

Appendix A

RF Test Data for BT LE (Conducted Measurement)

Product Name: Zeliox Control Module
Test Model: ZCM6-NA

Environmental Conditions

Temperature:	23.8°C
Relative Humidity:	52.4%
ATM Pressure:	100.0 kPa
Test Engineer:	Zhang Hai
Supervised by:	Fengliu Tang

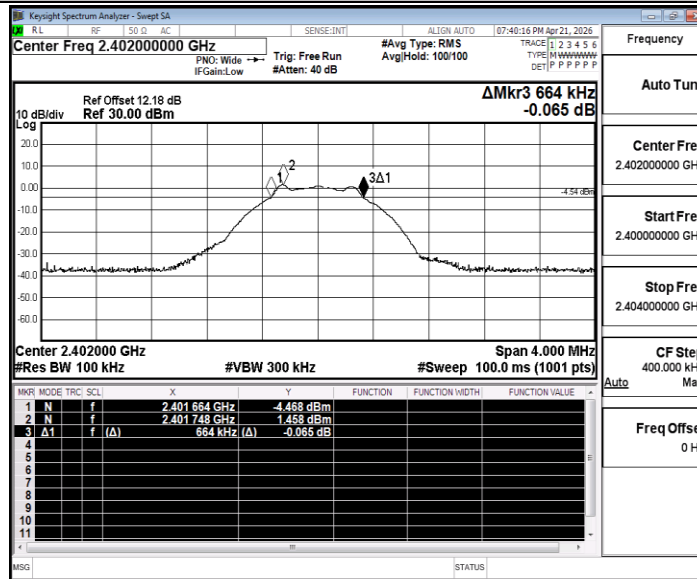
A.1 DTS Bandwidth

Test Result

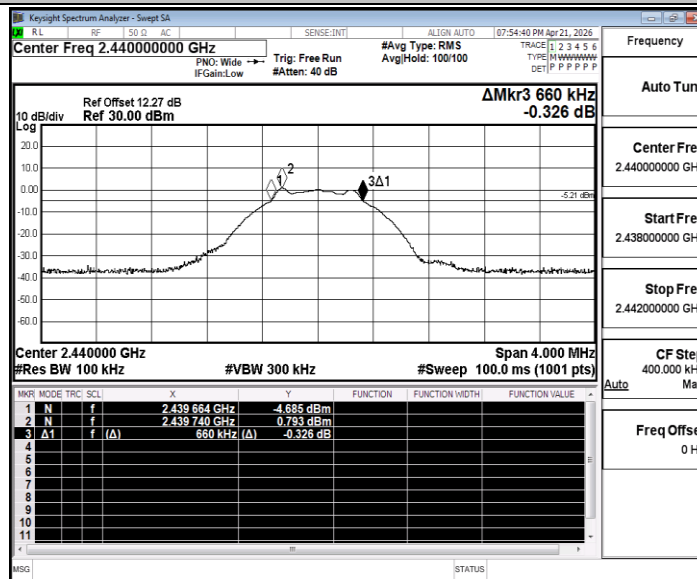
TestMode	Antenna	Freq(MHz)	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE	Ant1	2402	0.664	2401.664	2402.328	0.5	PASS
		2440	0.660	2439.664	2440.324	0.5	PASS
		2480	0.664	2479.660	2480.324	0.5	PASS

Test Graphs

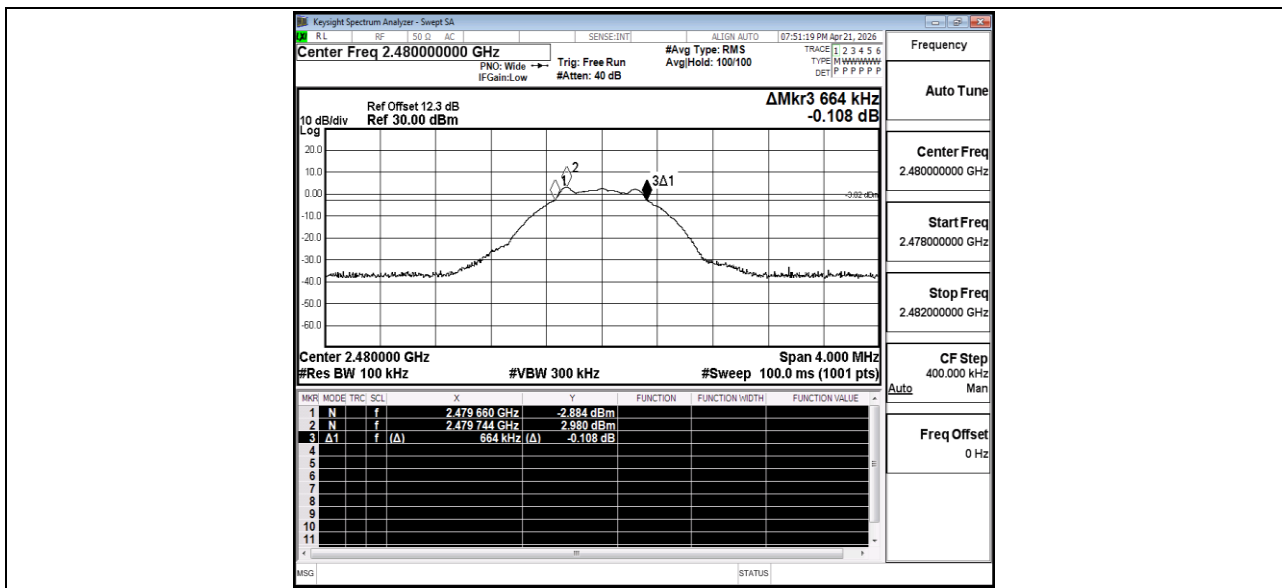
BLE_Ant1_2402



BLE_Ant1_2440



BLE_Ant1_2480



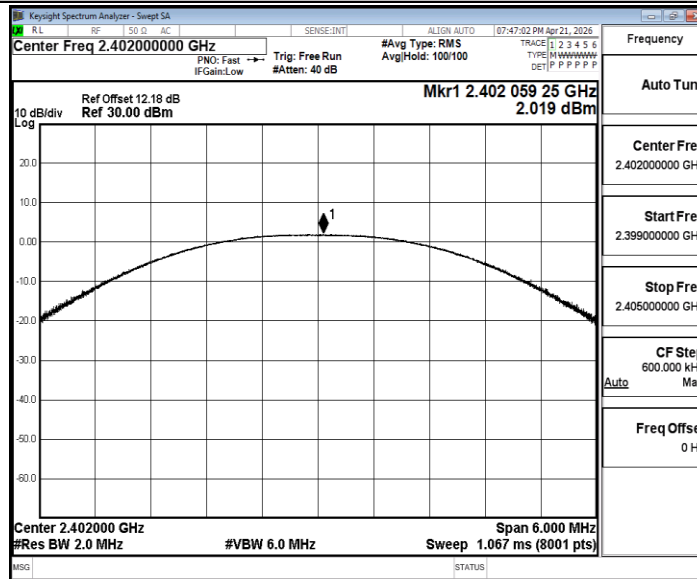
A.2 Maximum Peak Conducted Output Power

Test Result Peak

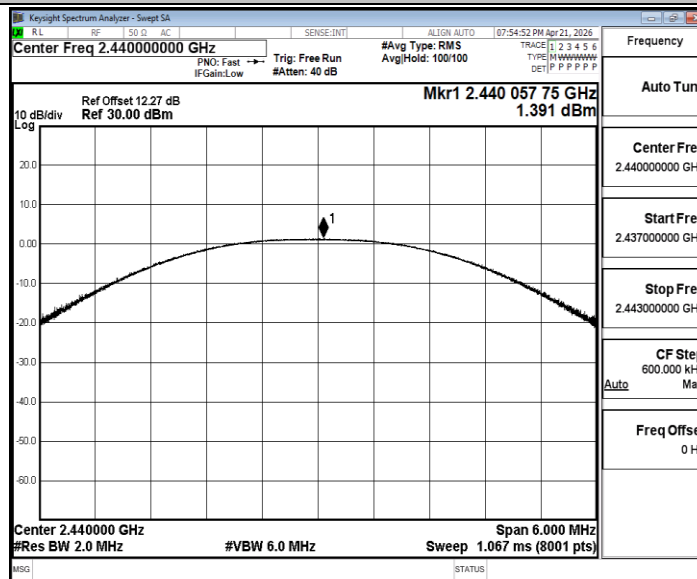
TestMode	Antenna	Freq(MHz)	Conducted Peak Power[dBm]	Conducted Limit[dBm]	Verdict
BLE	Ant1	2402	2.02	≤30	PASS
		2440	1.39	≤30	PASS
		2480	3.53	≤30	PASS

Test Graphs Peak

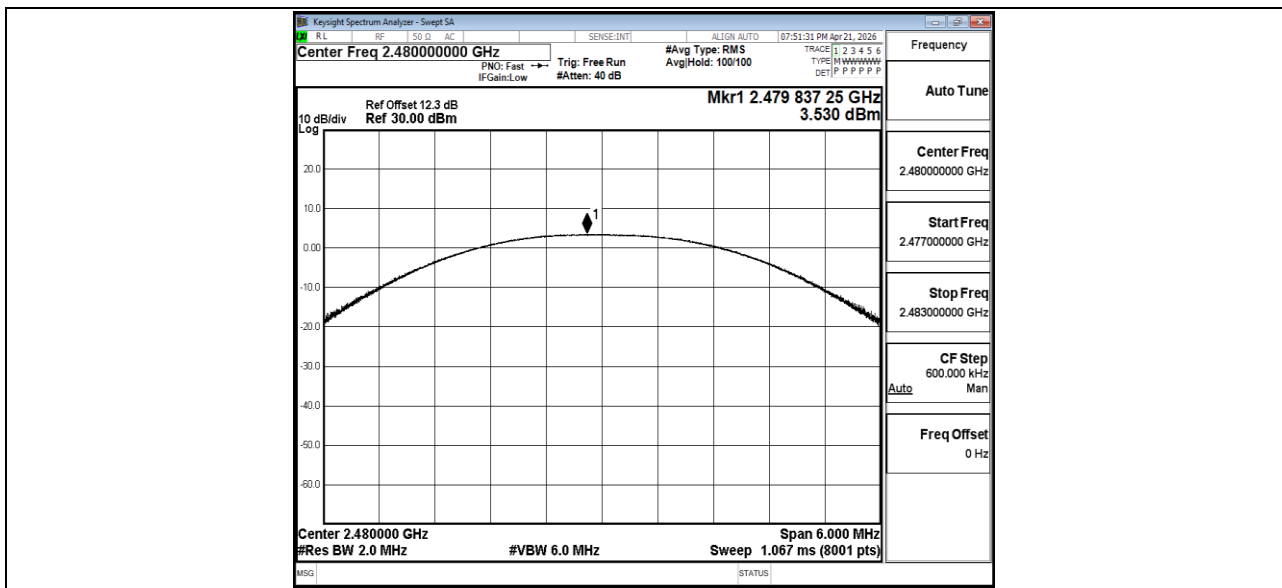
BLE_Ant1_2402



BLE_Ant1_2440



BLE_Ant1_2480



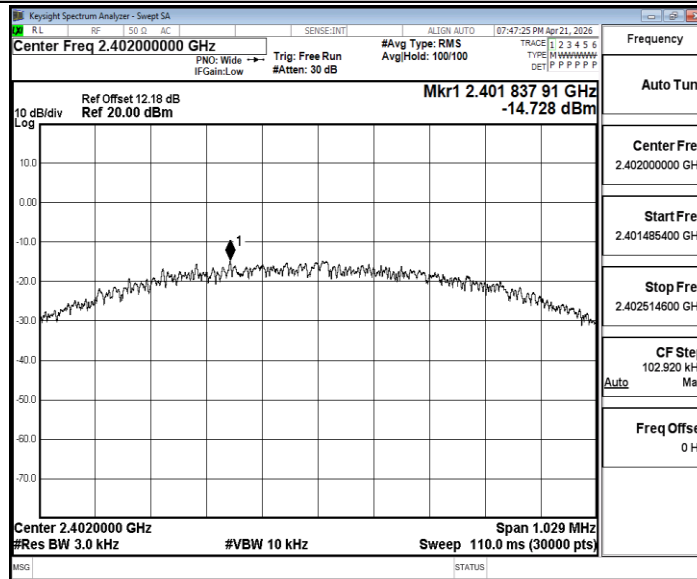
A.3 Maximum power spectral density

Test Result

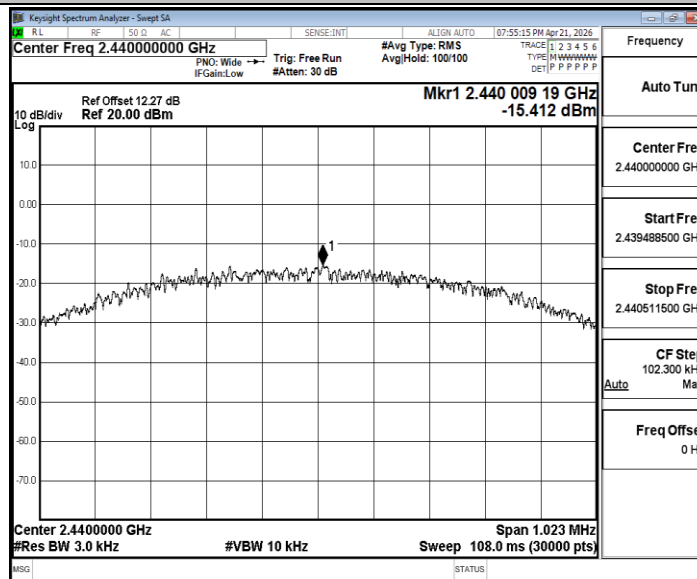
TestMode	Antenna	Freq(MHz)	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
BLE	Ant1	2402	-14.73	≤8.00	PASS
		2440	-15.41	≤8.00	PASS
		2480	-13.20	≤8.00	PASS

Test Graphs

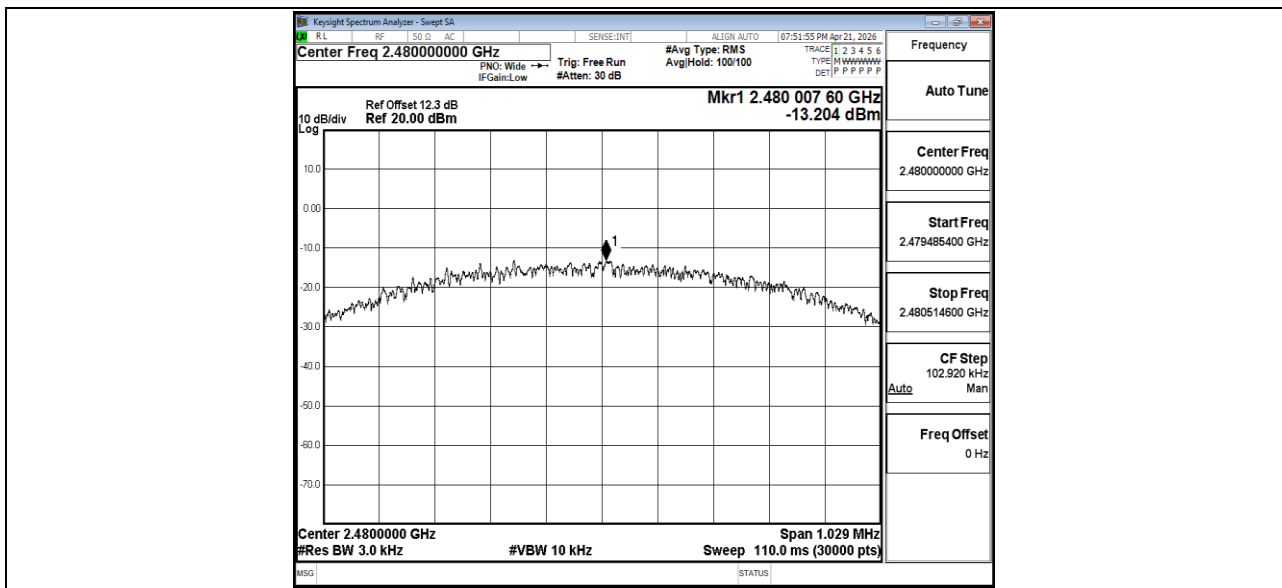
BLE_Ant1_2402



BLE_Ant1_2440



BLE_Ant1_2480

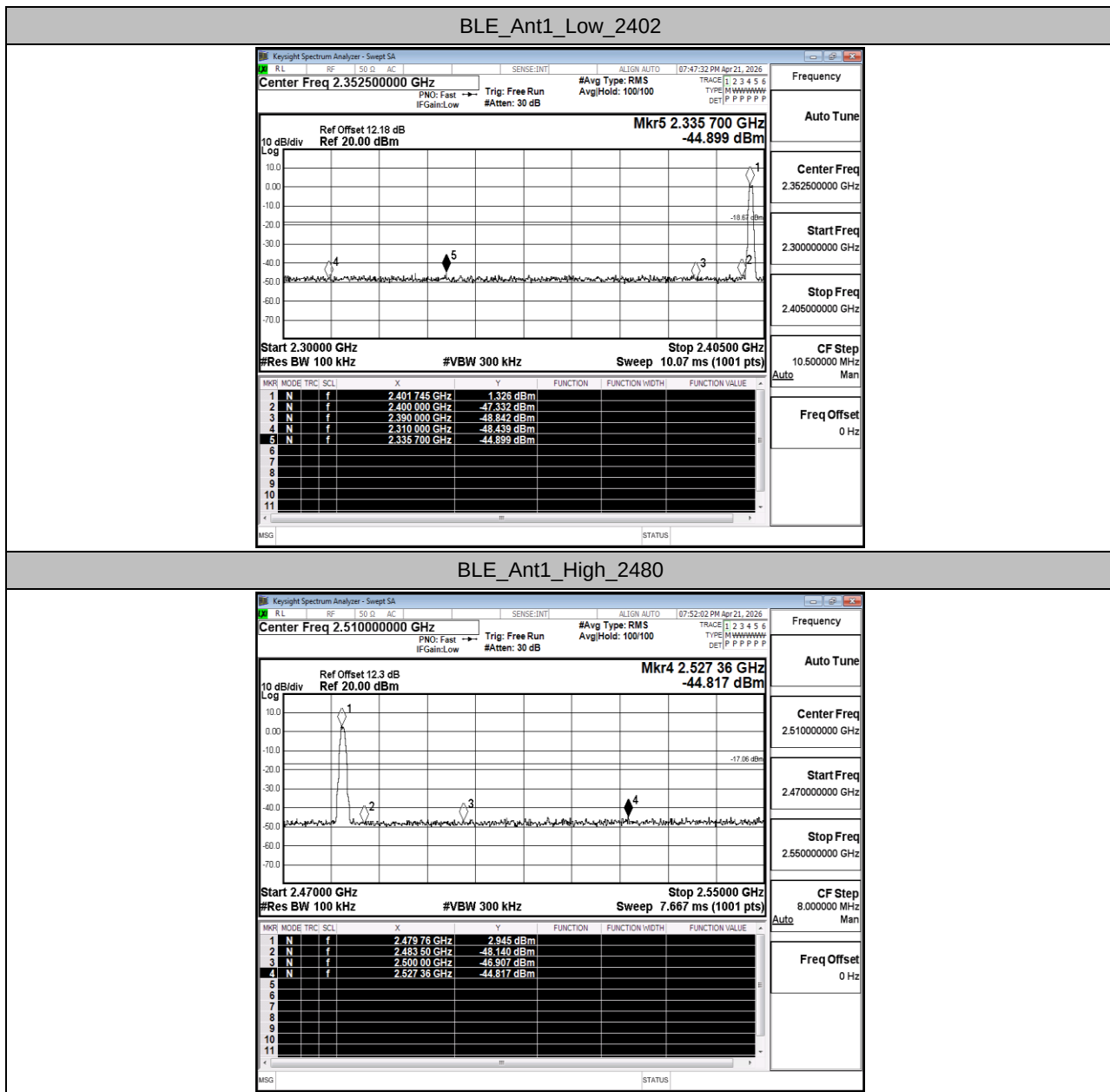


A.4 Band edge measurements

Test Result

TestMode	Antenna	ChName	Freq(MHz)	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE	Ant1	Low	2402	1.33	-44.9	≤-18.67	PASS
		High	2480	2.95	-44.82	≤-17.06	PASS

Test Graphs

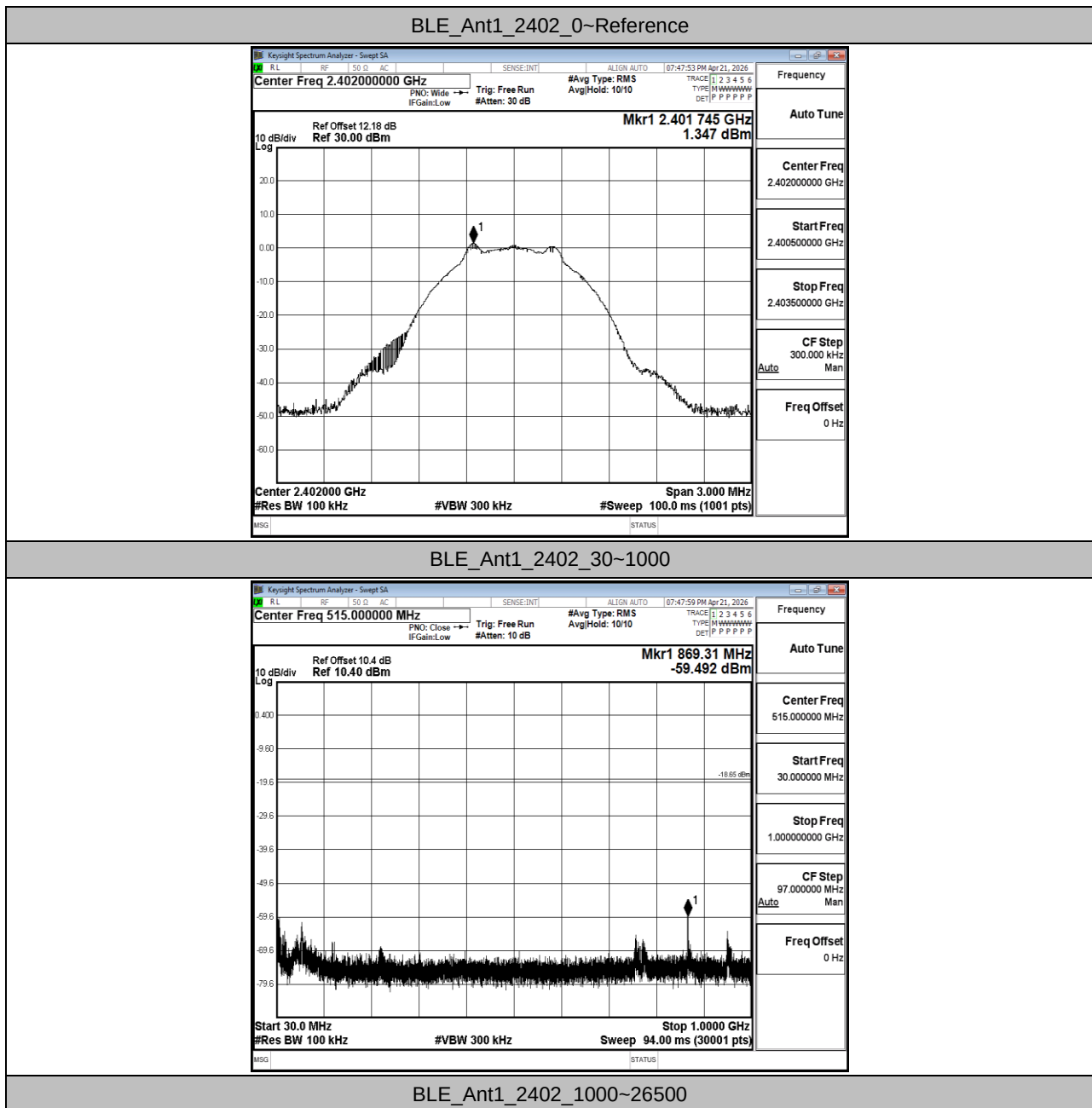


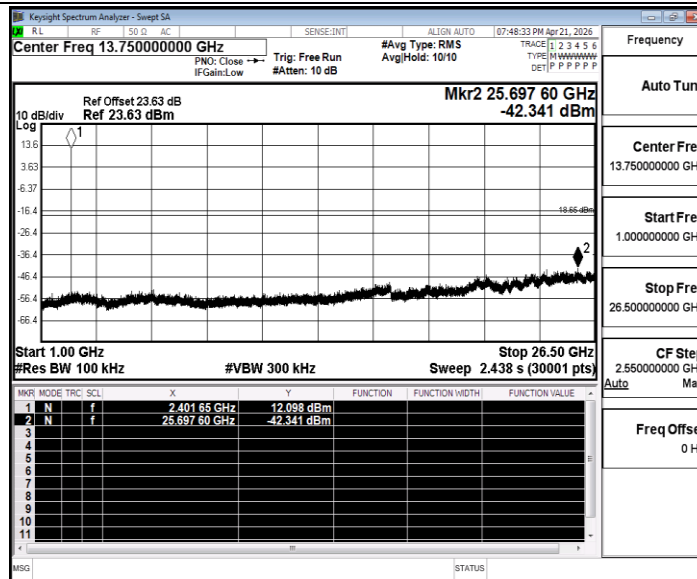
A.5 Conducted Spurious Emission

Test Result

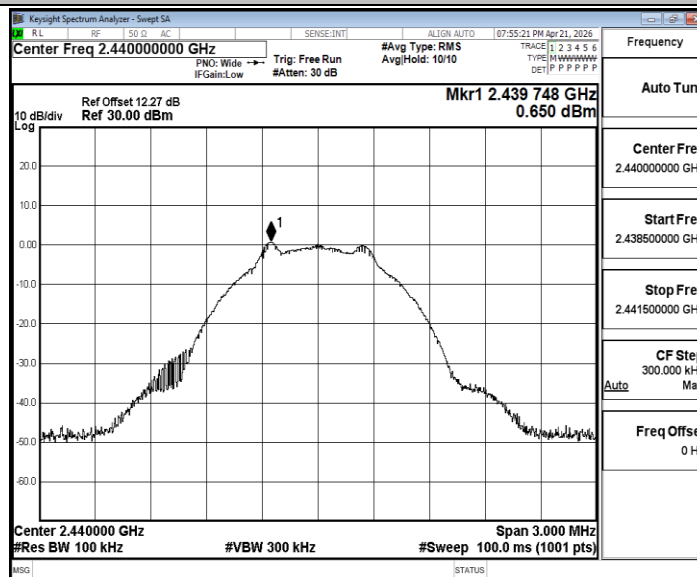
TestMode	Antenna	Freq(MHz)	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE	Ant1	2402	Reference	1.35	1.35	---	PASS
			30~1000	1.35	-59.49	≤-18.65	PASS
			1000~26500	1.35	-42.34	≤-18.65	PASS
		2440	Reference	0.65	0.65	---	PASS
			30~1000	0.65	-56.06	≤-19.35	PASS
			1000~26500	0.65	-43.07	≤-19.35	PASS
		2480	Reference	2.98	2.98	---	PASS
			30~1000	2.98	-56.93	≤-17.02	PASS
			1000~26500	2.98	-40.91	≤-17.02	PASS

Test Graphs

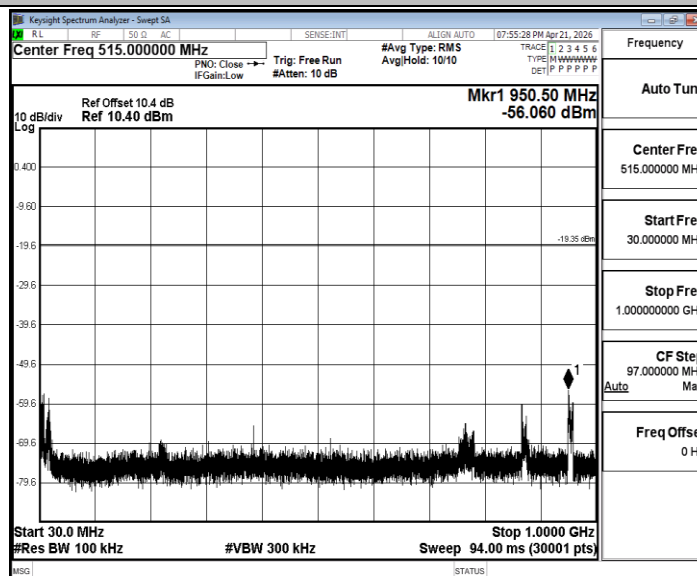




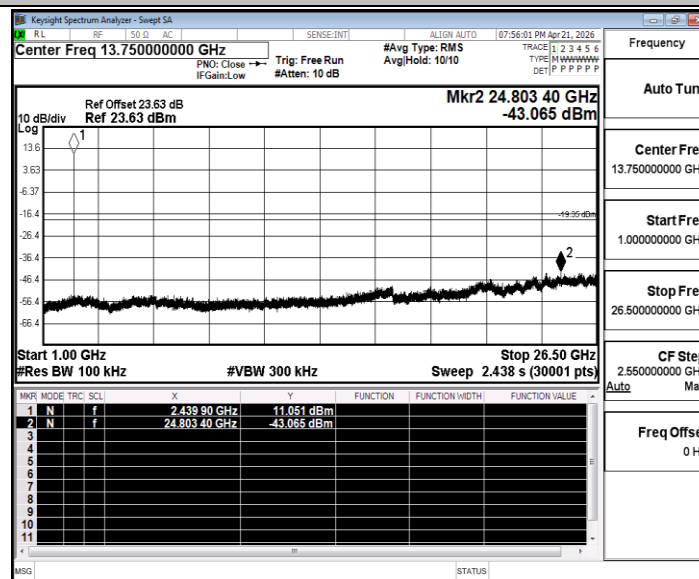
BLE_Ant1_2440_0~Reference



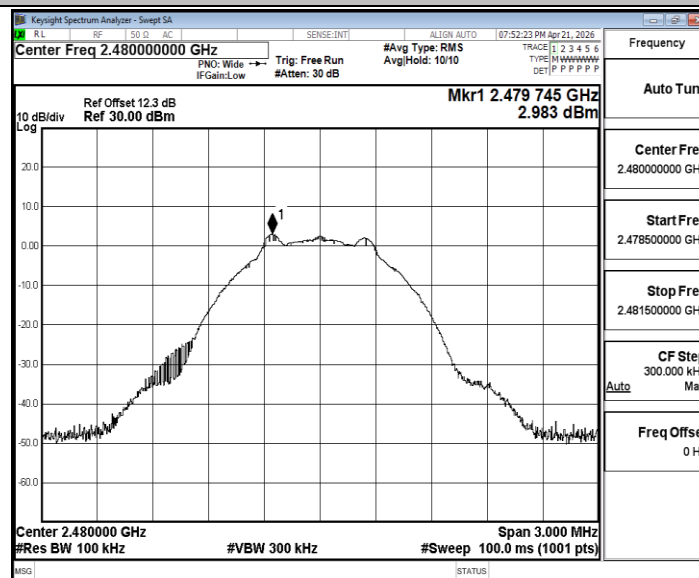
BLE_Ant1_2440_30~1000



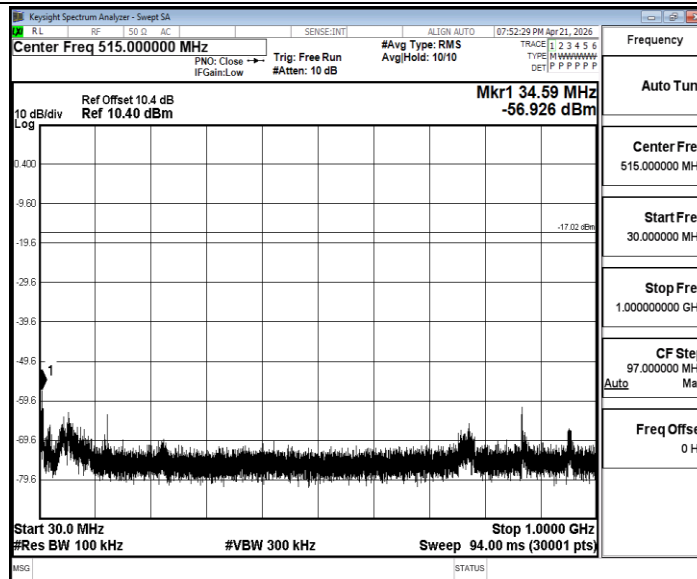
BLE_Ant1_2440_1000~26500



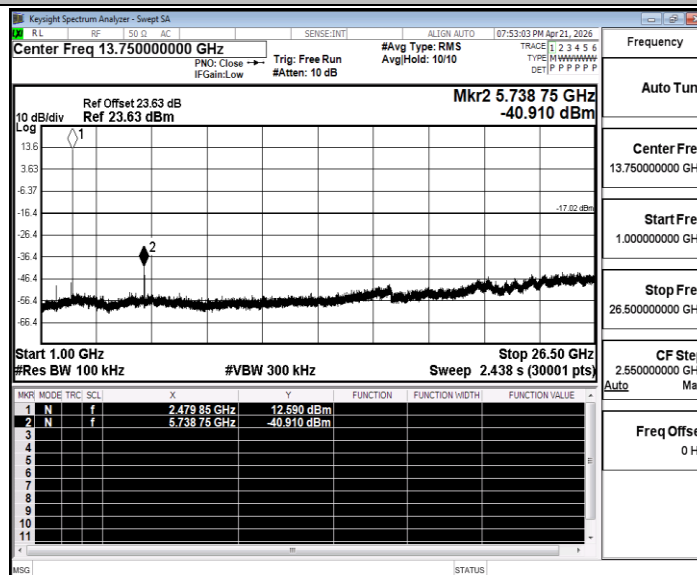
BLE_Ant1_2480_0~Reference



BLE_Ant1_2480_30~1000



BLE_Ant1_2480_1000~26500



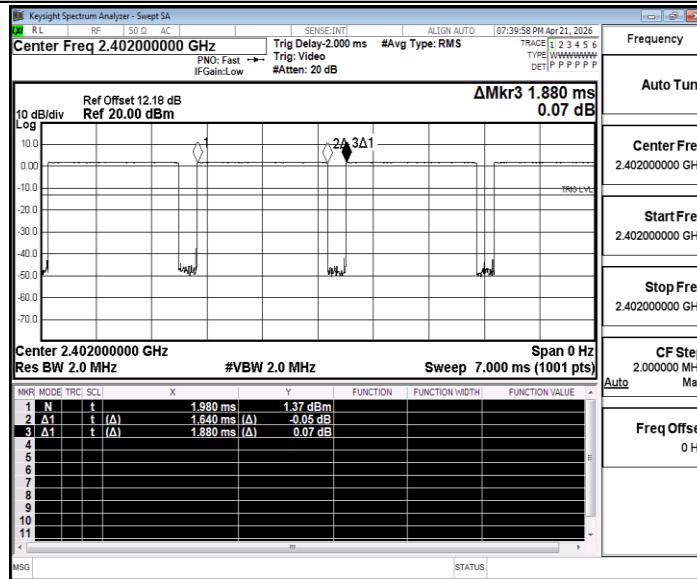
A.6 Duty Cycle

Test Result

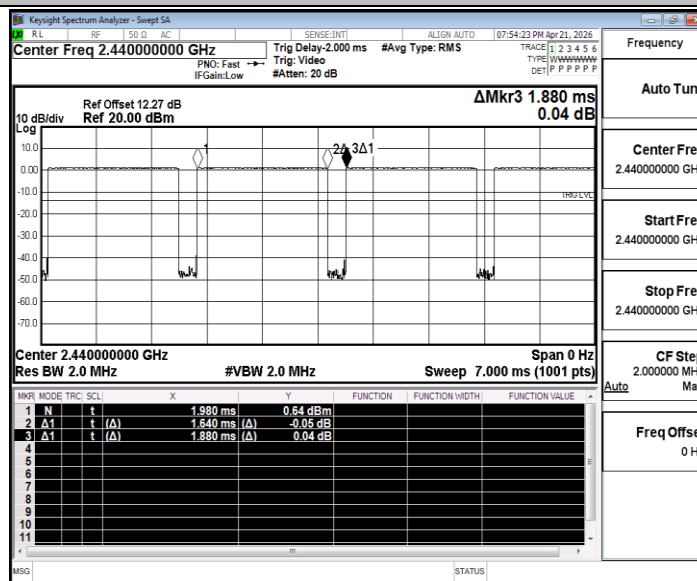
TestMode	Antenna	Freq(MHz)	ON Time [ms]	Period [ms]	X	DC [%]	xFactor	Limit	Verdict
BLE	Ant1	2402	1.64	1.88	0.8723	87.23	0.59	---	---
		2440	1.64	1.88	0.8723	87.23	0.59	---	---
		2480	1.63	1.87	0.8717	87.17	0.60	---	---

Test Graphs

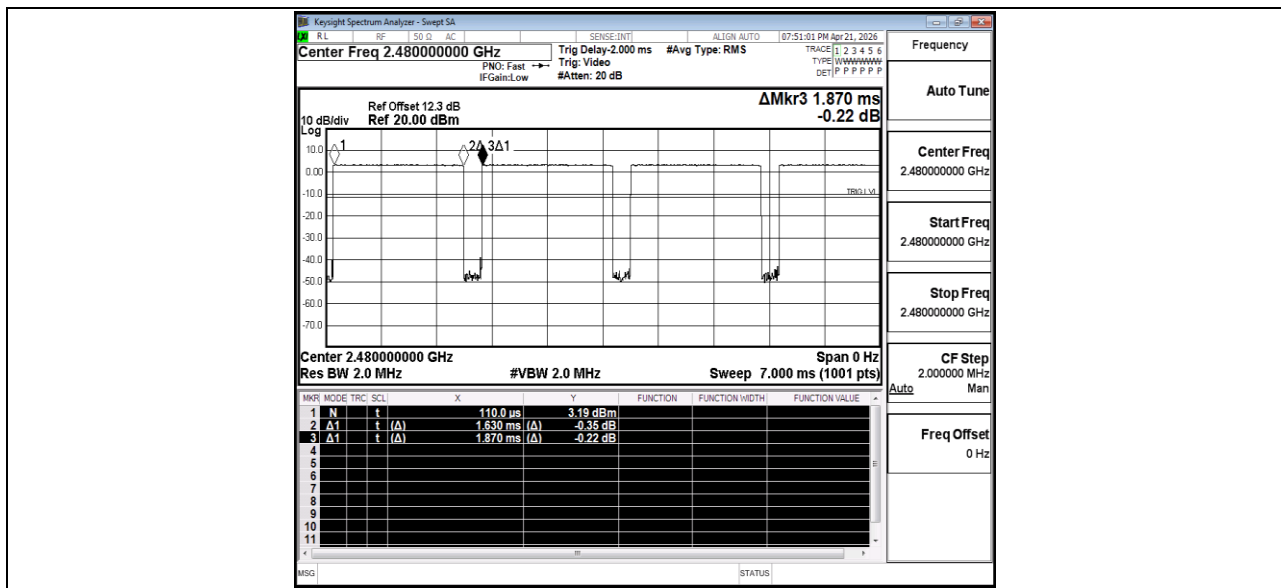
BLE_Ant1_2402



BLE_Ant1_2440



BLE_Ant1_2480



A.7 Emissions in Restricted Bands

Test Result

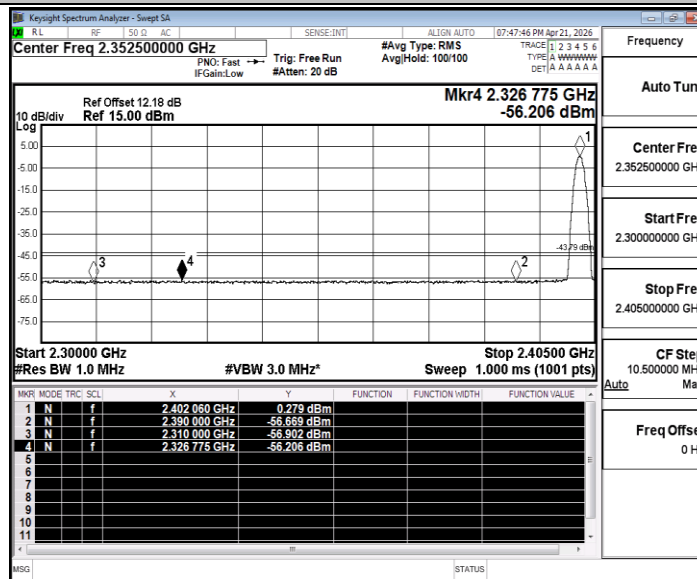
Test Mode	Antenna	Channel Name	Freq (MHz)	Detector	Freq [MHz]	Result [dBm]	Limit [dBm]	Gain [dBi]	DC Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Verdict
BLE	Ant1	Low	2402	AV	2310.000	-56.9	≤-43.79	3.41	0.59	42.30	≤54	PASS
				AV	2326.775	-56.21	≤-43.79	3.41	0.59	42.99	≤54	PASS
				AV	2390.000	-56.67	≤-43.79	3.41	0.59	42.53	≤54	PASS
				Peak	2310.000	-48.63	≤-23.20	3.41	0.00	49.98	≤74	PASS
				Peak	2342.315	-45.83	≤-23.20	3.41	0.00	52.78	≤74	PASS
				Peak	2390.000	-50.46	≤-23.20	3.41	0.00	48.15	≤74	PASS
		High	2480	AV	2483.500	-56.16	≤-43.80	3.41	0.60	43.05	≤54	PASS
				AV	2483.920	-55.57	≤-43.80	3.41	0.60	43.64	≤54	PASS
				AV	2500.000	-55.75	≤-43.80	3.41	0.60	43.46	≤54	PASS
				Peak	2483.500	-47.98	≤-23.20	3.41	0.00	50.63	≤74	PASS
				Peak	2487.680	-45.12	≤-23.20	3.41	0.00	53.49	≤74	PASS
				Peak	2500.000	-47.77	≤-23.20	3.41	0.00	50.84	≤74	PASS

Note:

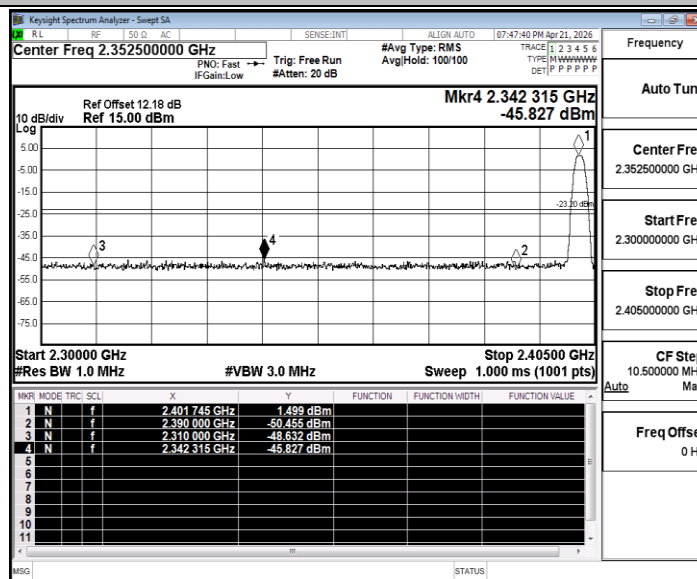
1. The Antenna Gain is compensated in the graph.
2. The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.

Test Graphs

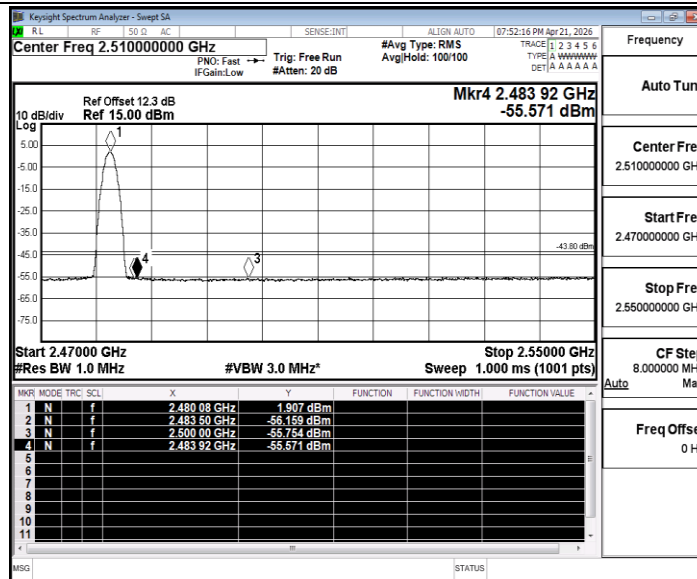
BLE_Ant1_Low_2402_AV



BLE_Ant1_Low_2402_Peak



BLE_Ant1_High_2480_AV



BLE_Ant1_High_2480_Peak

