

Appendix A

RF Test Data for BT LE (Conducted Measurement)

Product Name: Portable Power Station

Test Model: Alpha2000

Environmental Conditions

Temperature:	23.8 ° C
Relative Humidity:	52.1%
ATM Pressure:	100.0 kPa
Test Engineer:	Suichao Lai
Supervised by:	Yan Chen

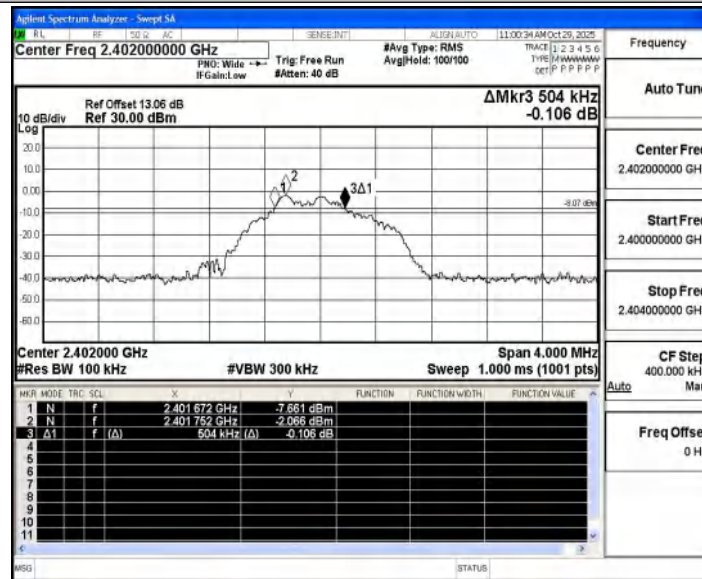
A.1 -6dB Bandwidth

Test Result

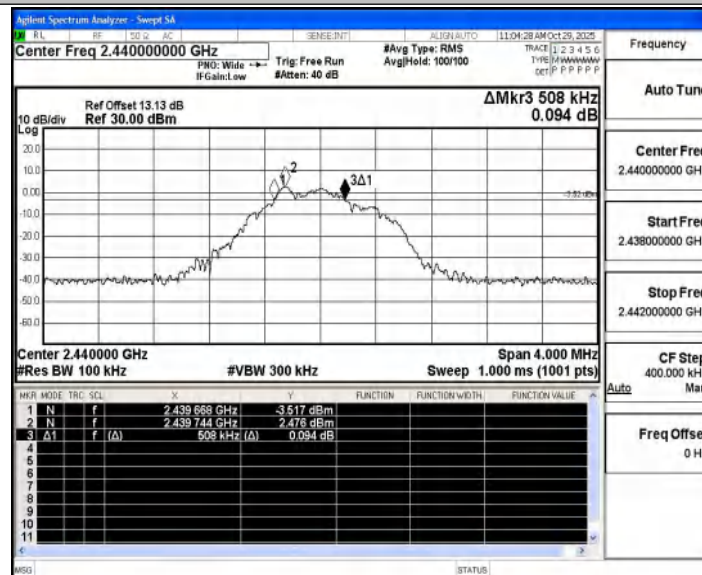
TestMode	Antenna	Freq(MHz)	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.504	2401.672	2402.176	0.5	PASS
		2440	0.508	2439.668	2440.176	0.5	PASS
		2480	0.504	2479.672	2480.176	0.5	PASS
BLE_2M	Ant1	2402	0.864	2401.412	2402.276	0.5	PASS
		2440	0.848	2439.420	2440.268	0.5	PASS
		2480	0.852	2479.408	2480.260	0.5	PASS

Test Graphs

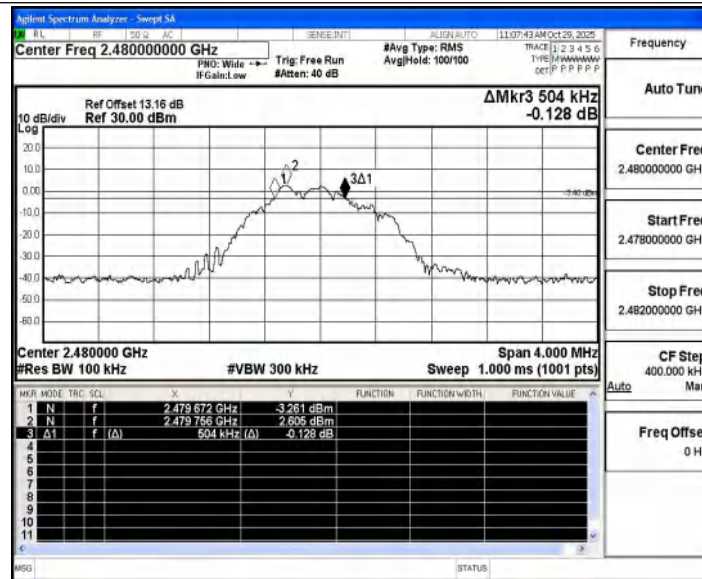
BLE_1M_Ant1_2402



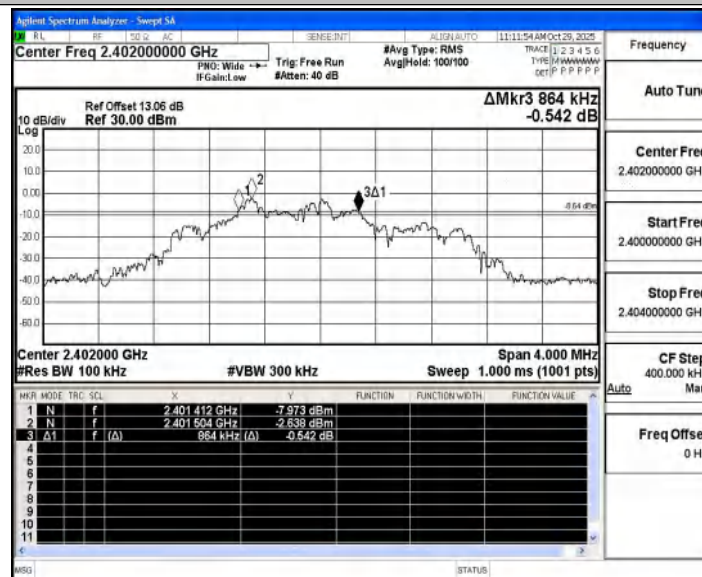
BLE_1M_Ant1_2440



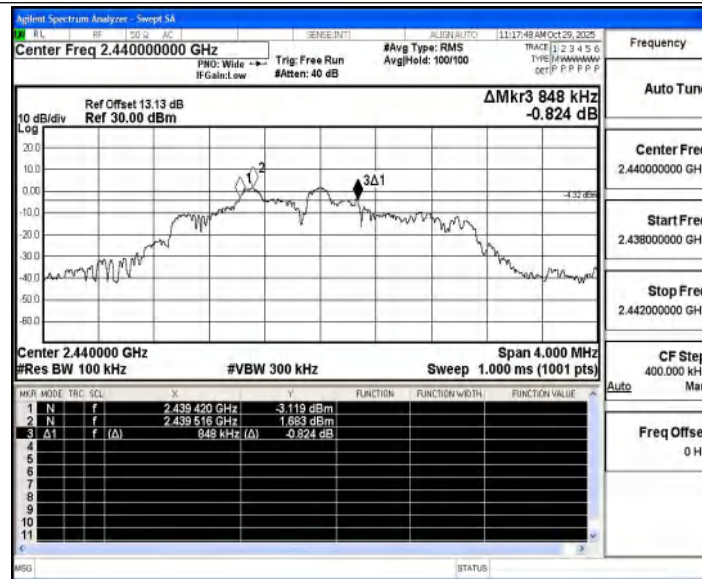
BLE_1M_Ant1_2480



BLE_2M_Ant1_2402



BLE_2M_Ant1_2440



BLE_2M_Ant1_2480

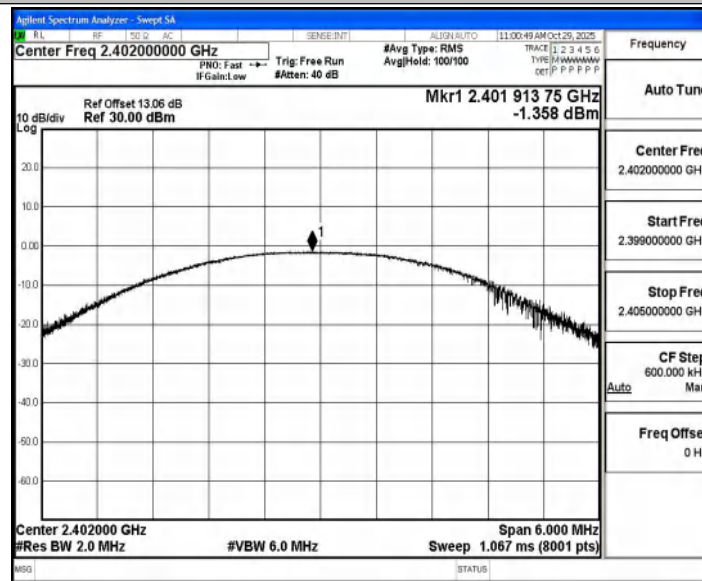


A.2 Maximum Peak Conducted Output Power

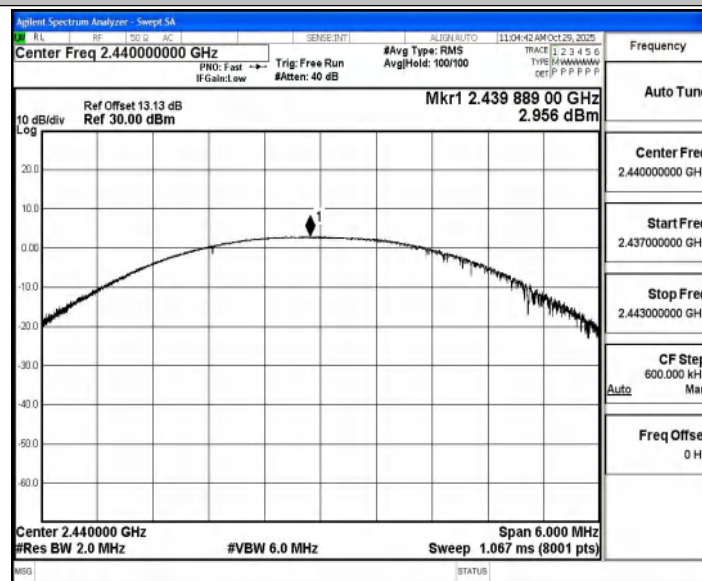
TestMode	Antenna	Freq(MHz)	Conducted Peak Power[dBm]	Conducted Limit[dBm]	EIRP[dBm]	EIRP Limit[dBm]	Verdict
BLE_1M	Ant1	2402	-1.36	≤30	-1.36	≤36	PASS
		2440	2.96	≤30	2.96	≤36	PASS
		2480	3.07	≤30	3.07	≤36	PASS
BLE_2M	Ant1	2402	-1.53	≤30	-1.53	≤36	PASS
		2440	2.79	≤30	2.79	≤36	PASS
		2480	3.05	≤30	3.05	≤36	PASS

Test Graphs Peak

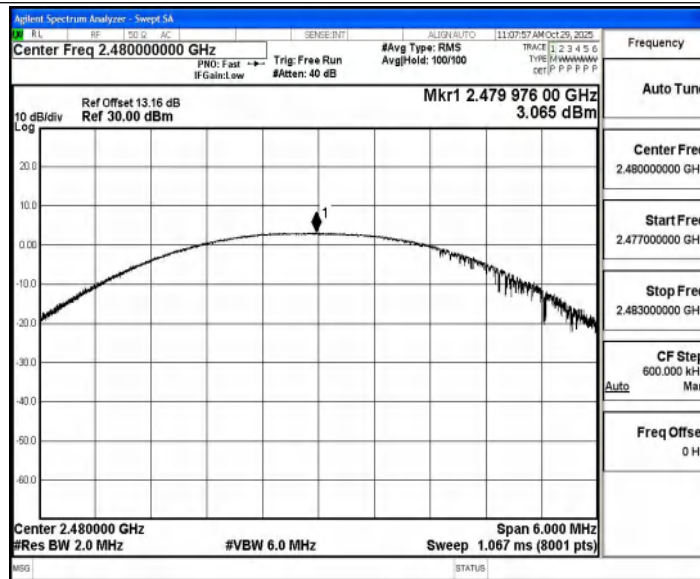
BLE_1M_Ant1_2402



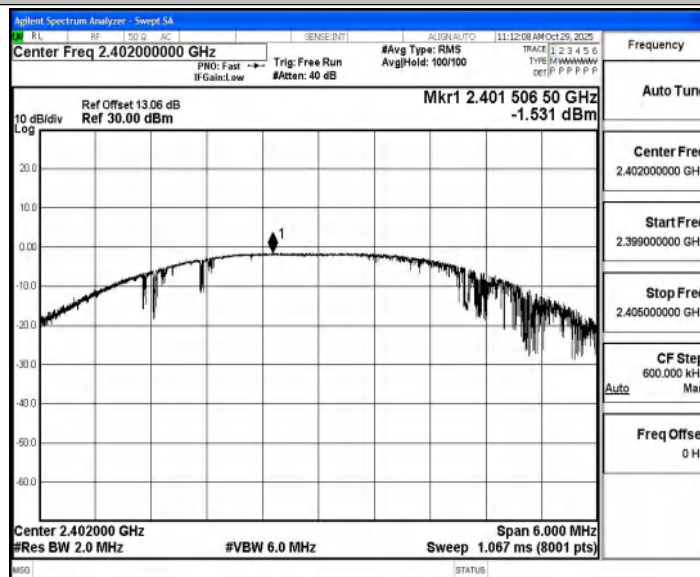
BLE_1M_Ant1_2440



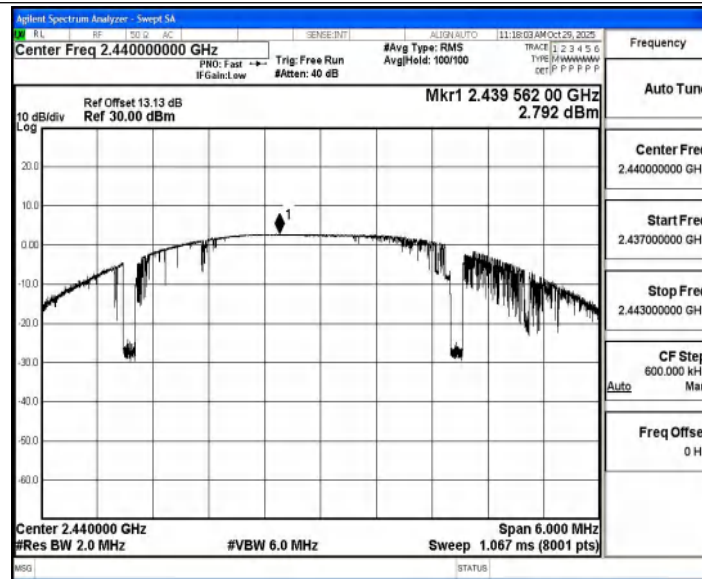
BLE_1M_Ant1_2480



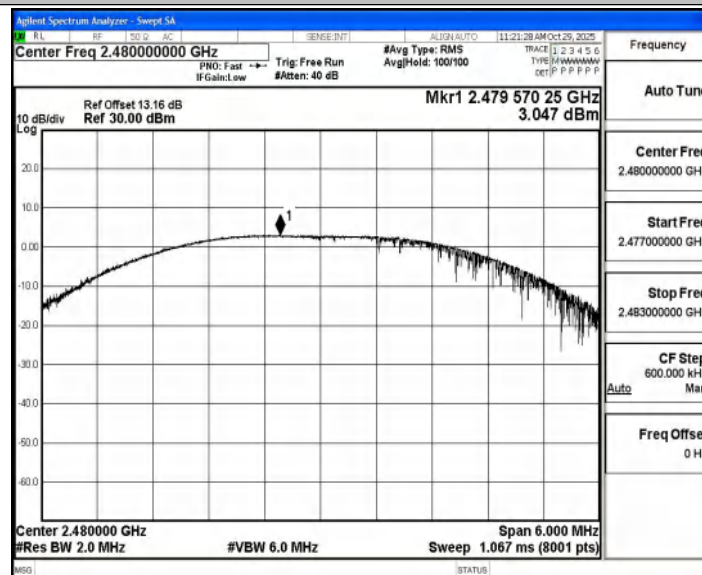
BLE_2M_Ant1_2402



BLE_2M_Ant1_2440



BLE_2M_Ant1_2480

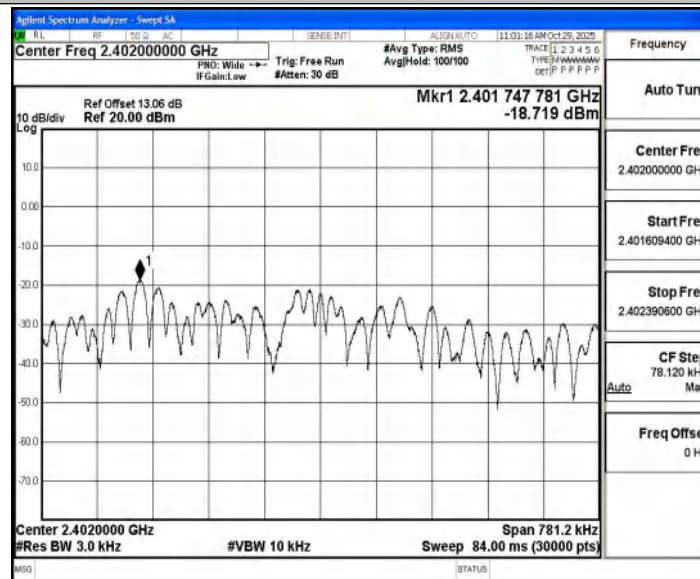


A.3 Maximum Power Spectral Density Level

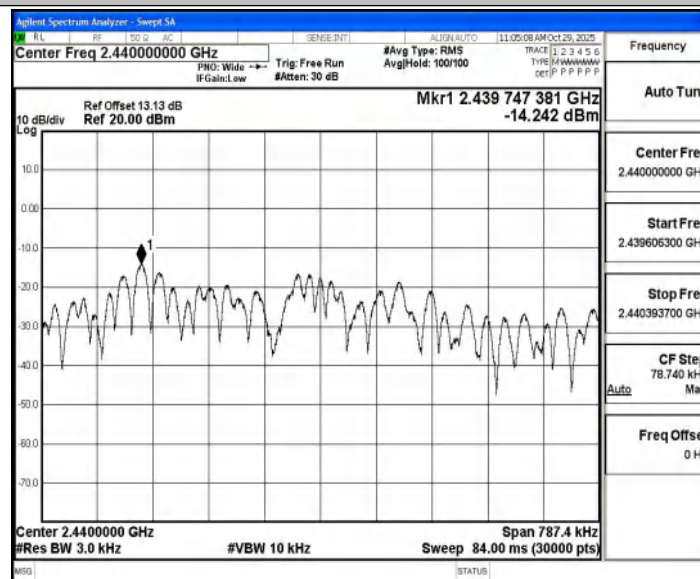
TestMode	Antenna	Freq(MHz)	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-18.72	≤8.00	PASS
		2440	-14.24	≤8.00	PASS
		2480	-14.01	≤8.00	PASS
BLE_2M	Ant1	2402	-24.02	≤8.00	PASS
		2440	-19.56	≤8.00	PASS
		2480	-19.25	≤8.00	PASS

Test Graphs

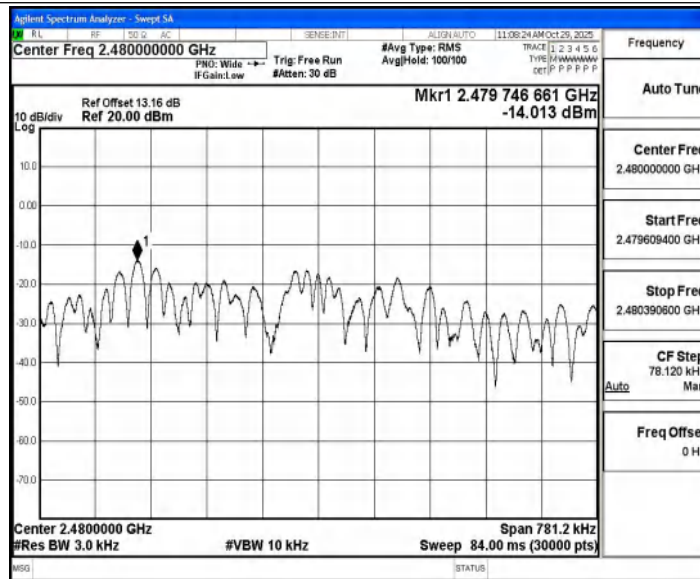
BLE_1M_Ant1_2402



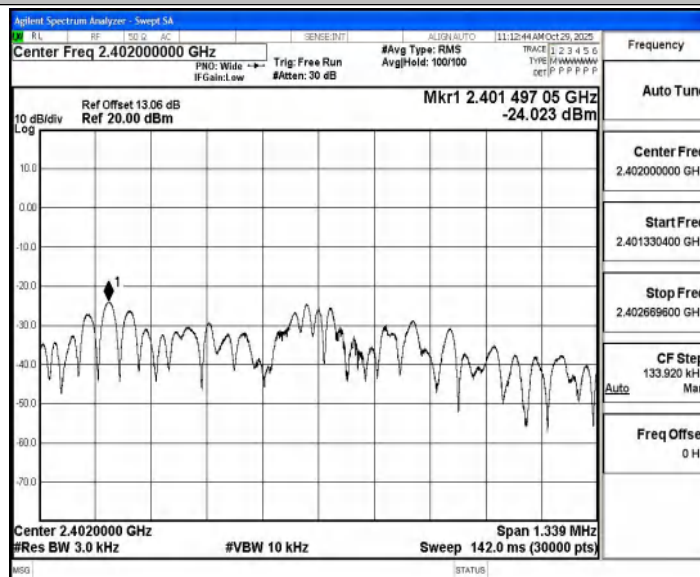
BLE_1M_Ant1_2440



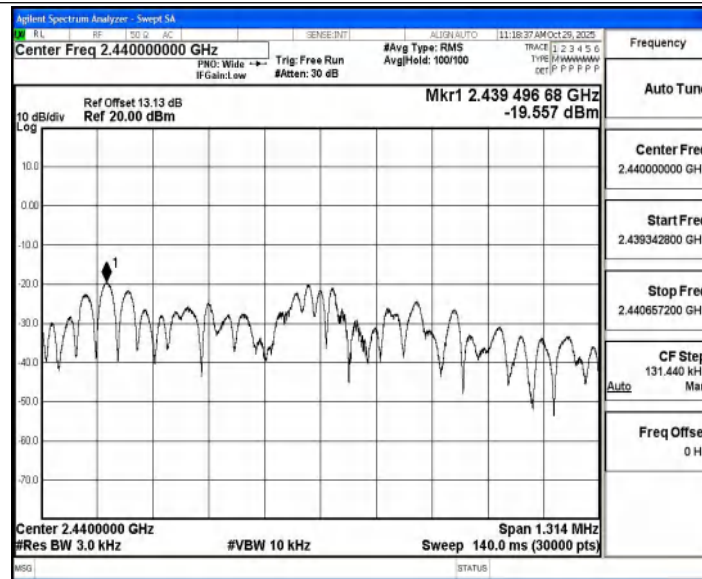
BLE_1M_Ant1_2480



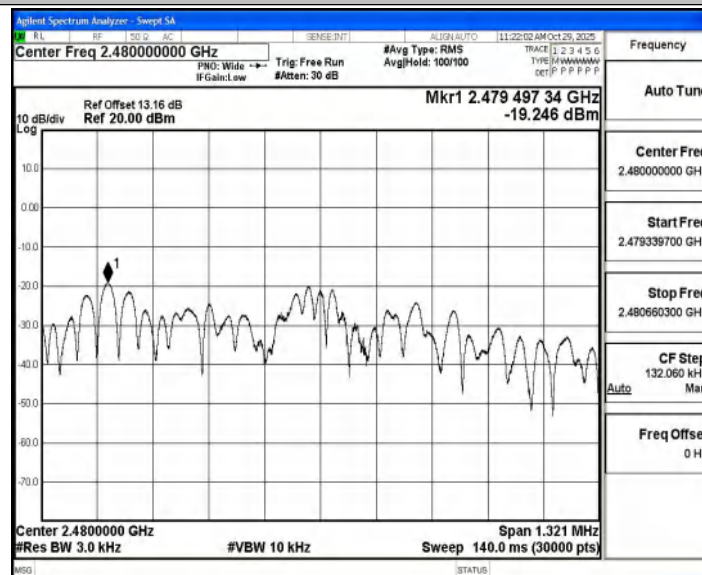
BLE_2M_Ant1_2402



BLE_2M_Ant1_2440



BLE_2M_Ant1_2480



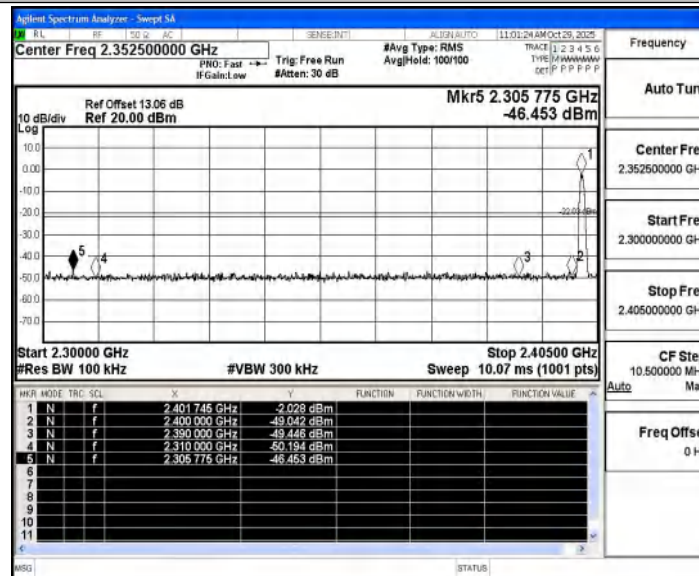
A.4 Band edge measurements

Test Result

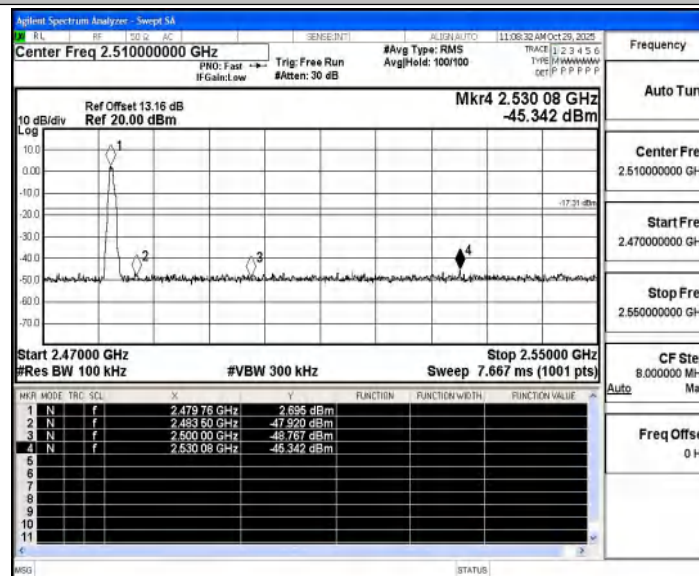
TestMode	Antenna	ChName	Freq(MHz)	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	-2.03	-46.45	≤-22.03	PASS
		High	2480	2.70	-45.34	≤-17.31	PASS
BLE_2M	Ant1	Low	2402	-3.67	-44.49	≤-23.67	PASS
		High	2480	2.24	-46.3	≤-17.76	PASS

Test Graphs

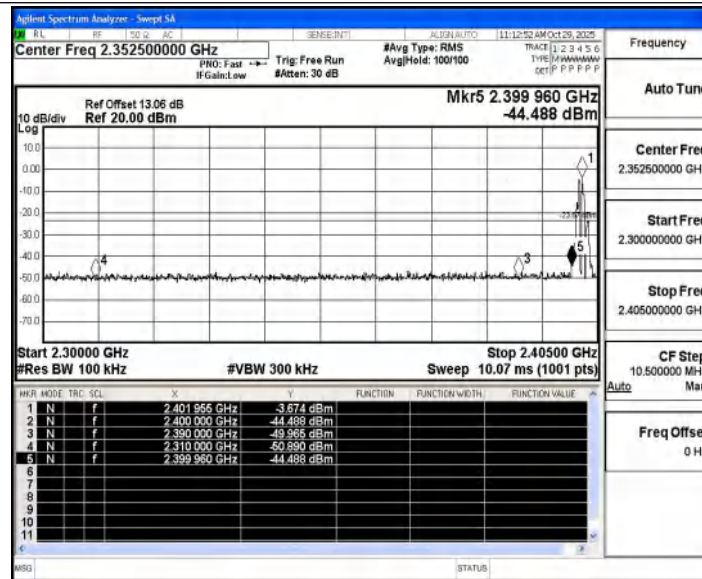
BLE_1M_Ant1_Low_2402



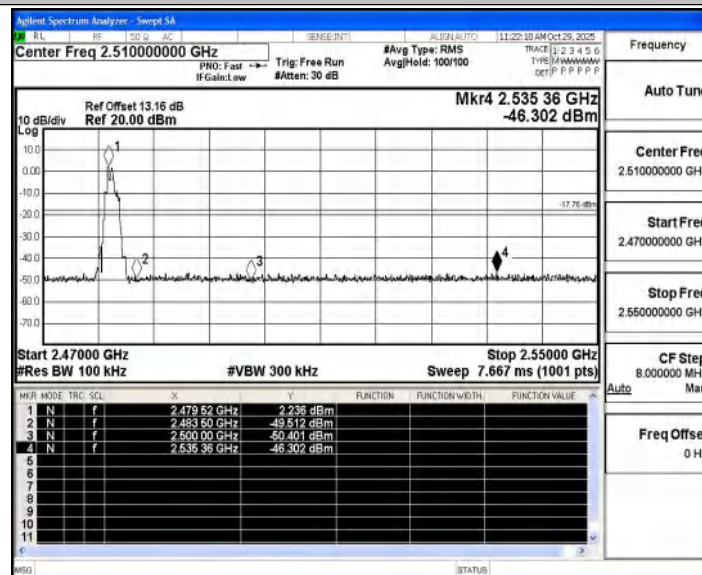
BLE_1M_Ant1_High_2480



BLE_2M_Ant1_Low_2402



BLE_2M_Ant1_High_2480



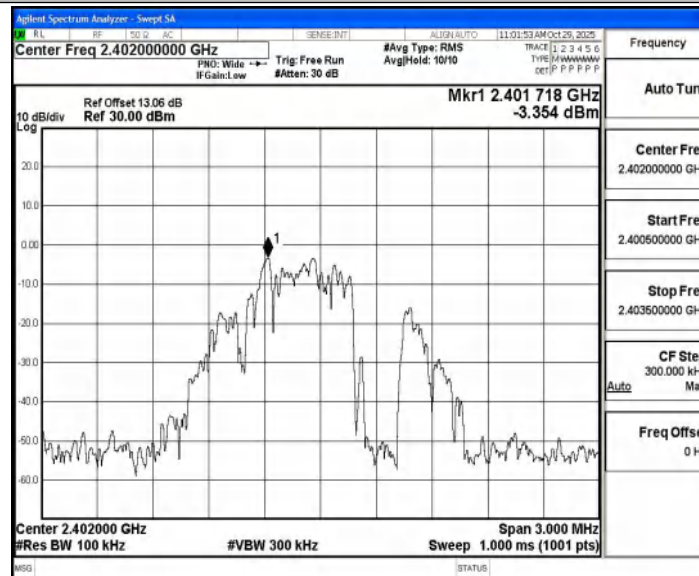
A.5 Conducted Spurious Emission

Test Result

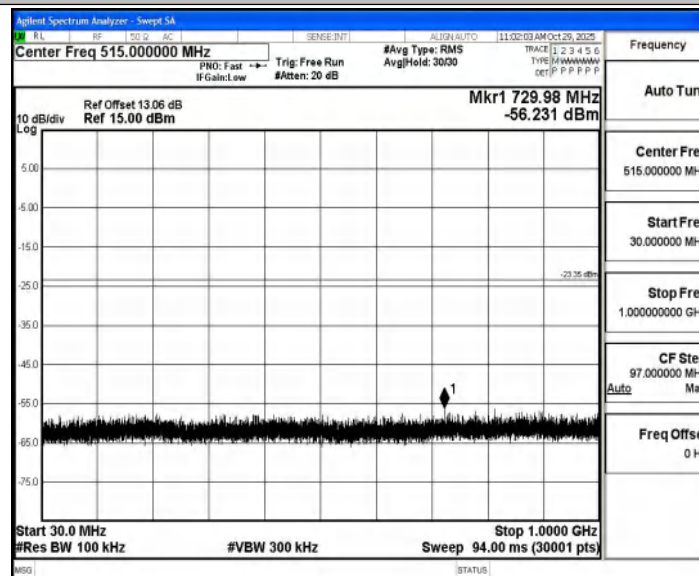
TestMode	Antenna	Freq(MHz)	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	Reference	-3.35	-3.35	---	PASS
			30~1000	-3.35	-56.23	≤-23.35	PASS
			1000~26500	-3.35	-44.14	≤-23.35	PASS
		2440	Reference	2.25	2.25	---	PASS
			30~1000	2.25	-56.79	≤-17.75	PASS
			1000~26500	2.25	-44.54	≤-17.75	PASS
		2480	Reference	1.82	1.82	---	PASS
			30~1000	1.82	-56.72	≤-18.18	PASS
			1000~26500	1.82	-42.85	≤-18.18	PASS
BLE_2M	Ant1	2402	Reference	-2.87	-2.87	---	PASS
			30~1000	-2.87	-57.05	≤-22.87	PASS
			1000~26500	-2.87	-44.25	≤-22.87	PASS
		2440	Reference	1.85	1.85	---	PASS
			30~1000	1.85	-56.48	≤-18.15	PASS
			1000~26500	1.85	-43.46	≤-18.15	PASS
		2480	Reference	1.73	1.73	---	PASS
			30~1000	1.73	-57.53	≤-18.27	PASS
			1000~26500	1.73	-44.36	≤-18.27	PASS

Test Graphs

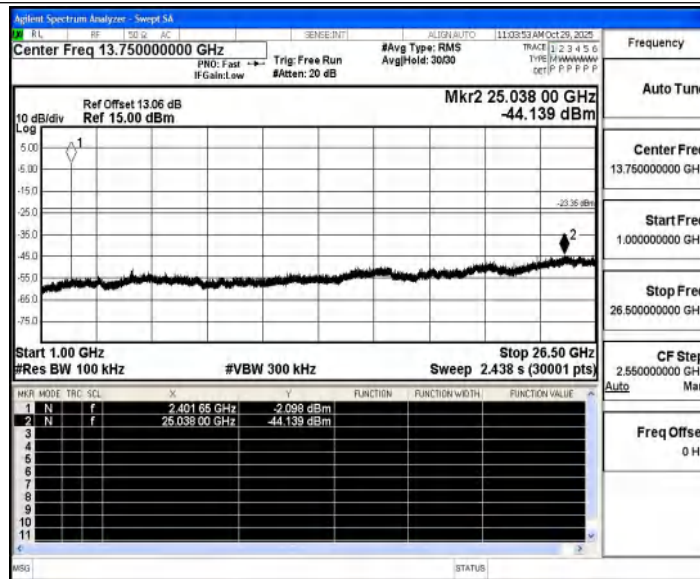
BLE_1M_Ant1_2402_0~Reference



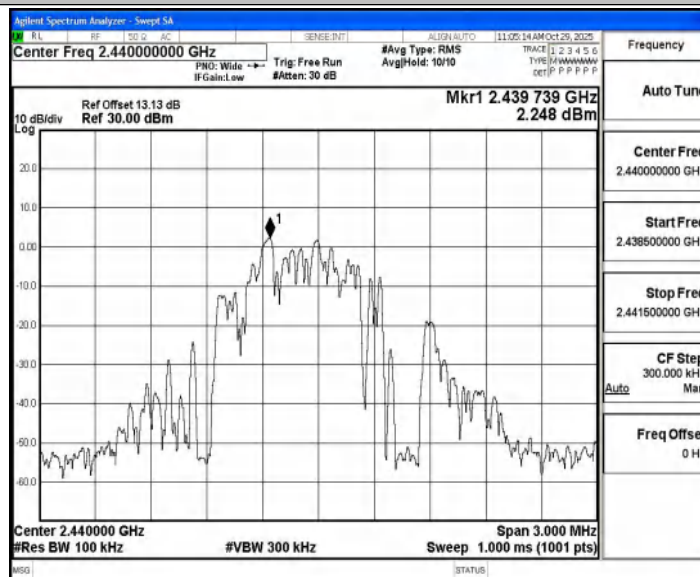
BLE_1M_Ant1_2402_30~1000



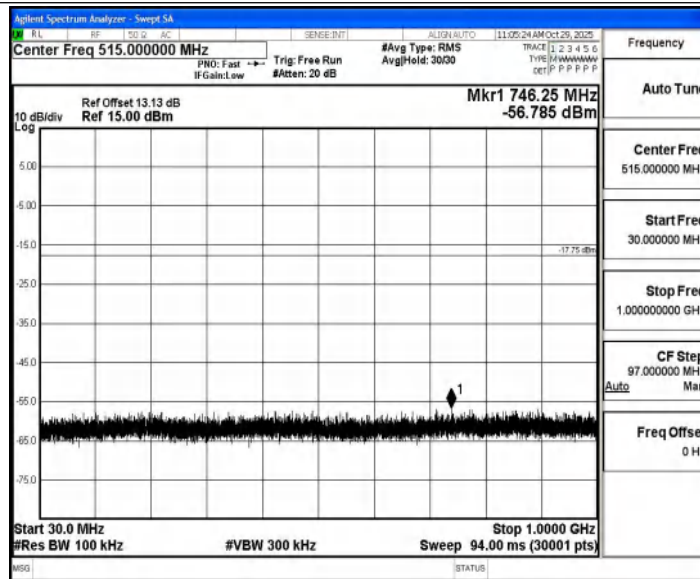
BLE_1M_Ant1_2402_1000~26500



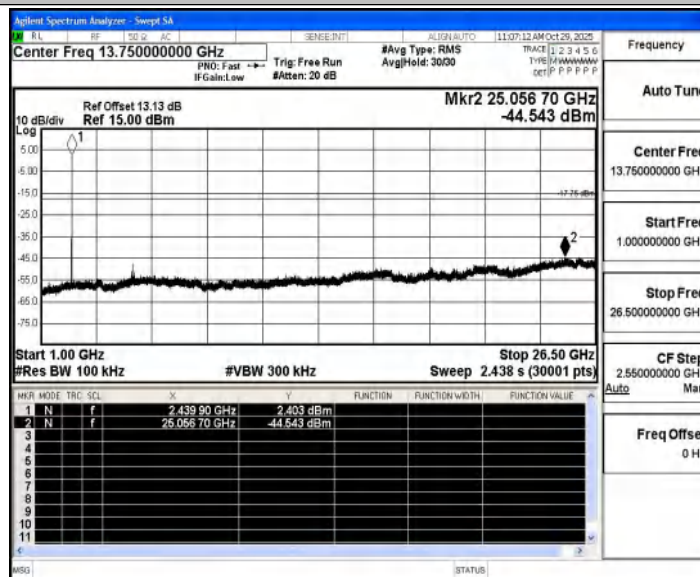
BLE_1M_Ant1_2440_0~Reference



BLE_1M_Ant1_2440_30~1000



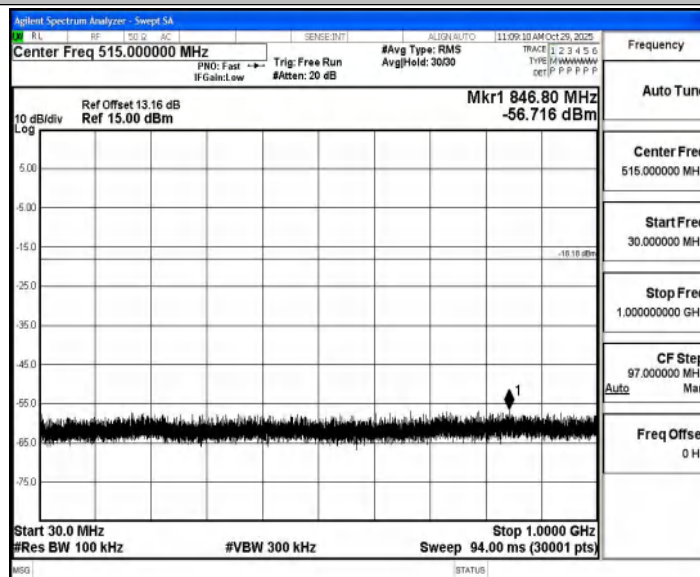
BLE_1M_Ant1_2440_1000~26500



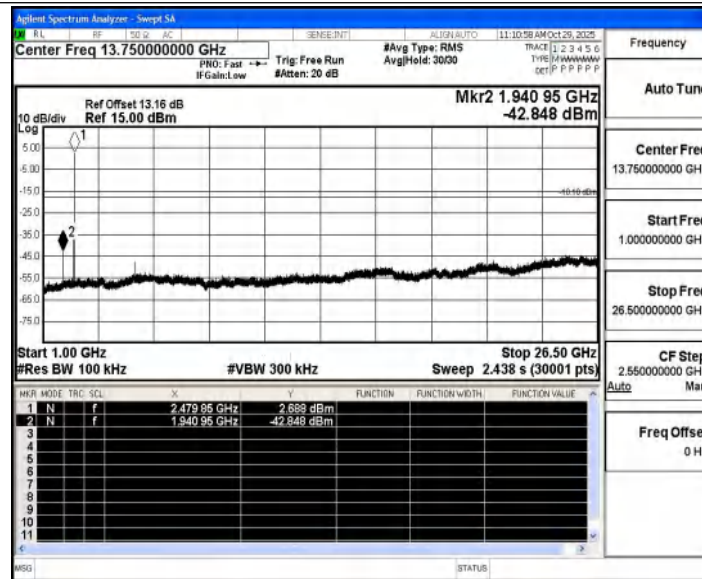
BLE_1M_Ant1_2480_0~Reference



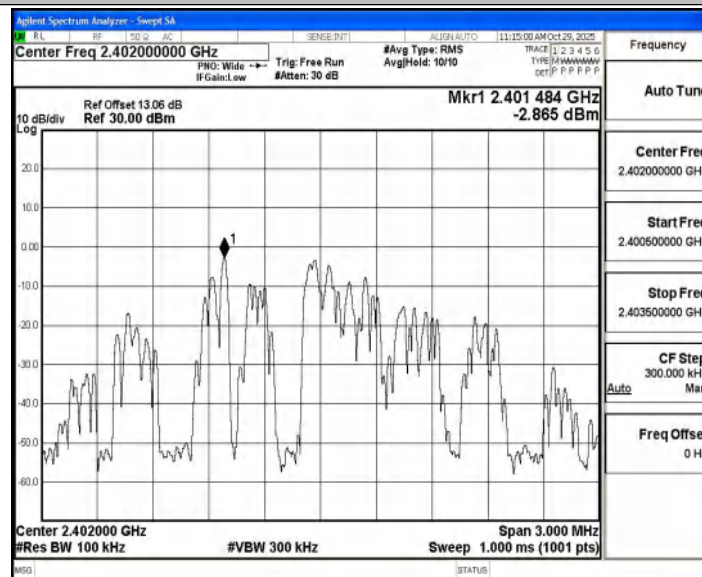
BLE_1M_Ant1_2480_30~1000



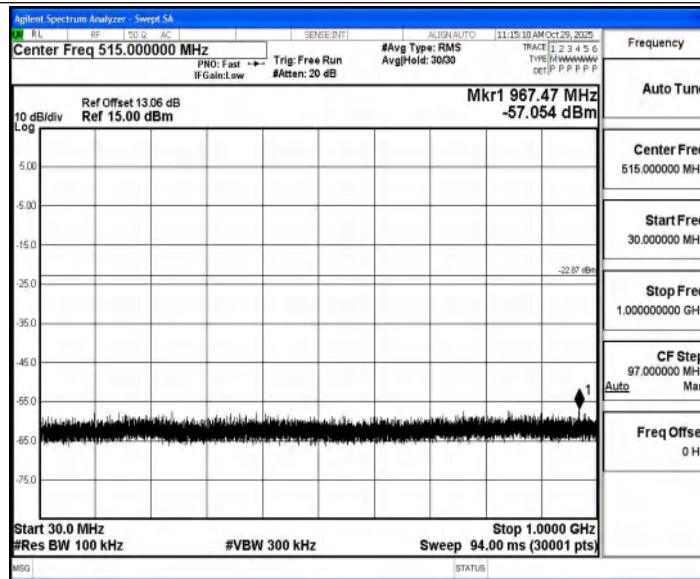
BLE_1M_Ant1_2480_1000~26500



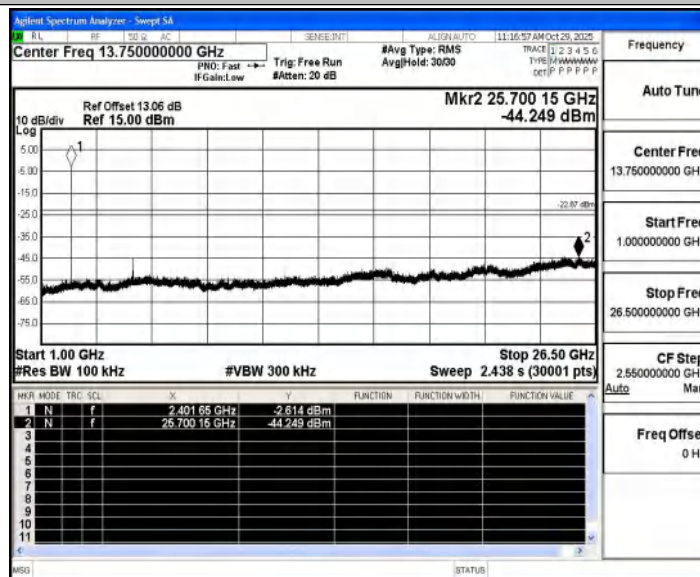
BLE_2M_Ant1_2402_0~Reference



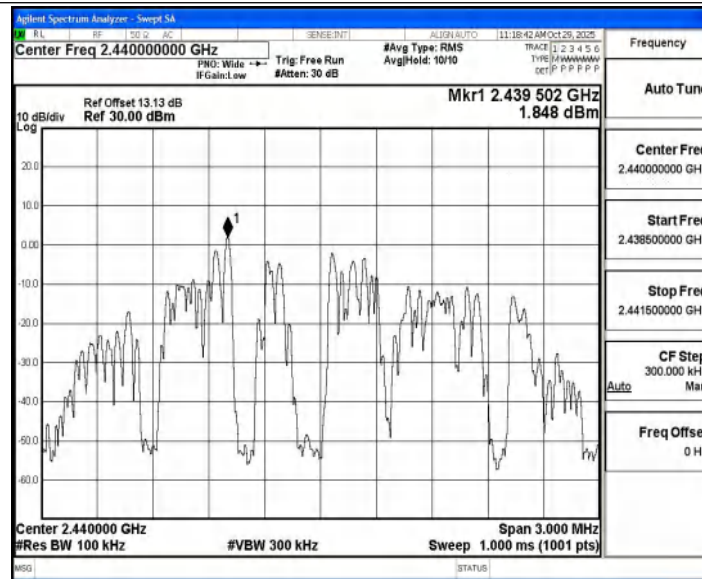
BLE_2M_Ant1_2402_30~1000



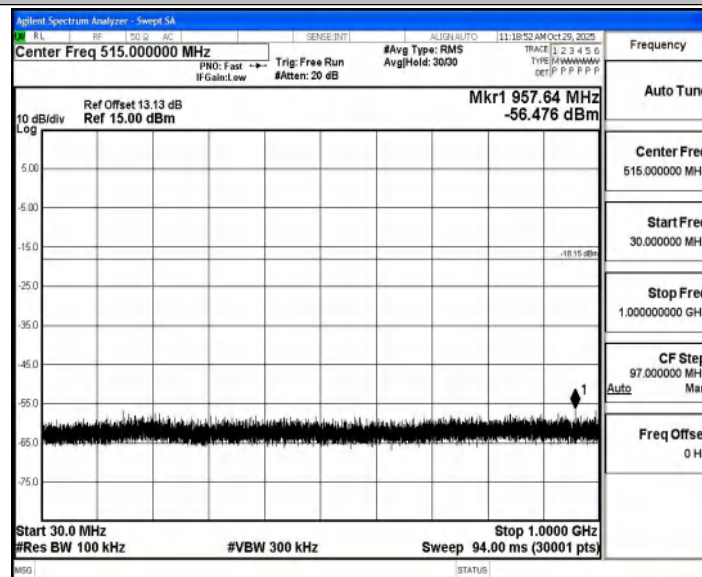
BLE_2M_Ant1_2402_1000~26500



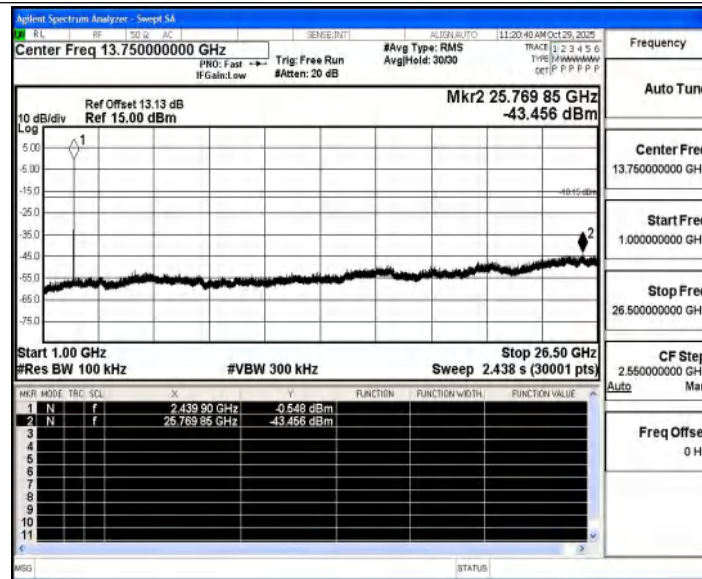
BLE_2M_Ant1_2440_0~Reference



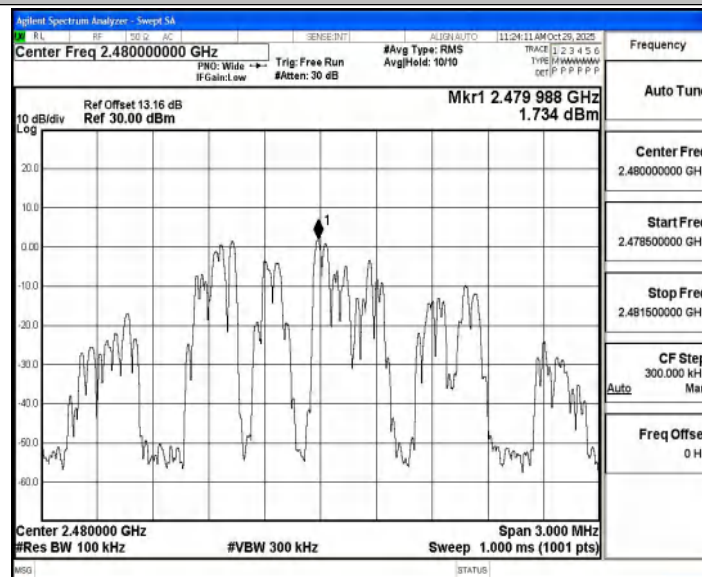
BLE_2M_Ant1_2440_30~1000



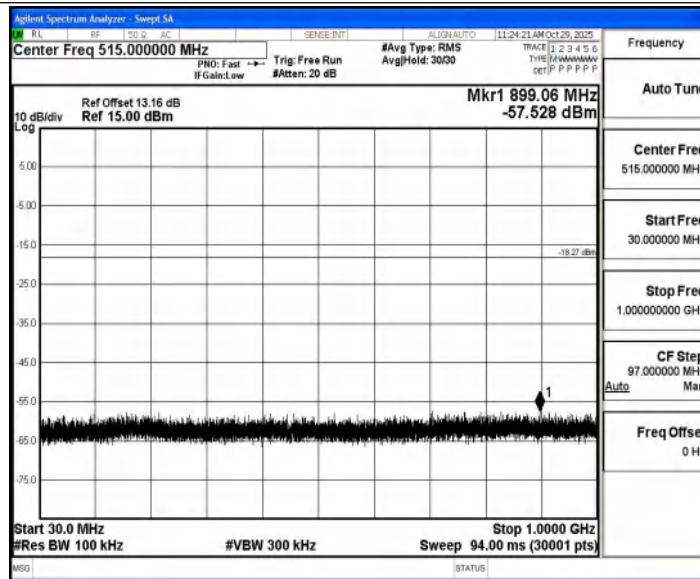
BLE_2M_Ant1_2440_1000~26500



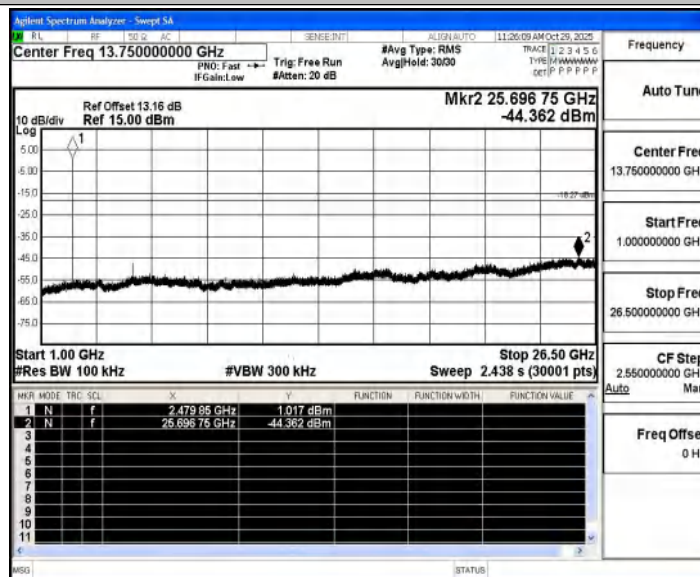
BLE_2M_Ant1_2480_0~Reference



BLE_2M_Ant1_2480_30~1000



BLE_2M_Ant1_2480_1000~26500



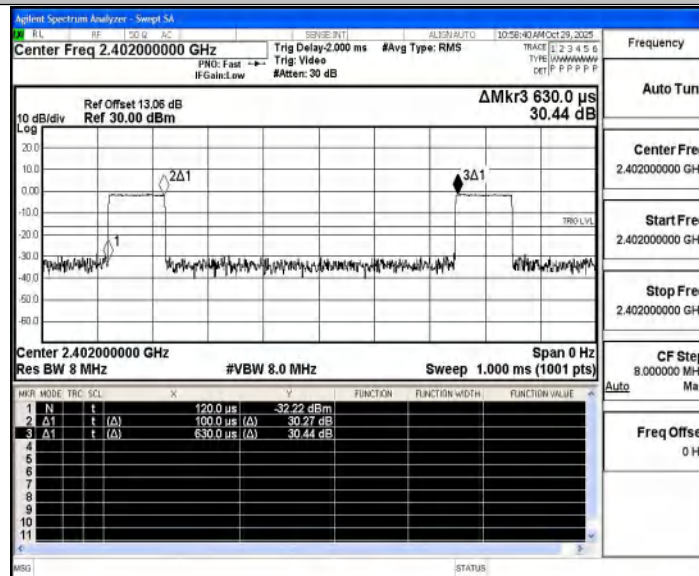
A.6 Duty Cycle

Test Result

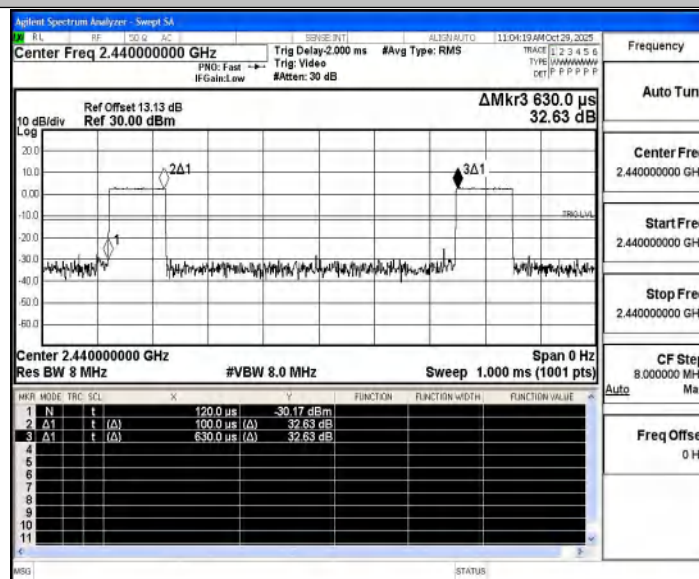
TestMode	Antenna	Freq(MHz)	ON Time [ms]	Period [ms]	X	DC [%]	xFactor	Limit	Verdict
BLE_1M	Ant1	2402	0.10	0.63	0.1587	15.87	7.99	---	---
		2440	0.10	0.63	0.1587	15.87	7.99	---	---
		2480	0.10	0.63	0.1587	15.87	7.99	---	---
BLE_2M	Ant1	2402	0.83	1.25	0.6640	66.40	1.78	---	---
		2440	0.83	1.25	0.6640	66.40	1.78	---	---
		2480	0.83	1.25	0.6640	66.40	1.78	---	---

Test Graphs

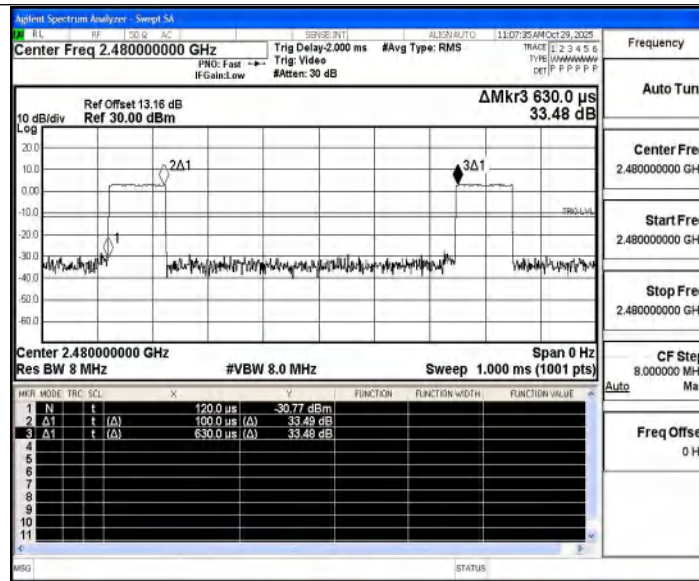
BLE_1M_Ant1_2402



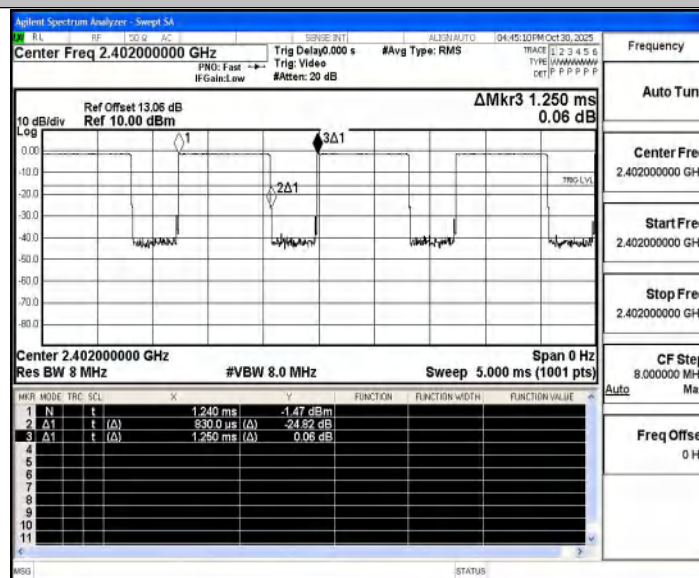
BLE_1M_Ant1_2440



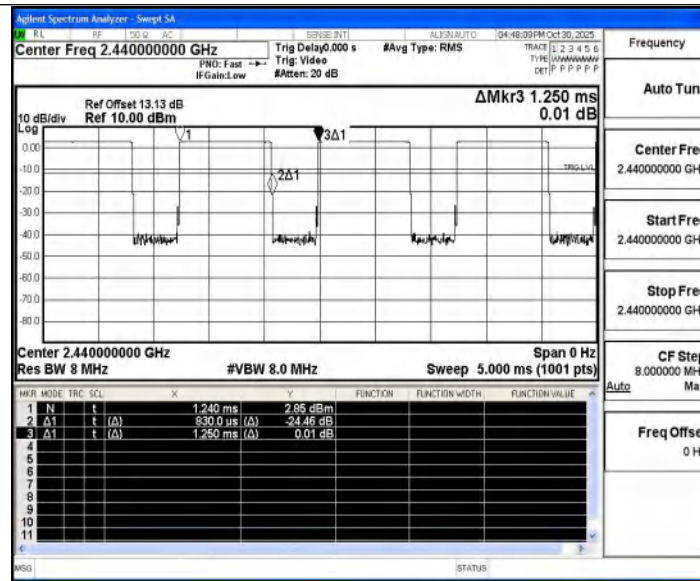
BLE_1M_Ant1_2480



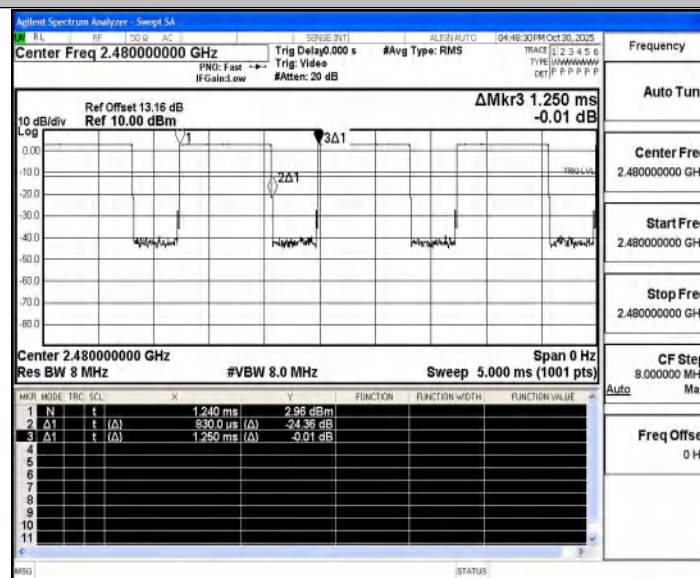
BLE_2M_Ant1_2402



BLE_2M_Ant1_2440



BLE_2M_Ant1_2480



A.7 Emissions in Restricted Bands

Test Result

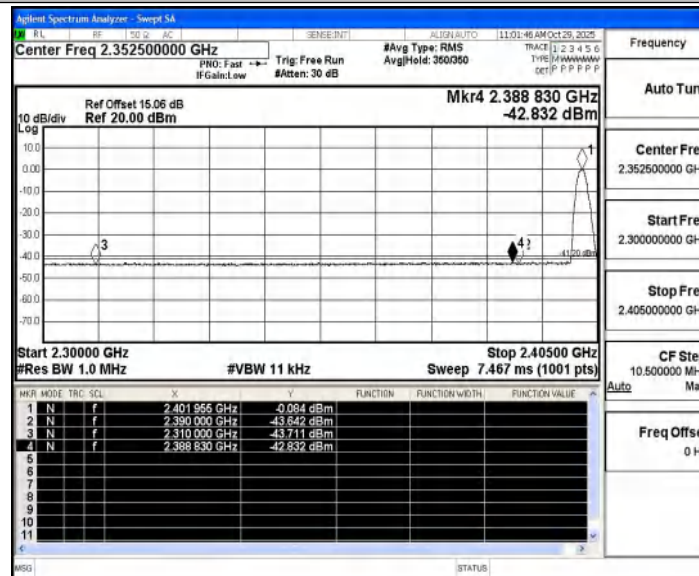
TestMode	Antenna	ChName	Freq(MHz)	Detector	Freq [MHz]	Result [dBm]	Limit [dBm]	Result [dBuV/m]	Limit [dBuV/m]	Verdict
BLE_1M	Ant1	Low	2402	AV	2310.000	-43.71	≤-41.20	51.49	≤54	PASS
				AV	2388.830	-42.83	≤-41.20	52.37	≤54	PASS
				AV	2390.000	-43.64	≤-41.20	51.56	≤54	PASS
				Peak	2310.000	-36.83	≤-21.20	58.37	≤74	PASS
				Peak	2335.175	-34.63	≤-21.20	60.57	≤74	PASS
				Peak	2390.000	-37.07	≤-21.20	58.13	≤74	PASS
		High	2480	AV	2483.500	-43.01	≤-41.20	52.19	≤54	PASS
				AV	2486.960	-42.4	≤-41.20	52.80	≤54	PASS
				AV	2500.000	-43.38	≤-41.20	51.82	≤54	PASS
				Peak	2483.500	-37.1	≤-21.20	58.10	≤74	PASS
				Peak	2489.840	-34.97	≤-21.20	60.23	≤74	PASS
				Peak	2500.000	-37.78	≤-21.20	57.42	≤74	PASS
BLE_2M	Ant1	Low	2402	AV	2310.000	-45.83	≤-41.20	49.37	≤54	PASS
				AV	2389.565	-45.33	≤-41.20	49.87	≤54	PASS
				AV	2390.000	-45.35	≤-41.20	49.85	≤54	PASS
				Peak	2310.000	-39.95	≤-21.20	55.25	≤74	PASS
				Peak	2389.040	-35.71	≤-21.20	59.49	≤74	PASS
				Peak	2390.000	-40.13	≤-21.20	55.07	≤74	PASS
		High	2480	AV	2483.500	-45.22	≤-41.20	49.98	≤54	PASS
				AV	2483.520	-45.22	≤-41.20	49.98	≤54	PASS
				AV	2500.000	-45.25	≤-41.20	49.95	≤54	PASS
				Peak	2483.500	-39.99	≤-21.20	55.21	≤74	PASS
				Peak	2488.720	-36.37	≤-21.20	58.83	≤74	PASS
				Peak	2500.000	-39.54	≤-21.20	55.66	≤74	PASS

Note:

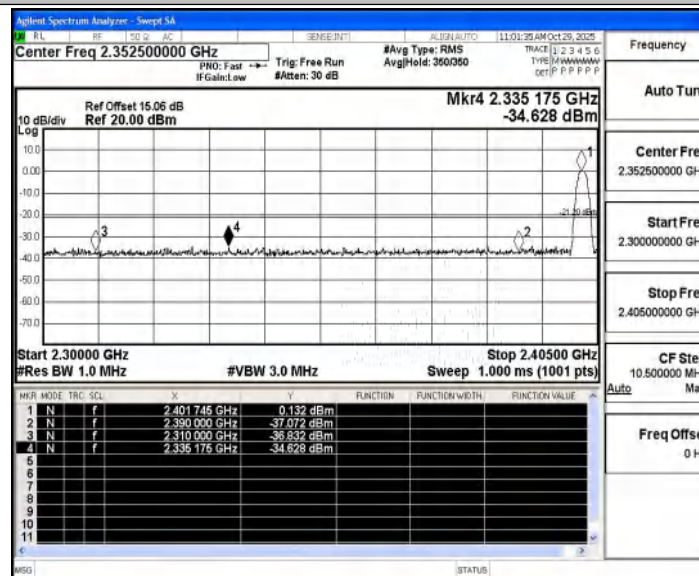
1. The Antenna Gain is compensated in the graph.
2. The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.

Test Graphs

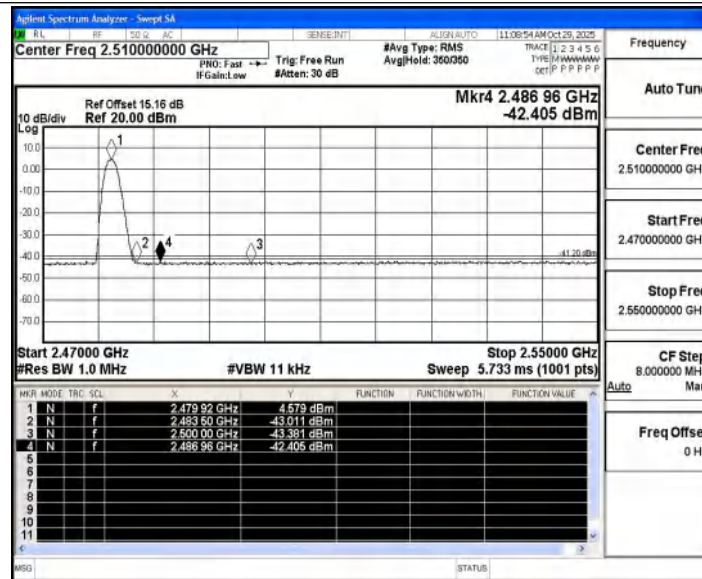
BLE_1M_Ant1_Low_2402_AV



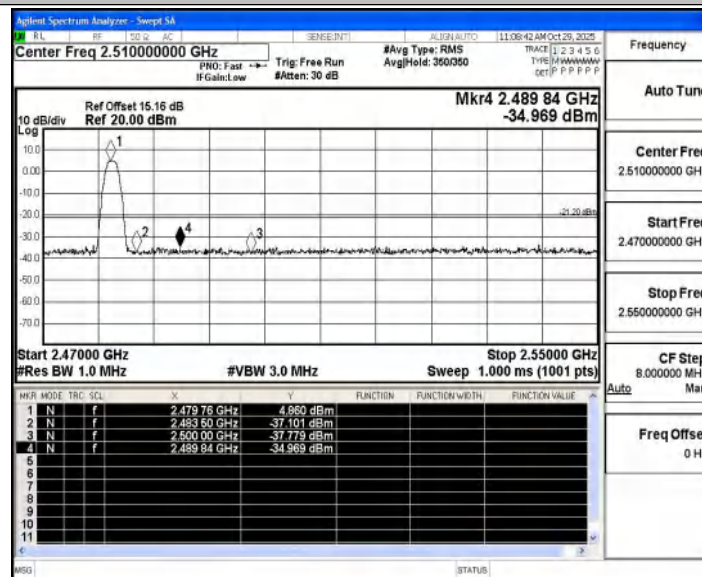
BLE_1M_Ant1_Low_2402_Peak



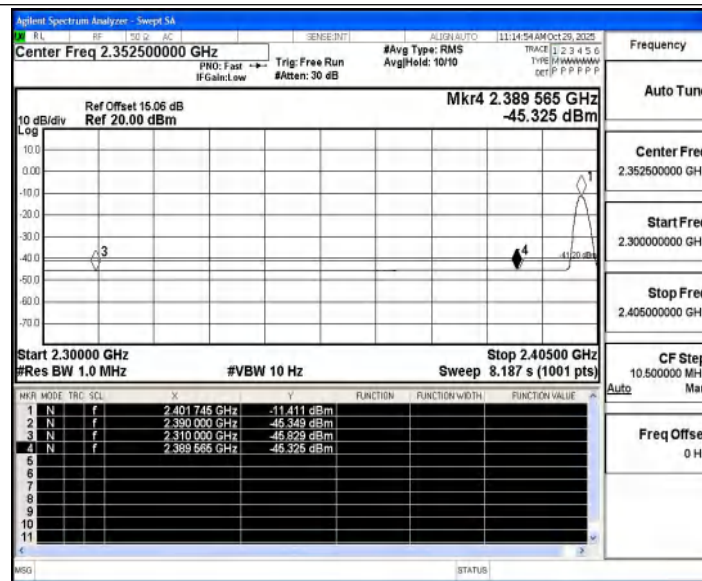
BLE_1M_Ant1_High_2480_AV



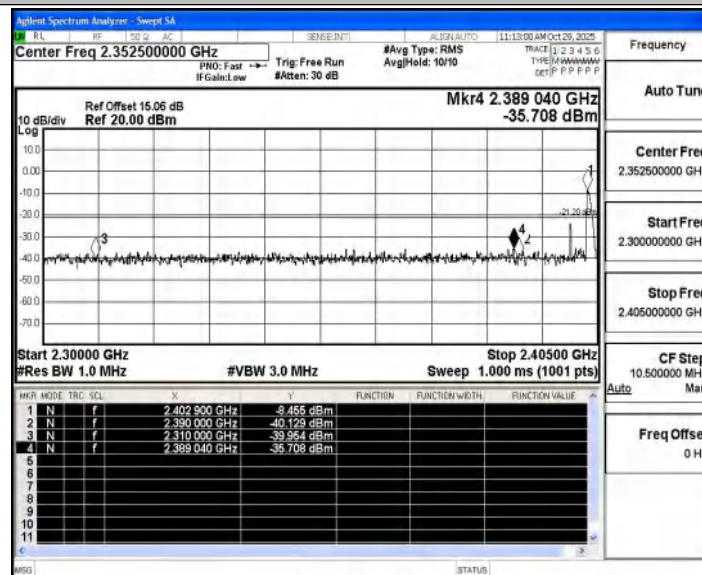
BLE_1M_Ant1_High_2480_Peak



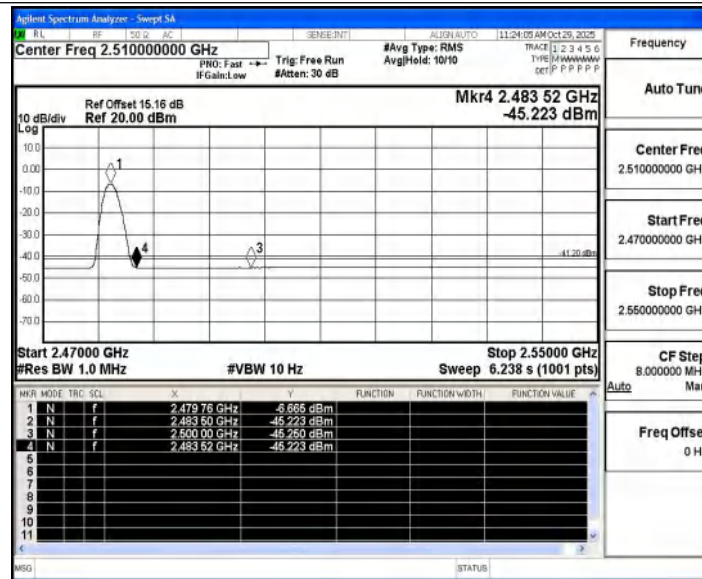
BLE_2M_Ant1_Low_2402_AV



BLE_2M_Ant1_Low_2402_Peak



BLE_2M_Ant1_High_2480_AV



BLE_2M_Ant1_High_2480_Peak

