

Appendix B

RF Test Data for BT LE (Conducted Measurement)

Product Name: Bluetooth speaker

Test Model: OS-1988

Environmental Conditions

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

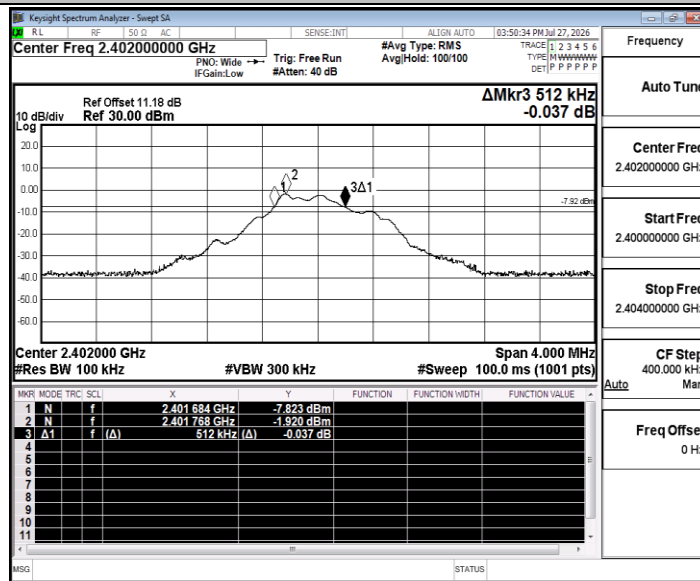
B.1 DTS Bandwidth

Test Result

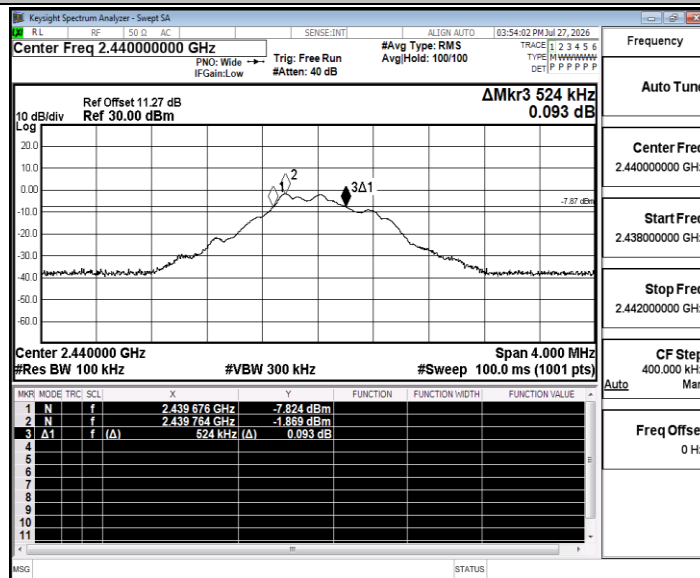
TestMode	Antenna	Freq(MHz)	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.512	2401.684	2402.196	0.5	PASS
		2440	0.524	2439.676	2440.200	0.5	PASS
		2480	0.528	2479.676	2480.204	0.5	PASS
BLE_2M	Ant1	2402	0.840	2401.436	2402.276	0.5	PASS
		2440	0.824	2439.432	2440.256	0.5	PASS
		2480	0.824	2479.432	2480.256	0.5	PASS

Test Graphs

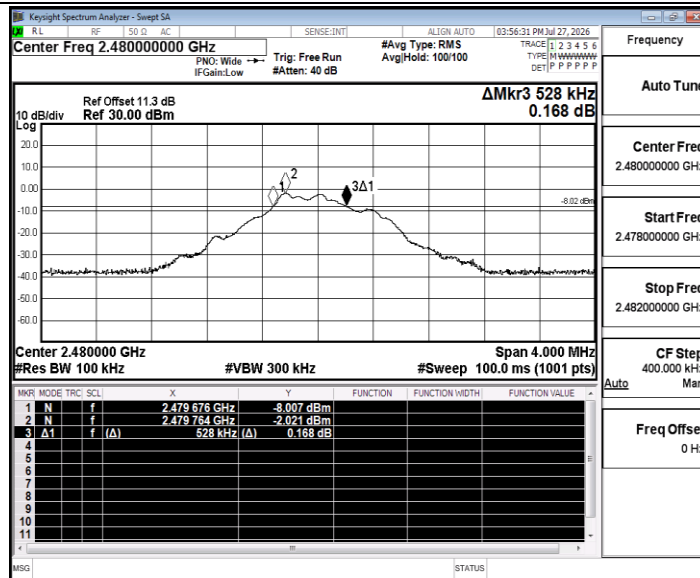
BLE_1M_Ant1_2402



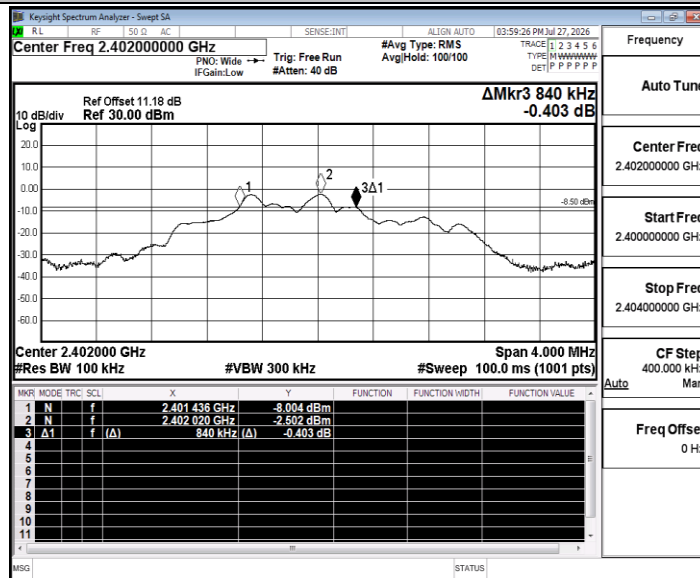
BLE_1M_Ant1_2440



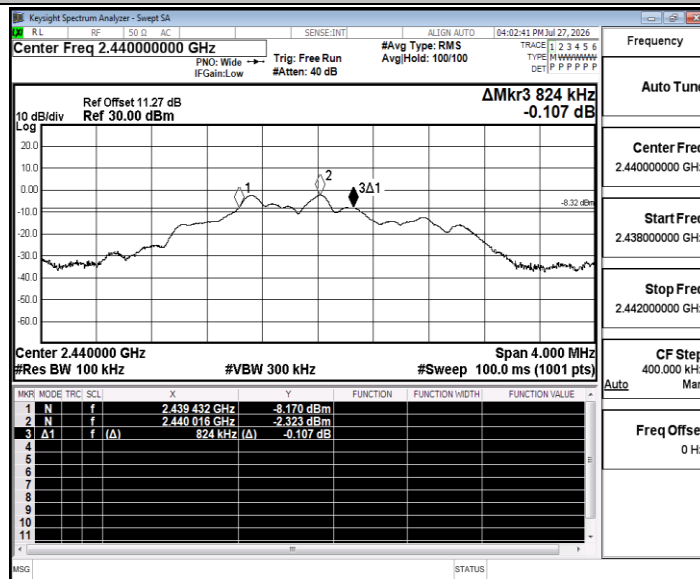
BLE_1M_Ant1_2480



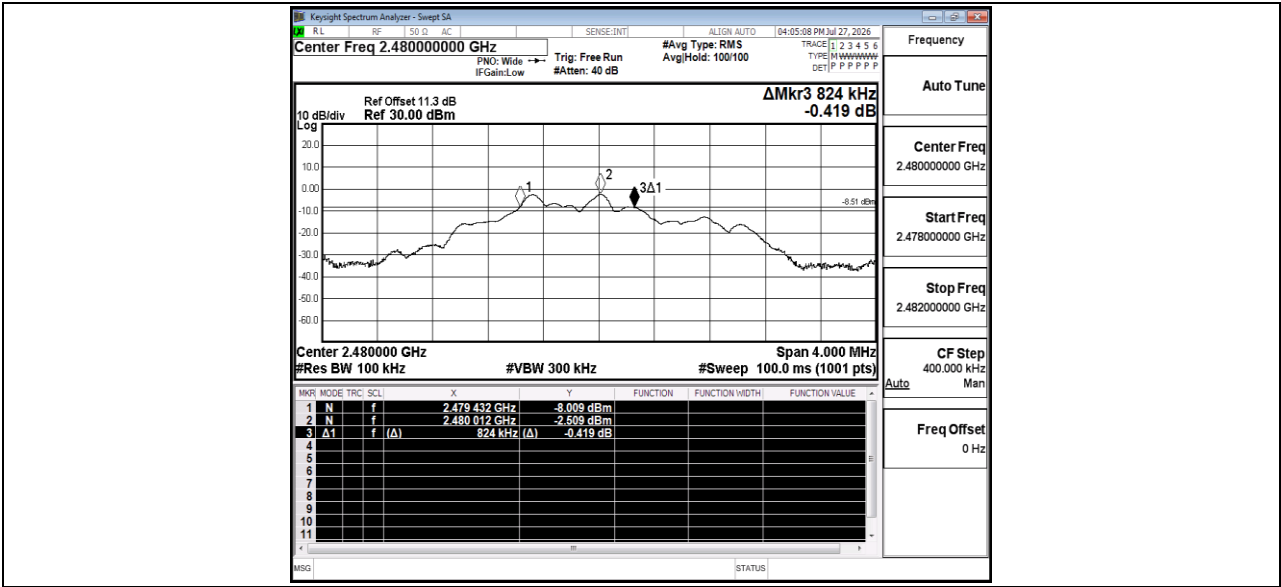
BLE_2M_Ant1_2402



BLE_2M_Ant1_2440



BLE_2M_Ant1_2480

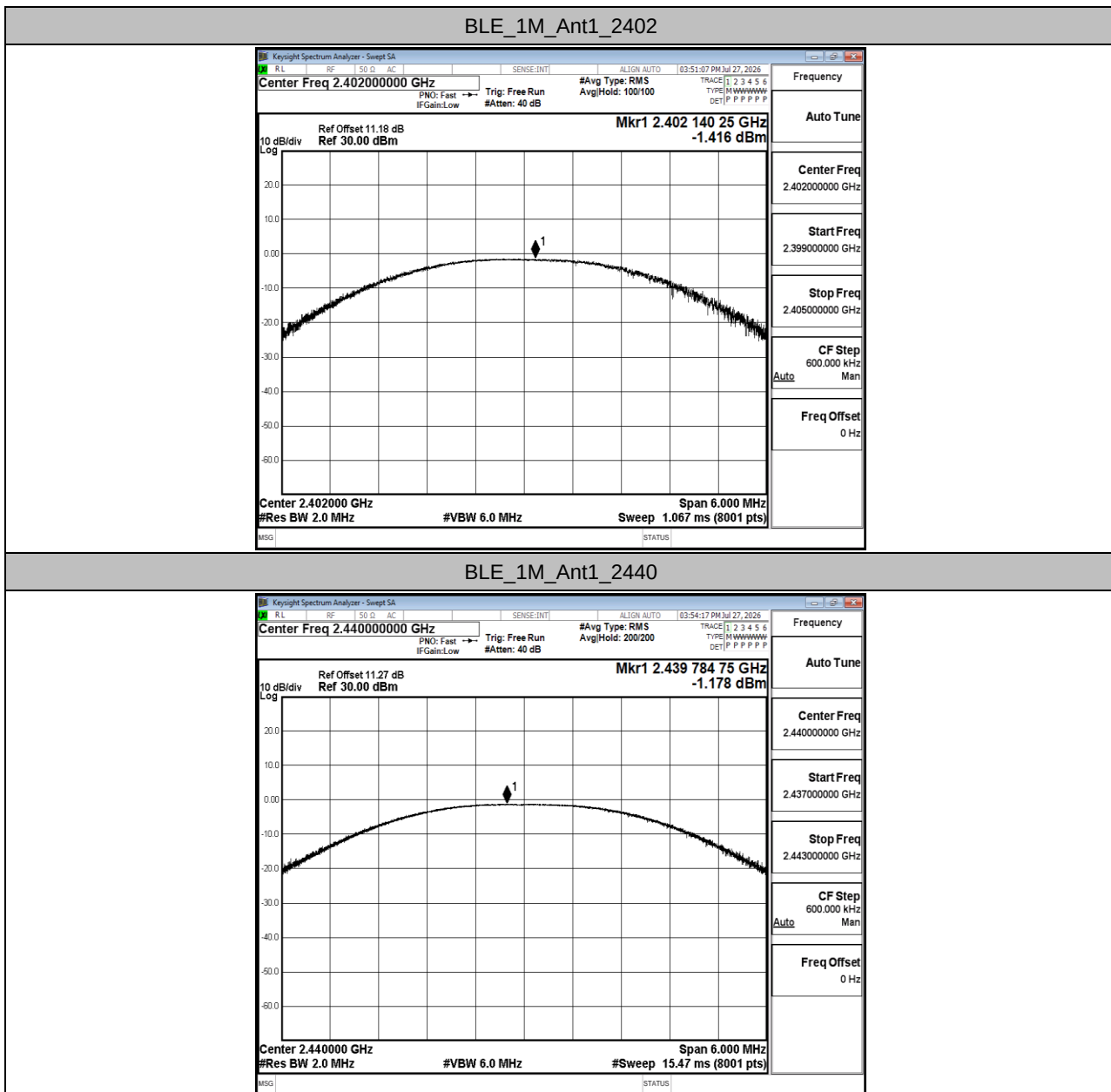


B.2 Maximum Peak conducted output power

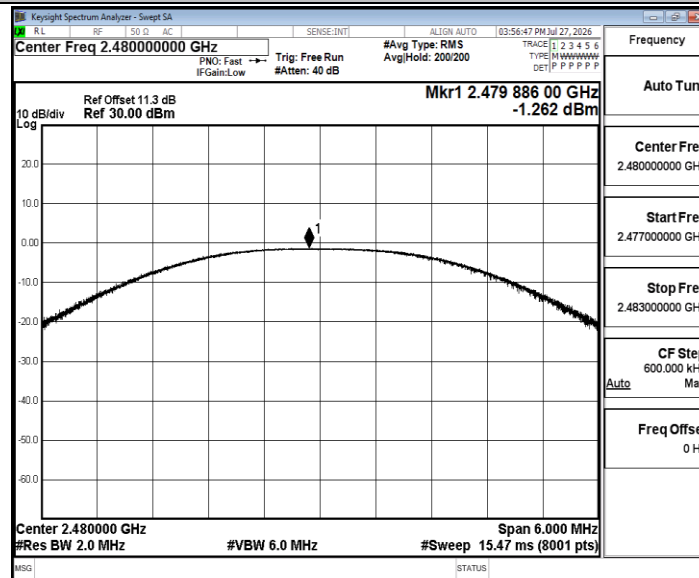
Test Result Peak

TestMode	Antenna	Freq(MHz)	Conducted Peak Power[dBm]	Conducted Limit[dBm]	Verdict
BLE_1M	Ant1	2402	-1.42	≤30	PASS
		2440	-1.18	≤30	PASS
		2480	-1.26	≤30	PASS
BLE_2M	Ant1	2402	-1.34	≤30	PASS
		2440	-1.25	≤30	PASS
		2480	-1.35	≤30	PASS

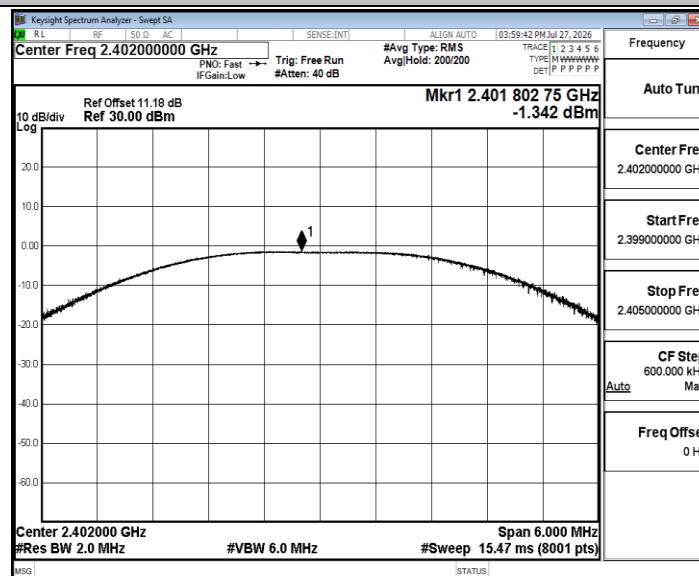
Test Graphs Peak



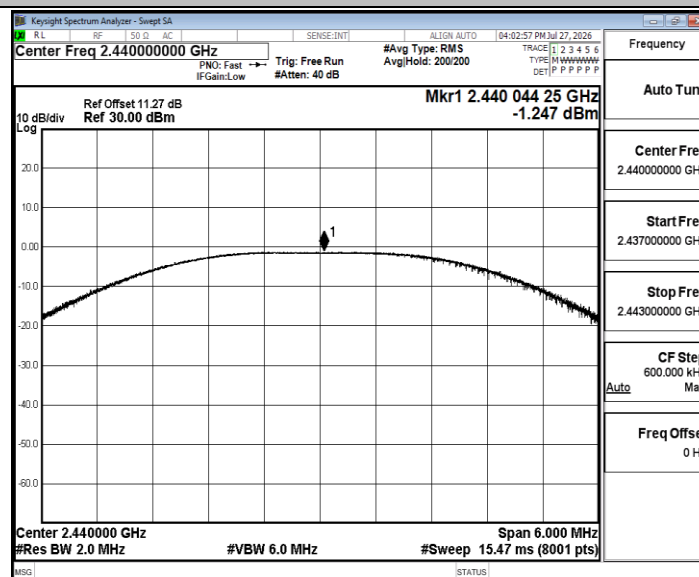
BLE_1M_Ant1_2480

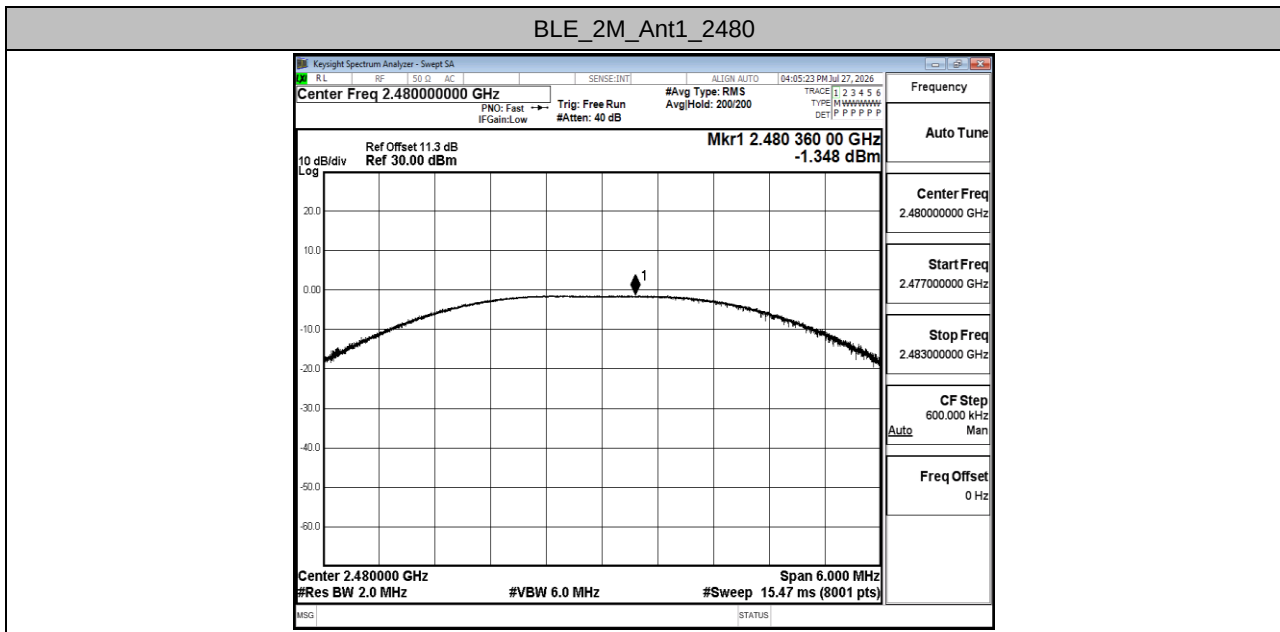


BLE_2M_Ant1_2402



BLE_2M_Ant1_2440





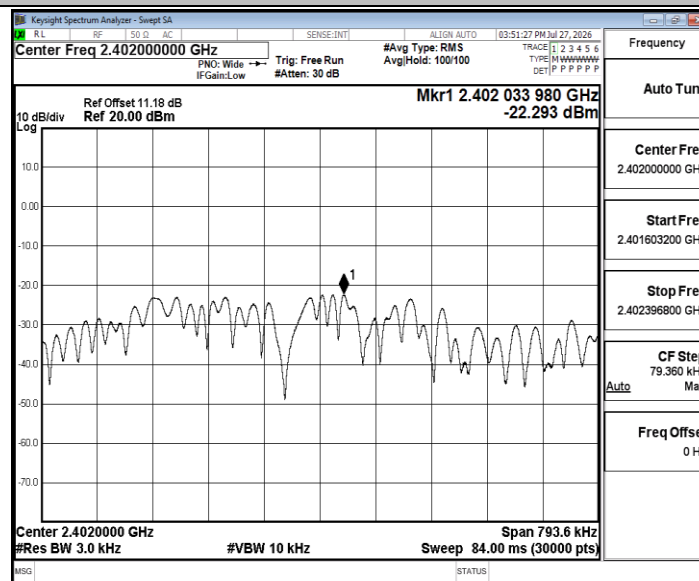
B.3 Maximum power spectral density

Test Result

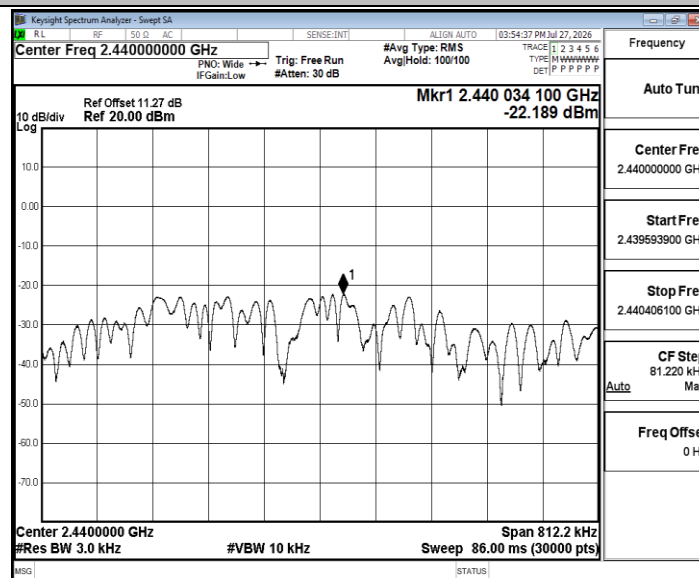
TestMode	Antenna	Freq(MHz)	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-22.29	≤8.00	PASS
		2440	-22.19	≤8.00	PASS
		2480	-22.42	≤8.00	PASS
BLE_2M	Ant1	2402	-24.23	≤8.00	PASS
		2440	-24.11	≤8.00	PASS
		2480	-24.19	≤8.00	PASS

Test Graphs

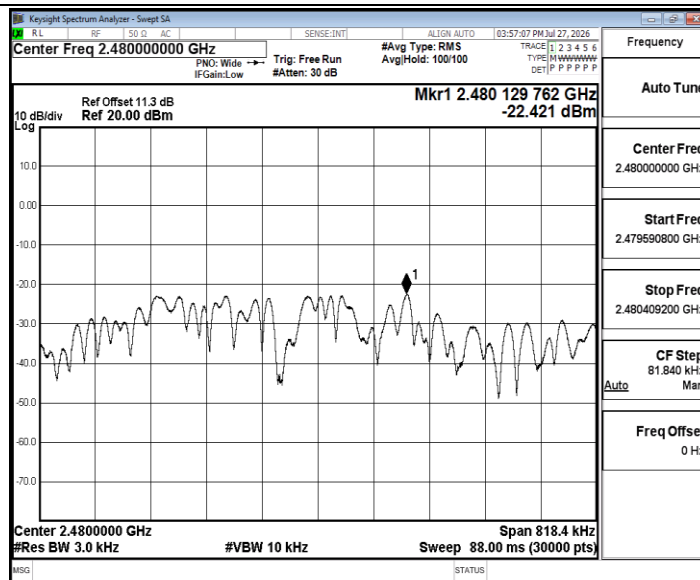
BLE_1M_Ant1_2402



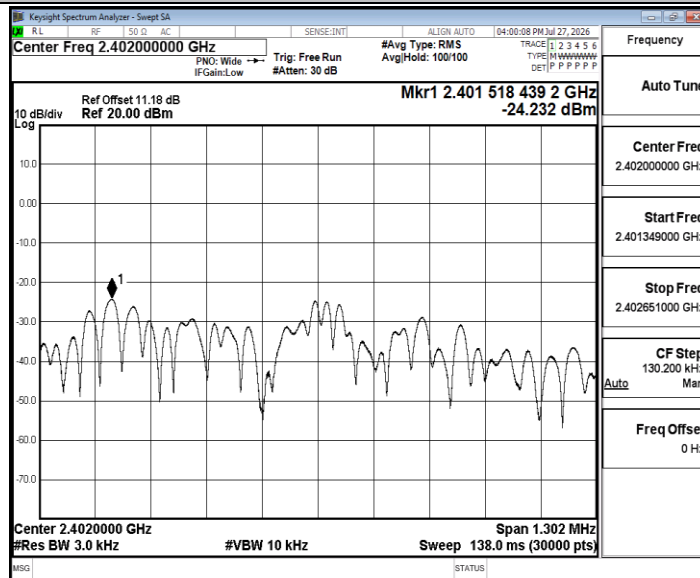
BLE_1M_Ant1_2440



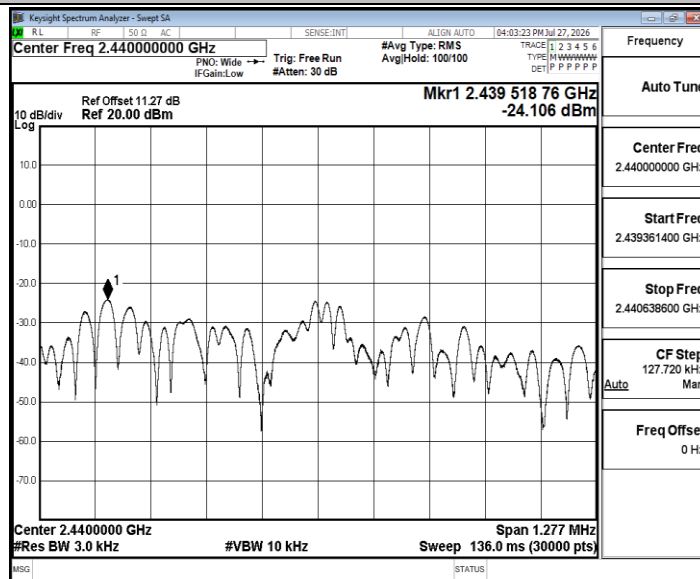
BLE_1M_Ant1_2480



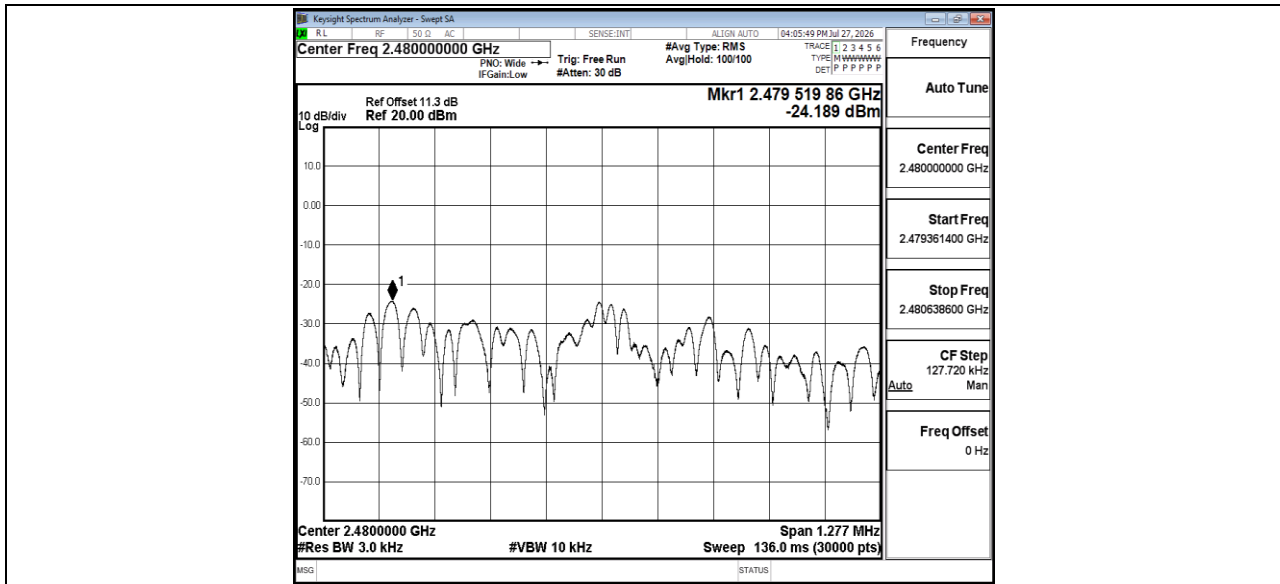
BLE_2M_Ant1_2402



BLE_2M_Ant1_2440



BLE_2M_Ant1_2480



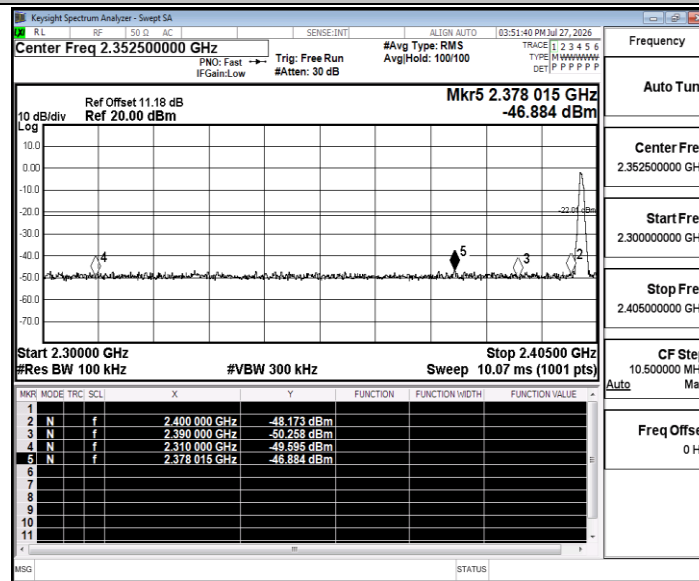
B.4 Band edge measurements

Test Result

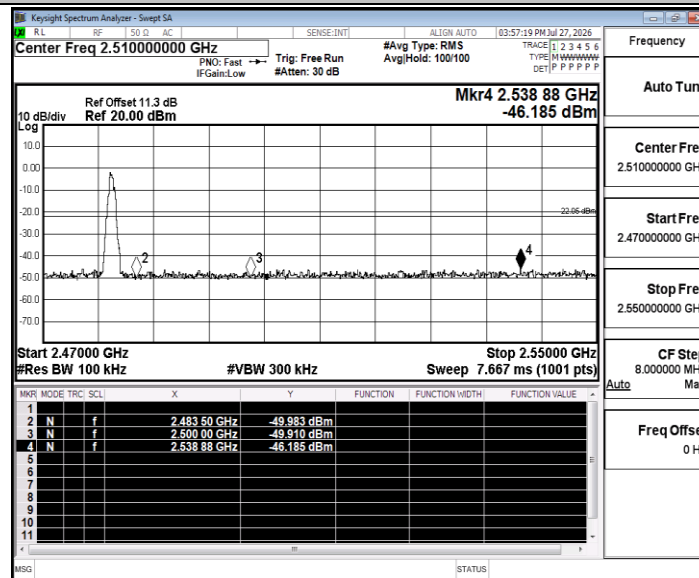
TestMode	Antenna	ChName	Freq(MHz)	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	-2.01	-46.88	≤-22.01	PASS
		High	2480	-2.05	-46.19	≤-22.05	PASS
BLE_2M	Ant1	Low	2402	-2.63	-34.63	≤-22.63	PASS
		High	2480	-2.60	-45.59	≤-22.6	PASS

Test Graphs

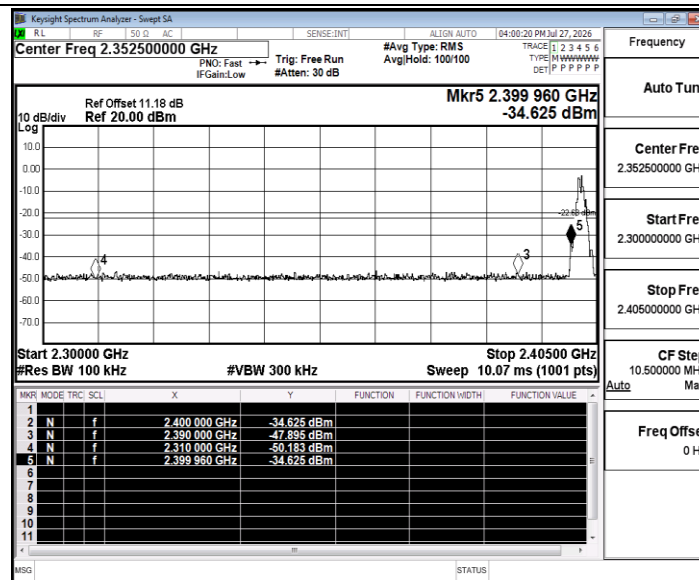
BLE_1M_Ant1_Low_2402



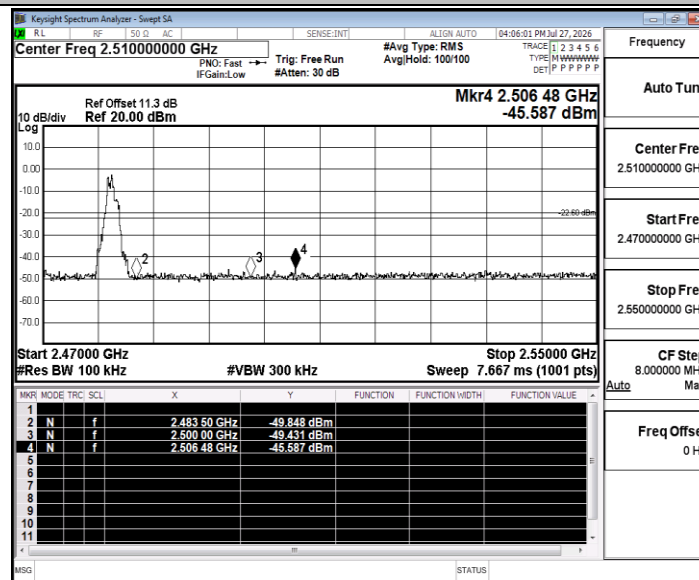
BLE_1M_Ant1_High_2480



BLE_2M_Ant1_Low_2402



BLE_2M_Ant1_High_2480



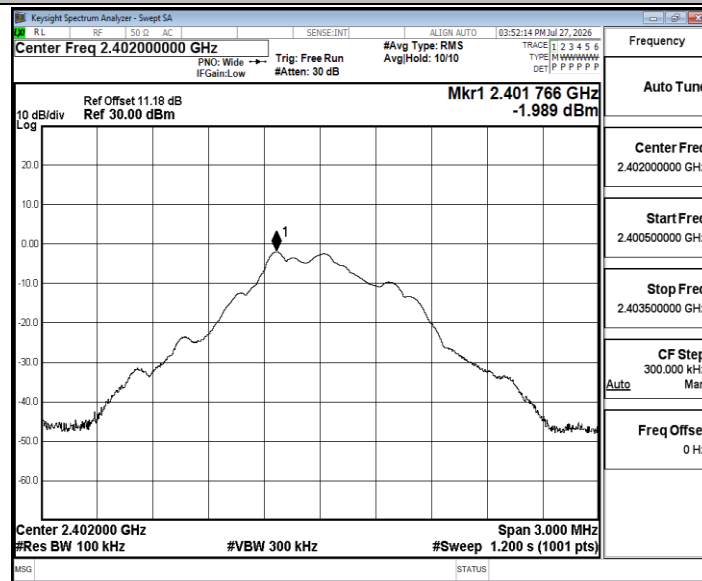
B.5 Conducted Spurious Emission

Test Result

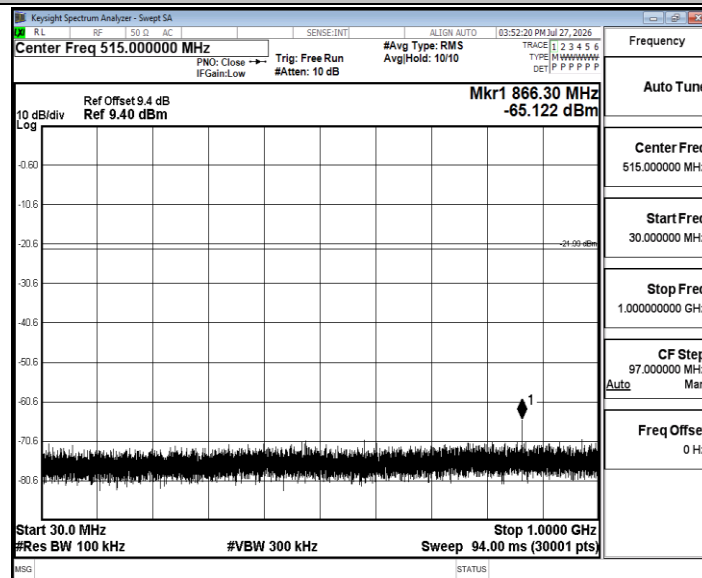
TestMode	Antenna	Freq(MHz)	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	Reference	-1.99	-1.99	---	PASS
			30~1000	-1.99	-65.12	≤-21.99	PASS
			1000~26500	-1.99	-39.06	≤-21.99	PASS
		2440	Reference	-1.93	-1.93	---	PASS
			30~1000	-1.93	-66.02	≤-21.93	PASS
			1000~26500	-1.93	-36.48	≤-21.93	PASS
		2480	Reference	-2.05	-2.05	---	PASS
			30~1000	-2.05	-64.91	≤-22.05	PASS
			1000~26500	-2.05	-41.99	≤-22.05	PASS
BLE_2M	Ant1	2402	Reference	-2.57	-2.57	---	PASS
			30~1000	-2.57	-68.01	≤-22.57	PASS
			1000~26500	-2.57	-37.29	≤-22.57	PASS
		2440	Reference	-2.42	-2.42	---	PASS
			30~1000	-2.42	-65.78	≤-22.42	PASS
			1000~26500	-2.42	-35.87	≤-22.42	PASS
		2480	Reference	-2.55	-2.55	---	PASS
			30~1000	-2.55	-66.19	≤-22.55	PASS
			1000~26500	-2.55	-41.83	≤-22.55	PASS

Test Graphs

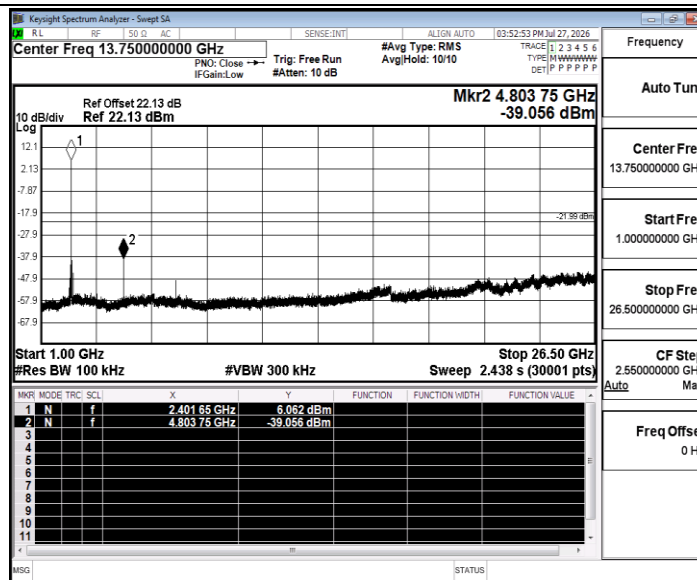
BLE_1M_Ant1_2402_0~Reference



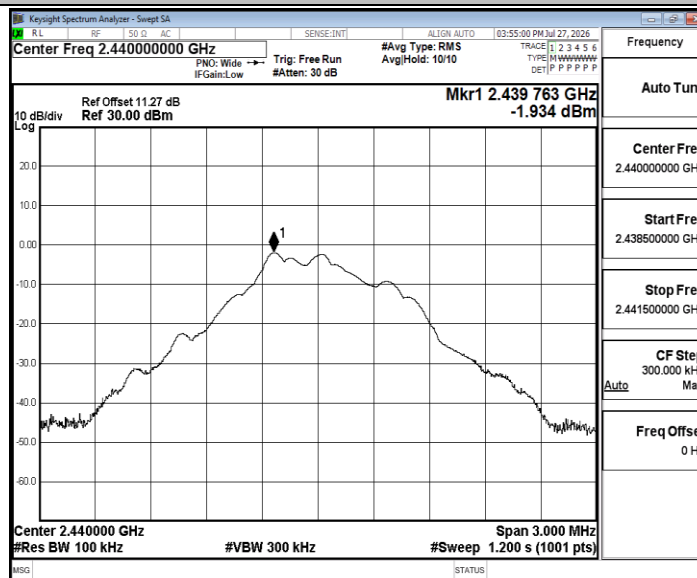
BLE_1M_Ant1_2402_30~1000



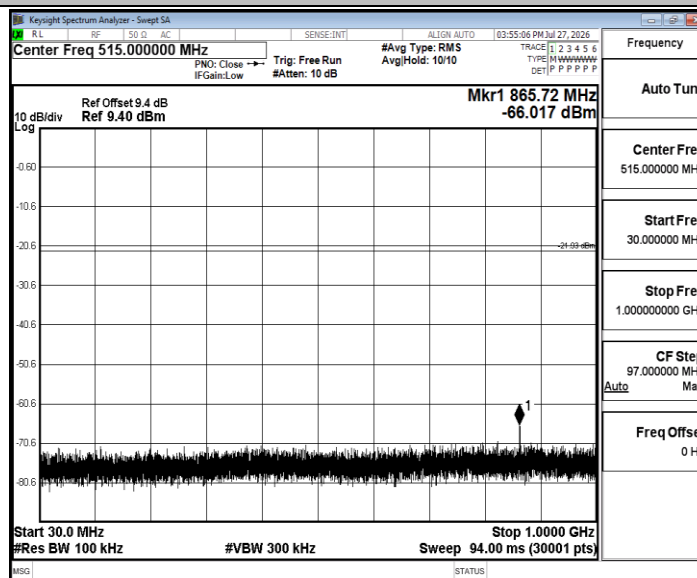
BLE_1M_Ant1_2402_1000~26500



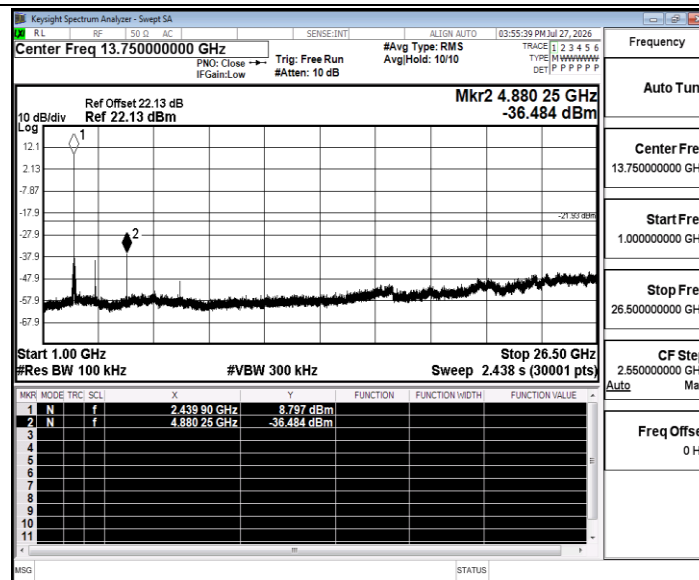
BLE_1M_Ant1_2440_0~Reference



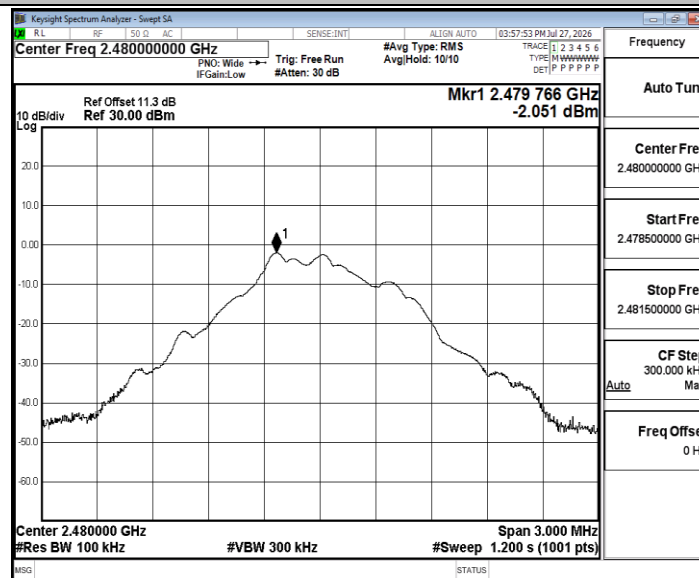
BLE_1M_Ant1_2440_30~1000



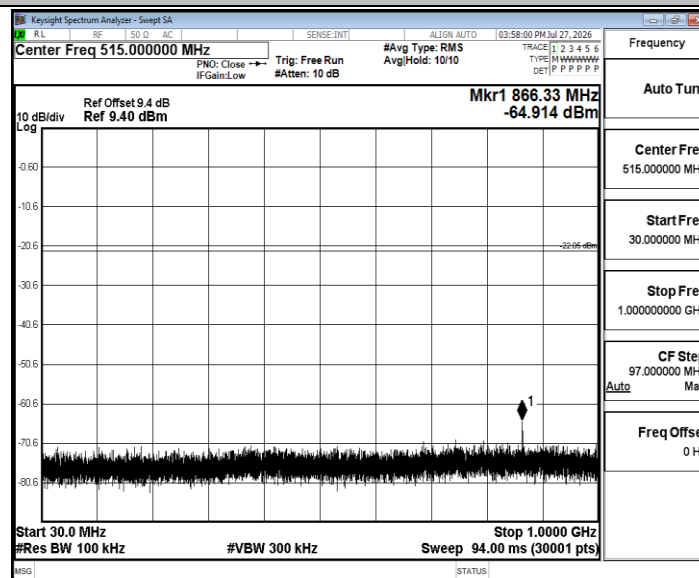
BLE_1M_Ant1_2440_1000~26500



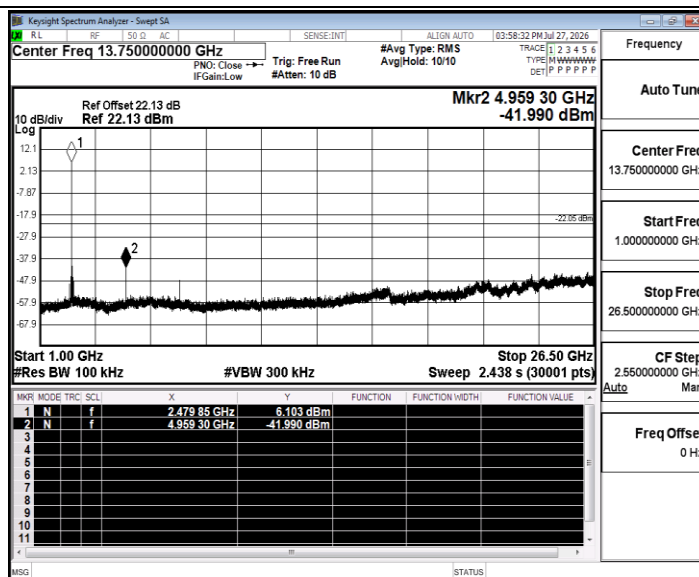
BLE_1M_Ant1_2480_0~Reference



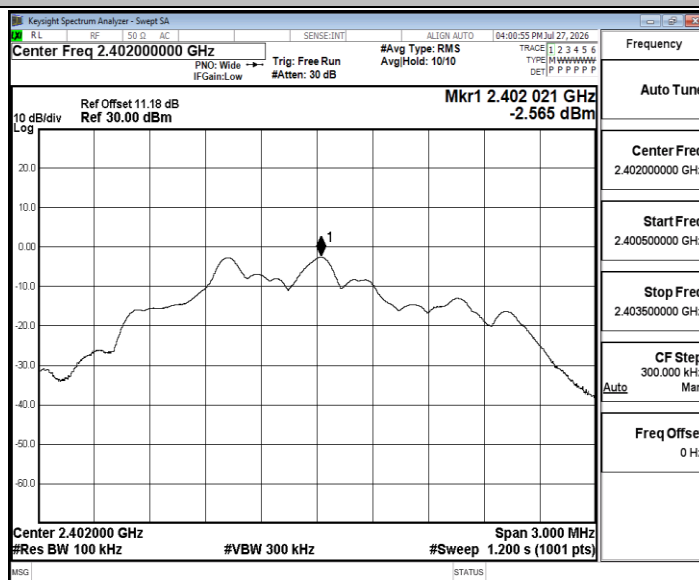
BLE_1M_Ant1_2480_30~1000



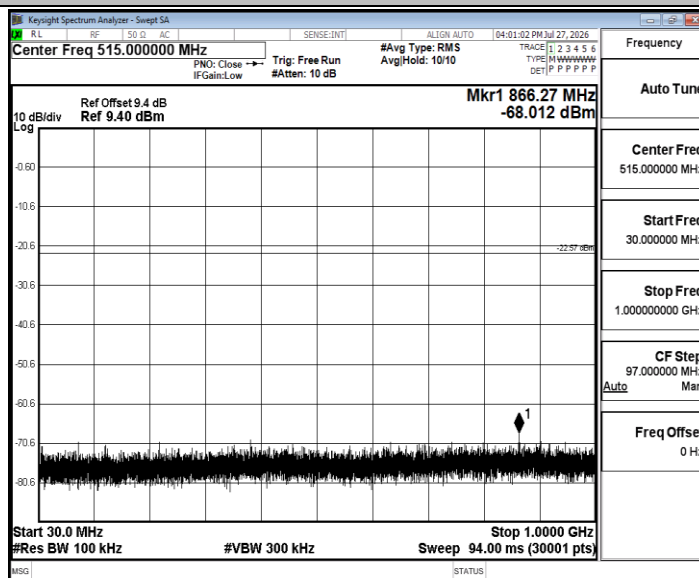
BLE_1M_Ant1_2480_1000~26500



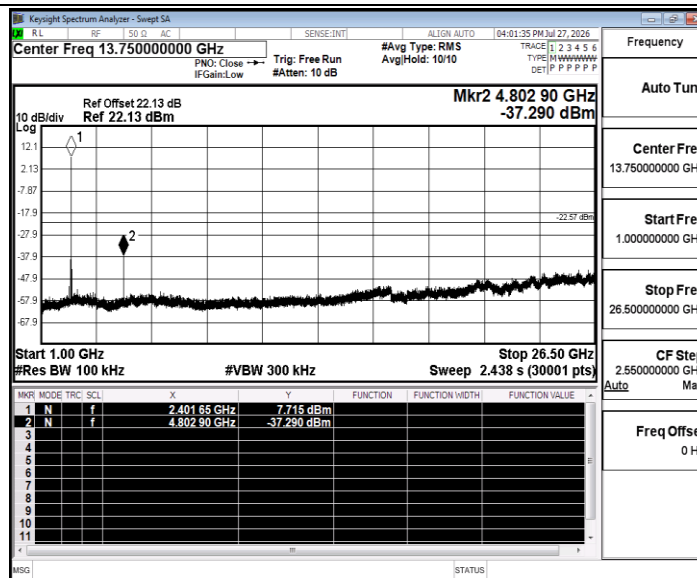
BLE_2M_Ant1_2402_0~Reference



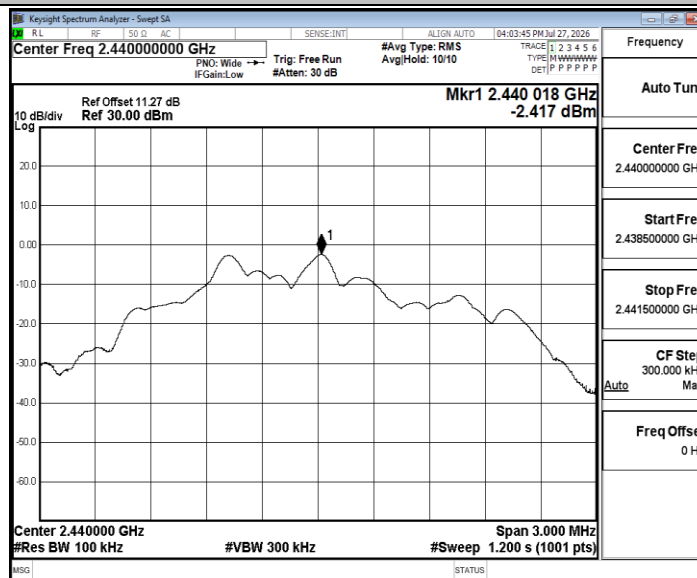
BLE_2M_Ant1_2402_30~1000



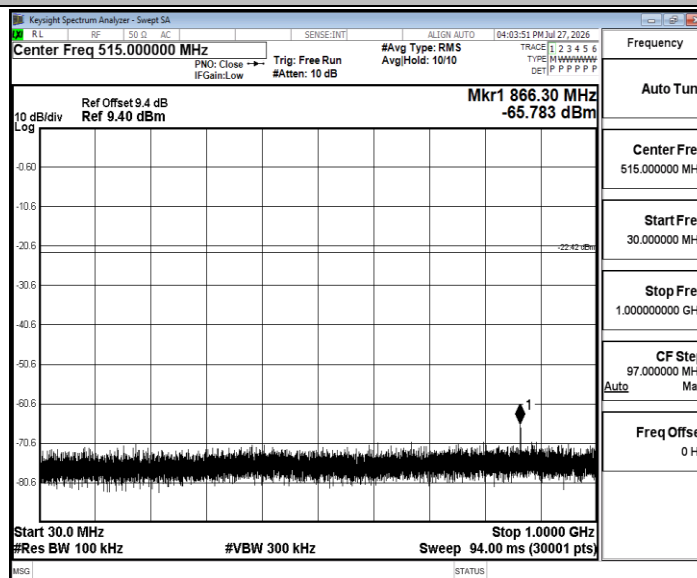
BLE_2M_Ant1_2402_1000~26500



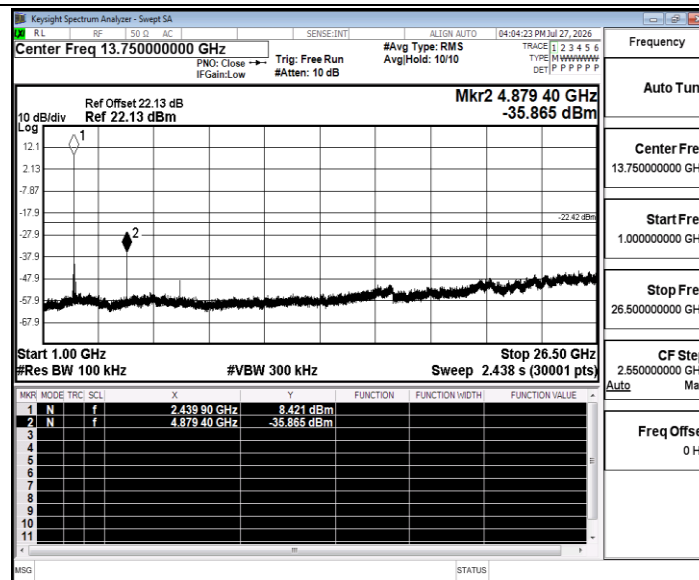
BLE_2M_Ant1_2440_0~Reference



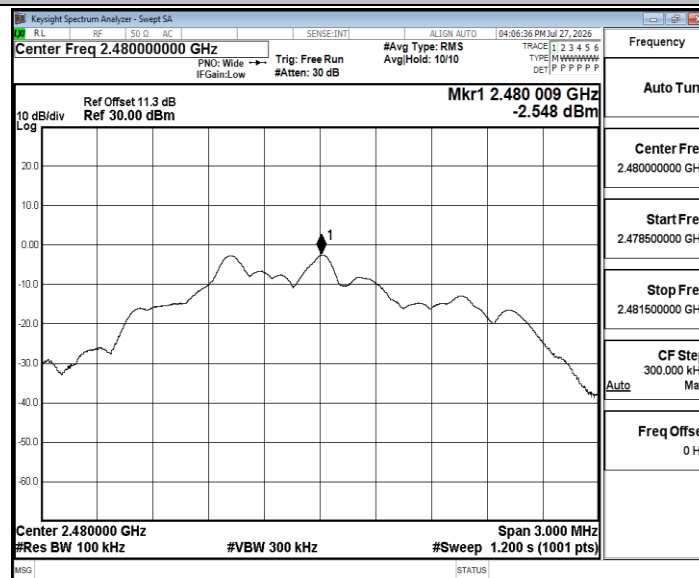
BLE_2M_Ant1_2440_30~1000



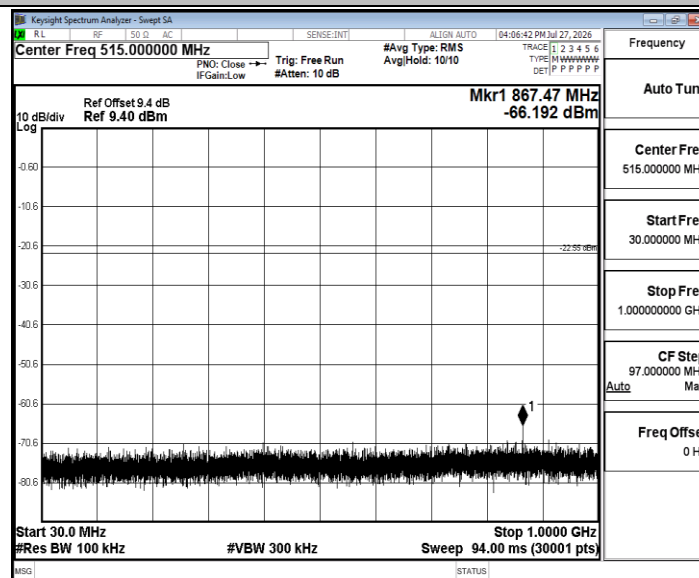
BLE_2M_Ant1_2440_1000~26500



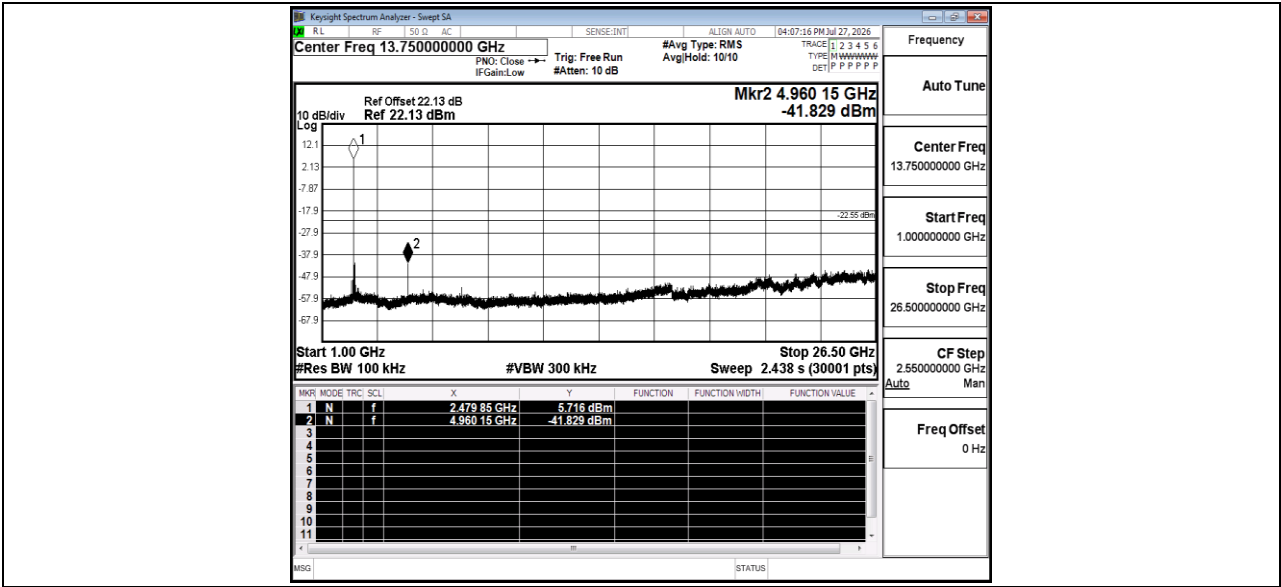
BLE_2M_Ant1_2480_0~Reference



BLE_2M_Ant1_2480_30~1000



BLE_2M_Ant1_2480_1000~26500

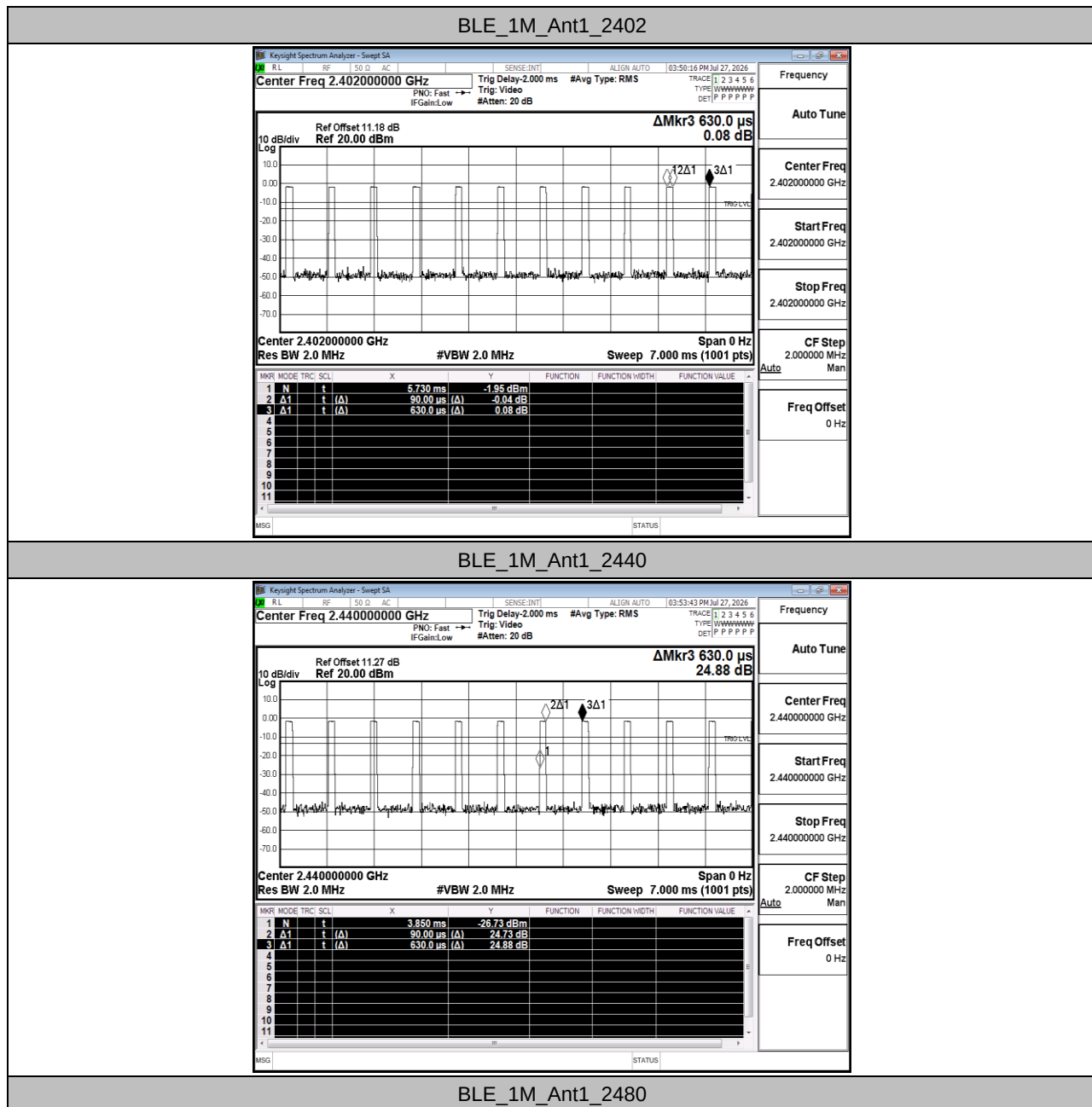


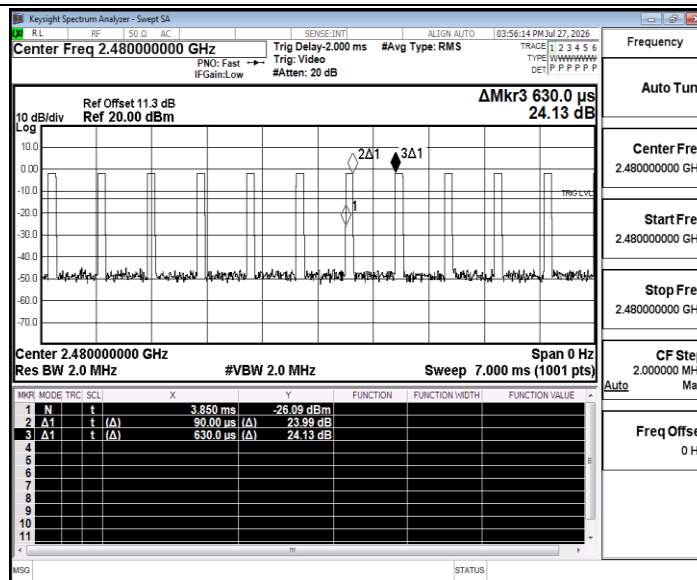
B.6 Duty Cycle

Test Result

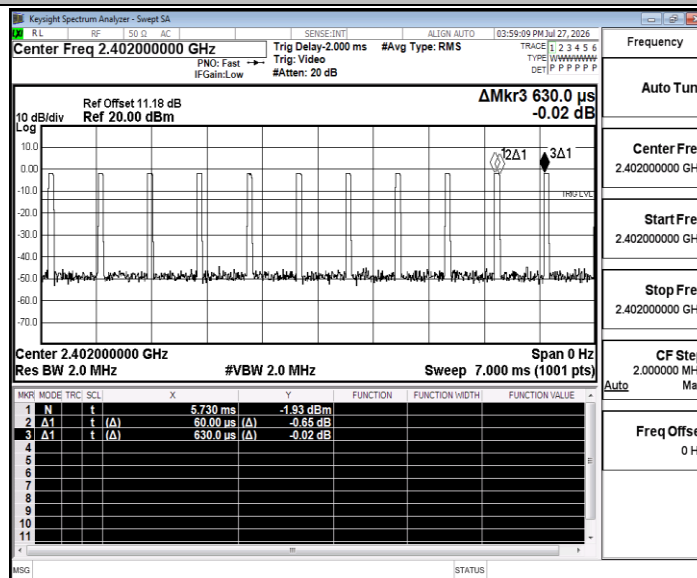
TestMode	Antenna	Freq(MHz)	ON Time [ms]	Period [ms]	X	DC [%]	xFactor	Limit	Verdict
BLE_1M	Ant1	2402	0.09	0.63	0.1429	14.29	8.45	---	---
		2440	0.09	0.63	0.1429	14.29	8.45	---	---
		2480	0.09	0.63	0.1429	14.29	8.45	---	---
BLE_2M	Ant1	2402	0.06	0.63	0.0952	9.52	10.21	---	---
		2440	0.05	0.62	0.0806	8.06	10.94	---	---
		2480	0.06	0.63	0.0952	9.52	10.21	---	---

Test Graphs

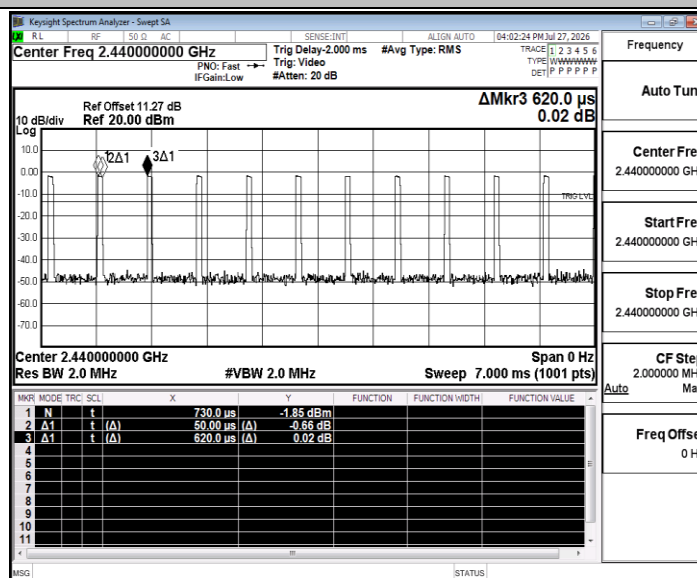




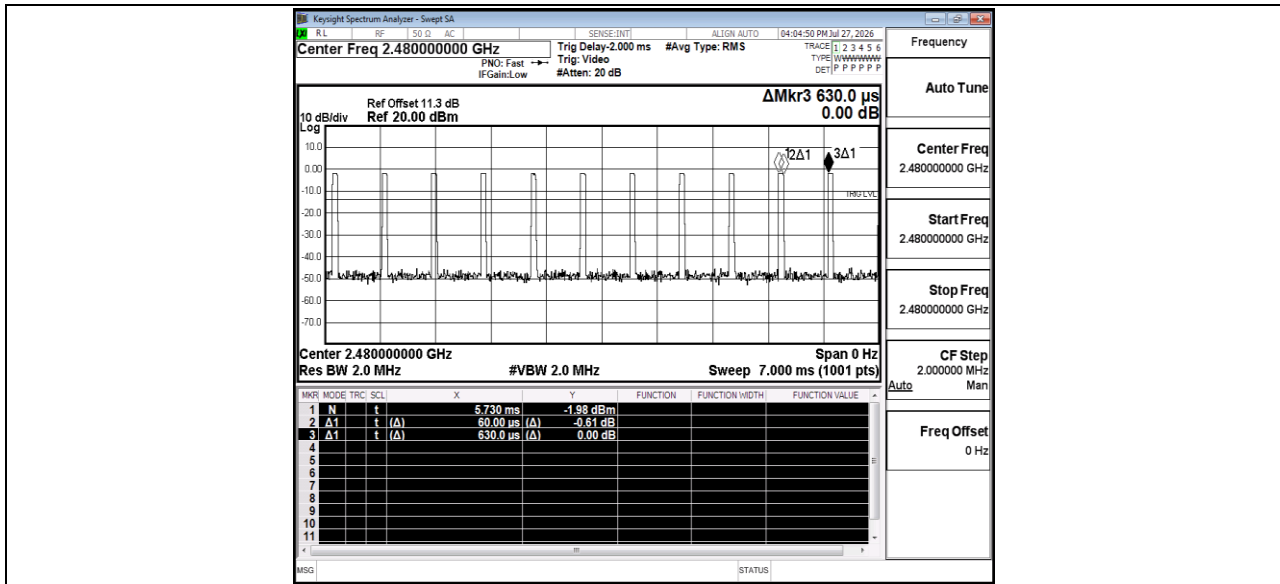
BLE_2M_Ant1_2402



BLE_2M_Ant1_2440



BLE_2M_Ant1_2480



B.7 Emissions in Restricted Bands

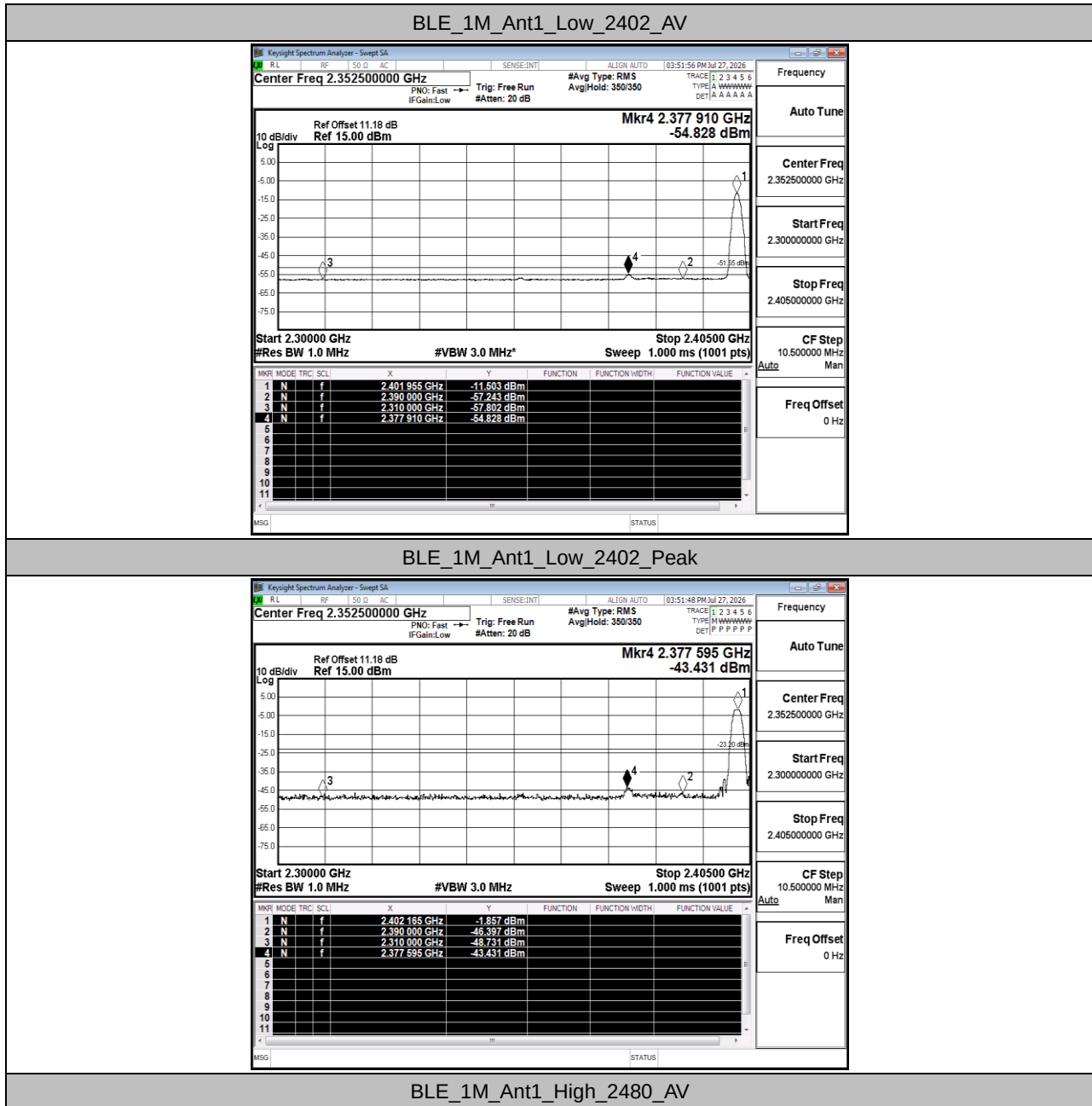
Test Result

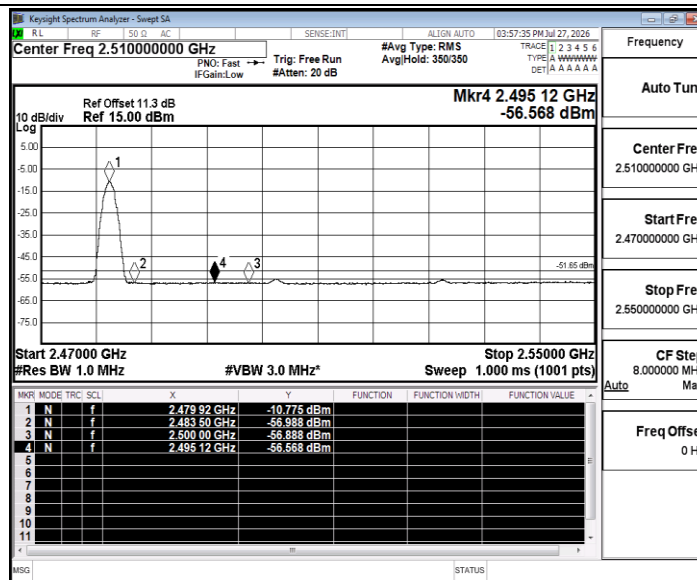
Test Mode	Antenna	Channel Name	Freq (MHz)	Detector	Freq [MHz]	Result [dBm]	Limit [dBm]	Gain [dBi]	DC Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Verdict
BLE_1M	Ant1	Low	2402	AV	2310.000	-57.8	≤-51.65	2.00	8.45	47.85	≤54	PASS
				AV	2377.910	-54.83	≤-51.65	2.00	8.45	50.82	≤54	PASS
				AV	2390.000	-57.24	≤-51.65	2.00	8.45	48.41	≤54	PASS
				Peak	2310.000	-48.73	≤-23.20	2.00	0.00	48.47	≤74	PASS
				Peak	2377.595	-43.43	≤-23.20	2.00	0.00	53.77	≤74	PASS
				Peak	2390.000	-46.4	≤-23.20	2.00	0.00	50.80	≤74	PASS
		High	2480	AV	2483.500	-56.99	≤-51.65	2.00	8.45	48.66	≤54	PASS
				AV	2495.120	-56.57	≤-51.65	2.00	8.45	49.08	≤54	PASS
				AV	2500.000	-56.89	≤-51.65	2.00	8.45	48.76	≤54	PASS
				Peak	2483.500	-45.65	≤-23.20	2.00	0.00	51.55	≤74	PASS
				Peak	2483.680	-42.57	≤-23.20	2.00	0.00	54.63	≤74	PASS
				Peak	2500.000	-46.29	≤-23.20	2.00	0.00	50.91	≤74	PASS
BLE_2M	Ant1	Low	2402	AV	2310.000	-57.97	≤-53.41	2.00	10.21	49.44	≤54	PASS
				AV	2377.805	-55.99	≤-53.41	2.00	10.21	51.42	≤54	PASS
				AV	2390.000	-57.36	≤-53.41	2.00	10.21	50.05	≤54	PASS
				Peak	2310.000	-48.66	≤-23.20	2.00	0.00	48.54	≤74	PASS
				Peak	2377.490	-43.57	≤-23.20	2.00	0.00	53.63	≤74	PASS
				Peak	2390.000	-47.36	≤-23.20	2.00	0.00	49.84	≤74	PASS
		High	2480	AV	2483.500	-56.9	≤-53.41	2.00	10.21	50.51	≤54	PASS
				AV	2485.600	-56.33	≤-53.41	2.00	10.21	51.08	≤54	PASS
				AV	2500.000	-57.21	≤-53.41	2.00	10.21	50.20	≤54	PASS
				Peak	2483.500	-44.65	≤-23.20	2.00	0.00	52.55	≤74	PASS
				Peak	2485.440	-39.44	≤-23.20	2.00	0.00	57.76	≤74	PASS
				Peak	2500.000	-46.88	≤-23.20	2.00	0.00	50.32	≤74	PASS

Note:

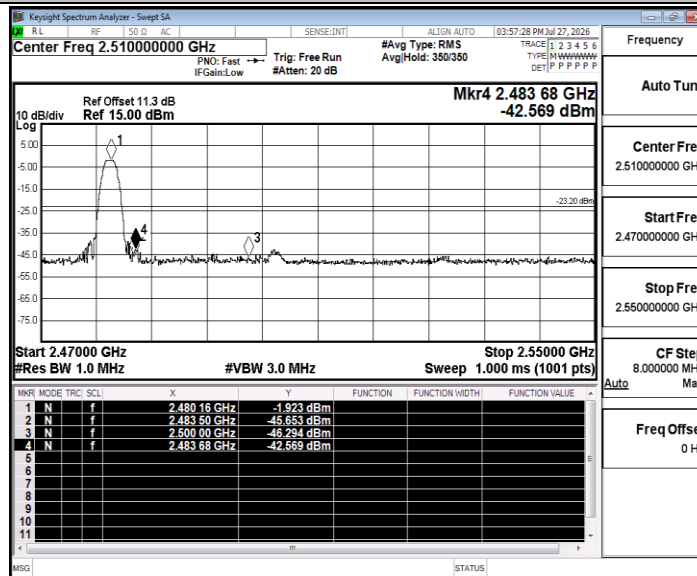
1. The Antenna Gain is compensated in the graph.
2. The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.

Test Graphs

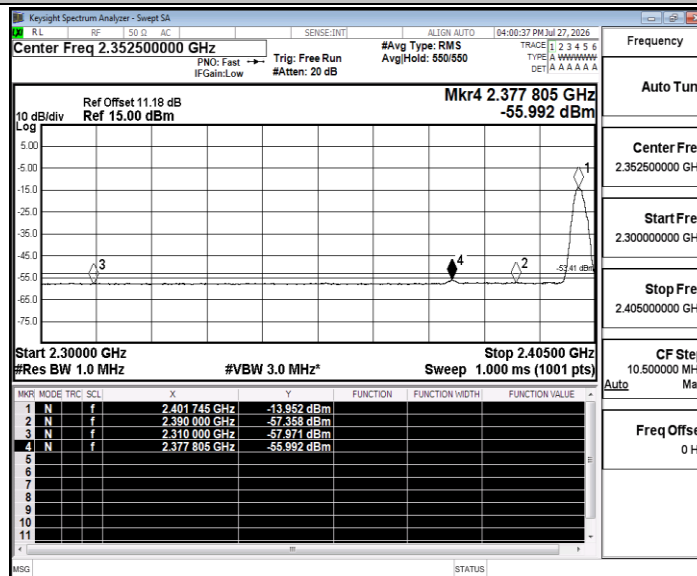




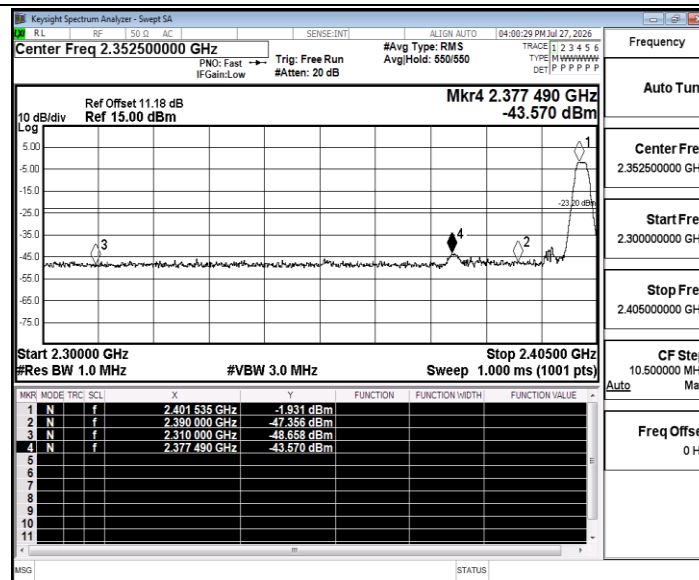
BLE_1M_Ant1_High_2480_Peak



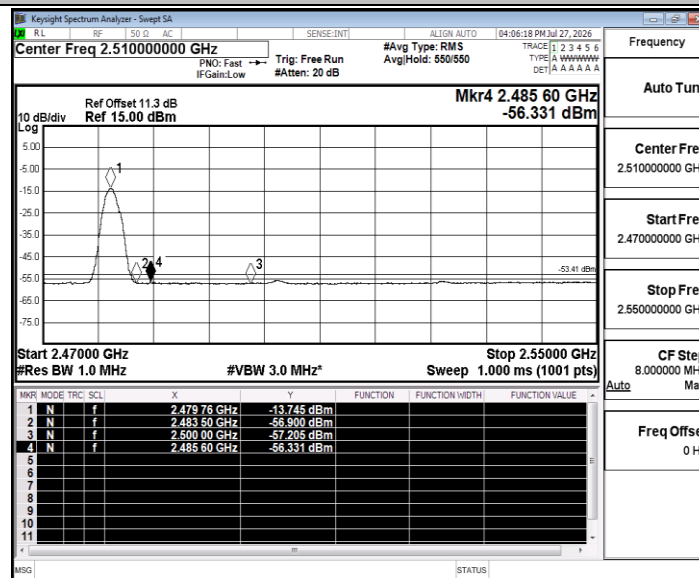
BLE_2M_Ant1_Low_2402_AV



BLE_2M_Ant1_Low_2402_Peak



BLE_2M_Ant1_High_2480_AV



BLE_2M_Ant1_High_2480_Peak

