



Appendix C

RF Test Data for 2.4GHz WIFI (Conducted Measurement)

Product Name: All-in-One Live Streaming Device

Trade Mark: HNKJ LAB

Test Model: HN-V88-HD

Environmental Conditions

Temperature:	24.6° C
Relative Humidity:	52.4%
ATM Pressure:	100.0 kPa
Test Engineer:	Simba Huang
Supervised by:	Seal Chen



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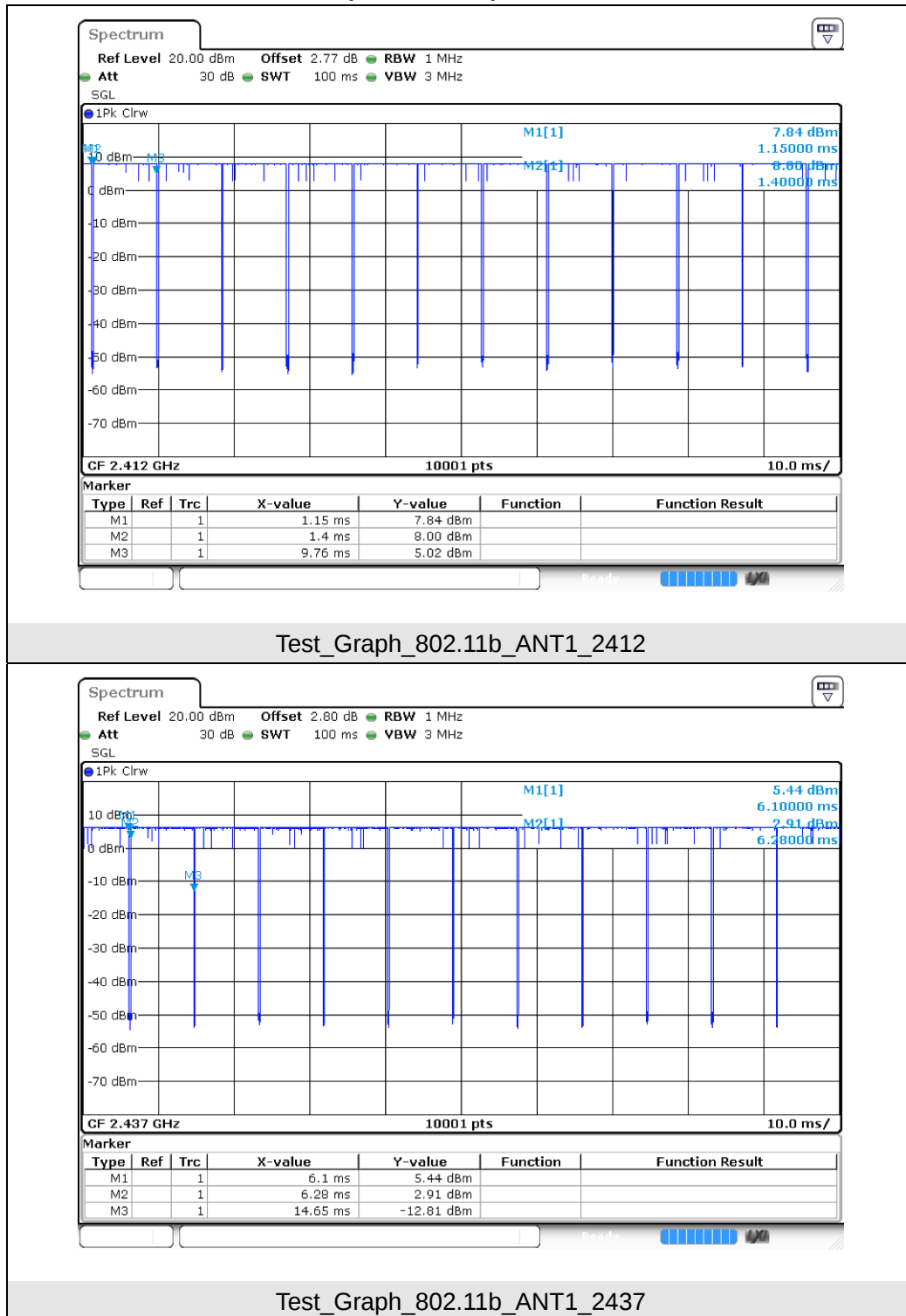
1 Duty Cycle

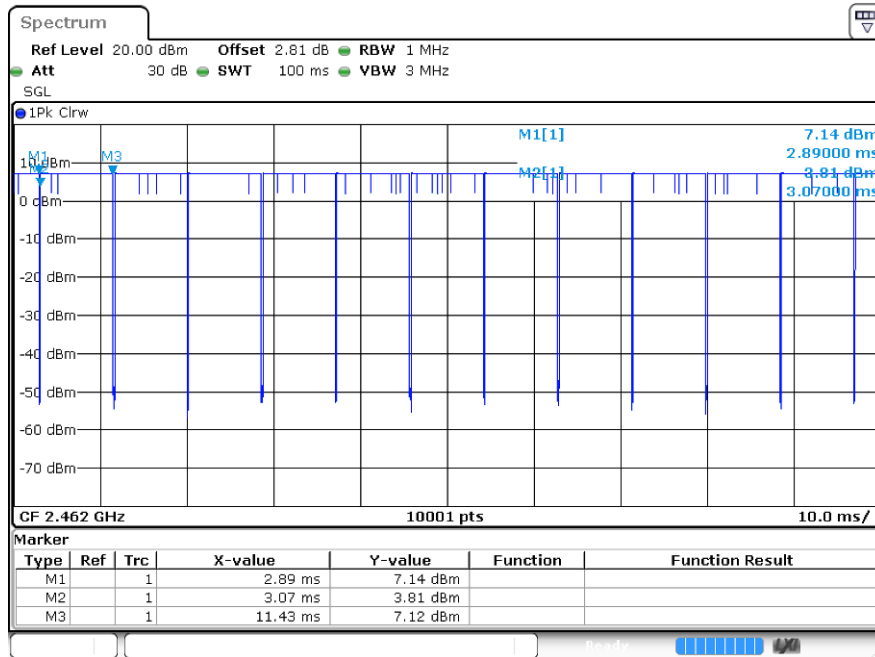
1.1 Test Result

Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	1/T (kHz)
802.11b	2412	Ant1	97.39	0.12
802.11b	2437	Ant1	98.03	0.12
802.11b	2462	Ant1	97.96	0.12
802.11g	2412	Ant1	97.81	0.72
802.11g	2437	Ant1	88.41	0.72
802.11g	2462	Ant1	88.56	0.72
802.11n20	2412	Ant1	86.09	0.85
802.11n20	2437	Ant1	86.71	0.85
802.11n20	2462	Ant1	86.74	0.85
802.11n40	2422	Ant1	76.51	1.72
802.11n40	2437	Ant1	76.53	1.69
802.11n40	2452	Ant1	76.84	1.69

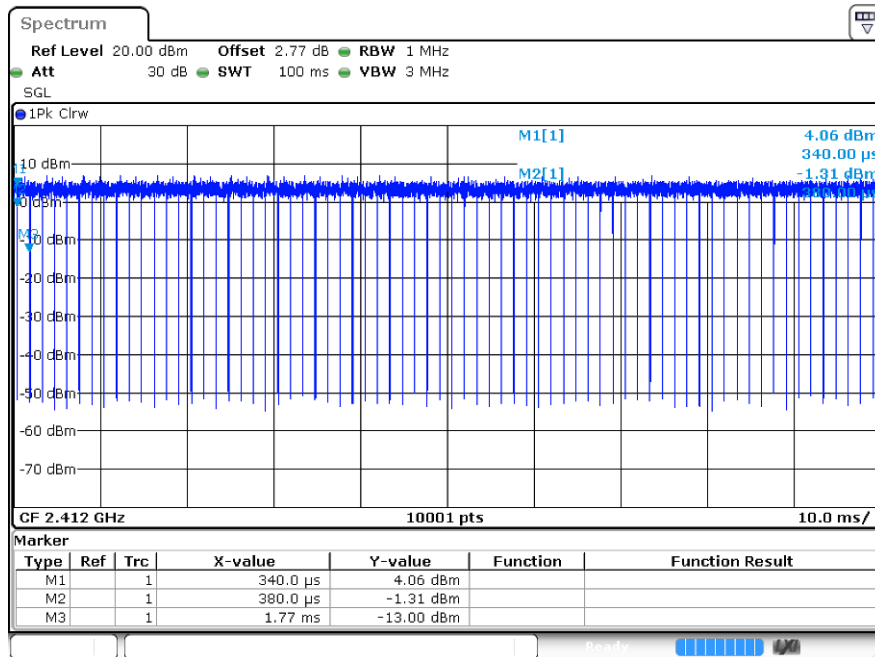
1.2 Test Graphs

Test Graphs of Occupied Bandwidth

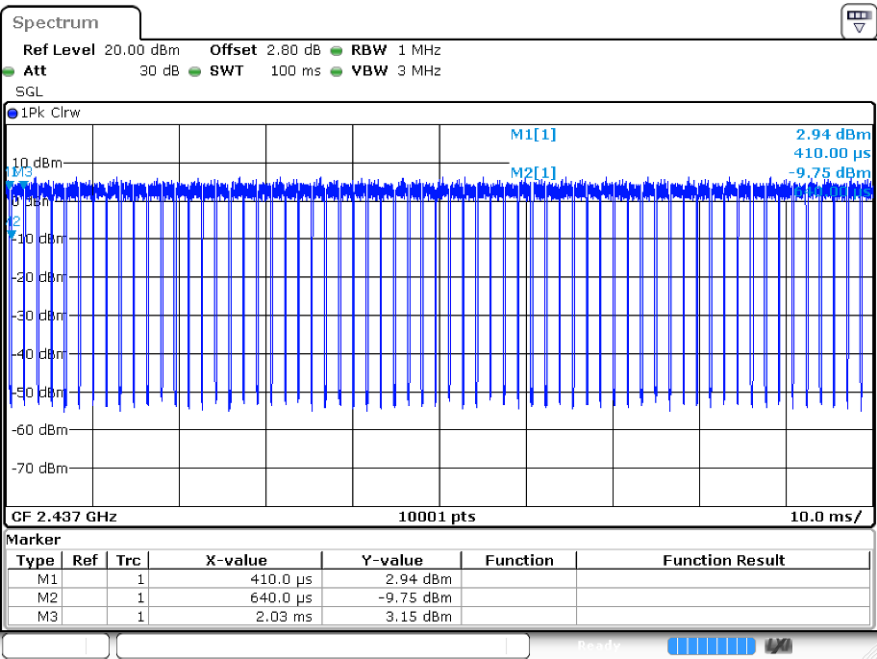




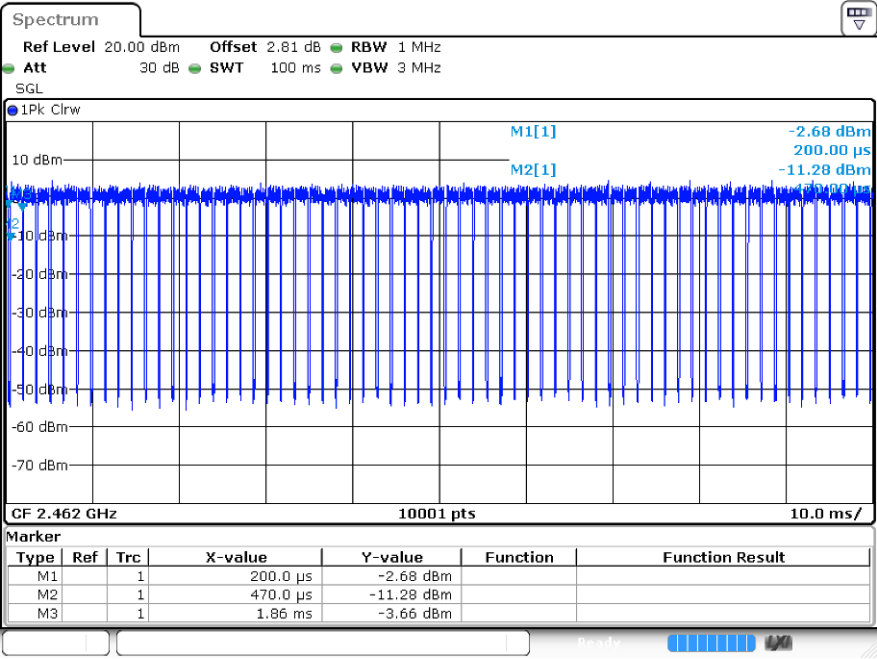
Test_Graph_802.11b_ANT1_2462



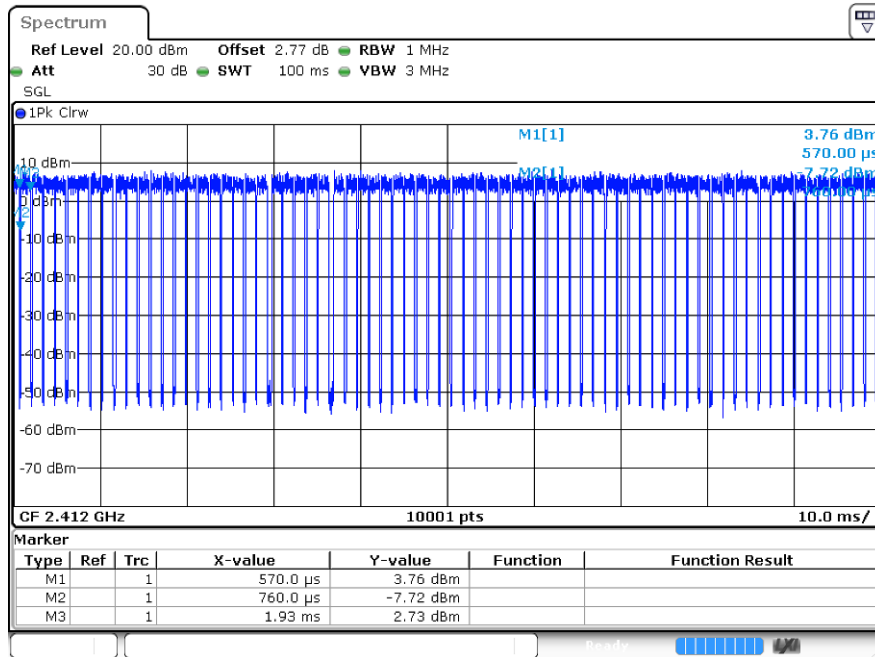
Test_Graph_802.11g_ANT1_2412



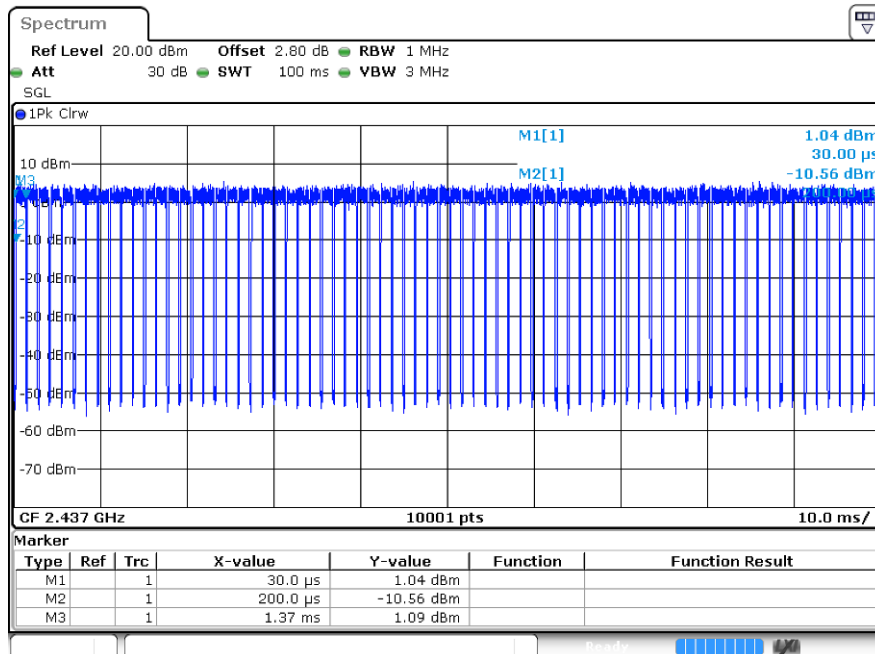
Test_Graph_802.11g_ANT1_2437



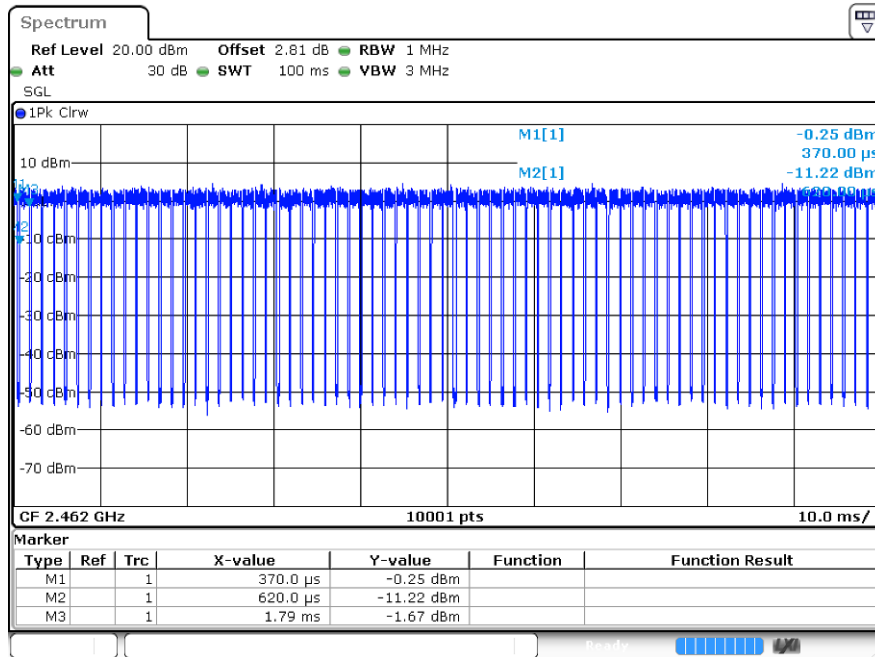
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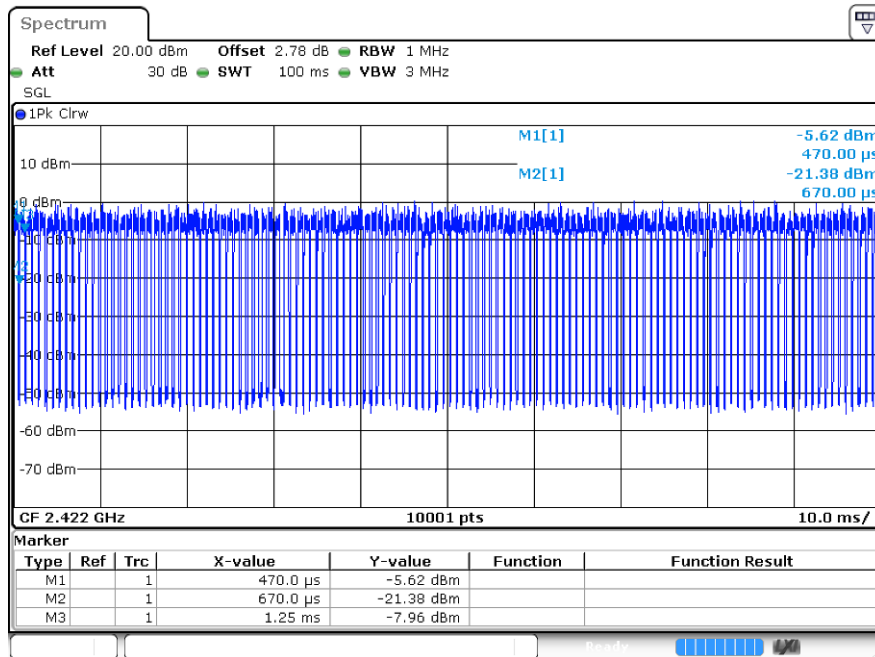
Test_Graph_802.11n20_ANT1_2412



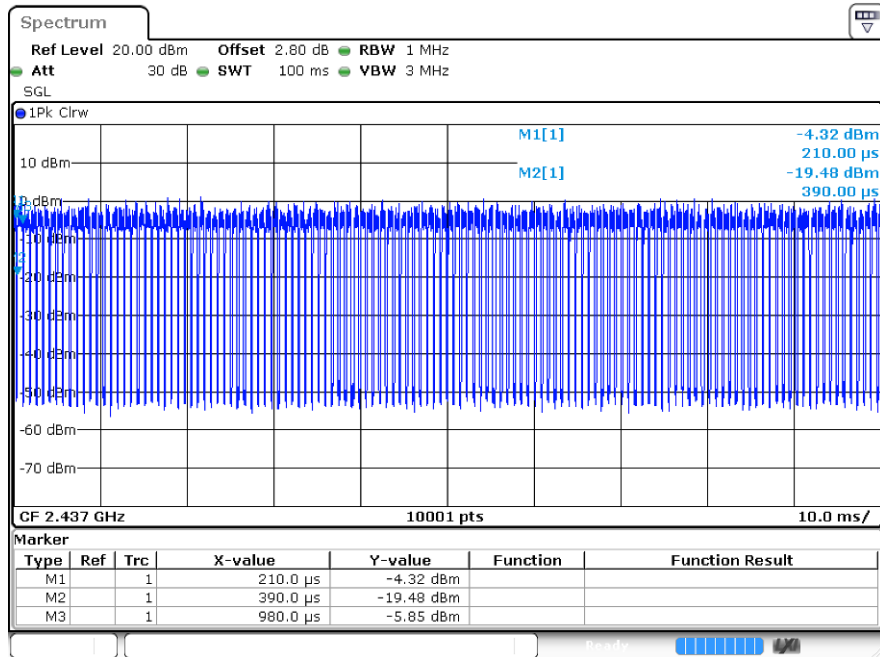
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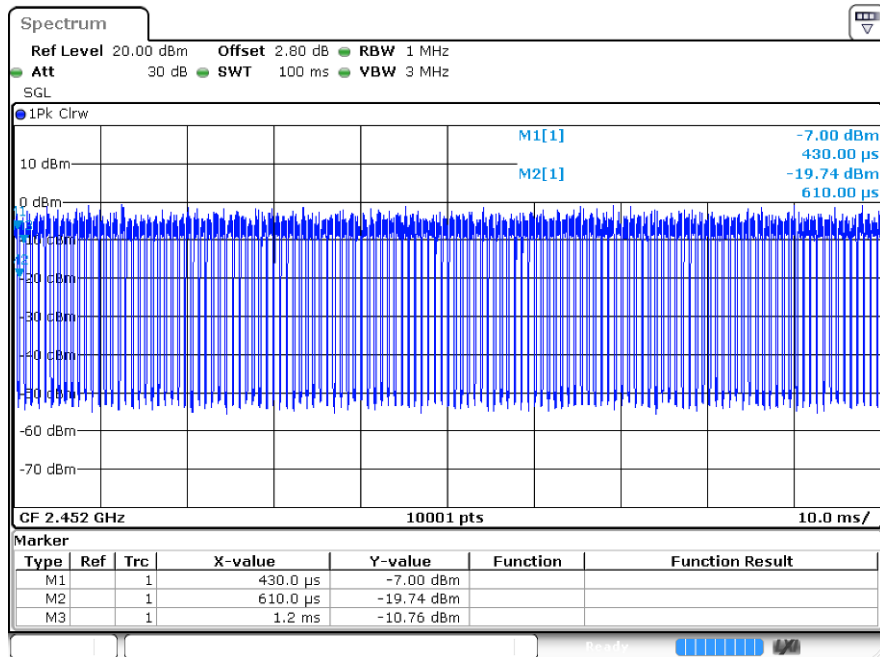
Test_Graph_802.11n20_ANT1_2462



Test_Graph_802.11n40_ANT1_2422



Test_Graph_802.11n40_ANT1_2437



Test_Graph_802.11n40_ANT1_2452



2 Maximum Conducted Output Power

2.1 Test Result

Test Data of Conducted Output Power				
Test Mode	Test Channel (MHz)	Peak Power (dBm)	Limits (dBm)	Pass or Fail
802.11b	2412	18.65	≤ 30	Pass
	2437	15.90	≤ 30	Pass
	2462	17.84	≤ 30	Pass
802.11g	2412	17.28	≤ 30	Pass
	2437	15.52	≤ 30	Pass
	2462	14.37	≤ 30	Pass
802.11n20	2412	18.39	≤ 30	Pass
	2437	14.48	≤ 30	Pass
	2462	14.49	≤ 30	Pass
802.11n40	2422	16.38	≤ 30	Pass
	2437	14.78	≤ 30	Pass
	2452	15.73	≤ 30	Pass



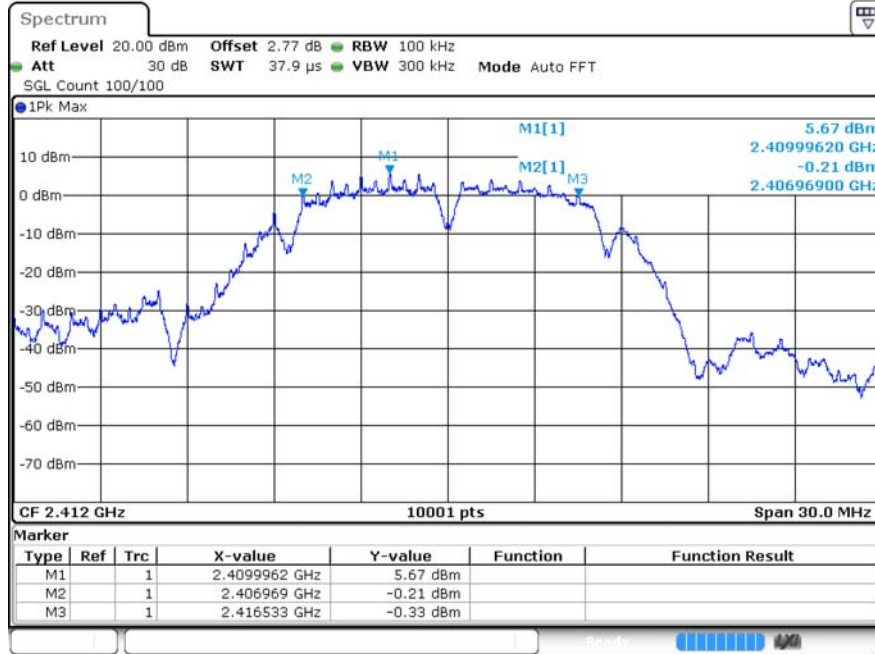
3 -6dB Bandwidth

3.1 Test Result

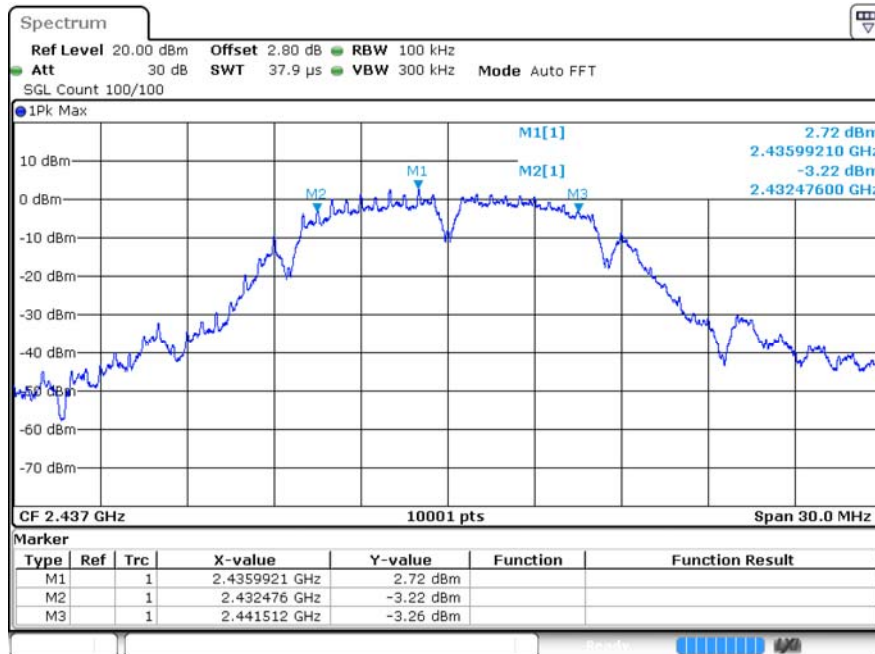
Test Data of Occupied Bandwidth and DTS Bandwidth				
Test Mode	Test Channel (MHz)	-6dB Bandwidth (MHz)	Limits (MHz)	Pass or Fail
802.11b	2412	9.564	≥ 0.5	Pass
	2437	9.036	≥ 0.5	Pass
	2462	9.084	≥ 0.5	Pass
802.11g	2412	10.047	≥ 0.5	Pass
	2437	15.728	≥ 0.5	Pass
	2462	16.158	≥ 0.5	Pass
802.11n20	2412	16.269	≥ 0.5	Pass
	2437	15.321	≥ 0.5	Pass
	2462	12.414	≥ 0.5	Pass
802.11n40	2422	36.45	≥ 0.5	Pass
	2437	27.552	≥ 0.5	Pass
	2452	21.312	≥ 0.5	Pass

3.2 Test Graphs

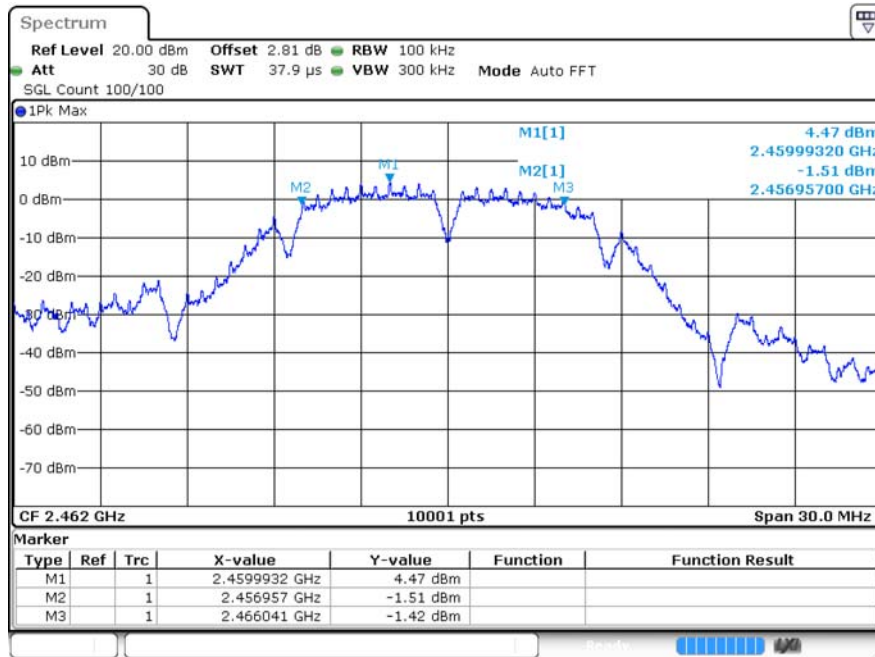
Test Graphs of Occupied Bandwidth



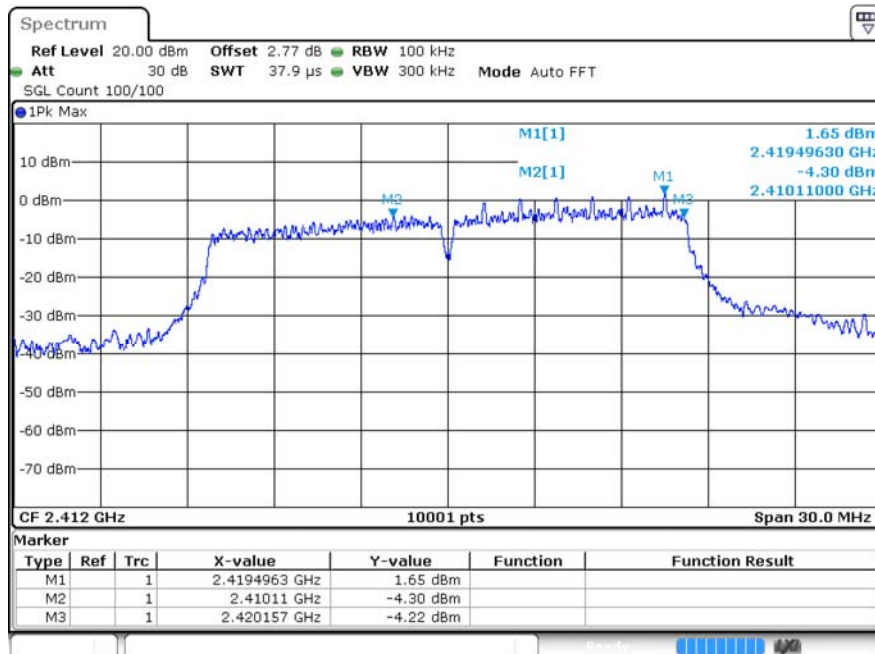
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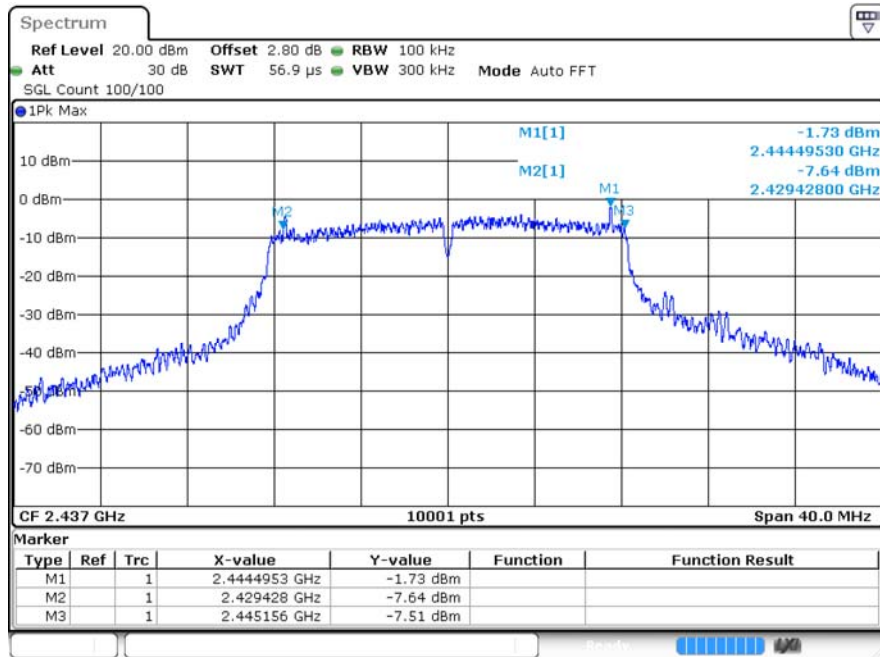
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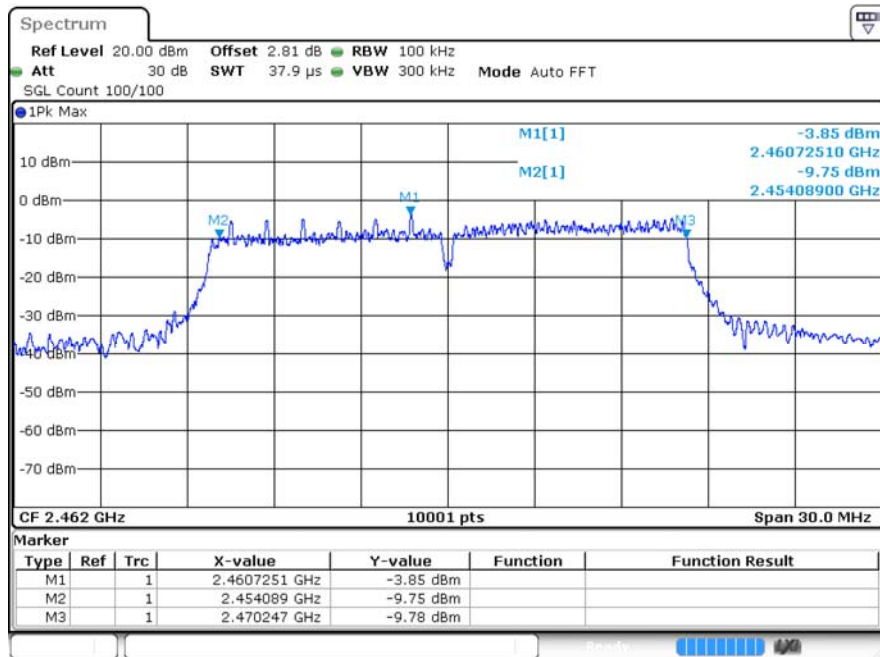
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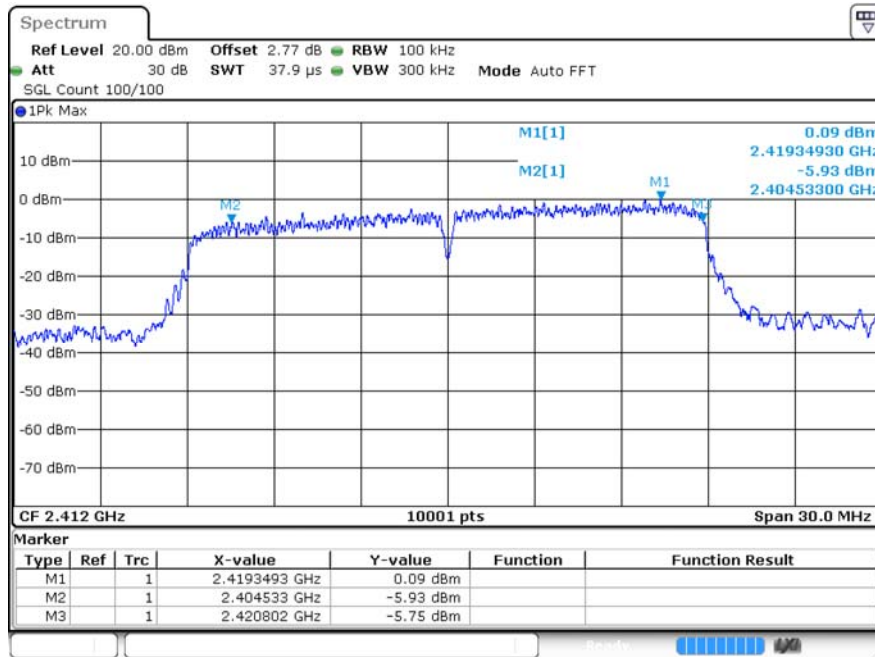
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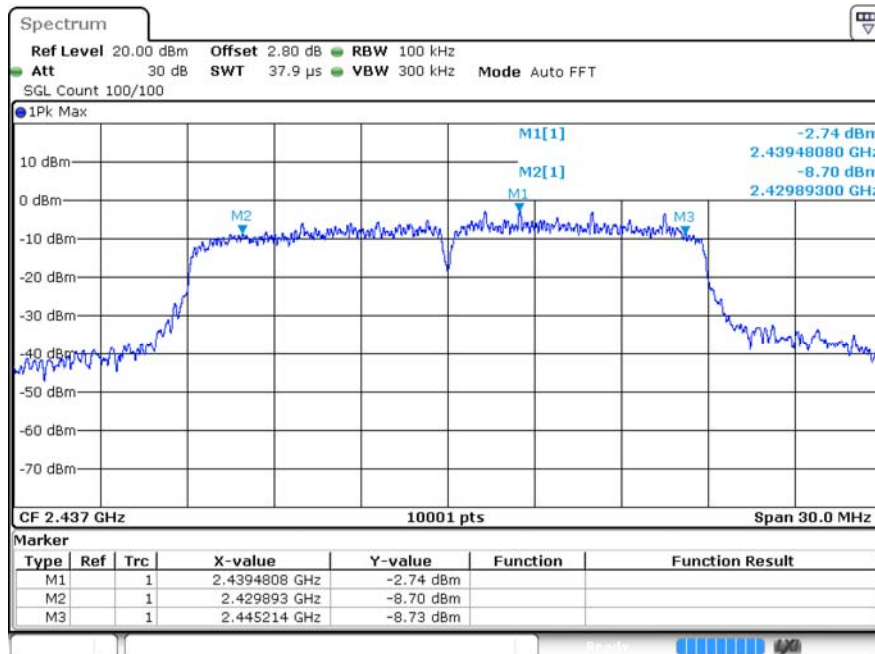
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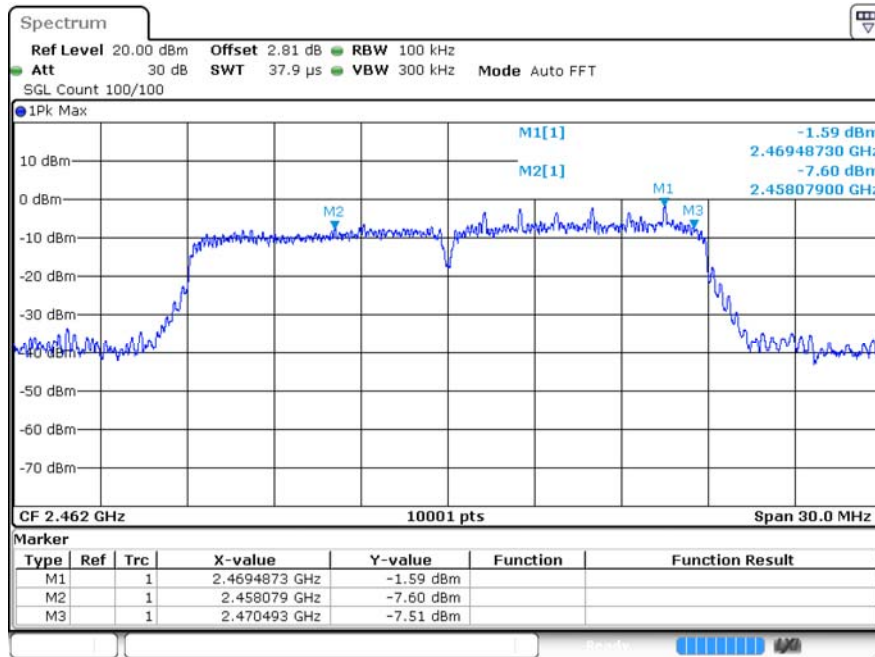
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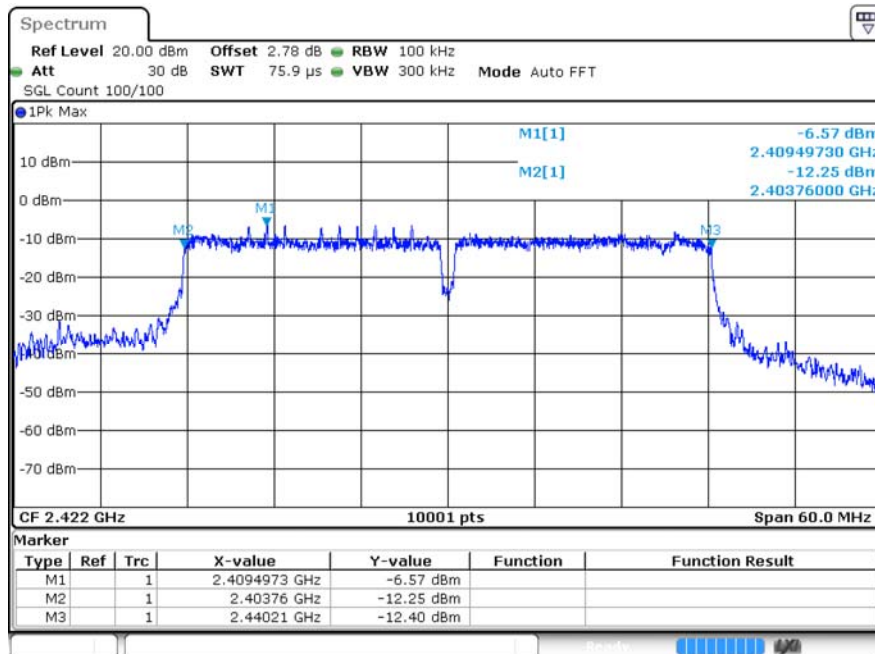
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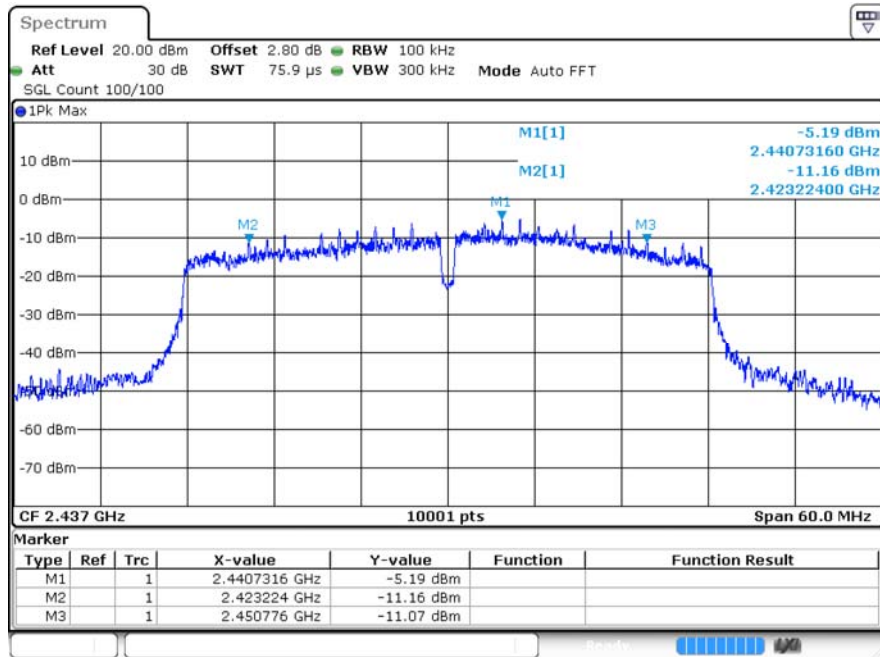
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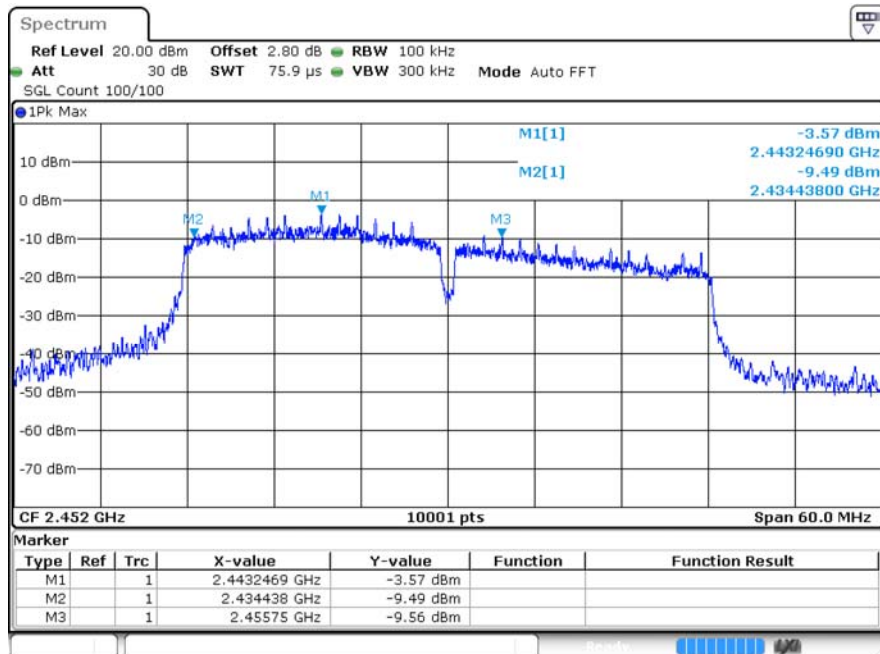
Test_Graph_802.11n20_ANT1_2462



Test_Graph_802.11n40_ANT1_2422



Test_Graph_802.11n40_ANT1_2437



Test_Graph_802.11n40_ANT1_2452

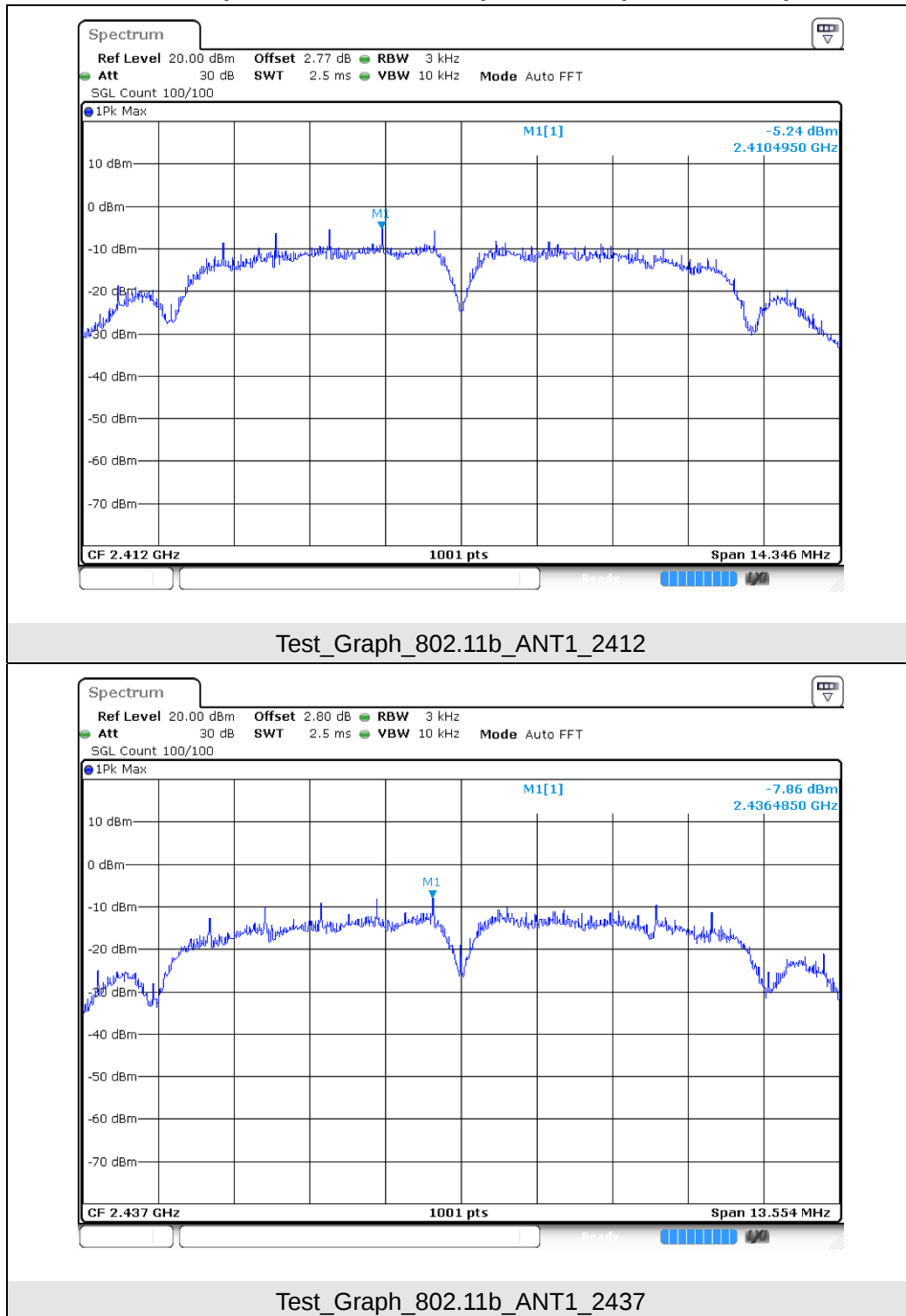
4 Maximum Power Spectral Density Level

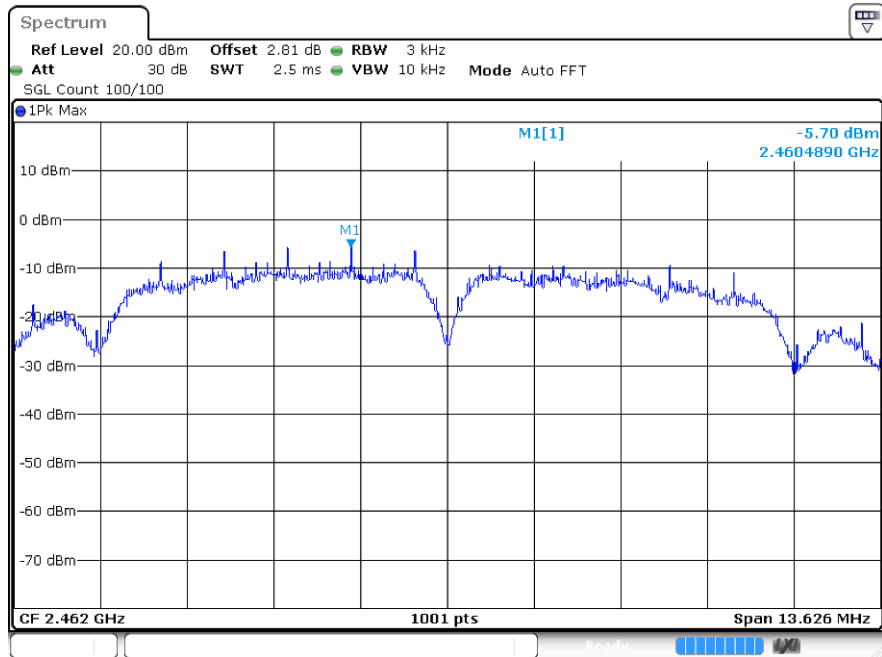
4.1 Test Result

Test Data of Conducted Output Power Spectral Density				
Test Mode	Test Channel	Power density (dBm/3kHz)	Limit (dBm/3kHz)	Pass or Fail
802.11b	2412	-5.24	≤ 8	Pass
	2437	-7.86	≤ 8	Pass
	2462	-5.7	≤ 8	Pass
802.11g	2412	-12.76	≤ 8	Pass
	2437	-14.88	≤ 8	Pass
	2462	-16.78	≤ 8	Pass
802.11n20	2412	-11.3	≤ 8	Pass
	2437	-16.51	≤ 8	Pass
	2462	-16.04	≤ 8	Pass
802.11n40	2422	-19.64	≤ 8	Pass
	2437	-20.47	≤ 8	Pass
	2452	-18.81	≤ 8	Pass

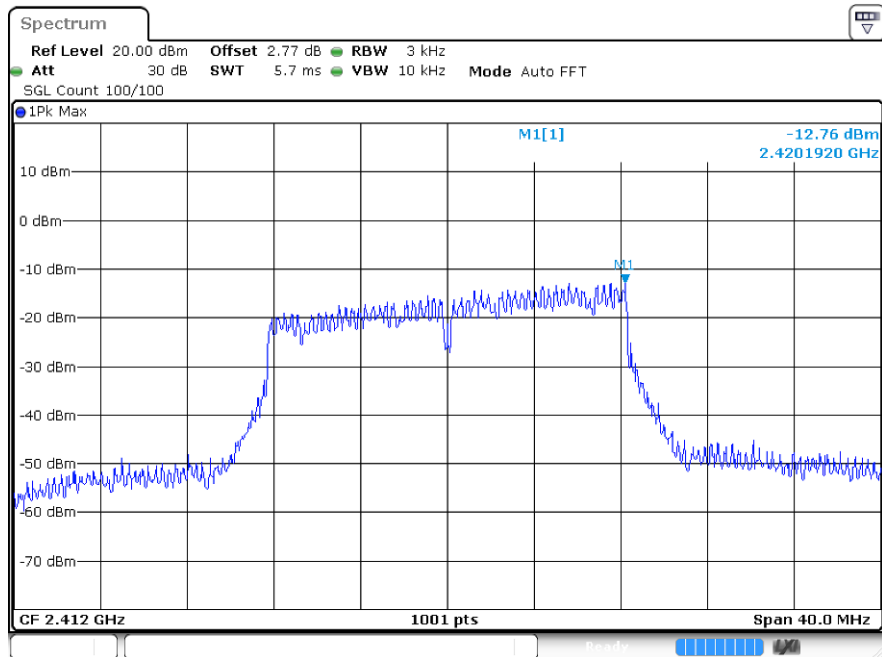
4.2 Test Graphs

Test Graphs of Conducted Output Power Spectral Density

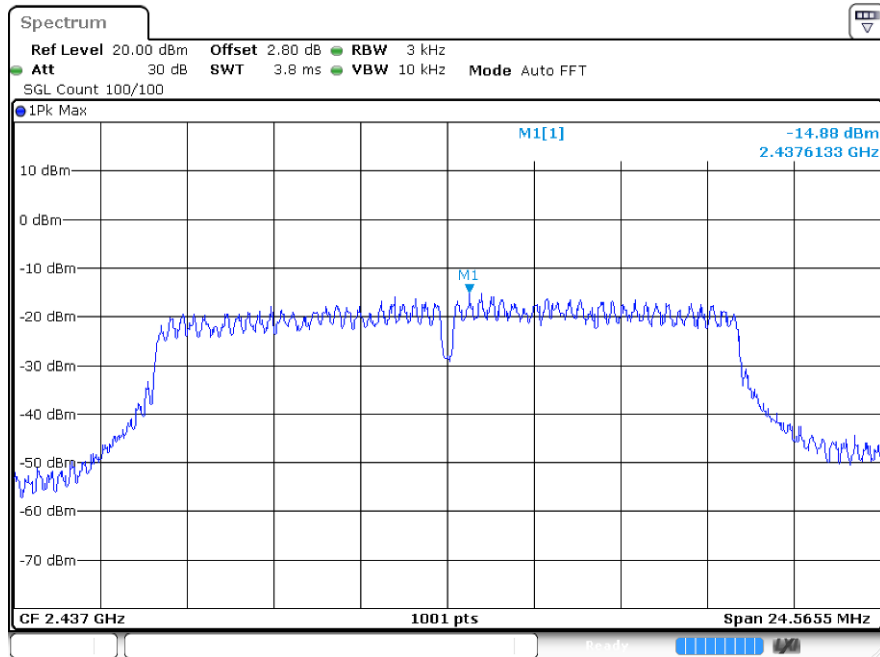




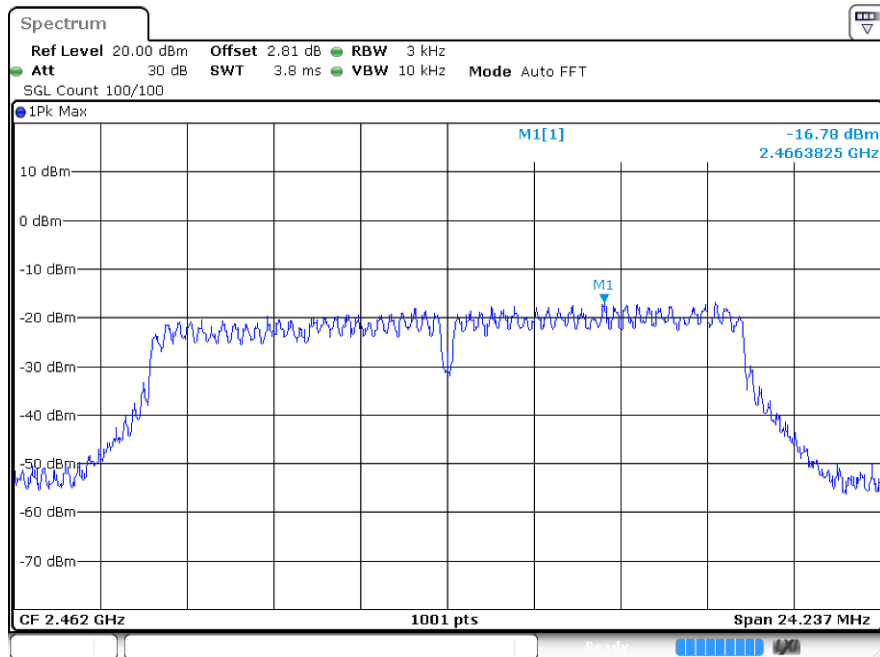
Test_Graph_802.11b_ANT1_2462



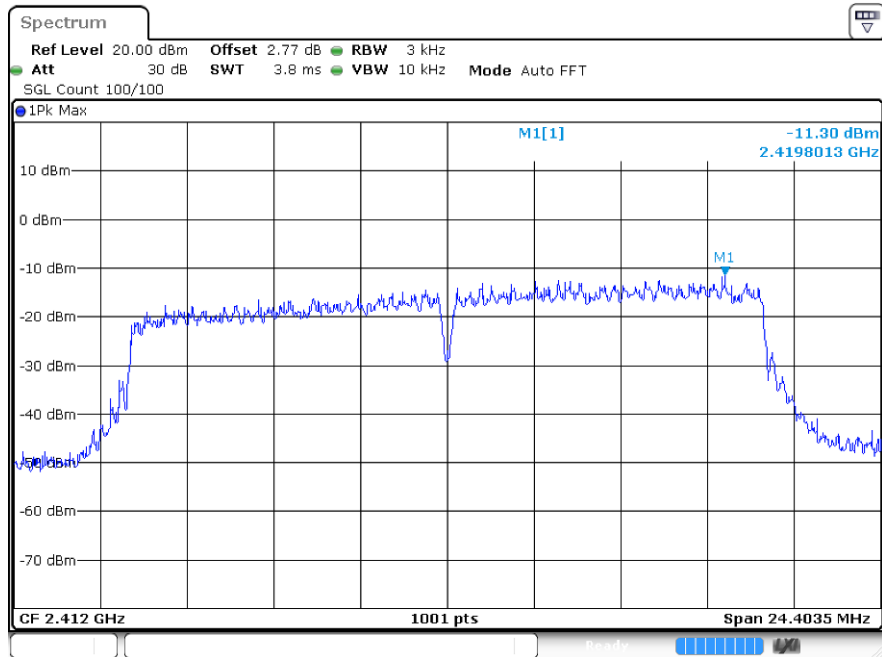
Test_Graph_802.11g_ANT1_2412



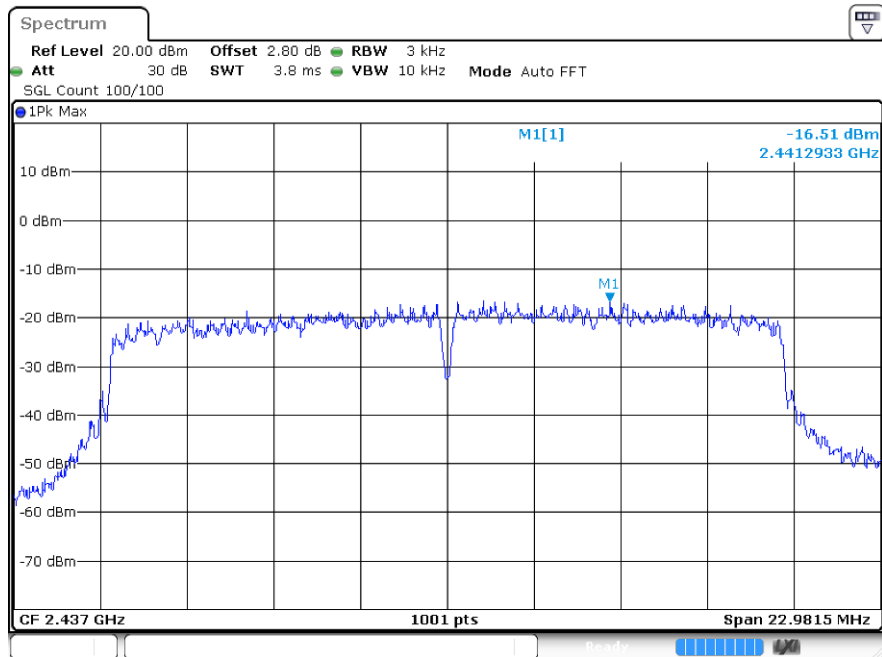
Test_Graph_802.11g_ANT1_2437



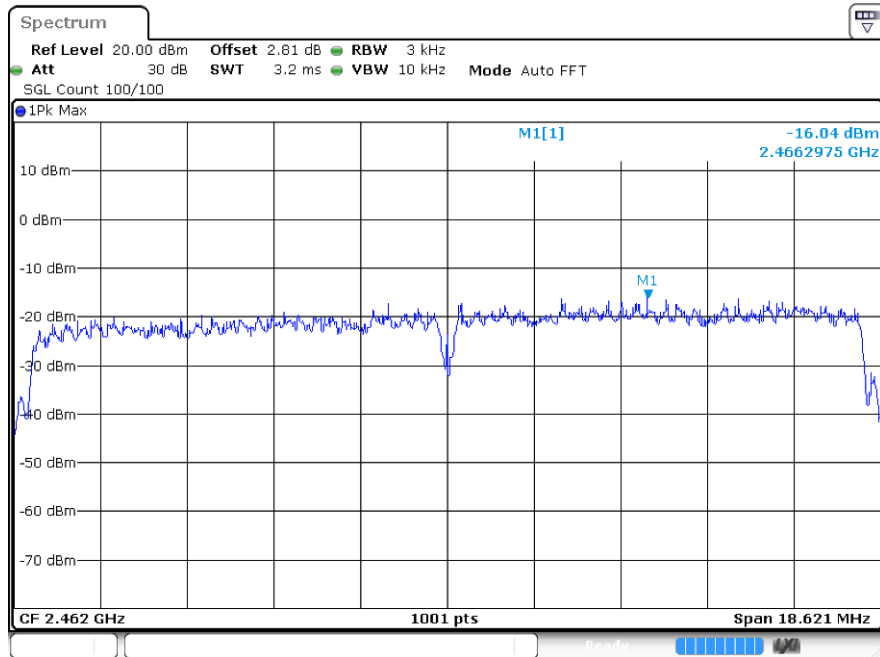
Test_Graph_802.11g_ANT1_2462



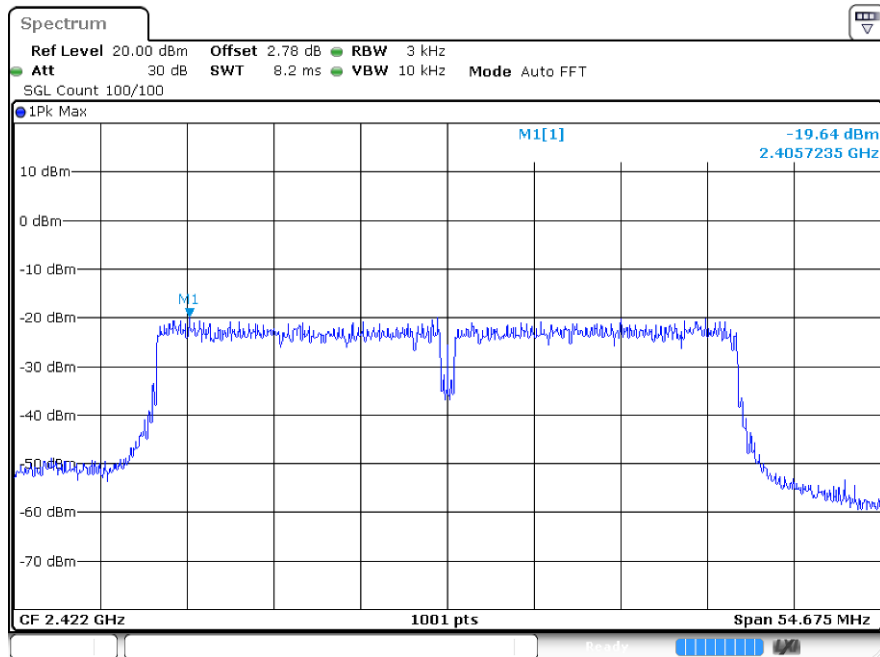
Test_Graph_802.11n20_ANT1_2412



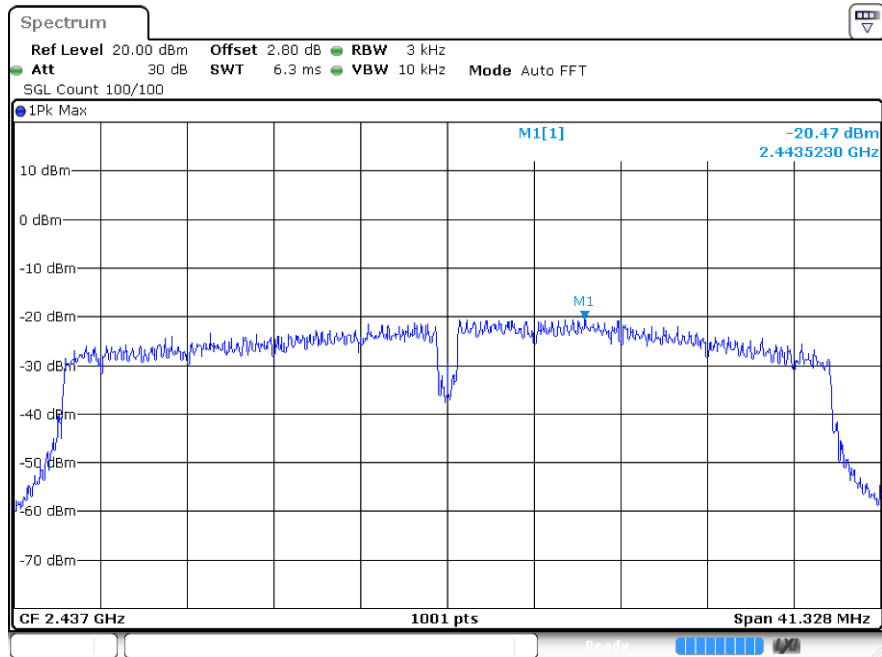
Test_Graph_802.11n20_ANT1_2437



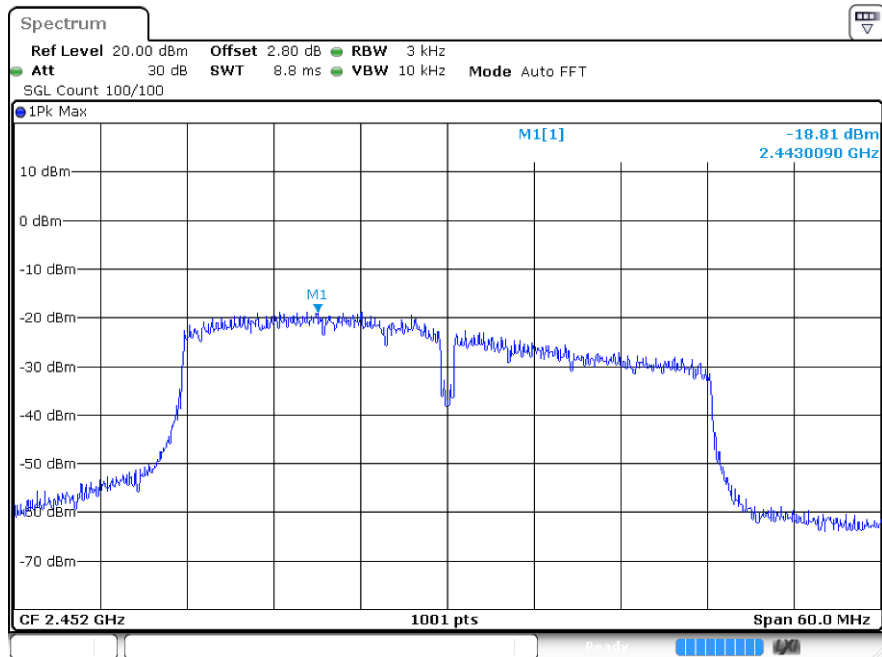
Test_Graph_802.11n20_ANT1_2462



Test_Graph_802.11n40_ANT1_2412



Test_Graph_802.11n40_ANT1_2437



Test_Graph_802.11n40_ANT1_2452

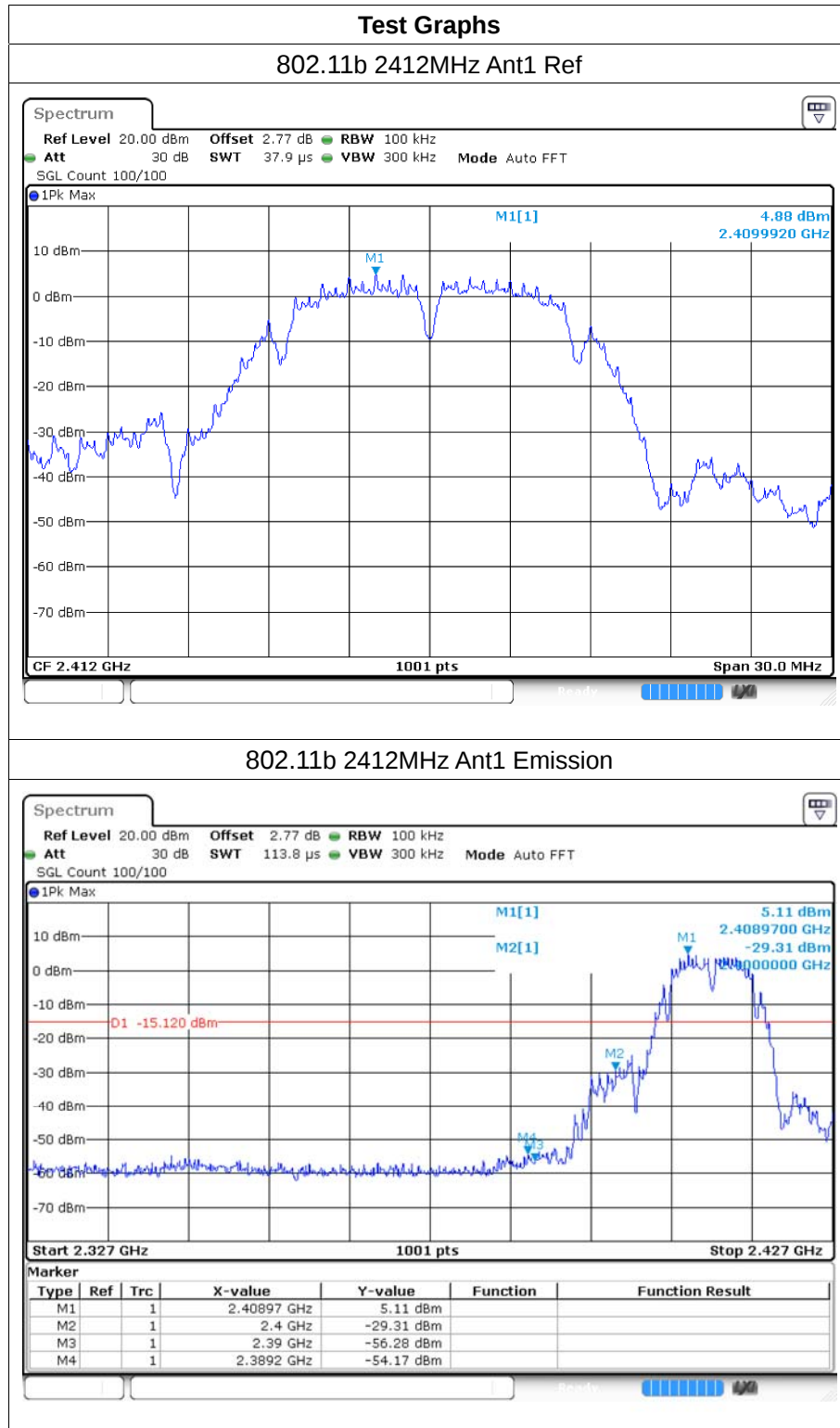


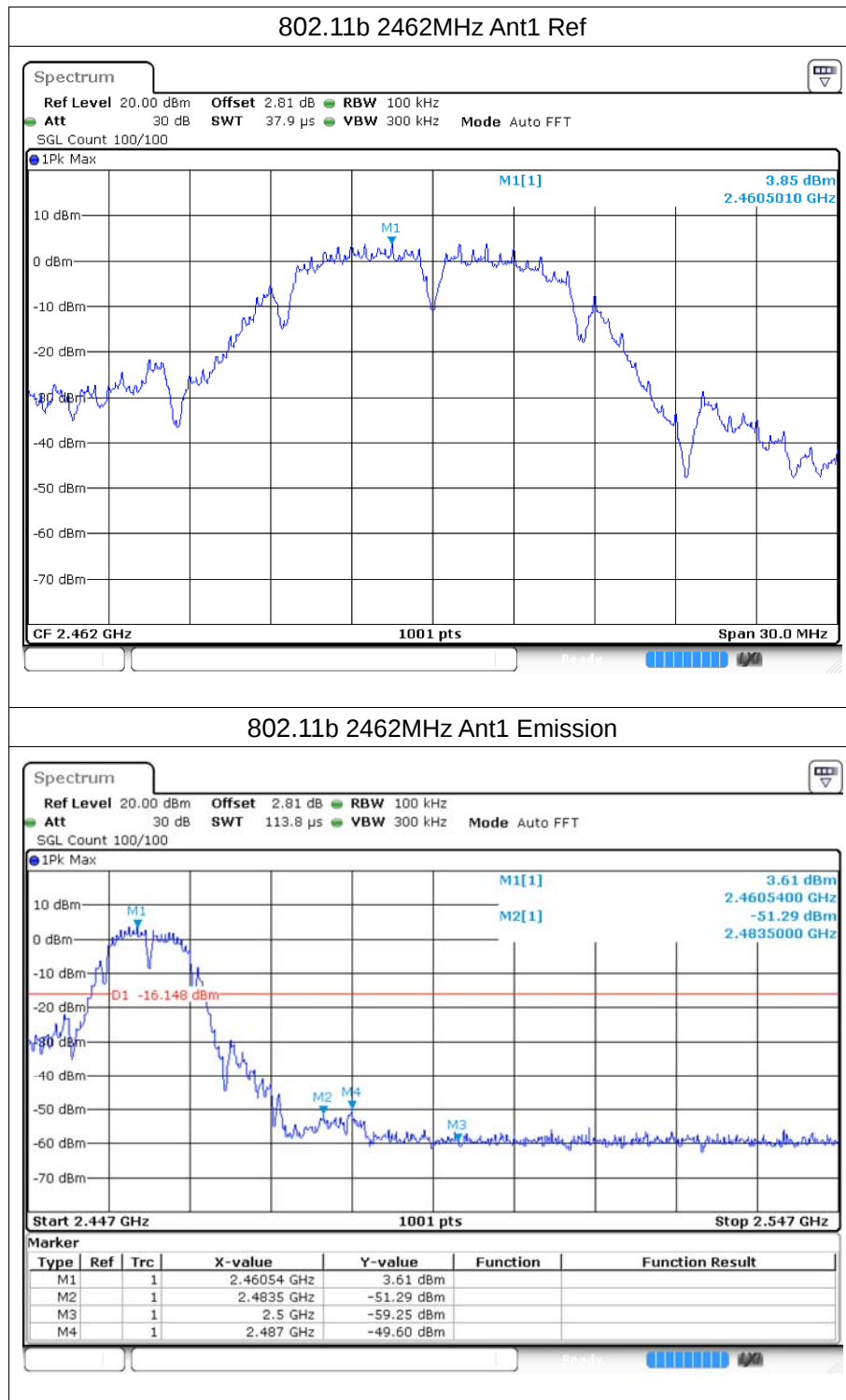
5 Band Edge

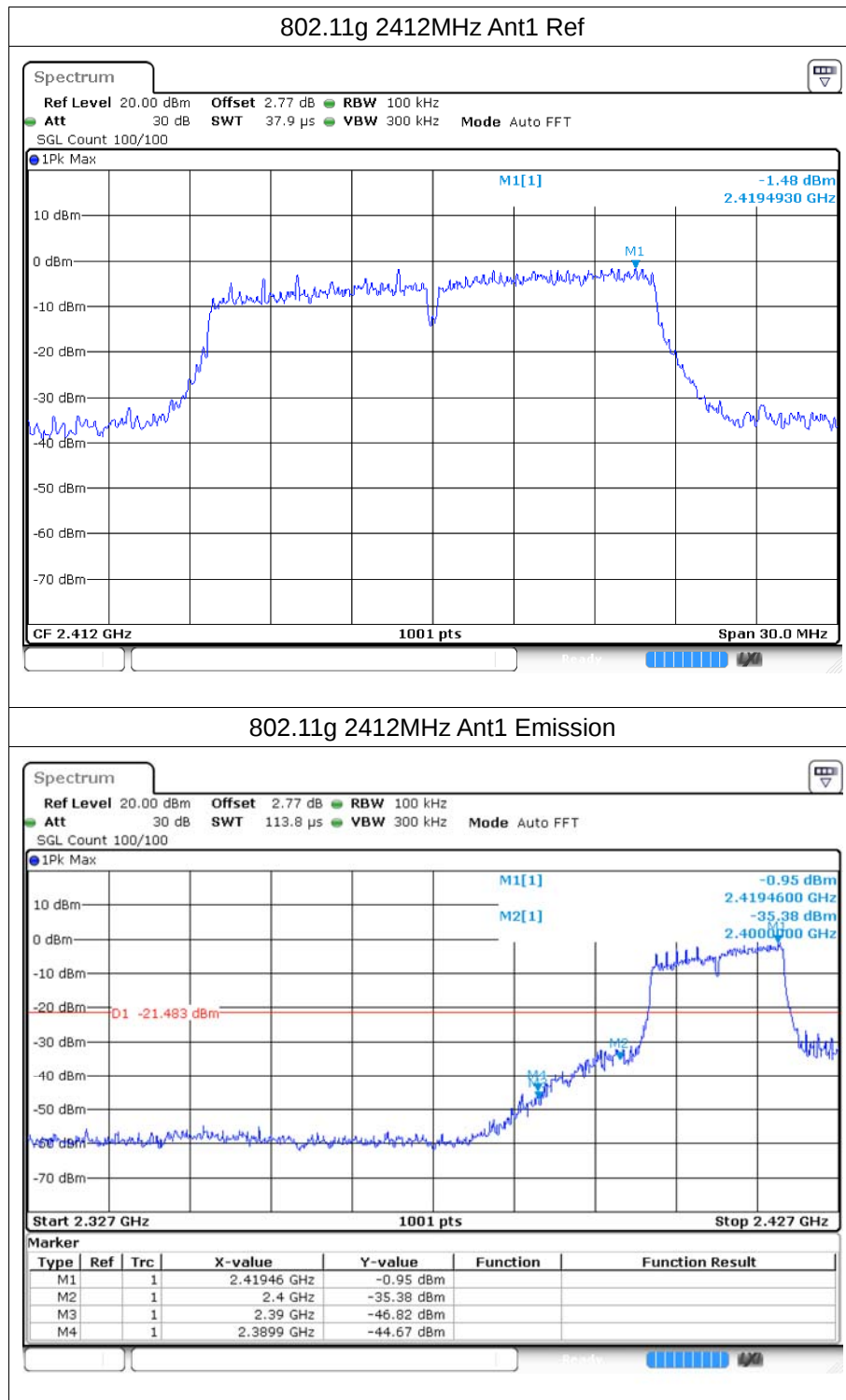
5.1 Test Result

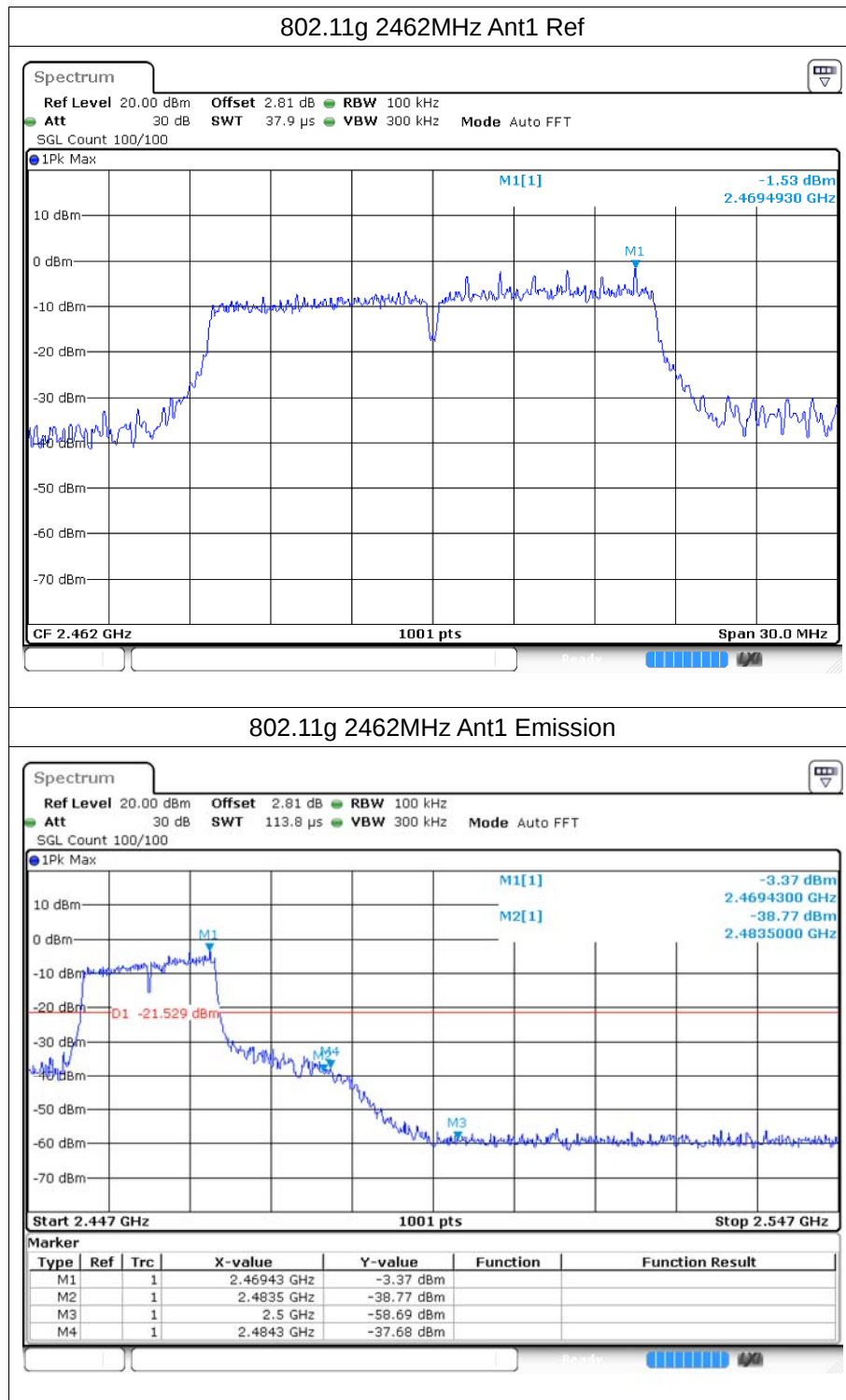
Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
802.11b	2412	Ant1	-59.05	-20	Pass
802.11b	2462	Ant1	-53.45	-20	Pass
802.11g	2412	Ant1	-43.19	-20	Pass
802.11g	2462	Ant1	-36.15	-20	Pass
802.11n20	2412	Ant1	-42.92	-20	Pass
802.11n20	2462	Ant1	-34.0	-20	Pass
802.11n40	2422	Ant1	-35.47	-20	Pass
802.11n40	2452	Ant1	-43.97	-20	Pass

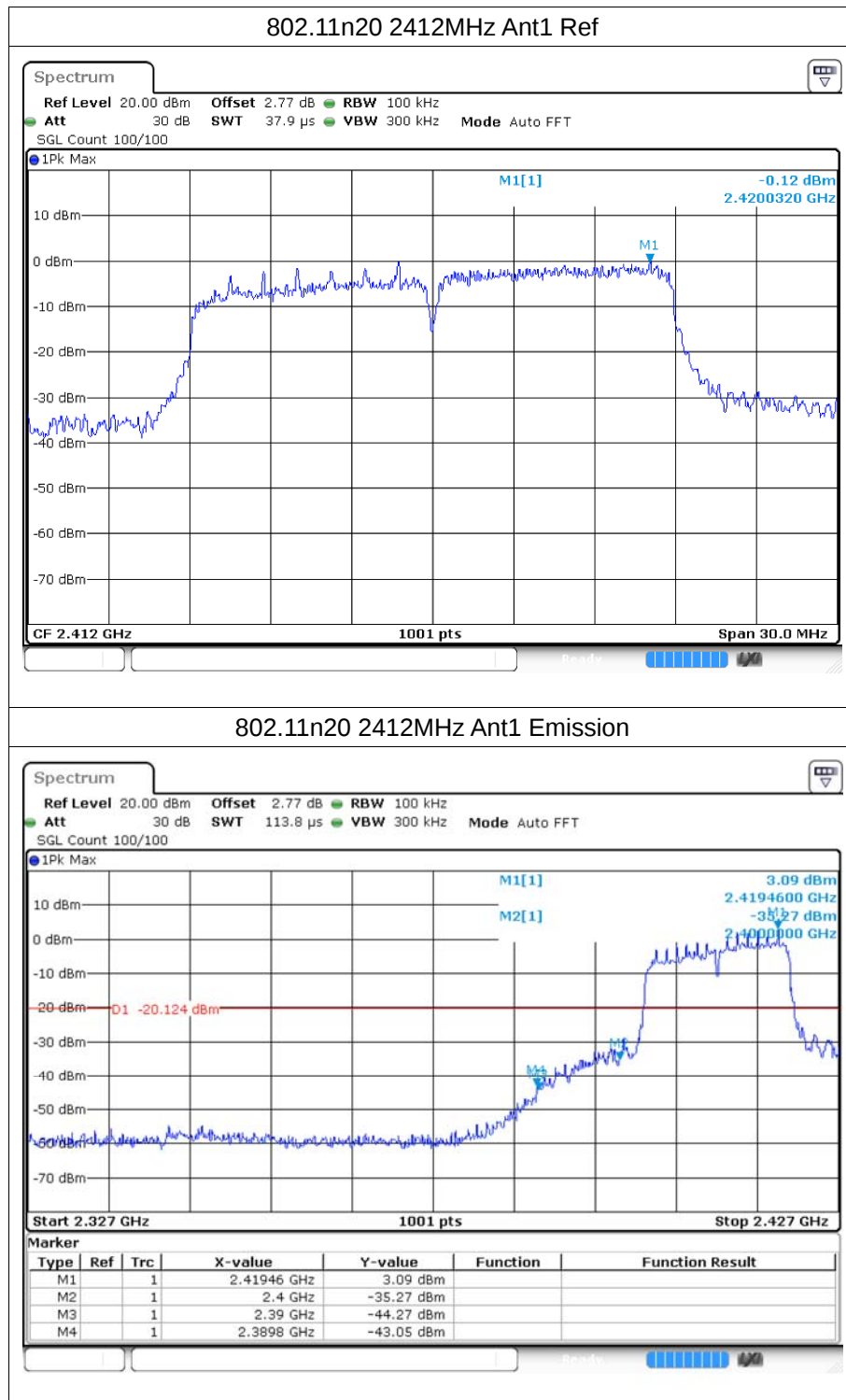
5.2 Test Graphs

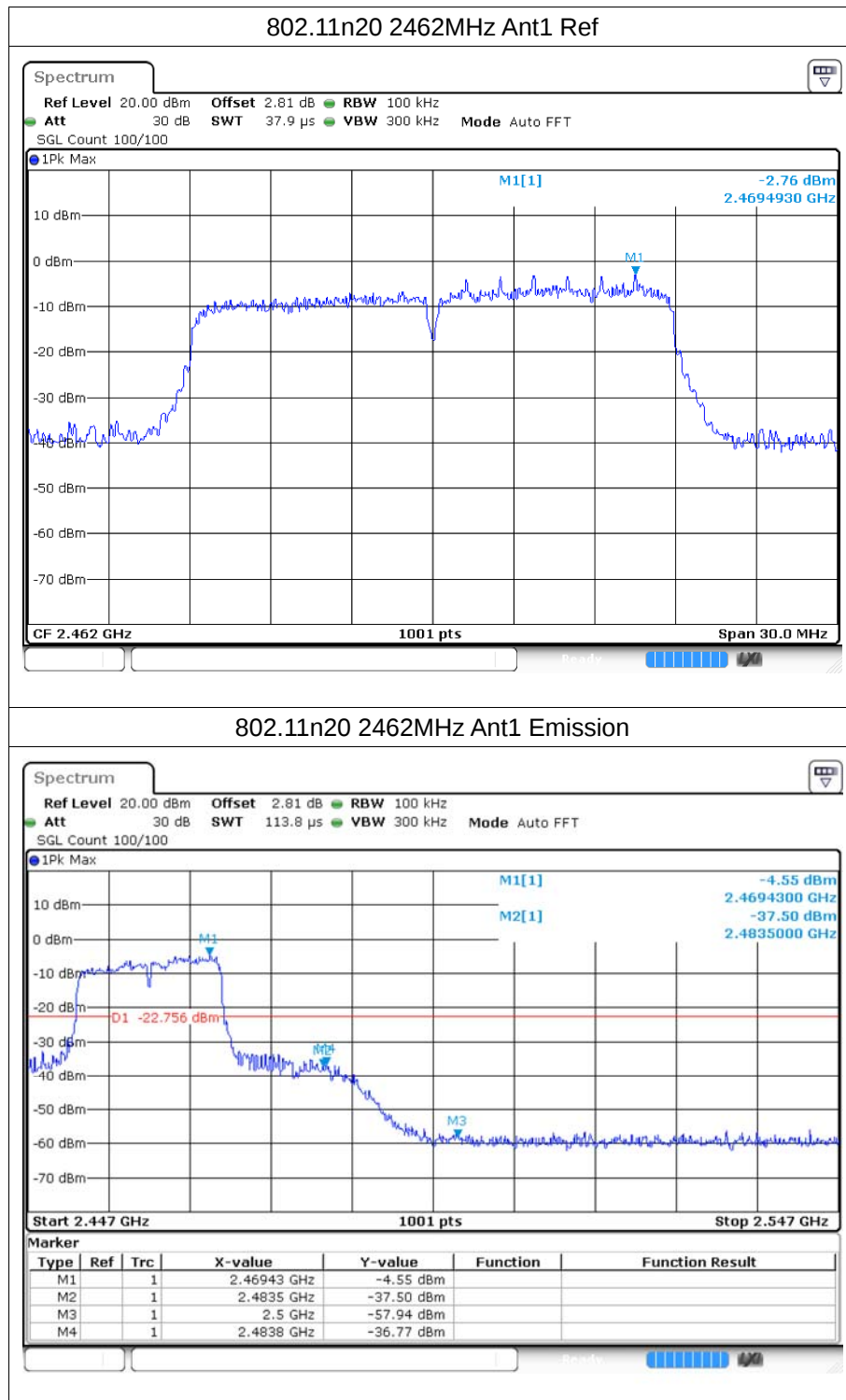


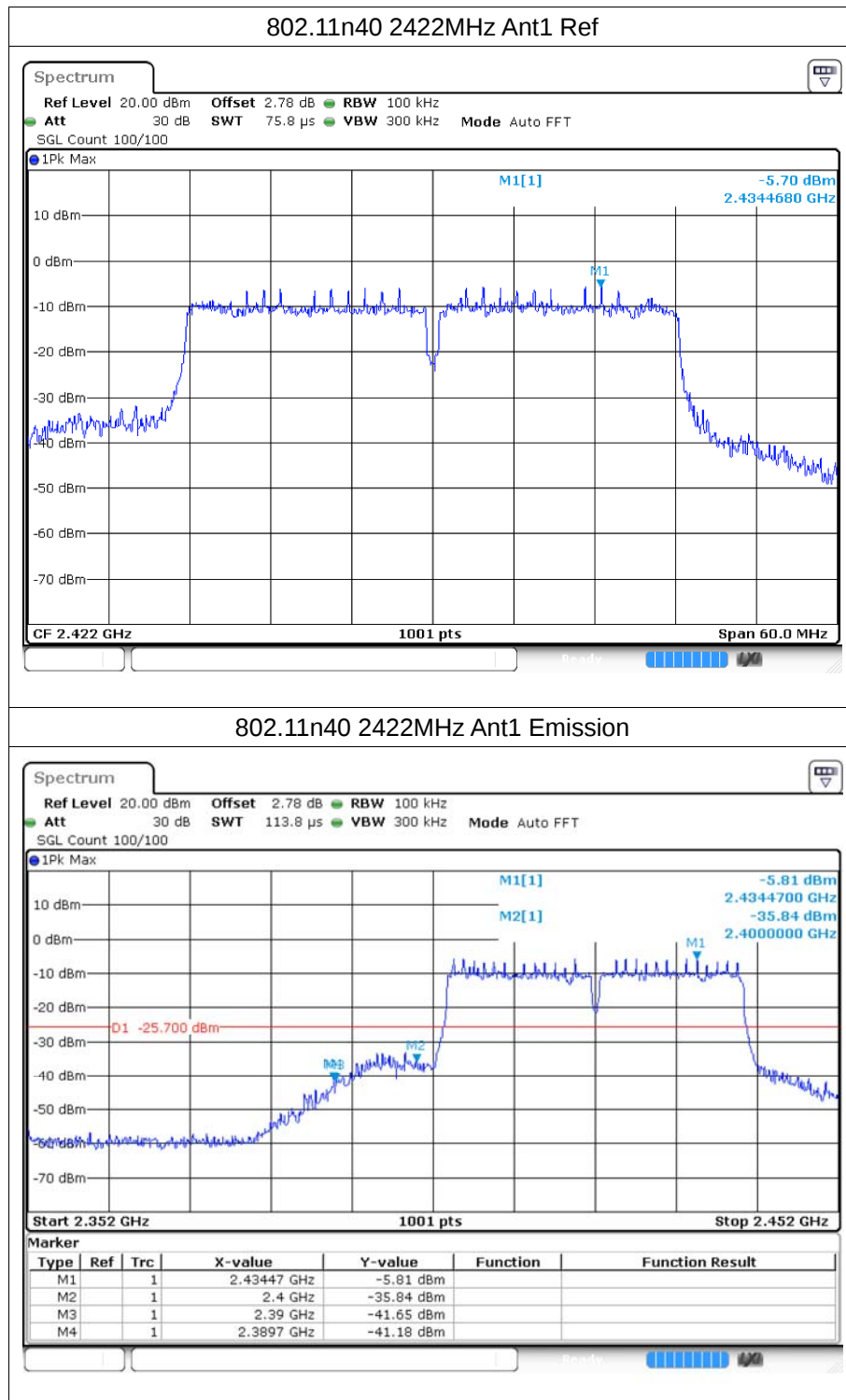


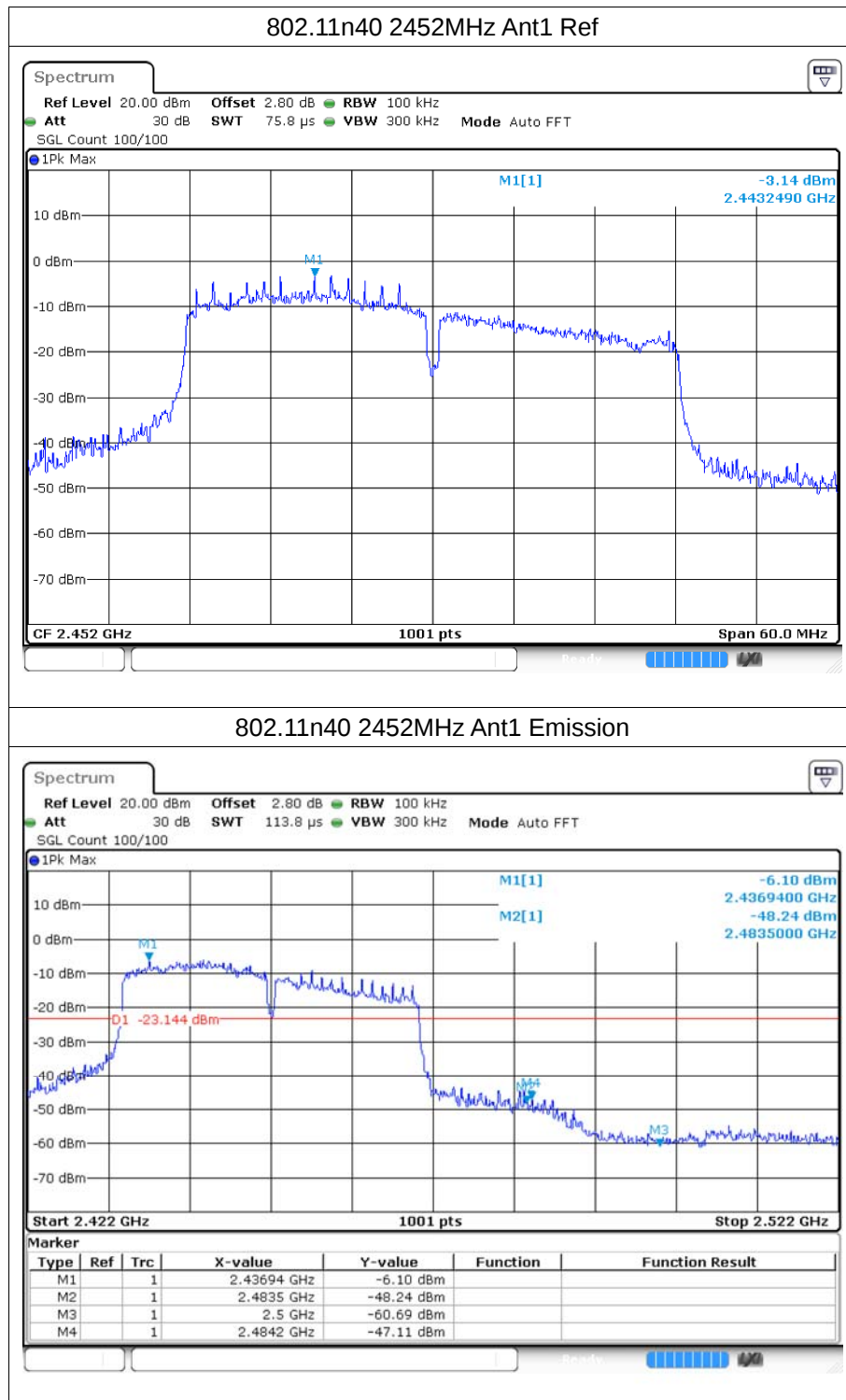












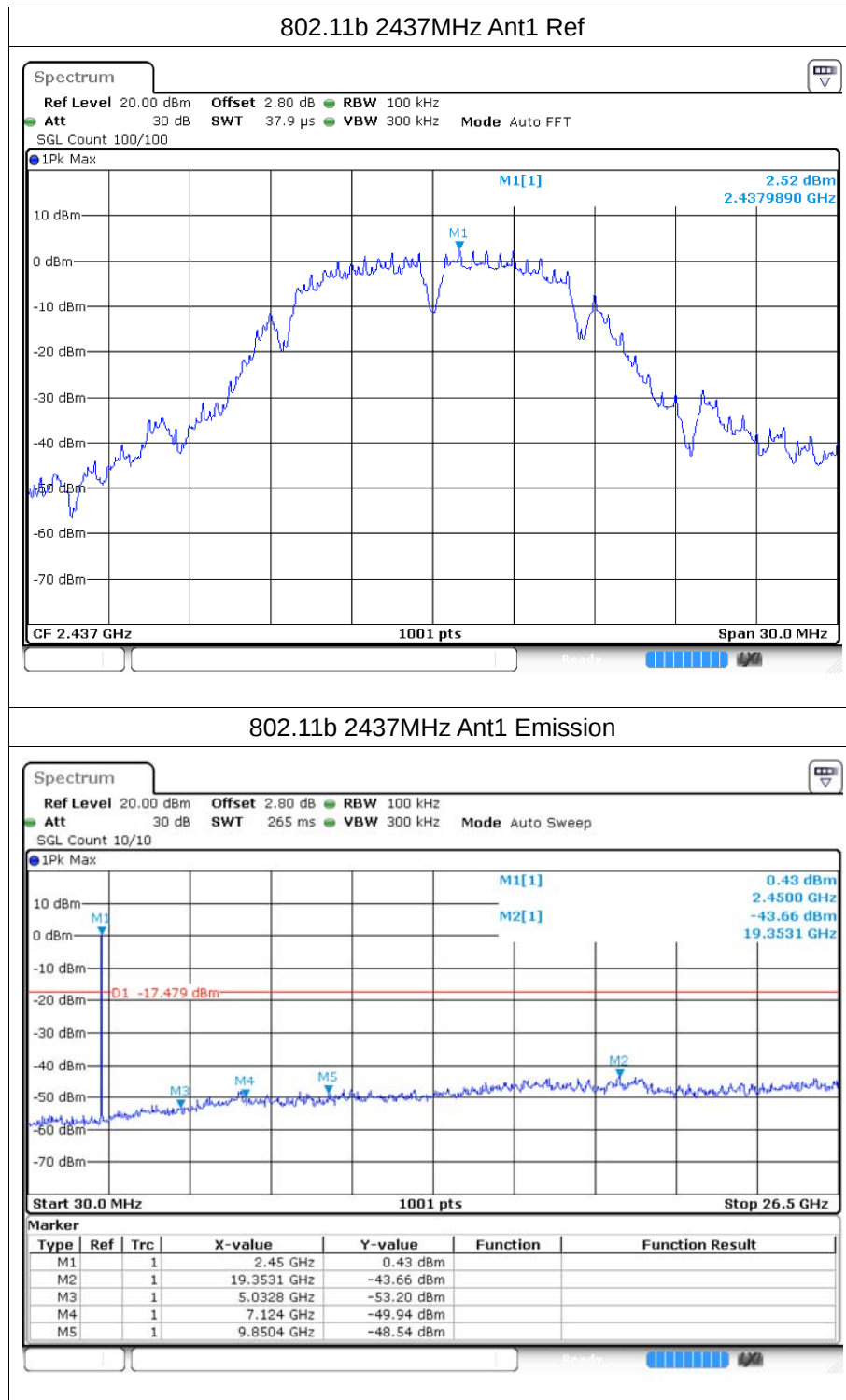
6 Conducted RF Spurious Emission

6.1 Test Result

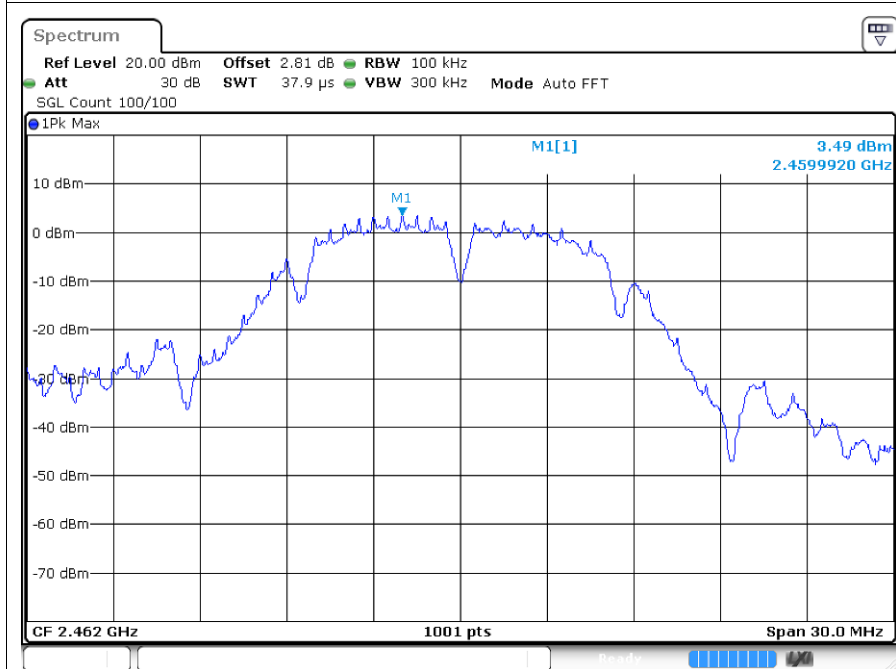
Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
802.11b	2412	Ant1	-47.15	-20	Pass
802.11b	2437	Ant1	-46.17	-20	Pass
802.11b	2462	Ant1	-46.85	-20	Pass
802.11g	2412	Ant1	-43.26	-20	Pass
802.11g	2437	Ant1	-41.75	-20	Pass
802.11g	2462	Ant1	-37.75	-20	Pass
802.11n20	2412	Ant1	-45.4	-20	Pass
802.11n20	2437	Ant1	-38.21	-20	Pass
802.11n20	2462	Ant1	-41.41	-20	Pass
802.11n40	2422	Ant1	-33.55	-20	Pass
802.11n40	2437	Ant1	-38.78	-20	Pass
802.11n40	2452	Ant1	-39.65	-20	Pass

6.2 Test Graphs

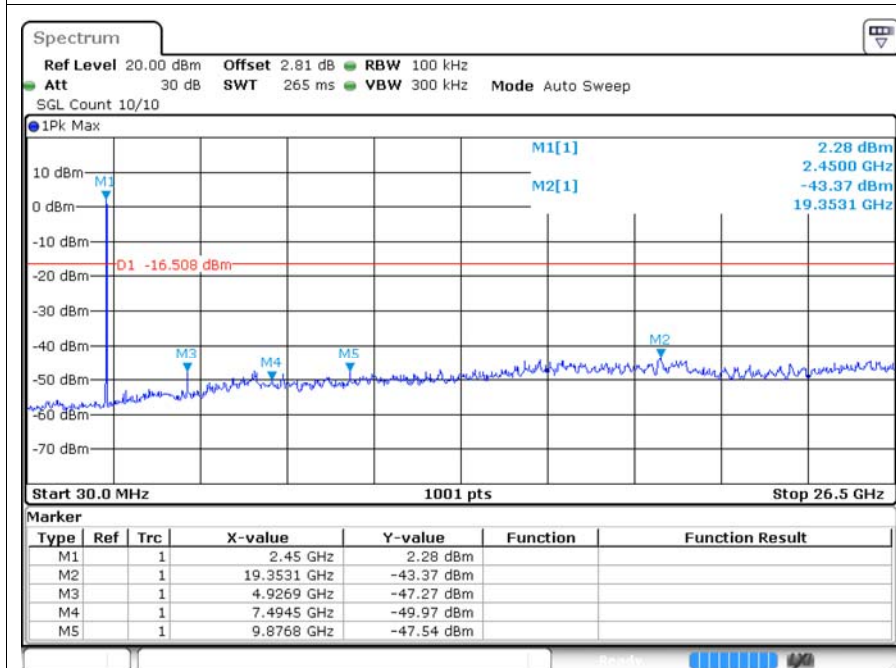




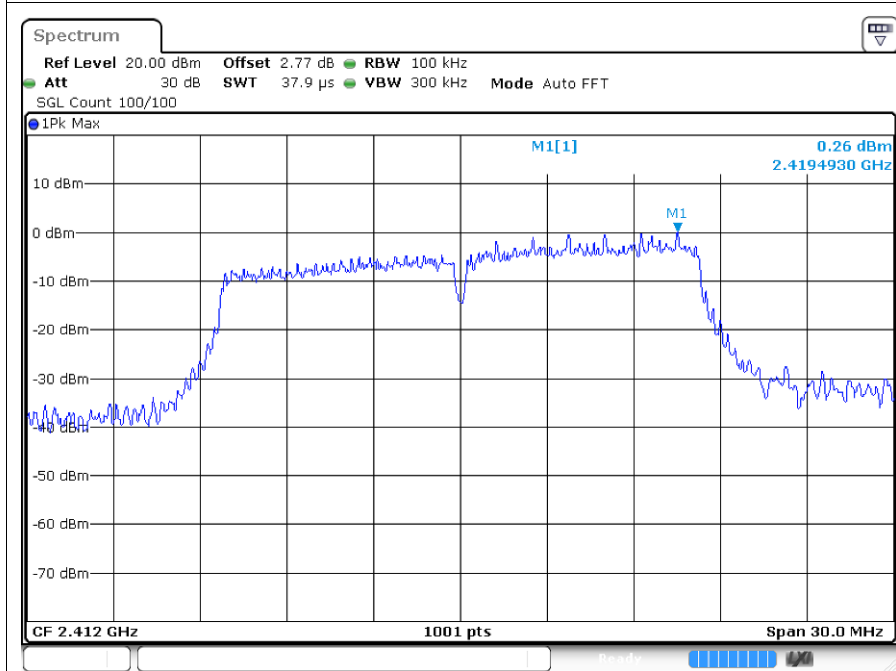
802.11b 2462MHz Ant1 Ref



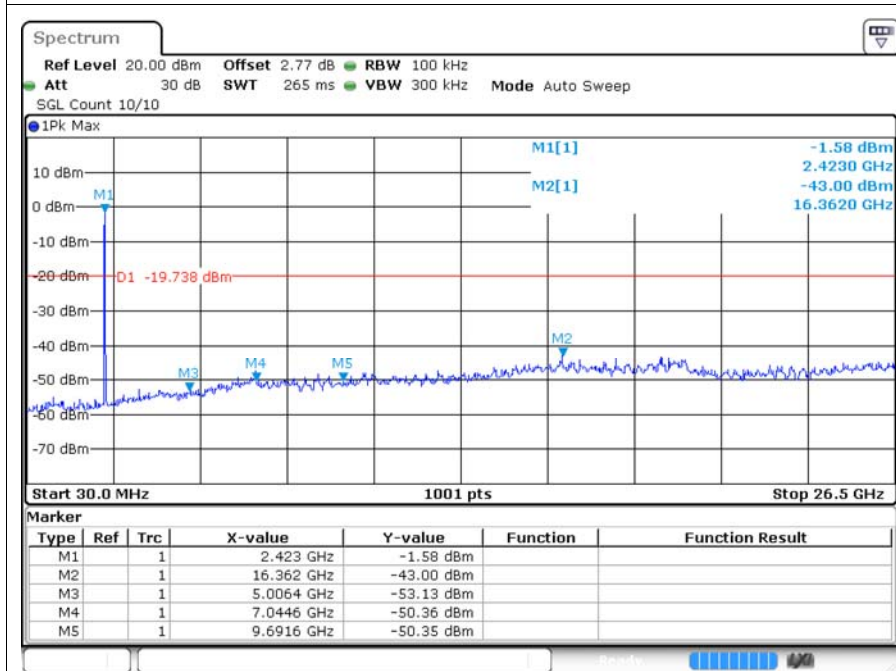
802.11b 2462MHz Ant1 Emission



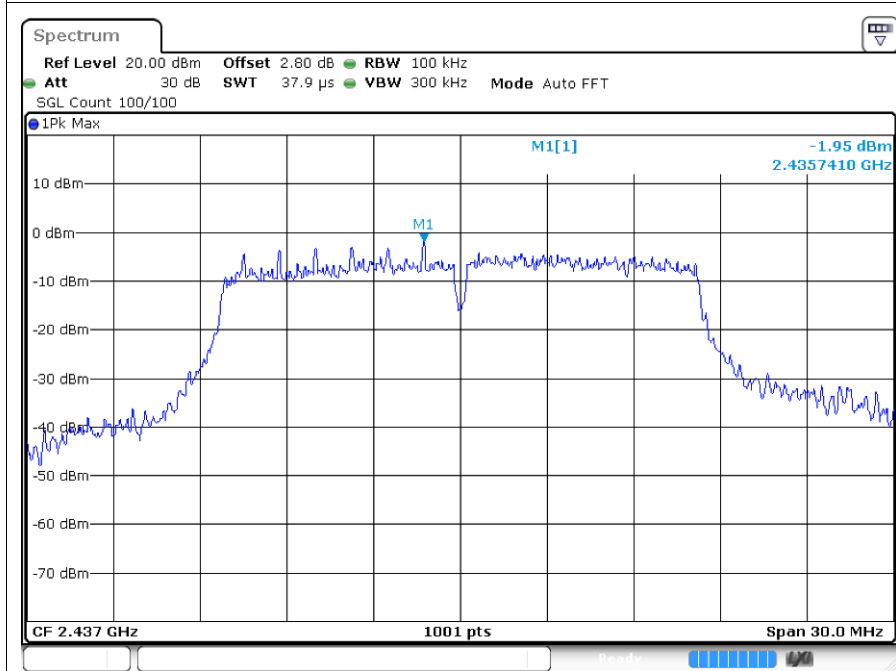
802.11g 2412MHz Ant1 Ref



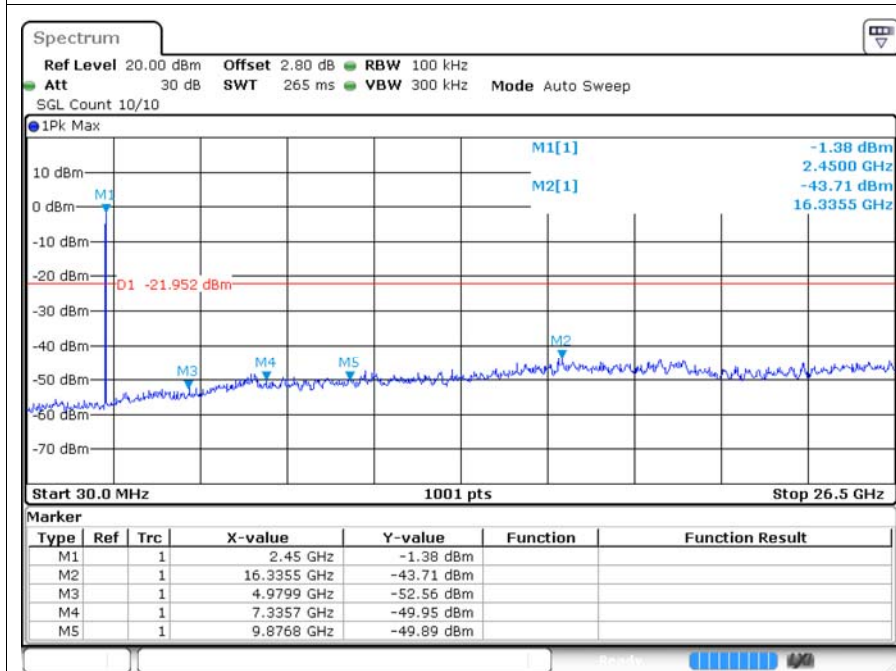
802.11g 2412MHz Ant1 Emission

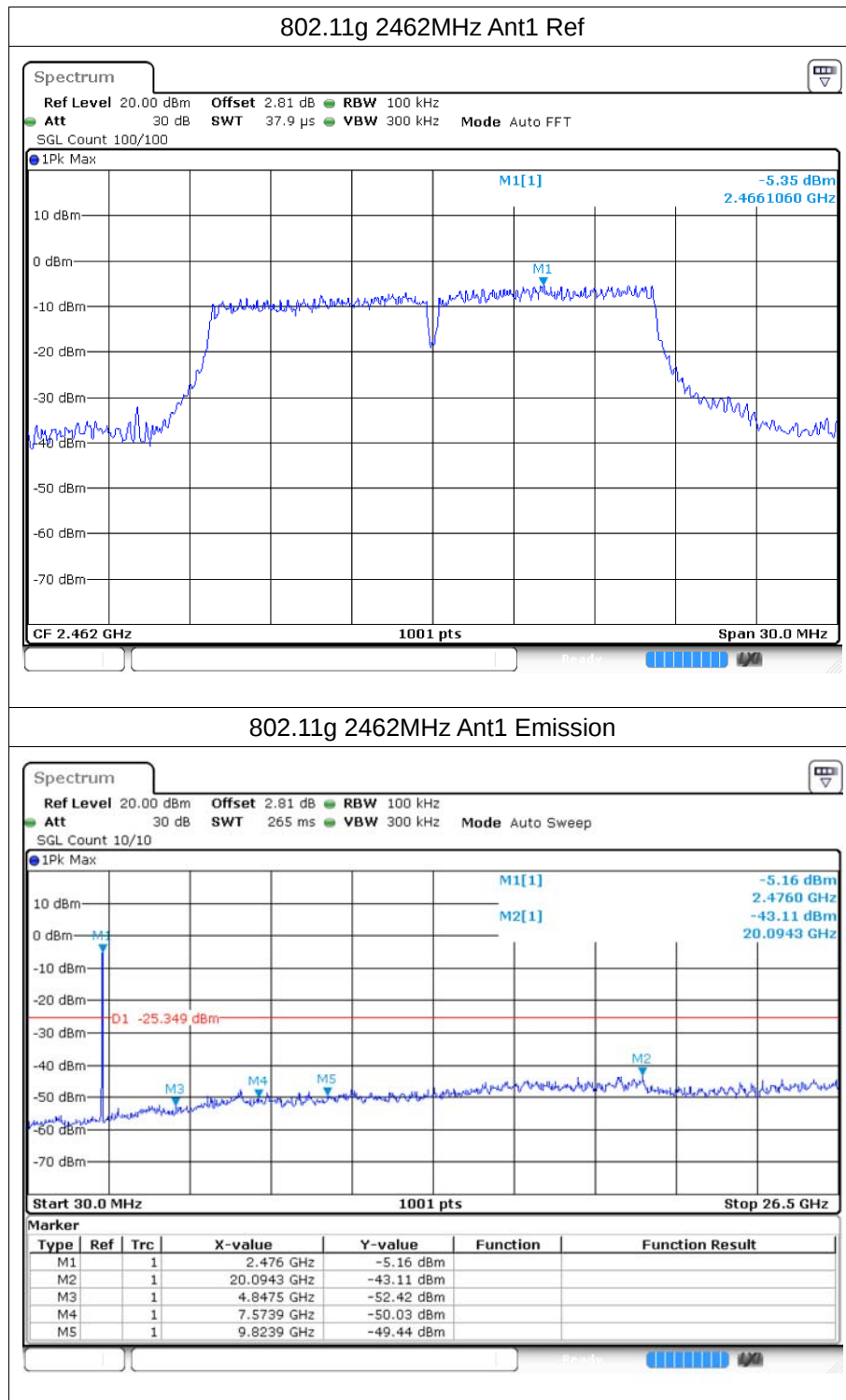


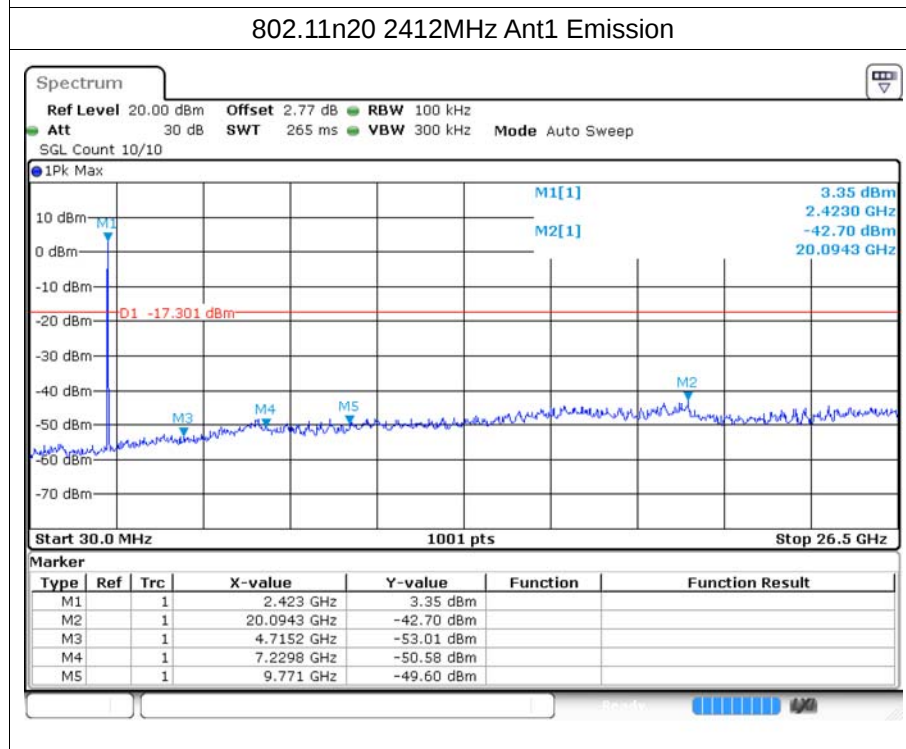
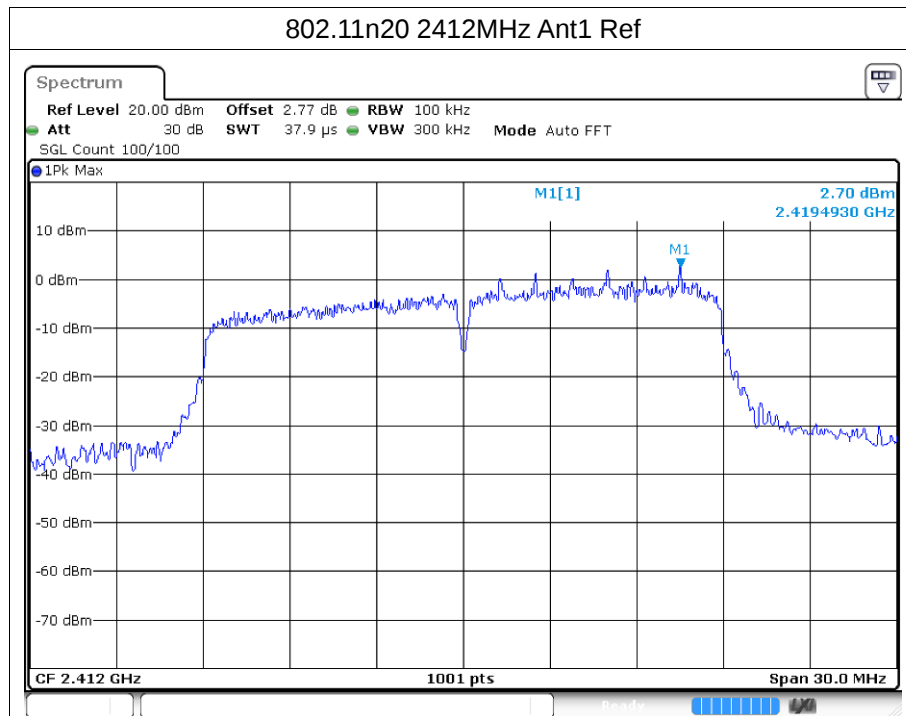
802.11g 2437MHz Ant1 Ref

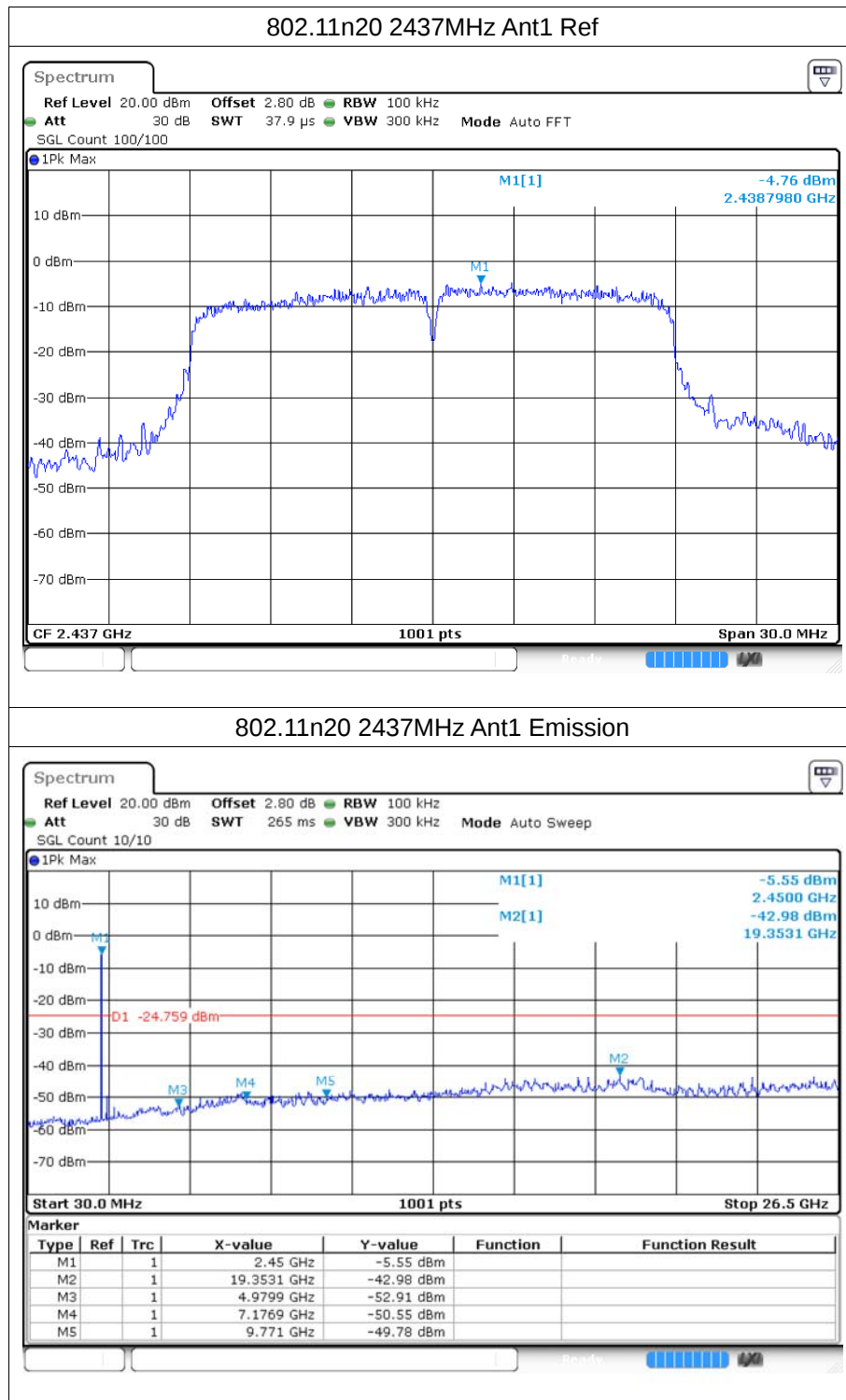


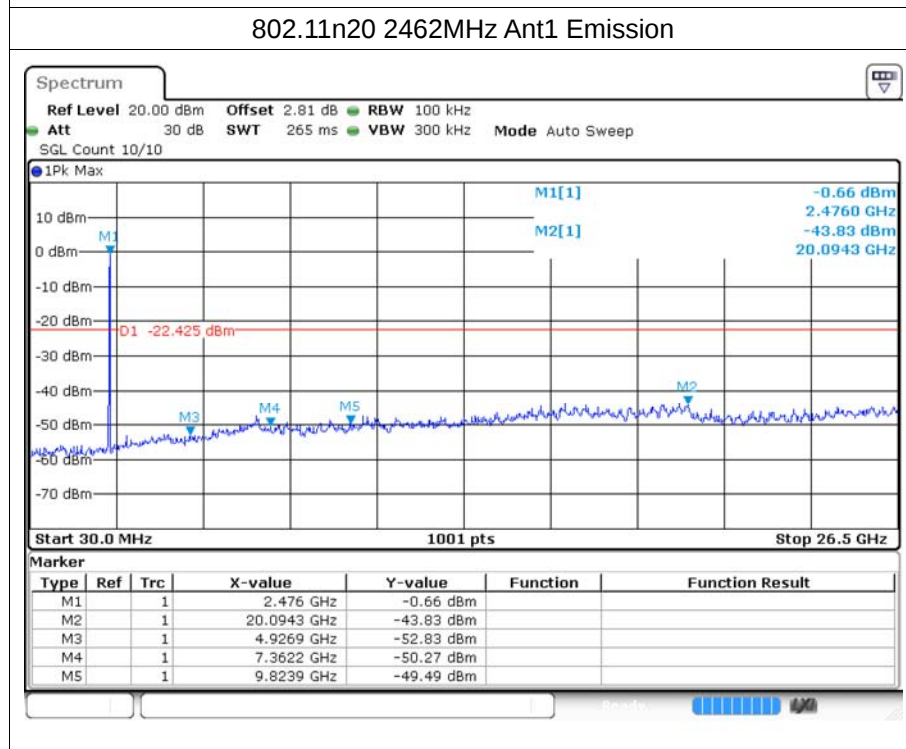
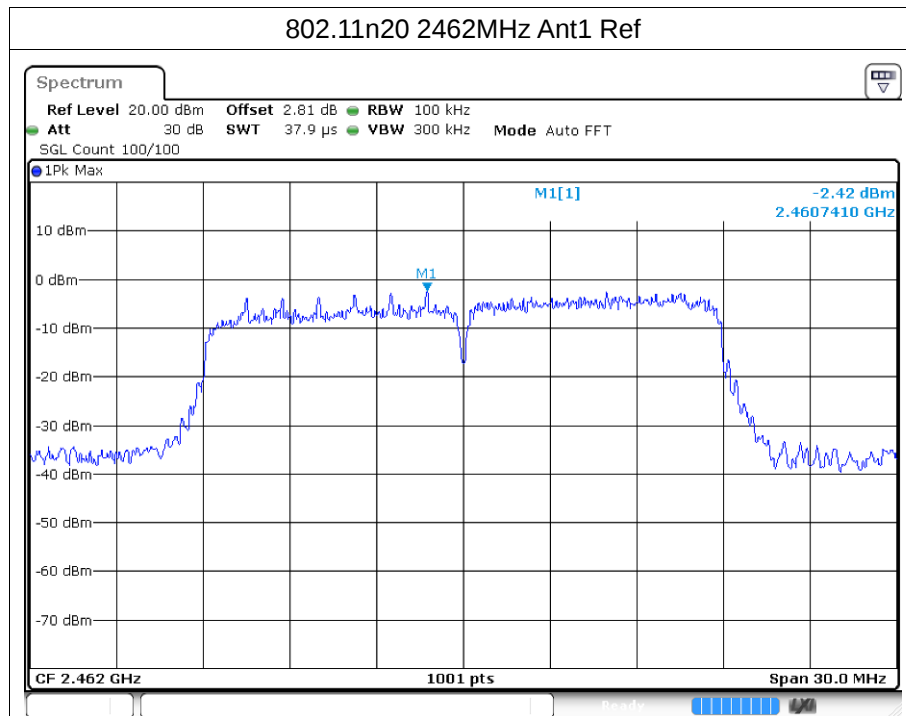
802.11g 2437MHz Ant1 Emission



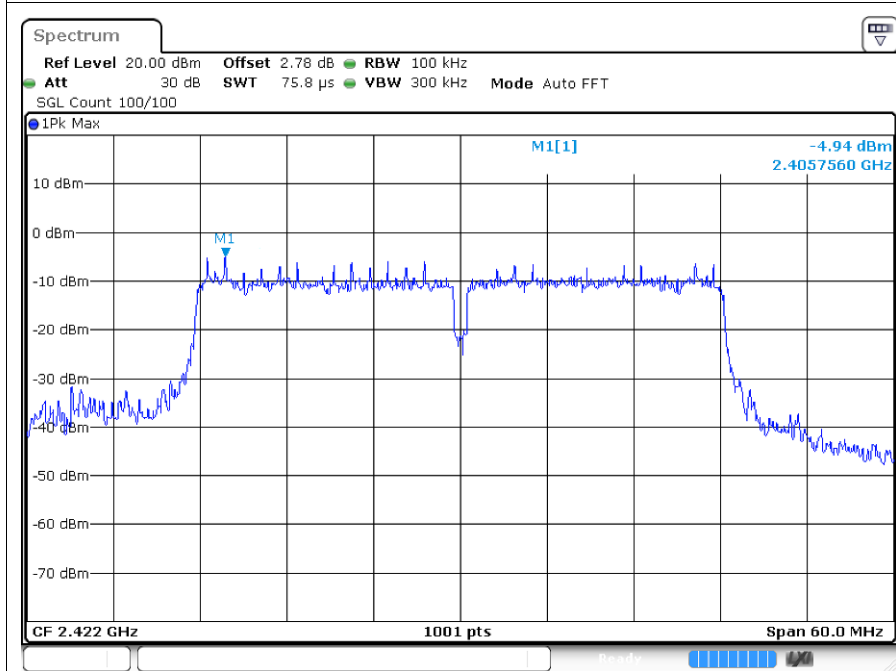




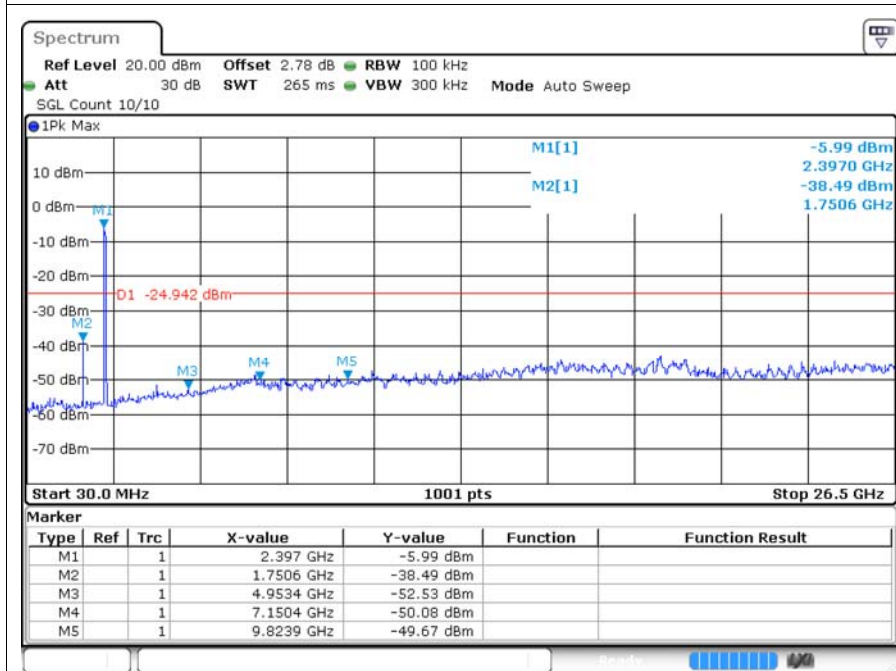




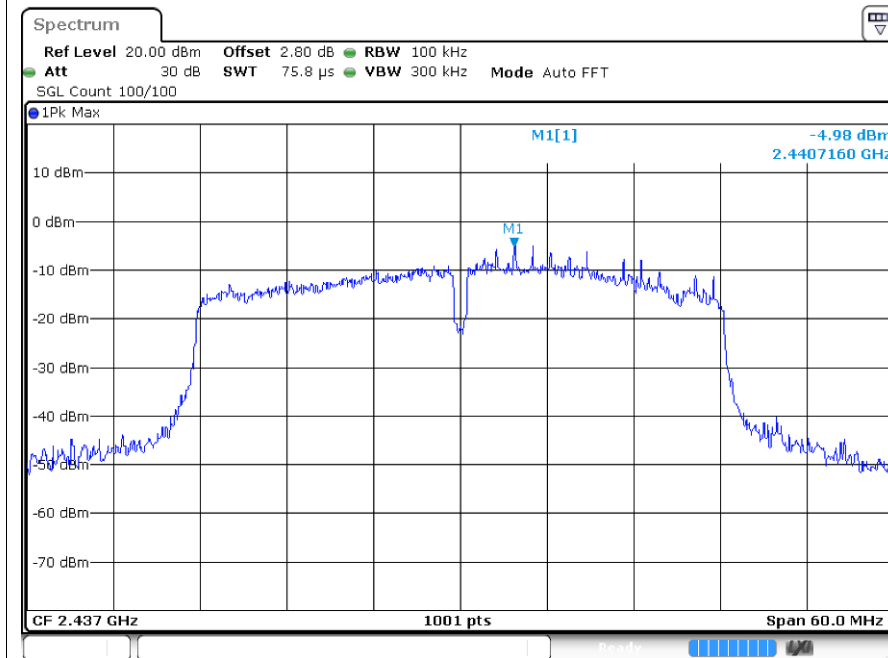
802.11n40 2422MHz Ant1 Ref



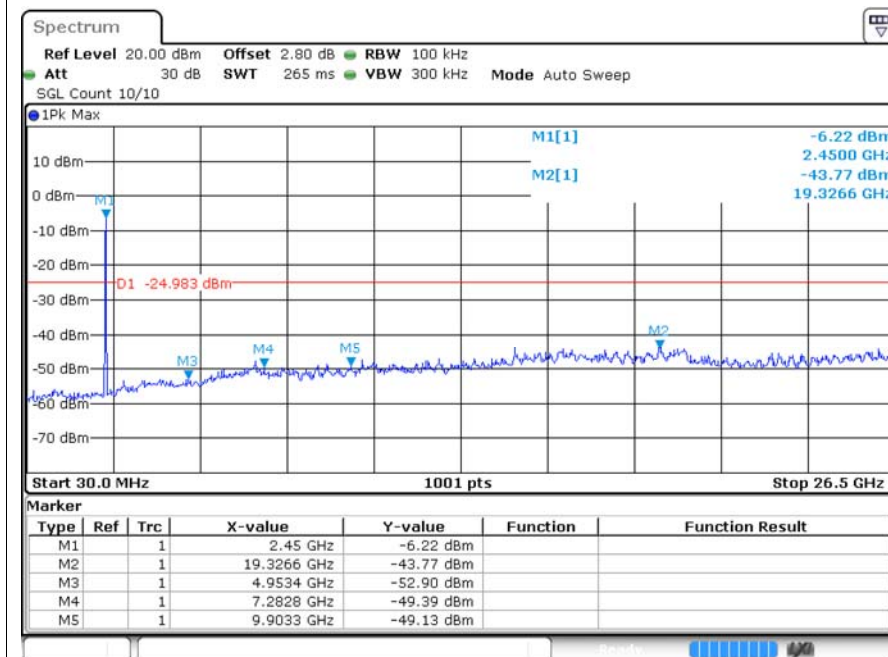
802.11n40 2422MHz Ant1 Emission

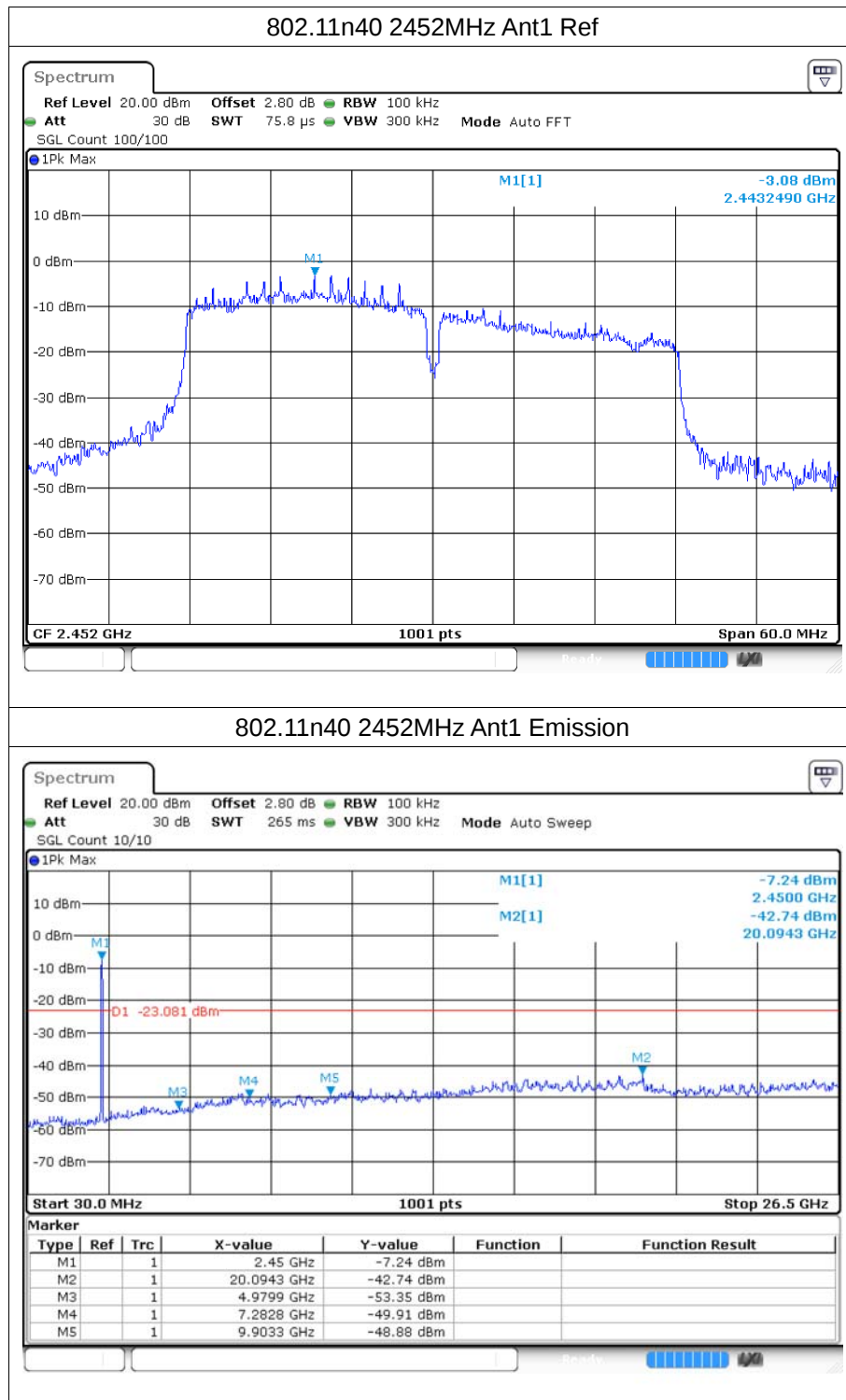


802.11n40 2437MHz Ant1 Ref



802.11n40 2437MHz Ant1 Emission







7 Restrict Band

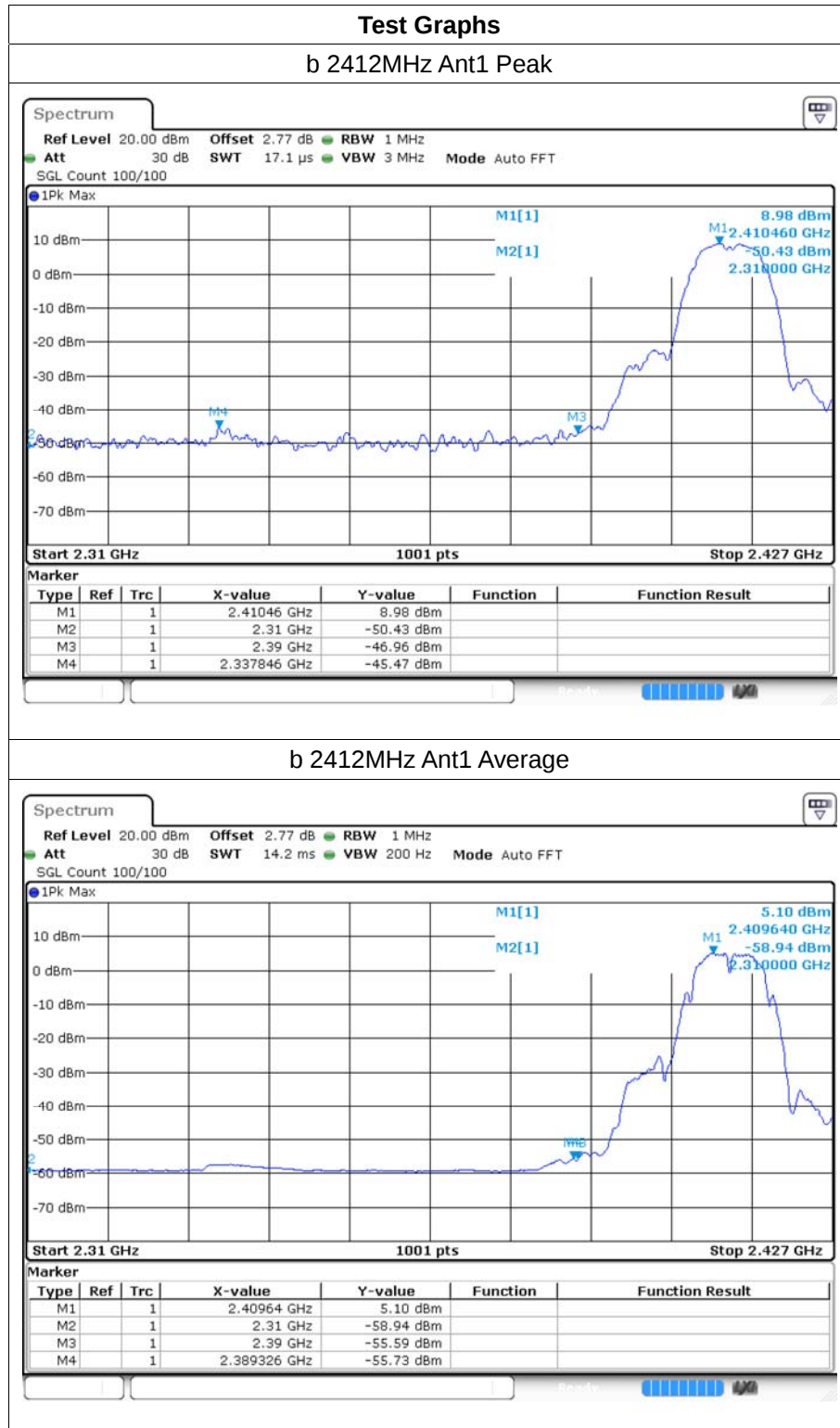
7.1 Test Result

Mode	Frequency (MHz)	Ant.	Spur Freq (MHz)	Power (dBm)	Gain (dBi)	E (dBuV/m)	Detector	Limit (dBuV/m)	Verdict
802.11b	2412	Ant1	2310	-50.43	2	46.83	Peak	74	Pass
802.11b	2412	Ant1	2310	-58.93	2	38.33	Average	54	Pass
802.11b	2412	Ant1	2337.846	-45.47	2	51.79	Peak	74	Pass
802.11b	2412	Ant1	2389.326	-55.73	2	41.53	Average	54	Pass
802.11b	2412	Ant1	2390	-46.96	2	50.3	Peak	74	Pass
802.11b	2412	Ant1	2390	-55.59	2	41.67	Average	54	Pass
802.11b	2462	Ant1	2483.5	-45.64	2	51.62	Peak	74	51.62
802.11b	2462	Ant1	2483.5	-52.63	2	44.63	Average	54	Pass
802.11b	2462	Ant1	2484.365	-43.91	2	53.35	Peak	74	Pass
802.11b	2462	Ant1	2486.803	-51.34	2	45.92	Average	54	Pass
802.11b	2462	Ant1	2500	-49.79	2	47.47	Peak	74	Pass
802.11b	2462	Ant1	2500	-58.76	2	38.5	Average	54	Pass
802.11g	2412	Ant1	2310	-48.01	2	49.25	Peak	74	Pass
802.11g	2412	Ant1	2310	-58.48	2	38.78	Average	54	Pass
802.11g	2412	Ant1	2389.911	-37.42	2	59.84	Peak	74	Pass
802.11g	2412	Ant1	2389.911	-48.69	2	48.57	Average	54	Pass
802.11g	2412	Ant1	2390	-36.83	2	50.3	Peak	74	Pass
802.11g	2412	Ant1	2390	-48.42	2	48.84	Average	54	Pass
802.11g	2462	Ant1	2483.5	-28.37	2	68.89	Peak	74	Pass
802.11g	2462	Ant1	2483.5	-47.5	2	49.76	Average	54	Pass
802.11g	2462	Ant1	2484.365	-28.37	2	68.89	Peak	74	Pass
802.11g	2462	Ant1	2483.517	-47.5	2	49.76	Average	54	Pass
802.11g	2462	Ant1	2500	-49.08	2	47.47	Peak	74	Pass
802.11g	2462	Ant1	2500	-58.08	2	39.18	Average	54	Pass
802.11n20	2412	Ant1	2310	-50.01	2	47.25	Peak	74	Pass
802.11n20	2412	Ant1	2310	-58.39	2	38.87	Average	54	Pass
802.11n20	2412	Ant1	2389.911	-33.18	2	64.08	Peak	74	Pass
802.11n20	2412	Ant1	2389.911	-46.8	2	50.46	Average	54	Pass
802.11n20	2412	Ant1	2390	-32.94	2	64.32	Peak	74	Pass
802.11n20	2412	Ant1	2390	-46.44	2	50.82	Average	54	Pass
802.11n20	2462	Ant1	2483.5	-24.05	2	73.21	Peak	74	Pass
802.11n20	2462	Ant1	2483.5	-45.27	2	51.99	Average	54	Pass
802.11n20	2462	Ant1	2483.782	-23.82	2	73.44	Peak	74	Pass
802.11n20	2462	Ant1	2483.623	-45.23	2	52.03	Average	54	Pass
802.11n20	2462	Ant1	2500	-49.33	2	47.93	Peak	74	Pass

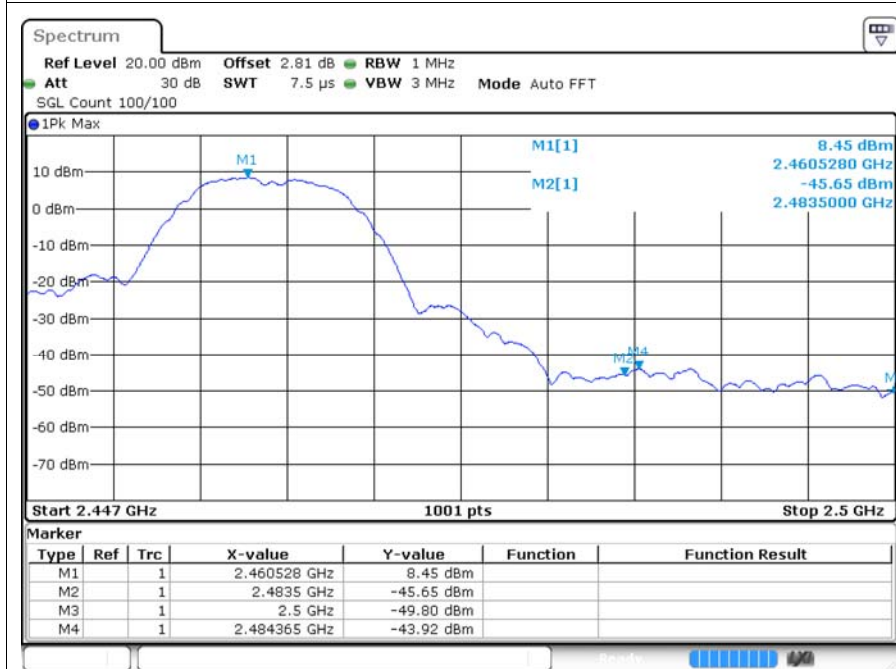


802.11n20	2462	Ant1	2500	-57.99	2	39.27	Average	54	Pass
802.11n40	2422	Ant1	2310	-50.36	2	46.9	Peak	74	Pass
802.11n40	2422	Ant1	2310	-58.25	2	39.01	Average	54	Pass
802.11n40	2422	Ant1	2389.946	-33.95	2	63.31	Peak	74	Pass
802.11n40	2422	Ant1	2389.946	-44.85	2	52.41	Average	54	Pass
802.11n40	2422	Ant1	2390	-33.8	2	63.46	Peak	74	Pass
802.11n40	2422	Ant1	2390	-44.57	2	52.69	Average	54	Pass
802.11n40	2452	Ant1	2483.5	-35.88	2	61.38	Peak	74	Pass
802.11n40	2452	Ant1	2483.5	-49.12	2	48.14	Average	54	Pass
802.11n40	2452	Ant1	2483.932	-35	2	62.26	Peak	74	Pass
802.11n40	2452	Ant1	2483.542	-49.12	2	48.14	Average	54	Pass
802.11n40	2452	Ant1	2500	-49.93	2	47.33	Peak	74	Pass
802.11n40	2452	Ant1	2500	-58.15	2	39.11	Average	54	Pass

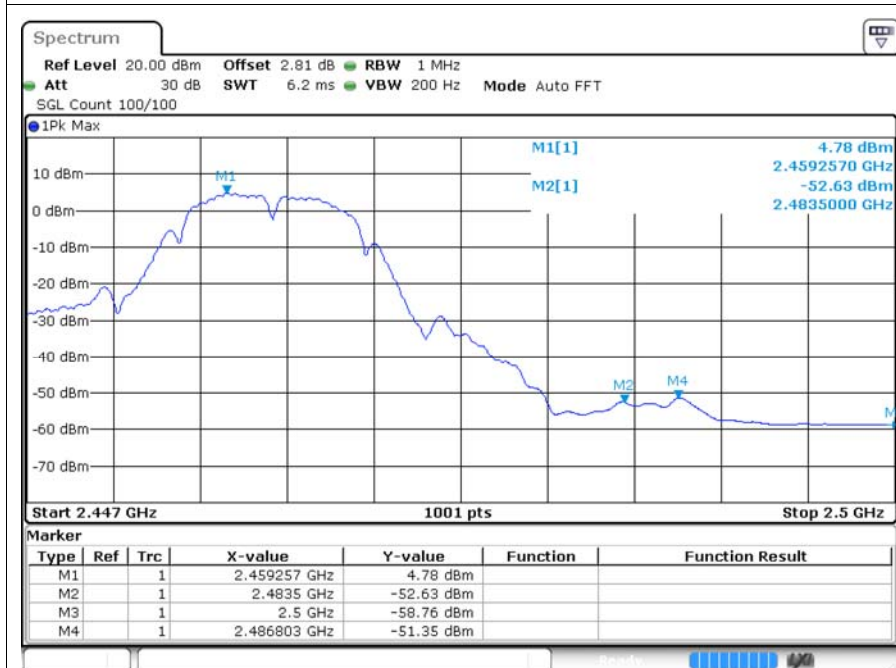
7.2 Test Graphs



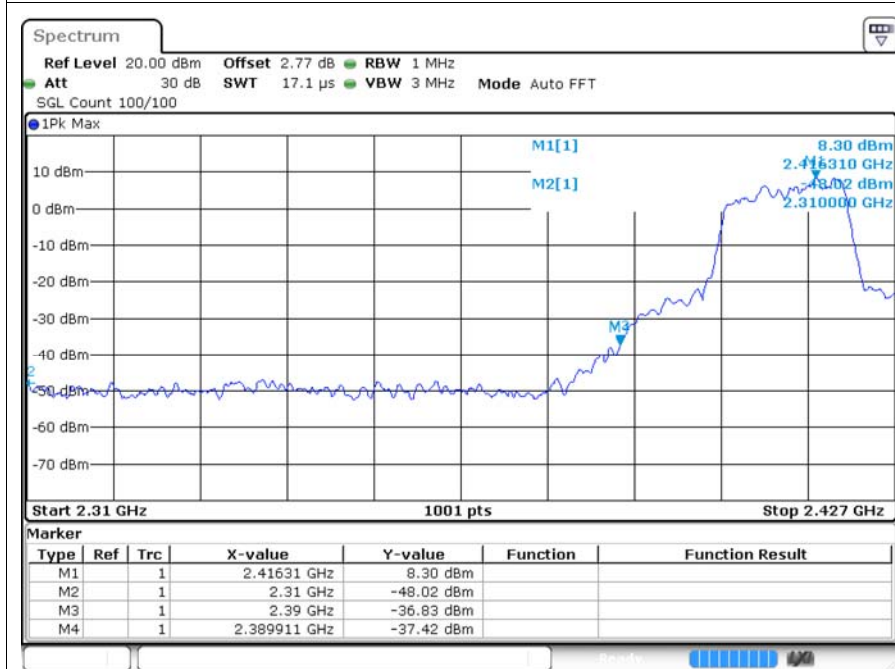
b 2462MHz Ant1 Peak



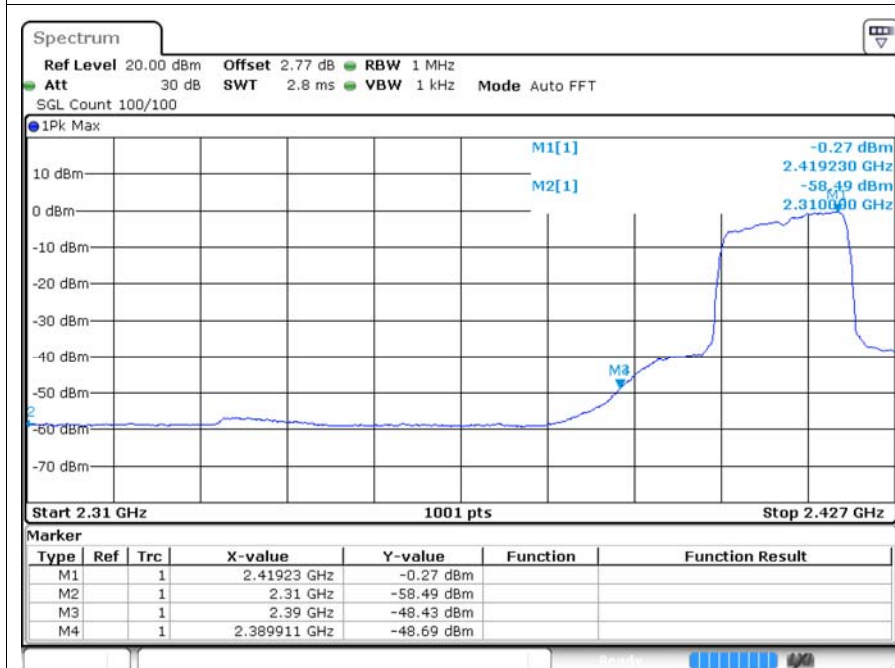
b 2462MHz Ant1 Average



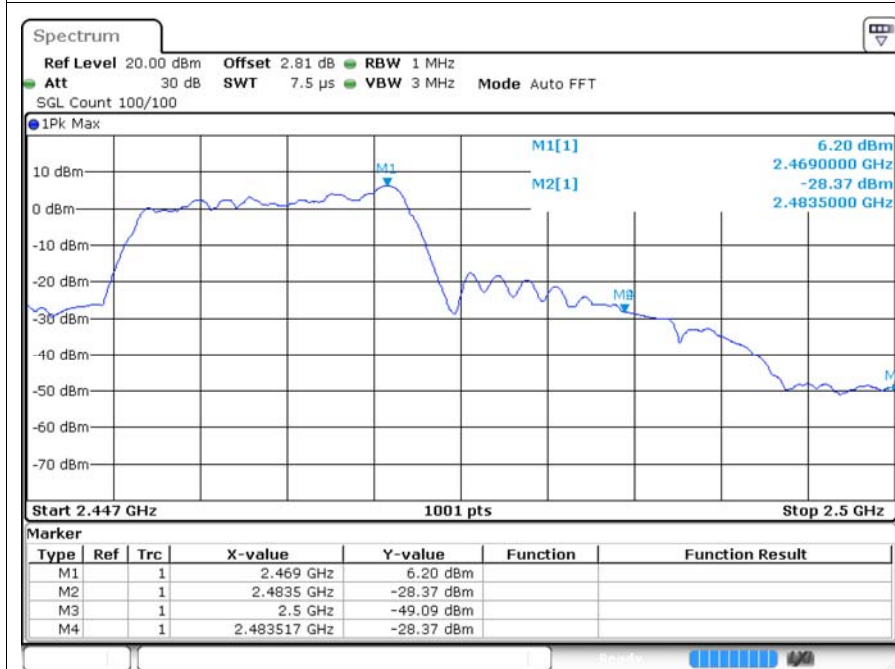
g 2412MHz Ant1 Peak



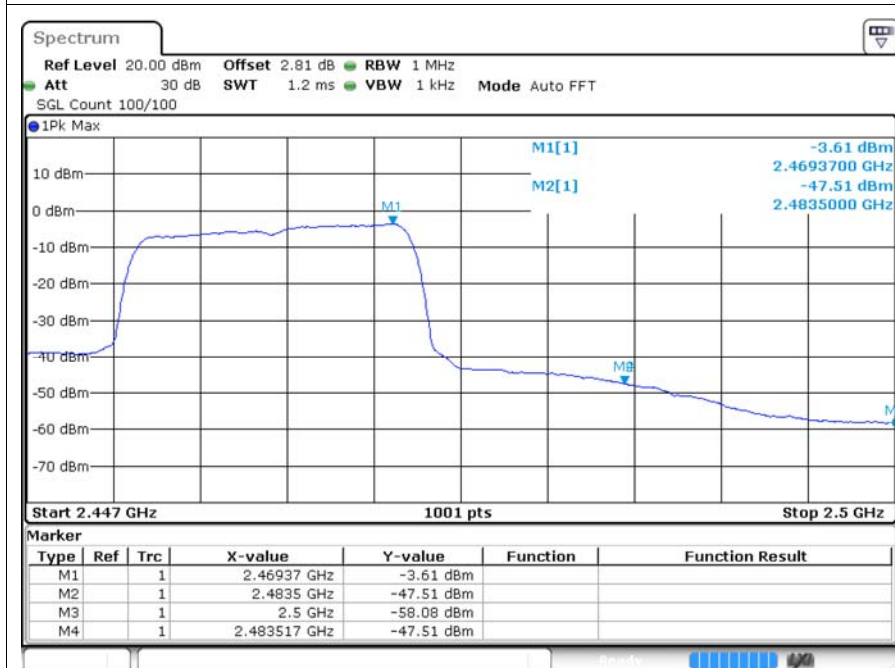
g 2412MHz Ant1 Average



g 2462MHz Ant1 Peak

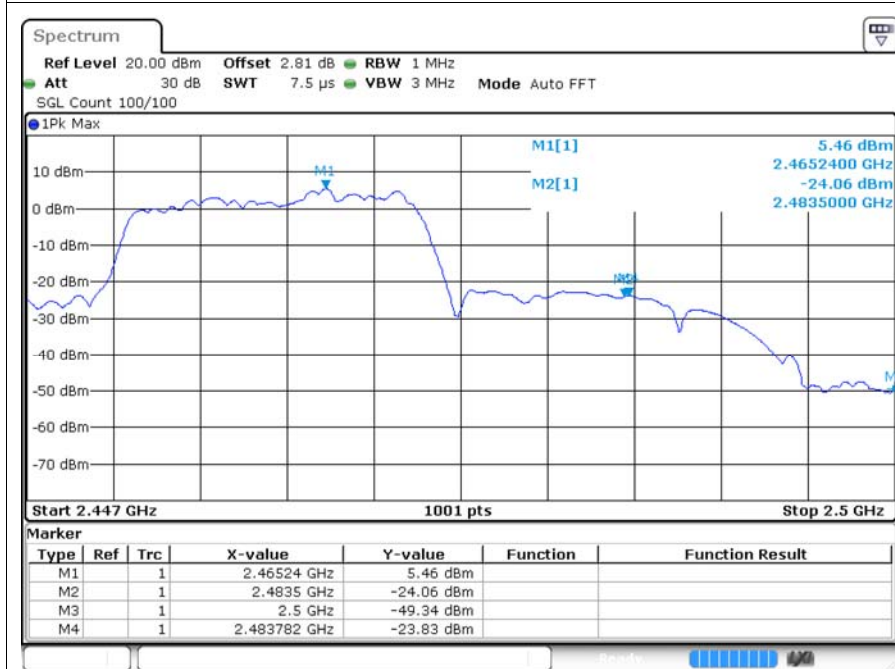


g 2462MHz Ant1 Average

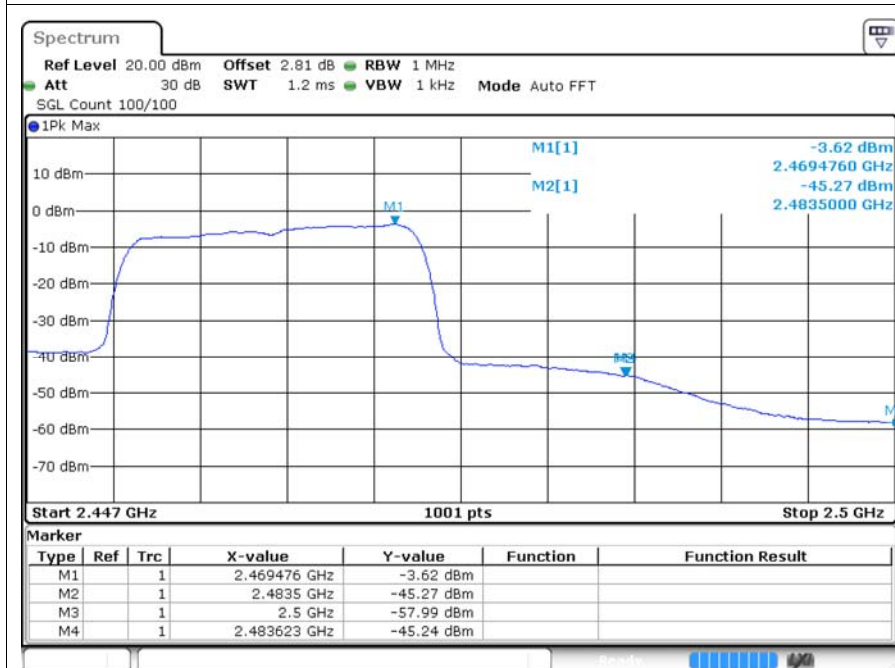




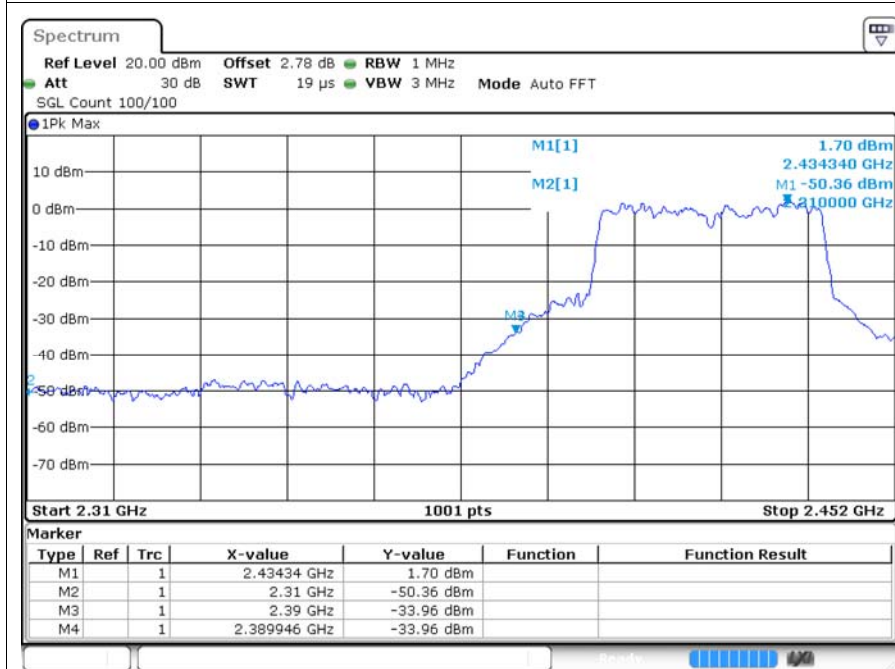
n20 2462MHz Ant1 Peak



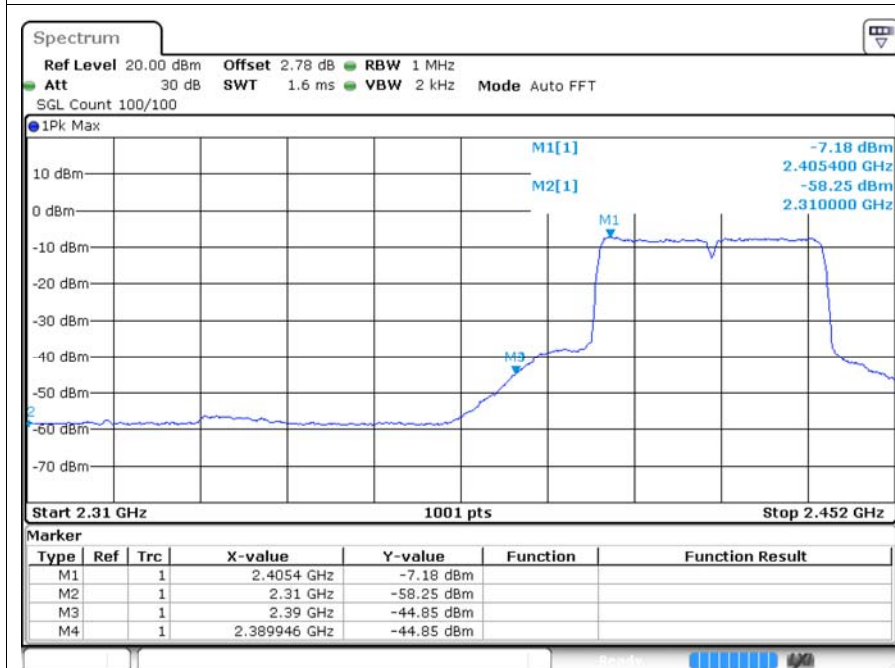
n20 2462MHz Ant1 Average

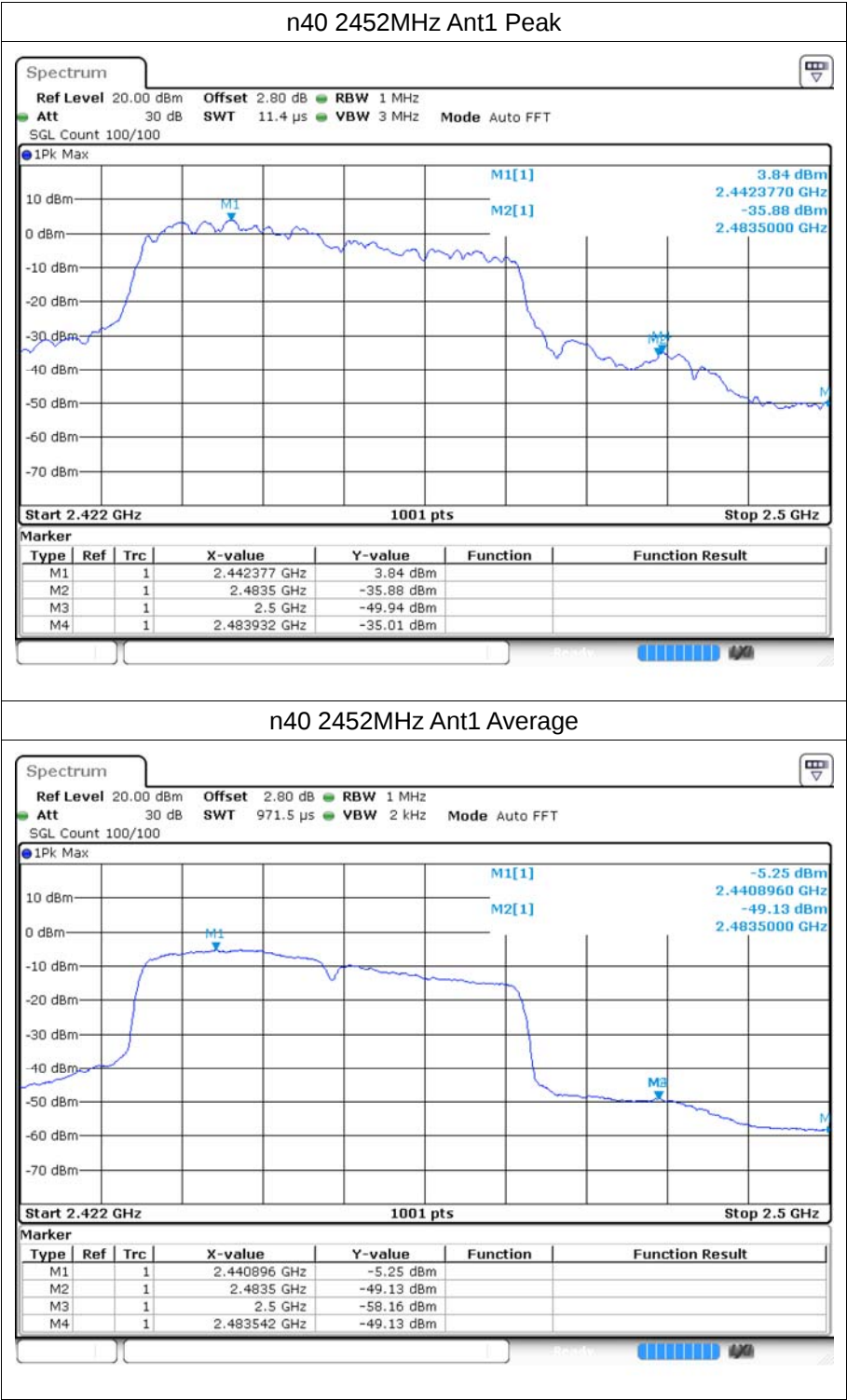


n40 2422MHz Ant1 Peak



n40 2422MHz Ant1 Average





----End Of The Report----