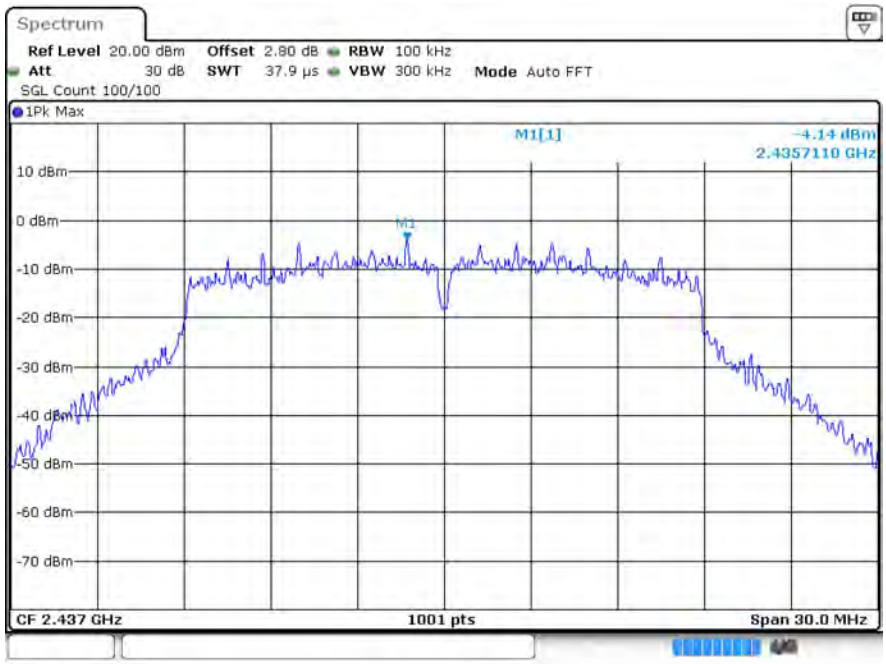
n20 2412MHz Ant1 Emission



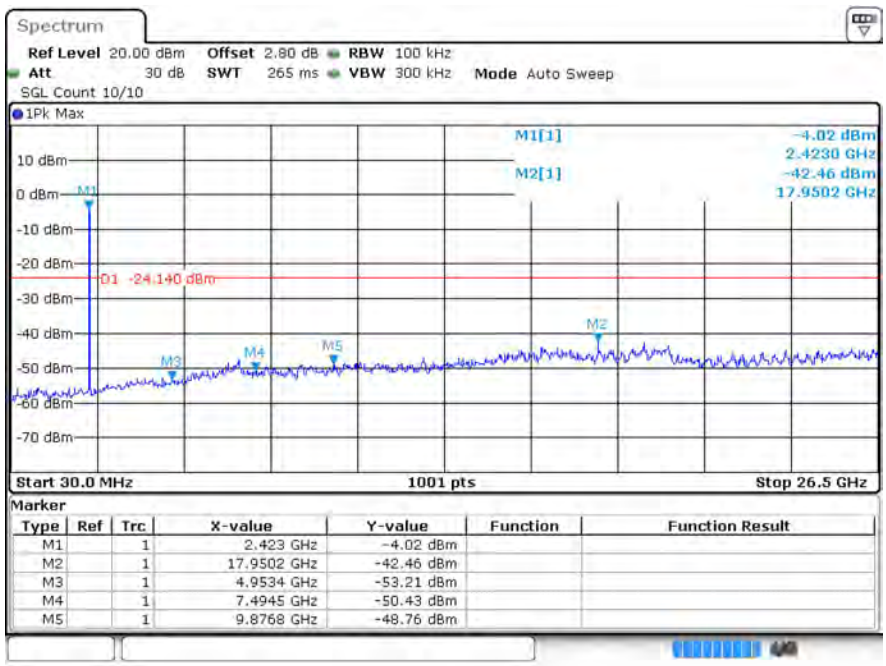
Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.423 GHz	-2.58 dBm		
M2		1	20.0678 GHz	-43.38 dBm		
M3		1	4.6887 GHz	-53.02 dBm		
M4		1	7.3093 GHz	-49.48 dBm		
M5		1	9.4798 GHz	-49.33 dBm		

n20 2437MHz Ant1 Ref



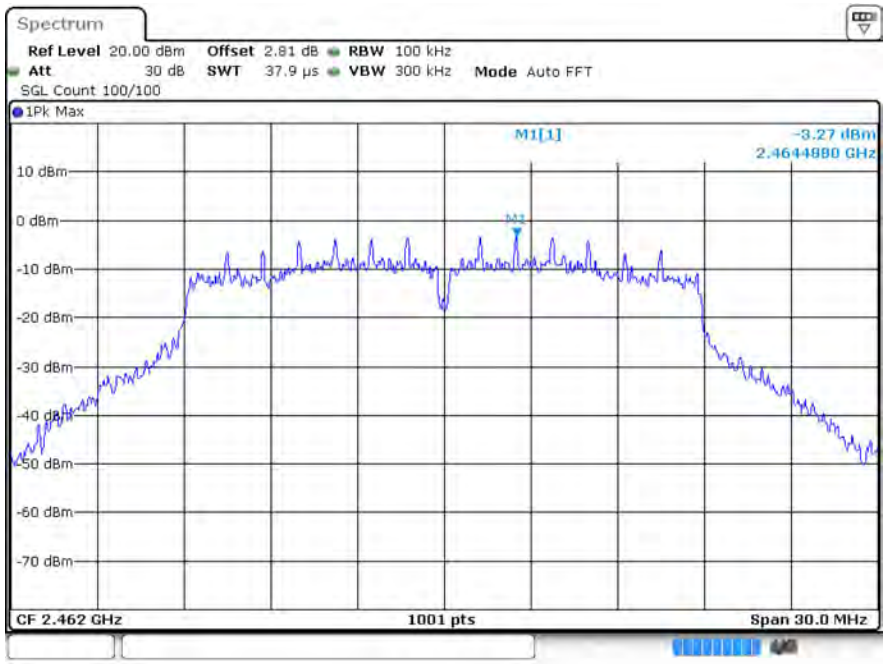
n20 2437MHz Ant1 Emission



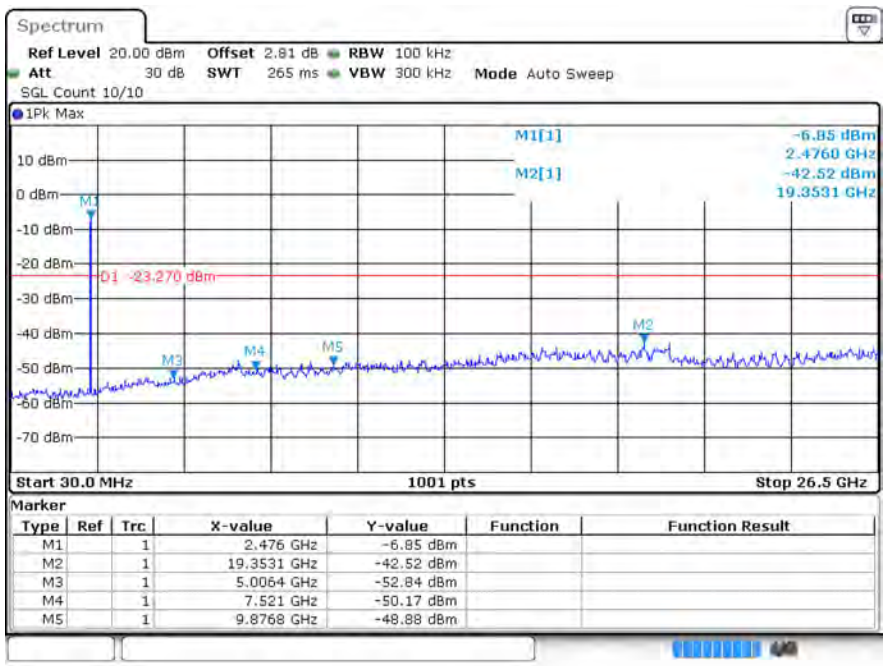
Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.423 GHz	-4.02 dBm		
M2		1	17.9502 GHz	-42.46 dBm		
M3		1	4.9534 GHz	-53.21 dBm		
M4		1	7.4945 GHz	-50.43 dBm		
M5		1	9.8768 GHz	-48.76 dBm		

n20 2462MHz Ant1 Ref



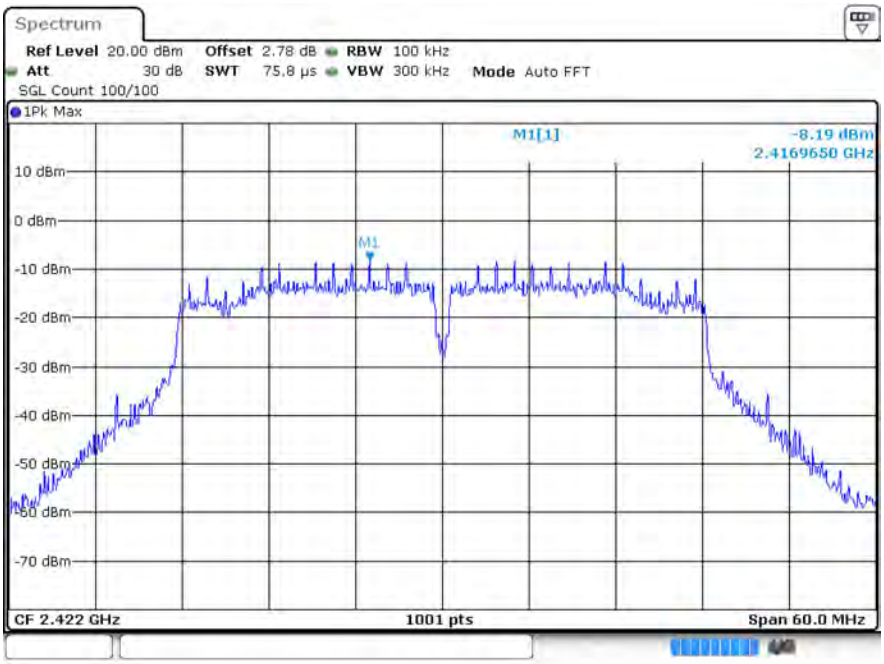
n20 2462MHz Ant1 Emission



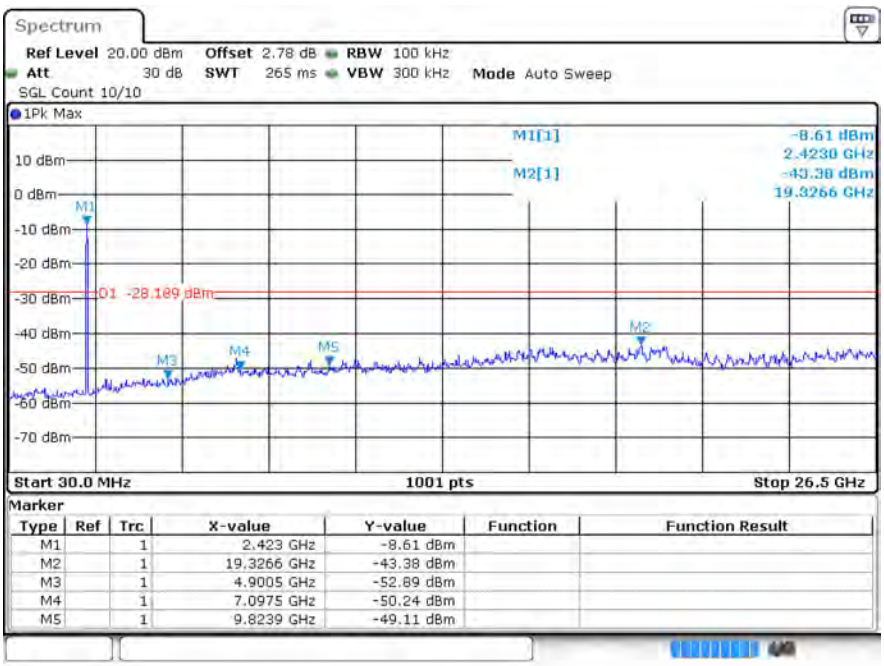
Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.476 GHz	-6.85 dBm		
M2		1	19.3531 GHz	-42.52 dBm		
M3		1	5.0064 GHz	-52.84 dBm		
M4		1	7.521 GHz	-50.17 dBm		
M5		1	9.8768 GHz	-48.88 dBm		

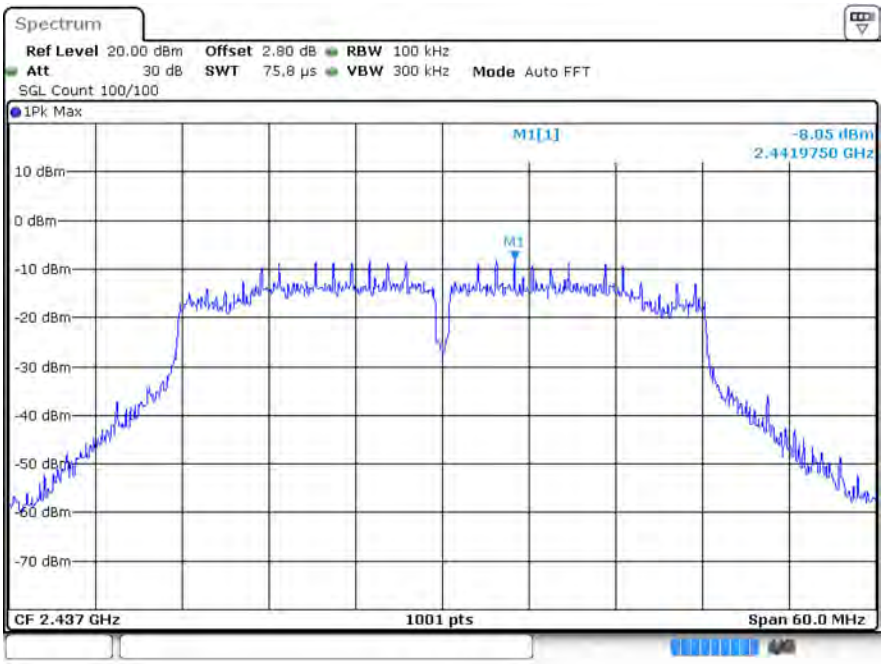
n40 2422MHz Ant1 Ref



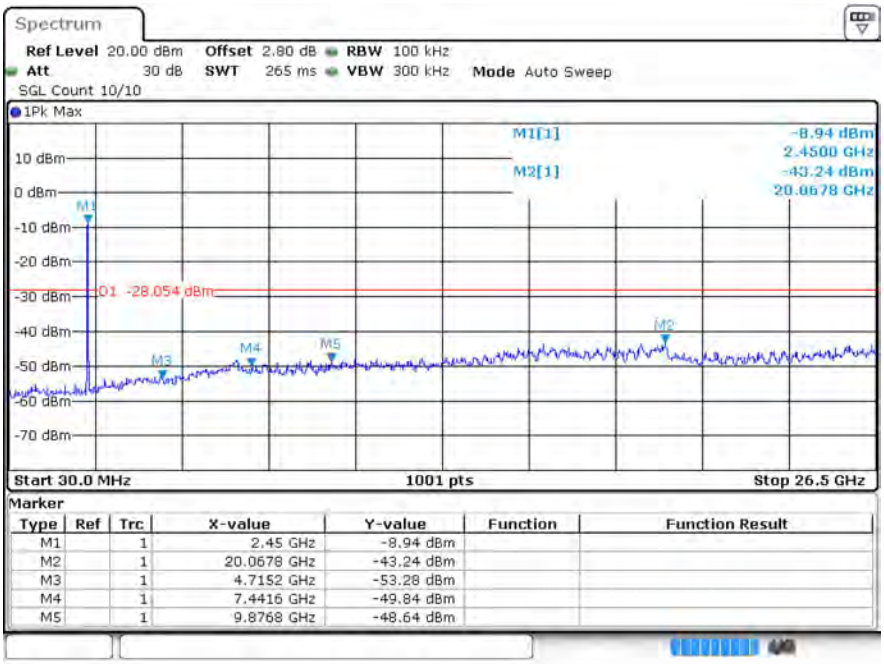
n40 2422MHz Ant1 Emission



n40 2437MHz Ant1 Ref



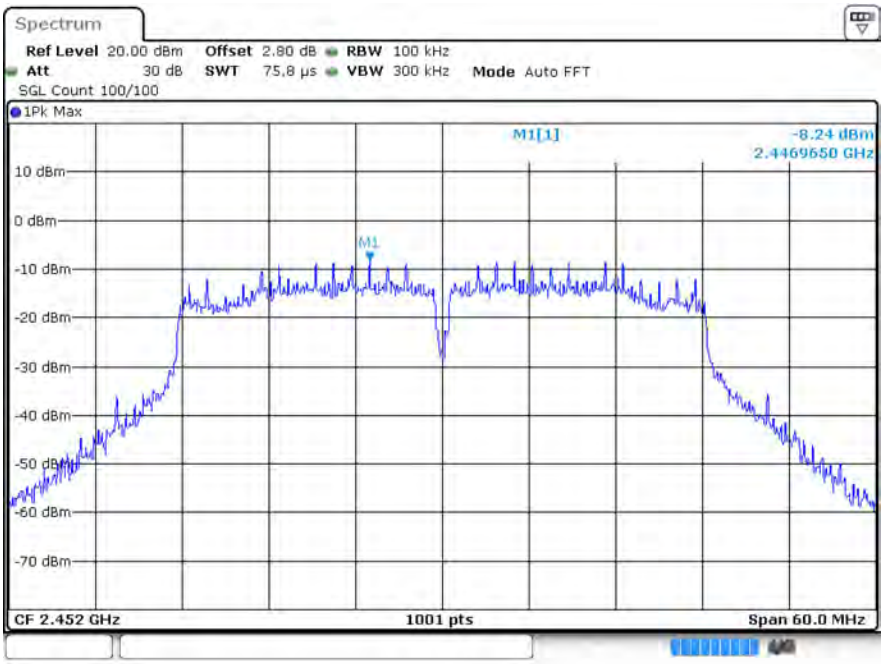
n40 2437MHz Ant1 Emission



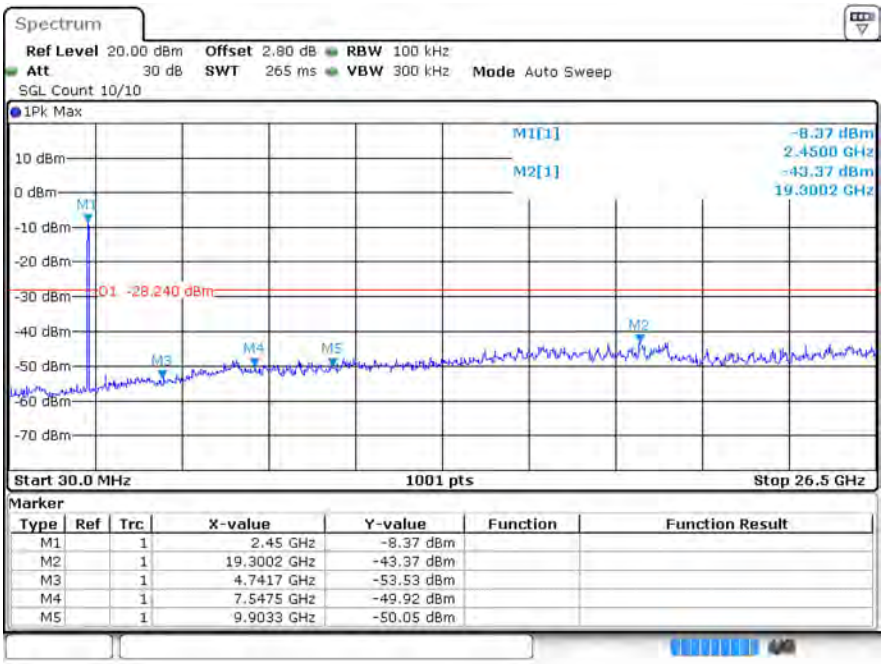
Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.45 GHz	-8.94 dBm		
M2		1	20.0678 GHz	-43.24 dBm		
M3		1	4.7152 GHz	-53.28 dBm		
M4		1	7.4416 GHz	-49.84 dBm		
M5		1	9.8768 GHz	-48.64 dBm		

n40 2452MHz Ant1 Ref



n40 2452MHz Ant1 Emission



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.45 GHz	-8.37 dBm		
M2		1	19.3002 GHz	-43.37 dBm		
M3		1	4.7417 GHz	-53.53 dBm		
M4		1	7.5475 GHz	-49.92 dBm		
M5		1	9.9033 GHz	-50.05 dBm		

7 Restrict Band

7.1 Test Result

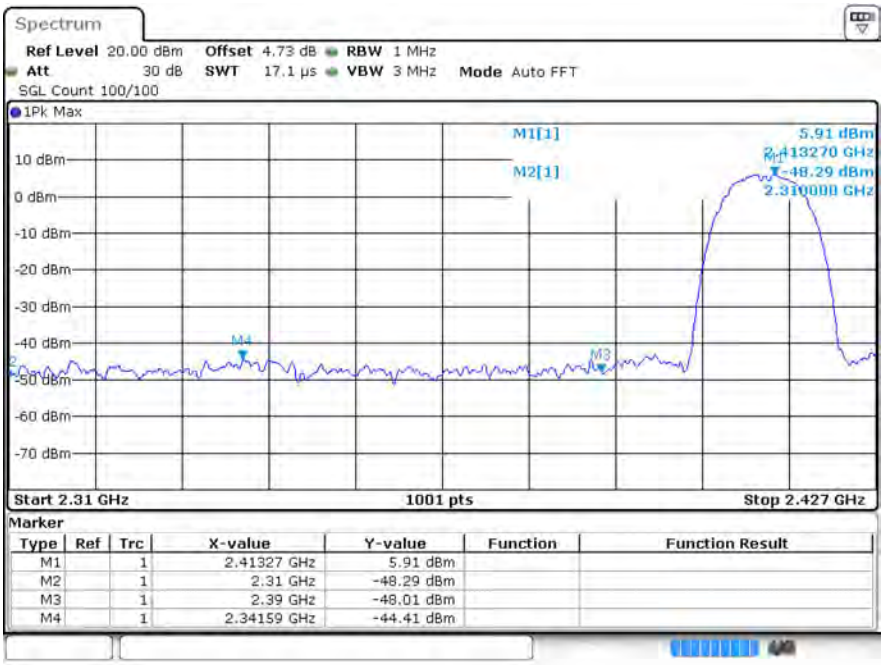
Mode	Frequency (MHz)	Antenna	Spur Freq (MHz)	Power (dBm)	Gain (dBi)	E (dBuV/m)	Detector	Limit (dBuV/m)	Verdict
b	2412	Ant1	2310	-48.28	2	48.98	Peak	74	Pass
b	2412	Ant1	2310	-56.6	2	40.66	Average	54	Pass
b	2412	Ant1	2341.59	-44.4	2	52.86	Peak	74	Pass
b	2412	Ant1	2337.144	-54.89	2	42.37	Average	54	Pass
b	2412	Ant1	2390	-48.01	2	49.25	Peak	74	Pass
b	2412	Ant1	2390	-56.31	2	40.95	Average	54	Pass
b	2462	Ant1	2483.5	-45.17	2	52.09	Peak	74	52.09
b	2462	Ant1	2483.5	-55.67	2	41.59	Average	54	Pass
b	2462	Ant1	2498.675	-44.08	2	53.18	Peak	74	Pass
b	2462	Ant1	2487.863	-55.22	2	42.04	Average	54	Pass
b	2462	Ant1	2500	-47.11	2	50.15	Peak	74	Pass
b	2462	Ant1	2500	-56.47	2	40.79	Average	54	Pass
g	2412	Ant1	2310	-48.69	2	48.57	Peak	74	Pass
g	2412	Ant1	2310	-56.06	2	41.2	Average	54	Pass
g	2412	Ant1	2338.314	-43.52	2	53.74	Peak	74	Pass
g	2412	Ant1	2338.431	-53.33	2	43.93	Average	54	Pass
g	2412	Ant1	2390	-48.79	2	49.25	Peak	74	Pass
g	2412	Ant1	2390	-55.94	2	41.32	Average	54	Pass
g	2462	Ant1	2483.5	-44.45	2	52.81	Peak	74	Pass
g	2462	Ant1	2483.5	-55.01	2	42.25	Average	54	Pass
g	2462	Ant1	2498.675	-44.45	2	52.81	Peak	74	Pass
g	2462	Ant1	2498.94	-54.75	2	42.51	Average	54	Pass
g	2462	Ant1	2500	-46.62	2	50.15	Peak	74	Pass
g	2462	Ant1	2500	-55.2	2	42.06	Average	54	Pass
n20	2412	Ant1	2310	-47.18	2	50.08	Peak	74	Pass
n20	2412	Ant1	2310	-55.34	2	41.92	Average	54	Pass
n20	2412	Ant1	2338.548	-43.76	2	53.5	Peak	74	Pass
n20	2412	Ant1	2341.122	-53.4	2	43.86	Average	54	Pass
n20	2412	Ant1	2390	-48.44	2	48.82	Peak	74	Pass
n20	2412	Ant1	2390	-55.87	2	41.39	Average	54	Pass
n20	2462	Ant1	2483.5	-46.67	2	50.59	Peak	74	Pass
n20	2462	Ant1	2483.5	-55.15	2	42.11	Average	54	Pass
n20	2462	Ant1	2484.842	-45.69	2	51.57	Peak	74	Pass
n20	2462	Ant1	2485.213	-54.43	2	42.83	Average	54	Pass

n20	2462	Ant1	2500	-46.81	2	50.45	Peak	74	Pass
n20	2462	Ant1	2500	-54.5	2	42.76	Average	54	Pass
n40	2422	Ant1	2310	-47.99	2	49.27	Peak	74	Pass
n40	2422	Ant1	2310	-55.25	2	42.01	Average	54	Pass
n40	2422	Ant1	2342.802	-43.44	2	53.82	Peak	74	Pass
n40	2422	Ant1	2342.234	-53.04	2	44.22	Average	54	Pass
n40	2422	Ant1	2390	-48.81	2	48.45	Peak	74	Pass
n40	2422	Ant1	2390	-55.9	2	41.36	Average	54	Pass
n40	2452	Ant1	2483.5	-47.34	2	49.92	Peak	74	Pass
n40	2452	Ant1	2483.5	-55.13	2	42.13	Average	54	Pass
n40	2452	Ant1	2485.492	-44.71	2	52.55	Peak	74	Pass
n40	2452	Ant1	2493.058	-54.65	2	42.61	Average	54	Pass
n40	2452	Ant1	2500	-47.11	2	50.15	Peak	74	Pass
n40	2452	Ant1	2500	-55.59	2	41.67	Average	54	Pass

7.2 Test Graphs

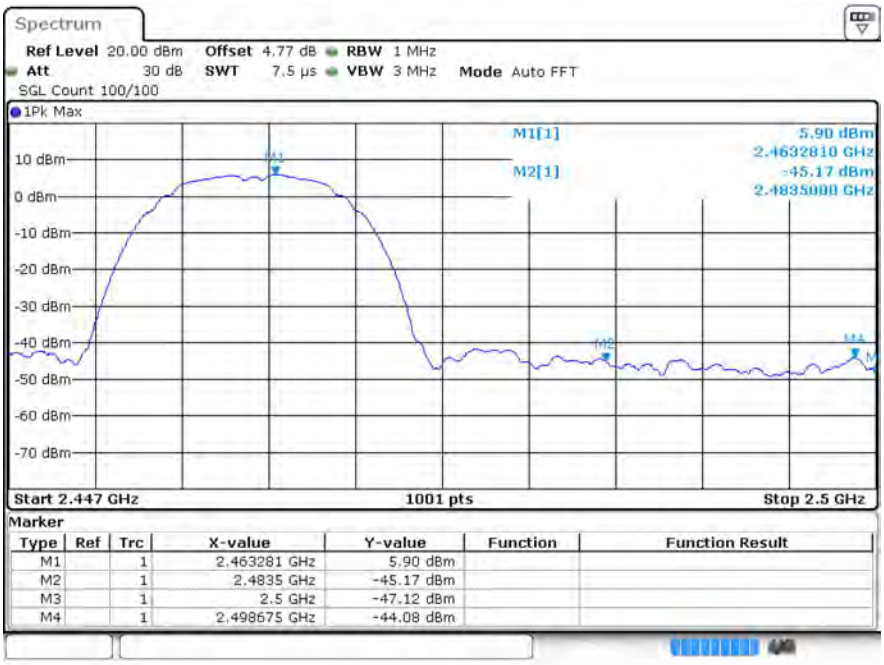
Test Graphs

b 2412MHz Ant1 Peak

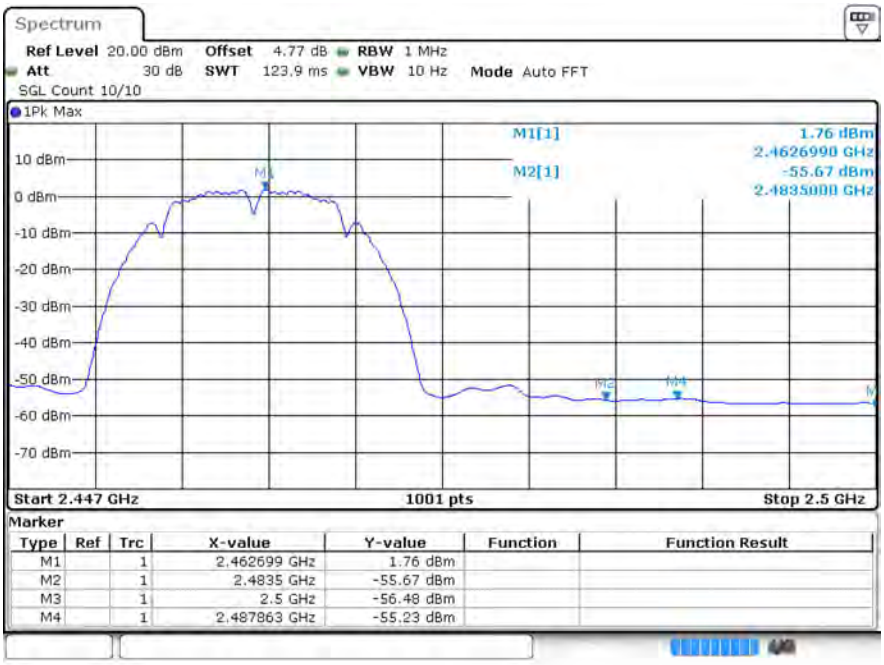


b 2412MHz Ant1 Average

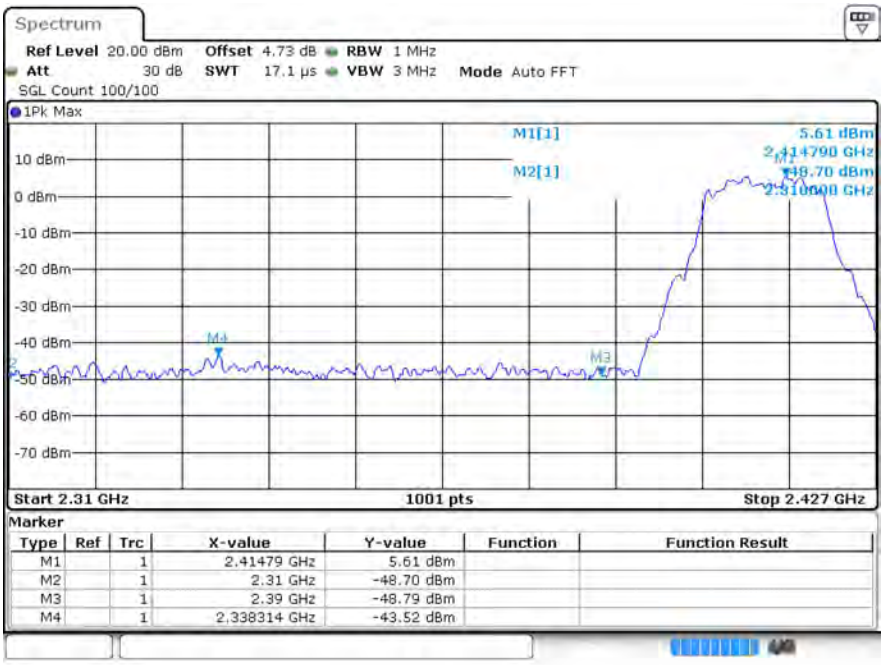
b 2462MHz Ant1 Peak



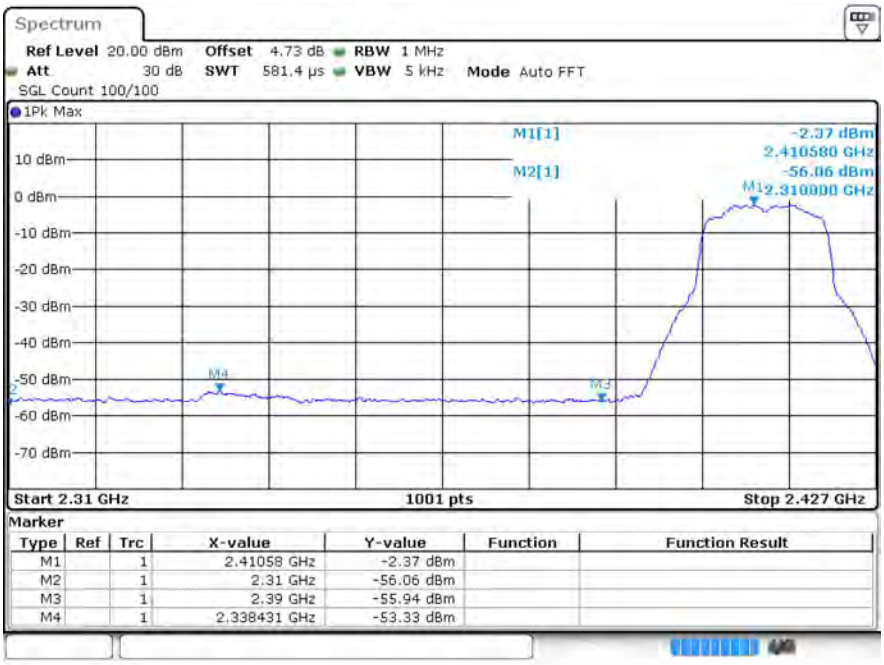
b 2462MHz Ant1 Average



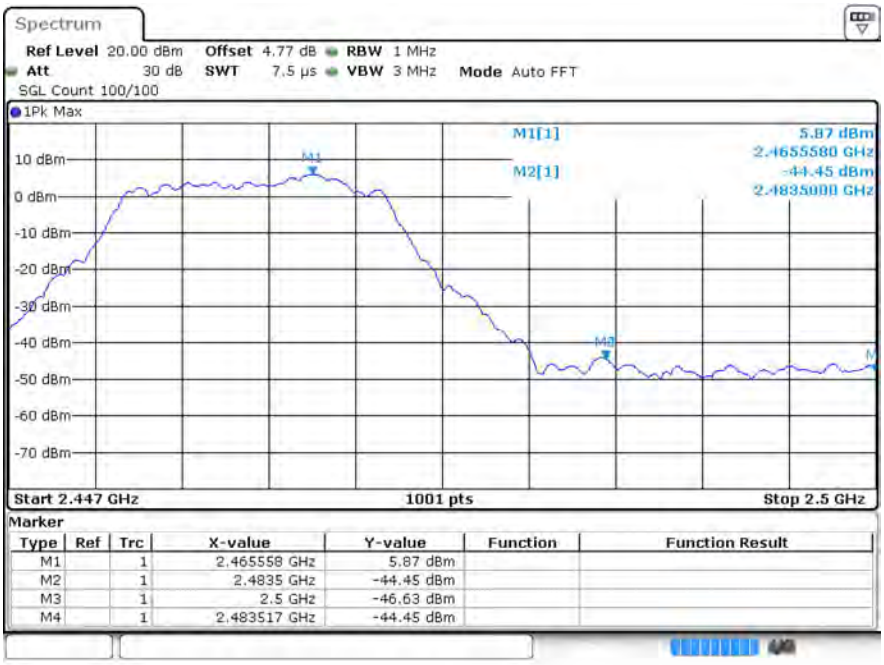
g 2412MHz Ant1 Peak



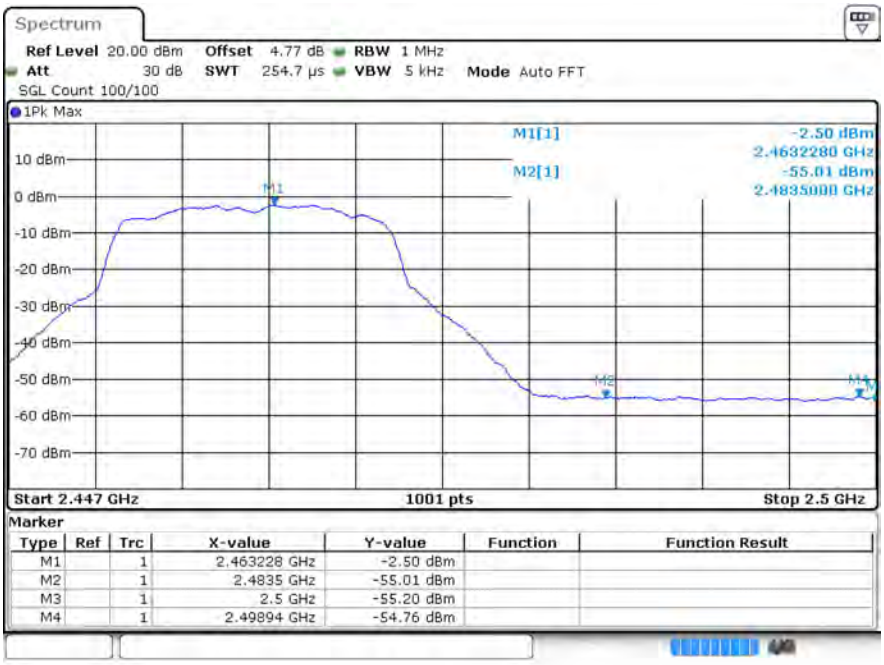
g 2412MHz Ant1 Average



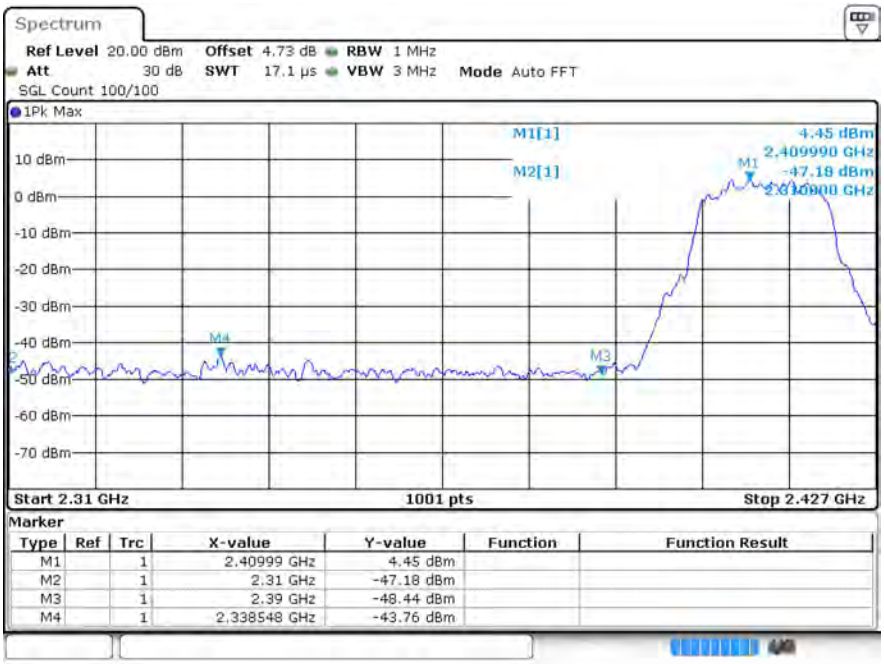
g 2462MHz Ant1 Peak



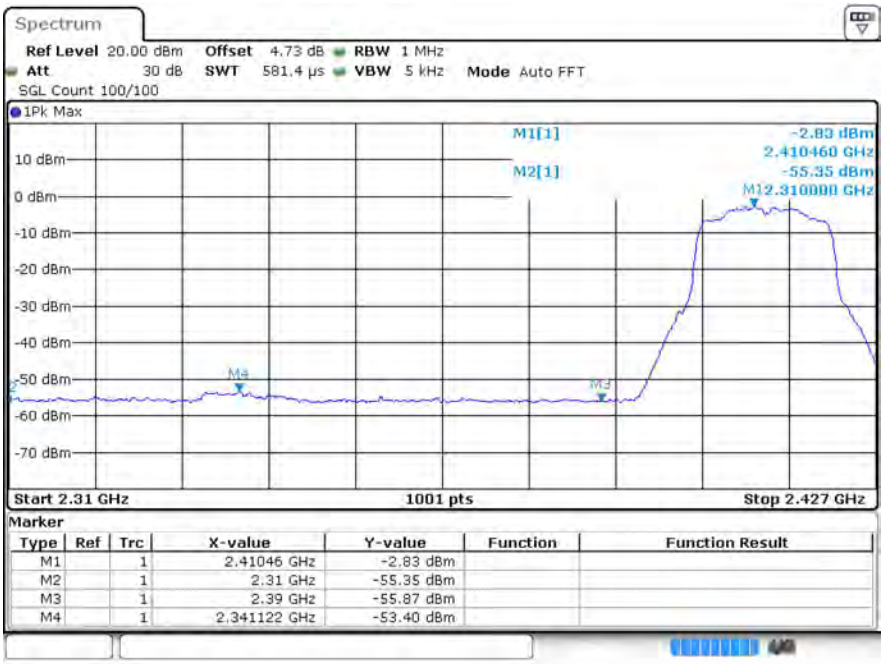
g 2462MHz Ant1 Average



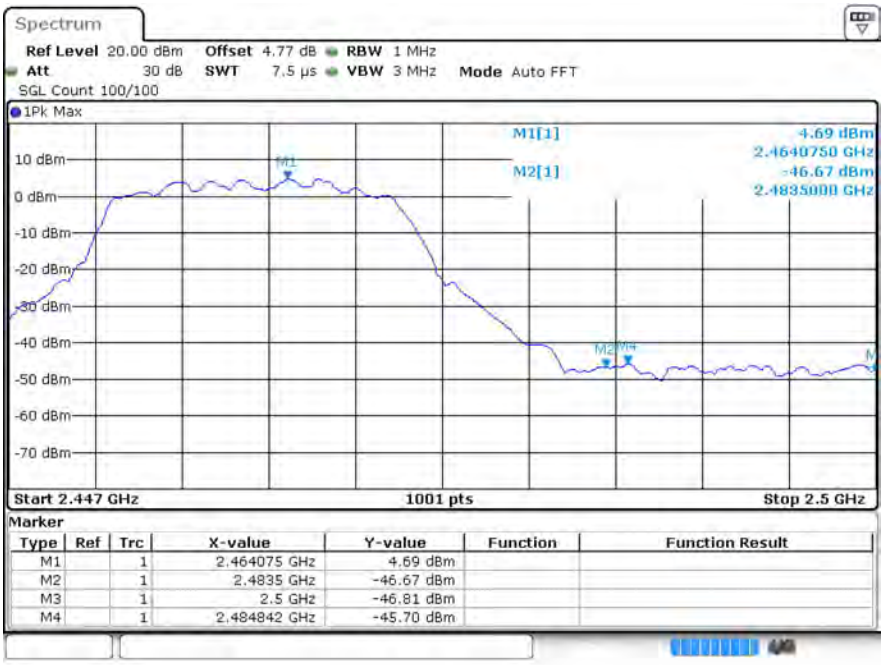
n20 2412MHz Ant1 Peak



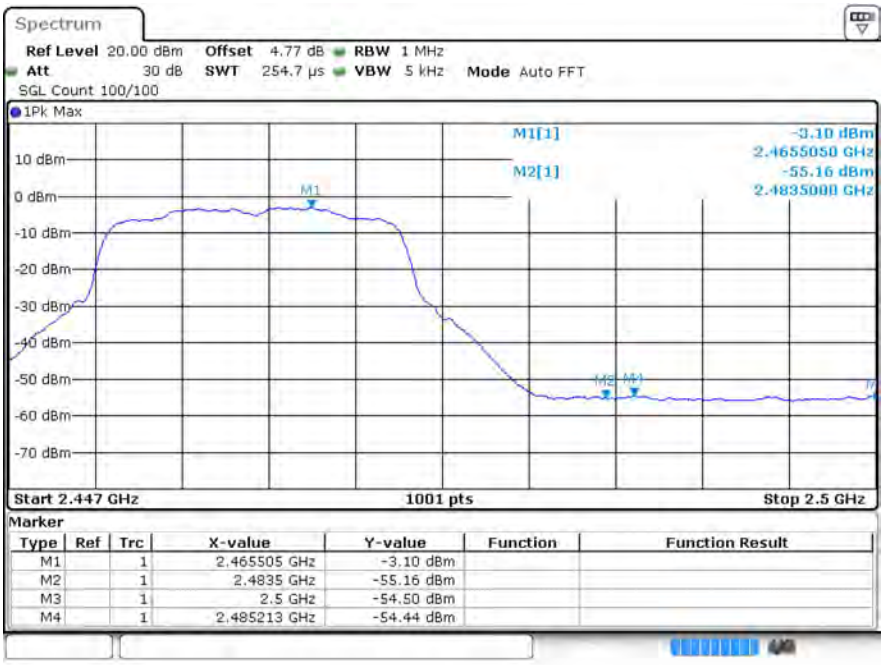
n20 2412MHz Ant1 Average



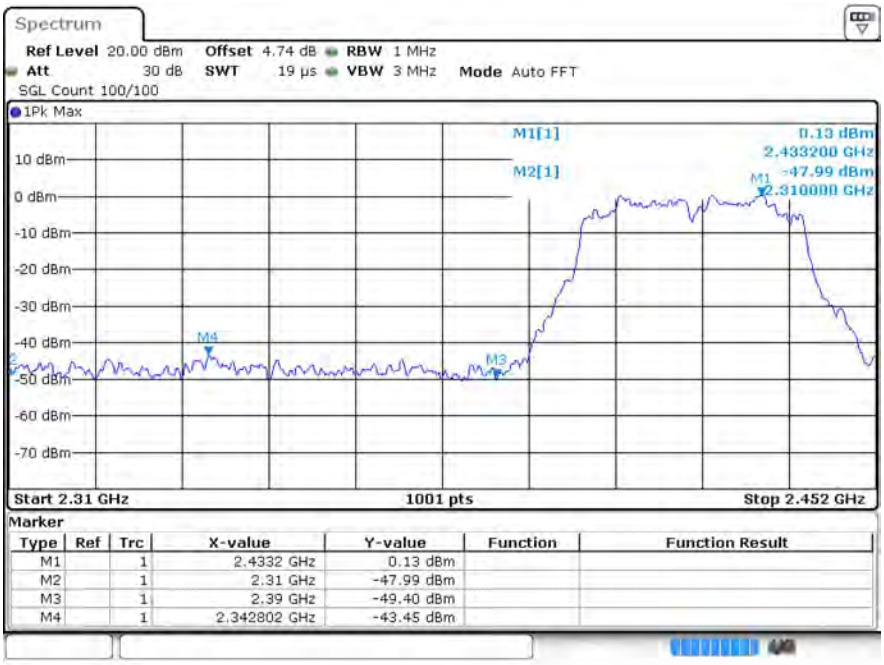
n20 2462MHz Ant1 Peak



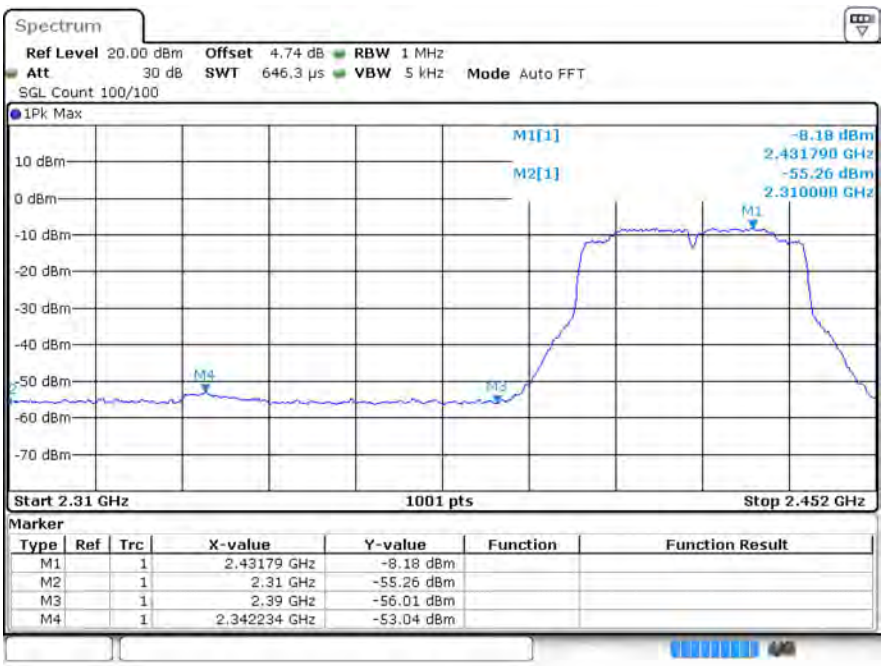
n20 2462MHz Ant1 Average



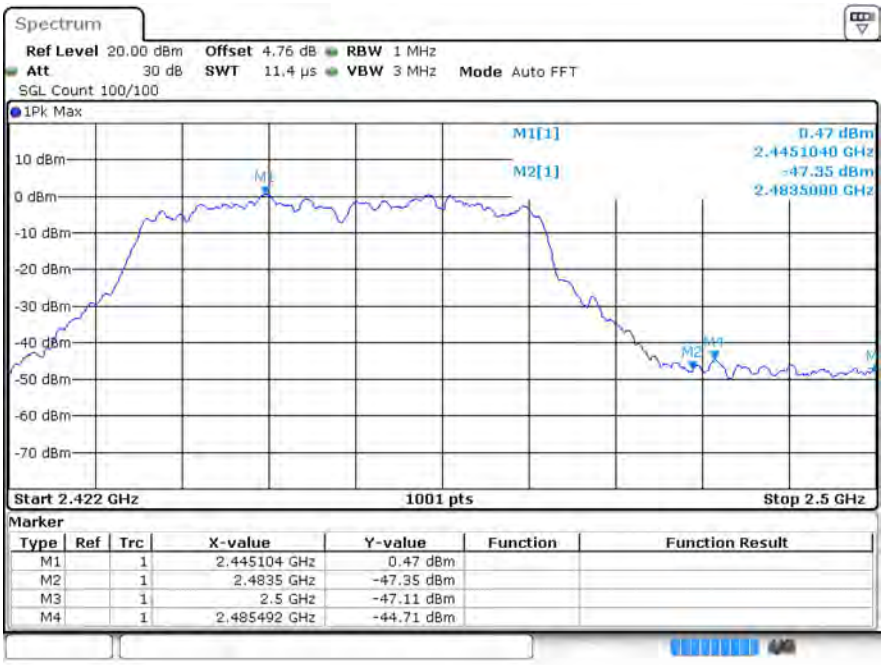
n40 2422MHz Ant1 Peak



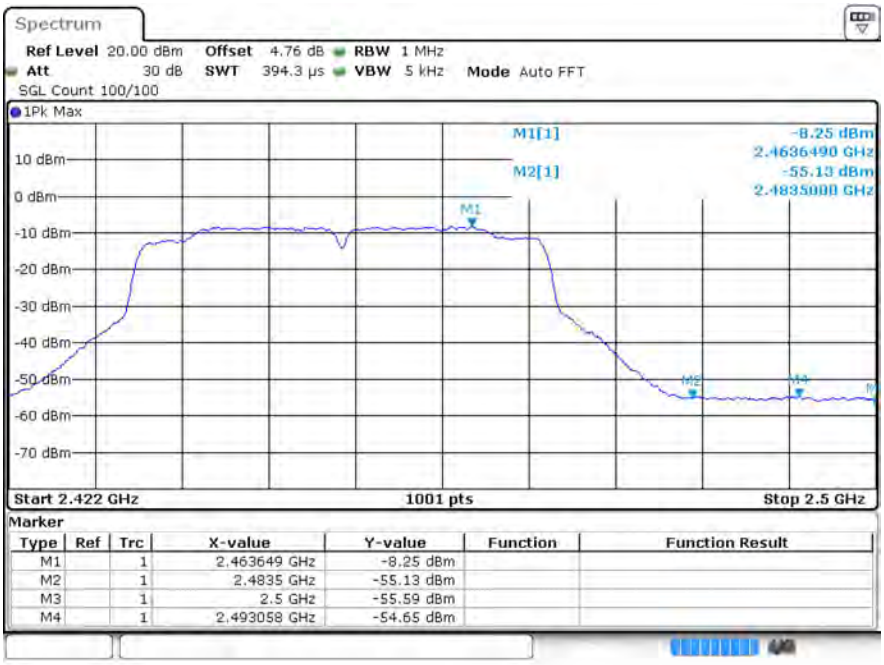
n40 2422MHz Ant1 Average



n40 2452MHz Ant1 Peak



n40 2452MHz Ant1 Average



---The End---