

Appendix - BLE

1.1 Appendix A: DTS Bandwidth

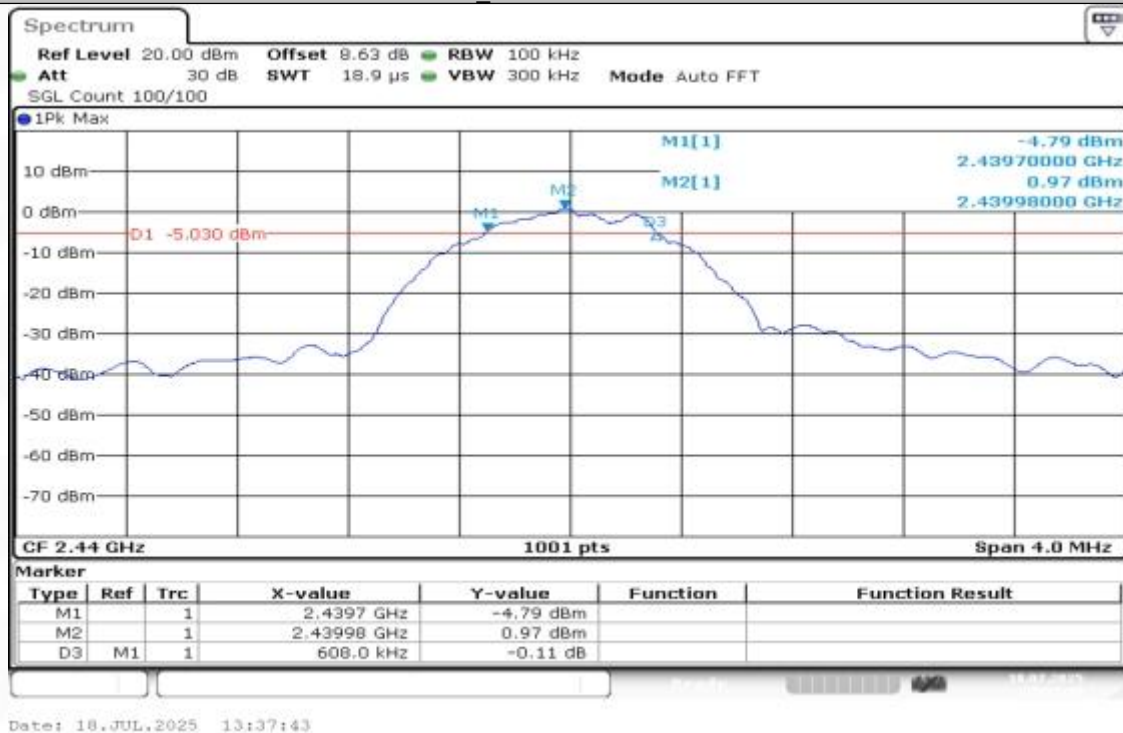
1.1.1 Test Result

TestMode	Antenna	Frequency[MHz]	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.64	2401.67	2402.31	0.5	PASS
BLE_1M	Ant1	2440	0.61	2439.70	2440.31	0.5	PASS
BLE_1M	Ant1	2480	0.72	2479.64	2480.36	0.5	PASS
BLE_2M	Ant1	2402	0.98	2401.50	2402.49	0.5	PASS
BLE_2M	Ant1	2440	0.89	2439.63	2440.52	0.5	PASS
BLE_2M	Ant1	2480	0.93	2479.47	2480.40	0.5	PASS

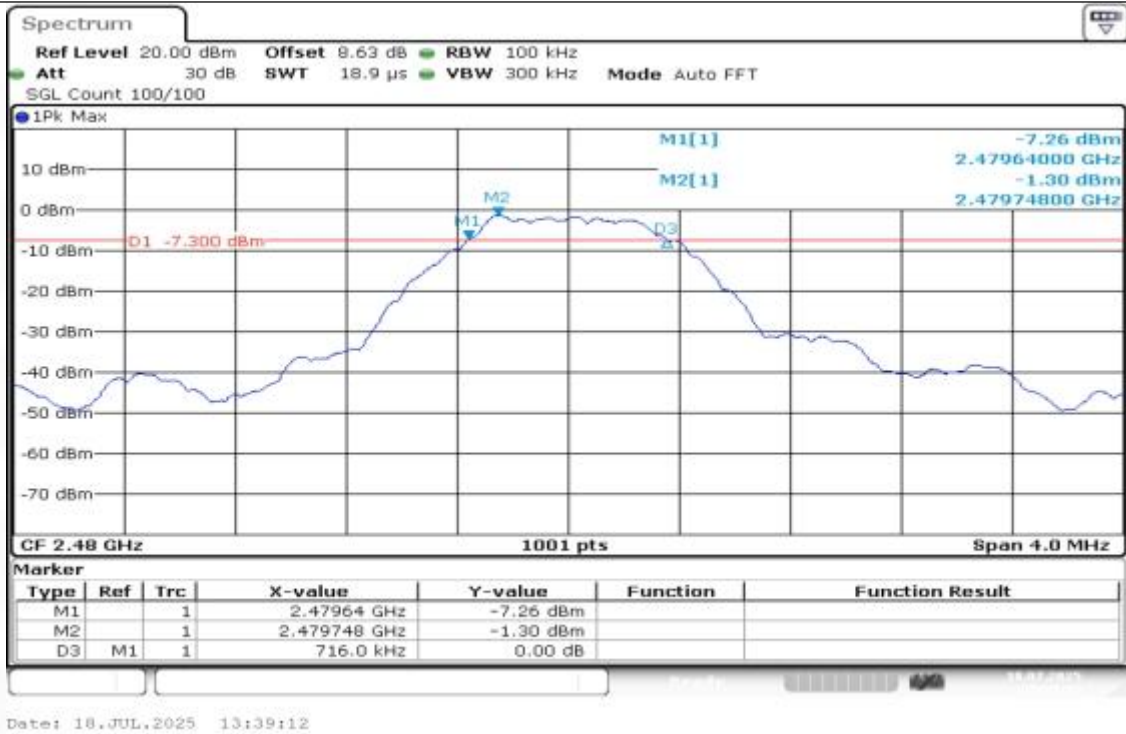
1.1.2 Test Graphs



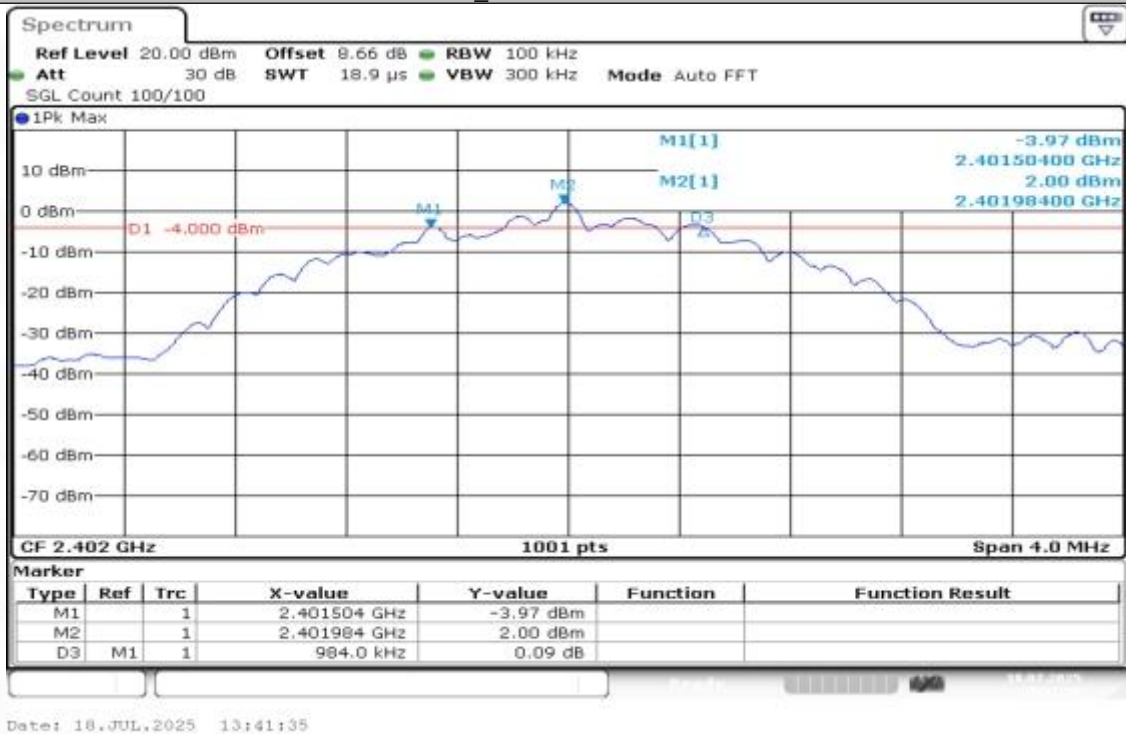
BLE 1M-Ant1-2402-PASS



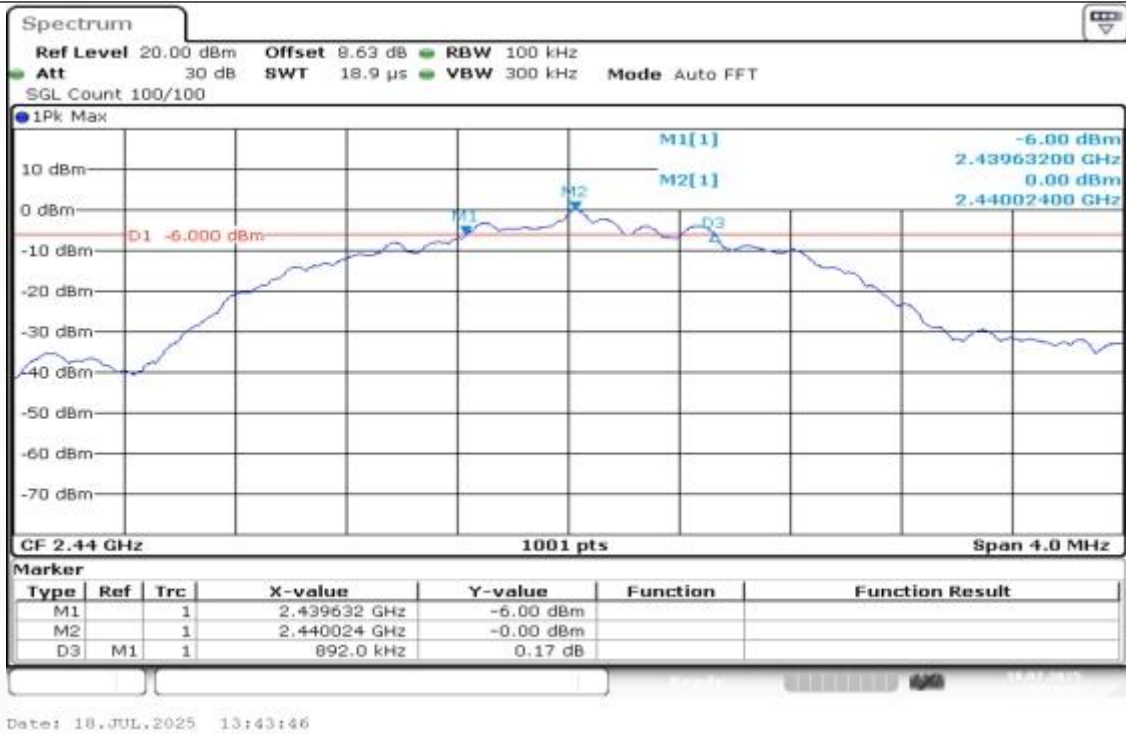
BLE 1M-Ant1-2440-PASS



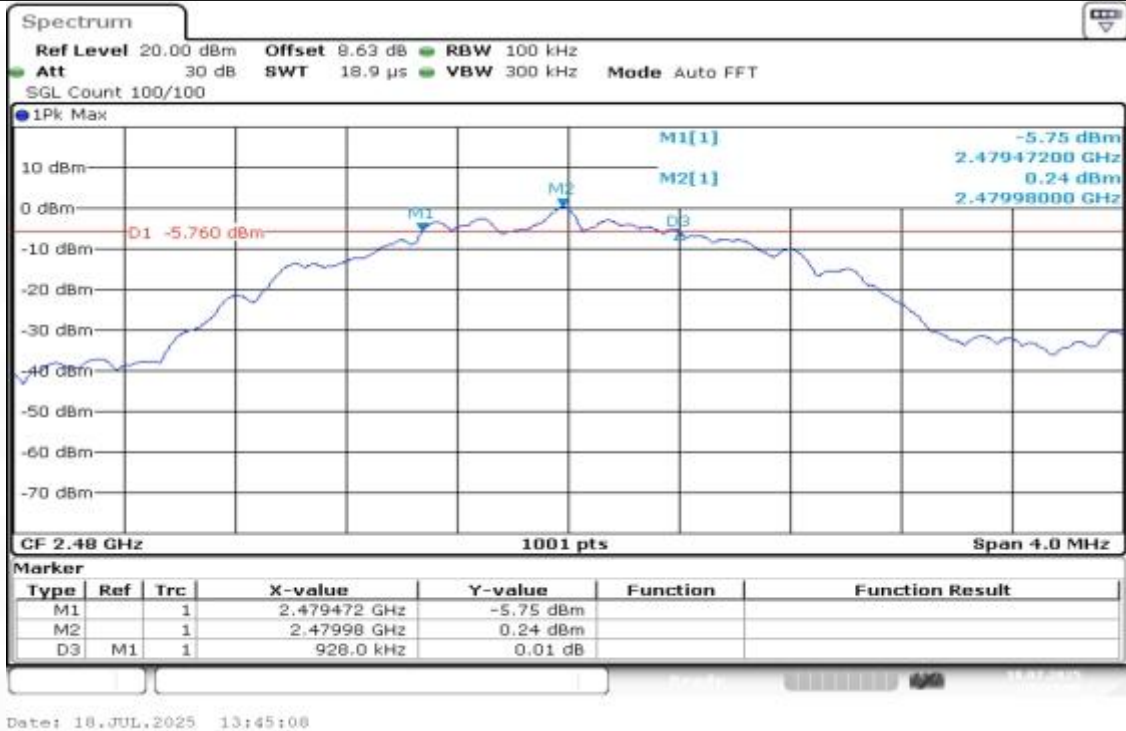
BLE_1M-Ant1-2480-PASS



BLE_2M-Ant1-2402-PASS



BLE_2M-Ant1-2440-PASS



BLE_2M-Ant1-2480-PASS

1.2 Appendix B: Occupied Channel Bandwidth

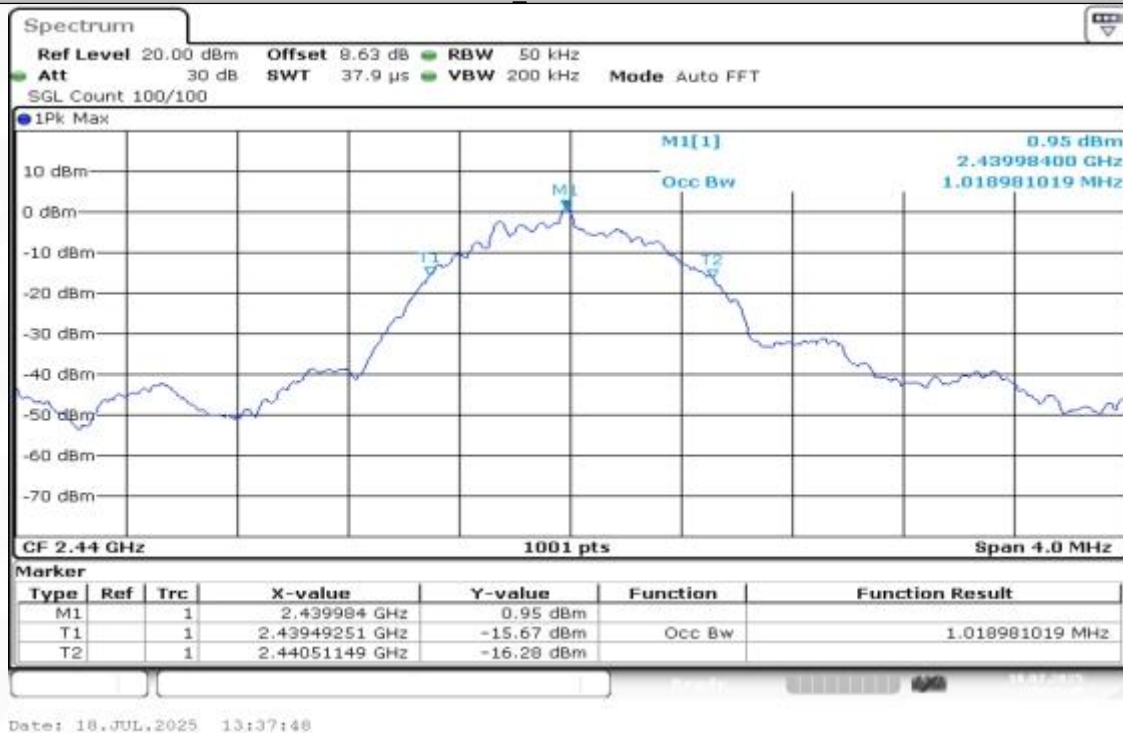
1.2.1 Test Result

TestMode	Antenna	Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	1.0110	2401.4925	2402.5035	---	---
BLE_1M	Ant1	2440	1.0190	2439.4925	2440.5115	---	---
BLE_1M	Ant1	2480	1.0190	2479.4805	2480.4995	---	---
BLE_2M	Ant1	2402	2.0659	2400.9730	2403.0390	---	---
BLE_2M	Ant1	2440	2.0220	2438.9730	2440.9950	---	---
BLE_2M	Ant1	2480	2.0140	2479.0010	2481.0150	---	---

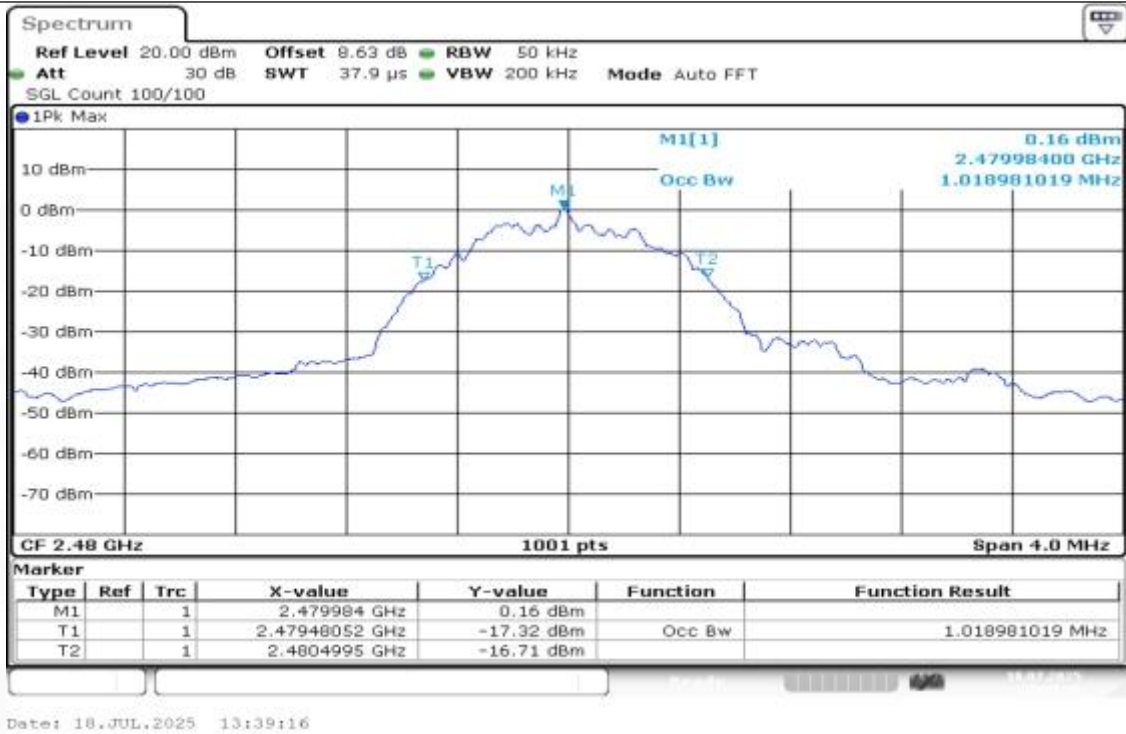
1.2.2 Test Graphs



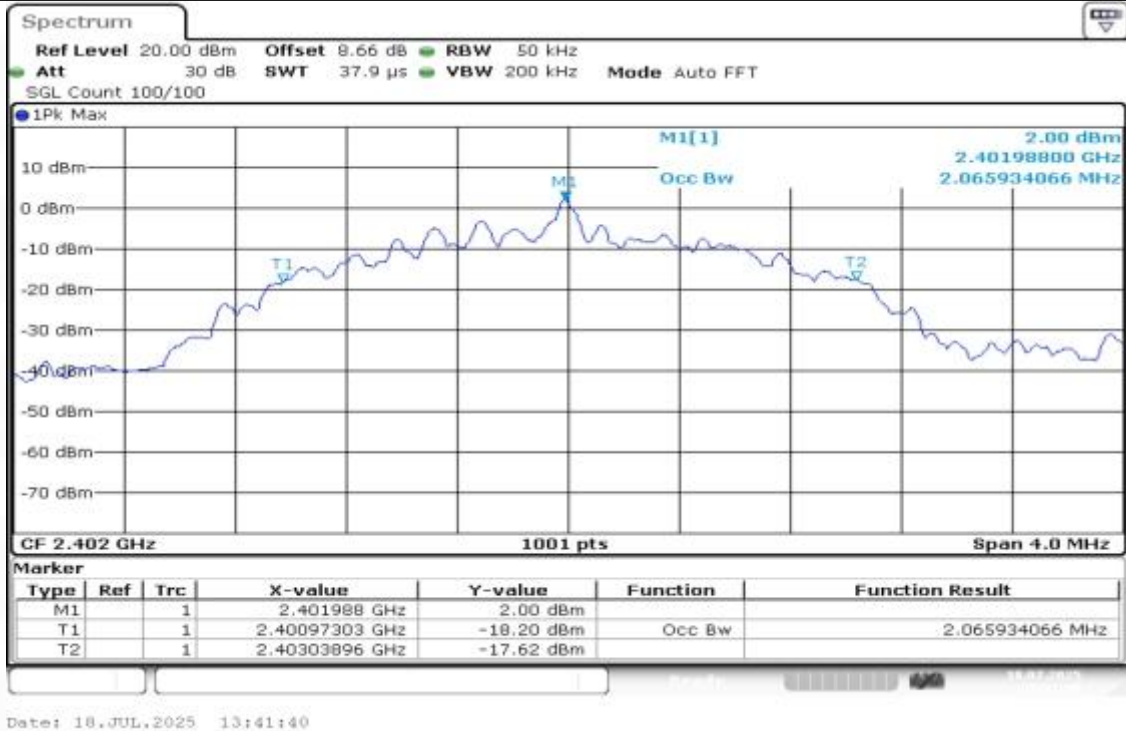
BLE_1M-Ant1-2402



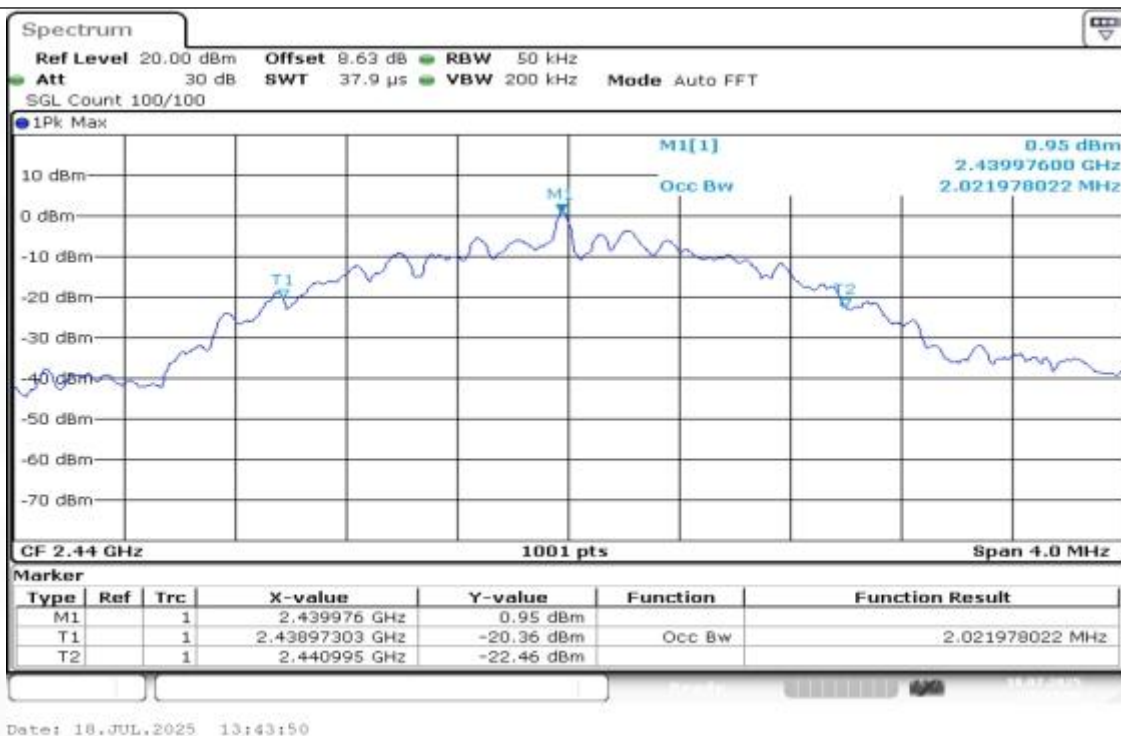
BLE_1M-Ant1-2440



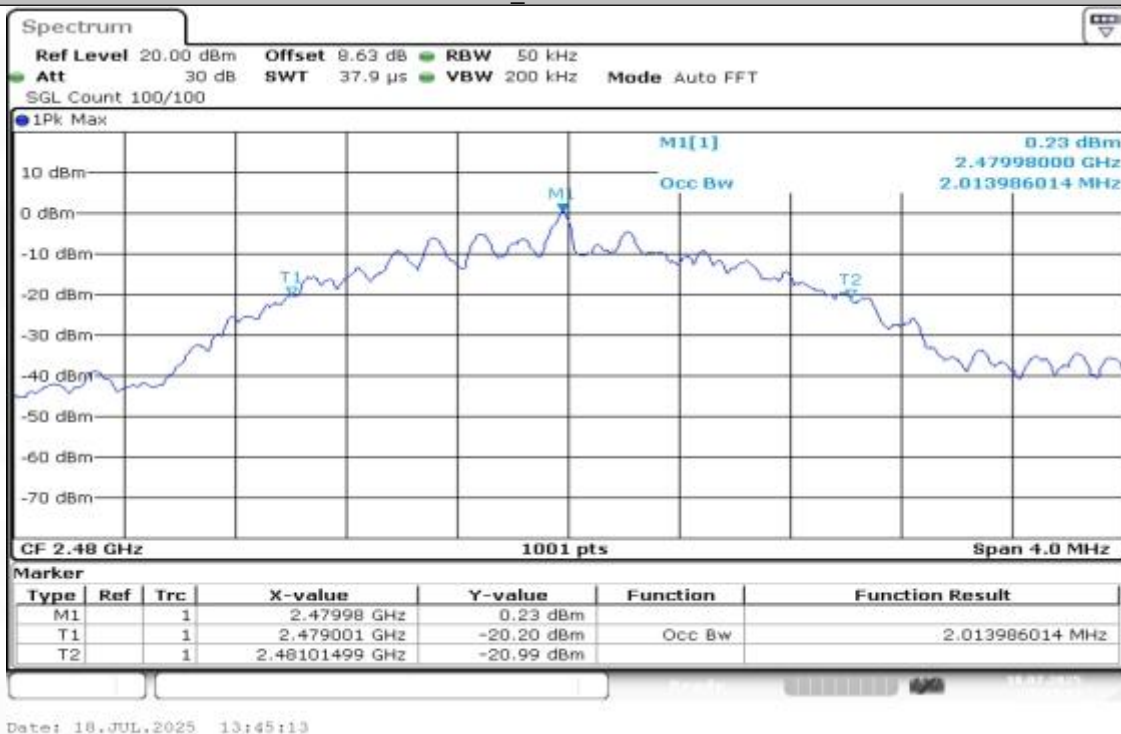
BLE_1M-Ant1-2480



BLE_2M-Ant1-2402



BLE_2M-Ant1-2440



BLE_2M-Ant1-2480

1.3 Appendix C: Maximum conducted output power

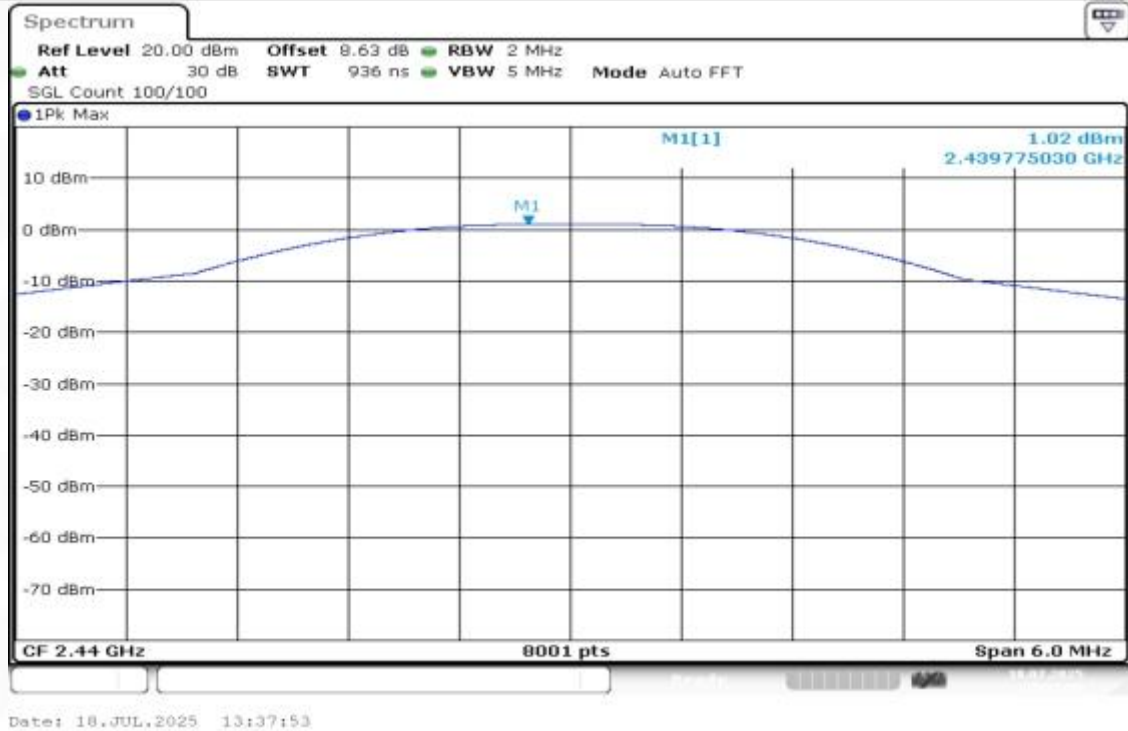
1.3.1 Test Result Peak

TestMode	Antenna	Frequency[MHz]	Conducted Peak Power[dBm]	Conducted Limit[dBm]	Verdict
BLE_1M	Ant1	2402	2.01	≤30	PASS
BLE_1M	Ant1	2440	1.02	≤30	PASS
BLE_1M	Ant1	2480	0.24	≤30	PASS
BLE_2M	Ant1	2402	2.07	≤30	PASS
BLE_2M	Ant1	2440	1.10	≤30	PASS
BLE_2M	Ant1	2480	0.33	≤30	PASS

1.3.2 Test Graphs Peak



BLE 1M-Ant1-2402-PASS



BLE 1M-Ant1-2440-PASS



BLE_1M-Ant1-2480-PASS



BLE_2M-Ant1-2402-PASS



BLE_2M-Ant1-2440-PASS



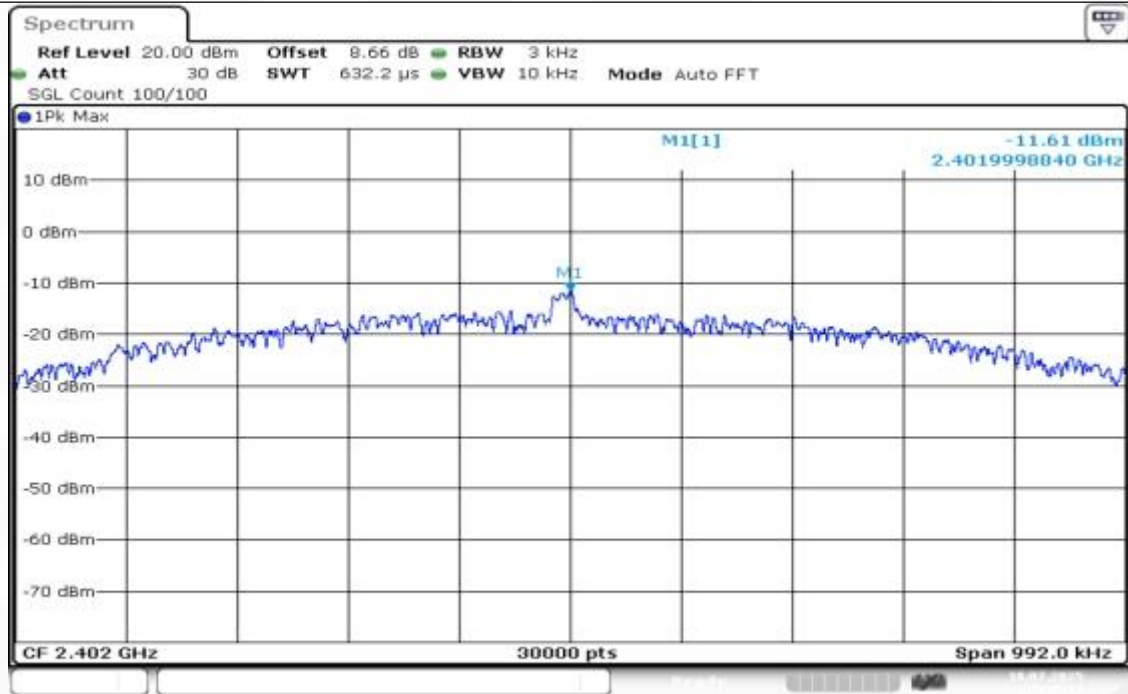
BLE_2M-Ant1-2480-PASS

1.4 Appendix D: Maximum power spectral density

1.4.1 Test Result

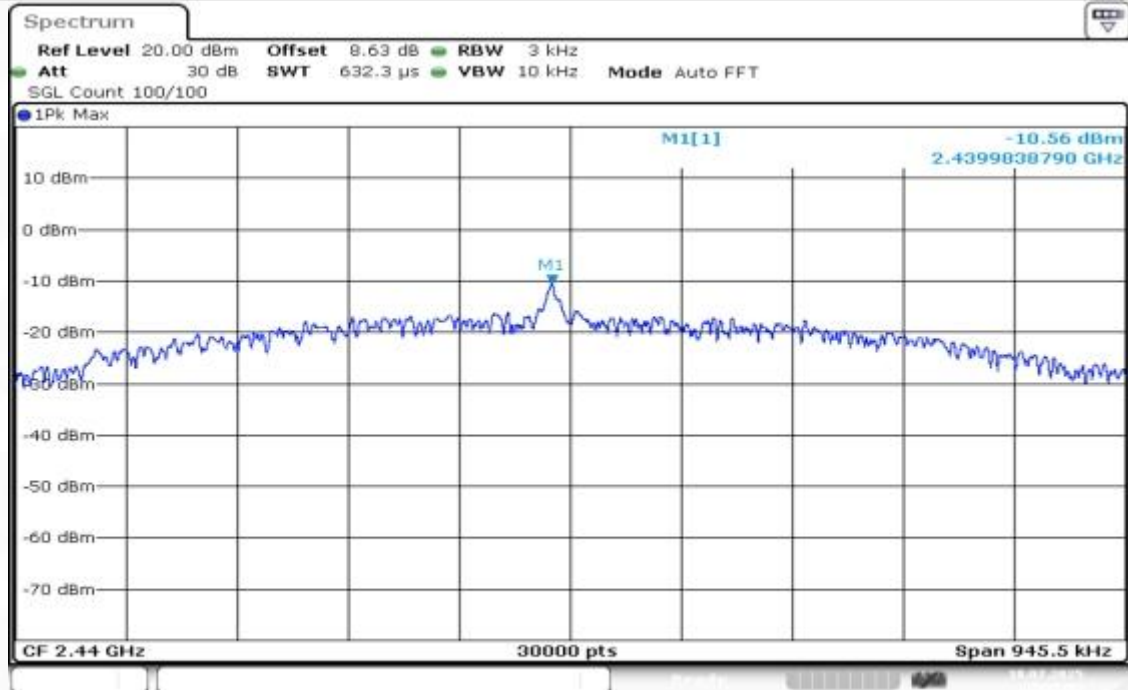
TestMode	Antenna	Frequency[MHz]	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-11.61	≤8.00	PASS
BLE_1M	Ant1	2440	-10.56	≤8.00	PASS
BLE_1M	Ant1	2480	-11.63	≤8.00	PASS
BLE_2M	Ant1	2402	-10.01	≤8.00	PASS
BLE_2M	Ant1	2440	-12.81	≤8.00	PASS
BLE_2M	Ant1	2480	-12.51	≤8.00	PASS

1.4.2 Test Graphs



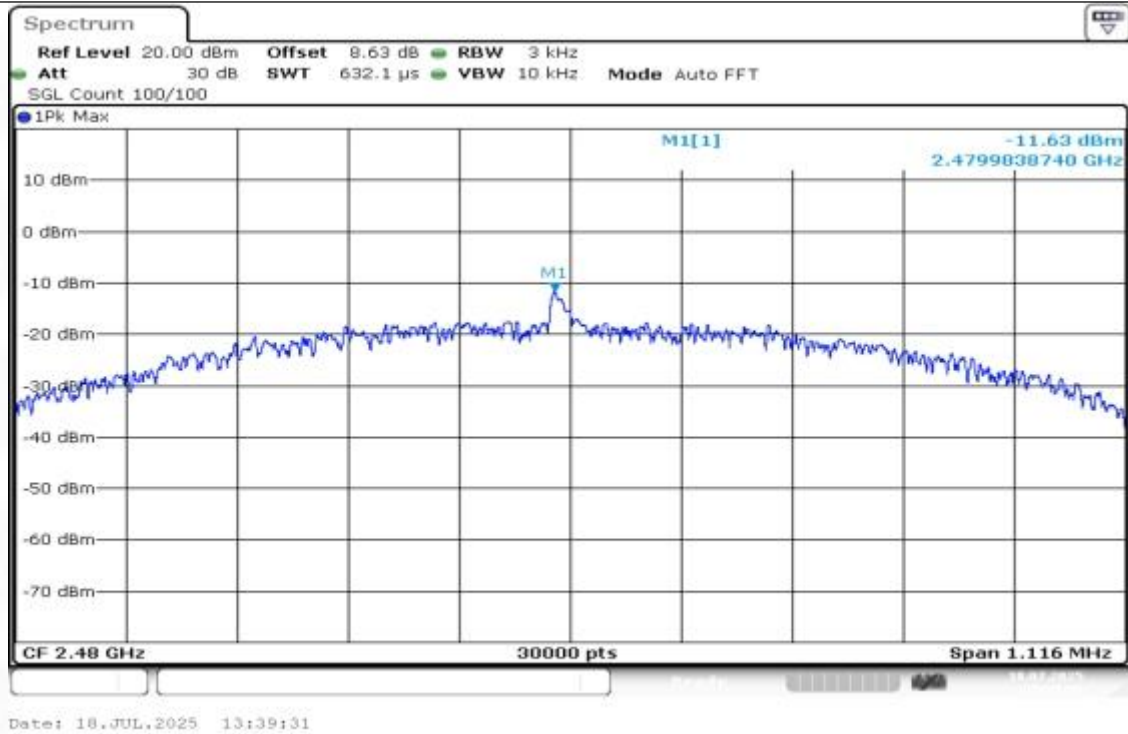
Date: 18.JUL.2025 13:36:13

BLE 1M-Ant1-2402-PASS

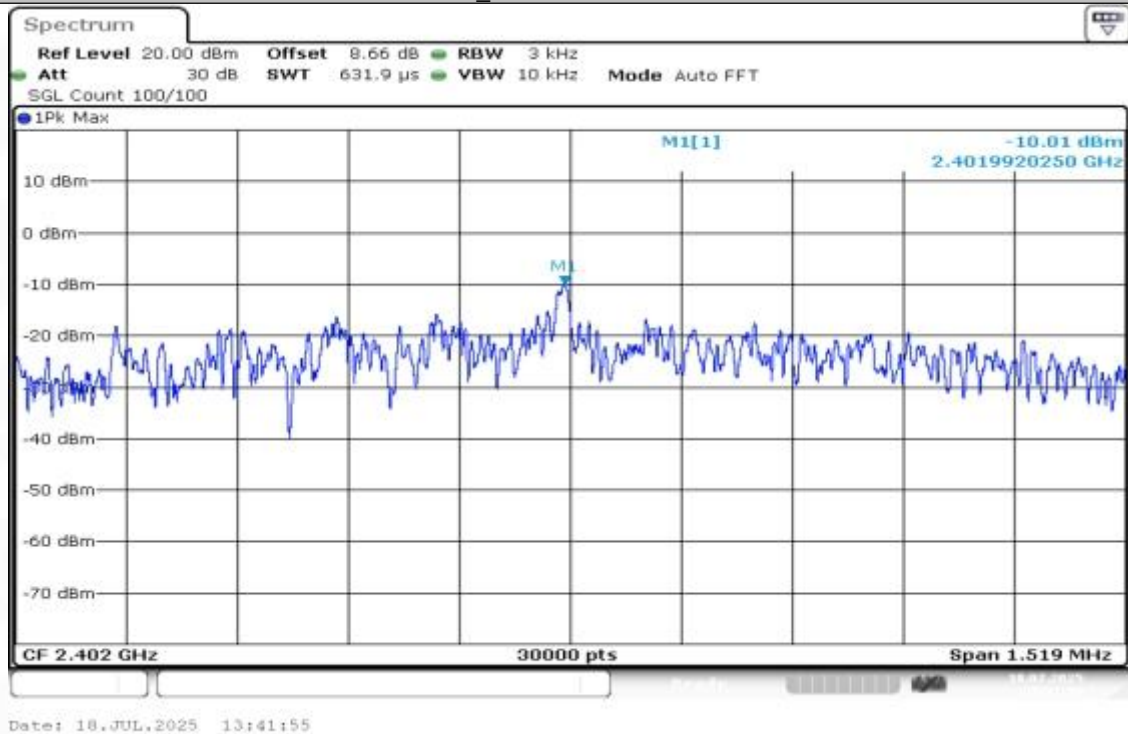


Date: 18.JUL.2025 13:38:03

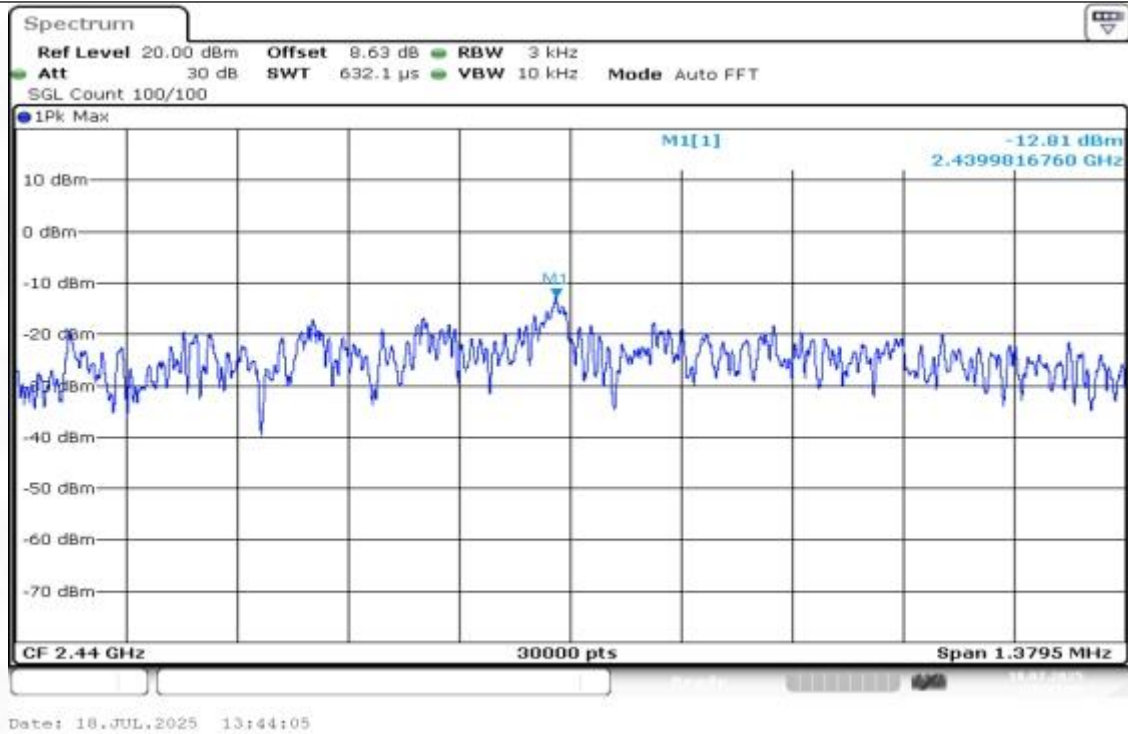
BLE 1M-Ant1-2440-PASS



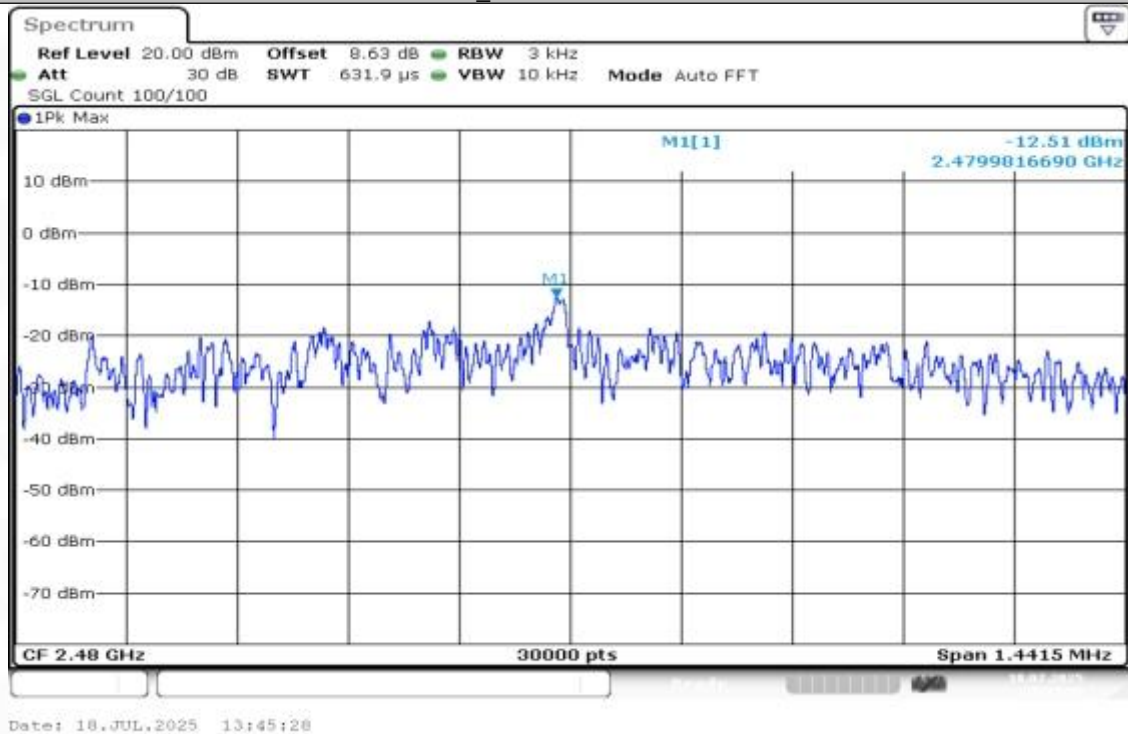
BLE_1M-Ant1-2480-PASS



BLE_2M-Ant1-2402-PASS



BLE_2M-Ant1-2440-PASS



BLE_2M-Ant1-2480-PASS

1.5 Appendix E: Reference level measurement

1.5.1 Test Result

TestMode	Antenna	Freq(MHz)	Max.Point[MHz]	Result[dBm]
BLE_1M	Ant1	2402	2401.96	0.08
BLE_1M	Ant1	2440	2439.98	0.97
BLE_1M	Ant1	2480	2479.97	-0.85
BLE_2M	Ant1	2402	2401.99	2.00
BLE_2M	Ant1	2440	2439.97	1.02
BLE_2M	Ant1	2480	2479.98	0.22

1.5.2 Test Graphs



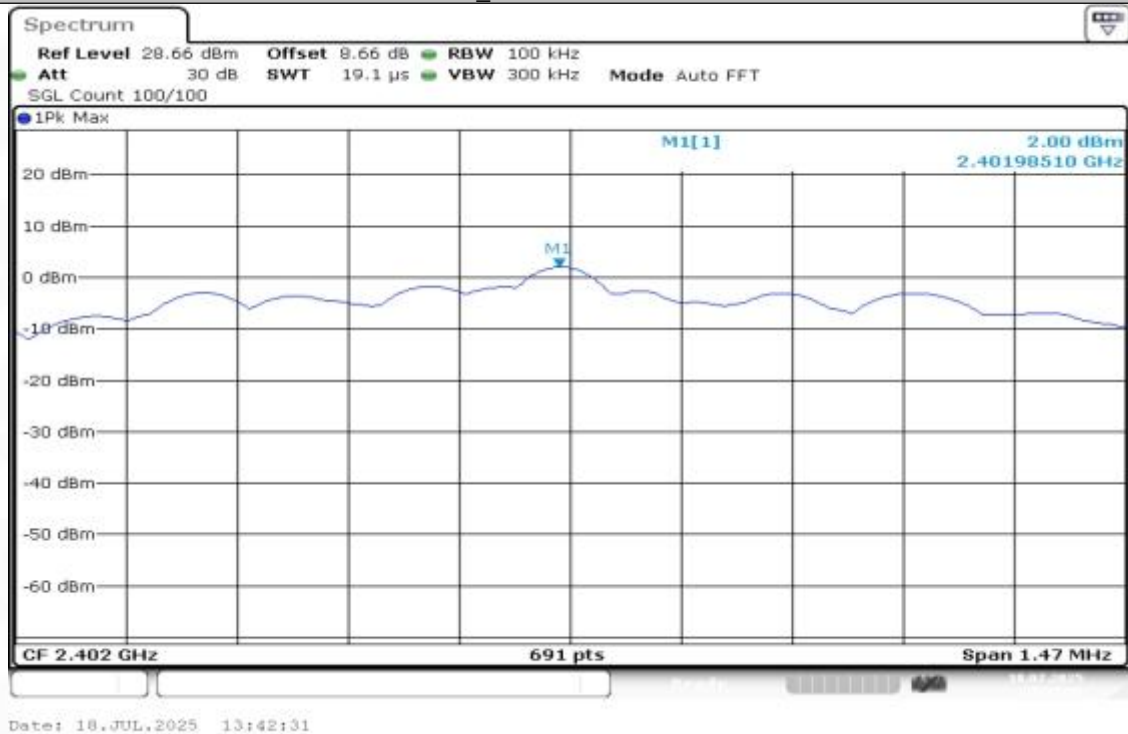
BLE 1M-Ant1-2402-PASS



BLE 1M-Ant1-2440-PASS



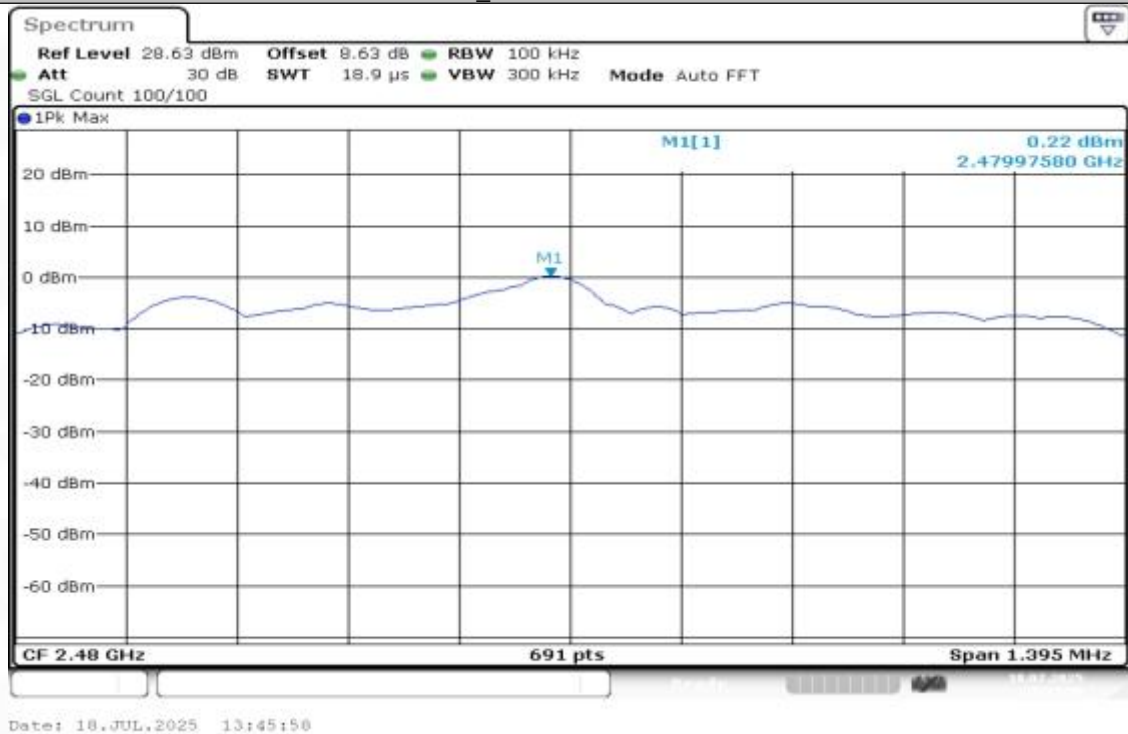
BLE_1M-Ant1-2480-PASS



BLE_2M-Ant1-2402-PASS



BLE_2M-Ant1-2440-PASS



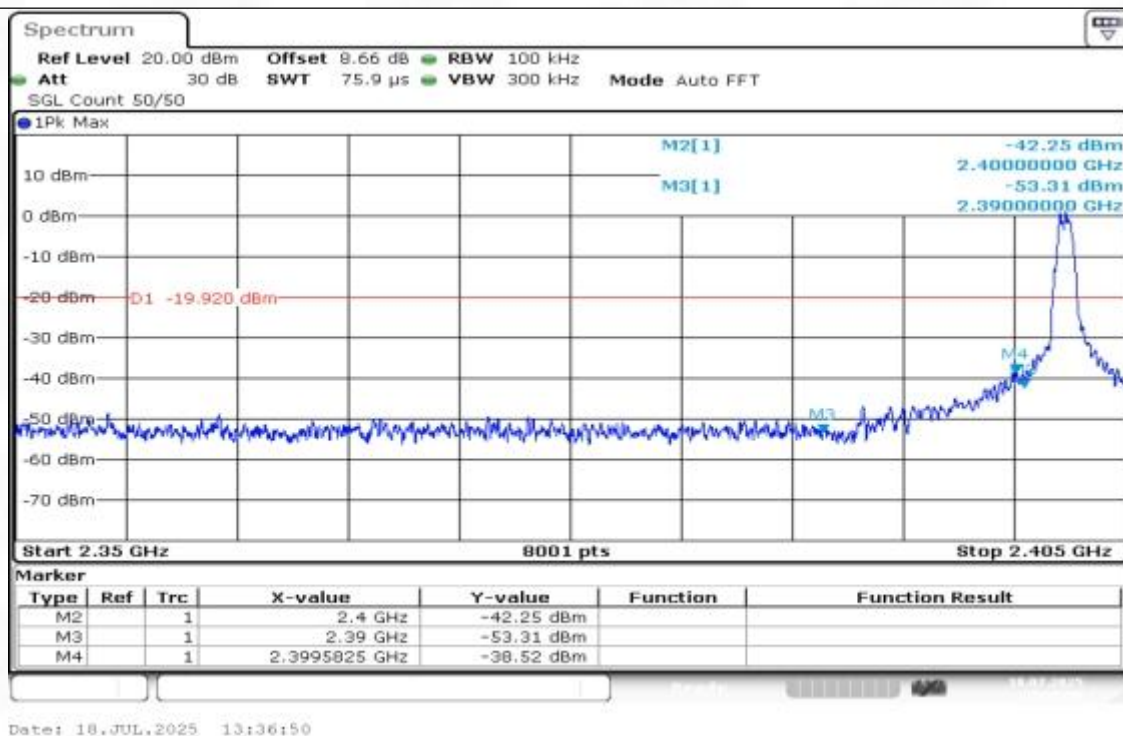
BLE_2M-Ant1-2480-PASS

1.6 Appendix F: Band edge measurements

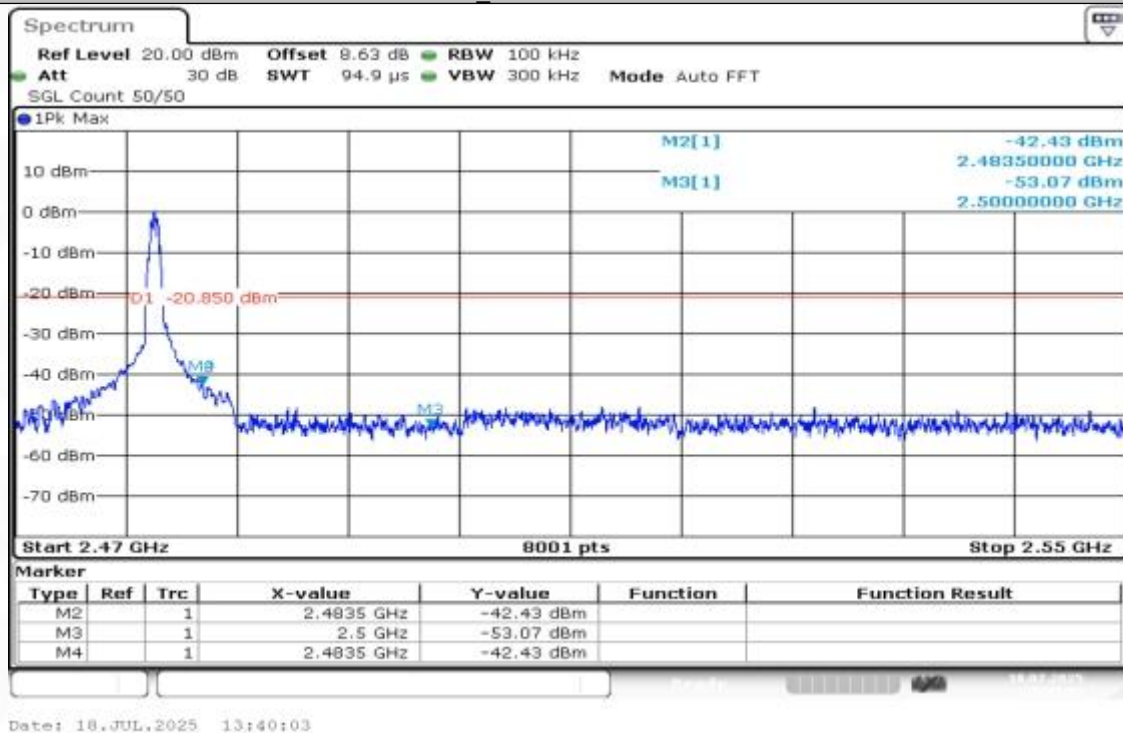
1.6.1 Test Result

TestMode	Antenna	ChName	Frequency[MHz]	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	0.08	-38.52	≤ -19.92	PASS
BLE_1M	Ant1	High	2480	-0.85	-42.43	≤ -20.85	PASS
BLE_2M	Ant1	Low	2402	2.00	-34.57	≤ -18	PASS
BLE_2M	Ant1	High	2480	0.22	-45.48	≤ -19.78	PASS

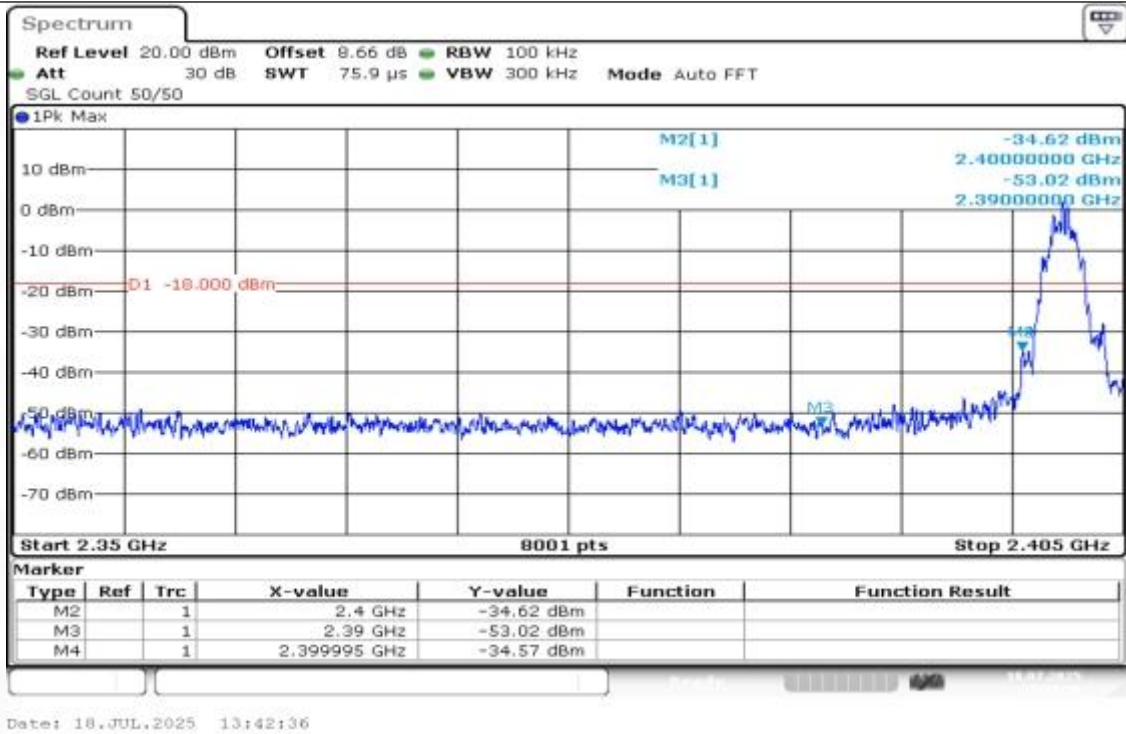
1.6.2 Test Graphs



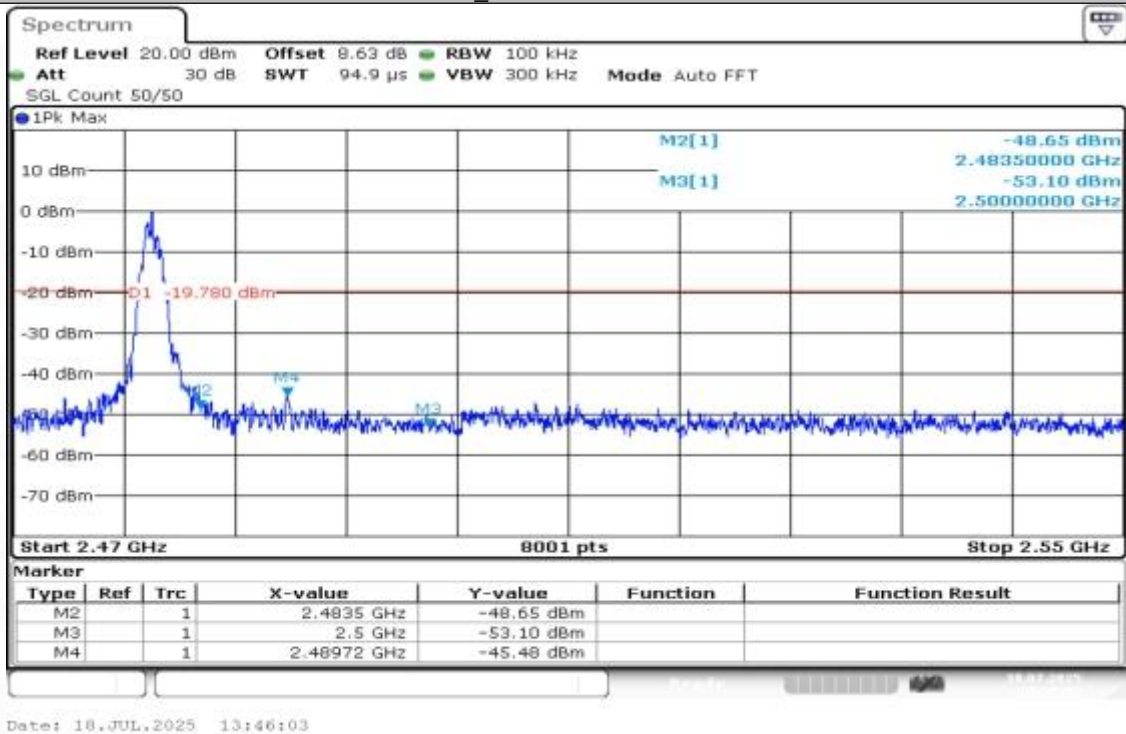
BLE 1M-Ant1-2402-PASS



BLE 1M-Ant1-2480-PASS



BLE_2M-Ant1-2402-PASS



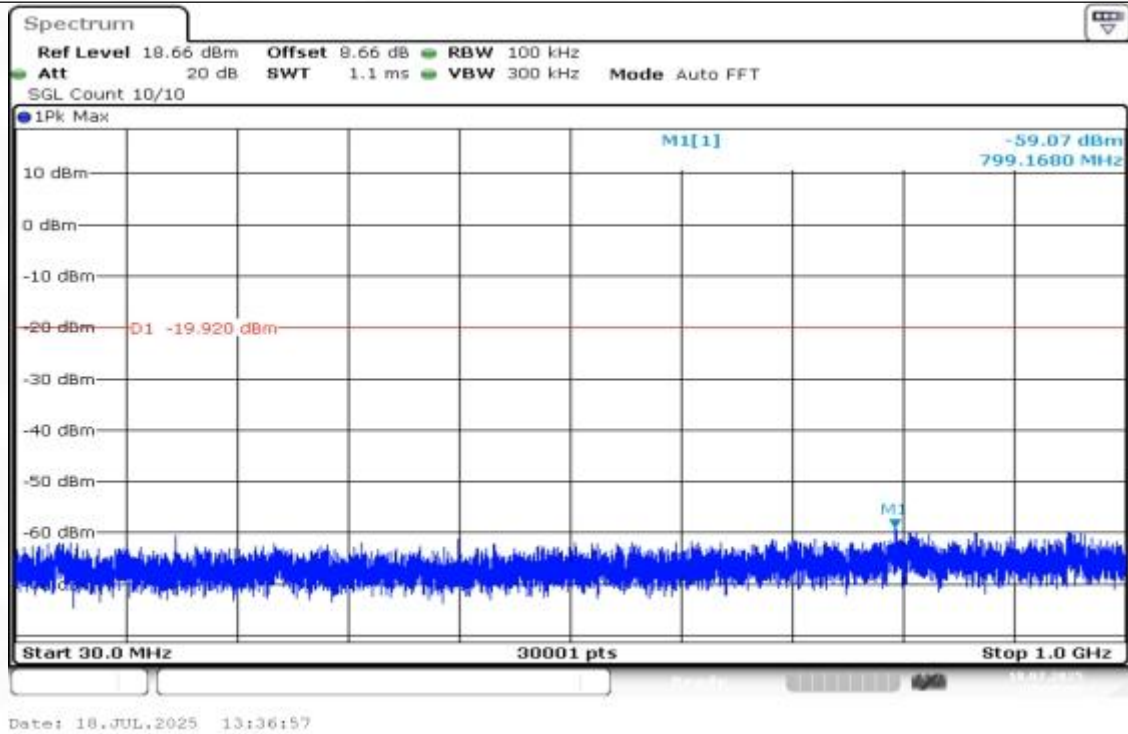
BLE_2M-Ant1-2480-PASS

1.7 Appendix G: Conducted Spurious Emission

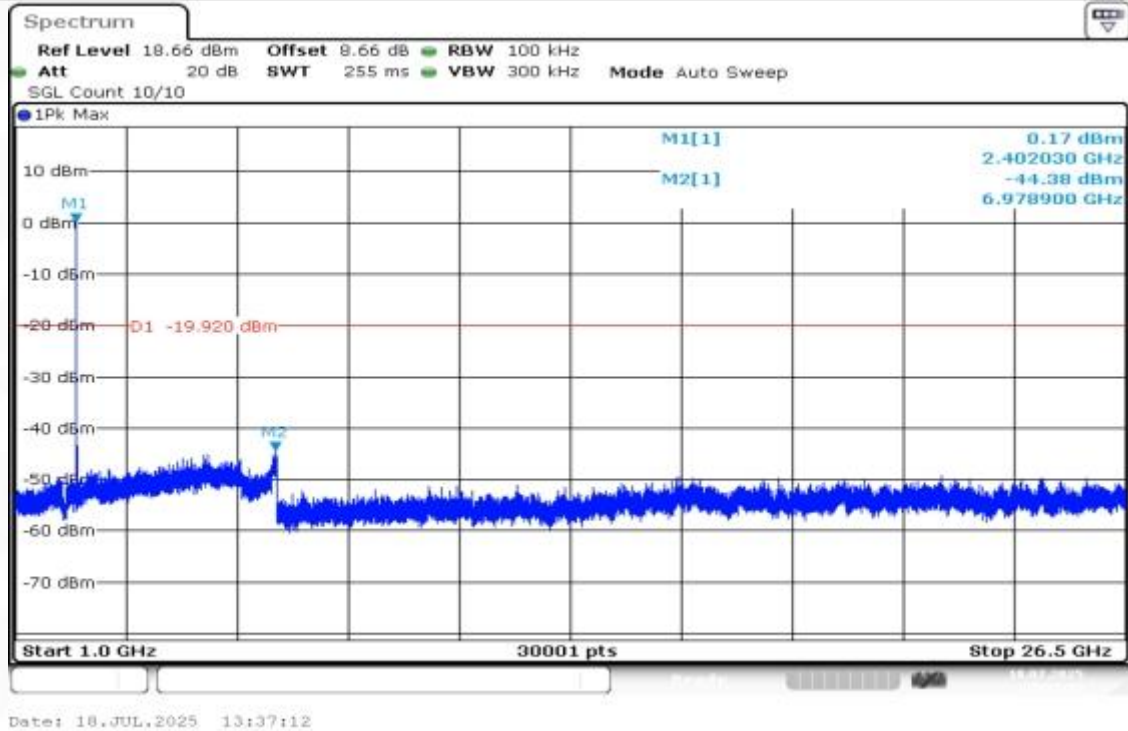
1.7.1 Test Result

TestMode	Antenna	Frequency[MHz]	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	30~1000	0.08	-59.07	≤-19.92	PASS
BLE_1M	Ant1	2402	1000~26500	0.08	-44.38	≤-19.92	PASS
BLE_1M	Ant1	2440	30~1000	0.97	-58.58	≤-19.03	PASS
BLE_1M	Ant1	2440	1000~26500	0.97	-44.05	≤-19.03	PASS
BLE_1M	Ant1	2480	30~1000	-0.85	-59.35	≤-20.85	PASS
BLE_1M	Ant1	2480	1000~26500	-0.85	-44.19	≤-20.85	PASS
BLE_2M	Ant1	2402	30~1000	2.00	-59.42	≤-18	PASS
BLE_2M	Ant1	2402	1000~26500	2.00	-44.44	≤-18	PASS
BLE_2M	Ant1	2440	30~1000	1.02	-57.86	≤-18.98	PASS
BLE_2M	Ant1	2440	1000~26500	1.02	-44.03	≤-18.98	PASS
BLE_2M	Ant1	2480	30~1000	0.22	-58.7	≤-19.78	PASS
BLE_2M	Ant1	2480	1000~26500	0.22	-43.97	≤-19.78	PASS

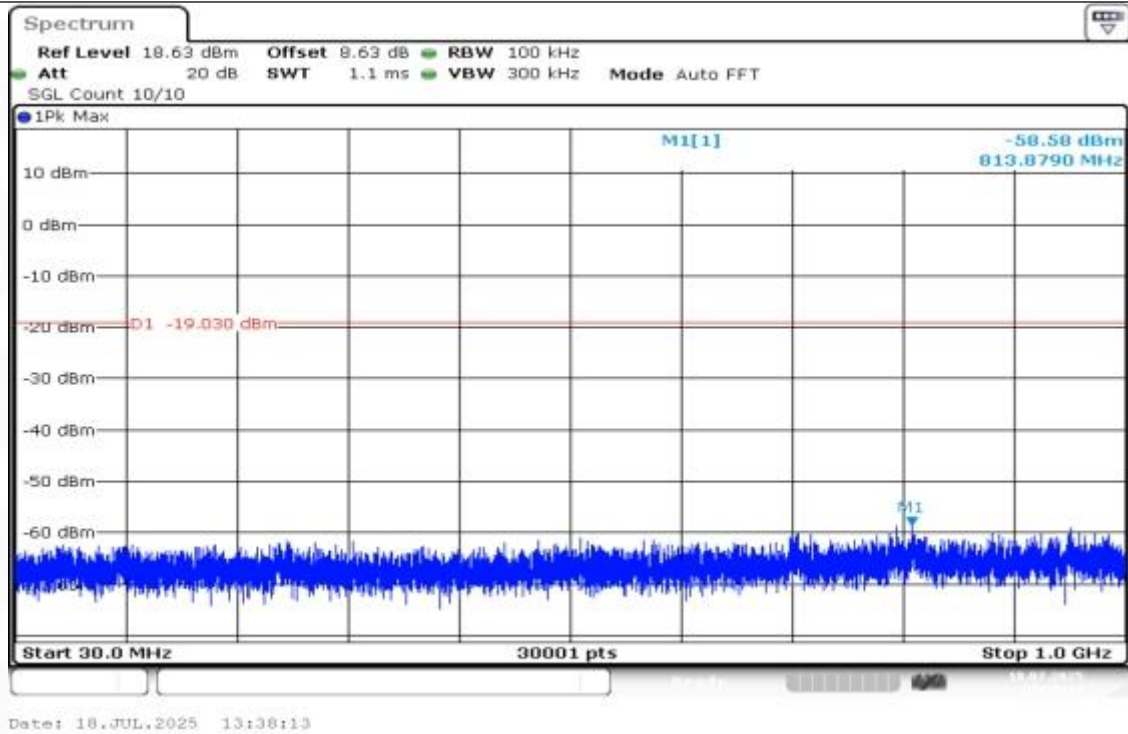
1.7.2 Test Graphs



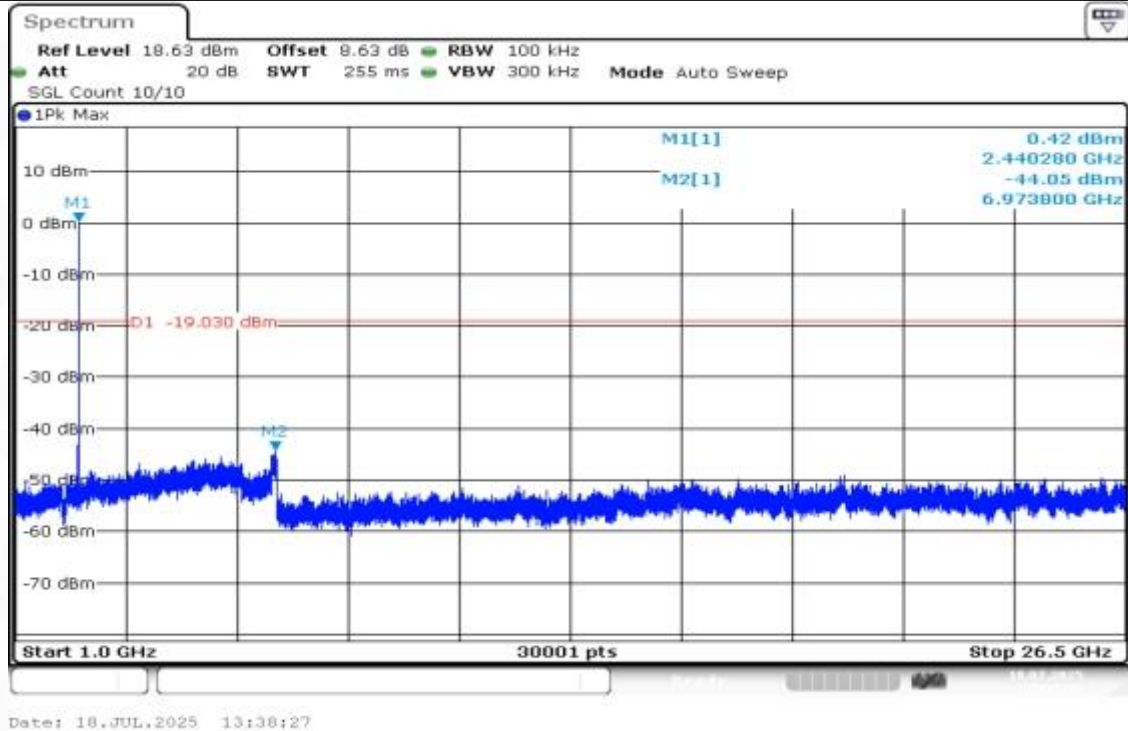
BLE_1M-Ant1-2402-30~1000-PASS



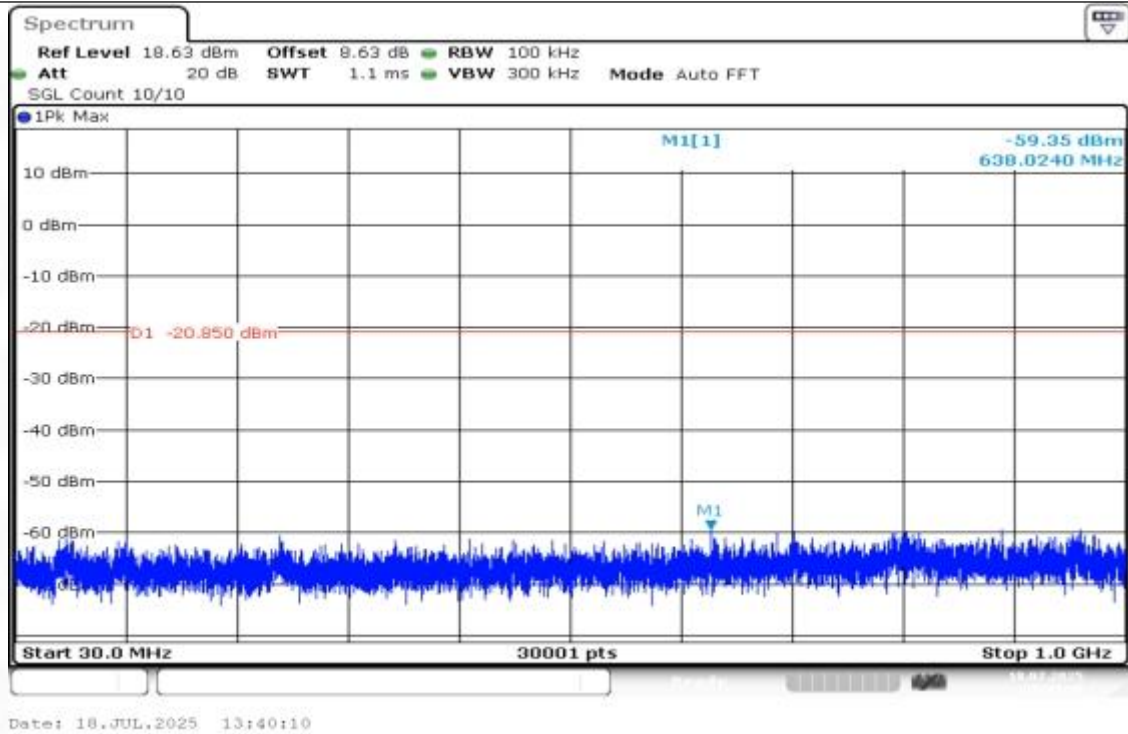
BLE_1M-Ant1-2402-1000~26500-PASS



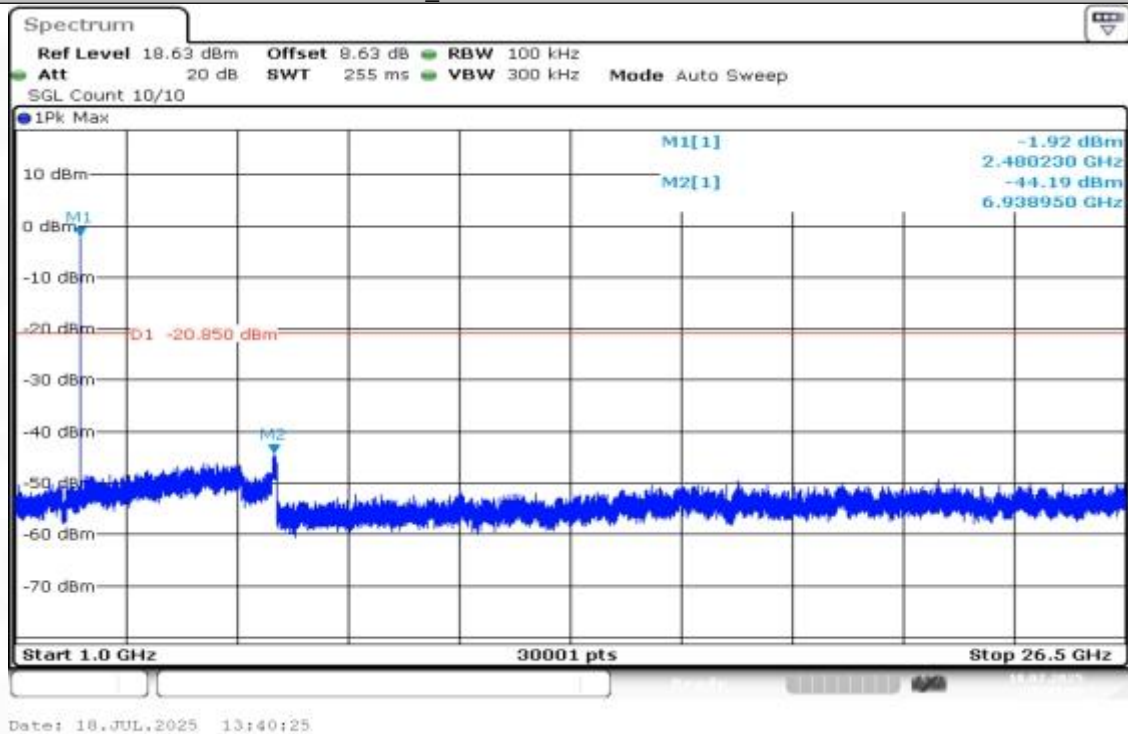
BLE_1M-Ant1-2440-30~1000-PASS



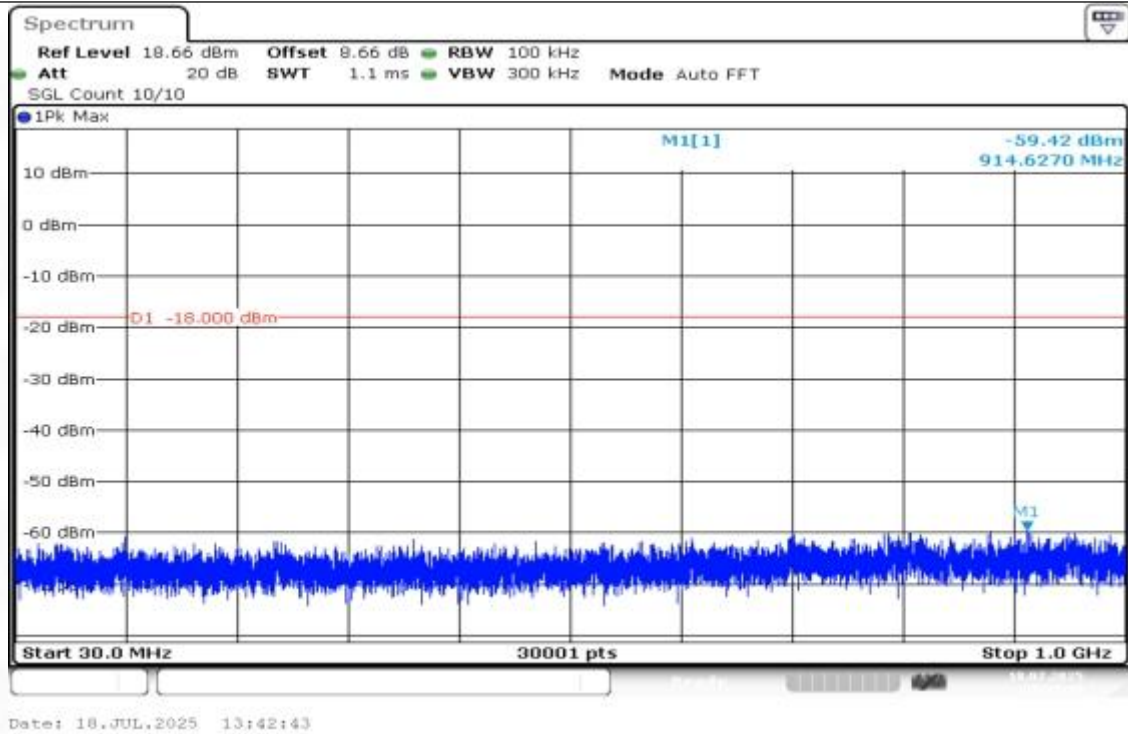
BLE_1M-Ant1-2440-1000~26500-PASS



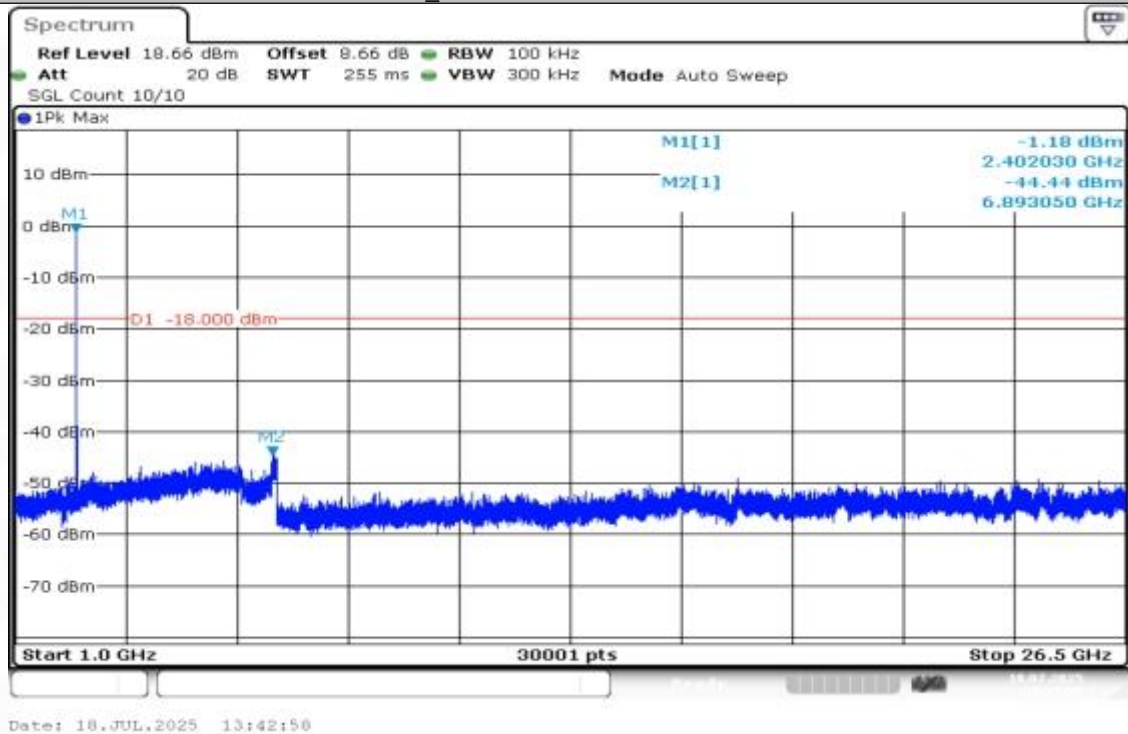
BLE_1M-Ant1-2480-30~1000-PASS



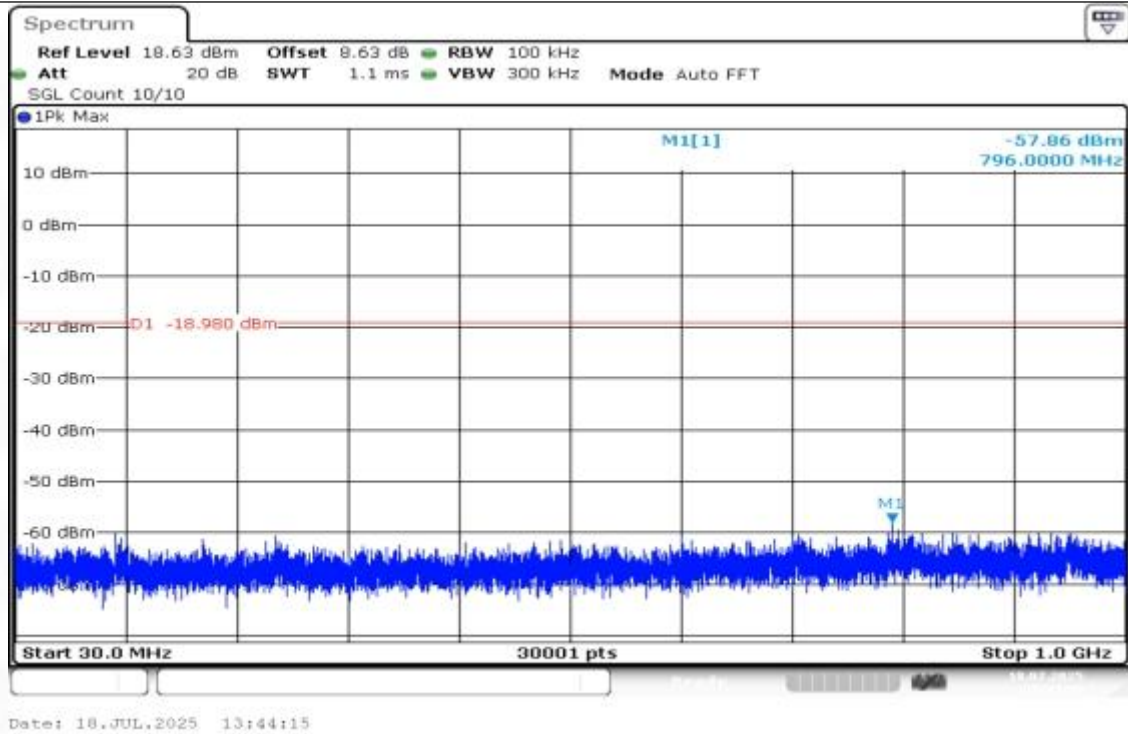
BLE_1M-Ant1-2480-1000~26500-PASS



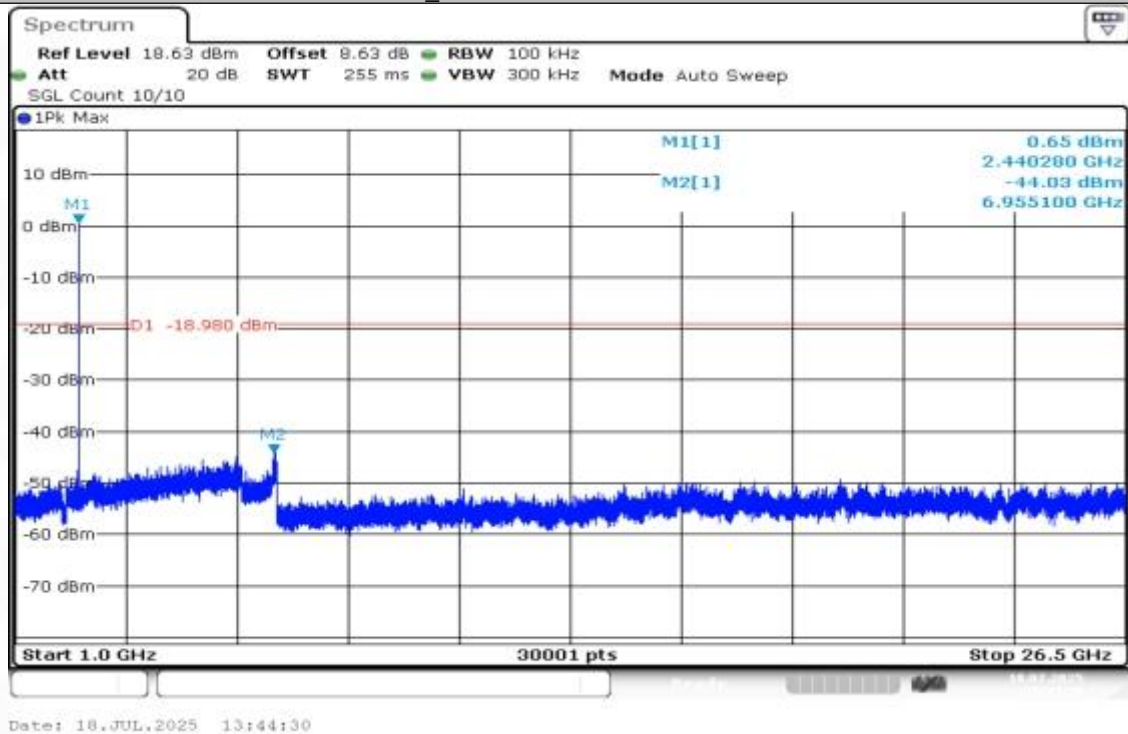
BLE_2M-Ant1-2402-30~1000-PASS



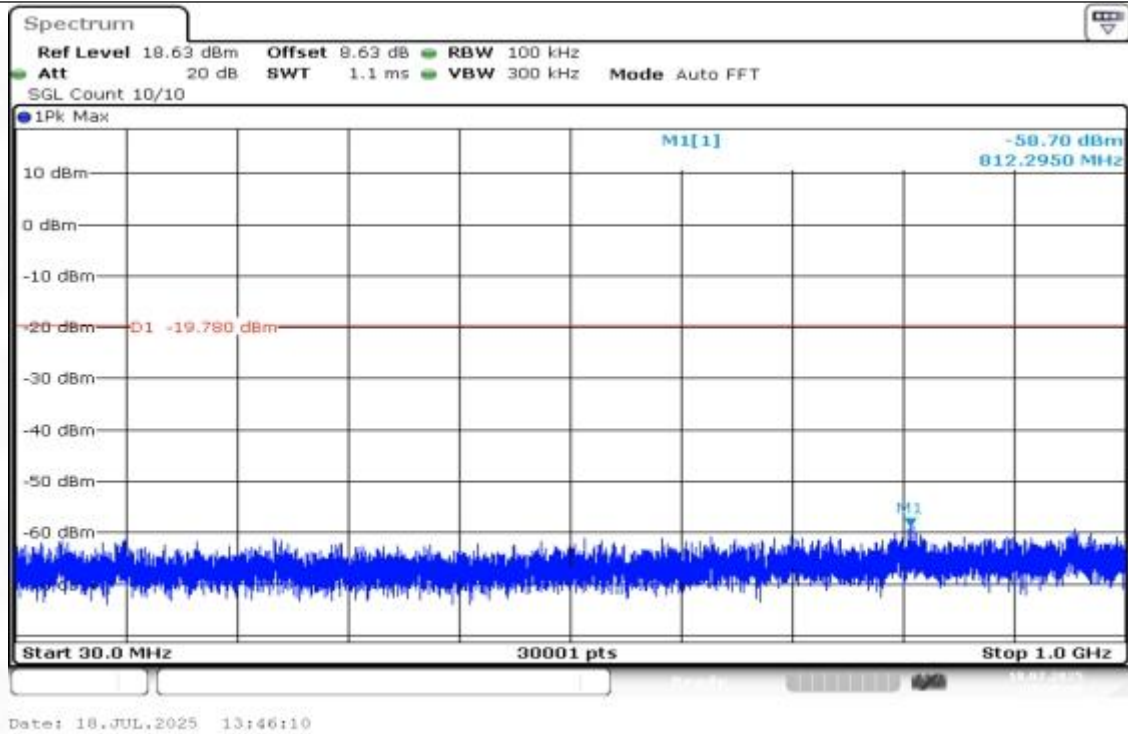
BLE_2M-Ant1-2402-1000~26500-PASS



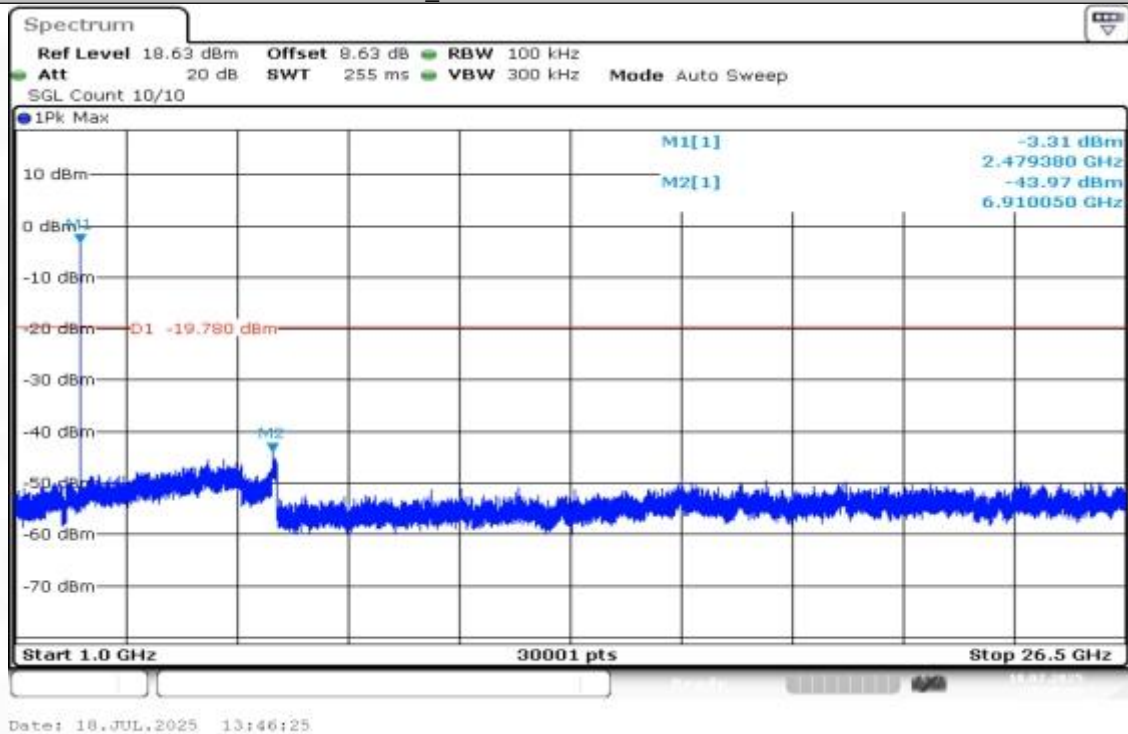
BLE_2M-Ant1-2440-30~1000-PASS



BLE_2M-Ant1-2440-1000~26500-PASS



BLE_2M-Ant1-2480-30~1000-PASS



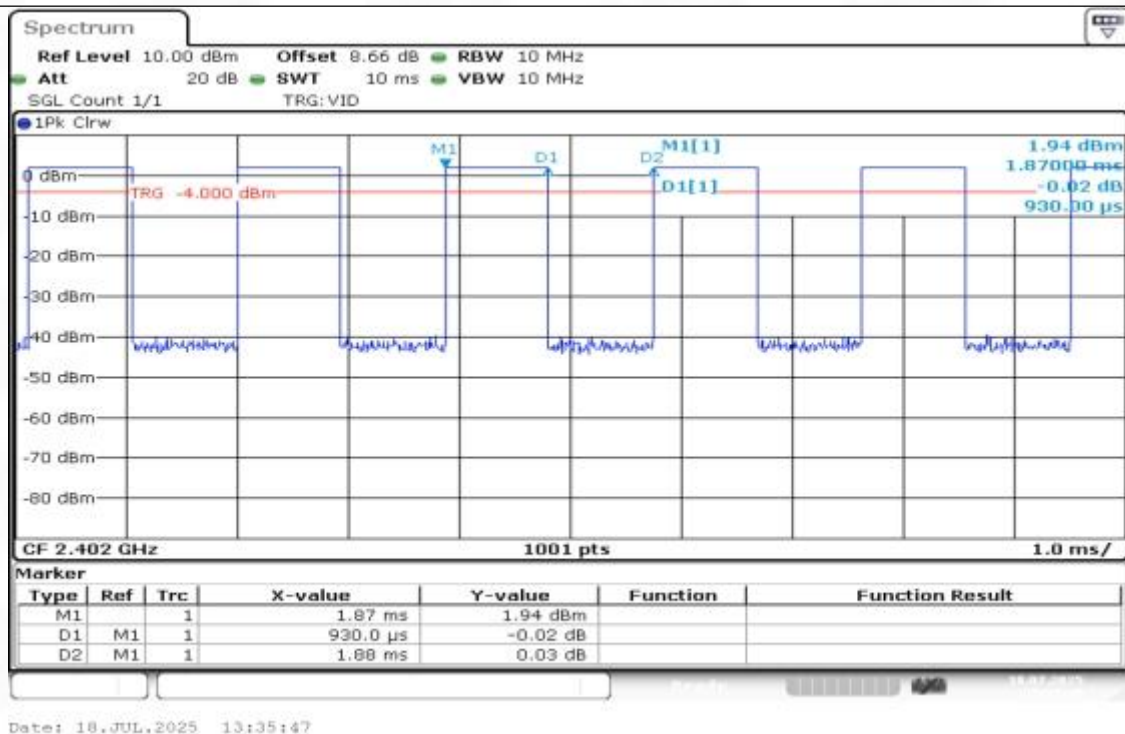
BLE_2M-Ant1-2480-1000~26500-PASS

1.8 Appendix H: Duty Cycle

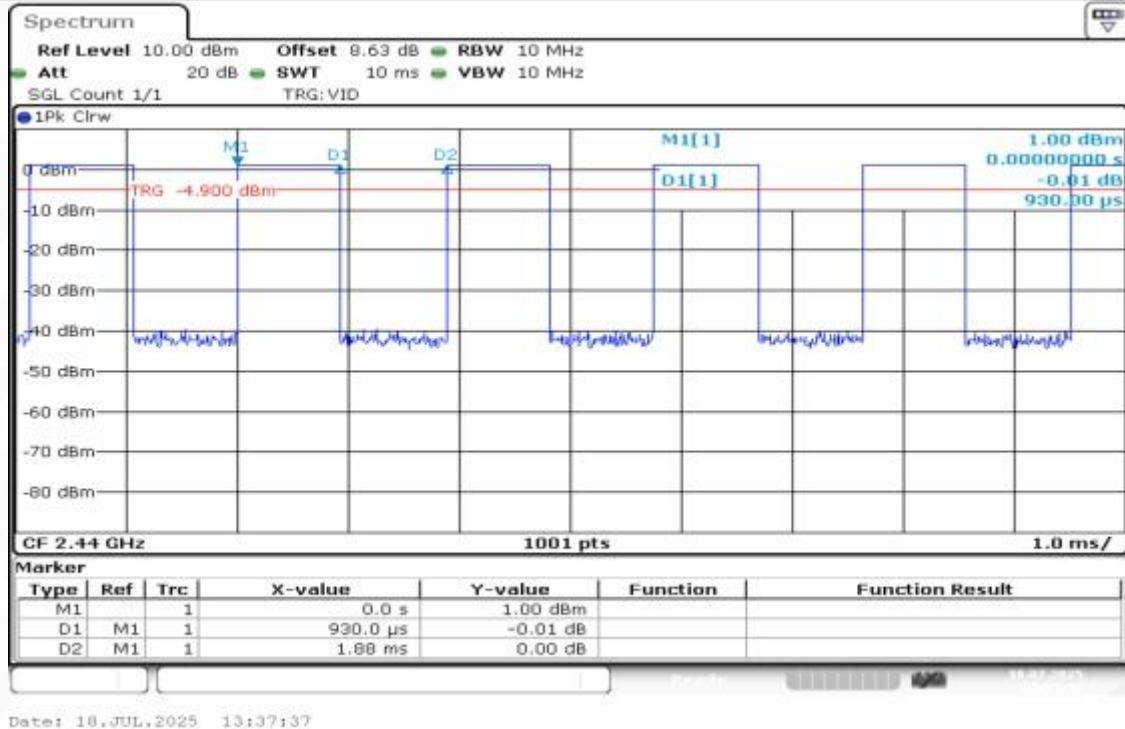
1.8.1 Test Result

TestMode	Antenna	Frequency[MHz]	ON Time [ms]	Period [ms]	Duty Cycle [%]	Duty Cycle Factor[dB]
BLE_1M	Ant1	2402	0.93	1.88	49.47	3.06
BLE_1M	Ant1	2440	0.93	1.88	49.47	3.06
BLE_1M	Ant1	2480	0.93	1.88	49.47	3.06
BLE_2M	Ant1	2402	0.50	1.57	31.85	4.97
BLE_2M	Ant1	2440	0.50	1.57	31.85	4.97
BLE_2M	Ant1	2480	0.50	1.57	31.85	4.97

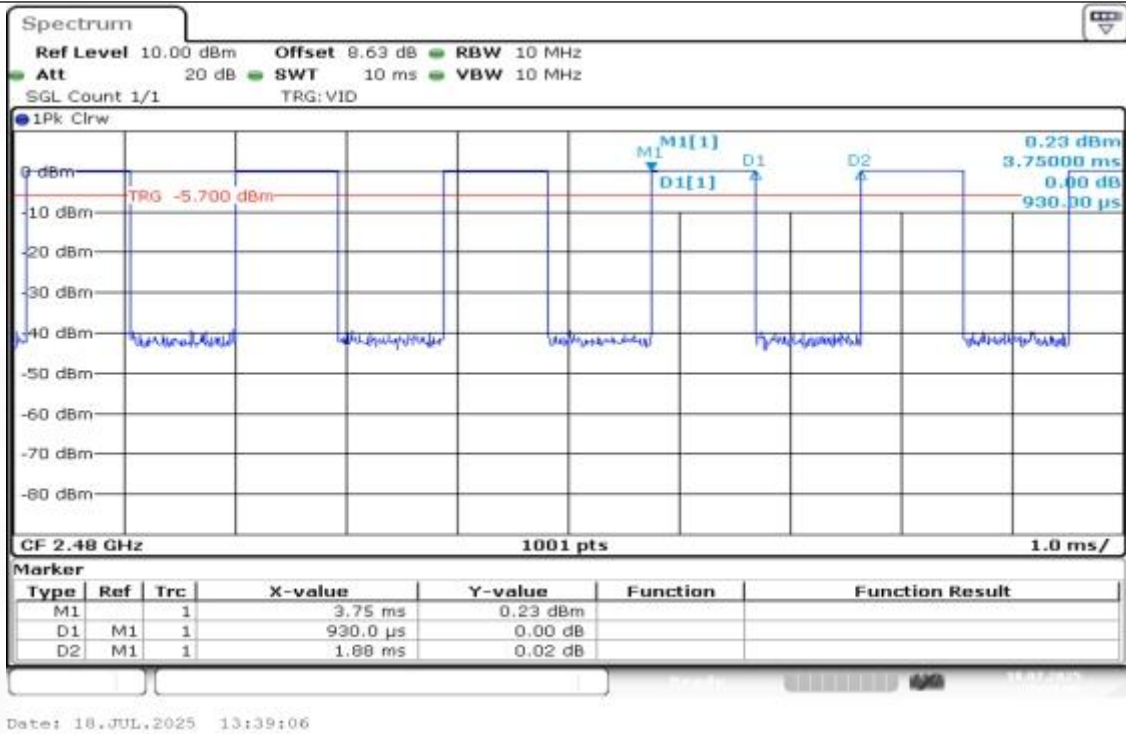
1.8.2 Test Graphs



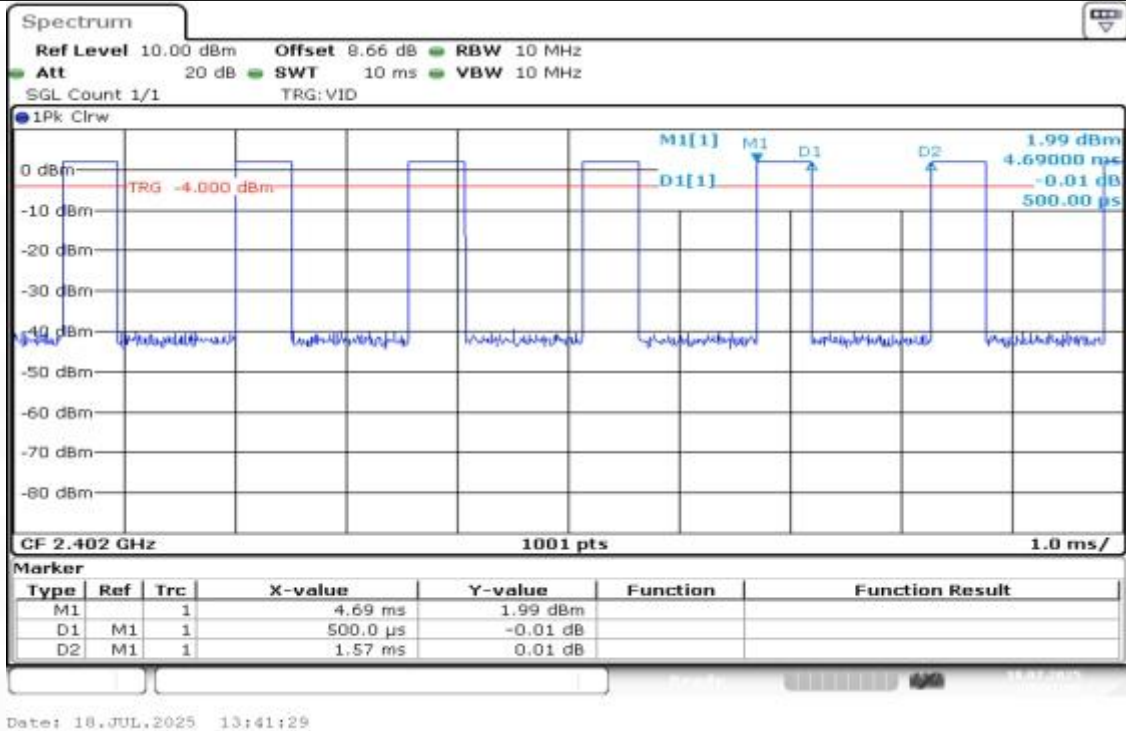
NTNV-BLE_1M-Ant1-2402



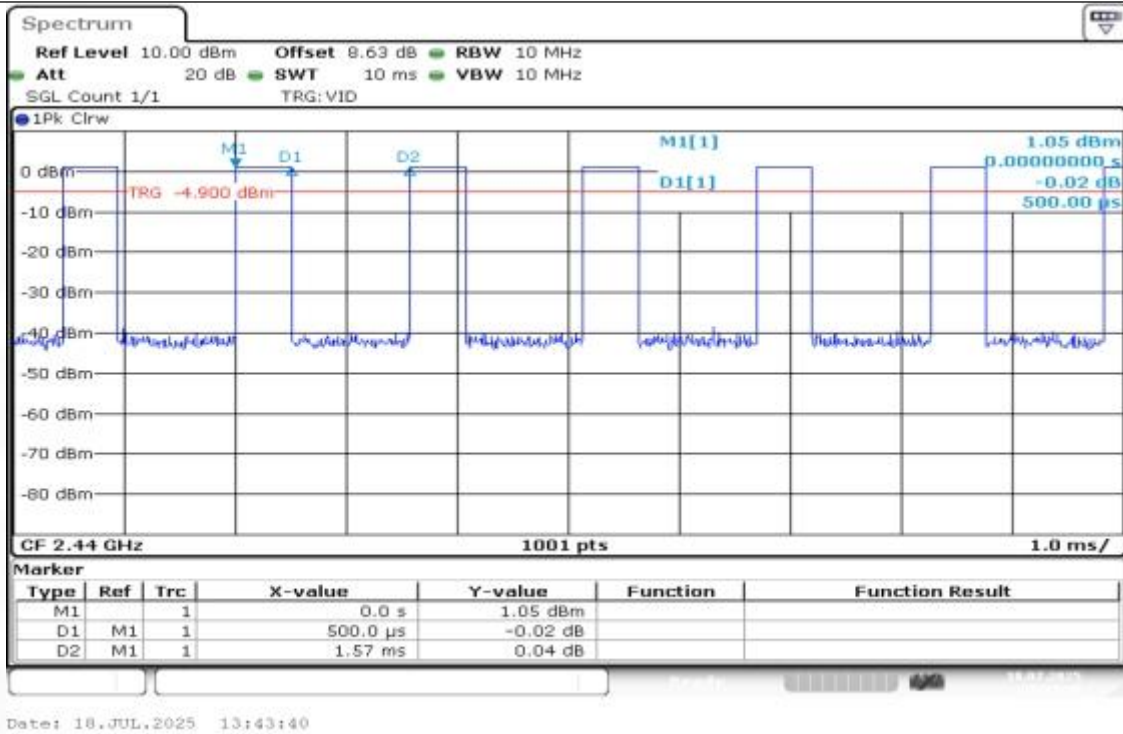
NTNV-BLE_1M-Ant1-2440



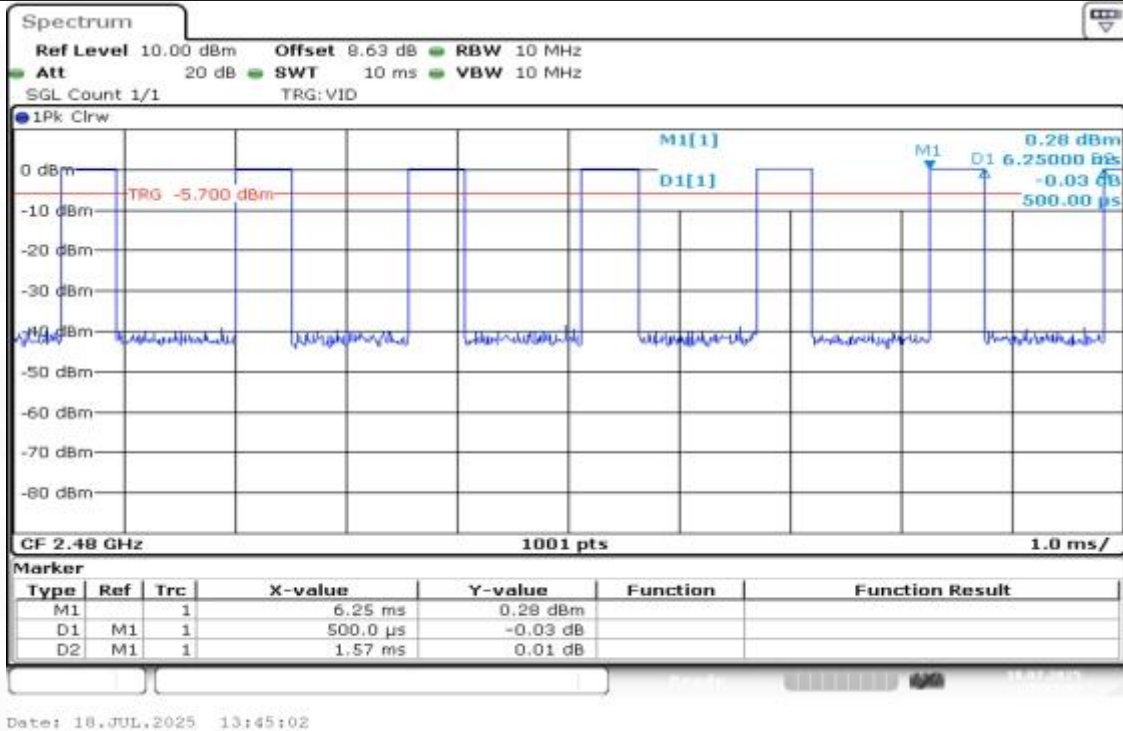
NTNV-BLE_1M-Ant1-2480



NTNV-BLE_2M-Ant1-2402



NTNV-BLE_2M-Ant1-2440



NTNV-BLE_2M-Ant1-2480

1.9 Appendix I: Emissions in Restricted Bands

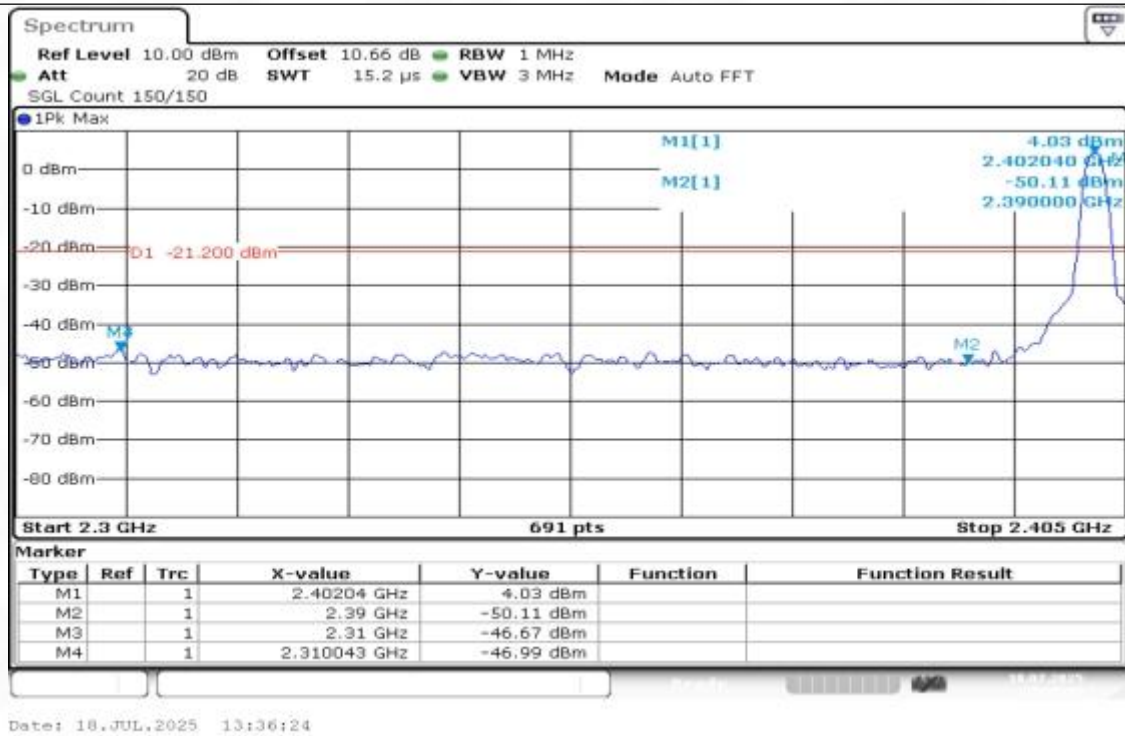
1.9.1 Test Result

TestMode	Antenna	ChName	Frequency[MHz]	Detector	Freq [MHz]	Result [dBm]	Limit [dBm]	Result [dBuV/m]	Limit [dBuV/m]	Verdict
BLE_1M	Ant1	Low	2402	Peak	2390.000	-50.11	≤-21.20	45.09	≤74	PASS
BLE_1M	Ant1	Low	2402	Peak	2310.000	-46.67	≤-21.20	48.53	≤74	PASS
BLE_1M	Ant1	Low	2402	Peak	2310.043	-46.99	≤-21.20	48.21	≤74	PASS
BLE_1M	Ant1	Low	2402	AV	2390.000	-58.51	≤-41.20	36.69	≤54	PASS
BLE_1M	Ant1	Low	2402	AV	2310.000	-58.5	≤-41.20	36.70	≤54	PASS
BLE_1M	Ant1	Low	2402	AV	2341.543	-56.63	≤-41.20	38.57	≤54	PASS
BLE_1M	Ant1	High	2480	Peak	2483.500	-42.11	≤-21.20	53.09	≤74	PASS
BLE_1M	Ant1	High	2480	Peak	2500.000	-49.27	≤-21.20	45.93	≤74	PASS
BLE_1M	Ant1	High	2480	Peak	2483.797	-40.77	≤-21.20	54.43	≤74	PASS
BLE_1M	Ant1	High	2480	AV	2483.500	-51.07	≤-41.20	44.13	≤54	PASS
BLE_1M	Ant1	High	2480	AV	2500.000	-58.22	≤-41.20	36.98	≤54	PASS
BLE_1M	Ant1	High	2480	AV	2483.565	-51.29	≤-41.20	43.91	≤54	PASS
BLE_2M	Ant1	Low	2402	Peak	2390.000	-37.47	≤-21.20	57.73	≤74	PASS
BLE_2M	Ant1	Low	2402	Peak	2310.000	-49.37	≤-21.20	45.83	≤74	PASS
BLE_2M	Ant1	Low	2402	Peak	2389.783	-37.24	≤-21.20	57.96	≤74	PASS
BLE_2M	Ant1	Low	2402	AV	2390.000	-58.17	≤-41.20	37.03	≤54	PASS
BLE_2M	Ant1	Low	2402	AV	2310.000	-58.62	≤-41.20	36.58	≤54	PASS
BLE_2M	Ant1	Low	2402	AV	2341.239	-56.76	≤-41.20	38.44	≤54	PASS
BLE_2M	Ant1	High	2480	Peak	2483.500	-41.14	≤-21.20	54.06	≤74	PASS
BLE_2M	Ant1	High	2480	Peak	2500.000	-49.09	≤-21.20	46.11	≤74	PASS
BLE_2M	Ant1	High	2480	Peak	2483.565	-41.17	≤-21.20	54.03	≤74	PASS
BLE_2M	Ant1	High	2480	AV	2483.500	-46.94	≤-41.20	48.26	≤54	PASS
BLE_2M	Ant1	High	2480	AV	2500.000	-57.77	≤-41.20	37.43	≤54	PASS
BLE_2M	Ant1	High	2480	AV	2483.565	-47.81	≤-41.20	47.39	≤54	PASS

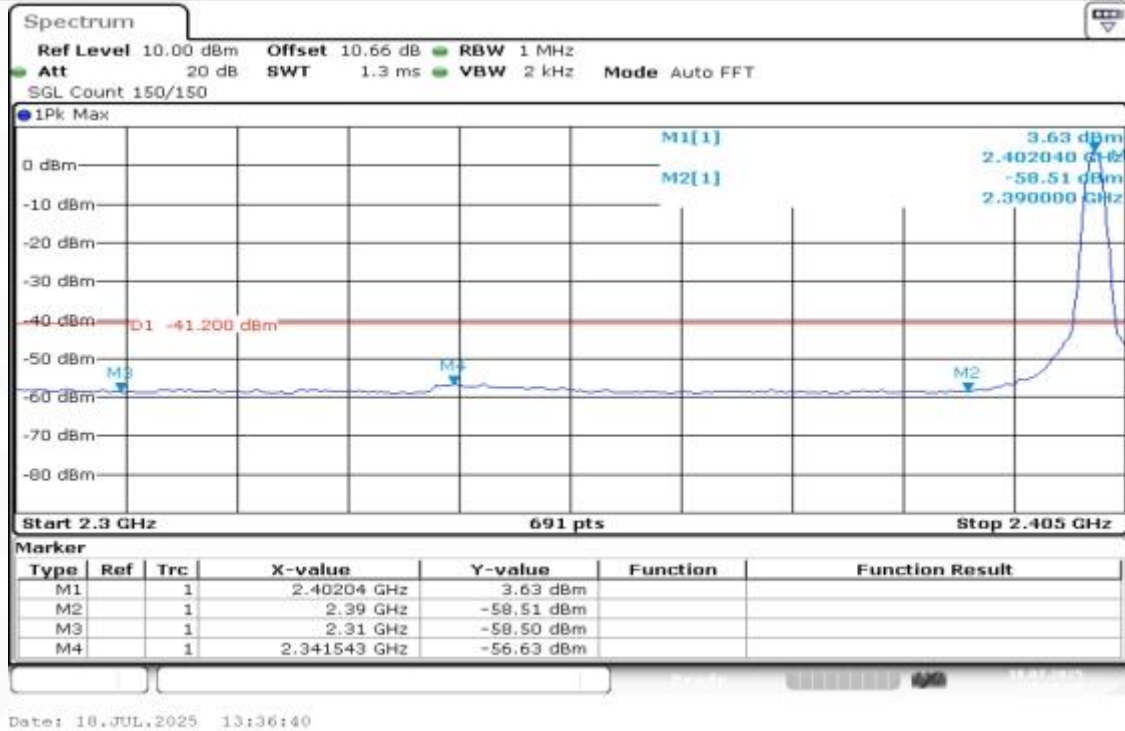
Note:

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.

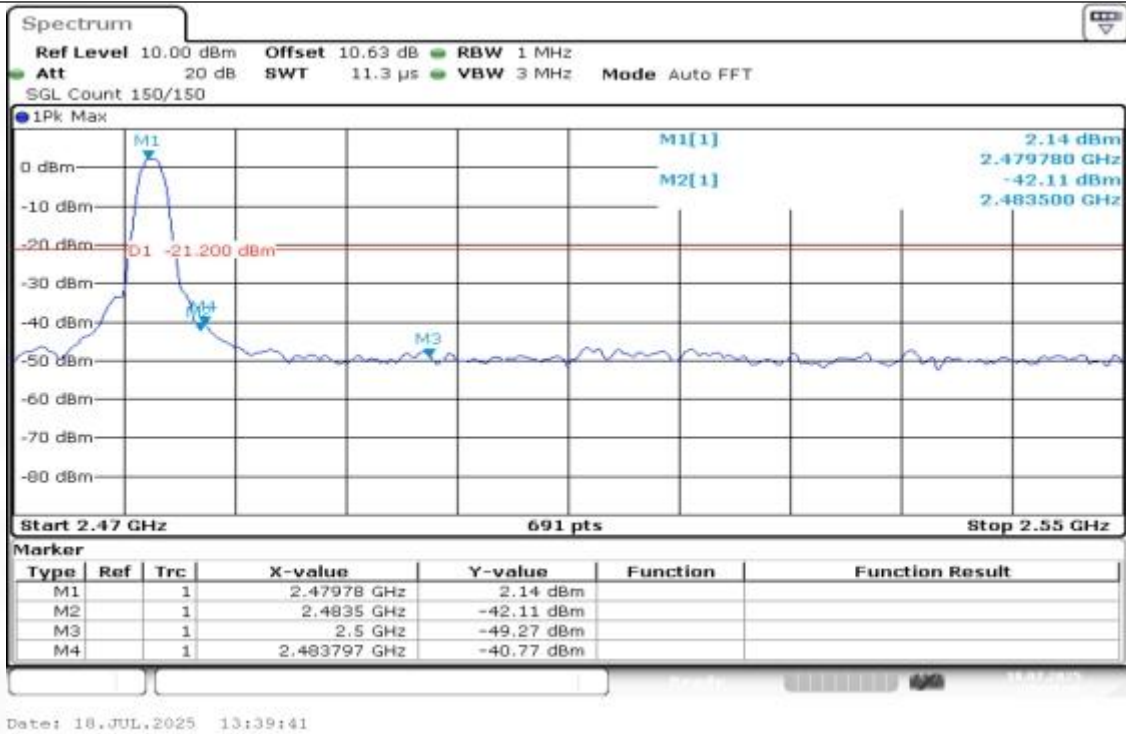
1.9.2 Test Graphs



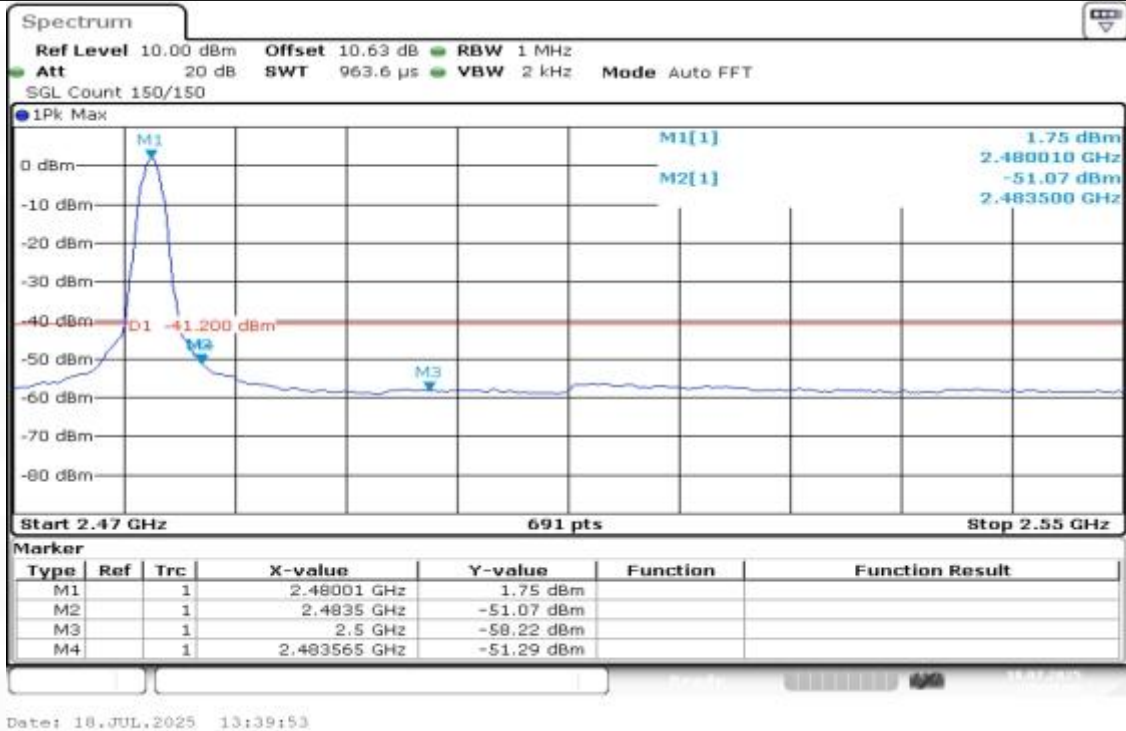
BLE_1M-Ant1-2402-PASS



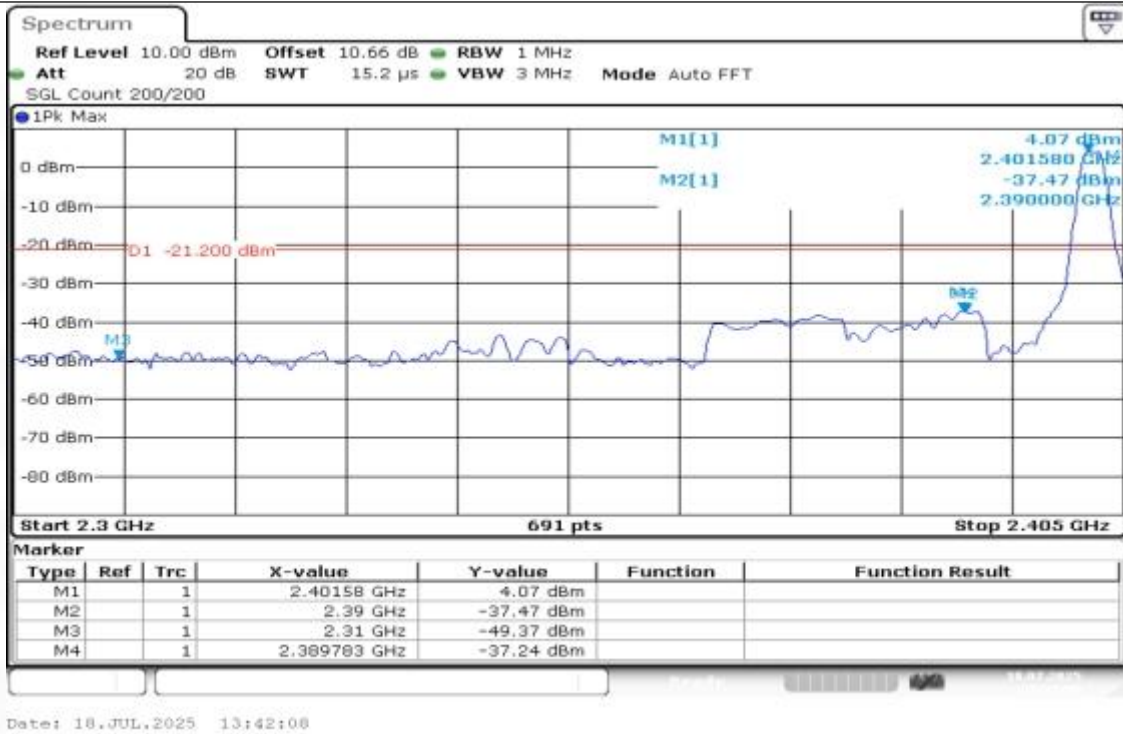
BLE_1M-Ant1-2402-PASS



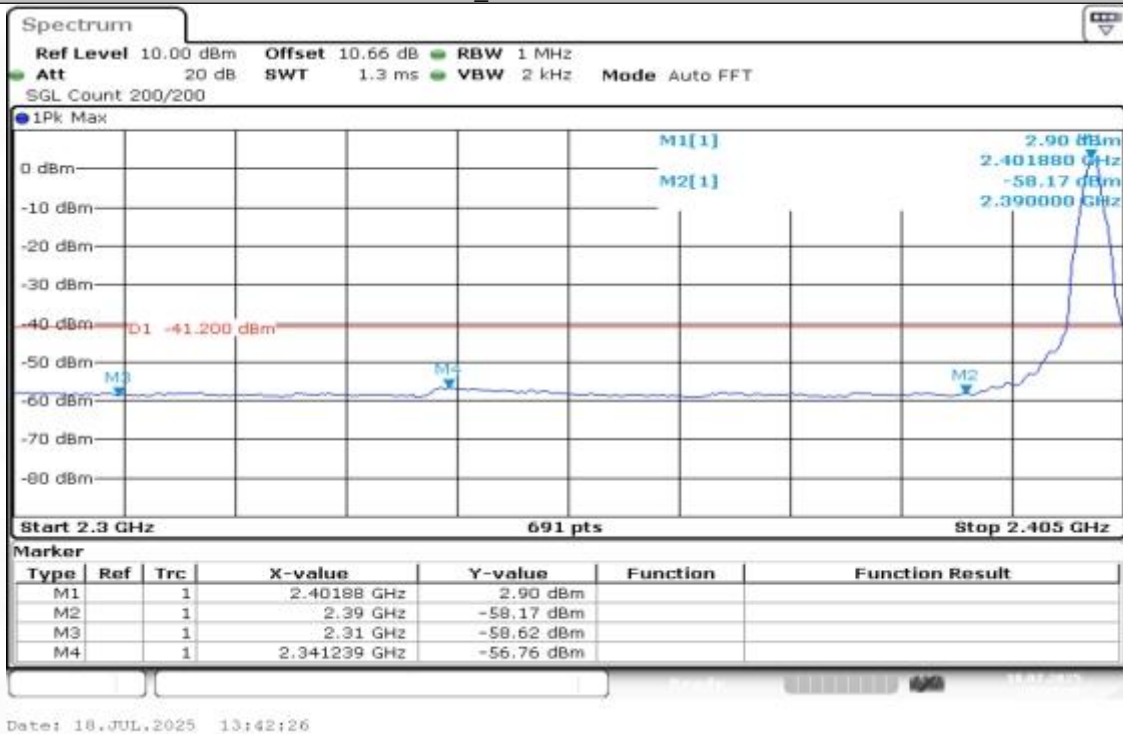
BLE_1M-Ant1-2480-PASS



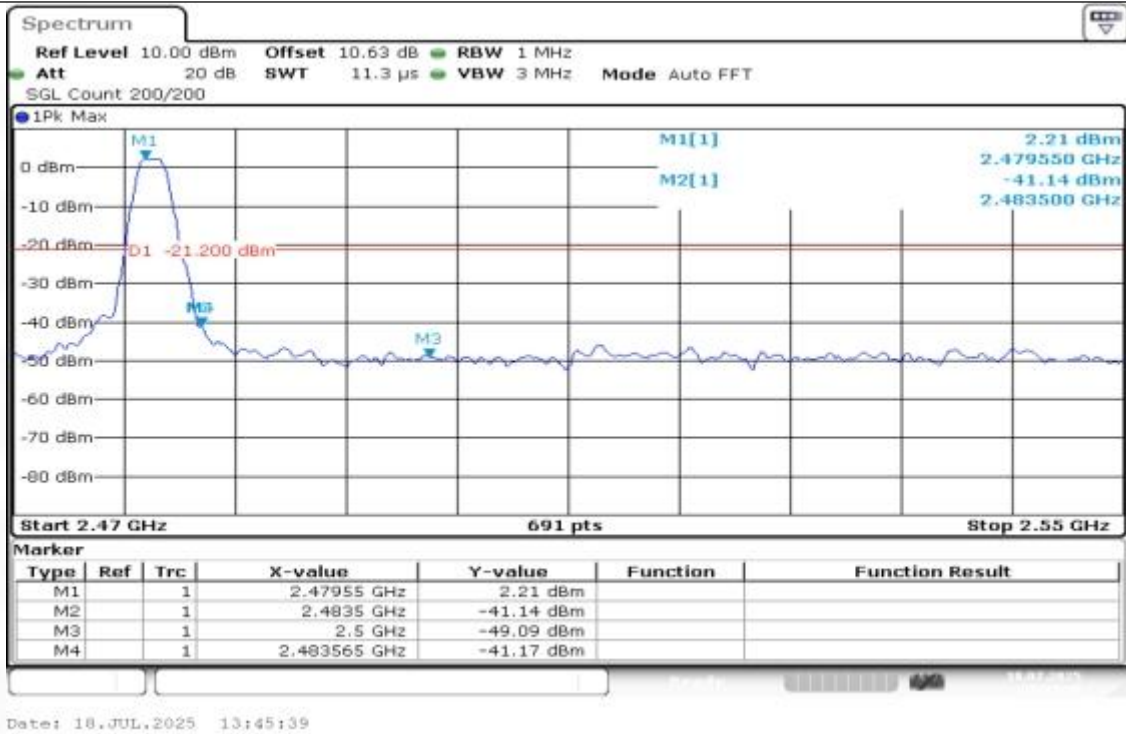
BLE_1M-Ant1-2480-PASS



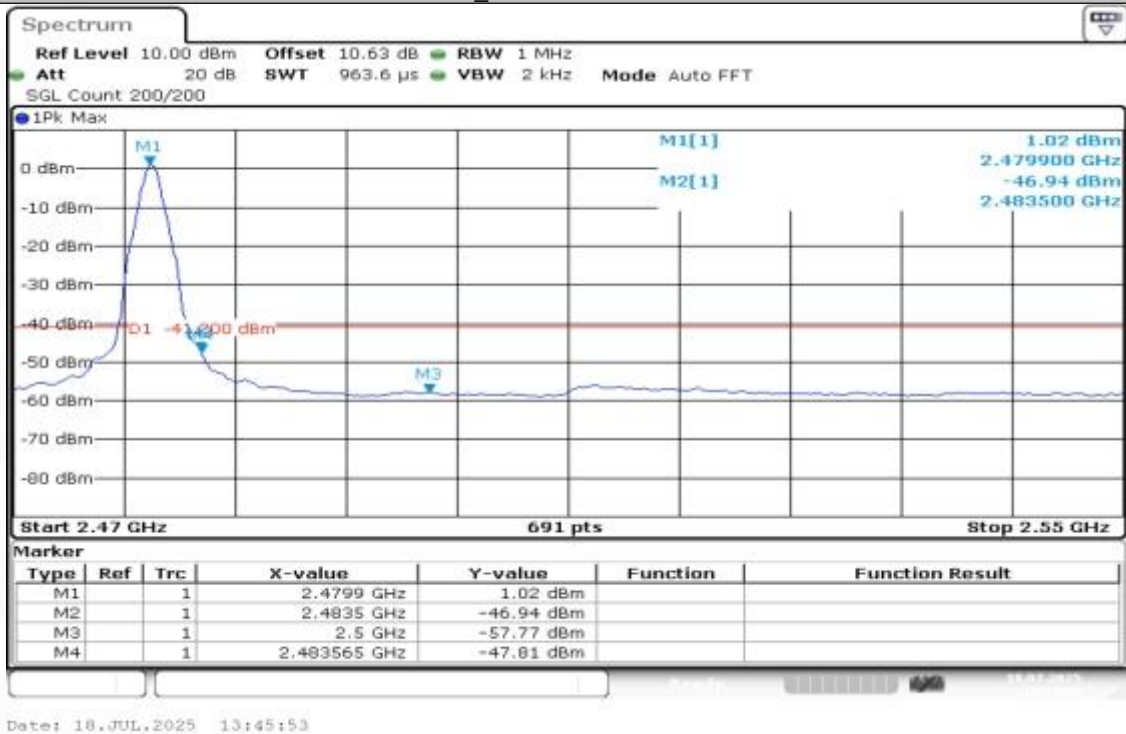
BLE_2M-Ant1-2402-PASS



BLE_2M-Ant1-2402-PASS



BLE_2M-Ant1-2480-PASS



BLE_2M-Ant1-2480-PASS