Appendix B

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

Product Name: Powered Monitor Speaker

Trade Mark: Klipsch

Test Model: the Nines

Environmental Conditions

Temperature:	25.5° C
Relative Humidity:	51.3%
ATM Pressure:	100.0 kPa
Test Engineer:	Simba Huang
Supervised by:	Seal Chen

Contents

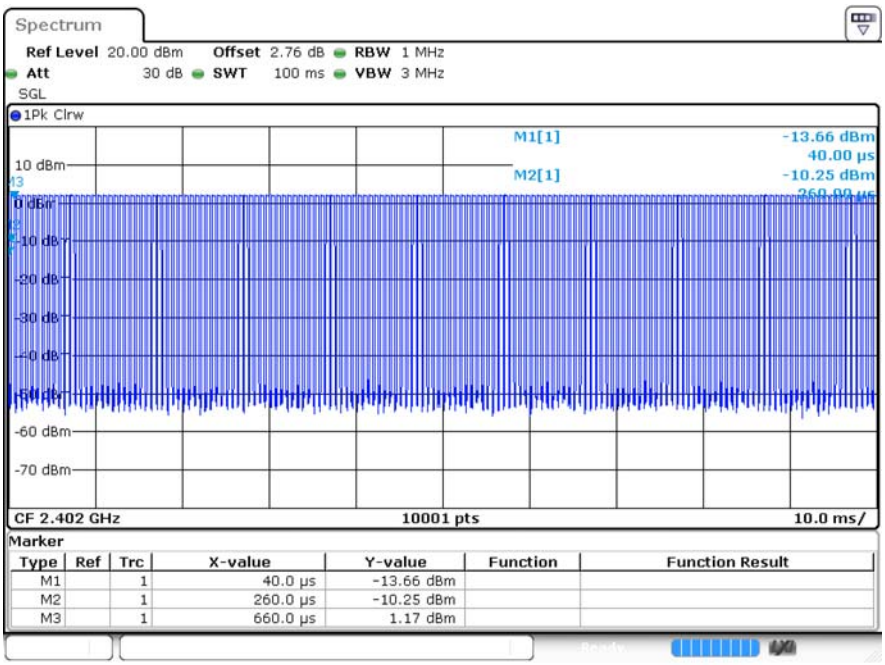
1 Duty Cycle

1.1 Test Result

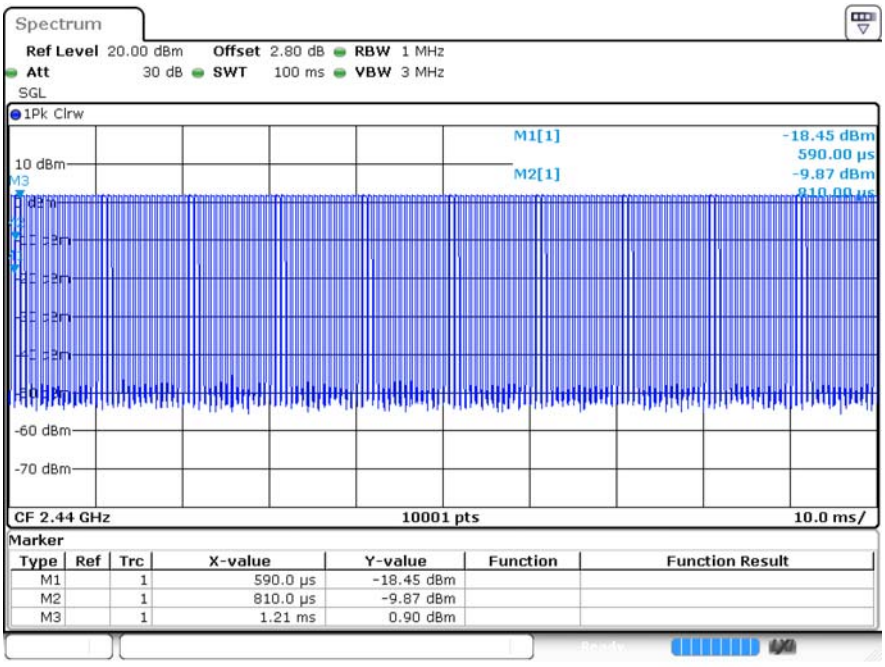
Mode	Frequency (MHz)	Duty Cycle (%)	1/T (kHz)
BLE 1M	2402	65.6	2.5
BLE 1M	2440	65.59	2.5
BLE 1M	2480	64.8	2.5
BLE 2M	2402	36	4.76
BLE 2M	2440	33.82	4.76
BLE 2M	2480	35.27	4.55

1.2 Test Graphs

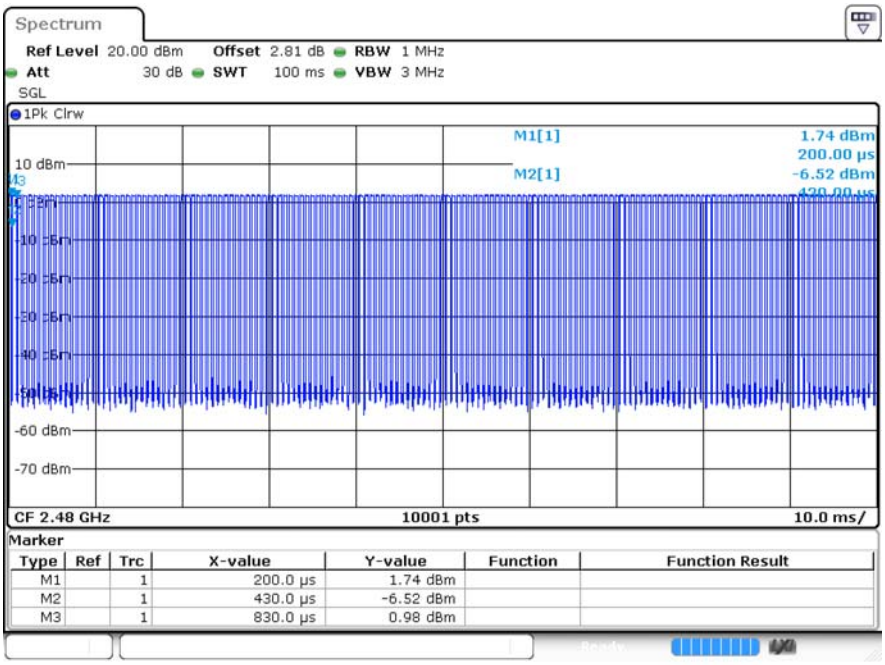
Test Graphs
BLE 1M 2402MHz



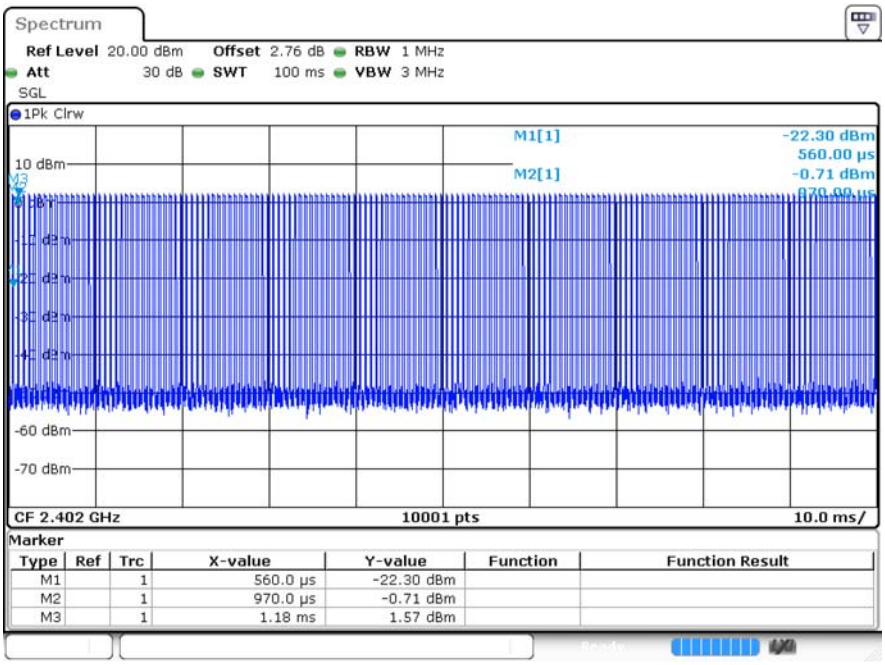
BLE 1M 2440MHz



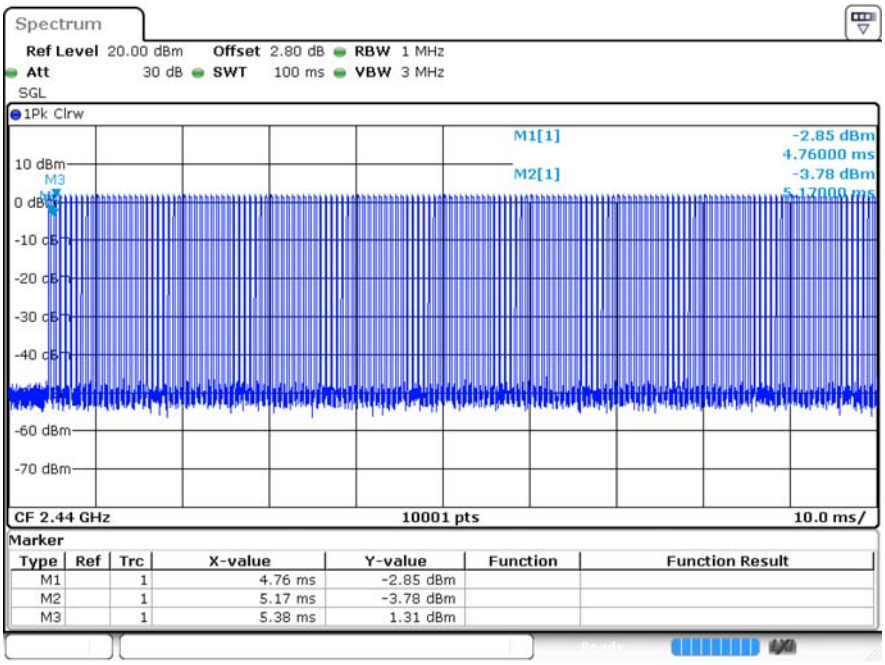
BLE 1M 2480MHz



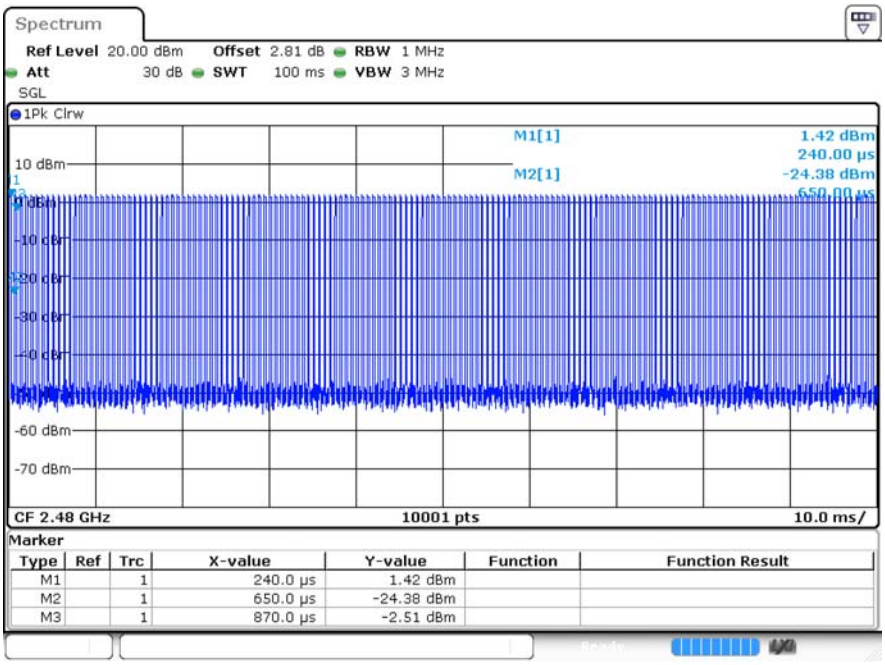
BLE 2M 2402MHz



BLE 2M 2440MHz



BLE 2M 2480MHz

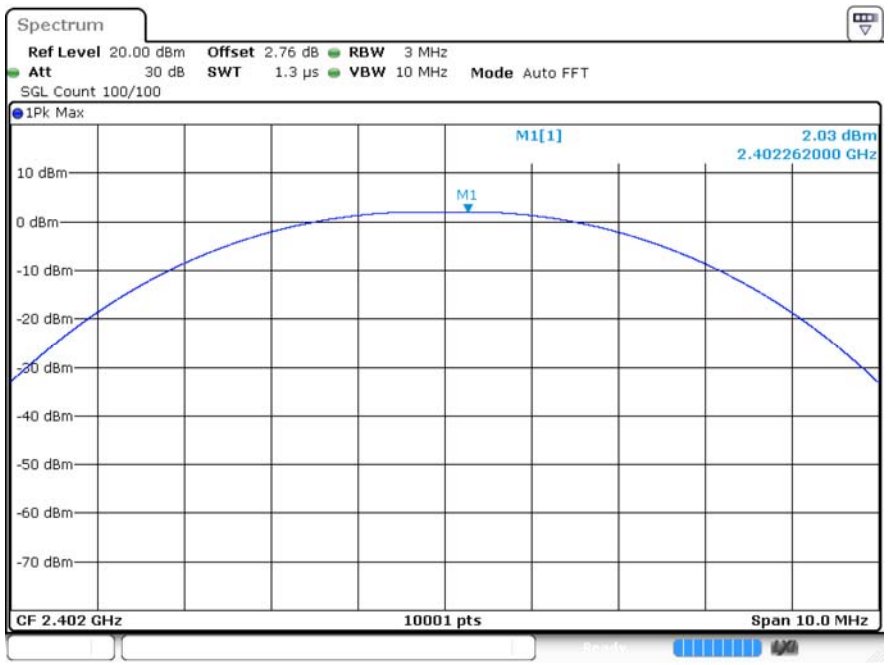
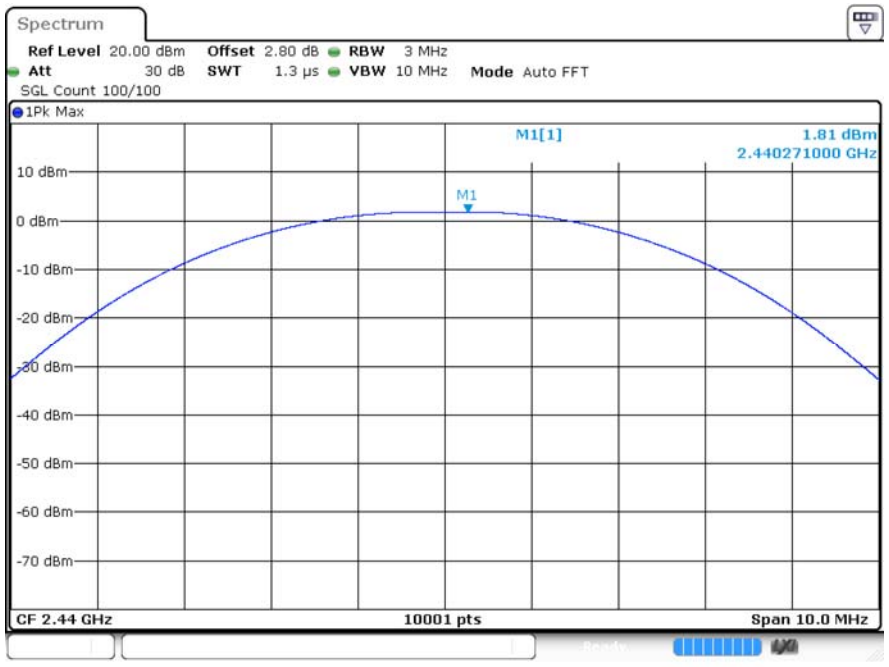


2 Maximum Conducted Output Power

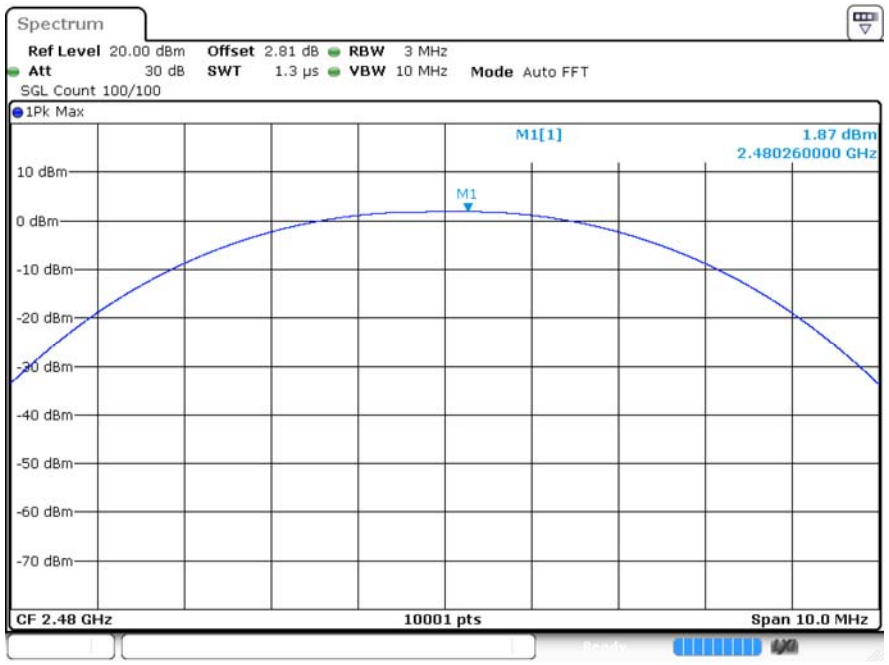
2.1 Test Result

Mode	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Verdict
BLE 1M	2402	2.03	30	Pass
BLE 1M	2440	1.81	30	Pass
BLE 1M	2480	1.87	30	Pass
BLE 2M	2402	2.06	30	Pass
BLE 2M	2440	1.82	30	Pass
BLE 2M	2480	1.89	30	Pass

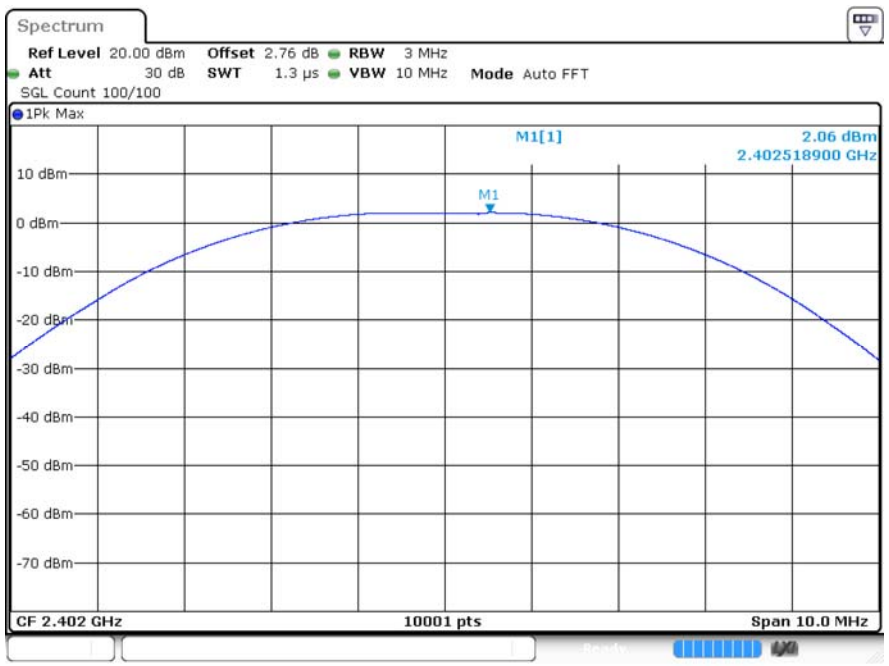
2.2 Test Graphs

Test Graphs
BLE 1M 2402MHz

BLE 1M 2440MHz


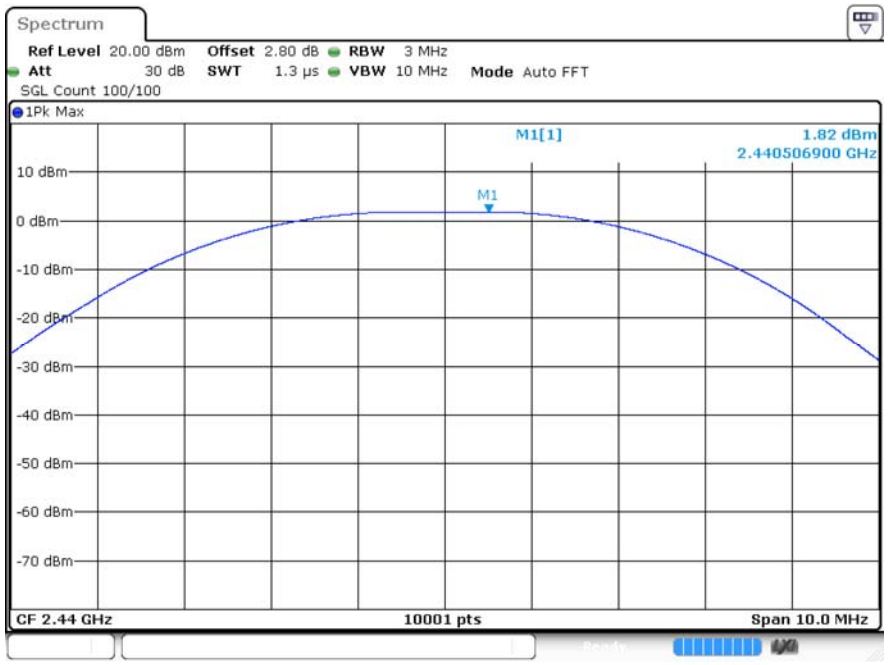
BLE 1M 2480MHz



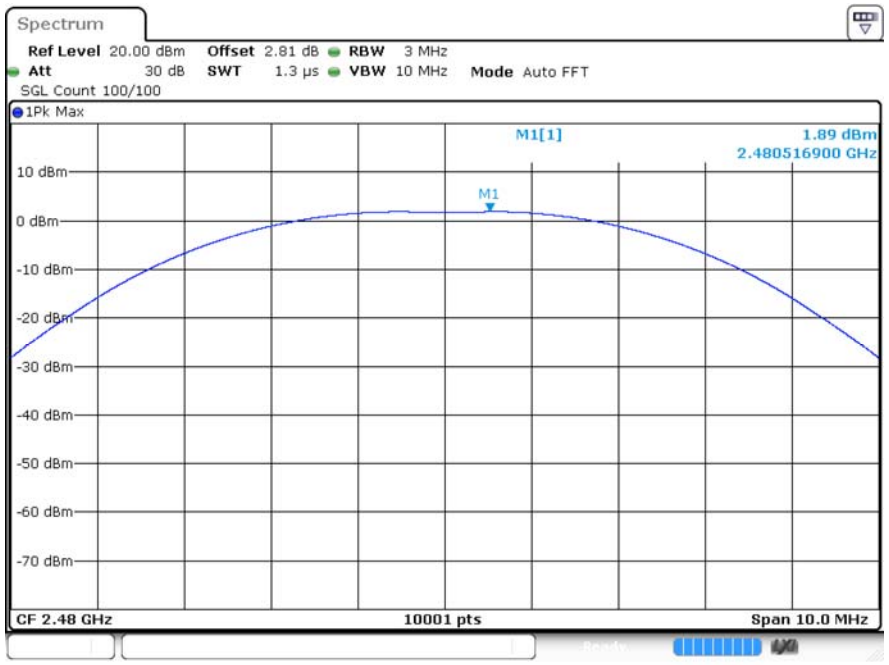
BLE 2M 2402MHz



BLE 2M 2440MHz



BLE 2M 2480MHz

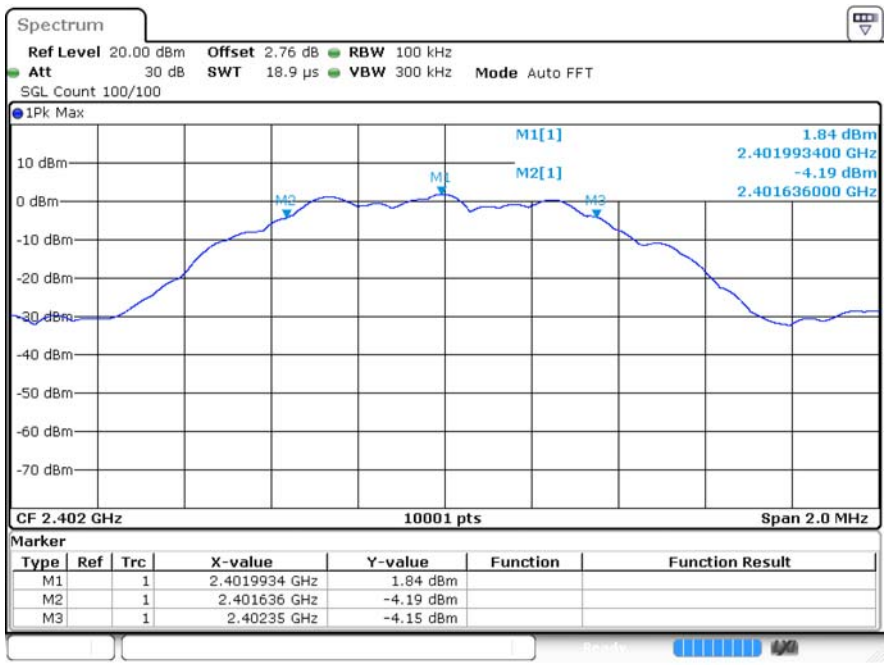
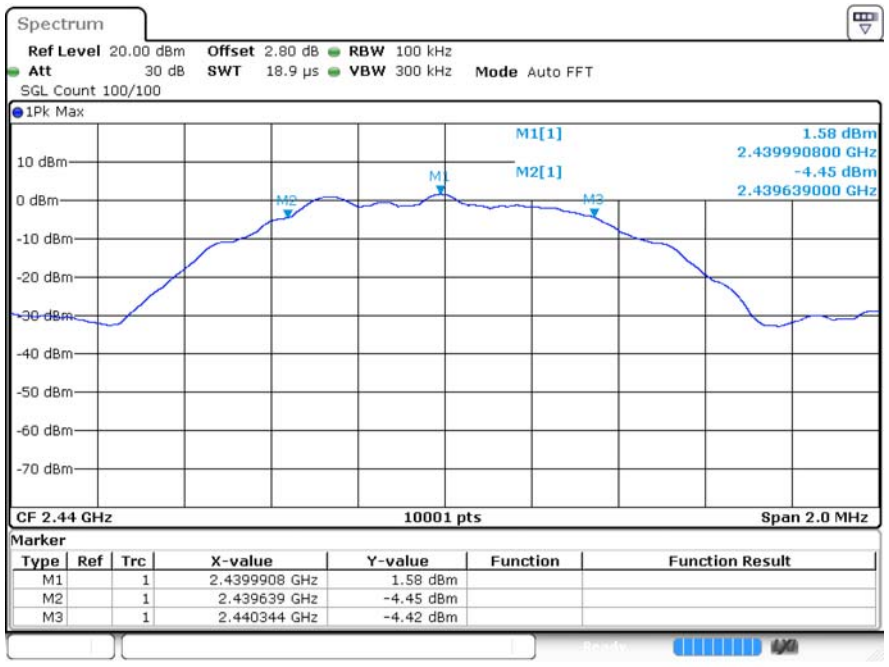


3 -6dB Bandwidth

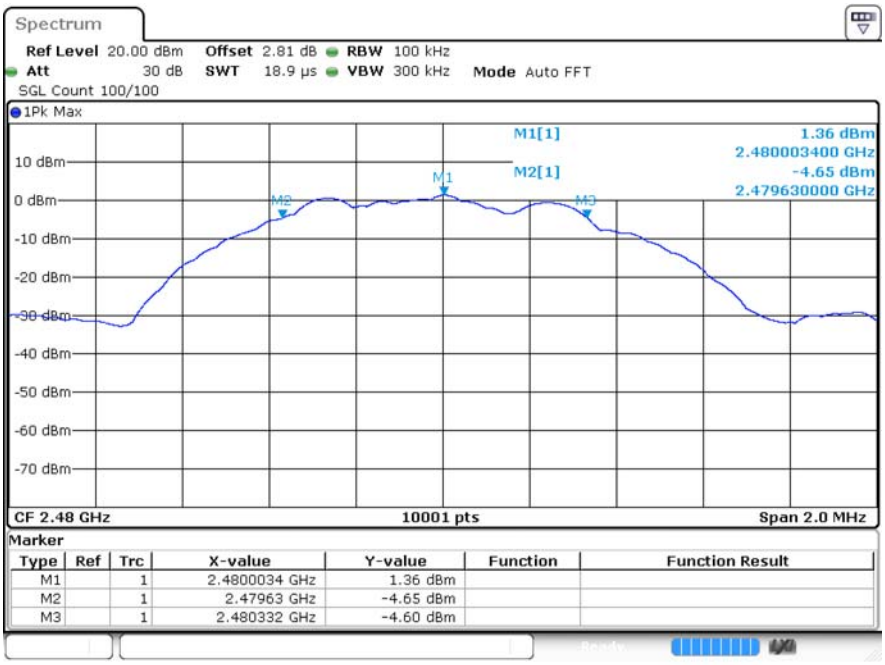
3.1 Test Result

Mode	Frequency (MHz)	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
BLE 1M	2402	0.714	0.5	Pass
BLE 1M	2440	0.705	0.5	Pass
BLE 1M	2480	0.702	0.5	Pass
BLE 2M	2402	1.128	0.5	Pass
BLE 2M	2440	0.839	0.5	Pass
BLE 2M	2480	0.941	0.5	Pass

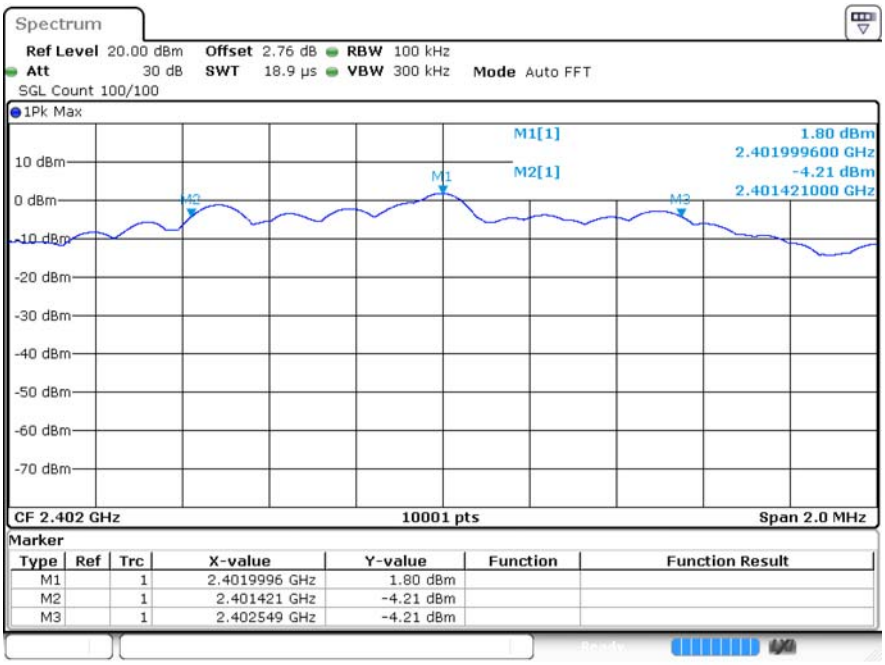
3.2 Test Graphs

Test Graphs
BLE 1M 2402MHz

BLE 1M 2440MHz


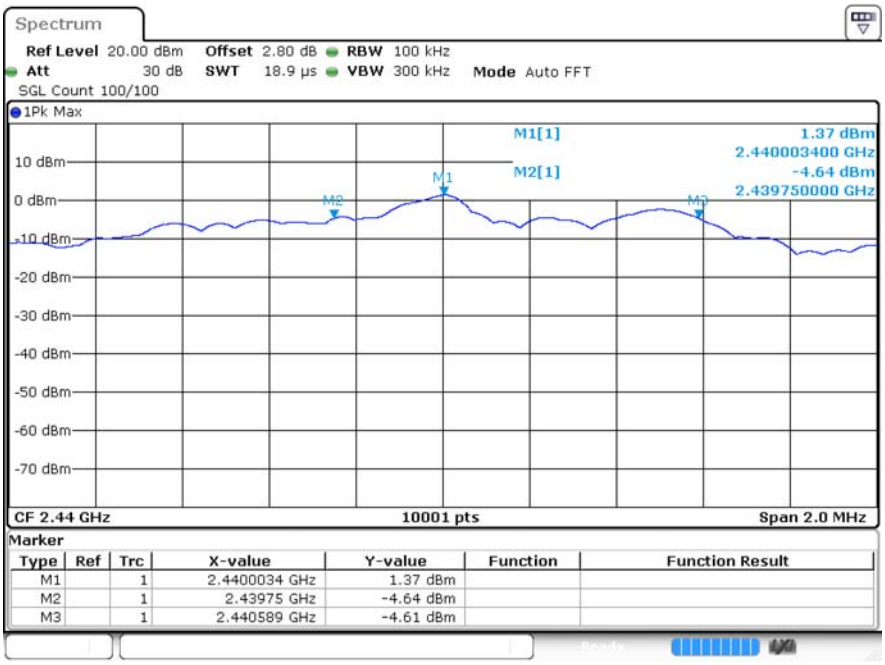
BLE 1M 2480MHz



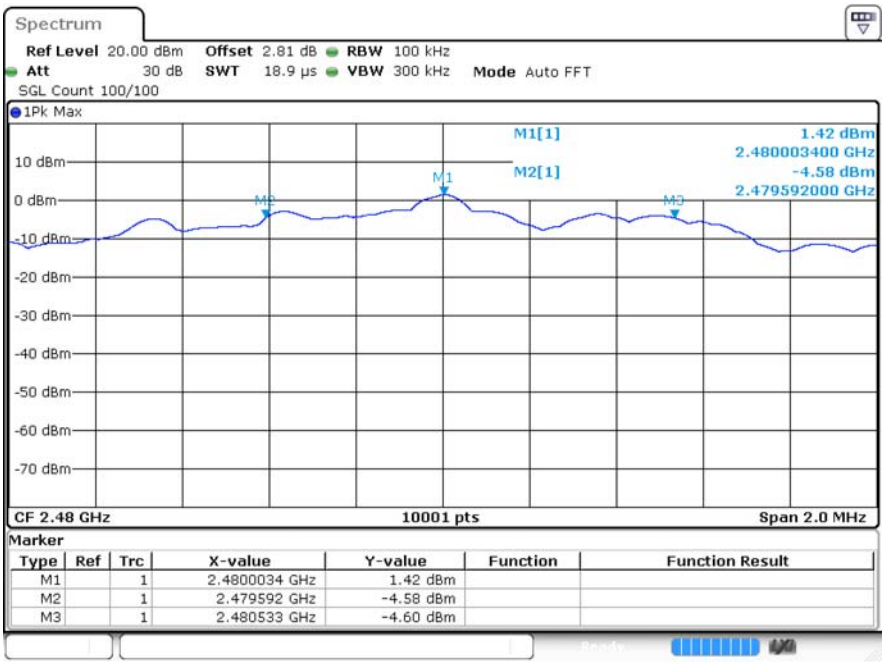
BLE 2M 2402MHz



BLE 2M 2440MHz



BLE 2M 2480MHz

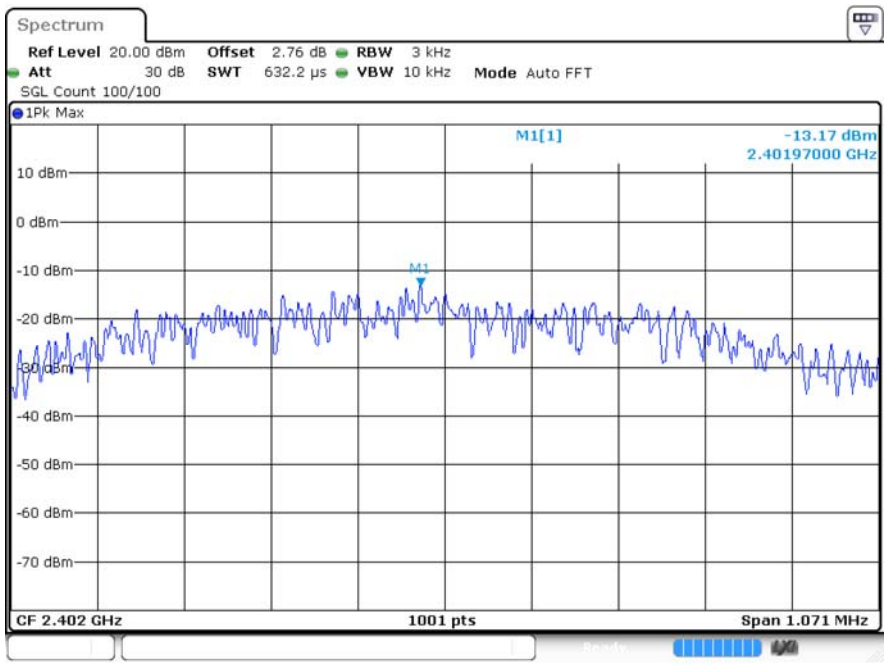
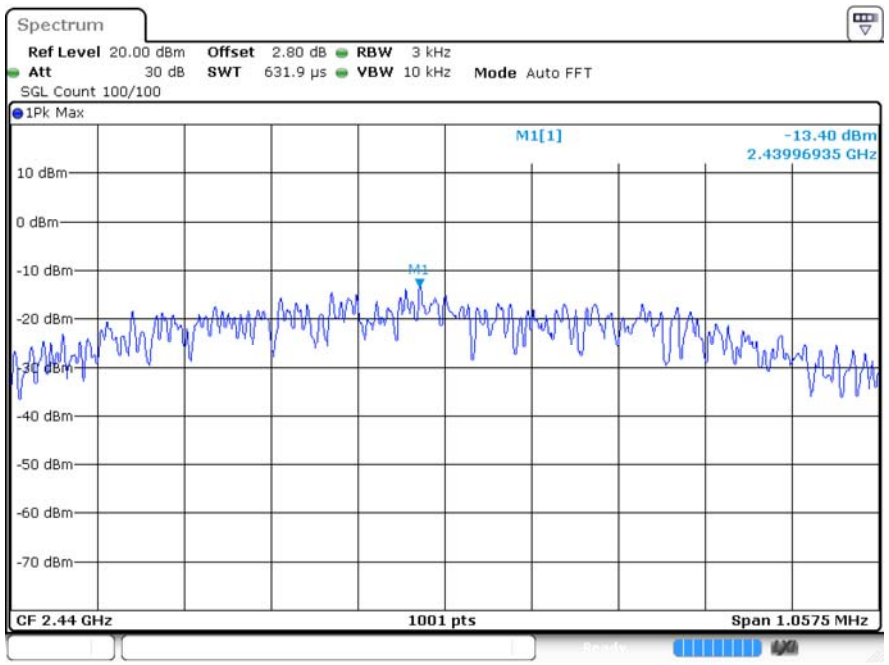


4 Maximum Power Spectral Density Level

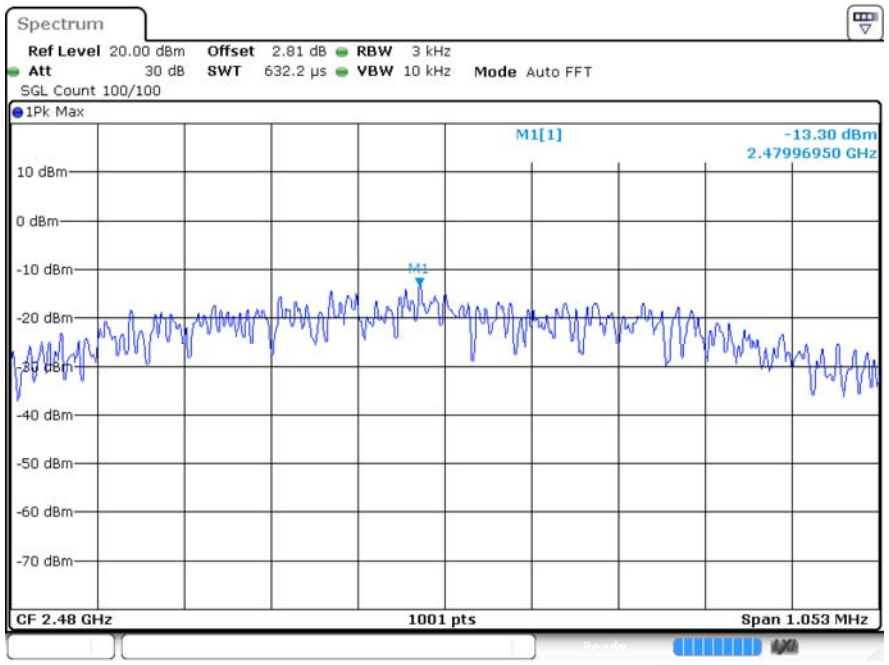
4.1 Test Result

Mode	Frequency (MHz)	Conducted PSD (dBm/3-100kHz)	Limit (dBm/3kHz)	Verdict
BLE 1M	2402	-13.17	≤8	Pass
BLE 1M	2440	-13.4	≤8	Pass
BLE 1M	2480	-13.3	≤8	Pass
BLE 2M	2402	-15.98	≤8	Pass
BLE 2M	2440	-16.26	≤8	Pass
BLE 2M	2480	-16.15	≤8	Pass

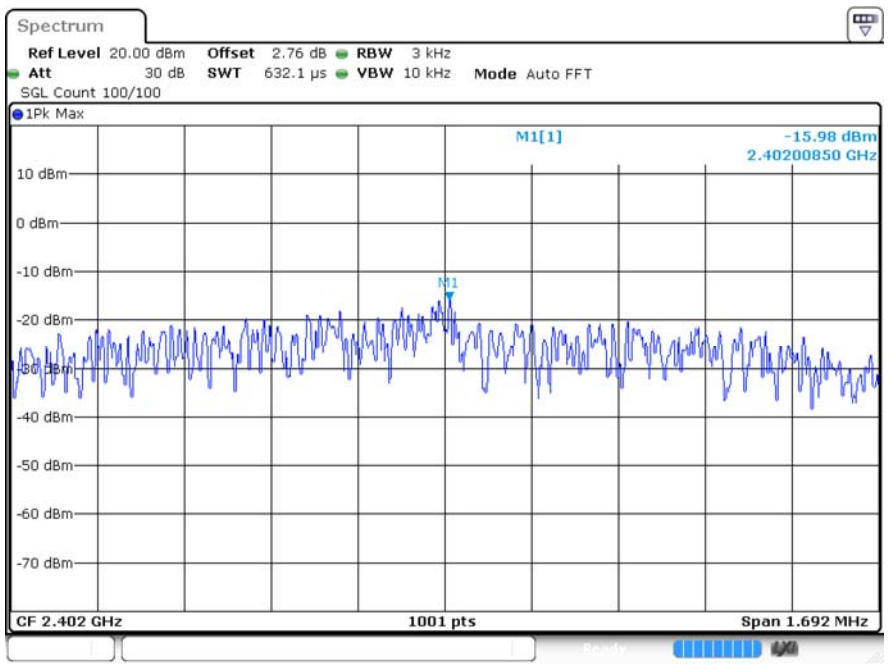
4.2 Test Graphs

Test Graphs
BLE 1M 2402MHz

BLE 1M 2440MHz


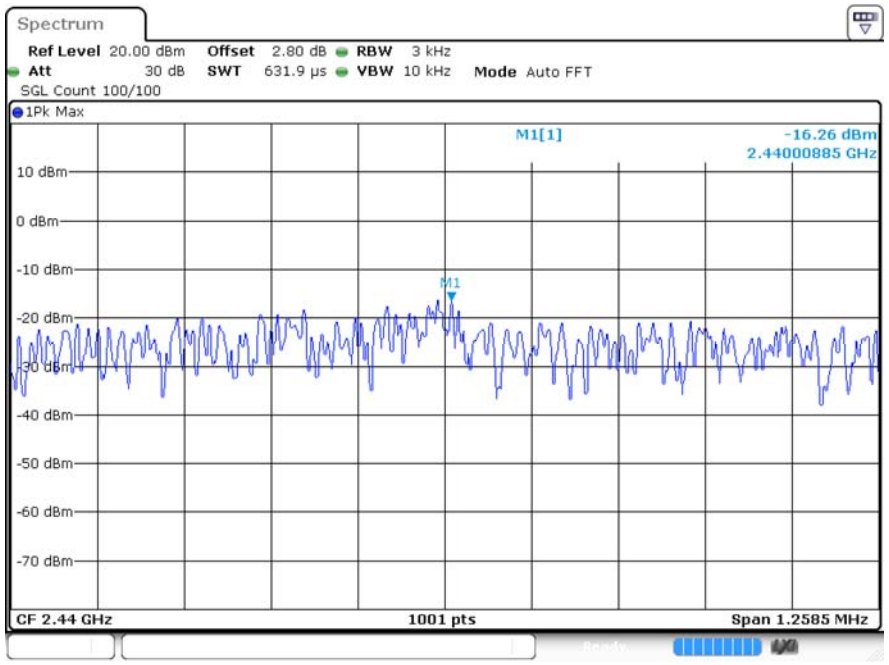
BLE 1M 2480MHz



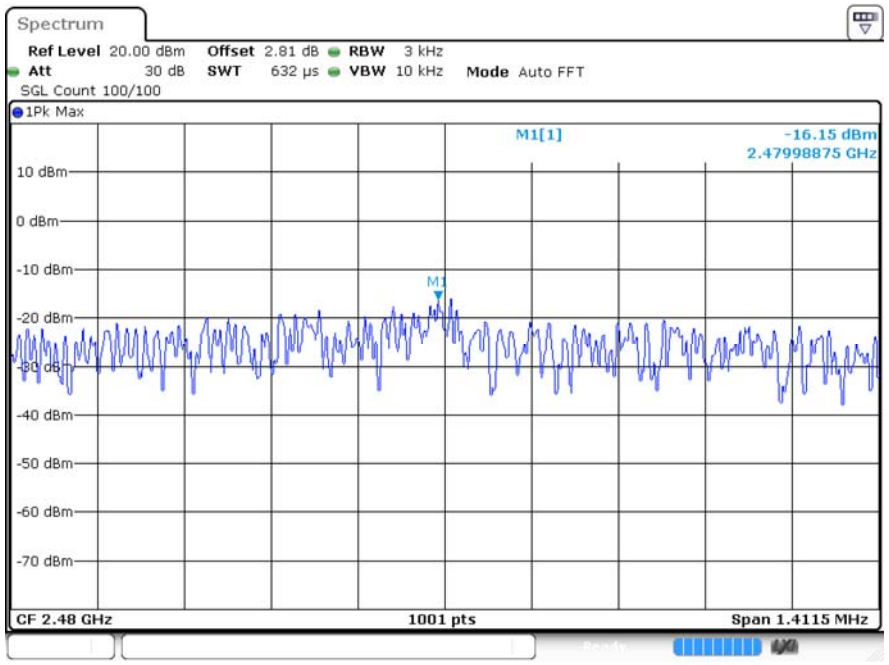
BLE 2M 2402MHz



BLE 2M 2440MHz



BLE 2M 2480MHz

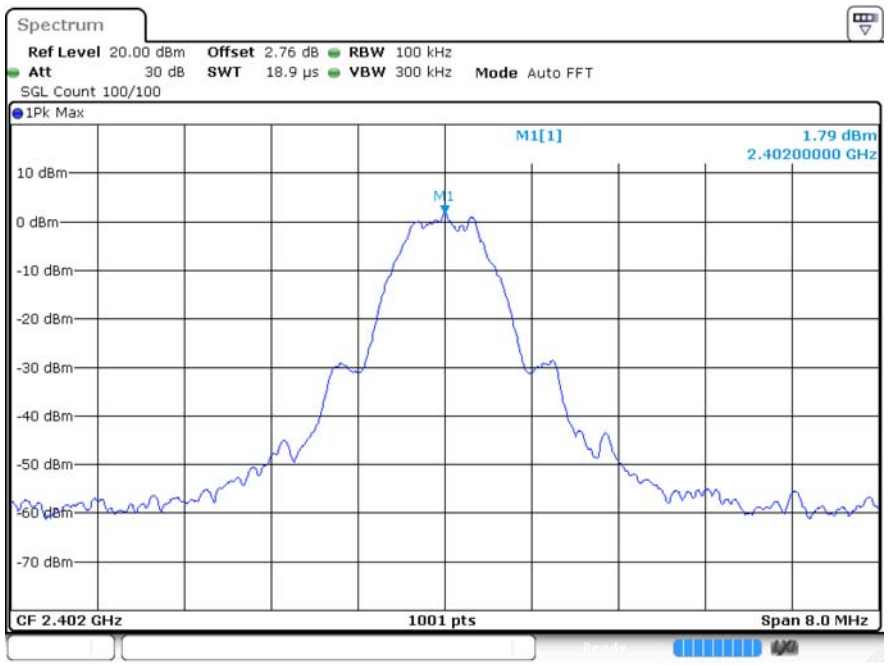
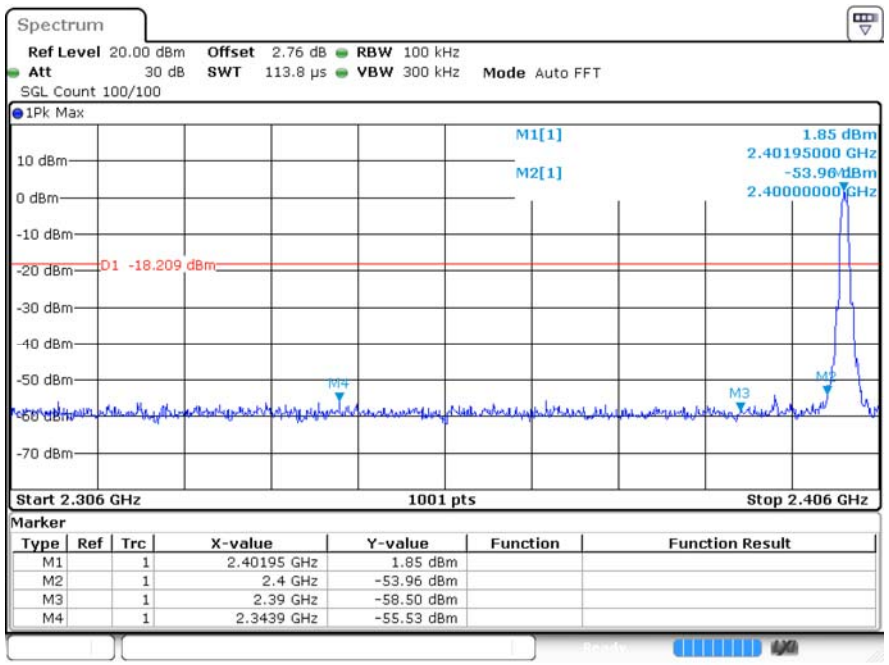


5 Band Edge

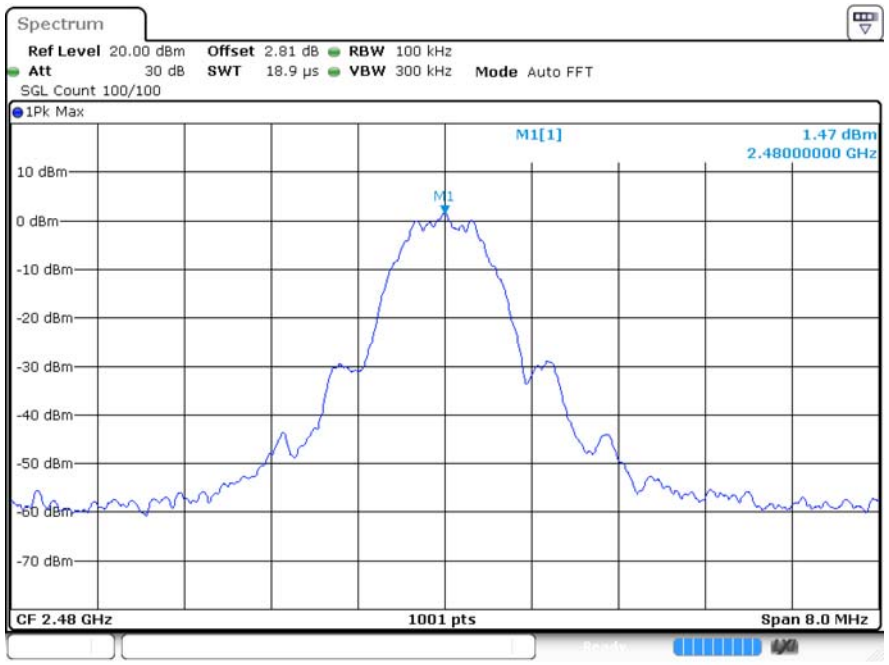
5.1 Test Result

Mode	Frequency (MHz)	Max Value (dBc)	Limit (dBc)	Verdict
BLE 1M	2402	-57.32	-20	Pass
BLE 1M	2480	-55.9	-20	Pass
BLE 2M	2402	-56.98	-20	Pass
BLE 2M	2480	-54.27	-20	Pass

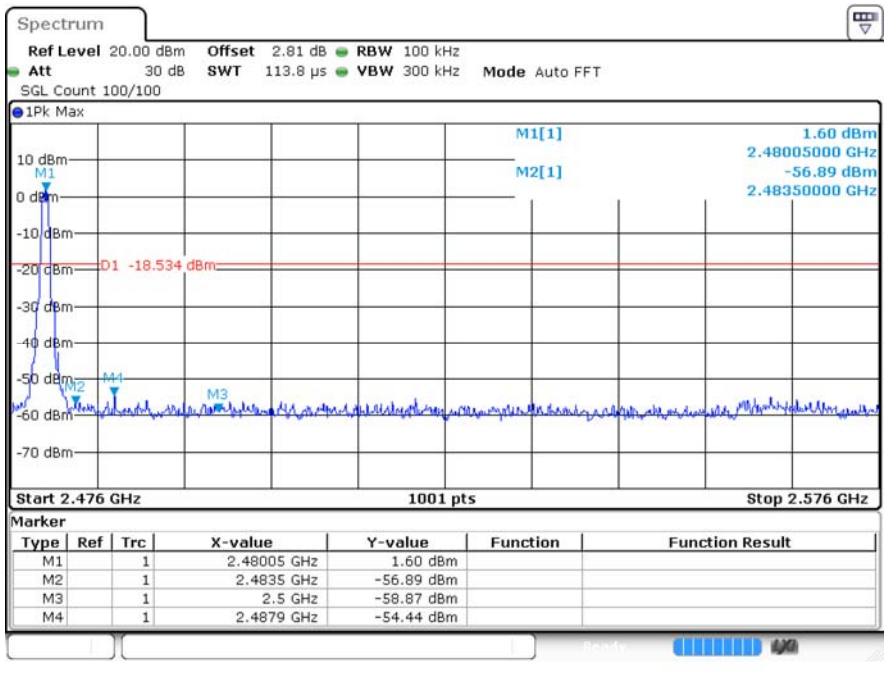
5.2 Test Graphs

Test Graphs
BLE 1M 2402MHz Ref

BLE 1M 2402MHz Emission


BLE 1M 2480MHz Ref

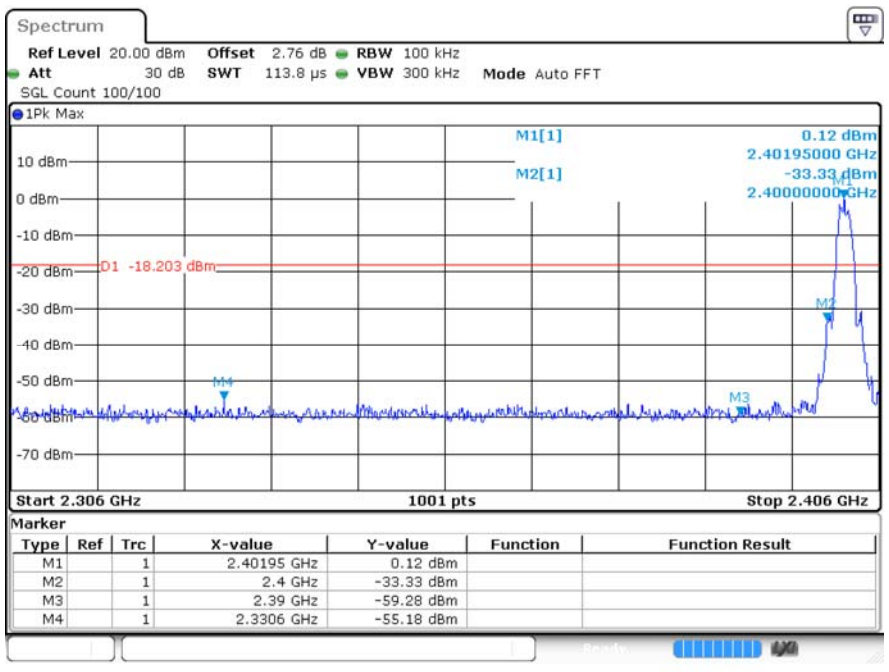


BLE 1M 2480MHz Emission



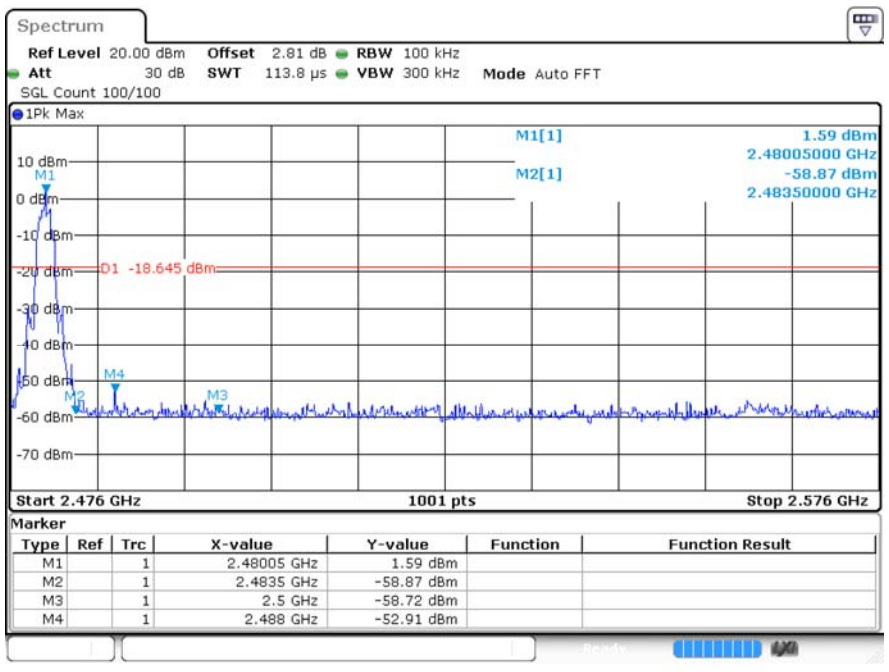
BLE 2M 2402MHz Ref

BLE 2M 2402MHz Emission



BLE 2M 2480MHz Ref

BLE 2M 2480MHz Emission

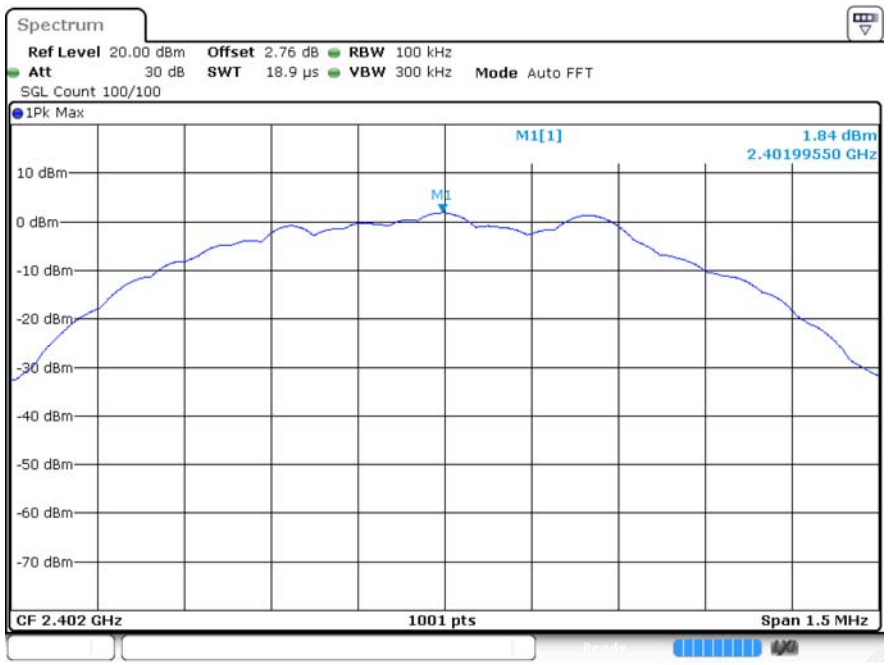
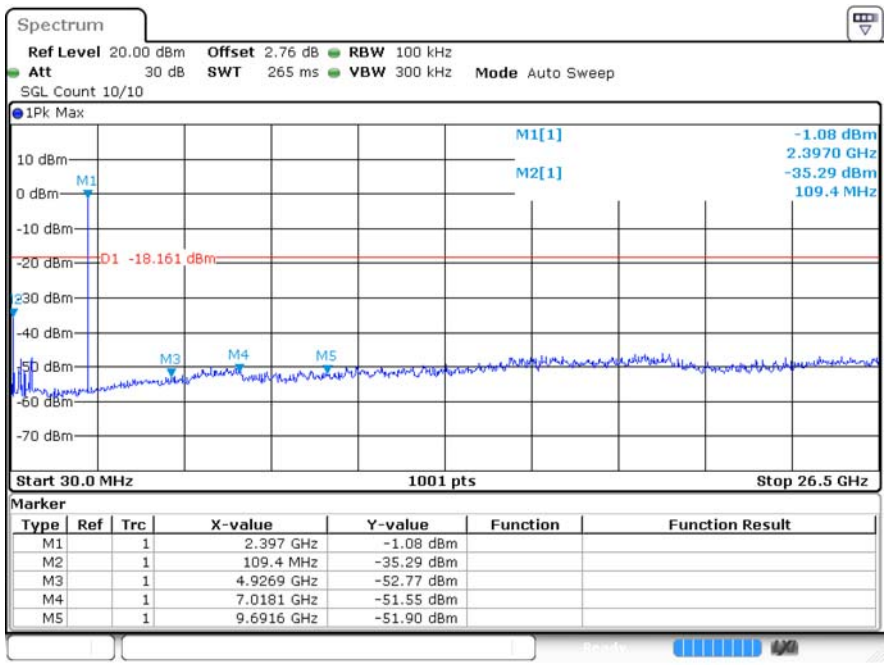


6 Conducted RF Spurious Emission

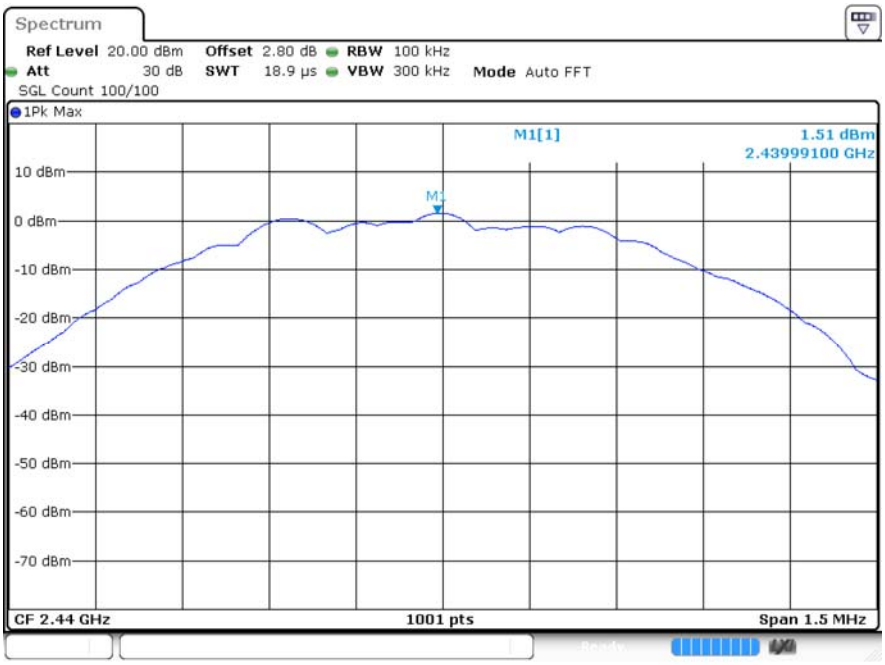
6.1 Test Result

Mode	Frequency (MHz)	Max Value (dBc)	Limit (dBc)	Verdict
BLE 1M	2402	-37.12	-20	Pass
BLE 1M	2440	-36.78	-20	Pass
BLE 1M	2480	-36.32	-20	Pass
BLE 2M	2402	-37.03	-20	Pass
BLE 2M	2440	-36.46	-20	Pass
BLE 2M	2480	-36.66	-20	Pass

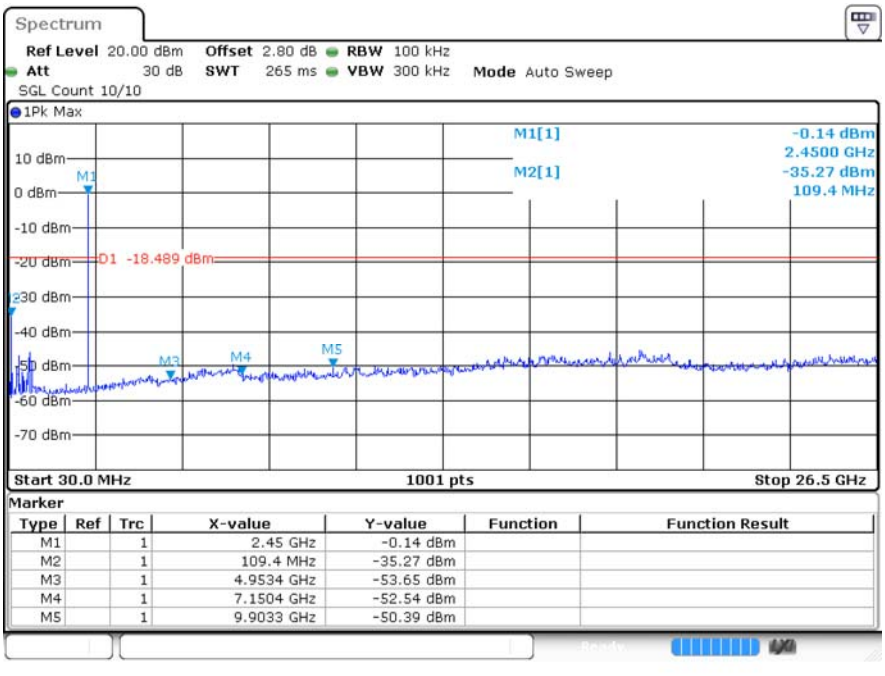
6.2 Test Graphs

Test Graphs
BLE 1M 2402MHz Ref

BLE 1M 2402MHz Emission


BLE 1M 2440MHz Ref

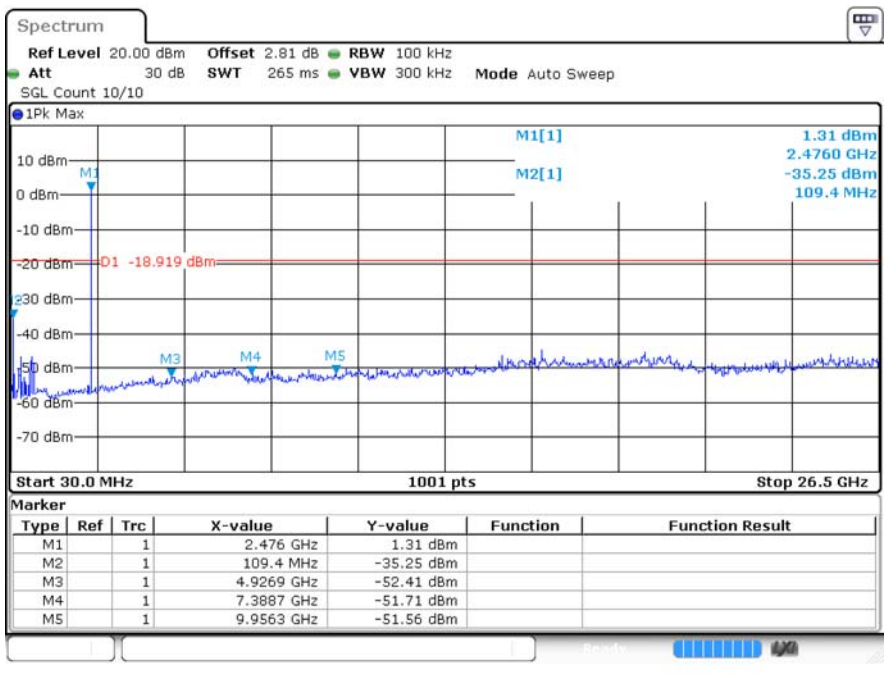


BLE 1M 2440MHz Emission

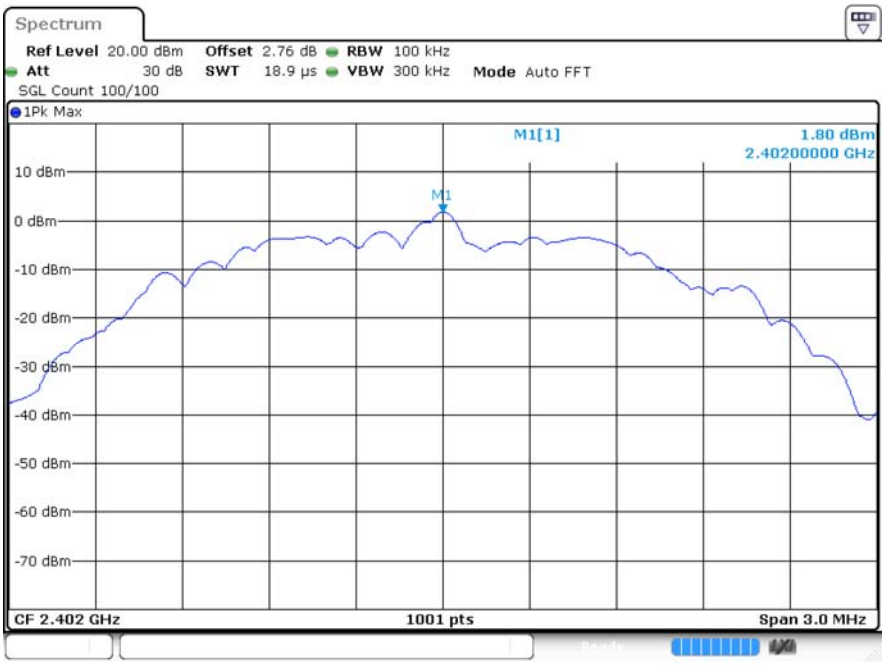


BLE 1M 2480MHz Ref

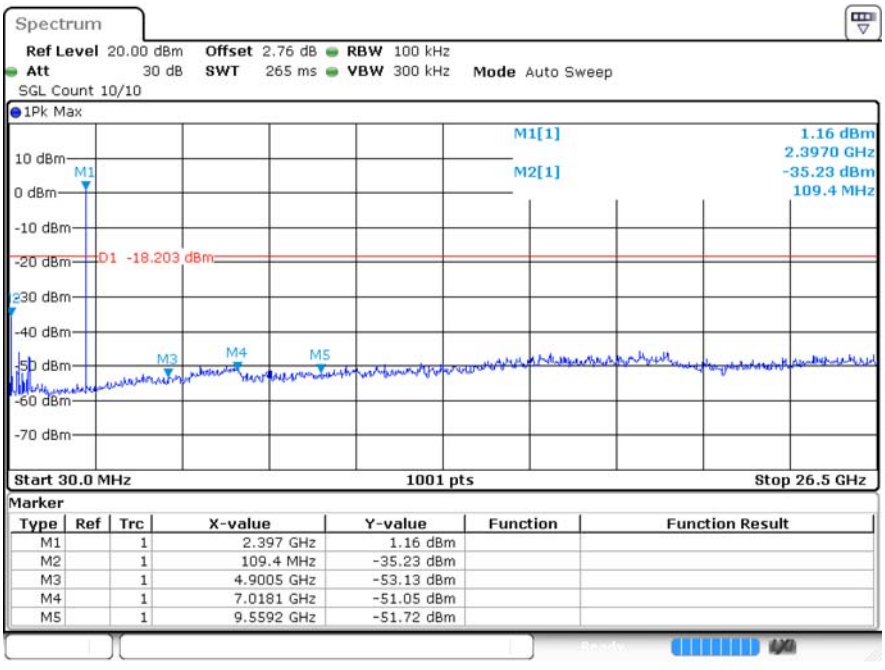
BLE 1M 2480MHz Emission



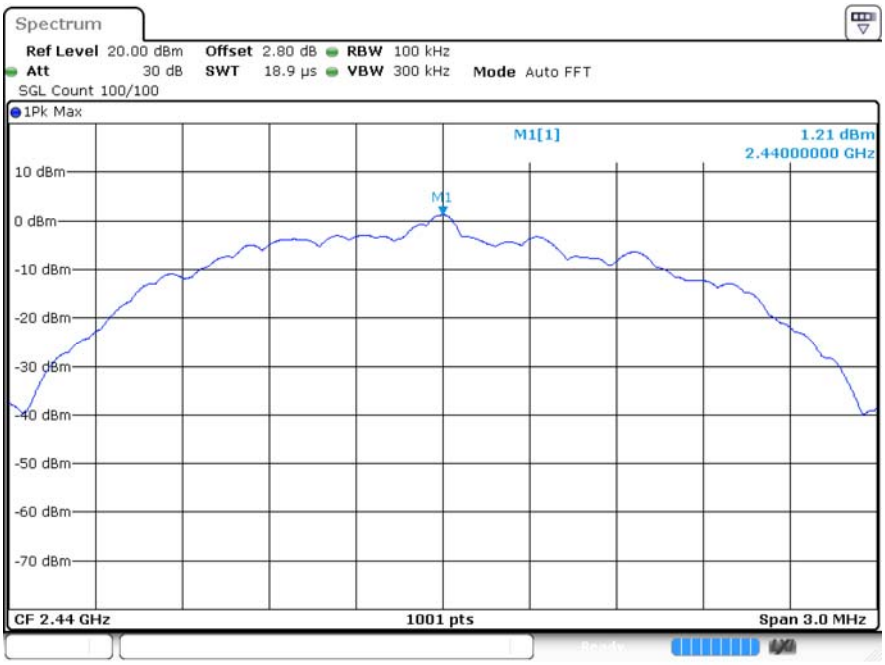
BLE 2M 2402MHz Ref



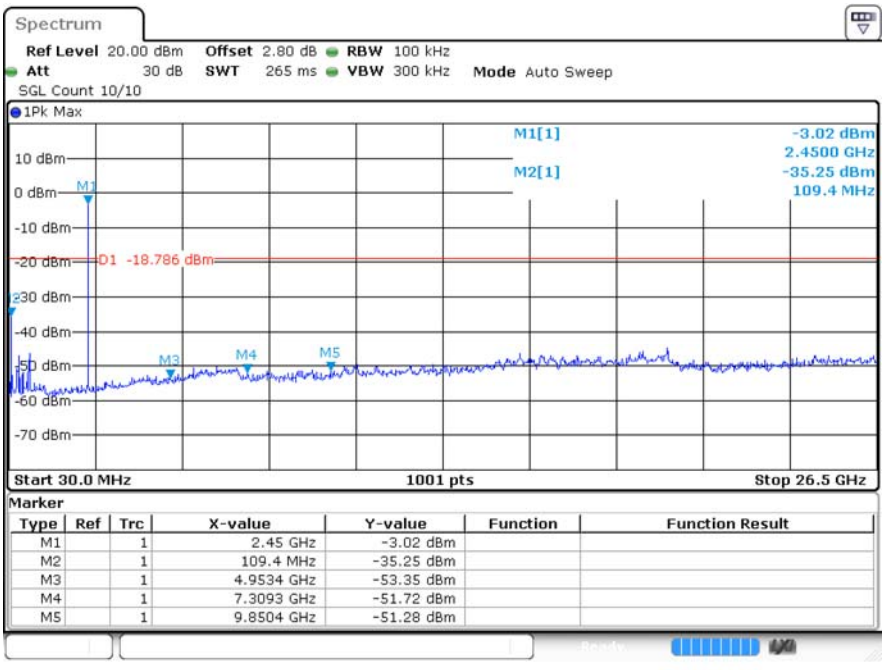
BLE 2M 2402MHz Emission



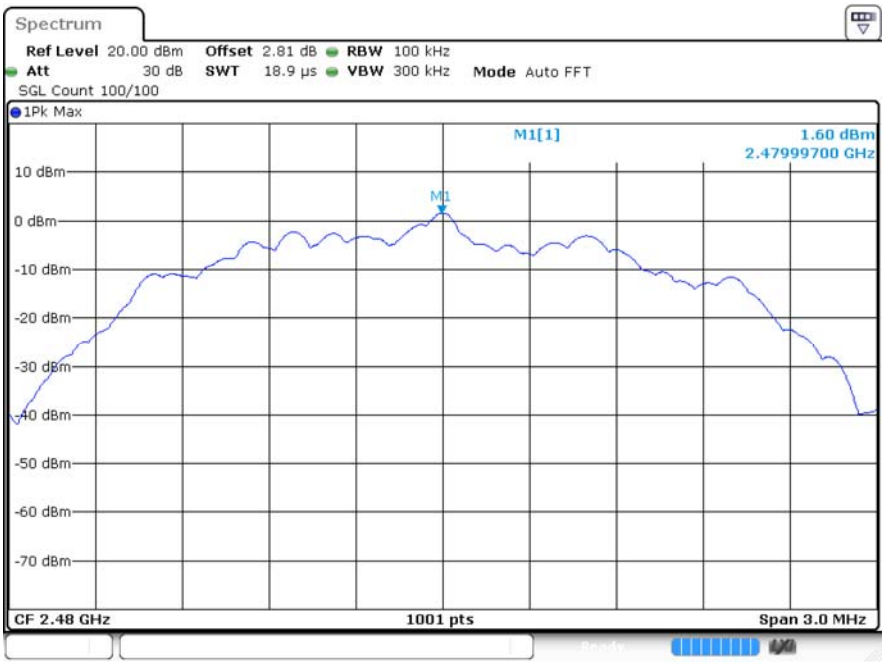
BLE 2M 2440MHz Ref



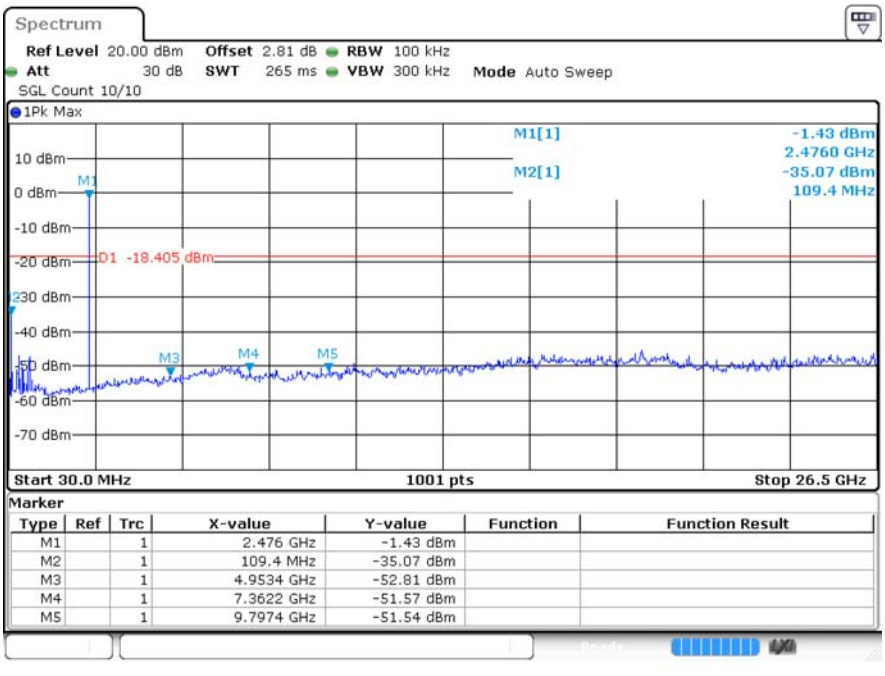
BLE 2M 2440MHz Emission



BLE 2M 2480MHz Ref



BLE 2M 2480MHz Emission



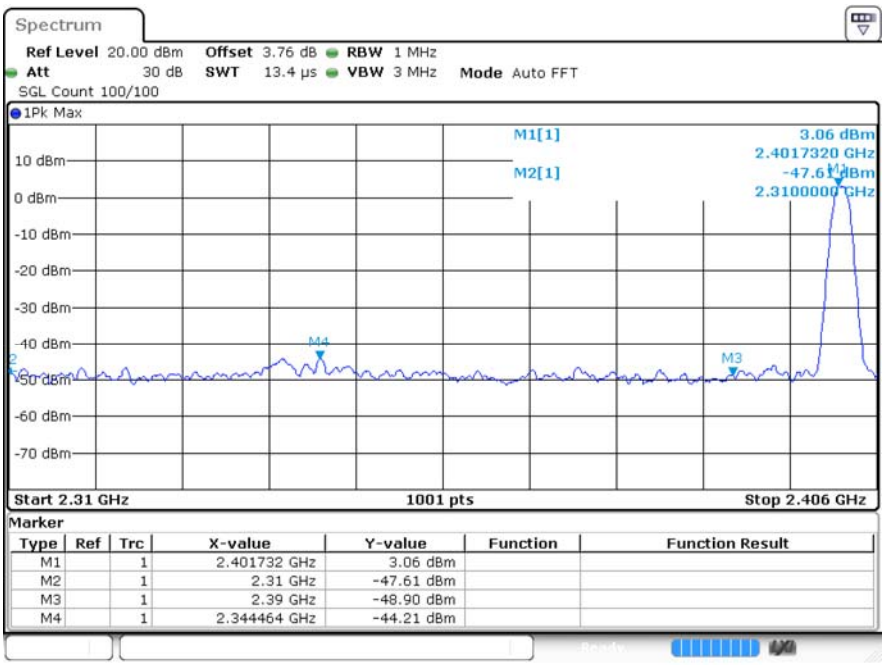
7 Restrict Band

7.1 Test Result

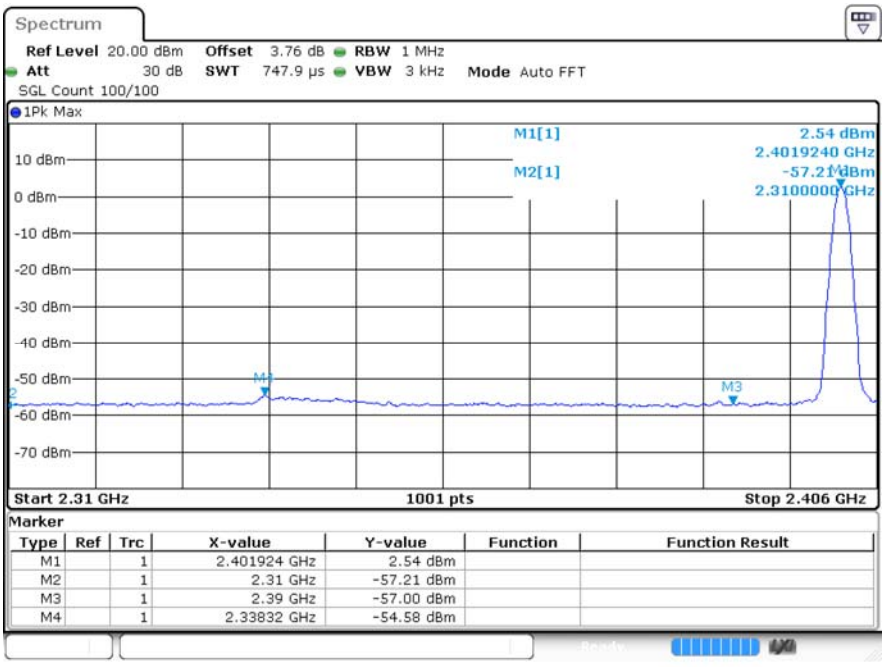
Mode	Frequency (MHz)	Spur Freq (MHz)	Power (dBm)	Gain (dBi)	E (dBuV/m)	Detector	Limit (dBuV/m)	Verdict
BLE 1M	2402	2310	-47.61	2	49.65	Peak	74	Pass
BLE 1M	2402	2310	-57.21	2	40.05	Average	54	Pass
BLE 1M	2402	2344.464	-44.2	2	53.06	Peak	74	Pass
BLE 1M	2402	2338.32	-54.57	2	42.69	Average	54	Pass
BLE 1M	2402	2390	-48.9	2	48.36	Peak	74	Pass
BLE 1M	2402	2390	-57	2	40.26	Average	54	Pass
BLE 1M	2480	2483.5	-47.98	2	49.28	Peak	74	Pass
BLE 1M	2480	2483.5	-55.85	2	41.41	Average	54	Pass
BLE 1M	2480	2494.696	-46.81	2	50.45	Peak	74	Pass
BLE 1M	2480	2487.04	-55.81	2	41.45	Average	54	Pass
BLE 1M	2480	2500	-49.04	2	48.22	Peak	74	Pass
BLE 1M	2480	2500	-56.8	2	40.46	Average	54	Pass
BLE 2M	2402	2310	-49.47	2	47.79	Peak	74	Pass
BLE 2M	2402	2310	-56.55	2	40.71	Average	54	Pass
BLE 2M	2402	2338.128	-45.65	2	51.61	Peak	74	Pass
BLE 2M	2402	2338.8	-53.95	2	43.31	Average	54	Pass
BLE 2M	2402	2390	-47.75	2	49.51	Peak	74	Pass
BLE 2M	2402	2390	-56.66	2	40.6	Average	54	Pass
BLE 2M	2480	2483.5	-42.42	2	54.84	Peak	74	Pass
BLE 2M	2480	2483.5	-51.5	2	45.76	Average	54	Pass
BLE 2M	2480	2483.512	-42.42	2	54.84	Peak	74	Pass
BLE 2M	2480	2483.512	-51.5	2	45.76	Average	54	Pass
BLE 2M	2480	2500	-48.36	2	48.9	Peak	74	Pass
BLE 2M	2480	2500	-56.35	2	40.91	Average	54	Pass

7.2 Test Graphs

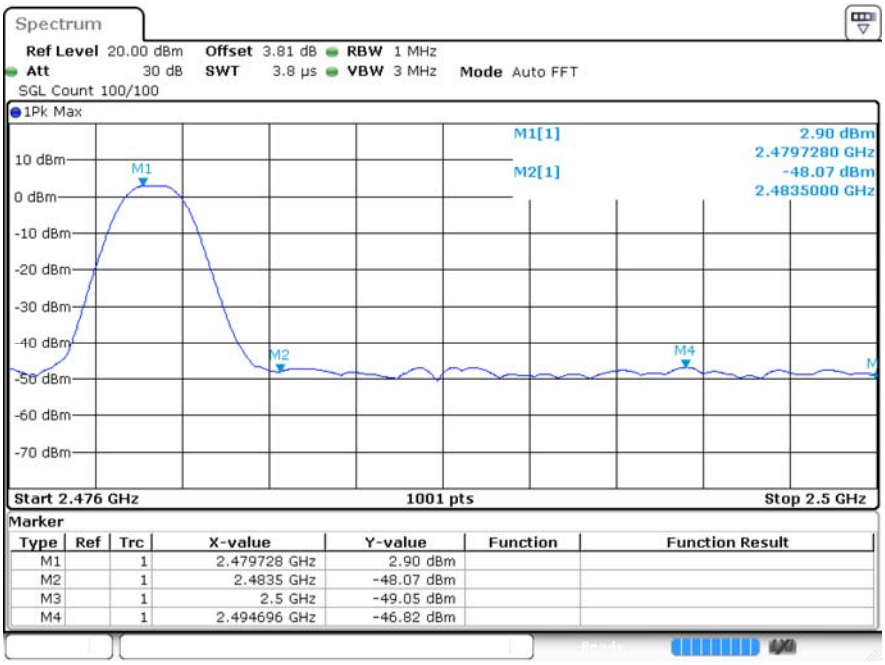
Test Graphs
BLE 1M 2402MHz Peak



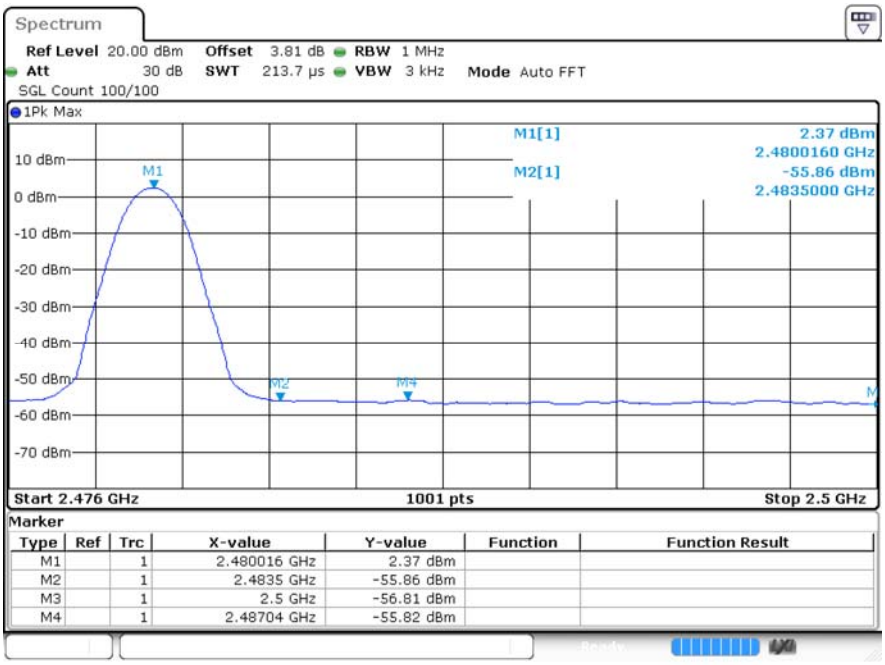
BLE 1M 2402MHz Average



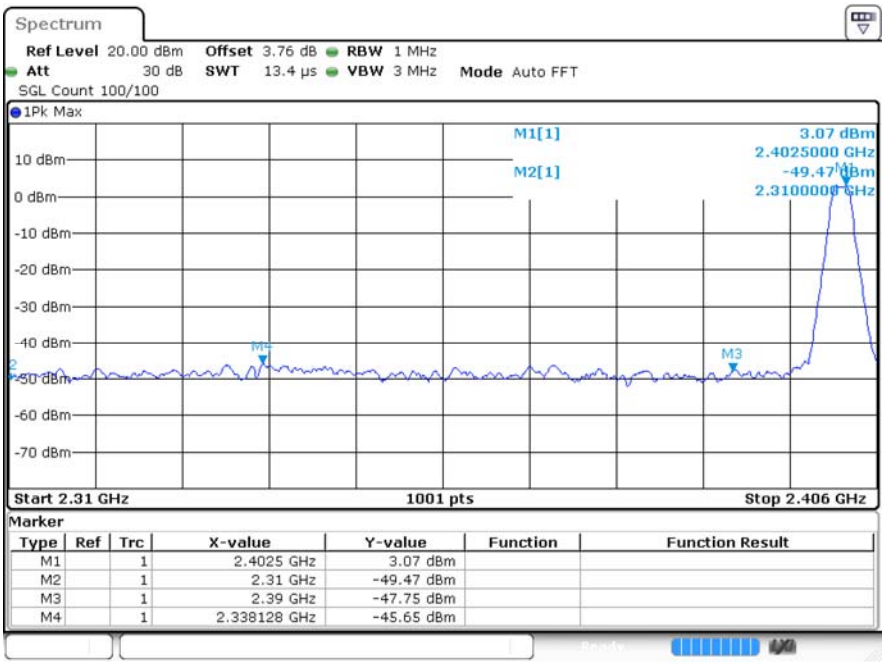
BLE 1M 2480MHz Peak



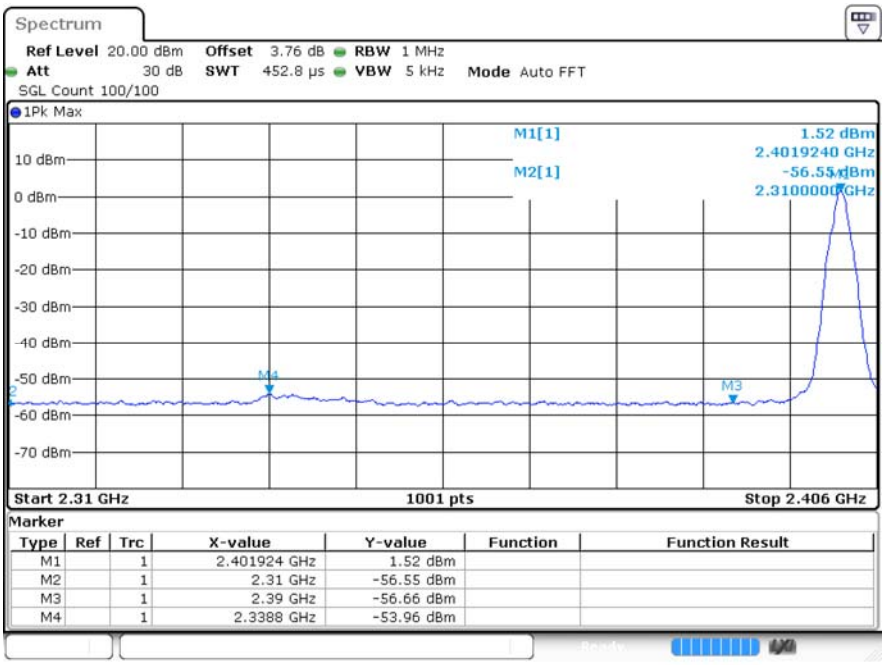
BLE 1M 2480MHz Average



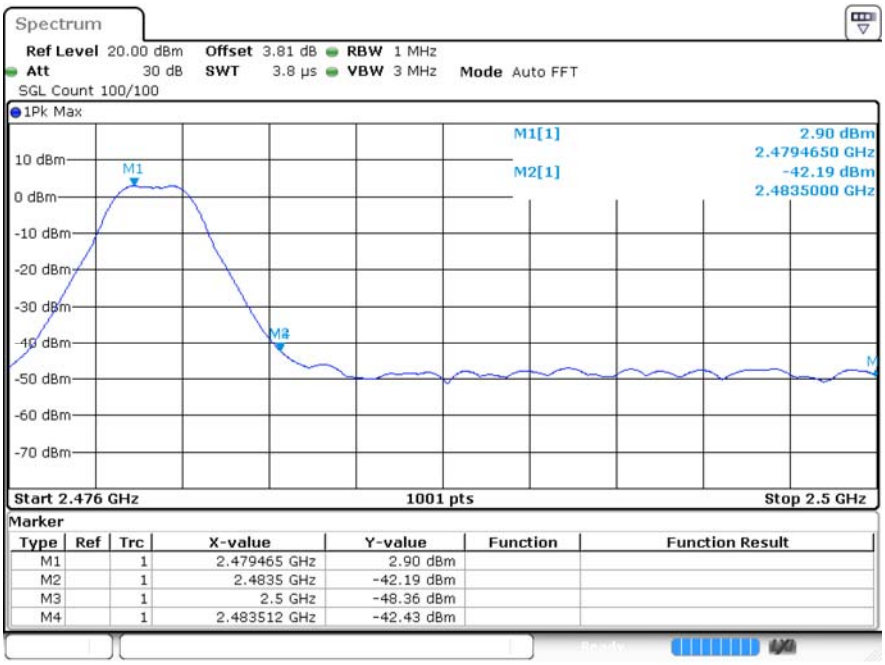
BLE 2M 2402MHz Peak



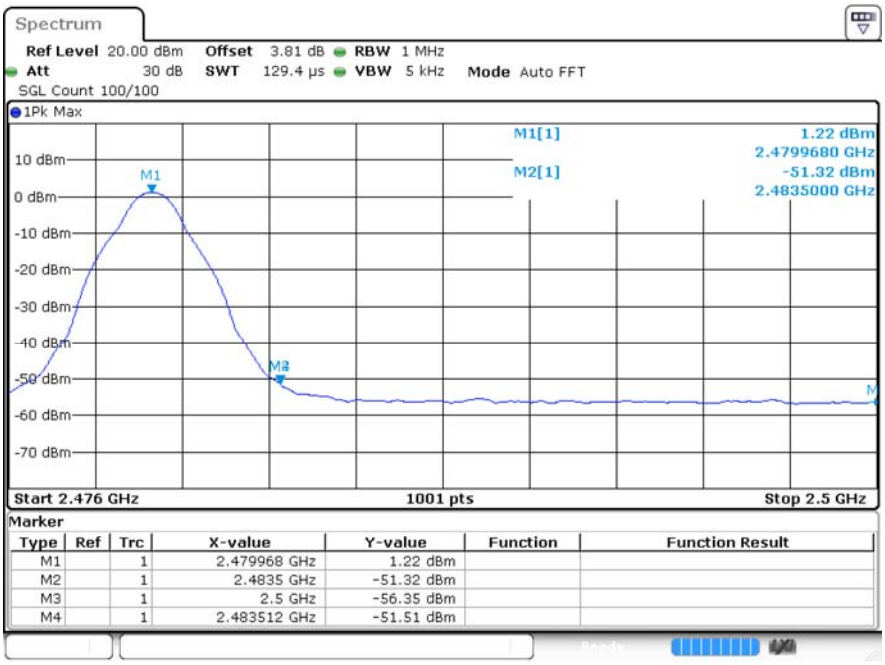
BLE 2M 2402MHz Average



BLE 2M 2480MHz Peak



BLE 2M 2480MHz Average



---The End---