

Appendix Test Data for BT(BLE) (Conducted Measurement)

Product Name: 5.3 Bluetooth adapter

Trade Mark: N/A

Test Model: RTL5.3

FCC ID: 2A3F2-RTL503

Environmental Conditions

Temperature:	23.6℃
Relative Humidity:	51%
ATM Pressure:	100.0 kPa
Test Engineer:	Anna Hu
Supervised by:	Hugo Chen
NOTE	N/A

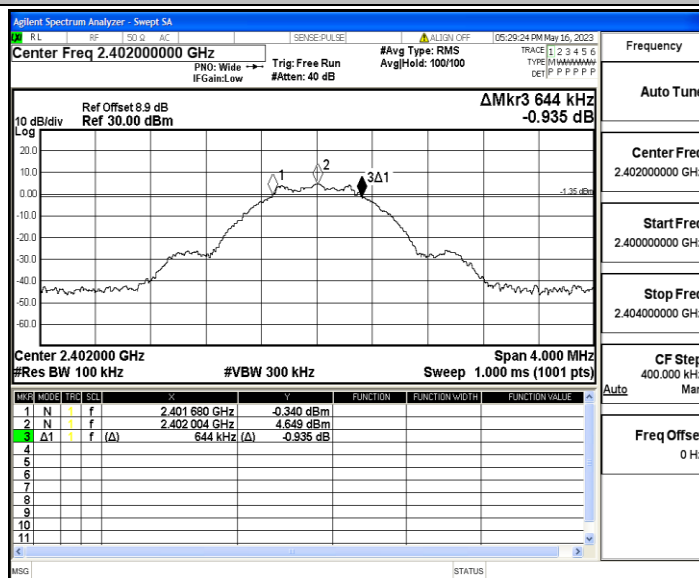
Appendix A: DTS Bandwidth

Test Result

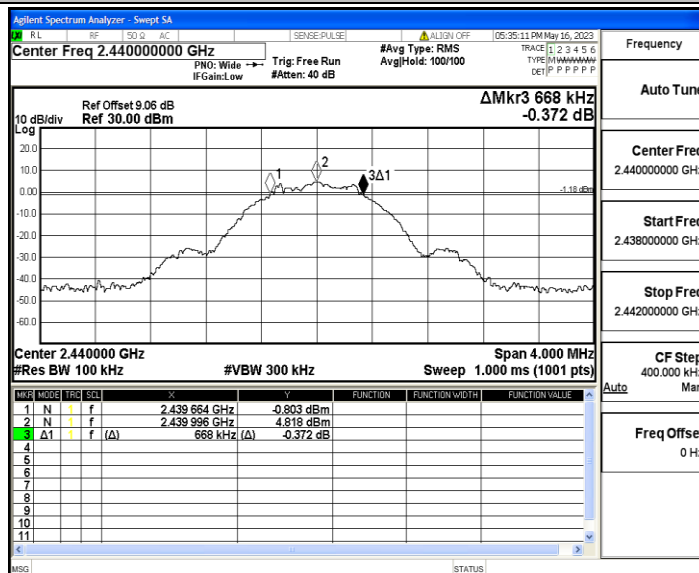
TestMode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.644	2401.680	2402.324	0.5	PASS
		2440	0.668	2439.664	2440.332	0.5	PASS
		2480	0.656	2479.664	2480.320	0.5	PASS
BLE_2M	Ant1	2402	1.108	2401.424	2402.532	0.5	PASS
		2440	1.136	2439.436	2440.572	0.5	PASS
		2480	1.088	2479.424	2480.512	0.5	PASS

Test Graphs

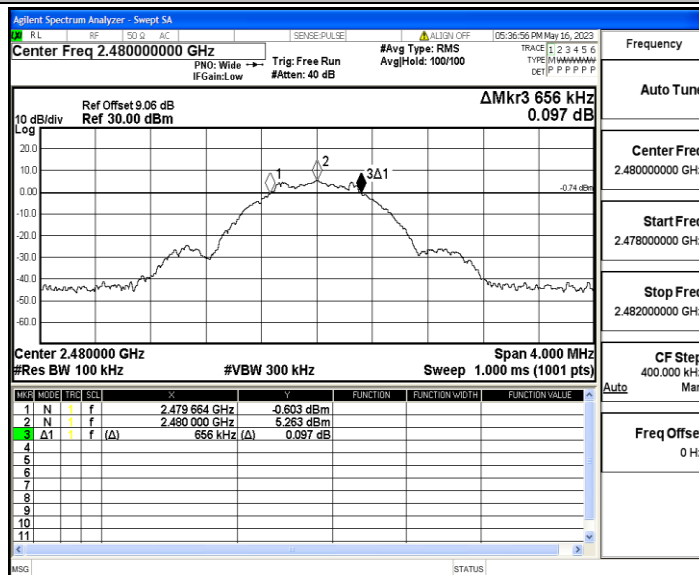
BLE_1M_Ant1_2402



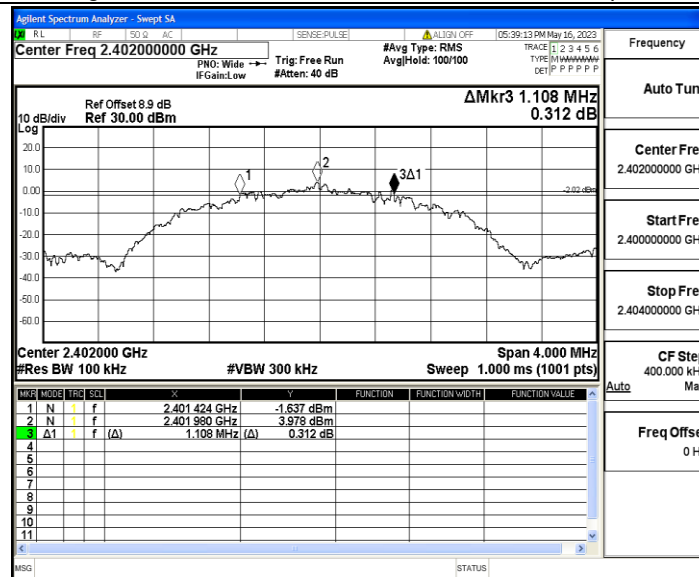
BLE_1M_Ant1_2440



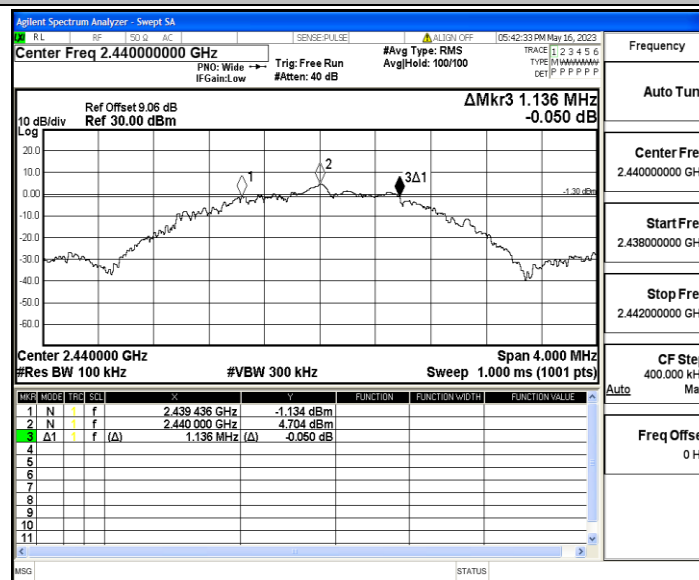
BLE_1M_Ant1_2480



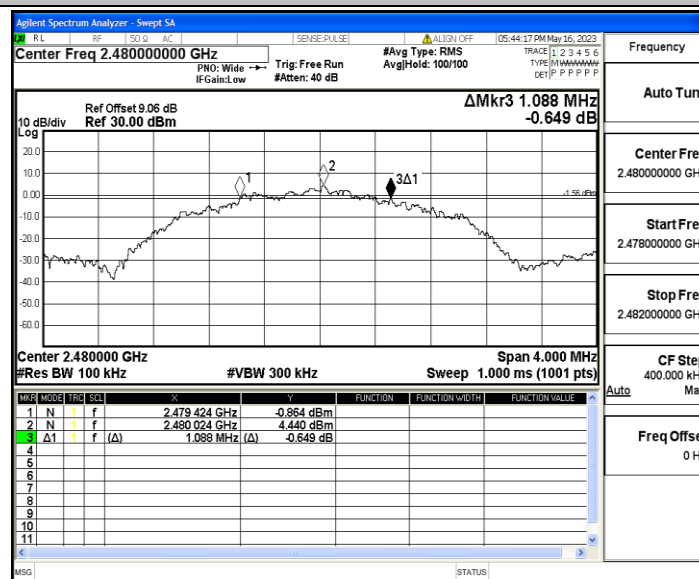
BLE_2M_Ant1_2402



BLE_2M_Ant1_2440



BLE_2M_Ant1_2480



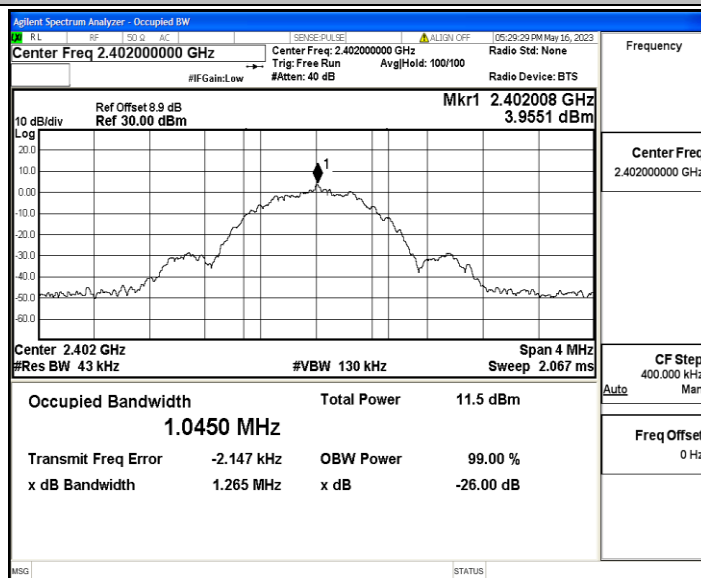
Appendix B: Occupied Channel Bandwidth

Test Result

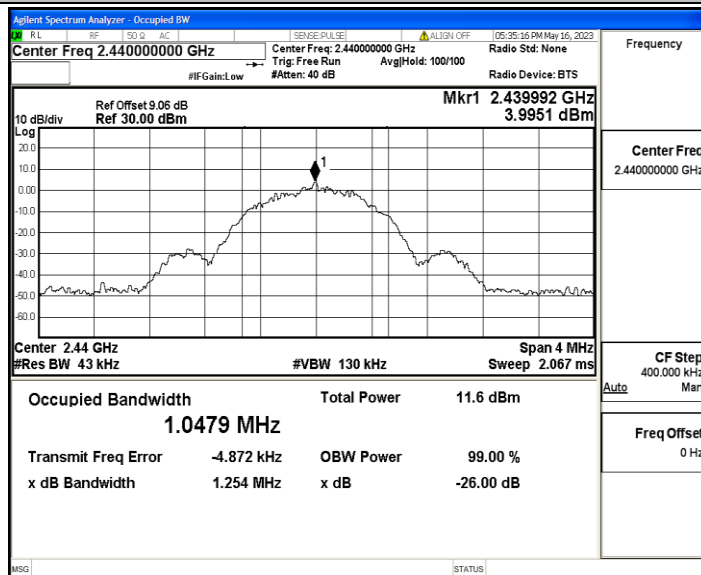
TestMode	Antenna	Channel	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	1.0450	2401.4754	2402.5204	---	---
		2440	1.0479	2439.4712	2440.5191	---	---
		2480	1.0383	2479.4736	2480.5119	---	---
BLE_2M	Ant1	2402	2.0762	2400.9739	2403.0501	---	---
		2440	2.0736	2438.9774	2441.0510	---	---
		2480	2.0794	2478.9721	2481.0515	---	---

Test Graphs

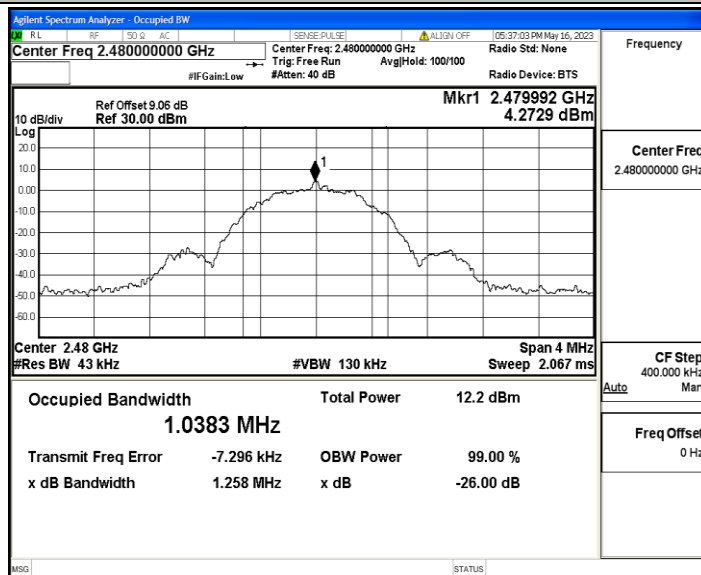
BLE_1M_Ant1_2402



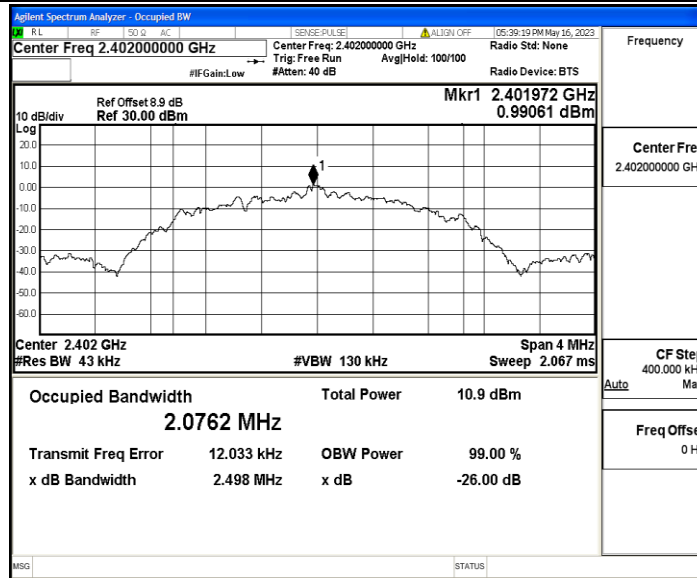
BLE_1M_Ant1_2440



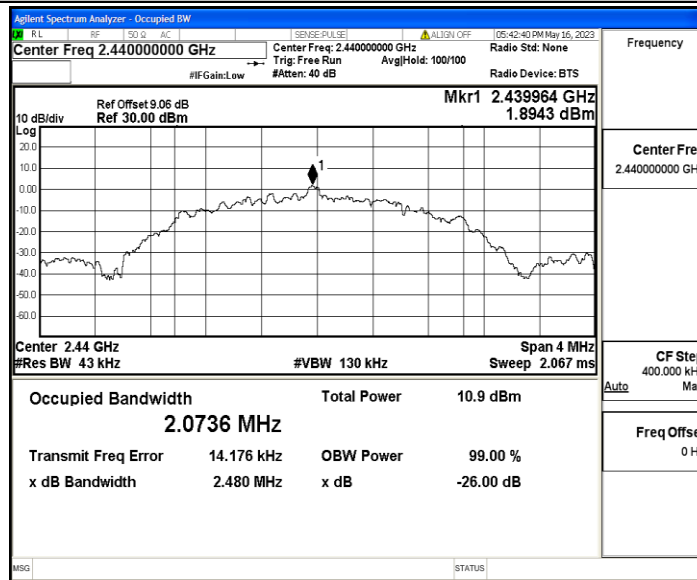
BLE_1M_Ant1_2480



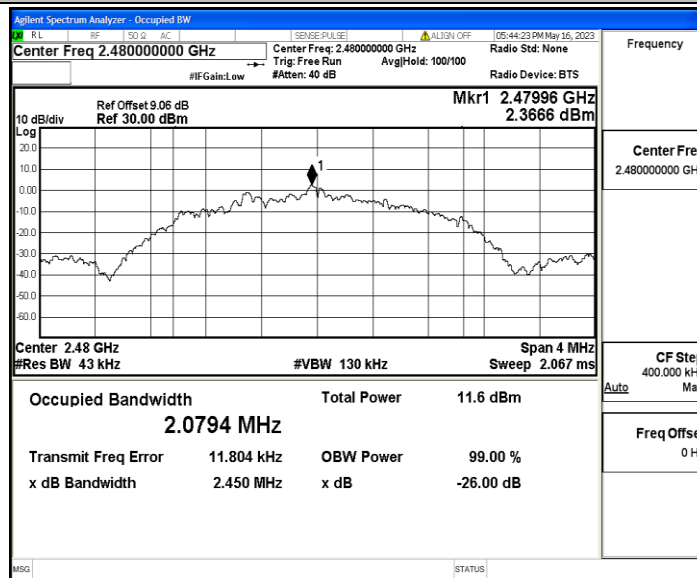
BLE_2M_Ant1_2402



BLE_2M_Ant1_2440



BLE_2M_Ant1_2480



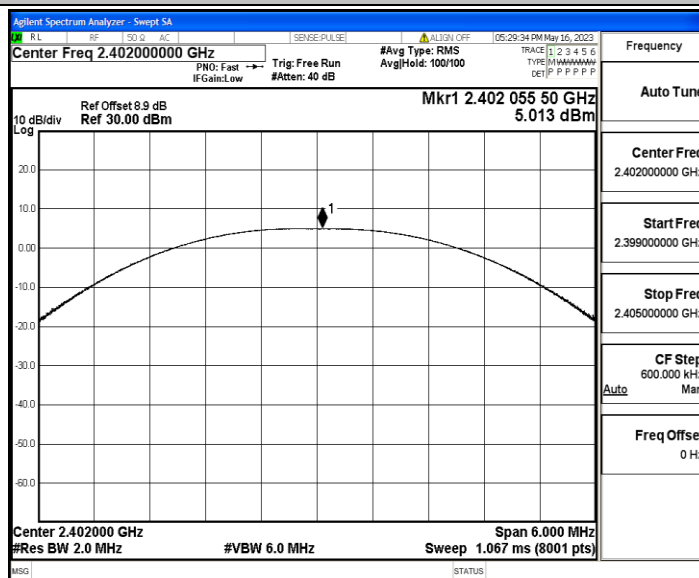
Appendix C: Maximum Peak conducted output power

Test Result

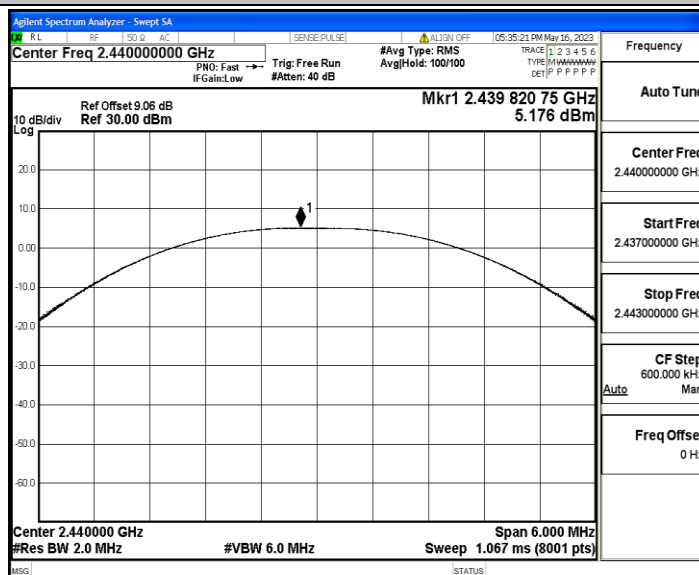
TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	5.01	≤30	PASS
		2440	5.18	≤30	PASS
		2480	5.62	≤30	PASS
BLE_2M	Ant1	2402	4.76	≤30	PASS
		2440	5.22	≤30	PASS
		2480	5.63	≤30	PASS

Test Graphs

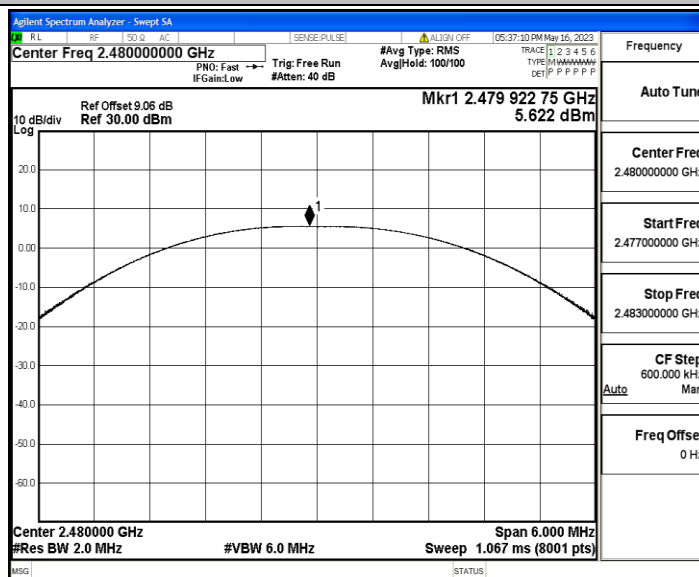
BLE_1M_Ant1_2402



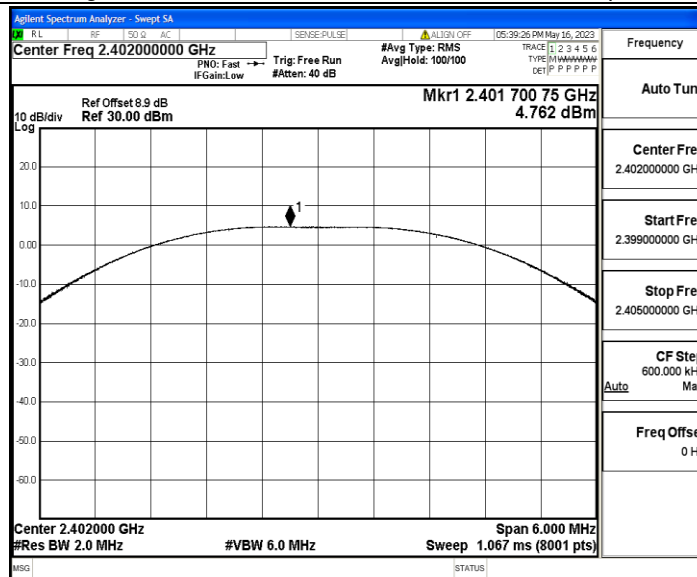
BLE_1M_Ant1_2440



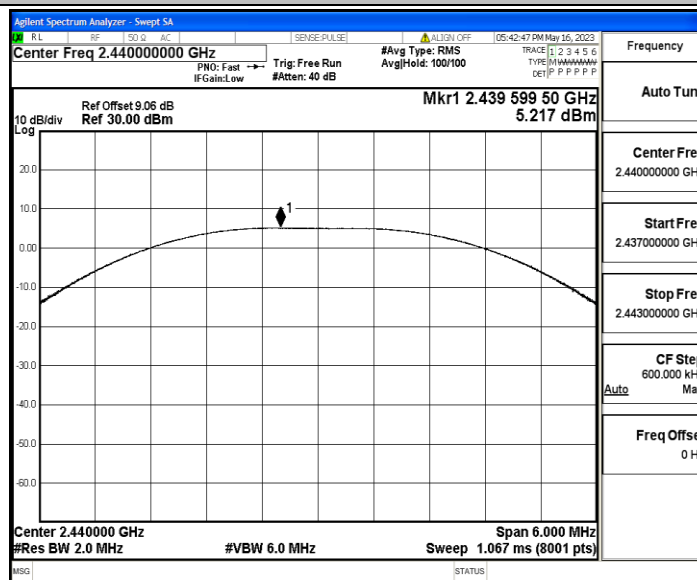
BLE_1M_Ant1_2480



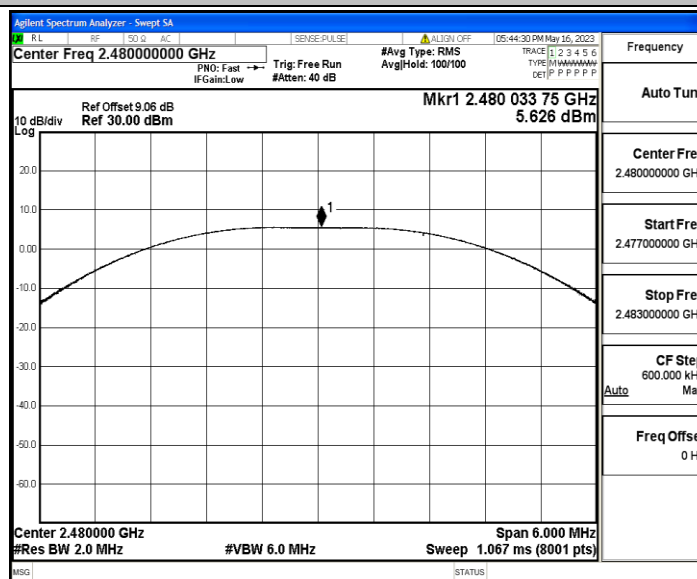
BLE_2M_Ant1_2402



BLE_2M_Ant1_2440



BLE_2M_Ant1_2480

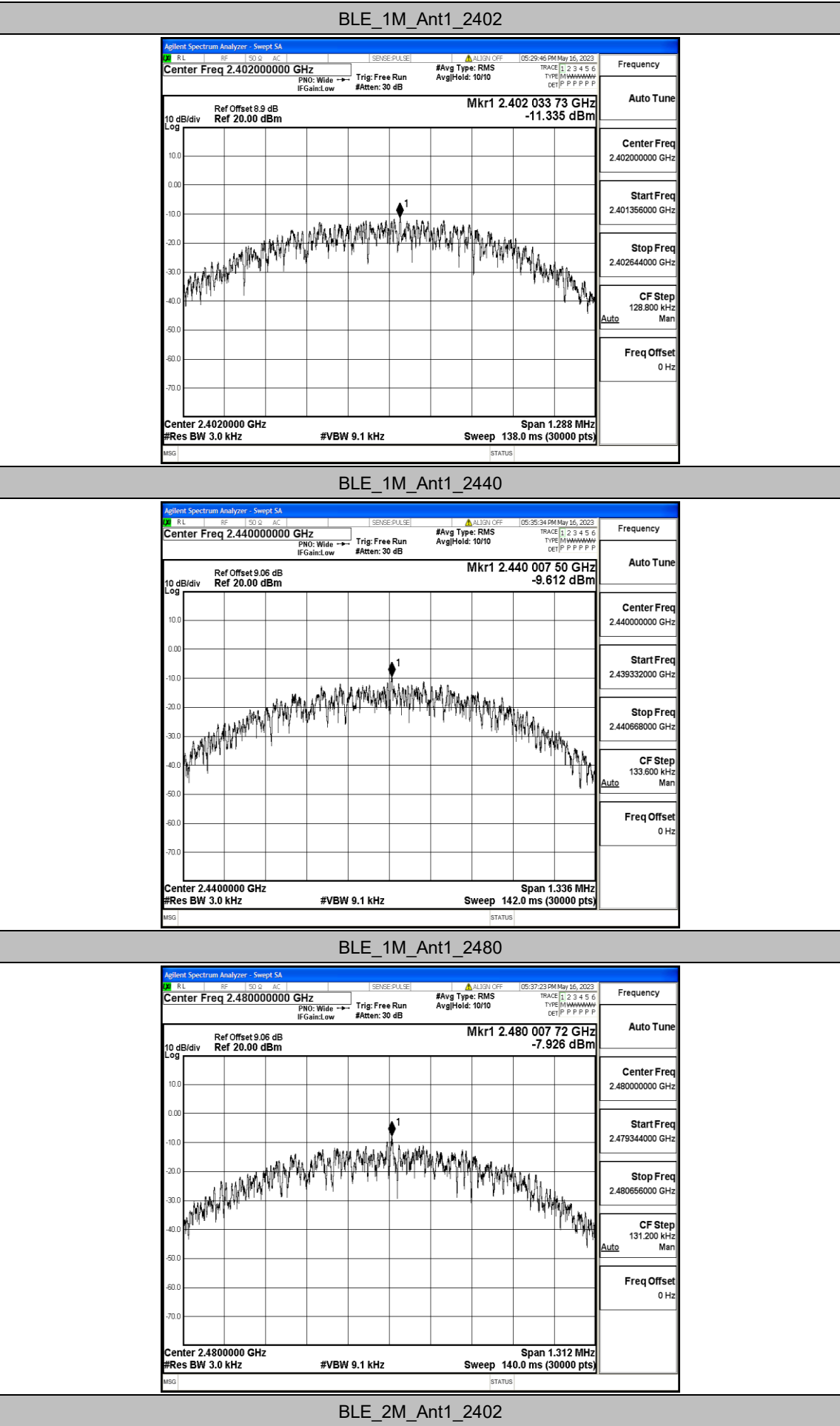


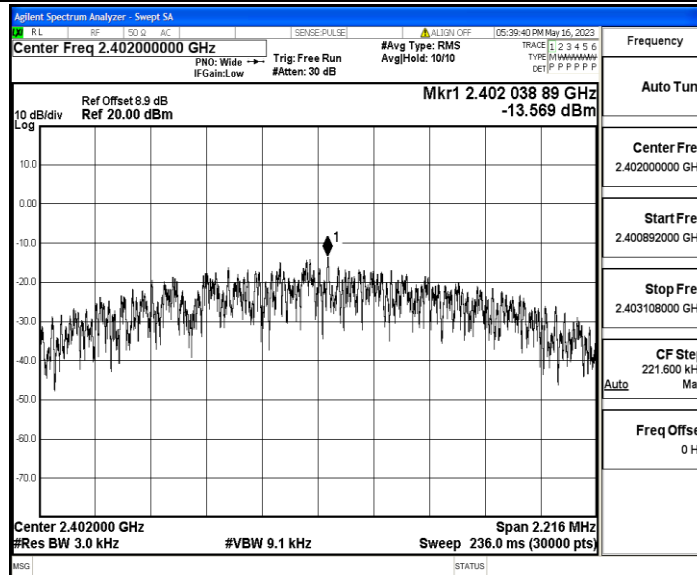
Appendix D: Maximum power spectral density

Test Result

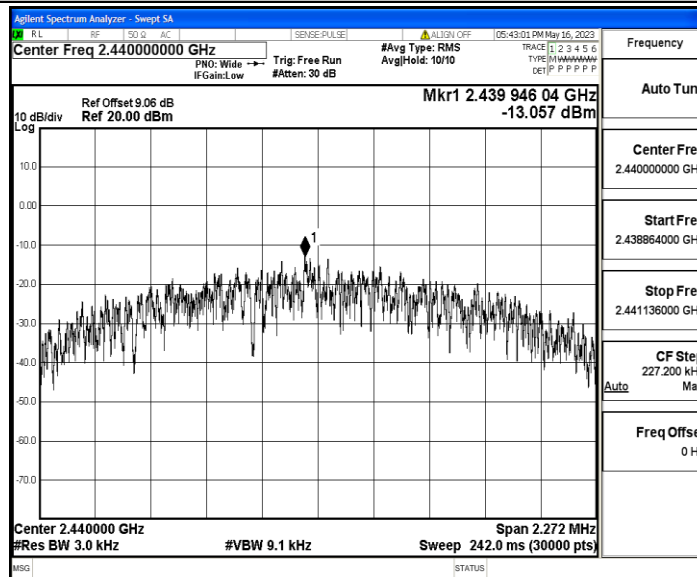
TestMode	Antenna	Channel	Result[dBm/3-100kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-11.34	≤8.00	PASS
		2440	-9.61	≤8.00	PASS
		2480	-7.93	≤8.00	PASS
BLE_2M	Ant1	2402	-13.57	≤8.00	PASS
		2440	-13.06	≤8.00	PASS
		2480	-11.15	≤8.00	PASS

Test Graphs

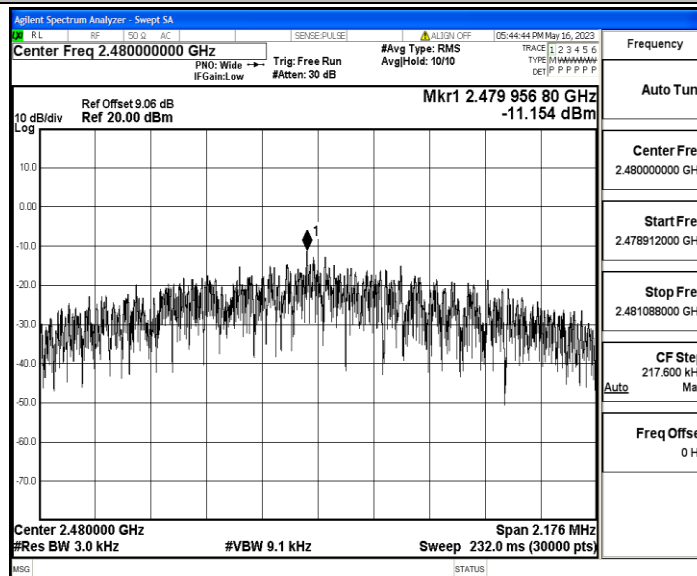




BLE_2M_Ant1_2440



BLE_2M_Ant1_2480



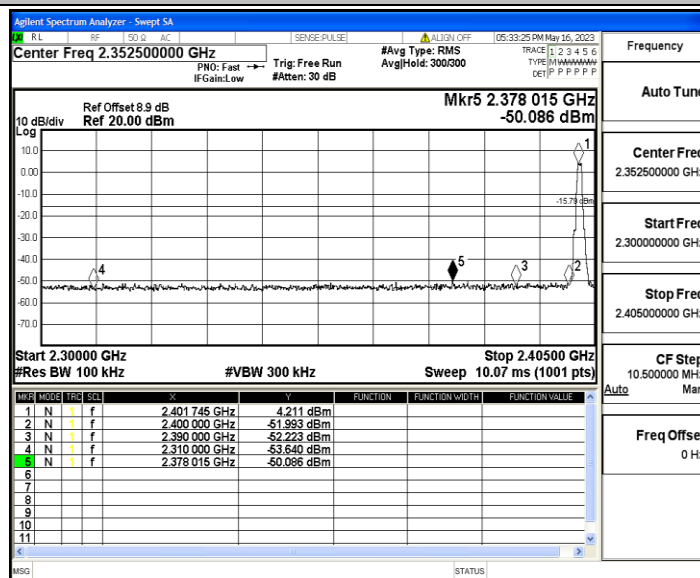
Appendix E: Band edge measurements

Test Result

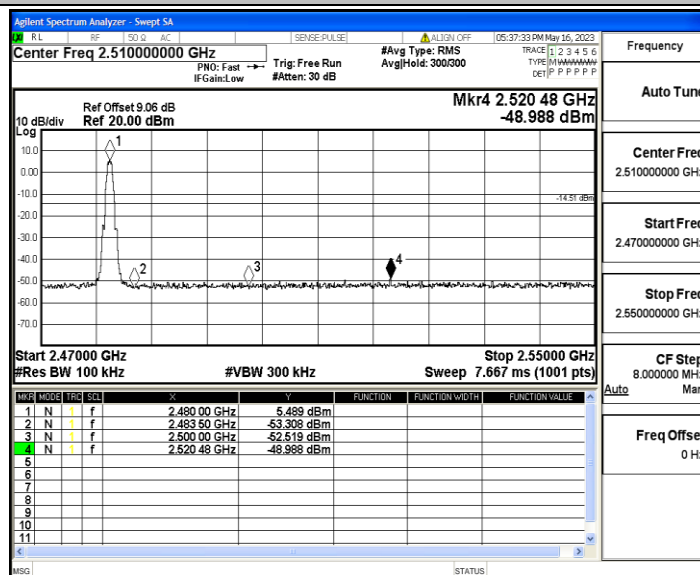
TestMode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	4.21	-50.09	≤-15.79	PASS
		High	2480	5.49	-48.99	≤-14.51	PASS
BLE_2M	Ant1	Low	2402	4.28	-27.51	≤-15.72	PASS
		High	2480	4.80	-49.24	≤-15.2	PASS

Test Graphs

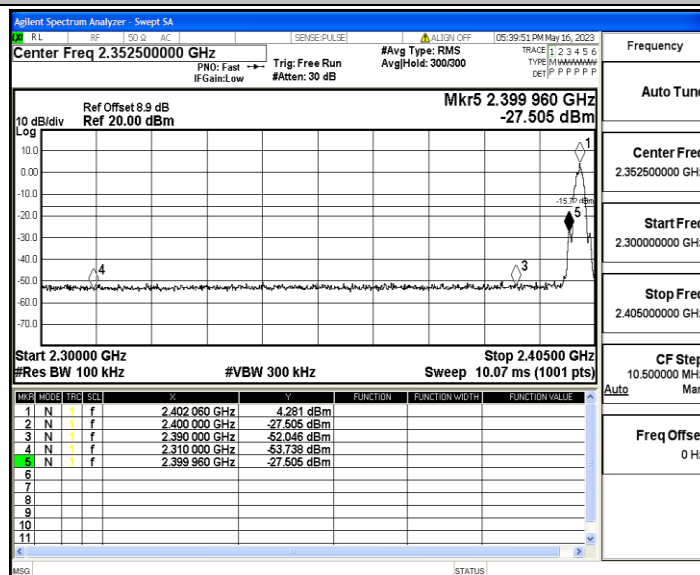
BLE_1M_Ant1_Low_2402



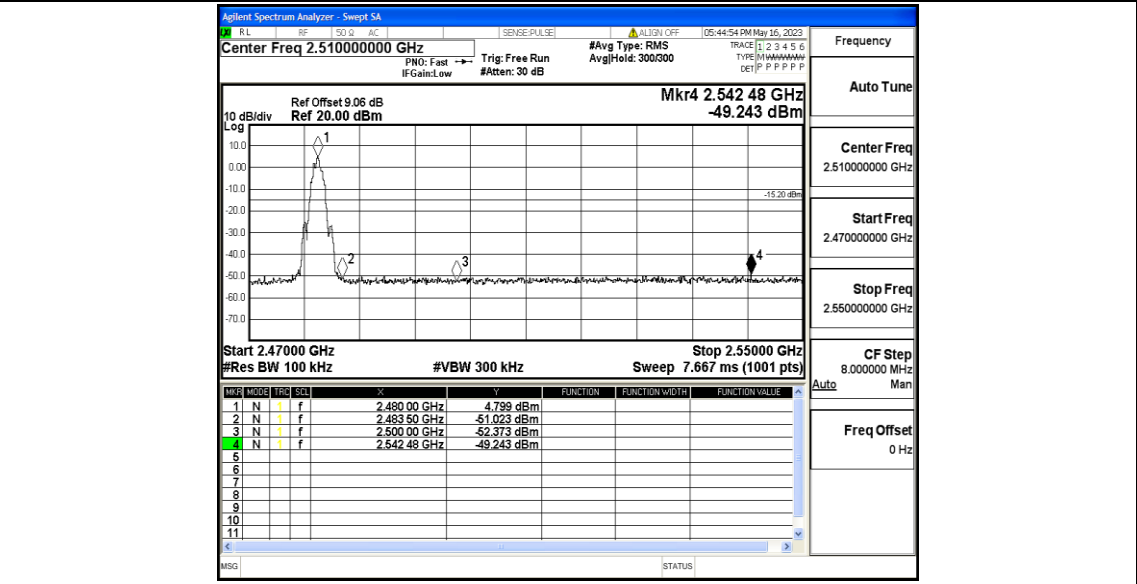
BLE_1M_Ant1_High_2480



BLE_2M_Ant1_Low_2402



BLE_2M_Ant1_High_2480



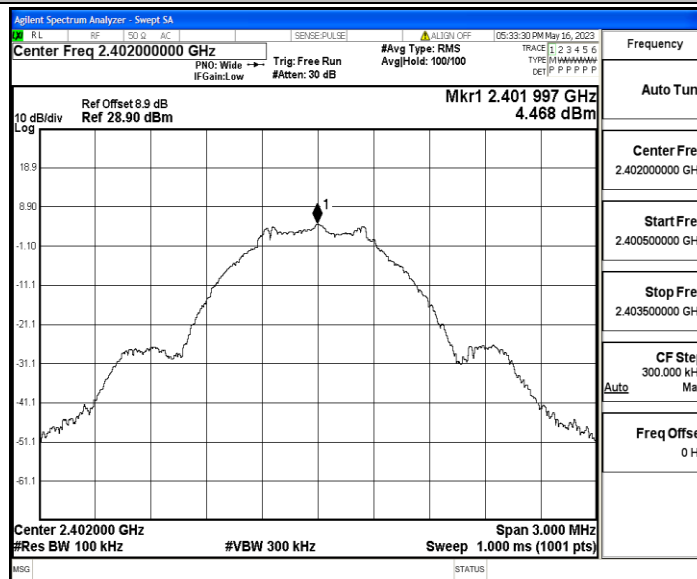
Appendix F: Conducted Spurious Emission

Test Result

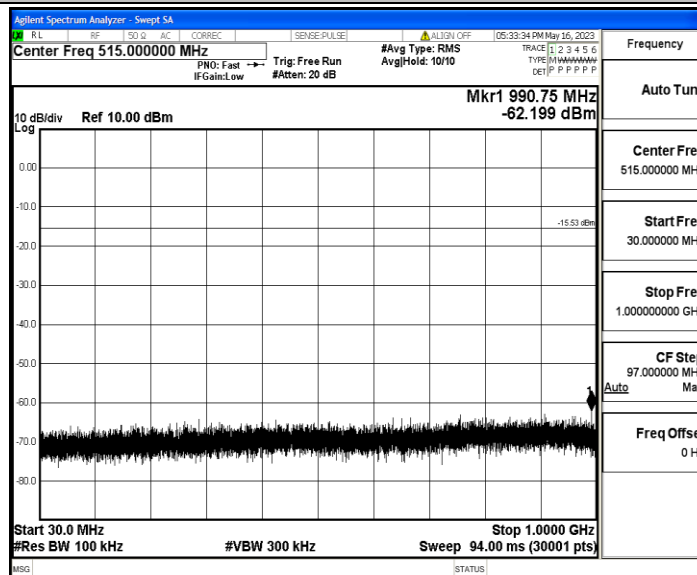
TestMode	Antenna	Channel	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	Reference	4.47	4.47	---	PASS
			30~1000	4.47	-62.2	≤-15.53	PASS
			1000~26500	4.47	-49.54	≤-15.53	PASS
		2440	Reference	4.59	4.59	---	PASS
			30~1000	4.59	-62.65	≤-15.41	PASS
			1000~26500	4.59	-50.7	≤-15.41	PASS
		2480	Reference	5.29	5.29	---	PASS
			30~1000	5.29	-62.56	≤-14.71	PASS
			1000~26500	5.29	-49.48	≤-14.71	PASS
BLE_2M	Ant1	2402	Reference	3.13	3.13	---	PASS
			30~1000	3.13	-62.95	≤-16.87	PASS
			1000~26500	3.13	-50.55	≤-16.87	PASS
		2440	Reference	4.72	4.72	---	PASS
			30~1000	4.72	-62.91	≤-15.28	PASS
			1000~26500	4.72	-49.84	≤-15.28	PASS
		2480	Reference	5.13	5.13	---	PASS
			30~1000	5.13	-62.5	≤-14.87	PASS
			1000~26500	5.13	-50.7	≤-14.87	PASS

Test Graphs

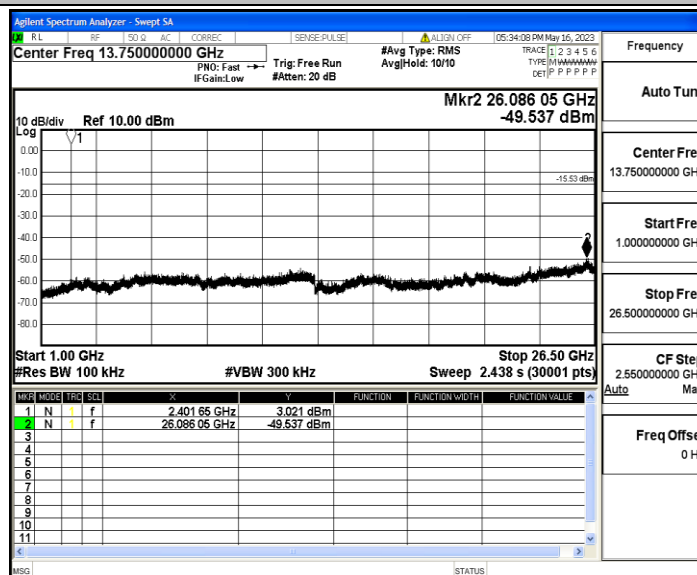
BLE_1M_Ant1_2402_0~Reference



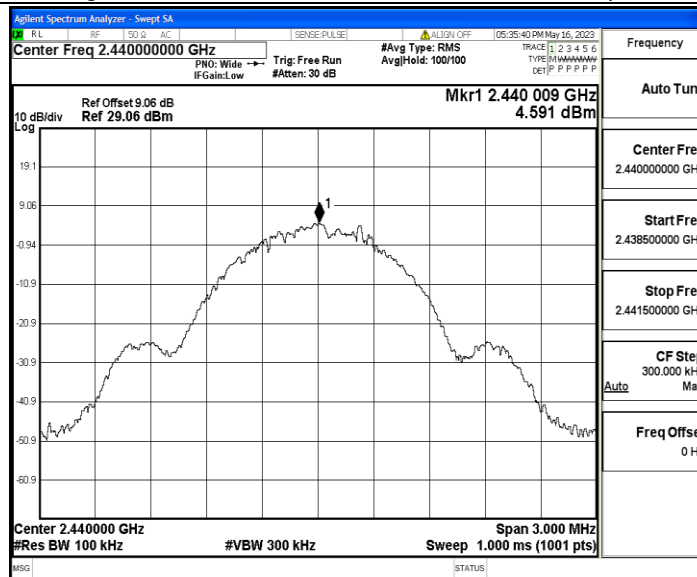
BLE_1M_Ant1_2402_30~1000



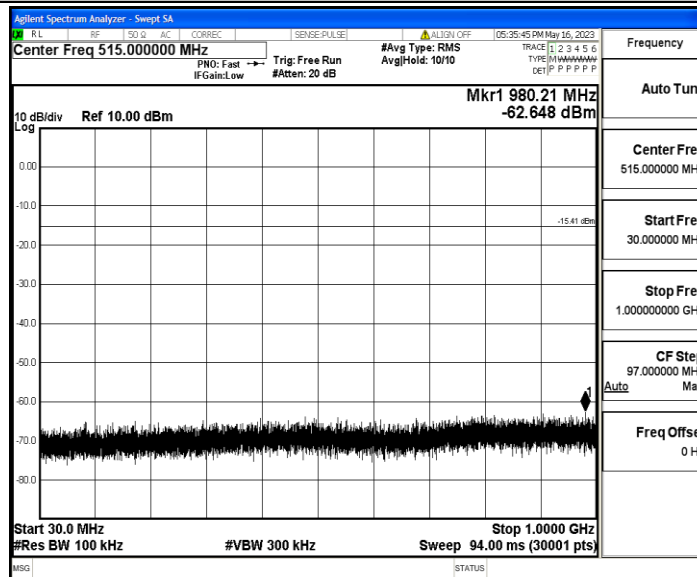
BLE_1M_Ant1_2402_1000~26500



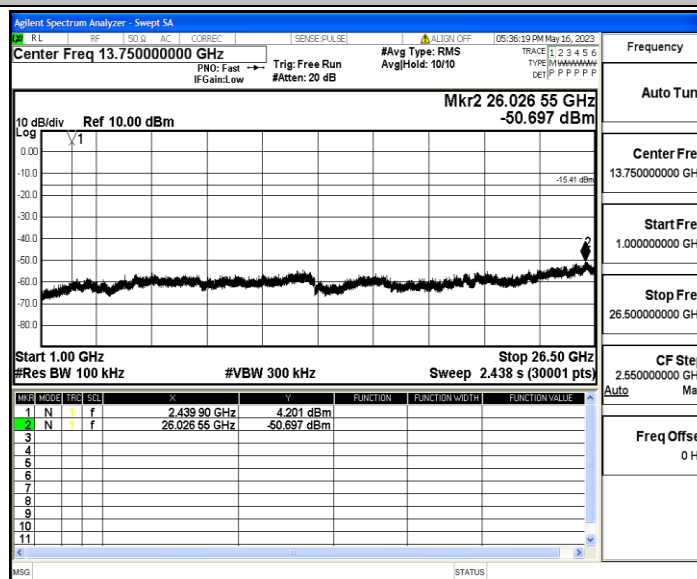
BLE_1M_Ant1_2440_0~Reference



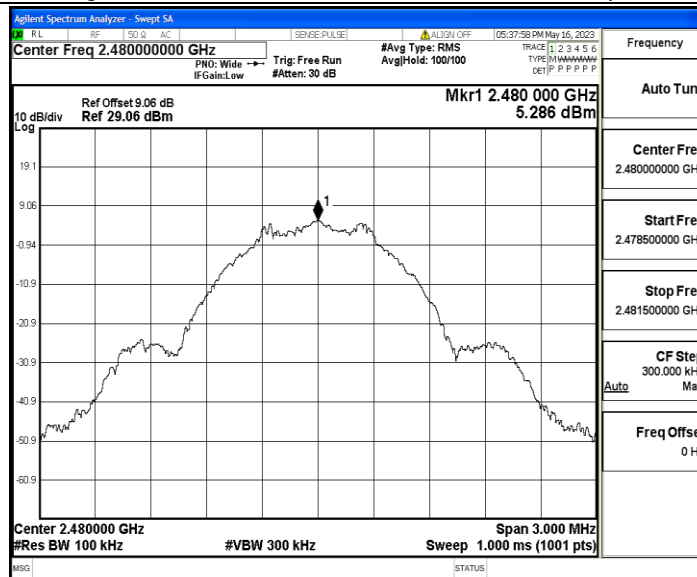
BLE_1M_Ant1_2440_30~1000



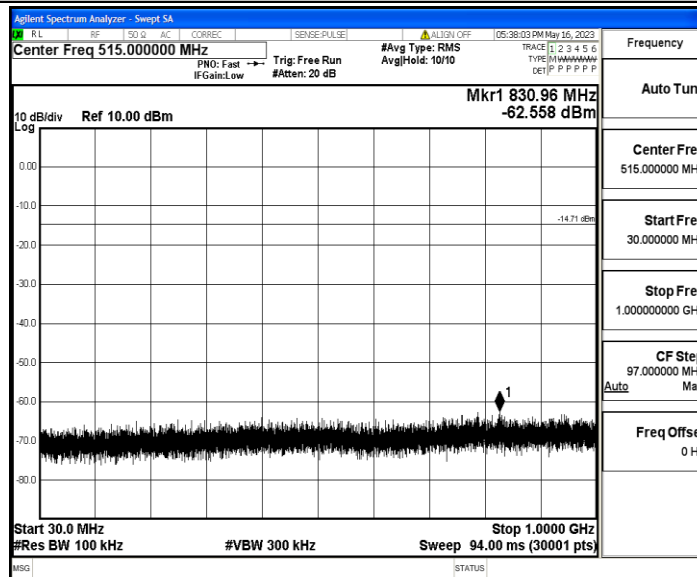
BLE_1M_Ant1_2440_1000~26500



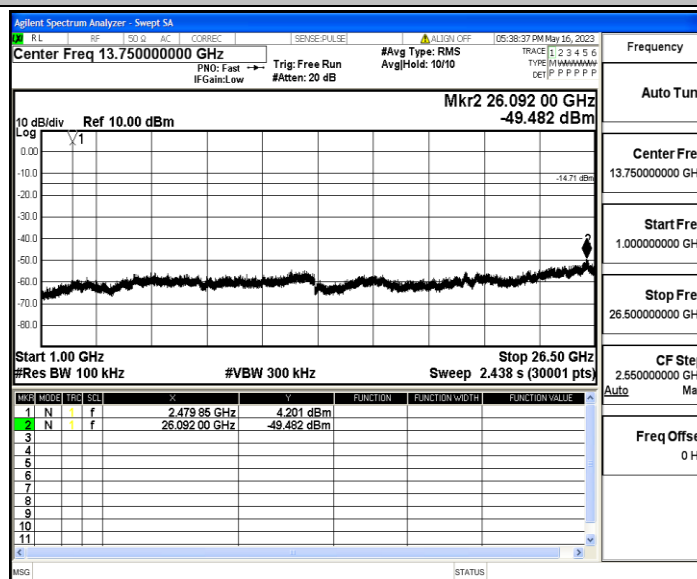
BLE_1M_Ant1_2480_0~Reference



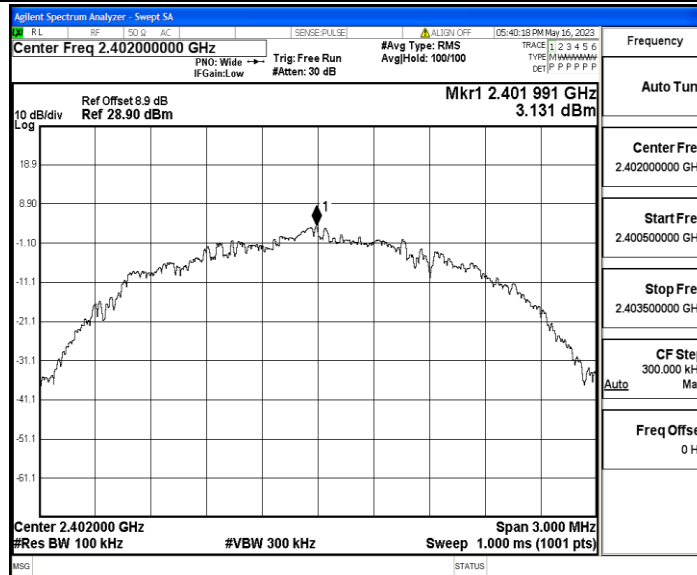
BLE_1M_Ant1_2480_30~1000



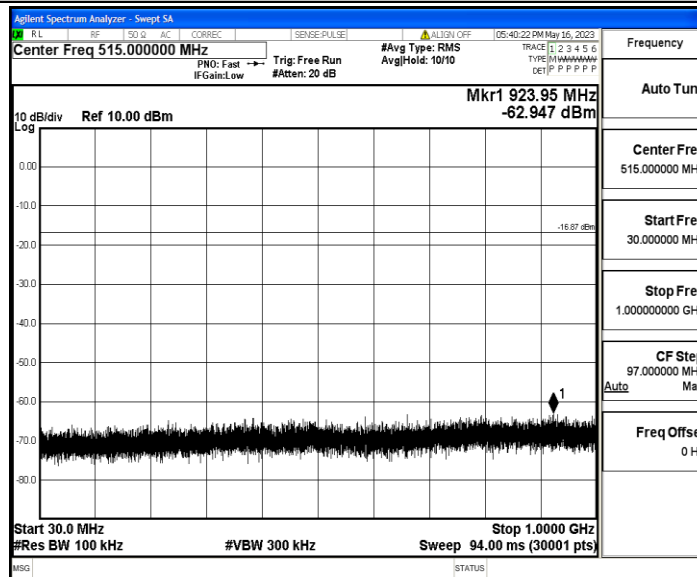
BLE_1M_Ant1_2480_1000~26500



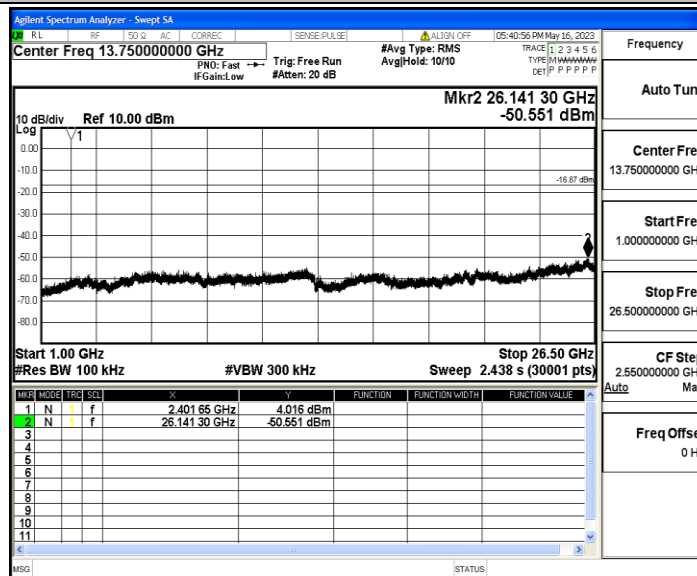
BLE_2M_Ant1_2402_0~Reference



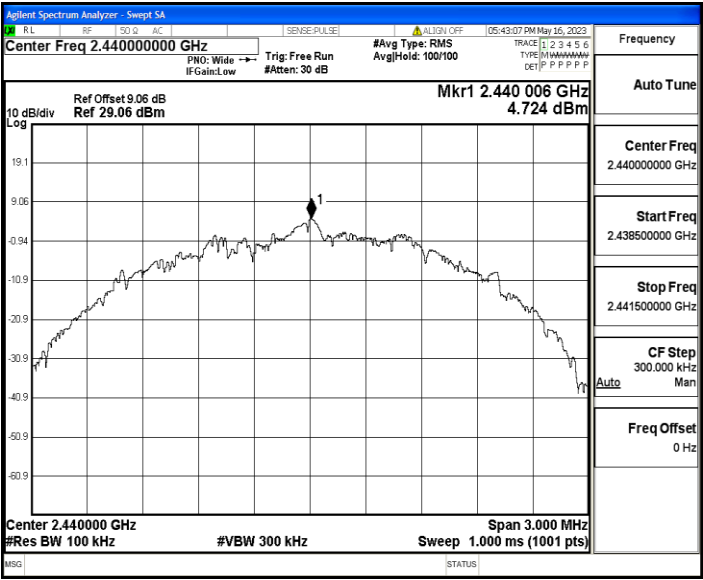
BLE_2M_Ant1_2402_30~1000



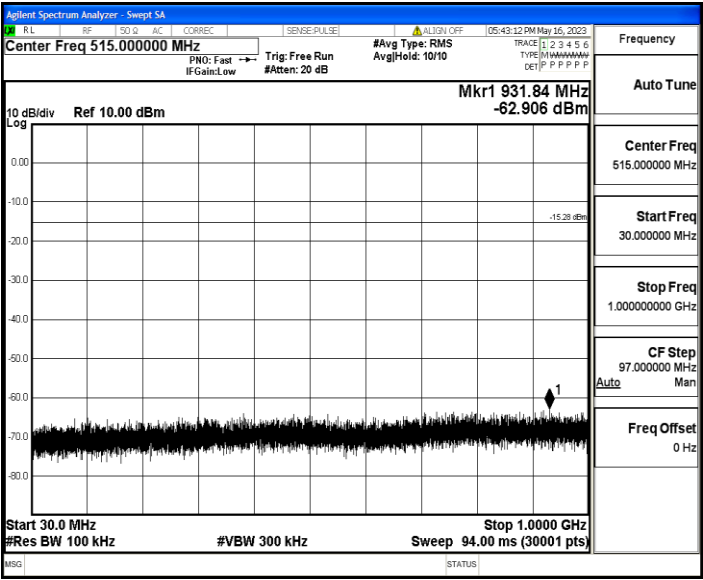
BLE_2M_Ant1_2402_1000~26500



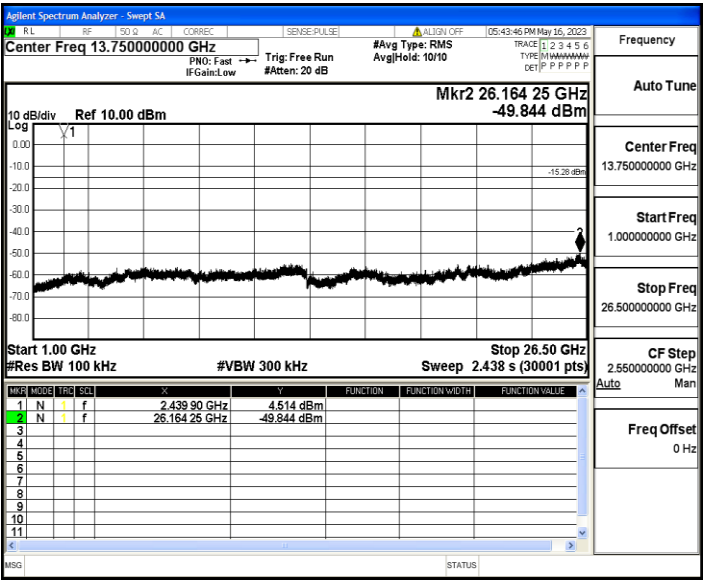
BLE_2M_Ant1_2440_0~Reference



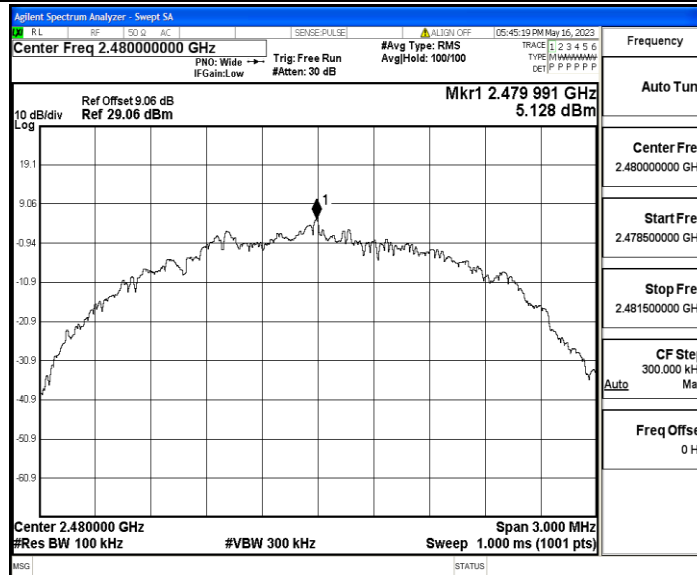
BLE_2M_Ant1_2440_30~1000



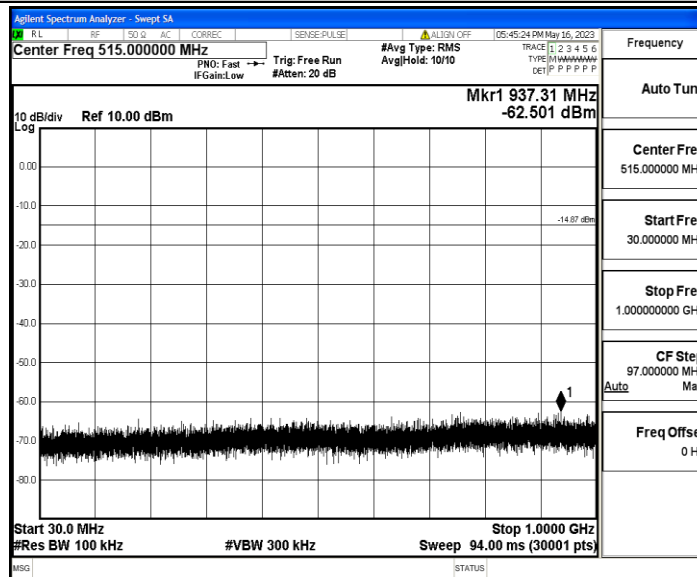
BLE_2M_Ant1_2440_1000~26500



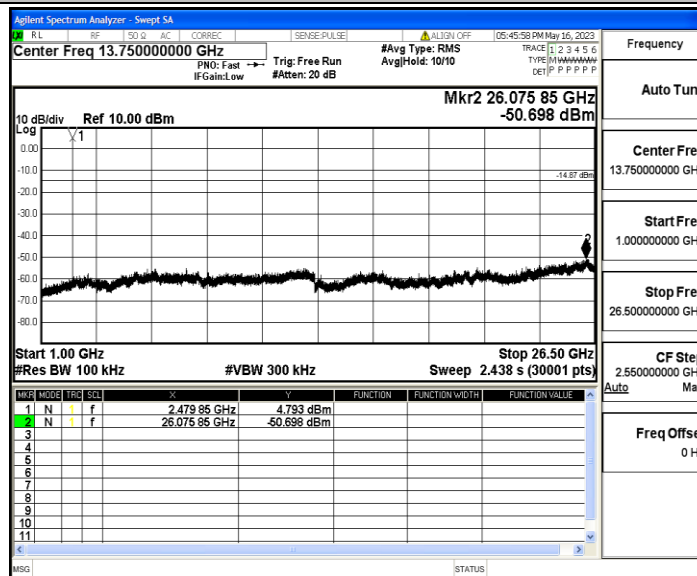
BLE_2M_Ant1_2480_0~Reference



BLE_2M_Ant1_2480_30~1000



BLE_2M_Ant1_2480_1000~26500



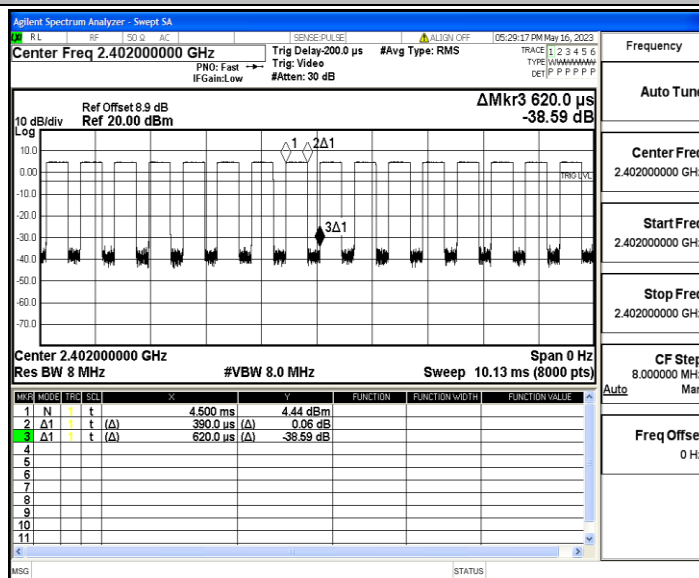
Appendix G: Duty Cycle

Test Result

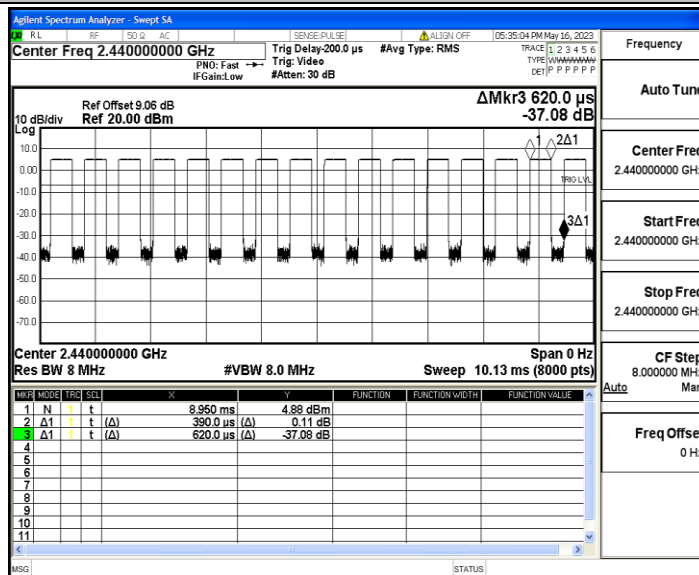
TestMode	Antenna	Channel	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]	1/T[kHz]
BLE_1M	Ant1	2402	0.39	0.62	62.90	2.56
		2440	0.39	0.62	62.90	2.56
		2480	0.39	0.62	62.90	2.56
BLE_2M	Ant1	2402	0.20	0.62	32.26	5.00
		2440	0.21	0.63	33.33	4.76
		2480	0.21	0.63	33.33	4.76

Test Graphs

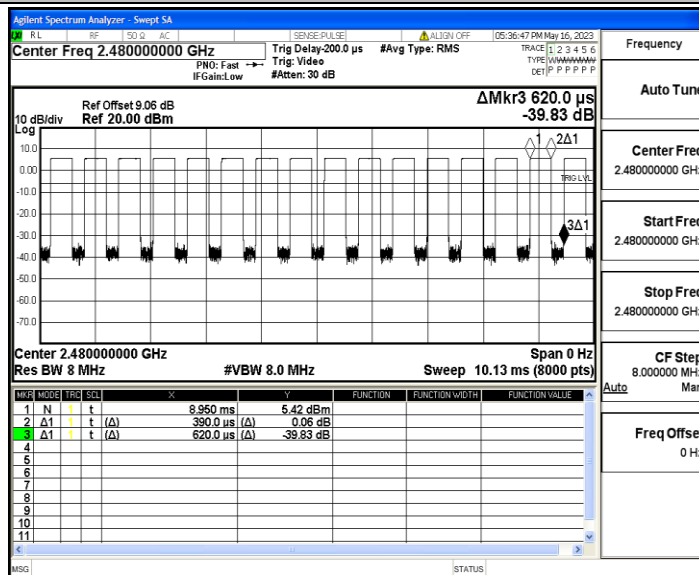
BLE_1M_Ant1_2402



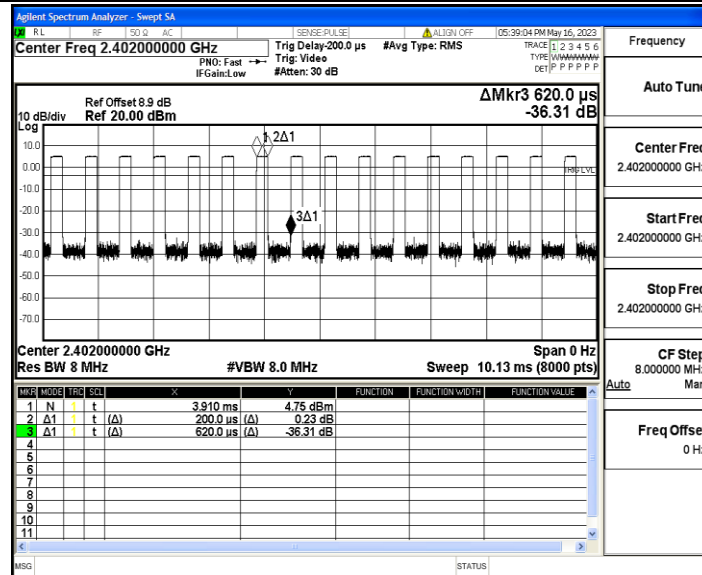
BLE_1M_Ant1_2440



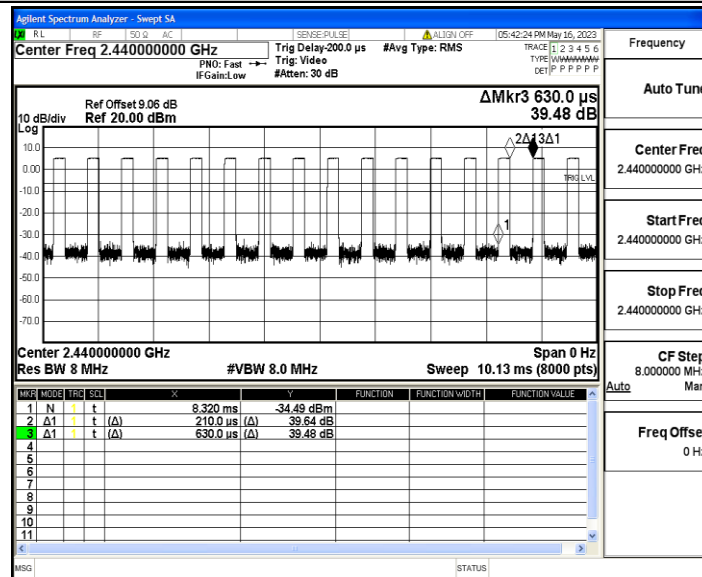
BLE_1M_Ant1_2480



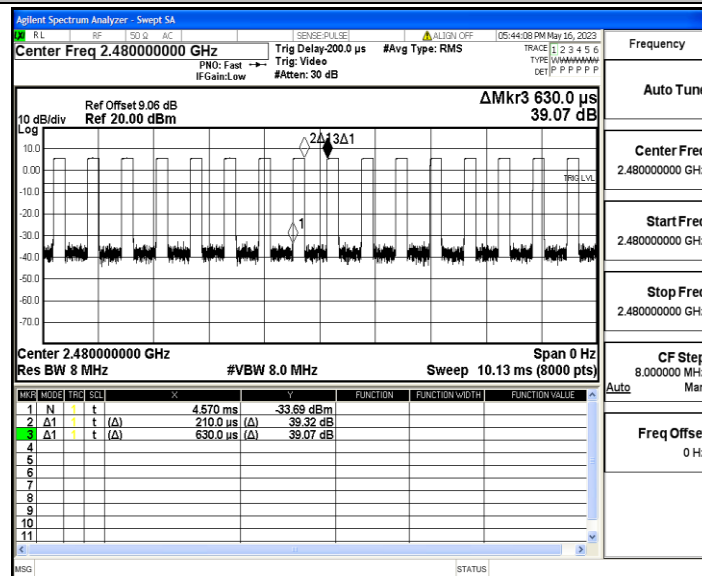
BLE_2M_Ant1_2402



BLE_2M_Ant1_2440



BLE_2M_Ant1_2480



Appendix H: Emissions in Restricted Bands

Test Result

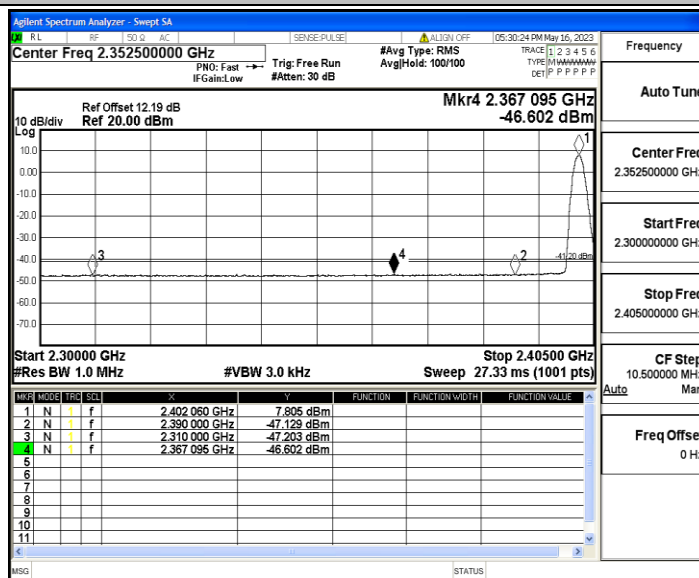
TestMode	Antenna	ChName	Channel	Detector	Freq. [MHz]	Result [dBm]	Limit [dBm]	Verdict
BLE_1M	Ant1	Low	2402	AV	2310.000	-47.2	≤-41.20	PASS
				AV	2367.095	-46.6	≤-41.20	PASS
				AV	2390.000	-47.13	≤-41.20	PASS
				Peak	2310.000	-41.22	≤-21.20	PASS
				Peak	2324.885	-37.83	≤-21.20	PASS
				Peak	2390.000	-41.9	≤-21.20	PASS
		High	2480	AV	2483.500	-44.63	≤-41.20	PASS
				AV	2483.520	-44.63	≤-41.20	PASS
				AV	2500.000	-46.75	≤-41.20	PASS
				Peak	2483.500	-40.03	≤-21.20	PASS
				Peak	2491.120	-37.45	≤-21.20	PASS
				Peak	2500.000	-40.9	≤-21.20	PASS
BLE_2M	Ant1	Low	2402	AV	2310.000	-47.01	≤-41.20	PASS
				AV	2327.405	-46.19	≤-41.20	PASS
				AV	2390.000	-46.72	≤-41.20	PASS
				Peak	2310.000	-42.55	≤-21.20	PASS
				Peak	2377.595	-36.08	≤-21.20	PASS
				Peak	2390.000	-40.78	≤-21.20	PASS
		High	2480	AV	2483.500	-42.07	≤-41.20	PASS
				AV	2483.520	-42.07	≤-41.20	PASS
				AV	2500.000	-46.18	≤-41.20	PASS
				Peak	2483.500	-38.37	≤-21.20	PASS
				Peak	2483.920	-37.41	≤-21.20	PASS
				Peak	2500.000	-40.02	≤-21.20	PASS

Note:

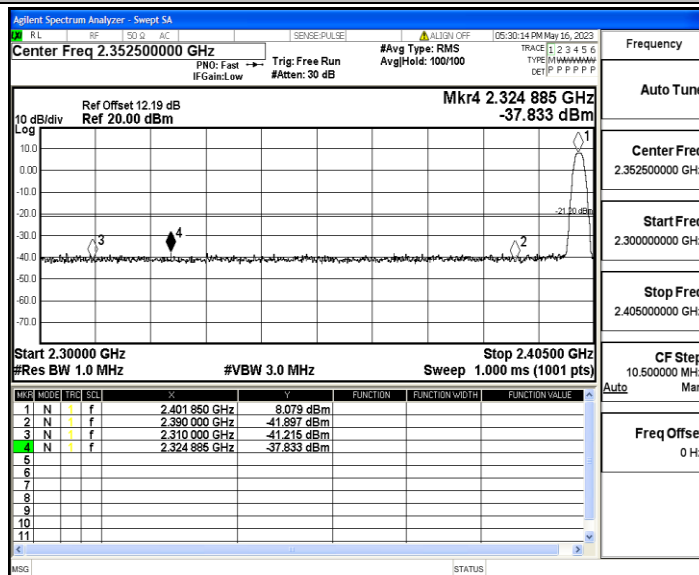
1. The Antenna Gain is compensated in the graph with 2dBi and Antenna Gain which is Higher.
2. The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.

Test Graphs

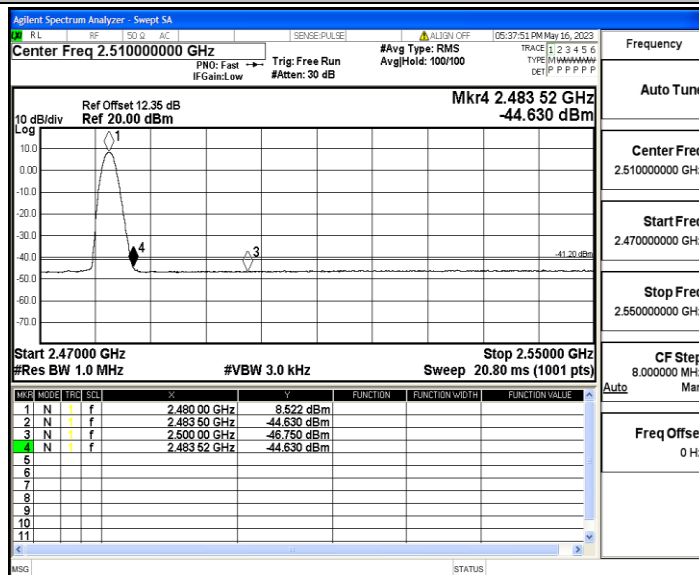
BLE_1M_Ant1_Low_2402_AV



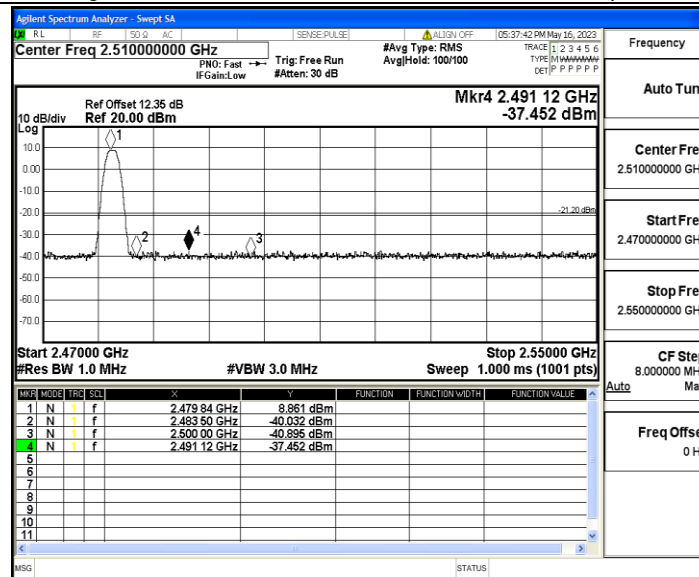
BLE_1M_Ant1_Low_2402_Peak



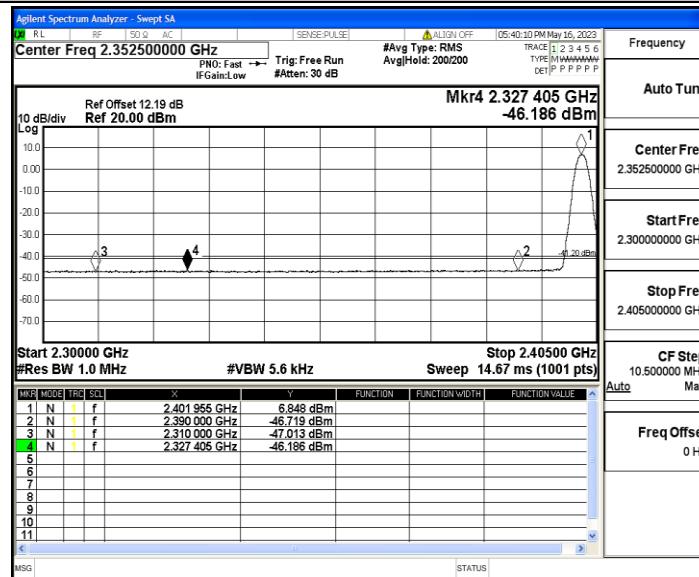
BLE_1M_Ant1_High_2480_AV



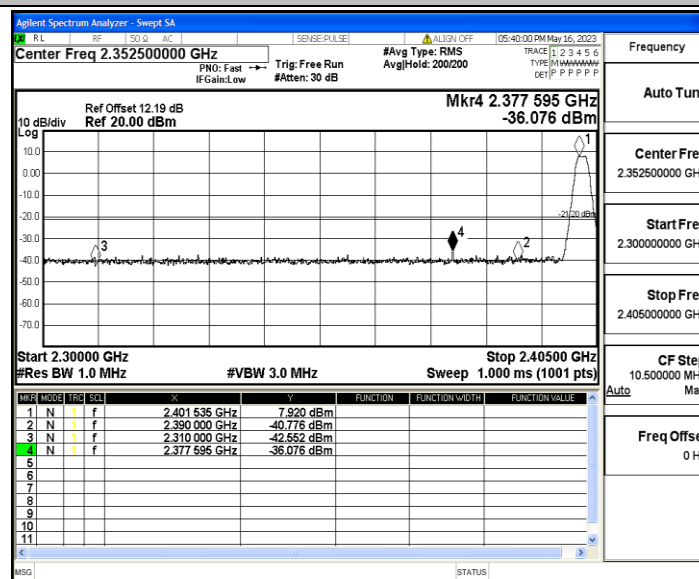
BLE_1M_Ant1_High_2480_Peak



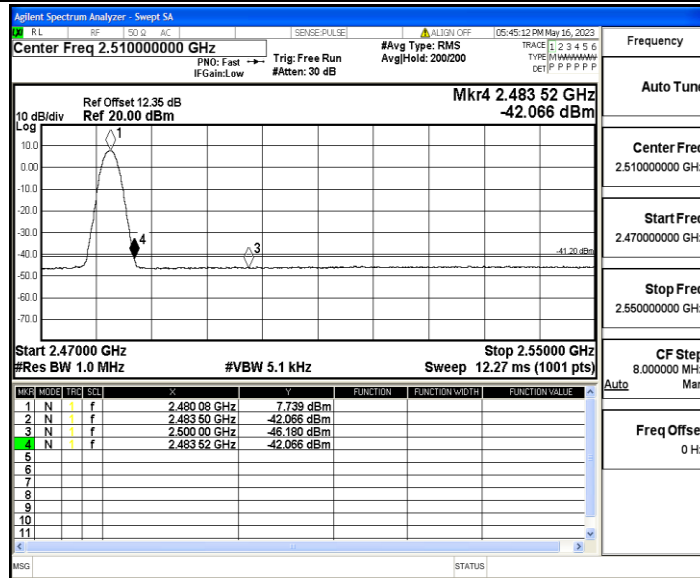
BLE_2M_Ant1_Low_2402_AV



BLE_2M_Ant1_Low_2402_Peak



BLE_2M_Ant1_High_2480_AV



BLE_2M_Ant1_High_2480_Peak

