

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

Product Name: Wanbo Projector

Trade Mark: wanbo

Test Model: T4

FCC ID:2A7PIT4

Environmental Conditions

Temperature:	25.5°C
Relative Humidity:	55%
ATM Pressure:	100.0 kPa
Test Engineer:	Anna Hu
Supervised by:	Hugo Chen
NOTE	N/A

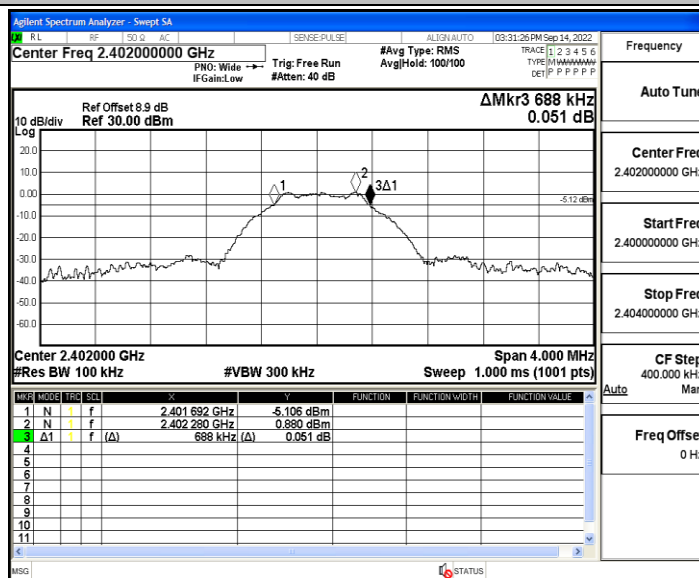
Appendix A: DTS Bandwidth

Test Result

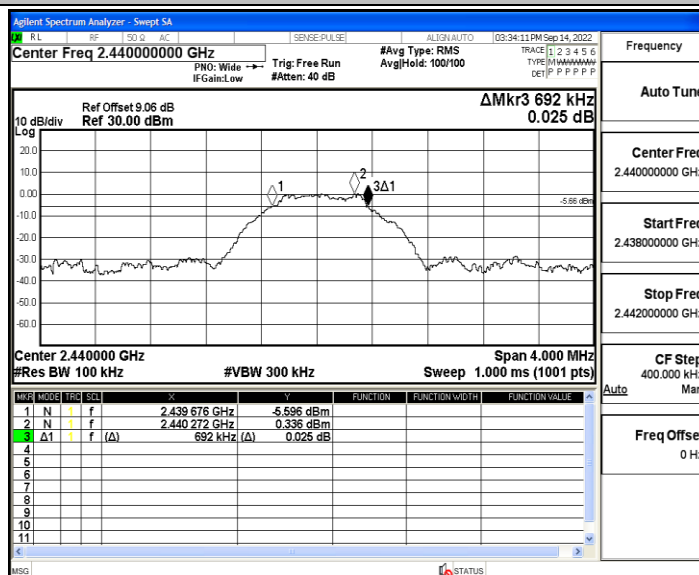
TestMode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant0	2402	0.688	2401.692	2402.380	0.5	PASS
		2440	0.692	2439.676	2440.368	0.5	PASS
		2480	0.684	2479.696	2480.380	0.5	PASS
BLE_2M	Ant0	2402	1.248	2401.372	2402.620	0.5	PASS
		2440	1.136	2439.468	2440.604	0.5	PASS
		2480	1.248	2479.384	2480.632	0.5	PASS

Test Graphs

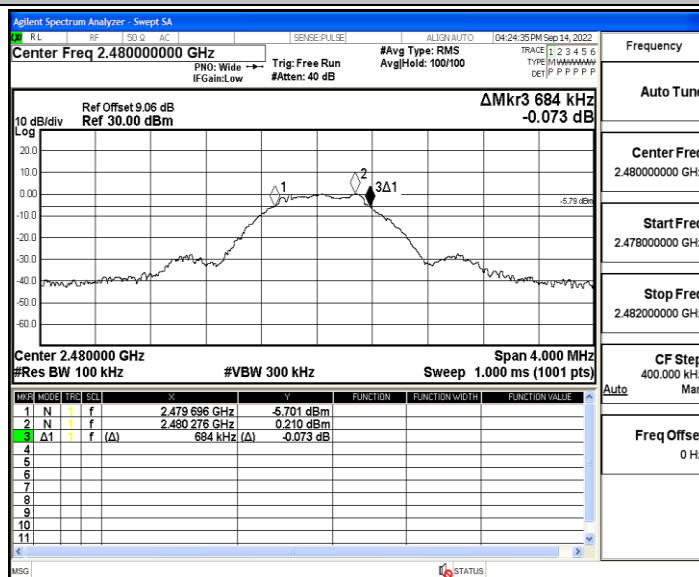
BLE_1M_Ant0_2402



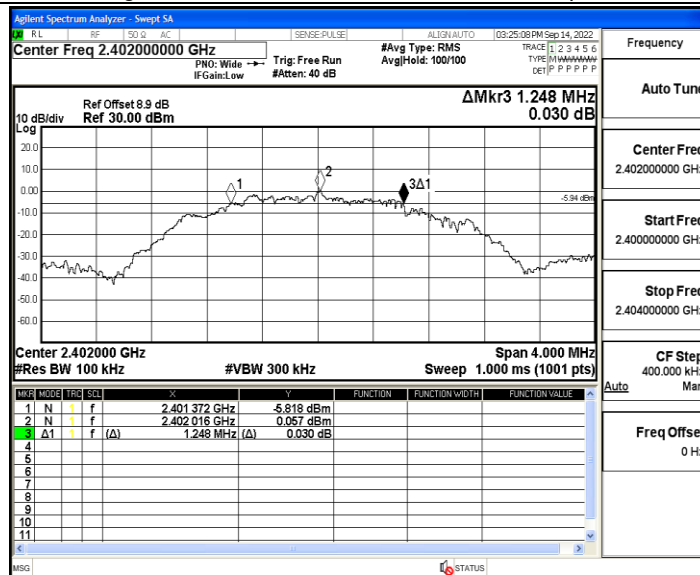
BLE_1M_Ant0_2440



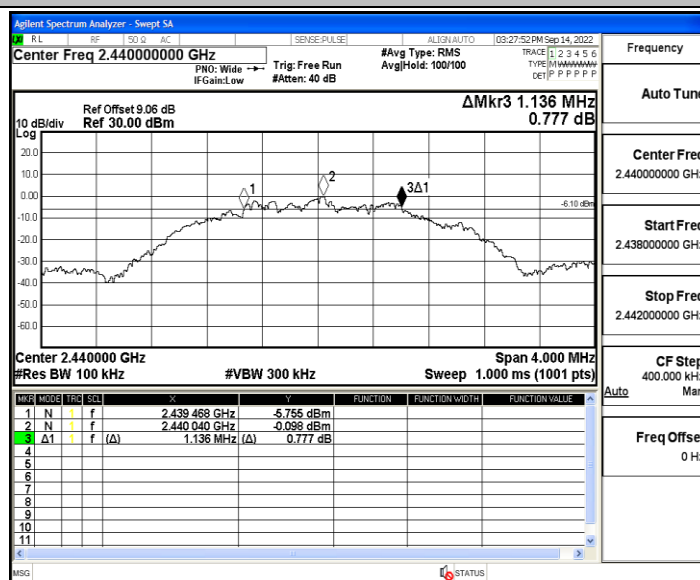
BLE_1M_Ant0_2480



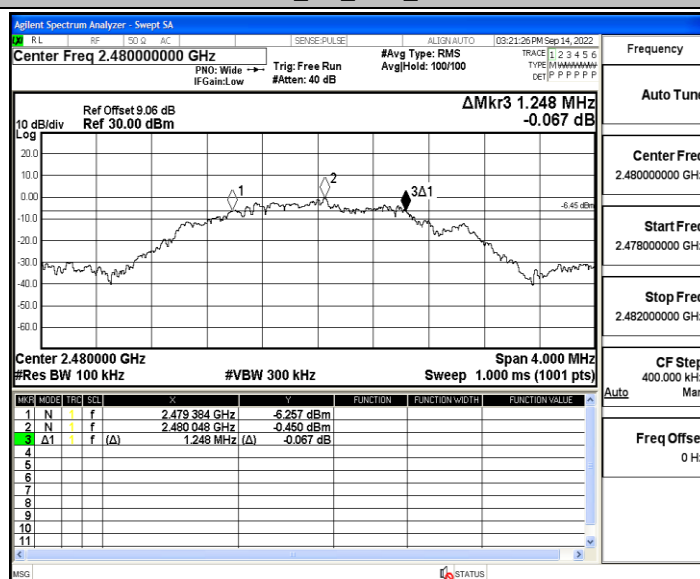
BLE_2M_Ant0_2402



BLE_2M_Ant0_2440



BLE_2M_Ant0_2480



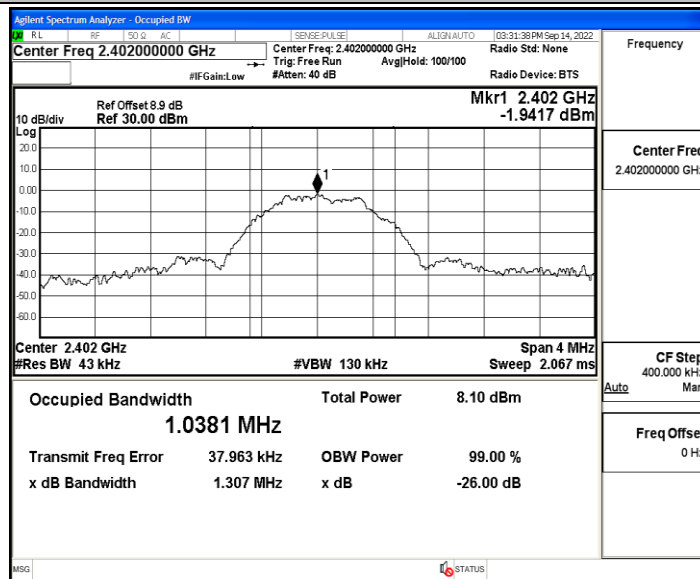
Appendix B: Occupied Channel Bandwidth

Test Result

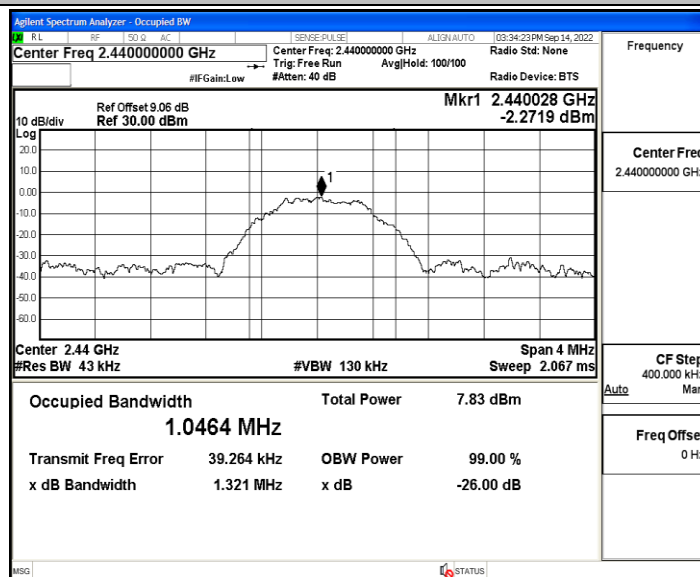
TestMode	Antenna	Channel	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant0	2402	1.0381	2401.519	2402.557	---	---
		2440	1.0464	2439.516	2440.562	---	---
		2480	1.0450	2479.521	2480.566	---	---
BLE_2M	Ant0	2402	2.1047	2401.000	2403.104	---	---
		2440	2.0940	2439.007	2441.101	---	---
		2480	2.1329	2478.973	2481.106	---	---

Test Graphs

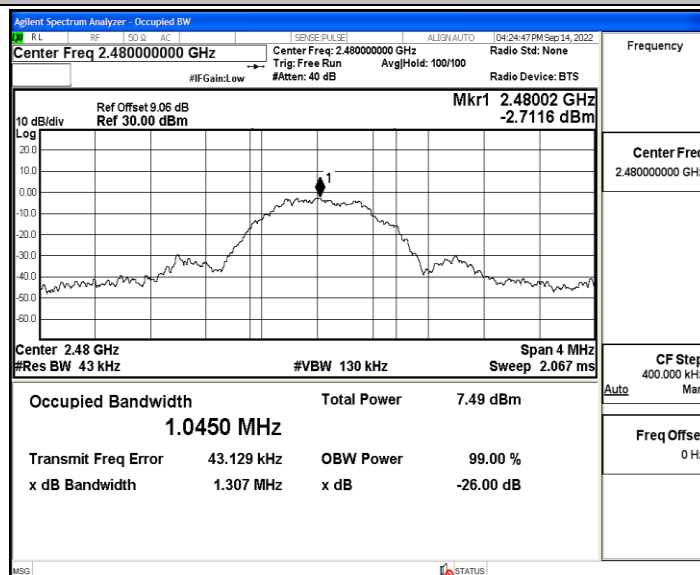
BLE_1M_Ant0_2402



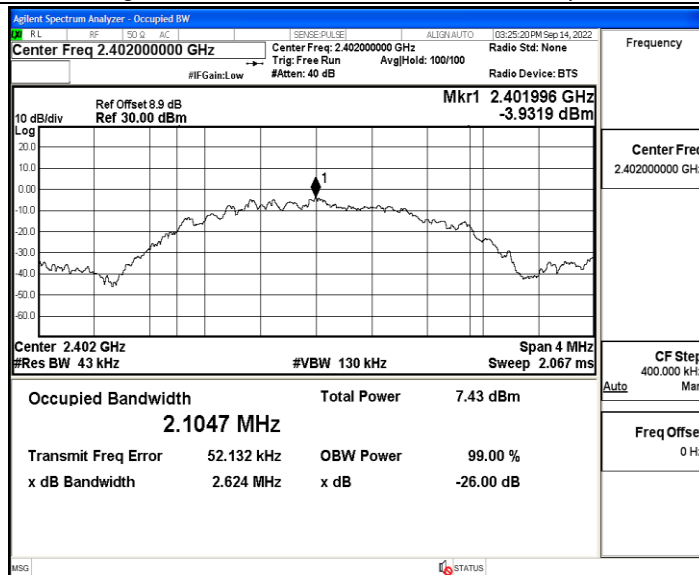
BLE_1M_Ant0_2440



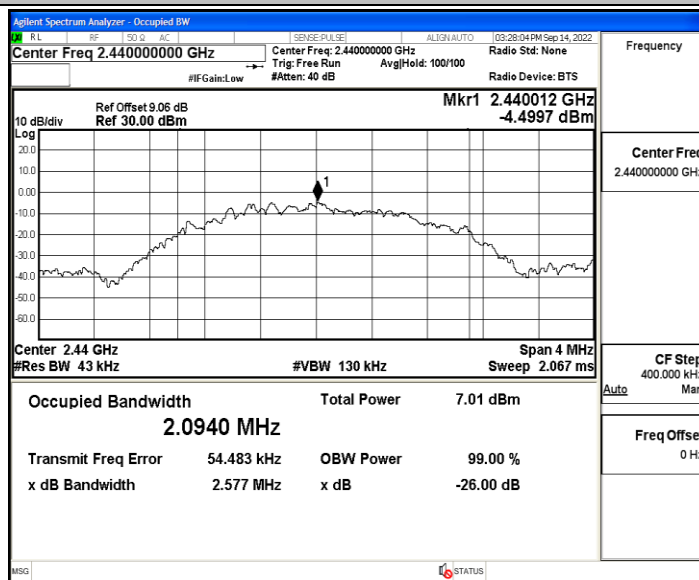
BLE_1M_Ant0_2480



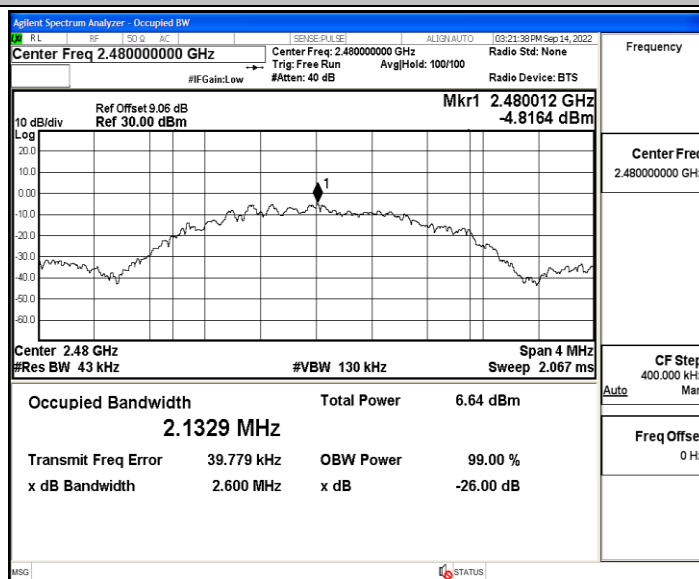
BLE_2M_Ant0_2402



BLE_2M_Ant0_2440



BLE_2M_Ant0_2480



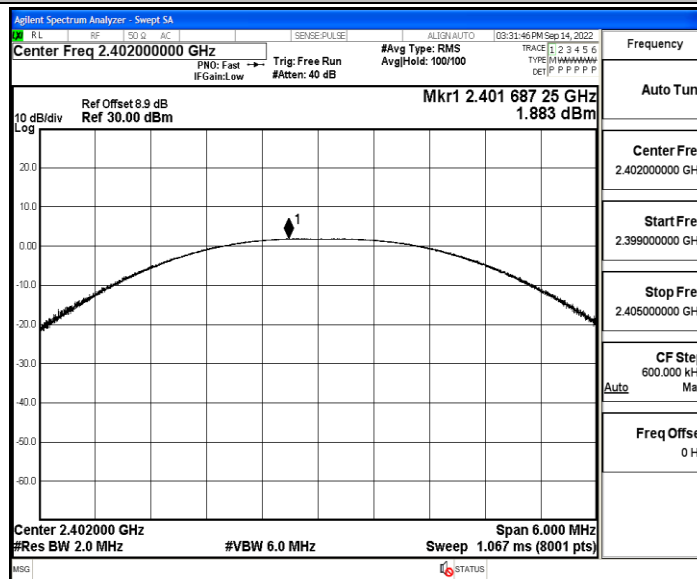
Appendix C: Maximum Peak conducted output power

Test Result

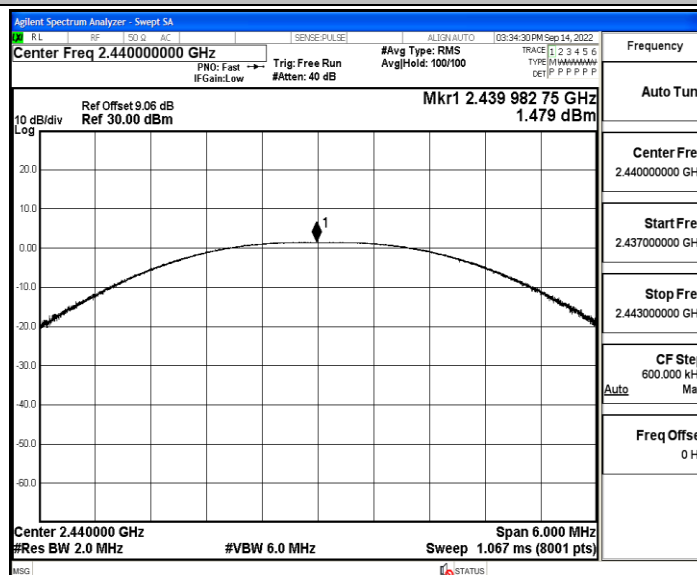
TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant0	2402	1.88	≤30	PASS
		2440	1.48	≤30	PASS
		2480	1.24	≤30	PASS
BLE_2M	Ant0	2402	1.9	≤30	PASS
		2440	1.54	≤30	PASS
		2480	1.18	≤30	PASS

Test Graphs

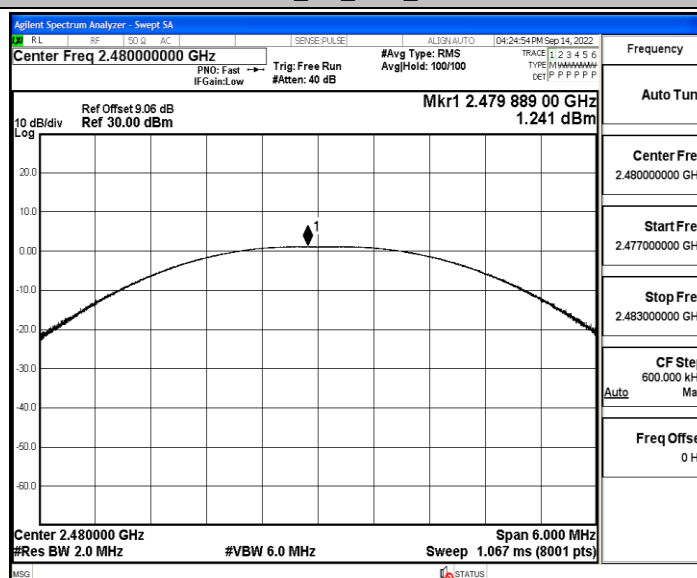
BLE_1M_Ant0_2402



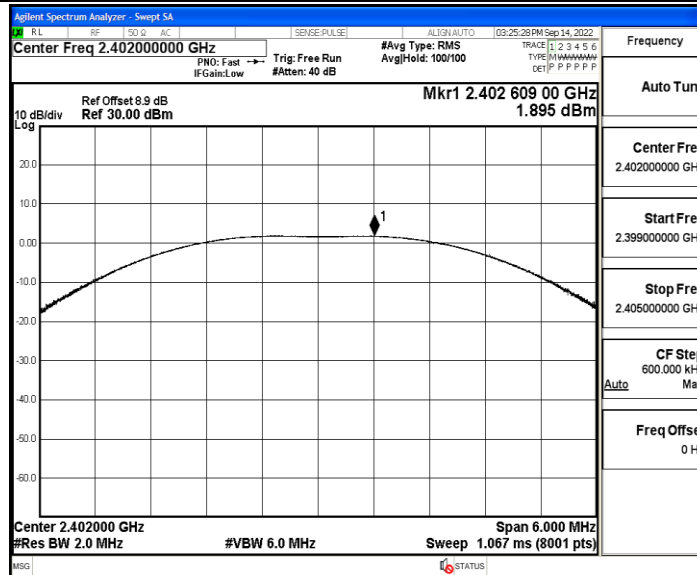
BLE_1M_Ant0_2440



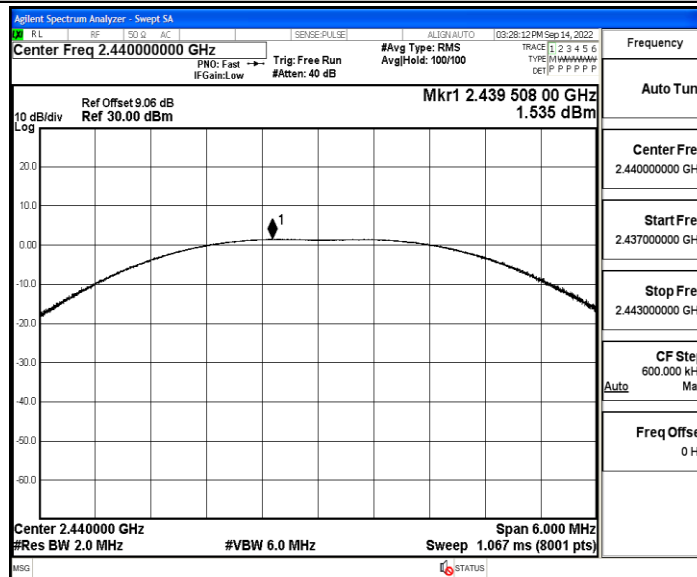
BLE_1M_Ant0_2480



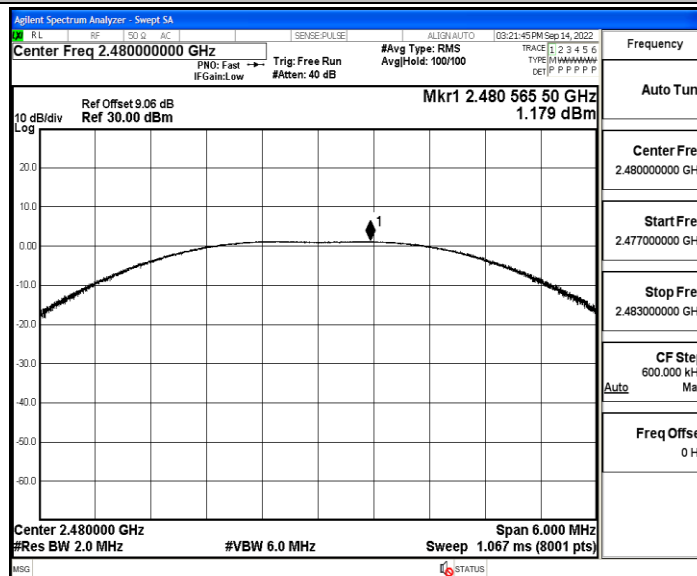
BLE_2M_Ant0_2402



BLE_2M_Ant0_2440



BLE_2M_Ant0_2480



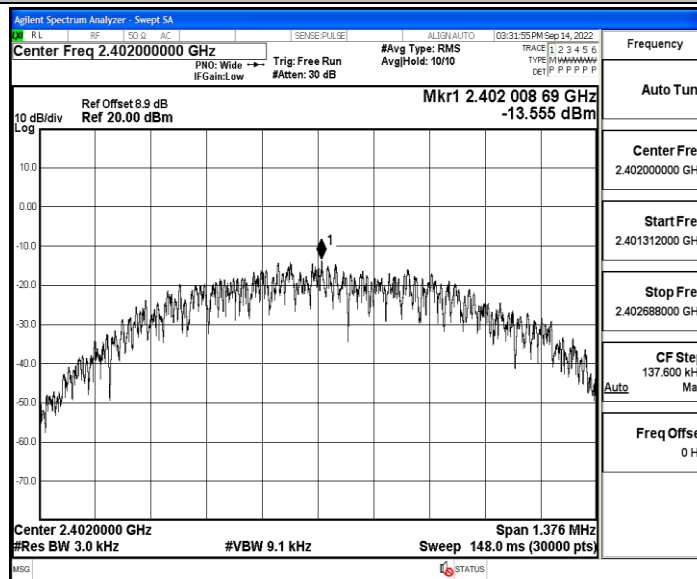
Appendix D: Maximum power spectral density

Test Result

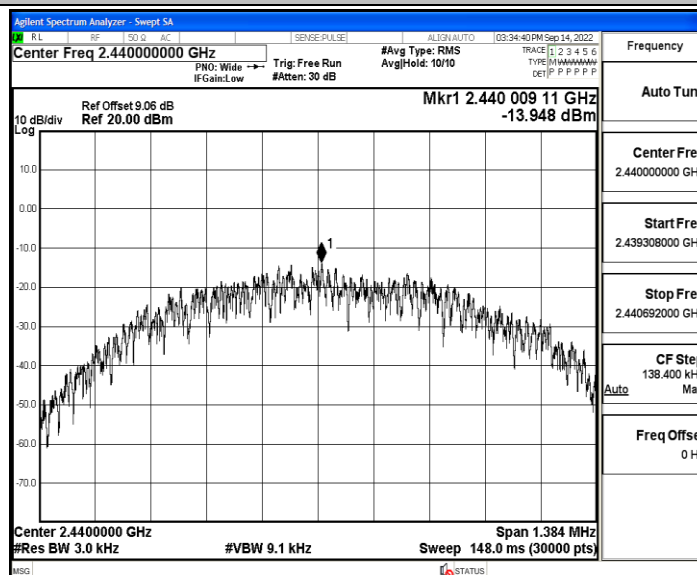
TestMode	Antenna	Channel	Result[dBm/3-100kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant0	2402	-13.56	≤8.00	PASS
		2440	-13.95	≤8.00	PASS
		2480	-14.39	≤8.00	PASS
BLE_2M	Ant0	2402	-15.95	≤8.00	PASS
		2440	-16.36	≤8.00	PASS
		2480	-16.85	≤8.00	PASS

Test Graphs

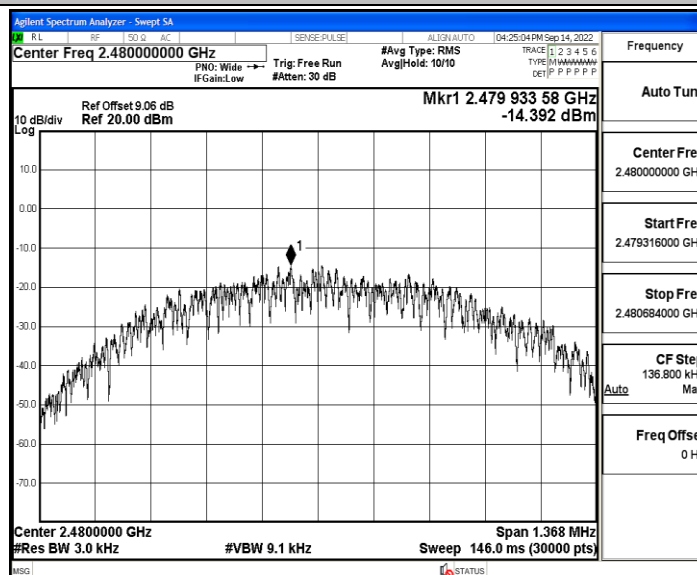
BLE_1M_Ant0_2402



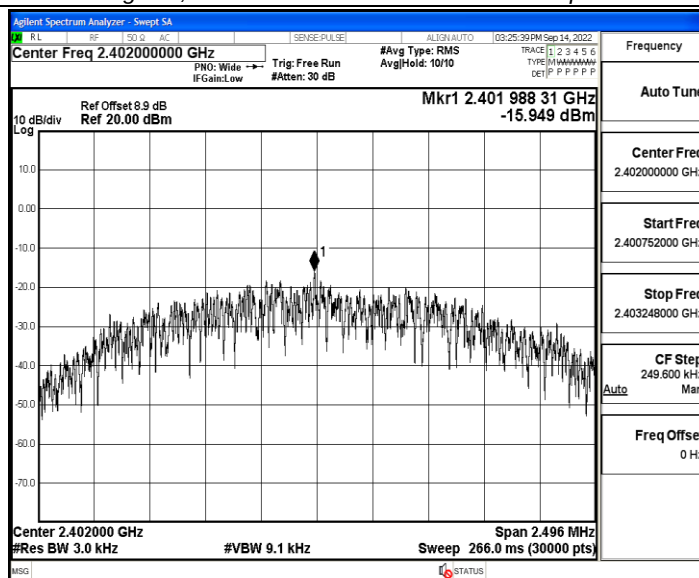
BLE_1M_Ant0_2440



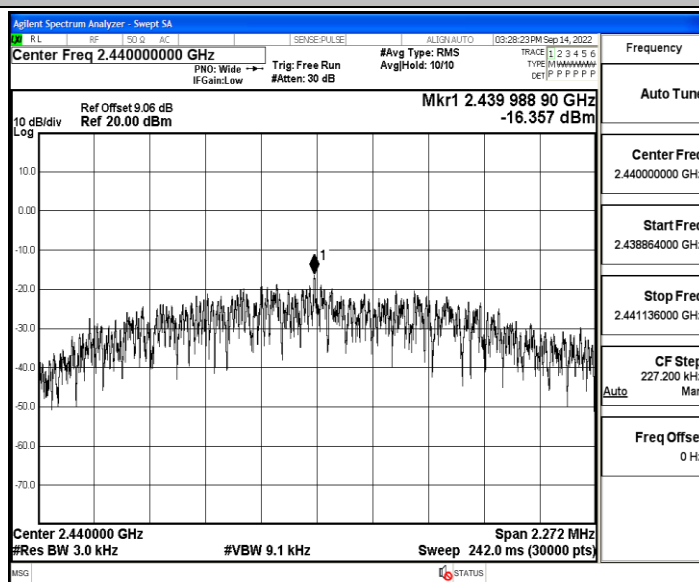
BLE_1M_Ant0_2480



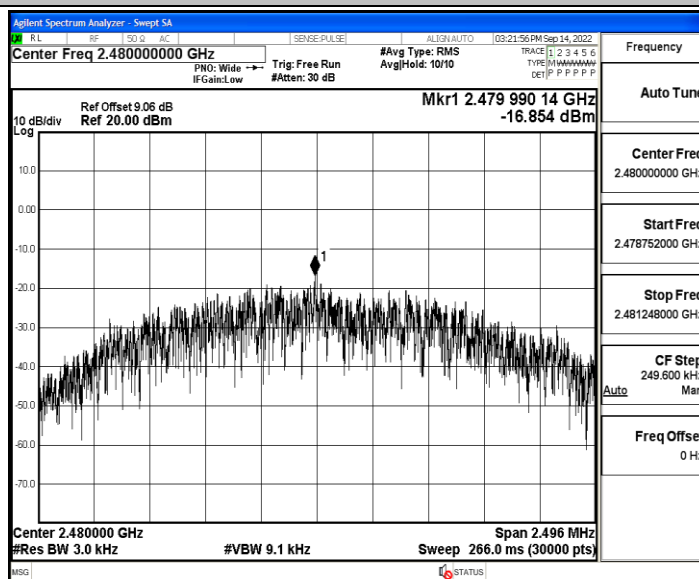
BLE_2M_Ant0_2402



BLE_2M_Ant0_2440



BLE_2M_Ant0_2480



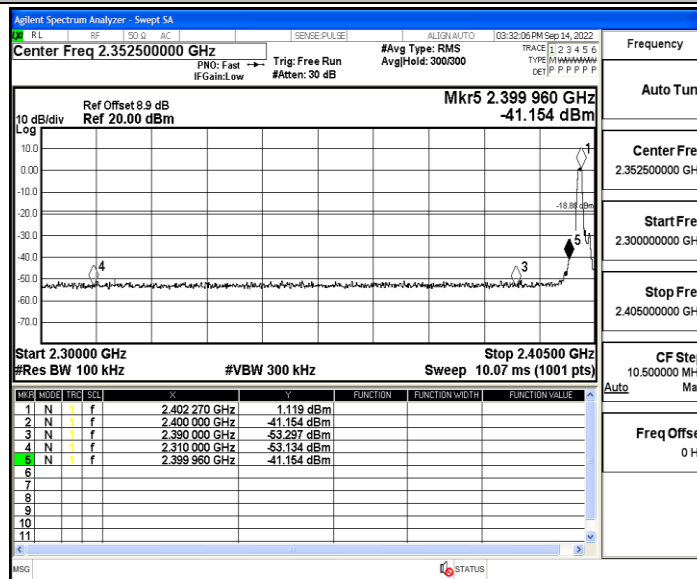
Appendix E: Band edge measurements

Test Result

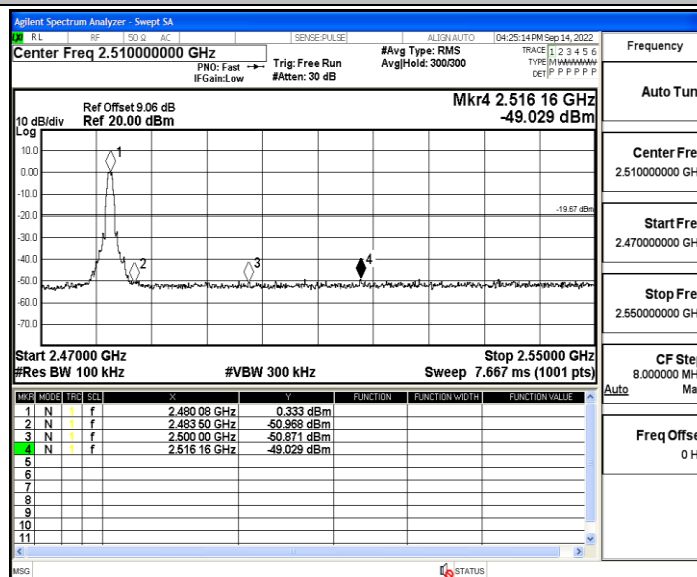
TestMode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant0	Low	2402	1.12	-41.15	≤-18.88	PASS
		High	2480	0.33	-49.03	≤-19.67	PASS
BLE_2M	Ant0	Low	2402	-1.29	-31.18	≤-21.29	PASS
		High	2480	-1.62	-49	≤-21.62	PASS

Test Graphs

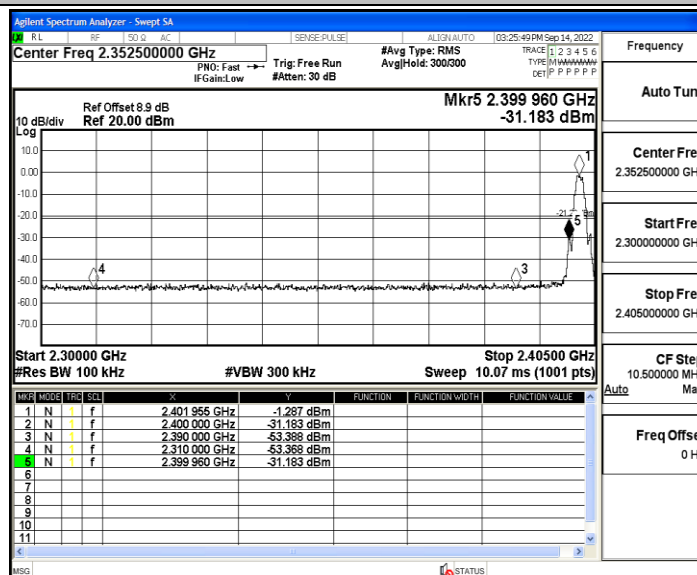
BLE_1M_Ant0_Low_2402



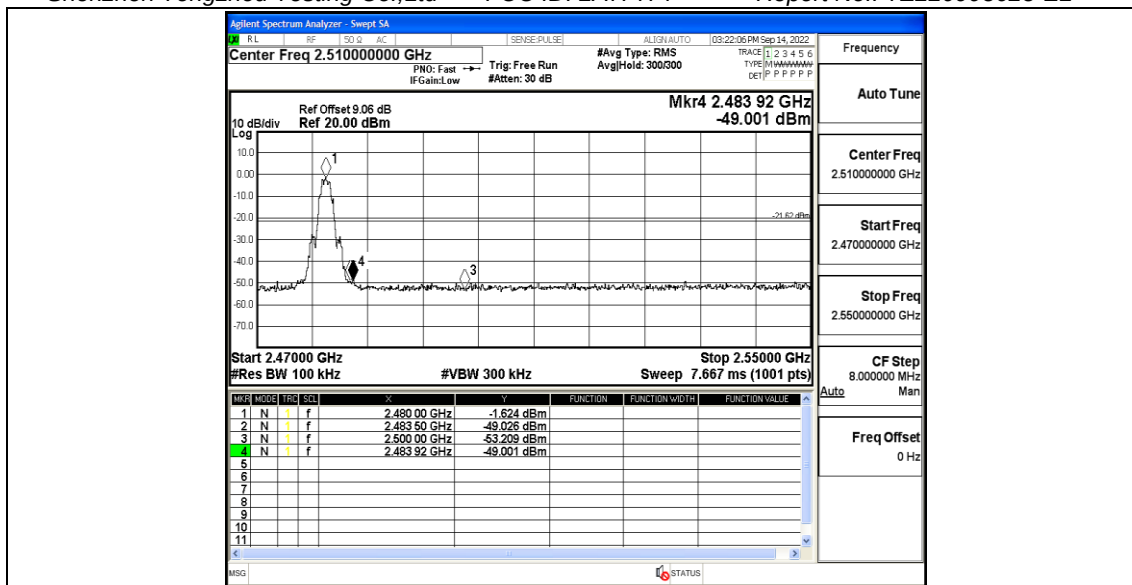
BLE_1M_Ant0_High_2480



BLE_2M_Ant0_Low_2402



BLE_2M_Ant0_High_2480



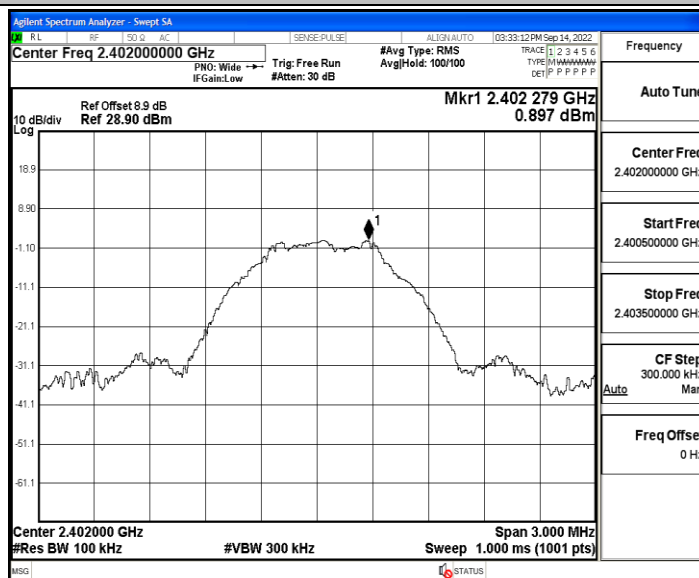
Appendix F: Conducted Spurious Emission

Test Result

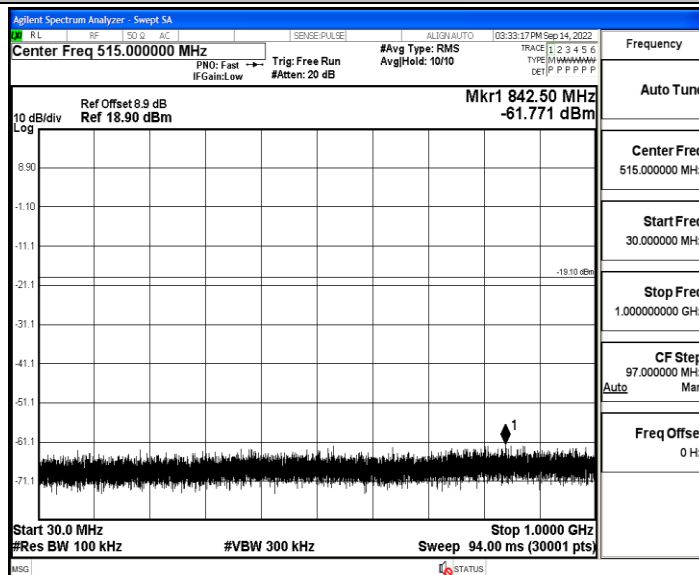
TestMode	Antenna	Channel	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant0	2402	Reference	0.90	0.90	---	PASS
			30~1000	0.90	-61.77	≤-19.1	PASS
			1000~26500	0.90	-45.21	≤-19.1	PASS
		2440	Reference	0.51	0.51	---	PASS
			30~1000	0.51	-61.35	≤-19.49	PASS
			1000~26500	0.51	-46.23	≤-19.49	PASS
		2480	Reference	0.14	0.14	---	PASS
			30~1000	0.14	-61.23	≤-19.86	PASS
			1000~26500	0.14	-45.23	≤-19.86	PASS
BLE_2M	Ant0	2402	Reference	0.30	0.30	---	PASS
			30~1000	0.30	-61.42	≤-19.7	PASS
			1000~26500	0.30	-49.59	≤-19.7	PASS
		2440	Reference	-0.08	-0.08	---	PASS
			30~1000	-0.08	-61.48	≤-20.08	PASS
			1000~26500	-0.08	-48.6	≤-20.08	PASS
		2480	Reference	-0.72	-0.72	---	PASS
			30~1000	-0.72	-61	≤-20.72	PASS
			1000~26500	-0.72	-50.64	≤-20.72	PASS

Test Graphs

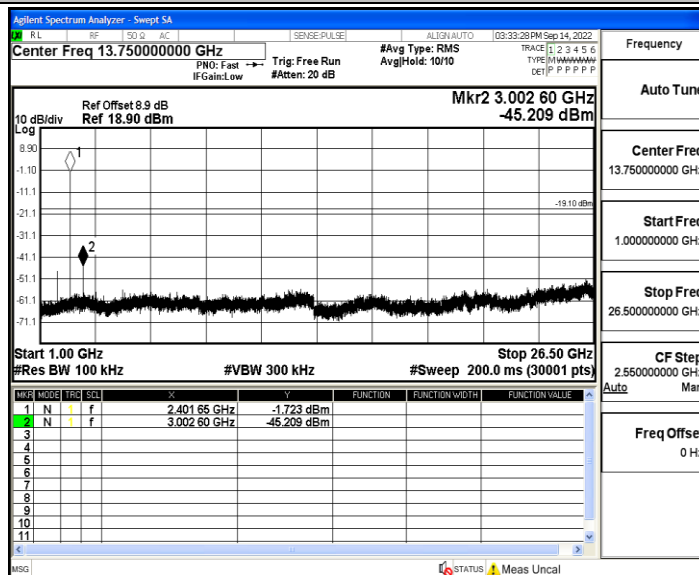
BLE_1M_Ant0_2402_0~Reference



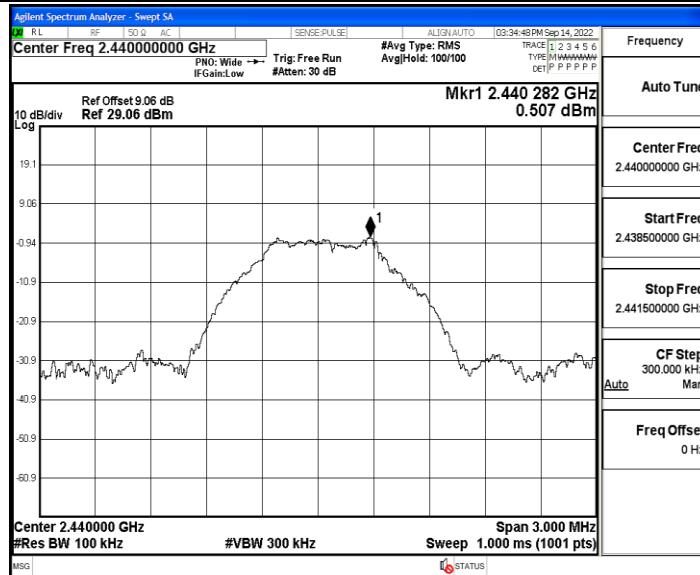
BLE_1M_Ant0_2402_30~1000



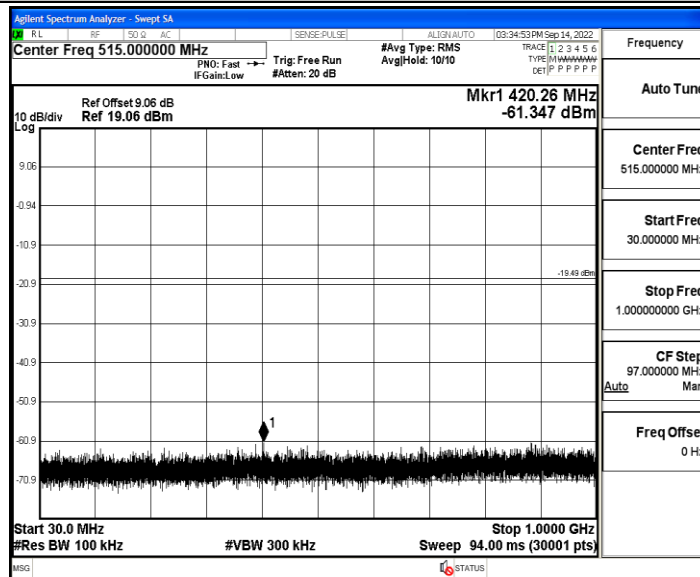
BLE_1M_Ant0_2402_1000~26500



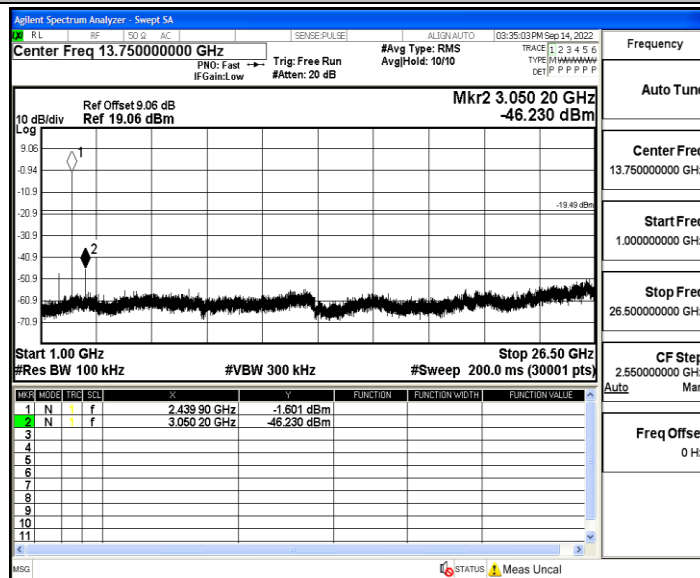
BLE_1M_Ant0_2440_0~Reference



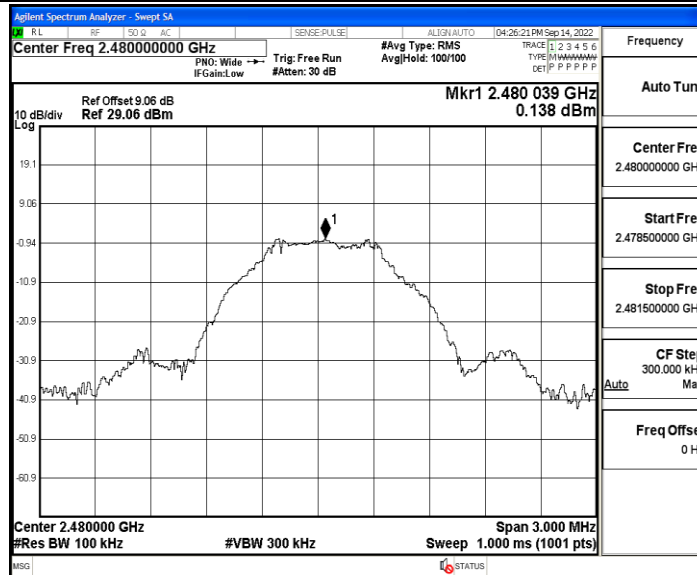
BLE_1M_Ant0_2440_30~1000



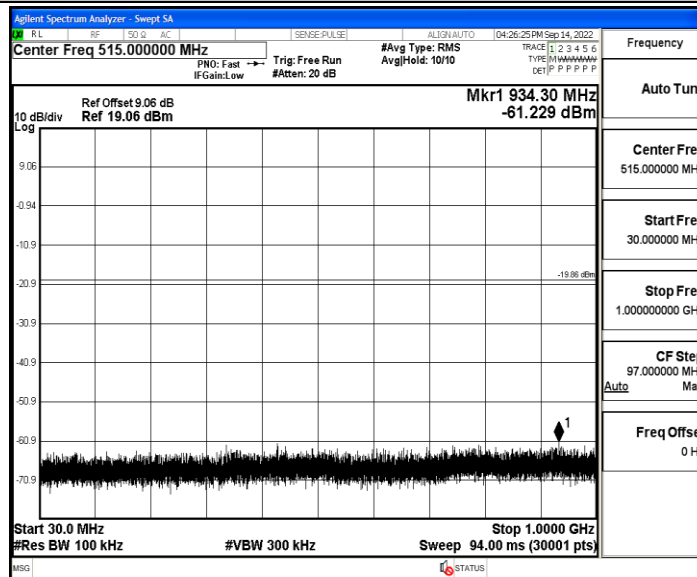
BLE_1M_Ant0_2440_1000~26500



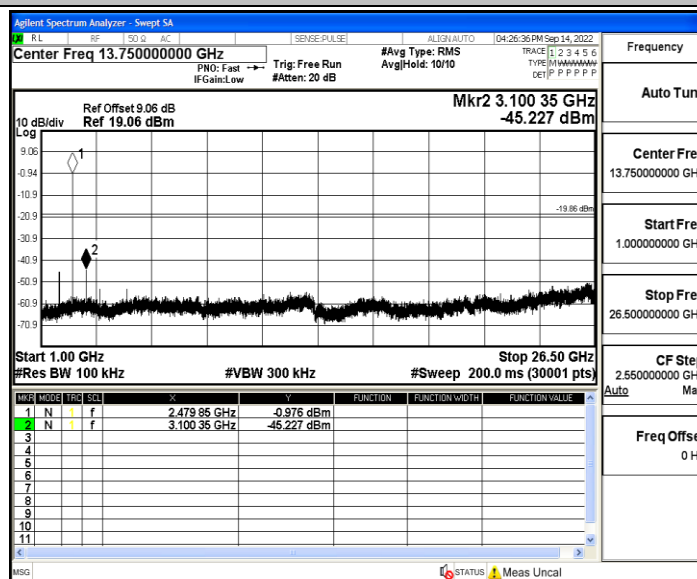
BLE_1M_Ant0_2480_0~Reference



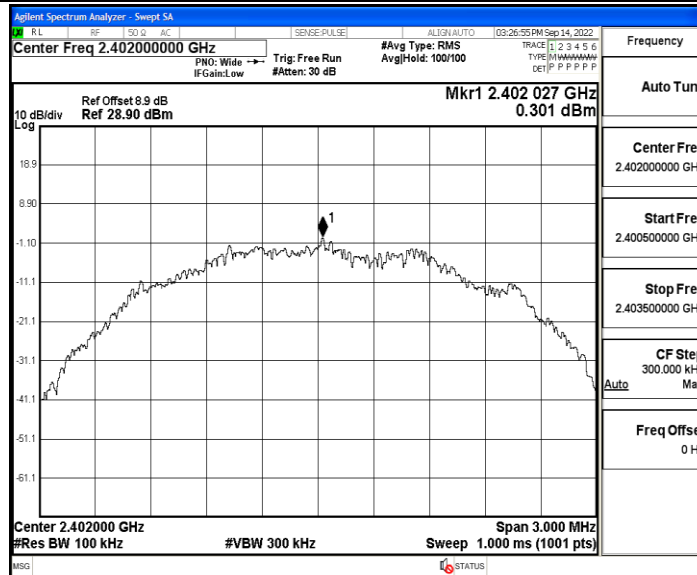
BLE_1M_Ant0_2480_30~1000



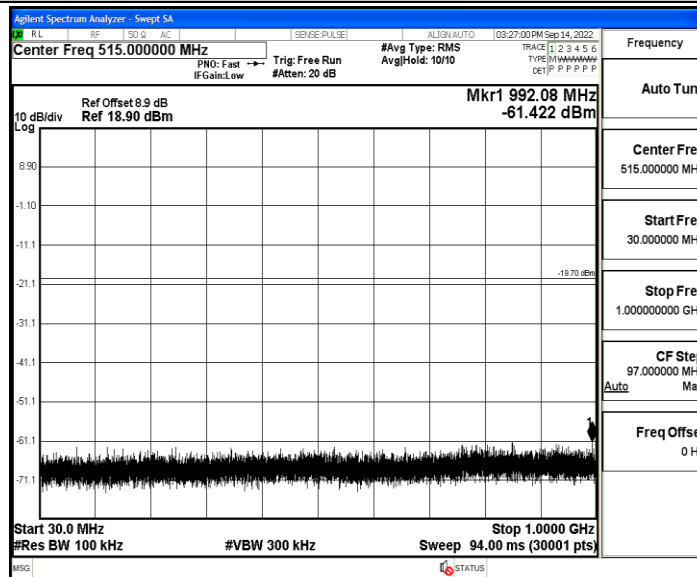
BLE_1M_Ant0_2480_1000~26500



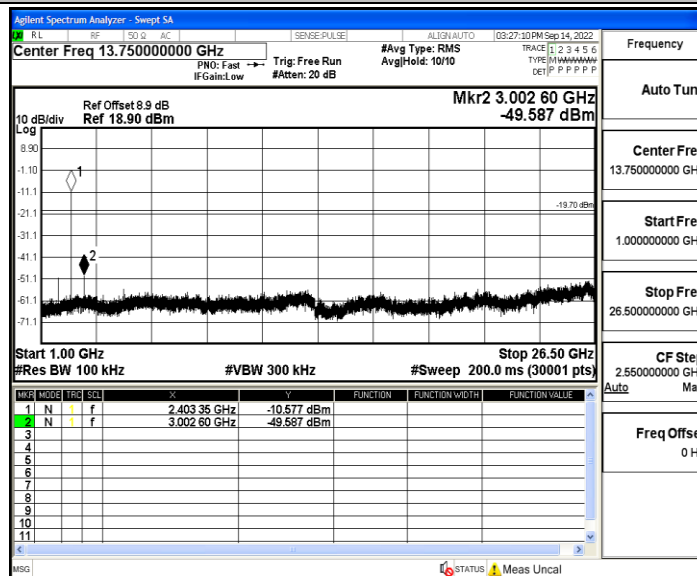
BLE_2M_Ant0_2402_0~Reference



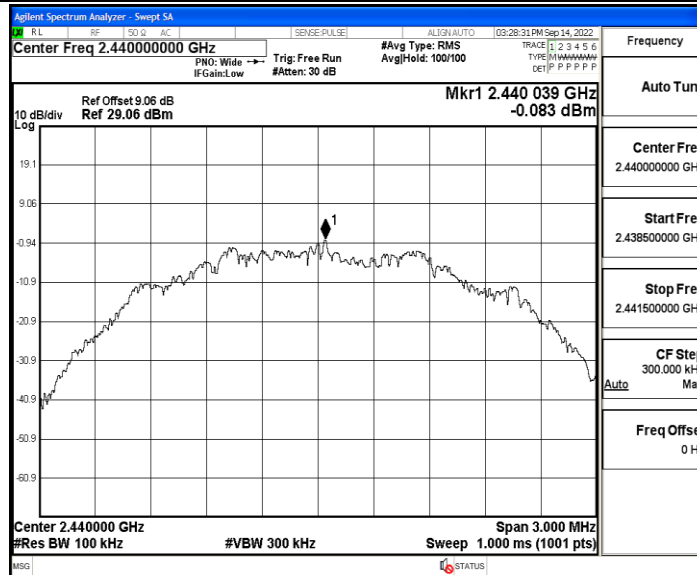
BLE_2M_Ant0_2402_30~1000



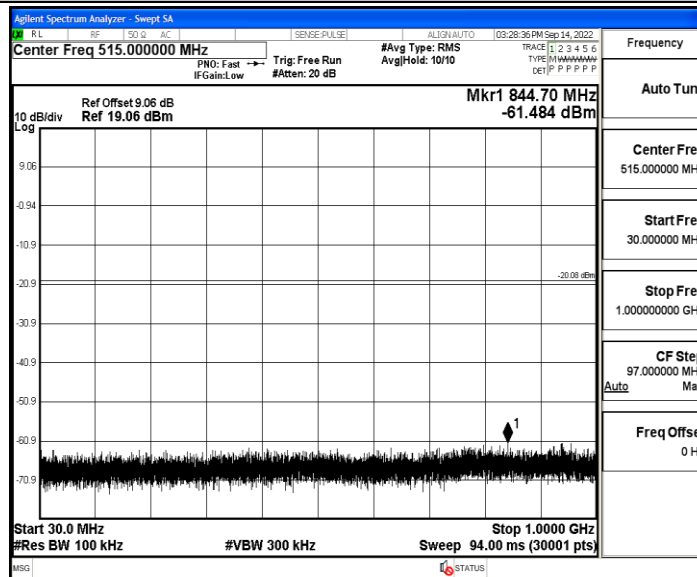
BLE_2M_Ant0_2402_1000~26500



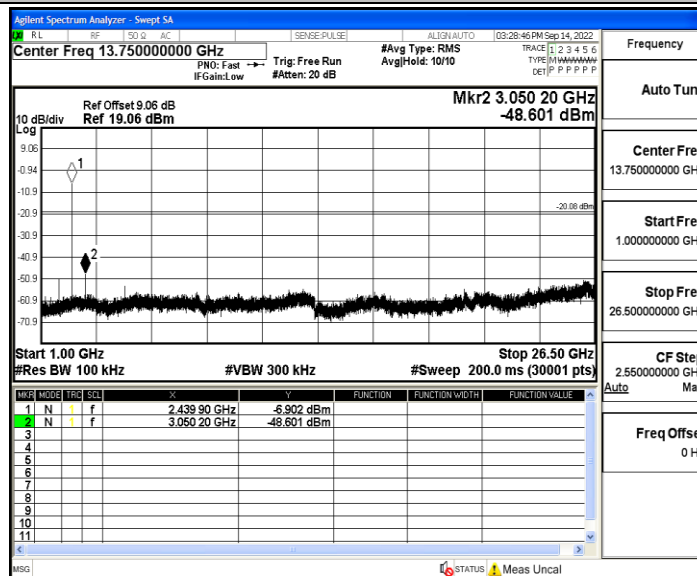
BLE_2M_Ant0_2440_0~Reference



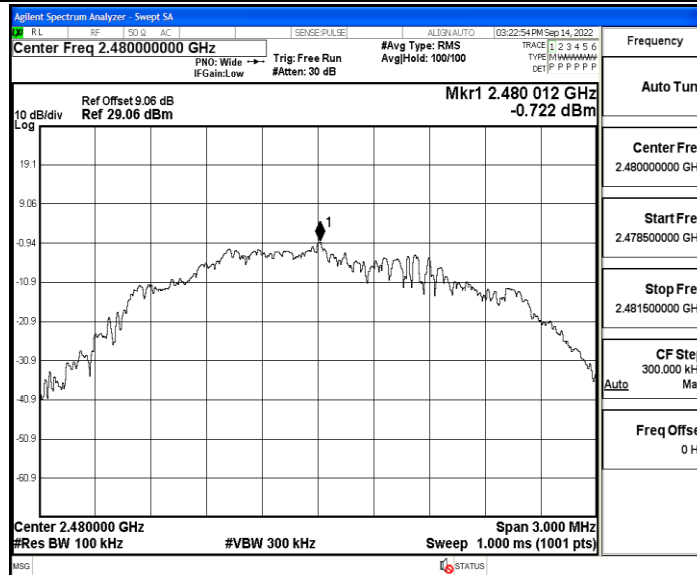
BLE_2M_Ant0_2440_30~1000



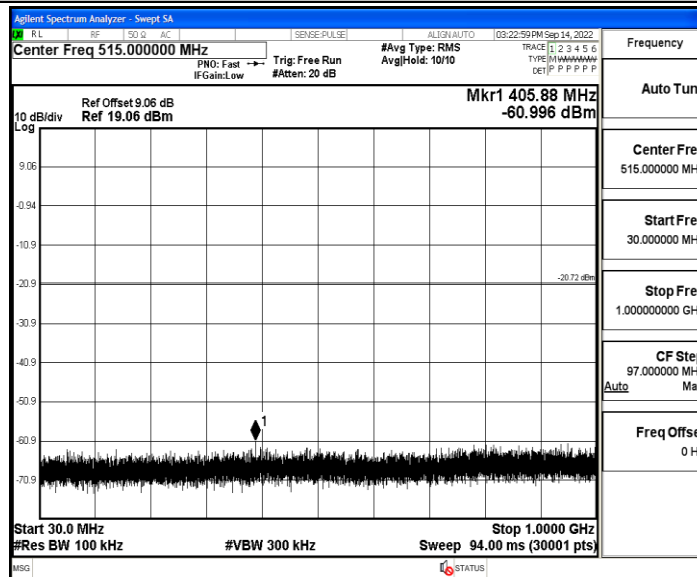
BLE_2M_Ant0_2440_1000~26500



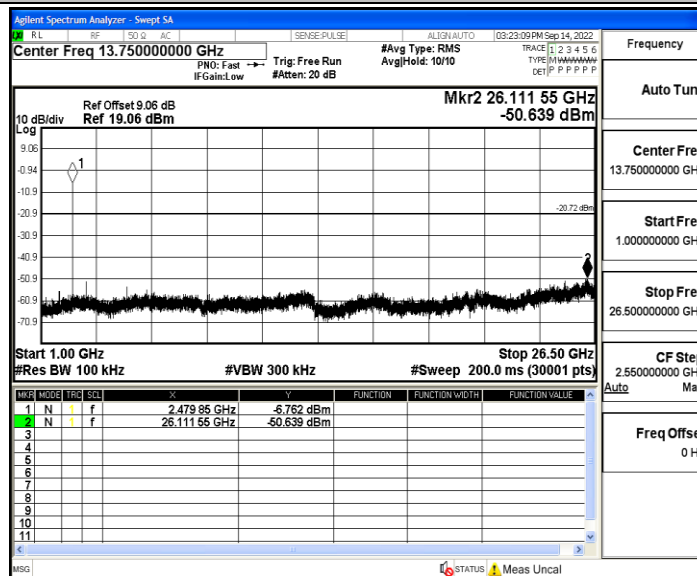
BLE_2M_Ant0_2480_0~Reference



BLE_2M_Ant0_2480_30~1000



BLE_2M_Ant0_2480_1000~26500



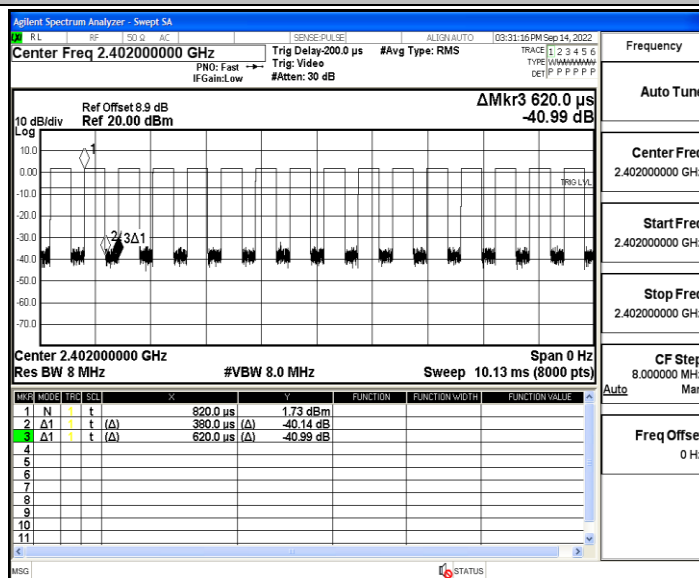
Appendix G: Duty Cycle

Test Result

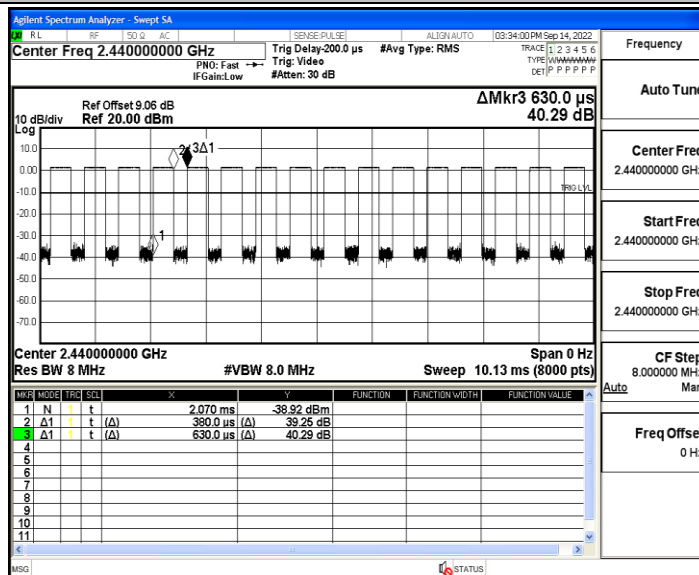
TestMode	Antenna	Channel	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]	1/T[kHz]
BLE_1M	Ant0	2402	0.38	0.62	61.29	2.63
		2440	0.38	0.63	60.32	2.63
		2480	0.38	0.63	60.32	2.63
BLE_2M	Ant0	2402	0.19	0.63	30.16	5.26
		2440	0.19	0.62	30.65	5.26
		2480	0.19	0.62	30.65	5.26

Test Graphs

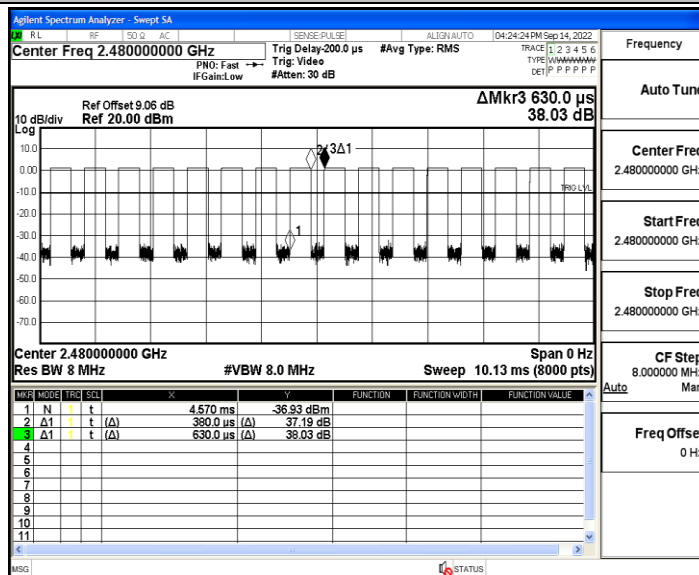
BLE_1M_Ant0_2402



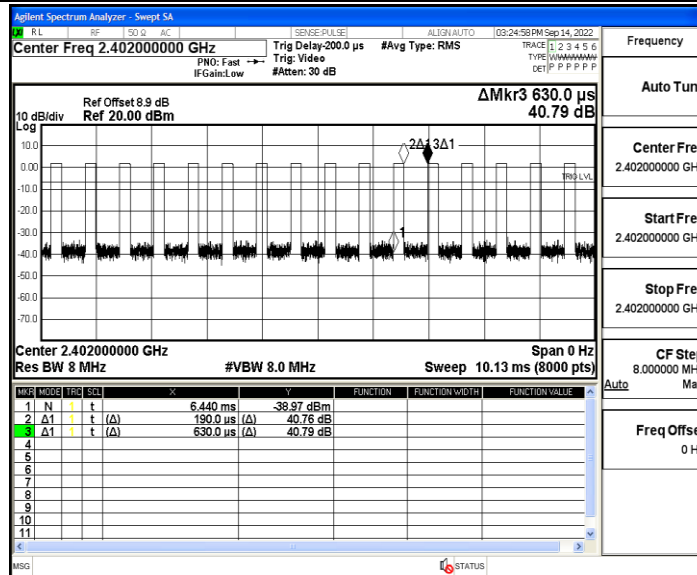
BLE_1M_Ant0_2440



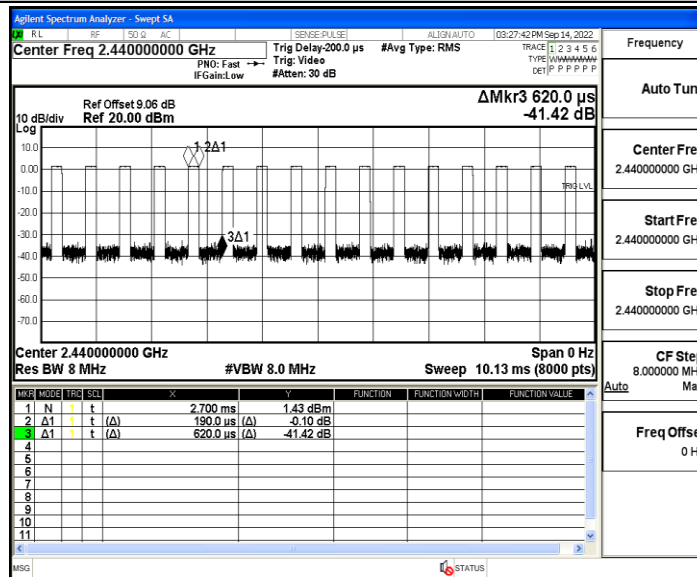
BLE_1M_Ant0_2480



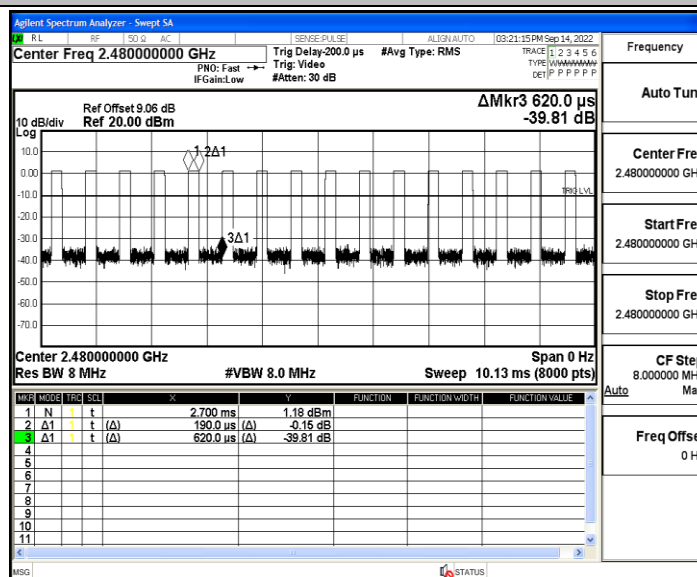
BLE_2M_Ant0_2402



BLE_2M_Ant0_2440



BLE_2M_Ant0_2480



Appendix H: Emissions in Restricted Bands

Test Result

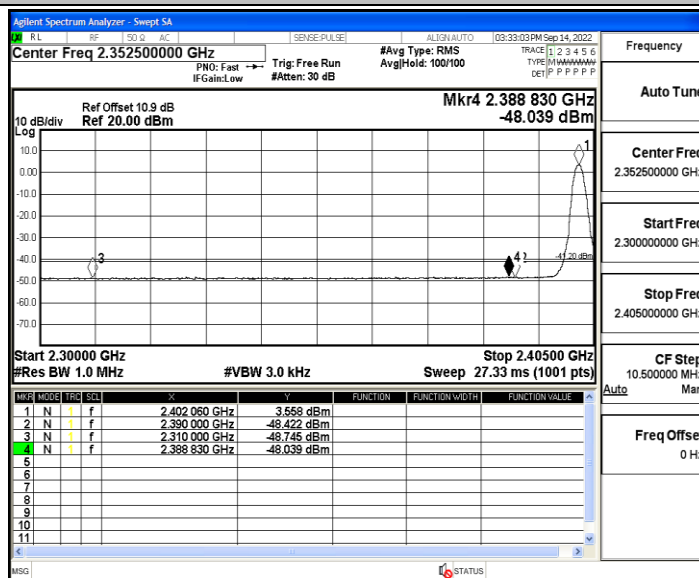
TestMode	Antenna	ChName	Channel	Detector	Freq. [MHz]	Result [dBm]	Limit [dBm]	Verdict
BLE_1M	Ant0	Low	2402	AV	2310.000	-48.75	≤-41.20	PASS
				AV	2388.830	-48.04	≤-41.20	PASS
				AV	2390.000	-48.42	≤-41.20	PASS
				Peak	2310.000	-42.6	≤-21.20	PASS
				Peak	2342.840	-39.57	≤-21.20	PASS
				Peak	2390.000	-41.72	≤-21.20	PASS
		High	2480	AV	2483.500	-45.82	≤-41.20	PASS
				AV	2483.520	-45.82	≤-41.20	PASS
				AV	2500.000	-47.92	≤-41.20	PASS
				Peak	2483.500	-40.51	≤-21.20	PASS
				Peak	2483.760	-38.86	≤-21.20	PASS
				Peak	2500.000	-41.89	≤-21.20	PASS
BLE_2M	Ant0	Low	2402	AV	2310.000	-48.42	≤-41.20	PASS
				AV	2384.210	-47.25	≤-41.20	PASS
				AV	2390.000	-48.03	≤-41.20	PASS
				Peak	2310.000	-42.46	≤-21.20	PASS
				Peak	2380.010	-39.23	≤-21.20	PASS
				Peak	2390.000	-41.51	≤-21.20	PASS
		High	2480	AV	2483.500	-42.5	≤-41.20	PASS
				AV	2483.520	-42.5	≤-41.20	PASS
				AV	2500.000	-57.56	≤-41.20	PASS
				Peak	2483.500	-36.59	≤-21.20	PASS
				Peak	2483.600	-36.35	≤-21.20	PASS
				Peak	2500.000	-51.62	≤-21.20	PASS

Note:

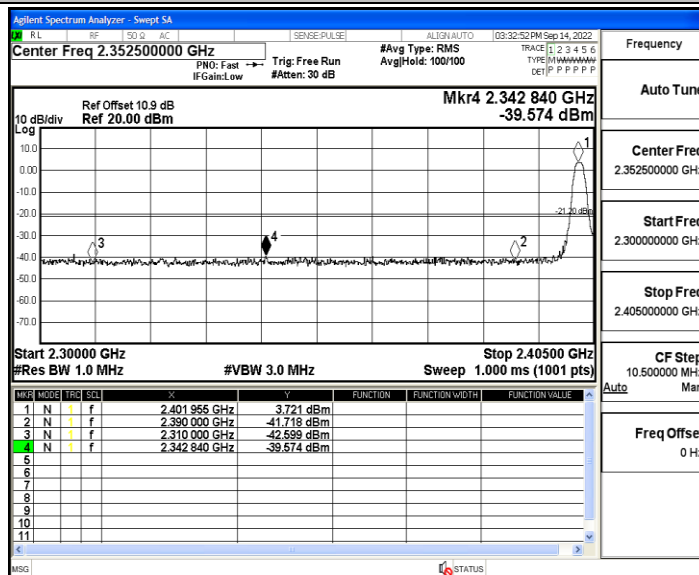
1. The Antenna Gain is compensated in the graph with 2dBi and Antenna Gain which is Higher.
2. The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.

Test Graphs

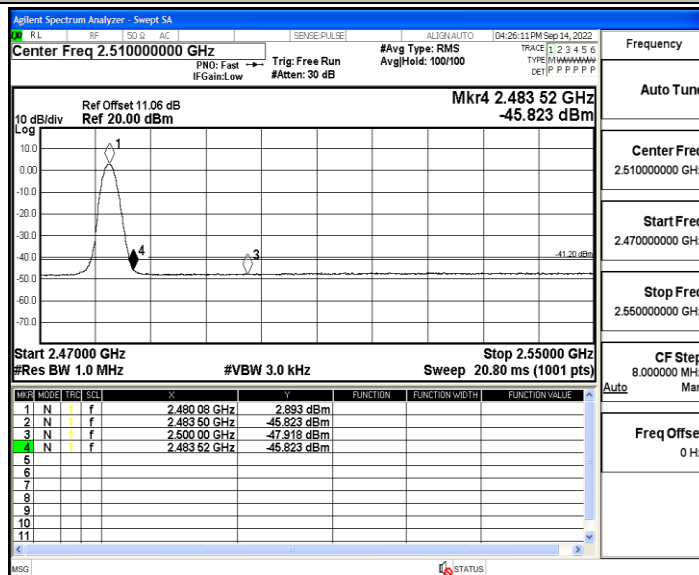
BLE_1M_Ant0_Low_2402_AV



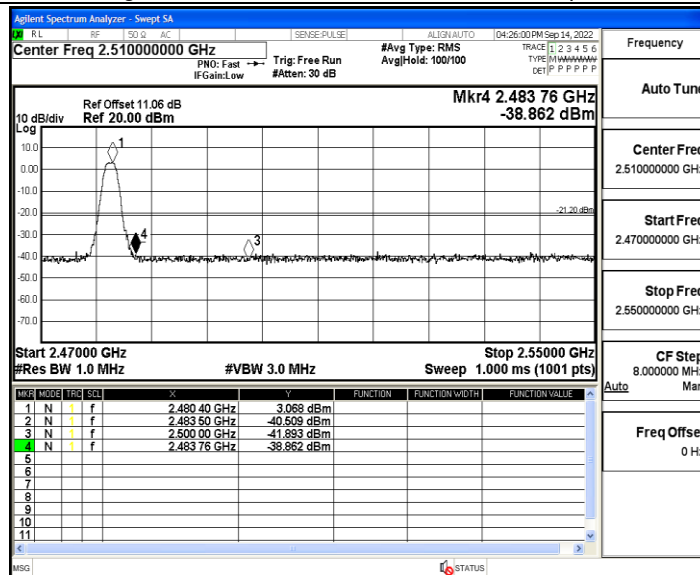
BLE_1M_Ant0_Low_2402_Peak



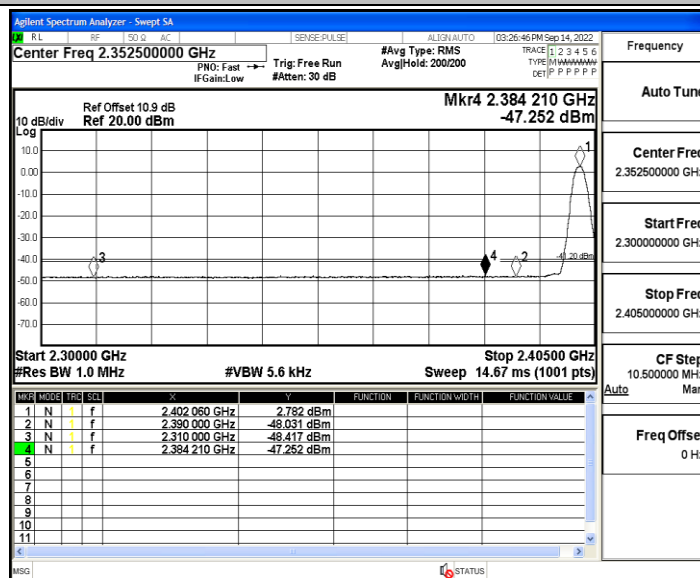
BLE_1M_Ant0_High_2480_AV



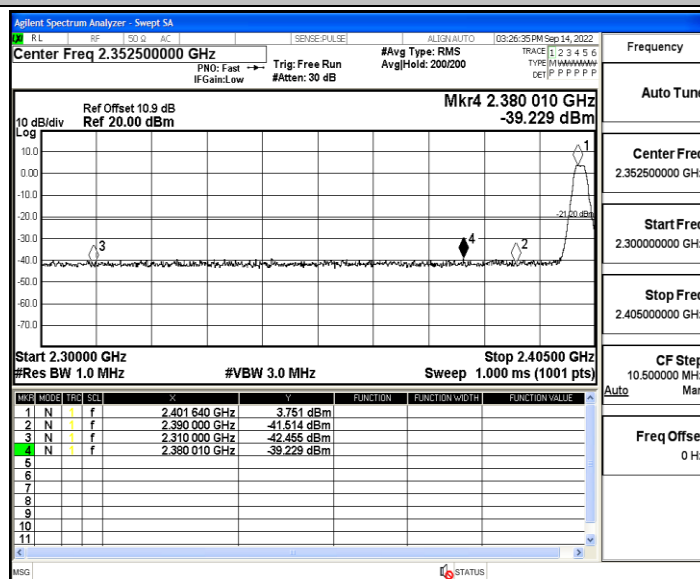
BLE_1M_Ant0_High_2480_Peak



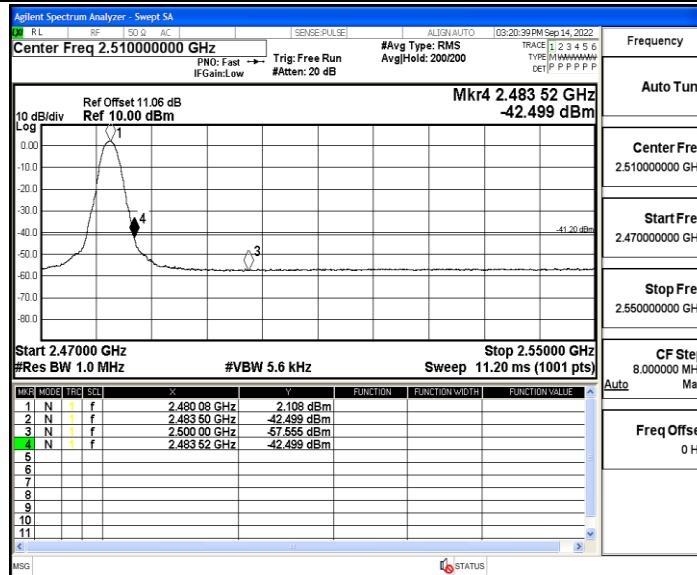
BLE_2M_Ant0_Low_2402_AV



BLE_2M_Ant0_Low_2402_Peak



BLE_2M_Ant0_High_2480_AV



BLE_2M_Ant0_High_2480_Peak

