Appendix B

RF Test Data for BT (BLE) (Conducted Measurement)

Product Name: WhalesBot Eagle

Trade Mark: WhalesBot

Test Model: Eagle 1001

Environmental Conditions

Temperature:	24.6° C
Relative Humidity:	52.4%
ATM Pressure:	100.0 kPa
Test Engineer:	Emiya lin
Supervised by:	Simba Haung

Contents

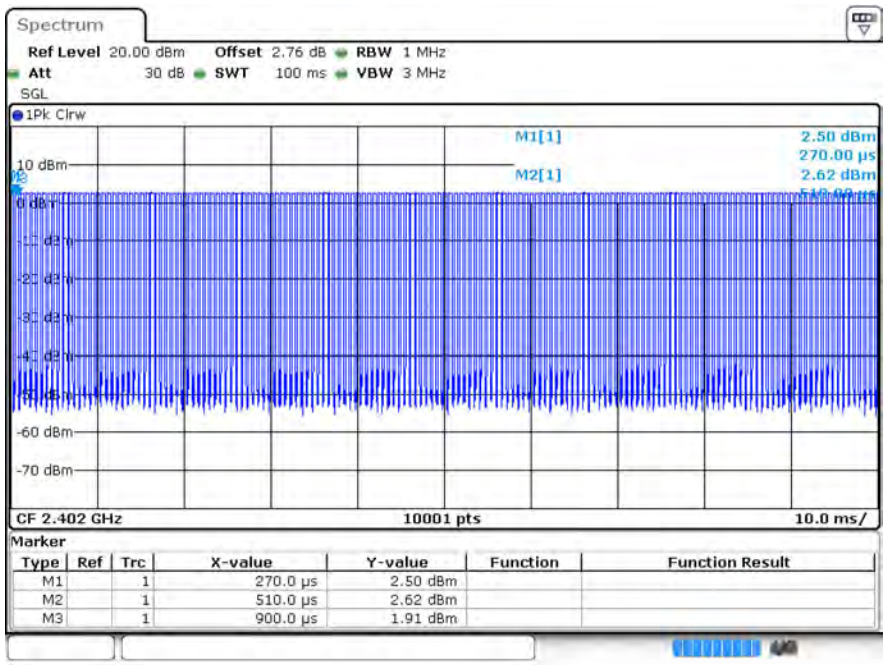
1 Duty Cycle

1.1 Test Result

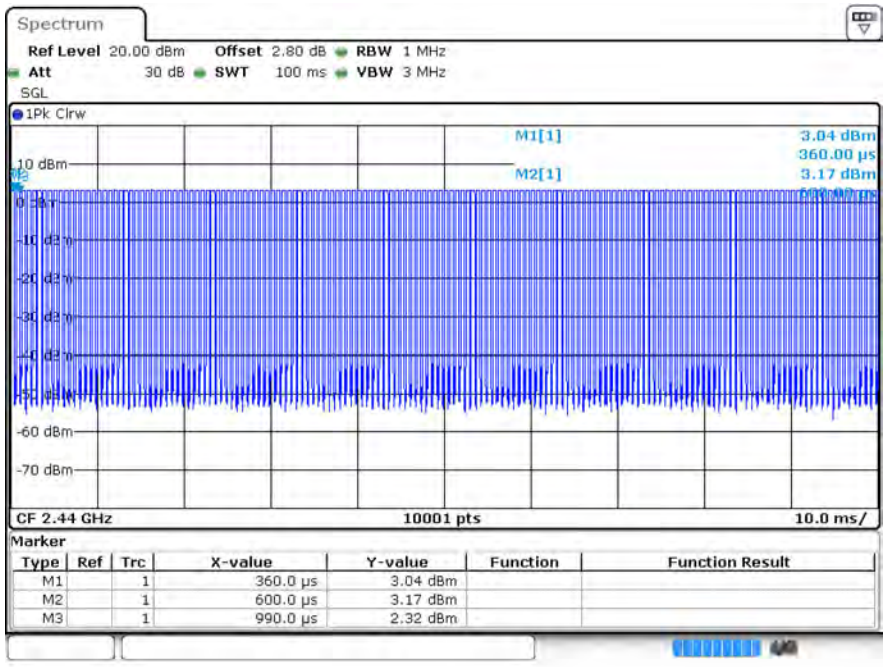
Mode	Frequency (MHz)	Duty Cycle (%)	Correction Factor	1/T (kHz)
BLE 1M	2402	64.15	1.93	2.56
BLE 1M	2440	64	1.94	2.56
BLE 1M	2480	64.27	1.92	2.56
BLE 2M	2402	64.79	1.88	2.56
BLE 2M	2440	64.49	1.9	2.56
BLE 2M	2480	64	1.94	2.56

1.2 Test Graphs

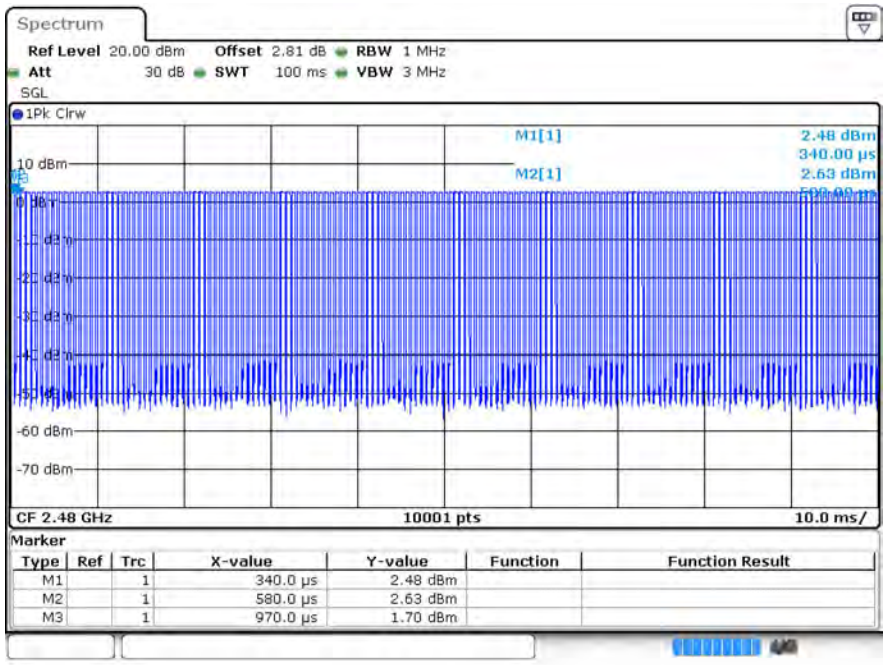
Test Graphs
BLE 1M 2402MHz



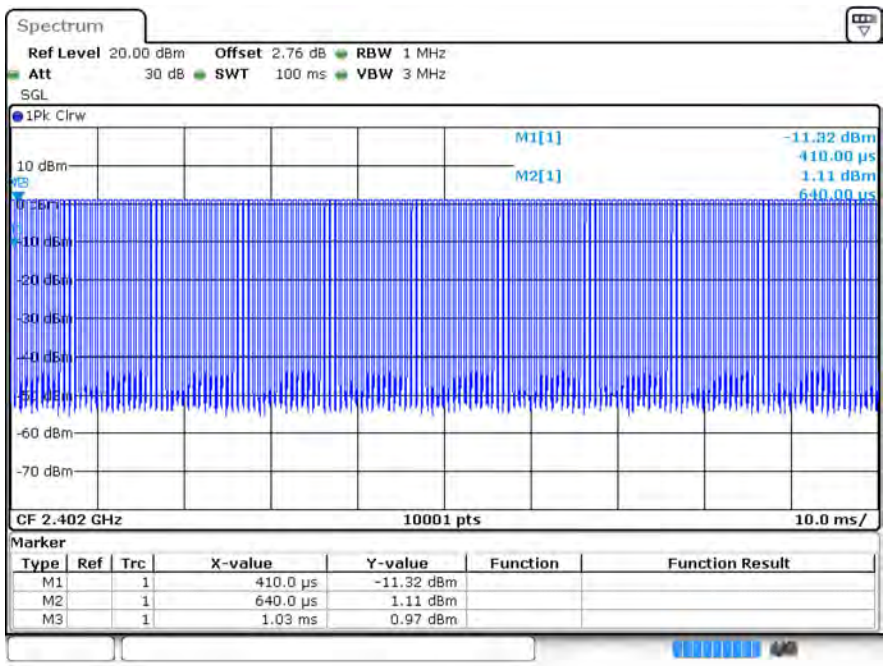
BLE 1M 2440MHz



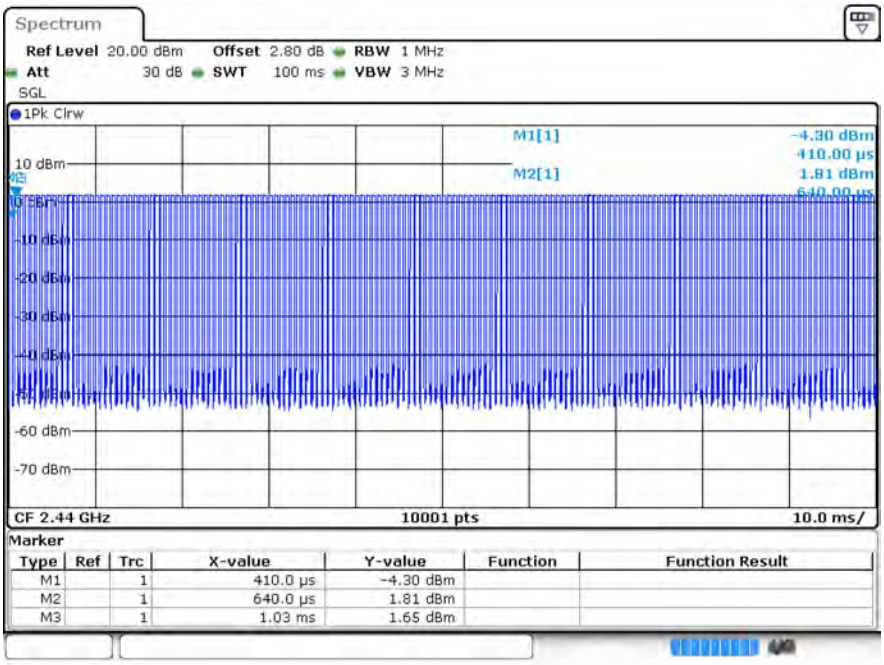
BLE 1M 2480MHz



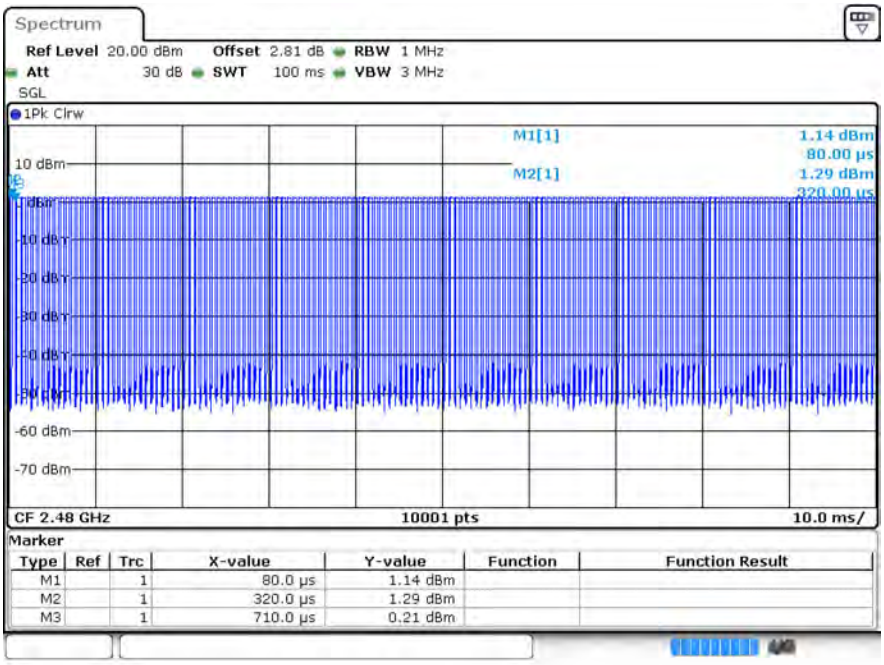
BLE 2M 2402MHz



BLE 2M 2440MHz



BLE 2M 2480MHz

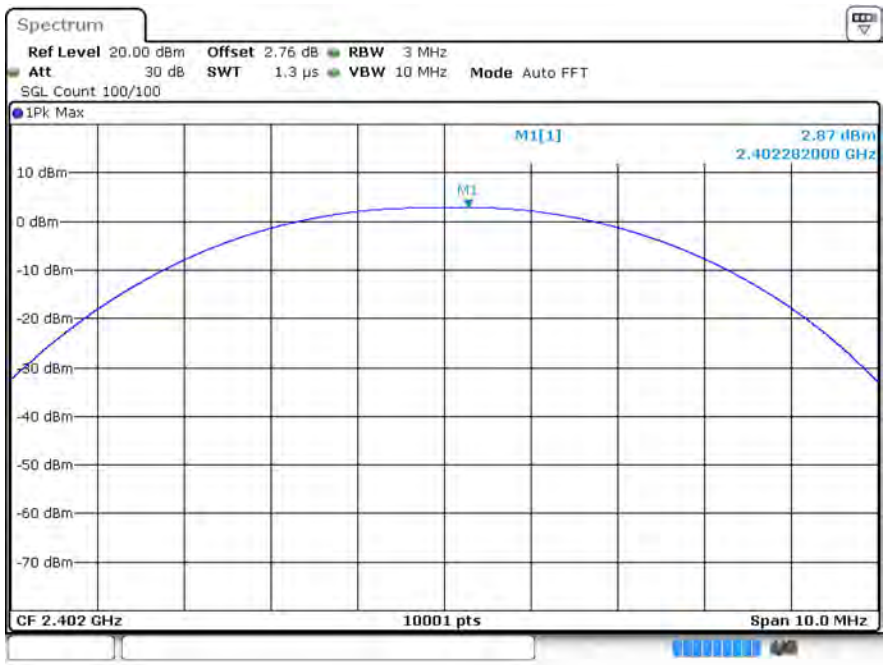
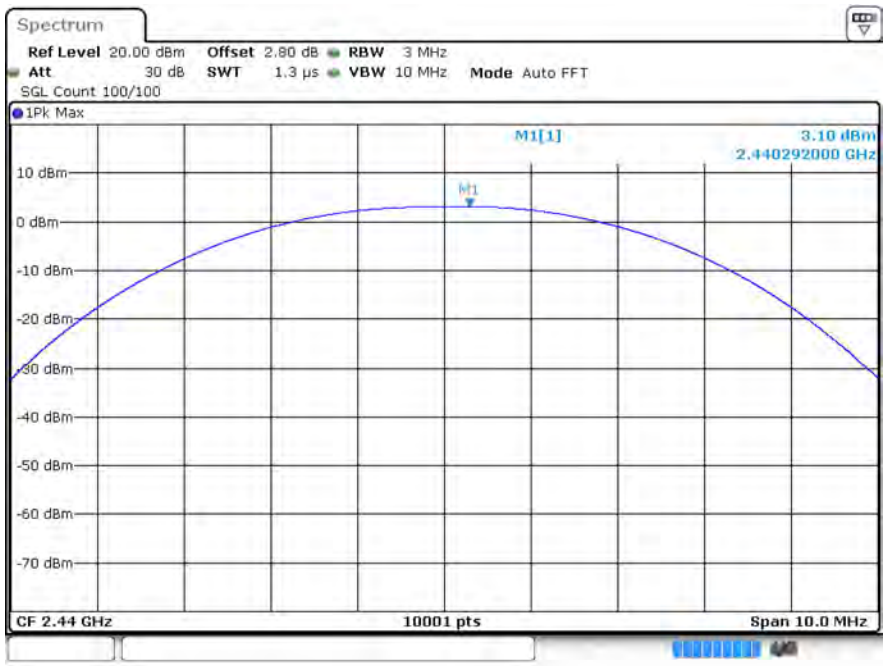


2 Maximum Conducted Output Power

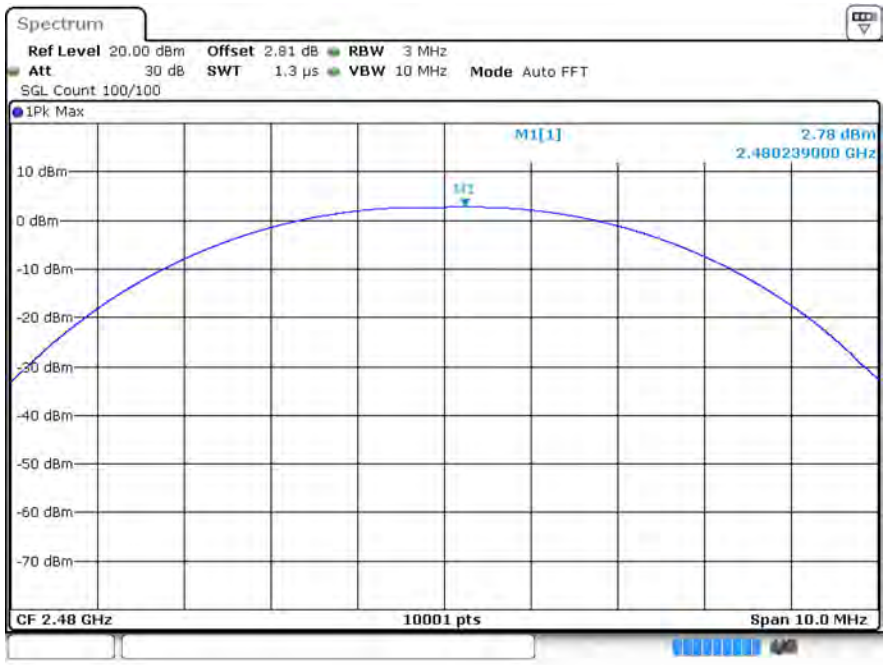
2.1 Test Result

Mode	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Verdict
BLE 1M	2402	2.87	30	Pass
BLE 1M	2440	3.1	30	Pass
BLE 1M	2480	2.78	30	Pass
BLE 2M	2402	2.99	30	Pass
BLE 2M	2440	3.13	30	Pass
BLE 2M	2480	2.8	30	Pass

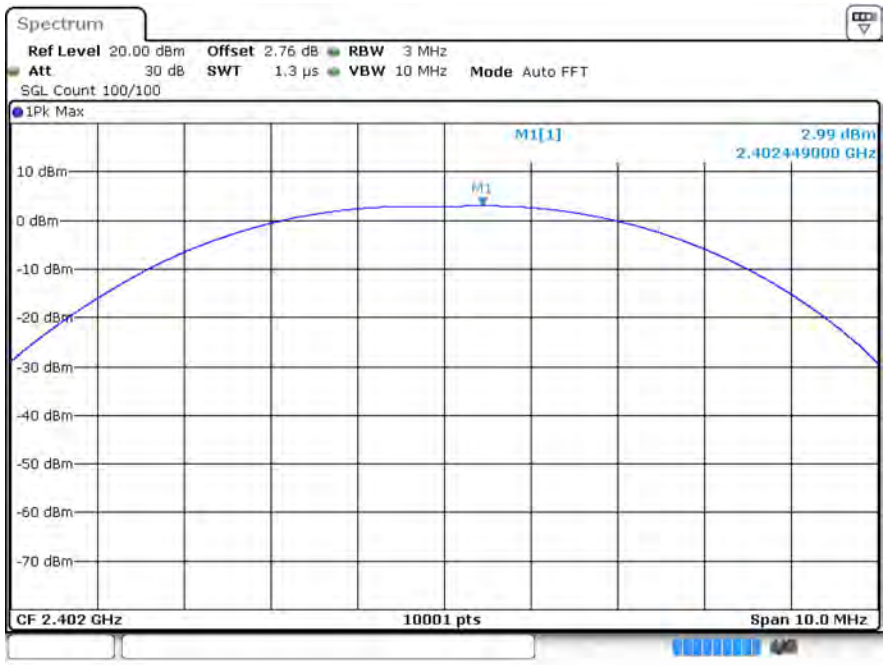
2.2 Test Graphs

Test Graphs
BLE 1M 2402MHz

BLE 1M 2440MHz


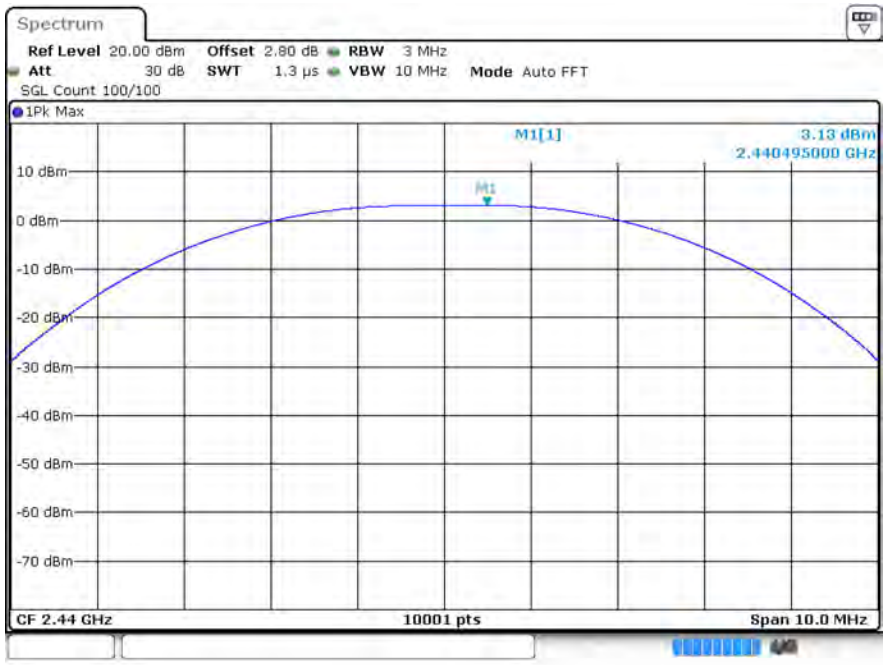
BLE 1M 2480MHz



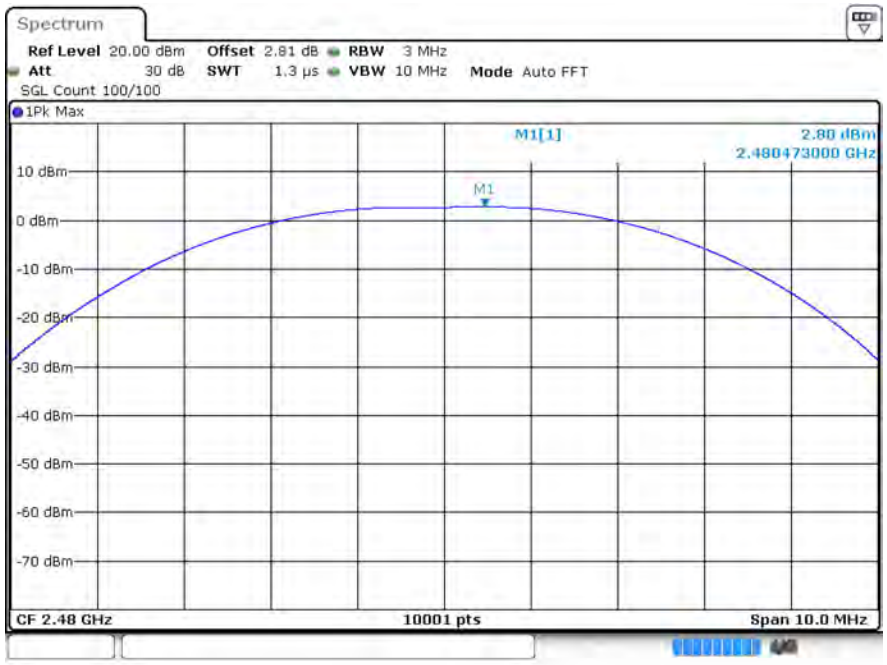
BLE 2M 2402MHz



BLE 2M 2440MHz



BLE 2M 2480MHz



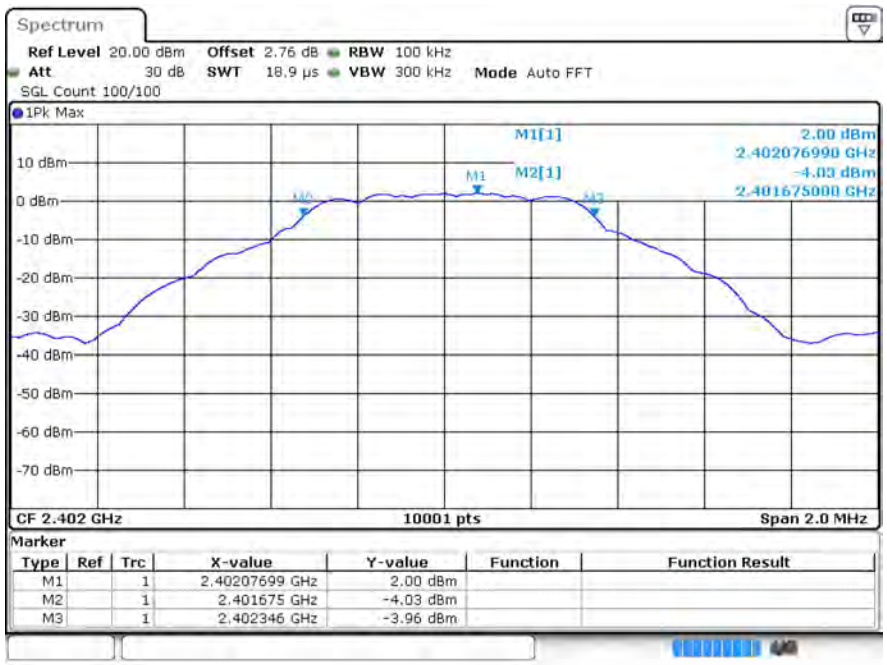
3 -6dB Bandwidth

3.1 Test Result

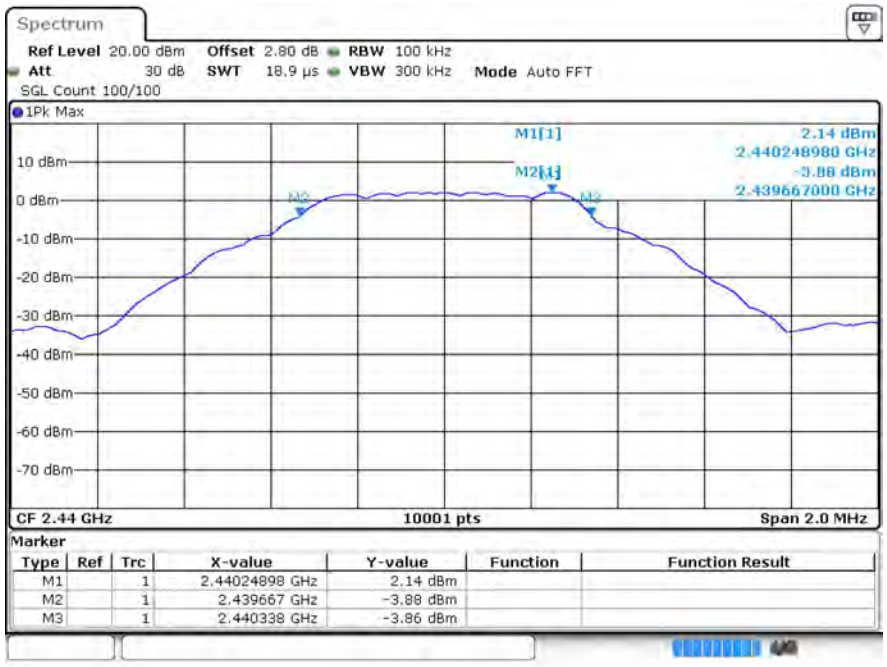
Mode	Frequency (MHz)	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
BLE 1M	2402	0.671	0.5	Pass
BLE 1M	2440	0.671	0.5	Pass
BLE 1M	2480	0.713	0.5	Pass
BLE 2M	2402	1.026	0.5	Pass
BLE 2M	2440	1.087	0.5	Pass
BLE 2M	2480	1.13	0.5	Pass

3.2 Test Graphs

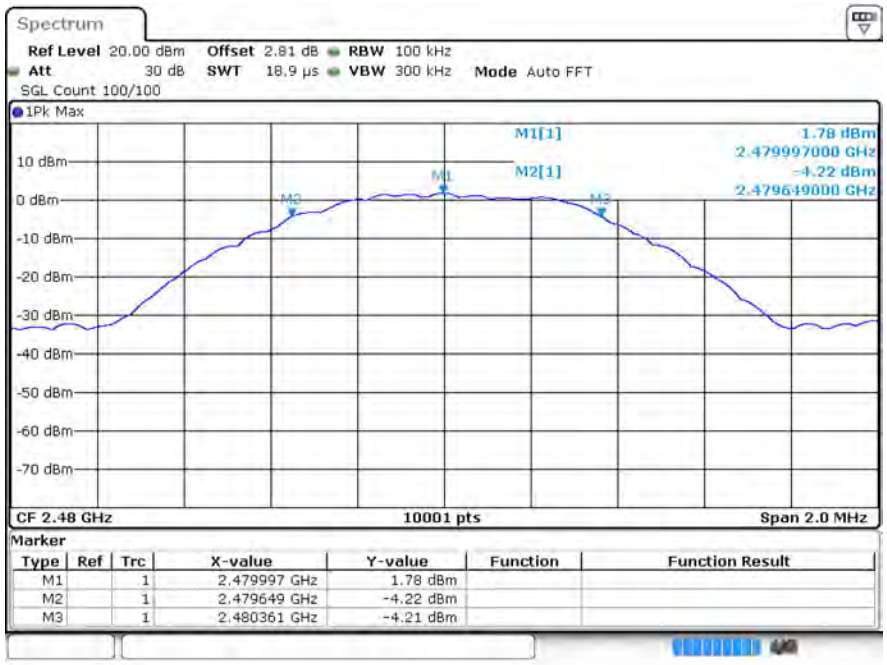
Test Graphs
BLE 1M 2402MHz



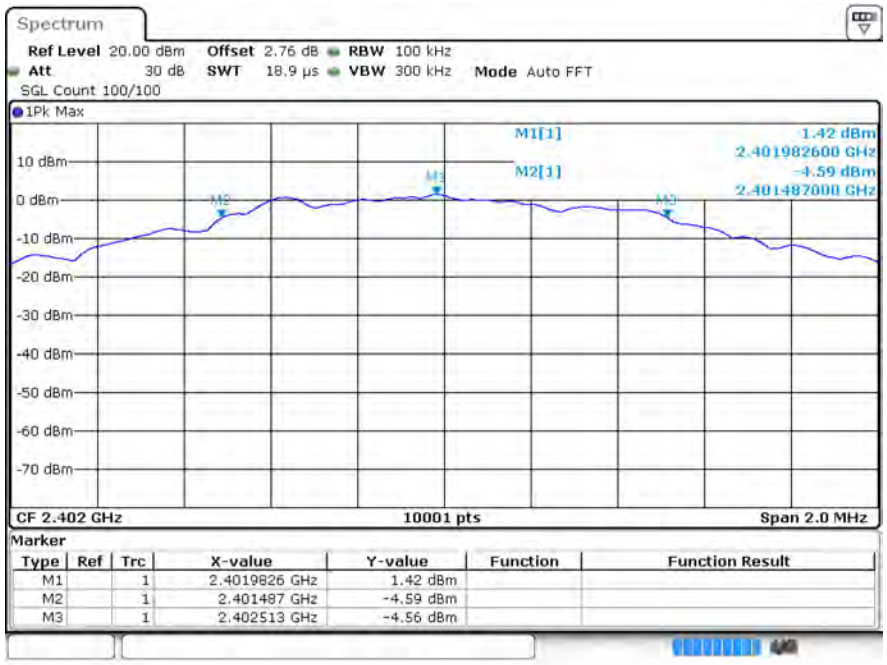
BLE 1M 2440MHz



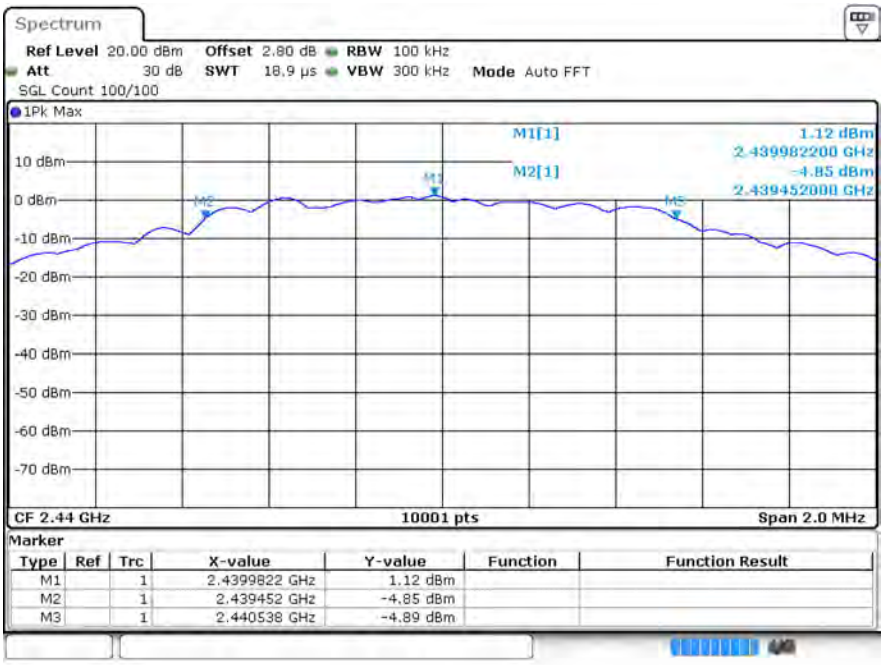
BLE 1M 2480MHz



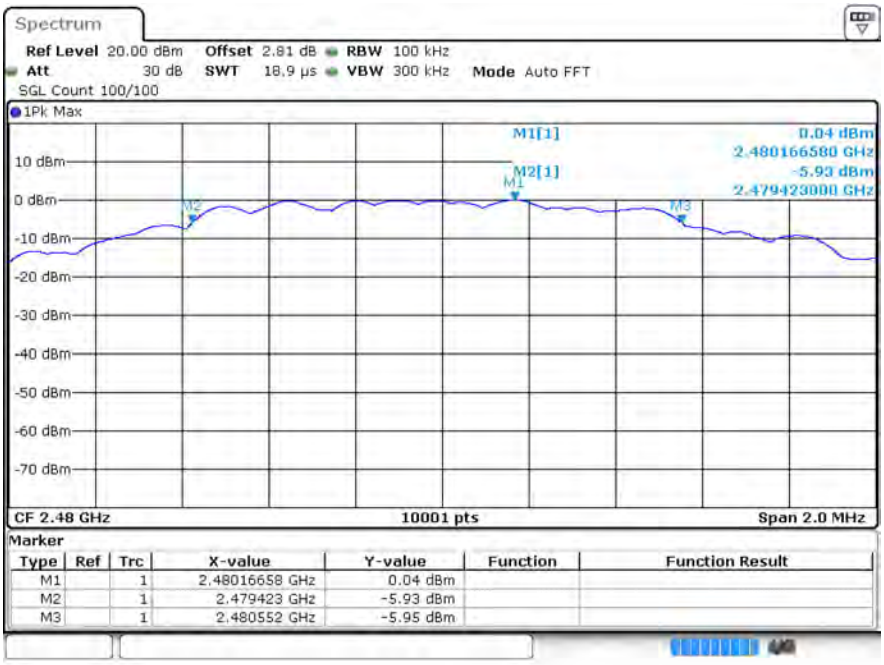
BLE 2M 2402MHz



BLE 2M 2440MHz



BLE 2M 2480MHz

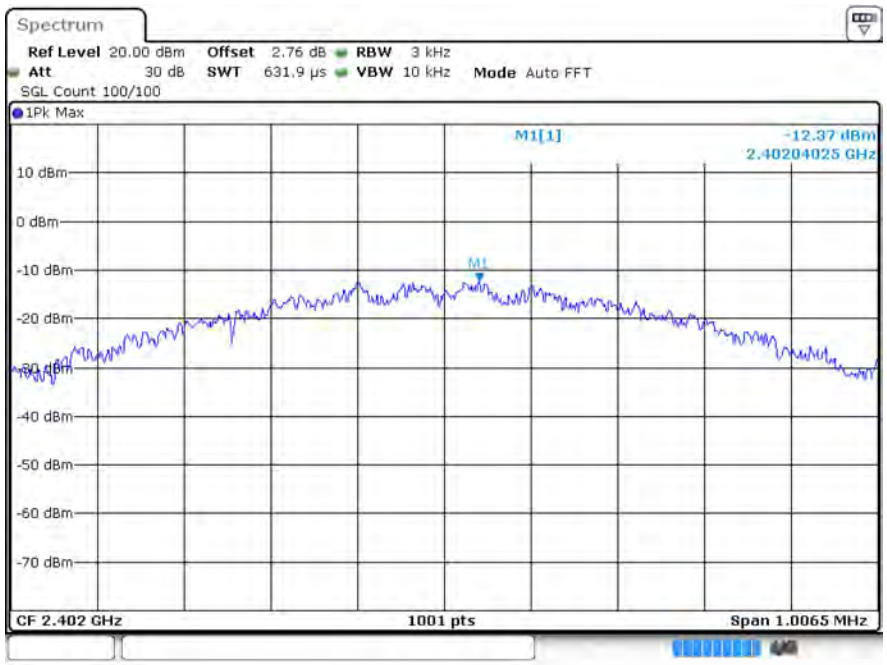
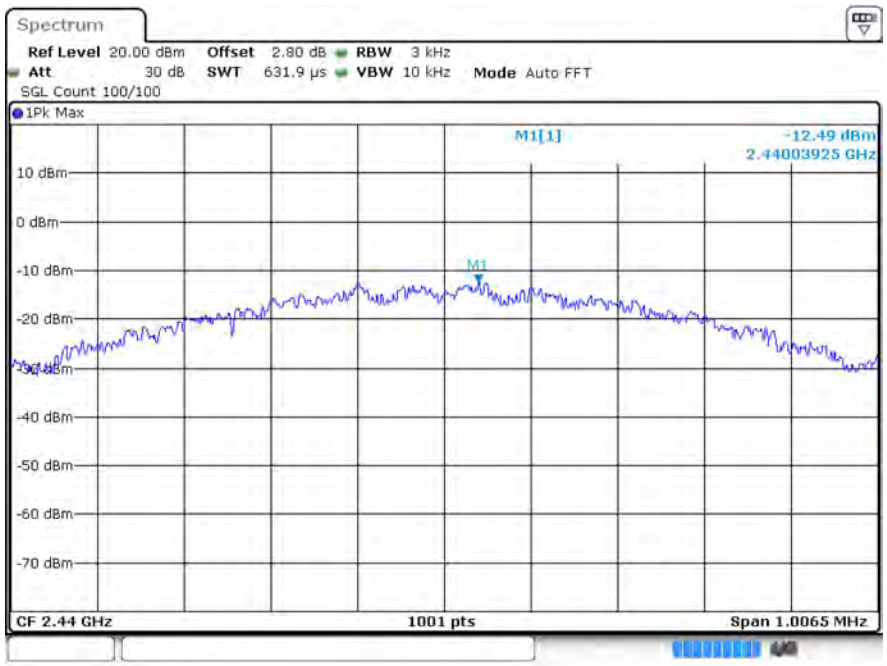


4 Maximum Power Spectral Density Level

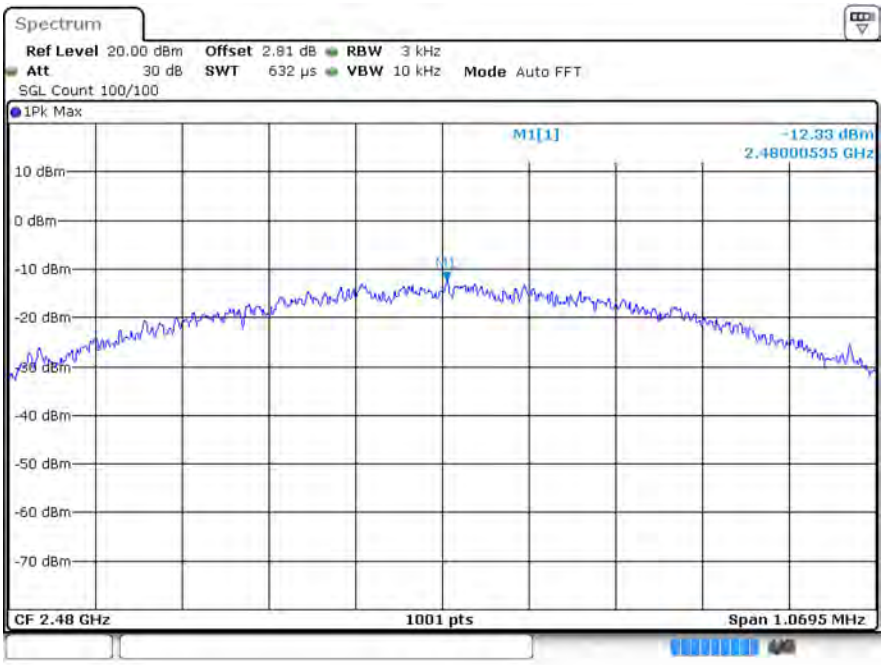
4.1 Test Result

Mode	Frequency (MHz)	Conducted PSD (dBm/3-100kHz)	Limit (dBm/3kHz)	Verdict
BLE 1M	2402	-12.37	≤8	Pass
BLE 1M	2440	-12.49	≤8	Pass
BLE 1M	2480	-12.33	≤8	Pass
BLE 2M	2402	-14.06	≤8	Pass
BLE 2M	2440	-14.8	≤8	Pass
BLE 2M	2480	-15.7	≤8	Pass

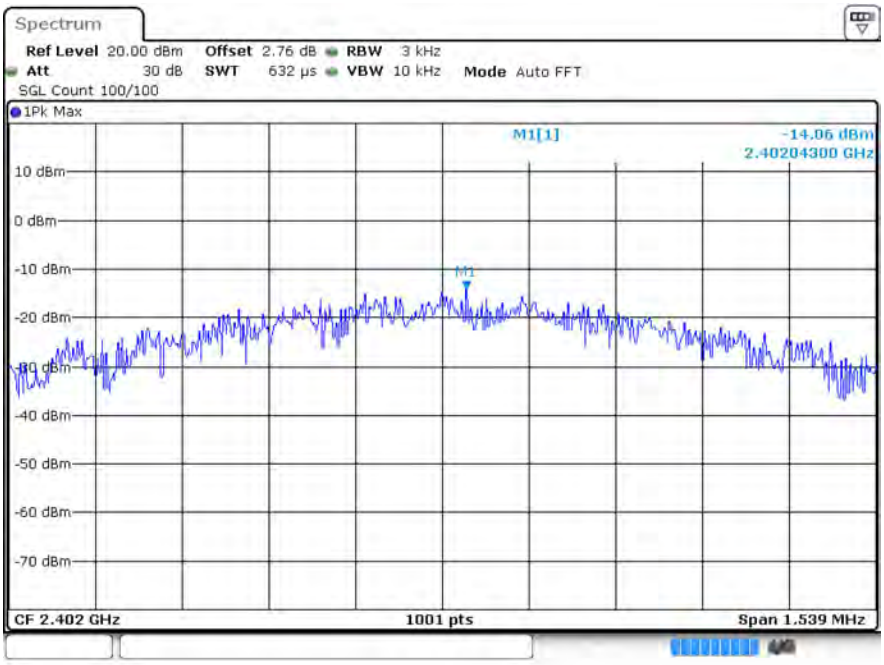
4.2 Test Graphs

Test Graphs
BLE 1M 2402MHz

BLE 1M 2440MHz


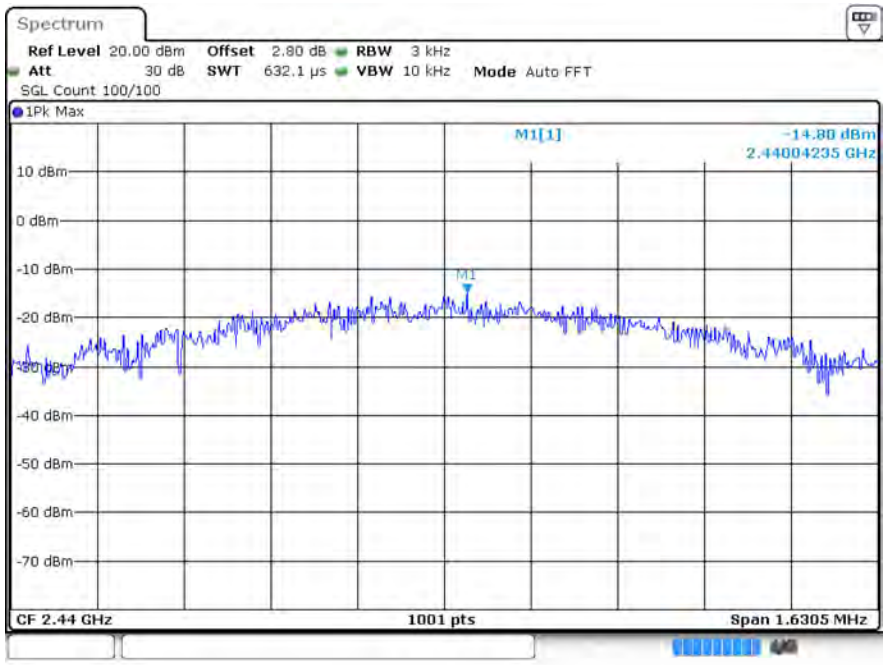
BLE 1M 2480MHz



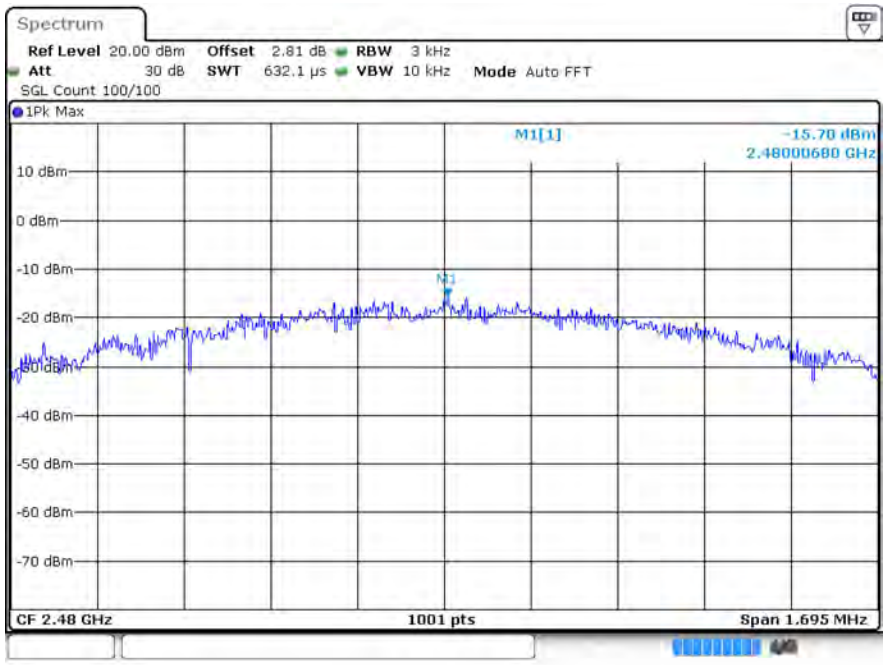
BLE 2M 2402MHz



BLE 2M 2440MHz



BLE 2M 2480MHz



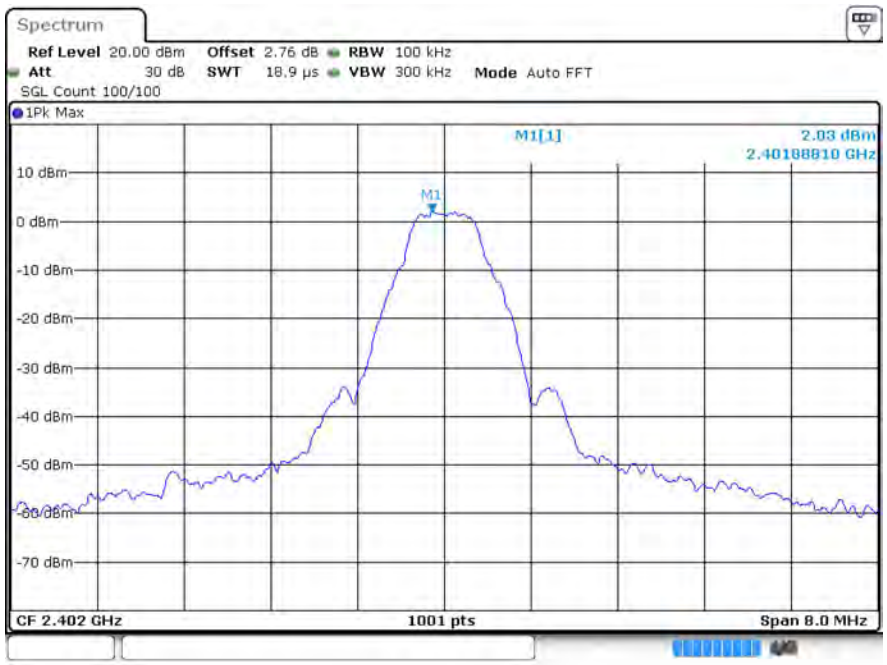
5 Band Edge

5.1 Test Result

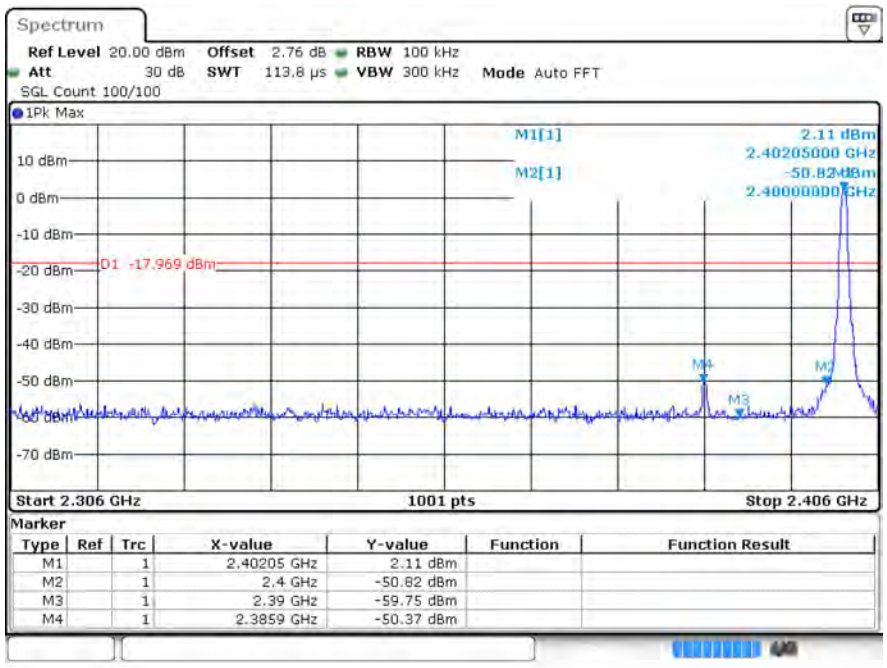
Mode	Frequency (MHz)	Max Value (dBc)	Limit (dBc)	Verdict
BLE 1M	2402	-52.39	-20	Pass
BLE 1M	2480	-57.81	-20	Pass
BLE 2M	2402	-53.29	-20	Pass
BLE 2M	2480	-56.08	-20	Pass

5.2 Test Graphs

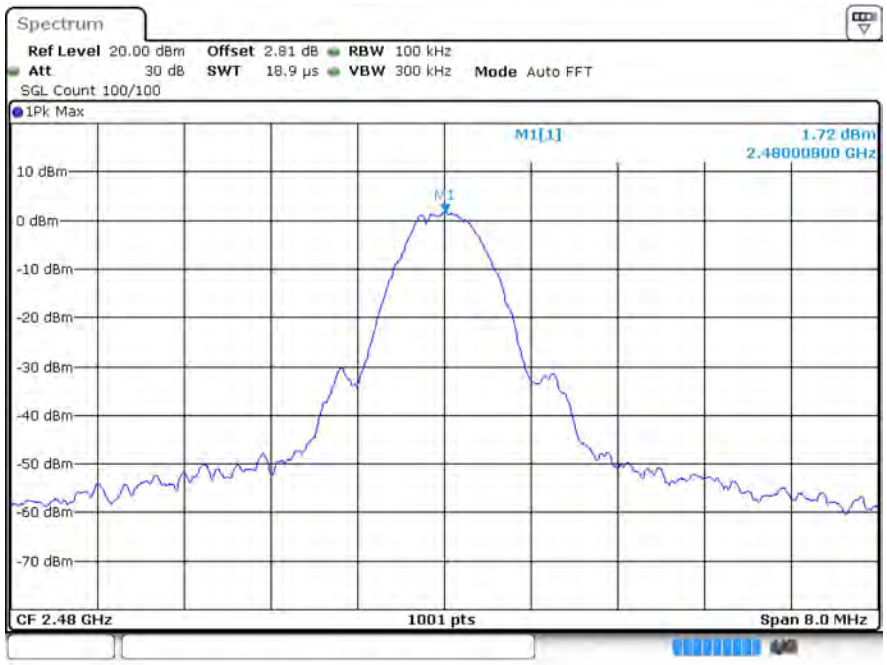
Test Graphs
BLE 1M 2402MHz Ref



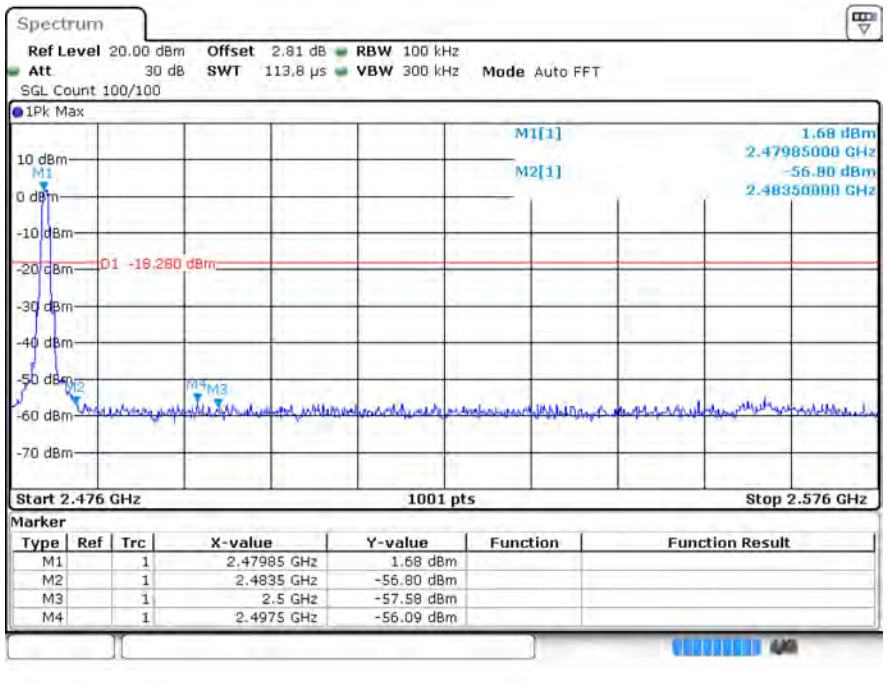
BLE 1M 2402MHz Emission



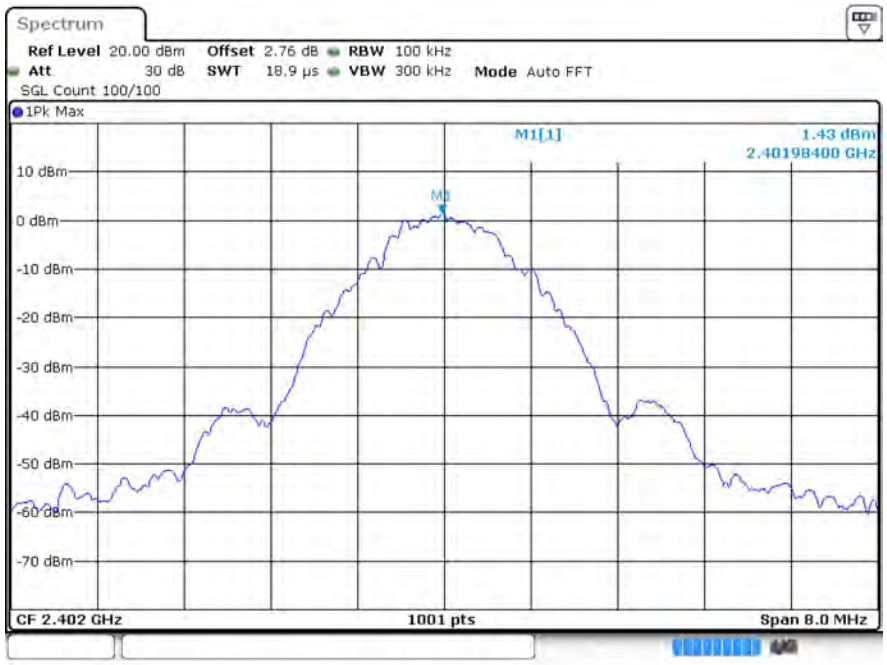
BLE 1M 2480MHz Ref



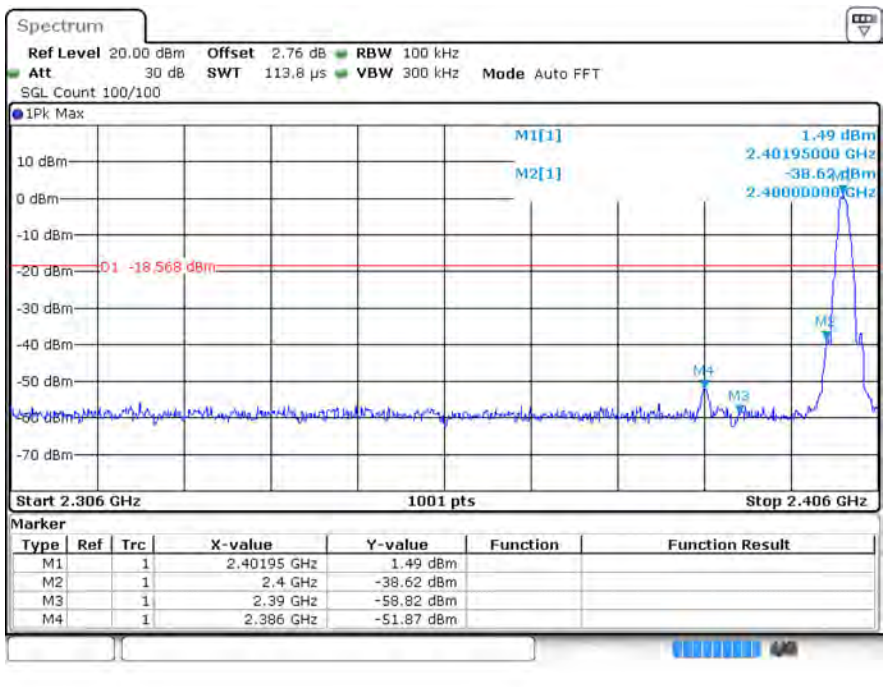
BLE 1M 2480MHz Emission



BLE 2M 2402MHz Ref

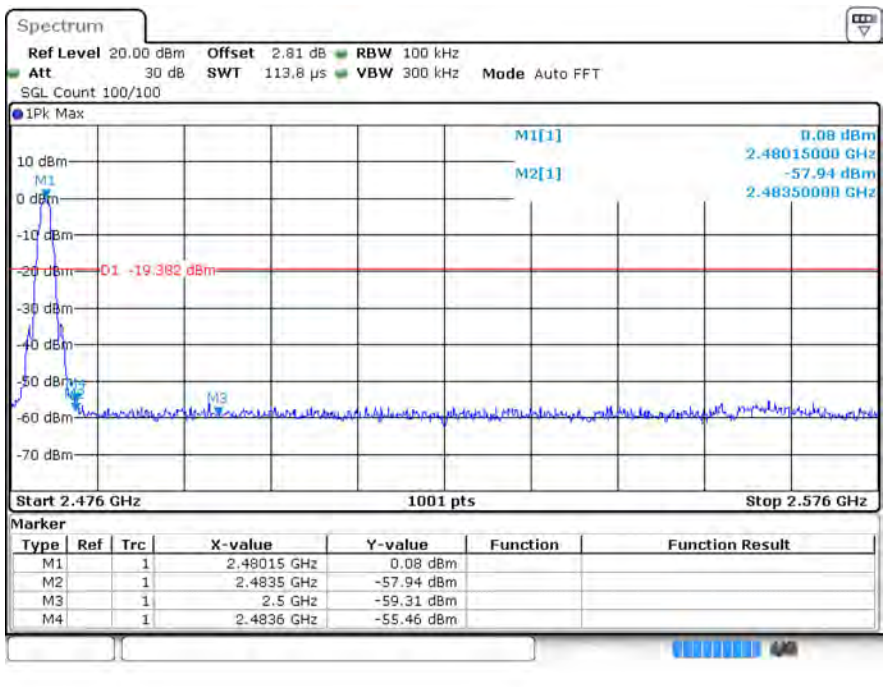


BLE 2M 2402MHz Emission



BLE 2M 2480MHz Ref

BLE 2M 2480MHz Emission



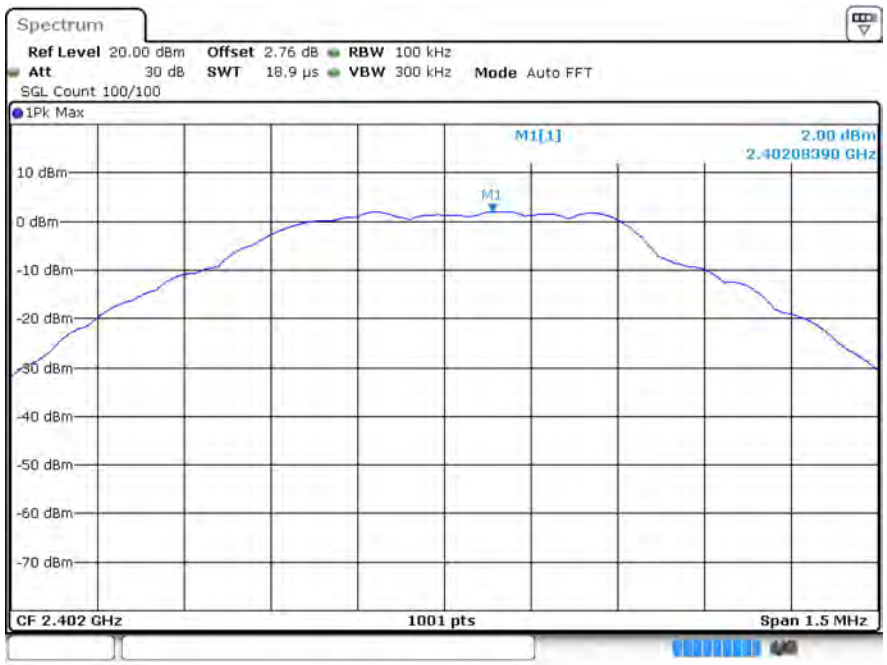
6 Conducted RF Spurious Emission

6.1 Test Result

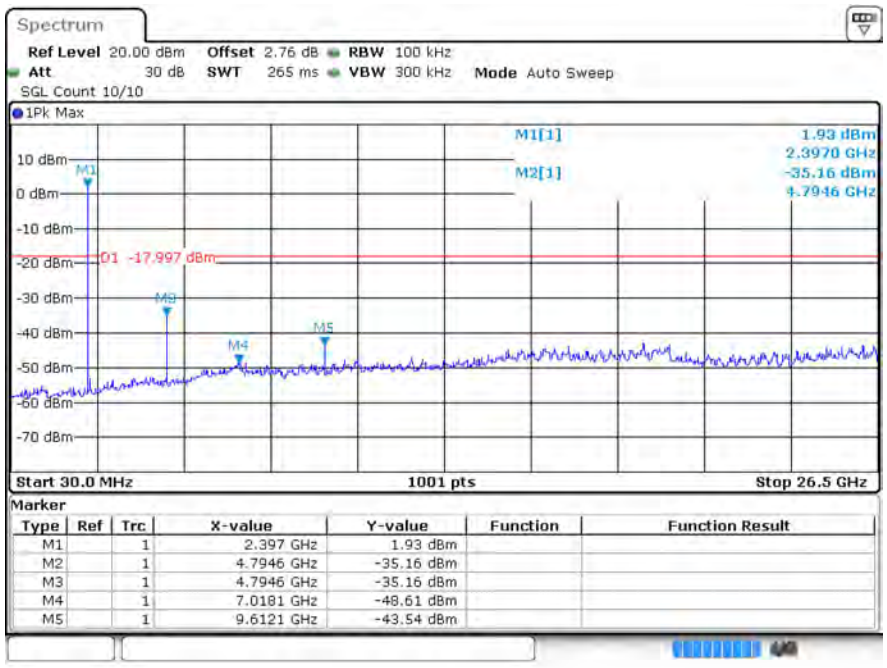
Mode	Frequency (MHz)	Max Value (dBc)	Limit (dBc)	Verdict
BLE 1M	2402	-37.16	-20	Pass
BLE 1M	2440	-36.86	-20	Pass
BLE 1M	2480	-38.1	-20	Pass
BLE 2M	2402	-39.35	-20	Pass
BLE 2M	2440	-36.97	-20	Pass
BLE 2M	2480	-34.99	-20	Pass

6.2 Test Graphs

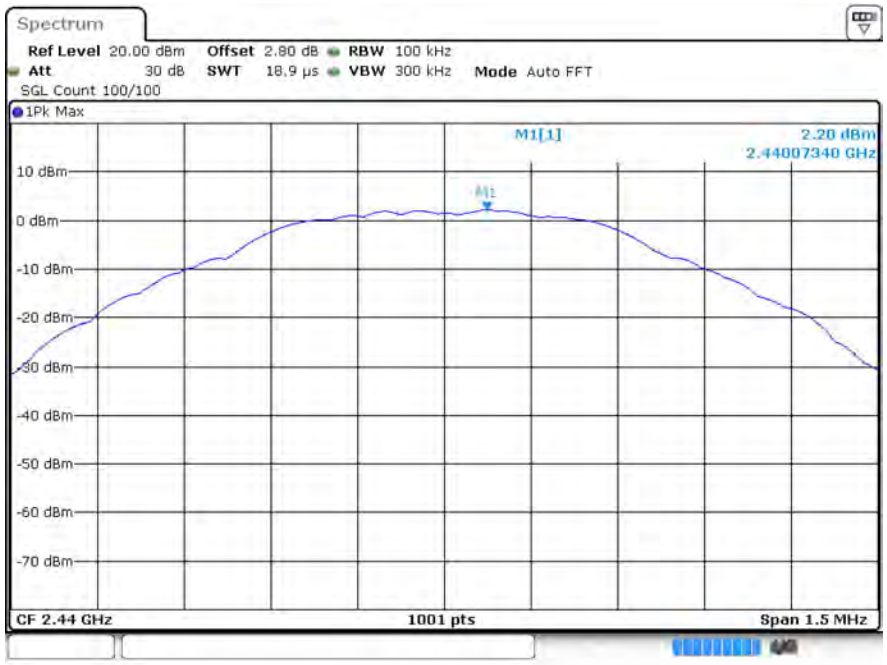
Test Graphs
BLE 1M 2402MHz Ref



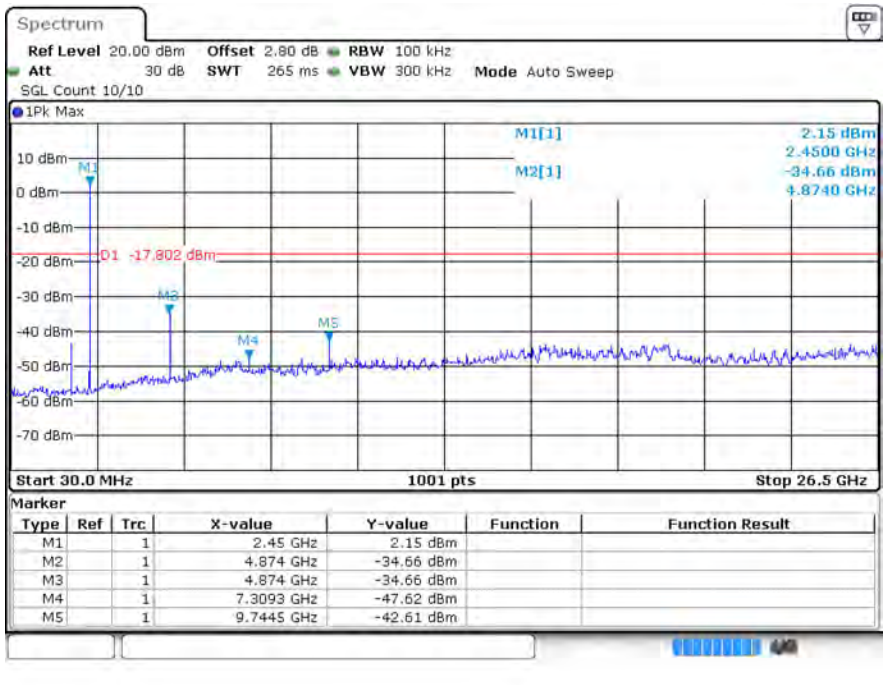
BLE 1M 2402MHz Emission



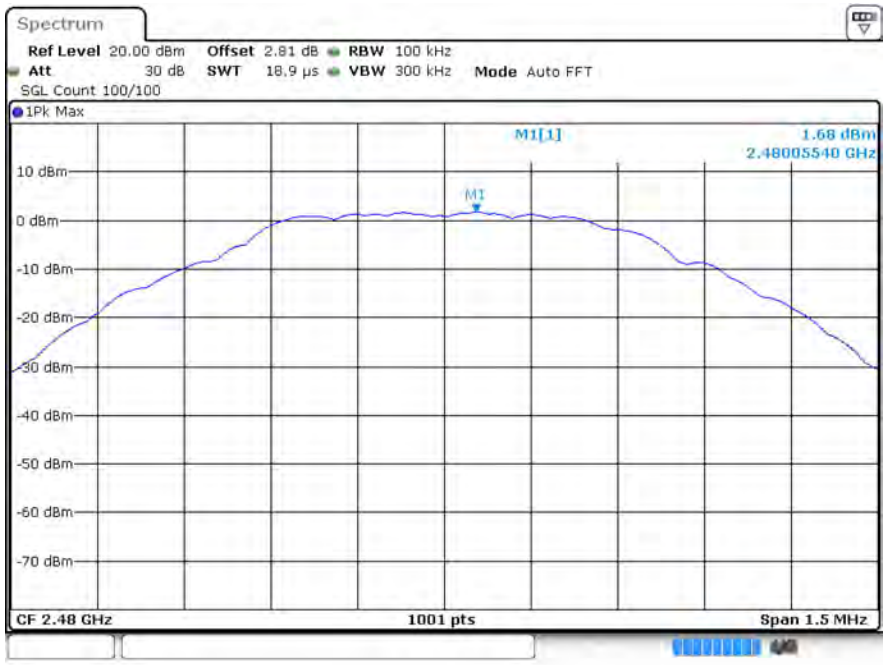
BLE 1M 2440MHz Ref



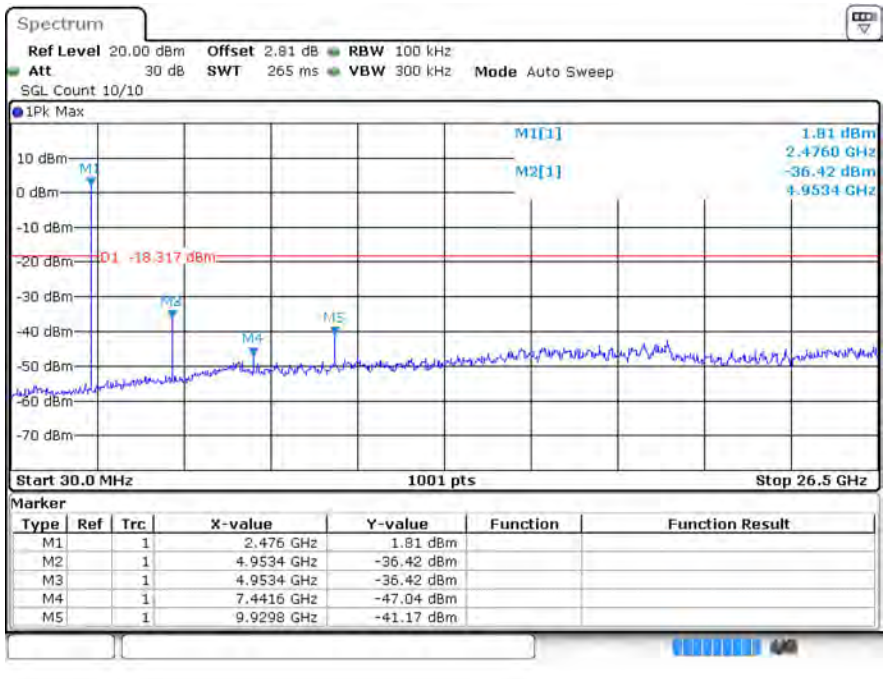
BLE 1M 2440MHz Emission



BLE 1M 2480MHz Ref

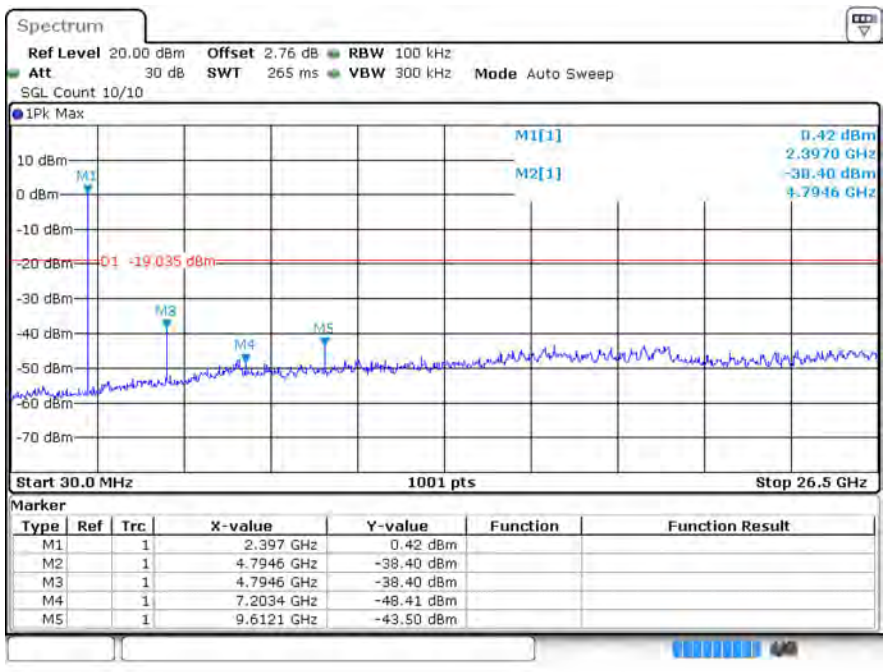


BLE 1M 2480MHz Emission



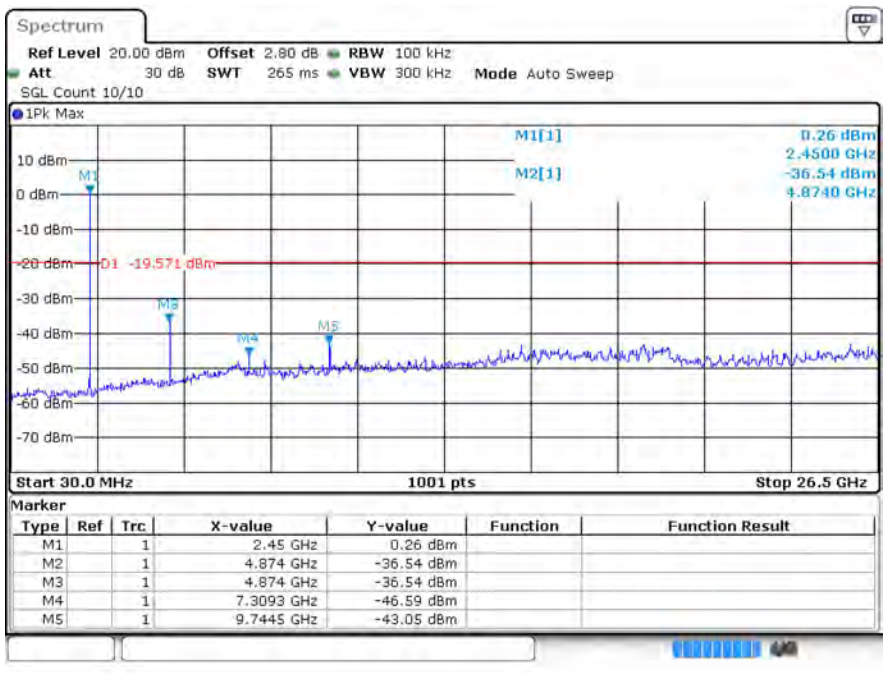
BLE 2M 2402MHz Ref

BLE 2M 2402MHz Emission



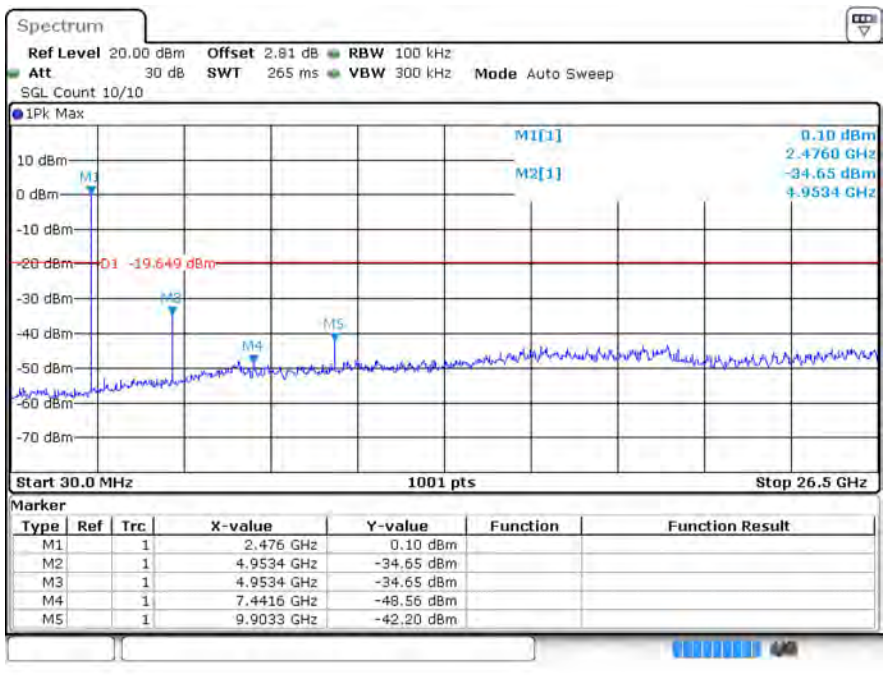
BLE 2M 2440MHz Ref

BLE 2M 2440MHz Emission



BLE 2M 2480MHz Ref

BLE 2M 2480MHz Emission



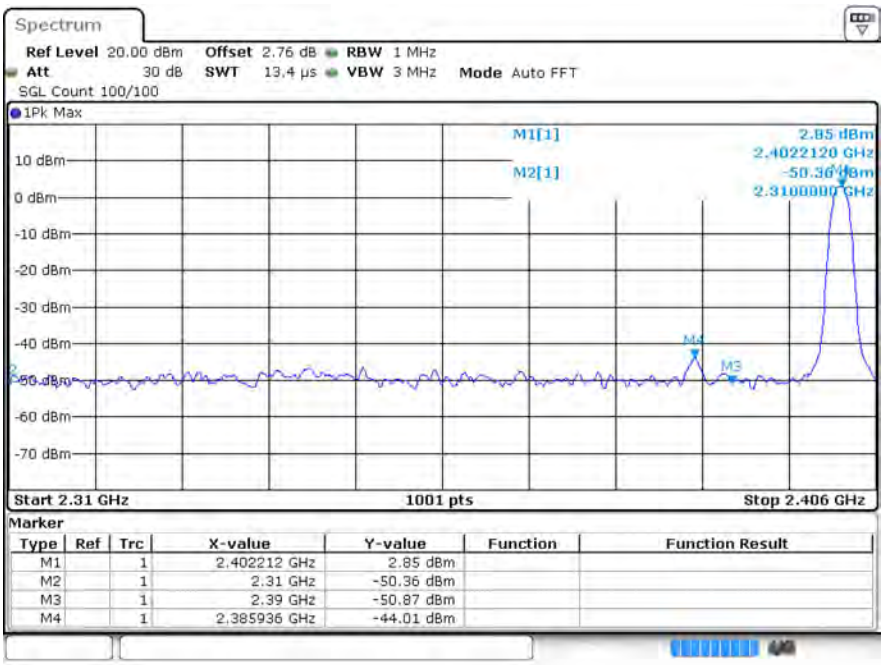
7 Restrict Band

7.1 Test Result

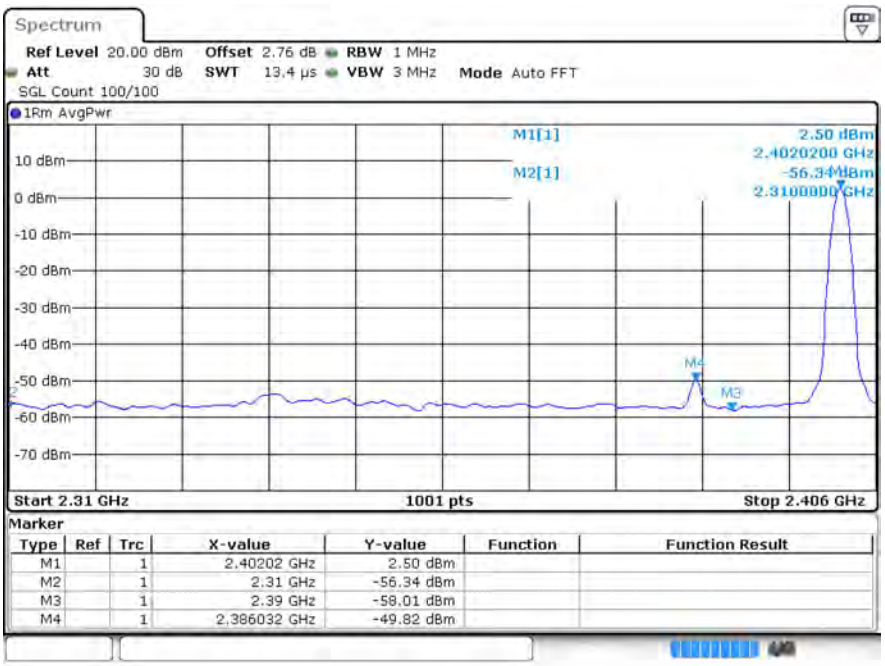
Mode	Frequency (MHz)	Spur Freq (MHz)	Power (dBm)	Gain (dBi)	Duty Factor	E (dBuV/m)	Detector	Limit (dBuV/m)	Verdict
BLE 1M	2402	2310	-50.36	2	-	46.87	Peak	74	Pass
BLE 1M	2402	2310	-56.34	2	1.93	40.89	Average	54	Pass
BLE 1M	2402	2385.936	-44	2	-	53.23	Peak	74	Pass
BLE 1M	2402	2386.032	-49.82	2	1.93	47.41	Average	54	Pass
BLE 1M	2402	2390	-50.87	2	-	46.36	Peak	74	Pass
BLE 1M	2402	2390	-58.01	2	1.93	39.22	Average	54	Pass
BLE 1M	2480	2483.5	-46.36	2	-	50.87	Peak	74	Pass
BLE 1M	2480	2483.5	-53.8	2	1.92	43.43	Average	54	Pass
BLE 1M	2480	2483.512	-46.39	2	-	50.84	Peak	74	Pass
BLE 1M	2480	2483.512	-53.88	2	1.92	43.35	Average	54	Pass
BLE 1M	2480	2500	-50.92	2	-	46.31	Peak	74	Pass
BLE 1M	2480	2500	-57.47	2	1.92	39.76	Average	54	Pass
BLE 2M	2402	2310	-48.42	2	-	48.81	Peak	74	Pass
BLE 2M	2402	2310	-57.03	2	1.88	40.2	Average	54	Pass
BLE 2M	2402	2343.6	-45.34	2	-	51.89	Peak	74	Pass
BLE 2M	2402	2386.128	-50.87	2	1.88	46.36	Average	54	Pass
BLE 2M	2402	2390	-48.1	2	-	49.13	Peak	74	Pass
BLE 2M	2402	2390	-57.16	2	1.88	40.07	Average	54	Pass
BLE 2M	2480	2483.5	-48.17	2	-	49.06	Peak	74	Pass
BLE 2M	2480	2483.5	-52.76	2	1.94	44.47	Average	54	Pass
BLE 2M	2480	2486.92	-47.18	2	-	50.05	Peak	74	Pass
BLE 2M	2480	2483.512	-52.87	2	1.94	44.36	Average	54	Pass
BLE 2M	2480	2500	-48.11	2	-	49.12	Peak	74	Pass
BLE 2M	2480	2500	-56.35	2	1.94	40.88	Average	54	Pass

7.2 Test Graphs

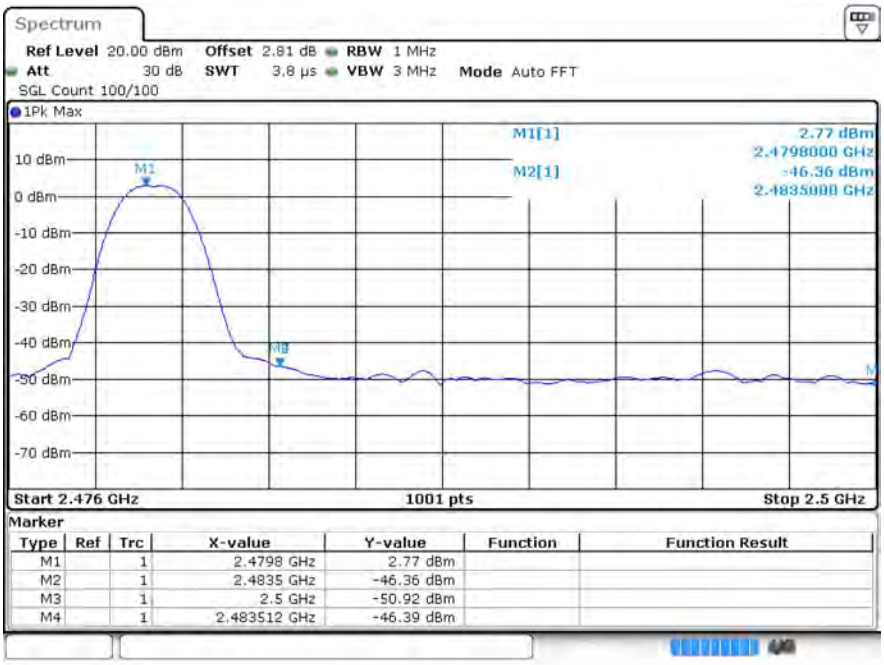
Test Graphs
BLE 1M 2402MHz Peak



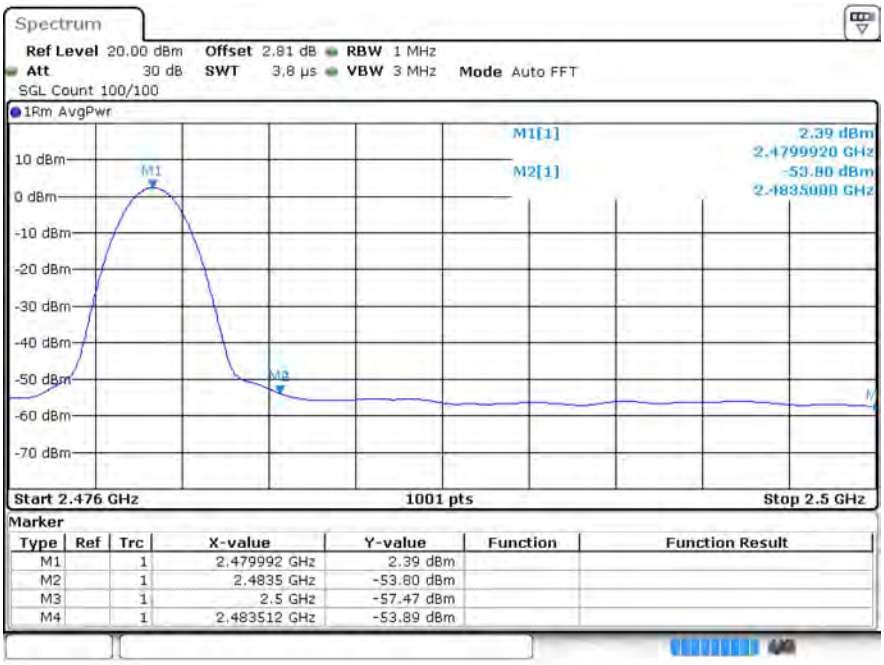
BLE 1M 2402MHz Average



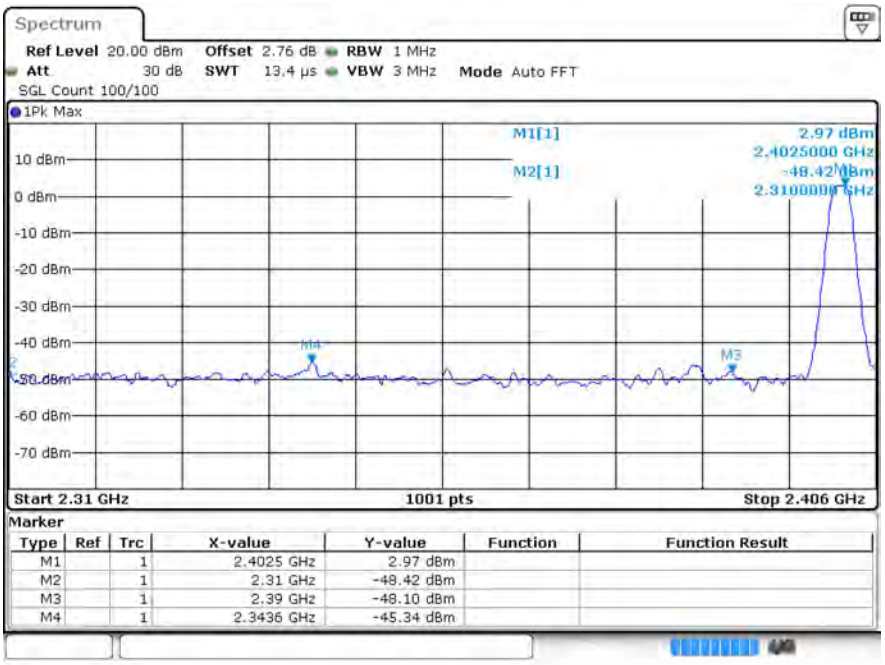
BLE 1M 2480MHz Peak



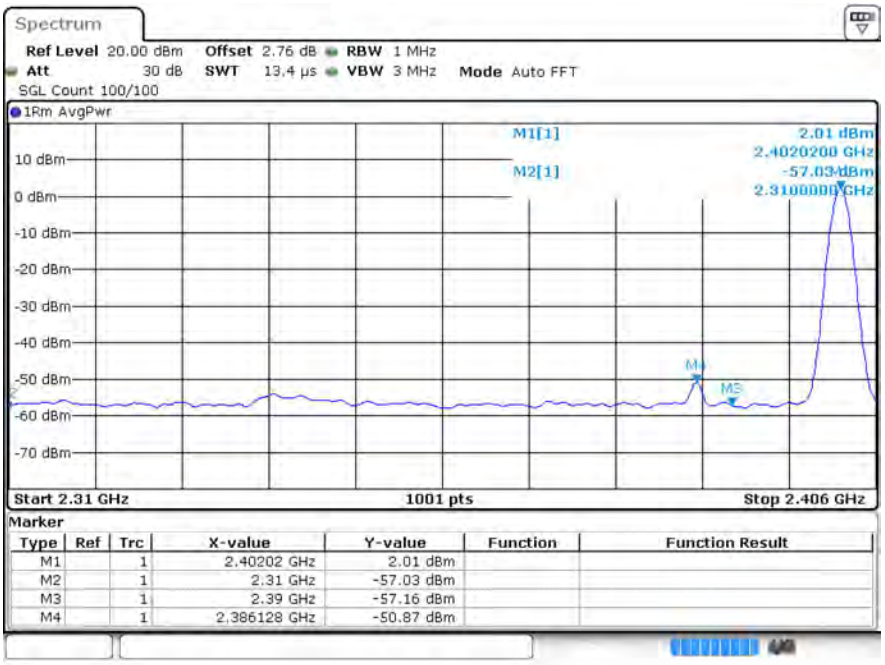
BLE 1M 2480MHz Average



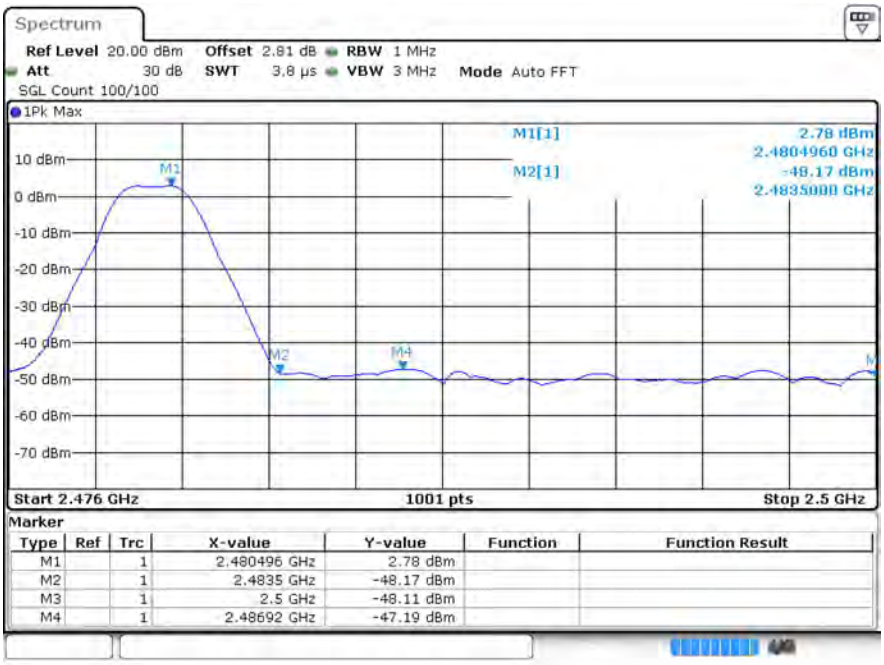
BLE 2M 2402MHz Peak



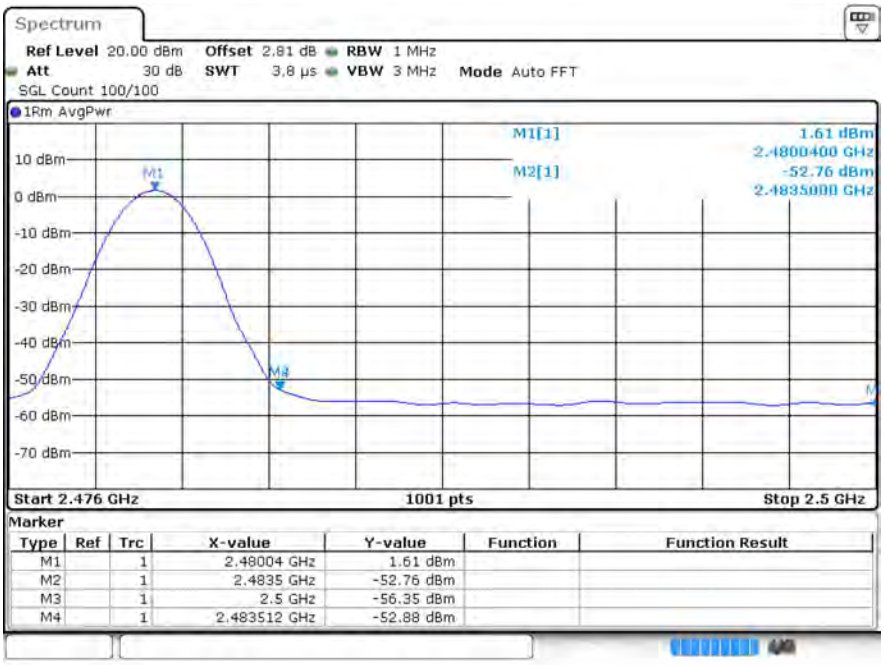
BLE 2M 2402MHz Average



BLE 2M 2480MHz Peak



BLE 2M 2480MHz Average



---The End---