



Appendix C

RF Test Data for 2.4GWIFI (Conducted Measurement)

Product Name: projector

Trade Mark: HAPPRUN

Test Model: JQ820

Environmental Conditions

Temperature:	25.4° C
Relative Humidity:	52.5%
ATM Pressure:	100.0 kPa
Test Engineer:	Emiya lin
Supervised by:	Simba Haung



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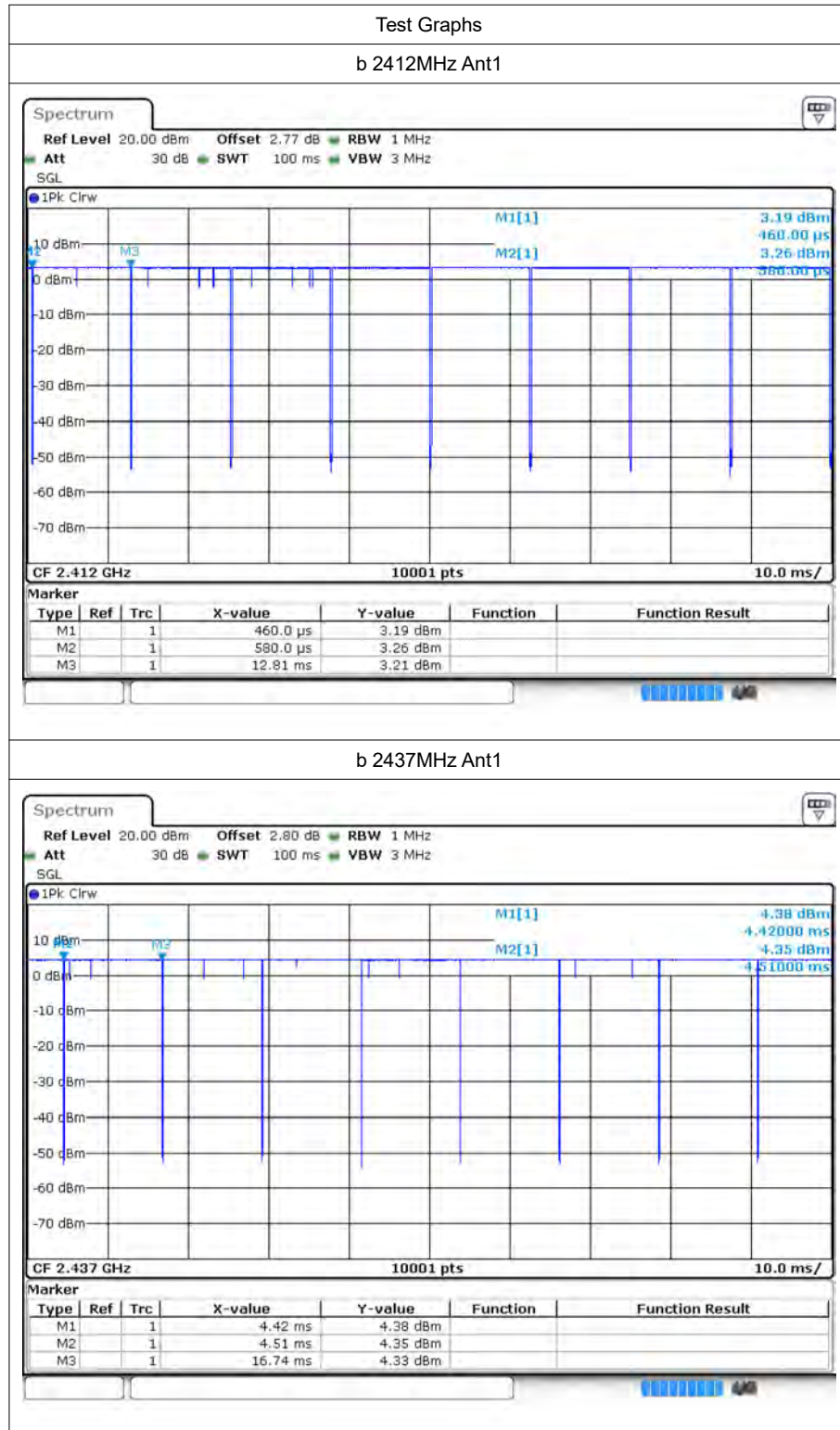


1 Duty Cycle

1.1 Test Result

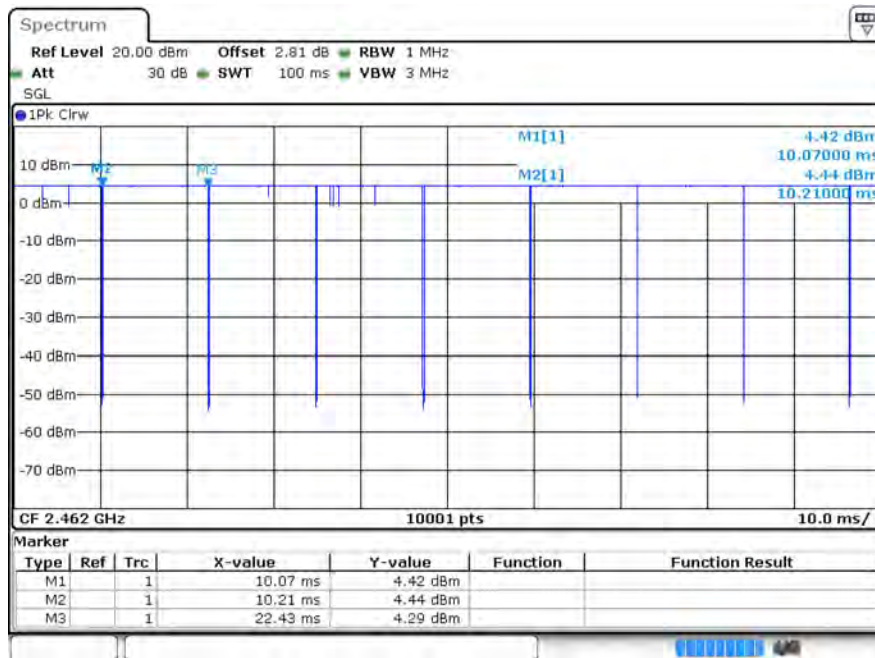
Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	Correction Factor	1/T (kHz)
b	2412	Ant1	98.36	0.07	0.08
b	2437	Ant1	99.19	0.04	0.08
b	2462	Ant1	99.29	0.03	0.08
g	2412	Ant1	95.7	0.19	0.49
g	2437	Ant1	92.59	0.33	0.49
g	2462	Ant1	94.71	0.24	0.49
n20	2412	Ant1	94.44	0.25	0.53
n20	2437	Ant1	95.64	0.19	0.53
n20	2462	Ant1	94.91	0.23	0.53
n40	2422	Ant1	89.78	0.47	1.09
n40	2437	Ant1	84.73	0.72	1.09
n40	2452	Ant1	89.87	0.46	1.09
ax20	2412	Ant1	90.78	0.42	0.68
ax20	2437	Ant1	92.65	0.33	0.68
ax20	2462	Ant1	90.62	0.43	0.68
ax40	2422	Ant1	81.82	0.87	1.35
ax40	2437	Ant1	87.75	0.57	1.35
ax40	2452	Ant1	86.92	0.61	1.35

1.2 Test Graphs

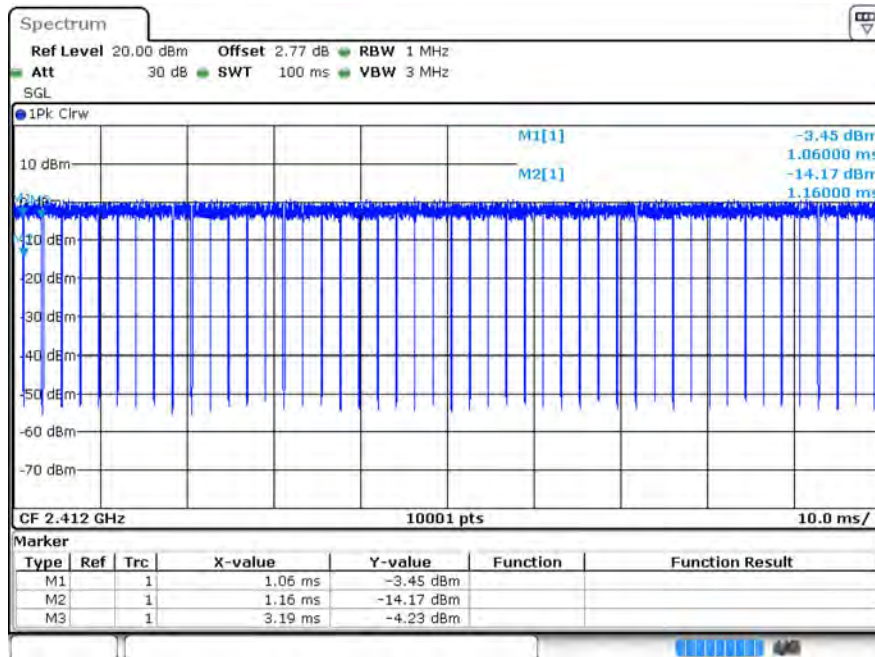


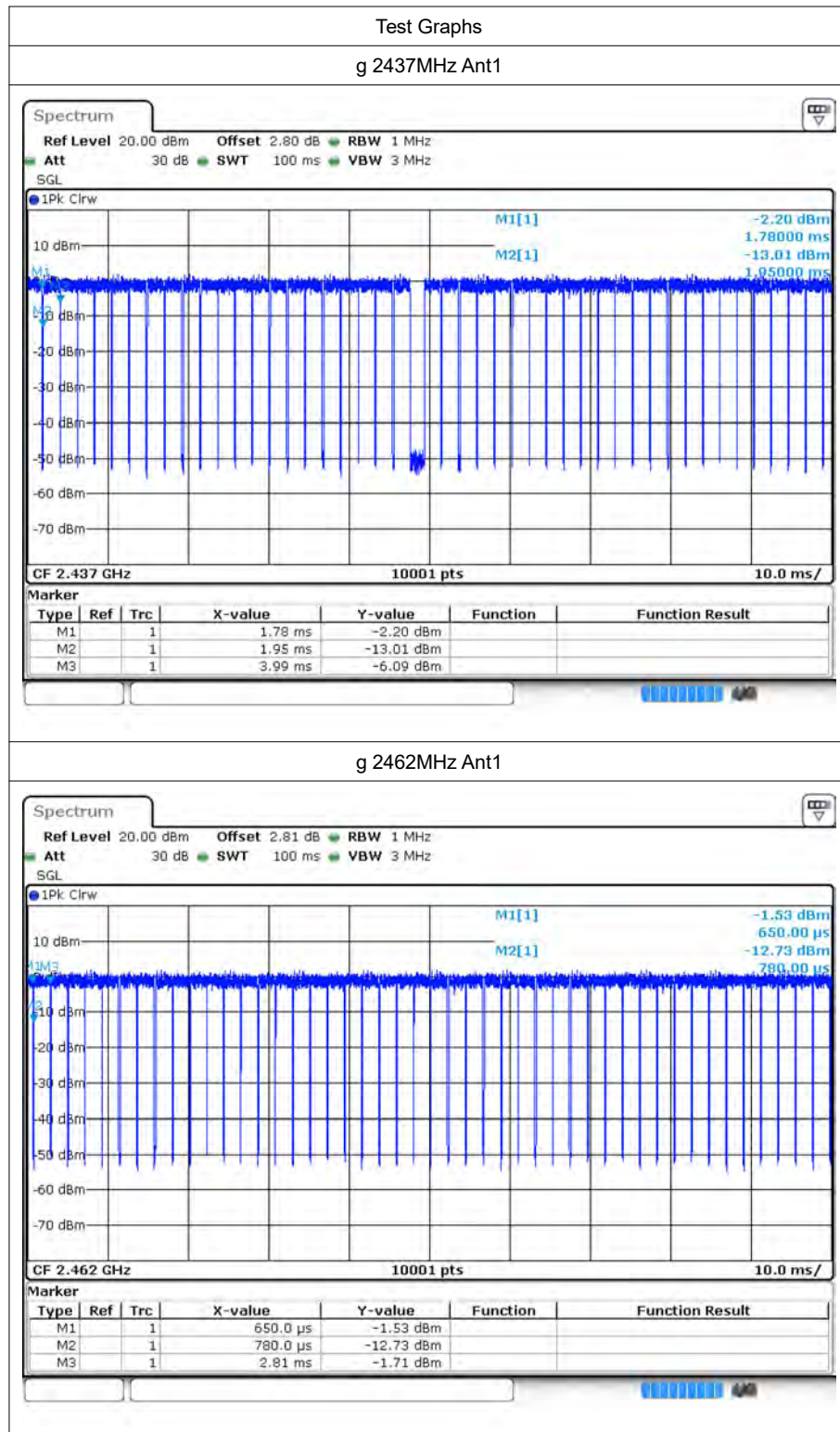
Test Graphs

b 2462MHz Ant1



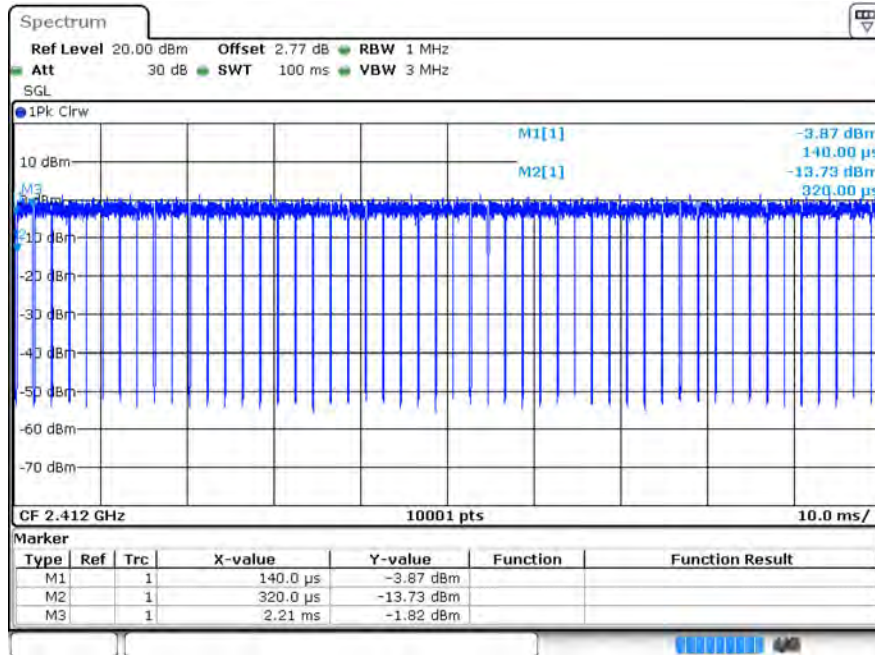
g 2412MHz Ant1



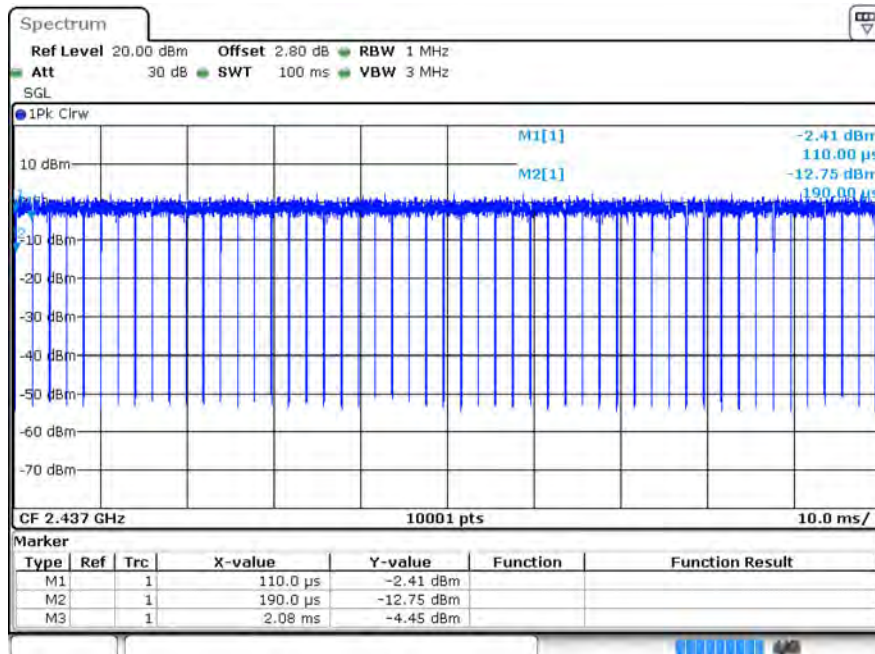


Test Graphs

n20 2412MHz Ant1



n20 2437MHz Ant1

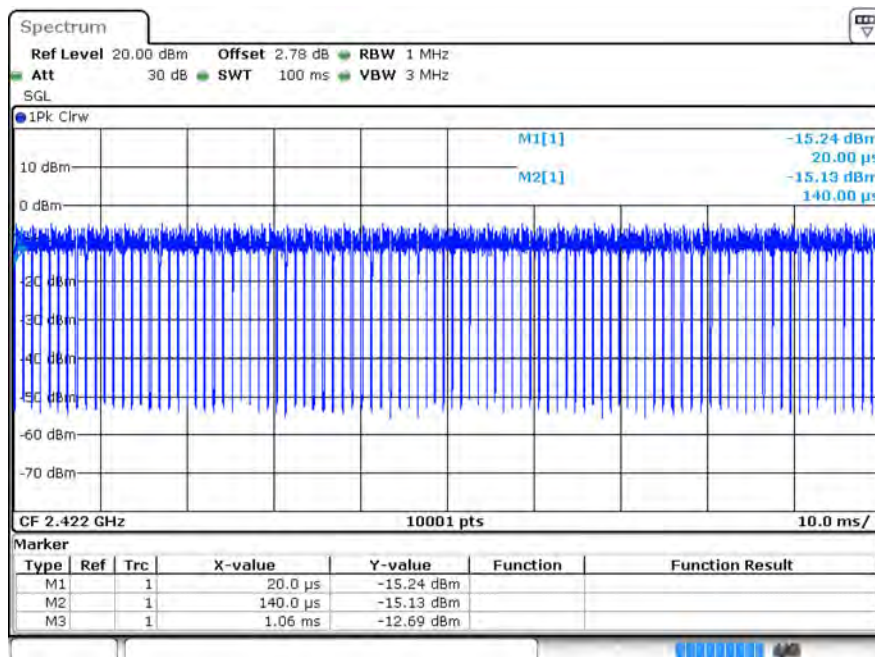


Test Graphs

n20 2462MHz Ant1



n40 2422MHz Ant1

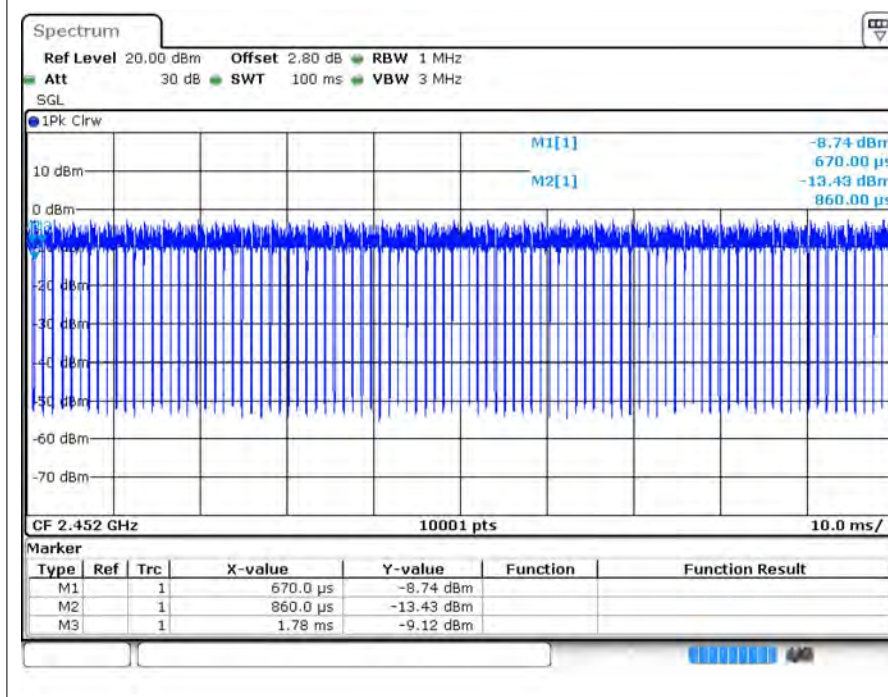


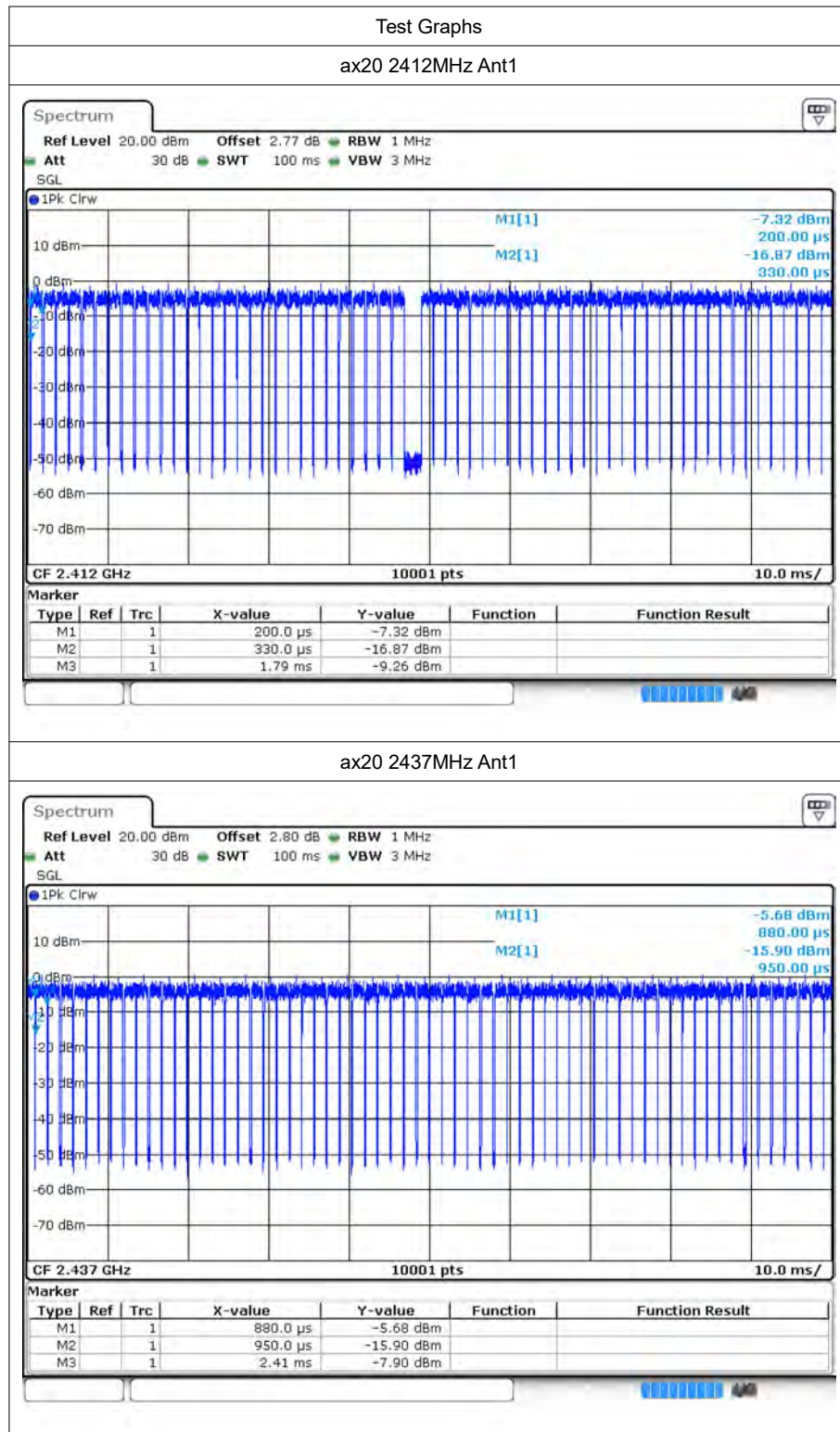
Test Graphs

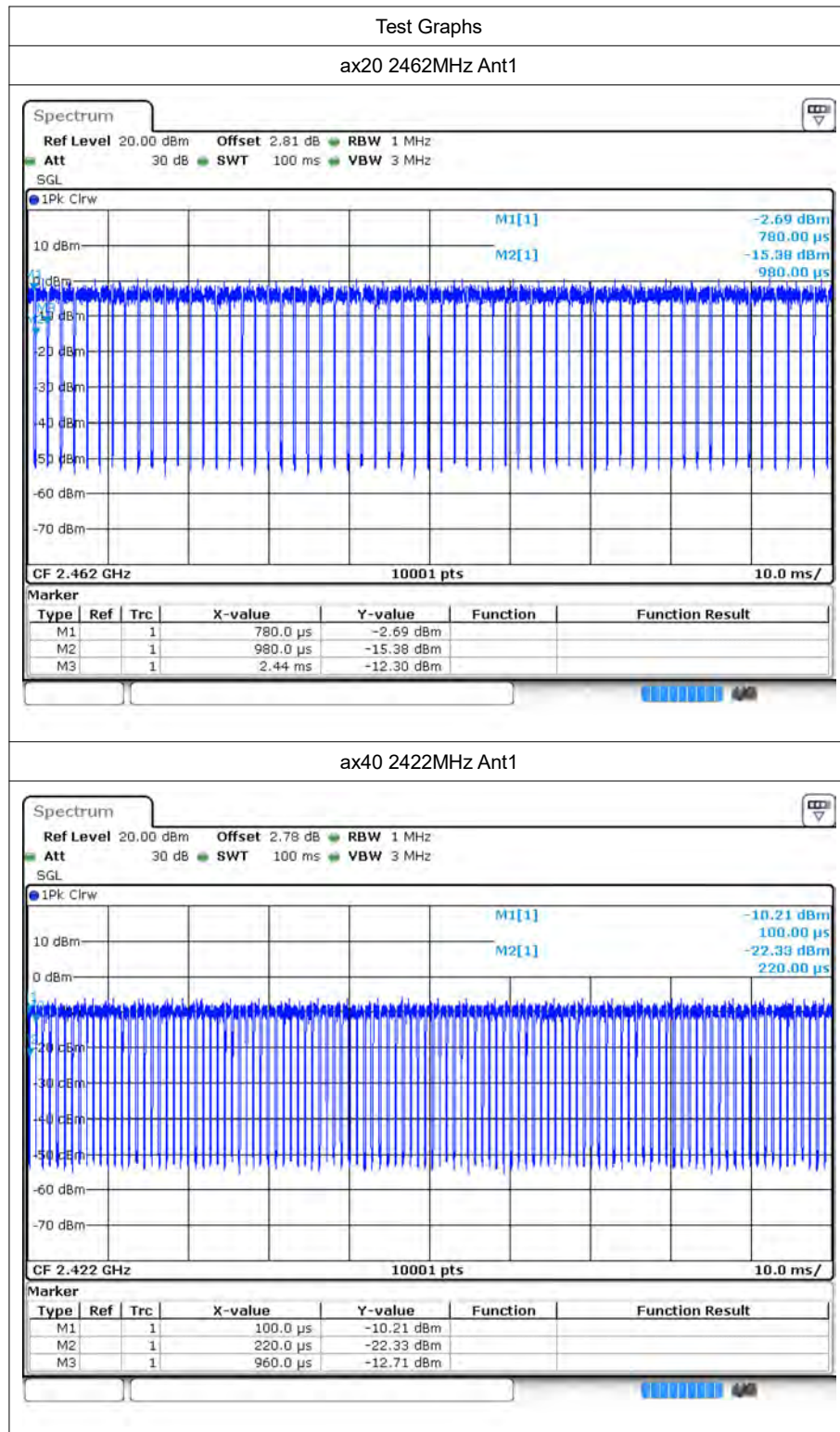
n40 2437MHz Ant1



n40 2452MHz Ant1

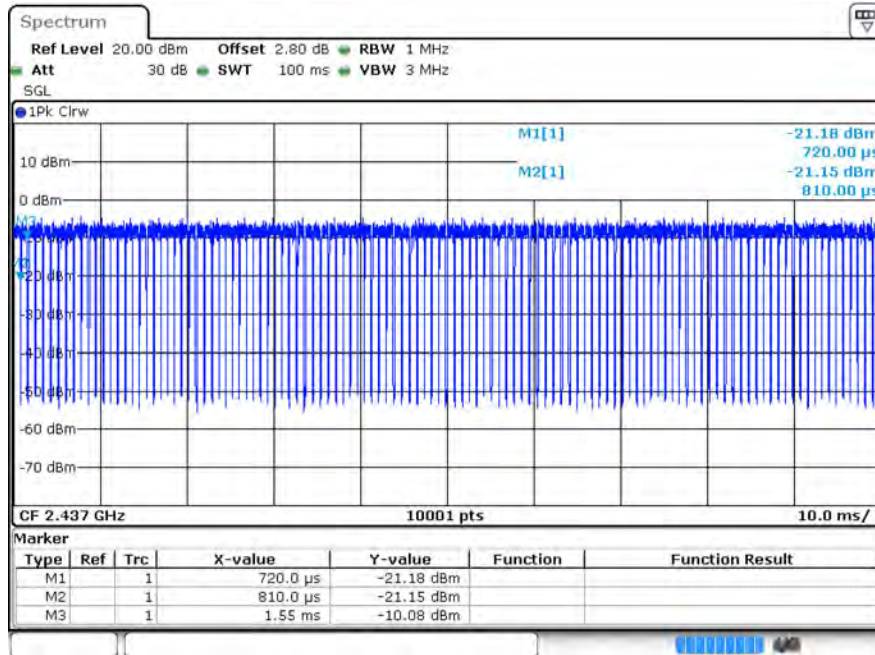




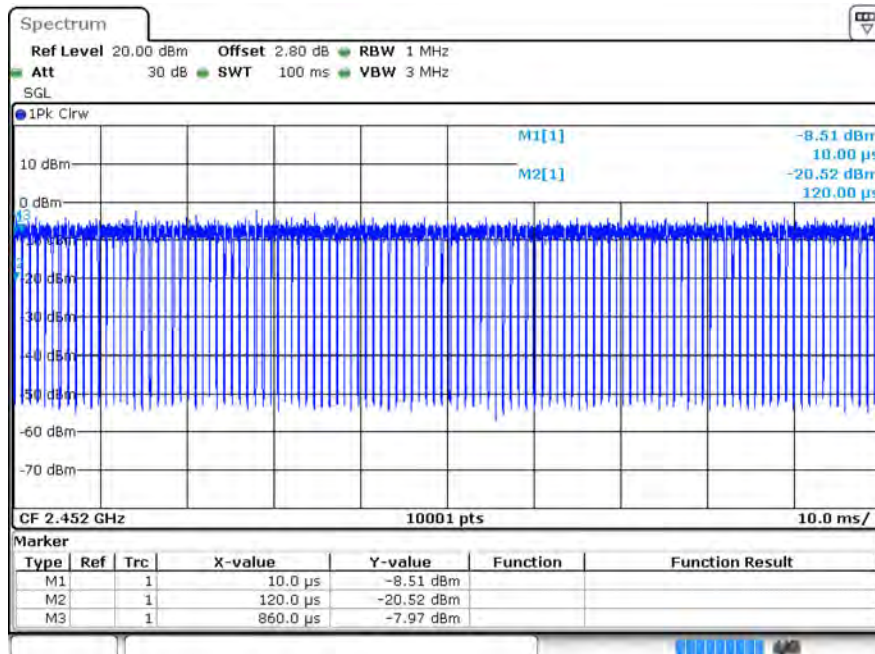


Test Graphs

ax40 2437MHz Ant1



ax40 2452MHz Ant1





2 Maximum Conducted Output Power

2.1 Test Result

Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Limit (dBm)	Verdict
b	2412	Ant1	12.02	30	Pass
b	2437	Ant1	13.21	30	Pass
b	2462	Ant1	13.24	30	Pass
g	2412	Ant1	11.26	30	Pass
g	2437	Ant1	12.31	30	Pass
g	2462	Ant1	12.37	30	Pass
n20	2412	Ant1	11.37	30	Pass
n20	2437	Ant1	12.3	30	Pass
n20	2462	Ant1	12.31	30	Pass
n40	2422	Ant1	12.19	30	Pass
n40	2437	Ant1	13.67	30	Pass
n40	2452	Ant1	13.92	30	Pass
ax20	2412	Ant1	10.12	30	Pass
ax20	2437	Ant1	11.28	30	Pass
ax20	2462	Ant1	11.35	30	Pass
ax40	2422	Ant1	9.82	30	Pass
ax40	2437	Ant1	11.23	30	Pass
ax40	2452	Ant1	11.39	30	Pass

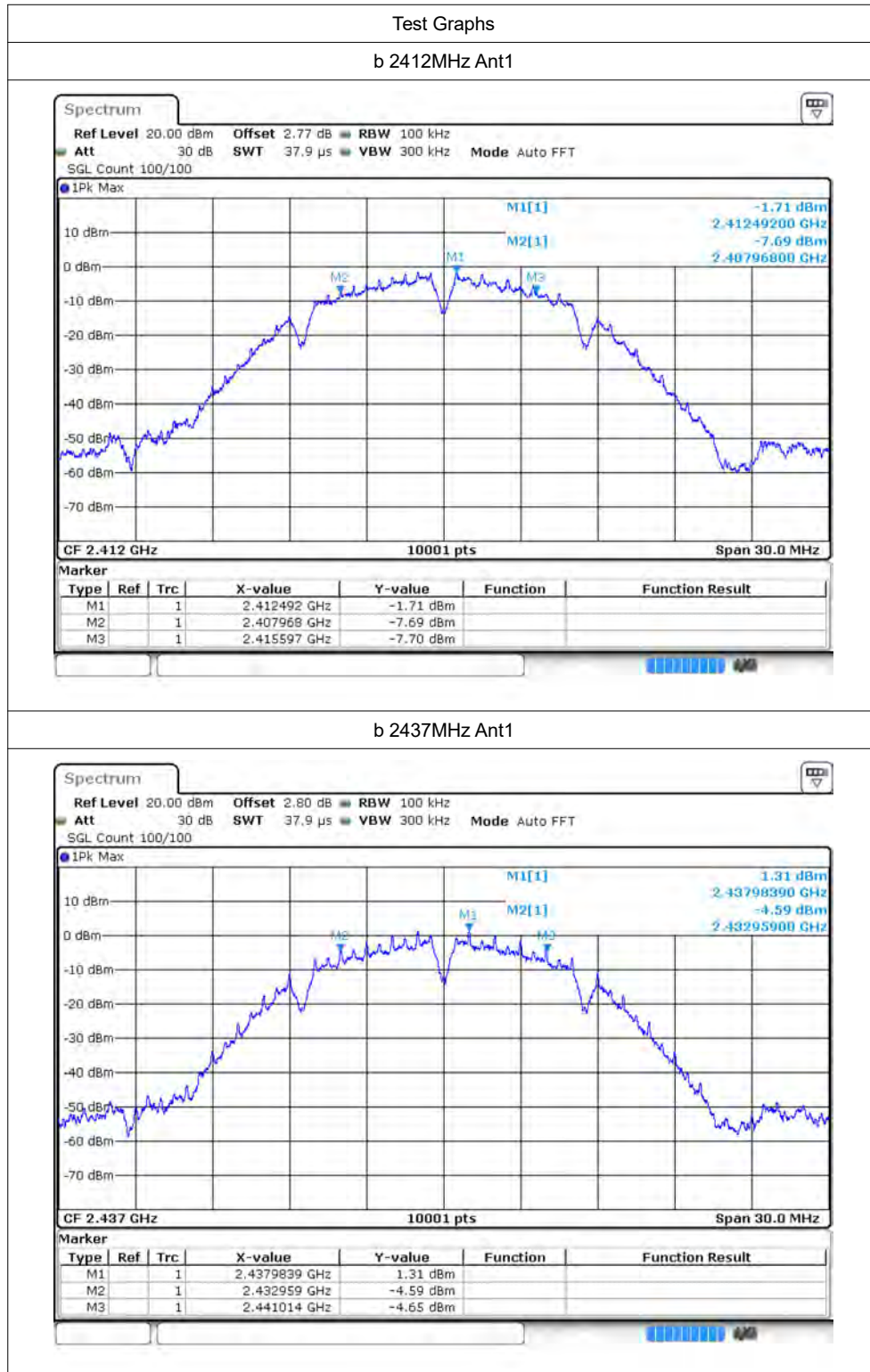


3 -6dB Bandwidth

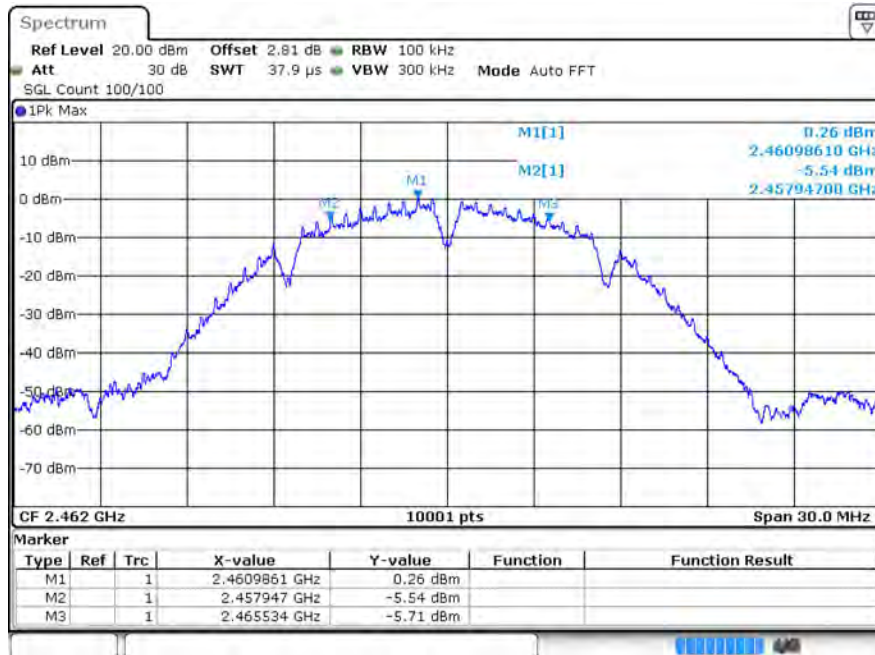
3.1 Test Result

Mode	Frequency (MHz)	Antenna	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
b	2412	Ant1	7.629	0.5	Pass
b	2437	Ant1	8.055	0.5	Pass
b	2462	Ant1	7.587	0.5	Pass
g	2412	Ant1	16.542	0.5	Pass
g	2437	Ant1	16.314	0.5	Pass
g	2462	Ant1	16.521	0.5	Pass
n20	2412	Ant1	17.613	0.5	Pass
n20	2437	Ant1	17.577	0.5	Pass
n20	2462	Ant1	17.808	0.5	Pass
n40	2422	Ant1	36.348	0.5	Pass
n40	2437	Ant1	36.33	0.5	Pass
n40	2452	Ant1	36.312	0.5	Pass
ax20	2412	Ant1	19.134	0.5	Pass
ax20	2437	Ant1	19.002	0.5	Pass
ax20	2462	Ant1	18.426	0.5	Pass
ax40	2422	Ant1	37.548	0.5	Pass
ax40	2437	Ant1	37.992	0.5	Pass
ax40	2452	Ant1	37.716	0.5	Pass

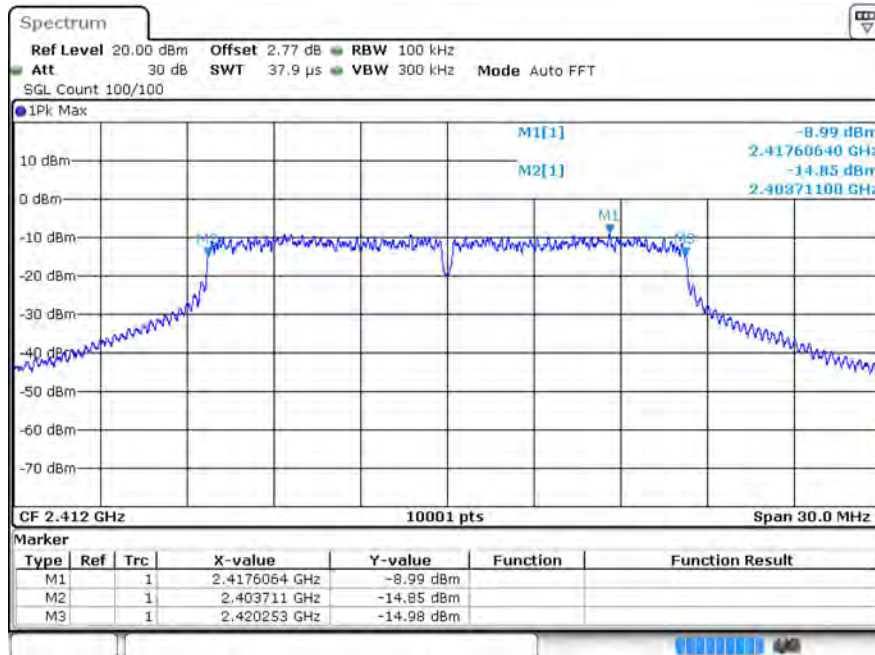
3.2 Test Graphs



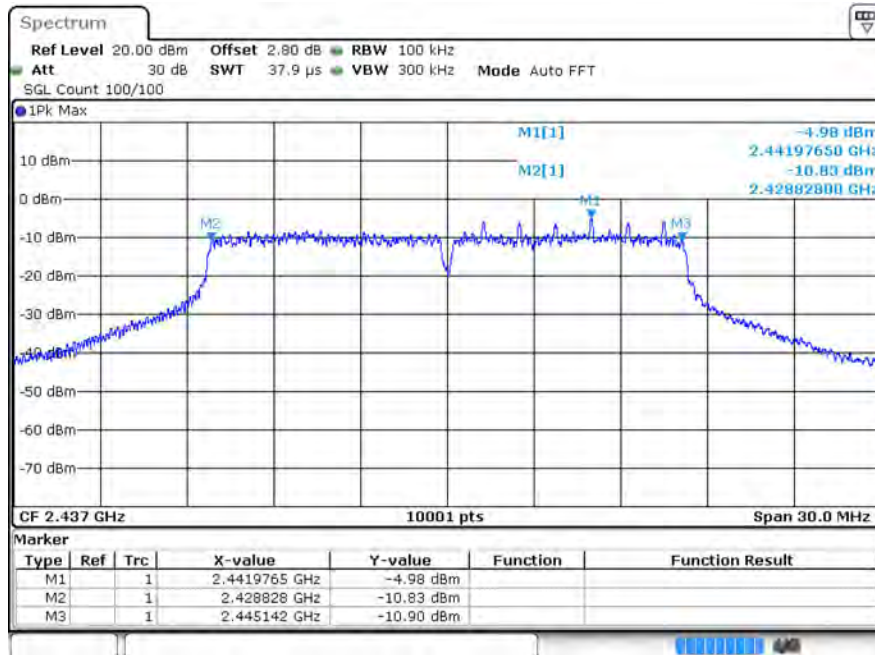
b 2462MHz Ant1



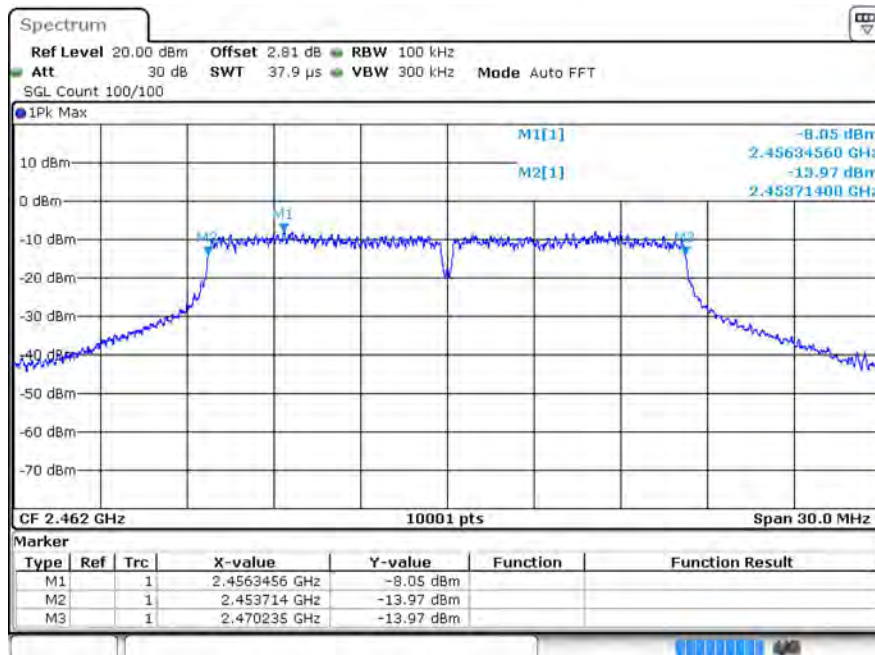
g 2412MHz Ant1



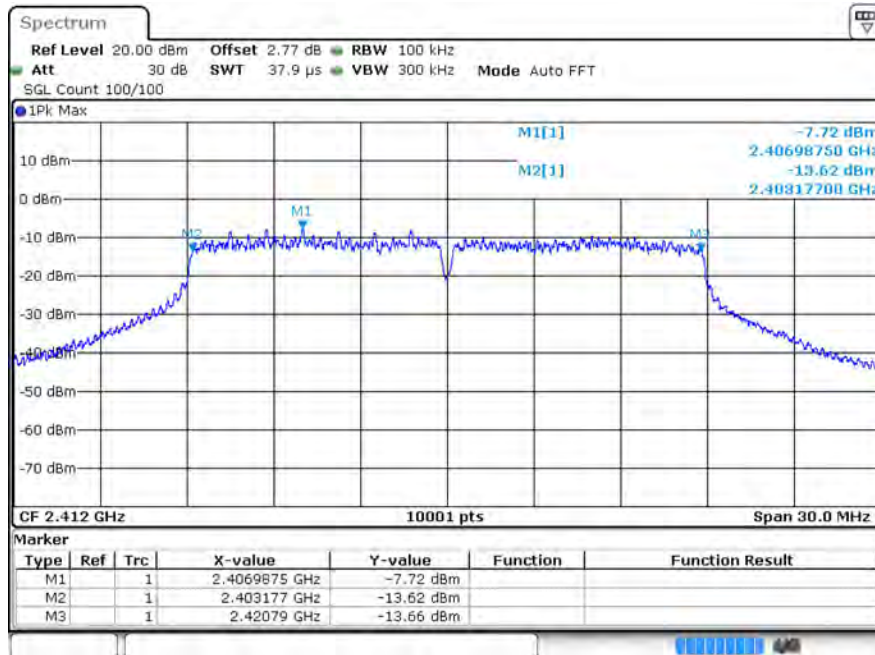
g 2437MHz Ant1



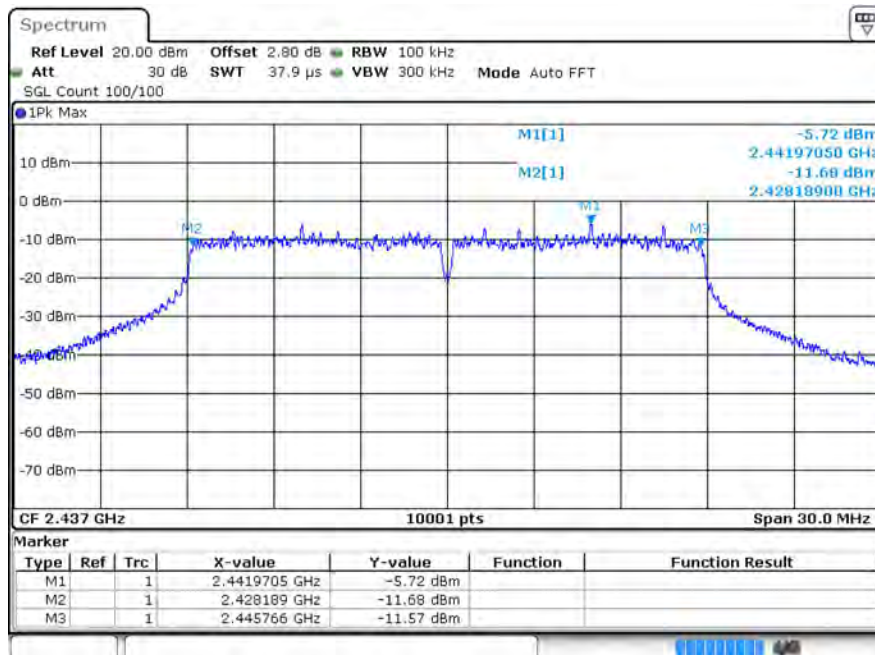
g 2462MHz Ant1



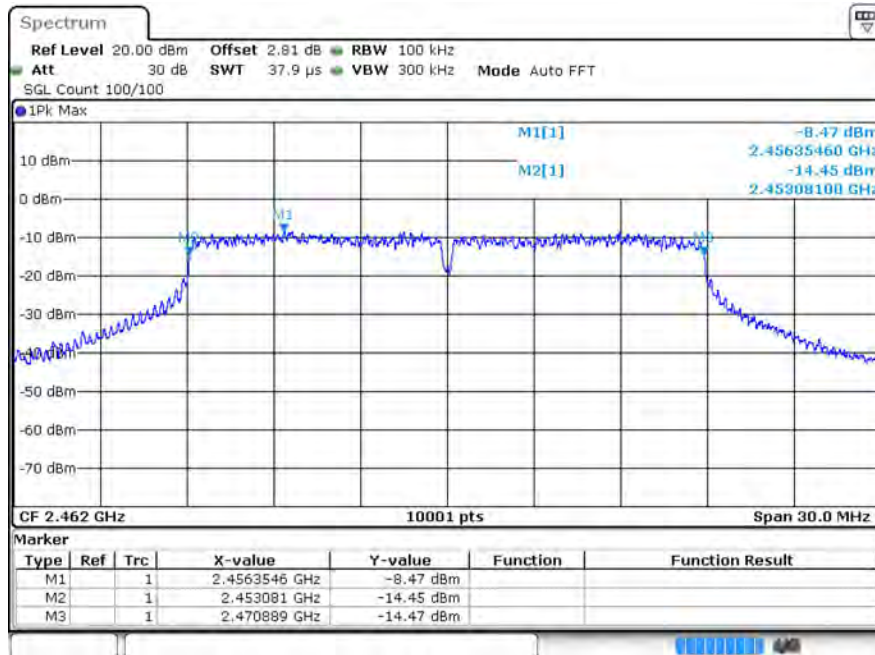
n20 2412MHz Ant1



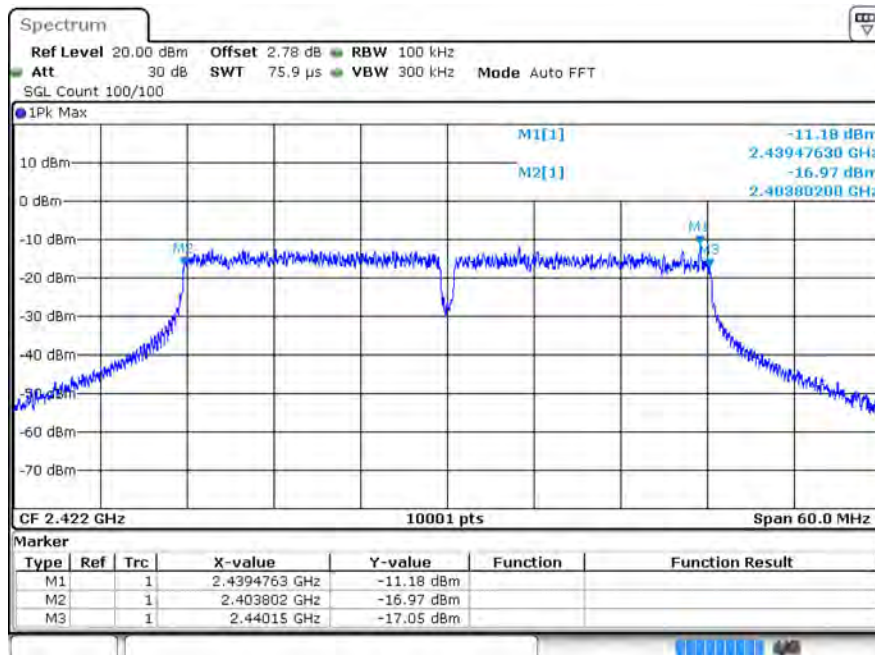
n20 2437MHz Ant1



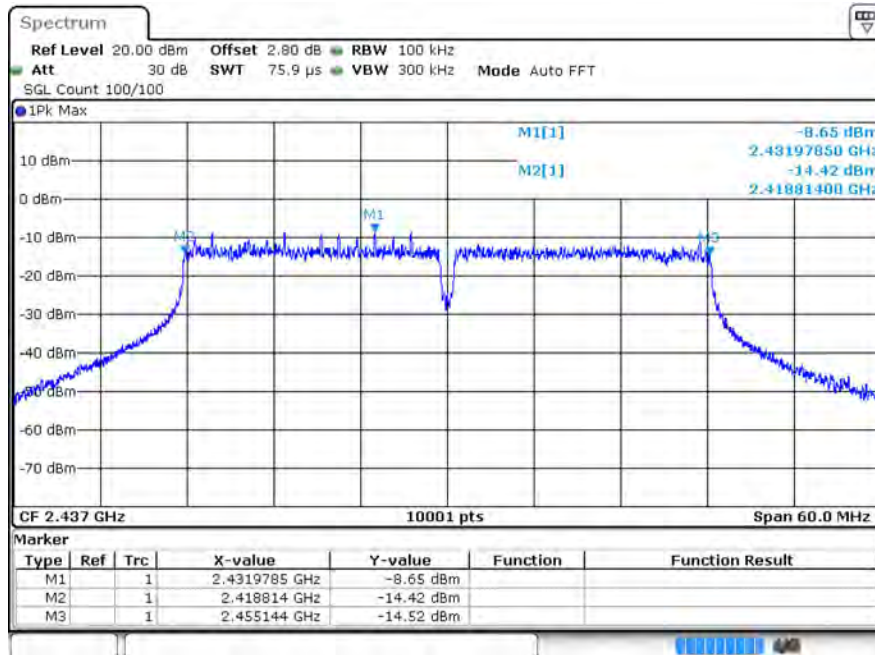
n20 2462MHz Ant1



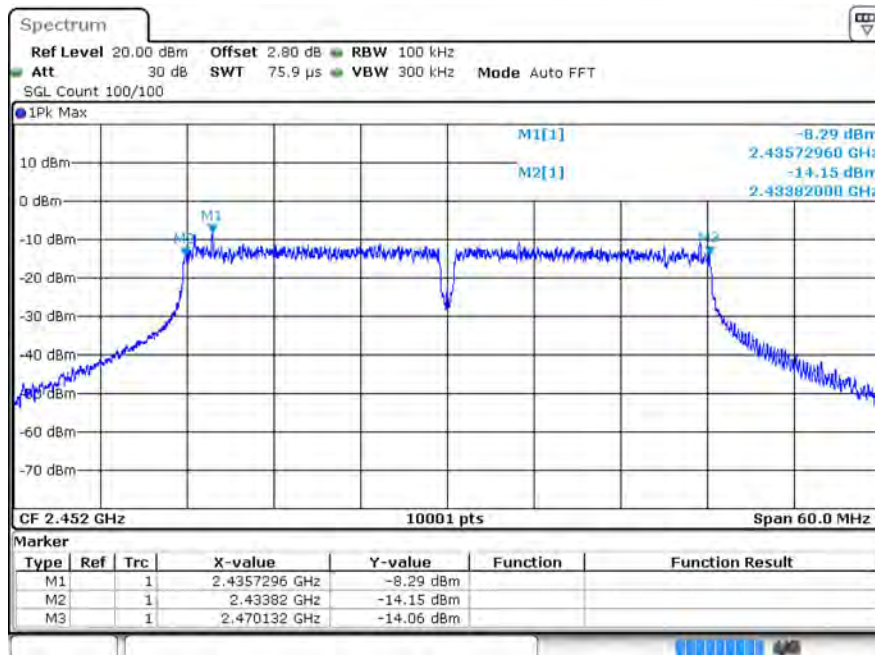
n40 2422MHz Ant1



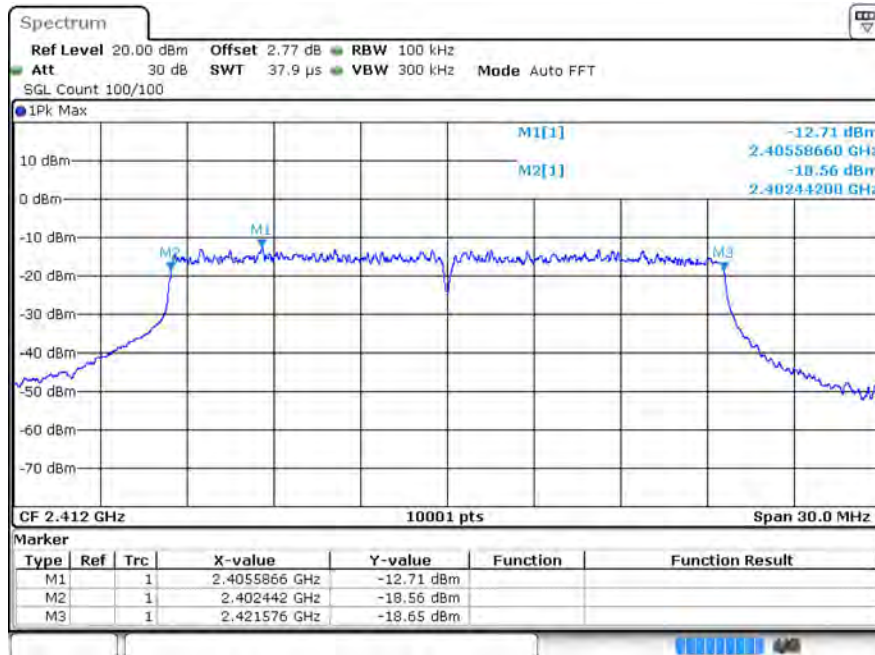
n40 2437MHz Ant1



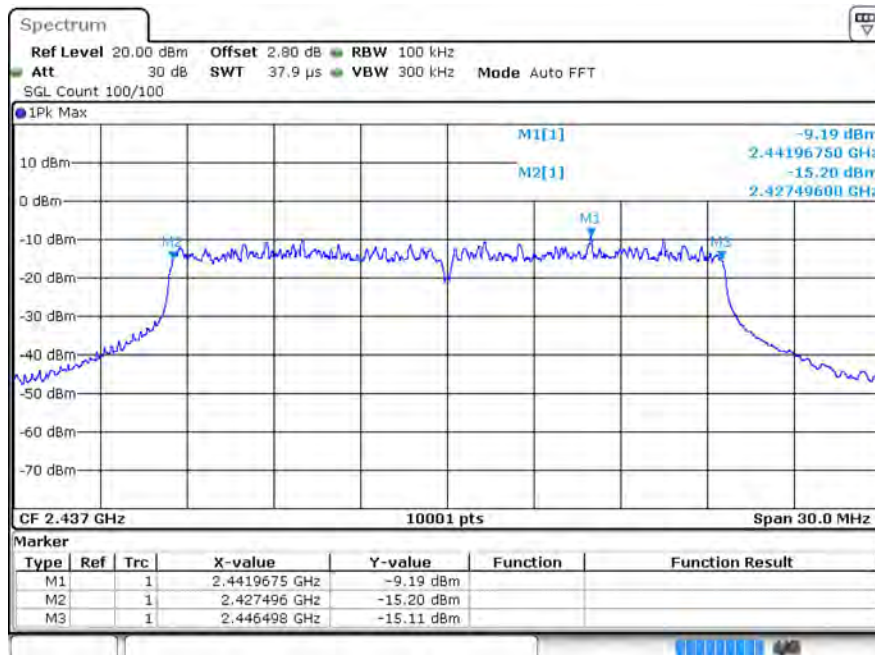
n40 2452MHz Ant1



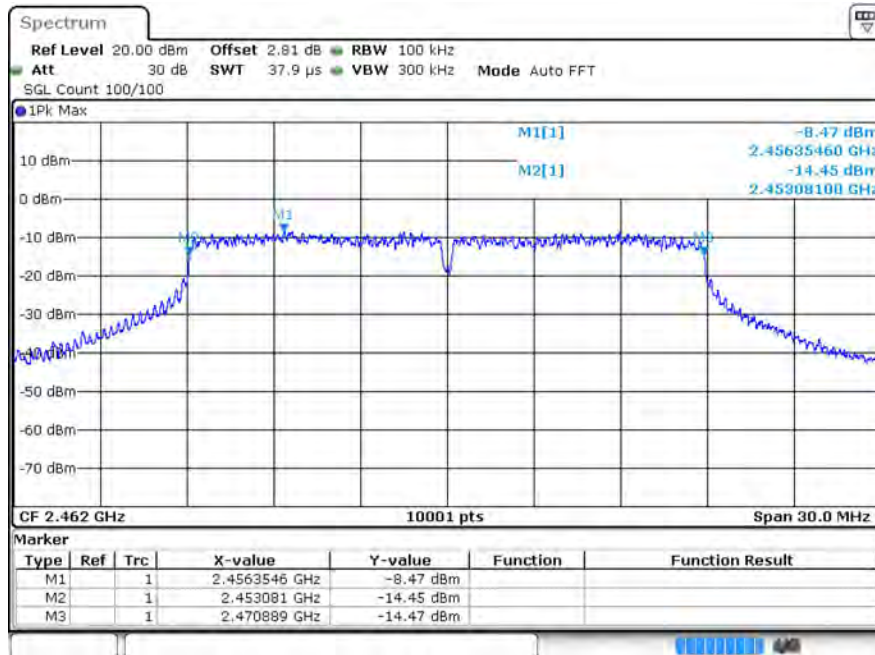
ax20 2412MHz Ant1



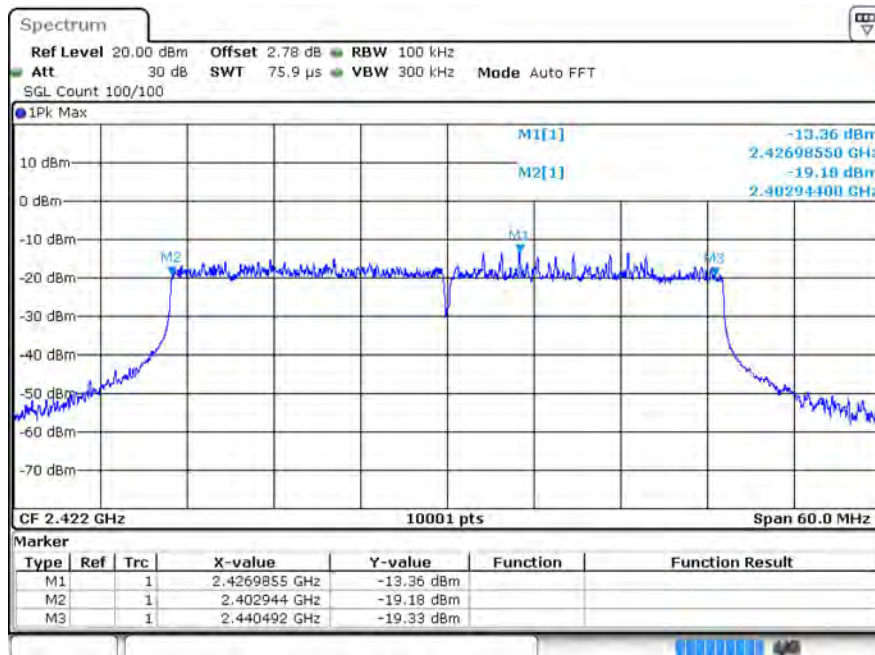
ax20 2437MHz Ant1



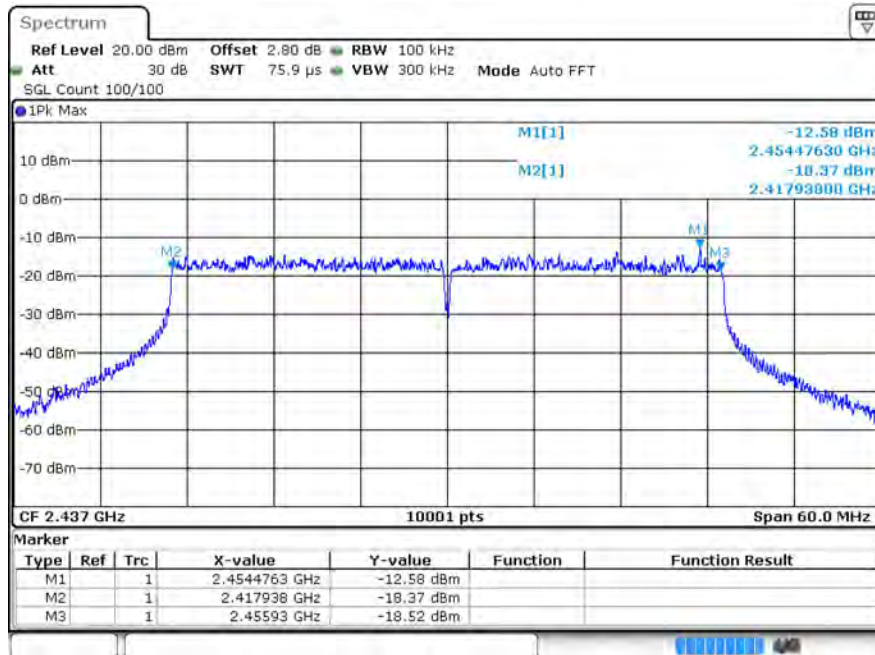
ax20 2462MHz Ant1



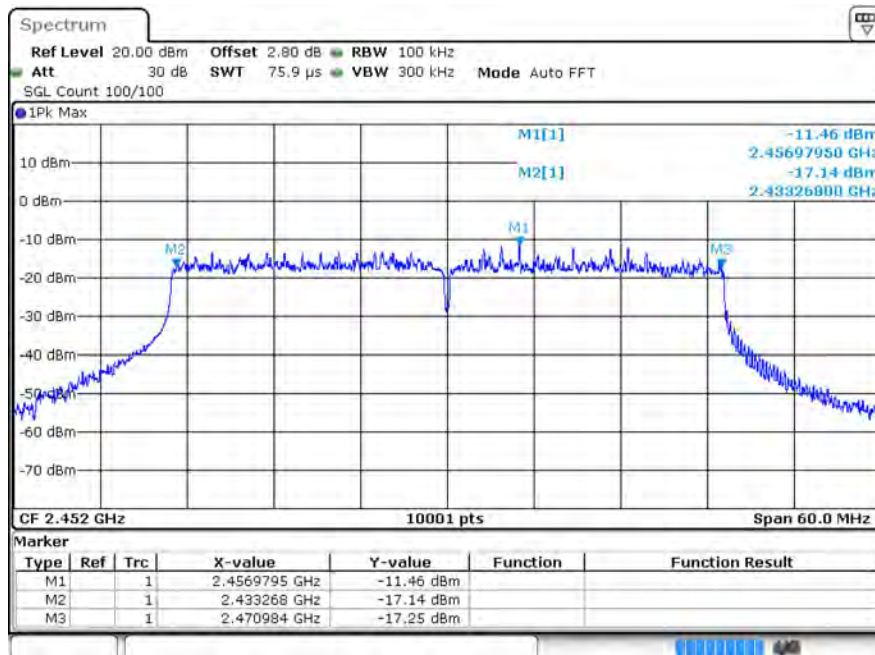
ax40 2422MHz Ant1



ax40 2437MHz Ant1



ax40 2452MHz Ant1

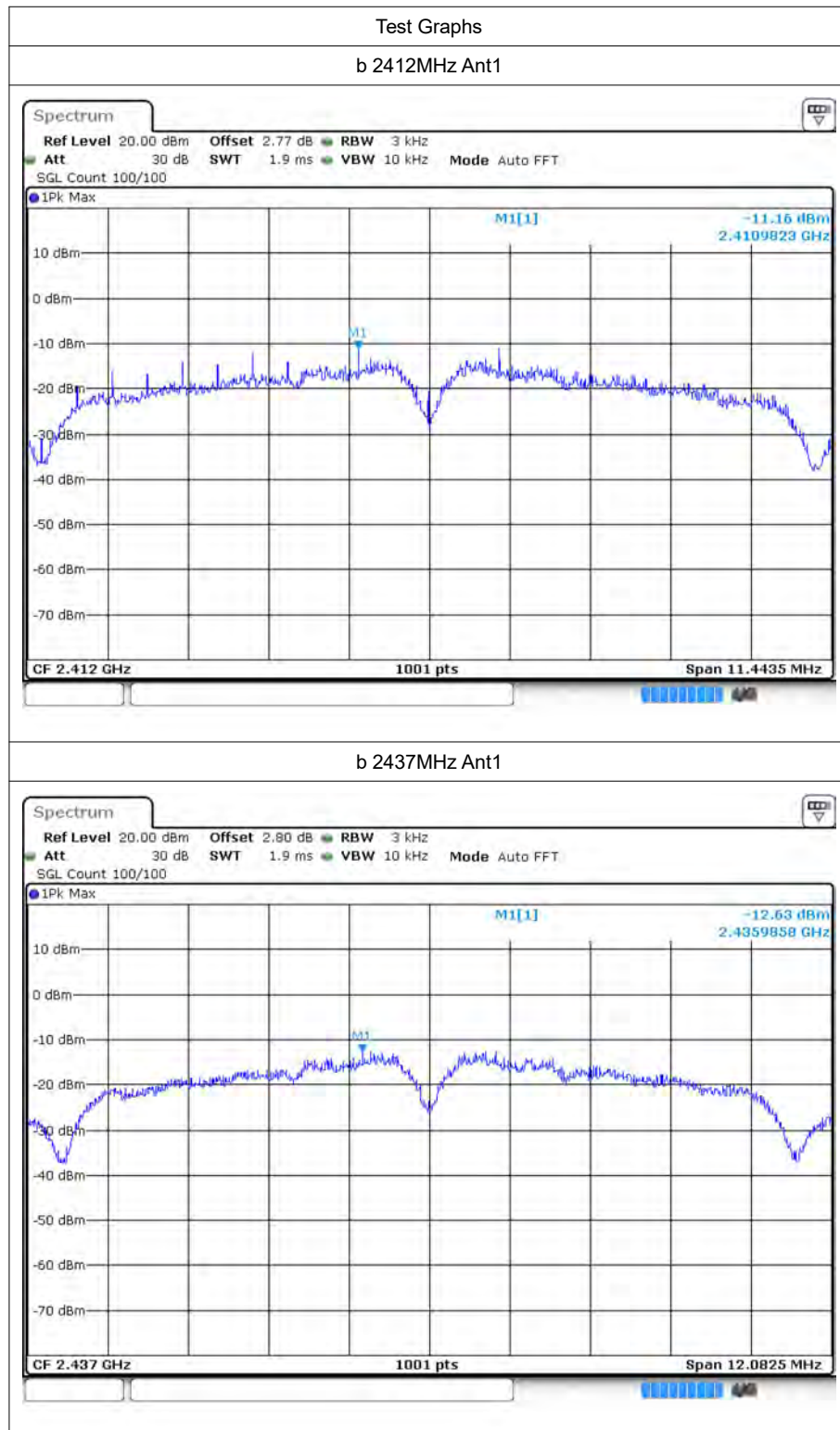


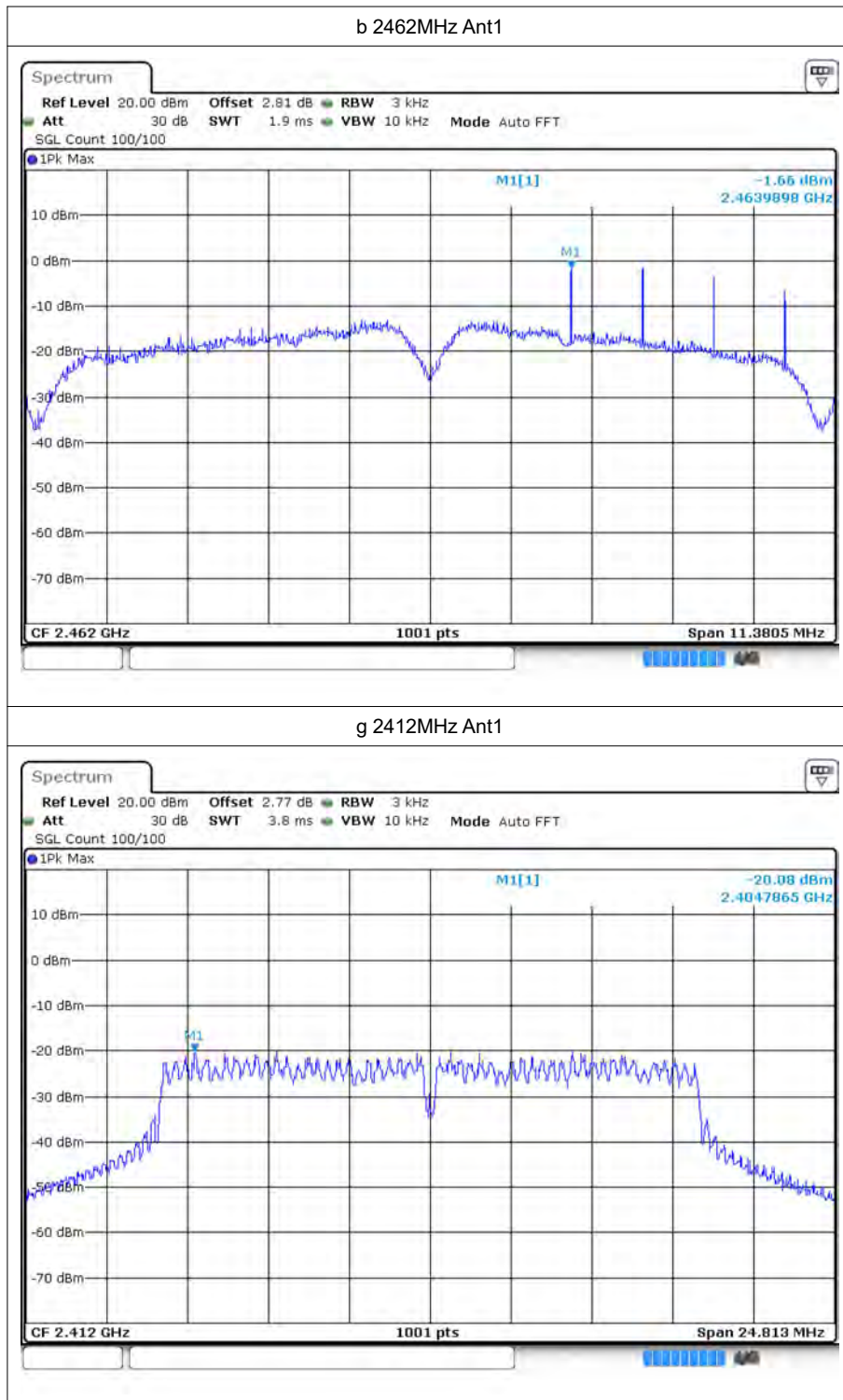
4 Maximum Power Spectral Density Level

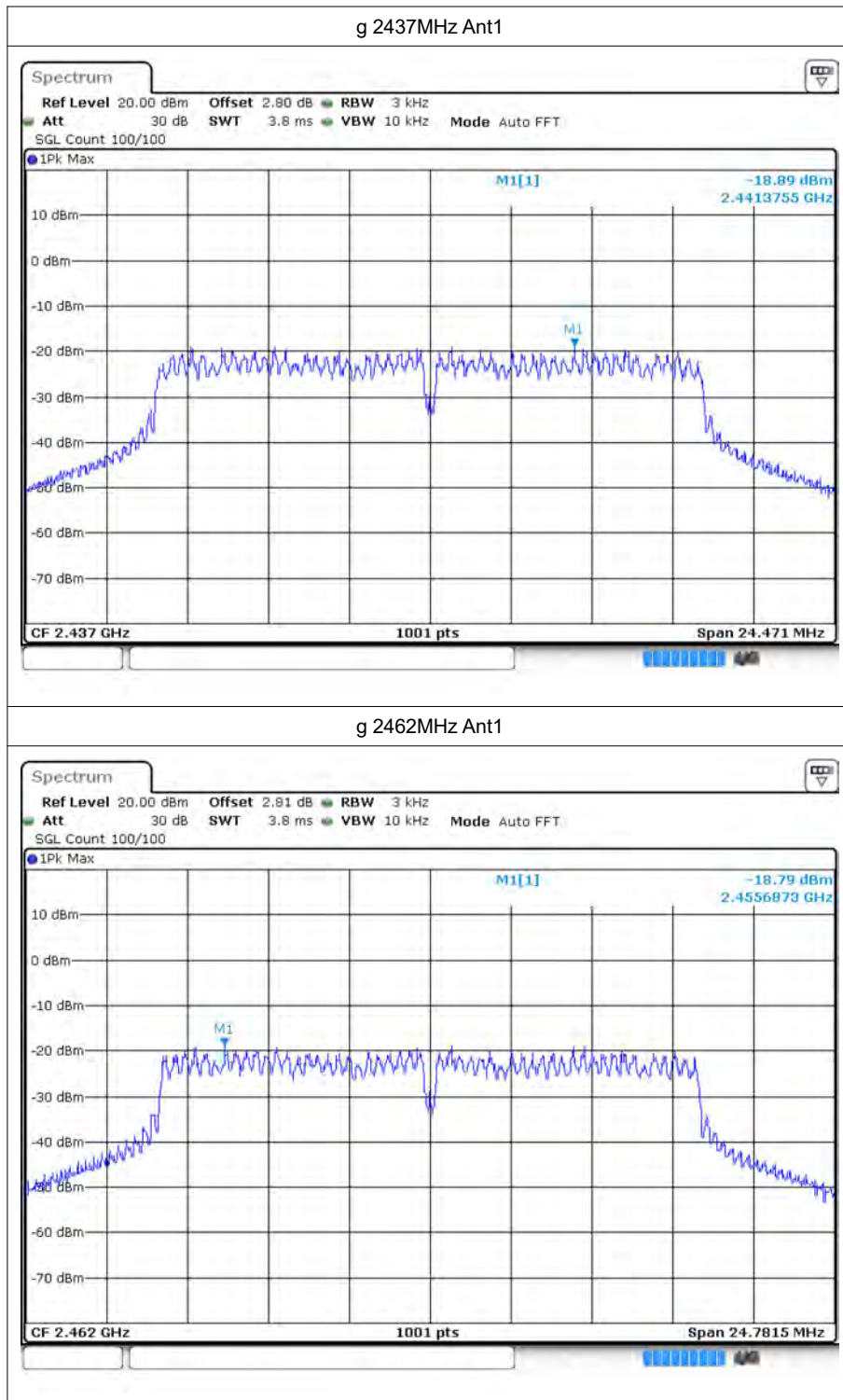
4.1 Test Result

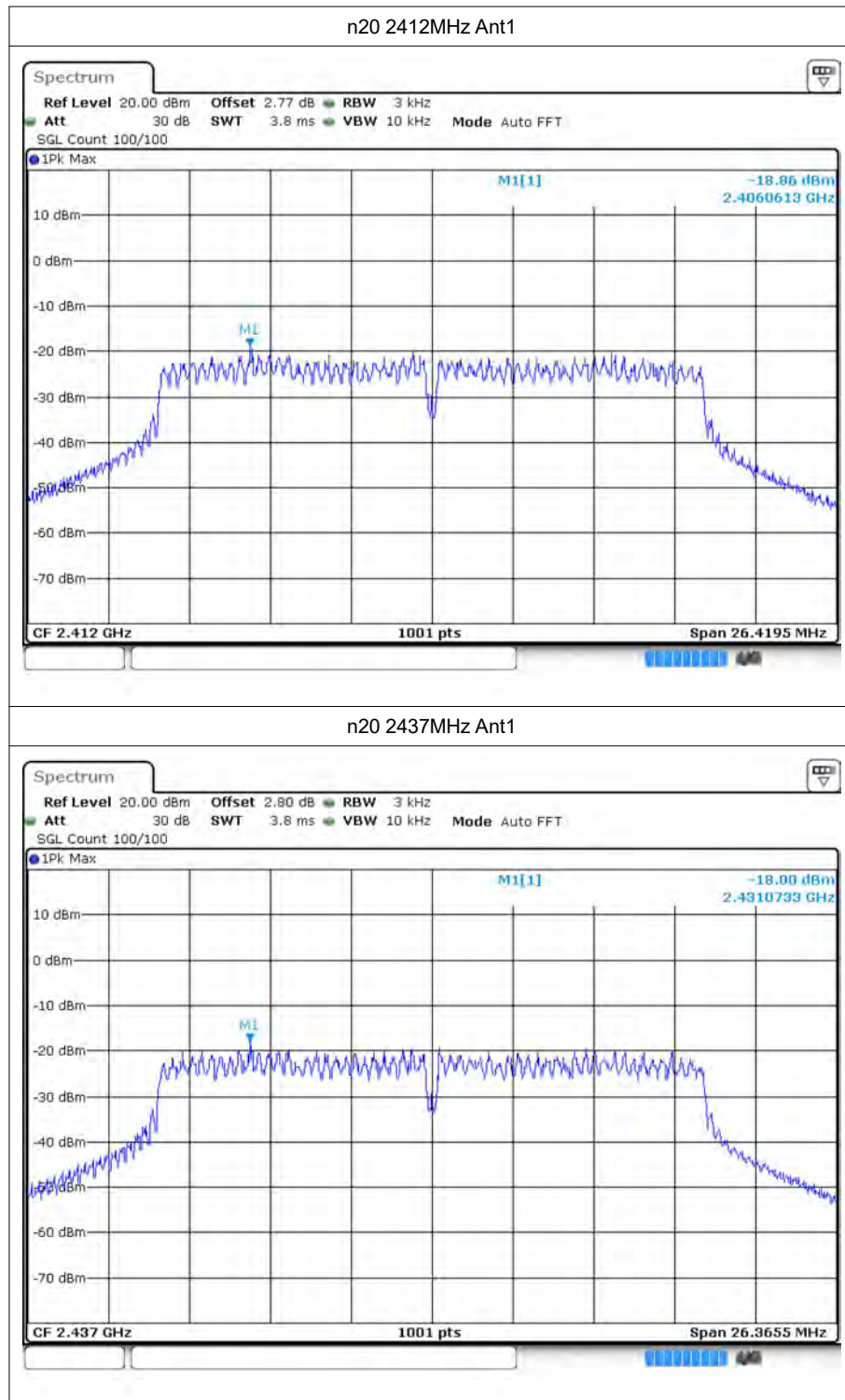
Mode	Frequency (MHz)	Antenna	Conducted PSD (dBm/3-100kHz)	Limit (dBm/3kHz)	Verdict
b	2412	Ant1	-11.16	≤8	Pass
b	2437	Ant1	-12.63	≤8	Pass
b	2462	Ant1	-1.66	≤8	Pass
g	2412	Ant1	-20.08	≤8	Pass
g	2437	Ant1	-18.89	≤8	Pass
g	2462	Ant1	-18.79	≤8	Pass
n20	2412	Ant1	-18.86	≤8	Pass
n20	2437	Ant1	-18	≤8	Pass
n20	2462	Ant1	-18.11	≤8	Pass
n40	2422	Ant1	-22.23	≤8	Pass
n40	2437	Ant1	-20.59	≤8	Pass
n40	2452	Ant1	-20.64	≤8	Pass
ax20	2412	Ant1	-11.99	≤8	Pass
ax20	2437	Ant1	-8.44	≤8	Pass
ax20	2462	Ant1	-9.08	≤8	Pass
ax40	2422	Ant1	-12.95	≤8	Pass
ax40	2437	Ant1	-11.66	≤8	Pass
ax40	2452	Ant1	-11.62	≤8	Pass

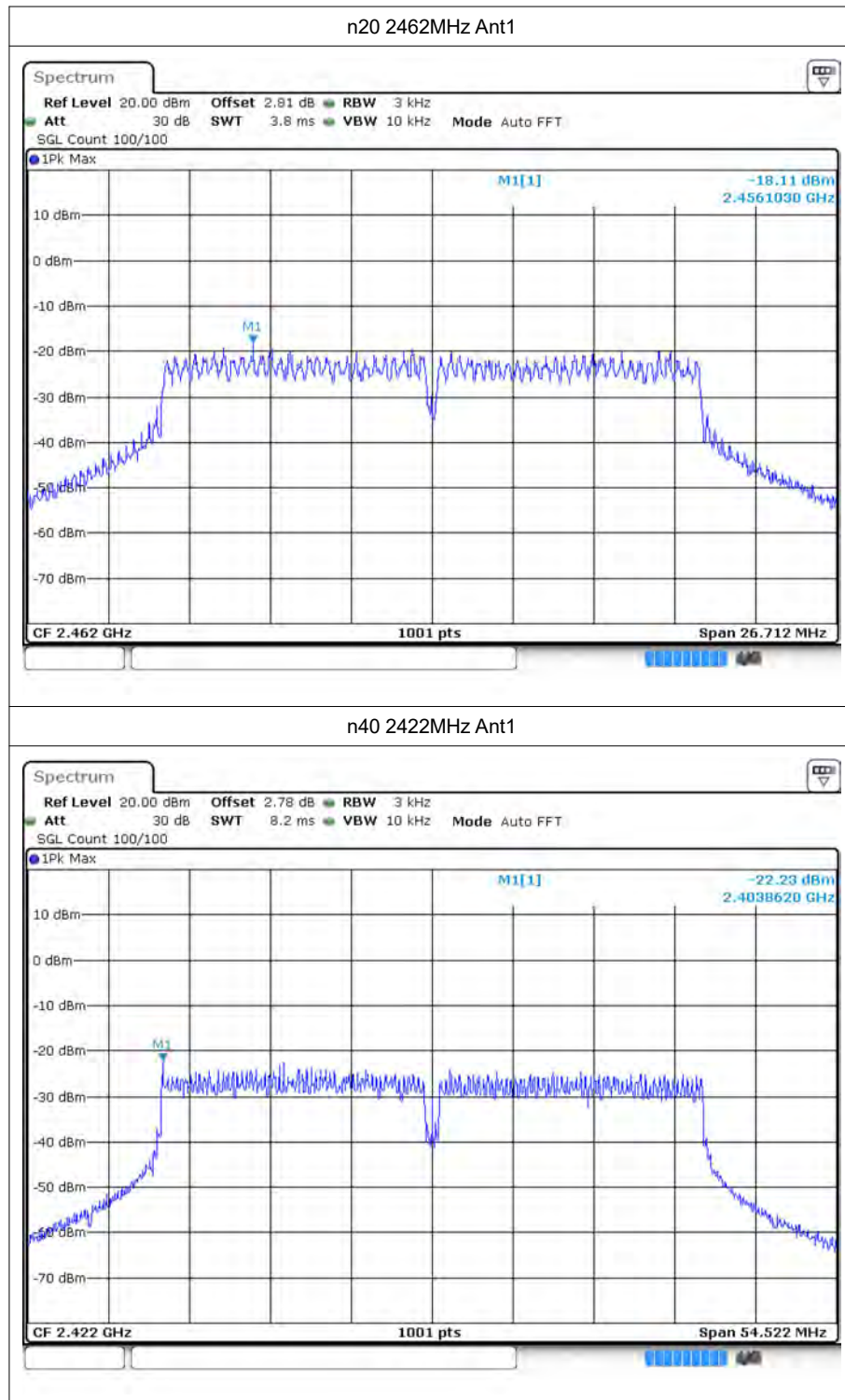
4.2 Test Graphs

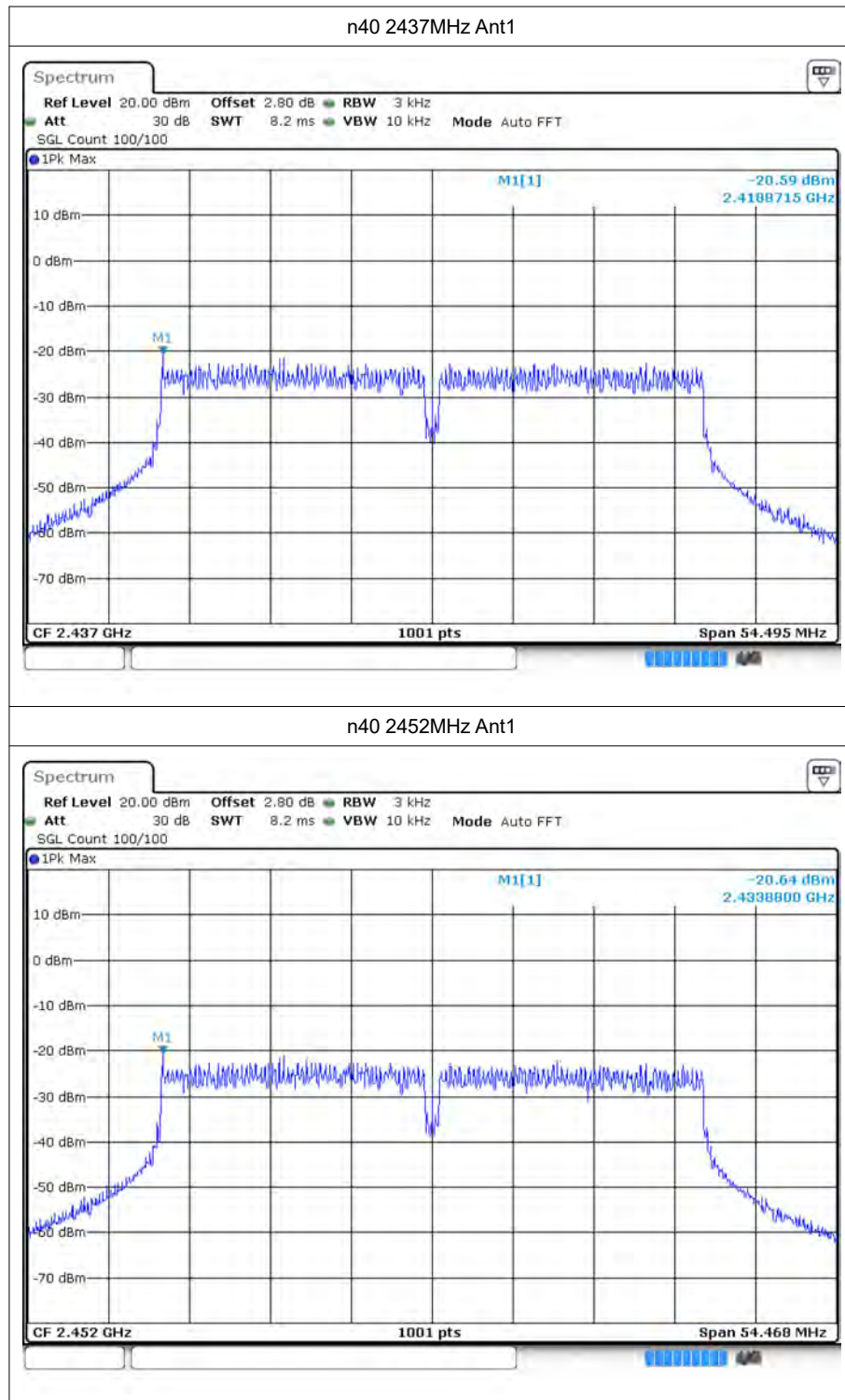


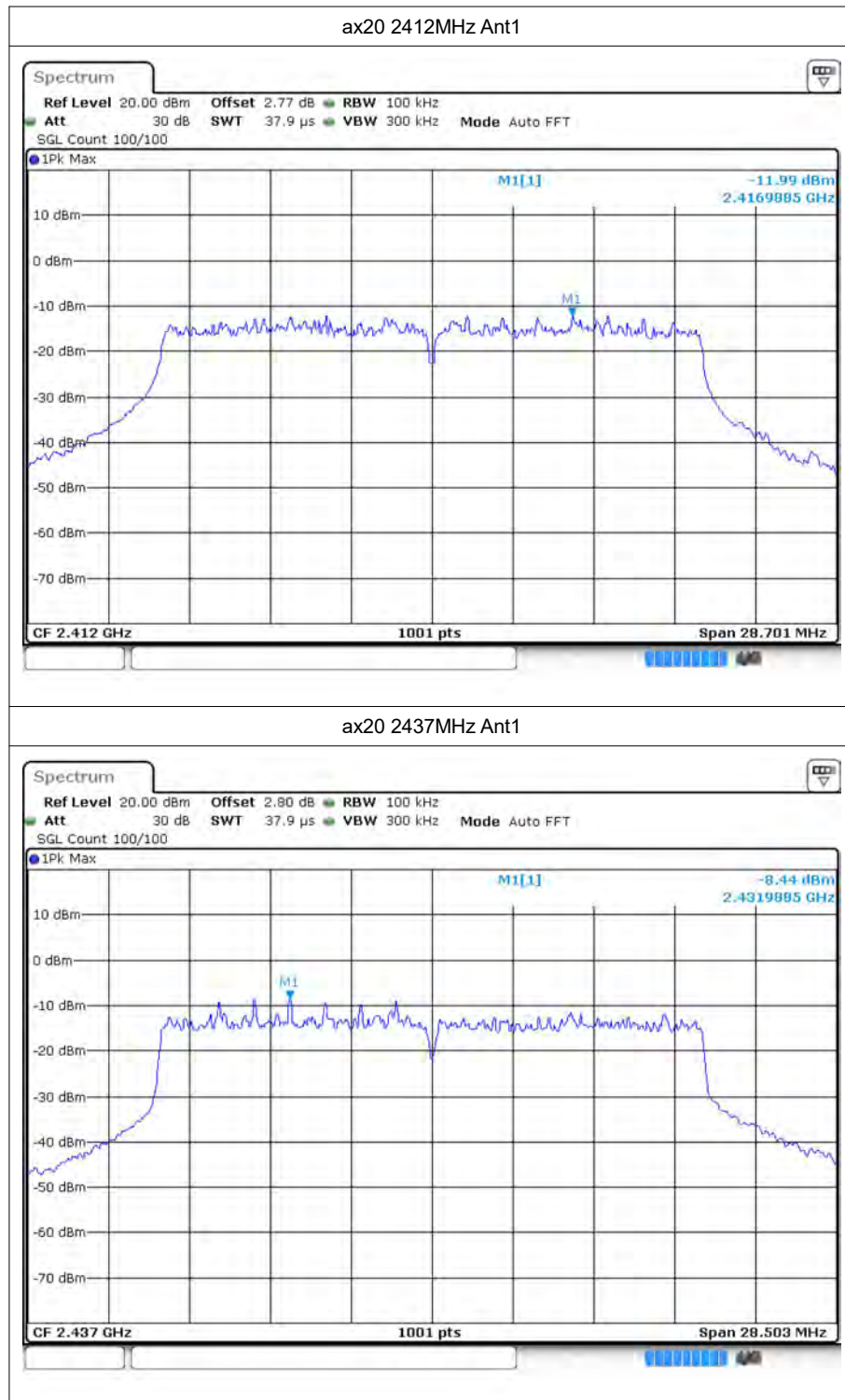


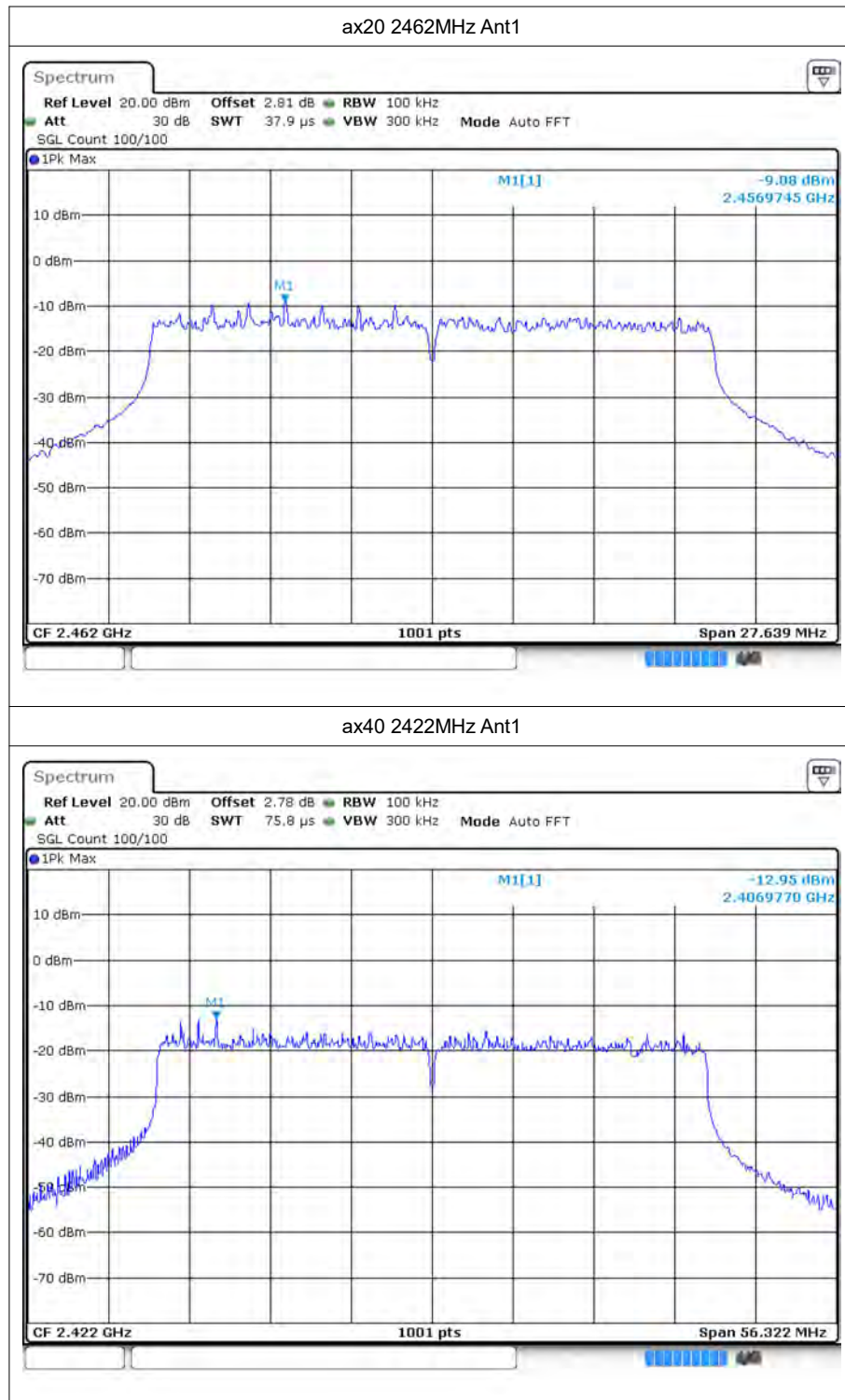


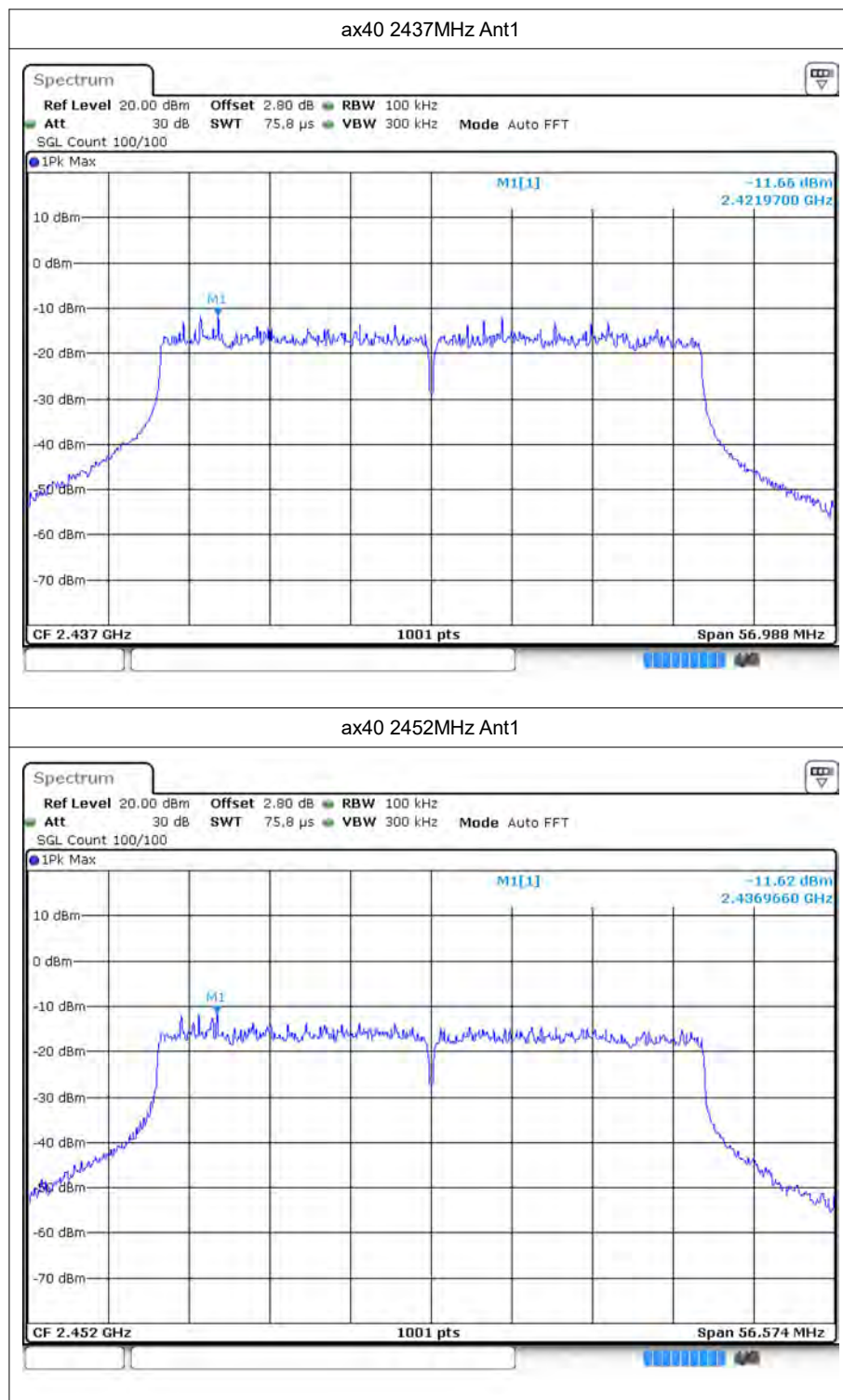












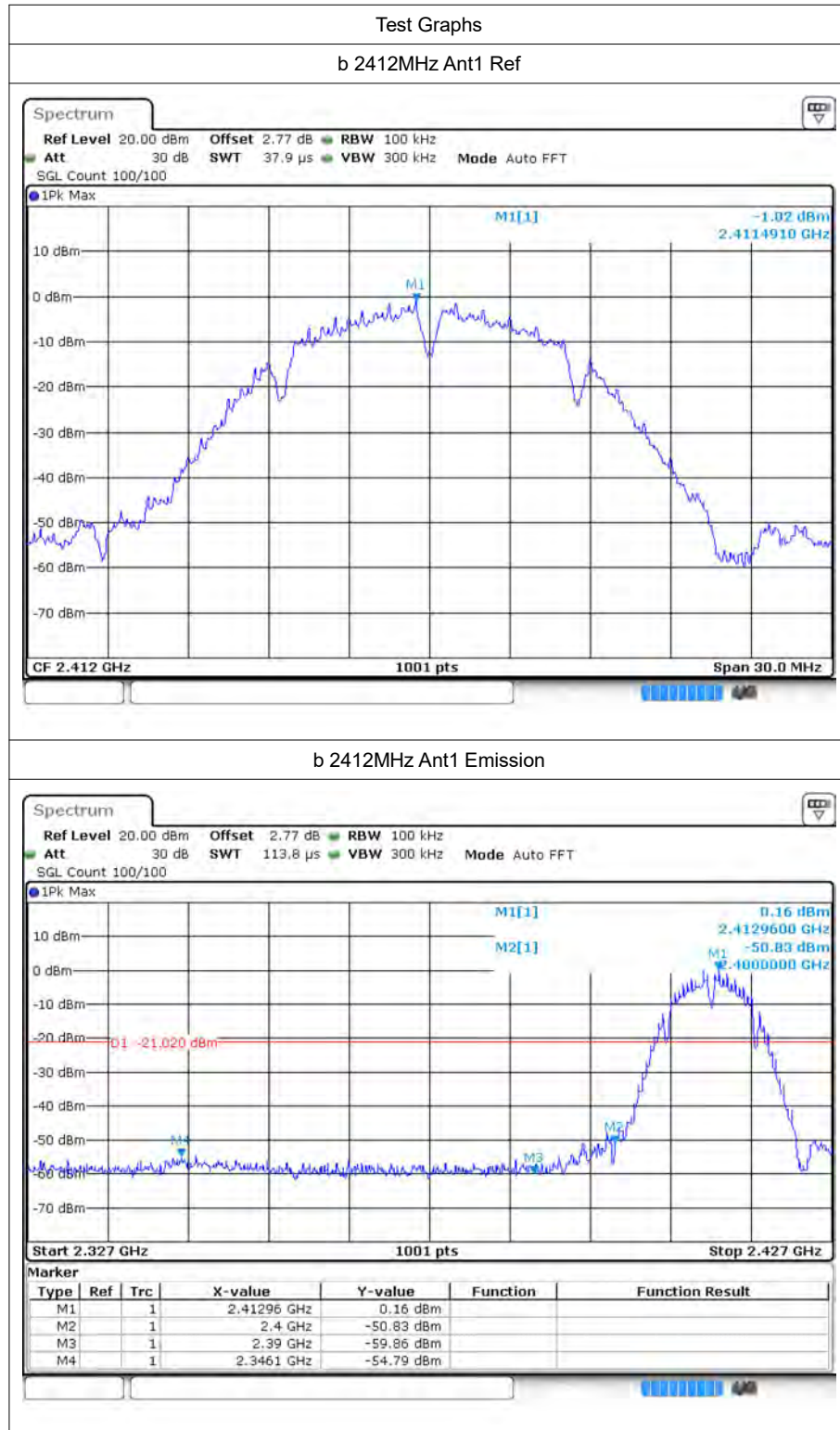


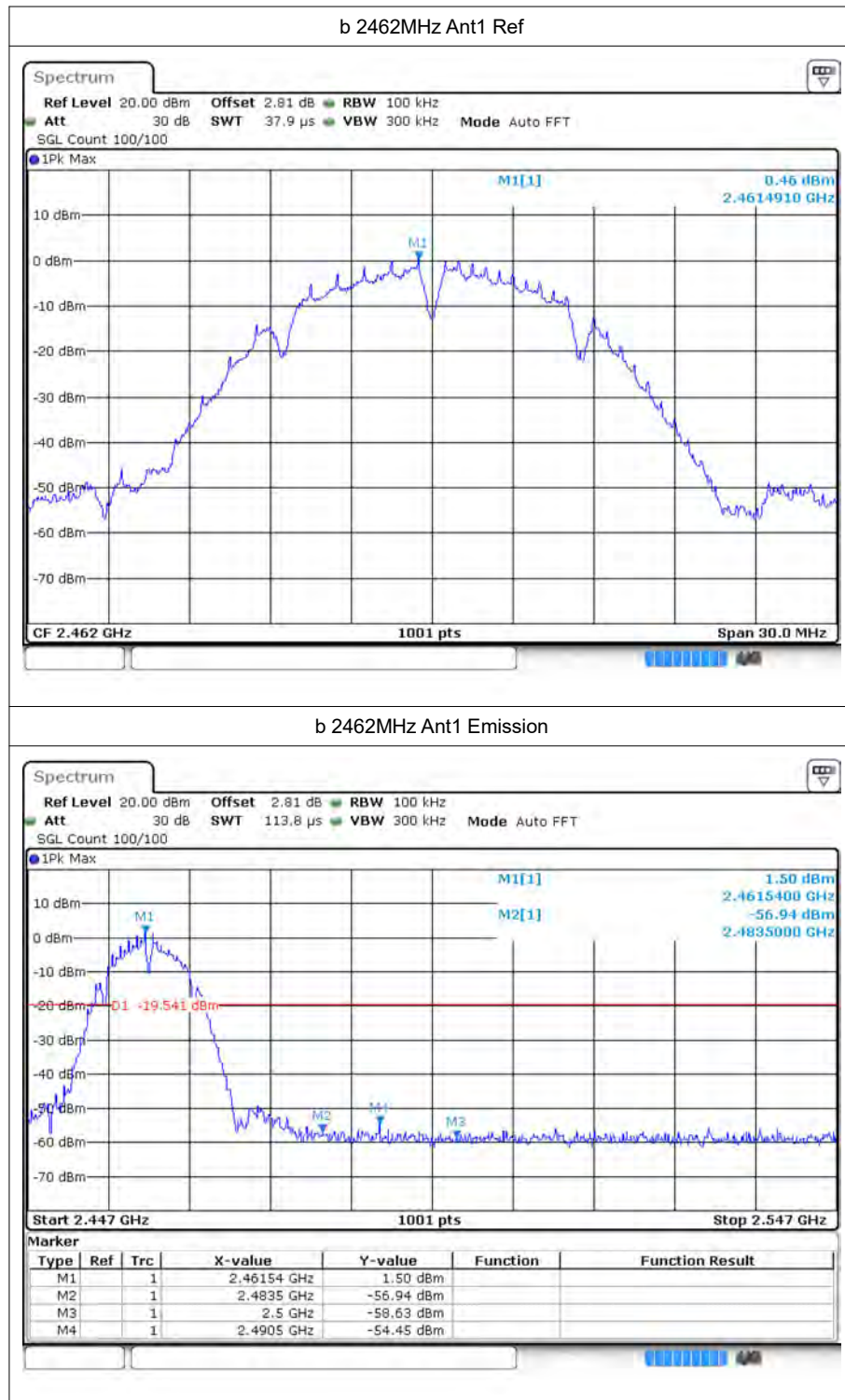
5 Band Edge

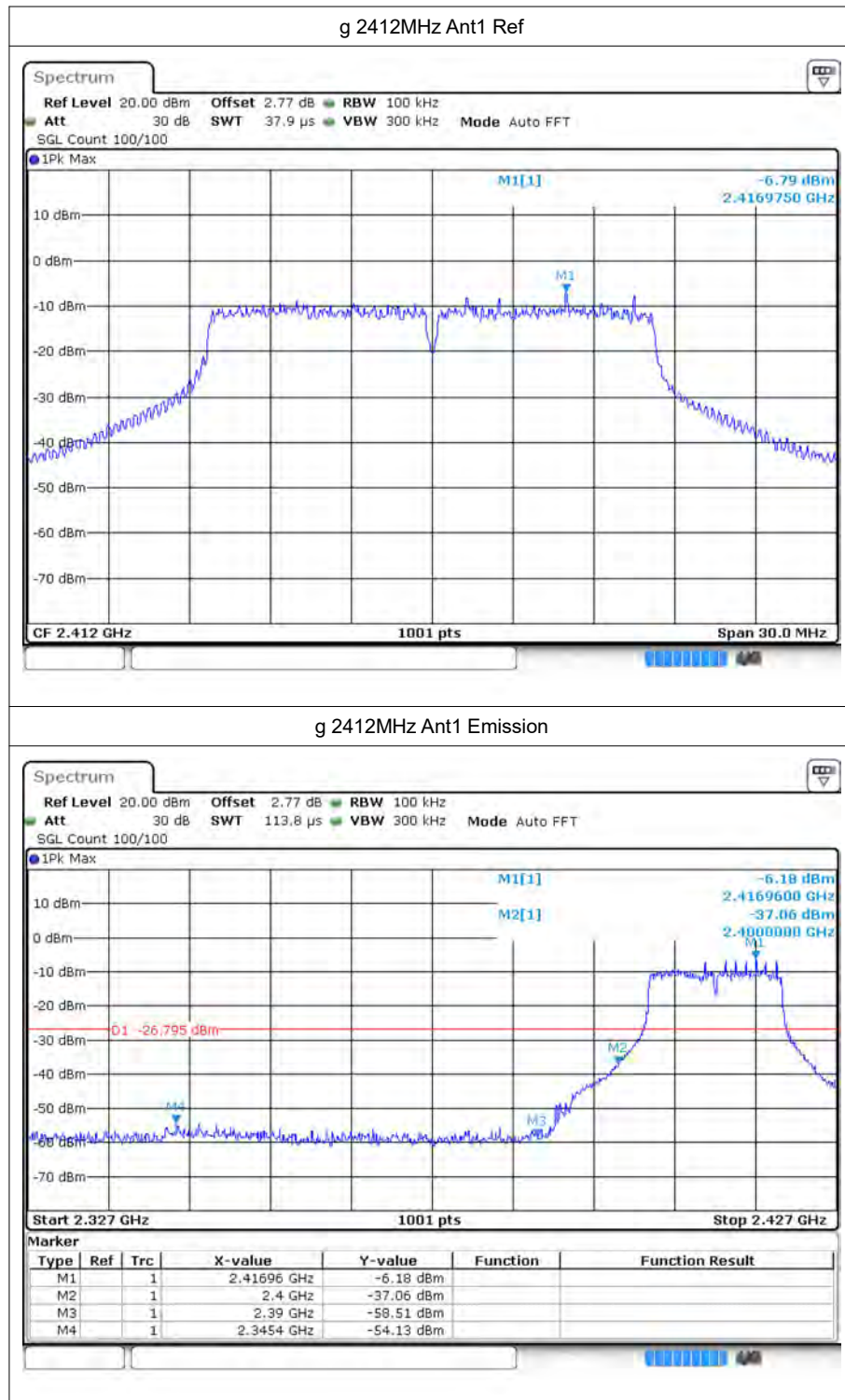
5.1 Test Result

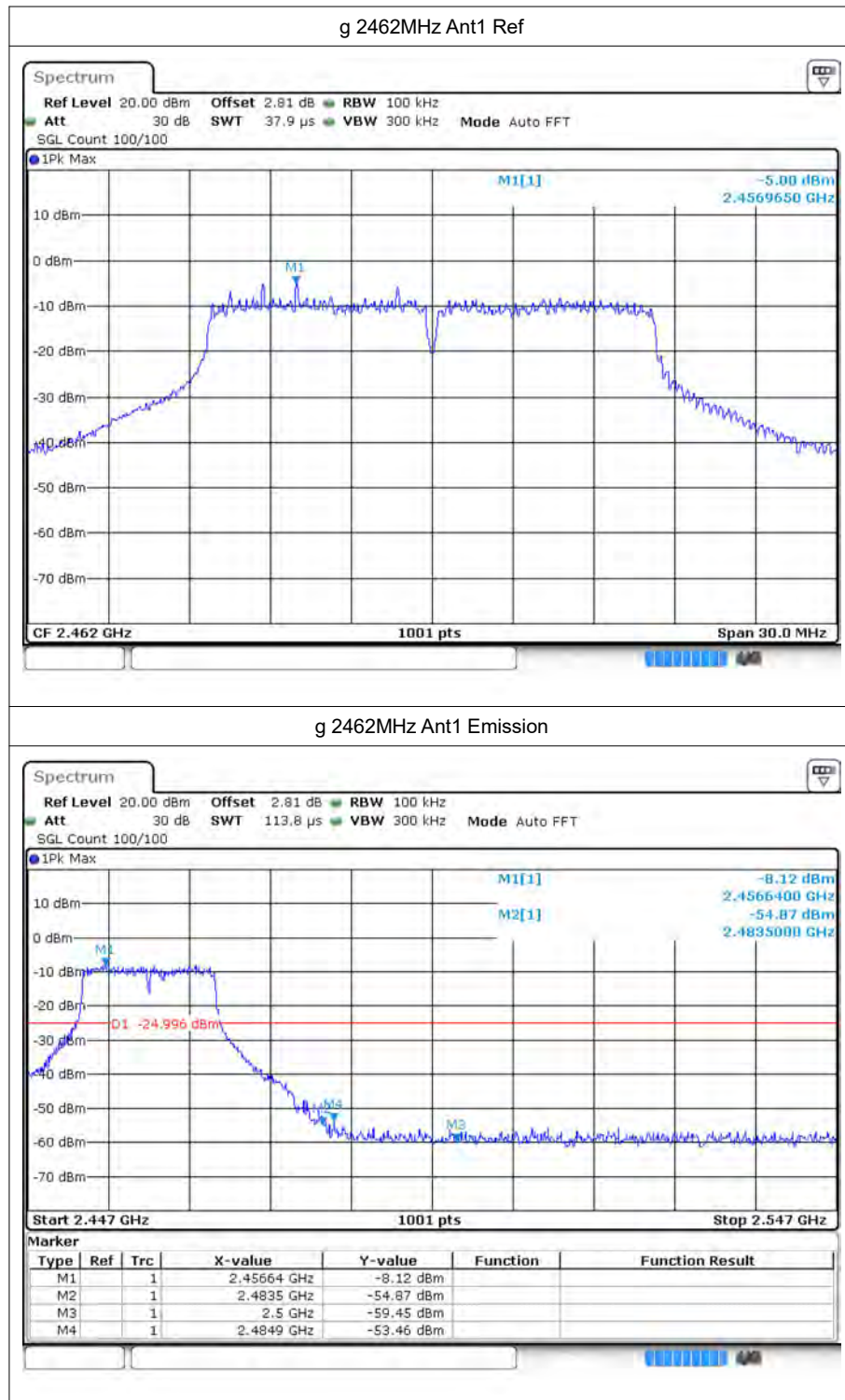
Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
b	2412	Ant1	-53.77	-20	#BE_NVNT_ b_2412_Ant1 _Value#
b	2462	Ant1	-54.9	-20	Pass
g	2412	Ant1	-47.33	-20	Pass
g	2462	Ant1	-48.46	-20	Pass
n20	2412	Ant1	-46.85	-20	Pass
n20	2462	Ant1	-42.52	-20	Pass
n40	2422	Ant1	-43.46	-20	Pass
n40	2452	Ant1	-40.39	-20	Pass
ax20	2412	Ant1	-43.31	-20	Pass
ax20	2462	Ant1	-47.71	-20	Pass
ax40	2422	Ant1	-39.73	-20	Pass
ax40	2452	Ant1	-40.76	-20	Pass

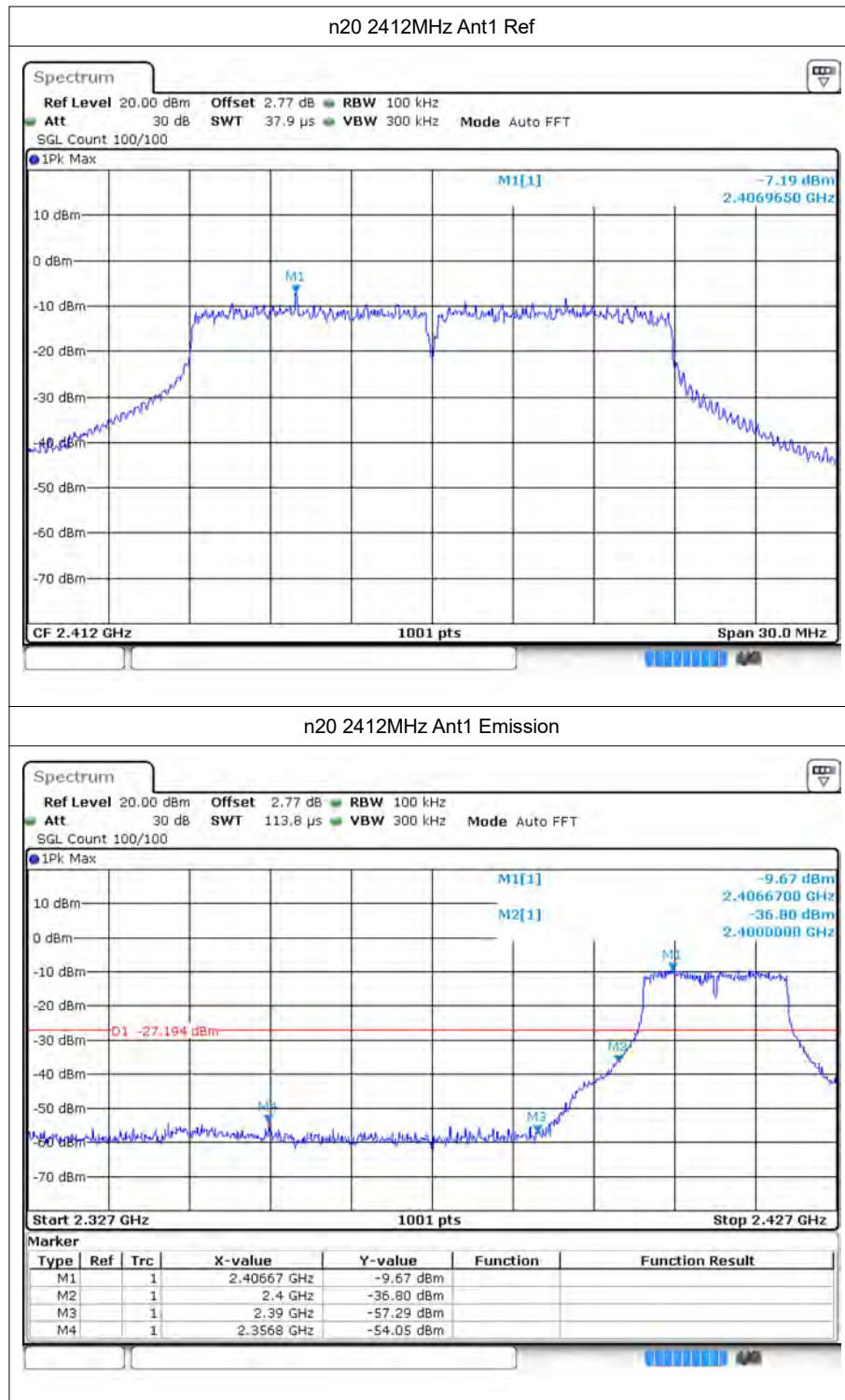
5.2 Test Graphs

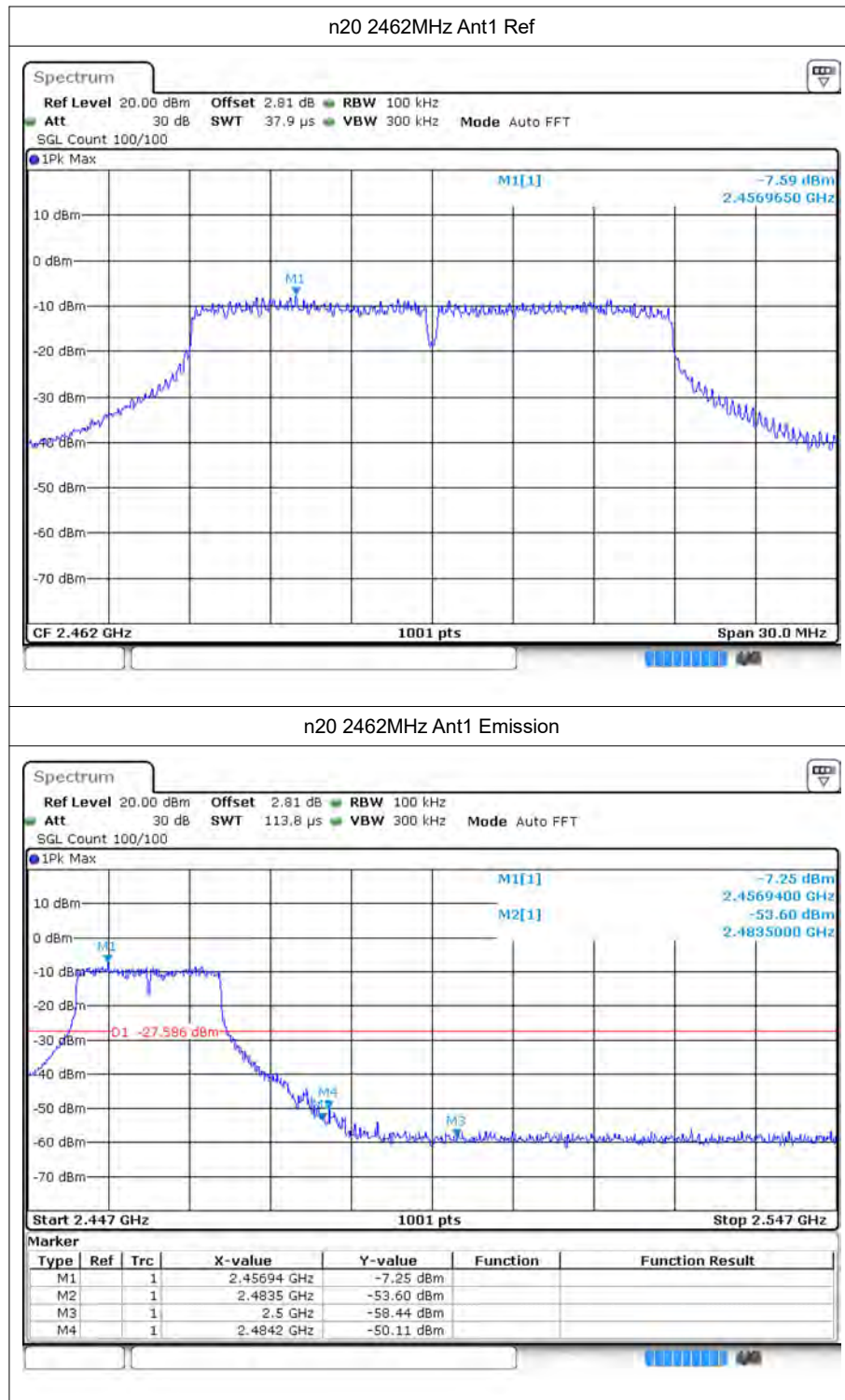


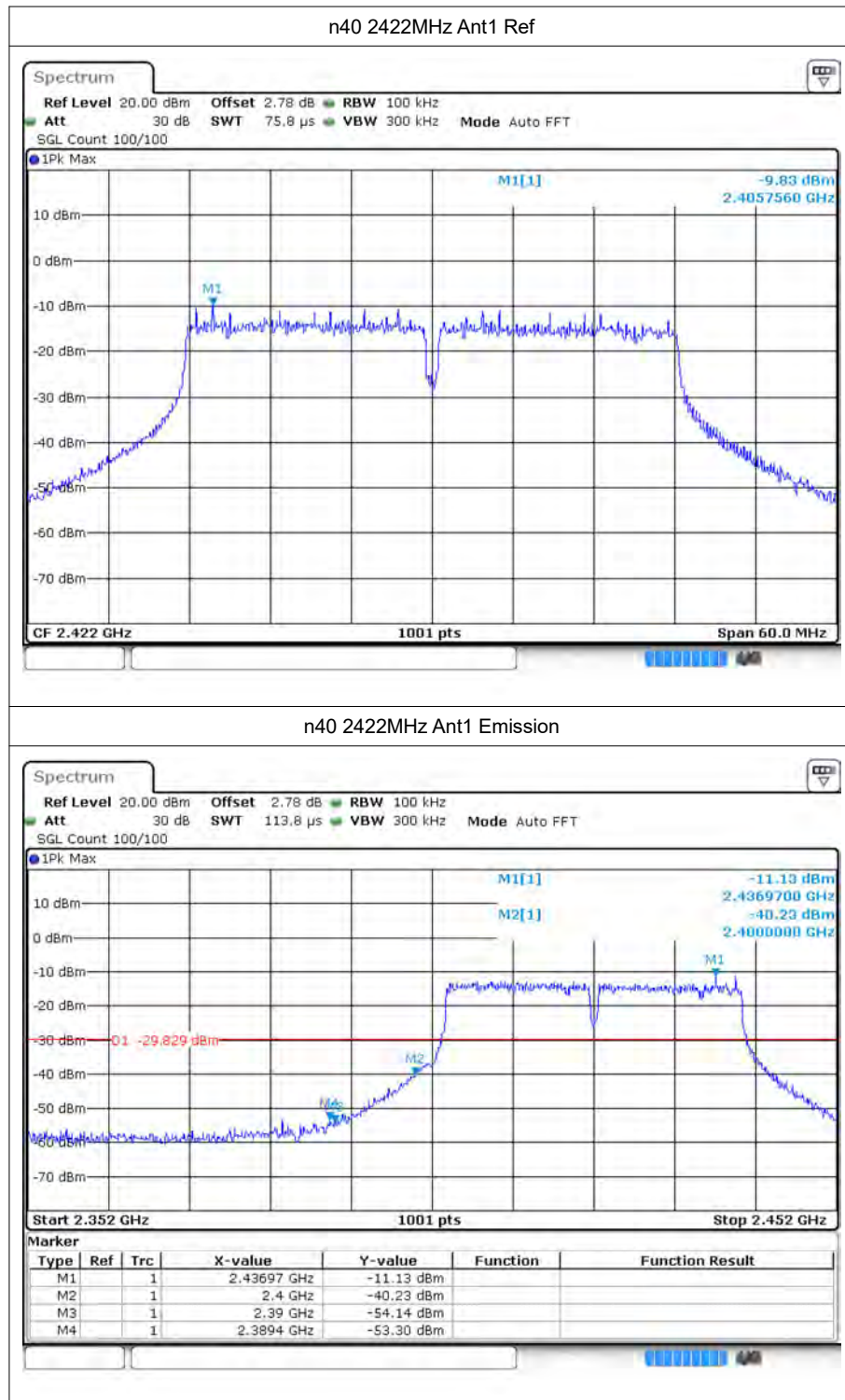


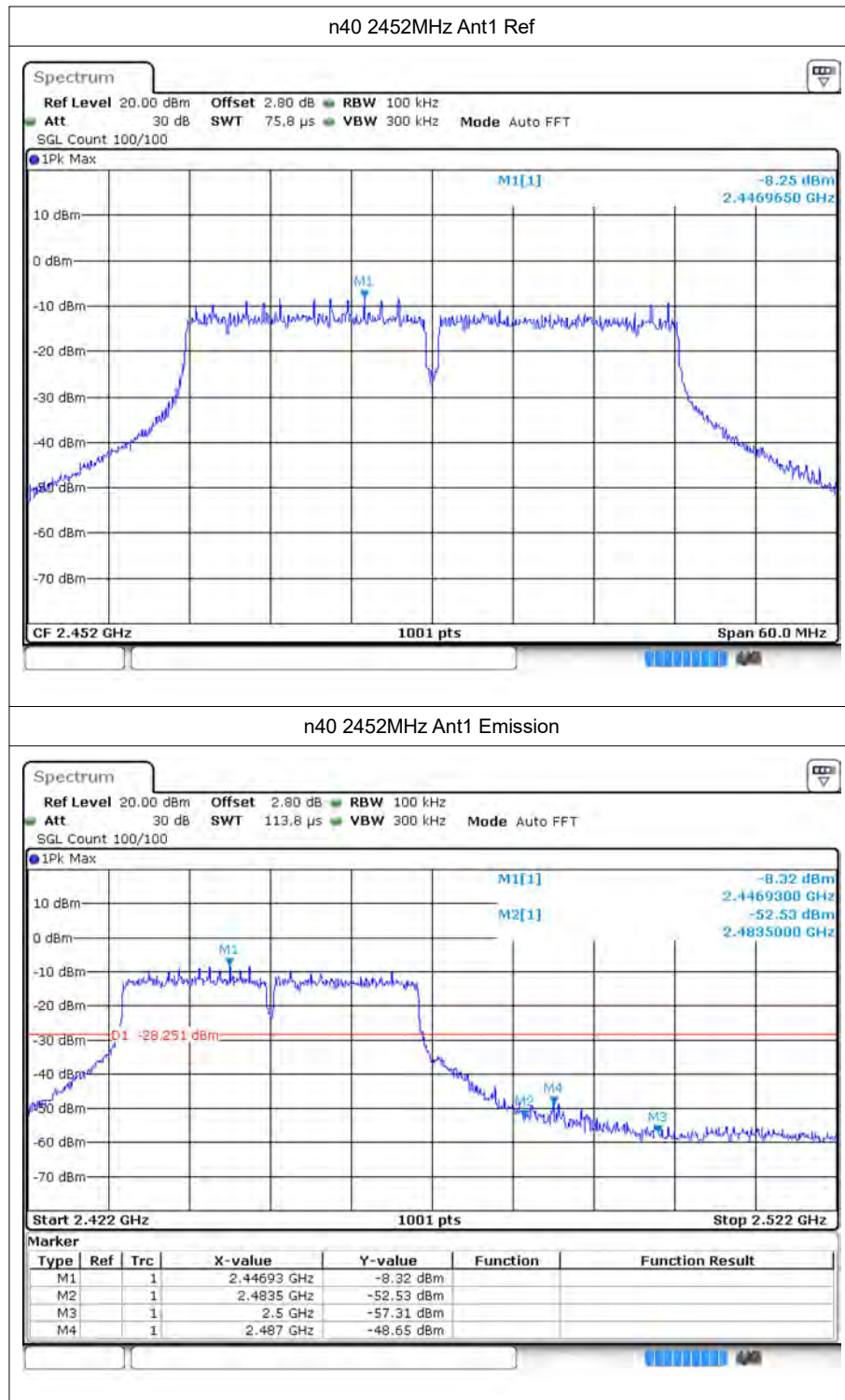


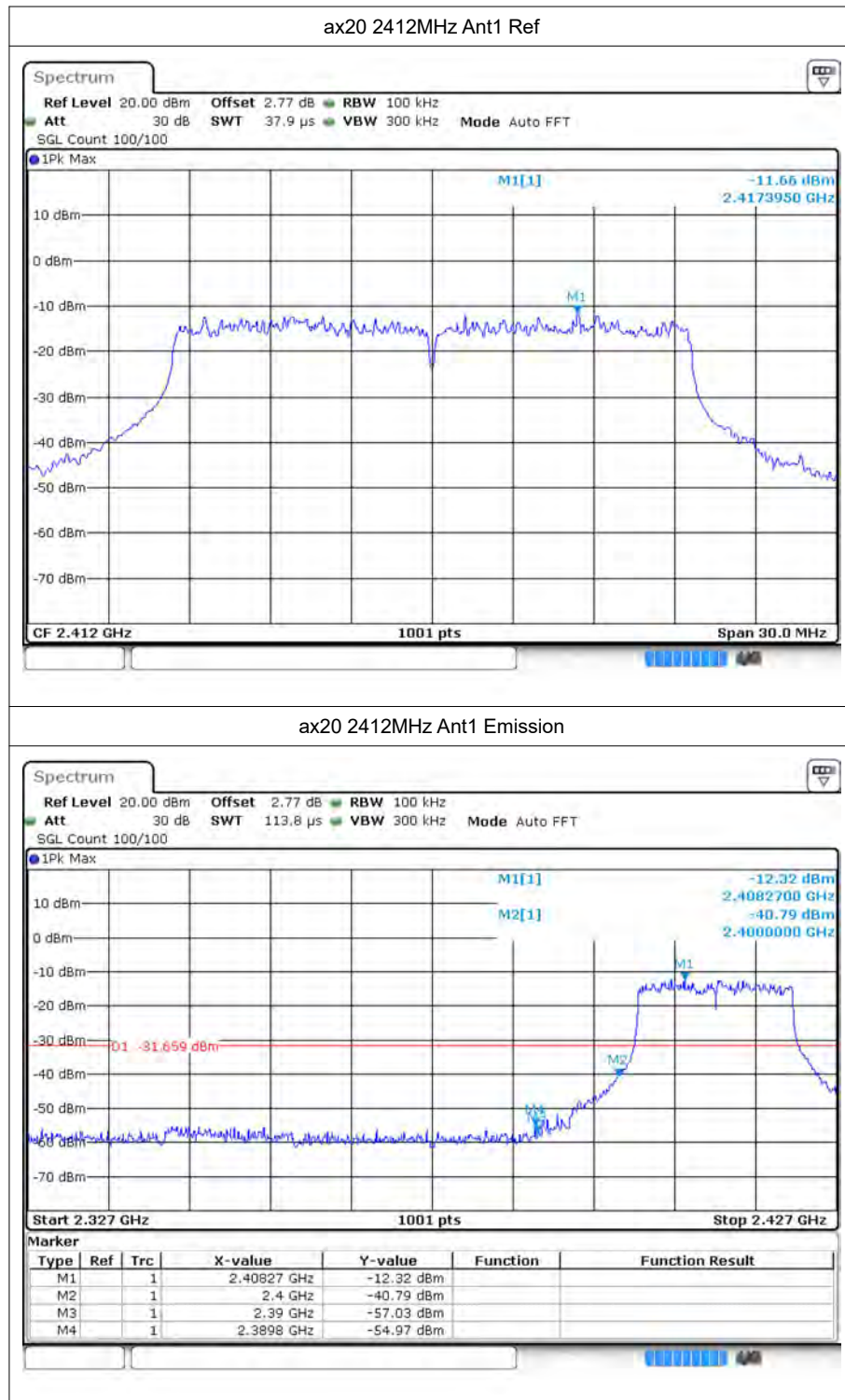


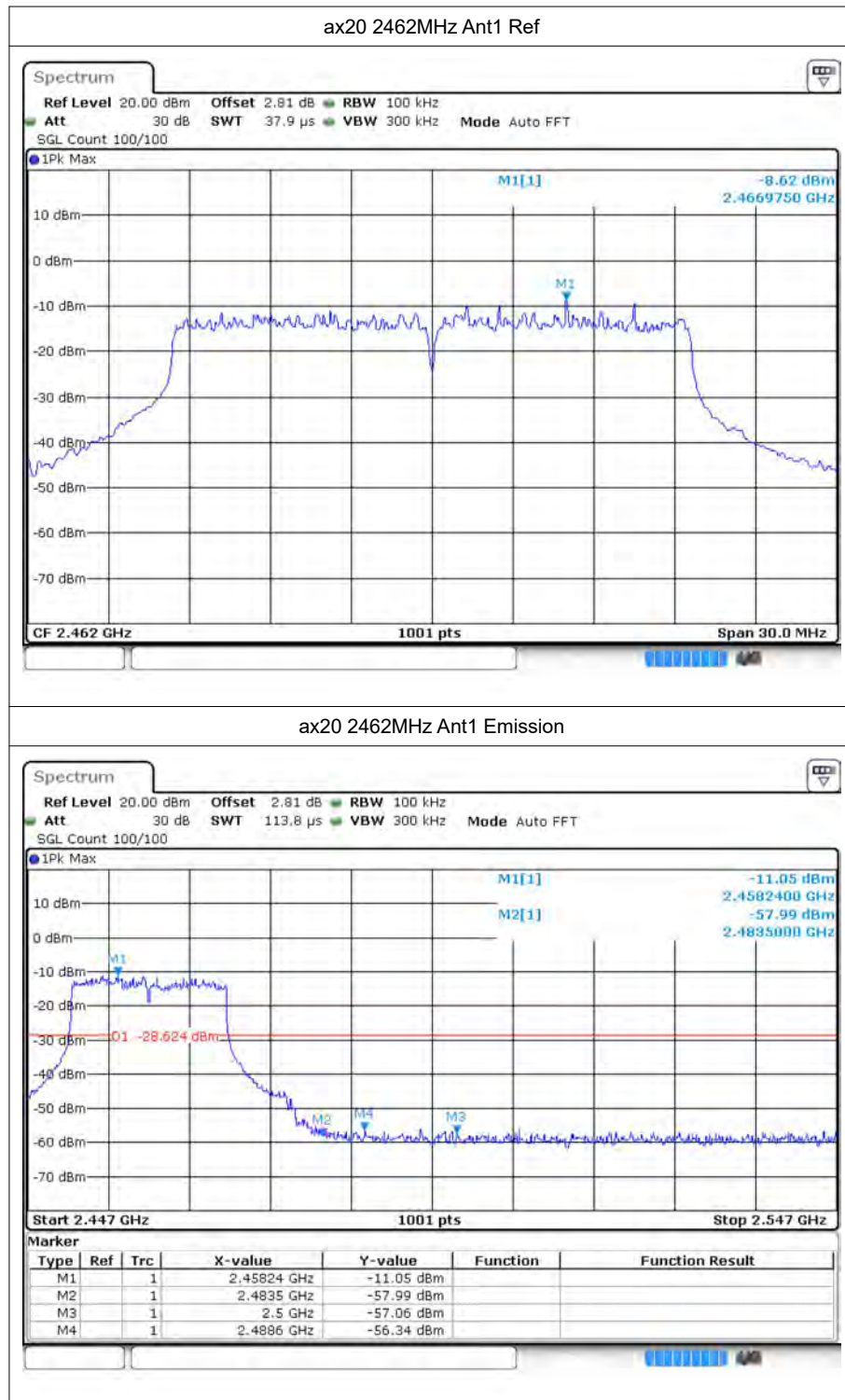


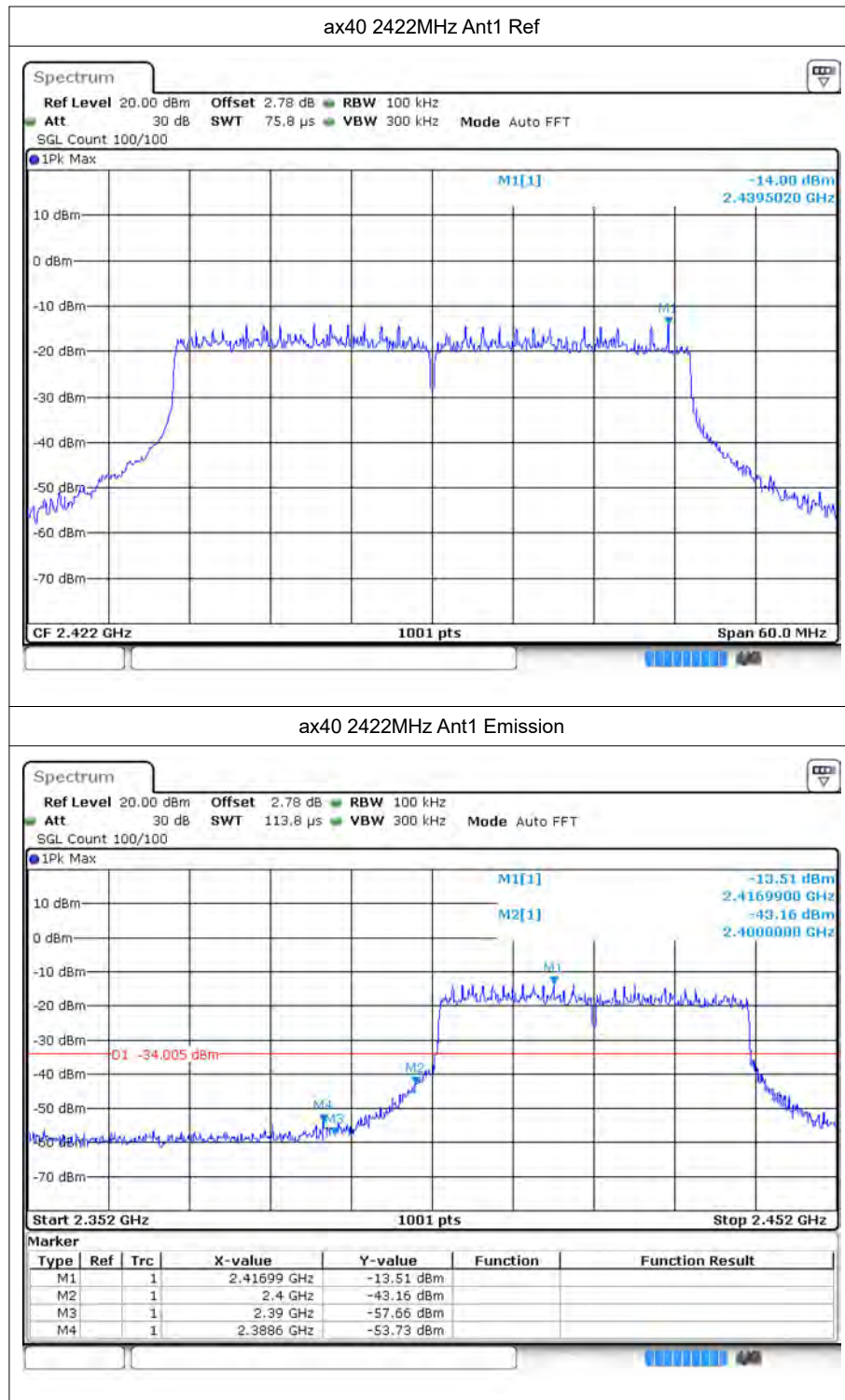


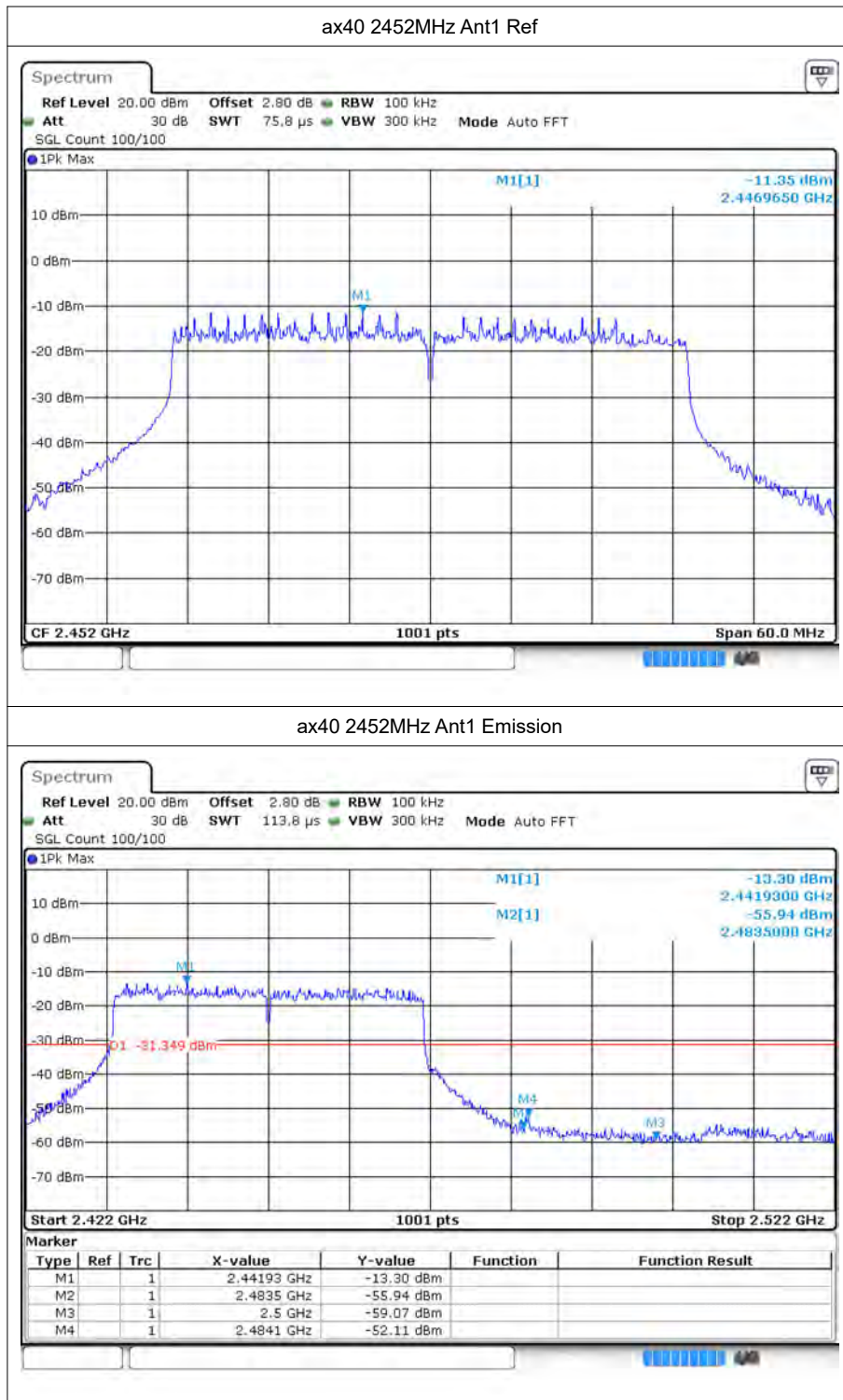












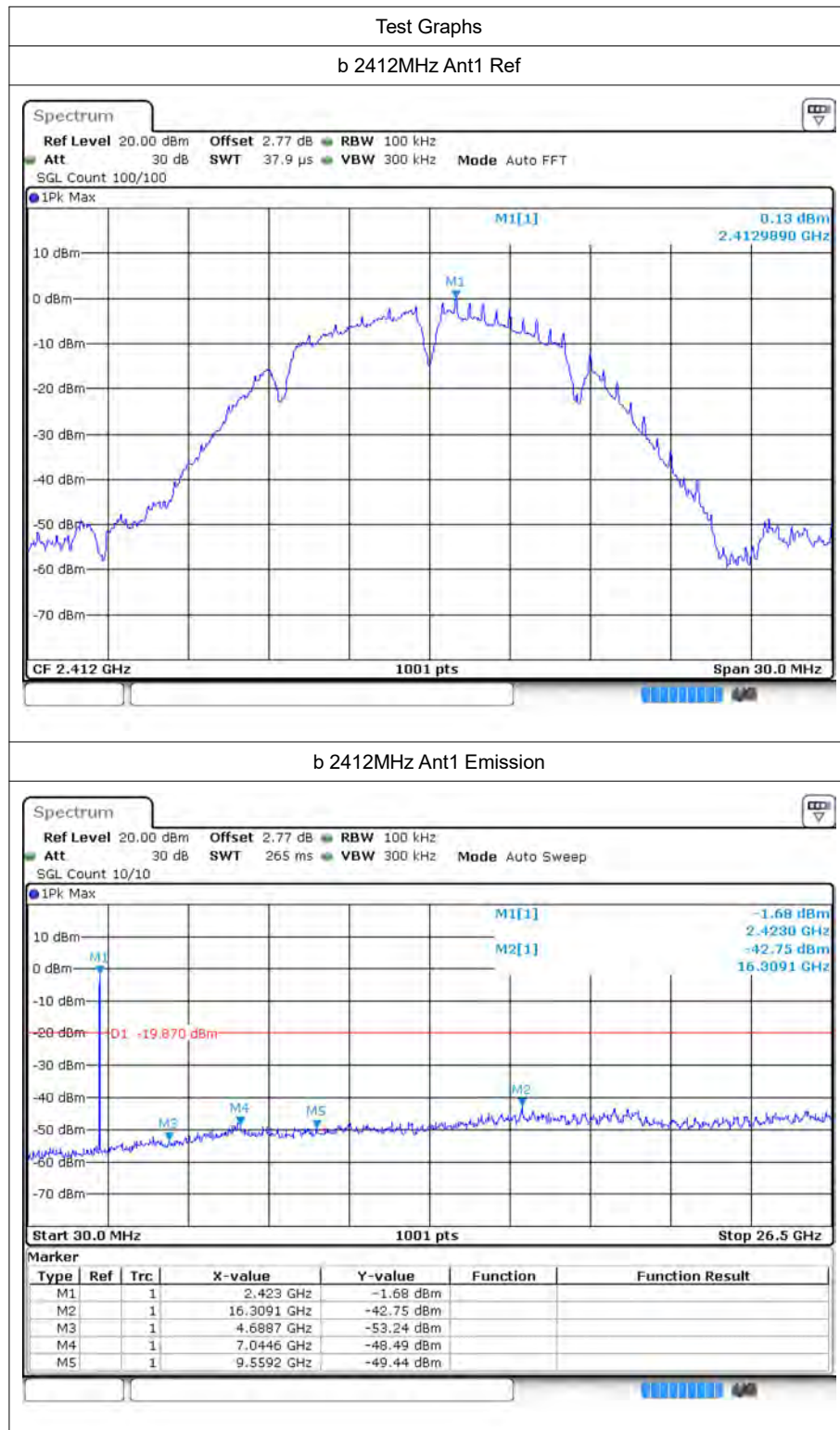


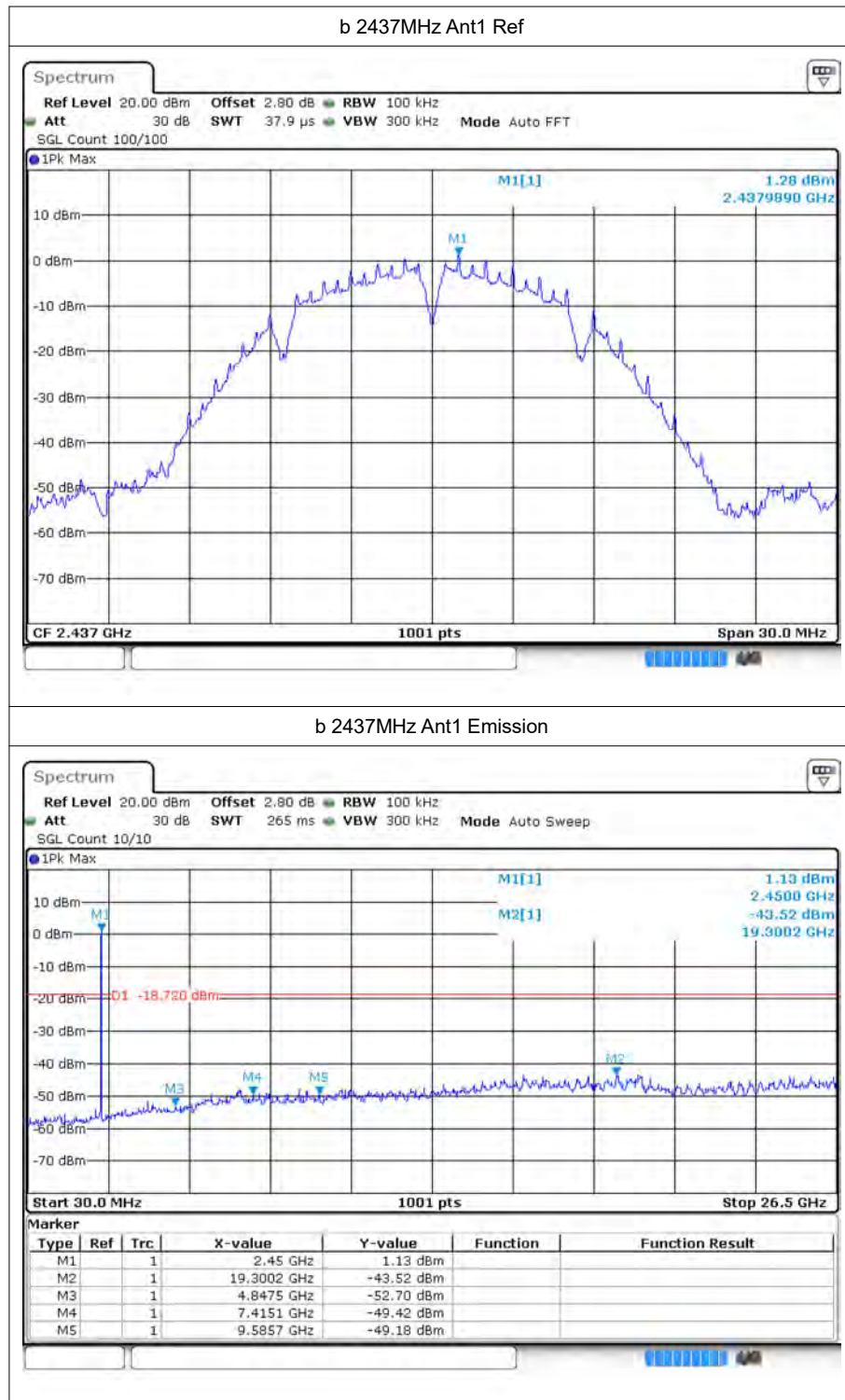
6 Conducted RF Spurious Emission

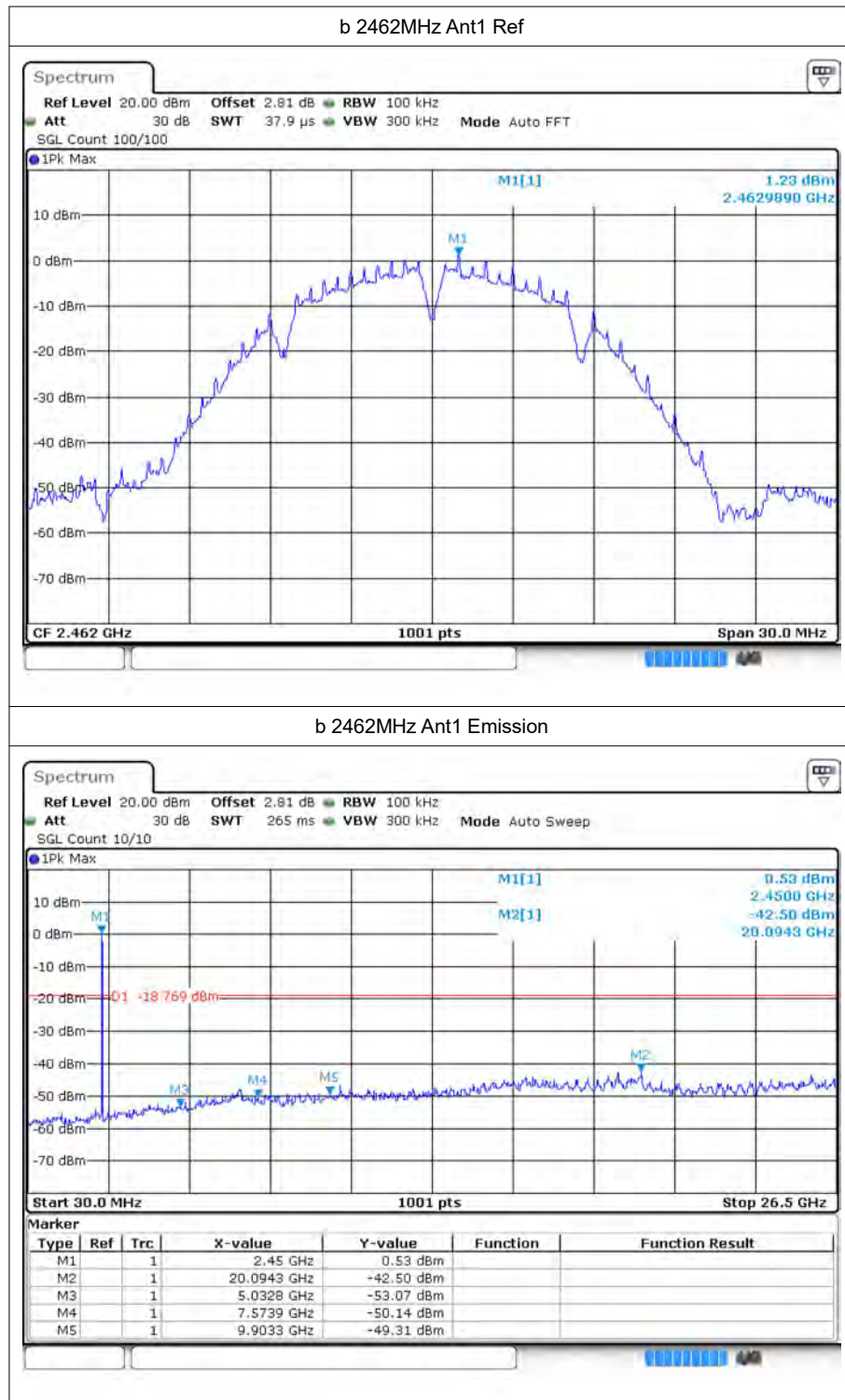
6.1 Test Result

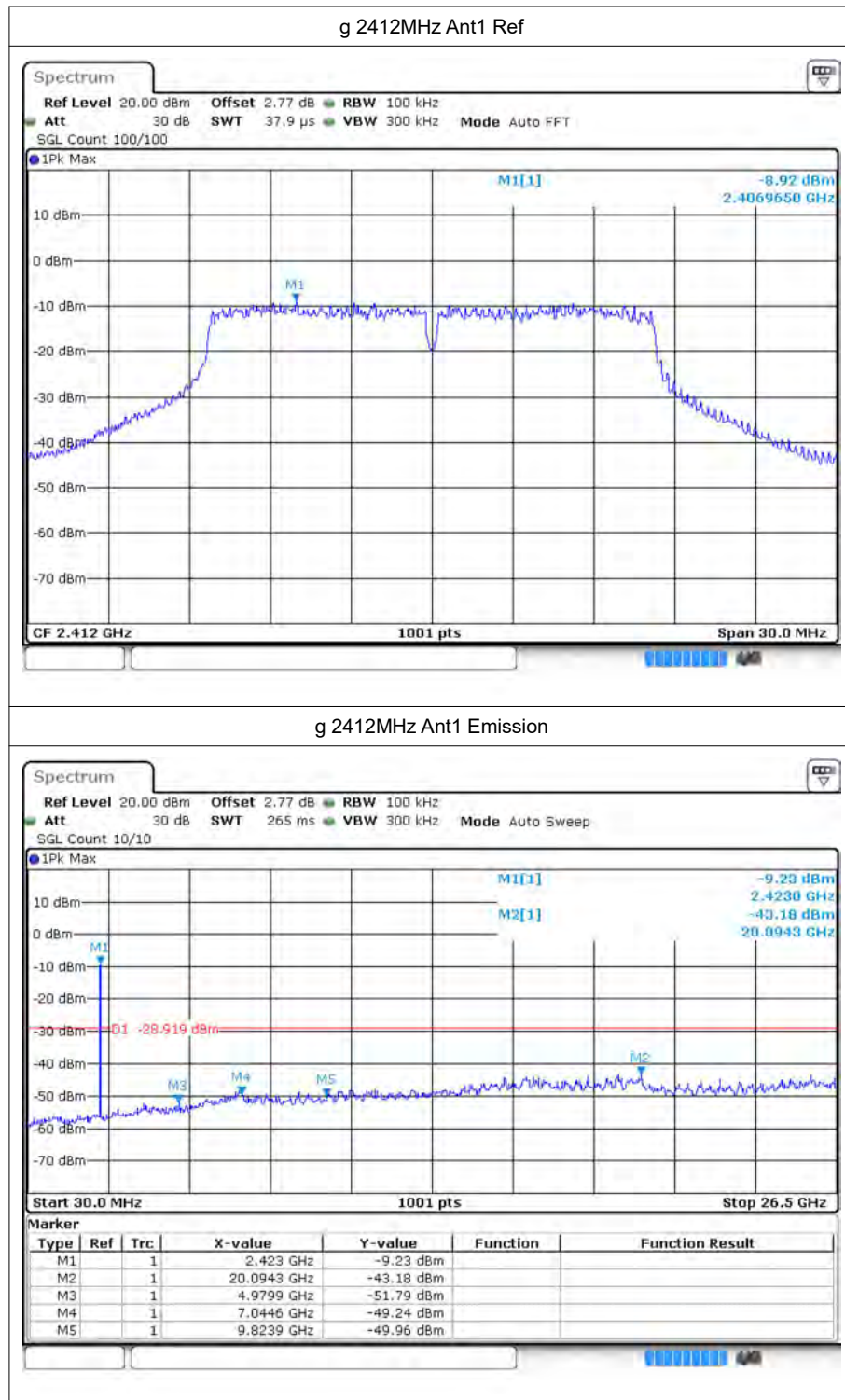
Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
b	2412	Ant1	-42.87	-20	Pass
b	2437	Ant1	-44.79	-20	Pass
b	2462	Ant1	-43.72	-20	Pass
g	2412	Ant1	-34.25	-20	Pass
g	2437	Ant1	-37.92	-20	Pass
g	2462	Ant1	-36.69	-20	Pass
n20	2412	Ant1	-36.96	-20	Pass
n20	2437	Ant1	-34.42	-20	Pass
n20	2462	Ant1	-36.02	-20	Pass
n40	2422	Ant1	-30.88	-20	Pass
n40	2437	Ant1	-33.57	-20	Pass
n40	2452	Ant1	-34.66	-20	Pass
ax20	2412	Ant1	-32	-20	Pass
ax20	2437	Ant1	-34.41	-20	Pass
ax20	2462	Ant1	-35.49	-20	Pass
ax40	2422	Ant1	-29.35	-20	Pass
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ax40	2452	Ant1	-30.05	-20	Pass

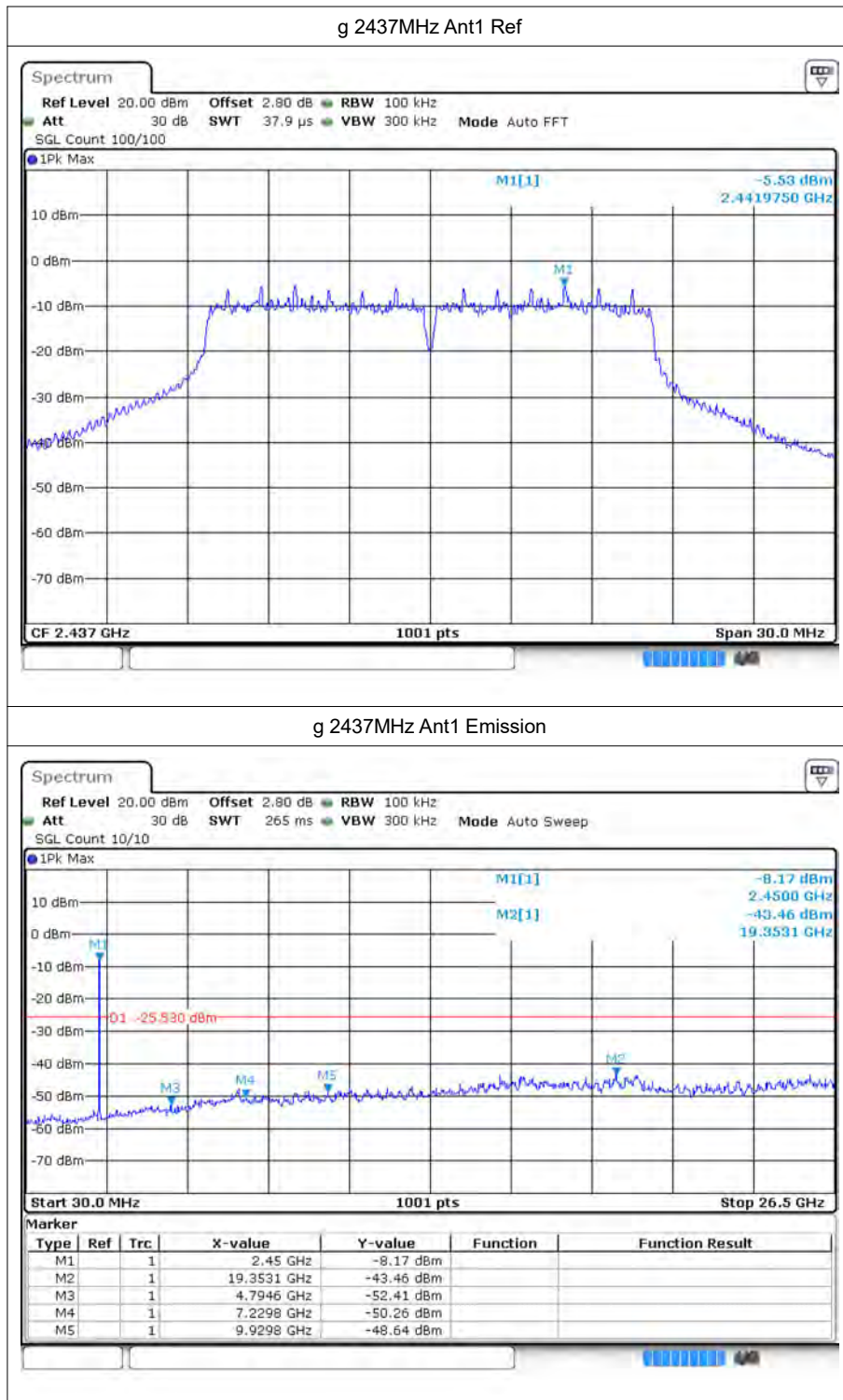
6.2 Test Graphs

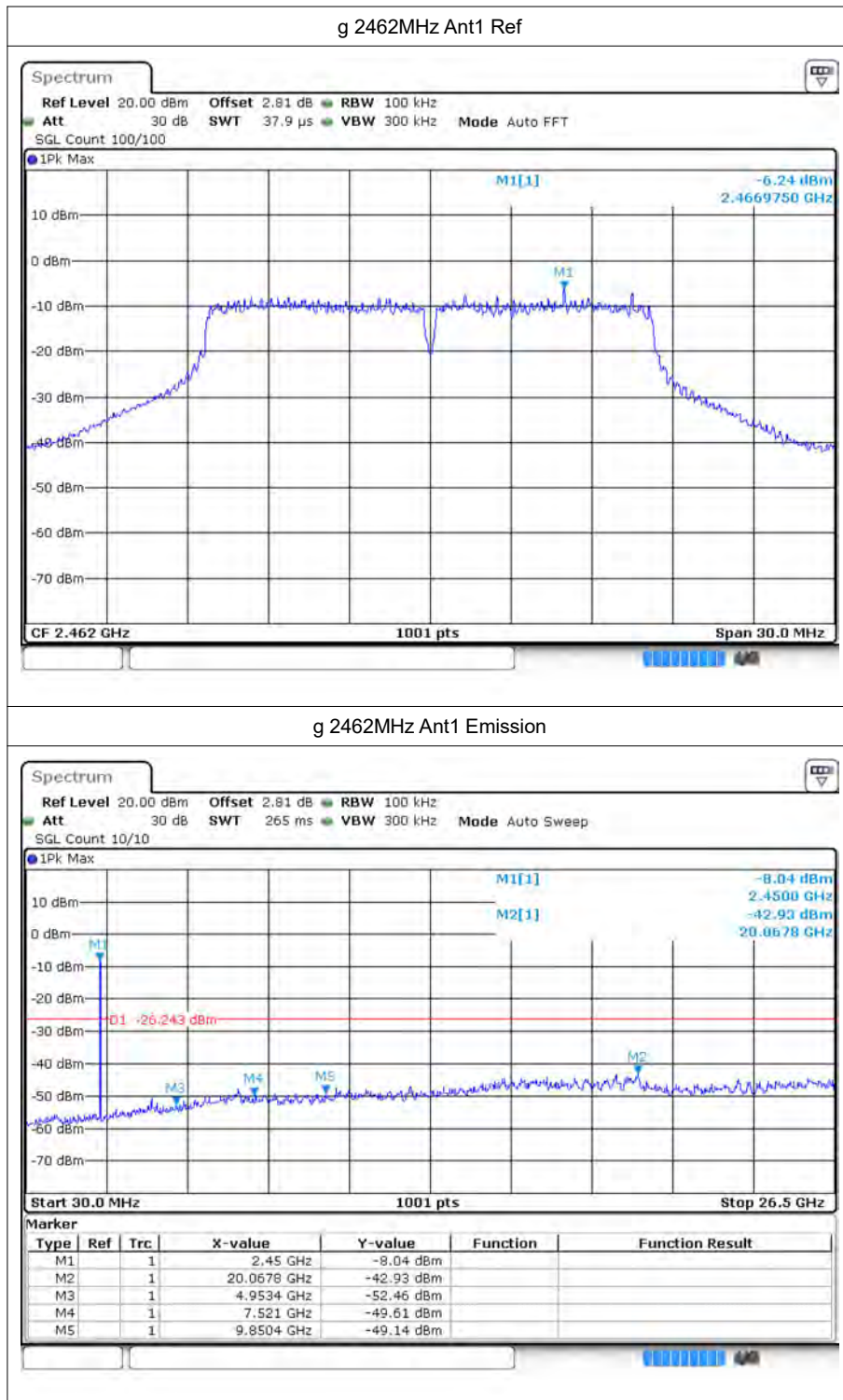


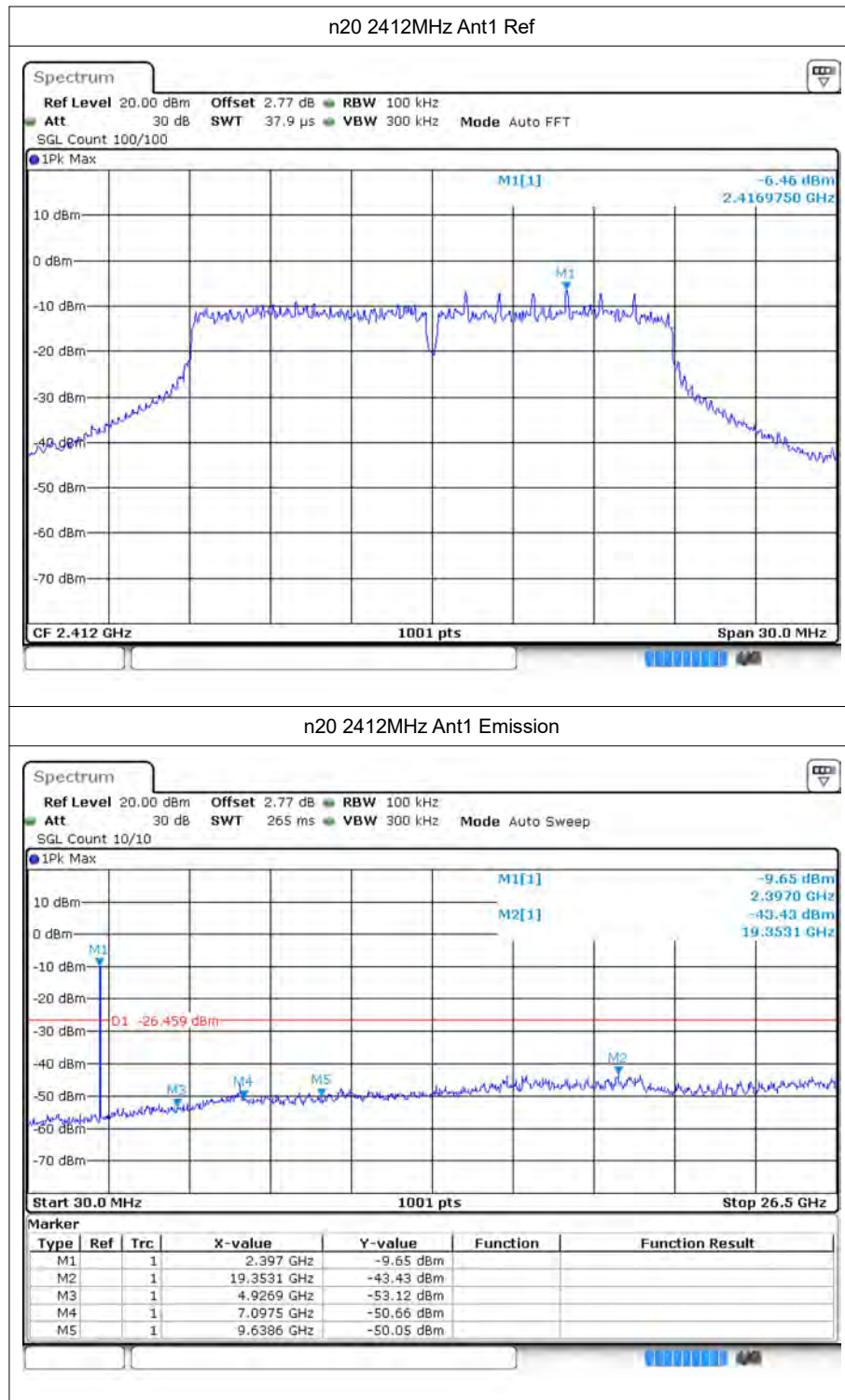


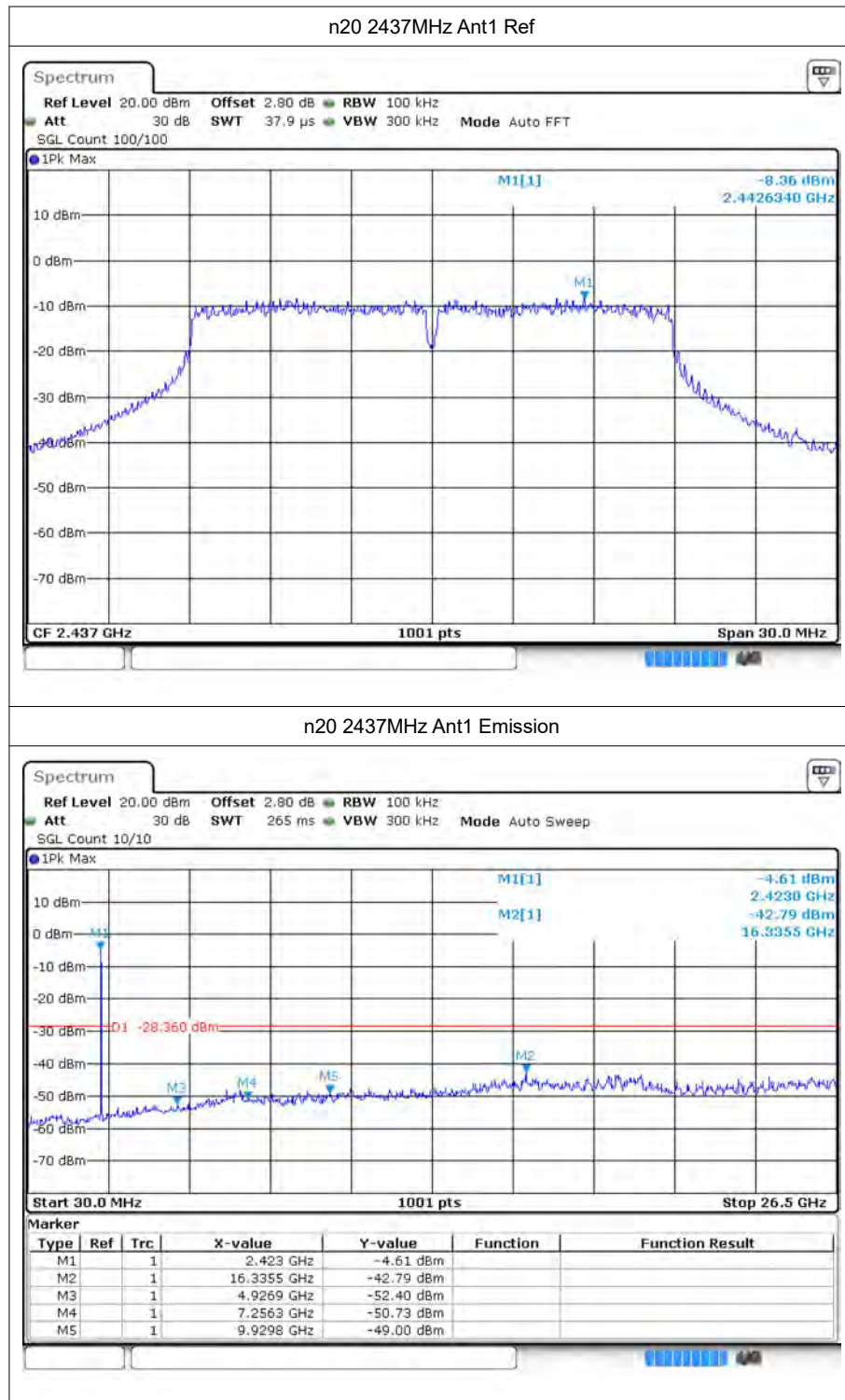


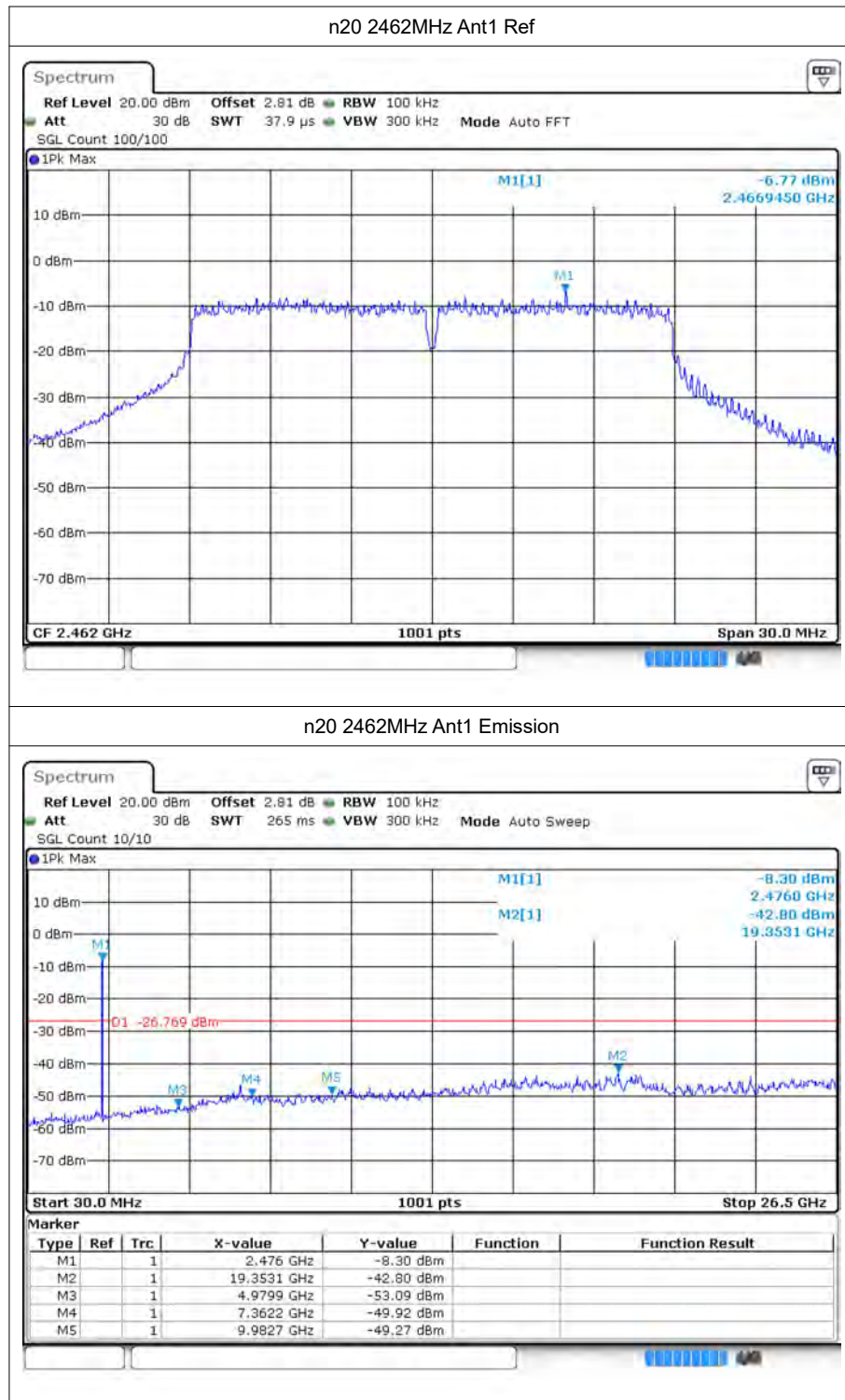


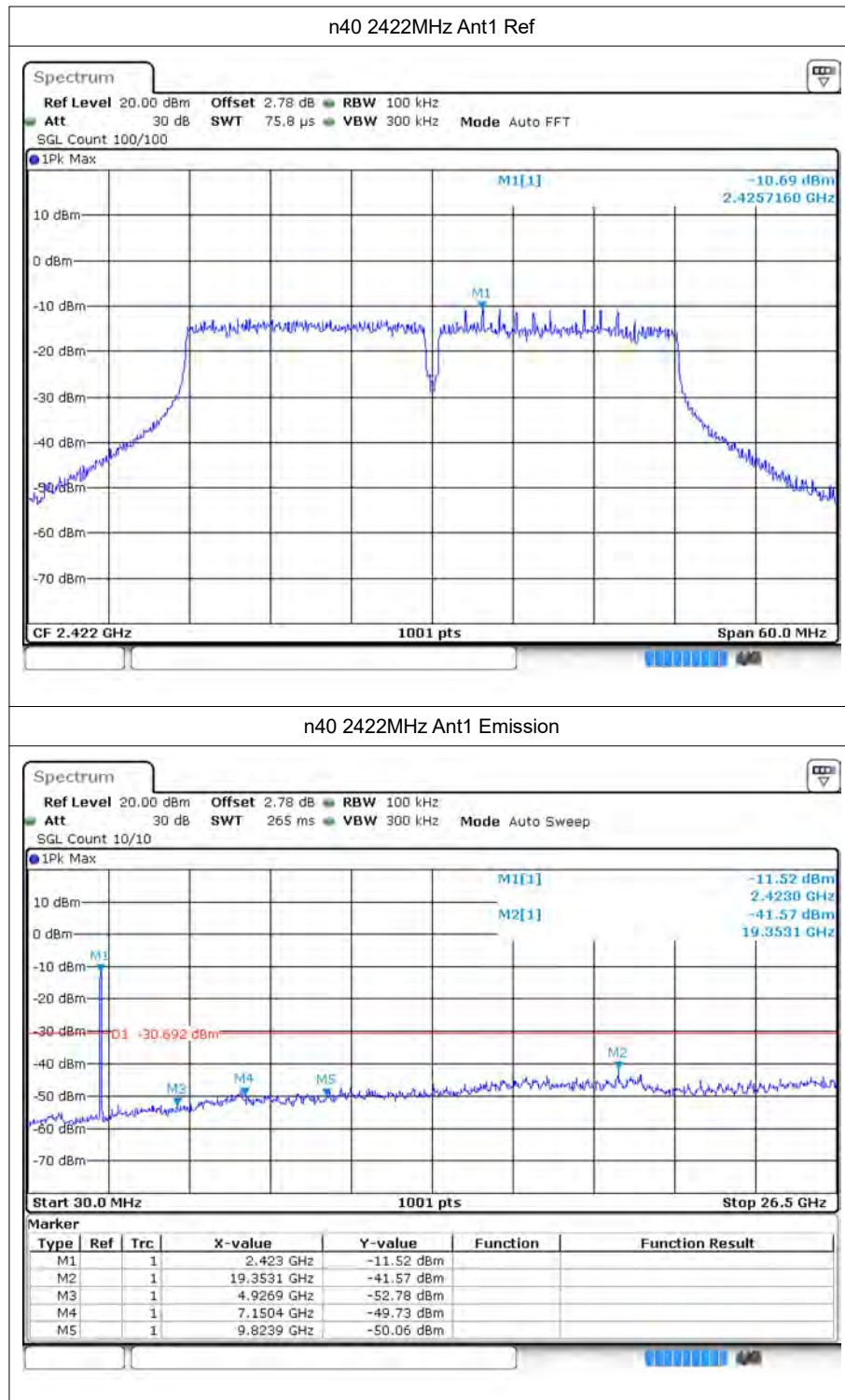


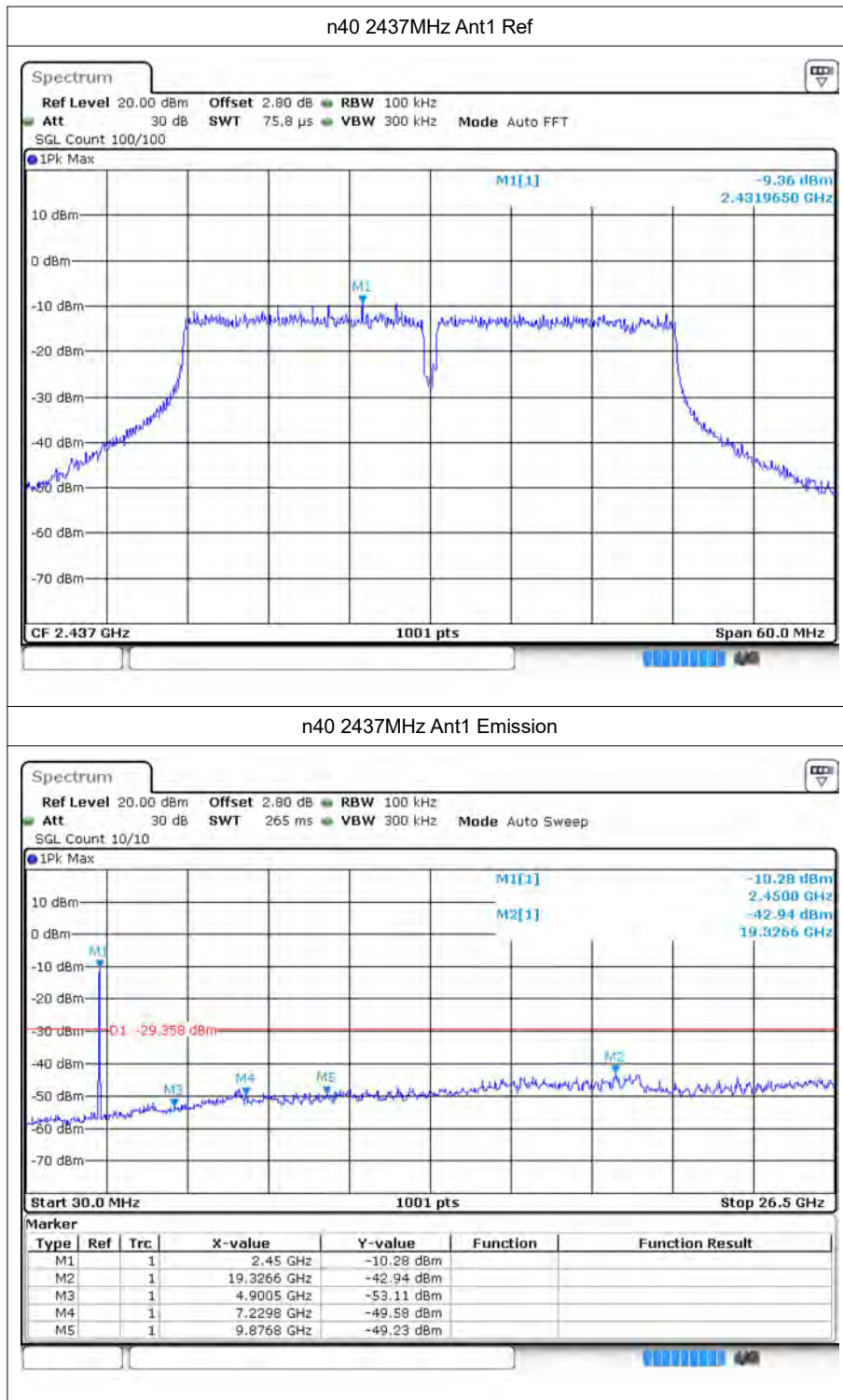


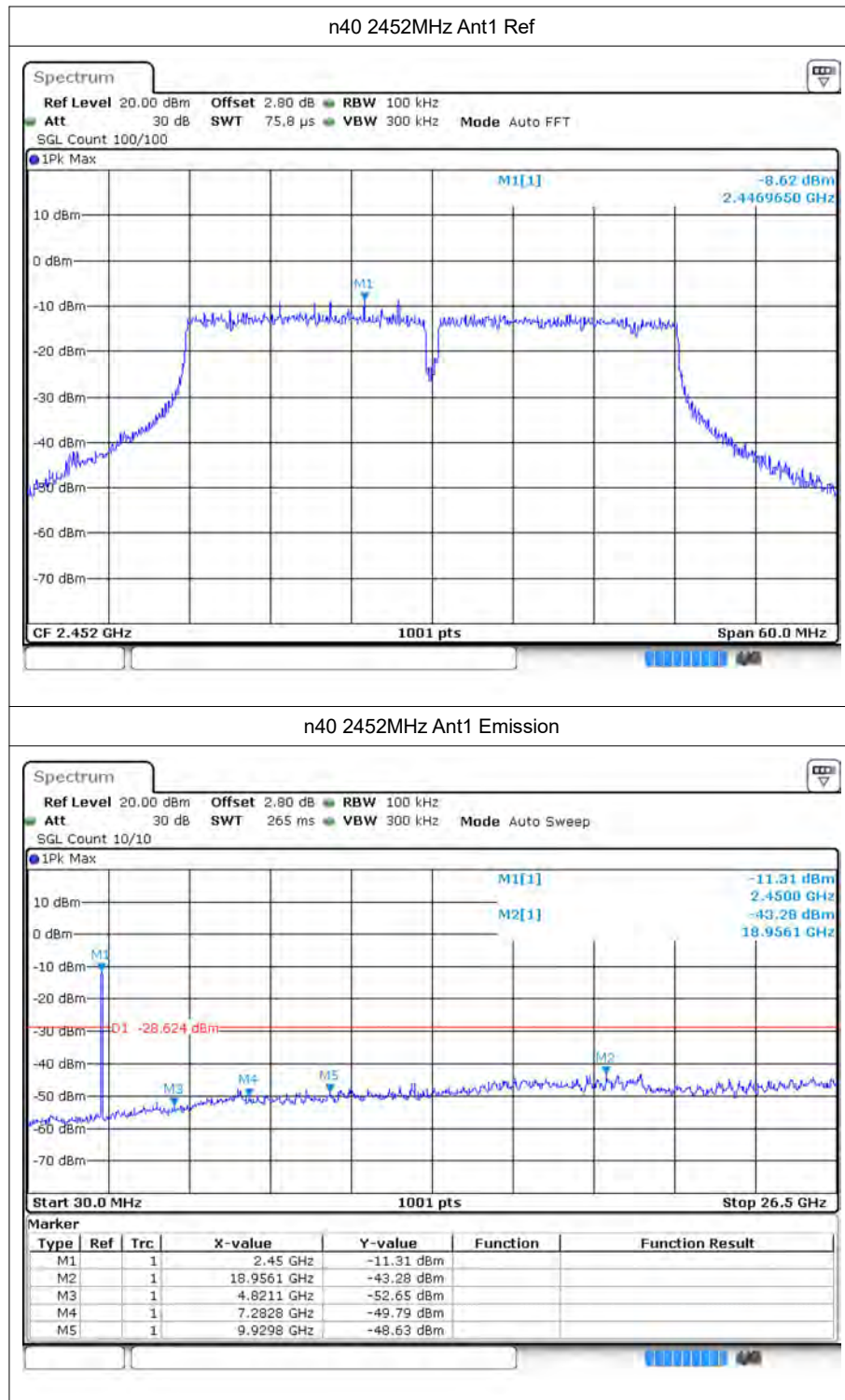


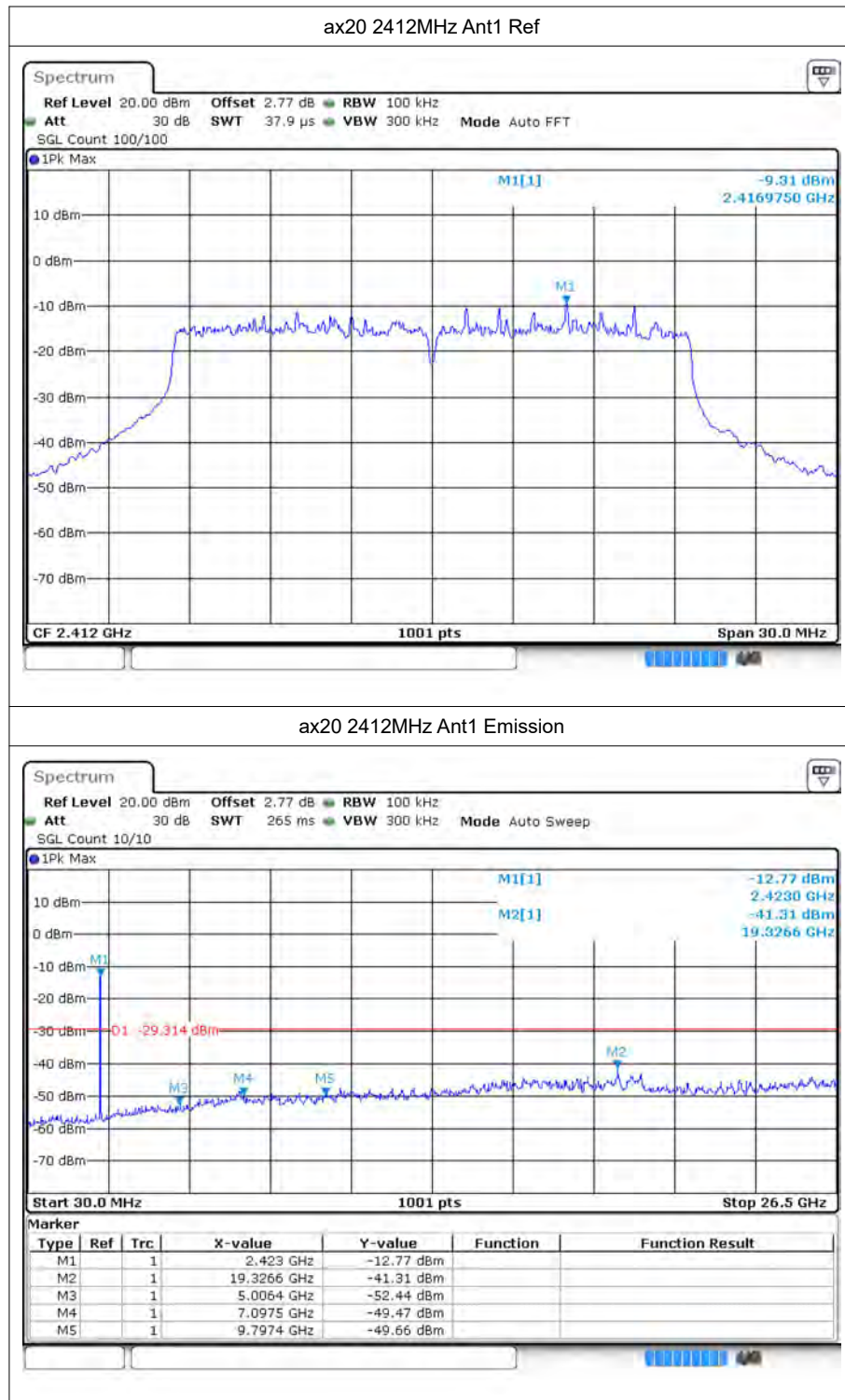


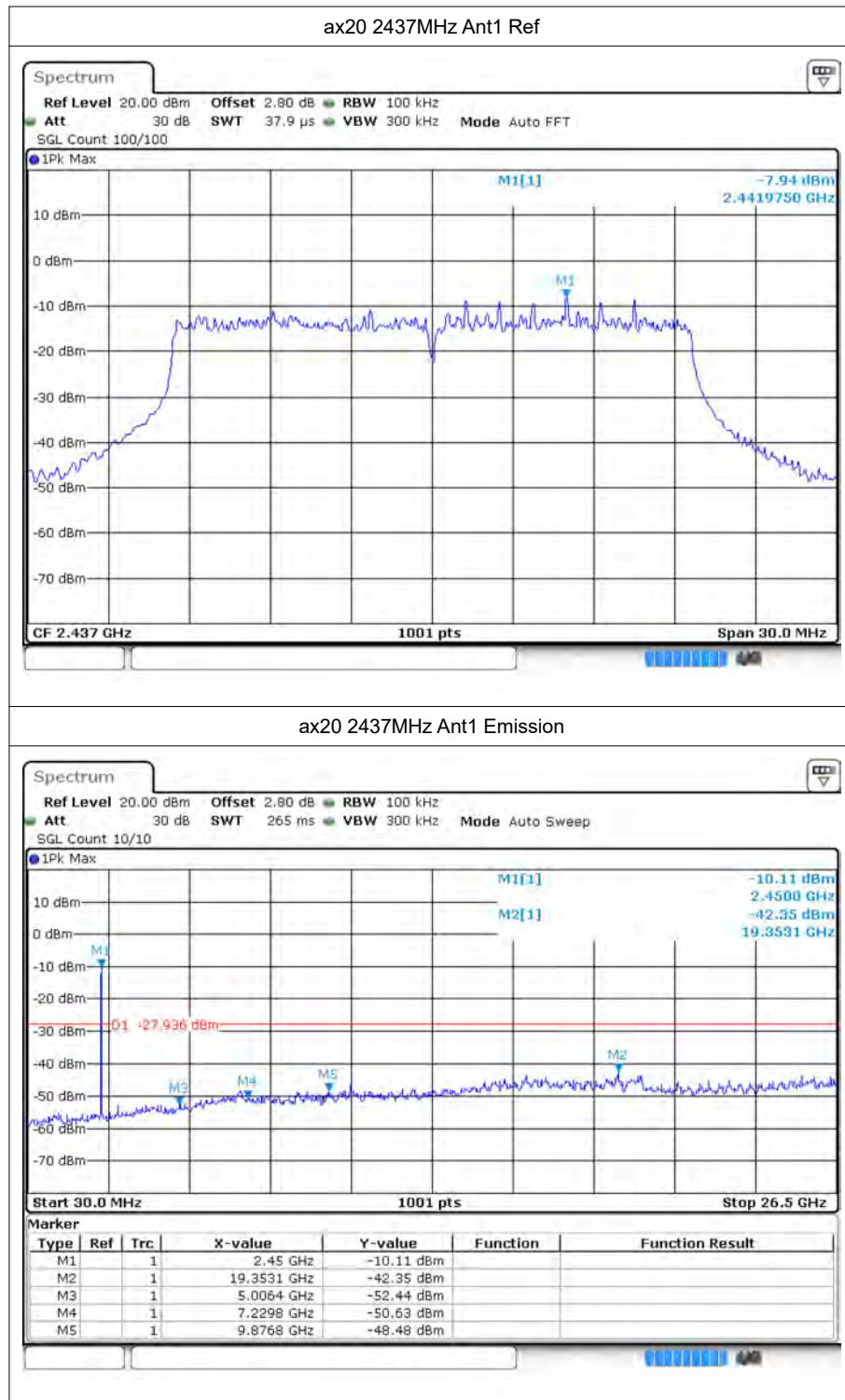


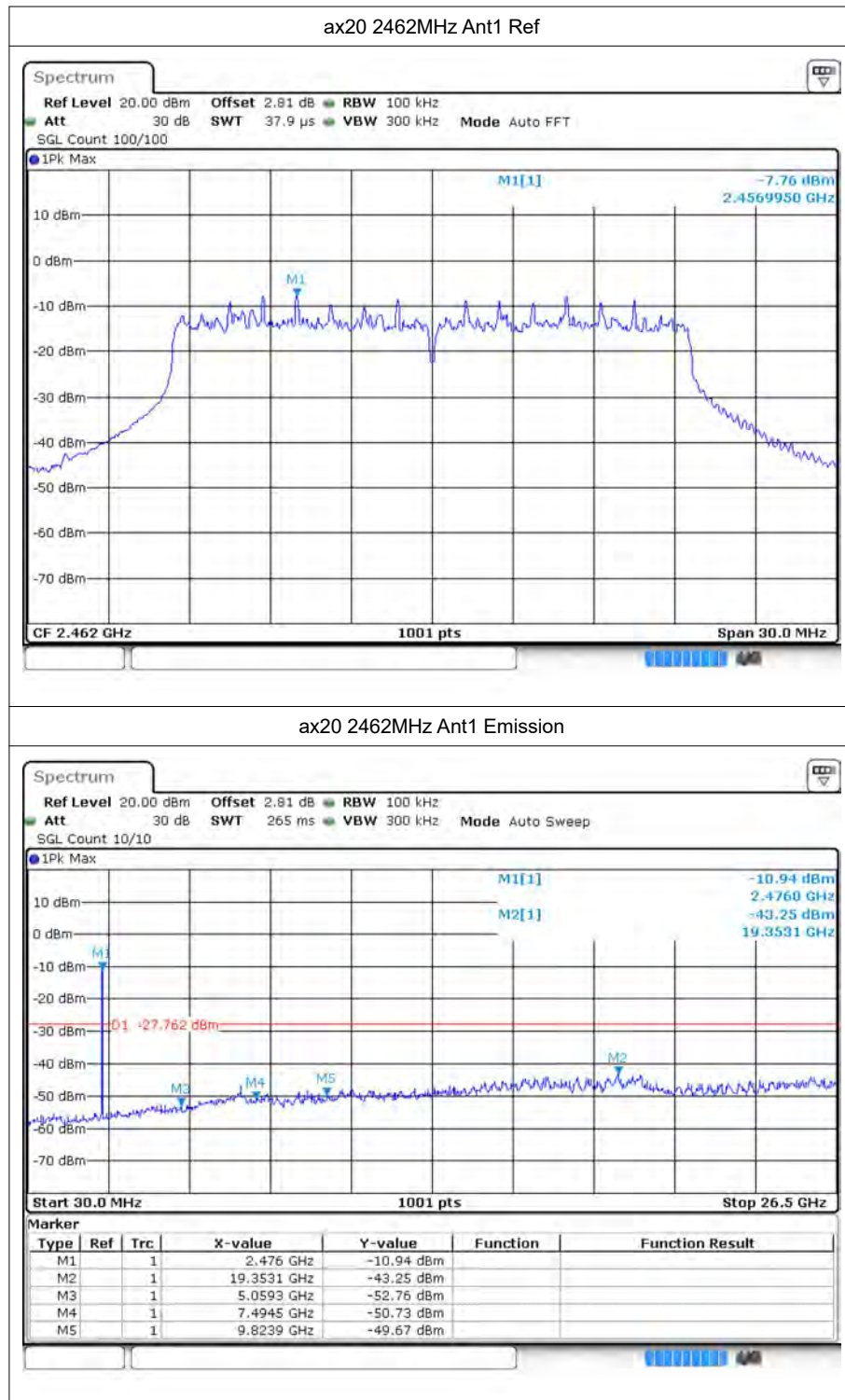


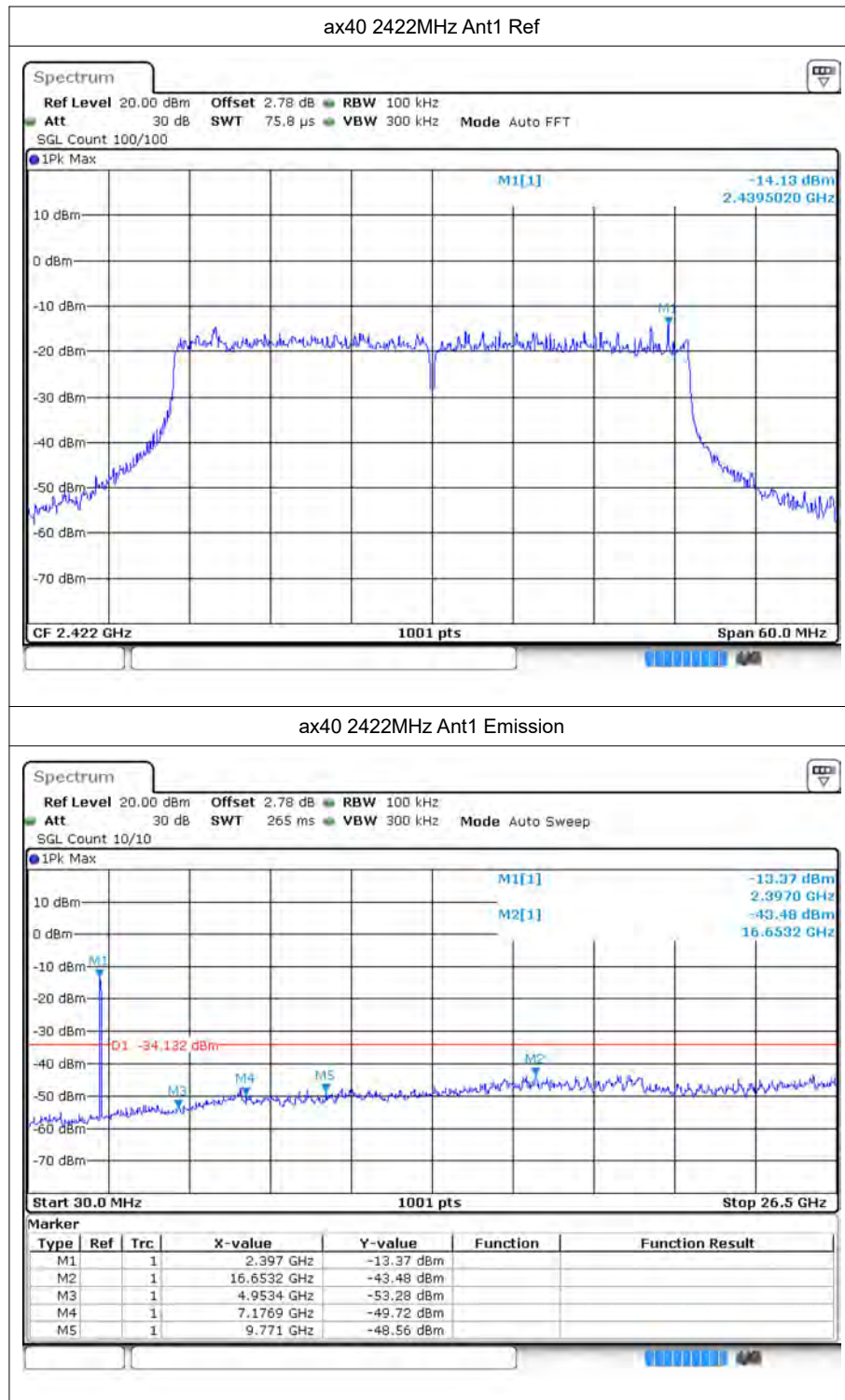


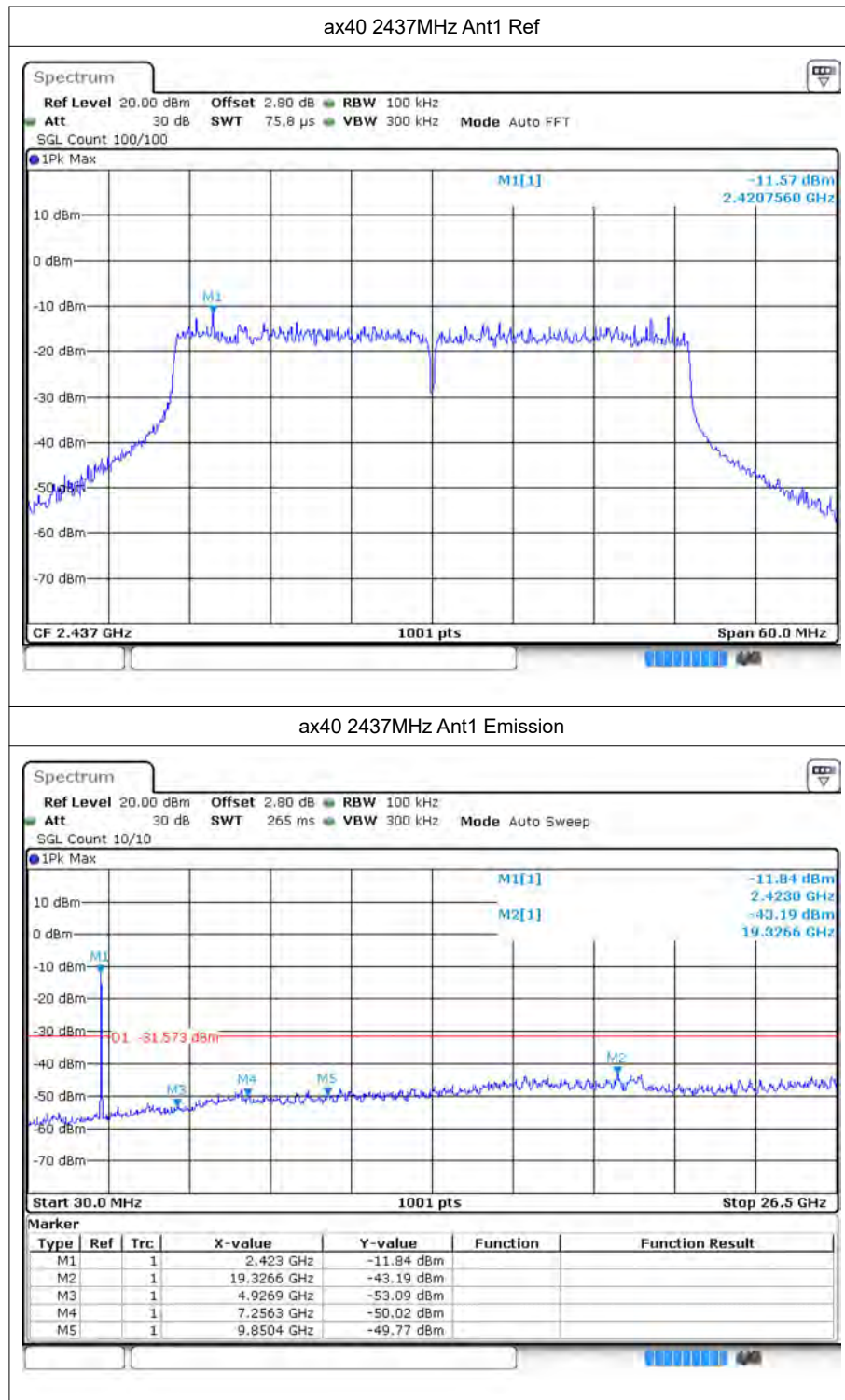


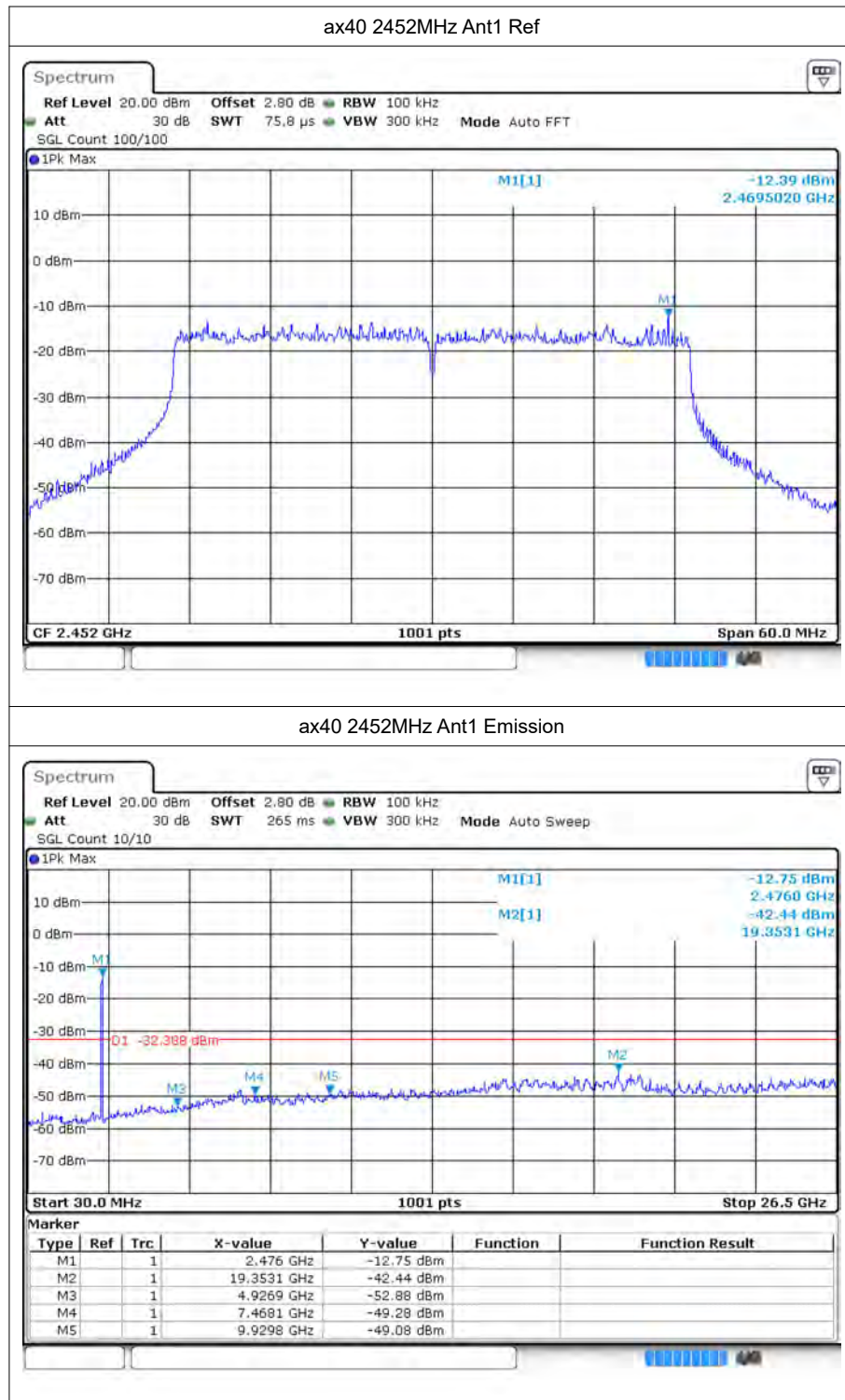














7 Restrict Band

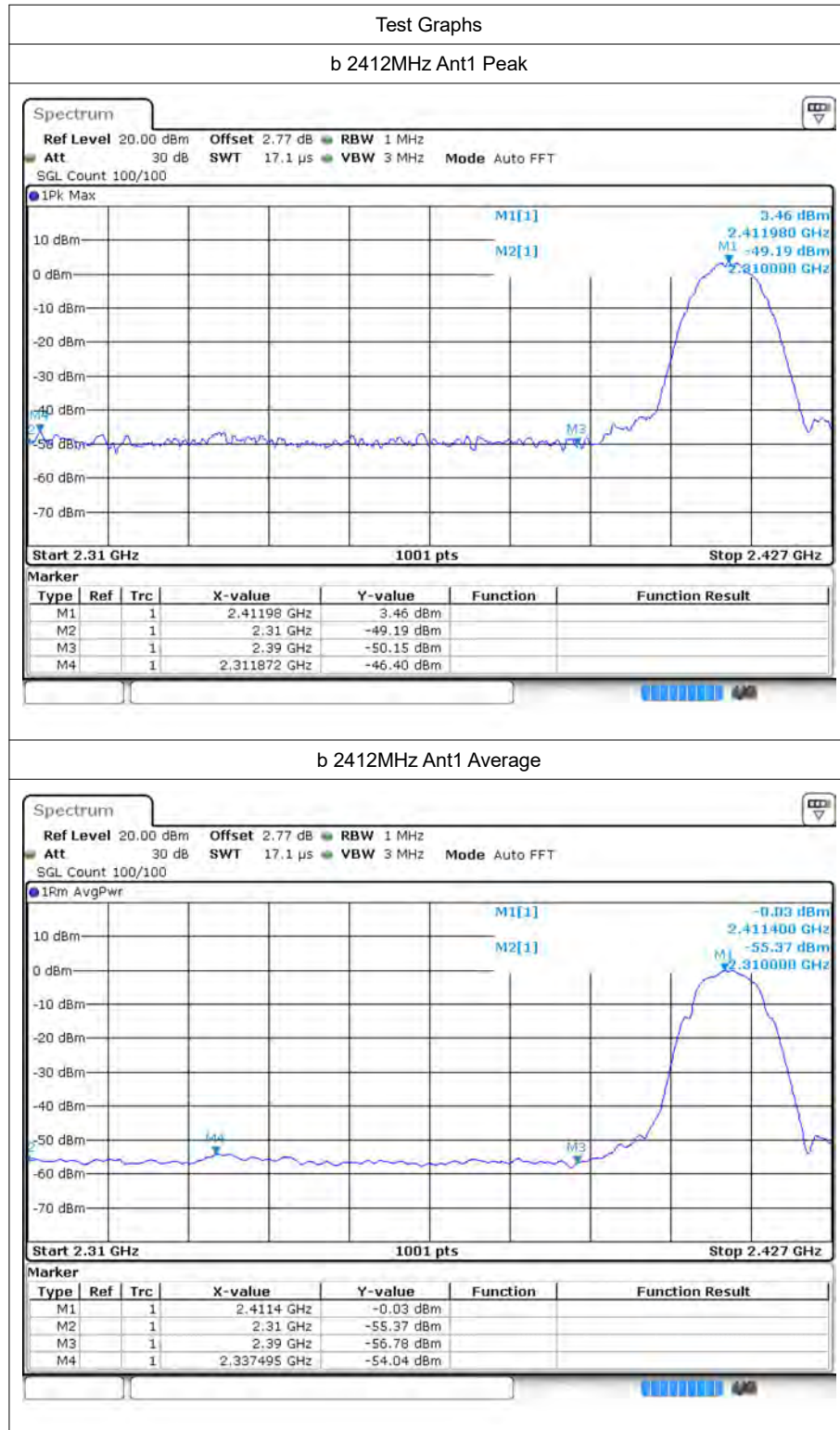
7.1 Test Result

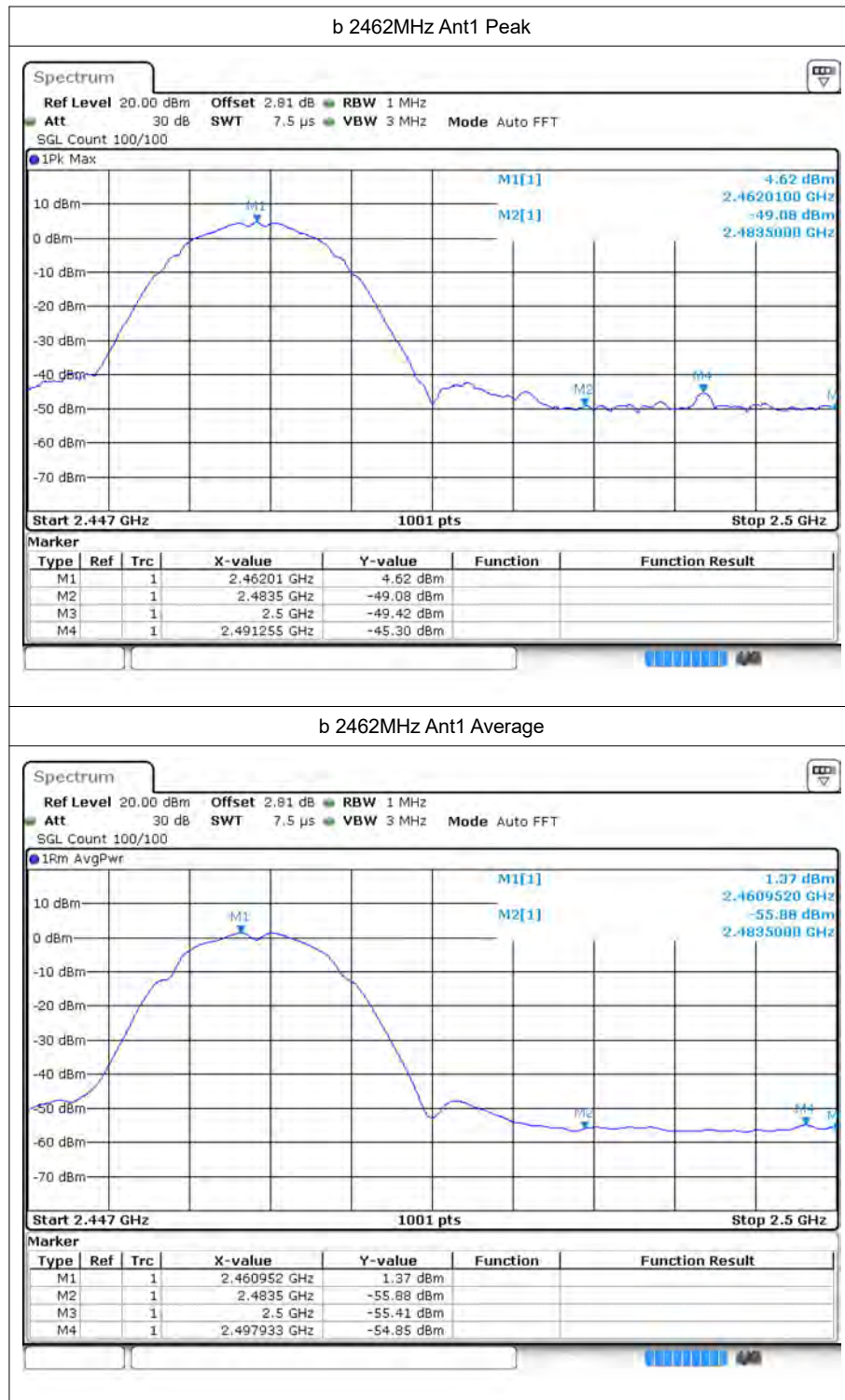
Mode	Frequency (MHz)	Antenna	Spur Freq (MHz)	Power (dBm)	Gain (dBi)	Duty Factor	E (dBuV/m)	Detector	Limit (dBuV/m)	Verdict
b	2412	Ant1	2310	-49.19	2.02	-	48.09	Peak	74	Pass
b	2412	Ant1	2310	-55.37	2.02	0	41.91	Average	54	Pass
b	2412	Ant1	2311.872	-46.4	2.02	-	50.88	Peak	74	Pass
b	2412	Ant1	2337.495	-54.03	2.02	0	43.25	Average	54	Pass
b	2412	Ant1	2390	-50.15	2.02	-	47.13	Peak	74	Pass
b	2412	Ant1	2390	-56.78	2.02	0	40.5	Average	54	Pass
b	2462	Ant1	2483.5	-49.08	2.02	-	48.2	Peak	74	48.2
b	2462	Ant1	2483.5	-55.88	2.02	0	41.4	Average	54	Pass
b	2462	Ant1	2491.255	-45.29	2.02	-	51.99	Peak	74	Pass
b	2462	Ant1	2497.933	-54.84	2.02	0	42.44	Average	54	Pass
b	2462	Ant1	2500	-49.42	2.02	-	47.86	Peak	74	Pass
b	2462	Ant1	2500	-55.41	2.02	0	41.87	Average	54	Pass
g	2412	Ant1	2310	-48.17	2.02	-	49.11	Peak	74	Pass
g	2412	Ant1	2310	-55.64	2.02	0.19	41.83	Average	54	Pass
g	2412	Ant1	2389.911	-42.53	2.02	-	54.75	Peak	74	Pass
g	2412	Ant1	2339.484	-54.16	2.02	0.19	43.31	Average	54	Pass
g	2412	Ant1	2390	-42.33	2.02	-	47.13	Peak	74	Pass
g	2412	Ant1	2390	-56.76	2.02	0.19	40.71	Average	54	Pass
g	2462	Ant1	2483.5	-44.75	2.02	-	52.53	Peak	74	Pass
g	2462	Ant1	2483.5	-54.28	2.02	0.24	43.24	Average	54	Pass
g	2462	Ant1	2491.255	-44.22	2.02	-	53.06	Peak	74	Pass
g	2462	Ant1	2483.517	-54.28	2.02	0.24	43.24	Average	54	Pass
g	2462	Ant1	2500	-48.68	2.02	-	47.86	Peak	74	Pass
g	2462	Ant1	2500	-56.65	2.02	0.24	40.87	Average	54	Pass
n20	2412	Ant1	2310	-51.15	2.02	-	46.13	Peak	74	Pass
n20	2412	Ant1	2310	-56.32	2.02	0.25	41.21	Average	54	Pass
n20	2412	Ant1	2389.911	-44.56	2.02	-	52.72	Peak	74	Pass
n20	2412	Ant1	2340.537	-54.38	2.02	0.25	43.15	Average	54	Pass
n20	2412	Ant1	2390	-44.39	2.02	-	52.89	Peak	74	Pass
n20	2412	Ant1	2390	-55.26	2.02	0.25	42.27	Average	54	Pass
n20	2462	Ant1	2483.5	-43.83	2.02	-	53.45	Peak	74	Pass
n20	2462	Ant1	2483.5	-53.34	2.02	0.23	44.17	Average	54	Pass
n20	2462	Ant1	2483.517	-43.82	2.02	-	53.46	Peak	74	Pass
n20	2462	Ant1	2483.517	-53.34	2.02	0.23	44.17	Average	54	Pass



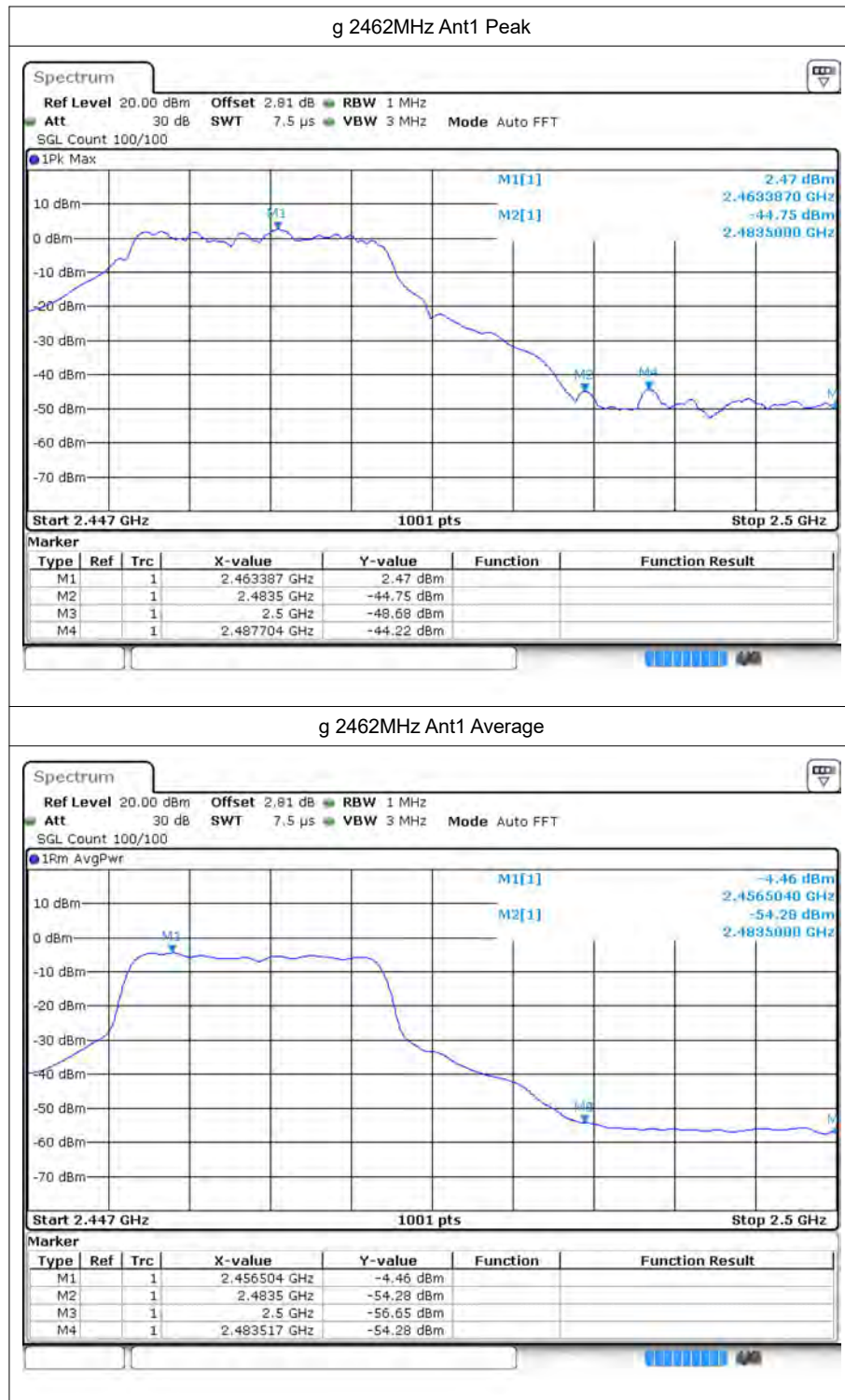
n20	2462	Ant1	2500	-50.71	2.02	-	46.57	Peak	74	Pass
n20	2462	Ant1	2500	-56.24	2.02	0.23	41.27	Average	54	Pass
n40	2422	Ant1	2310	-48.21	2.02	-	49.07	Peak	74	Pass
n40	2422	Ant1	2310	-55.58	2.02	0.47	42.17	Average	54	Pass
n40	2422	Ant1	2373.19	-44.83	2.02	-	52.45	Peak	74	Pass
n40	2422	Ant1	2389.946	-52.44	2.02	0.47	45.31	Average	54	Pass
n40	2422	Ant1	2390	-45.06	2.02	-	52.22	Peak	74	Pass
n40	2422	Ant1	2390	-52.44	2.02	0.47	45.31	Average	54	Pass
n40	2452	Ant1	2483.5	-37.32	2.02	-	59.96	Peak	74	Pass
n40	2452	Ant1	2483.5	-50.54	2.02	0.46	47.2	Average	54	Pass
n40	2452	Ant1	2483.542	-37.31	2.02	-	59.97	Peak	74	Pass
n40	2452	Ant1	2483.542	-50.53	2.02	0.46	47.21	Average	54	Pass
n40	2452	Ant1	2500	-48.61	2.02	-	48.67	Peak	74	Pass
n40	2452	Ant1	2500	-55.5	2.02	0.46	42.24	Average	54	Pass
ax20	2412	Ant1	2310	-49.92	2.02	-	47.36	Peak	74	Pass
ax20	2412	Ant1	2310	-56.59	2.02	0.42	41.11	Average	54	Pass
ax20	2412	Ant1	2337.612	-46.43	2.02	-	50.85	Peak	74	Pass
ax20	2412	Ant1	2339.835	-54.52	2.02	0.42	43.18	Average	54	Pass
ax20	2412	Ant1	2390	-51.02	2.02	-	46.26	Peak	74	Pass
ax20	2412	Ant1	2390	-55.99	2.02	0.42	41.71	Average	54	Pass
ax20	2462	Ant1	2483.5	-46.53	2.02	-	50.75	Peak	74	Pass
ax20	2462	Ant1	2483.5	-54.52	2.02	0.43	43.19	Average	54	Pass
ax20	2462	Ant1	2496.184	-46.25	2.02	-	51.03	Peak	74	Pass
ax20	2462	Ant1	2483.676	-54.47	2.02	0.43	43.24	Average	54	Pass
ax20	2462	Ant1	2500	-49.51	2.02	-	47.77	Peak	74	Pass
ax20	2462	Ant1	2500	-56.49	2.02	0.43	41.22	Average	54	Pass
ax40	2422	Ant1	2310	-47.67	2.02	-	49.61	Peak	74	Pass
ax40	2422	Ant1	2310	-56.1	2.02	0.87	42.05	Average	54	Pass
ax40	2422	Ant1	2388.384	-43.77	2.02	-	53.51	Peak	74	Pass
ax40	2422	Ant1	2388.526	-53.69	2.02	0.87	44.46	Average	54	Pass
ax40	2422	Ant1	2390	-44.94	2.02	-	52.34	Peak	74	Pass
ax40	2422	Ant1	2390	-54.54	2.02	0.87	43.61	Average	54	Pass
ax40	2452	Ant1	2483.5	-44.96	2.02	-	52.32	Peak	74	Pass
ax40	2452	Ant1	2483.5	-53.76	2.02	0.61	44.13	Average	54	Pass
ax40	2452	Ant1	2484.478	-44.55	2.02	-	52.73	Peak	74	Pass
ax40	2452	Ant1	2484.712	-53.74	2.02	0.61	44.15	Average	54	Pass
ax40	2452	Ant1	2500	-49.59	2.02	-	47.69	Peak	74	Pass
ax40	2452	Ant1	2500	-56.16	2.02	0.61	41.73	Average	54	Pass

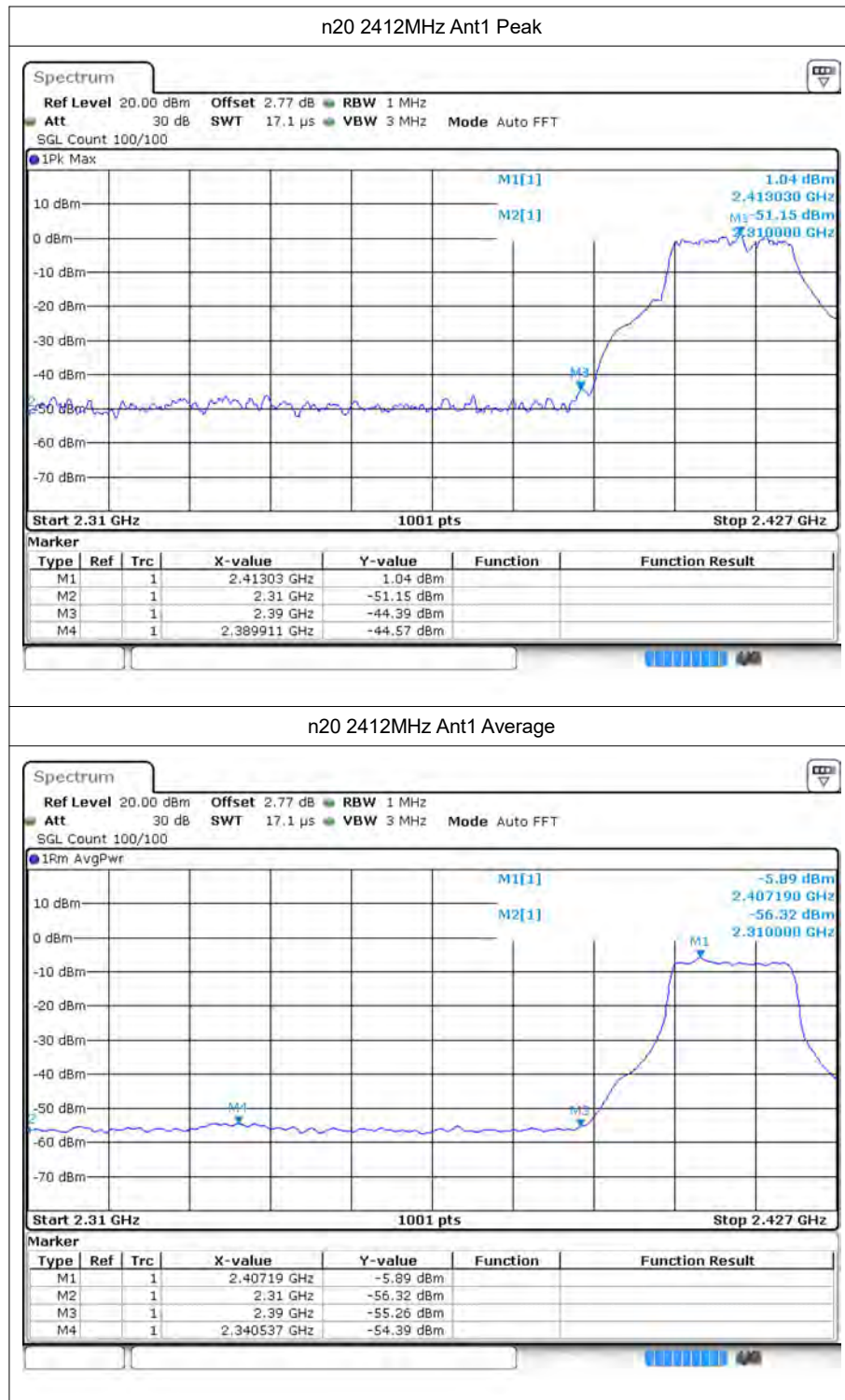
7.2 Test Graphs

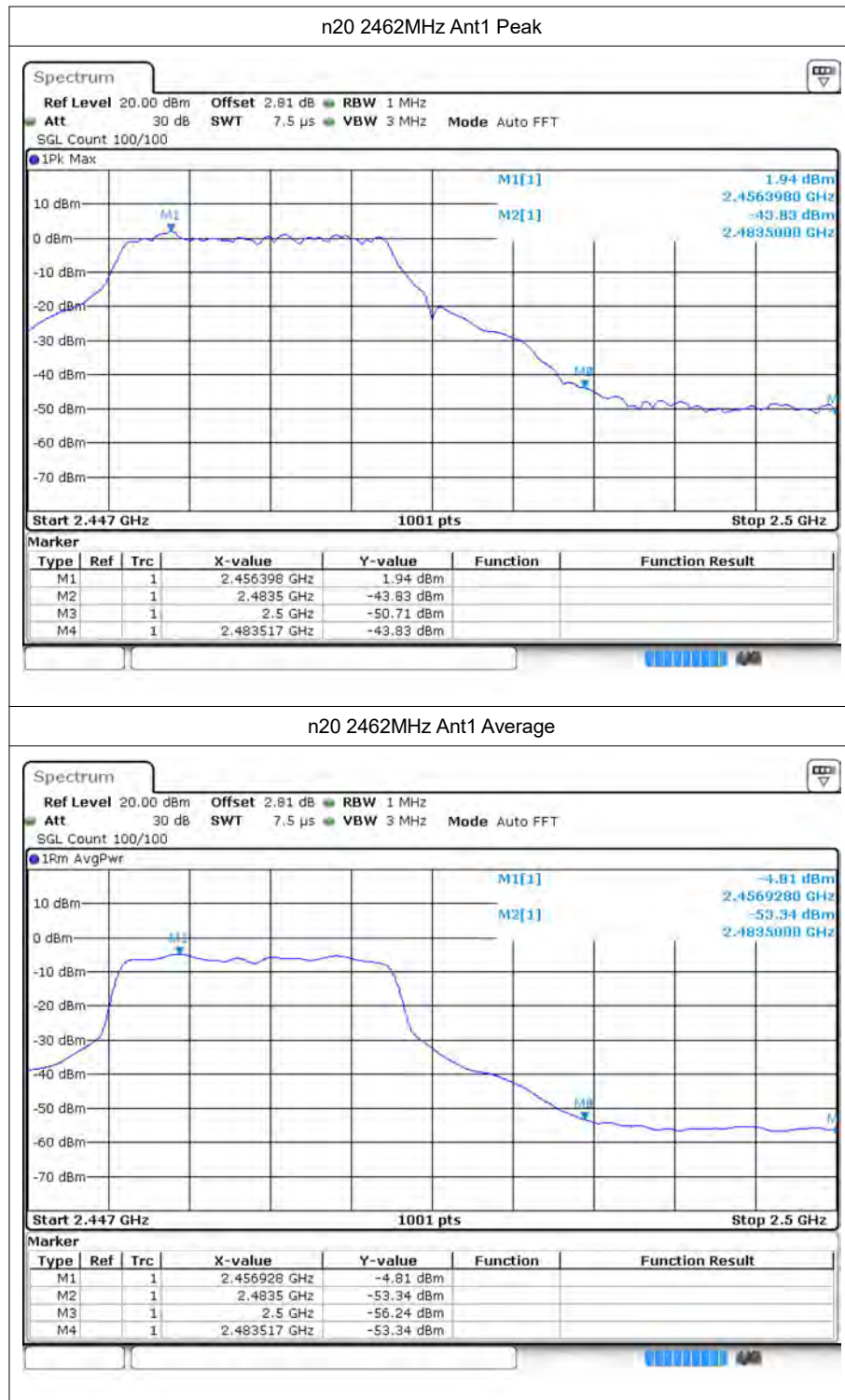


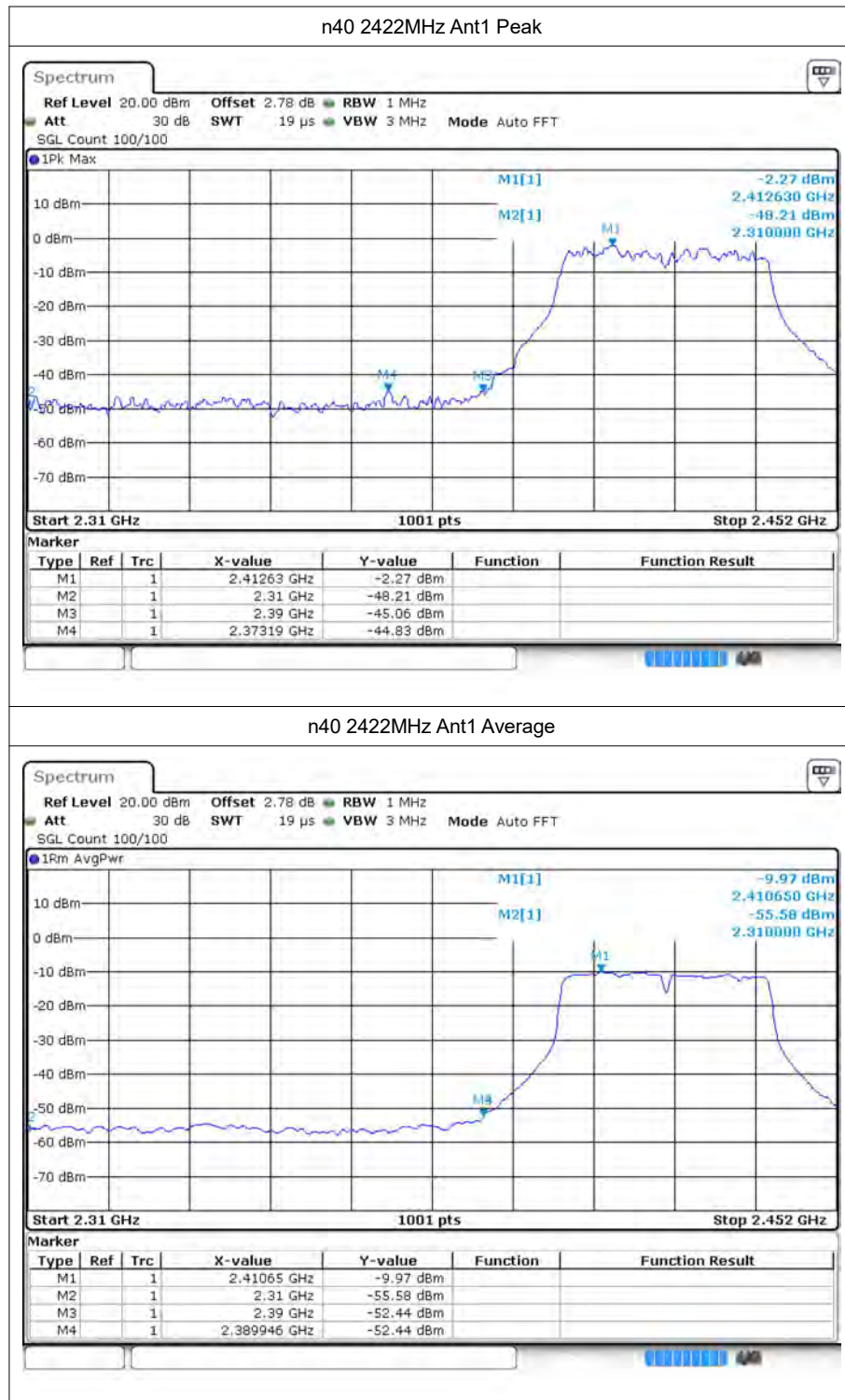


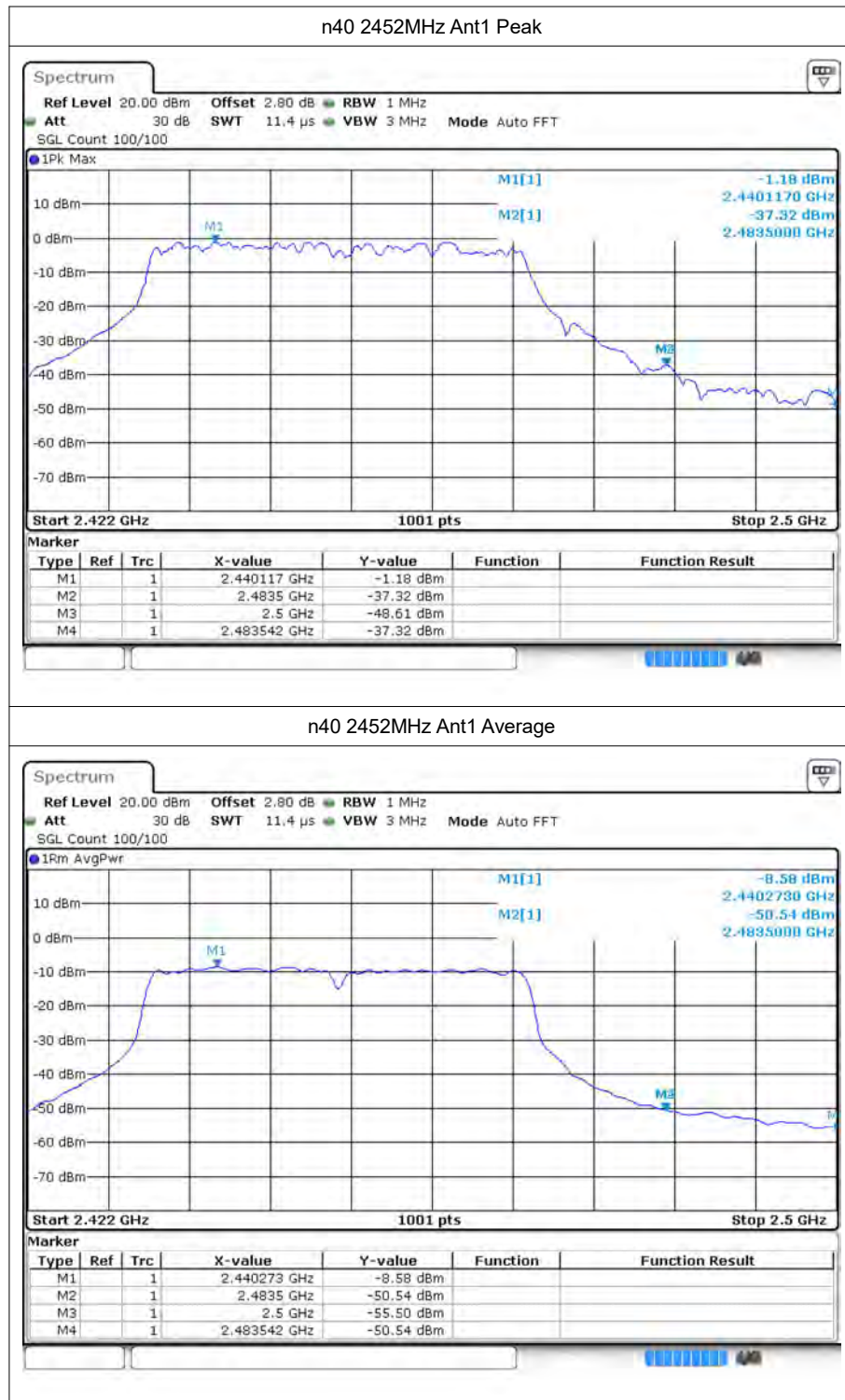


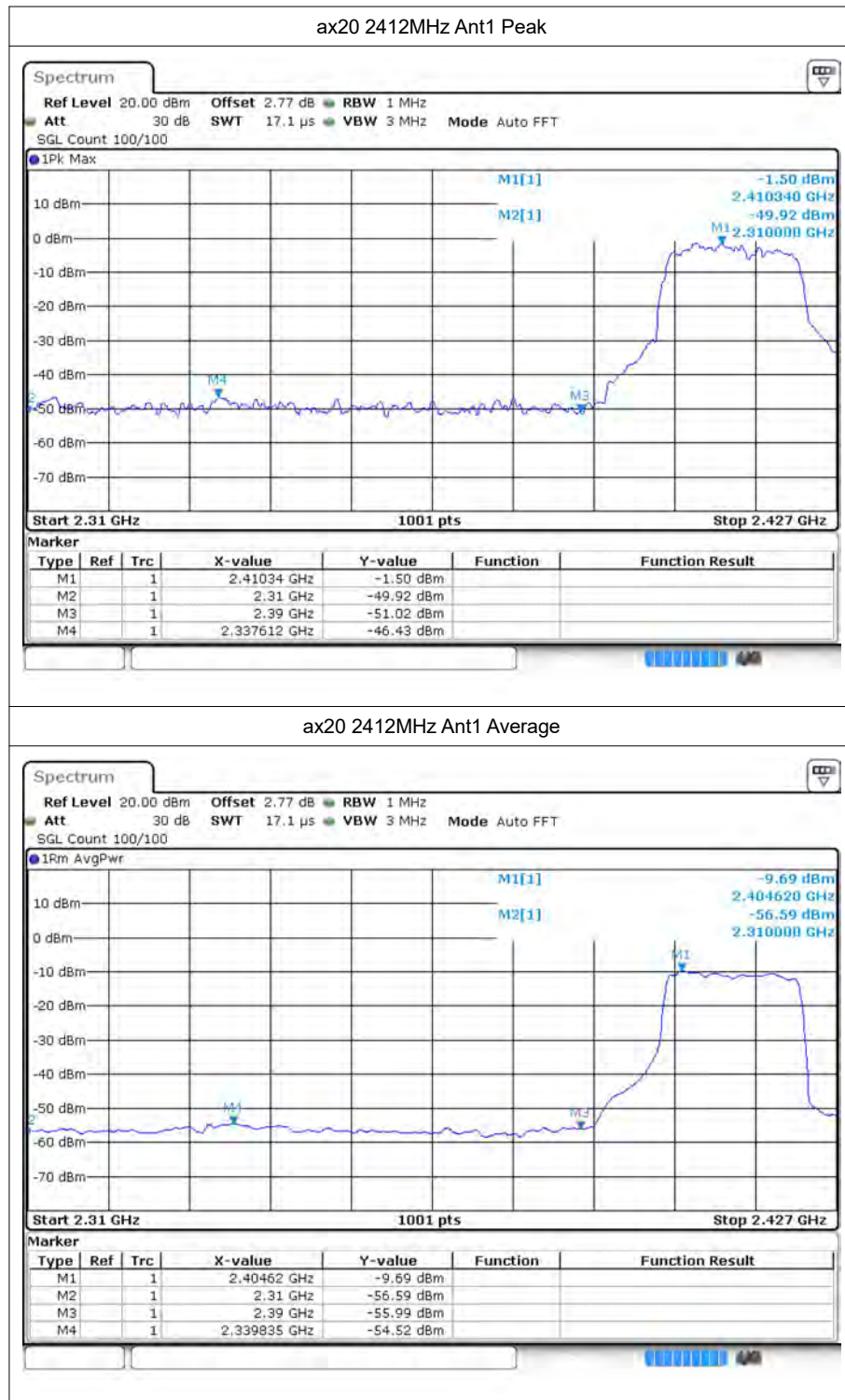


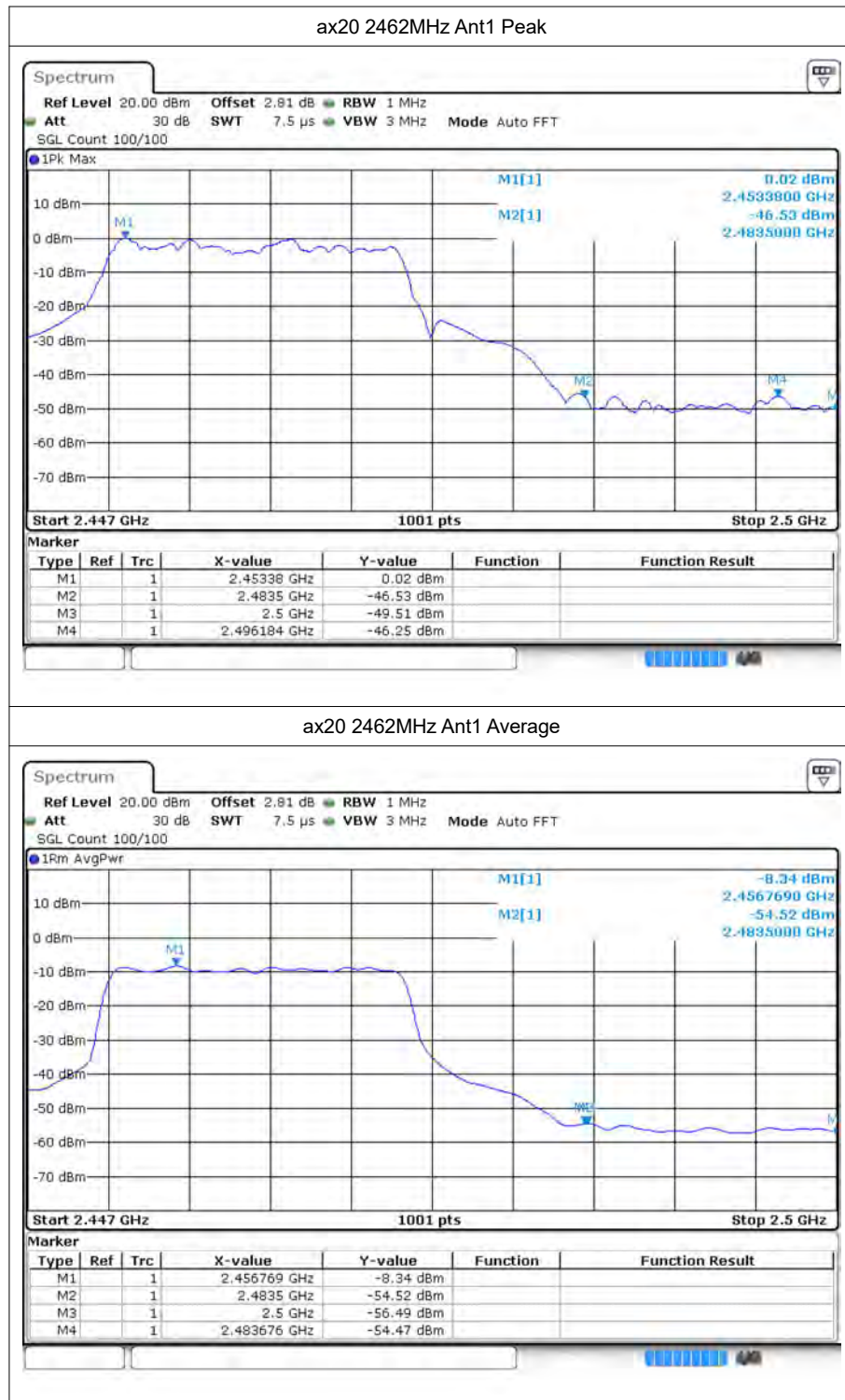


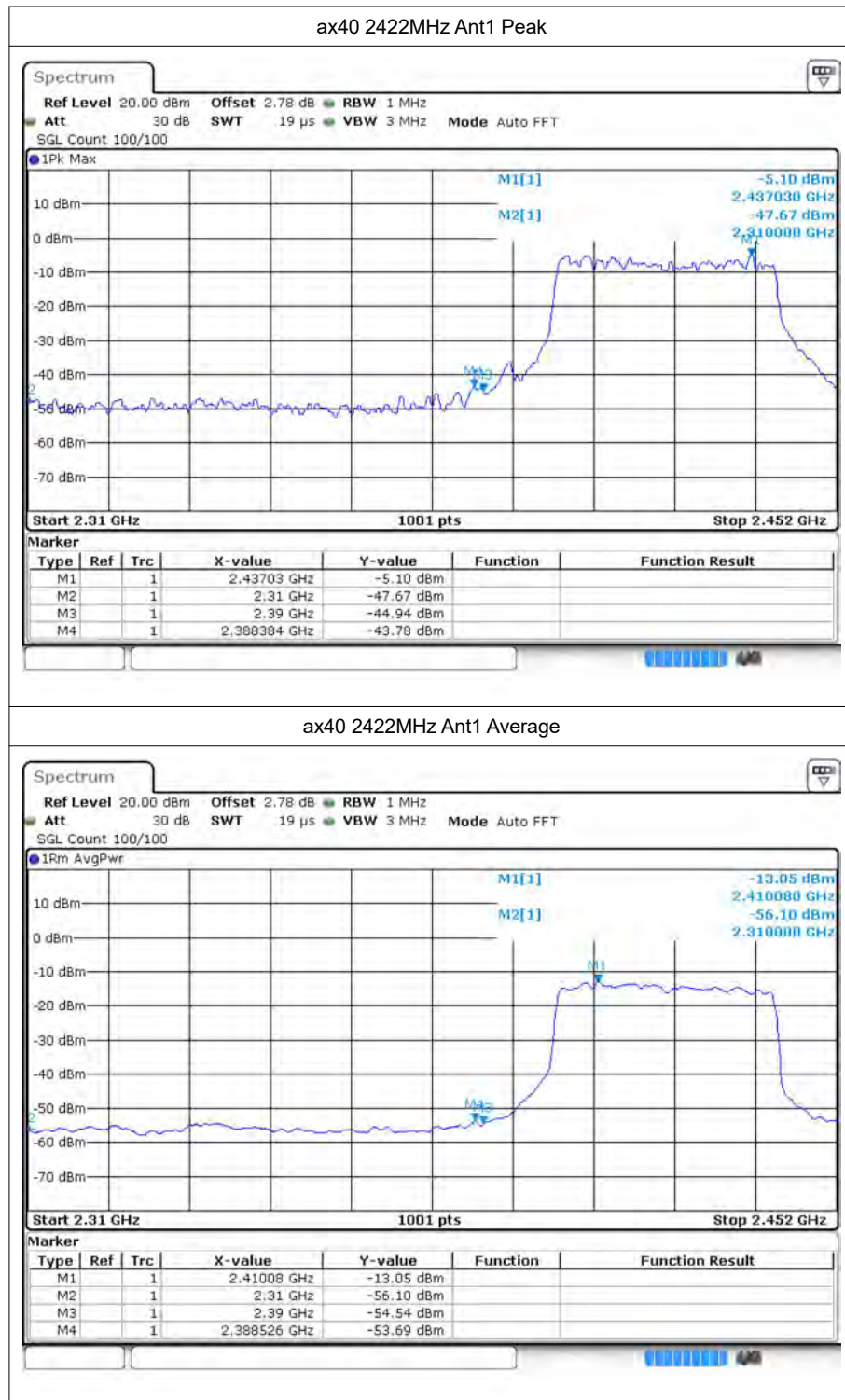


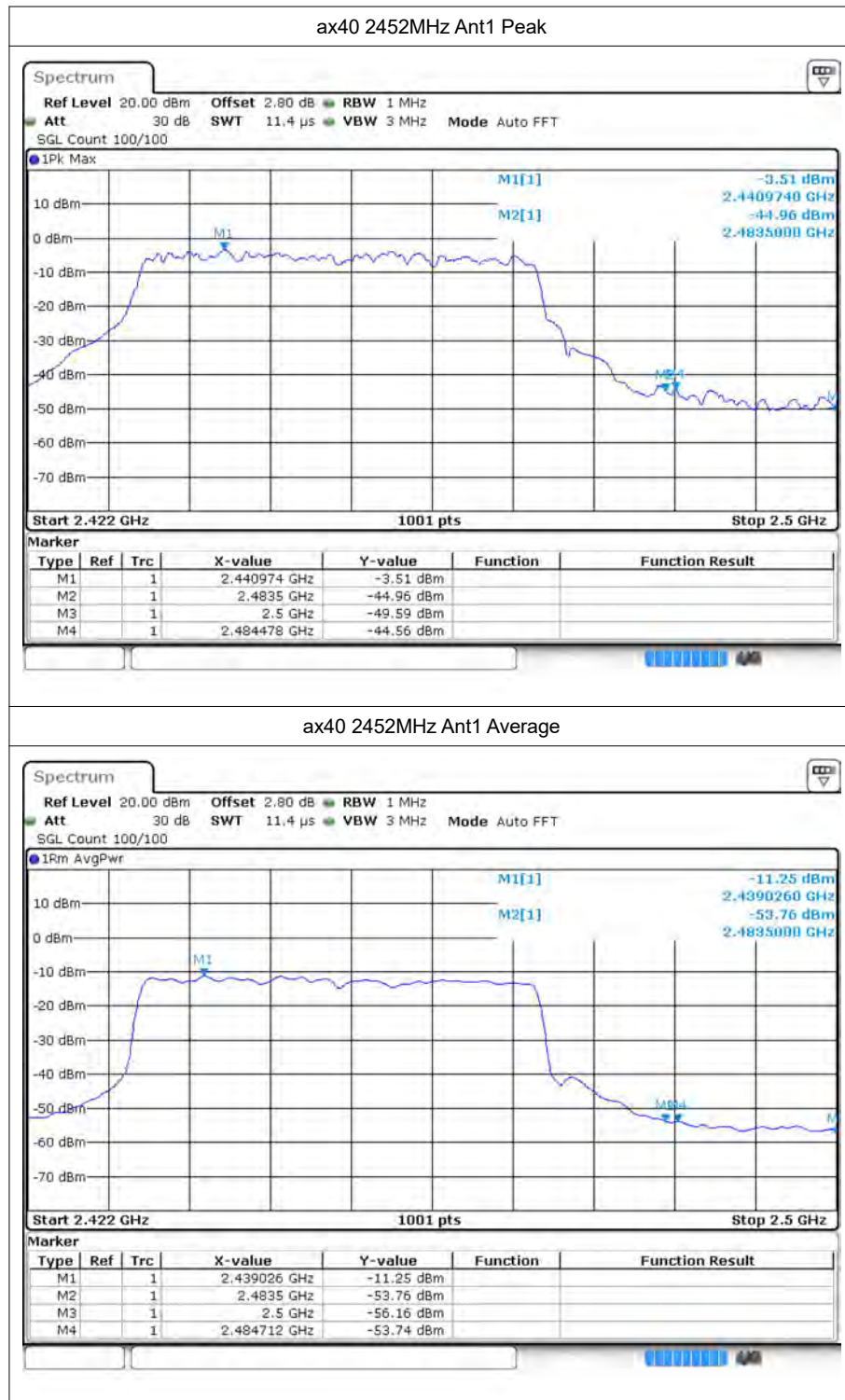












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