



## Appendix B

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

Product Name: Flow Connect

Trade Mark: M5STACK

Test Model: FCV1

#### Environmental Conditions

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



# Contents

	Page
<b>COVER PAGE</b>	
1 Duty Cycle .....	3
1.1 Test Result .....	3
1.2 Test Graphs .....	4
2 Maximum Conducted Output Power .....	7
2.1 Test Result .....	7
2.2 Test Graphs .....	8
3 -6dB Bandwidth .....	11
3.1 Test Result .....	11
3.2 Test Graphs .....	12
4 Maximum Power Spectral Density Level .....	15
4.1 Test Result .....	15
4.2 Test Graphs .....	16
5 Band Edge .....	19
5.1 Test Result .....	19
5.2 Test Graphs .....	20
6 Conducted RF Spurious Emission .....	24
6.1 Test Result .....	24
6.2 Test Graphs .....	25
7 Restrict Band .....	31
7.1 Test Result .....	31
7.2 Test Graphs .....	32

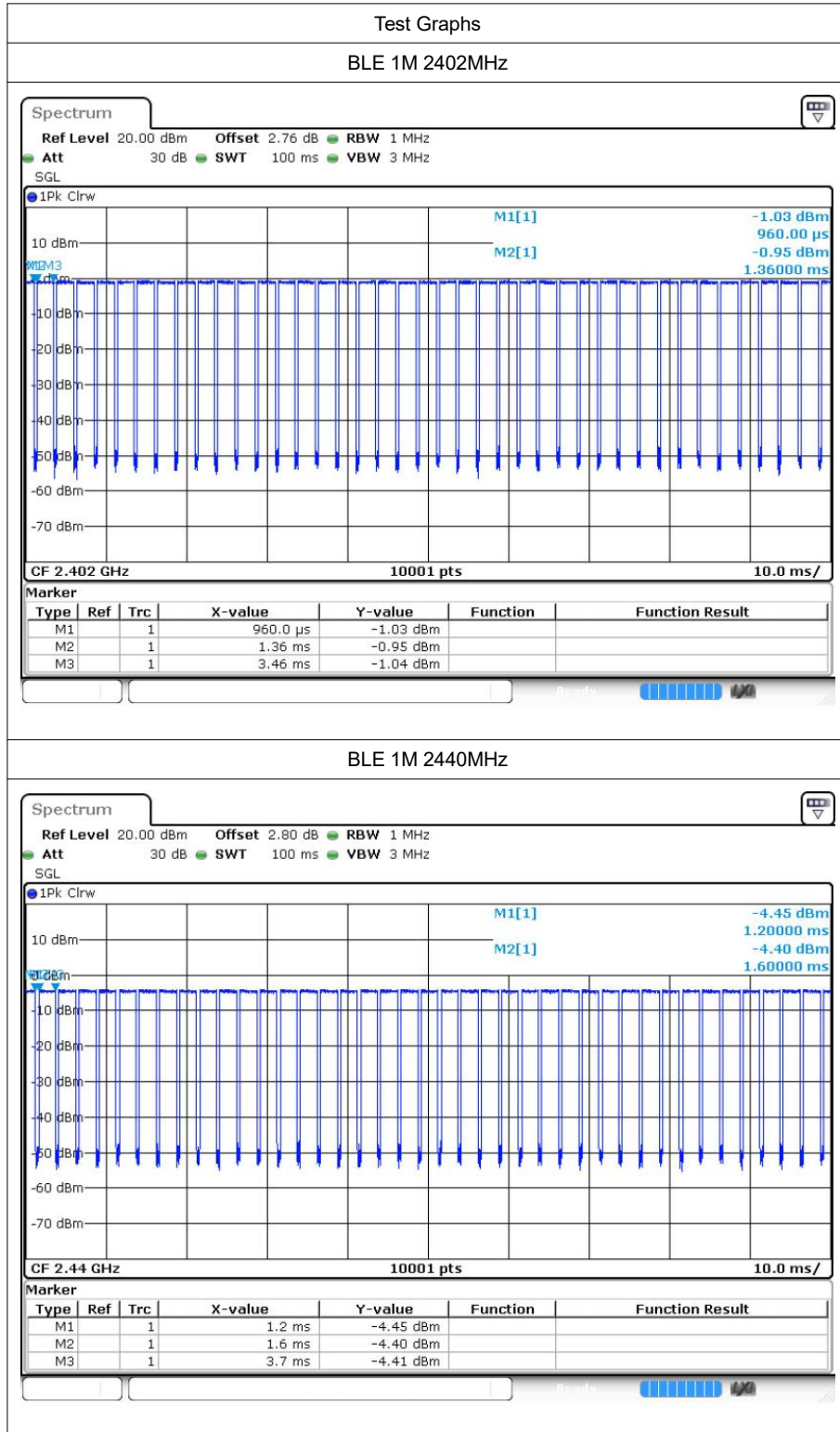


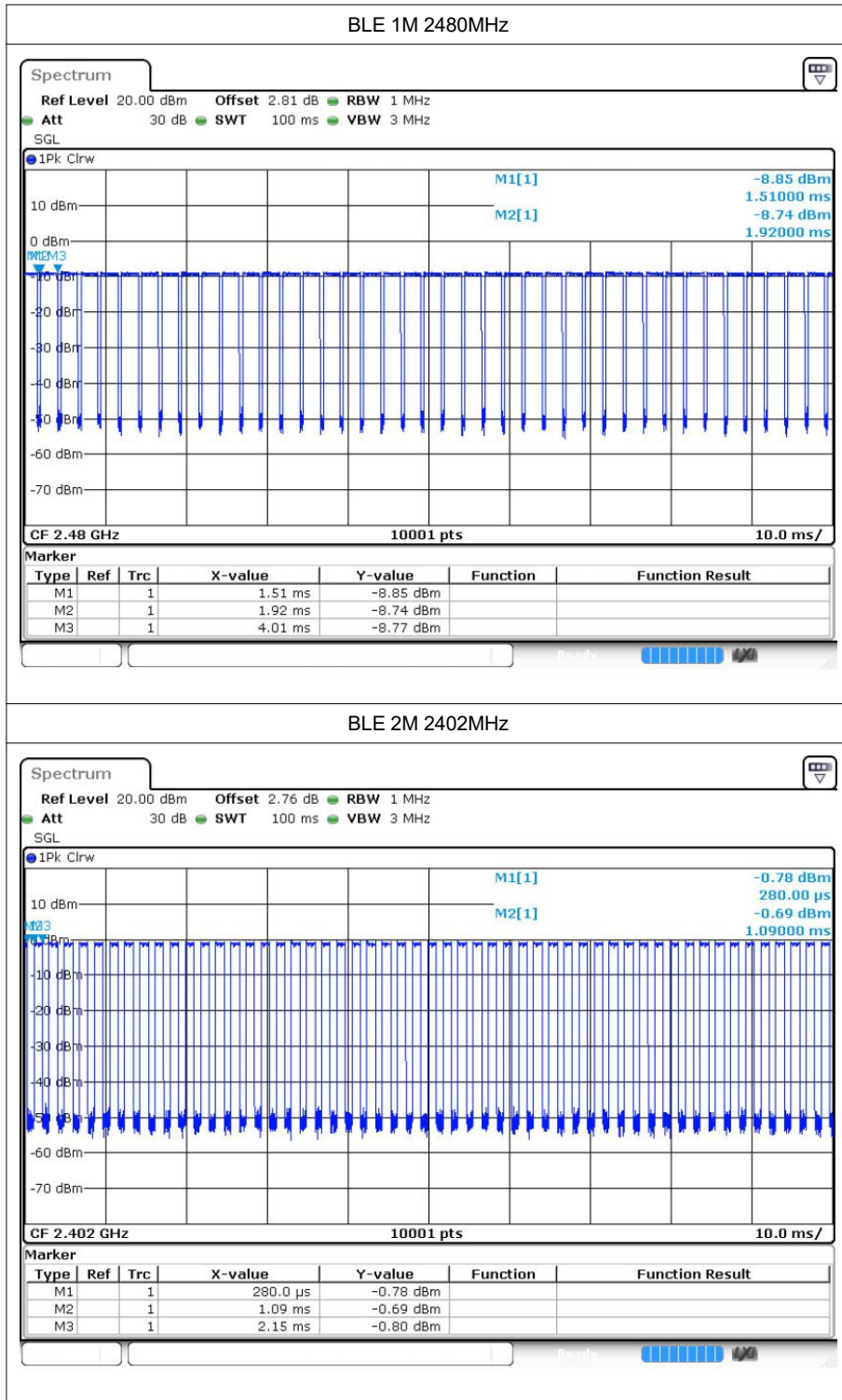
# 1 Duty Cycle

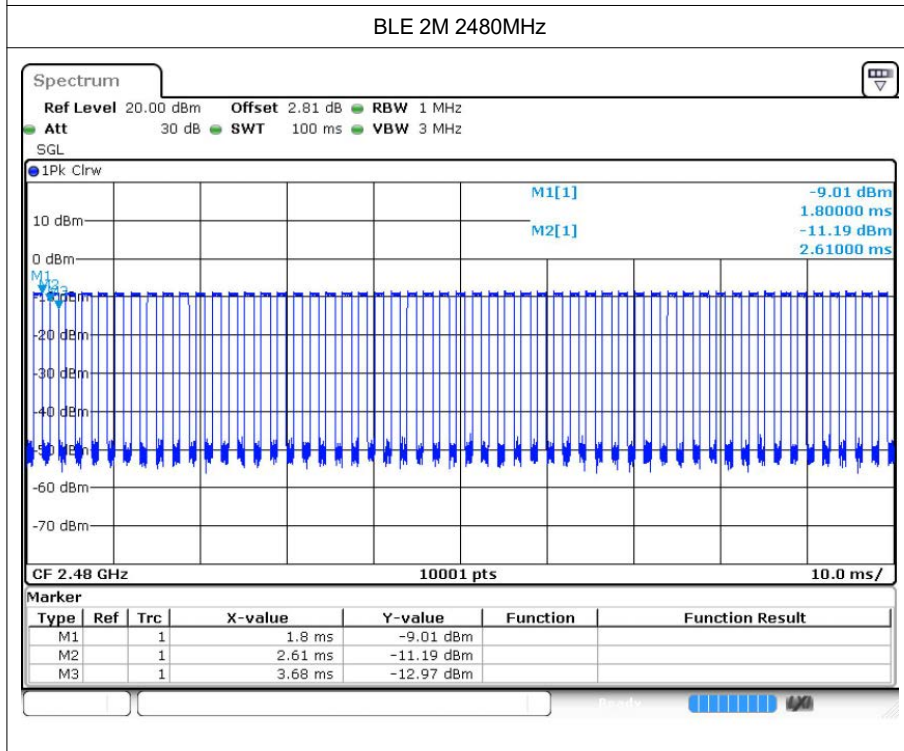
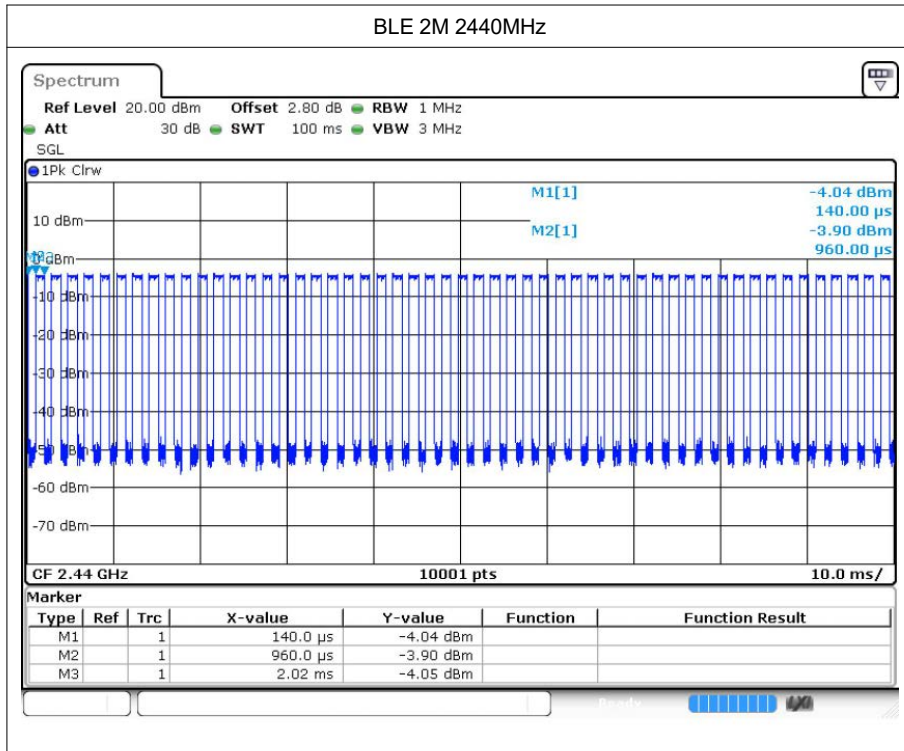
## 1.1 Test Result

Mode	Frequency (MHz)	Duty Cycle (%)	Correction Factor	1/T (kHz)
BLE 1M	2402	84.4	0.74	0.48
BLE 1M	2440	84.4	0.74	0.48
BLE 1M	2480	84.13	0.75	0.48
BLE 2M	2402	56.99	2.44	0.94
BLE 2M	2440	56.85	2.45	0.94
BLE 2M	2480	56.96	2.44	0.93

## 1.2 Test Graphs







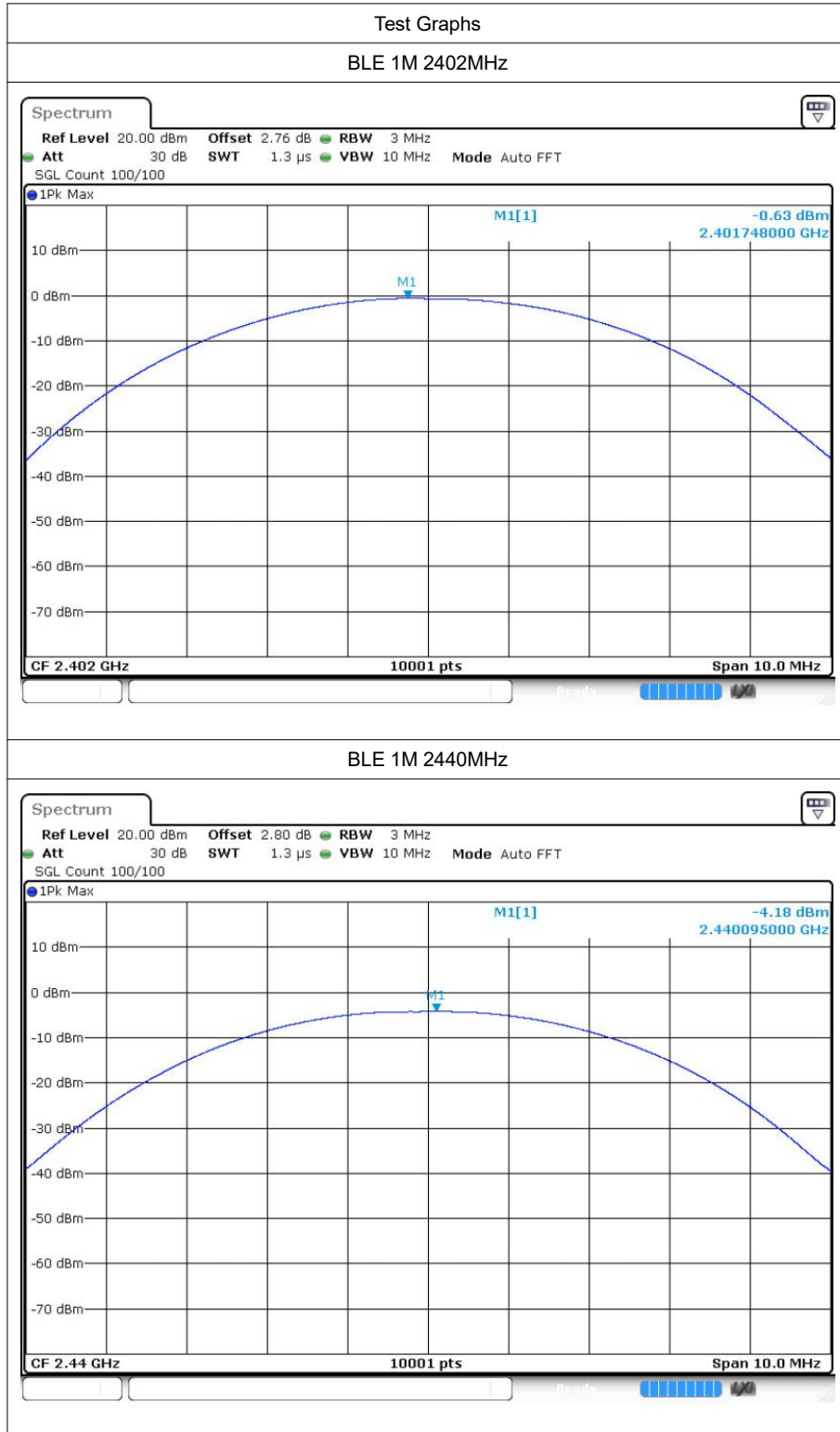


## 2 Maximum Conducted Output Power

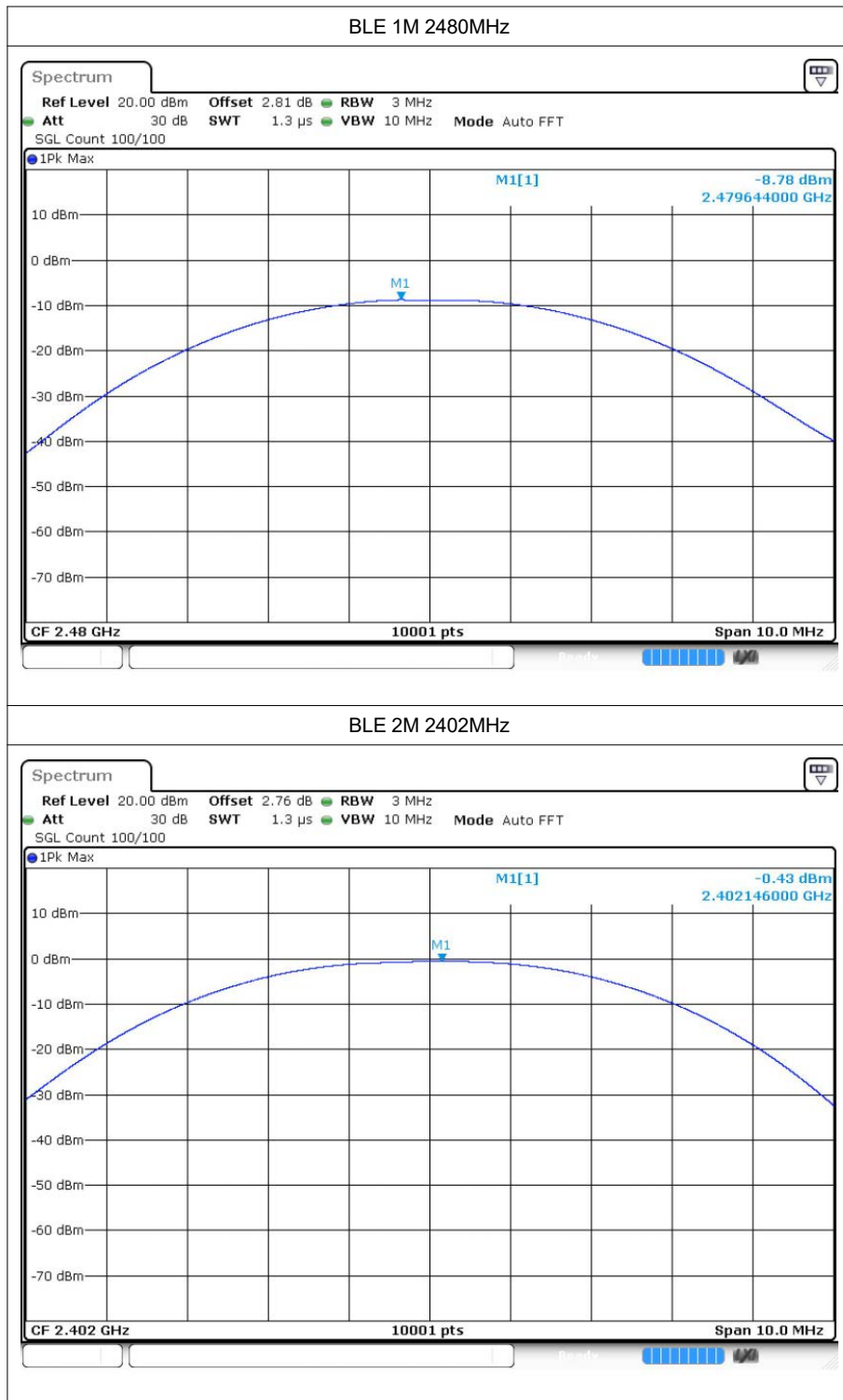
### 2.1 Test Result

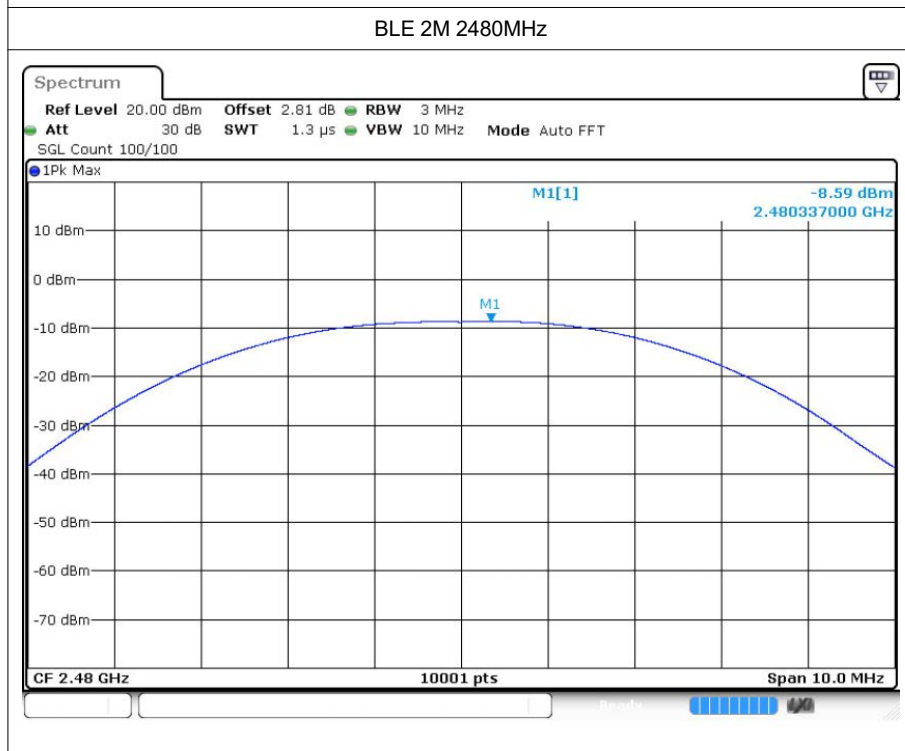
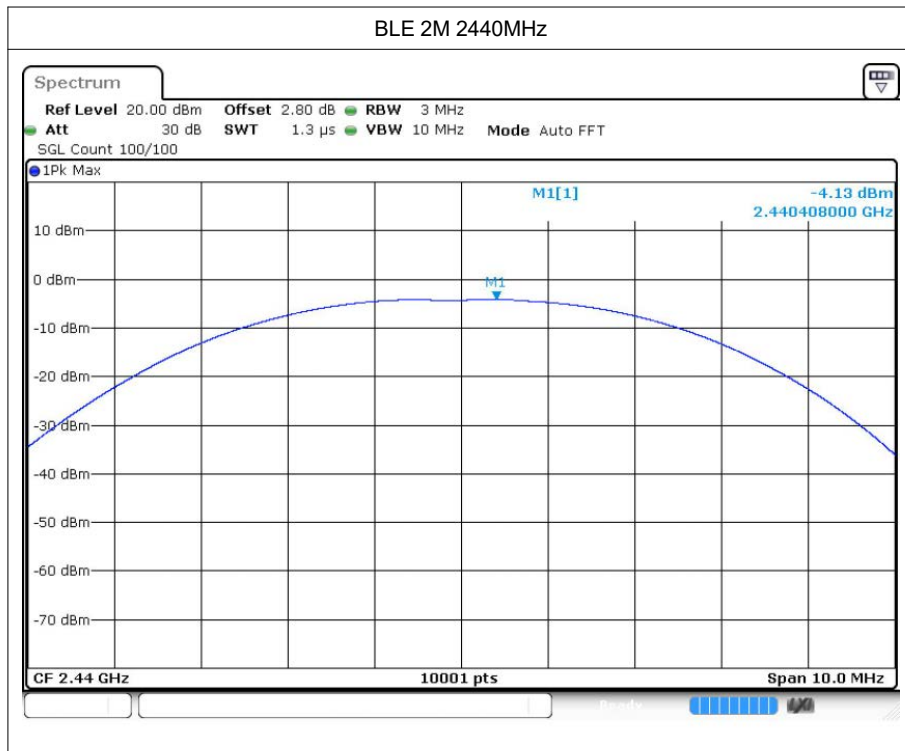
Mode	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Verdict
BLE 1M	2402	-0.63	30	Pass
BLE 1M	2440	-4.18	30	Pass
BLE 1M	2480	-8.78	30	Pass
BLE 2M	2402	-0.43	30	Pass
BLE 2M	2440	-4.13	30	Pass
BLE 2M	2480	-8.59	30	Pass

## 2.2 Test Graphs









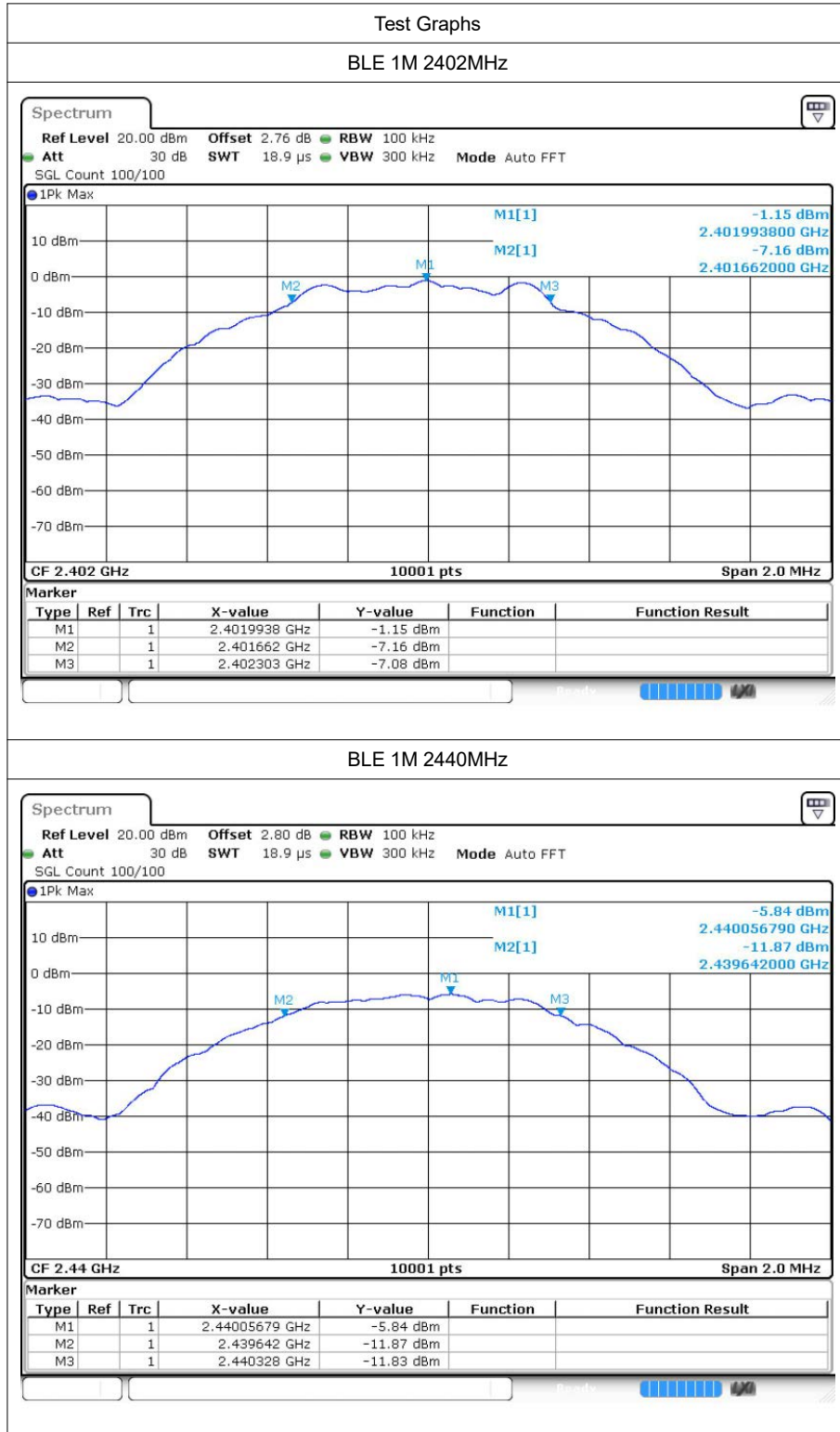


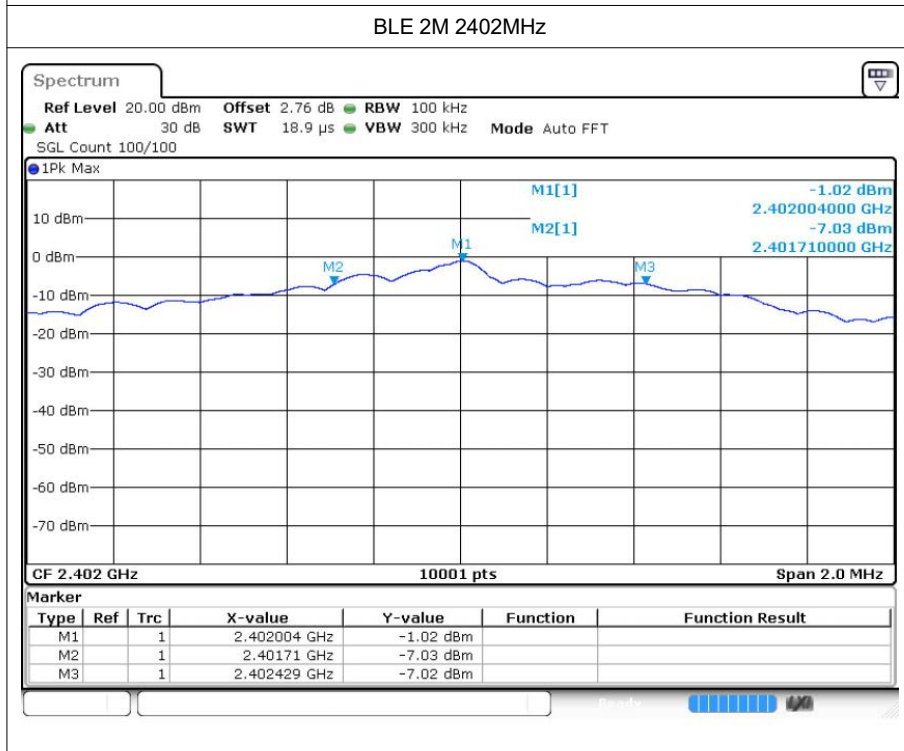
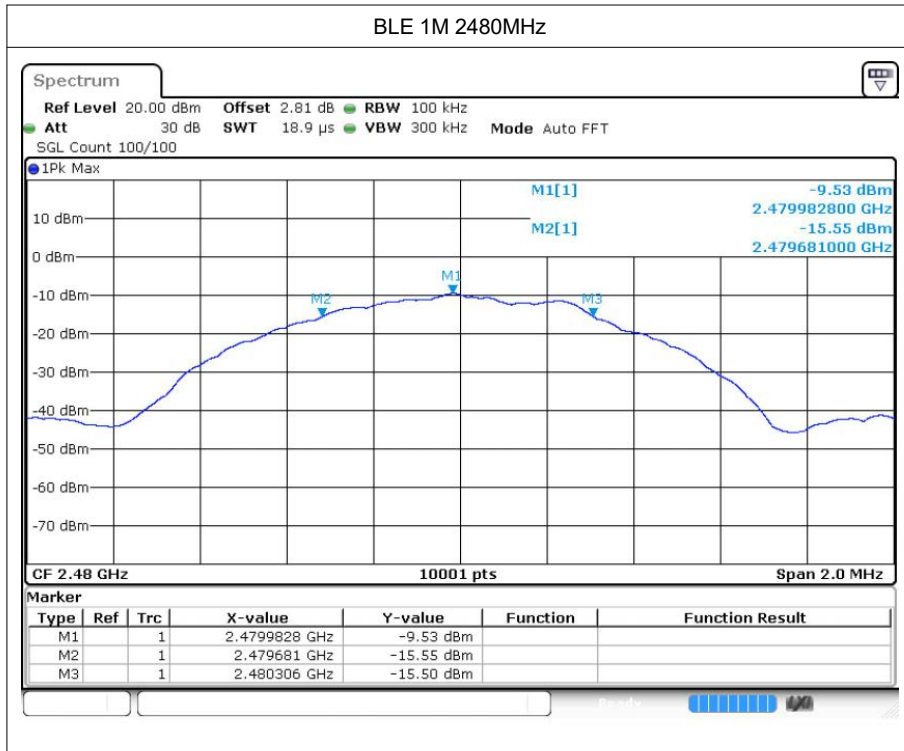
### 3 -6dB Bandwidth

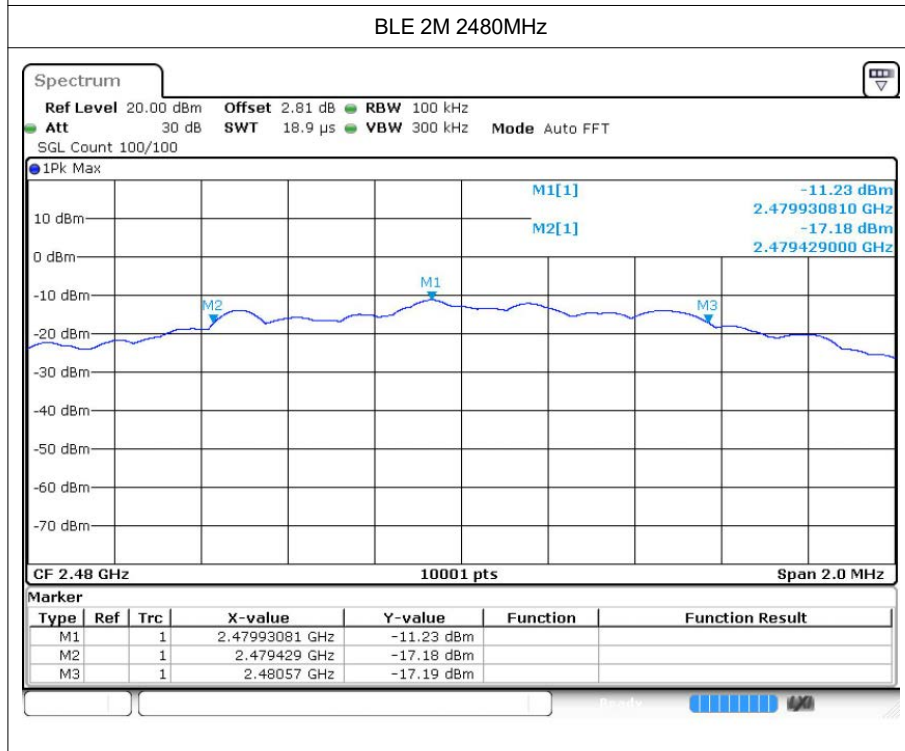
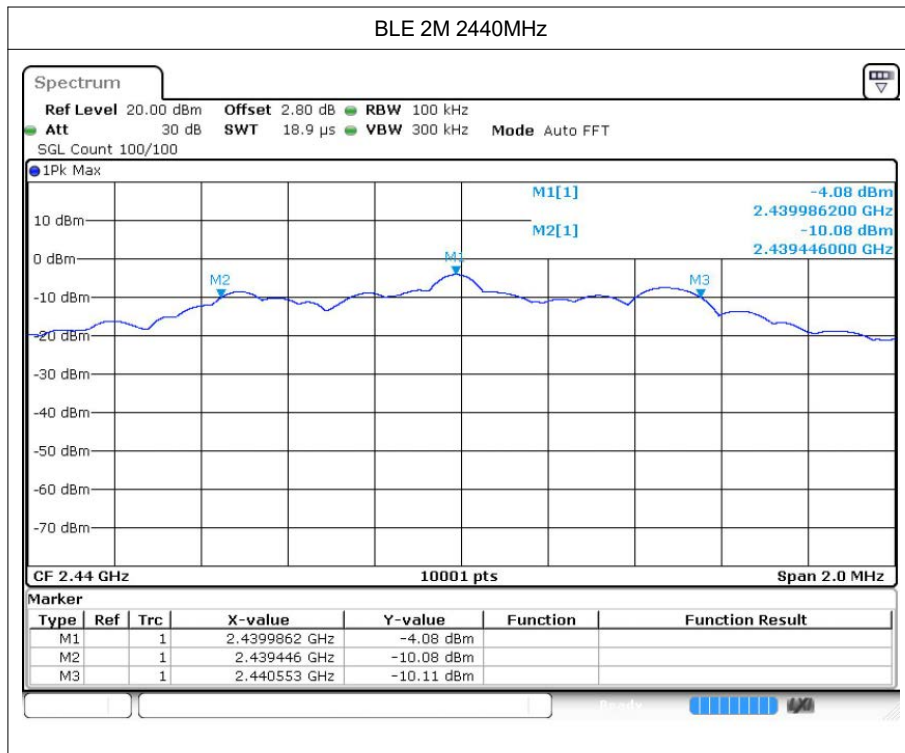
#### 3.1 Test Result

Mode	Frequency (MHz)	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
BLE 1M	2402	0.641	0.5	Pass
BLE 1M	2440	0.686	0.5	Pass
BLE 1M	2480	0.625	0.5	Pass
BLE 2M	2402	0.719	0.5	Pass
BLE 2M	2440	1.107	0.5	Pass
BLE 2M	2480	1.142	0.5	Pass

### 3.2 Test Graphs







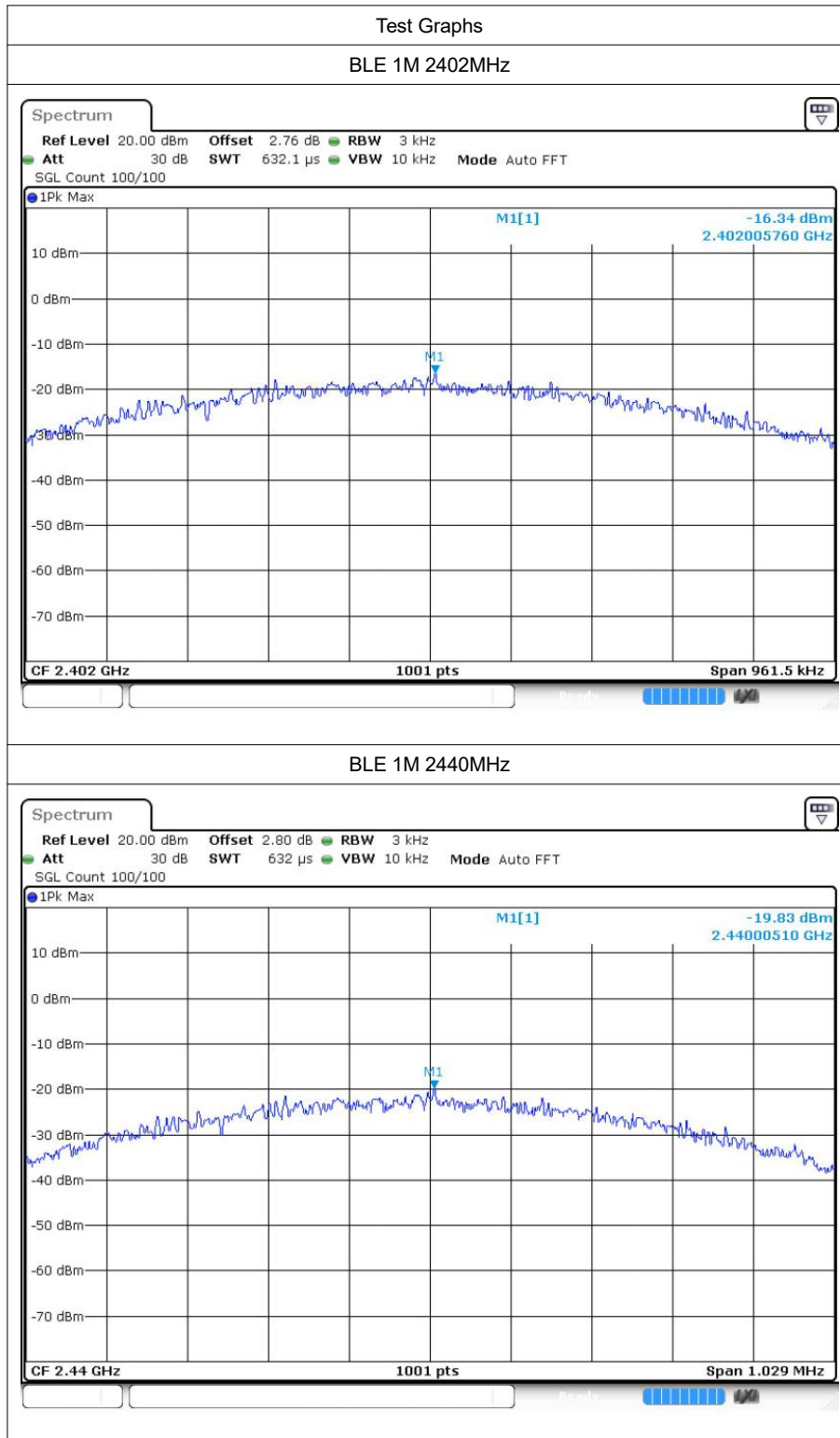


## 4 Maximum Power Spectral Density Level

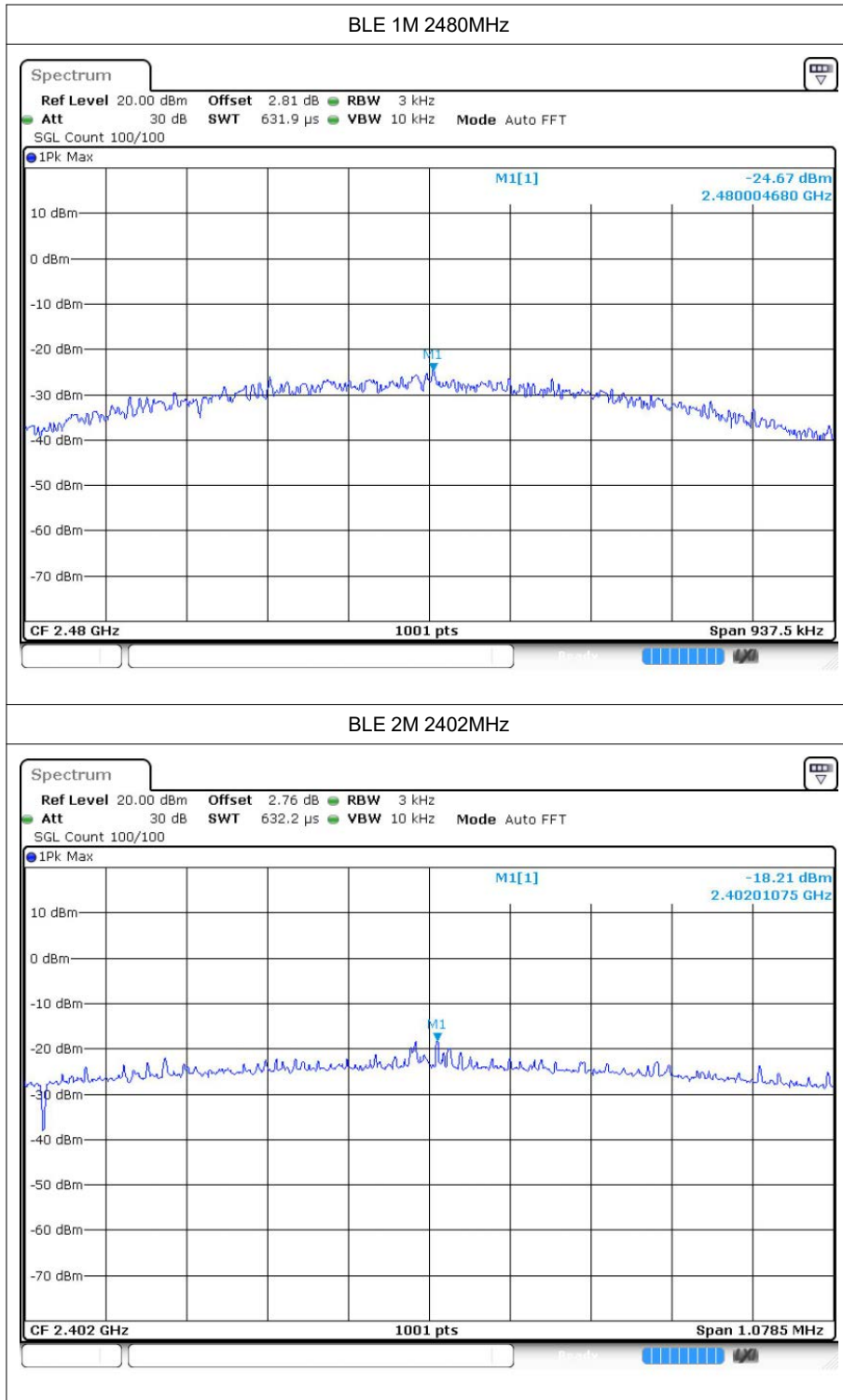
### 4.1 Test Result

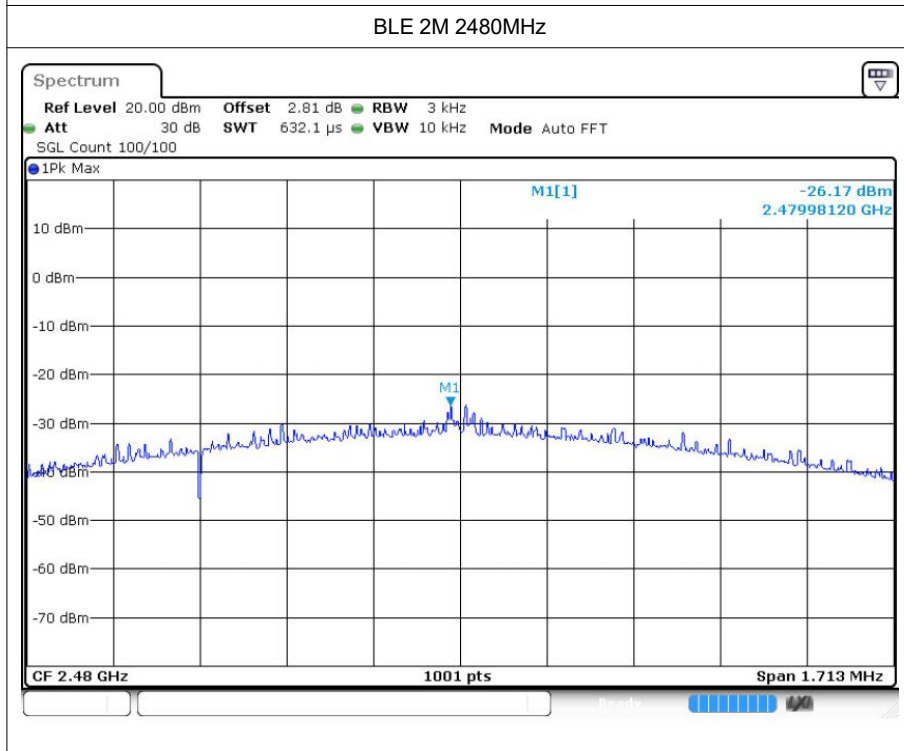
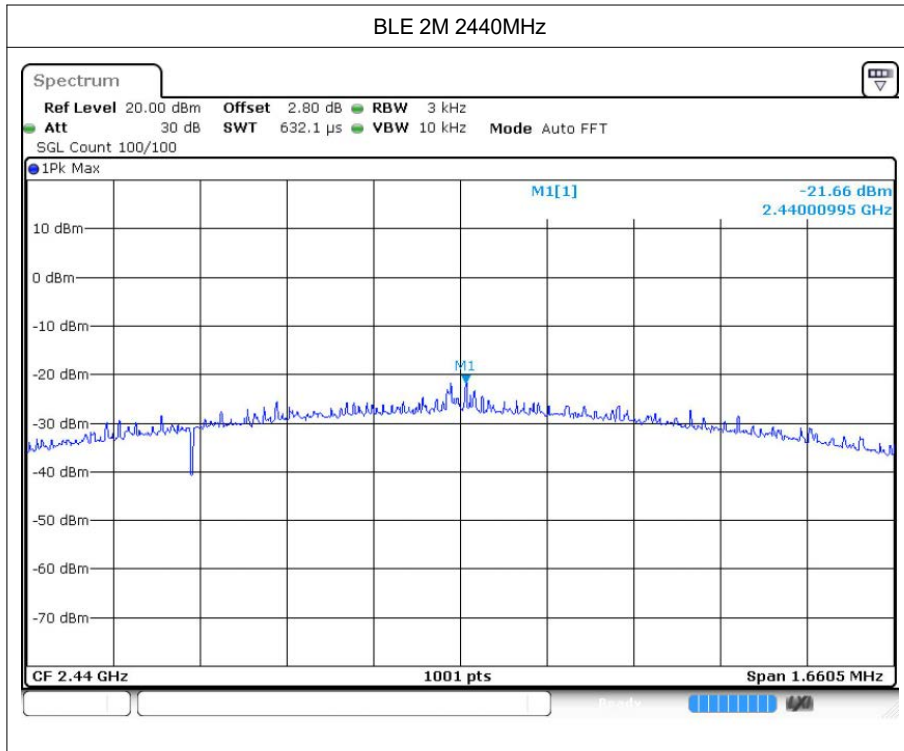
Mode	Frequency (MHz)	Conducted PSD (dBm/3-100kHz)	Limit (dBm/3kHz)	Verdict
BLE 1M	2402	-16.34	≤8	Pass
BLE 1M	2440	-19.83	≤8	Pass
BLE 1M	2480	-24.67	≤8	Pass
BLE 2M	2402	-18.21	≤8	Pass
BLE 2M	2440	-21.66	≤8	Pass
BLE 2M	2480	-26.17	≤8	Pass

## 4.2 Test Graphs









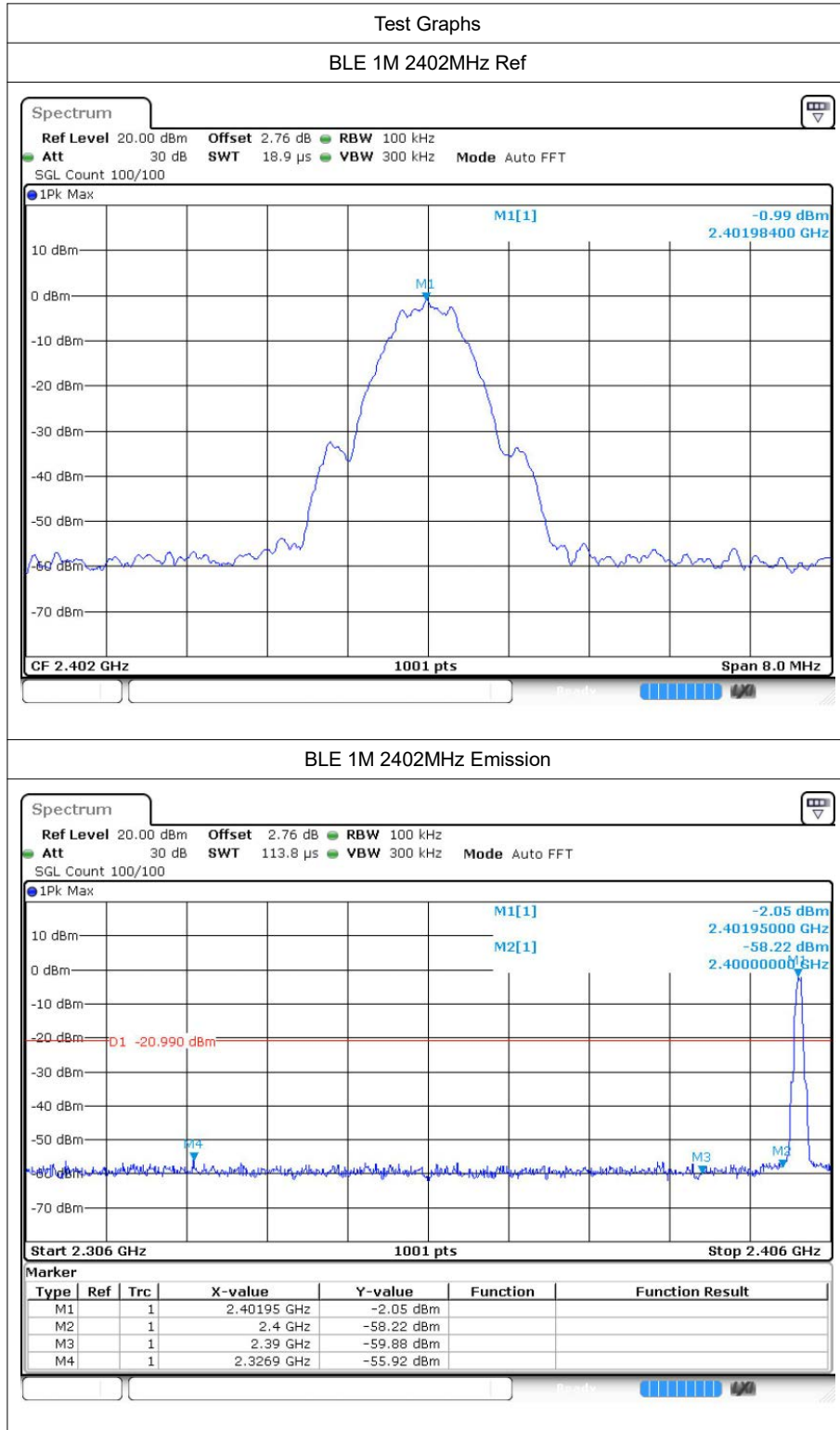


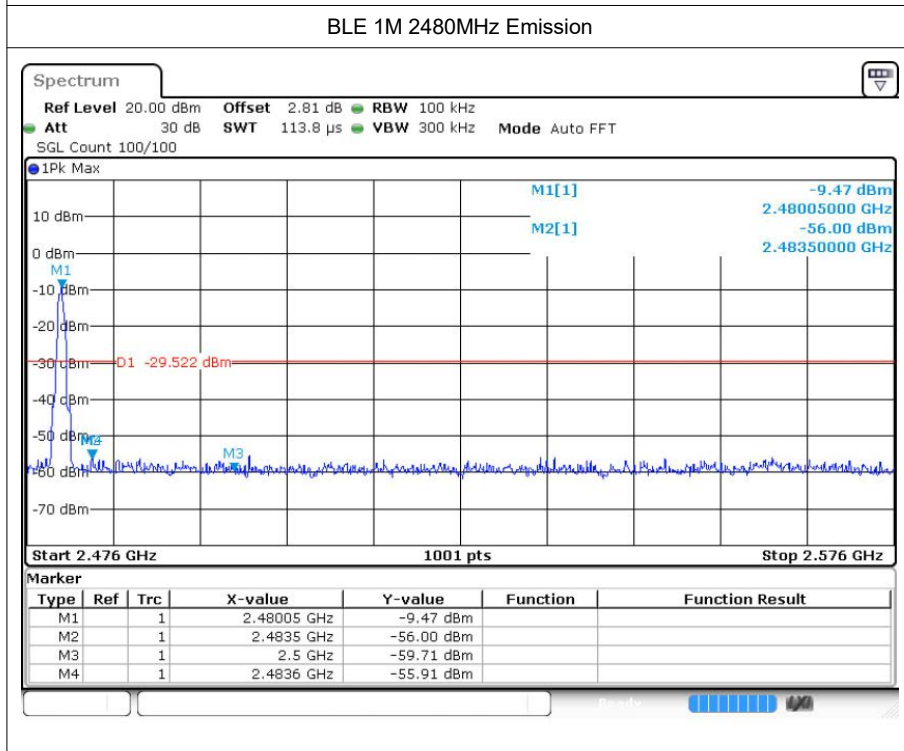
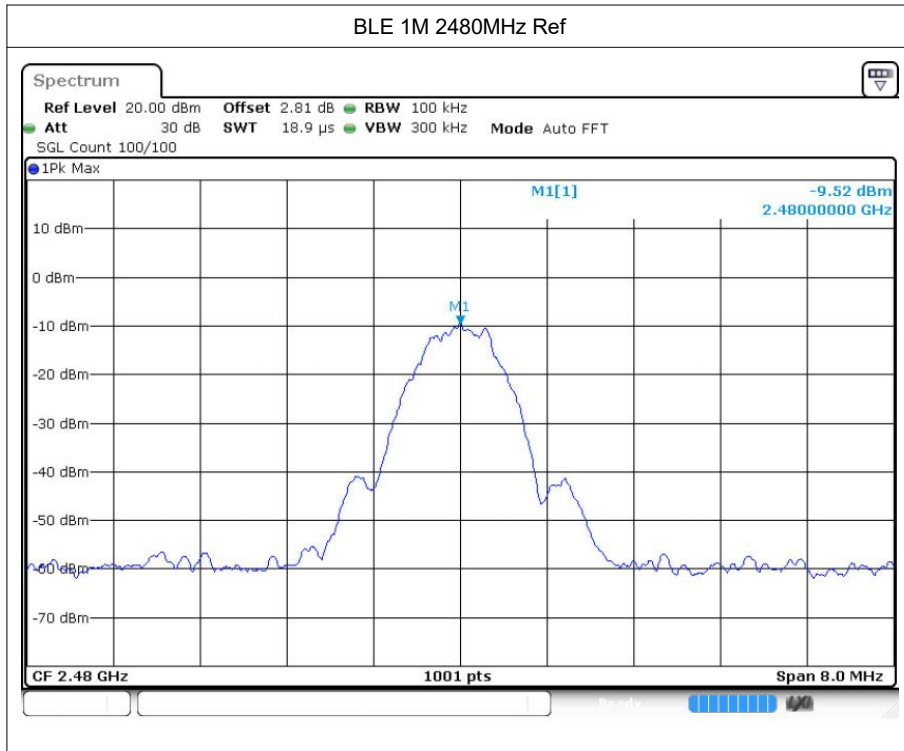
## 5 Band Edge

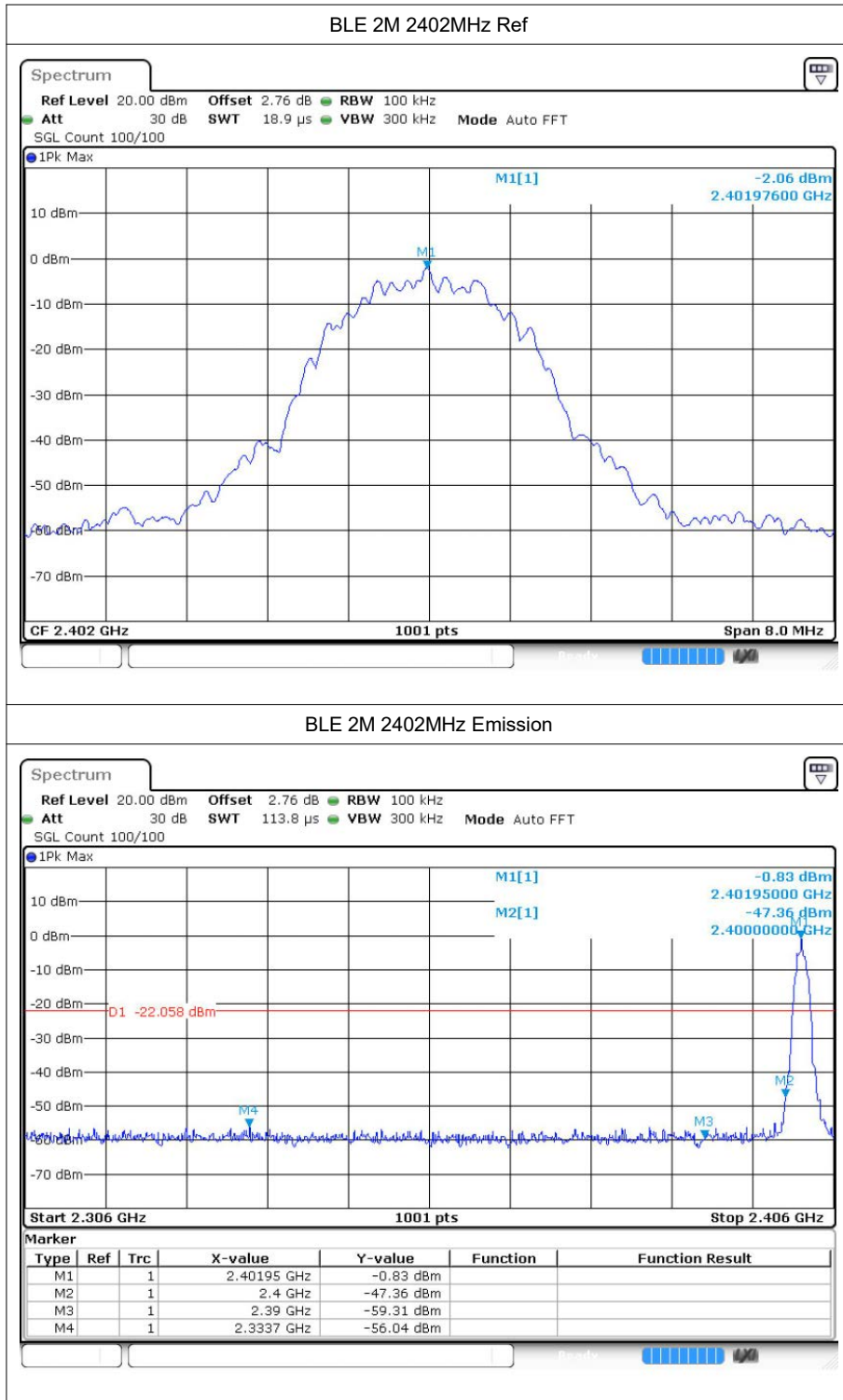
### 5.1 Test Result

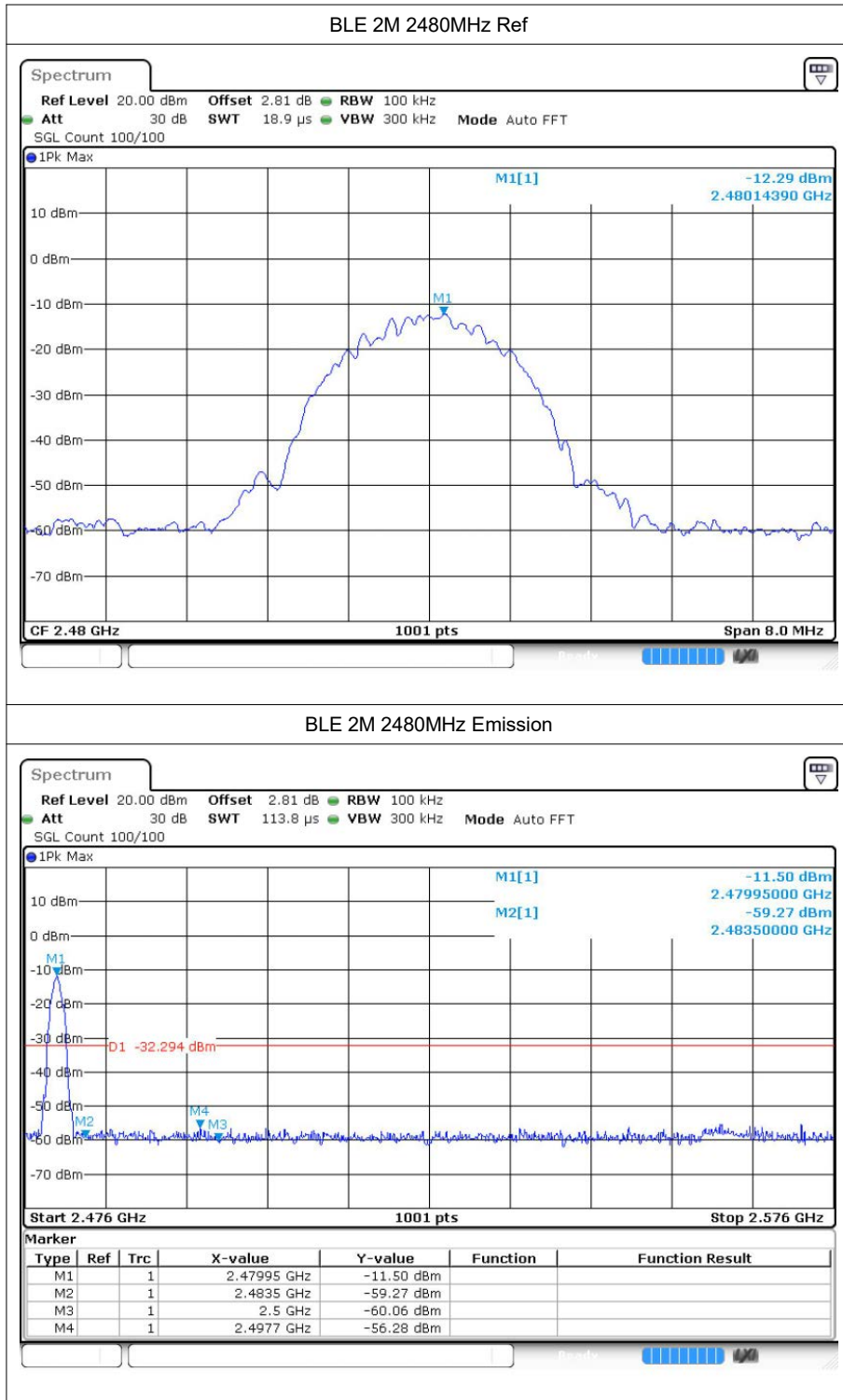
Mode	Frequency (MHz)	Max Value (dBc)	Limit (dBc)	Verdict
BLE 1M	2402	-54.93	-20	Pass
BLE 1M	2480	-46.38	-20	Pass
BLE 2M	2402	-53.97	-20	Pass
BLE 2M	2480	-43.98	-20	Pass

## 5.2 Test Graphs











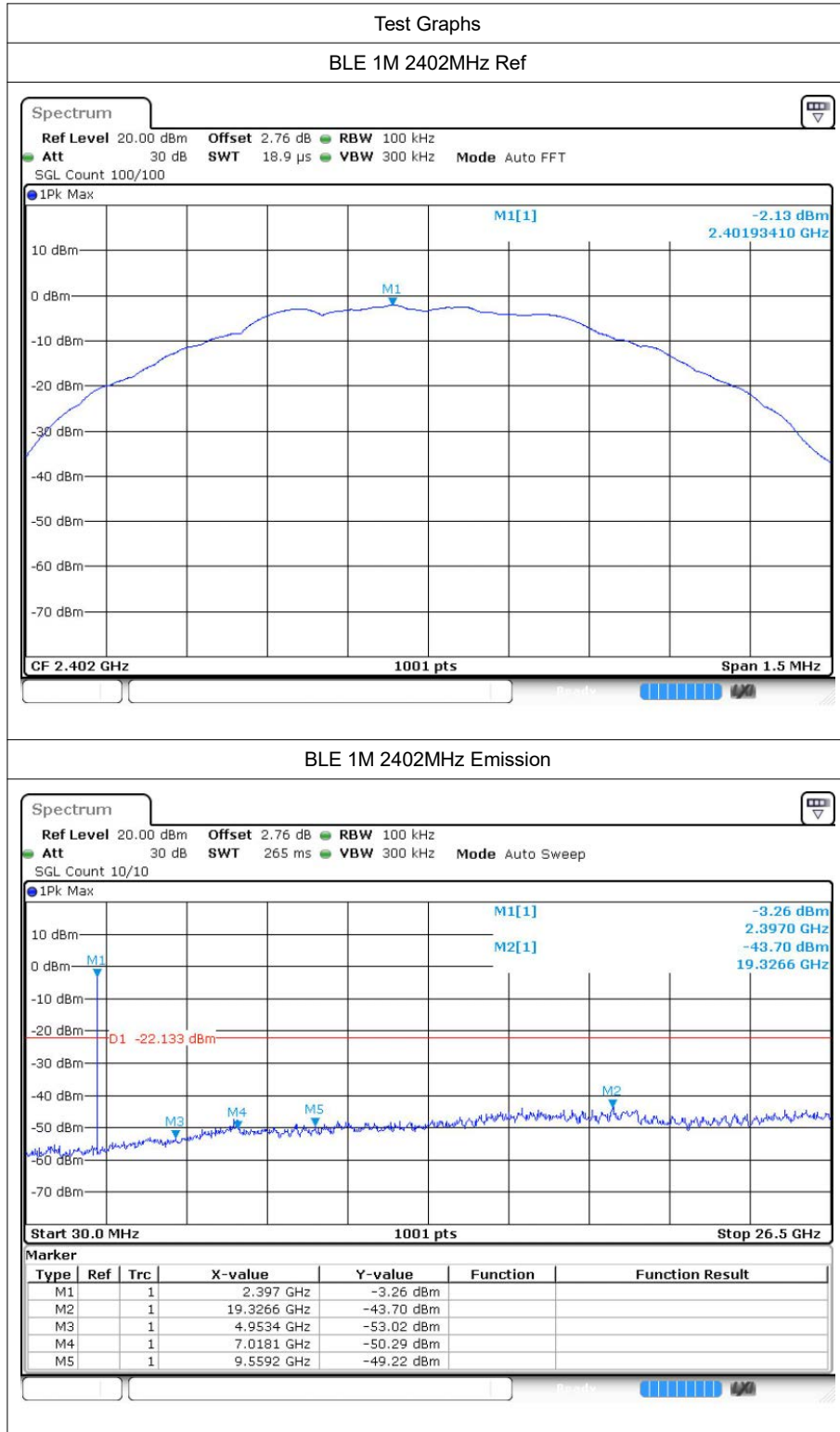
## 6 Conducted RF Spurious Emission

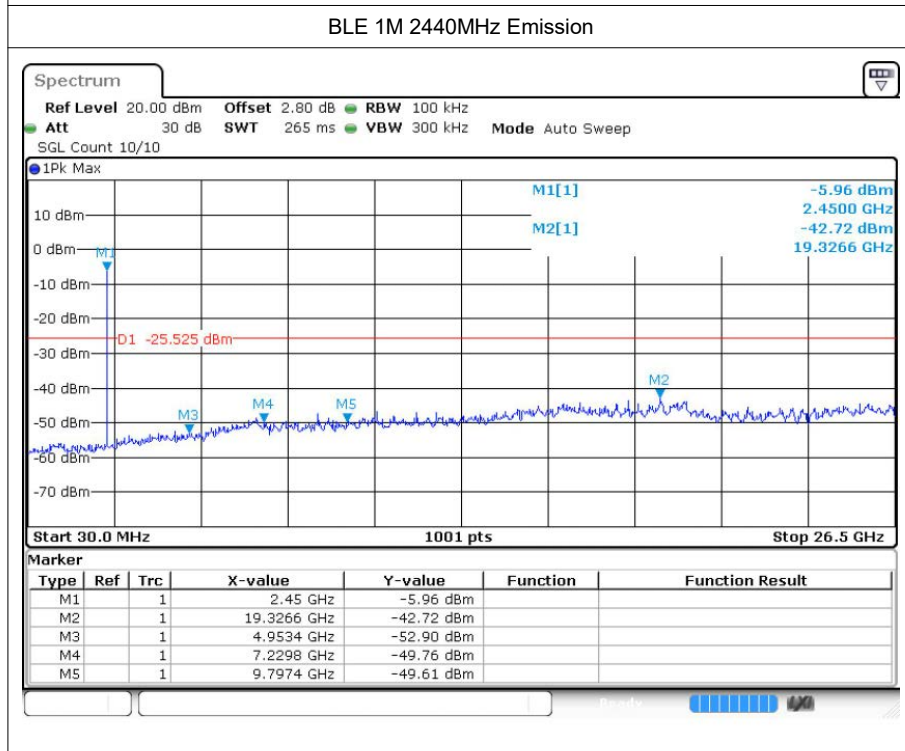
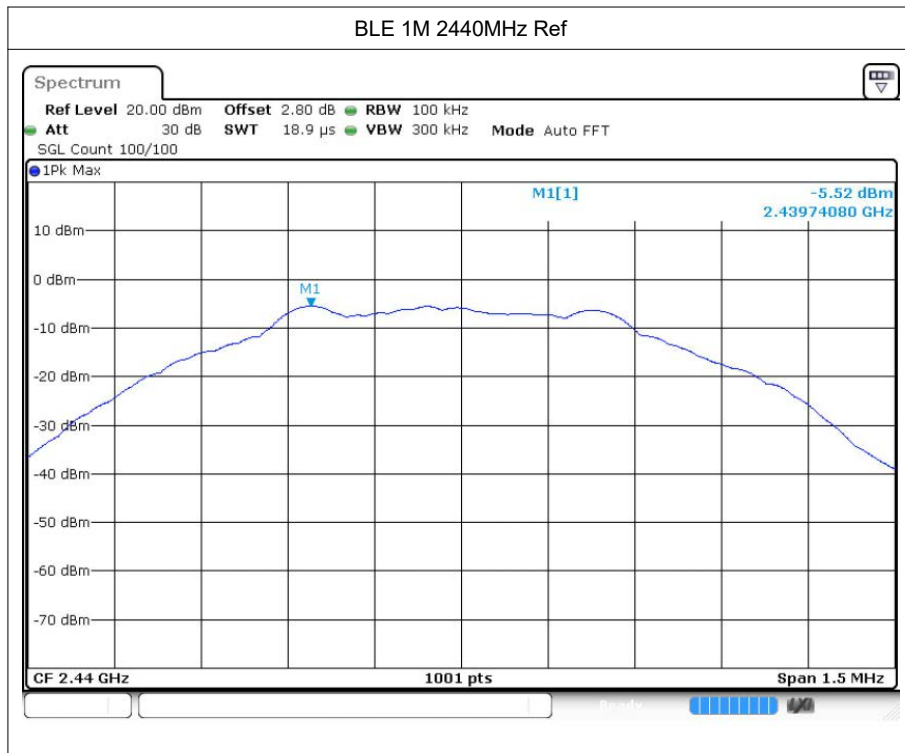
### 6.1 Test Result

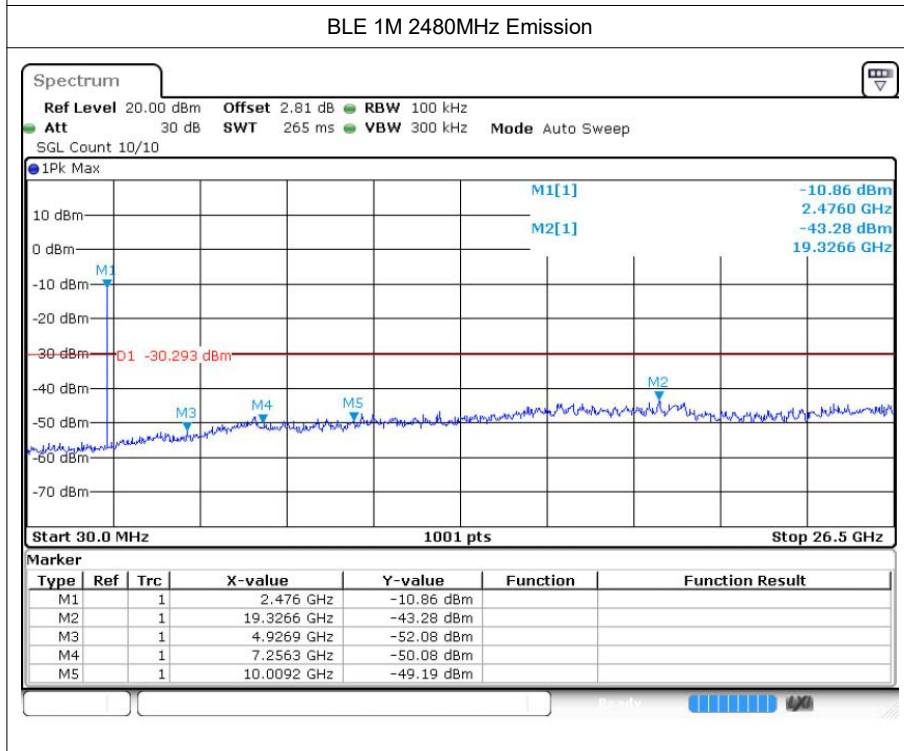
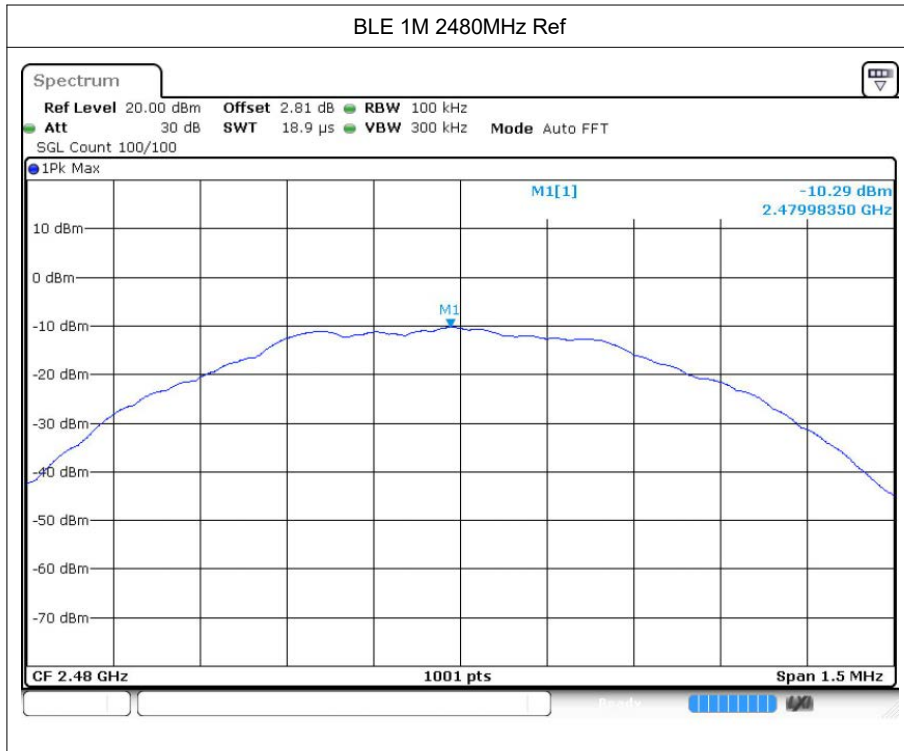
Mode	Frequency (MHz)	Max Value (dBc)	Limit (dBc)	Verdict
BLE 1M	2402	-41.57	-20	Pass
BLE 1M	2440	-37.19	-20	Pass
BLE 1M	2480	-32.99	-20	Pass
BLE 2M	2402	-39.08	-20	Pass
BLE 2M	2440	-39.12	-20	Pass
BLE 2M	2480	-34.74	-20	Pass

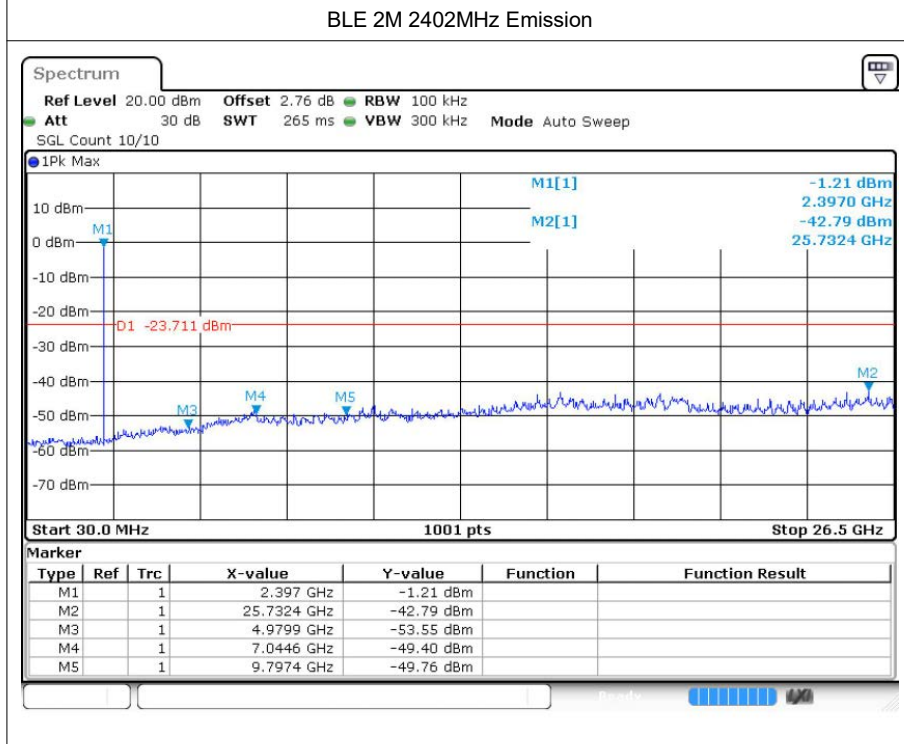
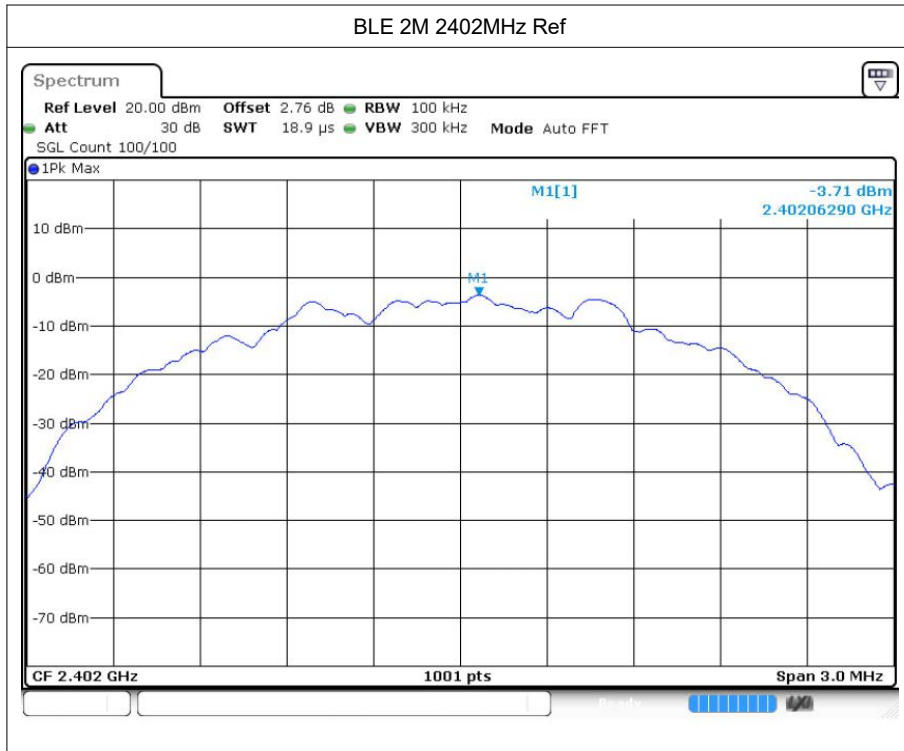


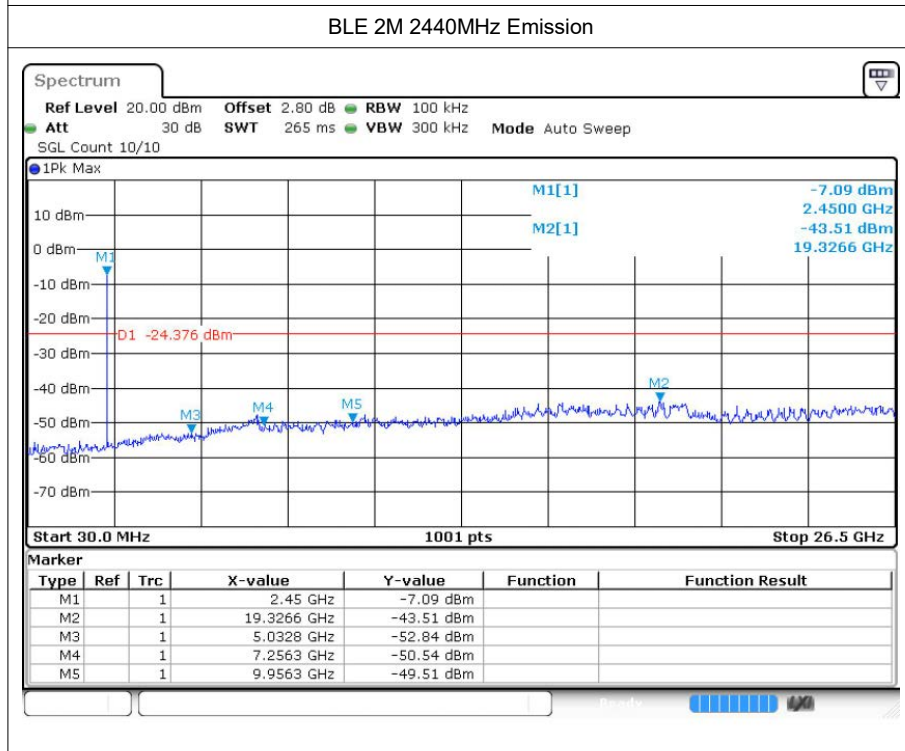
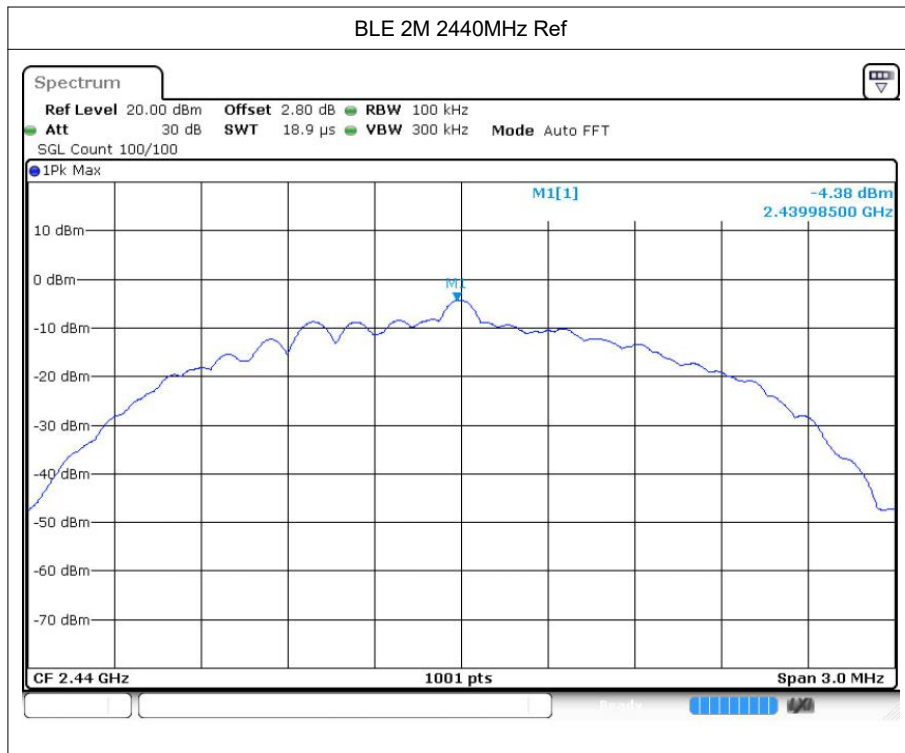
## 6.2 Test Graphs

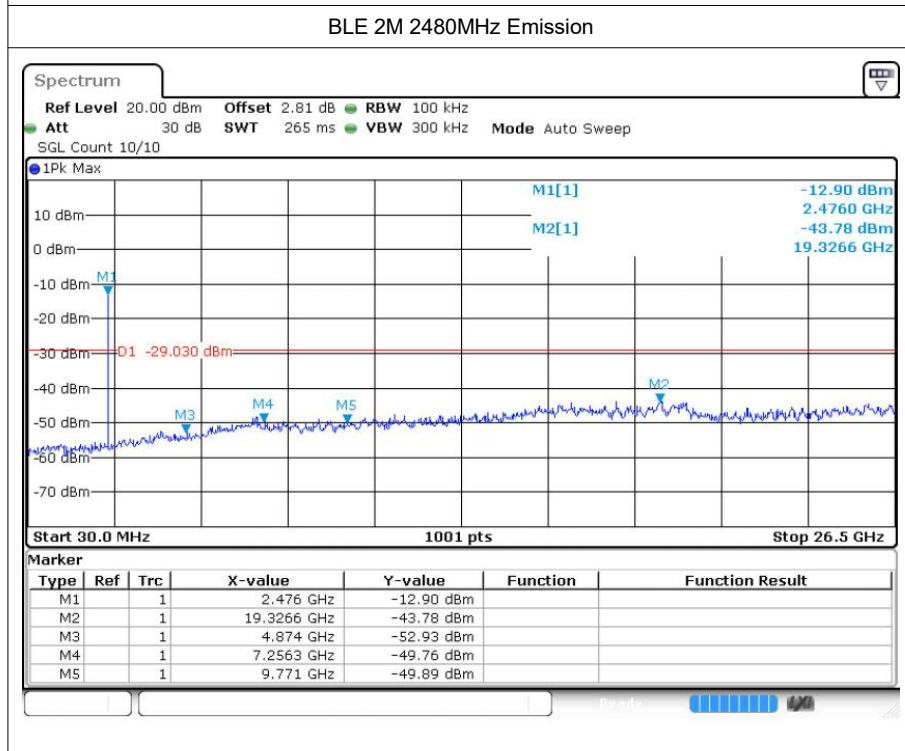
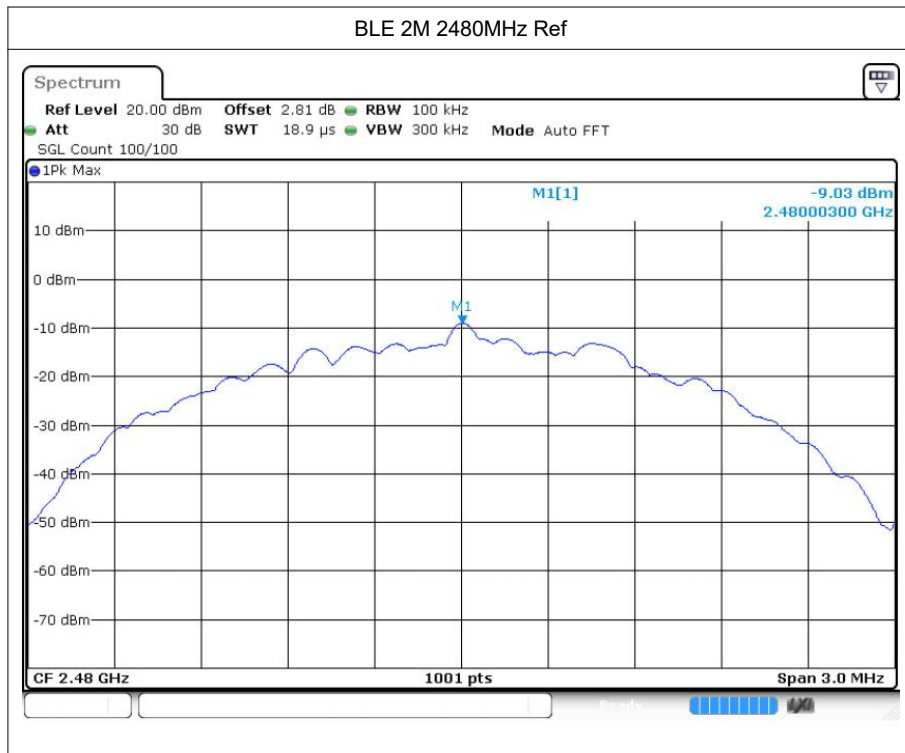












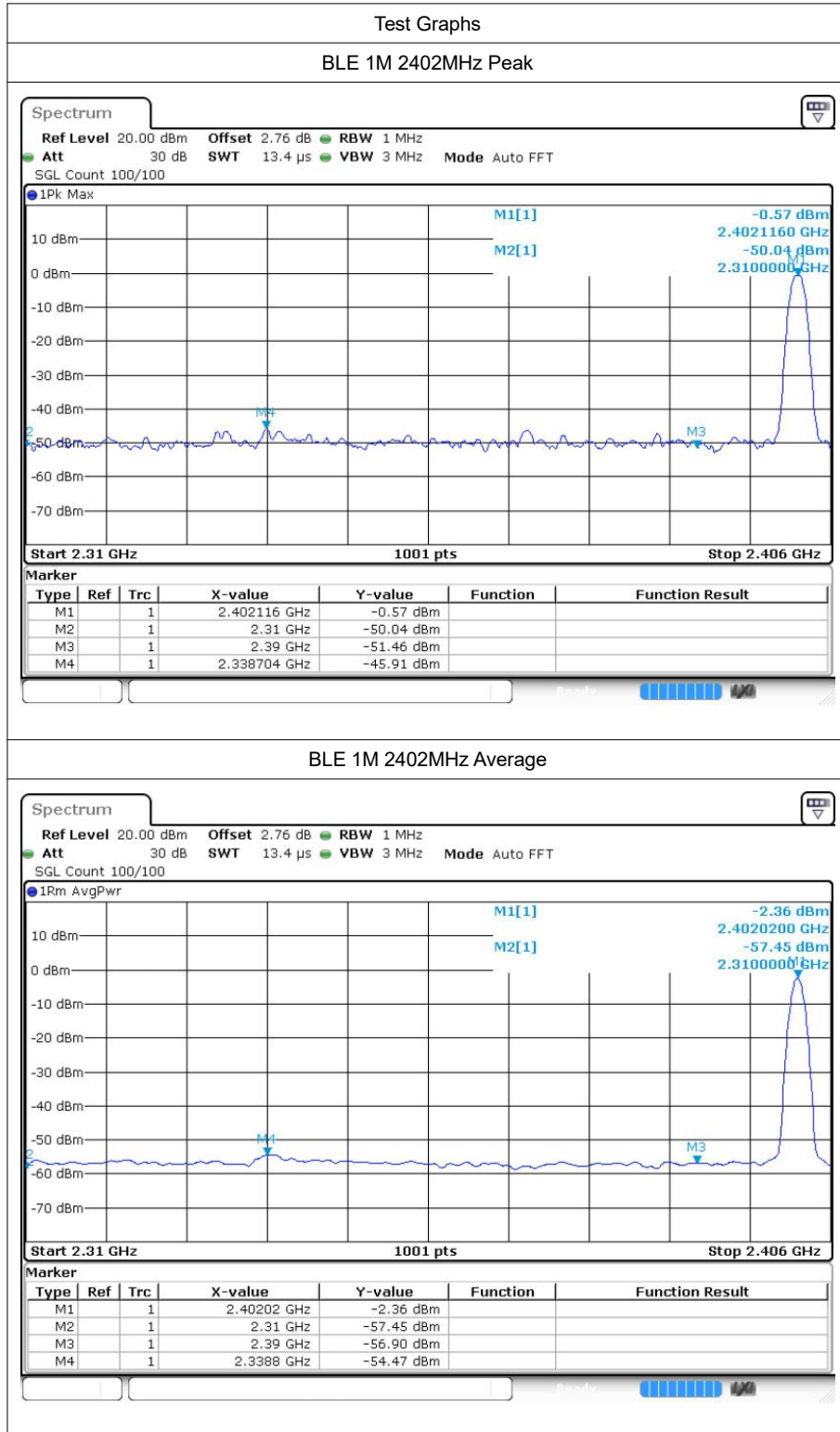


## 7 Restrict Band

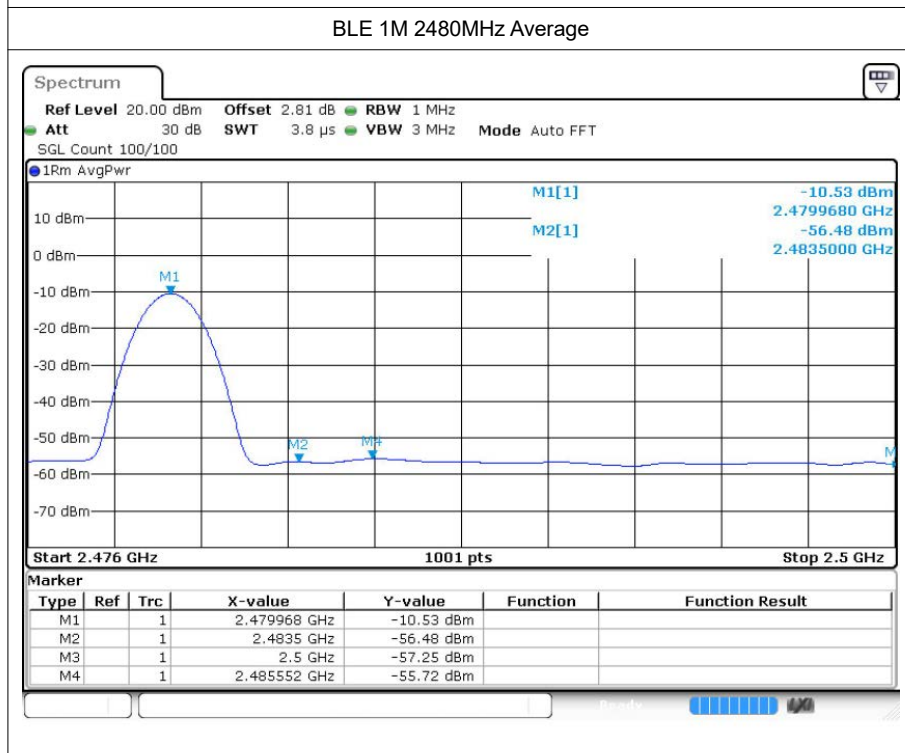
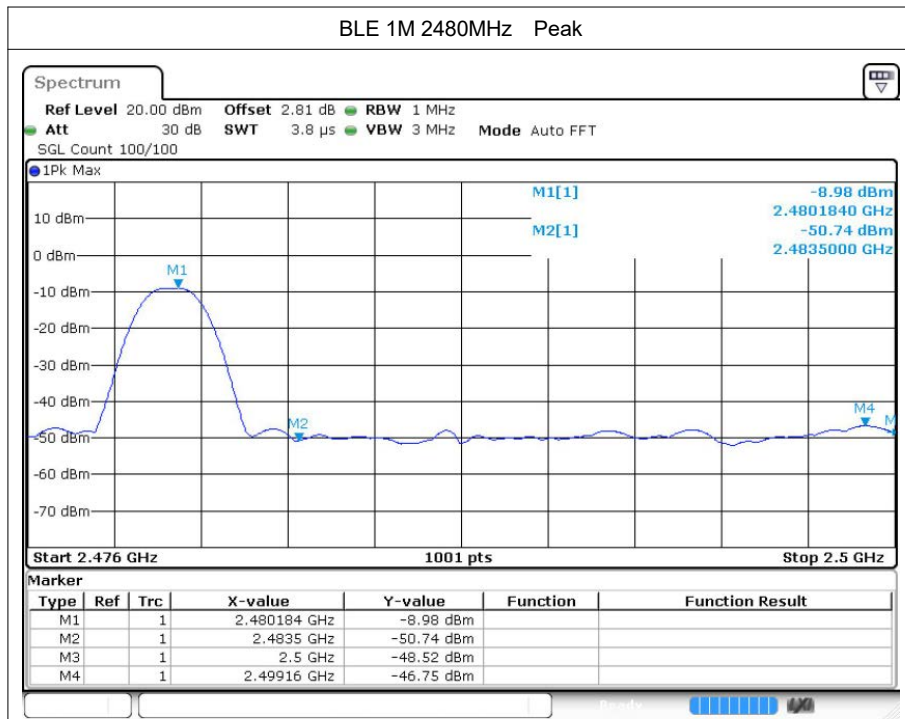
### 7.1 Test Result

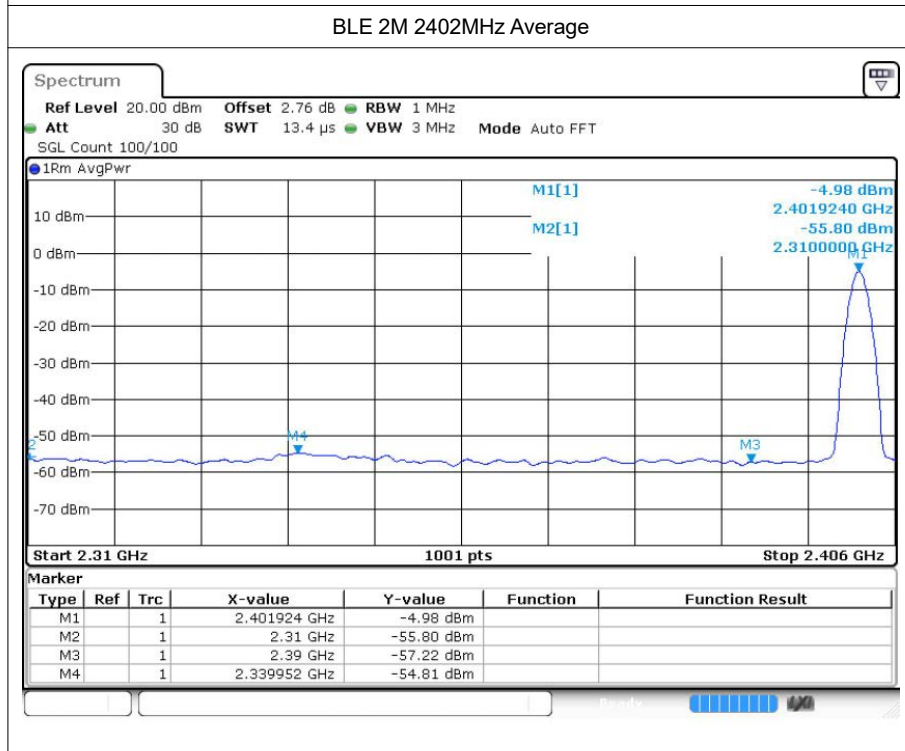
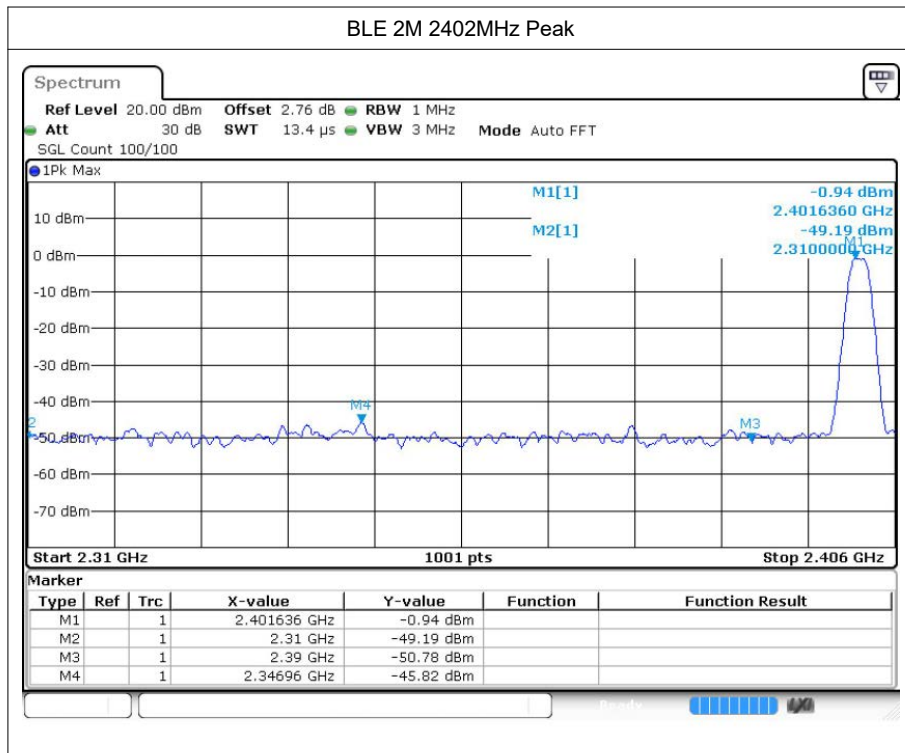
Mode	Frequency (MHz)	Spur Freq (MHz)	Power (dBm)	Gain (dBi)	Duty Factor	E (dBuV/m)	Detector	Limit (dBuV/m)	Verdict
BLE 1M	2402	2310	-50.04	2	-	47.22	Peak	74	Pass
BLE 1M	2402	2310	-57.45	2	0.74	40.55	Average	54	Pass
BLE 1M	2402	2338.704	-45.9	2	-	51.36	Peak	74	Pass
BLE 1M	2402	2338.8	-54.46	2	0.74	43.54	Average	54	Pass
BLE 1M	2402	2390	-51.46	2	-	45.8	Peak	74	Pass
BLE 1M	2402	2390	-56.9	2	0.74	41.1	Average	54	Pass
BLE 1M	2480	2483.5	-50.74	2	-	46.52	Peak	74	Pass
BLE 1M	2480	2483.5	-56.48	2	0.75	41.53	Average	54	Pass
BLE 1M	2480	2499.16	-46.74	2	-	50.52	Peak	74	Pass
BLE 1M	2480	2485.552	-55.71	2	0.75	42.3	Average	54	Pass
BLE 1M	2480	2500	-48.52	2	-	48.74	Peak	74	Pass
BLE 1M	2480	2500	-57.25	2	0.75	40.76	Average	54	Pass
BLE 2M	2402	2310	-49.19	2	-	48.07	Peak	74	Pass
BLE 2M	2402	2310	-55.8	2	2.44	43.9	Average	54	Pass
BLE 2M	2402	2346.96	-45.81	2	-	51.45	Peak	74	Pass
BLE 2M	2402	2339.952	-54.8	2	2.44	44.9	Average	54	Pass
BLE 2M	2402	2390	-50.78	2	-	46.48	Peak	74	Pass
BLE 2M	2402	2390	-57.22	2	2.44	42.48	Average	54	Pass
BLE 2M	2480	2483.5	-51.06	2	-	46.2	Peak	74	Pass
BLE 2M	2480	2483.5	-56.65	2	2.44	43.05	Average	54	Pass
BLE 2M	2480	2498.536	-47.73	2	-	49.53	Peak	74	Pass
BLE 2M	2480	2497.936	-55.91	2	2.44	43.79	Average	54	Pass
BLE 2M	2480	2500	-48.99	2	-	48.27	Peak	74	Pass
BLE 2M	2480	2500	-56.83	2	2.44	42.87	Average	54	Pass

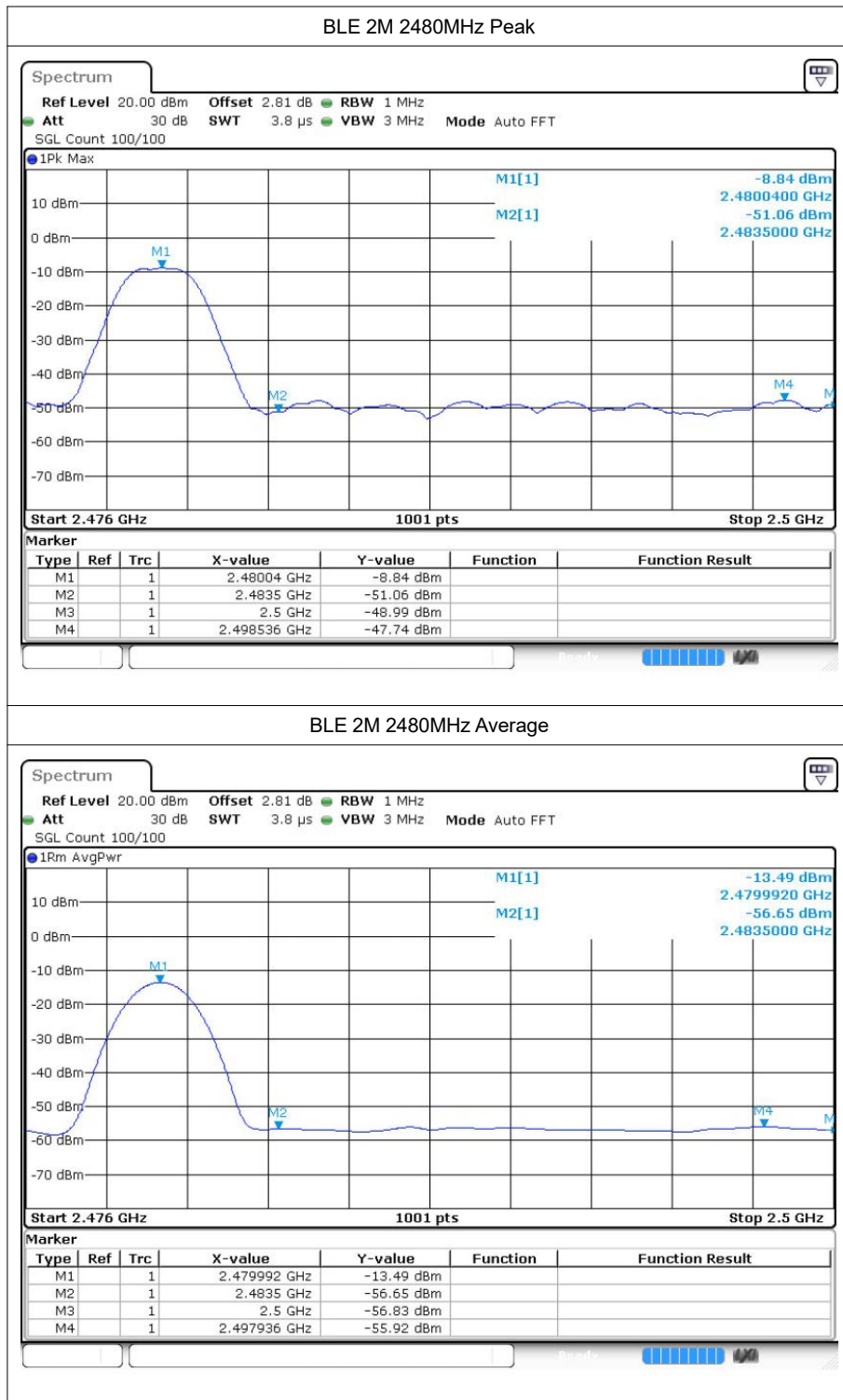
## 7.2 Test Graphs











---The End---