

Appendix B

RF Test Data for BT LE (Conducted Measurement)

Product Name: Portable Speaker

Test Model: Sonic Boom POP

Environmental Conditions

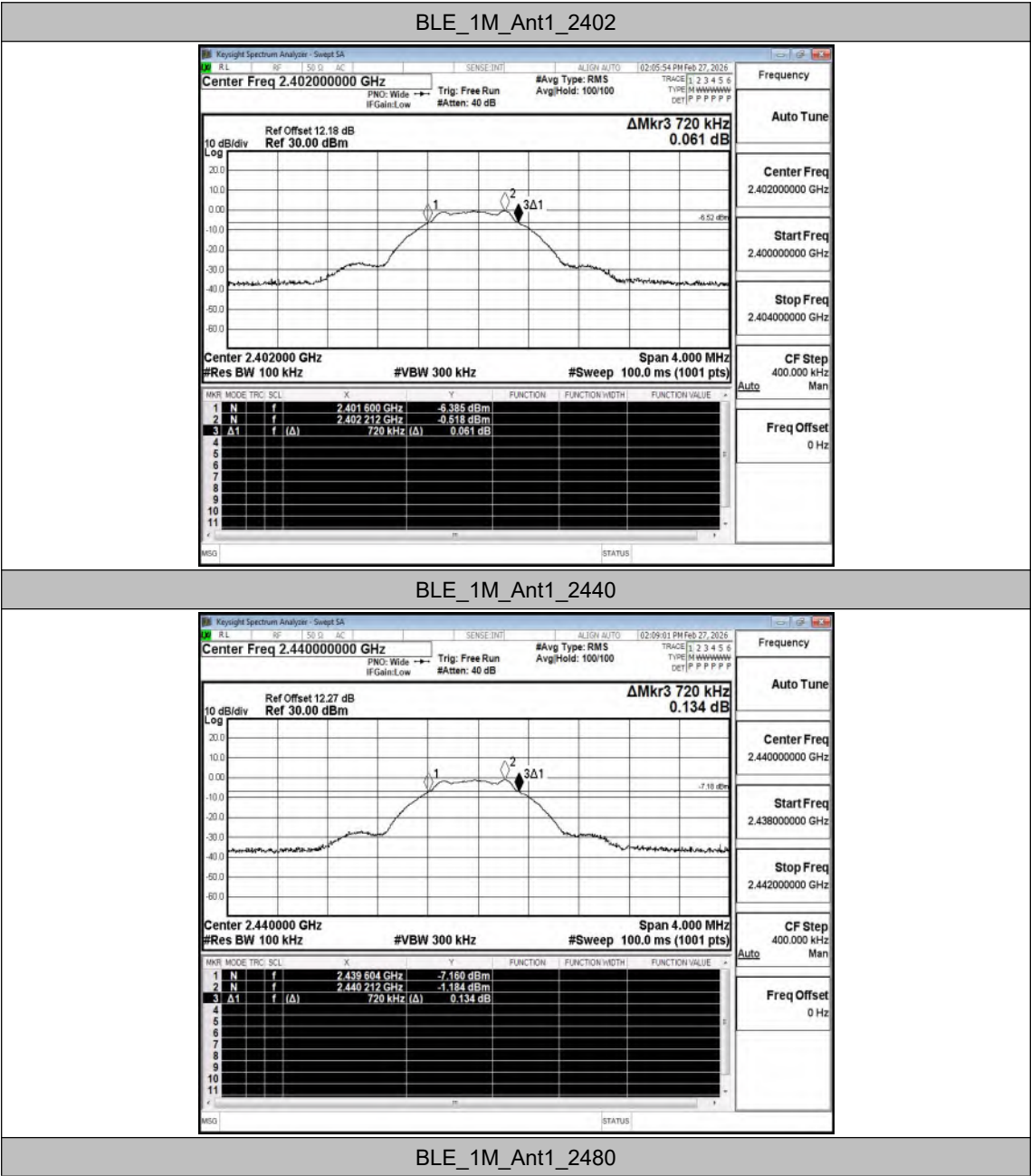
Temperature:	24.5°C
Relative Humidity:	54.2%
ATM Pressure:	100.0 kPa
Test Engineer:	Yan Chen
Supervised by:	Fengliu Tang

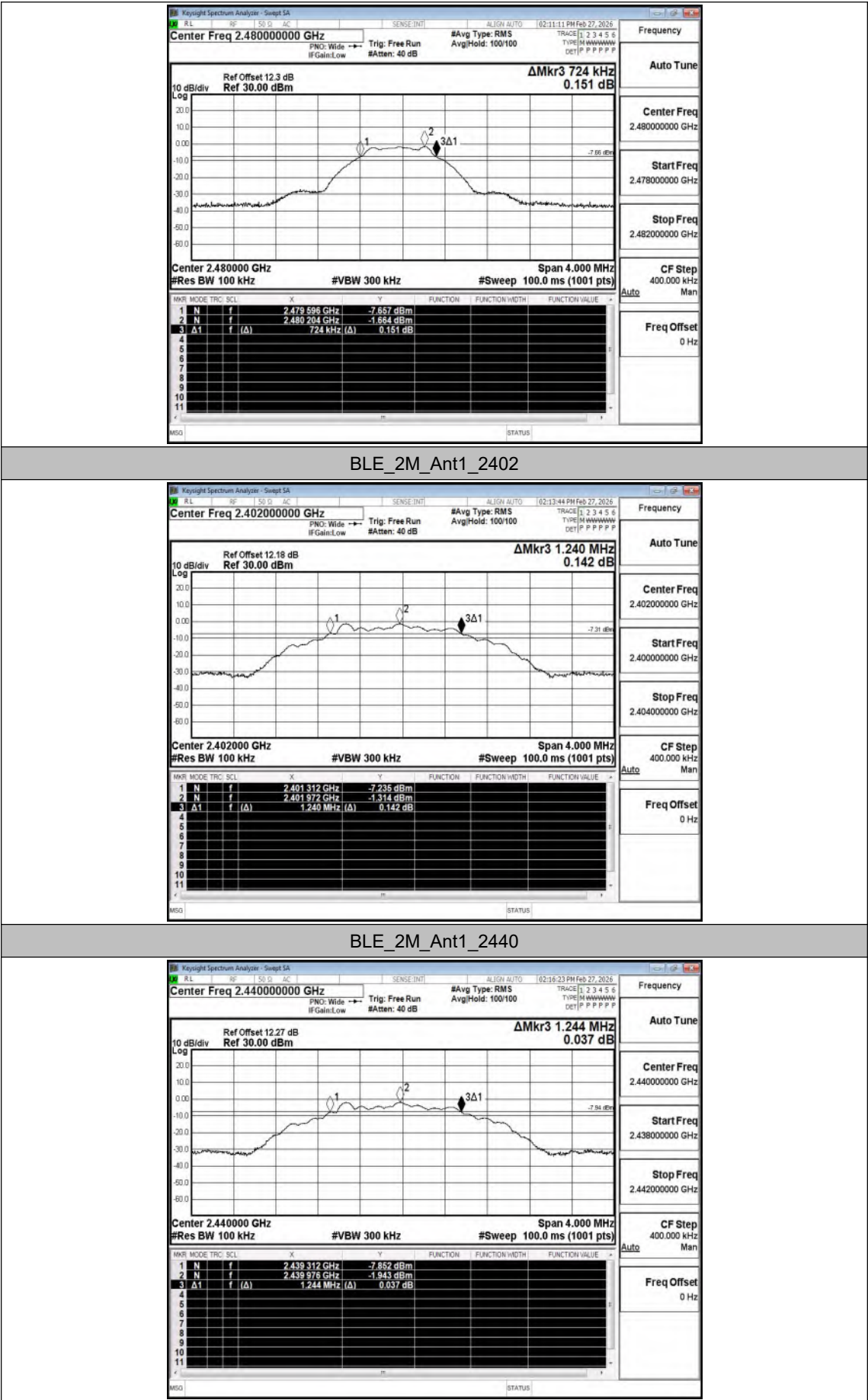
B.1 DTS Bandwidth

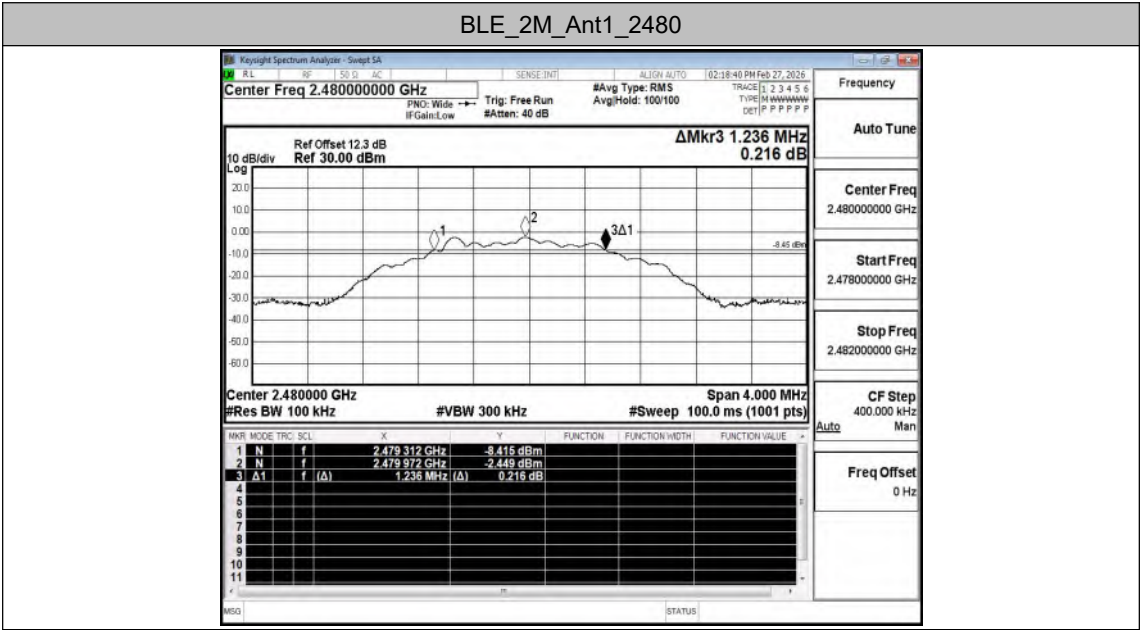
Test Result

TestMode	Antenna	Freq(MHz)	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.720	2401.600	2402.320	0.5	PASS
		2440	0.720	2439.604	2440.324	0.5	PASS
		2480	0.724	2479.596	2480.320	0.5	PASS
BLE_2M	Ant1	2402	1.240	2401.312	2402.552	0.5	PASS
		2440	1.244	2439.312	2440.556	0.5	PASS
		2480	1.236	2479.312	2480.548	0.5	PASS

Test Graphs





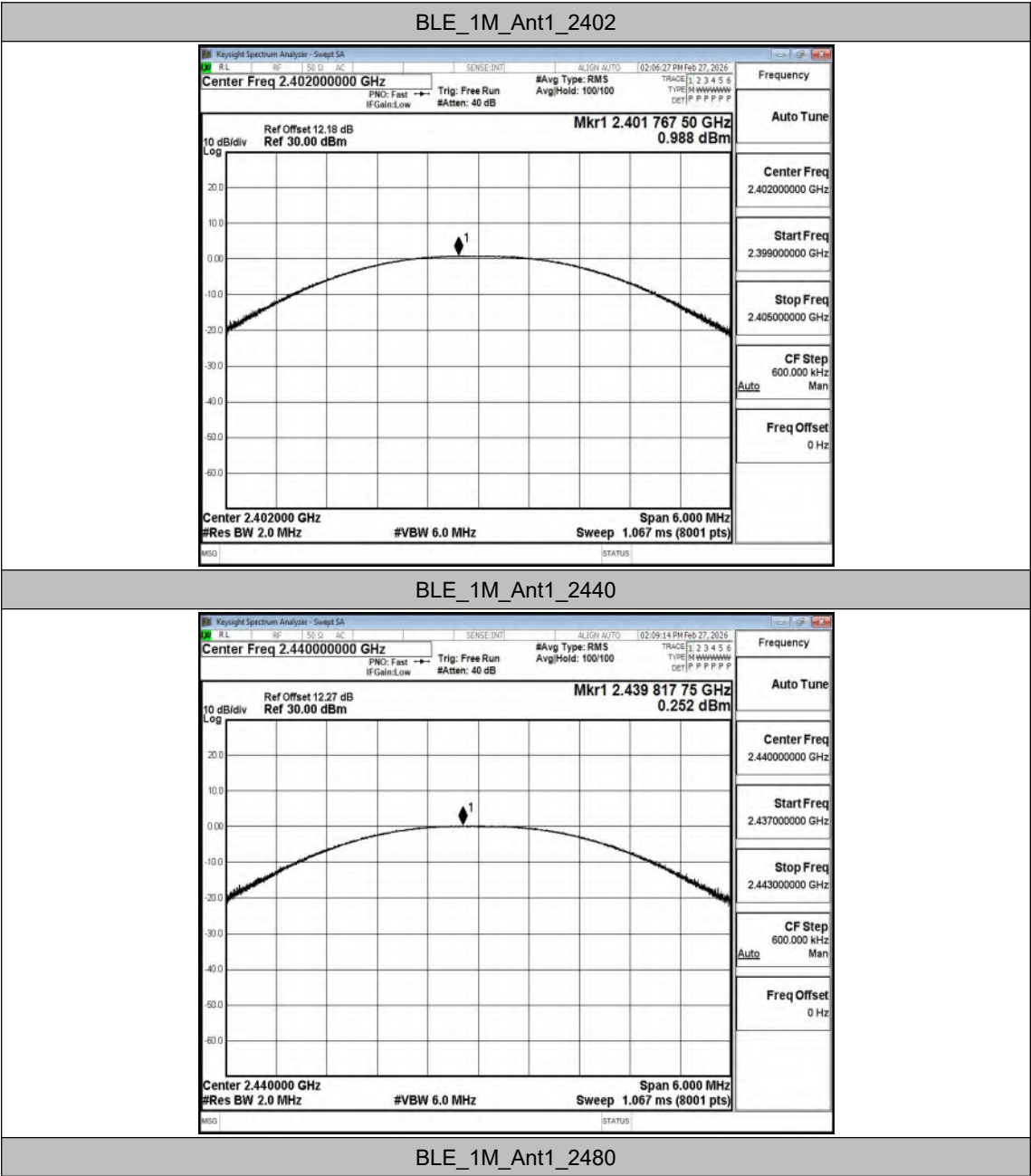


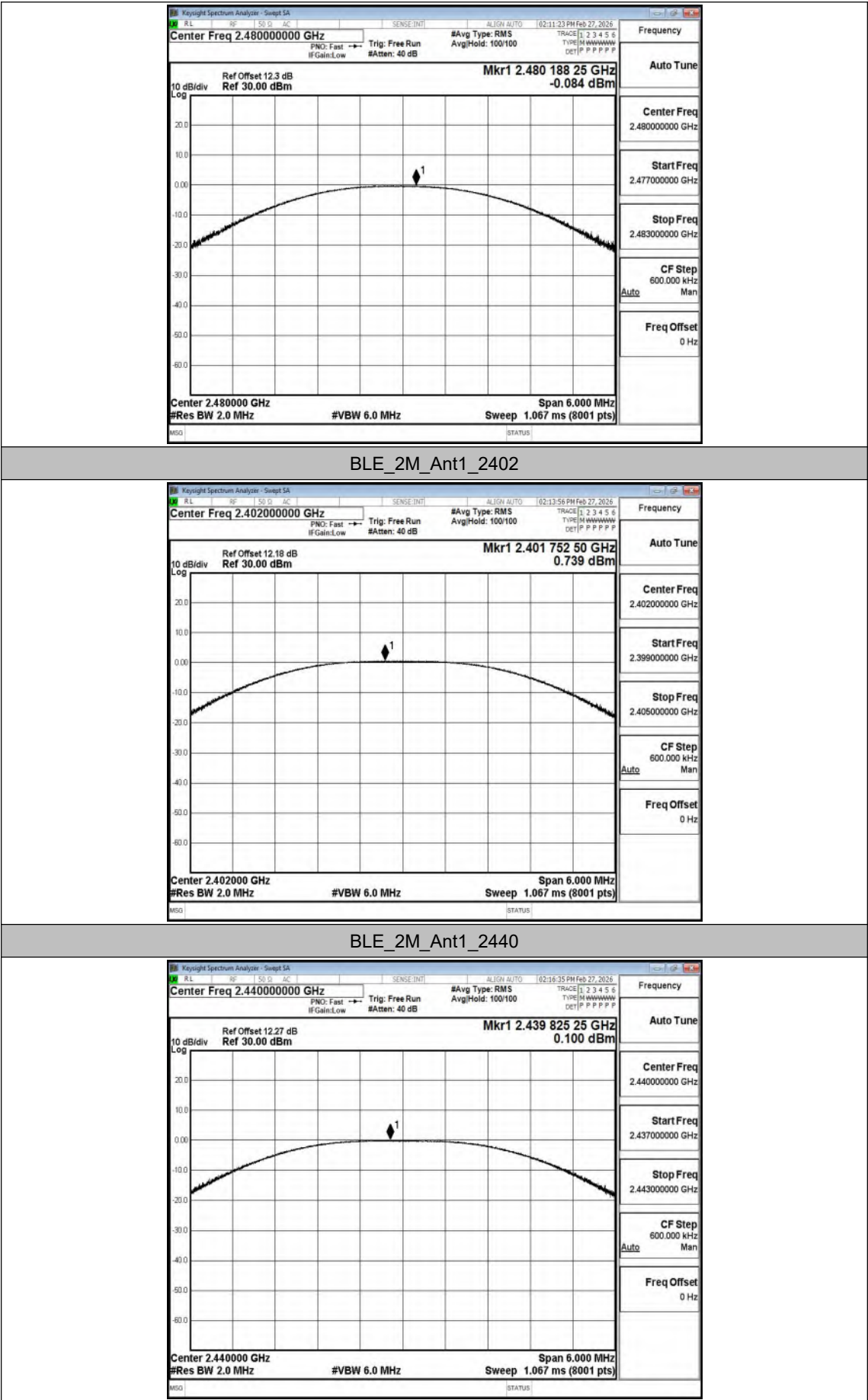
B.2 Maximum Peak conducted output power

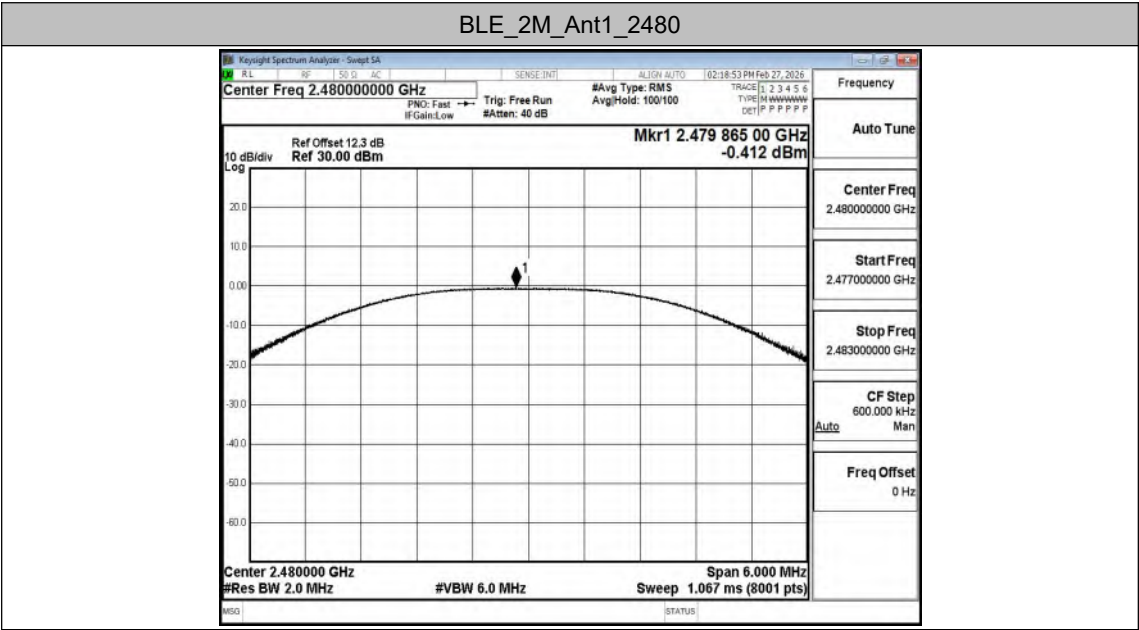
Test Result Peak

TestMode	Antenna	Freq(MHz)	Conducted Peak Power[dBm]	Conducted Limit[dBm]	Verdict
BLE_1M	Ant1	2402	0.99	≤30	PASS
		2440	0.25	≤30	PASS
		2480	-0.08	≤30	PASS
BLE_2M	Ant1	2402	0.74	≤30	PASS
		2440	0.10	≤30	PASS
		2480	-0.41	≤30	PASS

Test Graphs Peak







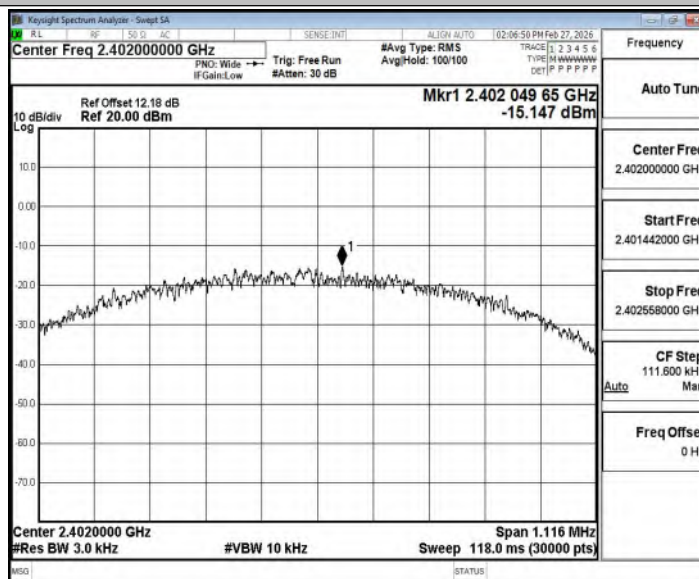
B.3 Maximum power spectral density

Test Result

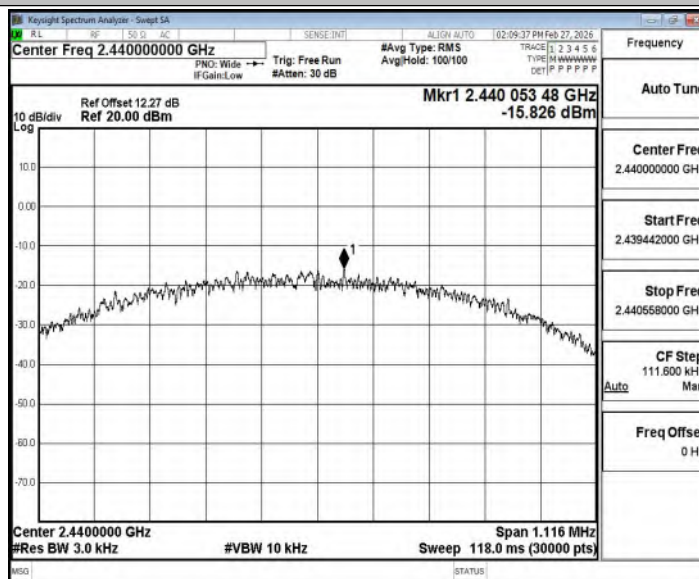
TestMode	Antenna	Freq(MHz)	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-15.15	≤8.00	PASS
		2440	-15.83	≤8.00	PASS
		2480	-16.30	≤8.00	PASS
BLE_2M	Ant1	2402	-18.58	≤8.00	PASS
		2440	-19.17	≤8.00	PASS
		2480	-19.62	≤8.00	PASS

Test Graphs

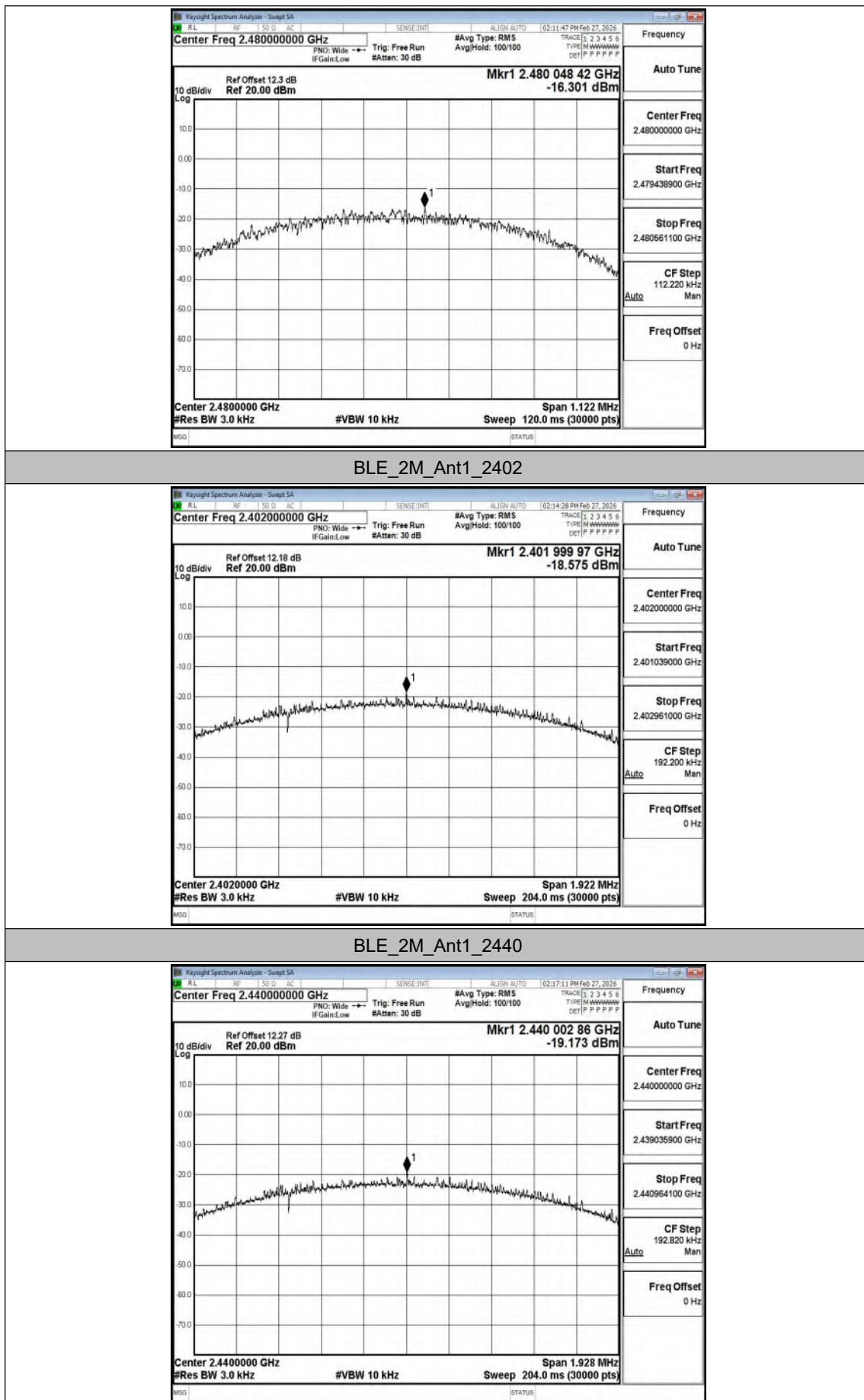
BLE_1M_Ant1_2402



BLE_1M_Ant1_2440



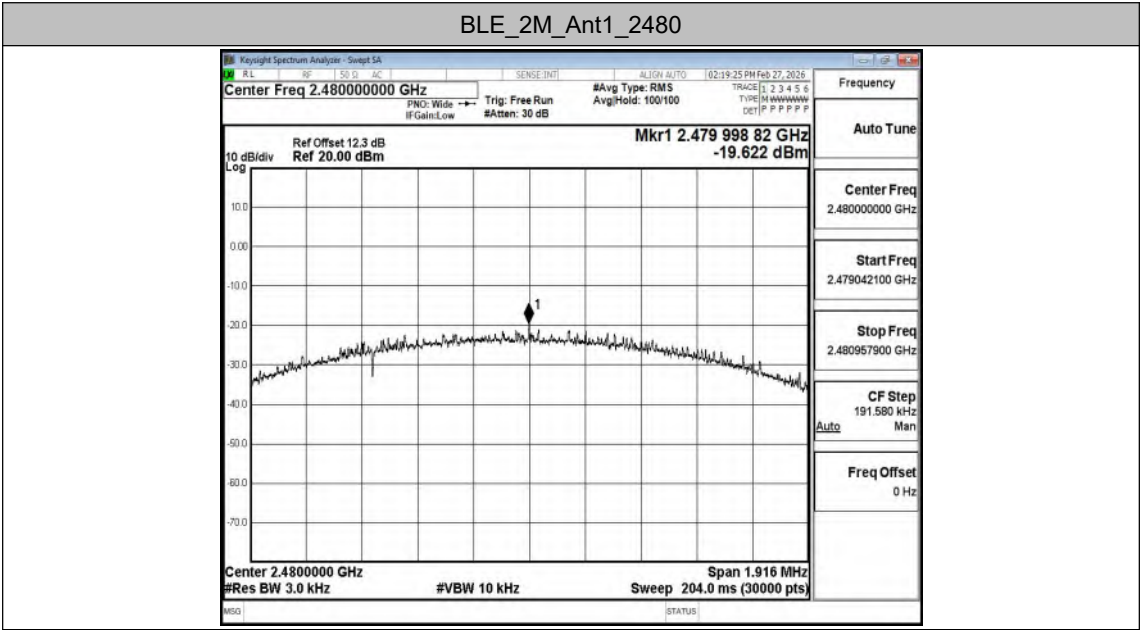
BLE_1M_Ant1_2480



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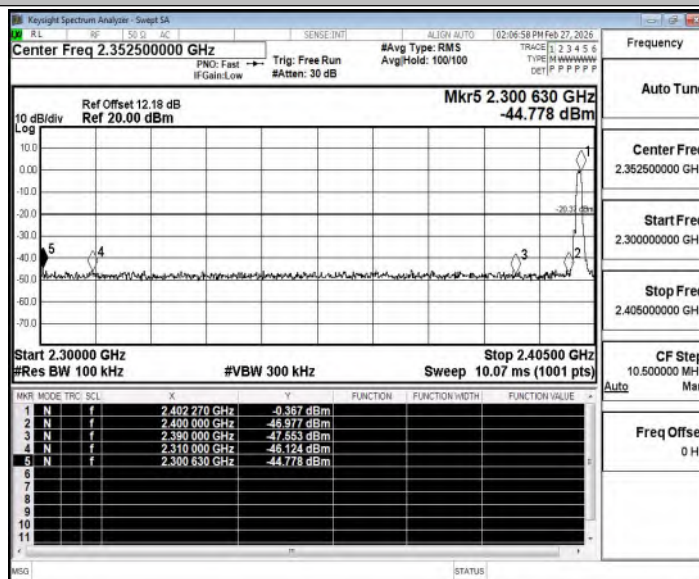
B.4 Band edge measurements

Test Result

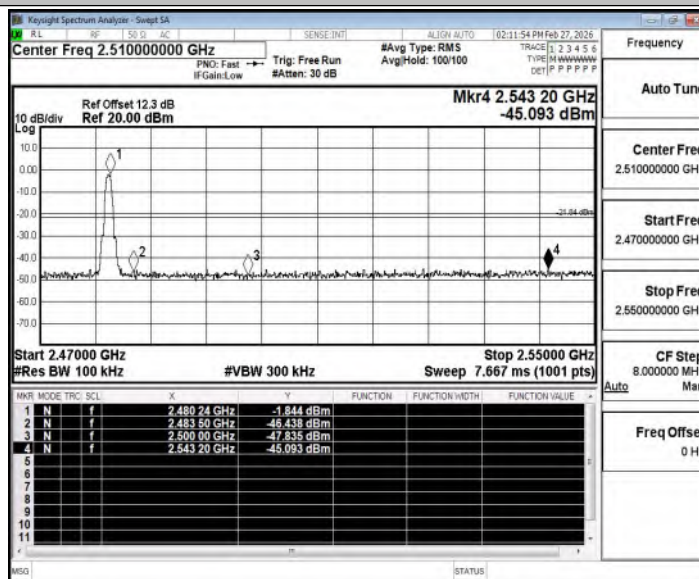
TestMode	Antenna	ChName	Freq(MHz)	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	-0.37	-44.78	≤-20.37	PASS
		High	2480	-1.84	-45.09	≤-21.84	PASS
BLE_2M	Ant1	Low	2402	-1.00	-32.29	≤-21	PASS
		High	2480	-4.32	-45	≤-24.32	PASS

Test Graphs

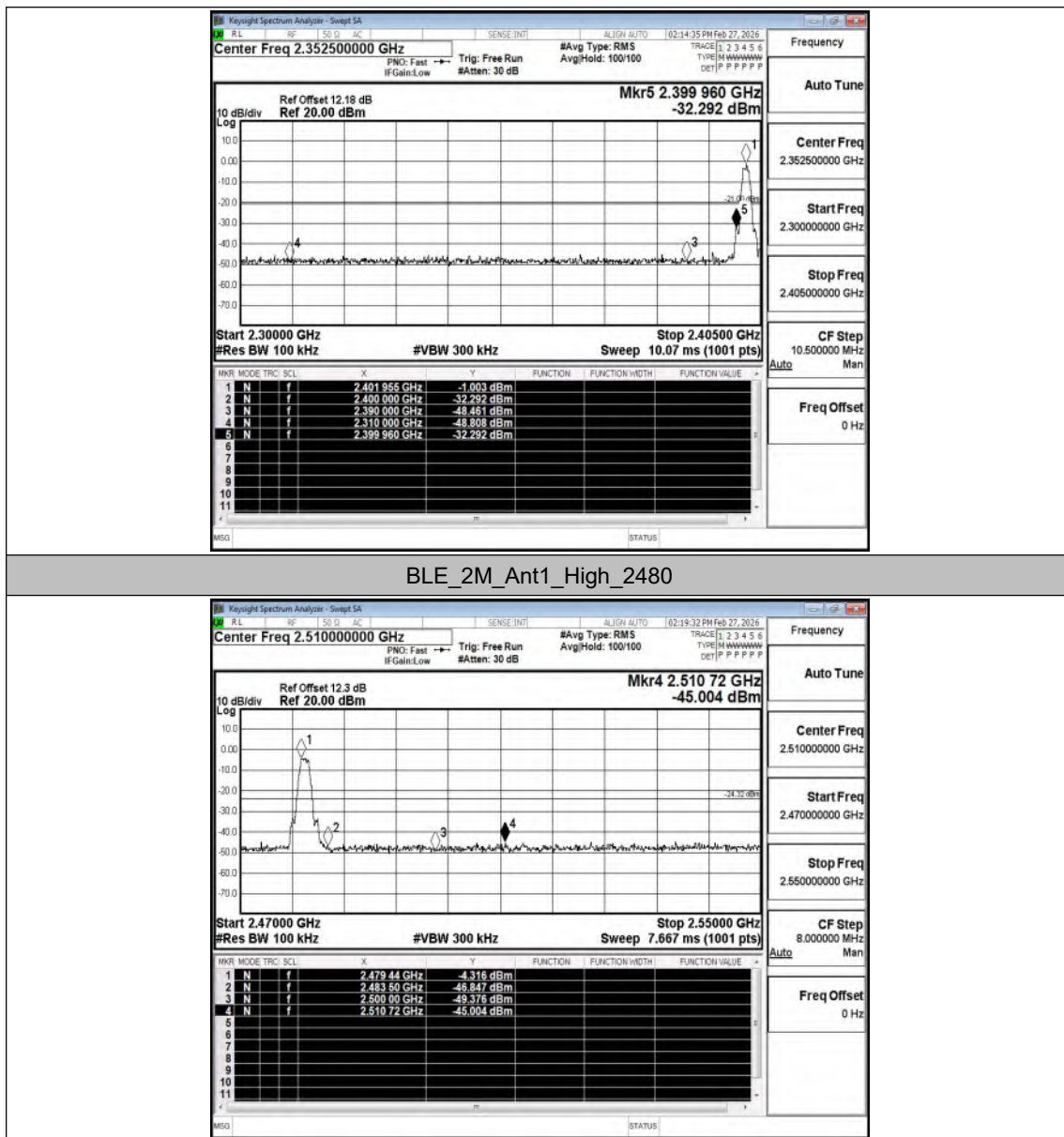
BLE_1M_Ant1_Low_2402



BLE_1M_Ant1_High_2480



BLE_2M_Ant1_Low_2402



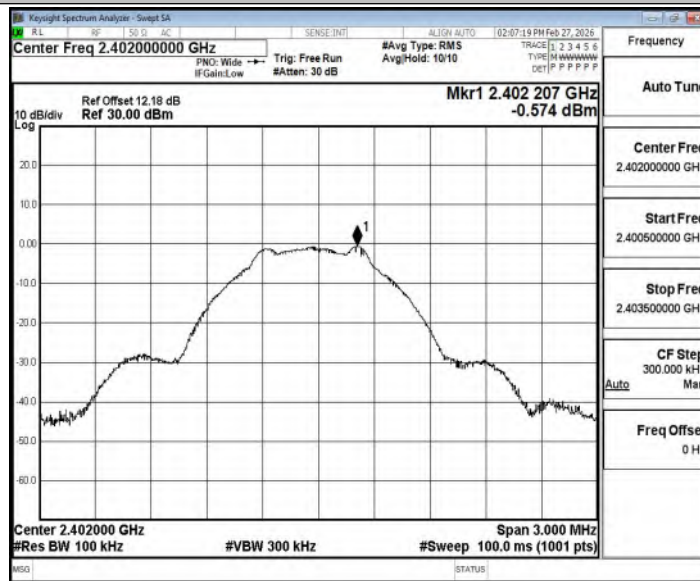
B.5 Conducted Spurious Emission

Test Result

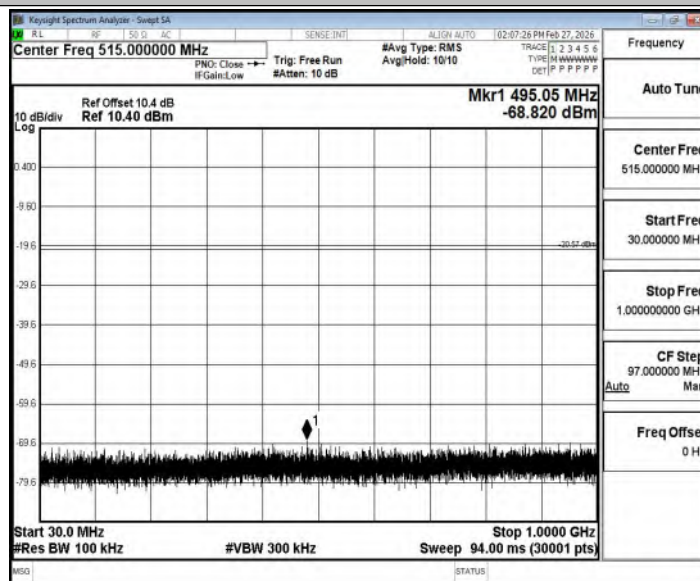
TestMode	Antenna	Freq(MHz)	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	Reference	-0.57	-0.57	---	PASS
			30~1000	-0.57	-68.82	≤-20.57	PASS
			1000~26500	-0.57	-33.71	≤-20.57	PASS
		2440	Reference	-1.31	-1.31	---	PASS
			30~1000	-1.31	-68.31	≤-21.31	PASS
			1000~26500	-1.31	-33.45	≤-21.31	PASS
		2480	Reference	-1.75	-1.75	---	PASS
			30~1000	-1.75	-67.62	≤-21.75	PASS
			1000~26500	-1.75	-34.86	≤-21.75	PASS
BLE_2M	Ant1	2402	Reference	-1.38	-1.38	---	PASS
			30~1000	-1.38	-68.83	≤-21.38	PASS
			1000~26500	-1.38	-34.11	≤-21.38	PASS
		2440	Reference	-2.08	-2.08	---	PASS
			30~1000	-2.08	-68.21	≤-22.08	PASS
			1000~26500	-2.08	-35.06	≤-22.08	PASS
		2480	Reference	-2.54	-2.54	---	PASS
			30~1000	-2.54	-68.32	≤-22.54	PASS
			1000~26500	-2.54	-36.36	≤-22.54	PASS

Test Graphs

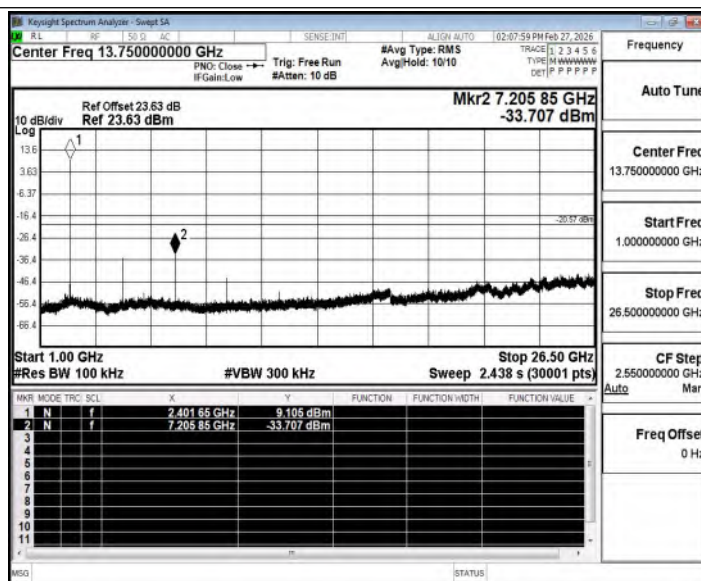
BLE_1M_Ant1_2402_0~Reference



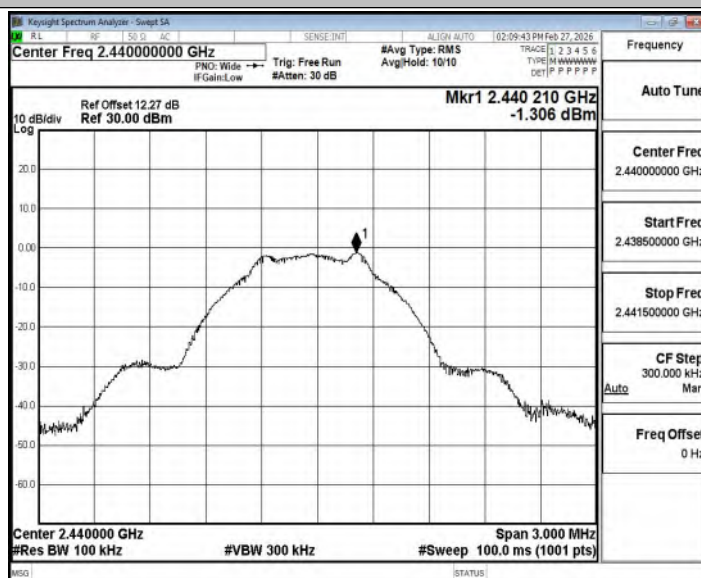
BLE_1M_Ant1_2402_30~1000



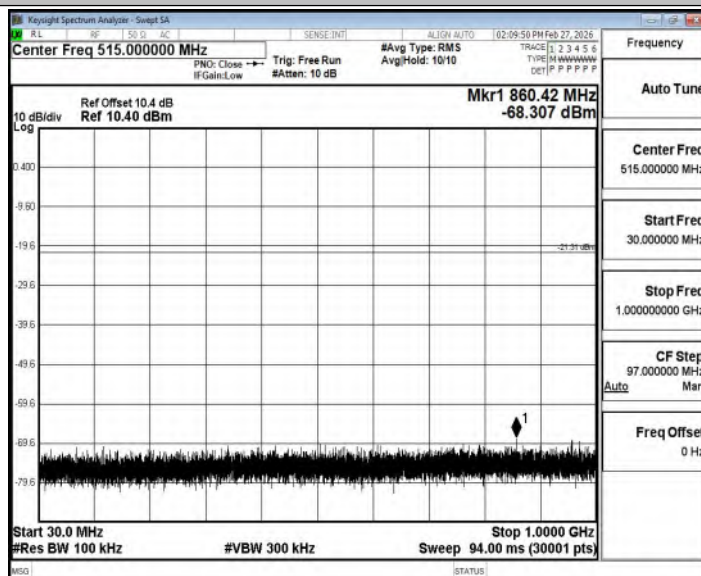
BLE_1M_Ant1_2402_1000~26500



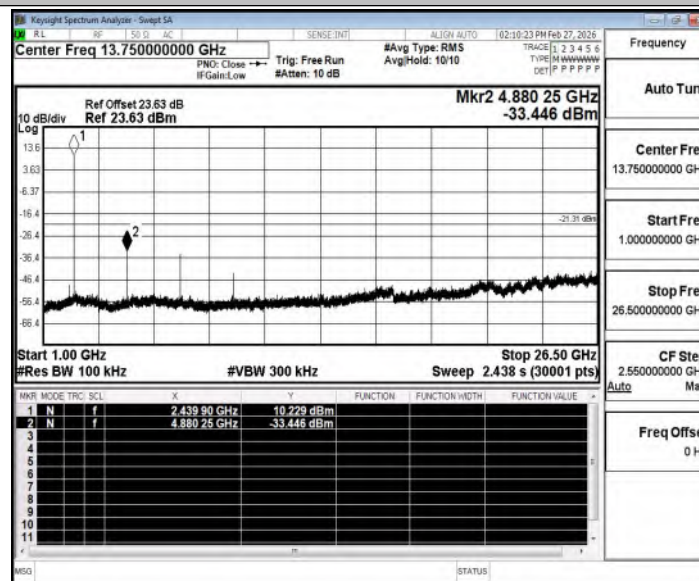
BLE_1M_Ant1_2440_0~Reference



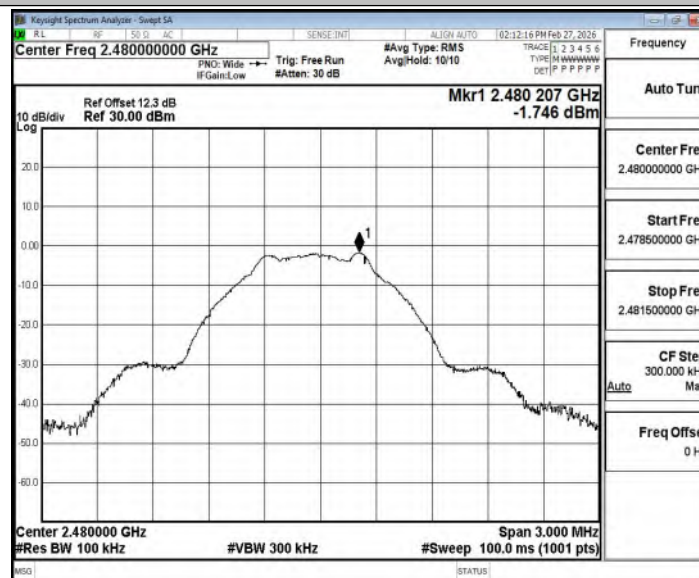
BLE_1M_Ant1_2440_30~1000



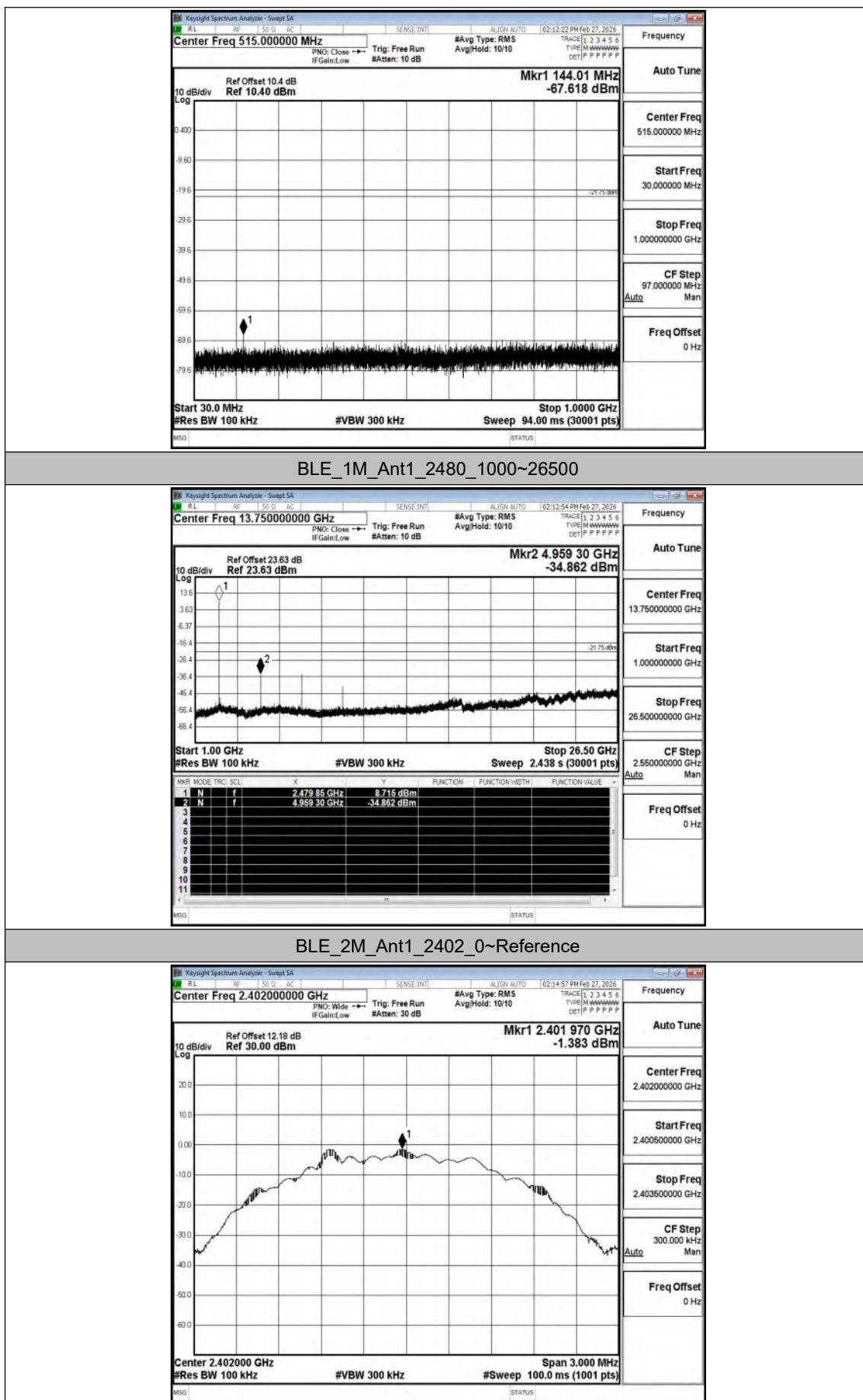
BLE_1M_Ant1_2440_1000~26500



BLE_1M_Ant1_2480_0~Reference



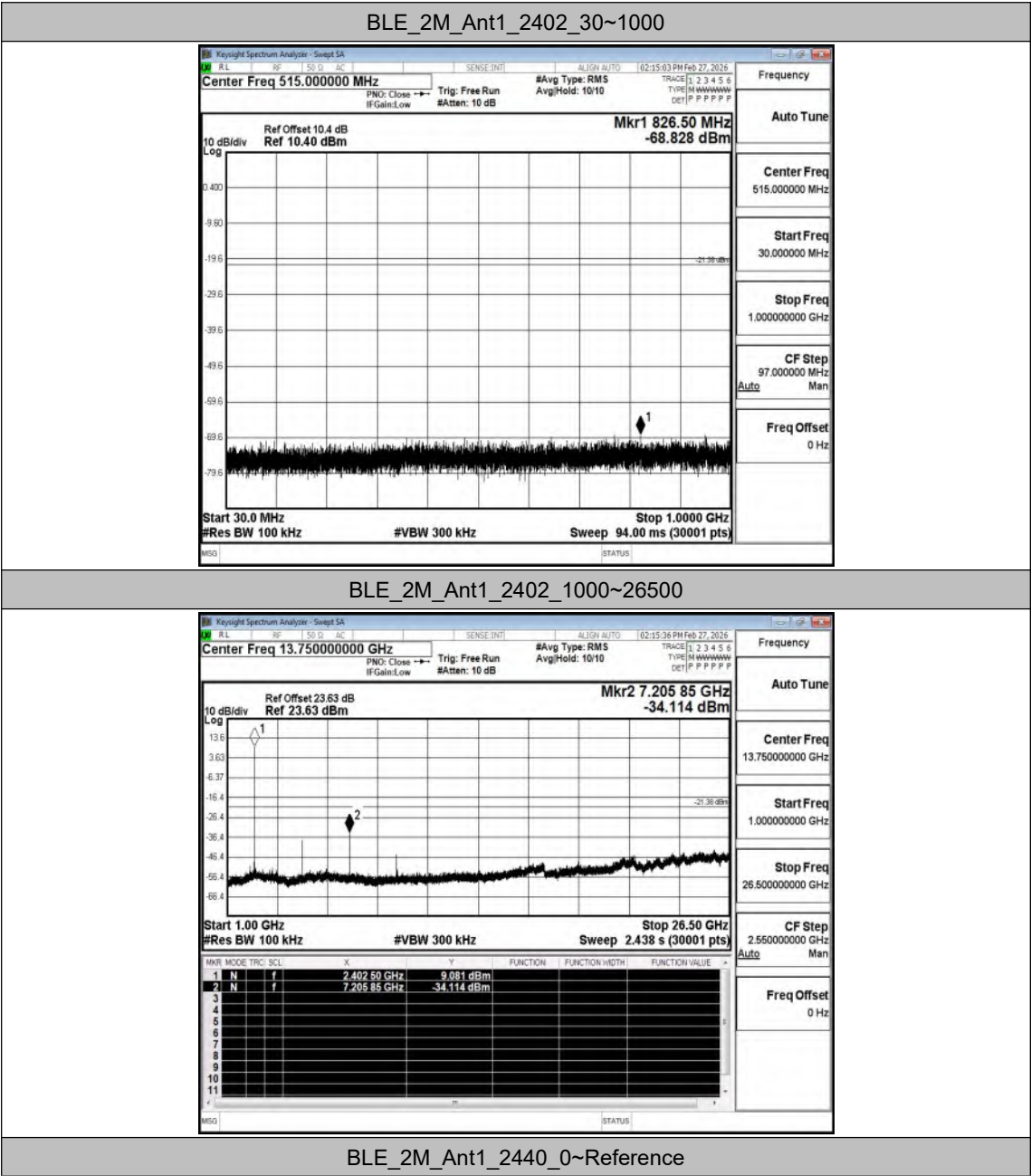
BLE_1M_Ant1_2480_30~1000

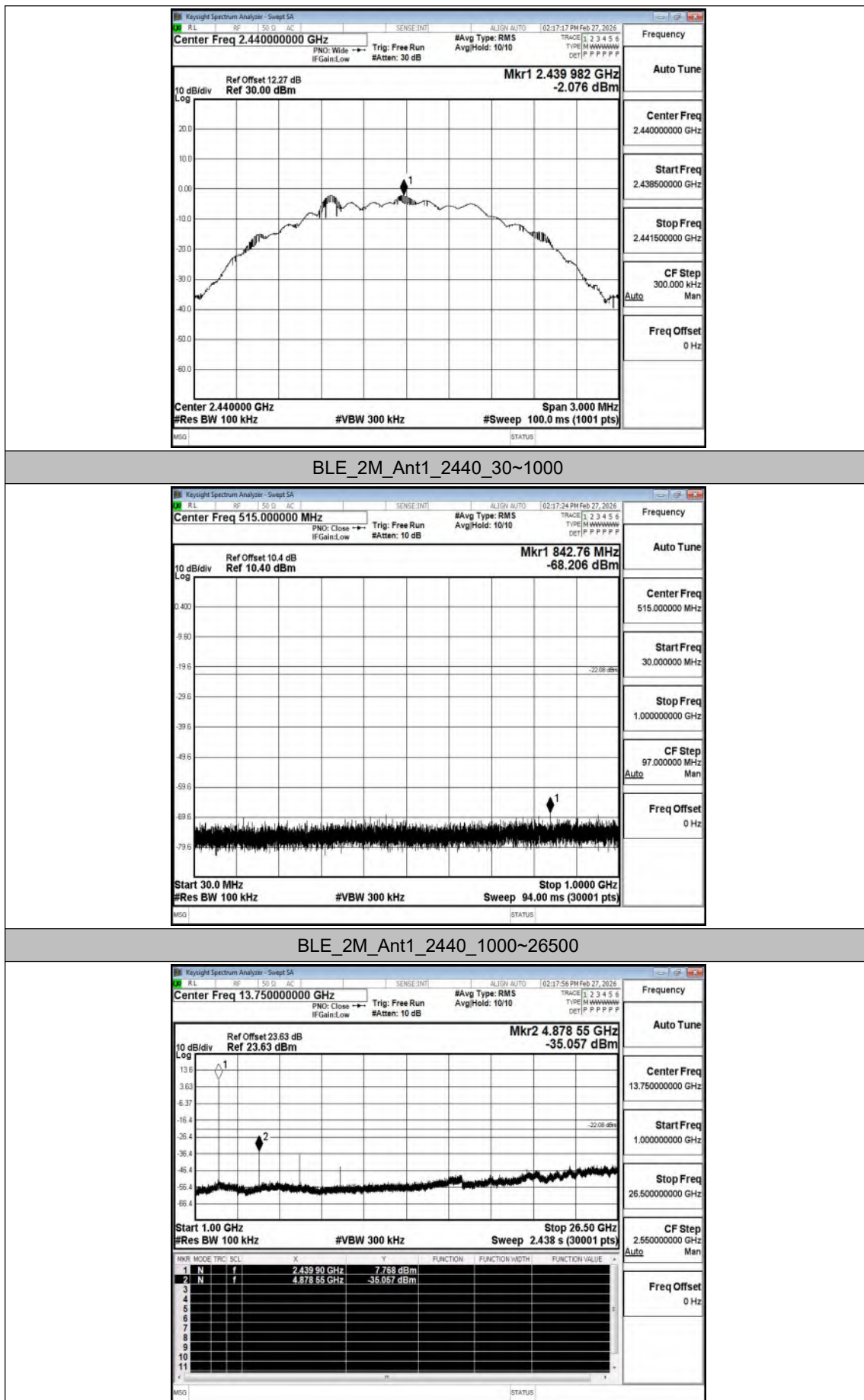


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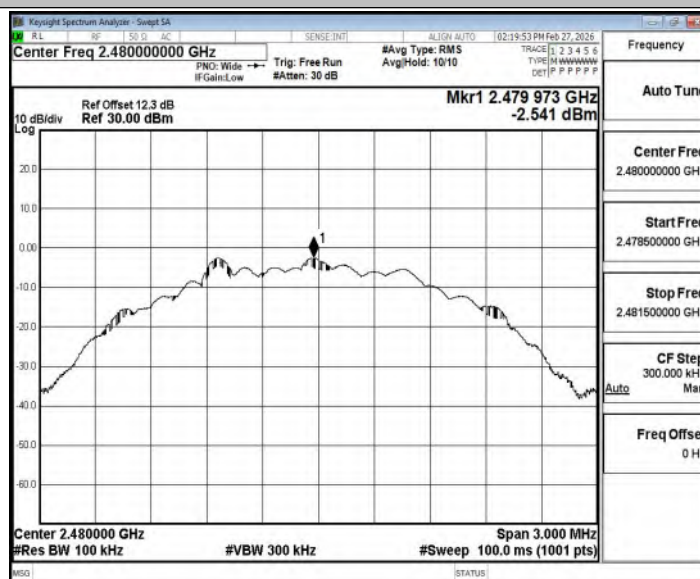


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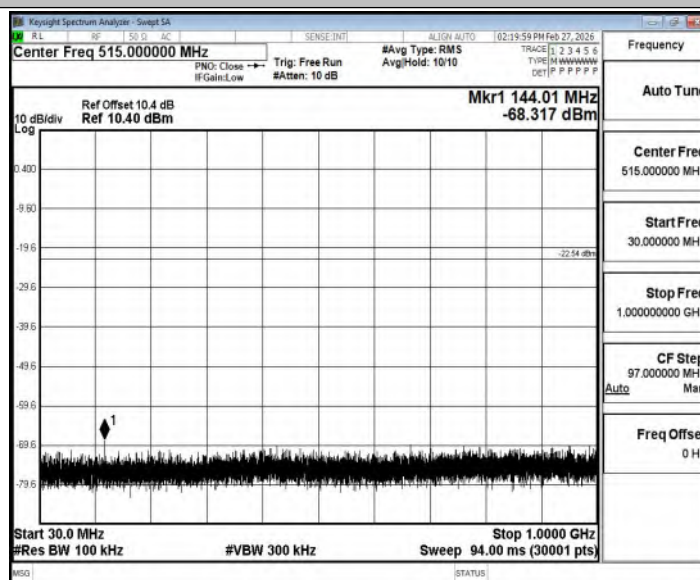
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BLE_2M_Ant1_2480_0~Reference



BLE_2M_Ant1_2480_30~1000



BLE_2M_Ant1_2480_1000~26500

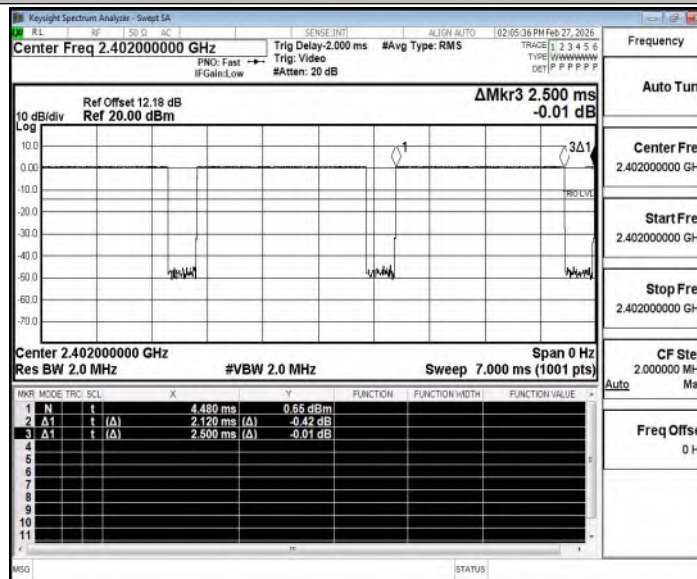
B.6 Duty Cycle

Test Result

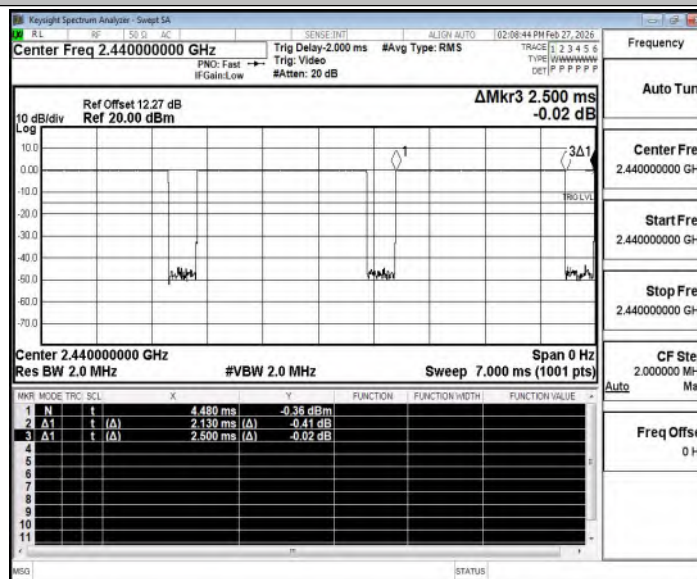
TestMode	Antenna	Freq(MHz)	ON Time [ms]	Period [ms]	X	DC [%]	xFactor	Limit	Verdict
BLE_1M	Ant1	2402	2.12	2.50	0.8480	84.80	0.72	---	---
		2440	2.13	2.50	0.8520	85.20	0.70	---	---
		2480	2.13	2.50	0.8520	85.20	0.70	---	---
BLE_2M	Ant1	2402	1.07	1.24	0.8629	86.29	0.64	---	---
		2440	1.07	1.25	0.8560	85.60	0.68	---	---
		2480	1.07	1.26	0.8492	84.92	0.71	---	---

Test Graphs

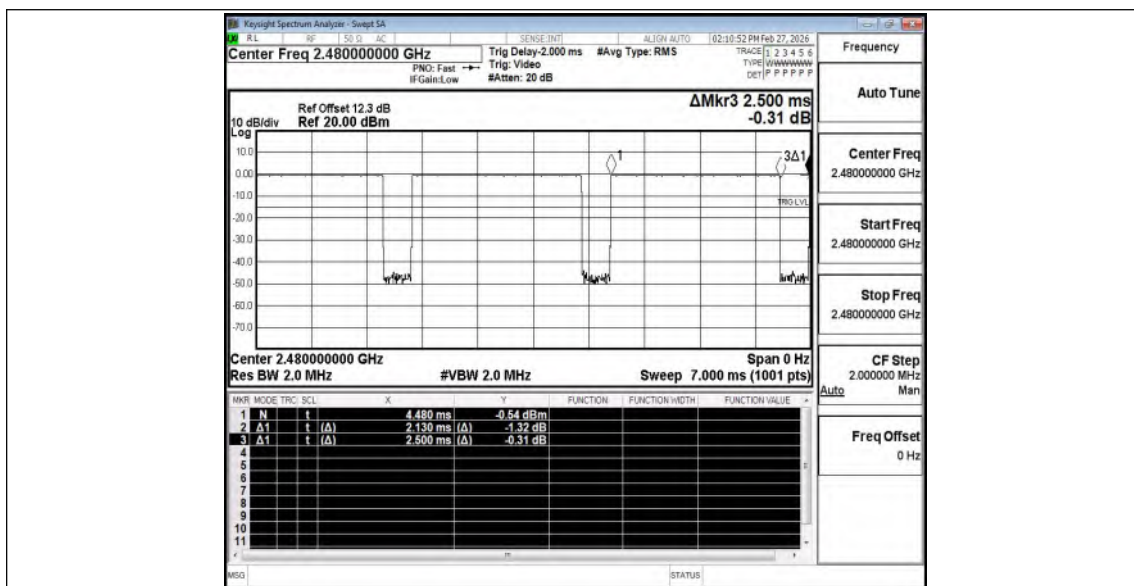
BLE_1M_Ant1_2402



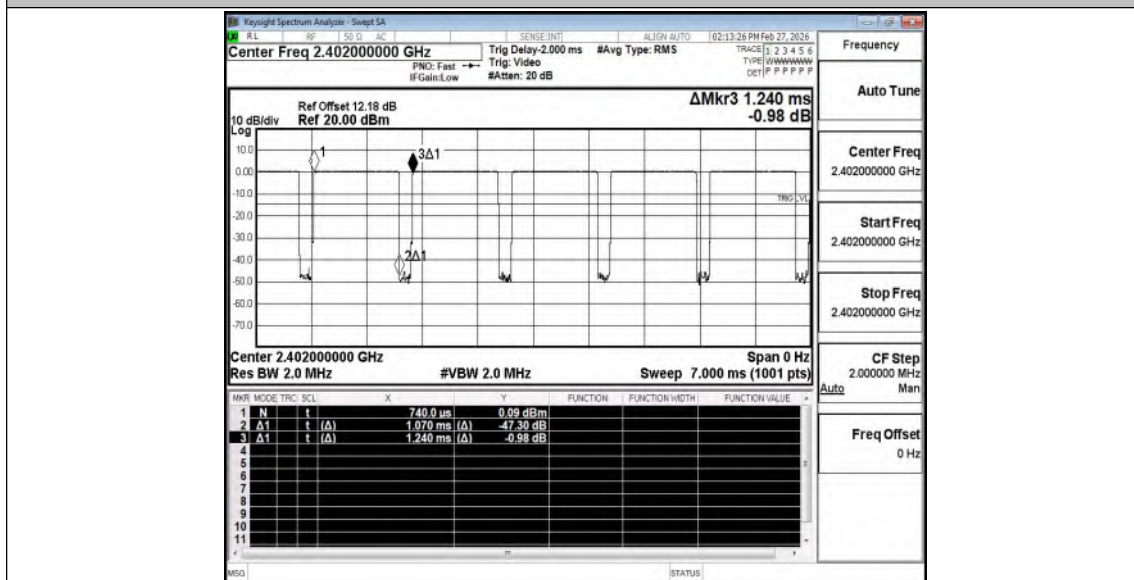
BLE_1M_Ant1_2440



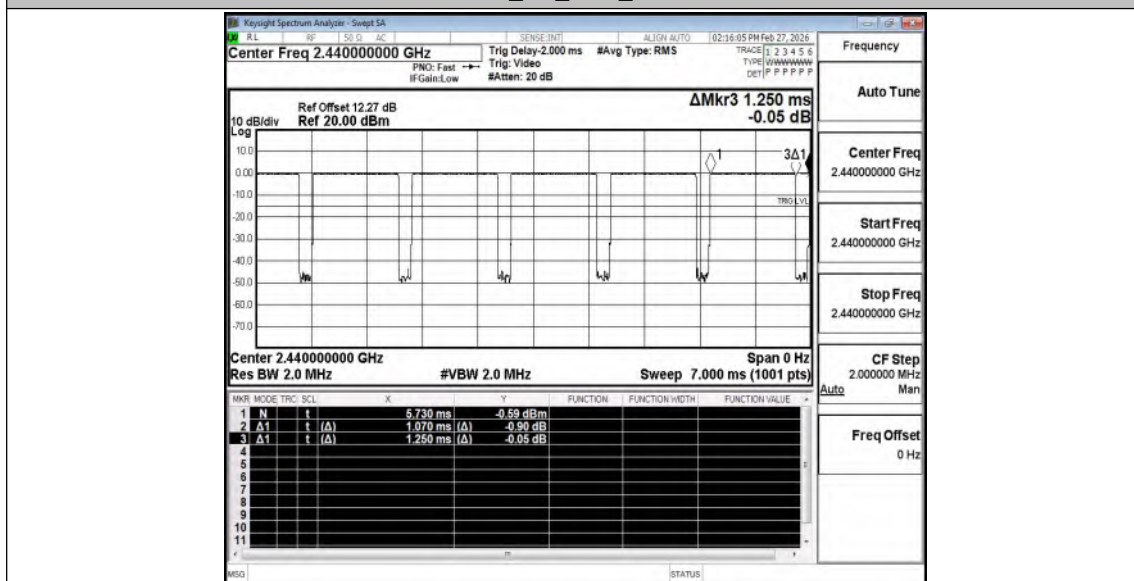
BLE_1M_Ant1_2480

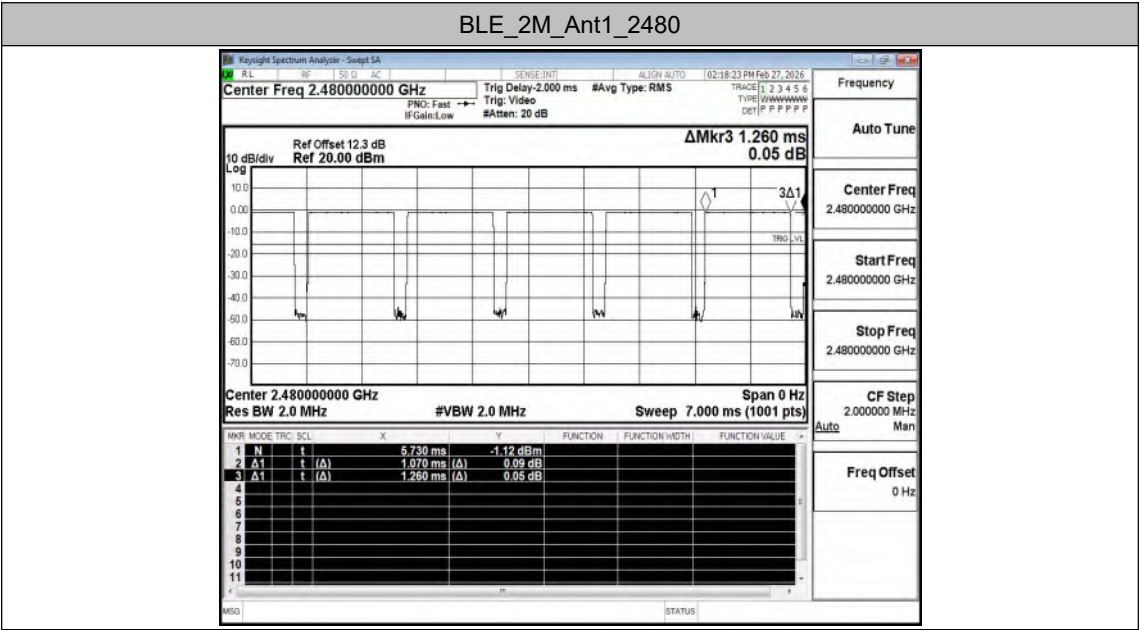


BLE_2M_Ant1_2402



BLE_2M_Ant1_2440





B.7 Emissions in Restricted Bands

Test Result

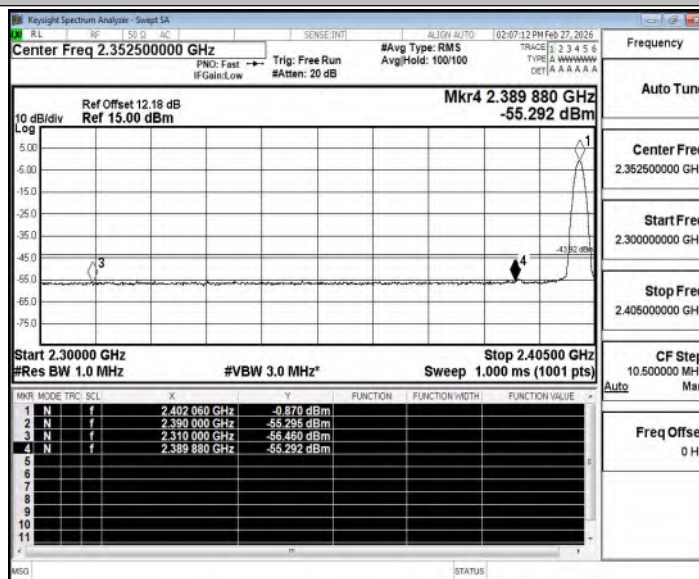
TestMode	Antenna	ChName	Freq(MHz)	Detector	Freq [MHz]	Result [dBm]	Limit [dBm]	Gain [dBi]	DC Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Verdict
BLE_1M	Ant1	Low	2402	AV	2310.000	-56.46	≤-43.92	2.00	0.72	41.46	≤54	PASS
				AV	2389.880	-55.29	≤-43.92	2.00	0.72	42.63	≤54	PASS
				AV	2390.000	-55.3	≤-43.92	2.00	0.72	42.62	≤54	PASS
				Peak	2310.000	-50.05	≤-23.20	2.00	0.00	47.15	≤74	PASS
				Peak	2346.830	-44.94	≤-23.20	2.00	0.00	52.26	≤74	PASS
				Peak	2390.000	-47.39	≤-23.20	2.00	0.00	49.81	≤74	PASS
		High	2480	AV	2483.500	-55.18	≤-43.90	2.00	0.70	42.72	≤54	PASS
				AV	2491.600	-54.72	≤-43.90	2.00	0.70	43.18	≤54	PASS
				AV	2500.000	-56.05	≤-43.90	2.00	0.70	41.85	≤54	PASS
				Peak	2483.500	-45.99	≤-23.20	2.00	0.00	51.21	≤74	PASS
				Peak	2484.080	-45.98	≤-23.20	2.00	0.00	51.22	≤74	PASS
				Peak	2500.000	-46.84	≤-23.20	2.00	0.00	50.36	≤74	PASS
BLE_2M	Ant1	Low	2402	AV	2310.000	-57.16	≤-43.84	2.00	0.64	40.68	≤54	PASS
				AV	2367.515	-55.65	≤-43.84	2.00	0.64	42.19	≤54	PASS
				AV	2390.000	-55.79	≤-43.84	2.00	0.64	42.05	≤54	PASS
				Peak	2310.000	-46.85	≤-23.20	2.00	0.00	50.35	≤74	PASS
				Peak	2359.430	-45.69	≤-23.20	2.00	0.00	51.51	≤74	PASS
				Peak	2390.000	-48.08	≤-23.20	2.00	0.00	49.12	≤74	PASS
		High	2480	AV	2483.500	-53.47	≤-43.91	2.00	0.71	44.44	≤54	PASS
				AV	2483.520	-53.47	≤-43.91	2.00	0.71	44.44	≤54	PASS
				AV	2500.000	-55.96	≤-43.91	2.00	0.71	41.95	≤54	PASS
				Peak	2483.500	-46.04	≤-23.20	2.00	0.00	51.16	≤74	PASS
				Peak	2483.920	-44.45	≤-23.20	2.00	0.00	52.75	≤74	PASS
				Peak	2500.000	-48.39	≤-23.20	2.00	0.00	48.81	≤74	PASS

Note:

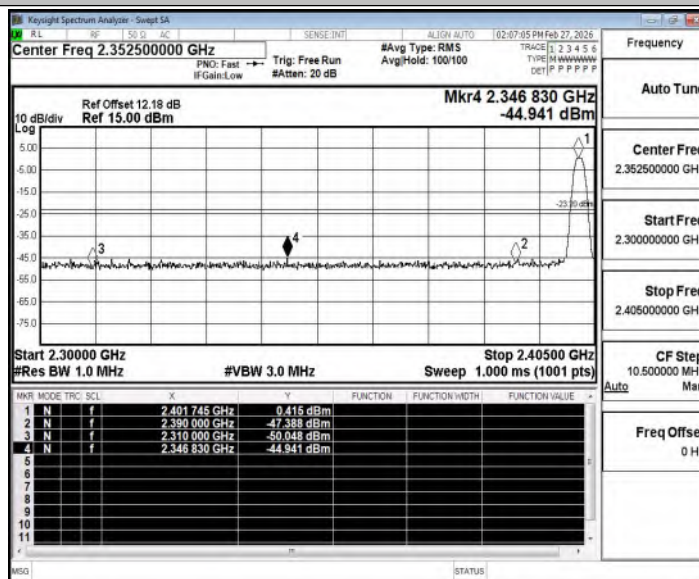
1. The Antenna Gain is compensated in the graph.
2. The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.

Test Graphs

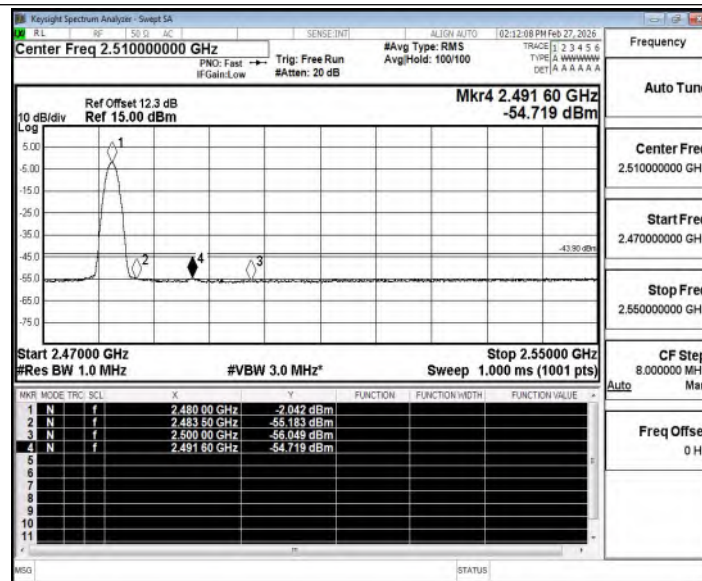
BLE_1M_Ant1_Low_2402_AV



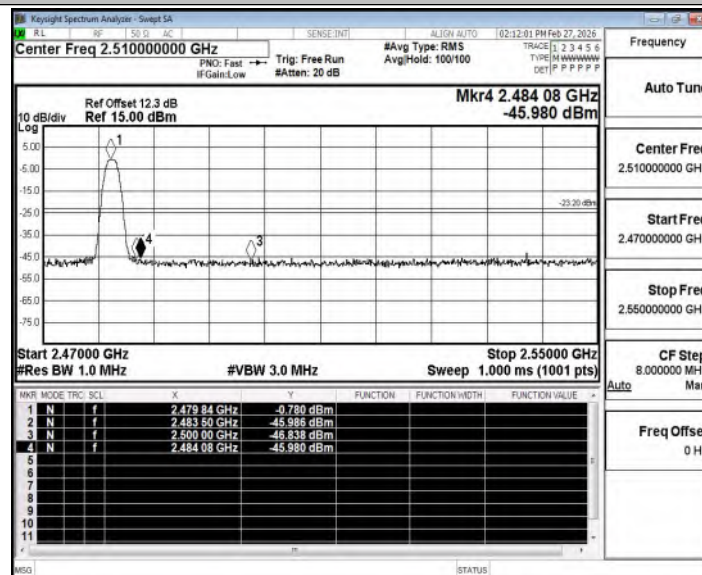
BLE_1M_Ant1_Low_2402_Peak



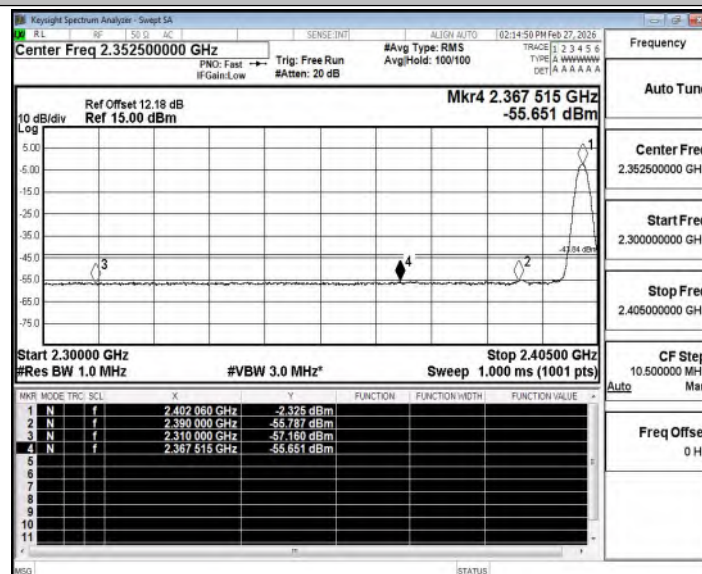
BLE_1M_Ant1_High_2480_AV



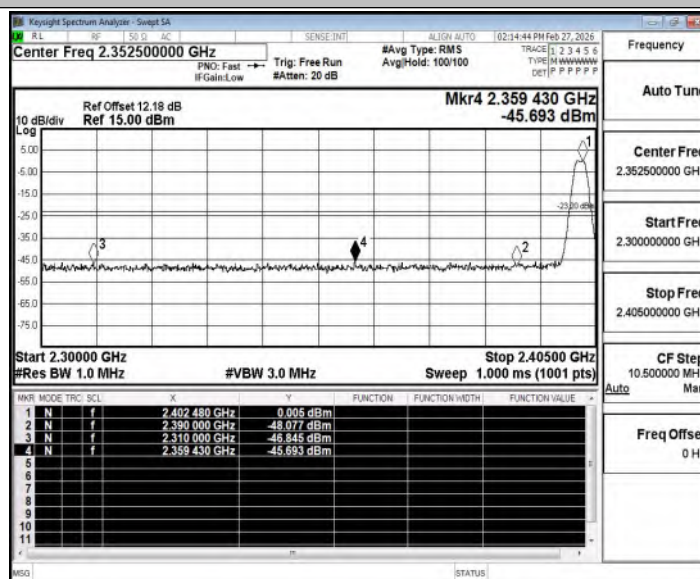
BLE_1M_Ant1_High_2480_Peak



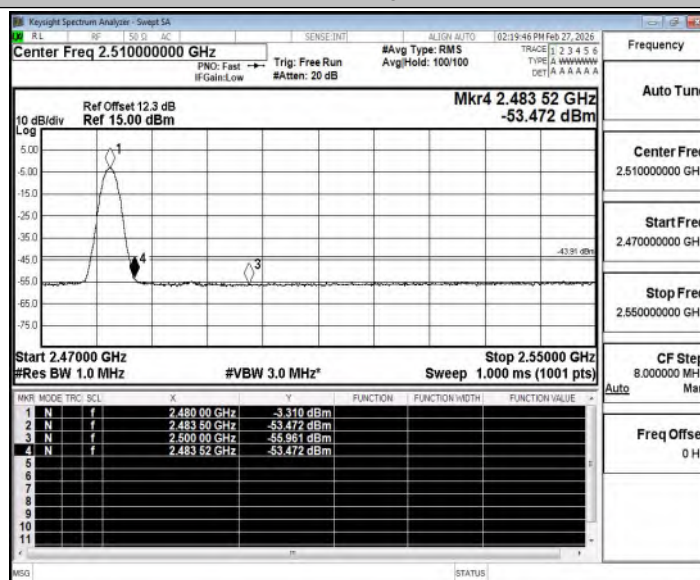
BLE_2M_Ant1_Low_2402_AV



BLE_2M_Ant1_Low_2402_Peak



BLE_2M_Ant1_High_2480_AV



BLE_2M_Ant1_High_2480_Peak

