

Appendix: Bluetooth LE

Contents

Appendix A: DTS Bandwidth 3

 Test Result 3

 Test Graphs 4

Appendix B: Occupied Channel Bandwidth 7

 Test Result 7

 Test Graphs 8

Appendix C: Maximum conducted output power 11

 Test Result 11

 Test Graphs 12

Appendix D: Maximum power spectral density 15

 Test Result 15

 Test Graphs 16

Appendix E: Band edge measurements 19

 Test Result 19

 Test Graphs 20

Appendix F: Conducted Spurious Emission 22

 Test Result 22

 Test Graphs 23

Appendix G: Duty Cycle 32

 Test Result 32

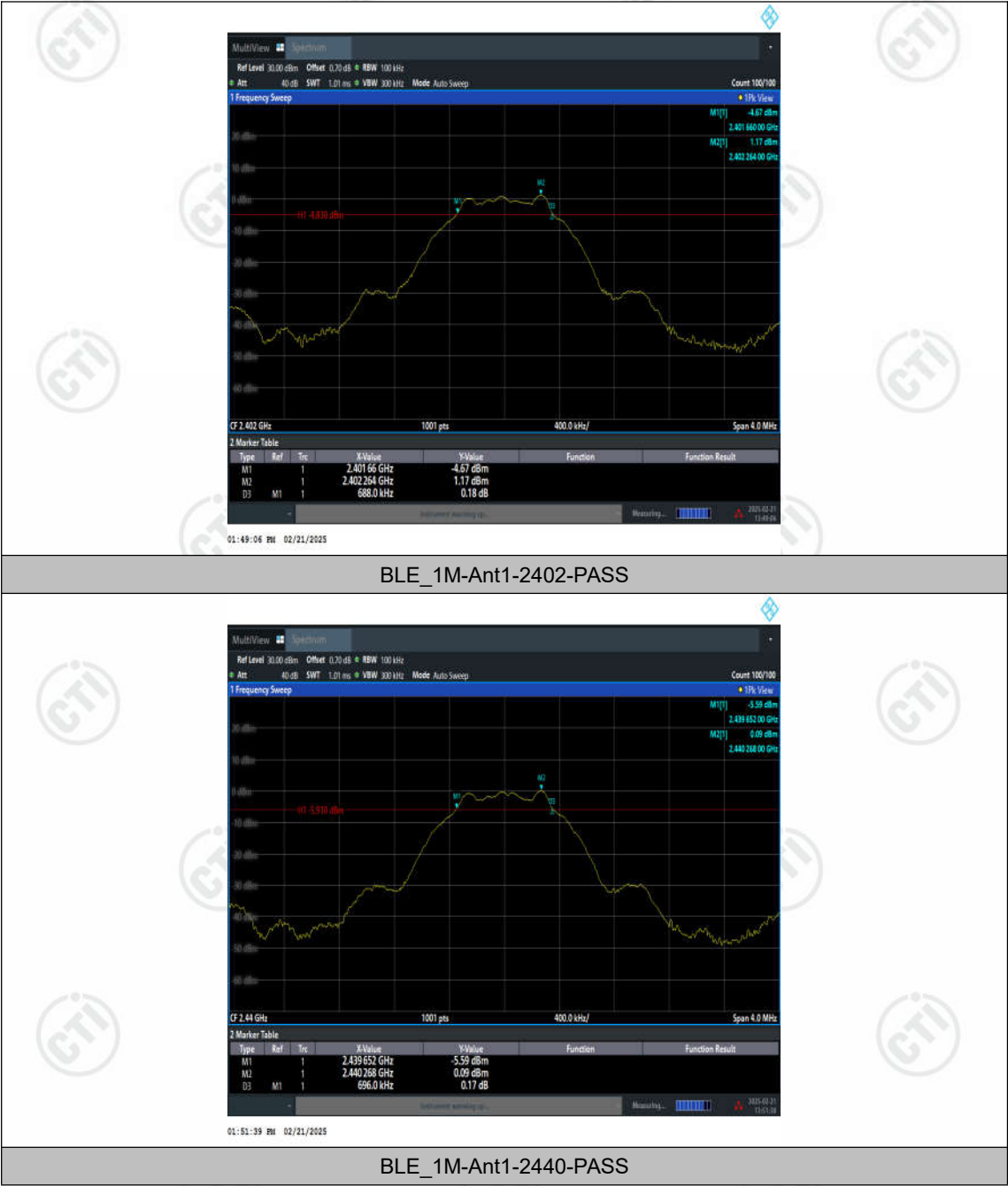
 Test Graphs 33

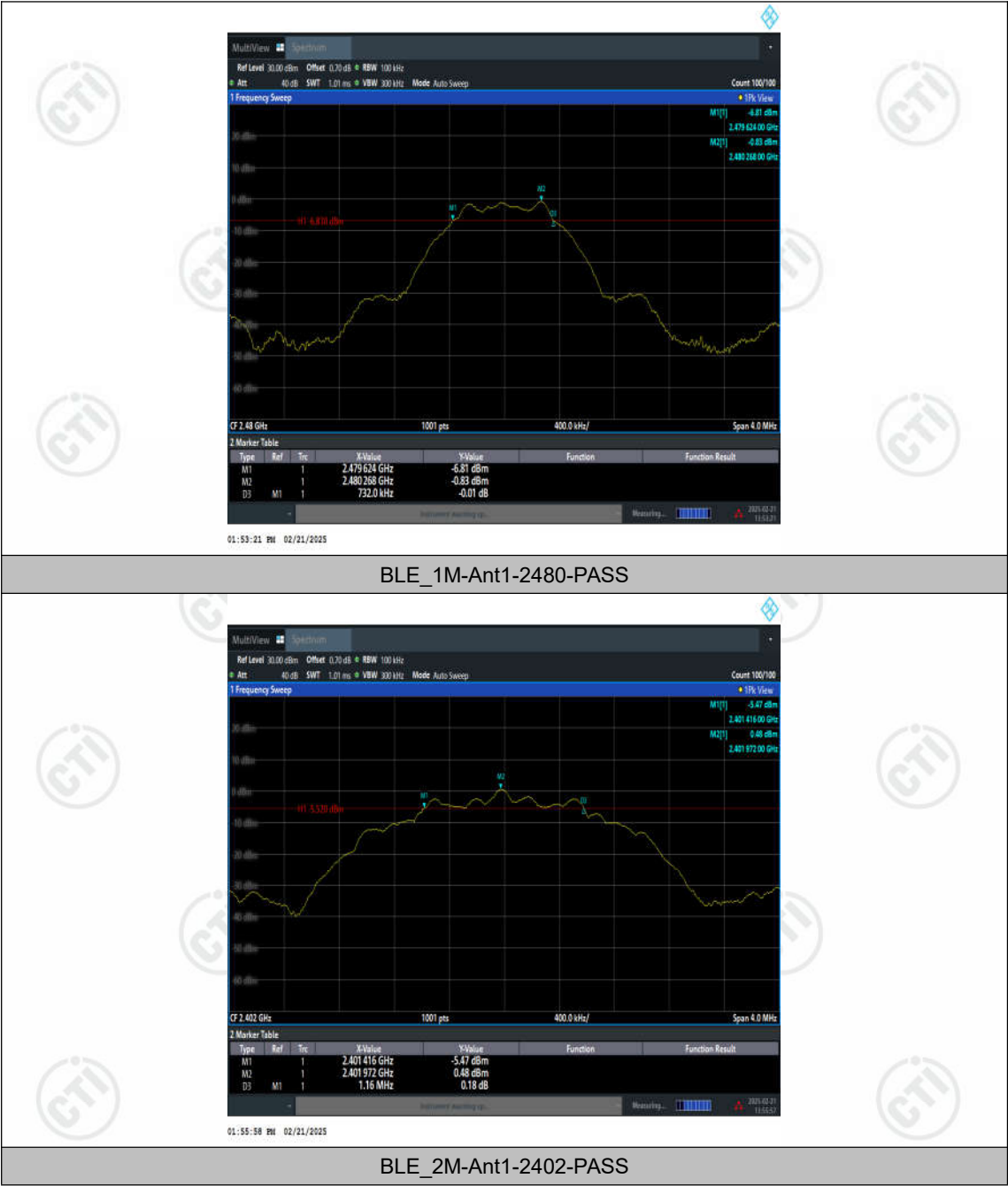
Appendix A: DTS Bandwidth

Test Result

TestMode	Antenna	Frequency[MHz]	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.69	2401.66	2402.35	0.5	PASS
BLE_1M	Ant1	2440	0.70	2439.65	2440.35	0.5	PASS
BLE_1M	Ant1	2480	0.73	2479.62	2480.36	0.5	PASS
BLE_2M	Ant1	2402	1.16	2401.42	2402.58	0.5	PASS
BLE_2M	Ant1	2440	1.18	2439.41	2440.58	0.5	PASS
BLE_2M	Ant1	2480	1.17	2479.41	2480.58	0.5	PASS

Test Graphs







Appendix B: Occupied Channel Bandwidth

Test Result

TestMode	Antenna	Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	1.034	2401.4846	2402.5183	---	---
BLE_1M	Ant1	2440	1.036	2439.4829	2440.5191	---	---
BLE_1M	Ant1	2480	1.047	2479.4780	2480.5249	---	---
BLE_2M	Ant1	2402	2.053	2400.9858	2403.0391	---	---
BLE_2M	Ant1	2440	2.043	2438.9901	2441.0330	---	---
BLE_2M	Ant1	2480	2.052	2478.9857	2481.0380	---	---

Test Graphs





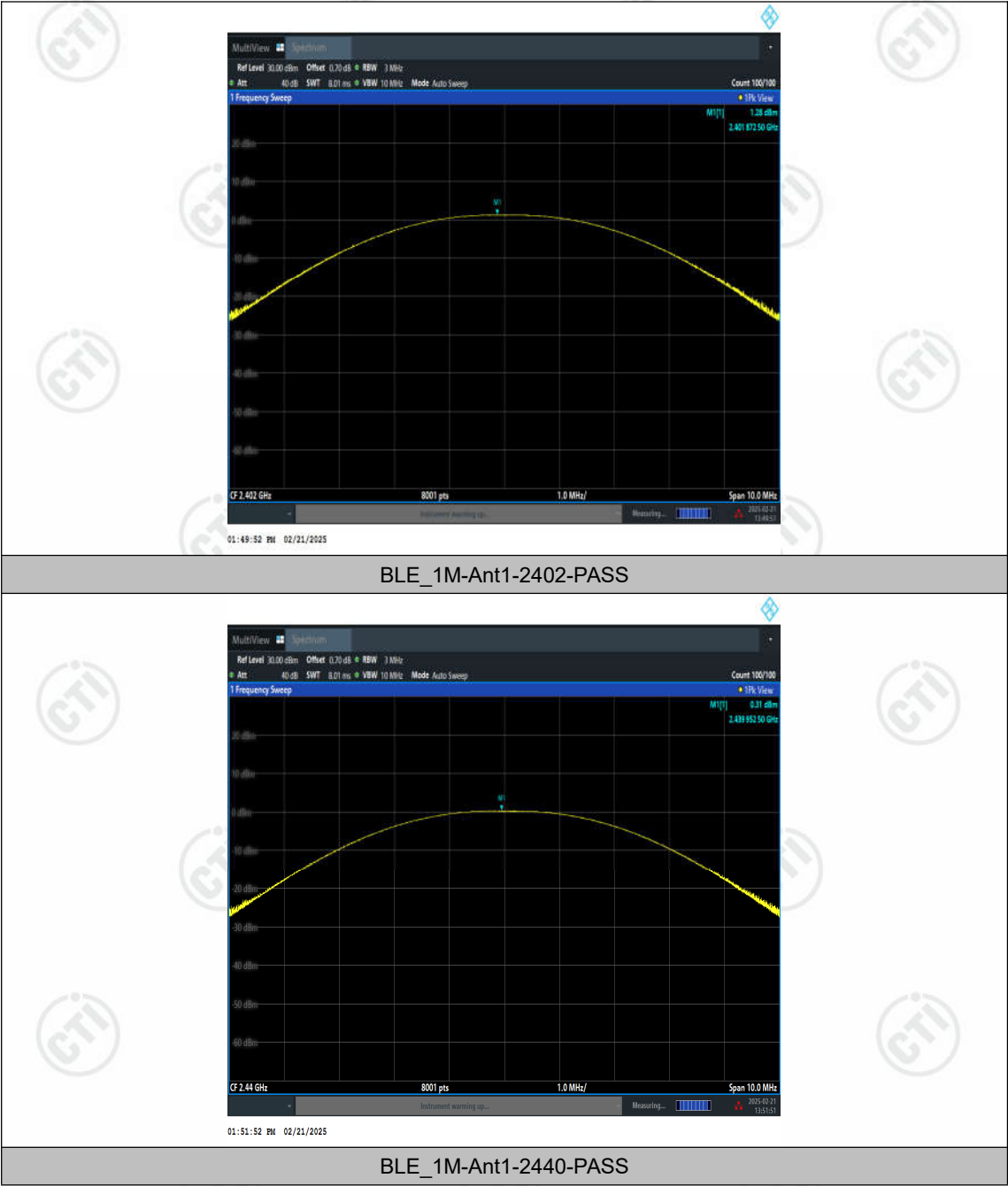


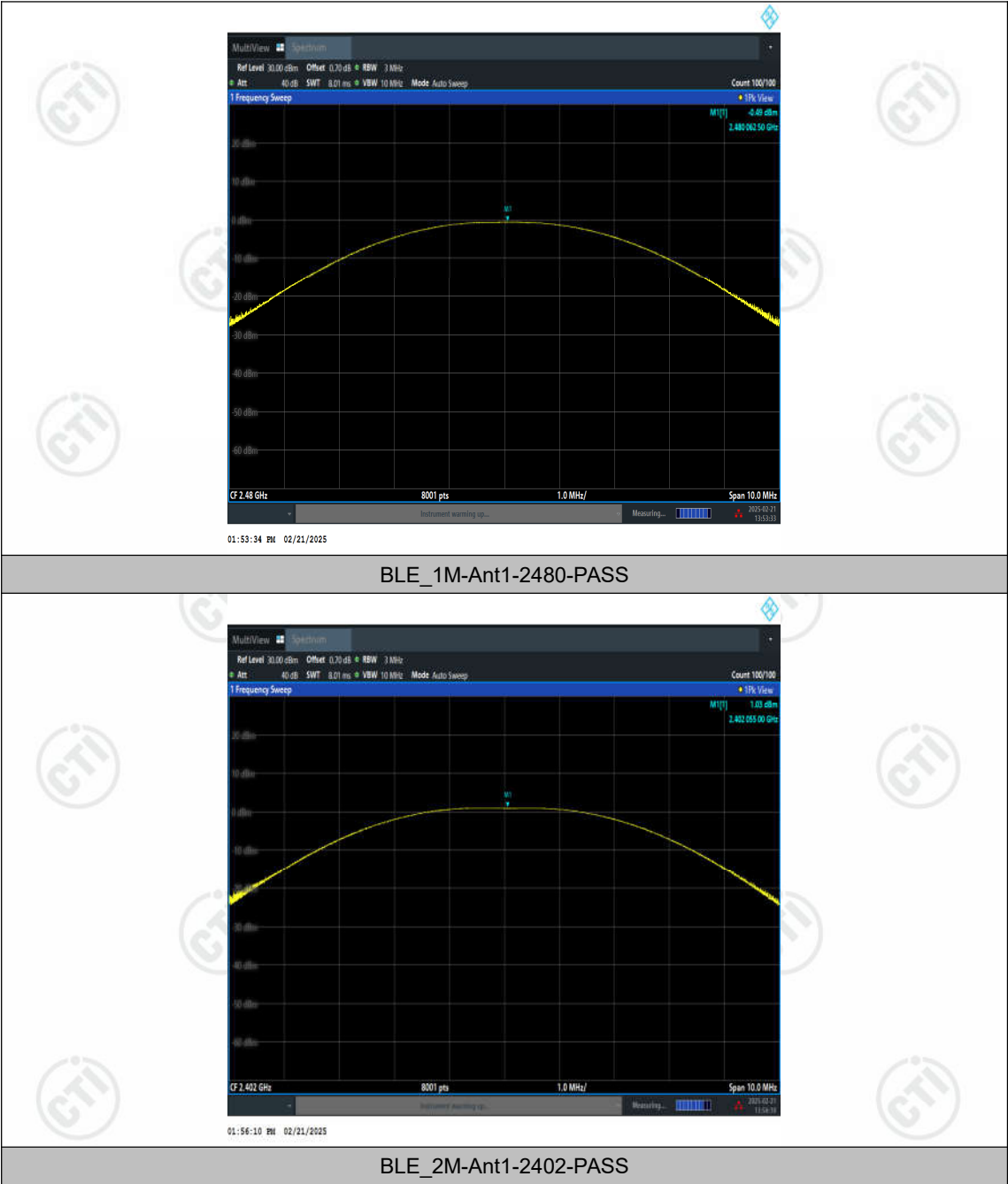
Appendix C: Maximum conducted output power

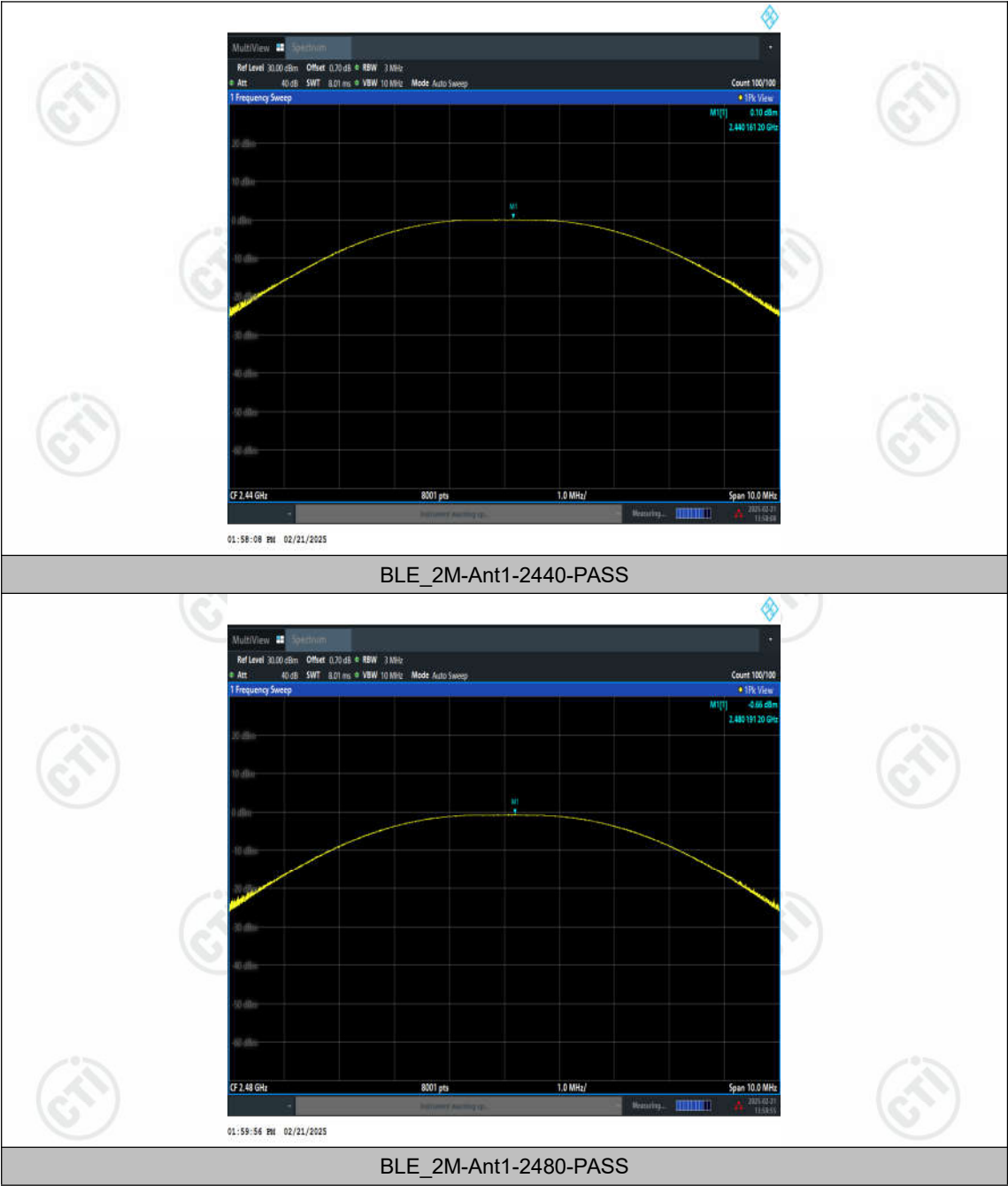
Test Result

TestMode	Antenna	Frequency[MHz]	Conducted Peak Power[dBm]	Conducted Limit[dBm]	Verdict
BLE_1M	Ant1	2402	1.28	≤30	PASS
BLE_1M	Ant1	2440	0.31	≤30	PASS
BLE_1M	Ant1	2480	-0.49	≤30	PASS
BLE_2M	Ant1	2402	1.03	≤30	PASS
BLE_2M	Ant1	2440	0.10	≤30	PASS
BLE_2M	Ant1	2480	-0.66	≤30	PASS

Test Graphs





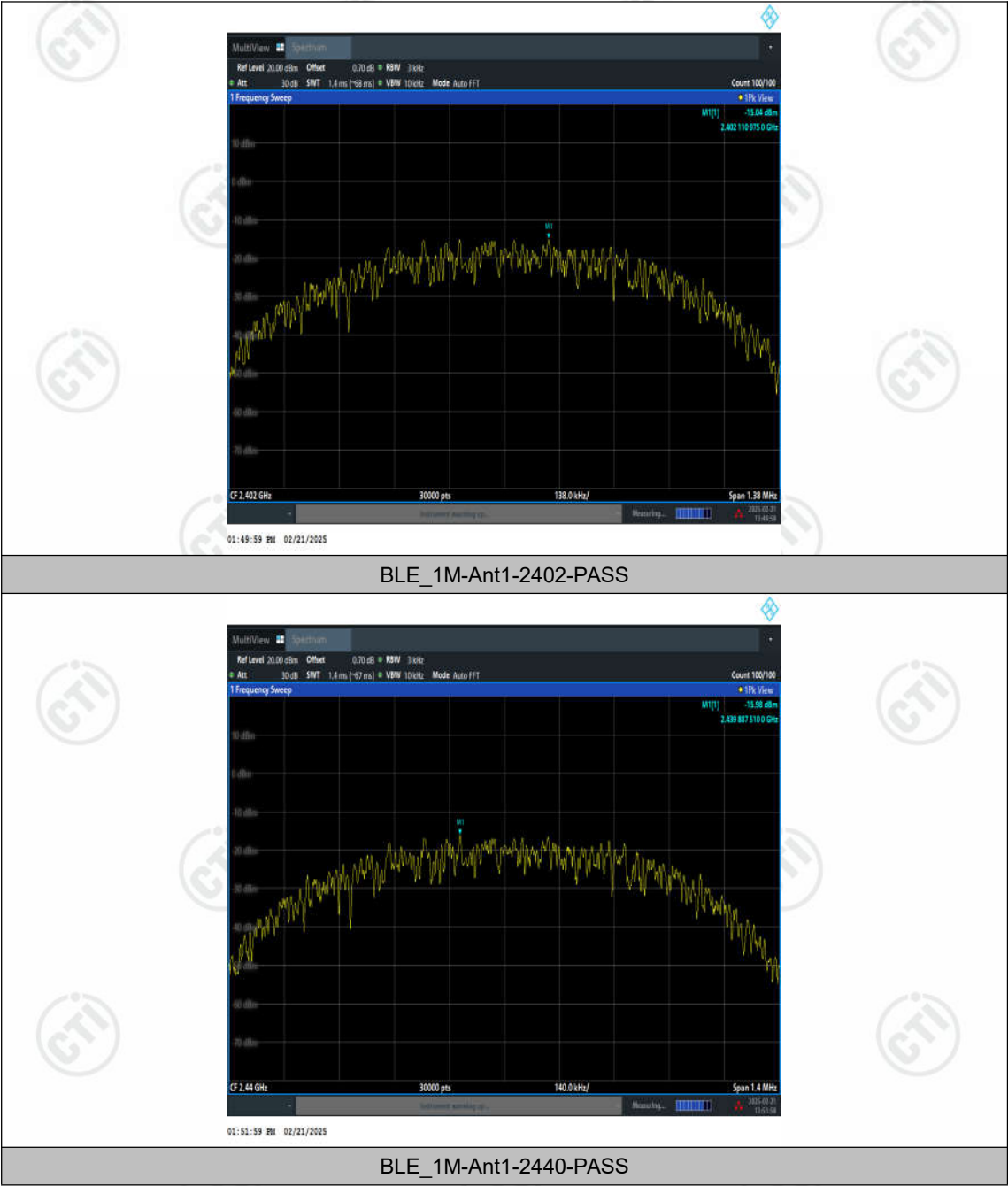


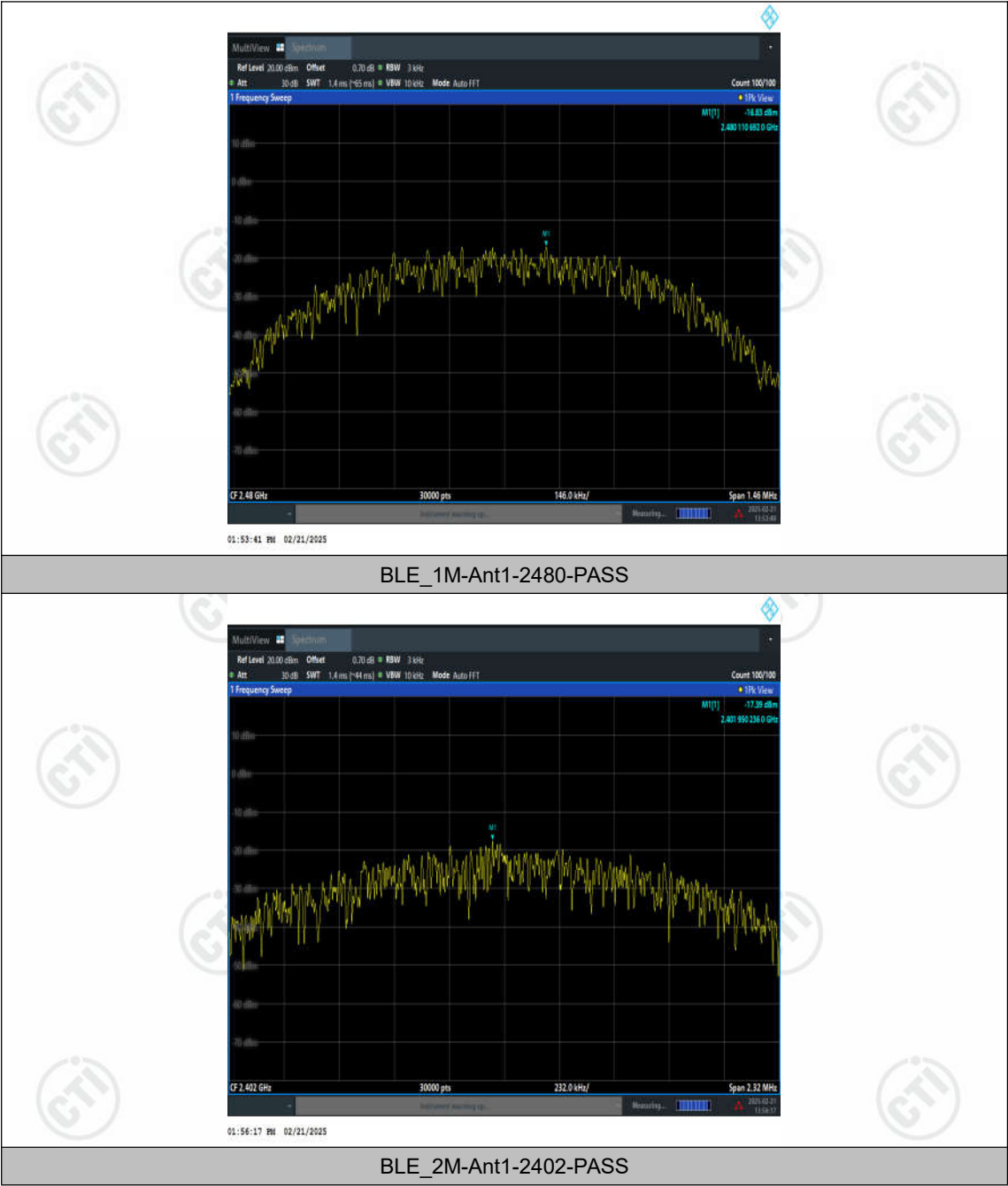
Appendix D: Maximum power spectral density

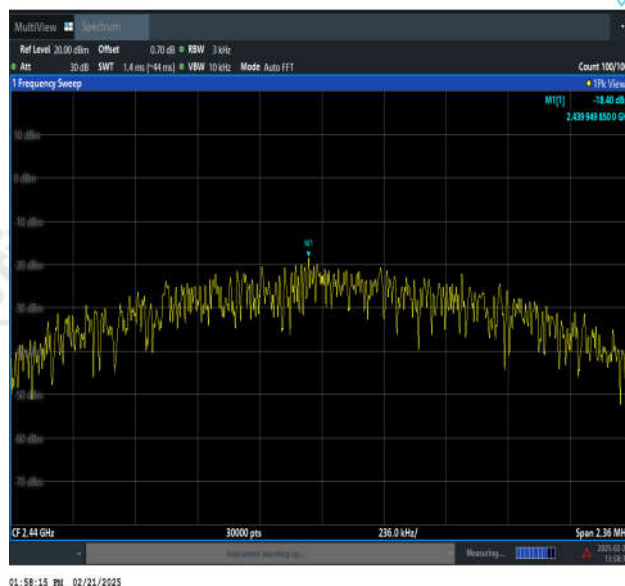
Test Result

TestMode	Antenna	Frequency[MHz]	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-15.04	≤8.00	PASS
BLE_1M	Ant1	2440	-15.98	≤8.00	PASS
BLE_1M	Ant1	2480	-16.83	≤8.00	PASS
BLE_2M	Ant1	2402	-17.39	≤8.00	PASS
BLE_2M	Ant1	2440	-18.40	≤8.00	PASS
BLE_2M	Ant1	2480	-19.77	≤8.00	PASS

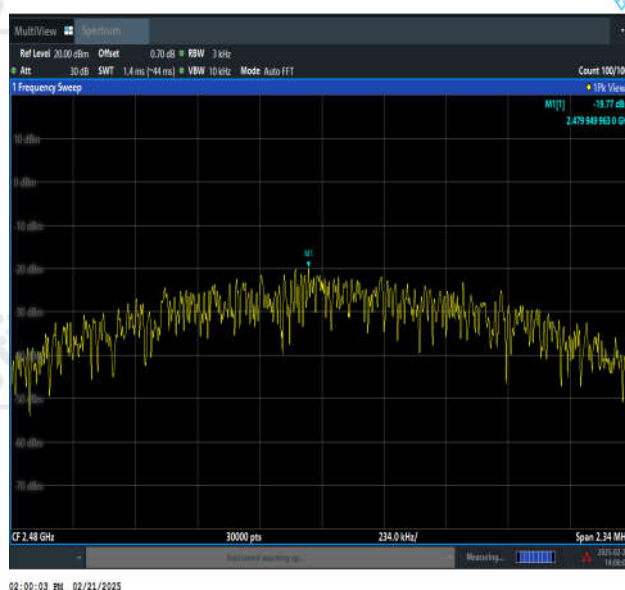
Test Graphs







BLE 2M-Ant1-2440-PASS



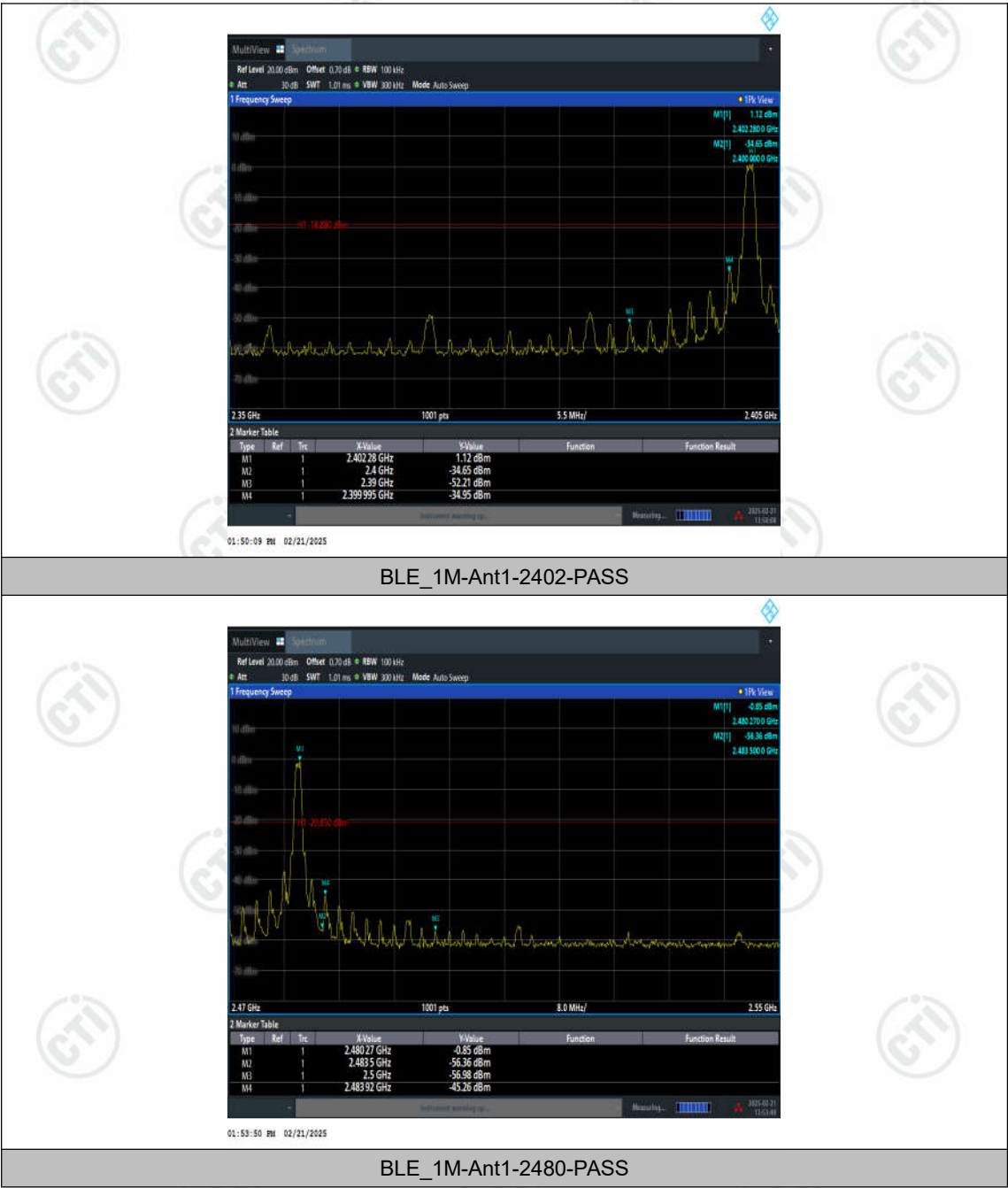
BLE_2M-Ant1-2480-PASS

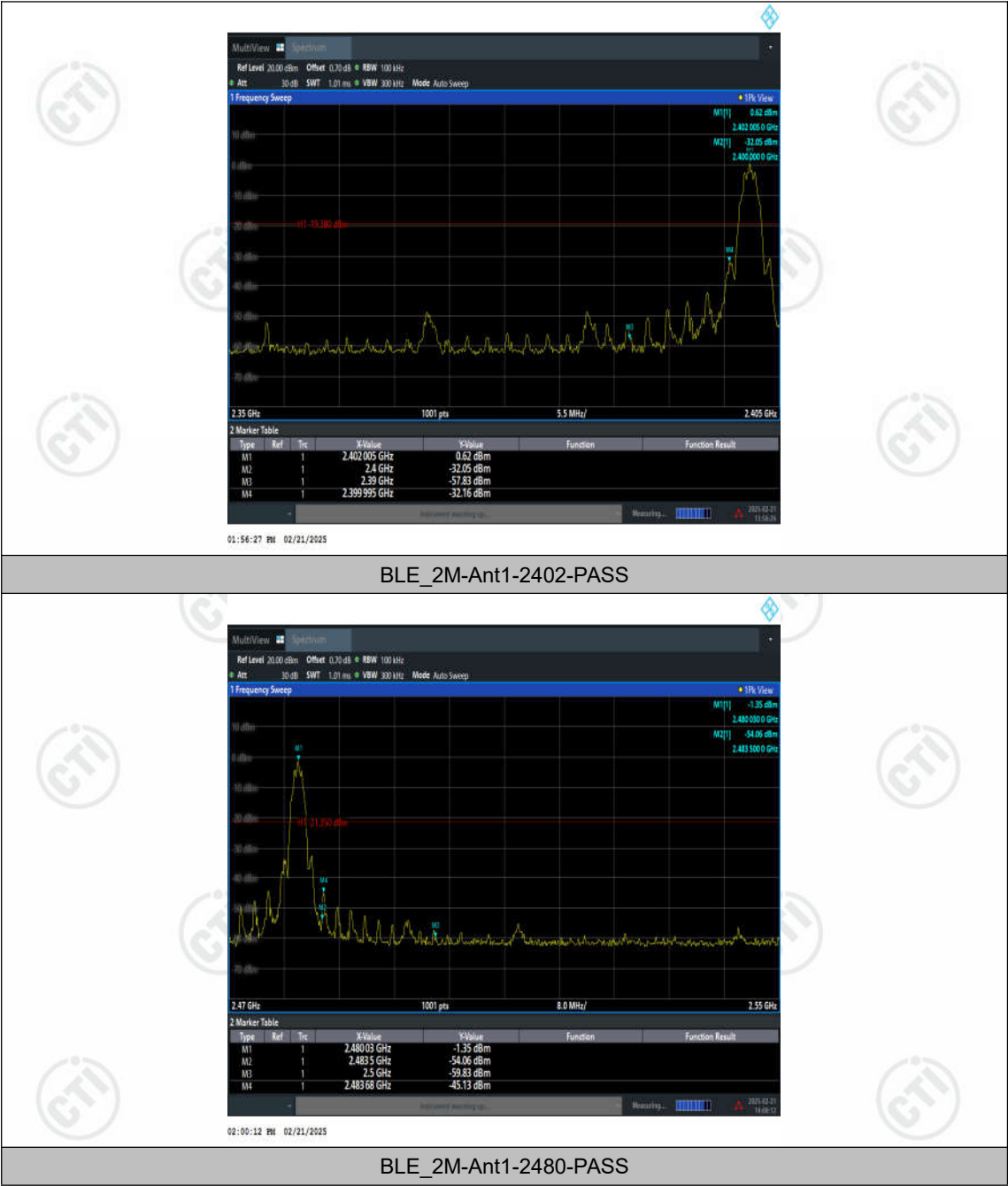
Appendix E: Band edge measurements

Test Result

TestMode	Antenna	ChName	Frequency[MHz]	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	1.12	-34.95	≤-18.88	PASS
BLE_1M	Ant1	High	2480	-0.85	-45.26	≤-20.85	PASS
BLE_2M	Ant1	Low	2402	0.62	-32.16	≤-19.38	PASS
BLE_2M	Ant1	High	2480	-1.35	-45.13	≤-21.35	PASS

Test Graphs



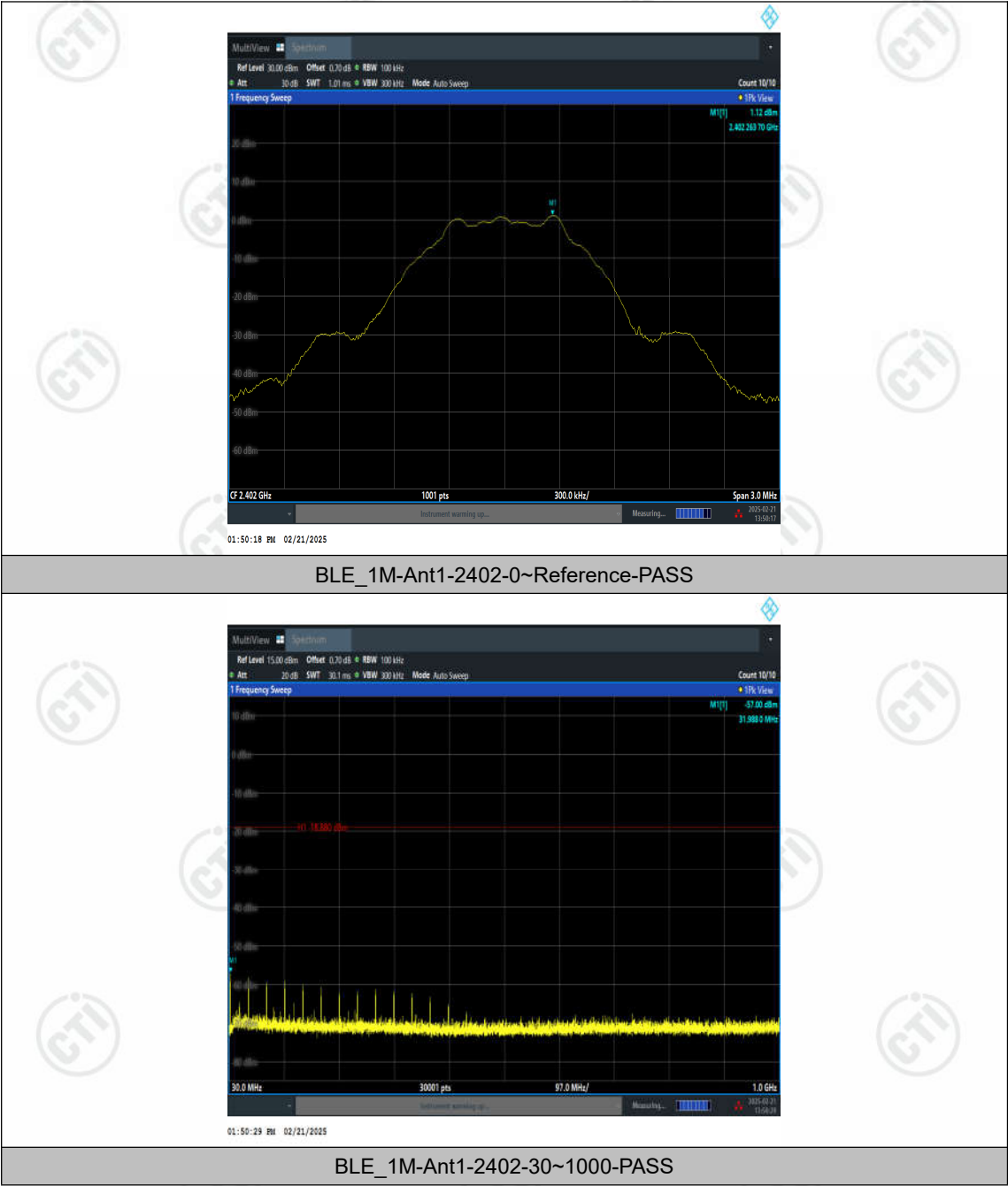


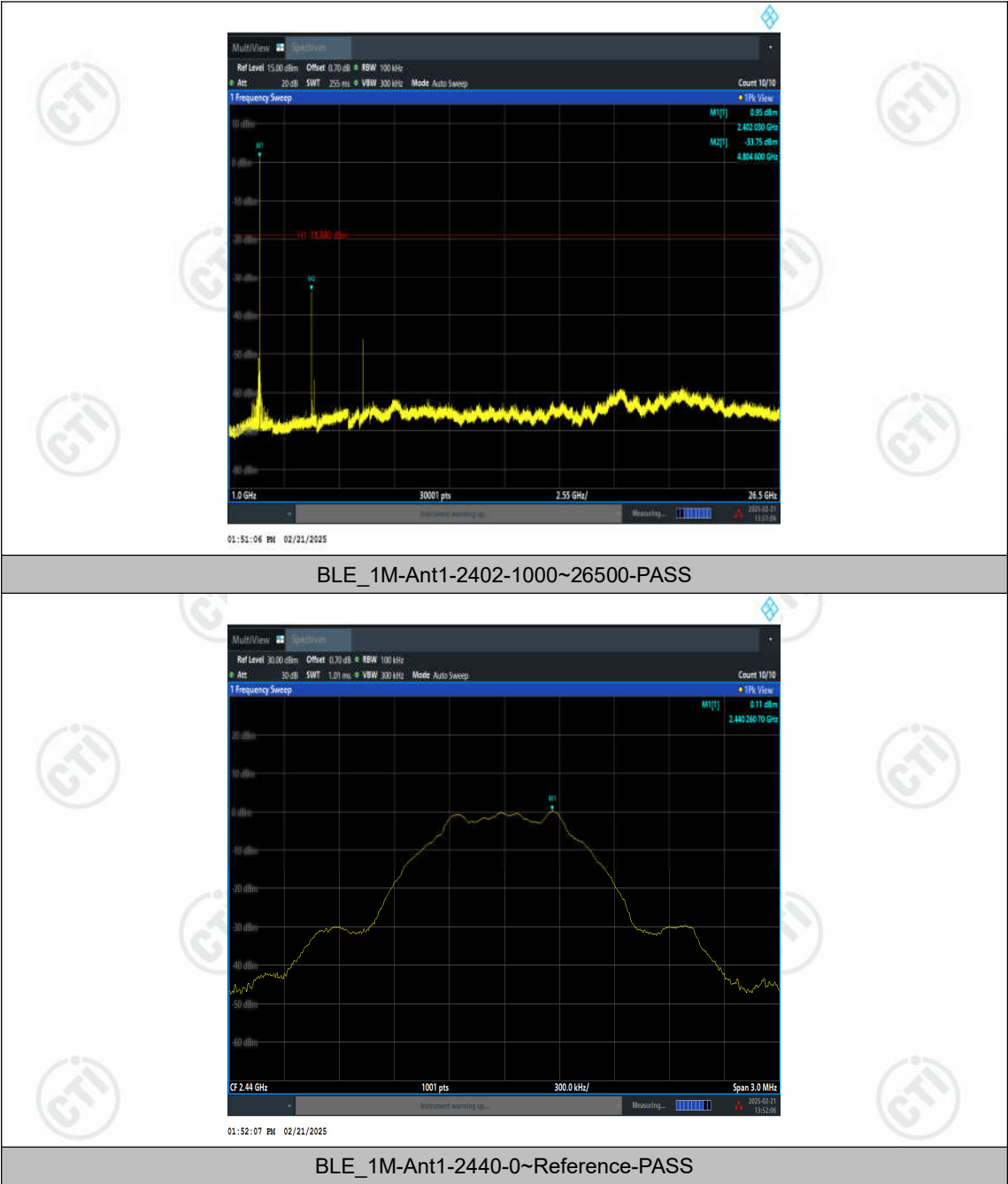
Appendix F: Conducted Spurious Emission

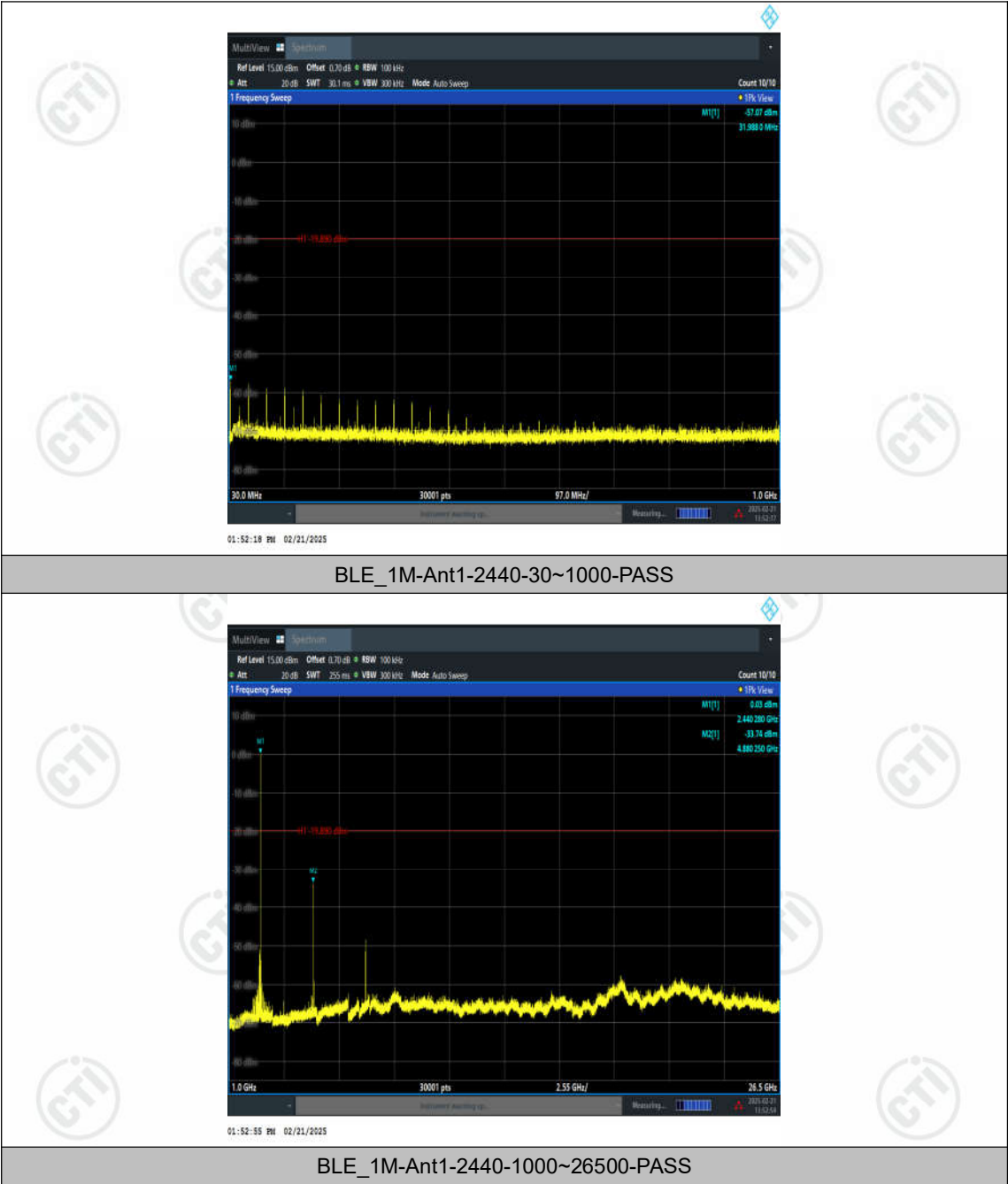
Test Result

TestMode	Antenna	Frequency [MHz]	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	0~Reference	1.12	1.12	---	PASS
BLE_1M	Ant1	2402	30~1000	1.12	-57	≤-18.88	PASS
BLE_1M	Ant1	2402	1000~26500	1.12	-33.75	≤-18.88	PASS
BLE_1M	Ant1	2440	0~Reference	0.11	0.11	---	PASS
BLE_1M	Ant1	2440	30~1000	0.11	-57.07	≤-19.89	PASS
BLE_1M	Ant1	2440	1000~26500	0.11	-33.74	≤-19.89	PASS
BLE_1M	Ant1	2480	0~Reference	-0.93	-0.93	---	PASS
BLE_1M	Ant1	2480	30~1000	-0.93	-56.9	≤-20.93	PASS
BLE_1M	Ant1	2480	1000~26500	-0.93	-34.92	≤-20.93	PASS
BLE_2M	Ant1	2402	0~Reference	0.56	0.56	---	PASS
BLE_2M	Ant1	2402	30~1000	0.56	-56.92	≤-19.44	PASS
BLE_2M	Ant1	2402	1000~26500	0.56	-34.81	≤-19.44	PASS
BLE_2M	Ant1	2440	0~Reference	-0.46	-0.46	---	PASS
BLE_2M	Ant1	2440	30~1000	-0.46	-57.25	≤-20.46	PASS
BLE_2M	Ant1	2440	1000~26500	-0.46	-36.11	≤-20.46	PASS
BLE_2M	Ant1	2480	0~Reference	-1.36	-1.36	---	PASS
BLE_2M	Ant1	2480	30~1000	-1.36	-56.78	≤-21.36	PASS
BLE_2M	Ant1	2480	1000~26500	-1.36	-37.53	≤-21.36	PASS

Test Graphs

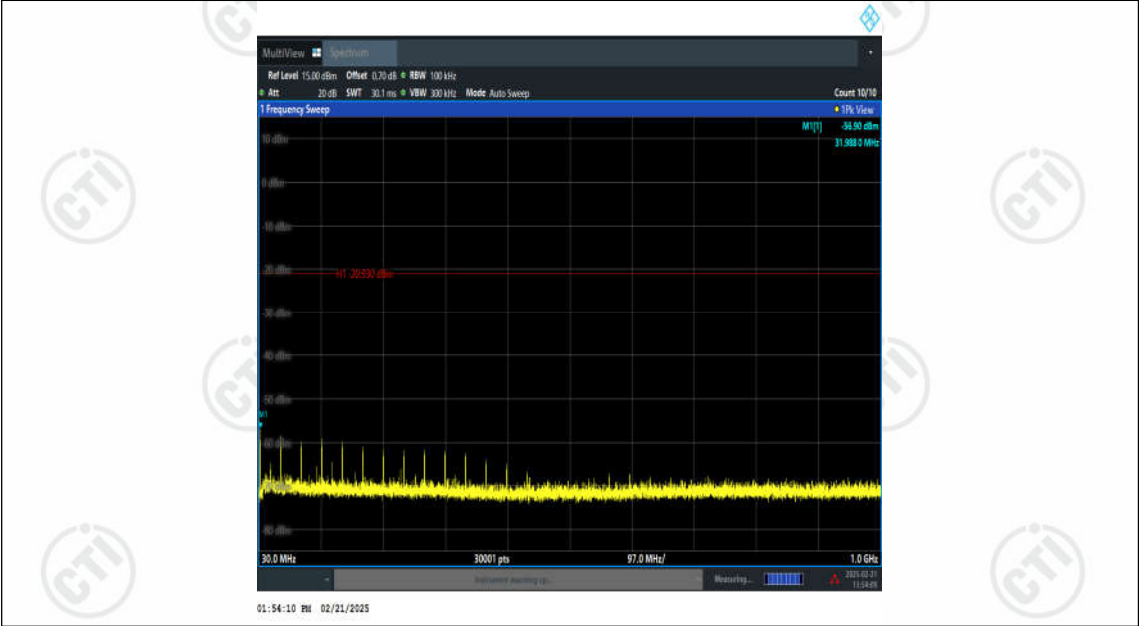




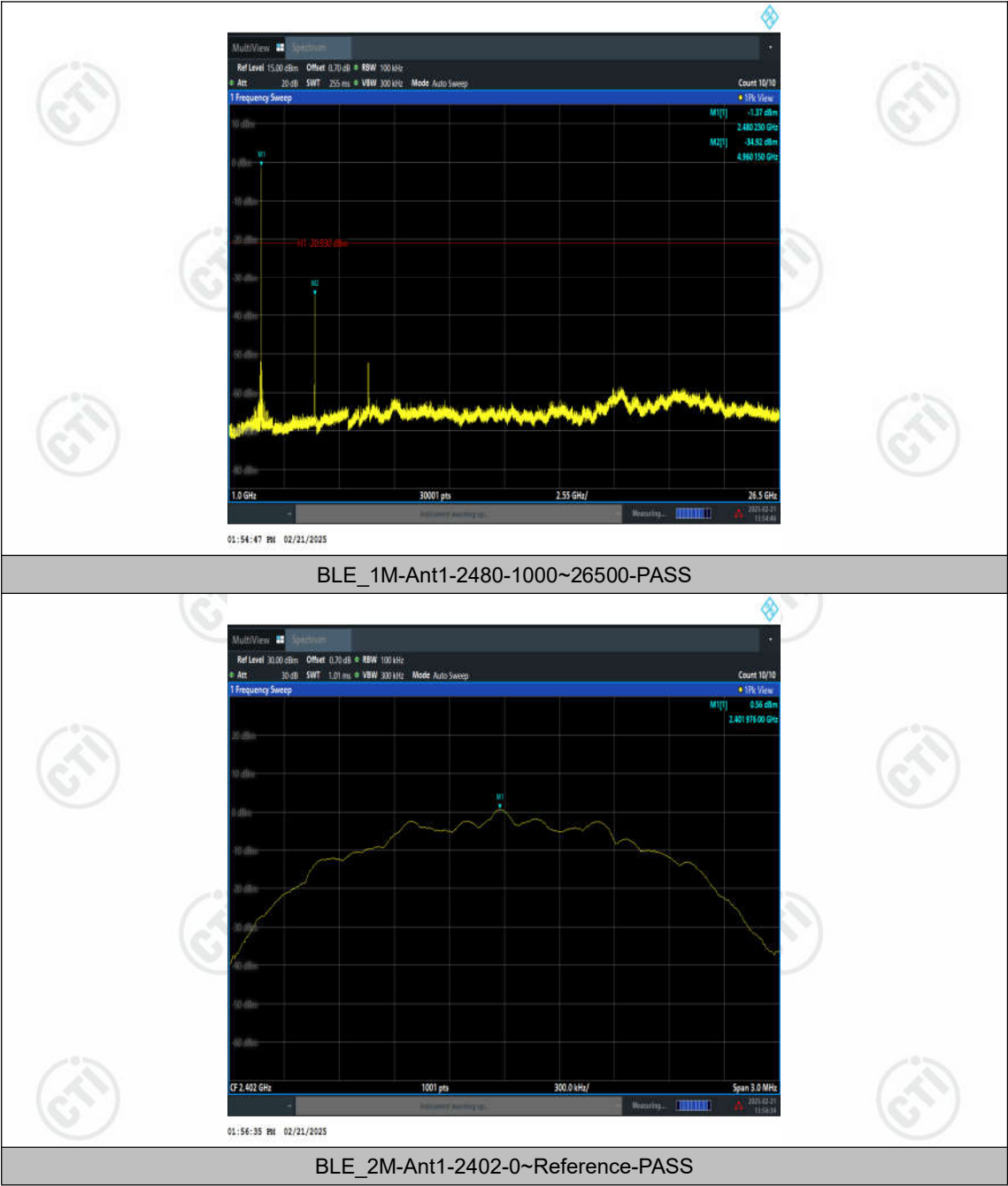


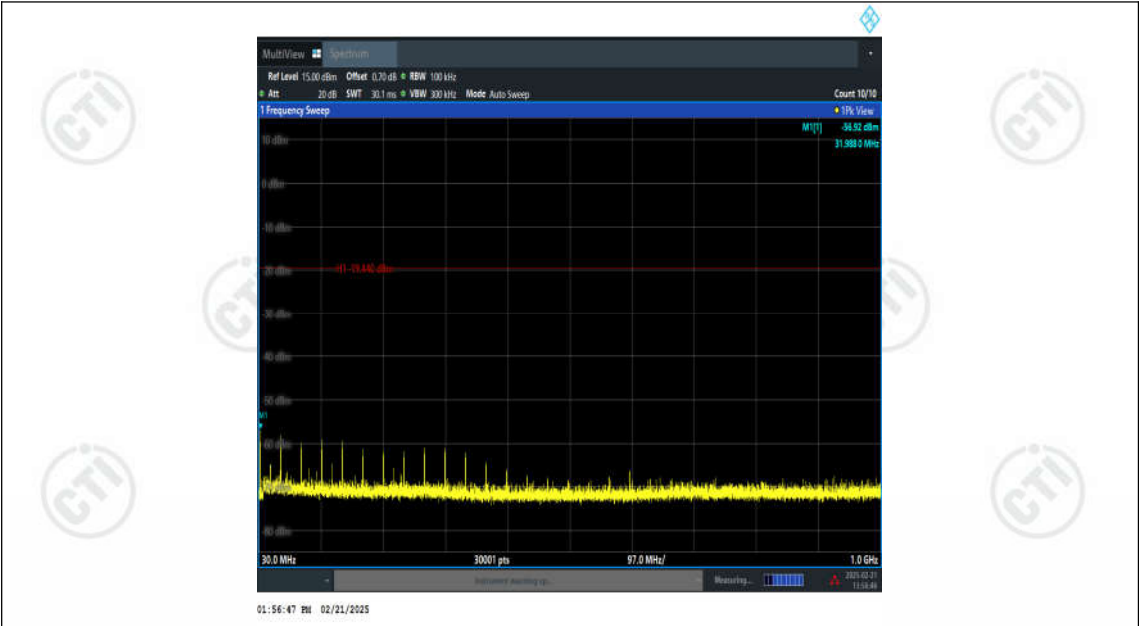


BLE_1M-Ant1-2480-0~Reference-PASS

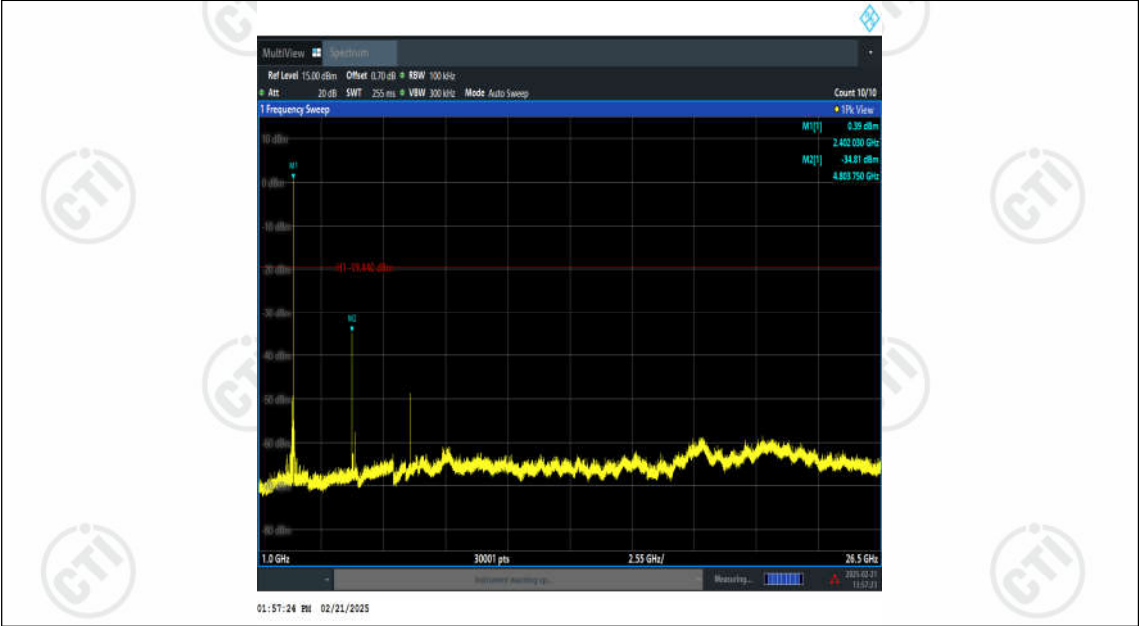


BLE_1M-Ant1-2480-30~1000-PASS





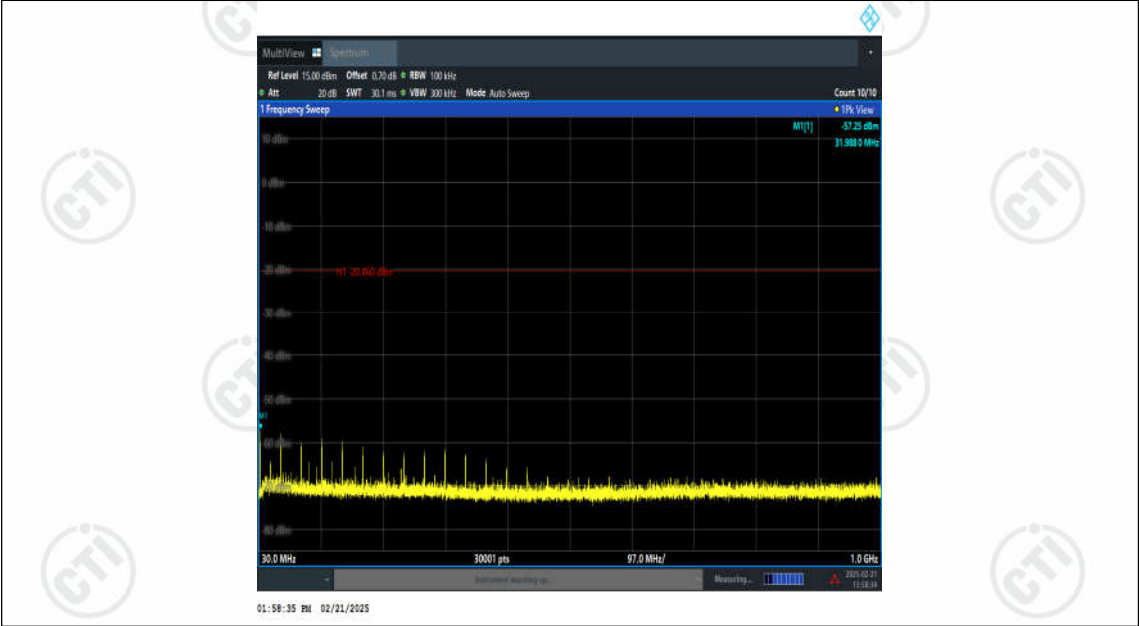
BLE_2M-Ant1-2402-30~1000-PASS



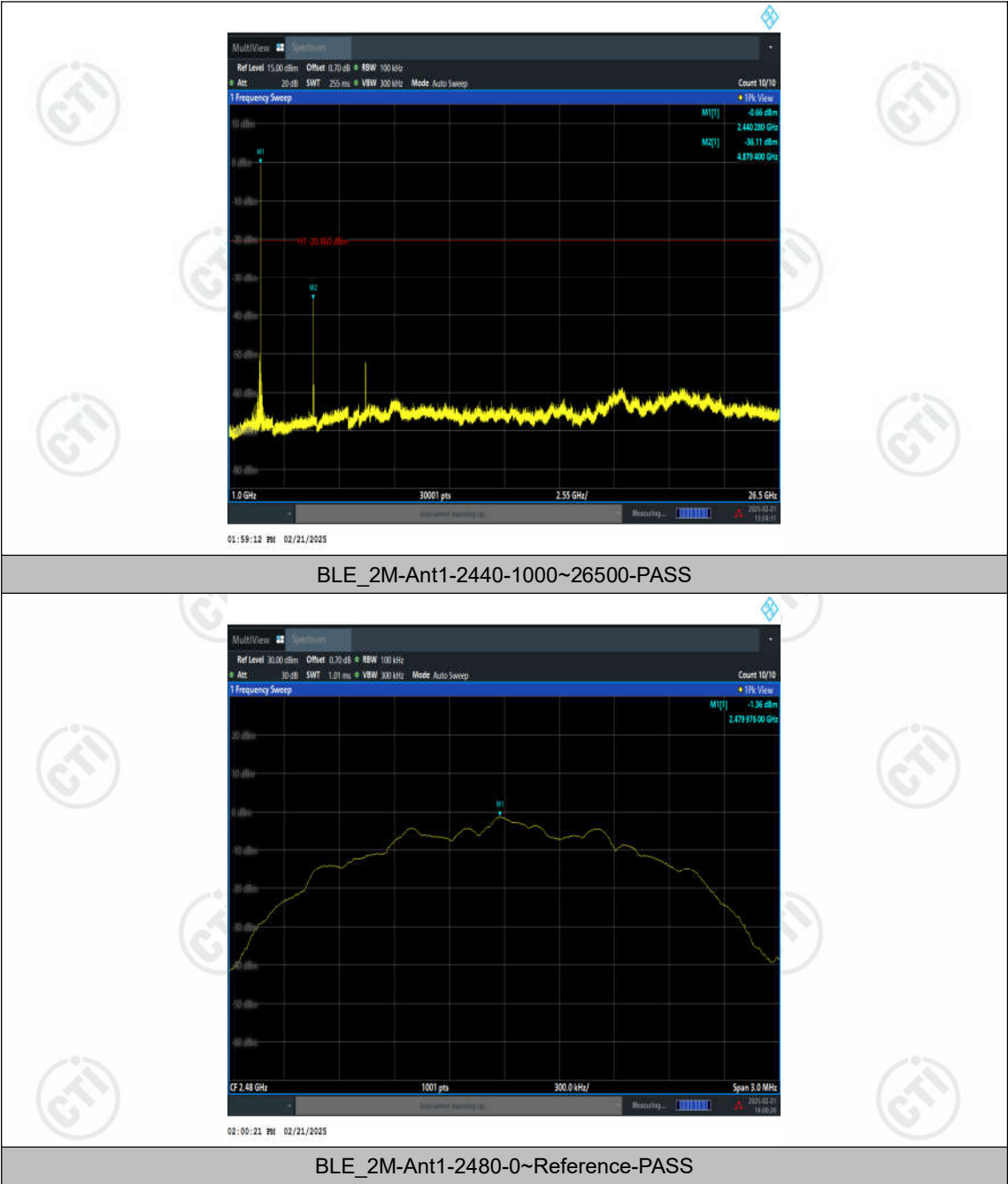
BLE_2M-Ant1-2402-1000~26500-PASS

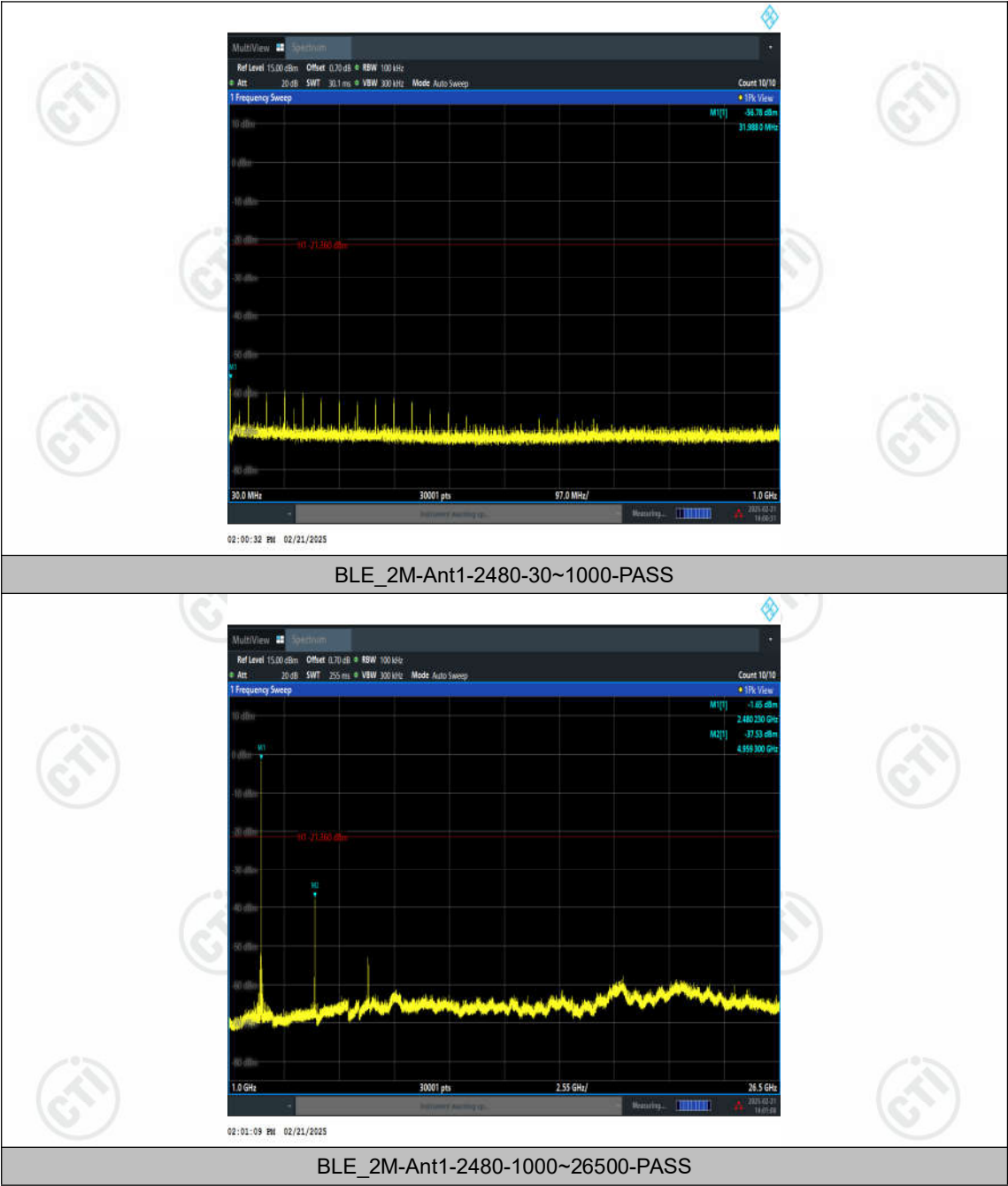


BLE_2M-Ant1-2440-0~Reference-PASS



BLE_2M-Ant1-2440-30~1000-PASS





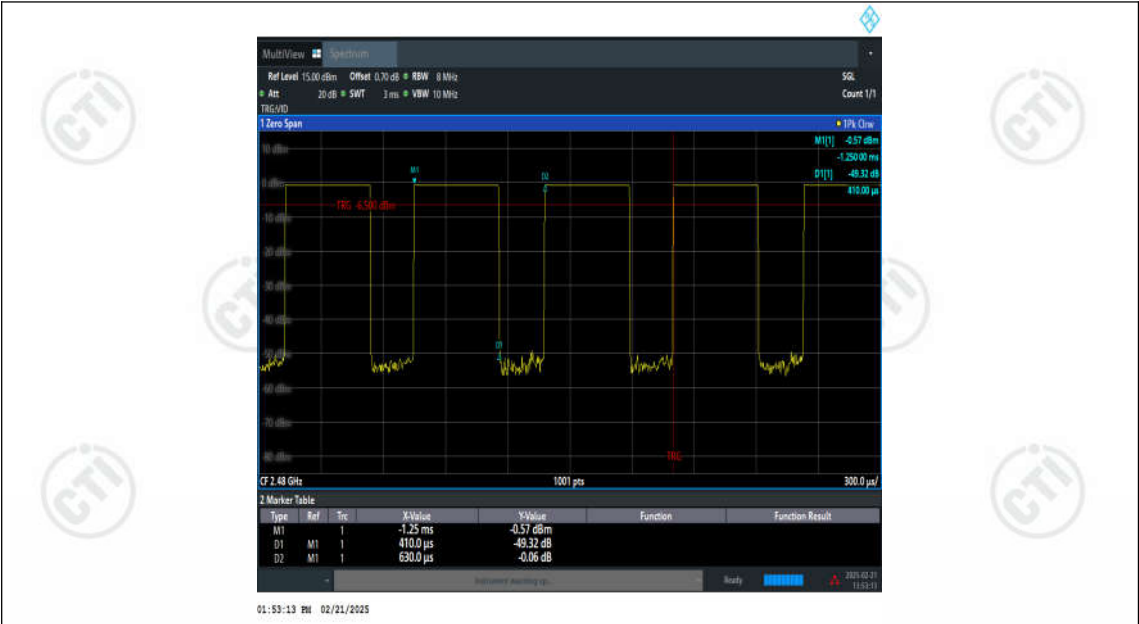
Appendix G: Duty Cycle

Test Result

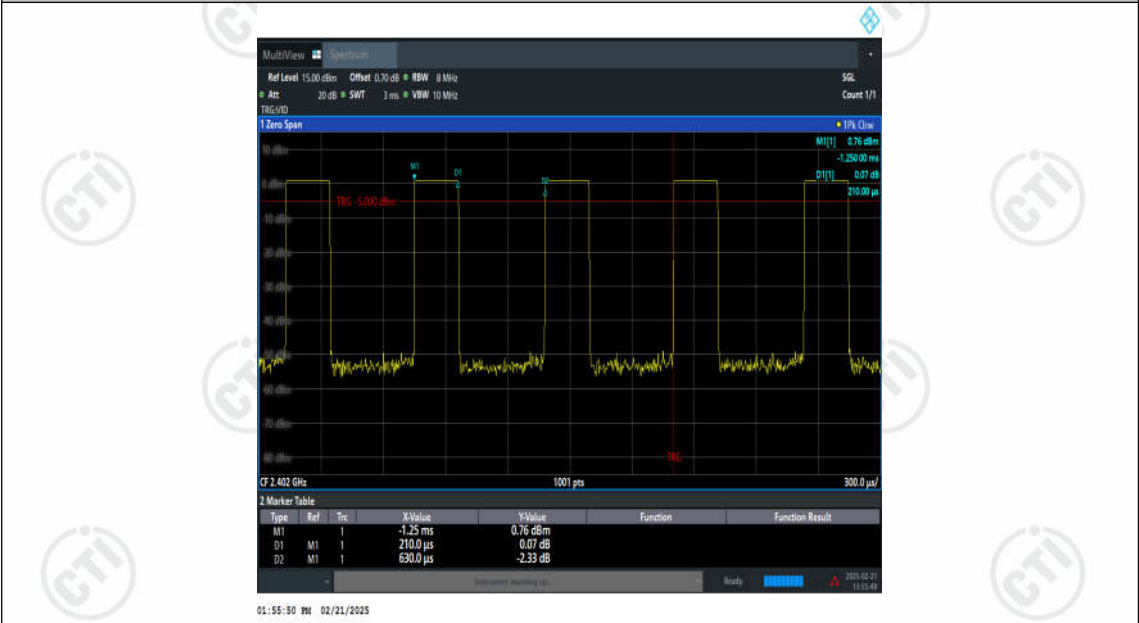
TestMode	Antenna	Frequency[MHz]	ON Time [ms]	Period [ms]	Duty Cycle [%]	Duty Cycle Factor[dB]
BLE_1M	Ant1	2402	0.41	0.63	65.08	1.87
BLE_1M	Ant1	2440	0.41	0.63	65.08	1.87
BLE_1M	Ant1	2480	0.41	0.63	65.08	1.87
BLE_2M	Ant1	2402	0.21	0.63	33.33	4.77
BLE_2M	Ant1	2440	0.21	0.63	33.33	4.77
BLE_2M	Ant1	2480	0.21	0.63	33.33	4.77

Test Graphs

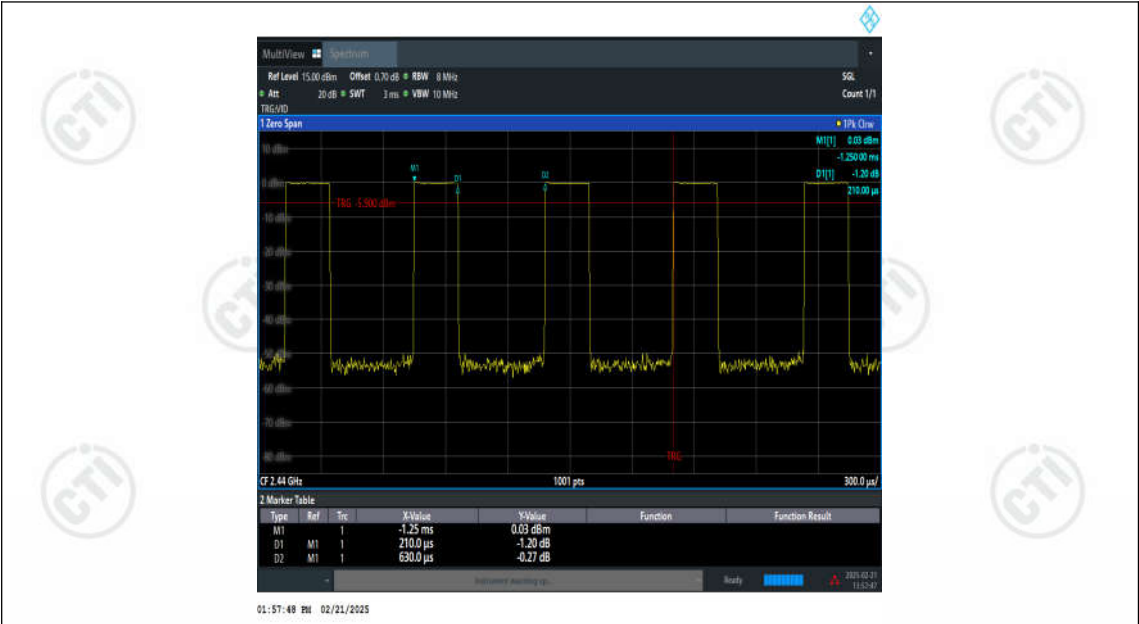




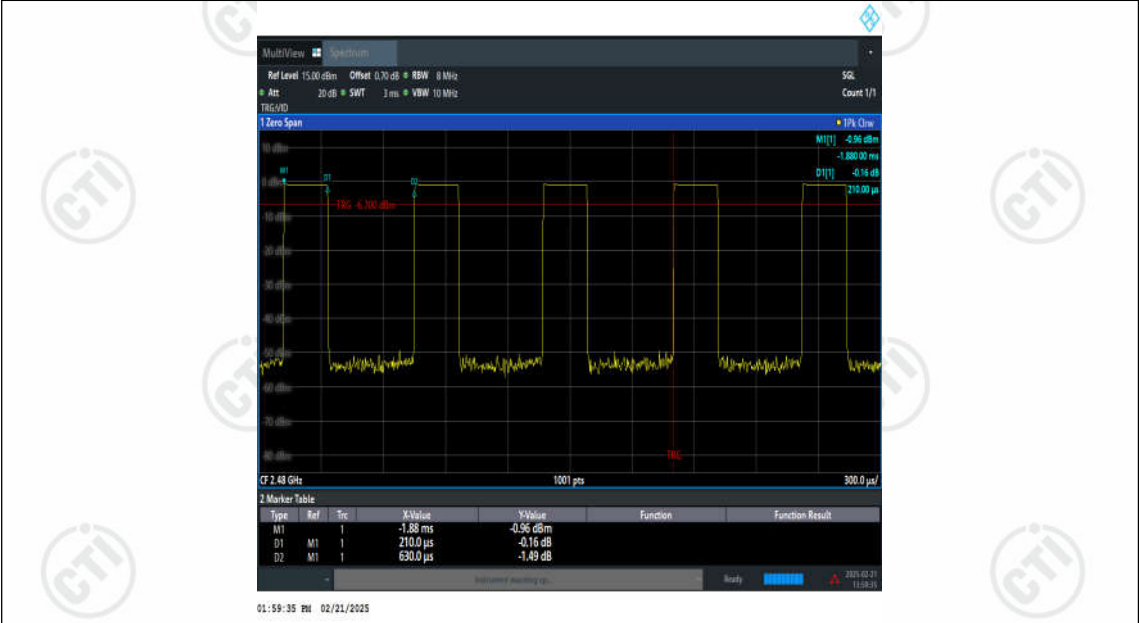
NTNV-BLE_1M-Ant1-2480



NTNV-BLE_2M-Ant1-2402



NTNV-BLE_2M-Ant1-2440



NTNV-BLE_2M-Ant1-2480

END OF REPORT