

Appendix B

RF Test Data for BT LE (Conducted Measurement)

Product Name: Bluetooth speaker

Test Model: OS-1993

Environmental Conditions

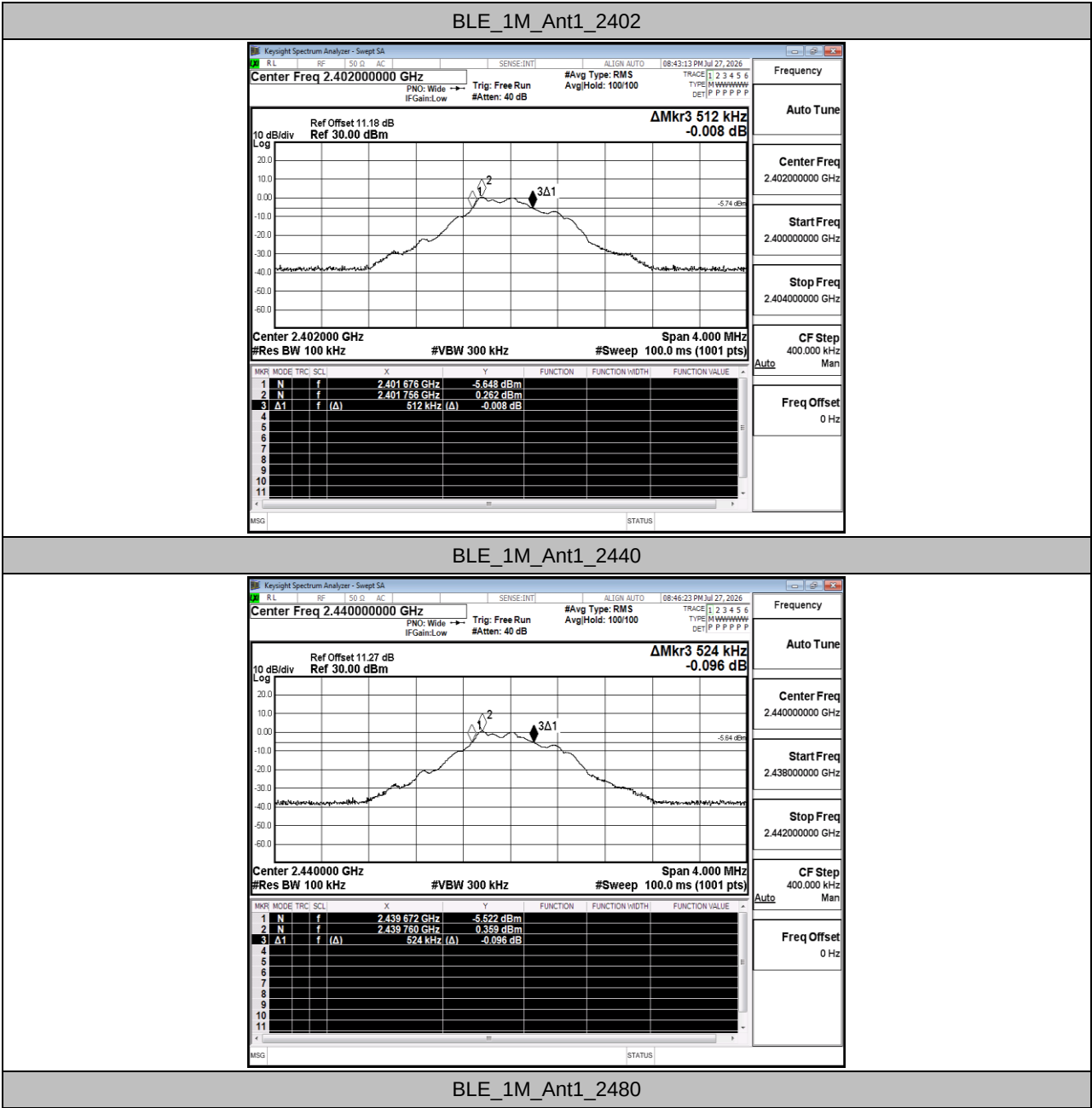
Temperature:	24.5°C
Relative Humidity:	53.2%
ATM Pressure:	100.0 kPa
Test Engineer:	Zhang hai
Supervised by:	Fengliu Tang

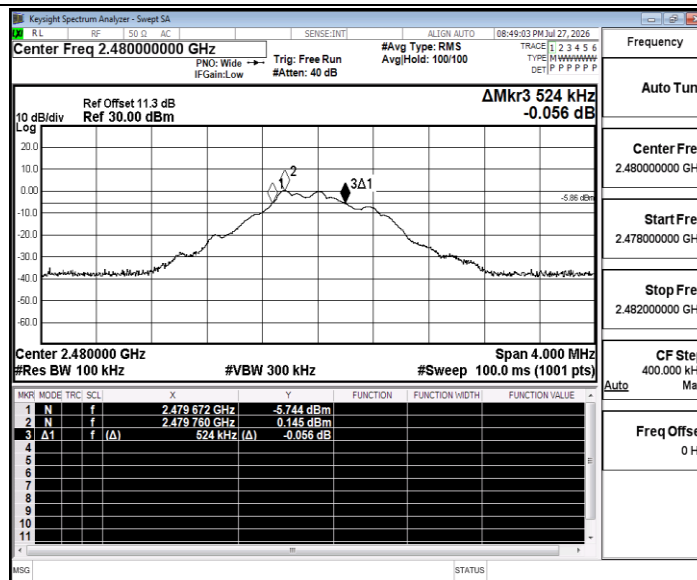
B.1 DTS Bandwidth

Test Result

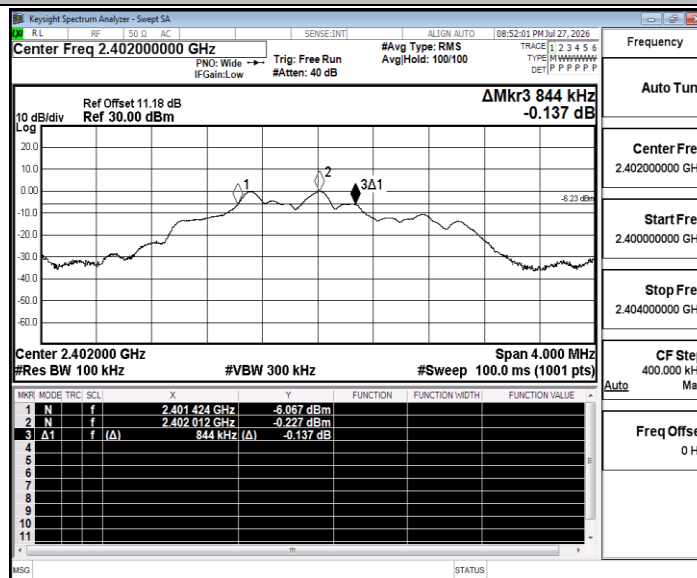
TestMode	Antenna	Freq(MHz)	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.512	2401.676	2402.188	0.5	PASS
		2440	0.524	2439.672	2440.196	0.5	PASS
		2480	0.524	2479.672	2480.196	0.5	PASS
BLE_2M	Ant1	2402	0.844	2401.424	2402.268	0.5	PASS
		2440	0.832	2439.424	2440.256	0.5	PASS
		2480	0.832	2479.420	2480.252	0.5	PASS

Test Graphs

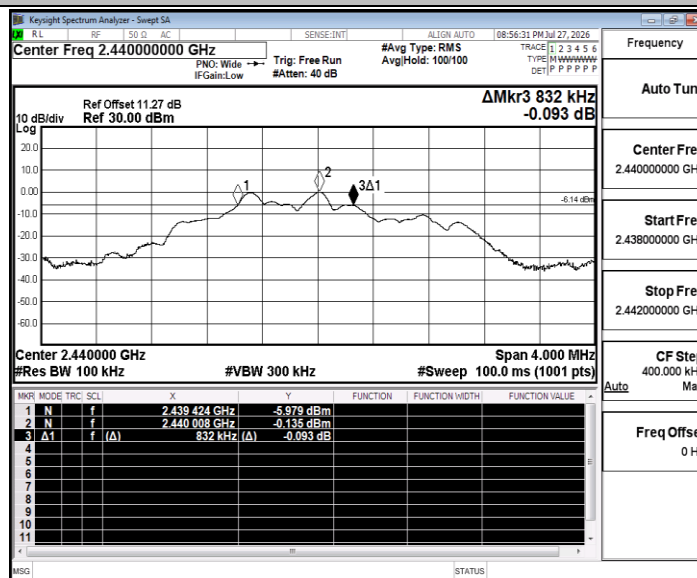


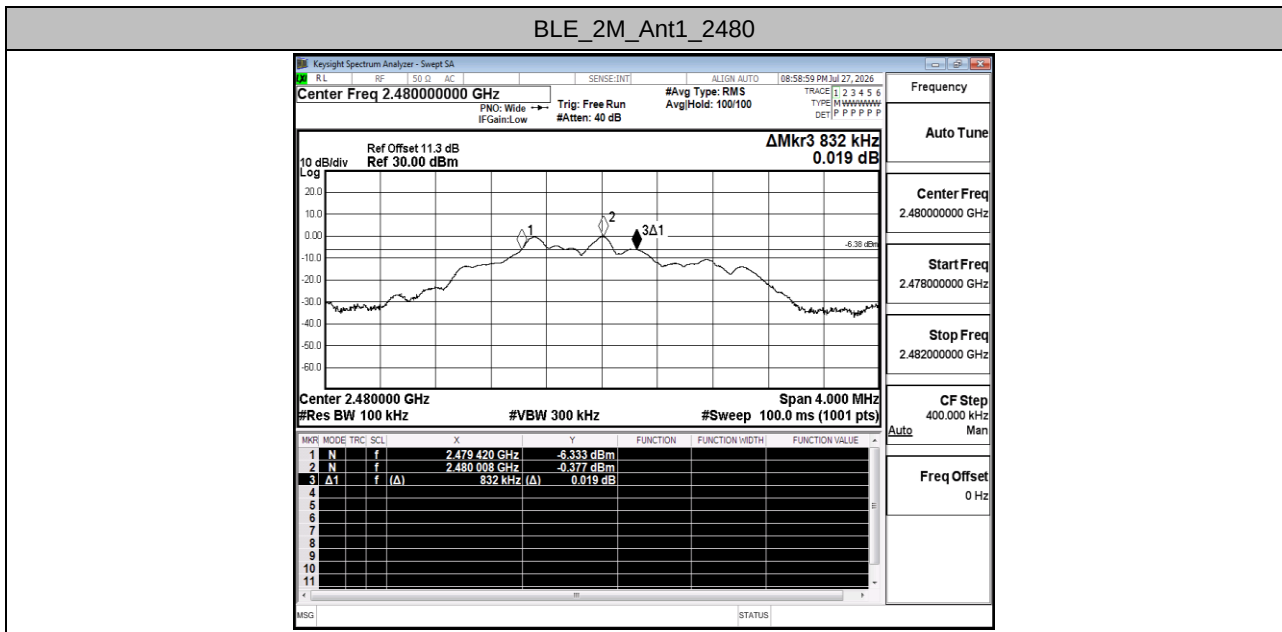


BLE_2M_Ant1_2402



BLE_2M_Ant1_2440



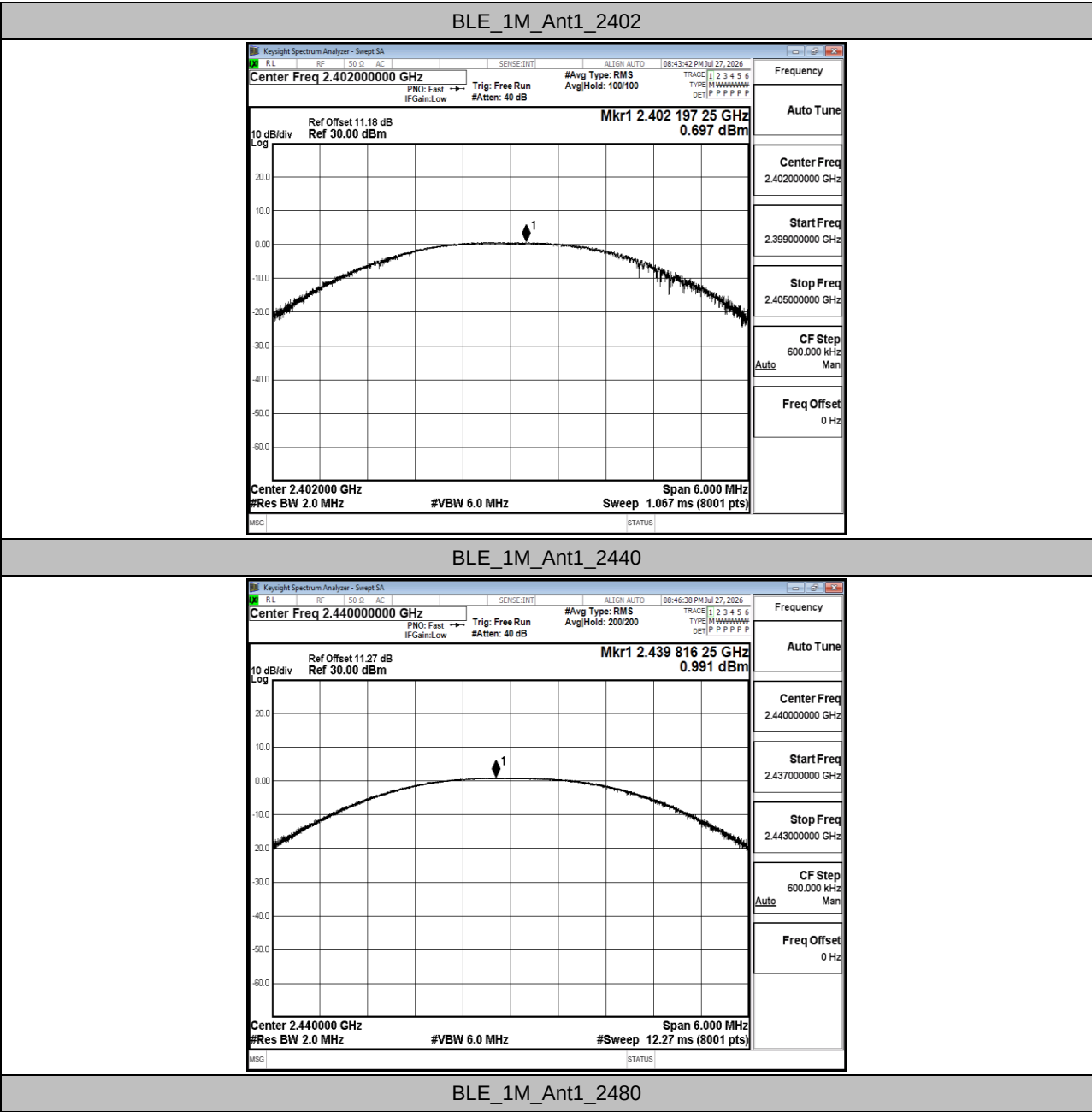


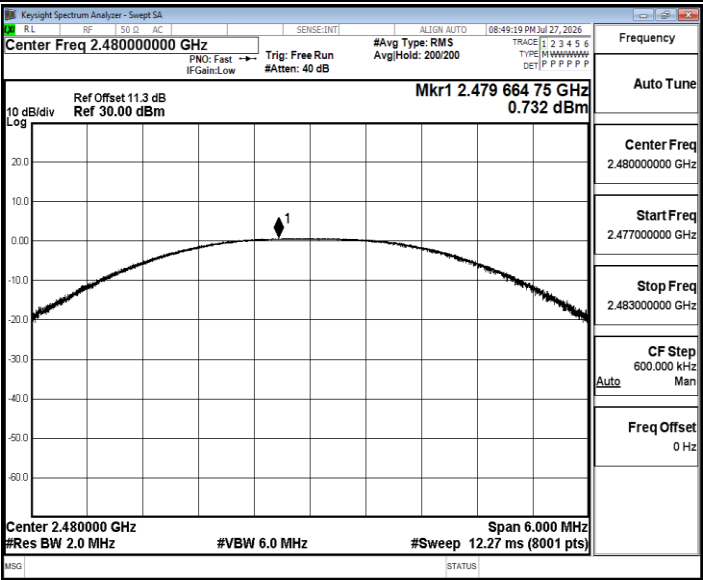
B.2 Maximum Peak conducted output power

Test Result Peak

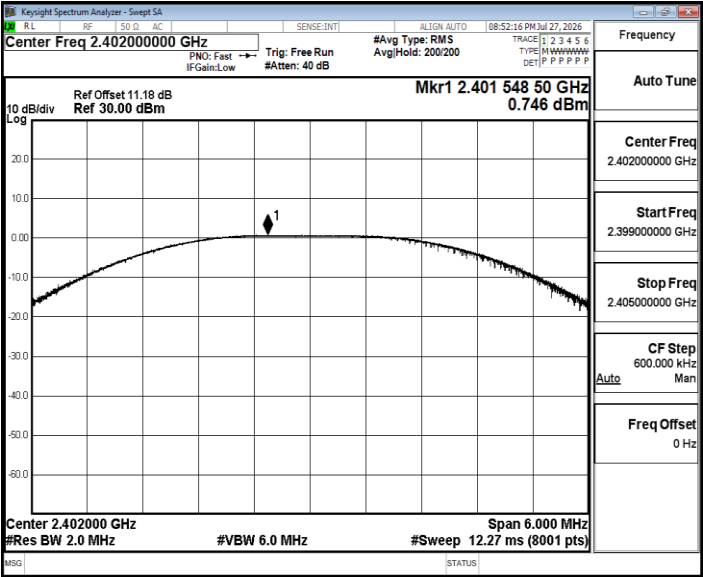
TestMode	Antenna	Freq(MHz)	Conducted Peak Power[dBm]	Conducted Limit[dBm]	Verdict
BLE_1M	Ant1	2402	0.70	≤30	PASS
		2440	0.99	≤30	PASS
		2480	0.73	≤30	PASS
BLE_2M	Ant1	2402	0.75	≤30	PASS
		2440	0.85	≤30	PASS
		2480	0.62	≤30	PASS

Test Graphs Peak

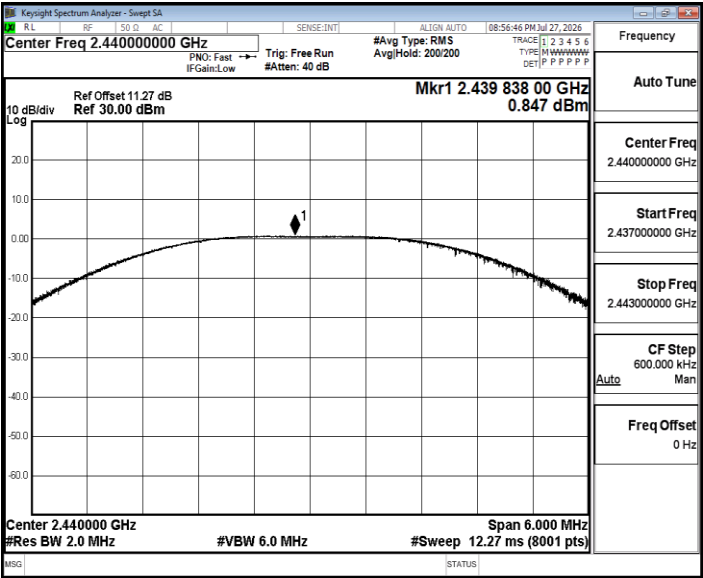


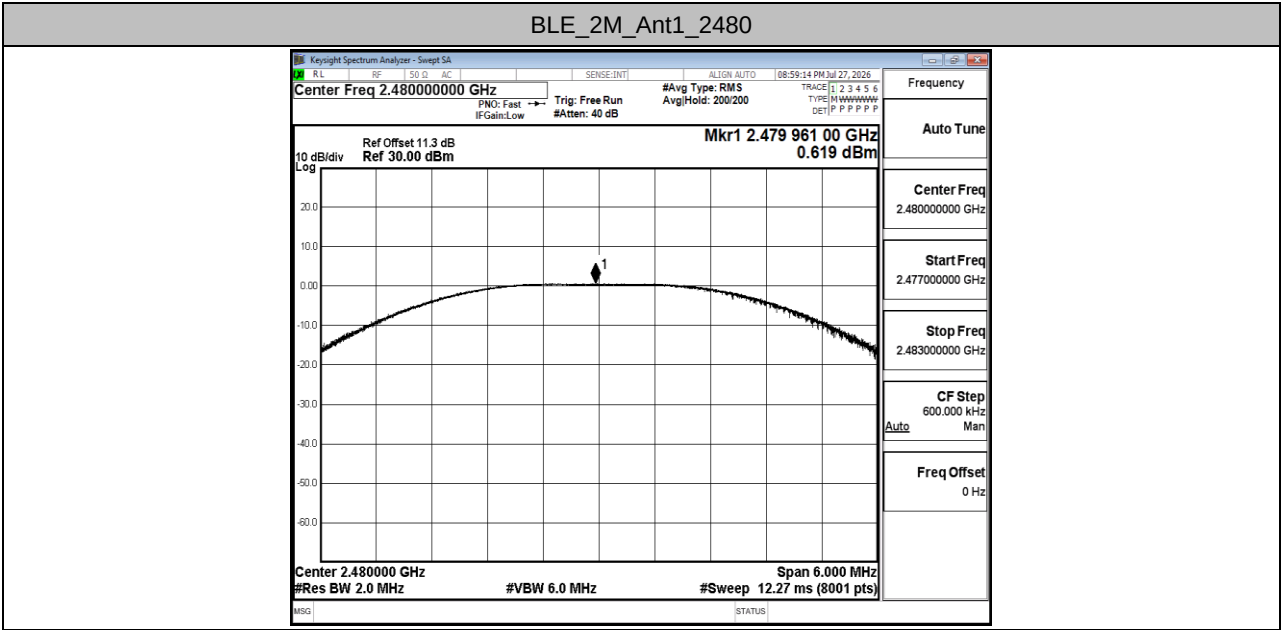


BLE_2M_Ant1_2402



BLE_2M_Ant1_2440





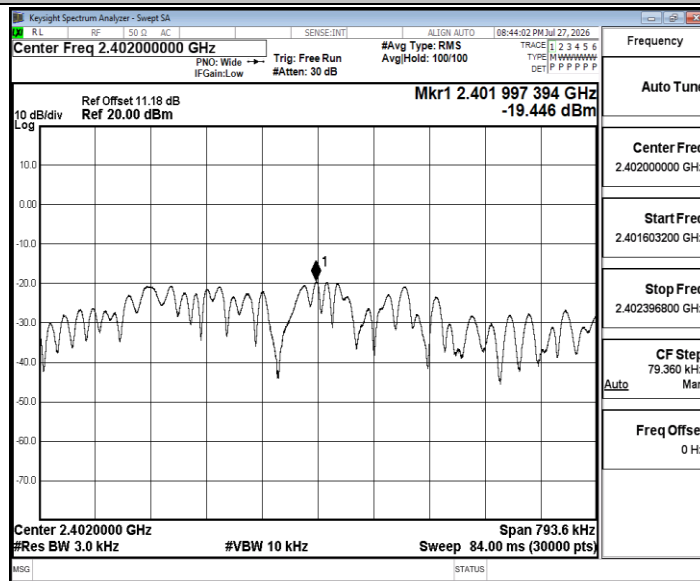
B.3 Maximum power spectral density

Test Result

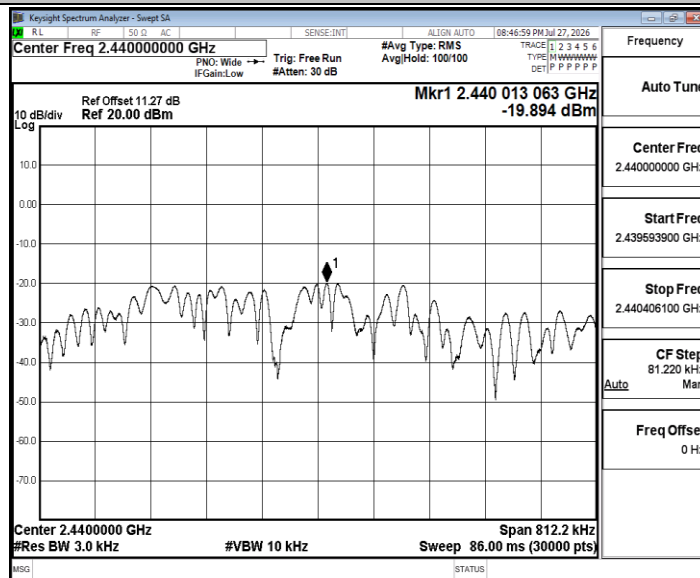
TestMode	Antenna	Freq(MHz)	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-19.45	≤8.00	PASS
		2440	-19.89	≤8.00	PASS
		2480	-20.11	≤8.00	PASS
BLE_2M	Ant1	2402	-21.97	≤8.00	PASS
		2440	-21.92	≤8.00	PASS
		2480	-21.99	≤8.00	PASS

Test Graphs

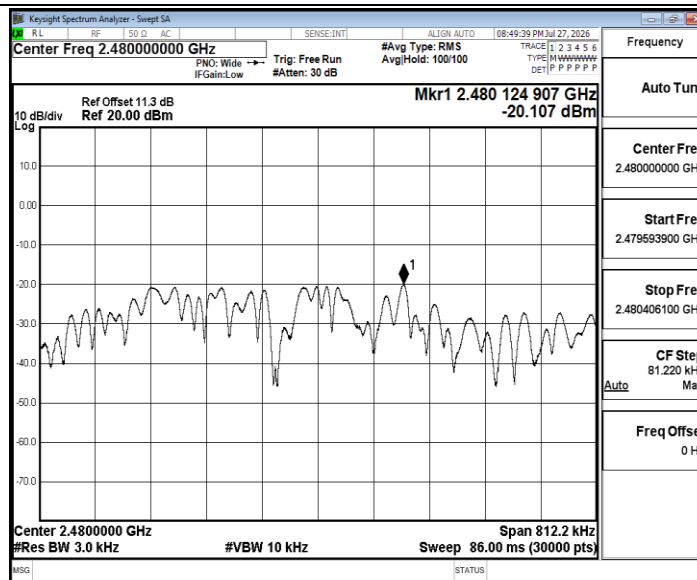
BLE_1M_Ant1_2402



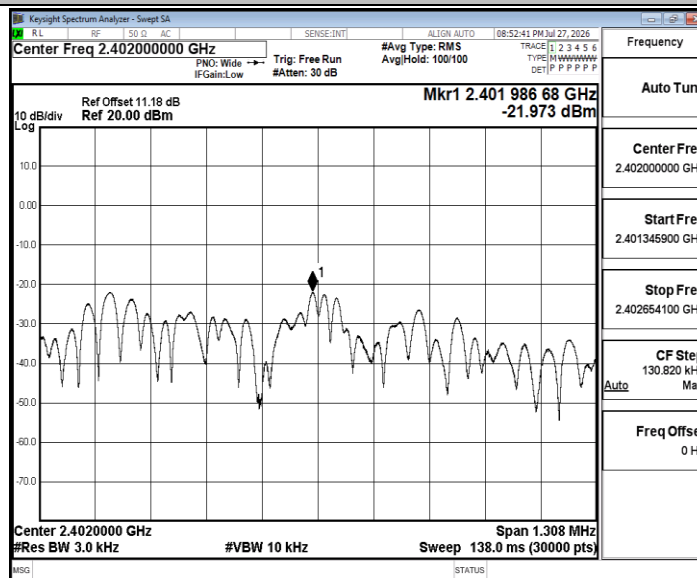
BLE_1M_Ant1_2440



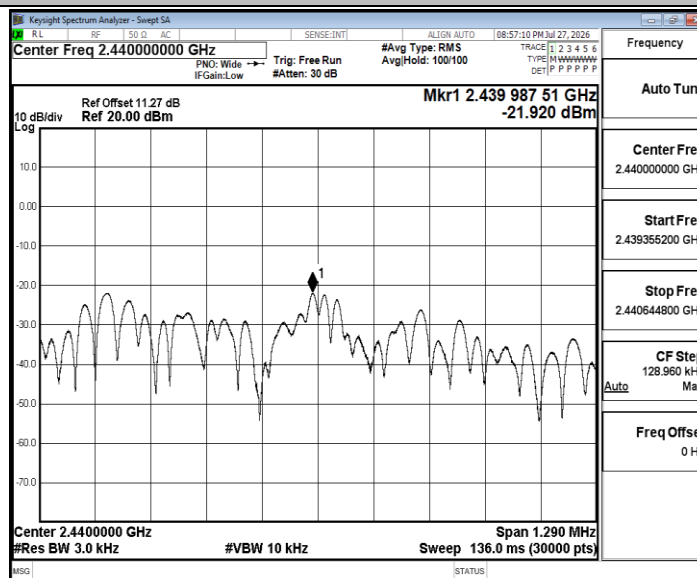
BLE_1M_Ant1_2480

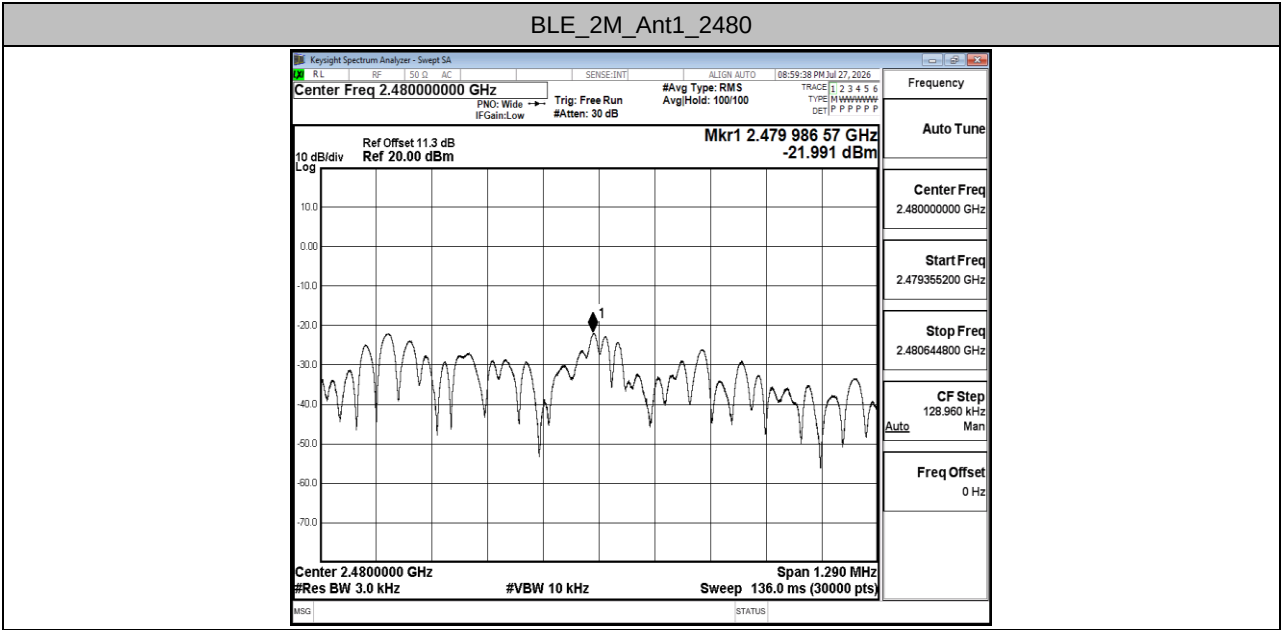


BLE_2M_Ant1_2402



BLE_2M_Ant1_2440





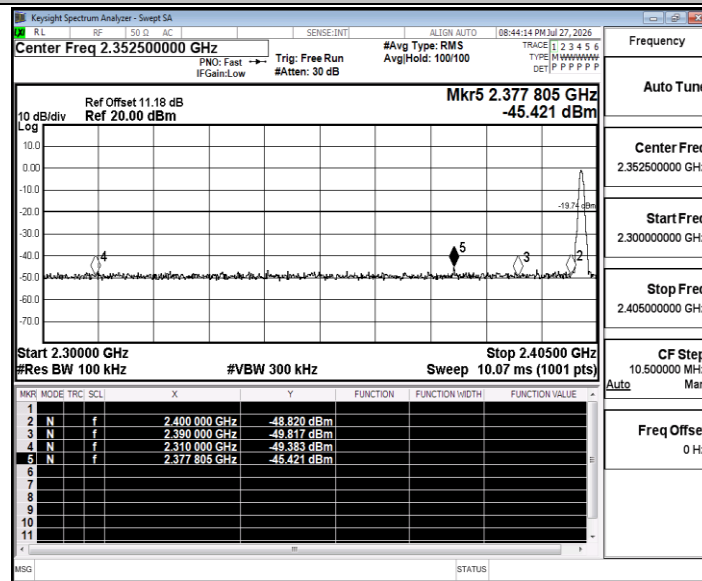
B.4 Band edge measurements

Test Result

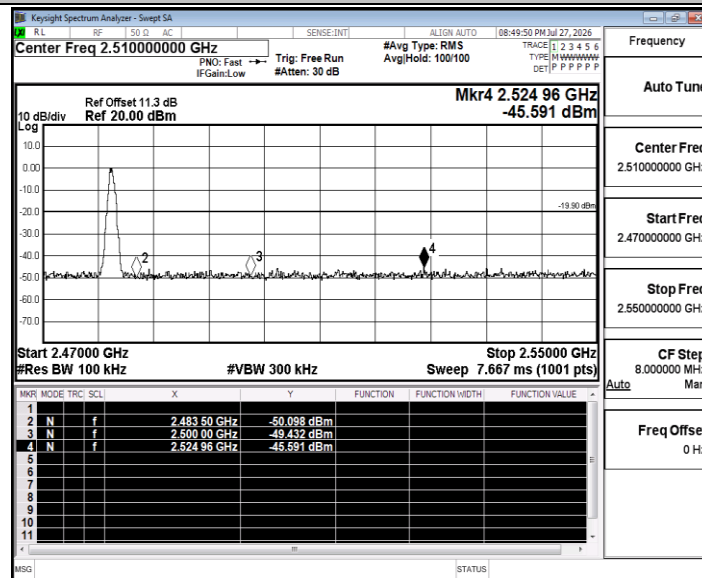
TestMode	Antenna	ChName	Freq(MHz)	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	0.26	-45.42	≤-19.74	PASS
		High	2480	0.10	-45.59	≤-19.9	PASS
BLE_2M	Ant1	Low	2402	-0.32	-32.67	≤-20.32	PASS
		High	2480	-0.45	-45.65	≤-20.45	PASS

Test Graphs

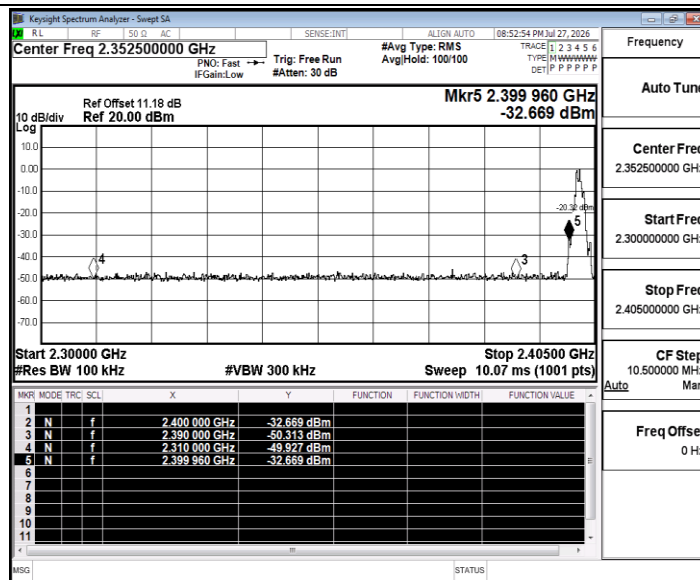
BLE_1M_Ant1_Low_2402



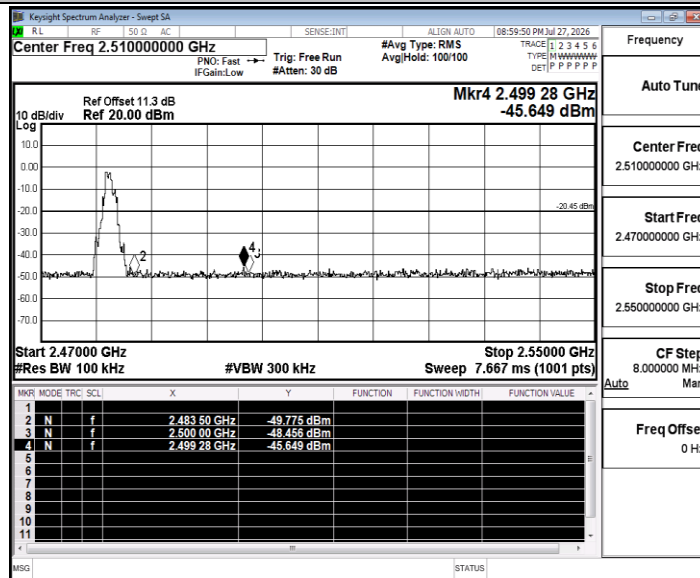
BLE_1M_Ant1_High_2480



BLE_2M_Ant1_Low_2402



BLE_2M_Ant1_High_2480



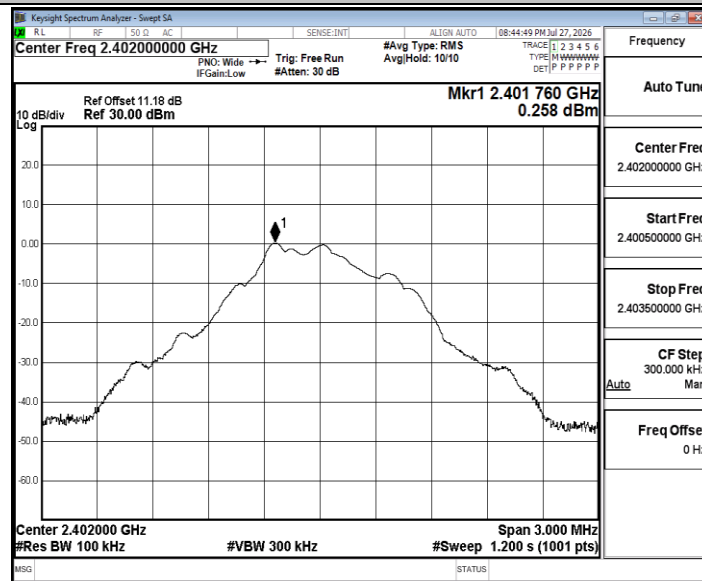
B.5 Conducted Spurious Emission

Test Result

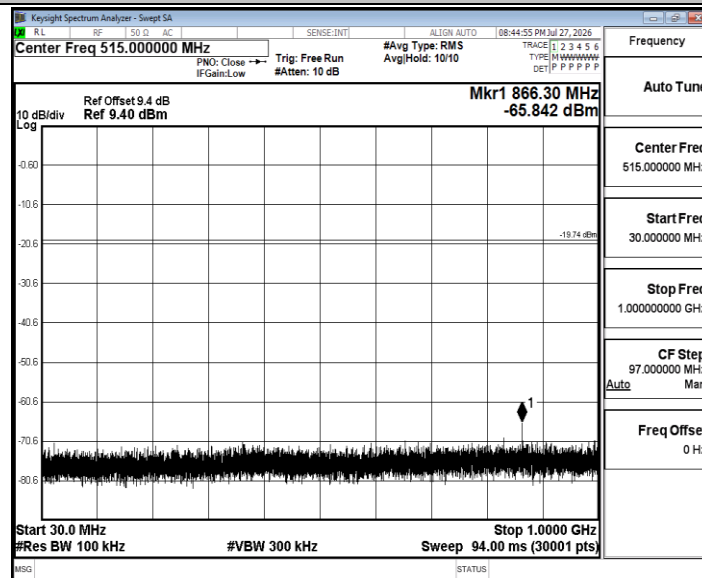
TestMode	Antenna	Freq(MHz)	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	Reference	0.26	0.26	---	PASS
			30~1000	0.26	-65.84	≤-19.74	PASS
			1000~26500	0.26	-38.13	≤-19.74	PASS
		2440	Reference	0.28	0.28	---	PASS
			30~1000	0.28	-64.84	≤-19.72	PASS
			1000~26500	0.28	-36.64	≤-19.72	PASS
		2480	Reference	0.10	0.10	---	PASS
			30~1000	0.10	-60.55	≤-19.9	PASS
			1000~26500	0.10	-33.53	≤-19.9	PASS
BLE_2M	Ant1	2402	Reference	-0.28	-0.28	---	PASS
			30~1000	-0.28	-61.19	≤-20.28	PASS
			1000~26500	-0.28	-36.34	≤-20.28	PASS
		2440	Reference	-0.22	-0.22	---	PASS
			30~1000	-0.22	-61.45	≤-20.22	PASS
			1000~26500	-0.22	-33.19	≤-20.22	PASS
		2480	Reference	-0.41	-0.41	---	PASS
			30~1000	-0.41	-62.01	≤-20.41	PASS
			1000~26500	-0.41	-32.29	≤-20.41	PASS

Test Graphs

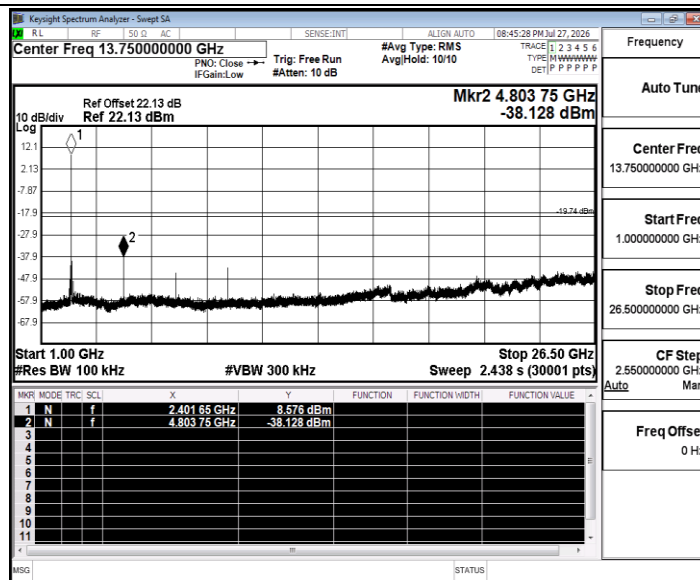
BLE_1M_Ant1_2402_0~Reference



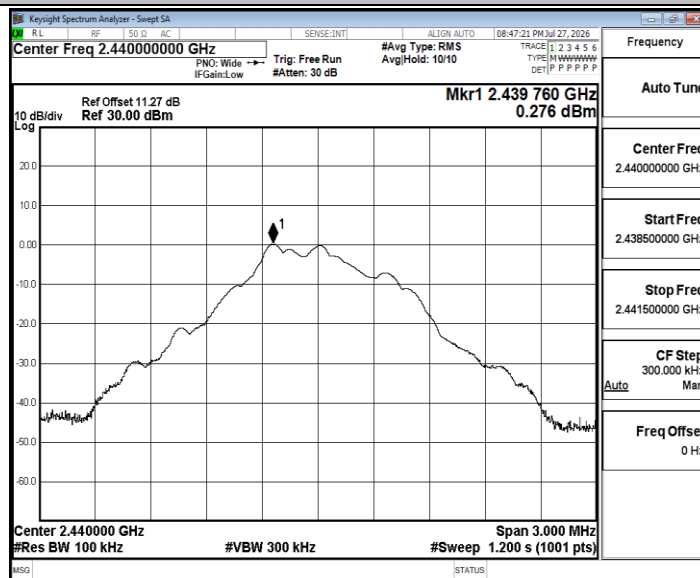
BLE_1M_Ant1_2402_30~1000



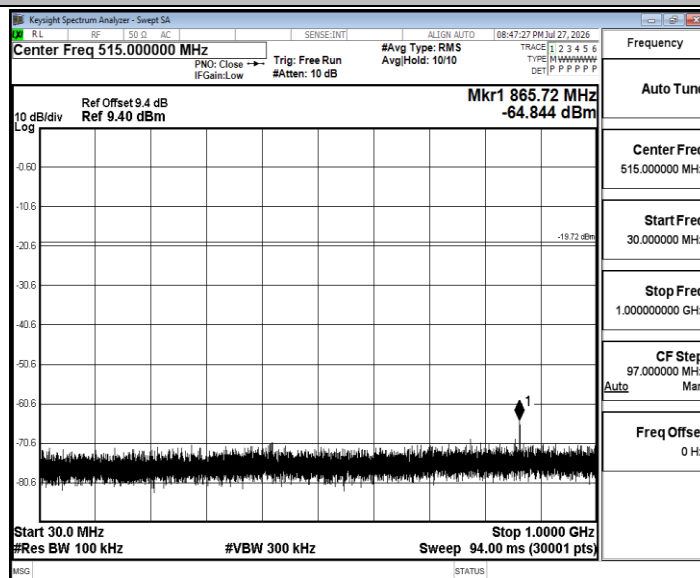
BLE_1M_Ant1_2402_1000~26500



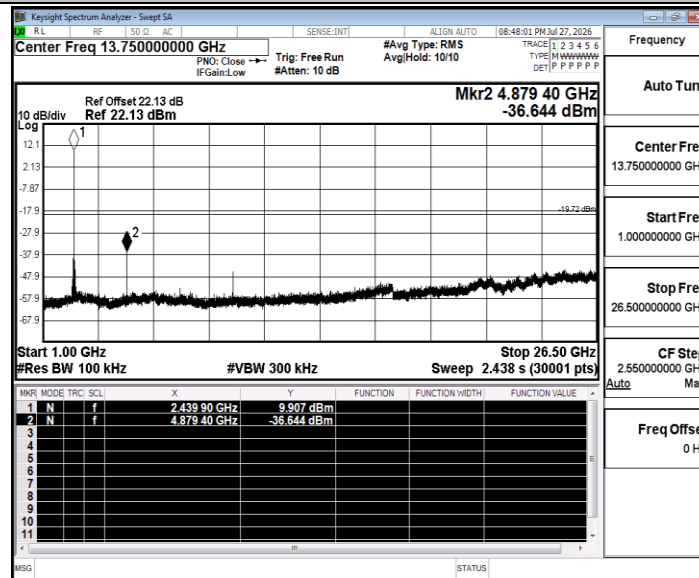
BLE_1M_Ant1_2440_0~Reference



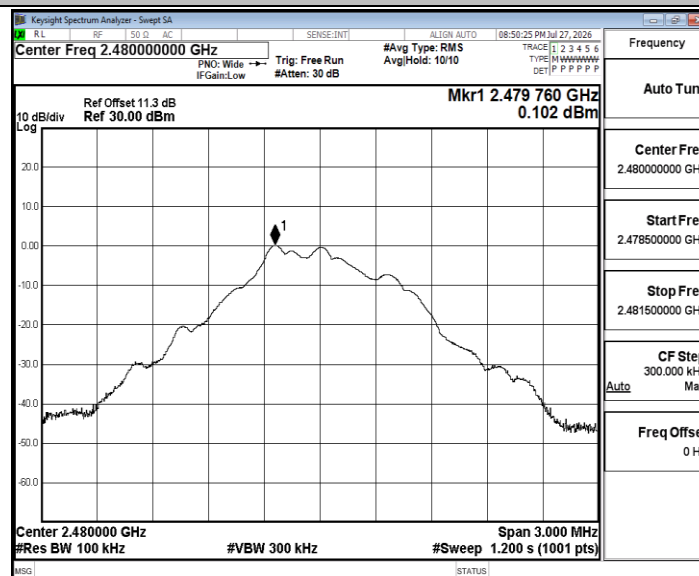
BLE_1M_Ant1_2440_30~1000



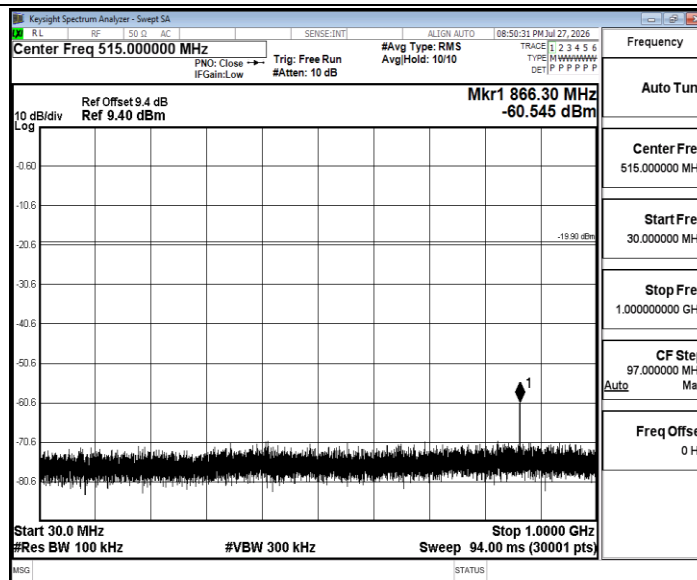
BLE_1M_Ant1_2440_1000~26500



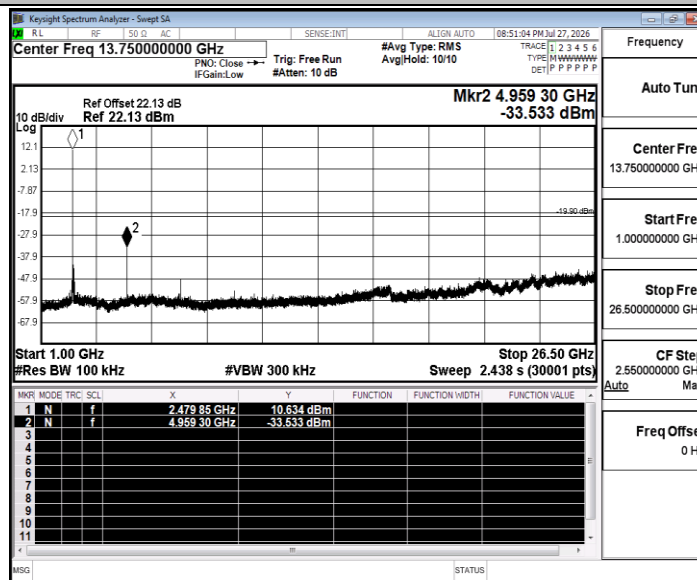
BLE_1M_Ant1_2480_0~Reference



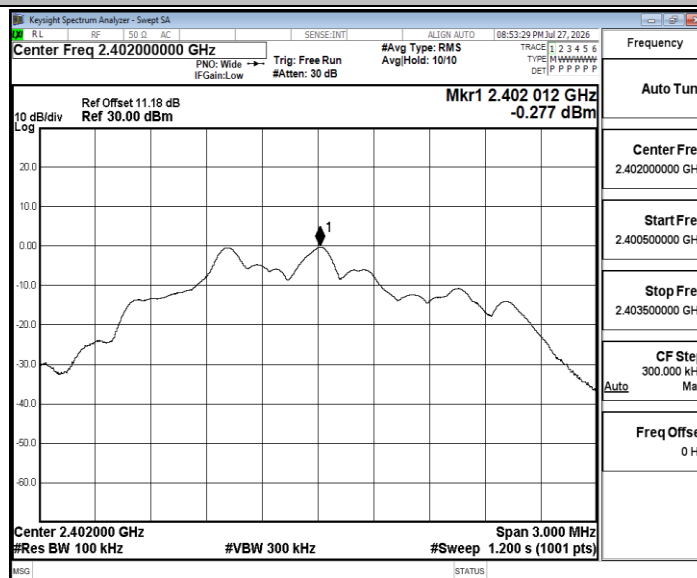
BLE_1M_Ant1_2480_30~1000

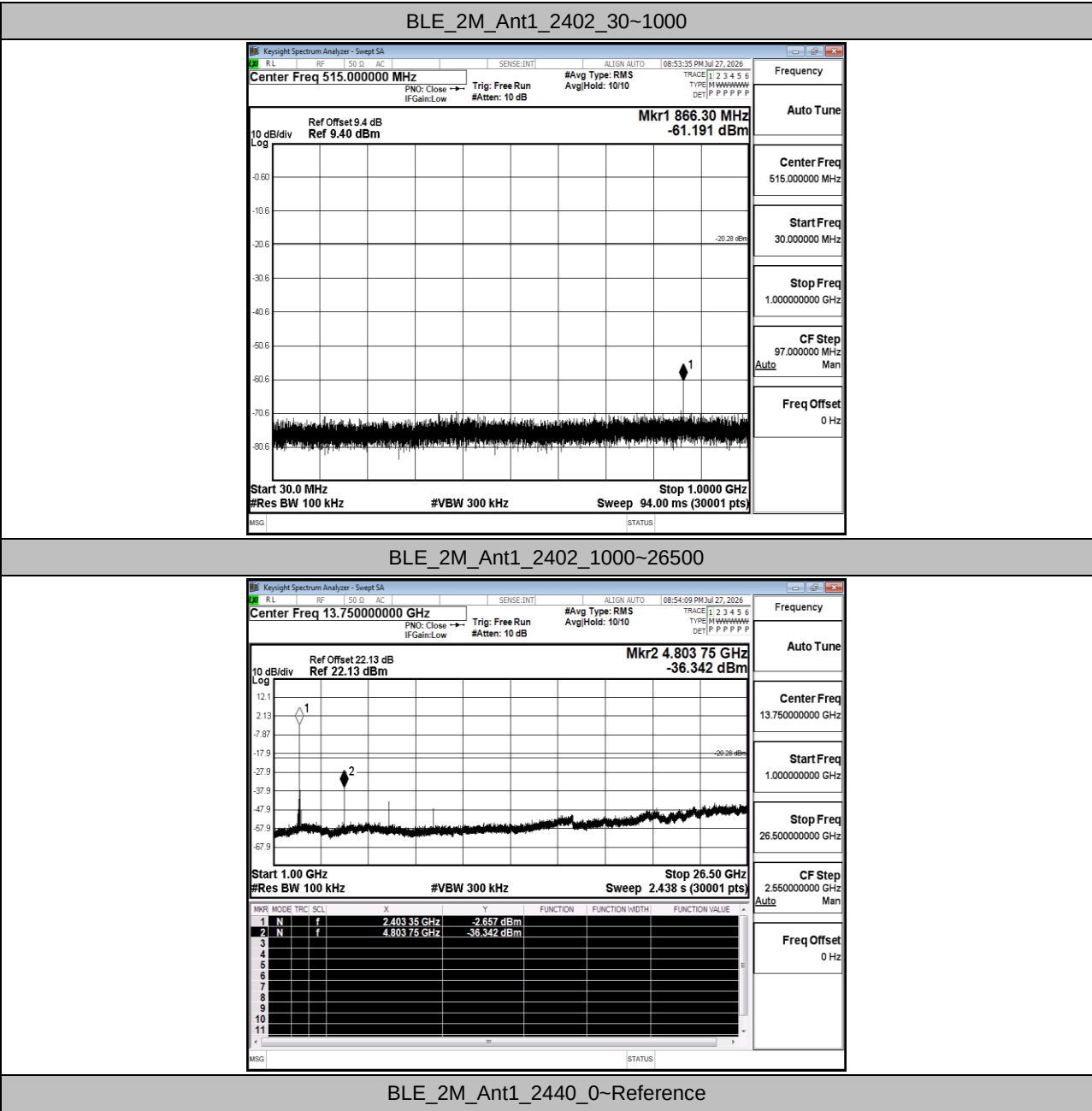


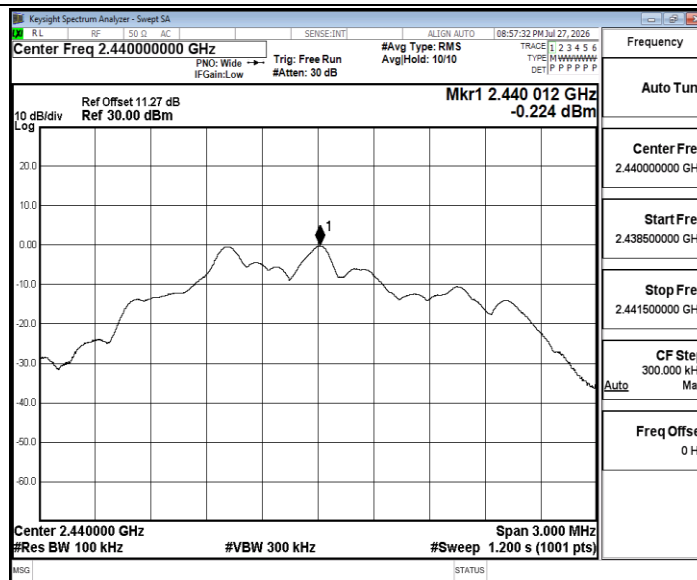
BLE_1M_Ant1_2480_1000~26500



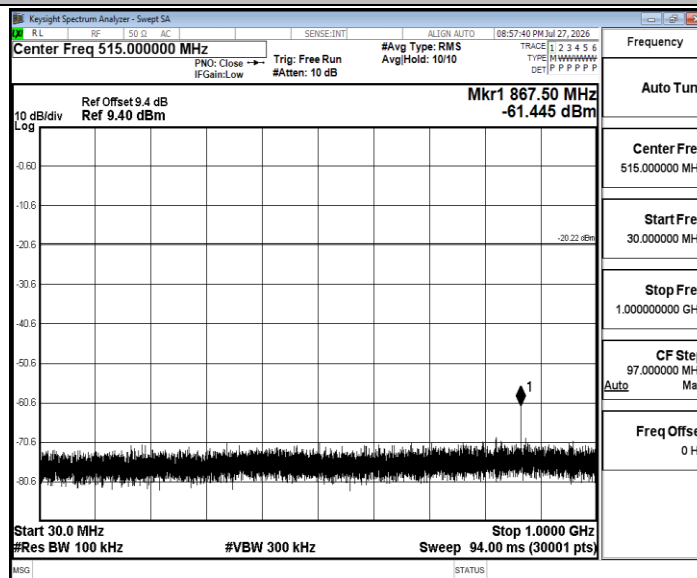
BLE_2M_Ant1_2402_0~Reference



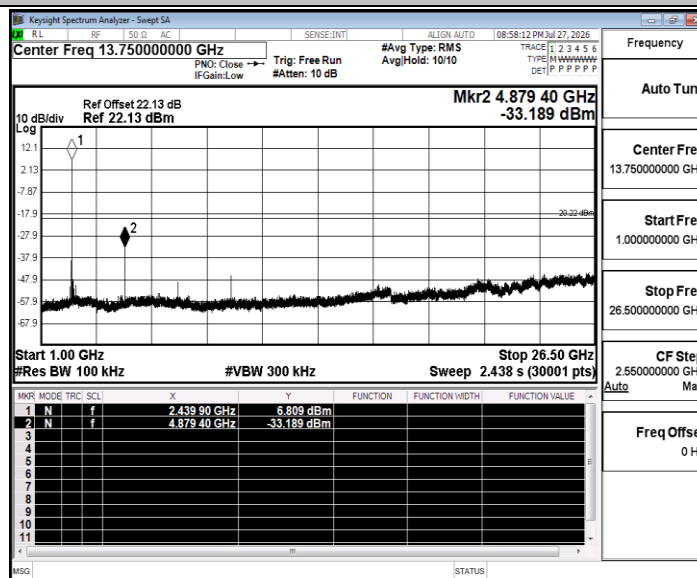




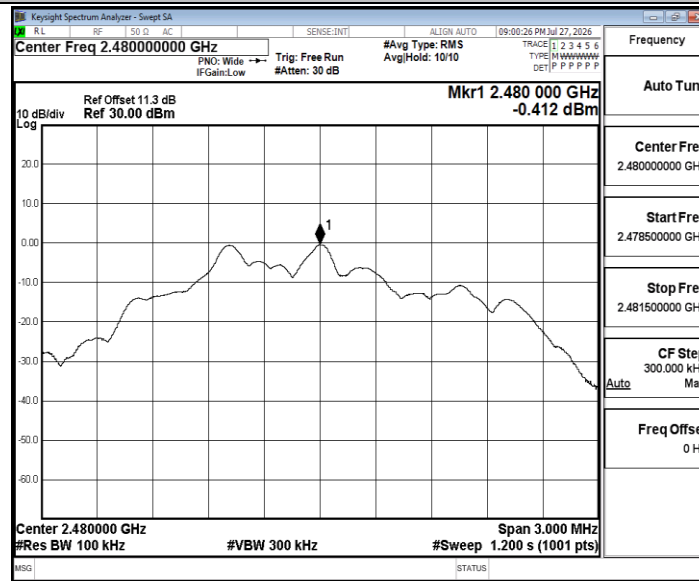
BLE_2M_Ant1_2440_30~1000



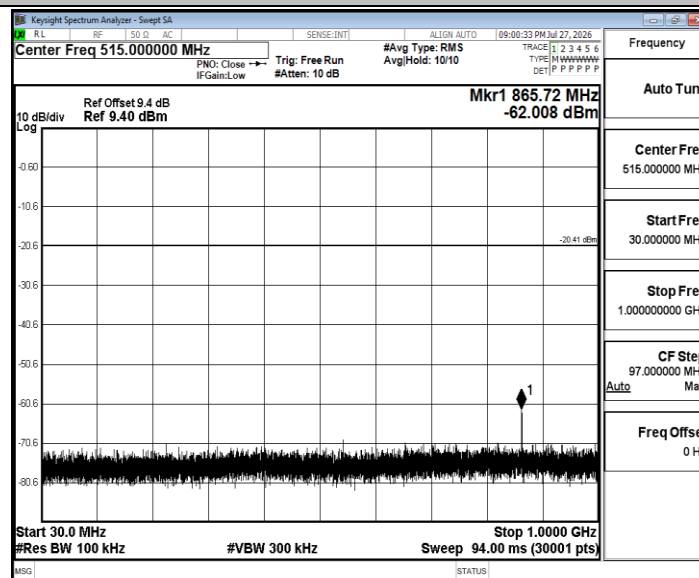
BLE_2M_Ant1_2440_1000~26500



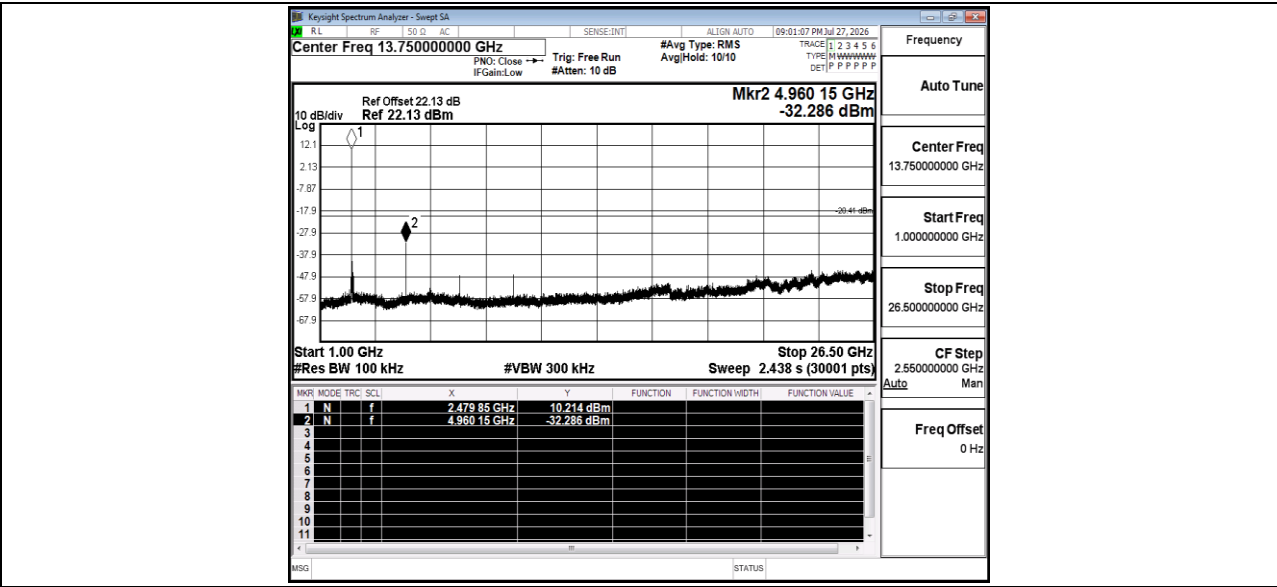
BLE_2M_Ant1_2480_0~Reference



BLE_2M_Ant1_2480_30~1000



BLE_2M_Ant1_2480_1000~26500

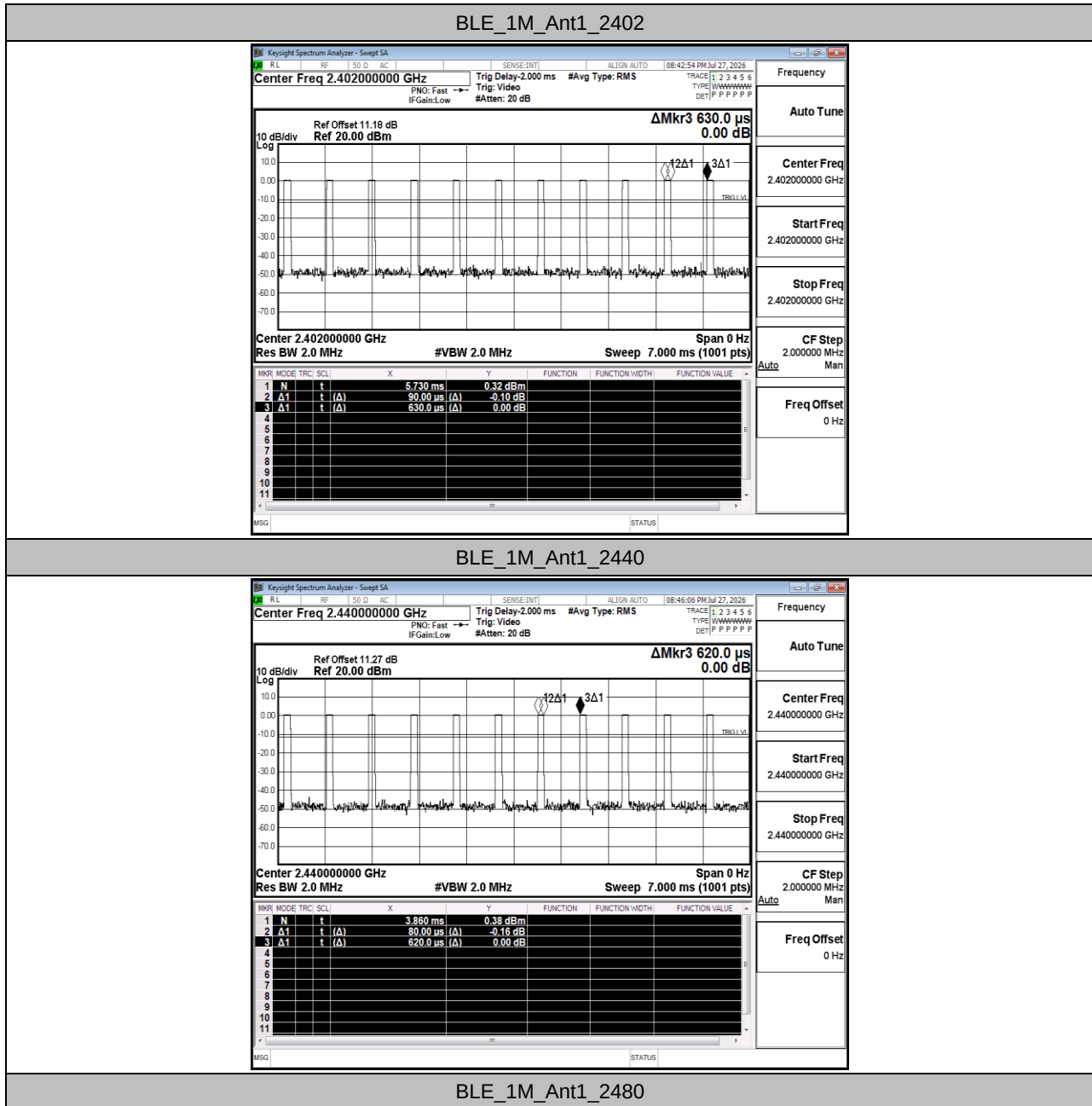


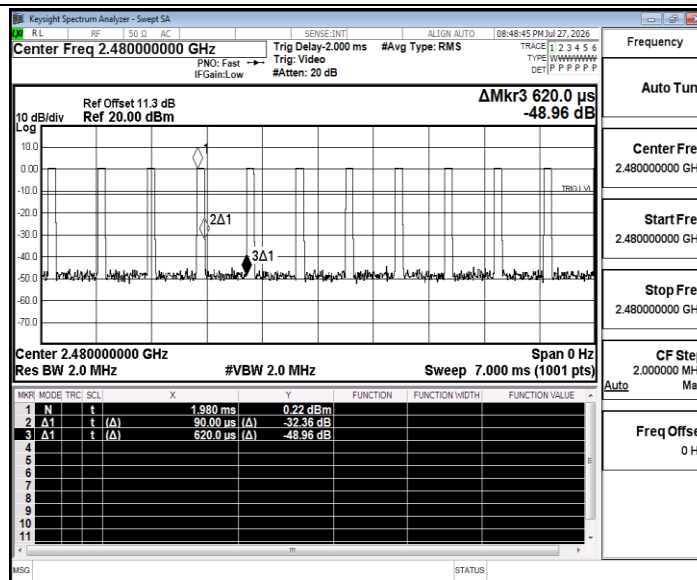
B.6 Duty Cycle

Test Result

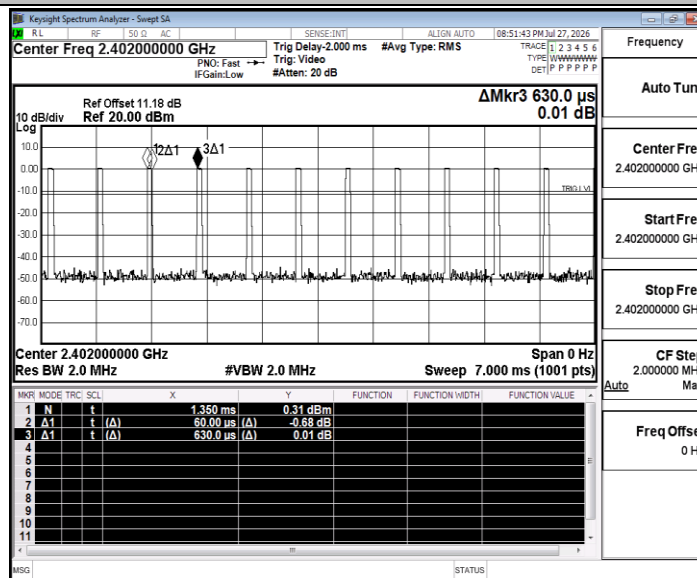
TestMode	Antenna	Freq(MHz)	ON Time [ms]	Period [ms]	X	DC [%]	xFactor	Limit	Verdict
BLE_1M	Ant1	2402	0.09	0.63	0.1429	14.29	8.45	---	---
		2440	0.08	0.62	0.1290	12.90	8.89	---	---
		2480	0.09	0.62	0.1452	14.52	8.38	---	---
BLE_2M	Ant1	2402	0.06	0.63	0.0952	9.52	10.21	---	---
		2440	0.06	0.63	0.0952	9.52	10.21	---	---
		2480	0.06	0.63	0.0952	9.52	10.21	---	---

Test Graphs

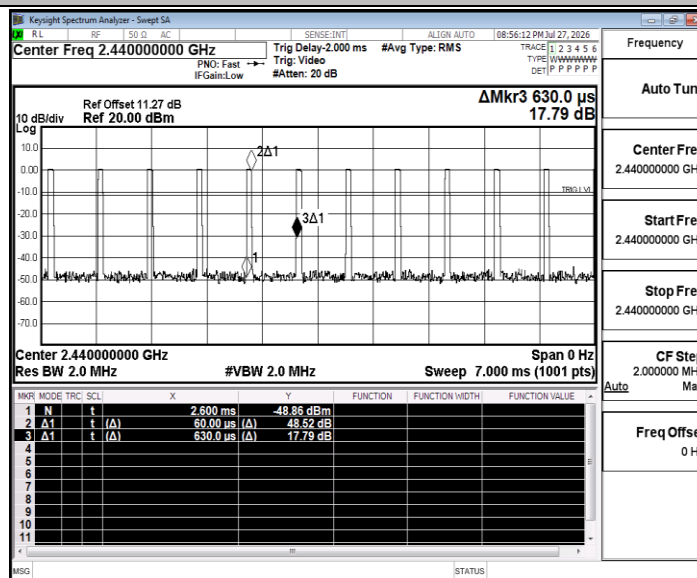


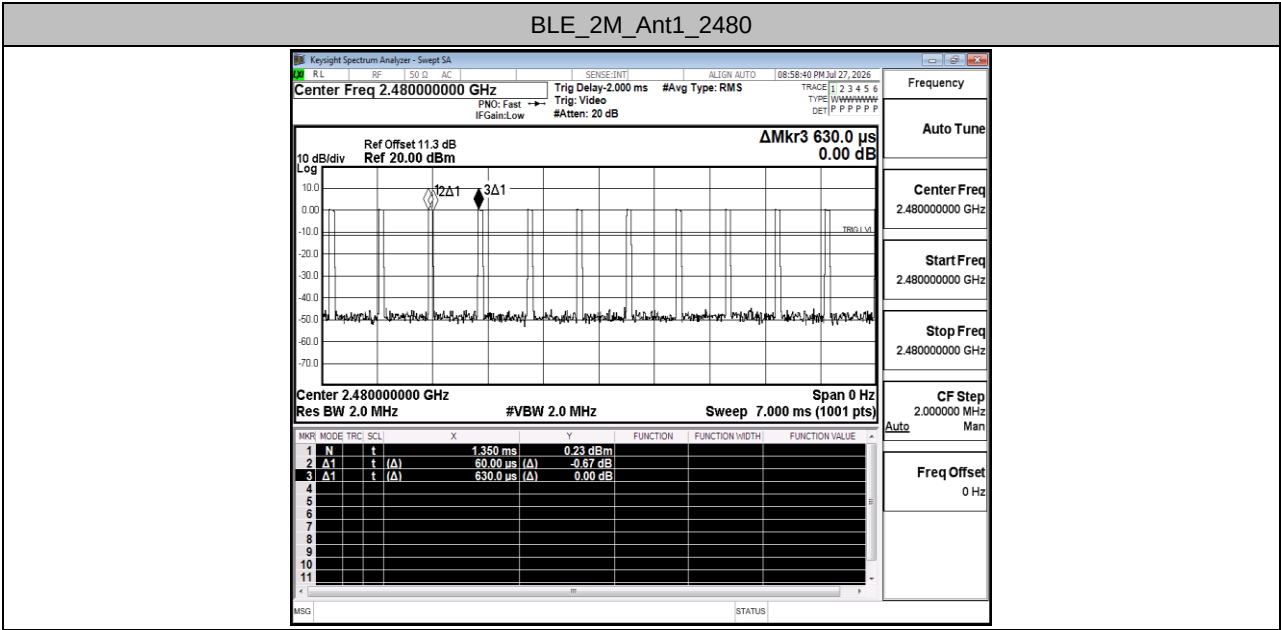


BLE_2M_Ant1_2402



BLE_2M_Ant1_2440





B.7 Emissions in Restricted Bands

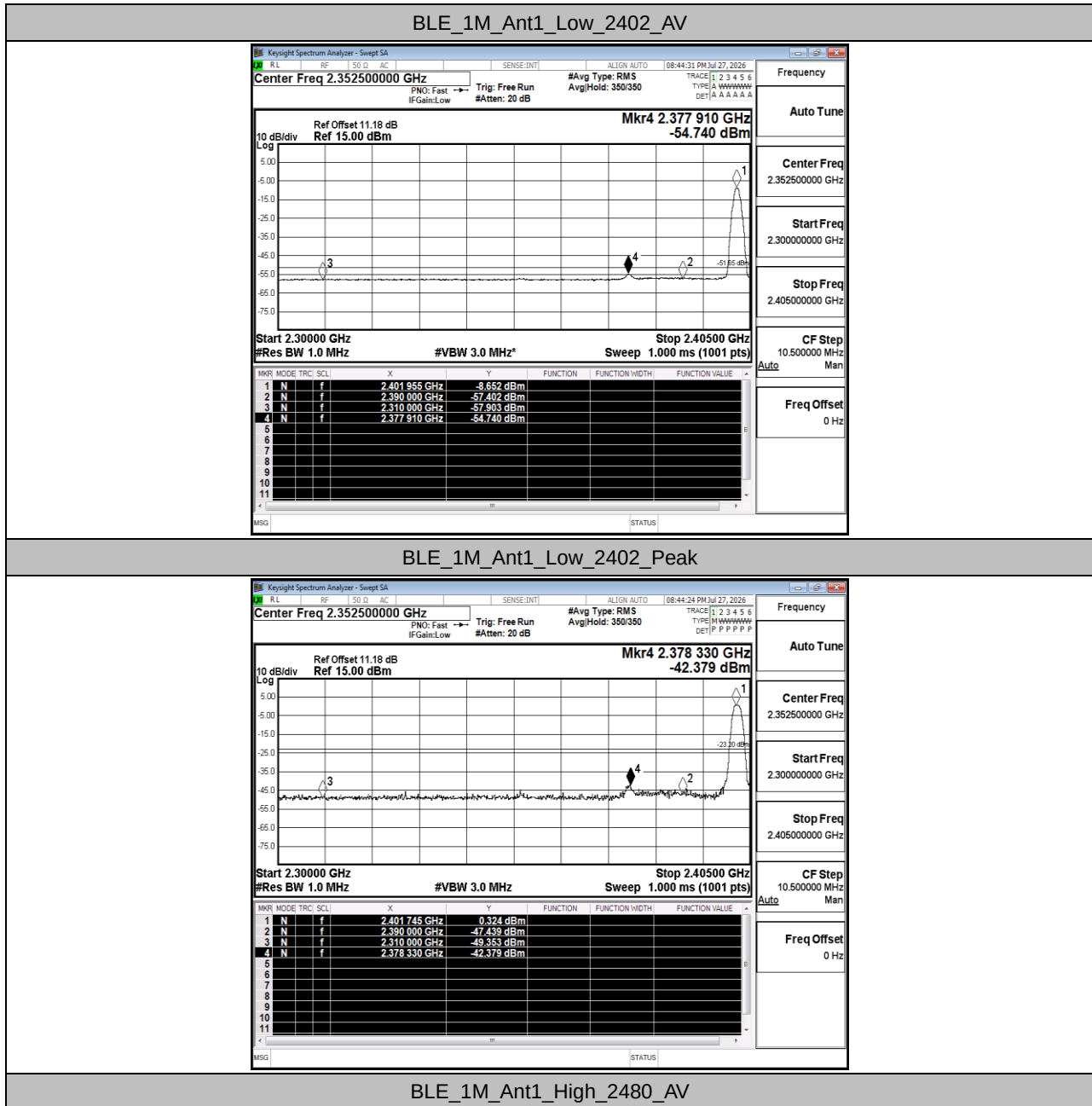
Test Result

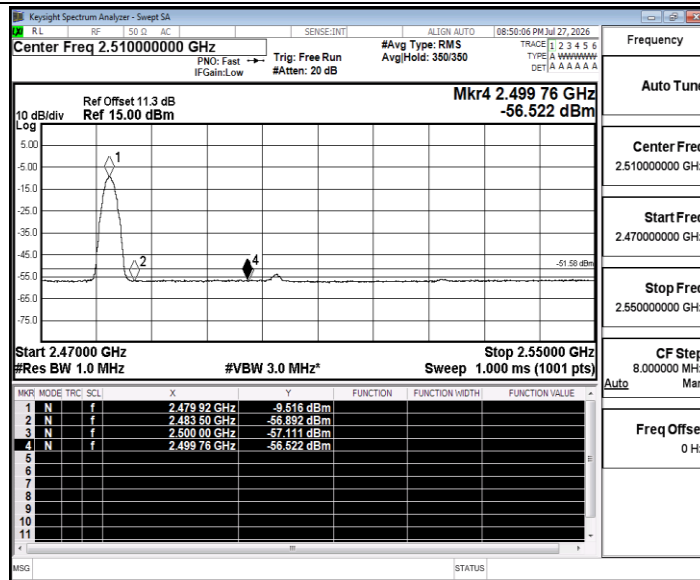
Test Mode	Antenna	Channel Name	Freq (MHz)	Detector	Freq [MHz]	Result [dBm]	Limit [dBm]	Gain [dBi]	DC Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Verdict
BLE_1M	Ant1	Low	2402	AV	2310.000	-57.9	≤-51.65	2.00	8.45	47.75	≤54	PASS
				AV	2377.910	-54.74	≤-51.65	2.00	8.45	50.91	≤54	PASS
				AV	2390.000	-57.4	≤-51.65	2.00	8.45	48.25	≤54	PASS
				Peak	2310.000	-49.35	≤-23.20	2.00	0.00	47.85	≤74	PASS
				Peak	2378.330	-42.38	≤-23.20	2.00	0.00	54.82	≤74	PASS
				Peak	2390.000	-47.44	≤-23.20	2.00	0.00	49.76	≤74	PASS
		High	2480	AV	2483.500	-56.89	≤-51.58	2.00	8.38	48.69	≤54	PASS
				AV	2499.760	-56.52	≤-51.58	2.00	8.38	49.06	≤54	PASS
				AV	2500.000	-57.11	≤-51.58	2.00	8.38	48.47	≤54	PASS
				Peak	2483.500	-47.82	≤-23.20	2.00	0.00	49.38	≤74	PASS
				Peak	2483.760	-43.24	≤-23.20	2.00	0.00	53.96	≤74	PASS
				Peak	2500.000	-46.61	≤-23.20	2.00	0.00	50.59	≤74	PASS
BLE_2M	Ant1	Low	2402	AV	2310.000	-57.91	≤-53.41	2.00	10.21	49.50	≤54	PASS
				AV	2377.595	-55.41	≤-53.41	2.00	10.21	52.00	≤54	PASS
				AV	2390.000	-57.31	≤-53.41	2.00	10.21	50.10	≤54	PASS
				Peak	2310.000	-49.34	≤-23.20	2.00	0.00	47.86	≤74	PASS
				Peak	2378.435	-42.11	≤-23.20	2.00	0.00	55.09	≤74	PASS
				Peak	2390.000	-47.03	≤-23.20	2.00	0.00	50.17	≤74	PASS
		High	2480	AV	2483.500	-56.9	≤-53.41	2.00	10.21	50.51	≤54	PASS
				AV	2485.680	-55.22	≤-53.41	2.00	10.21	52.19	≤54	PASS
				AV	2500.000	-56.64	≤-53.41	2.00	10.21	50.77	≤54	PASS
				Peak	2483.500	-41.29	≤-23.20	2.00	0.00	55.91	≤74	PASS
				Peak	2485.440	-35.82	≤-23.20	2.00	0.00	61.38	≤74	PASS
				Peak	2500.000	-44.29	≤-23.20	2.00	0.00	52.91	≤74	PASS

Note:

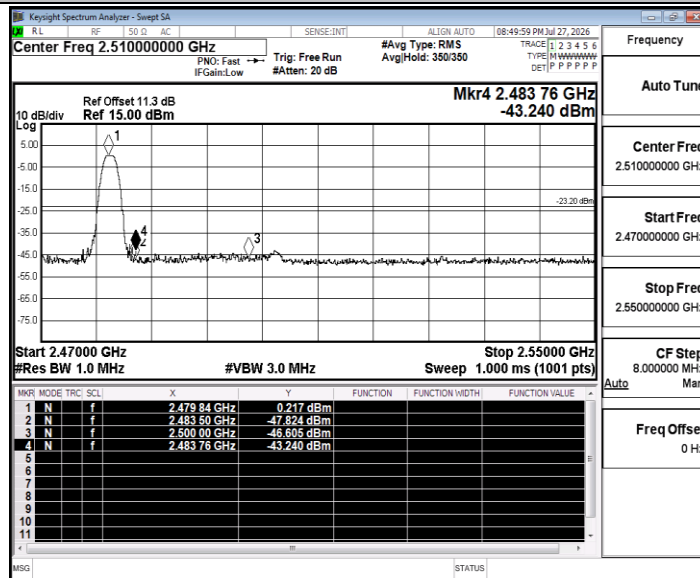
1. The Antenna Gain is compensated in the graph.
2. The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.

Test Graphs

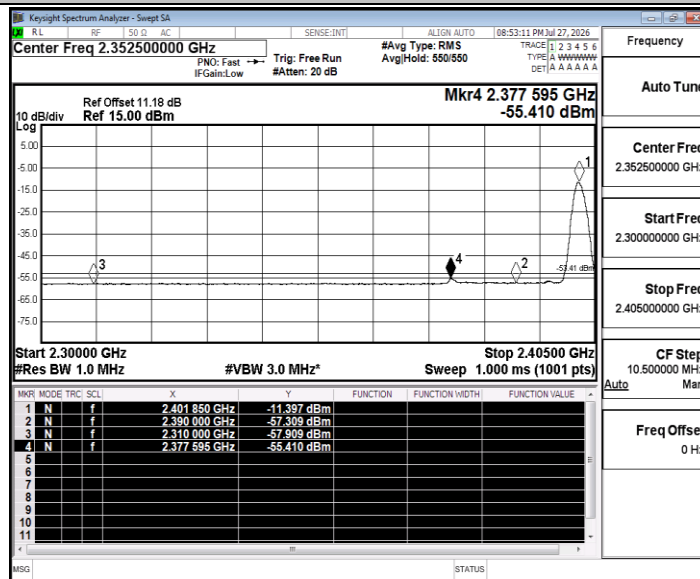




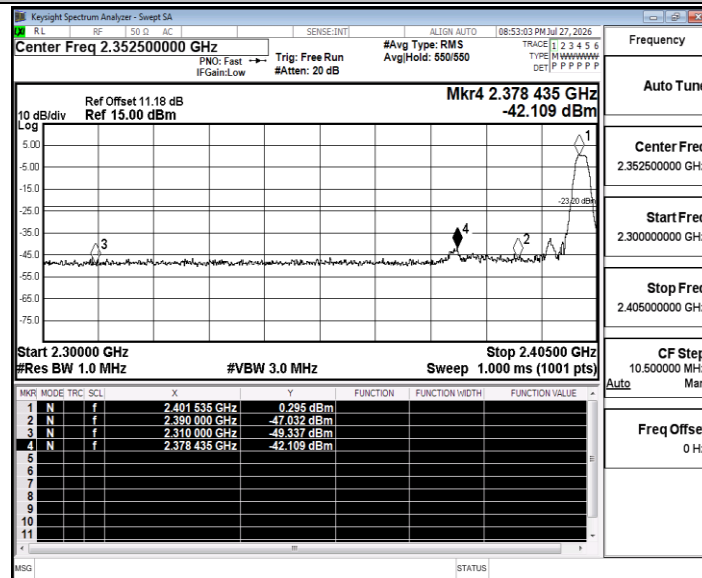
BLE_1M_Ant1_High_2480_Peak



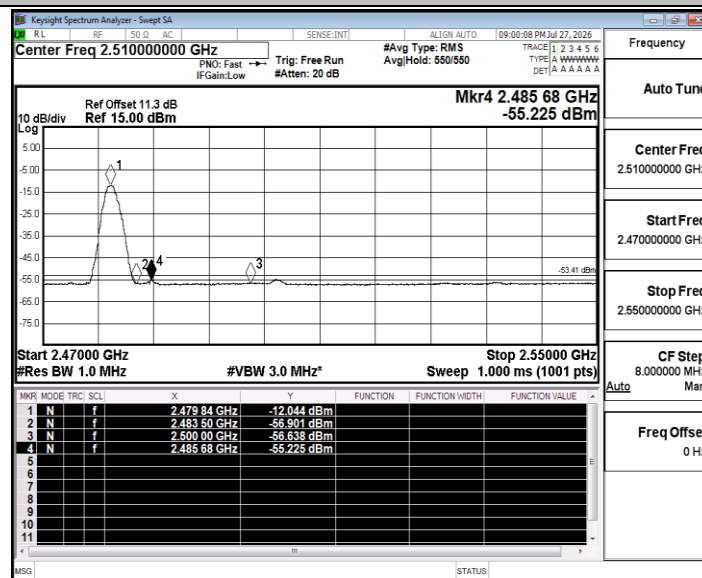
BLE_2M_Ant1_Low_2402_AV



BLE_2M_Ant1_Low_2402_Peak



BLE_2M_Ant1_High_2480_AV



BLE_2M_Ant1_High_2480_Peak

