

Appendix B

RF Test Data for BT LE (Conducted Measurement)

Product Name: Bluetooth speaker

Test Model: OS-2461

Environmental Conditions

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

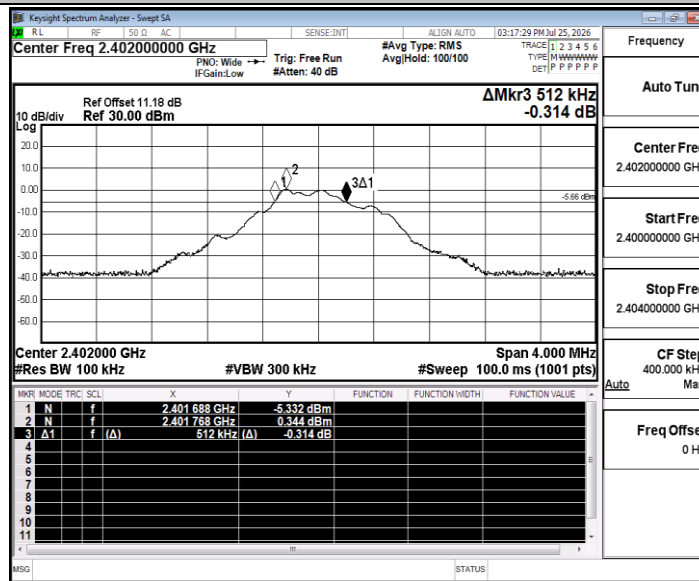
B.1 DTS Bandwidth

Test Result

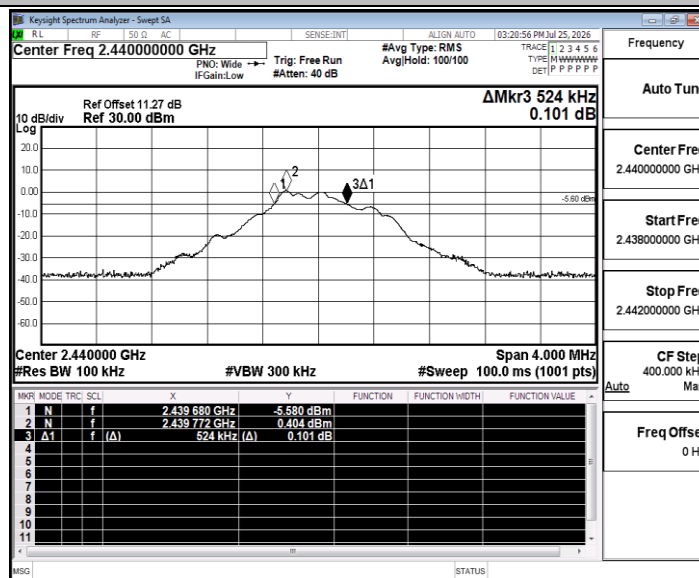
TestMode	Antenna	Freq(MHz)	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.512	2401.688	2402.200	0.5	PASS
		2440	0.524	2439.680	2440.204	0.5	PASS
		2480	0.528	2479.680	2480.208	0.5	PASS
BLE_2M	Ant1	2402	0.844	2401.436	2402.280	0.5	PASS
		2440	0.828	2439.432	2440.260	0.5	PASS
		2480	0.824	2479.428	2480.252	0.5	PASS

Test Graphs

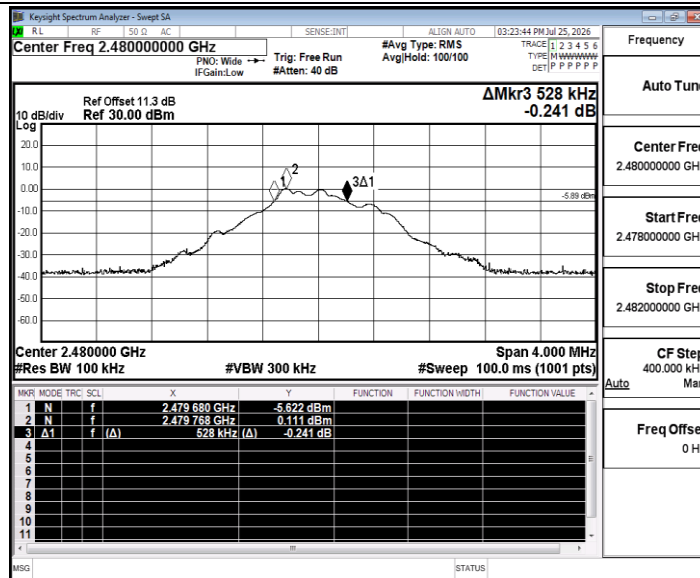
BLE_1M_Ant1_2402



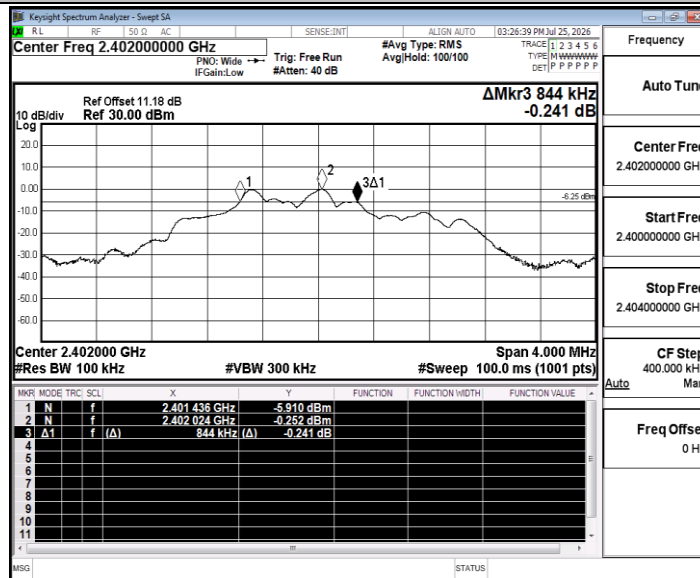
BLE_1M_Ant1_2440



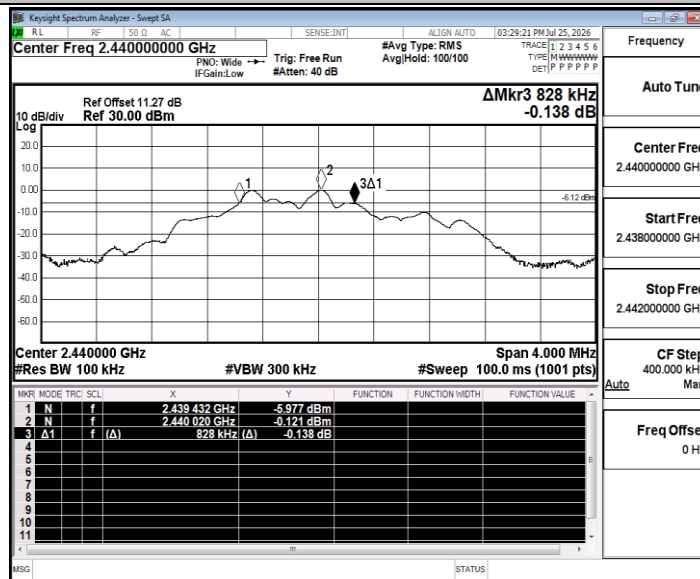
BLE_1M_Ant1_2480



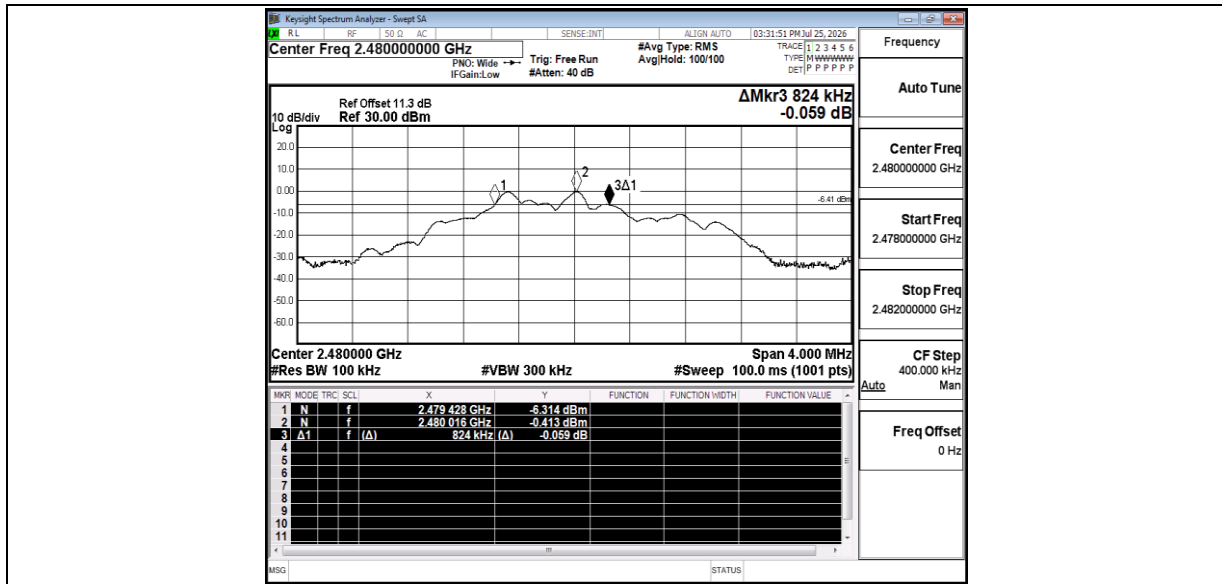
BLE_2M_Ant1_2402



BLE_2M_Ant1_2440



BLE_2M_Ant1_2480

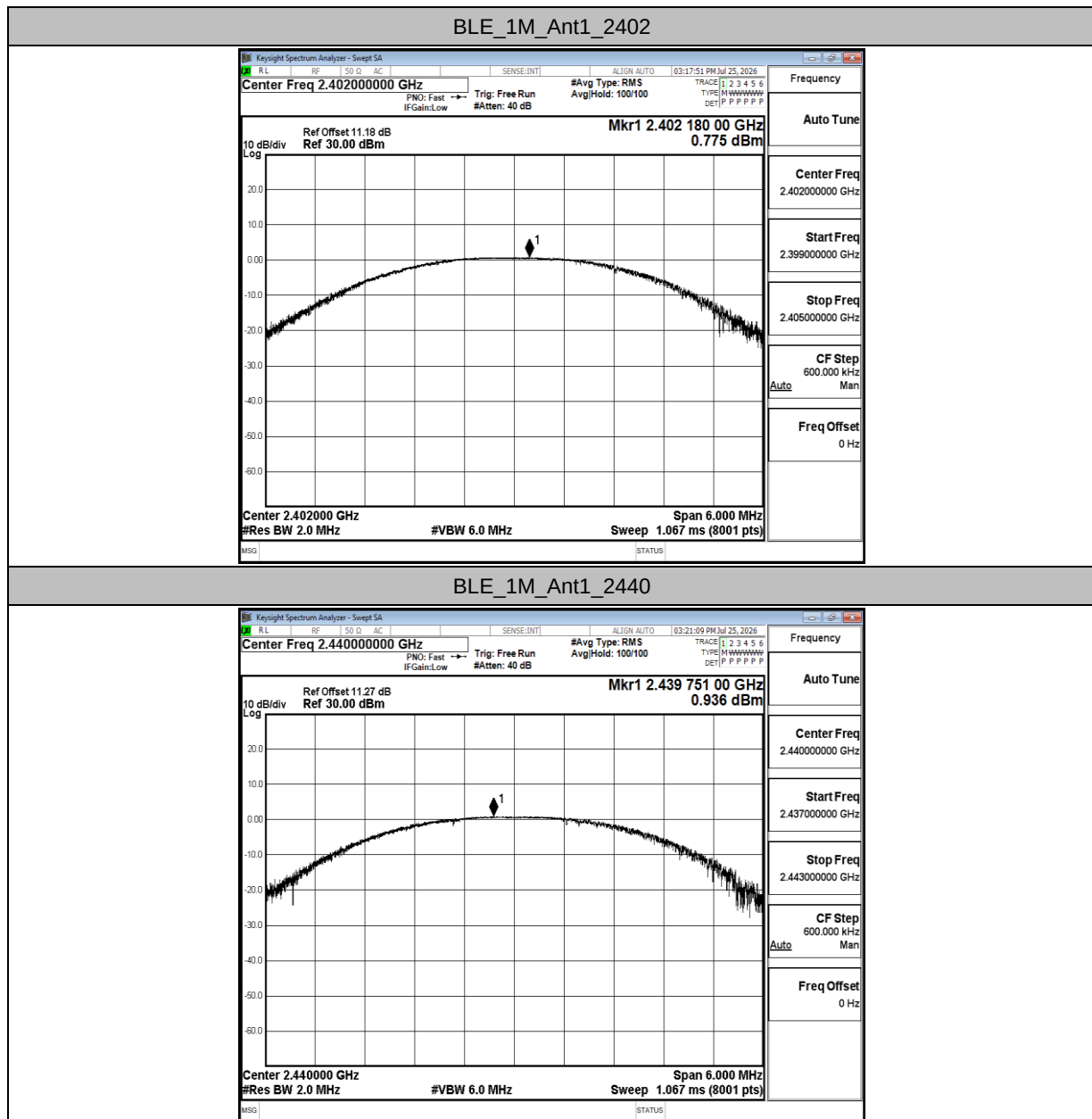


B.2 Maximum Peak conducted output power

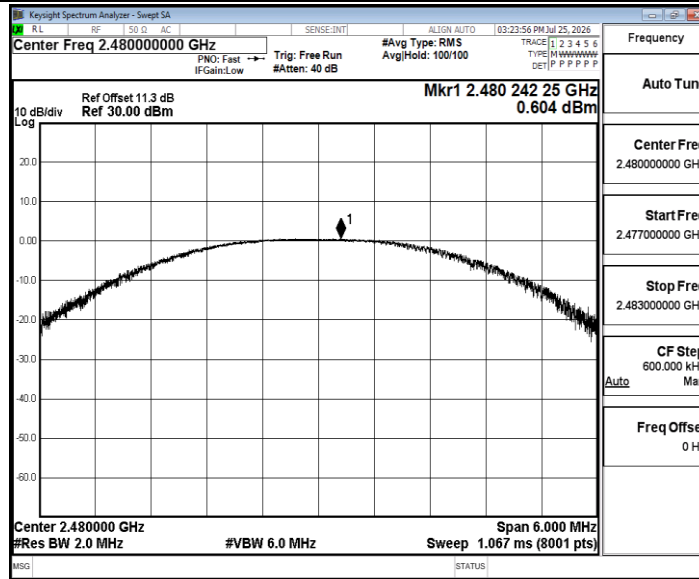
Test Result Peak

TestMode	Antenna	Freq(MHz)	Conducted Peak Power[dBm]	Conducted Limit[dBm]	Verdict
BLE_1M	Ant1	2402	0.78	≤30	PASS
		2440	0.94	≤30	PASS
		2480	0.60	≤30	PASS
BLE_2M	Ant1	2402	0.84	≤30	PASS
		2440	0.93	≤30	PASS
		2480	0.67	≤30	PASS

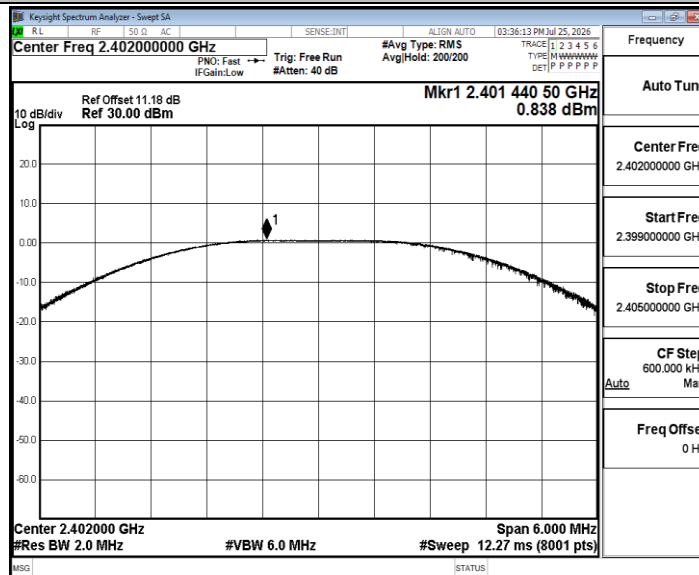
Test Graphs Peak



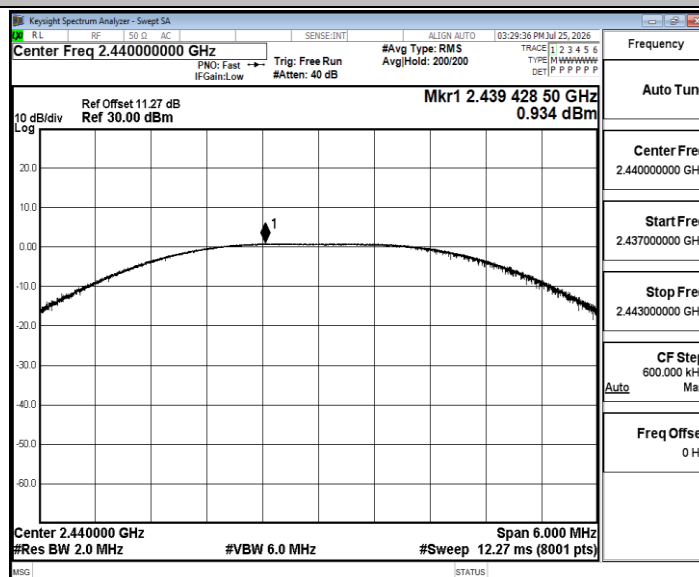
BLE_1M_Ant1_2480

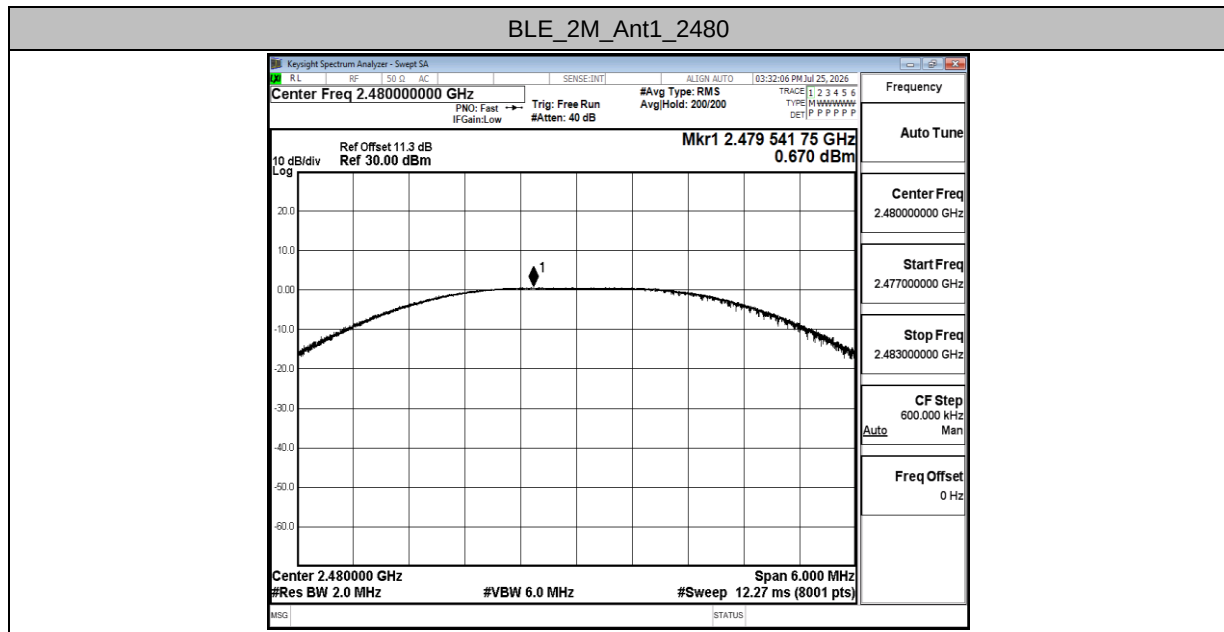


BLE_2M_Ant1_2402



BLE_2M_Ant1_2440



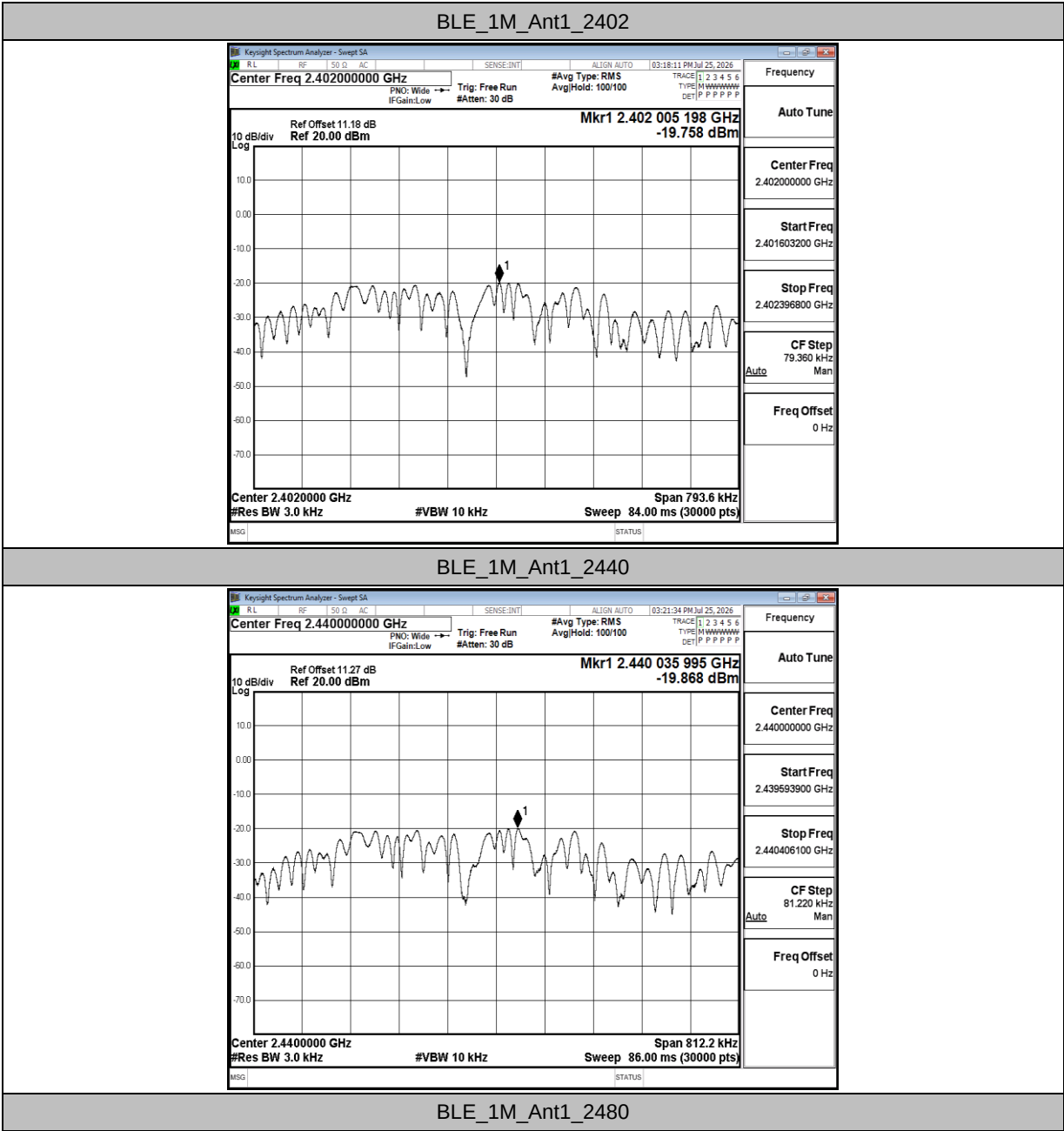


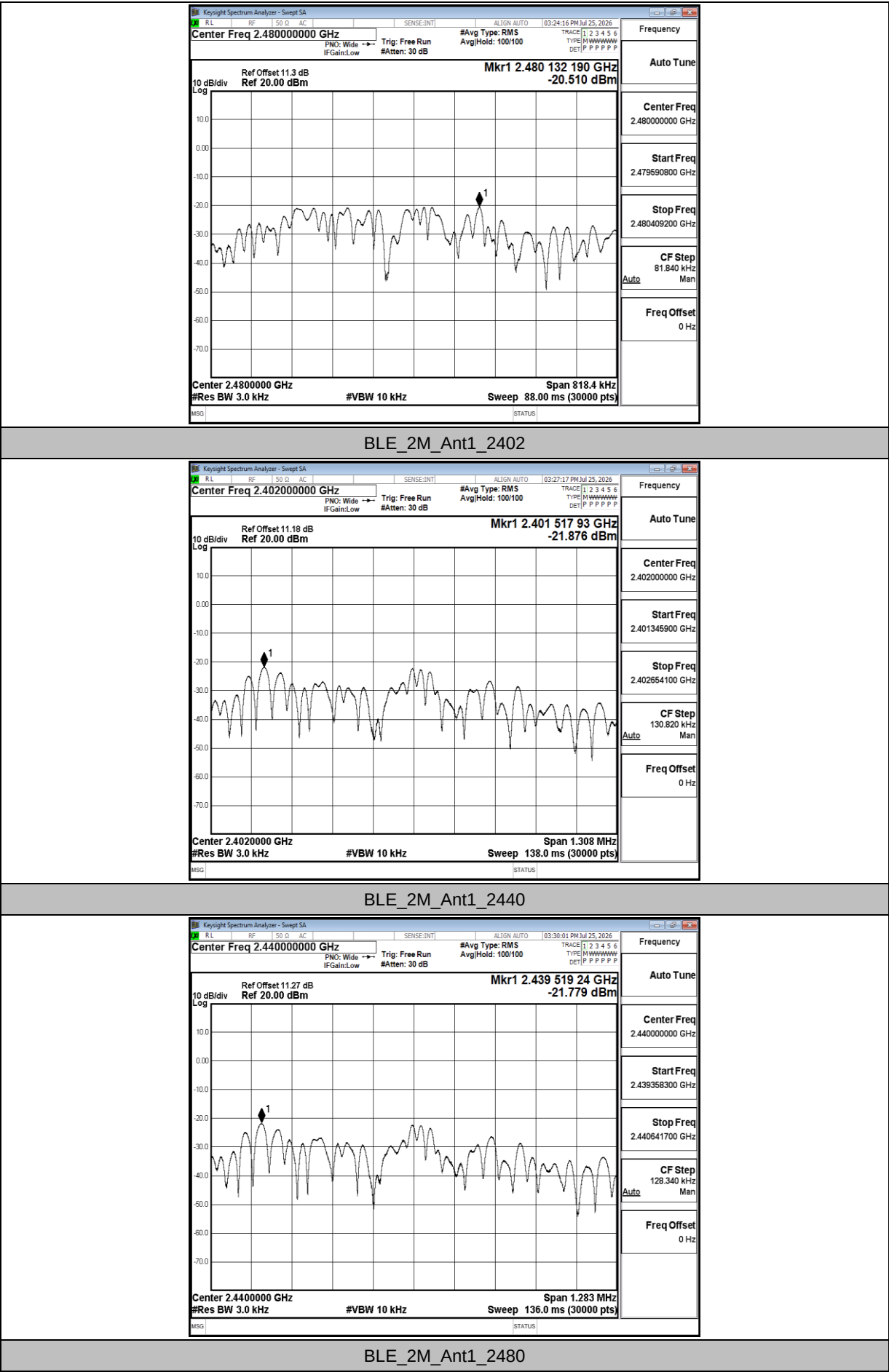
B.3 Maximum power spectral density

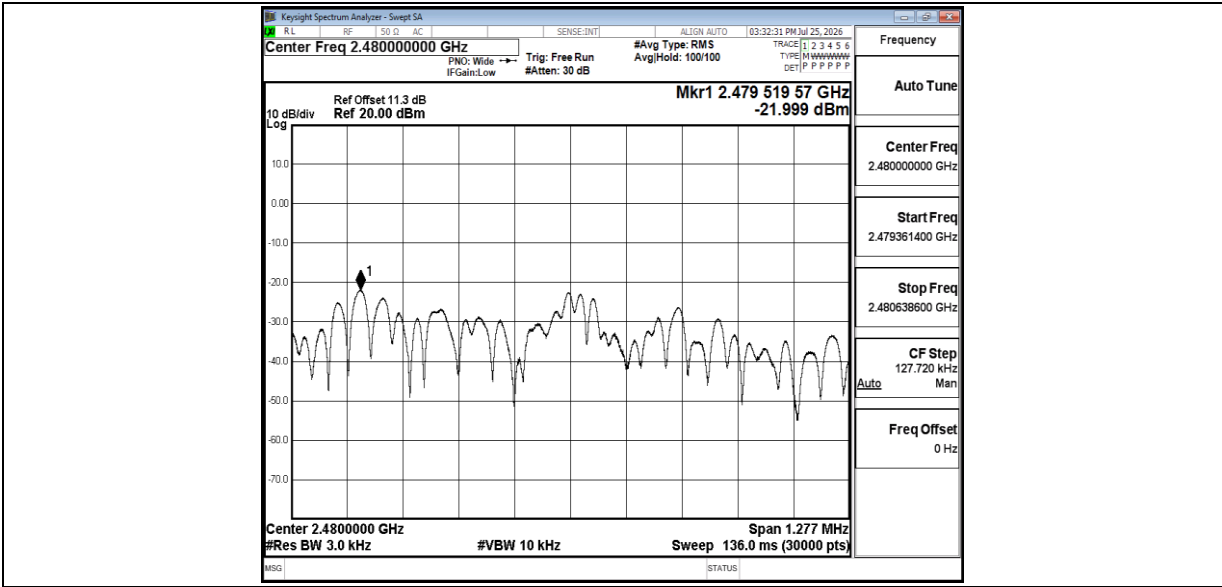
Test Result

TestMode	Antenna	Freq(MHz)	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-19.76	≤8.00	PASS
		2440	-19.87	≤8.00	PASS
		2480	-20.51	≤8.00	PASS
BLE_2M	Ant1	2402	-21.88	≤8.00	PASS
		2440	-21.78	≤8.00	PASS
		2480	-22.00	≤8.00	PASS

Test Graphs





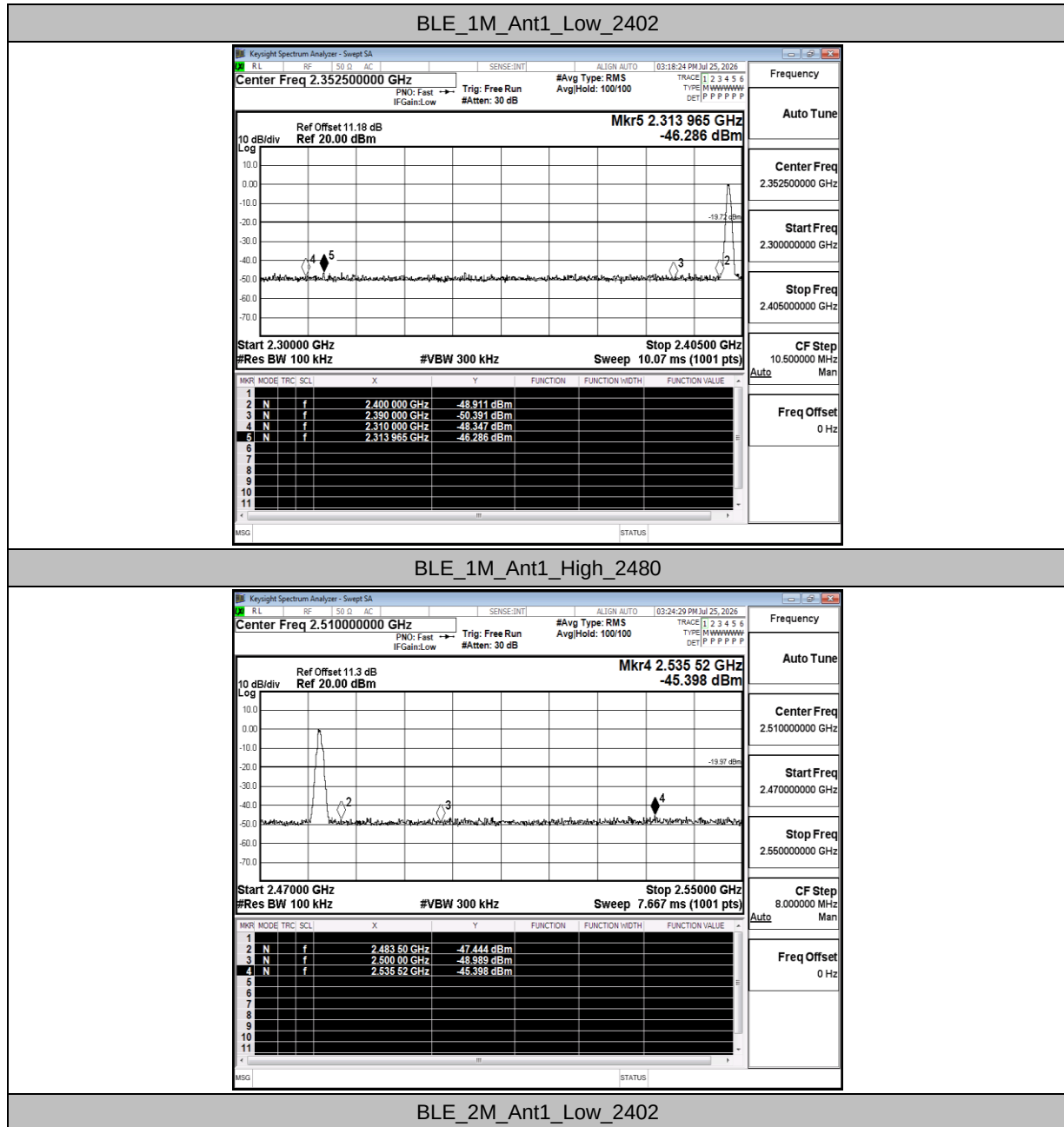


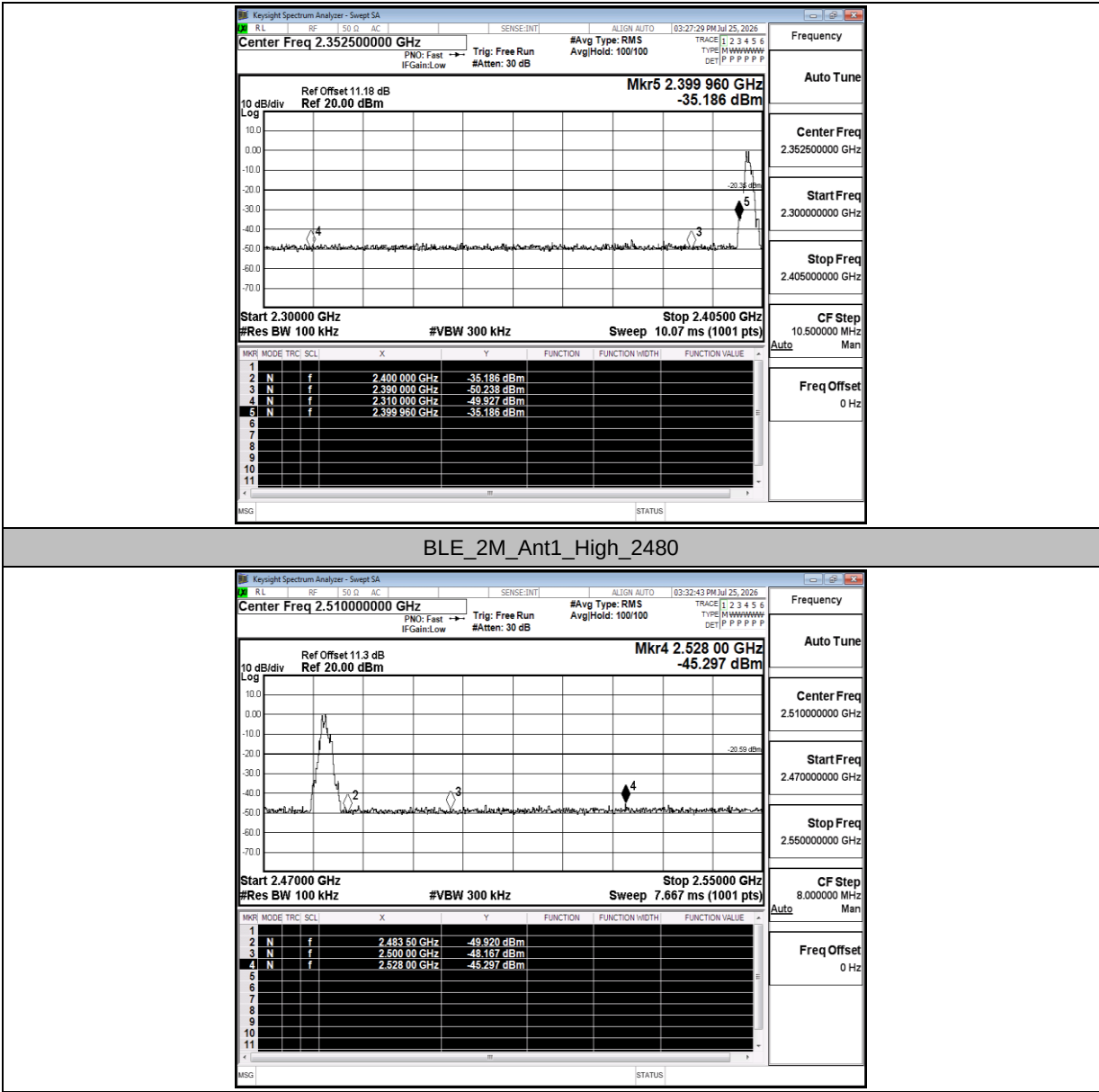
B.4 Band edge measurements

Test Result

TestMode	Antenna	ChName	Freq(MHz)	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	0.28	-46.29	≤-19.72	PASS
		High	2480	0.03	-45.4	≤-19.97	PASS
BLE_2M	Ant1	Low	2402	-0.35	-35.19	≤-20.35	PASS
		High	2480	-0.59	-45.3	≤-20.59	PASS

Test Graphs



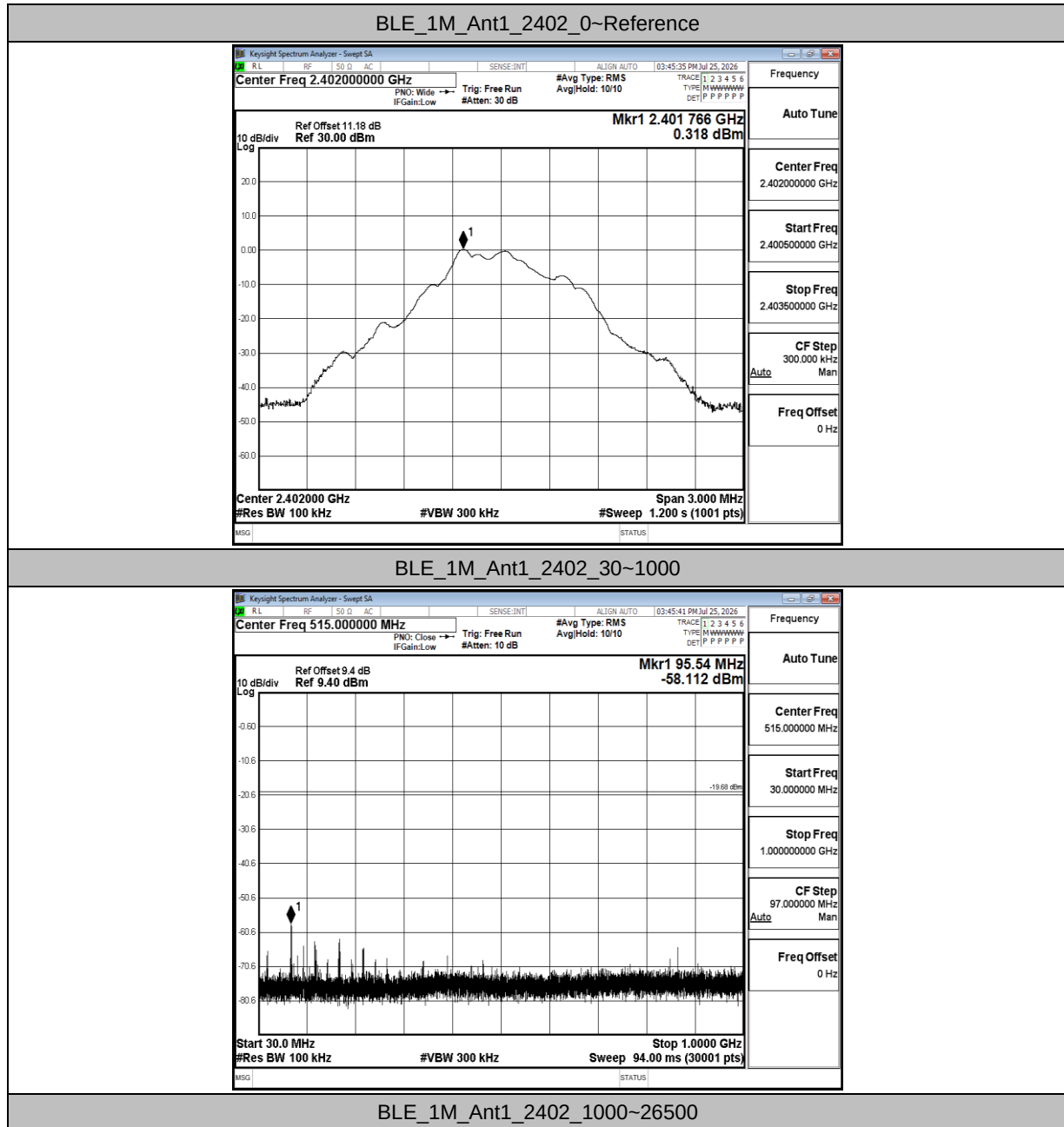


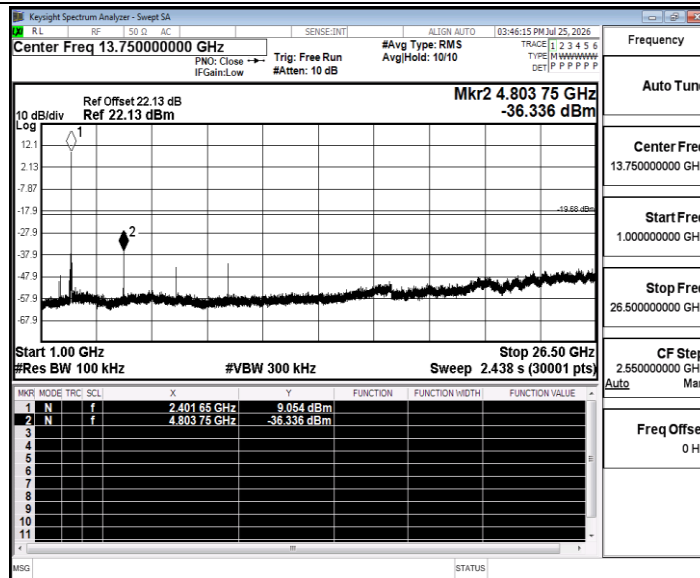
B.5 Conducted Spurious Emission

Test Result

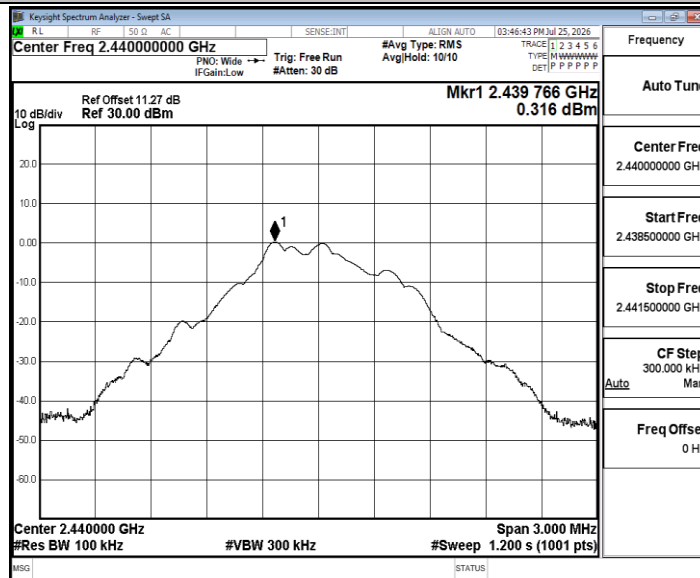
TestMode	Antenna	Freq(MHz)	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	Reference	0.32	0.32	---	PASS
			30~1000	0.32	-58.11	≤-19.68	PASS
			1000~26500	0.32	-36.34	≤-19.68	PASS
		2440	Reference	0.32	0.32	---	PASS
			30~1000	0.32	-56.29	≤-19.68	PASS
			1000~26500	0.32	-30.87	≤-19.68	PASS
		2480	Reference	0.06	0.06	---	PASS
			30~1000	0.06	-58.16	≤-19.94	PASS
			1000~26500	0.06	-35.59	≤-19.94	PASS
BLE_2M	Ant1	2402	Reference	-0.32	-0.32	---	PASS
			30~1000	-0.32	-59.76	≤-20.32	PASS
			1000~26500	-0.32	-35.94	≤-20.32	PASS
		2440	Reference	-0.21	-0.21	---	PASS
			30~1000	-0.21	-59.36	≤-20.21	PASS
			1000~26500	-0.21	-30.61	≤-20.21	PASS
		2480	Reference	-0.47	-0.47	---	PASS
			30~1000	-0.47	-56.97	≤-20.47	PASS
			1000~26500	-0.47	-29.49	≤-20.47	PASS

Test Graphs

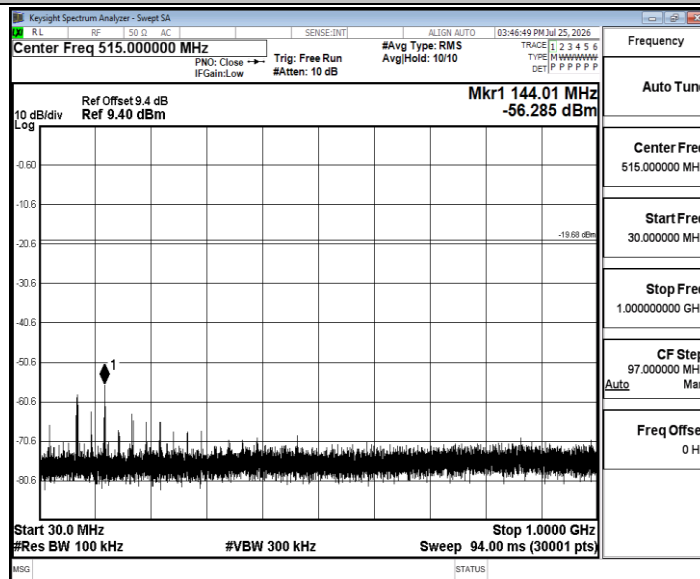




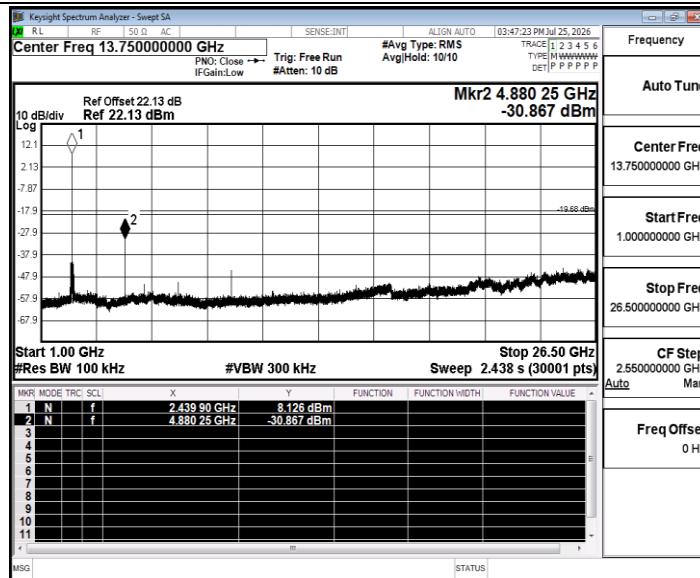
BLE_1M_Ant1_2440_0~Reference



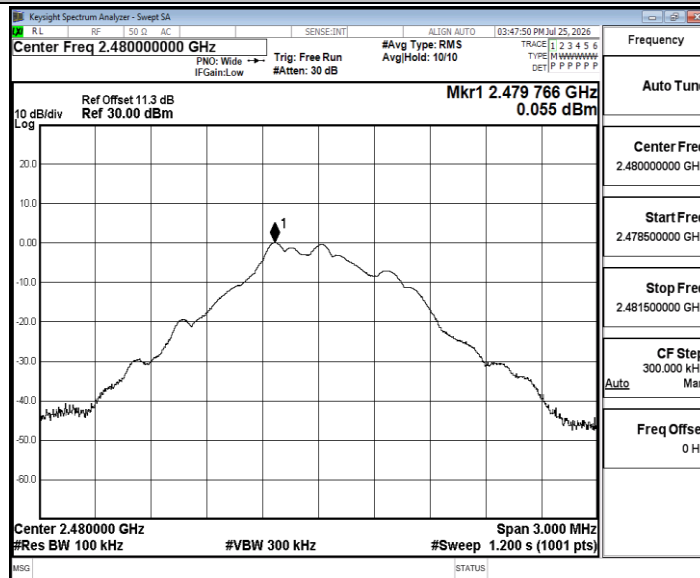
BLE_1M_Ant1_2440_30~1000



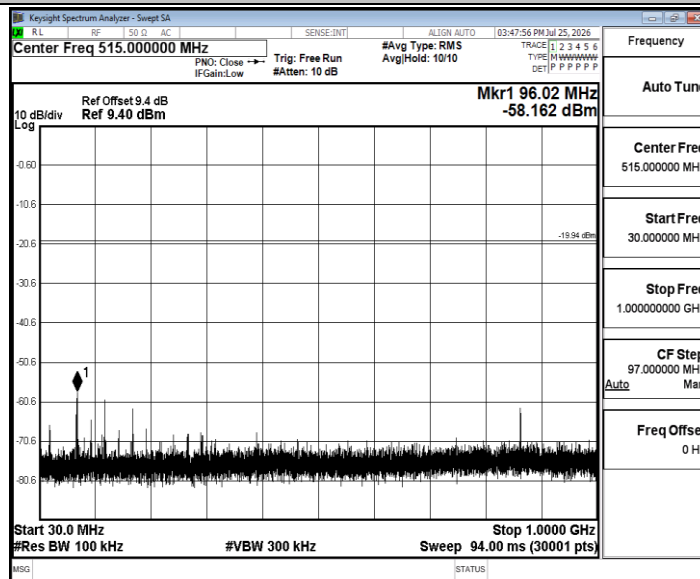
BLE_1M_Ant1_2440_1000~26500



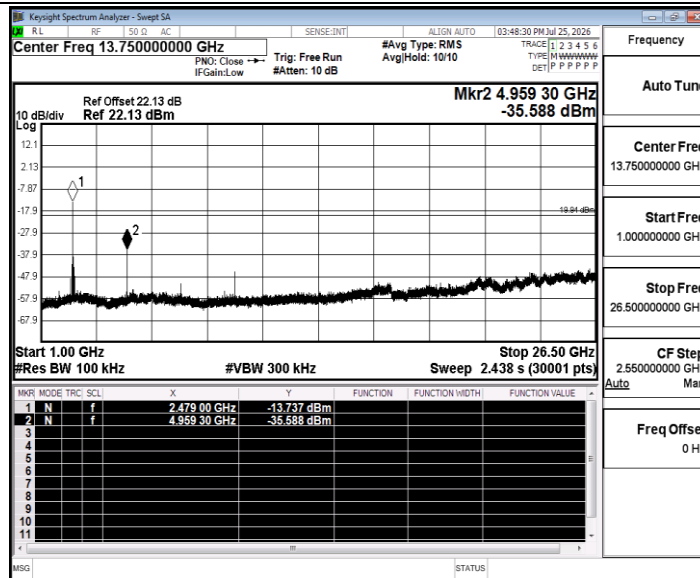
BLE_1M_Ant1_2480_0~Reference



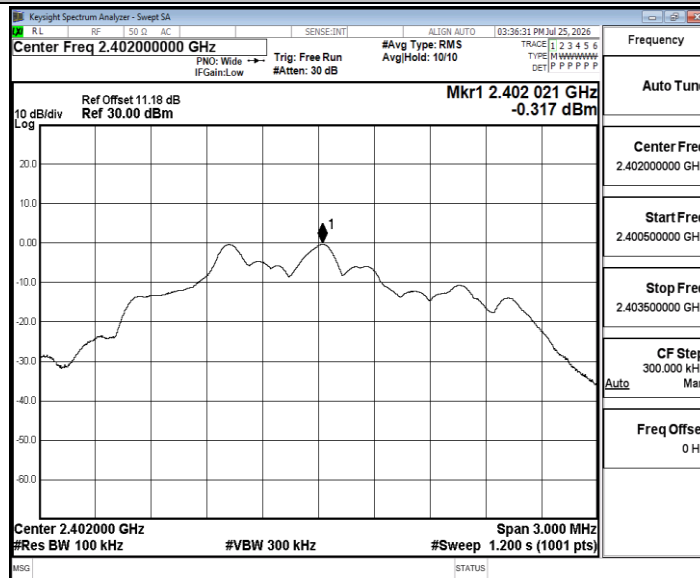
BLE_1M_Ant1_2480_30~1000



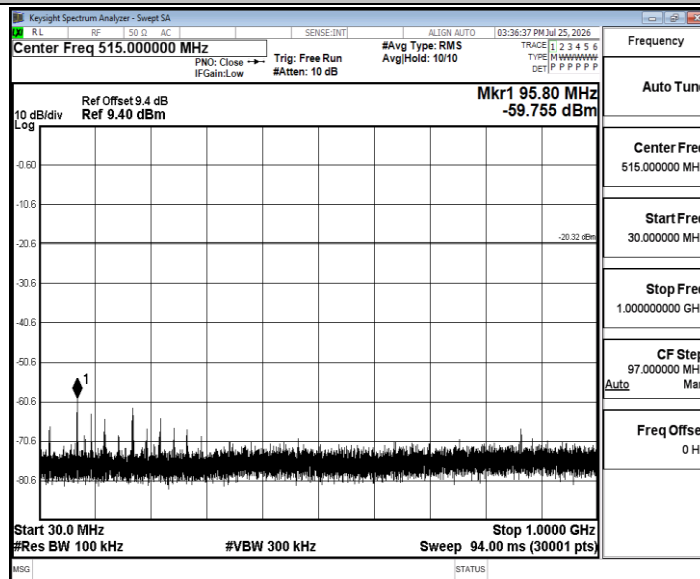
BLE_1M_Ant1_2480_1000~26500



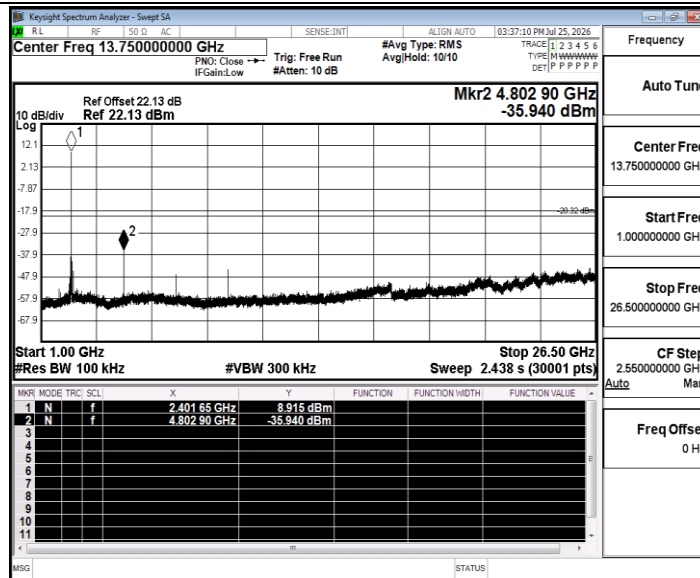
BLE_2M_Ant1_2402_0~Reference



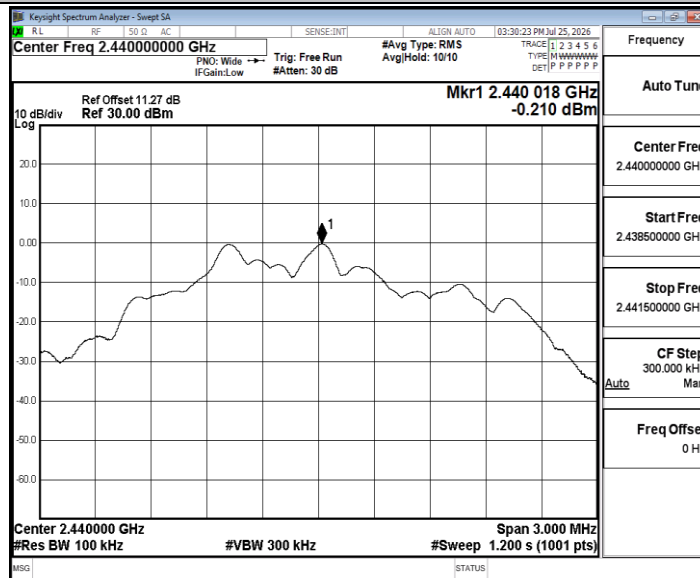
BLE_2M_Ant1_2402_30~1000



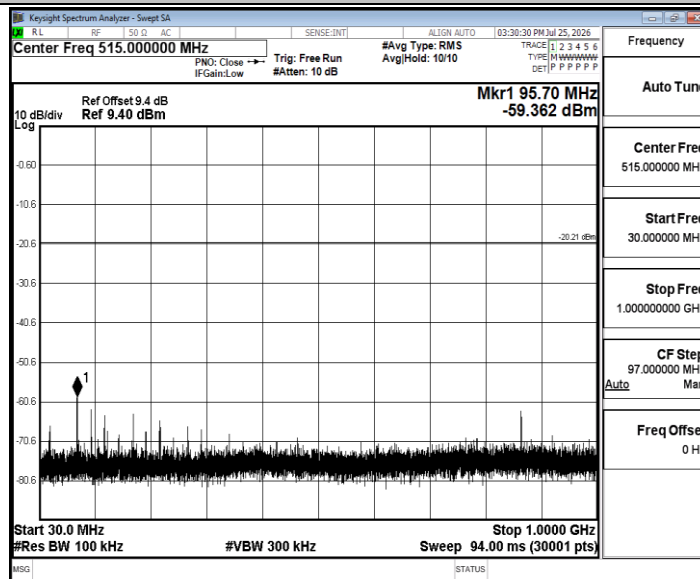
BLE_2M_Ant1_2402_1000~26500



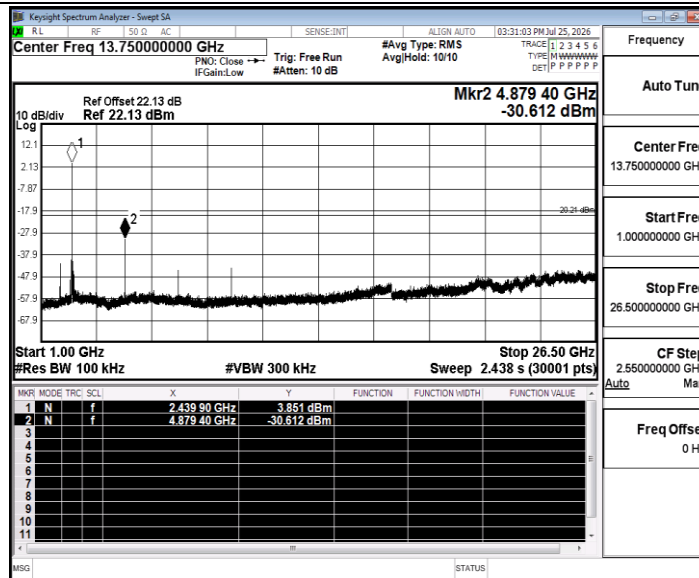
BLE_2M_Ant1_2440_0~Reference



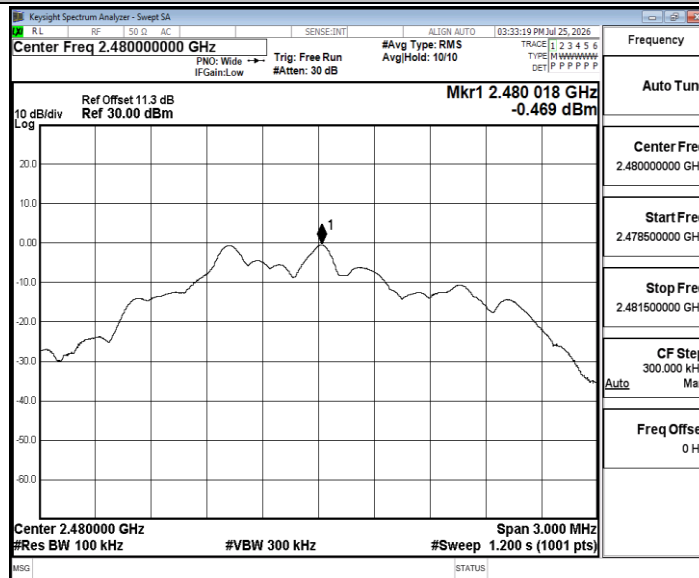
BLE_2M_Ant1_2440_30~1000



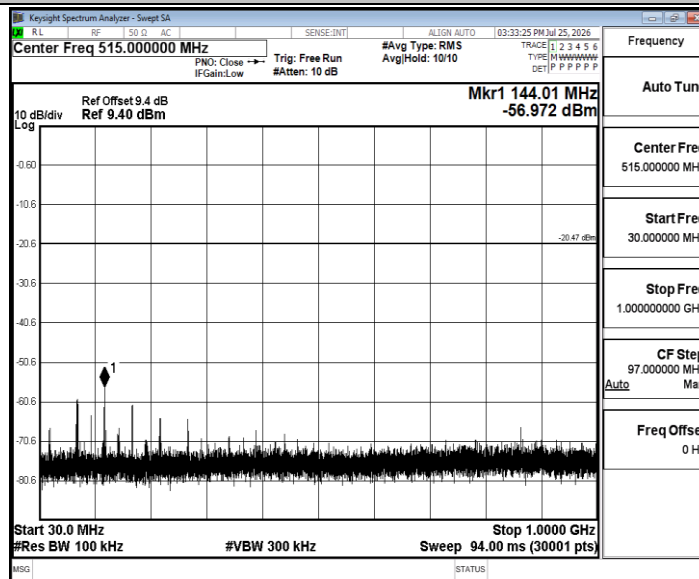
BLE_2M_Ant1_2440_1000~26500



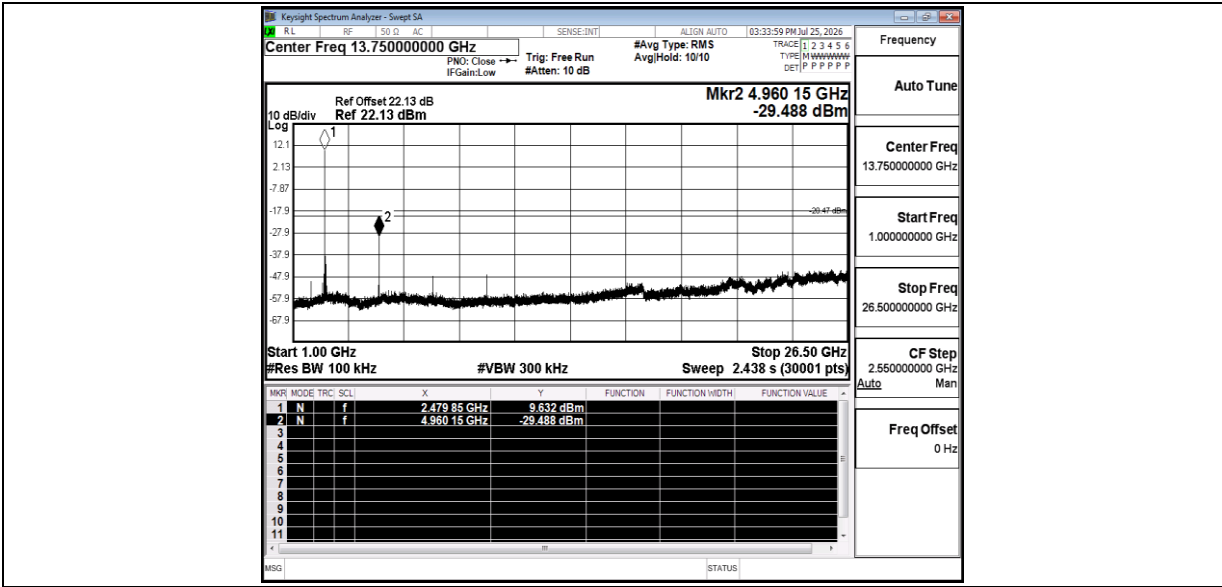
BLE_2M_Ant1_2480_0~Reference



BLE_2M_Ant1_2480_30~1000



BLE_2M_Ant1_2480_1000~26500

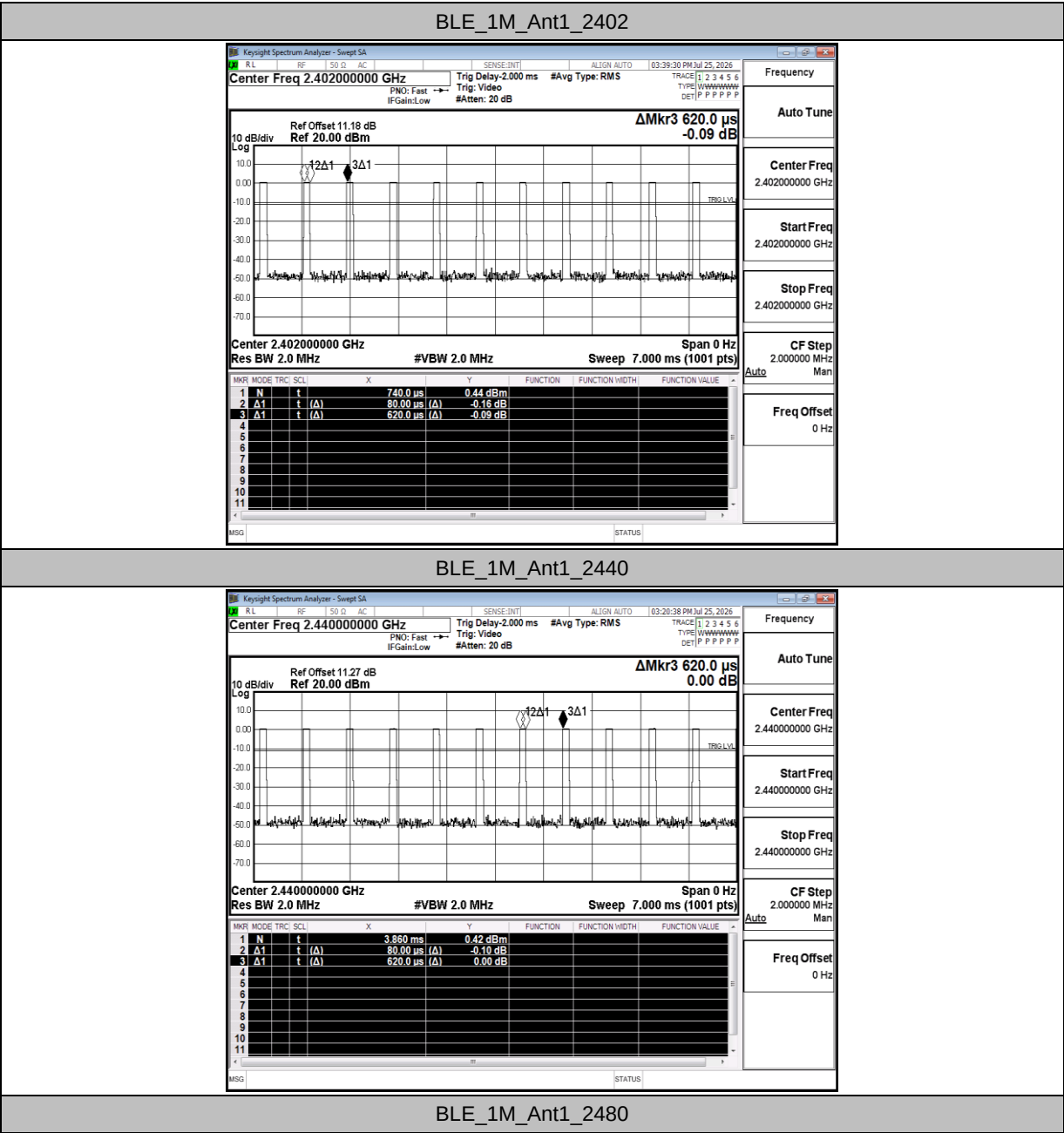


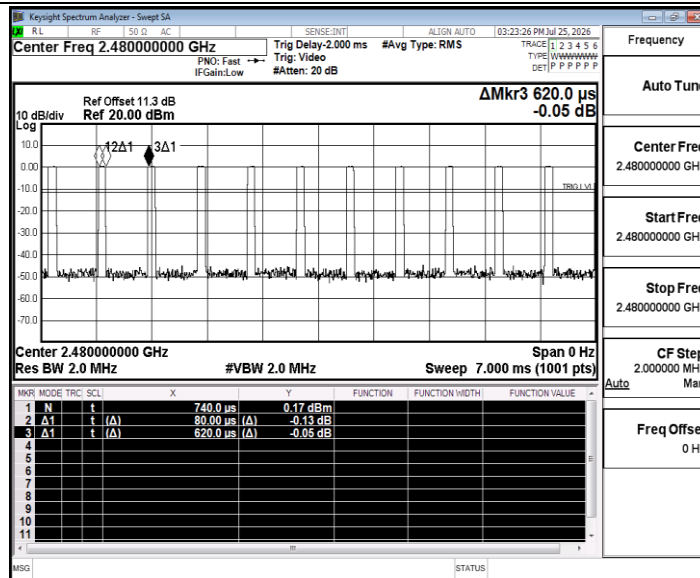
B.6 Duty Cycle

Test Result

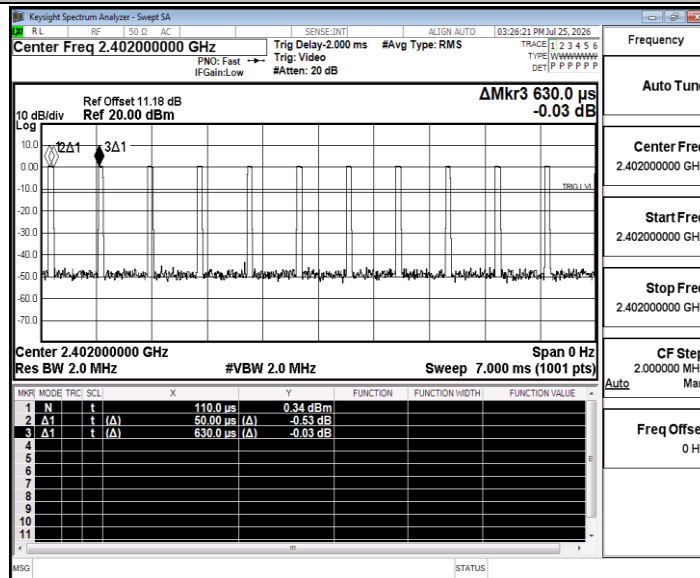
TestMode	Antenna	Freq(MHz)	ON Time [ms]	Period [ms]	X	DC [%]	xFactor	Limit	Verdict
BLE_1M	Ant1	2402	0.08	0.62	0.1290	12.90	8.89	---	---
		2440	0.08	0.62	0.1290	12.90	8.89	---	---
		2480	0.08	0.62	0.1290	12.90	8.89	---	---
BLE_2M	Ant1	2402	0.05	0.63	0.0794	7.94	11.00	---	---
		2440	0.05	0.63	0.0794	7.94	11.00	---	---
		2480	0.06	0.63	0.0952	9.52	10.21	---	---

Test Graphs

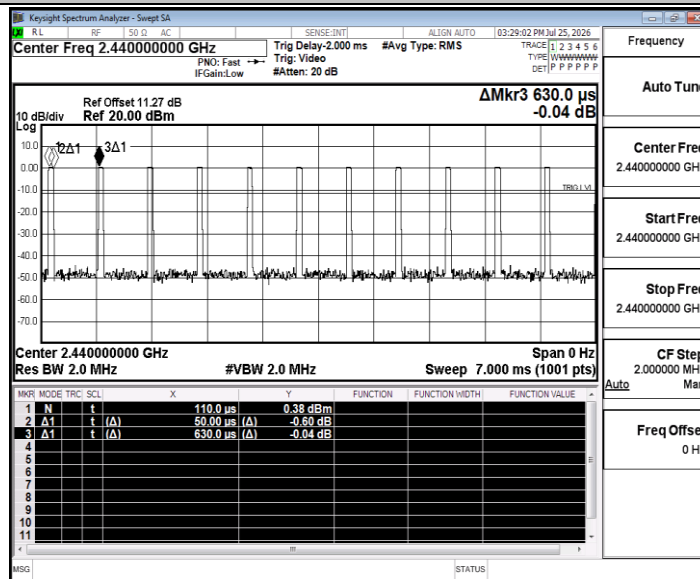




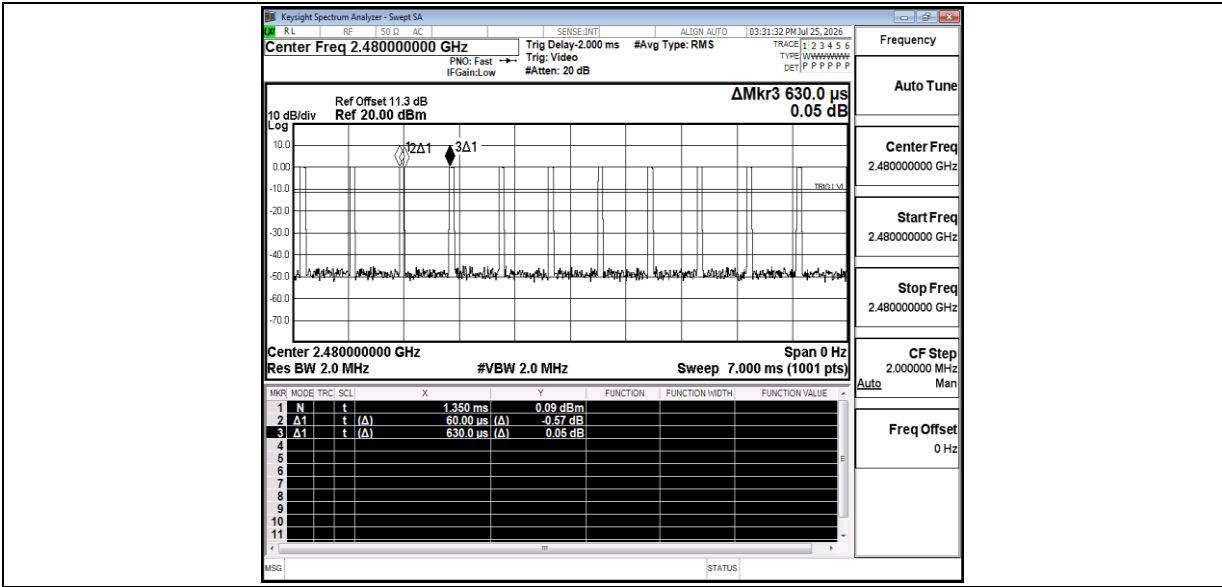
BLE_2M_Ant1_2402



BLE_2M_Ant1_2440



BLE_2M_Ant1_2480



B.7 Emissions in Restricted Bands

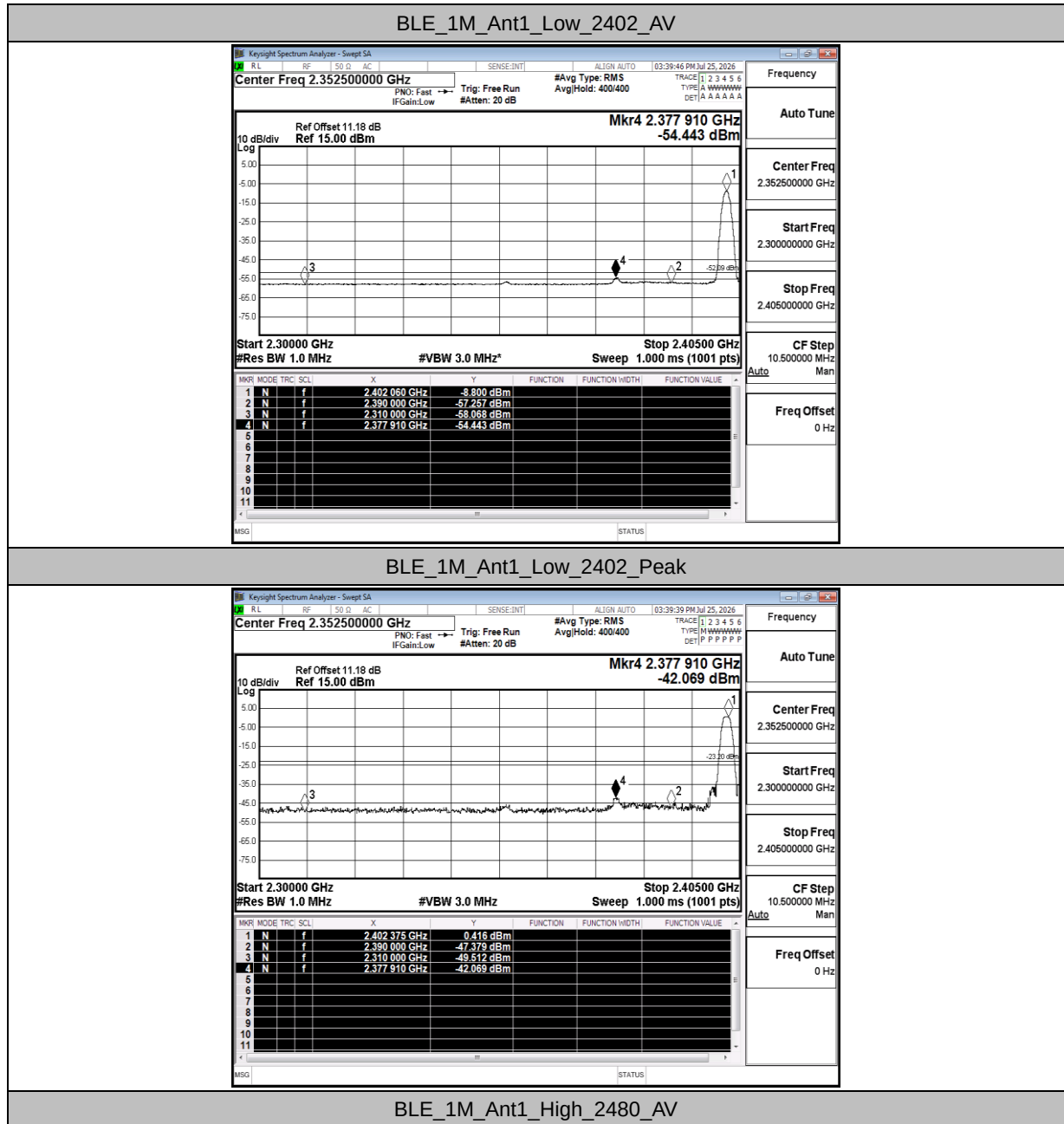
Test Result

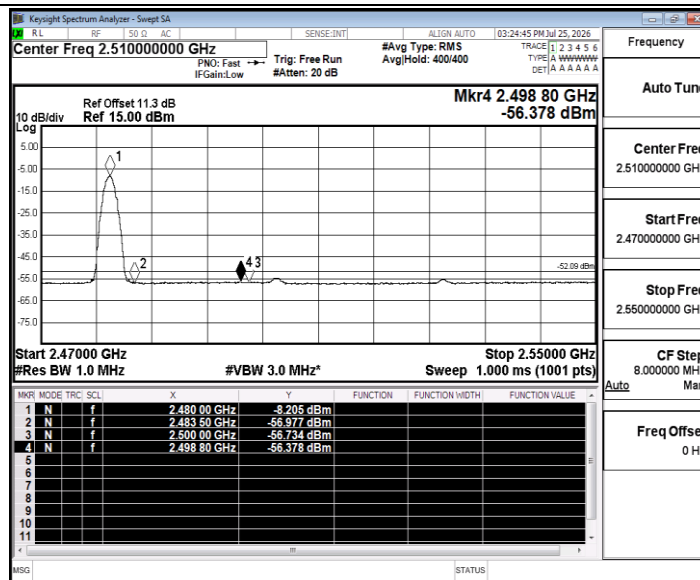
Test Mode	Antenna	Channel Name	Freq (MHz)	Detector	Freq [MHz]	Result [dBm]	Limit [dBm]	Gain [dBi]	DC Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Verdict
BLE_1M	Ant1	Low	2402	AV	2310.000	-58.07	≤-52.09	2.00	8.89	48.02	≤54	PASS
				AV	2377.910	-54.44	≤-52.09	2.00	8.89	51.65	≤54	PASS
				AV	2390.000	-57.26	≤-52.09	2.00	8.89	48.83	≤54	PASS
				Peak	2310.000	-49.51	≤-23.20	2.00	0.00	47.69	≤74	PASS
				Peak	2377.910	-42.07	≤-23.20	2.00	0.00	55.13	≤74	PASS
				Peak	2390.000	-47.38	≤-23.20	2.00	0.00	49.82	≤74	PASS
		High	2480	AV	2483.500	-56.98	≤-52.09	2.00	8.89	49.11	≤54	PASS
				AV	2498.800	-56.38	≤-52.09	2.00	8.89	49.71	≤54	PASS
				AV	2500.000	-56.73	≤-52.09	2.00	8.89	49.36	≤54	PASS
				Peak	2483.500	-38.93	≤-23.20	2.00	0.00	58.27	≤74	PASS
				Peak	2483.520	-38.93	≤-23.20	2.00	0.00	58.27	≤74	PASS
				Peak	2500.000	-46.99	≤-23.20	2.00	0.00	50.21	≤74	PASS
BLE_2M	Ant1	Low	2402	AV	2310.000	-57.77	≤-54.20	2.00	11.00	50.43	≤54	PASS
				AV	2378.015	-55.79	≤-54.20	2.00	11.00	52.41	≤54	PASS
				AV	2390.000	-57.43	≤-54.20	2.00	11.00	50.77	≤54	PASS
				Peak	2310.000	-48.45	≤-23.20	2.00	0.00	48.75	≤74	PASS
				Peak	2377.595	-42.3	≤-23.20	2.00	0.00	54.90	≤74	PASS
				Peak	2390.000	-46.66	≤-23.20	2.00	0.00	50.54	≤74	PASS
		High	2480	AV	2483.500	-56.93	≤-53.41	2.00	10.21	50.48	≤54	PASS
				AV	2486.080	-55.57	≤-53.41	2.00	10.21	51.84	≤54	PASS
				AV	2500.000	-56.78	≤-53.41	2.00	10.21	50.63	≤54	PASS
				Peak	2483.500	-40.96	≤-23.20	2.00	0.00	56.24	≤74	PASS
				Peak	2485.760	-36.94	≤-23.20	2.00	0.00	60.26	≤74	PASS
				Peak	2500.000	-47.25	≤-23.20	2.00	0.00	49.95	≤74	PASS

Note:

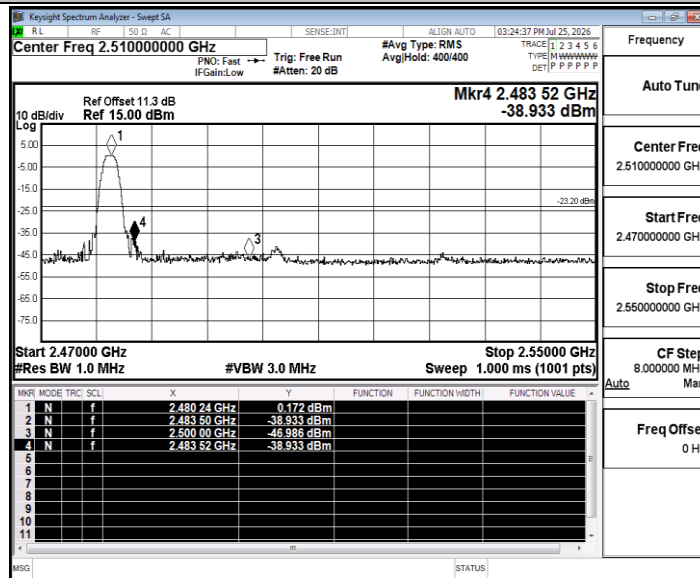
1. The Antenna Gain is compensated in the graph.
2. The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.

Test Graphs

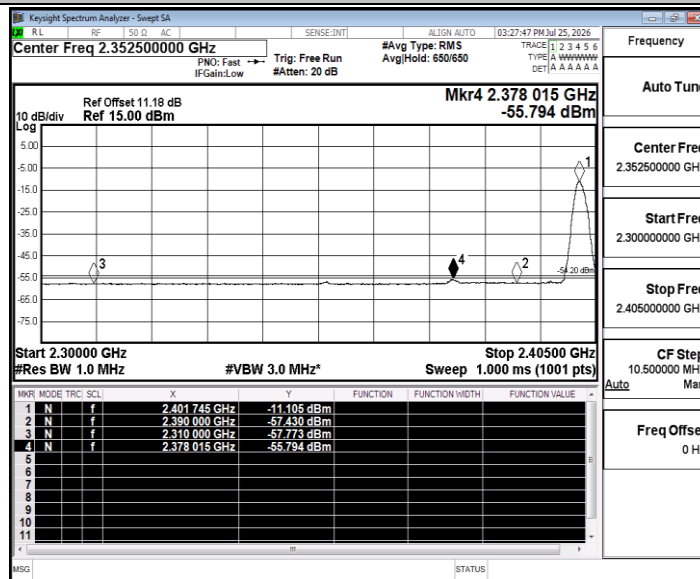




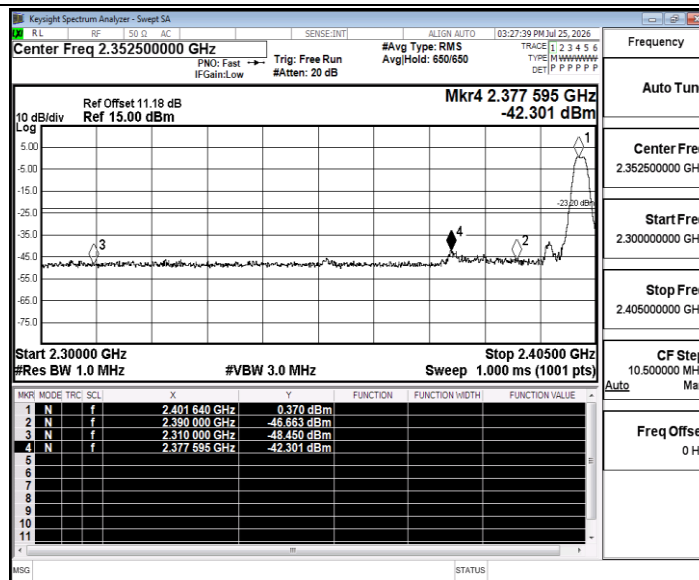
BLE_1M_Ant1_High_2480_Peak



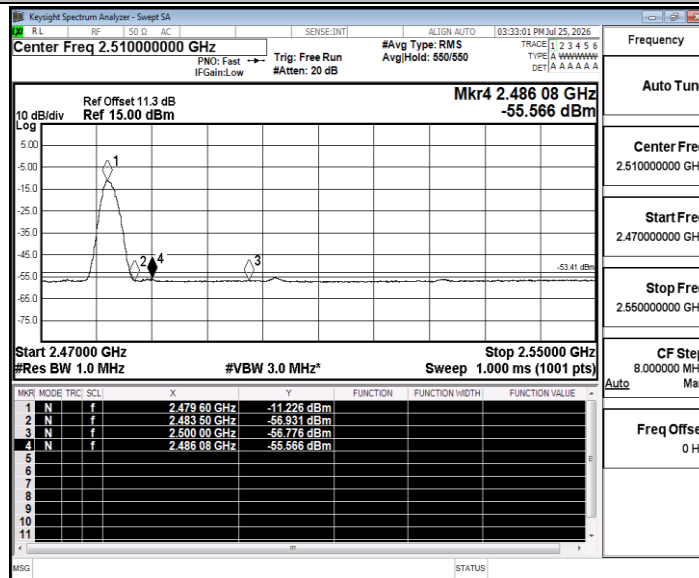
BLE_2M_Ant1_Low_2402_AV



BLE_2M_Ant1_Low_2402_Peak



BLE_2M_Ant1_High_2480_AV



BLE_2M_Ant1_High_2480_Peak

