Appendix B

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

Product Name: Smart Li- polymer Battery Pack

Trade Mark: N/A

Test Model: KEC-8000

Environmental Conditions

Temperature:	25.3° C
Relative Humidity:	52.4%
ATM Pressure:	100.0 kPa
Test Engineer:	Emiya lin
Supervised by:	Simba Haung

Contents

Page

COVER PAGE

1 Duty Cycle 3
1.1 Test Result 3
1.2 Test Graphs 4
2 Maximum Conducted Output Power 6
2.1 Test Result 6
2.2 Test Graphs 7
3 -6dB Bandwidth 9
3.1 Test Result 9
3.2 Test Graphs 10
4 Maximum Power Spectral Density Level 12
4.1 Test Result 12
4.2 Test Graphs 13
5 Band Edge 15
5.1 Test Result 15
5.2 Test Graphs 16
6 Conducted RF Spurious Emission 18
6.1 Test Result 18
6.2 Test Graphs 19
7 Restrict Band 22
7.1 Test Result 22
7.2 Test Graphs 23

1 Duty Cycle

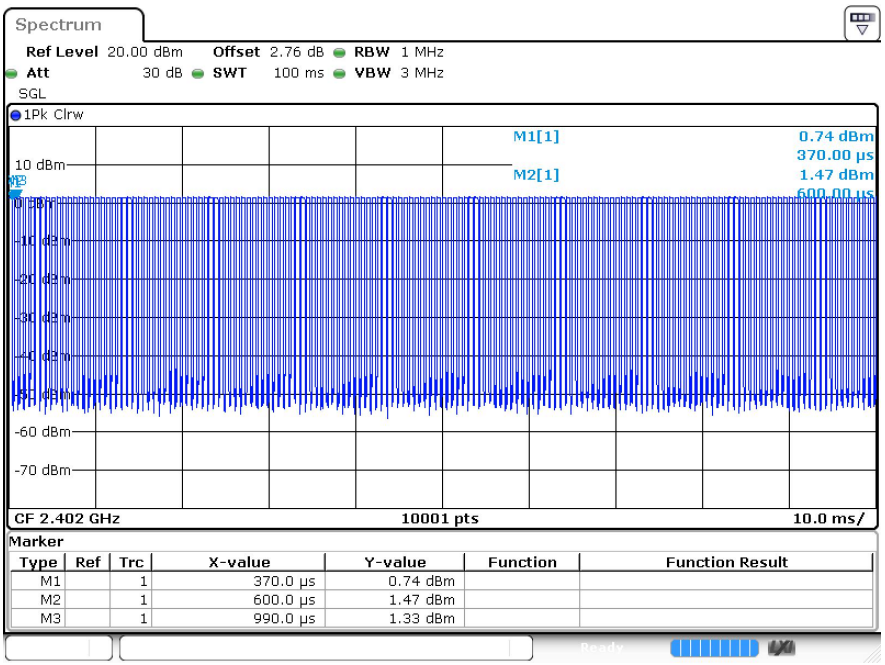
1.1 Test Result

Mode	Frequency (MHz)	Duty Cycle (%)	Correction Factor	1/T (kHz)
BLE 1M	2402	64	1.94	2.56
BLE 1M	2440	63.99	1.94	2.56
BLE 1M	2480	64	1.94	2.56

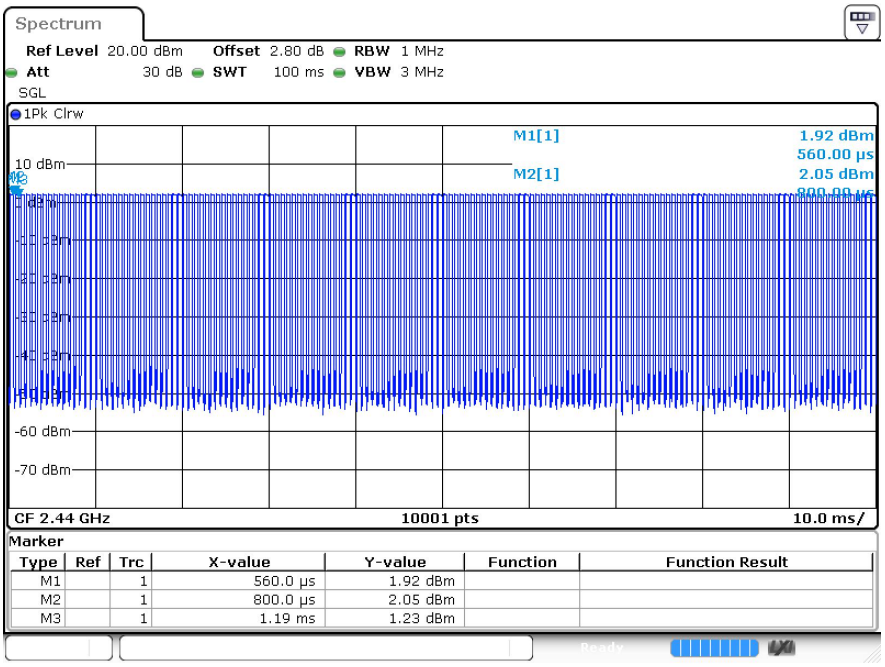
1.2 Test Graphs

Test Graphs

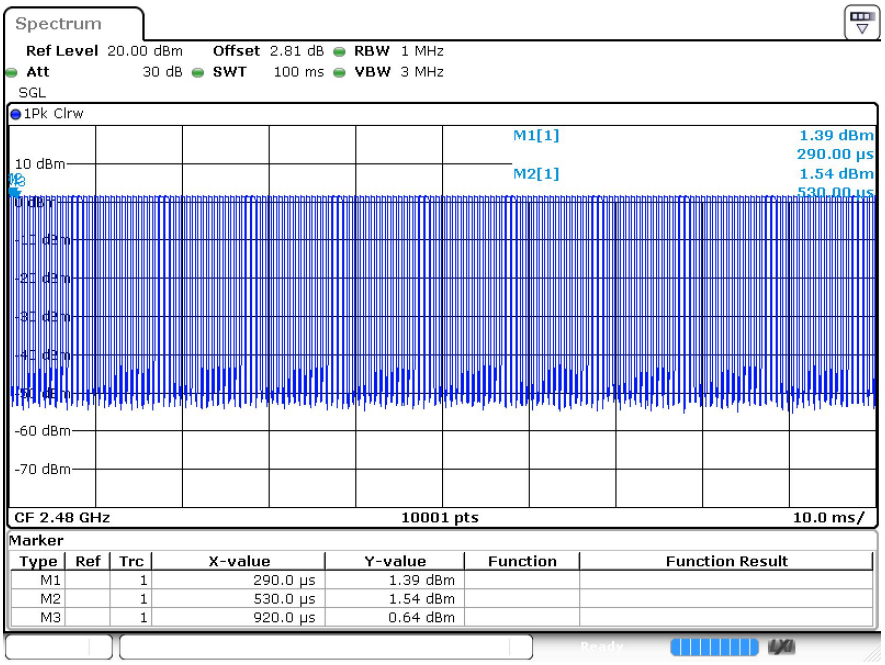
BLE 1M 2402MHz



BLE 1M 2440MHz



BLE 1M 2480MHz



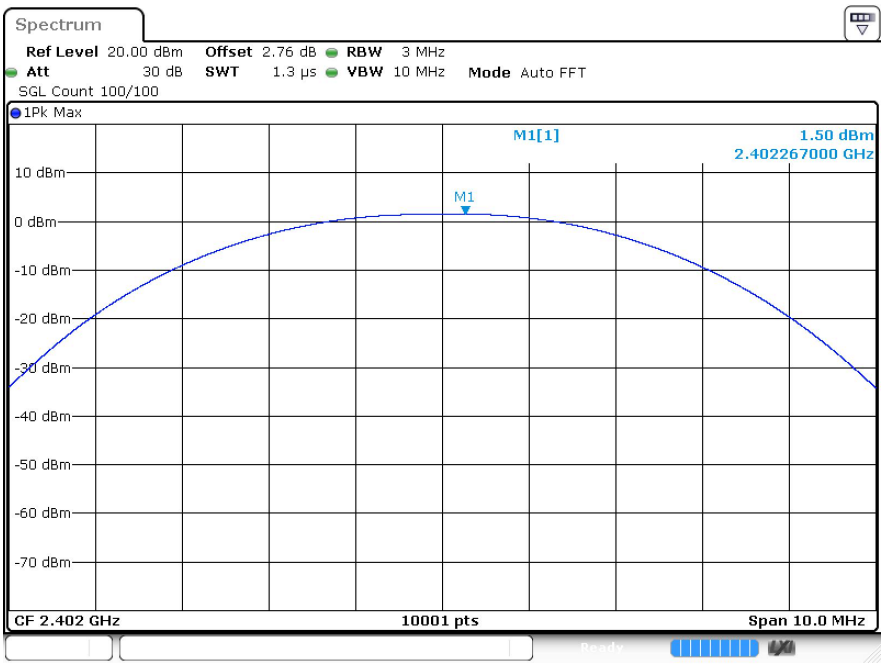
2 Maximum Conducted Output Power

2.1 Test Result

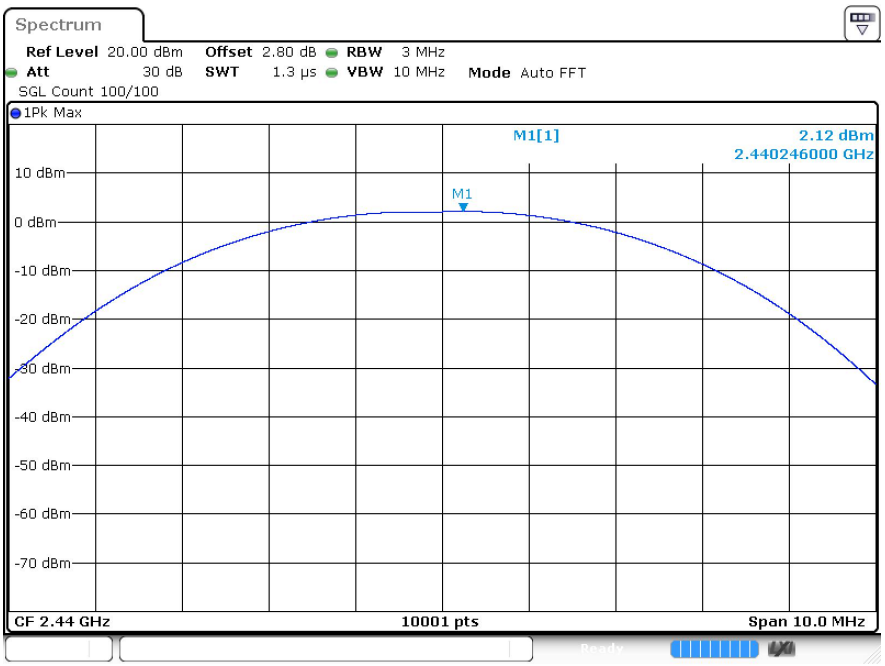
Mode	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Verdict
BLE 1M	2402	1.5	30	Pass
BLE 1M	2440	2.12	30	Pass
BLE 1M	2480	1.53	30	Pass

2.2 Test Graphs

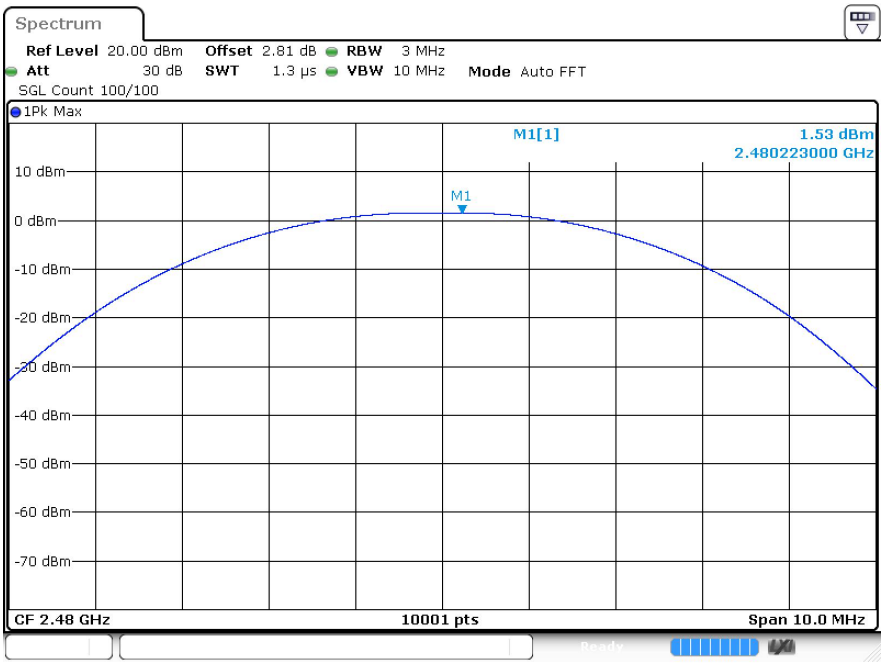
Test Graphs
BLE 1M 2402MHz



BLE 1M 2440MHz



BLE 1M 2480MHz



3 -6dB Bandwidth

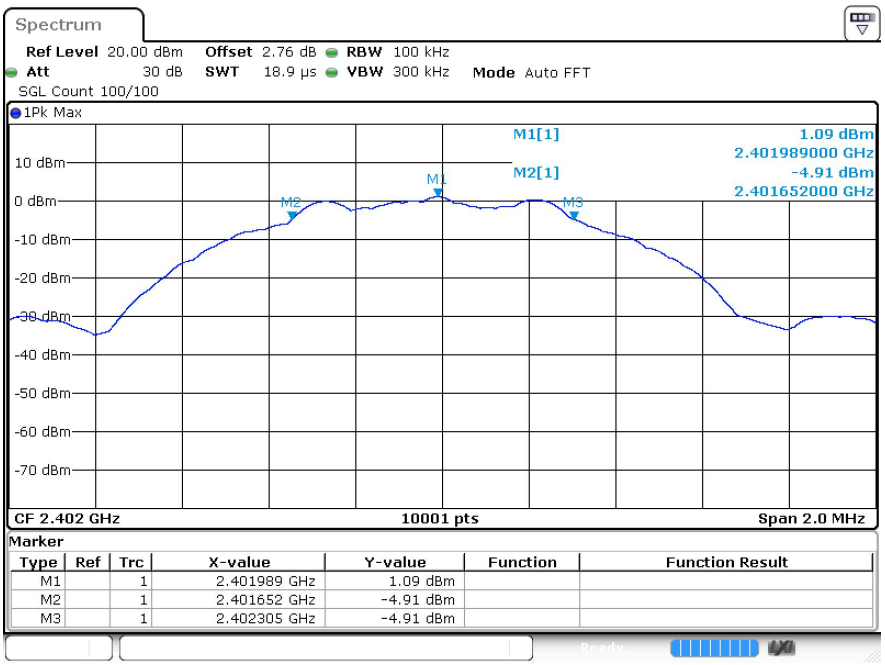
3.1 Test Result

Mode	Frequency (MHz)	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
BLE 1M	2402	0.653	0.5	Pass
BLE 1M	2440	0.656	0.5	Pass
BLE 1M	2480	0.681	0.5	Pass

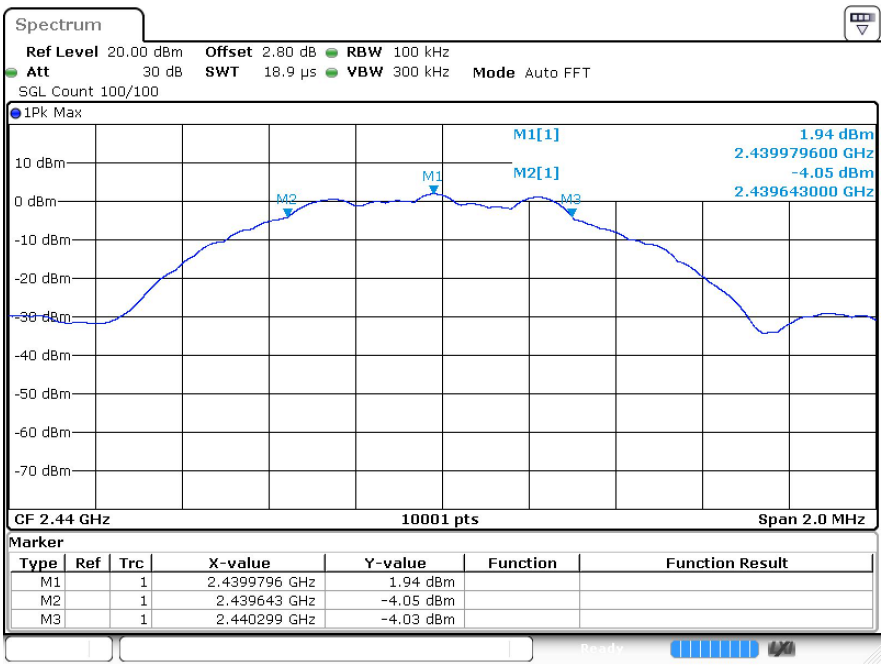
3.2 Test Graphs

Test Graphs

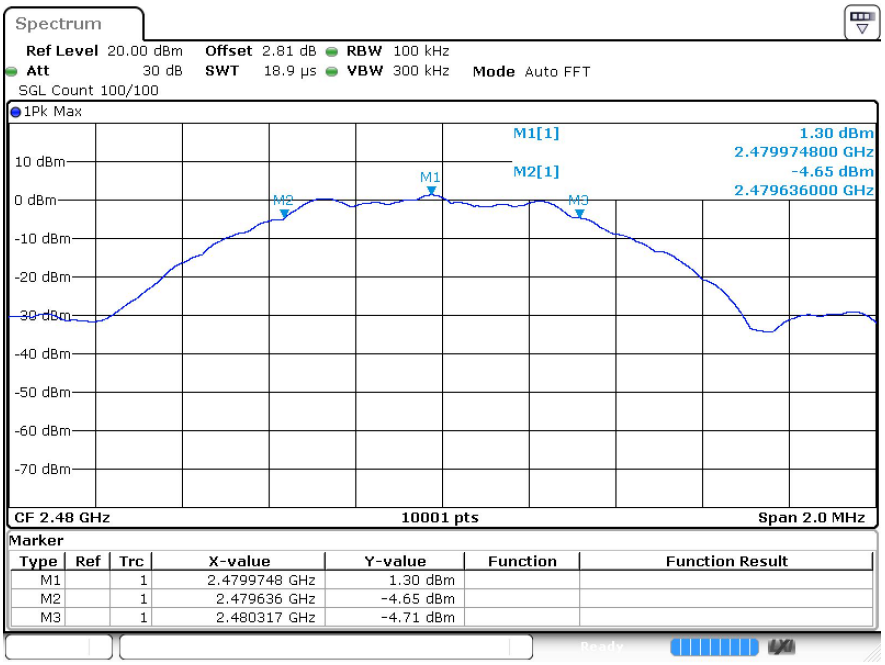
BLE 1M 2402MHz



BLE 1M 2440MHz



BLE 1M 2480MHz



4 Maximum Power Spectral Density Level

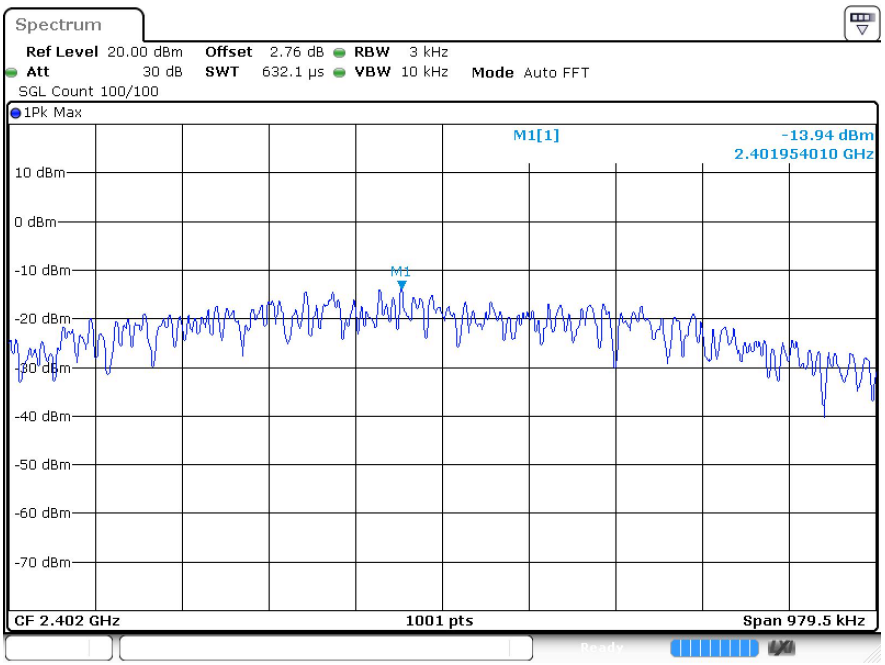
4.1 Test Result

Mode	Frequency (MHz)	Conducted PSD (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
BLE 1M	2402	-13.94	≤8	Pass
BLE 1M	2440	-13.4	≤8	Pass
BLE 1M	2480	-14.3	≤8	Pass

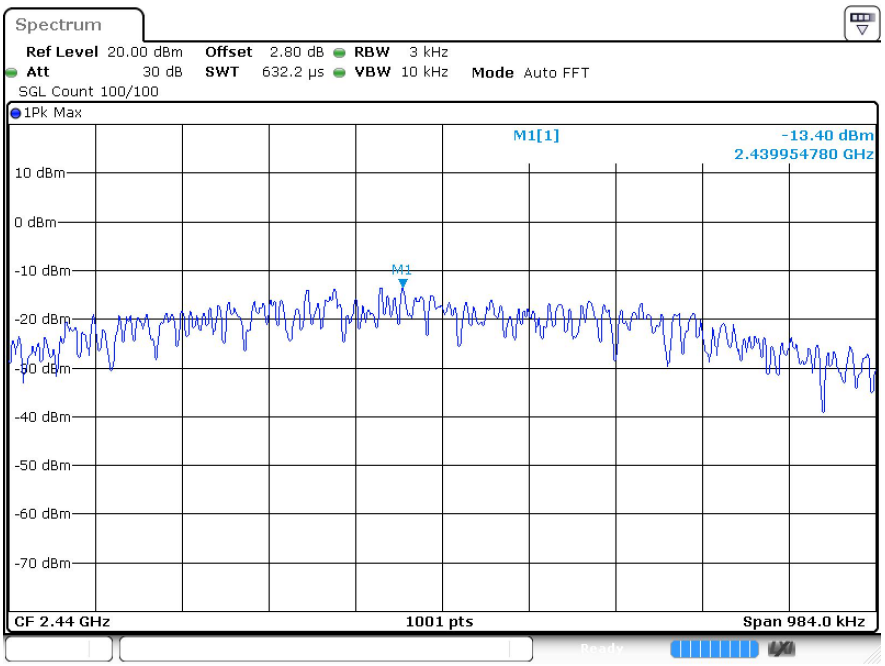
4.2 Test Graphs

Test Graphs

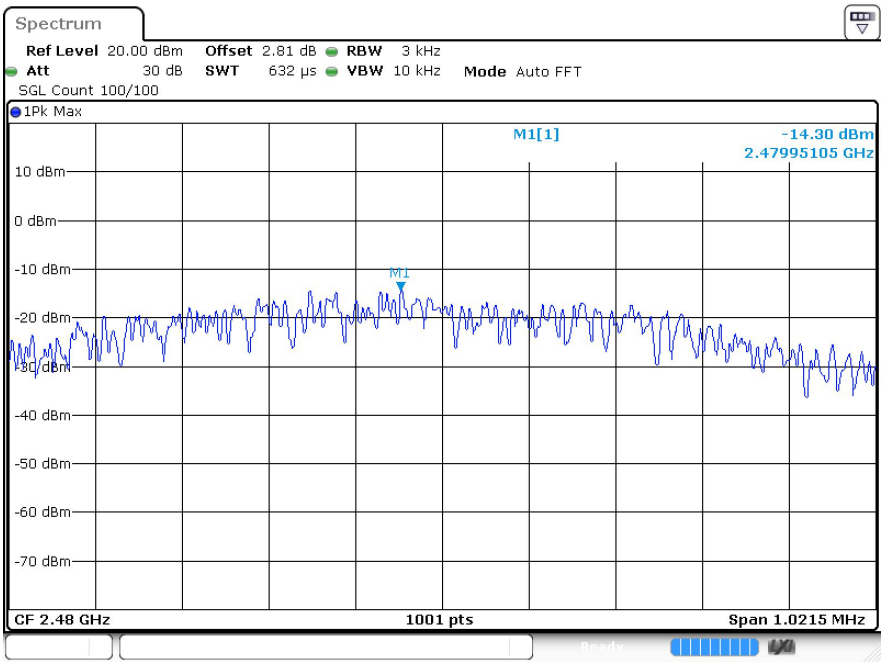
BLE 1M 2402MHz



BLE 1M 2440MHz



BLE 1M 2480MHz



5 Band Edge

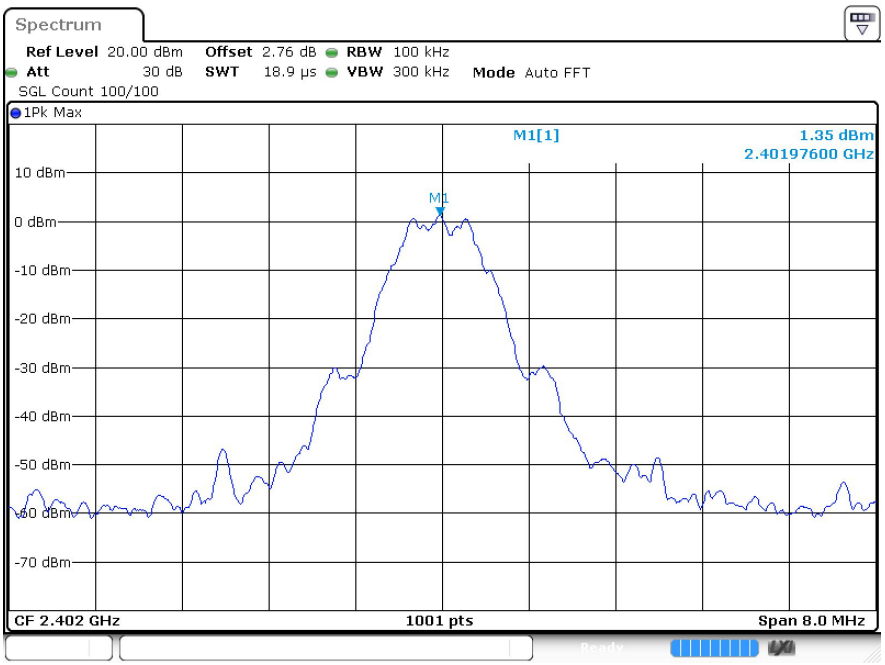
5.1 Test Result

Mode	Frequency (MHz)	Max Value (dBc)	Limit (dBc)	Verdict
BLE 1M	2402	-55.96	-20	Pass
BLE 1M	2480	-51.46	-20	Pass

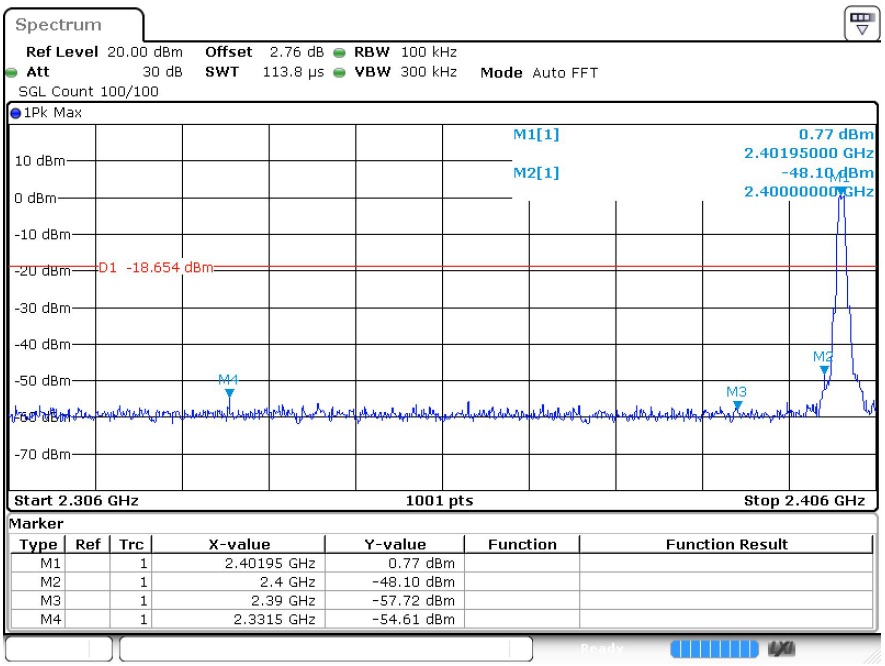
5.2 Test Graphs

Test Graphs

BLE 1M 2402MHz Ref

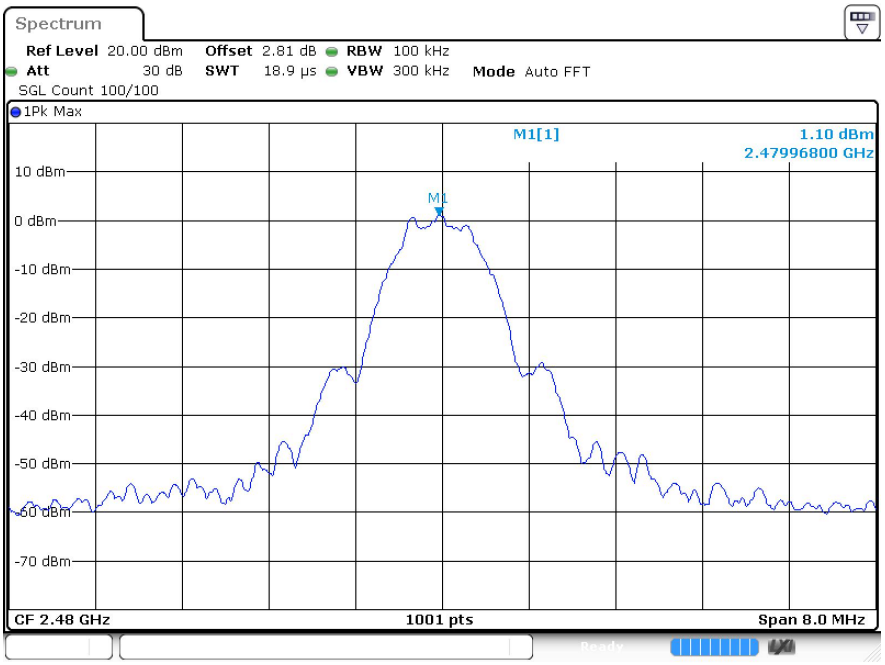


BLE 1M 2402MHz Emission

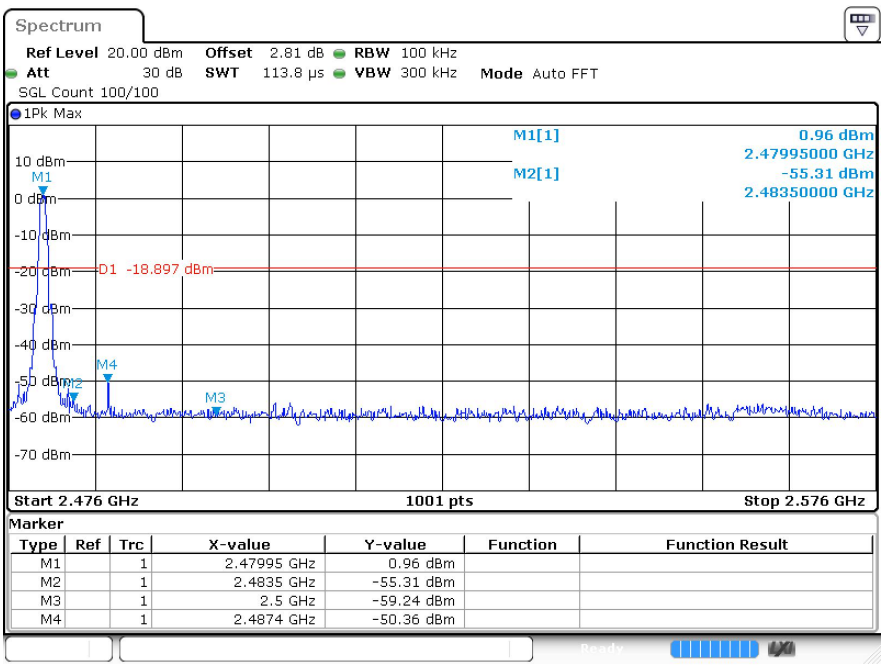


Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.40195 GHz	0.77 dBm		
M2		1	2.4 GHz	-48.10 dBm		
M3		1	2.39 GHz	-57.72 dBm		
M4		1	2.3315 GHz	-54.61 dBm		

BLE 1M 2480MHz Ref



BLE 1M 2480MHz Emission



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.47995 GHz	0.96 dBm		
M2		1	2.4835 GHz	-55.31 dBm		
M3		1	2.5 GHz	-59.24 dBm		
M4		1	2.4874 GHz	-50.36 dBm		

6 Conducted RF Spurious Emission

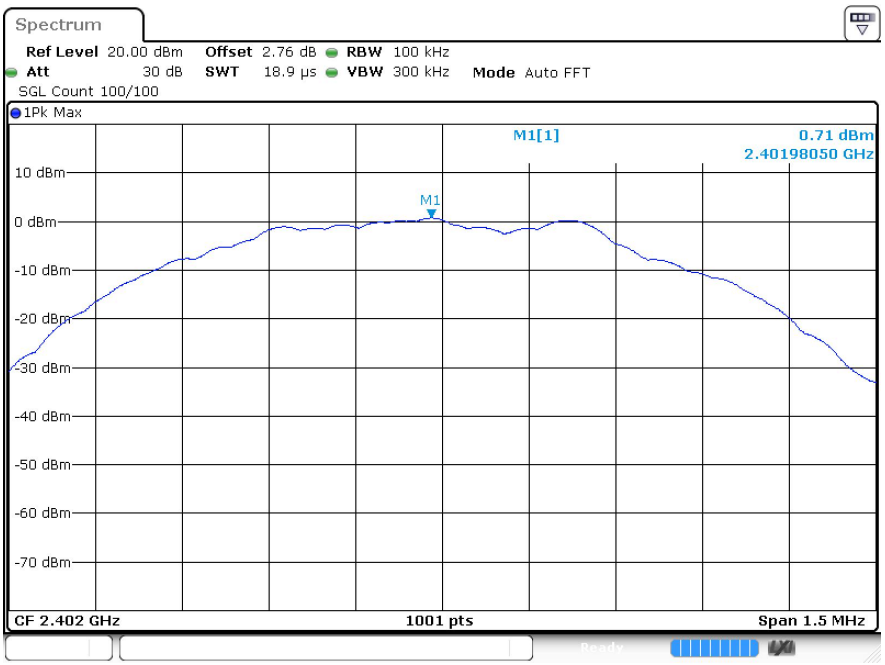
6.1 Test Result

Mode	Frequency (MHz)	Max Value (dBc)	Limit (dBc)	Verdict
BLE 1M	2402	-44.27	-20	Pass
BLE 1M	2440	-44.67	-20	Pass
BLE 1M	2480	-44.15	-20	Pass

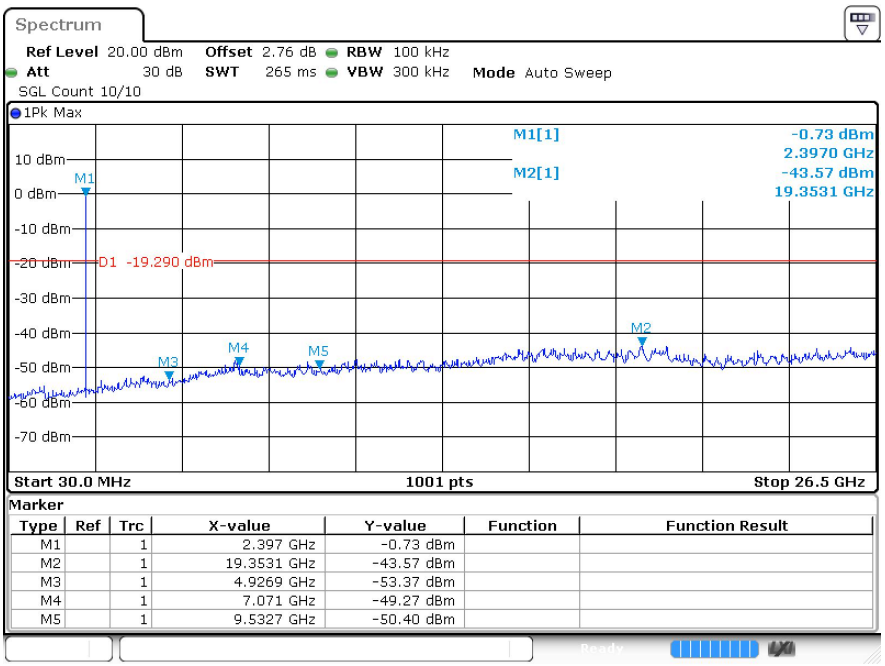
6.2 Test Graphs

Test Graphs

BLE 1M 2402MHz Ref



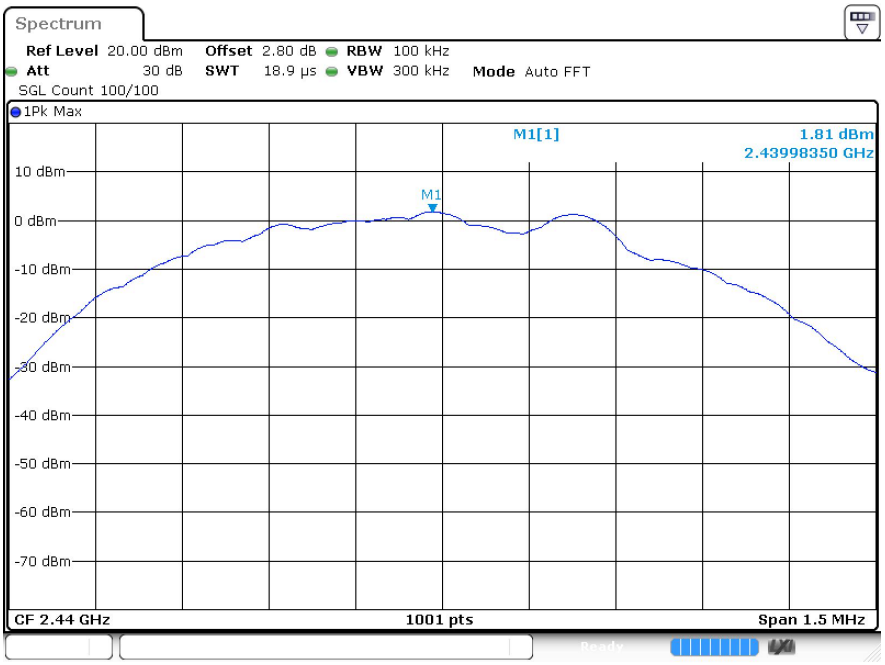
BLE 1M 2402MHz Emission



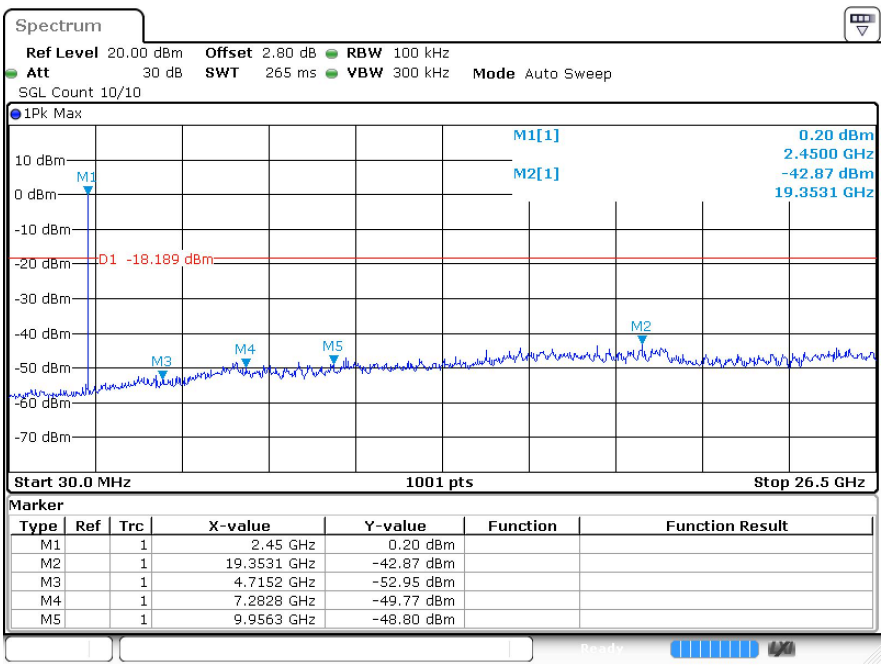
Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.397 GHz	-0.73 dBm		
M2		1	19.3531 GHz	-43.57 dBm		
M3		1	4.9269 GHz	-53.37 dBm		
M4		1	7.071 GHz	-49.27 dBm		
M5		1	9.5327 GHz	-50.40 dBm		

BLE 1M 2440MHz Ref



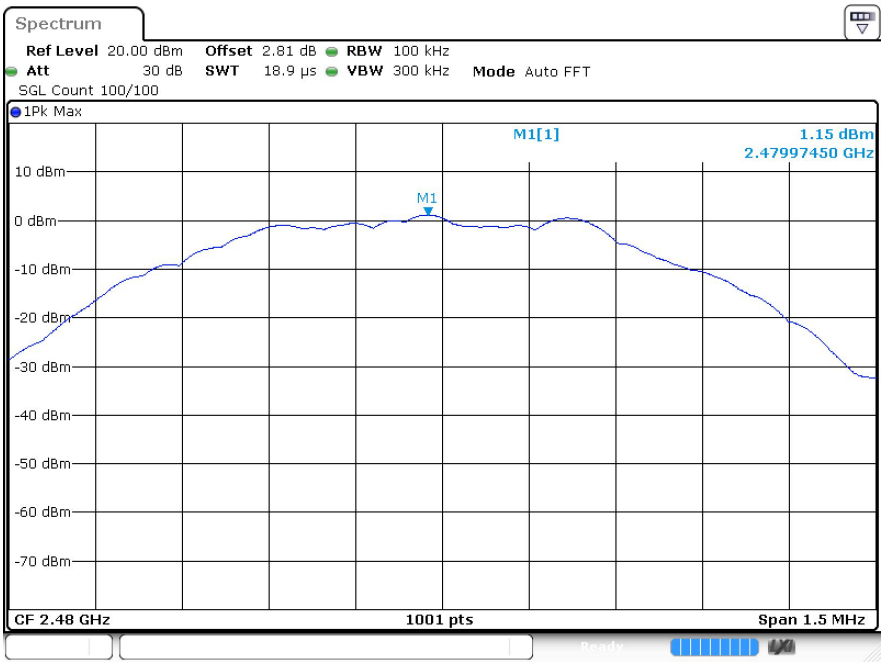
BLE 1M 2440MHz Emission



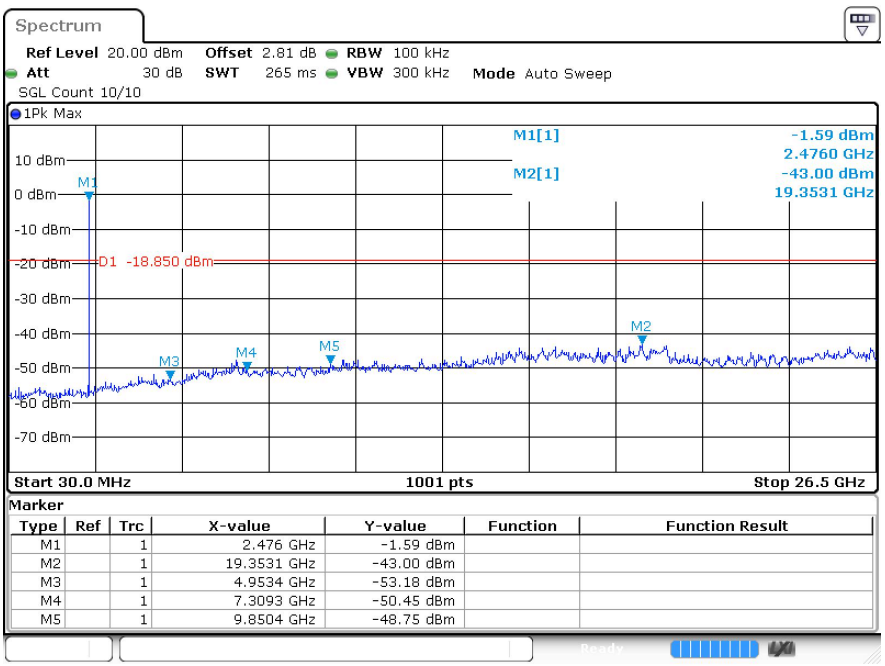
Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.45 GHz	0.20 dBm		
M2		1	19.3531 GHz	-42.87 dBm		
M3		1	4.7152 GHz	-52.95 dBm		
M4		1	7.2828 GHz	-49.77 dBm		
M5		1	9.9563 GHz	-48.80 dBm		

BLE 1M 2480MHz Ref



BLE 1M 2480MHz Emission



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.476 GHz	-1.59 dBm		
M2		1	19.3531 GHz	-43.00 dBm		
M3		1	4.9534 GHz	-53.18 dBm		
M4		1	7.3093 GHz	-50.45 dBm		
M5		1	9.8504 GHz	-48.75 dBm		

7 Restrict Band

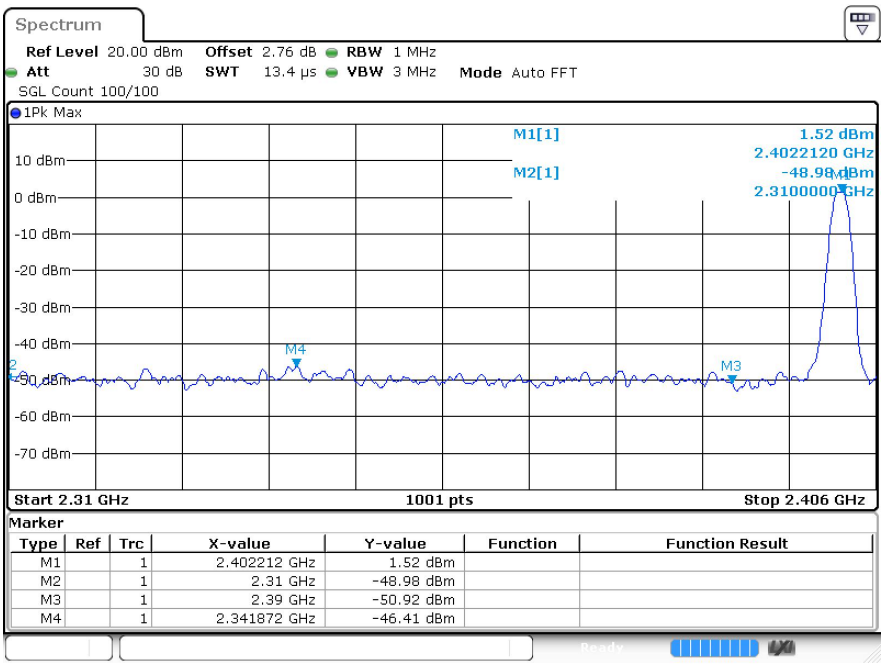
7.1 Test Result

Mode	Frequency (MHz)	Spur Freq (MHz)	Power (dBm)	Gain (dBi)	Duty Factor	E (dBuV/m)	Detector	Limit (dBuV/m)	Verdict
BLE 1M	2402	2310	-48.98	2	-	48.28	Peak	74	Pass
BLE 1M	2402	2310	-56.96	2	1.94	42.24	Average	54	Pass
BLE 1M	2402	2341.872	-46.41	2	-	50.85	Peak	74	Pass
BLE 1M	2402	2340.048	-55.02	2	1.94	44.18	Average	54	Pass
BLE 1M	2402	2390	-50.92	2	-	46.34	Peak	74	Pass
BLE 1M	2402	2390	-57.71	2	1.94	41.49	Average	54	Pass
BLE 1M	2480	2483.5	-49.98	2	-	47.28	Peak	74	Pass
BLE 1M	2480	2483.5	-55	2	1.94	44.2	Average	54	Pass
BLE 1M	2480	2487.424	-44.11	2	-	53.15	Peak	74	Pass
BLE 1M	2480	2483.512	-55.03	2	1.94	44.17	Average	54	Pass
BLE 1M	2480	2500	-49.31	2	-	47.95	Peak	74	Pass
BLE 1M	2480	2500	-57.08	2	1.94	42.12	Average	54	Pass

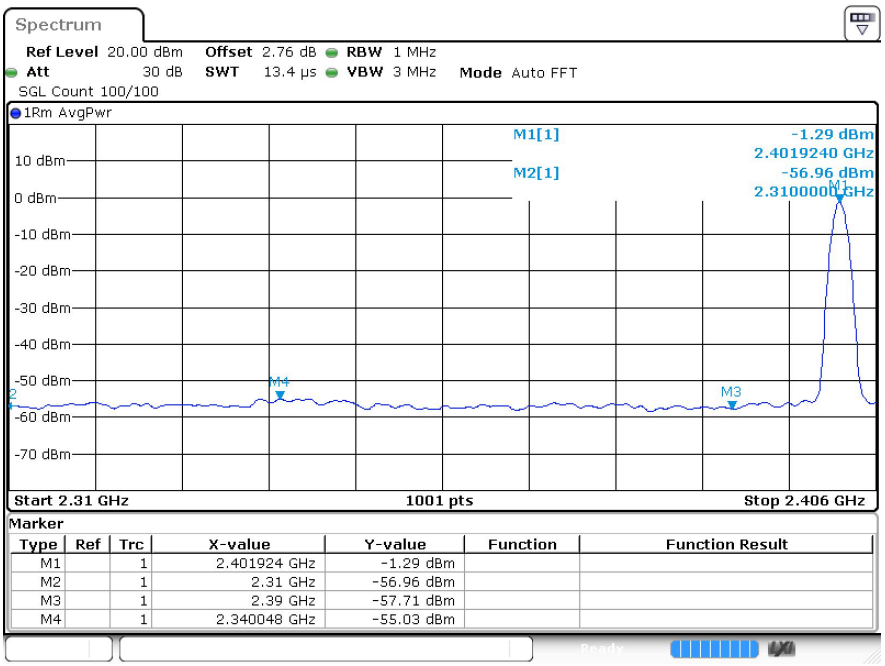
7.2 Test Graphs

Test Graphs

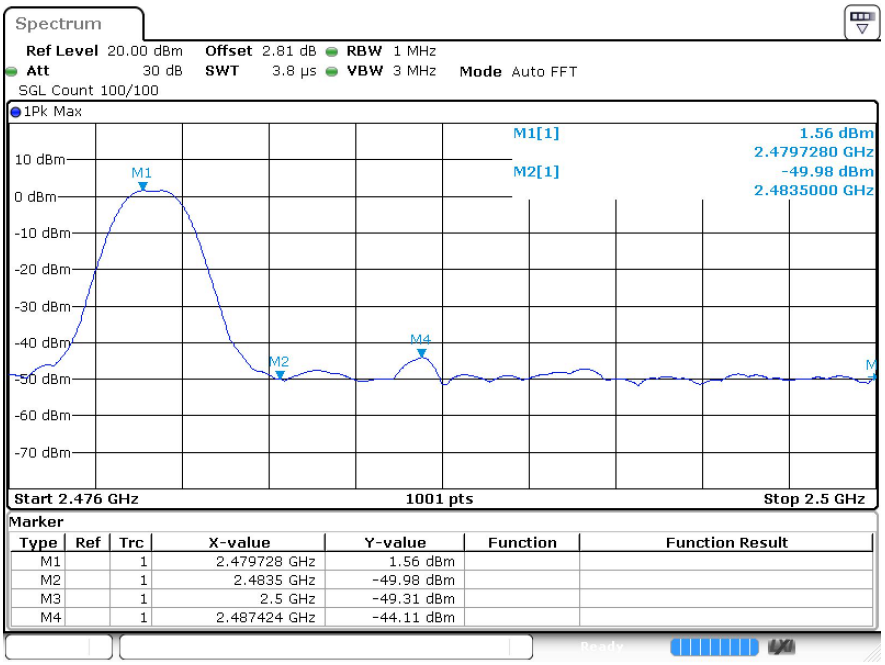
BLE 1M 2402MHz Peak



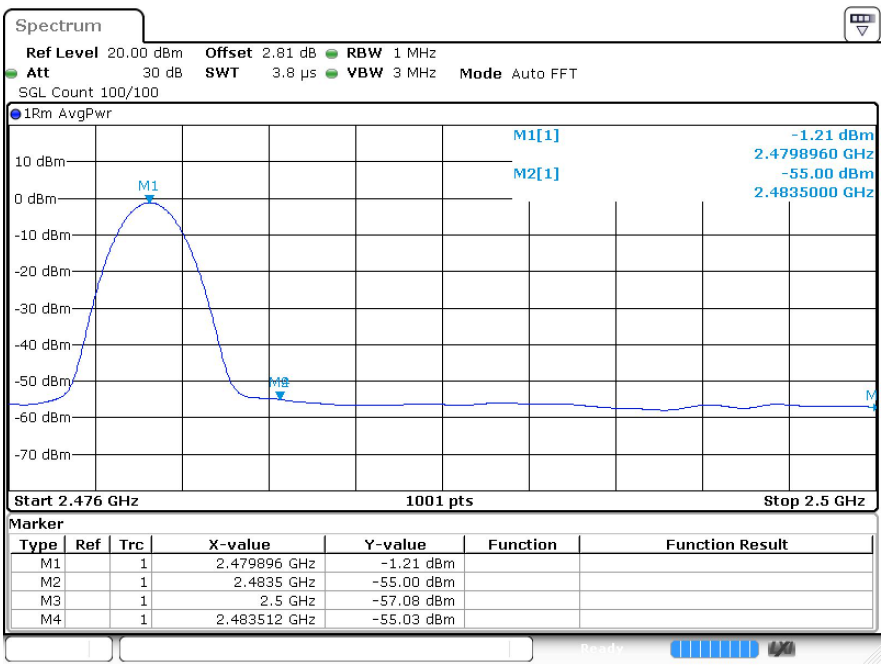
BLE 1M 2402MHz Average



BLE 1M 2480MHz Peak



BLE 1M 2480MHz Average



---The End---