

RF Test Data for Bluetooth LE (Conducted Measurements)

General Description of EUT	
Product Name:	SmartWatch
Test Model:	T3MAX
Sample ID:	202307-0081-1-2#
Environmental Conditions	
Temperature:	25°C
Relative Humidity:	55%
Test Voltage:	DC 3.7V
Test Engineer:	Huang jian ping
Note: For a more detailed features description, please refer to the report TBR-C-202307-0081-3 The report only show the worst case data.	

Contents

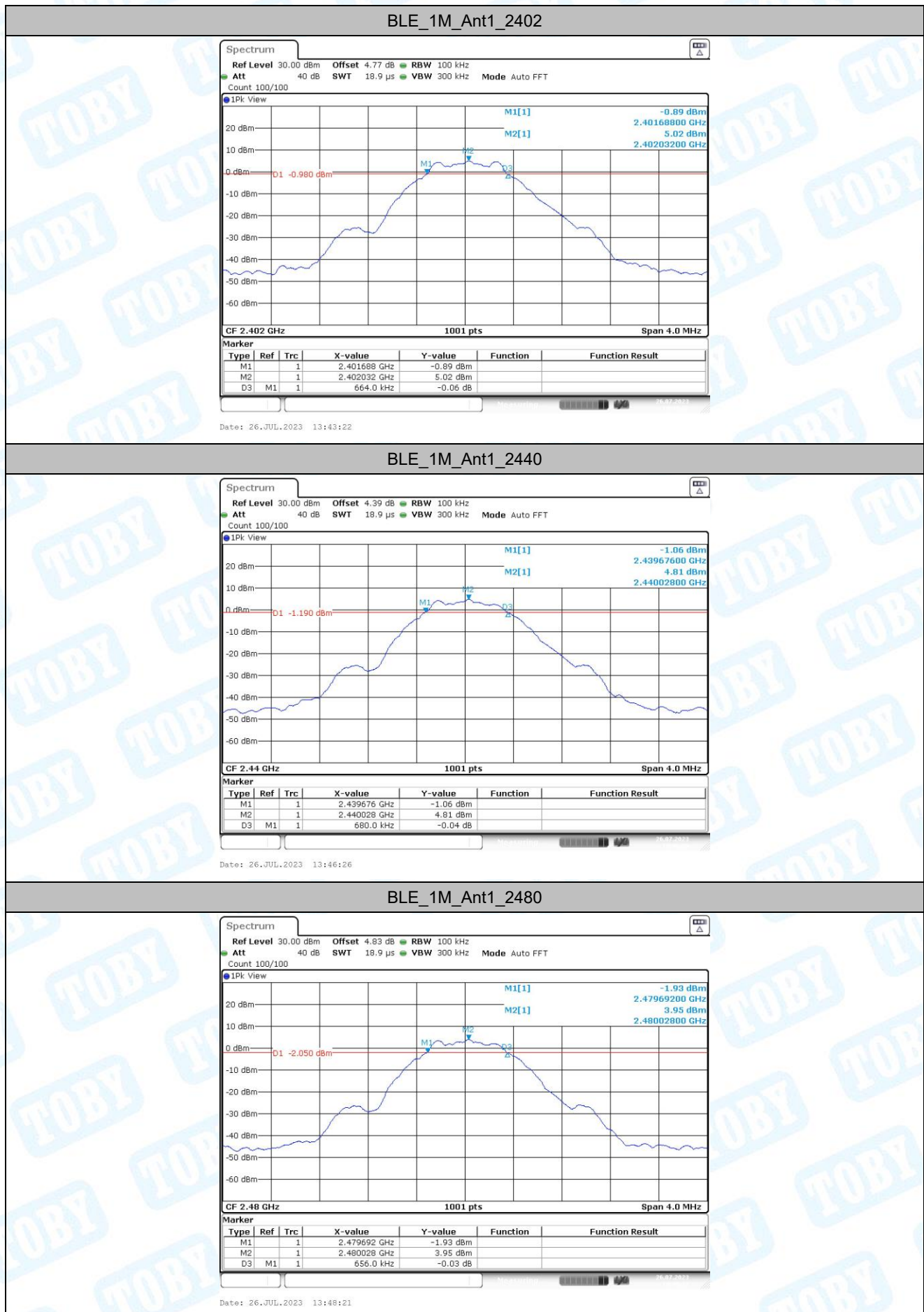
1. -6dB Bandwidth	3
1.1. Test Result	3
1.2. Test Graphs	4
2. Occupied Channel Bandwidth	6
2.1. Test Result	6
2.2. Test Graphs	7
3. Maximum conducted output power	9
3.1. Test Result	9
3.2. Test Graphs	10
4. Maximum power spectral density	12
4.1. Test Result	12
4.2. Test Graphs	13
5. Band edge measurements	15
5.1. Test Result	15
5.2. Test Graphs	16
6. Conducted Spurious Emission	18
6.1. Test Result	18
6.2. Test Graphs	19
7. Duty Cycle	25
7.1. Test Result	25
7.2. Test Graphs	26
8. Emissions in Restricted Bands	28
8.1. Test Result	28
8.2. Test Graphs	29

1. -6dB Bandwidth

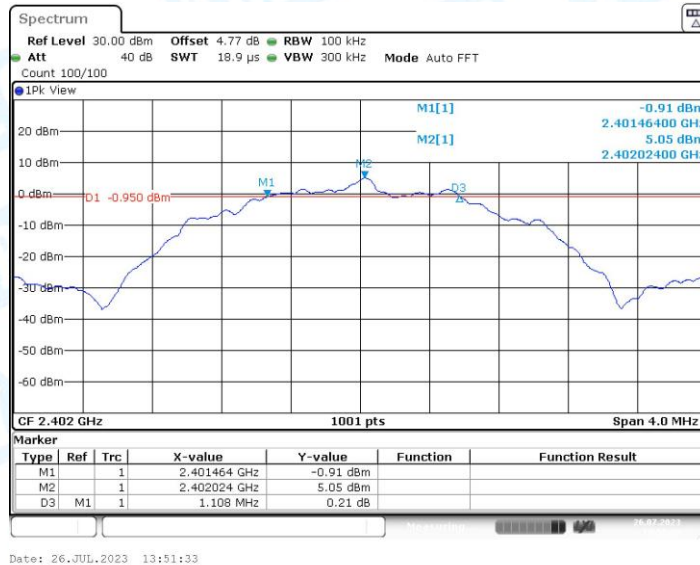
1.1. Test Result

Test Mode	Antenna	Channel	-6dB BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.66	2401.69	2402.35	0.5	PASS
		2440	0.68	2439.68	2440.36	0.5	PASS
		2480	0.66	2479.69	2480.35	0.5	PASS
BLE_2M	Ant1	2402	1.11	2401.46	2402.57	0.5	PASS
		2440	1.09	2439.49	2440.58	0.5	PASS
		2480	0.96	2479.46	2480.42	0.5	PASS

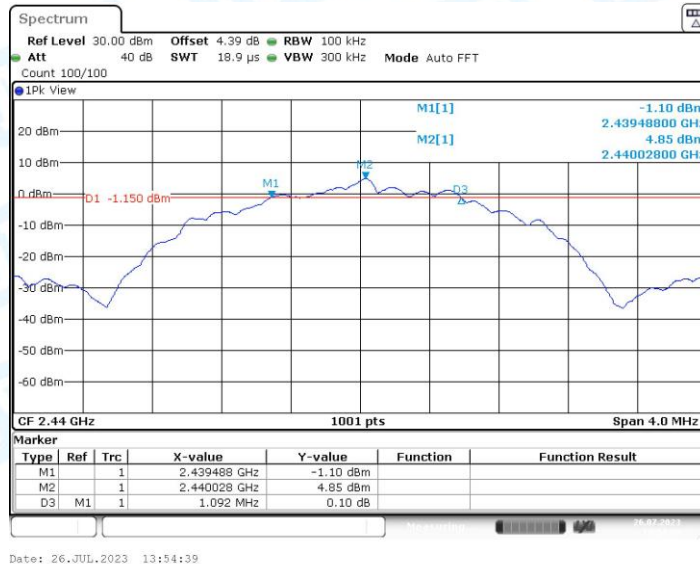
1.2. Test Graphs



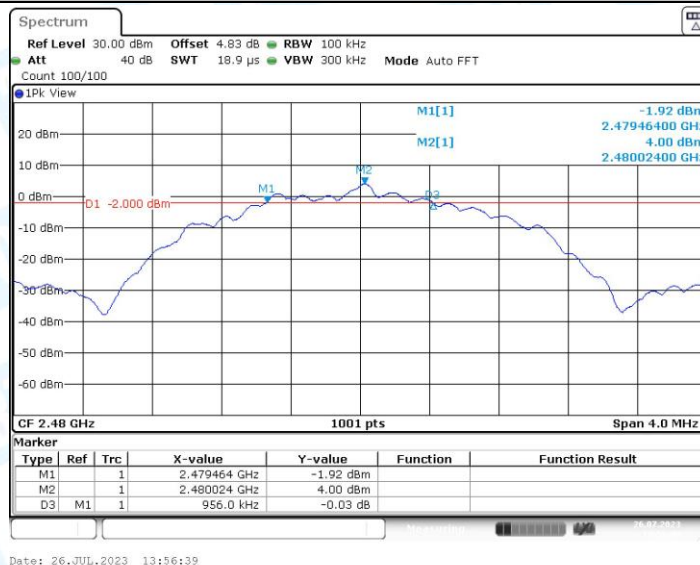
BLE_2M_Ant1_2402



BLE_2M_Ant1_2440



BLE_2M_Ant1_2480

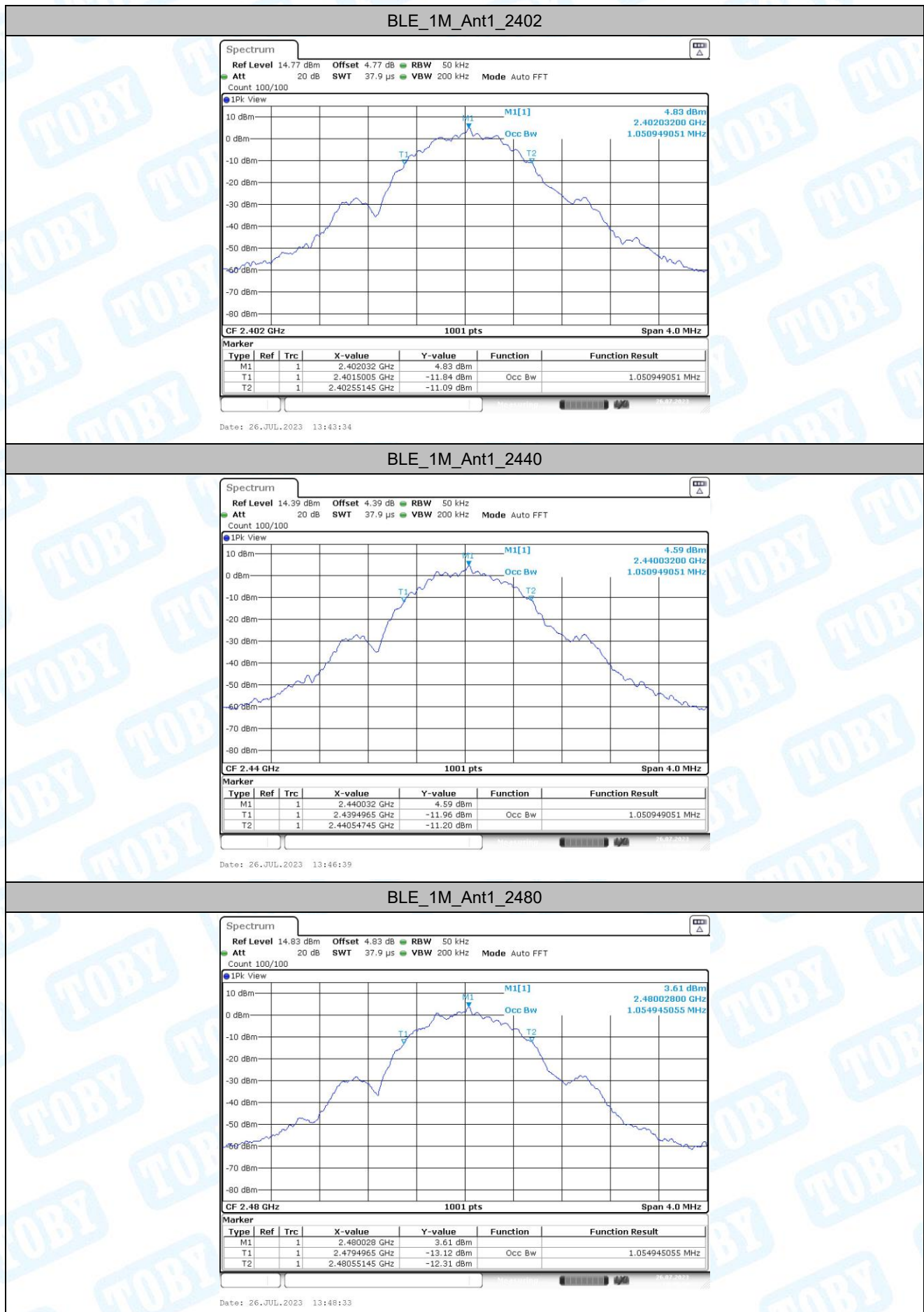


2. Occupied Channel Bandwidth

2.1. Test Result

Test Mode	Antenna	Channel	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	1.051	2401.5005	2402.5514	---	---
		2440	1.051	2439.4965	2440.5475	---	---
		2480	1.055	2479.4965	2480.5514	---	---
BLE_2M	Ant1	2402	2.058	2401.0050	2403.0629	---	---
		2440	2.07	2438.9970	2441.0669	---	---
		2480	2.058	2479.0050	2481.0629	---	---

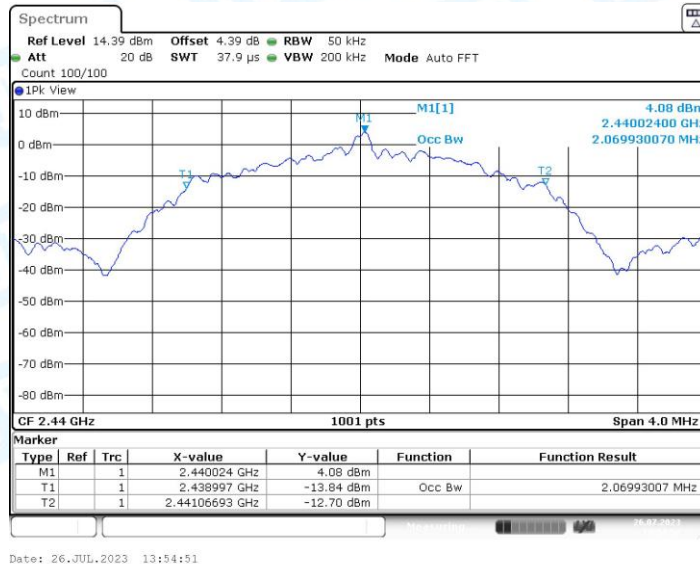
2.2. Test Graphs



BLE_2M_Ant1_2402



BLE_2M_Ant1_2440



BLE_2M_Ant1_2480

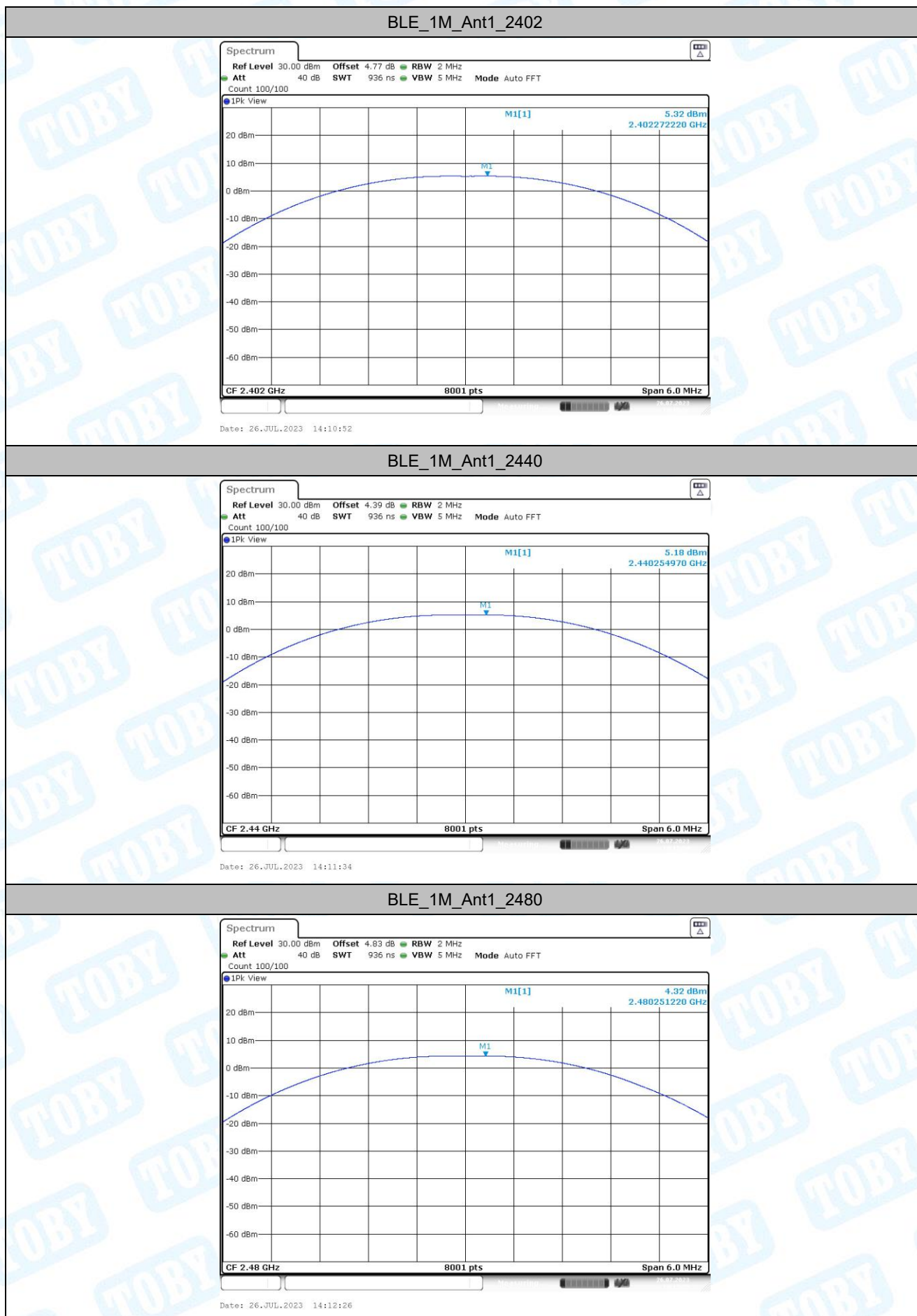


3. Maximum conducted output power

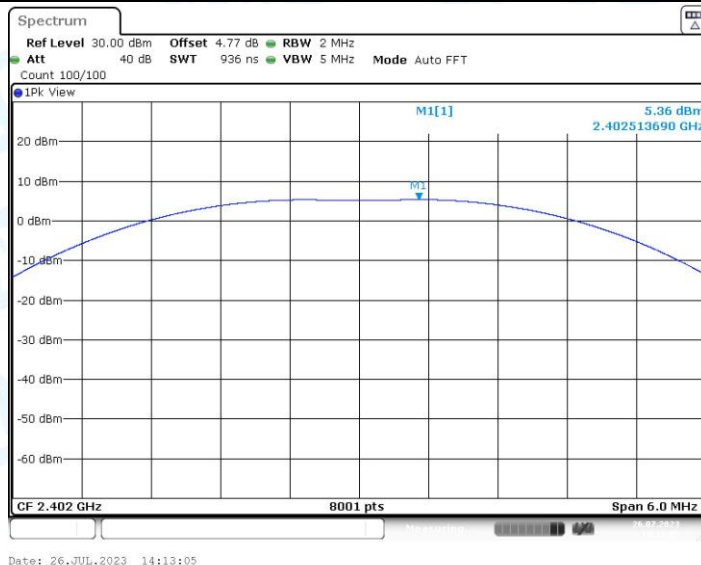
3.1. Test Result

Test Mode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	5.32	≤30	PASS
		2440	5.18	≤30	PASS
		2480	4.32	≤30	PASS
BLE_2M	Ant1	2402	5.36	≤30	PASS
		2440	5.17	≤30	PASS
		2480	4.34	≤30	PASS

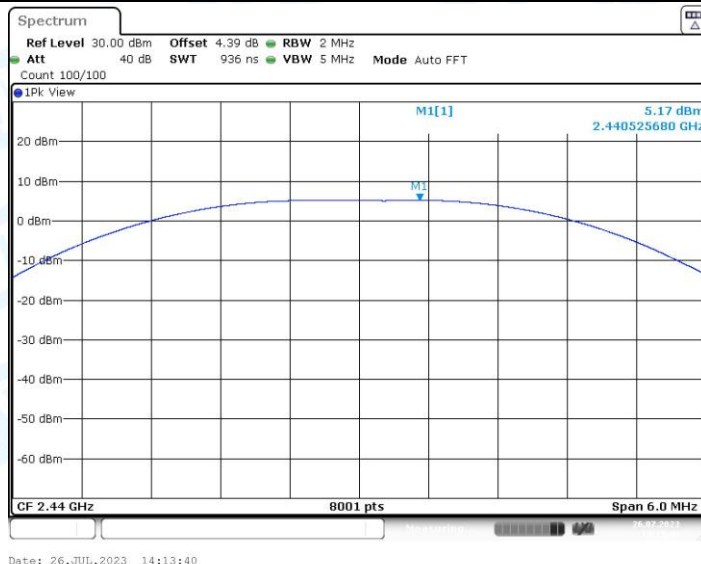
3.2. Test Graphs



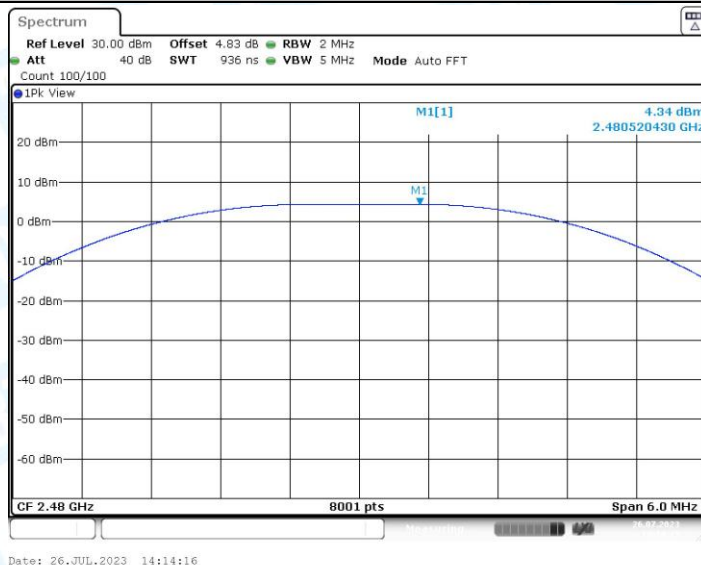
BLE_2M_Ant1_2402



BLE_2M_Ant1_2440



BLE_2M_Ant1_2480

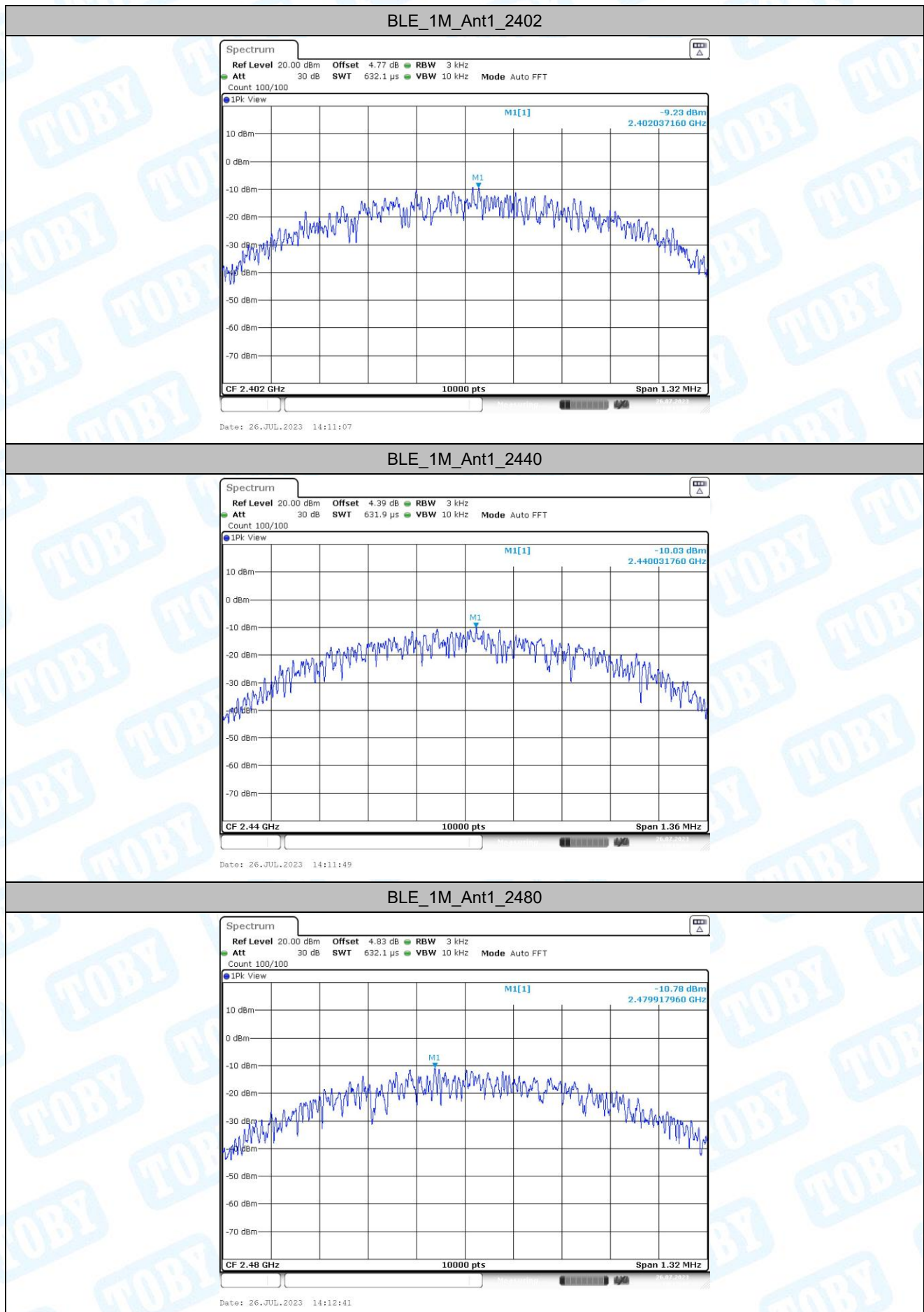


4. Maximum power spectral density

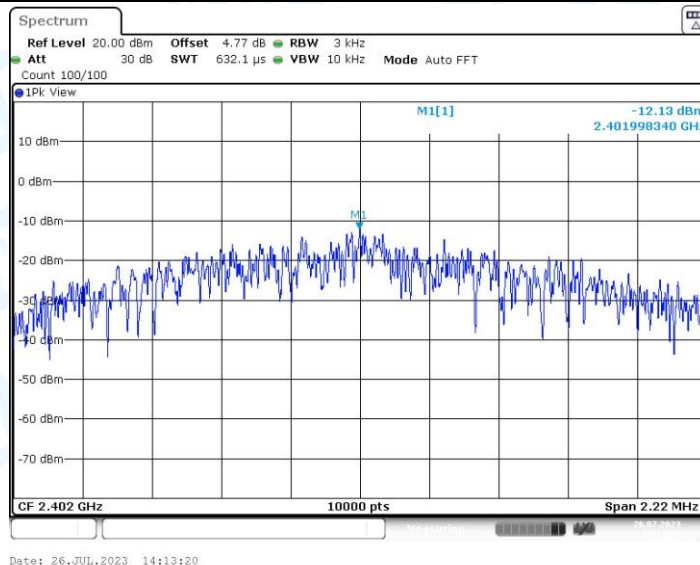
4.1. Test Result

Test Mode	Antenna	Channel	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-9.23	≤8.00	PASS
		2440	-10.03	≤8.00	PASS
		2480	-10.78	≤8.00	PASS
BLE_2M	Ant1	2402	-12.13	≤8.00	PASS
		2440	-13.14	≤8.00	PASS
		2480	-12.91	≤8.00	PASS

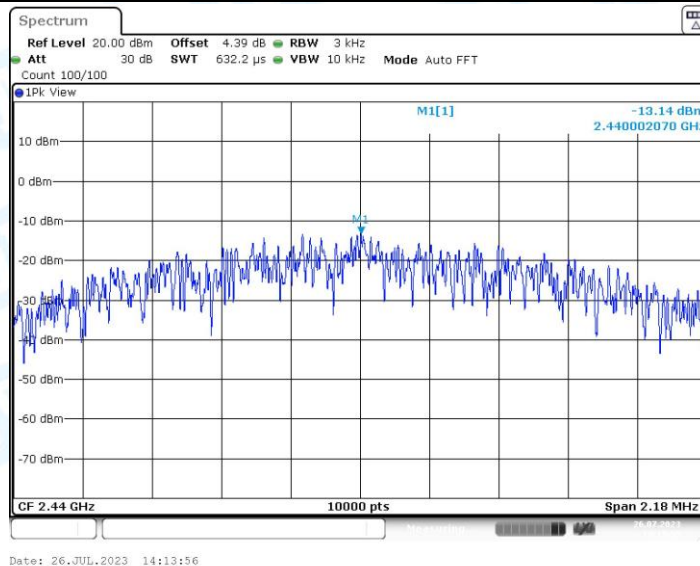
4.2. Test Graphs



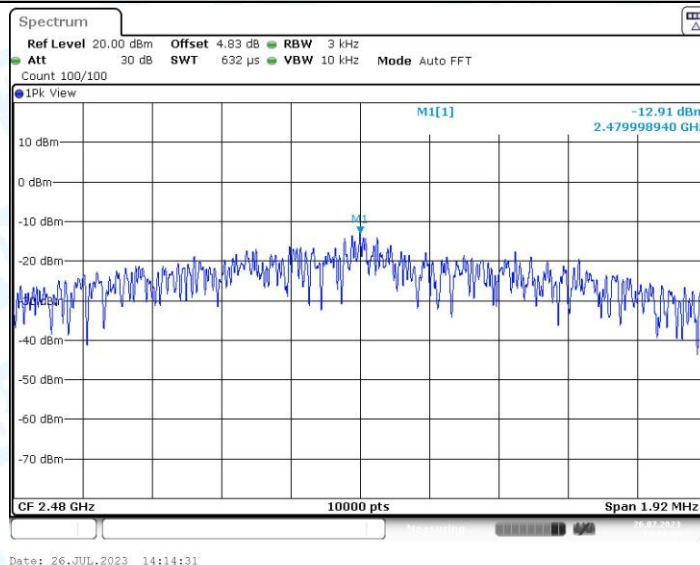
BLE_2M_Ant1_2402



BLE_2M_Ant1_2440



BLE_2M_Ant1_2480

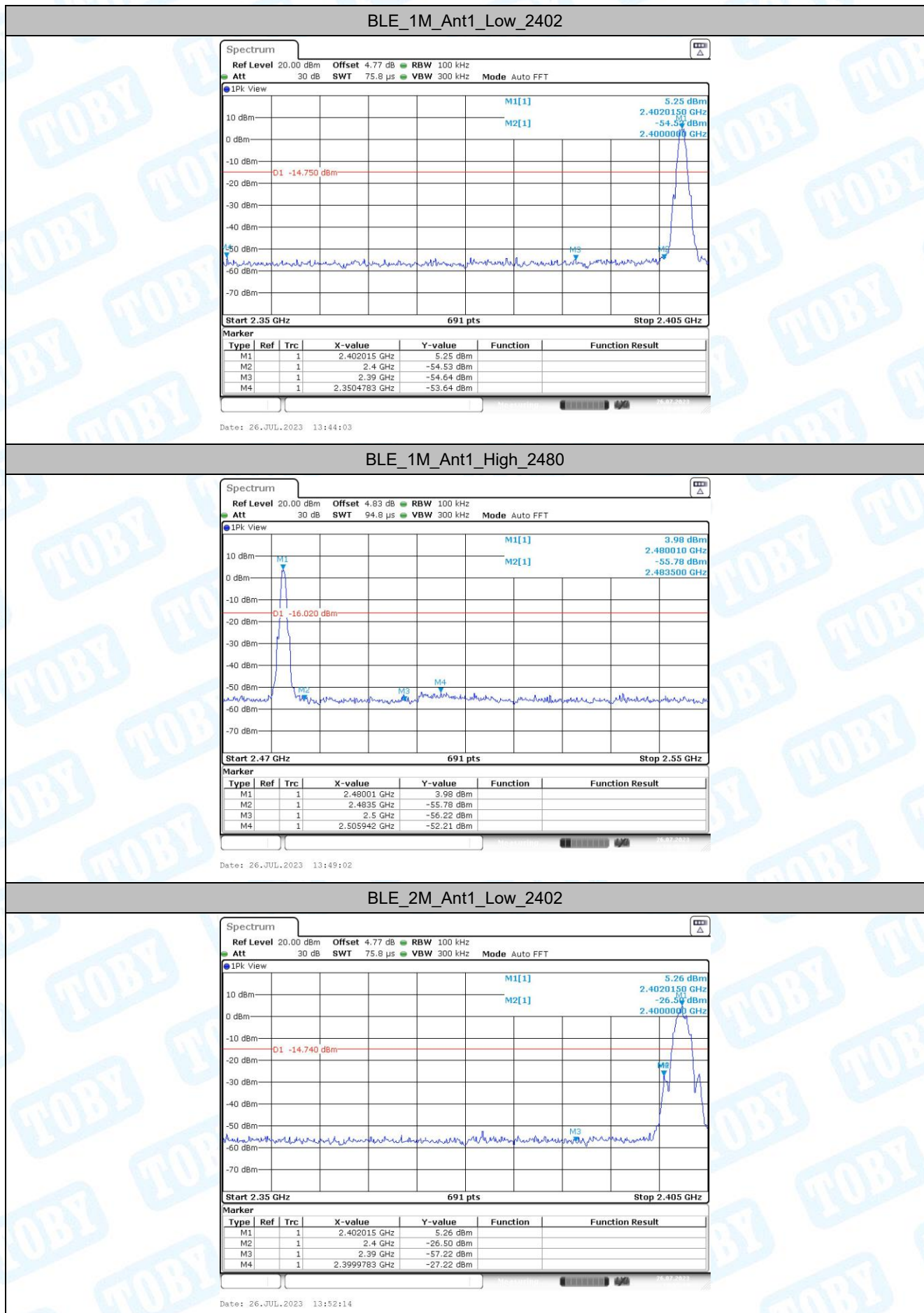


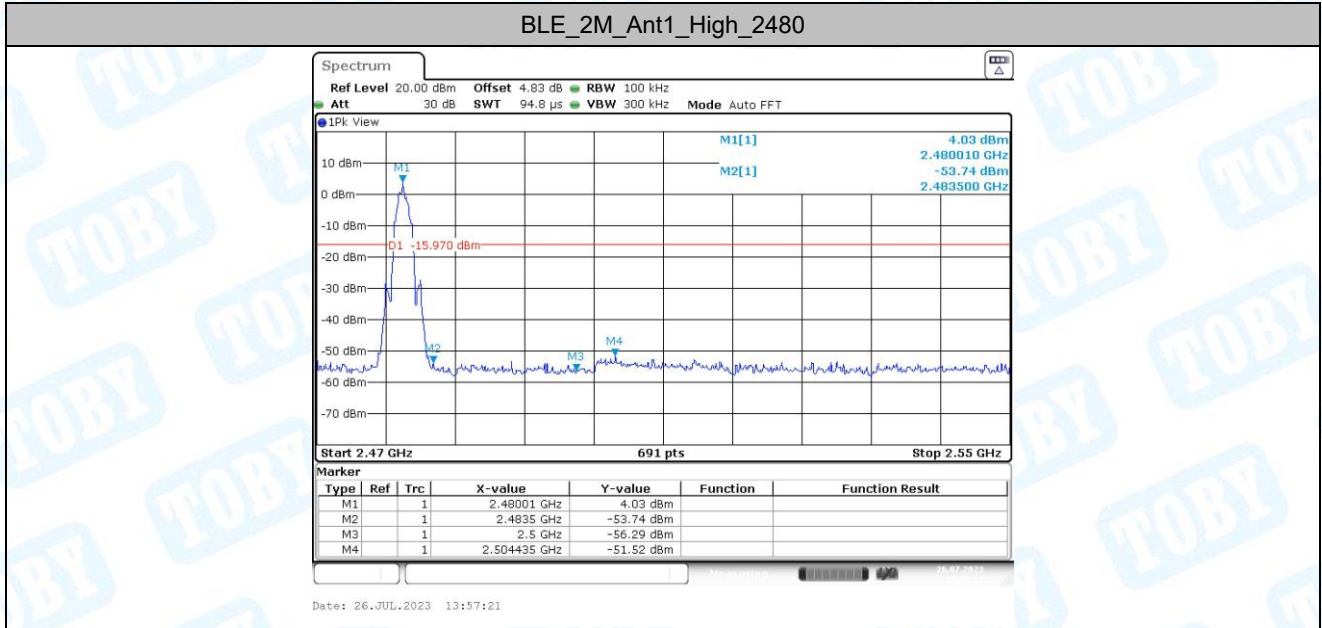
5. Band edge measurements

5.1. Test Result

Test Mode	Antenna	ChName	Channel	Ref.Level[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	5.25	-53.64	≤-14.75	PASS
		High	2480	3.98	-52.21	≤-16.02	PASS
BLE_2M	Ant1	Low	2402	5.26	-27.22	≤-14.74	PASS
		High	2480	4.03	-51.52	≤-15.97	PASS

5.2. Test Graphs



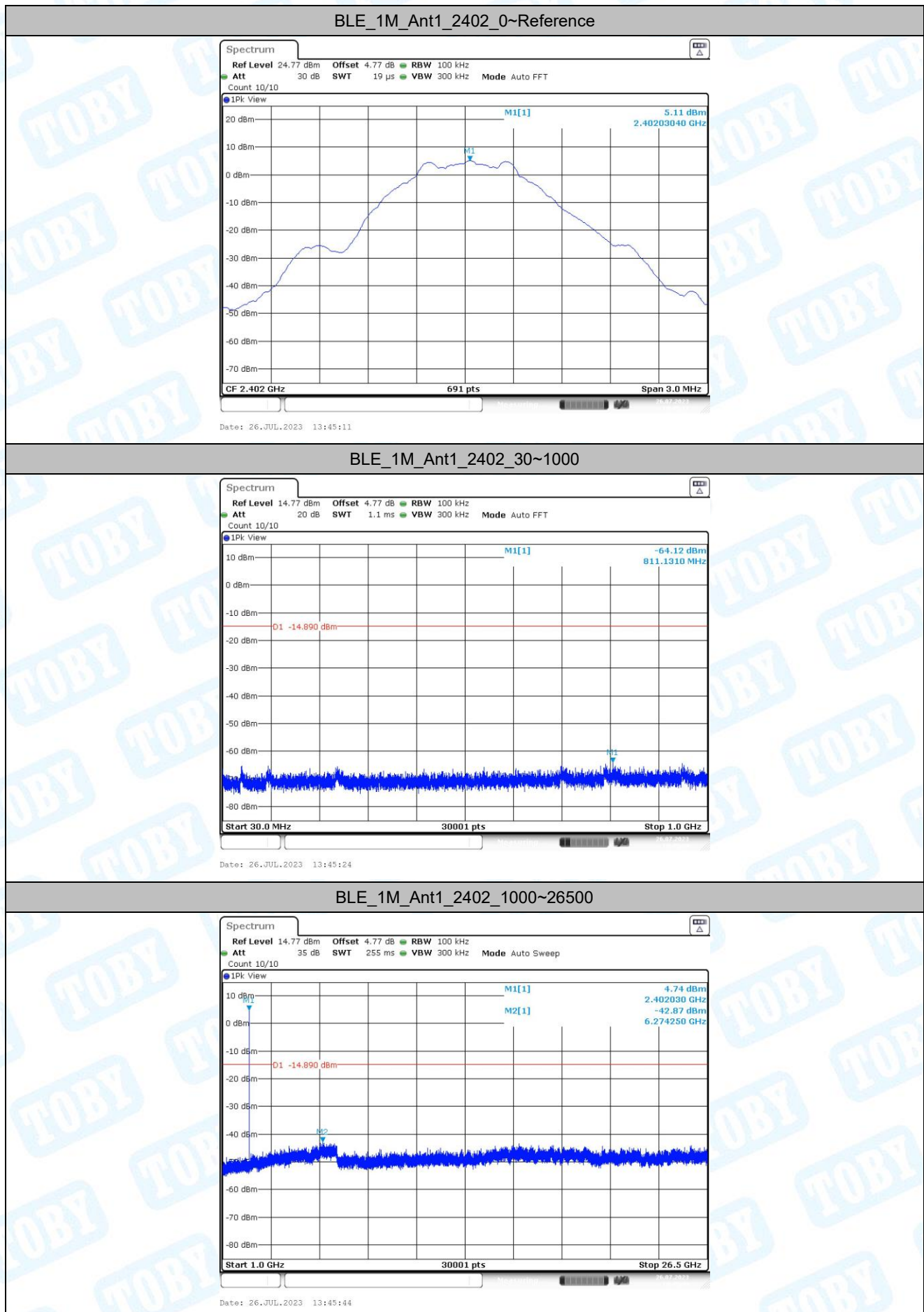


6. Conducted Spurious Emission

6.1. Test Result

Test Mode	Antenna	Channel	Freq. Range [MHz]	Ref. Level [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	Reference	5.11	5.11	---	PASS
			30~1000	5.11	-64.12	≤-14.89	PASS
			1000~26500	5.11	-42.87	≤-14.89	PASS
		2440	Reference	4.85	4.85	---	PASS
			30~1000	4.85	-64.79	≤-15.15	PASS
			1000~26500	4.85	-42.51	≤-15.15	PASS
		2480	Reference	3.91	3.91	---	PASS
			30~1000	3.91	-63.69	≤-16.09	PASS
			1000~26500	3.91	-42.34	≤-16.09	PASS
BLE_2M	Ant1	2402	Reference	5.16	5.16	---	PASS
			30~1000	5.16	-64.1	≤-14.84	PASS
			1000~26500	5.16	-42.97	≤-14.84	PASS
		2440	Reference	4.89	4.89	---	PASS
			30~1000	4.89	-63.63	≤-15.11	PASS
			1000~26500	4.89	-42.88	≤-15.11	PASS
		2480	Reference	3.95	3.95	---	PASS
			30~1000	3.95	-63.11	≤-16.05	PASS
			1000~26500	3.95	-43.01	≤-16.05	PASS

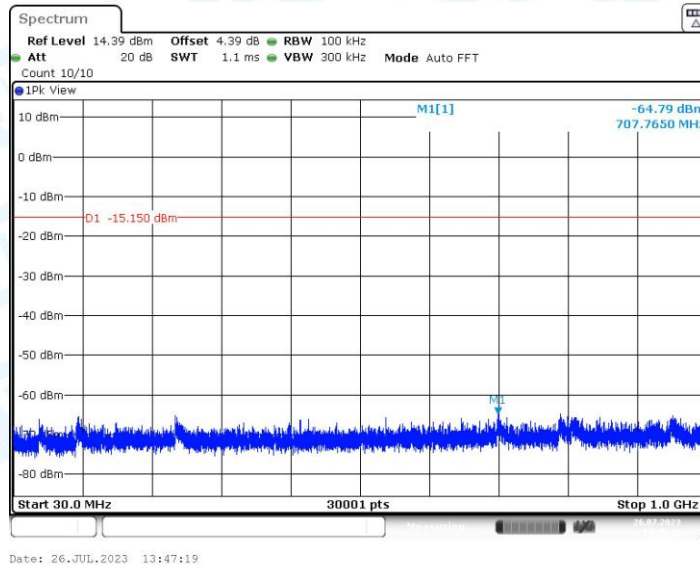
6.2. Test Graphs



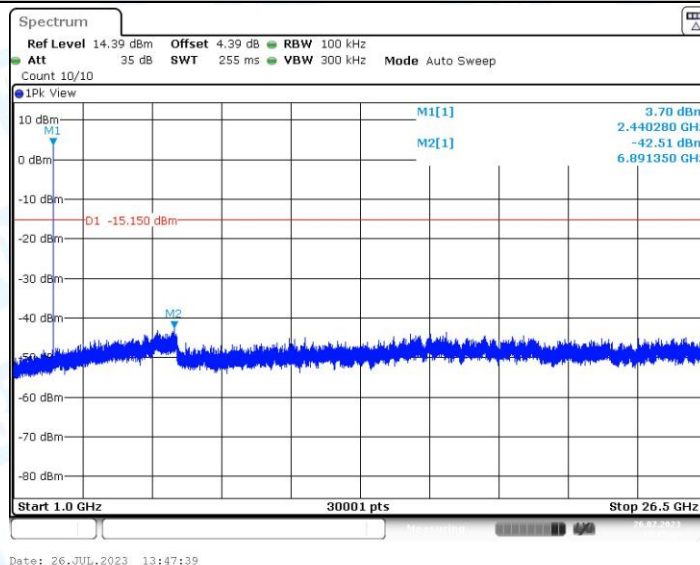
BLE_1M_Ant1_2440_0~Reference



BLE_1M_Ant1_2440_30~1000



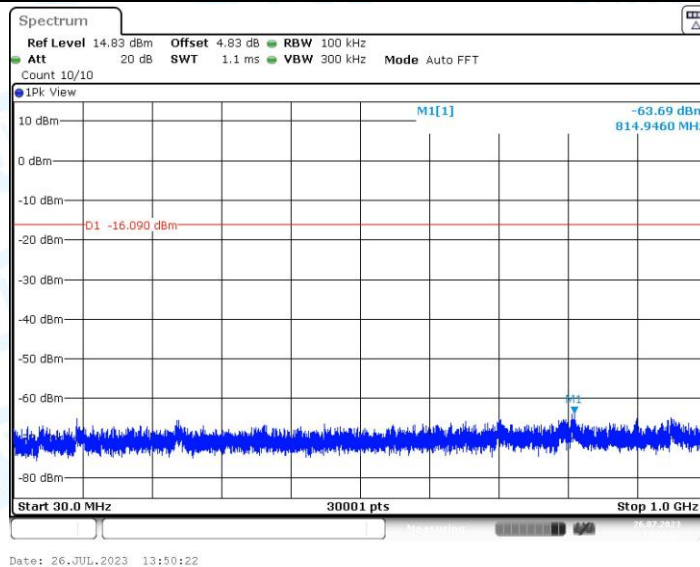
BLE_1M_Ant1_2440_1000~26500



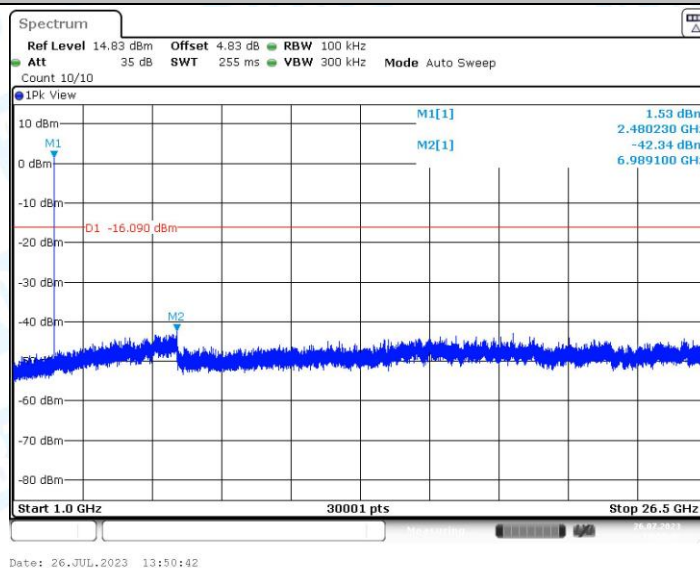
BLE_1M_Ant1_2480_0~Reference



BLE_1M_Ant1_2480_30~1000



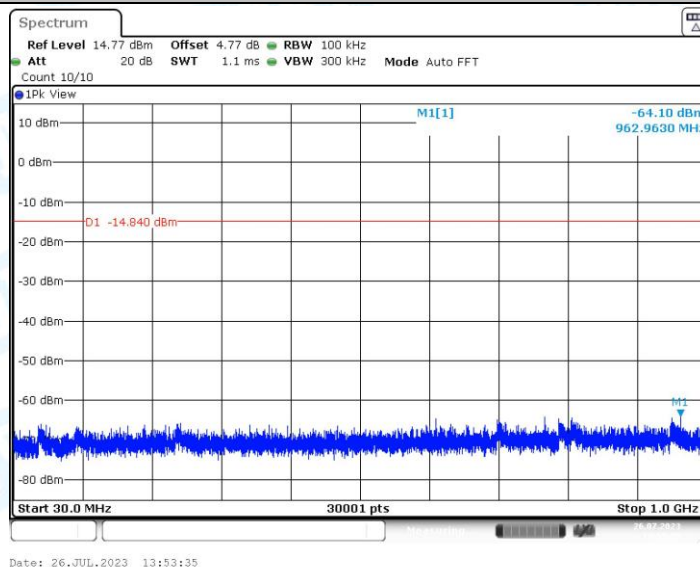
BLE_1M_Ant1_2480_1000~26500



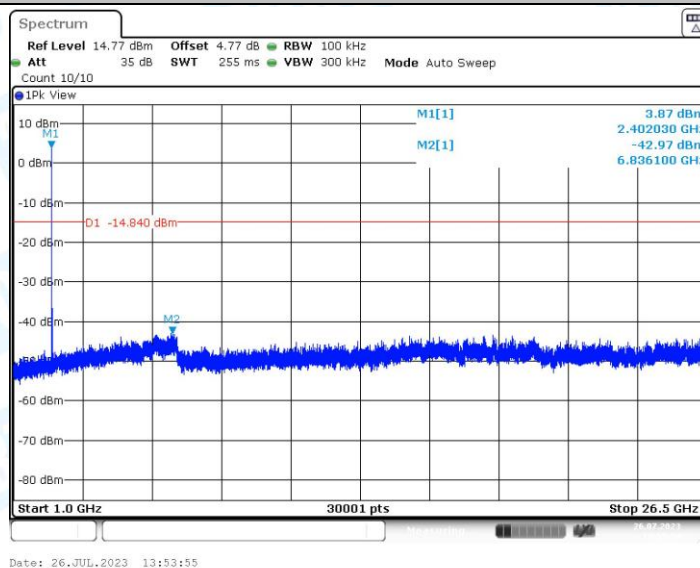
BLE_2M_Ant1_2402_0~Reference



BLE_2M_Ant1_2402_30~1000



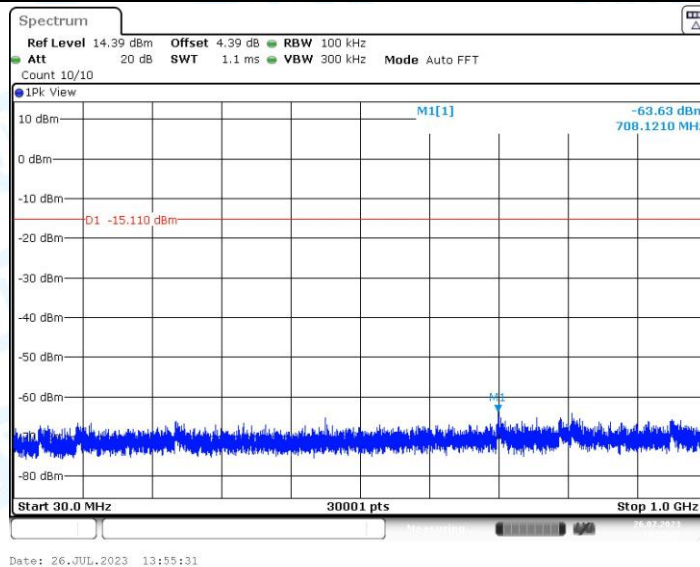
BLE_2M_Ant1_2402_1000~26500



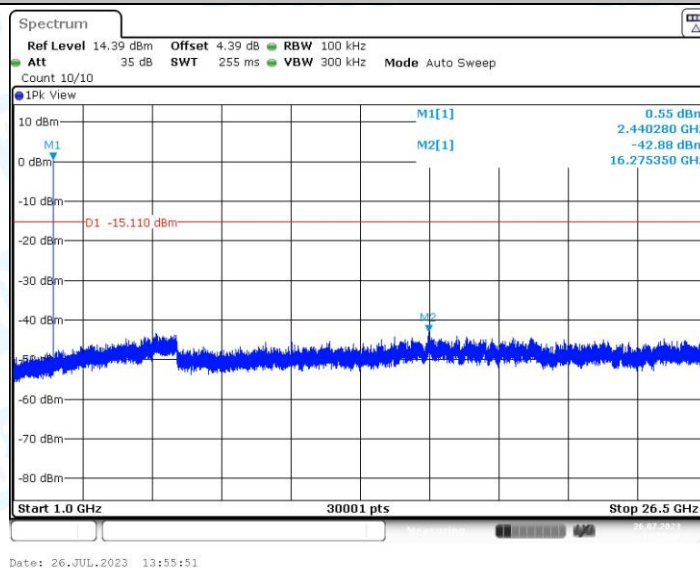
BLE_2M_Ant1_2440_0~Reference



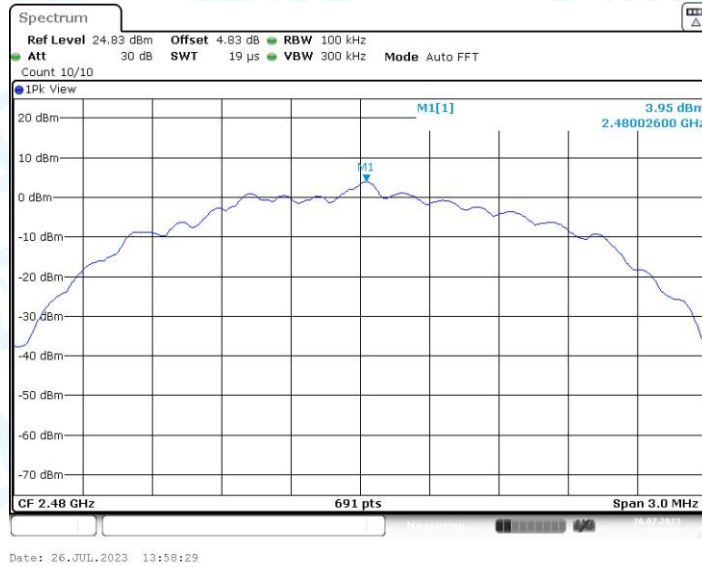
BLE_2M_Ant1_2440_30~1000



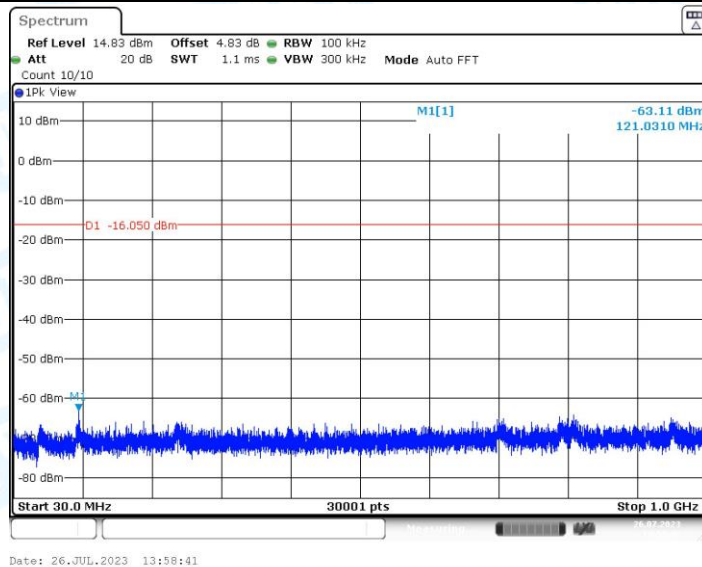
BLE_2M_Ant1_2440_1000~26500



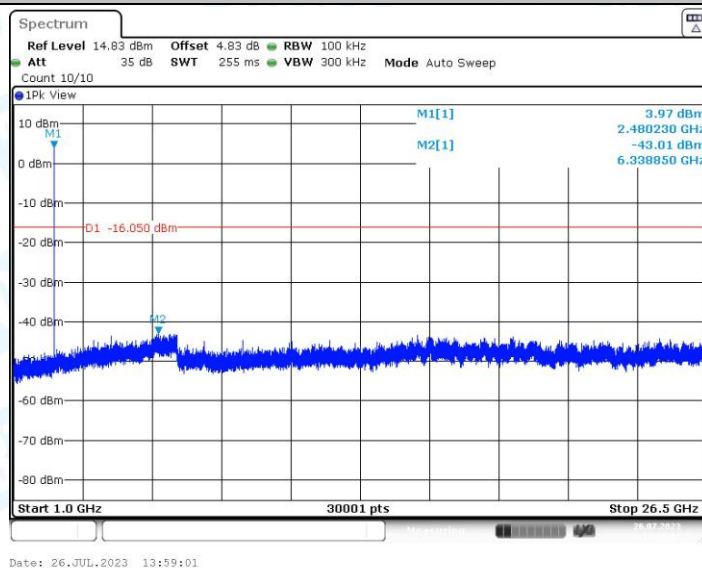
BLE_2M_Ant1_2480_0~Reference



BLE_2M_Ant1_2480_30~1000



BLE_2M_Ant1_2480_1000~26500

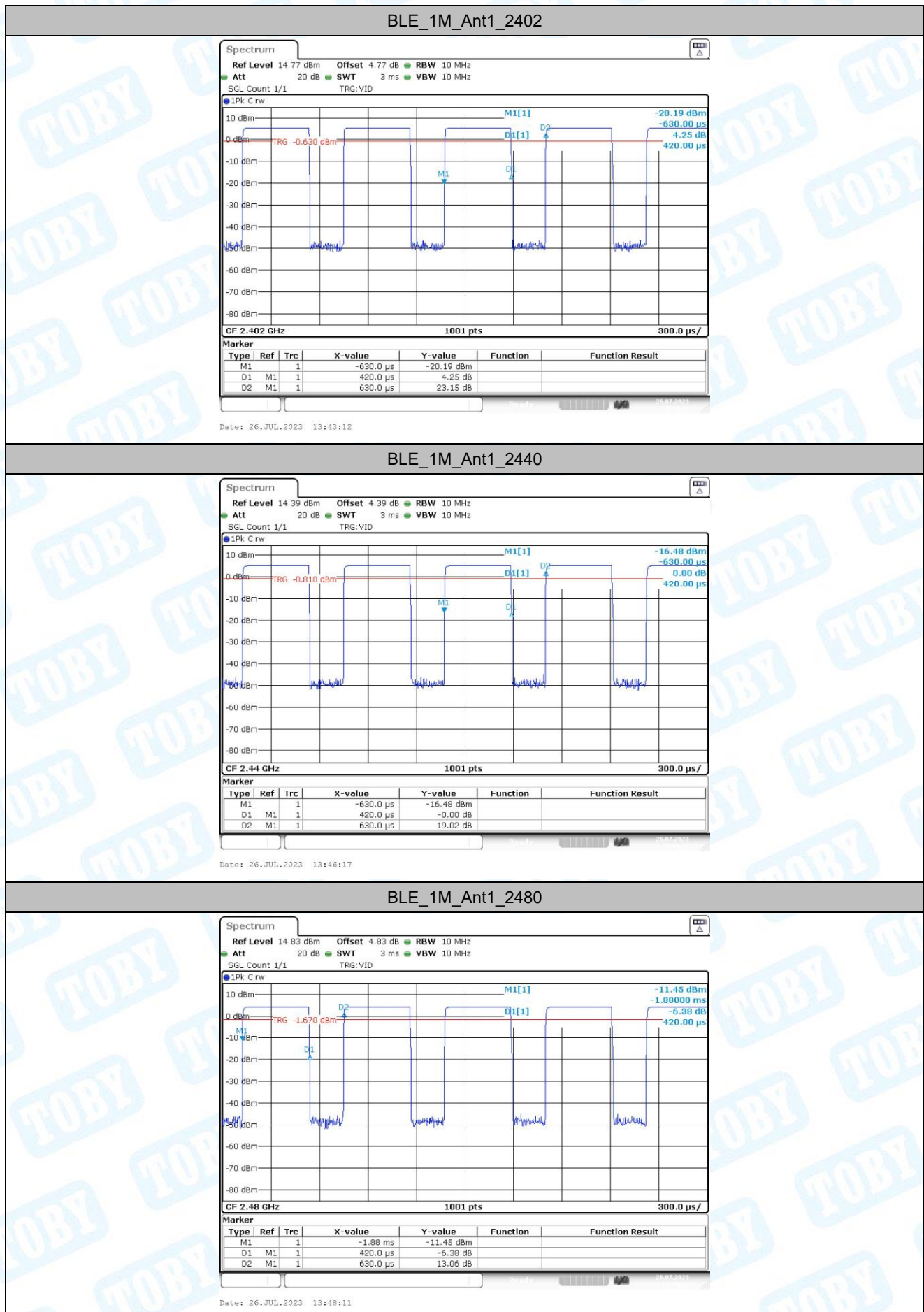


7. Duty Cycle

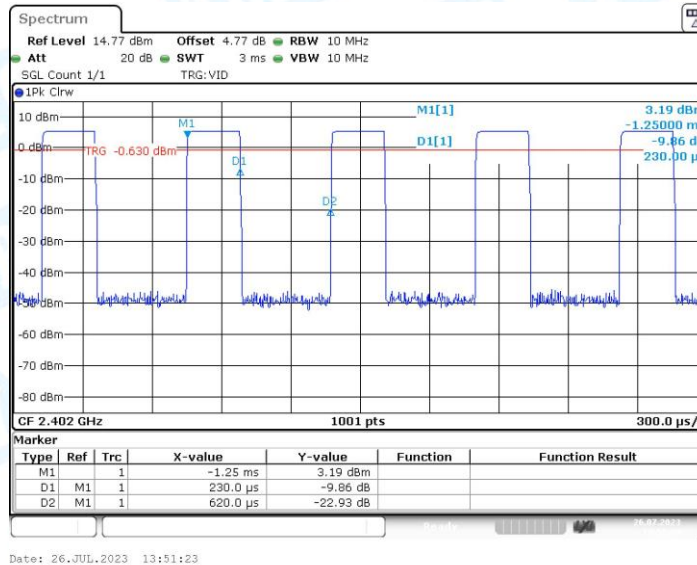
7.1. Test Result

Test Mode	Antenna	Channel	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]	1/T [KHz]	Limit	Verdict
BLE_1M	Ant1	2402	0.42	0.63	66.67	2.38	---	---
		2440	0.42	0.63	66.67	2.38	---	---
		2480	0.42	0.63	66.67	2.38	---	---
BLE_2M	Ant1	2402	0.23	0.62	37.10	4.35	---	---
		2440	0.23	0.62	37.10	4.35	---	---
		2480	0.23	0.63	36.51	4.35	---	---
Note:1/T=1/ Transmission Duration								

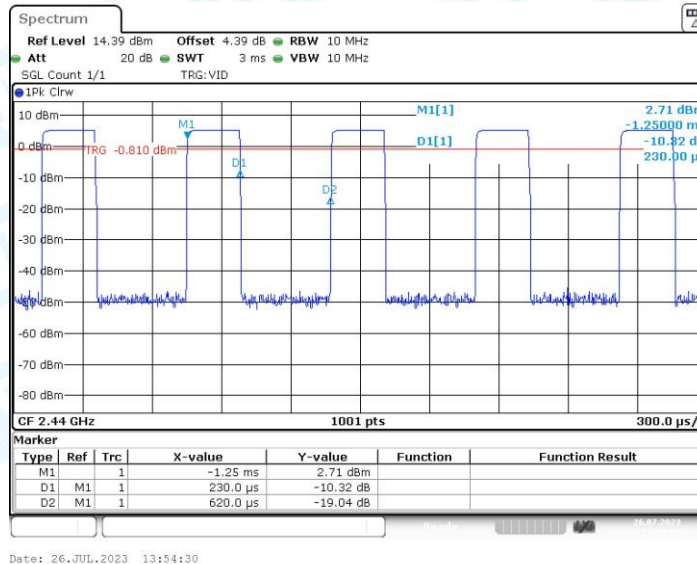
7.2. Test Graphs



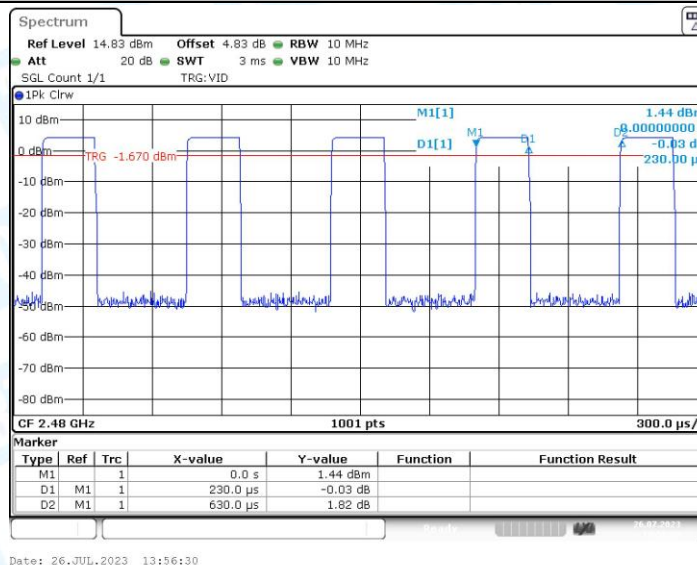
BLE_2M_Ant1_2402



BLE_2M_Ant1_2440



BLE_2M_Ant1_2480



8. Emissions in Restricted Bands

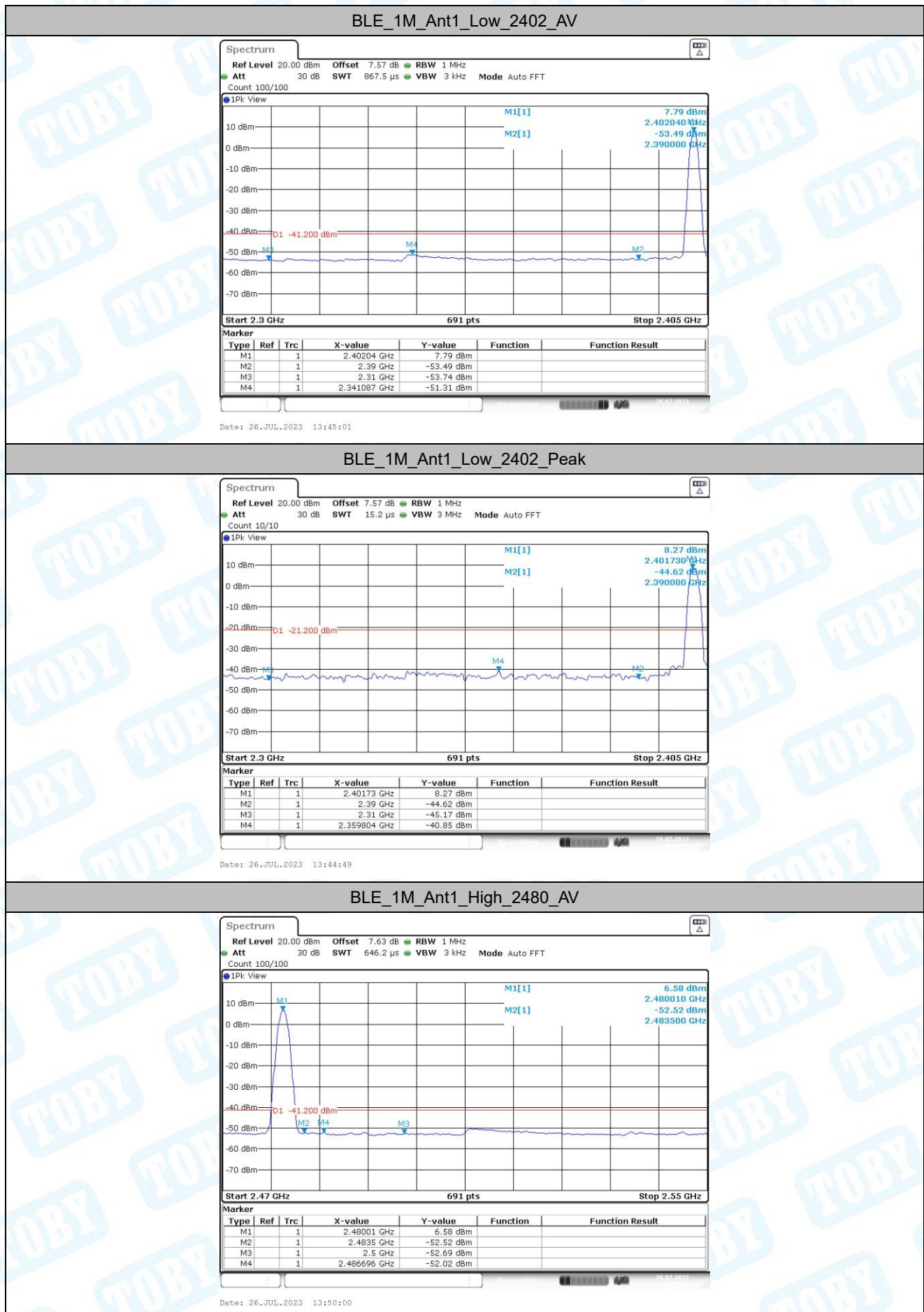
8.1. Test Result

Test Mode	Antenna	ChName	Channel	Detector	Freq. [MHz]	Result [dBm]	Limit [dBm]	Verdict
BLE_1M	Ant1	Low	2402	AV	2310.000	-53.74	≤-41.20	PASS
				AV	2341.087	-51.31	≤-41.20	PASS
				AV	2390.000	-53.49	≤-41.20	PASS
				Peak	2310.000	-45.17	≤-21.20	PASS
				Peak	2359.804	-40.85	≤-21.20	PASS
				Peak	2390.000	-44.62	≤-21.20	PASS
		High	2480	AV	2483.500	-52.52	≤-41.20	PASS
				AV	2486.696	-52.02	≤-41.20	PASS
				AV	2500.000	-52.69	≤-41.20	PASS
				Peak	2483.500	-42.51	≤-21.20	PASS
				Peak	2484.609	-39.19	≤-21.20	PASS
				Peak	2500.000	-43.05	≤-21.20	PASS
BLE_2M	Ant1	Low	2402	AV	2310.000	-53.27	≤-41.20	PASS
				AV	2342.000	-51.06	≤-41.20	PASS
				AV	2390.000	-53.34	≤-41.20	PASS
				Peak	2310.000	-43.83	≤-21.20	PASS
				Peak	2380.348	-40.35	≤-21.20	PASS
				Peak	2390.000	-43.47	≤-21.20	PASS
		High	2480	AV	2483.500	-49.39	≤-41.20	PASS
				AV	2483.565	-50.53	≤-41.20	PASS
				AV	2500.000	-52.46	≤-41.20	PASS
				Peak	2483.500	-41.81	≤-21.20	PASS
				Peak	2484.145	-40.1	≤-21.20	PASS
				Peak	2500.000	-41.81	≤-21.20	PASS

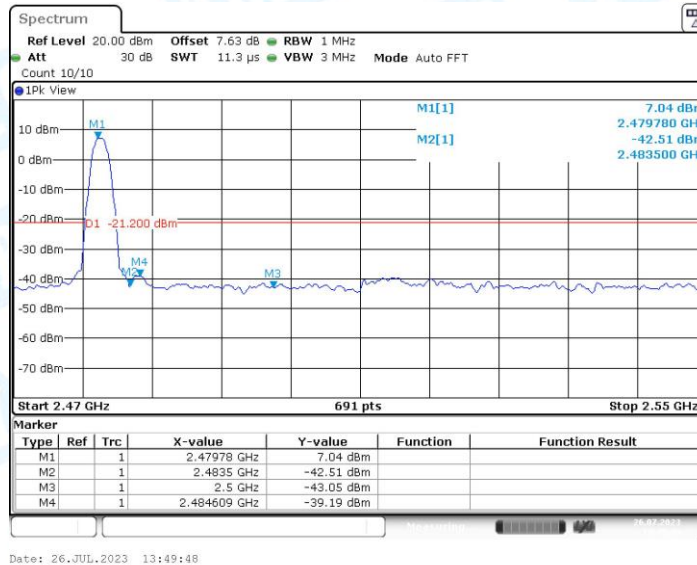
Note:

1. The Antenna Gain is compensated in the graph.
2. The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.

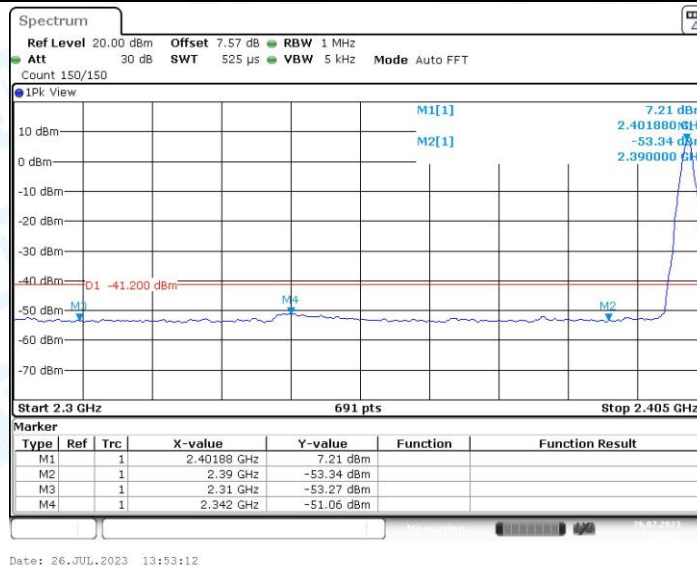
8.2. Test Graphs



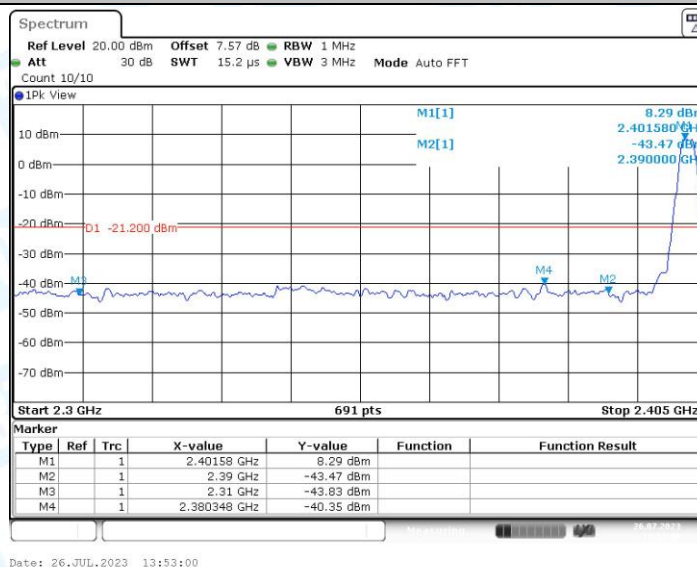
BLE_1M_Ant1_High_2480_Peak



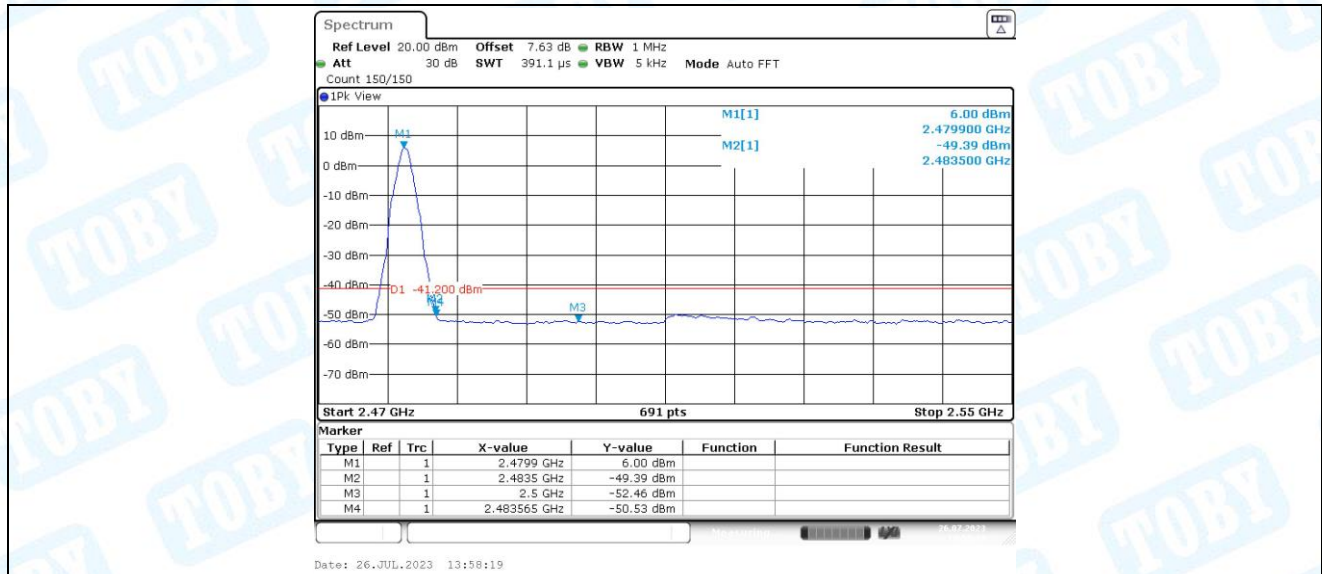
BLE_2M_Ant1_Low_2402_AV



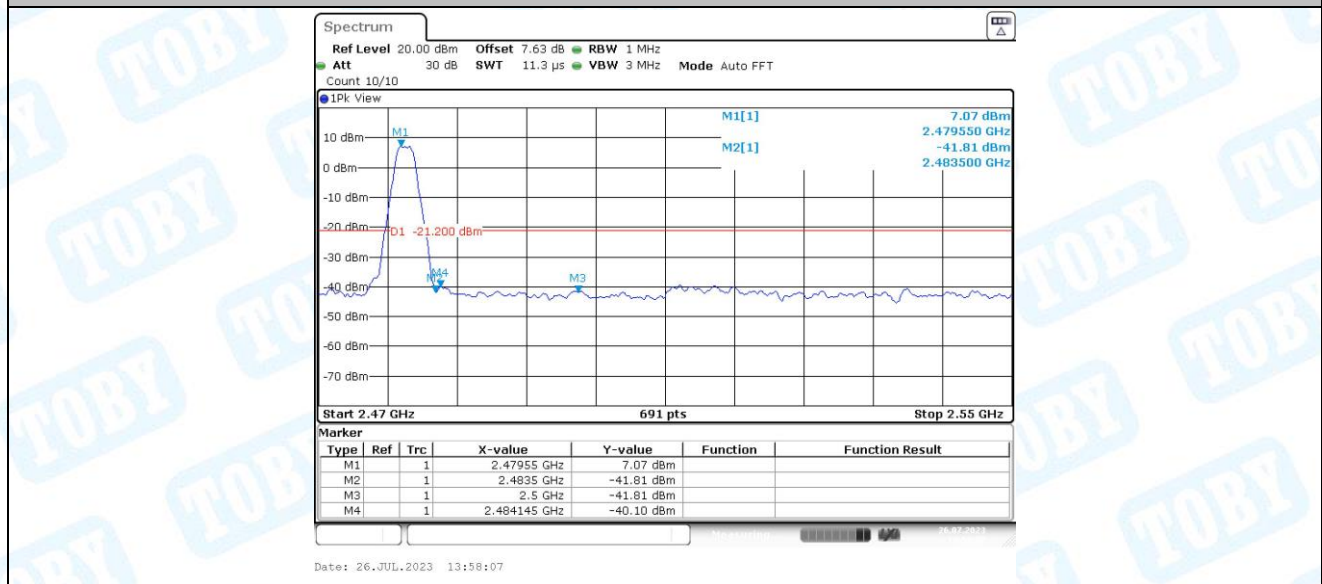
BLE_2M_Ant1_Low_2402_Peak



BLE_2M_Ant1_High_2480_AV



BLE_2M_Ant1_High_2480_Peak



-----End of the report-----