

FCC Appendix RF Test Data for BLE

Company: : Shenzhen Vikcent Technology Co., Ltd.

EUT : Magic Mirror Appliance

Model Number : MMA21-4-A

FCC ID : 2BTT6-MMA21-4-A

Report No. : CTA25111301802

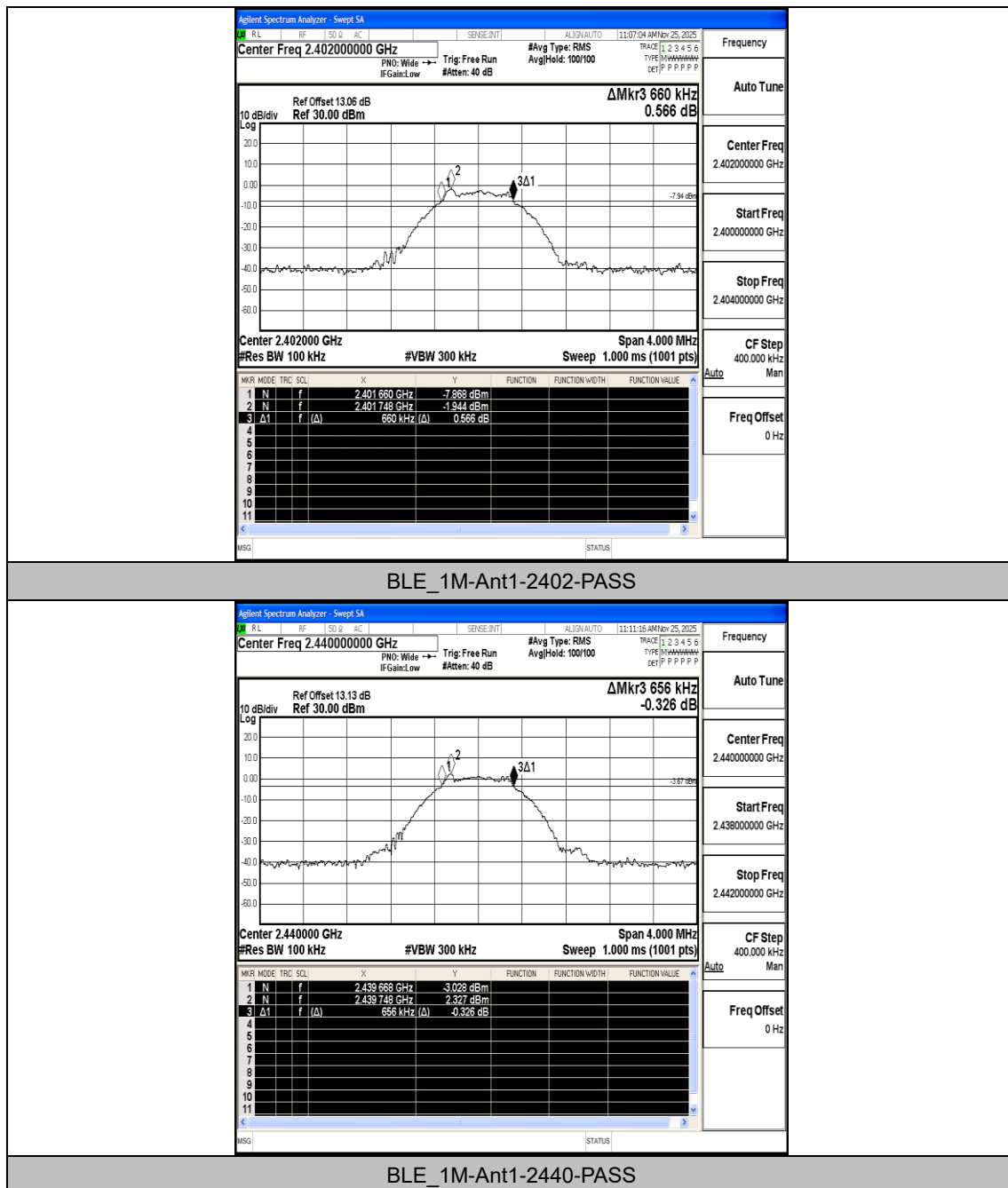
Reviewed By : Eric Wang

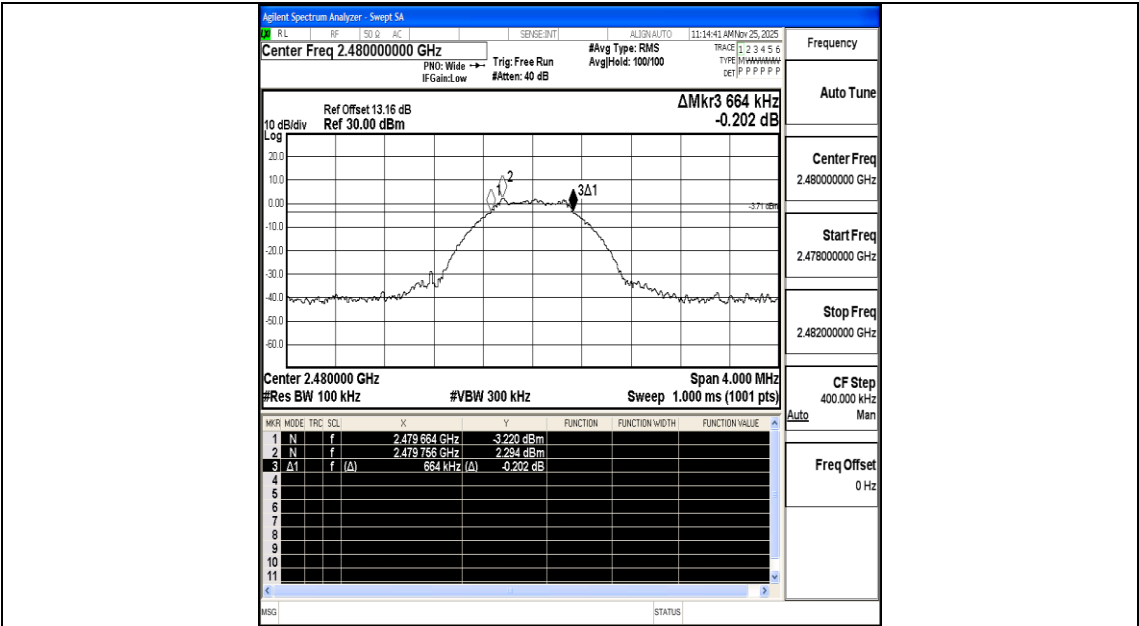
Appendix A: DTS Bandwidth

Test Result

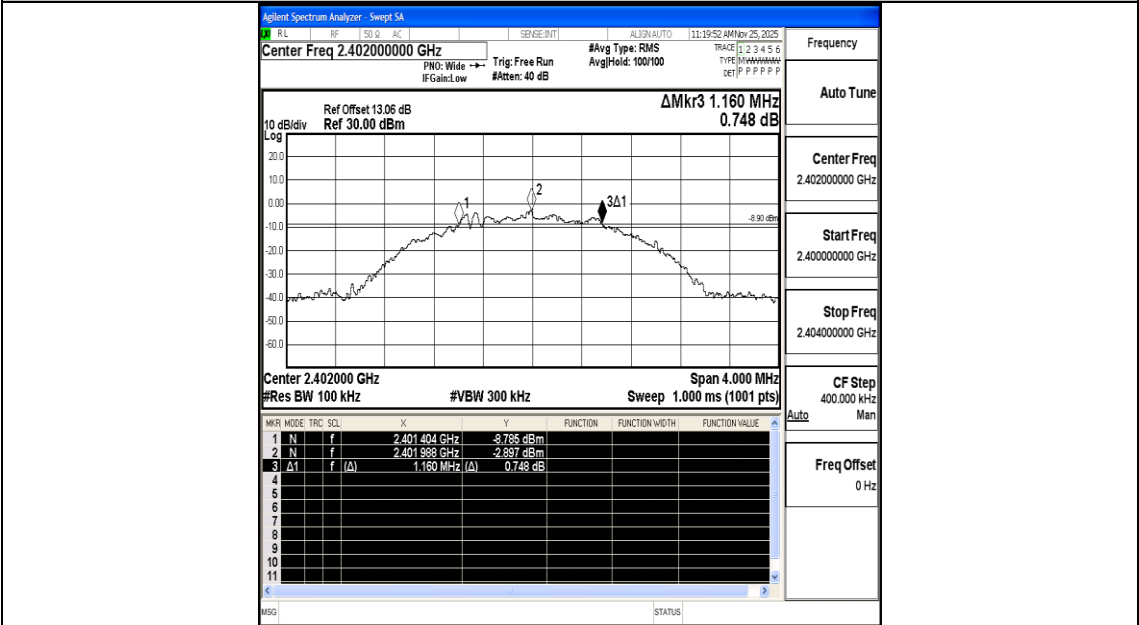
TestMode	Antenna	Frequency[MHz]	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.660	2401.660	2402.320	0.5	PASS
BLE_1M	Ant1	2440	0.656	2439.668	2440.324	0.5	PASS
BLE_1M	Ant1	2480	0.664	2479.664	2480.328	0.5	PASS
BLE_2M	Ant1	2402	1.160	2401.404	2402.564	0.5	PASS
BLE_2M	Ant1	2440	1.152	2439.416	2440.568	0.5	PASS
BLE_2M	Ant1	2480	1.168	2479.400	2480.568	0.5	PASS

Test Graphs

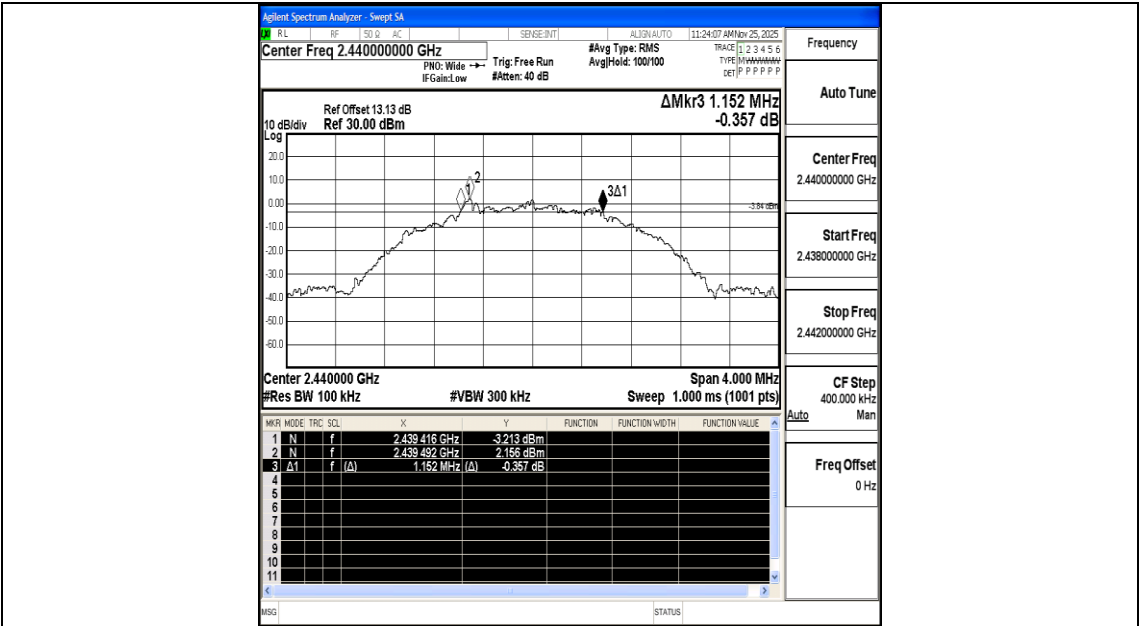




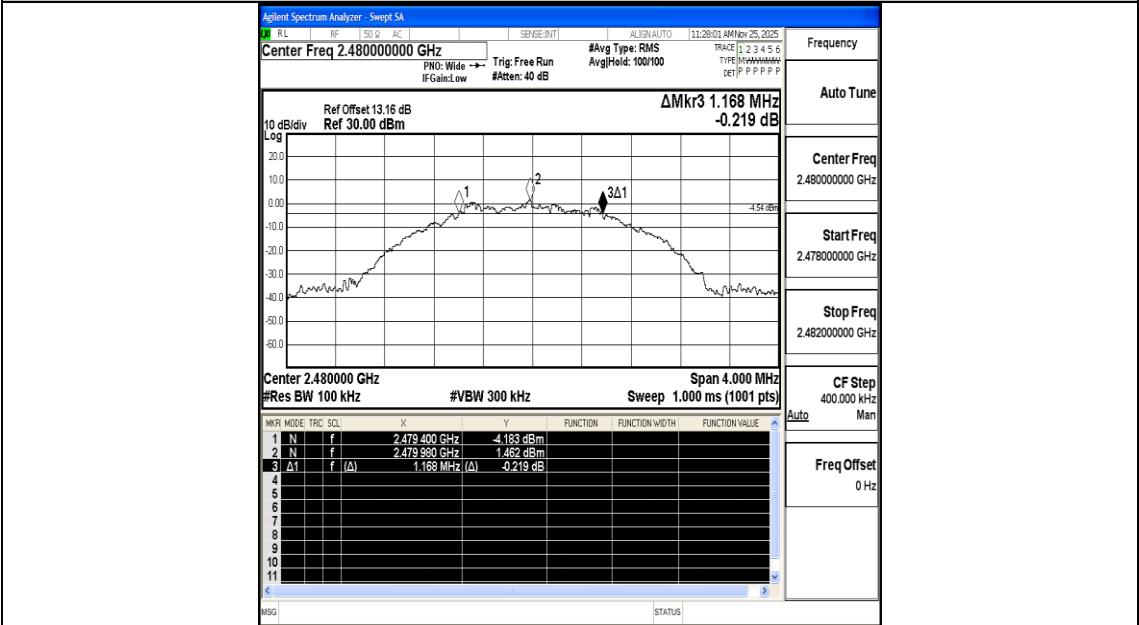
BLE_1M-Ant1-2480-PASS



BLE_2M-Ant1-2402-PASS



BLE_2M-Ant1-2440-PASS



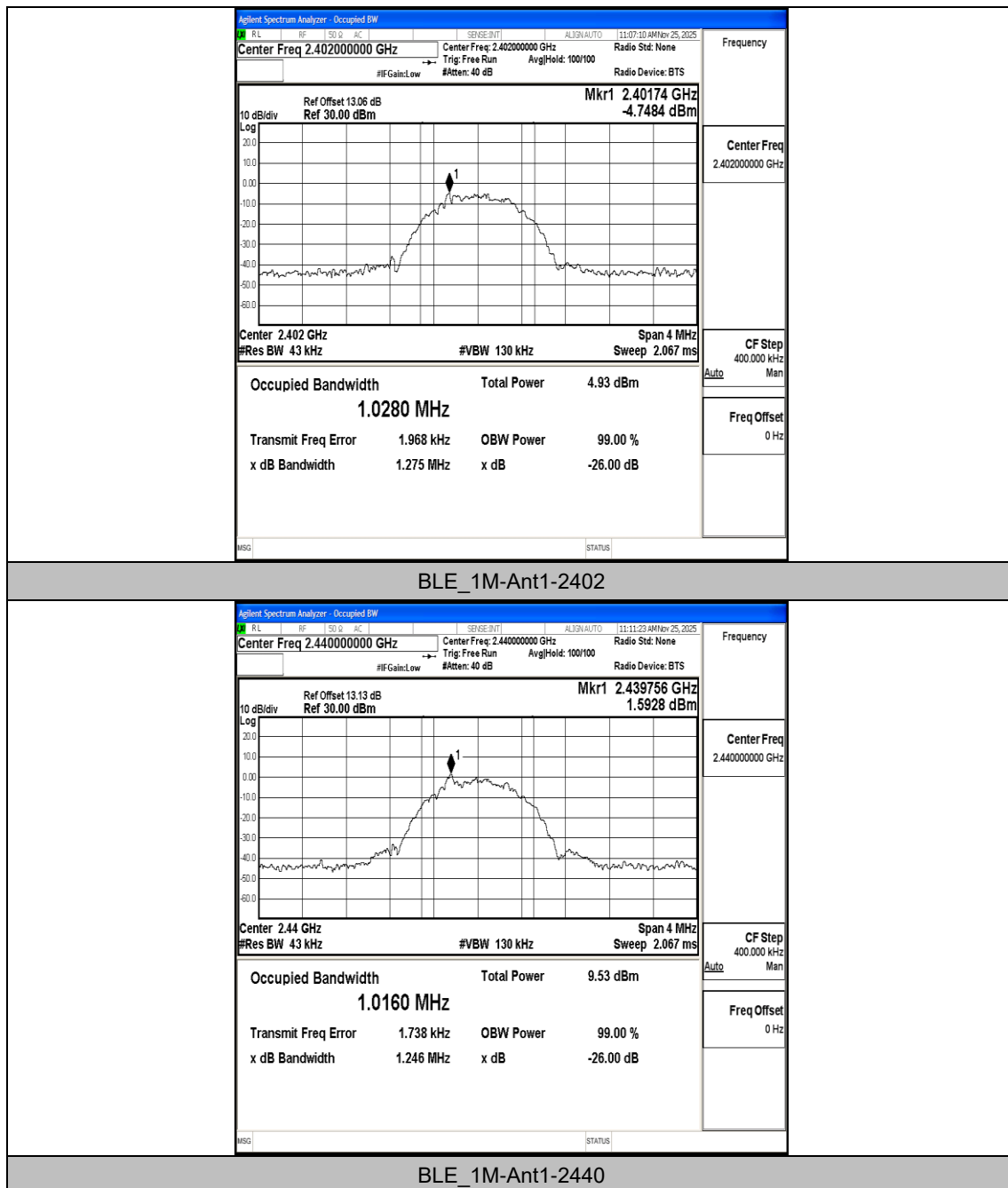
BLE_2M-Ant1-2480-PASS

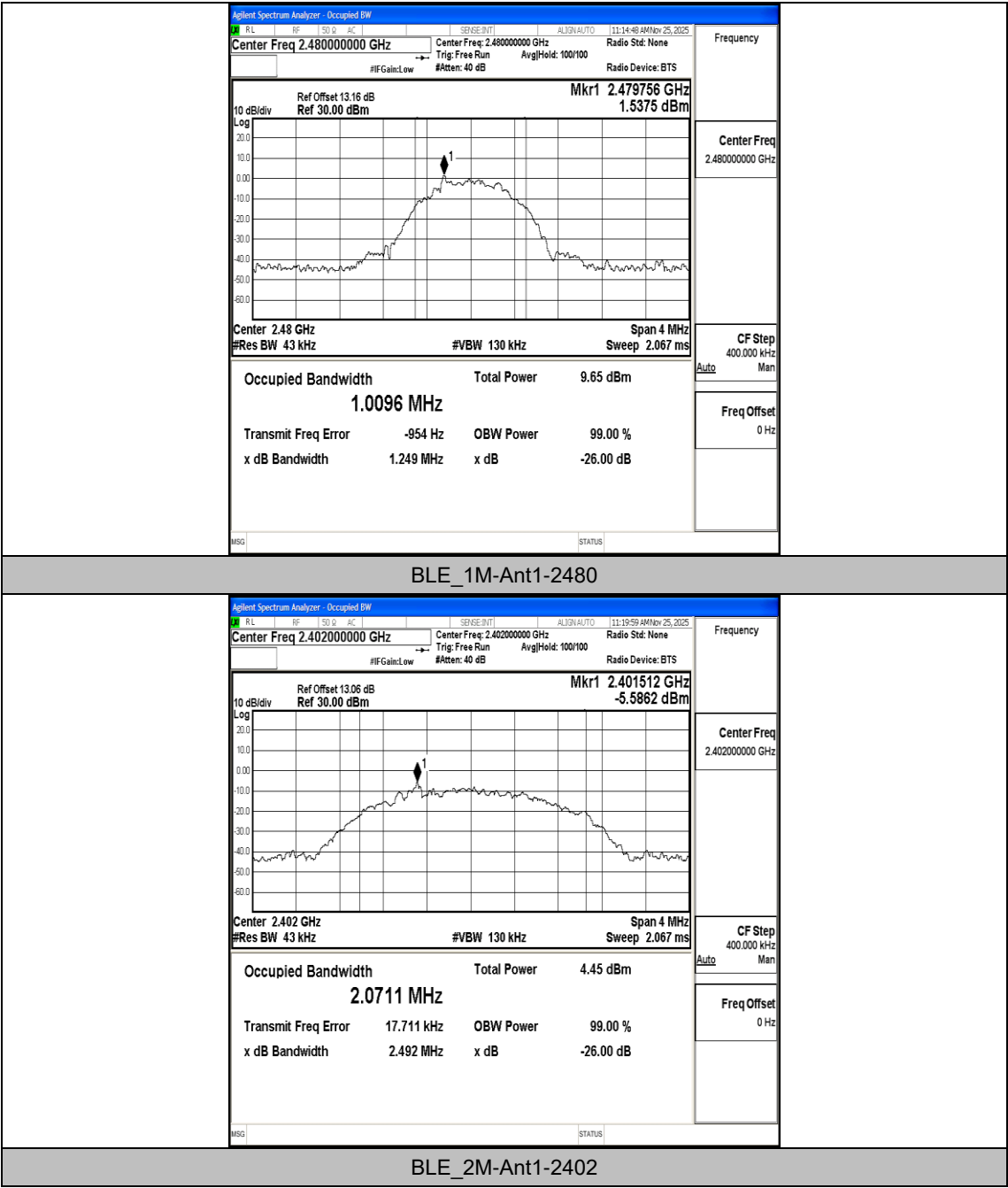
Appendix B: Occupied Channel Bandwidth

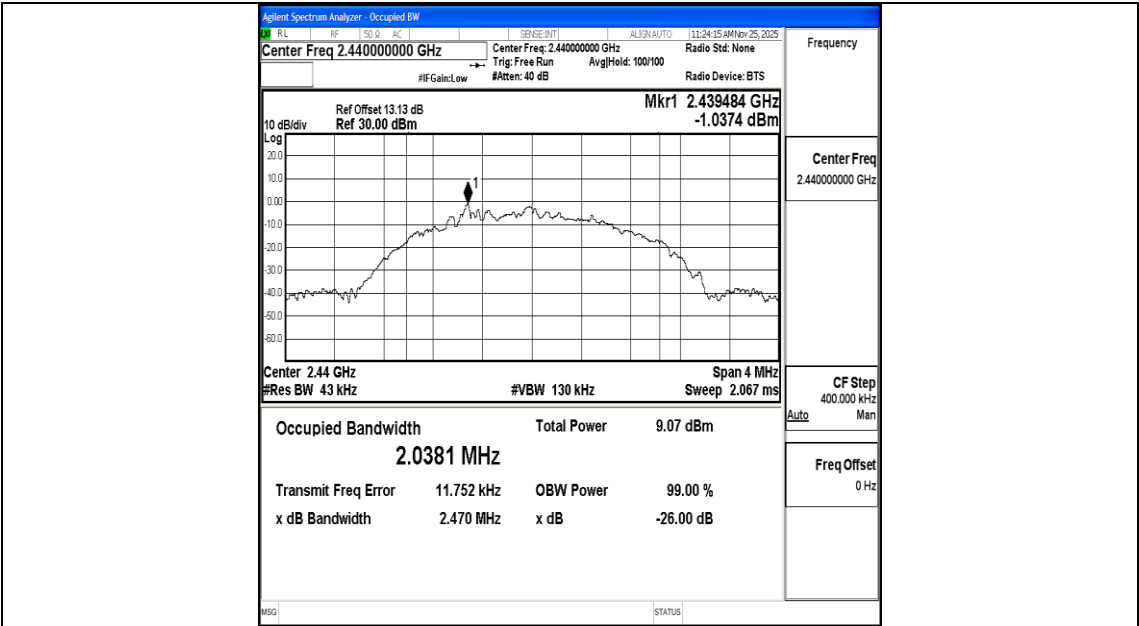
Test Result

TestMode	Antenna	Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	1.0280	2401.4880	2402.5160	---	---
BLE_1M	Ant1	2440	1.0160	2439.4937	2440.5097	---	---
BLE_1M	Ant1	2480	1.0096	2479.4943	2480.5039	---	---
BLE_2M	Ant1	2402	2.0711	2400.9822	2403.0533	---	---
BLE_2M	Ant1	2440	2.0381	2438.9927	2441.0308	---	---
BLE_2M	Ant1	2480	2.0430	2478.9896	2481.0326	---	---

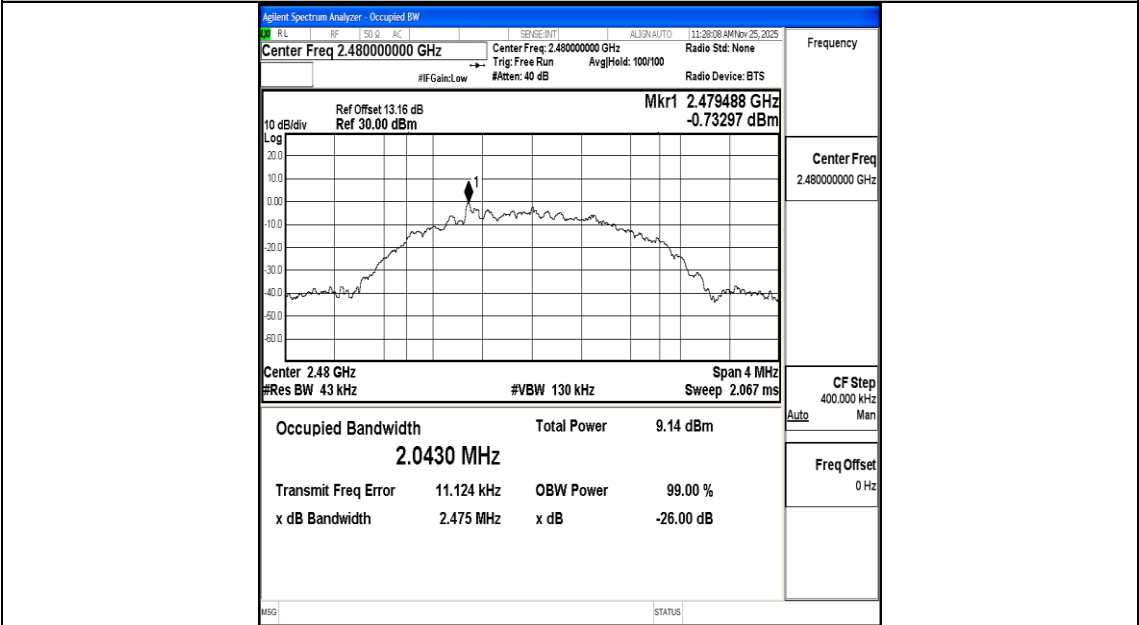
Test Graphs







BLE_2M-Ant1-2440



BLE_2M-Ant1-2480

Appendix C: Maximum conducted output power

Test Result Peak

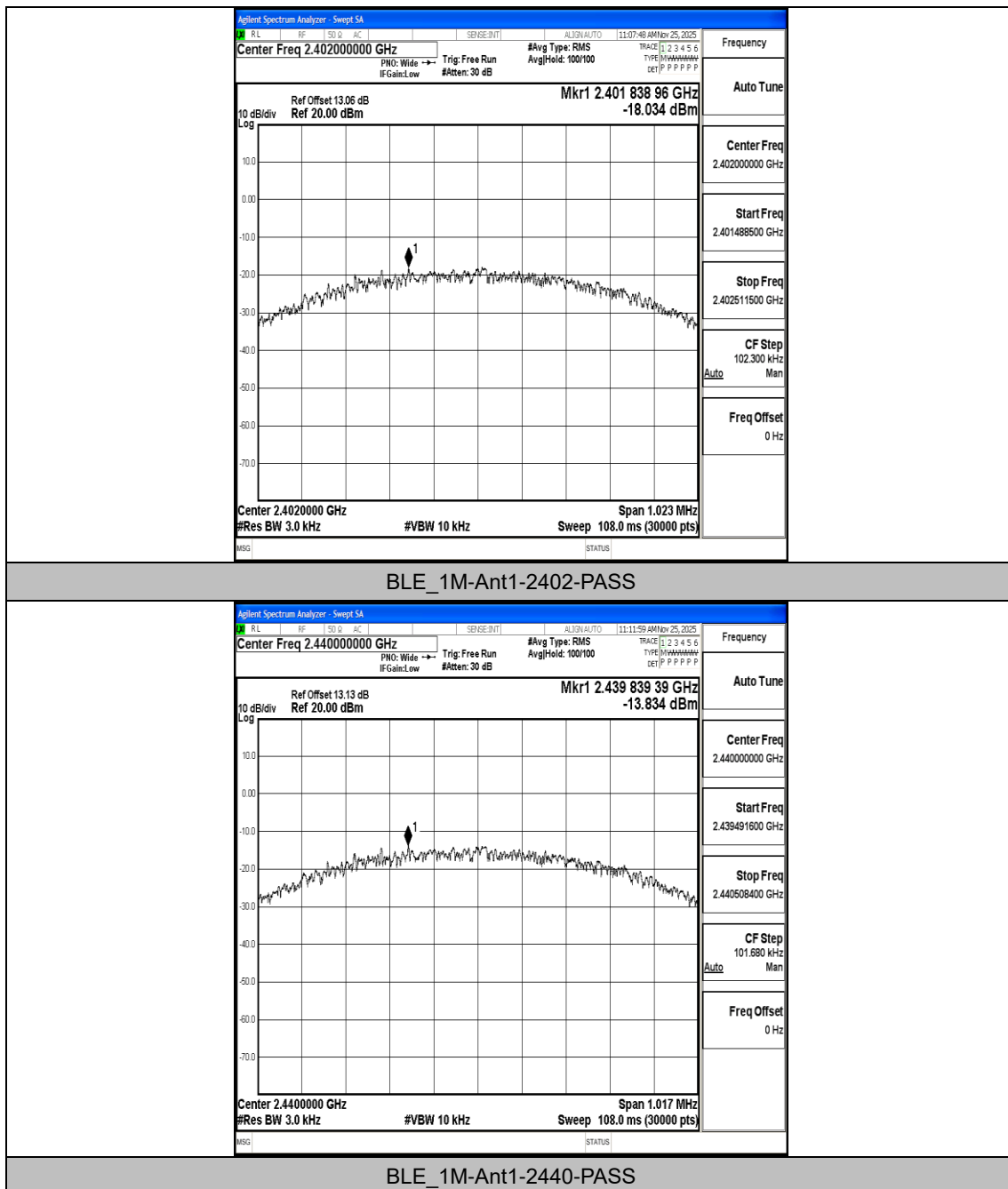
TestMode	Antenna	Frequency[MHz]	Conducted Peak Power[dBm]	Conducted Limit[dBm]	Verdict
BLE_1M	Ant1	2402	-1.07	≤30	PASS
BLE_1M	Ant1	2440	2.91	≤30	PASS
BLE_1M	Ant1	2480	3.05	≤30	PASS
BLE_2M	Ant1	2402	-1.29	≤30	PASS
BLE_2M	Ant1	2440	2.83	≤30	PASS
BLE_2M	Ant1	2480	3.00	≤30	PASS

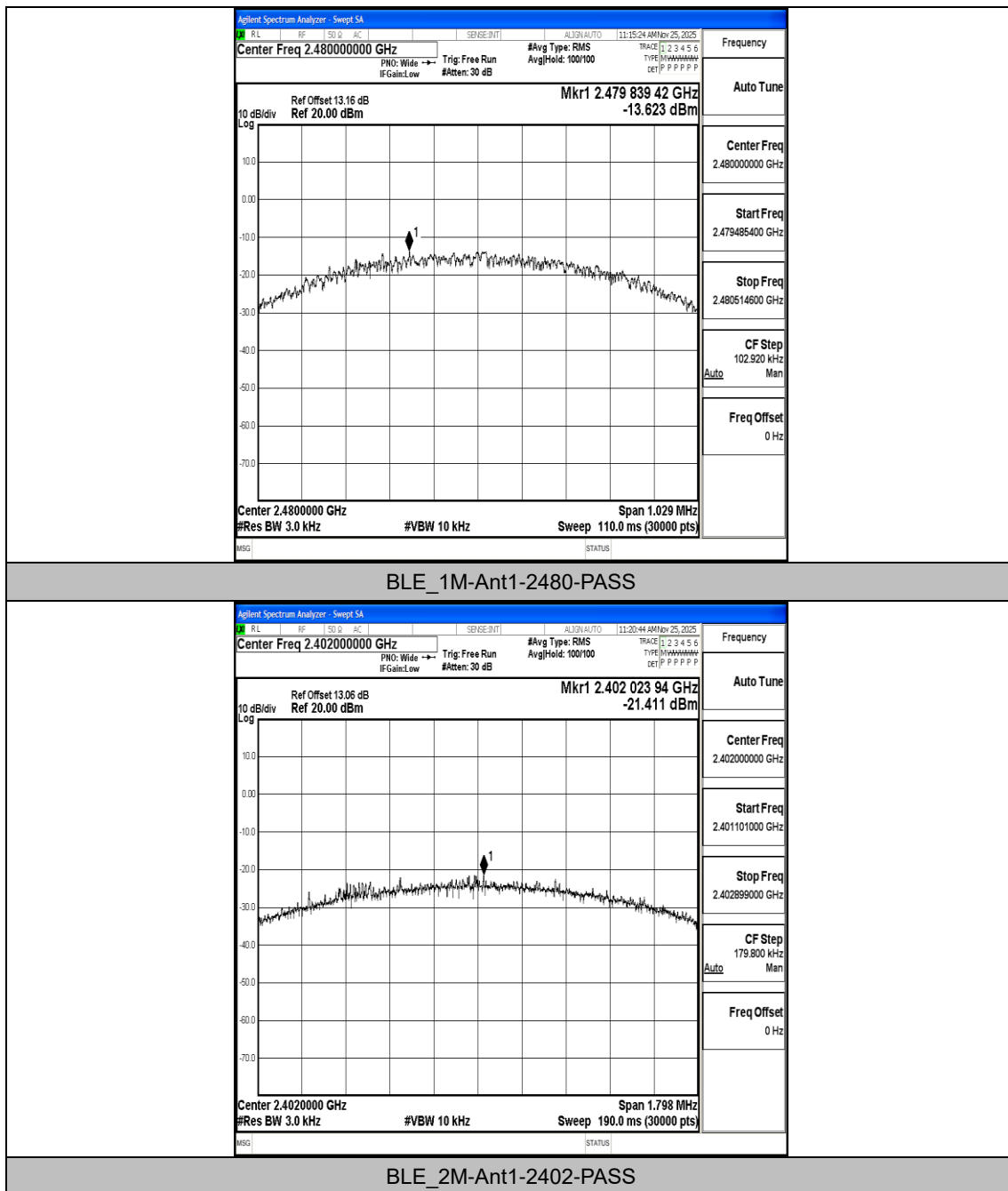
Appendix D: Maximum power spectral density

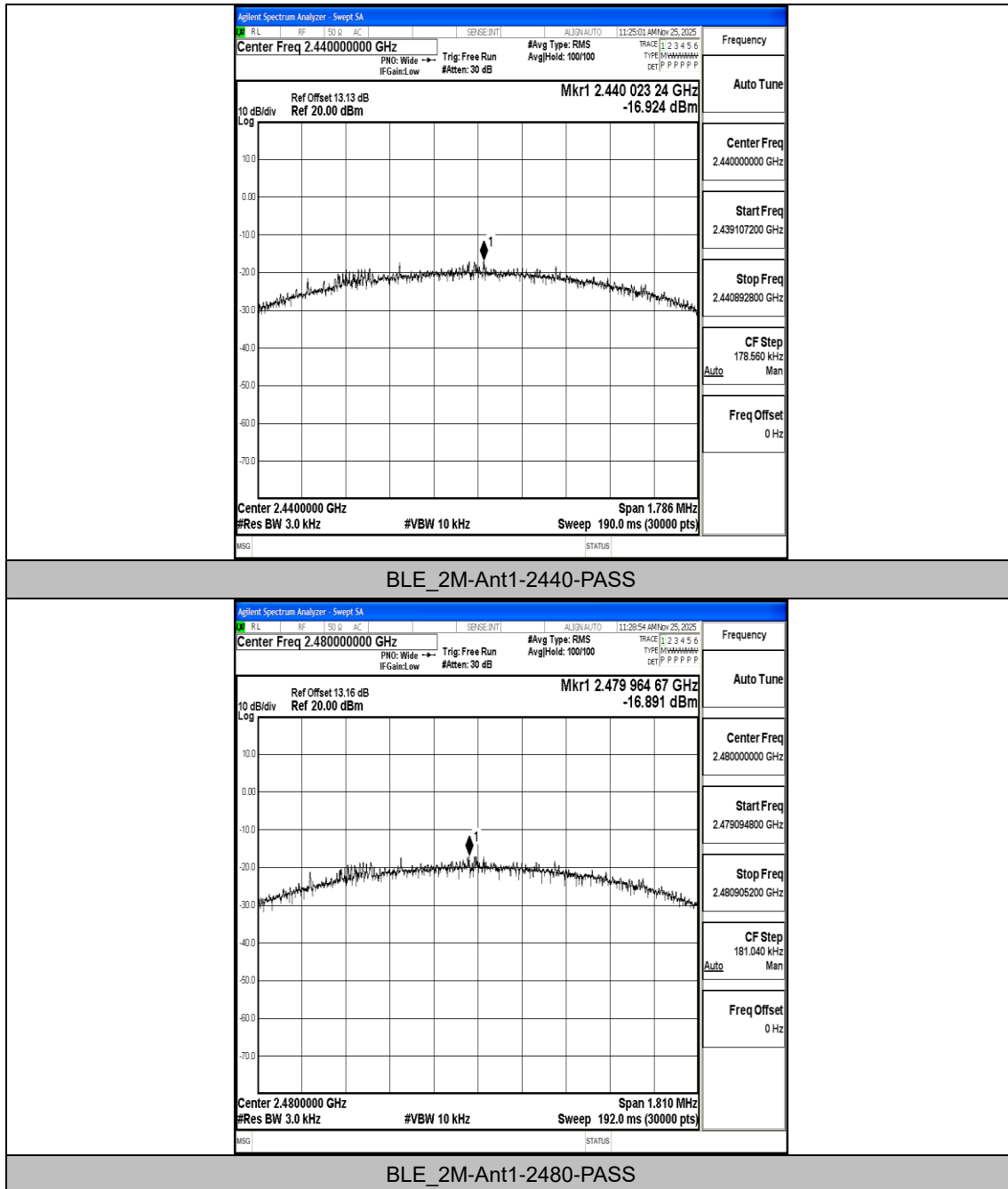
Test Result

TestMode	Antenna	Frequency[MHz]	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-18.03	≤8.00	PASS
BLE_1M	Ant1	2440	-13.83	≤8.00	PASS
BLE_1M	Ant1	2480	-13.62	≤8.00	PASS
BLE_2M	Ant1	2402	-21.41	≤8.00	PASS
BLE_2M	Ant1	2440	-16.92	≤8.00	PASS
BLE_2M	Ant1	2480	-16.89	≤8.00	PASS

Test Graphs





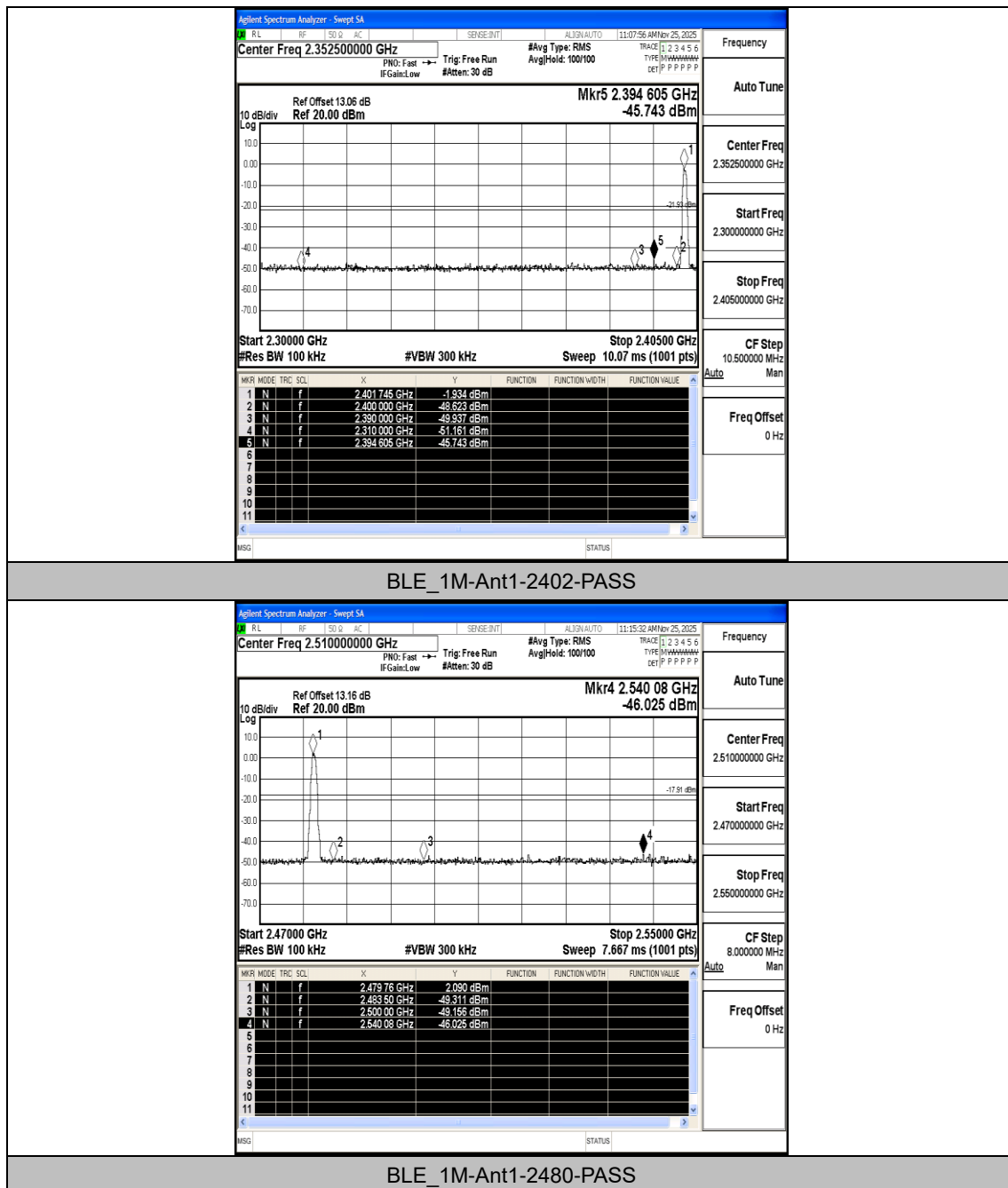


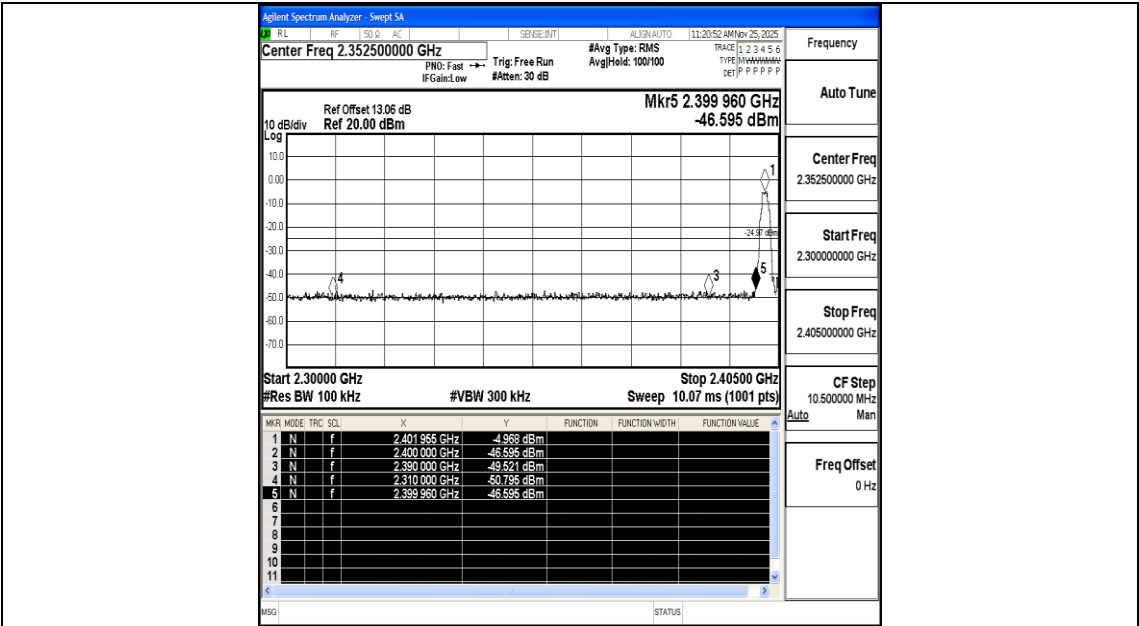
Appendix E: Band edge measurements

Test Result

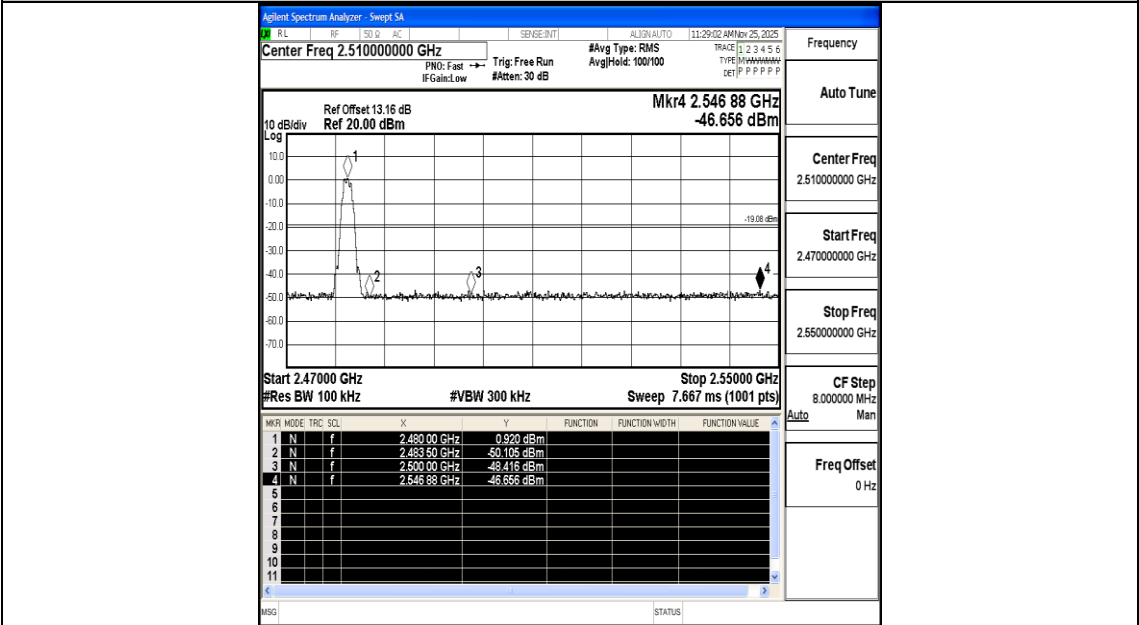
TestMode	Antenna	Channel	Frequency[MHz]	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	-1.93	-45.74	≤-21.93	PASS
BLE_1M	Ant1	High	2480	2.09	-46.03	≤-17.91	PASS
BLE_2M	Ant1	Low	2402	-4.97	-46.6	≤-24.97	PASS
BLE_2M	Ant1	High	2480	0.92	-46.66	≤-19.08	PASS

Test Graphs





BLE_2M-Ant1-2402-PASS



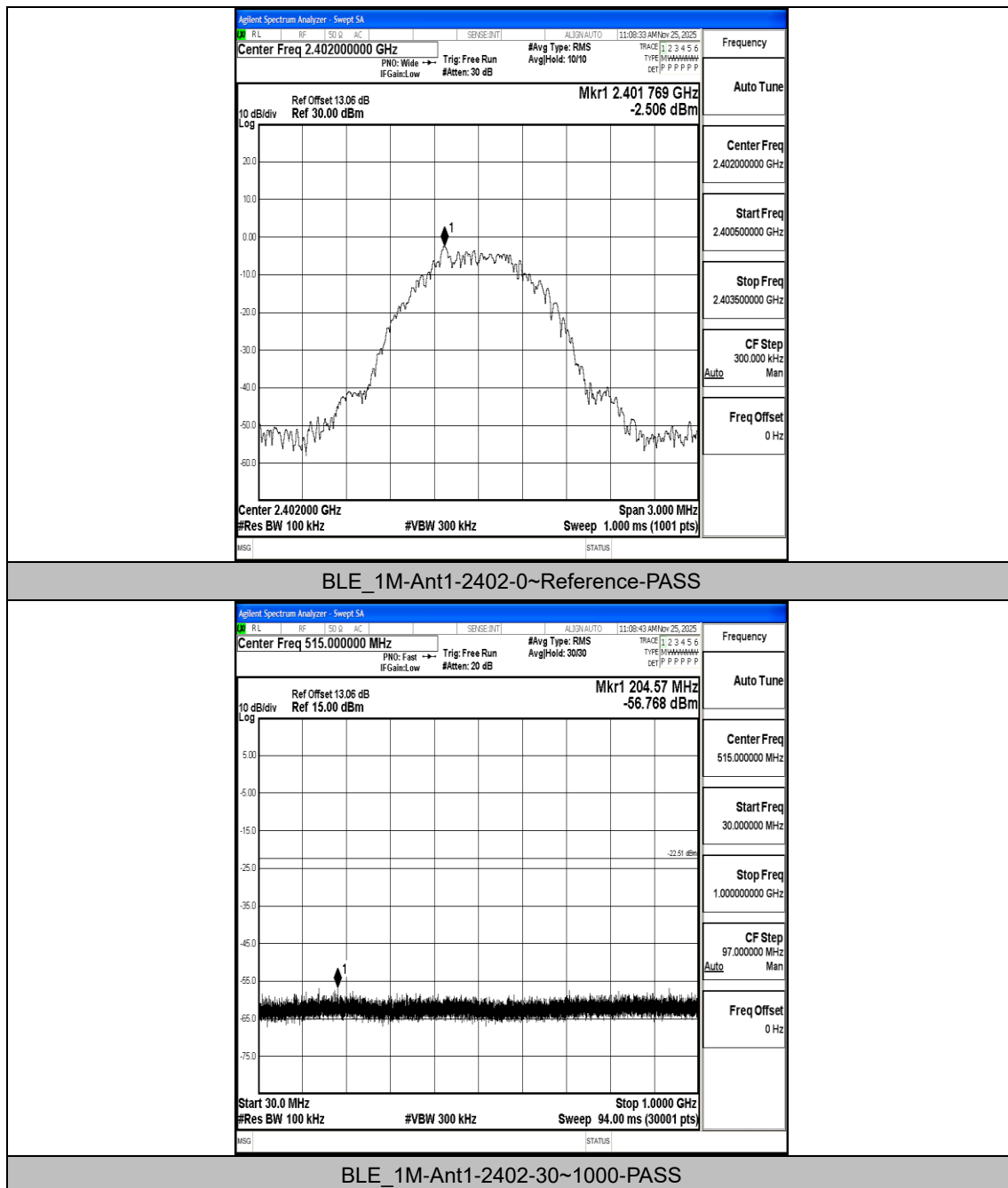
BLE_2M-Ant1-2480-PASS

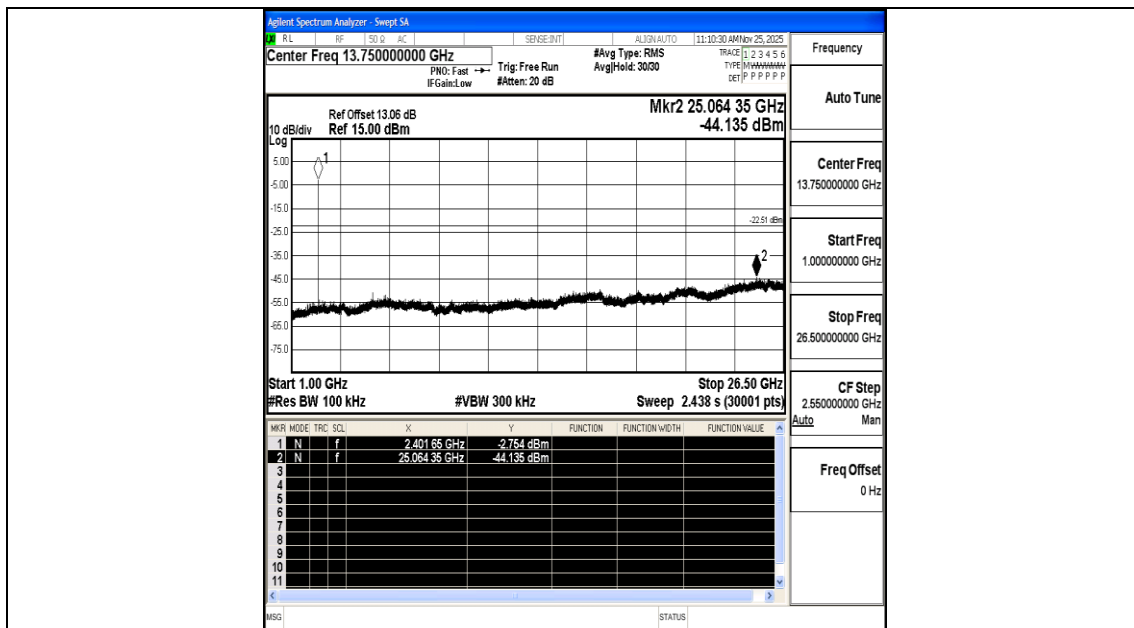
Appendix F: Conducted Spurious Emission

Test Result

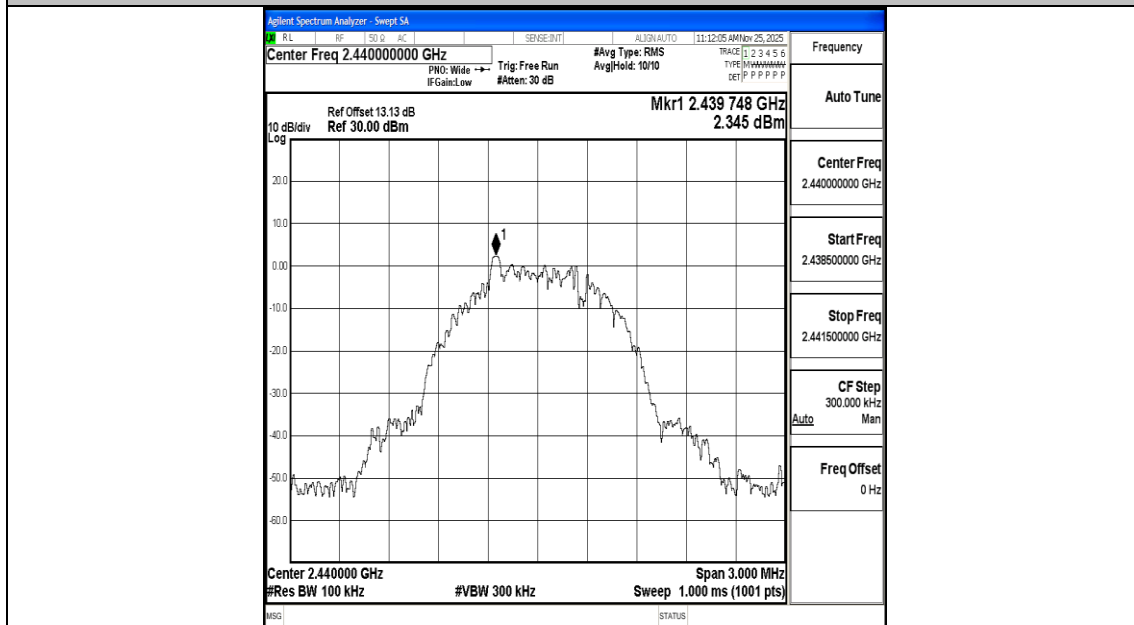
TestMode	Antenna	Frequency[MHz]	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	0~Reference	-2.51	-2.51	---	PASS
BLE_1M	Ant1	2402	30~1000	-2.51	-56.77	≤-22.51	PASS
BLE_1M	Ant1	2402	1000~26500	-2.51	-44.14	≤-22.51	PASS
BLE_1M	Ant1	2440	0~Reference	2.35	2.35	---	PASS
BLE_1M	Ant1	2440	30~1000	2.35	-57.03	≤-17.65	PASS
BLE_1M	Ant1	2440	1000~26500	2.35	-43.73	≤-17.65	PASS
BLE_1M	Ant1	2480	0~Reference	2.08	2.08	---	PASS
BLE_1M	Ant1	2480	30~1000	2.08	-57.4	≤-17.92	PASS
BLE_1M	Ant1	2480	1000~26500	2.08	-44.66	≤-17.92	PASS
BLE_2M	Ant1	2402	0~Reference	-3.43	-3.43	---	PASS
BLE_2M	Ant1	2402	30~1000	-3.43	-56.97	≤-23.43	PASS
BLE_2M	Ant1	2402	1000~26500	-3.43	-43.83	≤-23.43	PASS
BLE_2M	Ant1	2440	0~Reference	-1.06	-1.06	---	PASS
BLE_2M	Ant1	2440	30~1000	-1.06	-56.79	≤-21.06	PASS
BLE_2M	Ant1	2440	1000~26500	-1.06	-44.06	≤-21.06	PASS
BLE_2M	Ant1	2480	0~Reference	-1.26	-1.26	---	PASS
BLE_2M	Ant1	2480	30~1000	-1.26	-57.34	≤-21.26	PASS
BLE_2M	Ant1	2480	1000~26500	-1.26	-44.31	≤-21.26	PASS

Test Graphs

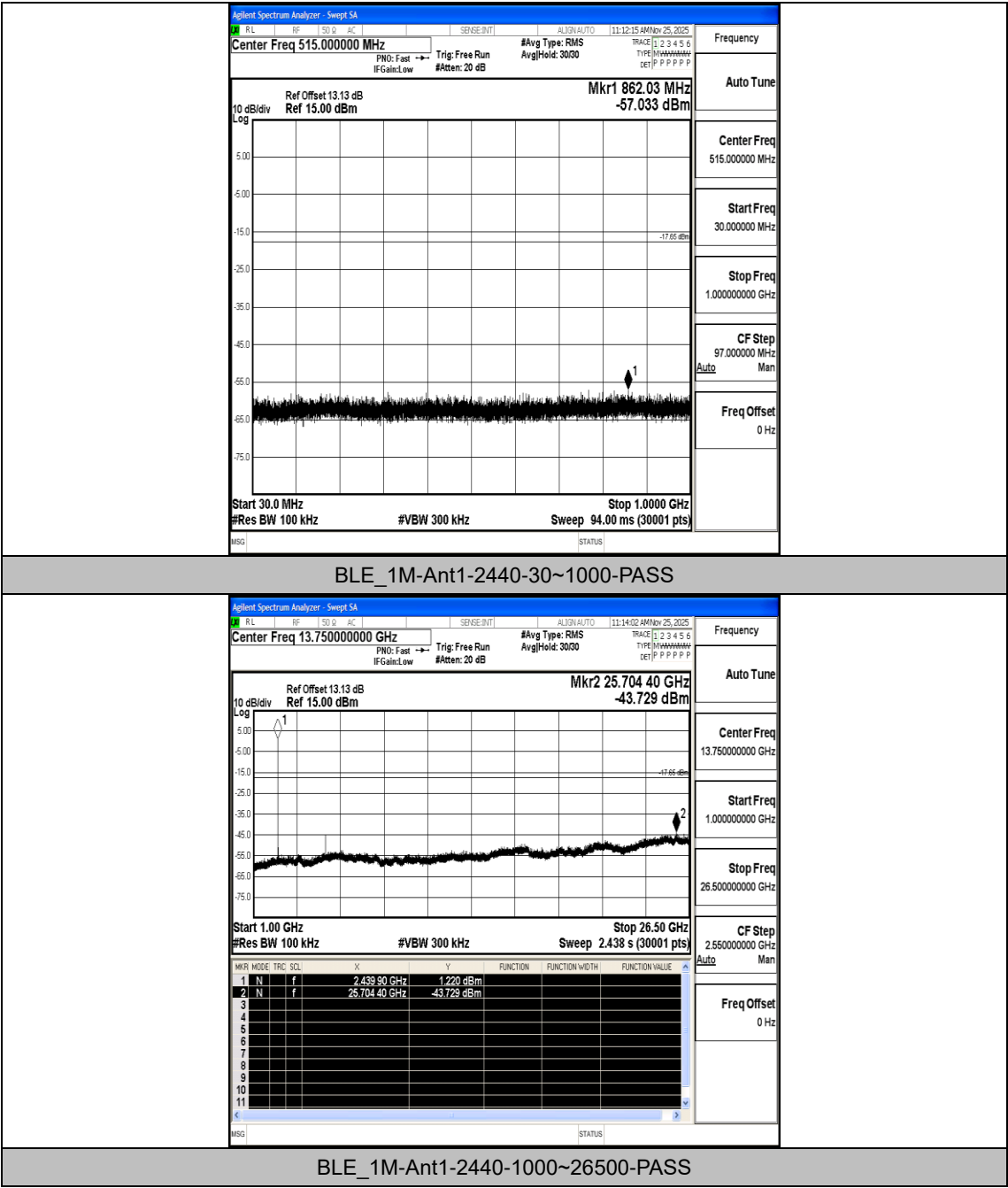


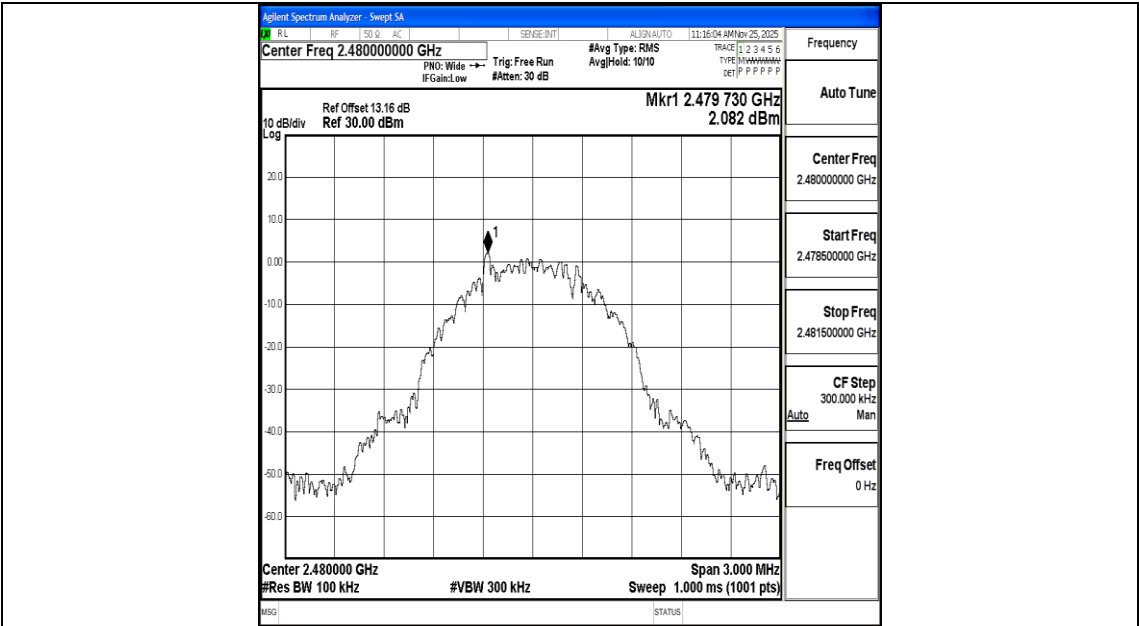


BLE_1M-Ant1-2402-1000~26500-PASS

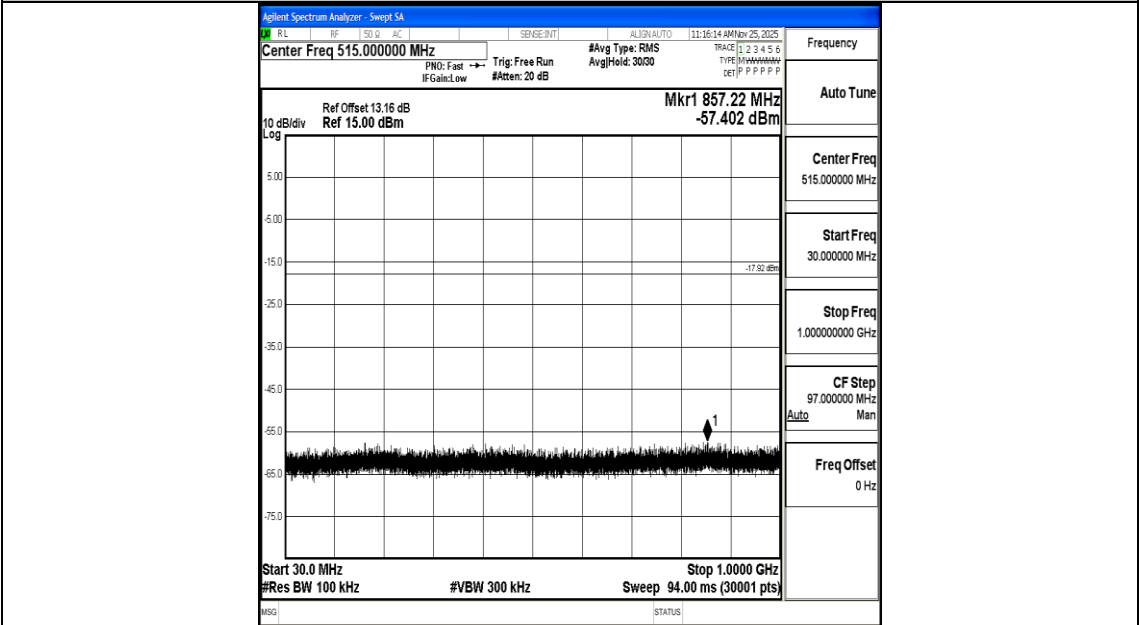


BLE_1M-Ant1-2440-0~Reference-PASS

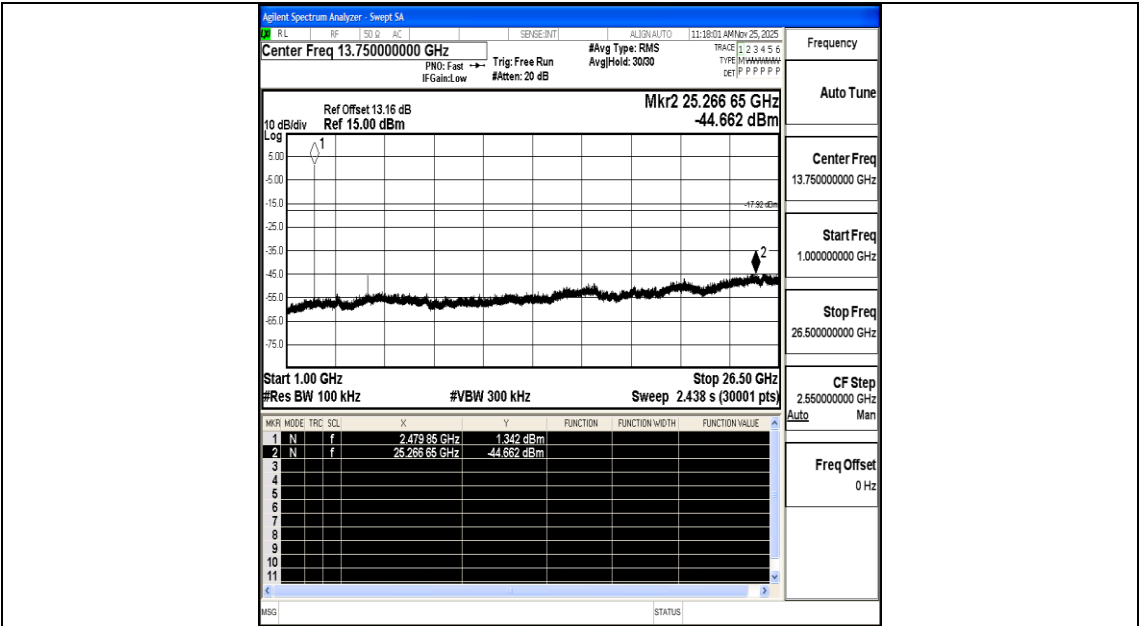




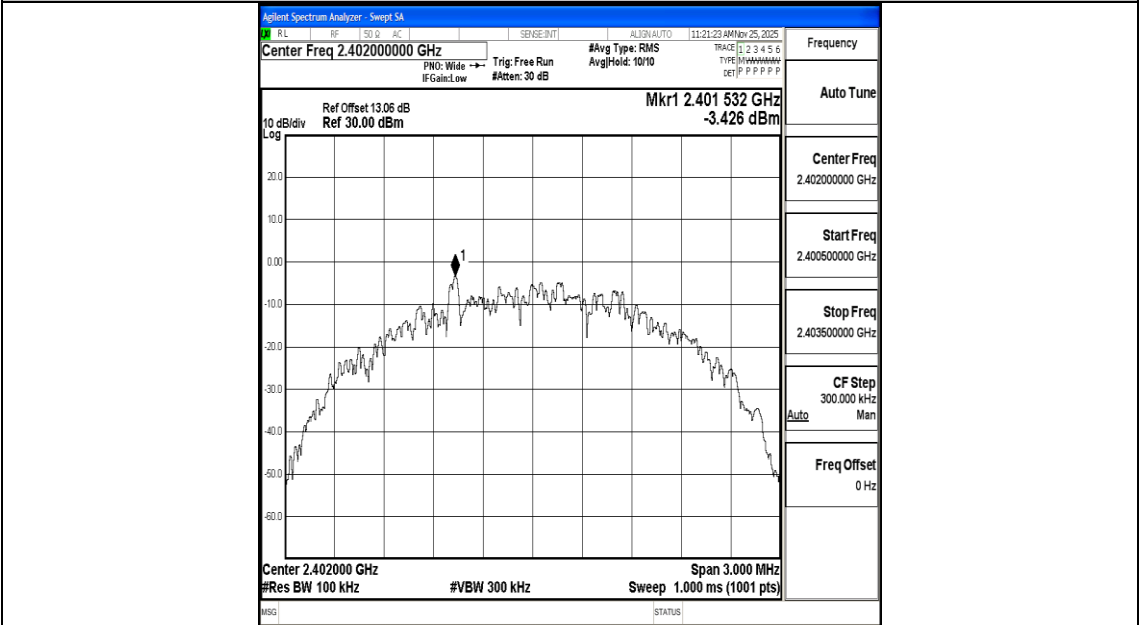
BLE_1M-Ant1-2480-0~Reference-PASS



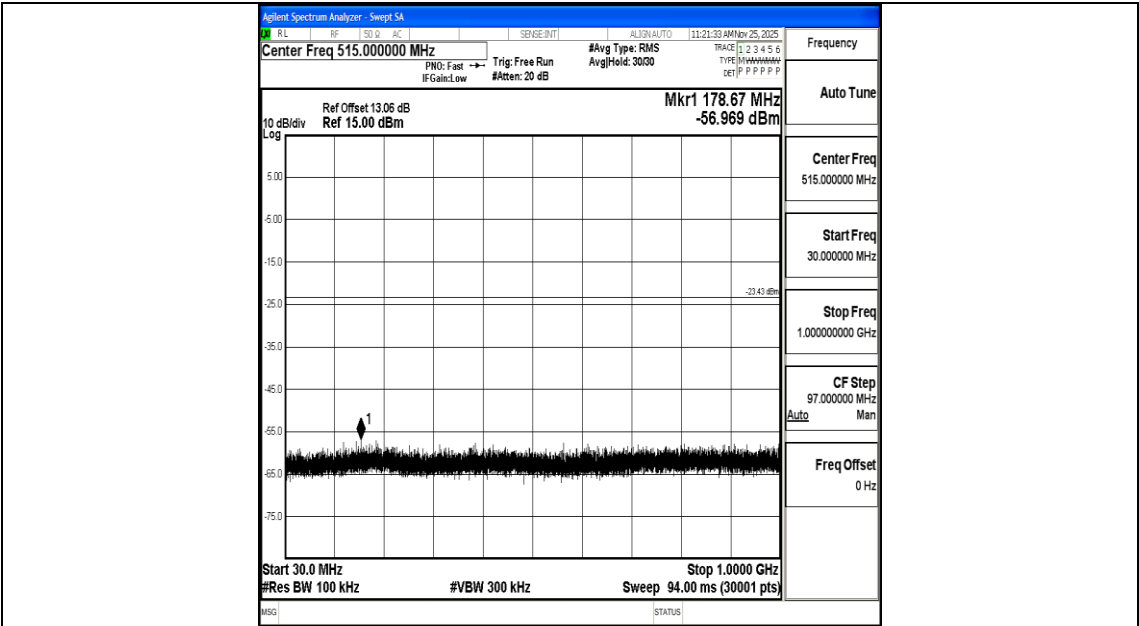
BLE_1M-Ant1-2480-30~1000-PASS



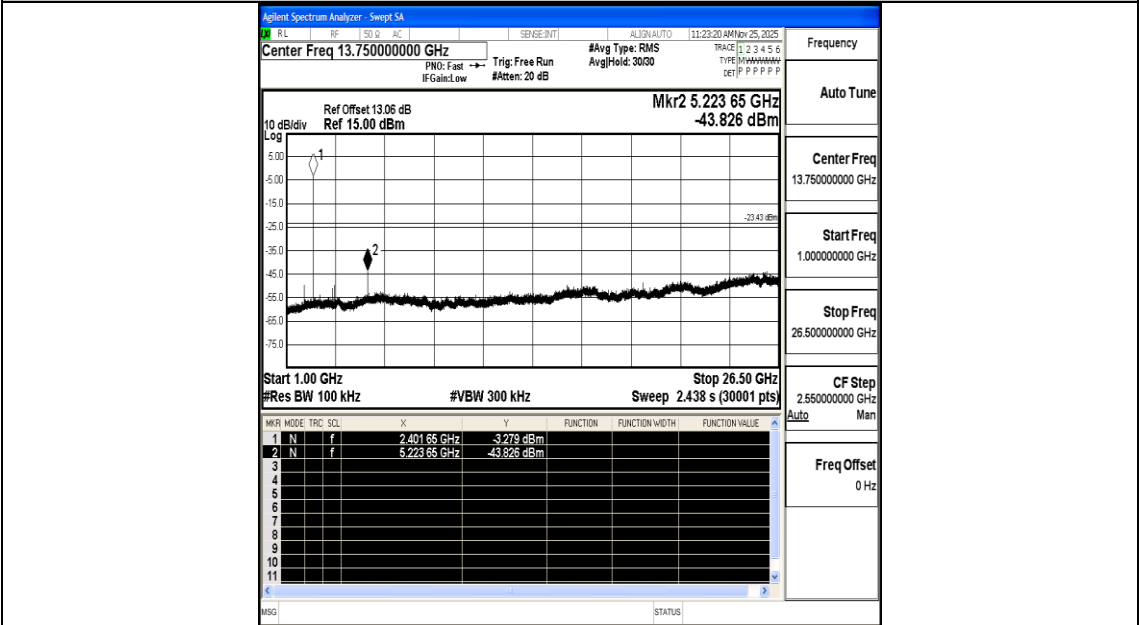
BLE_1M-Ant1-2480-1000~26500-PASS



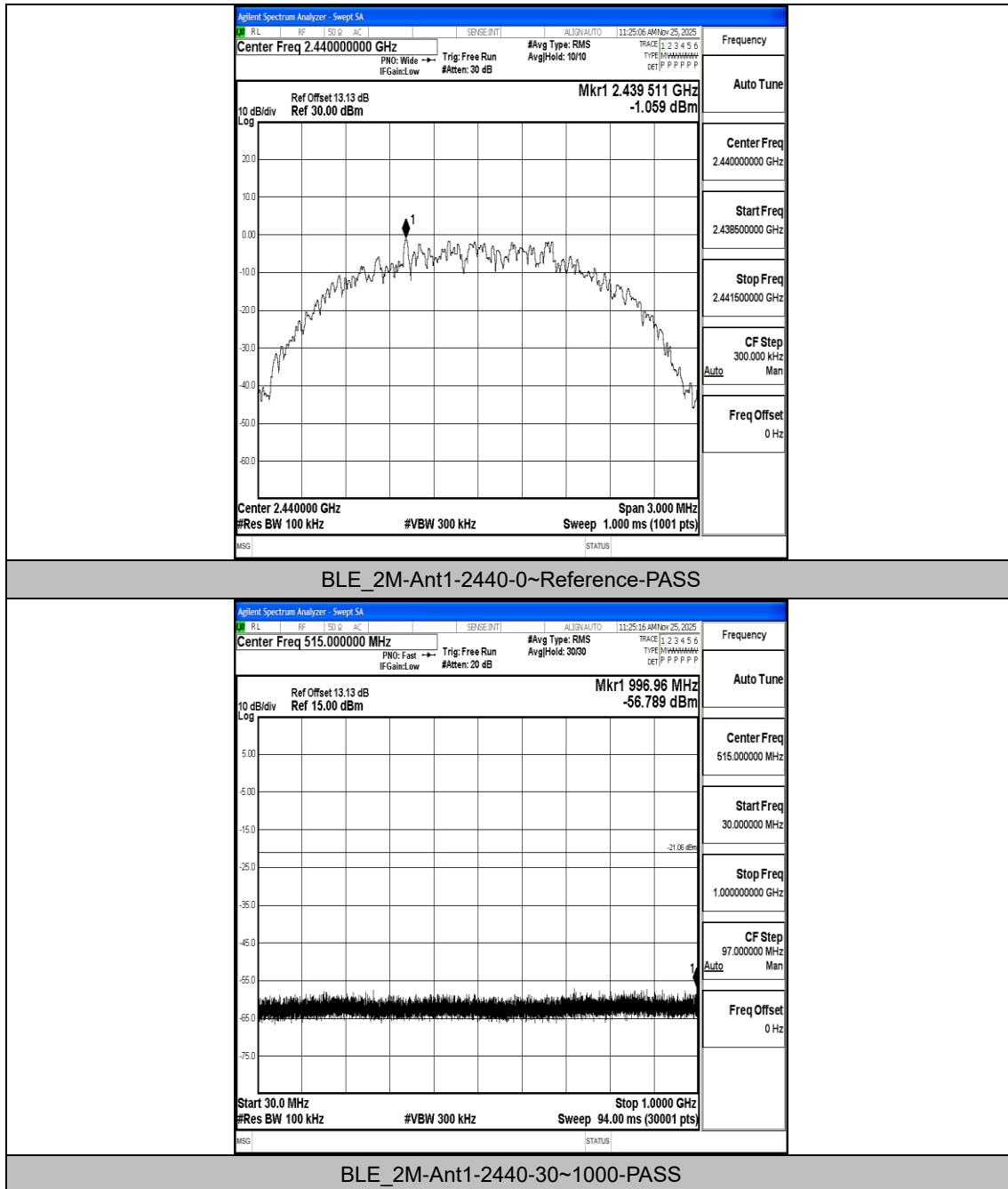
BLE_2M-Ant1-2402-0~Reference-PASS

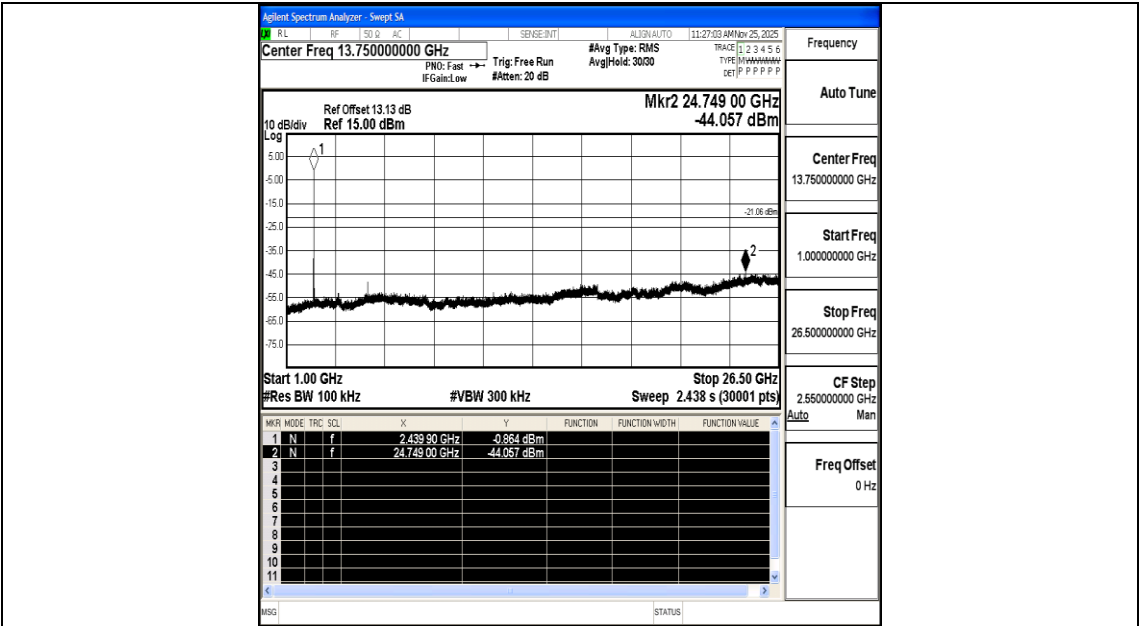


BLE_2M-Ant1-2402-30~1000-PASS

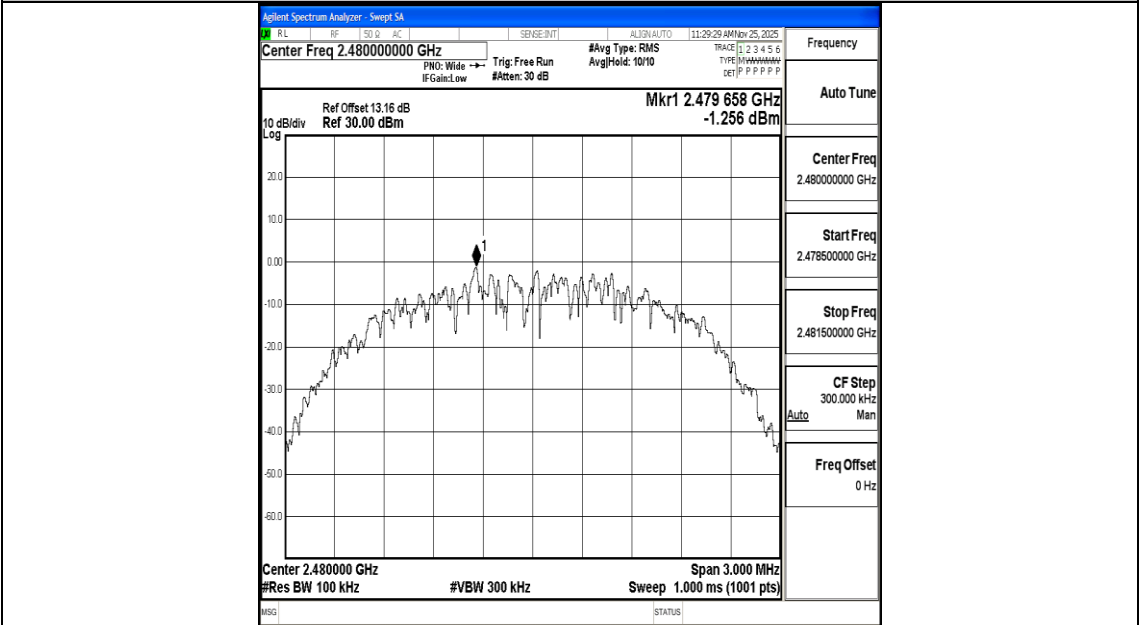


BLE_2M-Ant1-2402-1000~26500-PASS

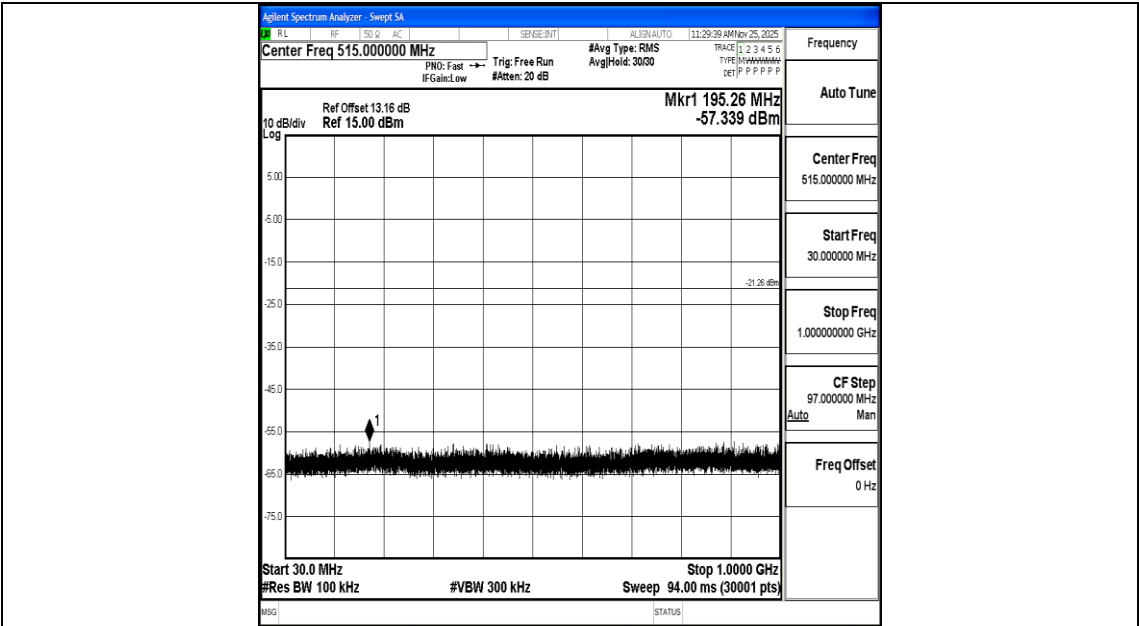




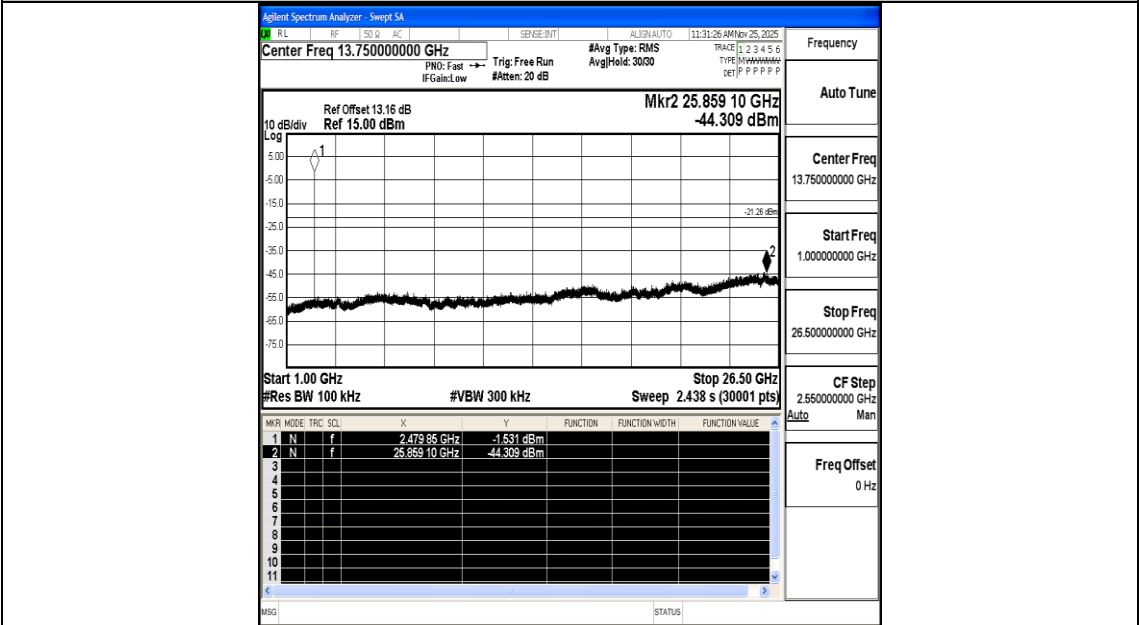
BLE_2M-Ant1-2440-1000~26500-PASS



BLE_2M-Ant1-2480-0~Reference-PASS



BLE_2M-Ant1-2480-30~1000-PASS



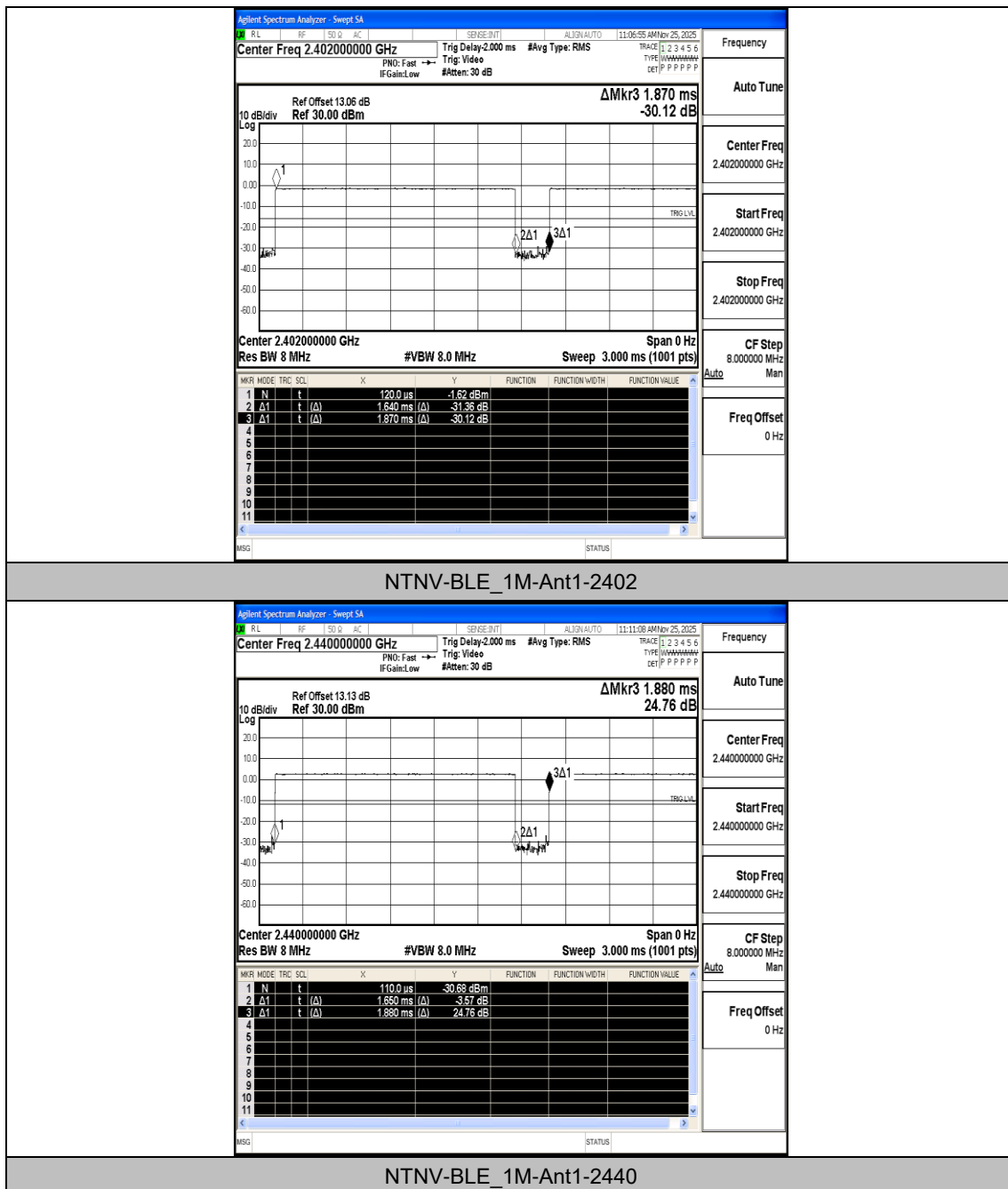
BLE_2M-Ant1-2480-1000~26500-PASS

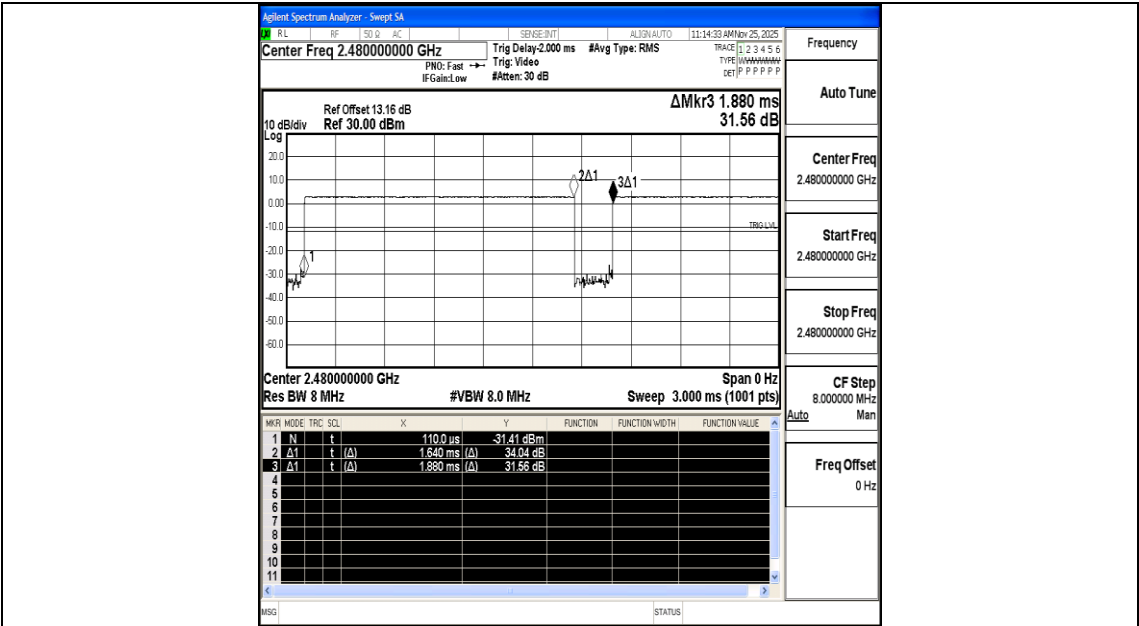
Appendix G: Duty Cycle

Test Result

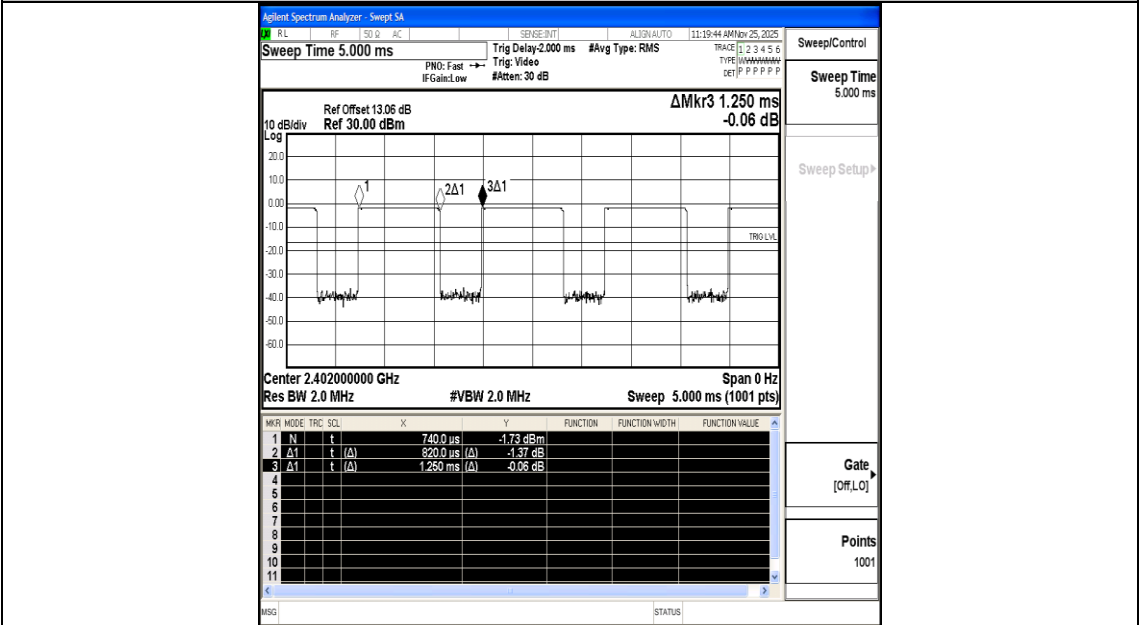
TestMode	Antenna	Frequency[MHz]	ON Time [ms]	Period [ms]	Duty Cycle [%]	Duty Cycle Factor[dB]
BLE_1M	Ant1	2402	1.64	1.87	87.70	0.57
BLE_1M	Ant1	2440	1.65	1.88	87.77	0.57
BLE_1M	Ant1	2480	1.64	1.88	87.23	0.59
BLE_2M	Ant1	2402	0.82	1.25	65.60	1.83
BLE_2M	Ant1	2440	0.83	1.25	66.40	1.78
BLE_2M	Ant1	2480	0.82	1.25	65.60	1.83

Test Graphs

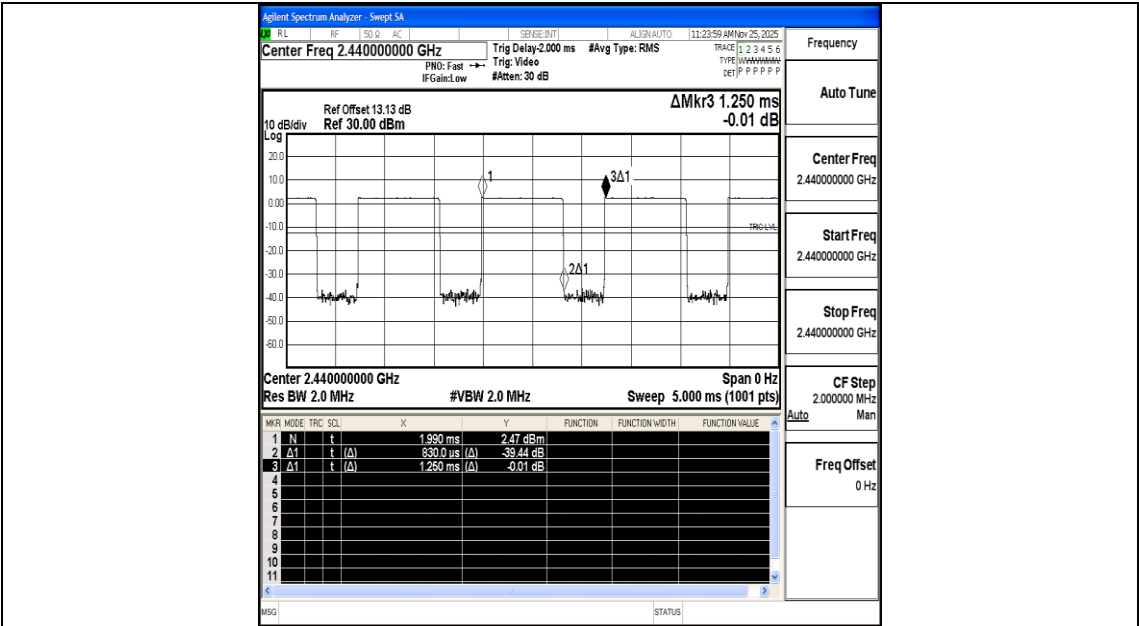




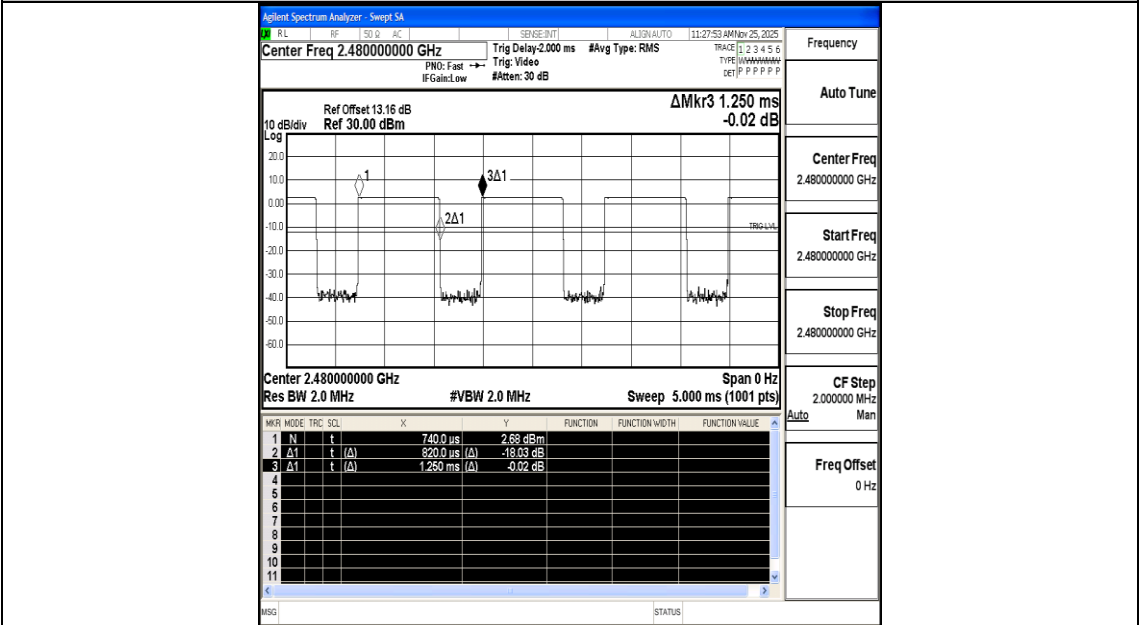
NTNV-BLE_1M-Ant1-2480



NTNV-BLE_2M-Ant1-2402



NTNV-BLE_2M-Ant1-2440



NTNV-BLE_2M-Ant1-2480

Appendix H: Emissions in Restricted Bands

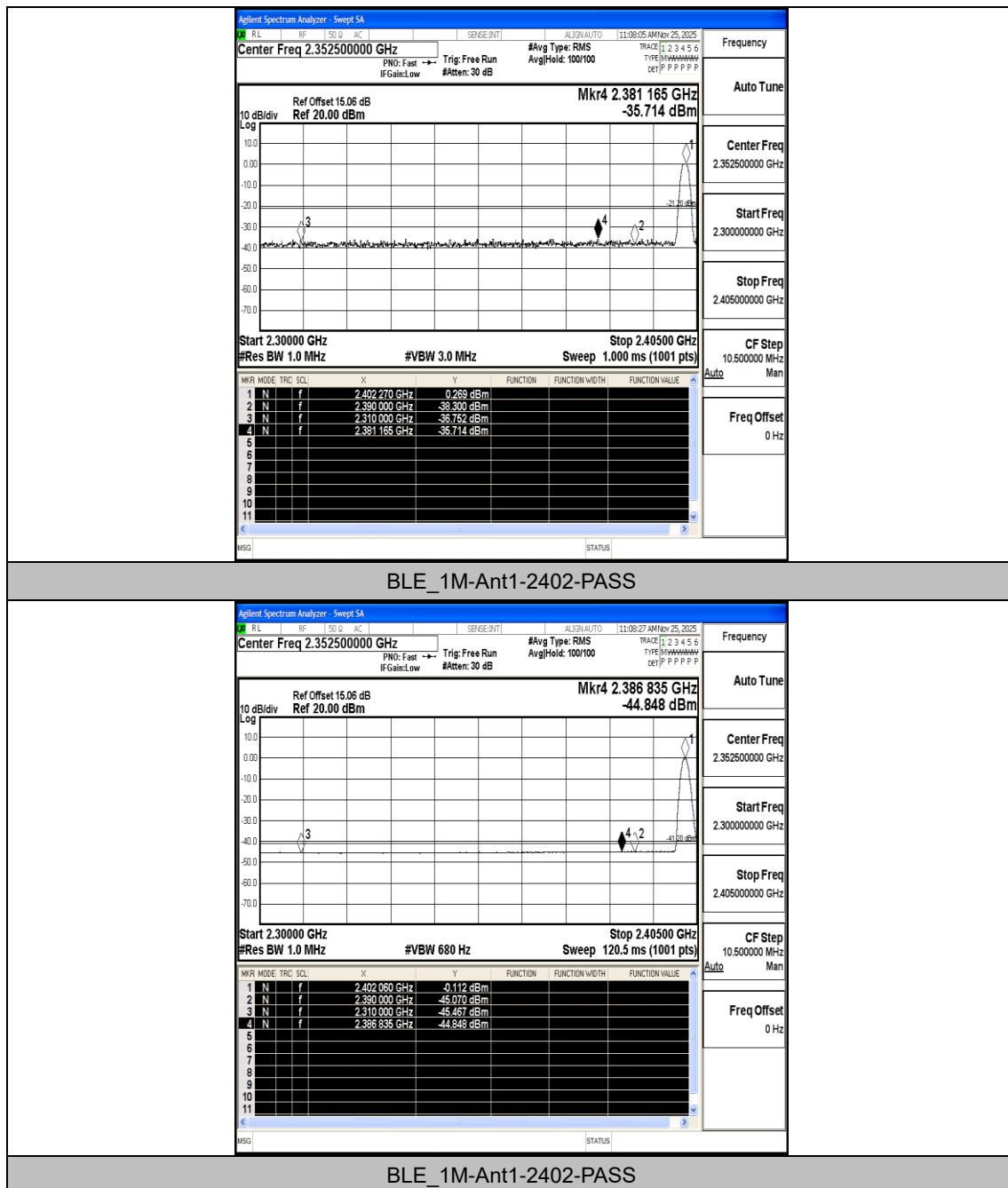
Test Result

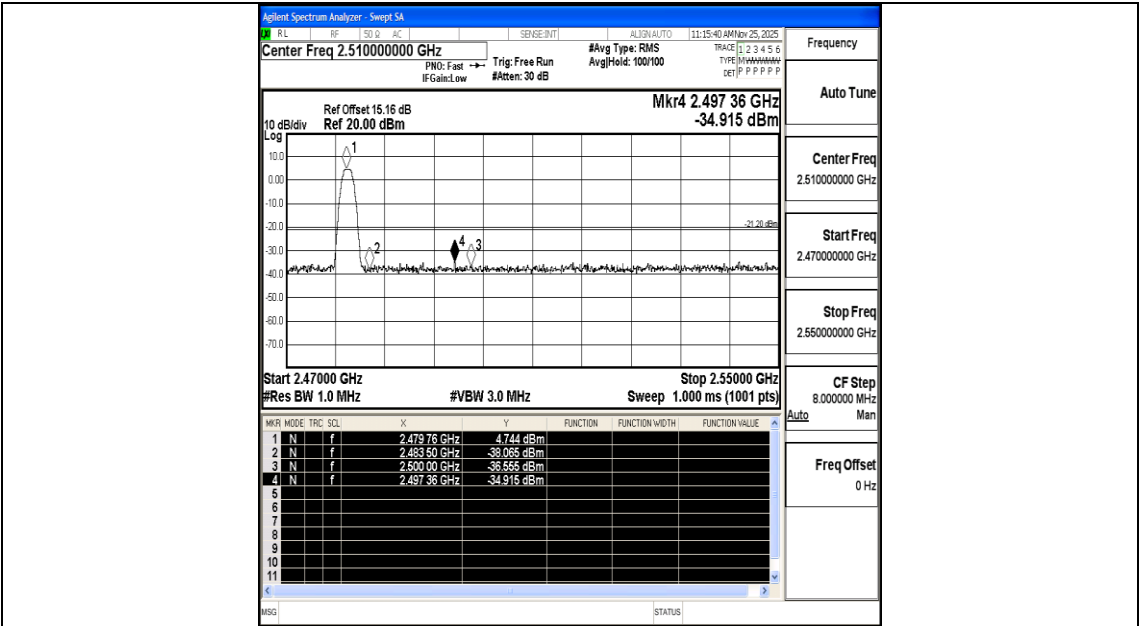
TestMode	Antenna	ChName	Frequency [MHz]	Detector	Freq [MHz]	Result [dBm]	Limit [dBm]	Result [dBuV/m]	Limit [dBuV/m]	Verdict
BLE_1M	Ant1	Low	2402	Peak	2390.000	-38.3	≤-21.20	56.90	≤74	PASS
BLE_1M	Ant1	Low	2402	Peak	2310.000	-36.75	≤-21.20	58.45	≤74	PASS
BLE_1M	Ant1	Low	2402	Peak	2381.165	-35.71	≤-21.20	59.49	≤74	PASS
BLE_1M	Ant1	Low	2402	AV	2390.000	-45.07	≤-41.20	50.13	≤54	PASS
BLE_1M	Ant1	Low	2402	AV	2310.000	-45.47	≤-41.20	49.73	≤54	PASS
BLE_1M	Ant1	Low	2402	AV	2386.835	-44.85	≤-41.20	50.35	≤54	PASS
BLE_1M	Ant1	High	2480	Peak	2483.500	-38.07	≤-21.20	57.13	≤74	PASS
BLE_1M	Ant1	High	2480	Peak	2500.000	-36.56	≤-21.20	58.64	≤74	PASS
BLE_1M	Ant1	High	2480	Peak	2497.360	-34.91	≤-21.20	60.29	≤74	PASS
BLE_1M	Ant1	High	2480	AV	2483.500	-44.35	≤-41.20	50.85	≤54	PASS
BLE_1M	Ant1	High	2480	AV	2500.000	-44.93	≤-41.20	50.27	≤54	PASS
BLE_1M	Ant1	High	2480	AV	2483.520	-44.35	≤-41.20	50.85	≤54	PASS
BLE_2M	Ant1	Low	2402	Peak	2390.000	-37.98	≤-21.20	57.22	≤74	PASS
BLE_2M	Ant1	Low	2402	Peak	2310.000	-38.45	≤-21.20	56.75	≤74	PASS
BLE_2M	Ant1	Low	2402	Peak	2378.750	-35.6	≤-21.20	59.60	≤74	PASS
BLE_2M	Ant1	Low	2402	AV	2390.000	-44.89	≤-41.20	50.31	≤54	PASS
BLE_2M	Ant1	Low	2402	AV	2310.000	-45.17	≤-41.20	50.03	≤54	PASS
BLE_2M	Ant1	Low	2402	AV	2385.155	-44.53	≤-41.20	50.67	≤54	PASS
BLE_2M	Ant1	High	2480	Peak	2483.500	-37.18	≤-21.20	58.02	≤74	PASS
BLE_2M	Ant1	High	2480	Peak	2500.000	-37.56	≤-21.20	57.64	≤74	PASS
BLE_2M	Ant1	High	2480	Peak	2485.360	-35.51	≤-21.20	59.69	≤74	PASS
BLE_2M	Ant1	High	2480	AV	2483.500	-43.57	≤-41.20	51.63	≤54	PASS
BLE_2M	Ant1	High	2480	AV	2500.000	-44.81	≤-41.20	50.39	≤54	PASS
BLE_2M	Ant1	High	2480	AV	2483.520	-43.57	≤-41.20	51.63	≤54	PASS

Note:

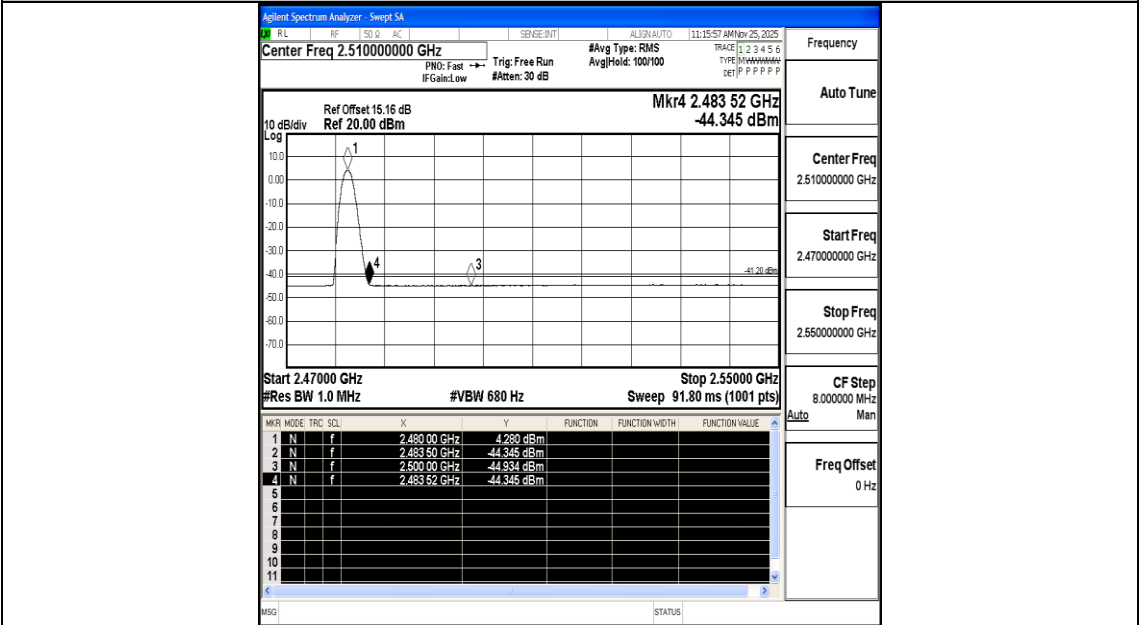
1. The Antenna Gain is compensated in the graph.
2. The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.

Test Graphs

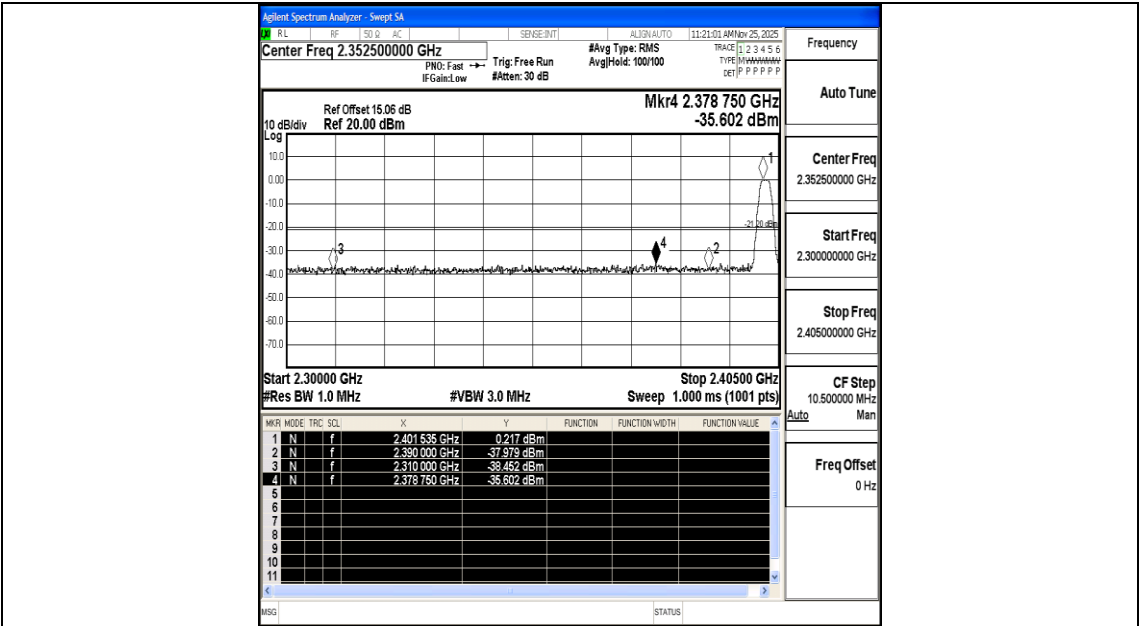




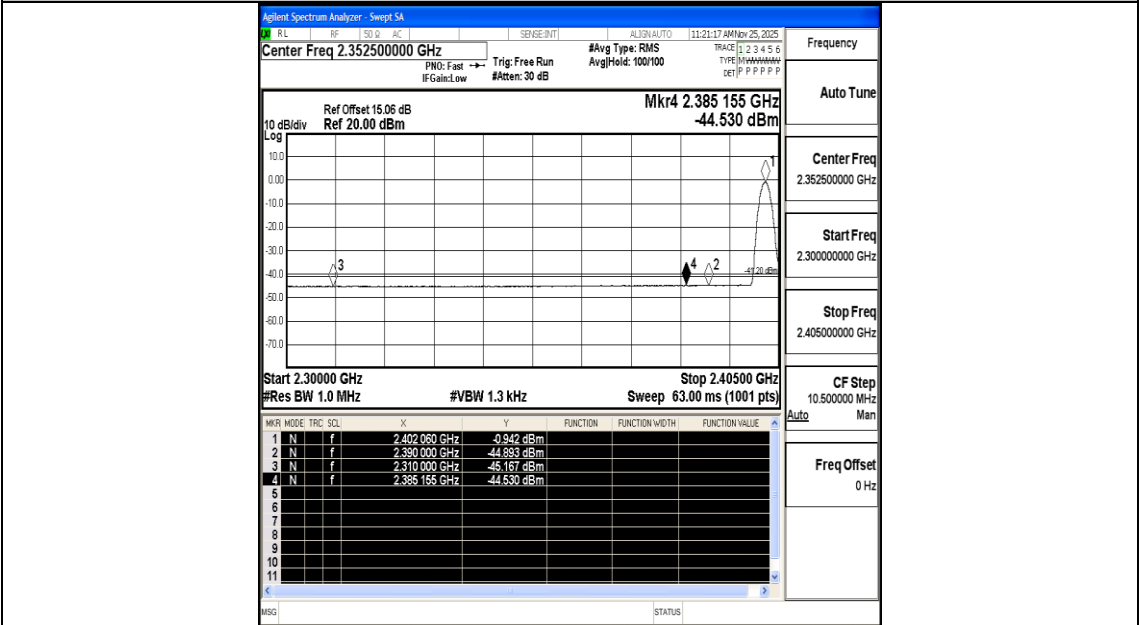
BLE_1M-Ant1-2480-PASS



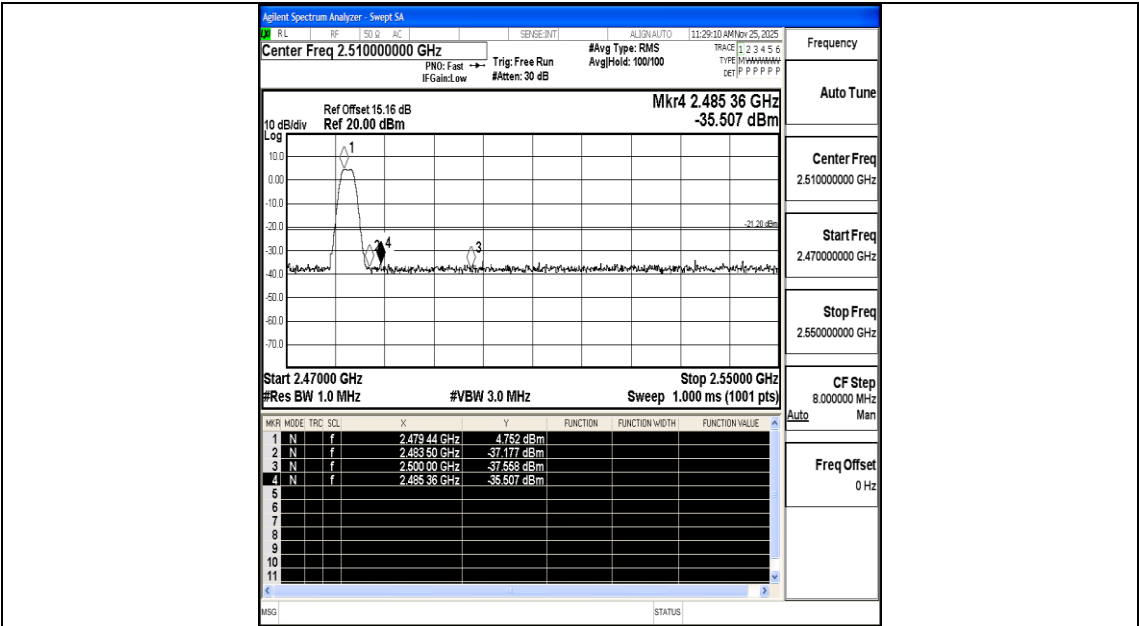
BLE_1M-Ant1-2480-PASS



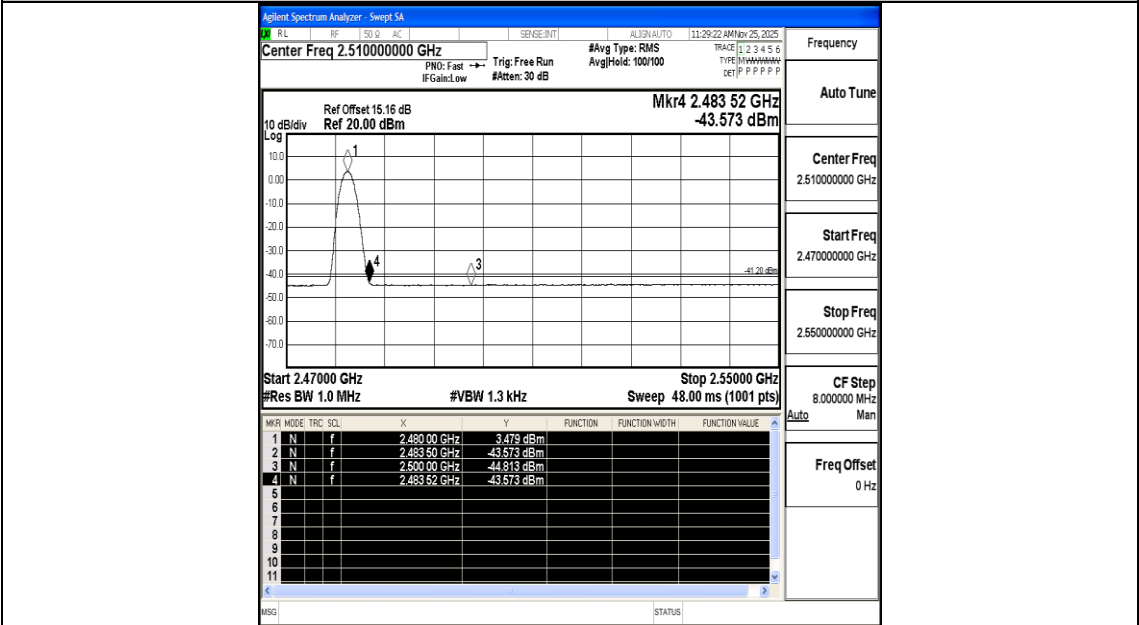
BLE_2M-Ant1-2402-PASS



BLE_2M-Ant1-2402-PASS



BLE_2M-Ant1-2480-PASS



BLE_2M-Ant1-2480-PASS