

Appendix B

RF Test Data for BT LE (Conducted Measurement)

Product Name: Bluetooth speaker

Test Model: OS-3000B

Environmental Conditions

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

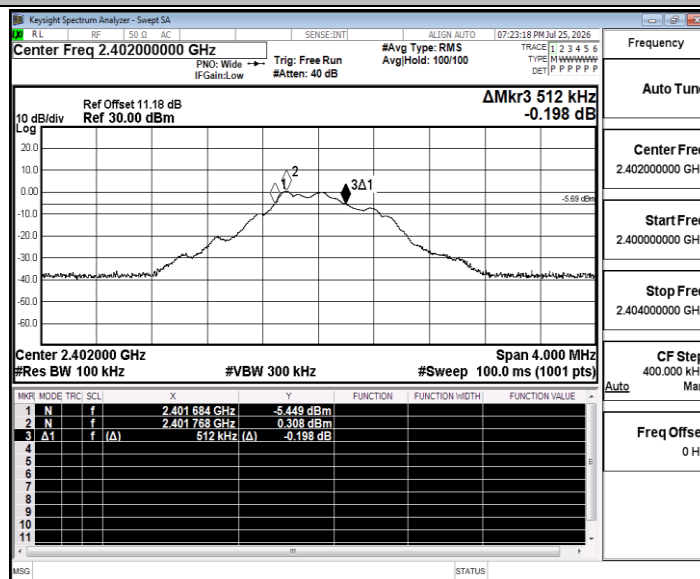
B.1 DTS Bandwidth

Test Result

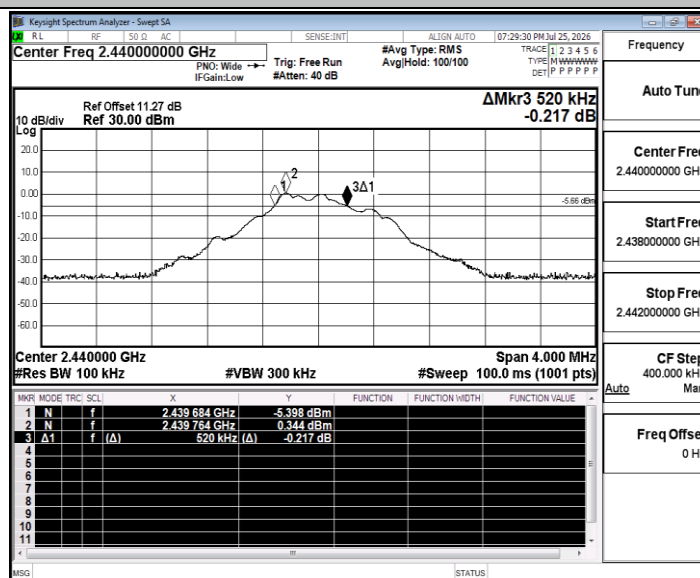
TestMode	Antenna	Freq(MHz)	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.512	2401.684	2402.196	0.5	PASS
		2440	0.520	2439.684	2440.204	0.5	PASS
		2480	0.528	2479.680	2480.208	0.5	PASS
BLE_2M	Ant1	2402	0.840	2401.436	2402.276	0.5	PASS
		2440	0.792	2439.436	2440.228	0.5	PASS
		2480	0.816	2479.432	2480.248	0.5	PASS

Test Graphs

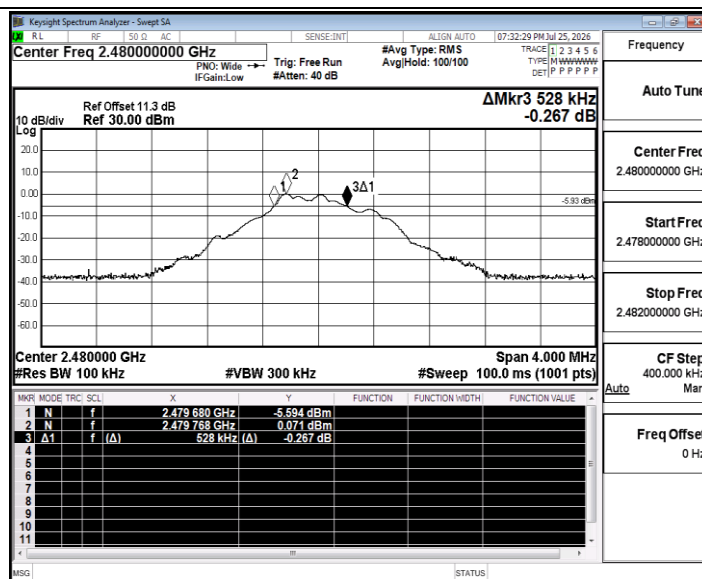
BLE_1M_Ant1_2402



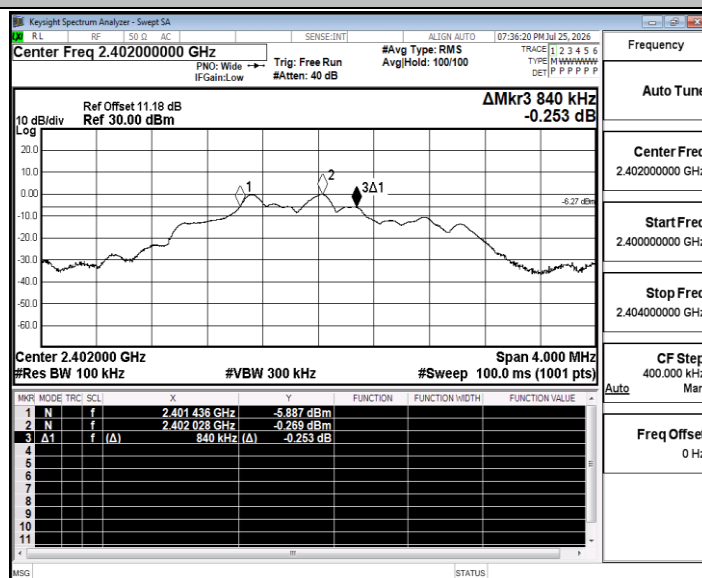
BLE_1M_Ant1_2440



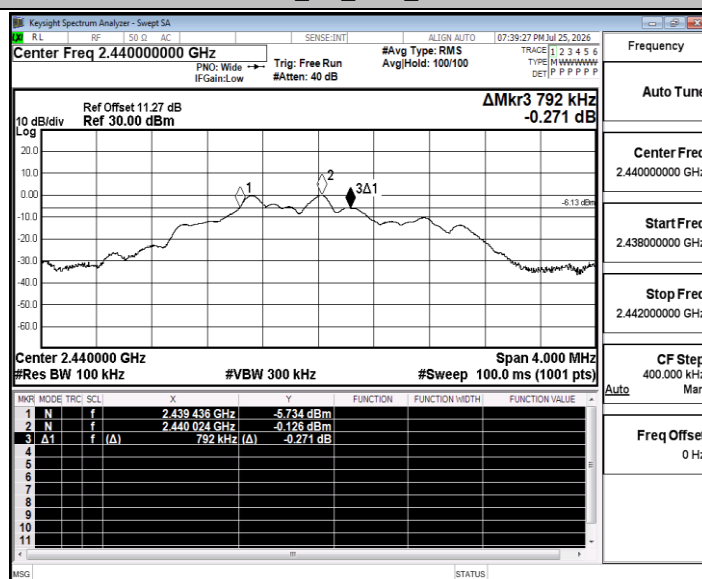
BLE_1M_Ant1_2480

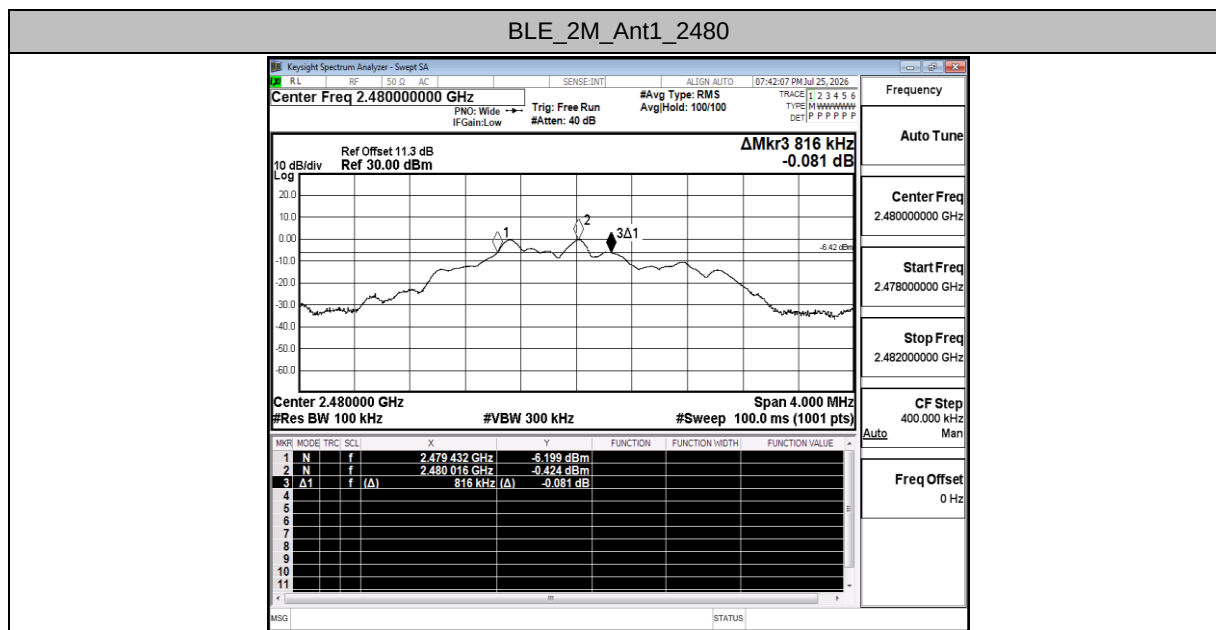


BLE_2M_Ant1_2402



BLE_2M_Ant1_2440



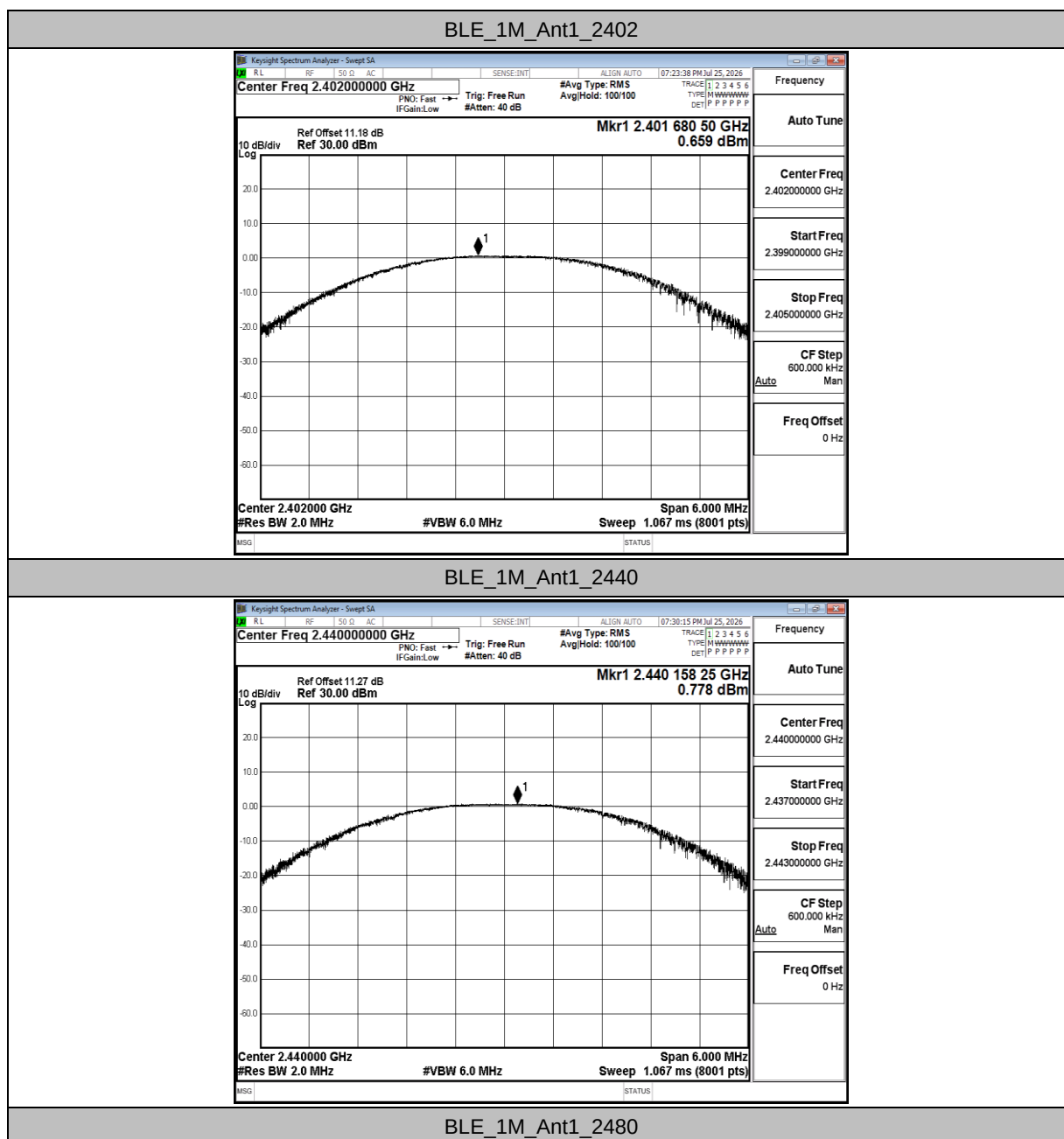


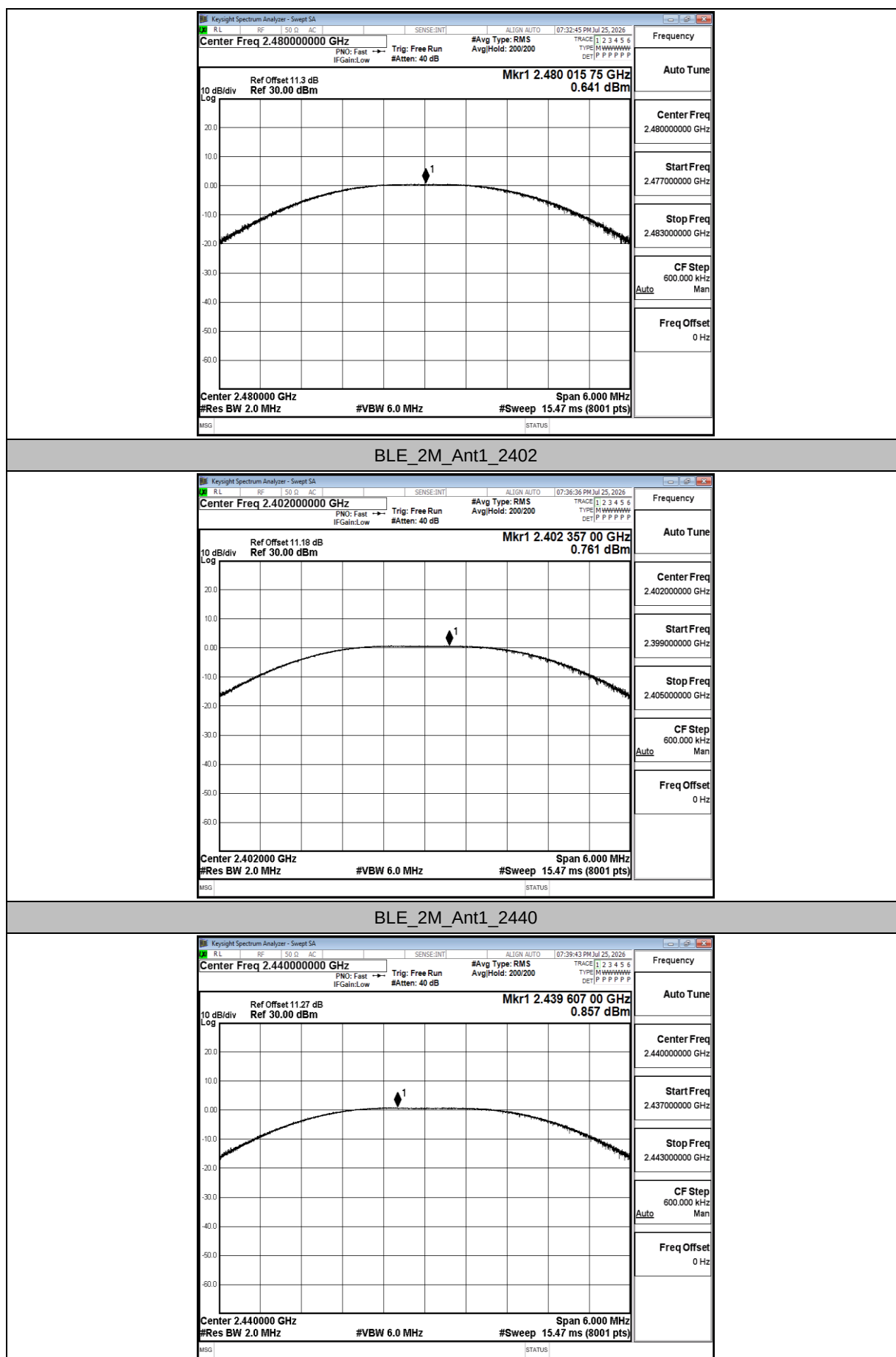
B.2 Maximum Peak conducted output power

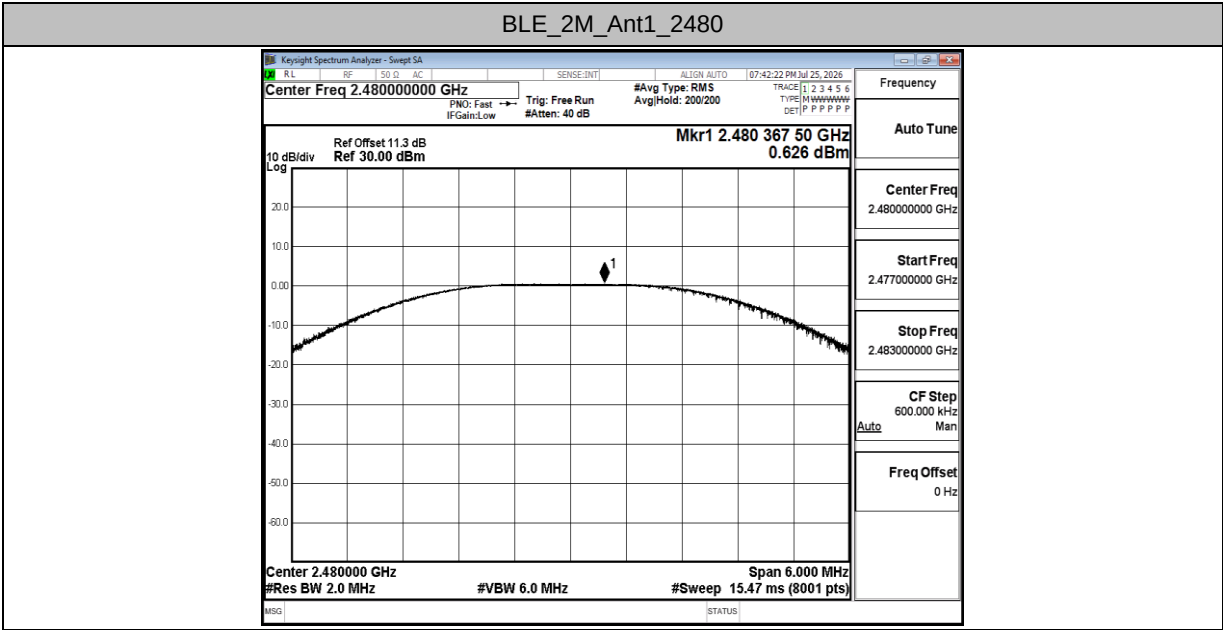
Test Result Peak

TestMode	Antenna	Freq(MHz)	Conducted Peak Power[dBm]	Conducted Limit[dBm]	Verdict
BLE_1M	Ant1	2402	0.66	≤30	PASS
		2440	0.78	≤30	PASS
		2480	0.64	≤30	PASS
BLE_2M	Ant1	2402	0.76	≤30	PASS
		2440	0.86	≤30	PASS
		2480	0.63	≤30	PASS

Test Graphs Peak





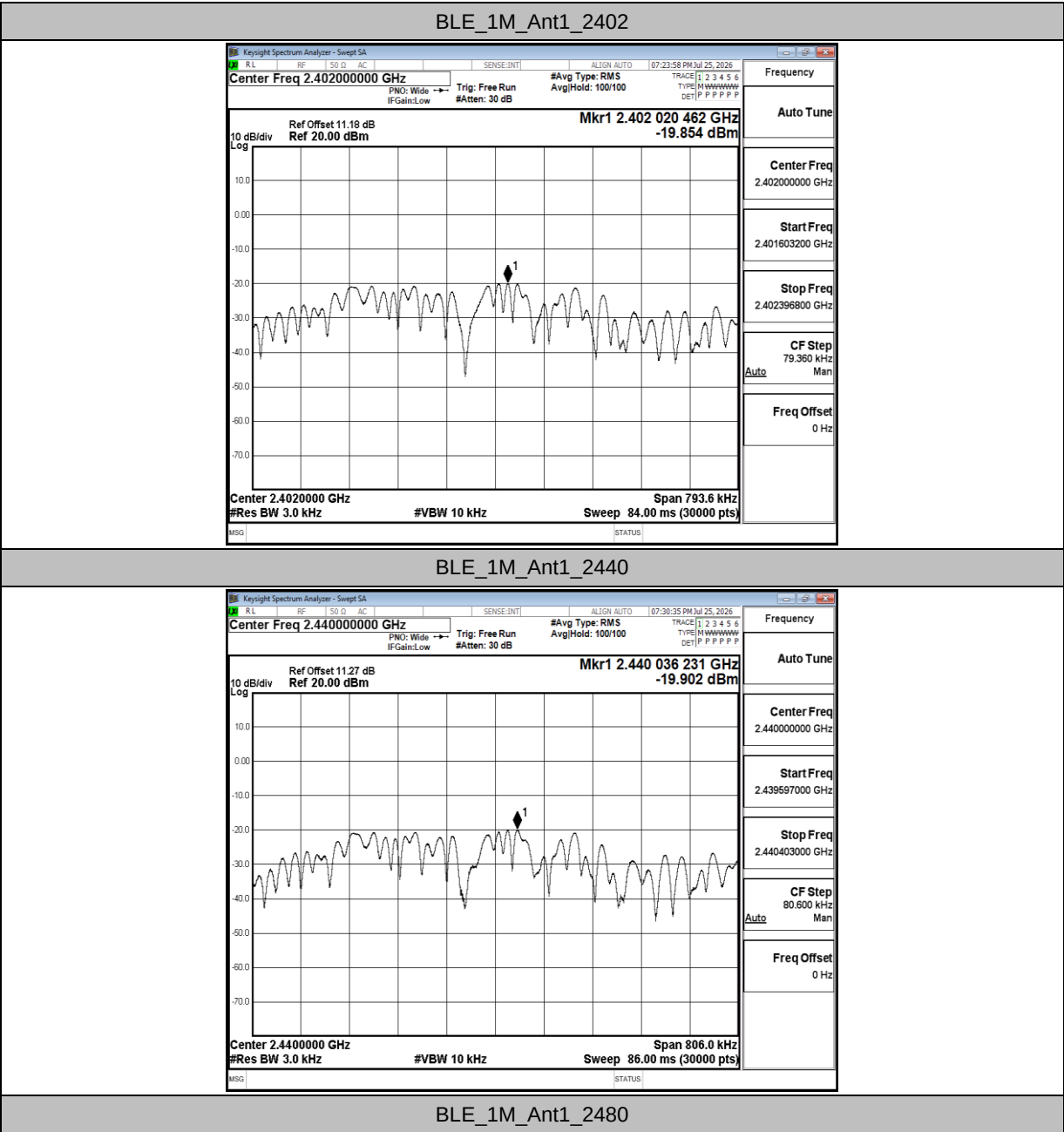


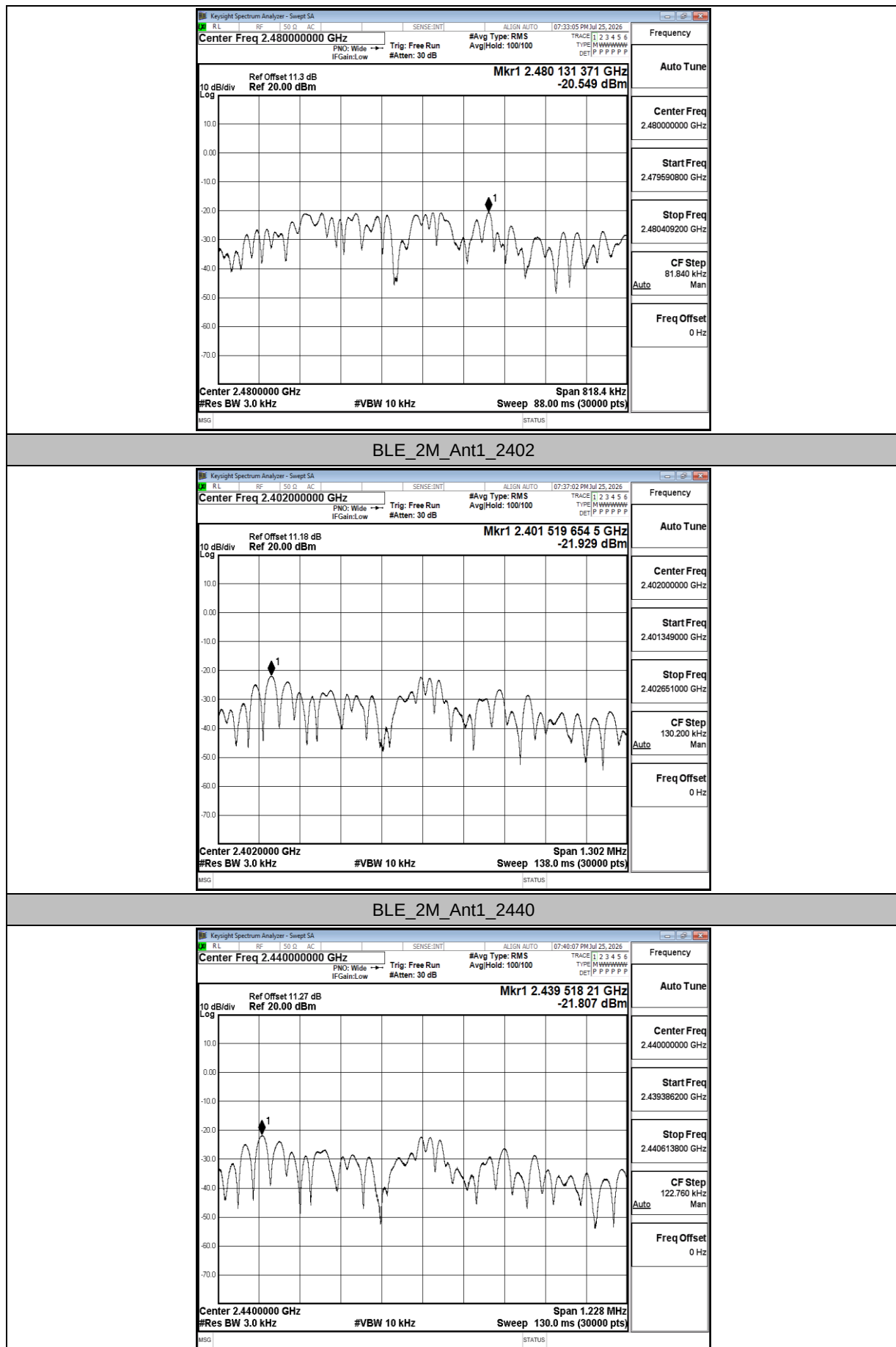
B.3 Maximum power spectral density

Test Result

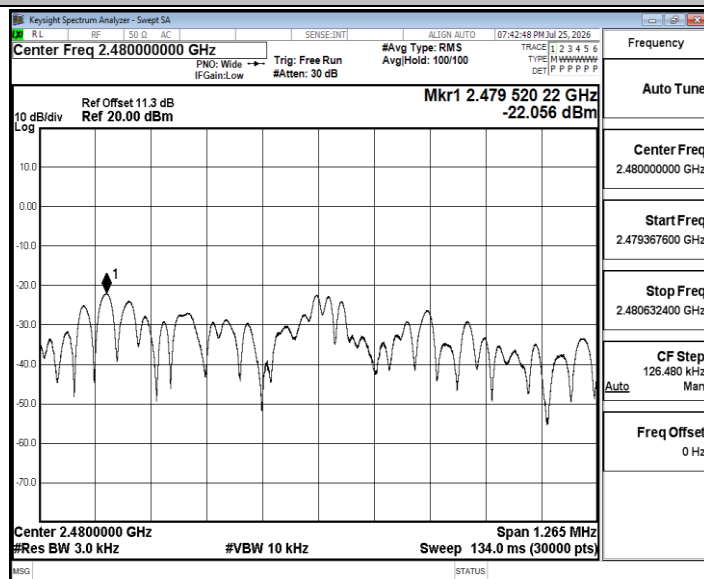
TestMode	Antenna	Freq(MHz)	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-19.85	≤8.00	PASS
		2440	-19.90	≤8.00	PASS
		2480	-20.55	≤8.00	PASS
BLE_2M	Ant1	2402	-21.93	≤8.00	PASS
		2440	-21.81	≤8.00	PASS
		2480	-22.06	≤8.00	PASS

Test Graphs





BLE_2M_Ant1_2480

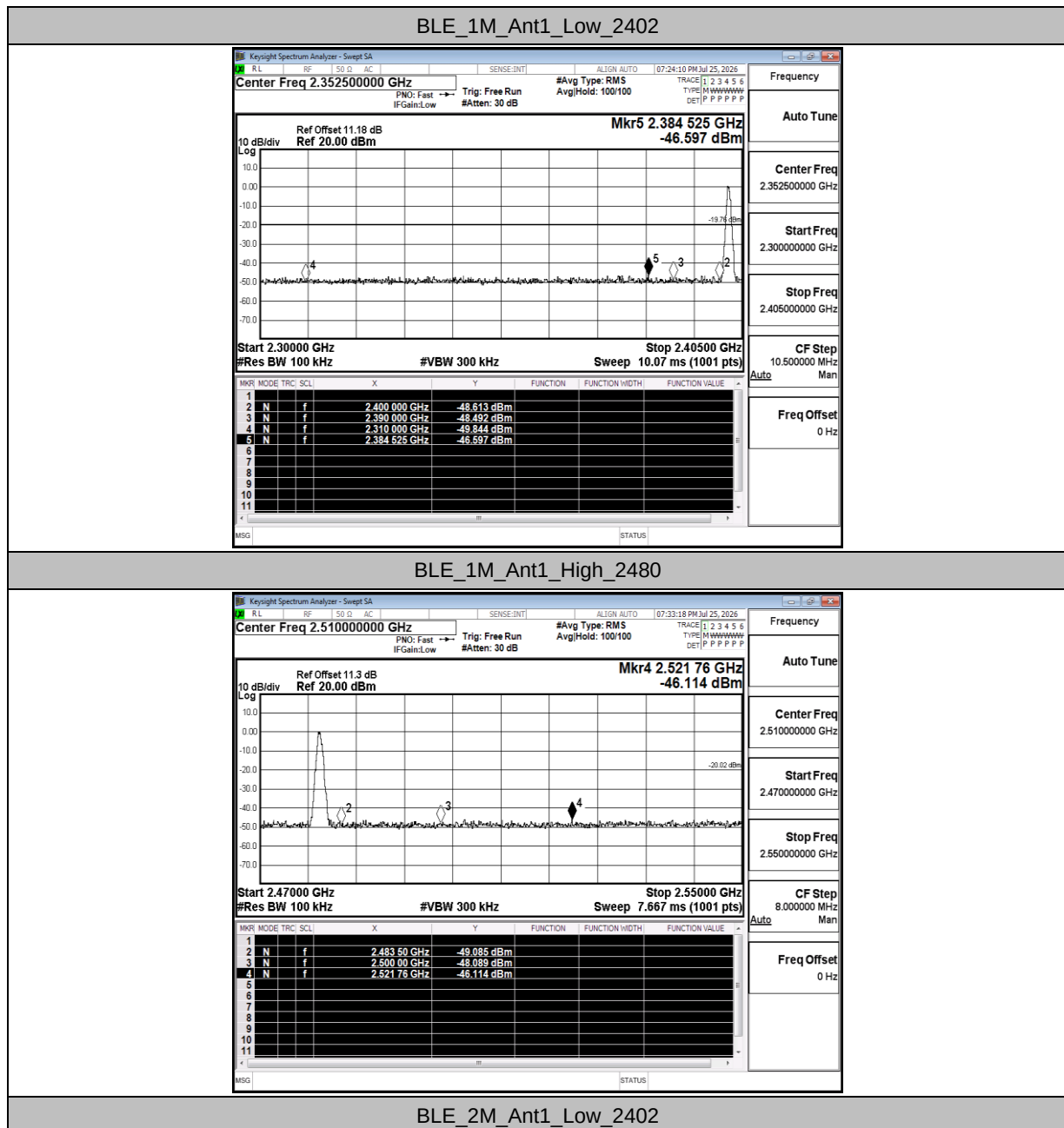


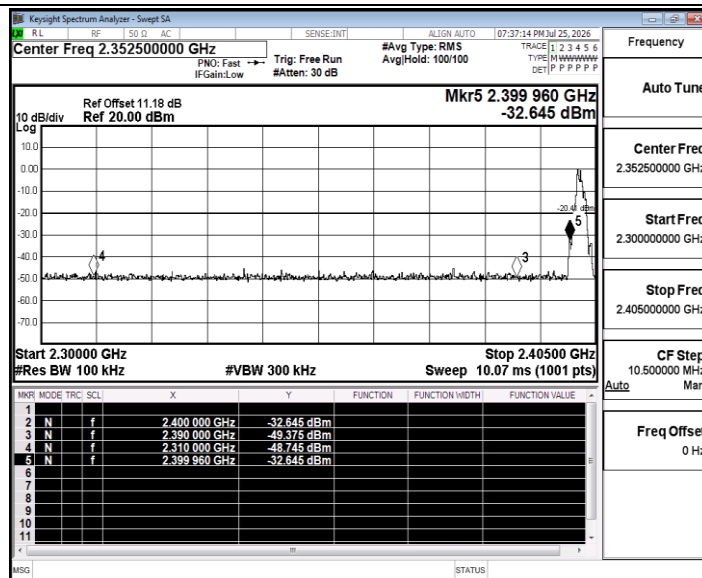
B.4 Band edge measurements

Test Result

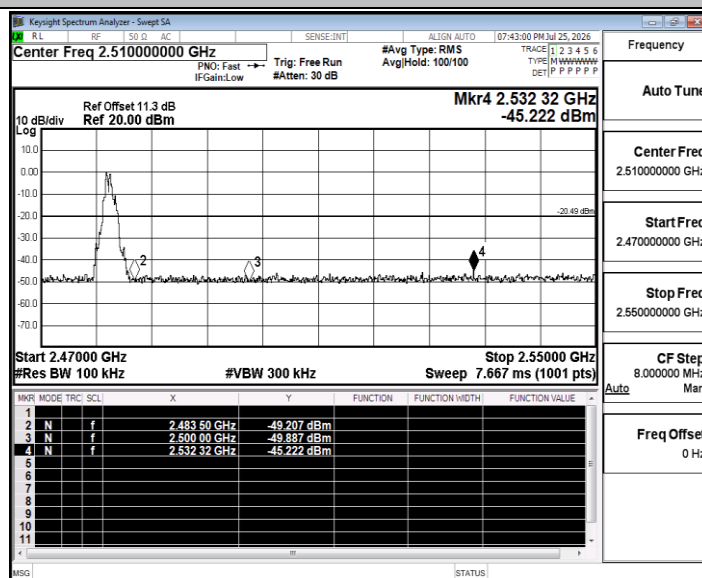
TestMode	Antenna	ChName	Freq(MHz)	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	0.24	-46.6	≤-19.76	PASS
		High	2480	-0.02	-46.11	≤-20.02	PASS
BLE_2M	Ant1	Low	2402	-0.41	-32.65	≤-20.41	PASS
		High	2480	-0.49	-45.22	≤-20.49	PASS

Test Graphs





BLE_2M_Ant1_High_2480



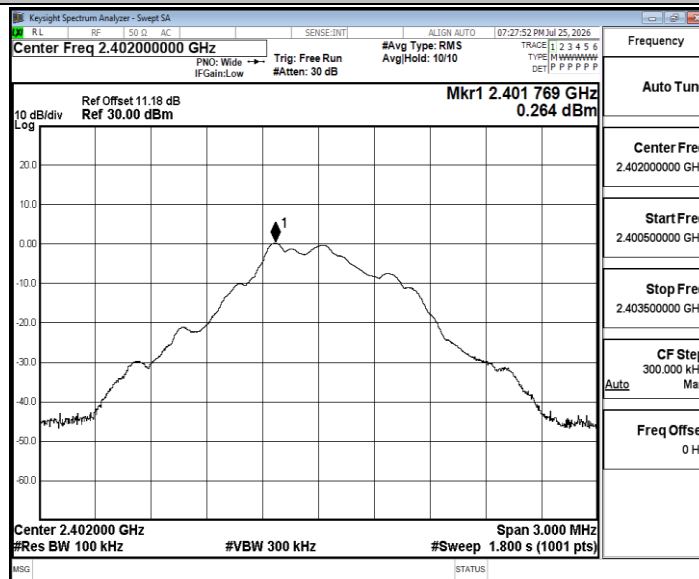
B.5 Conducted Spurious Emission

Test Result

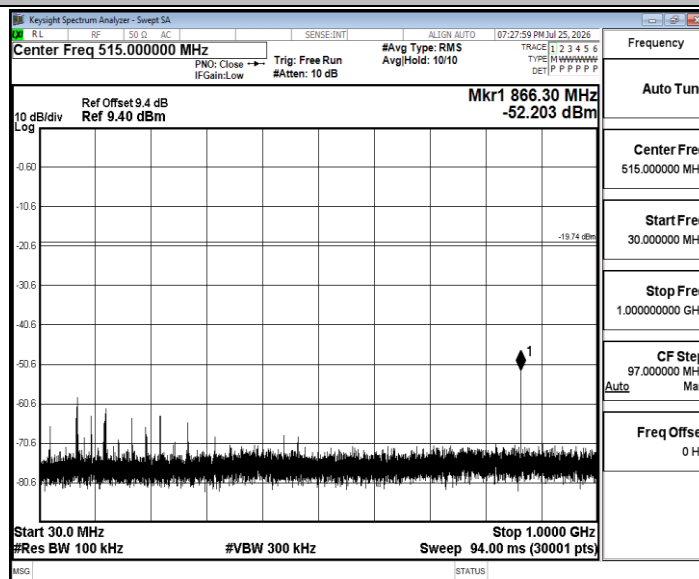
TestMode	Antenna	Freq(MHz)	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	Reference	0.26	0.26	---	PASS
			30~1000	0.26	-52.2	≤-19.74	PASS
			1000~26500	0.26	-34	≤-19.74	PASS
		2440	Reference	0.25	0.25	---	PASS
			30~1000	0.25	-53.43	≤-19.75	PASS
			1000~26500	0.25	-34.94	≤-19.75	PASS
		2480	Reference	0.01	0.01	---	PASS
			30~1000	0.01	-53.05	≤-19.99	PASS
			1000~26500	0.01	-32.01	≤-19.99	PASS
BLE_2M	Ant1	2402	Reference	-0.32	-0.32	---	PASS
			30~1000	-0.32	-53.58	≤-20.32	PASS
			1000~26500	-0.32	-37.97	≤-20.32	PASS
		2440	Reference	-0.24	-0.24	---	PASS
			30~1000	-0.24	-53.59	≤-20.24	PASS
			1000~26500	-0.24	-36.24	≤-20.24	PASS
		2480	Reference	-0.49	-0.49	---	PASS
			30~1000	-0.49	-53.24	≤-20.49	PASS
			1000~26500	-0.49	-30.96	≤-20.49	PASS

Test Graphs

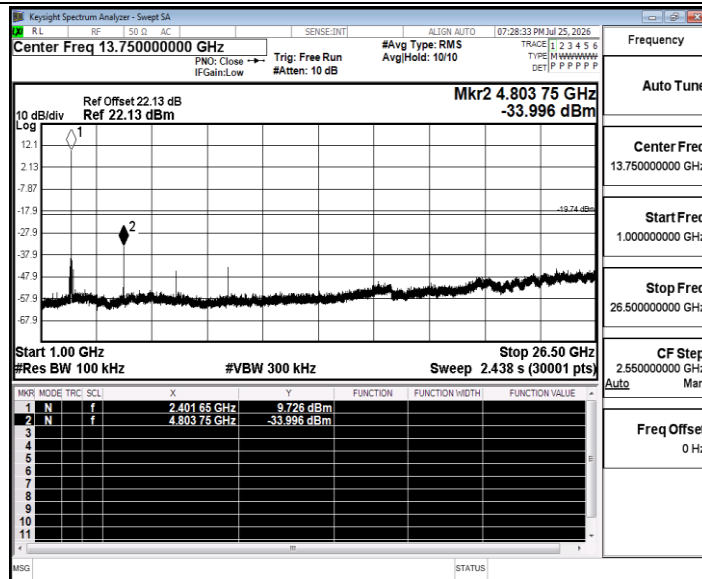
BLE_1M_Ant1_2402_0~Reference



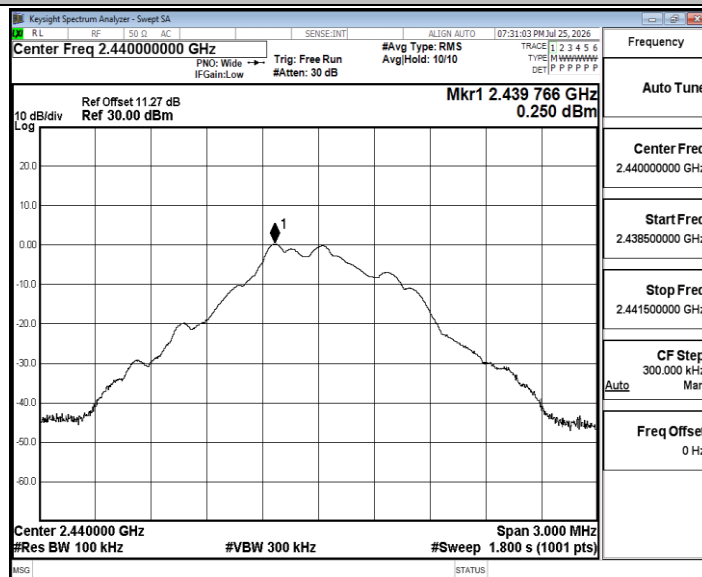
BLE_1M_Ant1_2402_30~1000



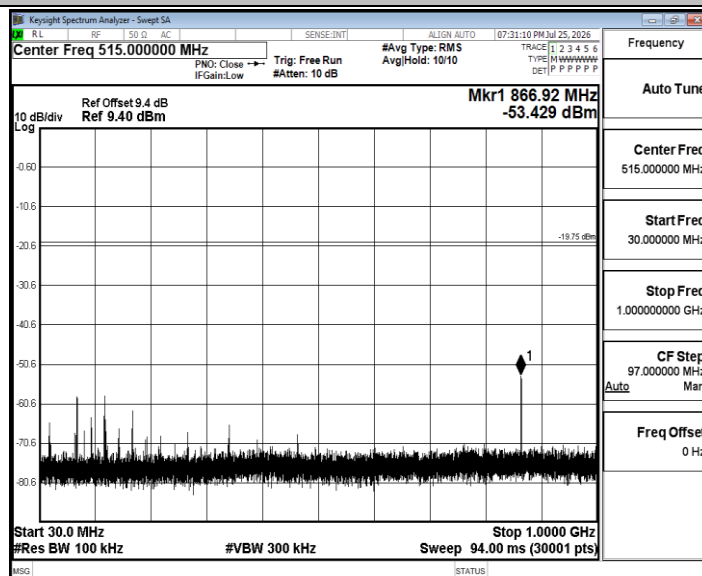
BLE_1M_Ant1_2402_1000~26500



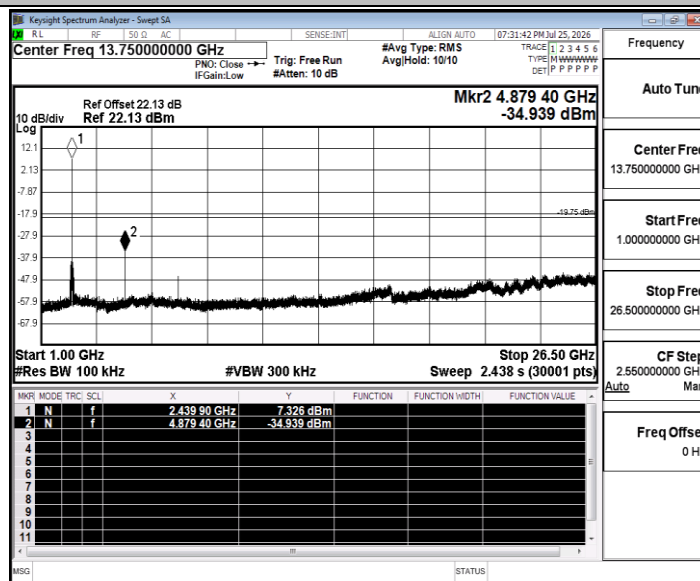
BLE_1M_Ant1_2440_0~Reference



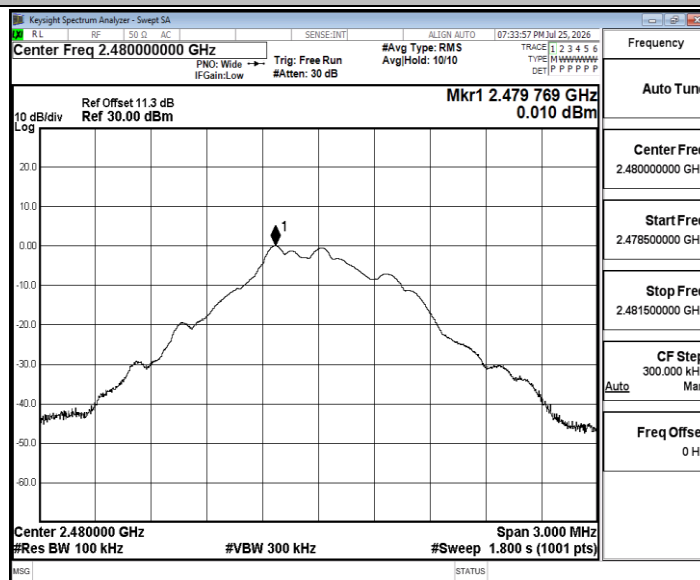
BLE_1M_Ant1_2440_30~1000



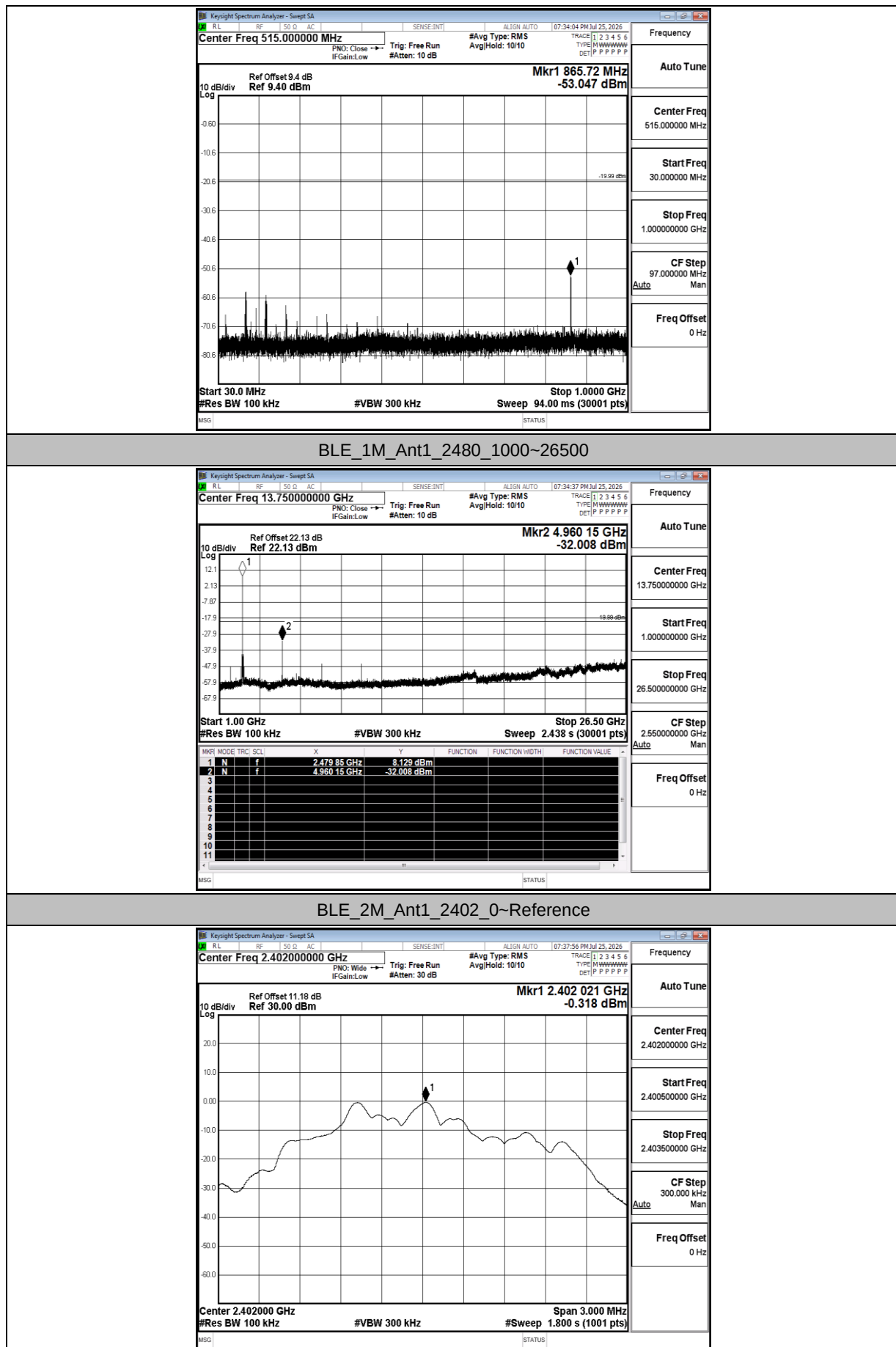
BLE_1M_Ant1_2440_1000~26500

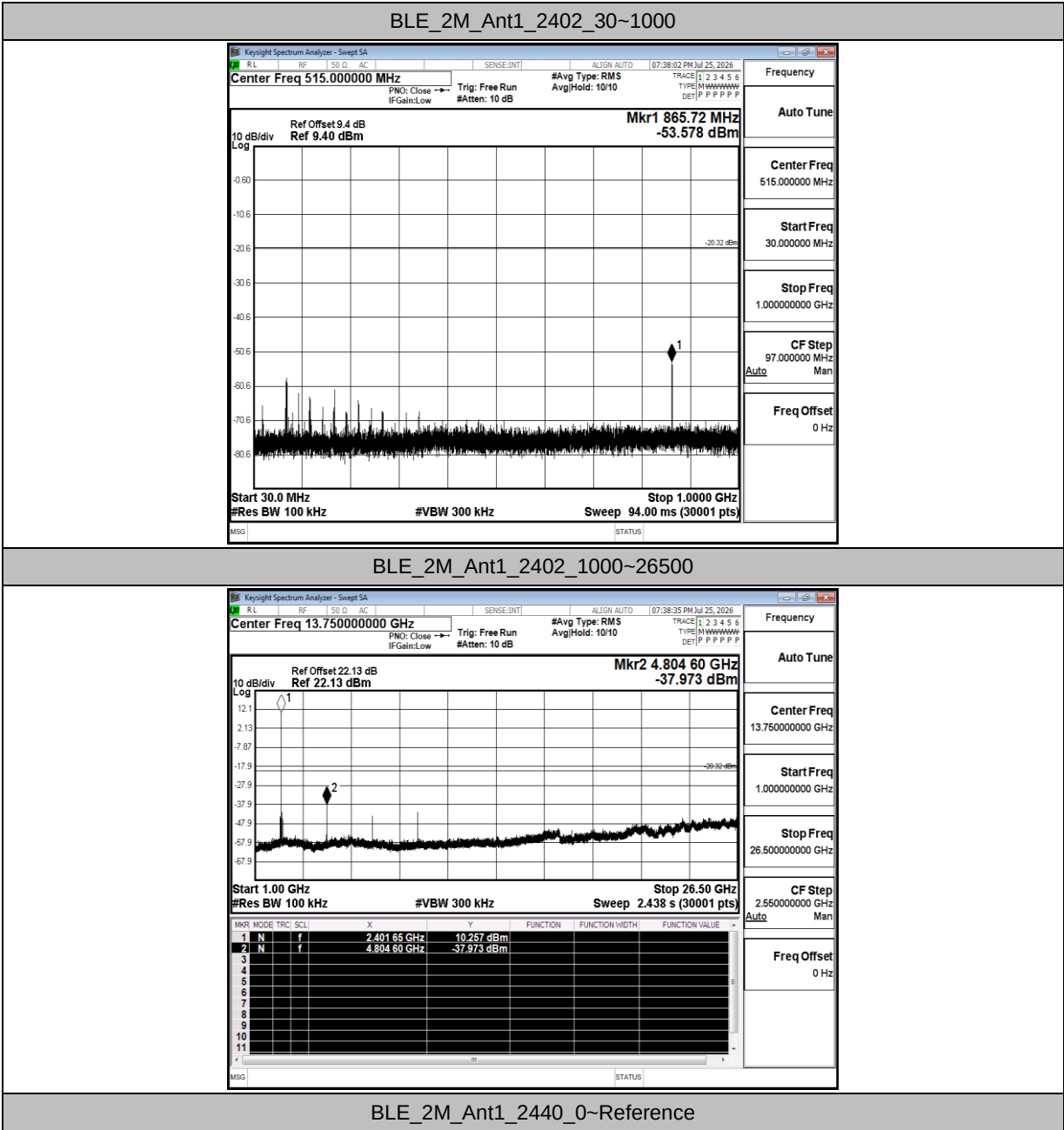


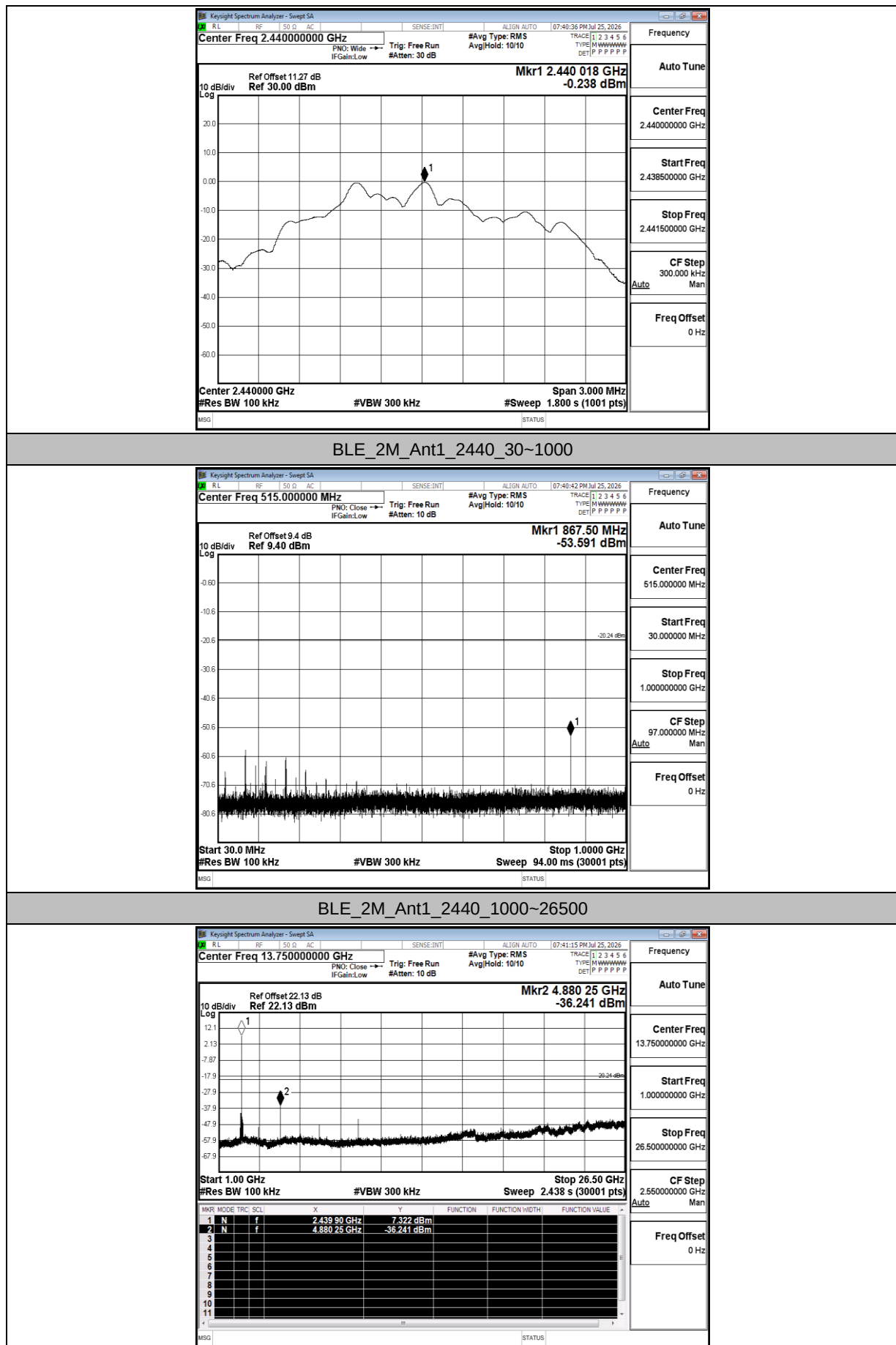
BLE_1M_Ant1_2480_0~Reference



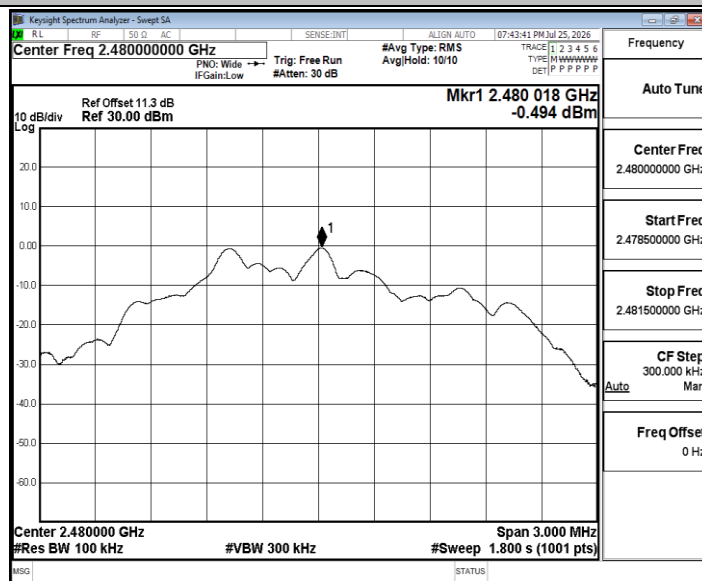
BLE_1M_Ant1_2480_30~1000



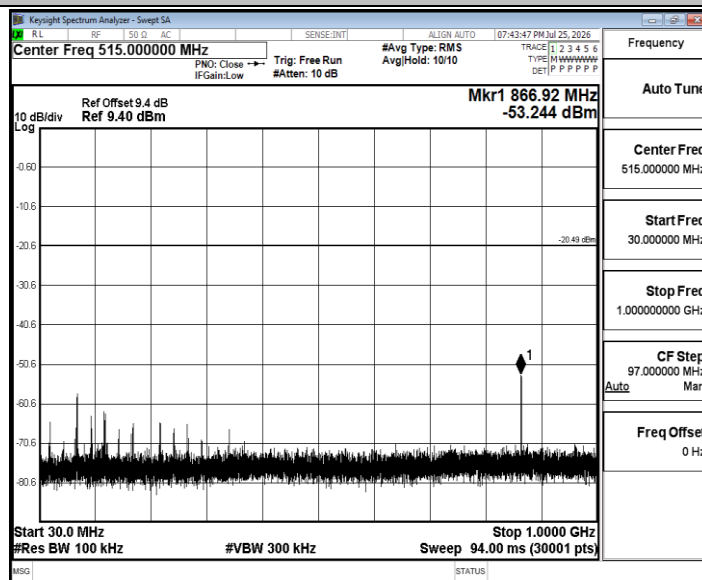




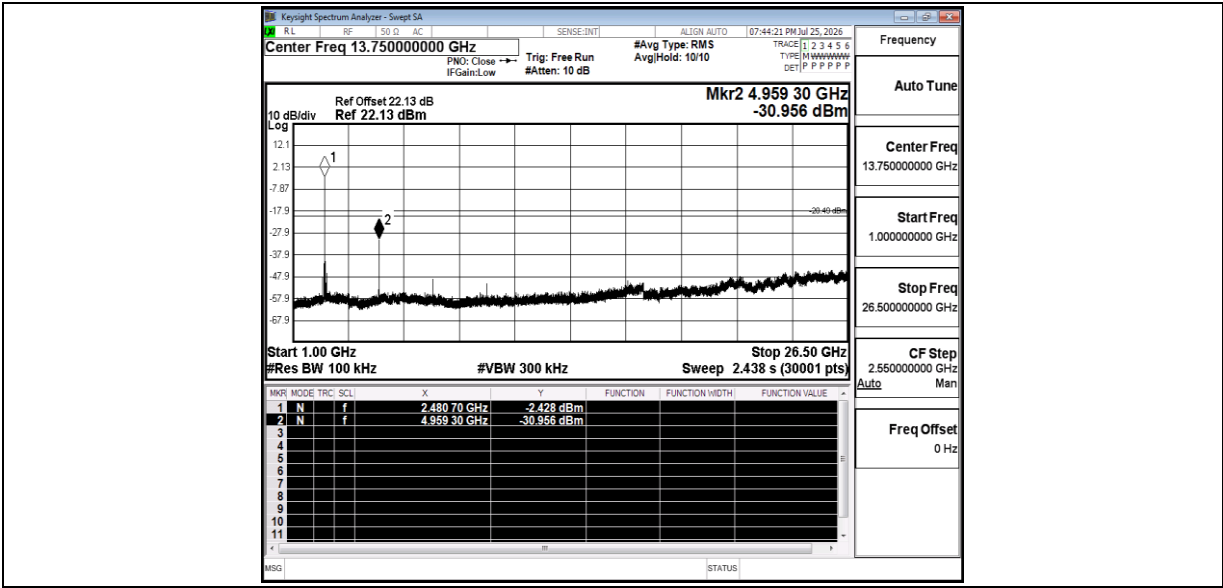
BLE_2M_Ant1_2480_0~Reference



BLE_2M_Ant1_2480_30~1000



BLE_2M_Ant1_2480_1000~26500



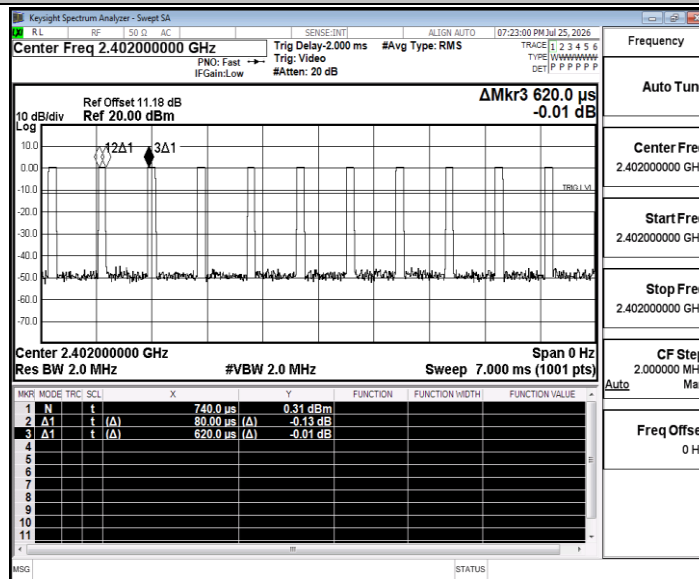
B.6 Duty Cycle

Test Result

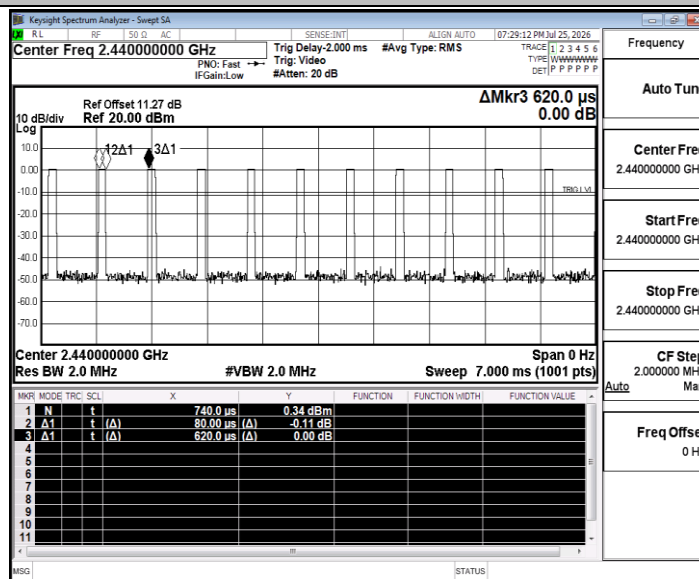
TestMode	Antenna	Freq(MHz)	ON Time [ms]	Period [ms]	X	DC [%]	xFactor	Limit	Verdict
BLE_1M	Ant1	2402	0.08	0.62	0.1290	12.90	8.89	---	---
		2440	0.08	0.62	0.1290	12.90	8.89	---	---
		2480	0.09	0.62	0.1452	14.52	8.38	---	---
BLE_2M	Ant1	2402	0.06	0.63	0.0952	9.52	10.21	---	---
		2440	0.06	0.63	0.0952	9.52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

Test Graphs

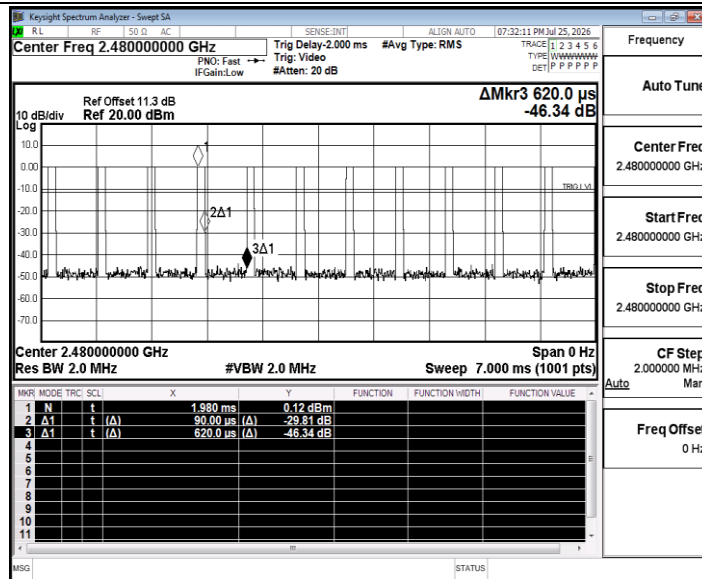
BLE_1M_Ant1_2402



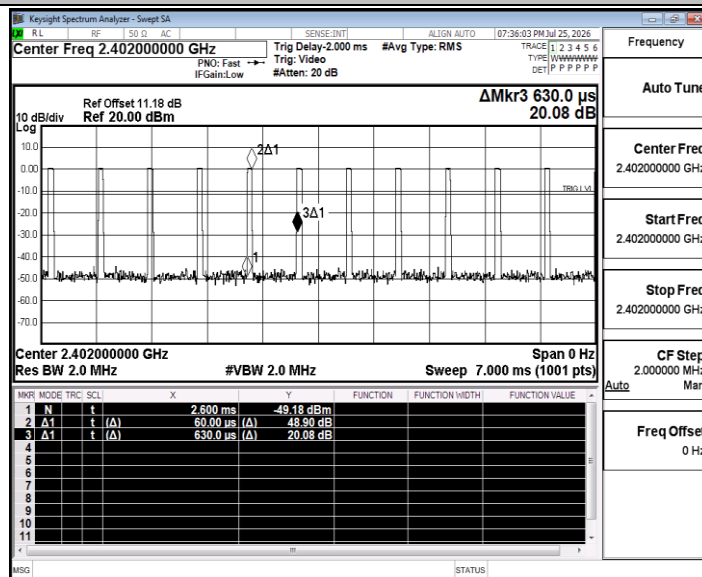
BLE_1M_Ant1_2440



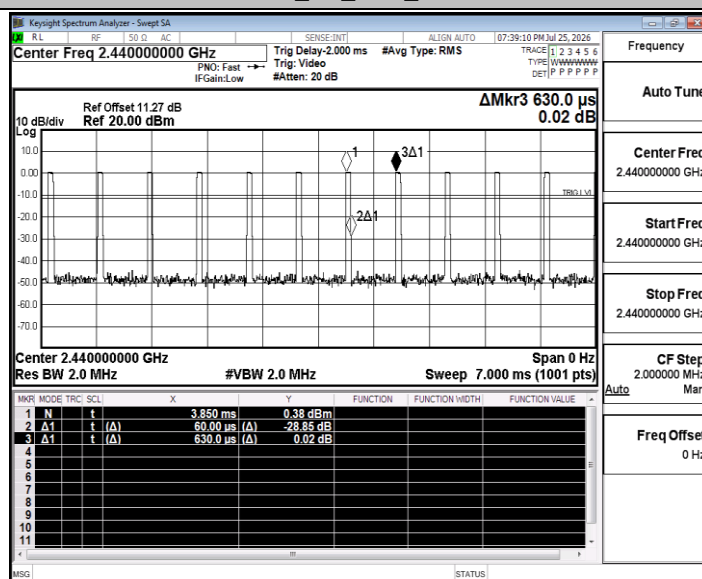
BLE_1M_Ant1_2480

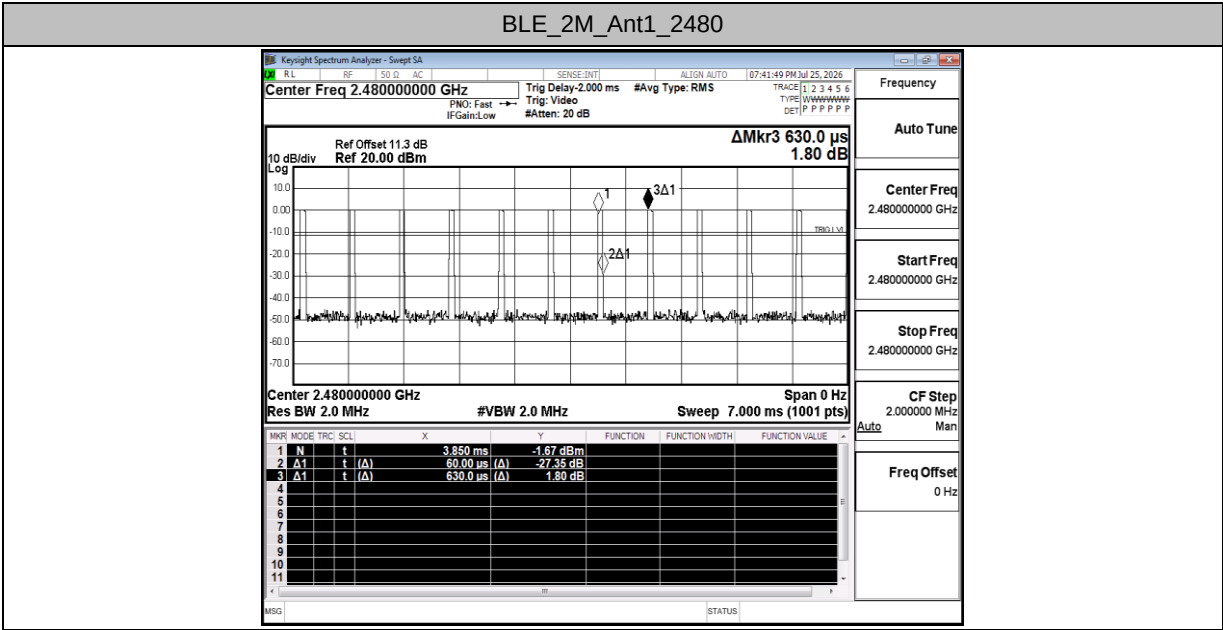


BLE_2M_Ant1_2402



BLE_2M_Ant1_2440





B.7 Emissions in Restricted Bands

Test Result

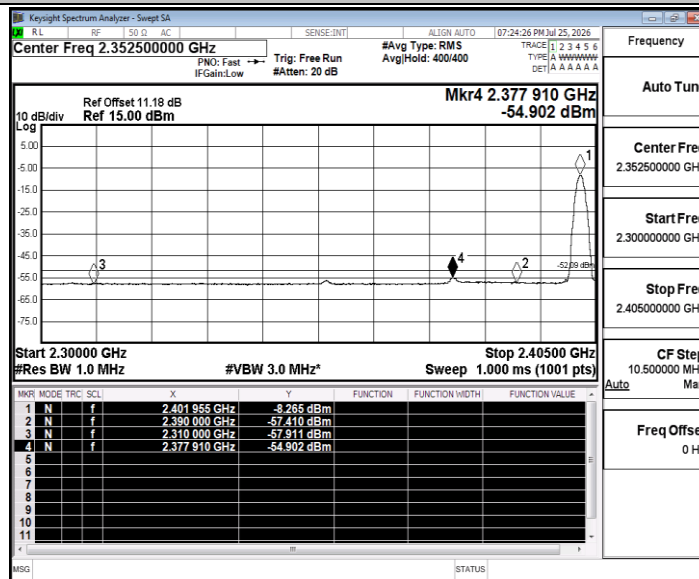
Test Mode	Antenna	Channel Name	Freq (MHz)	Detector	Freq [MHz]	Result [dBm]	Limit [dBm]	Gain [dBi]	DC Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Verdict
BLE_1M	Ant1	Low	2402	AV	2310.000	-57.91	≤-52.09	2.00	8.89	48.18	≤54	PASS
				AV	2377.910	-54.9	≤-52.09	2.00	8.89	51.19	≤54	PASS
				AV	2390.000	-57.41	≤-52.09	2.00	8.89	48.68	≤54	PASS
				Peak	2310.000	-49.37	≤-23.20	2.00	0.00	47.83	≤74	PASS
				Peak	2378.330	-43.29	≤-23.20	2.00	0.00	53.91	≤74	PASS
				Peak	2390.000	-47.55	≤-23.20	2.00	0.00	49.65	≤74	PASS
		High	2480	AV	2483.500	-56.71	≤-51.58	2.00	8.38	48.87	≤54	PASS
				AV	2494.240	-56.36	≤-51.58	2.00	8.38	49.22	≤54	PASS
				AV	2500.000	-56.48	≤-51.58	2.00	8.38	49.10	≤54	PASS
				Peak	2483.500	-40.02	≤-23.20	2.00	0.00	57.18	≤74	PASS
				Peak	2483.520	-40.02	≤-23.20	2.00	0.00	57.18	≤74	PASS
				Peak	2500.000	-47.55	≤-23.20	2.00	0.00	49.65	≤74	PASS
BLE_2M	Ant1	Low	2402	AV	2310.000	-57.58	≤-53.41	2.00	10.21	49.83	≤54	PASS
				AV	2378.015	-55.86	≤-53.41	2.00	10.21	51.55	≤54	PASS
				AV	2390.000	-57.4	≤-53.41	2.00	10.21	50.01	≤54	PASS
				Peak	2310.000	-48.66	≤-23.20	2.00	0.00	48.54	≤74	PASS
				Peak	2379.170	-43.25	≤-23.20	2.00	0.00	53.95	≤74	PASS
				Peak	2390.000	-47.11	≤-23.20	2.00	0.00	50.09	≤74	PASS
		High	2480	AV	2483.500	-56.77	≤-53.41	2.00	10.21	50.64	≤54	PASS
				AV	2485.520	-55.29	≤-53.41	2.00	10.21	52.12	≤54	PASS
				AV	2500.000	-57.01	≤-53.41	2.00	10.21	50.40	≤54	PASS
				Peak	2483.500	-43.31	≤-23.20	2.00	0.00	53.89	≤74	PASS
				Peak	2485.680	-36.95	≤-23.20	2.00	0.00	60.25	≤74	PASS
				Peak	2500.000	-47.98	≤-23.20	2.00	0.00	49.22	≤74	PASS

Note:

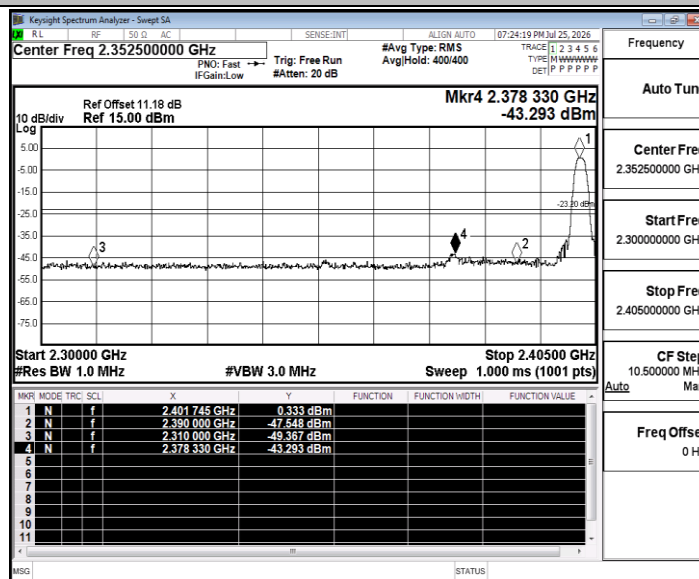
1. The Antenna Gain is compensated in the graph.
2. The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.

Test Graphs

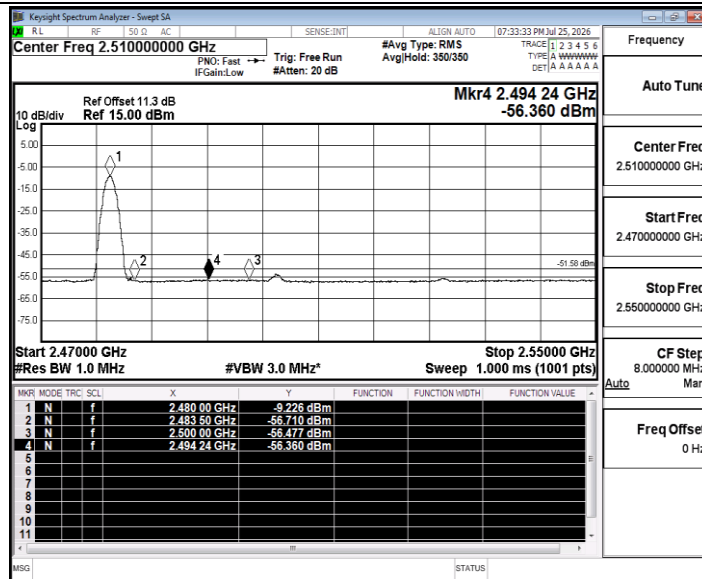
BLE_1M_Ant1_Low_2402_AV



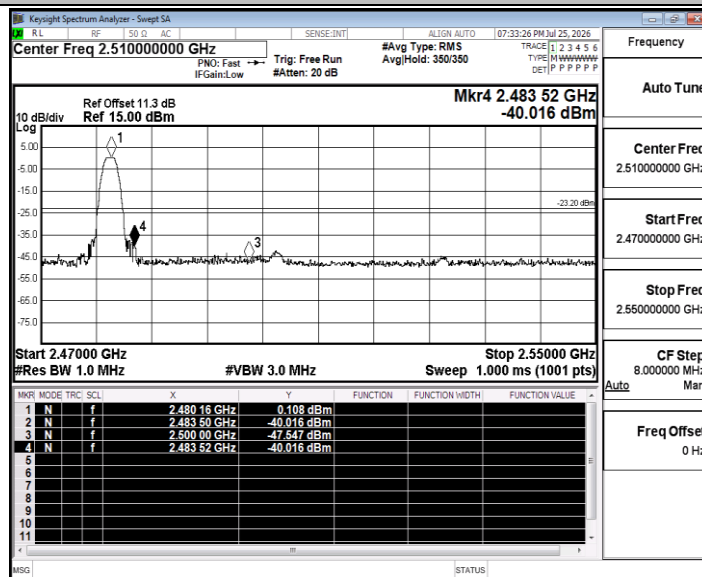
BLE_1M_Ant1_Low_2402_Peak



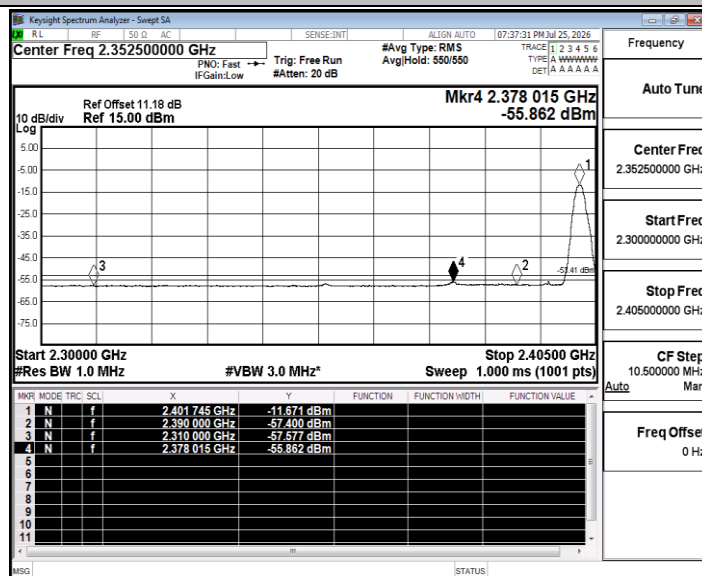
BLE_1M_Ant1_High_2480_AV



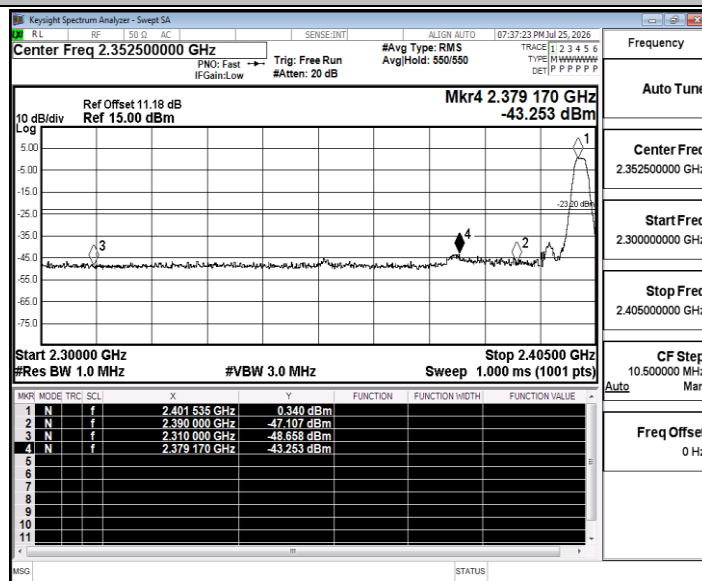
BLE_1M_Ant1_High_2480_Peak



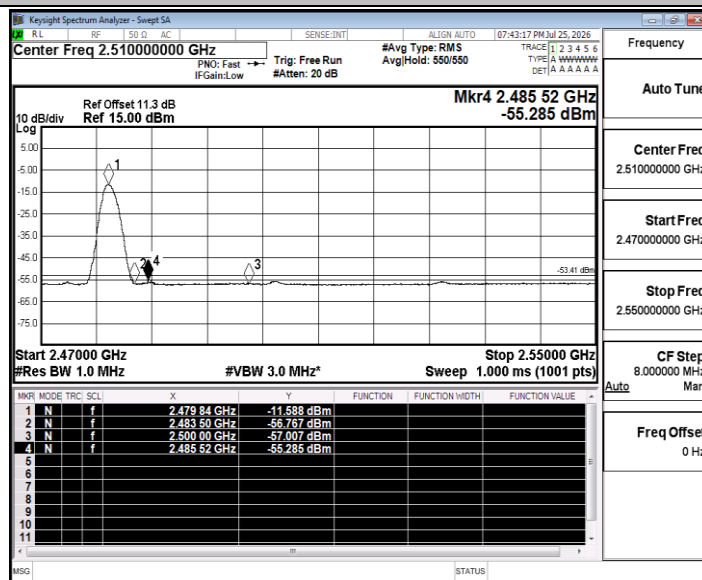
BLE_2M_Ant1_Low_2402_AV



BLE_2M_Ant1_Low_2402_Peak



BLE_2M_Ant1_High_2480_AV



BLE_2M_Ant1_High_2480_Peak

