



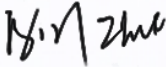
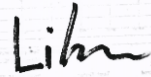
Appendix B

RF Test Data for BLE (Conducted Measurement)

Product Name: BUDS BOT

Test Model: LV09JL

Environmental Conditions

Temperature:	21.1° C
Relative Humidity:	52.2%
ATM Pressure:	100.0 kPa
Test Engineer:	
Supervised by:	

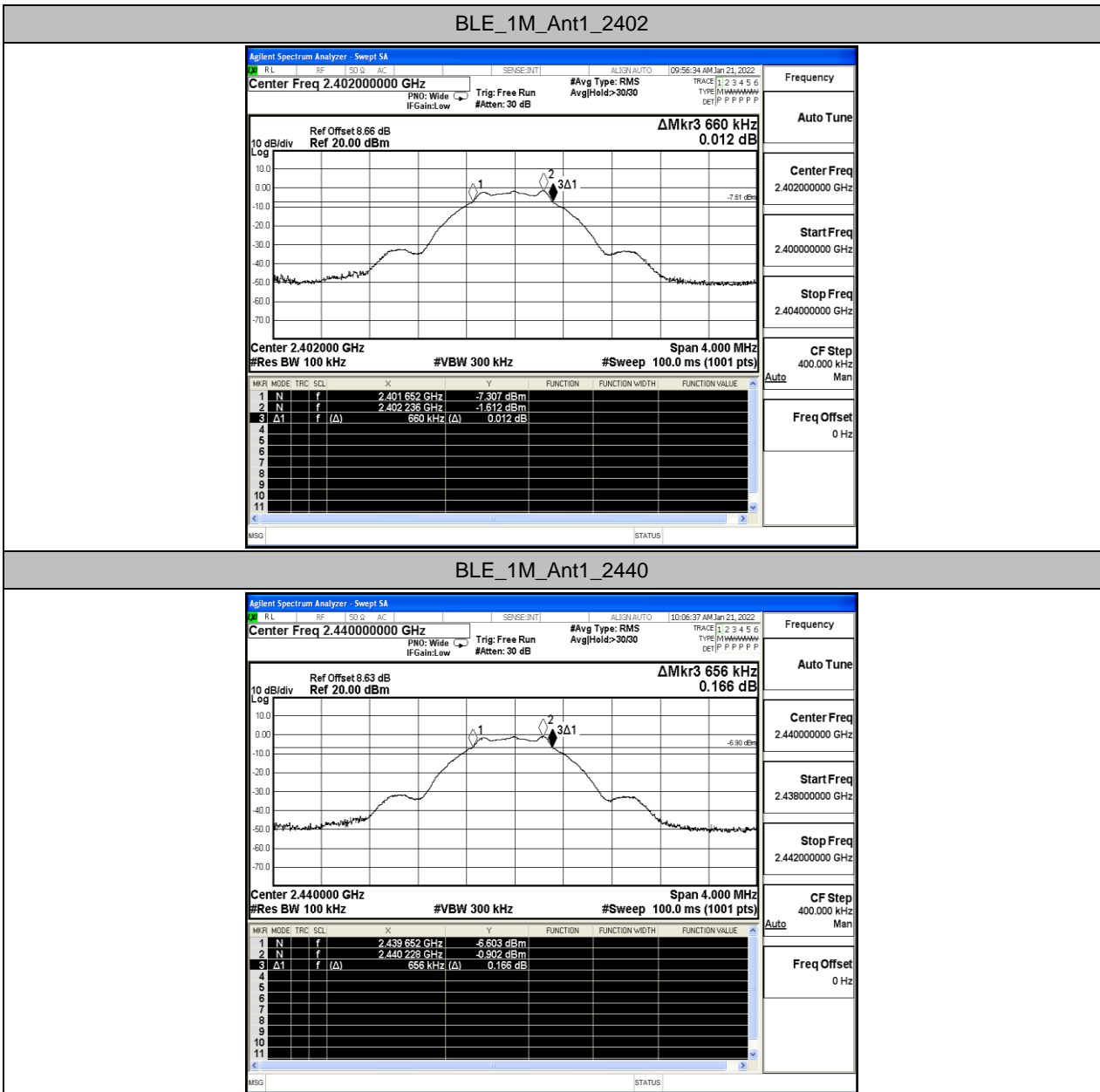


B.1 6dB Bandwidth

Test Result

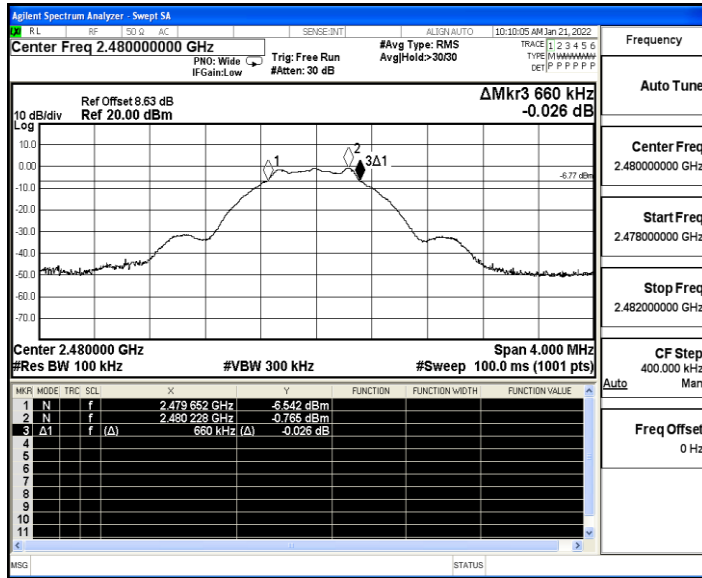
TestMode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.660	2401.652	2402.312	0.5	PASS
		2440	0.656	2439.652	2440.308	0.5	PASS
		2480	0.660	2479.652	2480.312	0.5	PASS
BLE_2M	Ant1	2402	1.144	2401.408	2402.552	0.5	PASS
		2440	1.148	2439.412	2440.560	0.5	PASS
		2480	1.152	2479.408	2480.560	0.5	PASS

Test Graphs

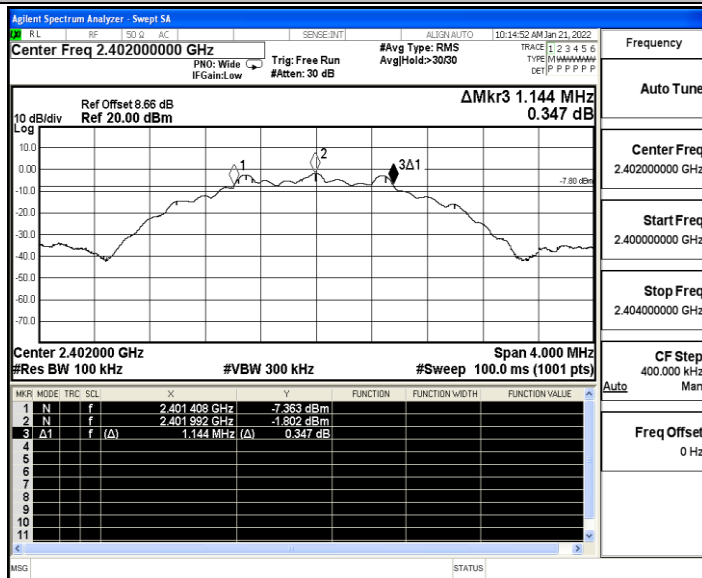




BLE_1M_Ant1_2480

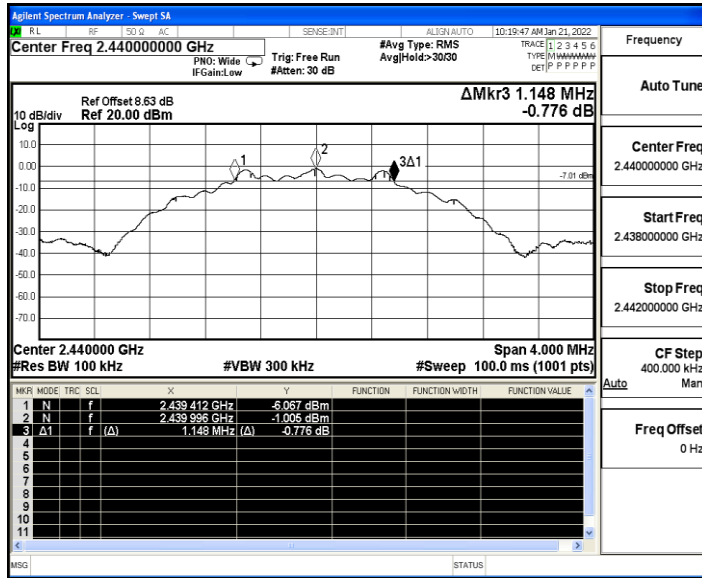


BLE_2M_Ant1_2402

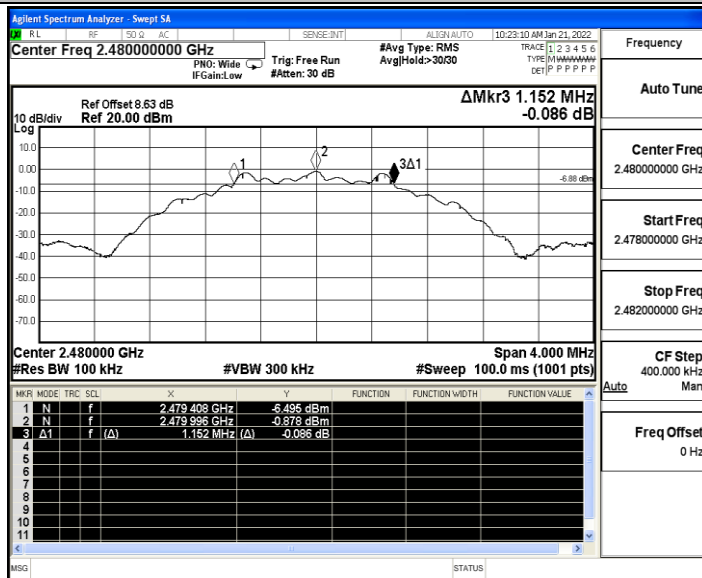




BLE_2M_Ant1_2440



BLE_2M_Ant1_2480





B.2 Maximum conducted output power

Test Result

TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	-1.33	≤30	PASS
		2440	-0.62	≤30	PASS
		2480	-0.49	≤30	PASS
BLE_2M	Ant1	2402	-1.15	≤30	PASS
		2440	-0.4	≤30	PASS
		2480	-0.23	≤30	PASS

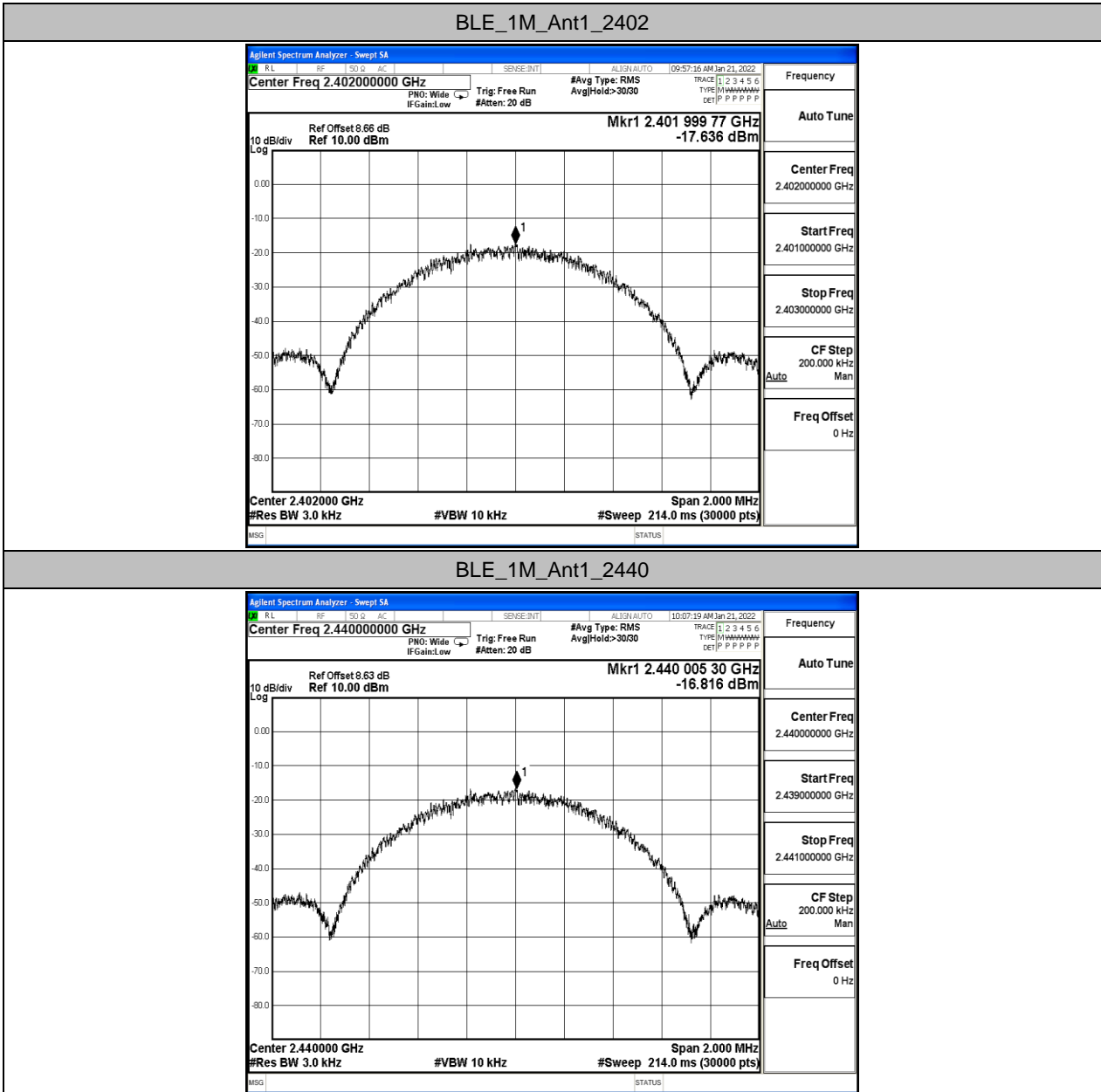


B.3 Maximum power spectral density

Test Result

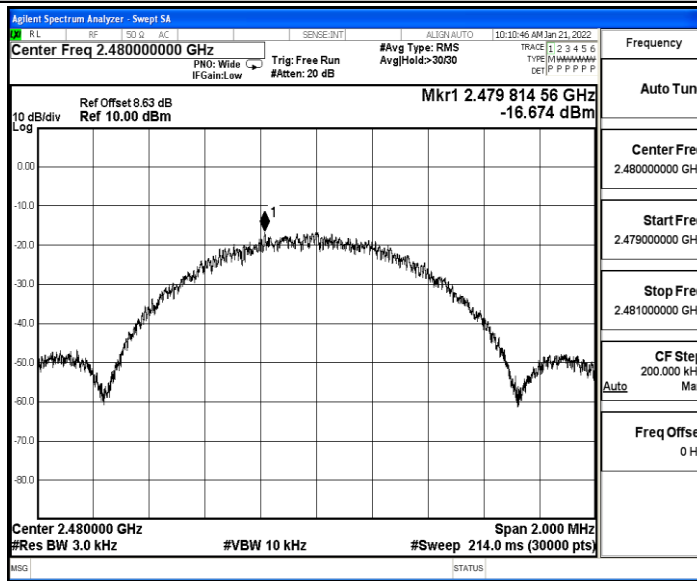
TestMode	Antenna	Channel	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-17.64	≤8.00	PASS
		2440	-16.82	≤8.00	PASS
		2480	-16.67	≤8.00	PASS
BLE_2M	Ant1	2402	-19.6	≤8.00	PASS
		2440	-18.97	≤8.00	PASS
		2480	-18.73	≤8.00	PASS

Test Graphs

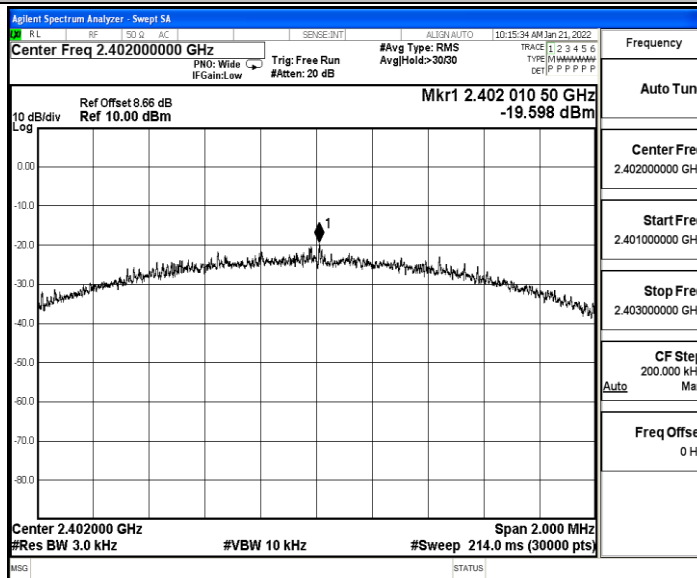




BLE_1M_Ant1_2480

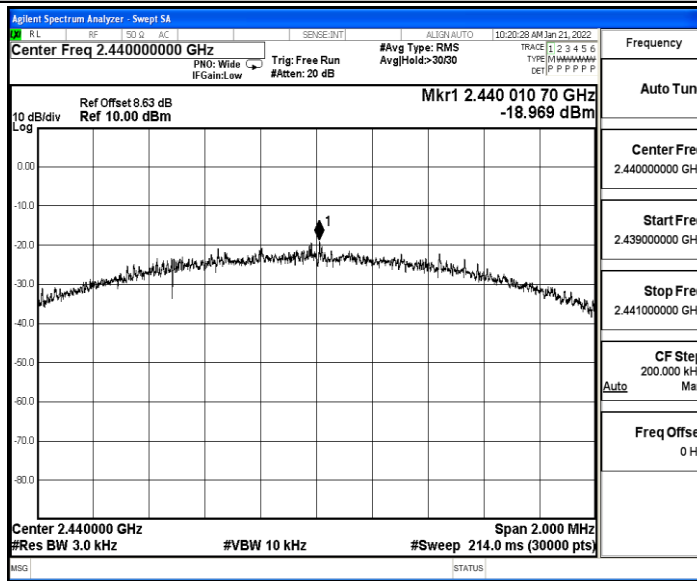


BLE_2M_Ant1_2402

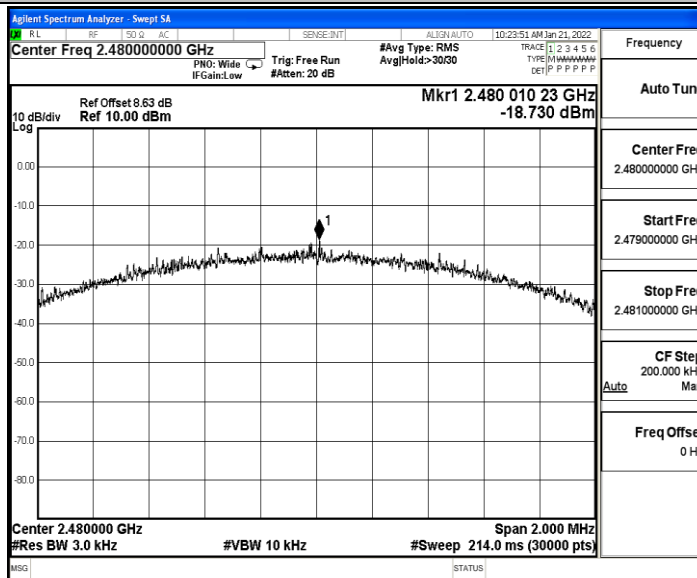




BLE_2M_Ant1_2440



BLE_2M_Ant1_2480



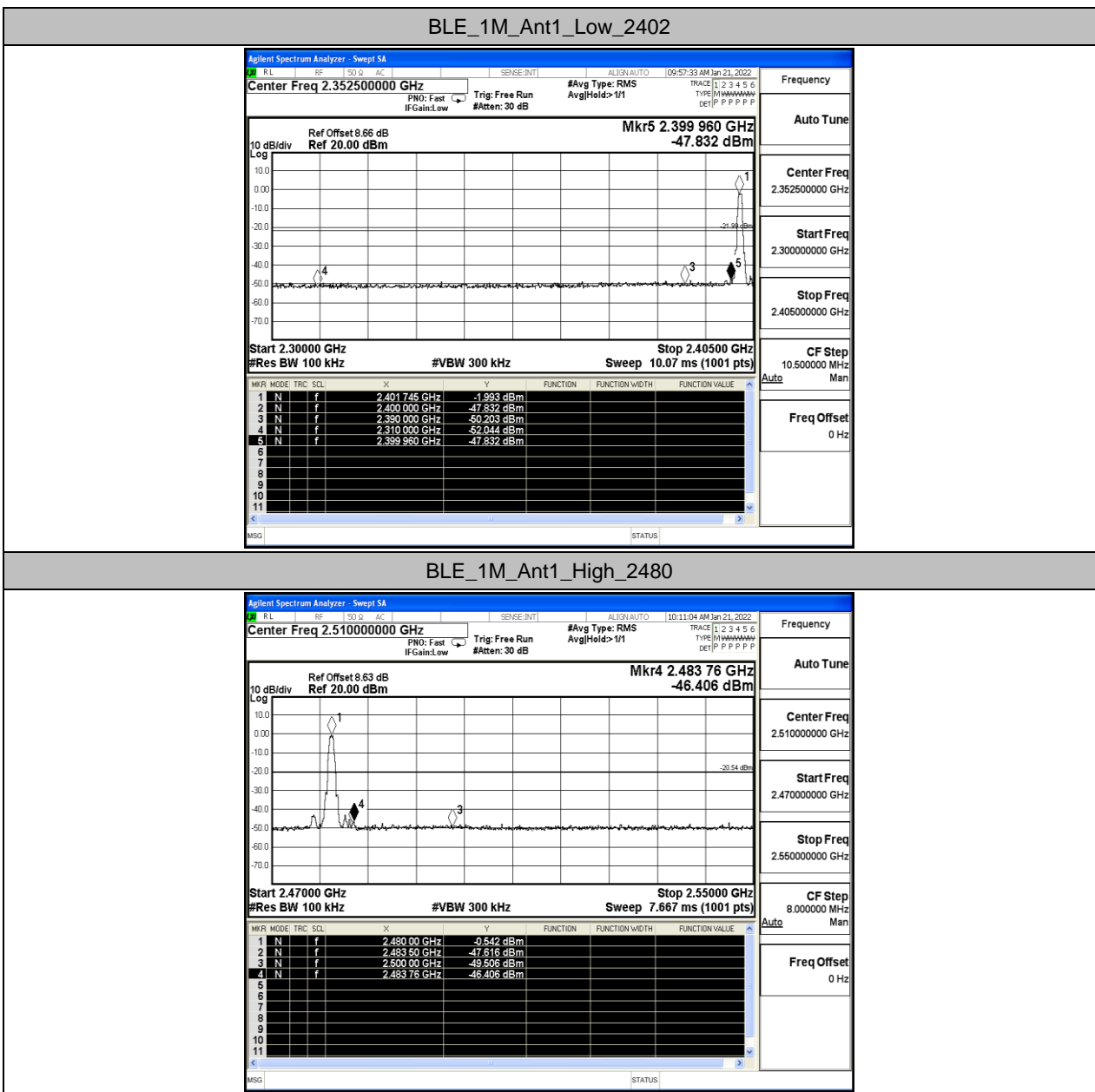


B.4 Band edge measurements

Test Result

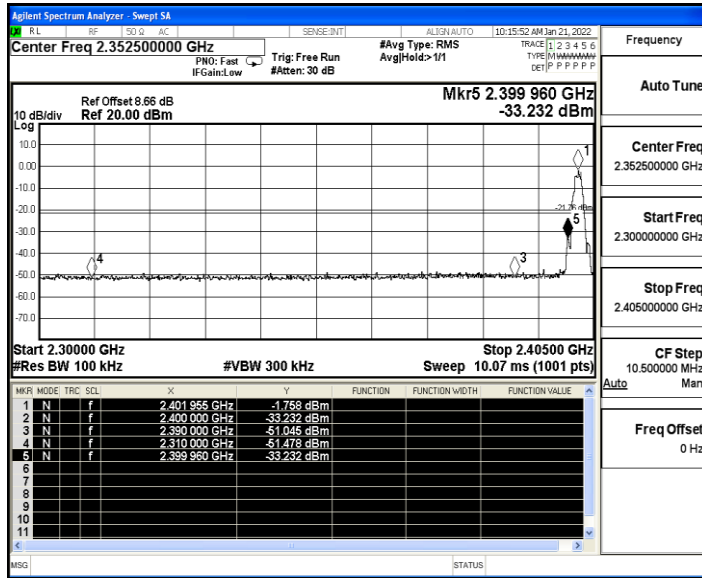
TestMode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	-1.99	-47.83	≤-21.99	PASS
		High	2480	-0.54	-46.41	≤-20.54	PASS
BLE_2M	Ant1	Low	2402	-1.76	-33.23	≤-21.76	PASS
		High	2480	-0.51	-47.11	≤-20.51	PASS

Test Graphs

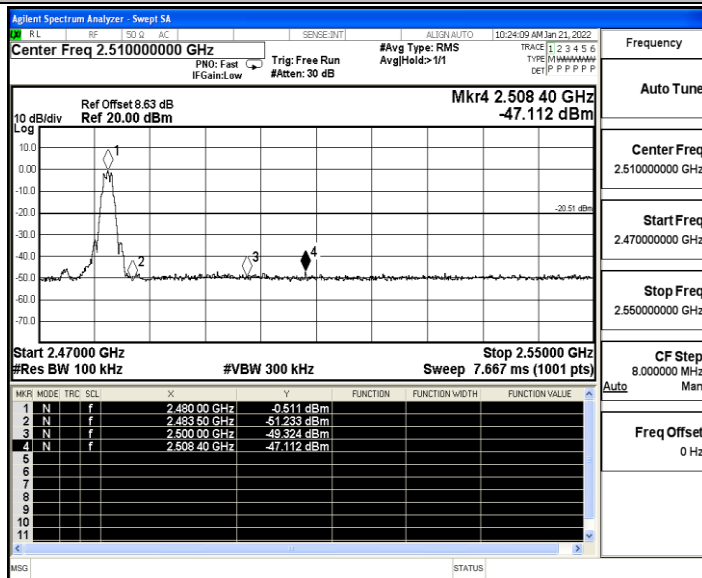




BLE_2M_Ant1_Low_2402



BLE_2M_Ant1_High_2480





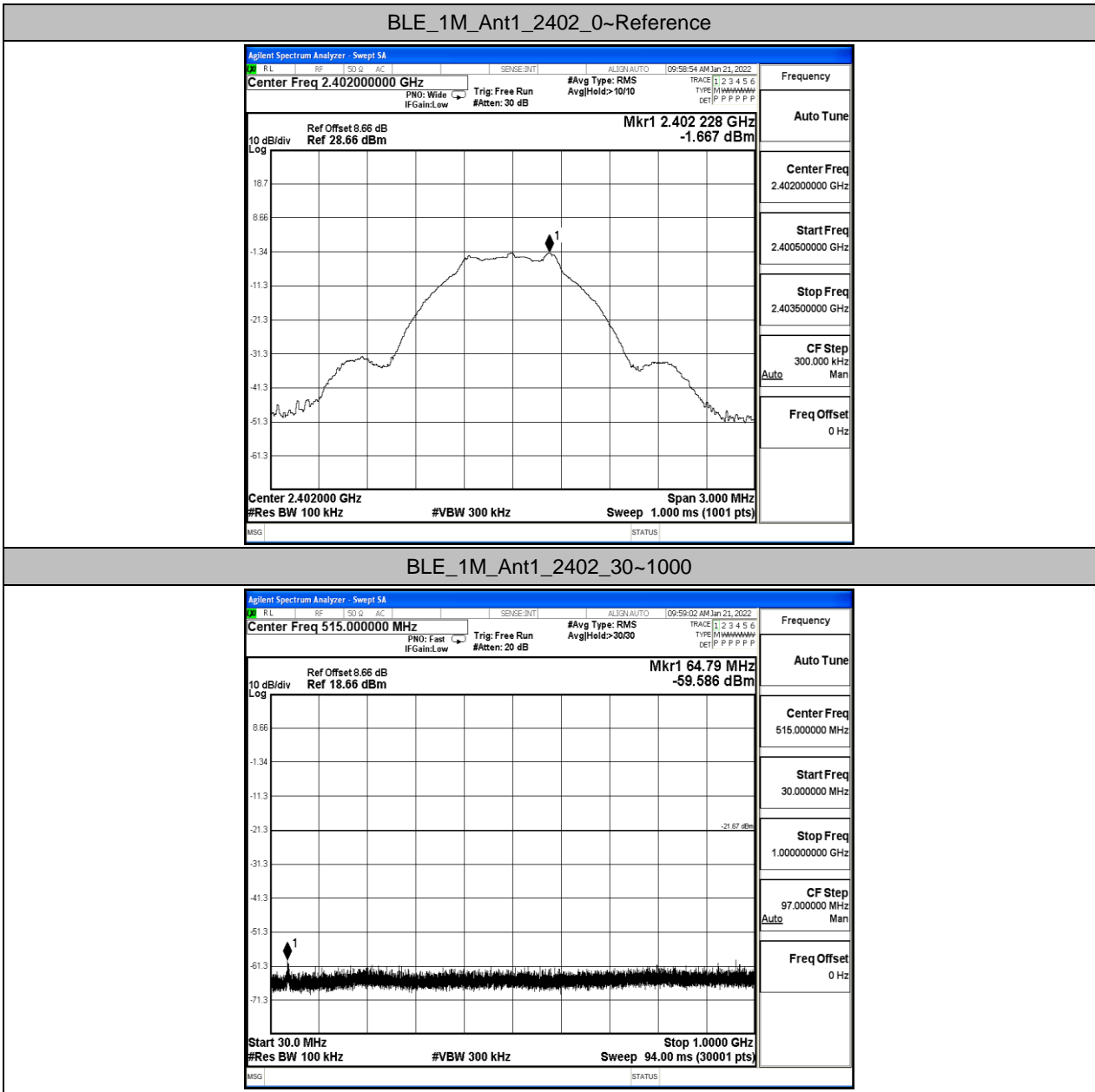
B.5 Conducted Spurious Emission

Test Result

TestMode	Antenna	Channel	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	Reference	-1.67	-1.67	---	PASS
			30~1000	-1.67	-59.59	≤-21.67	PASS
			1000~26500	-1.67	-46.28	≤-21.67	PASS
		2440	Reference	-1.50	-1.50	---	PASS
			30~1000	-1.50	-61.03	≤-21.5	PASS
			1000~26500	-1.50	-46.11	≤-21.5	PASS
		2480	Reference	-0.79	-0.79	---	PASS
			30~1000	-0.79	-60.56	≤-20.79	PASS
			1000~26500	-0.79	-46.06	≤-20.79	PASS
BLE_2M	Ant1	2402	Reference	-1.75	-1.75	---	PASS
			30~1000	-1.75	-60.33	≤-21.75	PASS
			1000~26500	-1.75	-46.36	≤-21.75	PASS
		2440	Reference	-1.02	-1.02	---	PASS
			30~1000	-1.02	-60.35	≤-21.02	PASS
			1000~26500	-1.02	-45.52	≤-21.02	PASS
		2480	Reference	-0.85	-0.85	---	PASS
			30~1000	-0.85	-50.52	≤-20.85	PASS
			1000~26500	-0.85	-46.16	≤-20.85	PASS

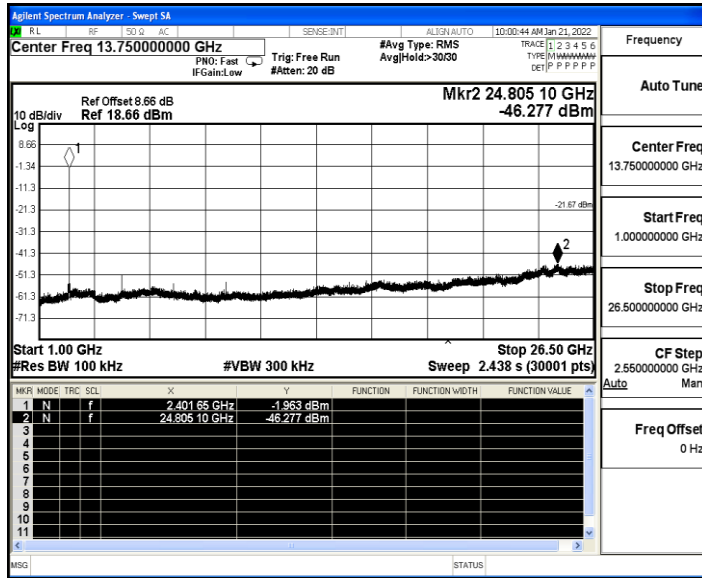


Test Graphs

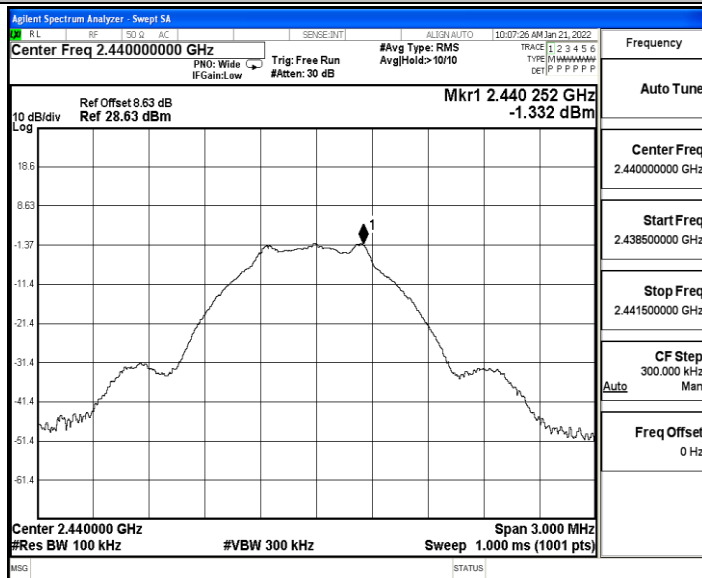




BLE_1M_Ant1_2402_1000~26500

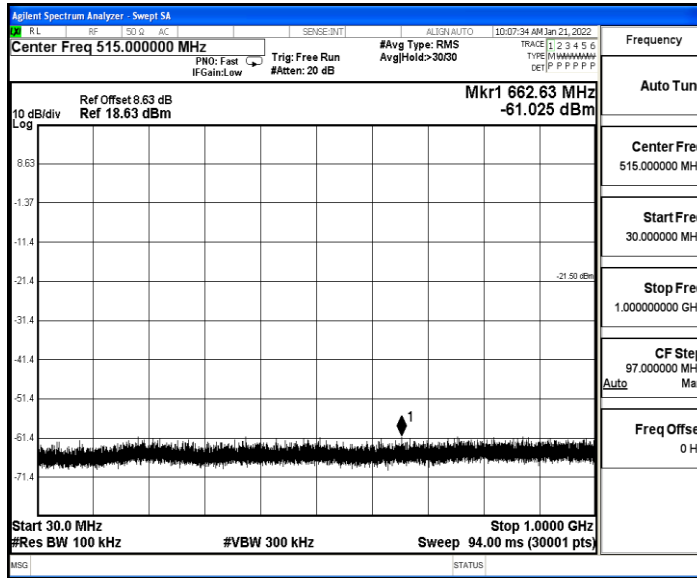


BLE_1M_Ant1_2440_0-Reference

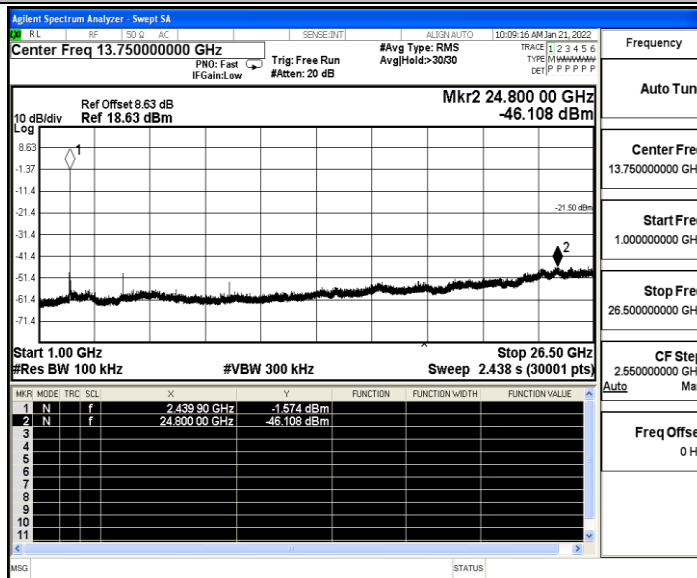




BLE_1M_Ant1_2440_30~1000

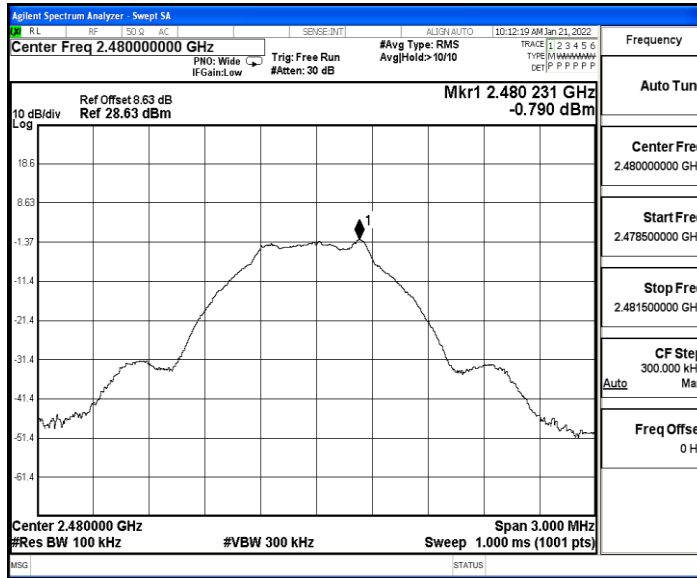


BLE_1M_Ant1_2440_1000~26500

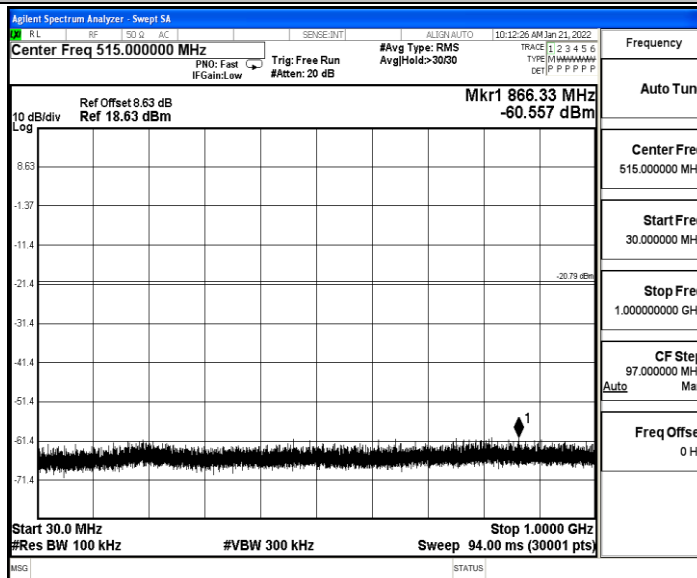




BLE_1M_Ant1_2480_0-Reference

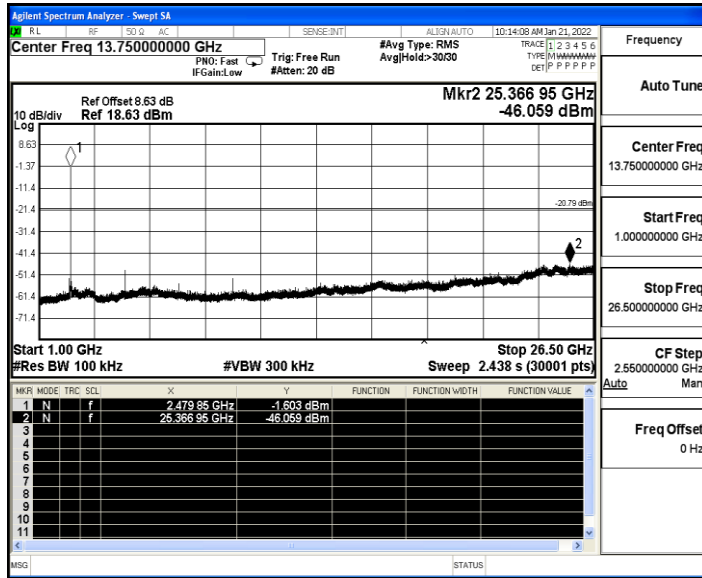


BLE_1M_Ant1_2480_30-1000

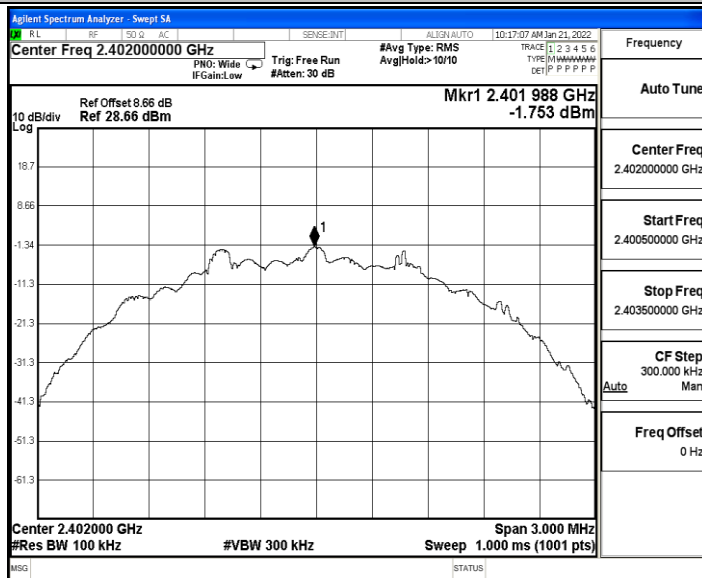




BLE_1M_Ant1_2480_1000~26500

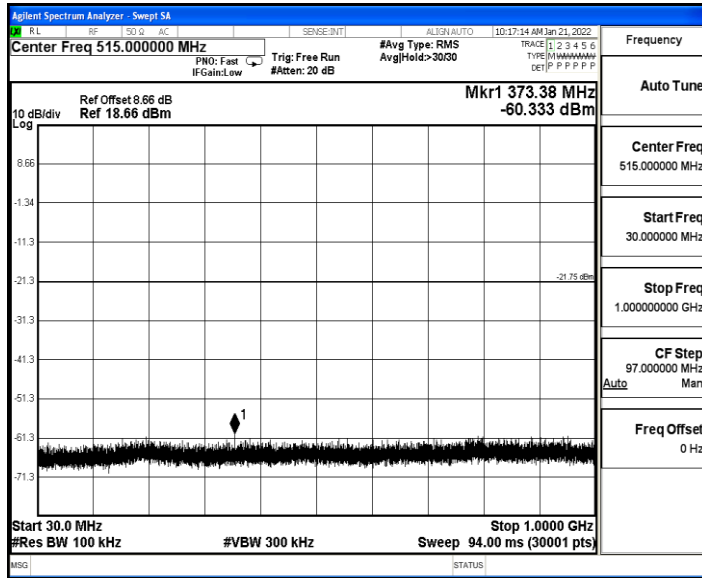


BLE_2M_Ant1_2402_0-Reference

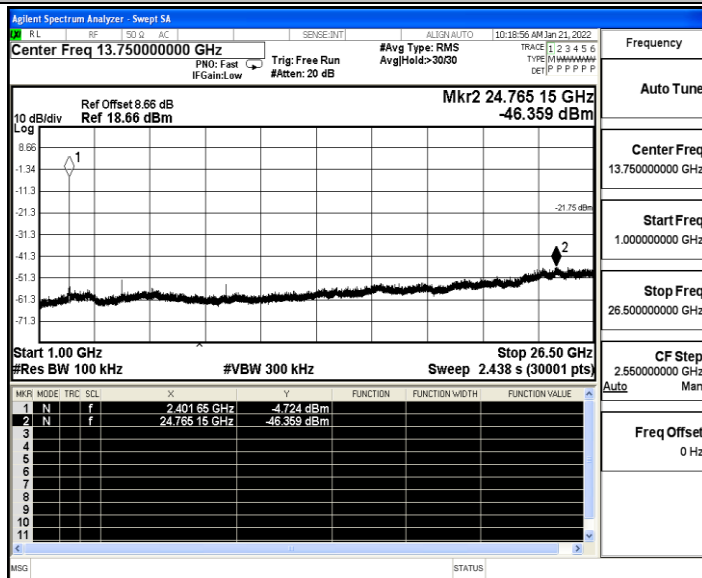




BLE_2M_Ant1_2402_30~1000

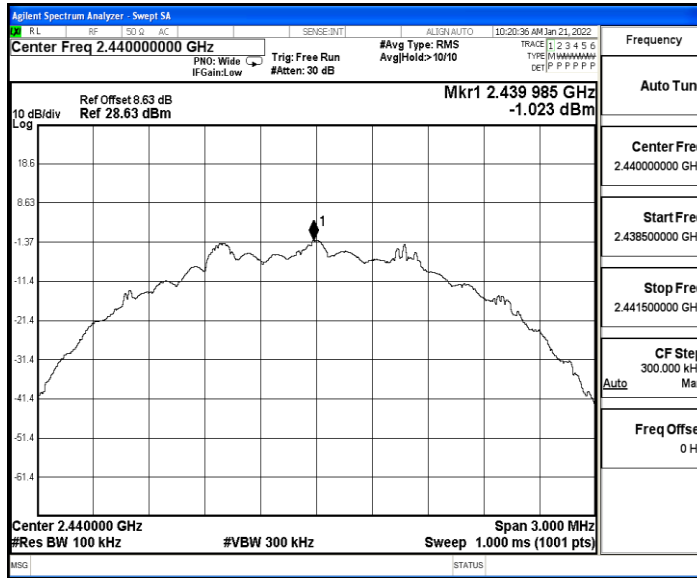


BLE_2M_Ant1_2402_1000~26500

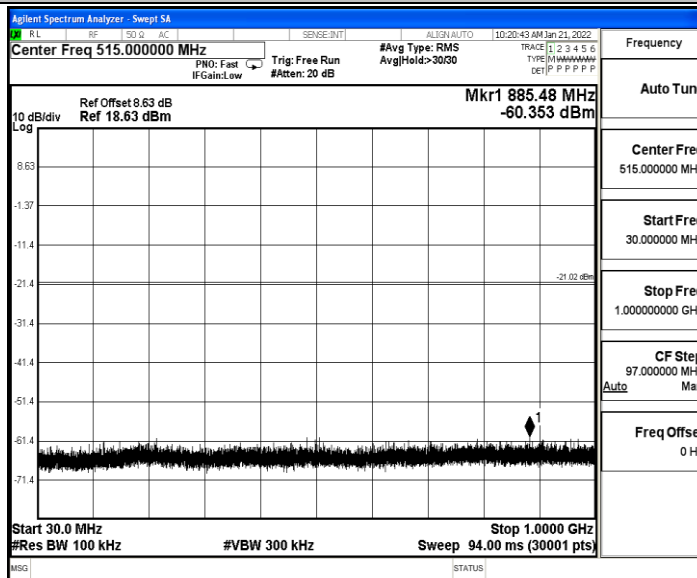




BLE_2M_Ant1_2440_0-Reference

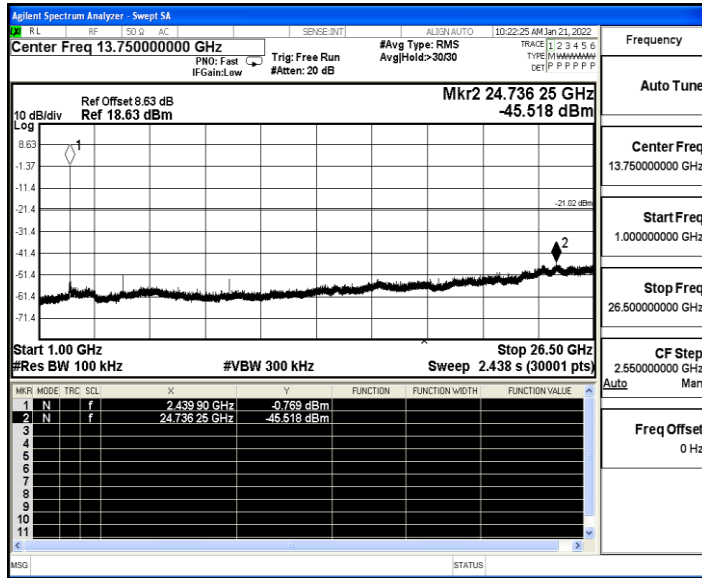


BLE_2M_Ant1_2440_30-1000

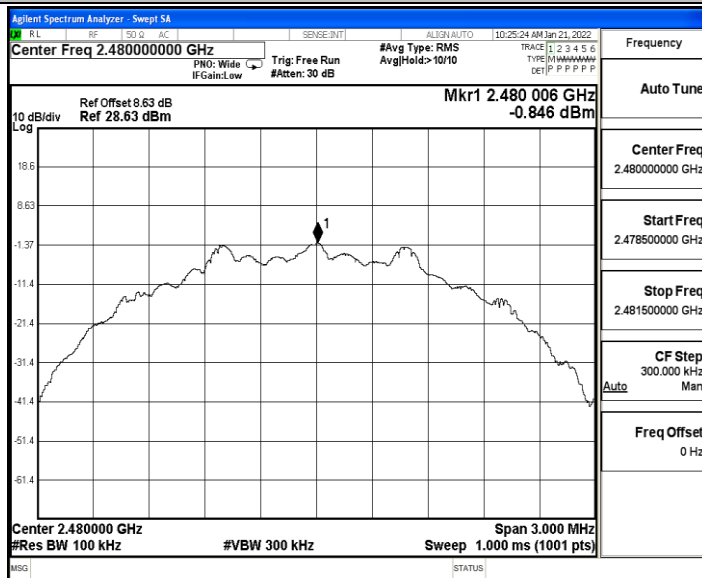




BLE_2M_Ant1_2440_1000~26500

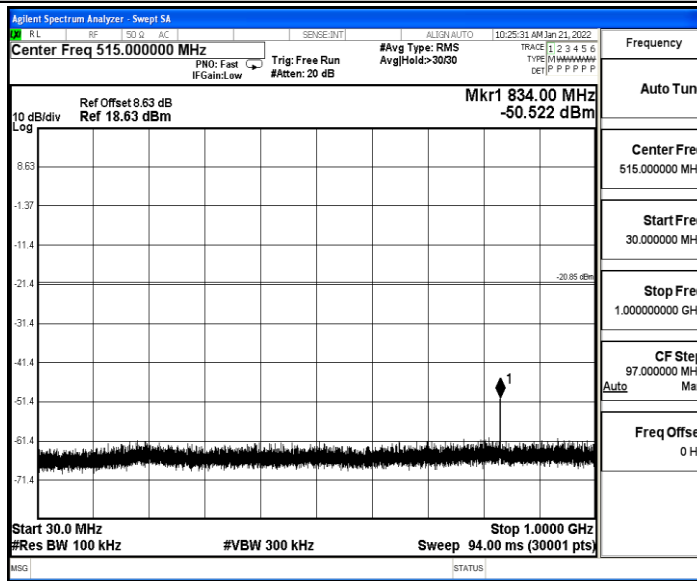


BLE_2M_Ant1_2480_0-Reference

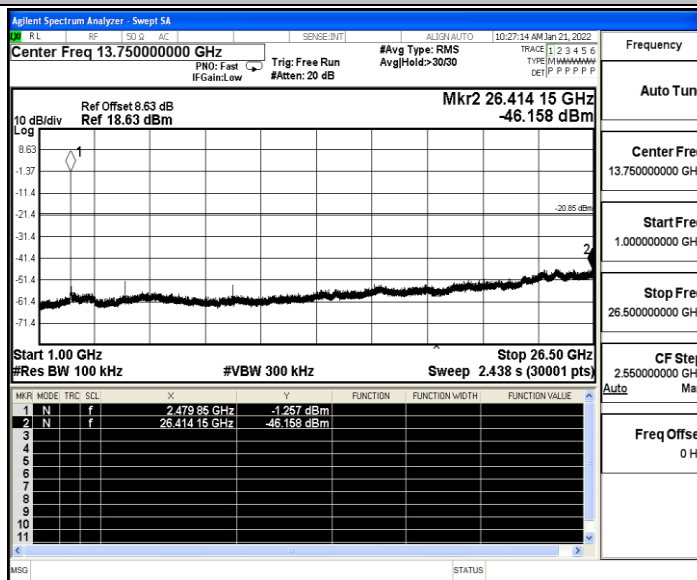




BLE_2M_Ant1_2480_30~1000



BLE_2M_Ant1_2480_1000~26500



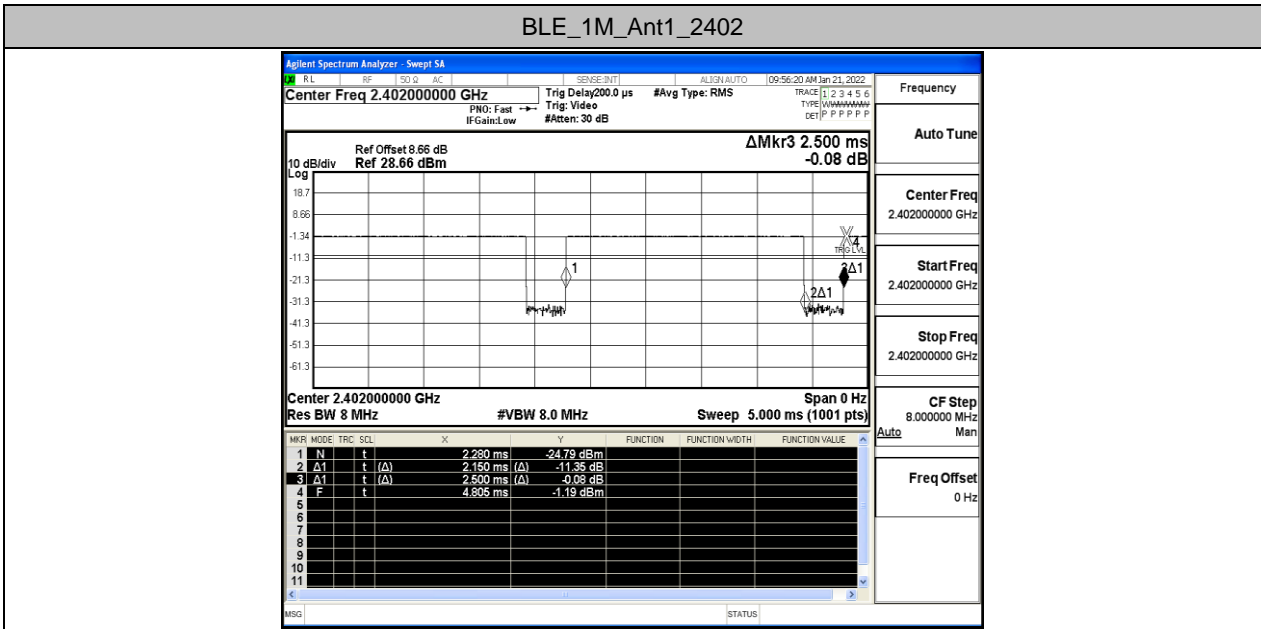


B.6 Duty Cycle

Test Result

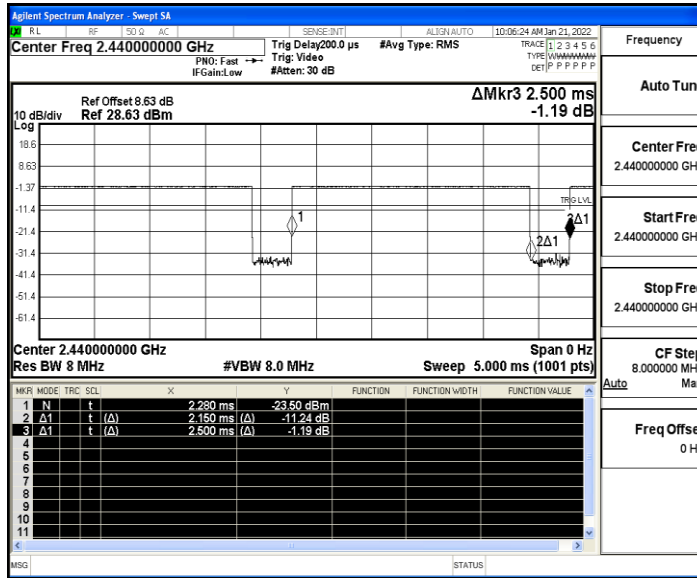
TestMode	Antenna	Channel	ON Time [ms]	Period [ms]	X	DC [%]	xFactor	Limit	Verdict
BLE_1M	Ant1	2402	2.15	2.50	0.8600	86.00	0.66	---	---
		2440	2.15	2.50	0.8600	86.00	0.66	---	---
		2480	2.15	2.50	0.8600	86.00	0.66	---	---
BLE_2M	Ant1	2402	1.09	2.50	0.4360	43.60	3.61	---	---
		2440	1.08	2.49	0.4337	43.37	3.63	---	---
		2480	1.09	2.50	0.4360	43.60	3.61	---	---

Test Graphs

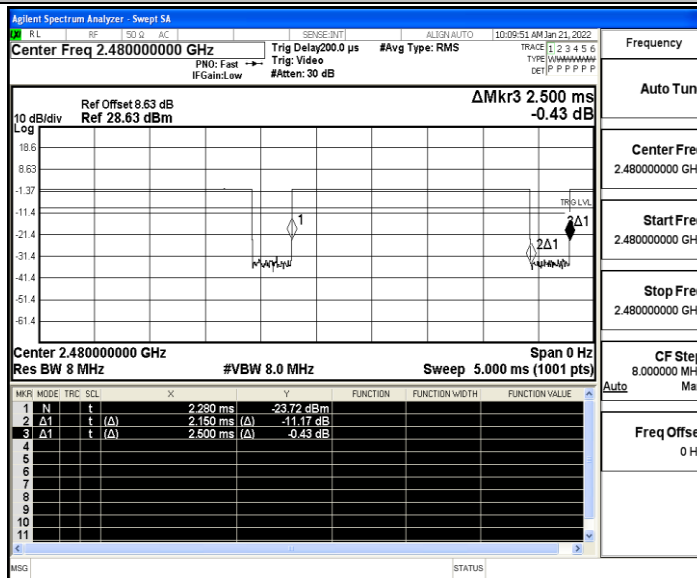




BLE_1M_Ant1_2440

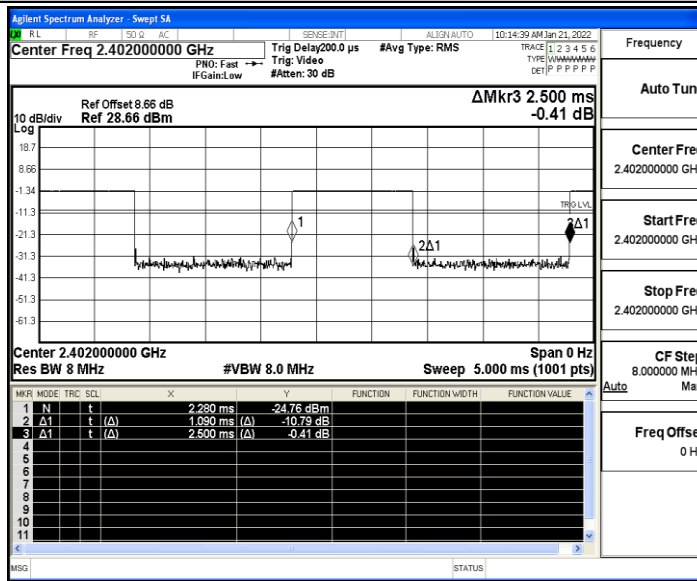


BLE_1M_Ant1_2480

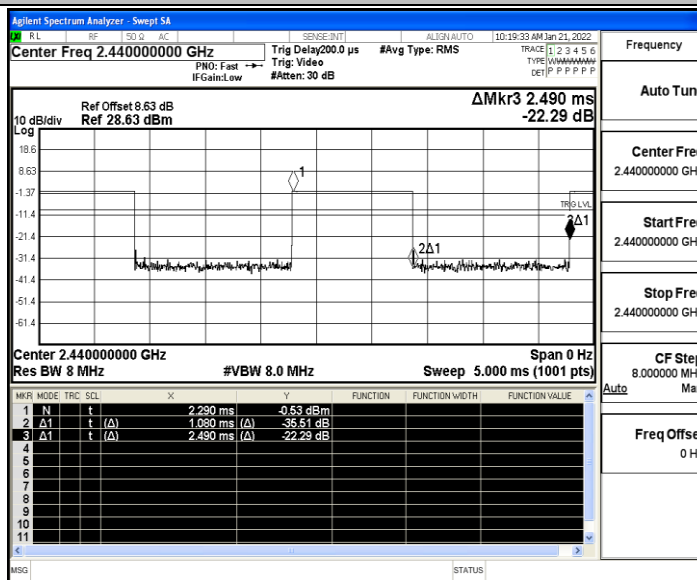


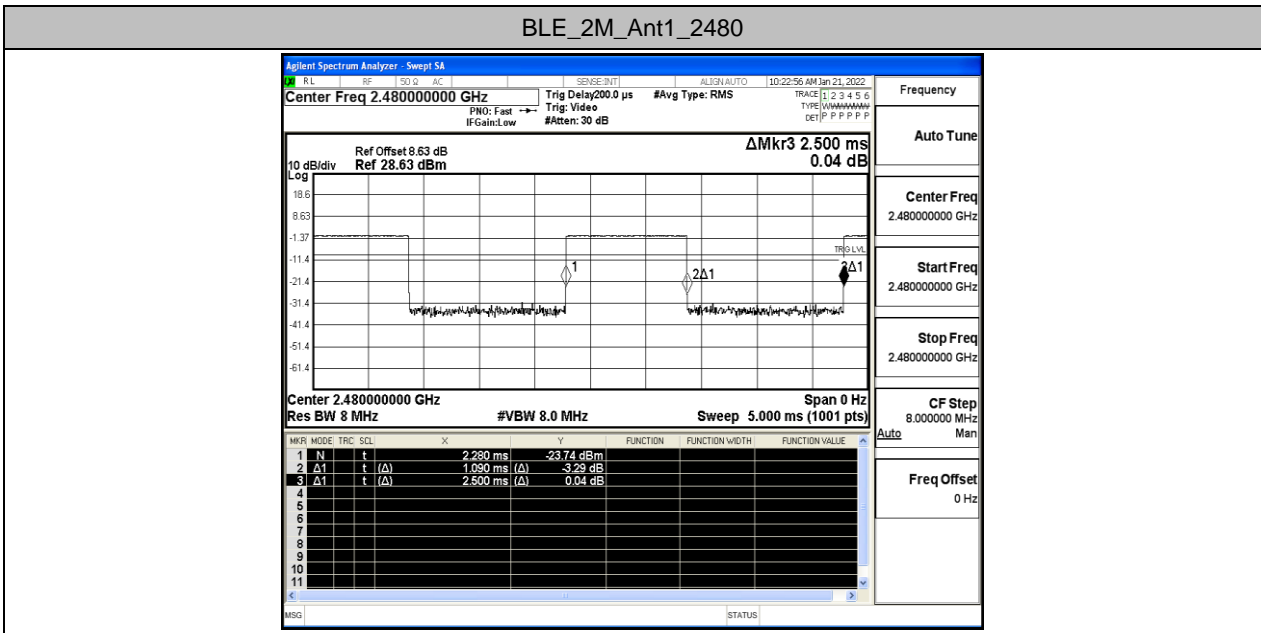


BLE_2M_Ant1_2402



BLE_2M_Ant1_2440







B.7 Emissions in Restricted Bands

Test Result

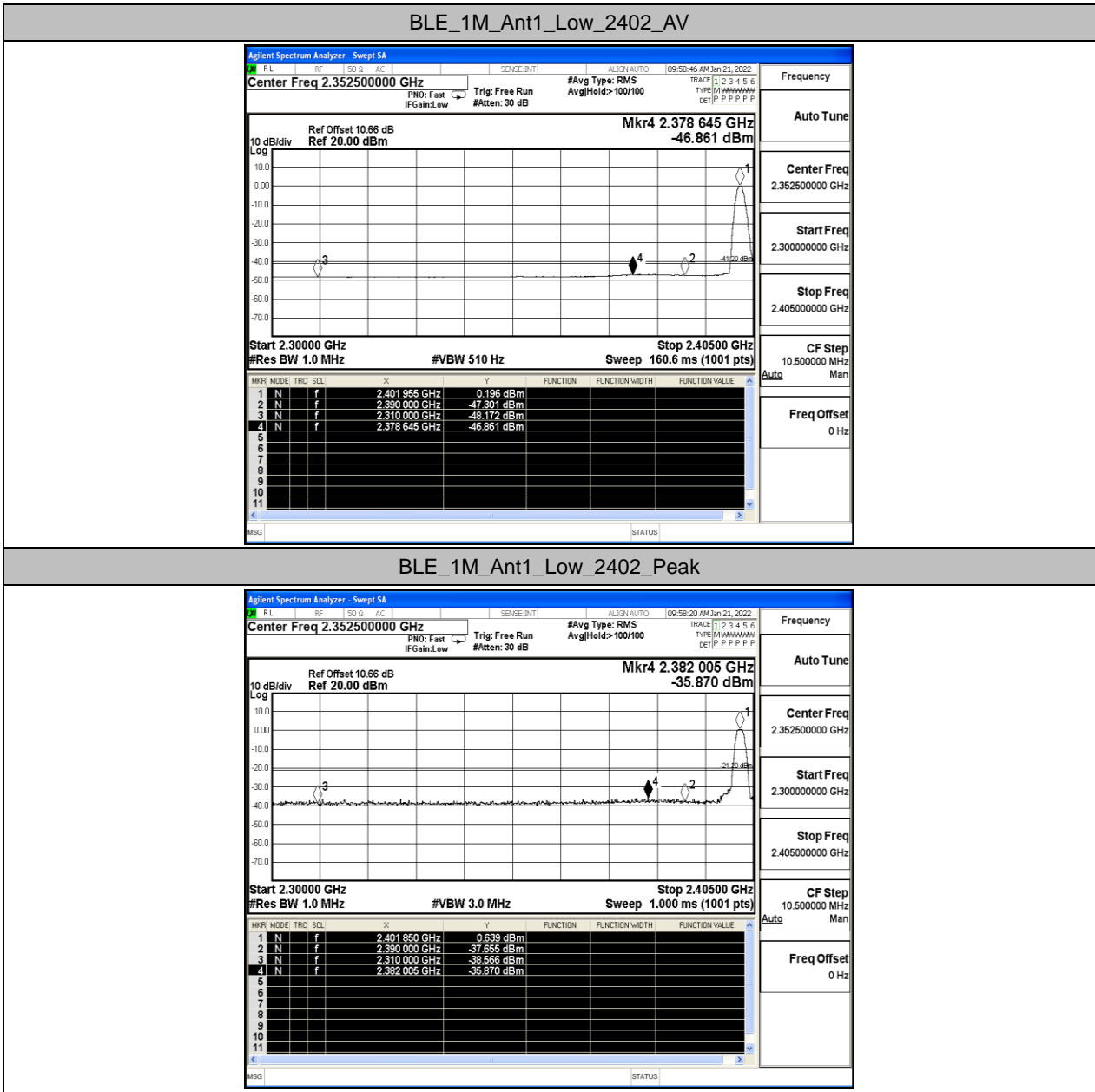
TestMode	Antenna	ChName	Channel	Detector	Freq. [MHz]	Result [dBm]	Limit [dBm]	Result [dBuV/m]	Limit [dBuV/m]	Verdict
BLE_1M	Ant1	Low	2402	AV	2310.000	-48.17	≤-41.20	47.03	≤54	PASS
				AV	2378.645	-46.86	≤-41.20	48.34	≤54	PASS
				AV	2390.000	-47.3	≤-41.20	47.90	≤54	PASS
				Peak	2310.000	-38.57	≤-21.20	56.63	≤74	PASS
				Peak	2382.005	-35.87	≤-21.20	59.33	≤74	PASS
				Peak	2390.000	-37.66	≤-21.20	57.54	≤74	PASS
		High	2480	AV	2483.500	-44.67	≤-41.20	50.53	≤54	PASS
				AV	2483.520	-44.67	≤-41.20	50.53	≤54	PASS
				AV	2500.000	-46.11	≤-41.20	49.09	≤54	PASS
				Peak	2483.500	-36.11	≤-21.20	59.09	≤74	PASS
				Peak	2497.920	-35.47	≤-21.20	59.73	≤74	PASS
				Peak	2500.000	-37.1	≤-21.20	58.10	≤74	PASS
BLE_2M	Ant1	Low	2402	AV	2310.000	-48.07	≤-41.20	47.13	≤54	PASS
				AV	2384.210	-46.75	≤-41.20	48.45	≤54	PASS
				AV	2390.000	-47.37	≤-41.20	47.83	≤54	PASS
				Peak	2310.000	-39.5	≤-21.20	55.70	≤74	PASS
				Peak	2374.550	-36.22	≤-21.20	58.98	≤74	PASS
				Peak	2390.000	-38.07	≤-21.20	57.13	≤74	PASS
		High	2480	AV	2483.500	-45.5	≤-41.20	49.70	≤54	PASS
				AV	2484.160	-45.58	≤-41.20	49.62	≤54	PASS
				AV	2500.000	-46.02	≤-41.20	49.18	≤54	PASS
				Peak	2483.500	-37.07	≤-21.20	58.13	≤74	PASS
				Peak	2484.320	-34.79	≤-21.20	60.41	≤74	PASS
				Peak	2500.000	-35.52	≤-21.20	59.68	≤74	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.

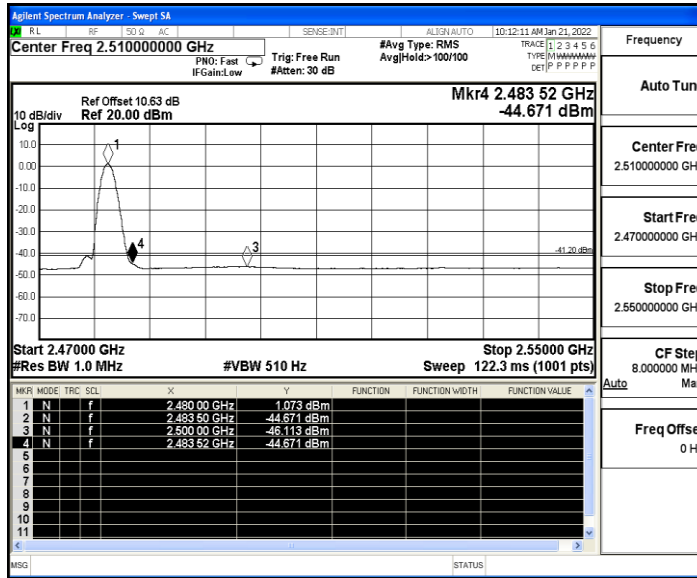


Test Graphs

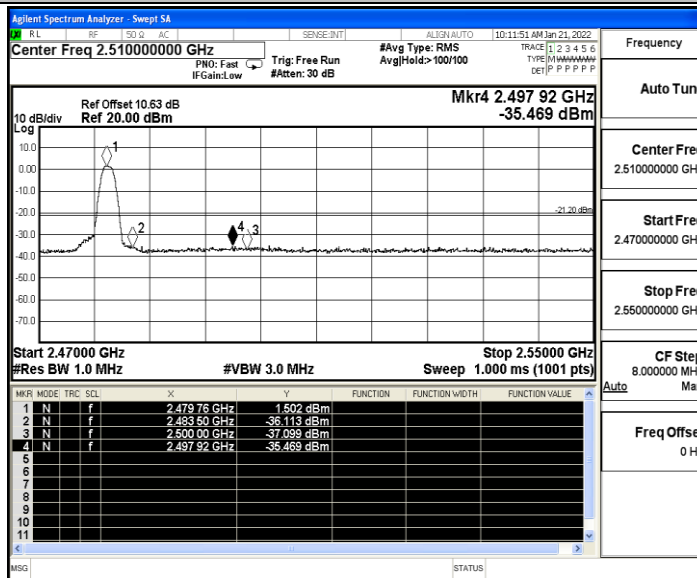




BLE_1M_Ant1_High_2480_AV

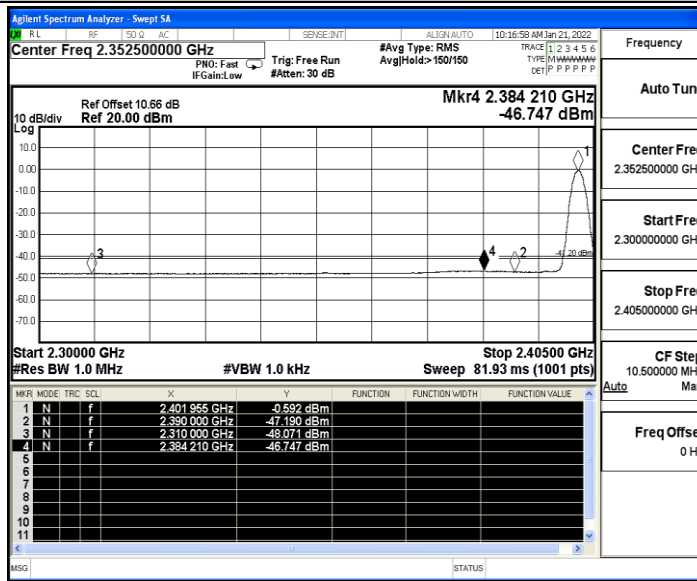


BLE_1M_Ant1_High_2480_Peak

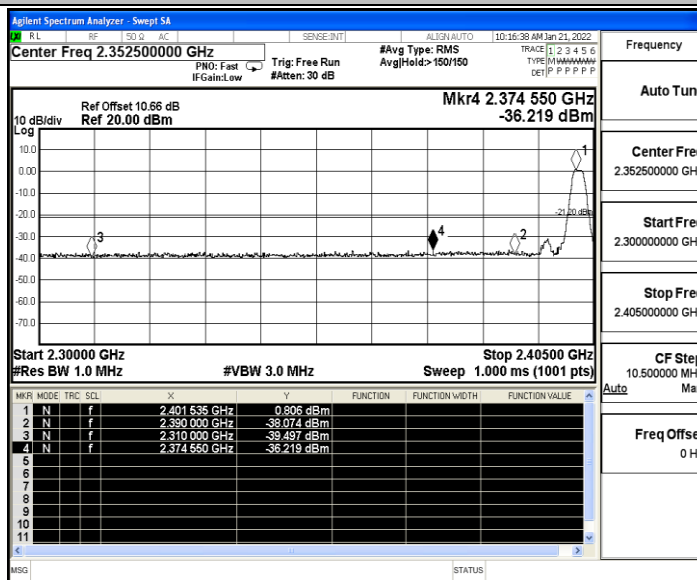




BLE_2M_Ant1_Low_2402_AV

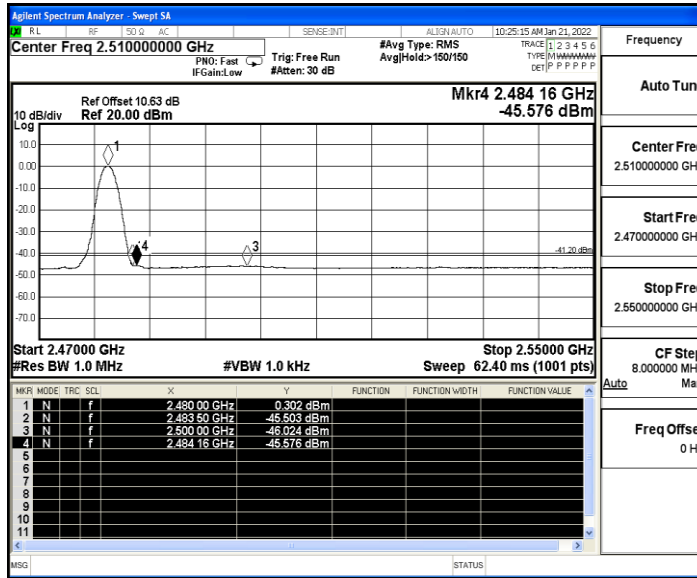


BLE_2M_Ant1_Low_2402_Peak





BLE_2M_Ant1_High_2480_AV



BLE_2M_Ant1_High_2480_Peak

