



### Appendix A

### RF Test Data for BLE (Conducted Measurement)

Product Name: Smart hexagon wall light panel

Test Model: FWWSB8-37-9

#### Environmental Conditions

Temperature:	23.5°C
Relative Humidity:	52.2%
ATM Pressure:	100.0 kPa
Test Engineer:	Nick Peng
	<i>Nick Peng</i>
Supervised by:	Ling Zhu
	<i>Ling Zhu</i>





## A.1 DTS Bandwidth

### Test Result

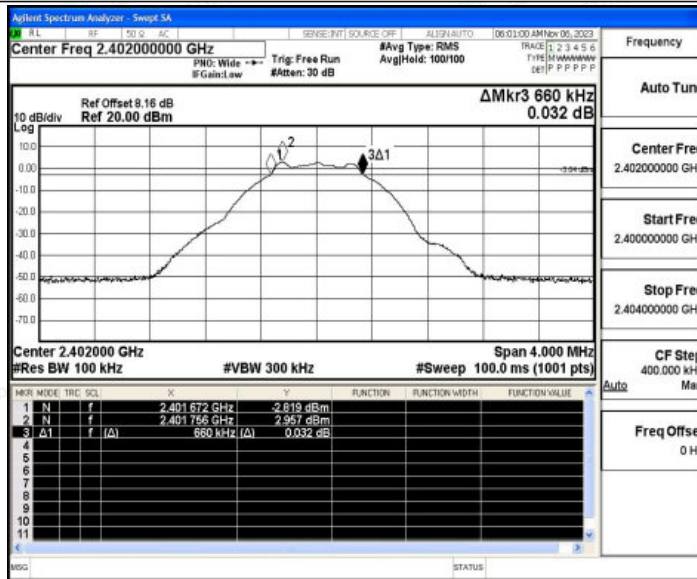
TestMode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.660	2401.672	2402.332	0.5	PASS
		2440	0.664	2439.668	2440.332	0.5	PASS
		2480	0.660	2479.672	2480.332	0.5	PASS
BLE_2M	Ant1	2402	1.164	2401.412	2402.576	0.5	PASS
		2440	1.160	2439.412	2440.572	0.5	PASS
		2480	1.160	2479.412	2480.572	0.5	PASS



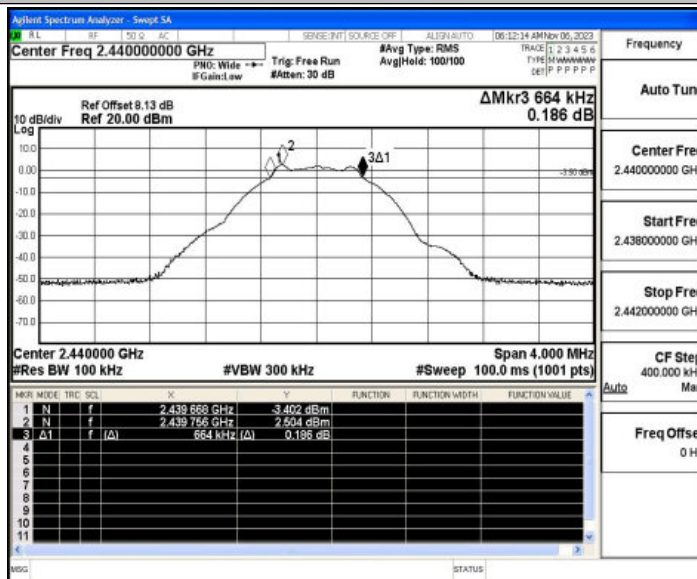


### Test Graphs

BLE\_1M\_Ant1\_2402

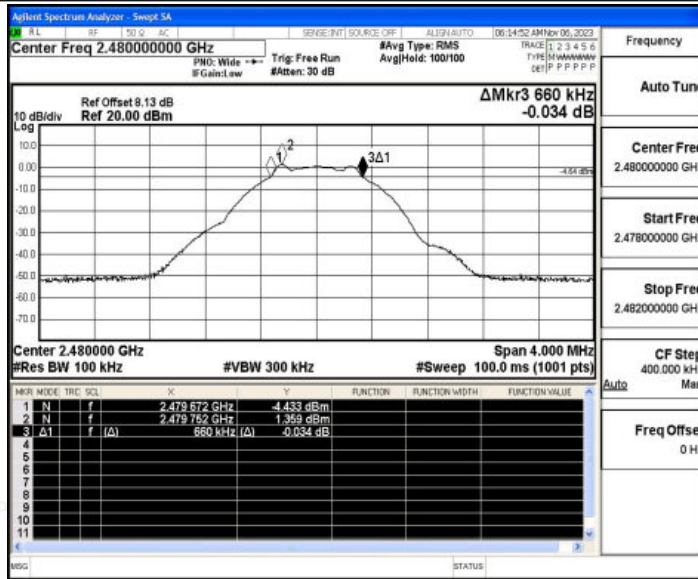


BLE\_1M\_Ant1\_2440

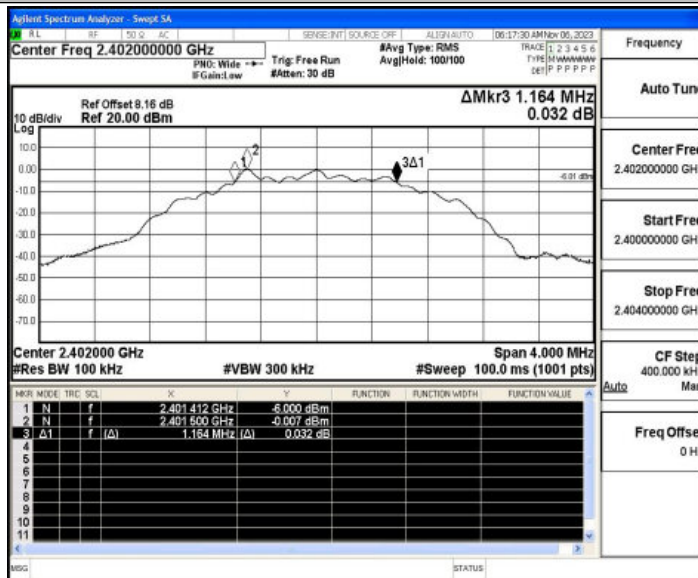


BLE\_1M\_Ant1\_2480



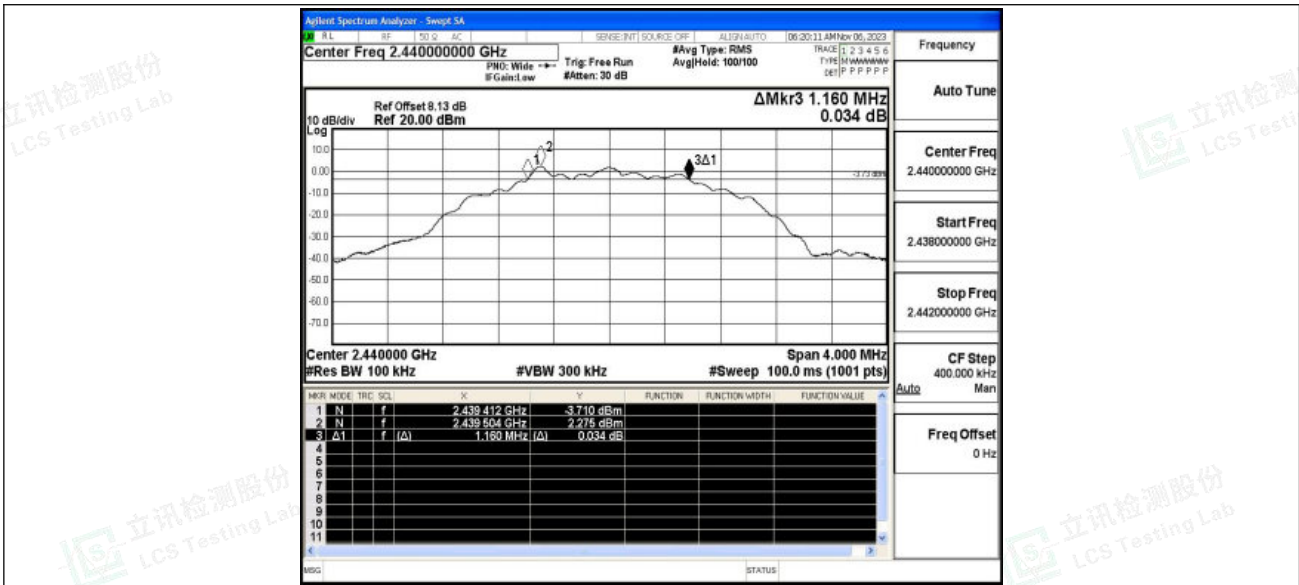


BLE\_2M\_Ant1\_2402

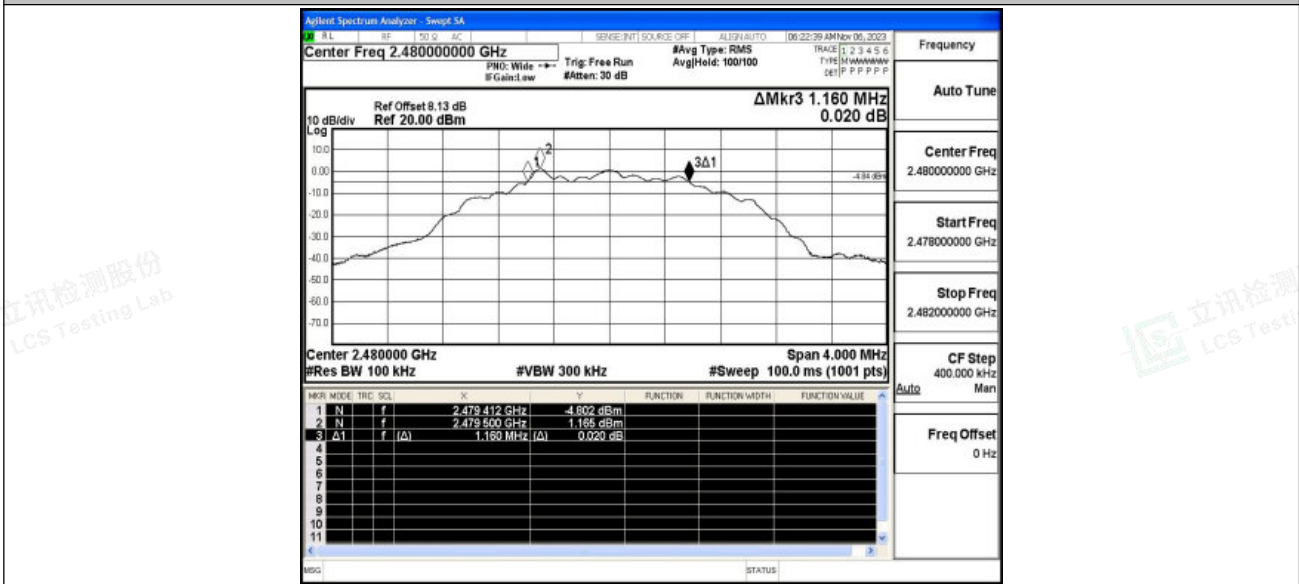


BLE\_2M\_Ant1\_2440





BLE\_2M\_Ant1\_2480





## A.2 Maximum Peak Conducted Output Power

### Test Result

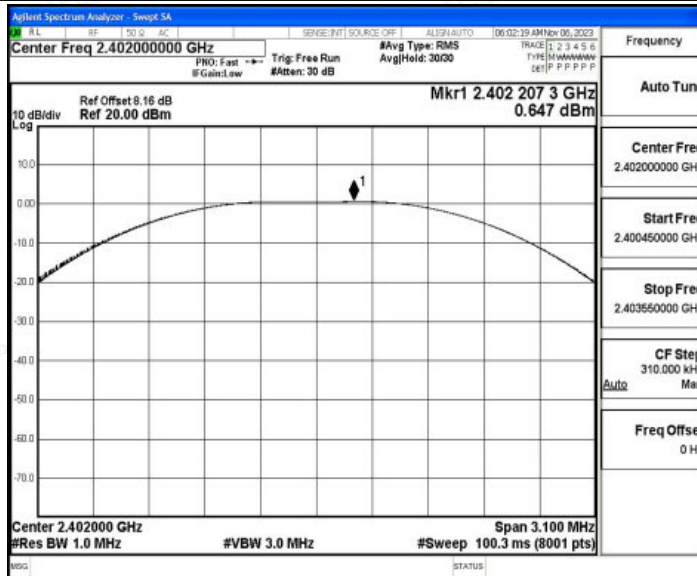
TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	0.65	≤30	PASS
		2440	2.73	≤30	PASS
		2480	1.58	≤30	PASS
BLE_2M	Ant1	2402	0.68	≤30	PASS
		2440	2.81	≤30	PASS
		2480	1.65	≤30	PASS



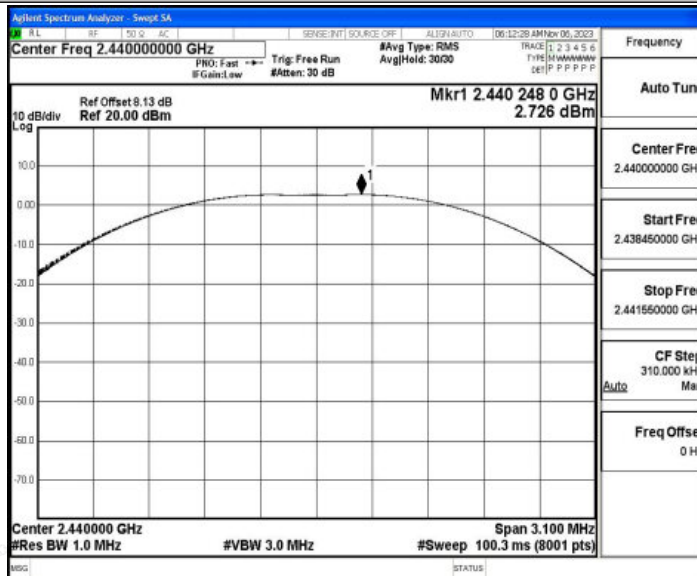


### Test Graphs

BLE\_1M\_Ant1\_2402

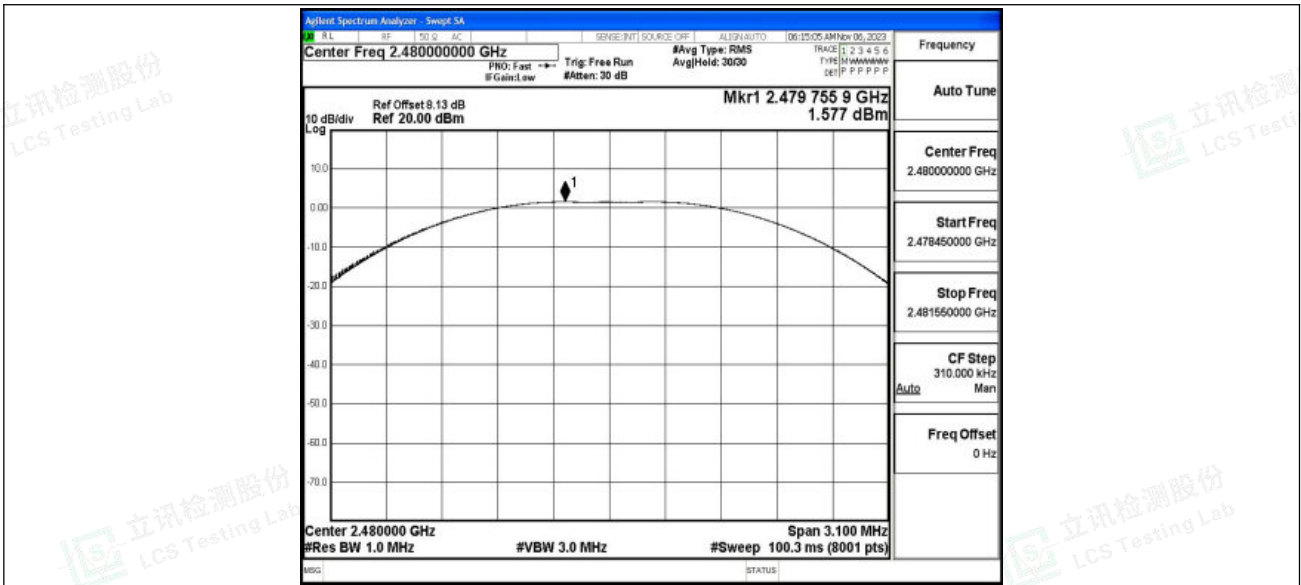


BLE\_1M\_Ant1\_2440

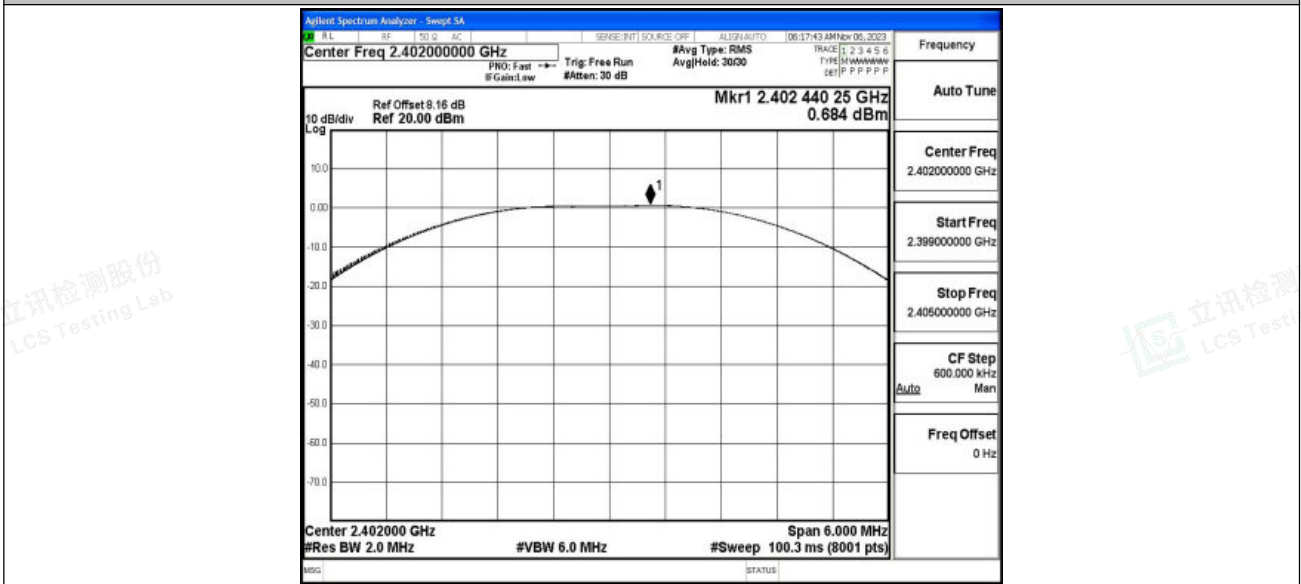


BLE\_1M\_Ant1\_2480





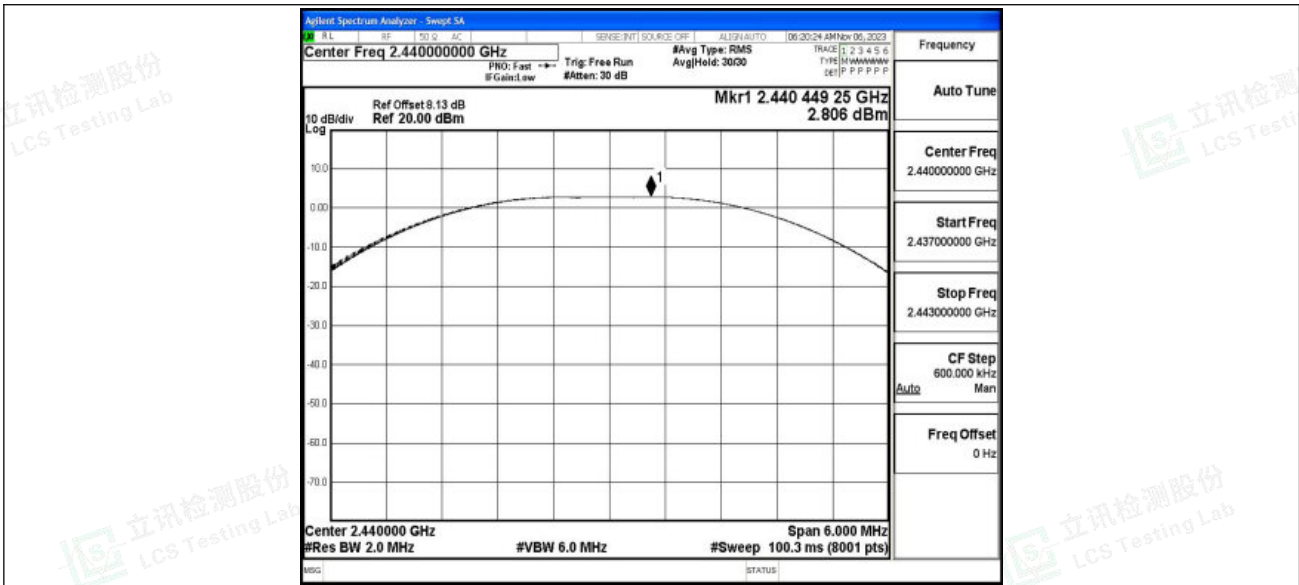
BLE\_2M\_Ant1\_2402



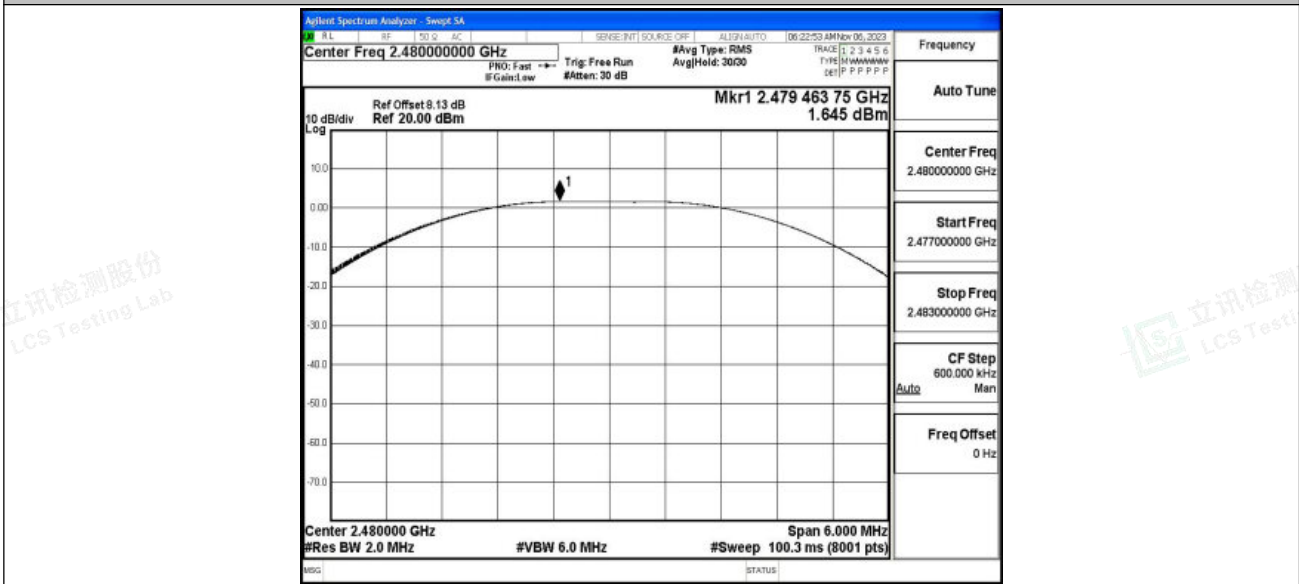
BLE\_2M\_Ant1\_2440







BLE\_2M\_Ant1\_2480





### A.3 Maximum power spectral density

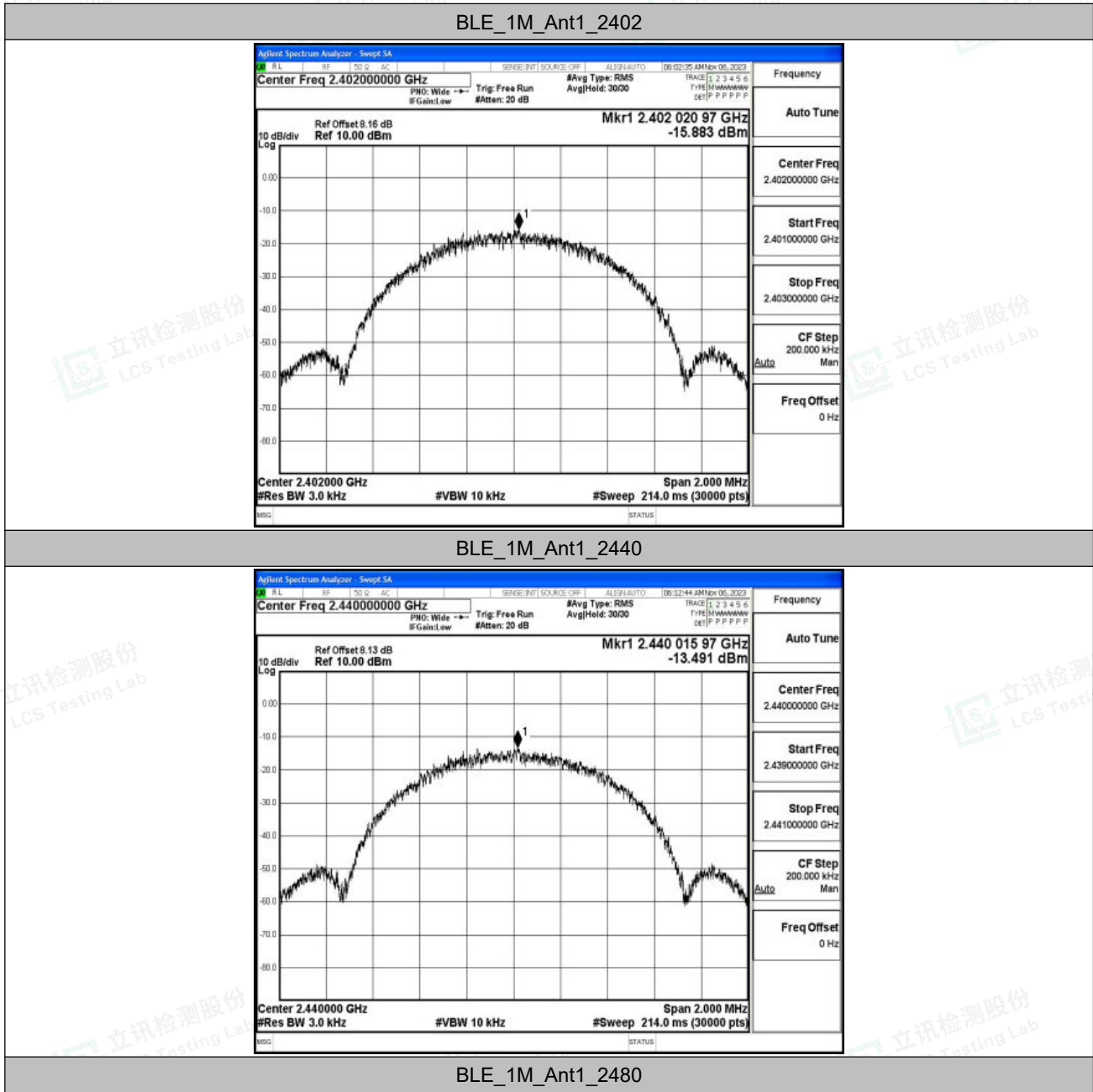
#### Test Result

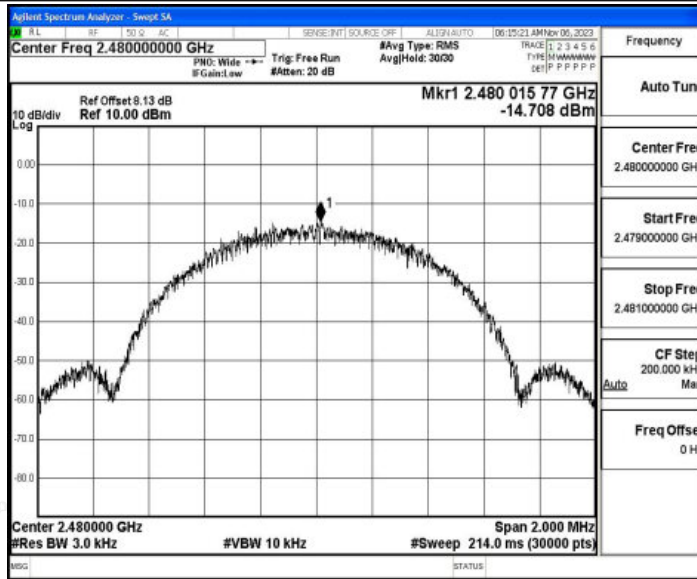
TestMode	Antenna	Channel	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-15.88	≤8.00	PASS
		2440	-13.49	≤8.00	PASS
		2480	-14.71	≤8.00	PASS
BLE_2M	Ant1	2402	-19.15	≤8.00	PASS
		2440	-16.87	≤8.00	PASS
		2480	-17.9	≤8.00	PASS



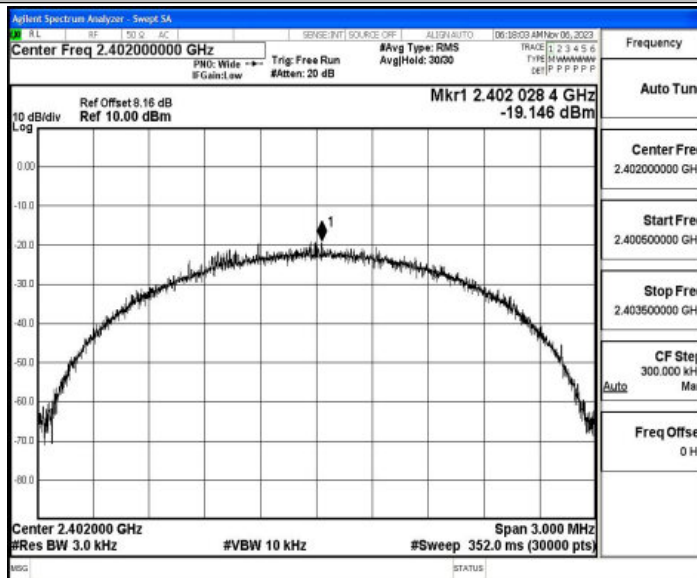


### Test Graphs



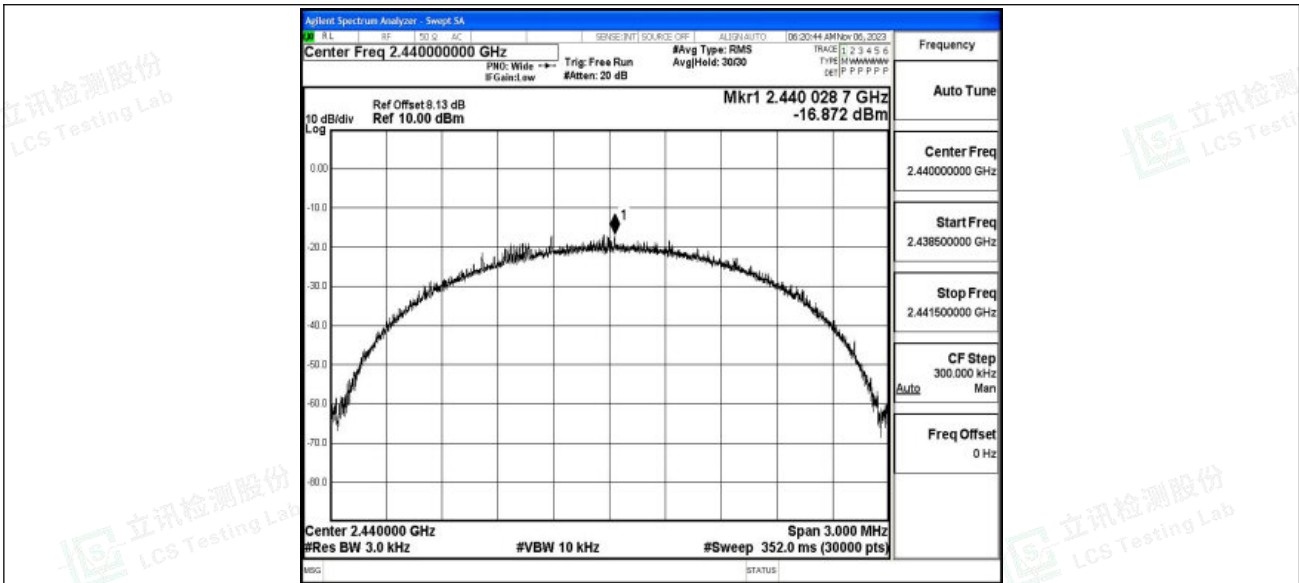


BLE\_2M\_Ant1\_2402

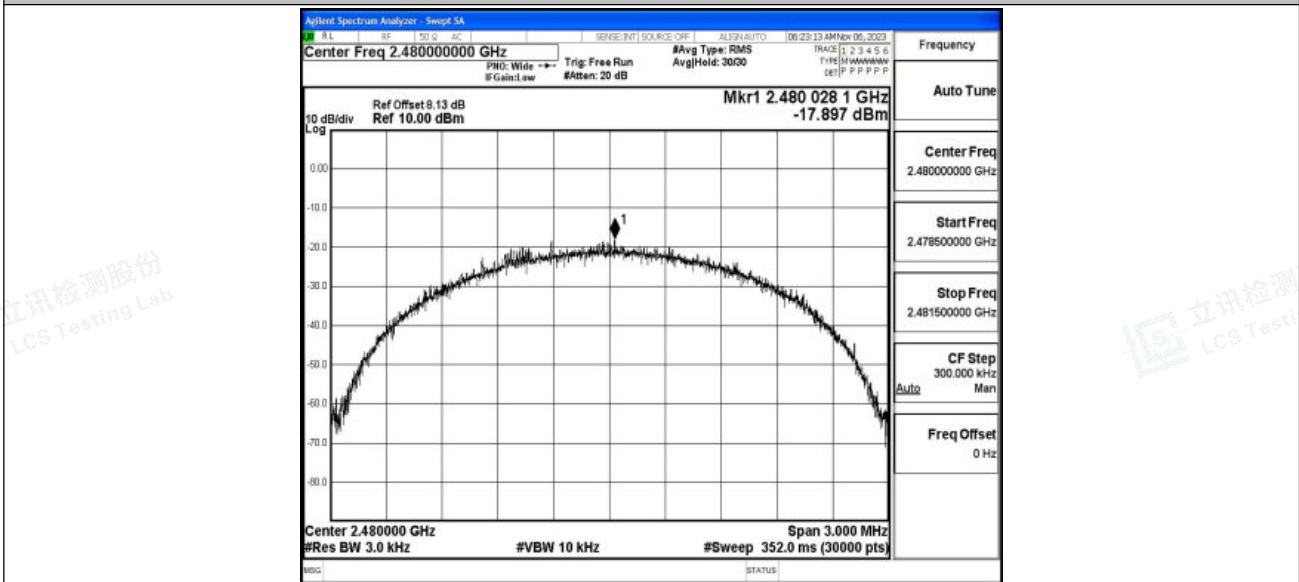


BLE\_2M\_Ant1\_2440





BLE\_2M\_Ant1\_2480





### A.4 Band edge measurements

#### Test Result

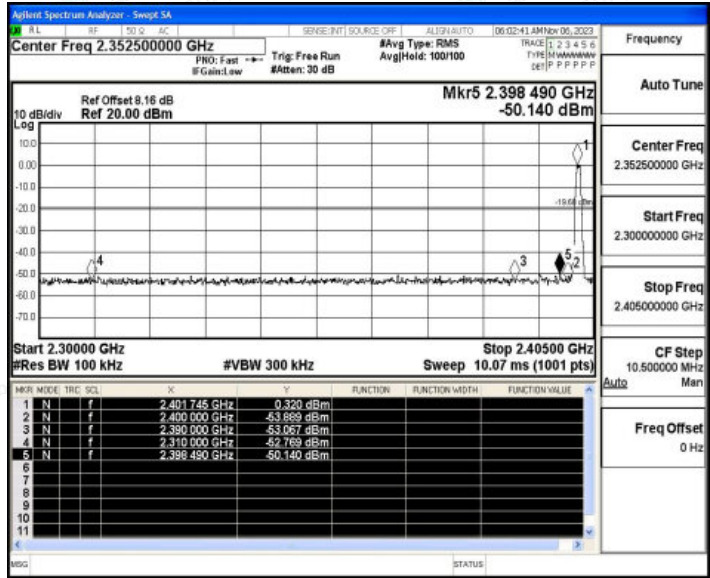
TestMode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	0.32	-50.14	≤-19.68	PASS
		High	2480	1.34	-49.64	≤-18.66	PASS
BLE_2M	Ant1	Low	2402	-1.79	-44.35	≤-21.79	PASS
		High	2480	-0.81	-49.29	≤-20.81	PASS



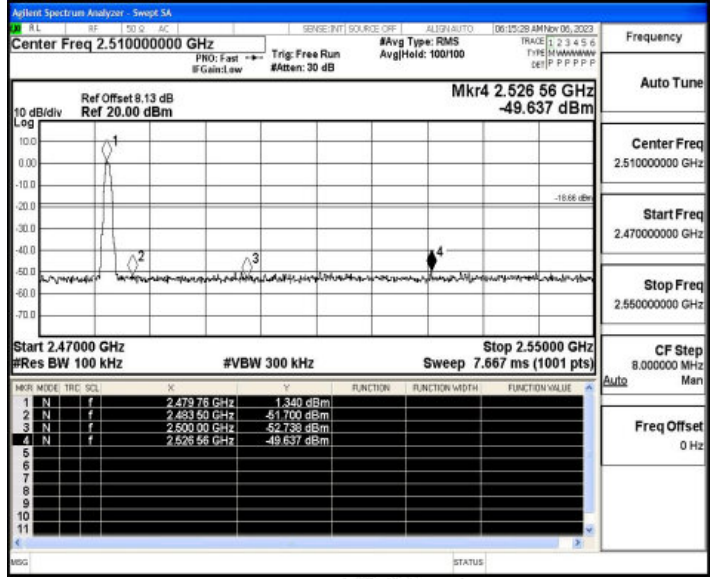


### Test Graphs

BLE\_1M\_Ant1\_Low\_2402

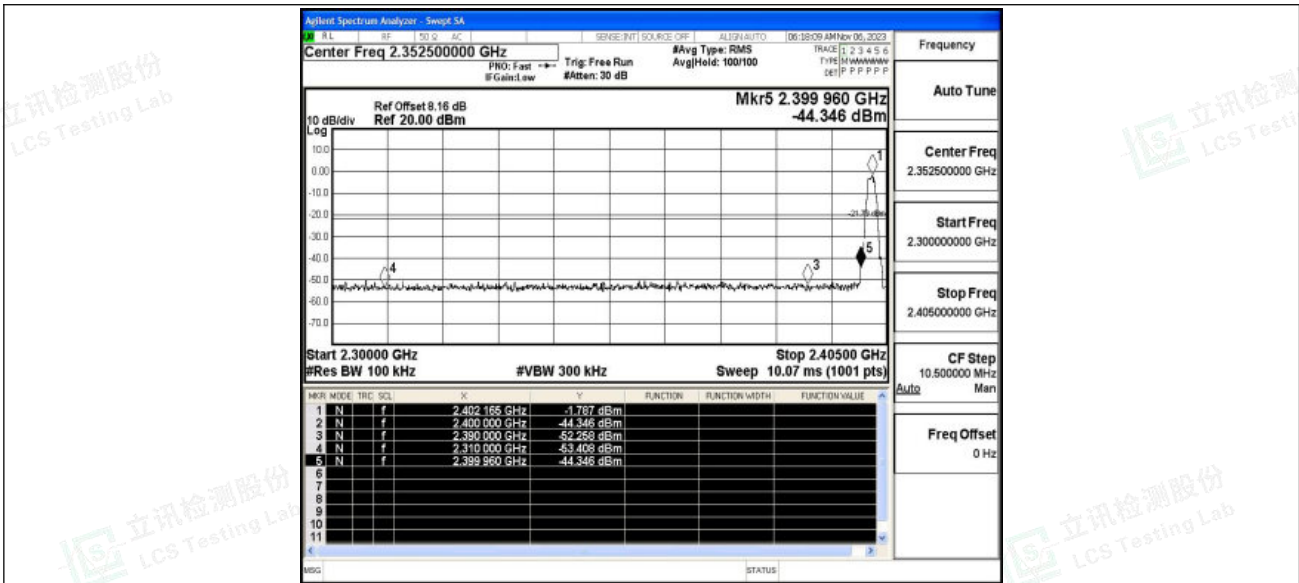


BLE\_1M\_Ant1\_High\_2480

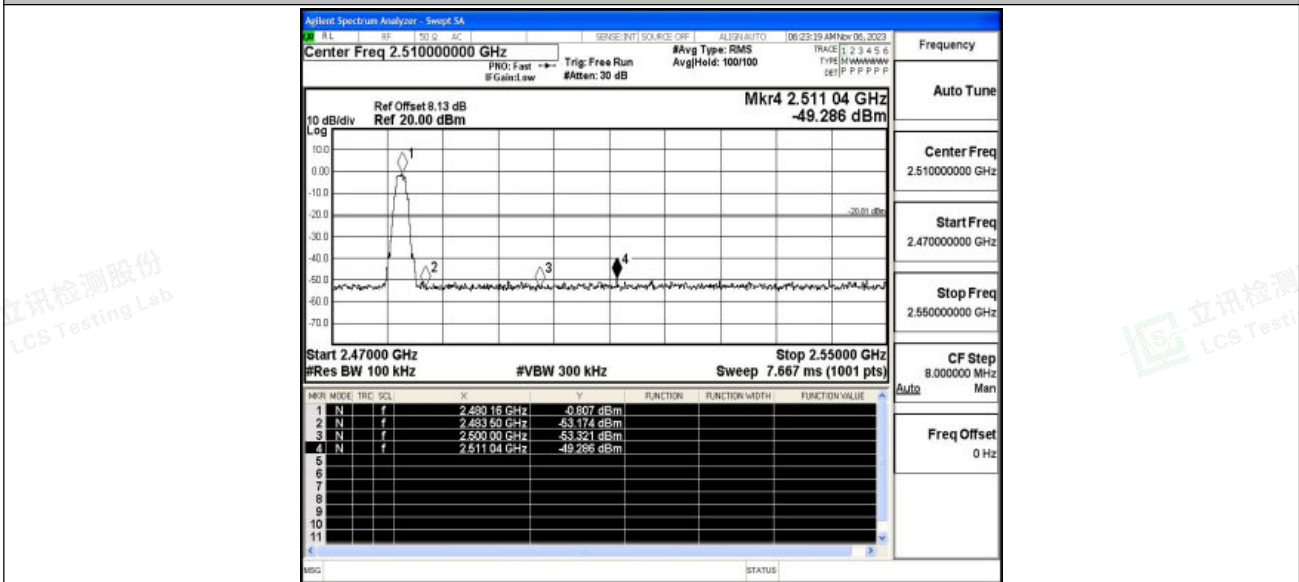


BLE\_2M\_Ant1\_Low\_2402





BLE\_2M\_Ant1\_High\_2480







## A.5 Conducted Spurious Emission

### Test Result

TestMode	Antenna	Channel	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	Reference	0.33	0.33	---	PASS
			30~1000	0.33	-61.44	≤-19.67	PASS
			1000~26500	0.33	-48.34	≤-19.67	PASS
		2440	Reference	2.50	2.50	---	PASS
			30~1000	2.50	-61.85	≤-17.5	PASS
			1000~26500	2.50	-49.33	≤-17.5	PASS
		2480	Reference	1.31	1.31	---	PASS
			30~1000	1.31	-60.36	≤-18.69	PASS
			1000~26500	1.31	-49.4	≤-18.69	PASS
BLE_2M	Ant1	2402	Reference	-0.18	-0.18	---	PASS
			30~1000	-0.18	-61.88	≤-20.18	PASS
			1000~26500	-0.18	-49.26	≤-20.18	PASS
		2440	Reference	2.07	2.07	---	PASS
			30~1000	2.07	-61.76	≤-17.93	PASS
			1000~26500	2.07	-49.08	≤-17.93	PASS
		2480	Reference	1.18	1.18	---	PASS
			30~1000	1.18	-61.46	≤-18.82	PASS
			1000~26500	1.18	-48.95	≤-18.82	PASS



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Add: 101, 201 Bldg A &amp; 301 Bldg C, Juji Industrial Park Yabianxueziwei, Shajing Street, Baoan District, Shenzhen, 518000, China

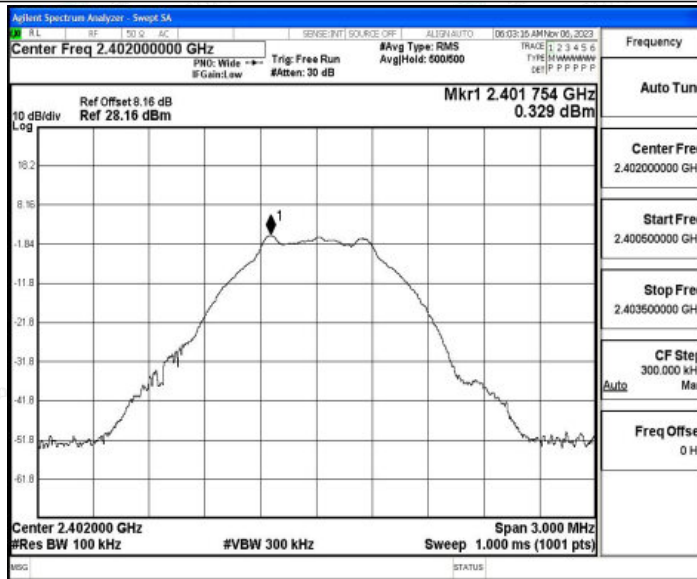
Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com

Scan code to check authenticity

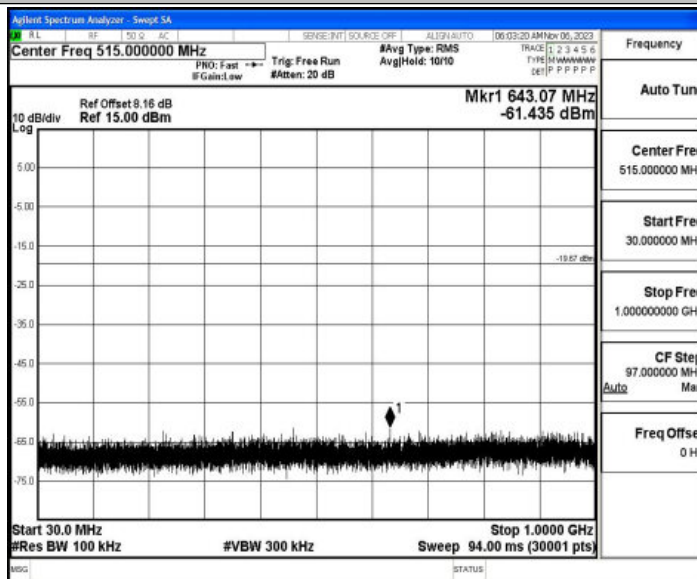


### Test Graphs

BLE\_1M\_Ant1\_2402\_0~Reference

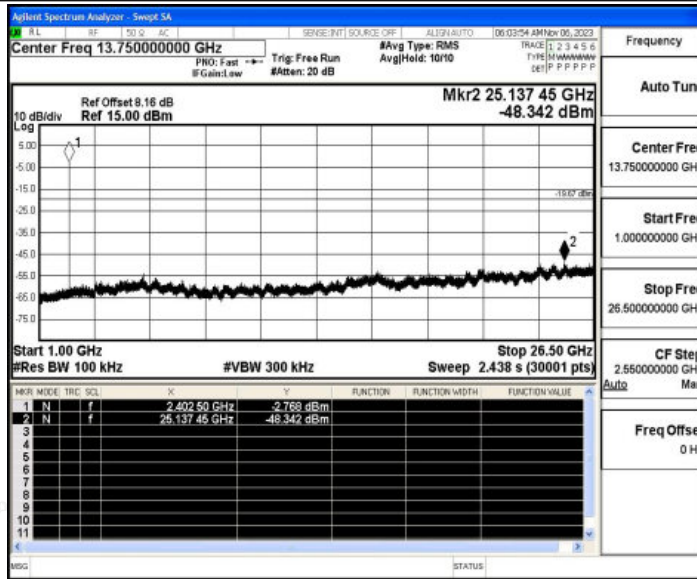


BLE\_1M\_Ant1\_2402\_30~1000

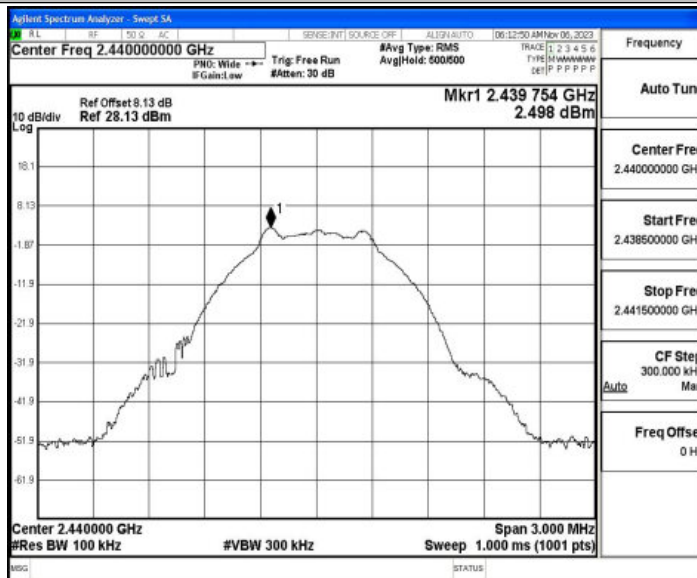


BLE\_1M\_Ant1\_2402\_1000~26500



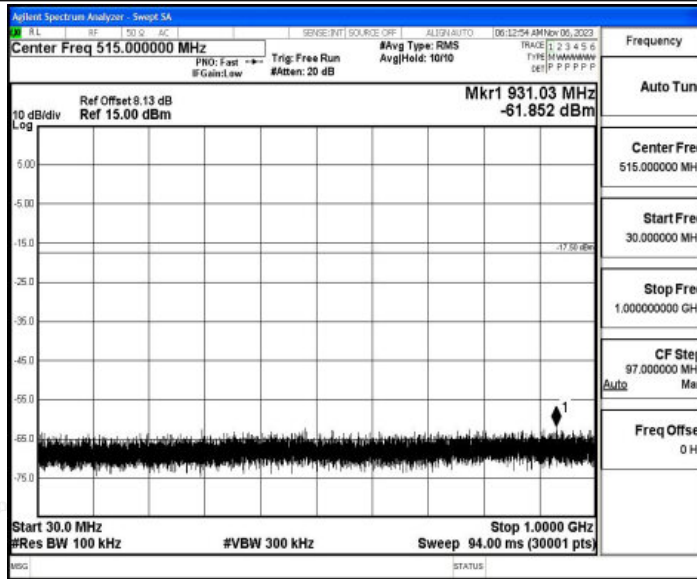


BLE\_1M\_Ant1\_2440\_0~Reference

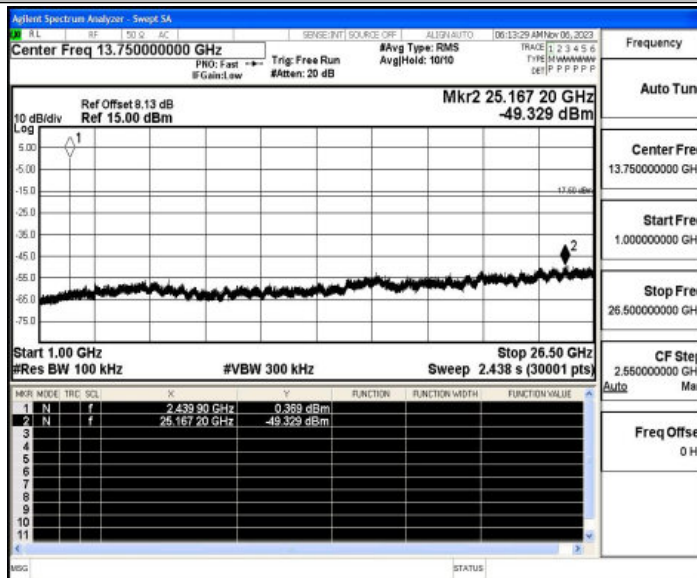


BLE\_1M\_Ant1\_2440\_30~1000



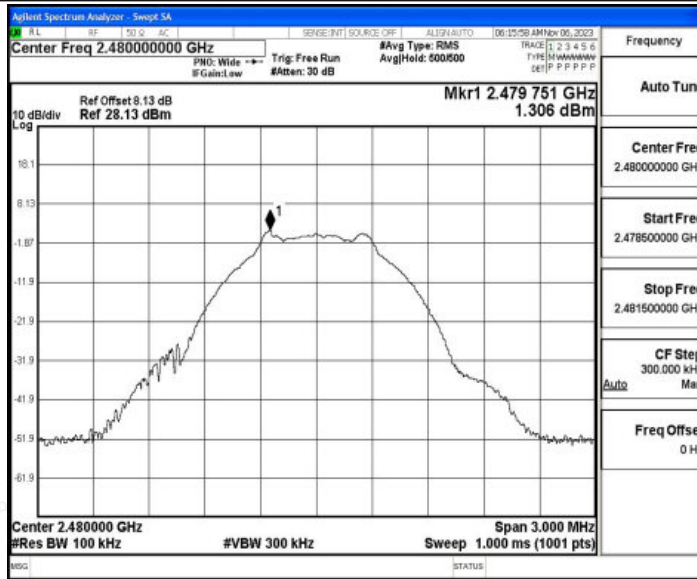


BLE\_1M\_Ant1\_2440\_1000~26500

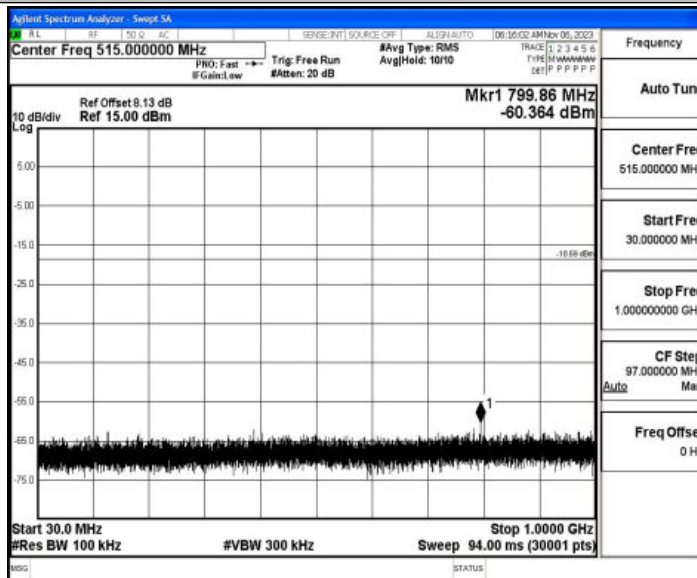


BLE\_1M\_Ant1\_2480\_0~Reference



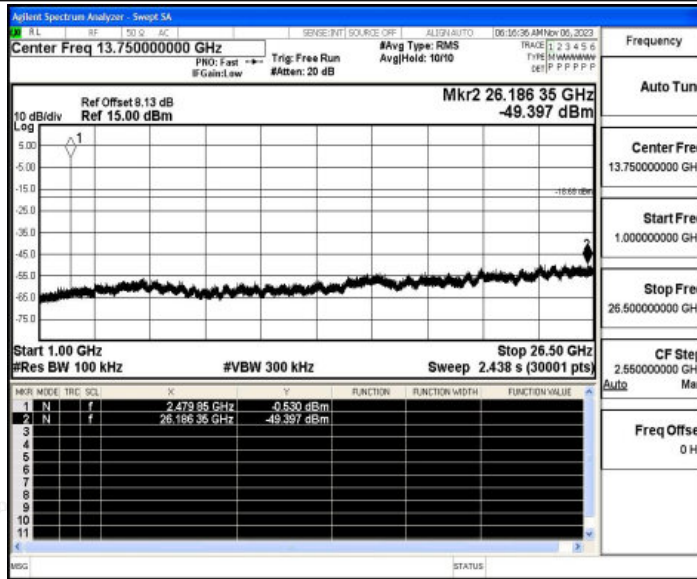


BLE\_1M\_Ant1\_2480\_30~1000

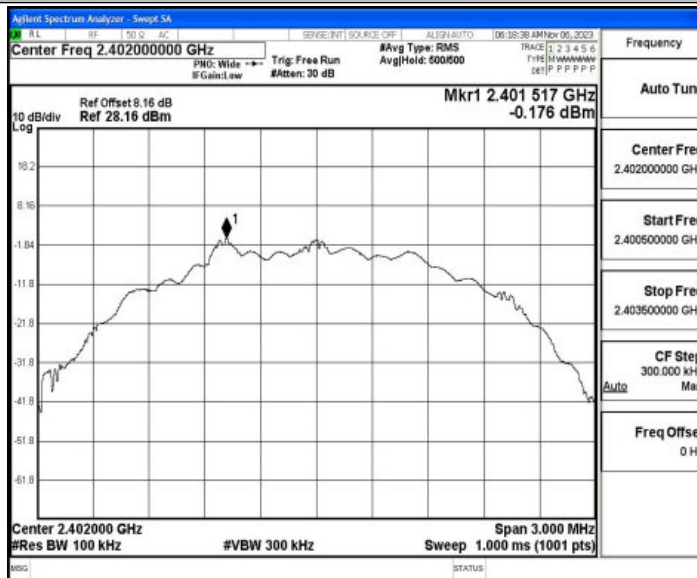


BLE\_1M\_Ant1\_2480\_1000~26500



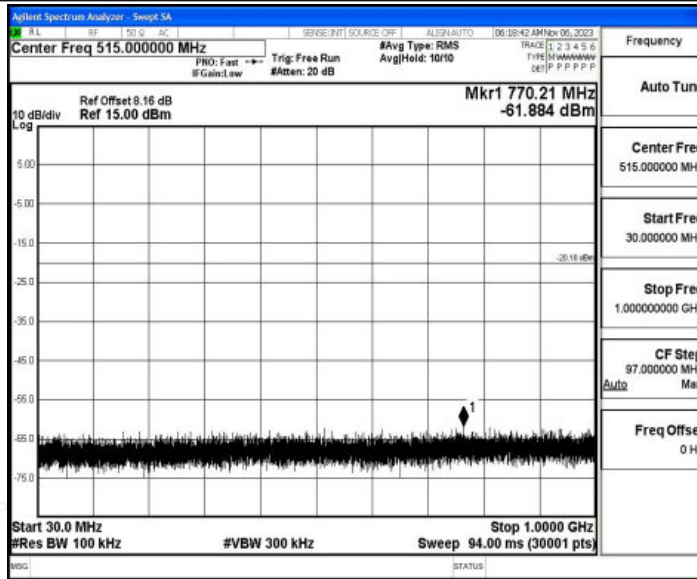


BLE\_2M\_Ant1\_2402\_0~Reference

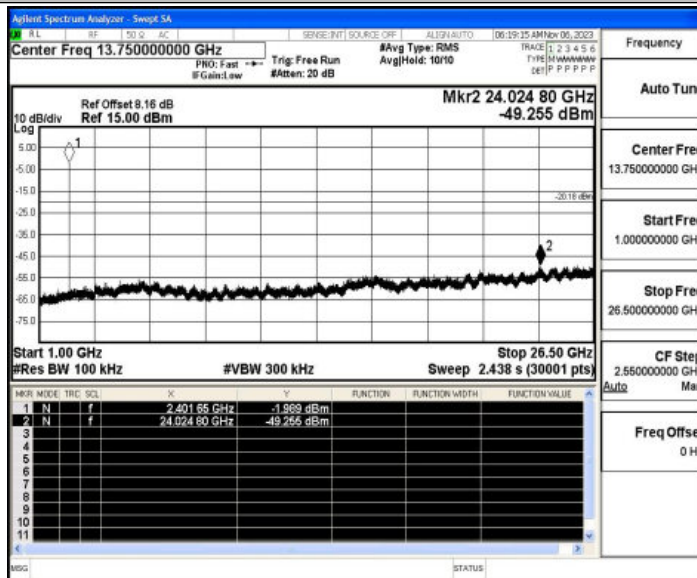


BLE\_2M\_Ant1\_2402\_30~1000



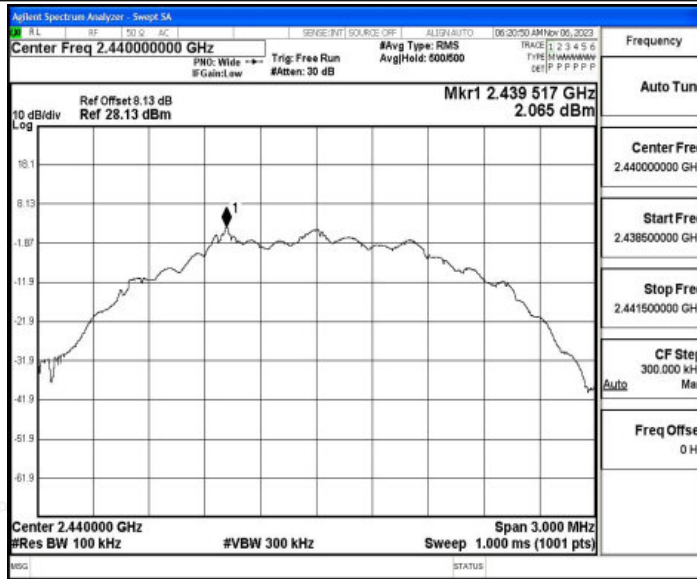


BLE\_2M\_Ant1\_2402\_1000~26500

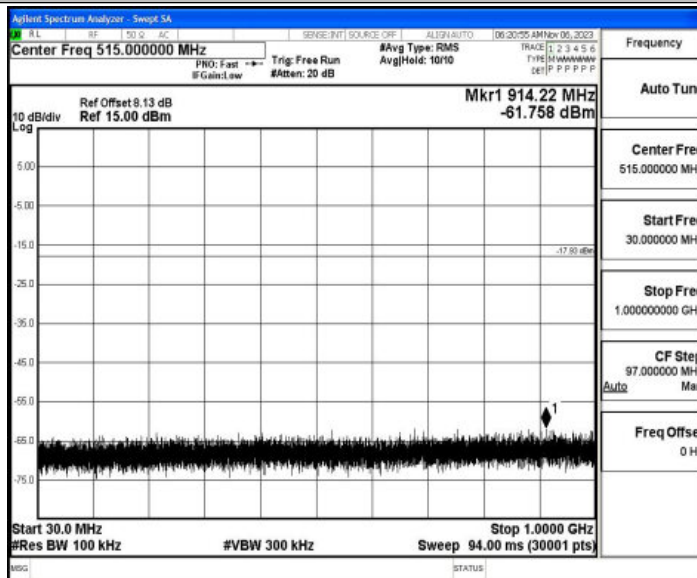


BLE\_2M\_Ant1\_2440\_0~Reference





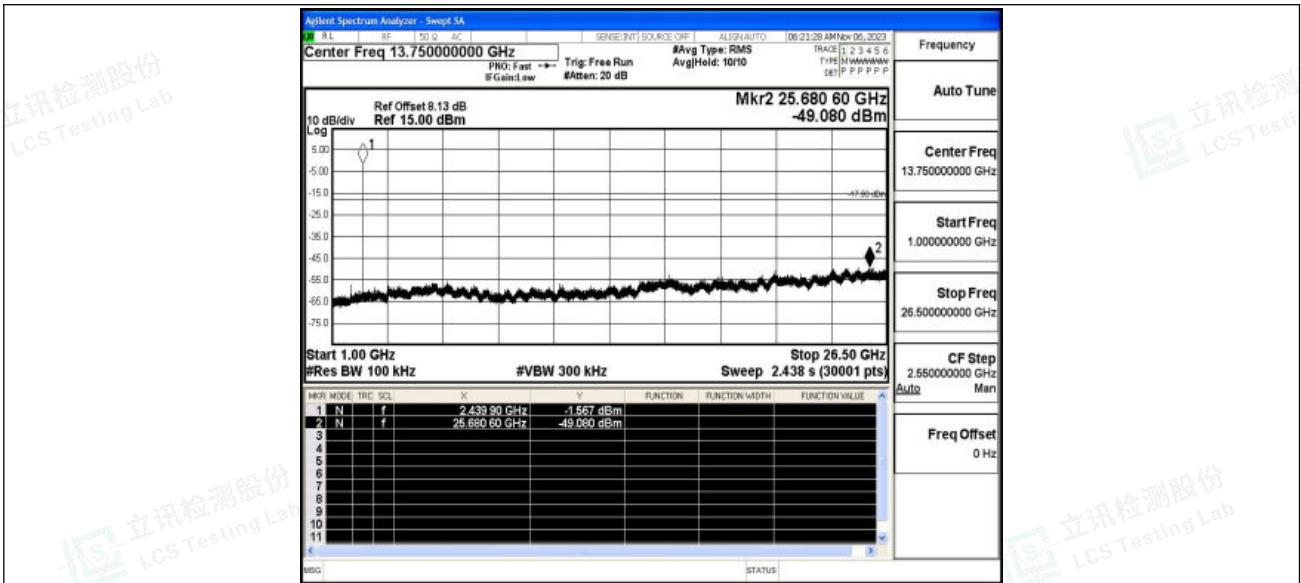
BLE\_2M\_Ant1\_2440\_30~1000



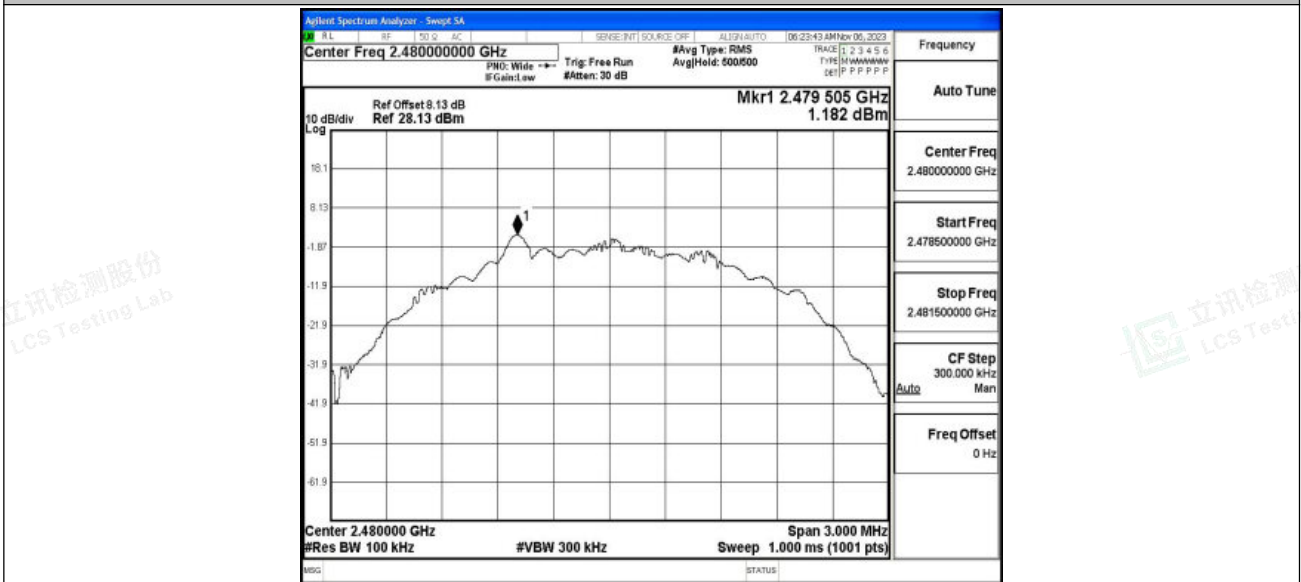
BLE\_2M\_Ant1\_2440\_1000~26500





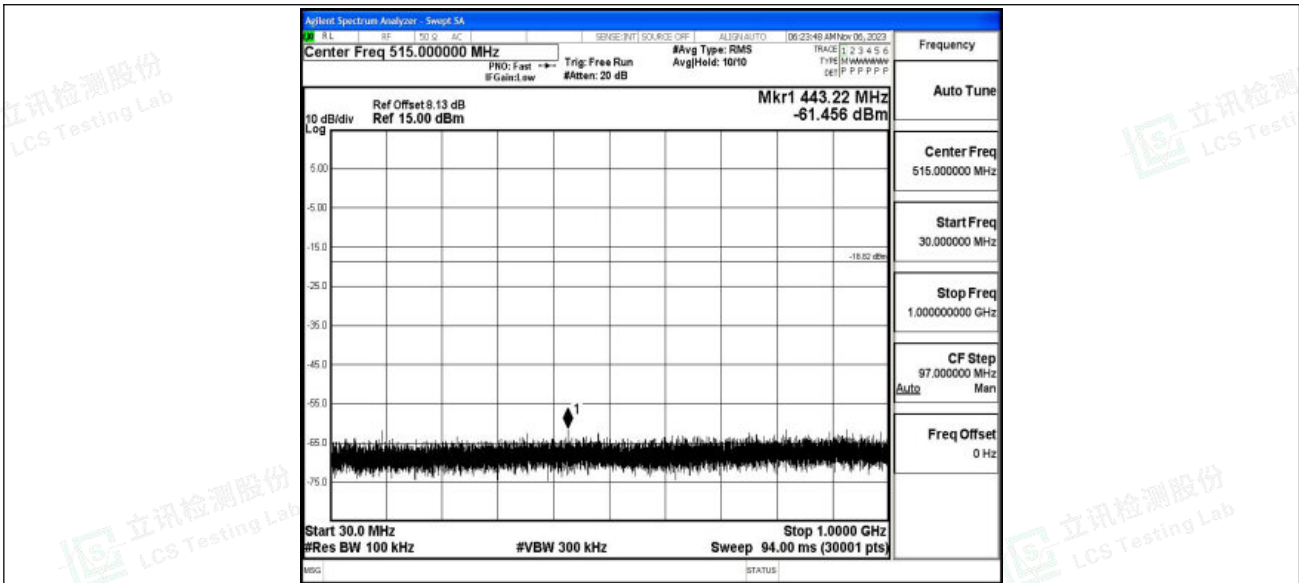


BLE\_2M\_Ant1\_2480\_0~Reference

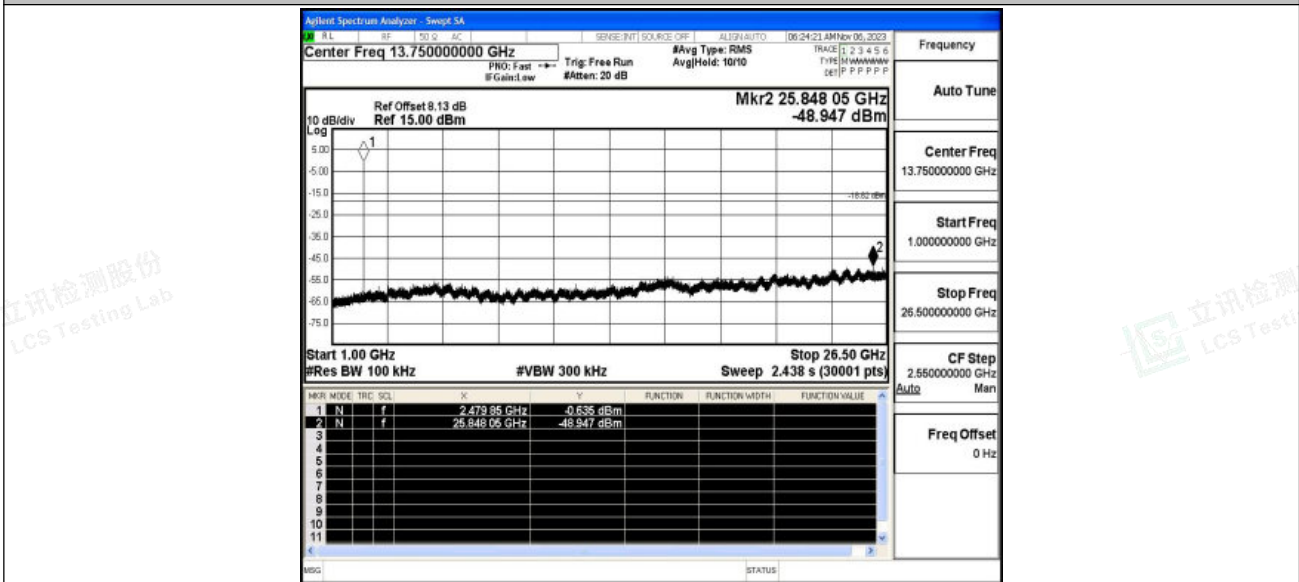


BLE\_2M\_Ant1\_2480\_30~1000





BLE\_2M\_Ant1\_2480\_1000~26500





### A.6 Duty Cycle

#### Test Result

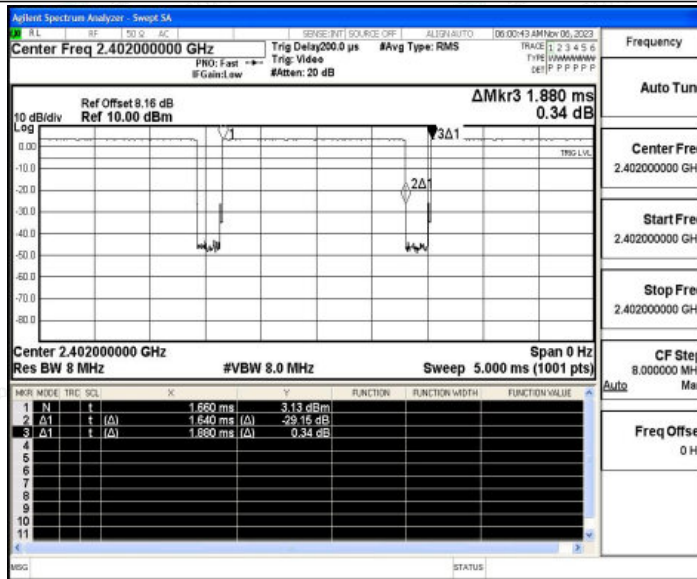
TestMode	Antenna	Channel	ON Time [ms]	Period [ms]	X	DC [%]	xFactor	1/T	Limit	Verdict
BLE_1M	Ant1	2402	1.64	1.88	0.8723	87.23	0.59	0.61	---	---
		2440	1.64	1.88	0.8723	87.23	0.59	0.61	---	---
		2480	1.64	1.88	0.8723	87.23	0.59	0.61	---	---
BLE_2M	Ant1	2402	0.83	1.25	0.6640	66.40	1.78	1.20	---	---
		2440	0.83	1.25	0.6640	66.40	1.78	1.20	---	---
		2480	0.83	1.25	0.6640	66.40	1.78	1.20	---	---



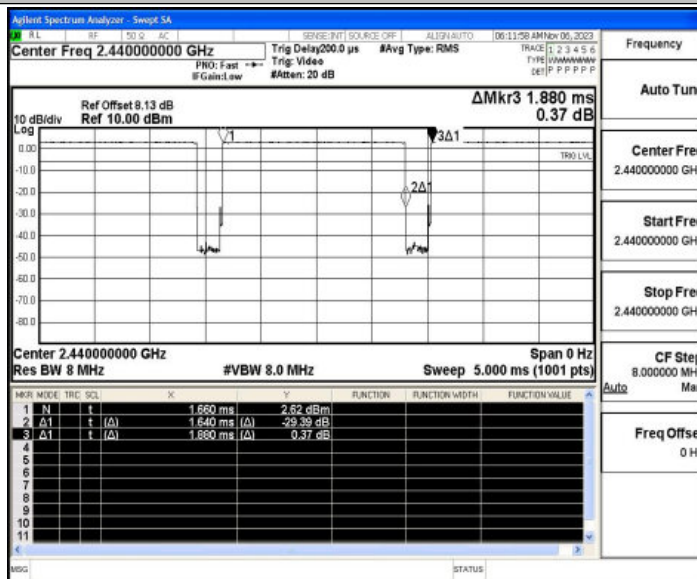


### Test Graphs

BLE\_1M\_Ant1\_2402

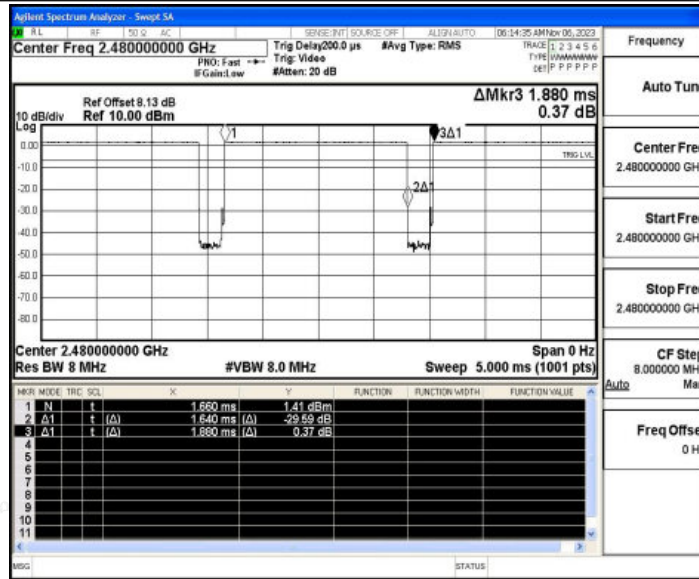


BLE\_1M\_Ant1\_2440

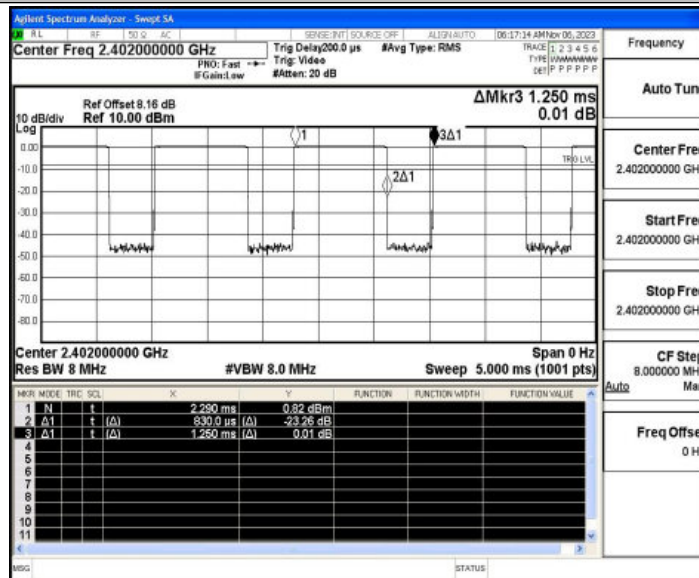


BLE\_1M\_Ant1\_2480



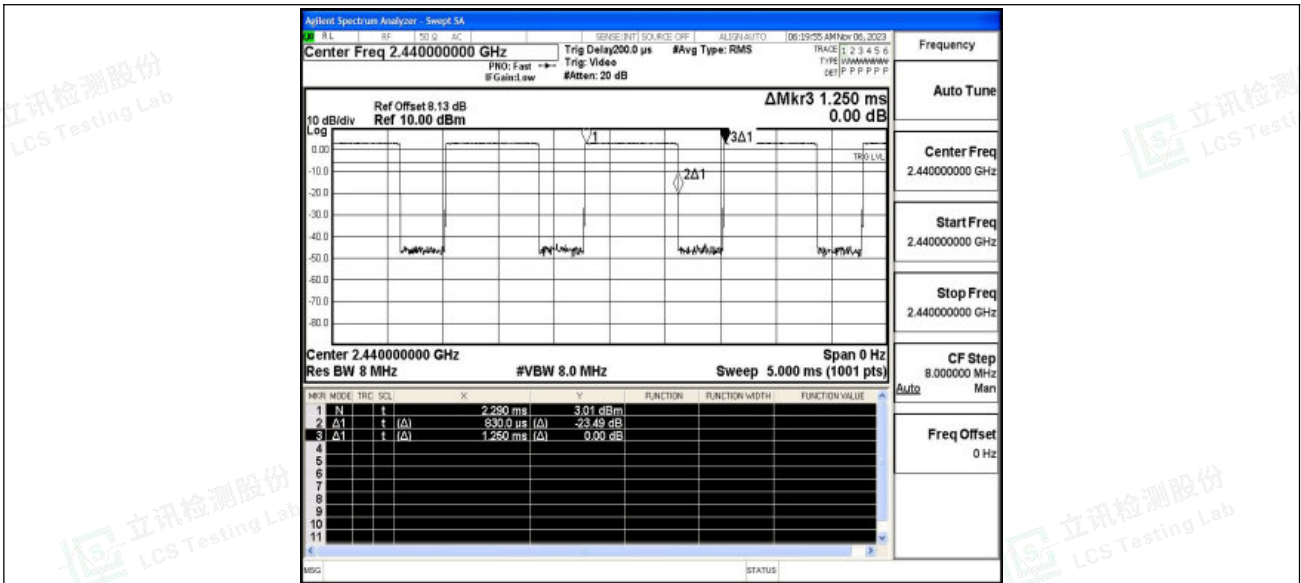


BLE\_2M\_Ant1\_2402

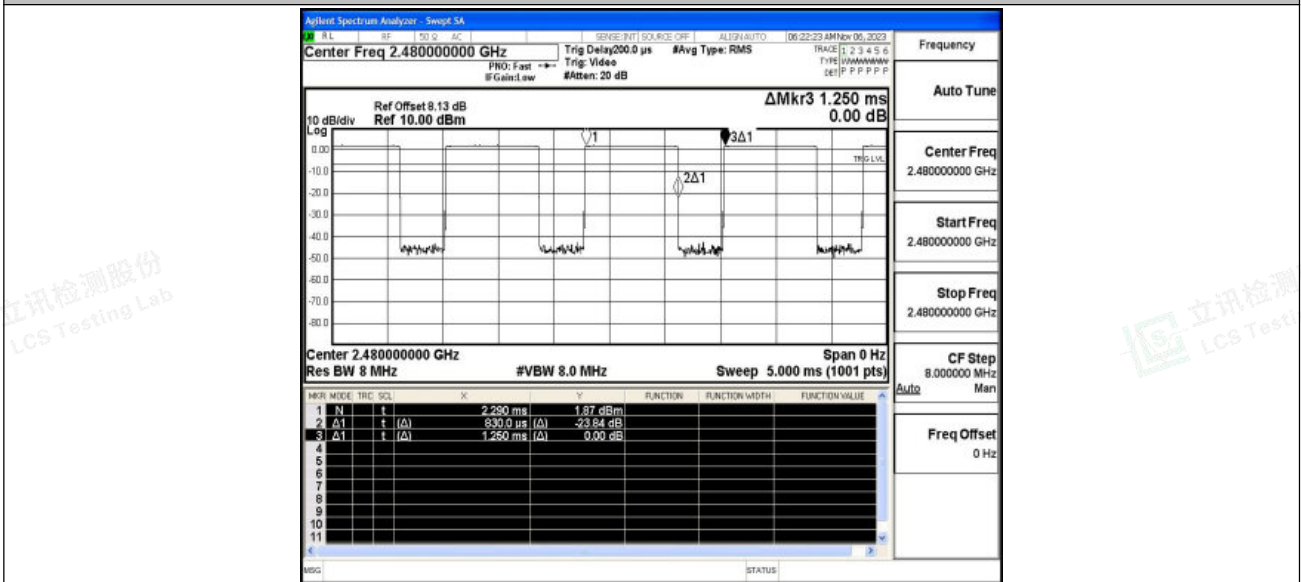


BLE\_2M\_Ant1\_2440





BLE\_2M\_Ant1\_2480





## A.7 Emissions in Restricted Bands

### Test Result

TestMode	Antenna	Channel Name	Channel	Detector	Freq. [MHz]	Result [dBm]	Limit [dBm]	Result [dBuV/m]	Limit [dBuV/m]	Verdict
BLE_1M	Ant1	Low	2402	AV	2310.000	-49.09	≤-41.20	46.11	≤54	PASS
				AV	2379.800	-48.45	≤-41.20	46.75	≤54	PASS
				AV	2390.000	-48.75	≤-41.20	46.45	≤54	PASS
				Peak	2310.000	-41.96	≤-21.20	53.24	≤74	PASS
				Peak	2348.825	-38.65	≤-21.20	56.55	≤74	PASS
				Peak	2390.000	-40.98	≤-21.20	54.22	≤74	PASS
		High	2480	AV	2483.500	-47.55	≤-41.20	47.65	≤54	PASS
				AV	2483.520	-47.55	≤-41.20	47.65	≤54	PASS
				AV	2500.000	-48.47	≤-41.20	46.73	≤54	PASS
				Peak	2483.500	-40.52	≤-21.20	54.68	≤74	PASS
				Peak	2485.920	-39.08	≤-21.20	56.12	≤74	PASS
				Peak	2500.000	-39.28	≤-21.20	55.92	≤74	PASS
BLE_2M	Ant1	Low	2402	AV	2310.000	-48.78	≤-41.20	46.42	≤54	PASS
				AV	2373.710	-48.28	≤-41.20	46.92	≤54	PASS
				AV	2390.000	-48.63	≤-41.20	46.57	≤54	PASS
				Peak	2310.000	-41.65	≤-21.20	53.55	≤74	PASS
				Peak	2327.090	-38.97	≤-21.20	56.23	≤74	PASS
				Peak	2390.000	-40.63	≤-21.20	54.57	≤74	PASS
		High	2480	AV	2483.500	-46.44	≤-41.20	48.76	≤54	PASS
				AV	2483.520	-46.44	≤-41.20	48.76	≤54	PASS
				AV	2500.000	-48.36	≤-41.20	46.84	≤54	PASS
				Peak	2483.500	-39.68	≤-21.20	55.52	≤74	PASS
				Peak	2497.280	-38.84	≤-21.20	56.36	≤74	PASS
				Peak	2500.000	-41.14	≤-21.20	54.06	≤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.



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Add: 101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Yabianxueziwei, Shajing Street, Baoan District, Shenzhen, 518000, China

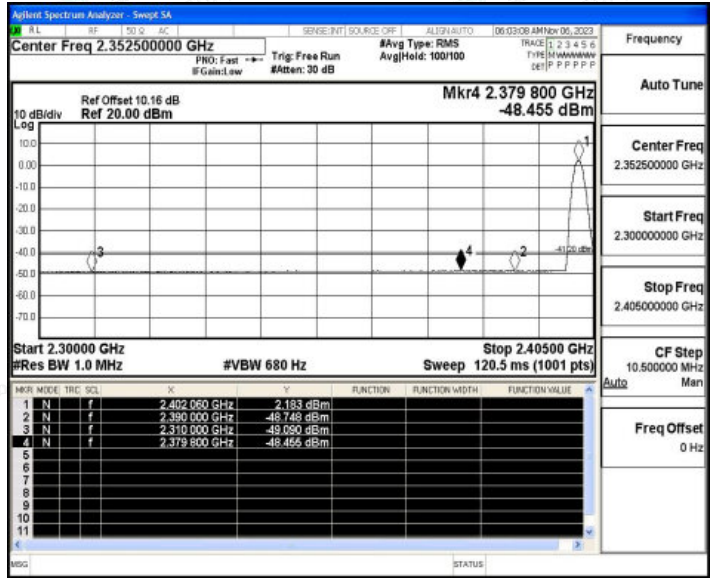
Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com

Scan code to check authenticity

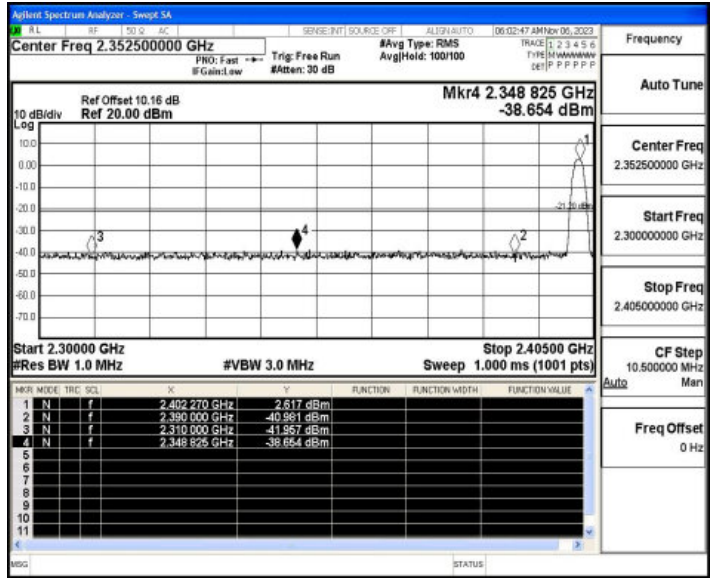


### Test Graphs

BLE\_1M\_Ant1\_Low\_2402\_AV



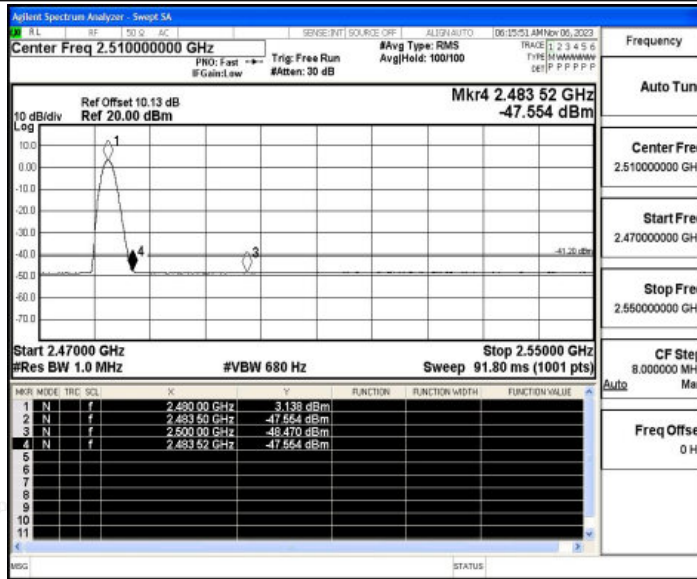
BLE\_1M\_Ant1\_Low\_2402\_Peak



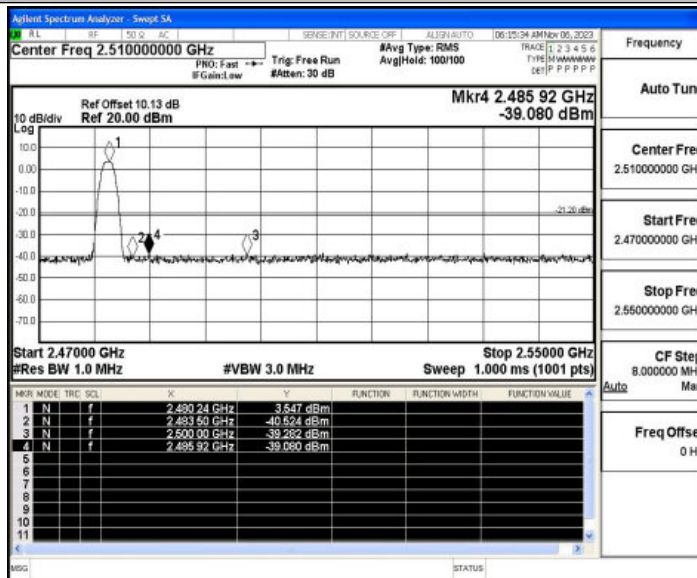
BLE\_1M\_Ant1\_High\_2480\_AV





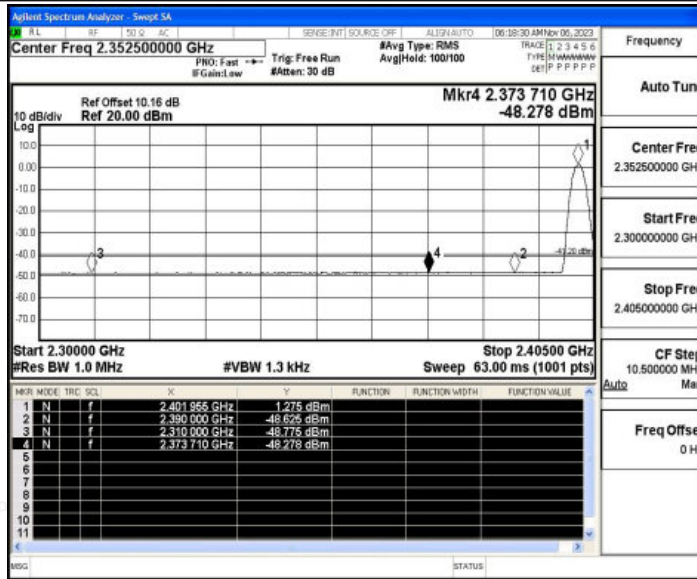


BLE\_1M\_Ant1\_High\_2480\_Peak

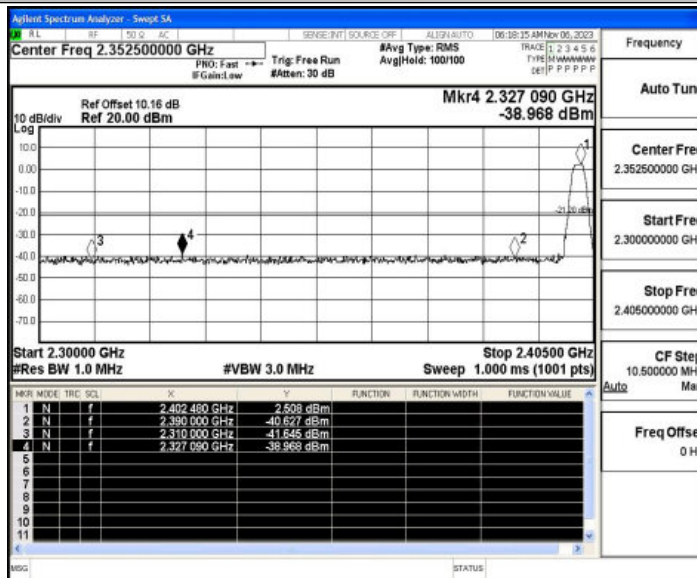


BLE\_2M\_Ant1\_Low\_2402\_AV



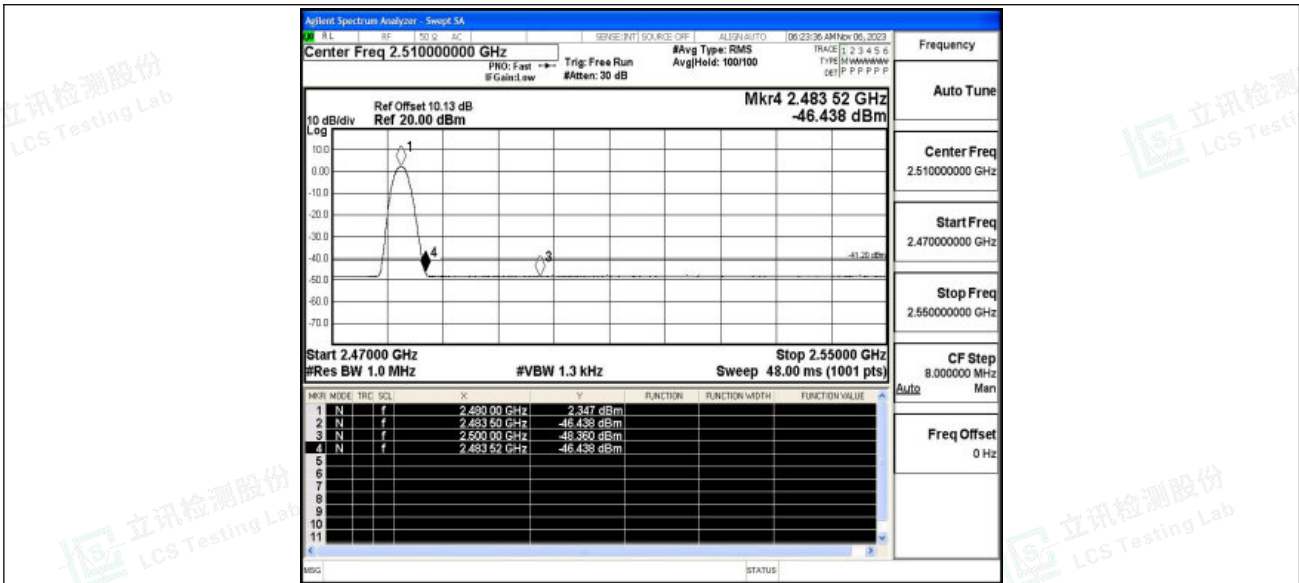


BLE\_2M\_Ant1\_Low\_2402\_Peak



BLE\_2M\_Ant1\_High\_2480\_AV





BLE\_2M\_Ant1\_High\_2480\_Peak

