

Appendix A

RF Test Data for BT LE(Conducted Measurement)

Product Name: Deep Cycle Rechargeable LiFePO4 Battery Pack

Test Model: LFP100-12-G24

Environmental Conditions

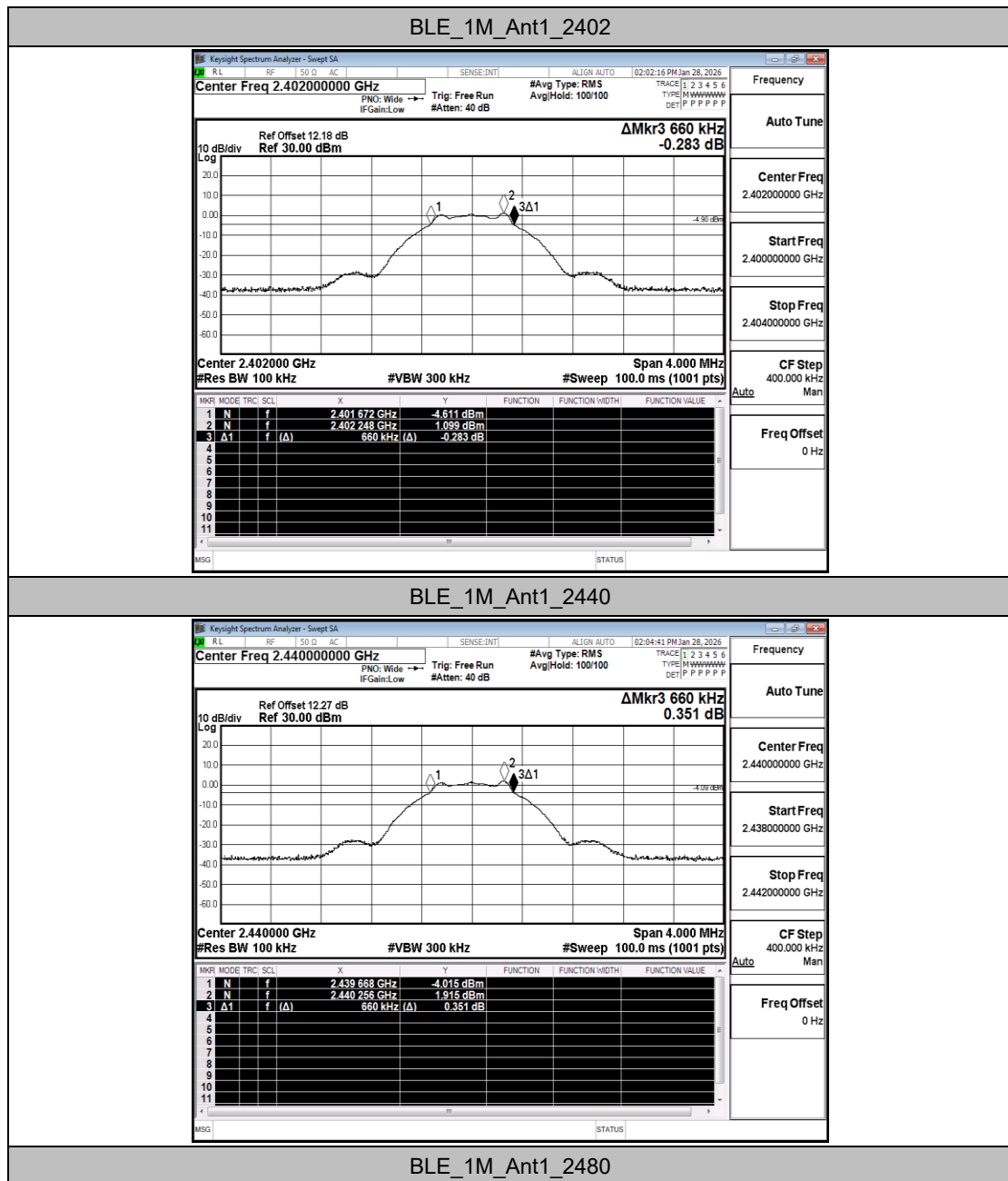
Temperature:	24.1°C
Relative Humidity:	52.2%
ATM Pressure:	100.0 kPa
Test Engineer:	Zhang hai
Supervised by:	Fengliu Tang

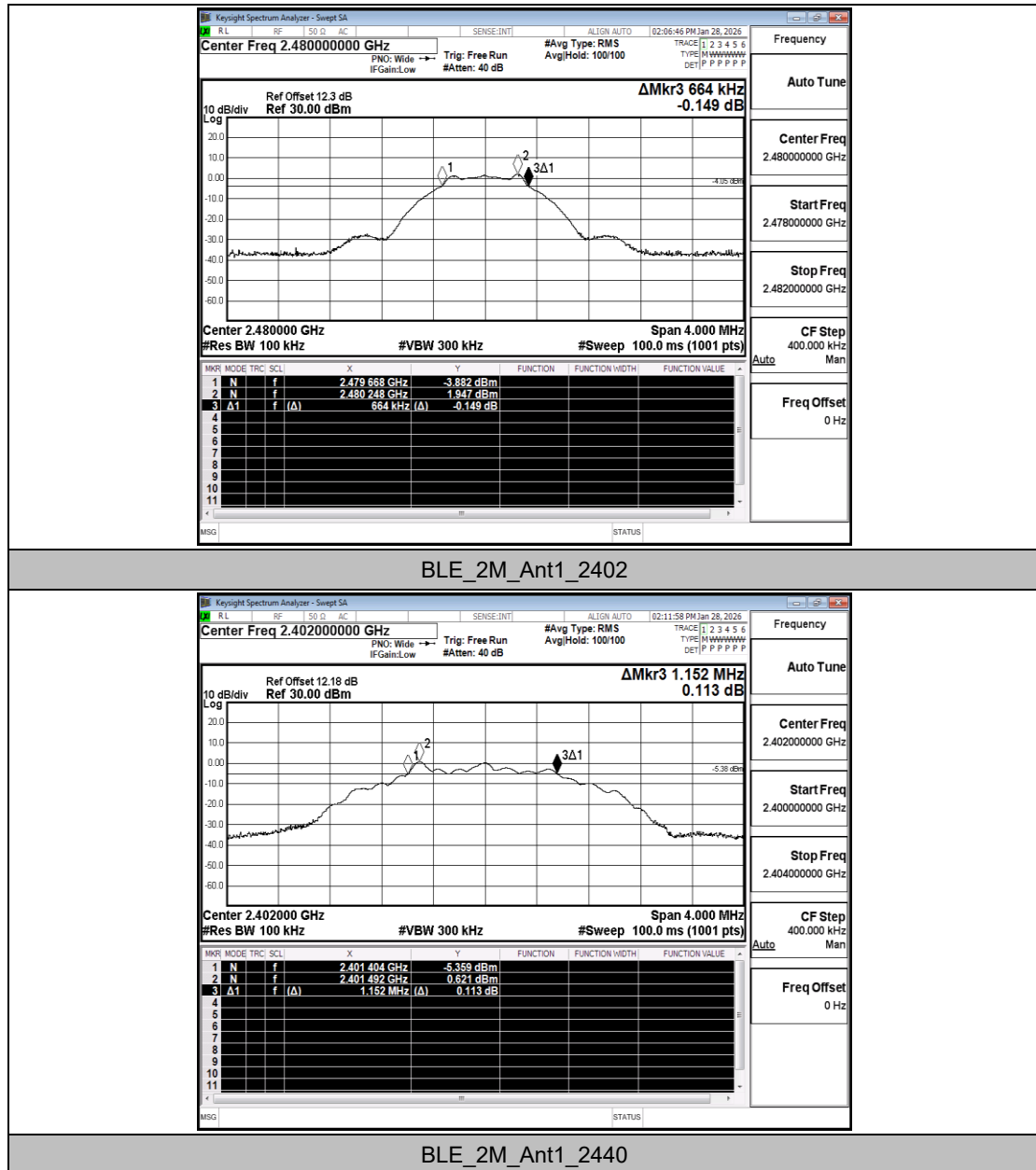
A.1 DTS Bandwidth

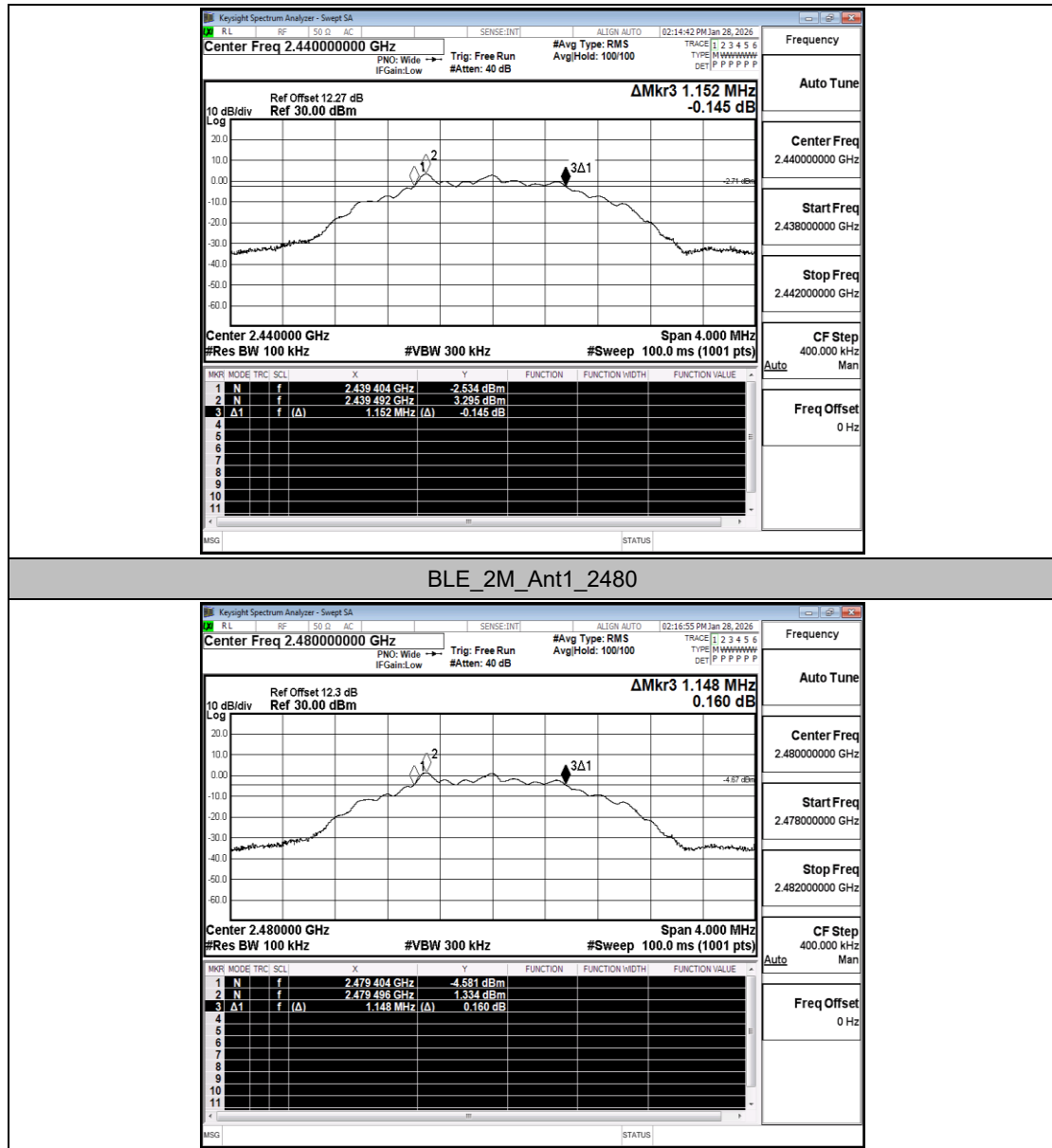
Test Result

TestMode	Antenna	Freq(MHz)	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.660	2401.672	2402.332	0.5	PASS
		2440	0.660	2439.668	2440.328	0.5	PASS
		2480	0.664	2479.668	2480.332	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	1.148	2479.404	2480.552	0.5	PASS

Test Graphs





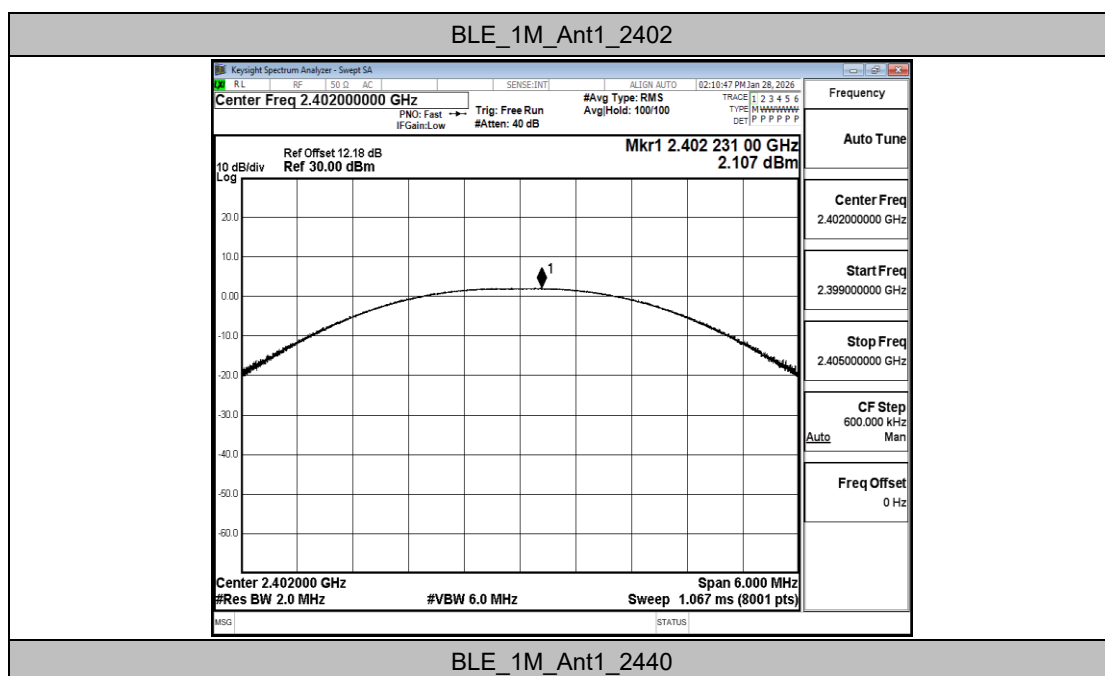


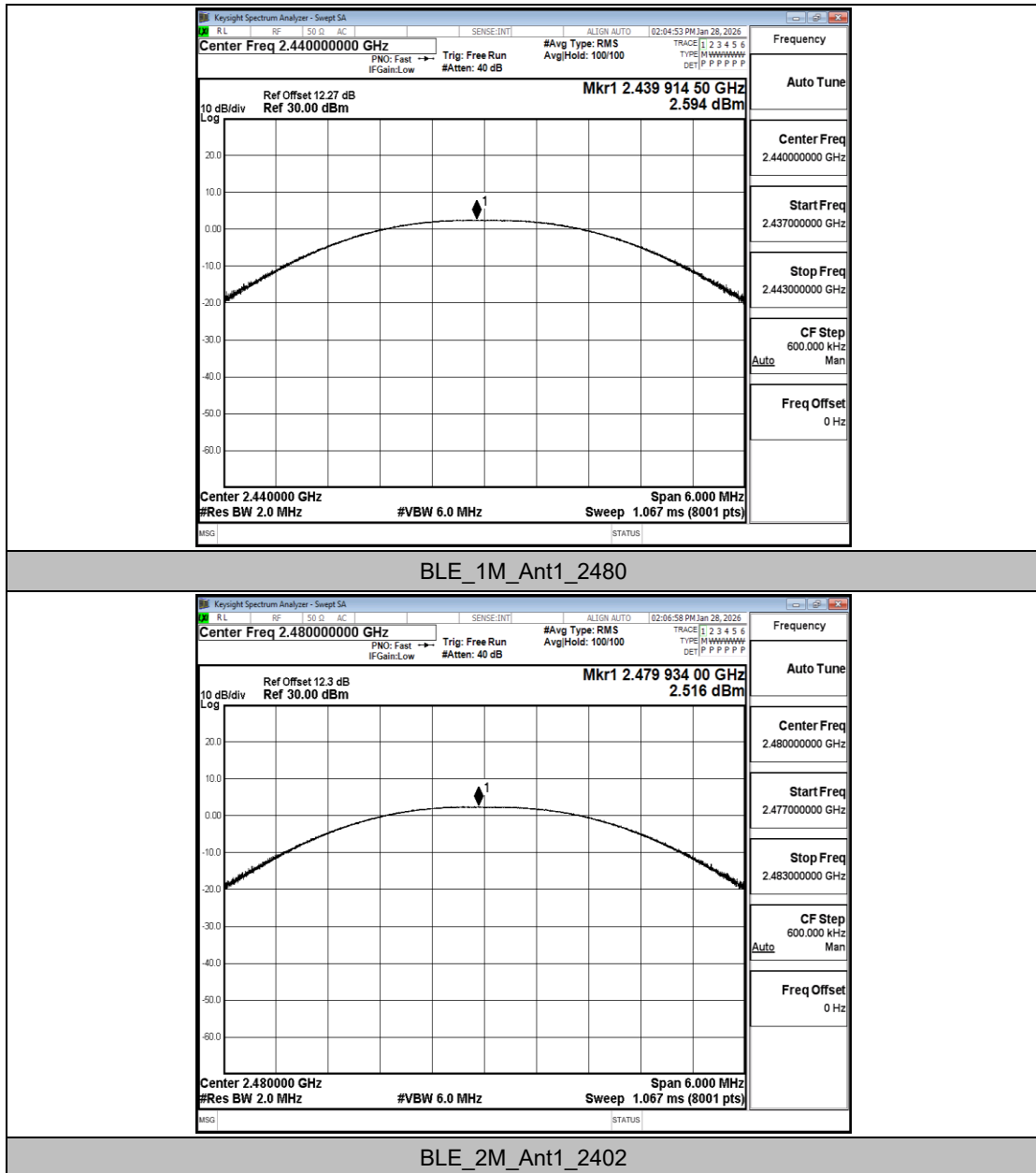
A.2 Maximum peak conducted output power

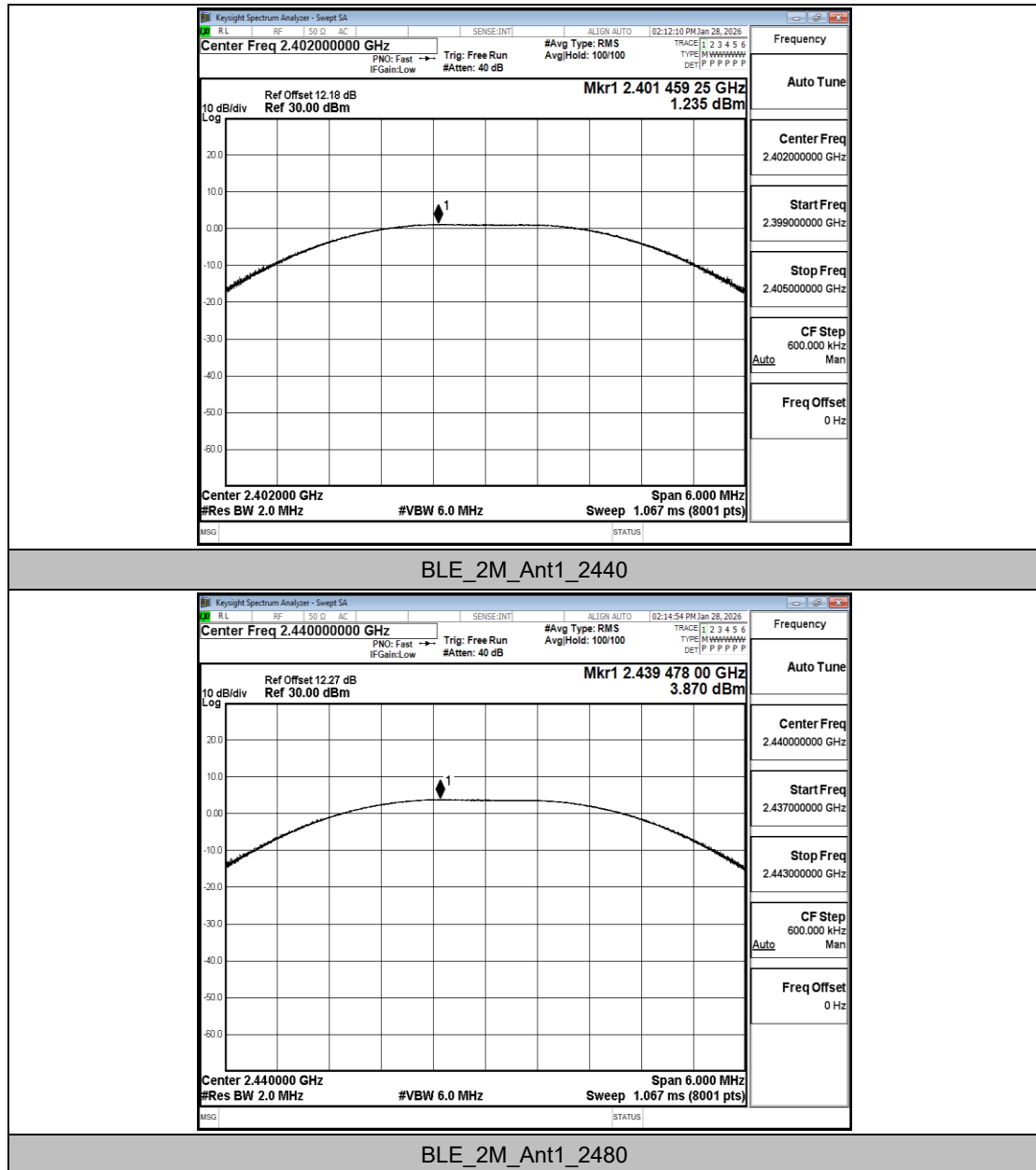
Test Result Peak

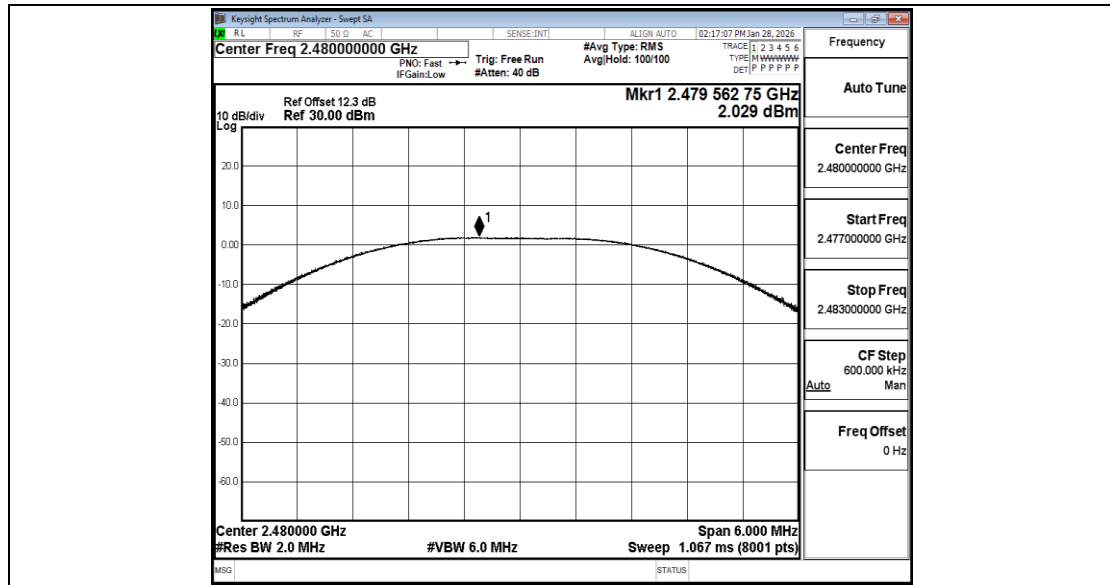
TestMode	Antenna	Freq(MHz)	Conducted Peak Power[dBm]	Conducted Limit[dBm]	Verdict
BLE_1M	Ant1	2402	2.11	≤30	PASS
		2440	2.59	≤30	PASS
		2480	2.52	≤30	PASS
BLE_2M	Ant1	2402	1.24	≤30	PASS
		2440	3.87	≤30	PASS
		2480	2.03	≤30	PASS

Test Graphs Peak







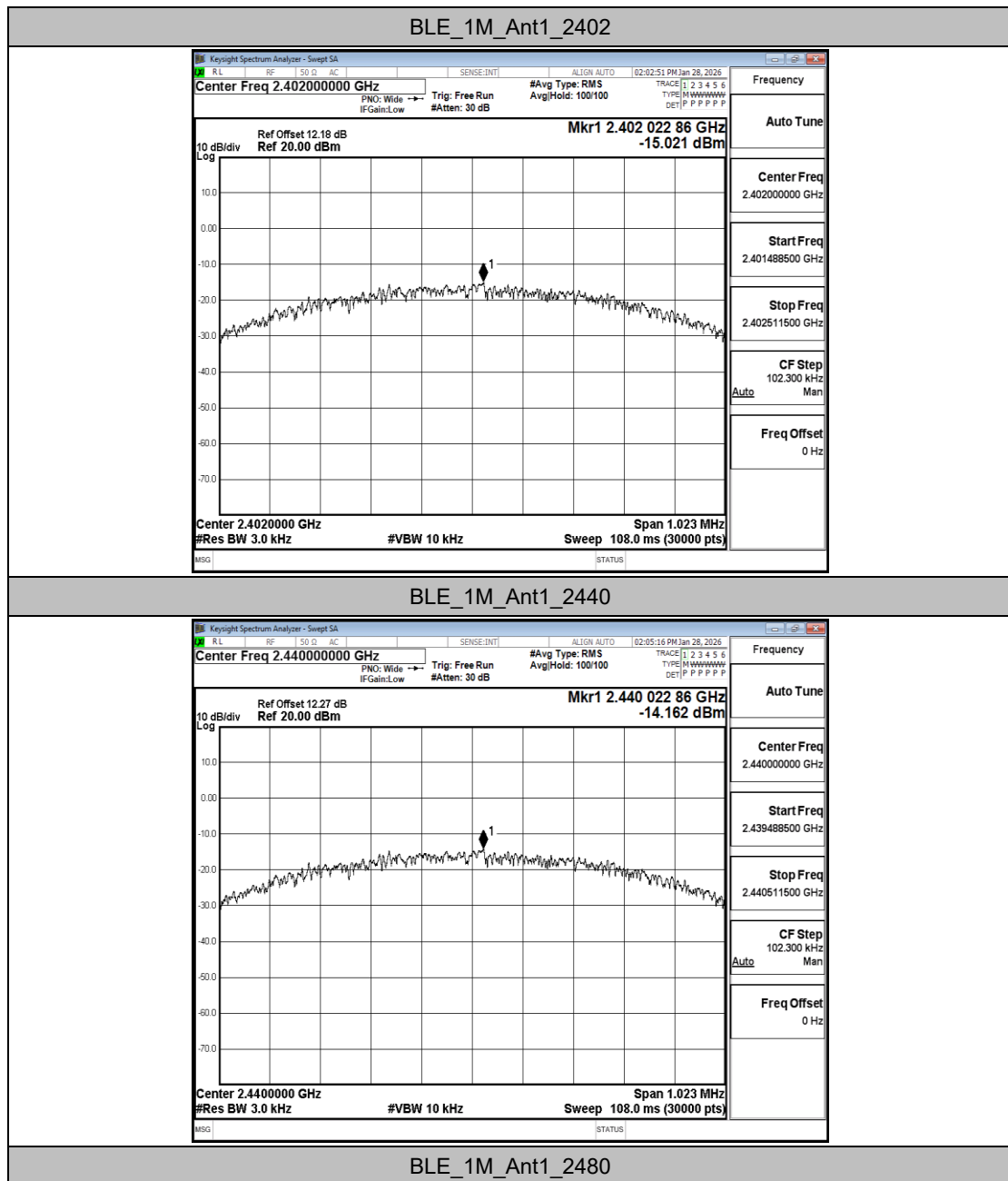


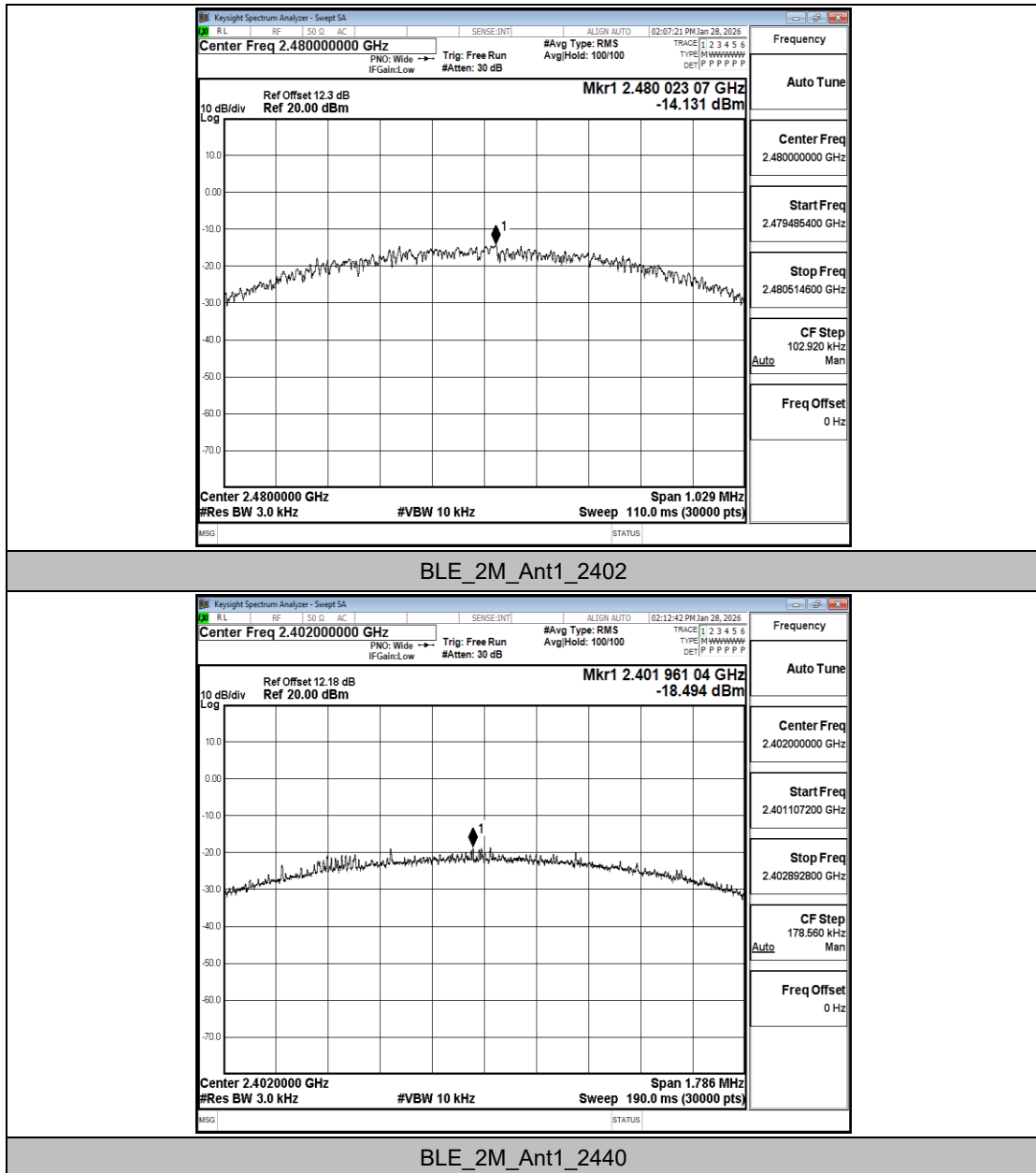
A.3 Maximum power spectral density

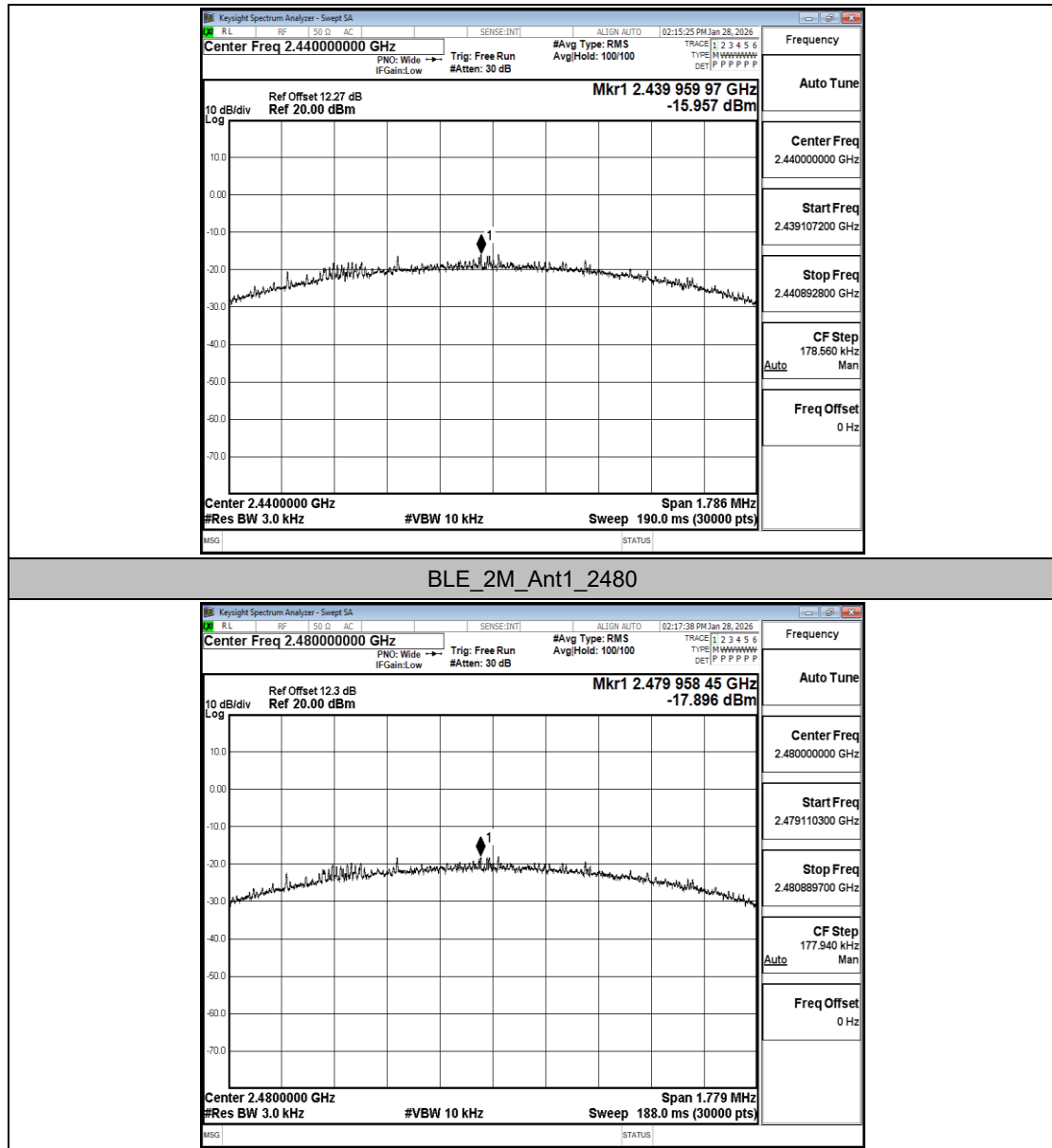
Test Result

TestMode	Antenna	Freq(MHz)	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-15.02	≤8.00	PASS
		2440	-14.16	≤8.00	PASS
		2480	-14.13	≤8.00	PASS
BLE_2M	Ant1	2402	-18.49	≤8.00	PASS
		2440	-15.96	≤8.00	PASS
		2480	-17.90	≤8.00	PASS

Test Graphs





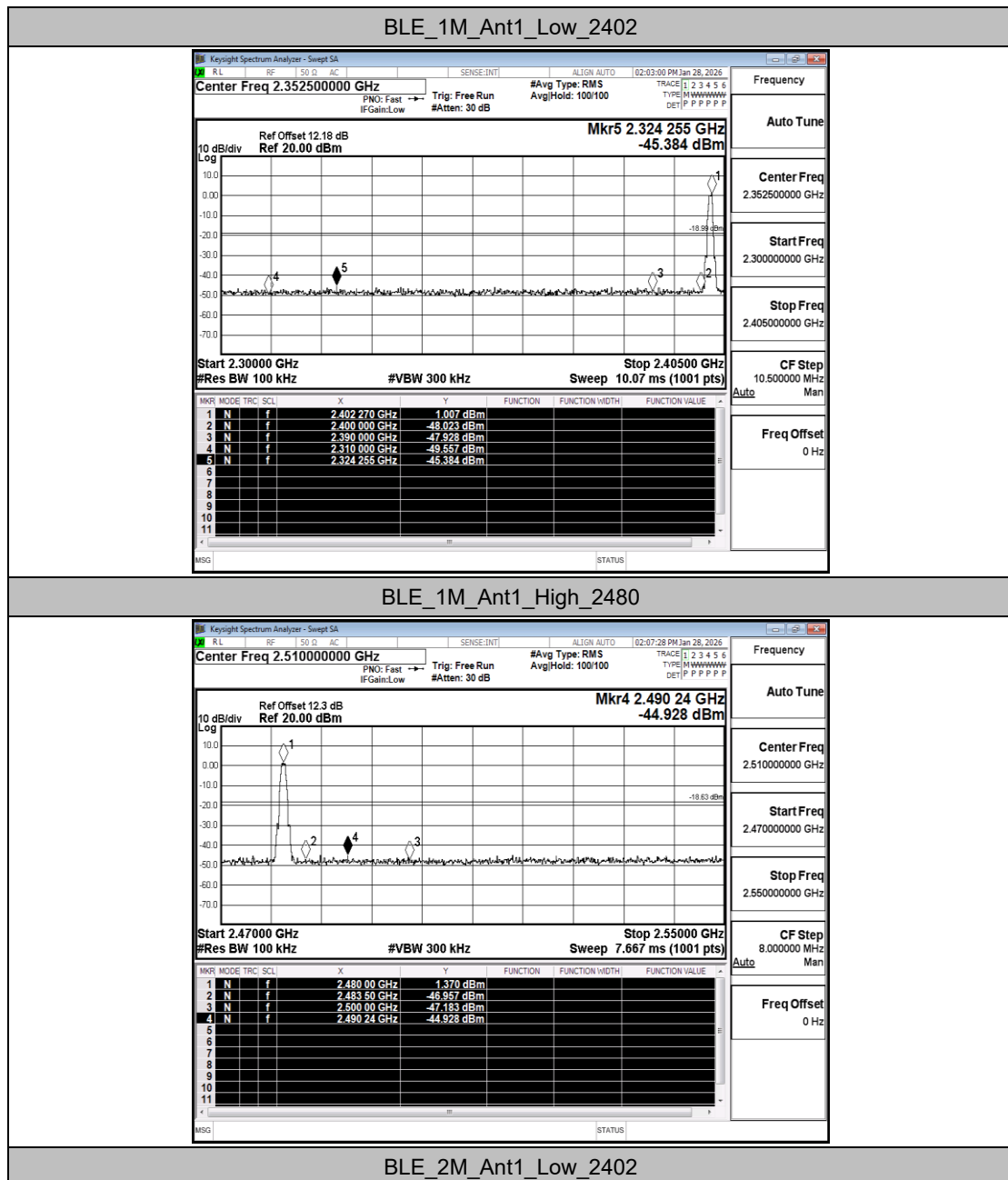


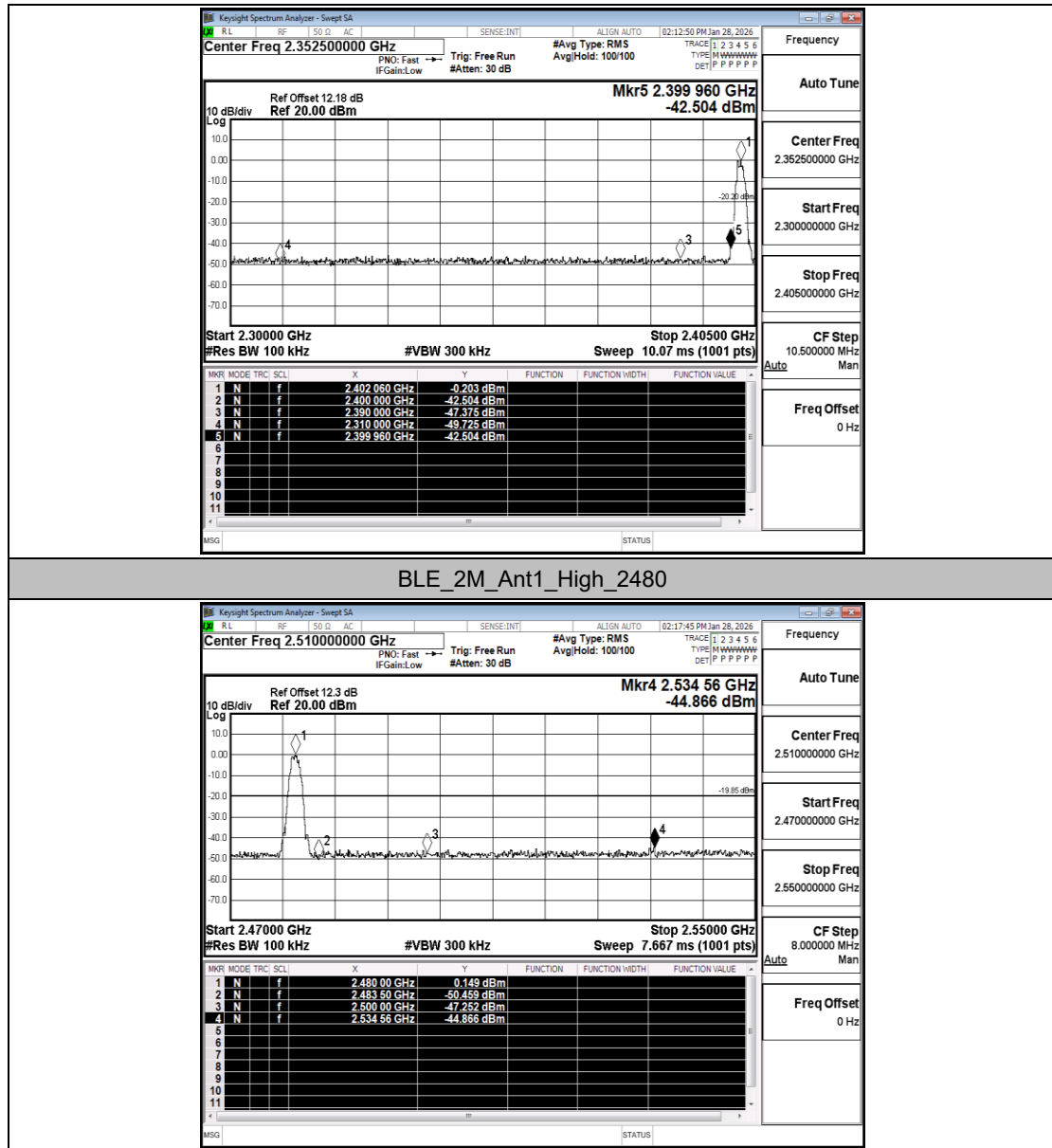
A.4 Band edge measurements

Test Result

TestMode	Antenna	Channel	Freq(MHz)	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	1.01	-45.38	≤-18.99	PASS
		High	2480	1.37	-44.93	≤-18.63	PASS
BLE_2M	Ant1	Low	2402	-0.20	-42.5	≤-20.2	PASS
		High	2480	0.15	-44.87	≤-19.85	PASS

Test Graphs



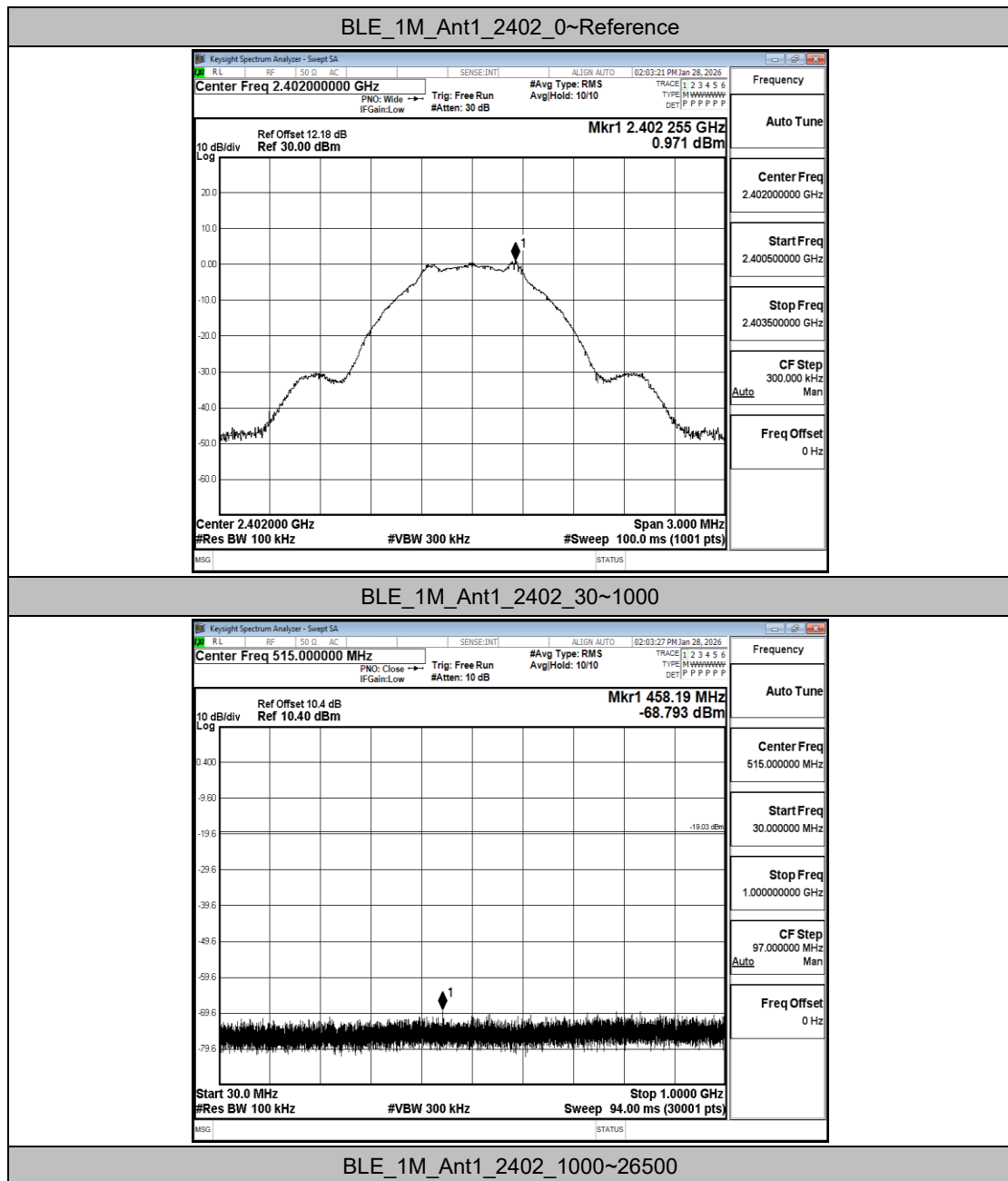


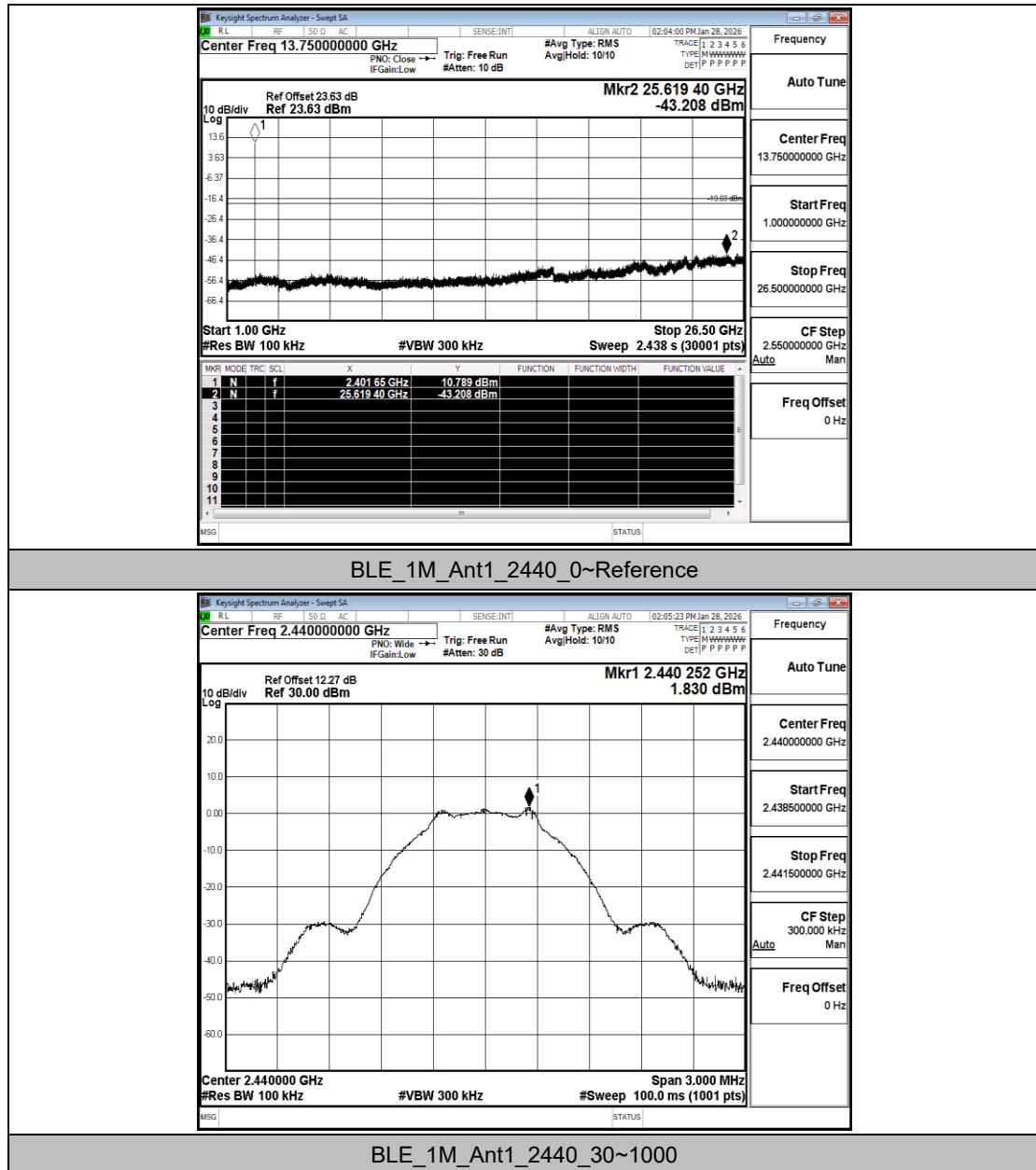
A.5 Conducted Spurious Emission

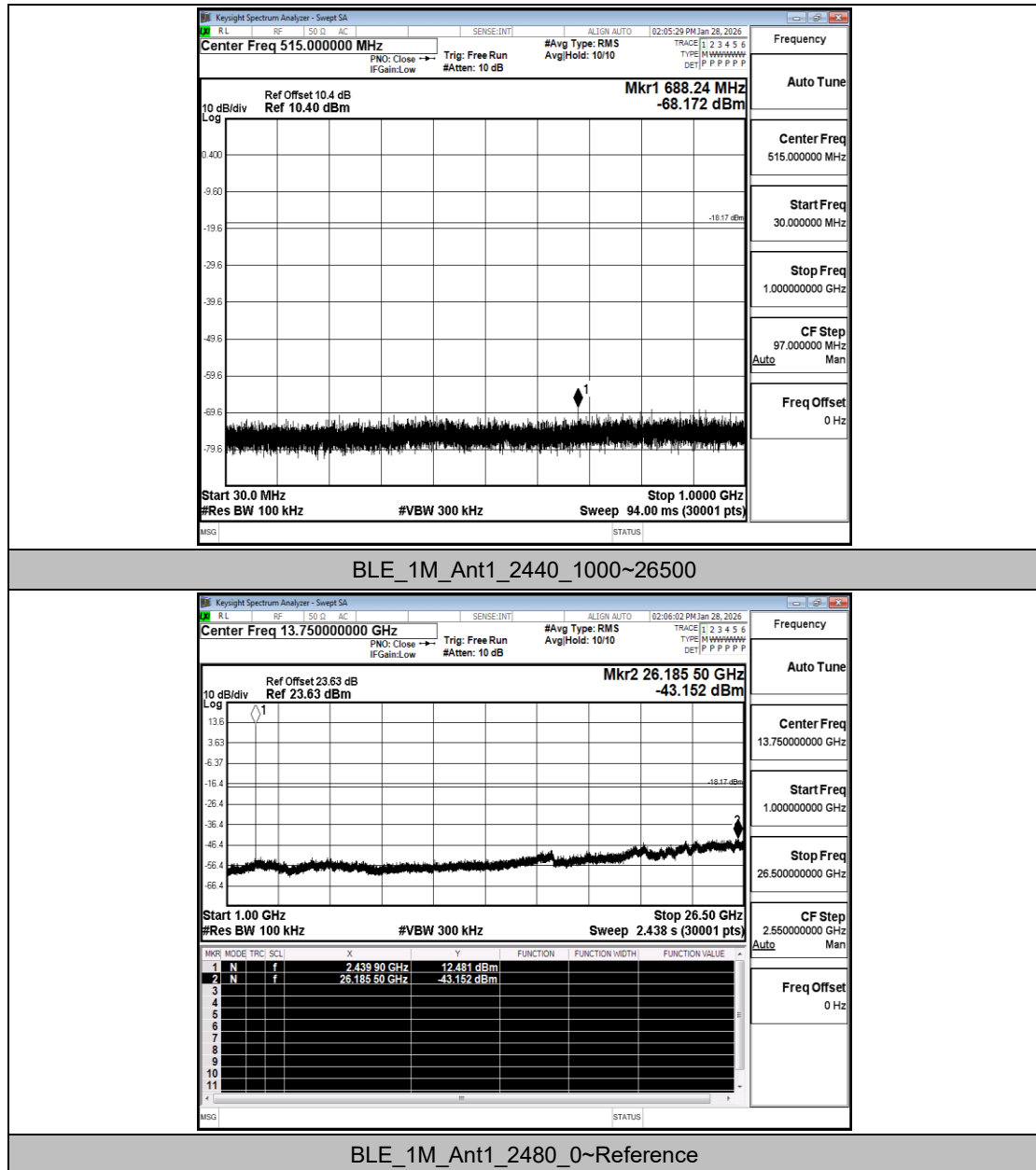
Test Result

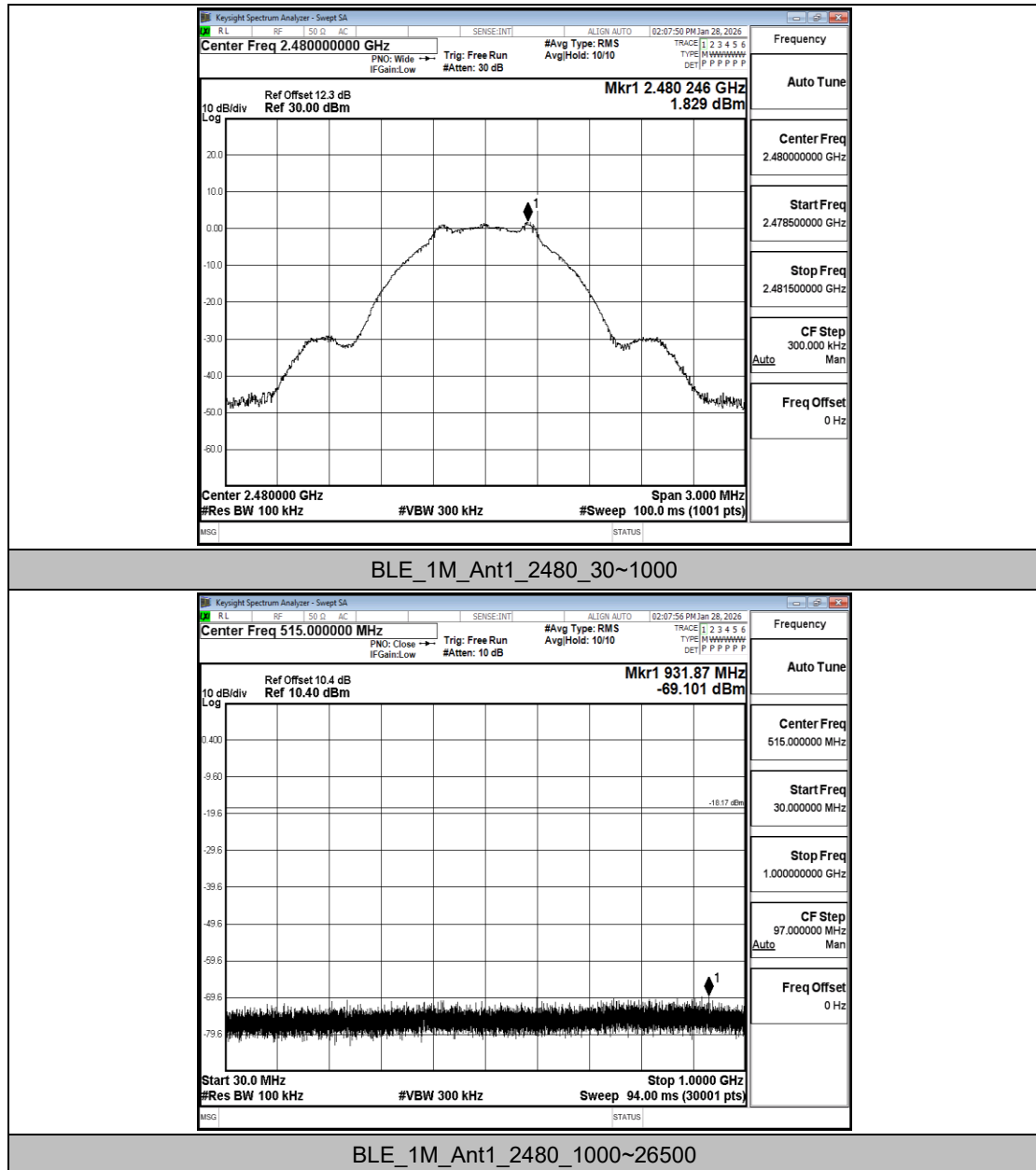
TestMode	Antenna	Freq(MHz)	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	Reference	0.97	0.97	---	PASS
			30~1000	0.97	-68.79	≤-19.03	PASS
			1000~26500	0.97	-43.21	≤-19.03	PASS
		2440	Reference	1.83	1.83	---	PASS
			30~1000	1.83	-68.17	≤-18.17	PASS
			1000~26500	1.83	-43.15	≤-18.17	PASS
		2480	Reference	1.83	1.83	---	PASS
			30~1000	1.83	-69.1	≤-18.17	PASS
			1000~26500	1.83	-42.27	≤-18.17	PASS
BLE_2M	Ant1	2402	Reference	0.50	0.50	---	PASS
			30~1000	0.50	-58.48	≤-19.5	PASS
			1000~26500	0.50	-43.02	≤-19.5	PASS
		2440	Reference	3.19	3.19	---	PASS
			30~1000	3.19	-54.91	≤-16.81	PASS
			1000~26500	3.19	-42.94	≤-16.81	PASS
		2480	Reference	1.28	1.28	---	PASS
			30~1000	1.28	-57.21	≤-18.72	PASS
			1000~26500	1.28	-34.7	≤-18.72	PASS

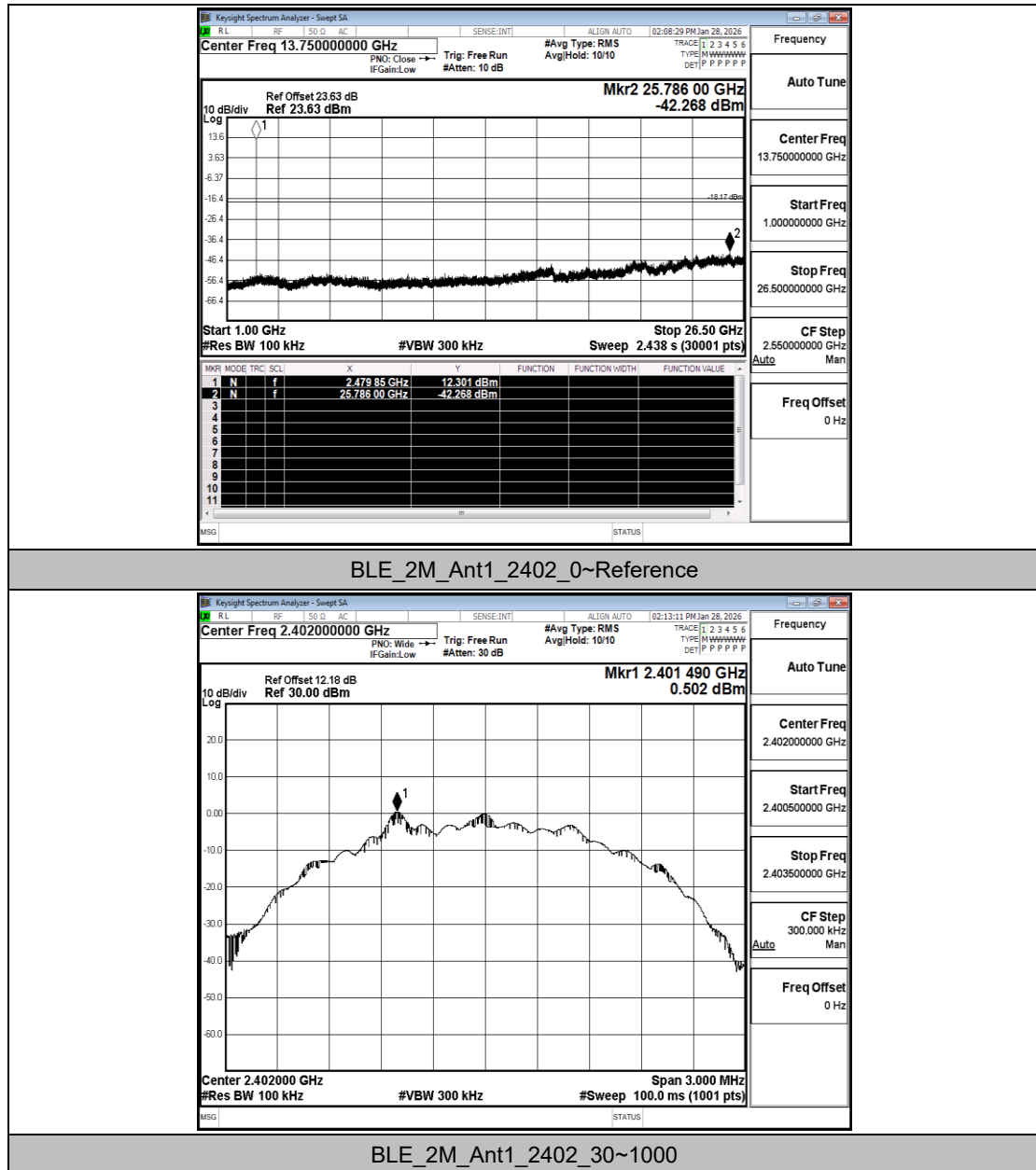
Test Graphs

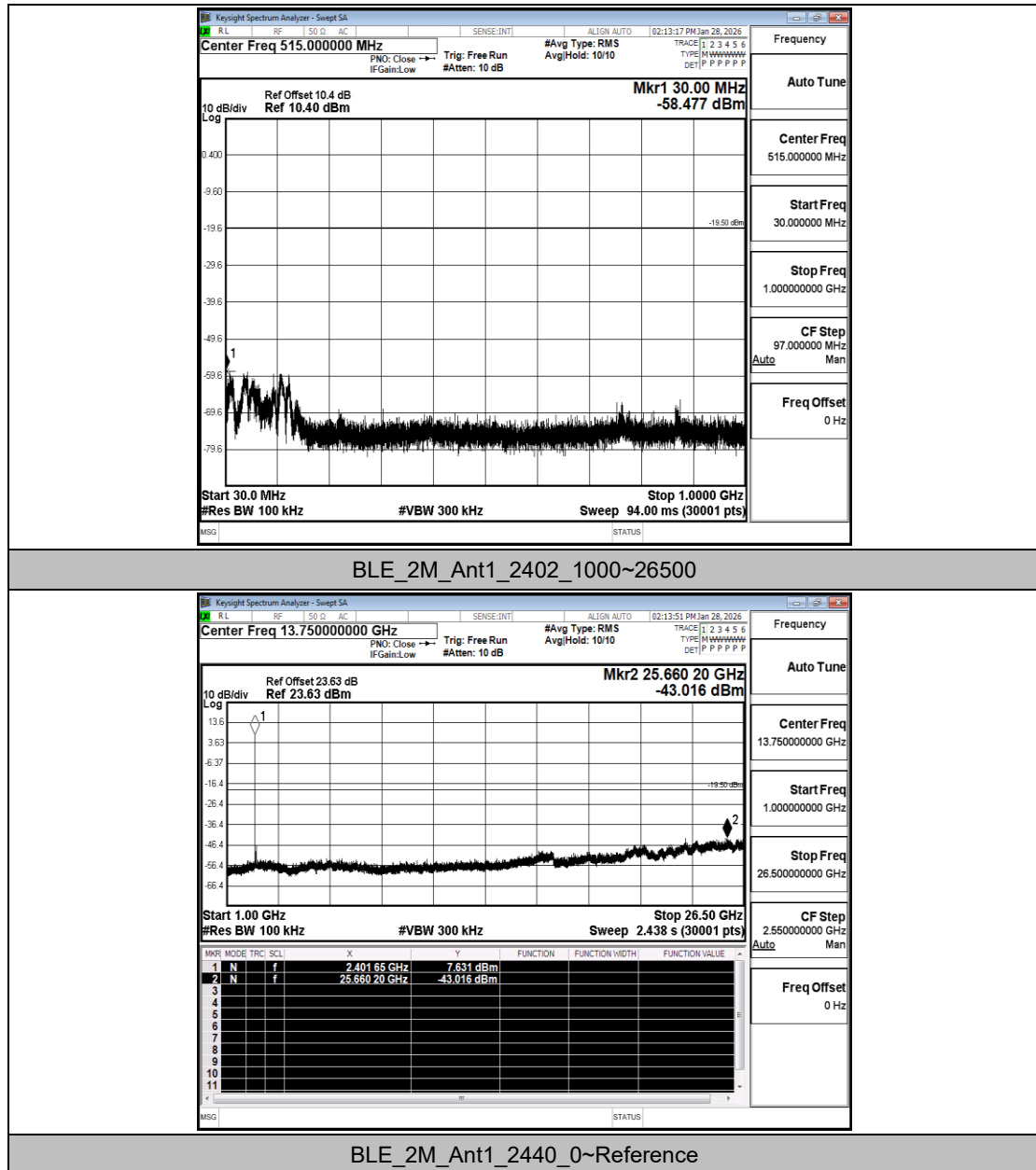


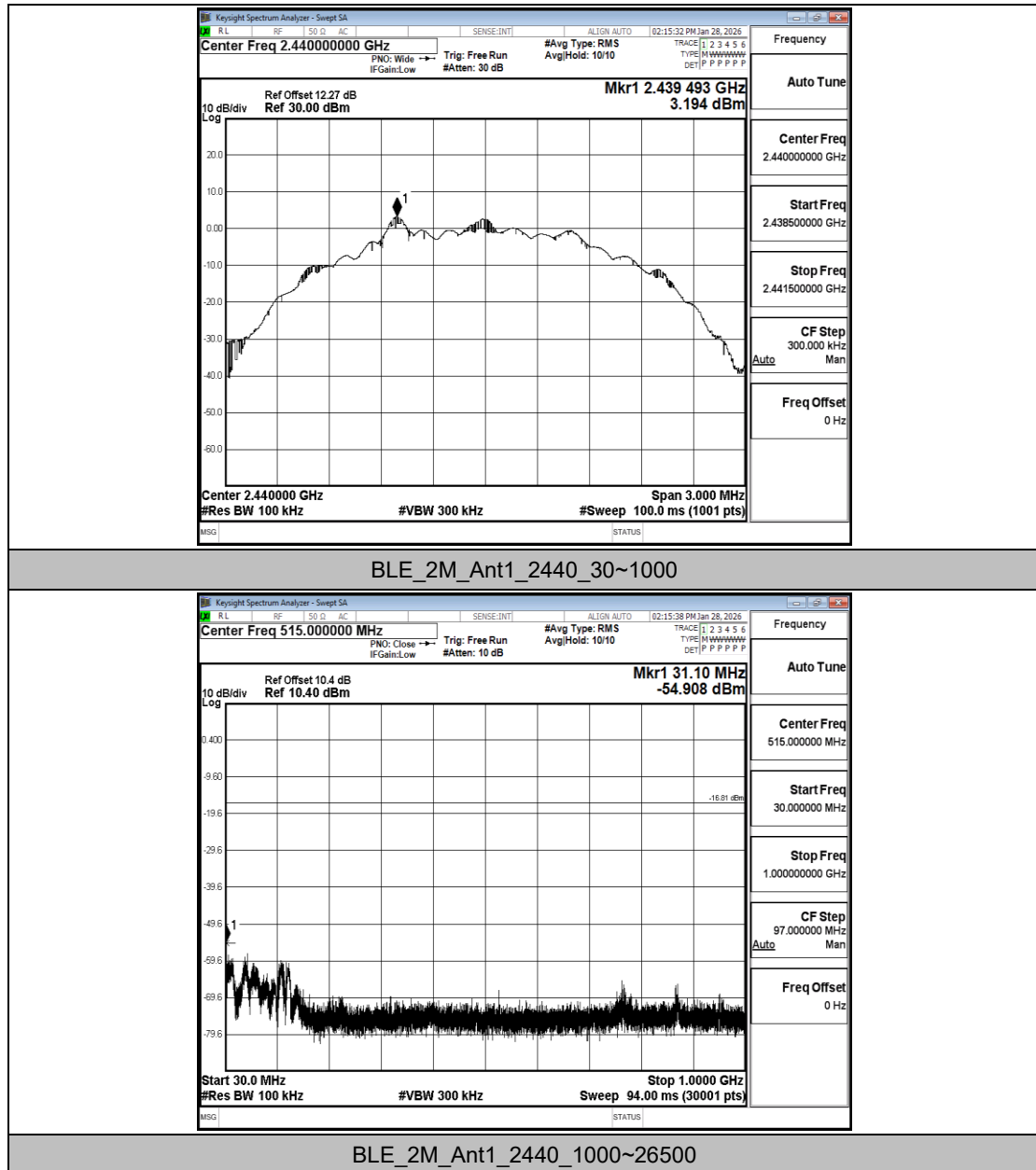


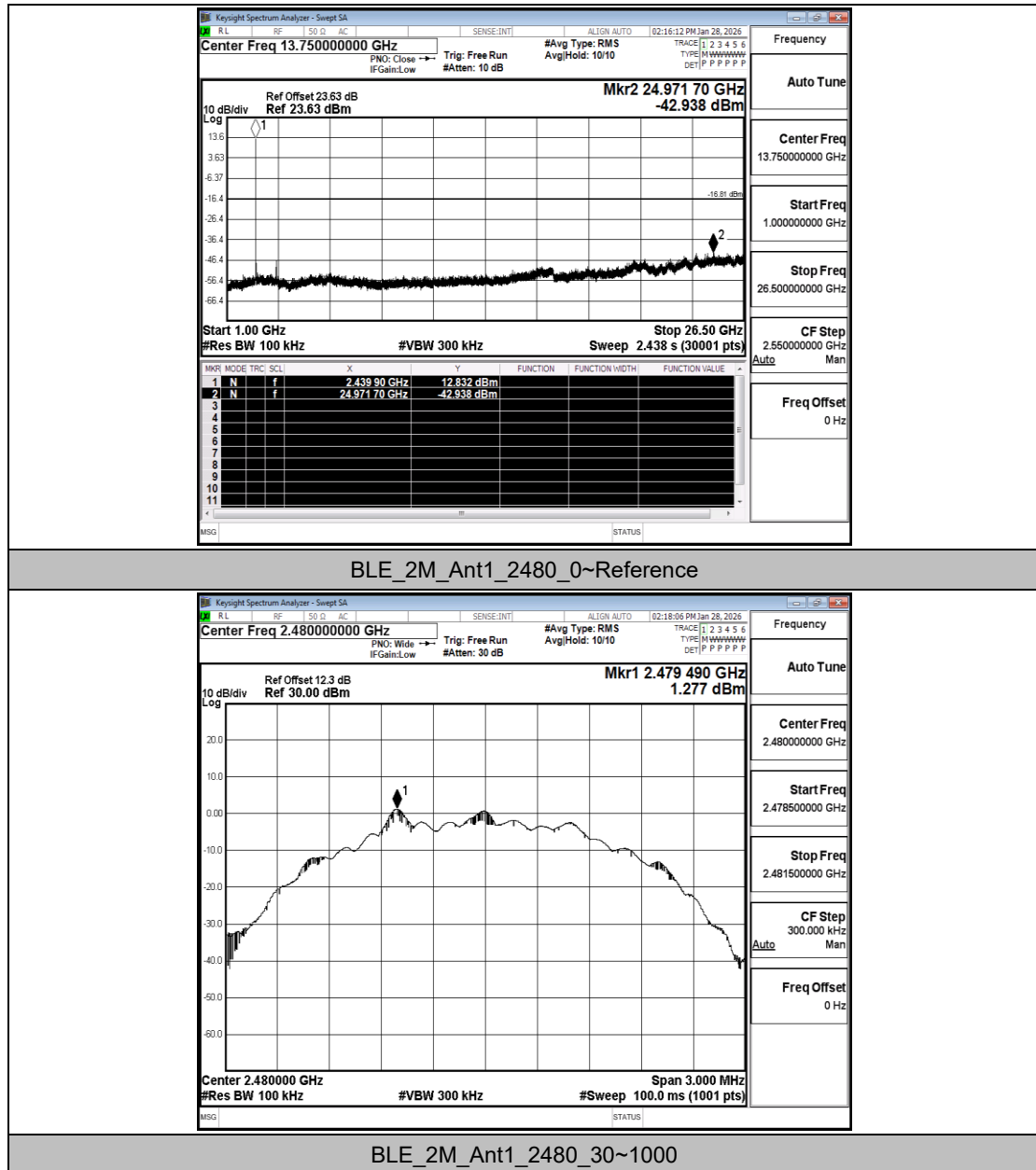


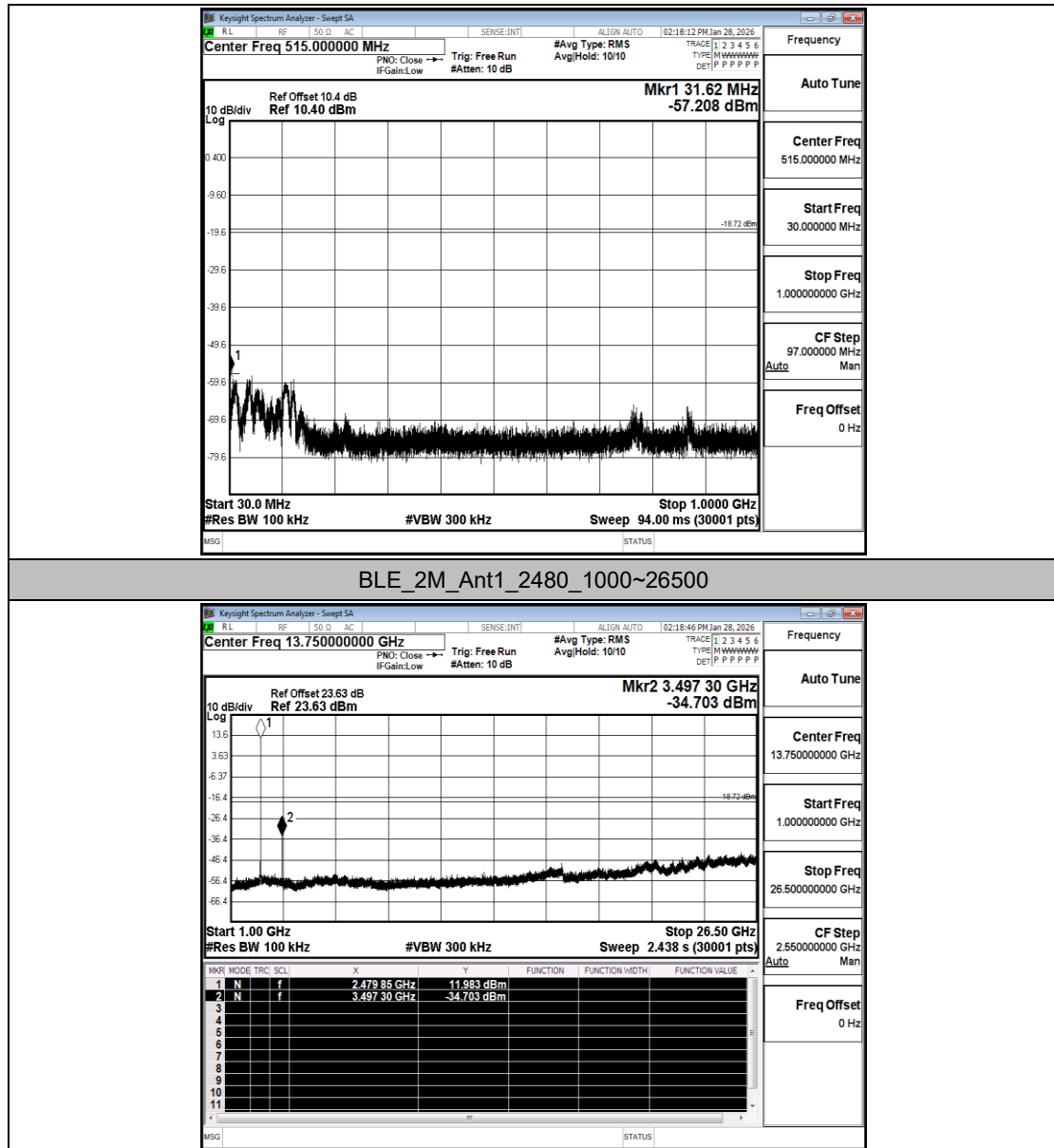










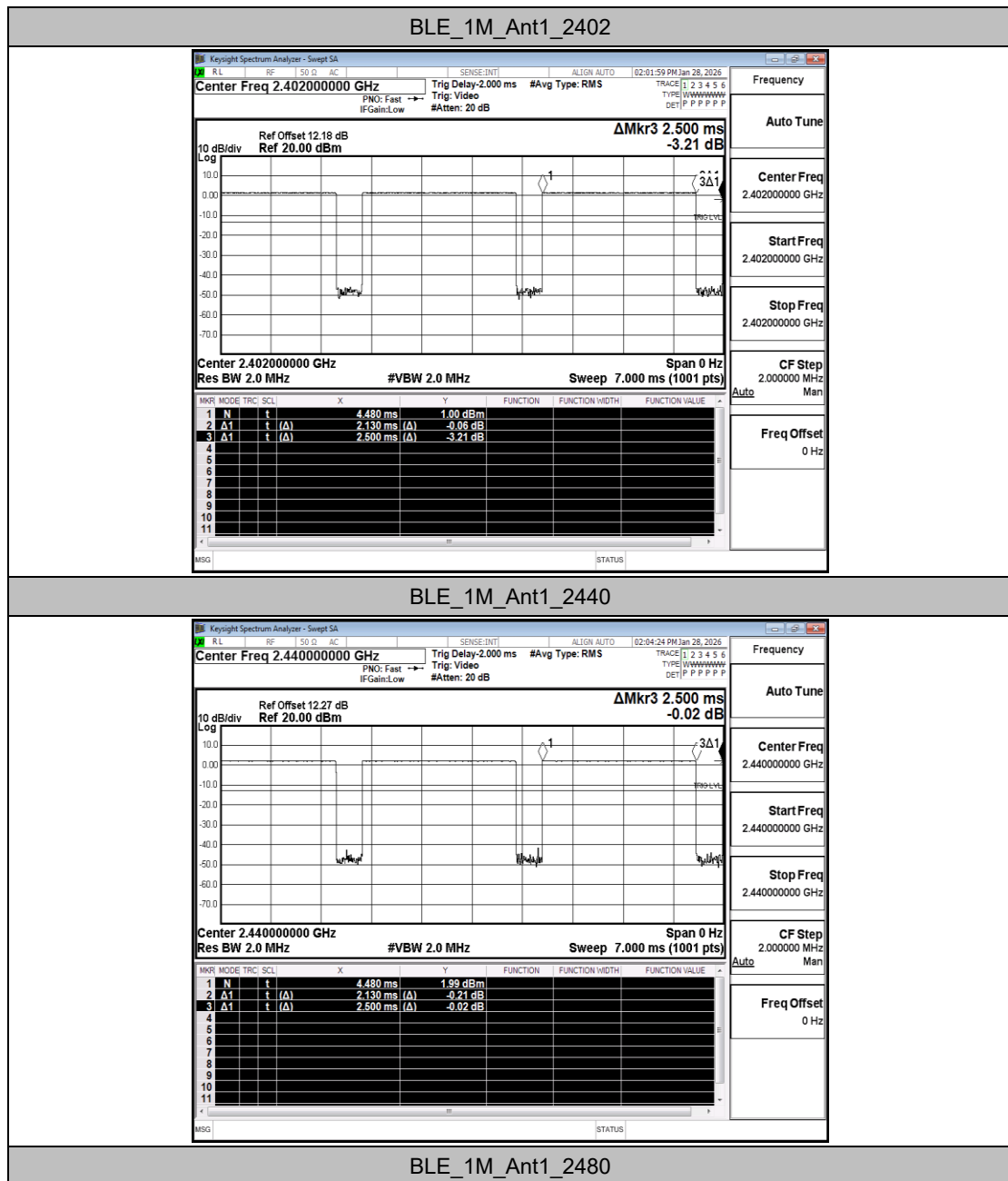


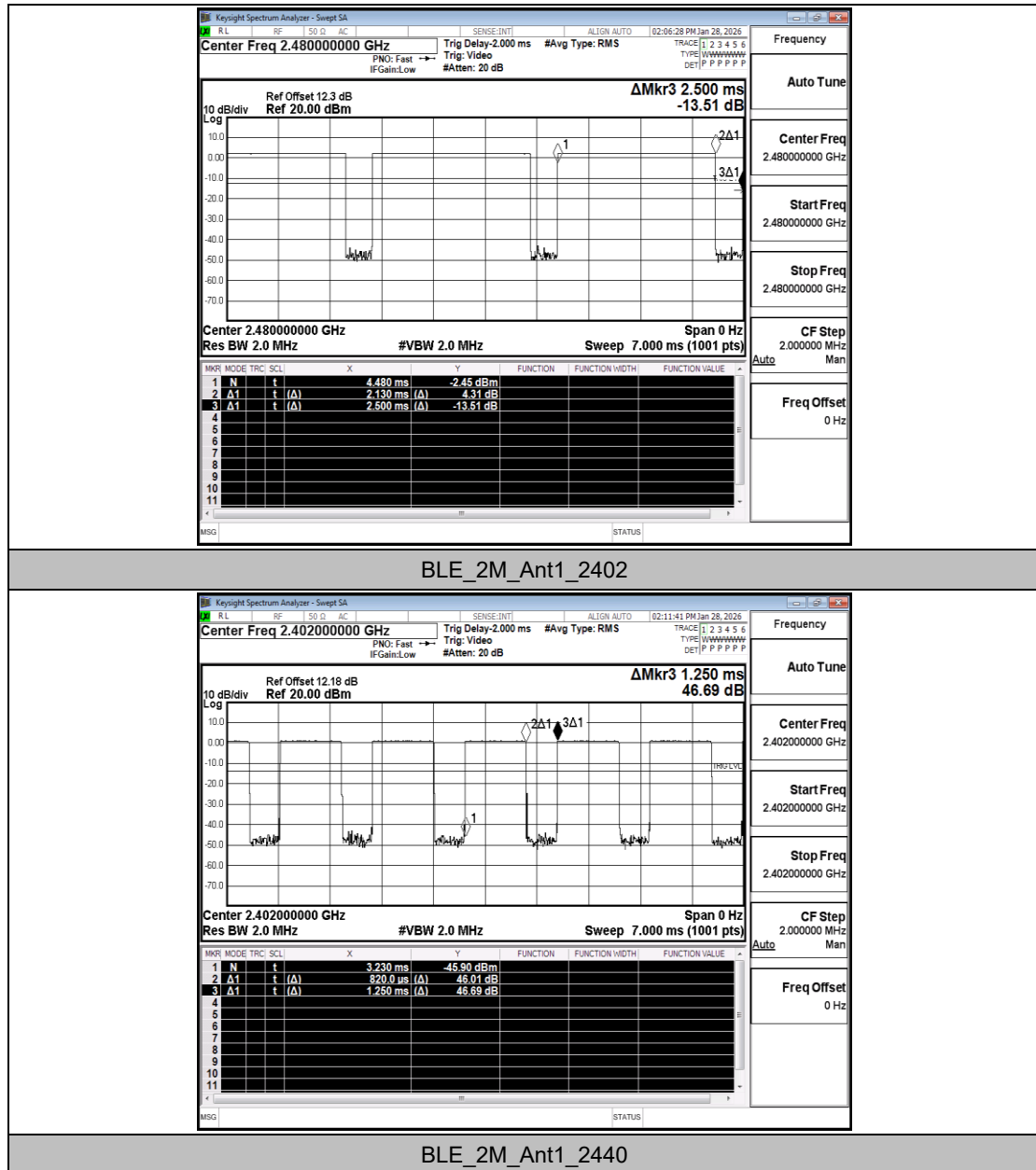
A.6 Duty Cycle

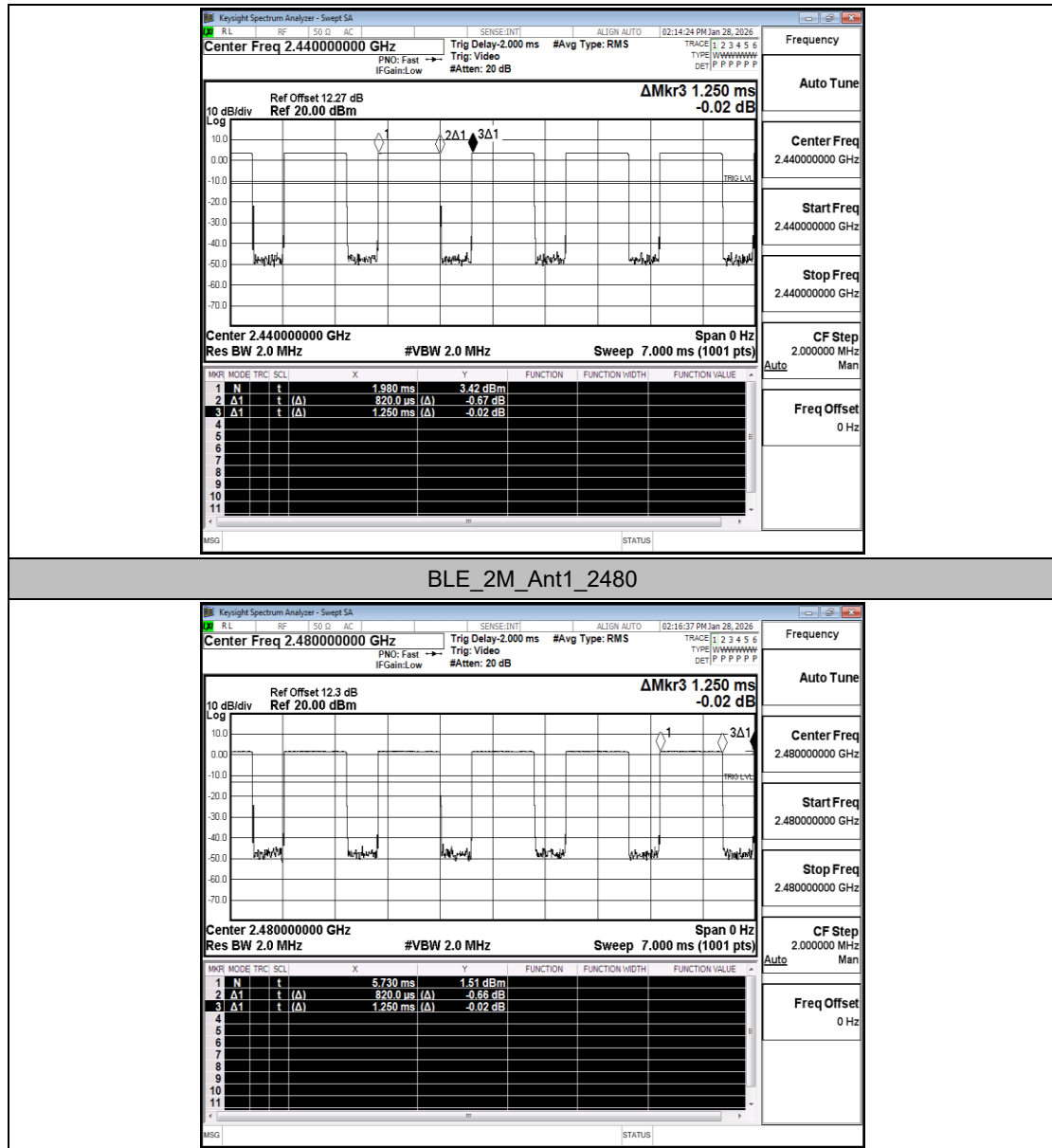
Test Result

TestMode	Antenna	Freq(MHz)	ON Time [ms]	Period [ms]	X	DC [%]	xFactor	Limit	Verdict
BLE_1M	Ant1	2402	2.13	2.50	0.8520	85.20	0.70	---	---
		2440	2.13	2.50	0.8520	85.20	0.70	---	---
		2480	2.13	2.50	0.8520	85.20	0.70	---	---
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	0.82	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	-57.07	≤-46.44	4.54	0.70	43.37	≤54	PASS
				AV	2384.945	-56.21	≤-46.44	4.54	0.70	44.23	≤54	PASS
				AV	2390.000	-56.6	≤-46.44	4.54	0.70	43.84	≤54	PASS
				Peak	2310.000	-49.39	≤-25.74	4.54	0.00	50.35	≤74	PASS
				Peak	2313.440	-45.97	≤-25.74	4.54	0.00	53.77	≤74	PASS
				Peak	2390.000	-48.43	≤-25.74	4.54	0.00	51.31	≤74	PASS
		High	2480	AV	2483.500	-56.44	≤-46.44	4.54	0.70	44.00	≤54	PASS
				AV	2489.840	-55.65	≤-46.44	4.54	0.70	44.79	≤54	PASS
				AV	2500.000	-56.89	≤-46.44	4.54	0.70	43.55	≤54	PASS
				Peak	2483.500	-49.42	≤-25.74	4.54	0.00	50.32	≤74	PASS
				Peak	2484.400	-45.81	≤-25.74	4.54	0.00	53.93	≤74	PASS
				Peak	2500.000	-48.09	≤-25.74	4.54	0.00	51.65	≤74	PASS
BLE_2M	Ant1	Low	2402	AV	2310.000	-57.16	≤-47.57	4.54	1.83	44.41	≤54	PASS
				AV	2343.470	-56.12	≤-47.57	4.54	1.83	45.45	≤54	PASS
				AV	2390.000	-57.26	≤-47.57	4.54	1.83	44.31	≤54	PASS
				Peak	2310.000	-47.54	≤-25.74	4.54	0.00	52.20	≤74	PASS
				Peak	2370.875	-45.64	≤-25.74	4.54	0.00	54.10	≤74	PASS
				Peak	2390.000	-50.02	≤-	4.54	0.00	49.72	≤74	PASS

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							25.74					
				AV	2483.500	-55.44	≤- 47.57	4.54	1.83	46.13	≤54	PASS
				AV	2483.520	-55.44	≤- 47.57	4.54	1.83	46.13	≤54	PASS
				AV	2500.000	-56.91	≤- 47.57	4.54	1.83	44.66	≤54	PASS
		High	2480	Peak	2483.500	-47.03	≤- 25.74	4.54	0.00	52.71	≤74	PASS
				Peak	2484.960	-44.22	≤- 25.74	4.54	0.00	55.52	≤74	PASS
				Peak	2500.000	-48.81	≤- 25.74	4.54	0.00	50.93	≤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

