

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 Peak 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

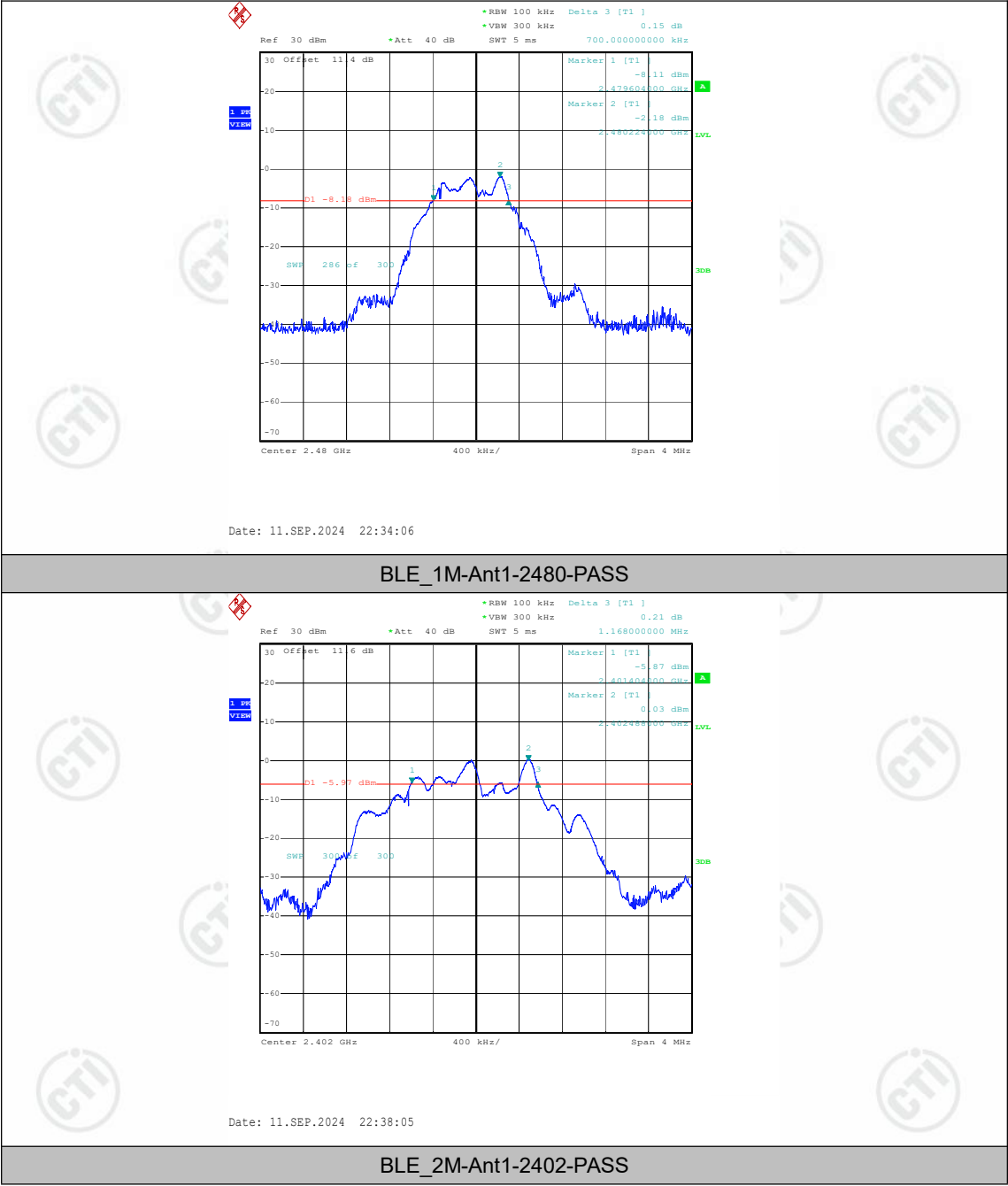
 Test Result 32

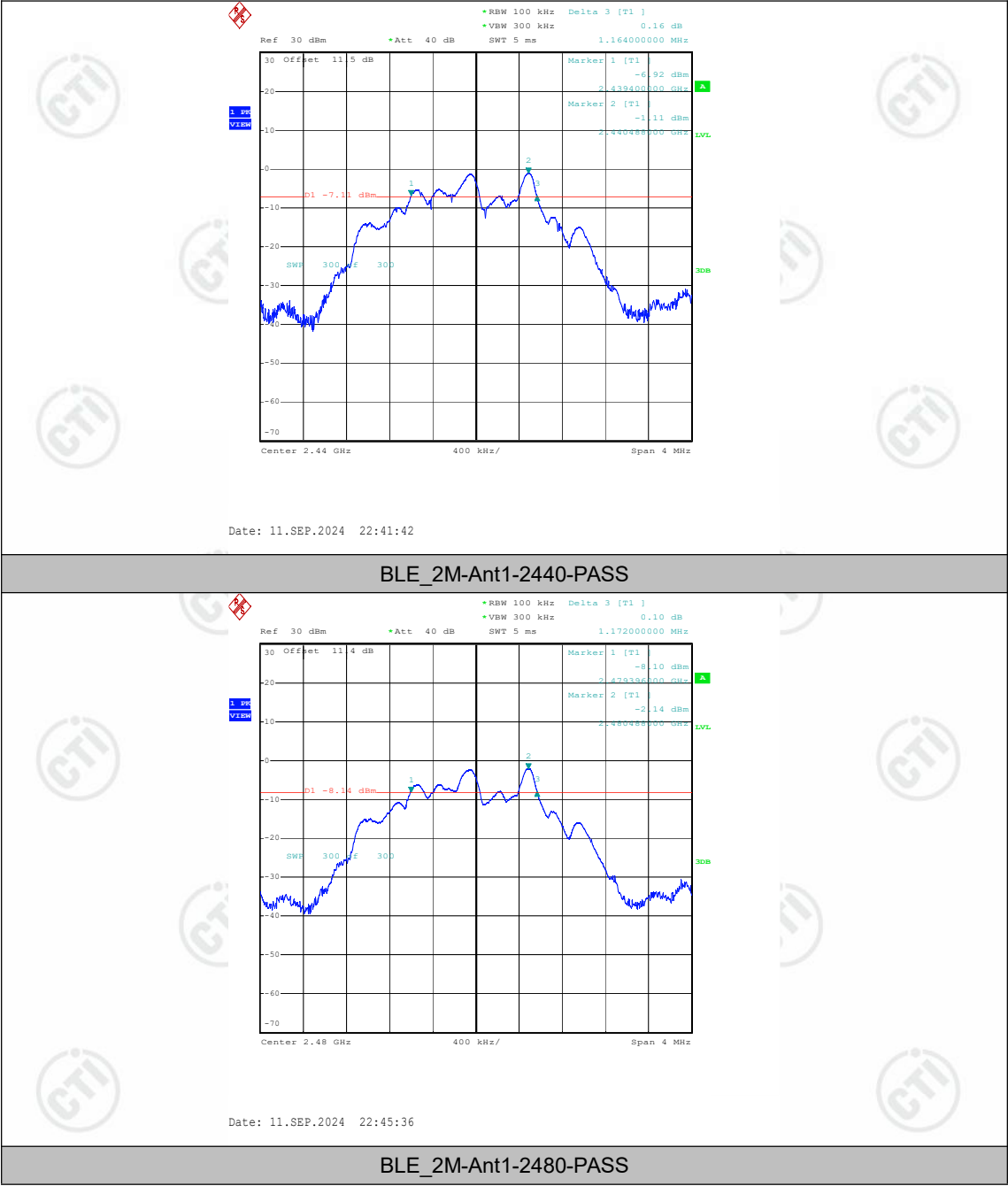
 Test Graphs 33

Appendix A: DTS Bandwidth

Test Result

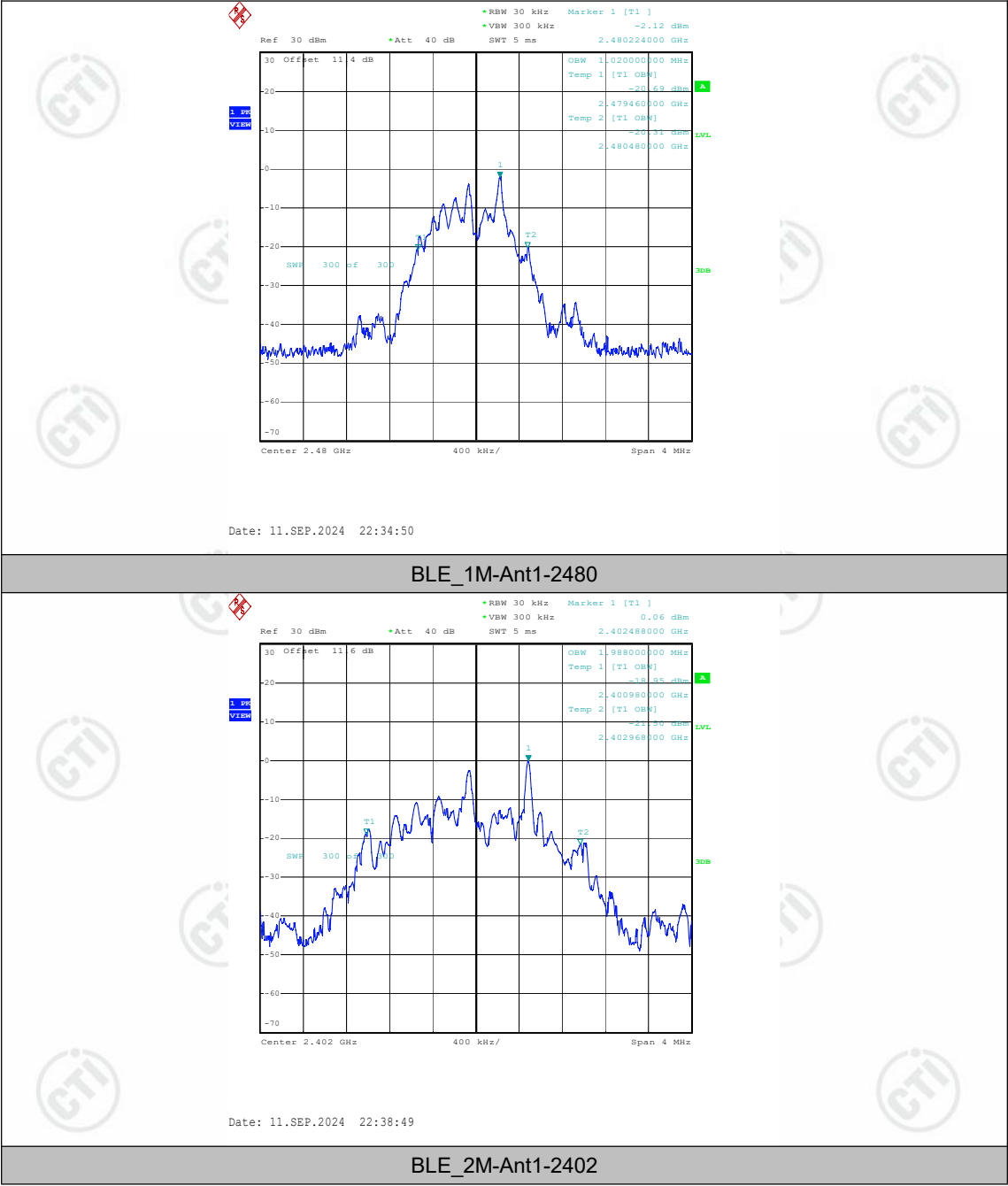
TestMode	Antenna	Frequency[MHz]	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.70	2401.61	2402.31	0.5	PASS
BLE_1M	Ant1	2440	0.68	2439.62	2440.30	0.5	PASS
BLE_1M	Ant1	2480	0.70	2479.60	2480.30	0.5	PASS
BLE_2M	Ant1	2402	1.17	2401.40	2402.57	0.5	PASS
BLE_2M	Ant1	2440	1.16	2439.40	2440.56	0.5	PASS
BLE_2M	Ant1	2480	1.17	2479.40	2480.57	0.5	PASS

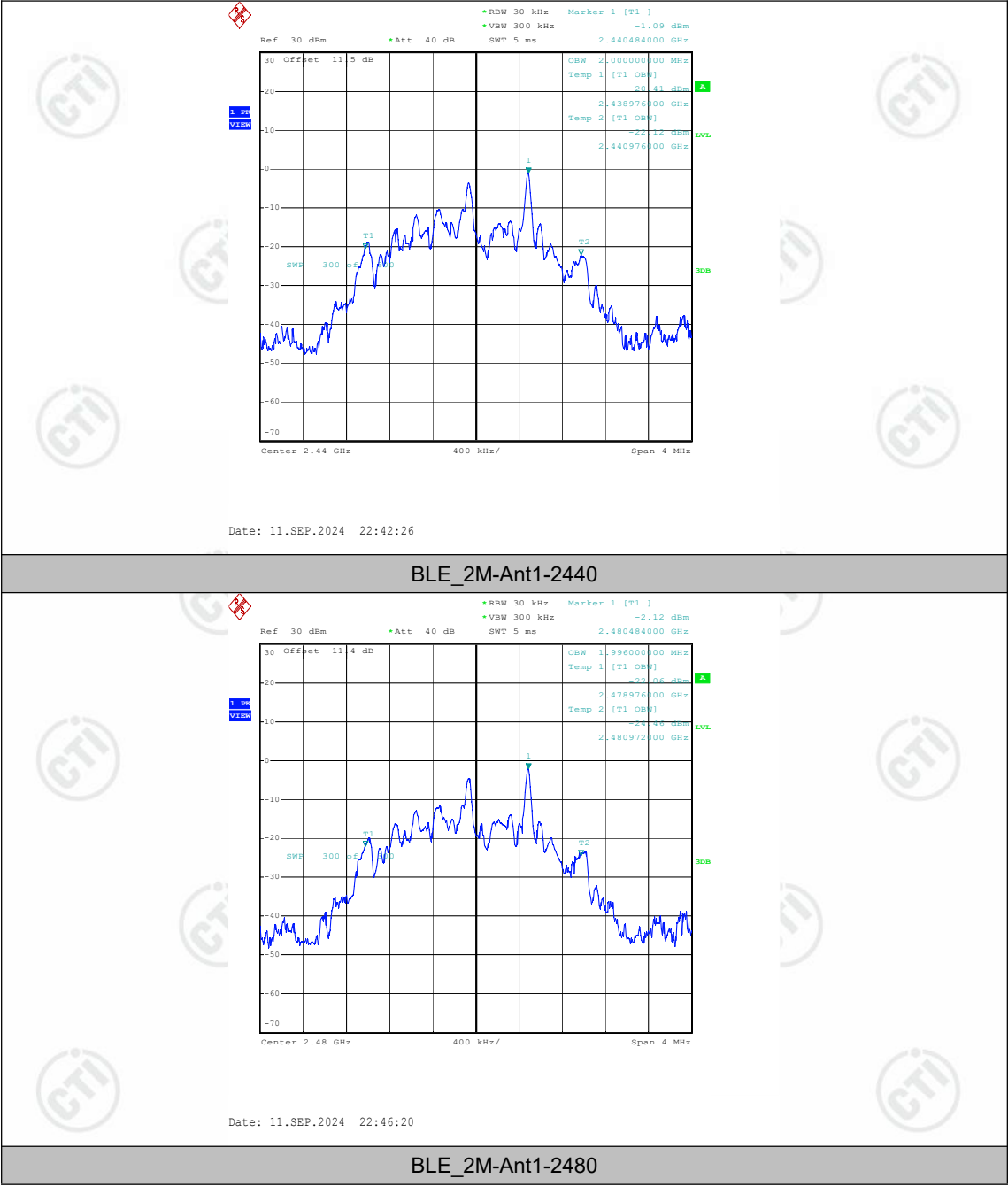




Appendix B: Occupied Channel Bandwidth**Test Result**

TestMode	Antenna	Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	1.012	2401.468	2402.480	---	---
BLE_1M	Ant1	2440	1.012	2439.464	2440.476	---	---
BLE_1M	Ant1	2480	1.02	2479.460	2480.480	---	---
BLE_2M	Ant1	2402	1.988	2400.980	2402.968	---	---
BLE_2M	Ant1	2440	2	2438.976	2440.976	---	---
BLE_2M	Ant1	2480	1.996	2478.976	2480.972	---	---

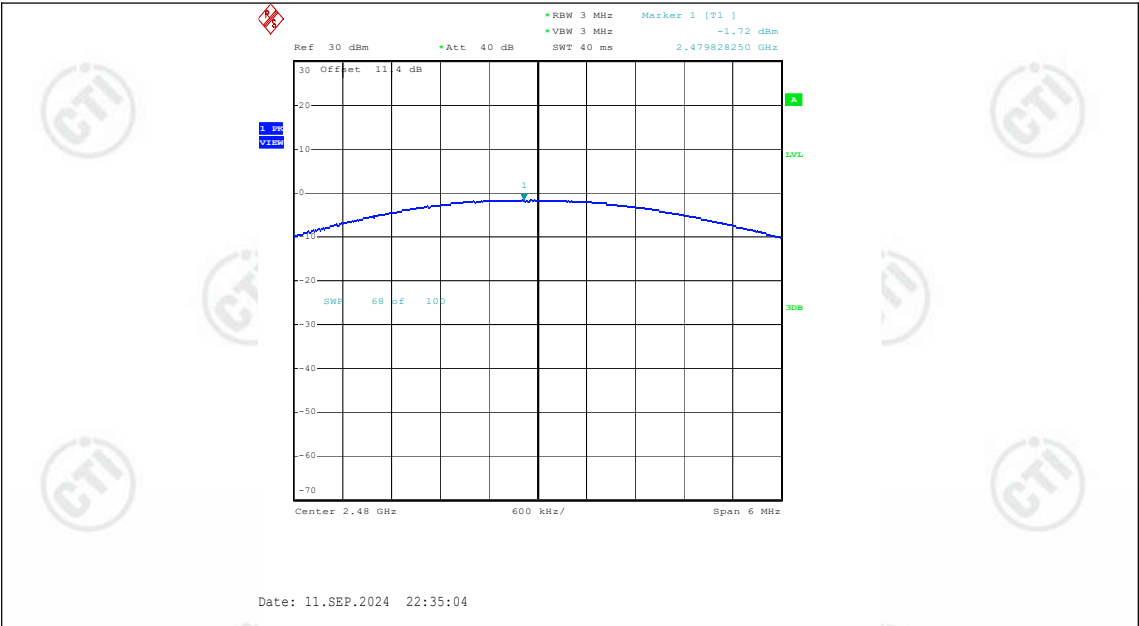




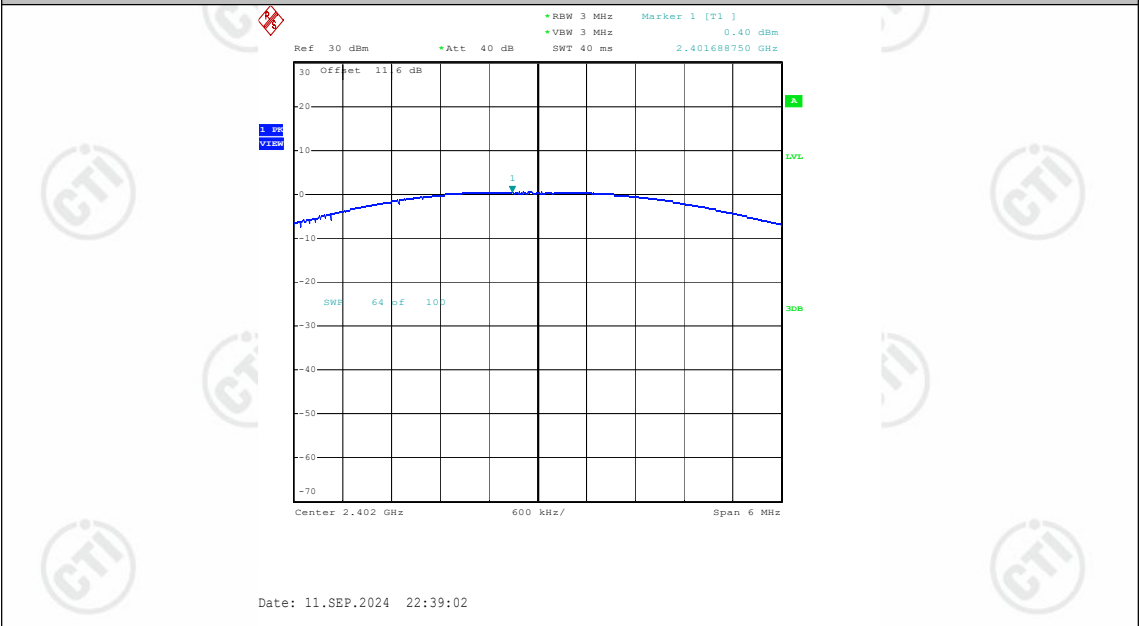
Appendix C: Maximum conducted output power

Test Result

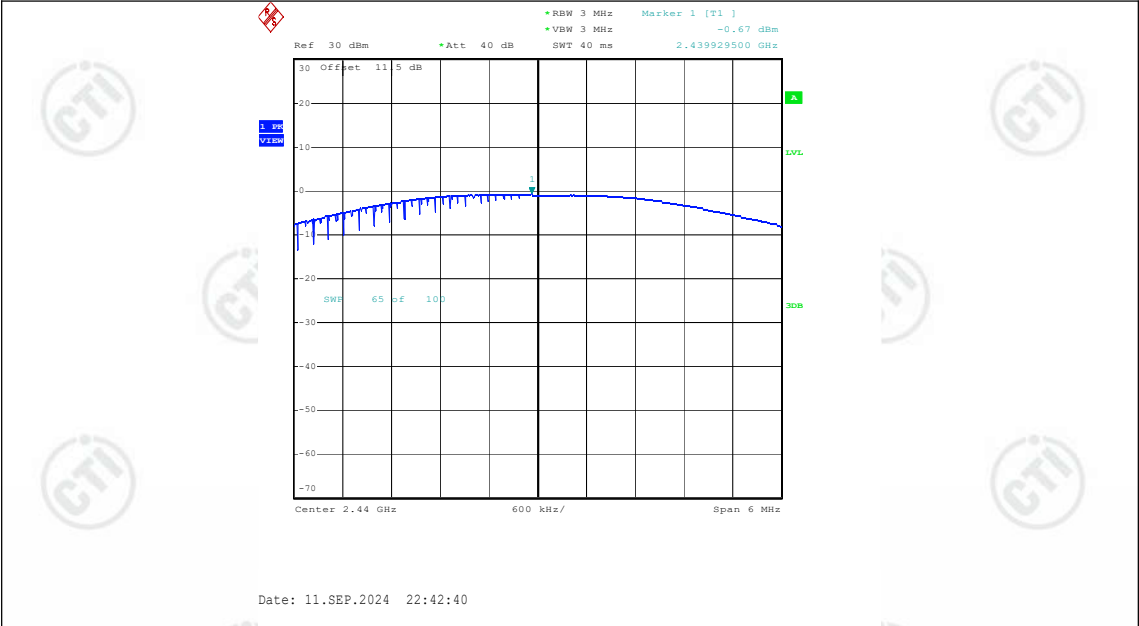
TestMode	Antenna	Frequency[MHz]	Conducted Peak Power[dBm]	Conducted Limit[dBm]	Verdict
BLE_1M	Ant1	2402	0.43	≤30	PASS
BLE_1M	Ant1	2440	-0.73	≤30	PASS
BLE_1M	Ant1	2480	-1.72	≤30	PASS
BLE_2M	Ant1	2402	0.40	≤30	PASS
BLE_2M	Ant1	2440	-0.67	≤30	PASS
BLE_2M	Ant1	2480	-1.68	≤30	PASS



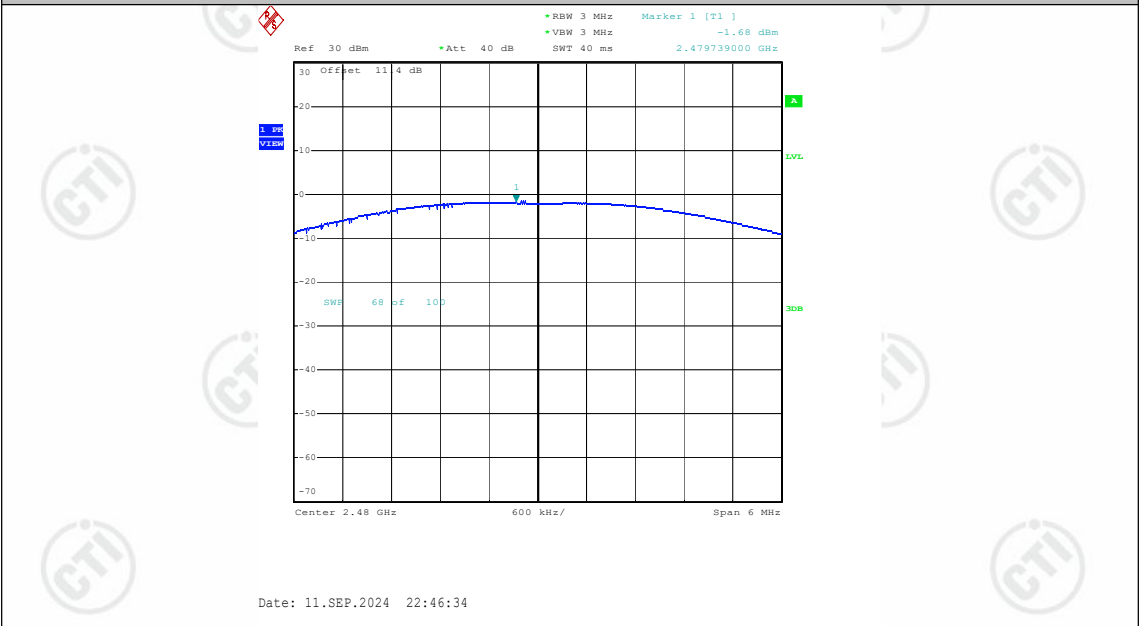
BLE_1M-Ant1-2480-PASS



BLE_2M-Ant1-2402-PASS



BLE_2M-Ant1-2440-PASS

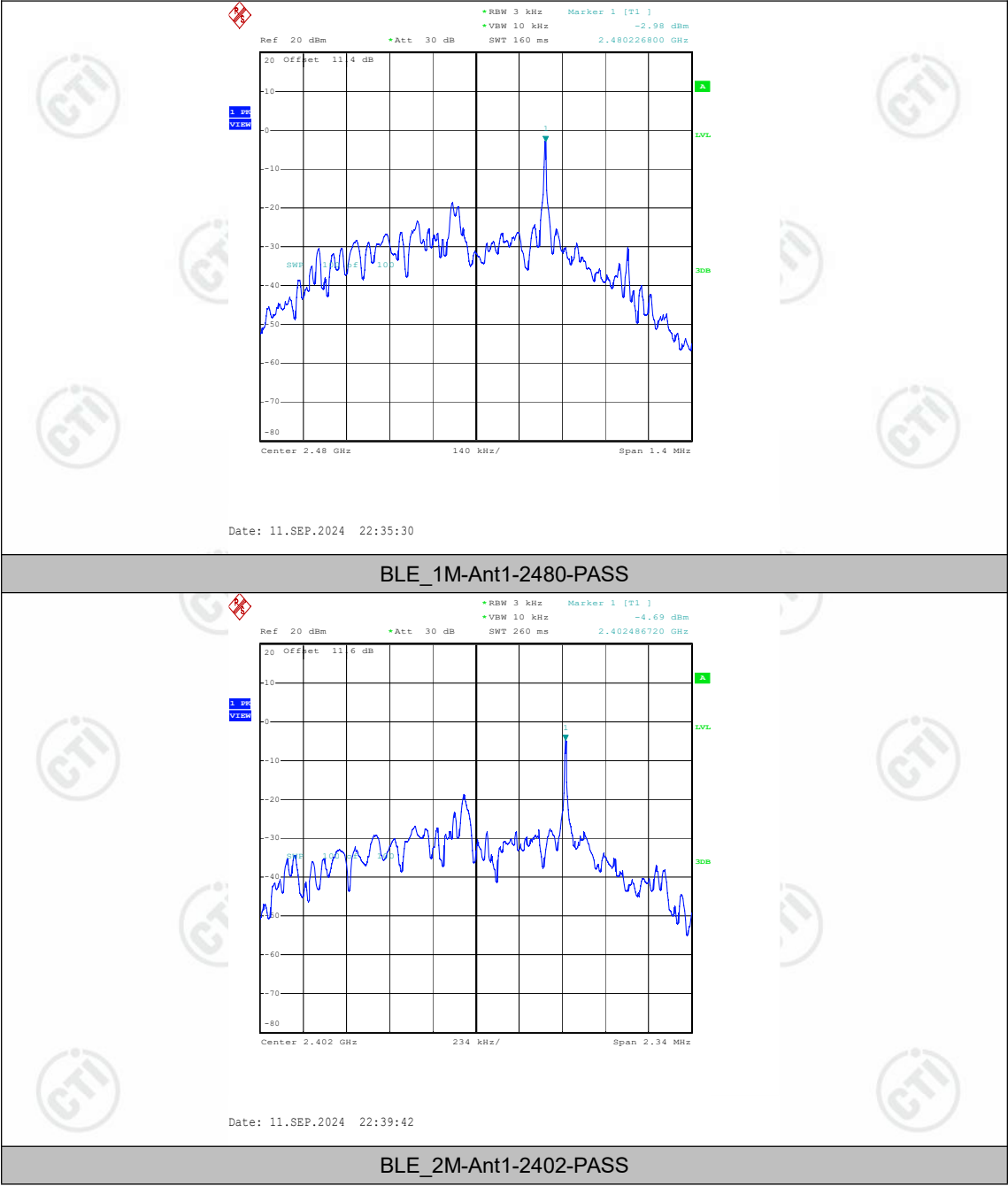


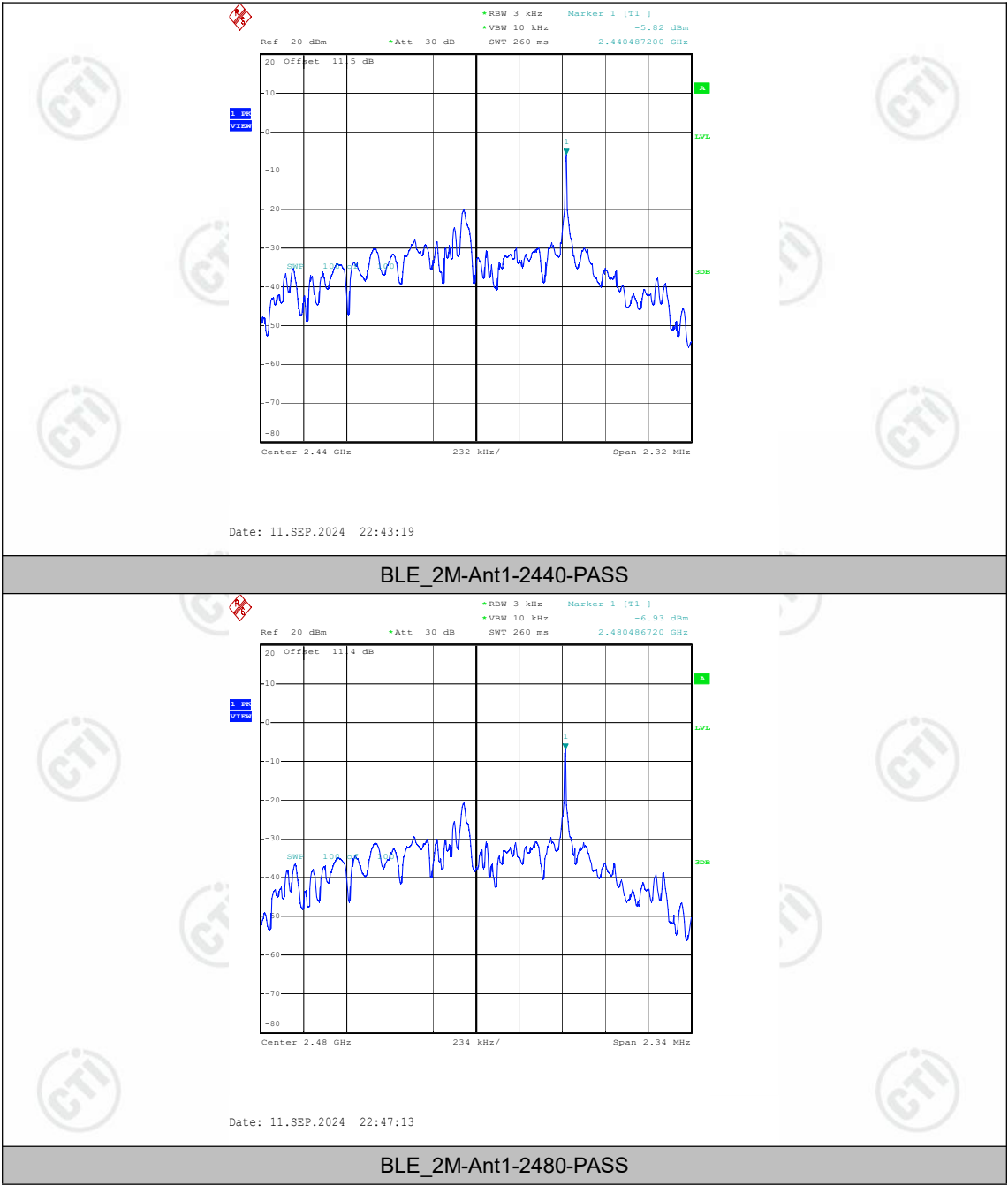
BLE_2M-Ant1-2480-PASS

Appendix D: Maximum power spectral density

Test Result

TestMode	Antenna	Frequency[MHz]	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-0.75	≤8.00	PASS
BLE_1M	Ant1	2440	-1.93	≤8.00	PASS
BLE_1M	Ant1	2480	-2.98	≤8.00	PASS
BLE_2M	Ant1	2402	-4.69	≤8.00	PASS
BLE_2M	Ant1	2440	-5.82	≤8.00	PASS
BLE_2M	Ant1	2480	-6.93	≤8.00	PASS

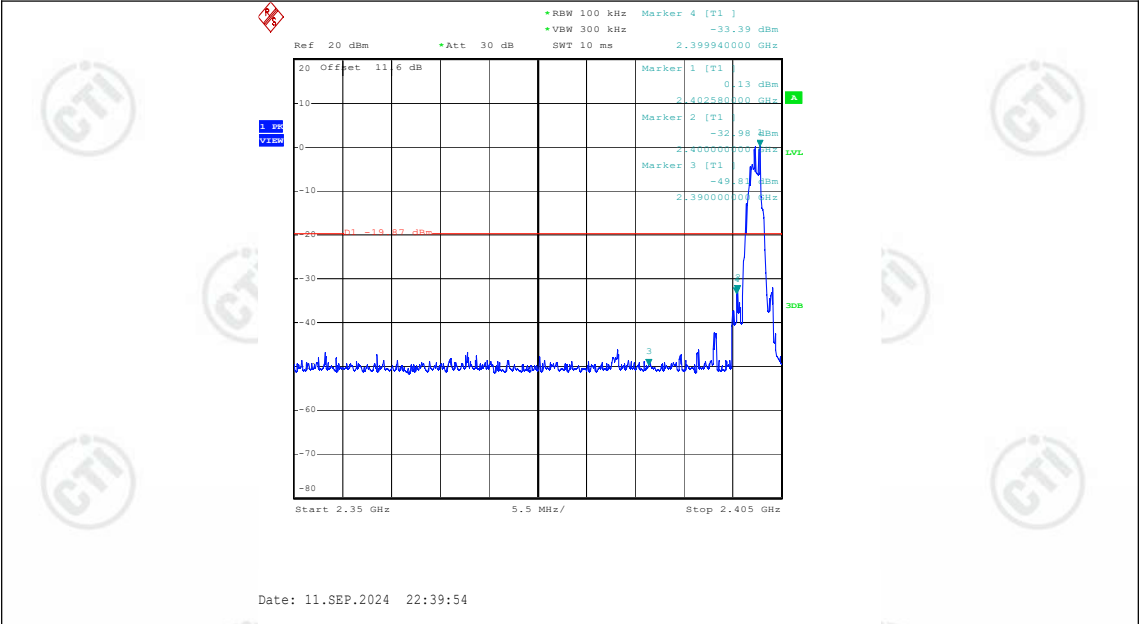




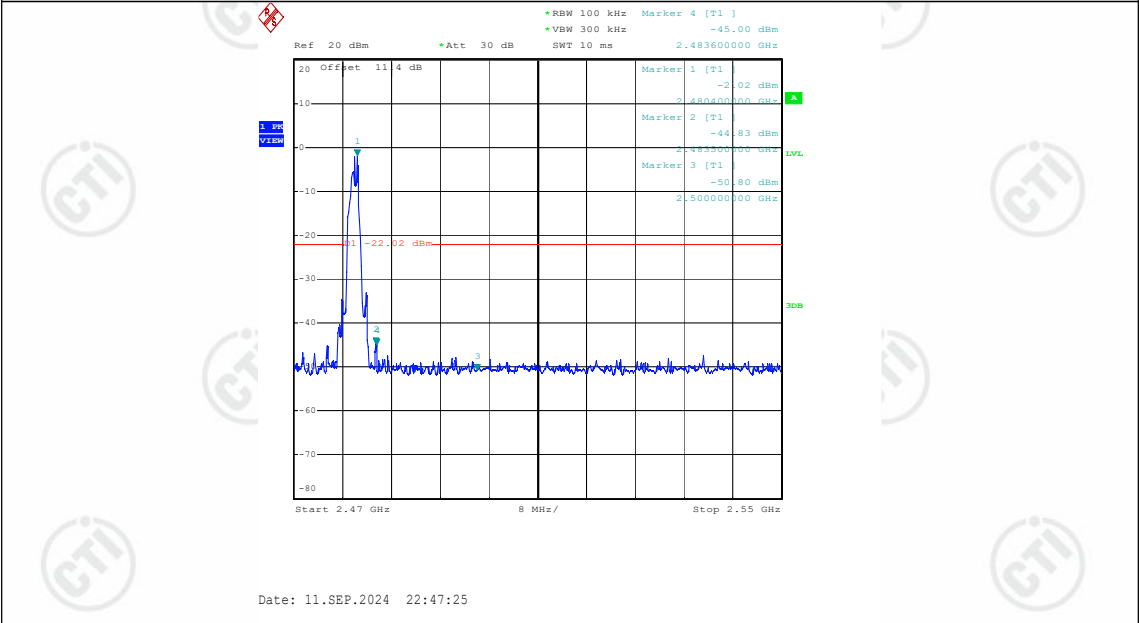
Appendix E: Band edge measurements

Test Result

TestMode	Antenna	ChName	Frequency[MHz]	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	0.15	-39.24	≤-19.85	PASS
BLE_1M	Ant1	High	2480	-2.03	-44.68	≤-22.03	PASS
BLE_2M	Ant1	Low	2402	0.13	-33.39	≤-19.87	PASS
BLE_2M	Ant1	High	2480	-2.02	-45	≤-22.02	PASS



BLE_2M-Ant1-2402-PASS



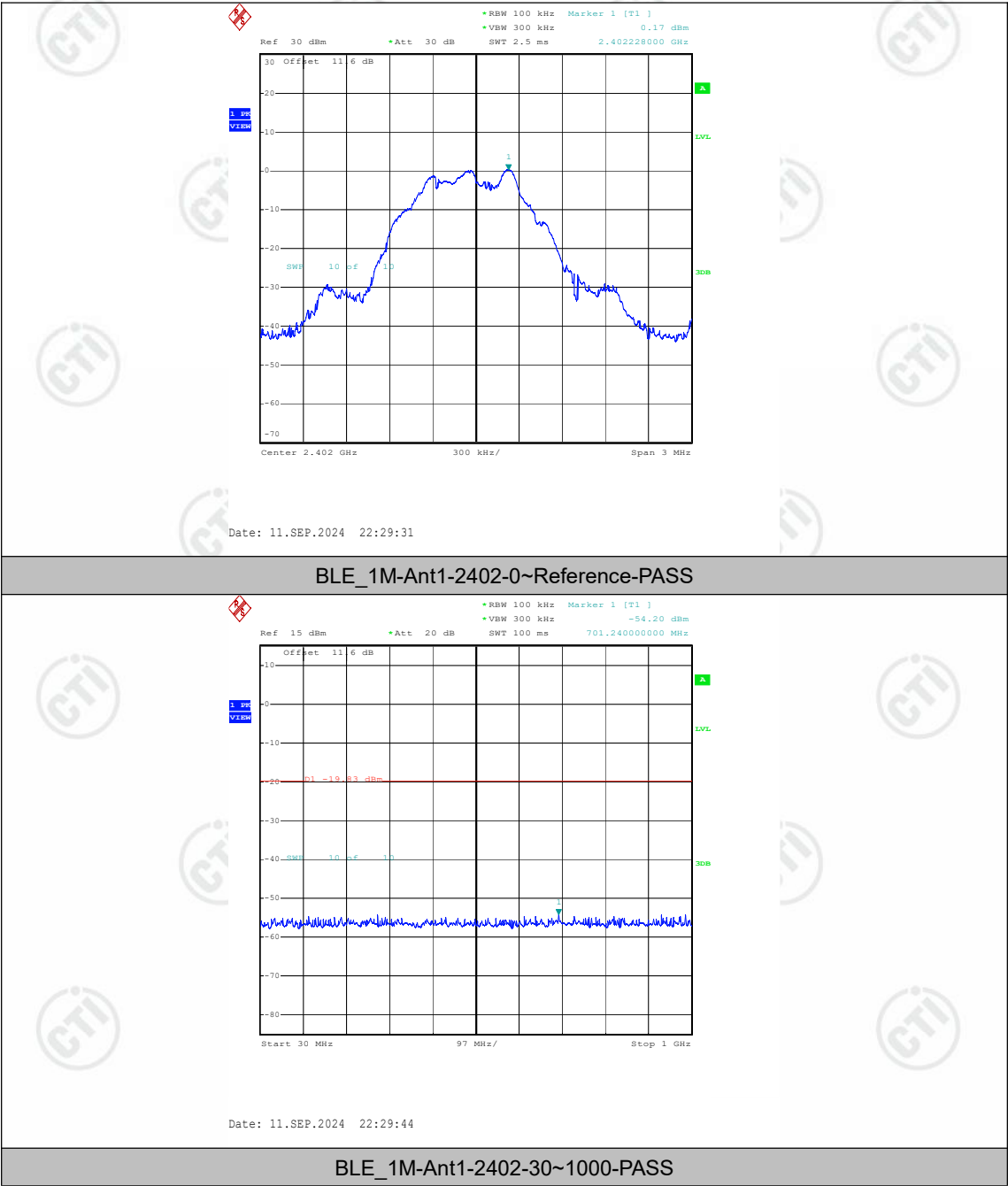
BLE_2M-Ant1-2480-PASS

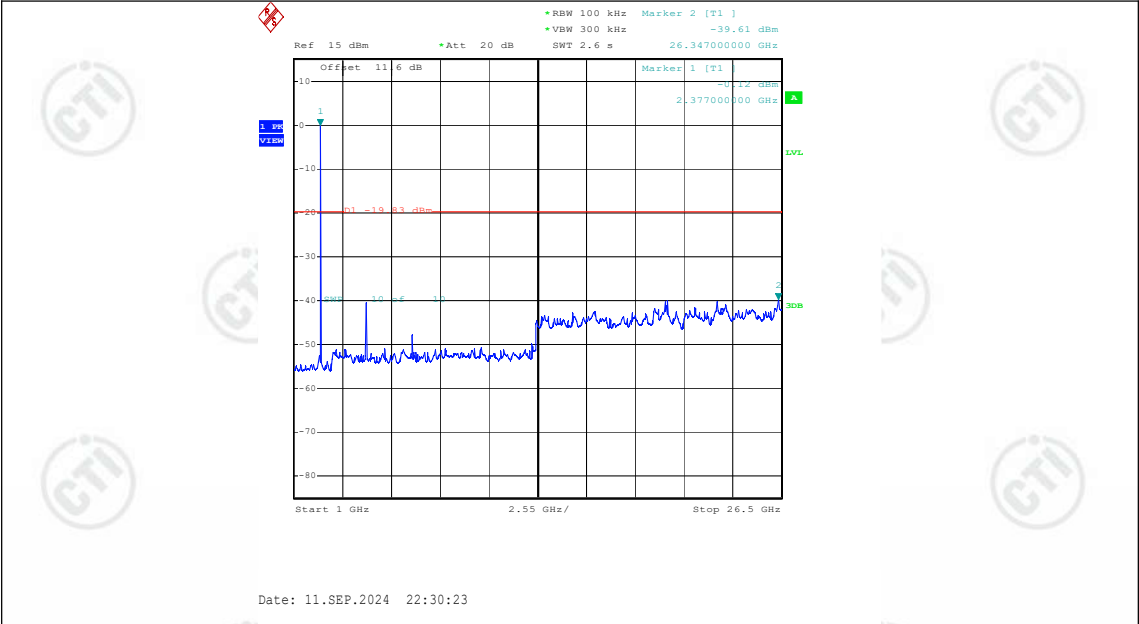
Appendix F: Conducted Spurious Emission

Test Result

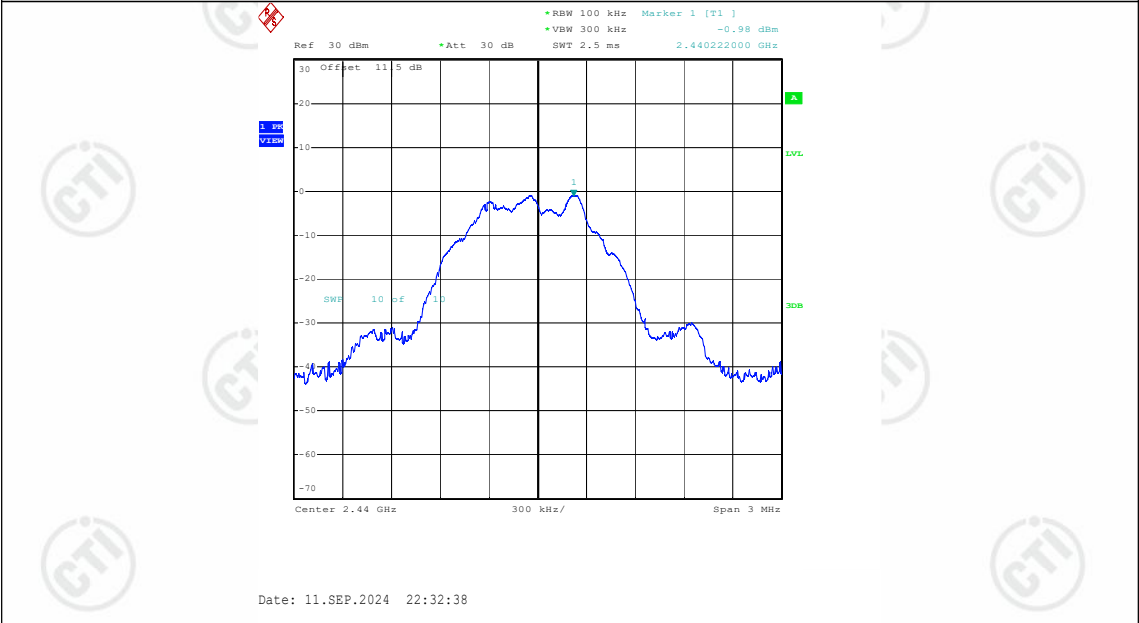
TestMode	Antenna	Frequency[M Hz]	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	0~Reference	0.17	0.17	---	PASS
BLE_1M	Ant1	2402	30~1000	0.17	-54.2	≤-19.83	PASS
BLE_1M	Ant1	2402	1000~26500	0.17	-39.61	≤-19.83	PASS
BLE_1M	Ant1	2440	0~Reference	-0.98	-0.98	---	PASS
BLE_1M	Ant1	2440	30~1000	-0.98	-54.02	≤-20.98	PASS
BLE_1M	Ant1	2440	1000~26500	-0.98	-40.53	≤-20.98	PASS
BLE_1M	Ant1	2480	0~Reference	-2.04	-2.04	---	PASS
BLE_1M	Ant1	2480	30~1000	-2.04	-53.57	≤-22.04	PASS
BLE_1M	Ant1	2480	1000~26500	-2.04	-40.44	≤-22.04	PASS
BLE_2M	Ant1	2402	0~Reference	0.16	0.16	---	PASS
BLE_2M	Ant1	2402	30~1000	0.16	-53.87	≤-19.84	PASS
BLE_2M	Ant1	2402	1000~26500	0.16	-40.53	≤-19.84	PASS
BLE_2M	Ant1	2440	0~Reference	-1.01	-1.01	---	PASS
BLE_2M	Ant1	2440	30~1000	-1.01	-53.5	≤-21.01	PASS
BLE_2M	Ant1	2440	1000~26500	-1.01	-40.68	≤-21.01	PASS
BLE_2M	Ant1	2480	0~Reference	-2.05	-2.05	---	PASS
BLE_2M	Ant1	2480	30~1000	-2.05	-54.29	≤-22.05	PASS
BLE_2M	Ant1	2480	1000~26500	-2.05	-40.75	≤-22.05	PASS

Test Graphs

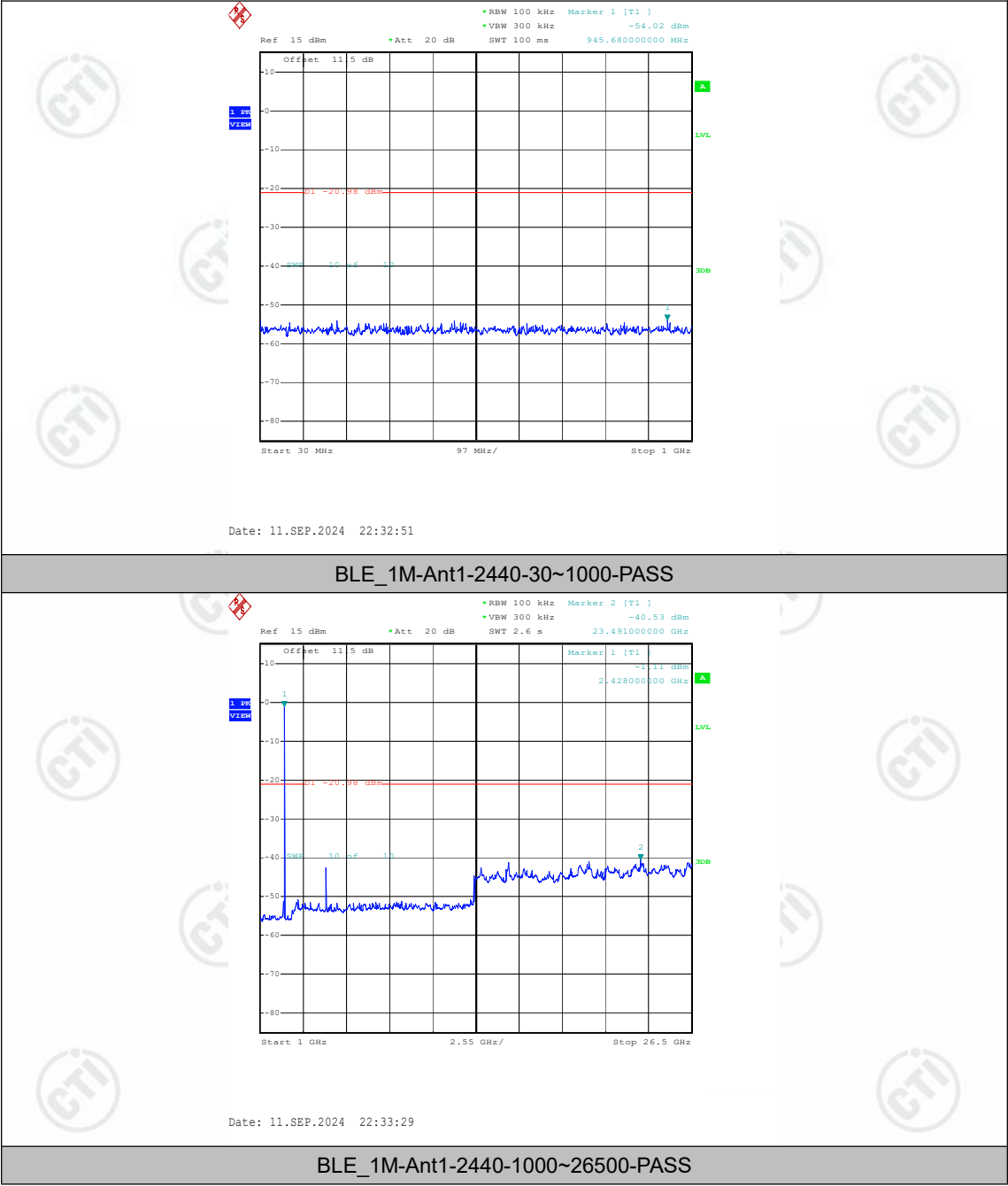


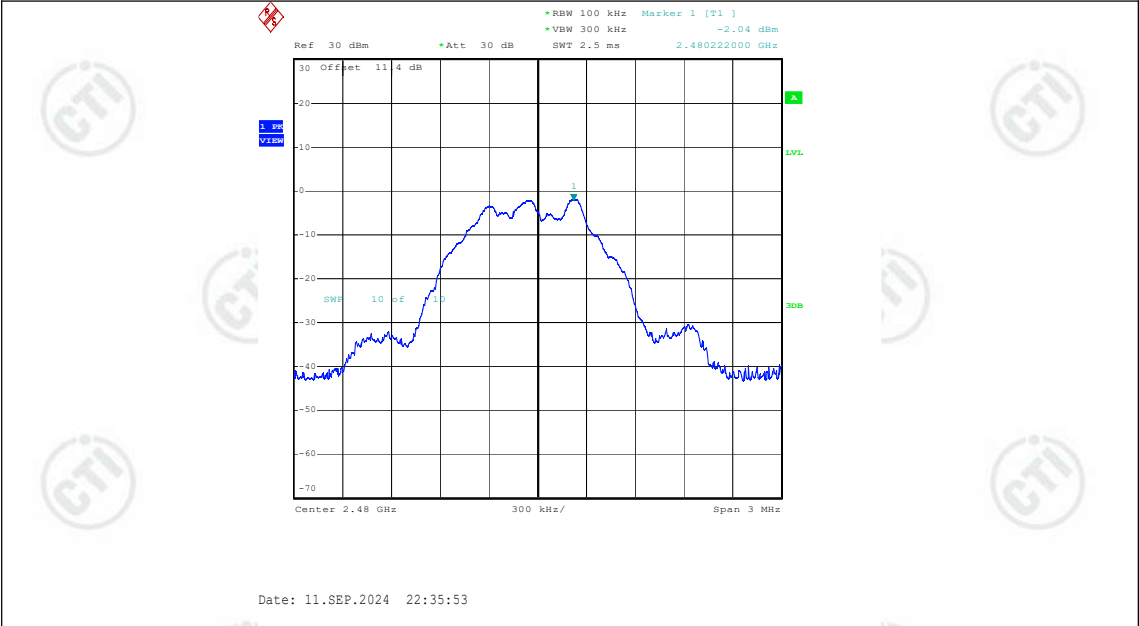


BLE_1M-Ant1-2402-1000~26500-PASS

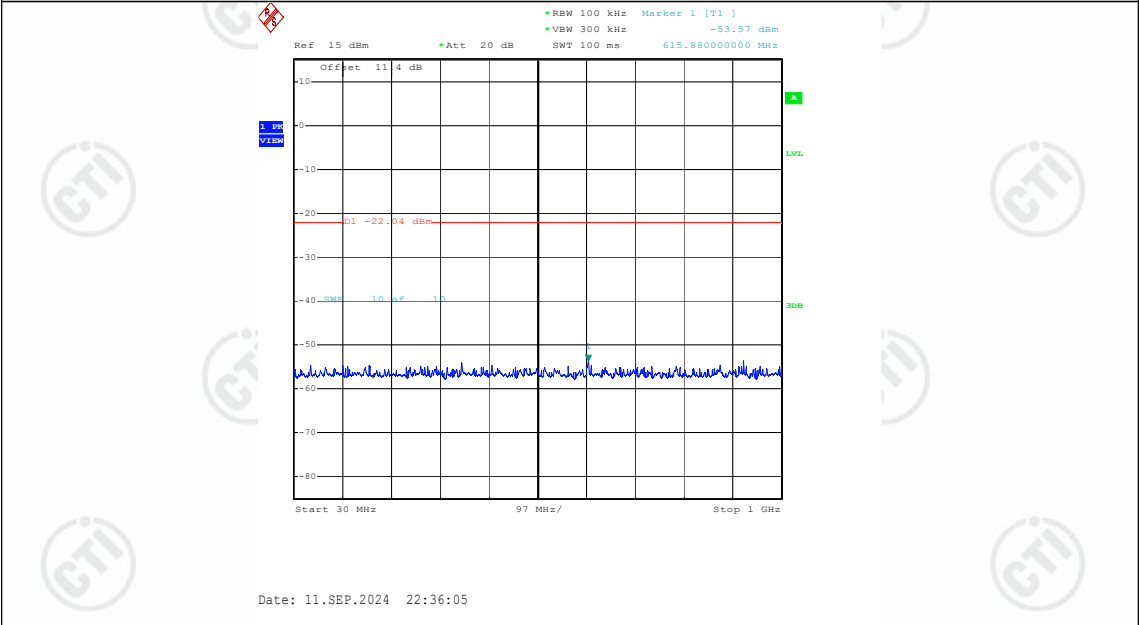


BLE_1M-Ant1-2440-0~Reference-PASS

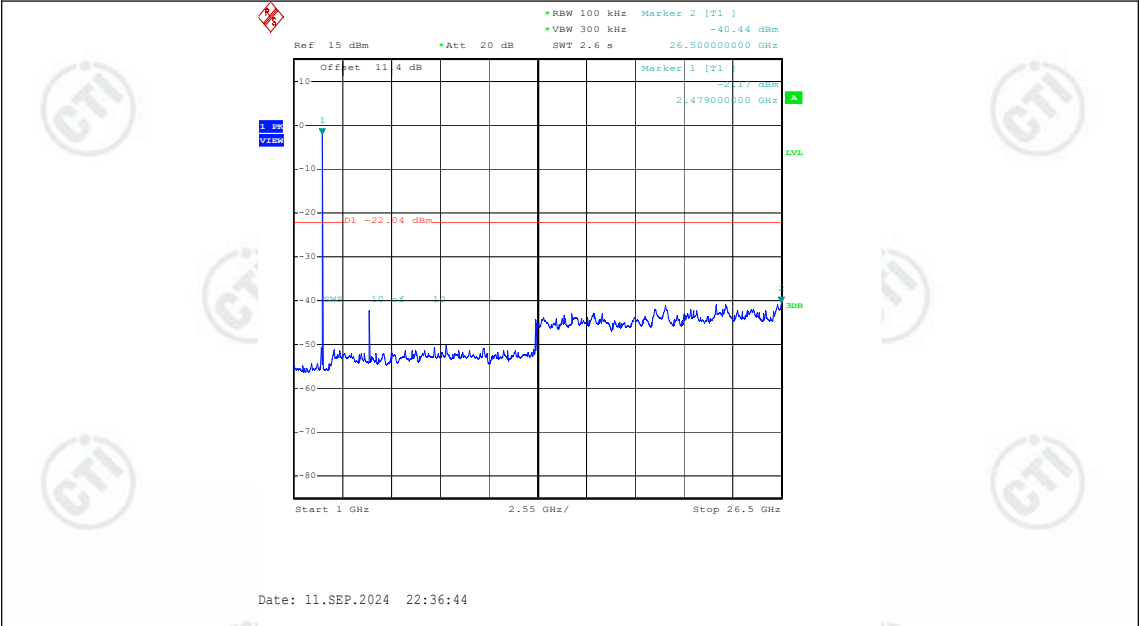




BLE_1M-Ant1-2480-0~Reference-PASS



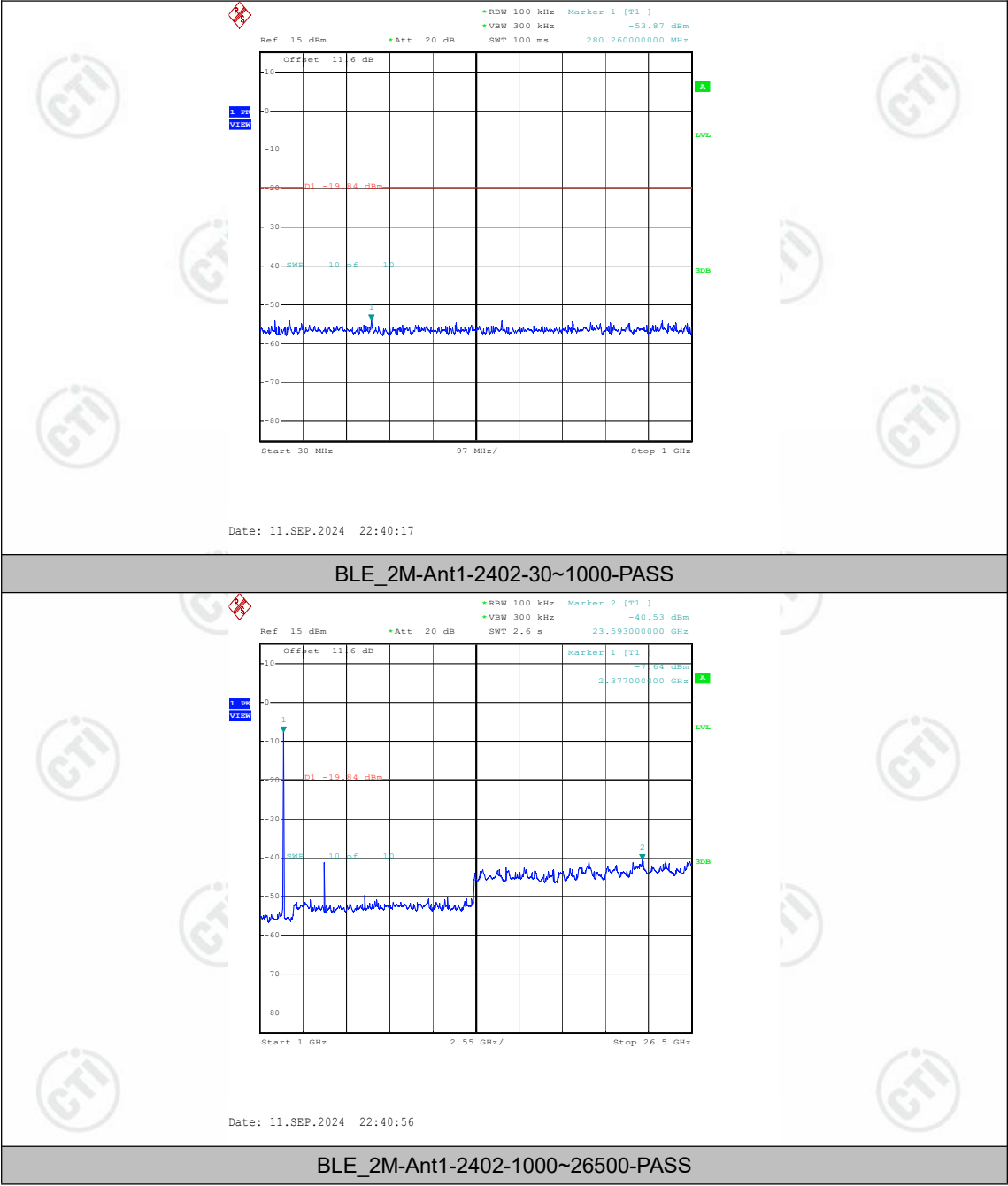
BLE_1M-Ant1-2480-30~1000-PASS



BLE_1M-Ant1-2480-1000~26500-PASS

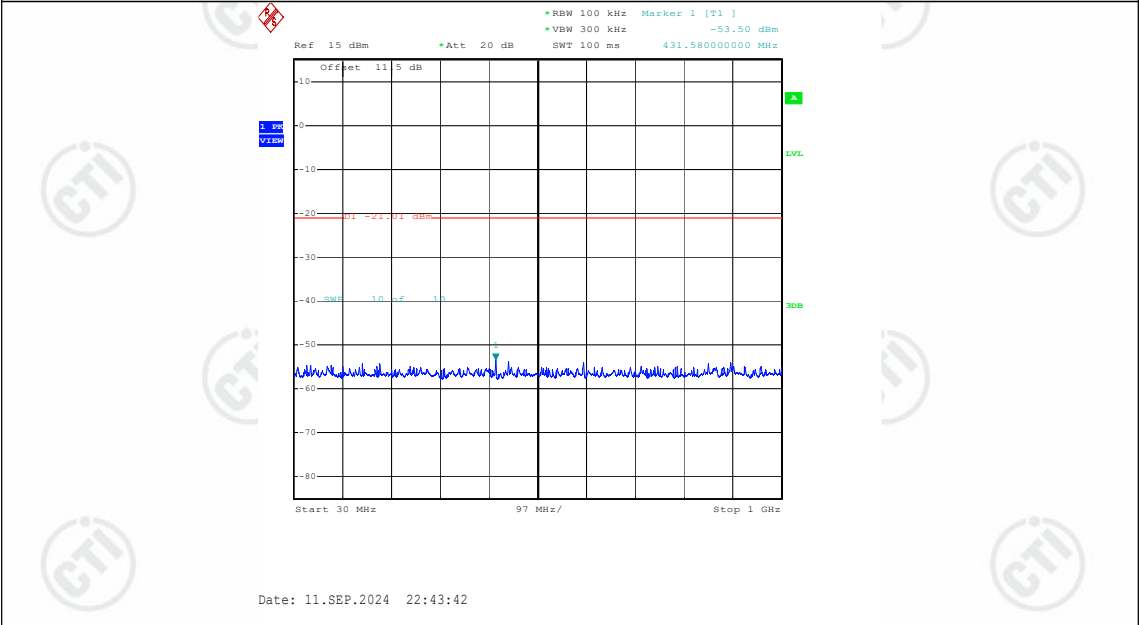


BLE_2M-Ant1-2402-0~Reference-PASS

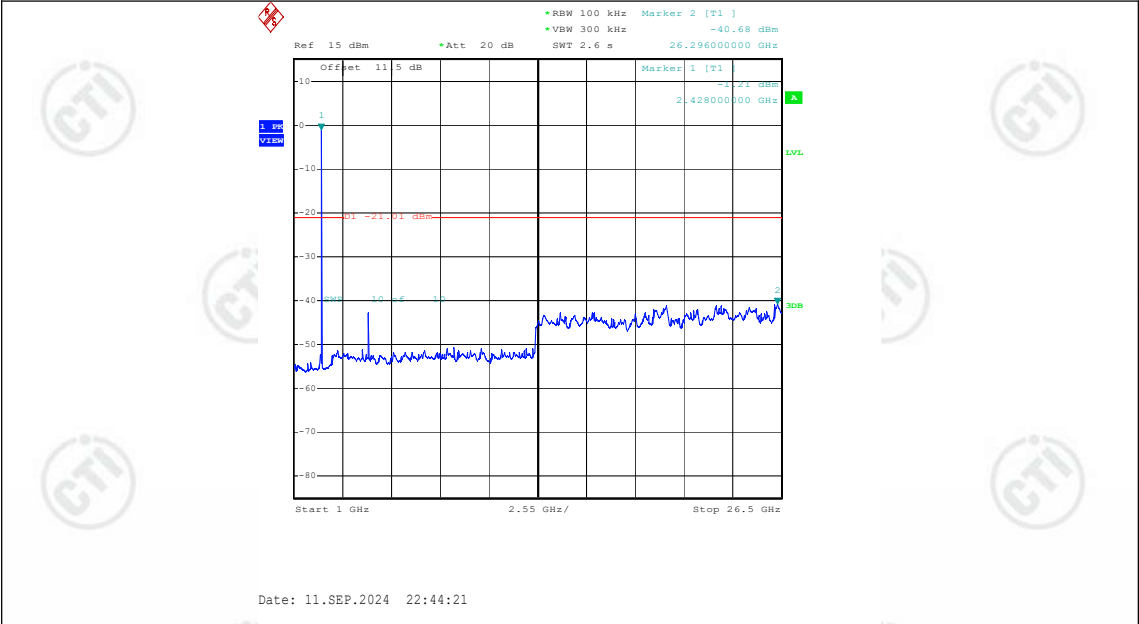




BLE_2M-Ant1-2440-0~Reference-PASS



BLE_2M-Ant1-2440-30~1000-PASS



BLE_2M-Ant1-2440-1000~26500-PASS



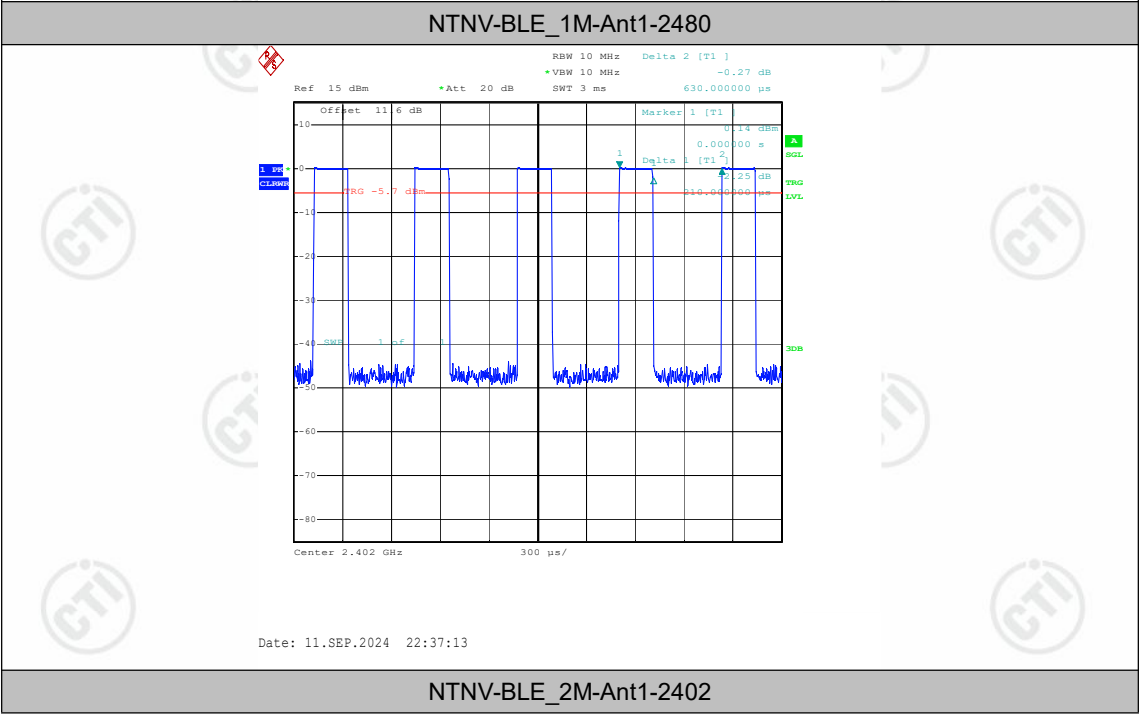
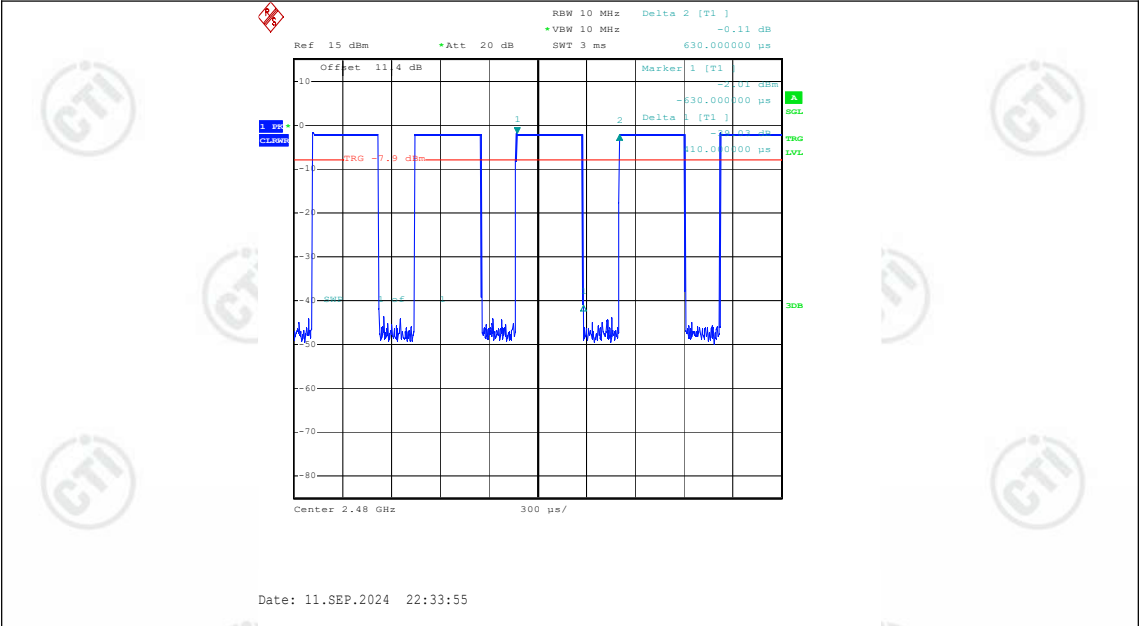
BLE_2M-Ant1-2480-0~Reference-PASS

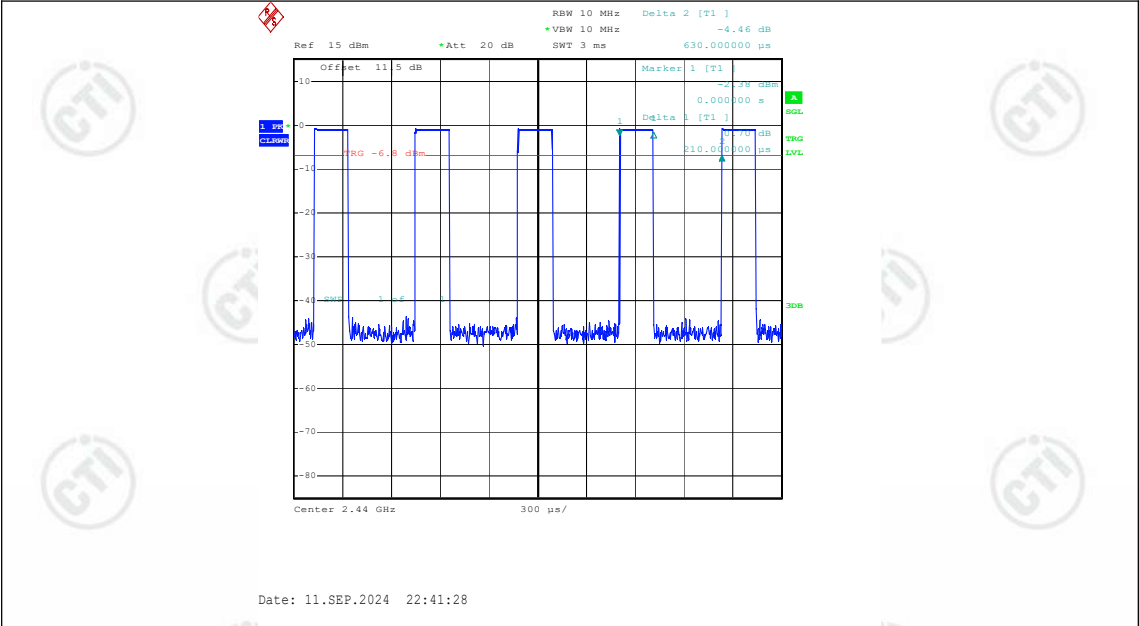
Appendix G: Duty Cycle

Test Result

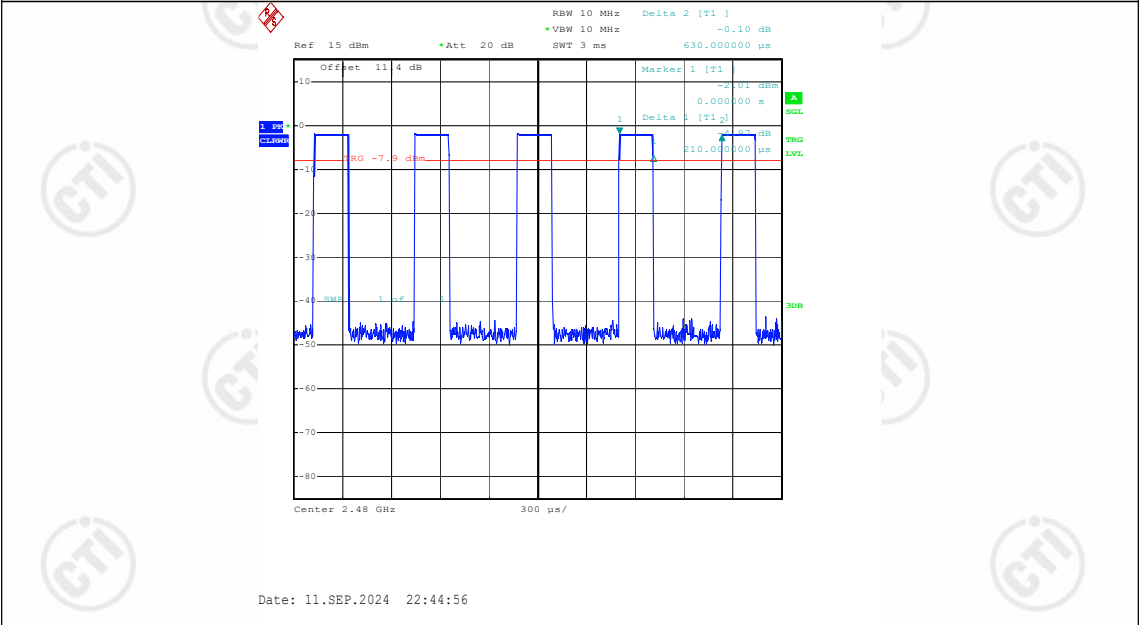
TestMode	Antenna	Frequency[MHz]	ON Time [ms]	Period [ms]	Duty Cycle [%]	Duty Cycle Factor[dB]
BLE_1M	Ant1	2402	0.41	0.63	65.08	1.87
BLE_1M	Ant1	2440	0.41	0.63	65.08	1.87
BLE_1M	Ant1	2480	0.41	0.63	65.08	1.87
BLE_2M	Ant1	2402	0.21	0.63	33.33	4.77
BLE_2M	Ant1	2440	0.21	0.63	33.33	4.77
BLE_2M	Ant1	2480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

Note:Duty Cycle Factor[dB]=-10*Ig(Duty Cycle);





NTNV-BLE_2M-Ant1-2440



NTNV-BLE_2M-Ant1-2480

END OF REPORT