Appendix C

RF Test Data for 2.4GWIFI(Conducted Measurement)

Product Name: AX3000 Dual Band XPON ONT

Trade Mark: N/A

Test Model: X302

Environmental Conditions

Temperature:	25.6° C
Relative Humidity:	52.3%
ATM Pressure:	100.0 kPa
Test Engineer:	Emiya lin
Supervised by:	Simba Haung

Contents

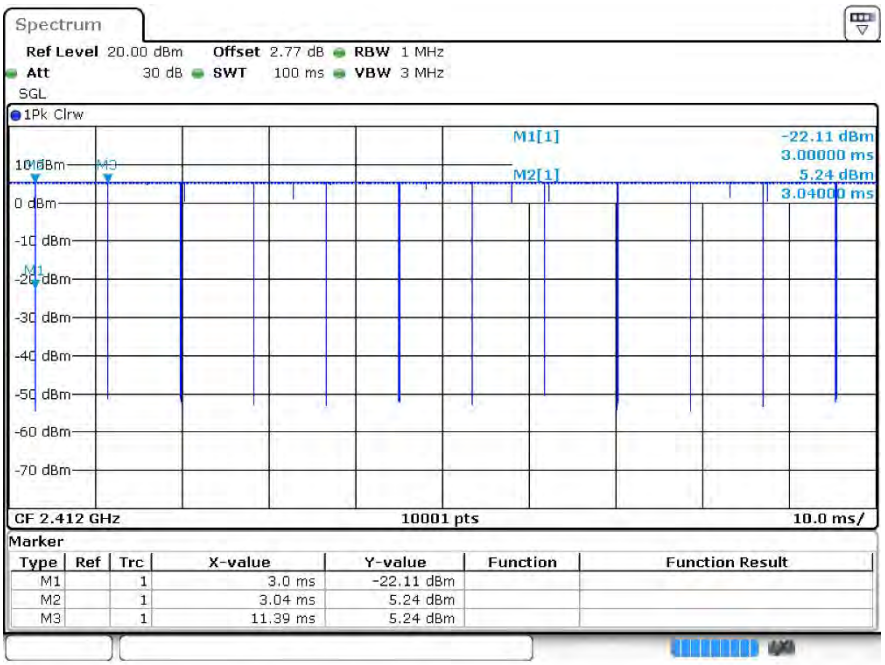
1 Duty Cycle

1.1 Test Result

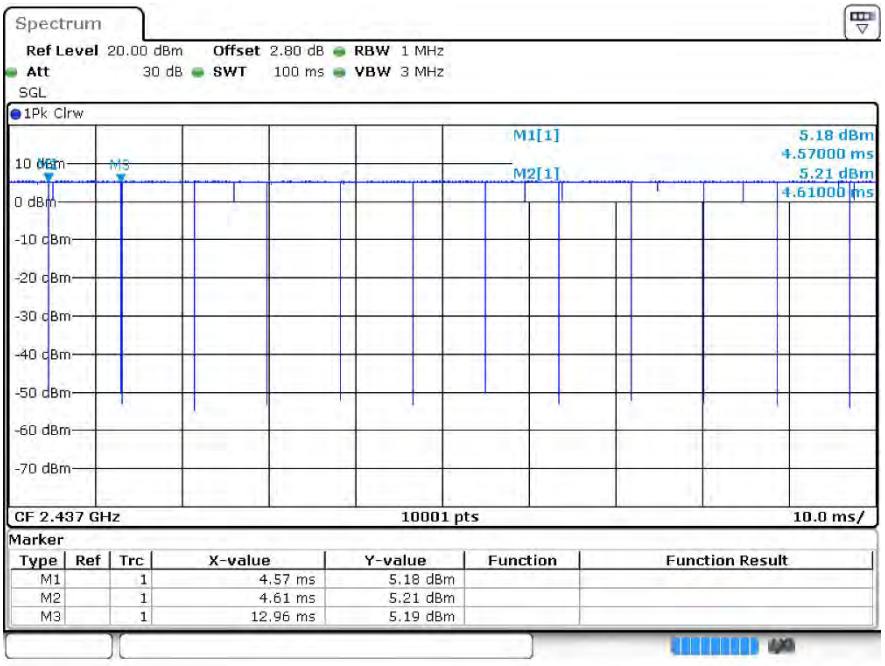
Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	Correction Factor	1/T (kHz)
b	2412	Ant0	99.61	0.02	0.12
b	2437	Ant0	99.59	0.02	0.12
b	2462	Ant0	99.58	0.02	0.12
g	2412	Ant0	99.61	0.02	0.12
g	2437	Ant0	99.59	0.02	0.12
g	2462	Ant0	99.58	0.02	0.12
n20	2412	Ant0	92.95	0.32	2.22
n20	2437	Ant0	93.02	0.31	2.22
n20	2462	Ant0	92.89	0.32	2.22
n40	2422	Ant0	92.94	0.32	2.22
n40	2437	Ant0	92.92	0.32	2.22
n40	2452	Ant0	92.91	0.32	2.27
ax20	2412	Ant0	87	0.6	4.35
ax20	2437	Ant0	87.04	0.6	4.55
ax20	2462	Ant0	87.03	0.6	4.35
ax40	2422	Ant0	92.92	0.32	2.27
ax40	2437	Ant0	92.9	0.32	2.22
ax40	2452	Ant0	92.9	0.32	2.27
b	2412	Ant1	99.6	0.02	0.12
b	2437	Ant1	99.6	0.02	0.12
b	2462	Ant1	99.59	0.02	0.12
g	2412	Ant1	99.6	0.02	0.12
g	2437	Ant1	99.6	0.02	0.12
g	2462	Ant1	99.59	0.02	0.12
n20	2412	Ant1	92.86	0.32	2.22
n20	2437	Ant1	93.01	0.31	2.22
n20	2462	Ant1	93	0.32	2.27
n40	2422	Ant1	92.93	0.32	2.27
n40	2437	Ant1	92.95	0.32	2.22
n40	2452	Ant1	92.93	0.32	2.27
ax20	2412	Ant1	87.06	0.6	4.35
ax20	2437	Ant1	87.03	0.6	4.35
ax20	2462	Ant1	87.06	0.6	4.55
ax40	2422	Ant1	92.94	0.32	2.22
ax40	2437	Ant1	92.92	0.32	2.22
ax40	2452	Ant1	92.93	0.32	2.27

1.2 Test Graphs

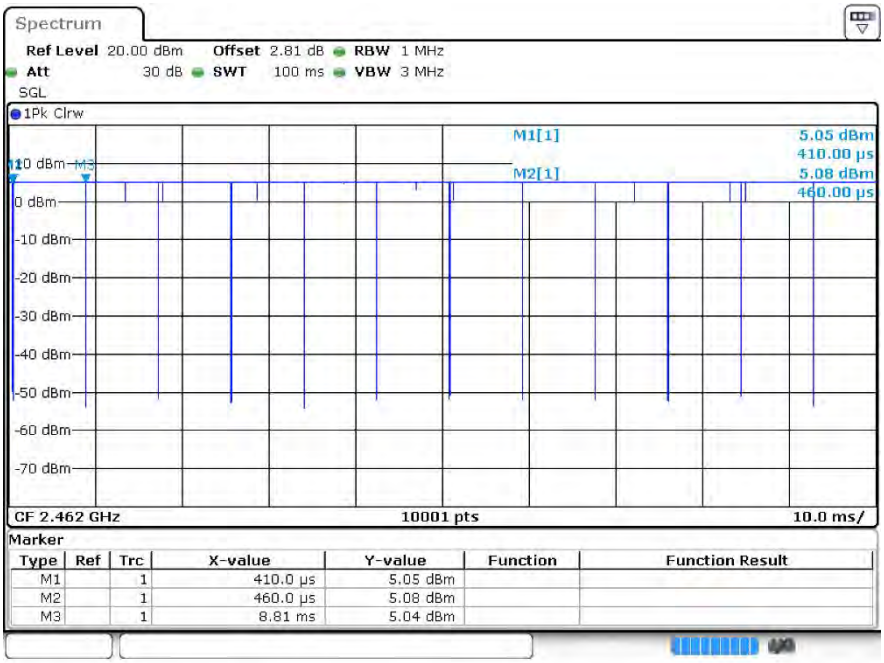
Test Graphs
Duty Cycleb 2412MHz Ant0



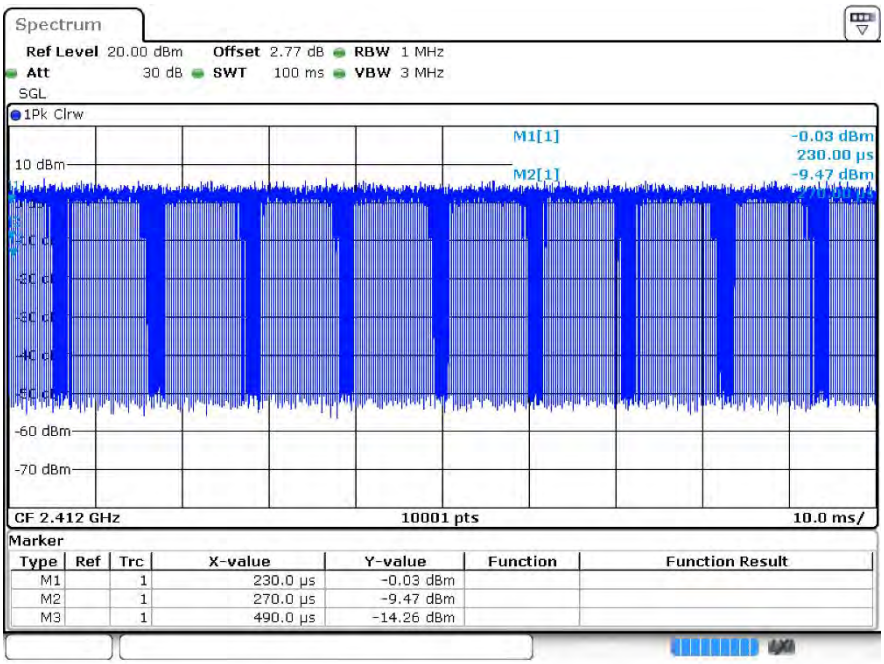
Duty Cycleb 2437MHz Ant0



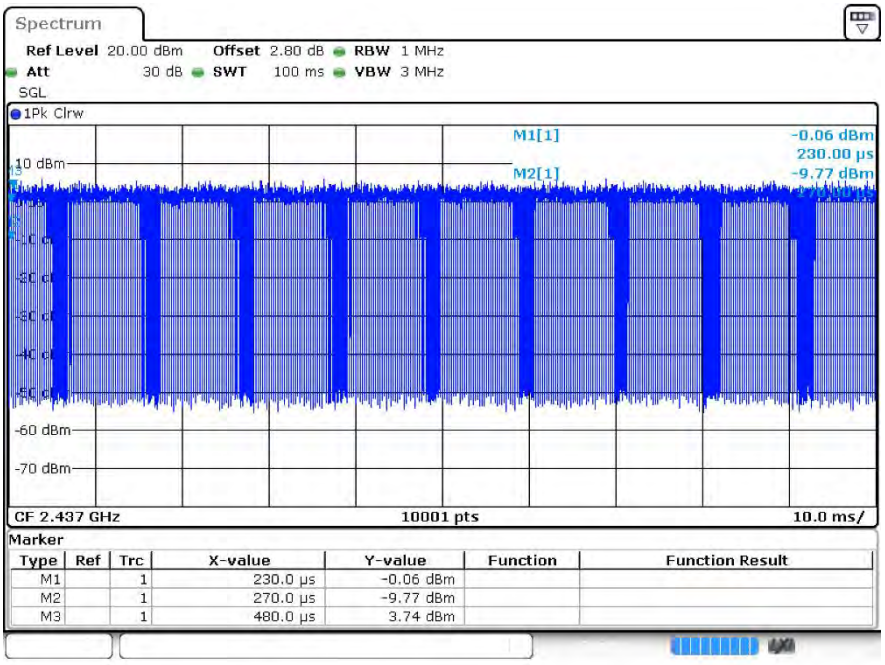
Duty Cycleb 2462MHz Ant0



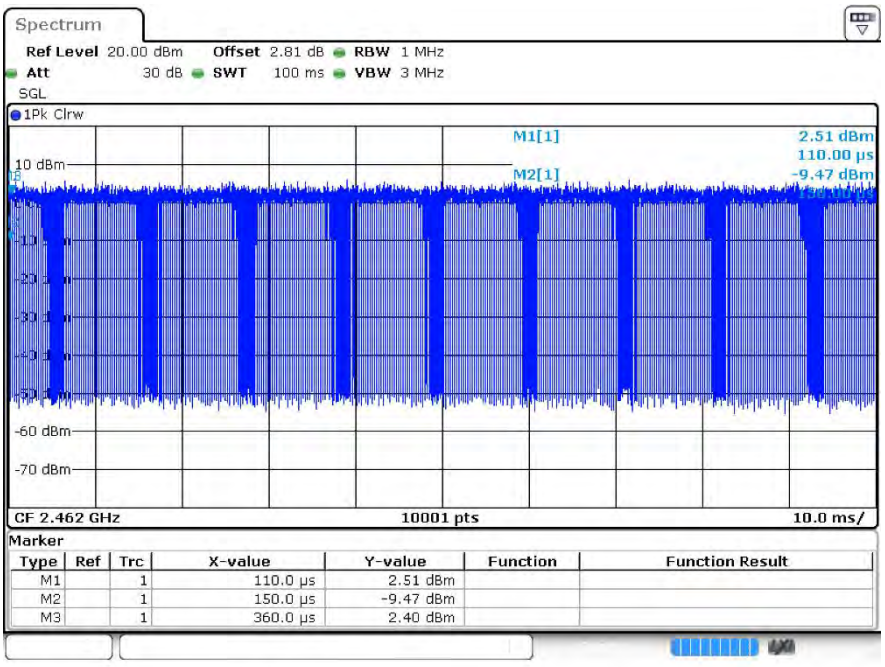
Duty Cycleg 2412MHz Ant0



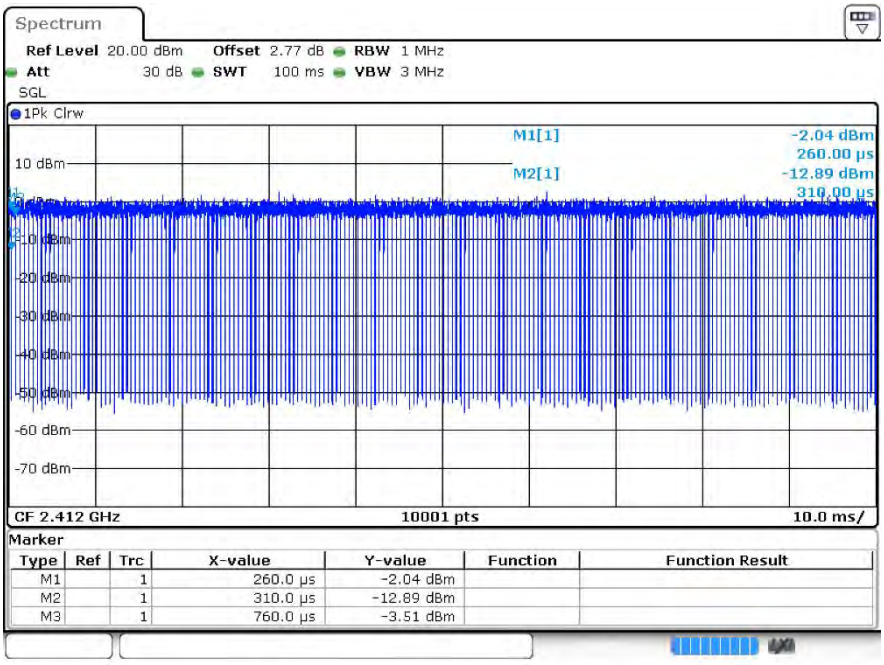
Duty Cycleg 2437MHz Ant0



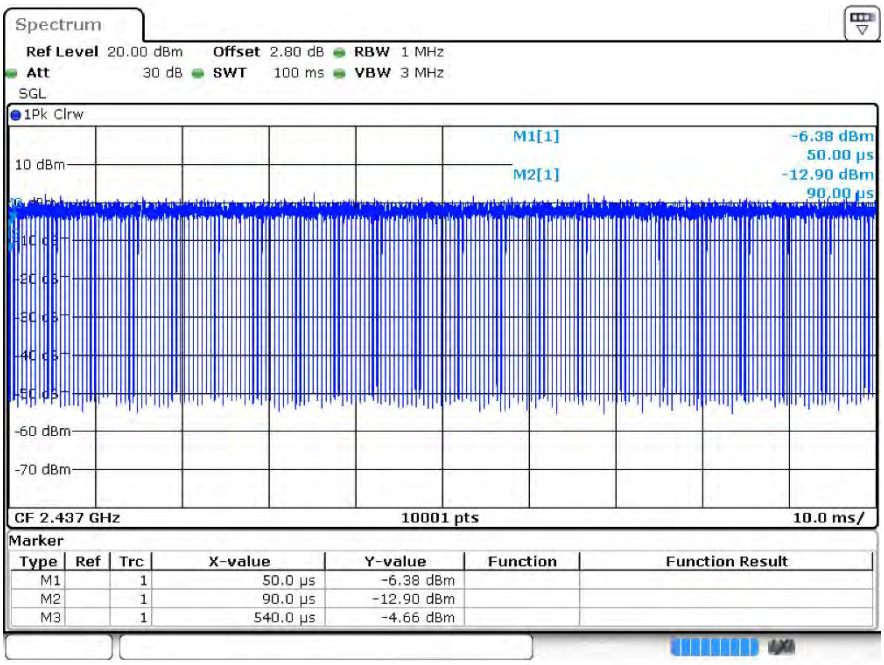
Duty Cycleg 2462MHz Ant0



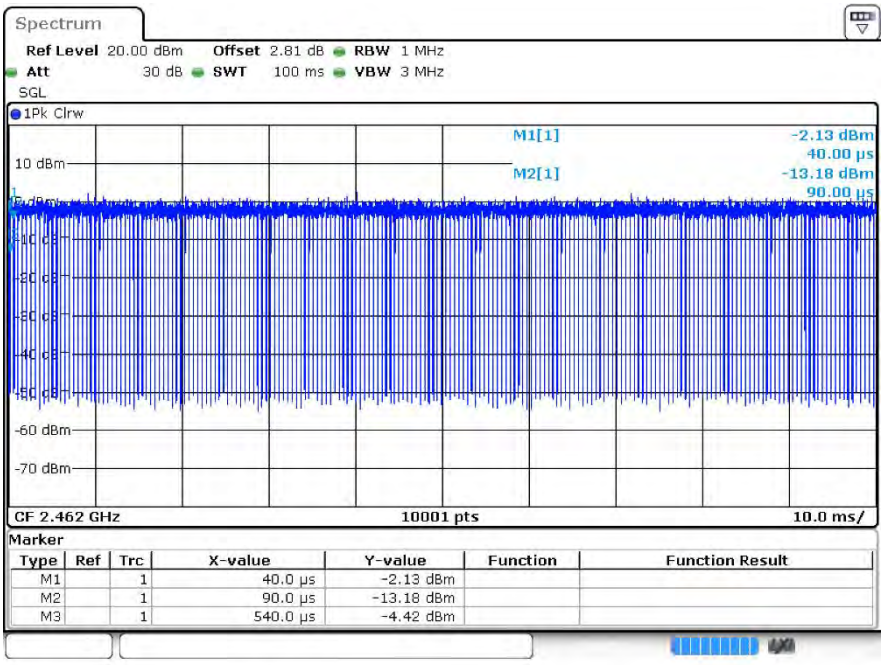
Duty Cyclen20 2412MHz Ant0



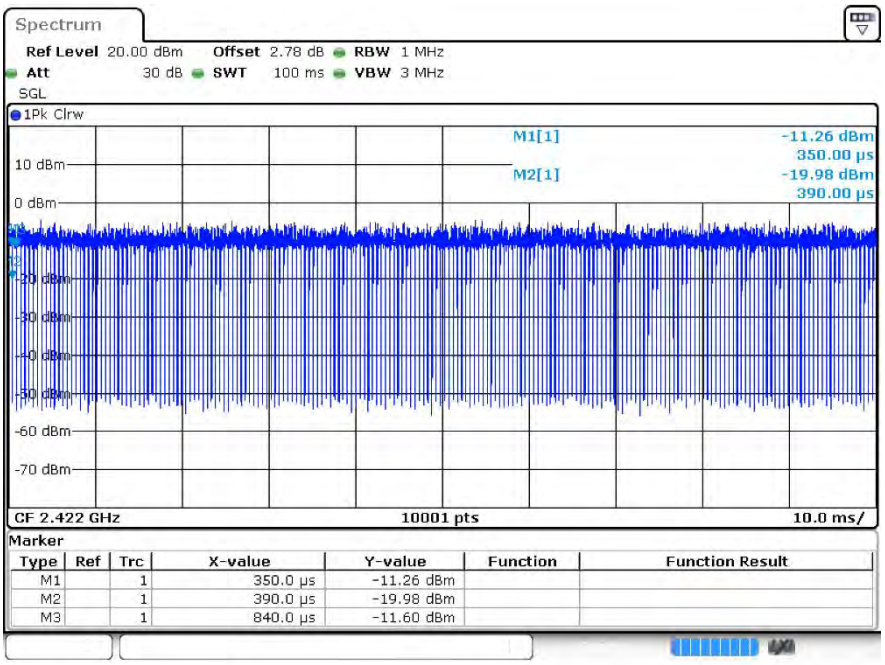
Duty Cyclen20 2437MHz Ant0



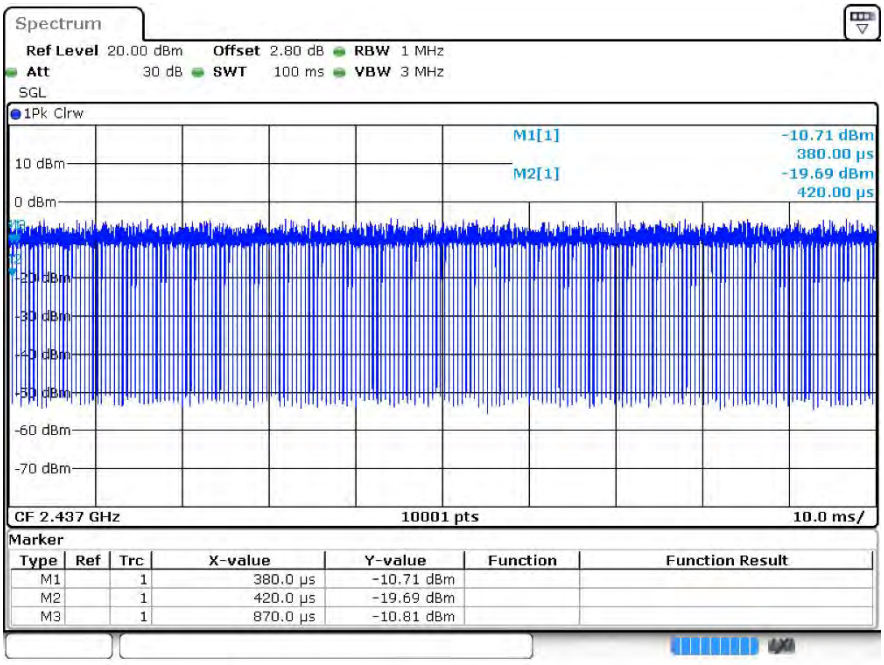
Duty Cyclen20 2462MHz Ant0



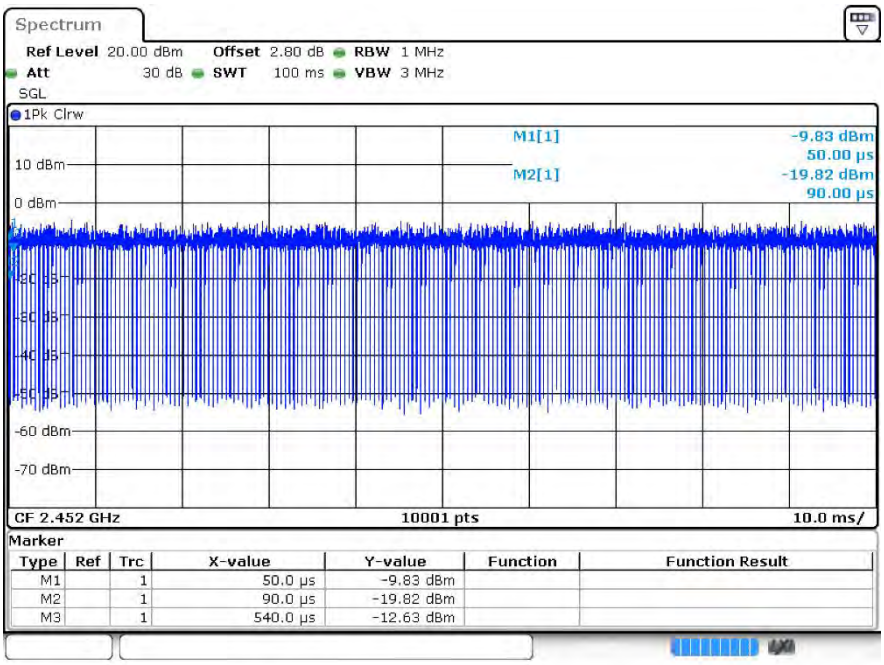
Duty Cyclen40 2422MHz Ant0



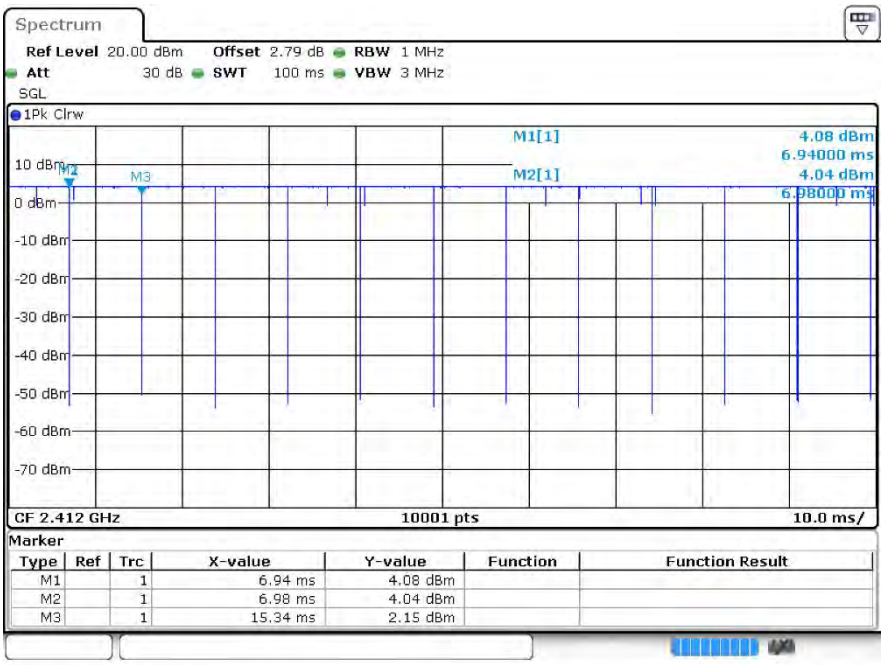
Duty Cyclen40 2437MHz Ant0



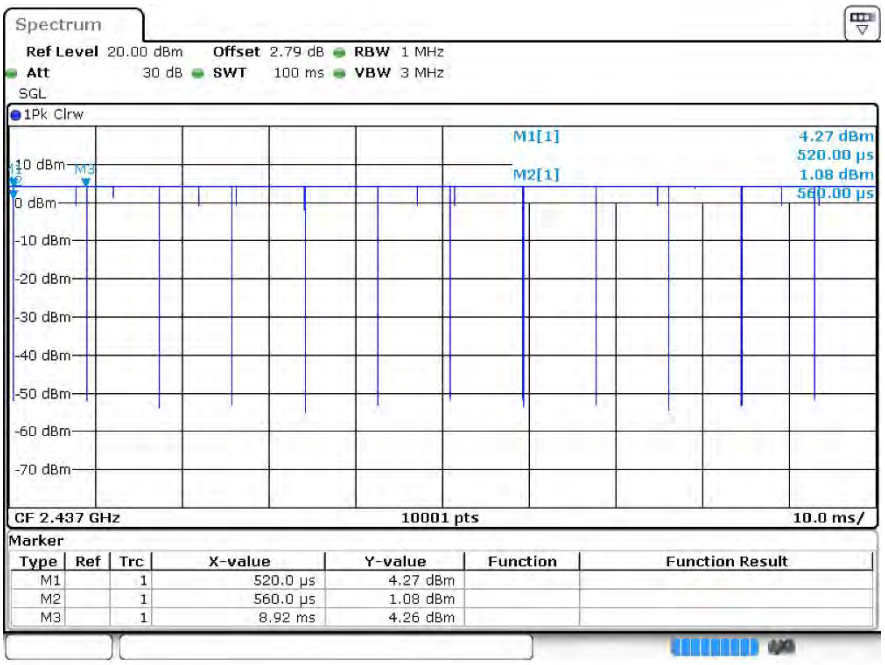
Duty Cyclen40 2452MHz Ant0



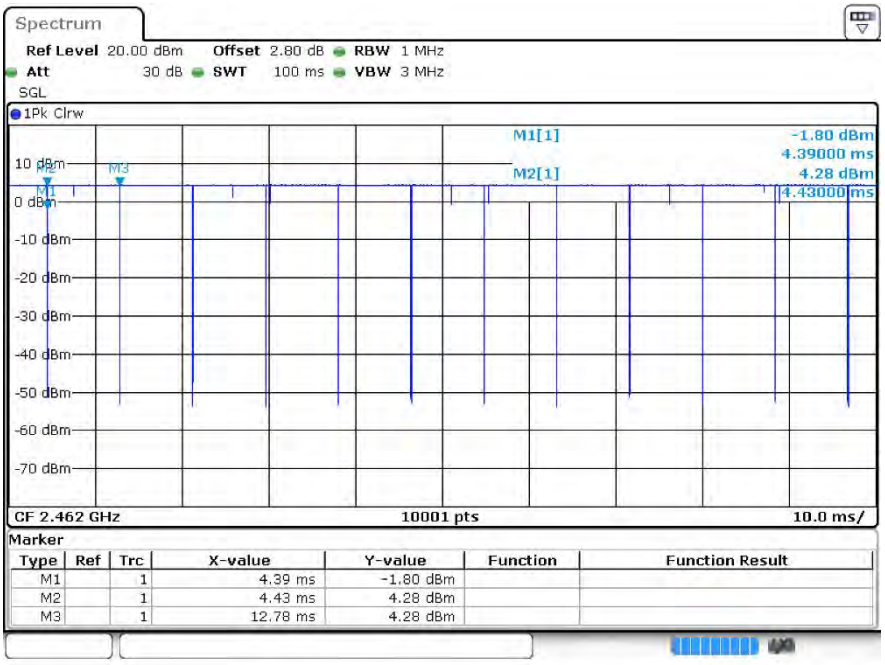
Test Graphs
Duty Cycleb 2412MHz Ant1



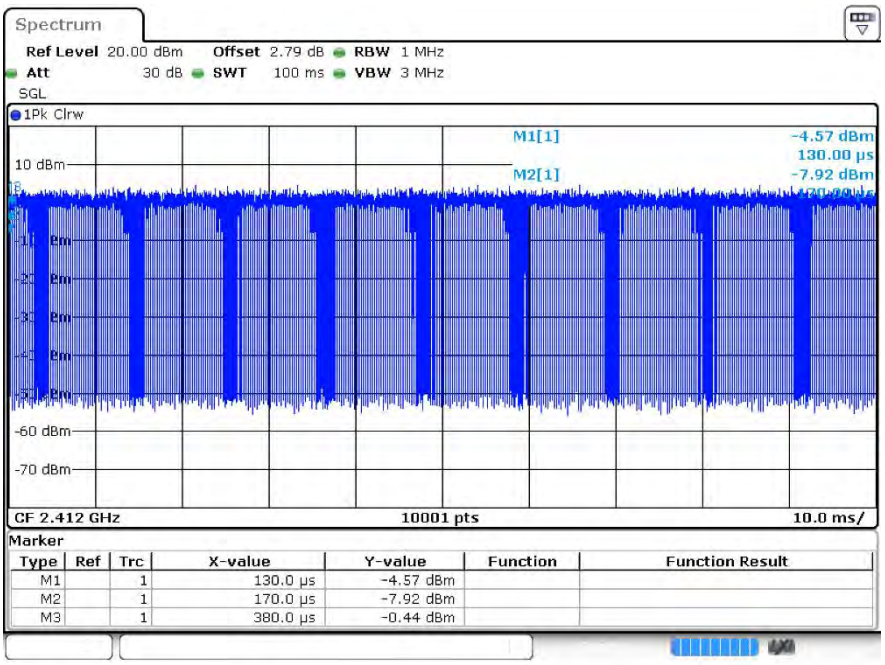
Duty Cycleb 2437MHz Ant1



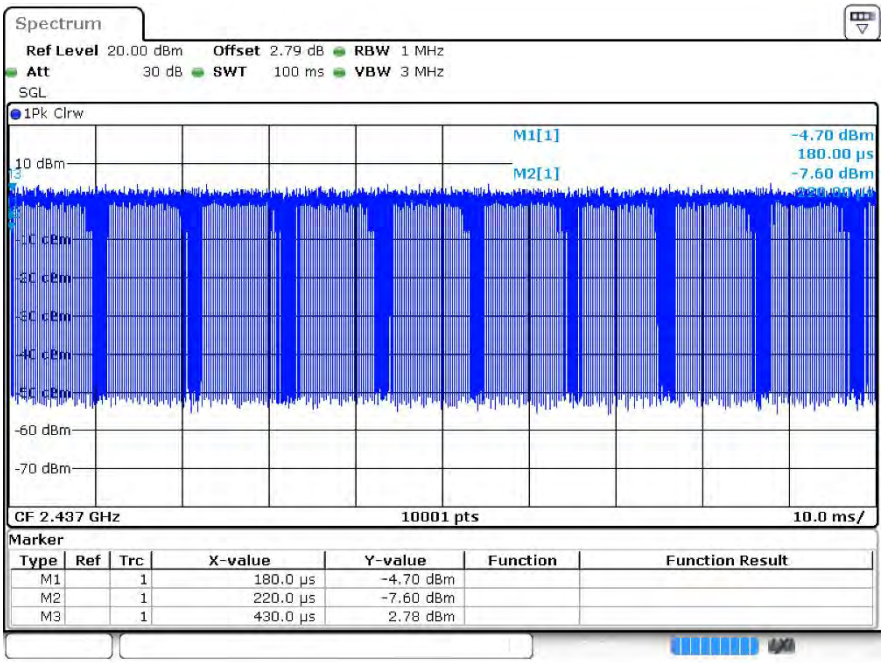
Duty Cycleb 2462MHz Ant1



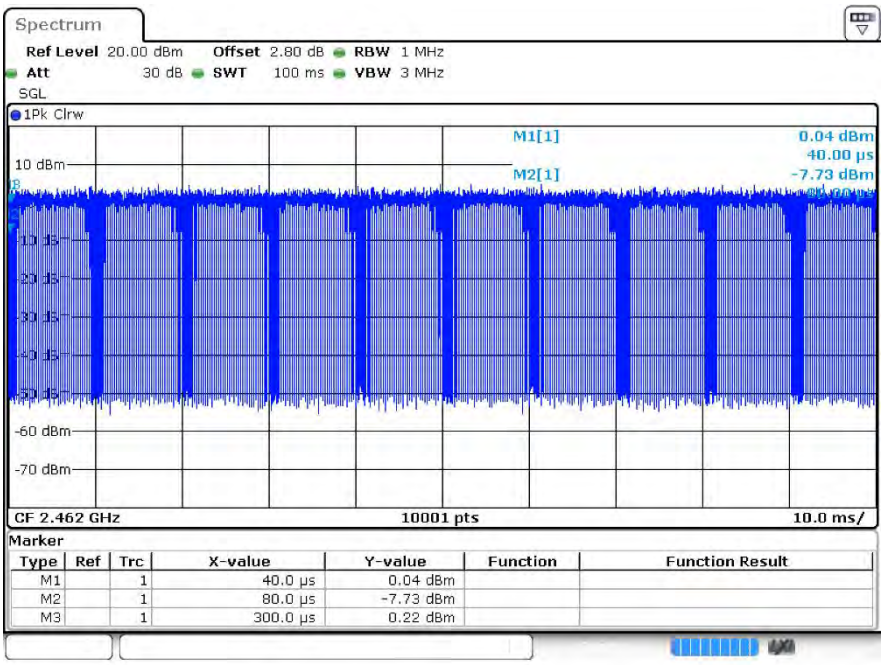
Duty Cycleg 2412MHz Ant1



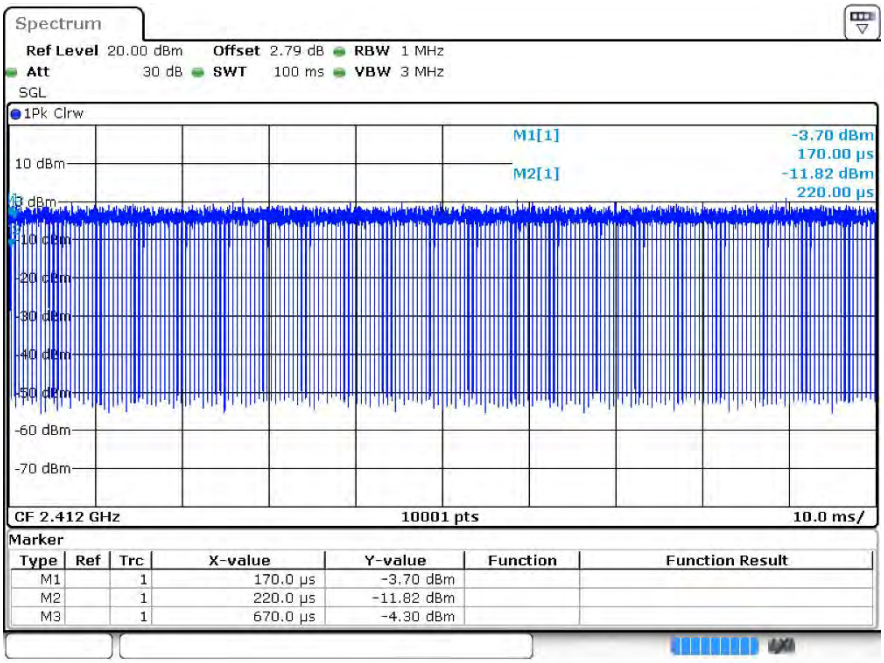
Duty Cycleg 2437MHz Ant1



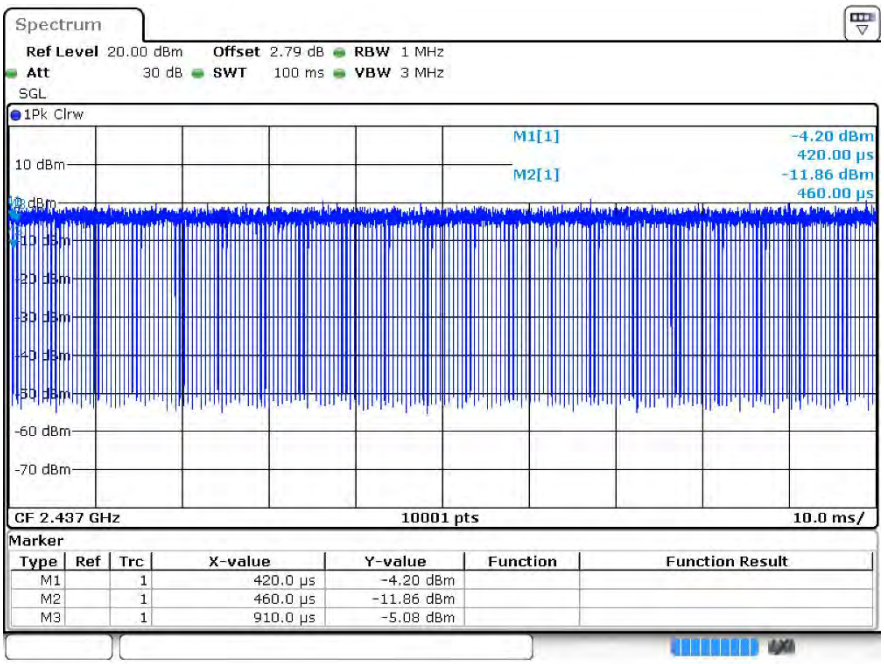
Duty Cycleg 2462MHz Ant1



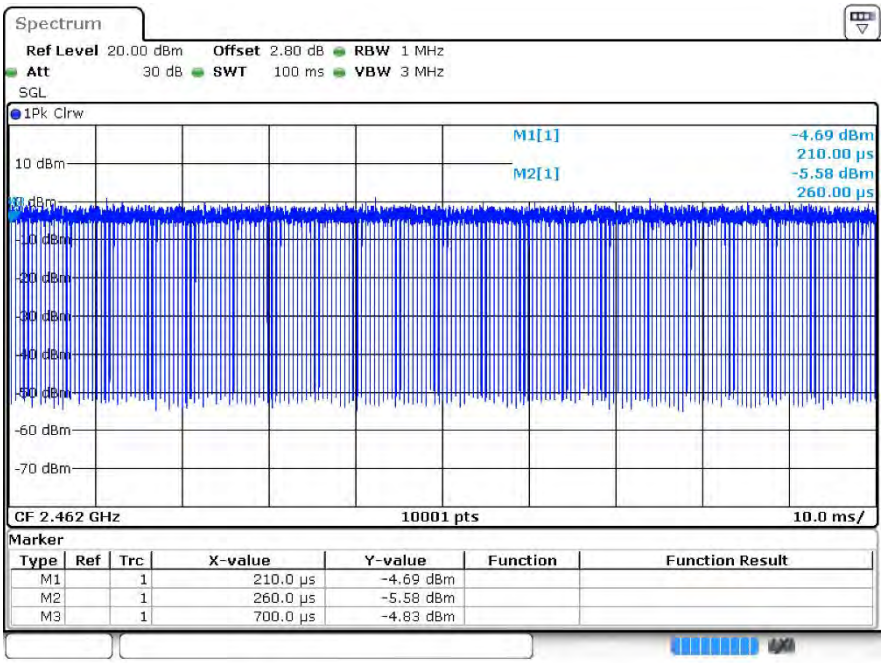
Duty Cyclen20 2412MHz Ant1



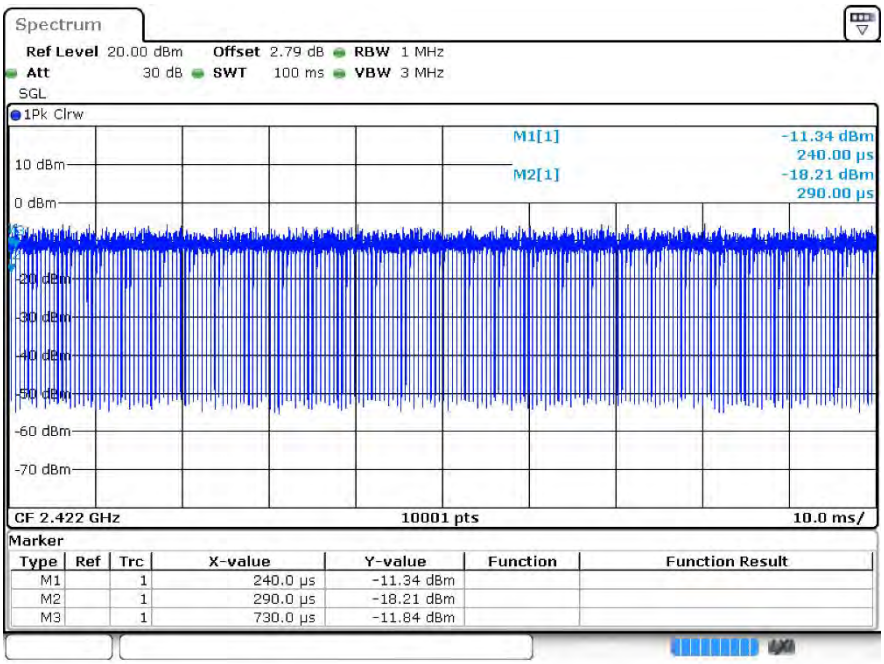
Duty Cyclen20 2437MHz Ant1



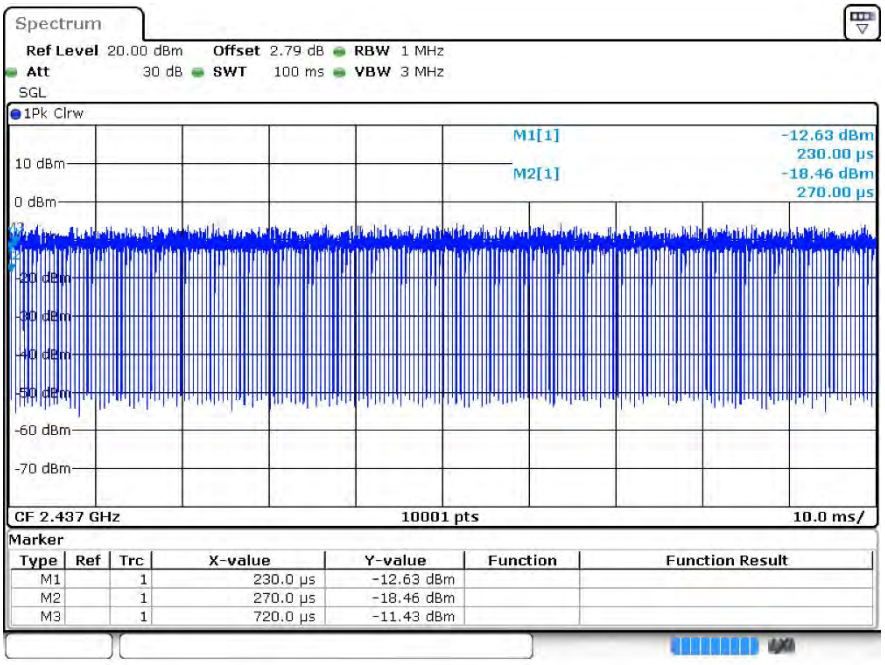
Duty Cyclen20 2462MHz Ant1



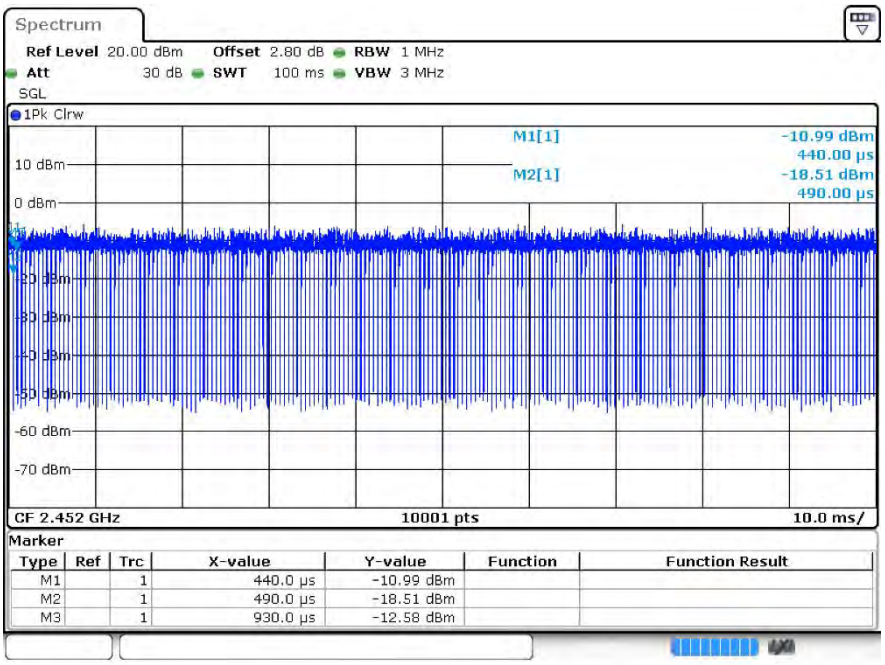
Duty Cyclen40 2422MHz Ant1



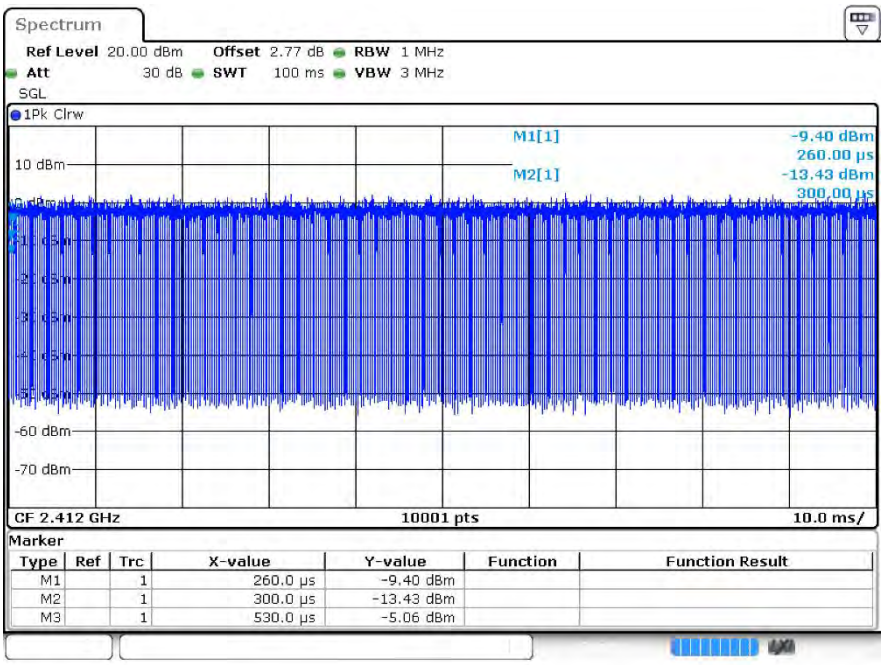
Duty Cyclen40 2437MHz Ant1



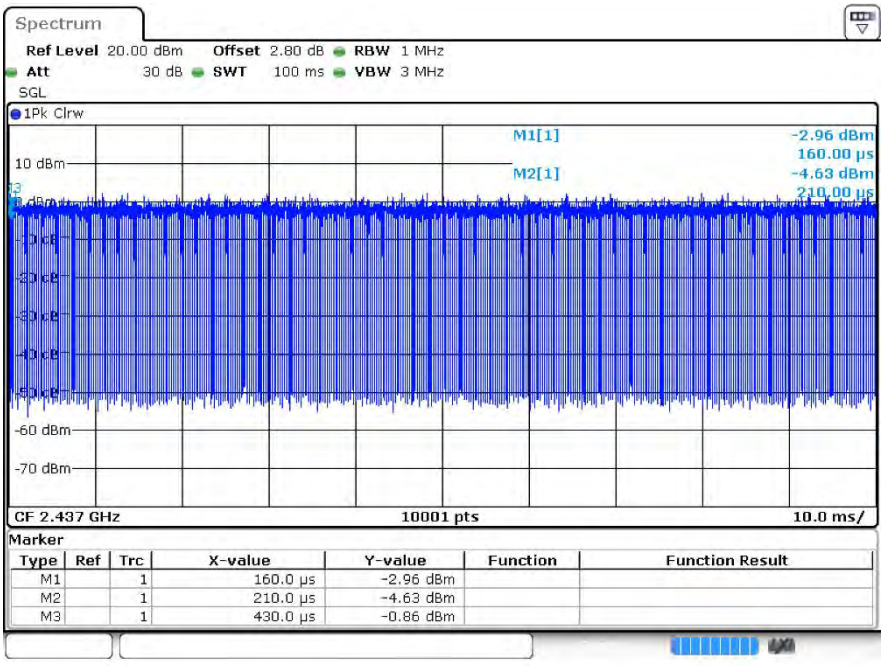
Duty Cyclen40 2452MHz Ant1



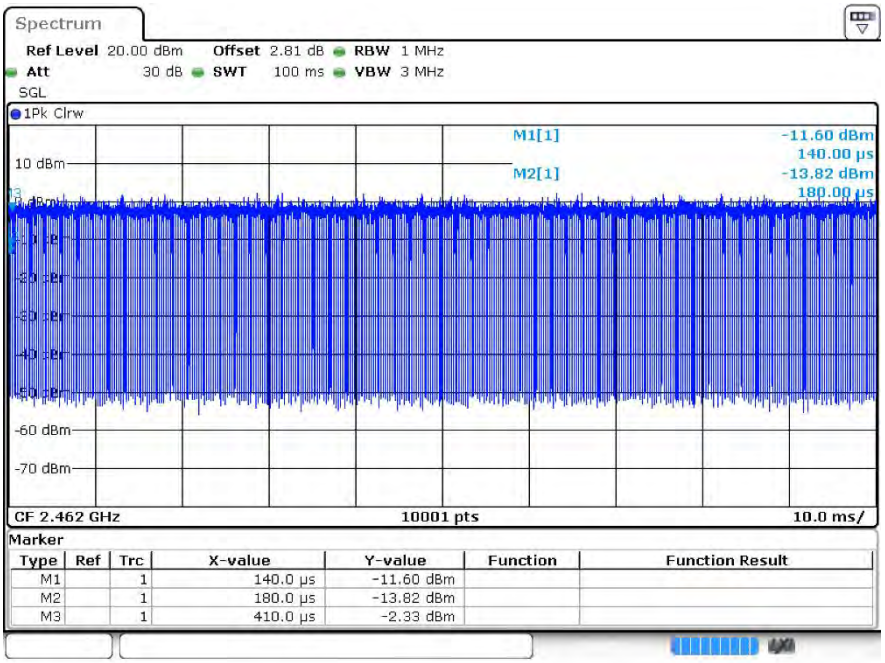
Duty Cycleax20 2412MHz Ant0



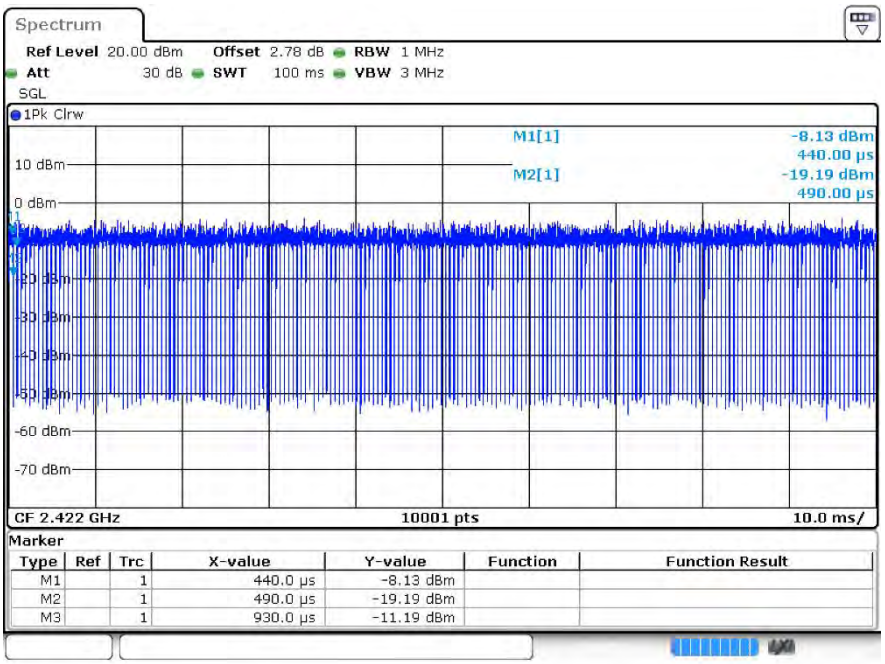
Duty Cycleax20 2437MHz Ant0



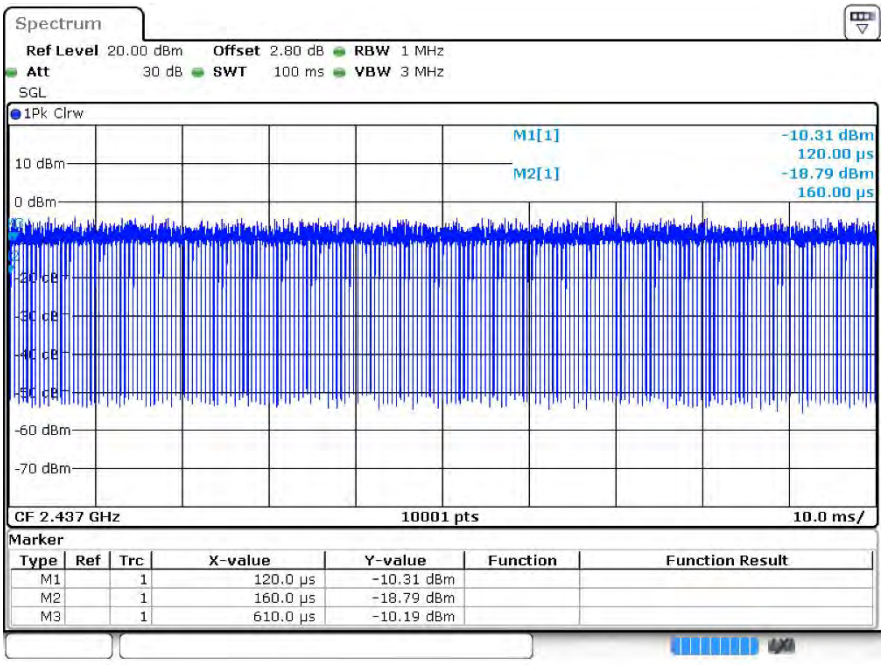
Duty Cycleax20 2462MHz Ant0



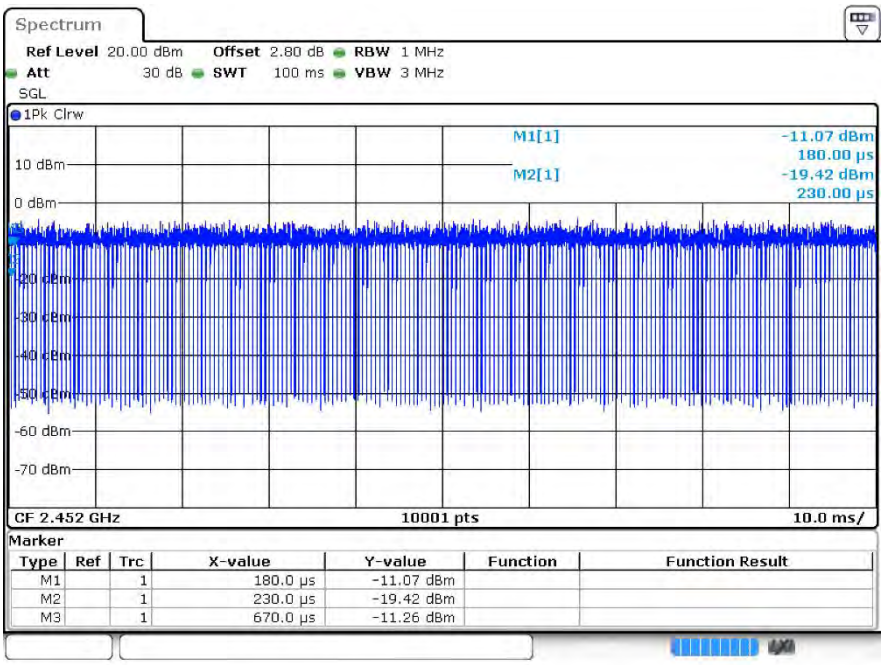
Duty Cycleax40 2422MHz Ant0



Duty Cycleax40 2437MHz Ant0



Duty Cycleax40 2452MHz Ant0



2 Maximum Conducted Output Power

2.1 Test Result

Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Limit (dBm)	Verdict
b	2412	Ant0	17.71	30	Pass
b	2437	Ant0	17.62	30	Pass
b	2462	Ant0	17.67	30	Pass
b	2412	Ant1	16.58	30	Pass
b	2437	Ant1	16.73	30	Pass
b	2462	Ant1	15.88	30	Pass
g	2412	Ant0	17.37	30	Pass
g	2437	Ant0	17.03	30	Pass
g	2462	Ant0	17.09	30	Pass
g	2412	Ant1	15.81	30	Pass
g	2437	Ant1	16.11	30	Pass
g	2462	Ant1	16.16	30	Pass
n20	2412	Ant0	14.55	30	Pass
n20	2437	Ant0	14.54	30	Pass
n20	2462	Ant0	14.45	30	Pass
n20	2412	Ant1	12.78	30	Pass
n20	2437	Ant1	12.9	30	Pass
n20	2462	Ant1	12.95	30	Pass
n20	2412	Sum	16.76	27.36	Pass
n20	2437	Sum	16.81	27.36	Pass
n20	2462	Sum	16.77	27.36	Pass
n40	2422	Ant0	13.74	30	Pass
n40	2437	Ant0	13.82	30	Pass
n40	2452	Ant0	13.71	30	Pass
n40	2422	Ant1	12.51	30	Pass
n40	2437	Ant1	12.62	30	Pass
n40	2452	Ant1	12.65	30	Pass
n40	2422	Sum	16.18	27.36	Pass
n40	2437	Sum	16.27	27.36	Pass
n40	2452	Sum	16.22	27.36	Pass
ax20	2412	Ant0	14.6	30	Pass
ax20	2437	Ant0	14.41	30	Pass
ax20	2462	Ant0	14.42	30	Pass
ax20	2412	Ant1	12.67	30	Pass

ax20	2437	Ant1	12.64	30	Pass
ax20	2462	Ant1	12.89	30	Pass
ax20	2412	Sum	16.75	27.36	Pass
ax20	2437	Sum	16.62	27.36	Pass
ax20	2462	Sum	16.73	27.36	Pass
ax40	2422	Ant0	14.16	30	Pass
ax40	2437	Ant0	14.34	30	Pass
ax40	2452	Ant0	14.13	30	Pass
ax40	2422	Ant1	12.47	30	Pass
ax40	2437	Ant1	12.55	30	Pass
ax40	2452	Ant1	12.54	30	Pass
ax40	2422	Sum	16.41	27.36	Pass
ax40	2437	Sum	16.55	27.36	Pass
ax40	2452	Sum	16.42	27.36	Pass

Note:

For MIMO mode:

Directional gain=10log[$(10^{G1/20}+10^{G2/20})^2/2$]dBi=8.64dBi

Limit =30-(8.64-6)=27.36dBm for POWER

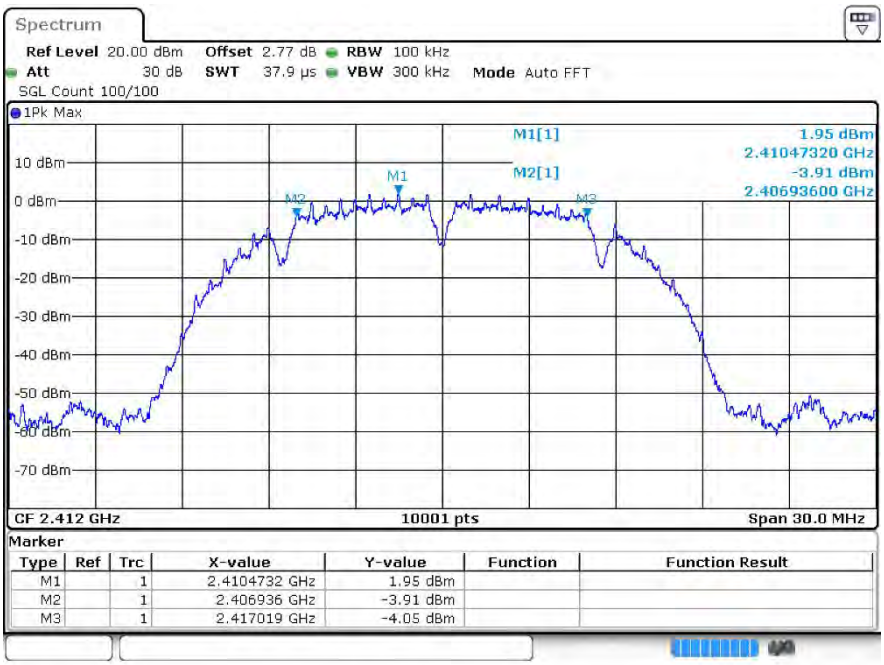
3 -6dB Bandwidth

3.1 Test Result

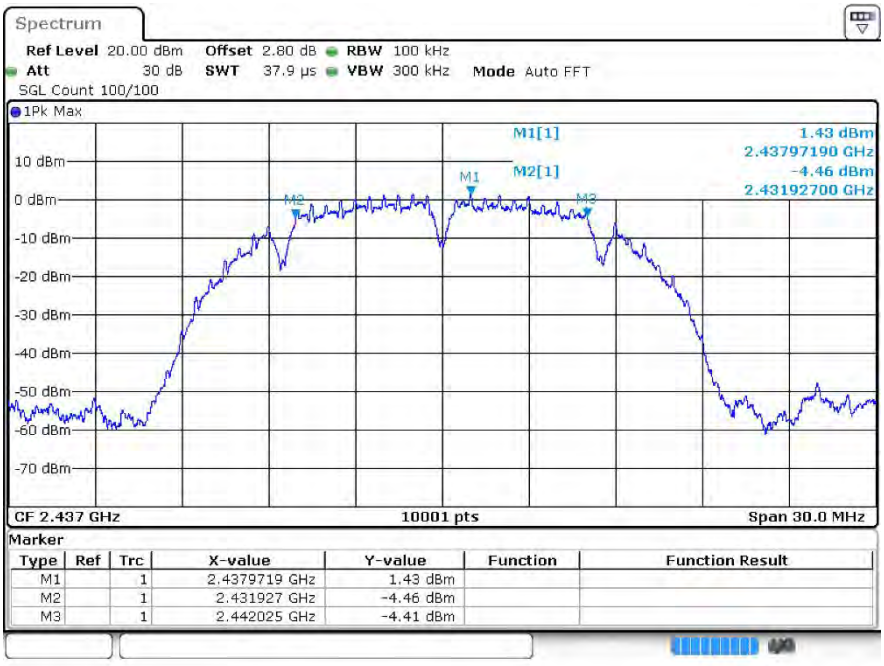
Mode	Frequency (MHz)	Antenna	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
b	2412	Ant0	10.083	0.5	Pass
b	2437	Ant0	10.098	0.5	Pass
b	2462	Ant0	10.119	0.5	Pass
g	2412	Ant0	15.114	0.5	Pass
g	2437	Ant0	15.111	0.5	Pass
g	2462	Ant0	15.09	0.5	Pass
n20	2412	Ant0	15.117	0.5	Pass
n20	2437	Ant0	15.105	0.5	Pass
n20	2462	Ant0	15.108	0.5	Pass
n40	2422	Ant0	31.332	0.5	Pass
n40	2437	Ant0	31.326	0.5	Pass
n40	2452	Ant0	35.004	0.5	Pass
ax20	2412	Ant0	16.089	0.5	Pass
ax20	2437	Ant0	16.356	0.5	Pass
ax20	2462	Ant0	15.099	0.5	Pass
ax40	2422	Ant0	35.052	0.5	Pass
ax40	2437	Ant0	31.32	0.5	Pass
ax40	2452	Ant0	27.87	0.5	Pass
b	2412	Ant1	10.098	0.5	Pass
b	2437	Ant1	10.059	0.5	Pass
b	2462	Ant1	10.086	0.5	Pass
g	2412	Ant1	15.09	0.5	Pass
g	2437	Ant1	15.03	0.5	Pass
g	2462	Ant1	15.111	0.5	Pass
n20	2412	Ant1	13.86	0.5	Pass
n20	2437	Ant1	12.612	0.5	Pass
n20	2462	Ant1	15.087	0.5	Pass
n40	2422	Ant1	31.338	0.5	Pass
n40	2437	Ant1	30.672	0.5	Pass
n40	2452	Ant1	33.846	0.5	Pass
ax20	2412	Ant1	15.138	0.5	Pass
ax20	2437	Ant1	15.105	0.5	Pass
ax20	2462	Ant1	15.165	0.5	Pass
ax40	2422	Ant1	30.396	0.5	Pass
ax40	2437	Ant1	35.064	0.5	Pass
ax40	2452	Ant1	35.094	0.5	Pass

3.2 Test Graphs

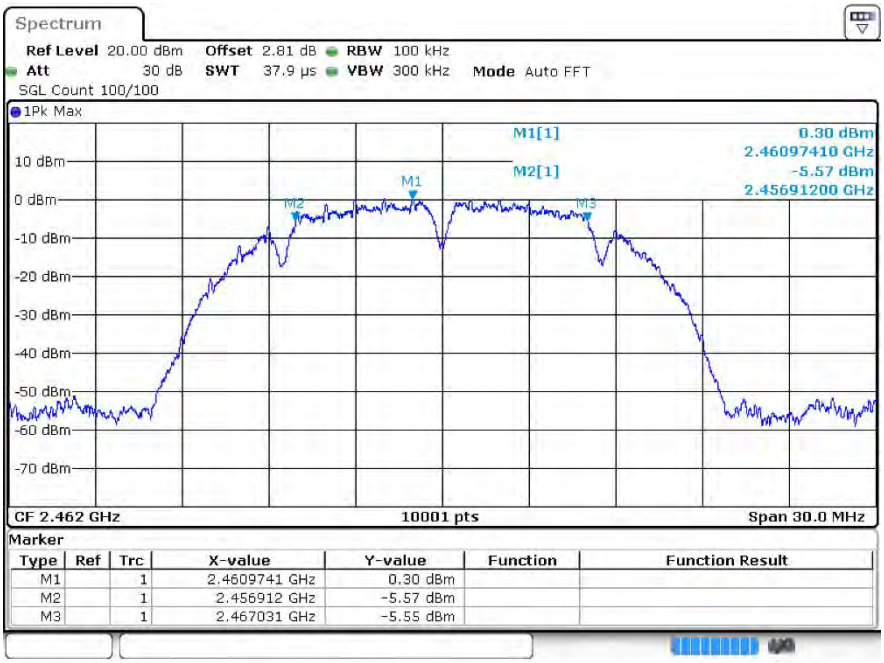
Test Graphs
b 2412MHz Ant0



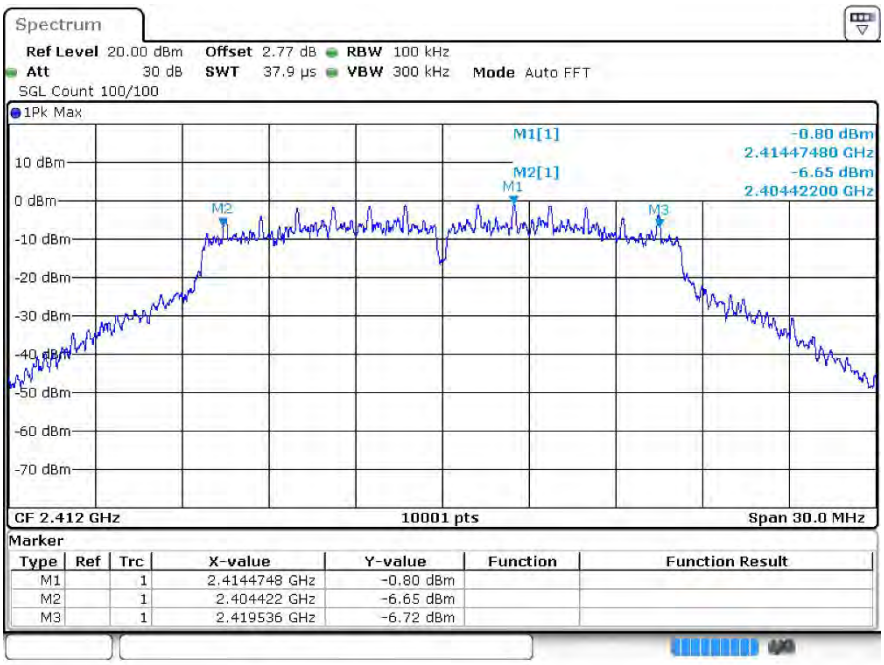
b 2437MHz Ant0



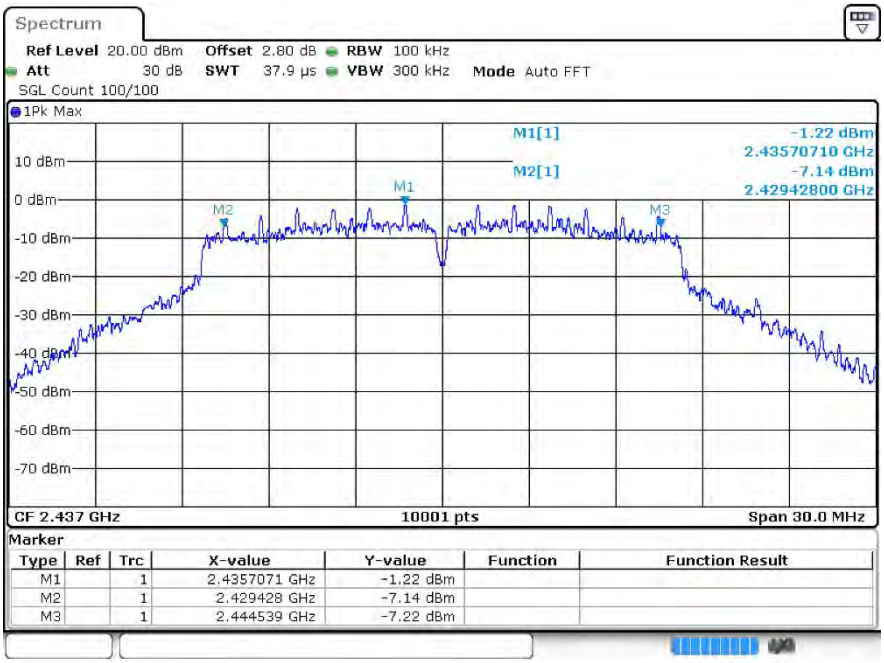
b 2462MHz Ant0



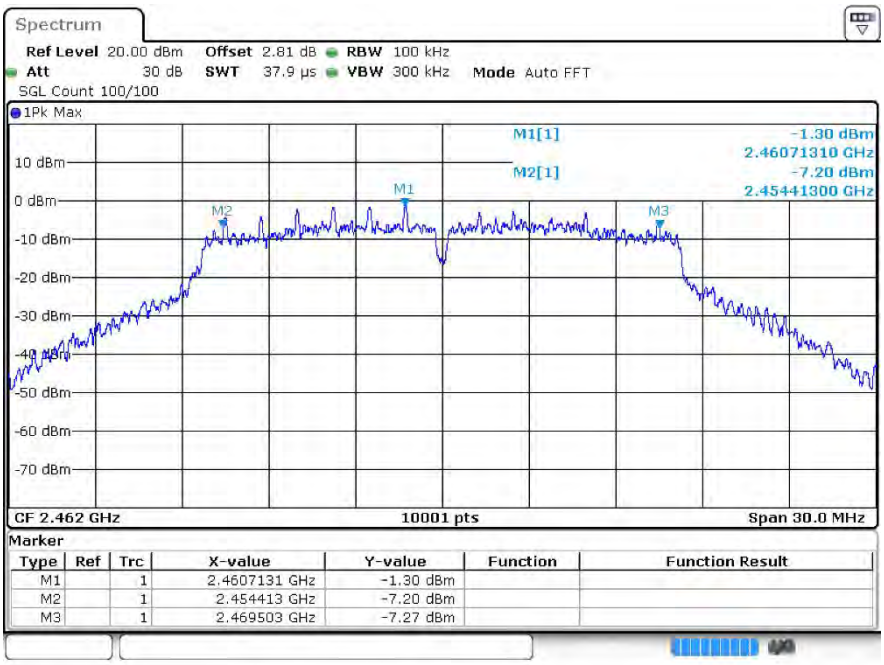
g 2412MHz Ant0



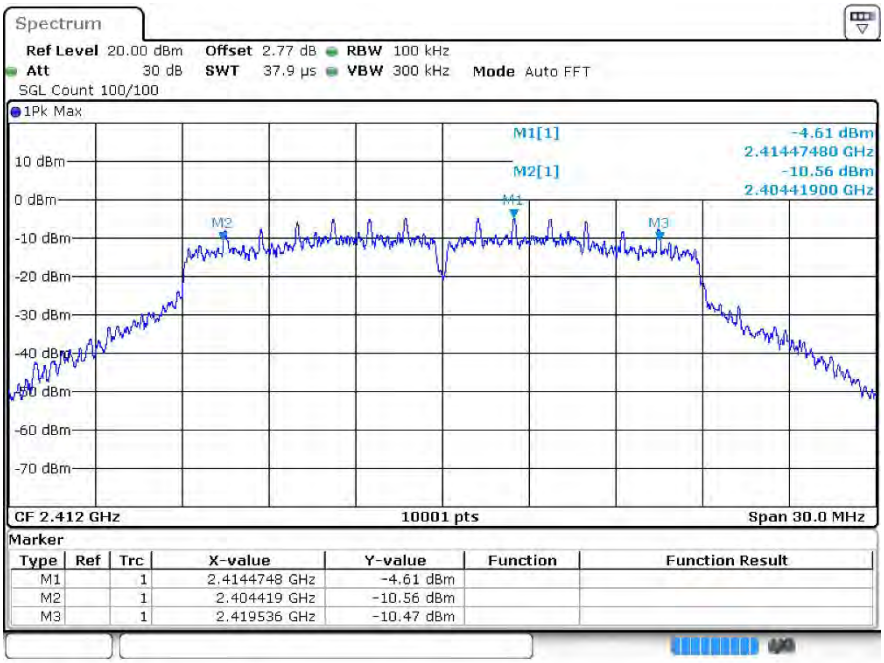
g 2437MHz Ant0



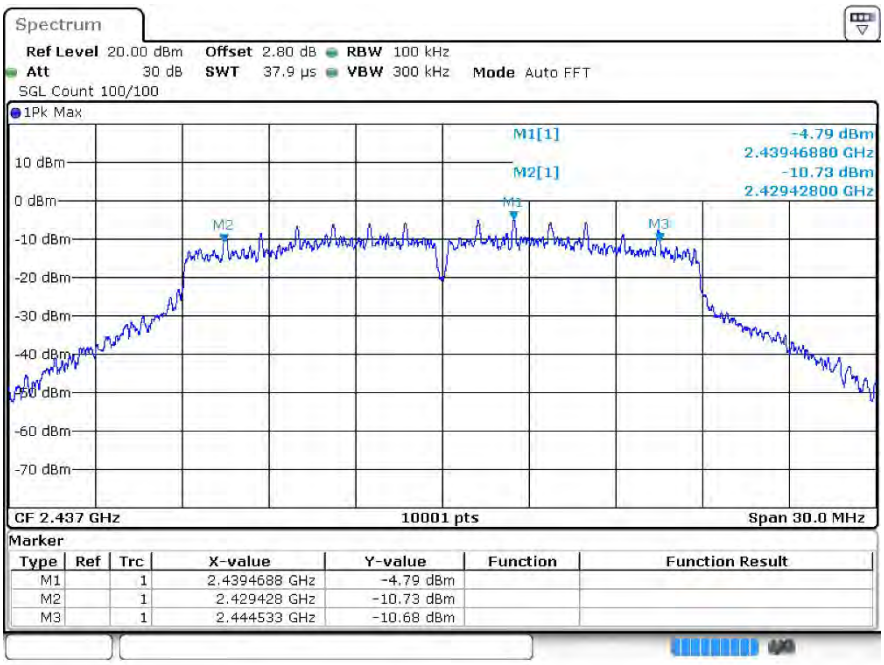
g 2462MHz Ant0



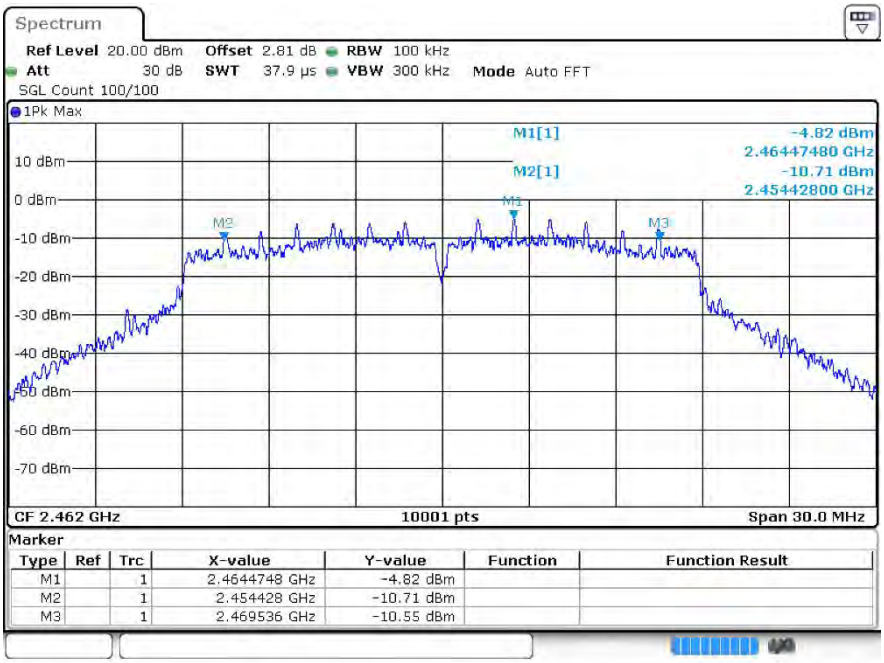
n20 2412MHz Ant0



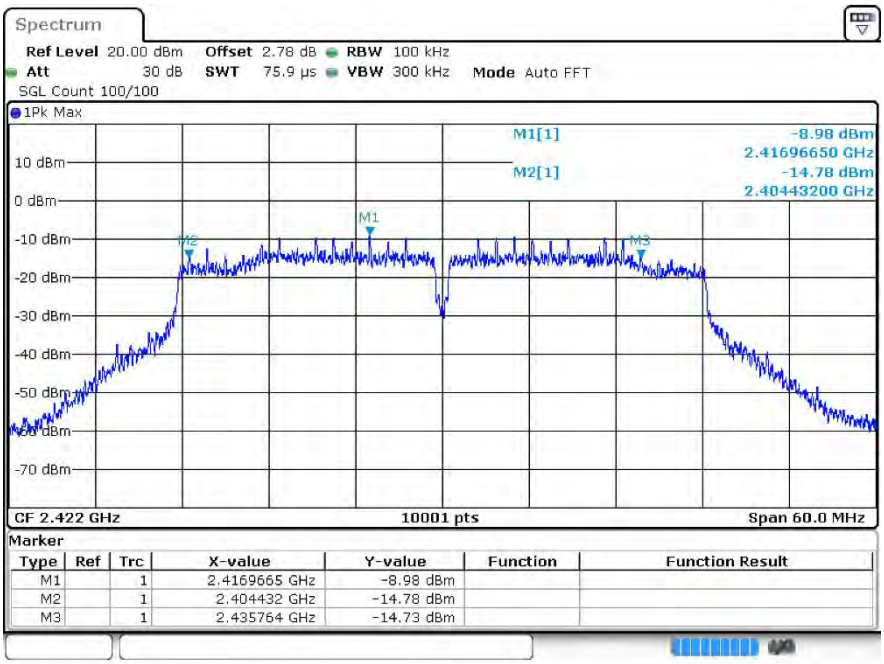
n20 2437MHz Ant0



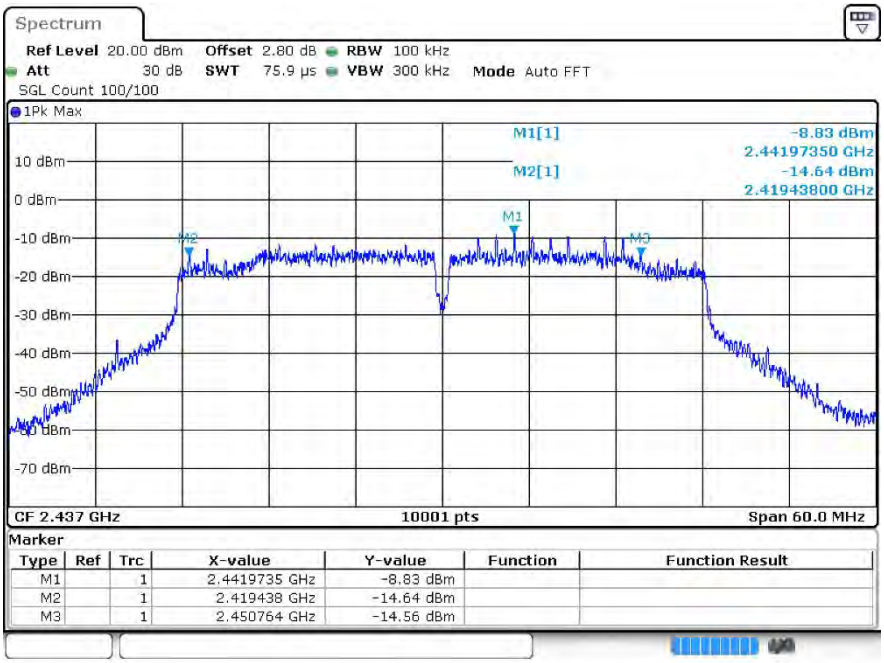
n20 2462MHz Ant0



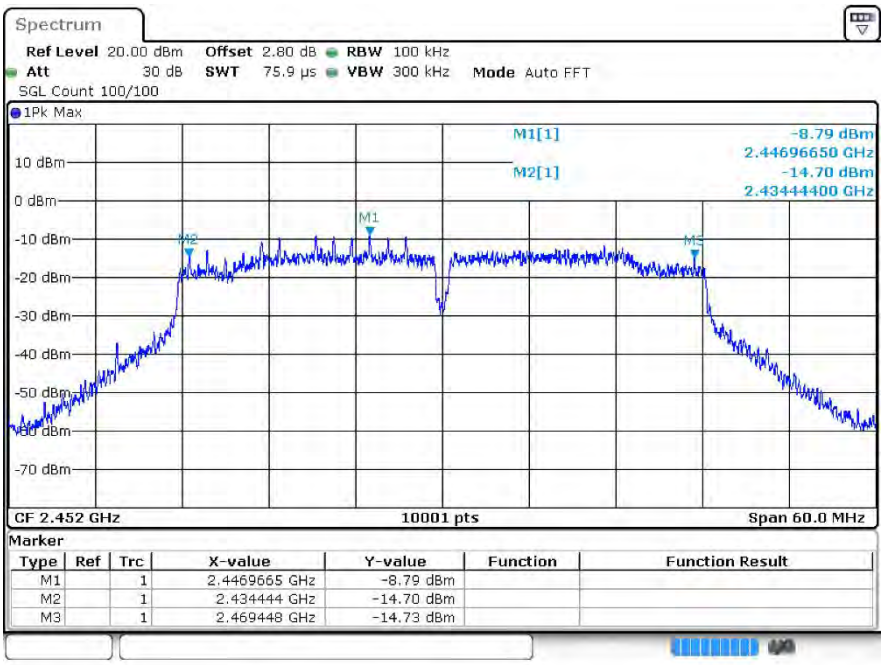
n40 2422MHz Ant0



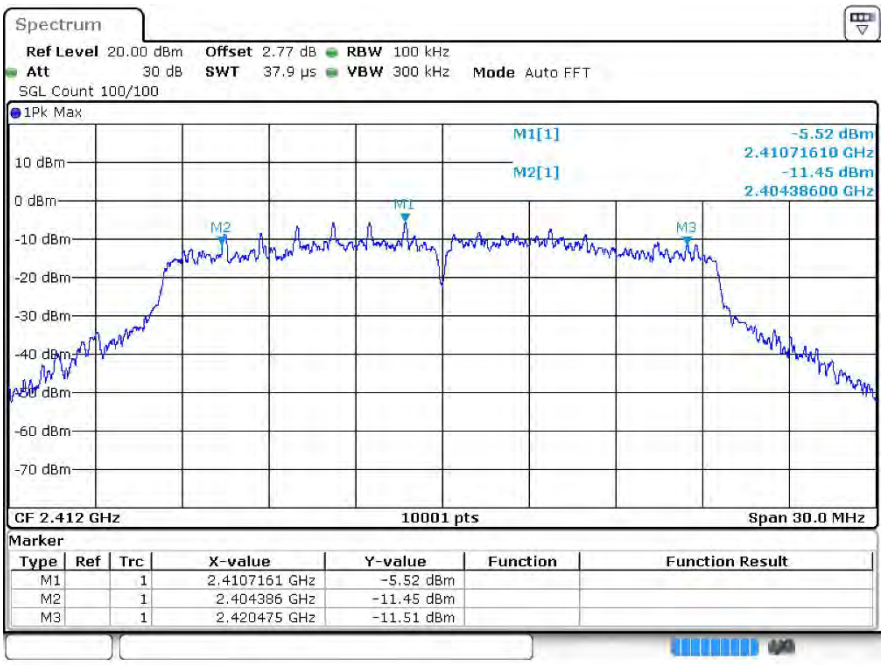
n40 2437MHz Ant0



n40 2452MHz Ant0



ax20 2412MHz Ant0



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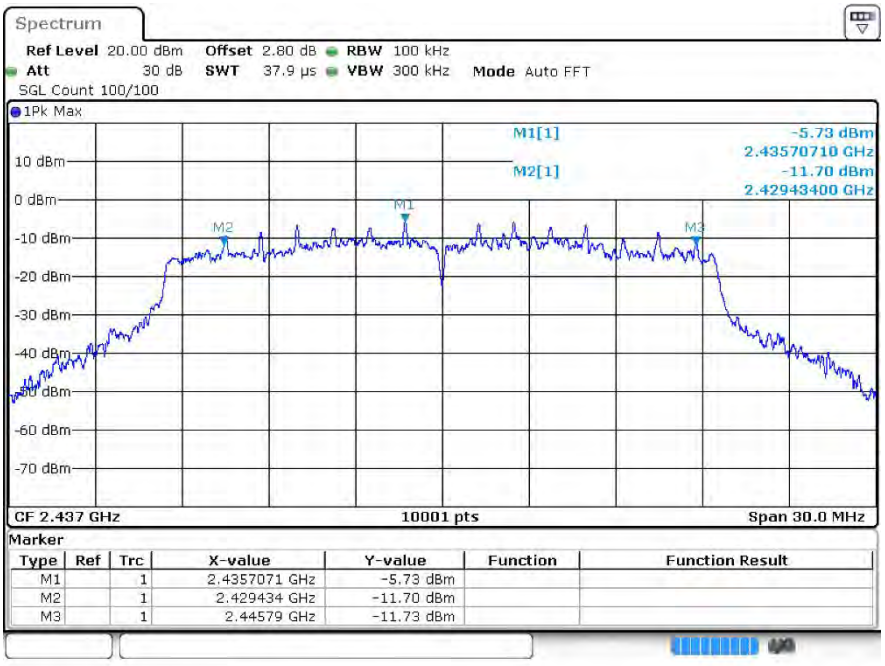
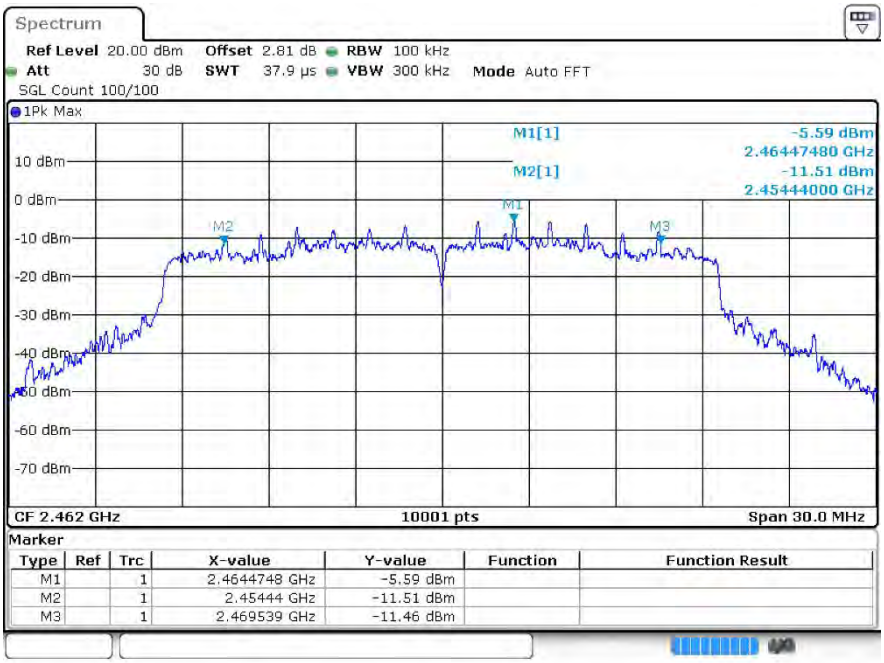


ax20 2462MHz Ant0



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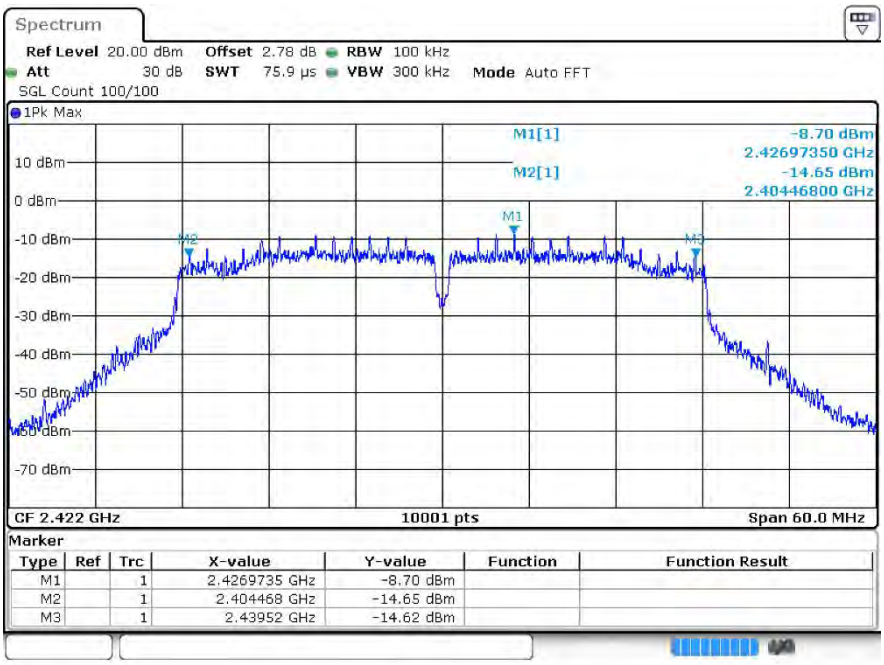
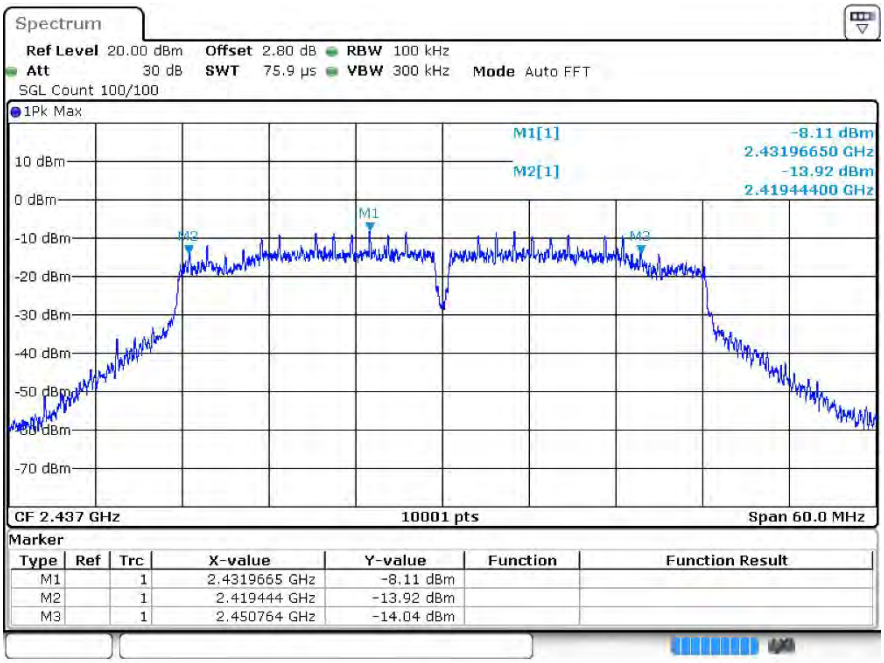


ax40 2437MHz Ant0



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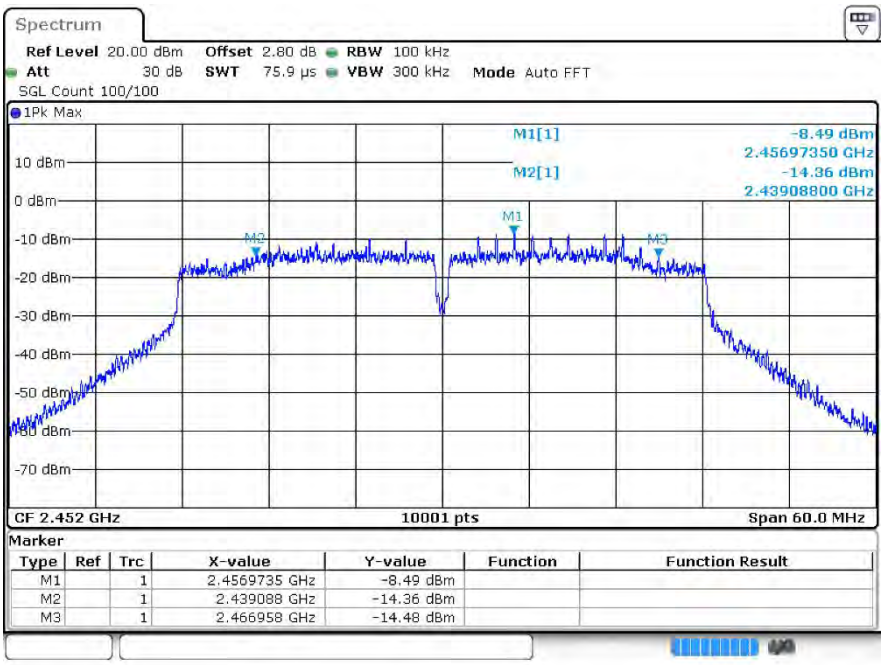
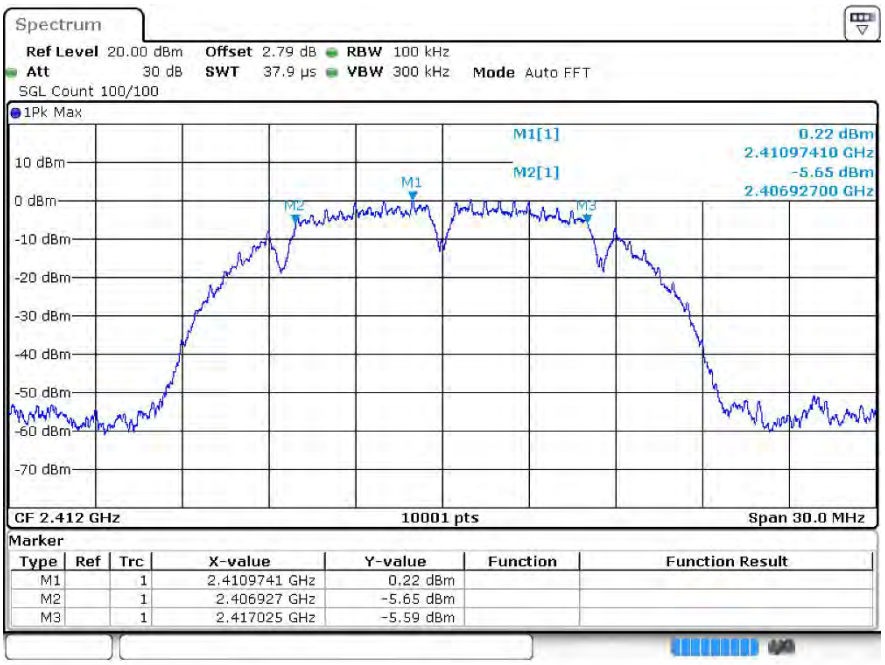
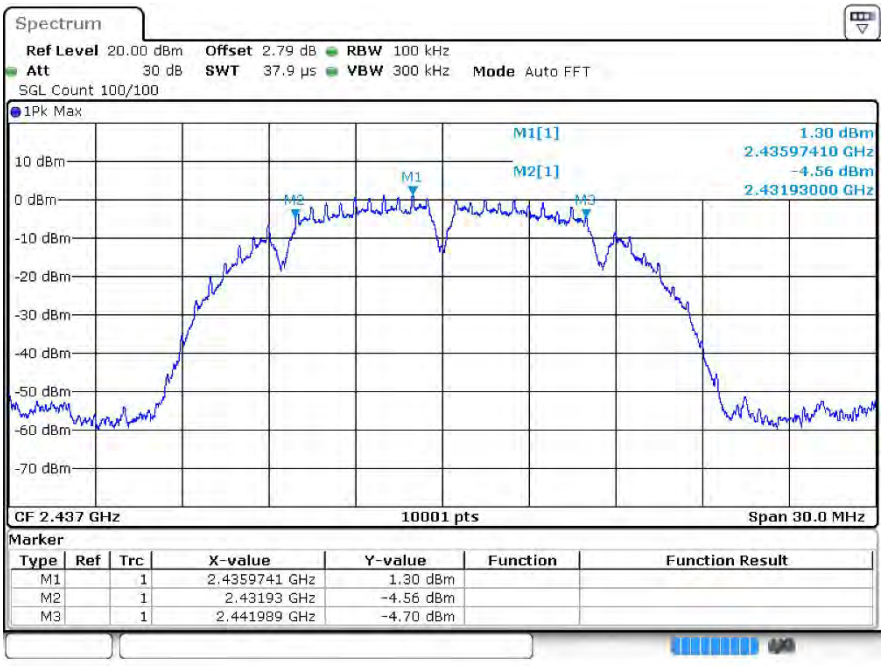


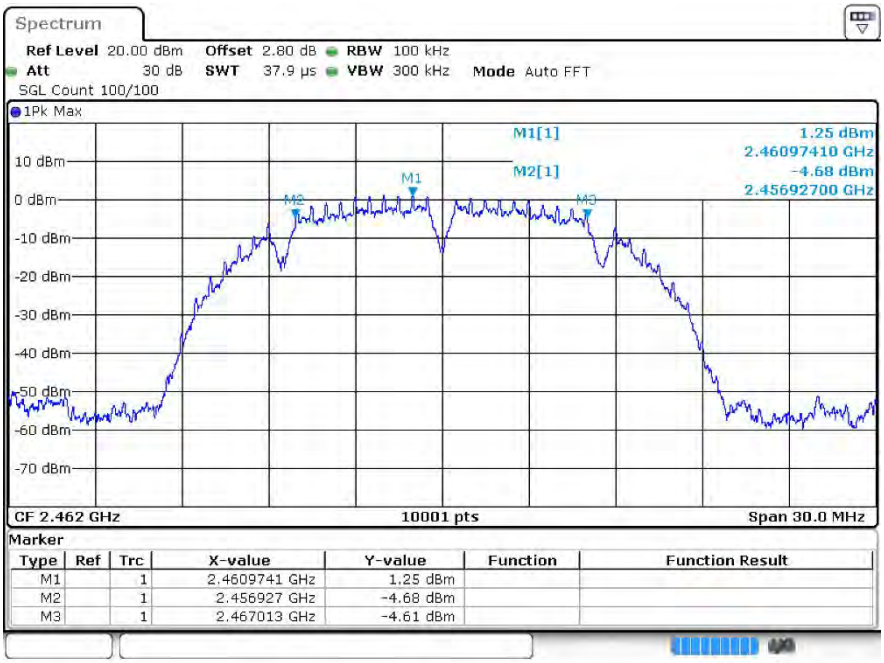
b 2412MHz Ant1



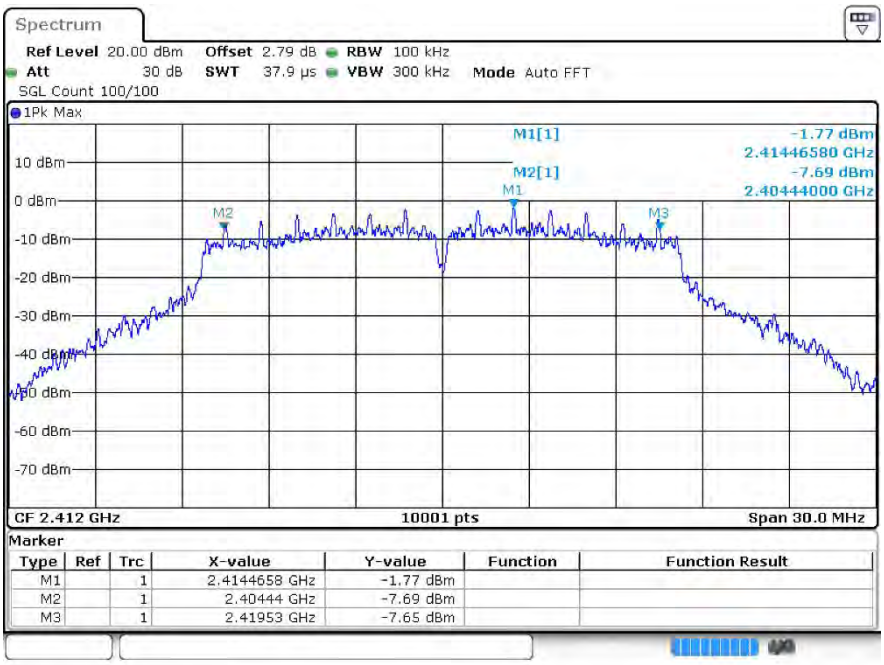
b 2437MHz Ant1



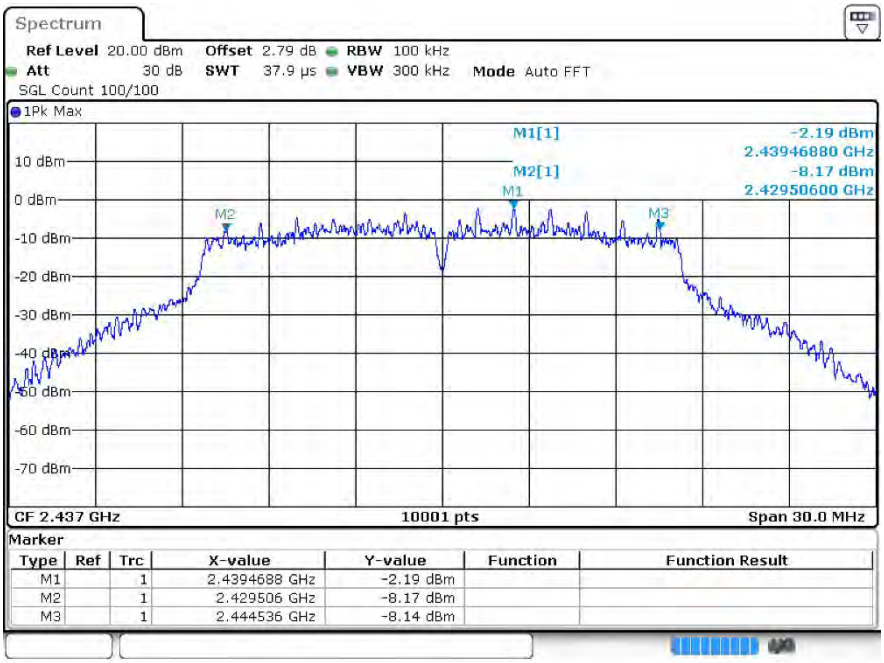
b 2462MHz Ant1



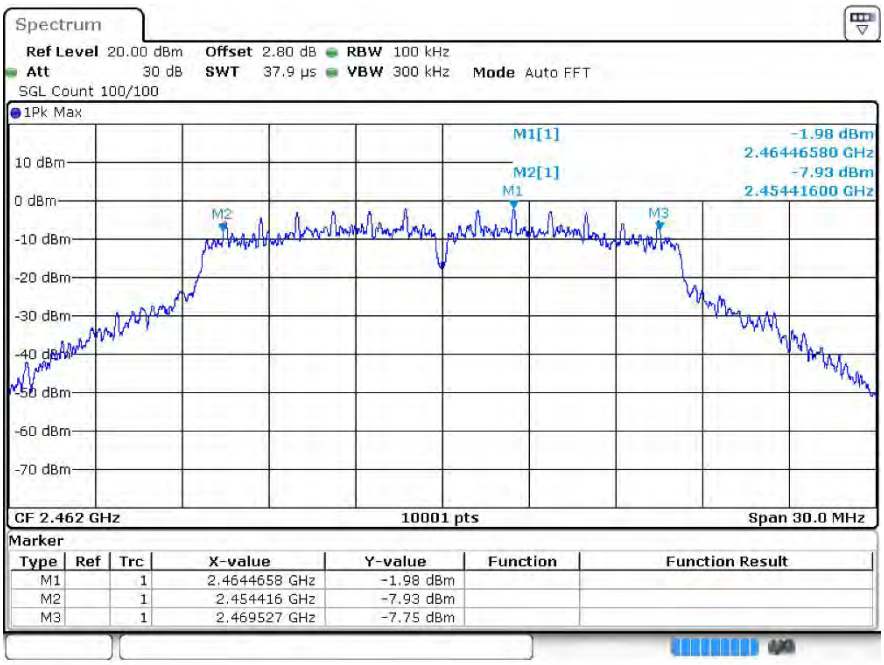
g 2412MHz Ant1



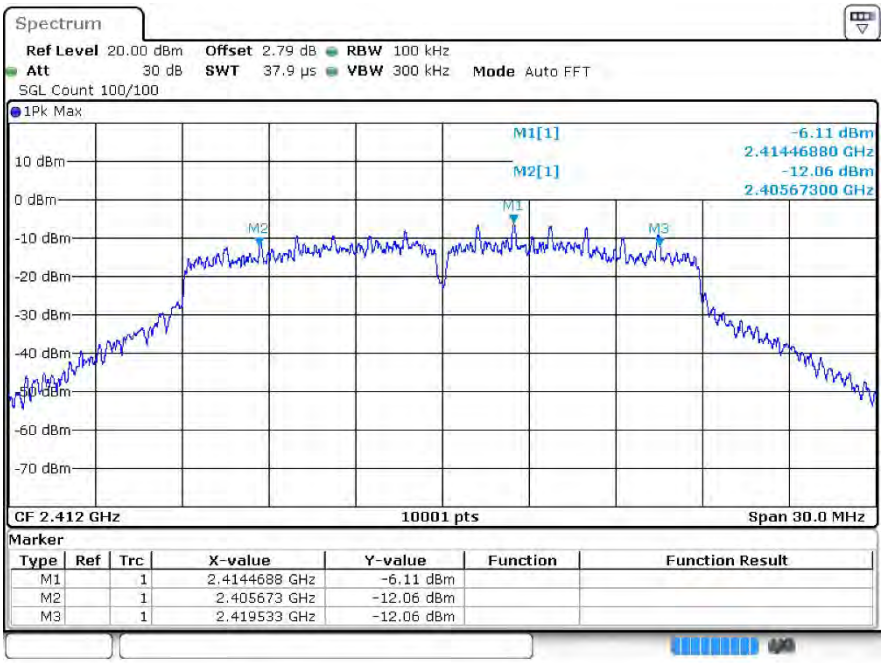
g 2437MHz Ant1



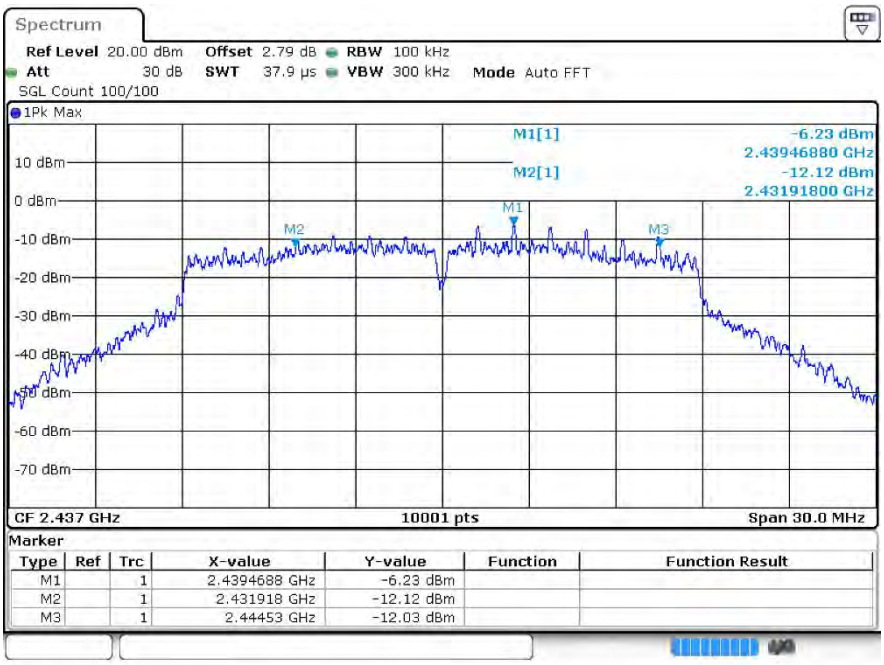
g 2462MHz Ant1



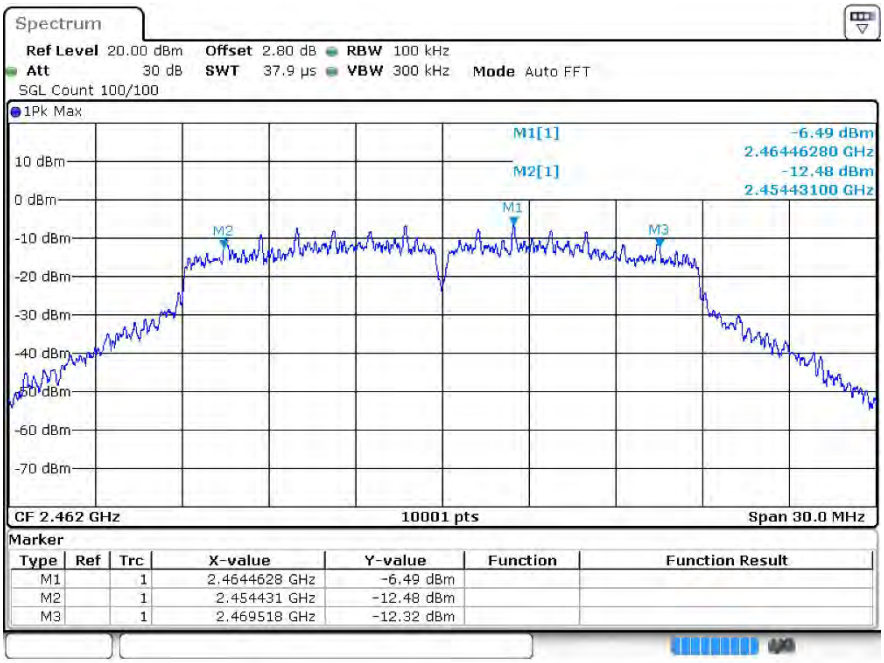
n20 2412MHz Ant1



n20 2437MHz Ant1



n20 2462MHz Ant1



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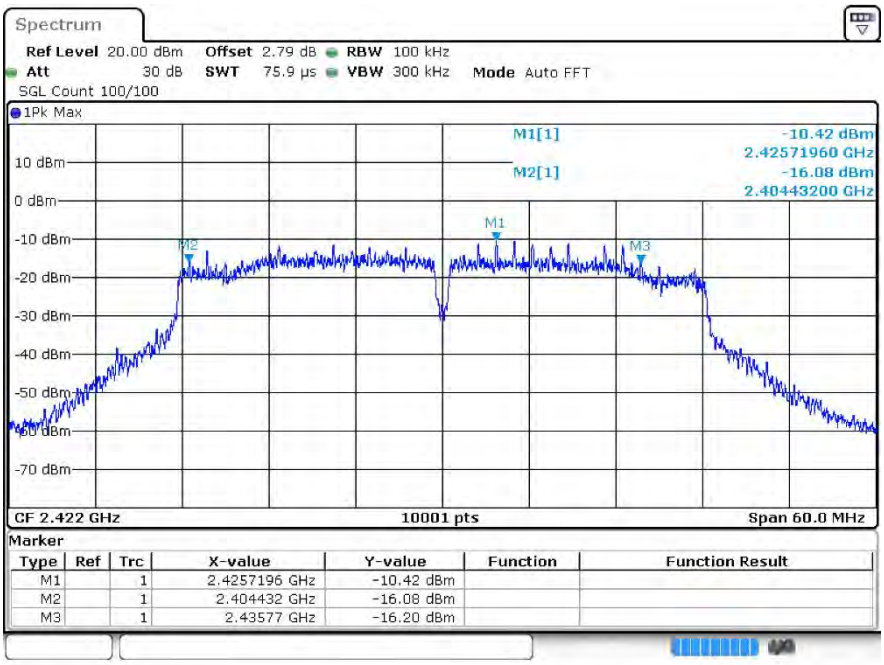

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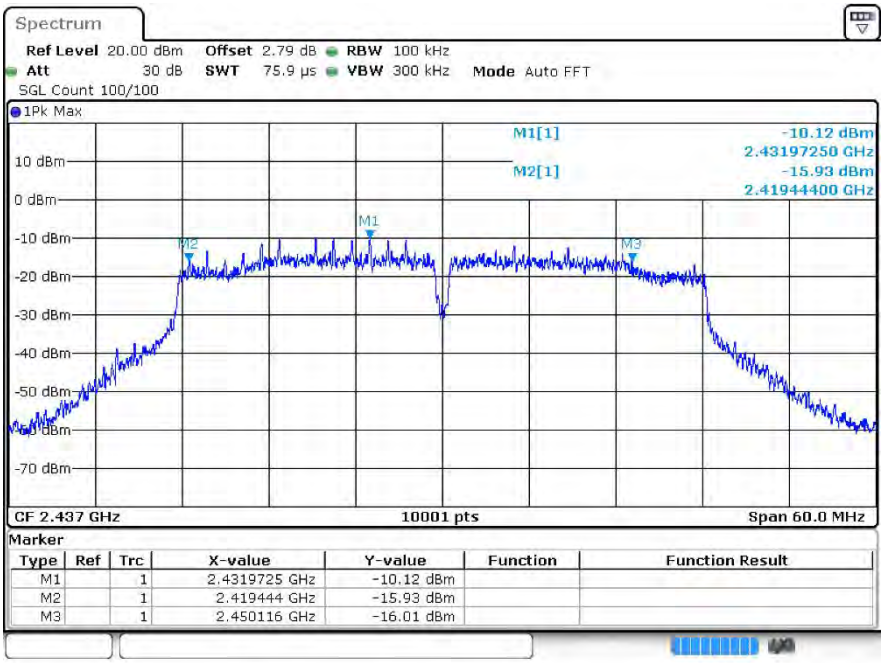
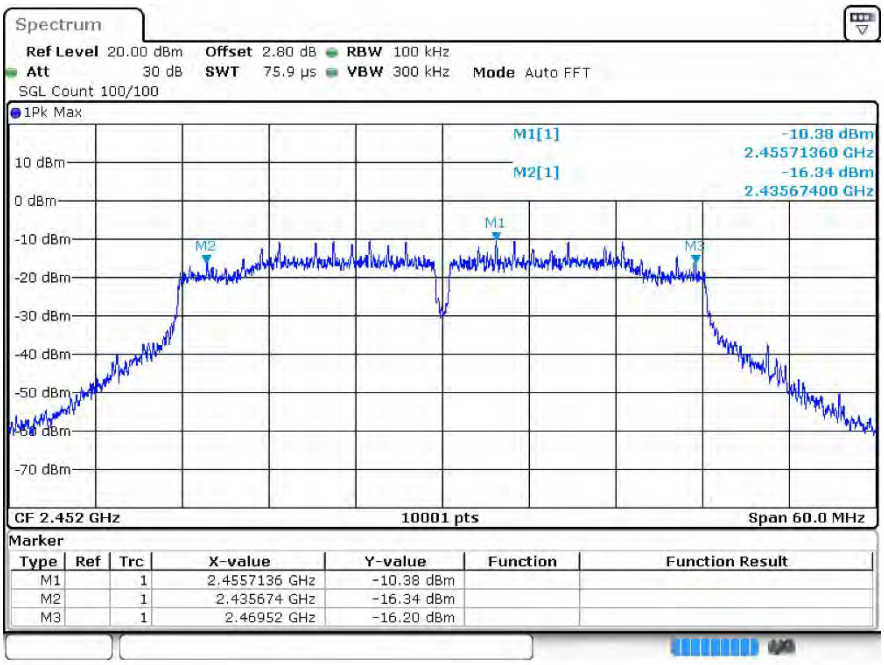
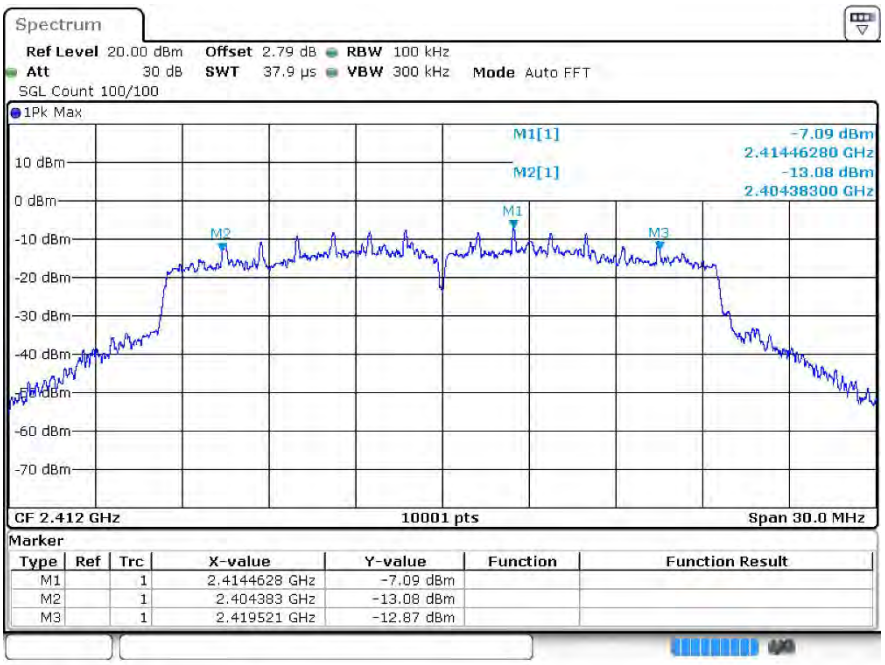


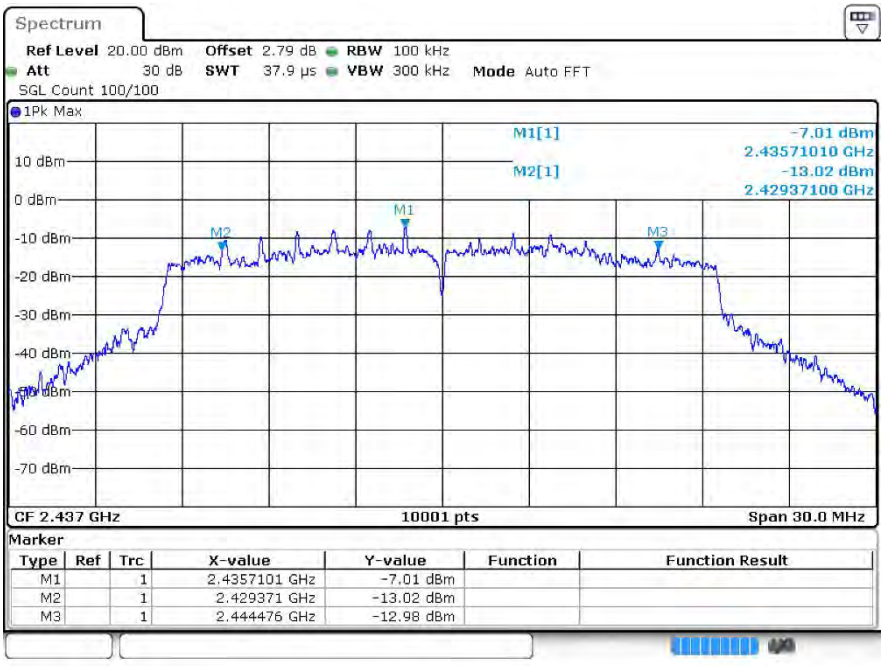
n40 2452MHz Ant1



ax20 2412MHz Ant1



ax20 2437MHz Ant1



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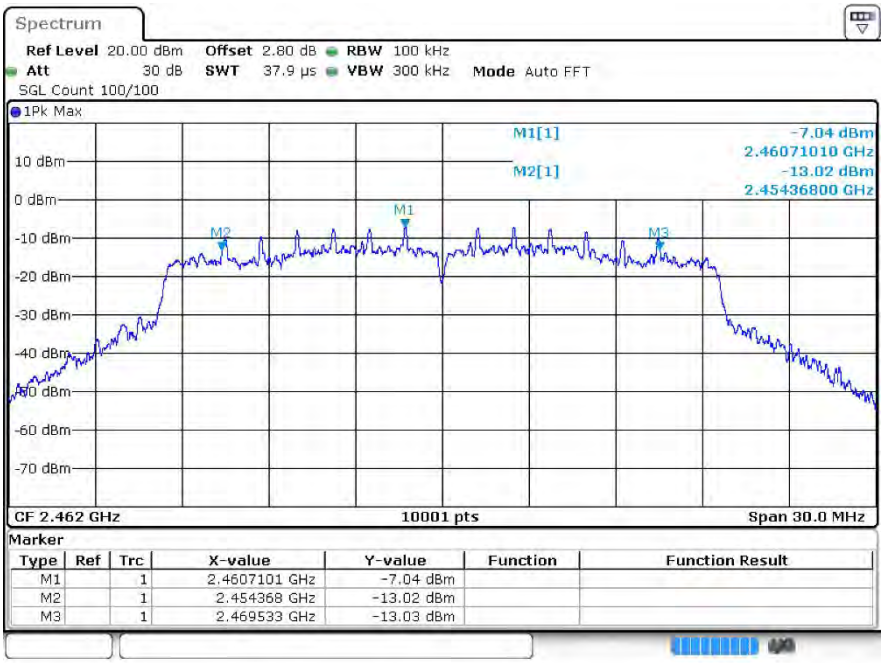

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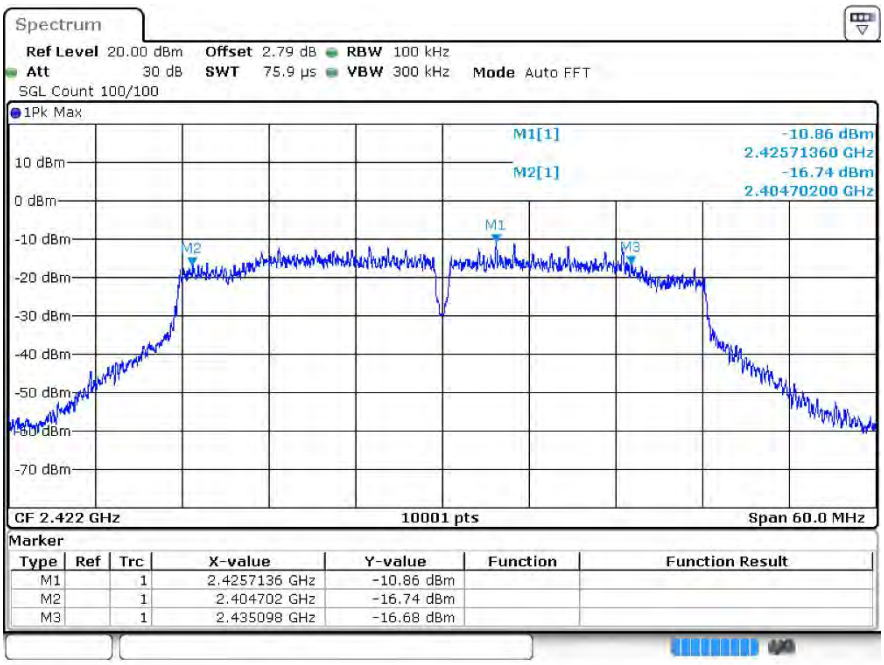

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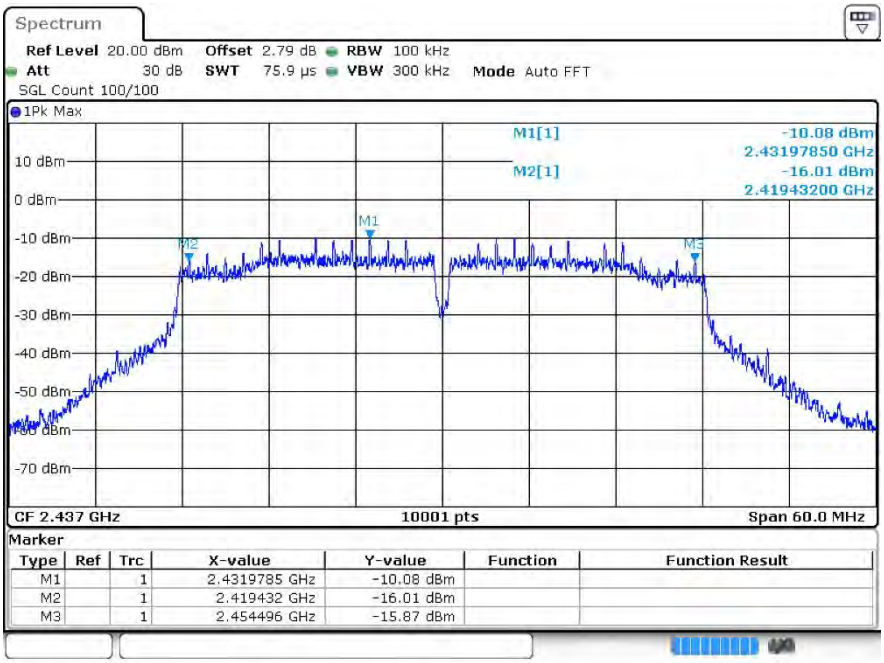

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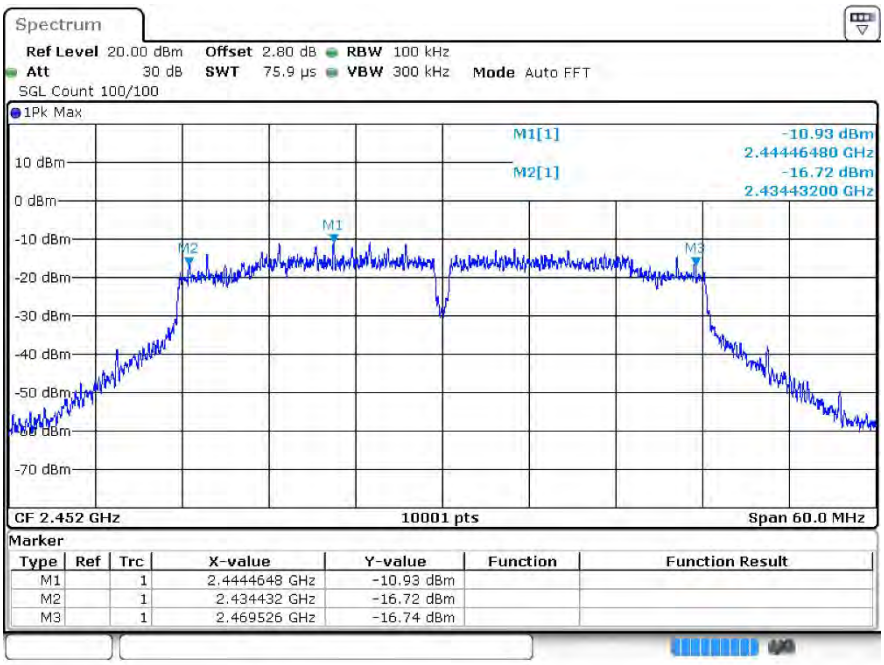


4 Maximum Power Spectral Density Level

4.1 Test Result

Mode	Frequency (MHz)	Antenna	Conducted PSD (dBm/3-100kHz)	Limit (dBm/3kHz)	Verdict
b	2412	Ant0	-11.56	≤8	Pass
b	2437	Ant0	-11.65	≤8	Pass
b	2462	Ant0	-11.65	≤8	Pass
g	2412	Ant0	-15.95	≤8	Pass
g	2437	Ant0	-15.07	≤8	Pass
g	2462	Ant0	-15.7	≤8	Pass
n20	2412	Ant0	-17.79	≤8	Pass
n20	2437	Ant0	-18.5	≤8	Pass
n20	2462	Ant0	-18.05	≤8	Pass
n40	2422	Ant0	-23.25	≤8	Pass
n40	2437	Ant0	-21.51	≤8	Pass
n40	2452	Ant0	-22.08	≤8	Pass
ax20	2412	Ant0	-5.41	≤8	Pass
ax20	2437	Ant0	-5.44	≤8	Pass
ax20	2462	Ant0	-5.49	≤8	Pass
ax40	2422	Ant0	-8.82	≤8	Pass
ax40	2437	Ant0	-9.04	≤8	Pass
ax40	2452	Ant0	-8.66	≤8	Pass
b	2412	Ant1	-12.67	≤8	Pass
b	2437	Ant1	-12.63	≤8	Pass
b	2462	Ant1	-12.46	≤8	Pass
g	2412	Ant1	-16.69	≤8	Pass
g	2437	Ant1	-17.4	≤8	Pass
g	2462	Ant1	-16.19	≤8	Pass
n20	2412	Ant1	-20.47	≤8	Pass
n20	2437	Ant1	-20.75	≤8	Pass
n20	2462	Ant1	-20.8	≤8	Pass
n40	2422	Ant1	-23.65	≤8	Pass
n40	2437	Ant1	-23.87	≤8	Pass
n40	2452	Ant1	-24.74	≤8	Pass
ax20	2412	Ant1	-7.33	≤8	Pass
ax20	2437	Ant1	-8.12	≤8	Pass
ax20	2462	Ant1	-7.08	≤8	Pass

ax40	2422	Ant1	-9.79	≤8	Pass
ax40	2437	Ant1	-10.21	≤8	Pass
ax40	2452	Ant1	-10.39	≤8	Pass
n20	2412	Sum	-2.38	≤5.36	Pass
n20	2437	Sum	-2.48	≤5.36	Pass
n20	2462	Sum	-2.64	≤5.36	Pass
n40	2422	Sum	-6.61	≤5.36	Pass
n40	2437	Sum	-6.41	≤5.36	Pass
n40	2452	Sum	-7.31	≤5.36	Pass
ax20	2412	Sum	-3.17	≤5.36	Pass
ax20	2437	Sum	-3.79	≤5.36	Pass
ax20	2462	Sum	-3.36	≤5.36	Pass
ax40	2422	Sum	-5.99	≤5.36	Pass
ax40	2437	Sum	-5.99	≤5.36	Pass
ax40	2452	Sum	-6.39	≤5.36	Pass

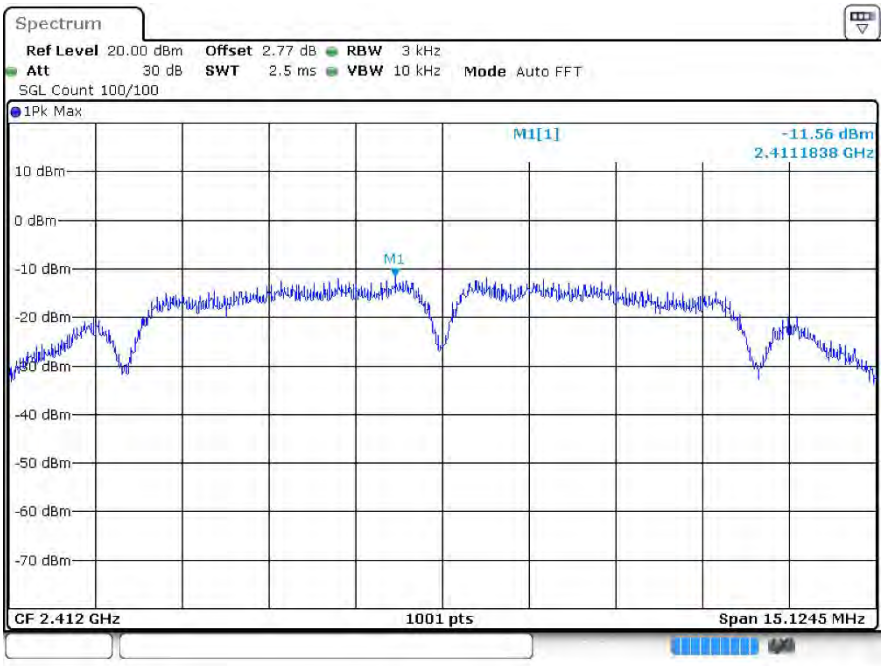
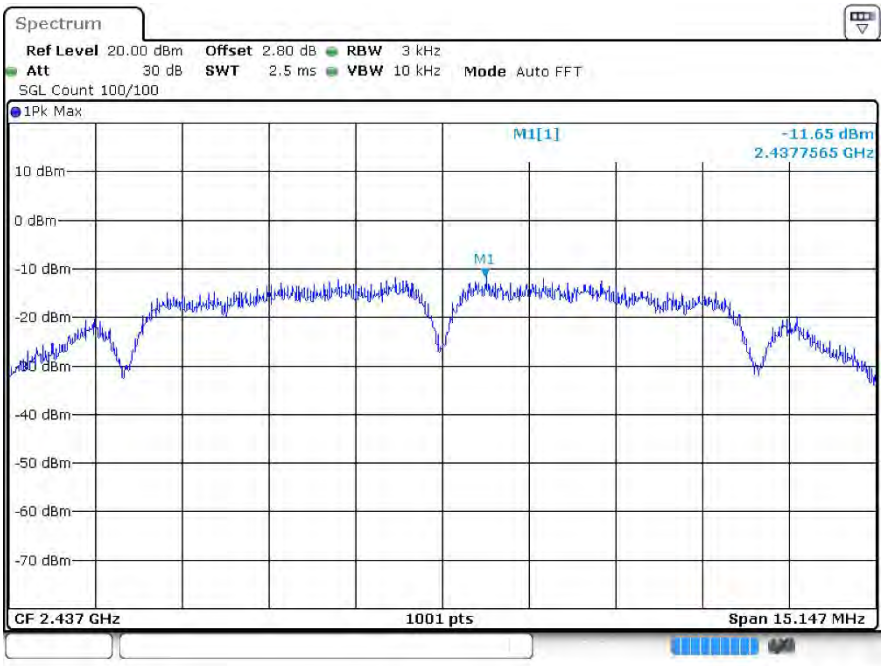
Note:

For MIMO mode:

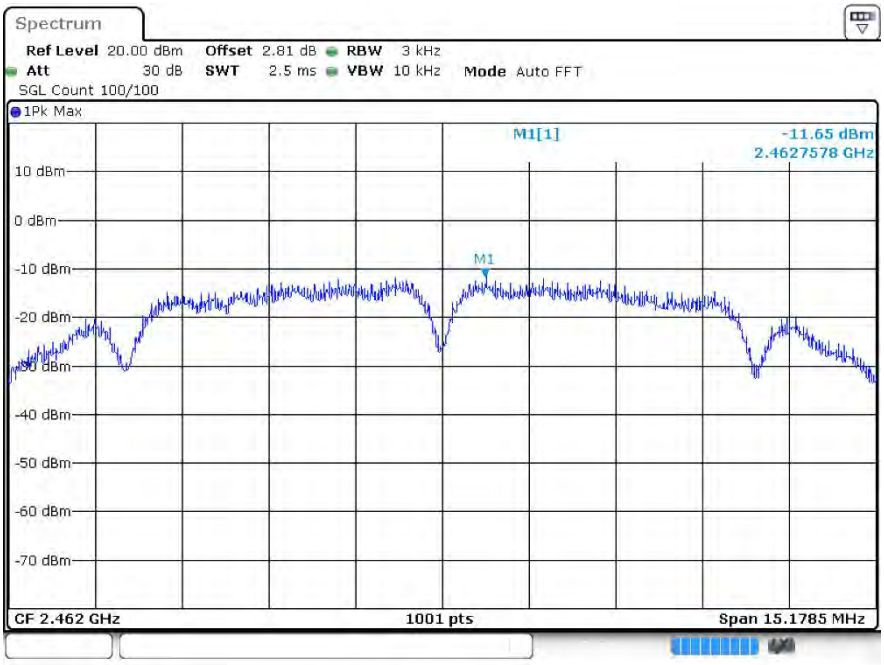
Directional gain=10log[$(10^{G1/20}+10^{G2/20})^2/2$]dBi=8.64dBi

Limit =8-(8.64-6)=5.36dBm for PSD

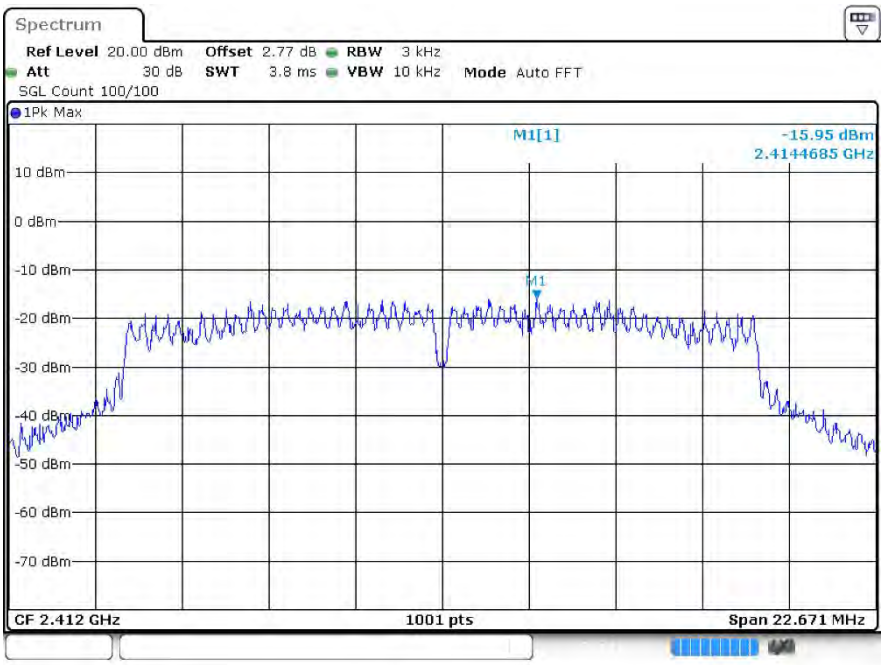
4.2 Test Graphs

Test Graphs
PSDb 2412MHz Ant0

PSD b 2437MHz Ant0


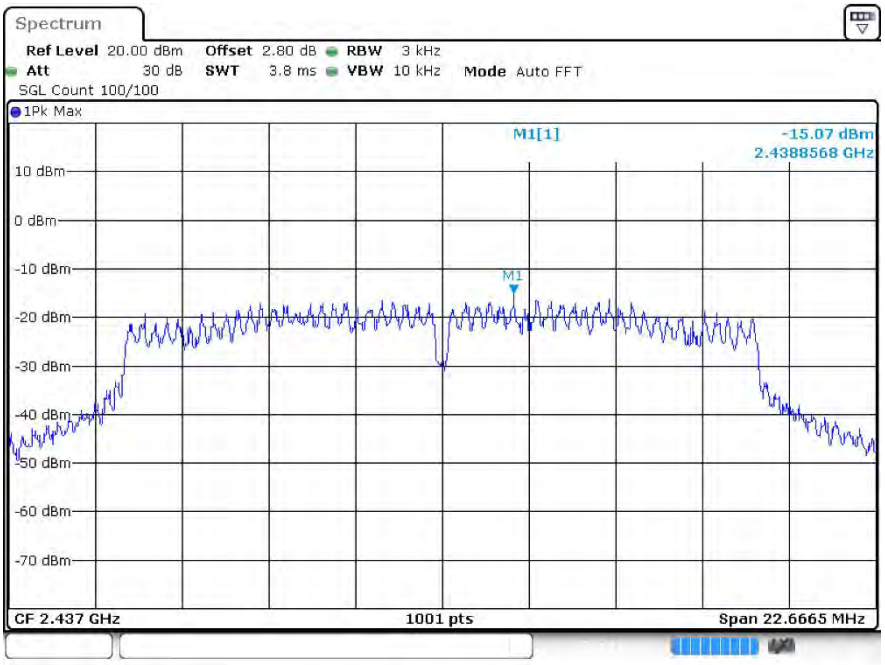
PSD b 2462MHz Ant0



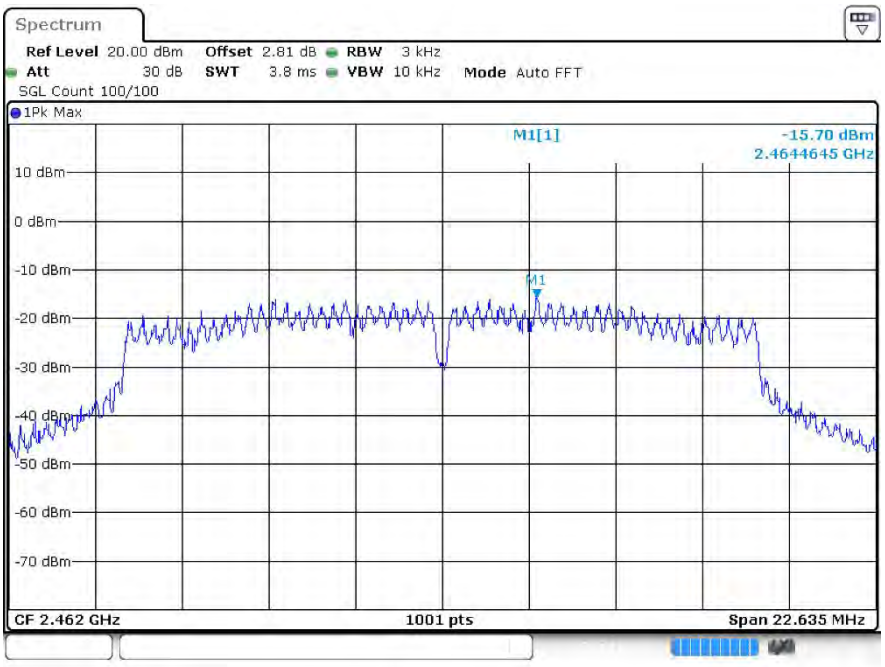
PSD g 2412MHz Ant0



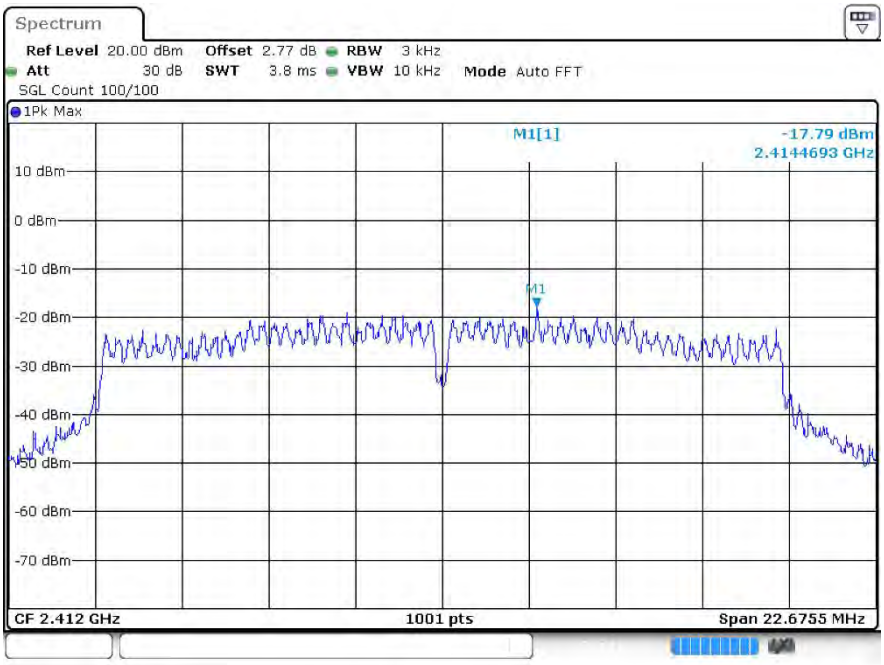
PSD g 2437MHz Ant0



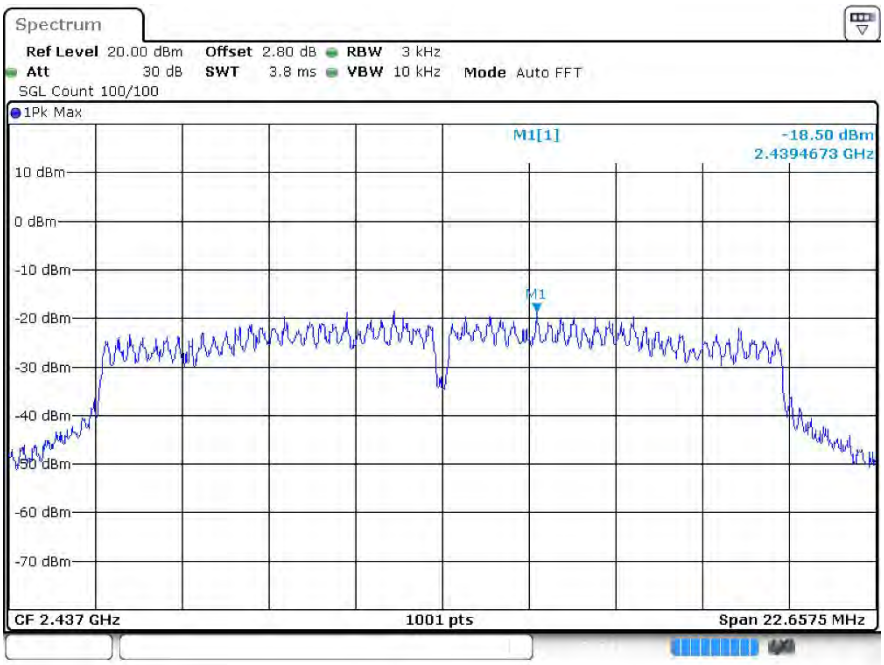
PSD g 2462MHz Ant0



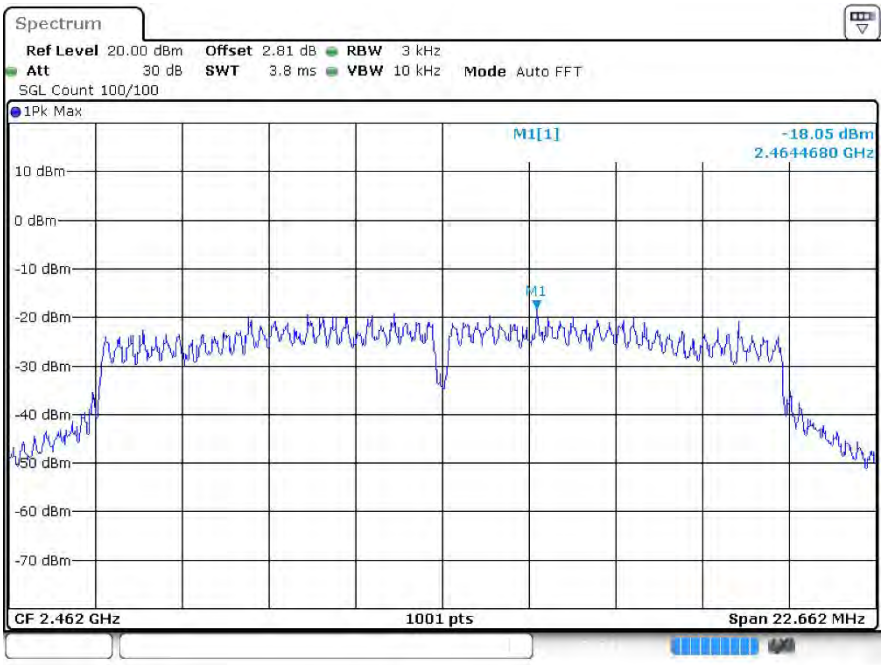
PSD n20 2412MHz Ant0



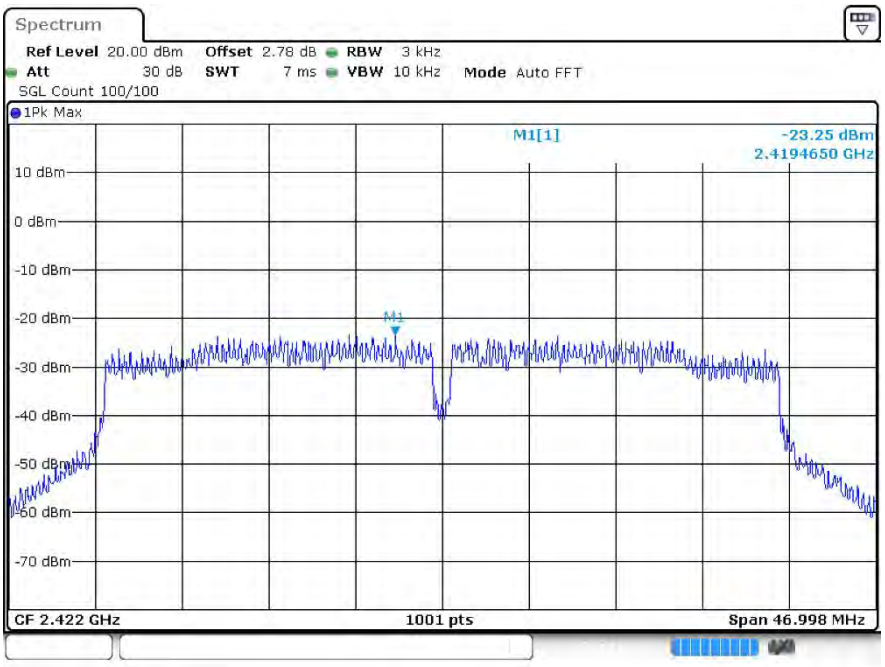
PSD n20 2437MHz Ant0



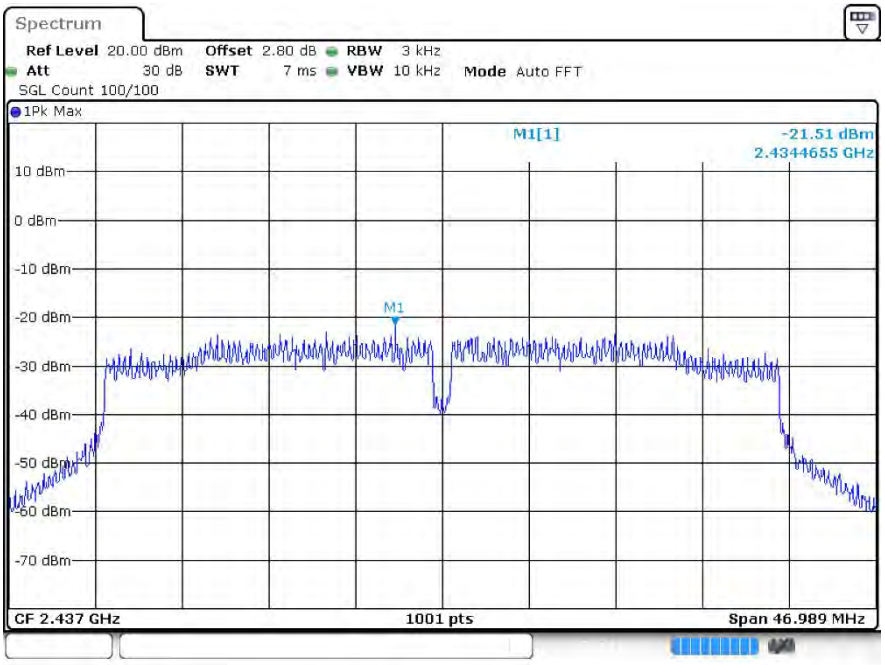
PSD n20 2462MHz Ant0



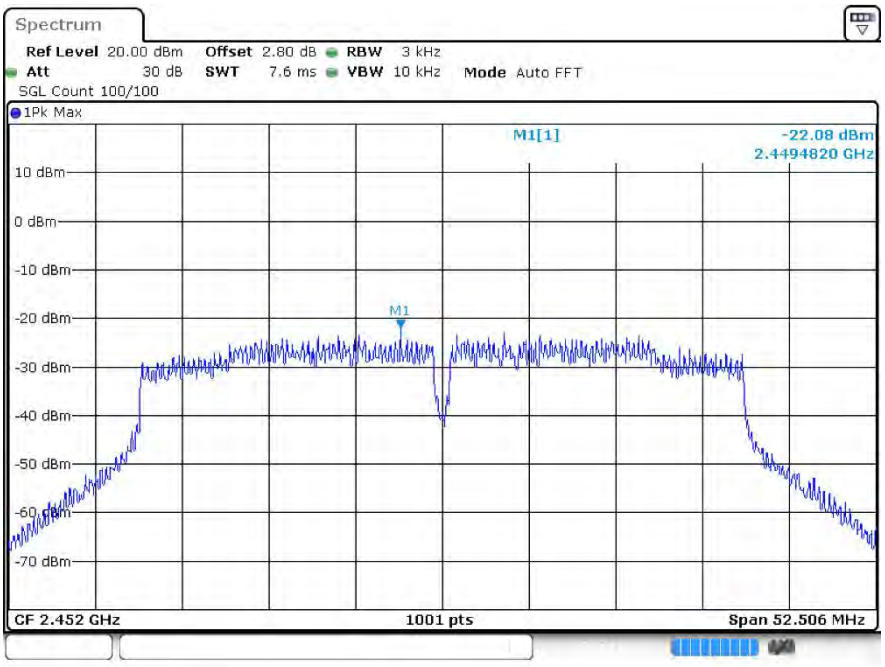
PSD n40 2422MHz Ant0



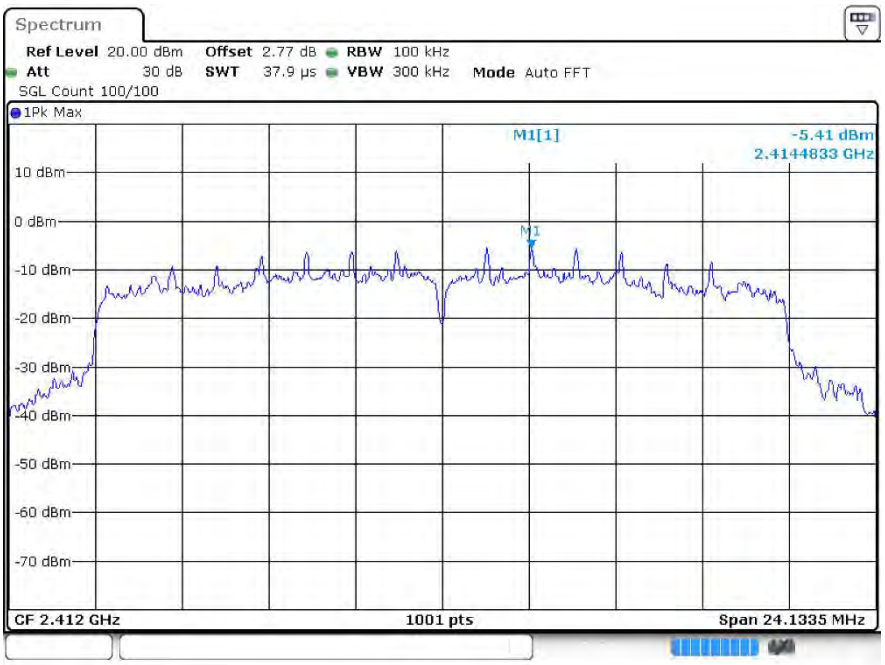
PSD n40 2437MHz Ant0



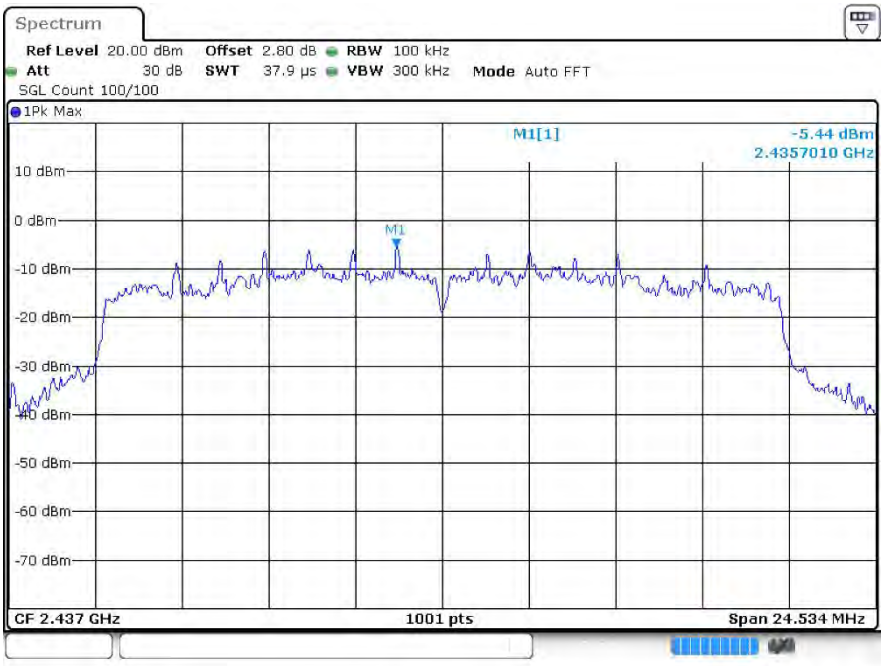
PSD n40 2452MHz Ant0



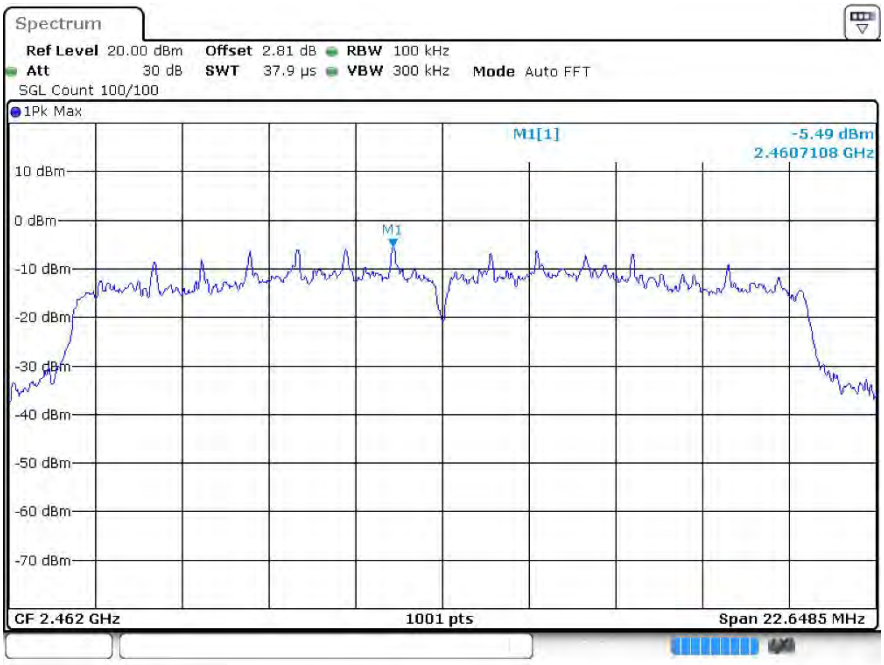
PSD ax20 2412MHz Ant0



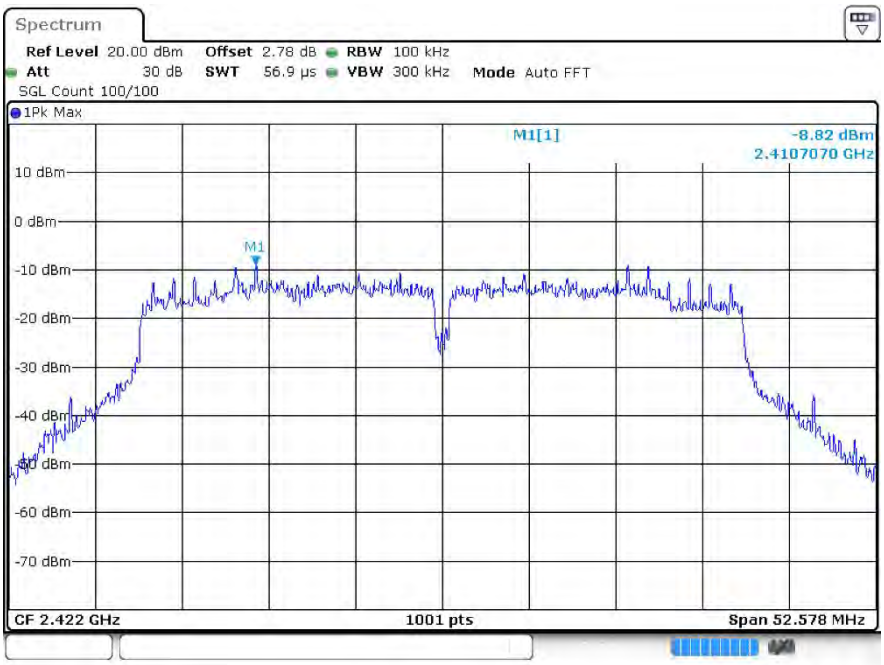
PSD ax20 2437MHz Ant0



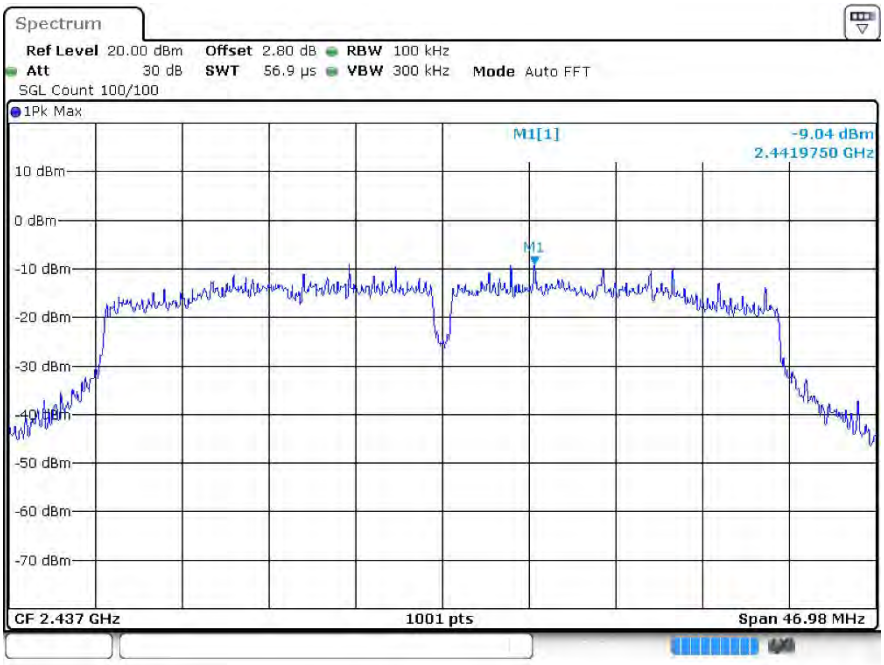
PSD ax20 2462MHz Ant0



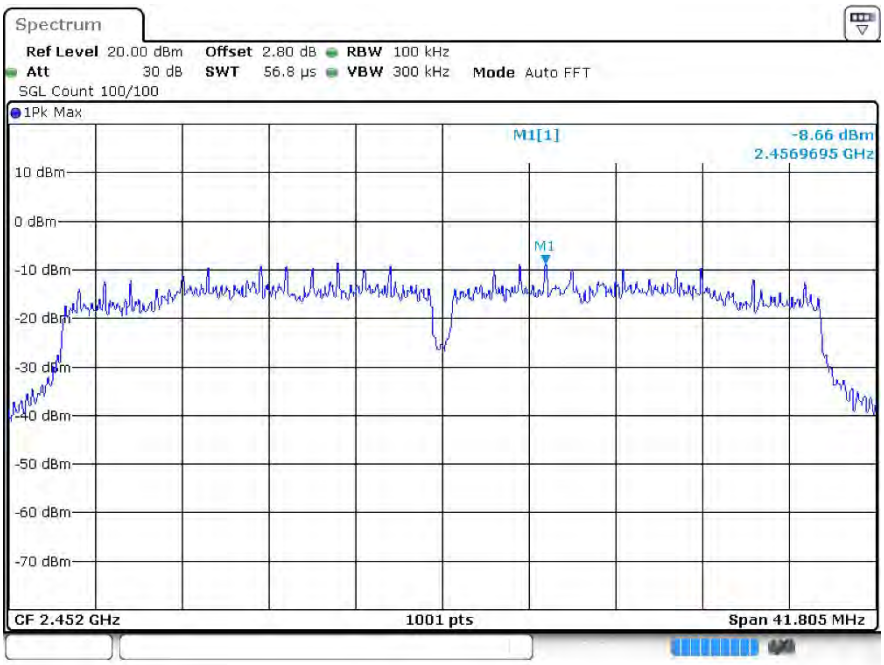
PSD ax40 2422MHz Ant0



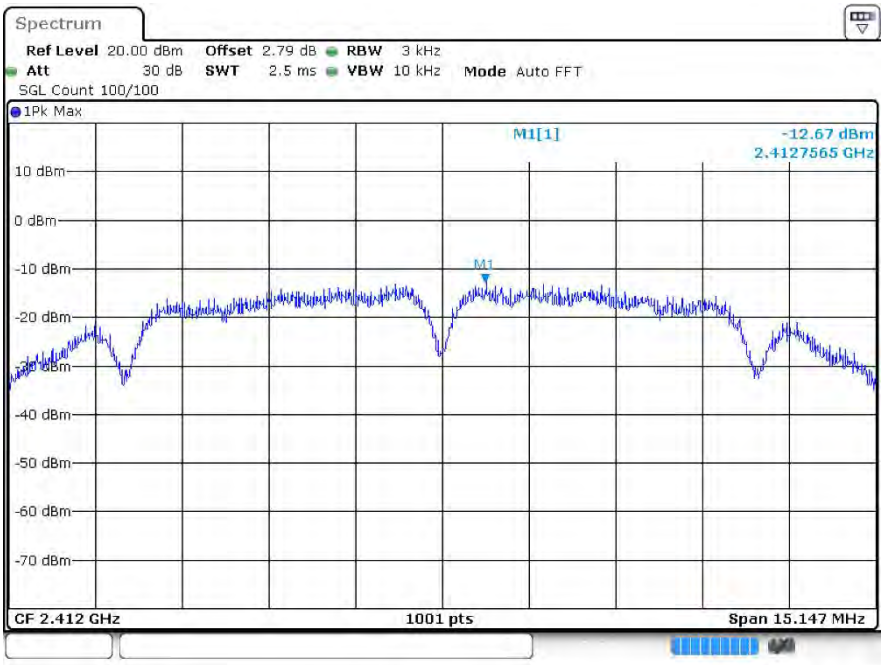
PSD ax40 2437MHz Ant0



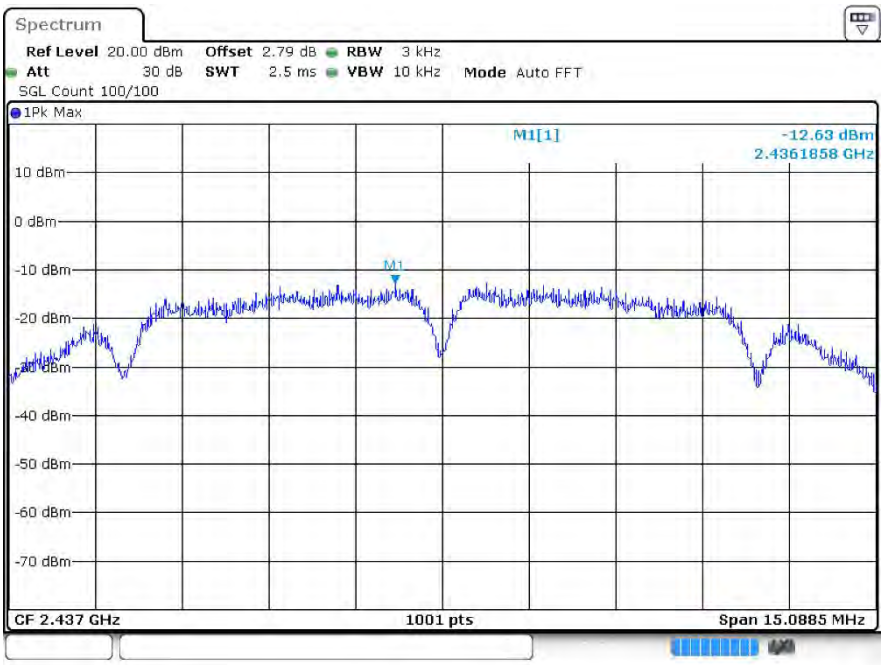
PSD ax40 2452MHz Ant0



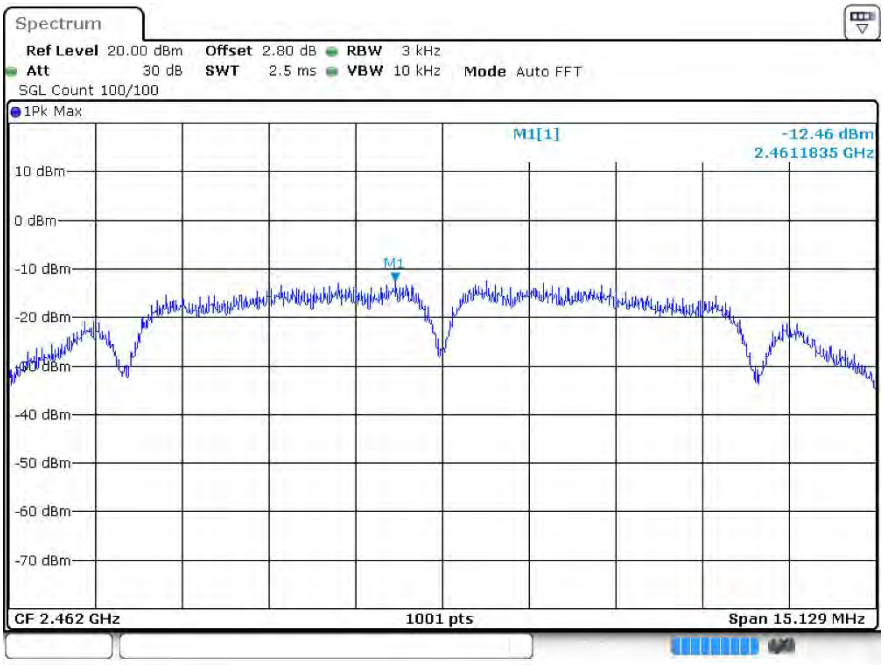
PSDb 2412MHz Ant1



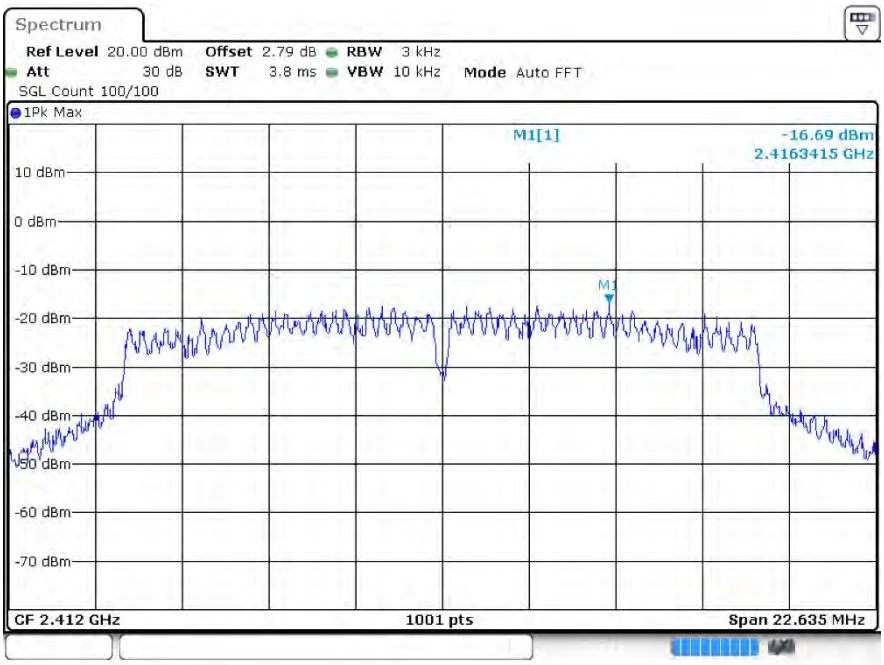
PSD b 2437MHz Ant1



PSD b 2462MHz Ant1



PSD g 2412MHz Ant1



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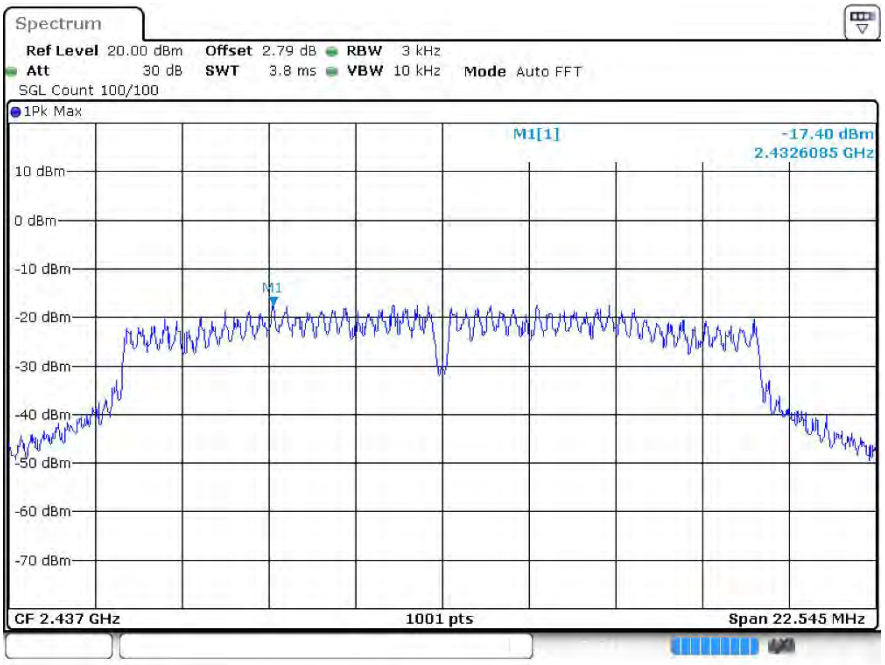
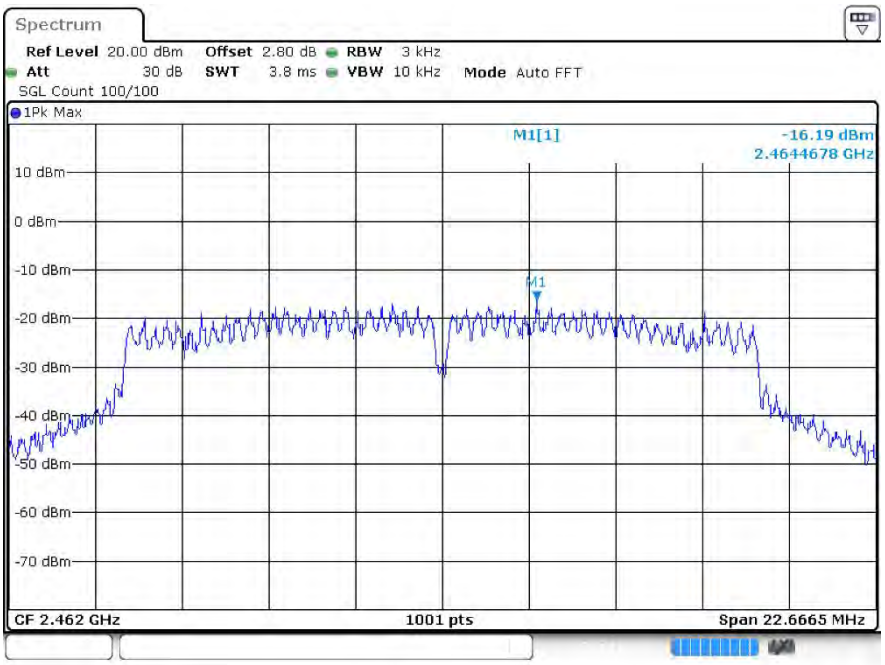
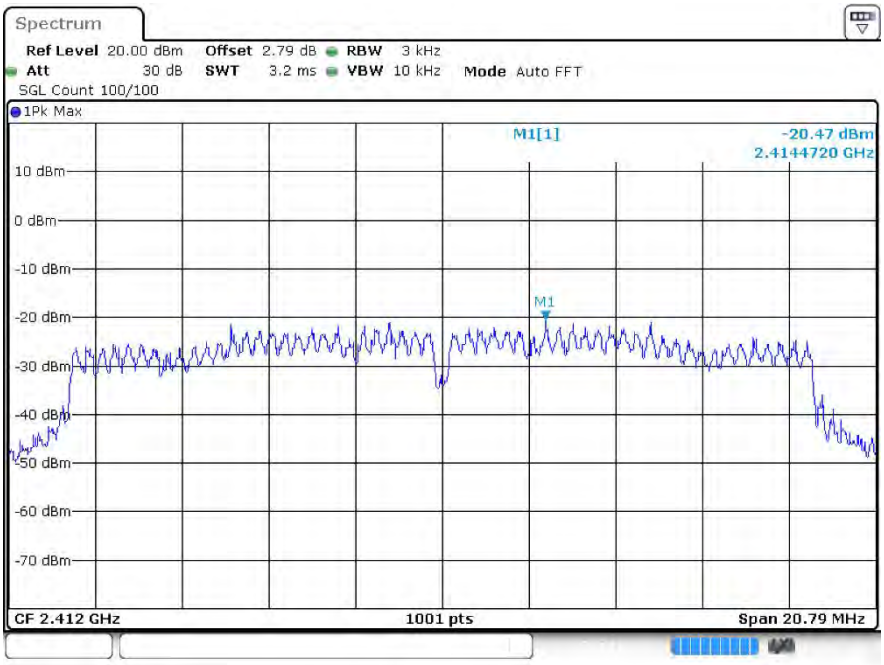


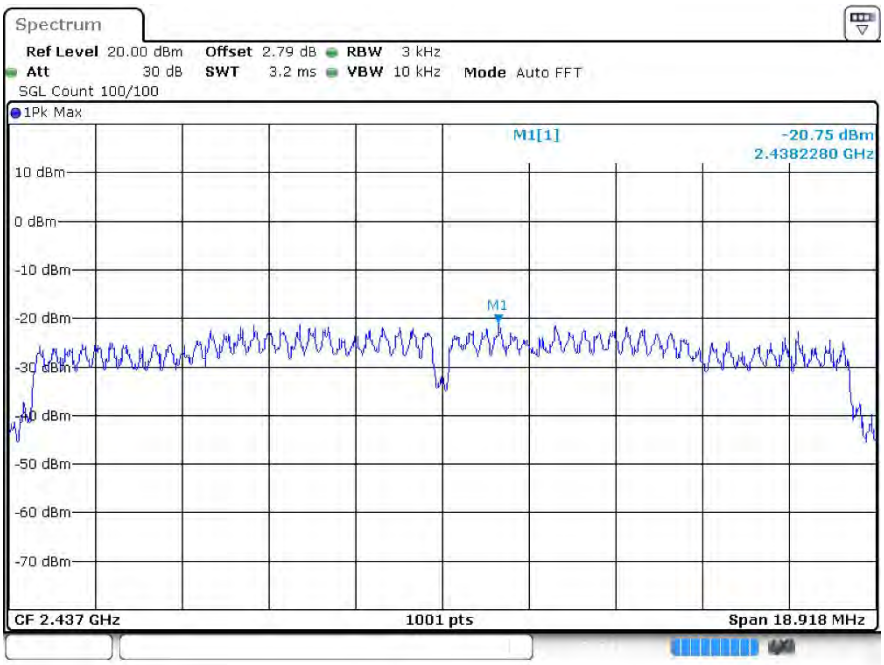
PSD g 2462MHz Ant1



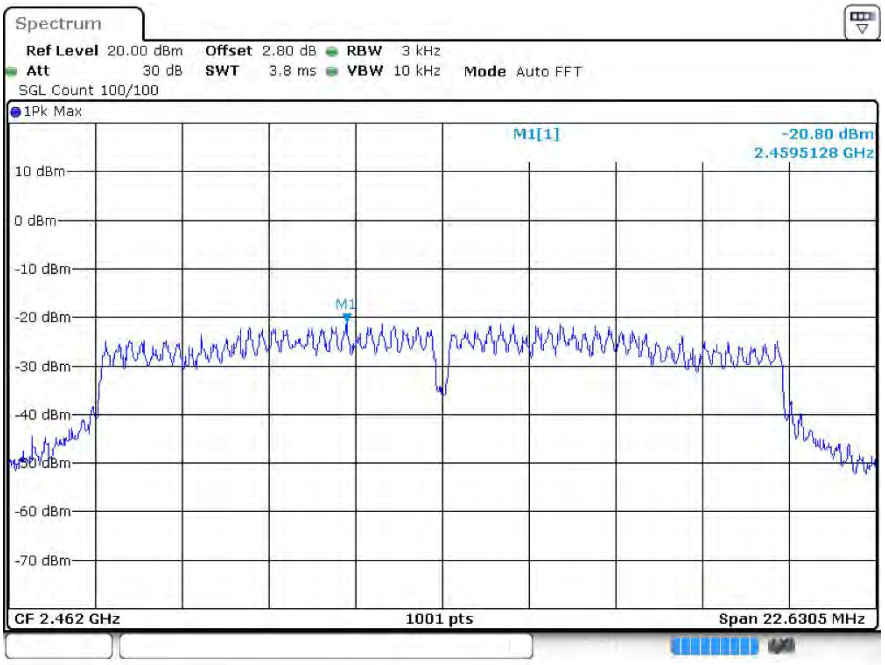
PSD n20 2412MHz Ant1



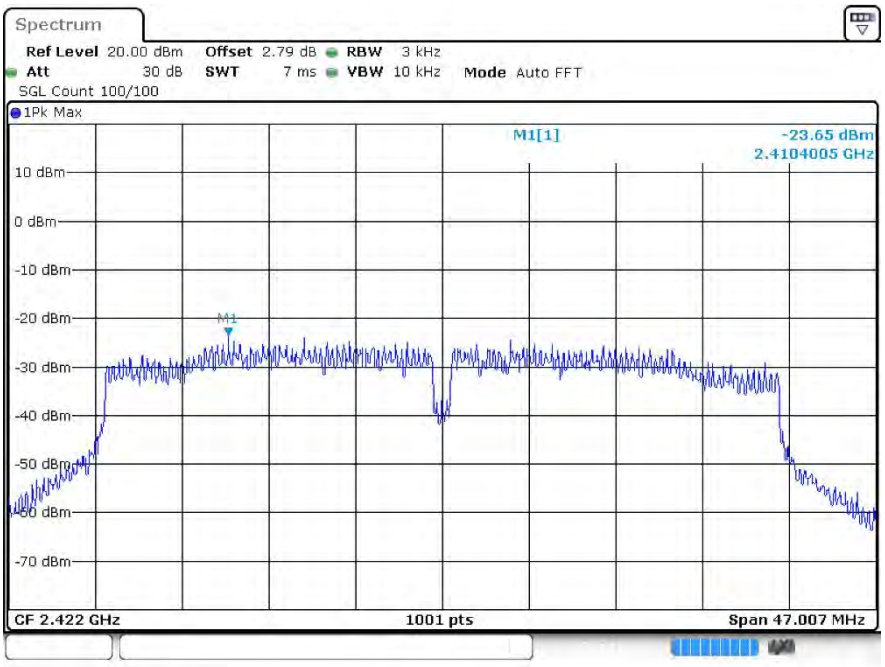
PSD n20 2437MHz Ant1



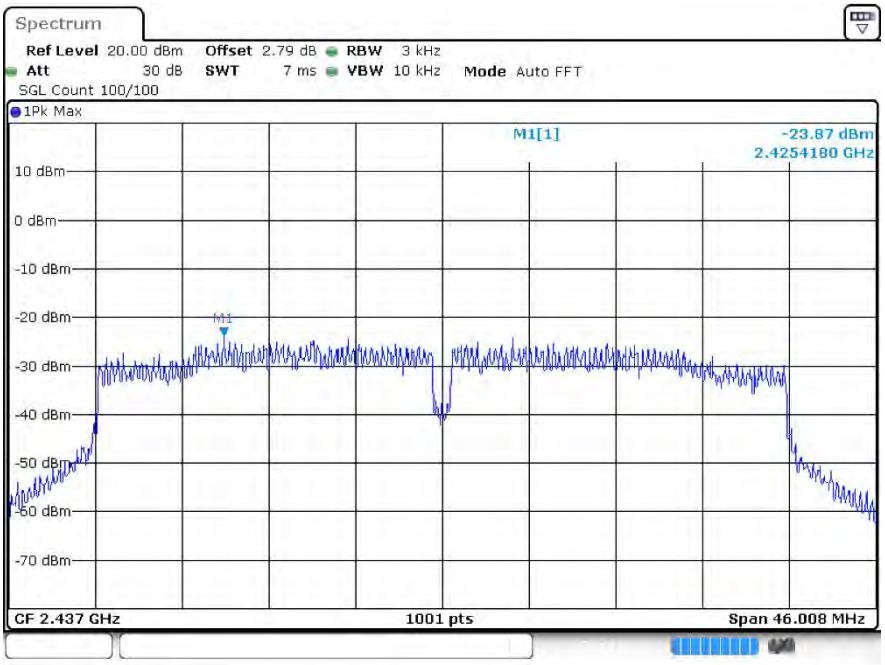
PSD n20 2462MHz Ant1



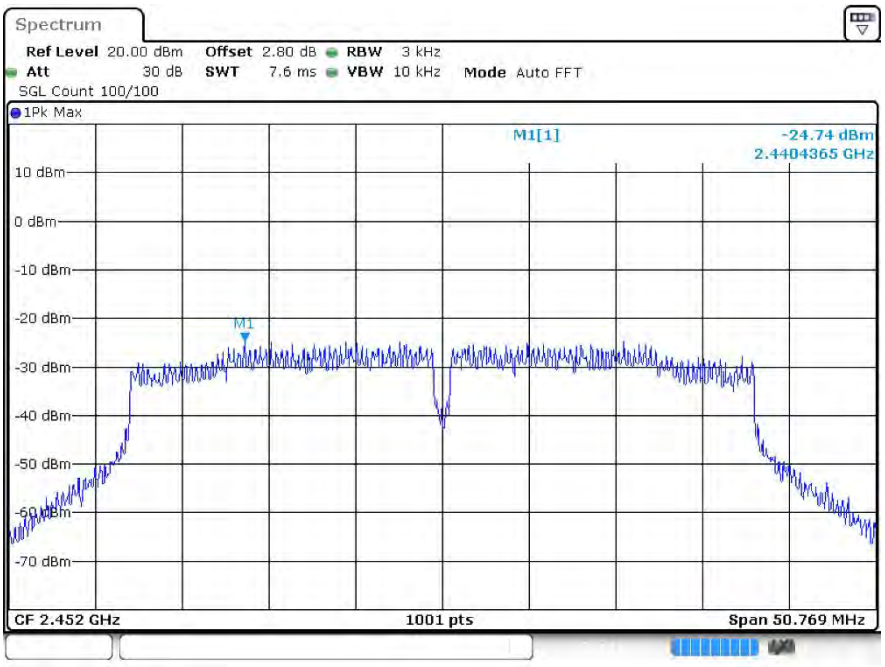
PSD n40 2422MHz Ant1



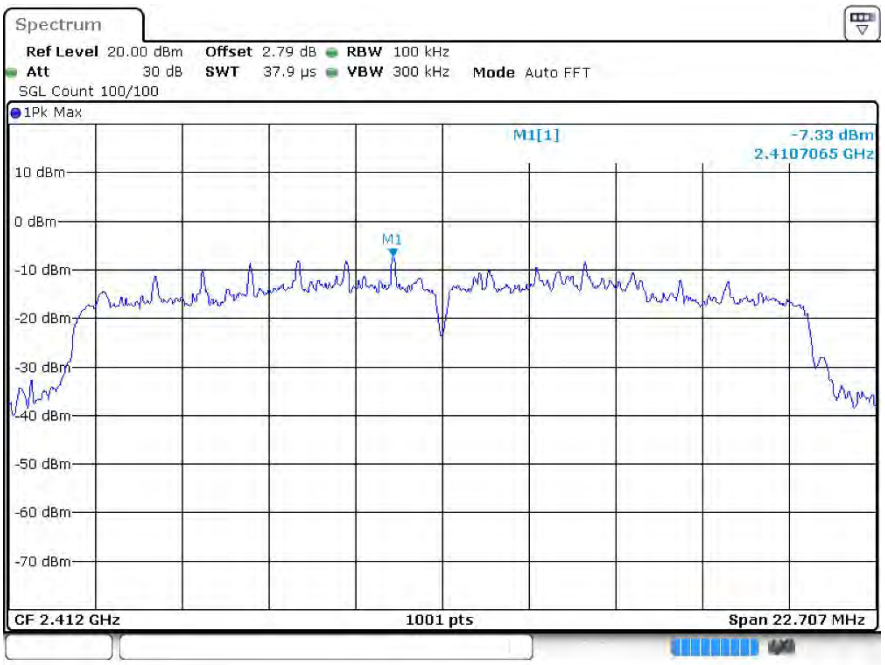
PSD n40 2437MHz Ant1



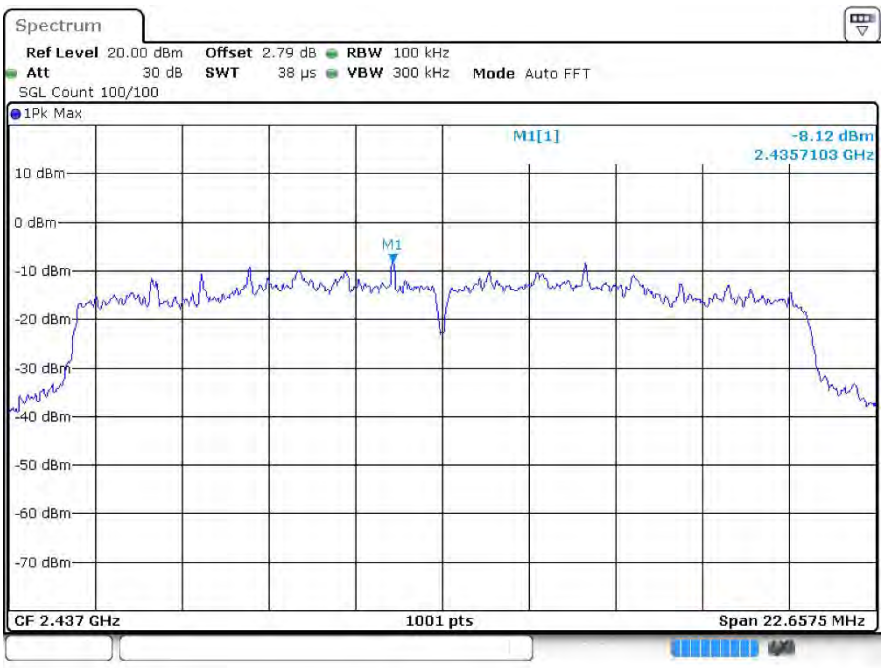
PSD n40 2452MHz Ant1



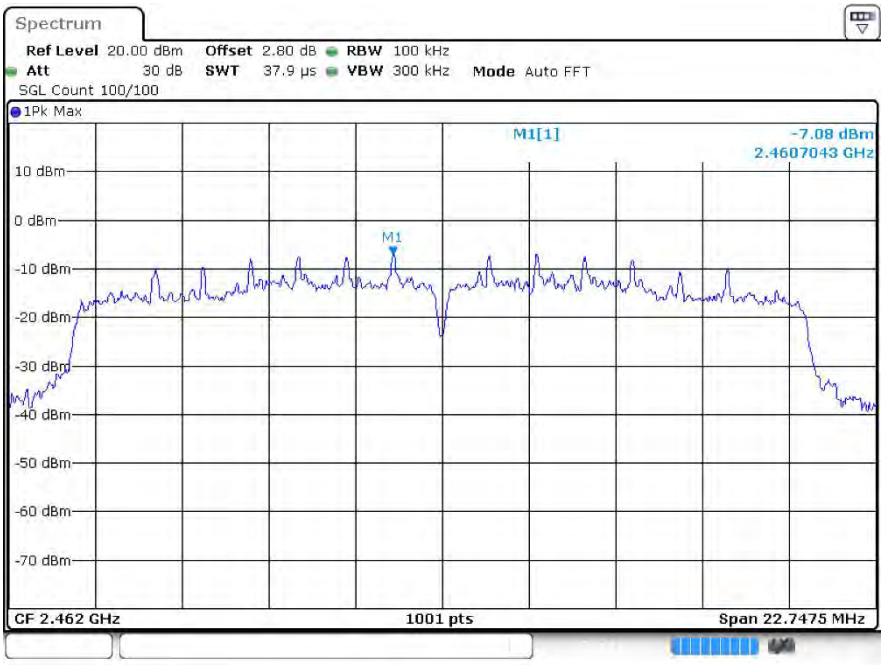
PSD ax20 2412MHz Ant1



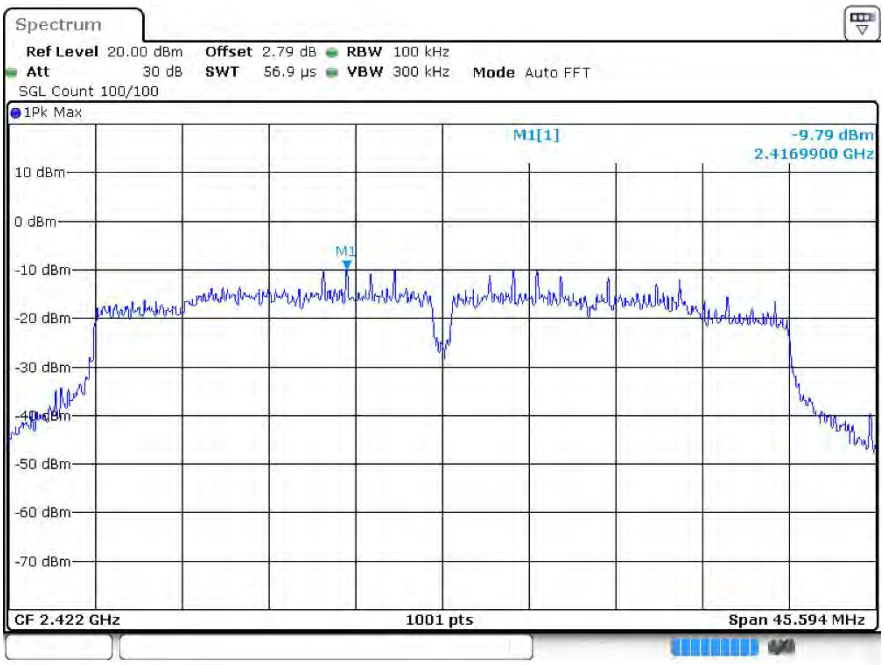
PSD ax20 2437MHz Ant1



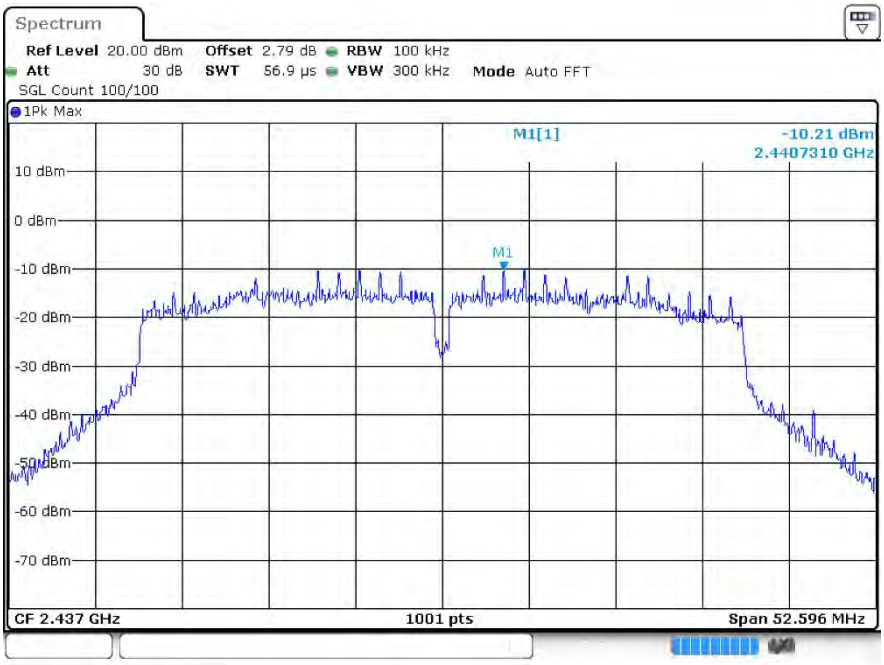
PSD ax20 2462MHz Ant1



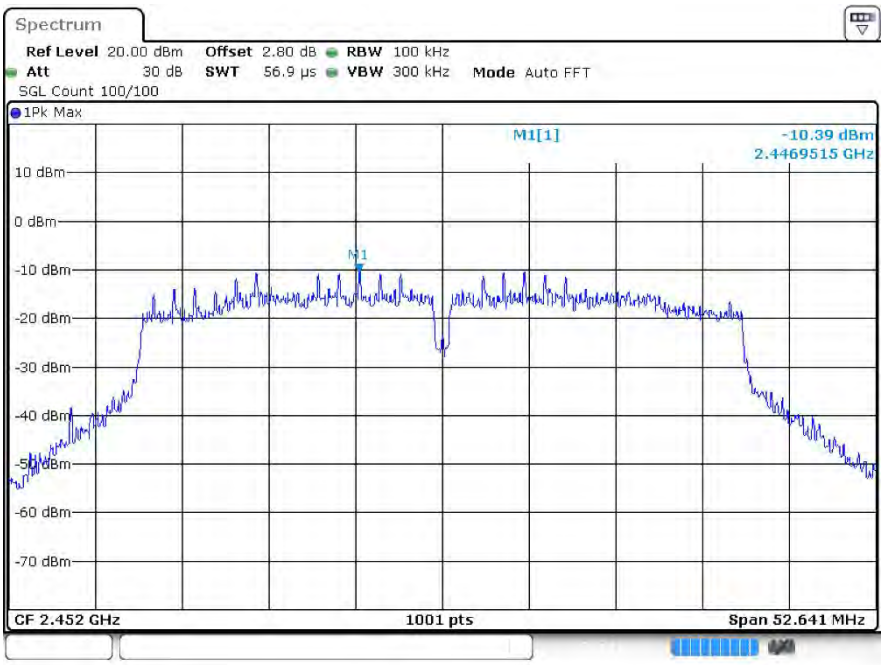
PSD ax40 2422MHz Ant1



PSD ax40 2437MHz Ant1



PSD ax40 2452MHz Ant1



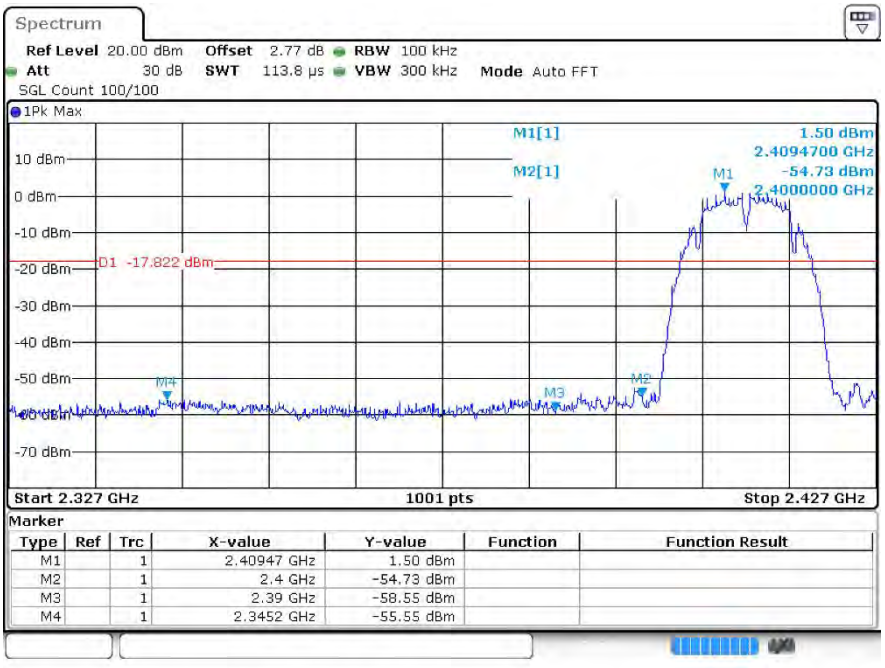
5 Band Edge

5.1 Test Result

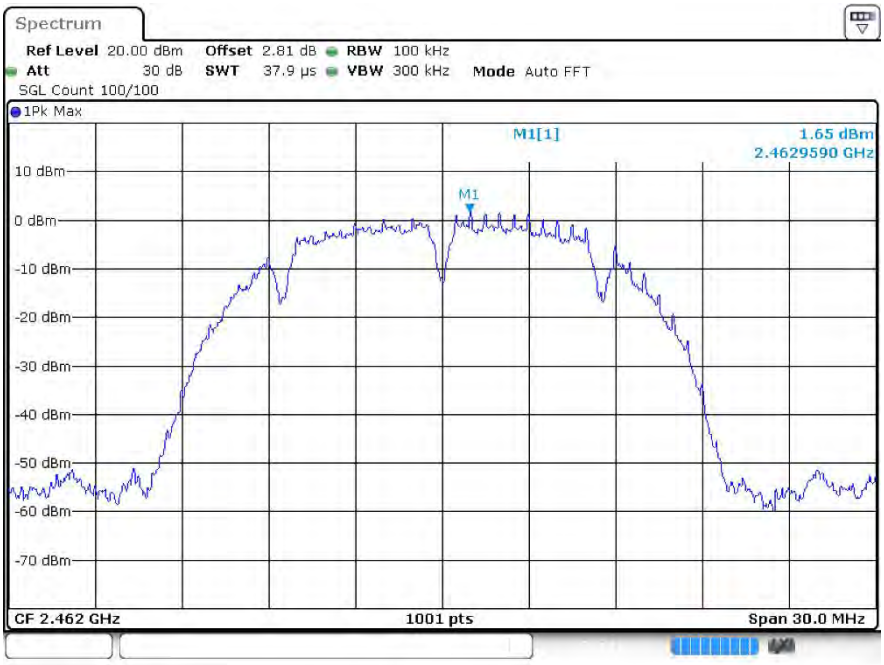
Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
b	2412	Ant0	-57.73	-20	Pass
b	2462	Ant0	-54.82	-20	Pass
g	2412	Ant0	-54.41	-20	Pass
g	2462	Ant0	-54.28	-20	Pass
n20	2412	Ant0	-49.88	-20	Pass
n20	2462	Ant0	-49.19	-20	Pass
n40	2422	Ant0	-46.14	-20	Pass
n40	2452	Ant0	-46.89	-20	Pass
ax20	2412	Ant0	-49.49	-20	Pass
ax20	2462	Ant0	-51.11	-20	Pass
ax40	2422	Ant0	-45.42	-20	Pass
ax40	2452	Ant0	-47.68	-20	Pass
b	2412	Ant1	-55.49	-20	-55.49
b	2462	Ant1	-55.87	-20	Pass
g	2412	Ant1	-50.32	-20	Pass
g	2462	Ant1	-54.27	-20	Pass
n20	2412	Ant1	-48.5	-20	Pass
n20	2462	Ant1	-49.38	-20	Pass
n40	2422	Ant1	-45.64	-20	Pass
n40	2452	Ant1	-45.55	-20	Pass
ax20	2412	Ant1	-48.49	-20	Pass
ax20	2462	Ant1	-48.72	-20	Pass
ax40	2422	Ant1	-45.84	-20	Pass
ax40	2452	Ant1	-44.88	-20	Pass

5.2 Test Graphs

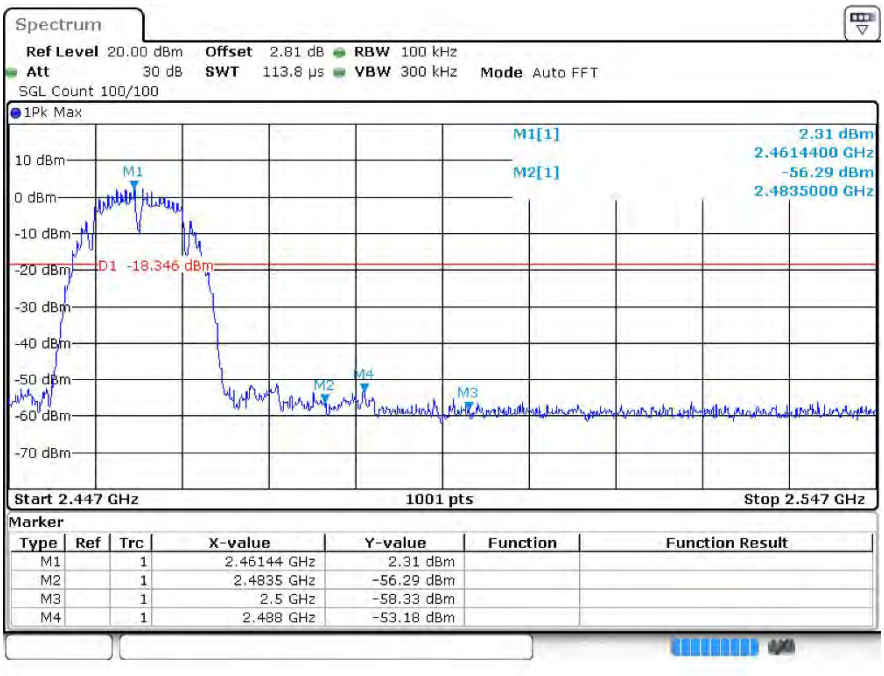
Test Graphs
b 2412MHz Ant0 Ref

b 2412MHz Ant0 Emission


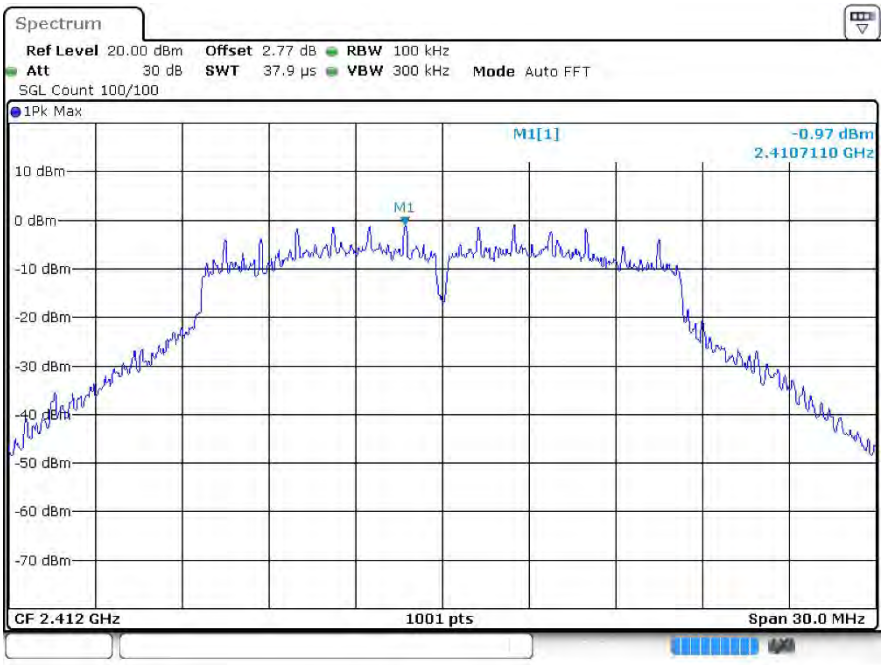
b 2462MHz Ant0 Ref



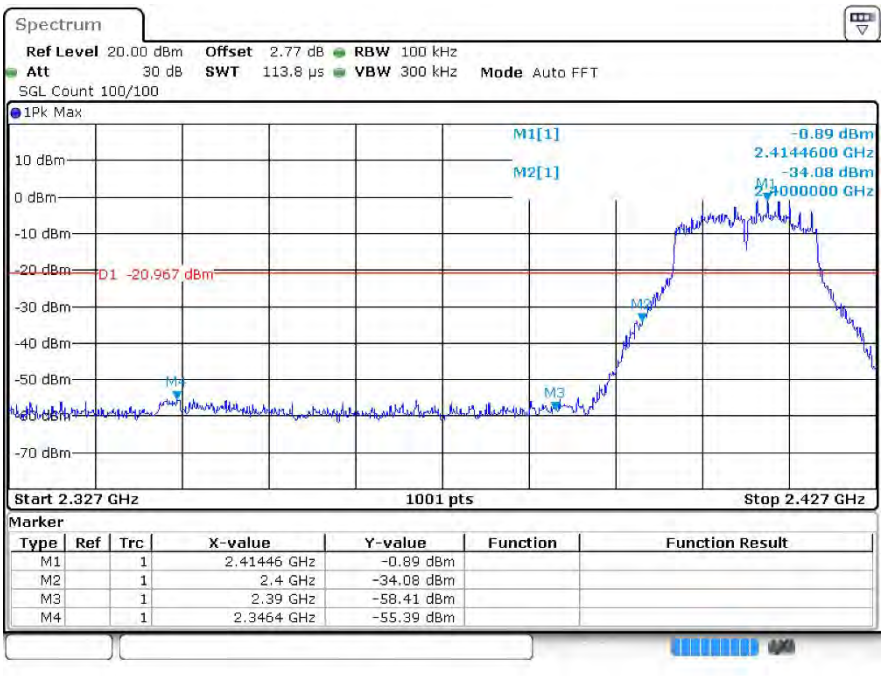
b 2462MHz Ant0 Emission



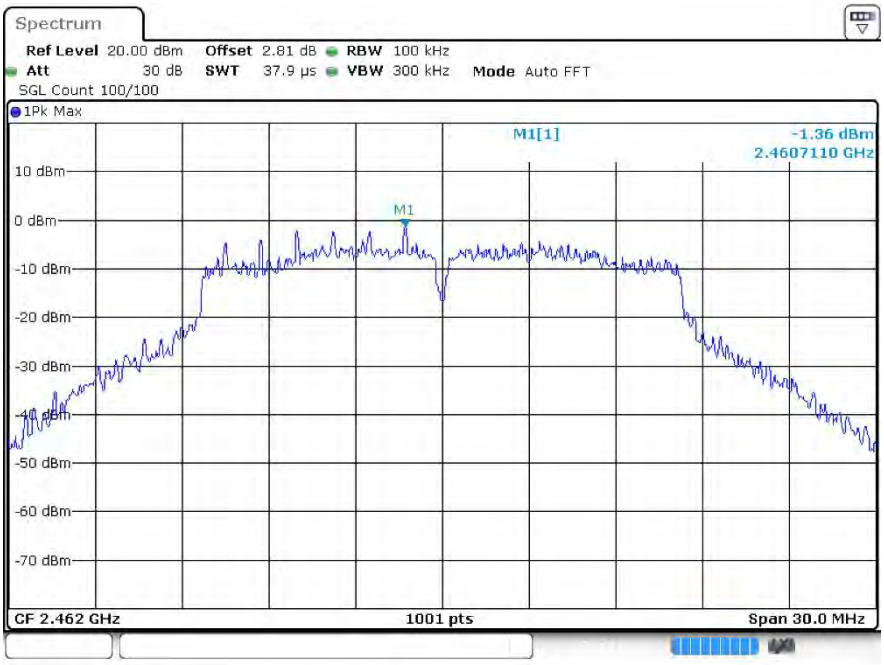
g 2412MHz Ant0 Ref



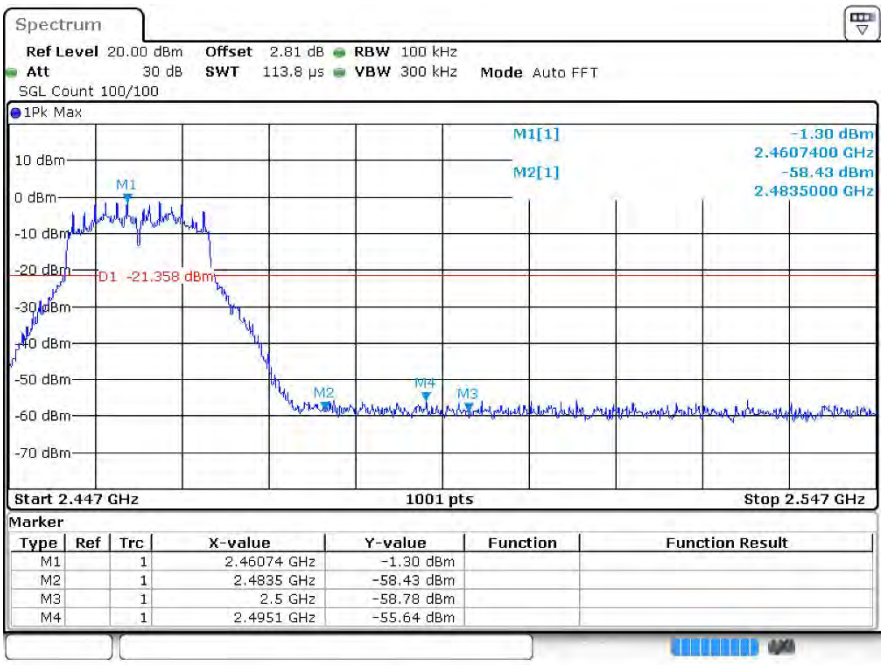
g 2412MHz Ant0 Emission



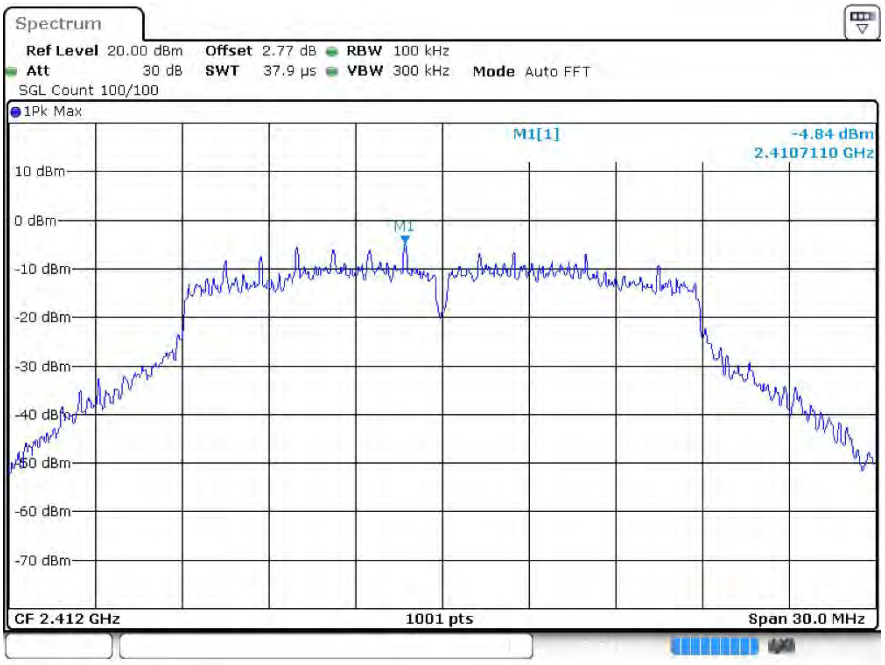
g 2462MHz Ant0 Ref



g 2462MHz Ant0 Emission



n20 2412MHz Ant0 Ref



n20 2412MHz Ant0 Emission