

Appendix Test Data for BLE (Conducted Measurement)

Product Name: Smart Gateway

Trade Mark: N/A

Test Model: DSGW-090J

FCC ID: 2AWWFDSGW-090J

Environmental Conditions

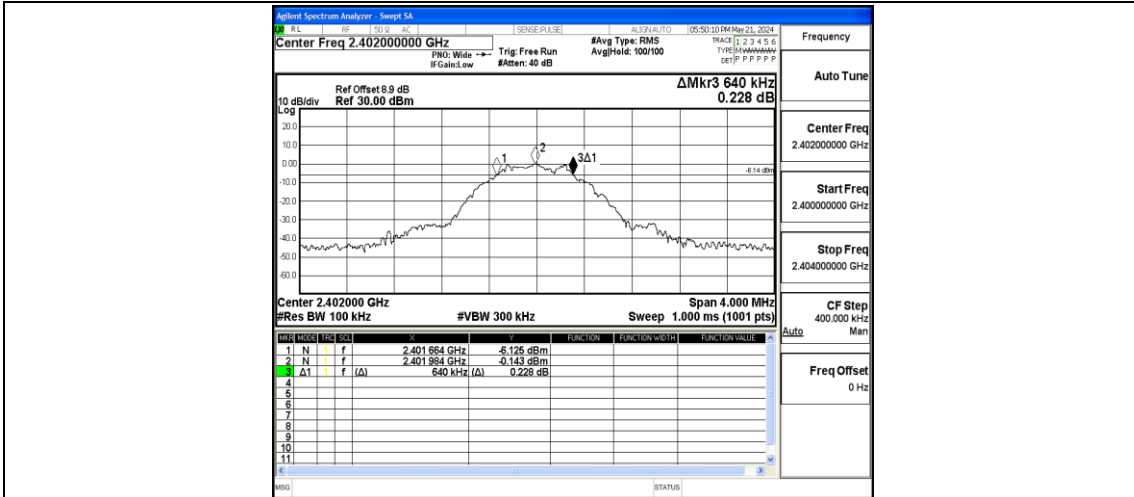
Temperature:	23.8°C
Relative Humidity:	58%
ATM Pressure:	100.0 kPa
Test Engineer:	Allen Lai
Supervised by:	Hugo Chen
NOTE	N/A

Appendix A: DTS Bandwidth

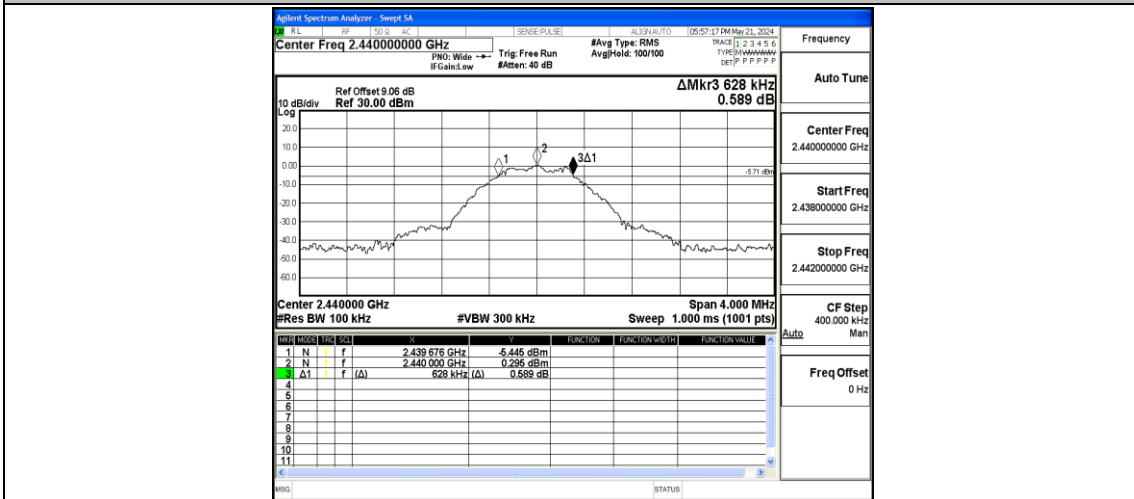
Test Result

TestMode	Antenna	Frequency[MHz]	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.640	2401.664	2402.304	0.5	PASS
BLE_1M	Ant1	2440	0.628	2439.676	2440.304	0.5	PASS
BLE_1M	Ant1	2480	0.624	2479.688	2480.312	0.5	PASS
BLE_2M	Ant1	2402	0.916	2401.604	2402.520	0.5	PASS
BLE_2M	Ant1	2440	1.052	2439.456	2440.508	0.5	PASS
BLE_2M	Ant1	2480	1.024	2479.492	2480.516	0.5	PASS

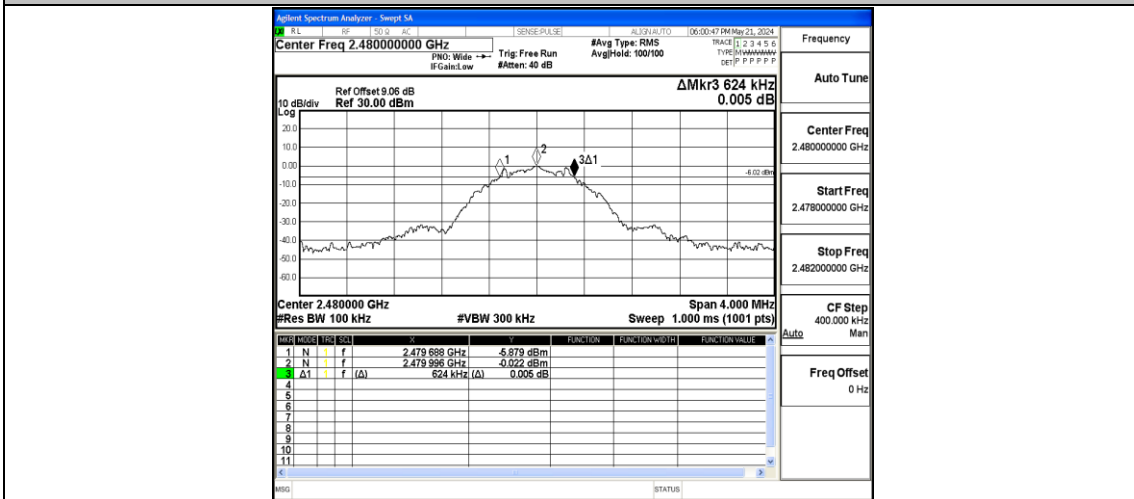
Test Graphs



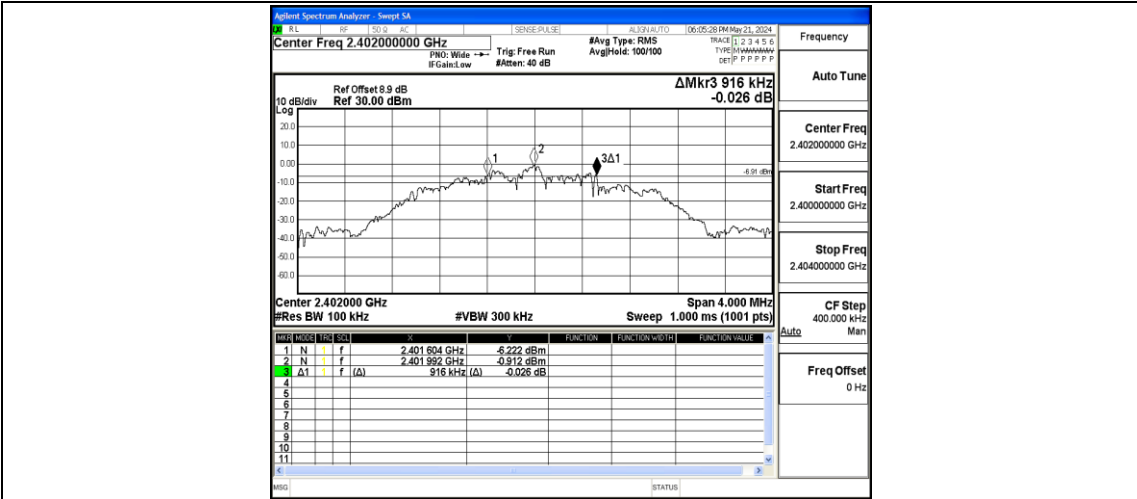
BLE_1M-Ant1-240-PASS



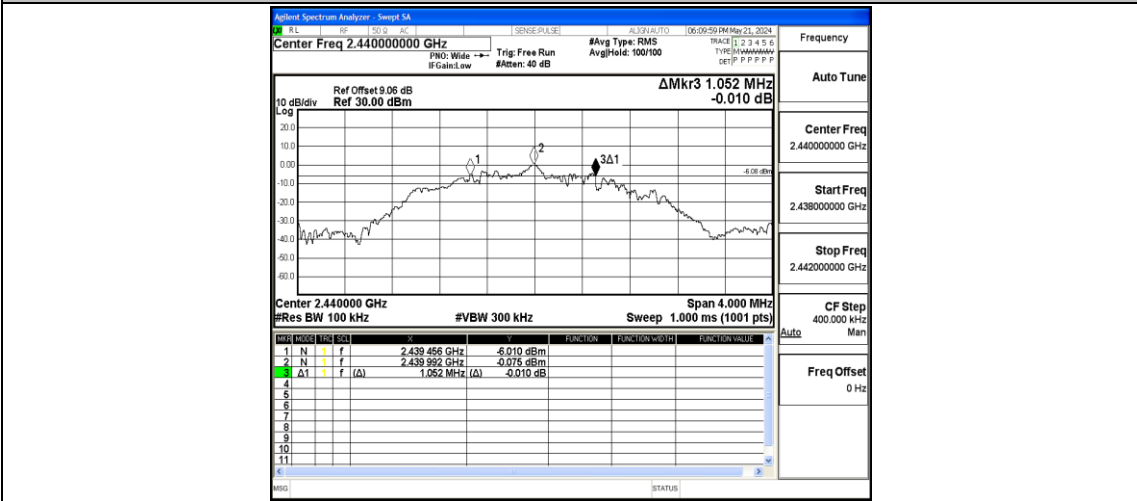
BLE_1M-Ant1-2440-PASS



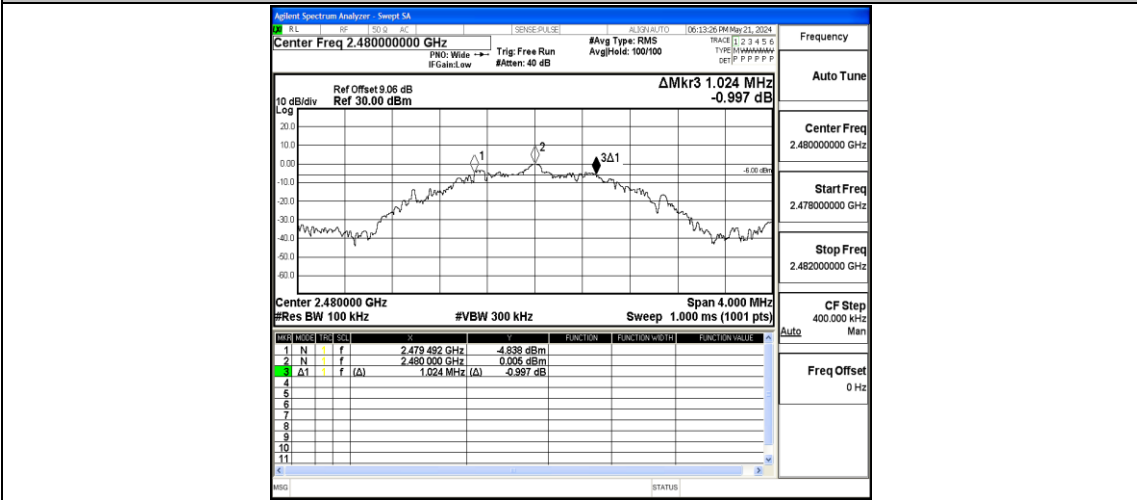
BLE_1M-Ant1-2480-PASS



BLE_2M-Ant1-2402-PASS



BLE_2M-Ant1-2440-PASS



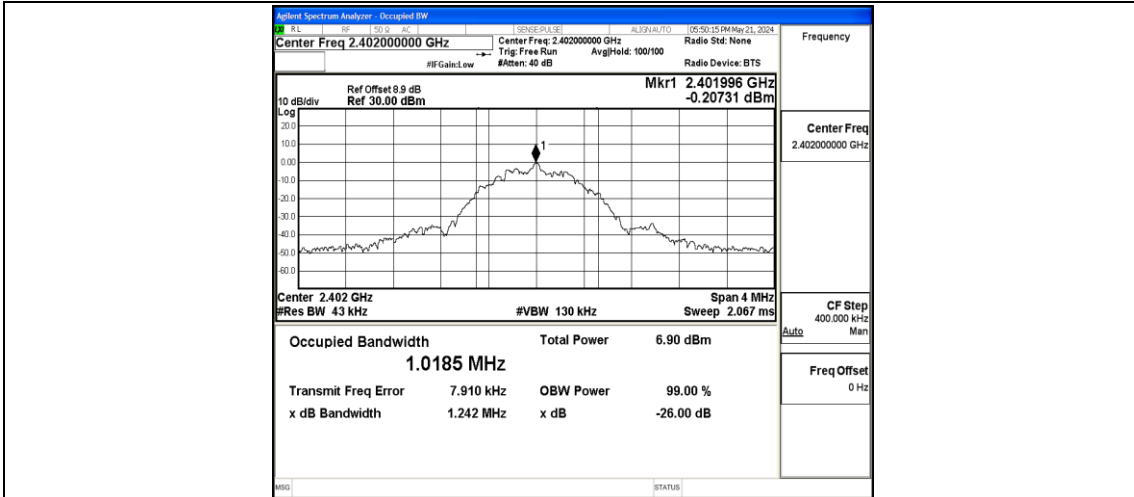
BLE_2M-Ant1-2480-PASS

Appendix B: Occupied Channel Bandwidth

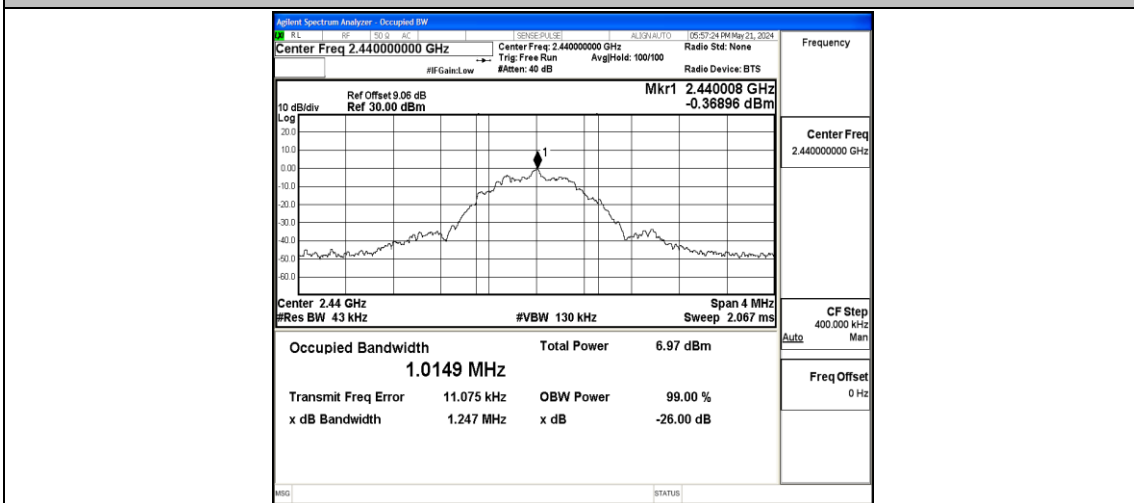
Test Result

TestMode	Antenna	Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	1.0185	2401.4987	2402.5172	---	---
BLE_1M	Ant1	2440	1.0149	2439.5036	2440.5185	---	---
BLE_1M	Ant1	2480	1.0161	2479.5002	2480.5163	---	---
BLE_2M	Ant1	2402	2.0592	2400.9955	2403.0547	---	---
BLE_2M	Ant1	2440	2.0606	2438.9940	2441.0546	---	---
BLE_2M	Ant1	2480	2.0613	2478.9861	2481.0474	---	---

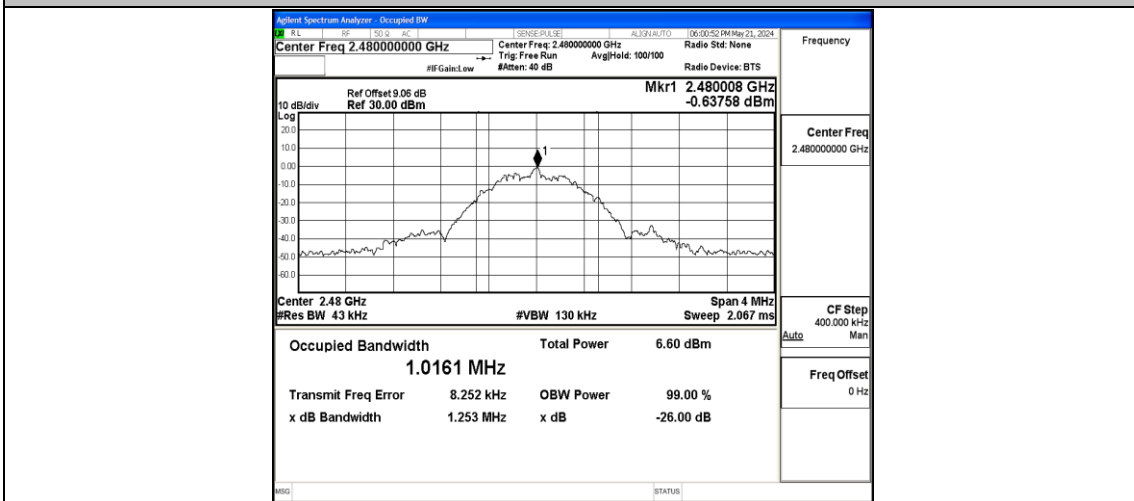
Test Graphs



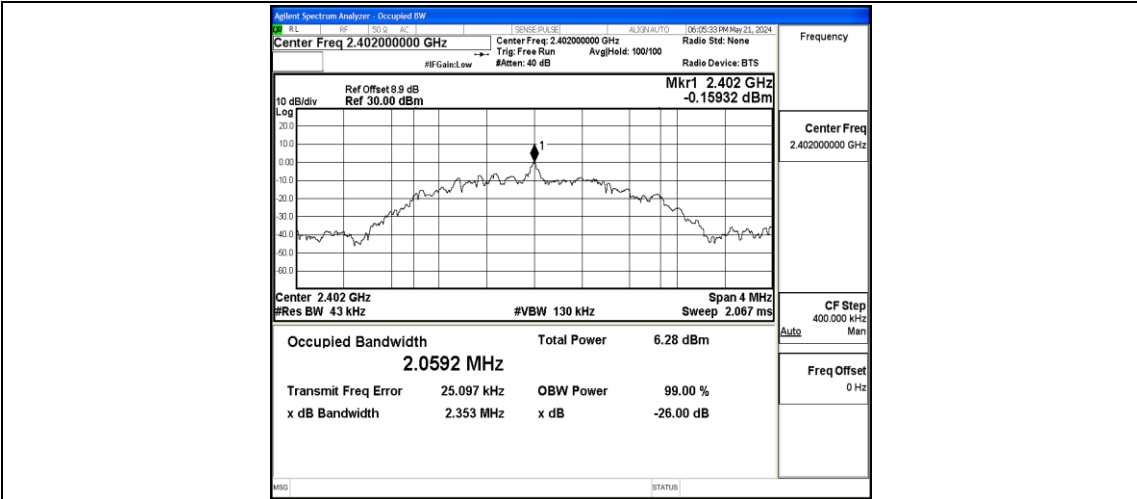
BLE_1M-Ant1-2402



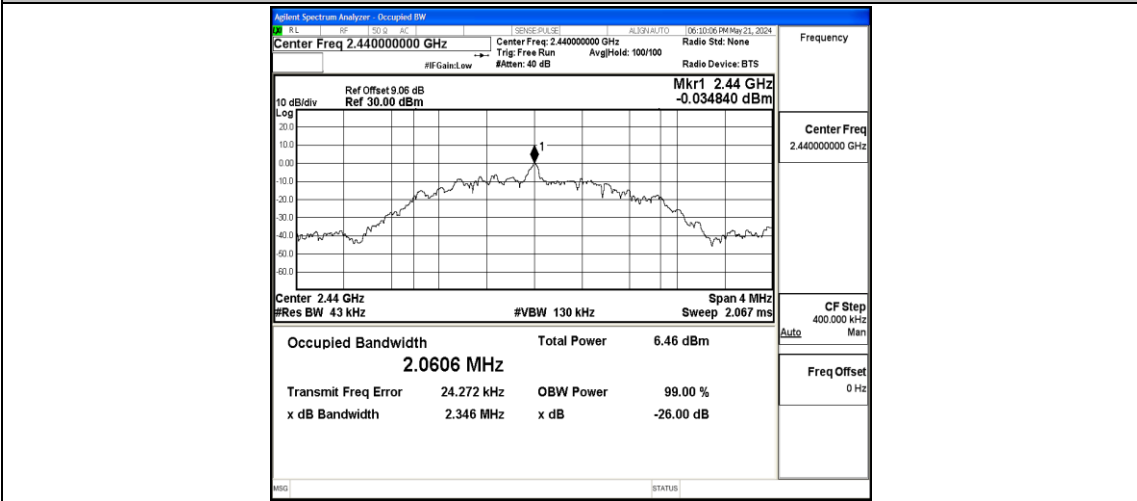
BLE_1M-Ant1-2440



BLE_1M-Ant1-2480



BLE_2M-Ant1-2402



BLE_2M-Ant1-2440



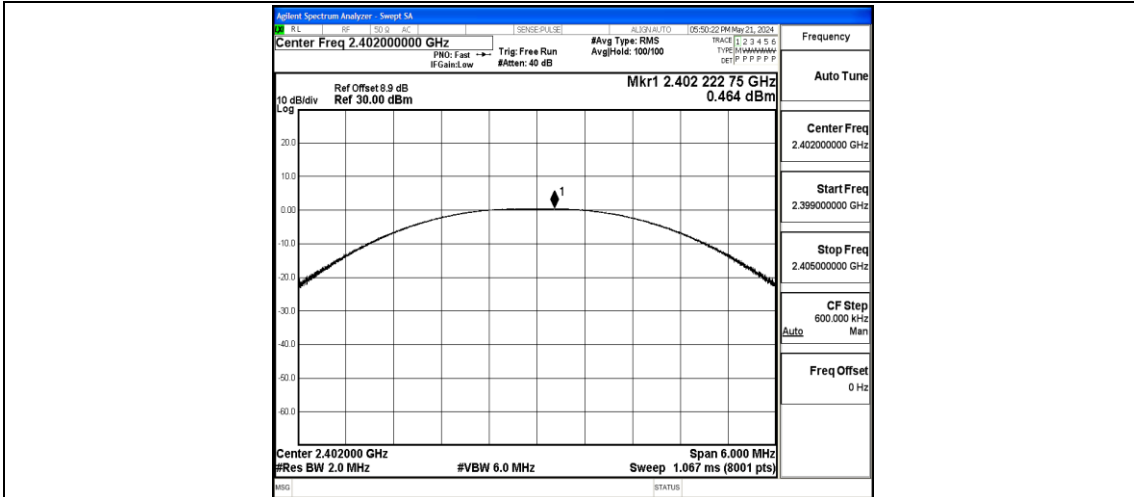
BLE_2M-Ant1-2480

Appendix C: Maximum peak conducted output power

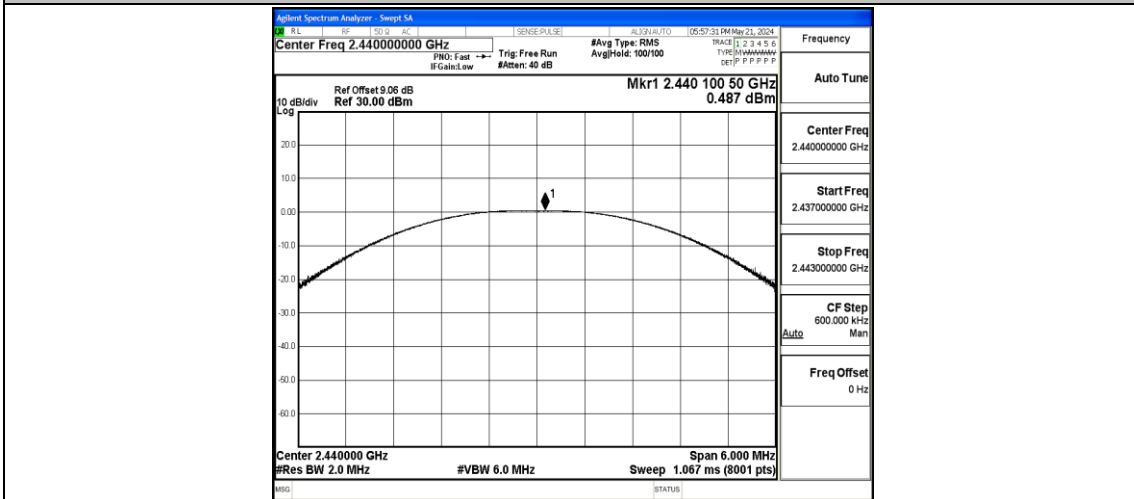
Test Result Peak

TestMode	Antenna	Frequency[MHz]	Conducted Peak Power[dBm]	Conducted Limit[dBm]	Verdict
BLE_1M	Ant1	2402	0.46	≤30	PASS
BLE_1M	Ant1	2440	0.49	≤30	PASS
BLE_1M	Ant1	2480	0.32	≤30	PASS
BLE_2M	Ant1	2402	0.43	≤30	PASS
BLE_2M	Ant1	2440	0.55	≤30	PASS
BLE_2M	Ant1	2480	0.26	≤30	PASS

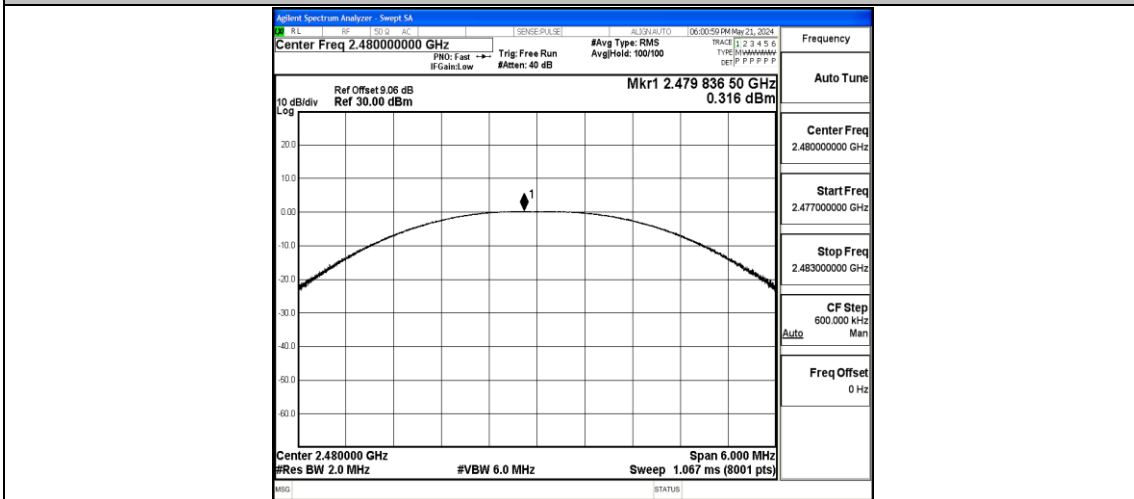
Test Graphs Peak



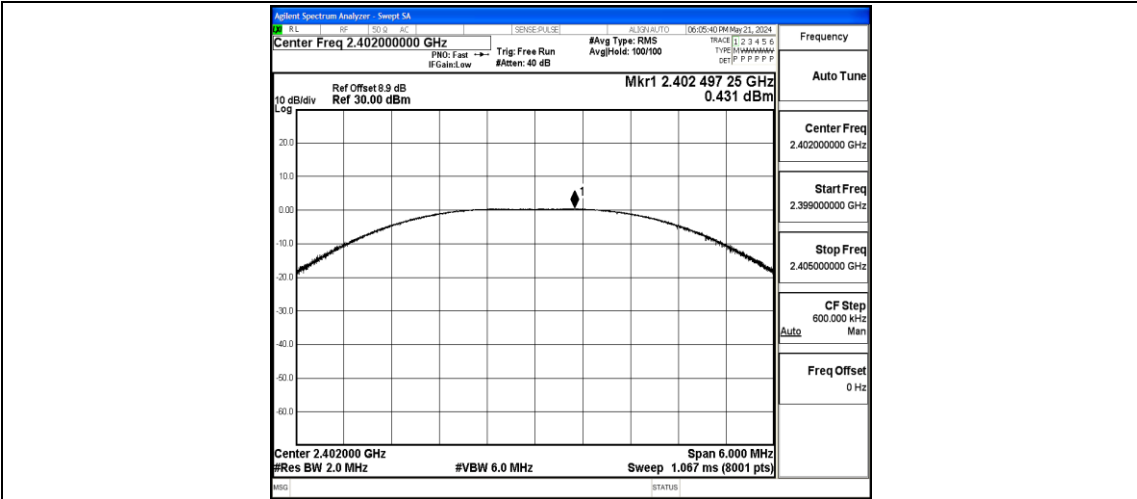
BLE_1M-Ant1-240-PASS



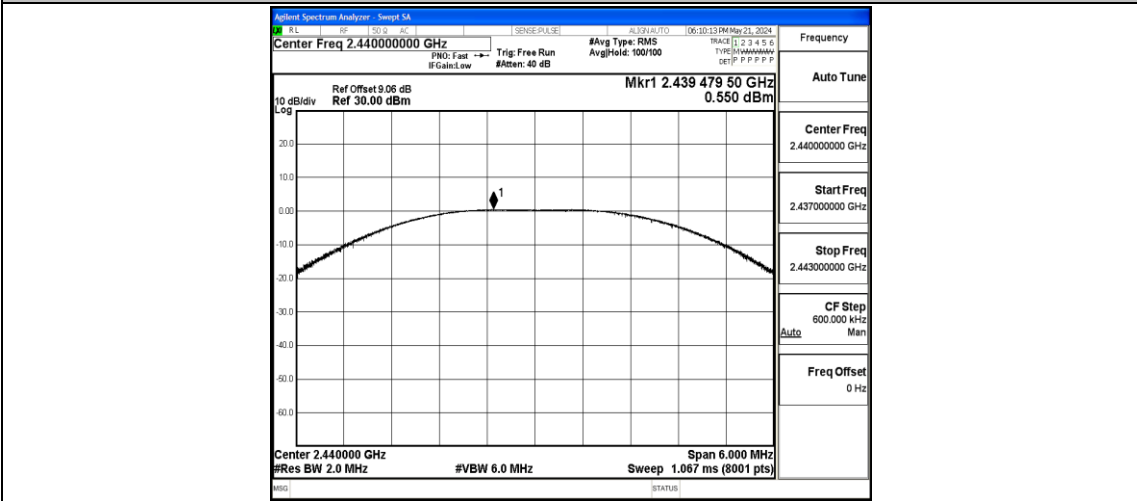
BLE_1M-Ant1-244-PASS



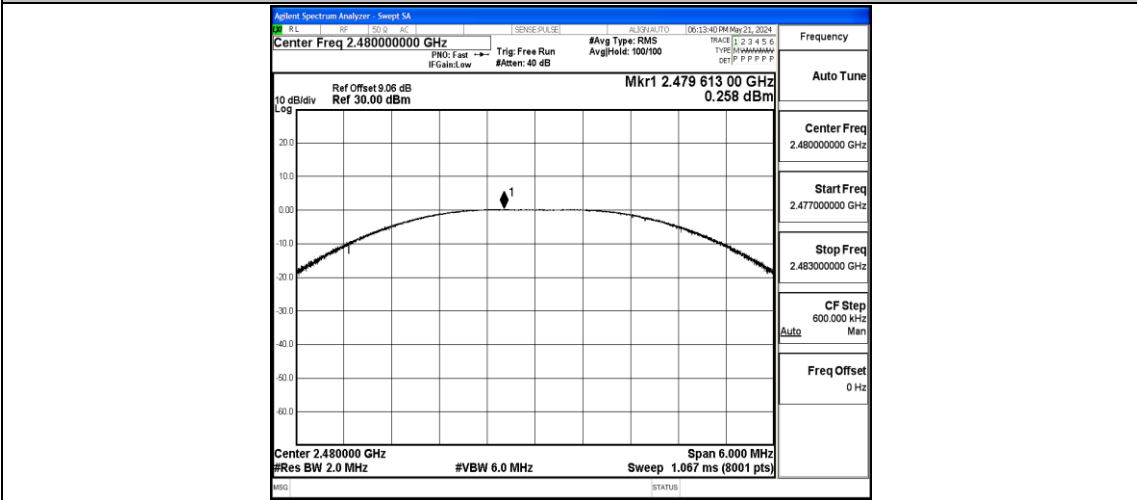
BLE_1M-Ant1-248-PASS



BLE_2M-Ant1-2402-PASS



BLE_2M-Ant1-2440-PASS



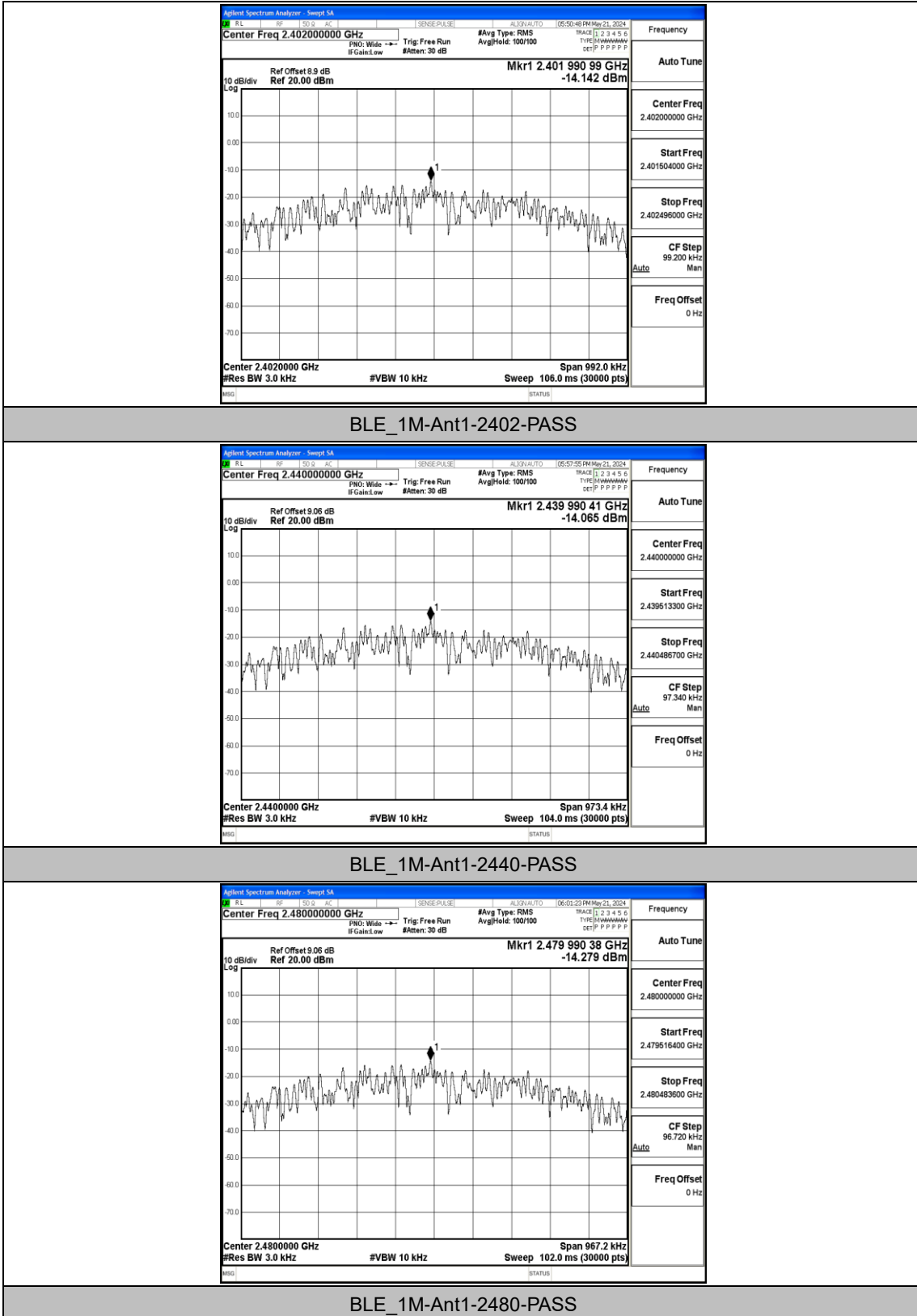
BLE_2M-Ant1-2480-PASS

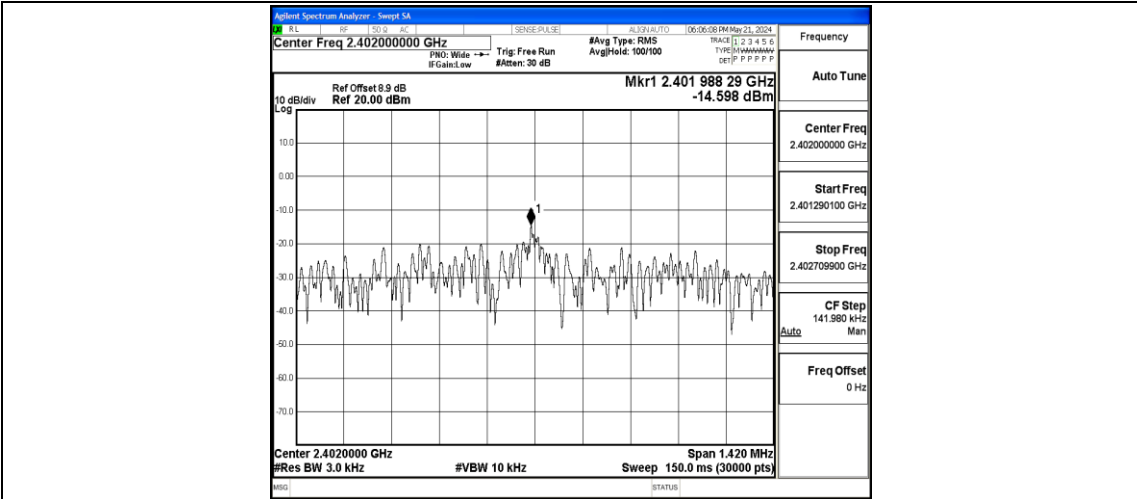
Appendix D: Maximum peak power spectral density

Test Result

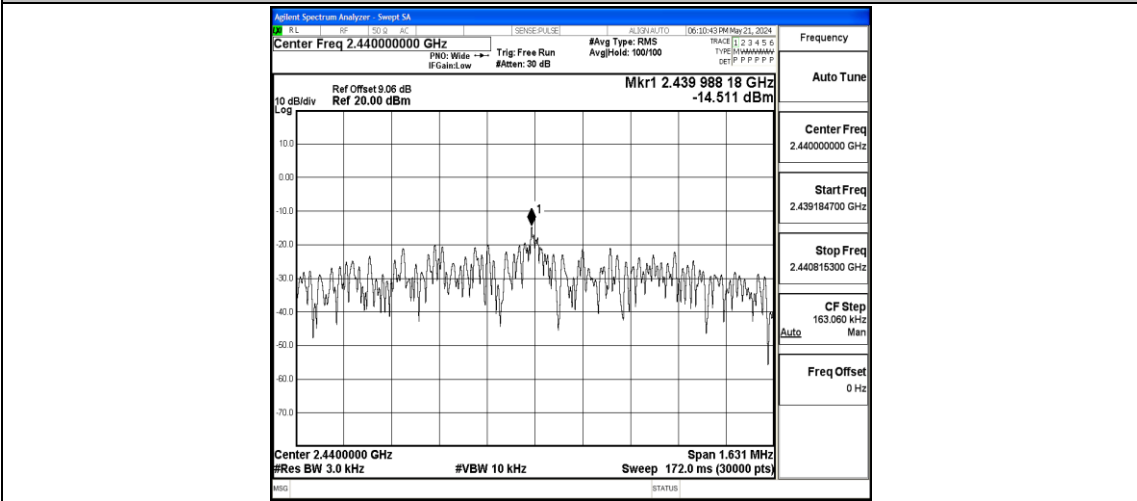
TestMode	Antenna	Frequency[MHz]	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-14.14	≤8.00	PASS
BLE_1M	Ant1	2440	-14.07	≤8.00	PASS
BLE_1M	Ant1	2480	-14.28	≤8.00	PASS
BLE_2M	Ant1	2402	-14.60	≤8.00	PASS
BLE_2M	Ant1	2440	-14.51	≤8.00	PASS
BLE_2M	Ant1	2480	-14.68	≤8.00	PASS

Test Graphs

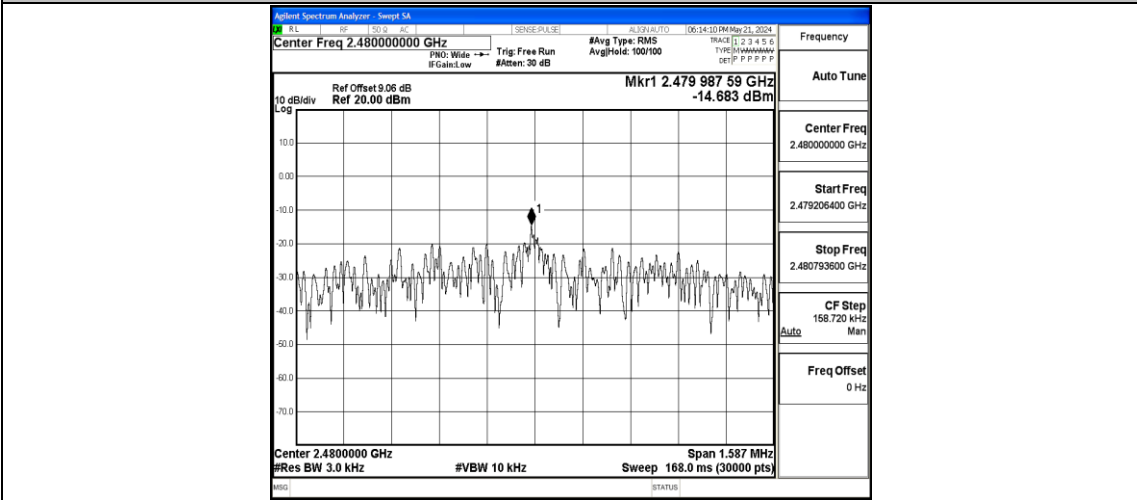




BLE_2M-Ant1-2402-PASS



BLE_2M-Ant1-2440-PASS



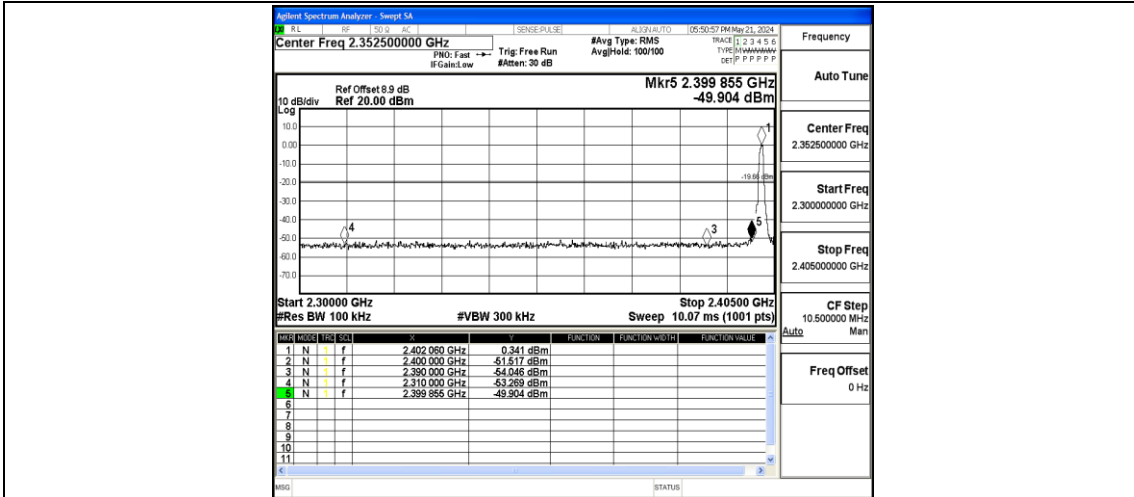
BLE_2M-Ant1-2480-PASS

Appendix E: Band edge measurements

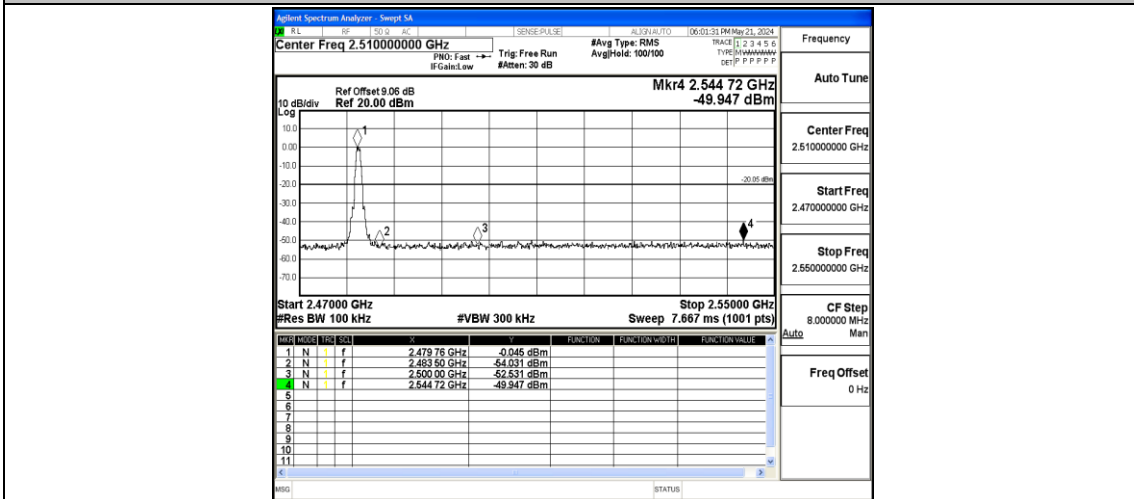
Test Result

TestMode	Antenna	ChName	Frequency[MHz]	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	0.34	-49.9	≤-19.66	PASS
BLE_1M	Ant1	High	2480	-0.05	-49.95	≤-20.05	PASS
BLE_2M	Ant1	Low	2402	0.37	-32.55	≤-19.63	PASS
BLE_2M	Ant1	High	2480	0.08	-49.87	≤-19.92	PASS

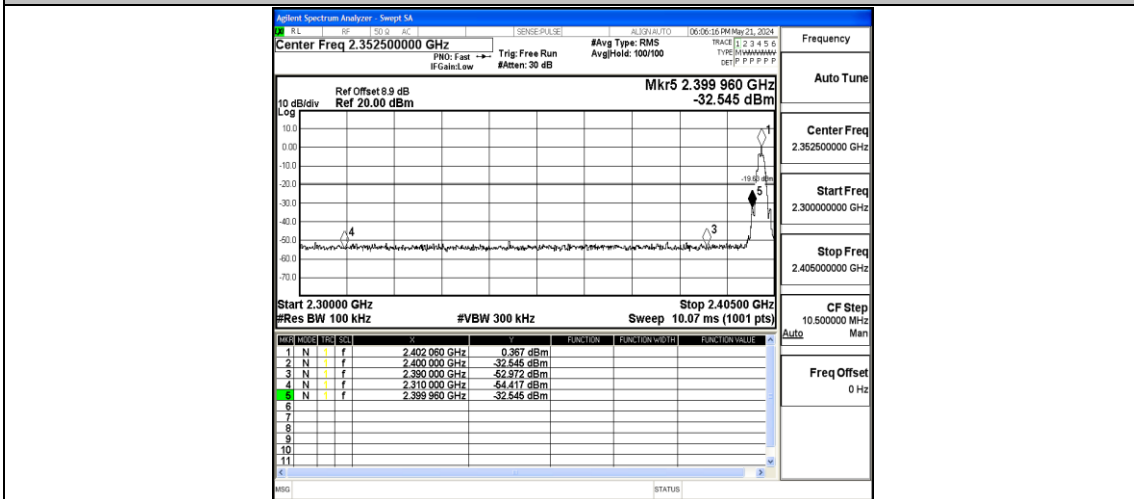
Test Graphs



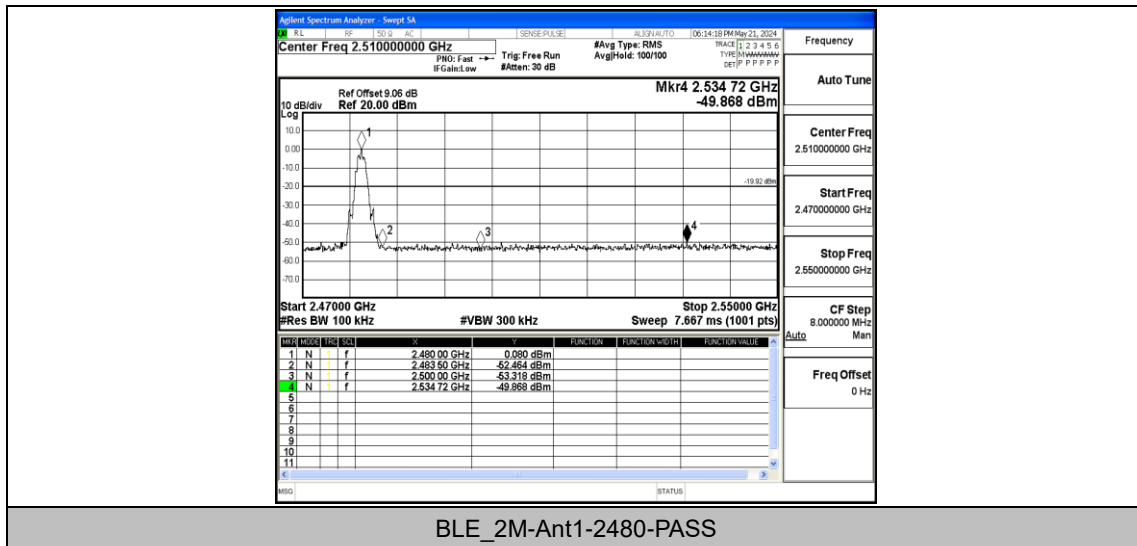
BLE_1M-Ant1-240-PASS



BLE_1M-Ant1-2480-PASS



BLE_2M-Ant1-240-PASS



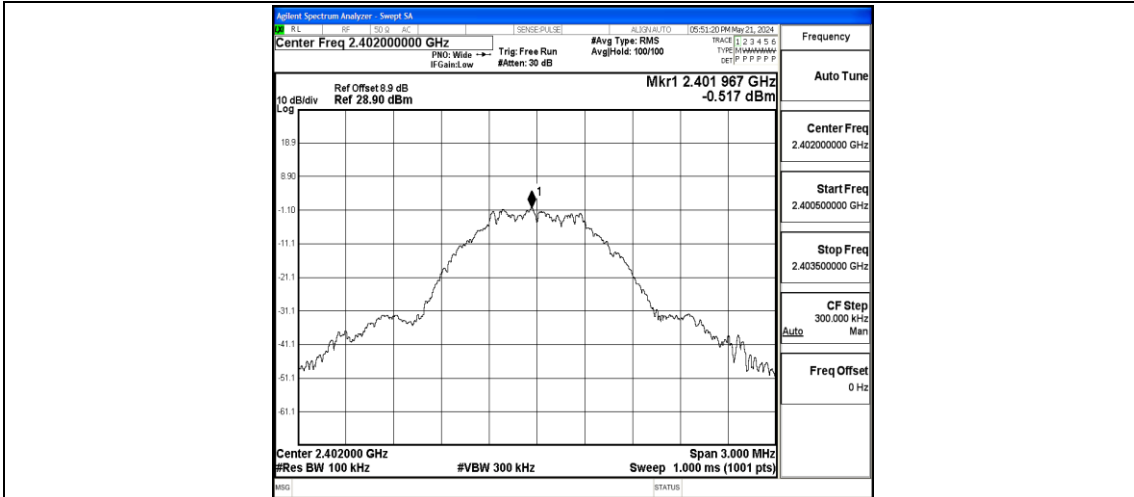
BLE_2M-Ant1-2480-PASS

Appendix F: Conducted Spurious Emission

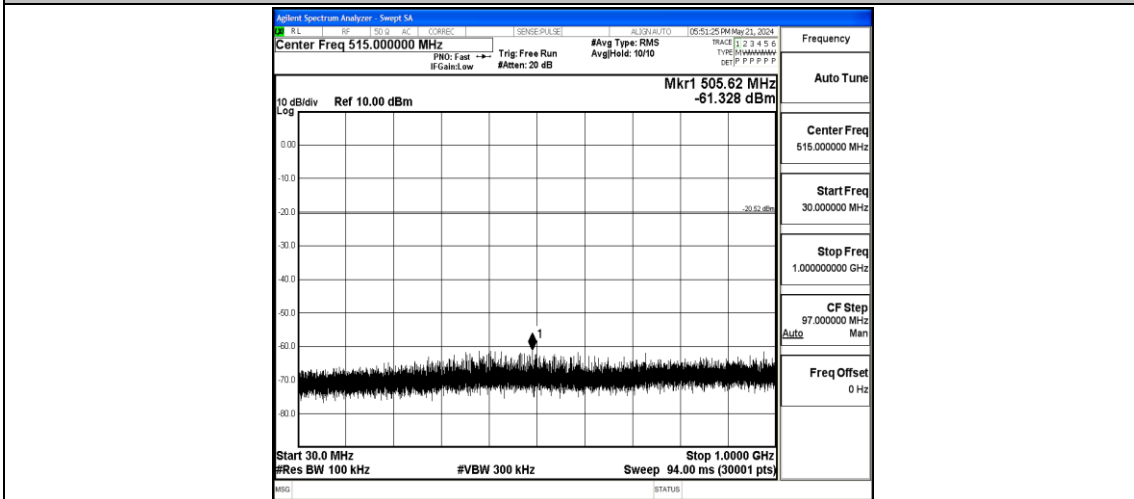
Test Result

TestMode	Antenna	Frequency[MHz]	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	0~Reference	-0.52	-0.52	---	PASS
BLE_1M	Ant1	2402	30~1000	-0.52	-61.33	≤-20.52	PASS
BLE_1M	Ant1	2402	1000~26500	-0.52	-50.66	≤-20.52	PASS
BLE_1M	Ant1	2440	0~Reference	0.28	0.28	---	PASS
BLE_1M	Ant1	2440	30~1000	0.28	-59.76	≤-19.72	PASS
BLE_1M	Ant1	2440	1000~26500	0.28	-49.43	≤-19.72	PASS
BLE_1M	Ant1	2480	0~Reference	0.05	0.05	---	PASS
BLE_1M	Ant1	2480	30~1000	0.05	-60.08	≤-19.95	PASS
BLE_1M	Ant1	2480	1000~26500	0.05	-50.45	≤-19.95	PASS
BLE_2M	Ant1	2402	0~Reference	0.23	0.23	---	PASS
BLE_2M	Ant1	2402	30~1000	0.23	-60.51	≤-19.77	PASS
BLE_2M	Ant1	2402	1000~26500	0.23	-50.36	≤-19.77	PASS
BLE_2M	Ant1	2440	0~Reference	-0.10	-0.10	---	PASS
BLE_2M	Ant1	2440	30~1000	-0.10	-61.31	≤-20.1	PASS
BLE_2M	Ant1	2440	1000~26500	-0.10	-49.18	≤-20.1	PASS
BLE_2M	Ant1	2480	0~Reference	-0.09	-0.09	---	PASS
BLE_2M	Ant1	2480	30~1000	-0.09	-60.49	≤-20.09	PASS
BLE_2M	Ant1	2480	1000~26500	-0.09	-50.26	≤-20.09	PASS

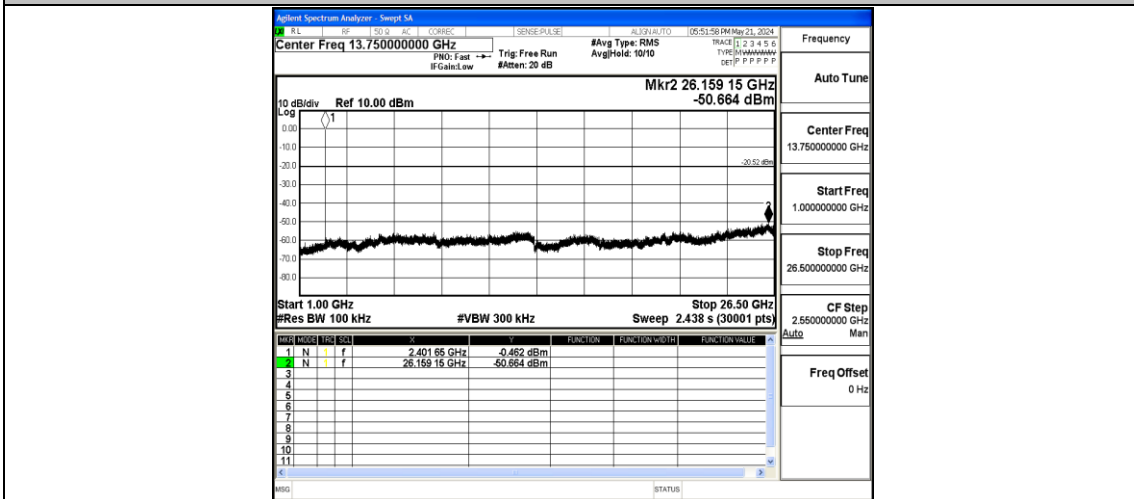
Test Graphs



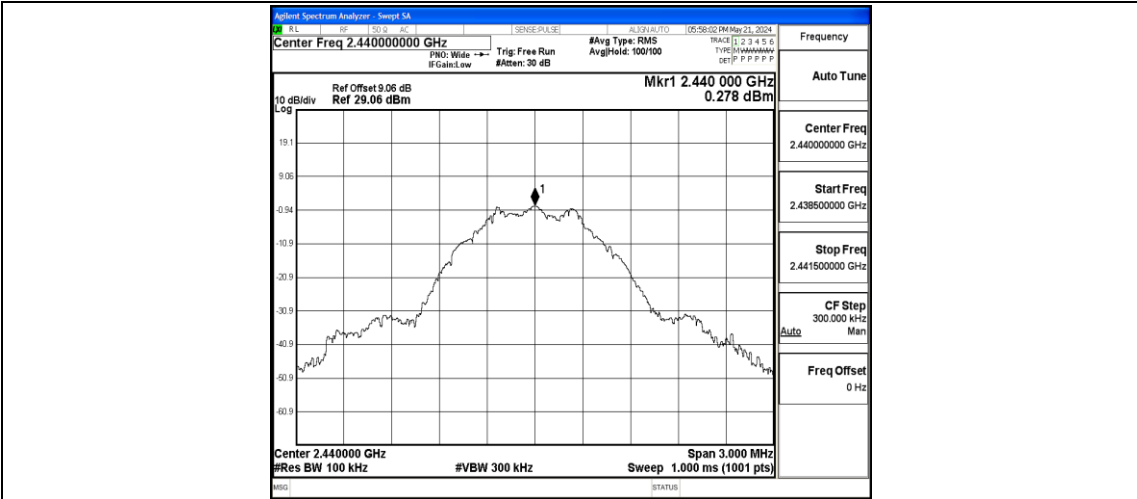
BLE_1M-Ant1-2402-0~Reference-PASS



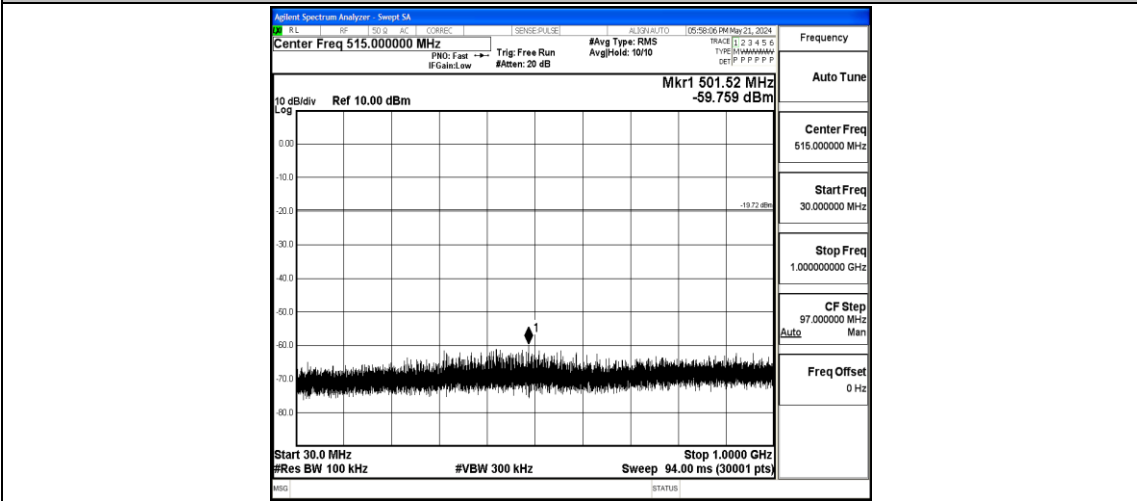
BLE_1M-Ant1-2402-30~1000-PASS



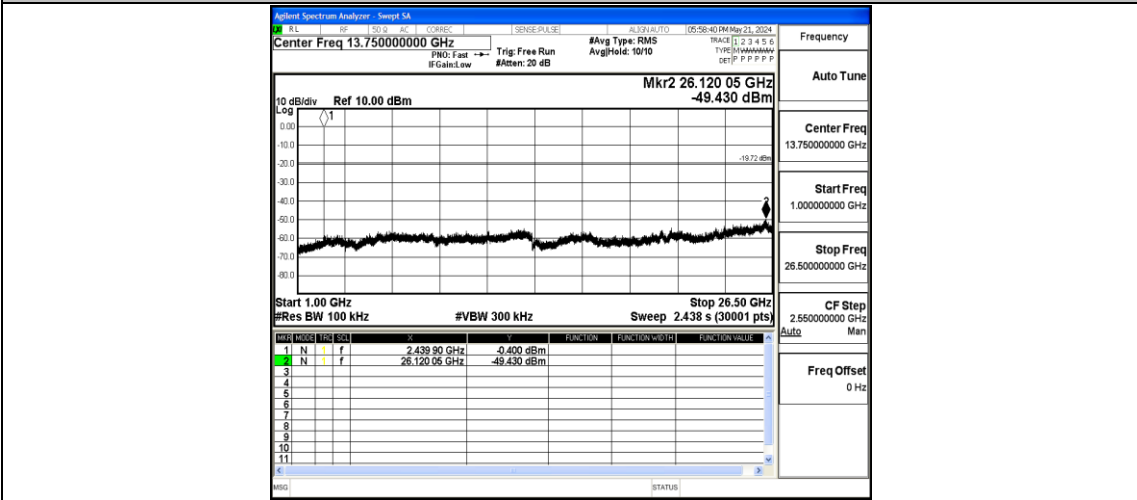
BLE_1M-Ant1-2402-1000~26500-PASS



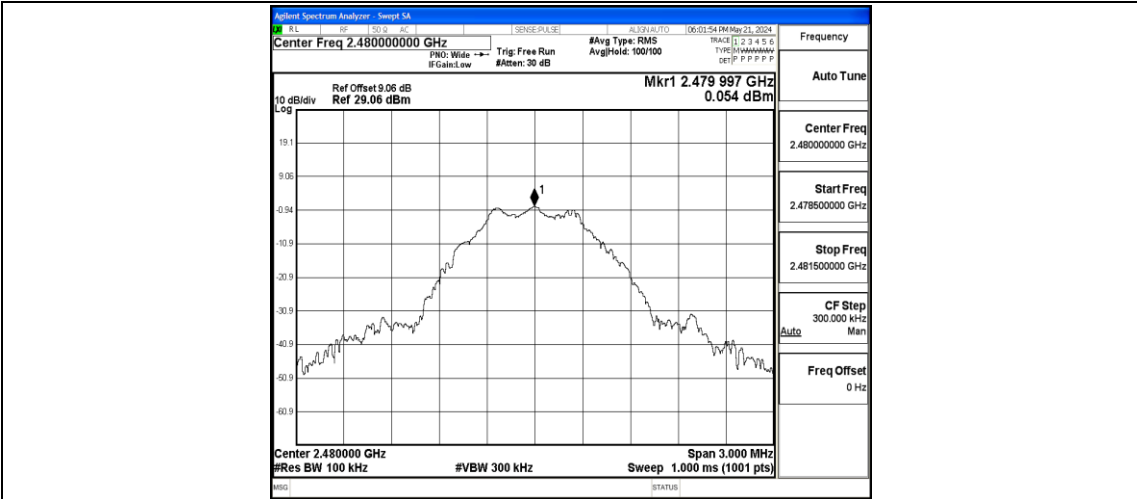
BLE_1M-Ant1-2440-0~Reference-PASS



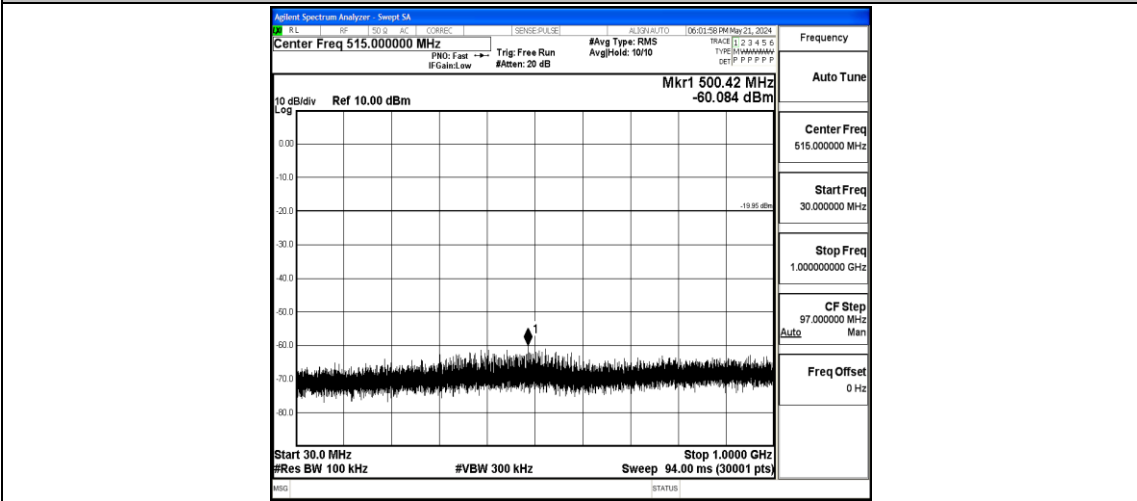
BLE_1M-Ant1-2440-30~1000-PASS



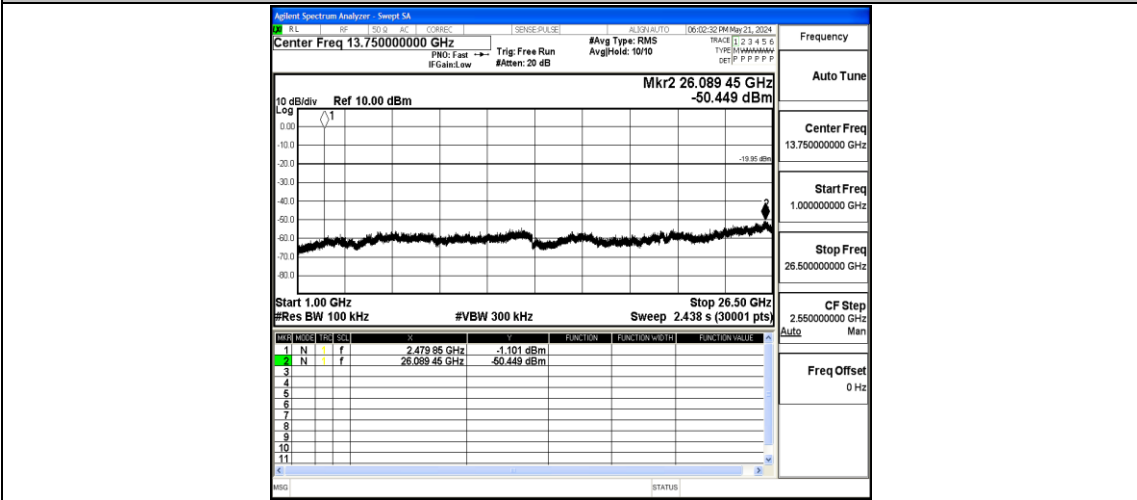
BLE_1M-Ant1-2440-1000~26500-PASS



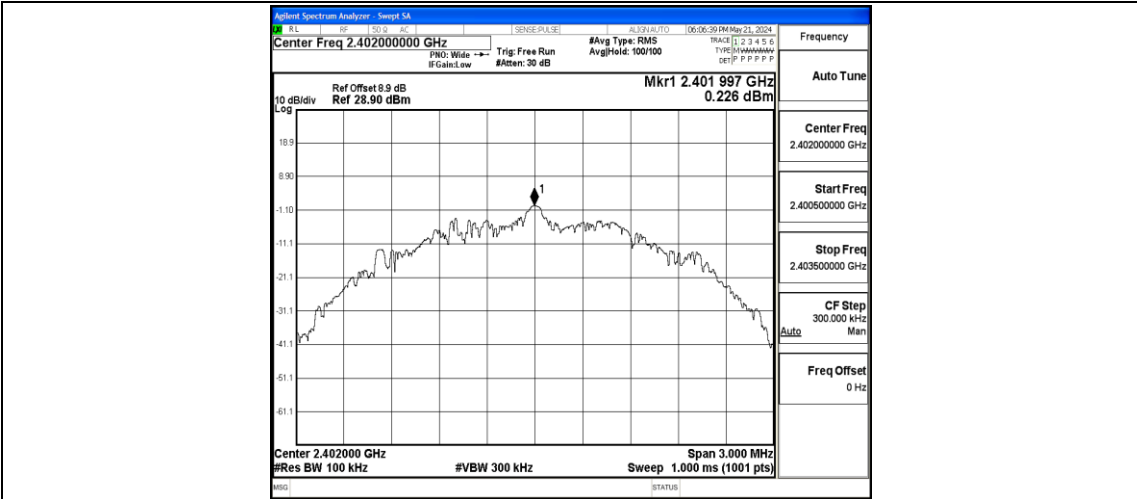
BLE_1M-Ant1-2480-0~Reference-PASS



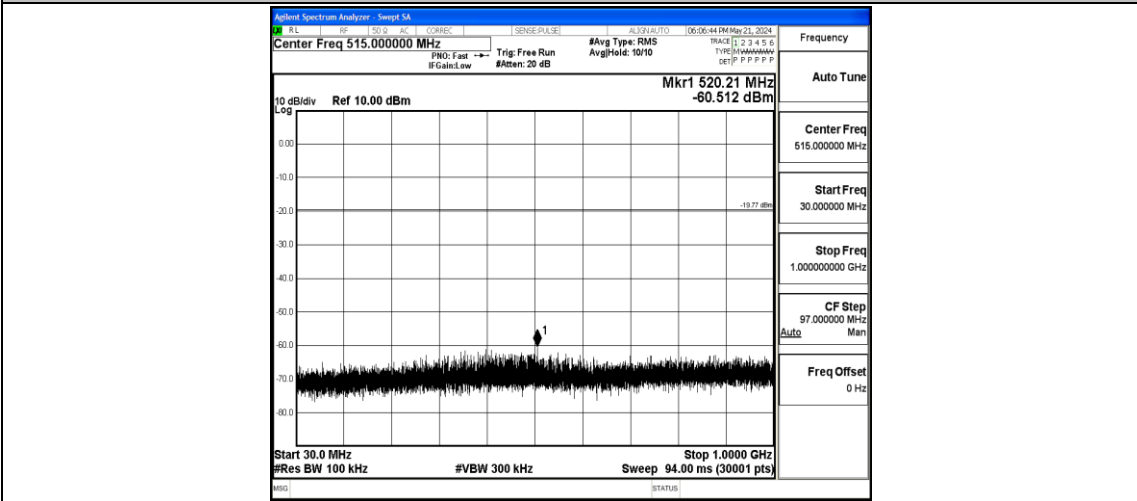
BLE_1M-Ant1-2480-30~1000-PASS



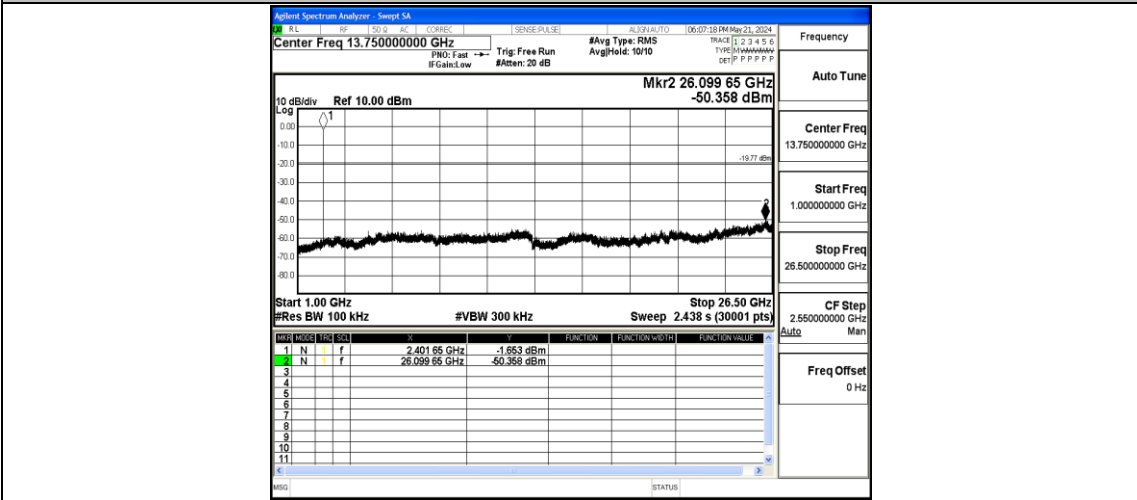
BLE_1M-Ant1-2480-1000~26500-PASS



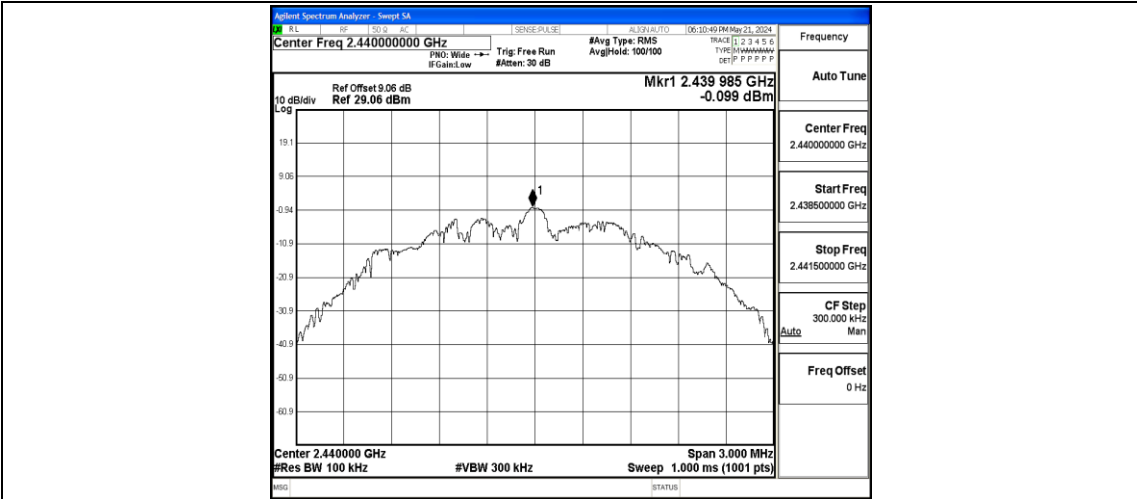
BLE_2M-Ant1-2402-0~Reference-PASS



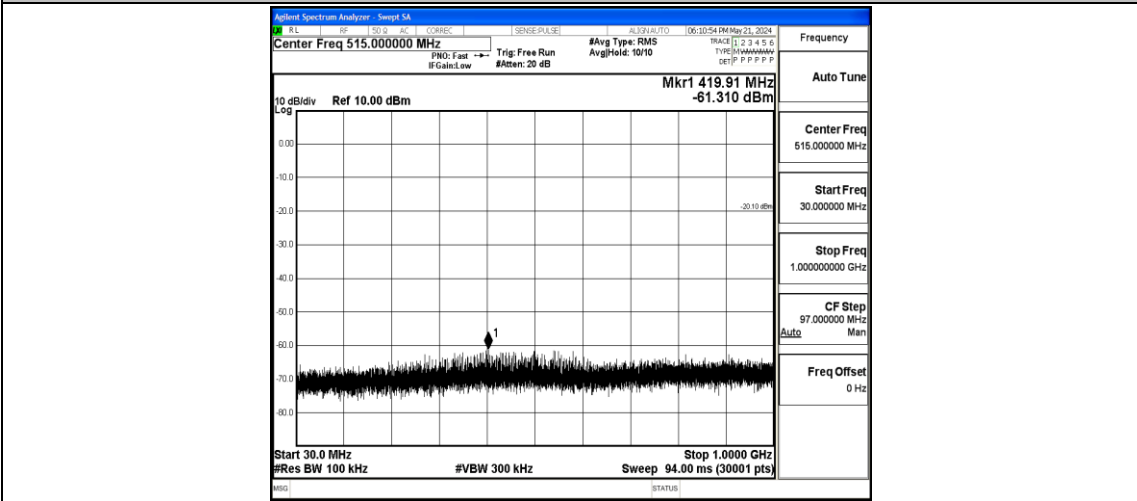
BLE_2M-Ant1-2402-30~1000-PASS



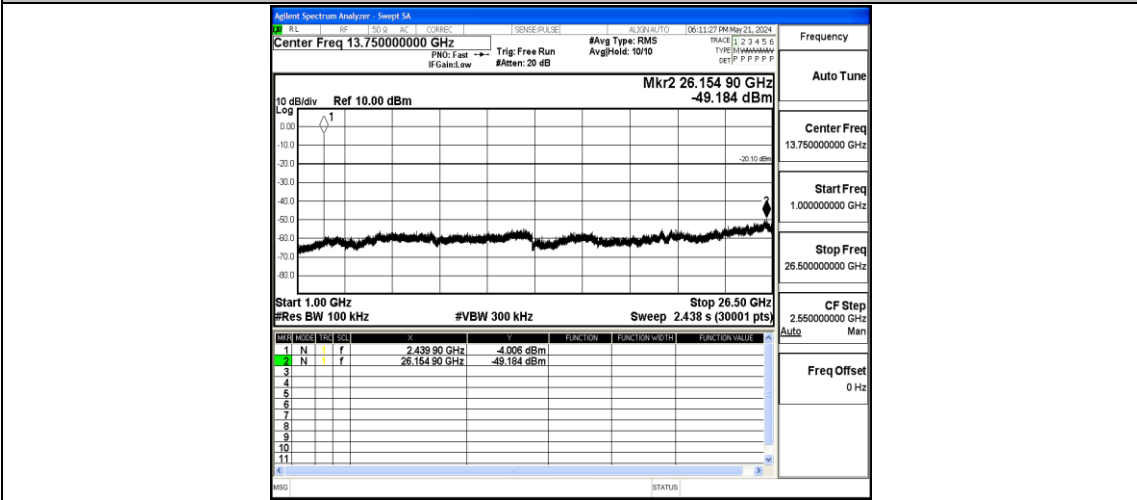
BLE_2M-Ant1-2402-1000~26500-PASS



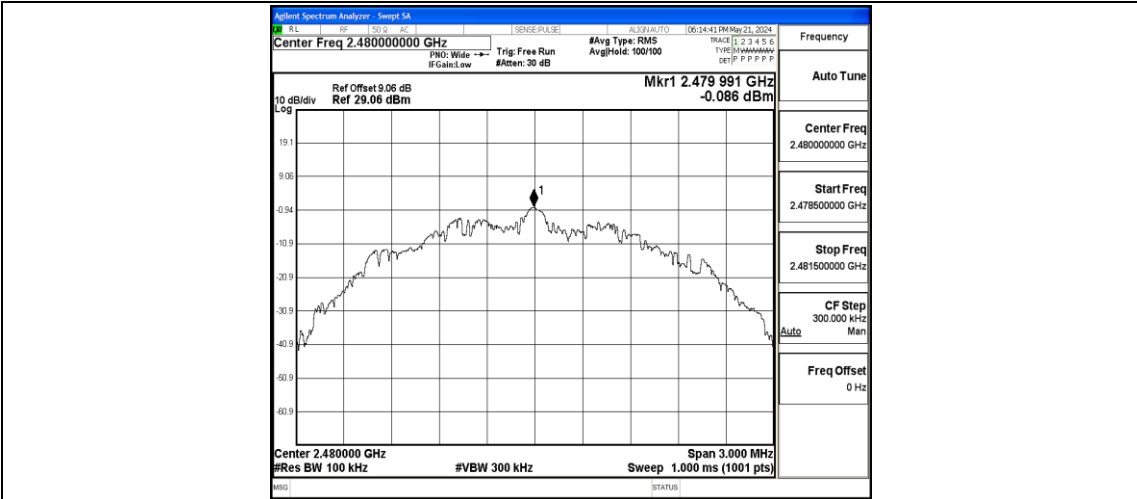
BLE_2M-Ant1-2440-0~Reference-PASS



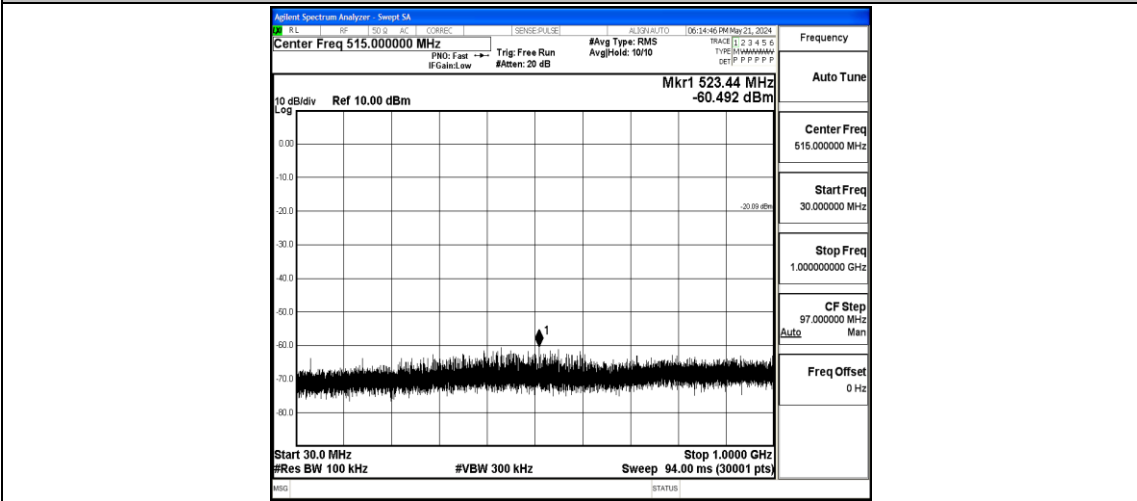
BLE_2M-Ant1-2440-30~1000-PASS



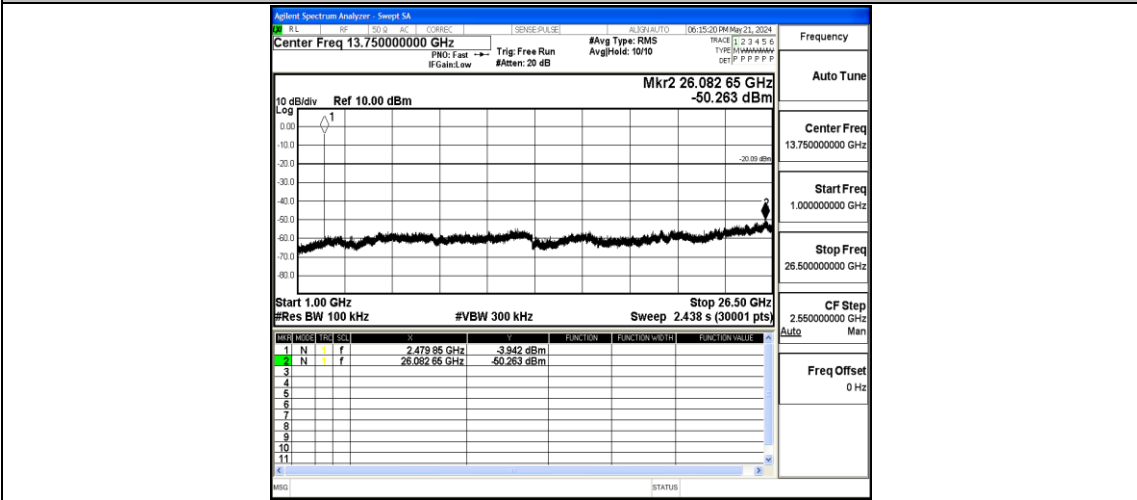
BLE_2M-Ant1-2440-1000~26500-PASS



BLE_2M-Ant1-2480-0~Reference-PASS



BLE_2M-Ant1-2480-30~1000-PASS



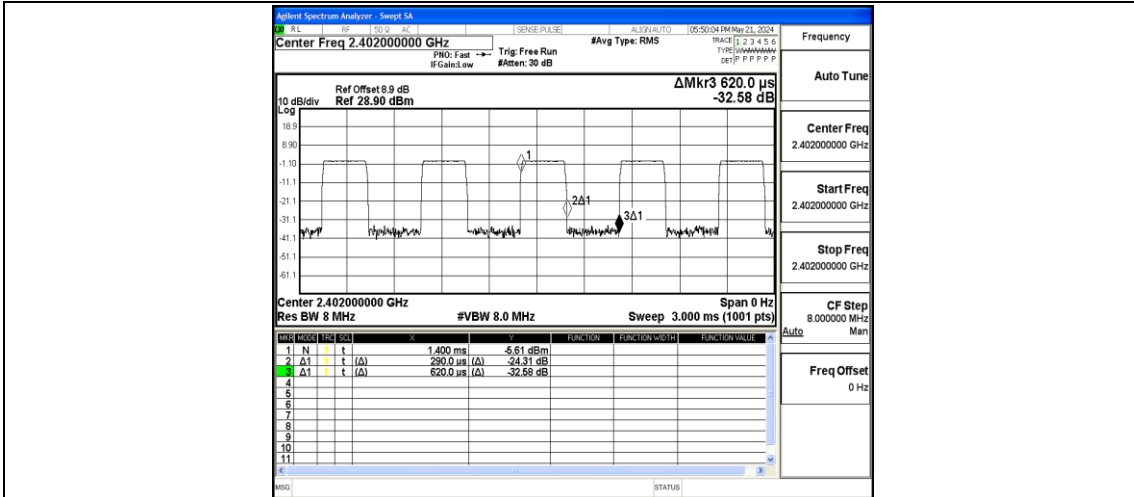
BLE_2M-Ant1-2480-1000~26500-PASS

Appendix G: Duty Cycle

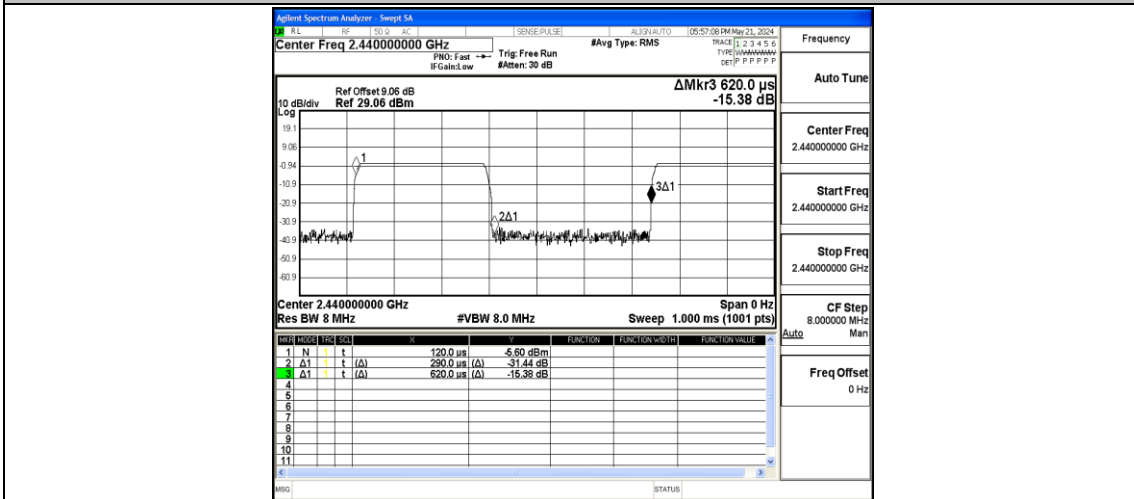
Test Result

TestMode	Antenna	Frequency[MHz]	ON Time [ms]	Period [ms]	Duty Cycle [%]	Duty Cycle Factor[dB]
BLE_1M	Ant1	2402	0.29	0.62	46.77	3.30
BLE_1M	Ant1	2440	0.29	0.62	46.77	3.30
BLE_1M	Ant1	2480	0.29	0.63	46.03	3.37
BLE_2M	Ant1	2402	0.17	0.62	27.42	5.62
BLE_2M	Ant1	2440	0.17	0.63	26.98	5.69
BLE_2M	Ant1	2480	0.17	0.63	26.98	5.69

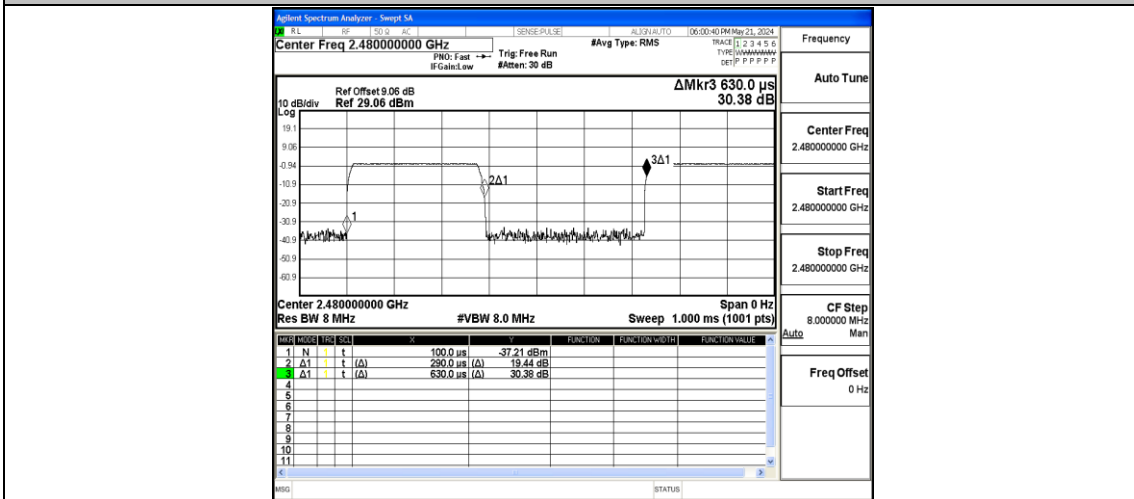
Test Graphs



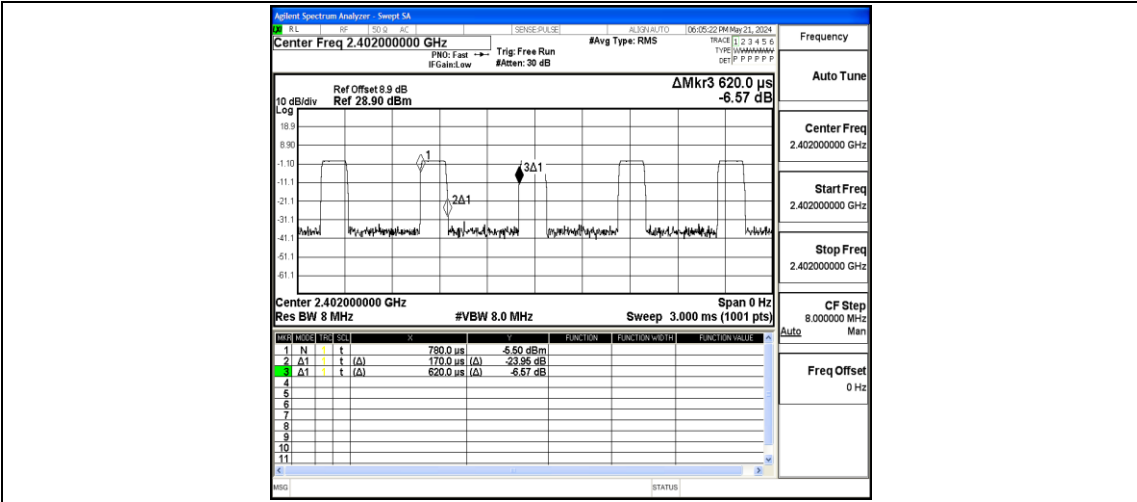
NTNV-BLE_1M-Ant1-2402



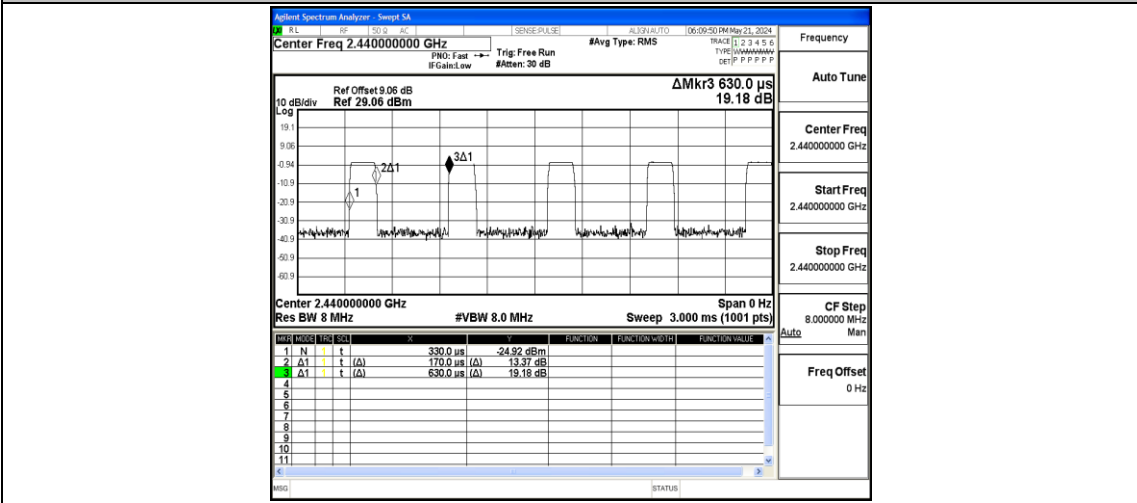
NTNV-BLE_1M-Ant1-2440



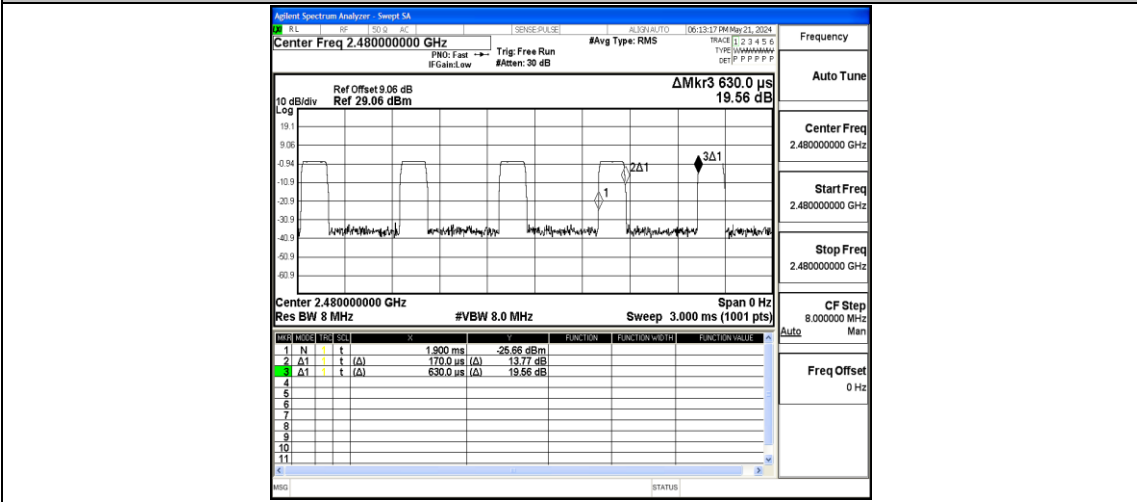
NTNV-BLE_1M-Ant1-2480



NTNV-BLE_2M-Ant1-2402



NTNV-BLE_2M-Ant1-2440



NTNV-BLE_2M-Ant1-2480