

Appendix A

RF Test Data for BT LE (Conducted Measurement)

Product Name: HE02 SOS Button

Test Model: HE02

Environmental Conditions

Temperature:	24.3°C
Relative Humidity:	53.4%
ATM Pressure:	100.0 kPa
Test Engineer:	Zhao Xing Hai
Supervised by:	Fengliu Tang

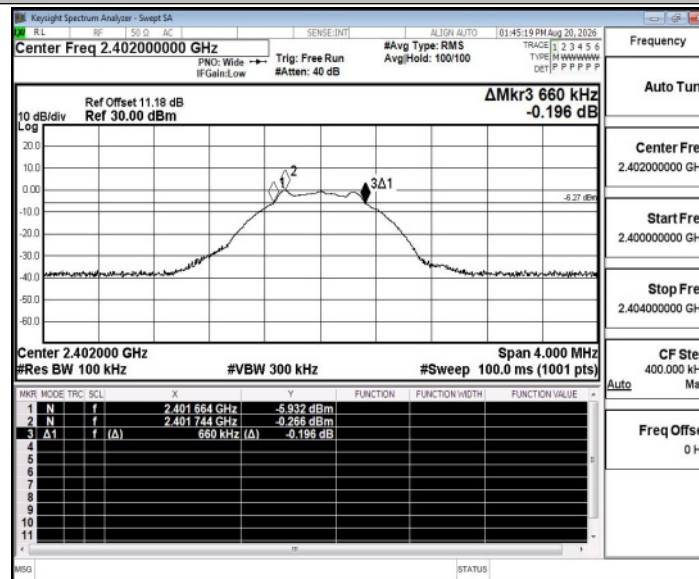
A.1 6dB Bandwidth

Test Result

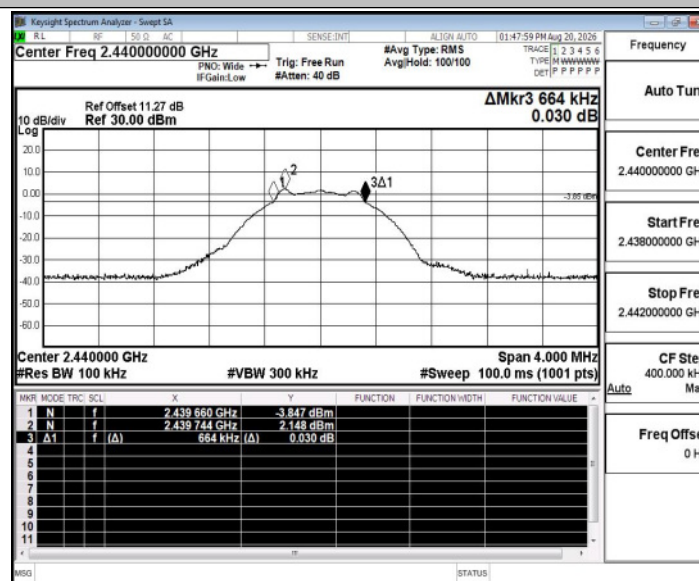
TestMode	Antenna	Freq(MHz)	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.660	2401.664	2402.324	0.5	PASS
		2440	0.664	2439.660	2440.324	0.5	PASS
		2480	0.660	2479.664	2480.324	0.5	PASS
BLE_2M	Ant1	2402	1.160	2401.404	2402.564	0.5	PASS
		2440	1.152	2439.408	2440.560	0.5	PASS
		2480	1.148	2479.408	2480.556	0.5	PASS

Test Graphs

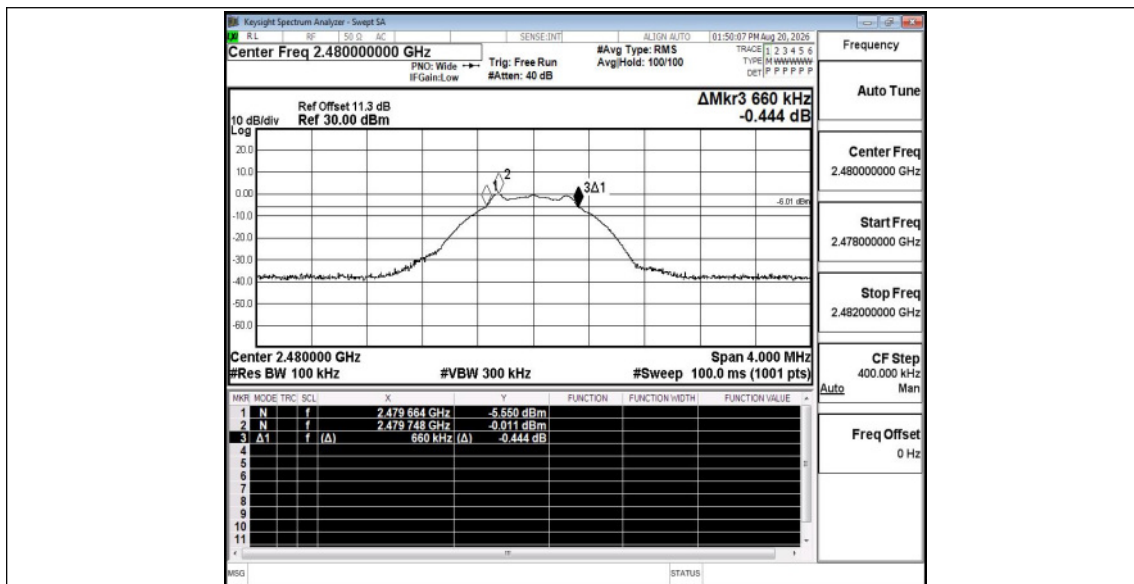
BLE_1M_Ant1_2402



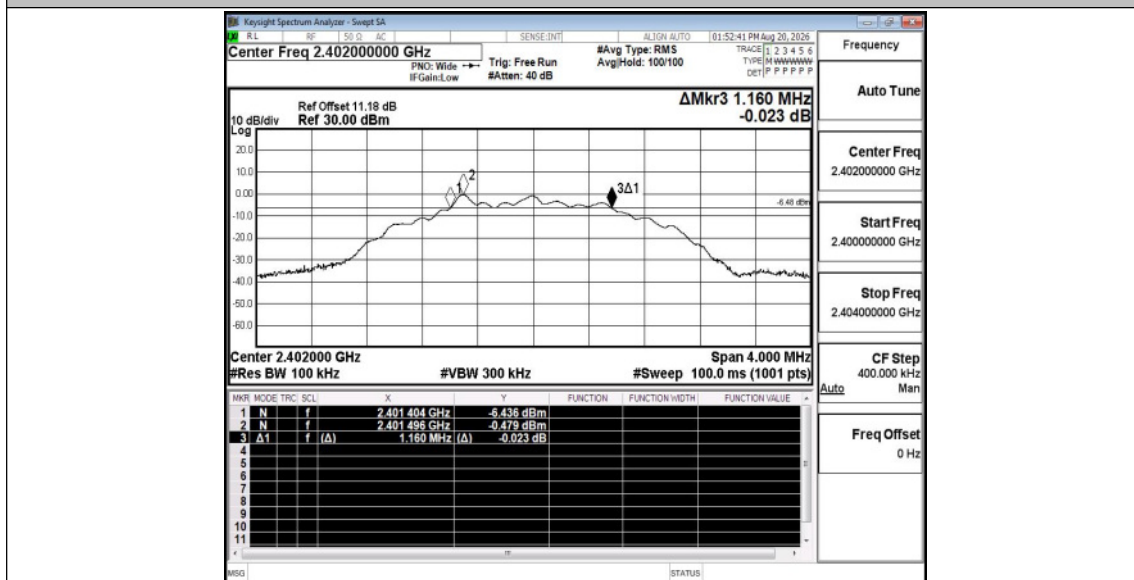
BLE_1M_Ant1_2440



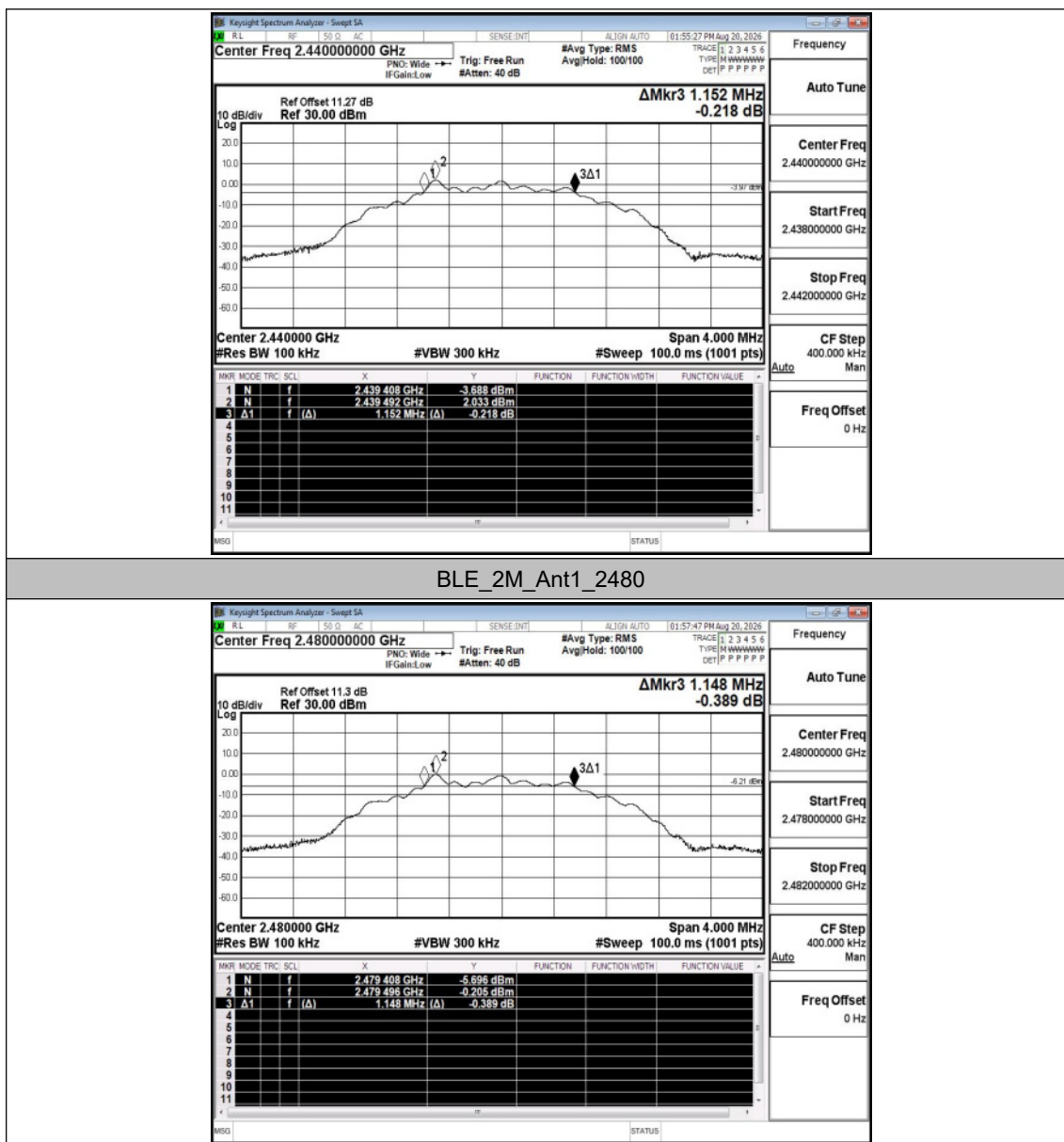
BLE_1M_Ant1_2480



BLE_2M_Ant1_2402



BLE_2M_Ant1_2440



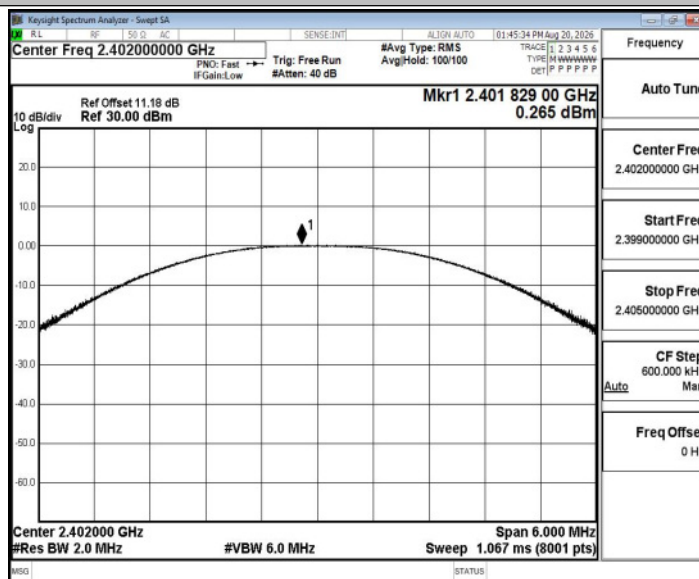
A.2 Maximum Peak conducted output power

Test Result

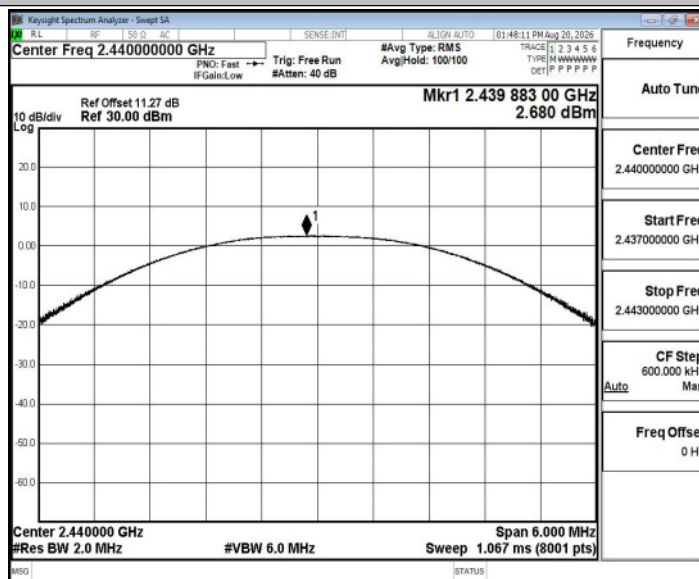
TestMode	Antenna	Freq(MHz)	Conducted Peak Power[dBm]	Conducted Limit[dBm]	Verdict
BLE_1M	Ant1	2402	0.27	≤30	PASS
		2440	2.68	≤30	PASS
		2480	0.60	≤30	PASS
BLE_2M	Ant1	2402	0.19	≤30	PASS
		2440	2.67	≤30	PASS
		2480	0.46	≤30	PASS

Test Graphs

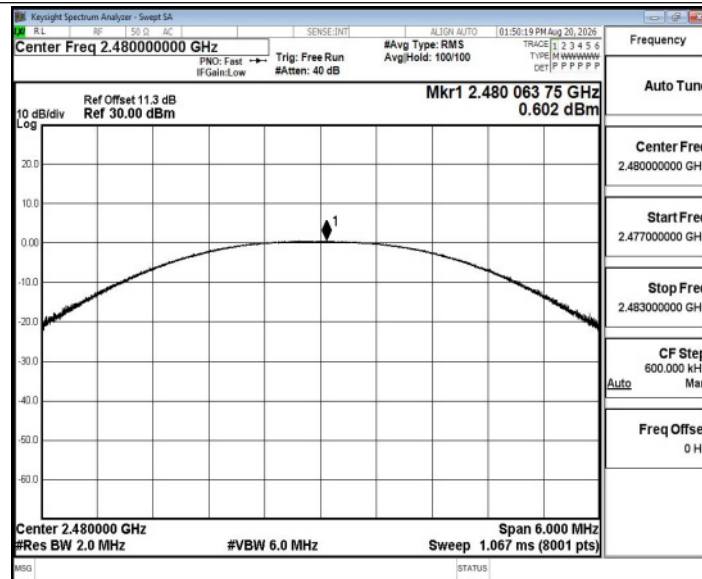
BLE_1M_Ant1_2402



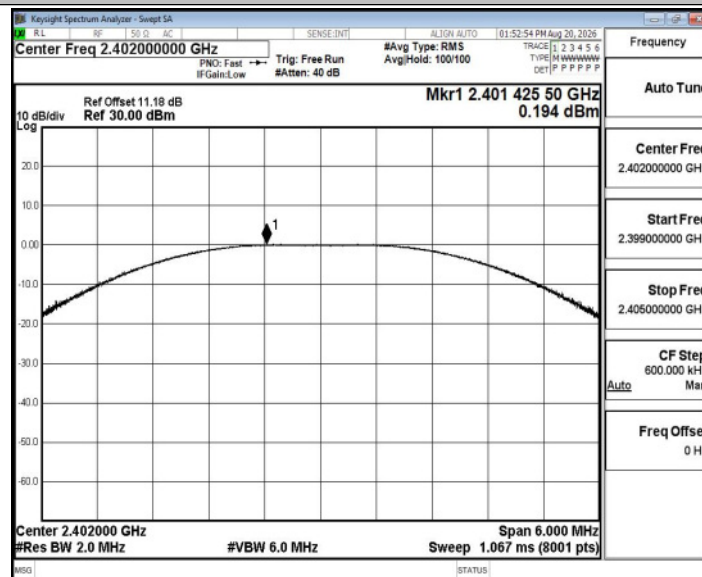
BLE_1M_Ant1_2440



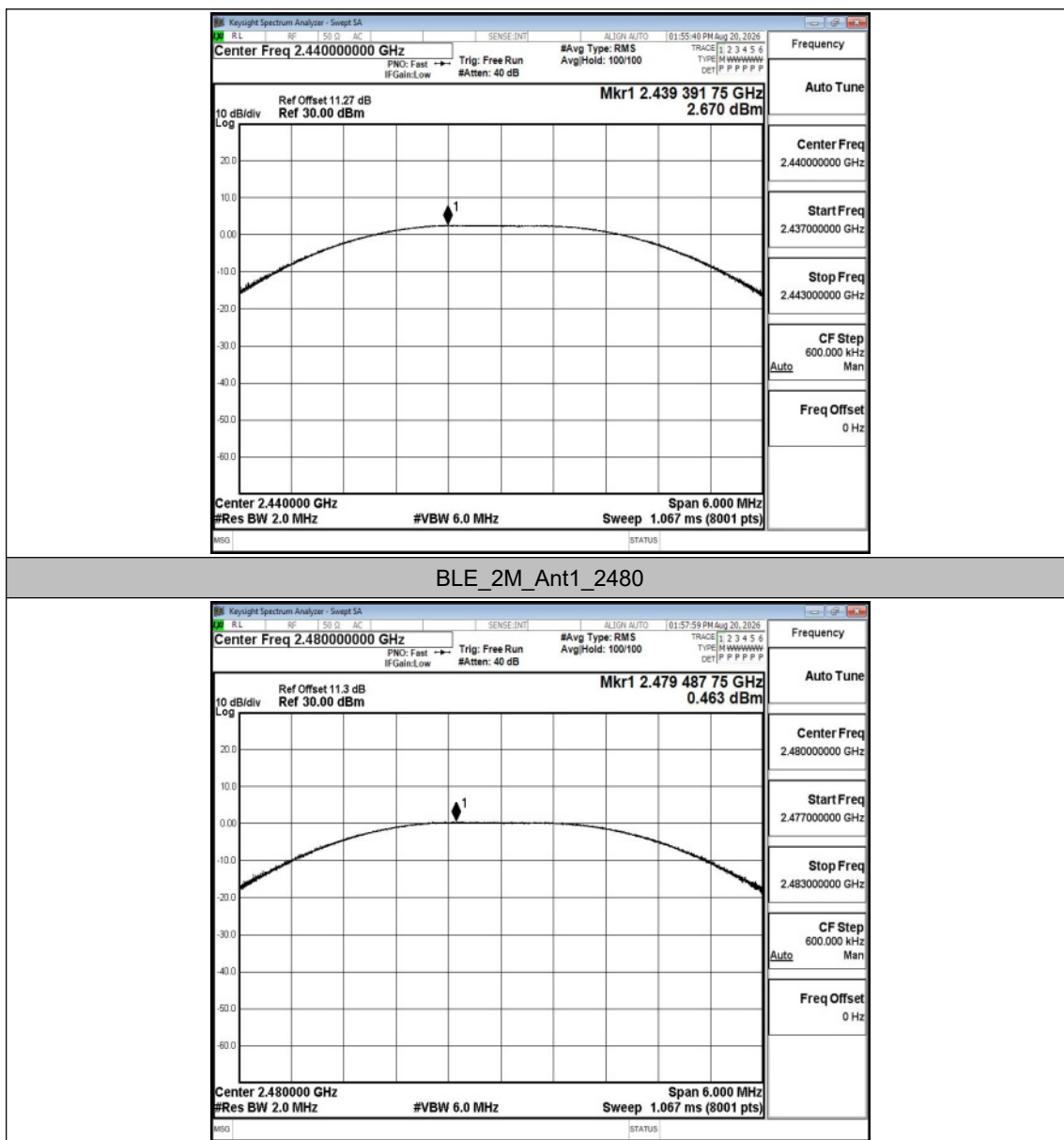
BLE_1M_Ant1_2480



BLE_2M_Ant1_2402



BLE_2M_Ant1_2440



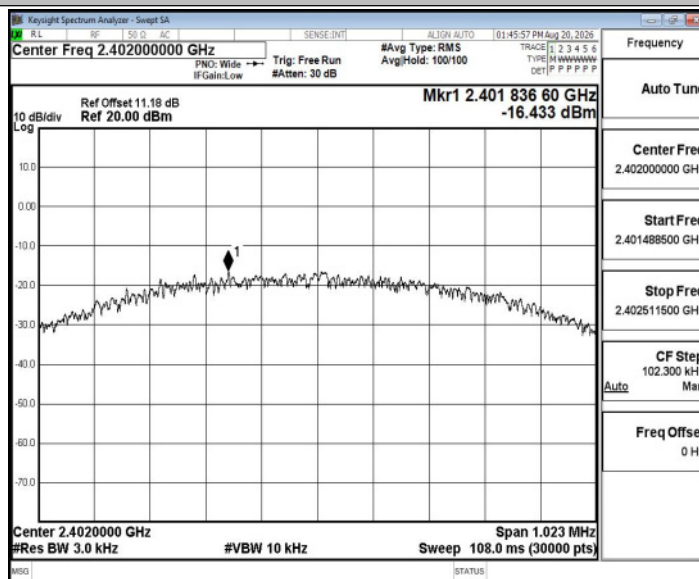
A.3 Maximum power spectral density

Test Result

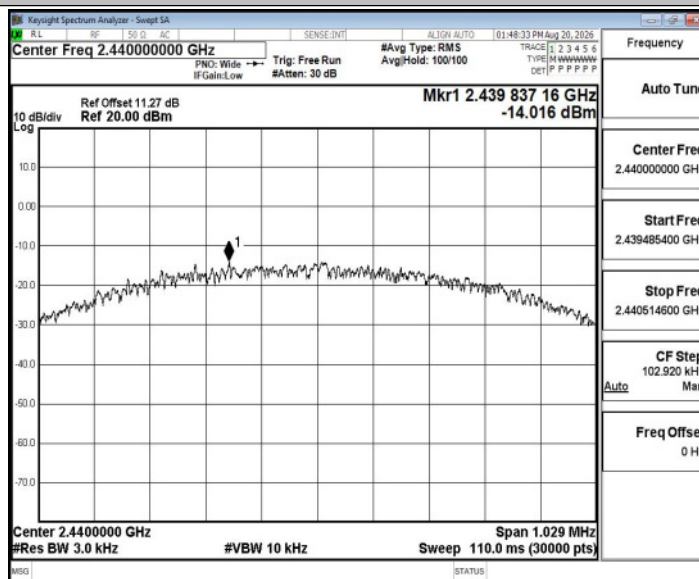
TestMode	Antenna	Freq(MHz)	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-16.43	≤8.00	PASS
		2440	-14.02	≤8.00	PASS
		2480	-16.17	≤8.00	PASS
BLE_2M	Ant1	2402	-19.53	≤8.00	PASS
		2440	-17.30	≤8.00	PASS
		2480	-19.33	≤8.00	PASS

Test Graphs

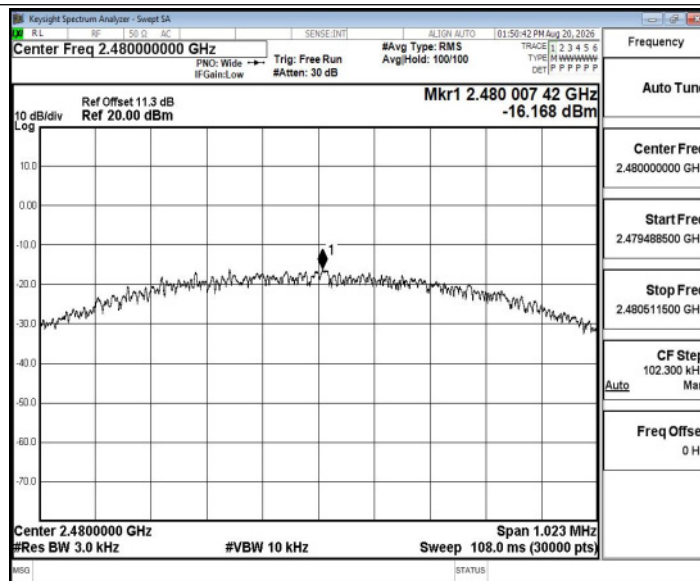
BLE_1M_Ant1_2402



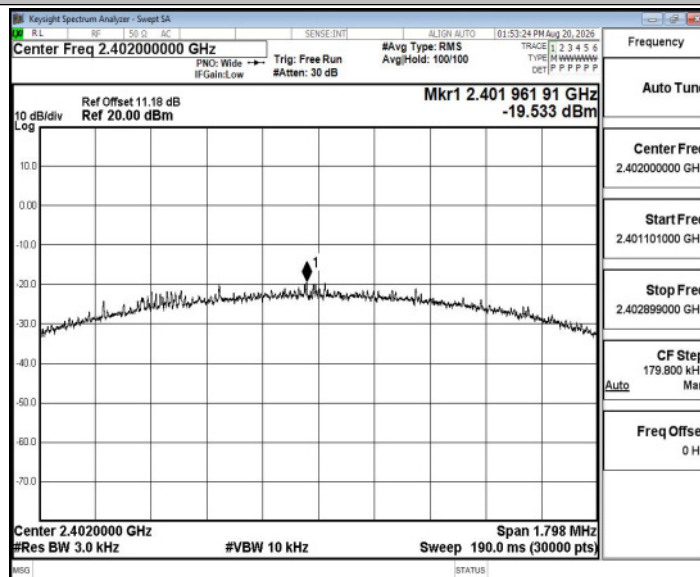
BLE_1M_Ant1_2440



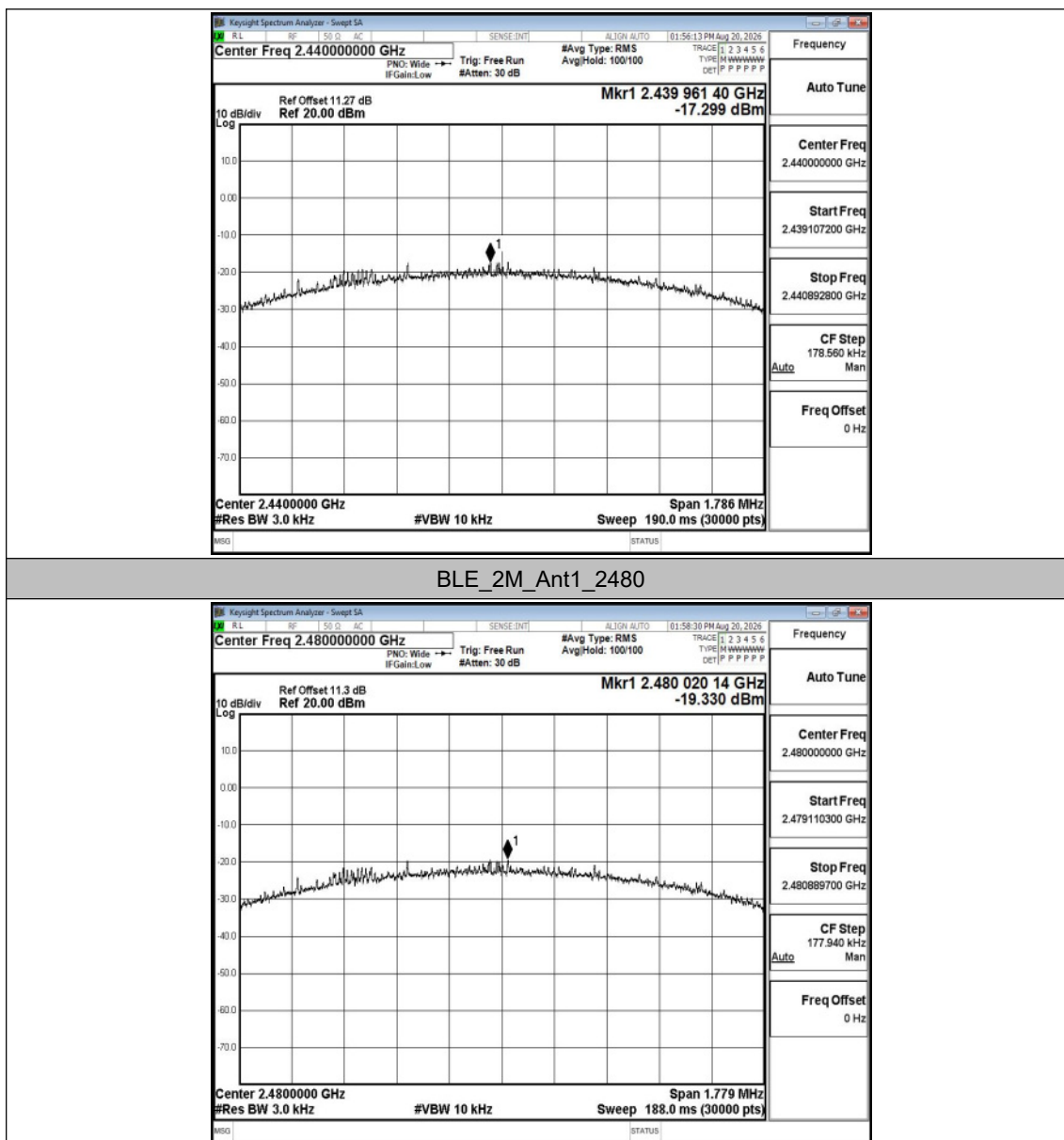
BLE_1M_Ant1_2480



BLE_2M_Ant1_2402



BLE_2M_Ant1_2440



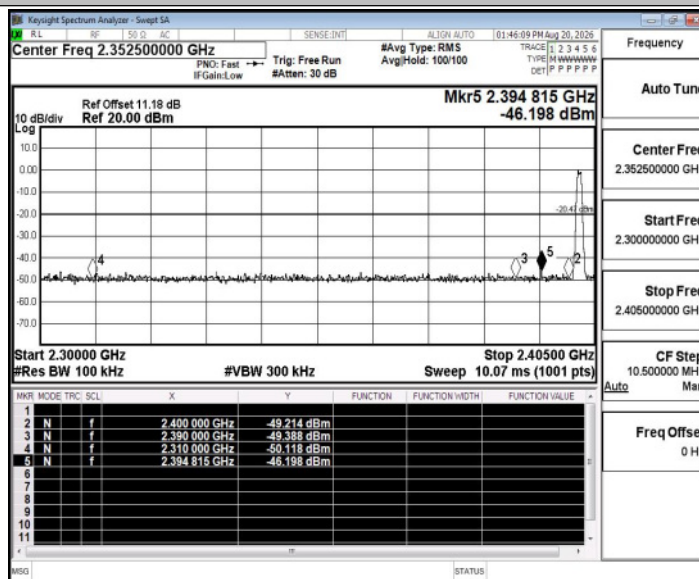
A.4 Band edge measurements

Test Result

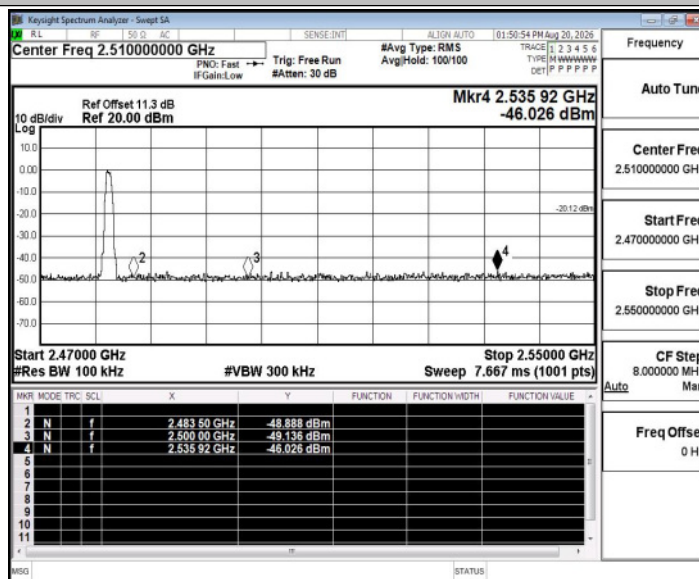
TestMode	Antenna	ChName	Freq(MHz)	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	-0.47	-46.2	≤-20.47	PASS
		High	2480	-0.12	-46.03	≤-20.12	PASS
BLE_2M	Ant1	Low	2402	-0.55	-46.05	≤-20.55	PASS
		High	2480	-0.84	-44.9	≤-20.84	PASS

Test Graphs

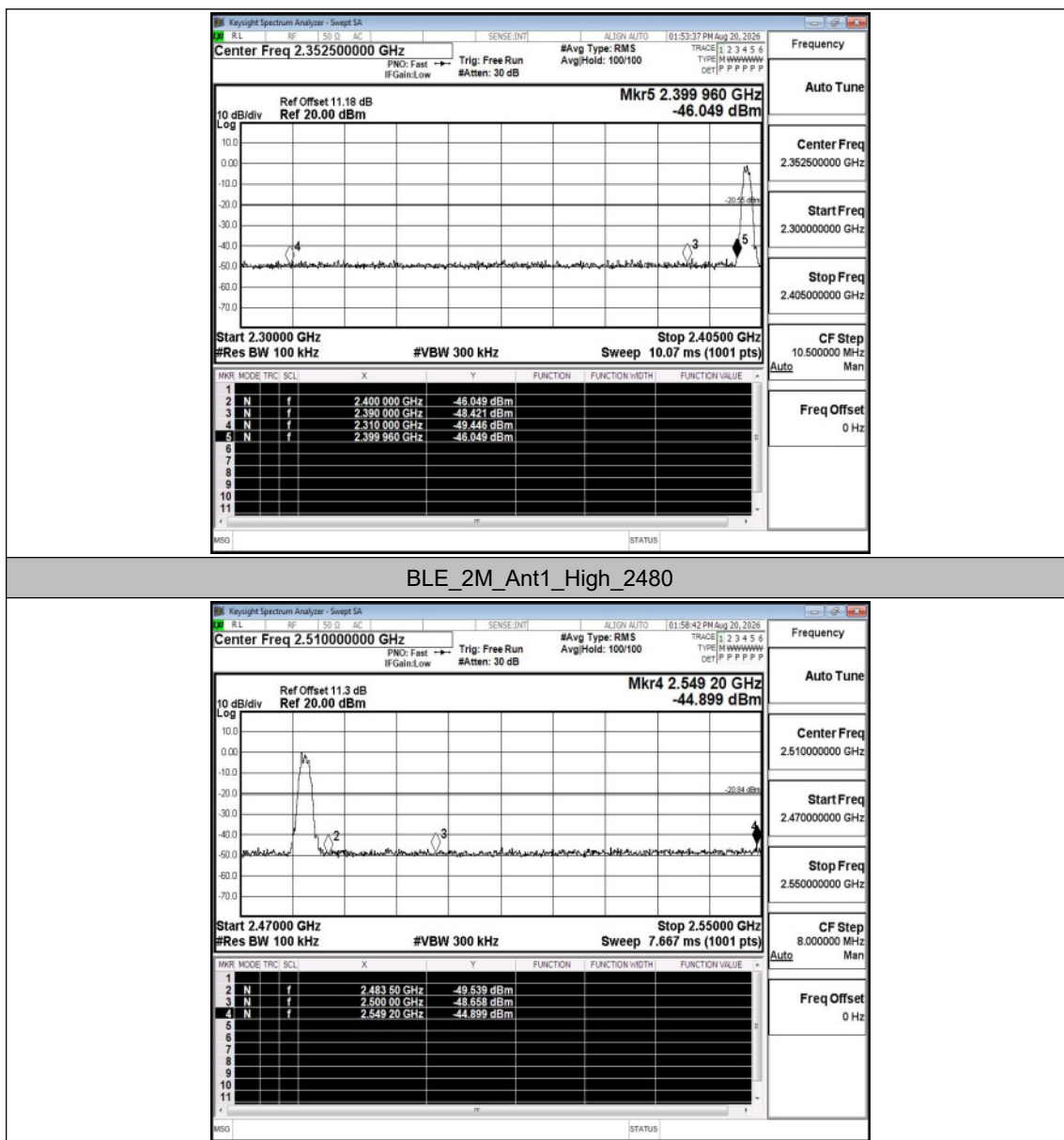
BLE_1M_Ant1_Low_2402



BLE_1M_Ant1_High_2480



BLE_2M_Ant1_Low_2402



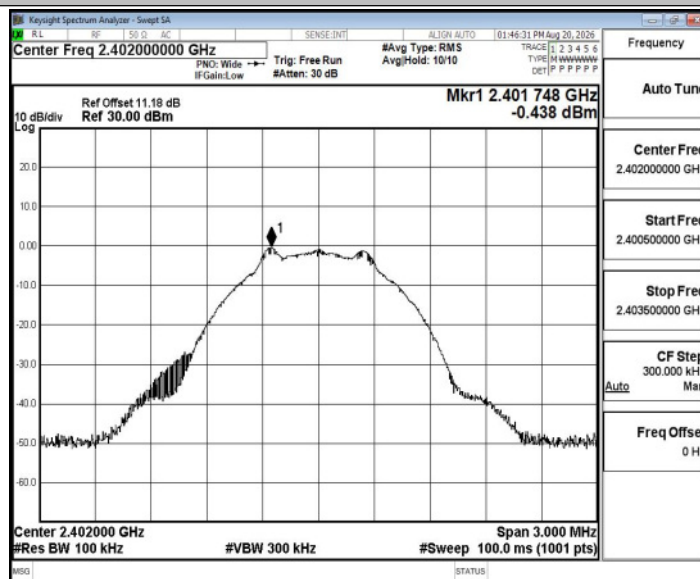
A.5 Conducted Spurious Emission

Test Result

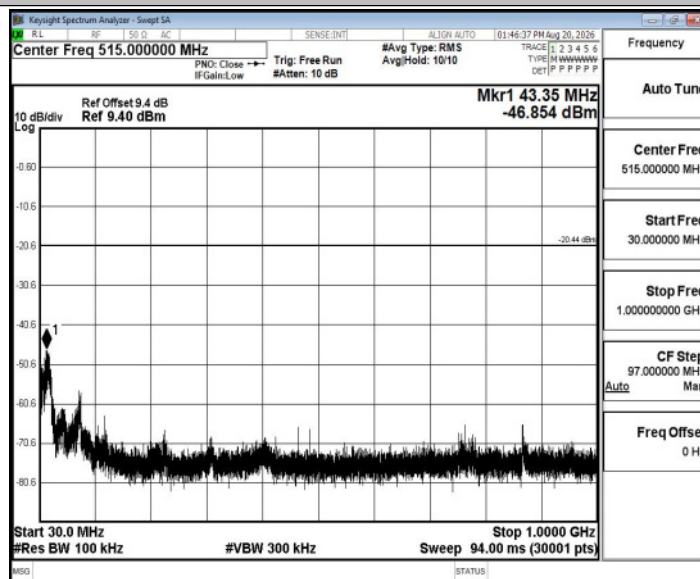
TestMode	Antenna	Freq(MHz)	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	Reference	-0.44	-0.44	---	PASS
			30~1000	-0.44	-46.85	≤-20.44	PASS
			1000~26500	-0.44	-37.76	≤-20.44	PASS
		2440	Reference	2.04	2.04	---	PASS
			30~1000	2.04	-47.36	≤-17.96	PASS
			1000~26500	2.04	-37.04	≤-17.96	PASS
		2480	Reference	-0.08	-0.08	---	PASS
			30~1000	-0.08	-46.38	≤-20.08	PASS
			1000~26500	-0.08	-42.06	≤-20.08	PASS
BLE_2M	Ant1	2402	Reference	-0.51	-0.51	---	PASS
			30~1000	-0.51	-46.73	≤-20.51	PASS
			1000~26500	-0.51	-42.56	≤-20.51	PASS
		2440	Reference	1.93	1.93	---	PASS
			30~1000	1.93	-47.03	≤-18.07	PASS
			1000~26500	1.93	-36.94	≤-18.07	PASS
		2480	Reference	-0.25	-0.25	---	PASS
			30~1000	-0.25	-46.39	≤-20.25	PASS
			1000~26500	-0.25	-37.75	≤-20.25	PASS

Test Graphs

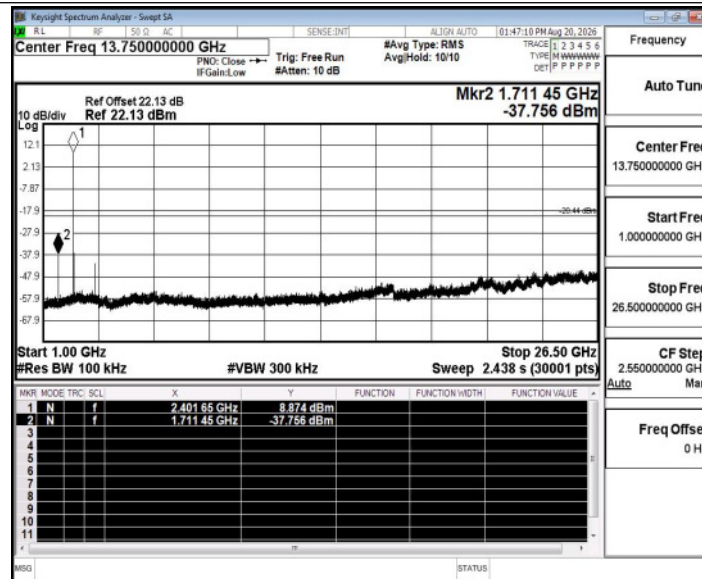
BLE_1M_Ant1_2402_0~Reference



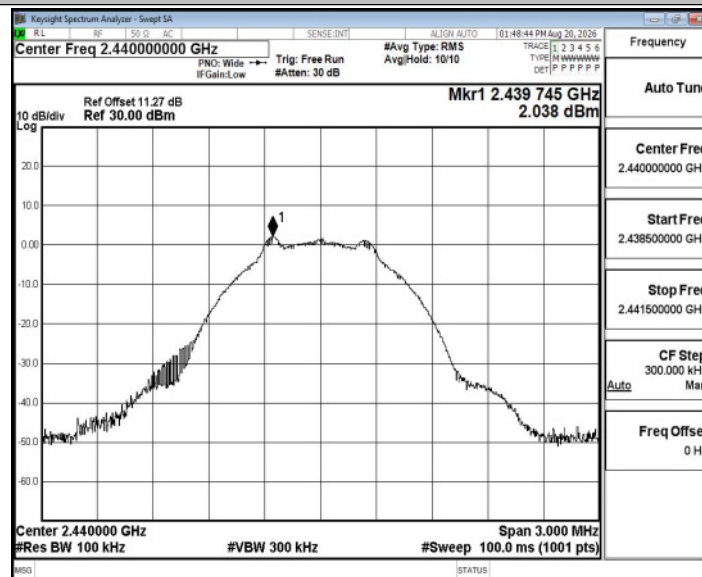
BLE_1M_Ant1_2402_30~1000



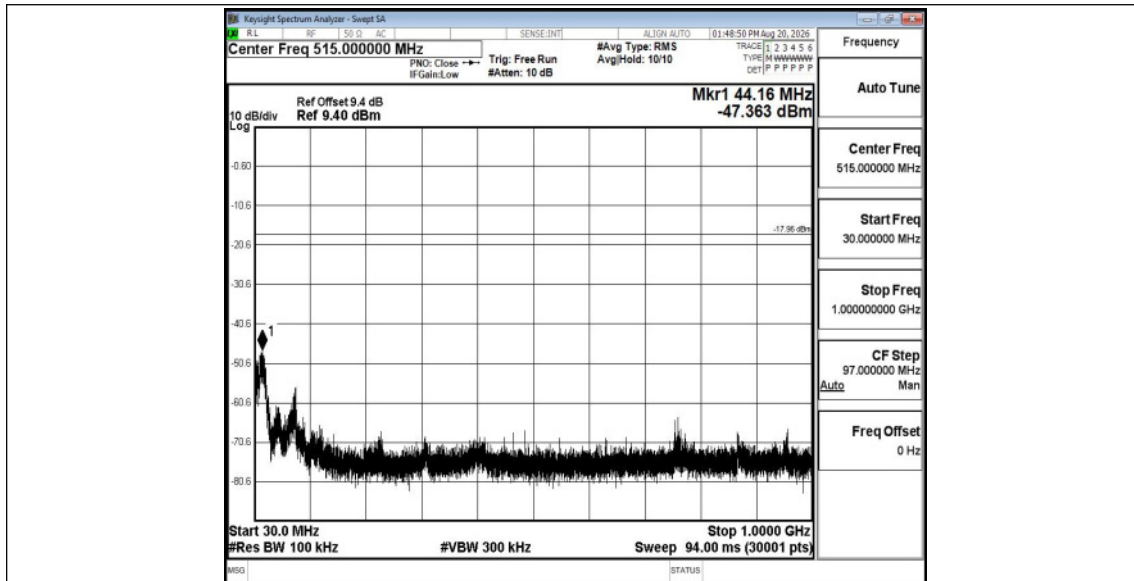
BLE_1M_Ant1_2402_1000~26500



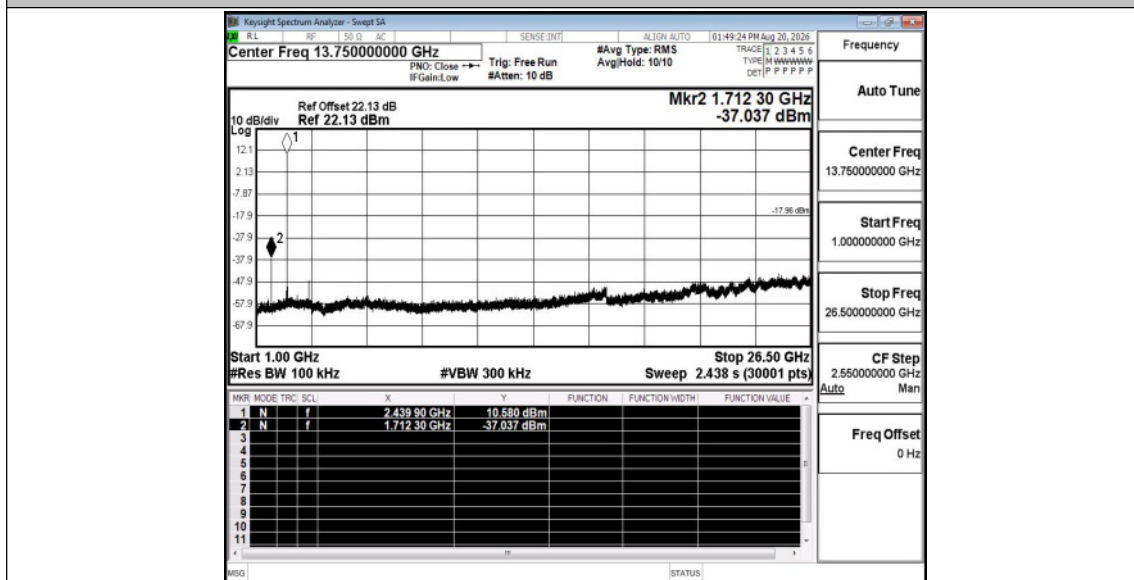
BLE_1M_Ant1_2440_0~Reference



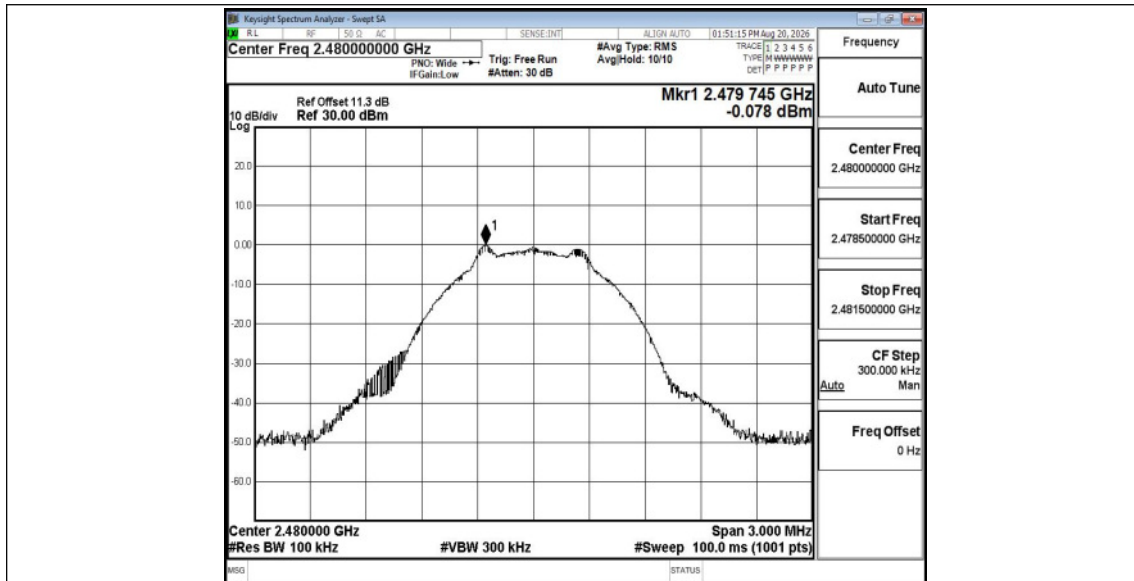
BLE_1M_Ant1_2440_30~1000



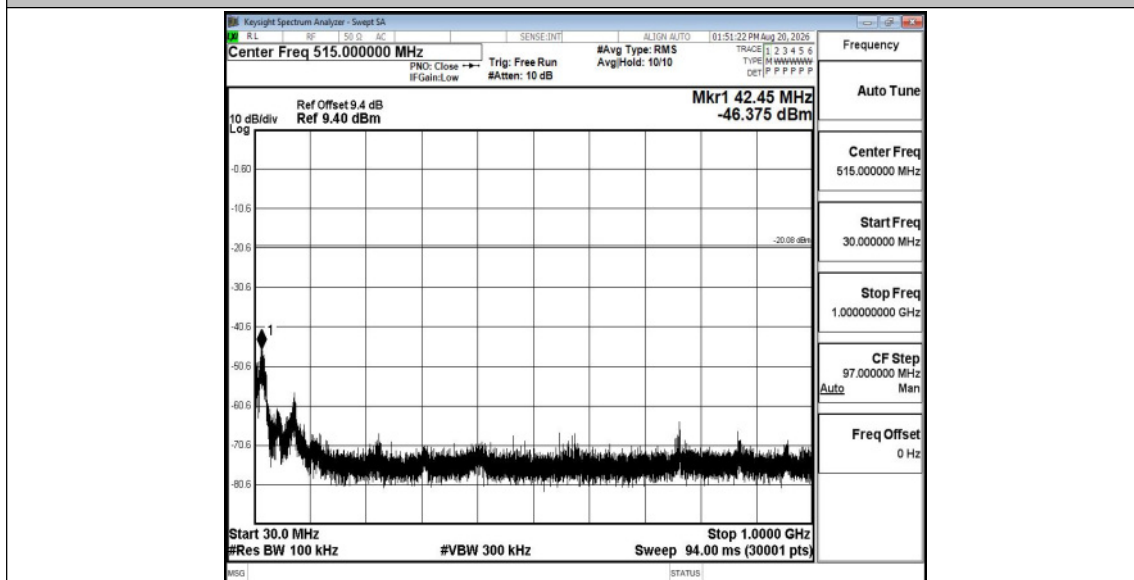
BLE_1M_Ant1_2440_1000~26500



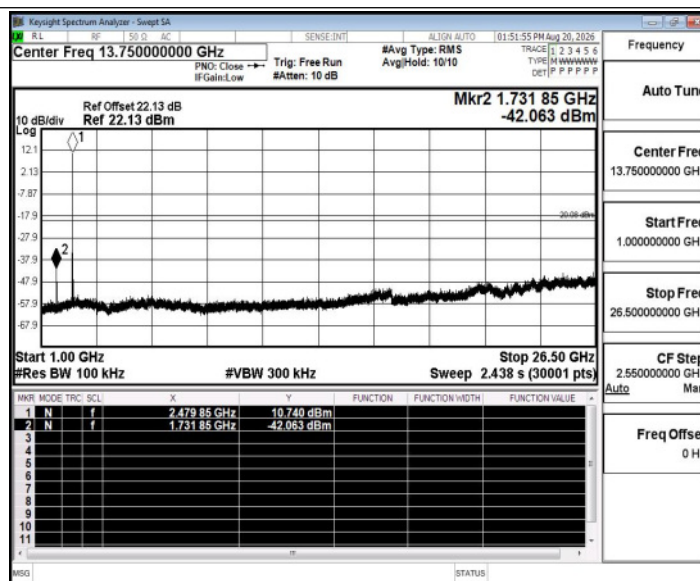
BLE_1M_Ant1_2480_0~Reference



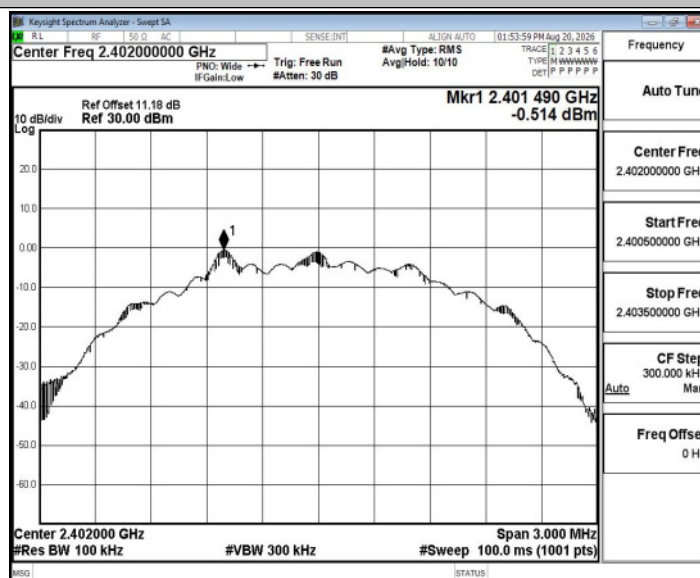
BLE_1M_Ant1_2480_30~1000



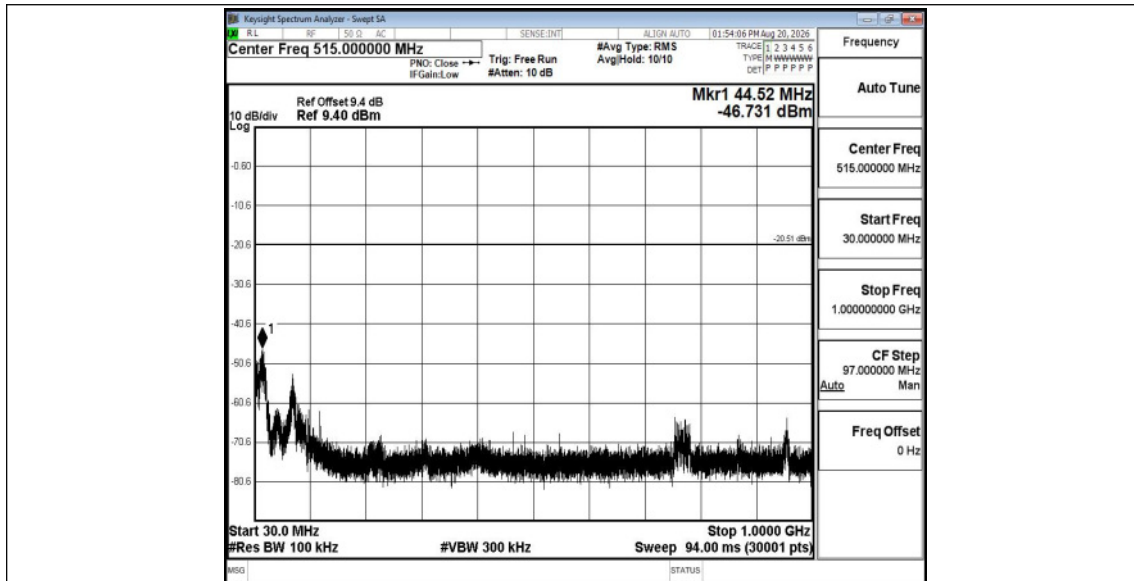
BLE_1M_Ant1_2480_1000~26500



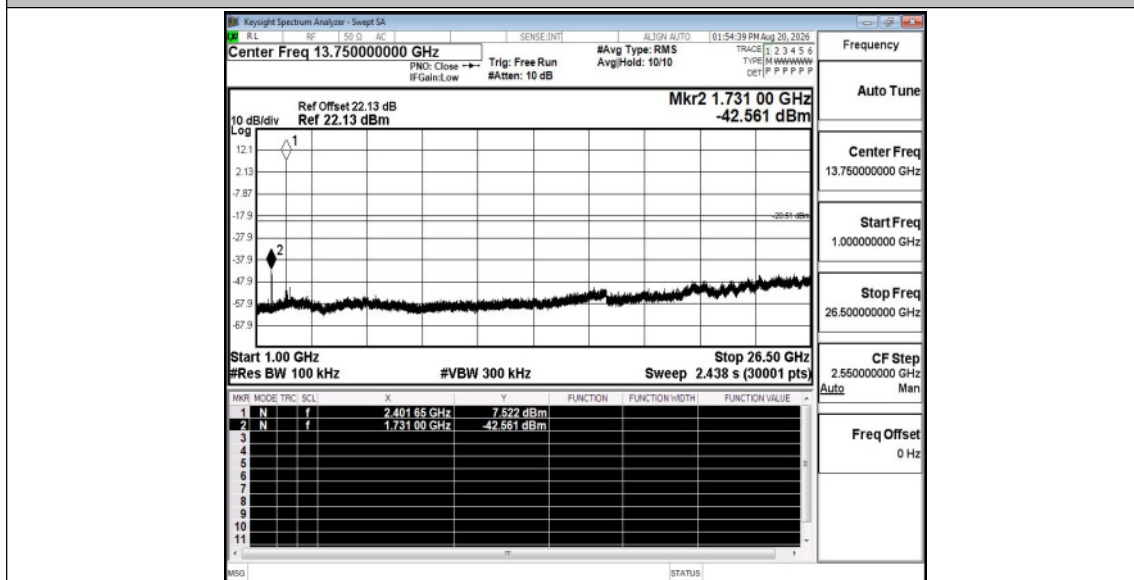
BLE_2M_Ant1_2402_0~Reference



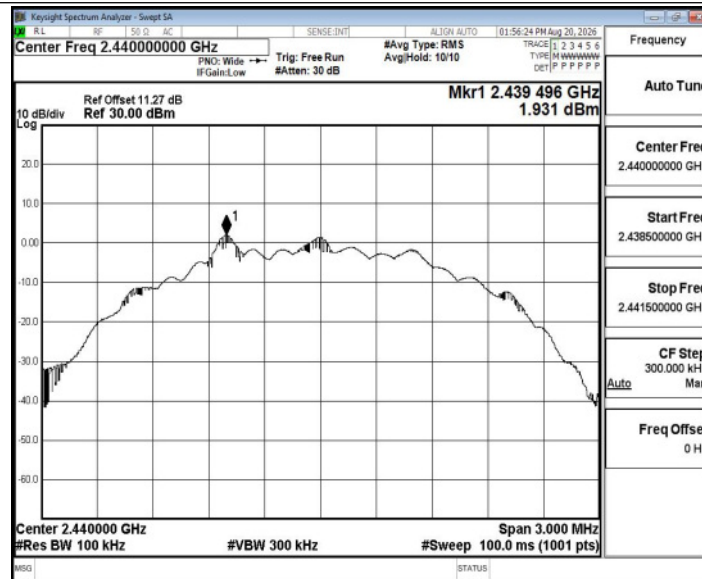
BLE_2M_Ant1_2402_30~1000



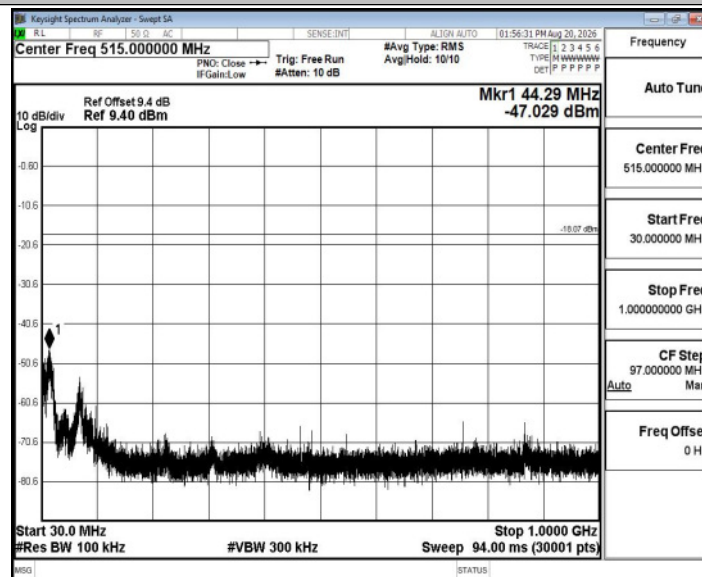
BLE_2M_Ant1_2402_1000~26500



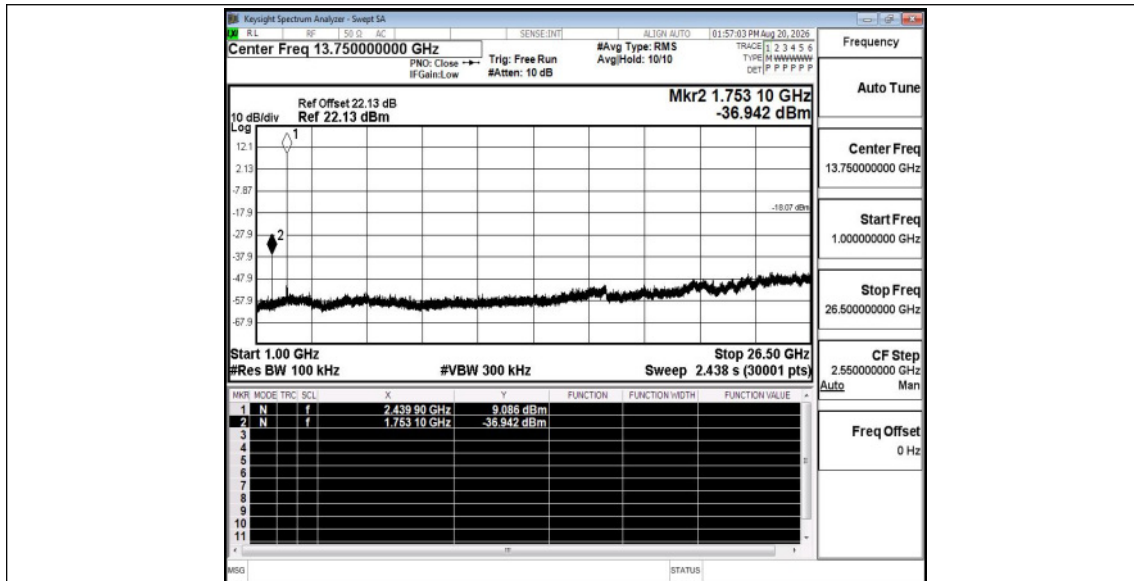
BLE_2M_Ant1_2440_0~Reference



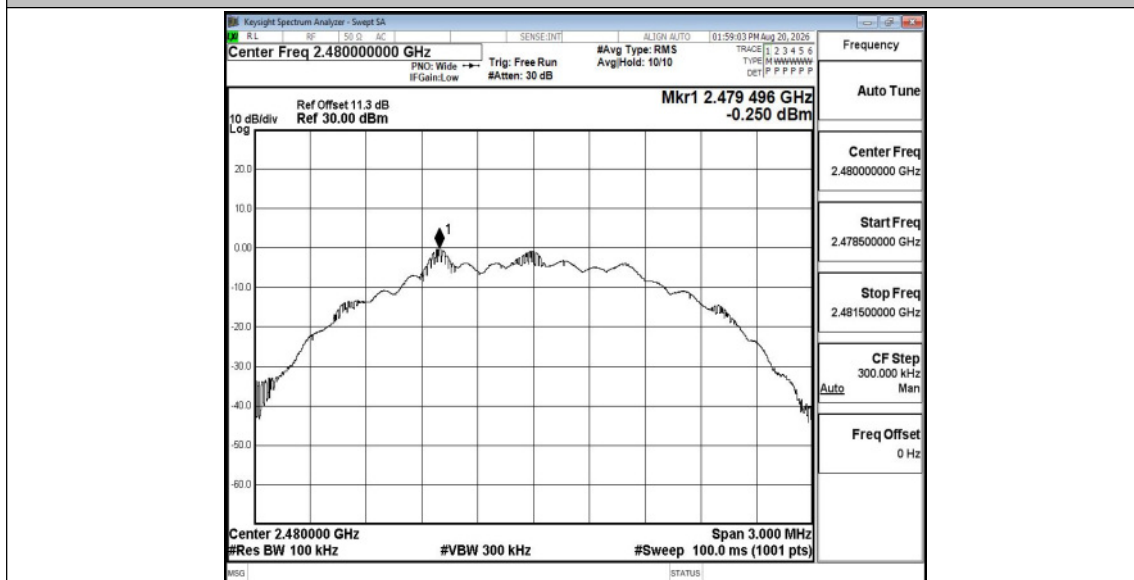
BLE_2M_Ant1_2440_30~1000



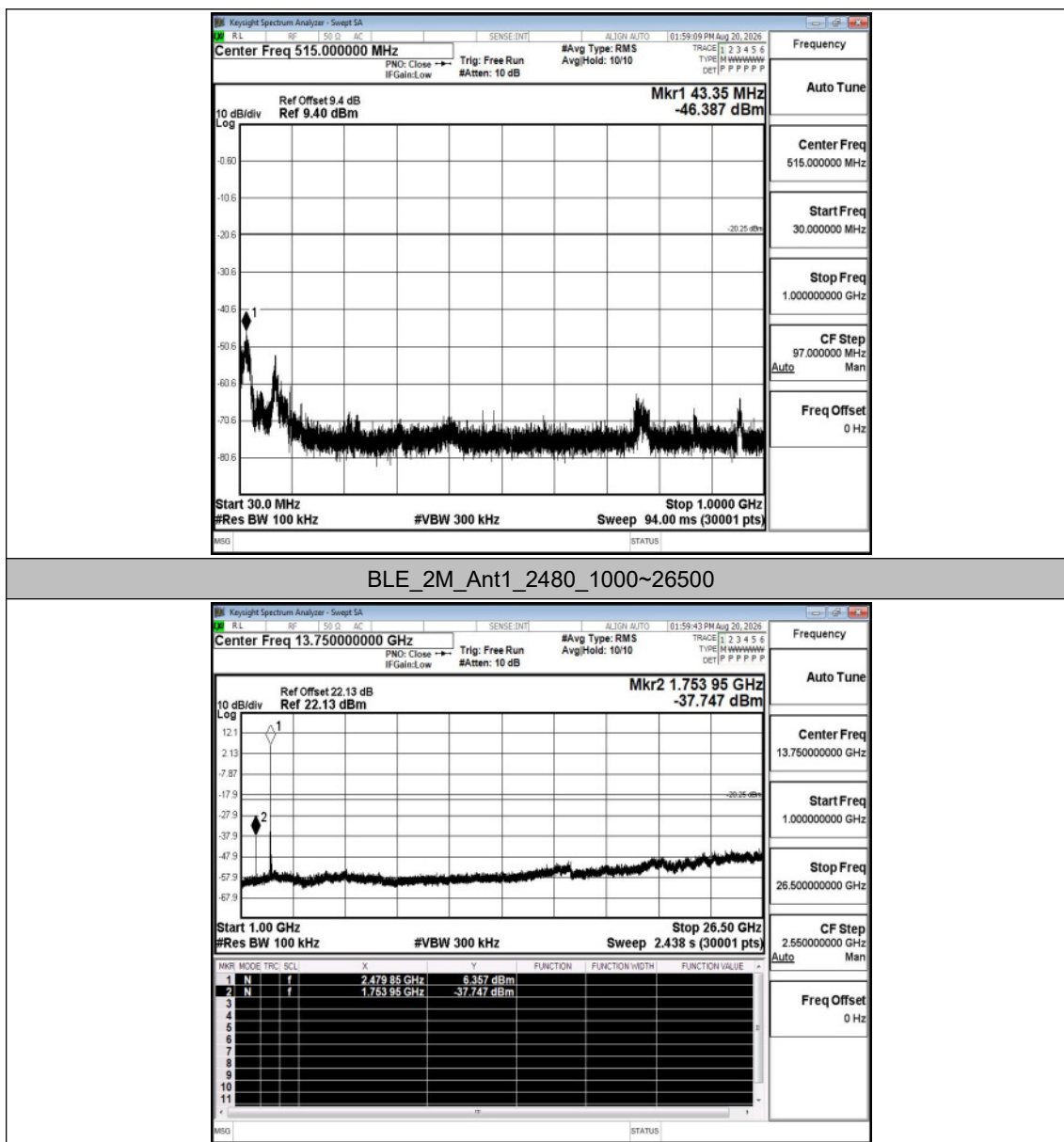
BLE_2M_Ant1_2440_1000~26500



BLE_2M_Ant1_2480_0~Reference



BLE_2M_Ant1_2480_30~1000



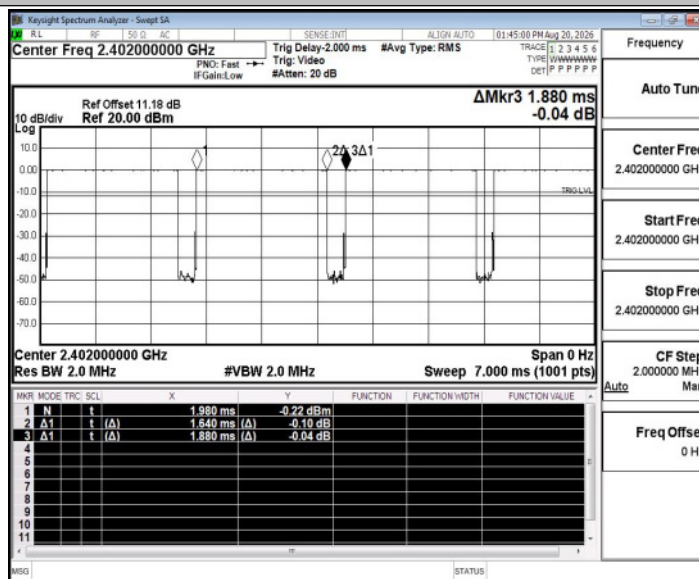
A.6 Duty Cycle

Test Result

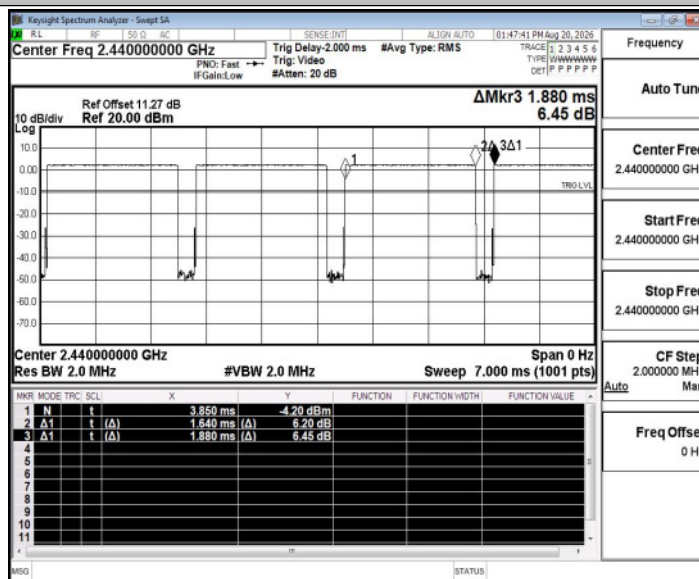
TestMode	Antenna	Freq(MHz)	ON Time [ms]	Period [ms]	X	DC [%]	xFactor	Limit	Verdict
BLE_1M	Ant1	2402	1.64	1.88	0.8723	87.23	0.59	---	---
		2440	1.64	1.88	0.8723	87.23	0.59	---	---
		2480	1.64	1.88	0.8723	87.23	0.59	---	---
BLE_2M	Ant1	2402	0.82	1.25	0.6560	65.60	1.83	---	---
		2440	0.82	1.25	0.6560	65.60	1.83	---	---
		2480	0.81	1.24	0.6532	65.32	1.85	---	---

Test Graphs

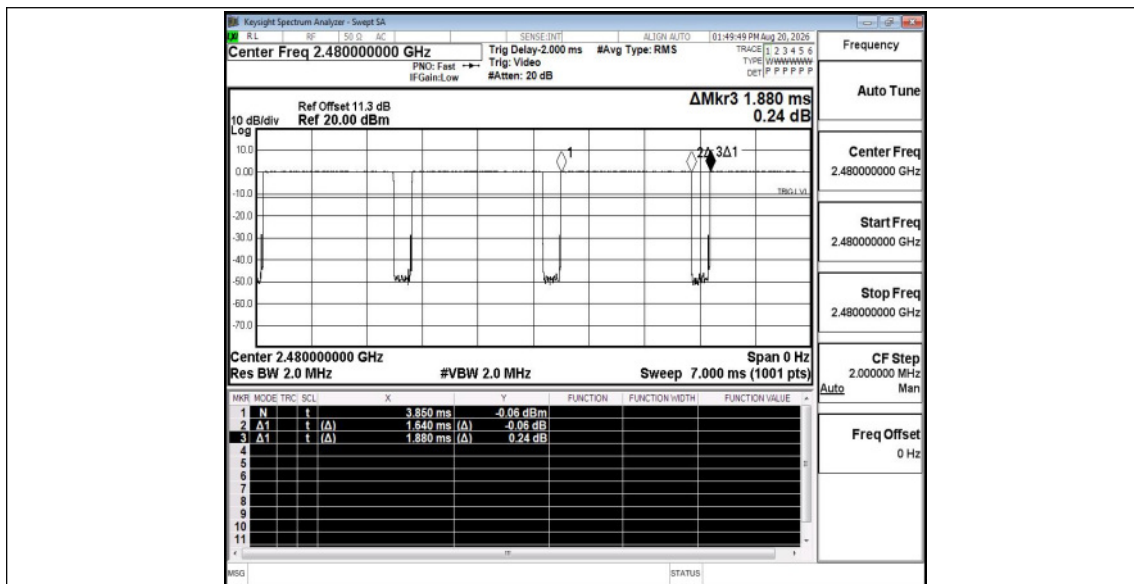
BLE_1M_Ant1_2402



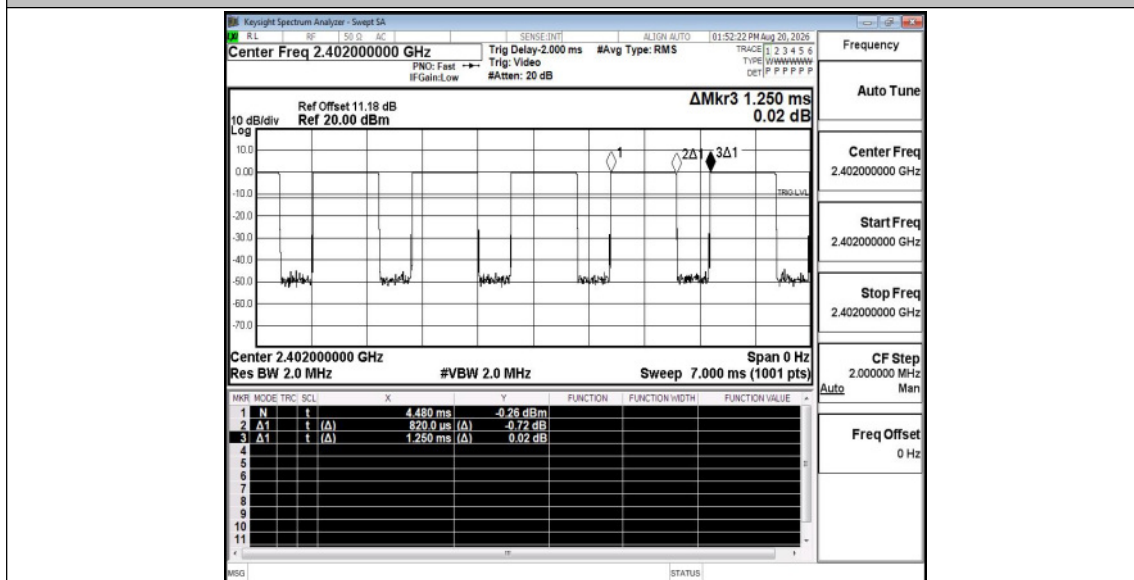
BLE_1M_Ant1_2440



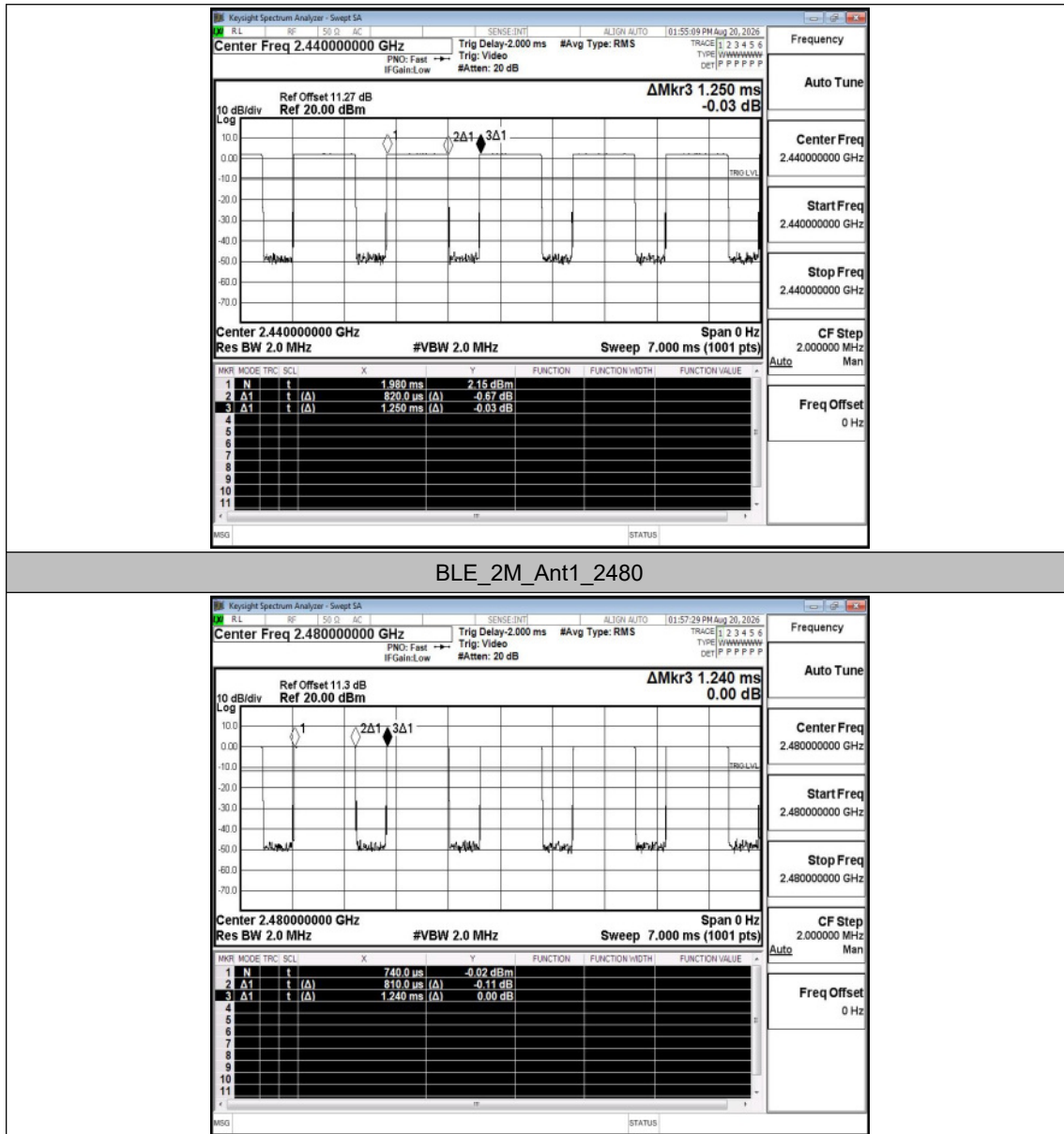
BLE_1M_Ant1_2480



BLE_2M_Ant1_2402



BLE_2M_Ant1_2440



A.7 Emissions in Restricted Bands

Test Result

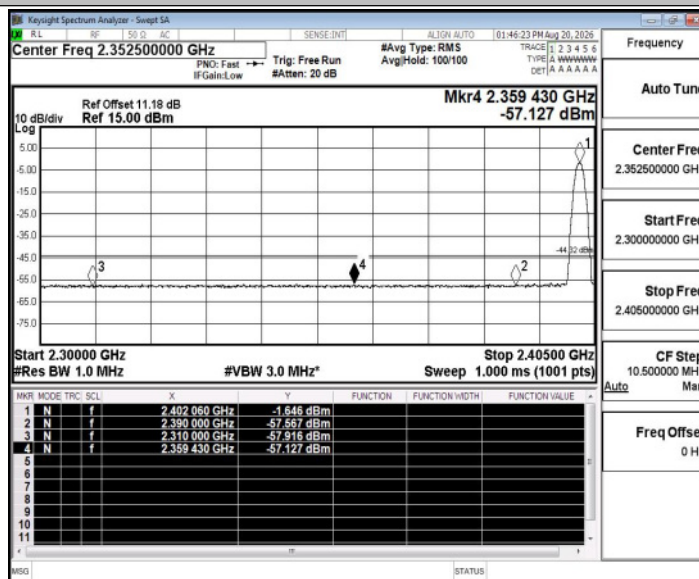
TestMode	Antenna	ChName	Freq(MHz)	Detector	Freq [MHz]	Result [dBm]	Limit [dBm]	Gain [dBi]	DC Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Verdict
BLE_1M	Ant1	Low	2402	AV	2310.000	-57.92	≤-44.32	2.53	0.59	40.40	≤54	PASS
				AV	2359.430	-57.13	≤-44.32	2.53	0.59	41.19	≤54	PASS
				AV	2390.000	-57.57	≤-44.32	2.53	0.59	40.75	≤54	PASS
				Peak	2310.000	-49.68	≤-23.73	2.53	0.00	48.05	≤74	PASS
				Peak	2356.700	-47.05	≤-23.73	2.53	0.00	50.68	≤74	PASS
				Peak	2390.000	-51.08	≤-23.73	2.53	0.00	46.65	≤74	PASS
		High	2480	AV	2483.500	-56.54	≤-44.32	2.53	0.59	41.78	≤54	PASS
				AV	2483.760	-54.87	≤-44.32	2.53	0.59	43.45	≤54	PASS
				AV	2500.000	-57.46	≤-44.32	2.53	0.59	40.86	≤54	PASS
				Peak	2483.500	-49.49	≤-23.73	2.53	0.00	48.24	≤74	PASS
				Peak	2484.000	-36.41	≤-23.73	2.53	0.00	61.32	≤74	PASS
				Peak	2500.000	-49.83	≤-23.73	2.53	0.00	47.90	≤74	PASS
BLE_2M	Ant1	Low	2402	AV	2310.000	-58.01	≤-45.56	2.53	1.83	41.55	≤54	PASS
				AV	2325.620	-57.03	≤-45.56	2.53	1.83	42.53	≤54	PASS
				AV	2390.000	-57.7	≤-45.56	2.53	1.83	41.86	≤54	PASS
				Peak	2310.000	-48.41	≤-23.73	2.53	0.00	49.32	≤74	PASS
				Peak	2324.255	-46.81	≤-23.73	2.53	0.00	50.92	≤74	PASS
				Peak	2390.000	-49.91	≤-23.73	2.53	0.00	47.82	≤74	PASS
		High	2480	AV	2483.500	-56.82	≤-45.58	2.53	1.85	42.76	≤54	PASS
				AV	2484.320	-55.27	≤-45.58	2.53	1.85	44.31	≤54	PASS
				AV	2500.000	-57.71	≤-45.58	2.53	1.85	41.87	≤54	PASS
				Peak	2483.500	-42.89	≤-23.73	2.53	0.00	54.84	≤74	PASS
				Peak	2483.600	-36.84	≤-23.73	2.53	0.00	60.89	≤74	PASS
				Peak	2500.000	-50.19	≤-23.73	2.53	0.00	47.54	≤74	PASS

Note:

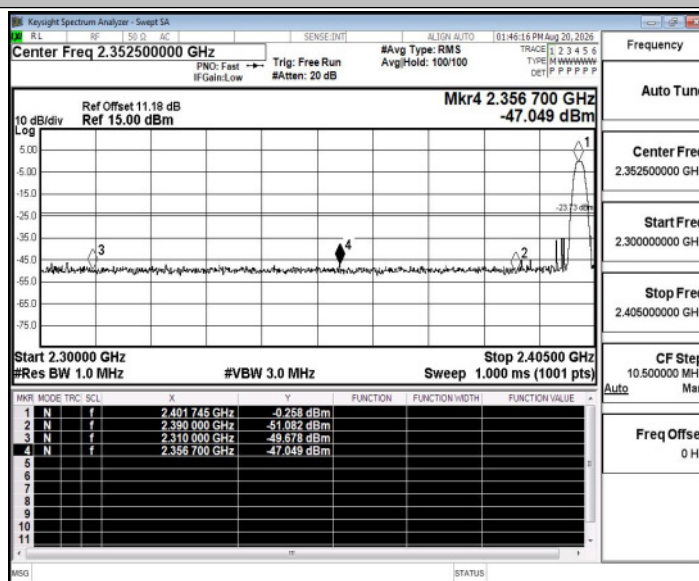
1. The Antenna Gain is compensated in the graph.
2. The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.

Test Graphs

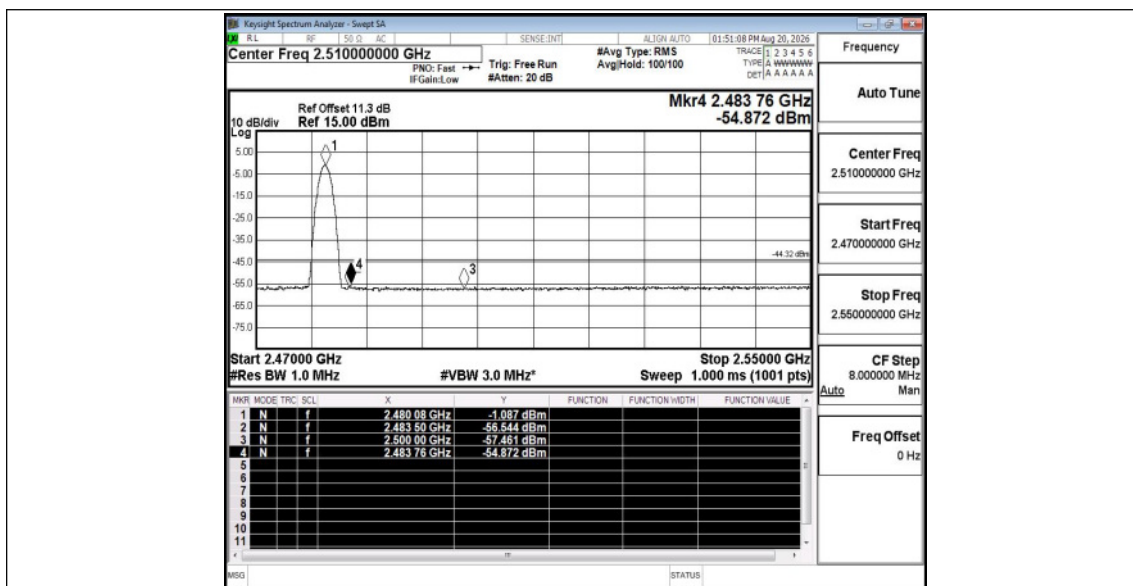
BLE_1M_Ant1_Low_2402_AV



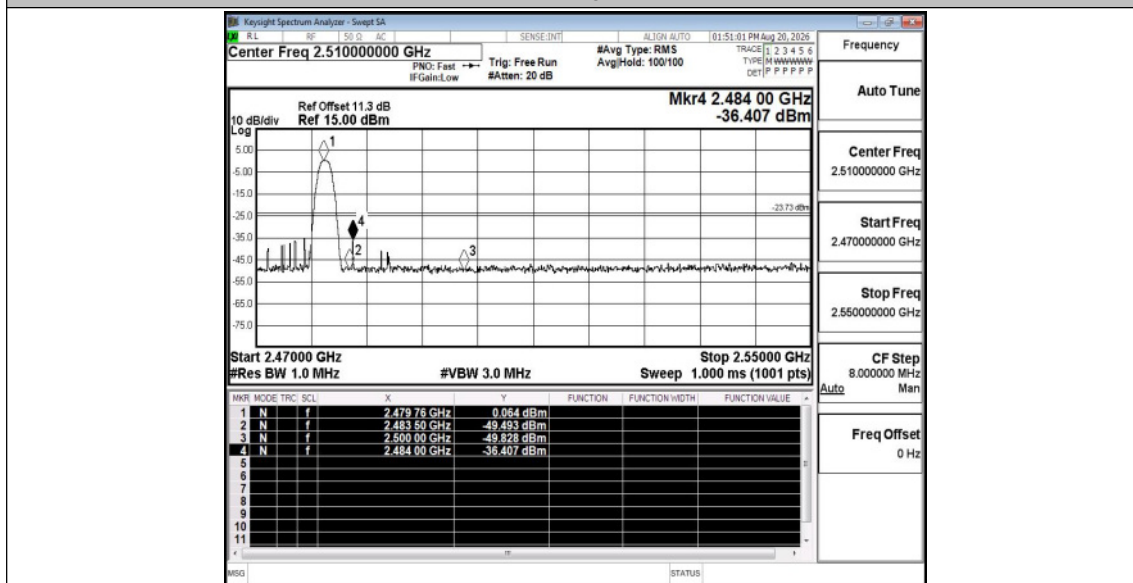
BLE_1M_Ant1_Low_2402_Peak



BLE_1M_Ant1_High_2480_AV



BLE_1M_Ant1_High_2480_Peak



BLE_2M_Ant1_Low_2402_AV

