



Appendix C

RF Test Data for 2.4GWIFI (Conducted Measurement)

Product Name: M5StampS3

Trade Mark: M5STACK

Test Model: StampS3

Environmental Conditions

Temperature:	24.0° C
Relative Humidity:	52.1%
ATM Pressure:	100.0 kPa
Test Engineer:	Simba Huang
Supervised by:	Seal Chen



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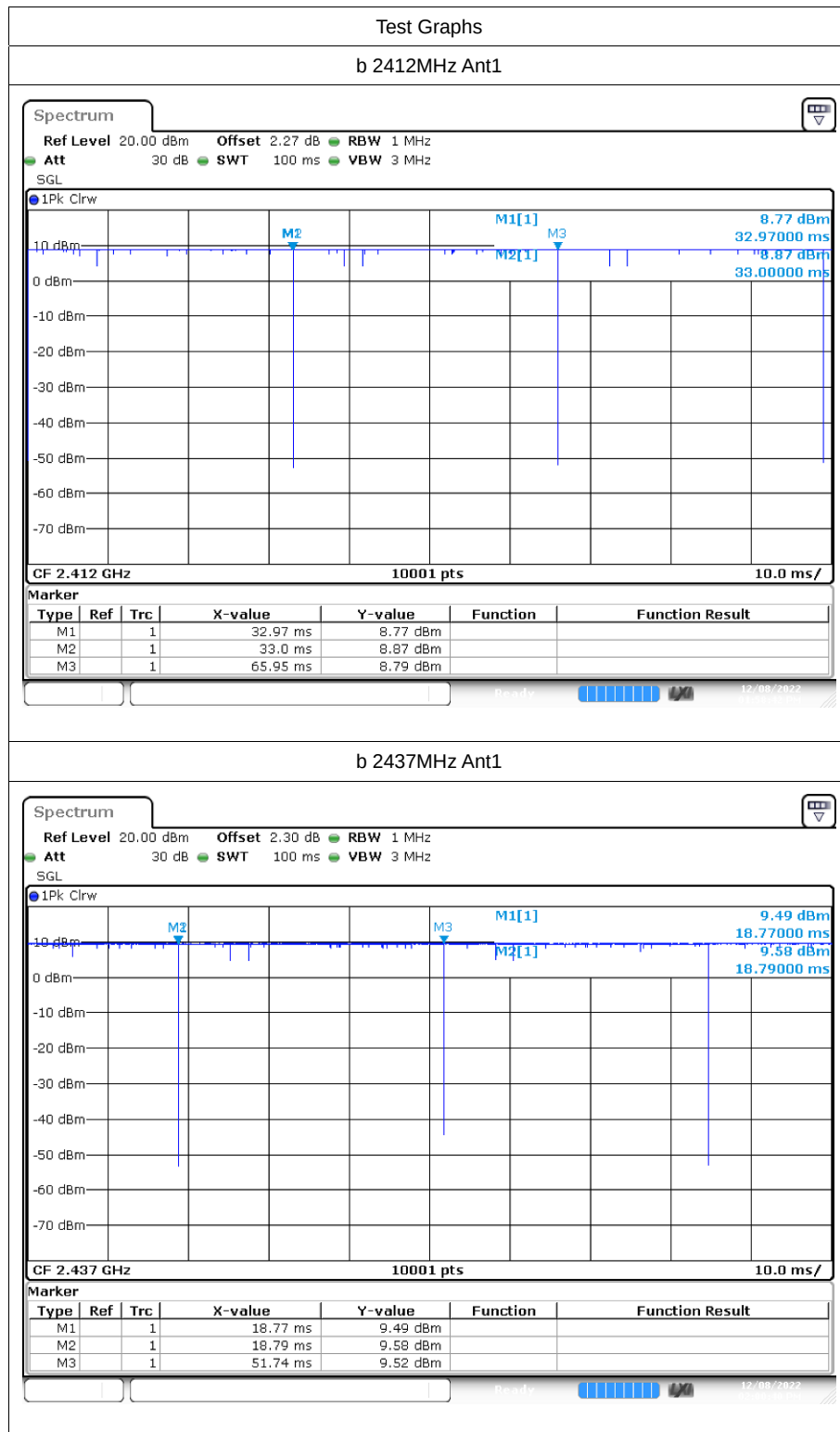


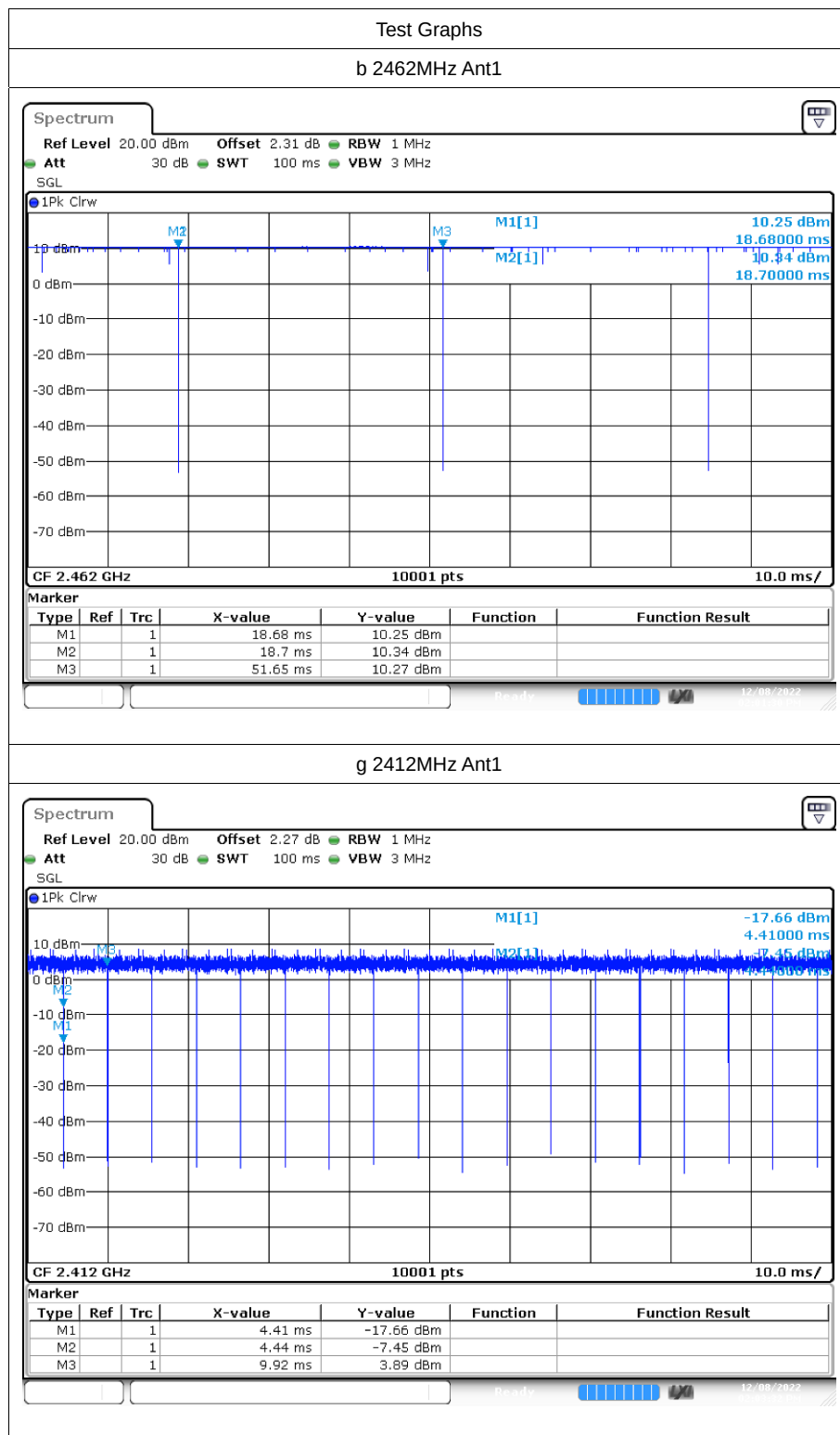
1 Duty Cycle

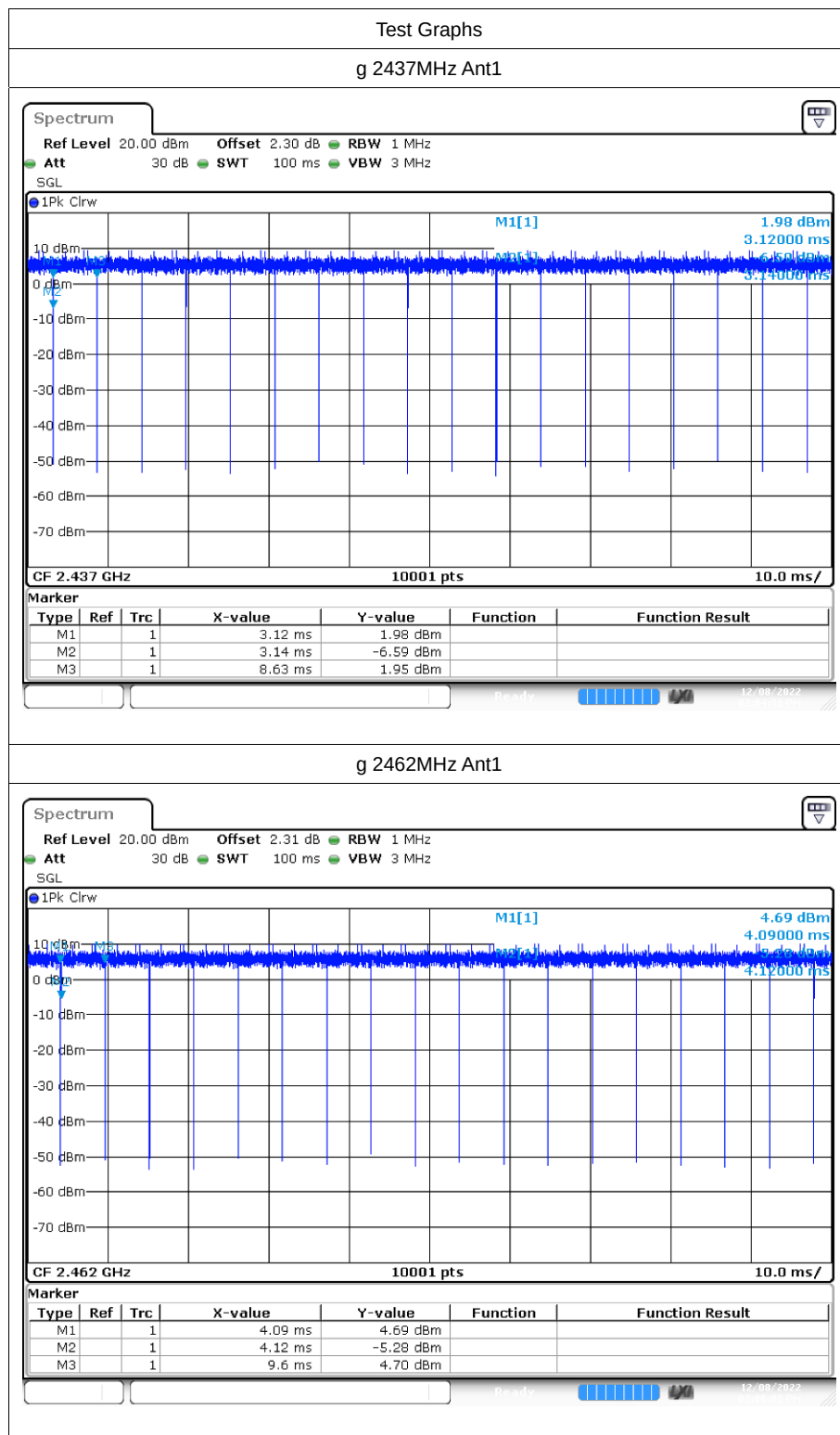
1.1 Test Result

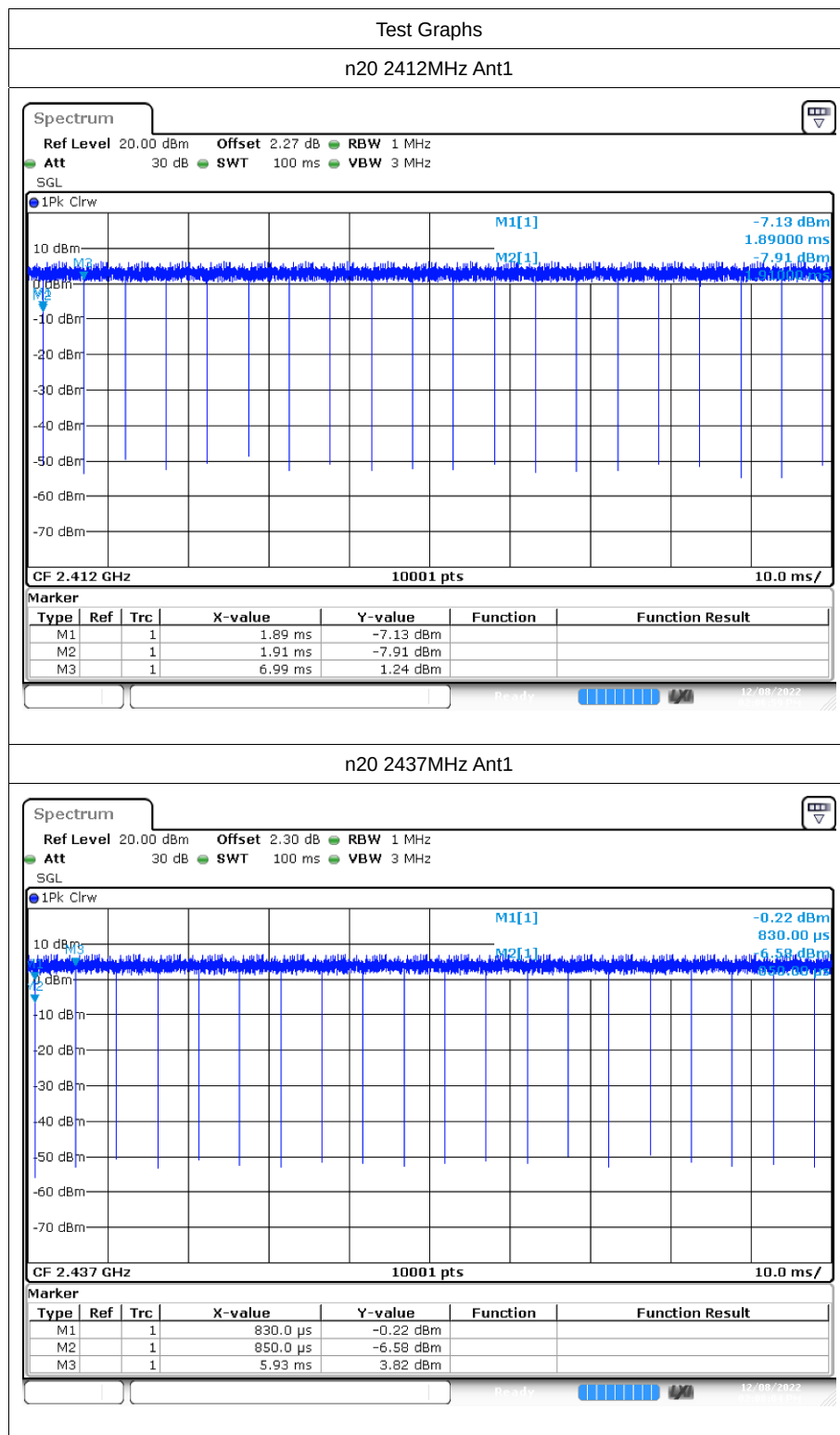
Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	1/T (kHz)
b	2412	Ant1	99.94	0.03
b	2437	Ant1	99.97	0.03
b	2462	Ant1	99.97	0.03
g	2412	Ant1	99.64	0.18
g	2437	Ant1	99.63	0.18
g	2462	Ant1	99.64	0.18
n20	2412	Ant1	99.72	0.2
n20	2437	Ant1	99.68	0.2
n20	2462	Ant1	99.66	0.2
n40	2422	Ant1	99.36	0.4
n40	2437	Ant1	99.44	0.4
n40	2452	Ant1	99.44	0.4

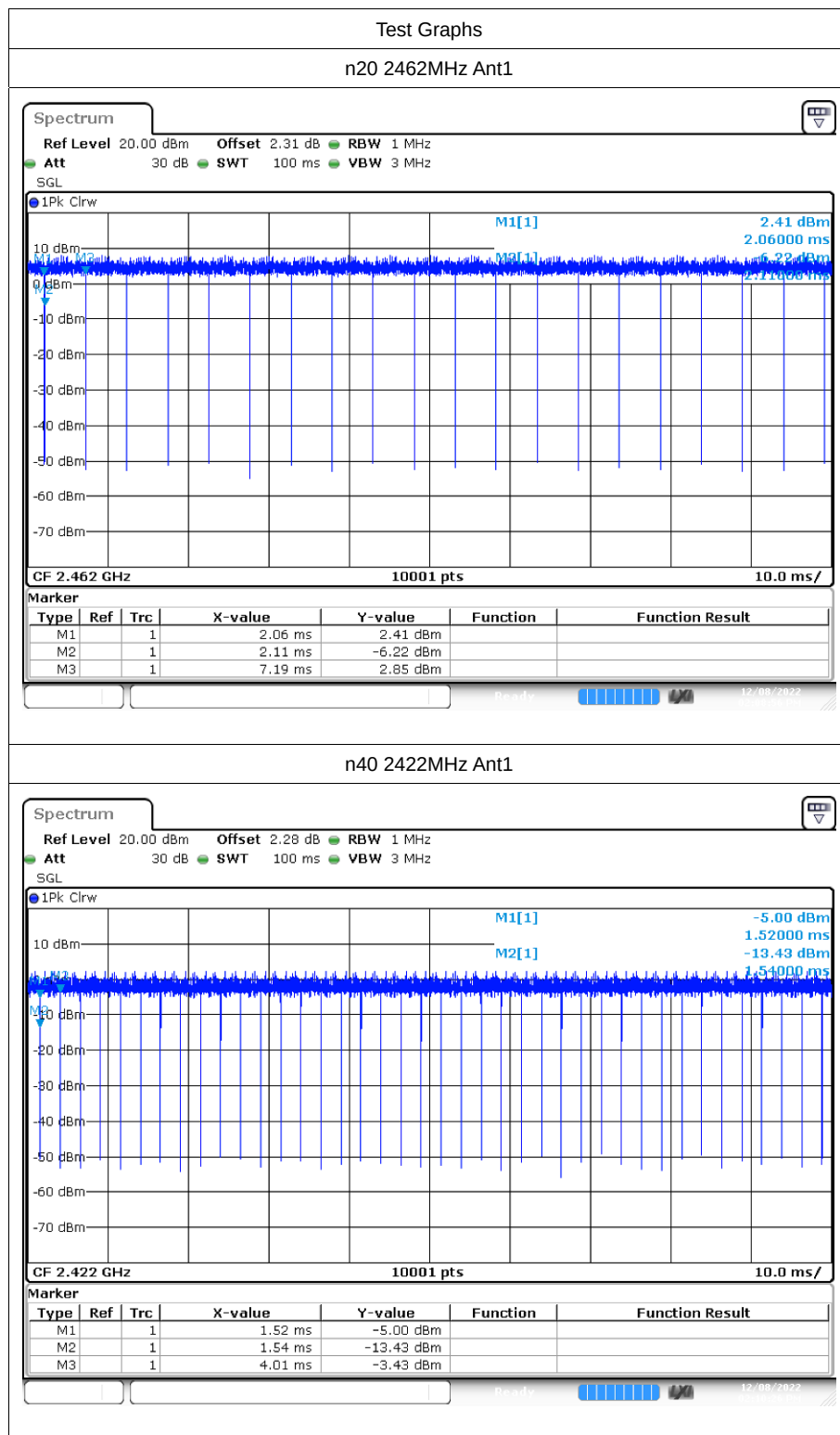
1.2 Test Graphs

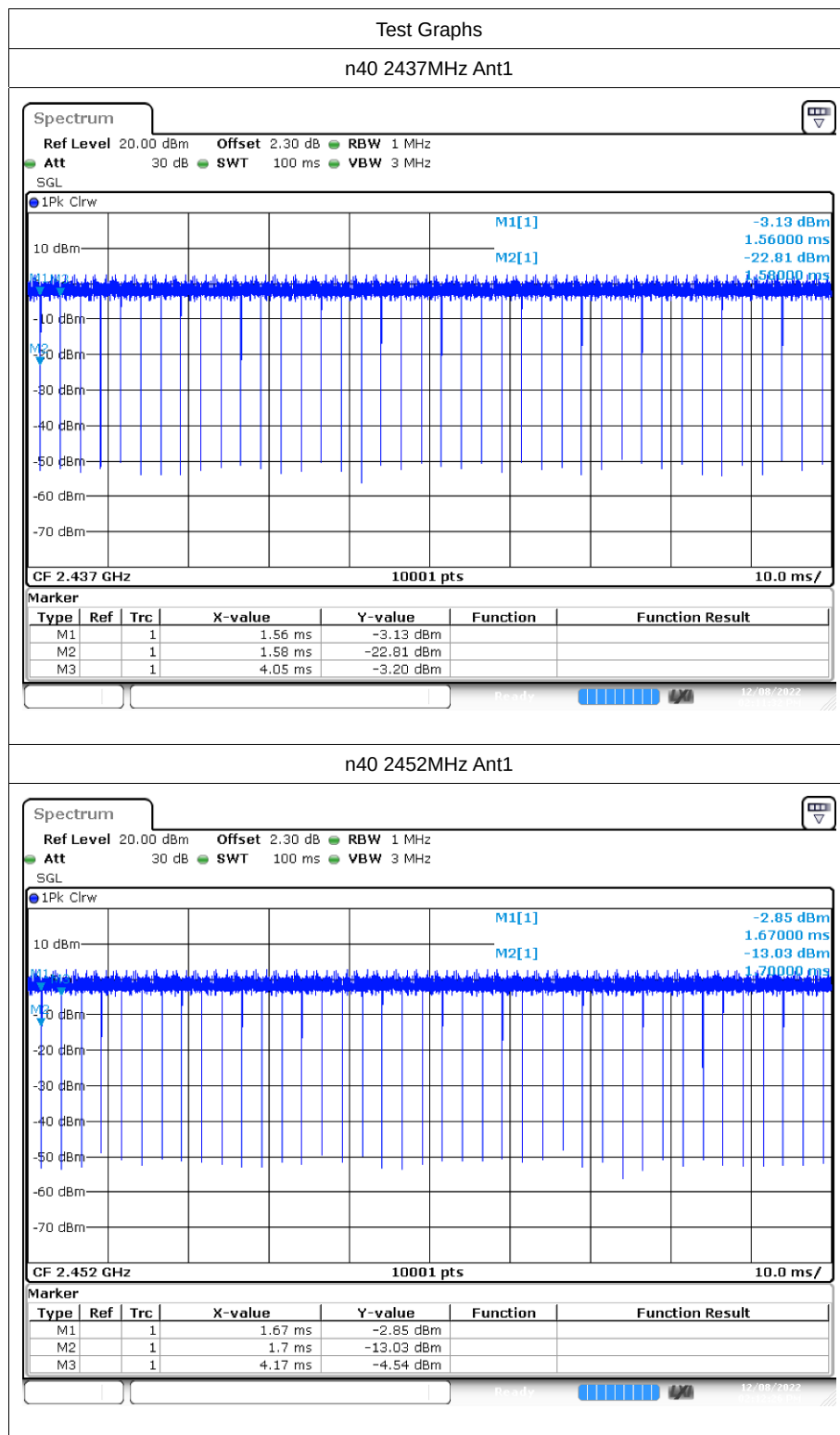












2 Maximum Conducted Output Power

2.1 Test Result

Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Limit (dBm)	Verdict
b	2412	Ant1	17.88	30	Pass
b	2437	Ant1	18.59	30	Pass
b	2462	Ant1	19.3	30	Pass
g	2412	Ant1	17.77	30	Pass
g	2437	Ant1	18.59	30	Pass
g	2462	Ant1	18.85	30	Pass
n20	2412	Ant1	16.19	30	Pass
n20	2437	Ant1	17.14	30	Pass
n20	2462	Ant1	17.81	30	Pass
n40	2422	Ant1	17.88	30	Pass
n40	2437	Ant1	18.38	30	Pass
n40	2452	Ant1	18.58	30	Pass

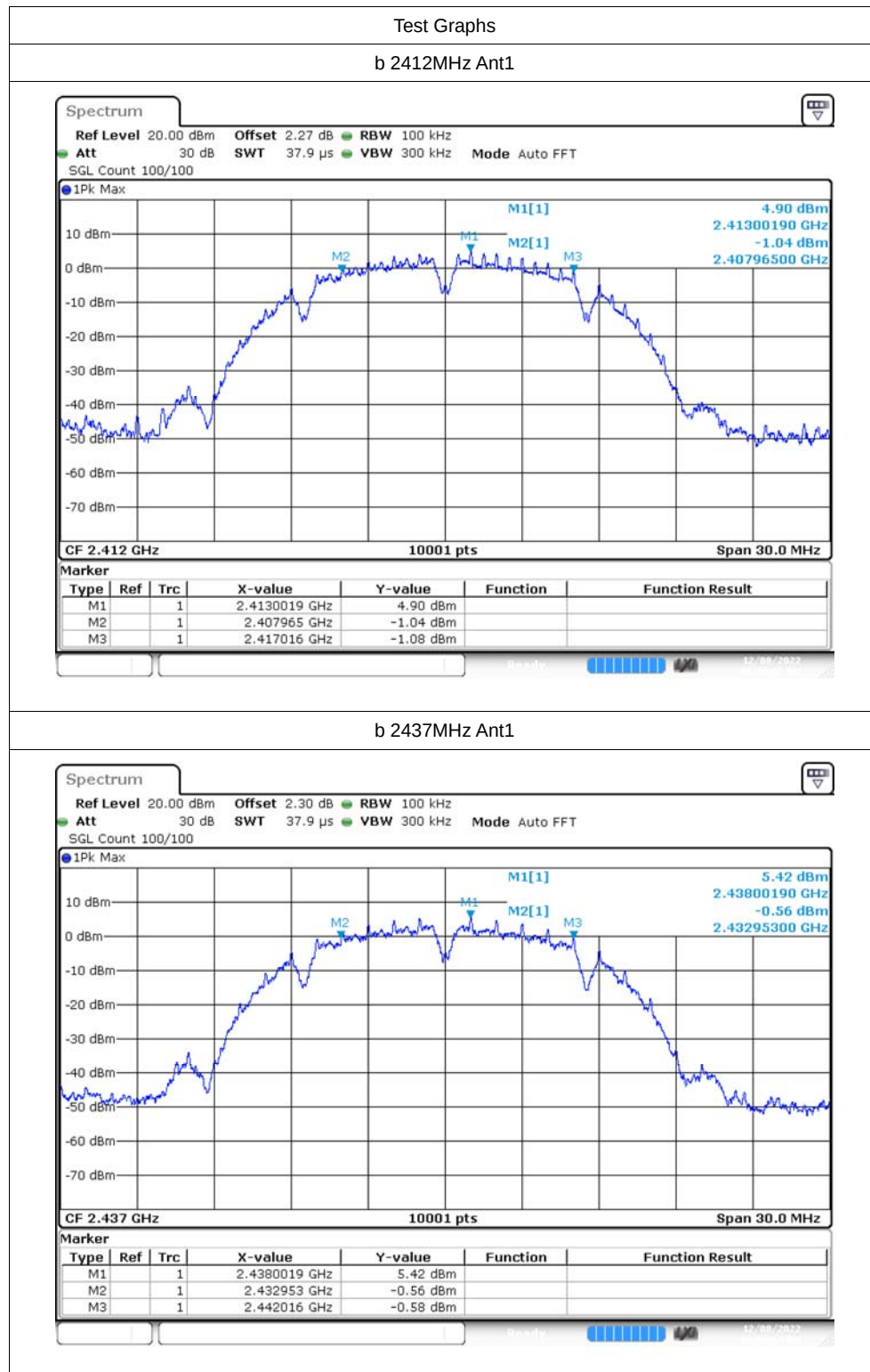


3 -6dB Bandwidth

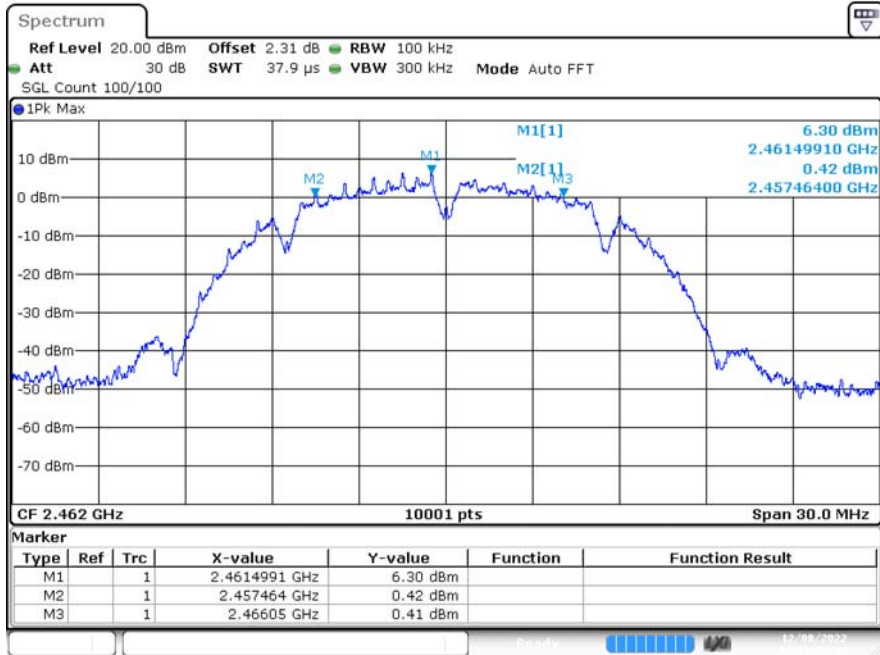
3.1 Test Result

Mode	Frequency (MHz)	Antenna	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
b	2412	Ant1	9.051	0.5	Pass
b	2437	Ant1	9.063	0.5	Pass
b	2462	Ant1	8.586	0.5	Pass
g	2412	Ant1	16.524	0.5	Pass
g	2437	Ant1	16.527	0.5	Pass
g	2462	Ant1	16.329	0.5	Pass
n20	2412	Ant1	17.814	0.5	Pass
n20	2437	Ant1	17.805	0.5	Pass
n20	2462	Ant1	17.7	0.5	Pass
n40	2422	Ant1	33.726	0.5	Pass
n40	2437	Ant1	33.522	0.5	Pass
n40	2452	Ant1	32.304	0.5	Pass

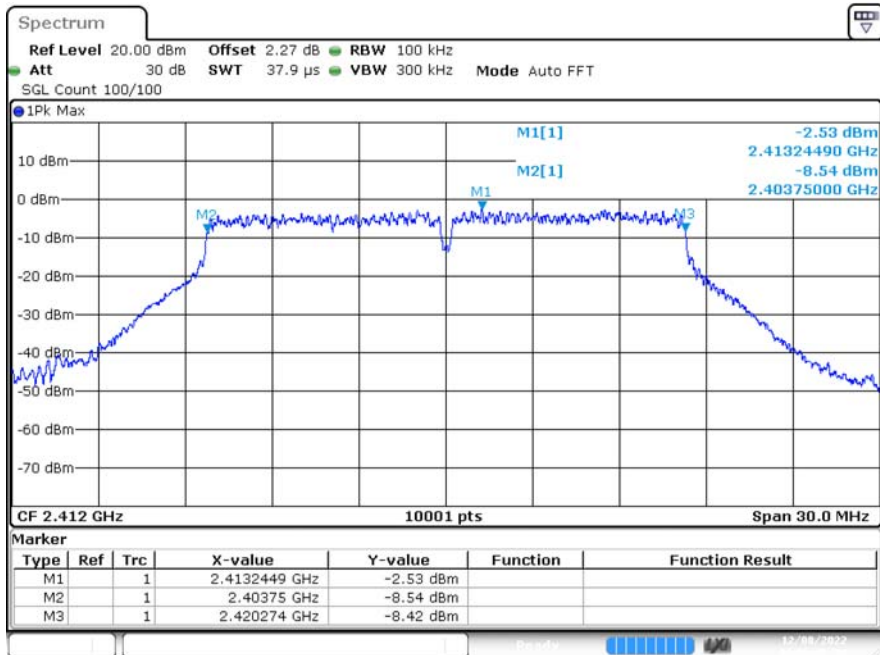
3.2 Test Graphs



b 2462MHz Ant1

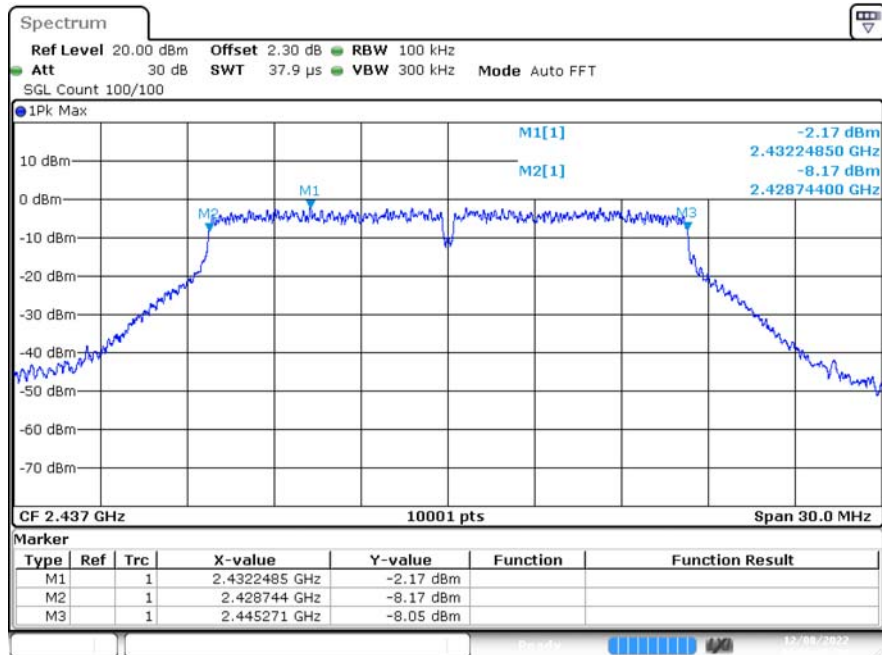


g 2412MHz Ant1

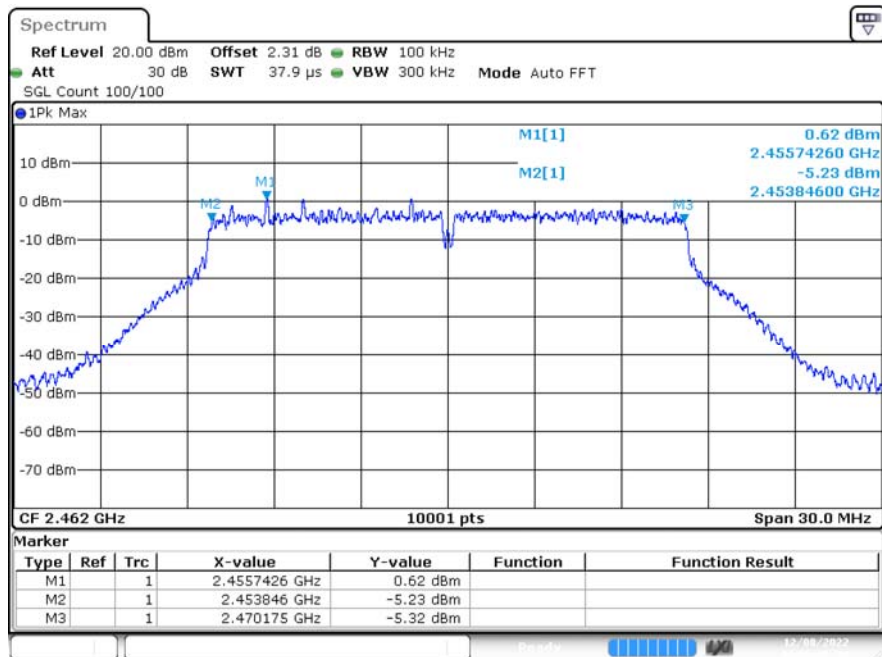


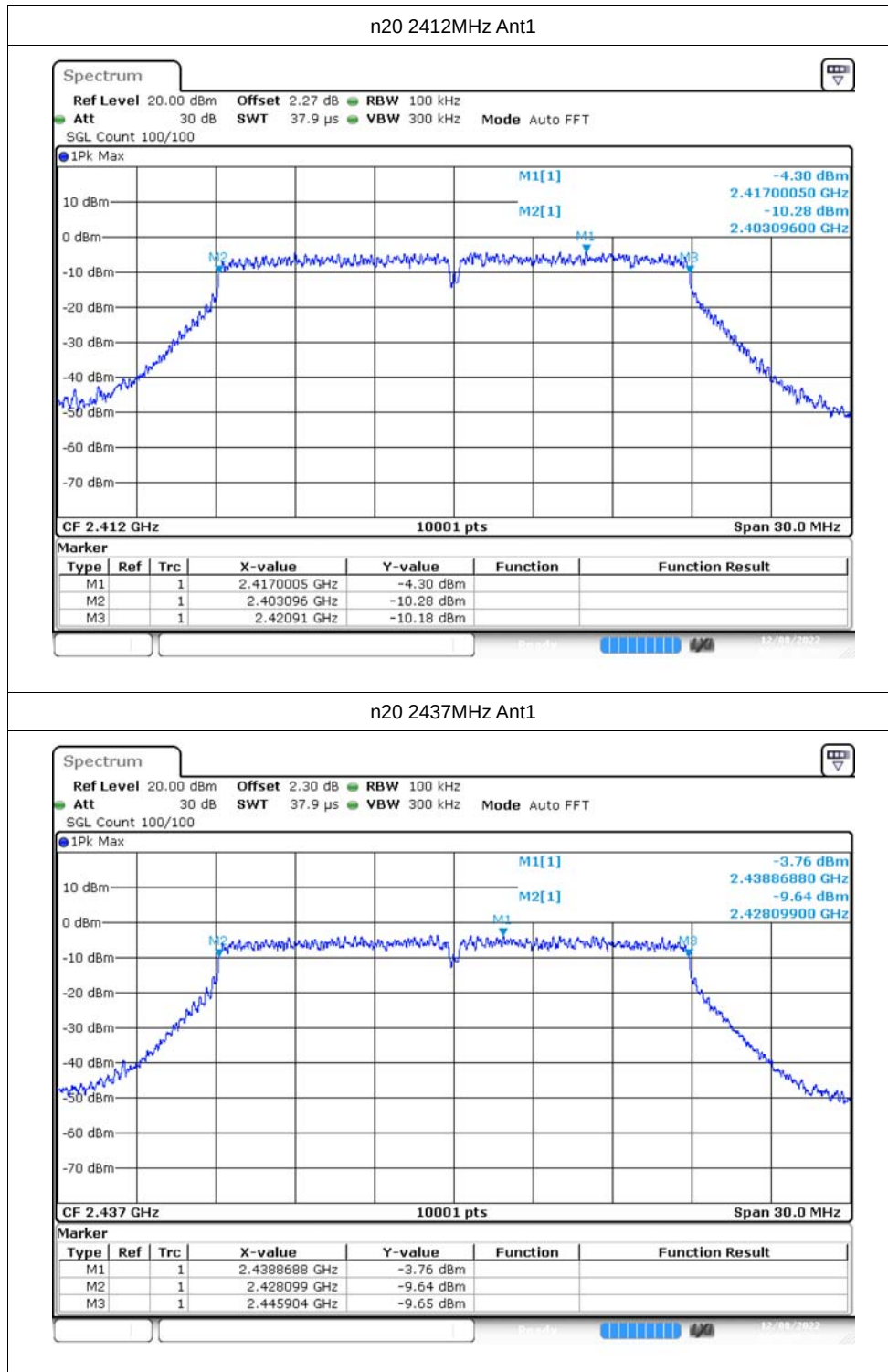


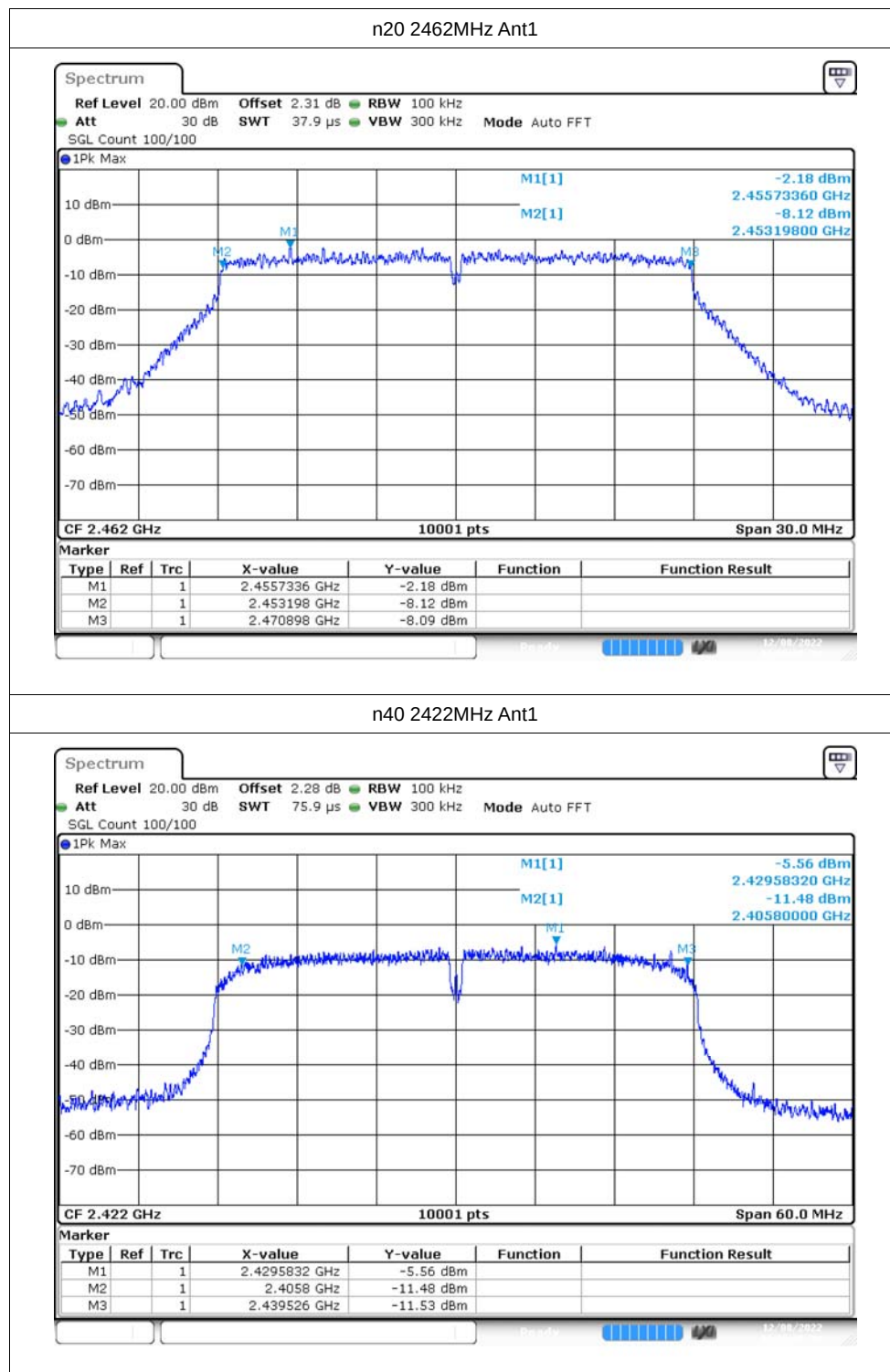
g 2437MHz Ant1

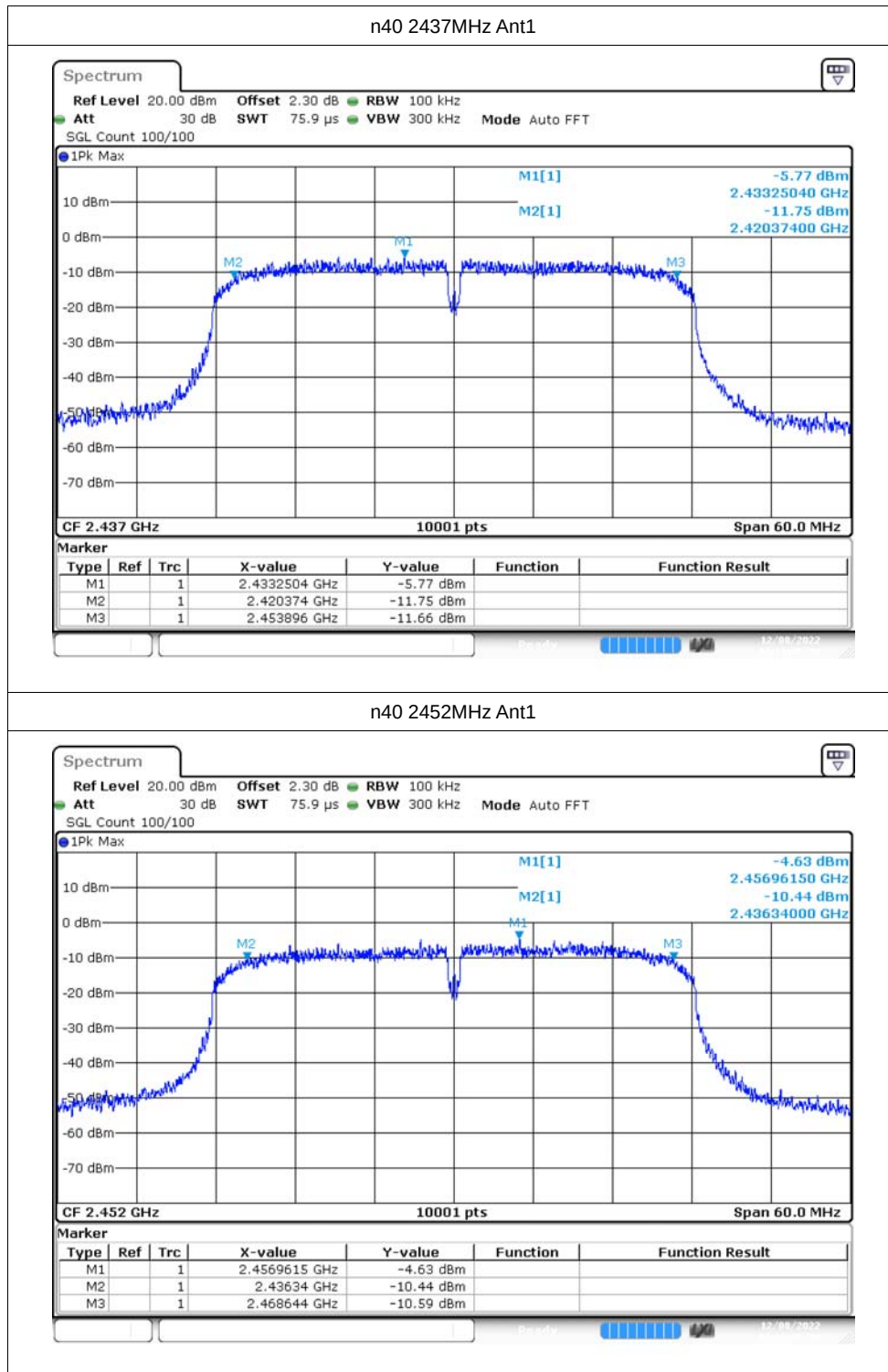


g 2462MHz Ant1







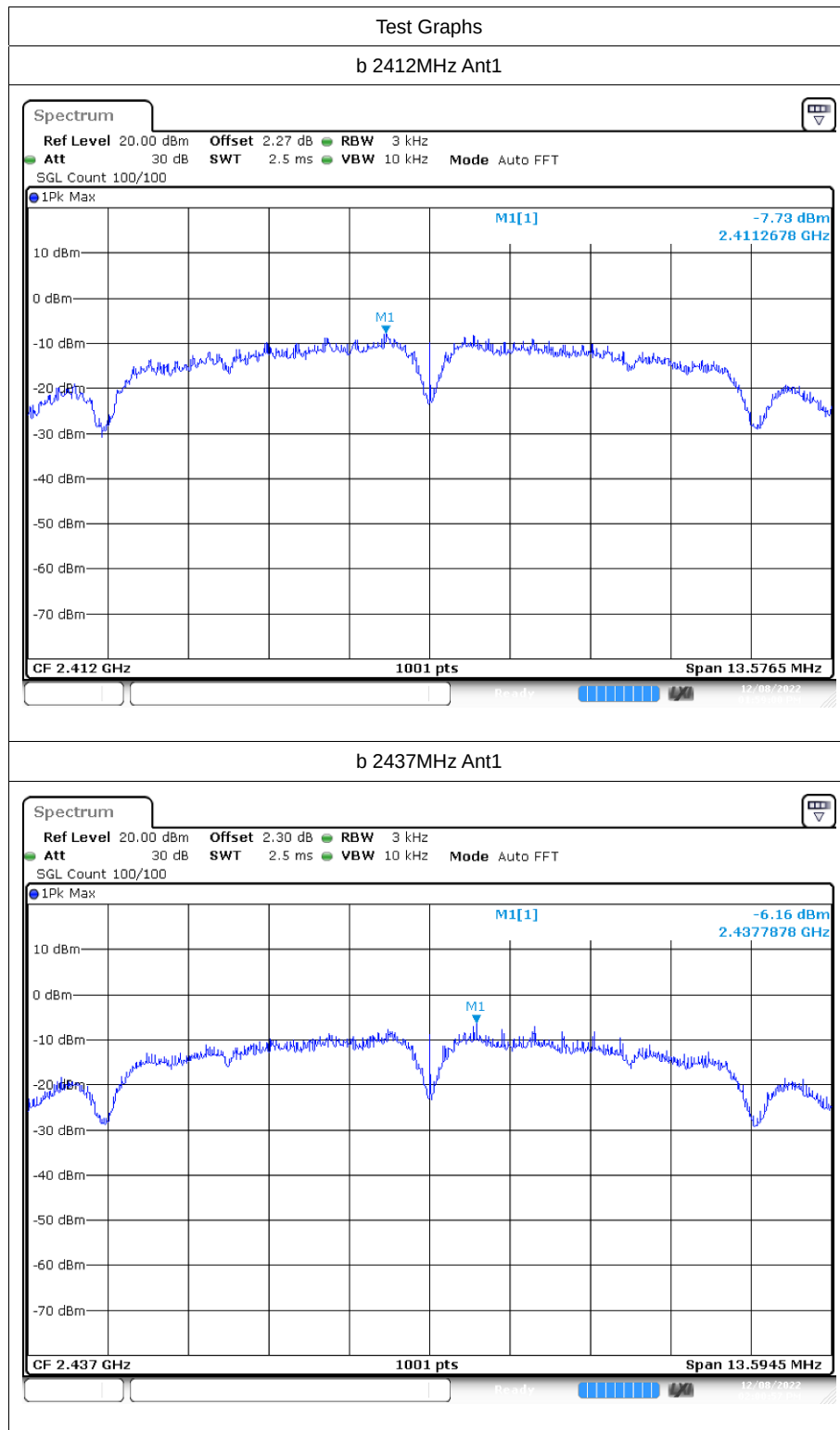


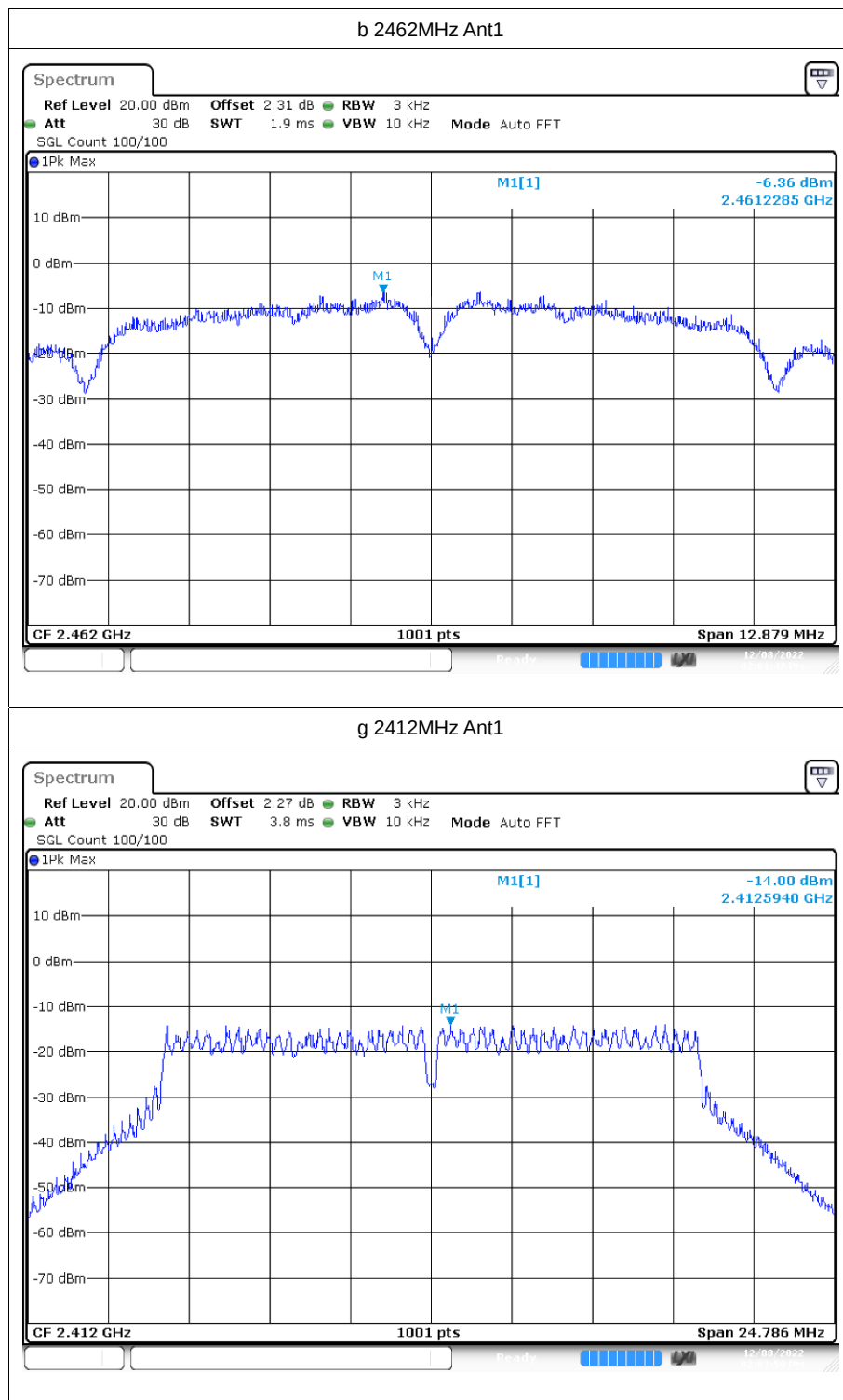
4 Maximum Power Spectral Density Level

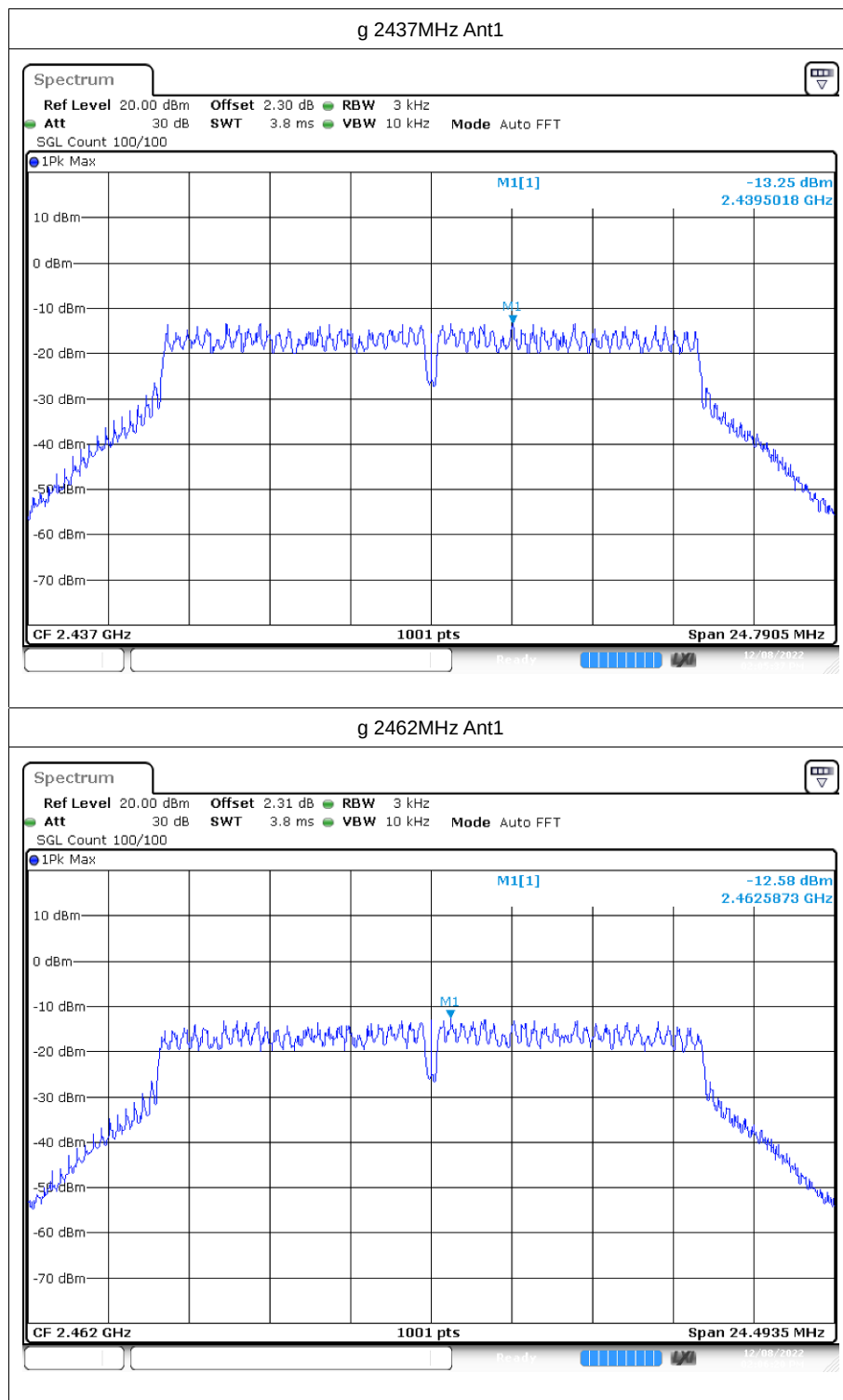
4.1 Test Result

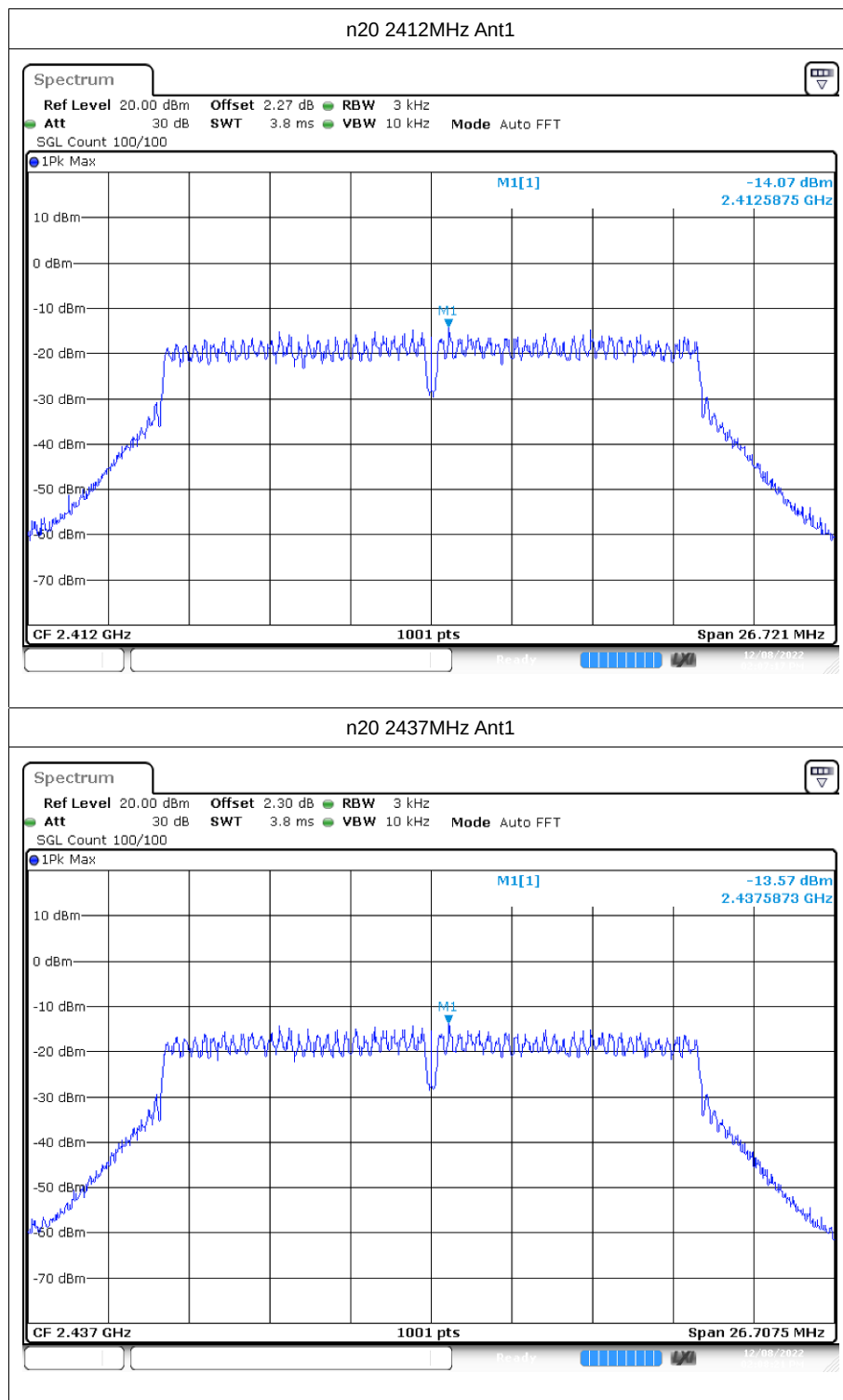
Mode	Frequency (MHz)	Antenna	Conducted PSD (dBm/3-100kHz)	Limit (dBm/3kHz)	Verdict
b	2412	Ant1	-7.73	≤ 8	Pass
b	2437	Ant1	-6.16	≤ 8	Pass
b	2462	Ant1	-6.36	≤ 8	Pass
g	2412	Ant1	-14	≤ 8	Pass
g	2437	Ant1	-13.25	≤ 8	Pass
g	2462	Ant1	-12.58	≤ 8	Pass
n20	2412	Ant1	-14.07	≤ 8	Pass
n20	2437	Ant1	-13.57	≤ 8	Pass
n20	2462	Ant1	-12.79	≤ 8	Pass
n40	2422	Ant1	-16.36	≤ 8	Pass
n40	2437	Ant1	-15.92	≤ 8	Pass
n40	2452	Ant1	-15.83	≤ 8	Pass

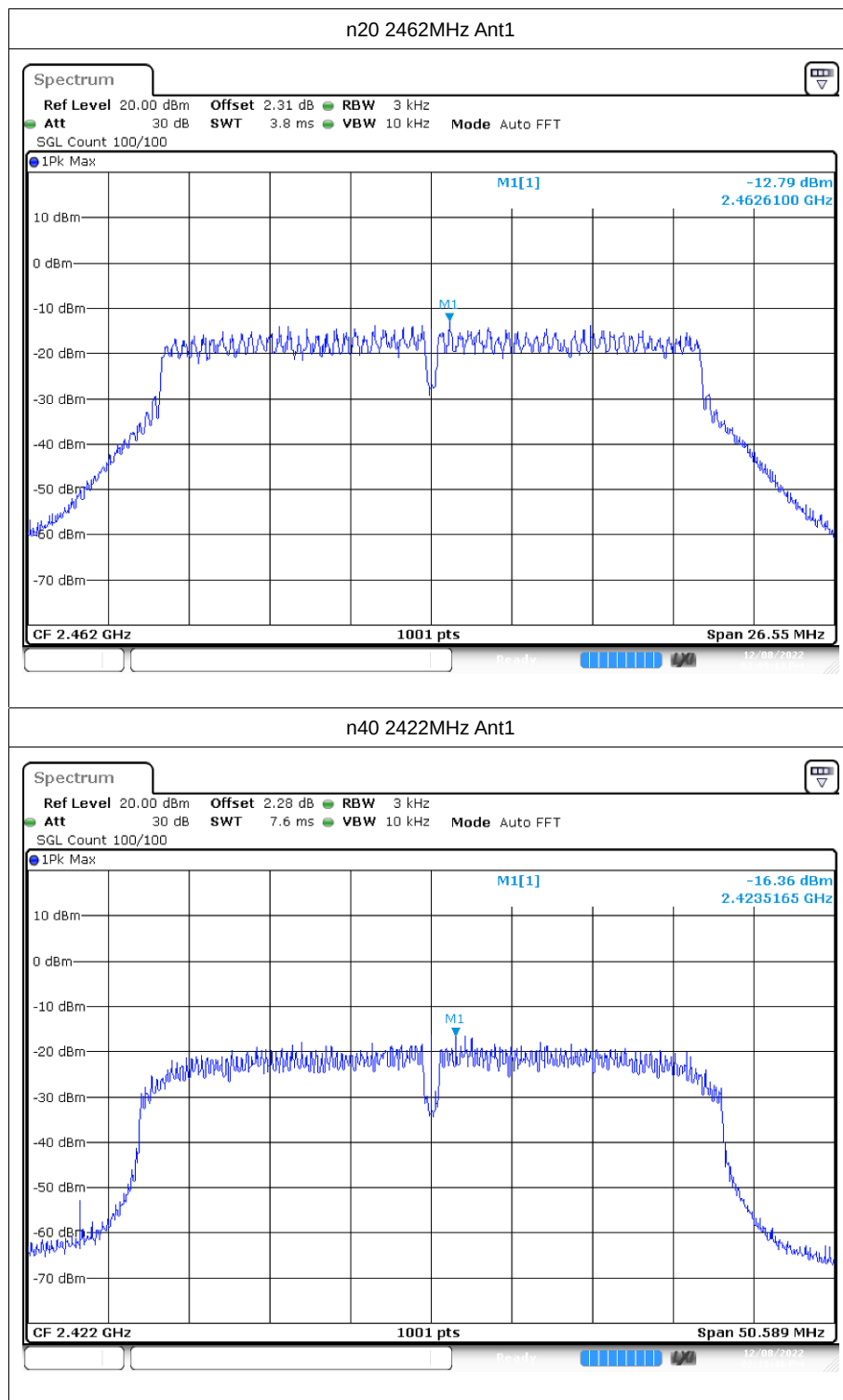
4.2 Test Graphs

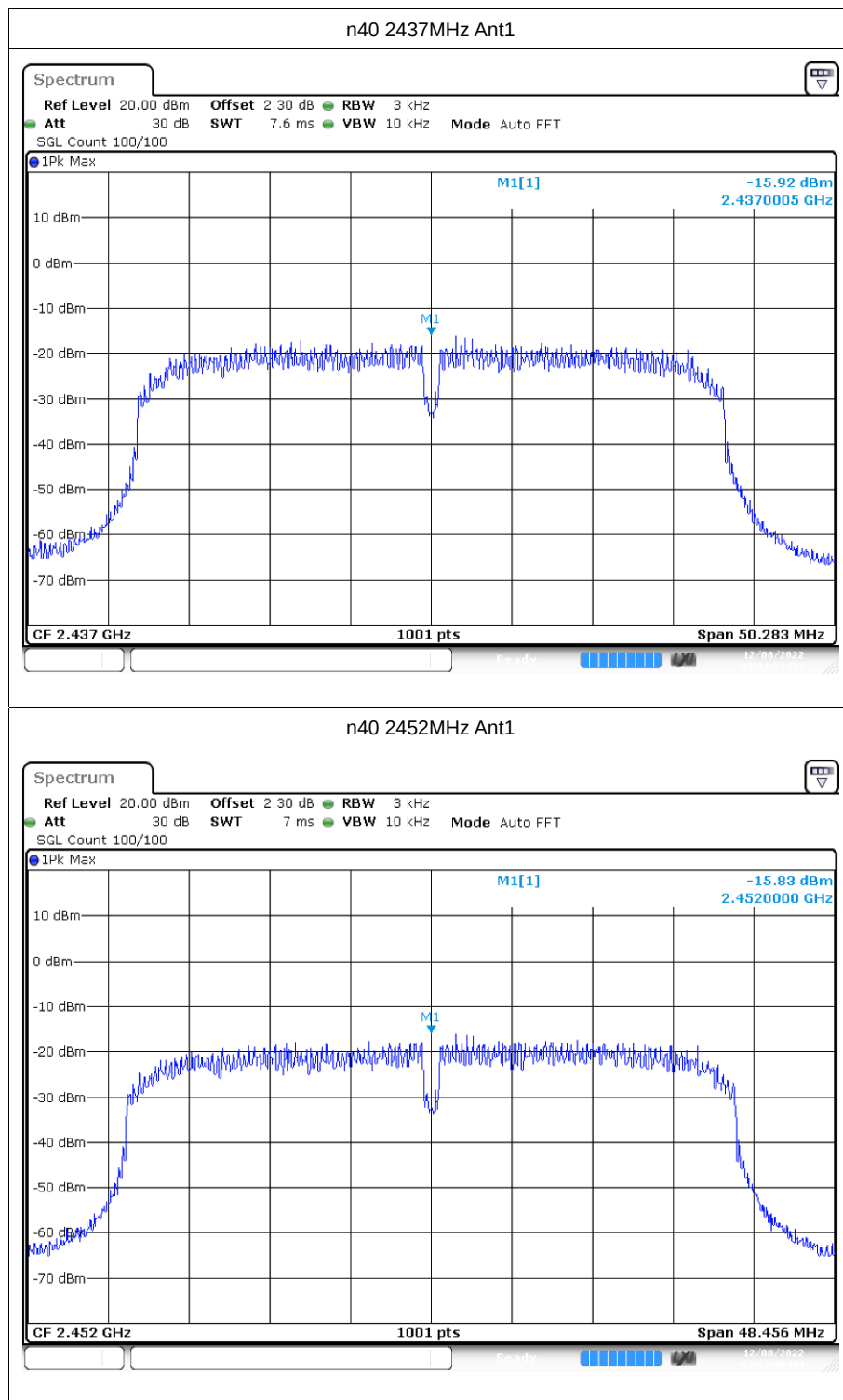












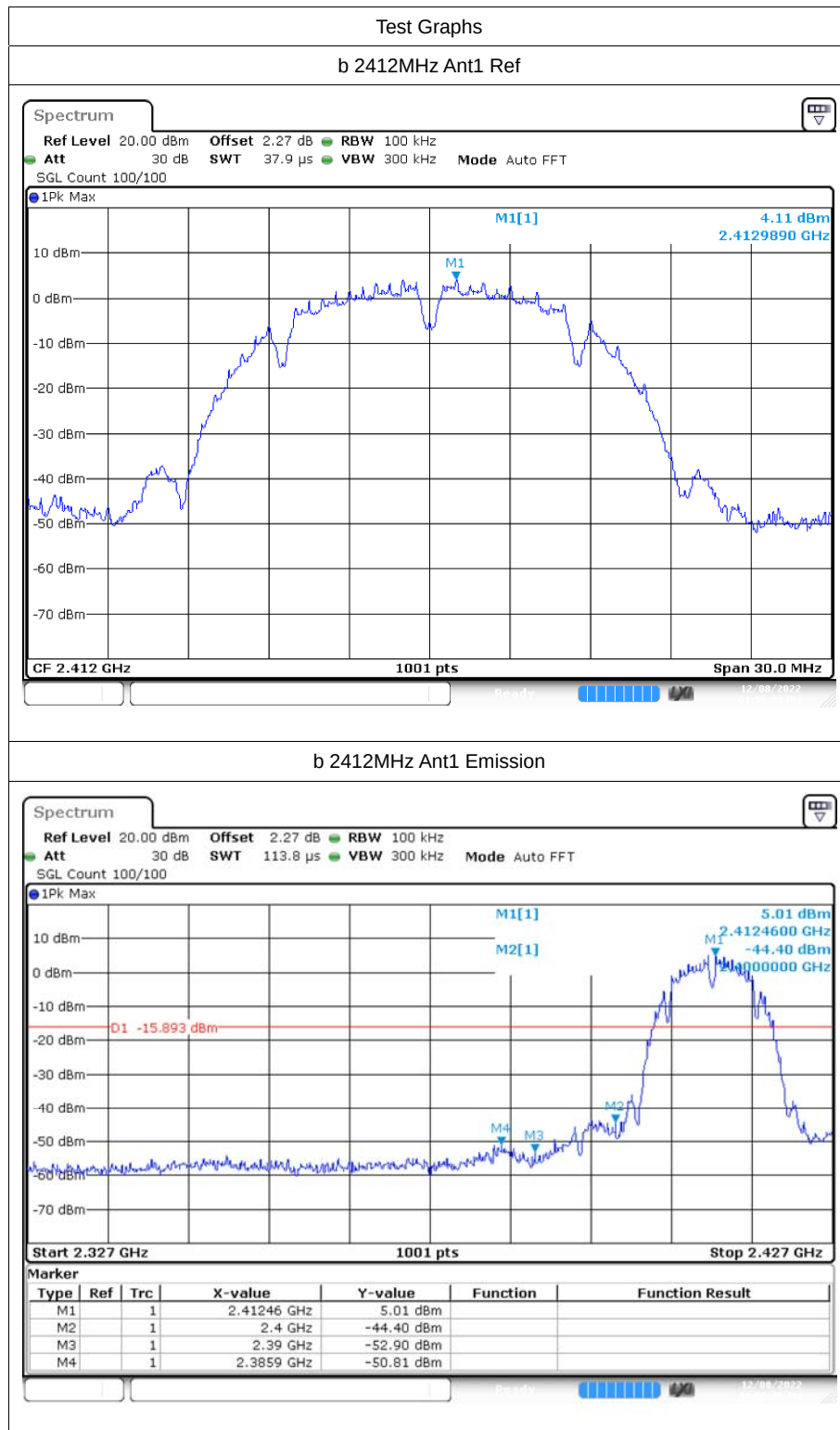


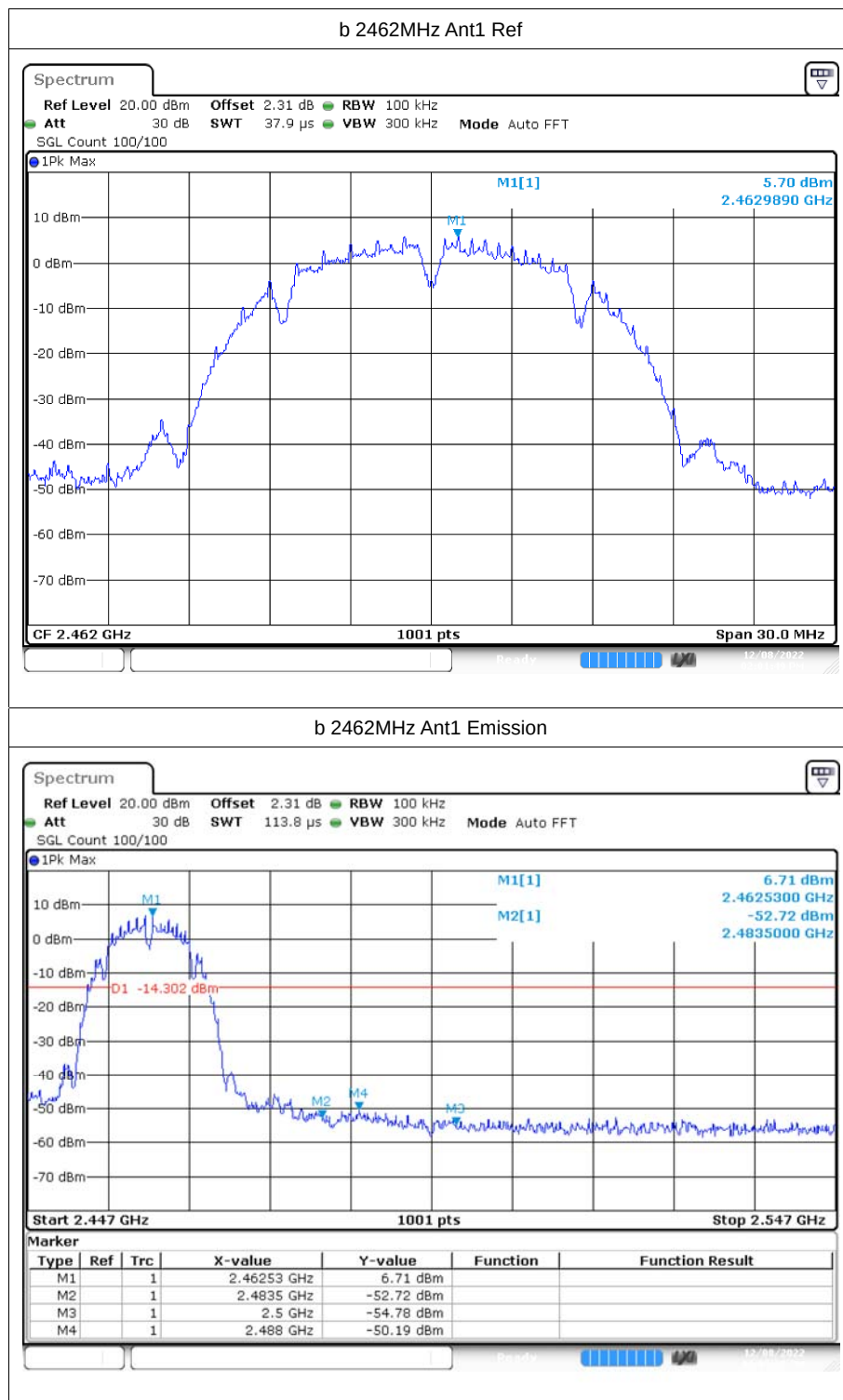
5 Band Edge

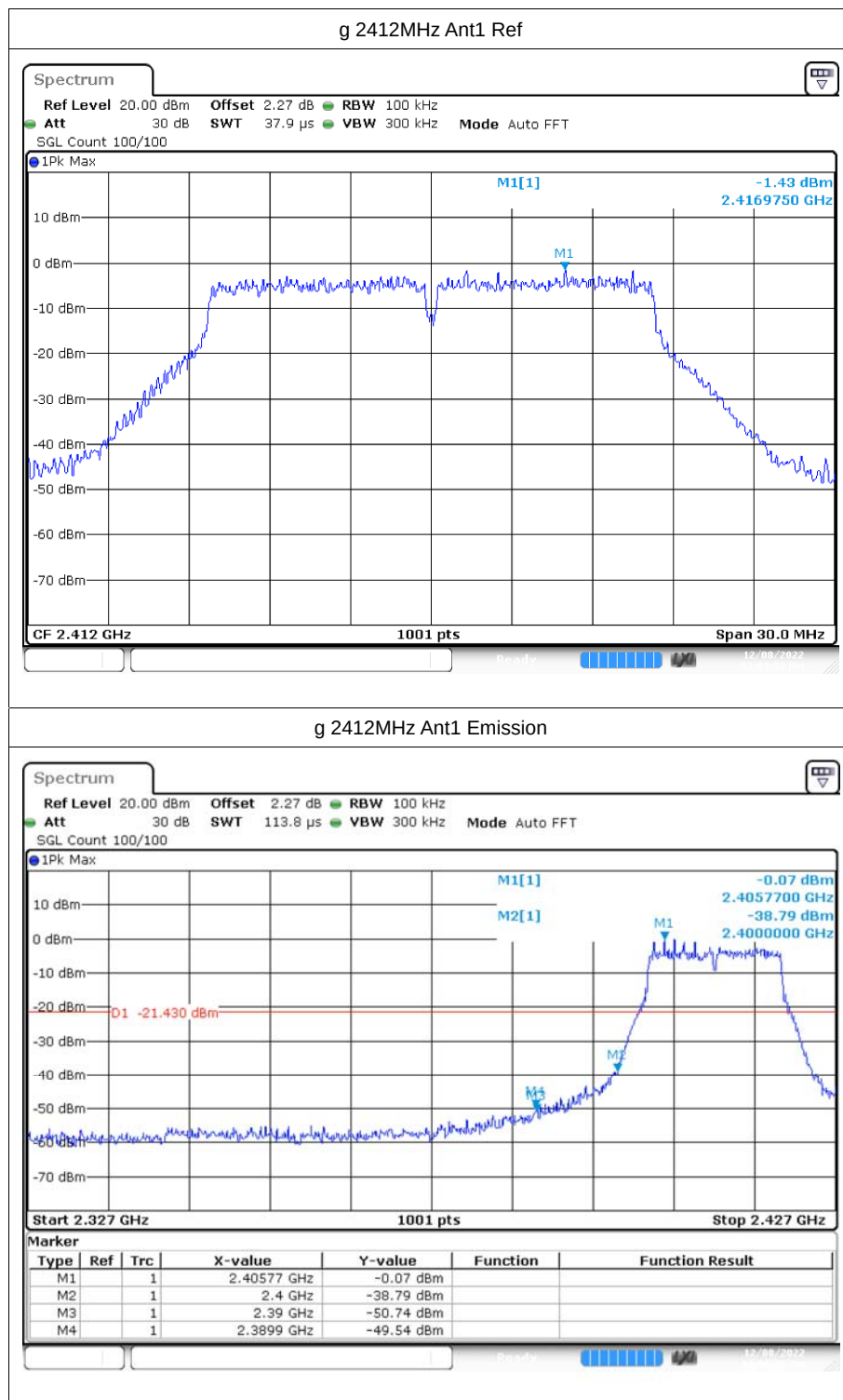
5.1 Test Result

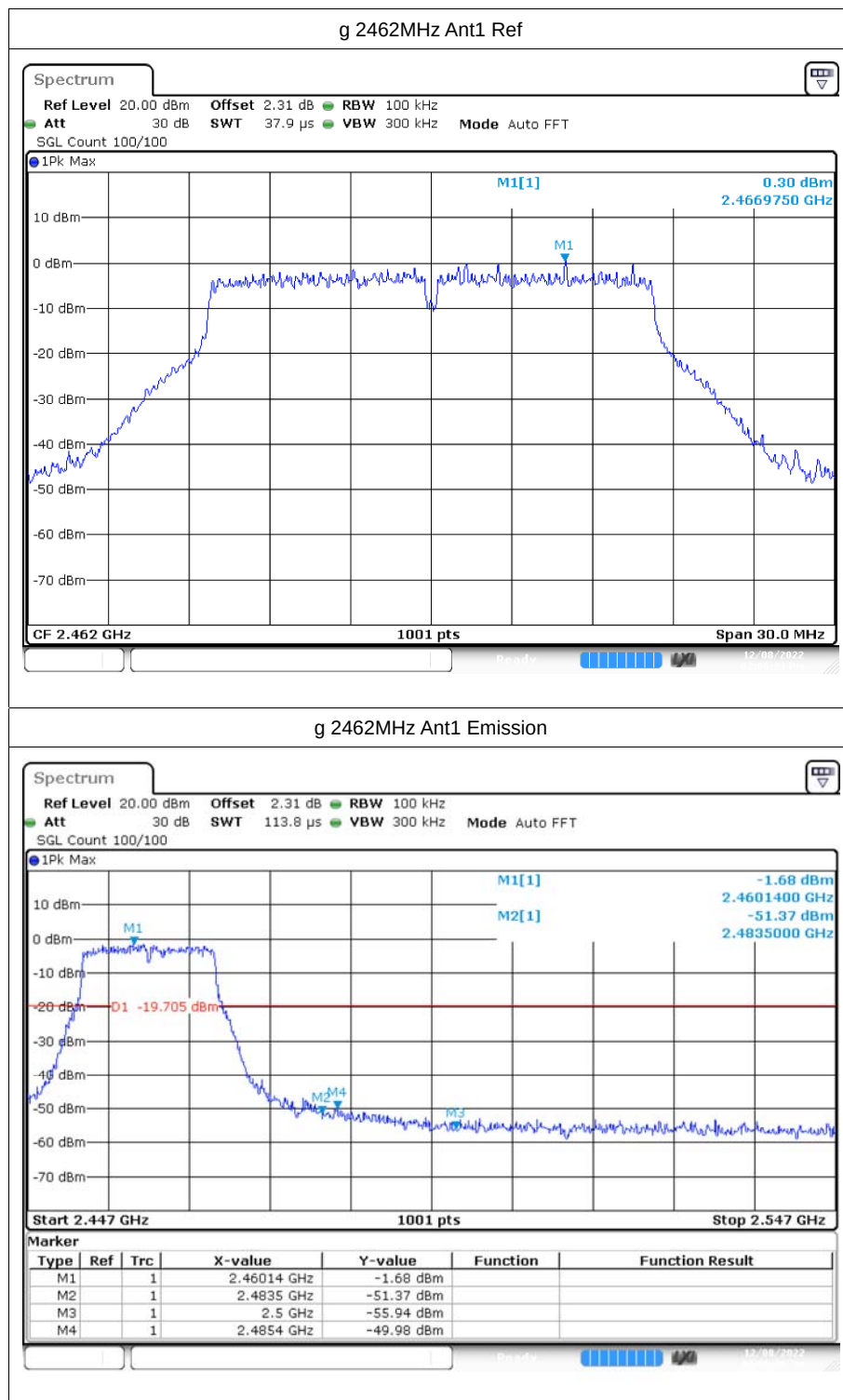
Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
b	2412	Ant1	-54.92	-20	-54.92
b	2462	Ant1	-55.88	-20	Pass
g	2412	Ant1	-48.11	-20	Pass
g	2462	Ant1	-50.28	-20	Pass
n20	2412	Ant1	-47.12	-20	Pass
n20	2462	Ant1	-50.9	-20	Pass
n40	2422	Ant1	-42.28	-20	Pass
n40	2452	Ant1	-43.74	-20	Pass

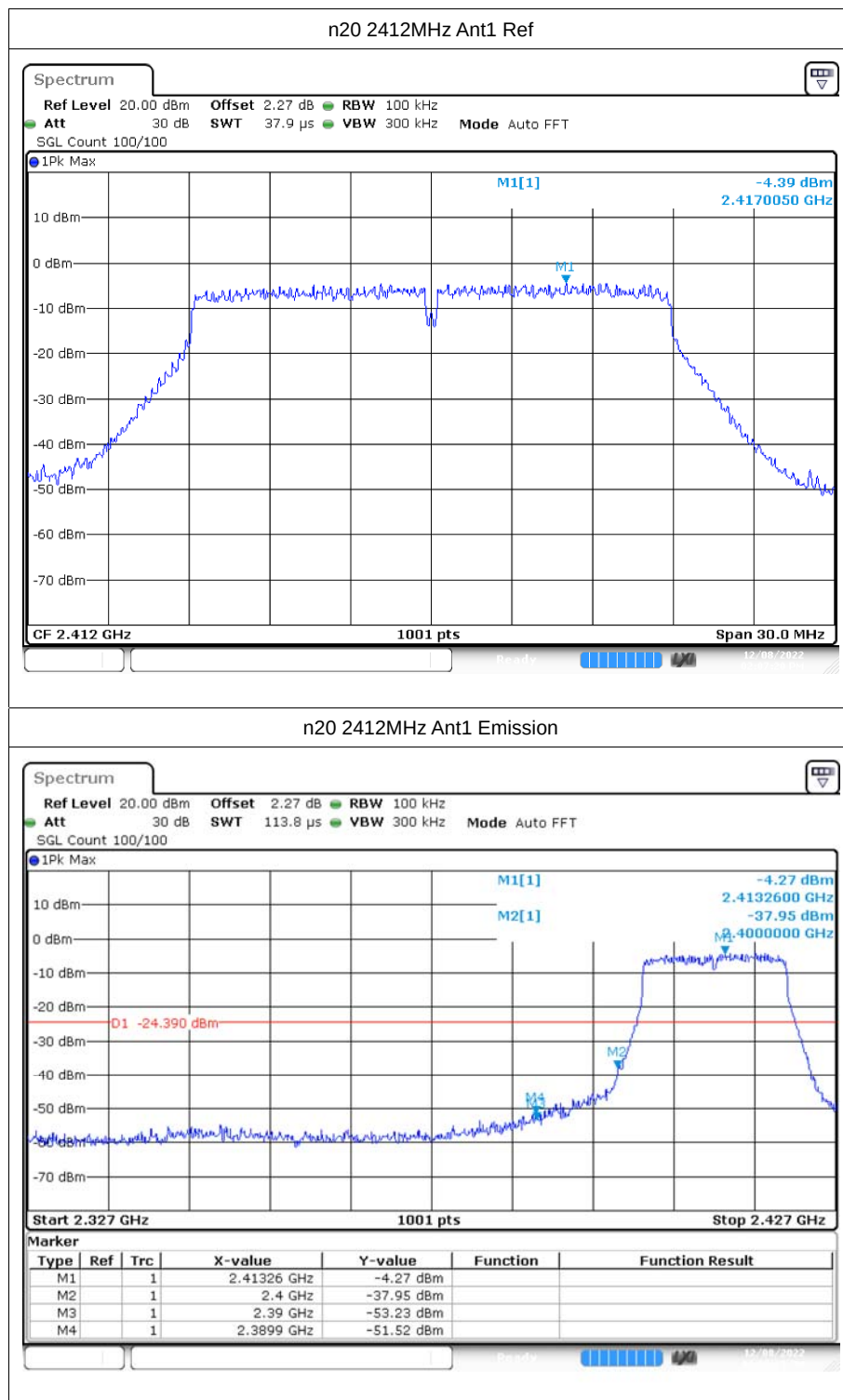
5.2 Test Graphs

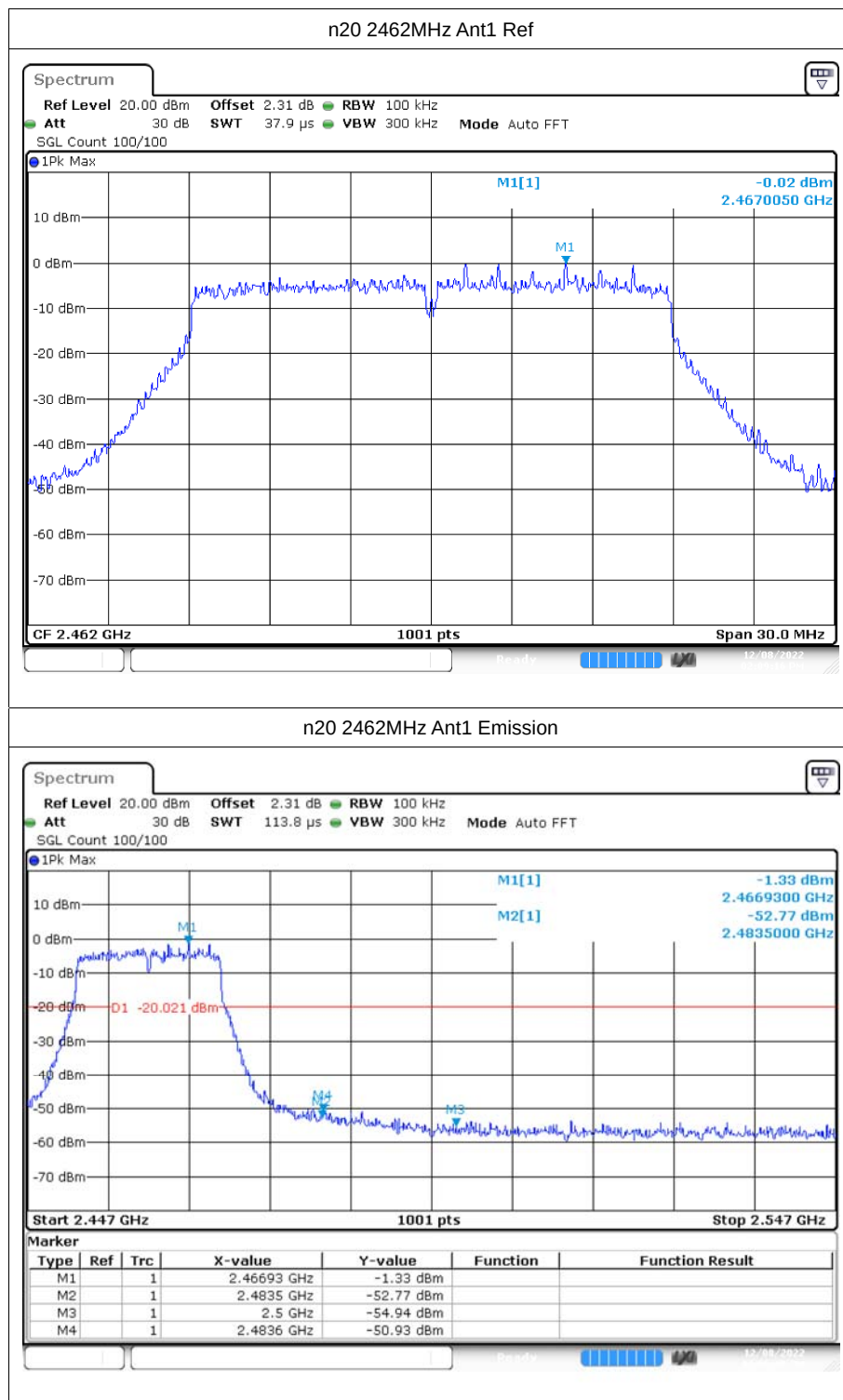


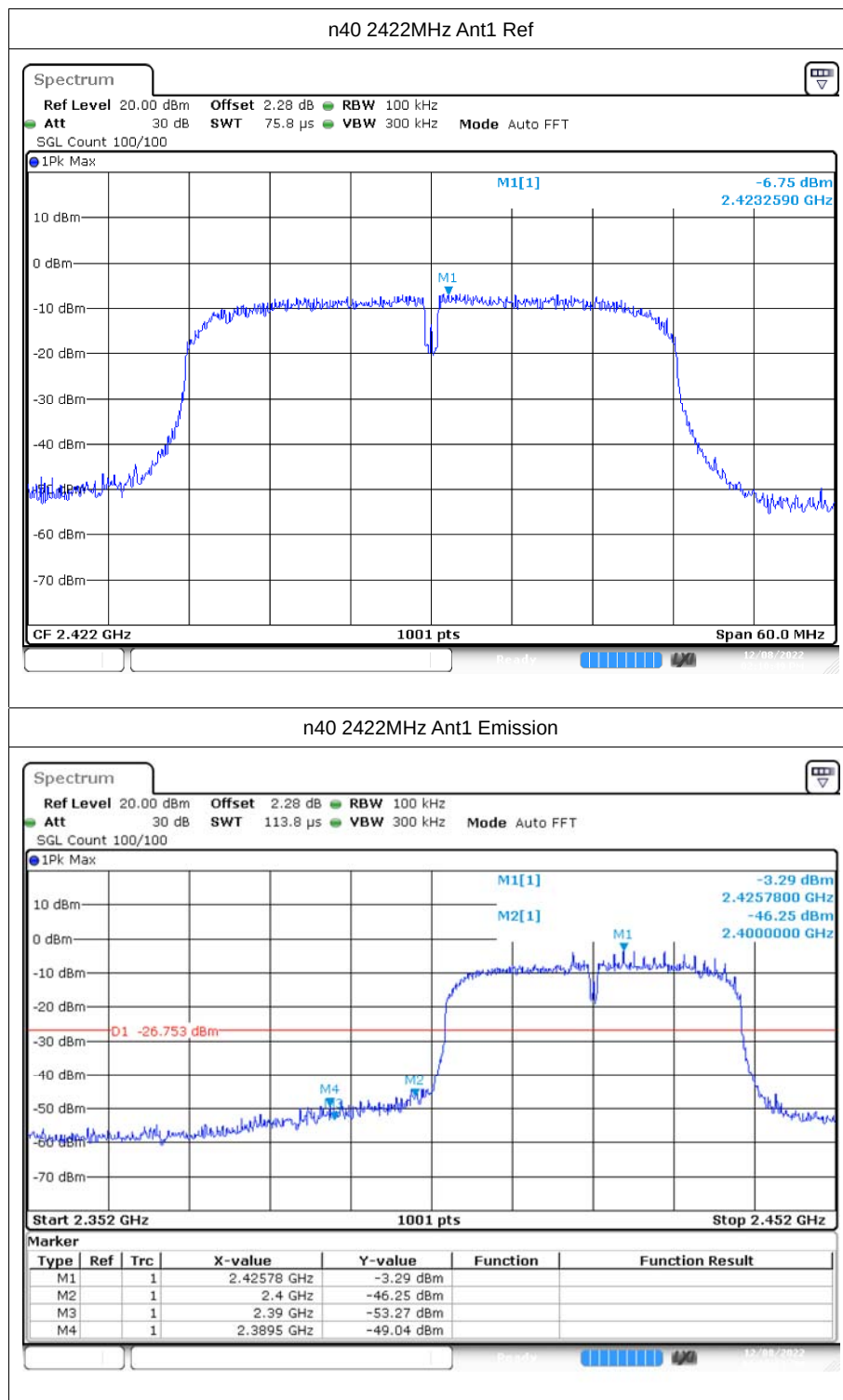


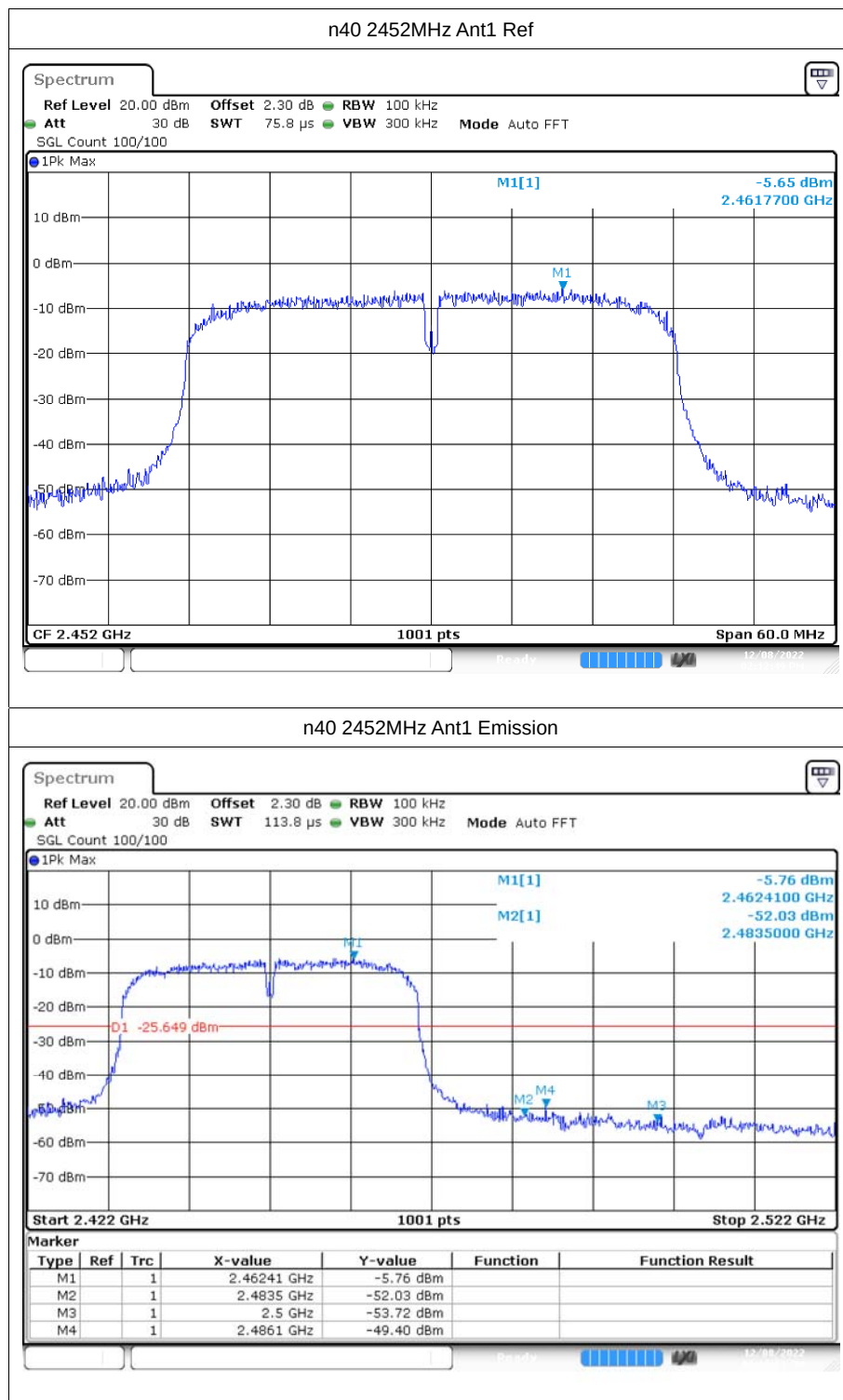












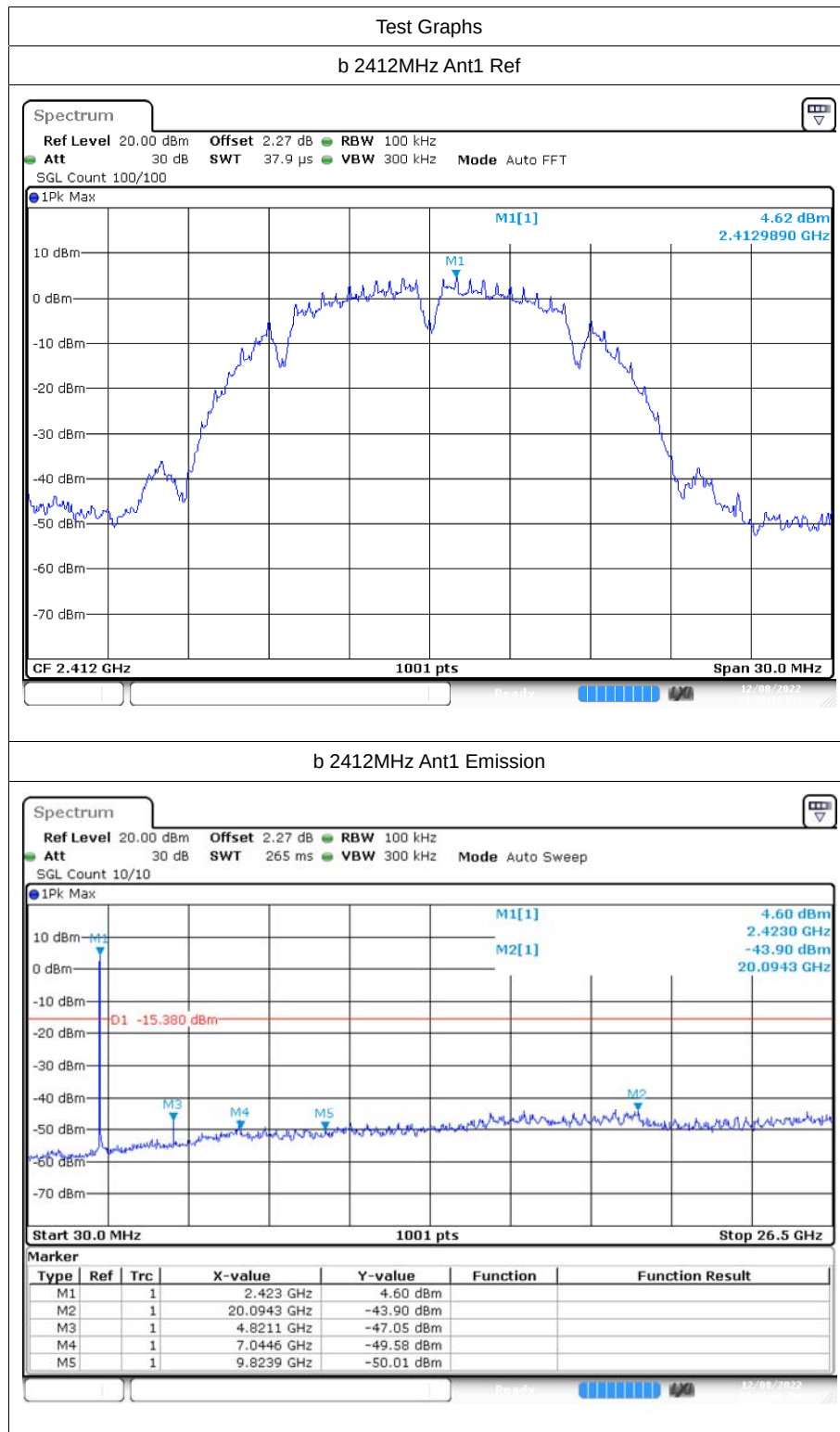


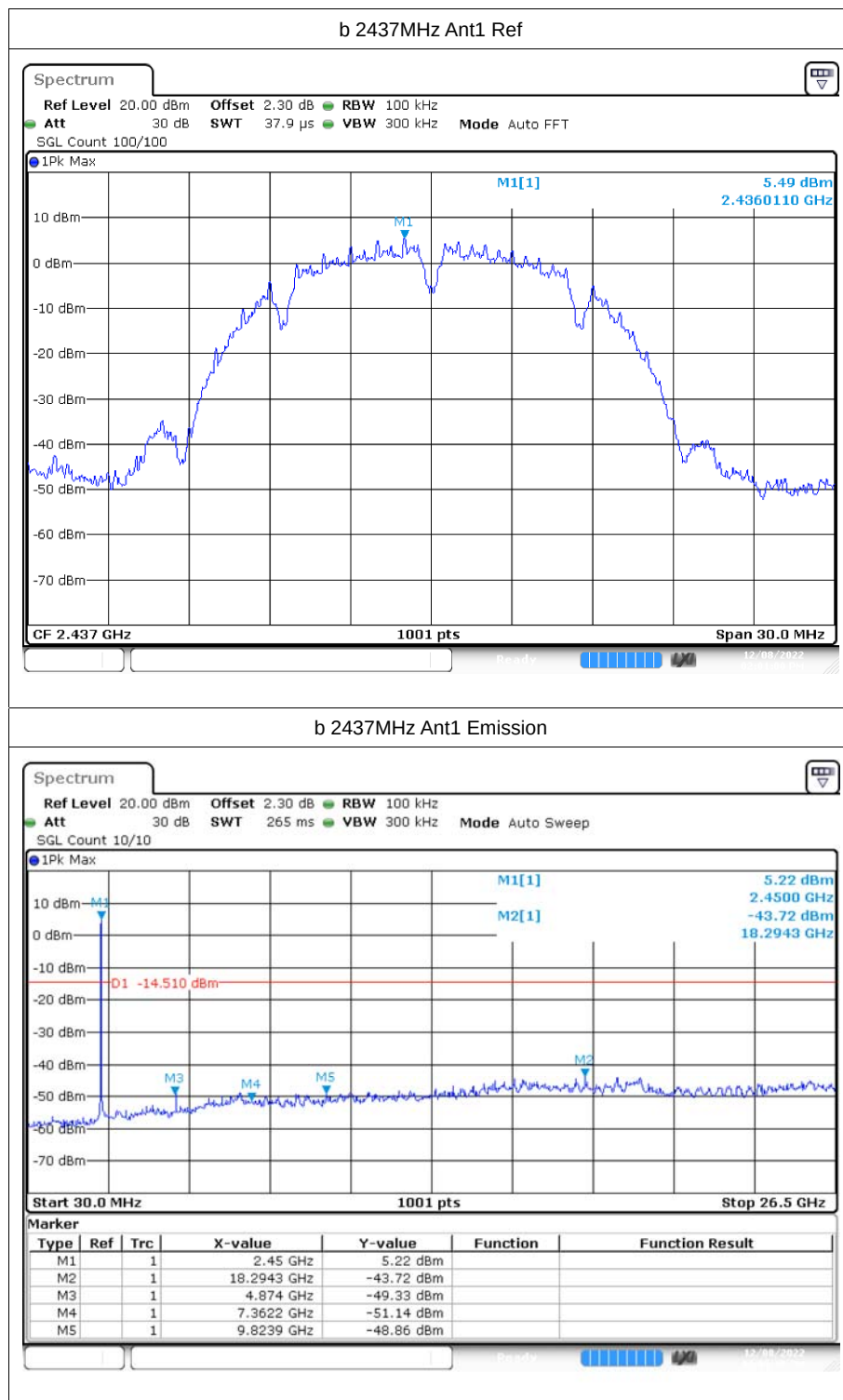
6 Conducted RF Spurious Emission

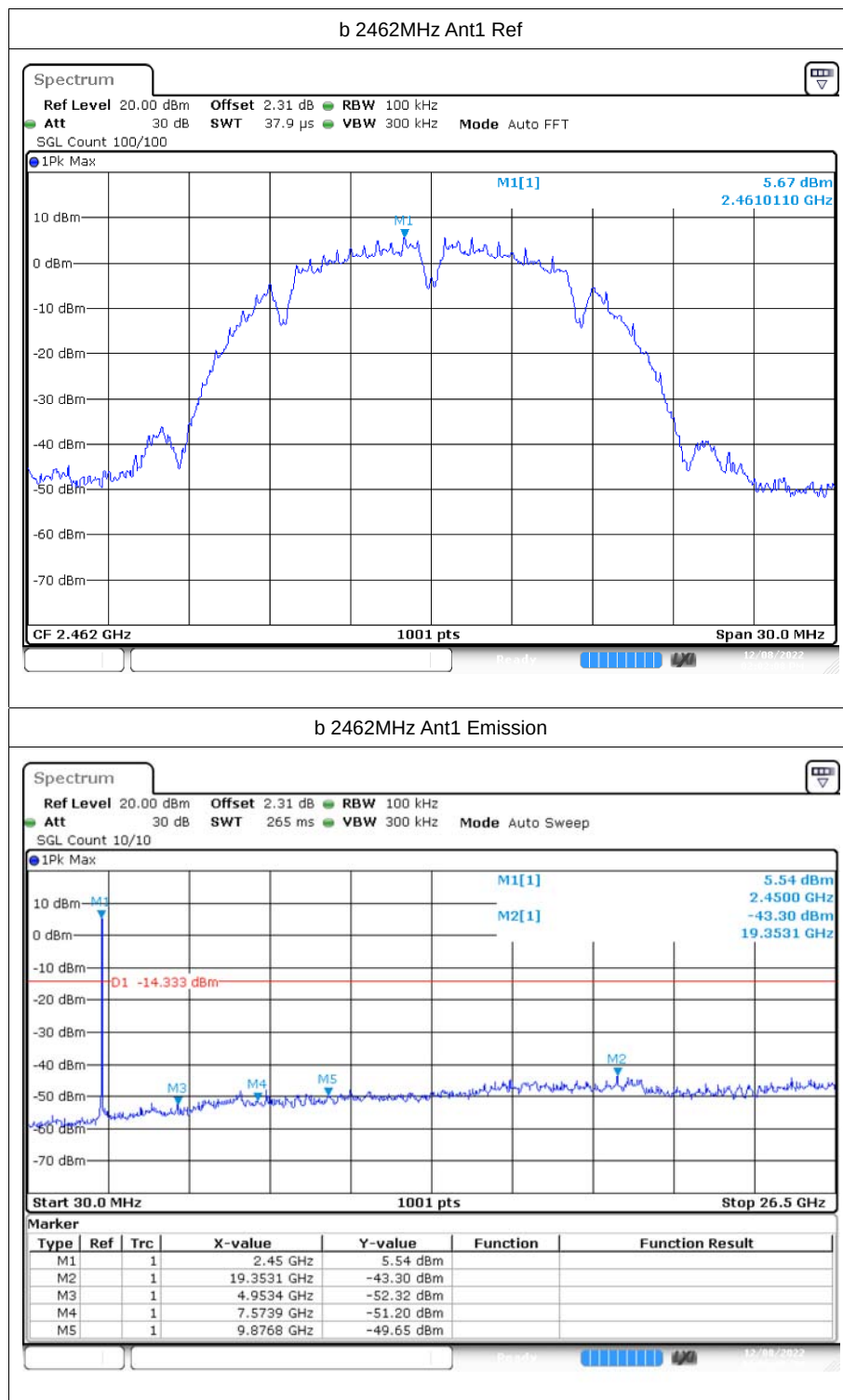
6.1 Test Result

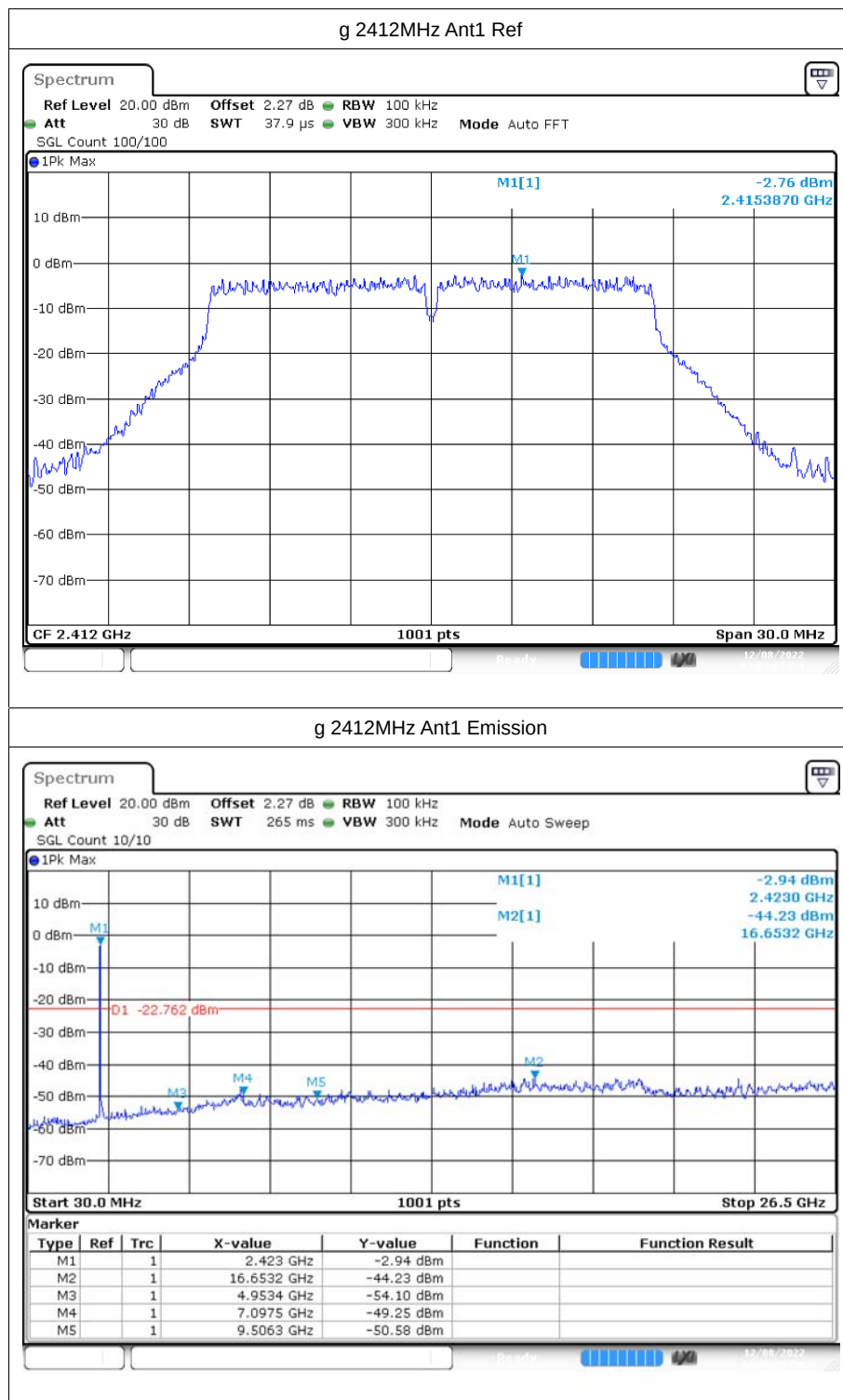
Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
b	2412	Ant1	-48.52	-20	Pass
b	2437	Ant1	-49.21	-20	Pass
b	2462	Ant1	-48.97	-20	Pass
g	2412	Ant1	-41.46	-20	Pass
g	2437	Ant1	-41.67	-20	Pass
g	2462	Ant1	-44.51	-20	Pass
n20	2412	Ant1	-39.09	-20	Pass
n20	2437	Ant1	-41.58	-20	Pass
n20	2462	Ant1	-39.19	-20	Pass
n40	2422	Ant1	-39.02	-20	Pass
n40	2437	Ant1	-40.63	-20	Pass
n40	2452	Ant1	-38.85	-20	Pass

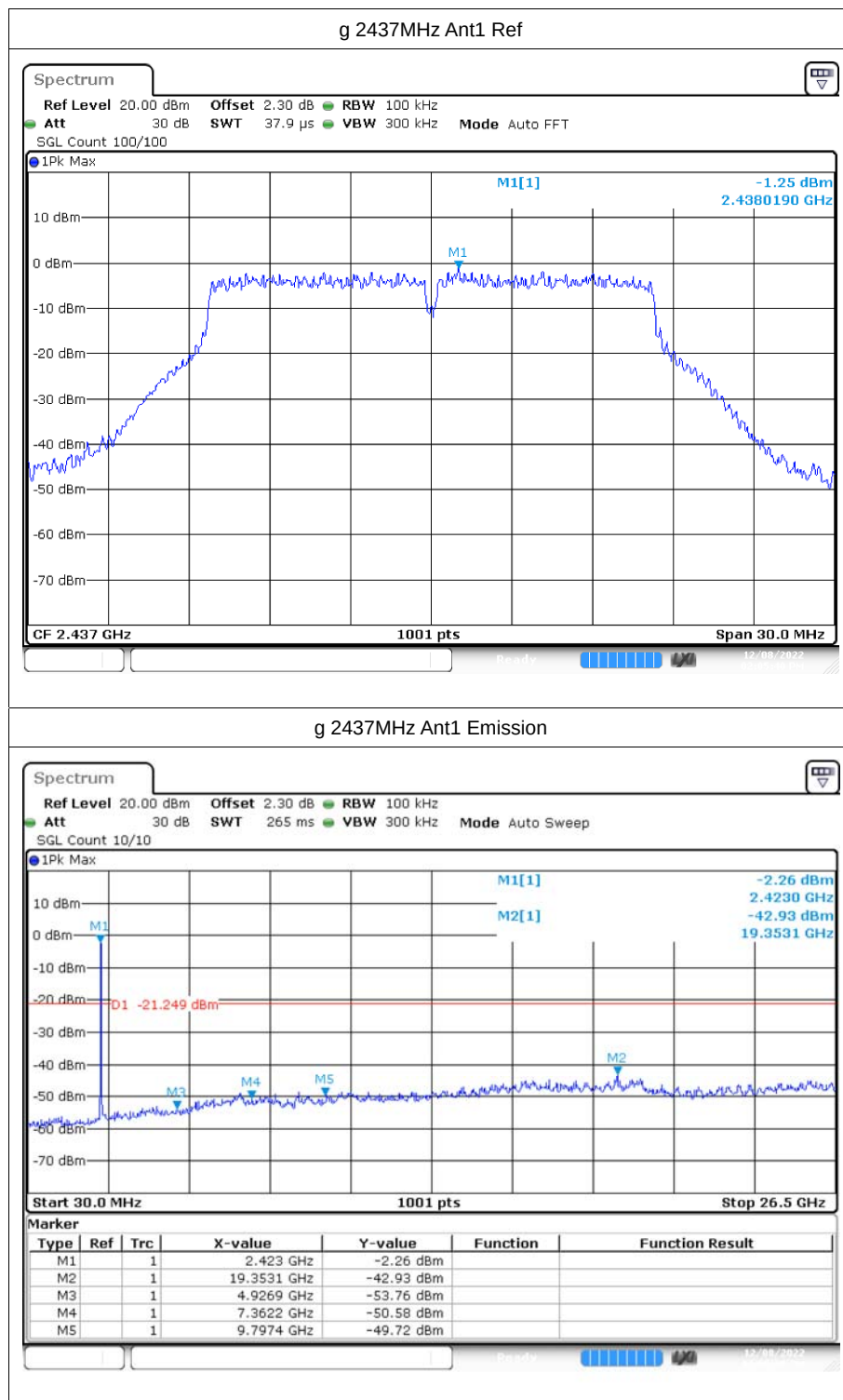
6.2 Test Graphs

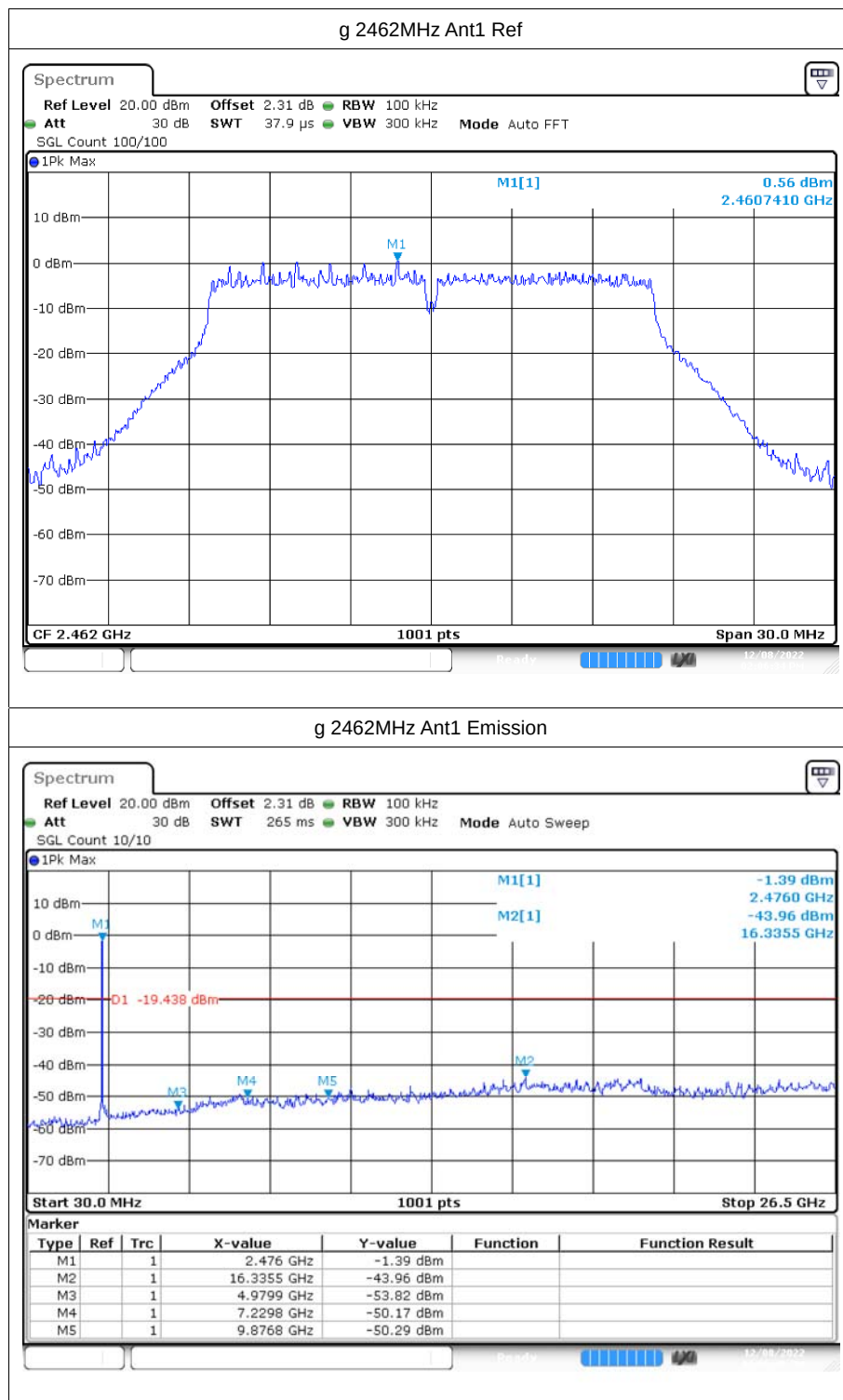


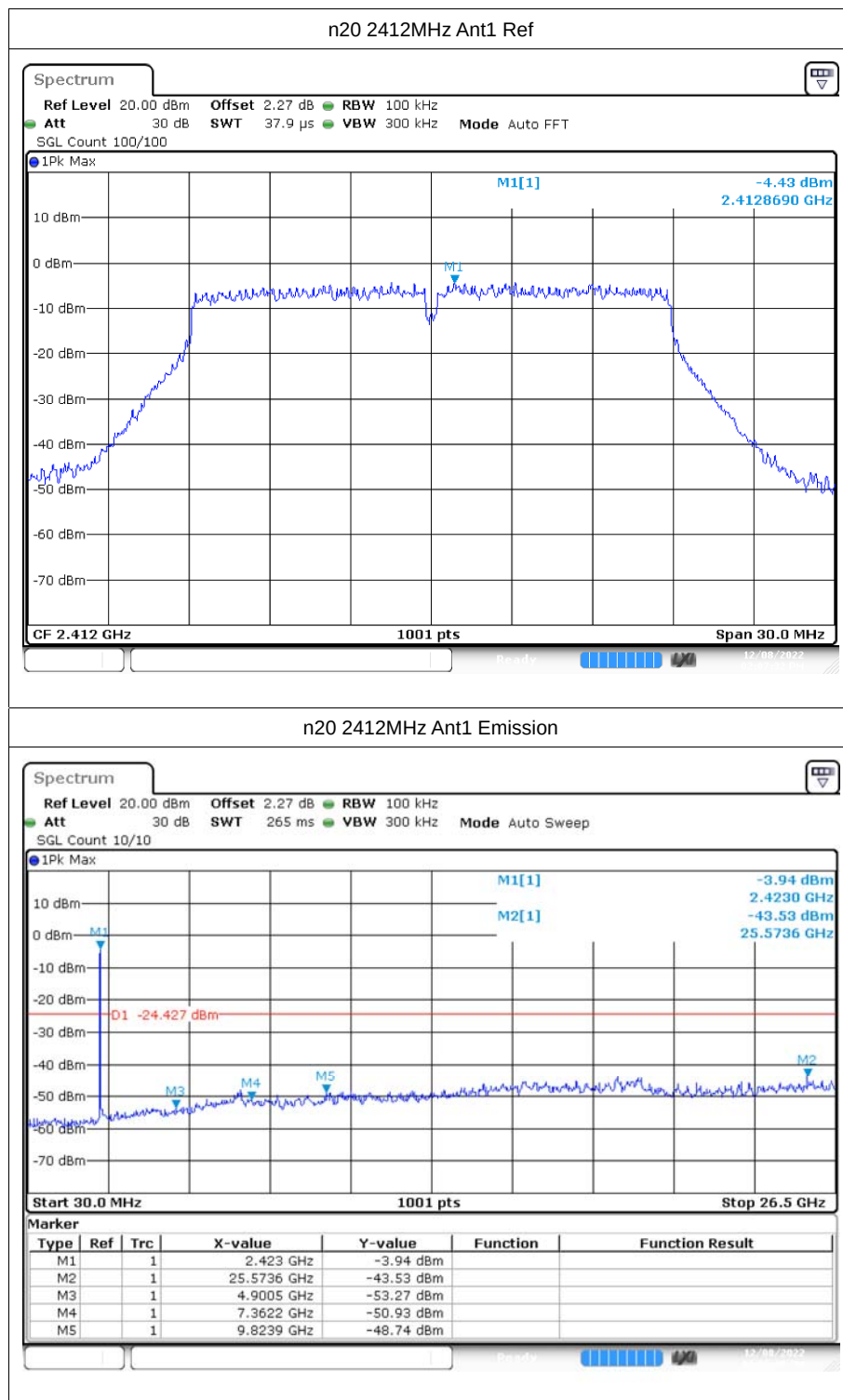


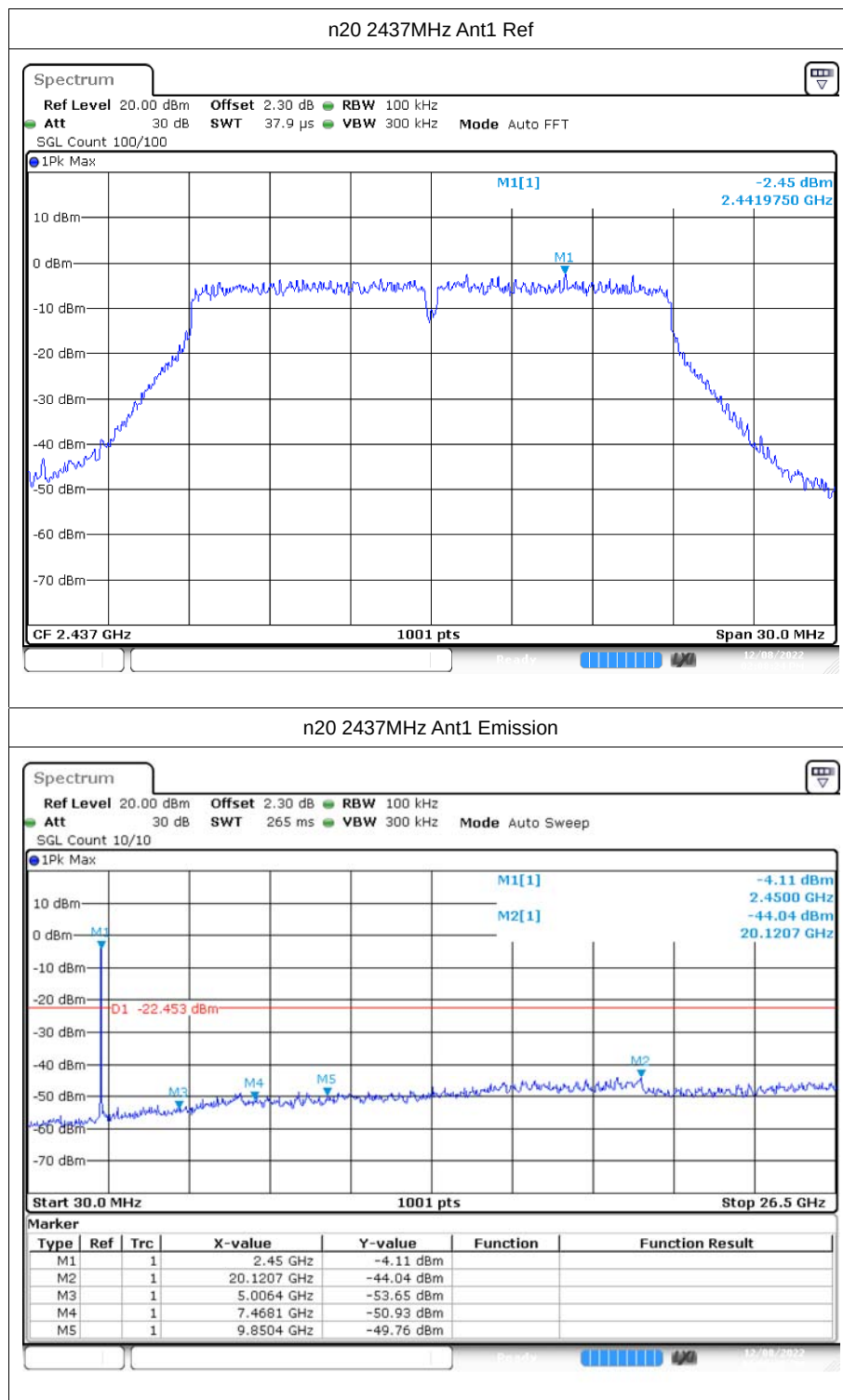


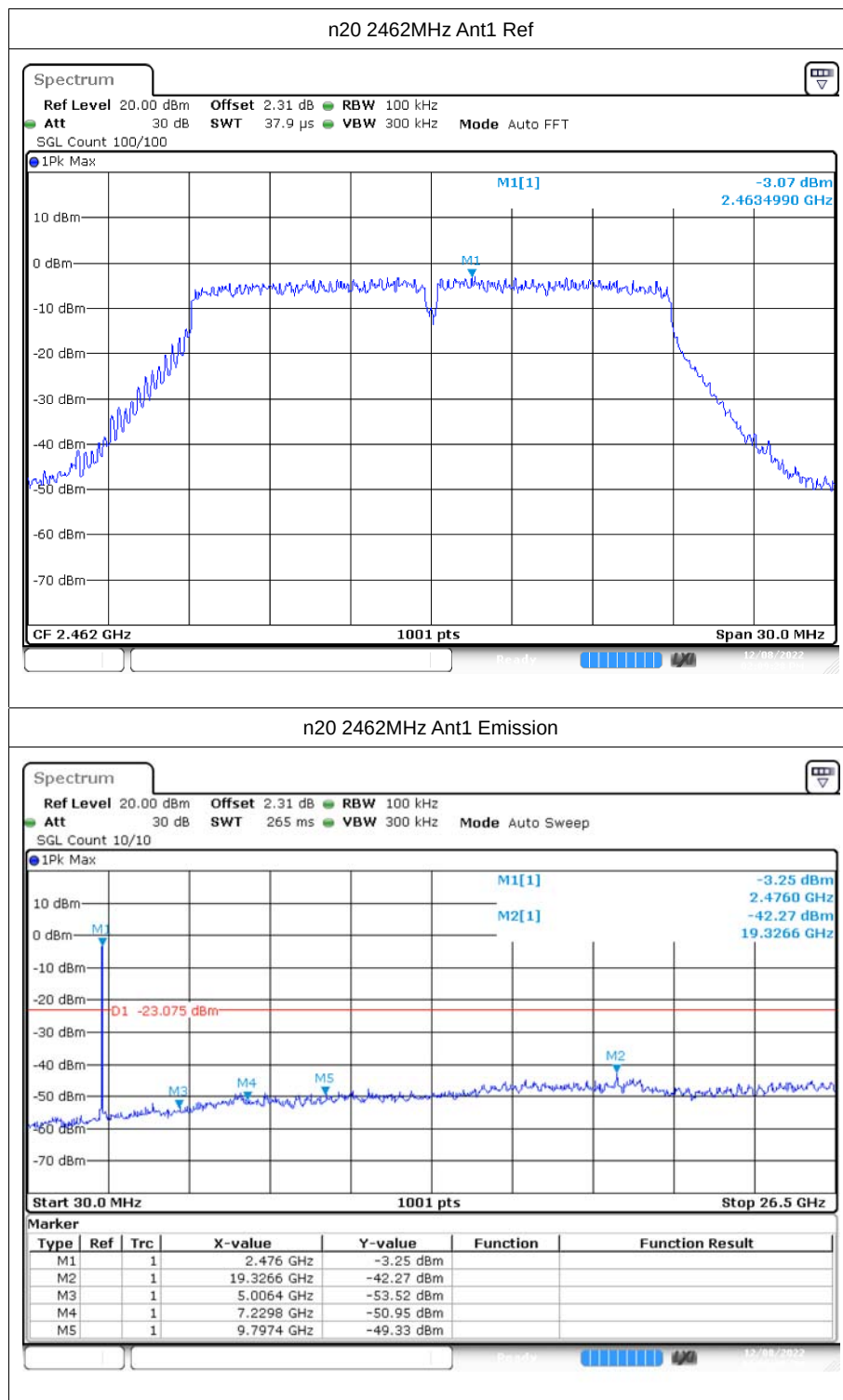


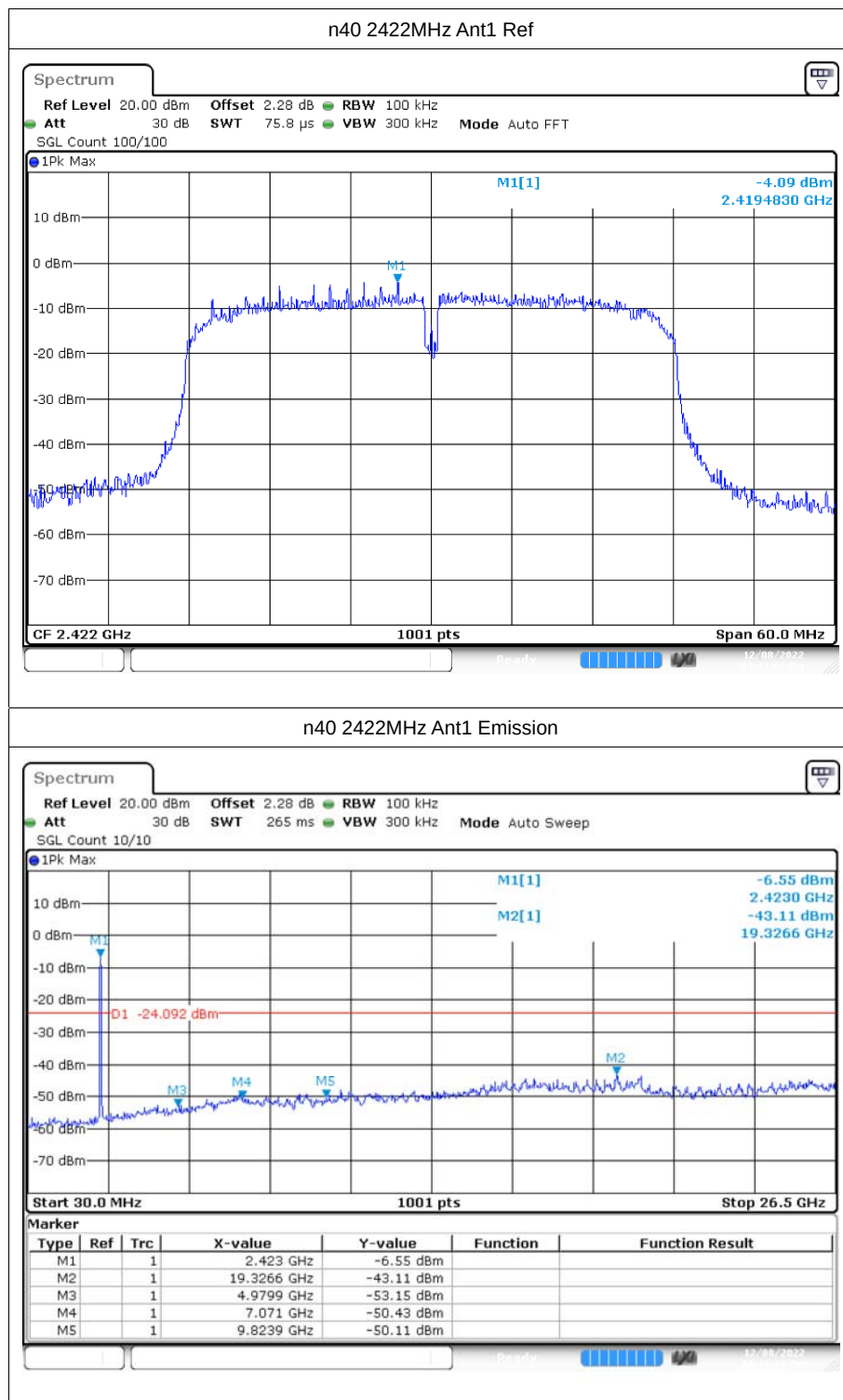


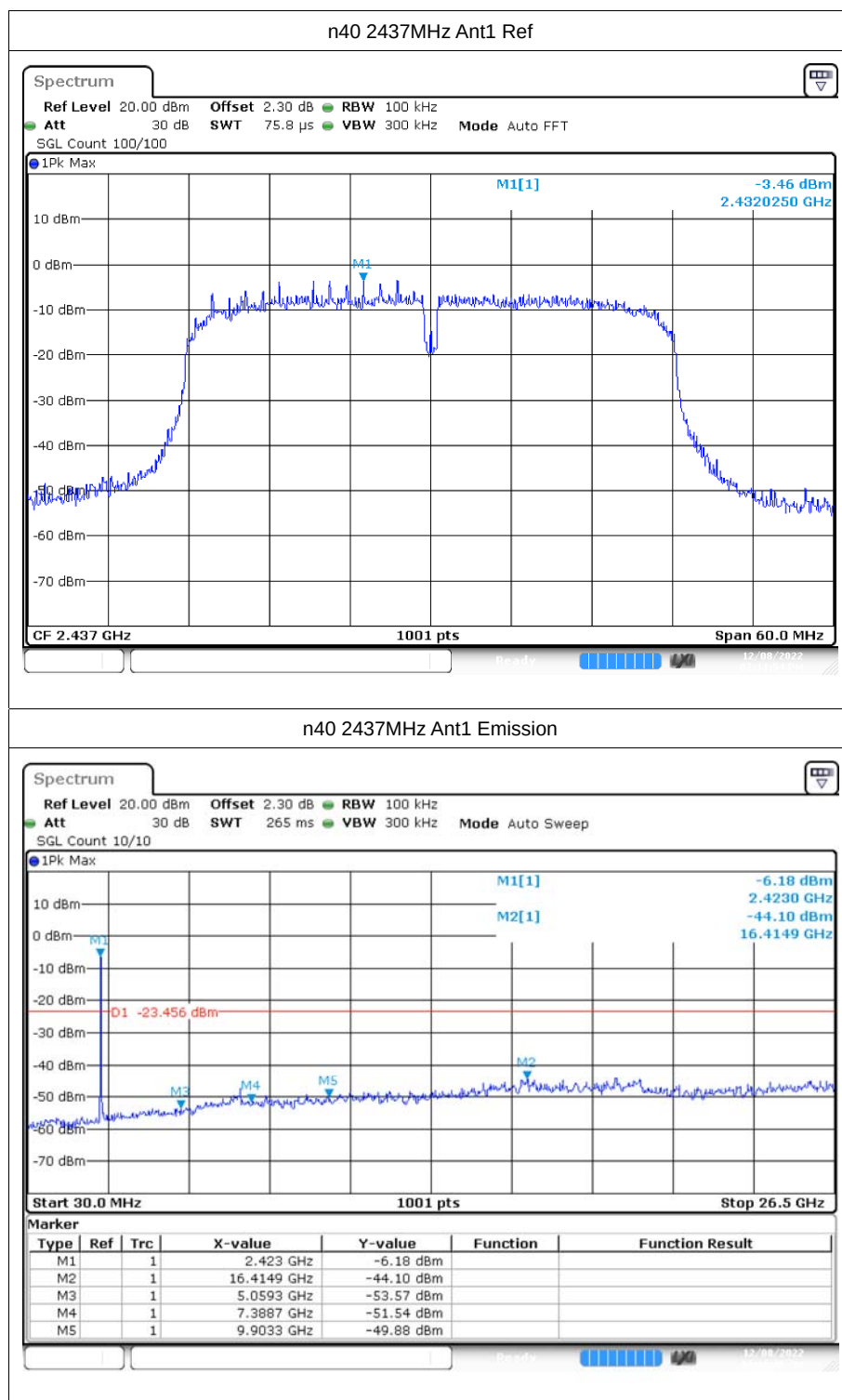


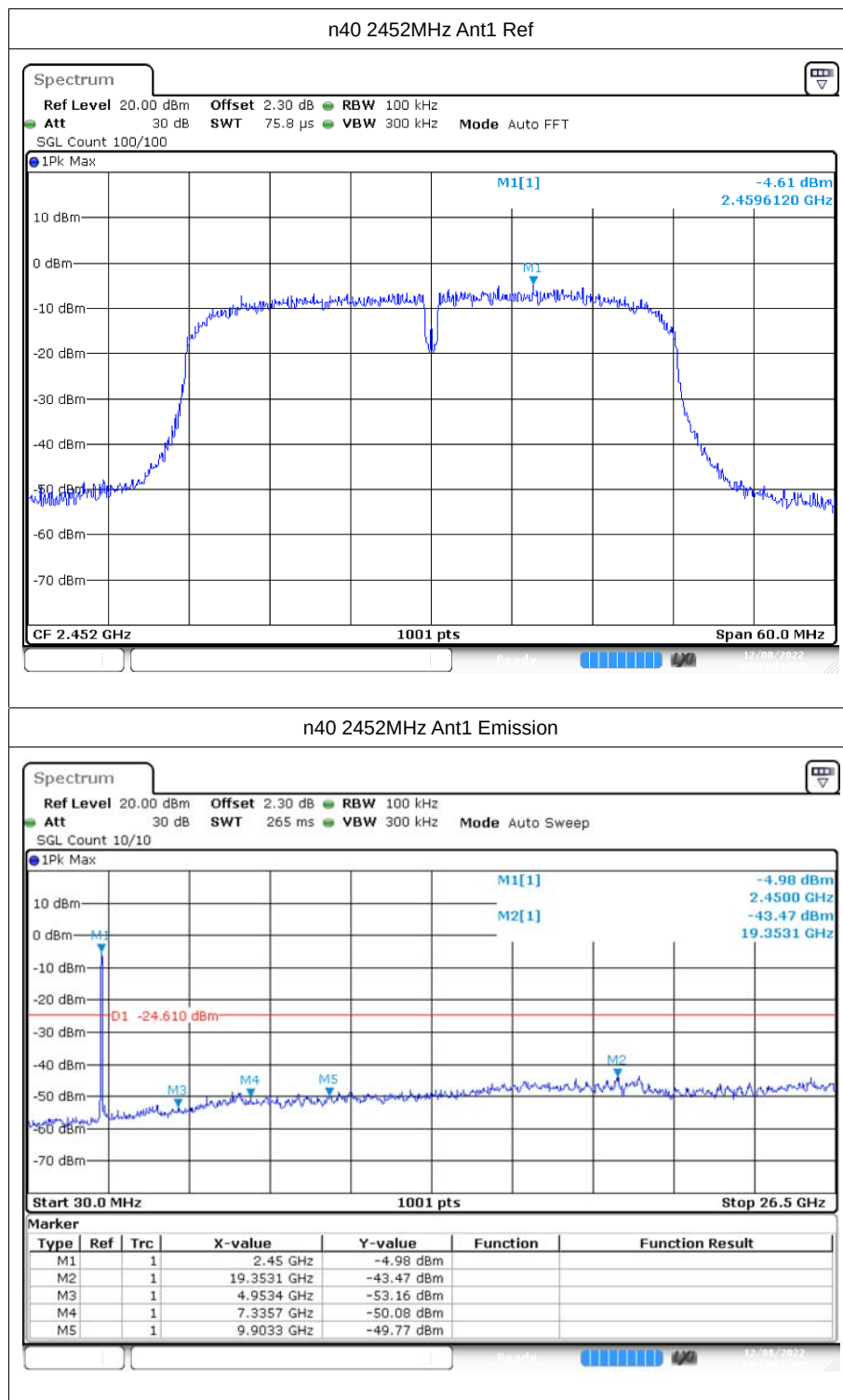














7 Restrict Band

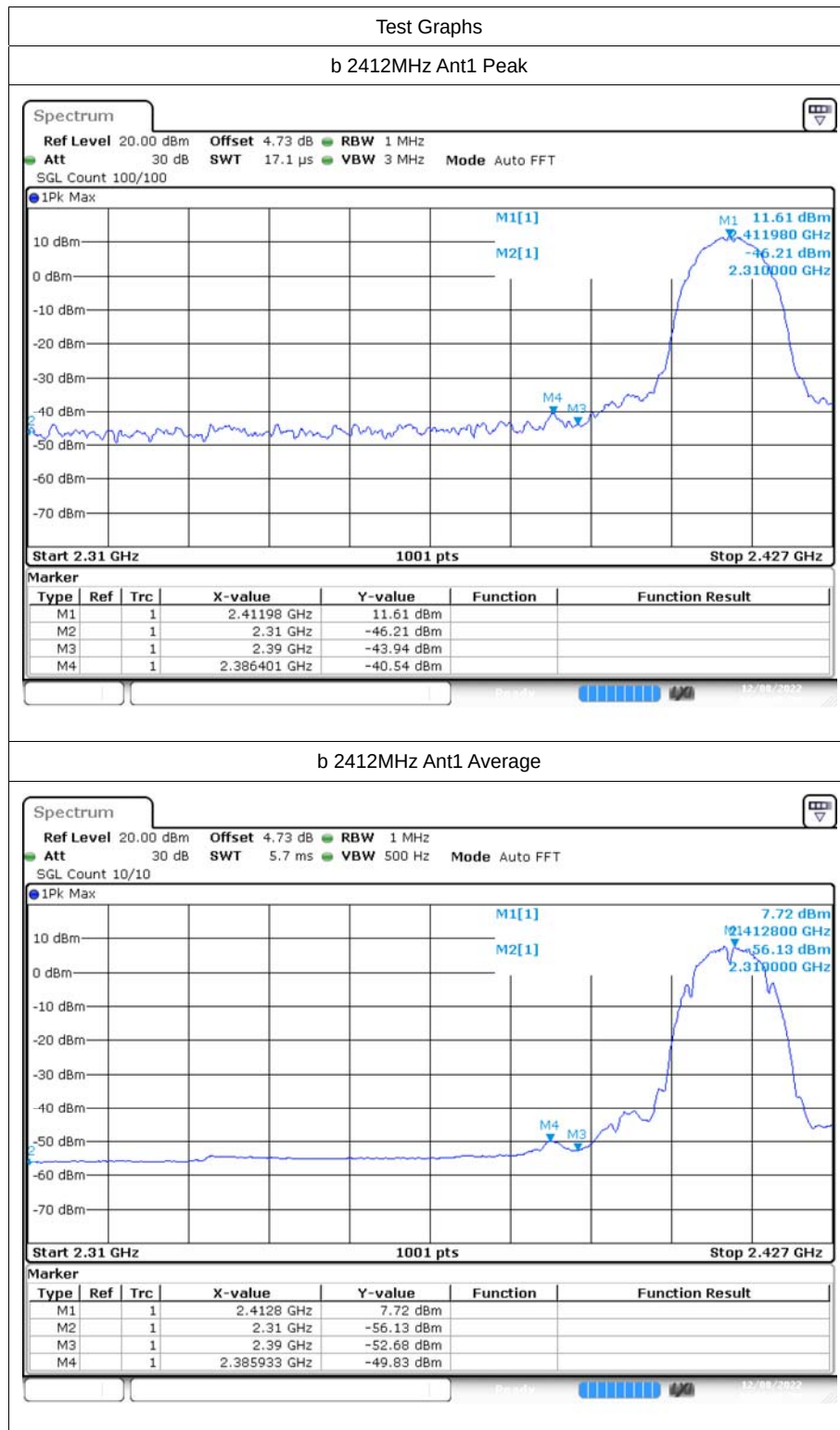
7.1 Test Result

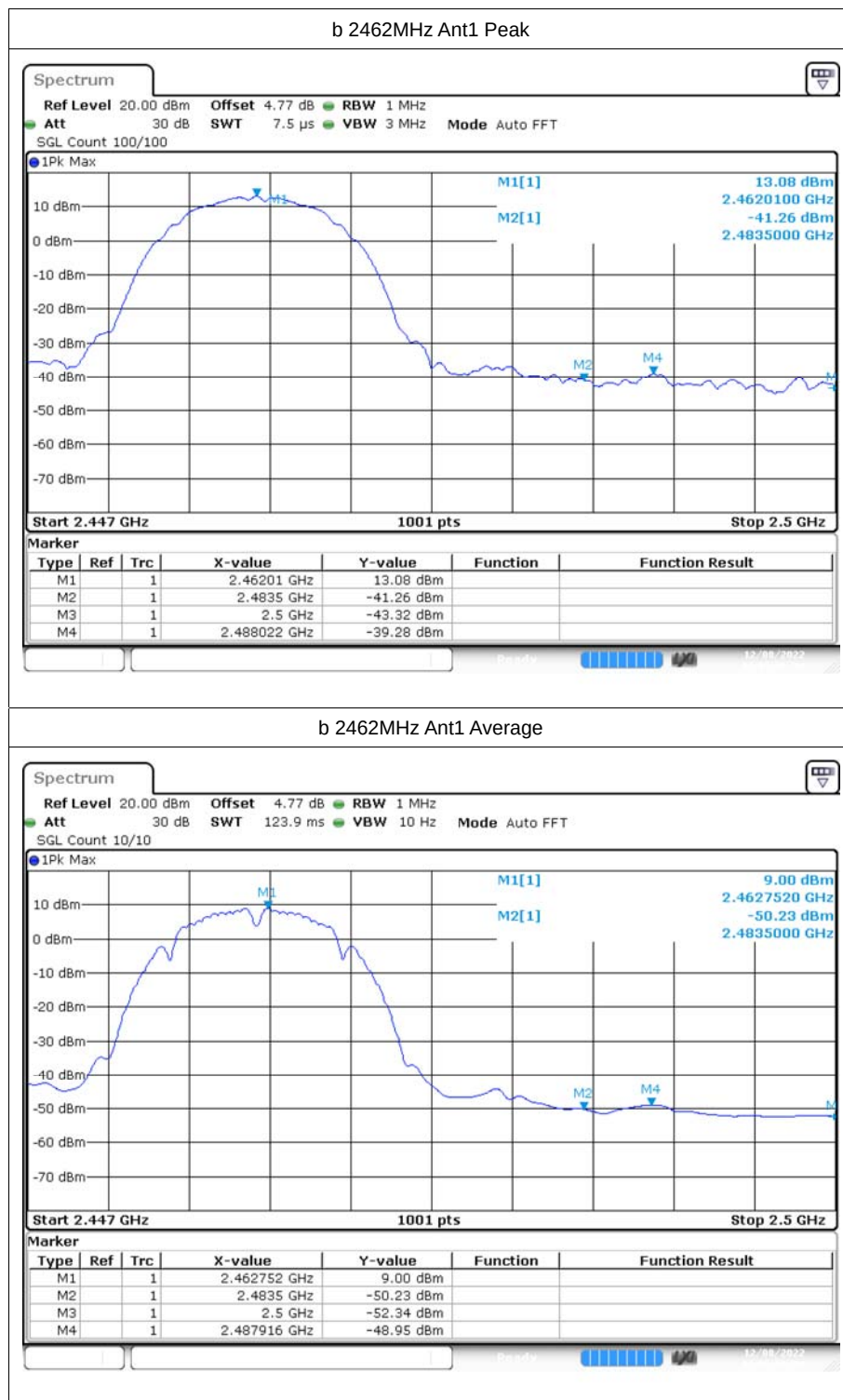
Mod e	Frequency (MHz)	Antenn a	Spur Freq (MHz)	Power (dBm)	Gain (dBi)	E (dBuV/m)	Detecto r	Limit (dBuV/m)	Verdic t
b	2412	Ant1	2310	-46.2	2.46	51.52	Peak	74	Pass
b	2412	Ant1	2310	-56.12	2.46	41.6	Average	54	Pass
b	2412	Ant1	2386.401	-40.53	2.46	57.19	Peak	74	Pass
b	2412	Ant1	2385.933	-49.83	2.46	47.89	Average	54	Pass
b	2412	Ant1	2390	-43.94	2.46	53.78	Peak	74	Pass
b	2412	Ant1	2390	-52.67	2.46	45.05	Average	54	Pass
b	2462	Ant1	2483.5	-41.25	2.46	56.47	Peak	74	56.47
b	2462	Ant1	2483.5	-50.23	2.46	47.49	Average	54	Pass
b	2462	Ant1	2488.022	-39.27	2.46	58.45	Peak	74	Pass
b	2462	Ant1	2487.916	-48.94	2.46	48.78	Average	54	Pass
b	2462	Ant1	2500	-43.32	2.46	54.4	Peak	74	Pass
b	2462	Ant1	2500	-52.34	2.46	45.38	Average	54	Pass
g	2412	Ant1	2310	-47.81	2.46	49.91	Peak	74	Pass
g	2412	Ant1	2310	-55.72	2.46	42	Average	54	Pass
g	2412	Ant1	2389.677	-36.92	2.46	60.8	Peak	74	Pass
g	2412	Ant1	2389.443	-48.66	2.46	49.06	Average	54	Pass
g	2412	Ant1	2390	-37.32	2.46	53.78	Peak	74	Pass
g	2412	Ant1	2390	-48.72	2.46	49	Average	54	Pass
g	2462	Ant1	2483.5	-39.1	2.46	58.62	Peak	74	Pass
g	2462	Ant1	2483.5	-48.21	2.46	49.51	Average	54	Pass
g	2462	Ant1	2488.022	-38.22	2.46	59.5	Peak	74	Pass
g	2462	Ant1	2484.63	-47.29	2.46	50.43	Average	54	Pass
g	2462	Ant1	2500	-43.44	2.46	54.4	Peak	74	Pass
g	2462	Ant1	2500	-50.72	2.46	47	Average	54	Pass
n20	2412	Ant1	2310	-46.52	2.46	51.2	Peak	74	Pass
n20	2412	Ant1	2310	-55.09	2.46	42.63	Average	54	Pass
n20	2412	Ant1	2389.794	-39.98	2.46	57.74	Peak	74	Pass
n20	2412	Ant1	2389.911	-49.11	2.46	48.61	Average	54	Pass
n20	2412	Ant1	2390	-40.17	2.46	57.55	Peak	74	Pass
n20	2412	Ant1	2390	-48.86	2.46	48.86	Average	54	Pass
n20	2462	Ant1	2483.5	-37.6	2.46	60.12	Peak	74	Pass
n20	2462	Ant1	2483.5	-49.2	2.46	48.52	Average	54	Pass
n20	2462	Ant1	2483.517	-37.6	2.46	60.12	Peak	74	Pass
n20	2462	Ant1	2484.736	-48.79	2.46	48.93	Average	54	Pass

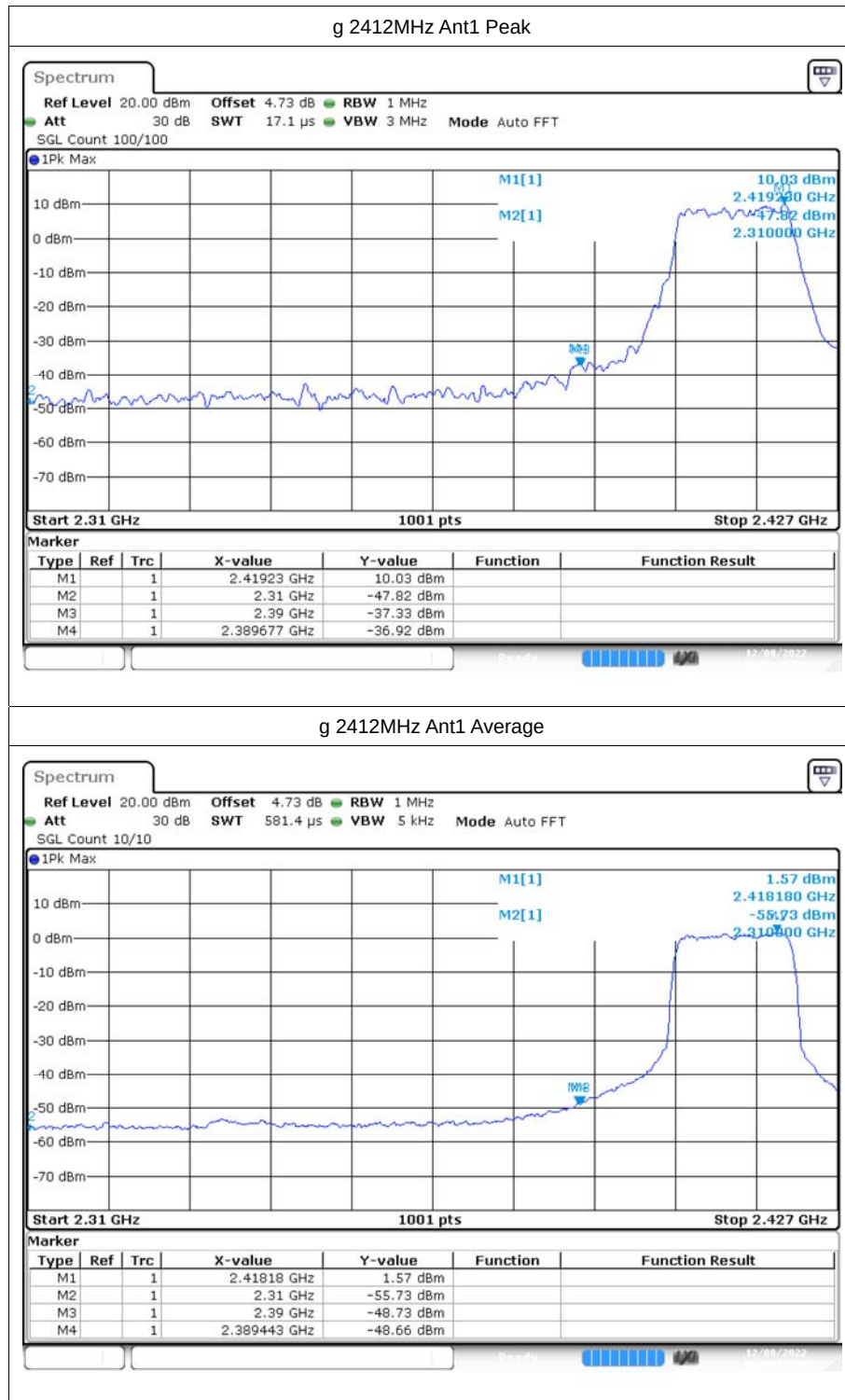


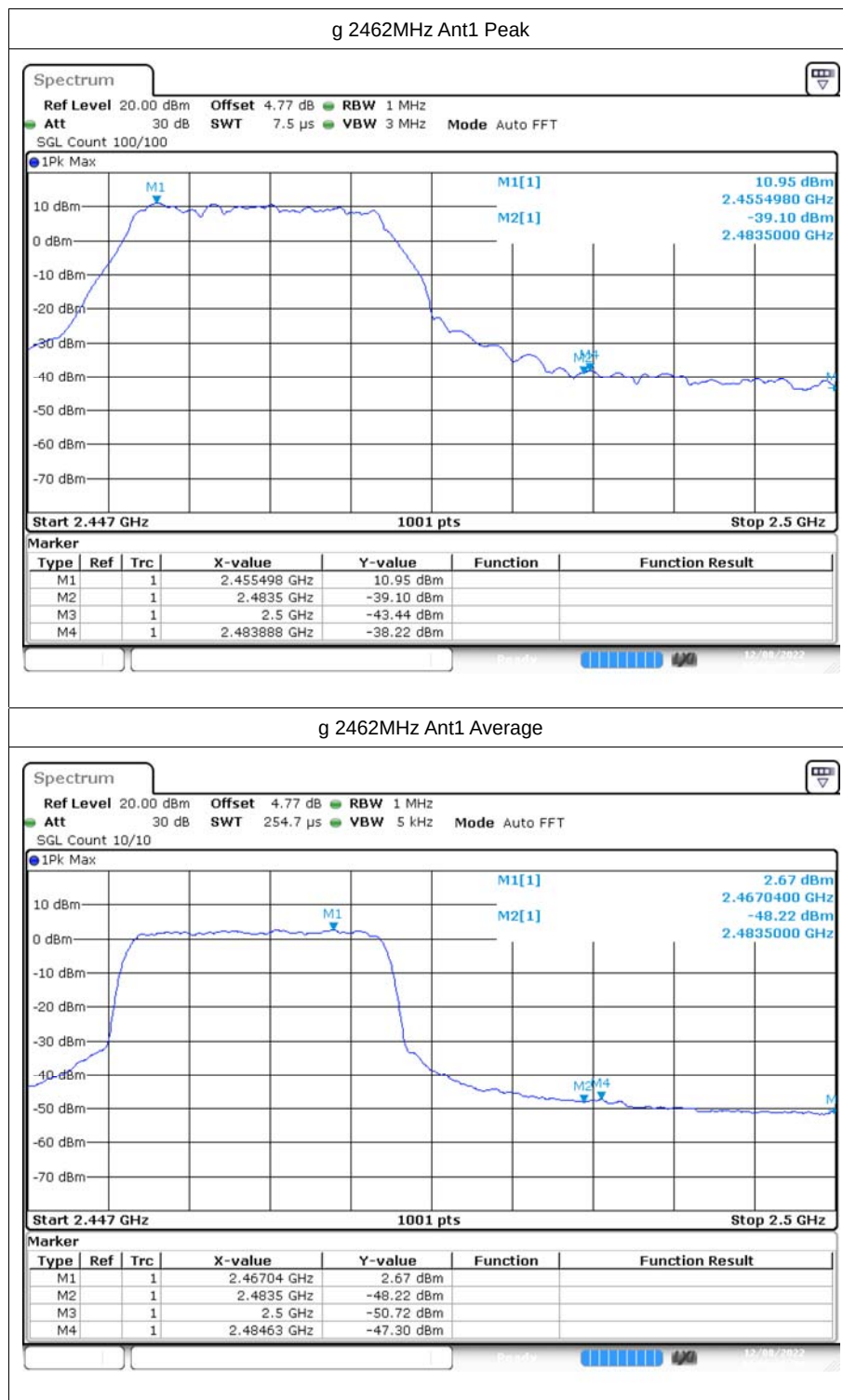
n20	2462	Ant1	2500	-44.78	2.46	52.94	Peak	74	Pass
n20	2462	Ant1	2500	-52.53	2.46	45.19	Average	54	Pass
n40	2422	Ant1	2310	-47.37	2.46	50.35	Peak	74	Pass
n40	2422	Ant1	2310	-55.76	2.46	41.96	Average	54	Pass
n40	2422	Ant1	2387.816	-38.22	2.46	59.5	Peak	74	Pass
n40	2422	Ant1	2389.662	-48.36	2.46	49.36	Average	54	Pass
n40	2422	Ant1	2390	-38.47	2.46	59.25	Peak	74	Pass
n40	2422	Ant1	2390	-48.71	2.46	49.01	Average	54	Pass
n40	2452	Ant1	2483.5	-42.19	2.46	55.53	Peak	74	Pass
n40	2452	Ant1	2483.5	-48.42	2.46	49.3	Average	54	Pass
n40	2452	Ant1	2486.038	-41.08	2.46	56.64	Peak	74	Pass
n40	2452	Ant1	2483.542	-48.42	2.46	49.3	Average	54	Pass
n40	2452	Ant1	2500	-43.31	2.46	54.41	Peak	74	Pass
n40	2452	Ant1	2500	-52.13	2.46	45.59	Average	54	Pass

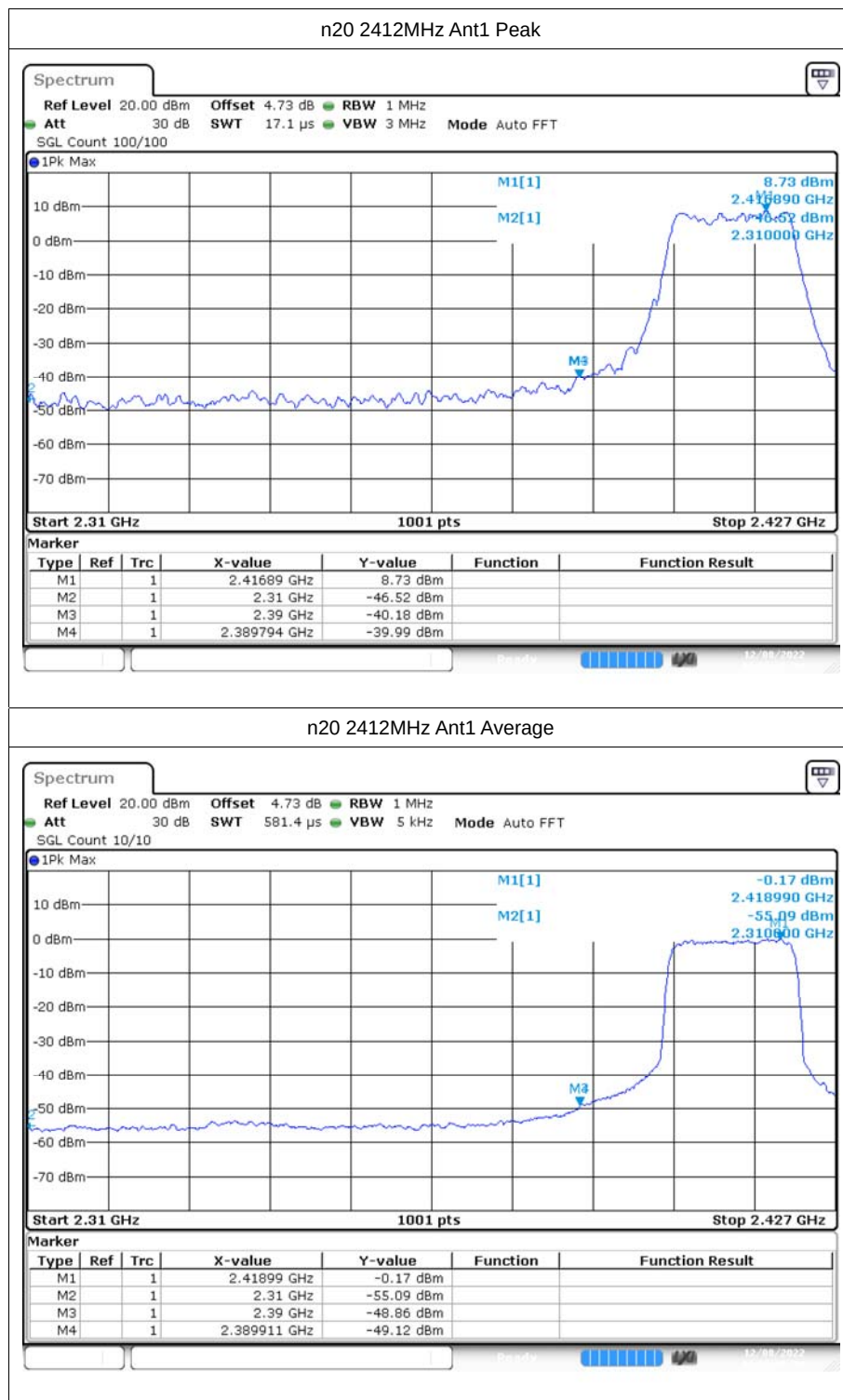
7.2 Test Graphs

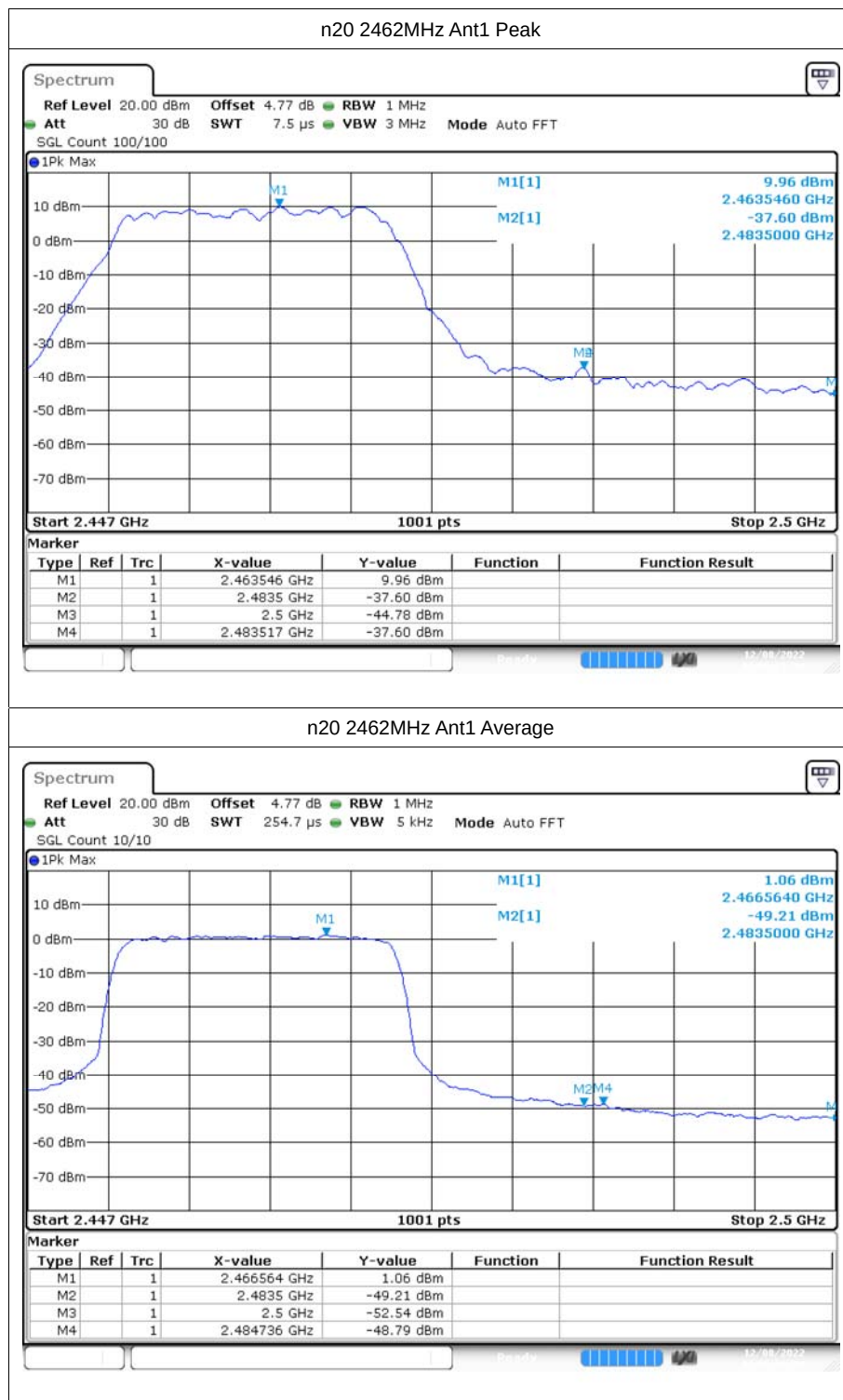


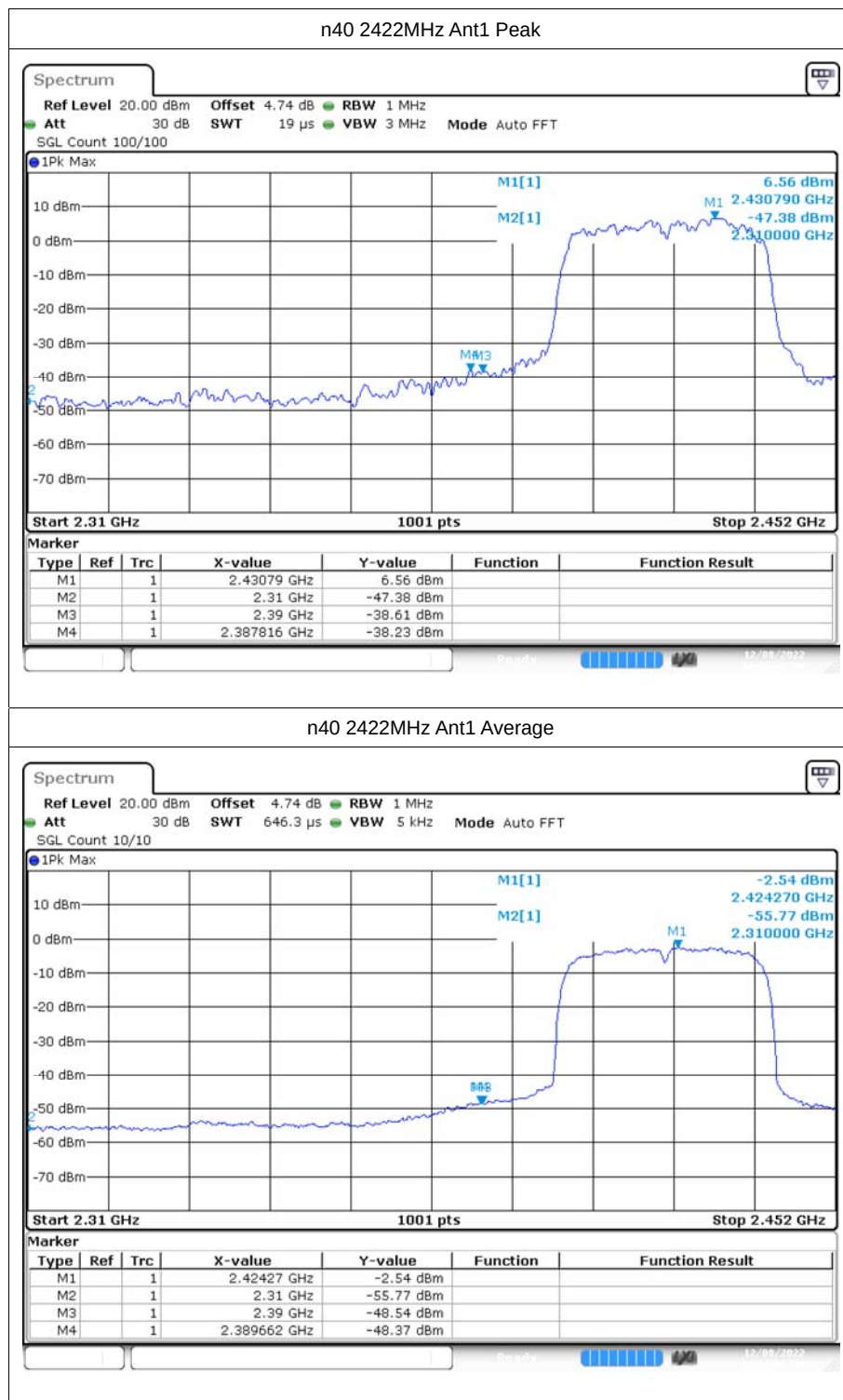


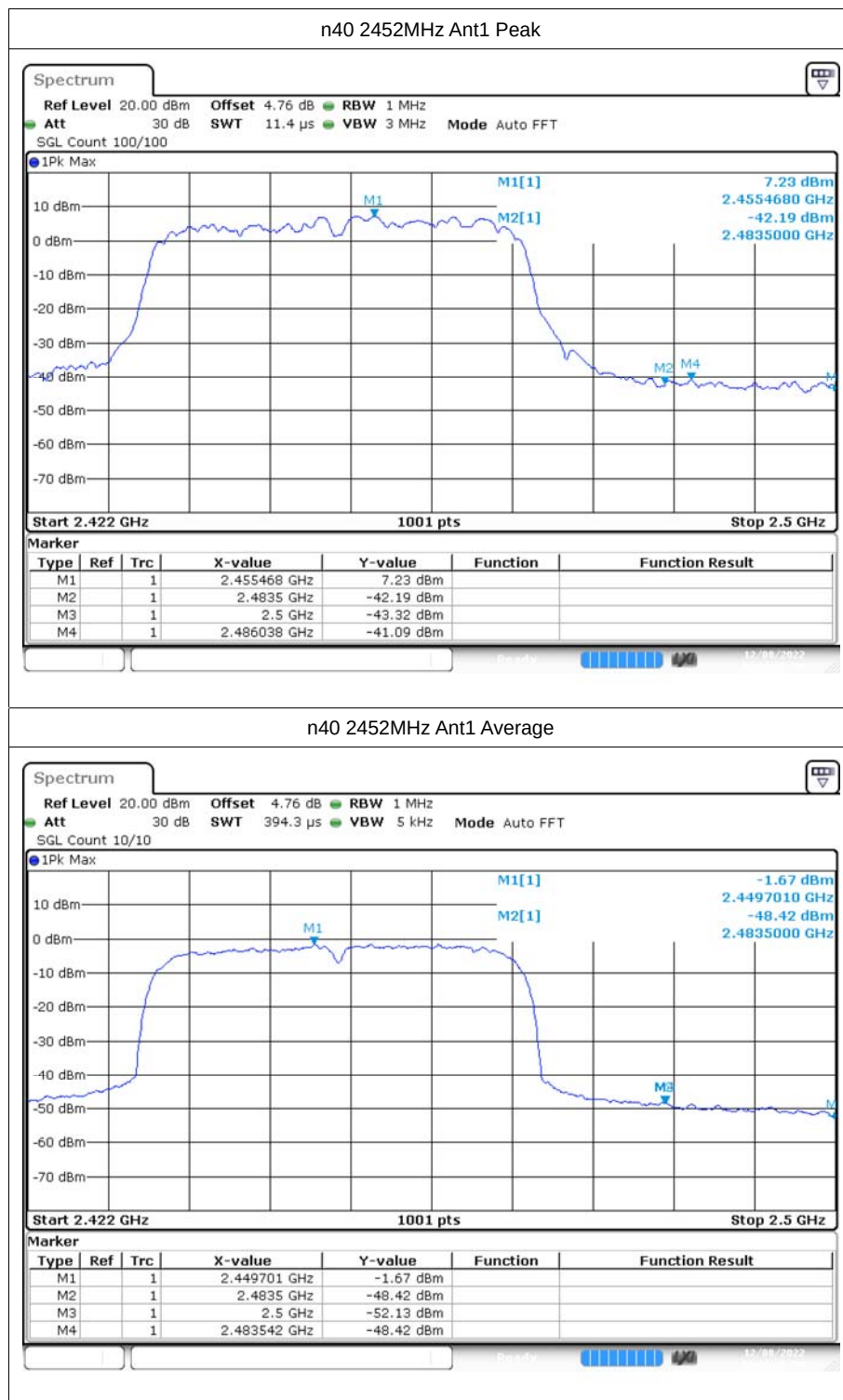












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