



Appendix C

RF Test Data for 2.4GWIFI (Conducted Measurement)

Product Name: M5CoreS3

Trade Mark: M5STACK

Test Model: CoreS3

Environmental Conditions

Temperature:	25.9° C
Relative Humidity:	51.8%
ATM Pressure:	100.0 kPa
Test Engineer:	Simba Huang
Supervised by:	Seal Chen



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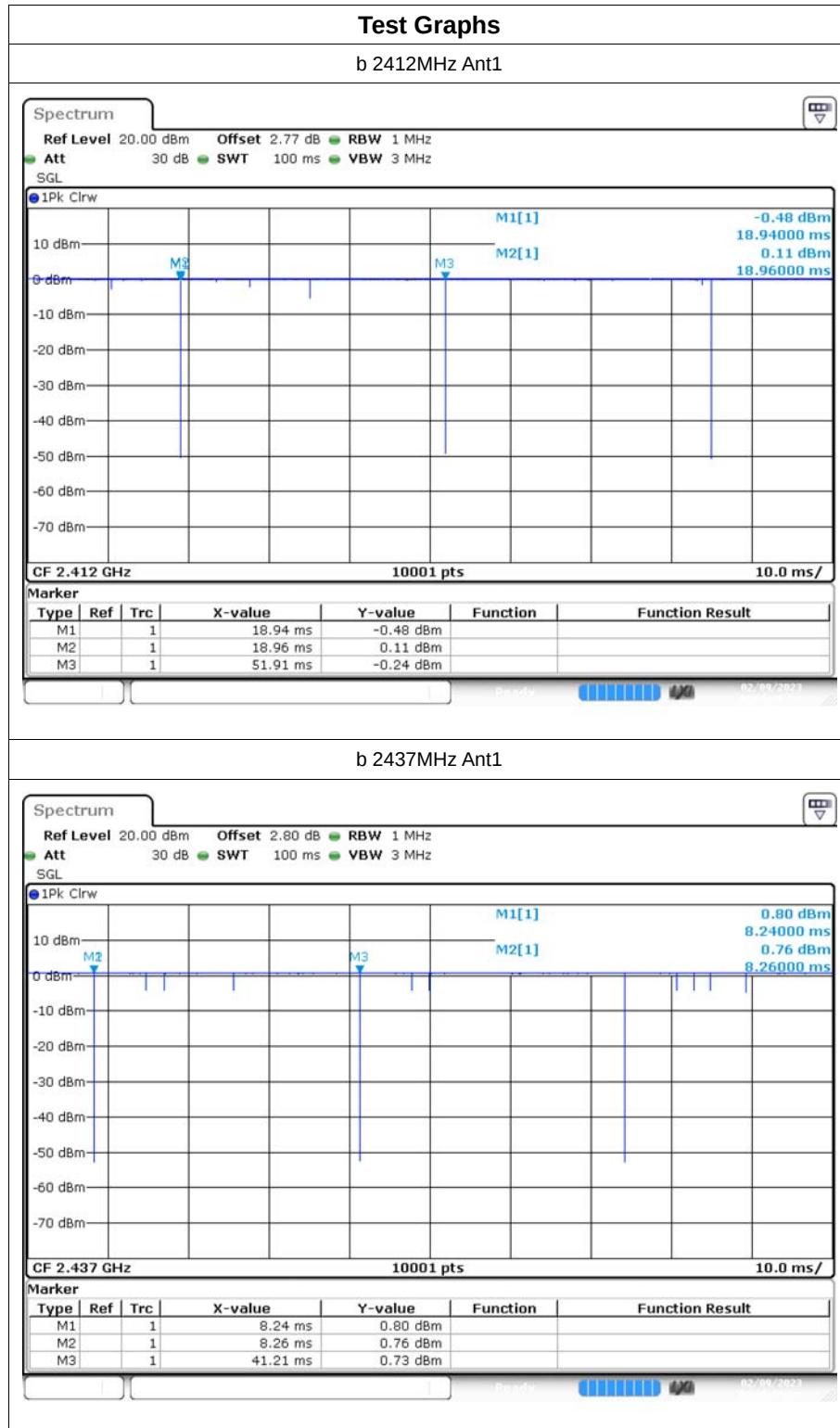


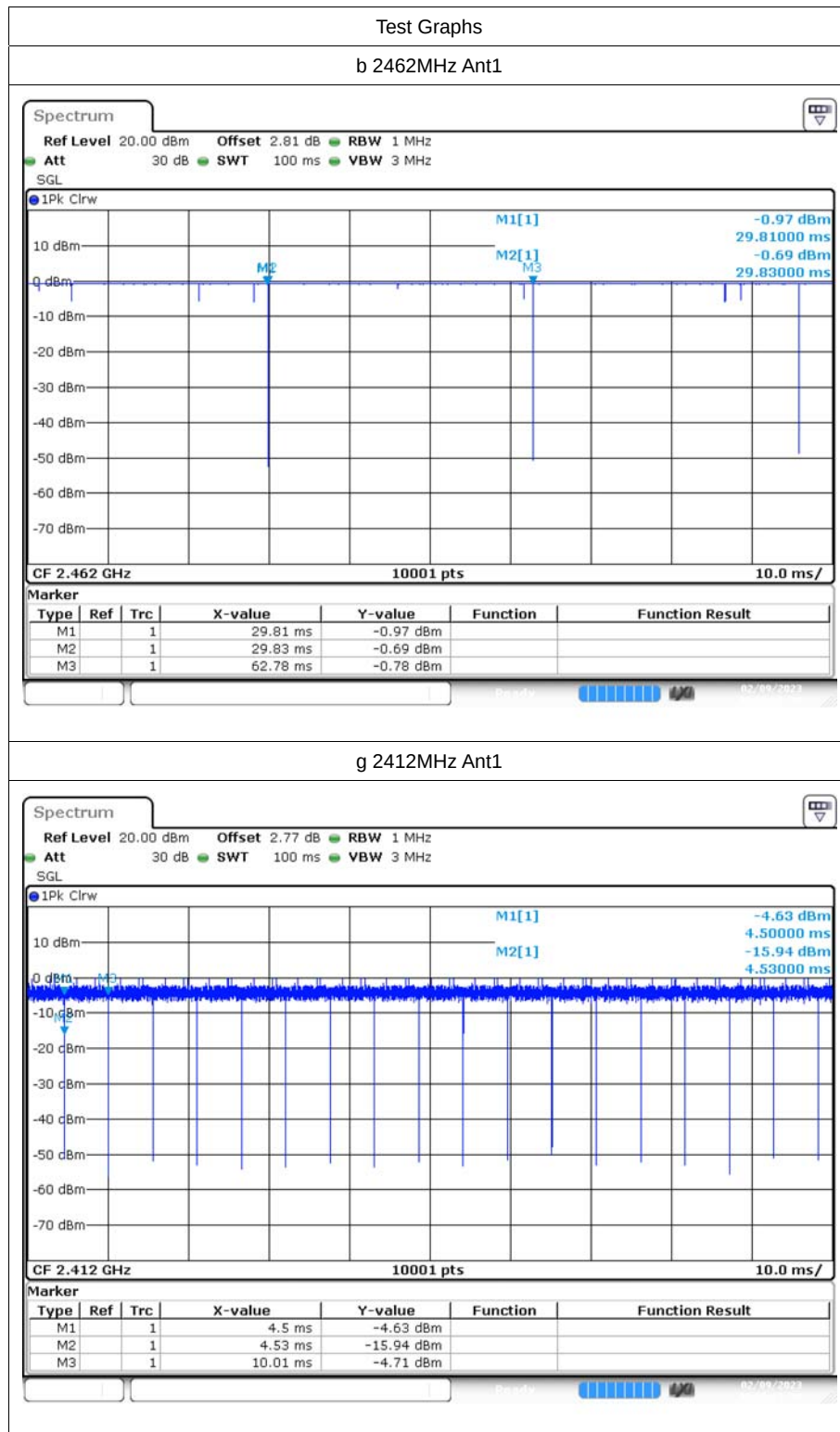
1 Duty Cycle

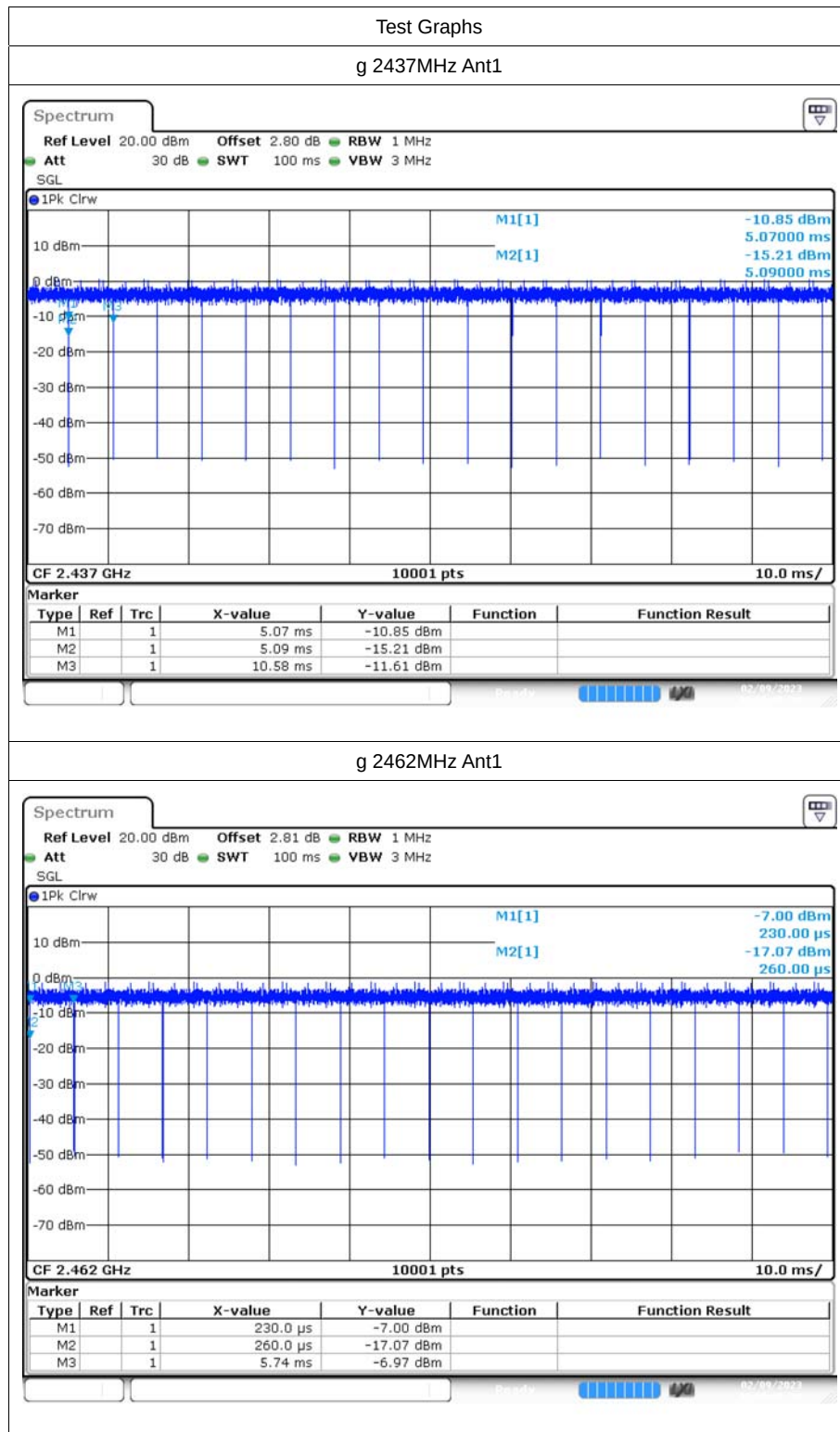
1.1 Test Result

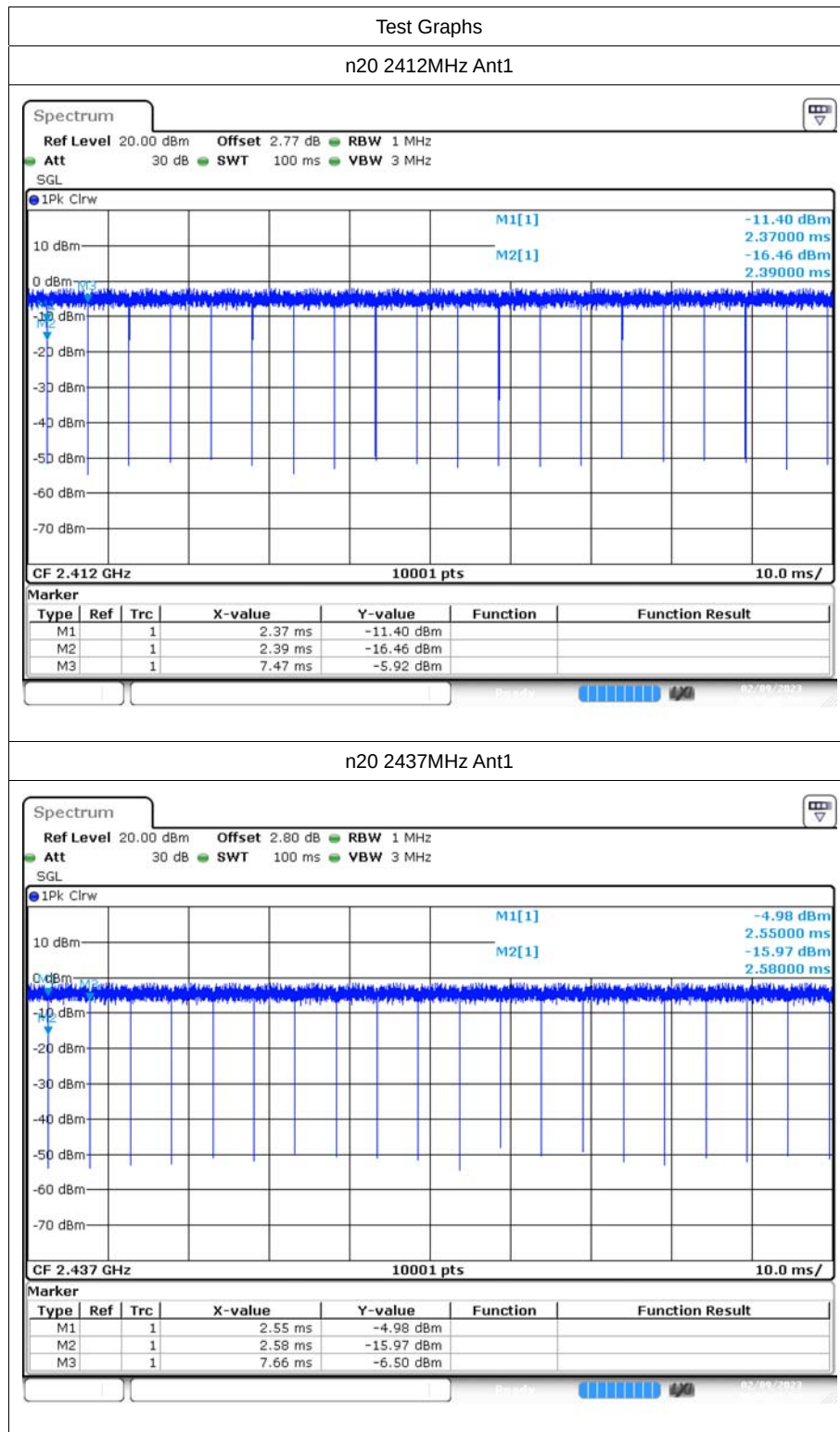
Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	1/T (kHz)
802.11b	2412	Ant1	99.97	0.03
802.11b	2437	Ant1	99.97	0.03
802.11b	2462	Ant1	99.97	0.03
802.11g	2412	Ant1	99.64	0.18
802.11g	2437	Ant1	99.73	0.18
802.11g	2462	Ant1	99.67	0.18
802.11n20	2412	Ant1	99.69	0.2
802.11n20	2437	Ant1	99.68	0.2
802.11n20	2462	Ant1	99.69	0.2
802.11n40	2422	Ant1	99.04	0.41
802.11n40	2437	Ant1	99.06	0.41
802.11n40	2452	Ant1	99.04	0.41

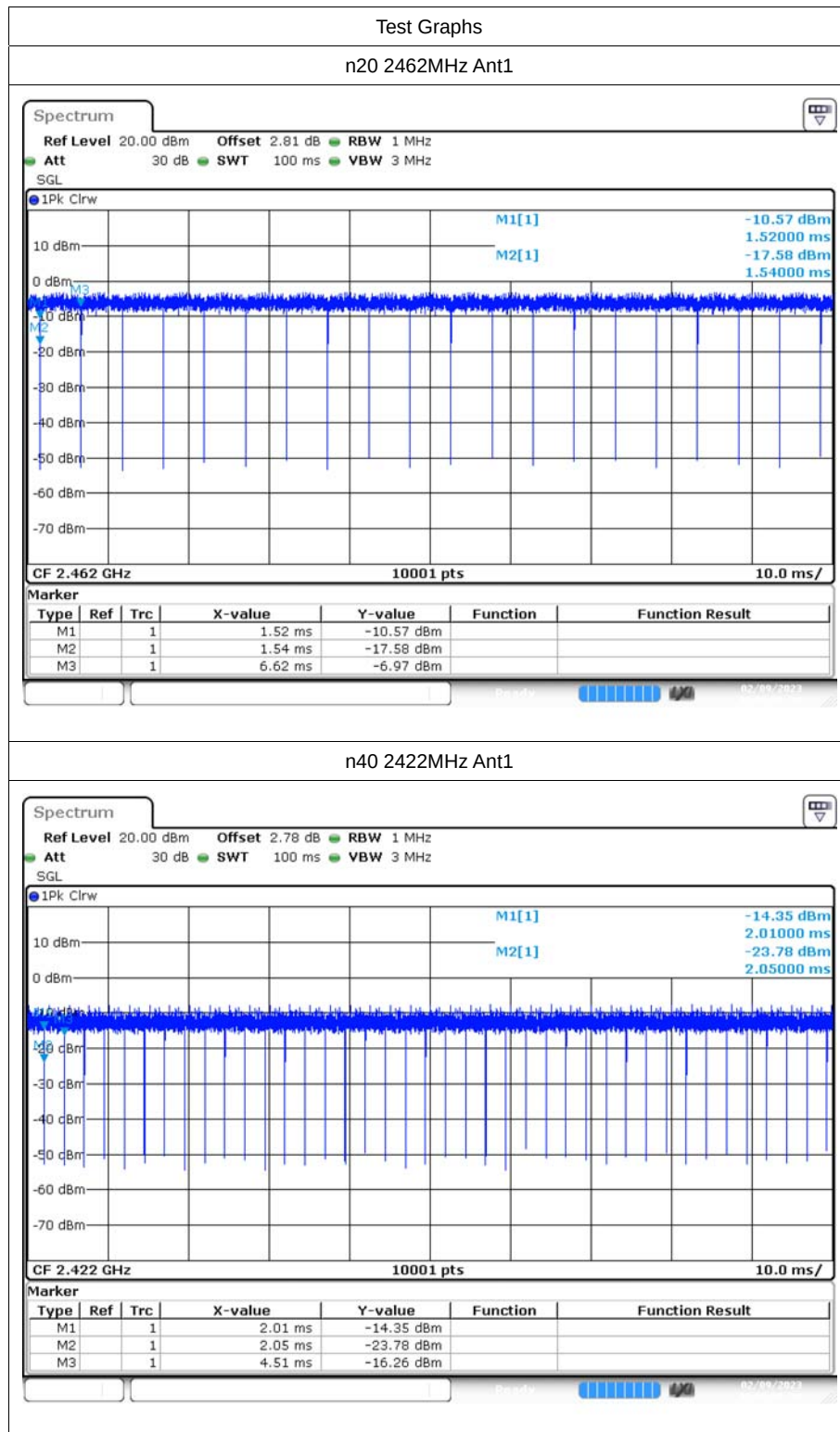
1.2 Test Graphs

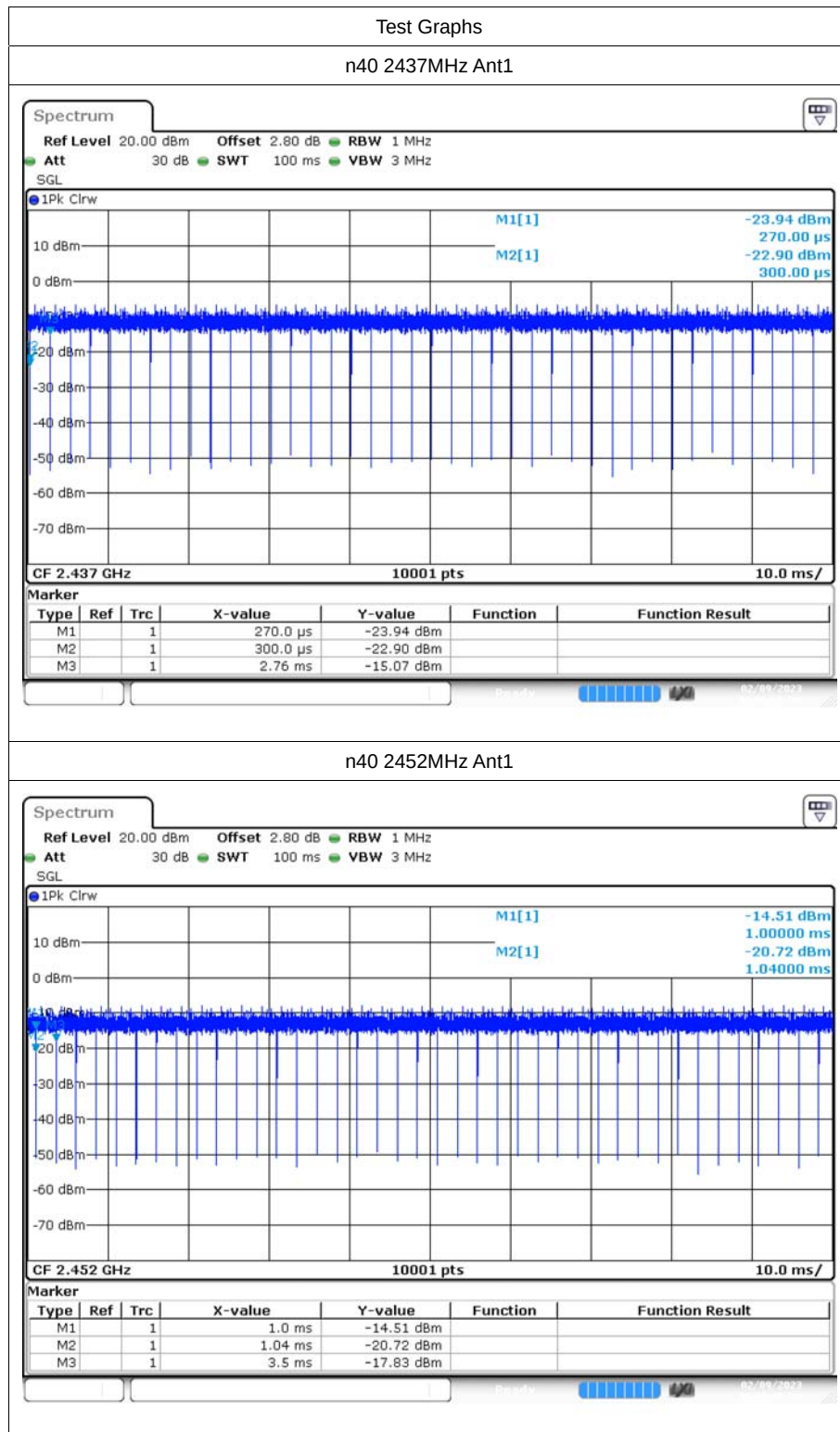














2 Maximum Conducted Output Power

2.1 Test Result

Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Limit (dBm)	Verdict
802.11b	2412	Ant1	9.86	30	Pass
802.11b	2437	Ant1	10.31	30	Pass
802.11b	2462	Ant1	8.9	30	Pass
802.11g	2412	Ant1	9.23	30	Pass
802.11g	2437	Ant1	9.48	30	Pass
802.11g	2462	Ant1	8.19	30	Pass
802.11n20	2412	Ant1	8.73	30	Pass
802.11n20	2437	Ant1	8.96	30	Pass
802.11n20	2462	Ant1	7.6	30	Pass
802.11n40	2422	Ant1	8.2	30	Pass
802.11n40	2437	Ant1	8.06	30	Pass
802.11n40	2452	Ant1	7.58	30	Pass

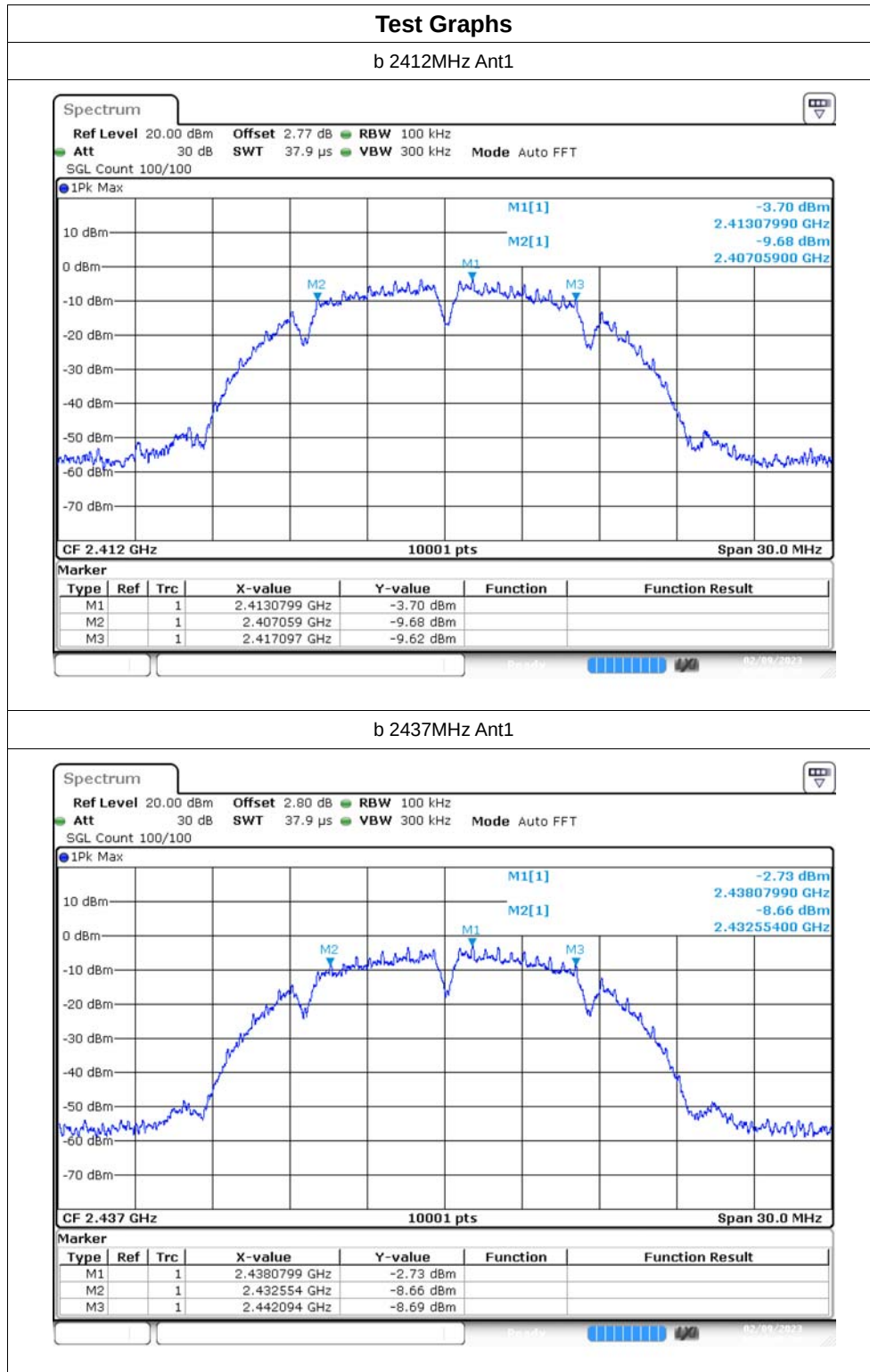


3 -6dB Bandwidth

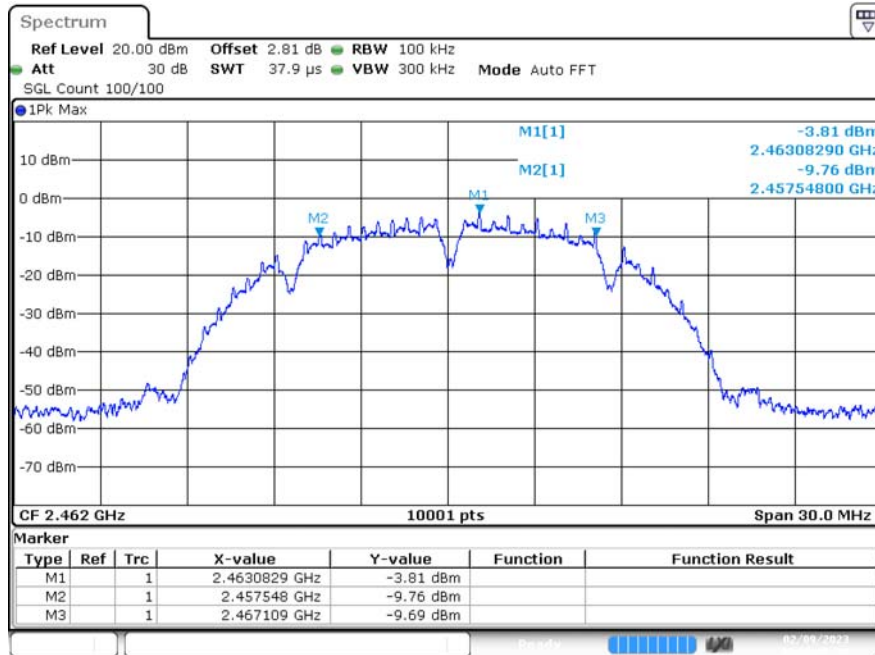
3.1 Test Result

Mode	Frequency (MHz)	Antenna	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
802.11b	2412	Ant1	10.038	0.5	Pass
802.11b	2437	Ant1	9.54	0.5	Pass
802.11b	2462	Ant1	9.561	0.5	Pass
802.11g	2412	Ant1	16.506	0.5	Pass
802.11g	2437	Ant1	16.398	0.5	Pass
802.11g	2462	Ant1	16.536	0.5	Pass
802.11n20	2412	Ant1	17.775	0.5	Pass
802.11n20	2437	Ant1	17.688	0.5	Pass
802.11n20	2462	Ant1	17.598	0.5	Pass
802.11n40	2422	Ant1	33.552	0.5	Pass
802.11n40	2437	Ant1	31.332	0.5	Pass
802.11n40	2452	Ant1	32.982	0.5	Pass

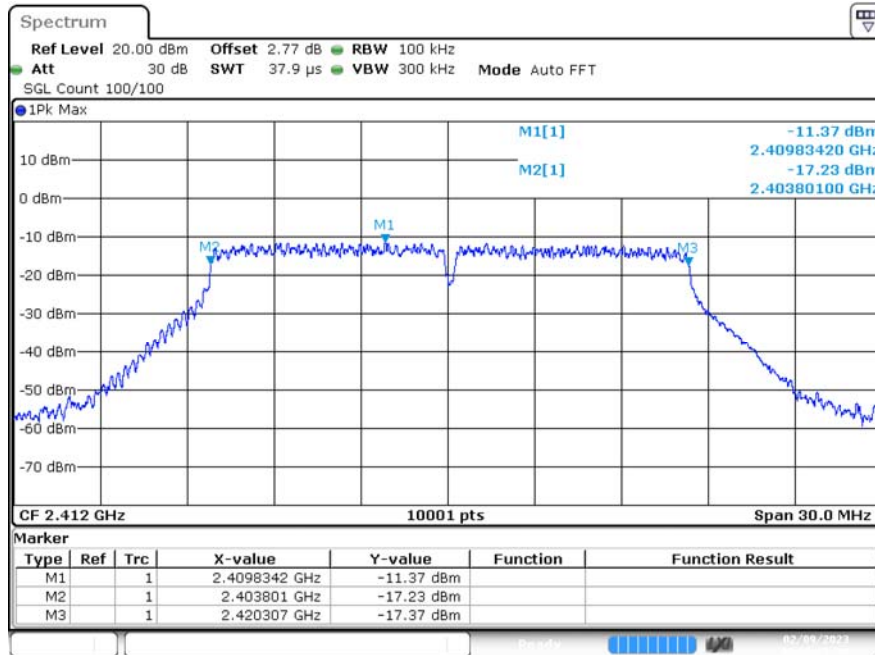
3.2 Test Graphs



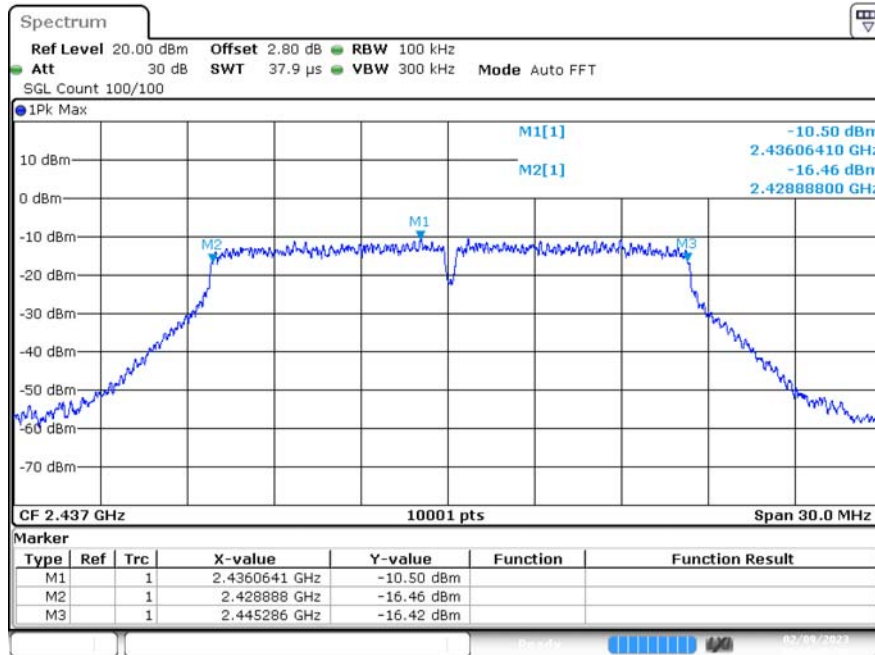
b 2462MHz Ant1



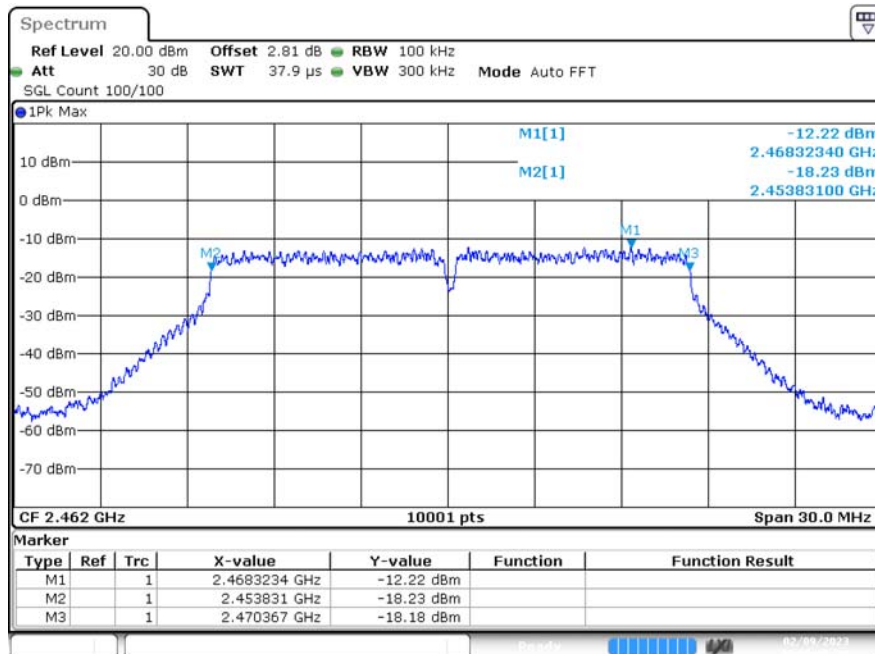
g 2412MHz Ant1



g 2437MHz Ant1

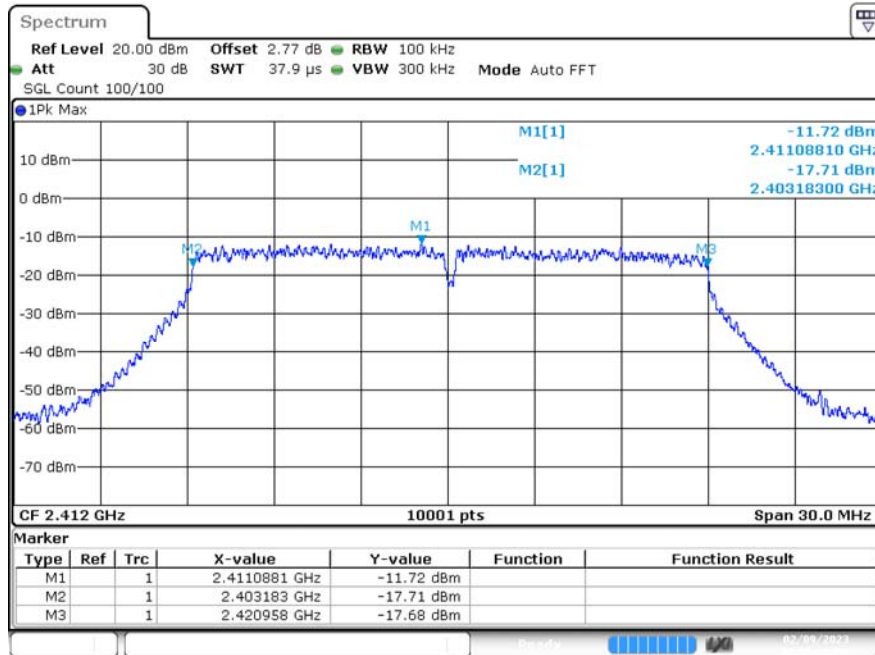


g 2462MHz Ant1

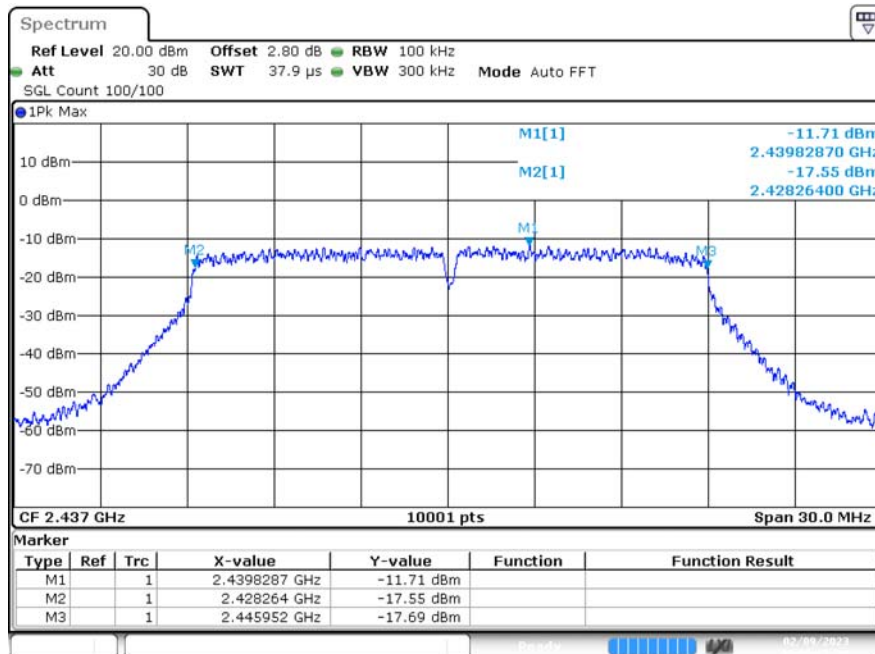




n20 2412MHz Ant1

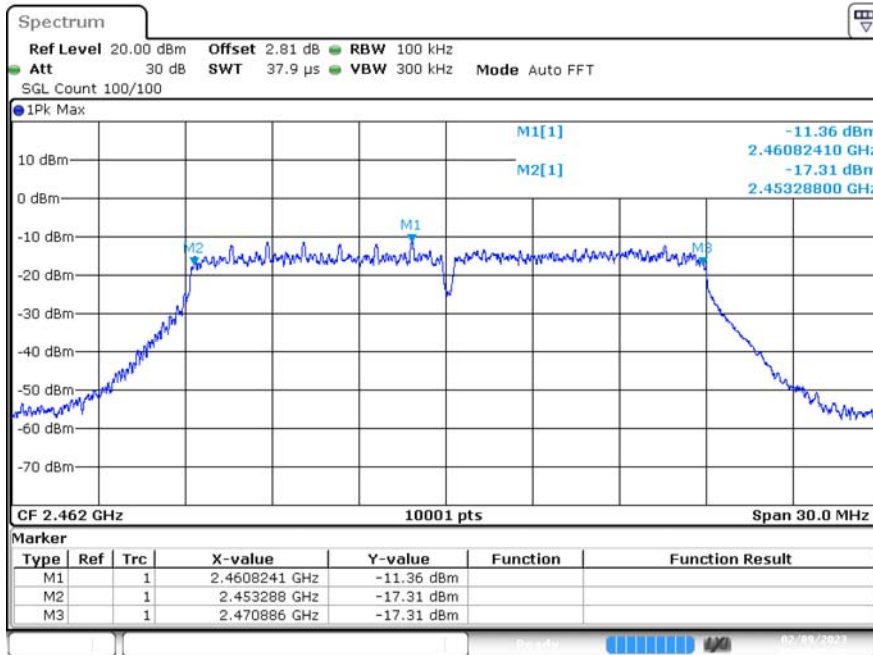


n20 2437MHz Ant1

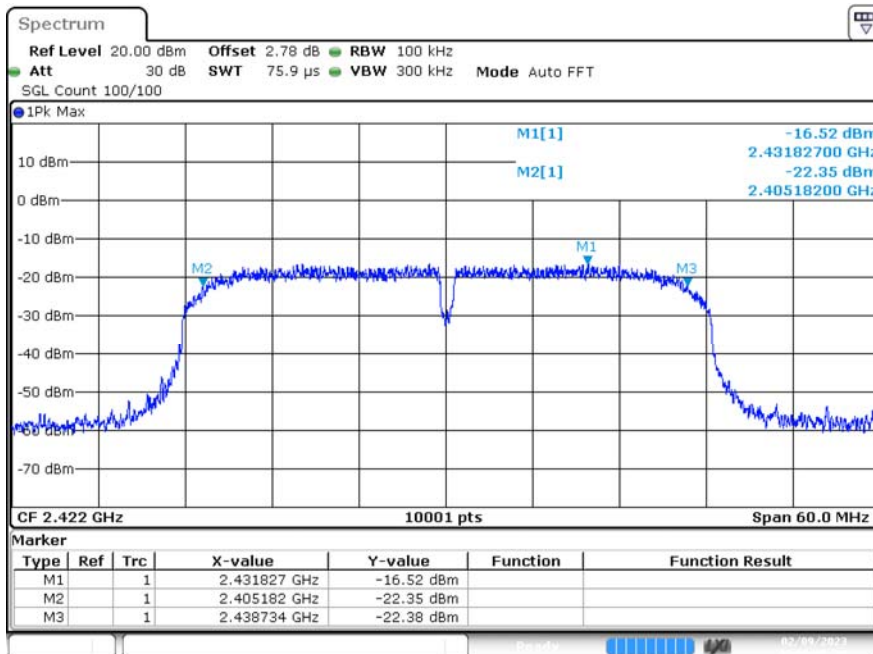




n20 2462MHz Ant1

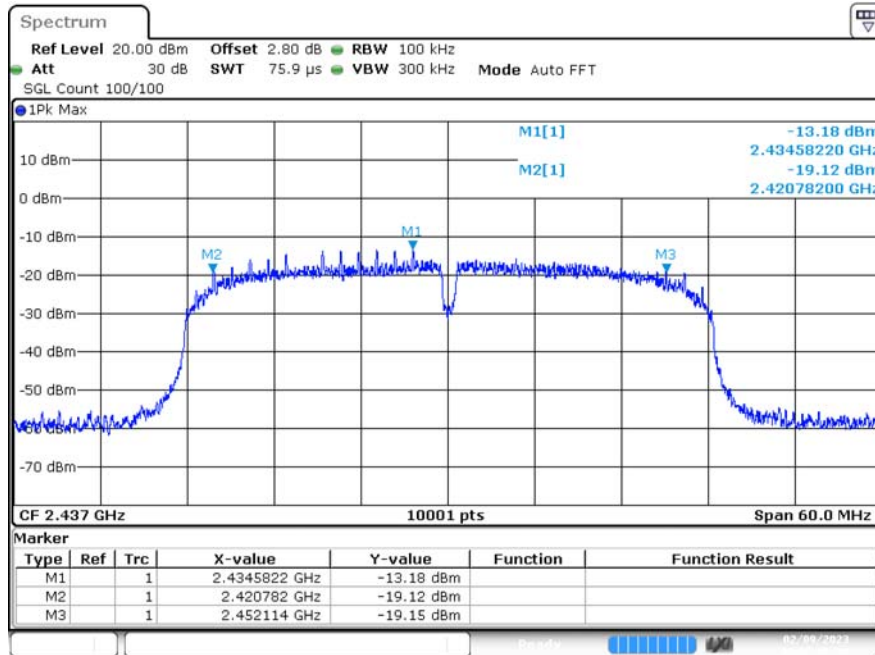


n40 2422MHz Ant1

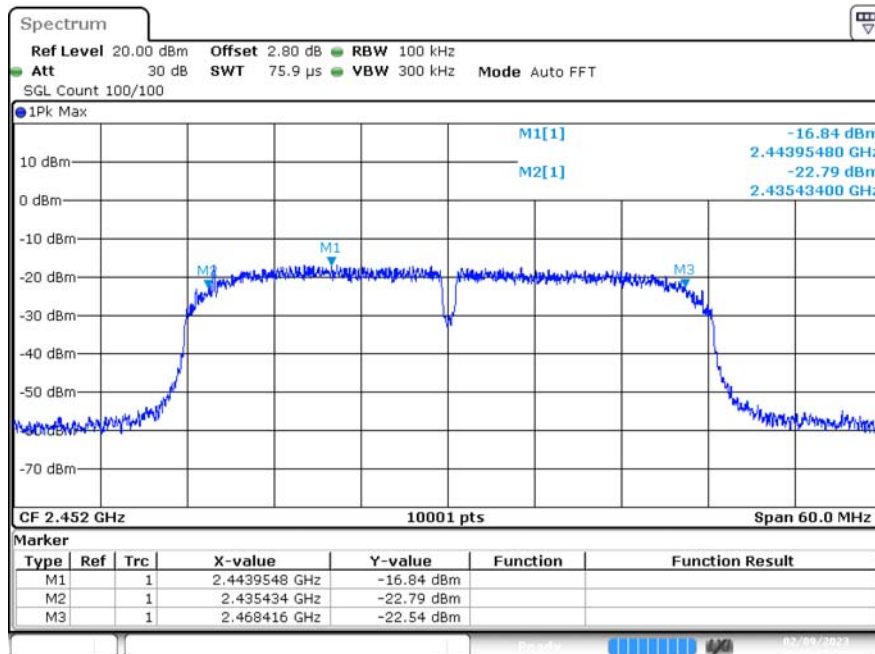




n40 2437MHz Ant1



n40 2452MHz Ant1



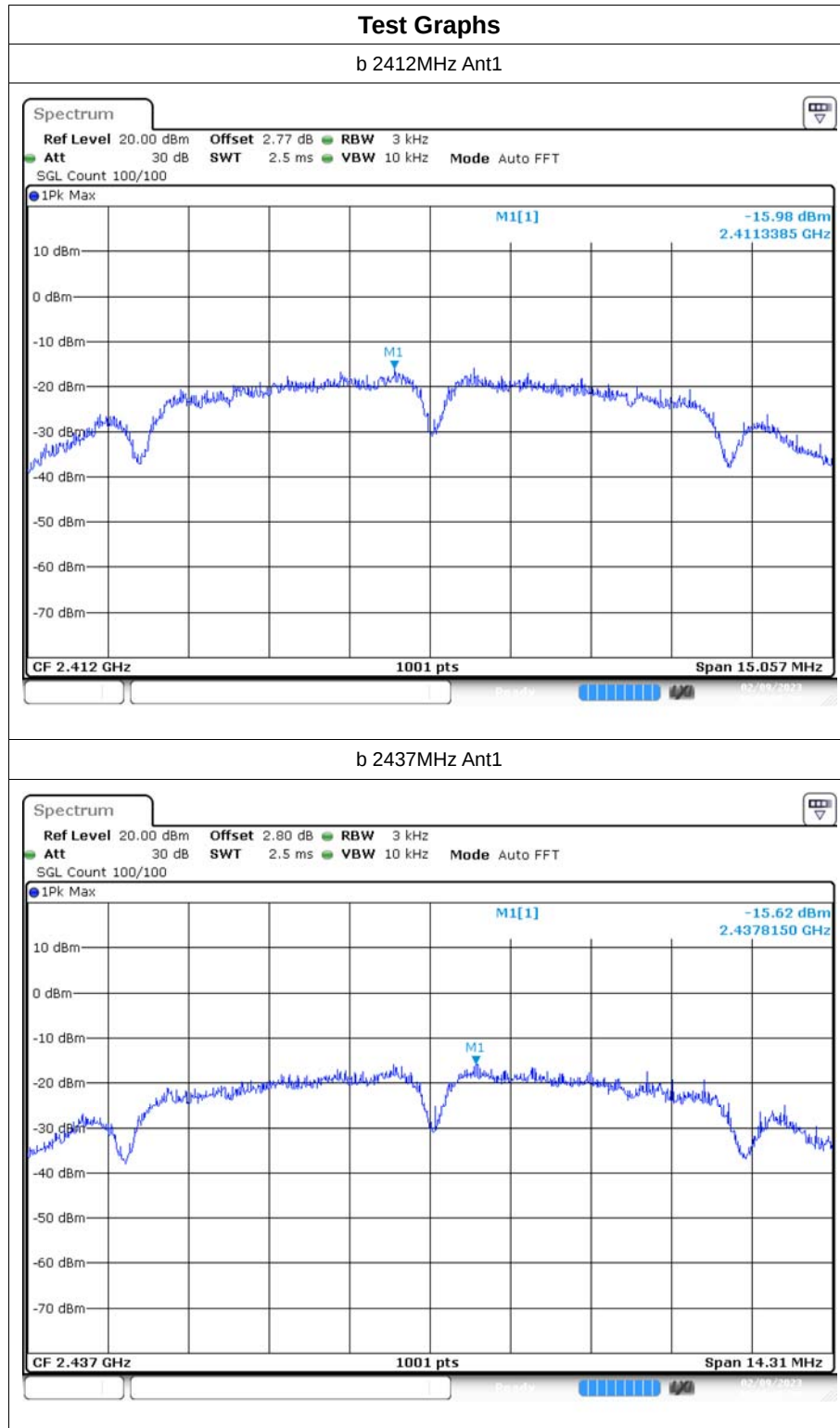


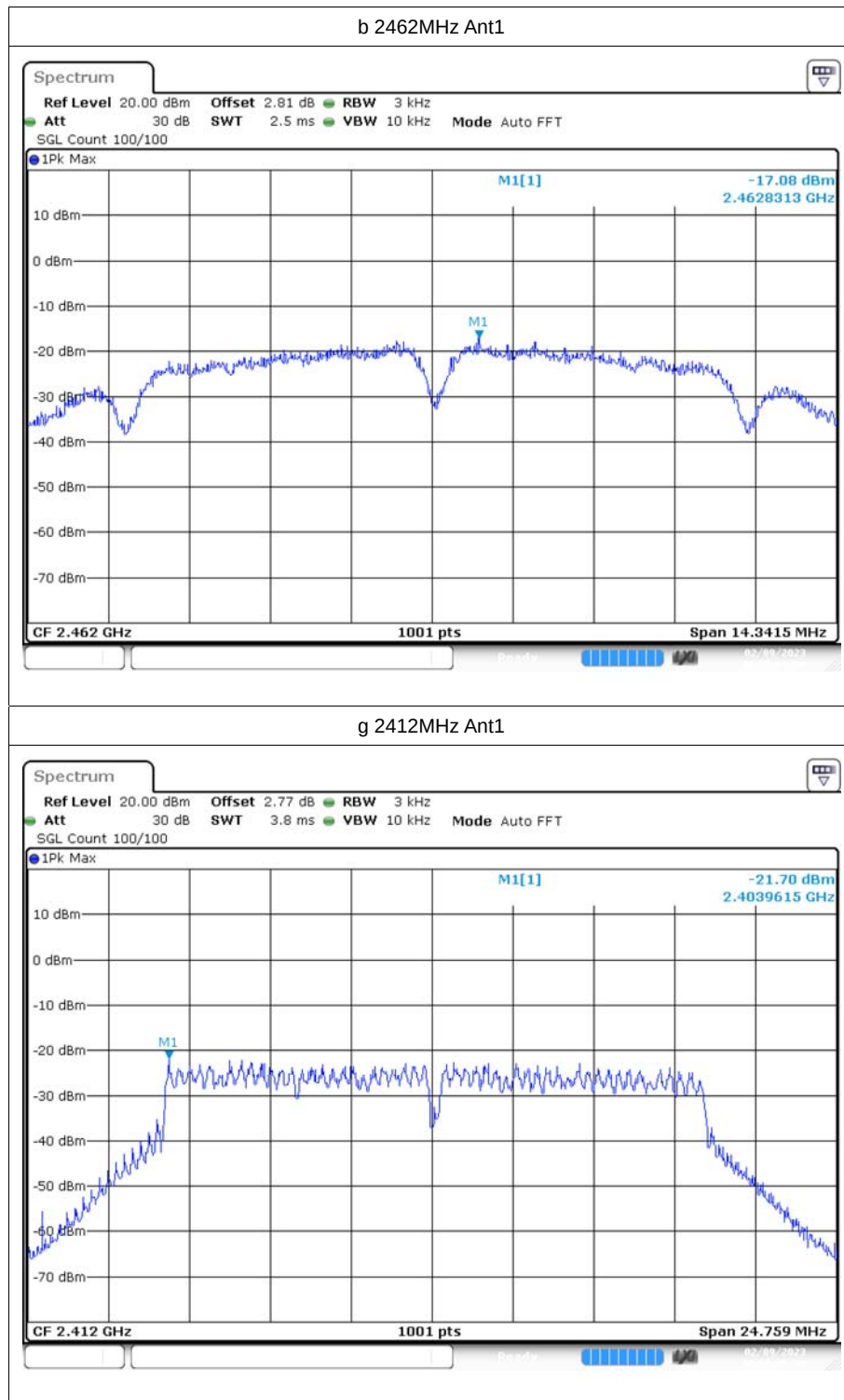
4 Maximum Power Spectral Density Level

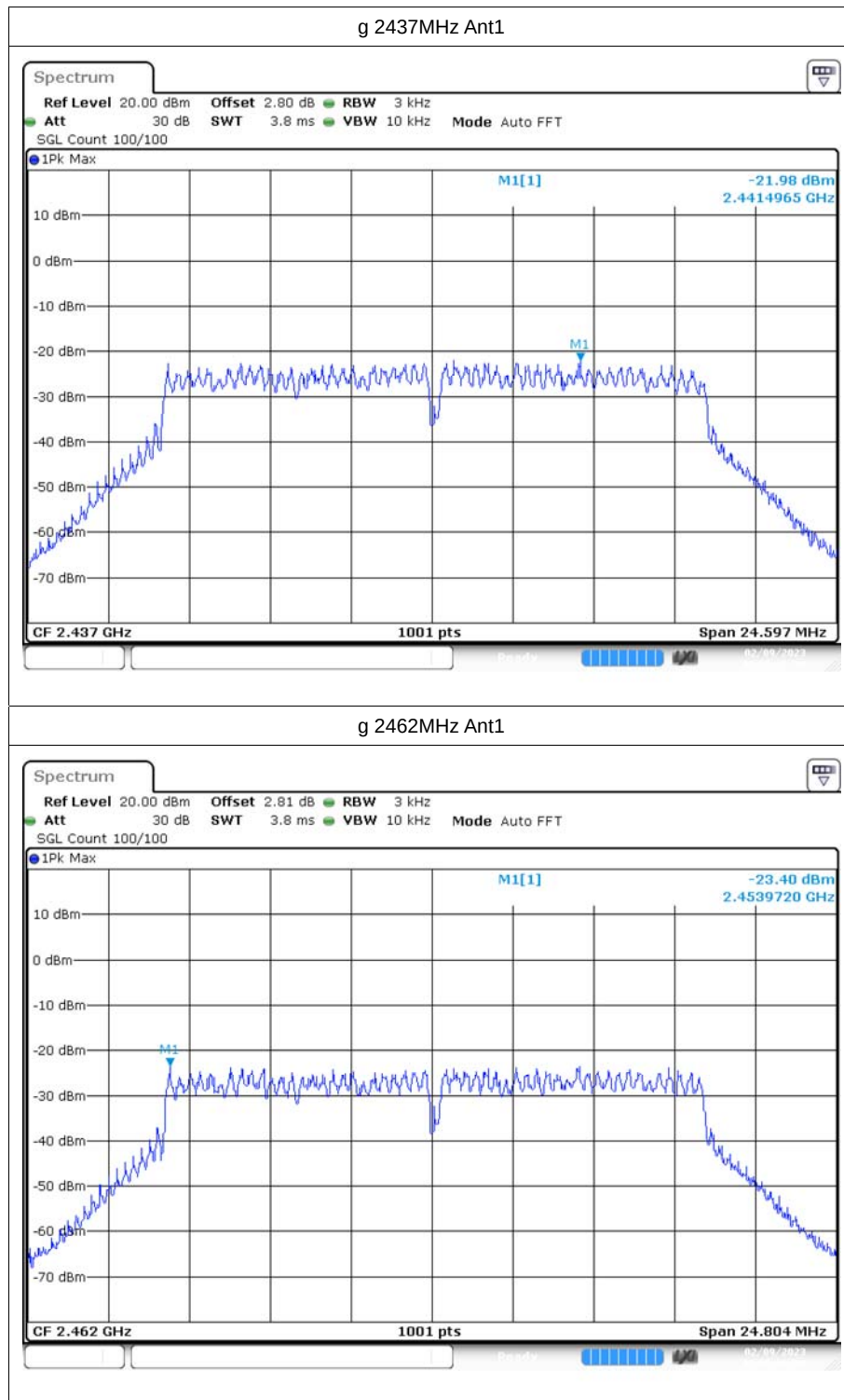
4.1 Test Result

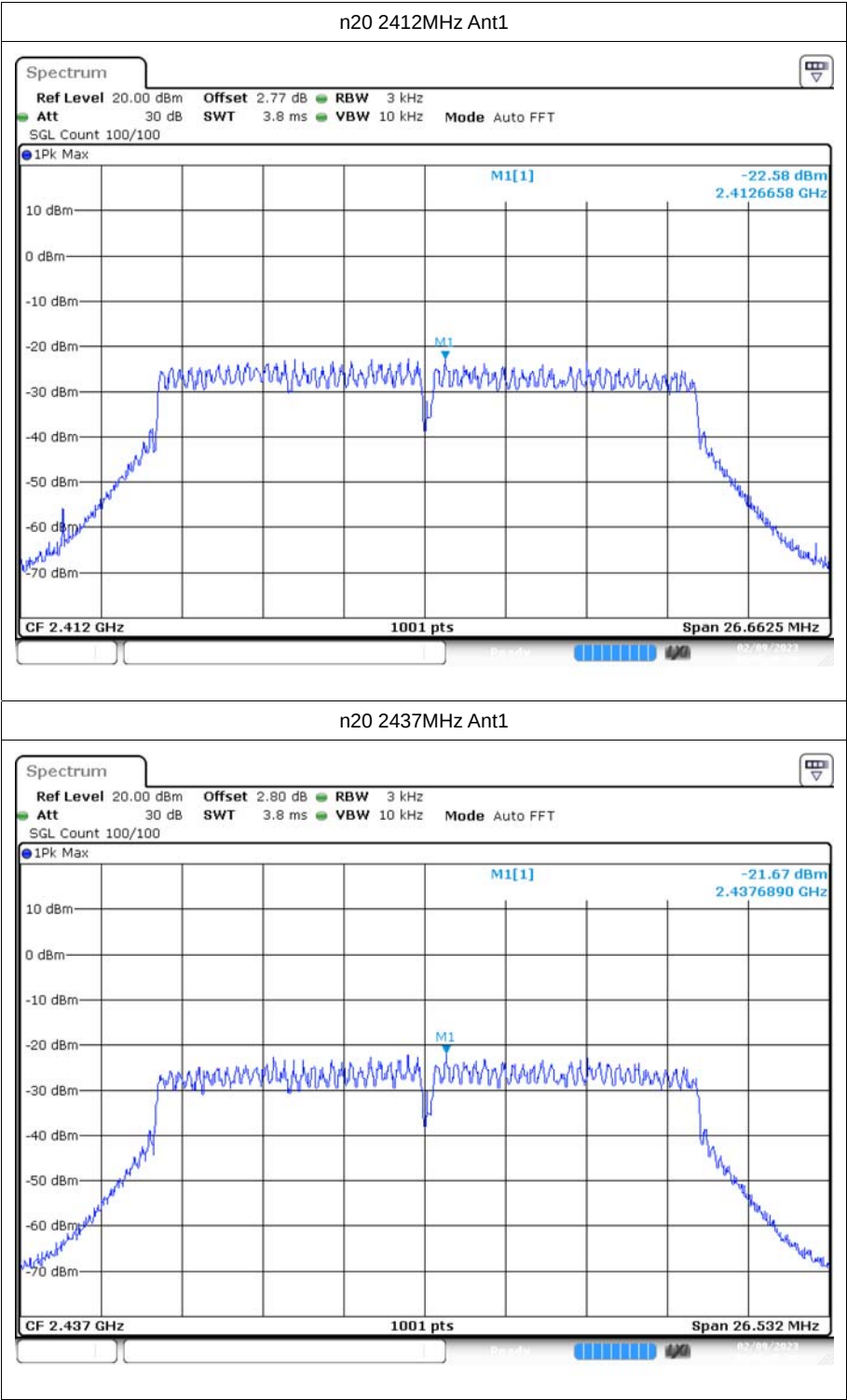
Mode	Frequency (MHz)	Antenna	Conducted PSD (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
802.11b	2412	Ant1	-15.98	≤ 8	Pass
802.11b	2437	Ant1	-15.62	≤ 8	Pass
802.11b	2462	Ant1	-17.08	≤ 8	Pass
802.11g	2412	Ant1	-21.7	≤ 8	Pass
802.11g	2437	Ant1	-21.98	≤ 8	Pass
802.11g	2462	Ant1	-23.4	≤ 8	Pass
802.11n20	2412	Ant1	-22.58	≤ 8	Pass
802.11n20	2437	Ant1	-21.67	≤ 8	Pass
802.11n20	2462	Ant1	-23.27	≤ 8	Pass
802.11n40	2422	Ant1	-26.44	≤ 8	Pass
802.11n40	2437	Ant1	-25.65	≤ 8	Pass
802.11n40	2452	Ant1	-26.84	≤ 8	Pass

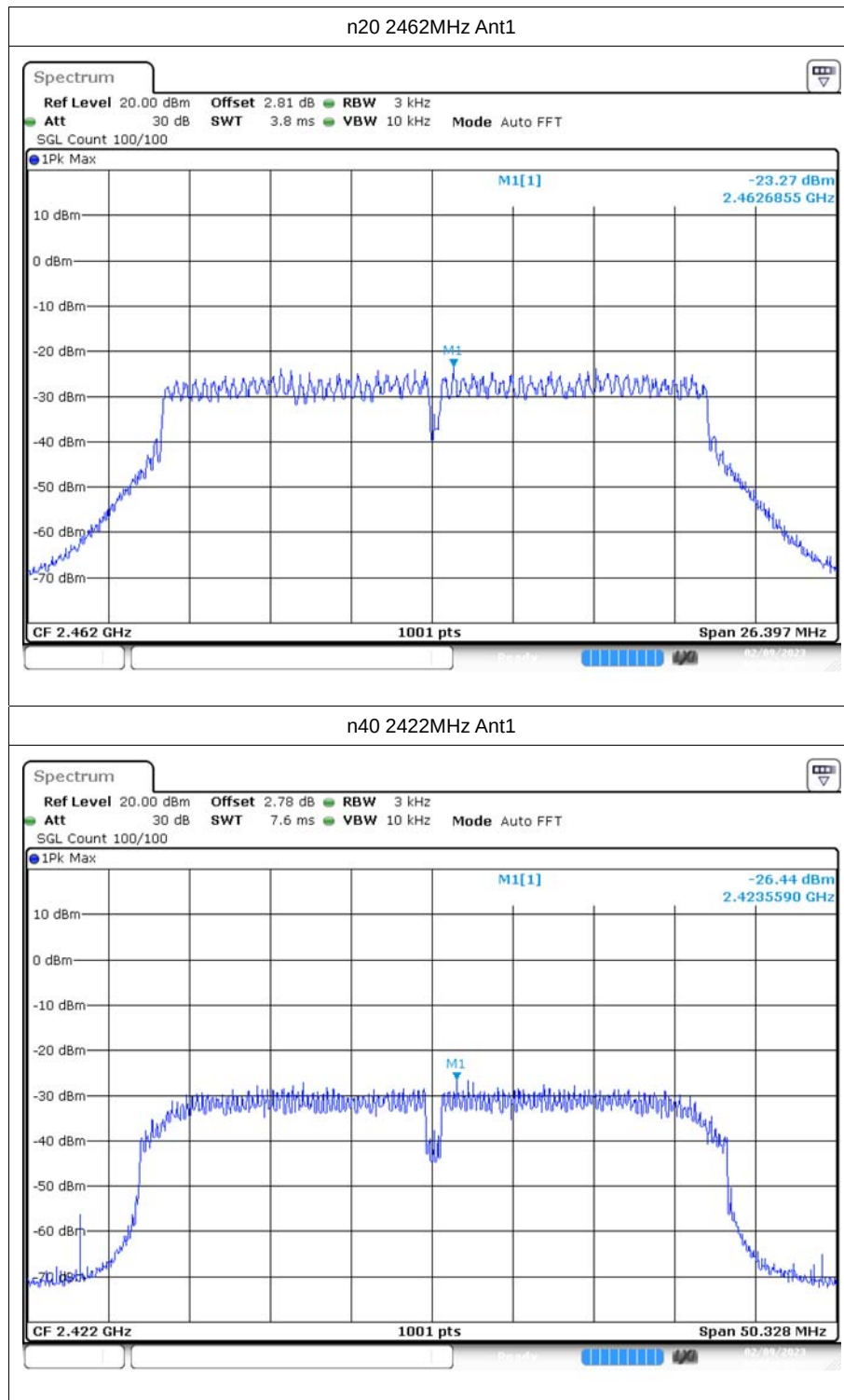
4.2 Test Graphs

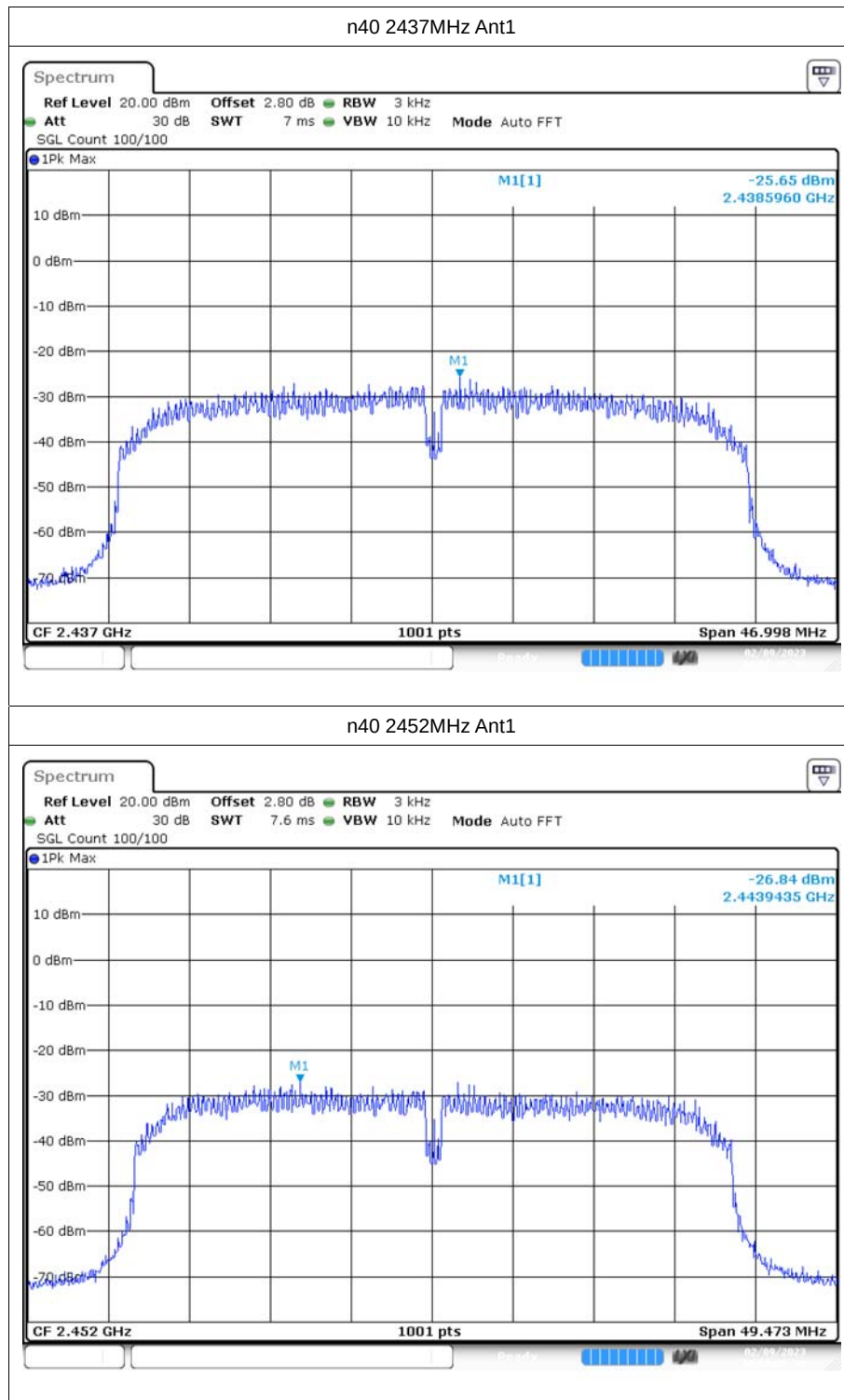












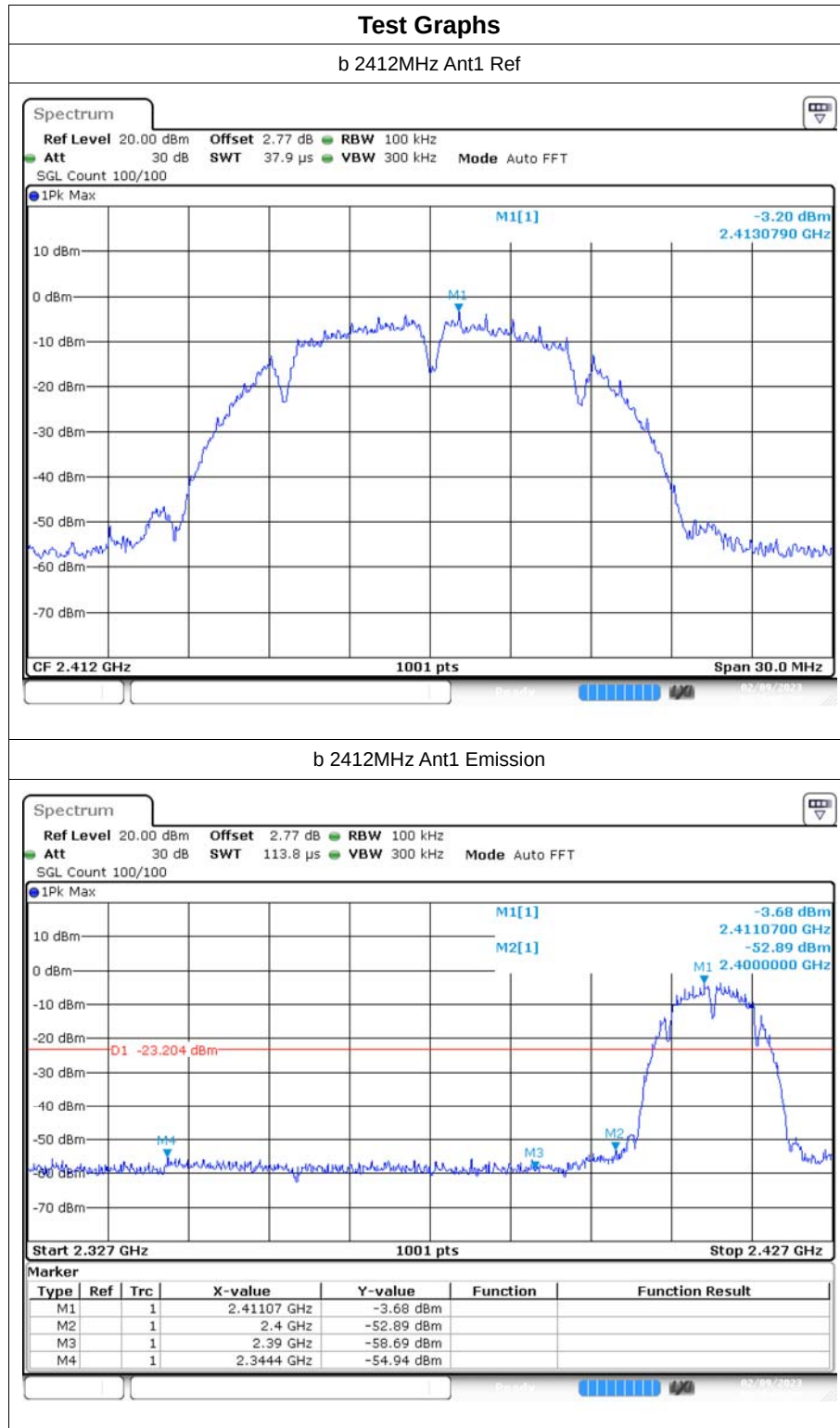


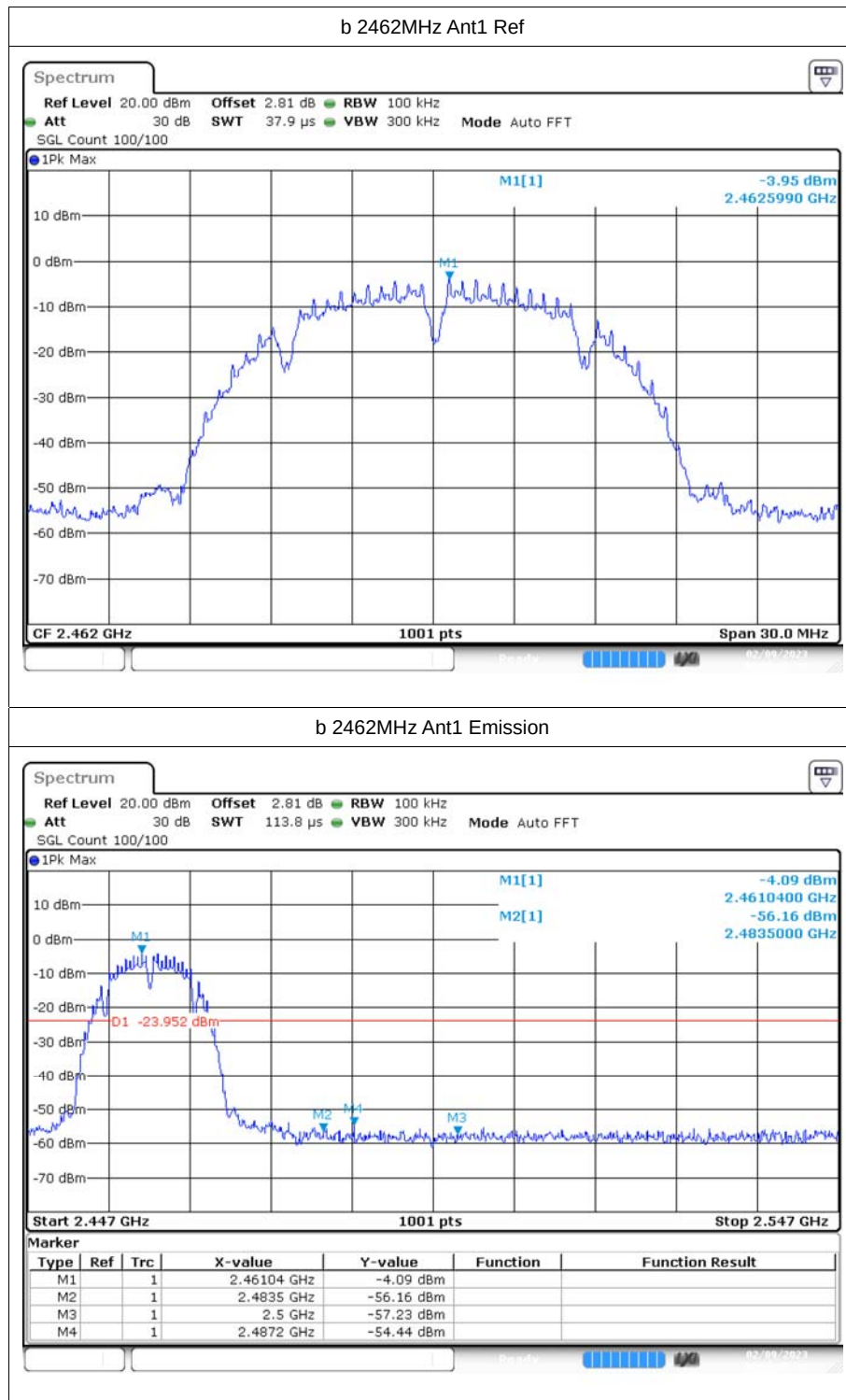
5 Band Edge

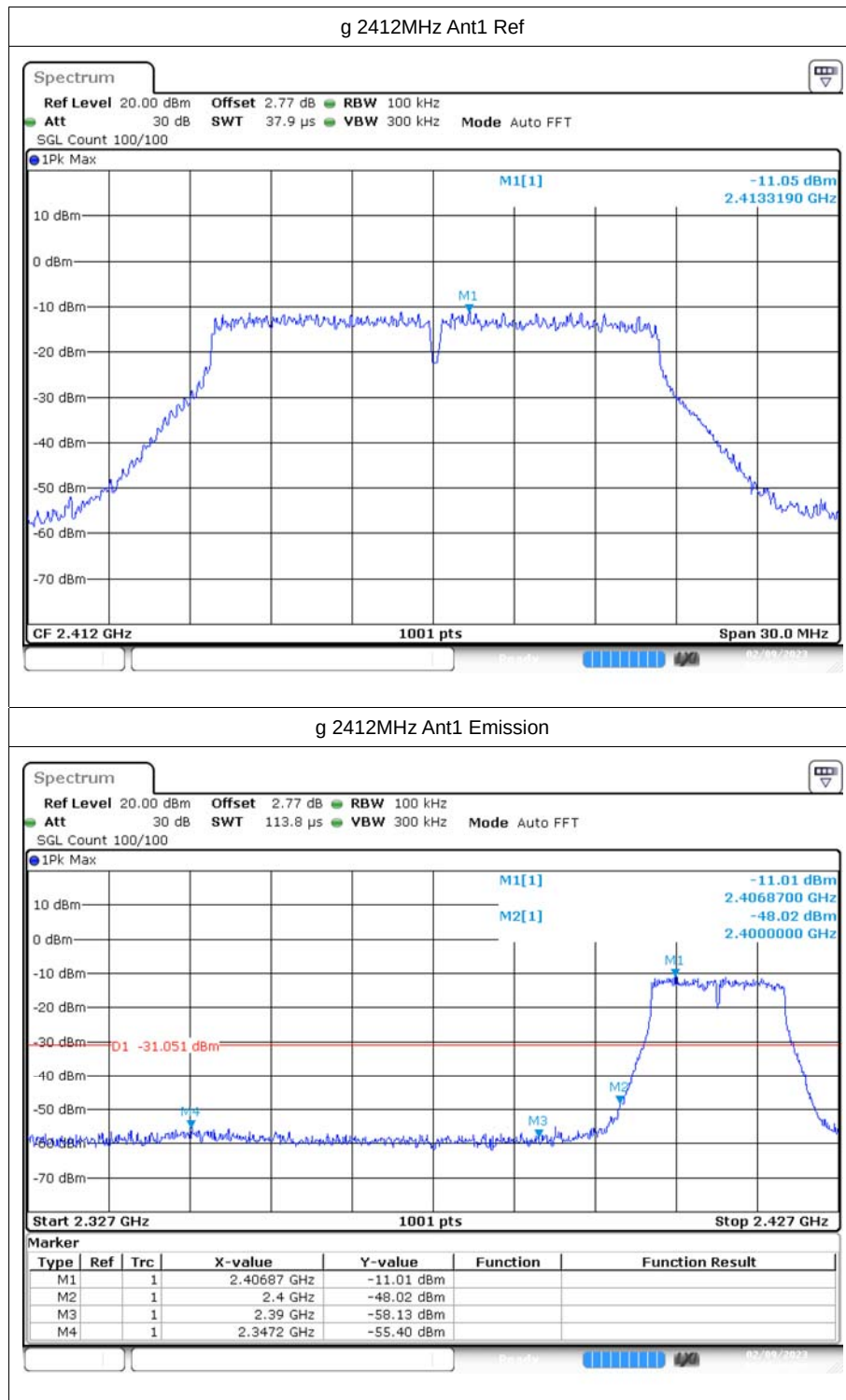
5.1 Test Result

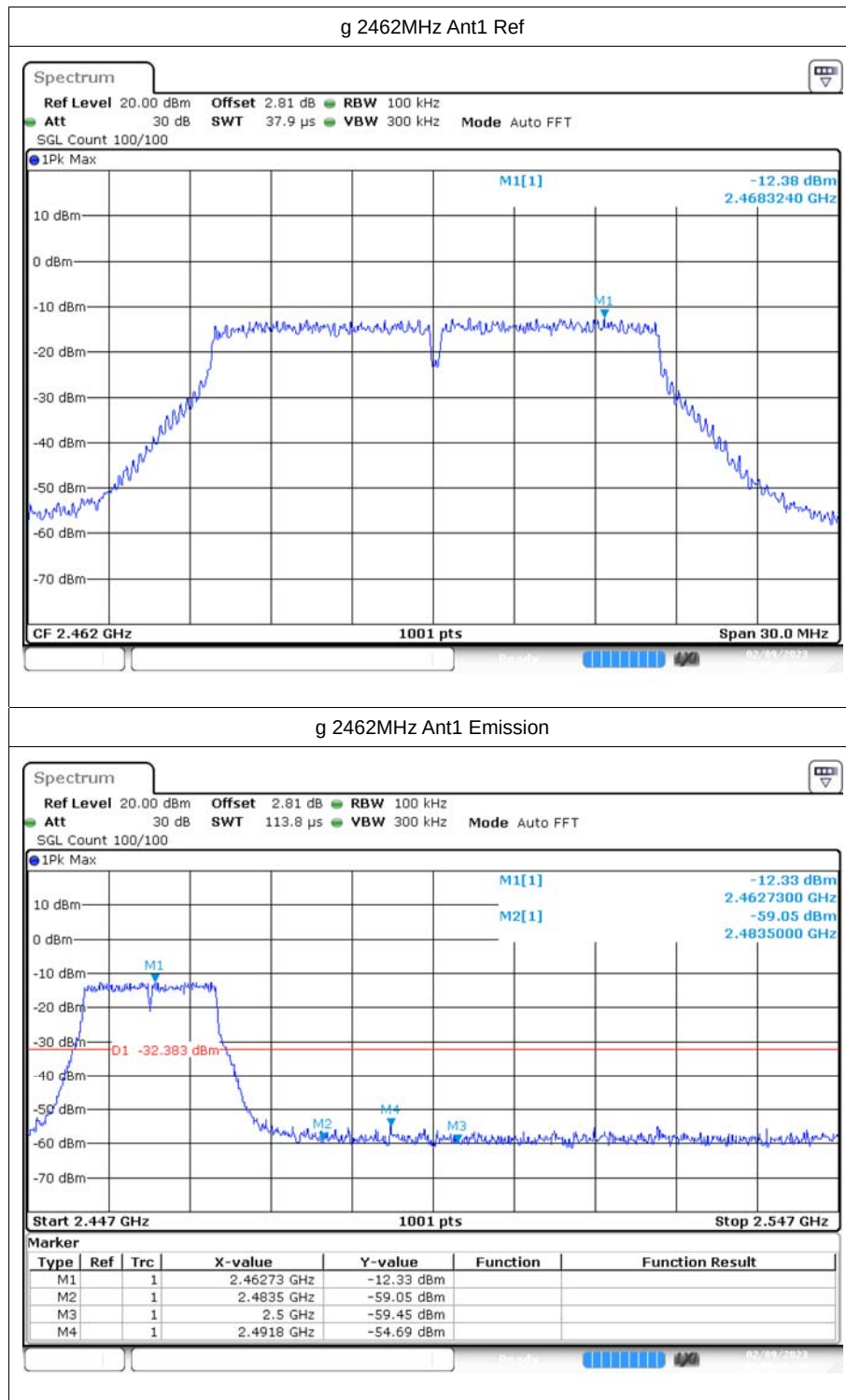
Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
b	2412	Ant1	-51.74	-20	-51.74
b	2462	Ant1	-50.49	-20	Pass
g	2412	Ant1	-44.35	-20	Pass
g	2462	Ant1	-42.31	-20	Pass
n20	2412	Ant1	-43.62	-20	Pass
n20	2462	Ant1	-46.36	-20	Pass
n40	2422	Ant1	-40.35	-20	Pass
n40	2452	Ant1	-40.08	-20	Pass

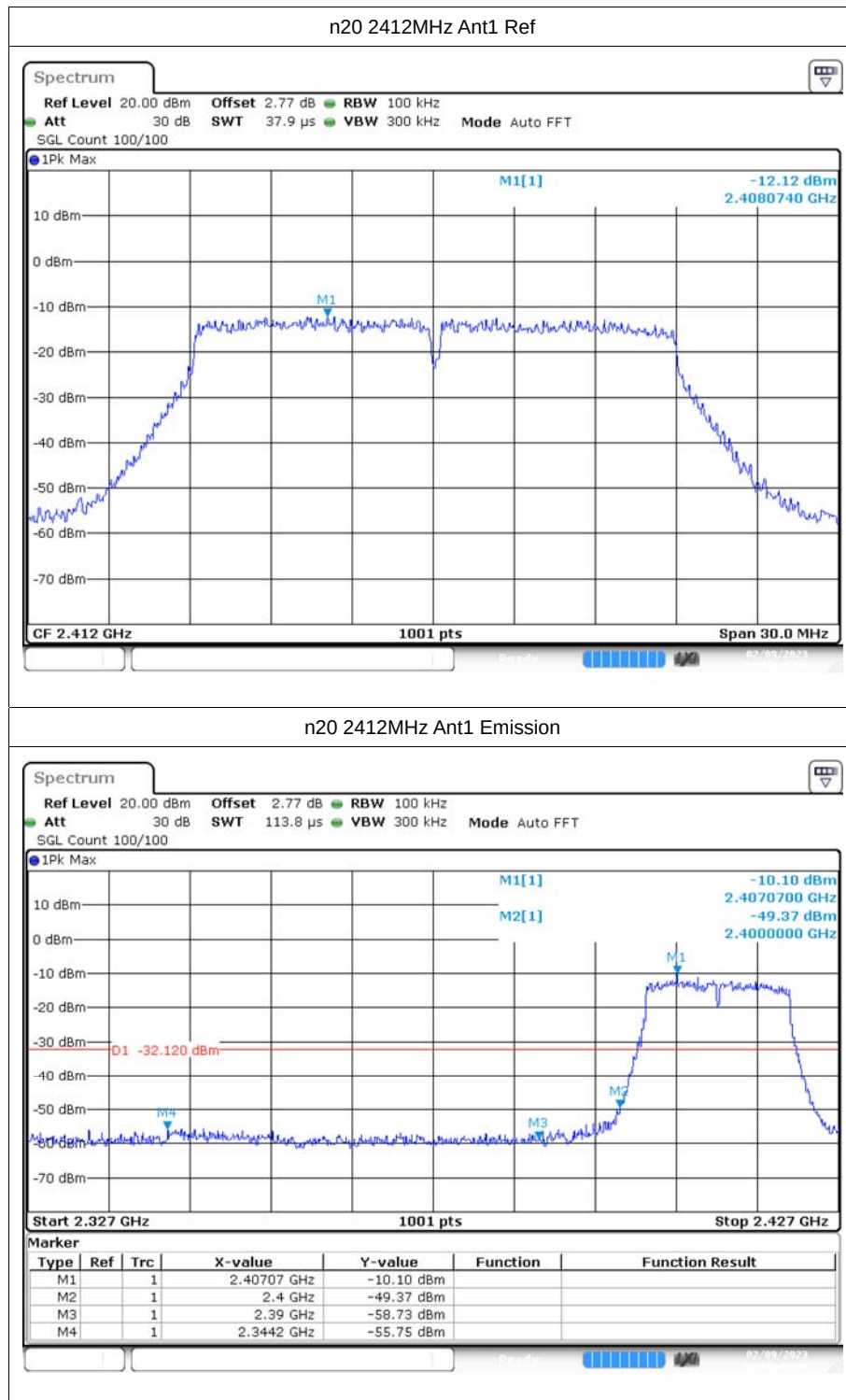
5.2 Test Graphs

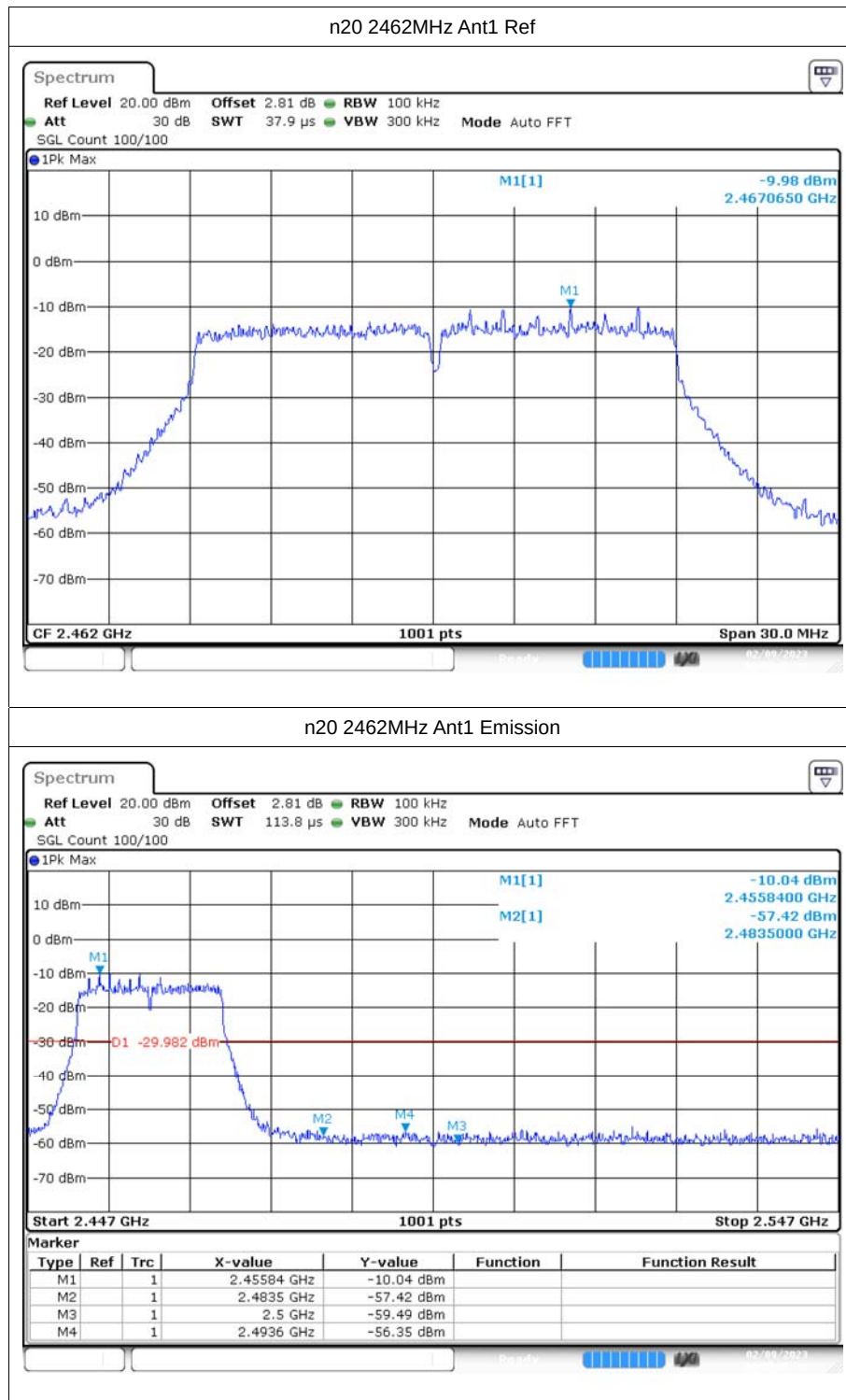


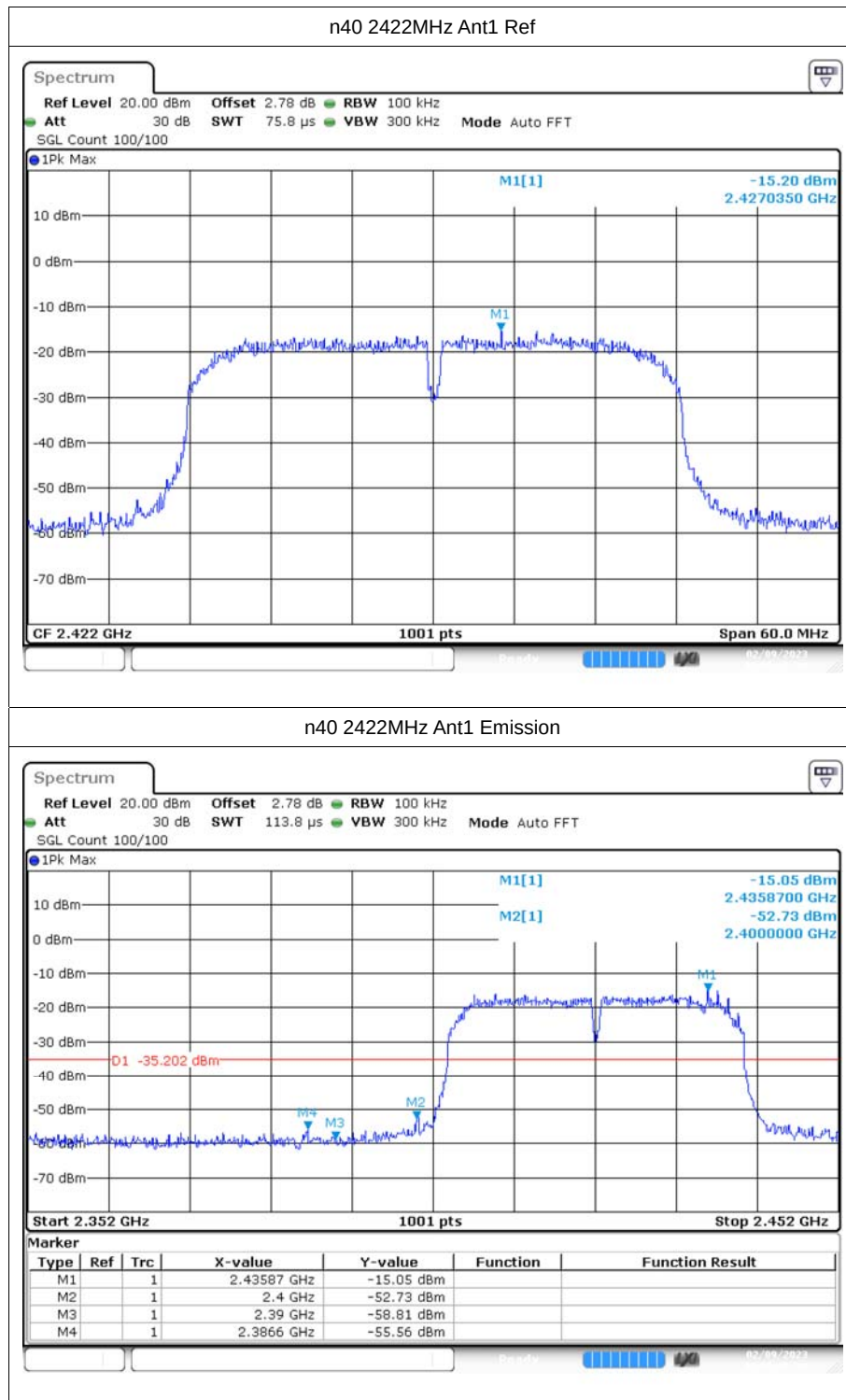


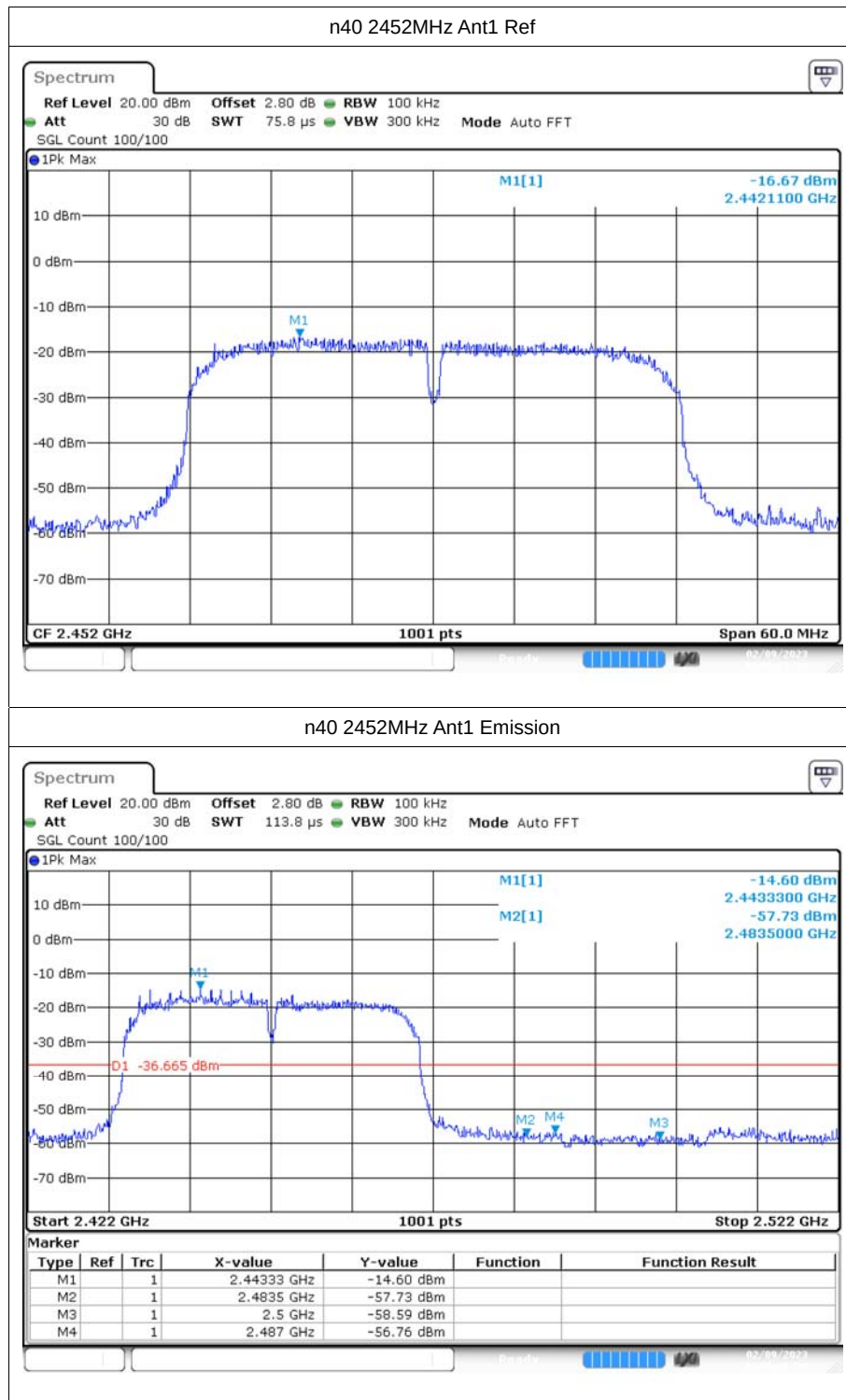












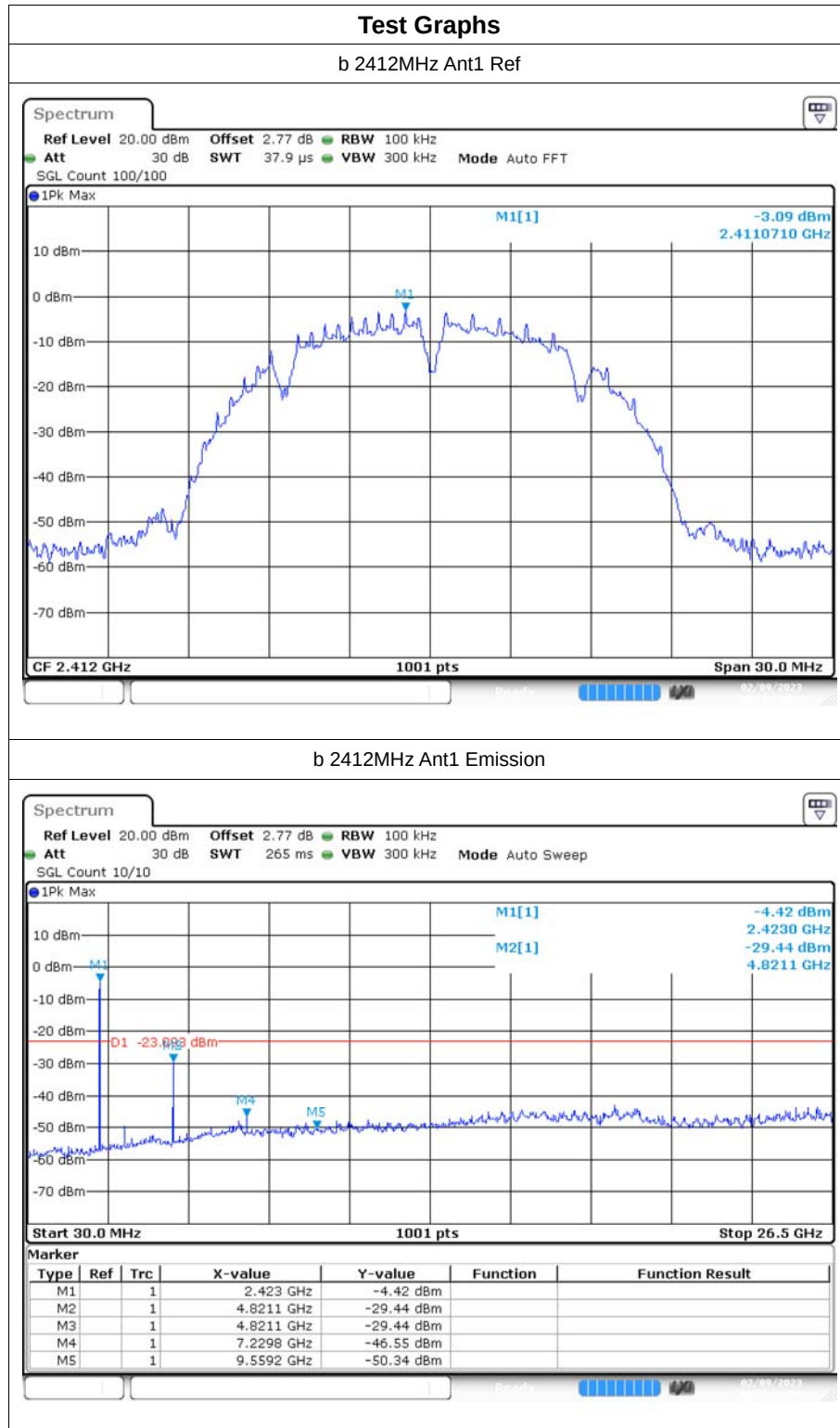


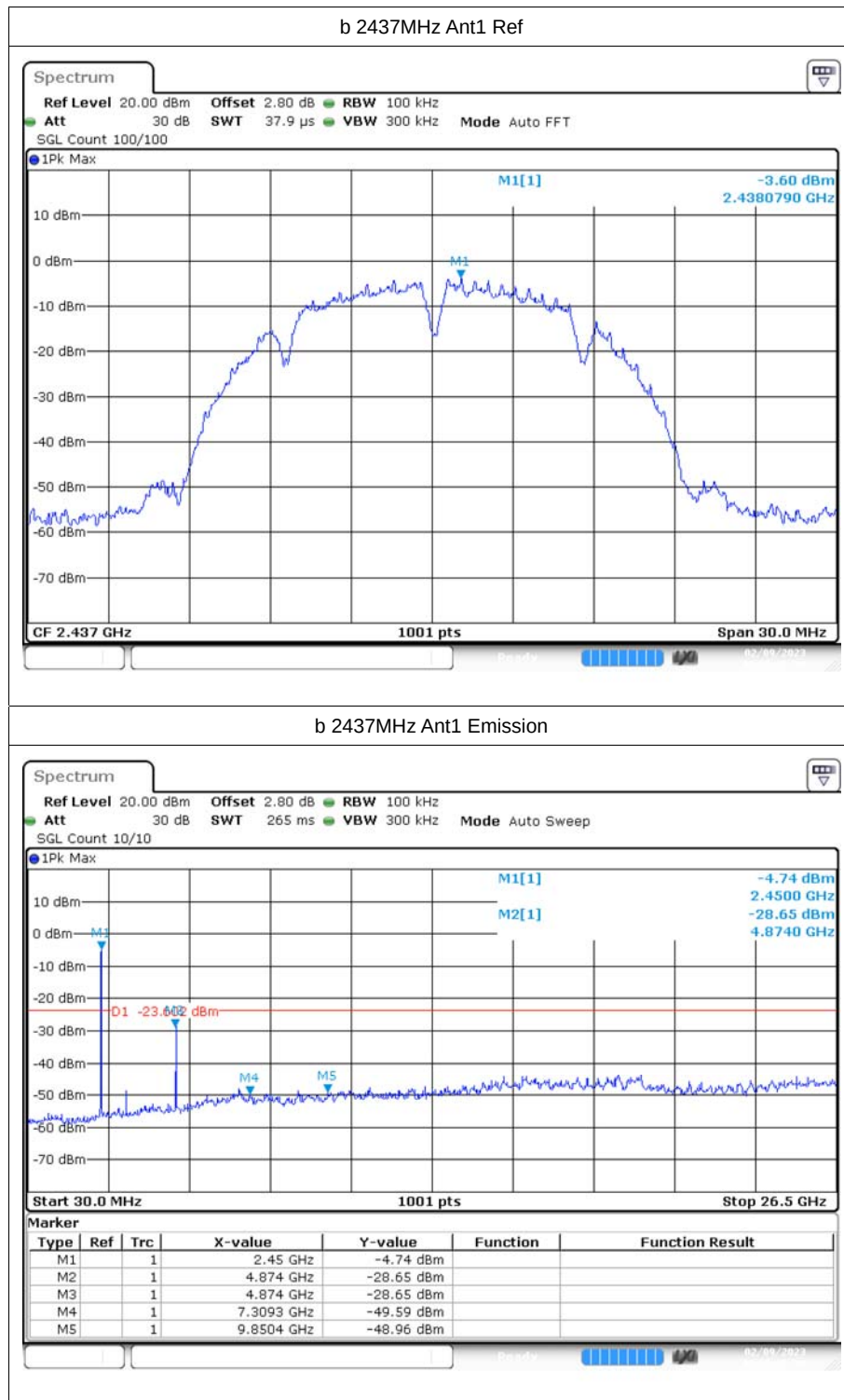
6 Conducted RF Spurious Emission

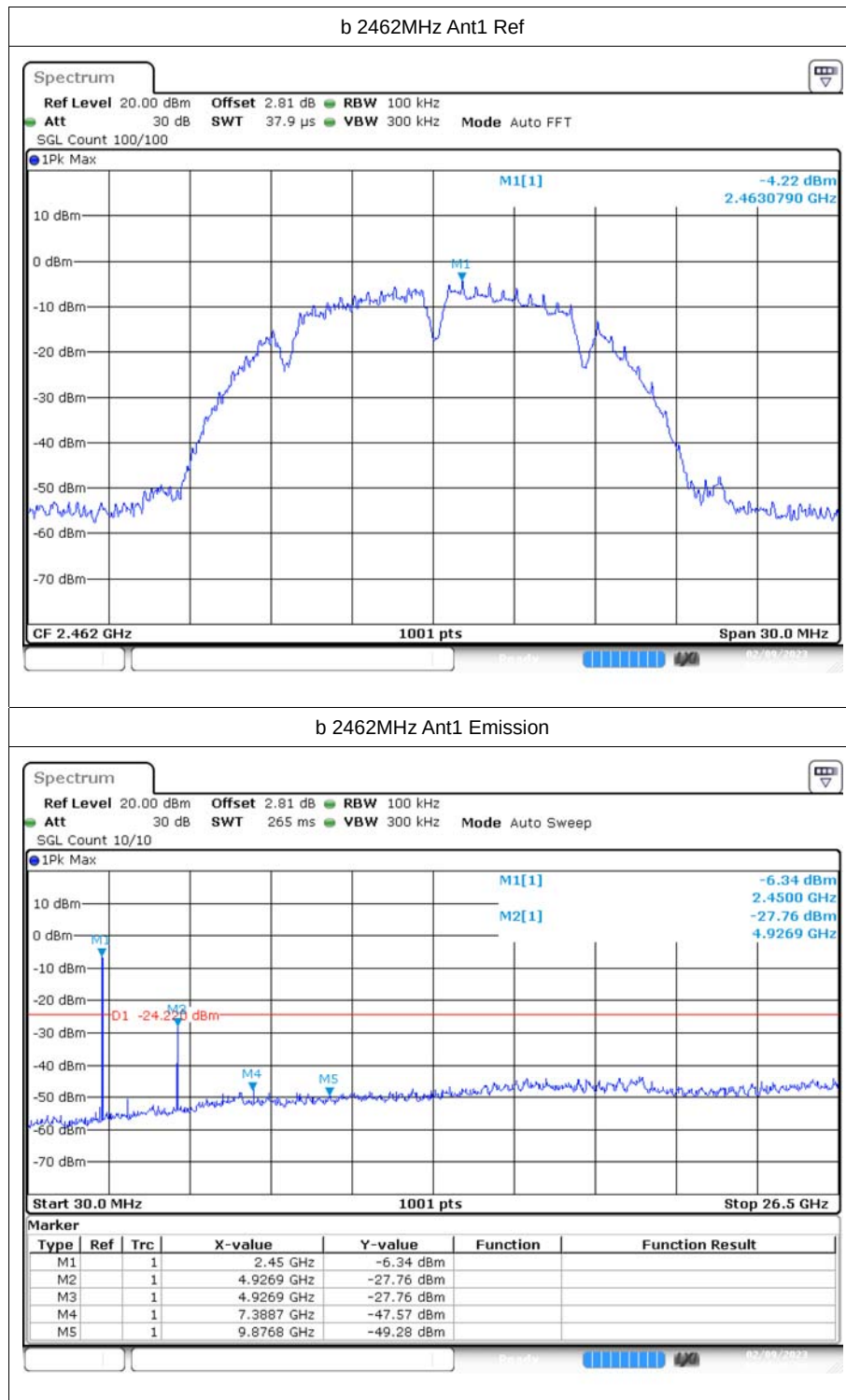
6.1 Test Result

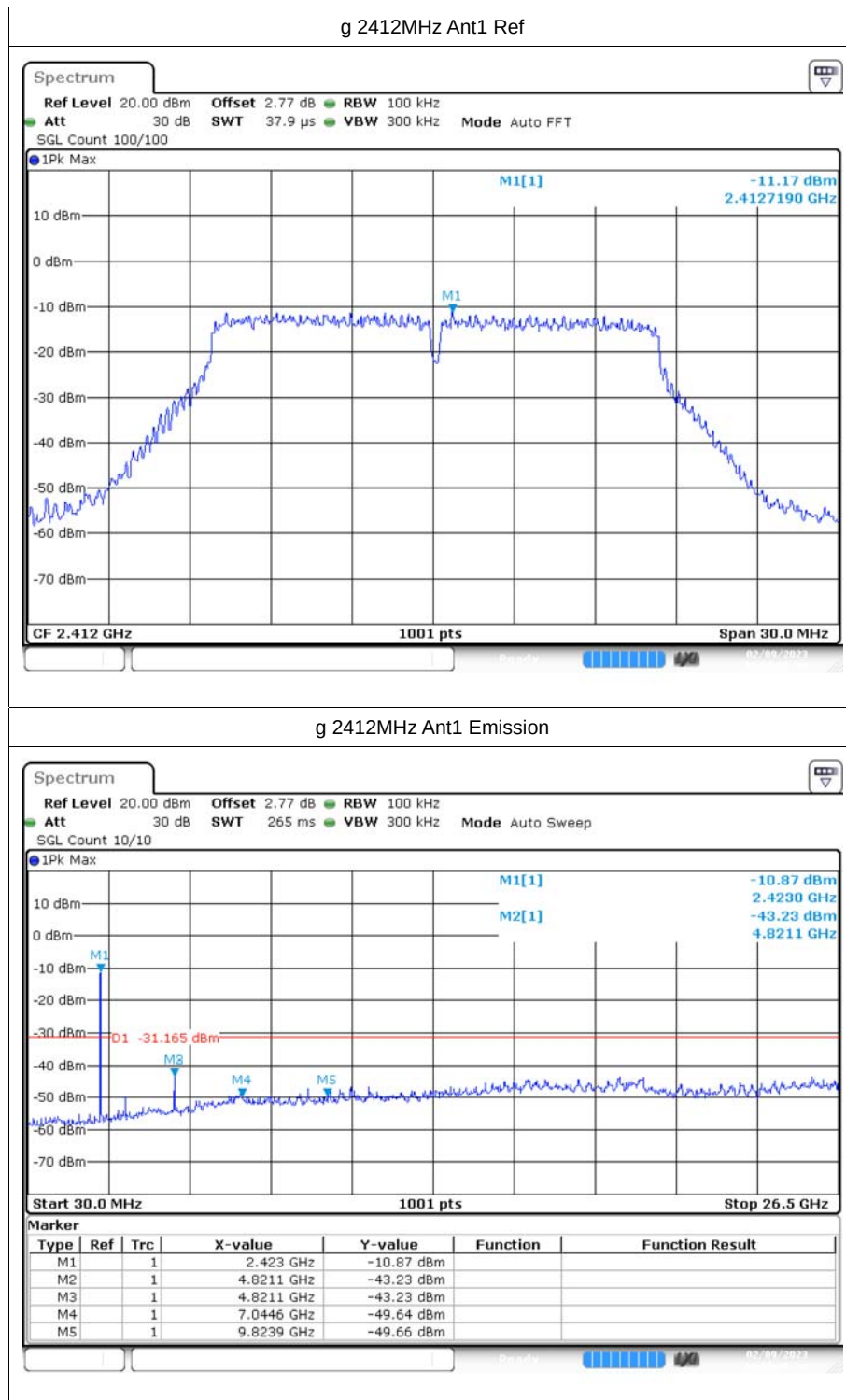
Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
802.11b	2412	Ant1	-26.35	-20	Pass
802.11b	2437	Ant1	-25.05	-20	Pass
802.11b	2462	Ant1	-23.53	-20	Pass
802.11g	2412	Ant1	-32.05	-20	Pass
802.11g	2437	Ant1	-32.16	-20	Pass
802.11g	2462	Ant1	-34.15	-20	Pass
802.11n20	2412	Ant1	-33.9	-20	Pass
802.11n20	2437	Ant1	-33	-20	Pass
802.11n20	2462	Ant1	-30.59	-20	Pass
802.11n40	2422	Ant1	-27.5	-20	Pass
802.11n40	2437	Ant1	-28.73	-20	Pass
802.11n40	2452	Ant1	-27.44	-20	Pass

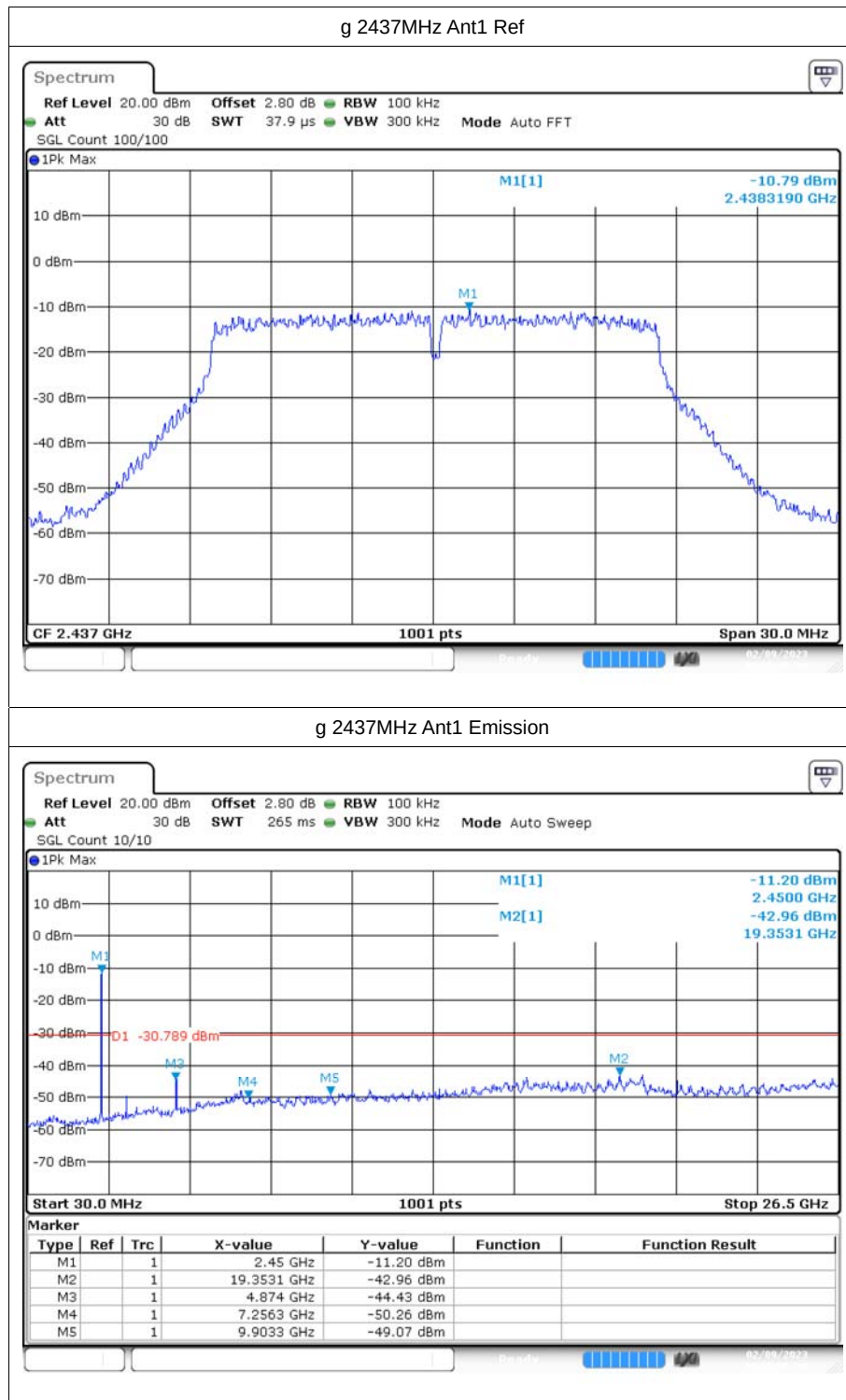
6.2 Test Graphs

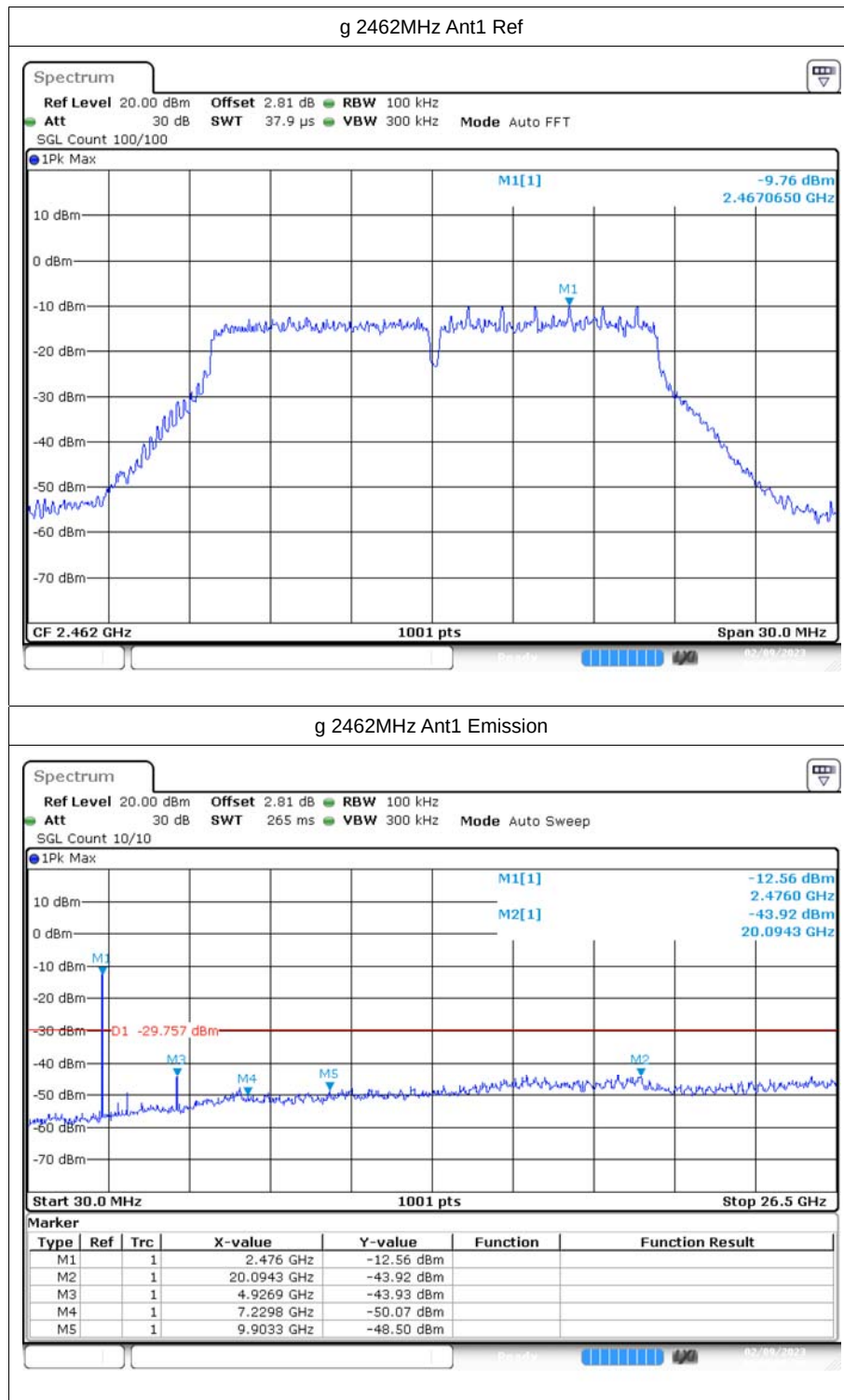


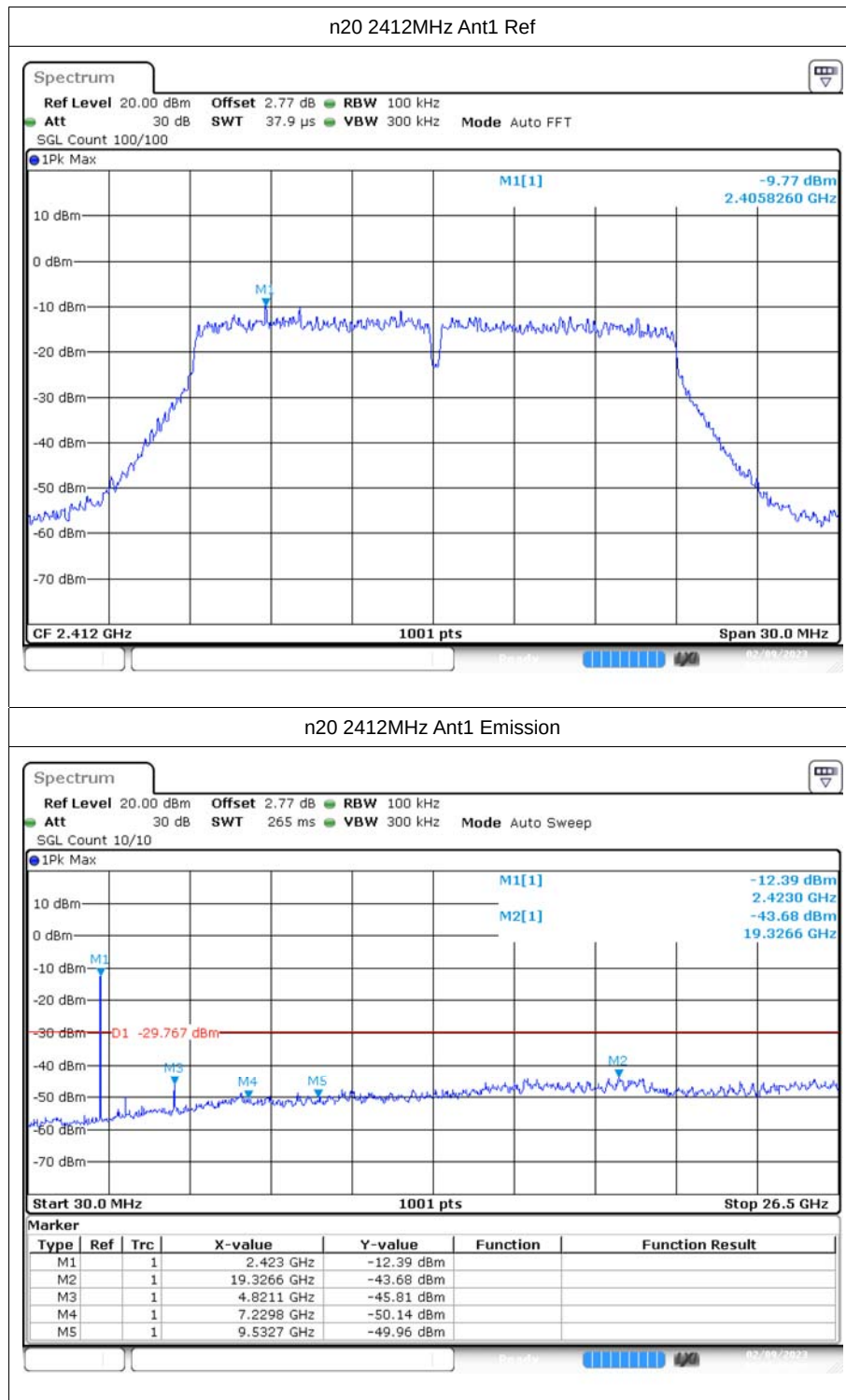


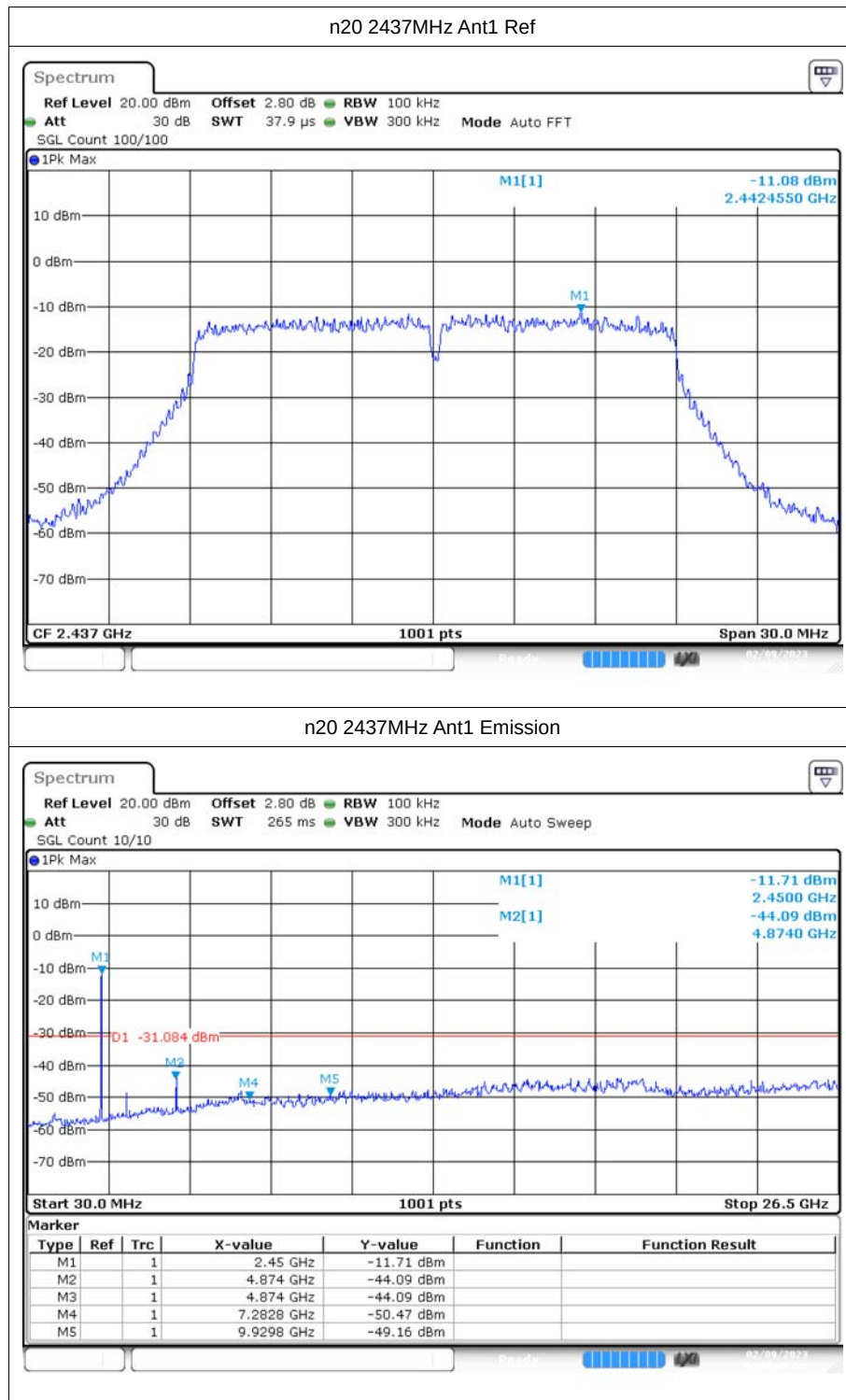


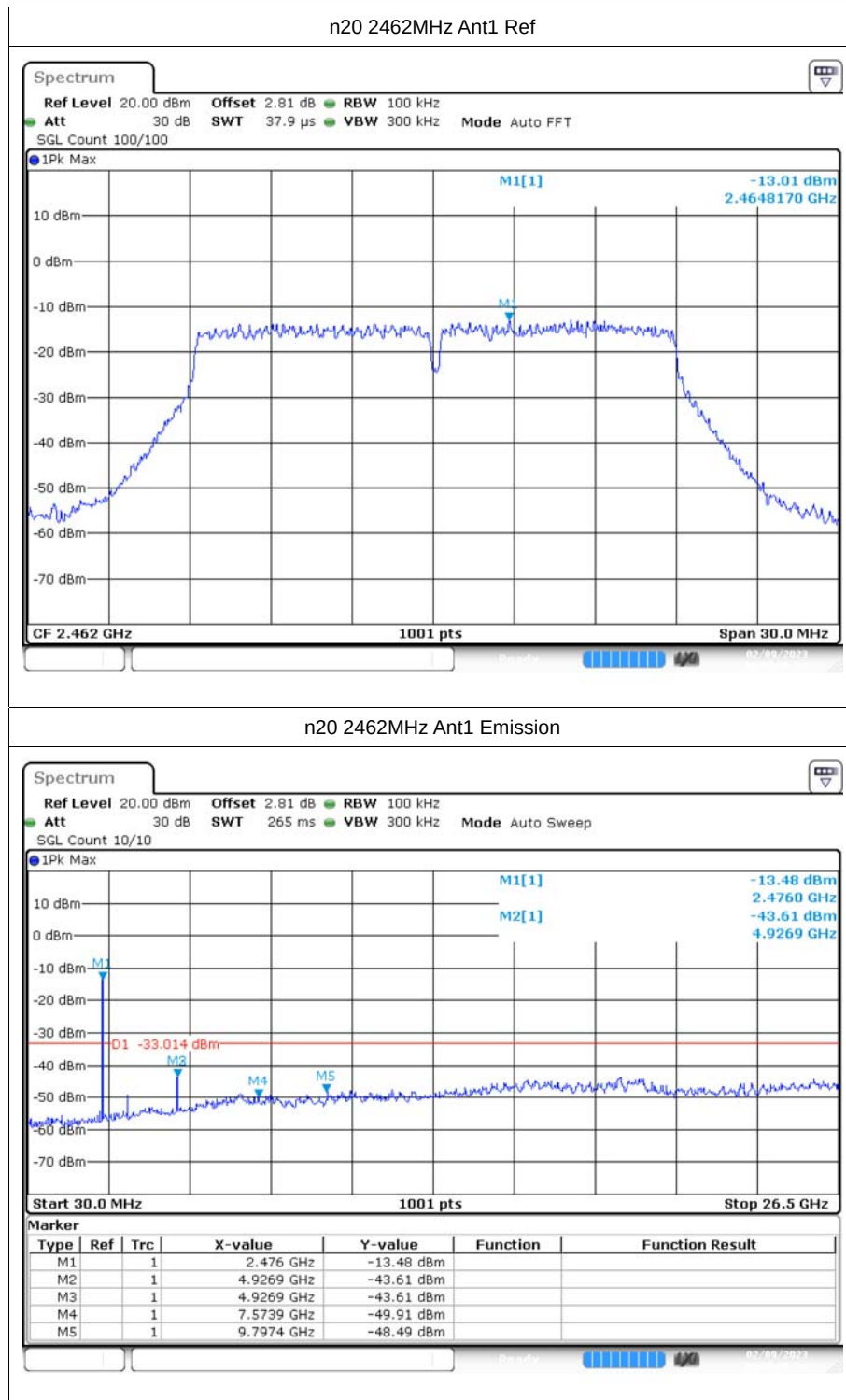


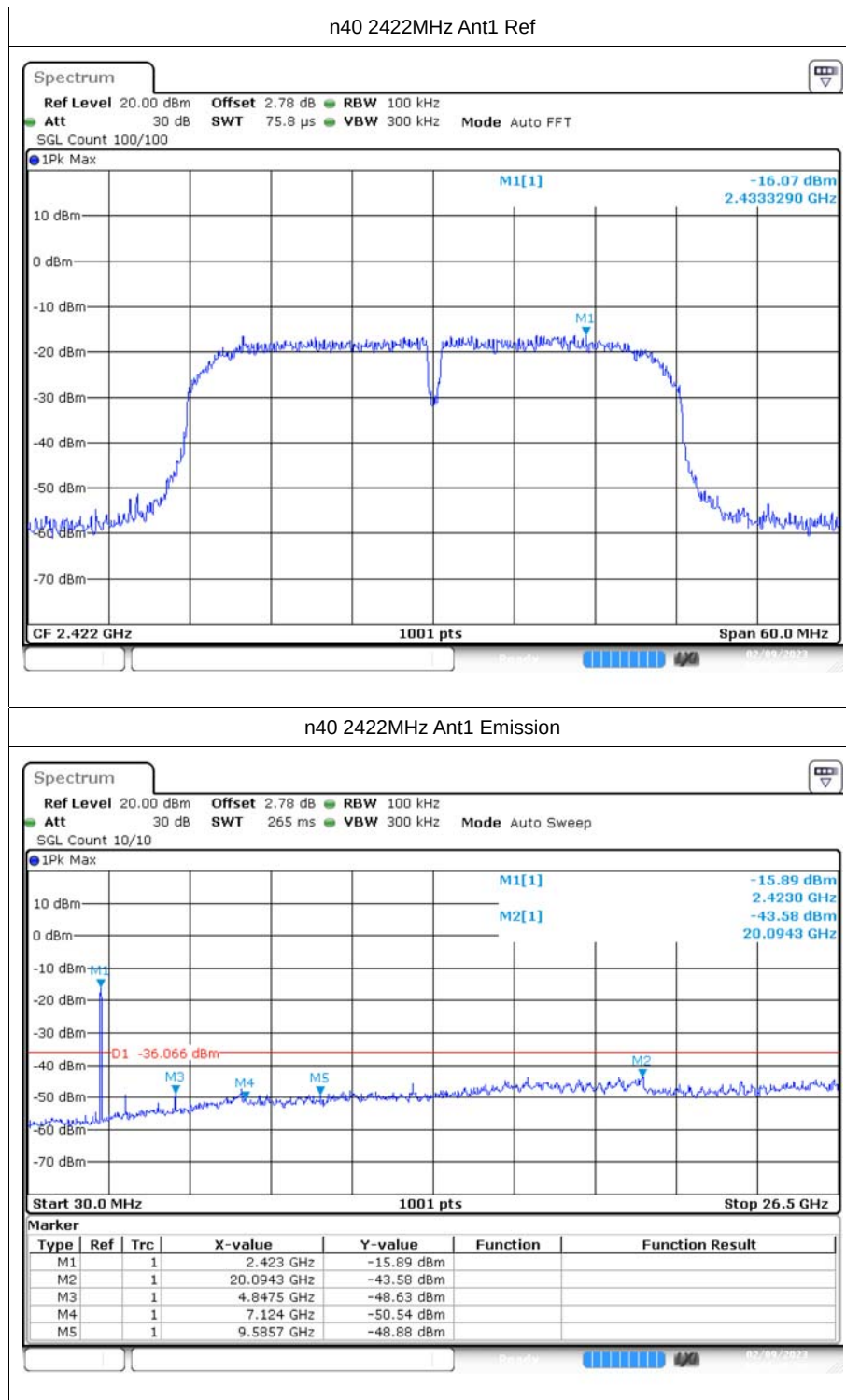


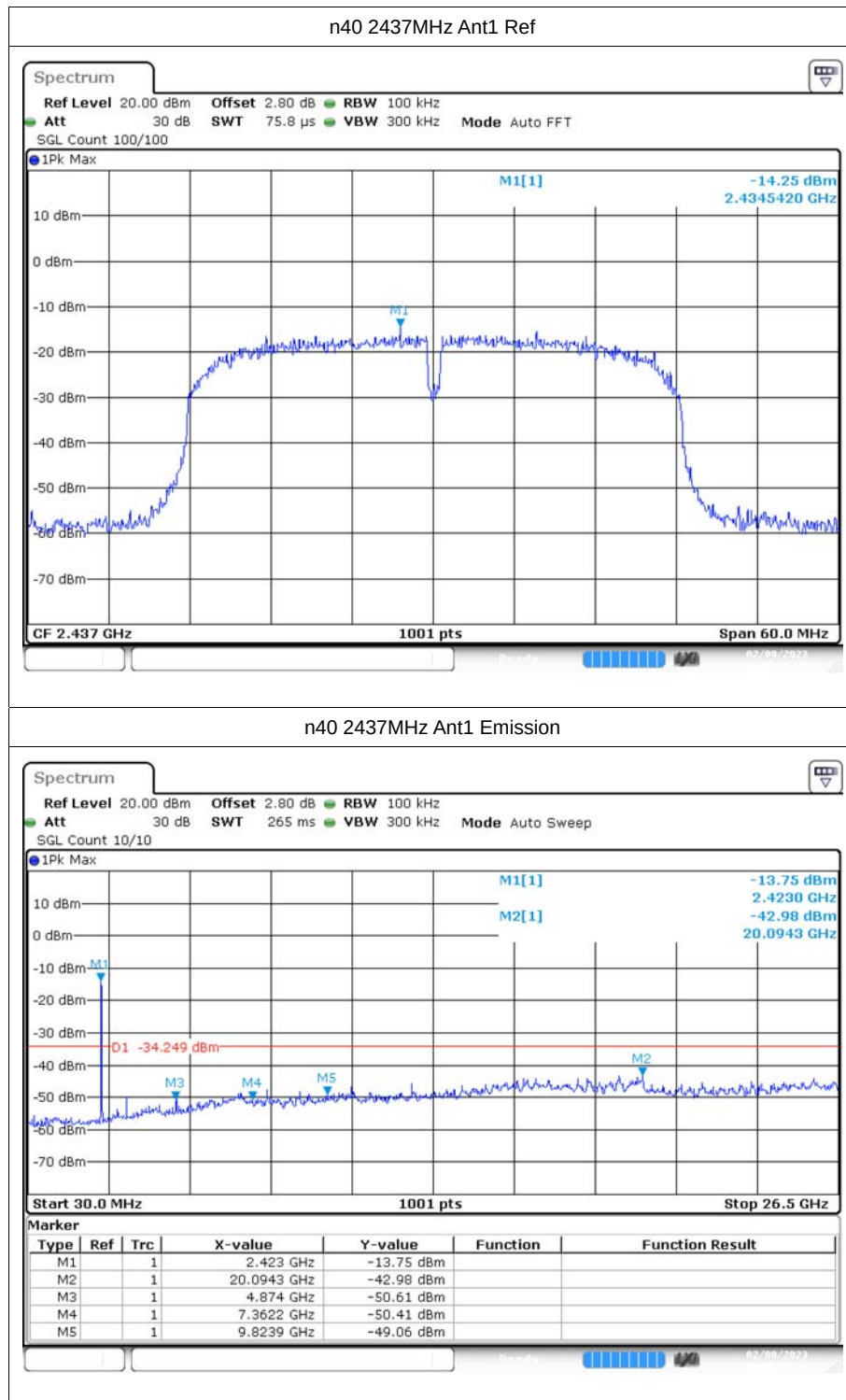


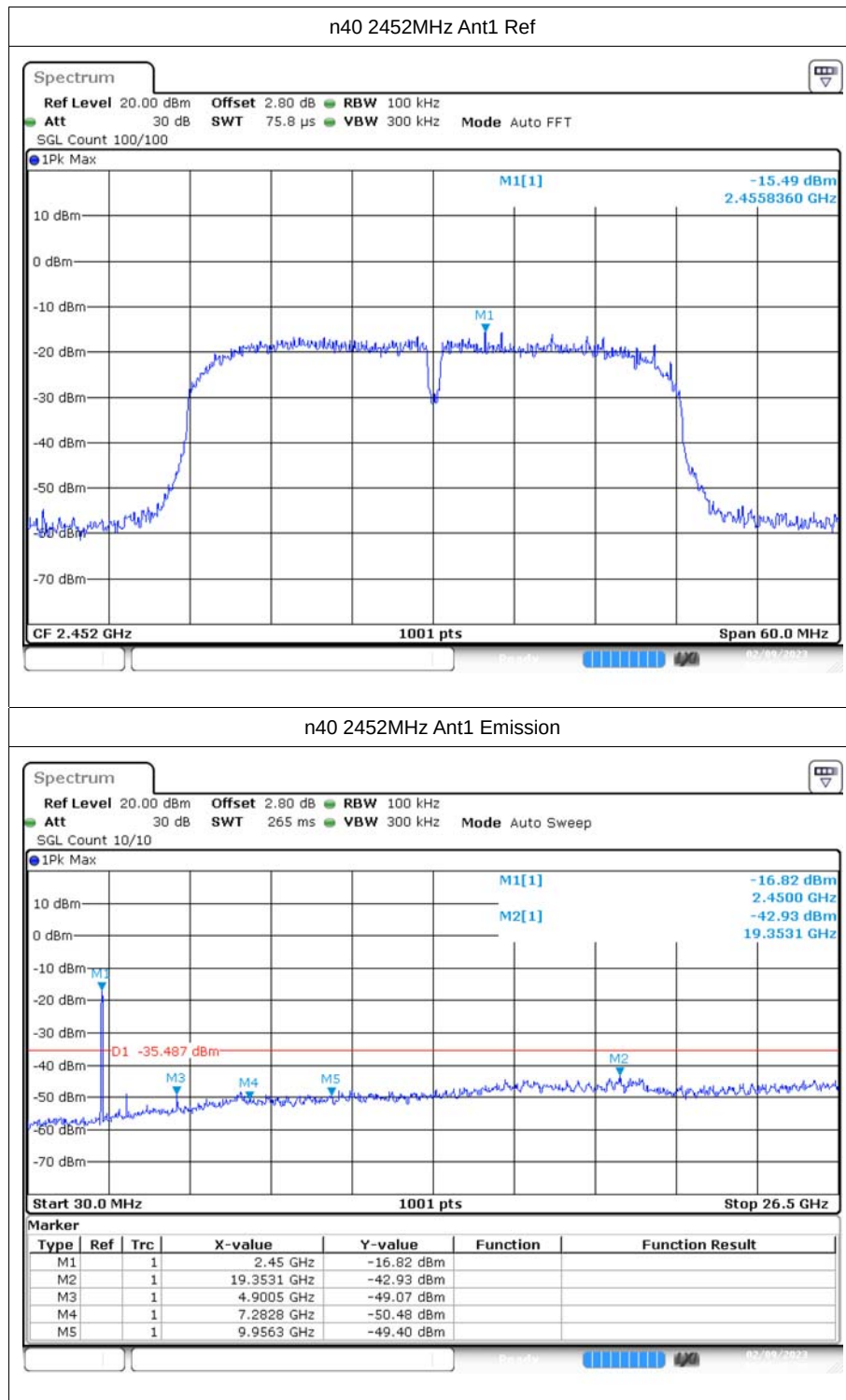














7 Restrict Band

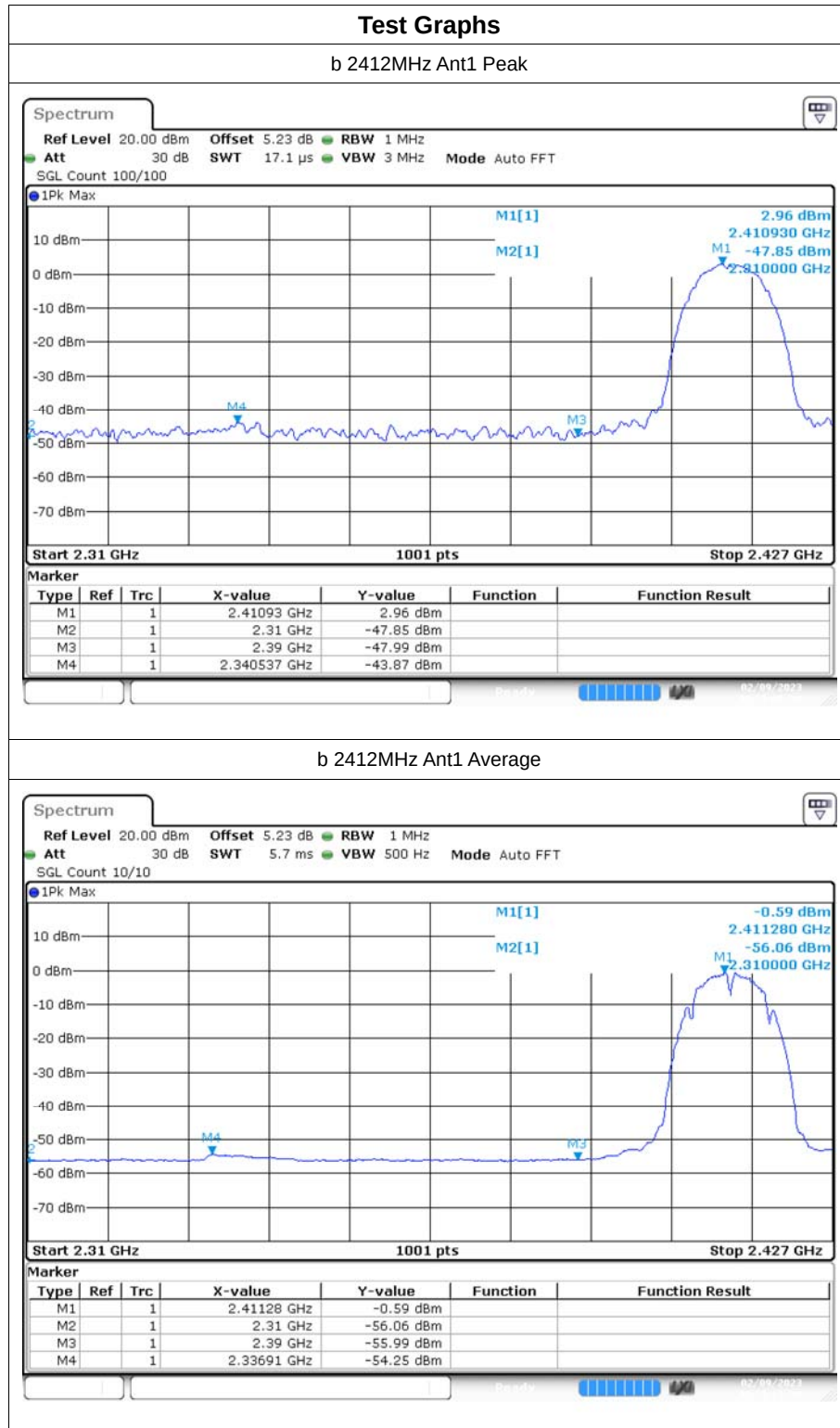
7.1 Test Result

Mode	Frequency (MHz)	Antenna	Spur Freq (MHz)	Power (dBm)	Gain (dBi)	E (dBuV/m)	Detector	Limit (dBuV/m)	Verdict
b	2412	Ant1	2310	-47.84	2.46	49.88	Peak	74	Pass
b	2412	Ant1	2310	-56.06	2.46	41.66	Average	54	Pass
b	2412	Ant1	2340.537	-43.87	2.46	53.85	Peak	74	Pass
b	2412	Ant1	2336.91	-54.25	2.46	43.47	Average	54	Pass
b	2412	Ant1	2390	-47.99	2.46	49.73	Peak	74	Pass
b	2412	Ant1	2390	-55.98	2.46	41.74	Average	54	Pass
b	2462	Ant1	2483.5	-44.94	2.46	52.78	Peak	74	52.78
b	2462	Ant1	2483.5	-55.37	2.46	42.35	Average	54	Pass
b	2462	Ant1	2497.244	-43.33	2.46	54.39	Peak	74	Pass
b	2462	Ant1	2483.517	-55.37	2.46	42.35	Average	54	Pass
b	2462	Ant1	2500	-45.61	2.46	52.11	Peak	74	Pass
b	2462	Ant1	2500	-55.6	2.46	42.12	Average	54	Pass
g	2412	Ant1	2310	-48.92	2.46	48.8	Peak	74	Pass
g	2412	Ant1	2310	-55.46	2.46	42.26	Average	54	Pass
g	2412	Ant1	2337.963	-43.47	2.46	54.25	Peak	74	Pass
g	2412	Ant1	2336.91	-53.49	2.46	44.23	Average	54	Pass
g	2412	Ant1	2390	-47.74	2.46	49.73	Peak	74	Pass
g	2412	Ant1	2390	-54.34	2.46	43.38	Average	54	Pass
g	2462	Ant1	2483.5	-46.99	2.46	50.73	Peak	74	Pass
g	2462	Ant1	2483.5	-53.87	2.46	43.85	Average	54	Pass
g	2462	Ant1	2497.244	-44.41	2.46	53.31	Peak	74	Pass
g	2462	Ant1	2483.517	-53.87	2.46	43.85	Average	54	Pass
g	2462	Ant1	2500	-44.77	2.46	52.11	Peak	74	Pass
g	2462	Ant1	2500	-54.82	2.46	42.9	Average	54	Pass
n20	2412	Ant1	2310	-47.42	2.46	50.3	Peak	74	Pass
n20	2412	Ant1	2310	-55.13	2.46	42.59	Average	54	Pass
n20	2412	Ant1	2338.548	-43.8	2.46	53.92	Peak	74	Pass
n20	2412	Ant1	2339.016	-53.26	2.46	44.46	Average	54	Pass
n20	2412	Ant1	2390	-46.11	2.46	51.61	Peak	74	Pass
n20	2412	Ant1	2390	-55.37	2.46	42.35	Average	54	Pass
n20	2462	Ant1	2483.5	-47.4	2.46	50.32	Peak	74	Pass
n20	2462	Ant1	2483.5	-54.88	2.46	42.84	Average	54	Pass
n20	2462	Ant1	2484.736	-44.74	2.46	52.98	Peak	74	Pass
n20	2462	Ant1	2492.209	-54.24	2.46	43.48	Average	54	Pass
n20	2462	Ant1	2500	-45.53	2.46	52.19	Peak	74	Pass

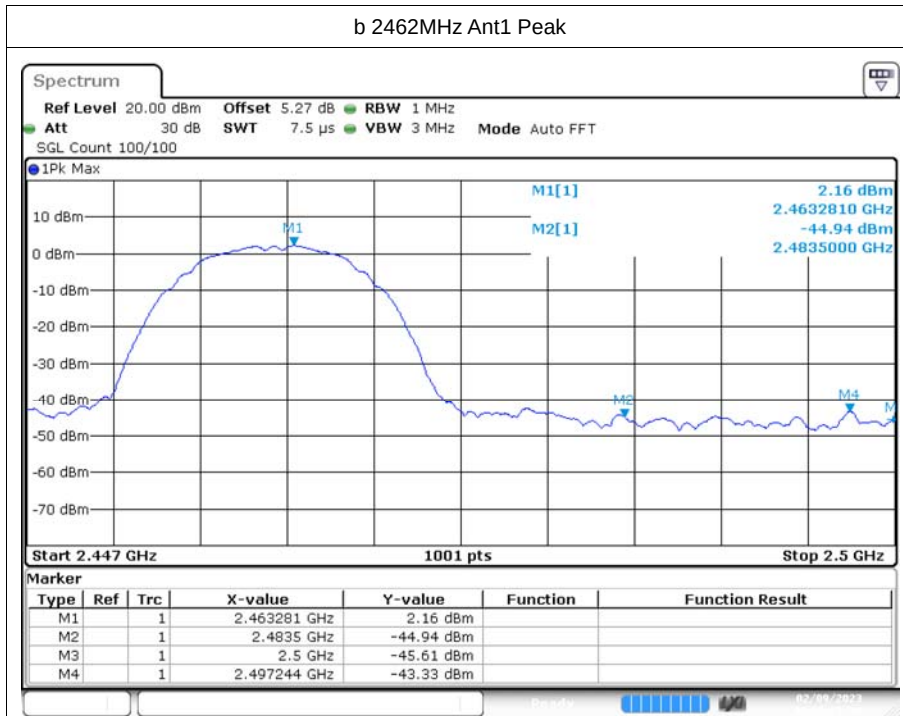


n20	2462	Ant1	2500	-55.05	2.46	42.67	Average	54	Pass
n40	2422	Ant1	2310	-47.46	2.46	50.26	Peak	74	Pass
n40	2422	Ant1	2310	-55.11	2.46	42.61	Average	54	Pass
n40	2422	Ant1	2376.74	-44.36	2.46	53.36	Peak	74	Pass
n40	2422	Ant1	2339.394	-53.85	2.46	43.87	Average	54	Pass
n40	2422	Ant1	2390	-47.49	2.46	50.23	Peak	74	Pass
n40	2422	Ant1	2390	-55.16	2.46	42.56	Average	54	Pass
n40	2452	Ant1	2483.5	-46.14	2.46	51.58	Peak	74	Pass
n40	2452	Ant1	2483.5	-54.75	2.46	42.97	Average	54	Pass
n40	2452	Ant1	2487.91	-44.8	2.46	52.92	Peak	74	Pass
n40	2452	Ant1	2485.18	-53.87	2.46	43.85	Average	54	Pass
n40	2452	Ant1	2500	-45.6	2.46	52.12	Peak	74	Pass
n40	2452	Ant1	2500	-55.21	2.46	42.51	Average	54	Pass

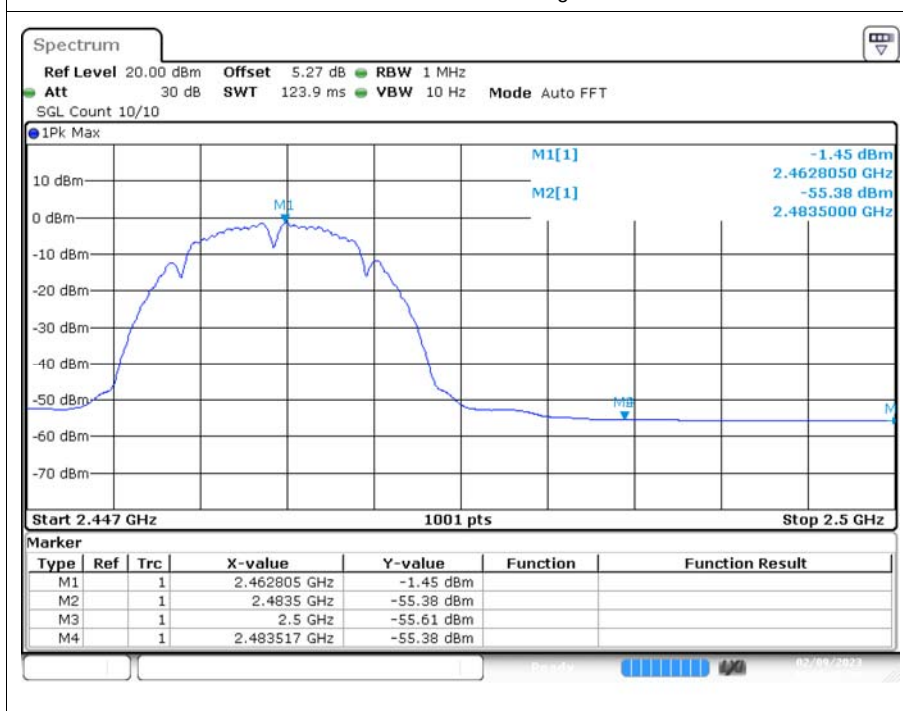
7.2 Test Graphs



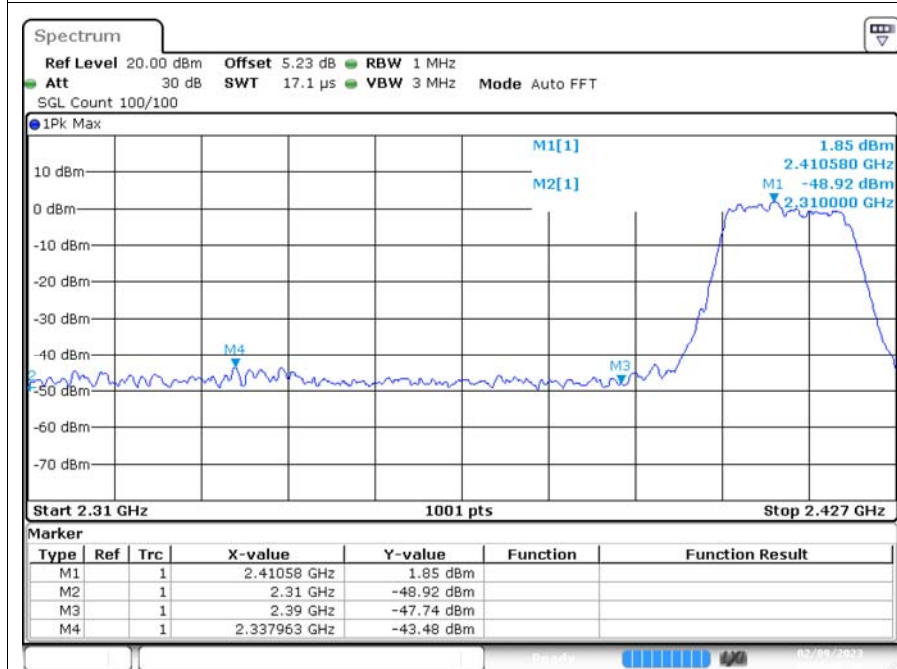
b 2462MHz Ant1 Peak



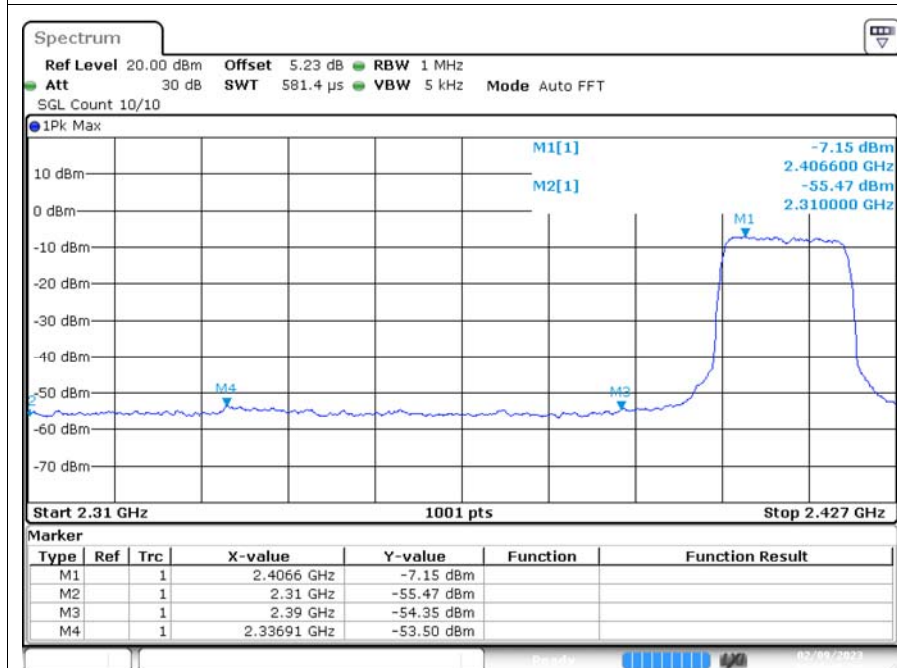
b 2462MHz Ant1 Average

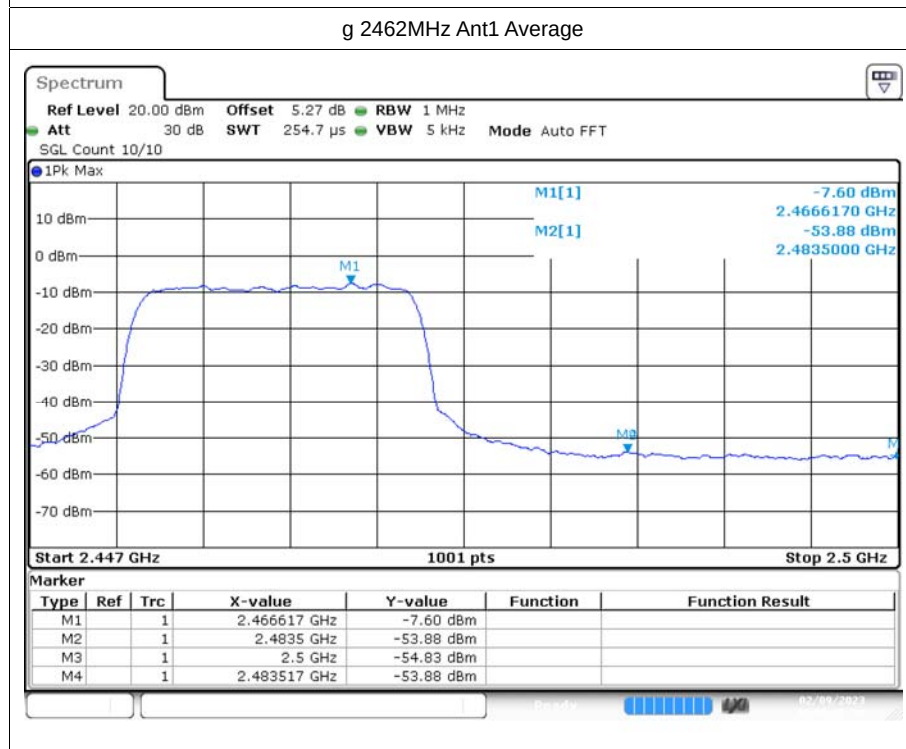
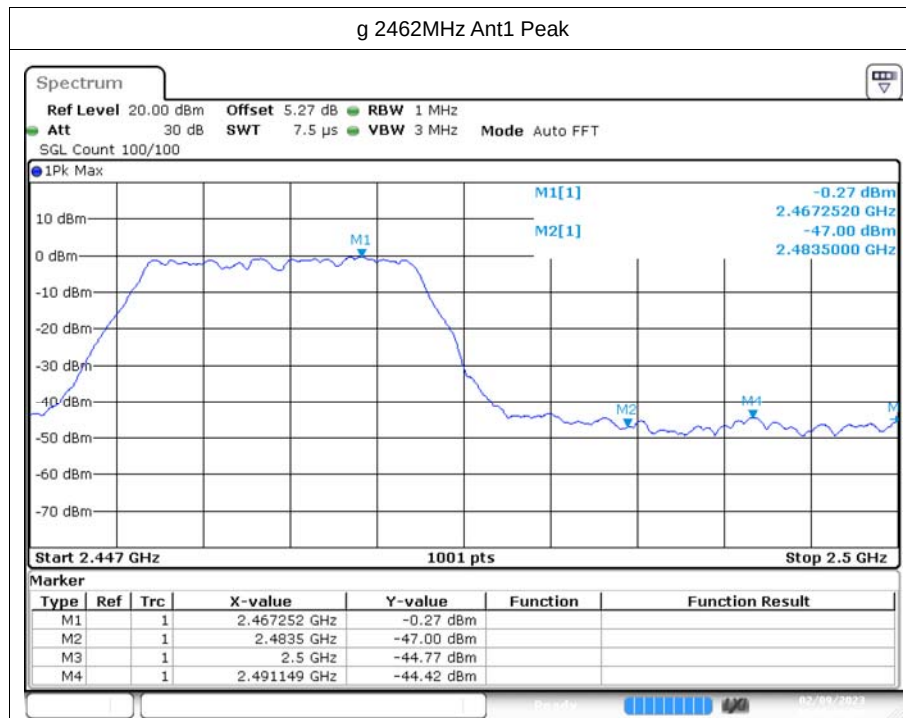


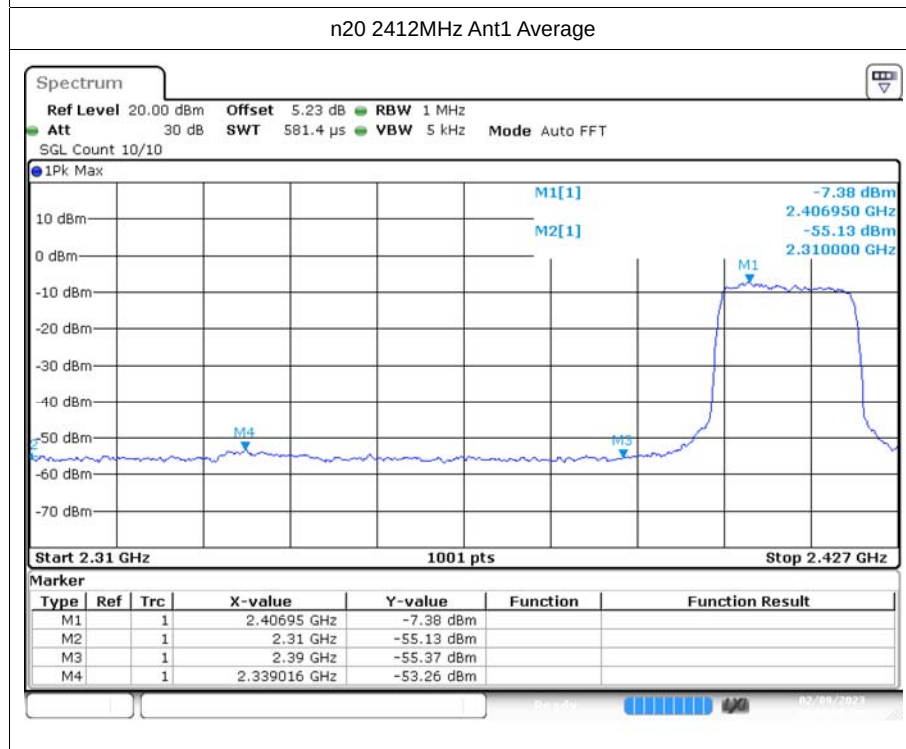
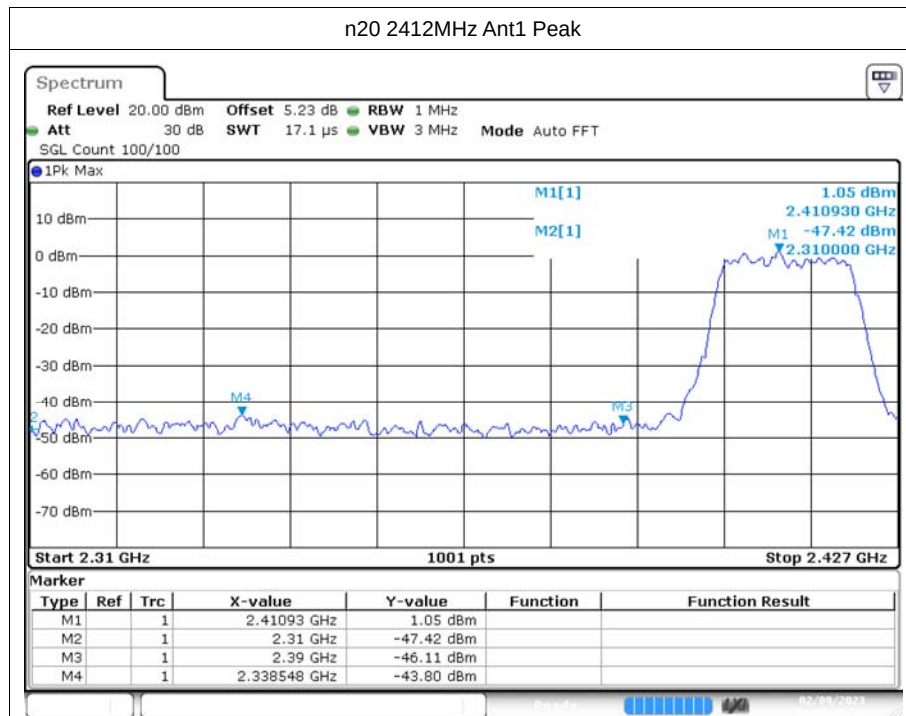
g 2412MHz Ant1 Peak

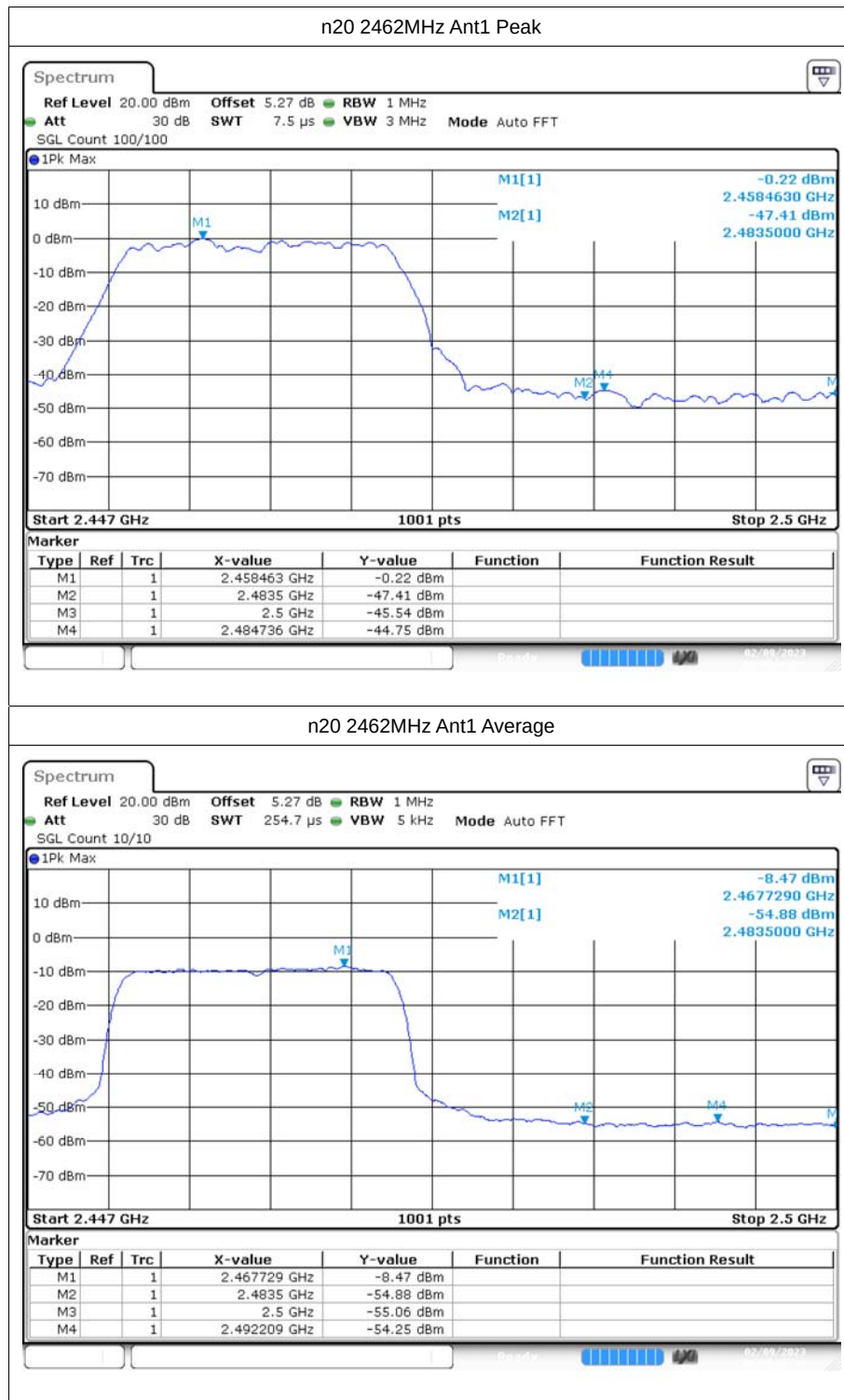


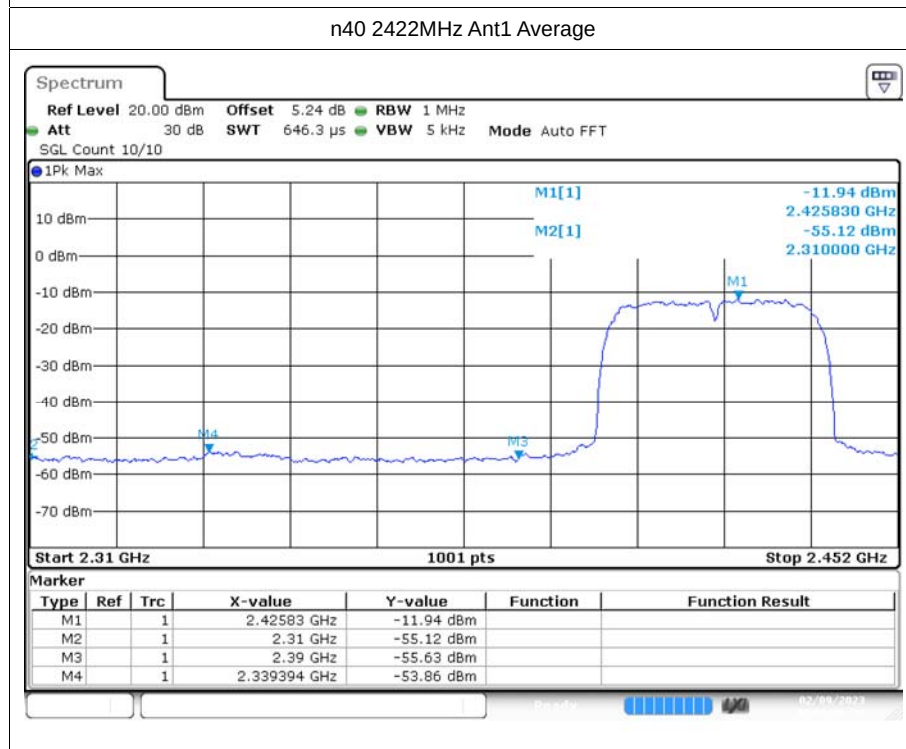
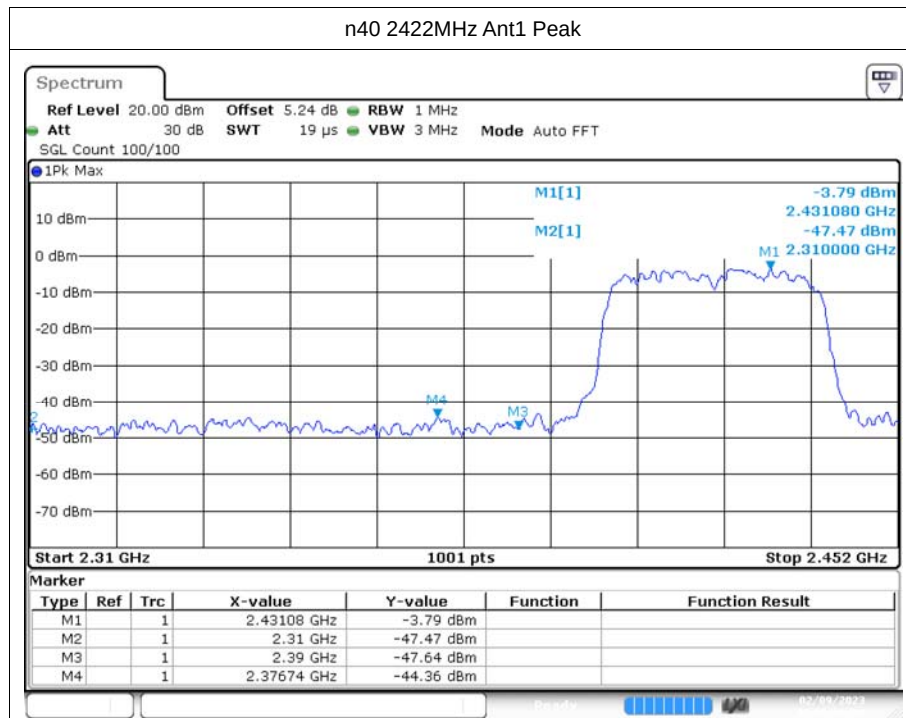
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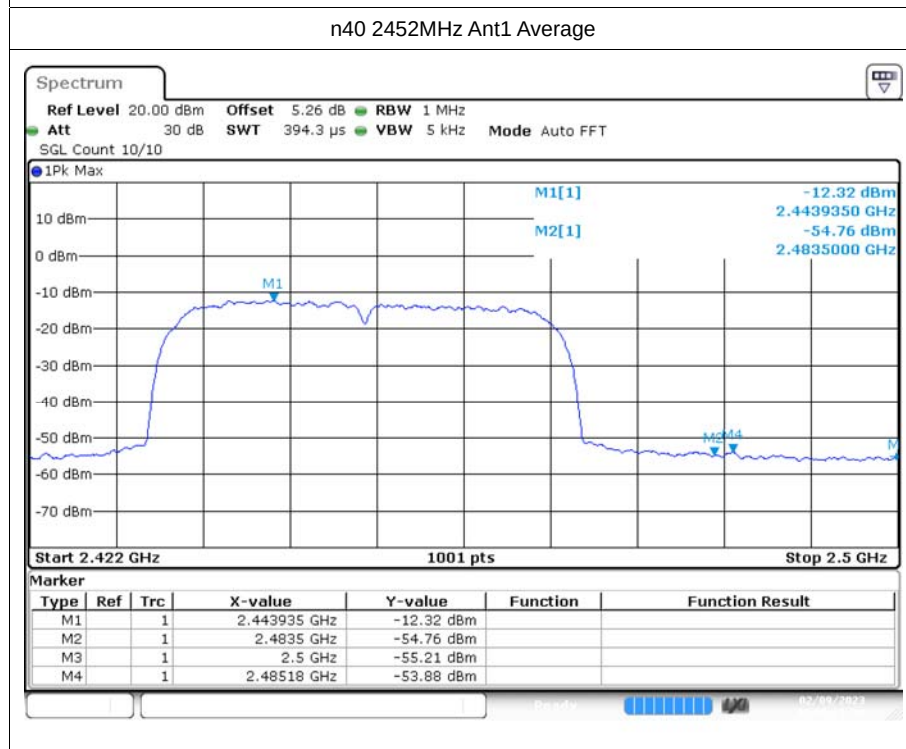
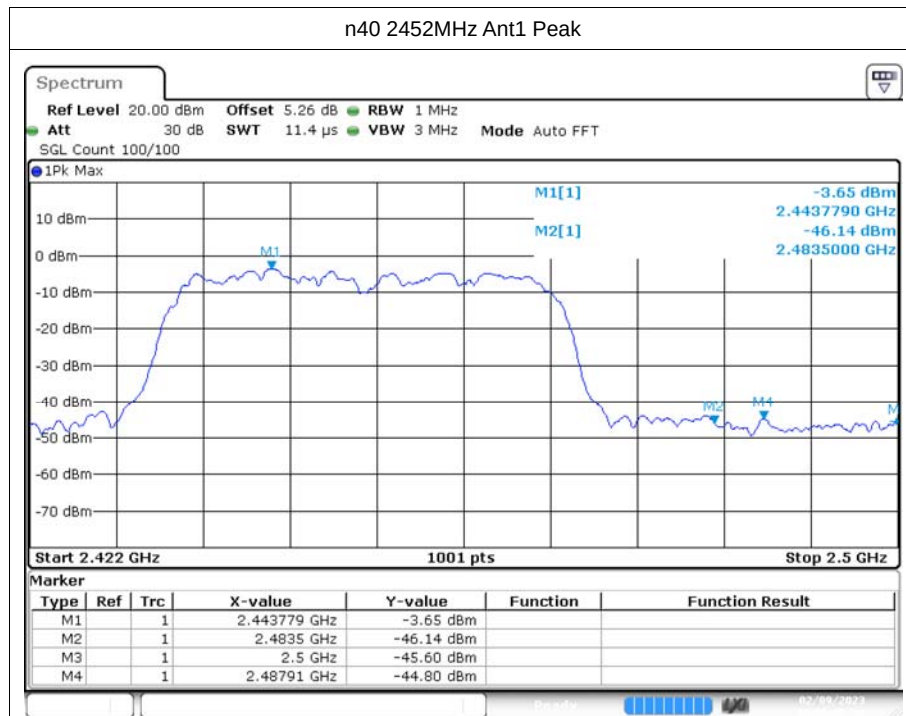












---The End---