

Appendix A

RF Test Data for BT LE (Conducted Measurement)

Product Name: Smart Color E-paper Photo Frame

Test Model: SEIABW001

Environmental Conditions

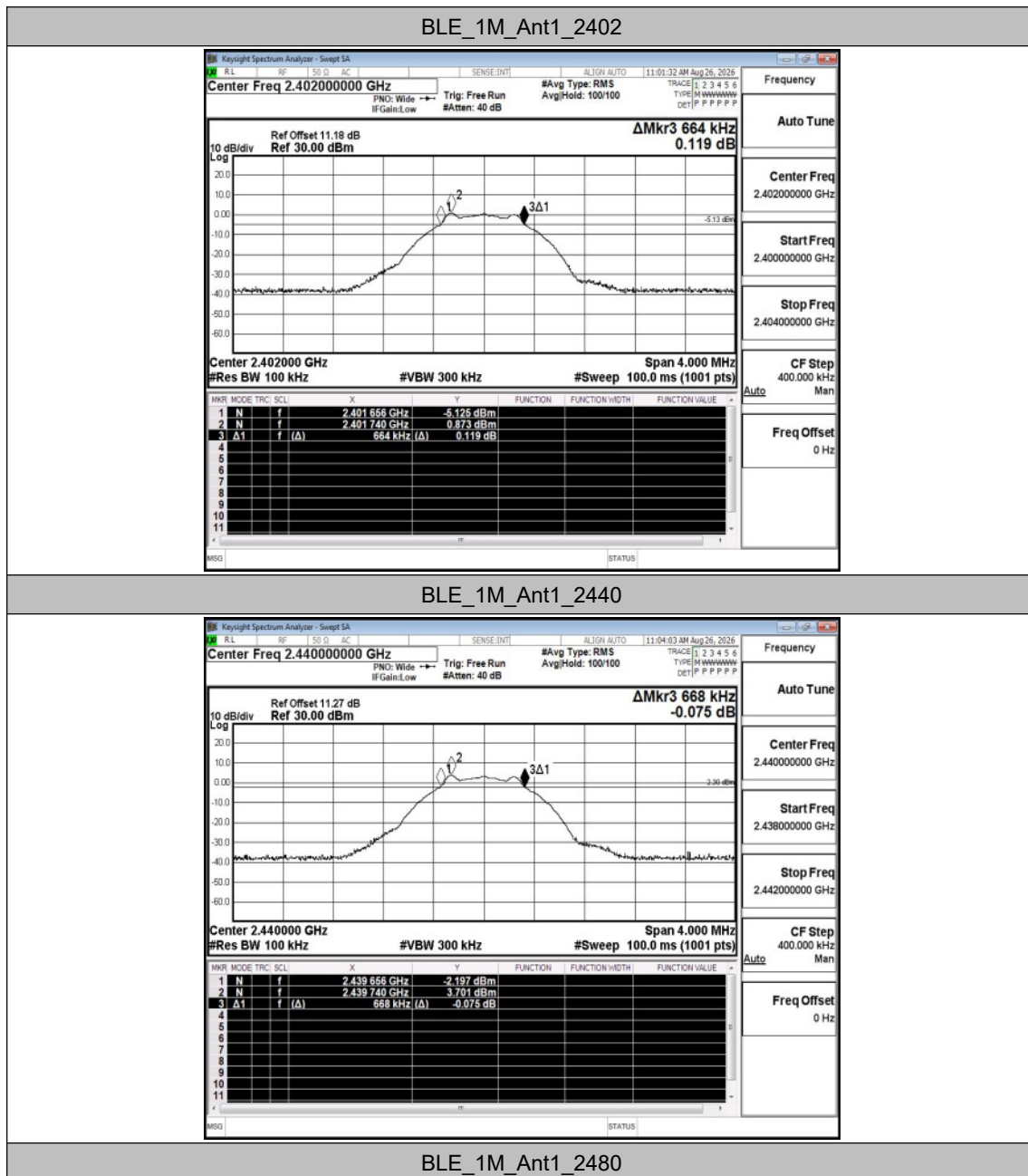
Temperature:	23.2°C
Relative Humidity:	54.3%
ATM Pressure:	100.0 kPa
Test Engineer:	Zhang hai
Supervised by:	Fengliu Tang

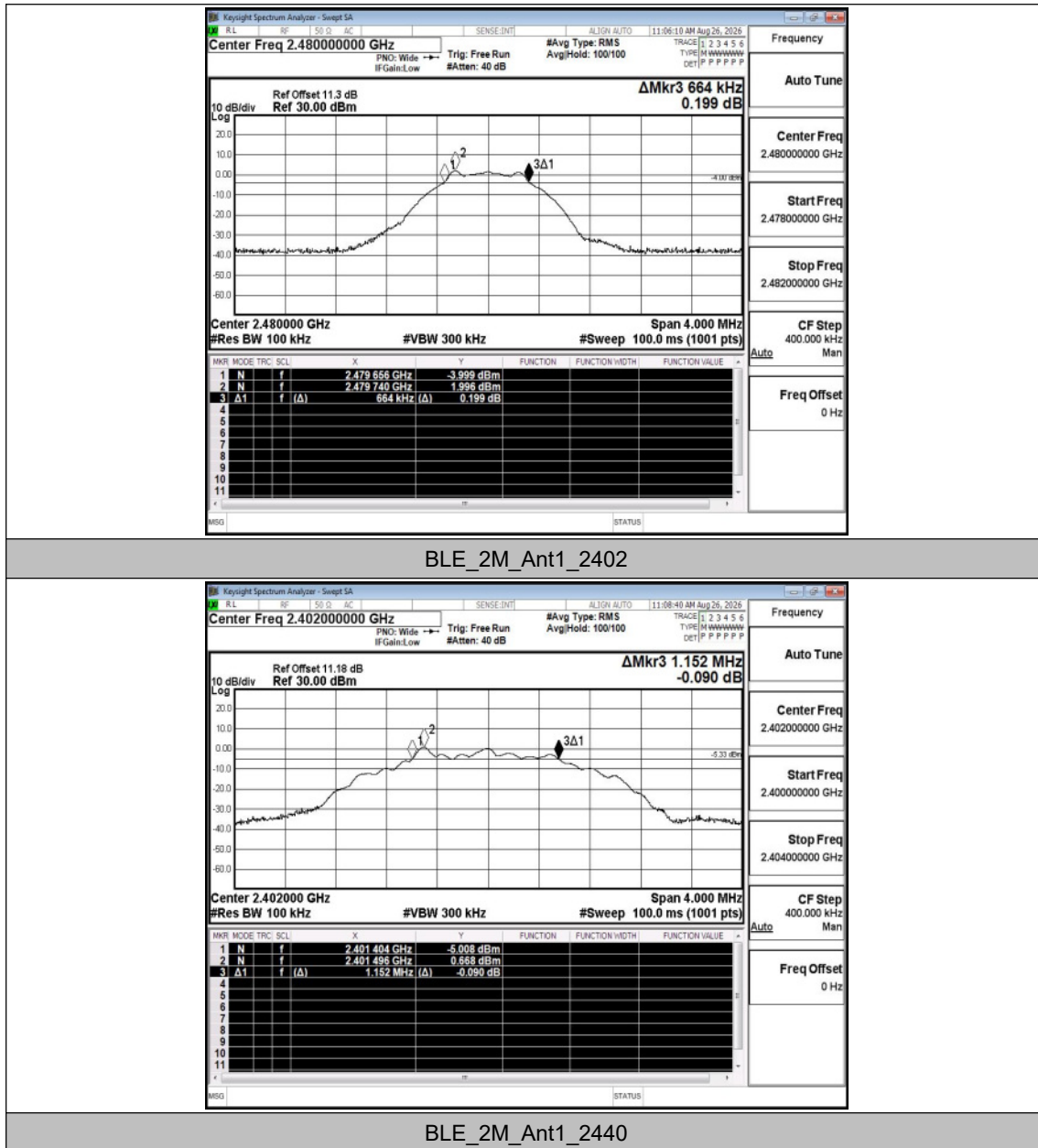
A.1 DTS Bandwidth

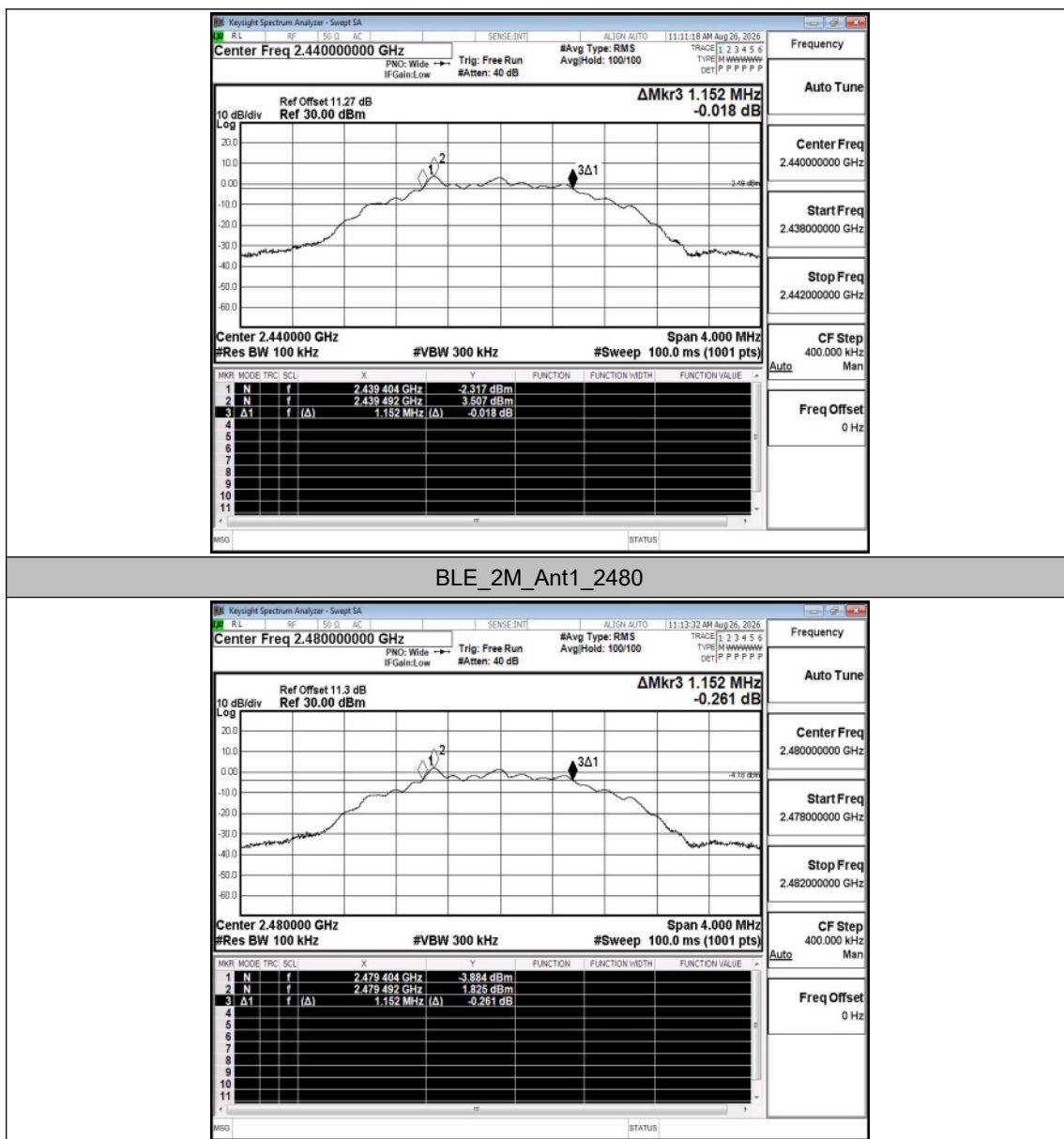
Test Result

TestMode	Antenna	Freq(MHz)	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.664	2401.656	2402.320	0.5	PASS
		2440	0.668	2439.656	2440.324	0.5	PASS
		2480	0.664	2479.656	2480.320	0.5	PASS
BLE_2M	Ant1	2402	1.152	2401.404	2402.556	0.5	PASS
		2440	1.152	2439.404	2440.556	0.5	PASS
		2480	1.152	2479.404	2480.556	0.5	PASS

Test Graphs





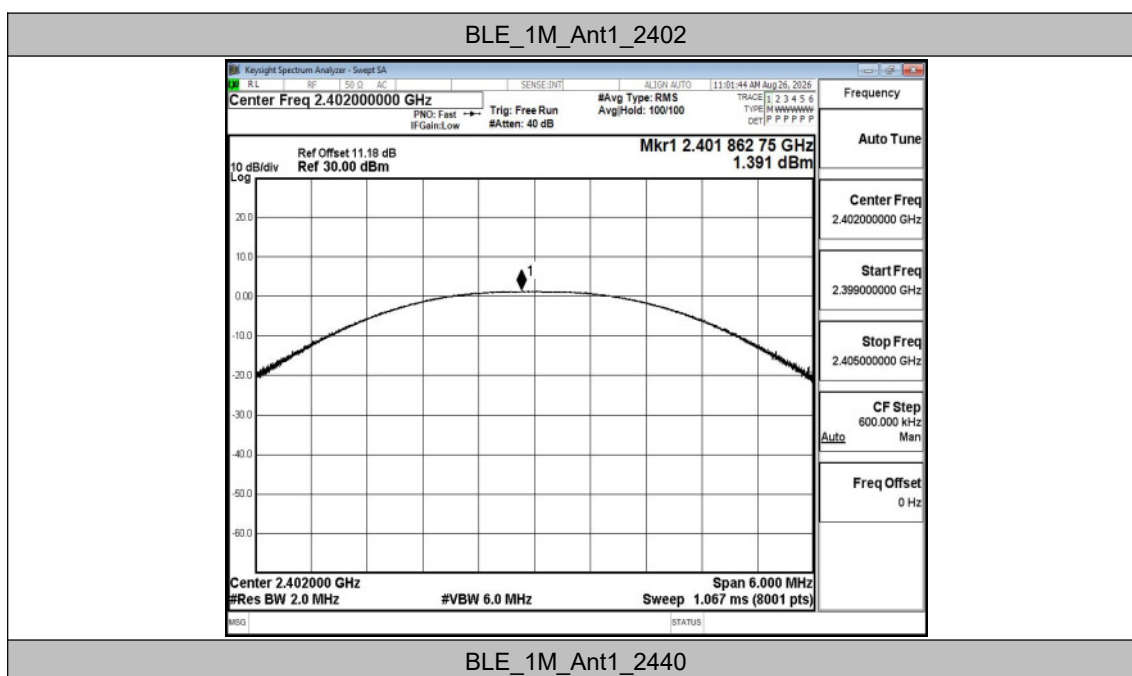


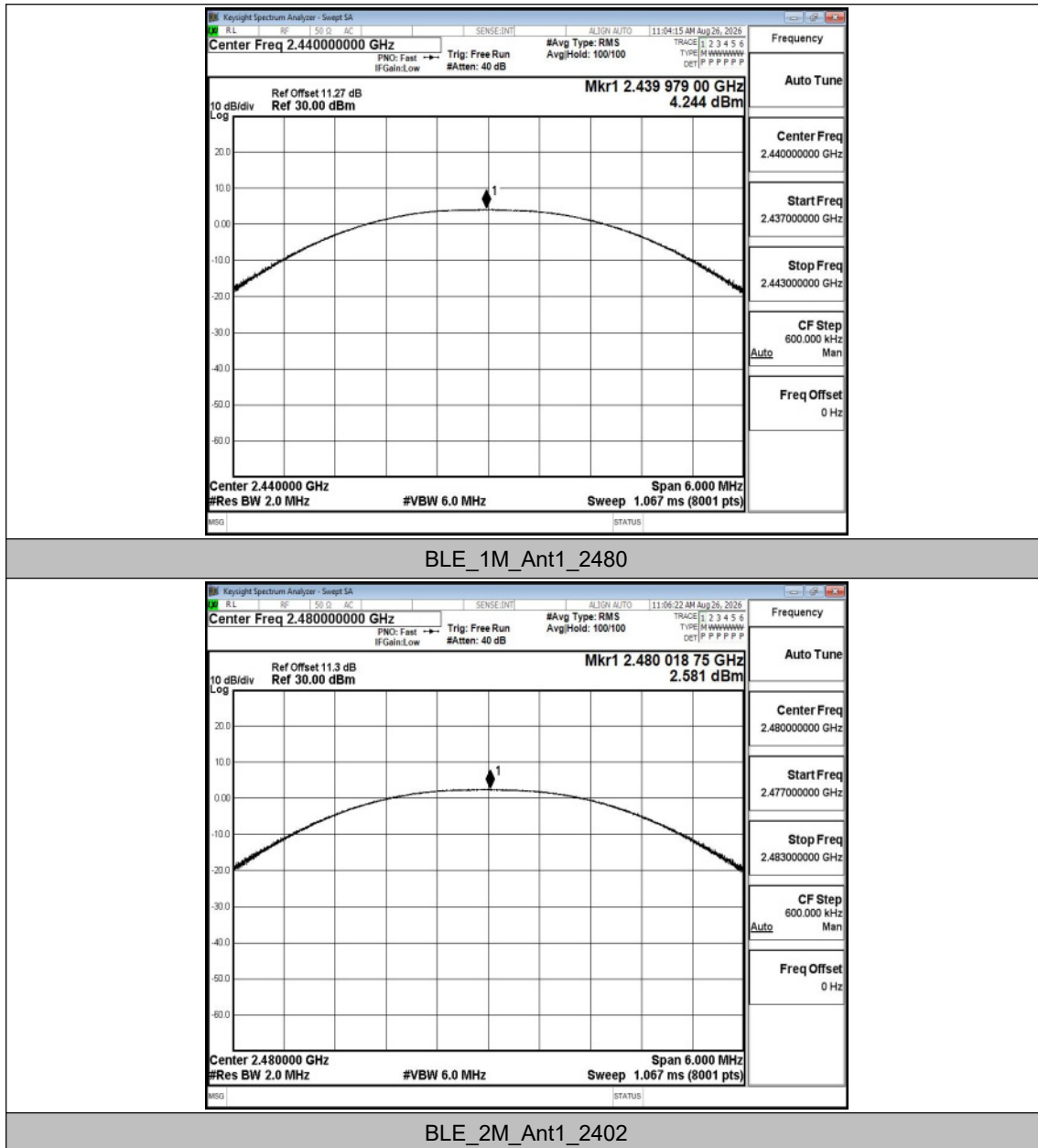
A.2 Maximum Peak conducted output power

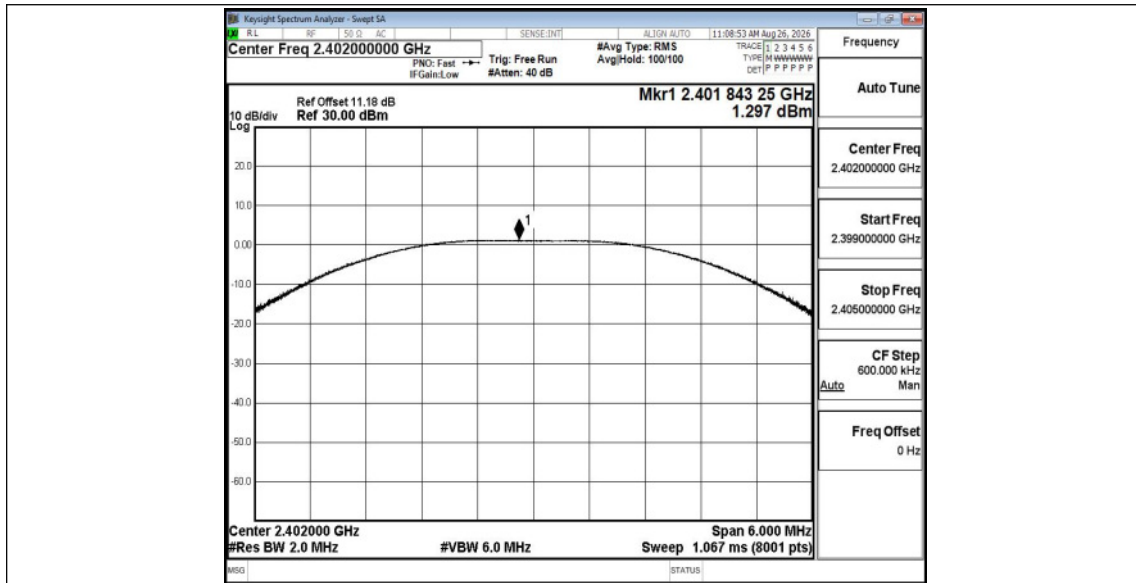
Test Result

TestMode	Antenna	Freq(MHz)	Conducted Peak Power[dBm]	Conducted Limit[dBm]	Verdict
BLE_1M	Ant1	2402	1.39	≤30	PASS
		2440	4.24	≤30	PASS
		2480	2.58	≤30	PASS
BLE_2M	Ant1	2402	1.30	≤30	PASS
		2440	4.08	≤30	PASS
		2480	2.43	≤30	PASS

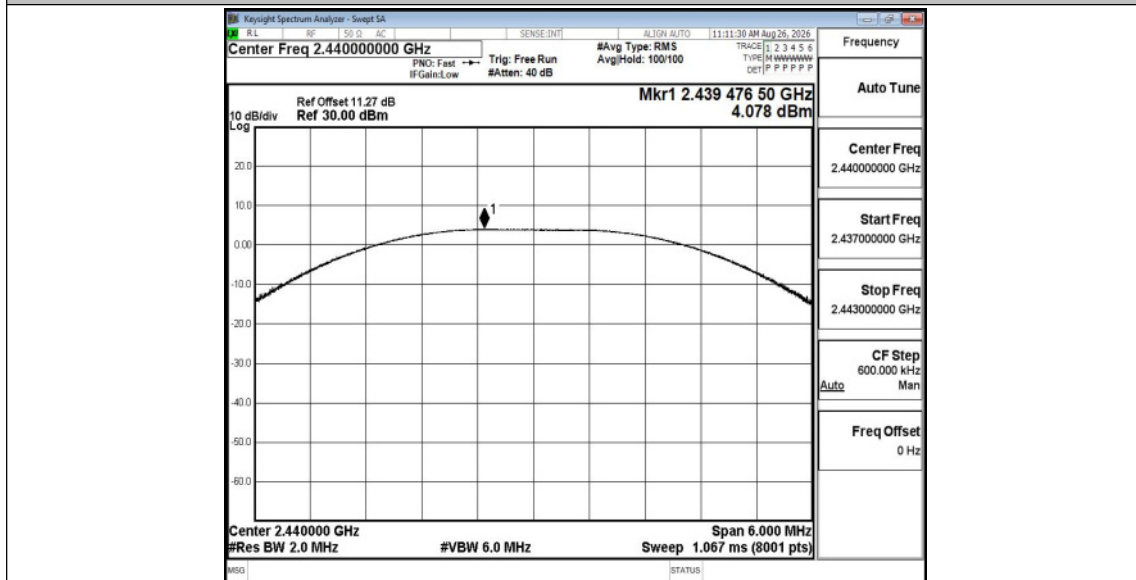
Test Graphs Peak



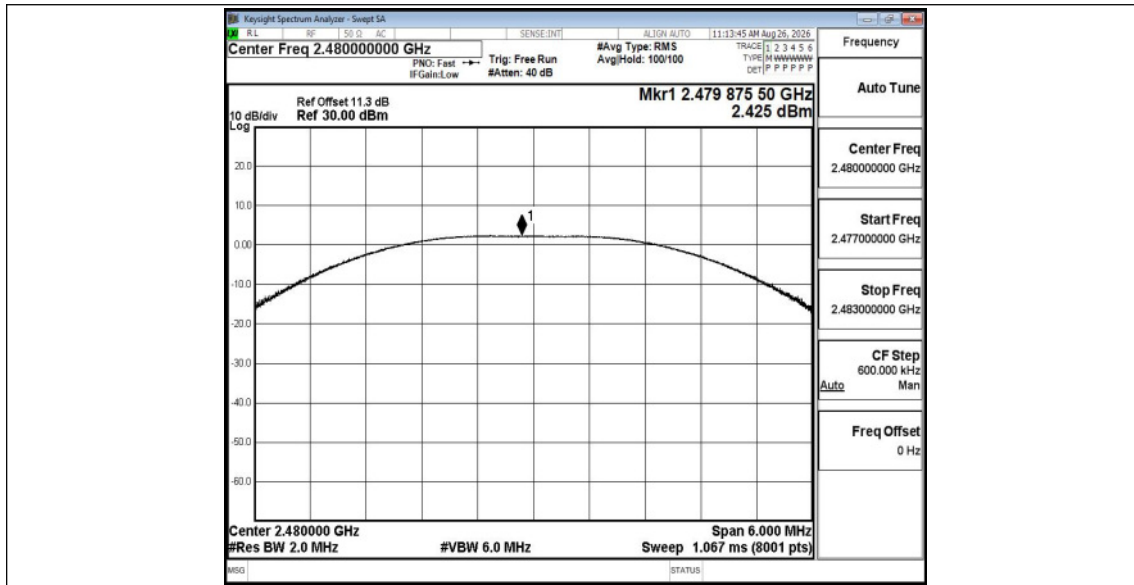




BLE_2M_Ant1_2440



BLE_2M_Ant1_2480



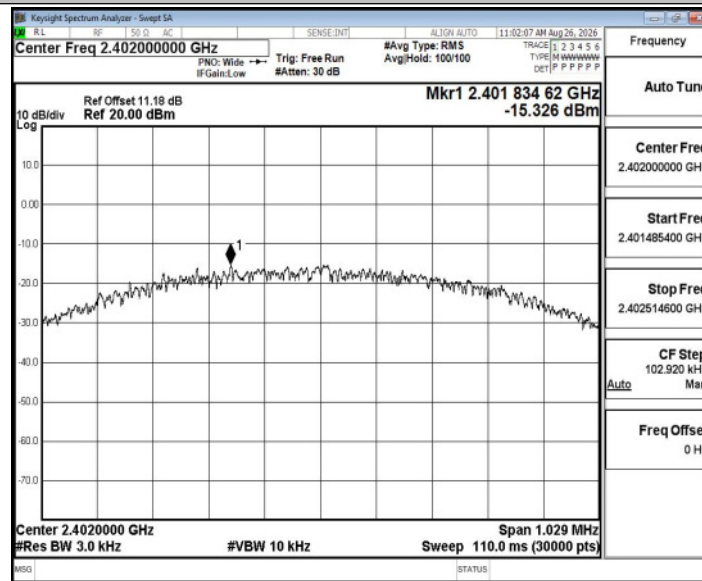
A.3 Maximum power spectral density

Test Result

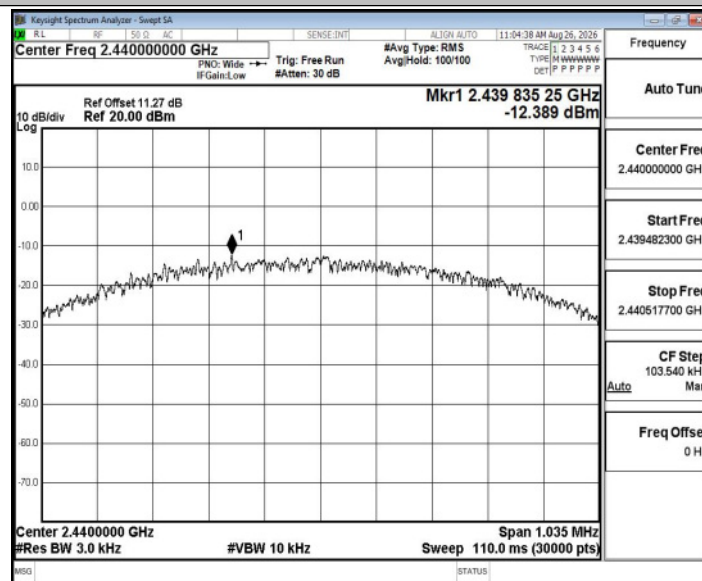
TestMode	Antenna	Freq(MHz)	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-15.33	≤8.00	PASS
		2440	-12.39	≤8.00	PASS
		2480	-14.04	≤8.00	PASS
BLE_2M	Ant1	2402	-18.47	≤8.00	PASS
		2440	-15.79	≤8.00	PASS
		2480	-17.21	≤8.00	PASS

Test Graphs

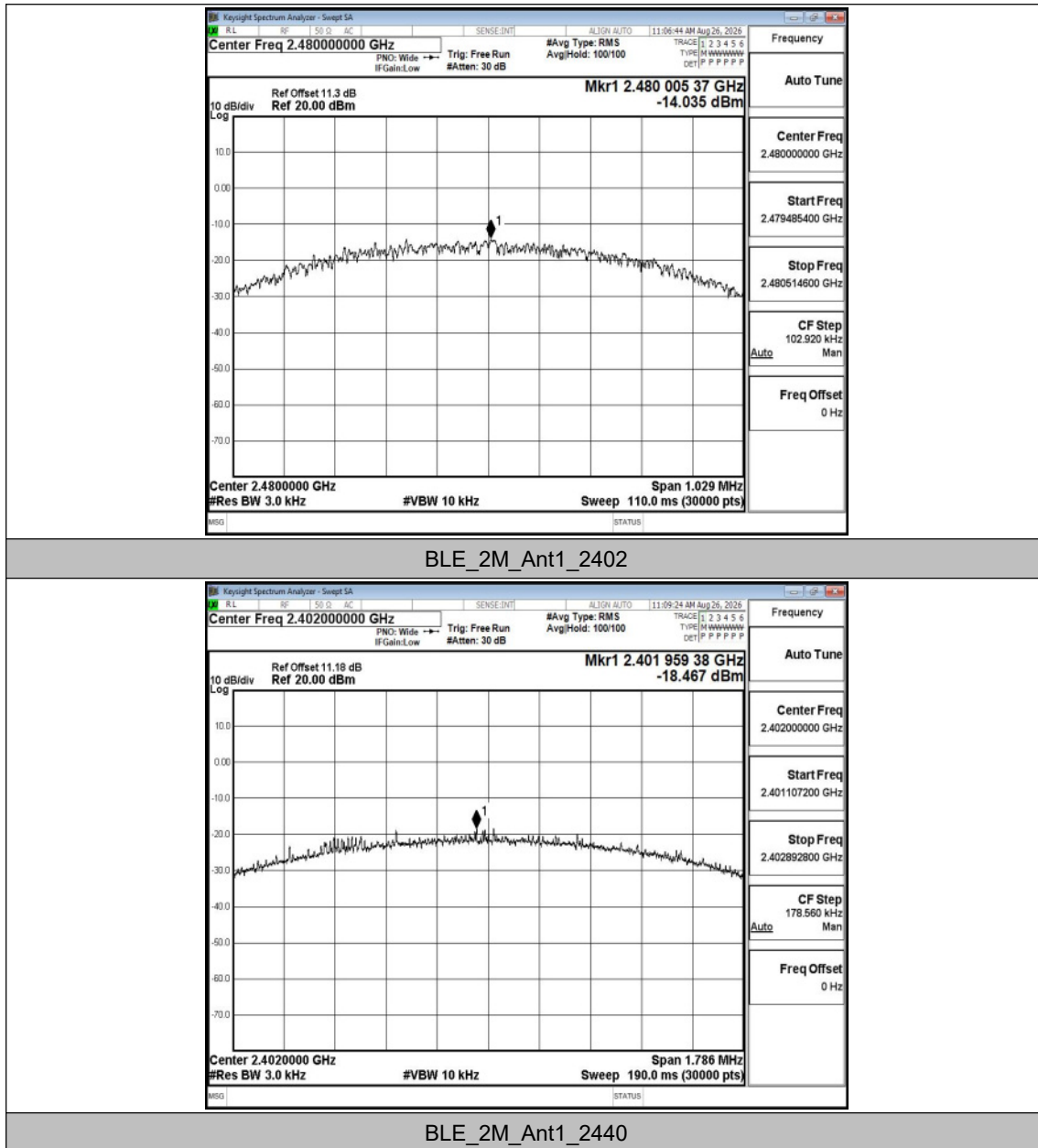
BLE_1M_Ant1_2402

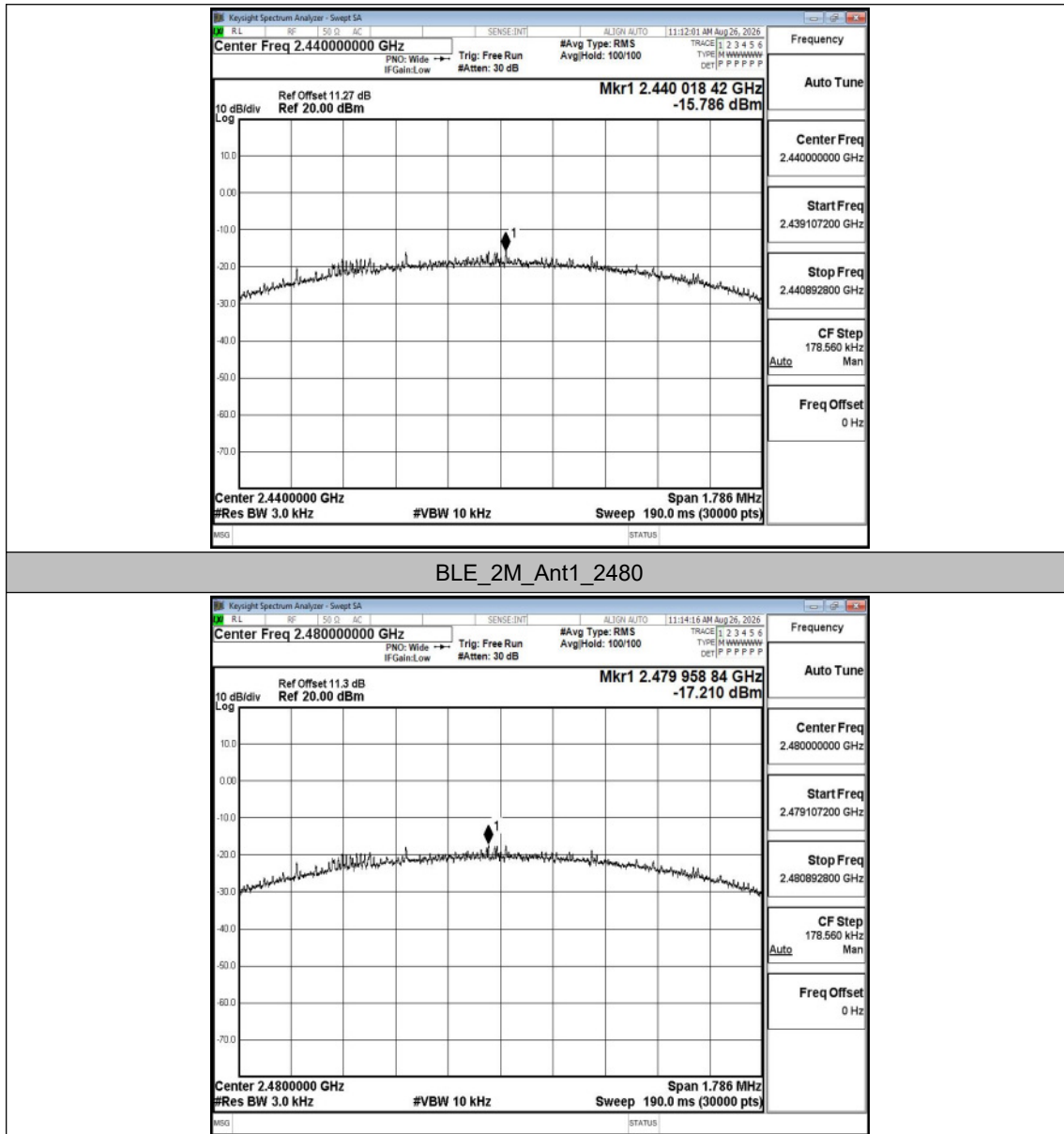


BLE_1M_Ant1_2440



BLE_1M_Ant1_2480





Guangzhou LCS Compliance Testing Laboratory Ltd.

Add: No.44-1, Qianfeng North Road, Shiqi, Panyu District, Guangzhou, Guangdong, China

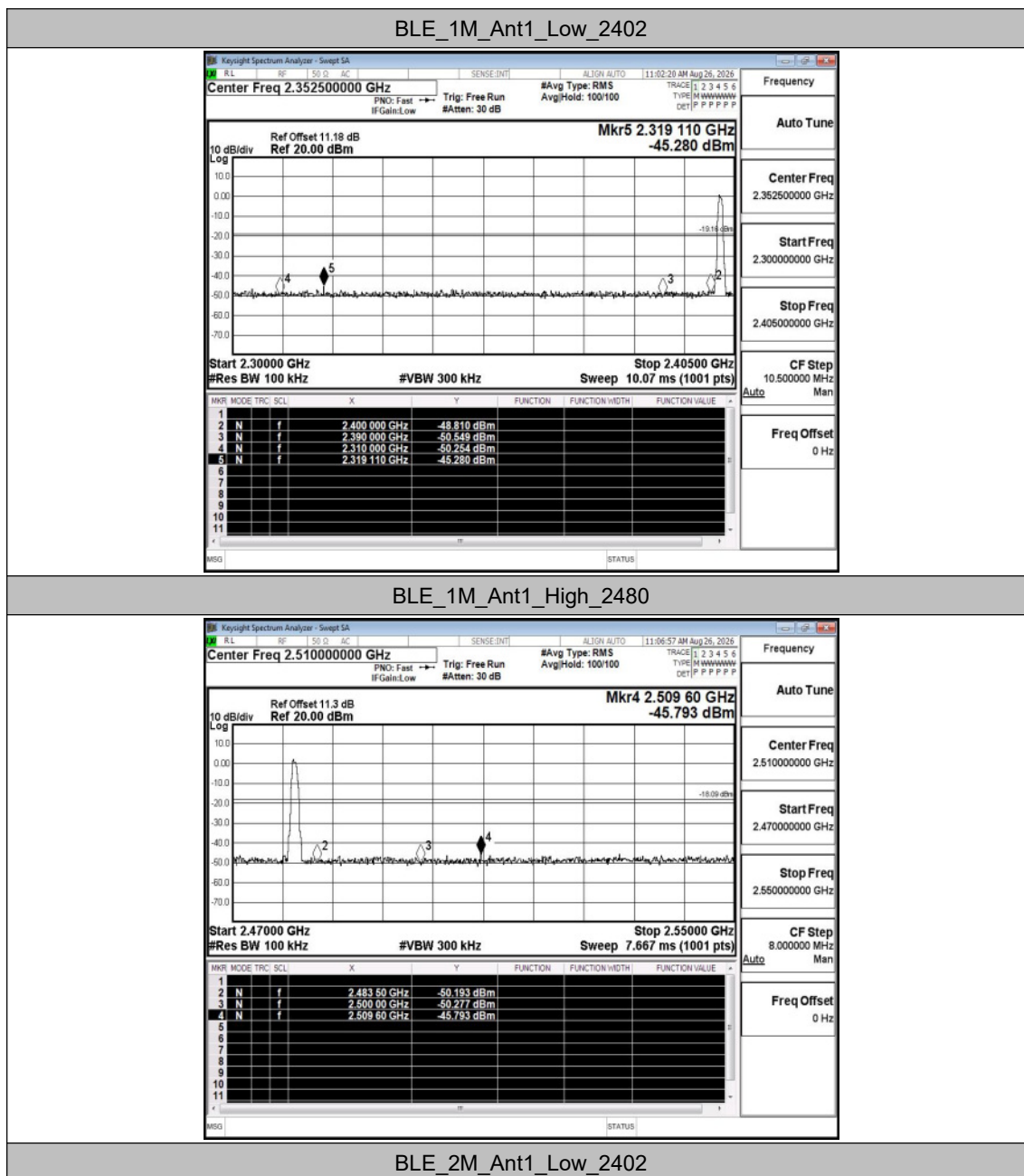
Tel: +(86) 020-39166689 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com

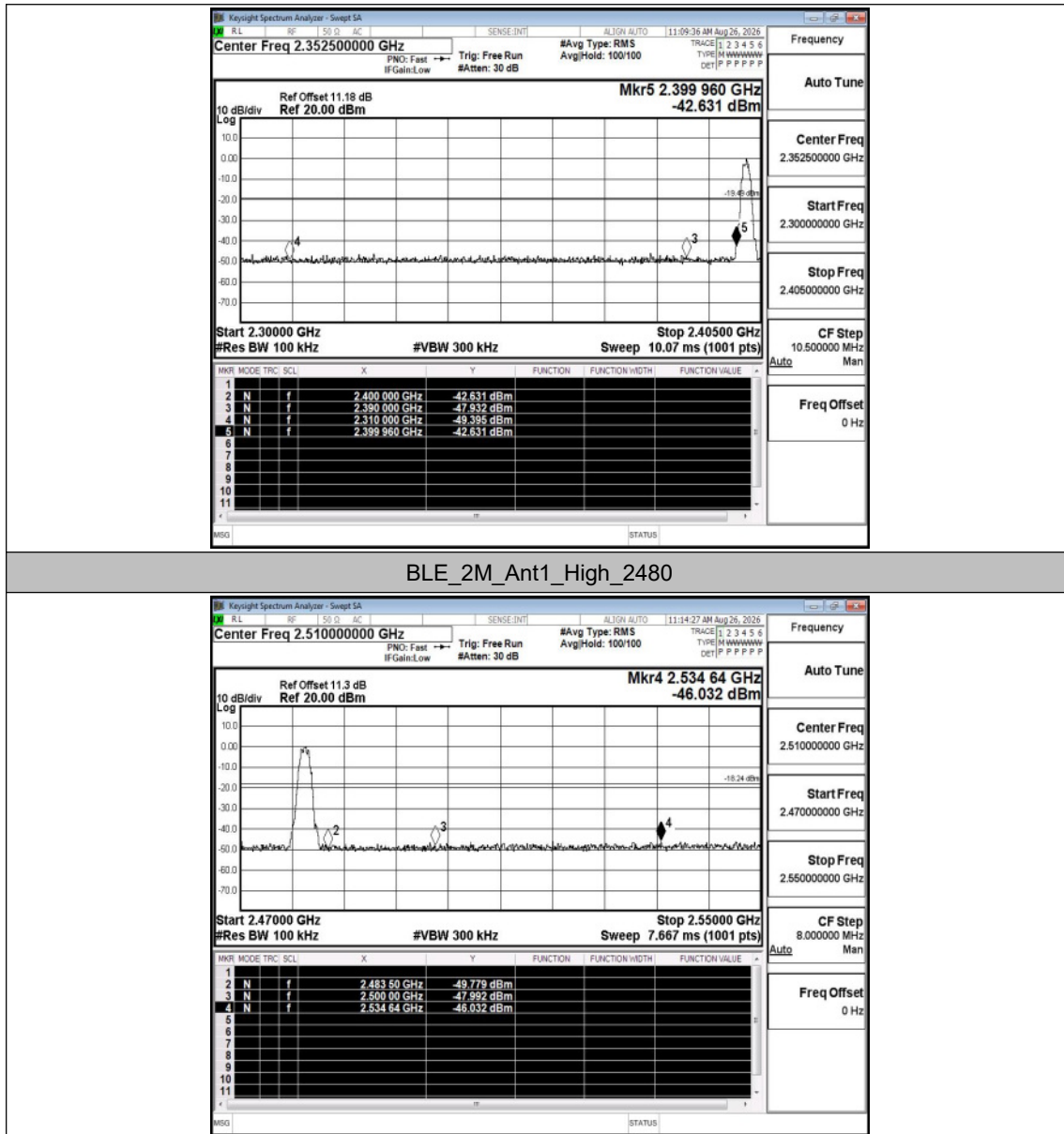
A.4 Band edge measurements

Test Result

TestMode	Antenna	ChName	Freq(MHz)	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	0.84	-45.28	≤-19.16	PASS
		High	2480	1.91	-45.79	≤-18.09	PASS
BLE_2M	Ant1	Low	2402	0.51	-42.63	≤-19.49	PASS
		High	2480	1.76	-46.03	≤-18.24	PASS

Test Graphs





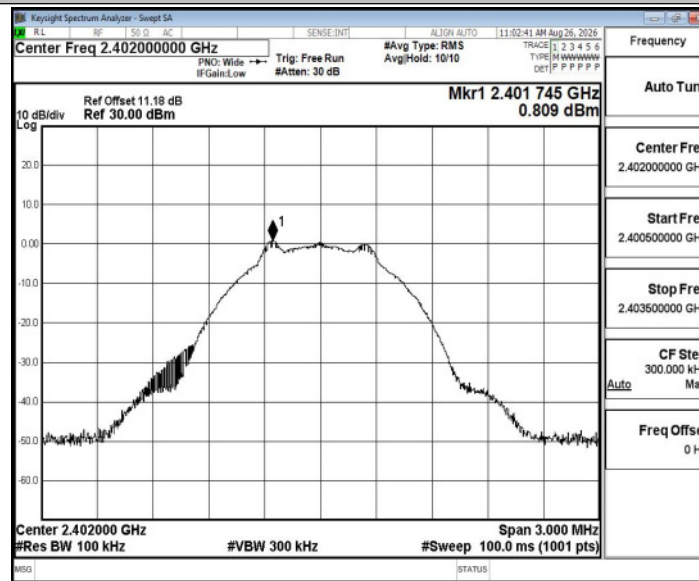
A.5 Conducted Spurious Emission

Test Result

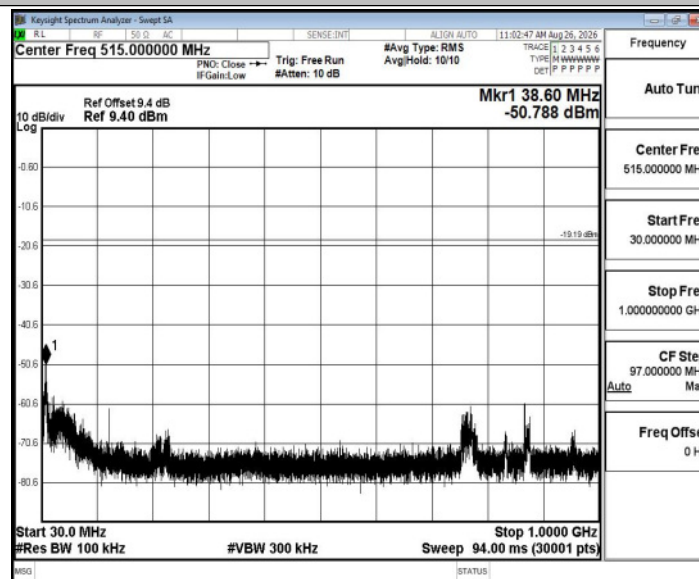
TestMode	Antenna	Freq(MHz)	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	Reference	0.81	0.81	---	PASS
			30~1000	0.81	-50.79	≤-19.19	PASS
			1000~26500	0.81	-31.29	≤-19.19	PASS
		2440	Reference	3.62	3.62	---	PASS
			30~1000	3.62	-50.13	≤-16.38	PASS
			1000~26500	3.62	-33.45	≤-16.38	PASS
		2480	Reference	1.97	1.97	---	PASS
			30~1000	1.97	-51.56	≤-18.03	PASS
			1000~26500	1.97	-42.8	≤-18.03	PASS
BLE_2M	Ant1	2402	Reference	0.52	0.52	---	PASS
			30~1000	0.52	-51.69	≤-19.48	PASS
			1000~26500	0.52	-44.85	≤-19.48	PASS
		2440	Reference	3.40	3.40	---	PASS
			30~1000	3.40	-53.19	≤-16.6	PASS
			1000~26500	3.40	-43.06	≤-16.6	PASS
		2480	Reference	1.76	1.76	---	PASS
			30~1000	1.76	-51.29	≤-18.24	PASS
			1000~26500	1.76	-41.37	≤-18.24	PASS

Test Graphs

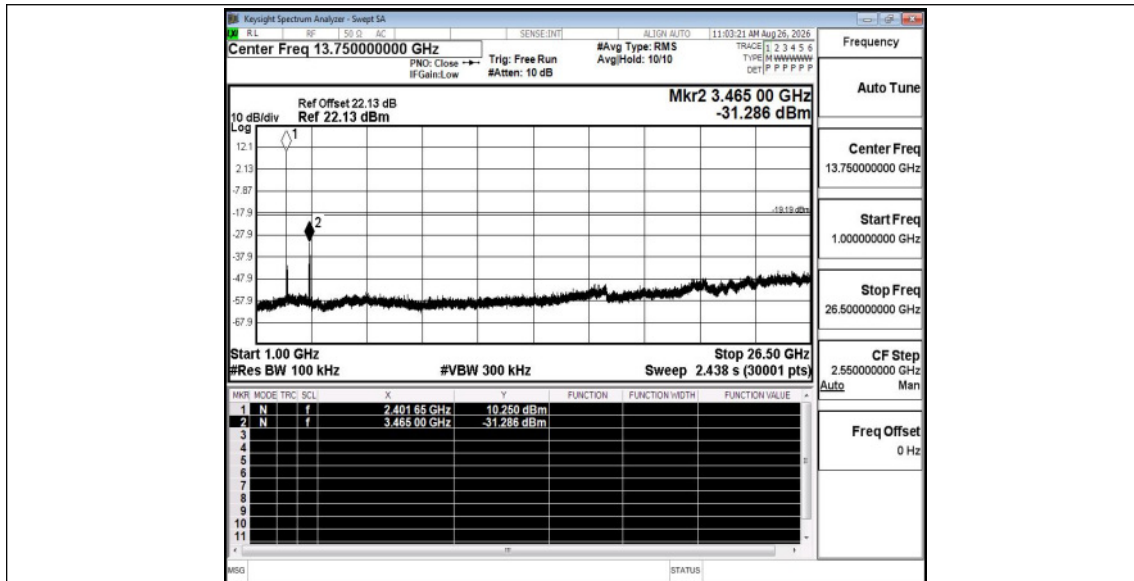
BLE_1M_Ant1_2402_0~Reference



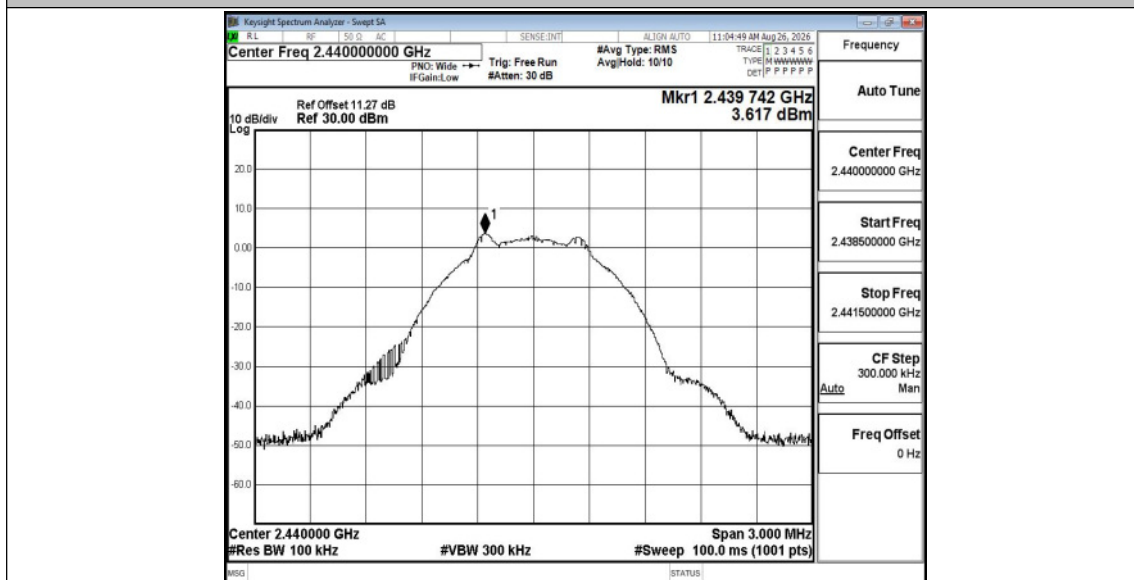
BLE_1M_Ant1_2402_30~1000



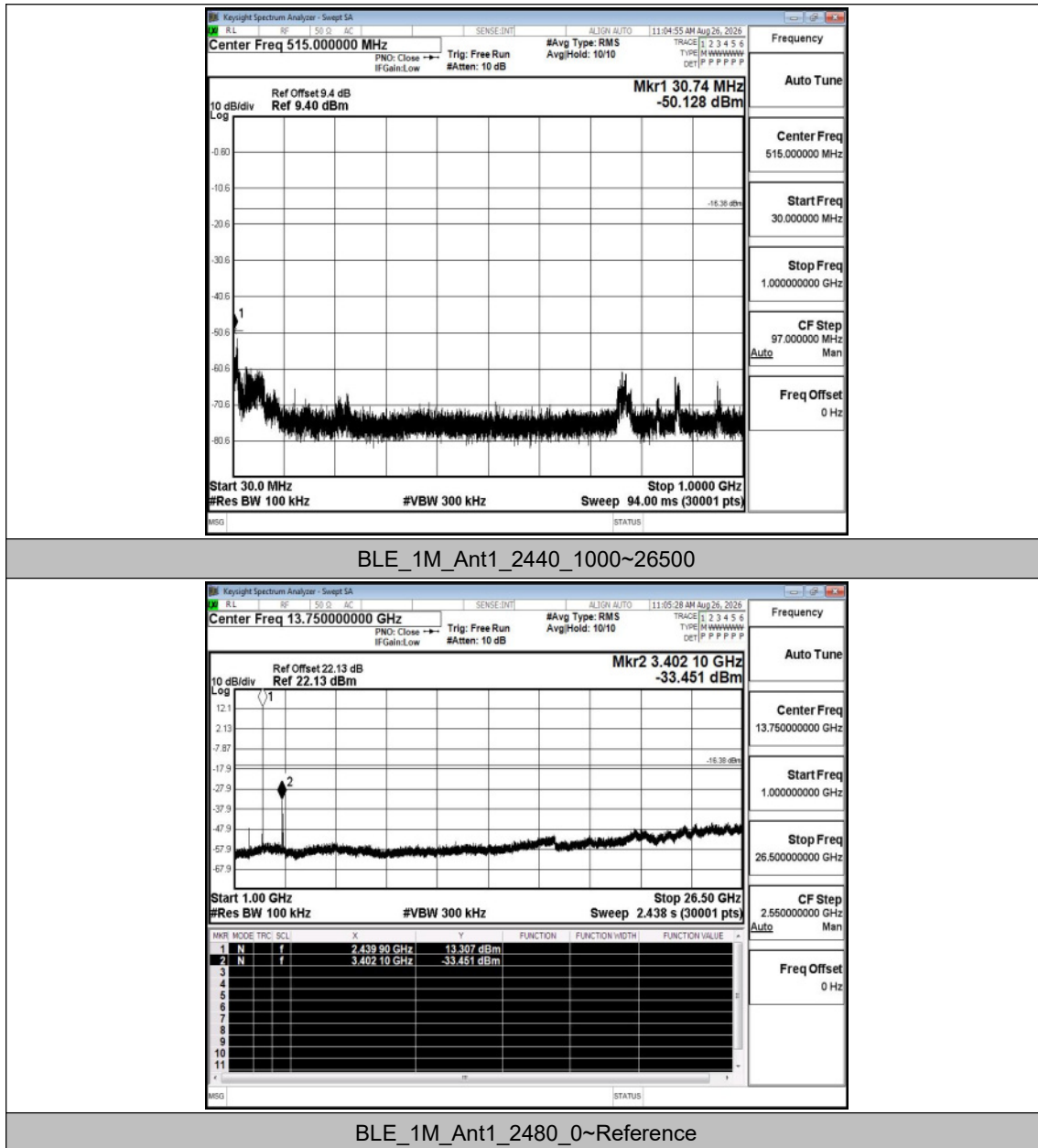
BLE_1M_Ant1_2402_1000~26500



BLE_1M_Ant1_2440_0~Reference

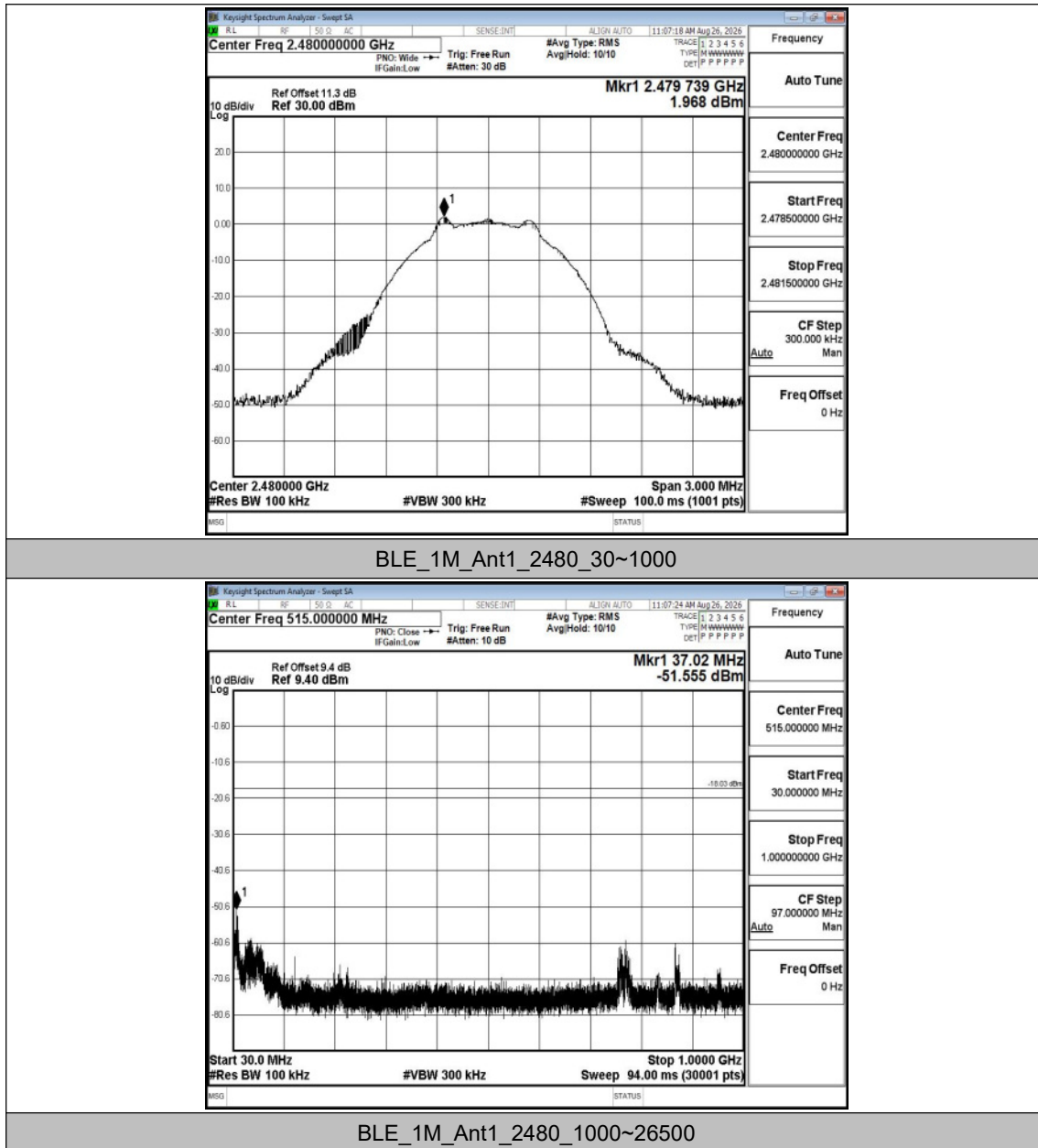


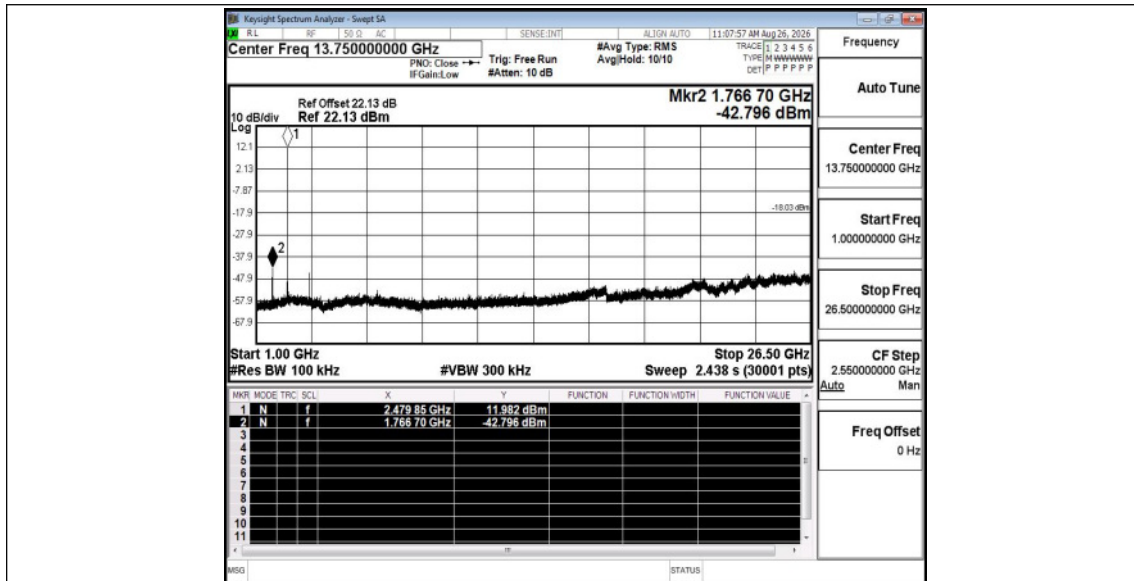
BLE_1M_Ant1_2440_30~1000



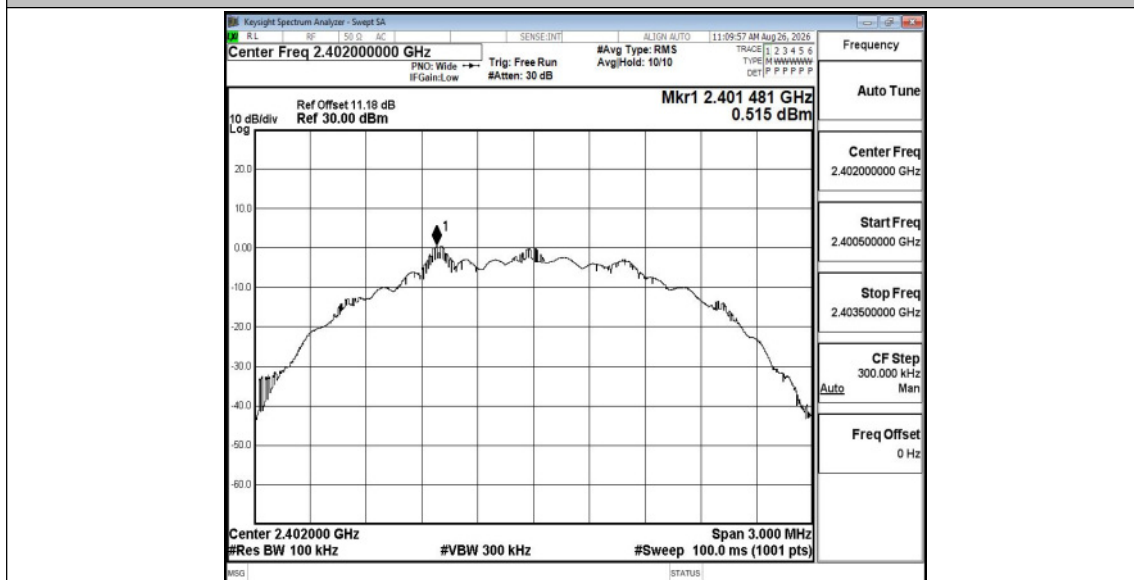
BLE_1M_Ant1_2440_1000~26500

BLE_1M_Ant1_2480_0~Reference

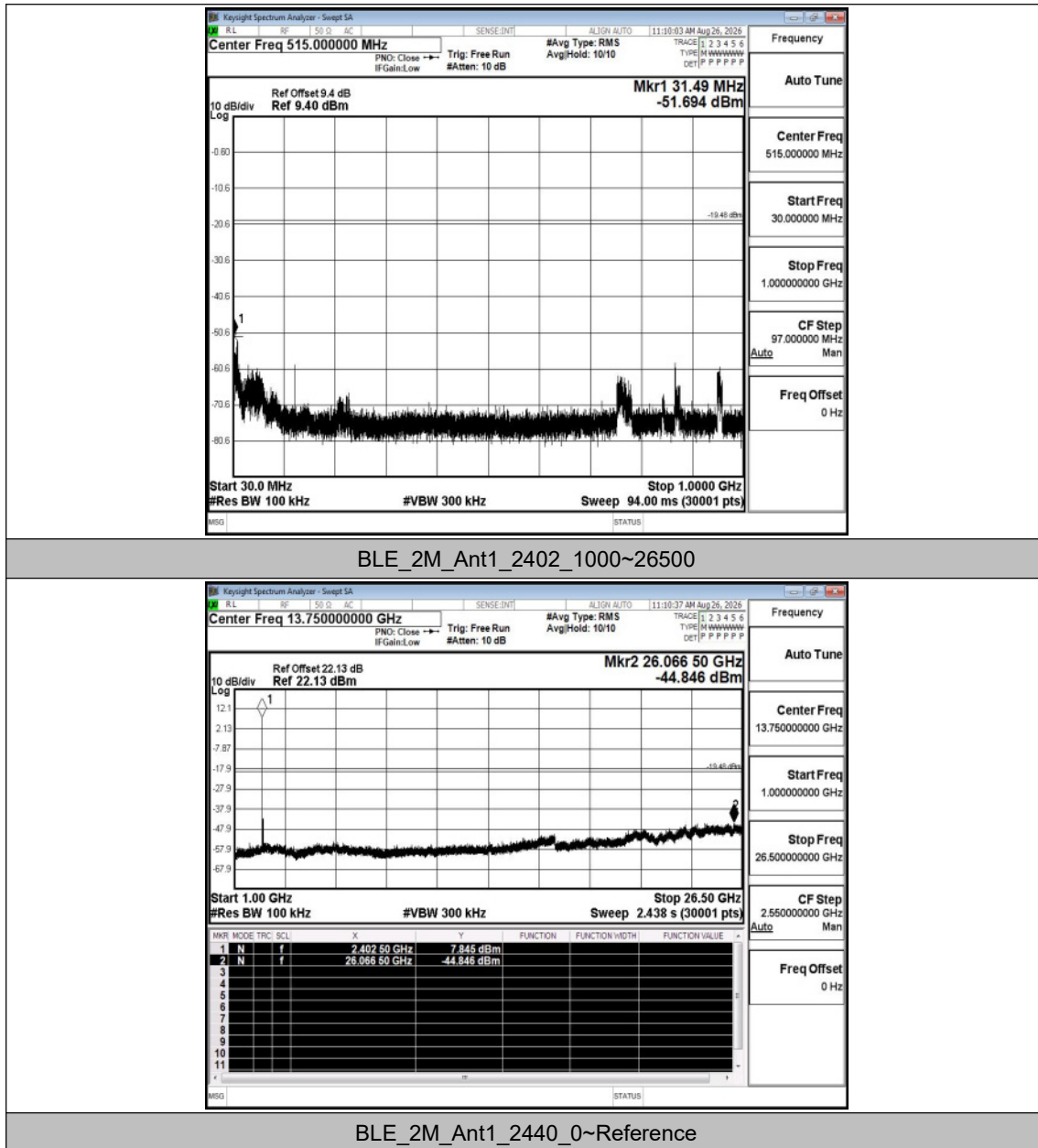


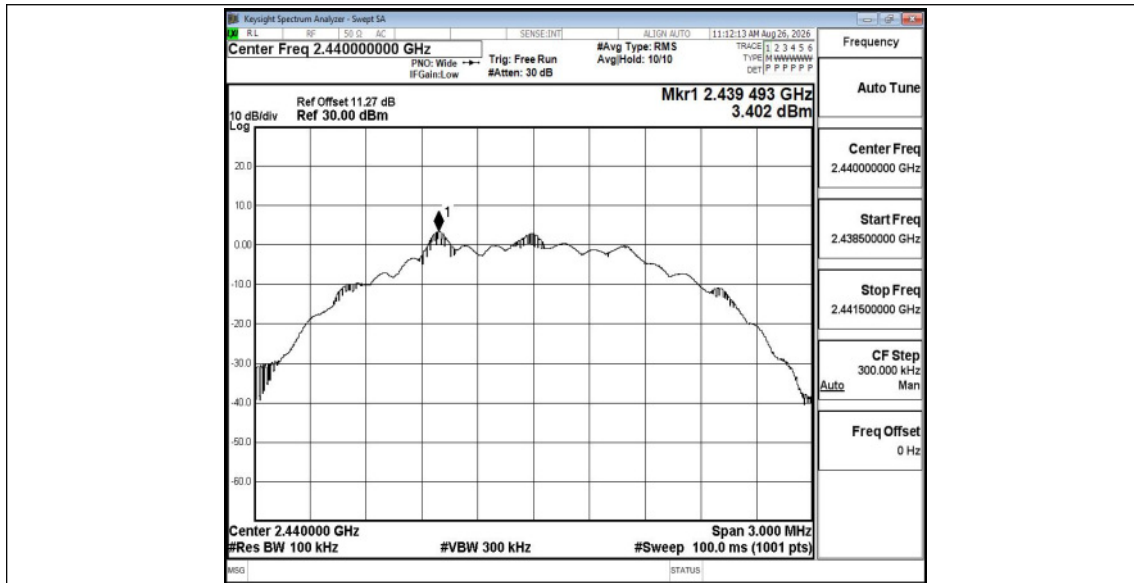


BLE_2M_Ant1_2402_0~Reference

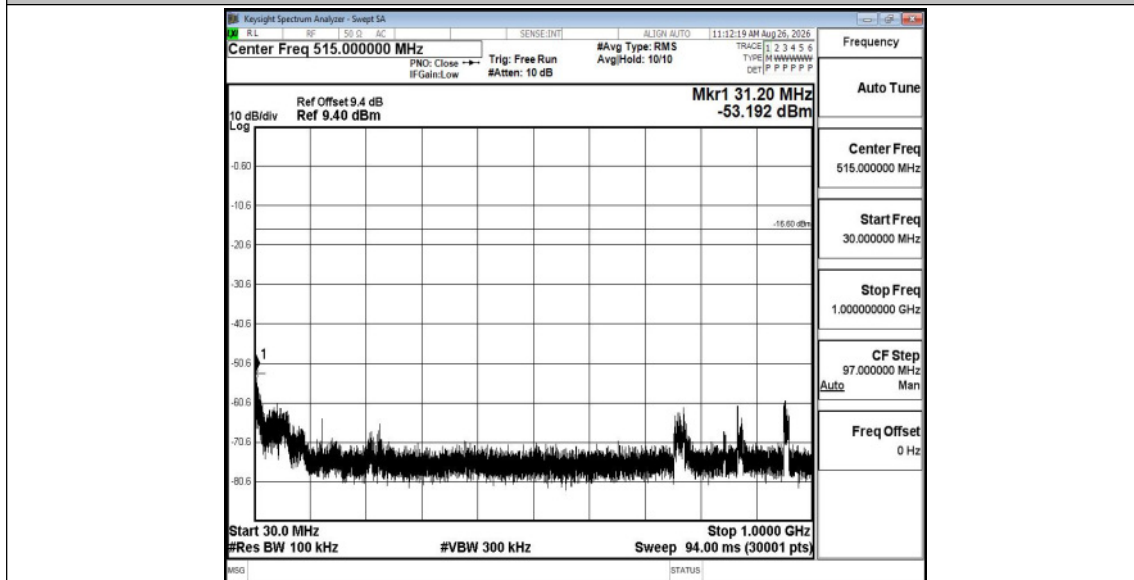


BLE_2M_Ant1_2402_30~1000

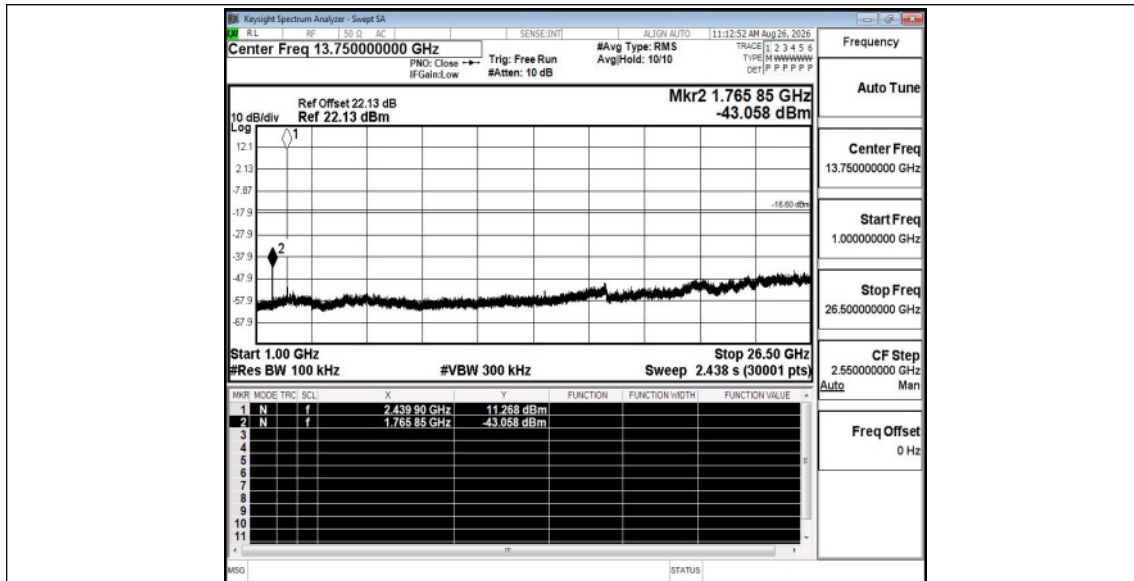




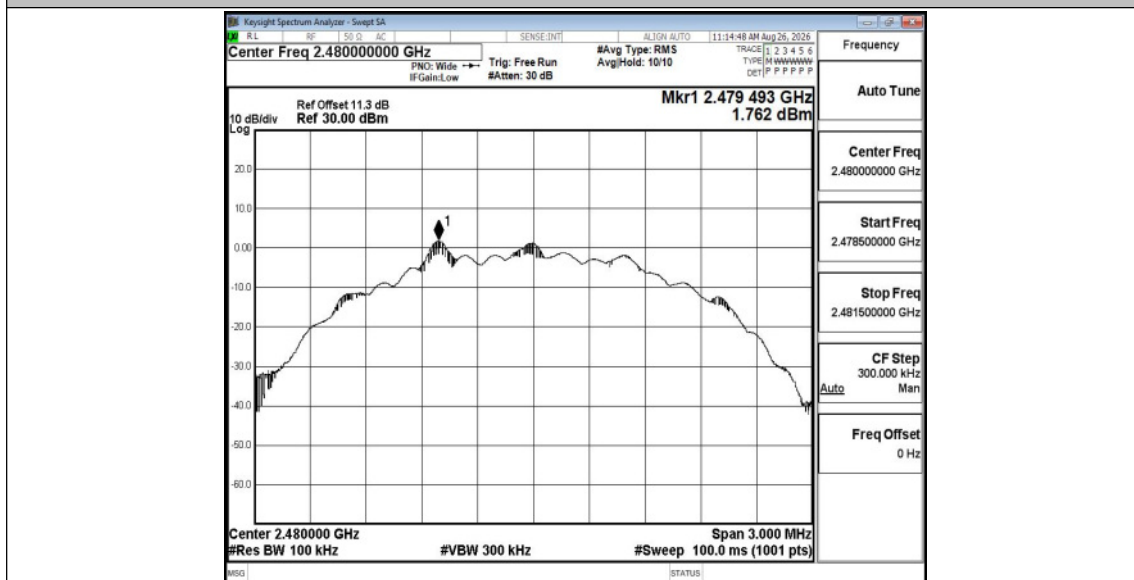
BLE_2M_Ant1_2440_30~1000



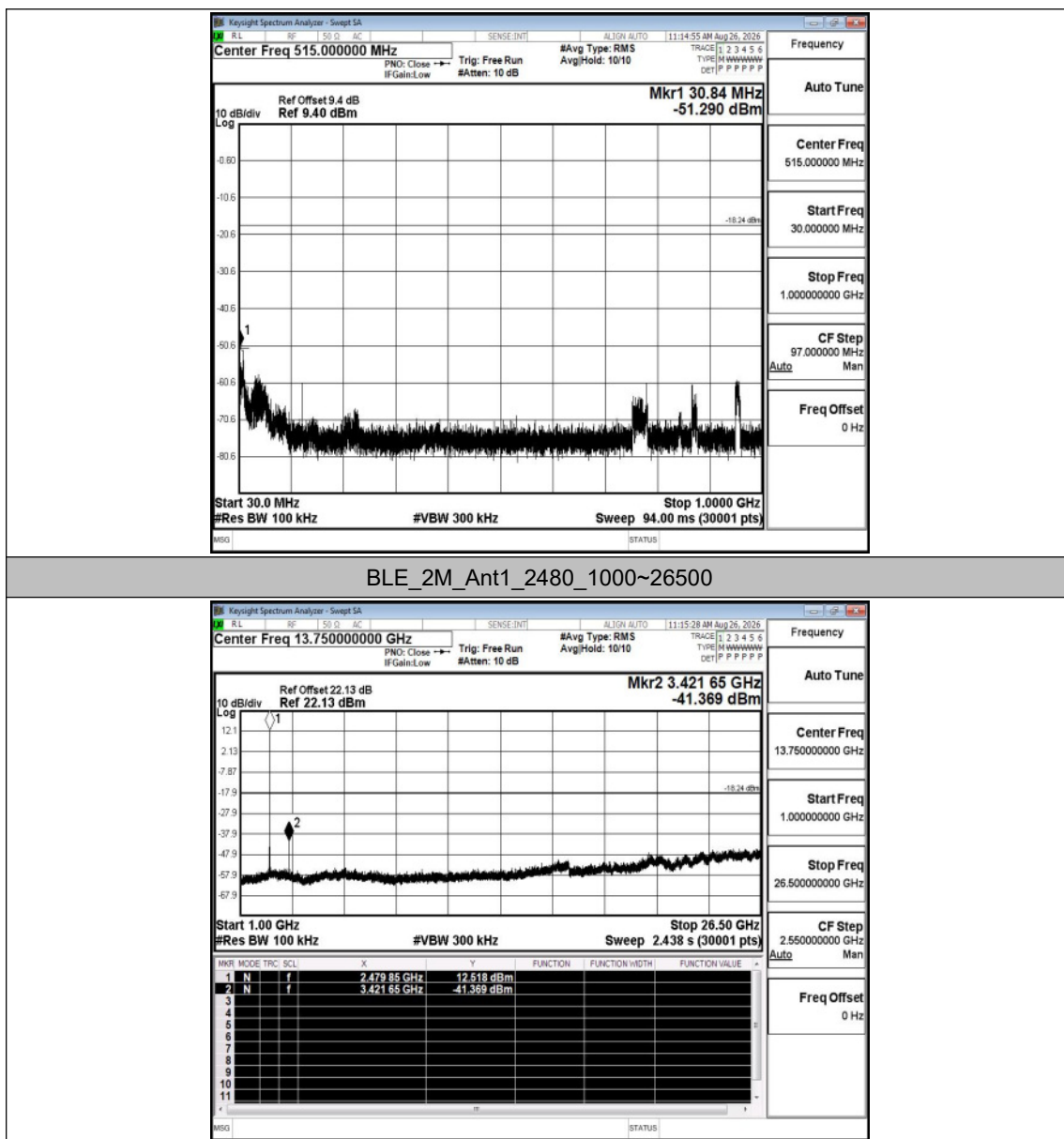
BLE_2M_Ant1_2440_1000~26500



BLE_2M_Ant1_2480_0~Reference



BLE_2M_Ant1_2480_30~1000

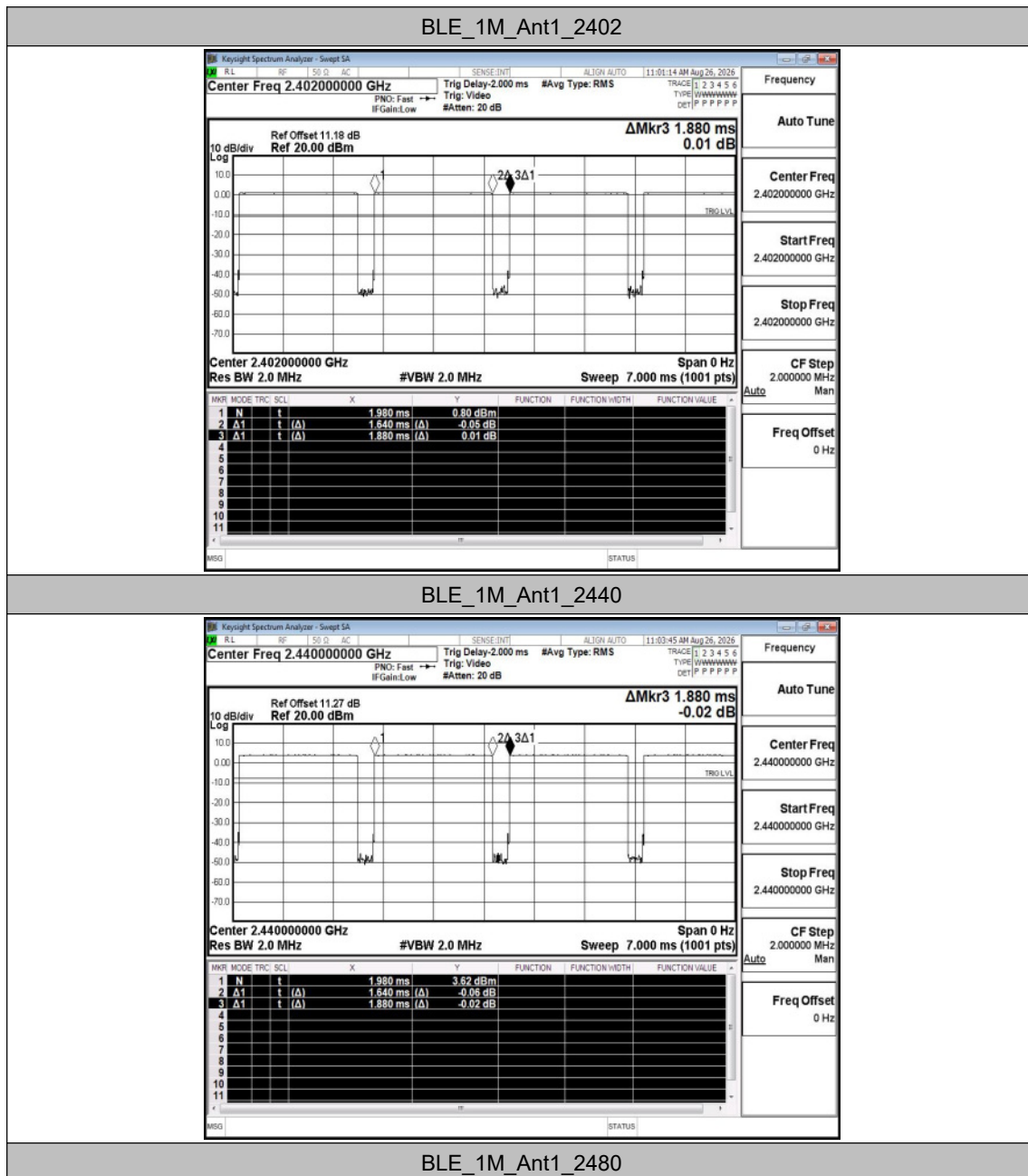


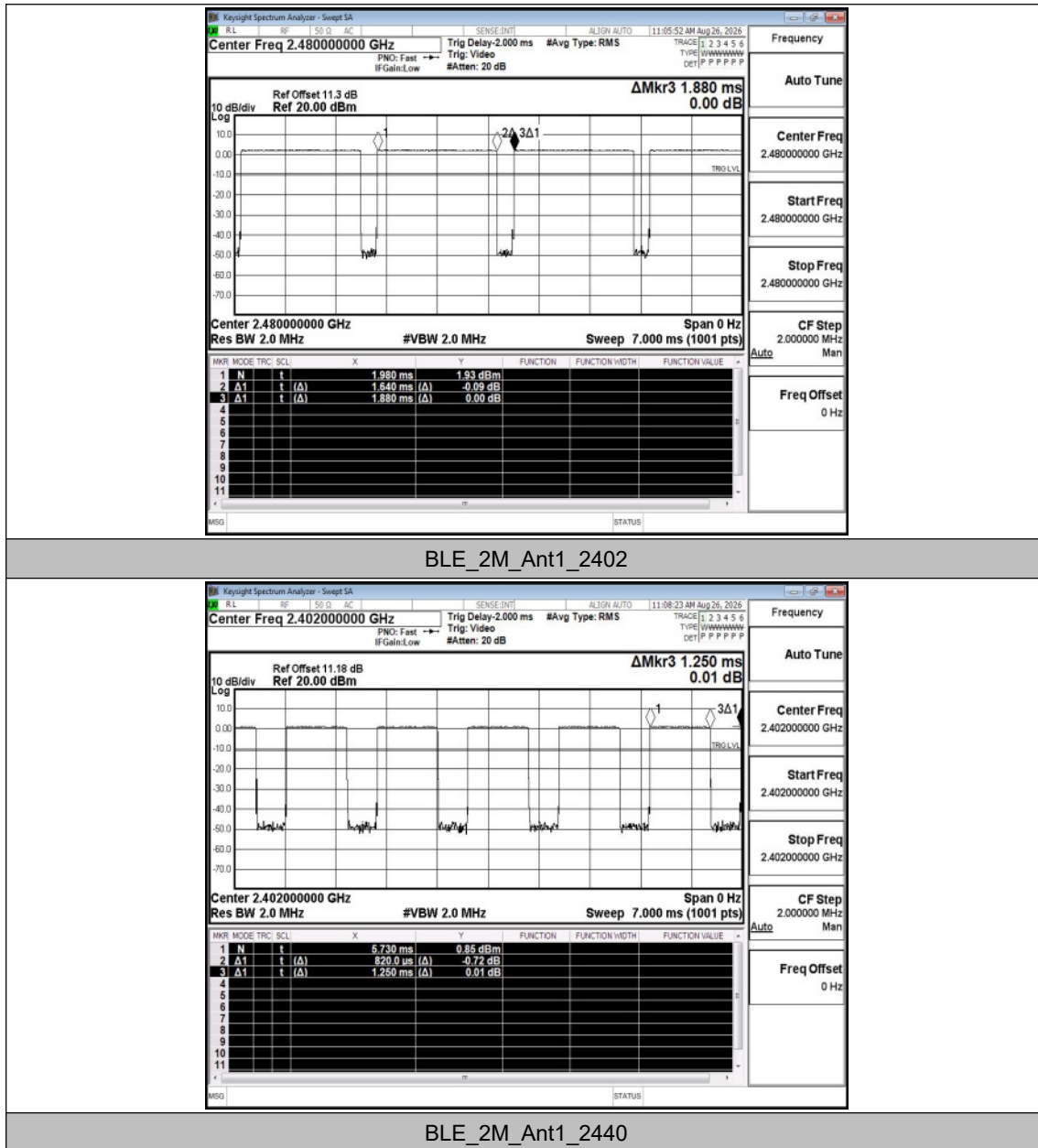
A.6 Duty Cycle

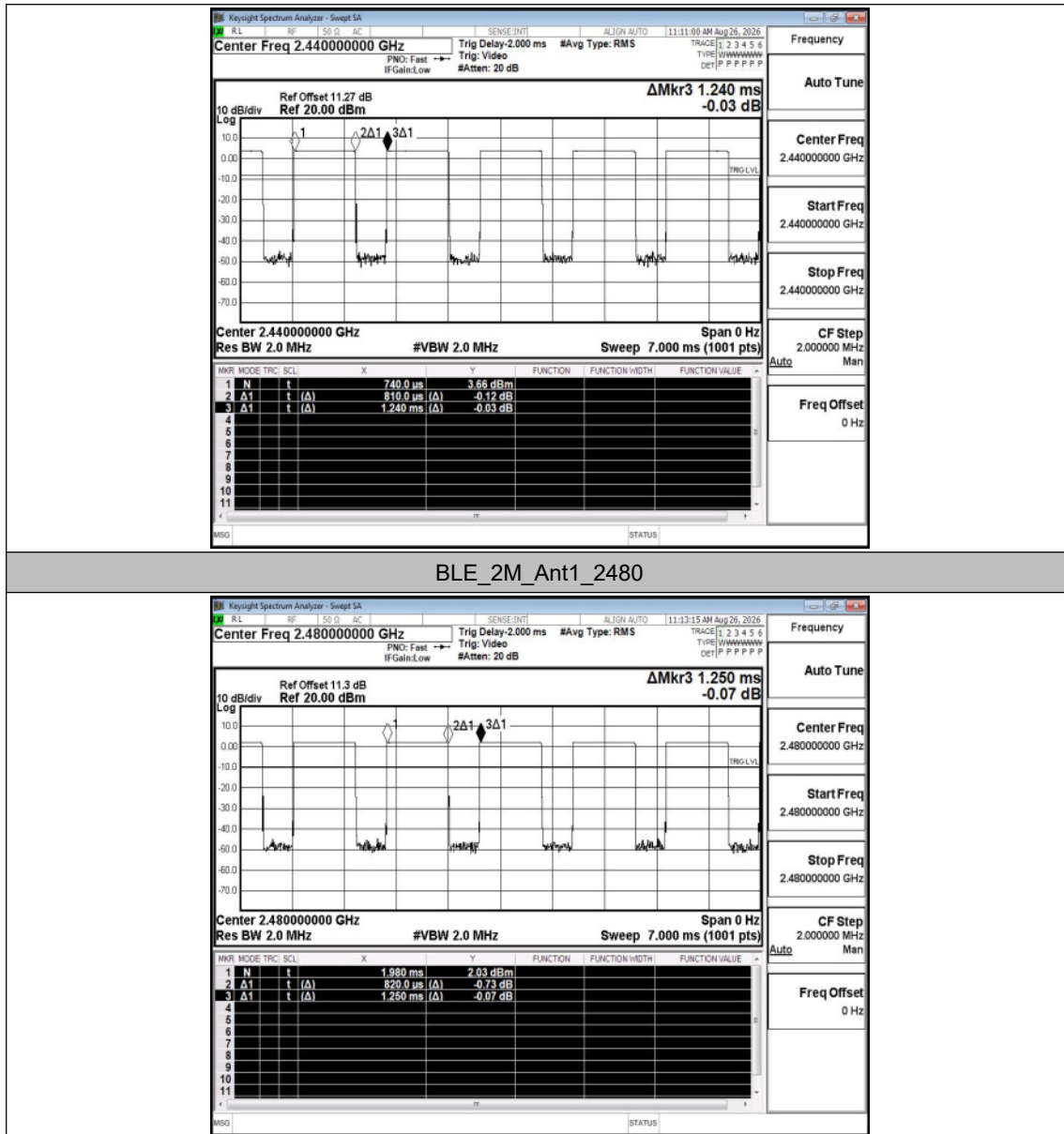
Test Result

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	0.81	1.24	0.6532	65.32	1.85	---	---
		2480	0.82	1.25	0.6560	65.60	1.83	---	---

Test Graphs







A.7 Emissions in Restricted Bands

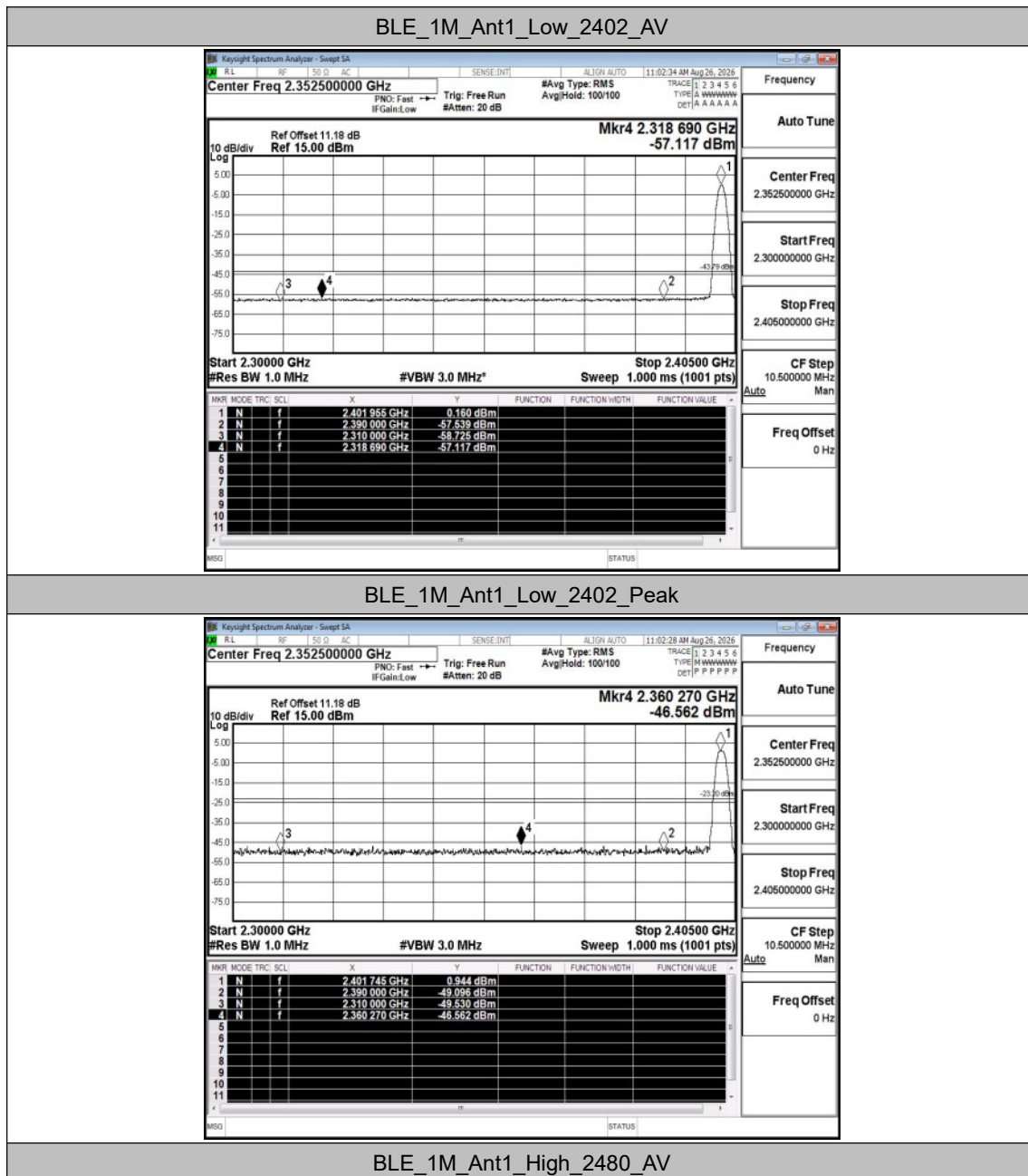
Test Result

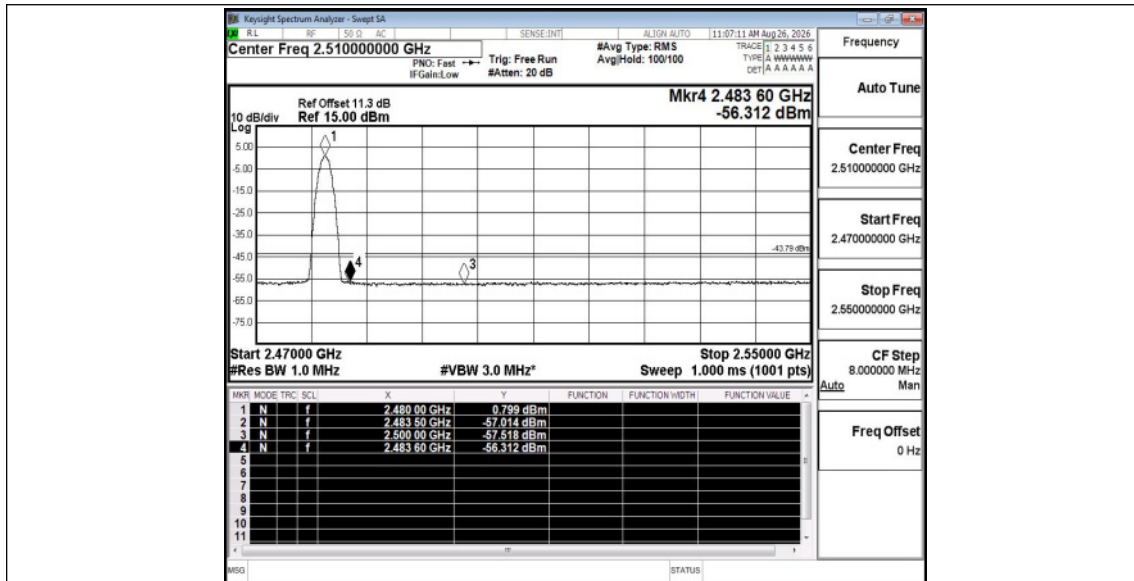
TestMode	Antenna	ChName	Freq(MHz)	Detector	Freq [MHz]	Result [dBm]	Limit [dBm]	Gain [dBi]	DC Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Verdict
BLE_1M	Ant1	Low	2402	AV	2310.000	-58.73	≤-43.79	2.00	0.59	39.06	≤54	PASS
				AV	2318.690	-57.12	≤-43.79	2.00	0.59	40.67	≤54	PASS
				AV	2390.000	-57.54	≤-43.79	2.00	0.59	40.25	≤54	PASS
				Peak	2310.000	-49.53	≤-23.20	2.00	0.00	47.67	≤74	PASS
				Peak	2360.270	-46.56	≤-23.20	2.00	0.00	50.64	≤74	PASS
				Peak	2390.000	-49.1	≤-23.20	2.00	0.00	48.10	≤74	PASS
		High	2480	AV	2483.500	-57.01	≤-43.79	2.00	0.59	40.78	≤54	PASS
				AV	2483.600	-56.31	≤-43.79	2.00	0.59	41.48	≤54	PASS
				AV	2500.000	-57.52	≤-43.79	2.00	0.59	40.27	≤54	PASS
				Peak	2483.500	-47.15	≤-23.20	2.00	0.00	50.05	≤74	PASS
				Peak	2483.840	-42.3	≤-23.20	2.00	0.00	54.90	≤74	PASS
				Peak	2500.000	-48.65	≤-23.20	2.00	0.00	48.55	≤74	PASS
BLE_2M	Ant1	Low	2402	AV	2310.000	-57.89	≤-45.03	2.00	1.83	41.14	≤54	PASS
				AV	2380.325	-56.77	≤-45.03	2.00	1.83	42.26	≤54	PASS
				AV	2390.000	-58.02	≤-45.03	2.00	1.83	41.01	≤54	PASS
				Peak	2310.000	-48.71	≤-23.20	2.00	0.00	48.49	≤74	PASS
				Peak	2378.015	-47	≤-23.20	2.00	0.00	50.20	≤74	PASS
				Peak	2390.000	-50.49	≤-23.20	2.00	0.00	46.71	≤74	PASS
		High	2480	AV	2483.500	-56.75	≤-45.03	2.00	1.83	42.28	≤54	PASS
				AV	2483.600	-56.62	≤-45.03	2.00	1.83	42.41	≤54	PASS
				AV	2500.000	-57.32	≤-45.03	2.00	1.83	41.71	≤54	PASS
				Peak	2483.500	-49.51	≤-23.20	2.00	0.00	47.69	≤74	PASS
				Peak	2483.920	-43.27	≤-23.20	2.00	0.00	53.93	≤74	PASS
				Peak	2500.000	-48.78	≤-23.20	2.00	0.00	48.42	≤74	PASS

Note:

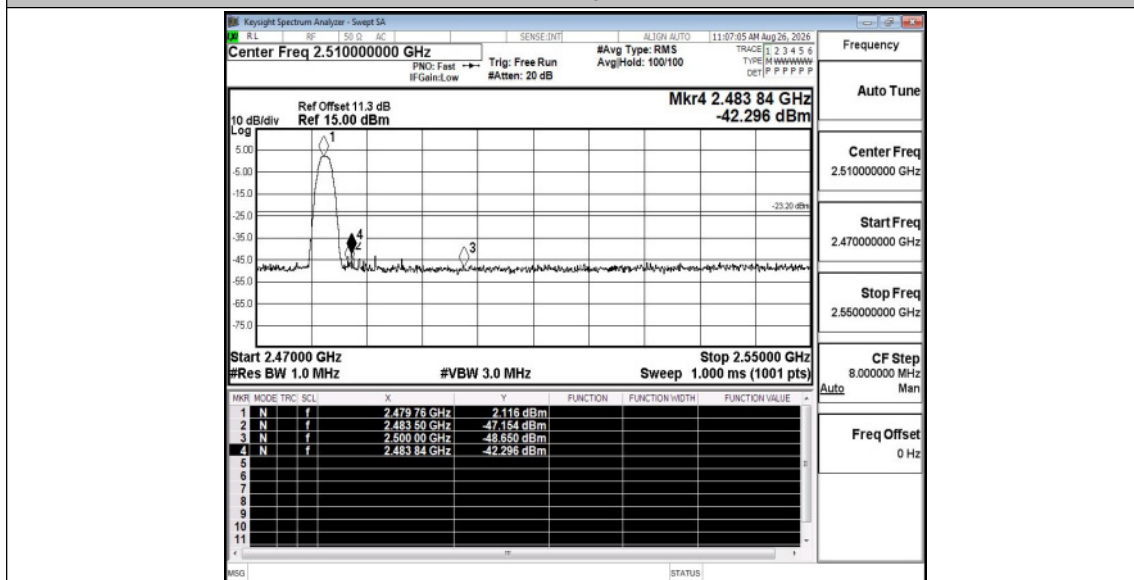
1. The Antenna Gain is compensated in the graph.
2. The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.

Test Graphs

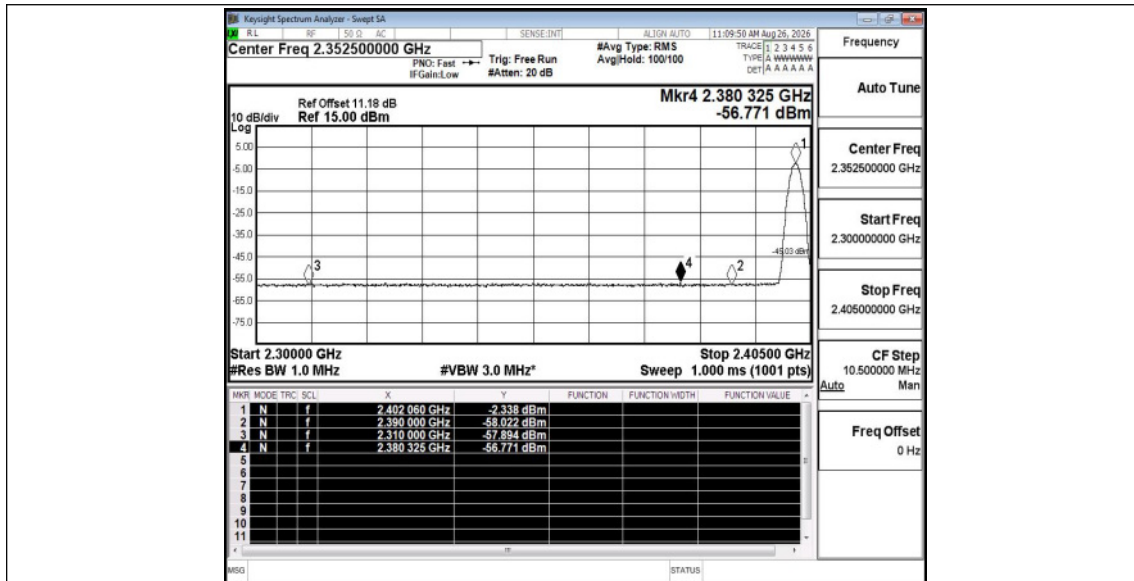




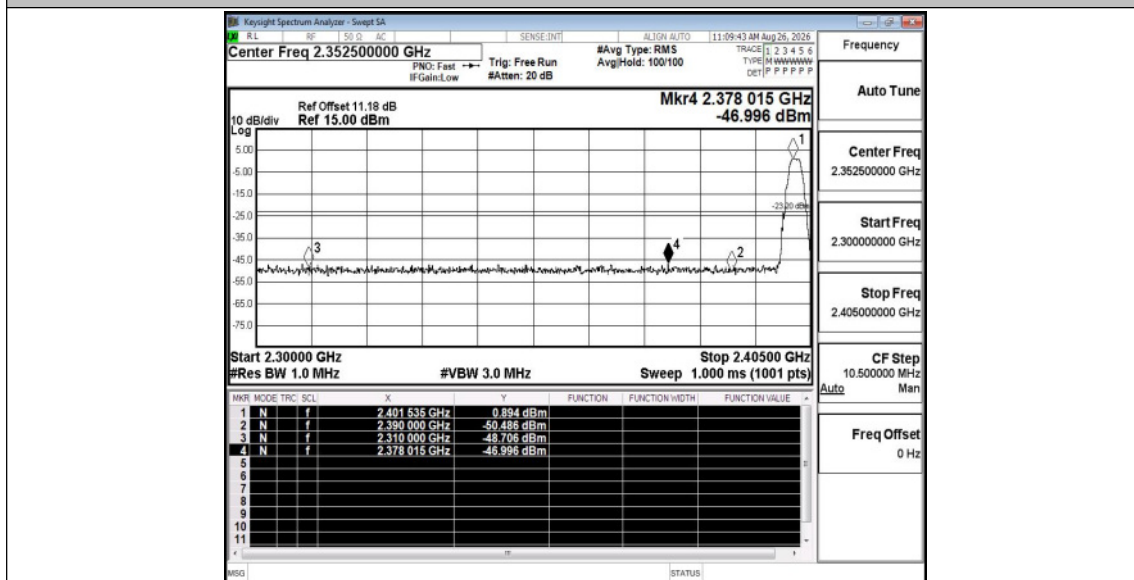
BLE_1M_Ant1_High_2480_Peak



BLE_2M_Ant1_Low_2402_AV



BLE_2M_Ant1_Low_2402_Peak



BLE_2M_Ant1_High_2480_AV

