



Appendix B

RF Test Data for BLE (Conducted Measurement)

Product Name: Puya

Test Model: HPPAP39

Environmental Conditions

Temperature:	23.8° C
Relative Humidity:	52.1%
ATM Pressure:	100.0 kPa
Test Engineer:	Nick Peng
Supervised by:	Ling Zhu





B.1 DTS Bandwidth

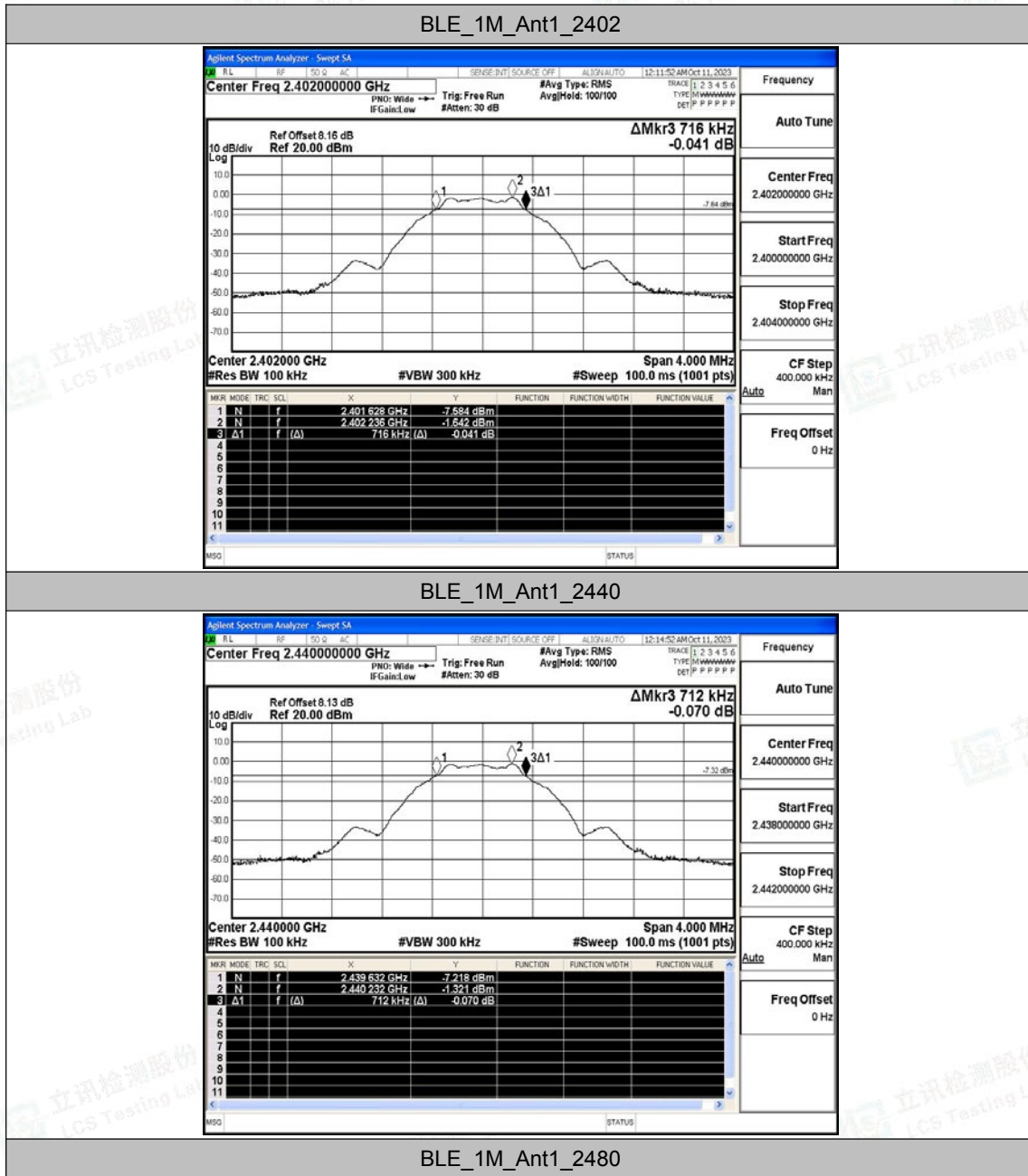
Test Result

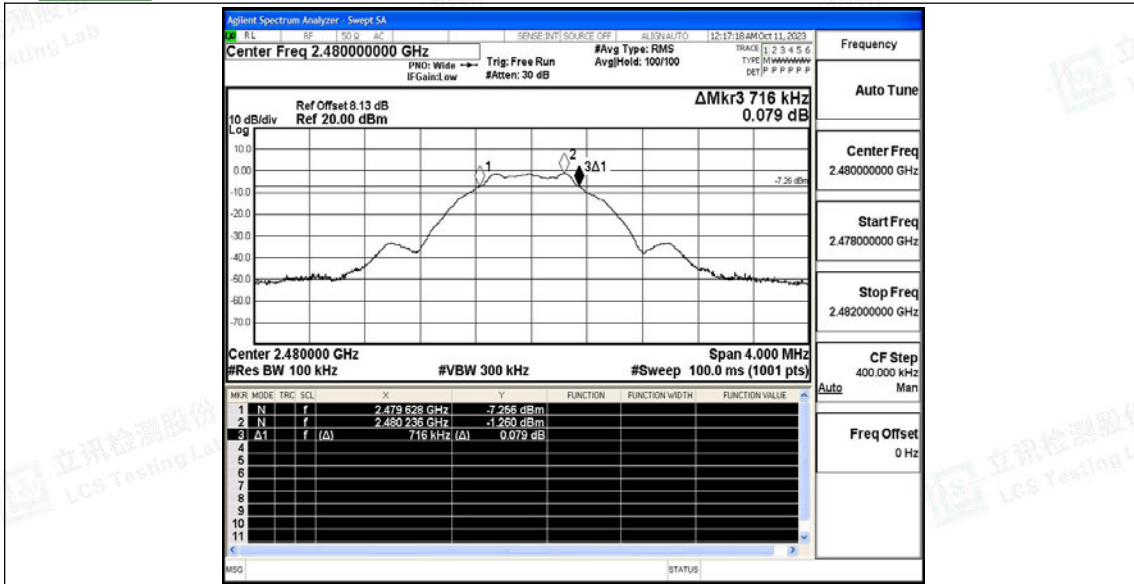
TestMode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.716	2401.628	2402.344	0.5	PASS
		2440	0.712	2439.632	2440.344	0.5	PASS
		2480	0.716	2479.628	2480.344	0.5	PASS
BLE_2M	Ant1	2402	1.156	2401.408	2402.564	0.5	PASS
		2440	1.156	2439.408	2440.564	0.5	PASS
		2480	1.156	2479.408	2480.564	0.5	PASS



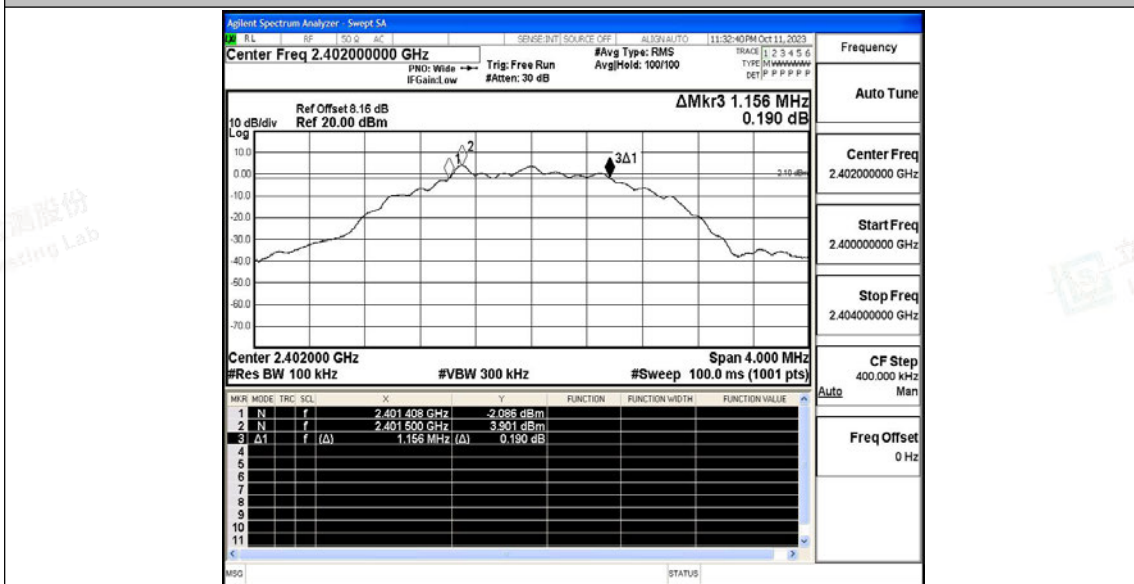


Test Graphs



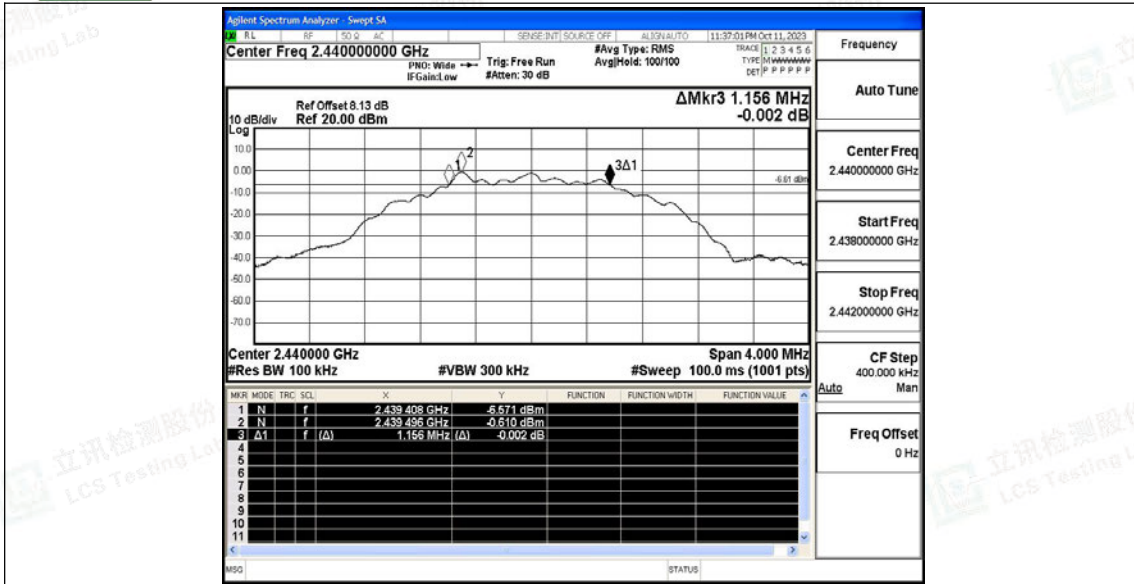


BLE_2M_Ant1_2402

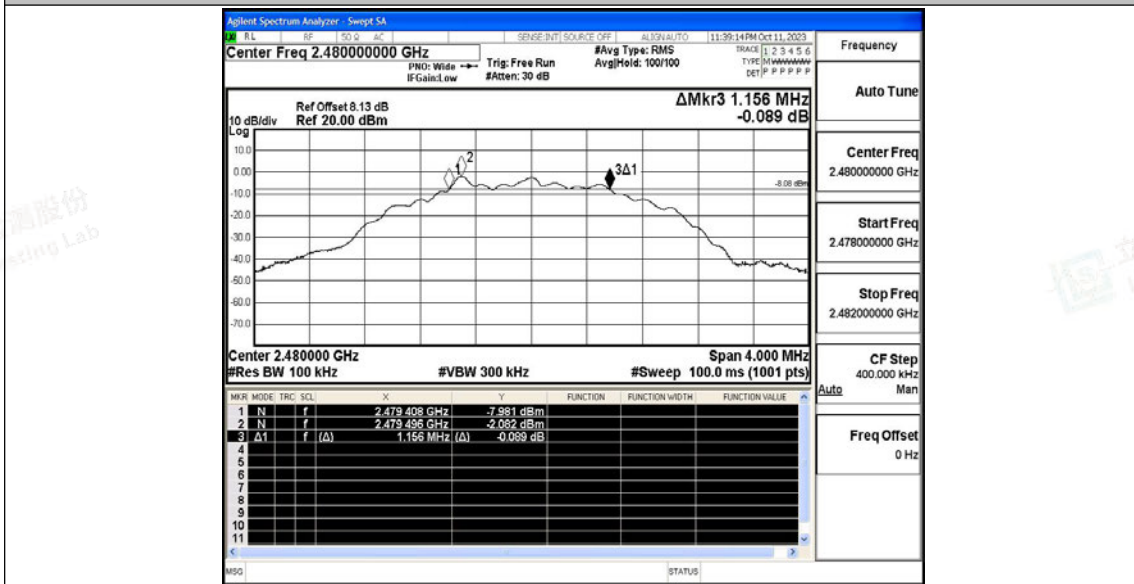


BLE_2M_Ant1_2440





BLE_2M_Ant1_2480





B.2 Maximum conducted output power

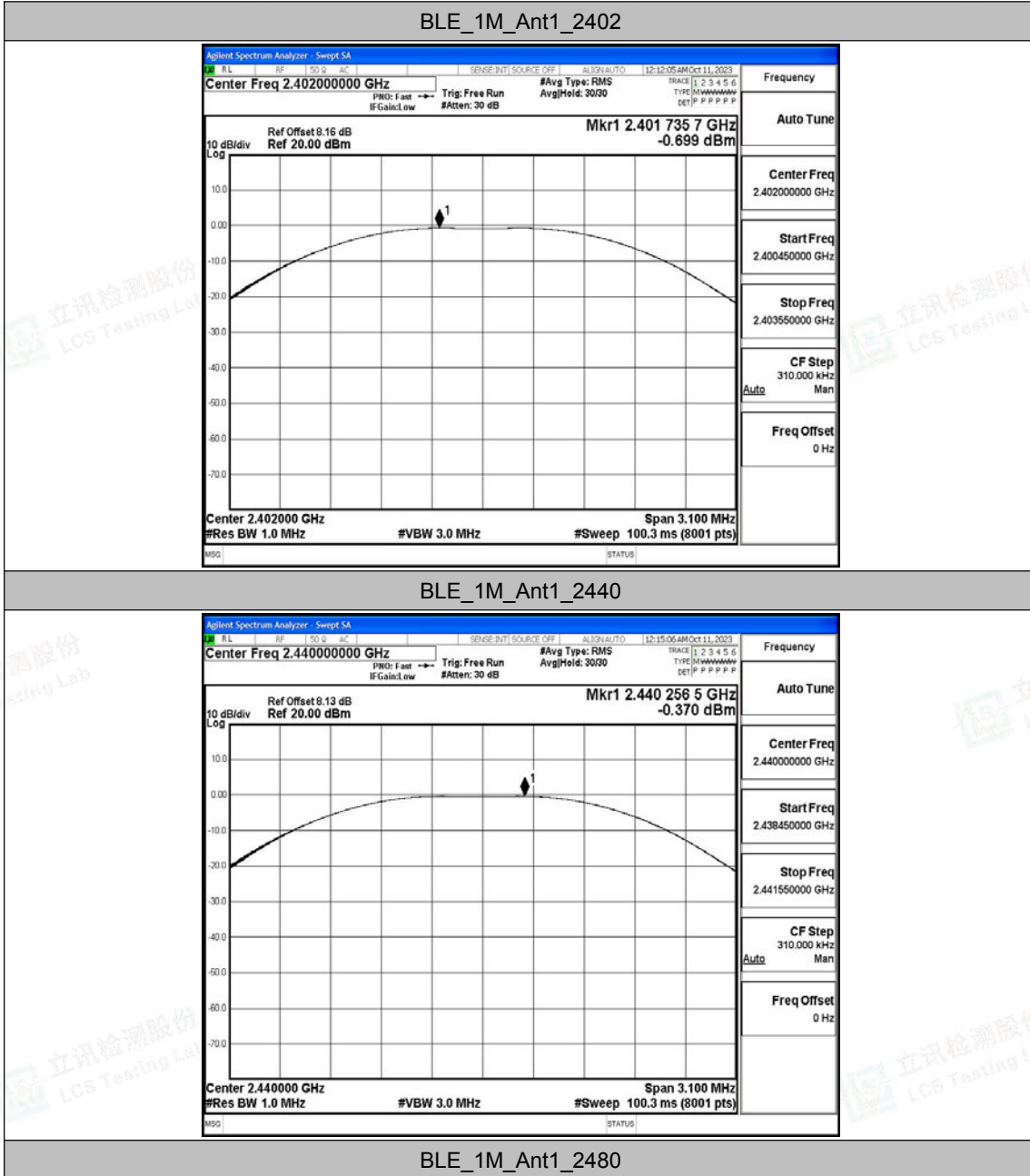
Test Result

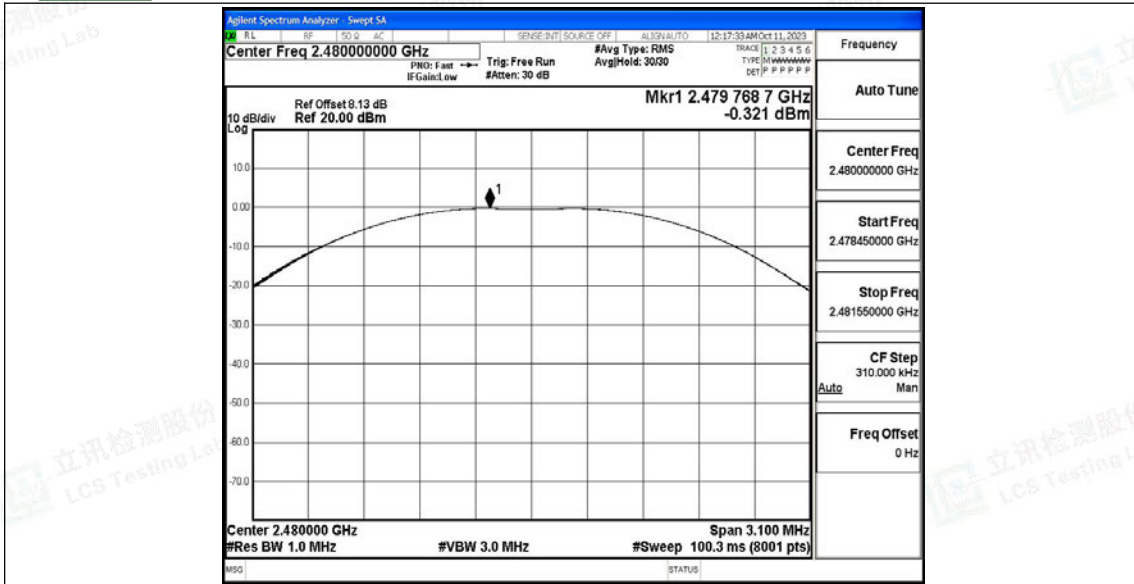
TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	-0.7	≤30	PASS
		2440	-0.37	≤30	PASS
		2480	-0.32	≤30	PASS
BLE_2M	Ant1	2402	-0.62	≤30	PASS
		2440	-0.13	≤30	PASS
		2480	-1.62	≤30	PASS



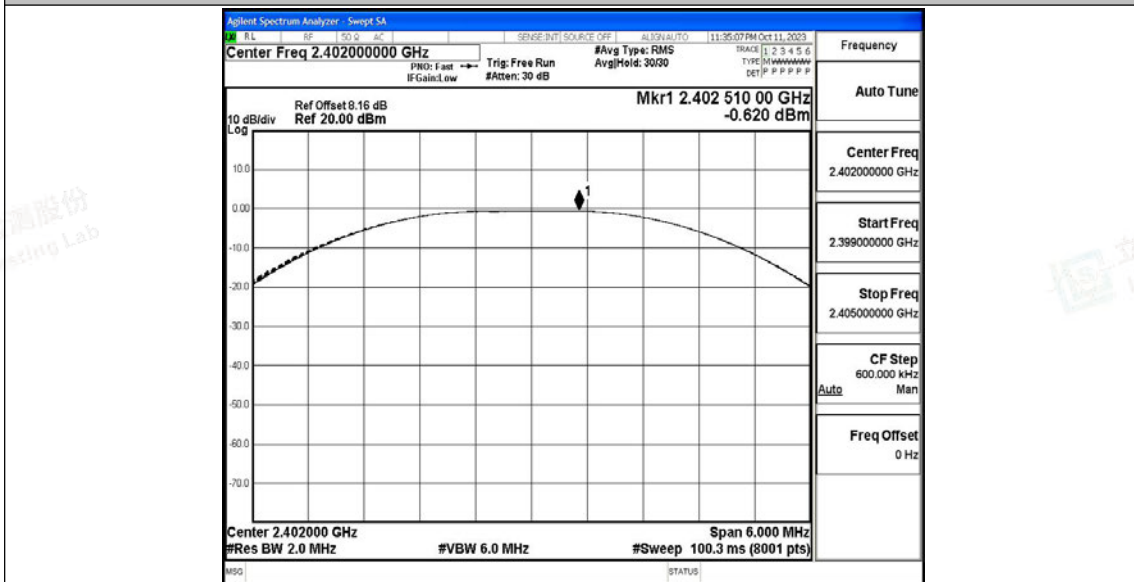


Test Graphs



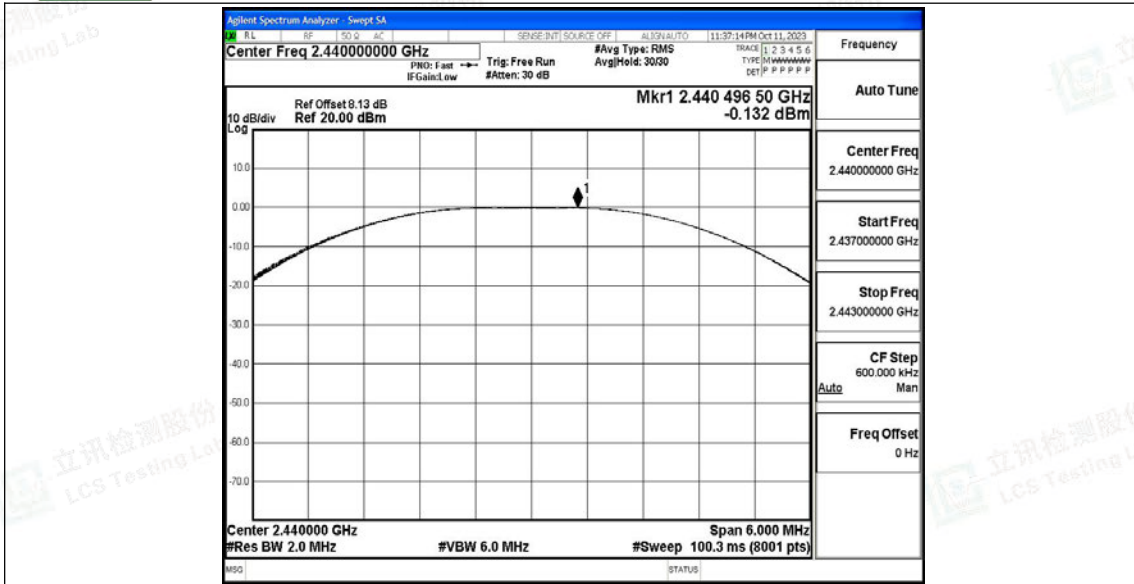


BLE_2M_Ant1_2402

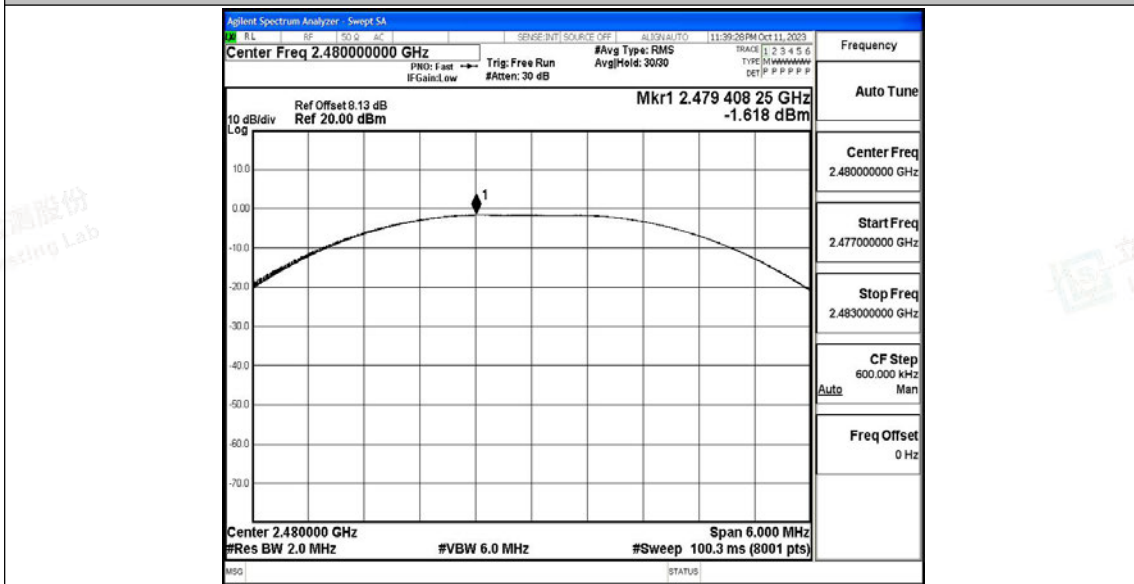


BLE_2M_Ant1_2440





BLE_2M_Ant1_2480





B.3 Maximum power spectral density

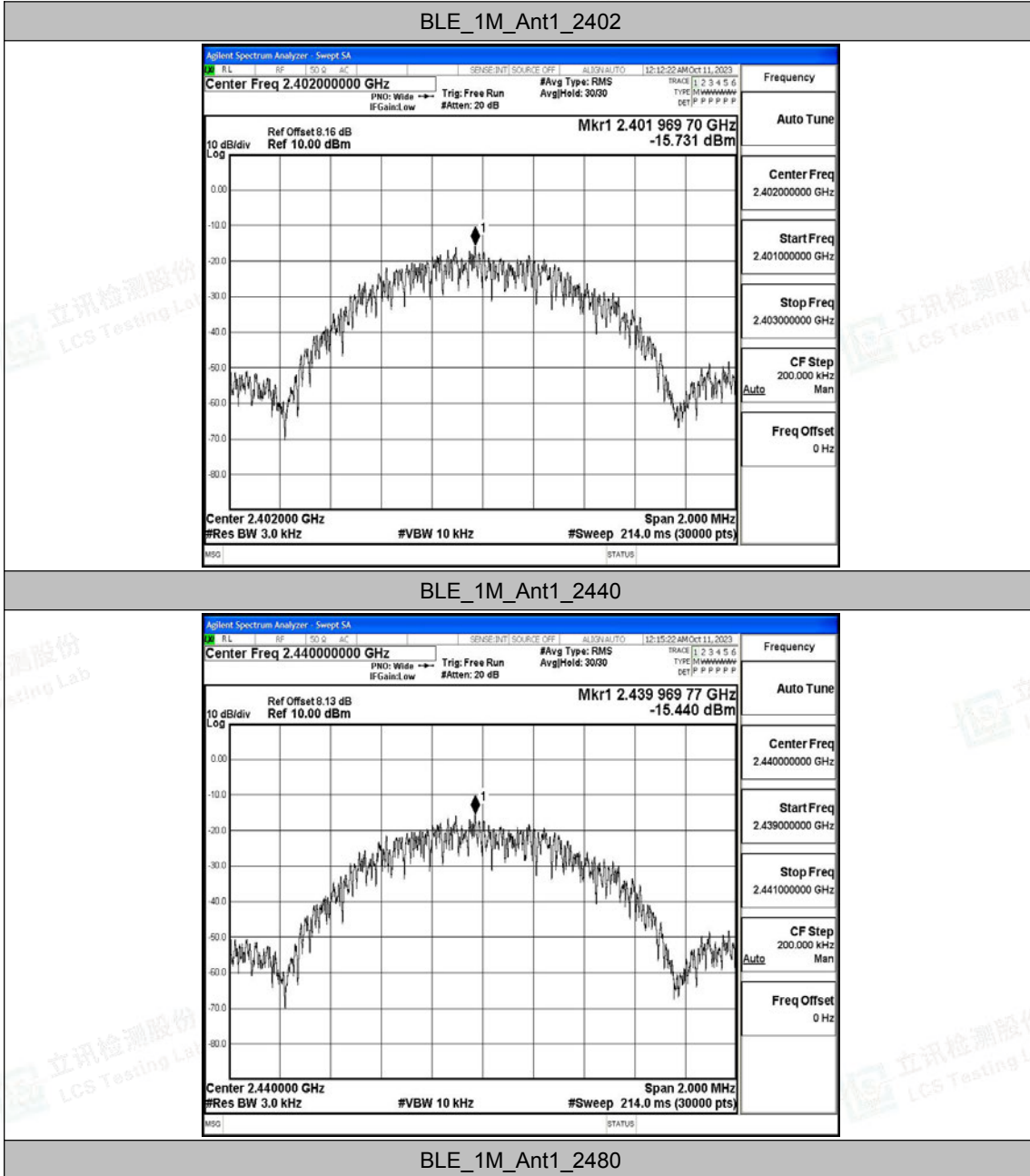
Test Result

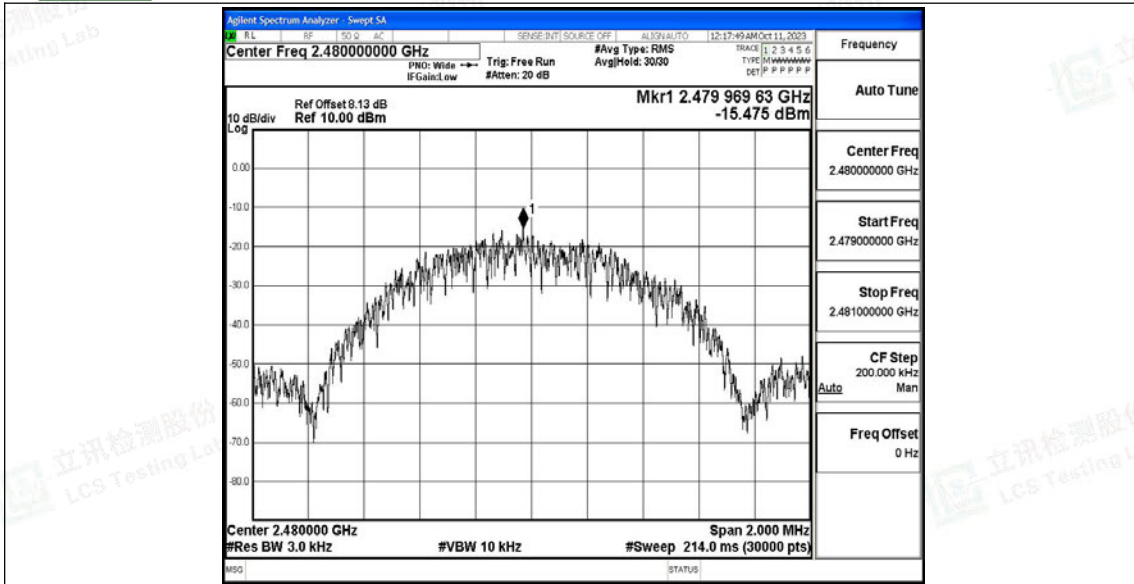
TestMode	Antenna	Channel	Result[dBm/3-100kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-15.73	≤8.00	PASS
		2440	-15.44	≤8.00	PASS
		2480	-15.48	≤8.00	PASS
BLE_2M	Ant1	2402	-20.15	≤8.00	PASS
		2440	-19.86	≤8.00	PASS
		2480	-21.31	≤8.00	PASS



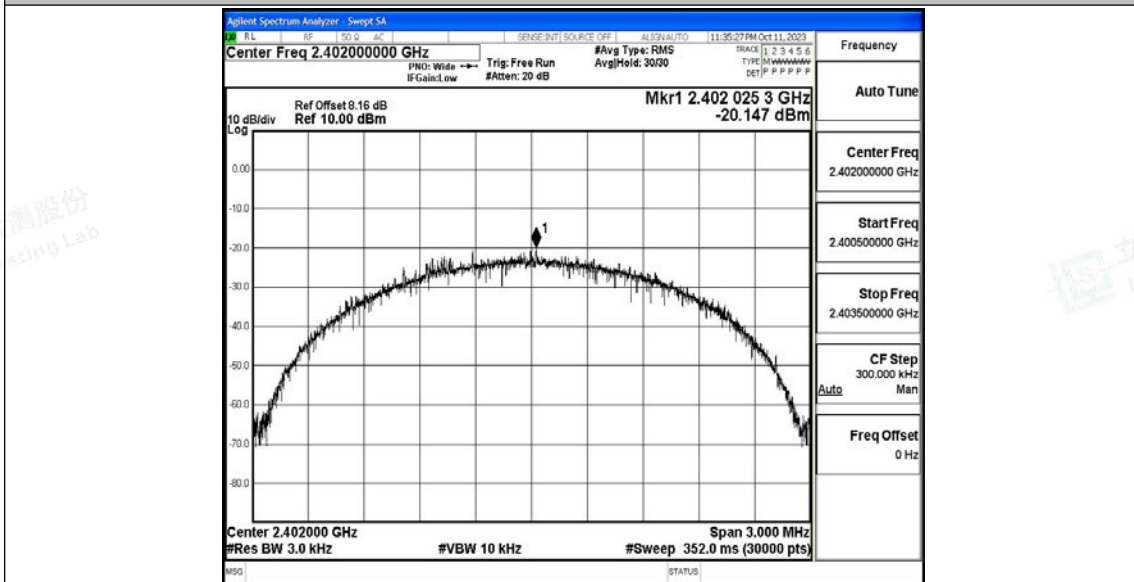


Test Graphs



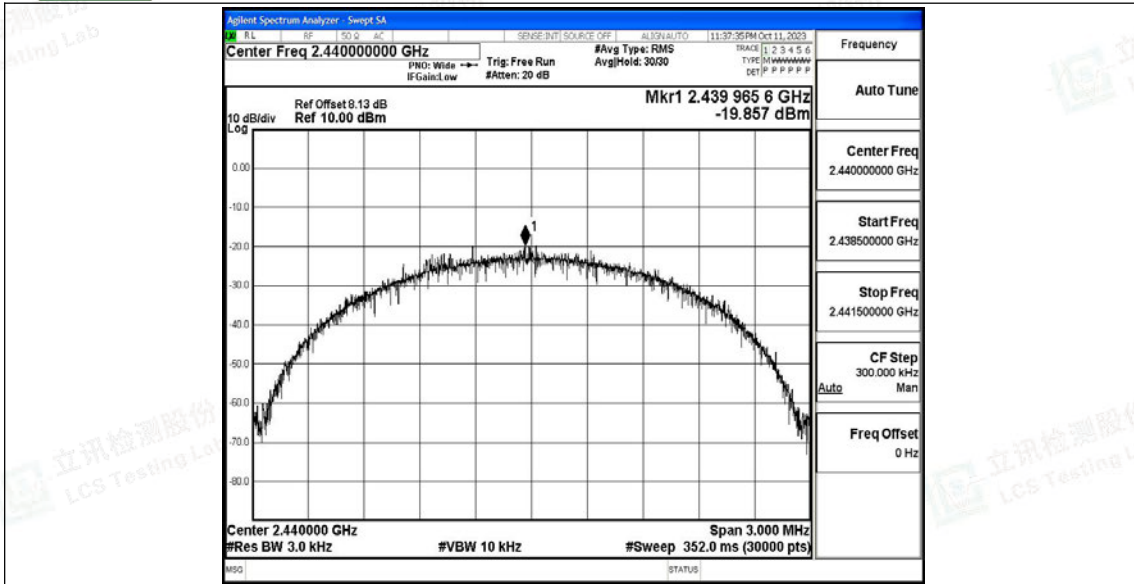


BLE_2M_Ant1_2402

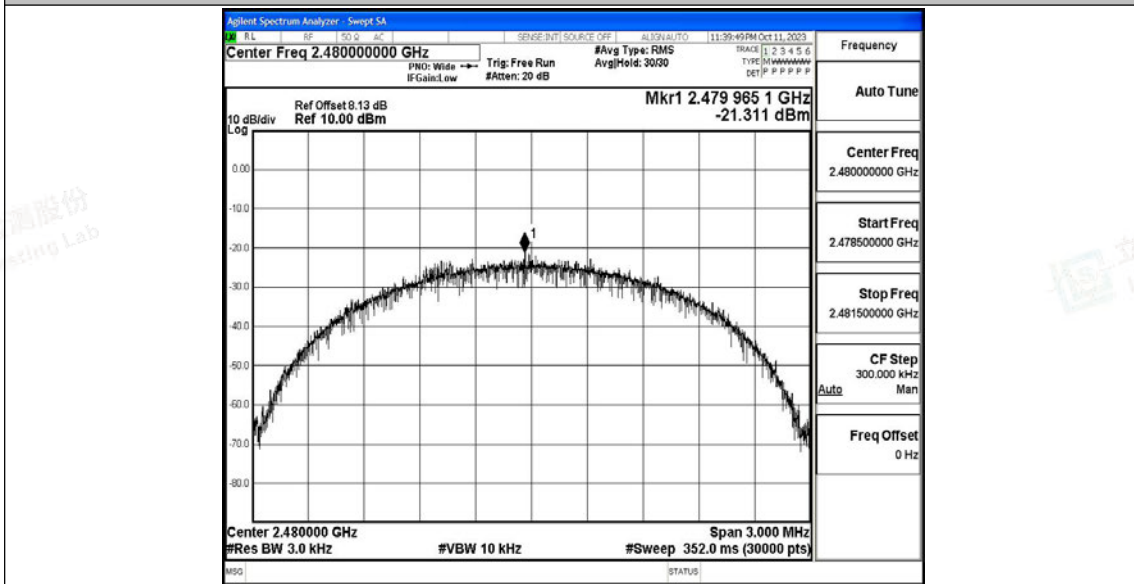


BLE_2M_Ant1_2440





BLE_2M_Ant1_2480





B.4 Band edge measurements

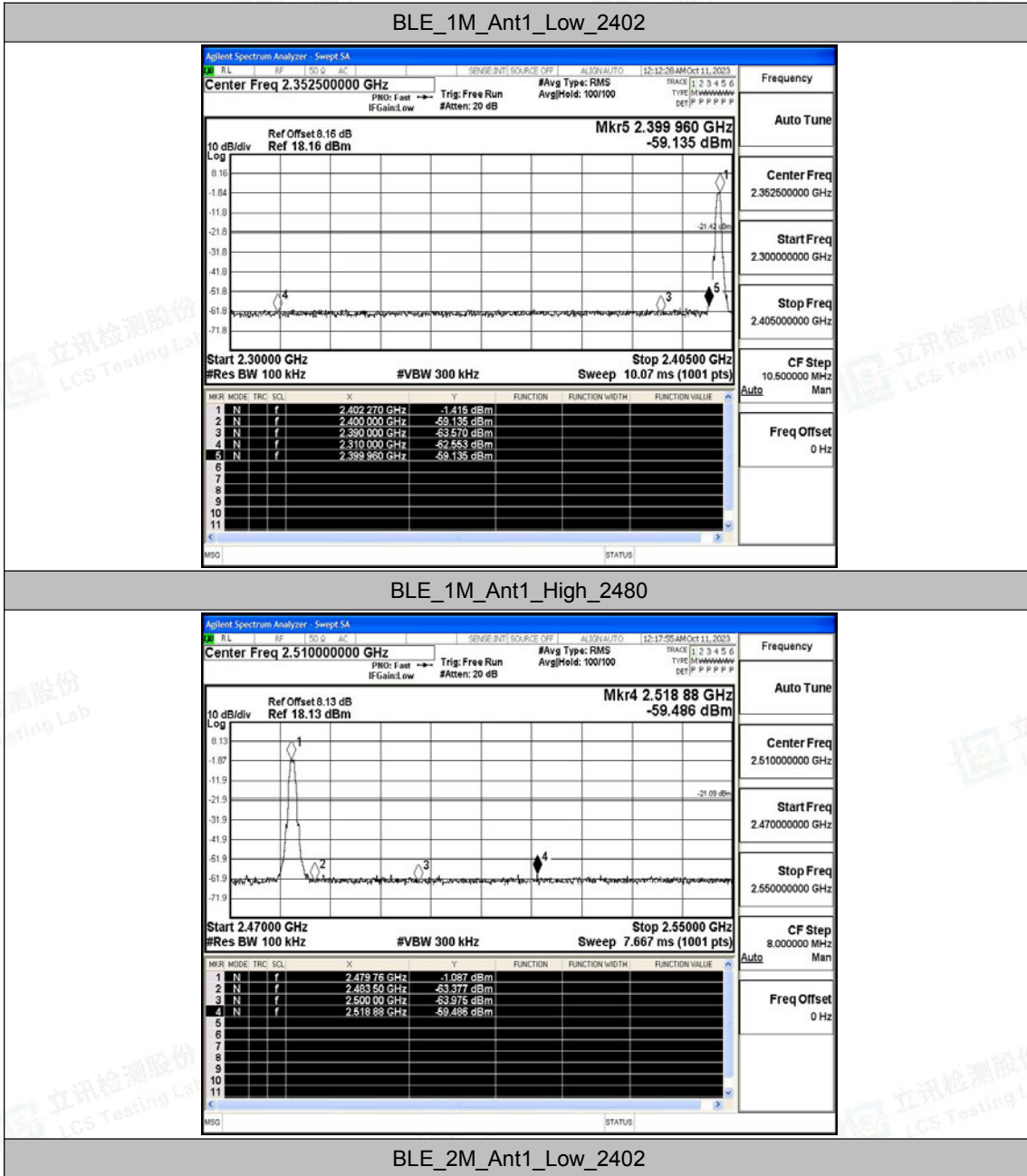
Test Result

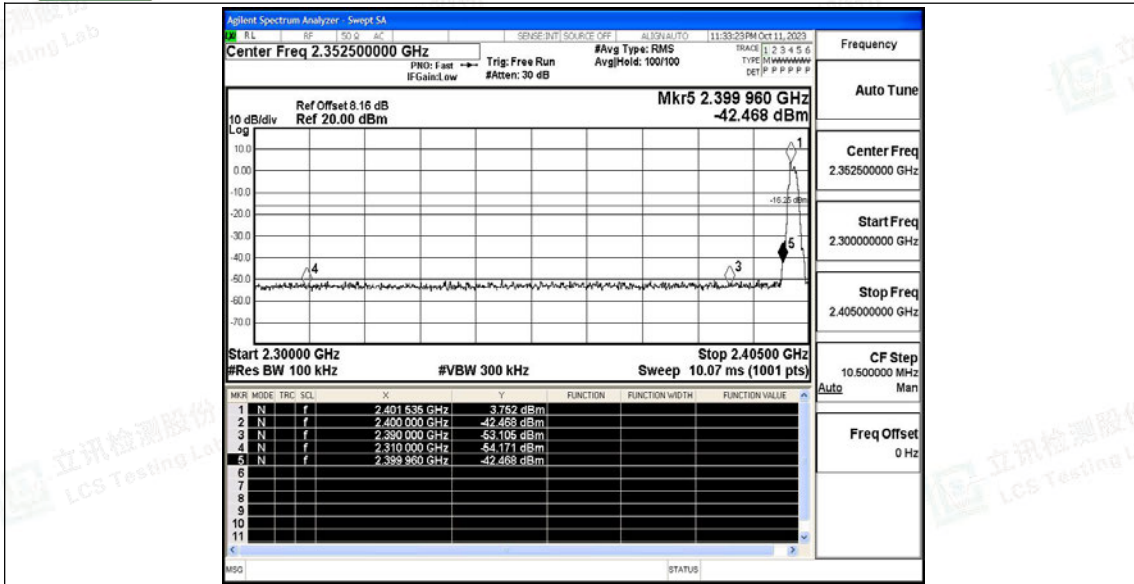
TestMode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	-1.42	-59.14	≤-21.42	PASS
		High	2480	-1.09	-59.49	≤-21.09	PASS
BLE_2M	Ant1	Low	2402	3.75	-42.47	≤-16.25	PASS
		High	2480	-2.68	-49.69	≤-22.68	PASS



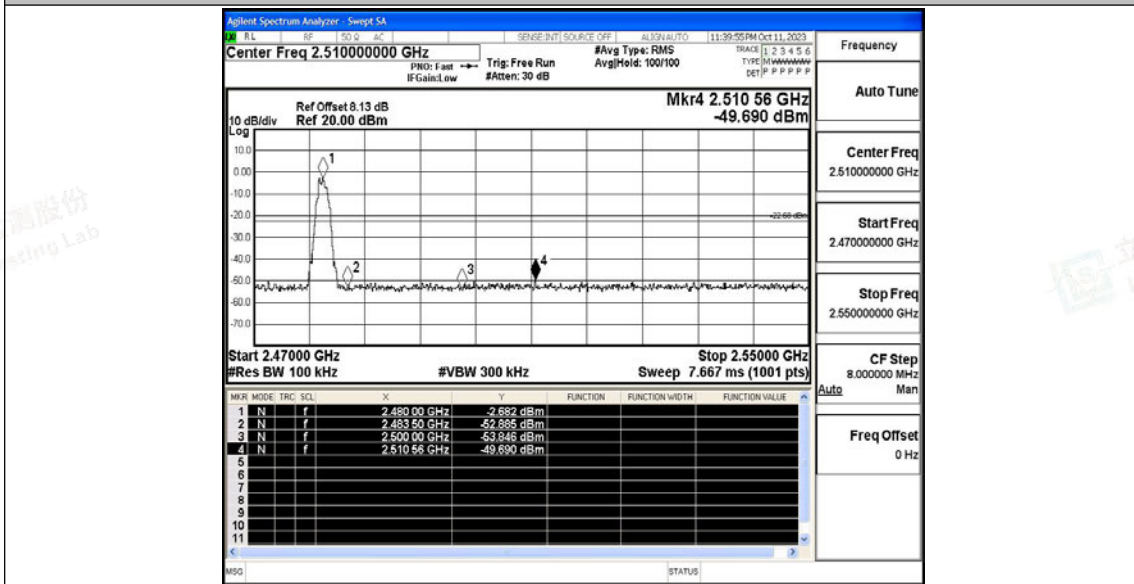


Test Graphs





BLE_2M_Ant1_High_2480





B.5 Conducted Spurious Emission

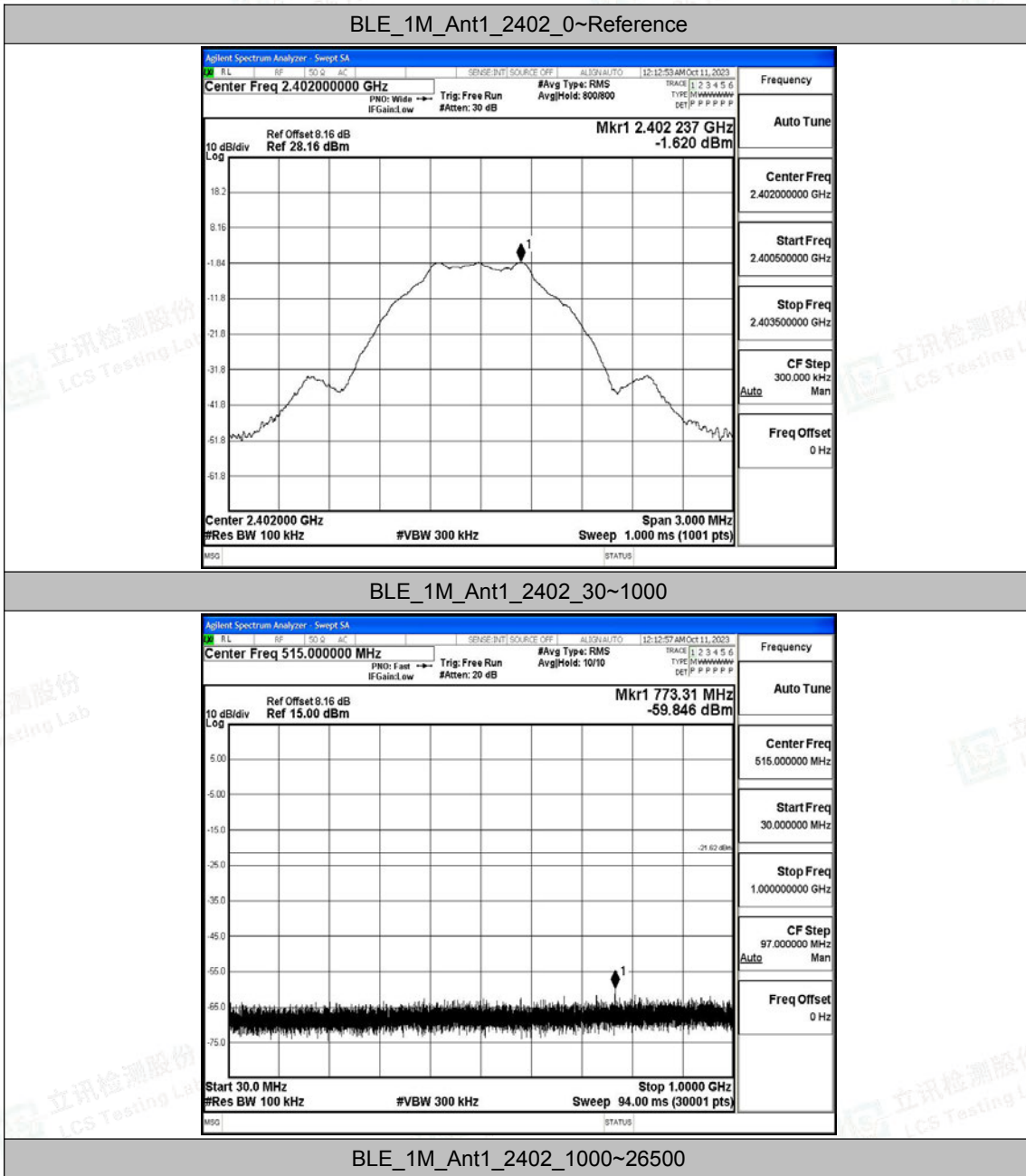
Test Result

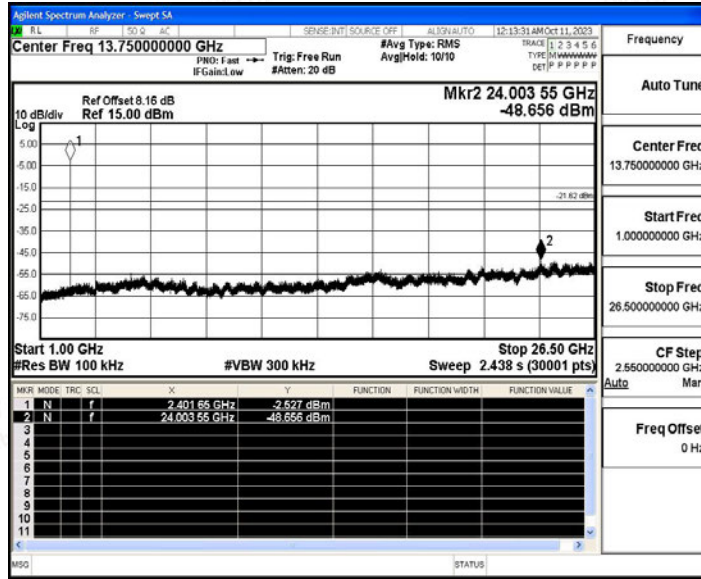
TestMode	Antenna	Channel	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	Reference	-1.62	-1.62	---	PASS
			30~1000	-1.62	-59.85	≤-21.62	PASS
			1000~26500	-1.62	-48.66	≤-21.62	PASS
		2440	Reference	-1.31	-1.31	---	PASS
			30~1000	-1.31	-61.41	≤-21.31	PASS
			1000~26500	-1.31	-48.38	≤-21.31	PASS
		2480	Reference	-1.27	-1.27	---	PASS
			30~1000	-1.27	-60.99	≤-21.27	PASS
			1000~26500	-1.27	-48.49	≤-21.27	PASS
BLE_2M	Ant1	2402	Reference	-1.14	-1.14	---	PASS
			30~1000	-1.14	-61.53	≤-21.14	PASS
			1000~26500	-1.14	-48.43	≤-21.14	PASS
		2440	Reference	-0.64	-0.64	---	PASS
			30~1000	-0.64	-61.28	≤-20.64	PASS
			1000~26500	-0.64	-49.51	≤-20.64	PASS
		2480	Reference	-2.63	-2.63	---	PASS
			30~1000	-2.63	-61.68	≤-22.63	PASS
			1000~26500	-2.63	-48.91	≤-22.63	PASS



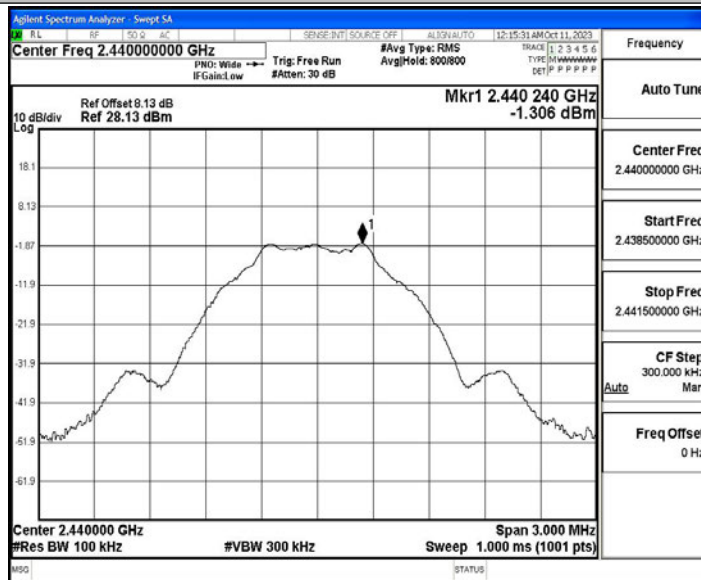


Test Graphs



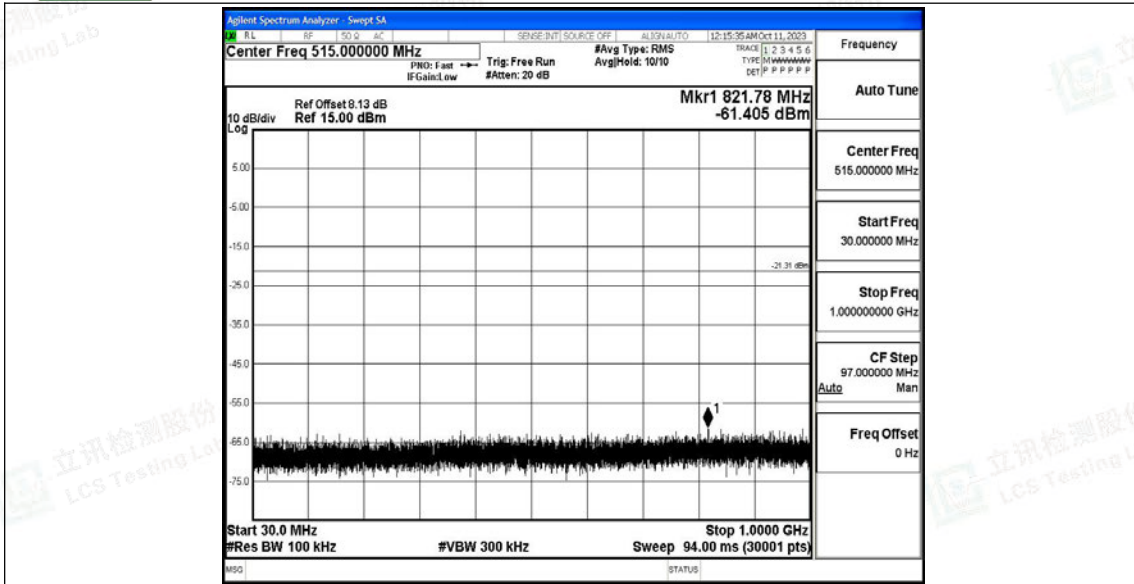


BLE_1M_Ant1_2440_0~Reference

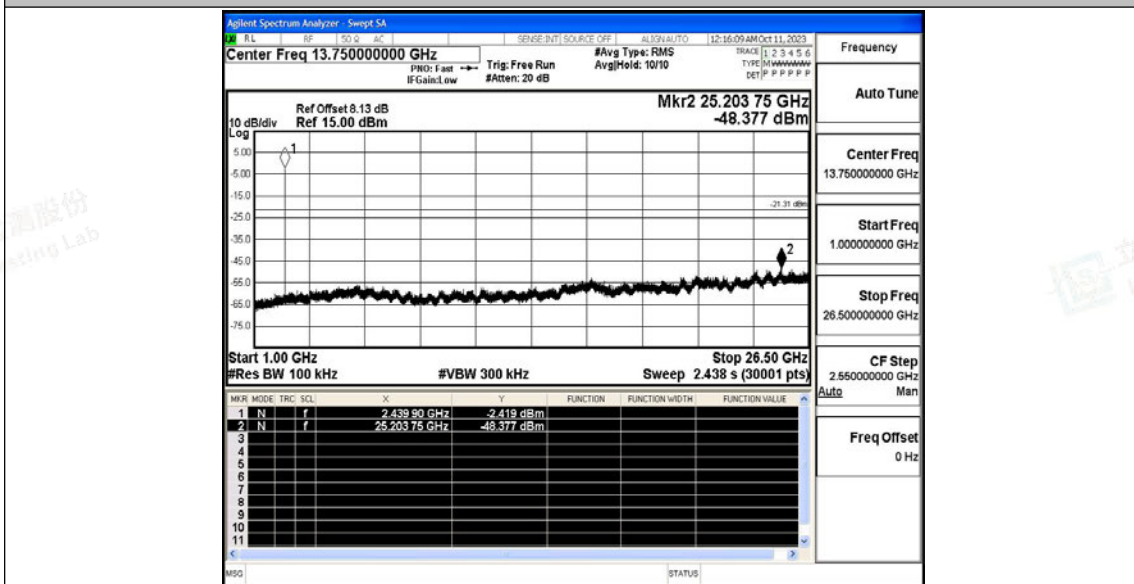


BLE_1M_Ant1_2440_30~1000



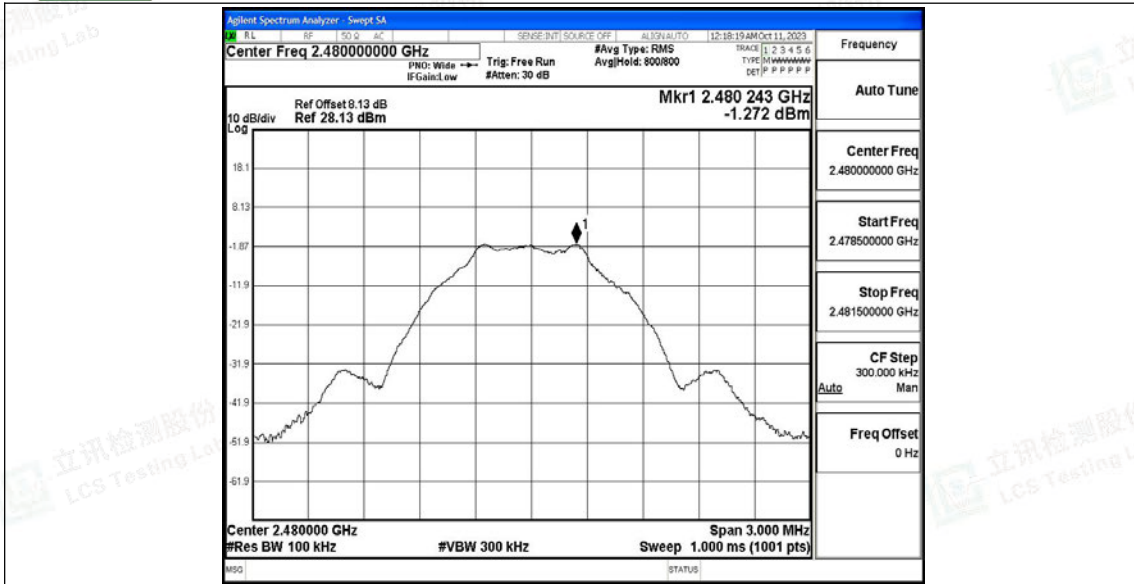


BLE_1M_Ant1_2440_1000~26500

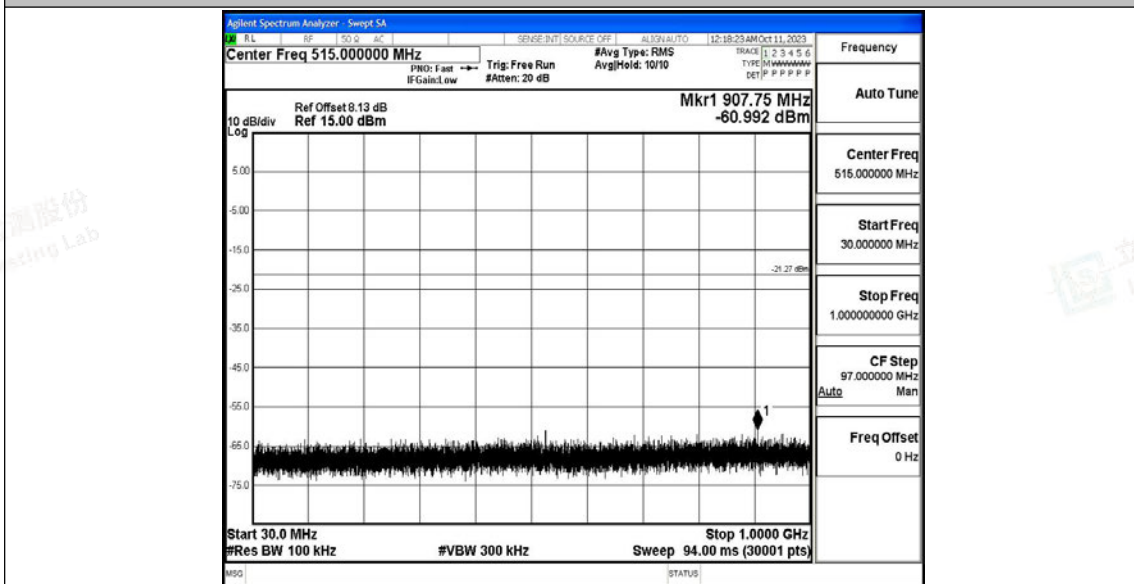


BLE_1M_Ant1_2480_0~Reference



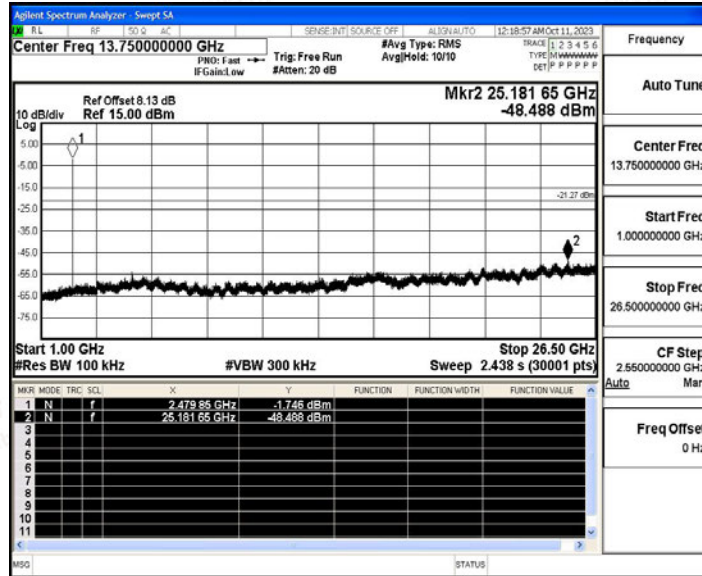


BLE_1M_Ant1_2480_30~1000

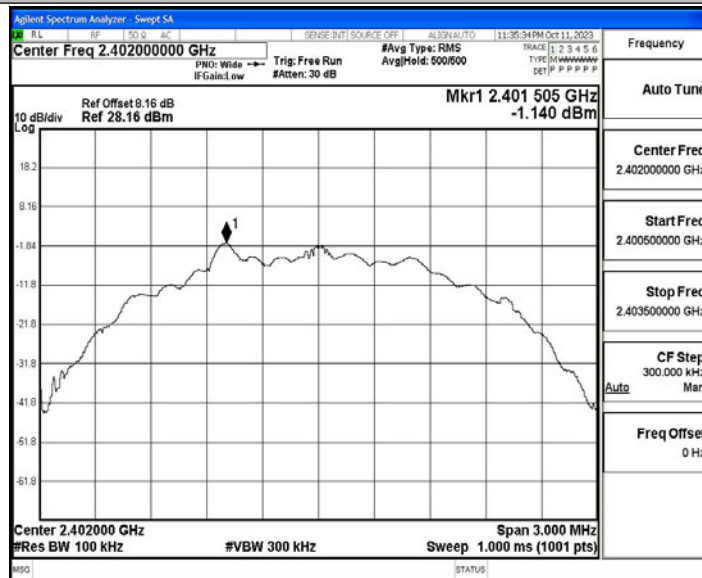


BLE_1M_Ant1_2480_1000~26500



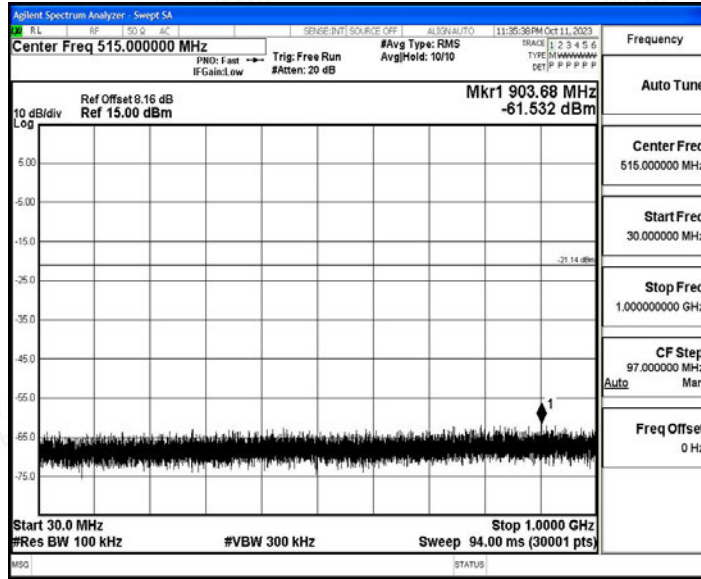


BLE_2M_Ant1_2402_0~Reference

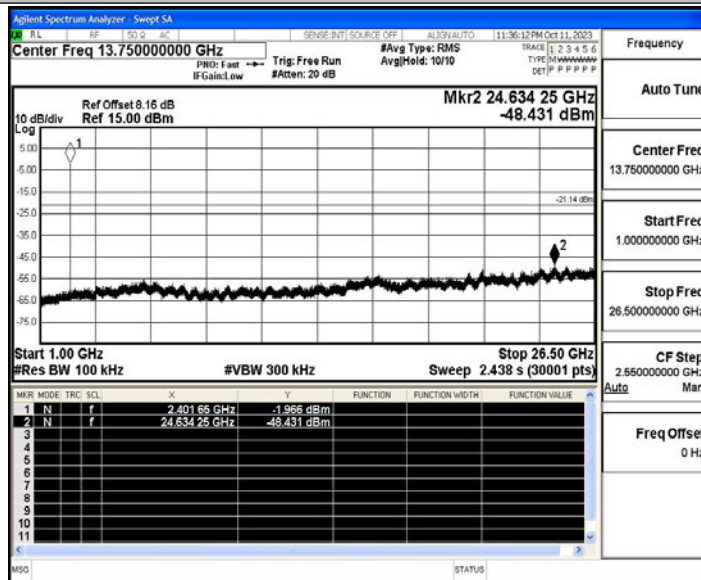


BLE_2M_Ant1_2402_30~1000



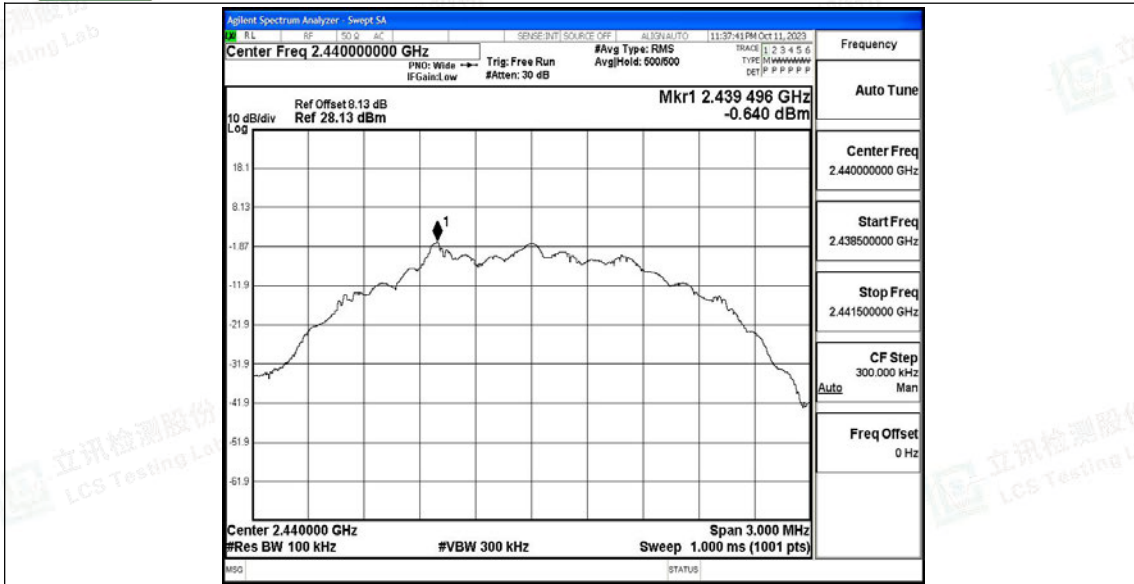


BLE_2M_Ant1_2402_1000~26500

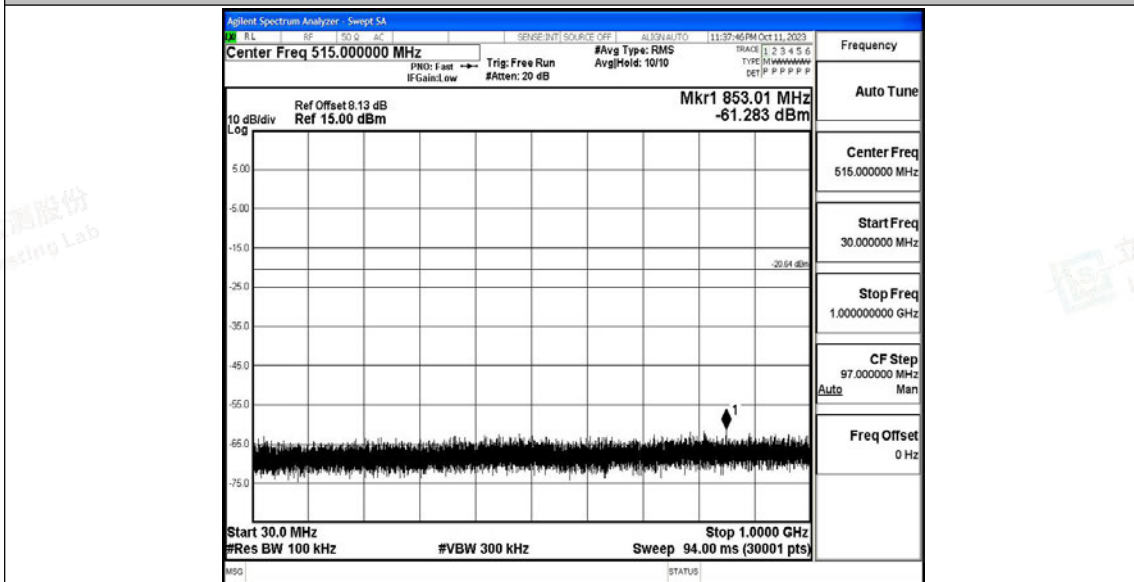


BLE_2M_Ant1_2440_0~Reference



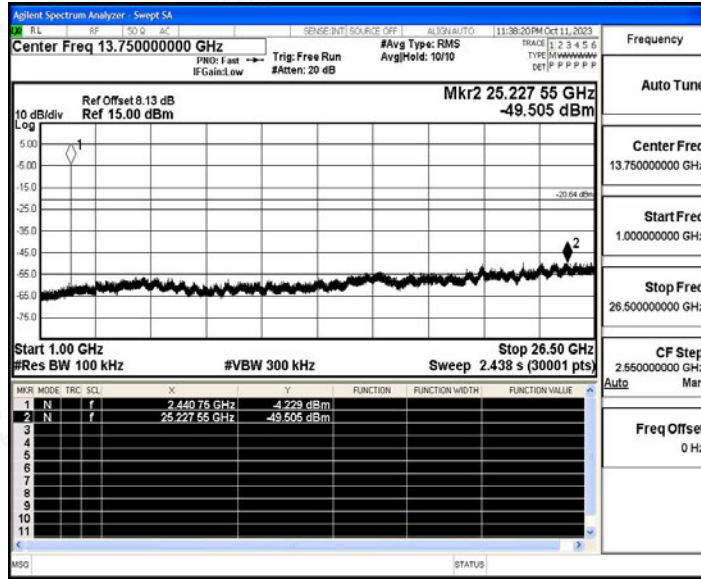


BLE_2M_Ant1_2440_30~1000

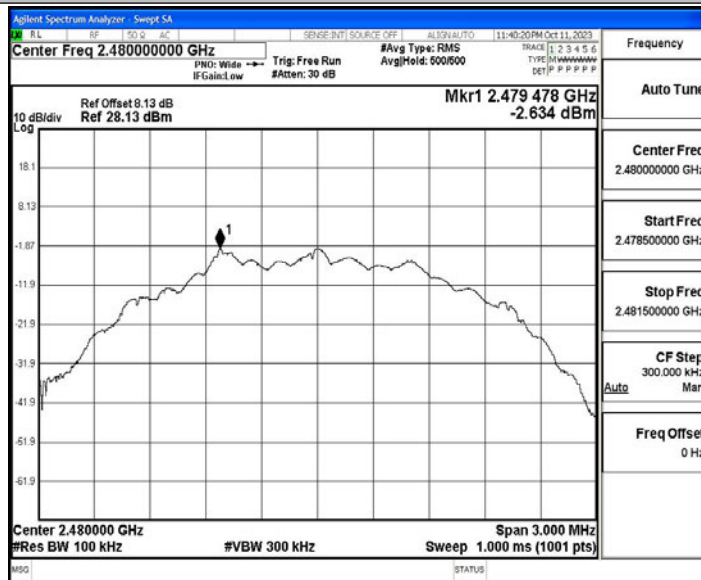


BLE_2M_Ant1_2440_1000~26500



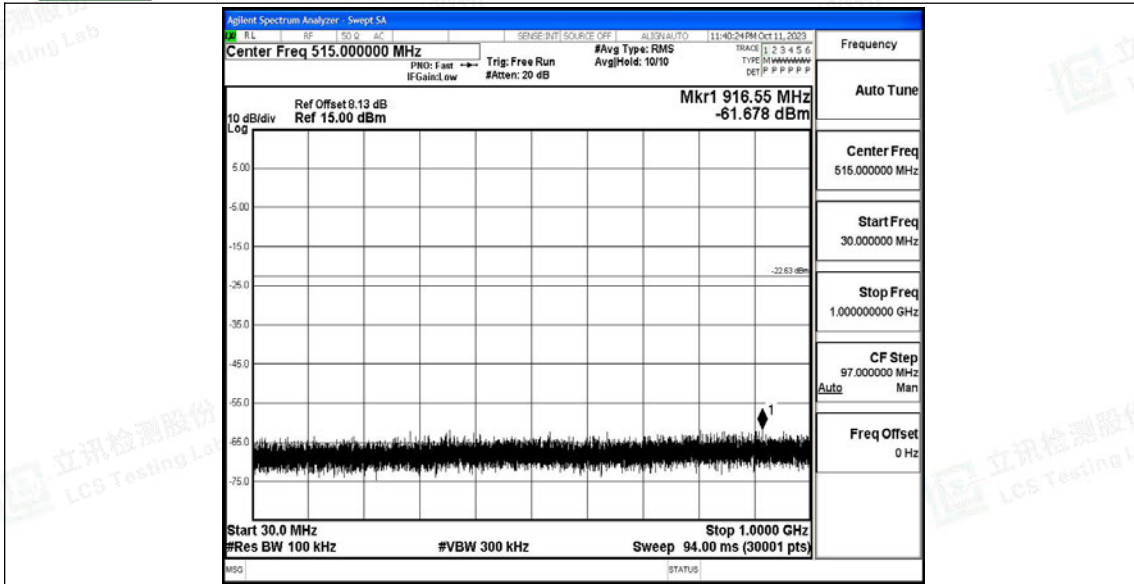


BLE_2M_Ant1_2480_0~Reference

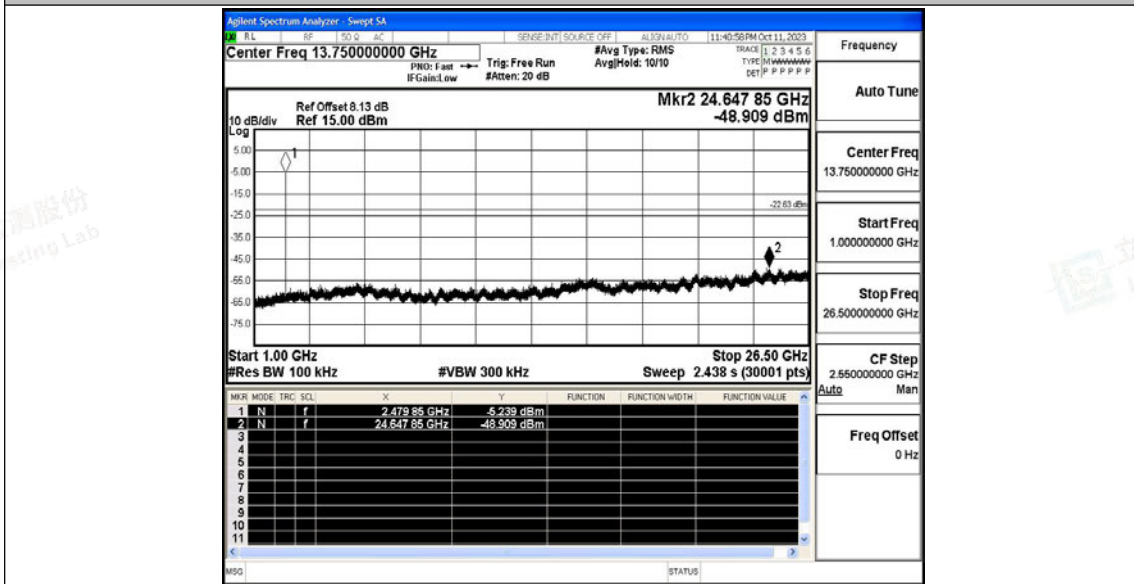


BLE_2M_Ant1_2480_30~1000





BLE_2M_Ant1_2480_1000~26500





B.6 Duty Cycle

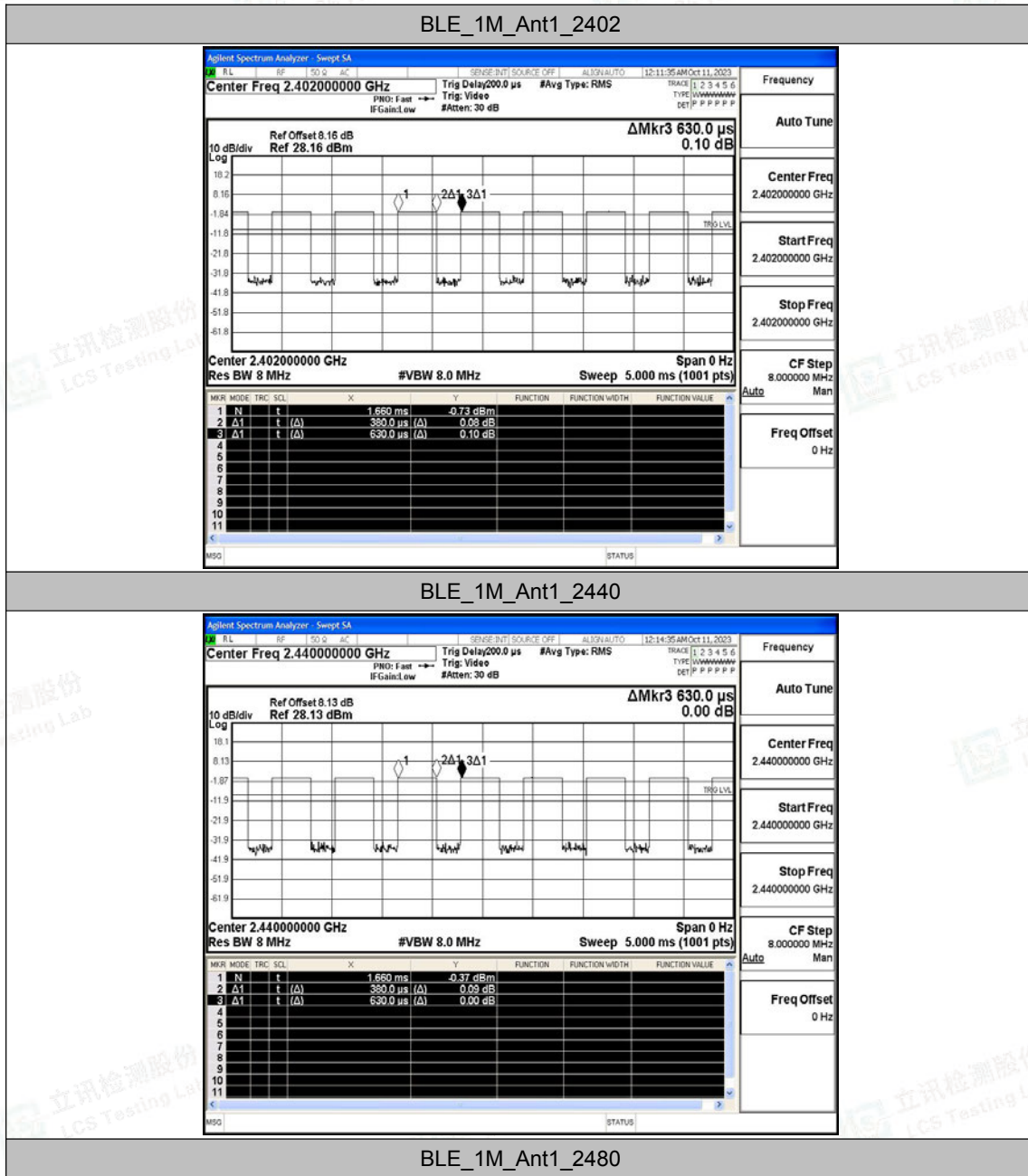
Test Result

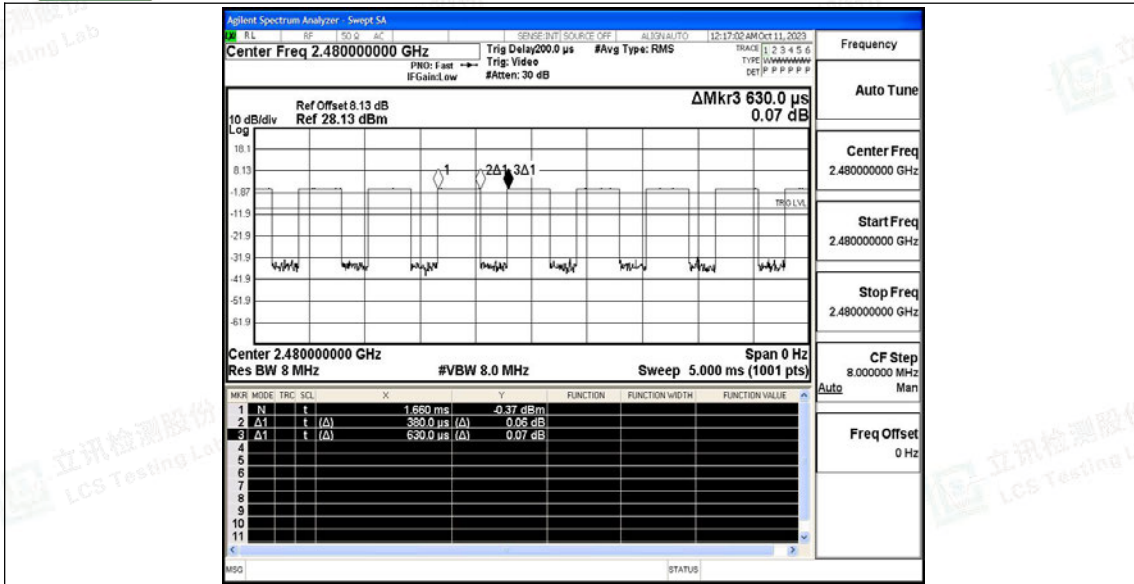
TestMode	Antenna	Channel	ON Time [ms]	Period [ms]	X	DC [%]	xFactor	1/T	Limit	Verdict
BLE_1M	Ant1	2402	0.38	0.63	0.6032	60.32	2.20	2.63	---	---
		2440	0.38	0.63	0.6032	60.32	2.20	2.63	---	---
		2480	0.38	0.63	0.6032	60.32	2.20	2.63	---	---
BLE_2M	Ant1	2402	0.82	1.25	0.6560	65.60	1.83	1.22	---	---
		2440	0.82	1.25	0.6560	65.60	1.83	1.22	---	---
		2480	0.82	1.25	0.6560	65.60	1.83	1.22	---	---



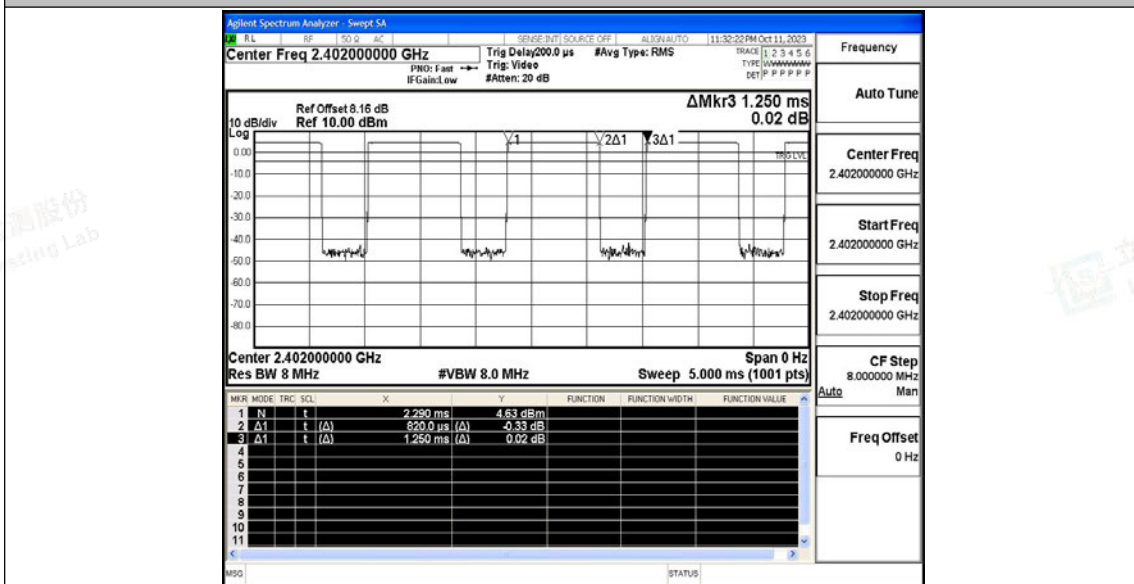


Test Graphs



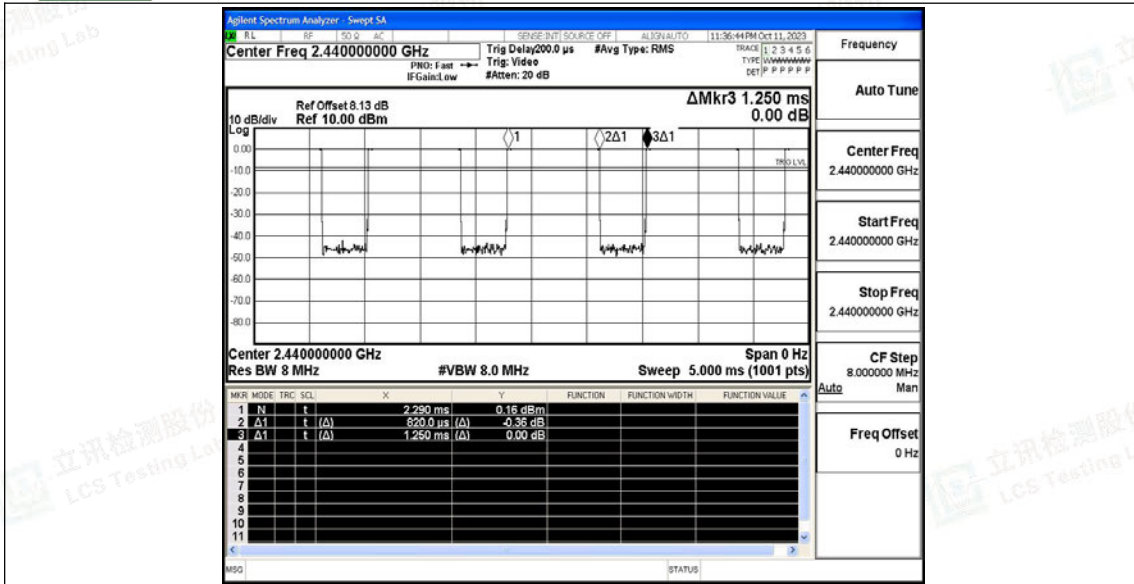


BLE_2M_Ant1_2402

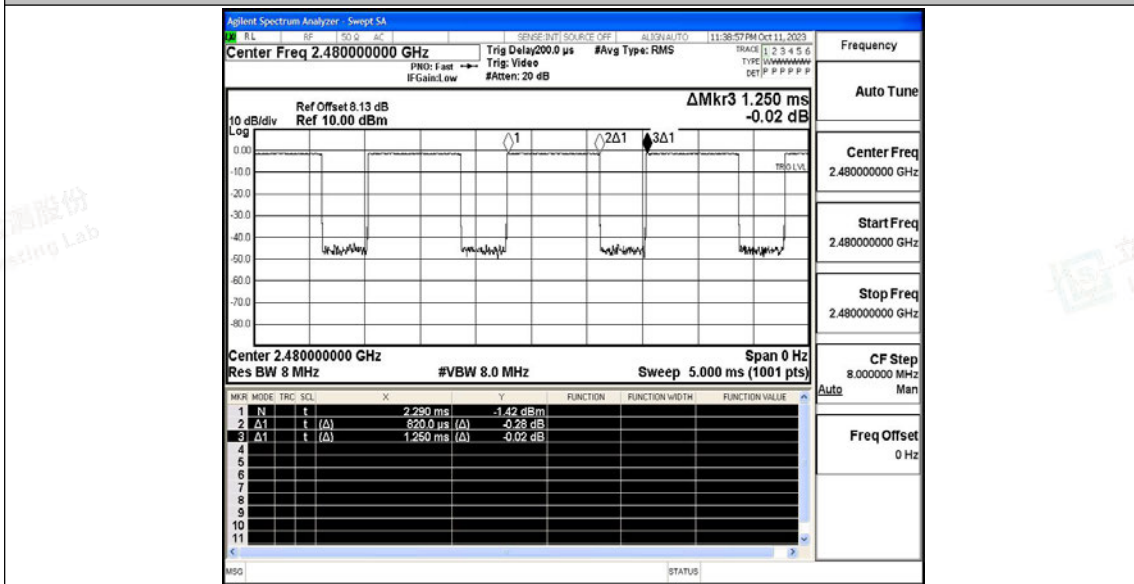


BLE_2M_Ant1_2440





BLE_2M_Ant1_2480





B.7 Emissions in Restricted Bands

Test Result

TestMode	Antenna	ChName	Channel	Detector	Freq. [MHz]	Result [dBm]	Limit [dBm]	Result [dBuV/m]	Limit [dBuV/m]	Verdict
BLE_1M	Ant1	Low	2402	AV	2310.000	-58.51	≤-41.20	36.69	≤54	PASS
				AV	2364.470	-57.5	≤-41.20	37.70	≤54	PASS
				AV	2390.000	-57.96	≤-41.20	37.24	≤54	PASS
				Peak	2310.000	-52.02	≤-21.20	43.18	≤74	PASS
				Peak	2367.620	-49.1	≤-21.20	46.10	≤74	PASS
				Peak	2390.000	-50.21	≤-21.20	44.99	≤74	PASS
		High	2480	AV	2483.500	-54.15	≤-41.20	41.05	≤54	PASS
				AV	2483.520	-54.15	≤-41.20	41.05	≤54	PASS
				AV	2500.000	-57.91	≤-41.20	37.29	≤54	PASS
				Peak	2483.500	-51.99	≤-21.20	43.21	≤74	PASS
				Peak	2492.400	-48.94	≤-21.20	46.26	≤74	PASS
				Peak	2500.000	-52.4	≤-21.20	42.80	≤74	PASS
BLE_2M	Ant1	Low	2402	Peak	2310.000	-40.42	≤-21.20	54.78	≤74	PASS
				Peak	2379.800	-39.16	≤-21.20	56.04	≤74	PASS
				Peak	2390.000	-41.33	≤-21.20	53.87	≤74	PASS
		High	2480	AV	2483.500	-47.4	≤-41.20	47.80	≤54	PASS
				AV	2483.520	-47.4	≤-41.20	47.80	≤54	PASS
				AV	2500.000	-48.18	≤-41.20	47.02	≤54	PASS
				Peak	2483.500	-40.7	≤-21.20	54.50	≤74	PASS
				Peak	2485.840	-39.65	≤-21.20	55.55	≤74	PASS
				Peak	2500.000	-42.79	≤-21.20	52.41	≤74	PASS

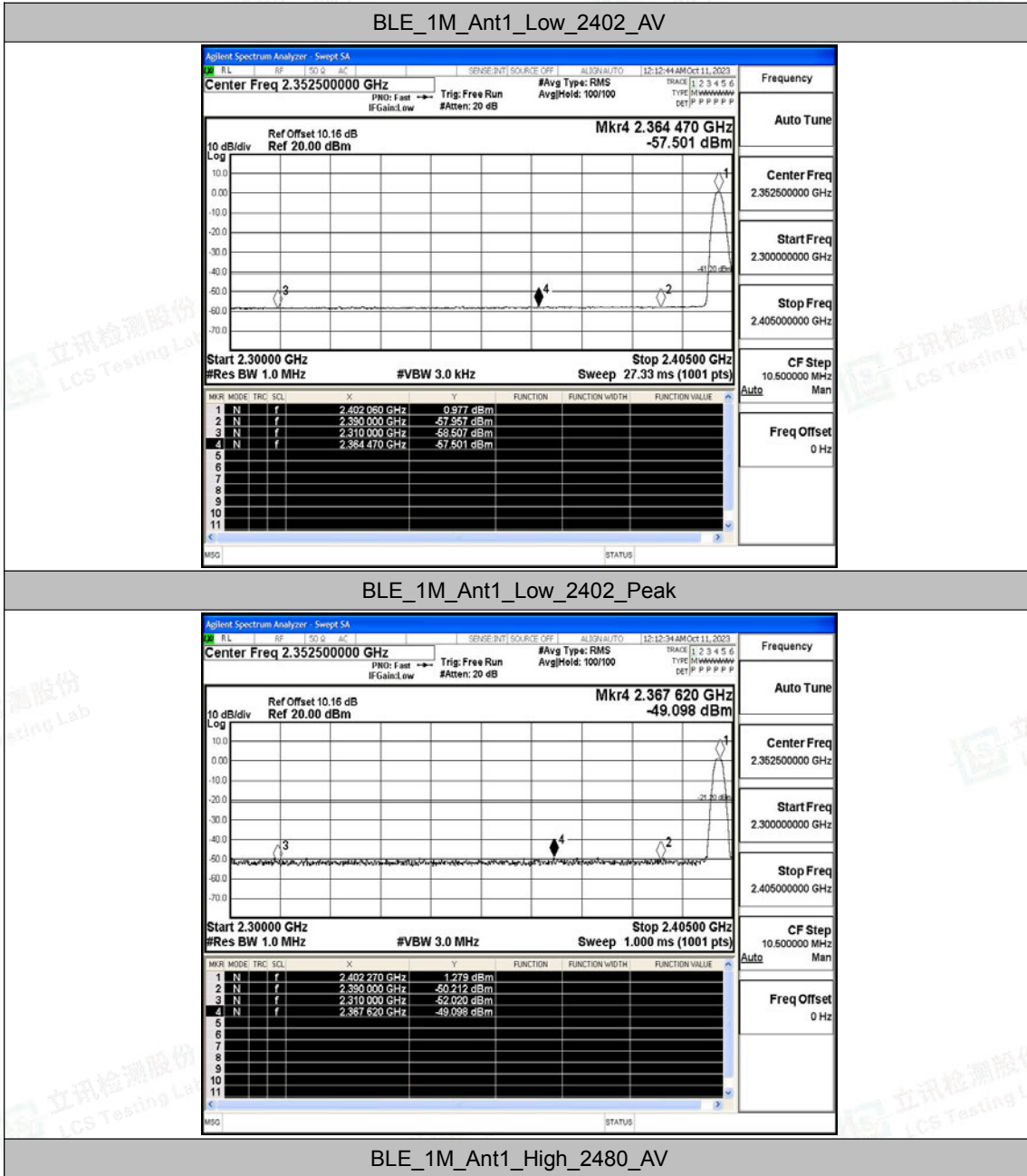
Note:

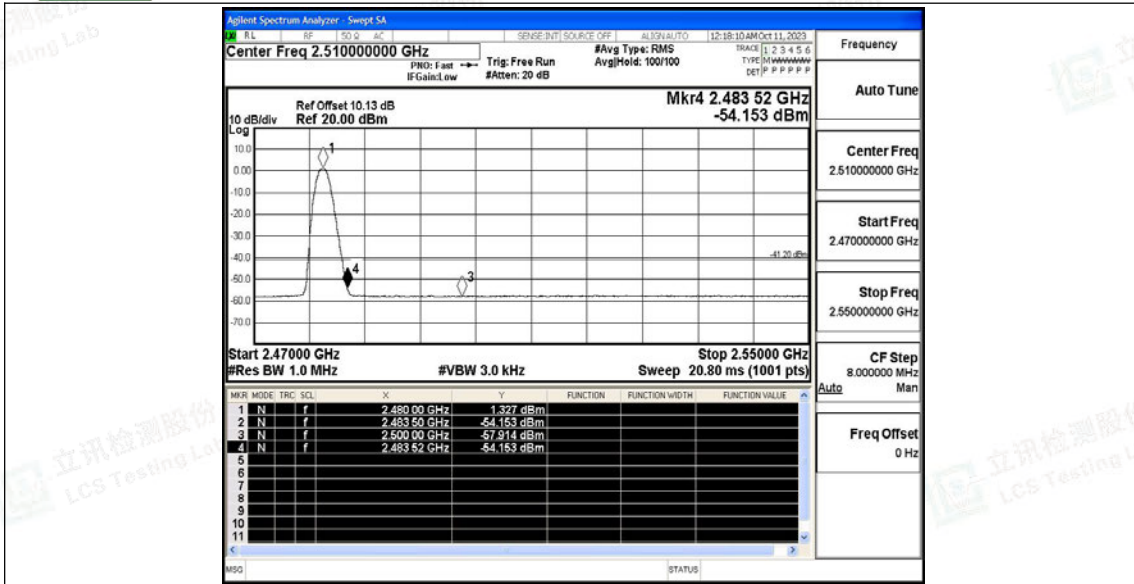
1. The Antenna Gain is compensated in the graph.
2. The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.



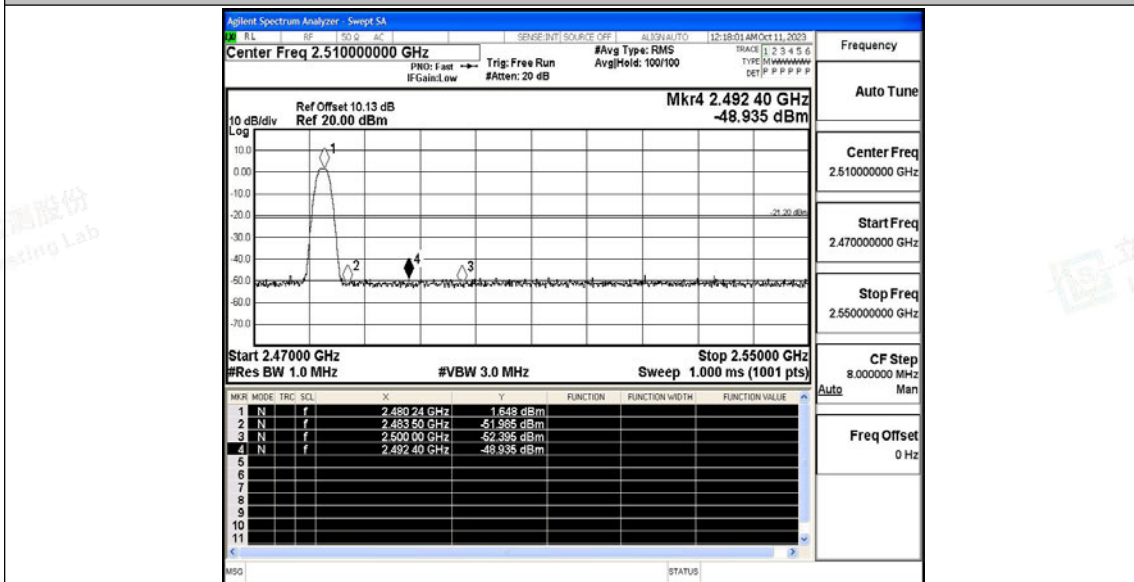


Test Graphs



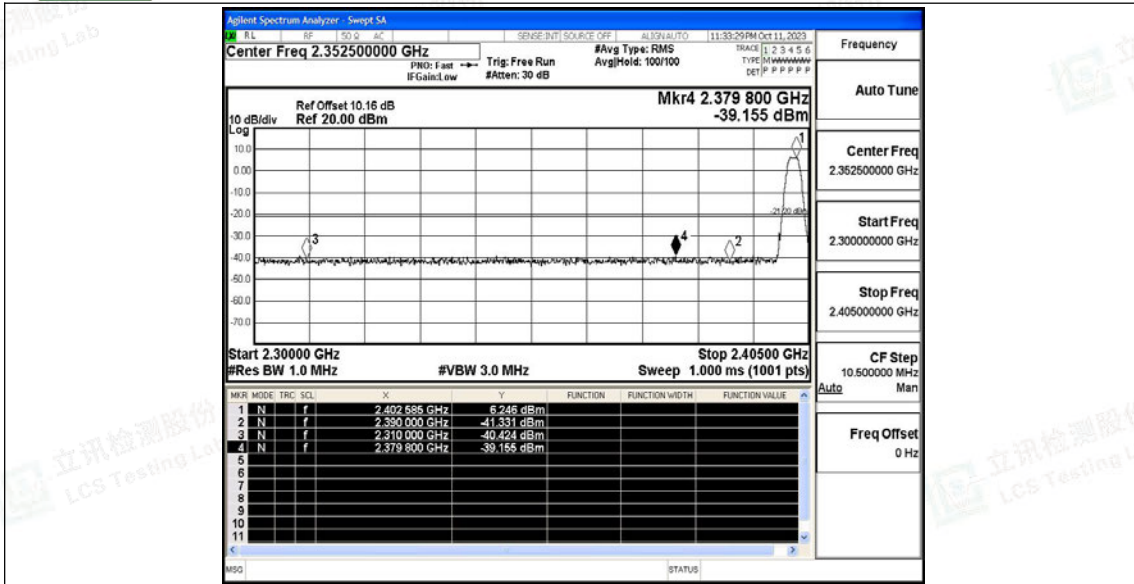


BLE_1M_Ant1_High_2480_Peak

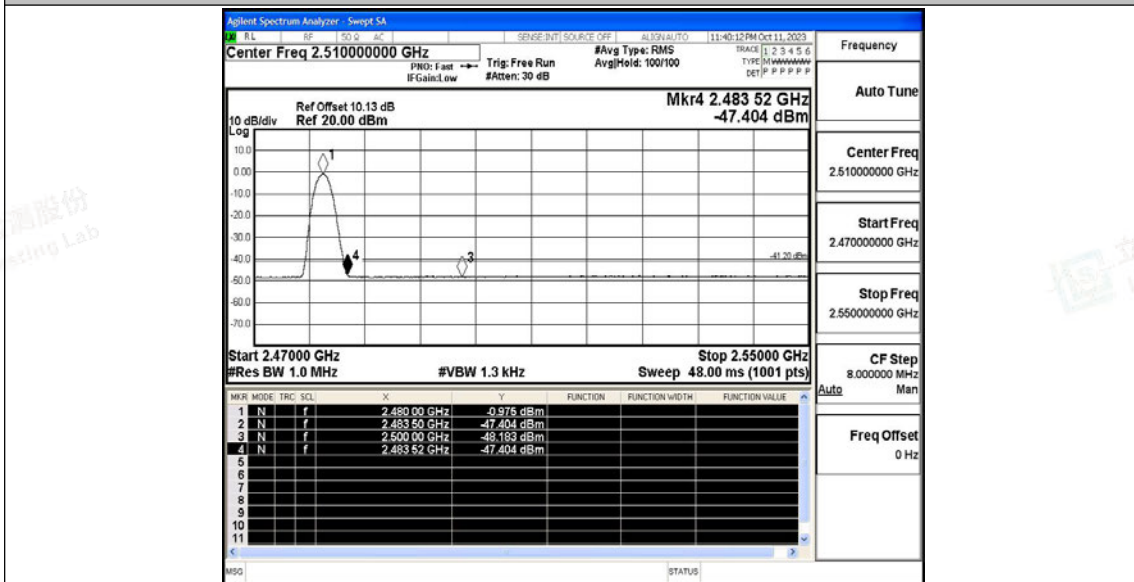


BLE_2M_Ant1_Low_2402_Peak





BLE_2M_Ant1_High_2480_AV



BLE_2M_Ant1_High_2480_Peak



