



Appendix B

RF Test Data for BT LE (Conducted Measurement)

Product Name: LED Controller

Test Model: SP701E

Environmental Conditions

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





A.1 DTS Bandwidth

Test Result

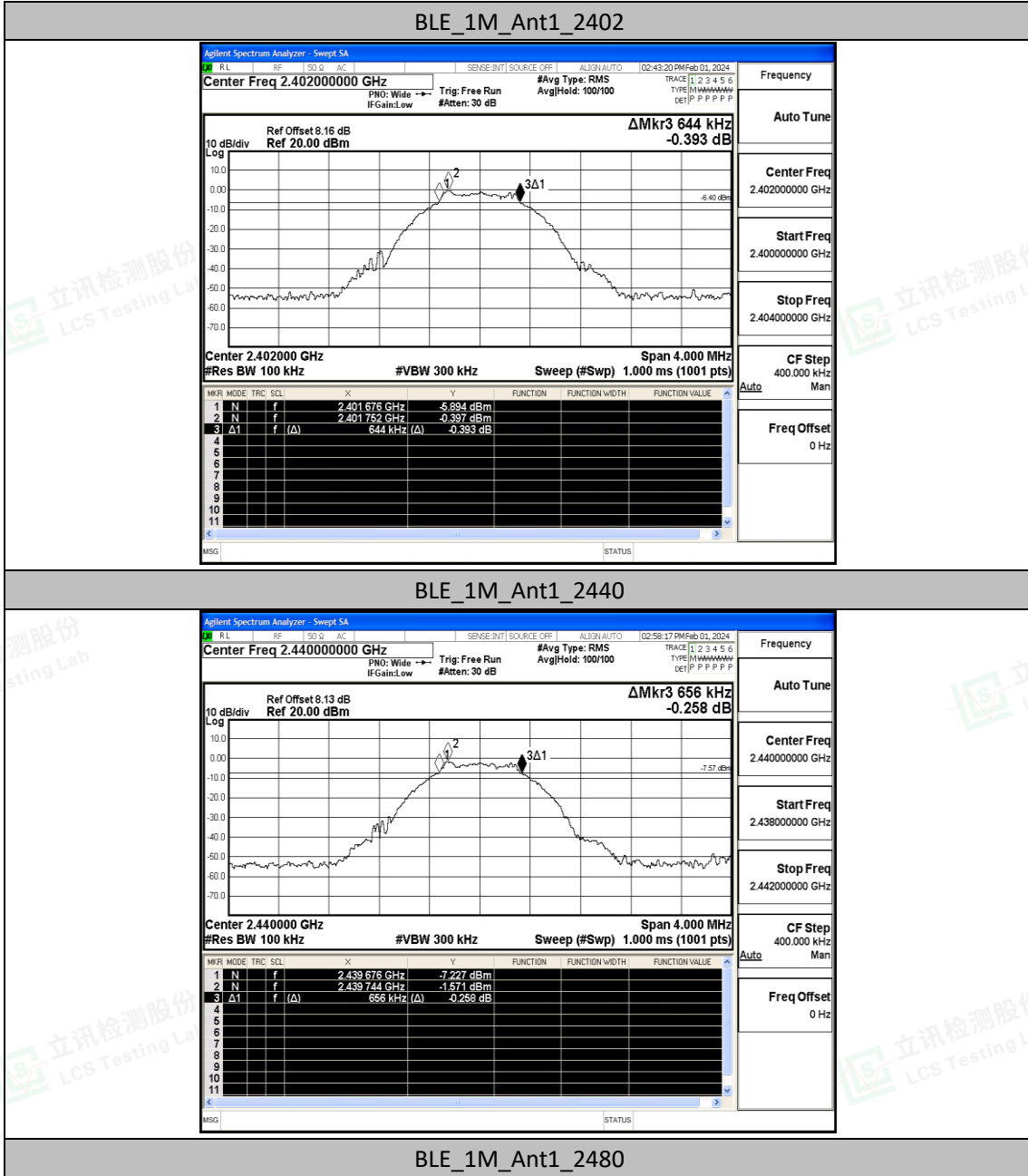
TestMode	Antenna	Frequency[MHz]	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.644	2401.676	2402.320	0.5	PASS
		2440	0.656	2439.676	2440.332	0.5	PASS
		2480	0.660	2479.668	2480.328	0.5	PASS
BLE_2M	Ant1	2402	1.140	2401.424	2402.564	0.5	PASS
		2440	1.336	2439.328	2440.664	0.5	PASS
		2480	1.184	2479.408	2480.592	0.5	PASS

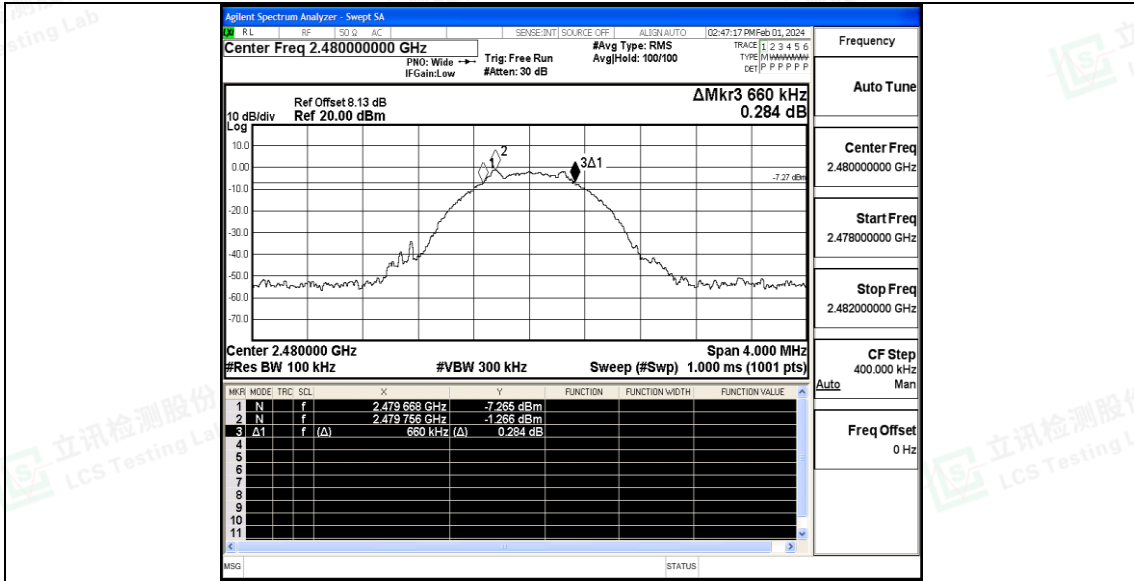


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Scan code to check authenticity

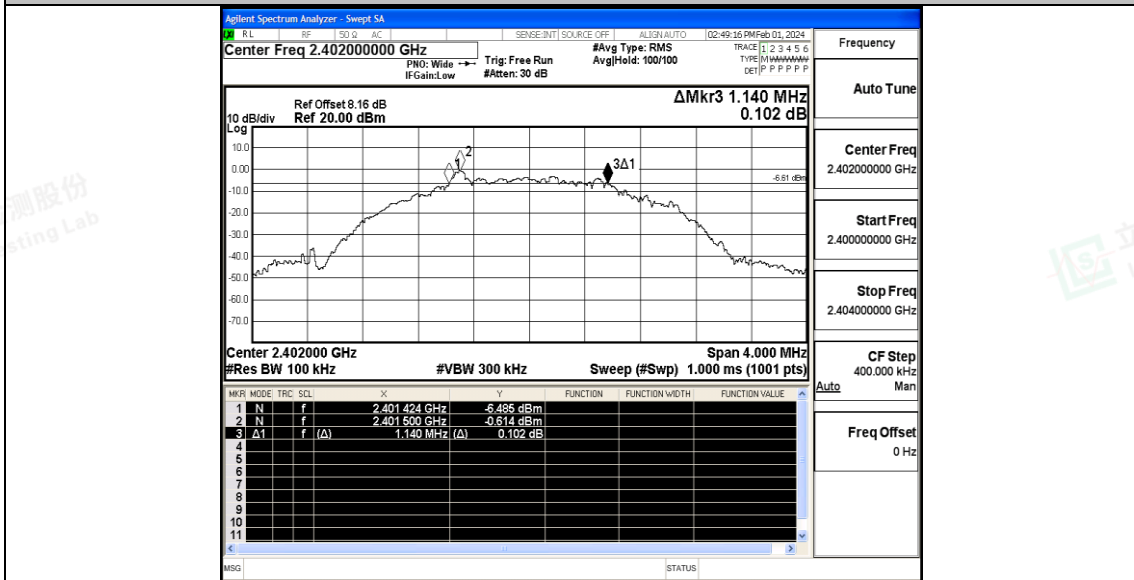


Test Graphs



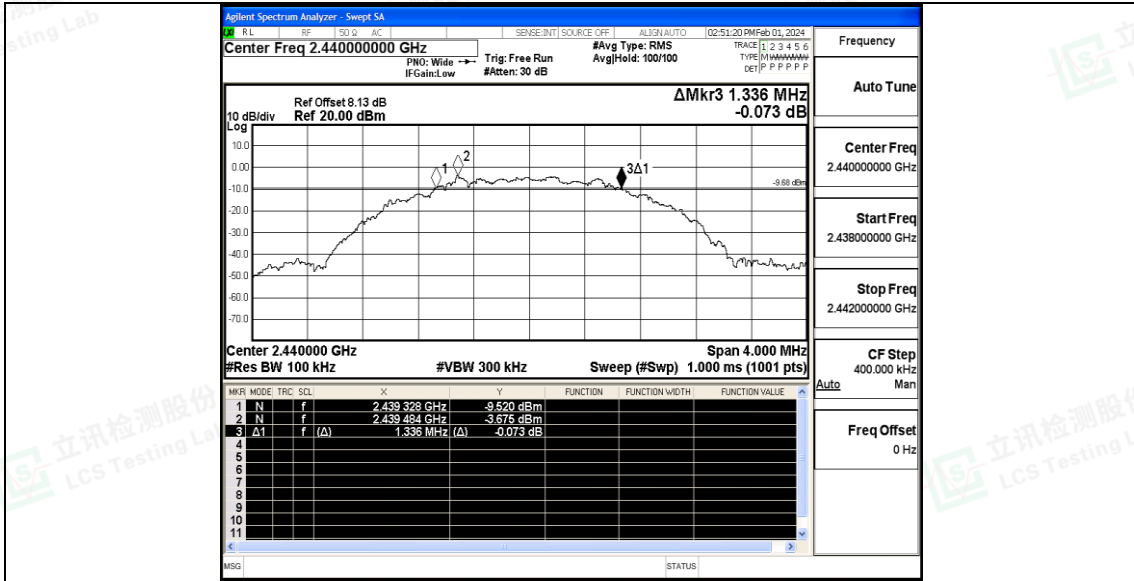


BLE_2M_Ant1_2402

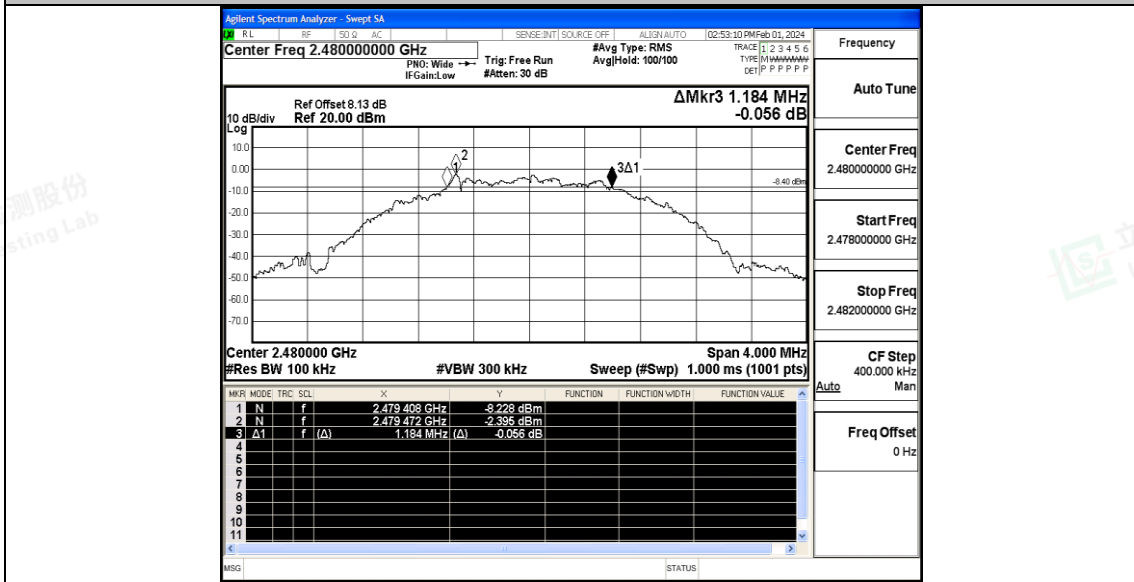


BLE_2M_Ant1_2440





BLE_2M_Ant1_2480





A.2 Maximum conducted output power

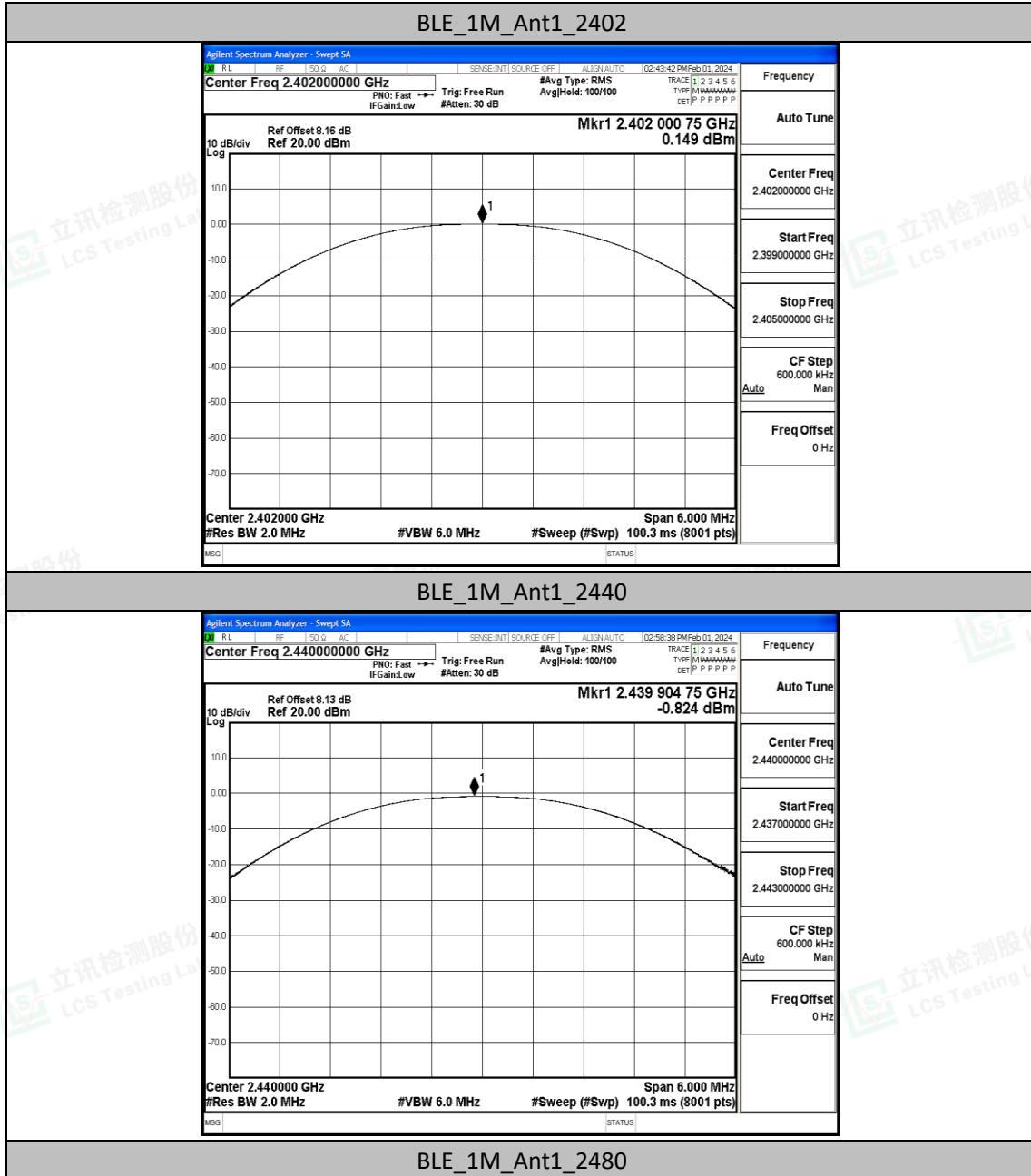
Test Result

TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	0.15	≤30	PASS
		2440	-0.82	≤30	PASS
		2480	-0.66	≤30	PASS
BLE_2M	Ant1	2402	-0.04	≤30	PASS
		2440	-0.88	≤30	PASS
		2480	-0.84	≤30	PASS

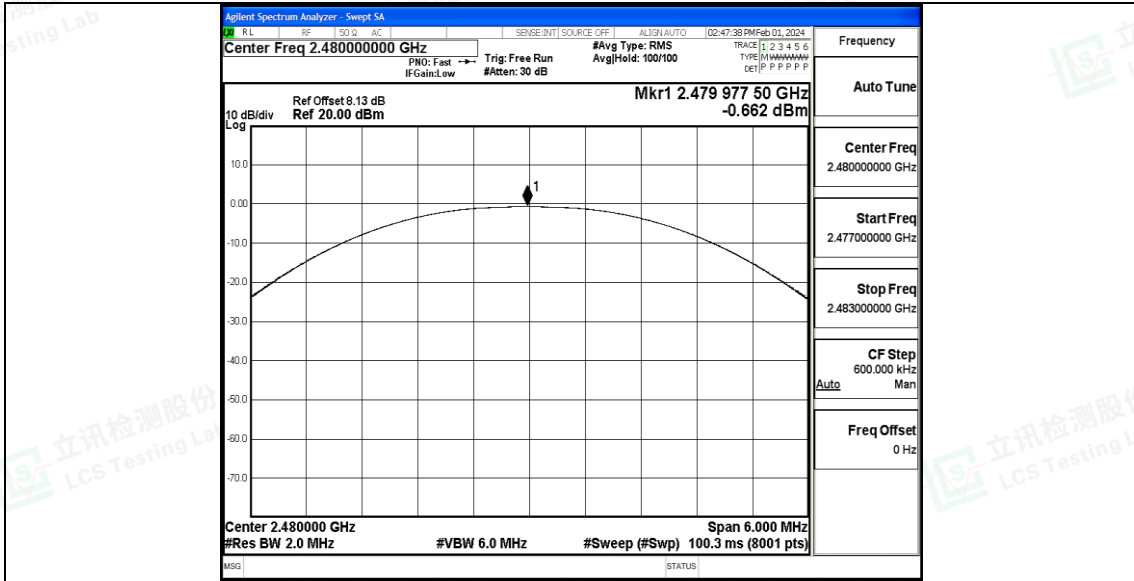




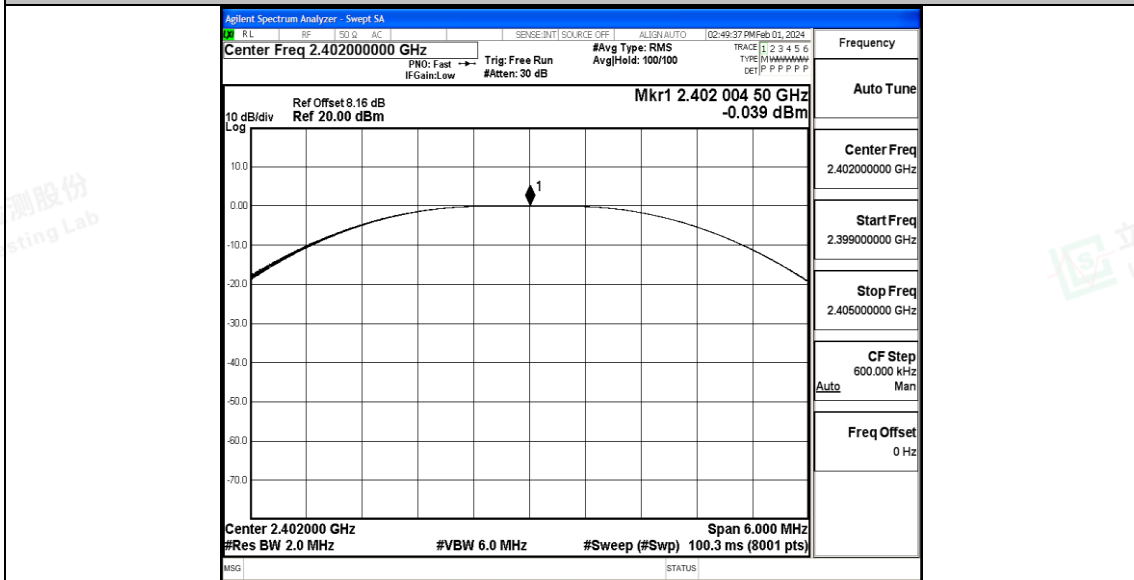
Test Graphs



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 Scan code to check authenticity

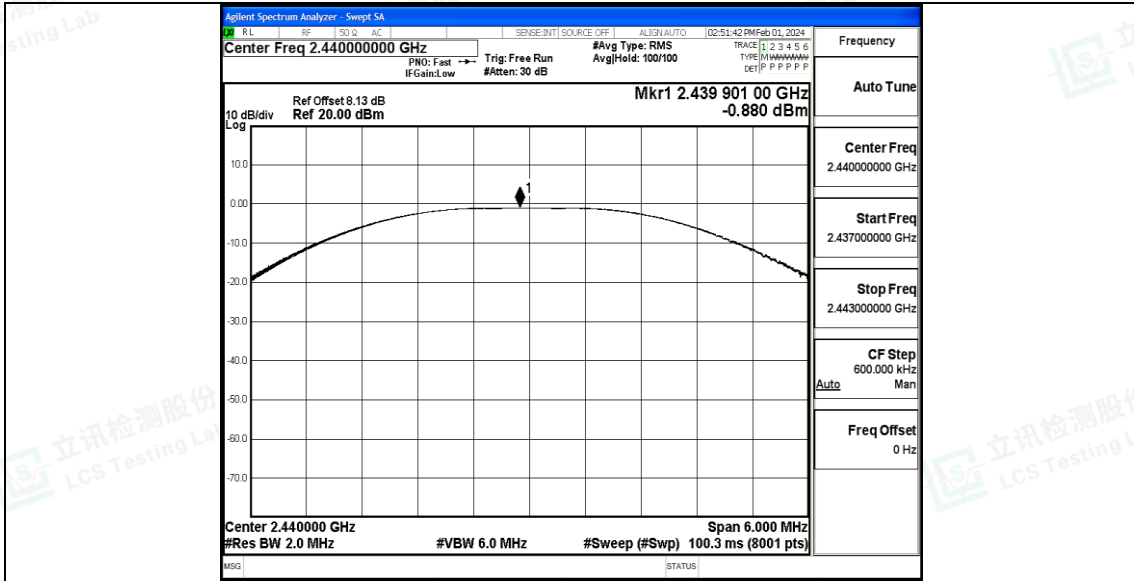


BLE_2M_Ant1_2402

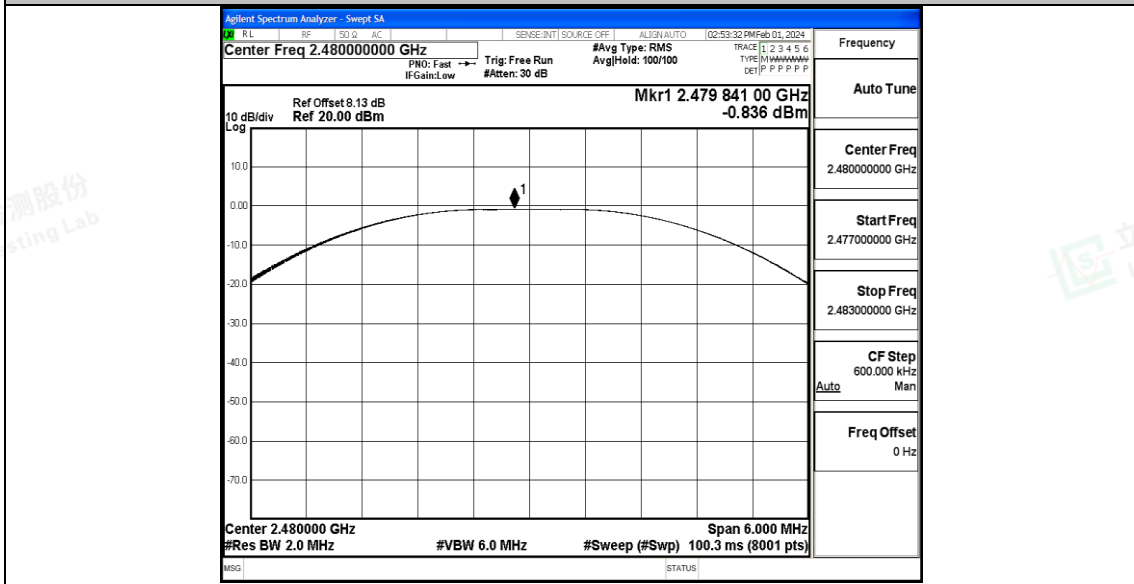


BLE_2M_Ant1_2440





BLE_2M_Ant1_2480





A.3 Maximum power spectral density

Test Result

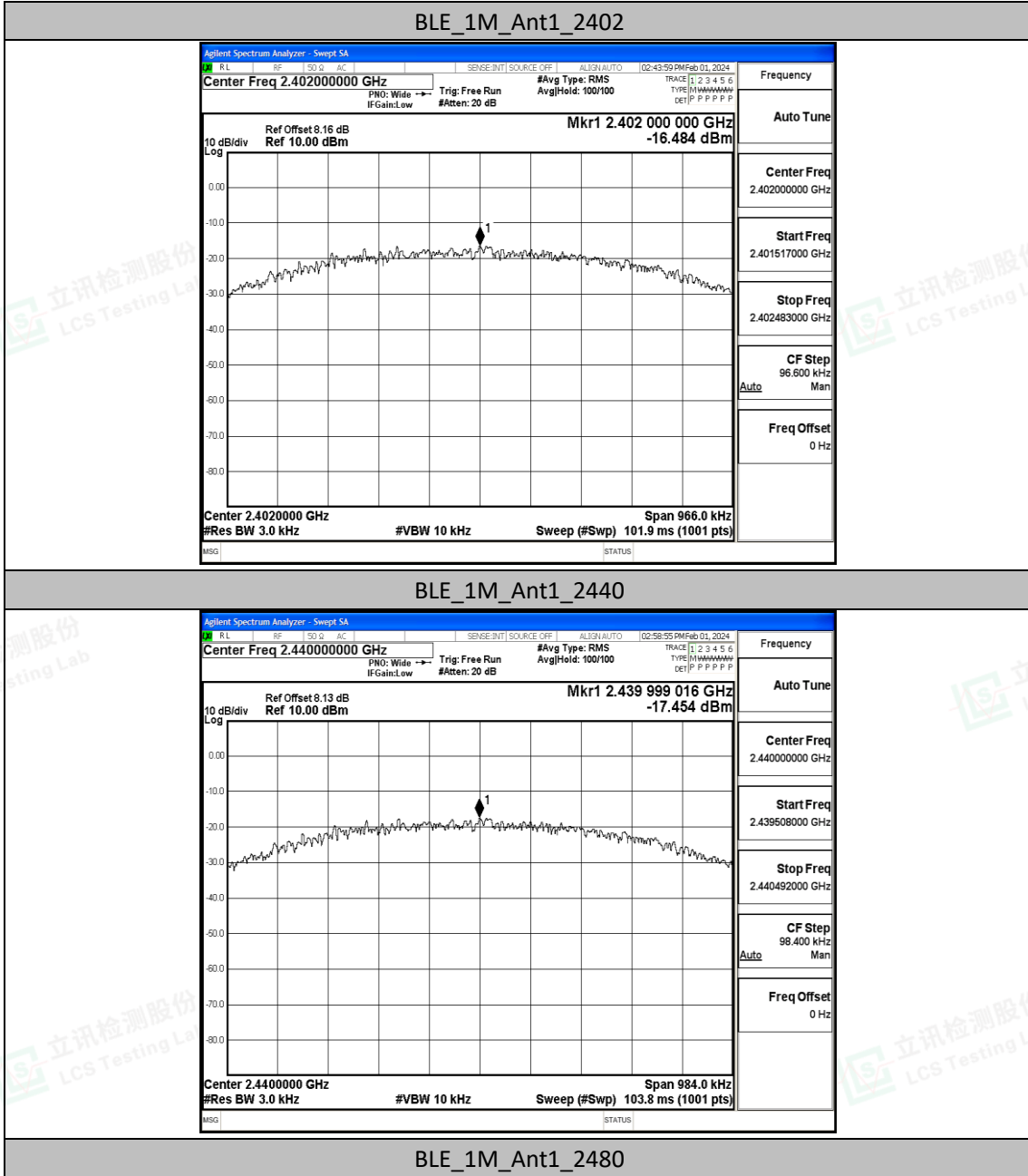
TestMode	Antenna	Frequency[MHz]	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-16.48	≤8.00	PASS
		2440	-17.45	≤8.00	PASS
		2480	-17.28	≤8.00	PASS
BLE_2M	Ant1	2402	-19.72	≤8.00	PASS
		2440	-20.71	≤8.00	PASS
		2480	-20.52	≤8.00	PASS

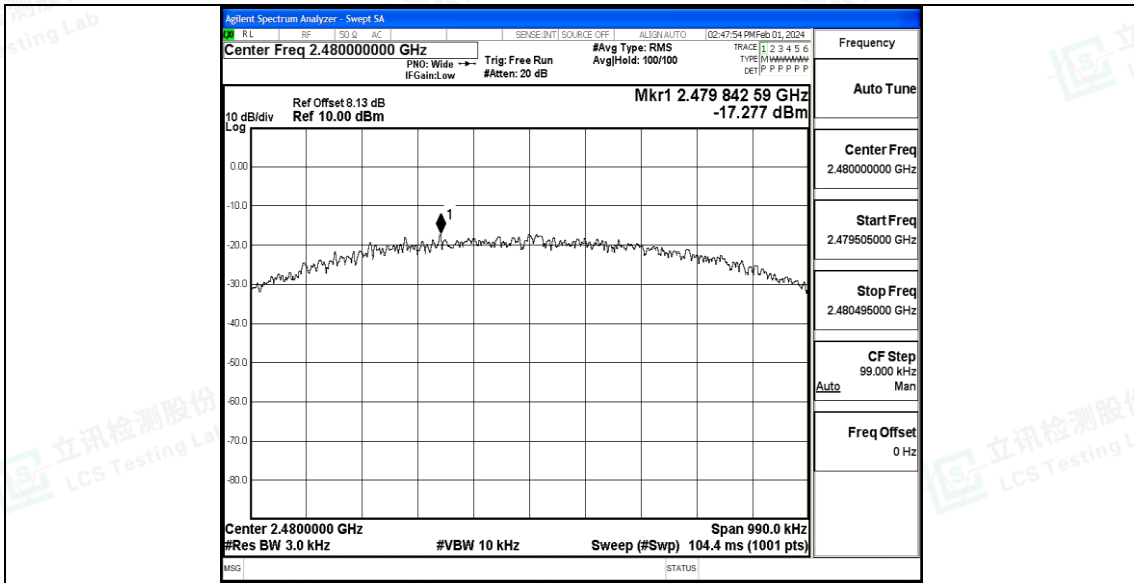


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Scan code to check authenticity

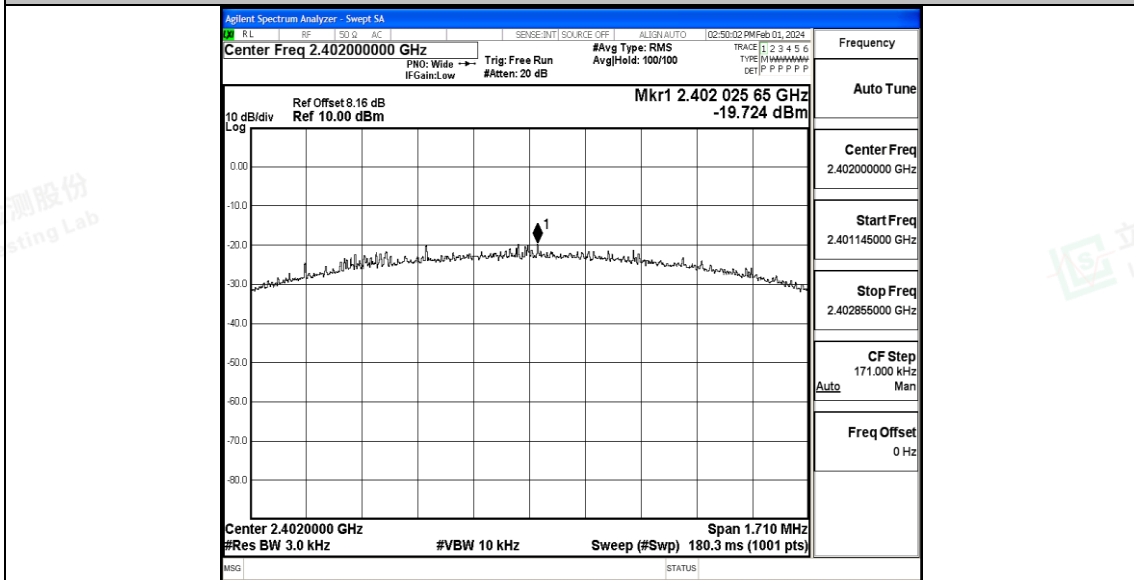


Test Graphs



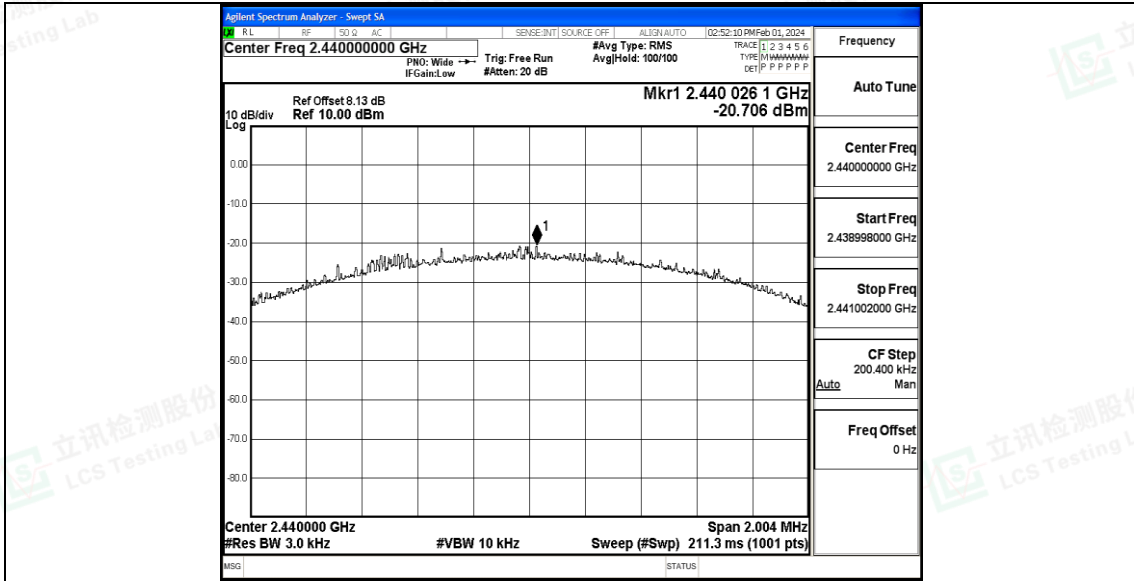


BLE_2M_Ant1_2402

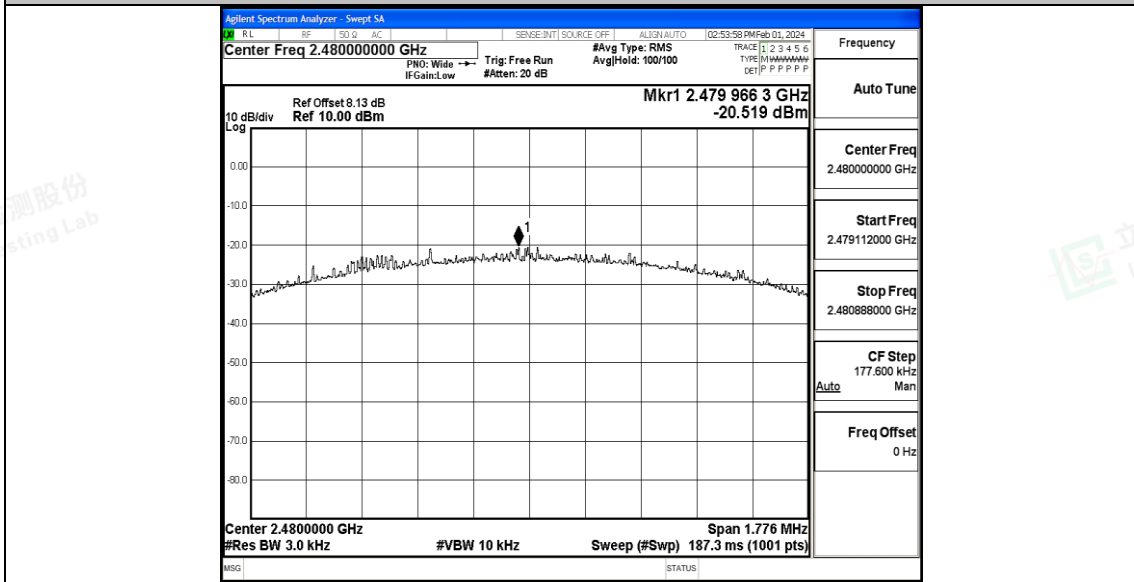


BLE_2M_Ant1_2440





BLE_2M_Ant1_2480





Reference level measurement

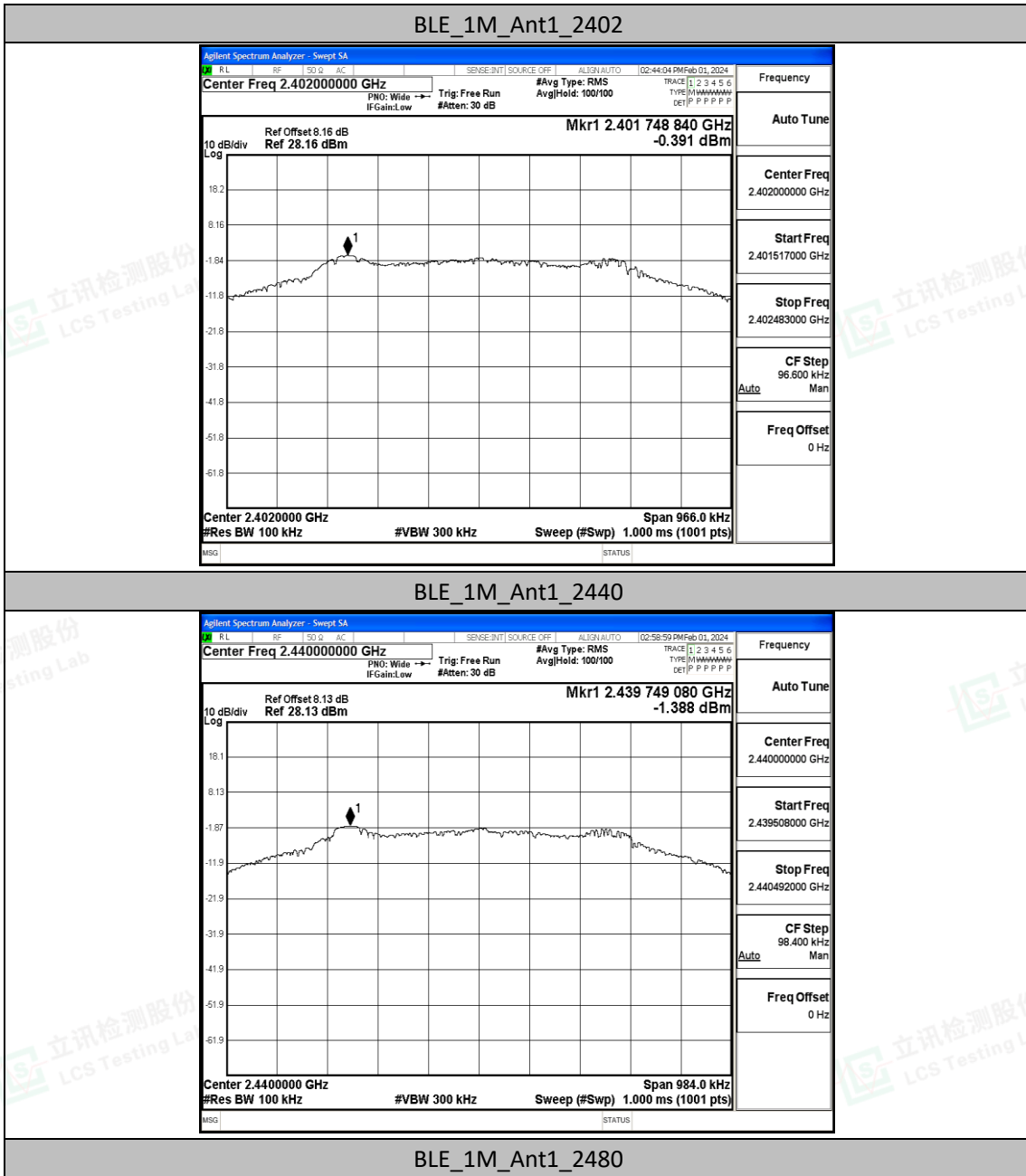
Test Result

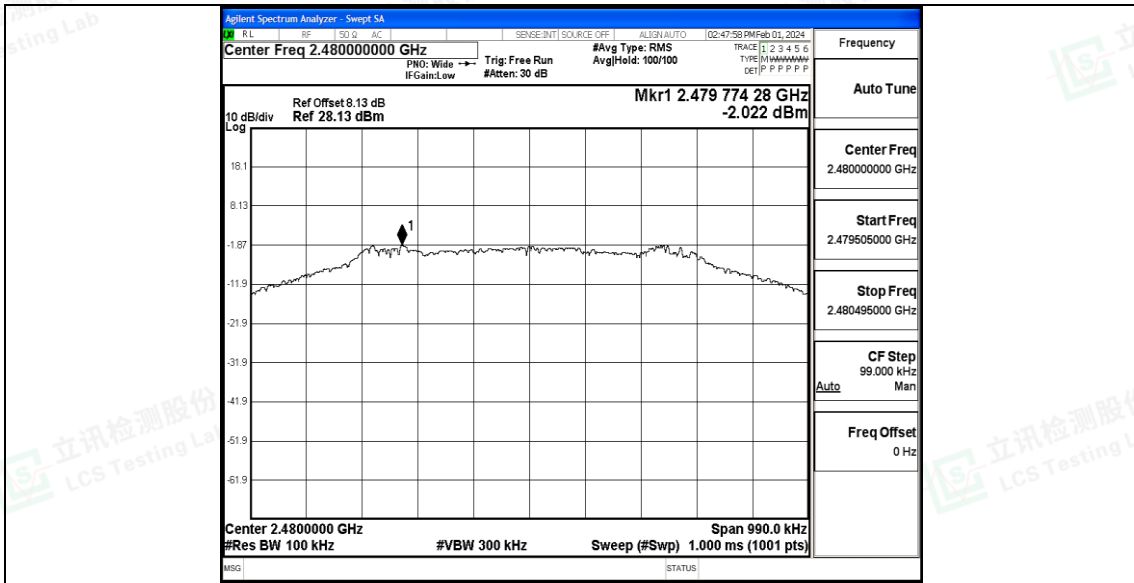
TestMode	Antenna	Freq(MHz)	Max.Point[MHz]	Result[dBm]
BLE_1M	Ant1	2402	2401.75	-0.39
		2440	2439.75	-1.39
		2480	2479.77	-2.02
BLE_2M	Ant1	2402	2401.49	-0.71
		2440	2439.50	-1.65
		2480	2479.49	-1.52



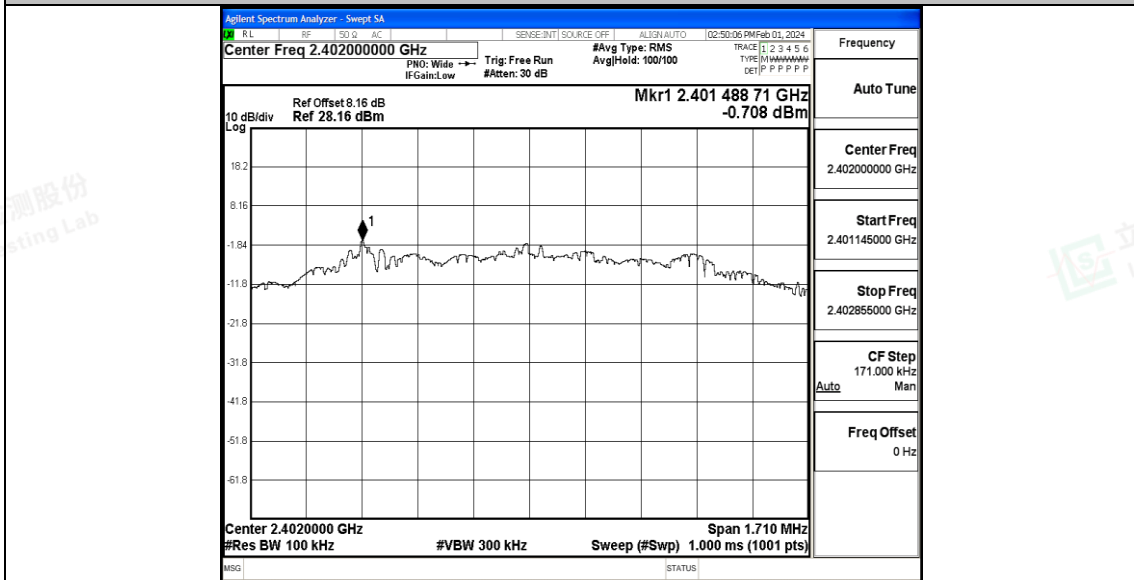


Test Graphs



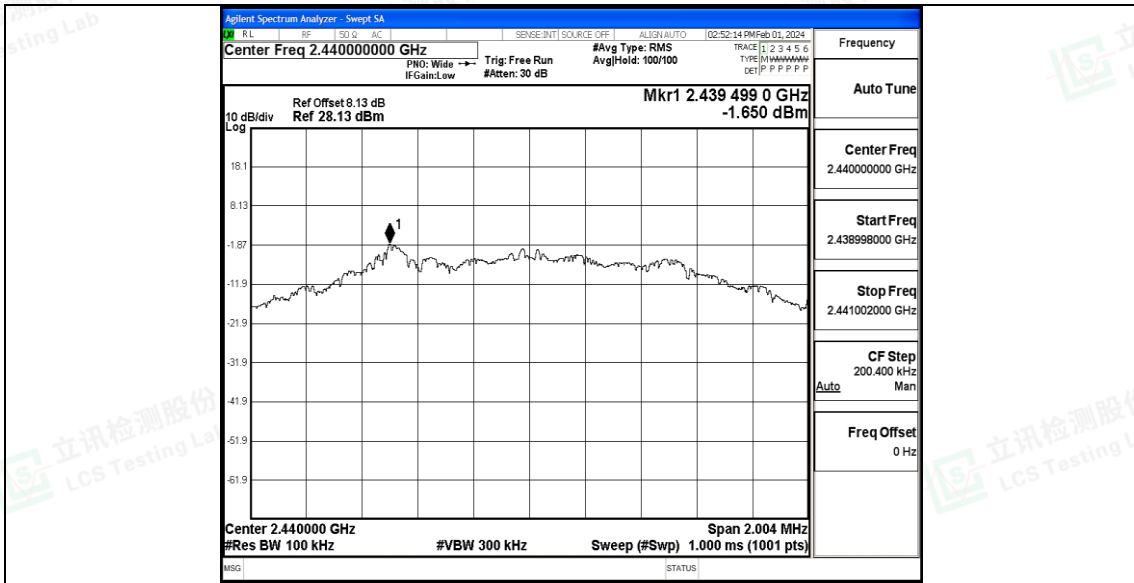


BLE_2M_Ant1_2402

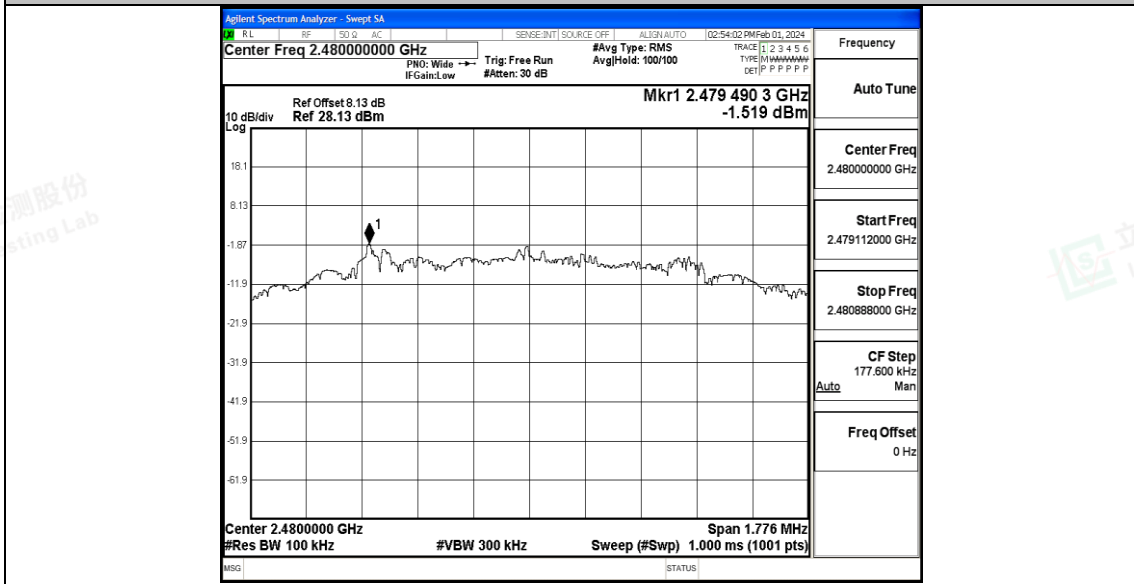


BLE_2M_Ant1_2440





BLE_2M_Ant1_2480





A.4 Band edge measurements

Test Result

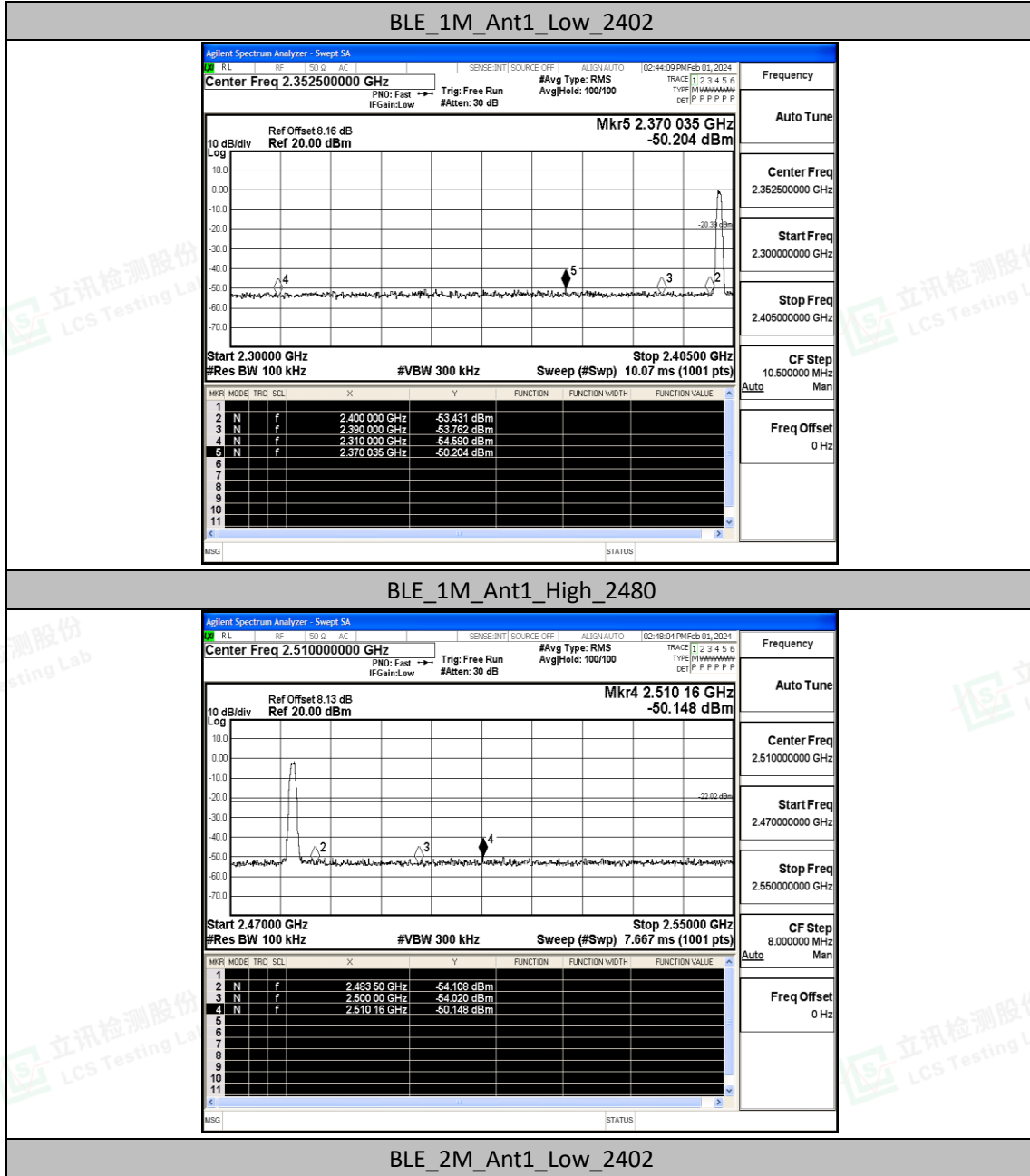
TestMode	Antenna	Channel	Frequency[MHz]	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	-0.39	-50.2	≤-20.46	PASS
		High	2480	-2.02	-50.15	≤-20.7	PASS
BLE_2M	Ant1	Low	2402	-0.71	-49.17	≤-20.87	PASS
		High	2480	-1.52	-49.2	≤-22.29	PASS

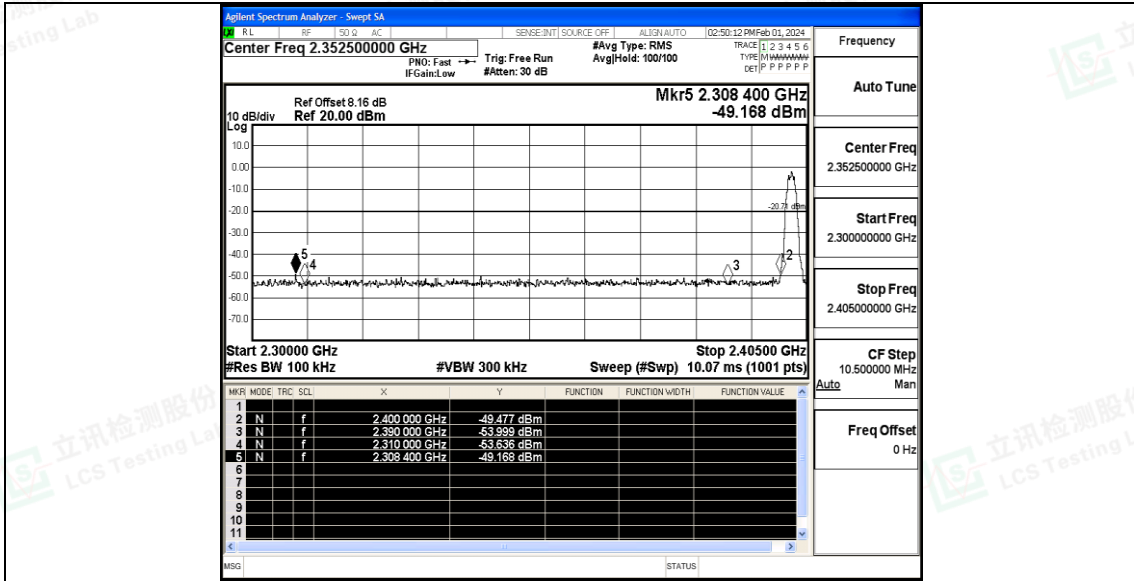


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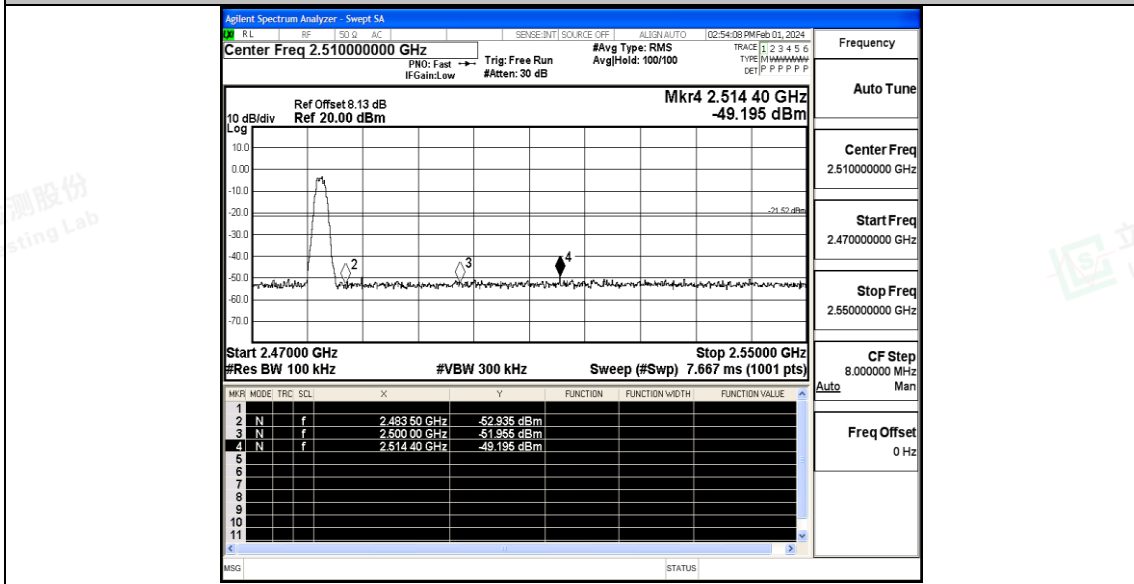


Test Graphs





BLE_2M_Ant1_High_2480





A.5 Conducted Spurious Emission

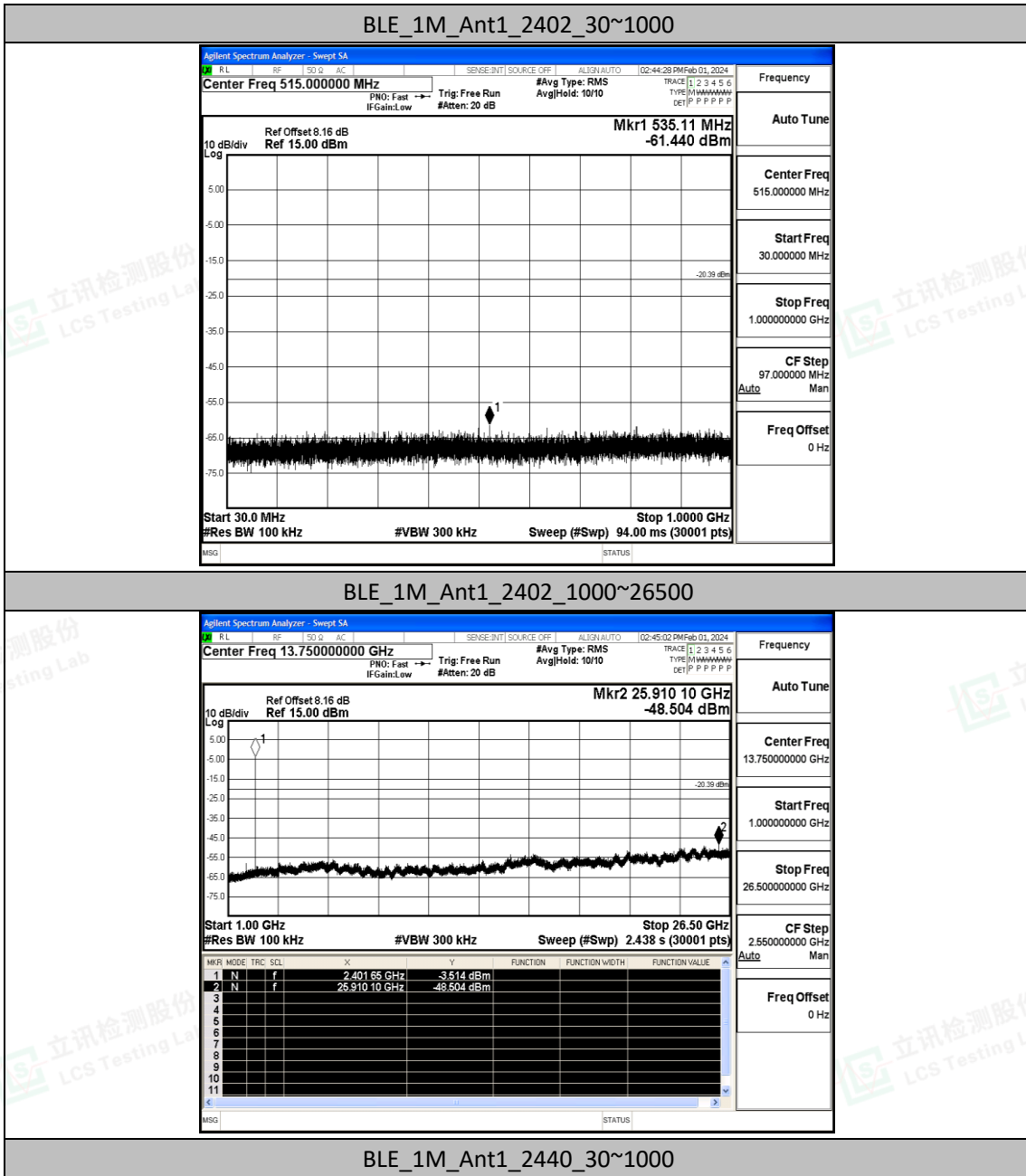
Test Result

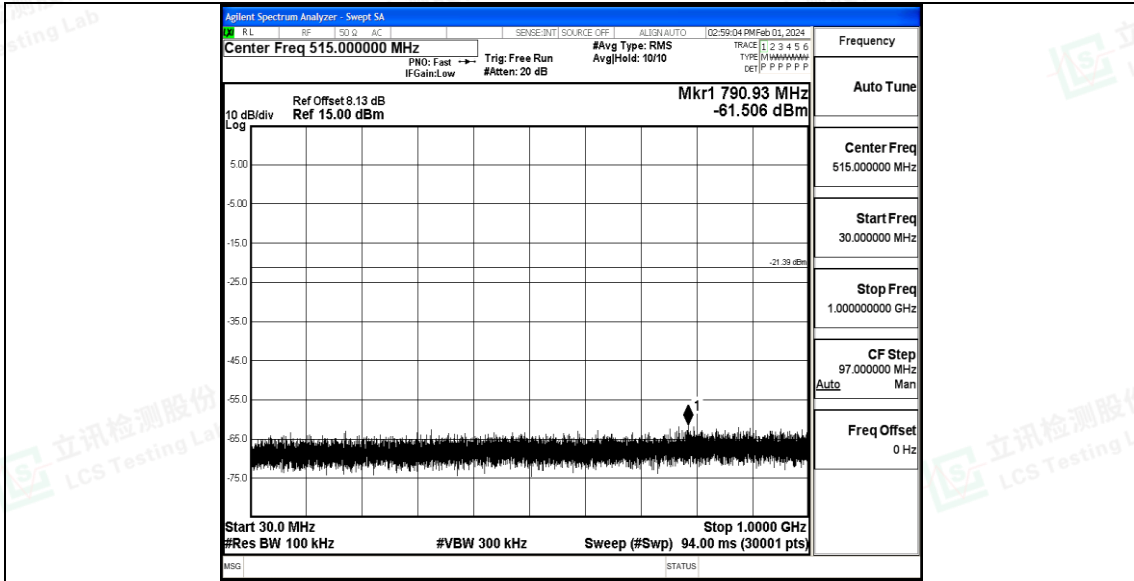
TestMode	Antenna	Frequency[MHz]	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	30~1000	-0.39	-61.44	≤-20.39	PASS
			1000~26500	-0.39	-48.5	≤-20.39	PASS
		2440	30~1000	-1.39	-61.51	≤-21.39	PASS
			1000~26500	-1.39	-48.7	≤-21.39	PASS
		2480	30~1000	-2.02	-61.42	≤-22.02	PASS
			1000~26500	-2.02	-49.16	≤-22.02	PASS
BLE_2M	Ant1	2402	30~1000	-0.71	-61.27	≤-20.71	PASS
			1000~26500	-0.71	-49.1	≤-20.71	PASS
		2440	30~1000	-1.65	-61.37	≤-21.65	PASS
			1000~26500	-1.65	-48.37	≤-21.65	PASS
		2480	30~1000	-1.52	-60.43	≤-21.52	PASS
			1000~26500	-1.52	-40.2	≤-21.52	PASS



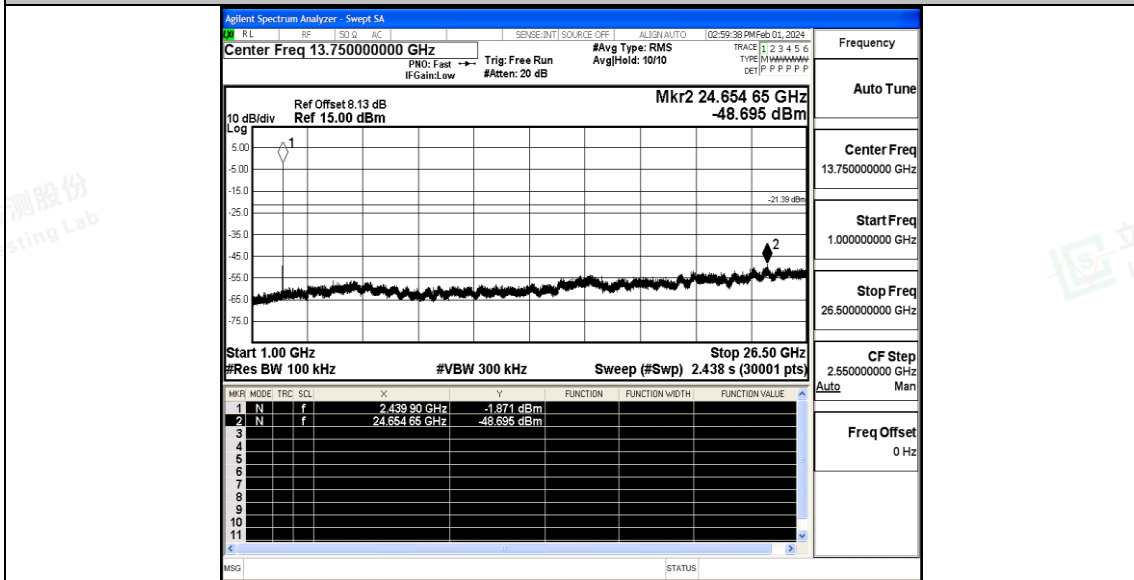


Test Graphs



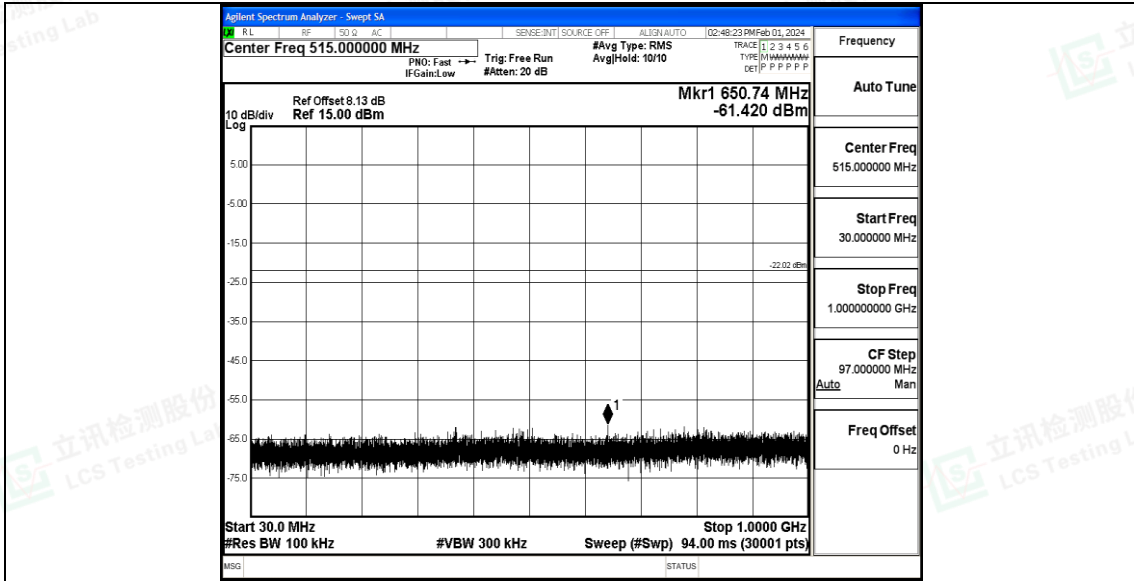


BLE_1M_Ant1_2440_1000~26500

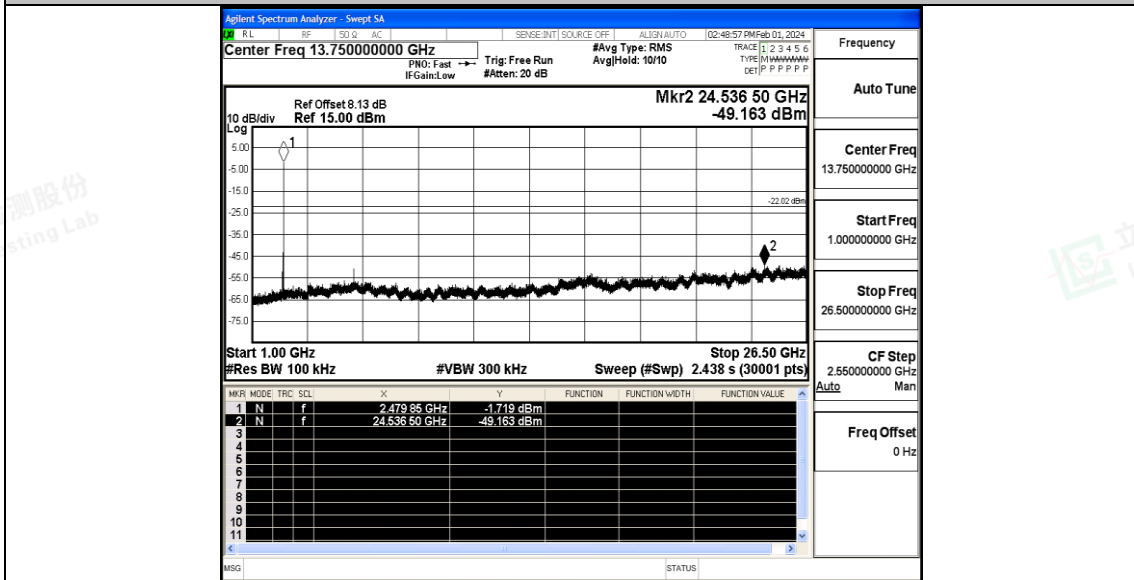


BLE_1M_Ant1_2480_30~1000



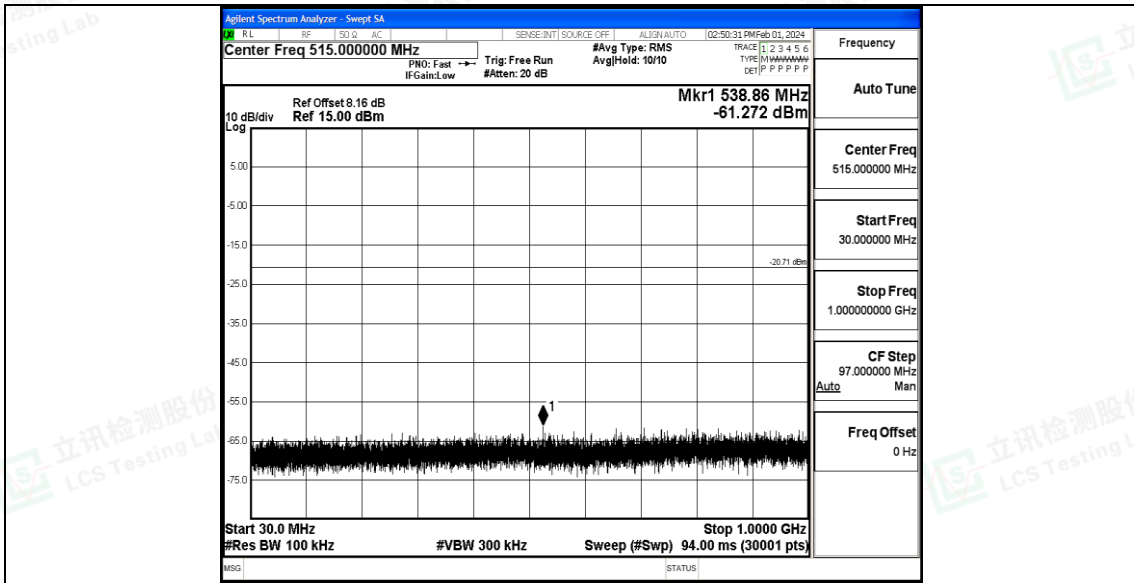


BLE_1M_Ant1_2480_1000~26500

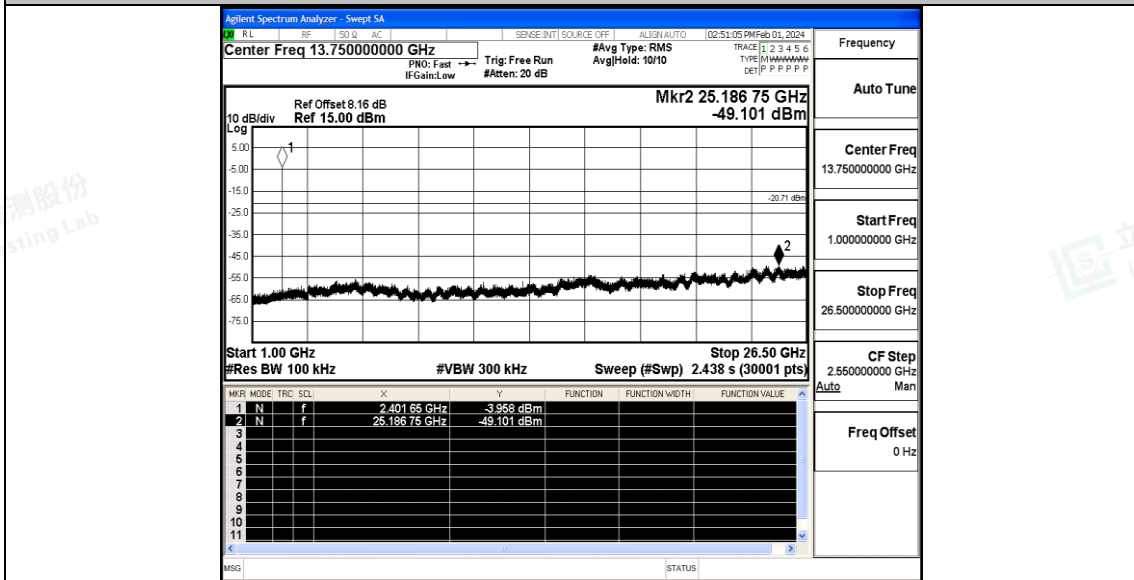


BLE_2M_Ant1_2402_30~1000



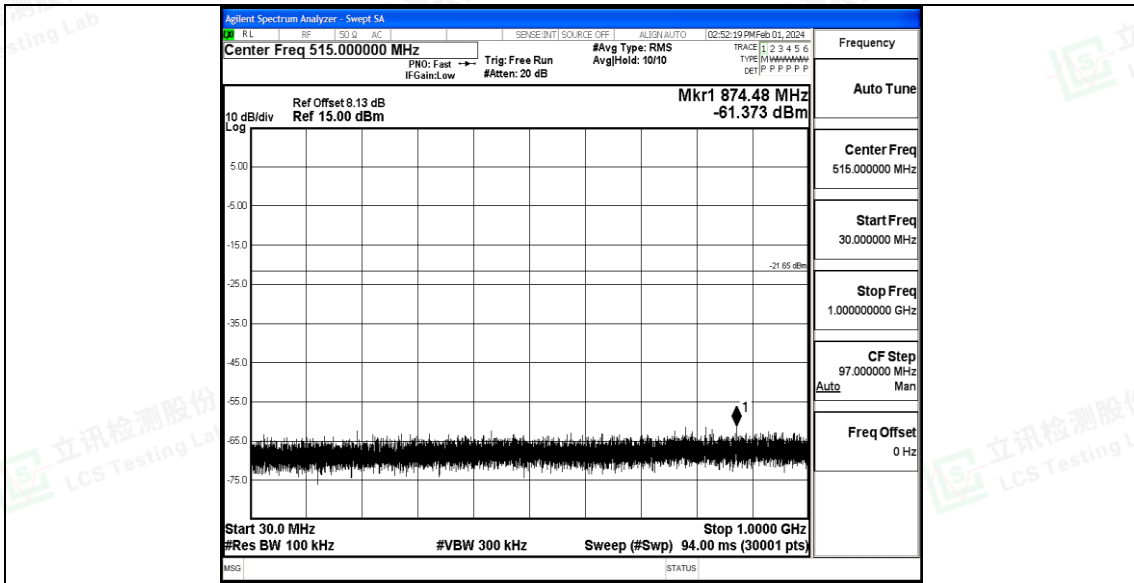


BLE_2M_Ant1_2402_1000~26500

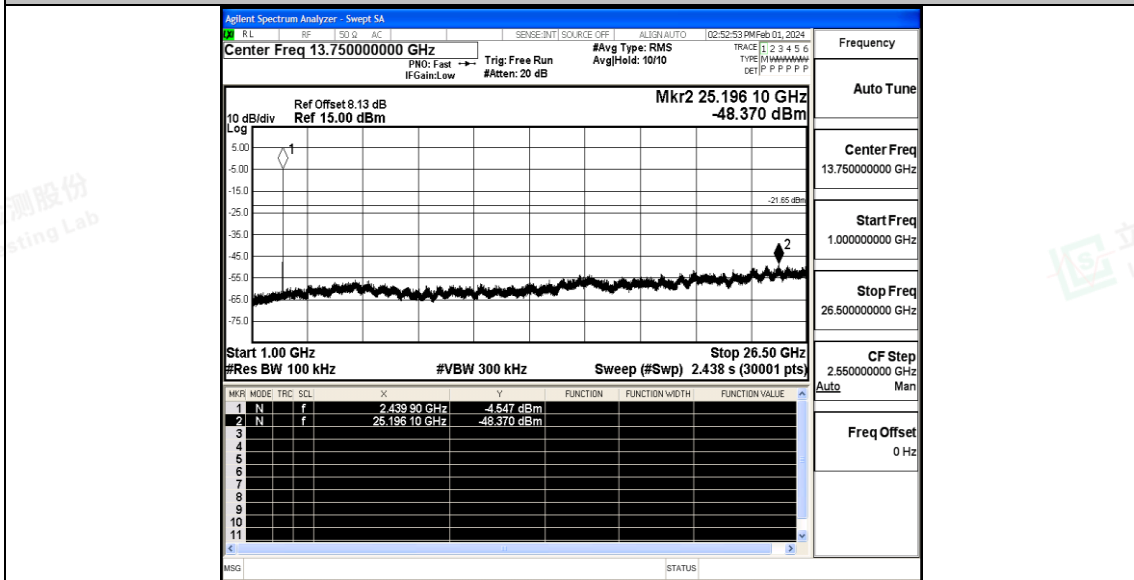


BLE_2M_Ant1_2440_30~1000



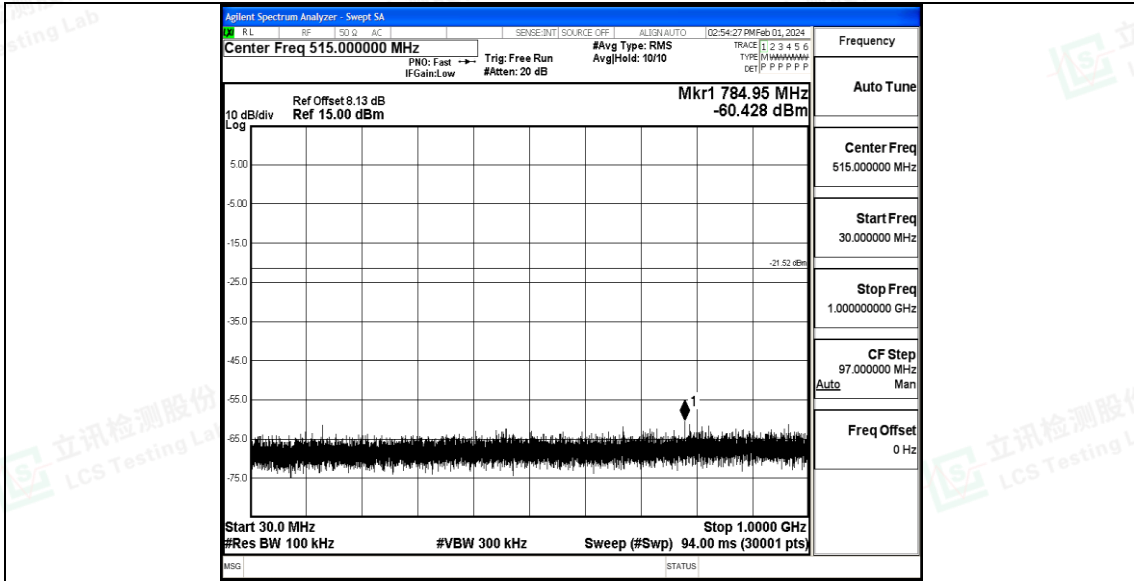


BLE_2M_Ant1_2440_1000~26500

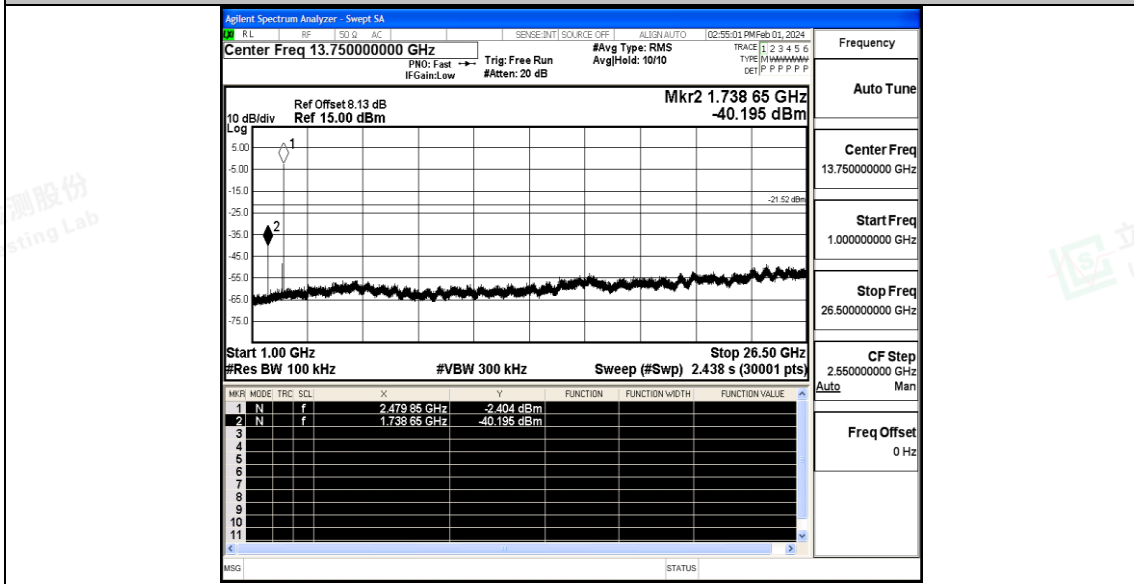


BLE_2M_Ant1_2480_30~1000





BLE_2M_Ant1_2480_1000~26500





A.6 Duty Cycle

Test Result

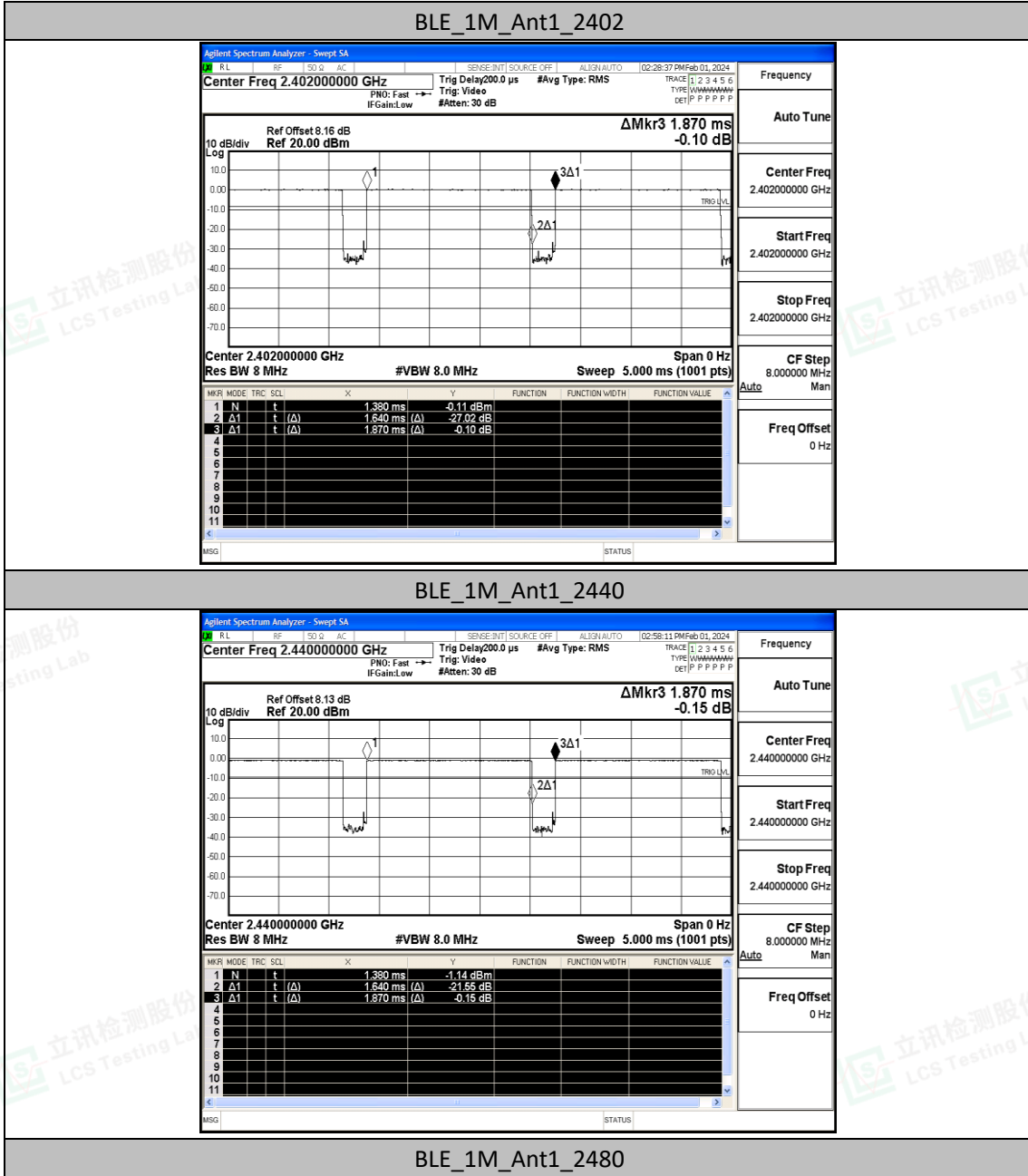
TestMode	Antenna	Frequency[MHz]	ON Time [ms]	Period [ms]	Duty Cycle [%]	Duty Cycle Factor[dB]	1/T Factor[dB]
BLE_1M	Ant1	2402	1.64	1.87	87.70	0.57	0.61
		2440	1.64	1.87	87.70	0.57	0.61
		2480	1.64	1.87	87.70	0.57	0.61
BLE_2M	Ant1	2402	0.82	1.25	65.60	1.83	1.22
		2440	0.82	1.25	65.60	1.83	1.22
		2480	0.82	1.25	65.60	1.83	1.22

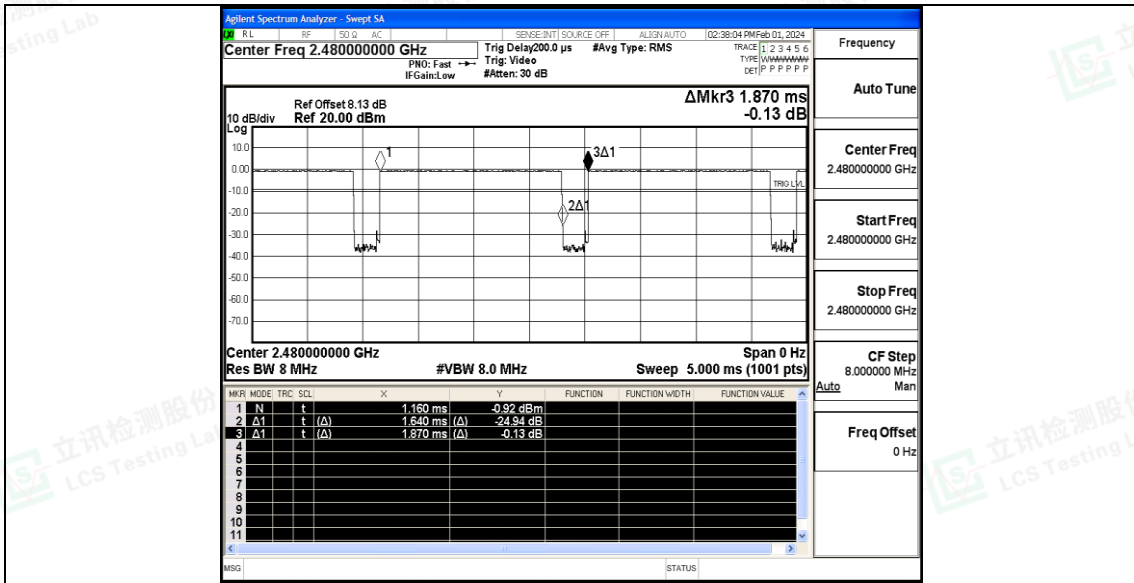


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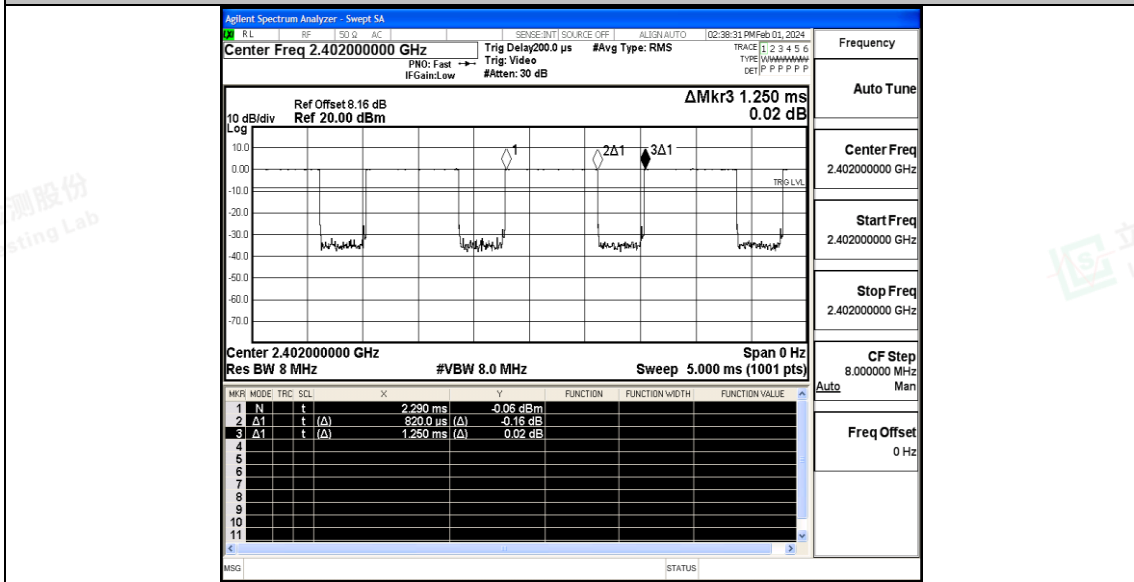


Test Graphs



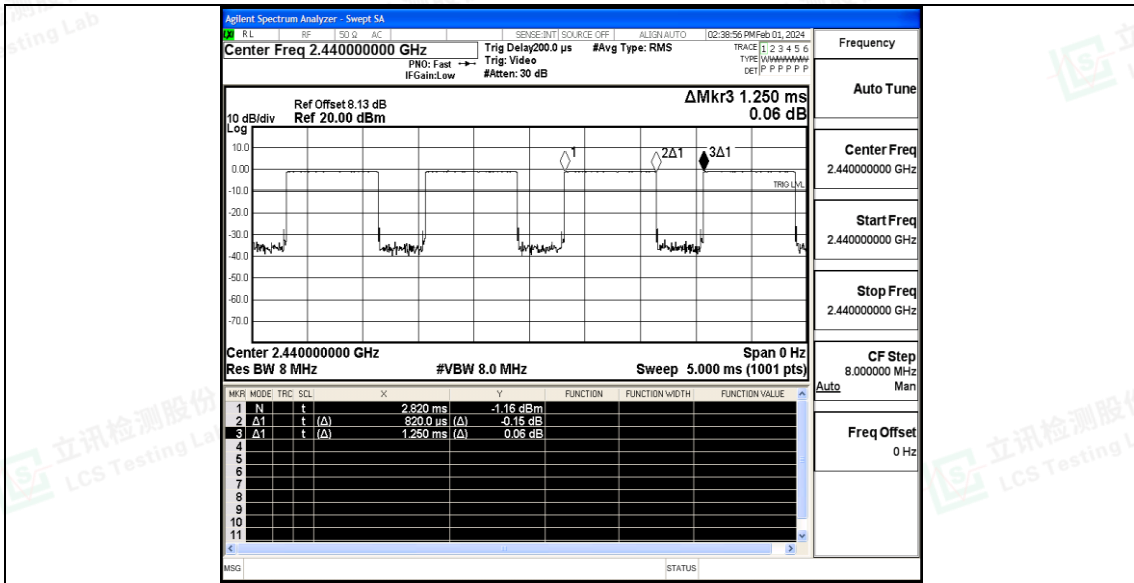


BLE_2M_Ant1_2402

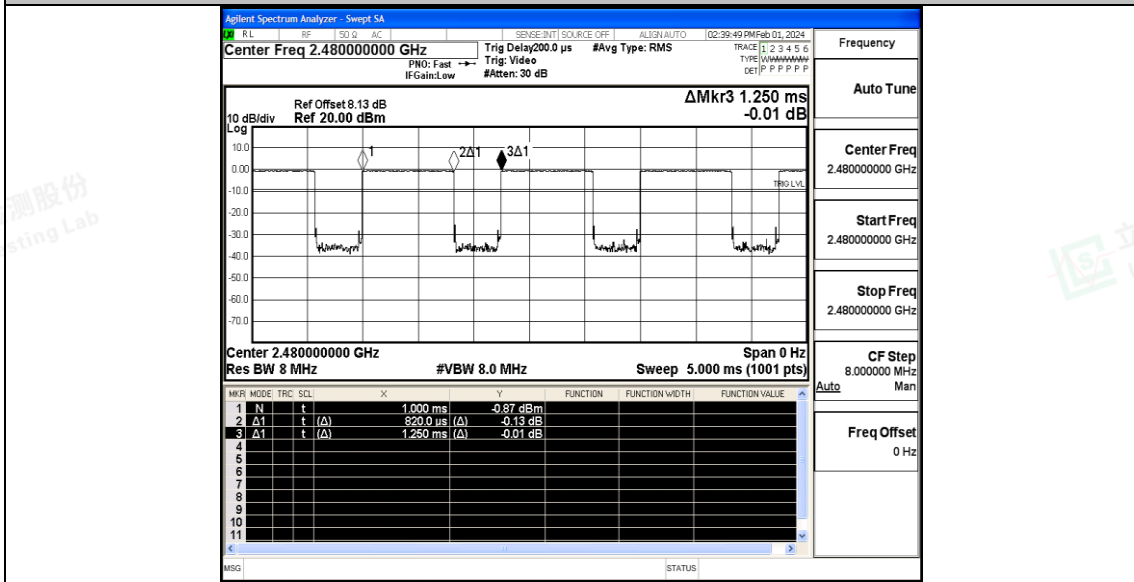


BLE_2M_Ant1_2440





BLE_2M_Ant1_2480





A.7 Emissions in Restricted Bands

Test Result

TestMode	Antenna	ChName	Frequency [MHz]	Detector	Freq [MHz]	Result [dBm]	Limit [dBm]	Result [dBuV/m]	Limit [dBuV/m]	Verdict
BLE_1M	Ant1	Low	2402	AV	2310.000	-49.19	≤-41.20	46.01	≤54	PASS
				AV	2380.010	-48.36	≤-41.20	46.84	≤54	PASS
				AV	2390.000	-49.2	≤-41.20	46.00	≤54	PASS
				Peak	2310.000	-42.88	≤-21.20	52.32	≤74	PASS
				Peak	2382.740	-38.92	≤-21.20	56.28	≤74	PASS
				Peak	2390.000	-41.09	≤-21.20	54.11	≤74	PASS
		High	2480	AV	2483.500	-48.92	≤-41.20	46.28	≤54	PASS
				AV	2486.320	-48.19	≤-41.20	47.01	≤54	PASS
				AV	2500.000	-49.02	≤-41.20	46.18	≤54	PASS
				Peak	2483.500	-41.88	≤-21.20	53.32	≤74	PASS
				Peak	2486.800	-38.99	≤-21.20	56.21	≤74	PASS
				Peak	2500.000	-42.01	≤-21.20	53.19	≤74	PASS
BLE_2M	Ant1	Low	2402	AV	2310.000	-47.98	≤-41.20	47.22	≤54	PASS
				AV	2379.485	-47.25	≤-41.20	47.95	≤54	PASS
				AV	2390.000	-48.12	≤-41.20	47.08	≤54	PASS
				Peak	2310.000	-42.61	≤-21.20	52.59	≤74	PASS
				Peak	2377.805	-38.56	≤-21.20	56.64	≤74	PASS
				Peak	2390.000	-40.96	≤-21.20	54.24	≤74	PASS
		High	2480	AV	2483.500	-47.58	≤-41.20	47.62	≤54	PASS
				AV	2491.360	-46.98	≤-41.20	48.22	≤54	PASS
				AV	2500.000	-48	≤-41.20	47.20	≤54	PASS
				Peak	2483.500	-41.03	≤-21.20	54.17	≤74	PASS
				Peak	2490.640	-38.3	≤-21.20	56.90	≤74	PASS
				Peak	2500.000	-42.41	≤-21.20	52.79	≤74	PASS

Note:

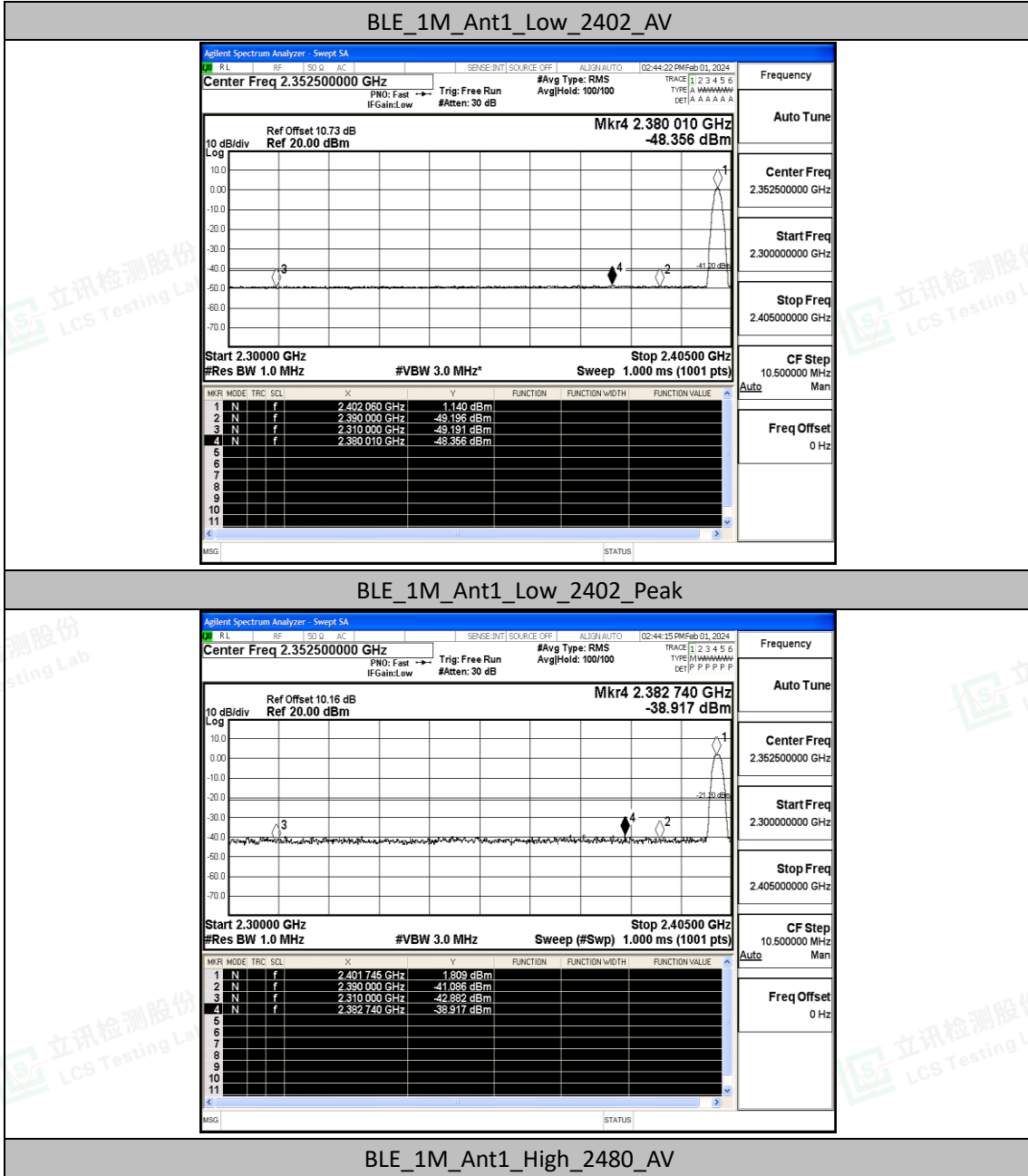
- The Antenna Gain is compensated in the graph. The Correction Factor is compensated in the graph.
- The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.

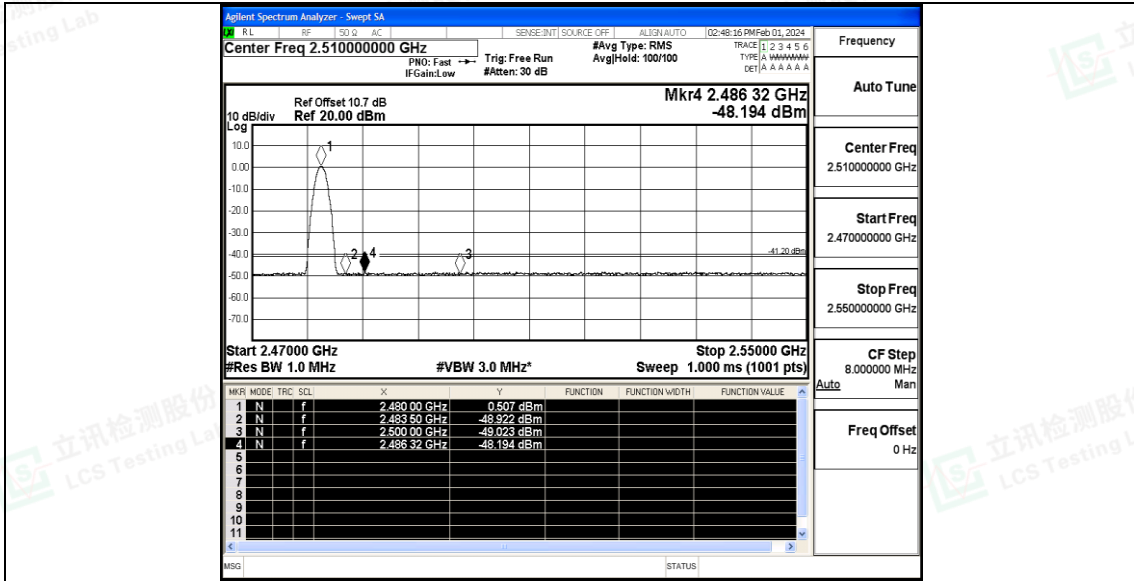


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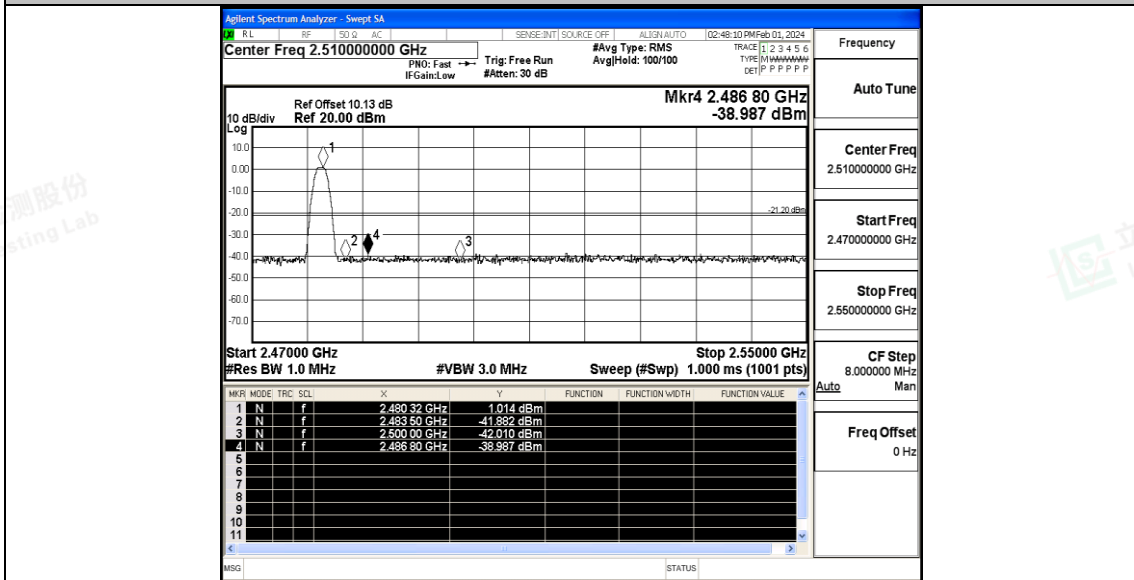


Test Graphs



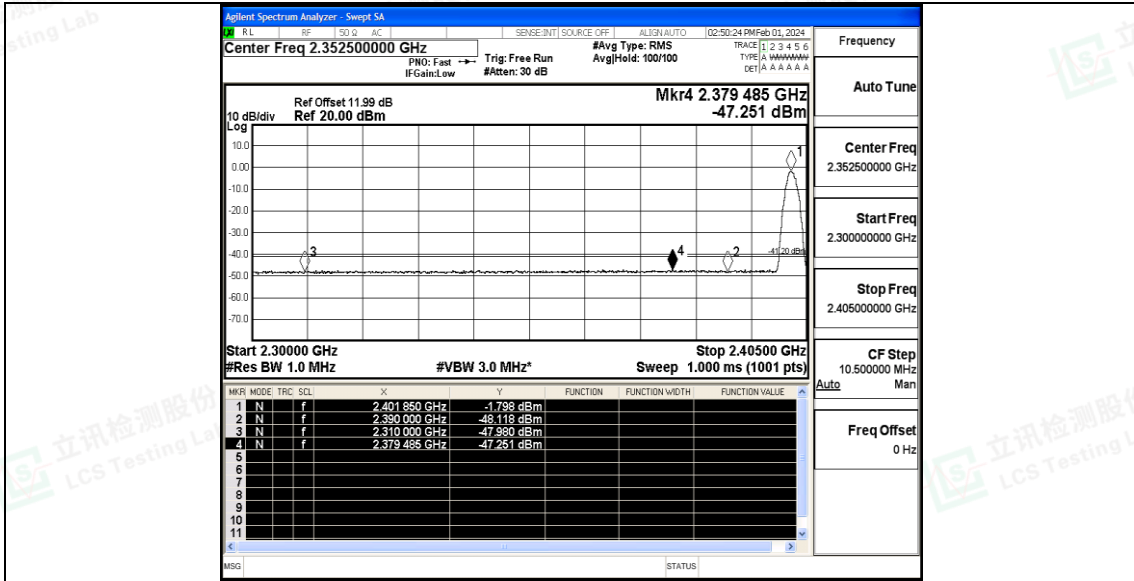


BLE_1M_Ant1_High_2480_Peak

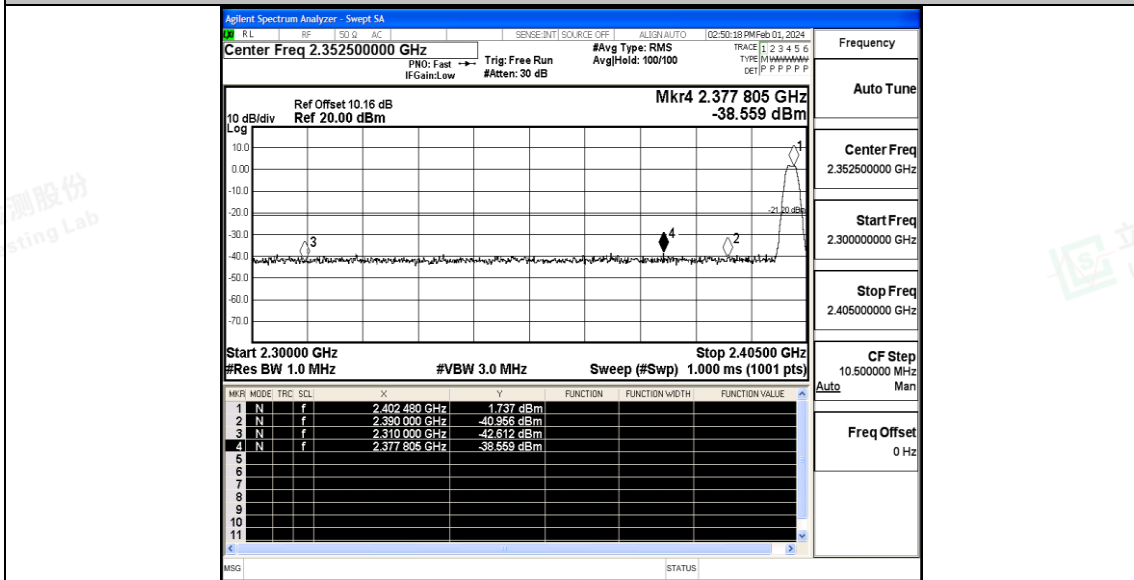


BLE_2M_Ant1_Low_2402_AV



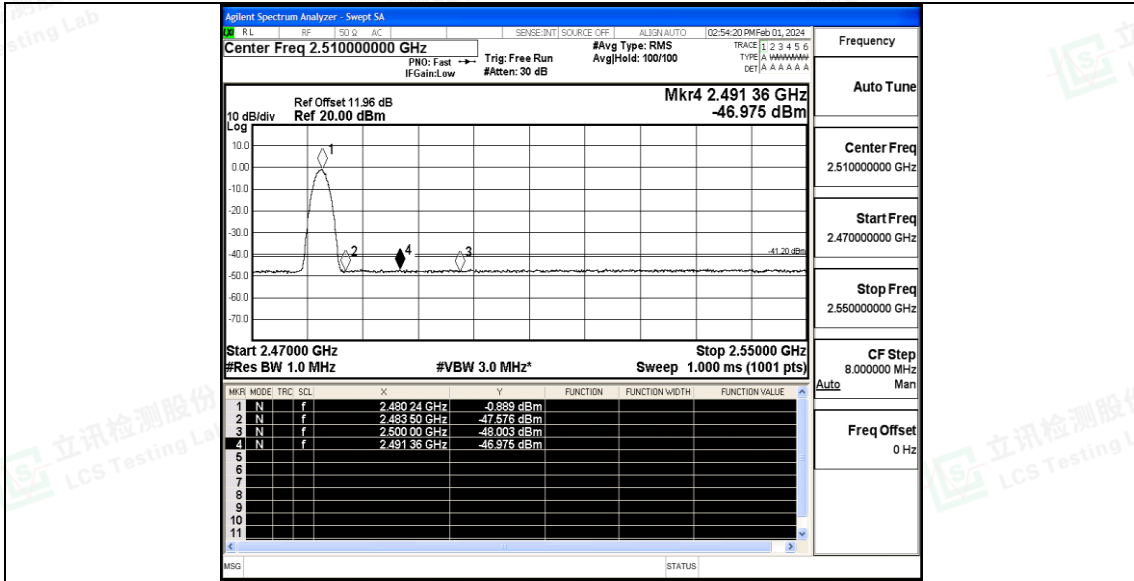


BLE_2M_Ant1_Low_2402_Peak



BLE_2M_Ant1_High_2480_AV





BLE_2M_Ant1_High_2480_Peak

