

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

Product Name: RGBW LED Lights

Trade Mark:  , Winunite

Test Model: ROCK-SUPER

FCC ID: 2A69MROCK-SUPER

Environmental Conditions

Temperature:	24.1℃
Relative Humidity:	57%
ATM Pressure:	100.0 kPa
Test Engineer:	Anna Hu
Supervised by:	Hugo Chen
NOTE	N/A

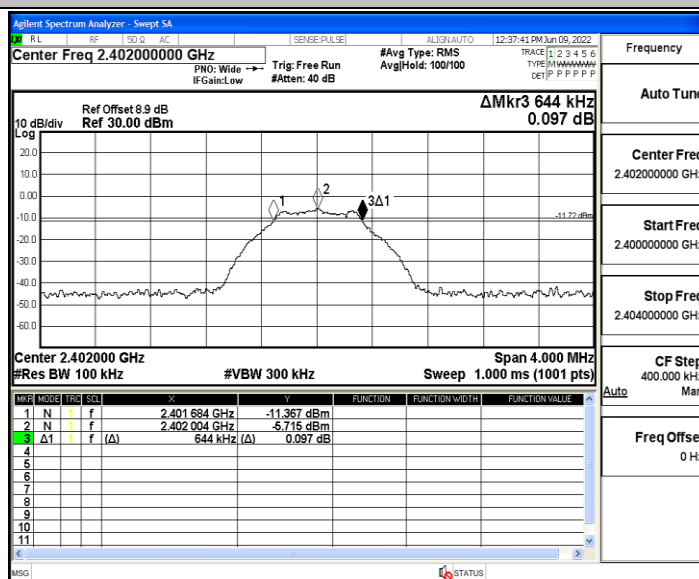
Appendix A: DTS Bandwidth

Test Result

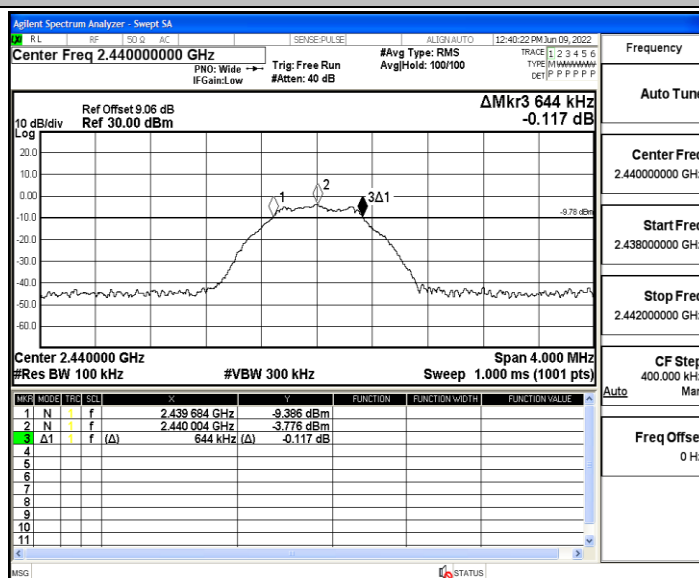
TestMode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.644	2401.684	2402.328	0.5	PASS
		2440	0.644	2439.684	2440.328	0.5	PASS
		2480	0.652	2479.680	2480.332	0.5	PASS
BLE_2M	Ant1	2402	1.204	2401.372	2402.576	0.5	PASS
		2440	1.108	2439.464	2440.572	0.5	PASS
		2480	1.120	2479.452	2480.572	0.5	PASS

Test Graphs

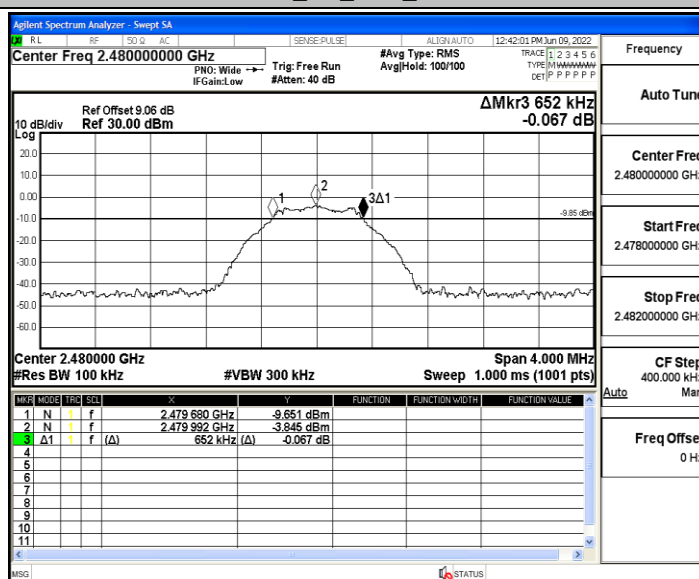
BLE_1M_Ant1_2402



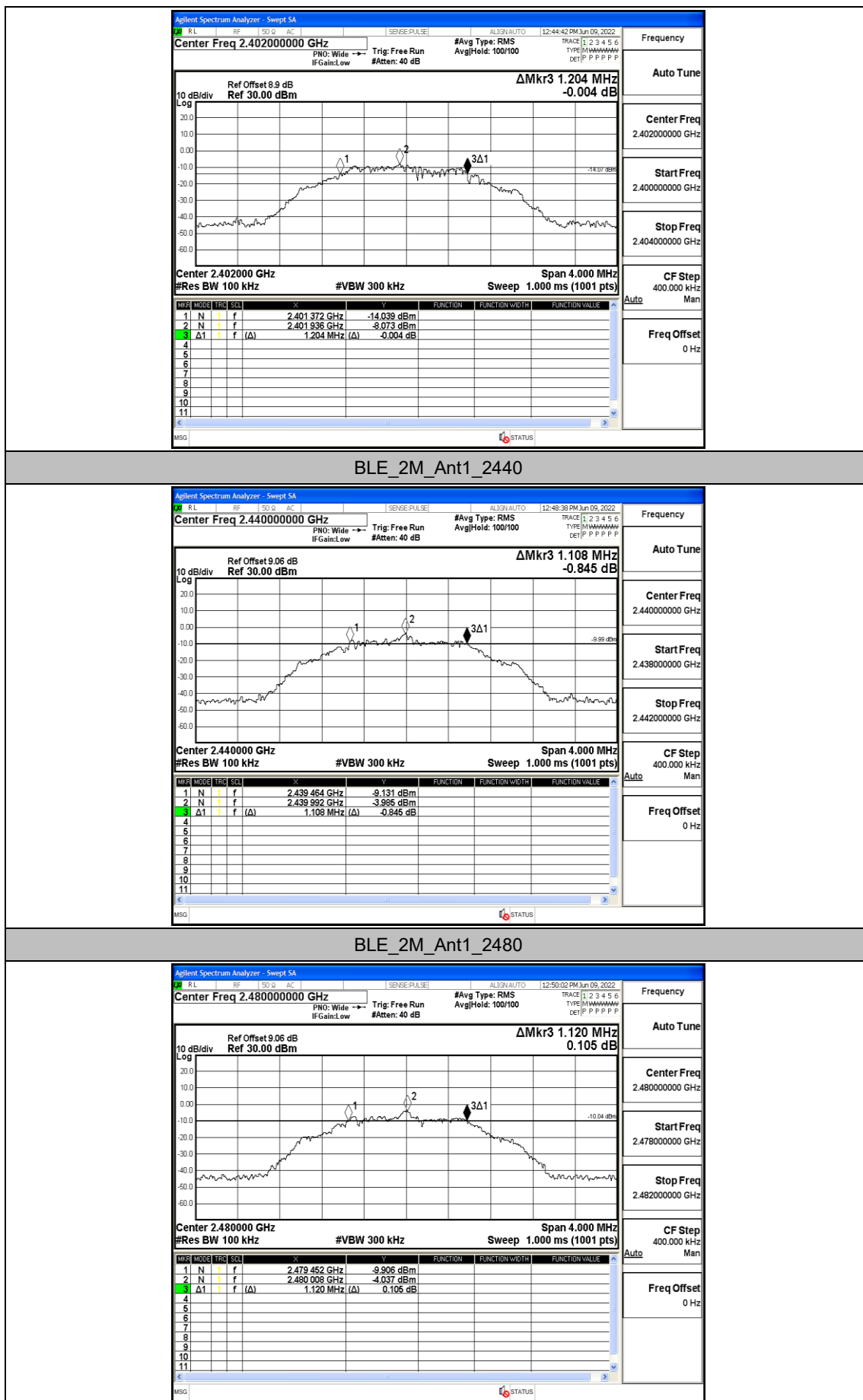
BLE_1M_Ant1_2440



BLE_1M_Ant1_2480



BLE_2M_Ant1_2402

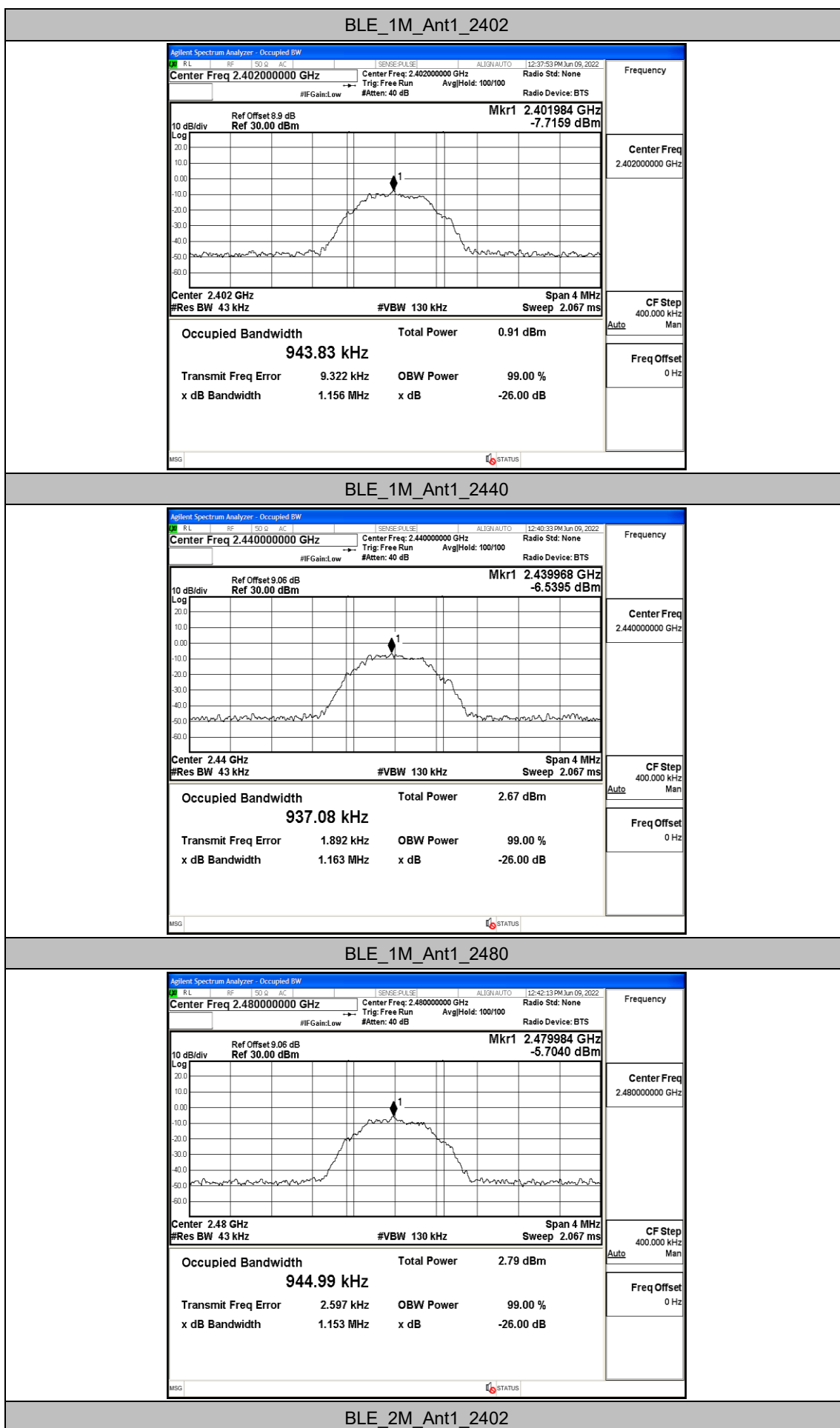


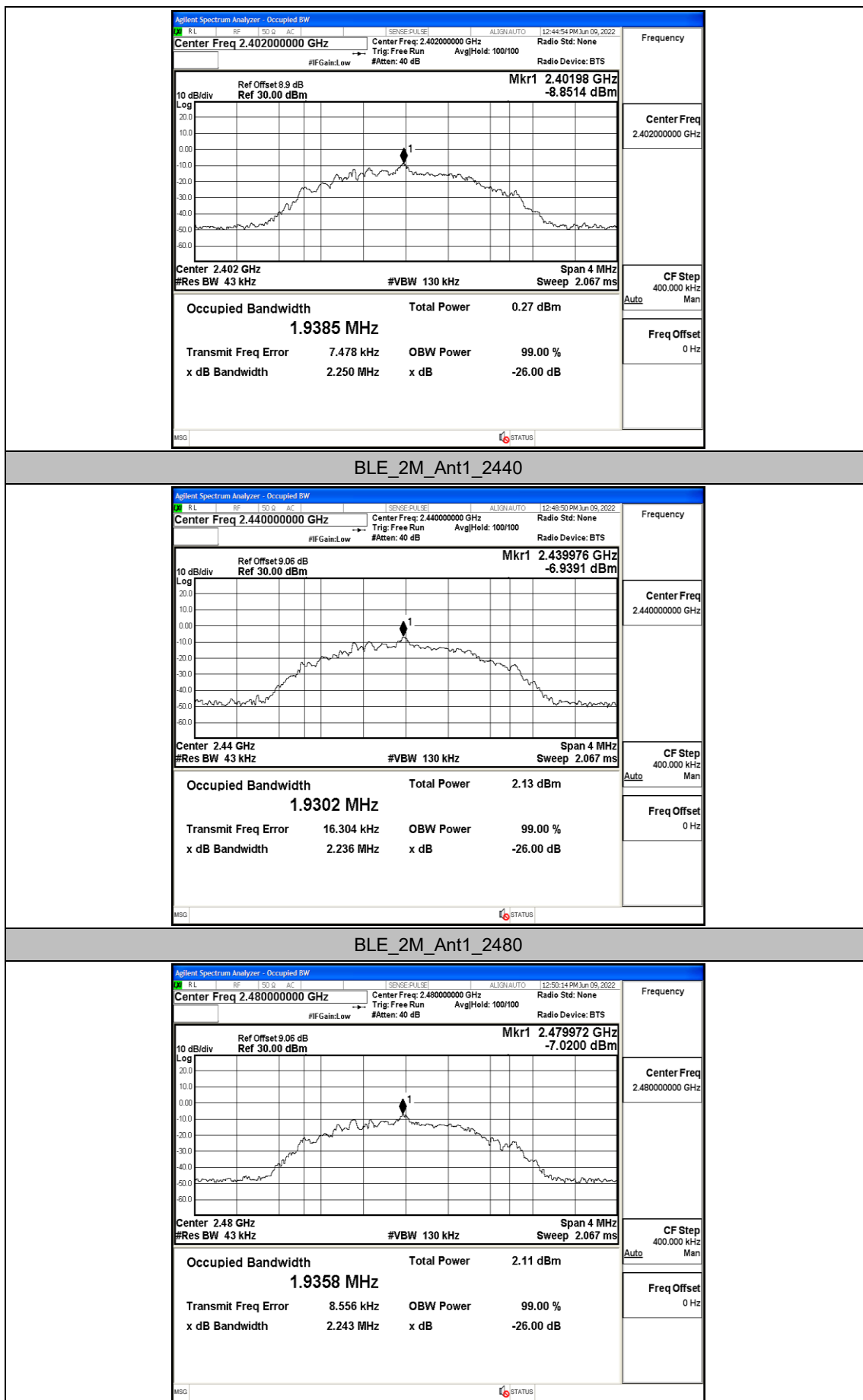
Appendix B: Occupied Channel Bandwidth

Test Result

TestMode	Antenna	Channel	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.94383	2401.537	2402.481	---	---
		2440	0.93708	2439.533	2440.470	---	---
		2480	0.94499	2479.530	2480.475	---	---
BLE_2M	Ant1	2402	1.9385	2401.038	2402.977	---	---
		2440	1.9302	2439.051	2440.981	---	---
		2480	1.9358	2479.041	2480.976	---	---

Test Graphs



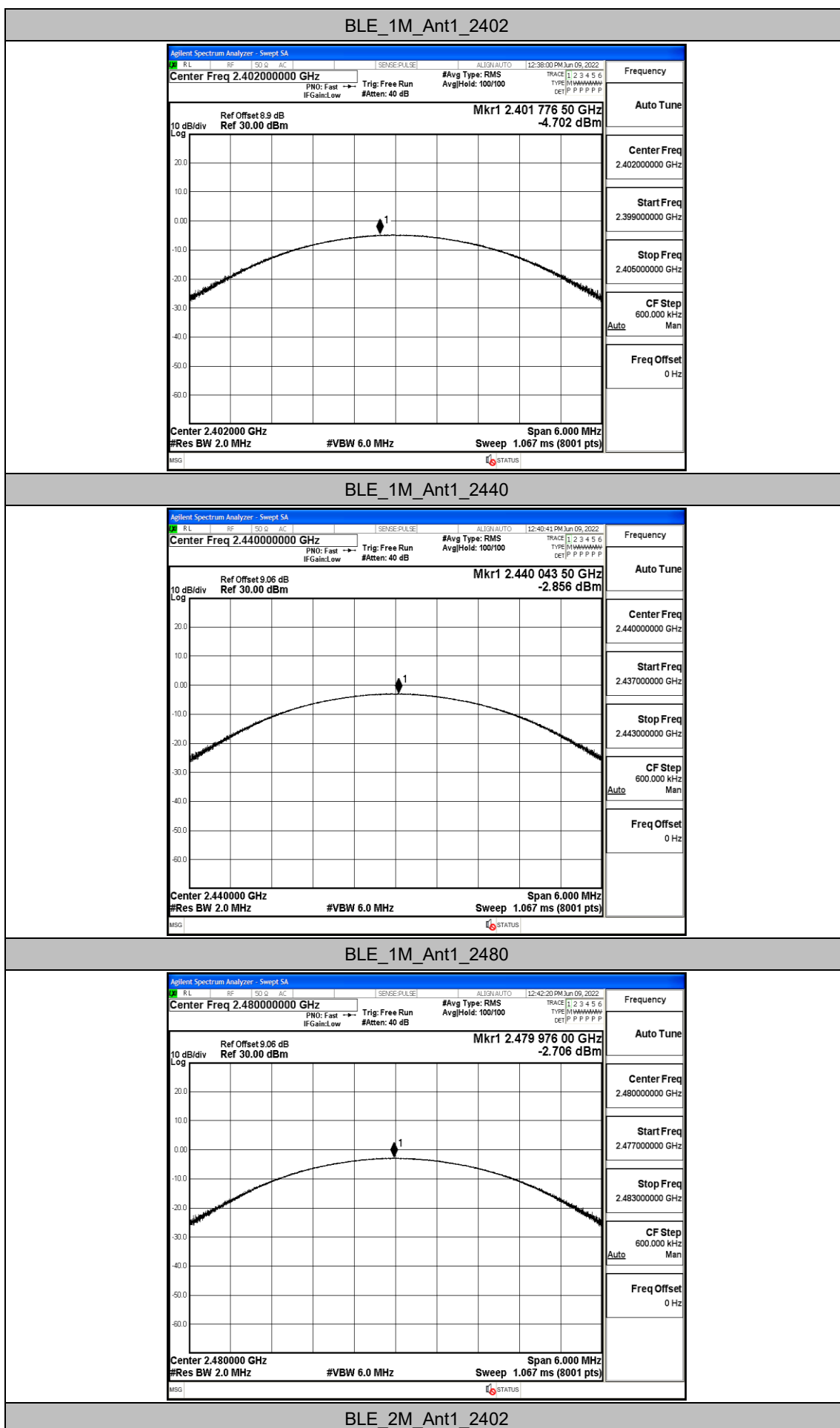


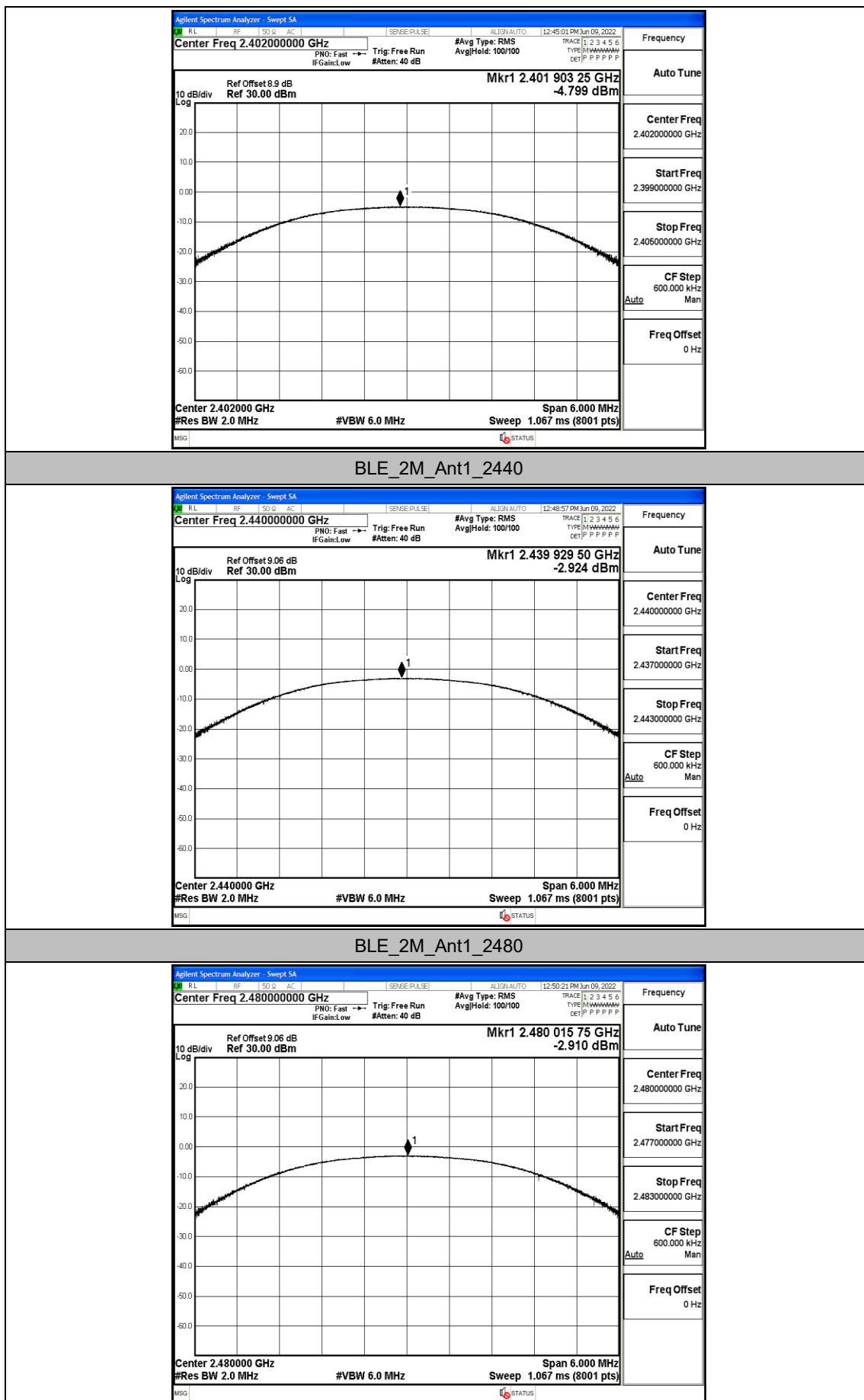
Appendix C: Maximum Peak conducted output power

Test Result

TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	-4.7	≤30	PASS
		2440	-2.86	≤30	PASS
		2480	-2.71	≤30	PASS
BLE_2M	Ant1	2402	-4.8	≤30	PASS
		2440	-2.92	≤30	PASS
		2480	-2.91	≤30	PASS

Test Graphs



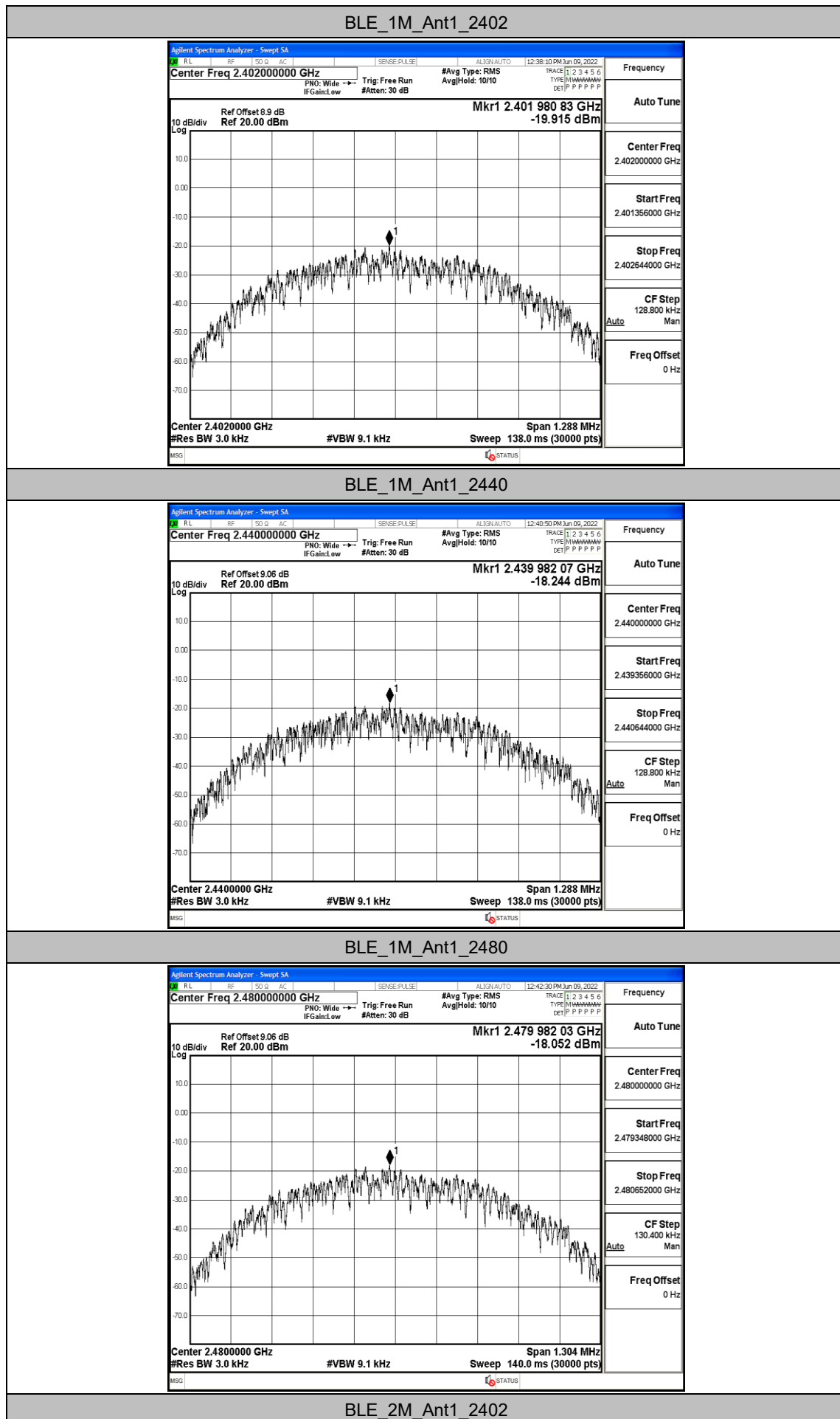


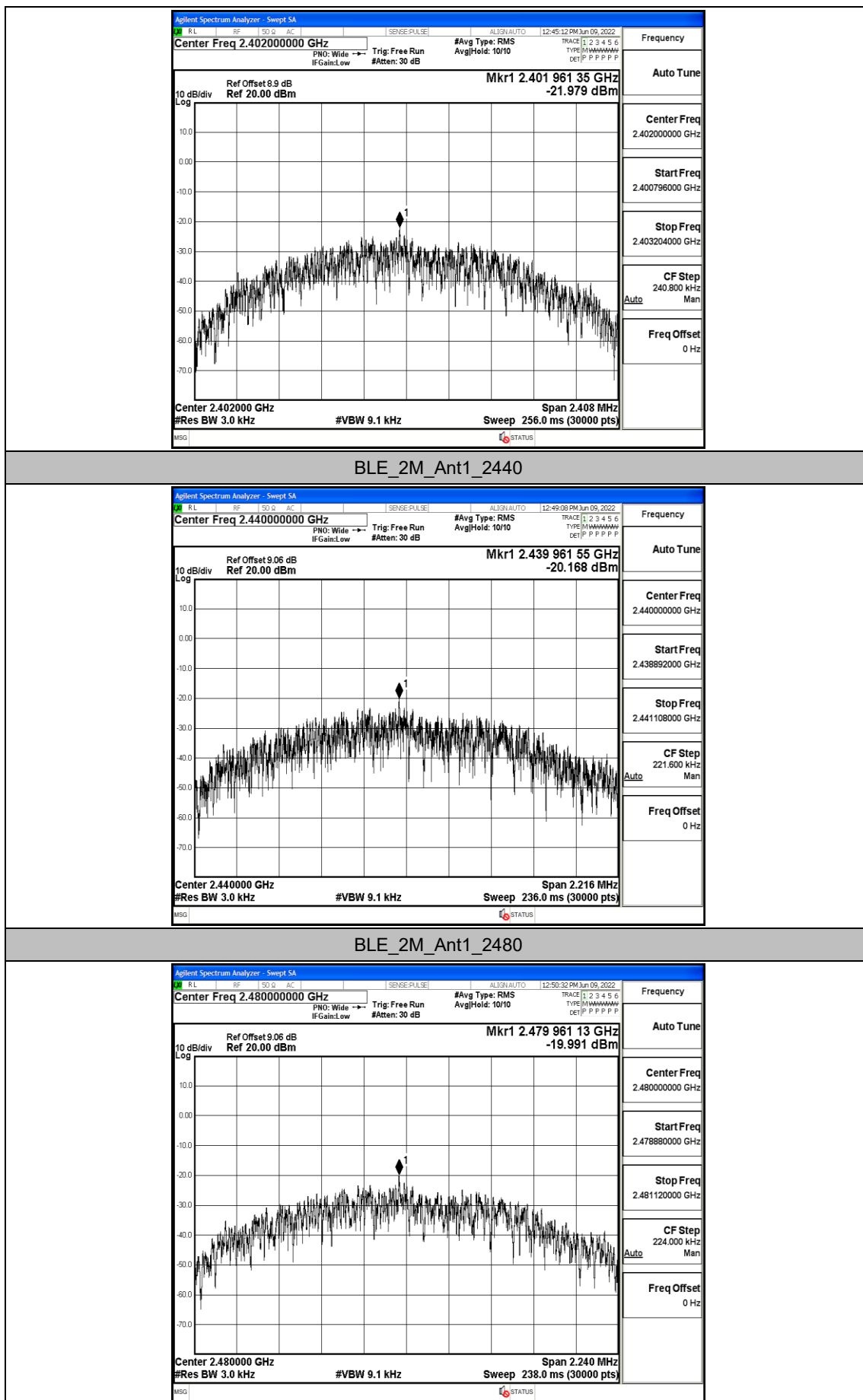
Appendix D: Maximum power spectral density

Test Result

TestMode	Antenna	Channel	Result[dBm/3-100kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-19.92	≤8.00	PASS
		2440	-18.24	≤8.00	PASS
		2480	-18.05	≤8.00	PASS
BLE_2M	Ant1	2402	-21.98	≤8.00	PASS
		2440	-20.17	≤8.00	PASS
		2480	-19.99	≤8.00	PASS

Test Graphs





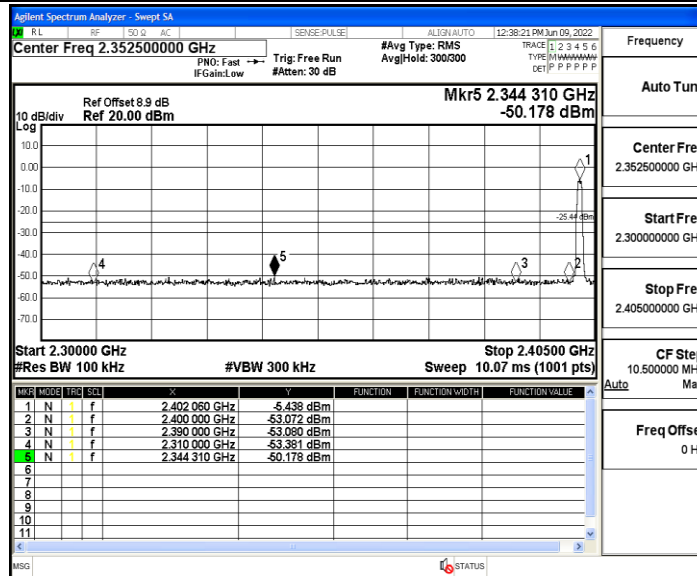
Appendix E: Band edge measurements

Test Result

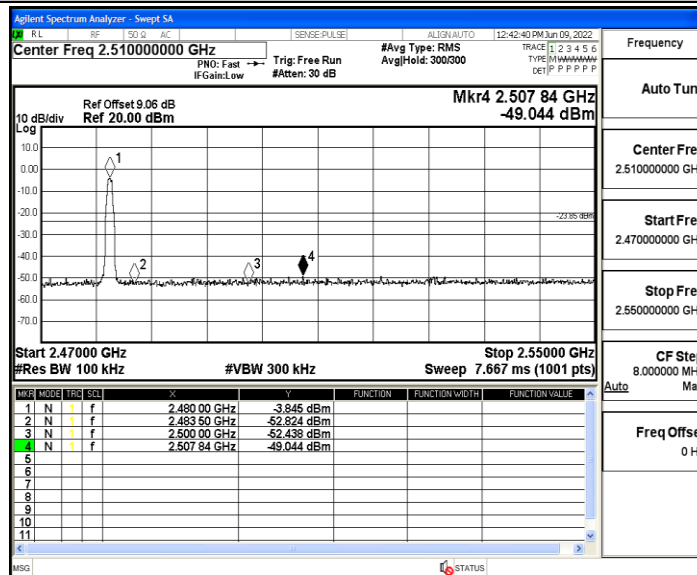
TestMode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	-5.44	-50.18	≤-25.44	PASS
		High	2480	-3.85	-49.04	≤-23.85	PASS
BLE_2M	Ant1	Low	2402	-5.63	-49.02	≤-25.63	PASS
		High	2480	-3.88	-49.62	≤-23.88	PASS

Test Graphs

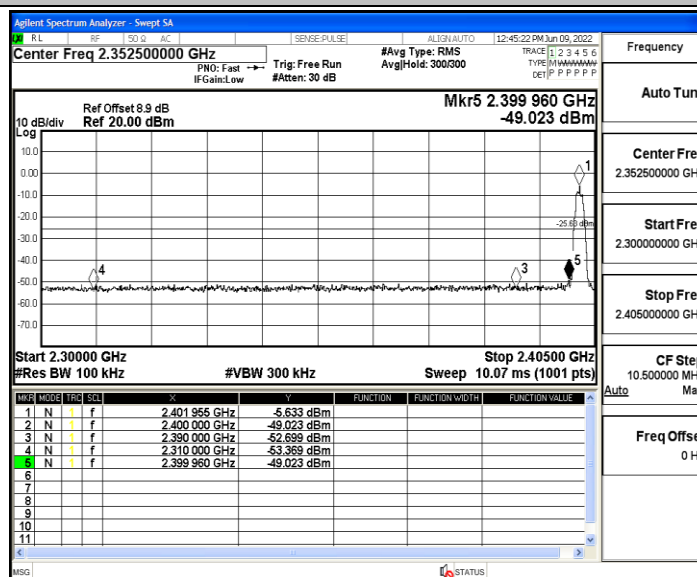
BLE_1M_Ant1_Low_2402



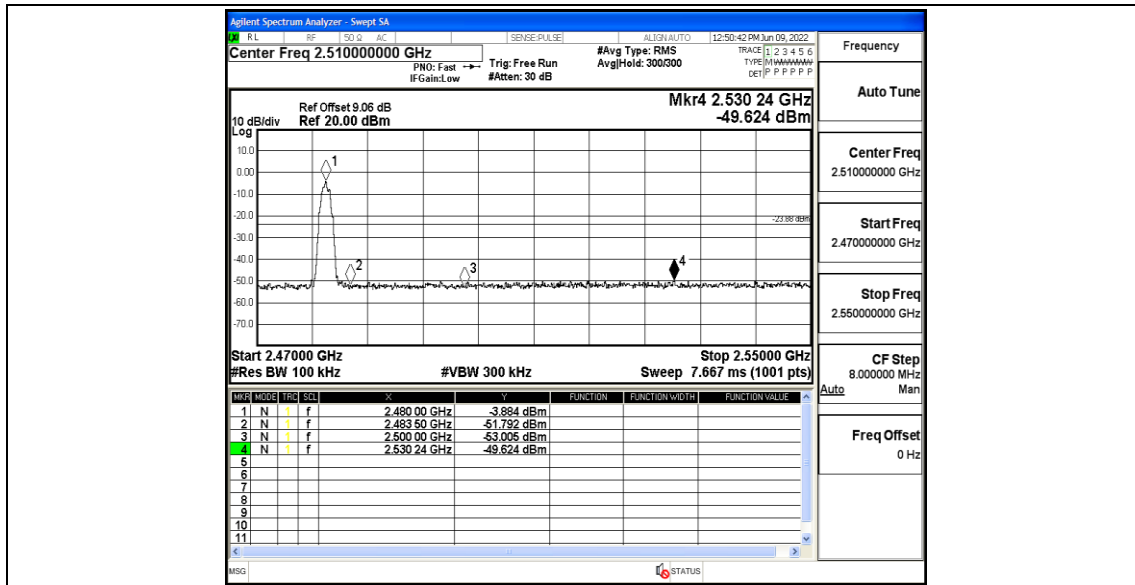
BLE_1M_Ant1_High_2480



BLE_2M_Ant1_Low_2402



BLE_2M_Ant1_High_2480



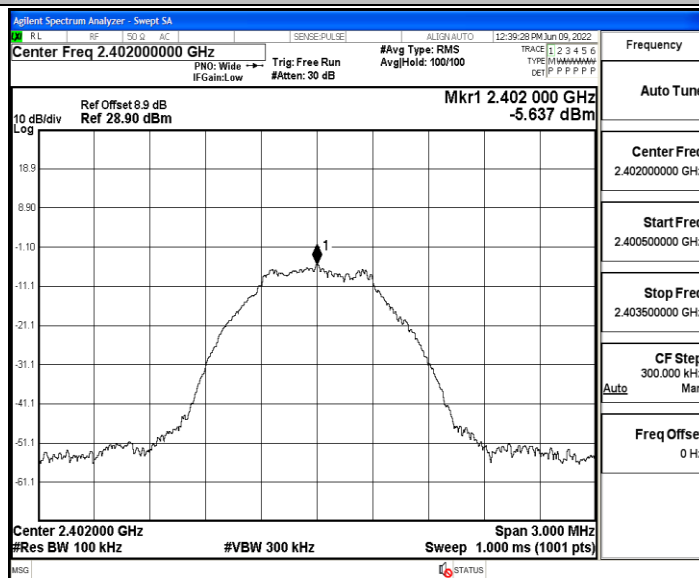
Appendix F: Conducted Spurious Emission

Test Result

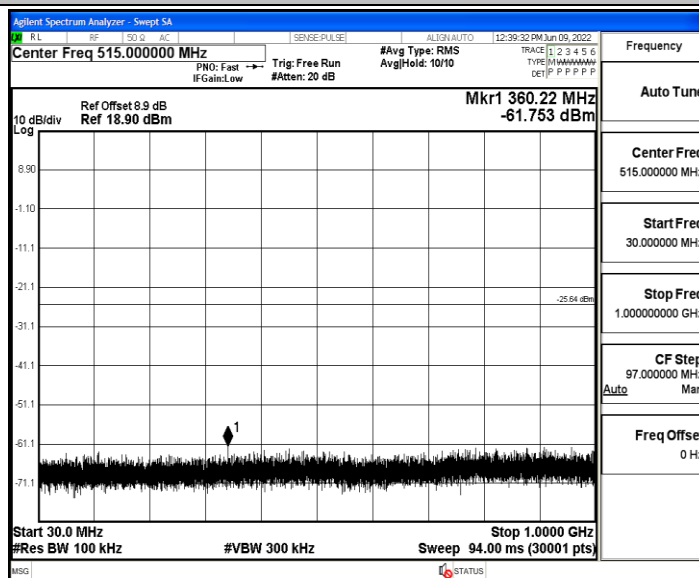
TestMode	Antenna	Channel	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	Reference	-5.64	-5.64	---	PASS
			30~1000	-5.64	-61.75	≤-25.64	PASS
			1000~26500	-5.64	-50.5	≤-25.64	PASS
		2440	Reference	-3.83	-3.83	---	PASS
			30~1000	-3.83	-61.03	≤-23.83	PASS
			1000~26500	-3.83	-51.43	≤-23.83	PASS
		2480	Reference	-3.72	-3.72	---	PASS
			30~1000	-3.72	-61.13	≤-23.72	PASS
			1000~26500	-3.72	-51.21	≤-23.72	PASS
BLE_2M	Ant1	2402	Reference	-7.52	-7.52	---	PASS
			30~1000	-7.52	-61.29	≤-27.52	PASS
			1000~26500	-7.52	-51.32	≤-27.52	PASS
		2440	Reference	-3.97	-3.97	---	PASS
			30~1000	-3.97	-61.39	≤-23.97	PASS
			1000~26500	-3.97	-50.64	≤-23.97	PASS
		2480	Reference	-4.14	-4.14	---	PASS
			30~1000	-4.14	-61.33	≤-24.14	PASS
			1000~26500	-4.14	-51.4	≤-24.14	PASS

Test Graphs

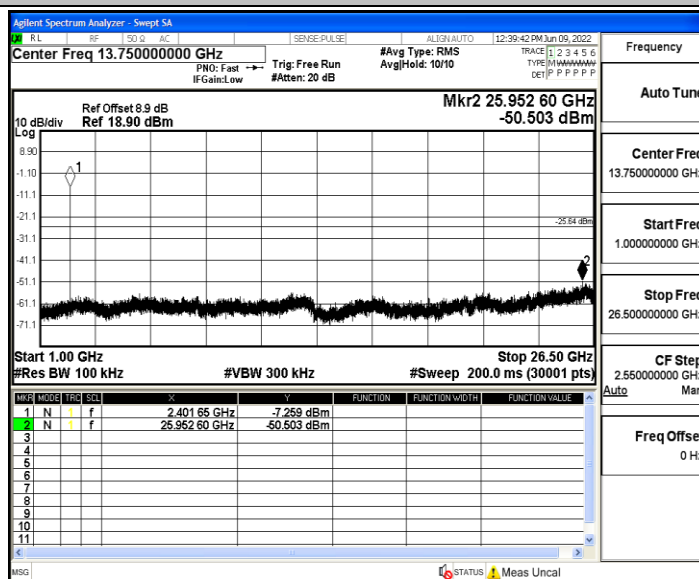
BLE_1M_Ant1_2402_0~Reference



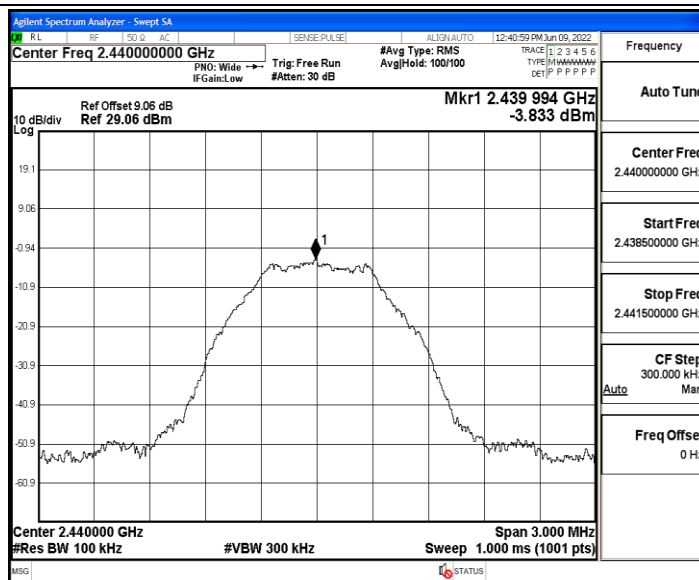
BLE_1M_Ant1_2402_30~1000



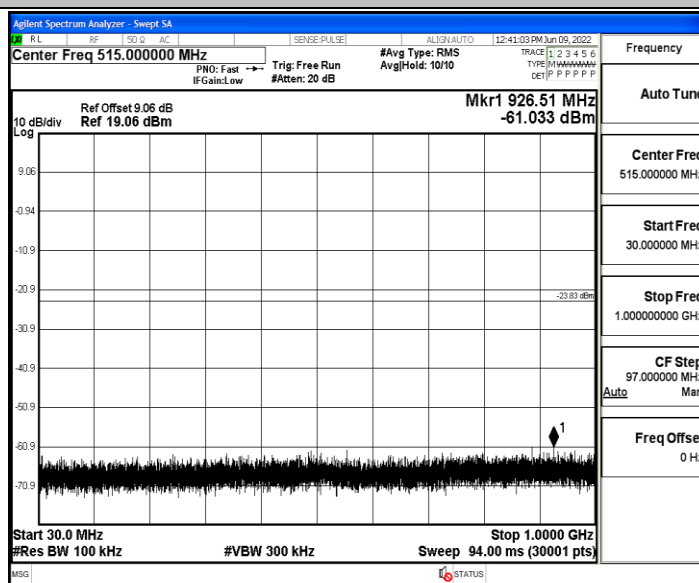
BLE_1M_Ant1_2402_1000~26500



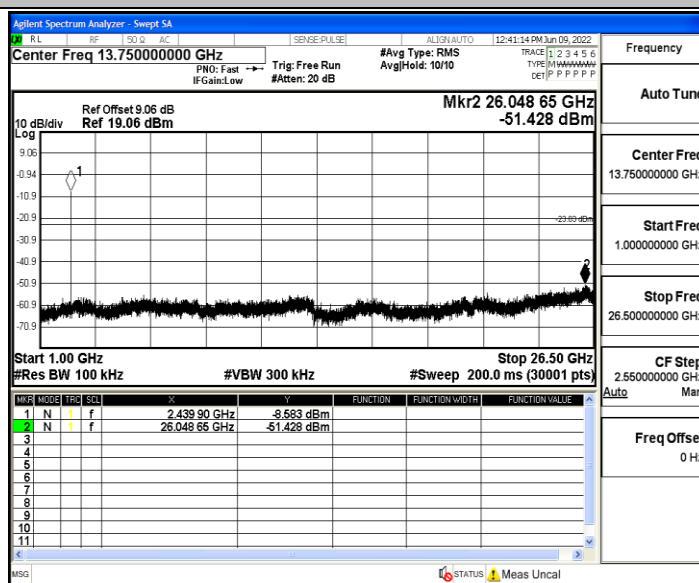
BLE_1M_Ant1_2440_0~Reference



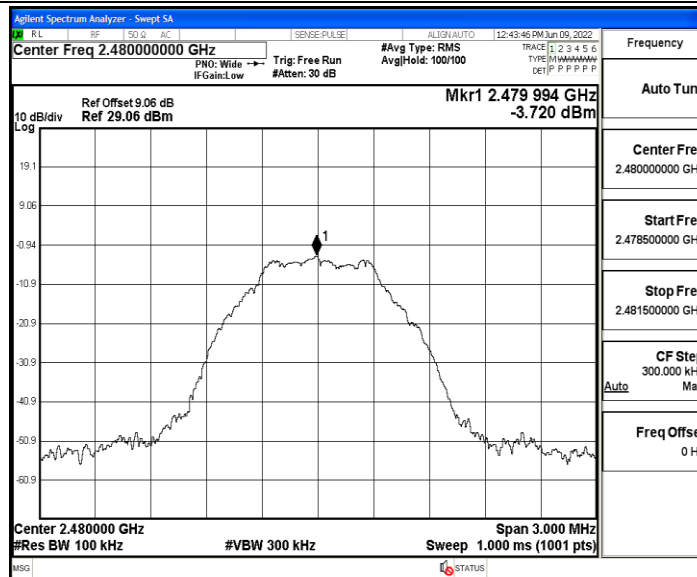
BLE_1M_Ant1_2440_30~1000



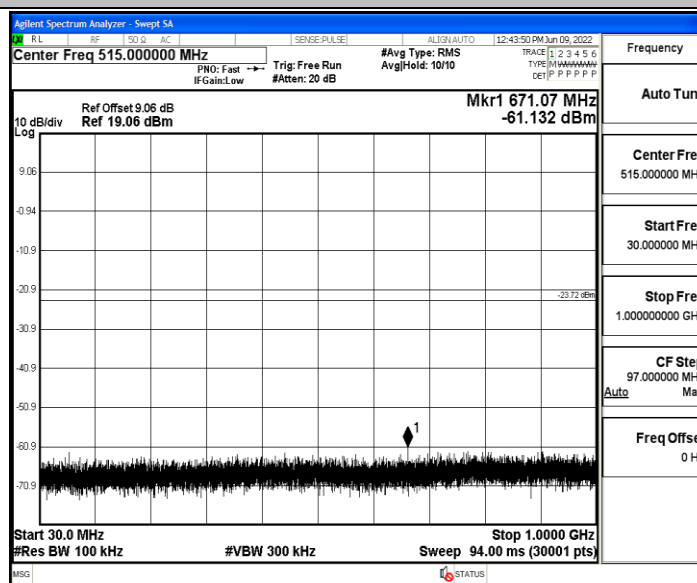
BLE_1M_Ant1_2440_1000~26500



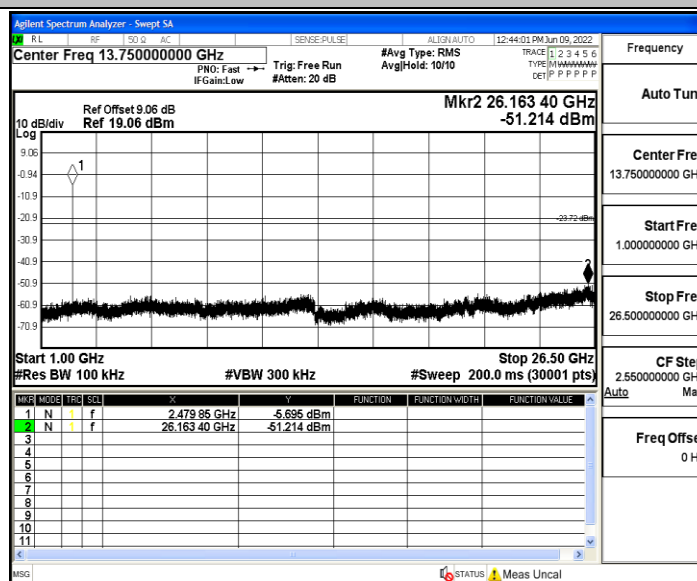
BLE_1M_Ant1_2480_0~Reference



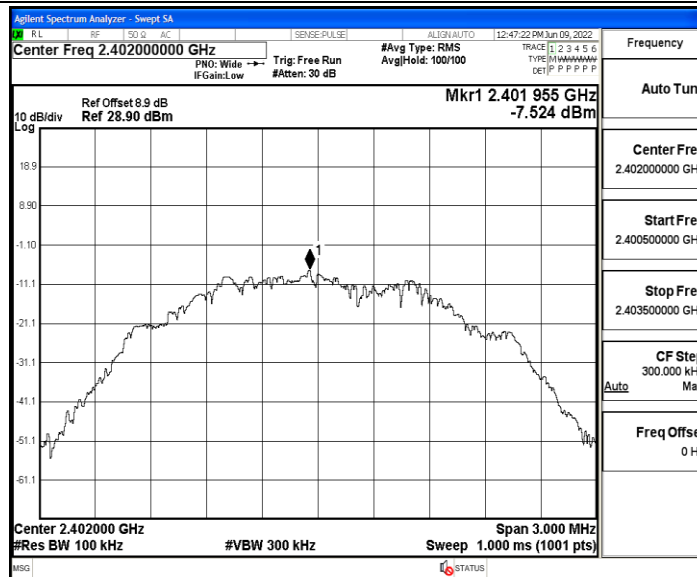
BLE_1M_Ant1_2480_30~1000



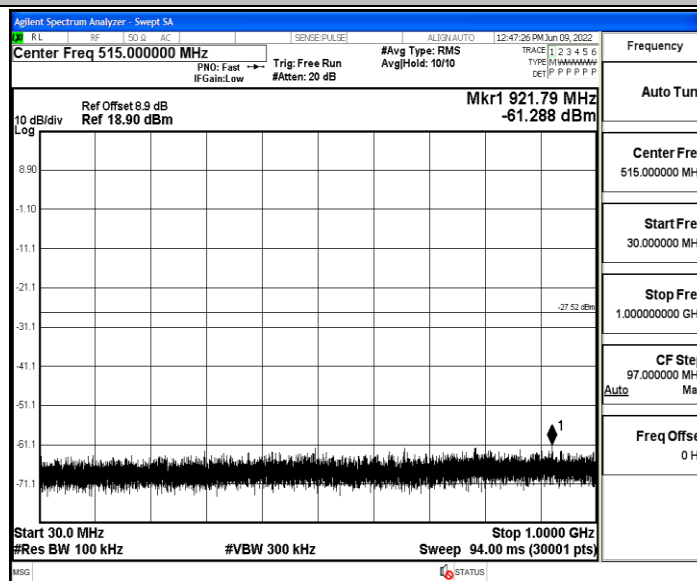
BLE_1M_Ant1_2480_1000~26500



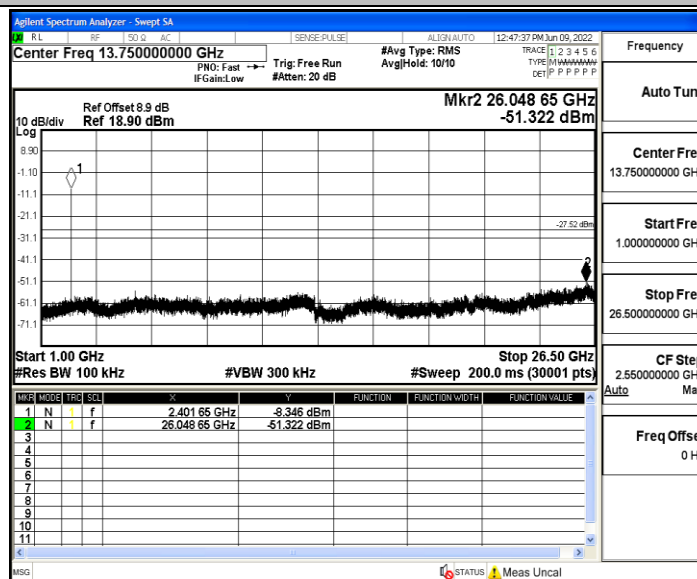
BLE_2M_Ant1_2402_0~Reference



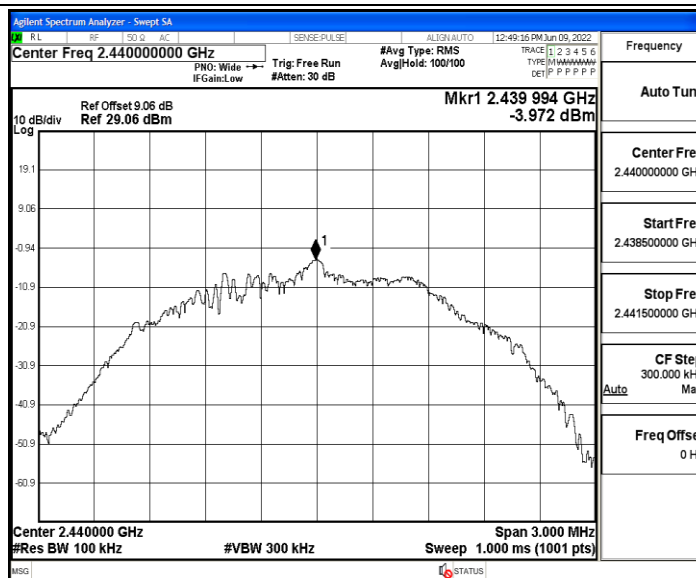
BLE_2M_Ant1_2402_30~1000



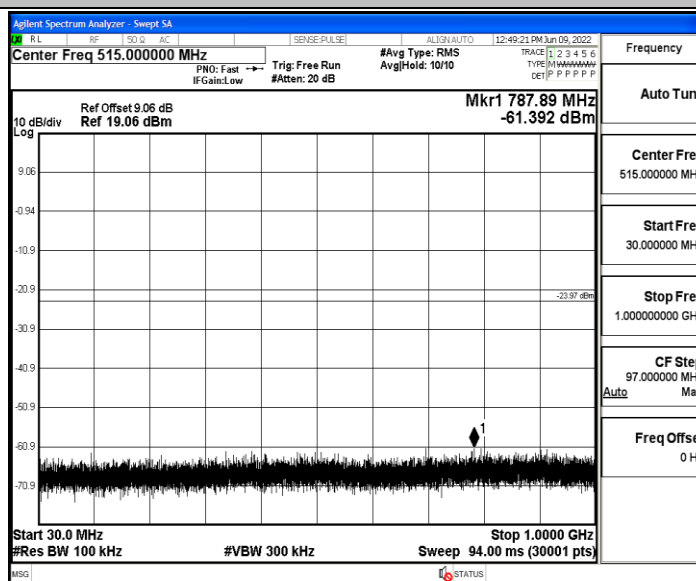
BLE_2M_Ant1_2402_1000~26500



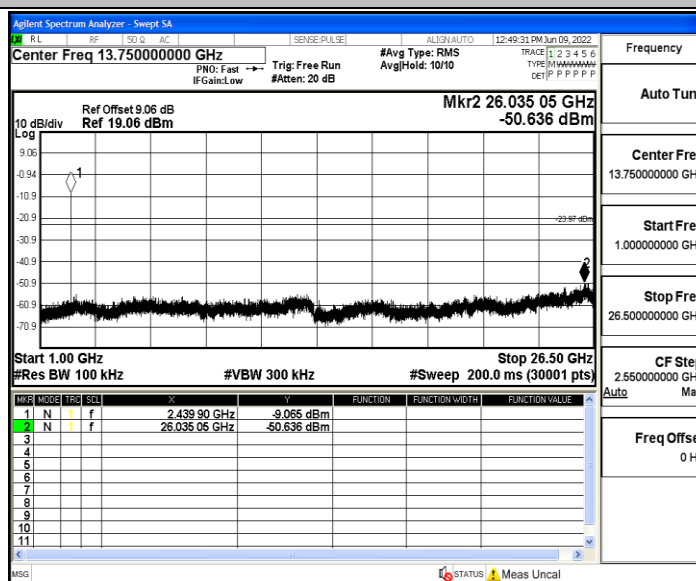
BLE_2M_Ant1_2440_0~Reference



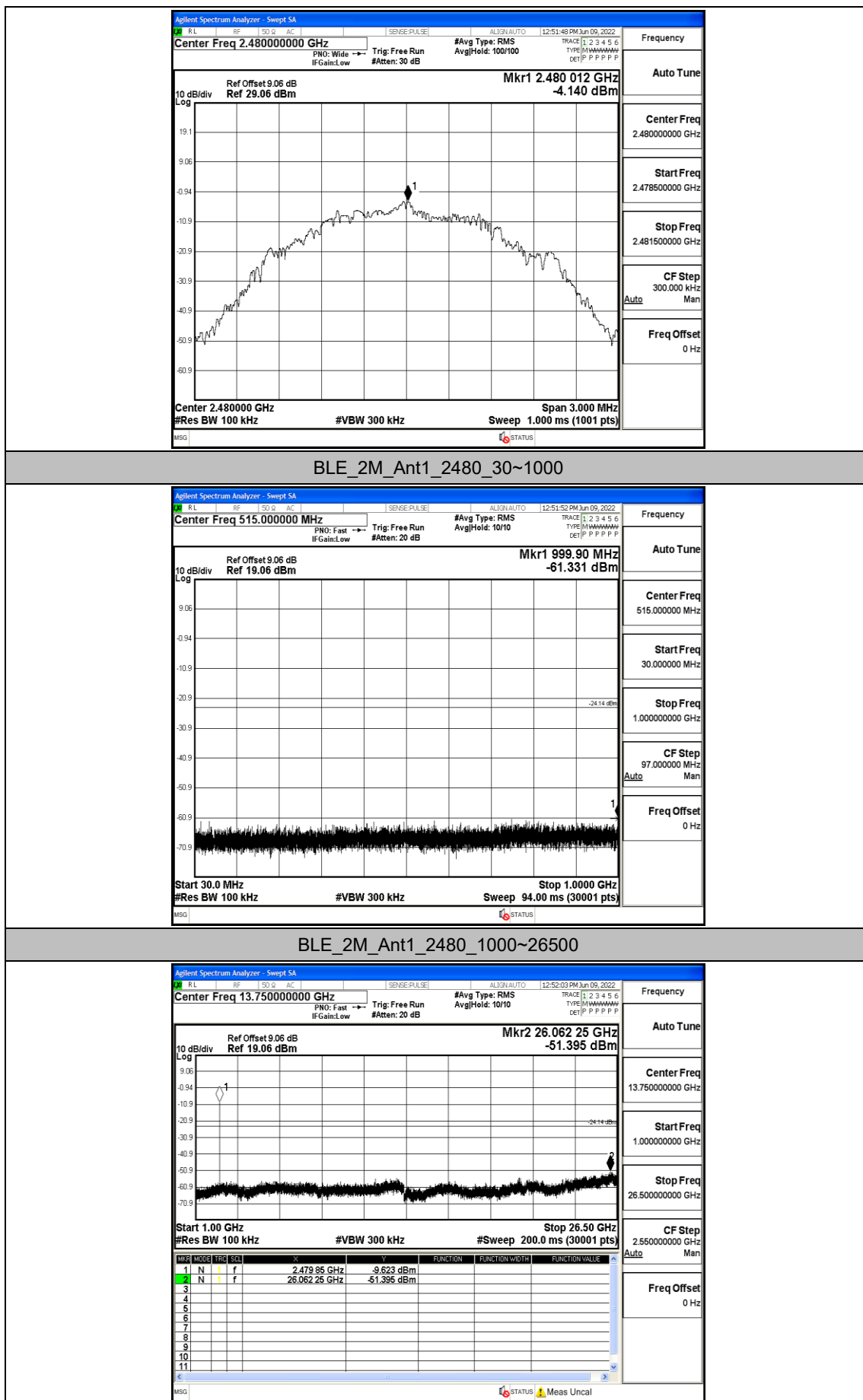
BLE_2M_Ant1_2440_30~1000



BLE_2M_Ant1_2440_1000~26500



BLE_2M_Ant1_2480_0~Reference

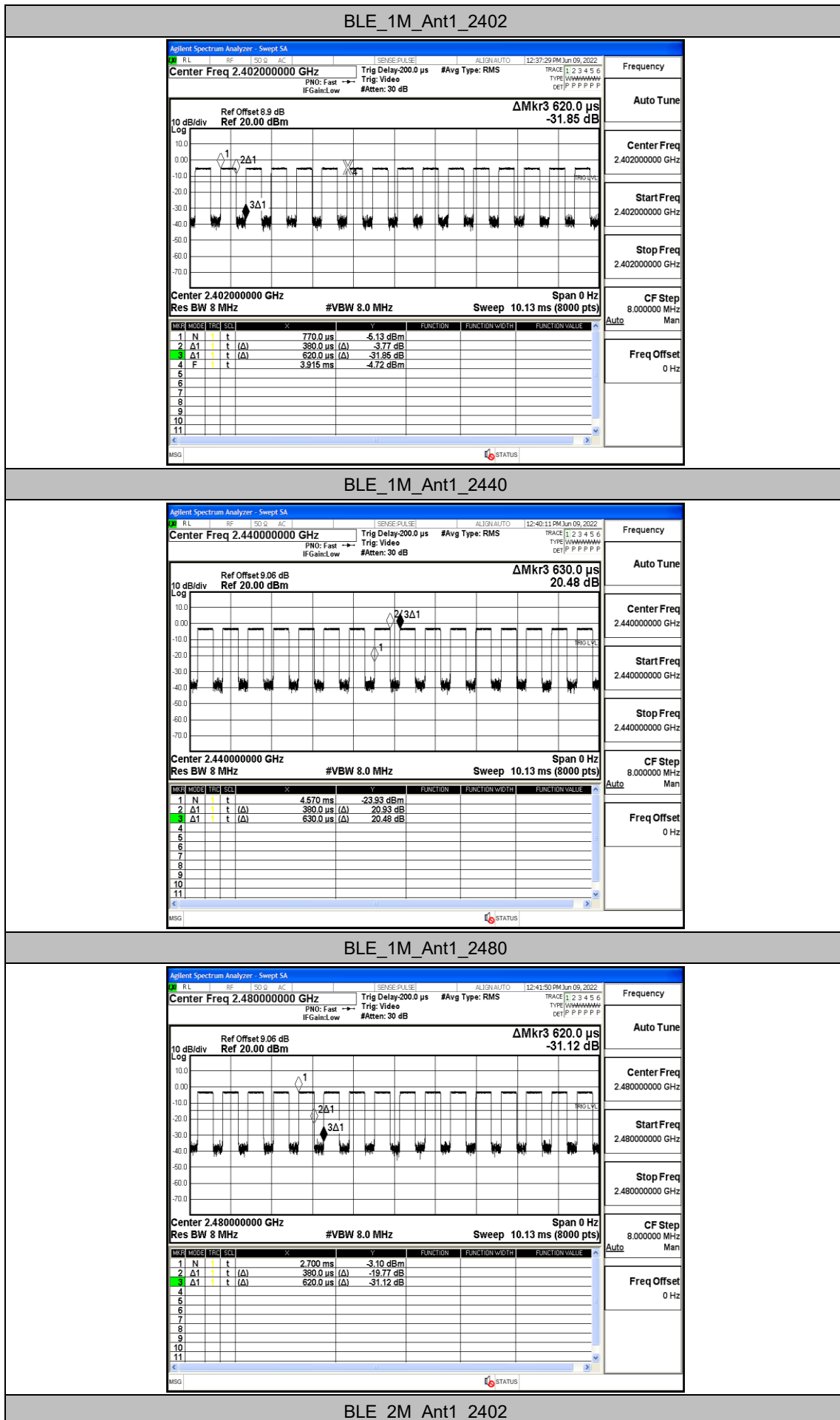


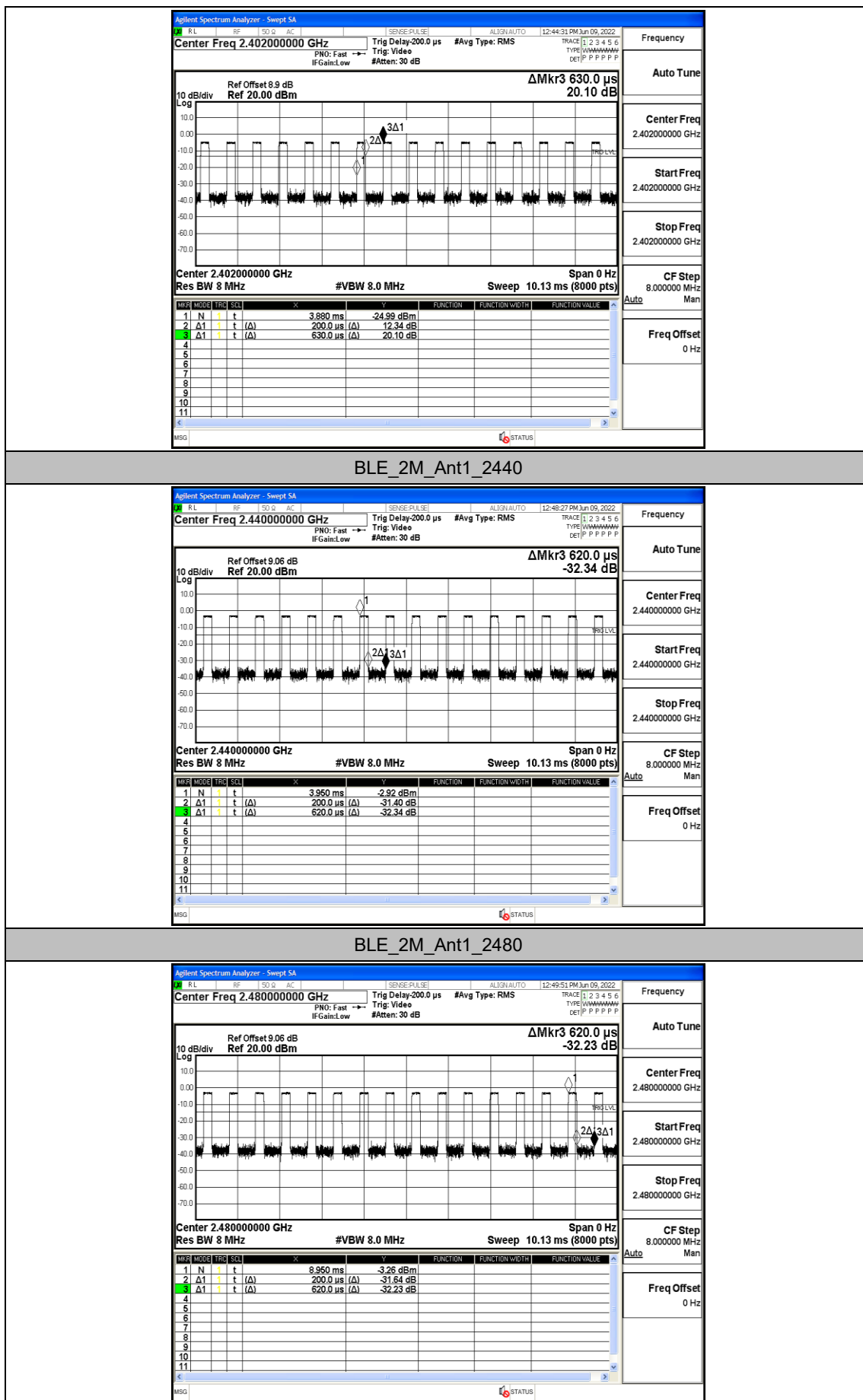
Appendix G: Duty Cycle

Test Result

TestMode	Antenna	Channel	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]	1/T[kHz]
BLE_1M	Ant1	2402	0.38	0.62	61.29	2.63
		2440	0.38	0.63	60.32	2.63
		2480	0.38	0.62	61.29	2.63
BLE_2M	Ant1	2402	0.20	0.63	31.75	5.00
		2440	0.20	0.62	32.26	5.00
		2480	0.20	0.62	32.26	5.00

Test Graphs





Appendix H: Emissions in Restricted Bands

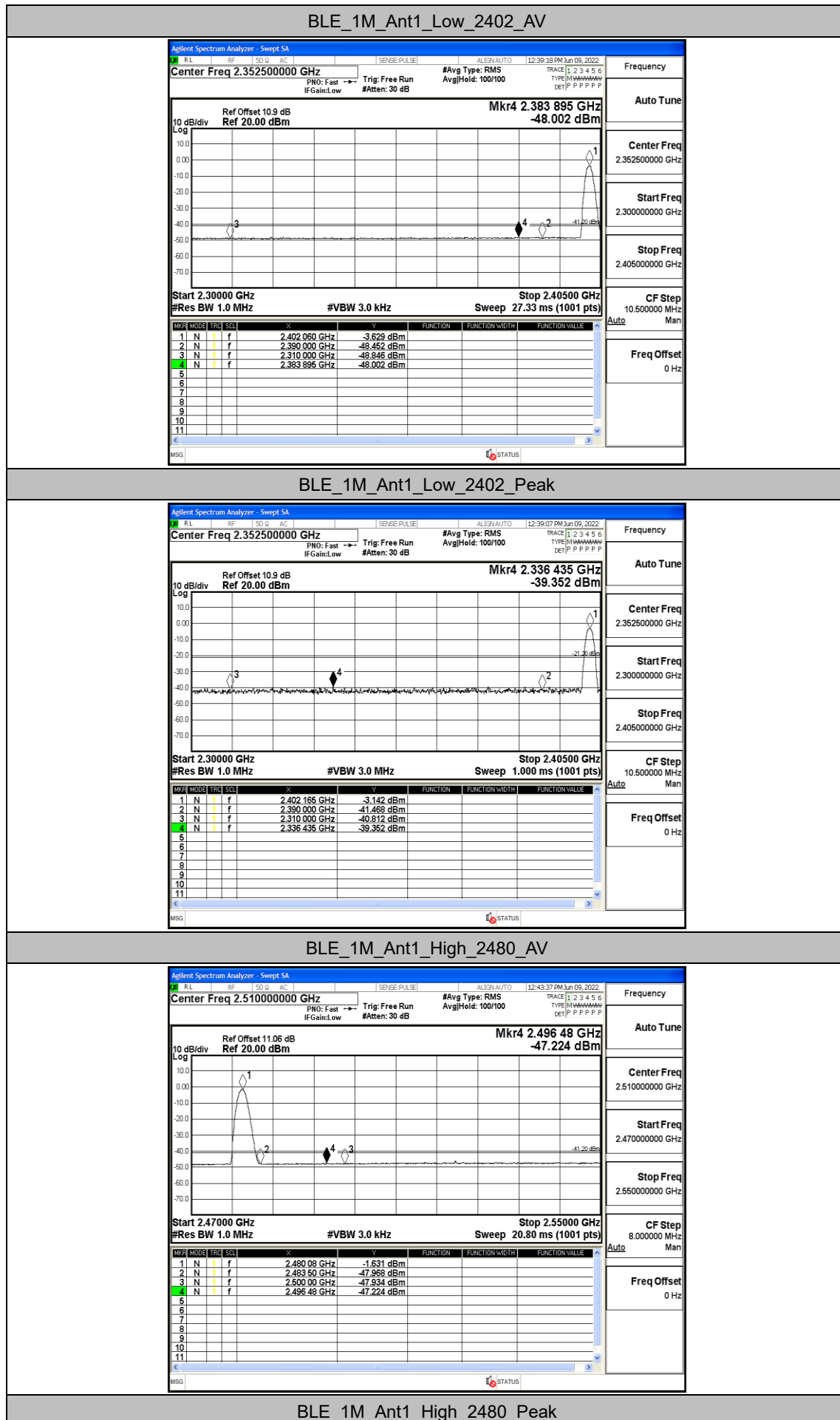
Test Result

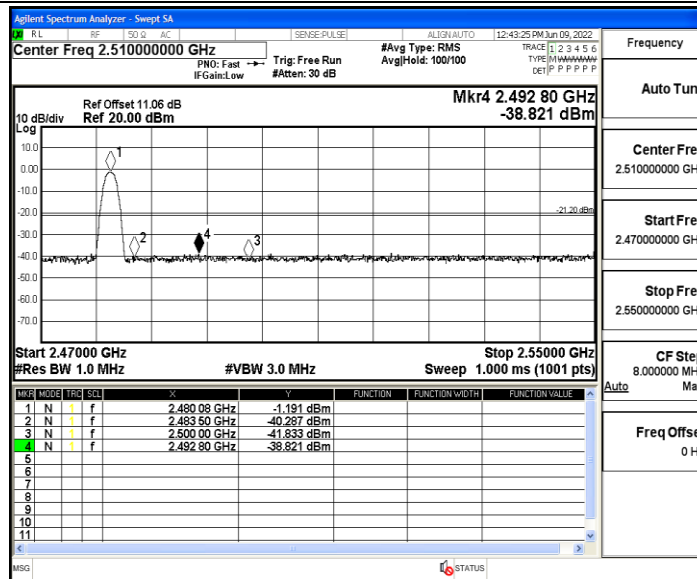
TestMode	Antenna	ChName	Channel	Detector	Freq. [MHz]	Result [dBm]	Limit [dBm]	Verdict
BLE_1M	Ant1	Low	2402	AV	2310.000	-48.85	≤-41.20	PASS
				AV	2383.895	-48	≤-41.20	PASS
				AV	2390.000	-48.45	≤-41.20	PASS
				Peak	2310.000	-40.81	≤-21.20	PASS
				Peak	2336.435	-39.35	≤-21.20	PASS
				Peak	2390.000	-41.47	≤-21.20	PASS
		High	2480	AV	2483.500	-47.97	≤-41.20	PASS
				AV	2496.480	-47.22	≤-41.20	PASS
				AV	2500.000	-47.93	≤-41.20	PASS
				Peak	2483.500	-40.29	≤-21.20	PASS
				Peak	2492.800	-38.82	≤-21.20	PASS
				Peak	2500.000	-41.83	≤-21.20	PASS
BLE_2M	Ant1	Low	2402	AV	2310.000	-48.4	≤-41.20	PASS
				AV	2358.905	-47.44	≤-41.20	PASS
				AV	2390.000	-47.72	≤-41.20	PASS
				Peak	2310.000	-42.32	≤-21.20	PASS
				Peak	2369.405	-38.39	≤-21.20	PASS
				Peak	2390.000	-39.98	≤-21.20	PASS
		High	2480	AV	2483.500	-47.45	≤-41.20	PASS
				AV	2490.000	-46.72	≤-41.20	PASS
				AV	2500.000	-47.33	≤-41.20	PASS
				Peak	2483.500	-41.76	≤-21.20	PASS
				Peak	2489.520	-38.55	≤-21.20	PASS
				Peak	2500.000	-42.23	≤-21.20	PASS

Note:

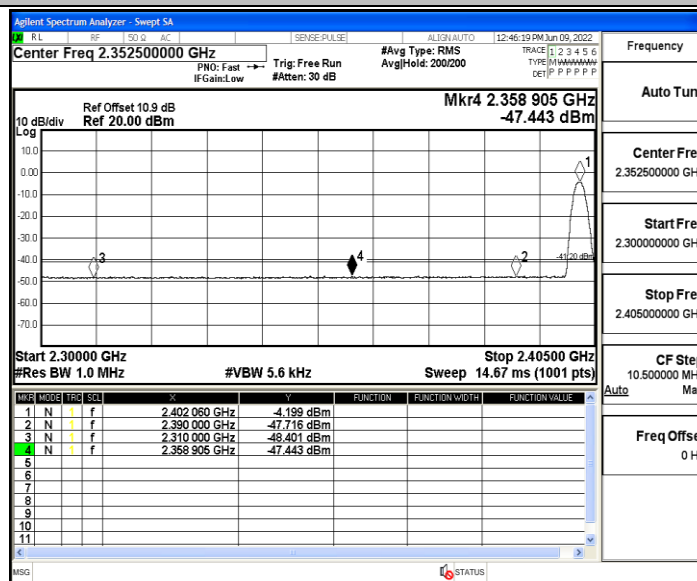
1. The Antenna Gain is compensated in the graph with 2dBi and Antenna Gain which is Higher.
2. The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.

Test Graphs

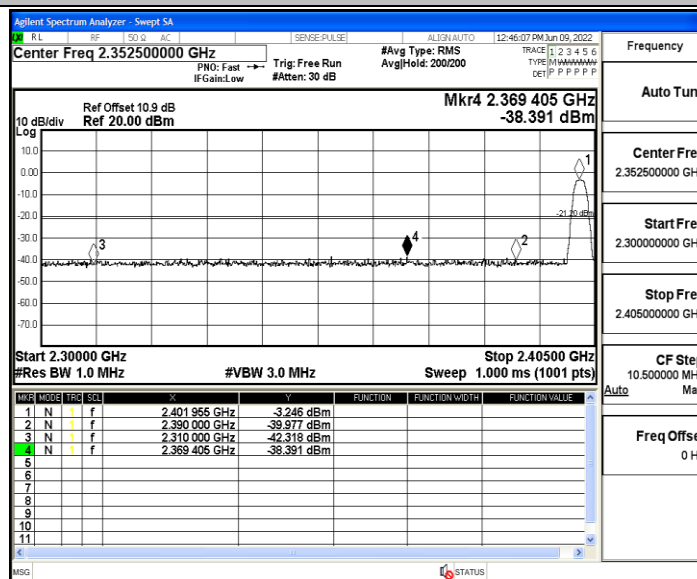




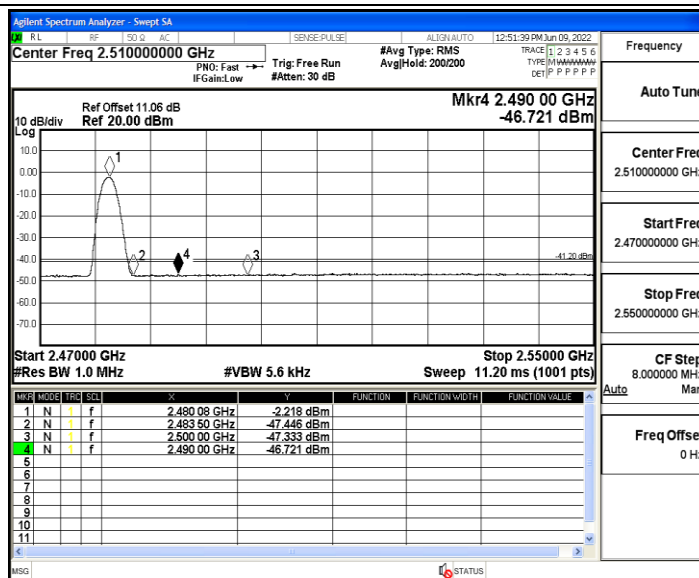
BLE_2M_Ant1_Low_2402_AV



BLE_2M_Ant1_Low_2402_Peak



BLE_2M_Ant1_High_2480_AV



BLE_2M_Ant1_High_2480_Peak

