Appendix RF test data for BLE

Product Name: carplay

Trade Mark: N/A

Test Model: D01

Environmental Conditions

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

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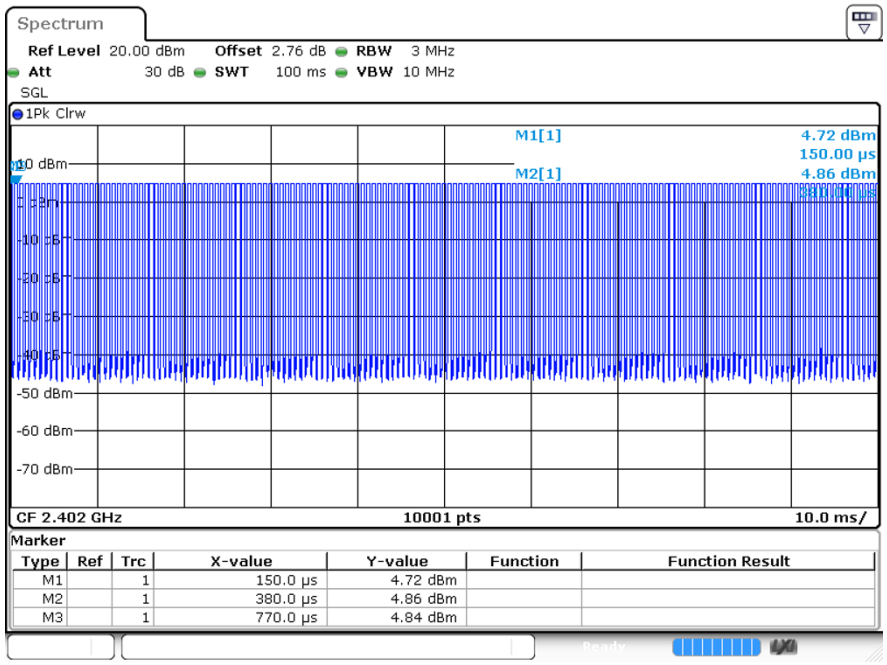
1 Duty Cycle

1.1 Test Result

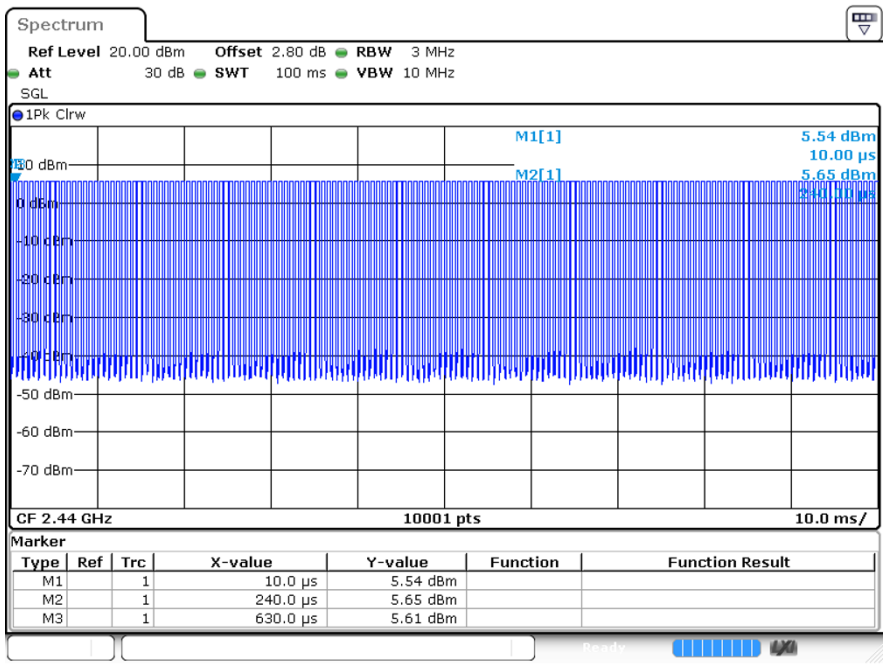
Mode	Frequency (MHz)	Duty Cycle (%)	Correction Factor	1/T (kHz)
BLE 1M	2402	64	1.94	2.56
BLE 1M	2440	64	1.94	2.56
BLE 1M	2480	64.36	1.91	2.56
BLE 2M	2402	34.49	4.62	4.76
BLE 2M	2440	35.21	4.53	4.76
BLE 2M	2480	35.2	4.54	4.76

1.2 Test Graphs

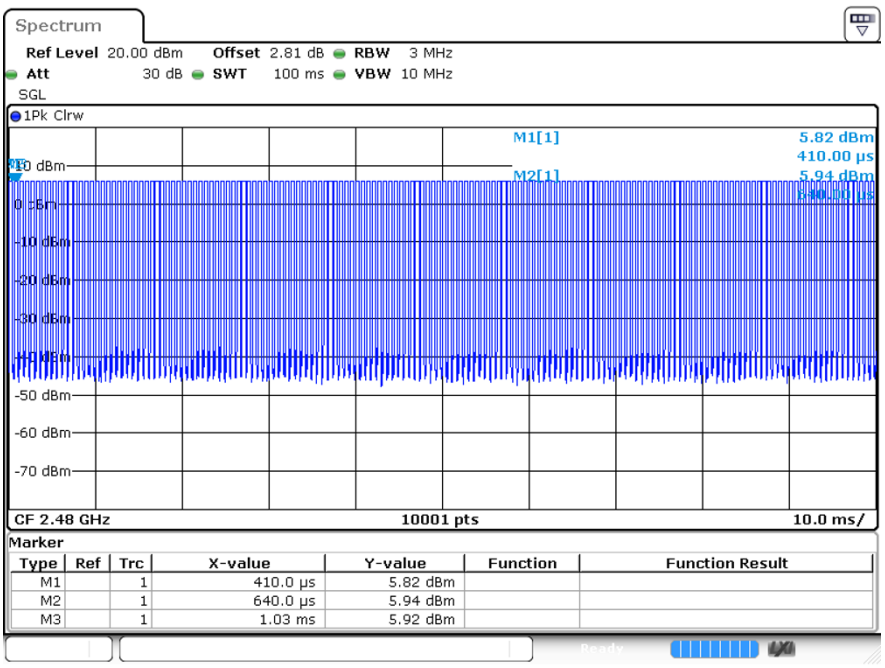
Test Graphs
BLE 1M 2402MHz



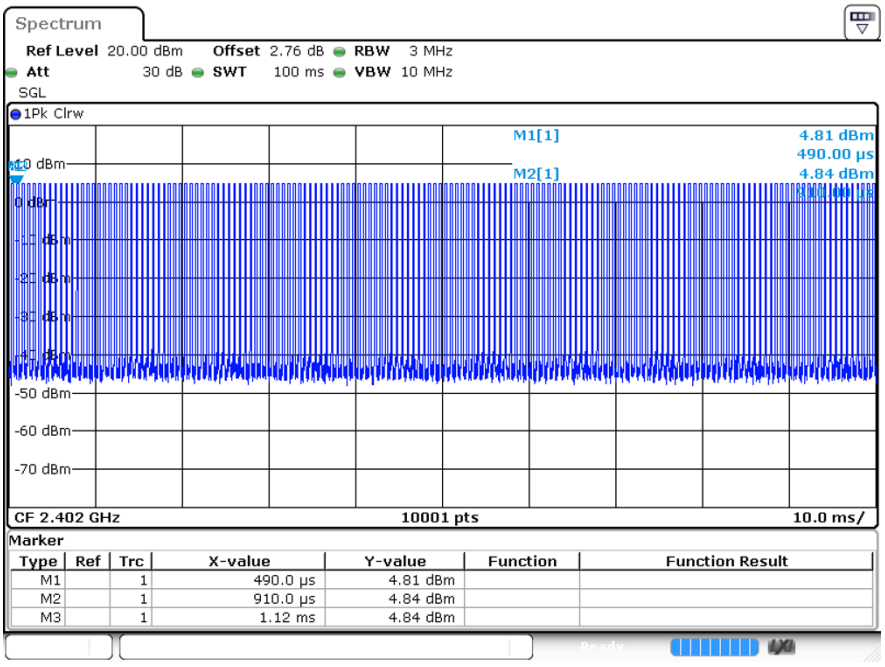
BLE 1M 2440MHz



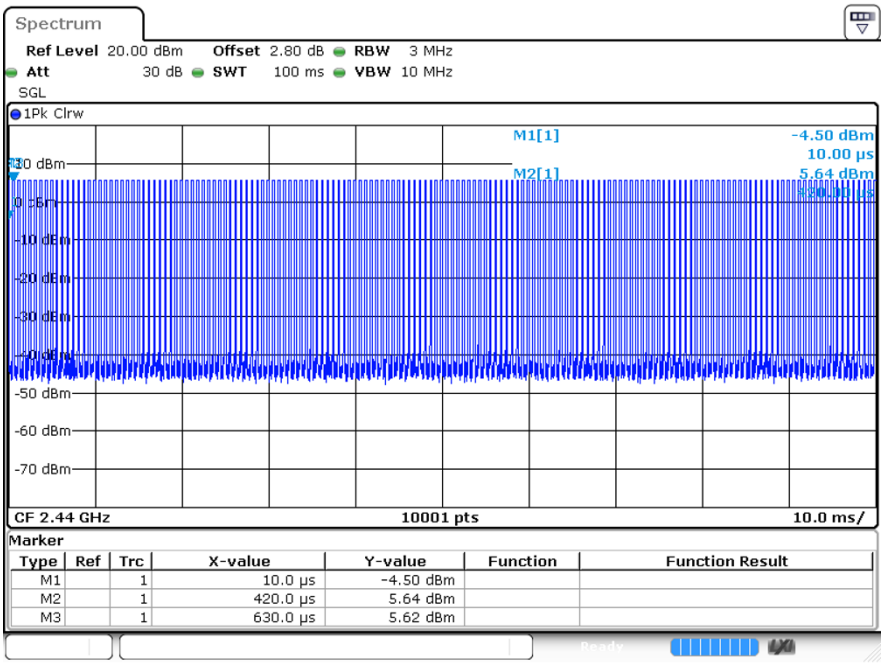
BLE 1M 2480MHz



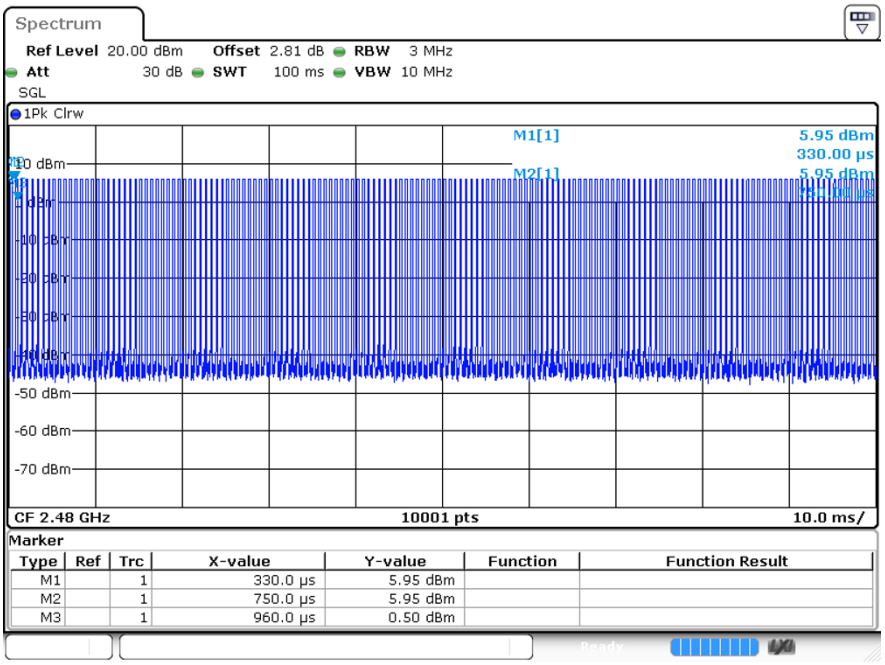
BLE 2M 2402MHz



BLE 2M 2440MHz



BLE 2M 2480MHz

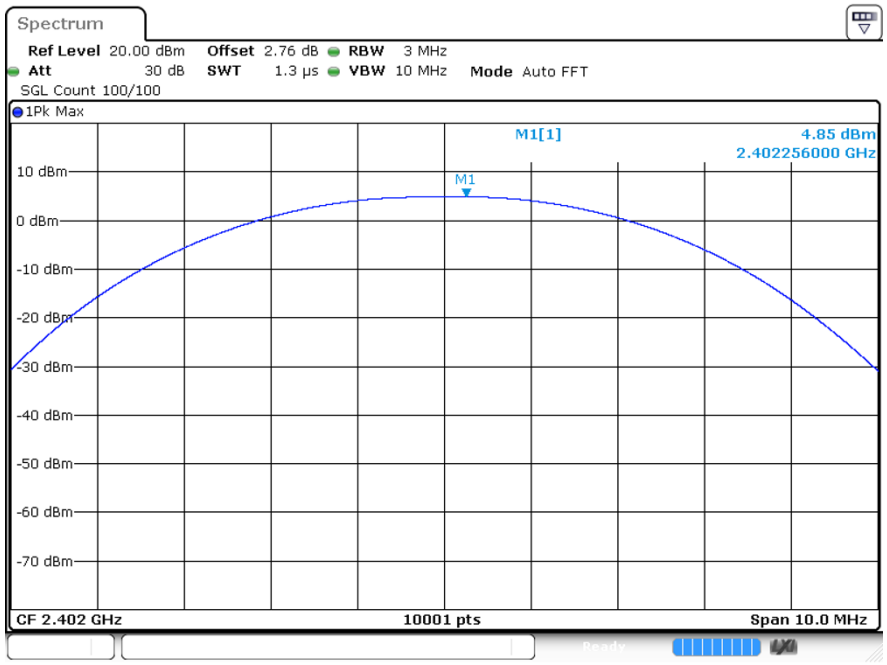
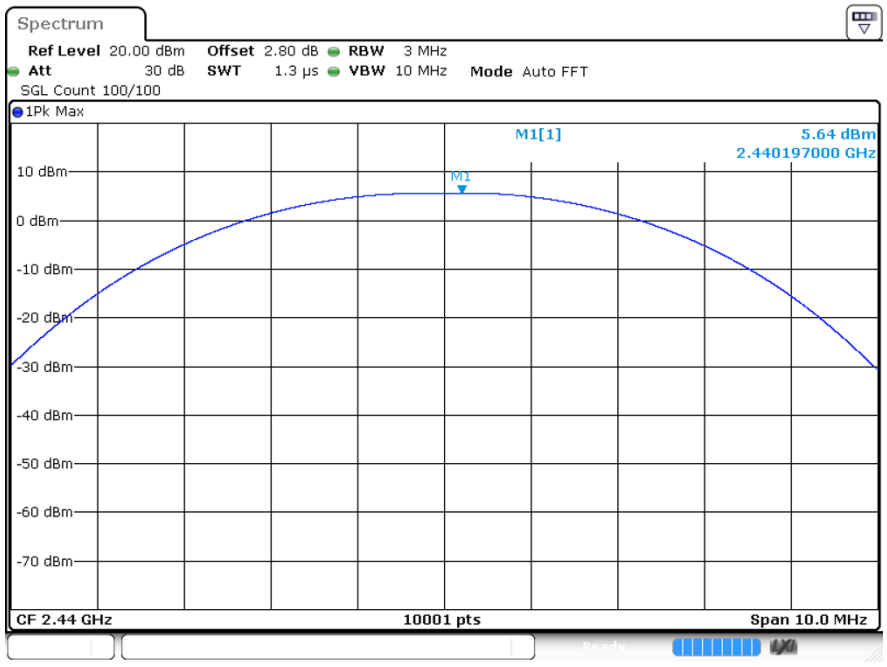


2 Maximum Conducted Output Power

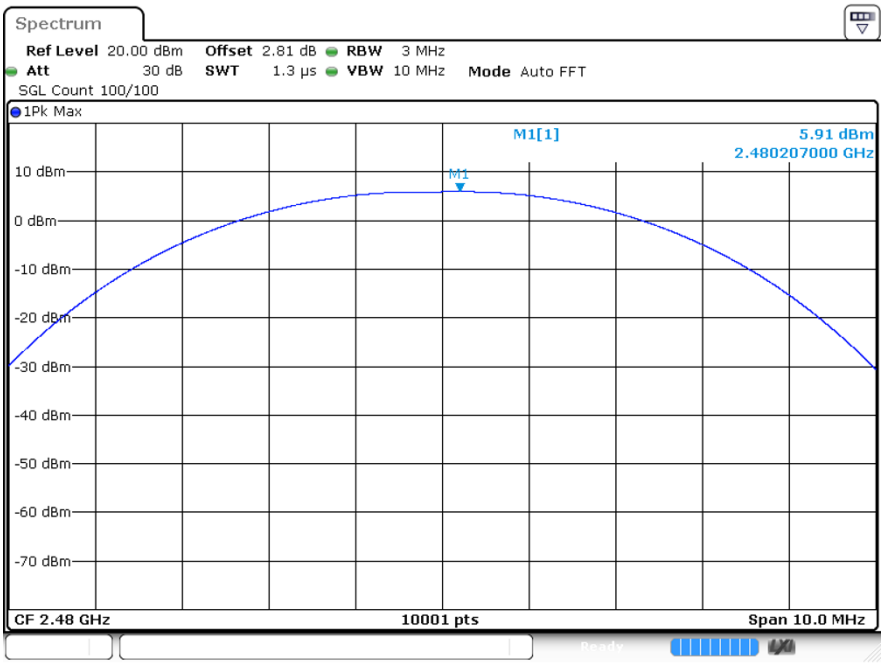
2.1 Test Result

Mode	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Verdict
BLE 1M	2402	4.85	30	Pass
BLE 1M	2440	5.64	30	Pass
BLE 1M	2480	5.91	30	Pass
BLE 2M	2402	4.88	30	Pass
BLE 2M	2440	5.66	30	Pass
BLE 2M	2480	5.95	30	Pass

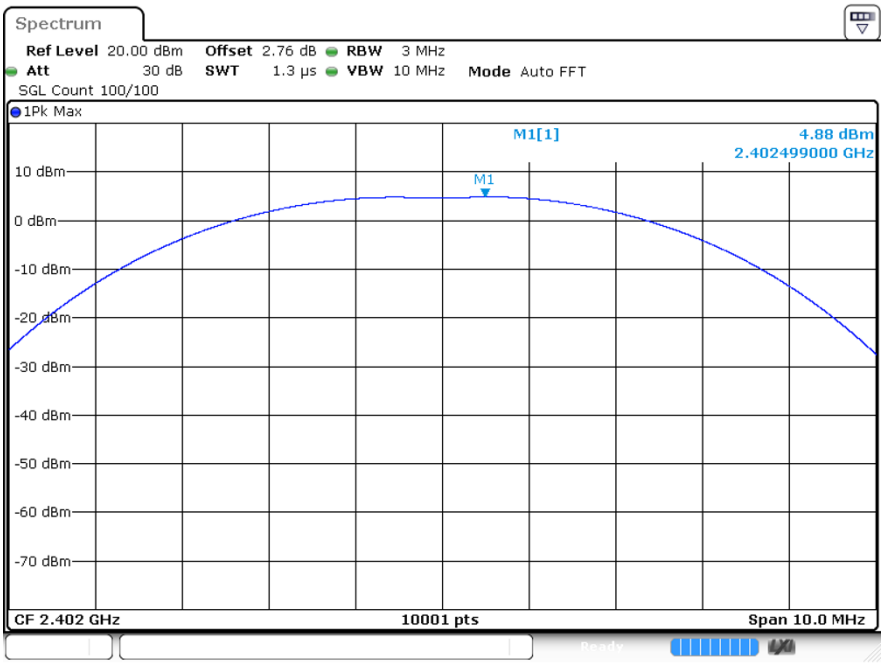
2.2 Test Graphs

Test Graphs
BLE 1M 2402MHz

BLE 1M 2440MHz


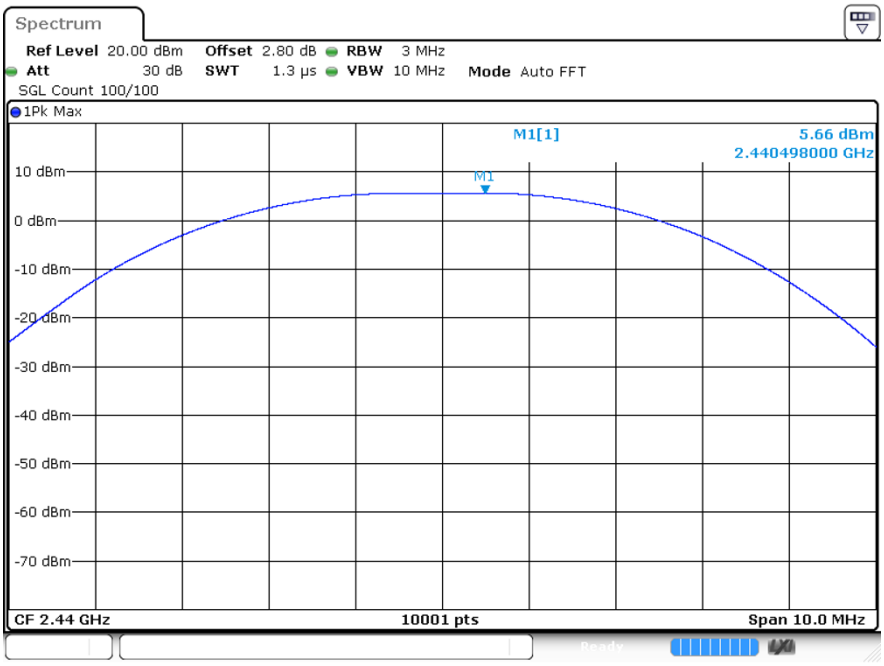
BLE 1M 2480MHz



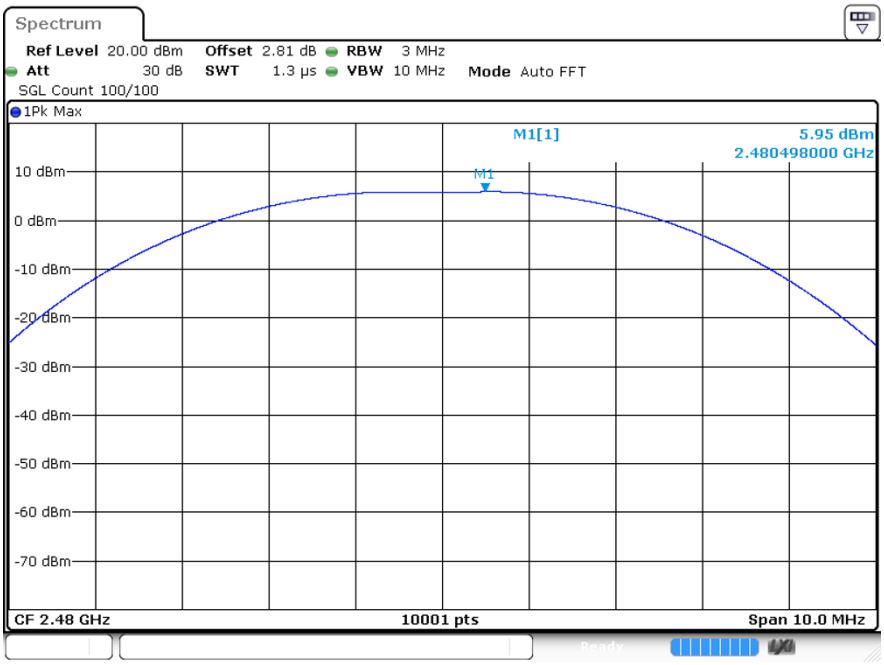
BLE 2M 2402MHz



BLE 2M 2440MHz



BLE 2M 2480MHz



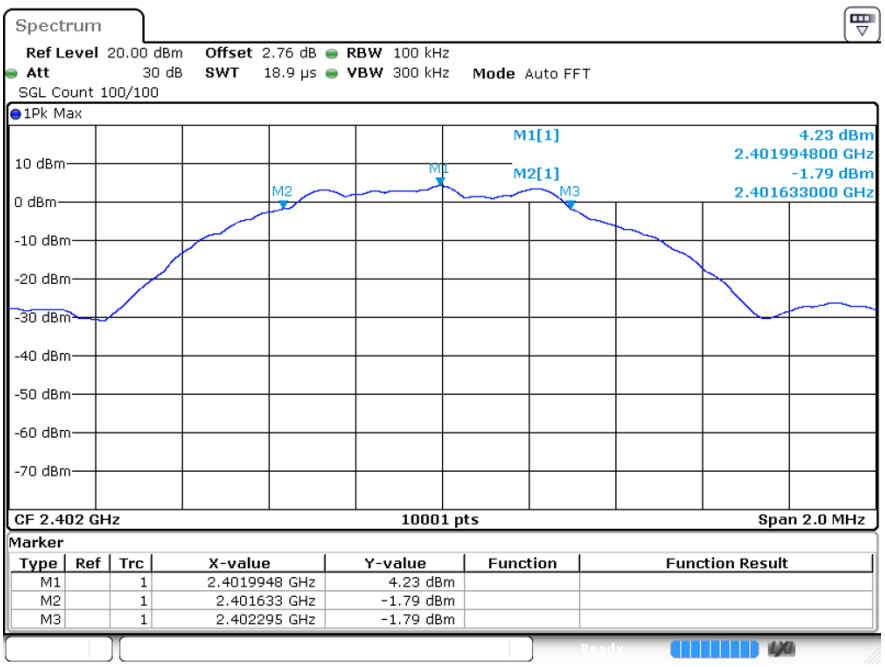
3 -6dB Bandwidth

3.1 Test Result

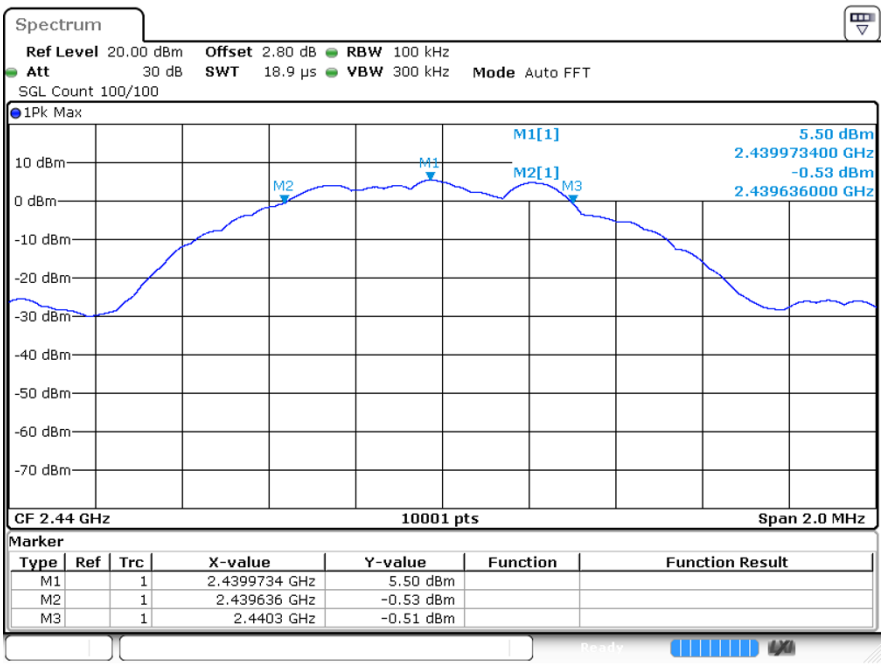
Mode	Frequency (MHz)	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
BLE 1M	2402	0.662	0.5	Pass
BLE 1M	2440	0.664	0.5	Pass
BLE 1M	2480	0.672	0.5	Pass
BLE 2M	2402	1.126	0.5	Pass
BLE 2M	2440	1.123	0.5	Pass
BLE 2M	2480	0.848	0.5	Pass

3.2 Test Graphs

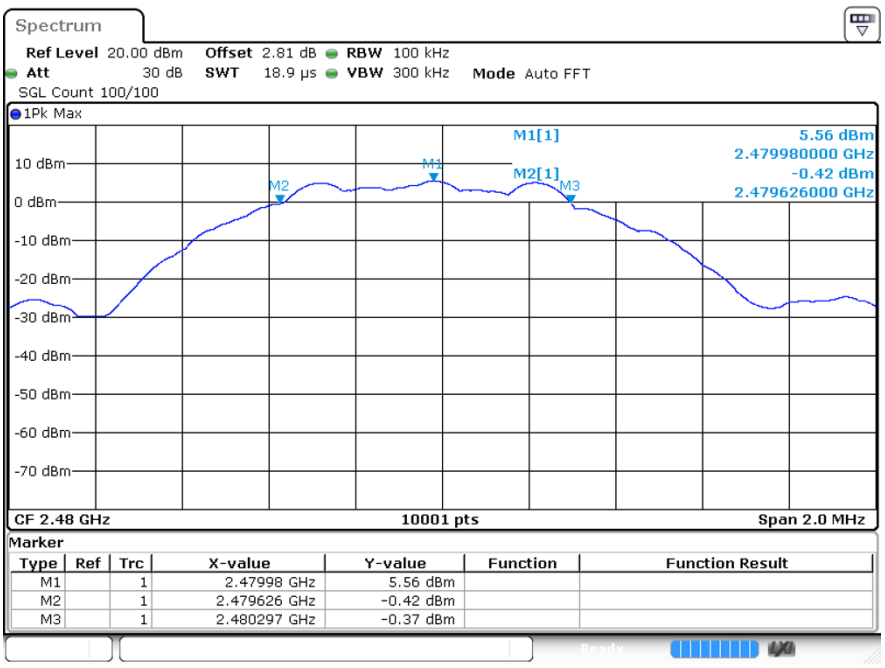
Test Graphs
BLE 1M 2402MHz



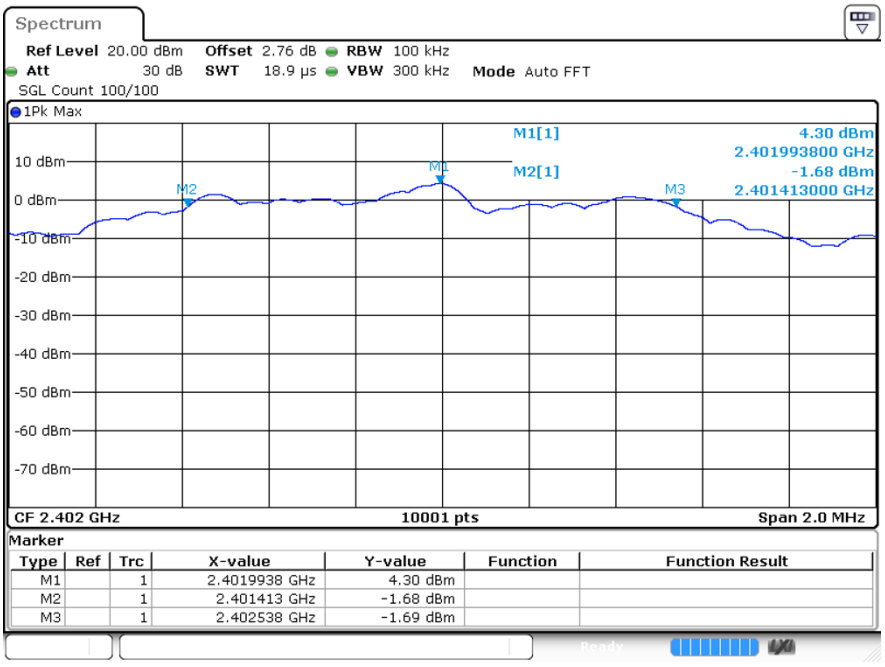
BLE 1M 2440MHz



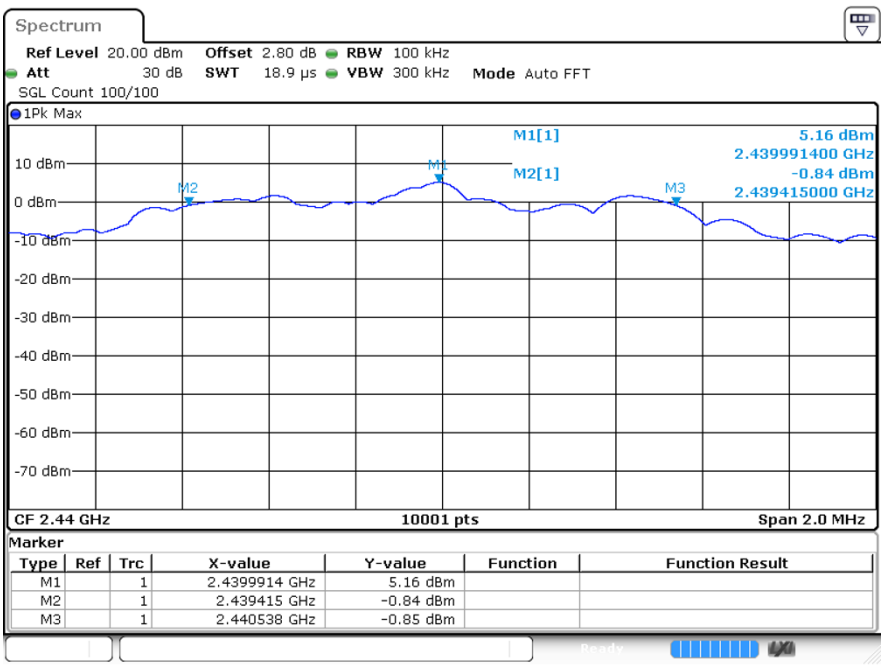
BLE 1M 2480MHz



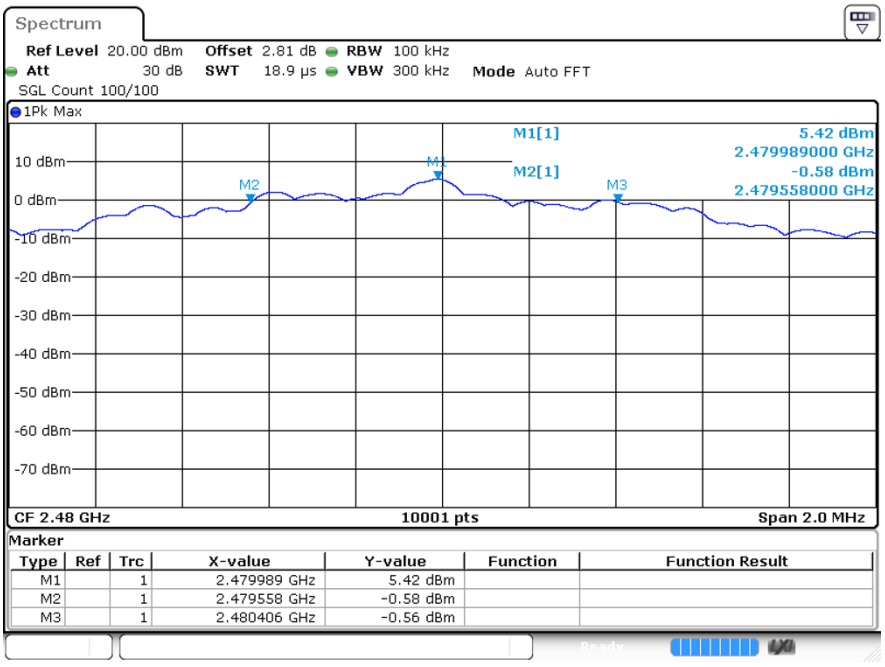
BLE 2M 2402MHz



BLE 2M 2440MHz



BLE 2M 2480MHz

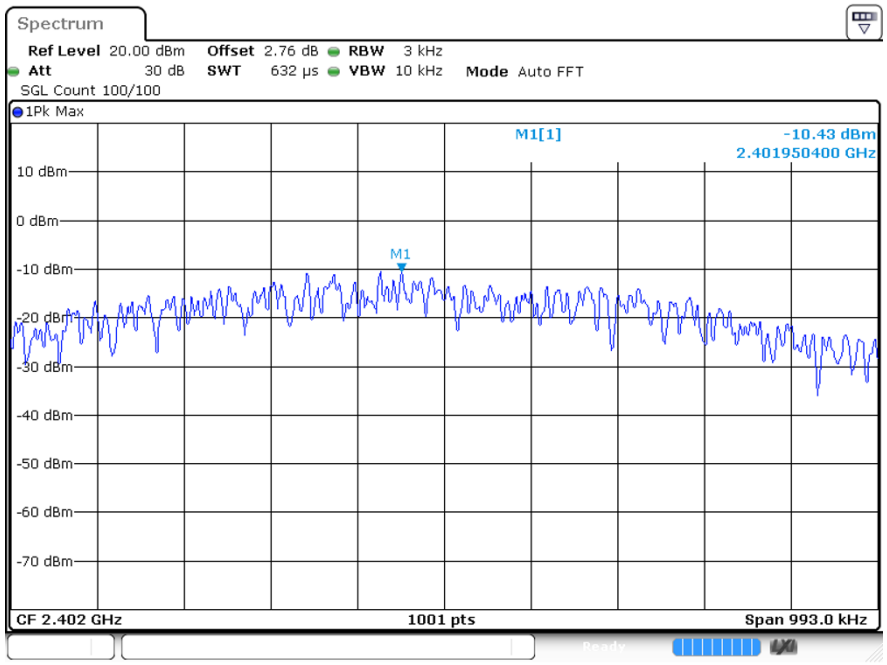
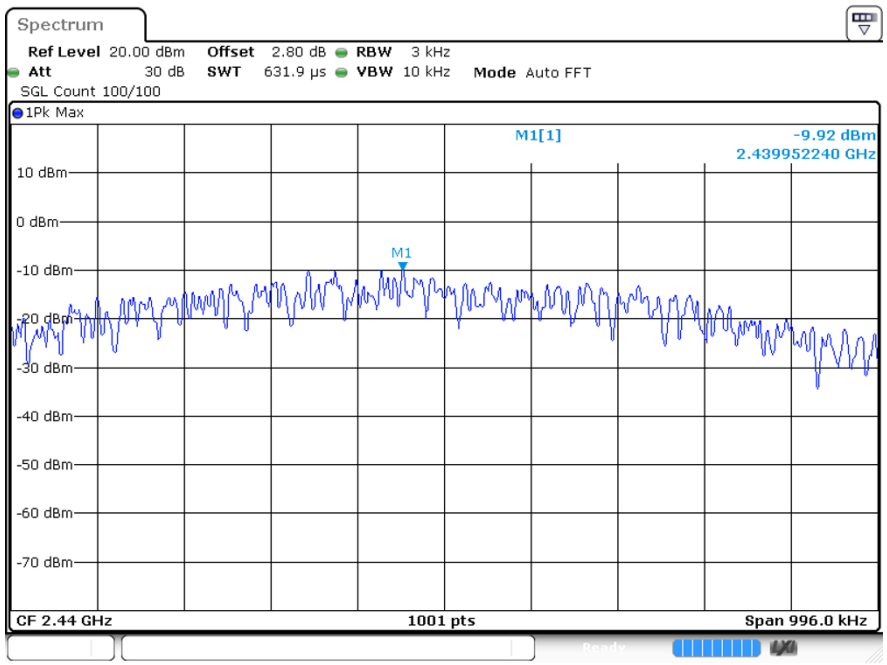


4 Maximum Power Spectral Density Level

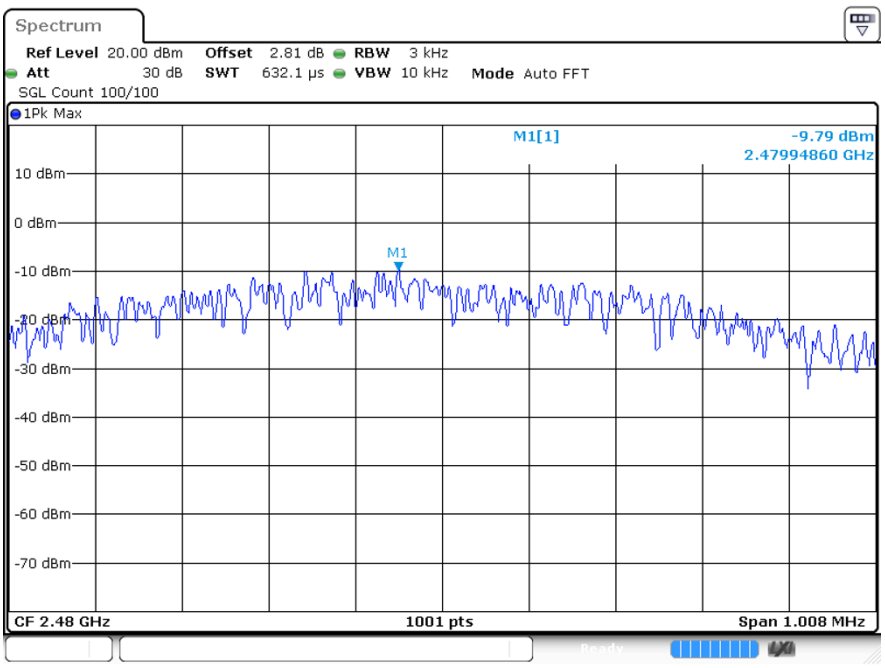
4.1 Test Result

Mode	Frequency (MHz)	Conducted PSD (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
BLE 1M	2402	-10.43	≤8	Pass
BLE 1M	2440	-9.92	≤8	Pass
BLE 1M	2480	-9.79	≤8	Pass
BLE 2M	2402	-12.85	≤8	Pass
BLE 2M	2440	-12.35	≤8	Pass
BLE 2M	2480	-11.82	≤8	Pass

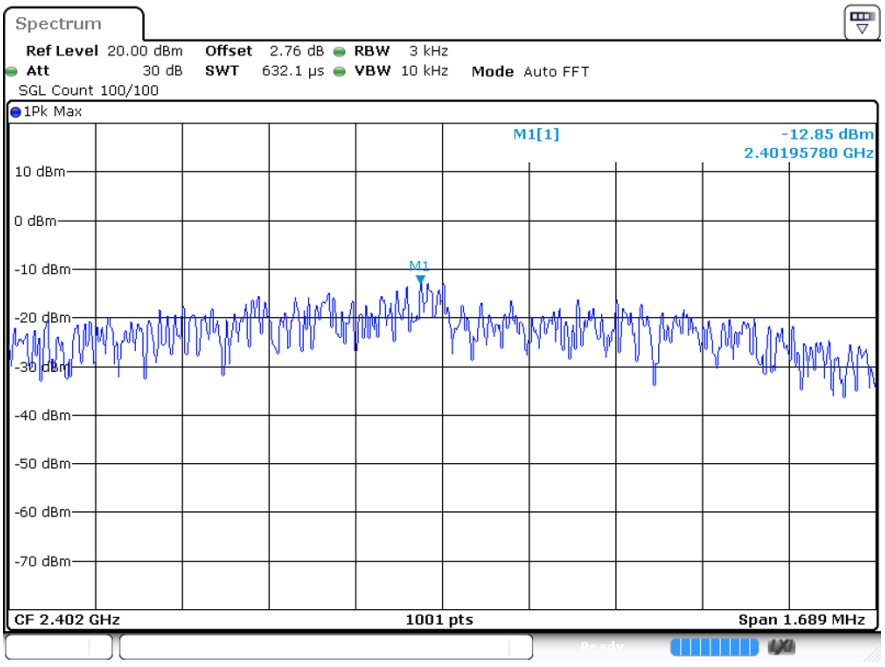
4.2 Test Graphs

Test Graphs
BLE 1M 2402MHz

BLE 1M 2440MHz


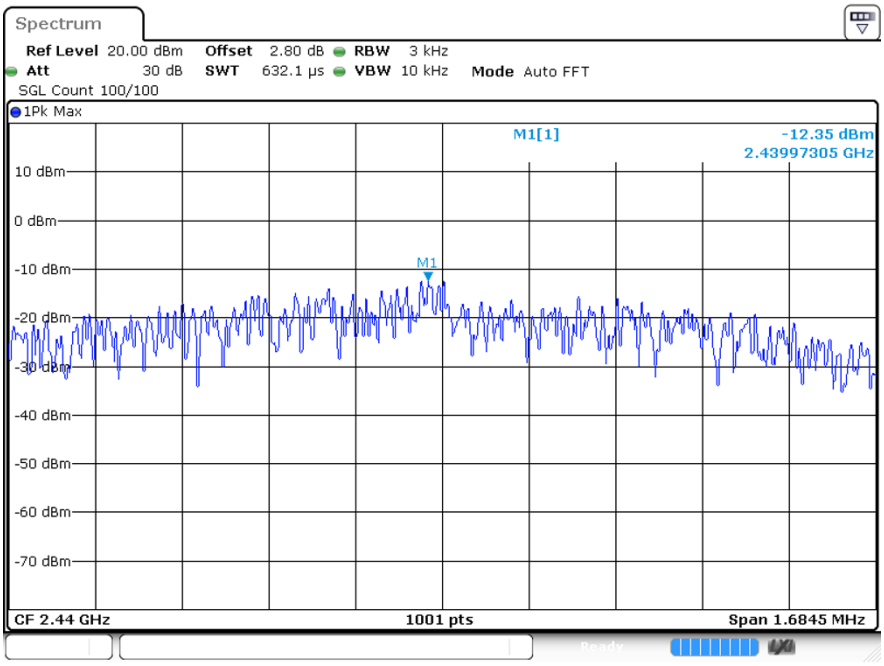
BLE 1M 2480MHz



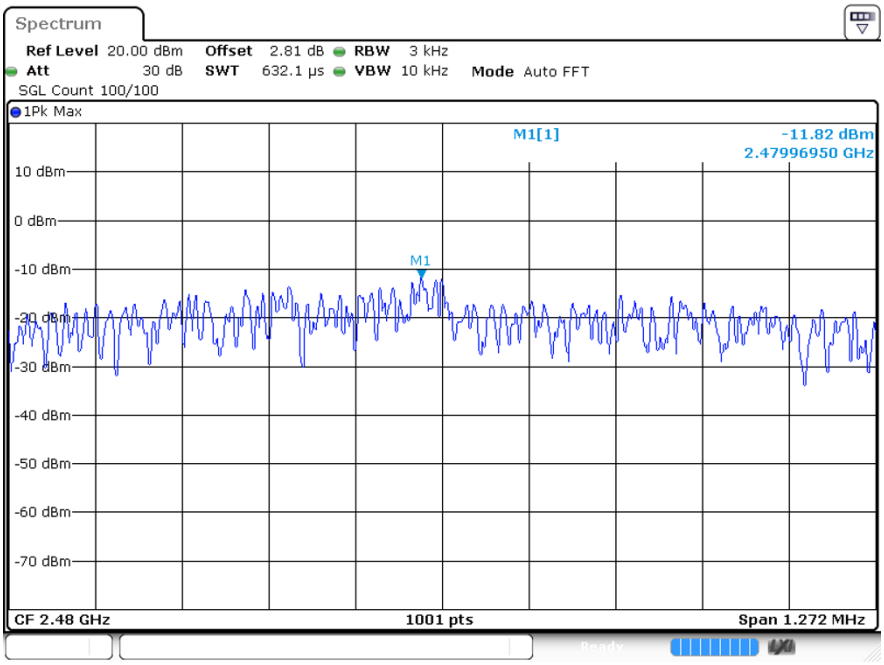
BLE 2M 2402MHz



BLE 2M 2440MHz



BLE 2M 2480MHz



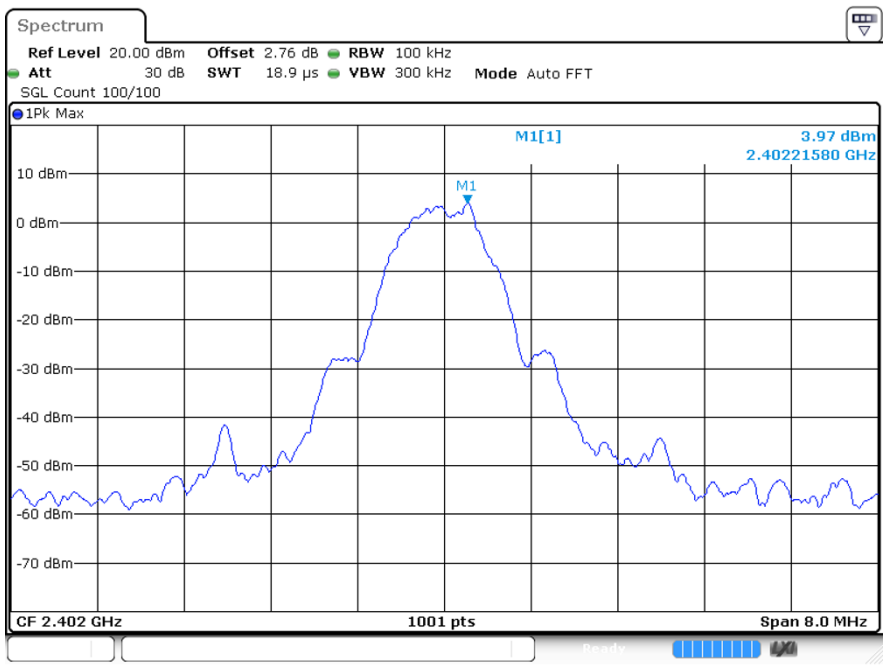
5 Band Edge

5.1 Test Result

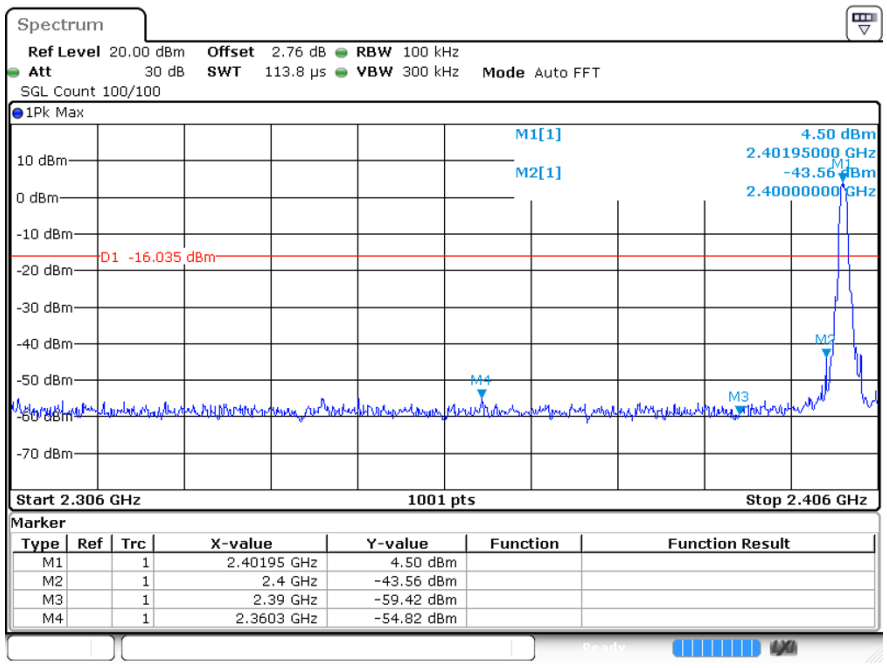
Mode	Frequency (MHz)	Max Value (dBc)	Limit (dBc)	Verdict
BLE 1M	2402	-58.79	-20	Pass
BLE 1M	2480	-50.48	-20	Pass
BLE 2M	2402	-59.72	-20	Pass
BLE 2M	2480	-50.43	-20	Pass

5.2 Test Graphs

Test Graphs
BLE 1M 2402MHz Ref



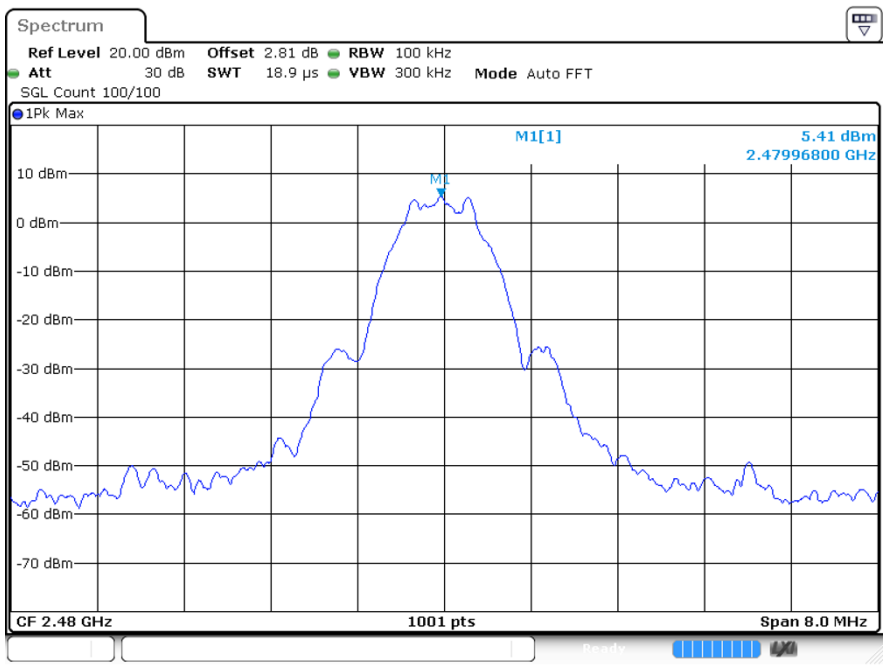
BLE 1M 2402MHz Emission



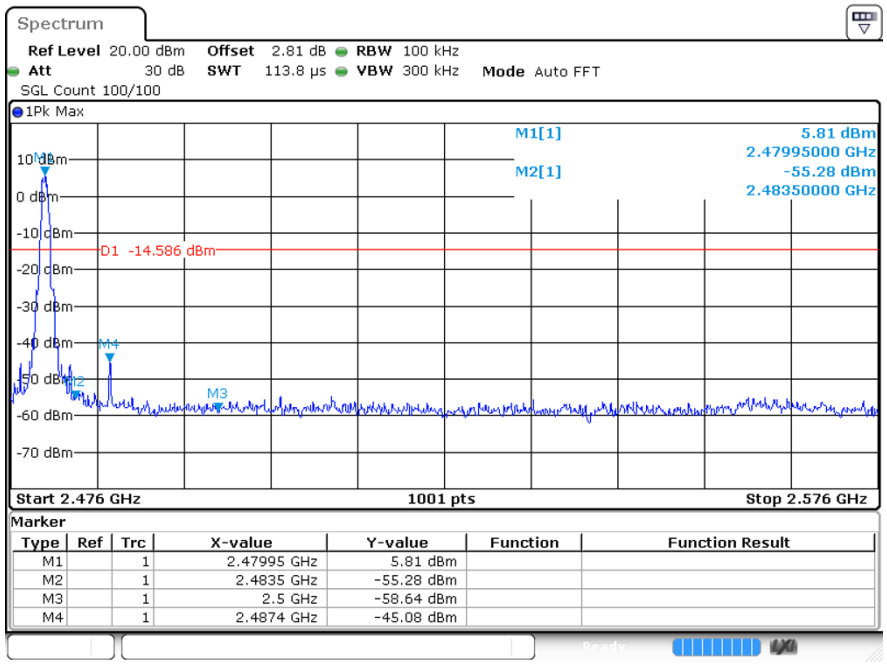
Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.40195 GHz	4.50 dBm		
M2		1	2.4 GHz	-43.56 dBm		
M3		1	2.39 GHz	-59.42 dBm		
M4		1	2.3603 GHz	-54.82 dBm		

BLE 1M 2480MHz Ref

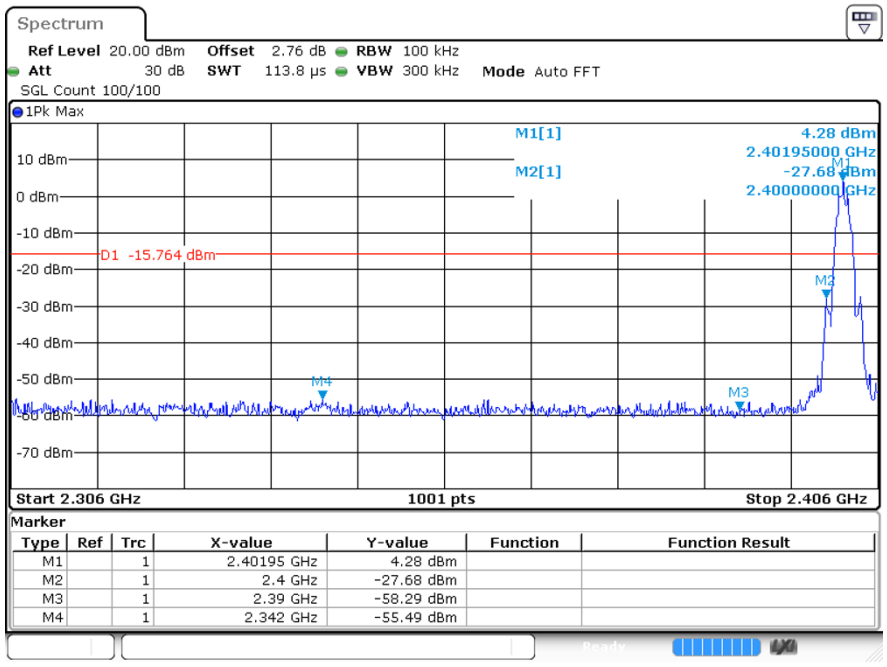


BLE 1M 2480MHz Emission

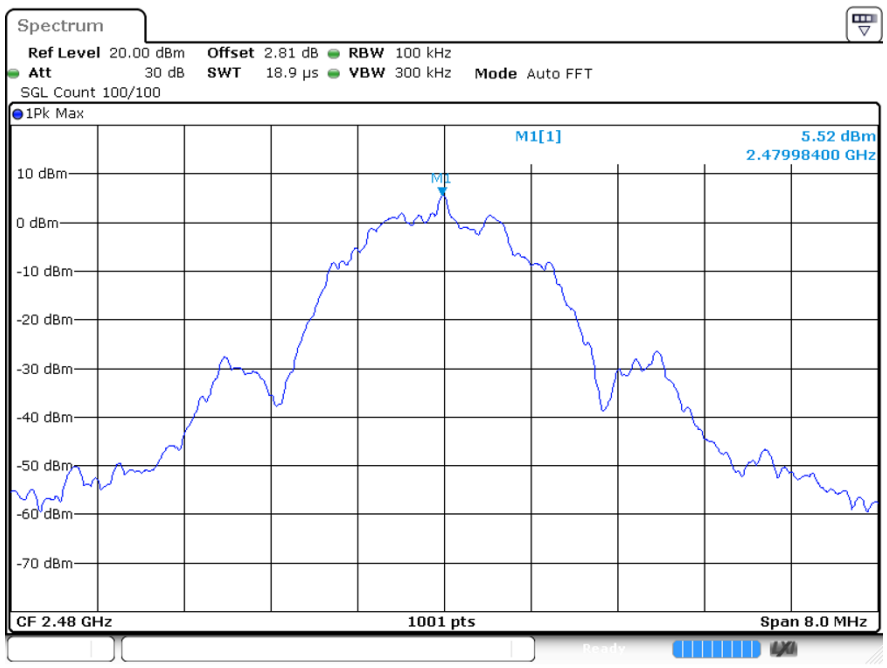


BLE 2M 2402MHz Ref

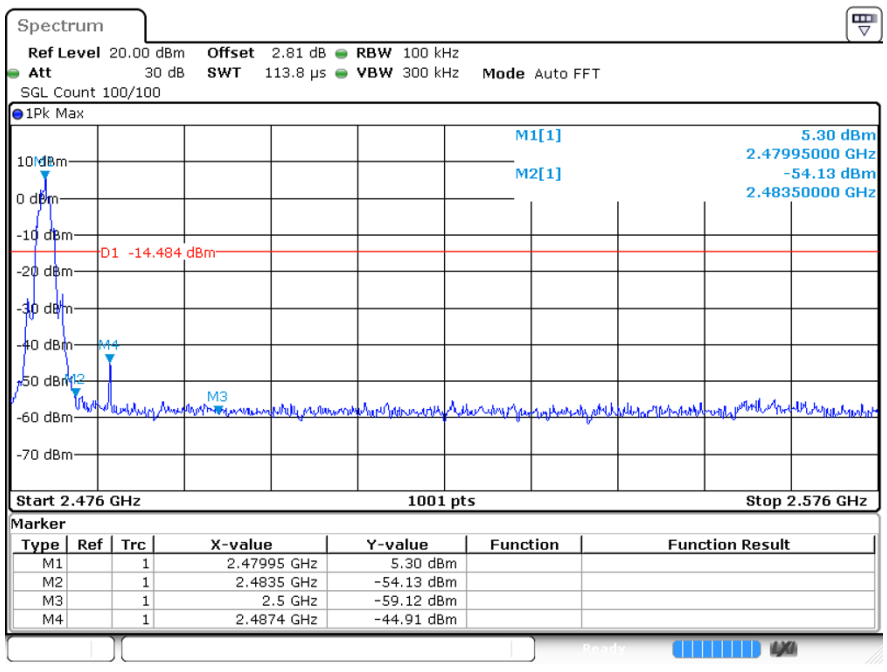
BLE 2M 2402MHz Emission



BLE 2M 2480MHz Ref



BLE 2M 2480MHz Emission



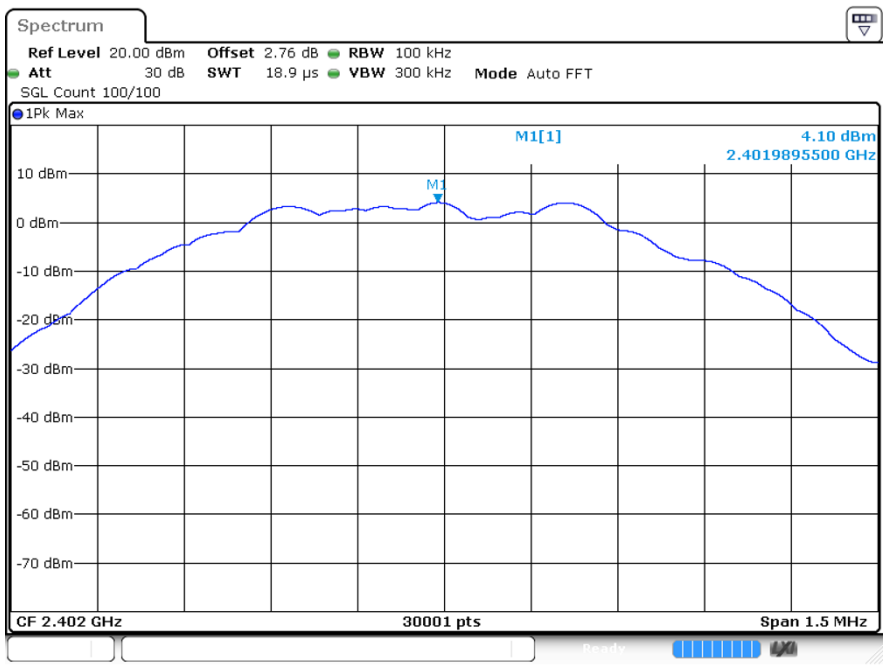
6 Conducted RF Spurious Emission

6.1 Test Result

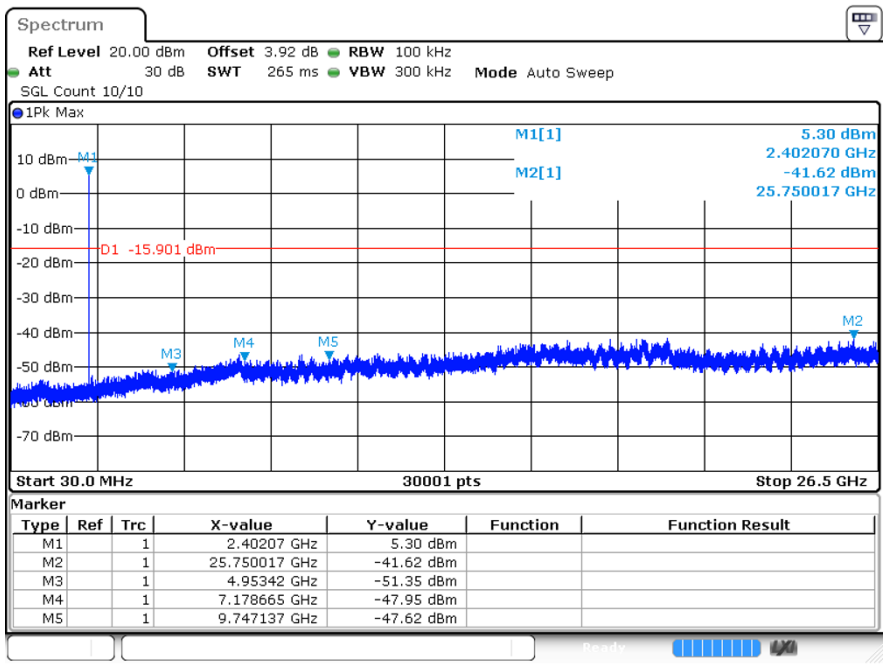
Mode	Frequency (MHz)	Max Value (dBc)	Limit (dBc)	Verdict
BLE 1M	2402	-45.72	-20	Pass
BLE 1M	2440	-46.15	-20	Pass
BLE 1M	2480	-46.97	-20	Pass
BLE 2M	2402	-46.12	-20	Pass
BLE 2M	2440	-46.25	-20	Pass
BLE 2M	2480	-46.54	-20	Pass

6.2 Test Graphs

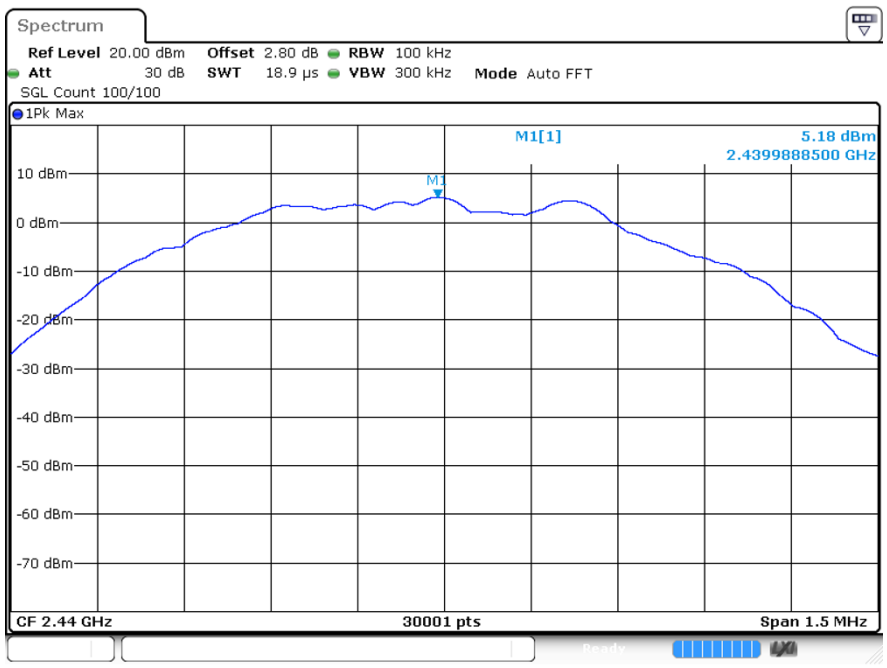
Test Graphs
BLE 1M 2402MHz Ref



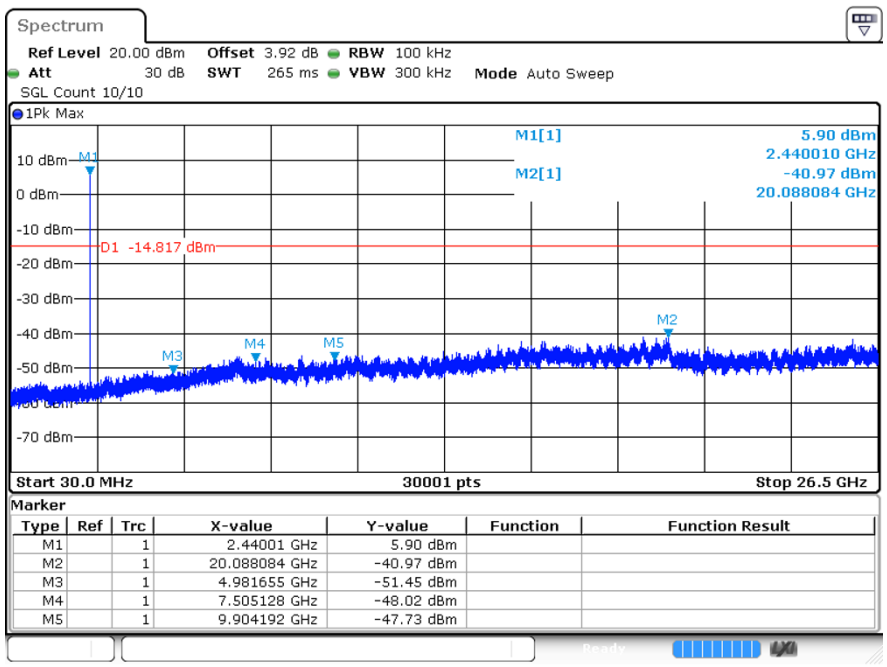
BLE 1M 2402MHz Emission



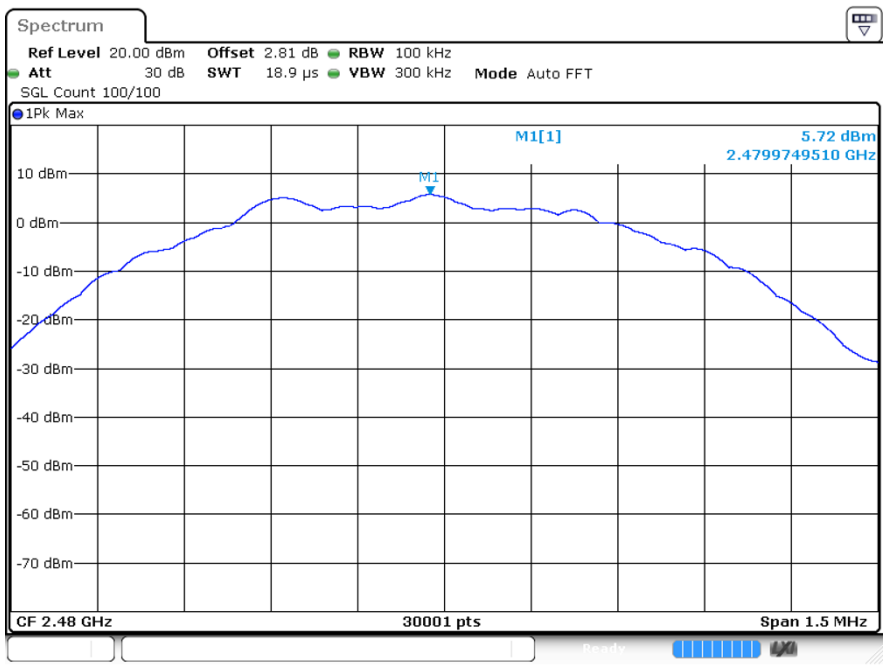
BLE 1M 2440MHz Ref



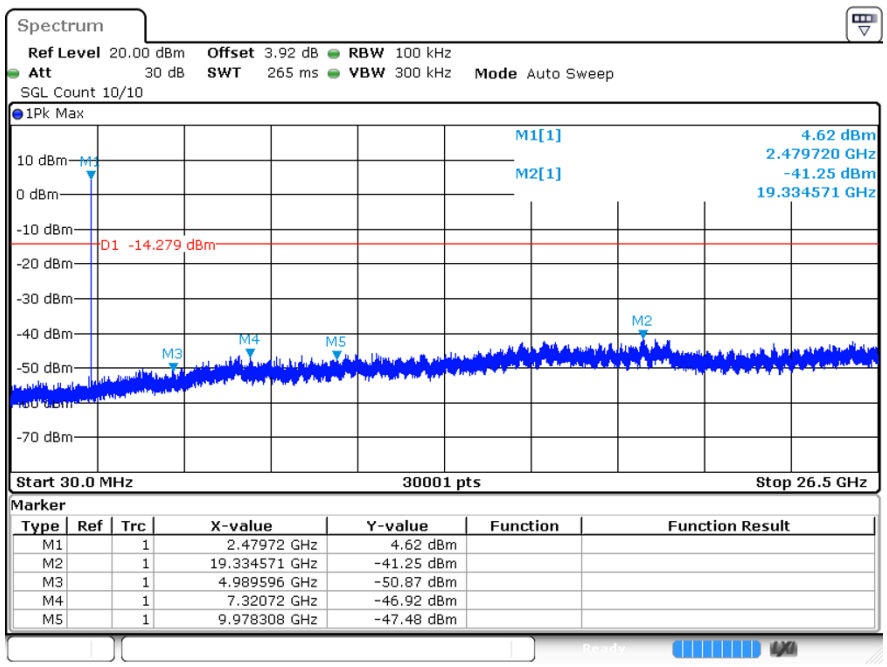
BLE 1M 2440MHz Emission



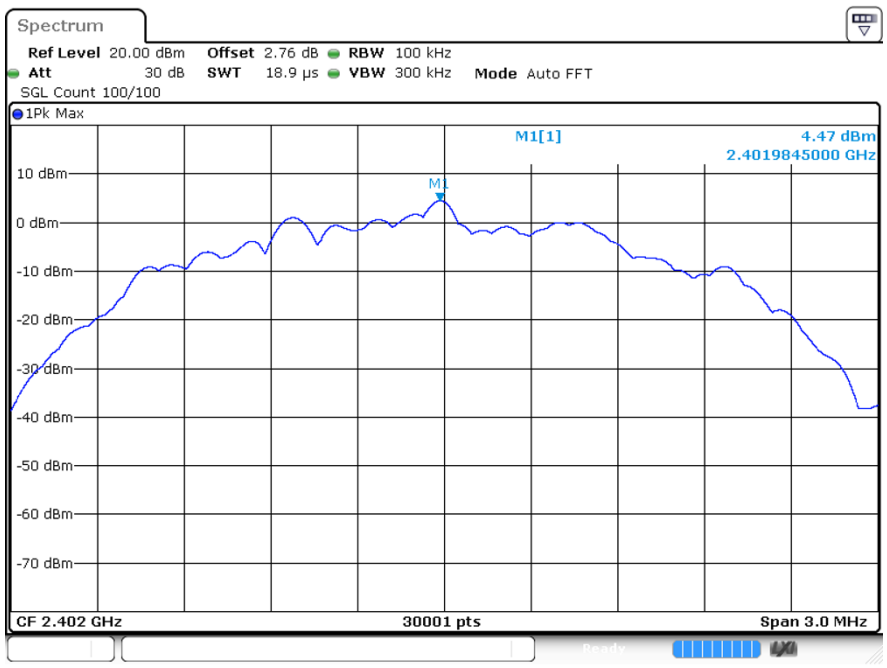
BLE 1M 2480MHz Ref



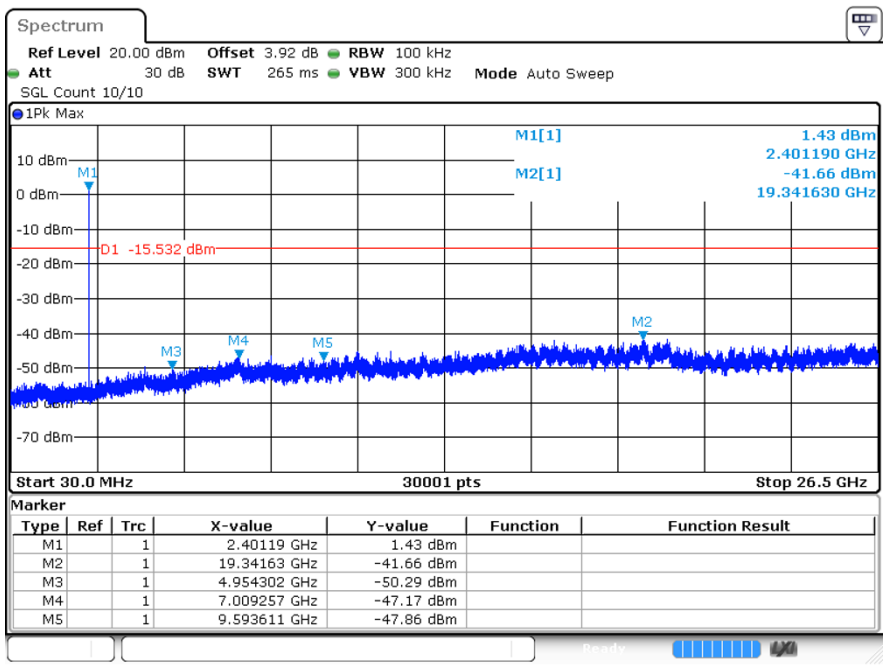
BLE 1M 2480MHz Emission



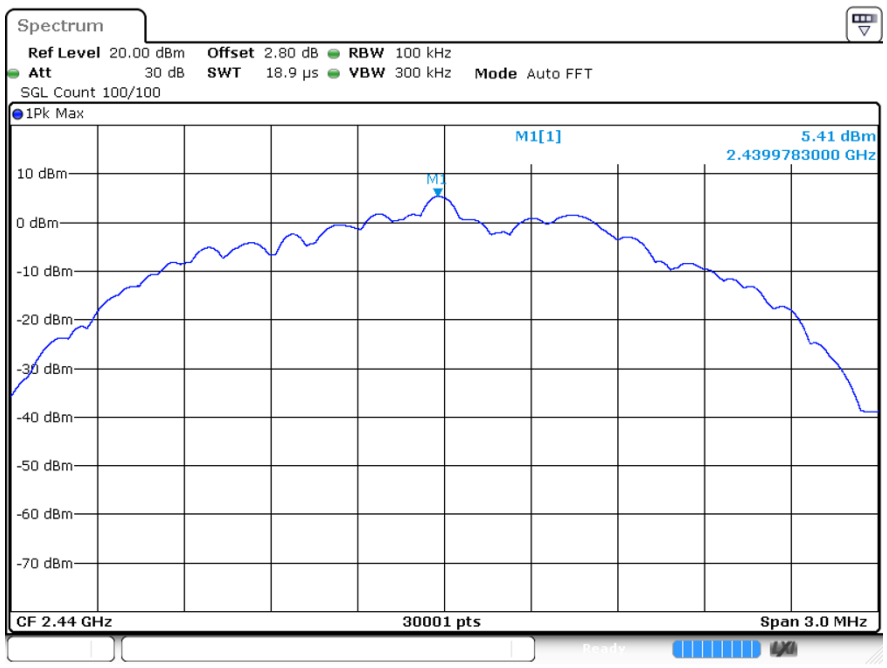
BLE 2M 2402MHz Ref



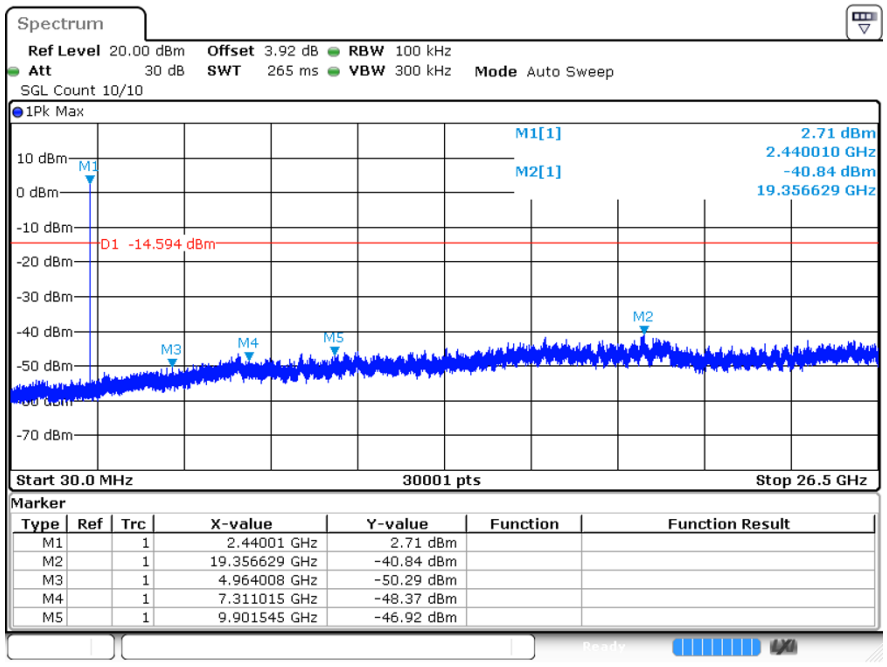
BLE 2M 2402MHz Emission



BLE 2M 2440MHz Ref



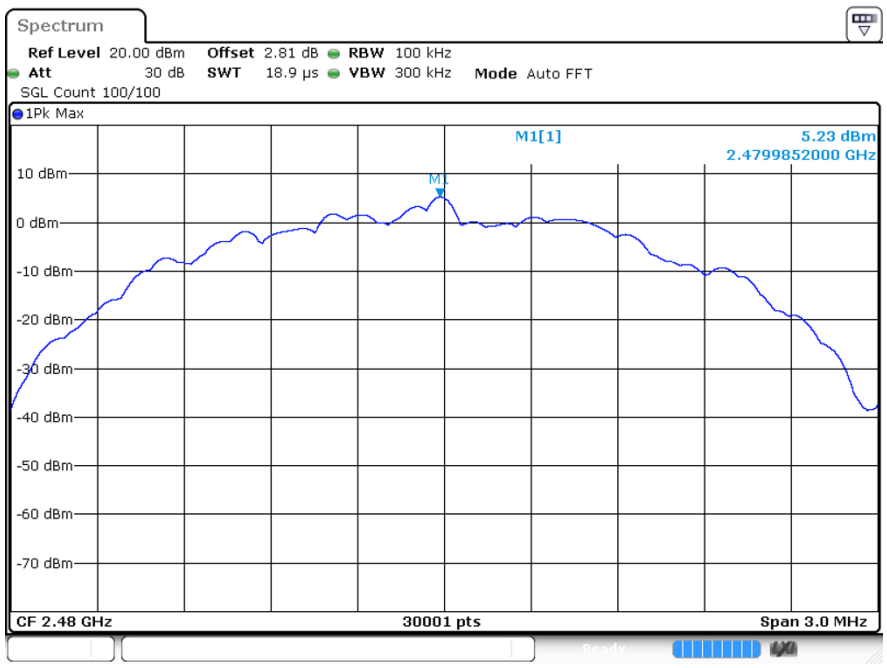
BLE 2M 2440MHz Emission



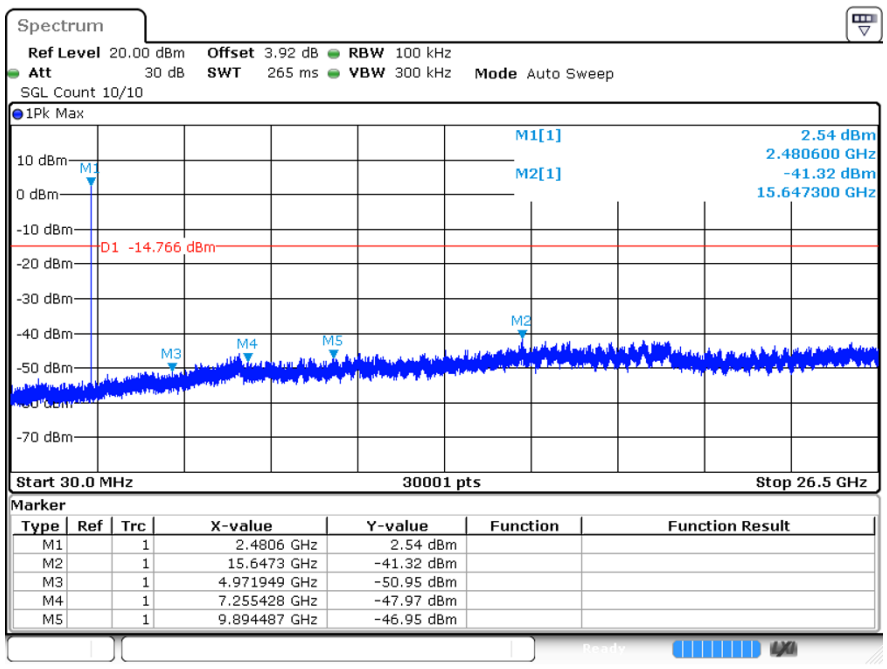
Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.44001 GHz	2.71 dBm		
M2		1	19.356629 GHz	-40.84 dBm		
M3		1	4.964008 GHz	-50.29 dBm		
M4		1	7.311015 GHz	-48.37 dBm		
M5		1	9.901545 GHz	-46.92 dBm		

BLE 2M 2480MHz Ref



BLE 2M 2480MHz Emission



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.4806 GHz	2.54 dBm		
M2		1	15.6473 GHz	-41.32 dBm		
M3		1	4.971949 GHz	-50.95 dBm		
M4		1	7.255428 GHz	-47.97 dBm		
M5		1	9.894487 GHz	-46.95 dBm		

---The End---