



## Appendix B

### RF Test Data for BT LE (Conducted Measurement)

Product Name: BT Magic Bluetooth Module

Test Model: BT Magic

#### Environmental Conditions

Temperature:	23.5°C
Relative Humidity:	52.2%
ATM Pressure:	100.0 kPa
Test Engineer:	<i>Taylor Hu</i> Taylor Hu
Supervised by:	<i>Li Huan</i> Li Huan





## 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	0.708	2439.632	2440.340	0.5	PASS
		2480	0.712	2479.632	2480.344	0.5	PASS
BLE_2M	Ant1	2402	1.244	2401.336	2402.580	0.5	PASS
		2440	1.252	2439.336	2440.588	0.5	PASS
		2480	1.248	2479.340	2480.588	0.5	PASS



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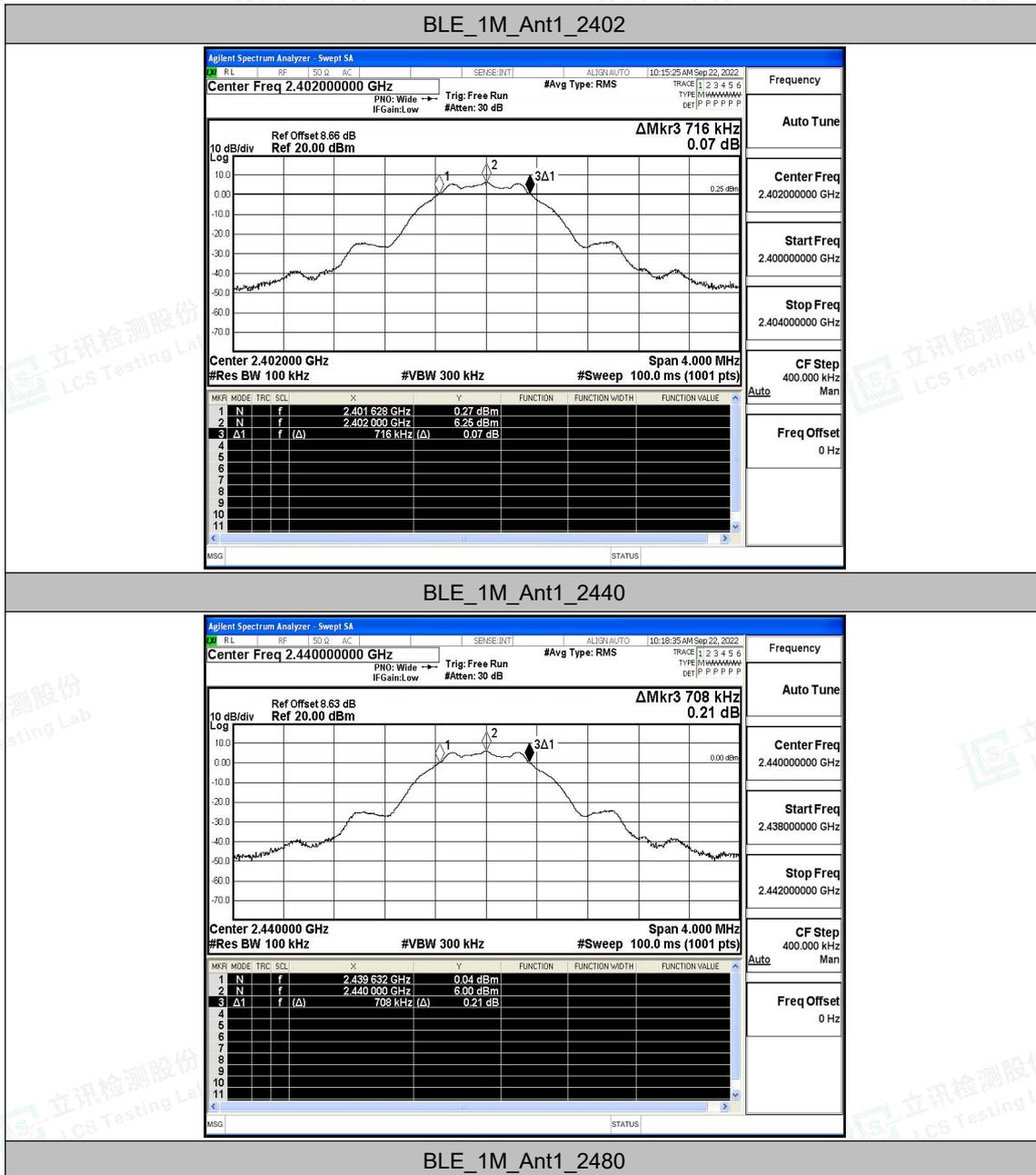
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### Test Graphs

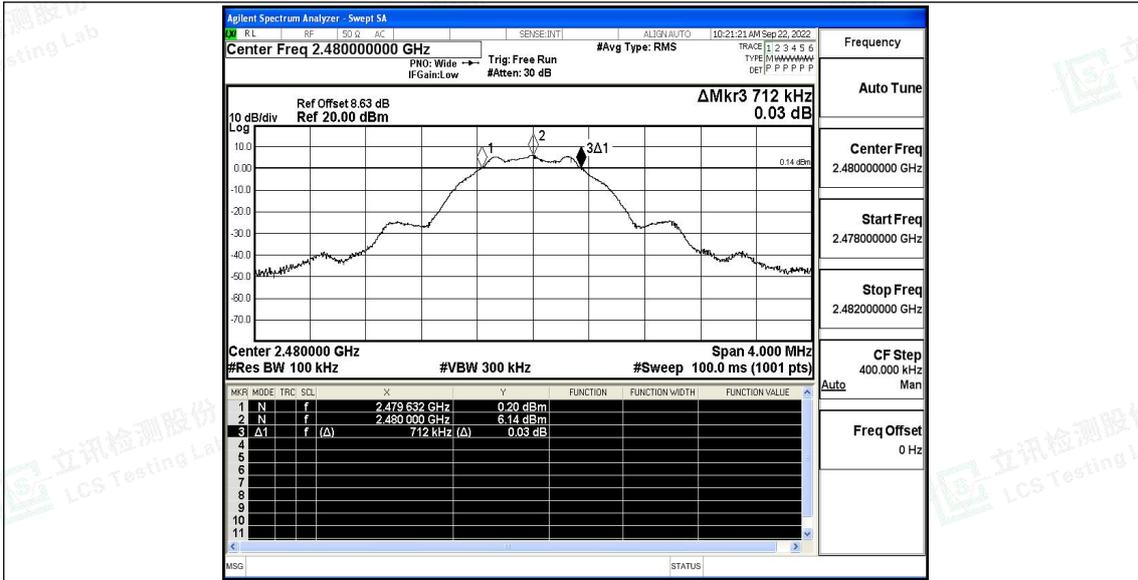


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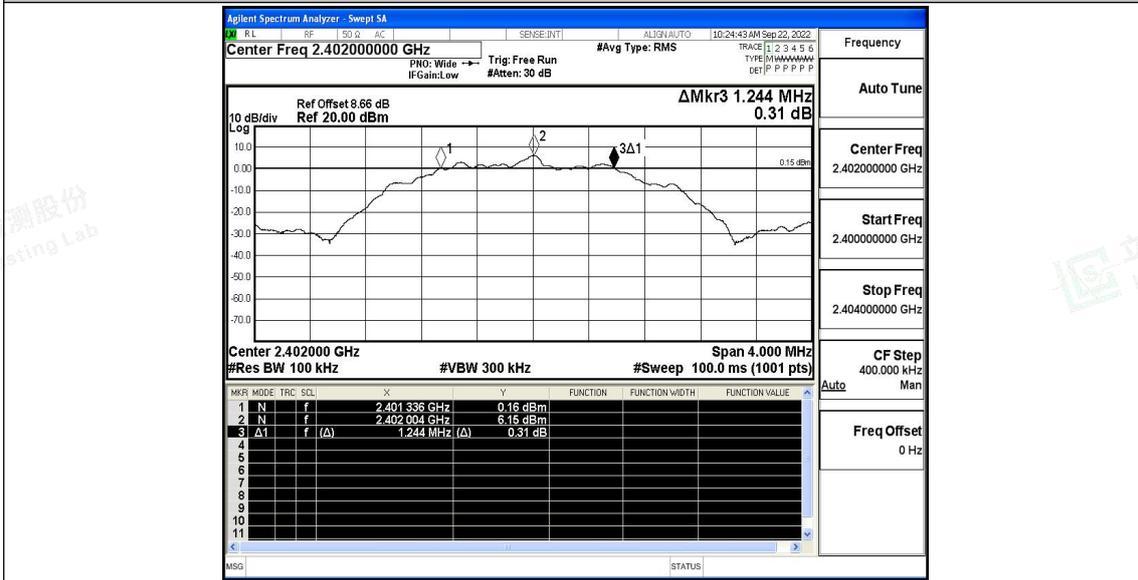
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BLE\_2M\_Ant1\_2402



BLE\_2M\_Ant1\_2440

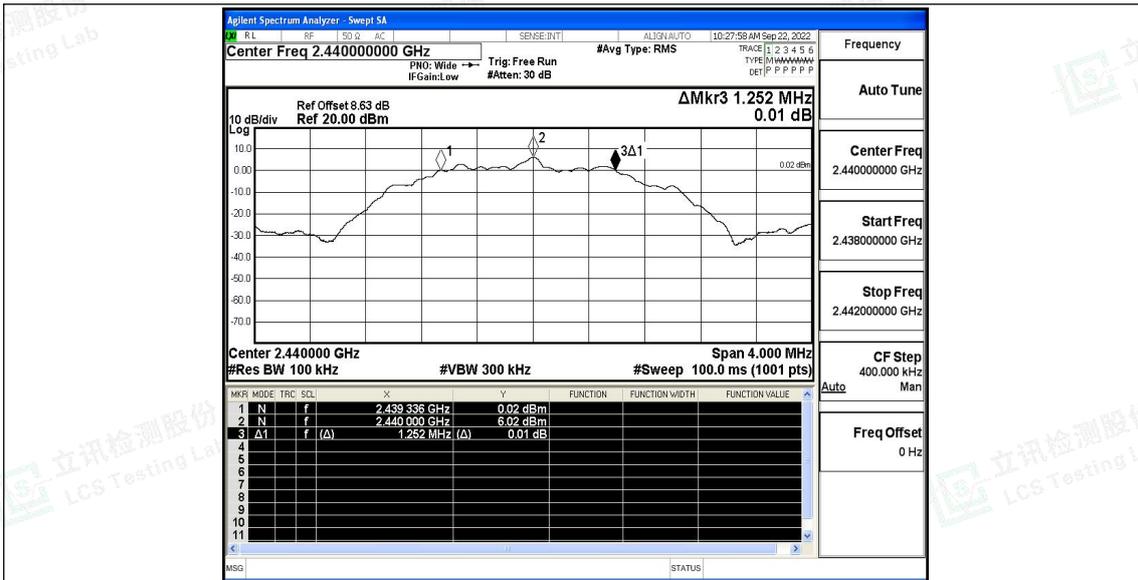


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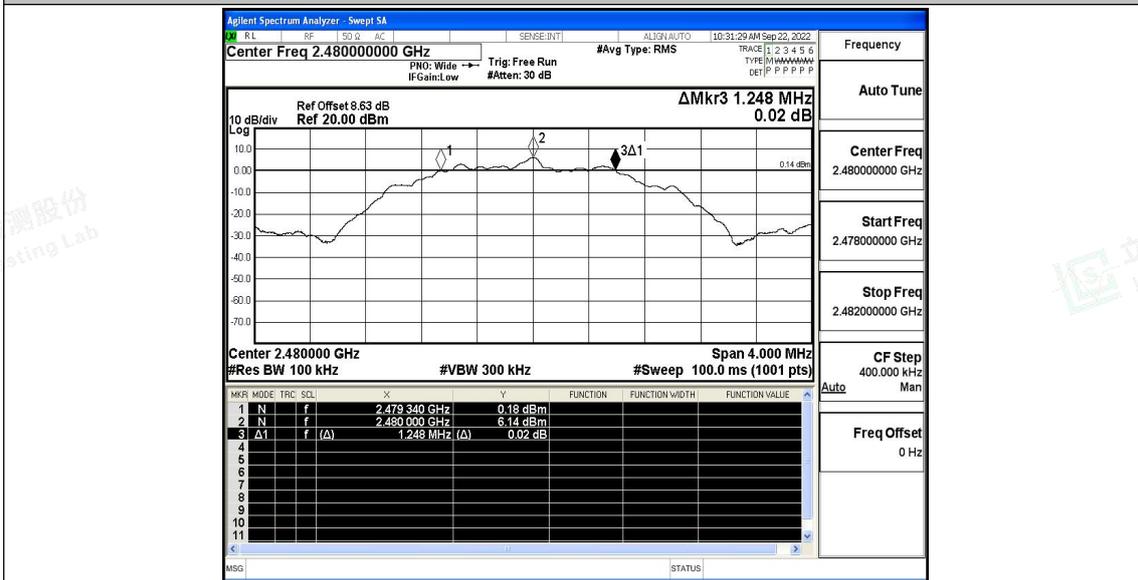
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BLE\_2M\_Ant1\_2480



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## B.2 Maximum conducted output power

### Test Result

TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	2.48	≤30	PASS
		2440	2.20	≤30	PASS
		2480	2.37	≤30	PASS
BLE_2M	Ant1	2402	2.42	≤30	PASS
		2440	2.34	≤30	PASS
		2480	2.46	≤30	PASS





### B.3 Maximum power spectral density

#### Test Result

TestMode	Antenna	Channel	Result[dBm/3-100kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-9.15	≤8.00	PASS
		2440	-9.12	≤8.00	PASS
		2480	-8.86	≤8.00	PASS
BLE_2M	Ant1	2402	-10.96	≤8.00	PASS
		2440	-11.06	≤8.00	PASS
		2480	-10.98	≤8.00	PASS



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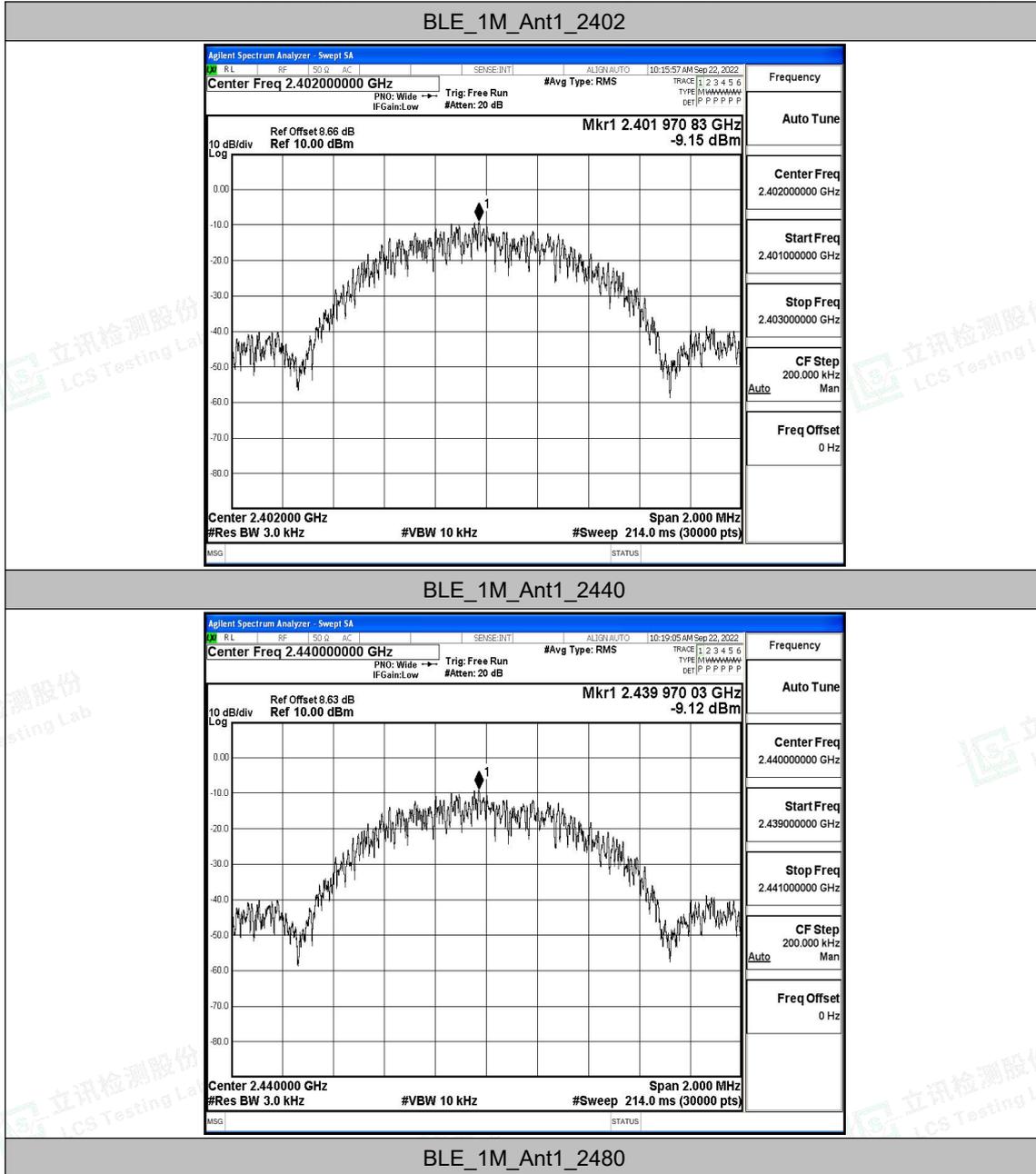
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### Test Graphs

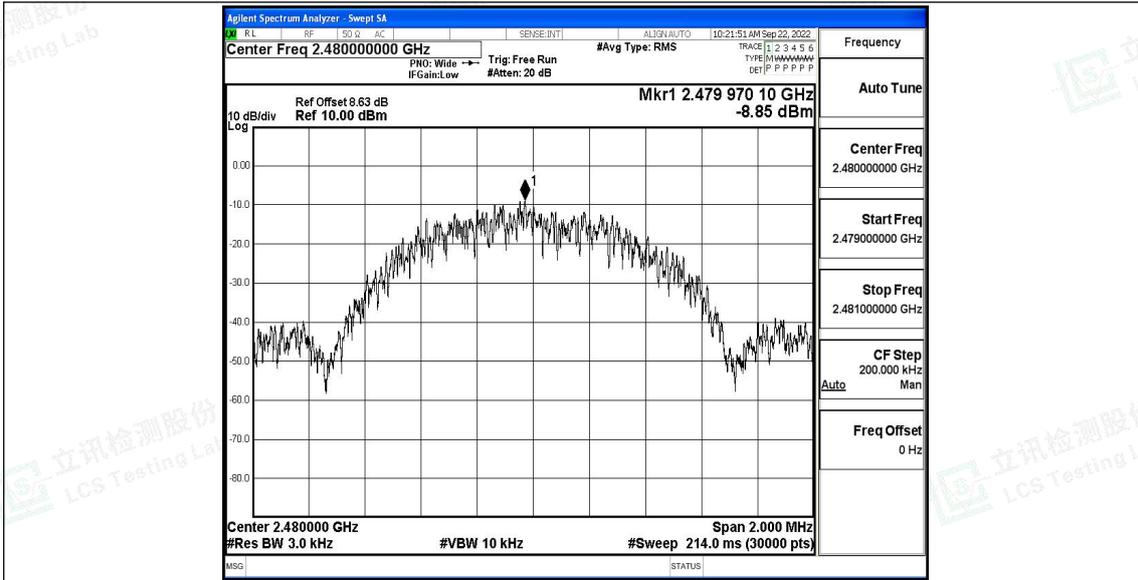


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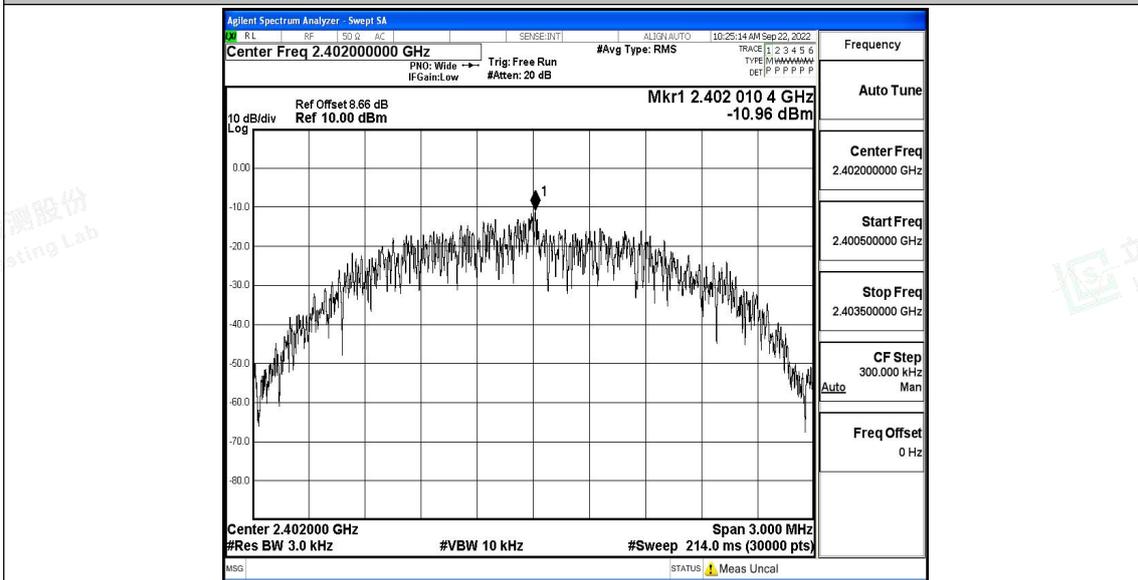
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BLE\_2M\_Ant1\_2402



BLE\_2M\_Ant1\_2440

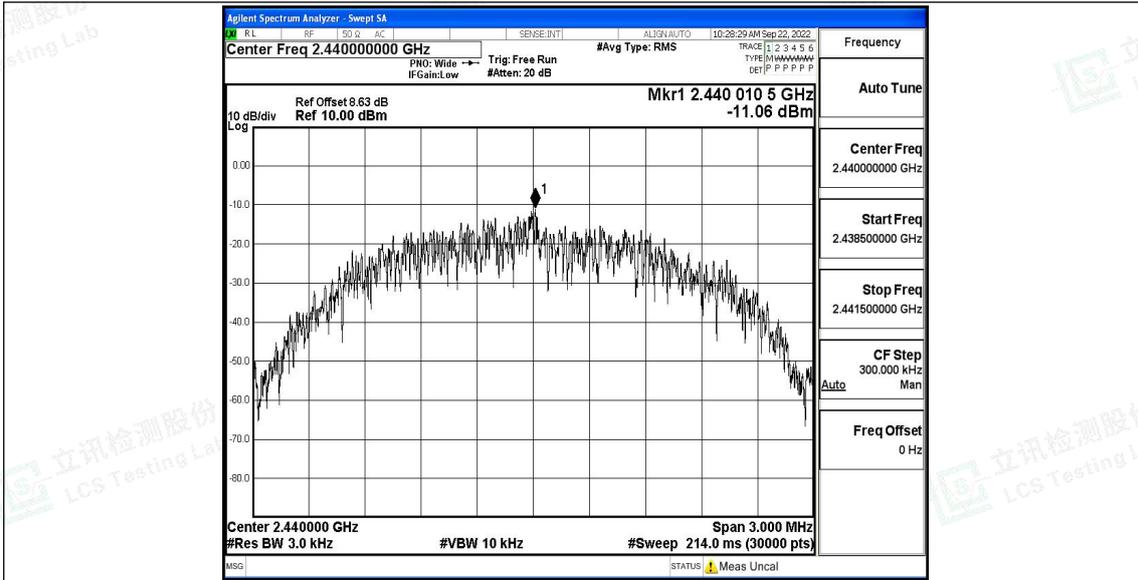


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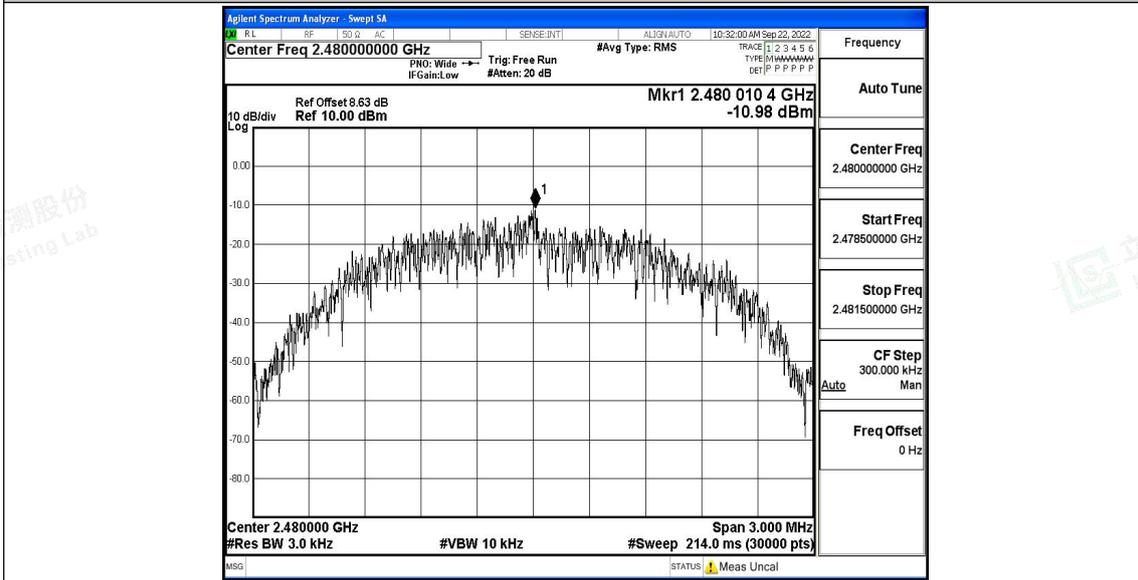
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BLE\_2M\_Ant1\_2480



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## B.4 Band edge measurements

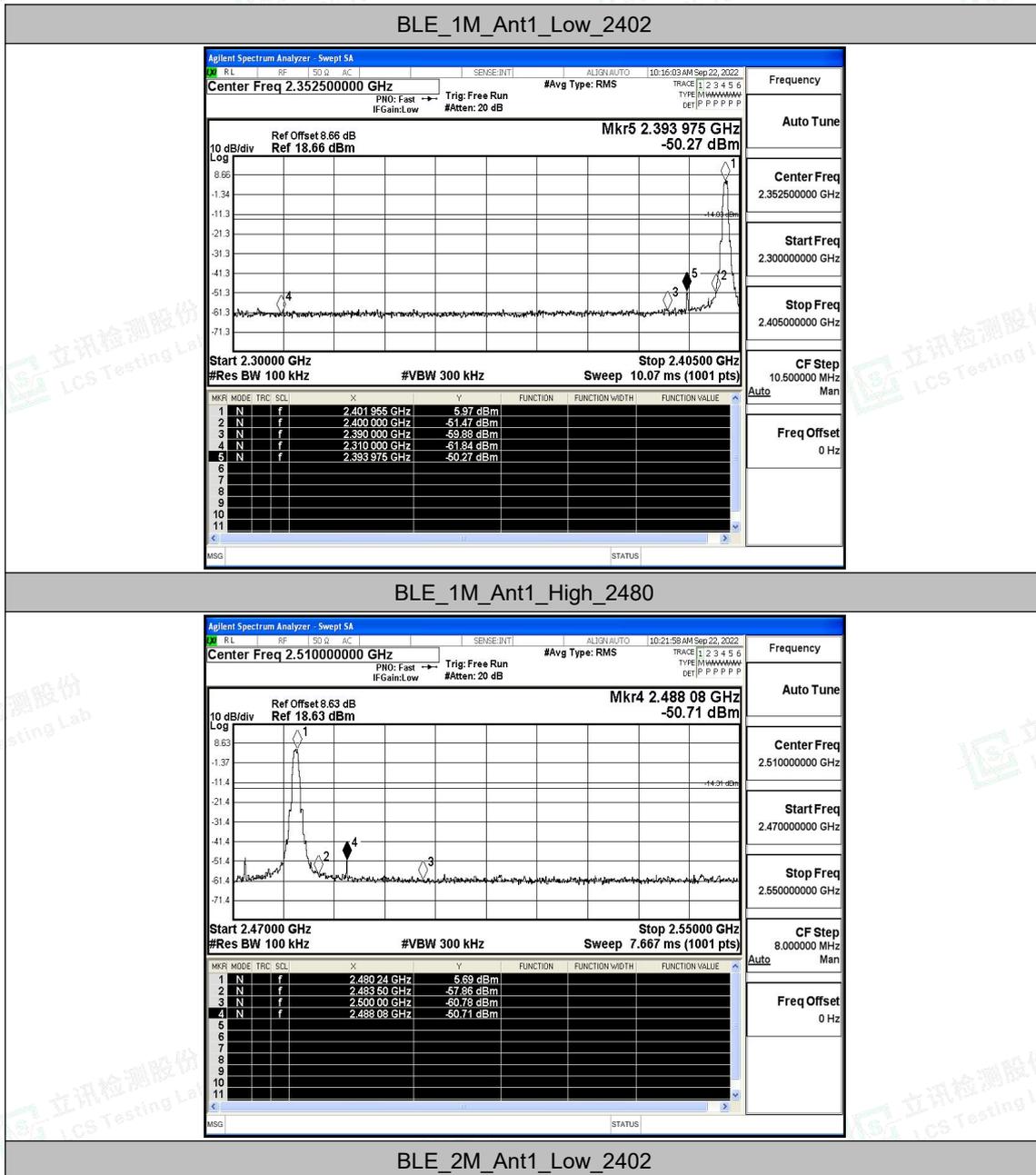
### Test Result

TestMode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	5.97	-50.27	≤-14.03	PASS
		High	2480	5.69	-50.71	≤-14.31	PASS
BLE_2M	Ant1	Low	2402	4.77	-25.68	≤-15.23	PASS
		High	2480	6.28	-49.68	≤-13.72	PASS





### Test Graphs

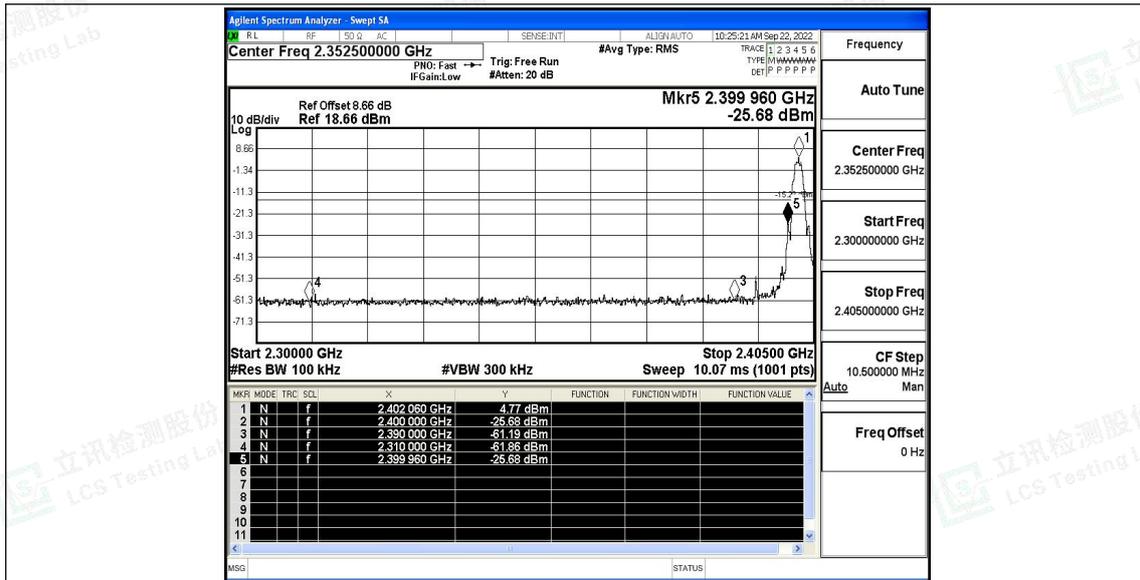


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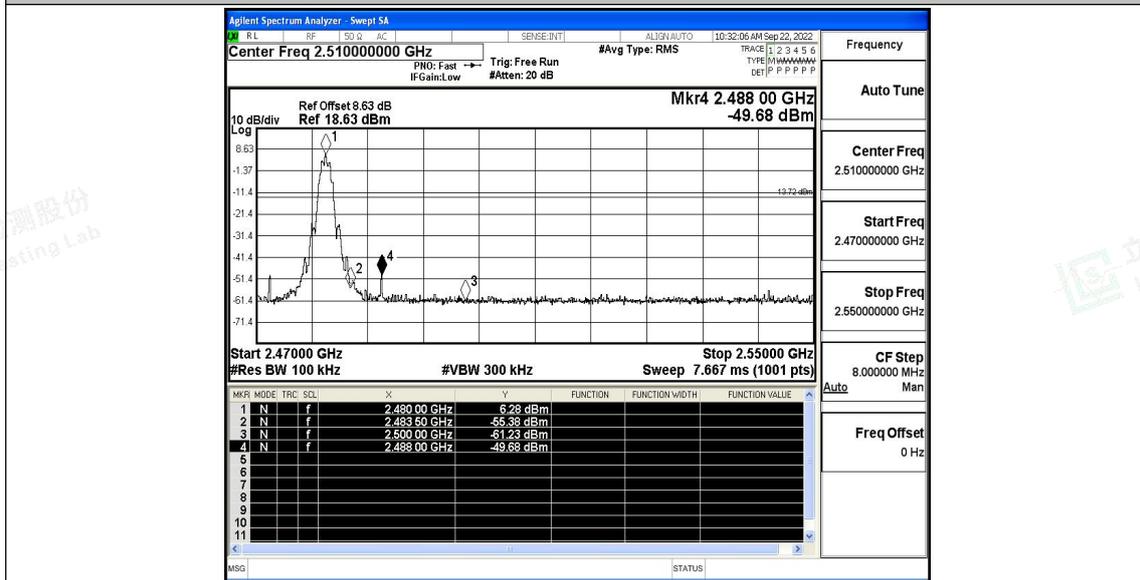
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BLE\_2M\_Ant1\_High\_2480



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## B.5 Conducted Spurious Emission

### Test Result

TestMode	Antenna	Channel	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	Reference	4.97	4.97	---	PASS
			30~1000	4.97	-60.57	≤-15.03	PASS
			1000~26500	4.97	-44.75	≤-15.03	PASS
		2440	Reference	4.62	4.62	---	PASS
			30~1000	4.62	-60.49	≤-15.38	PASS
			1000~26500	4.62	-43.86	≤-15.38	PASS
		2480	Reference	4.92	4.92	---	PASS
			30~1000	4.92	-61.04	≤-15.08	PASS
			1000~26500	4.92	-45.45	≤-15.08	PASS
BLE_2M	Ant1	2402	Reference	5.46	5.46	---	PASS
			30~1000	5.46	-60.63	≤-14.54	PASS
			1000~26500	5.46	-46.25	≤-14.54	PASS
		2440	Reference	3.04	3.04	---	PASS
			30~1000	3.04	-60.01	≤-16.96	PASS
			1000~26500	3.04	-29.89	≤-16.96	PASS
		2480	Reference	6.14	6.14	---	PASS
			30~1000	6.14	-60.68	≤-13.86	PASS
			1000~26500	6.14	-45.87	≤-13.86	PASS



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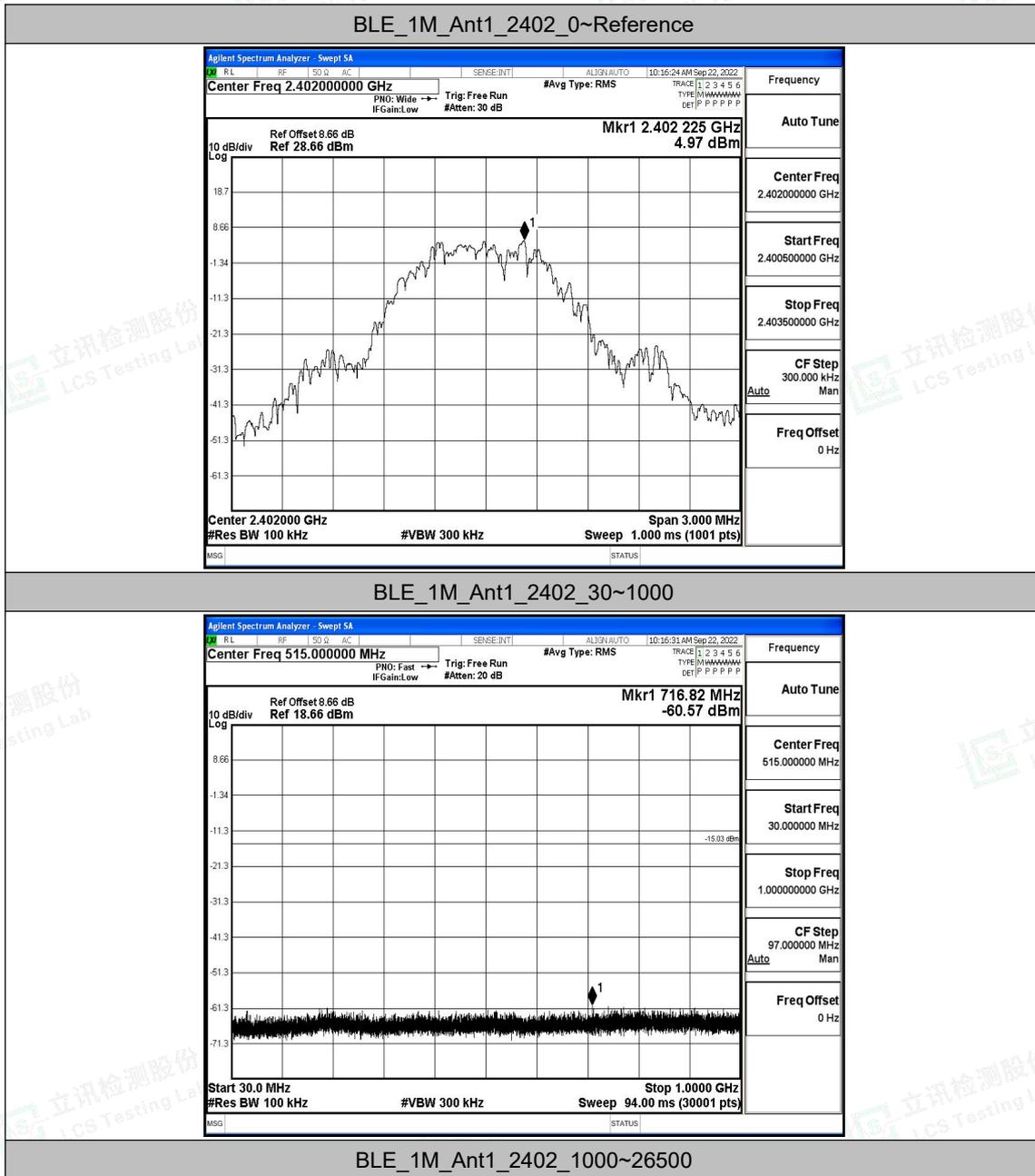
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### Test Graphs

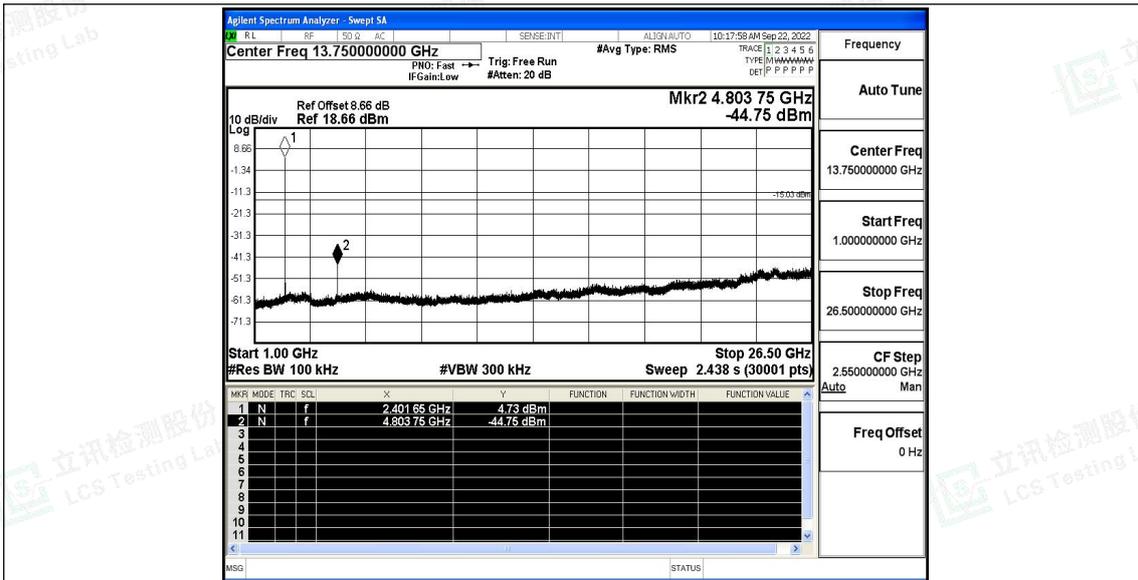


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BLE\_1M\_Ant1\_2440\_0~Reference



BLE\_1M\_Ant1\_2440\_30~1000

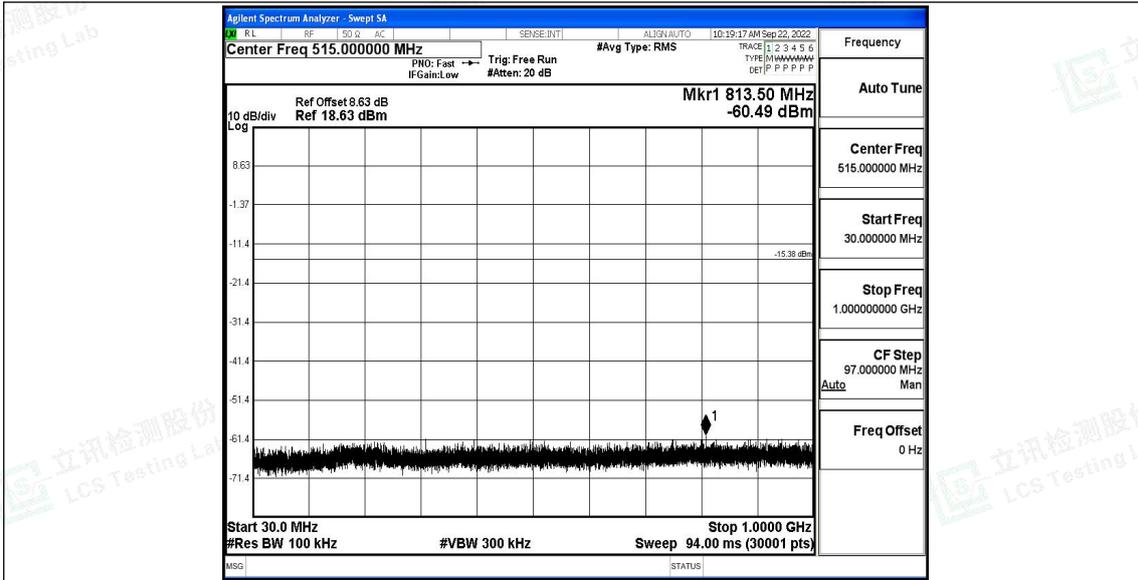


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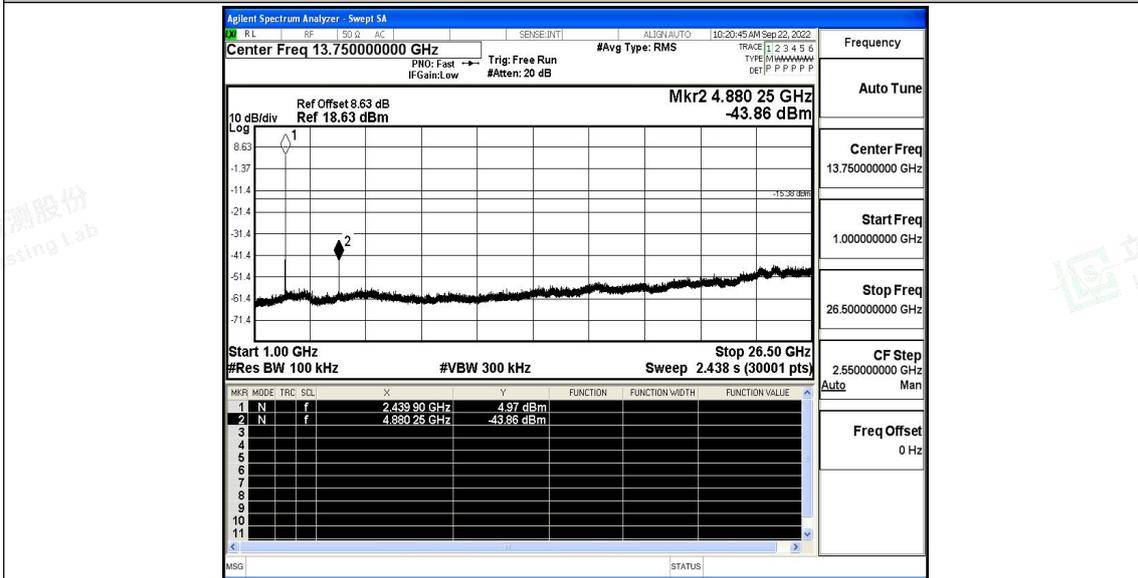
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BLE\_1M\_Ant1\_2440\_1000~26500



BLE\_1M\_Ant1\_2480\_0~Reference

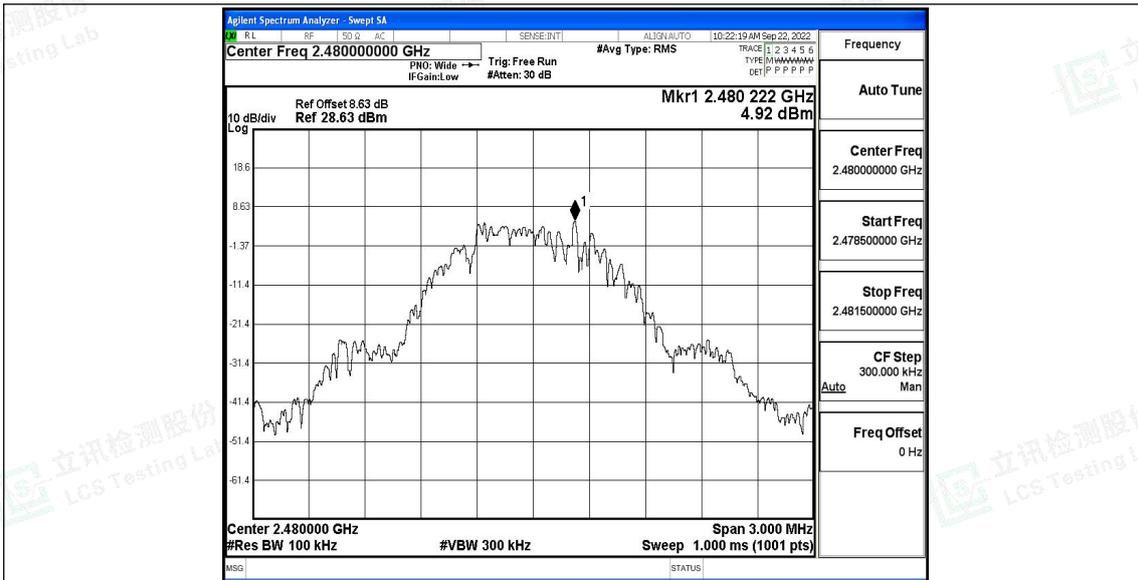


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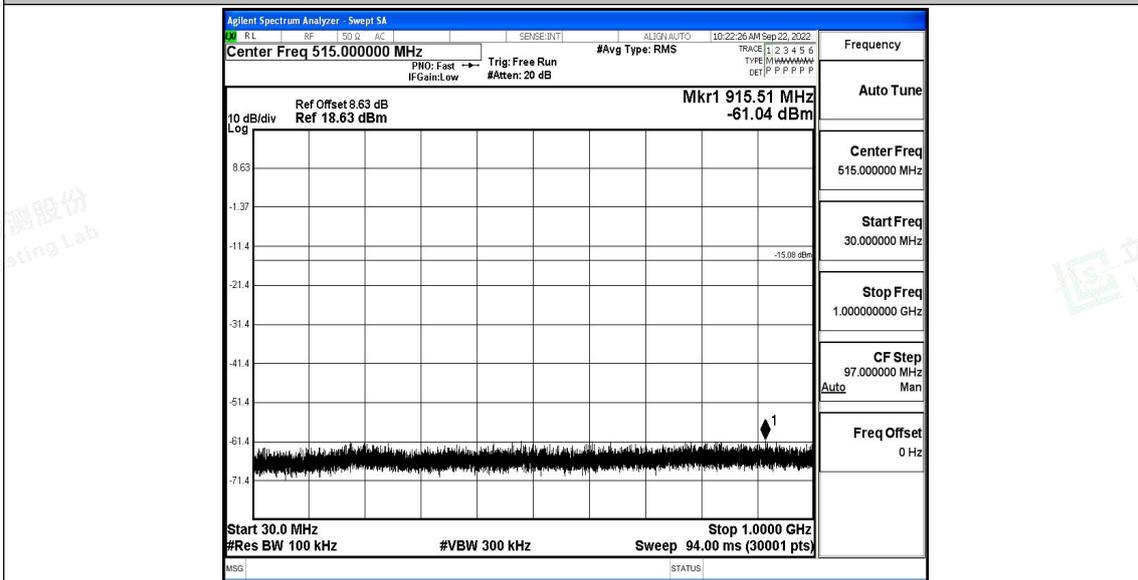
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BLE\_1M\_Ant1\_2480\_30~1000



BLE\_1M\_Ant1\_2480\_1000~26500

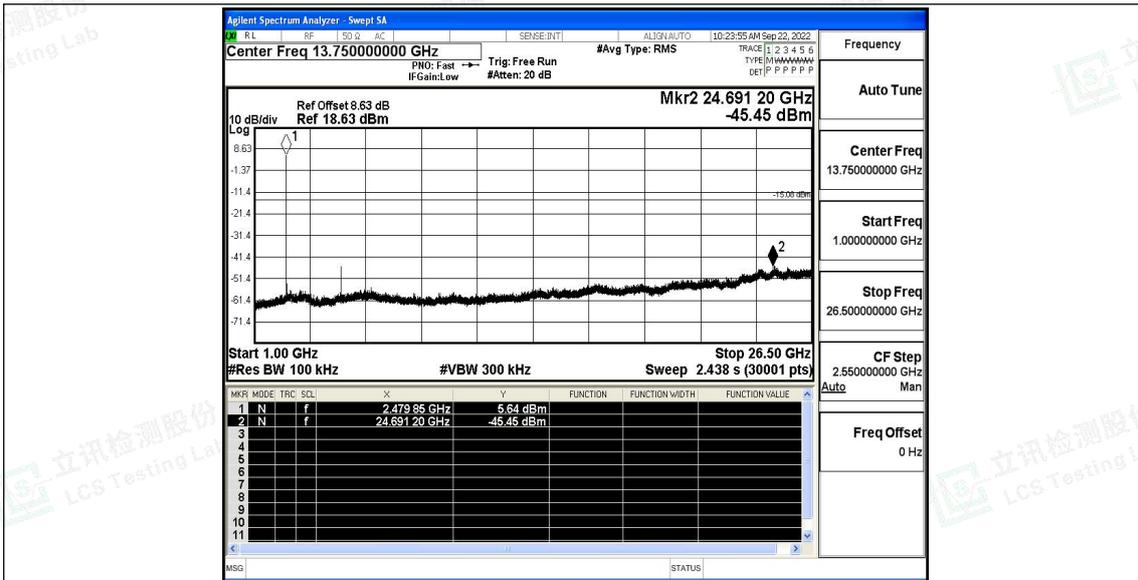


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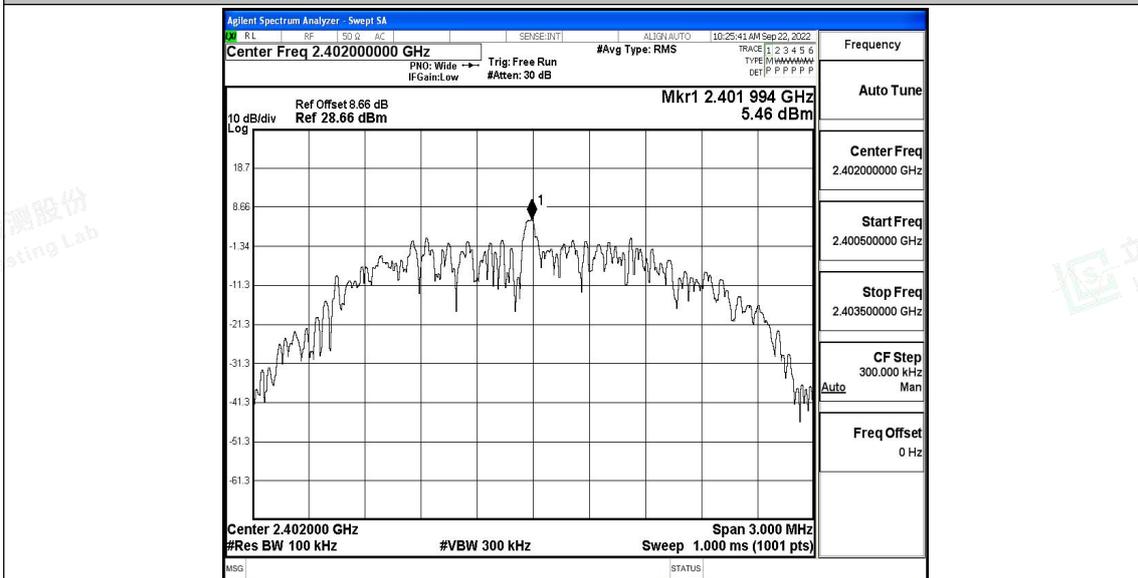
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BLE\_2M\_Ant1\_2402\_0~Reference



BLE\_2M\_Ant1\_2402\_30~1000

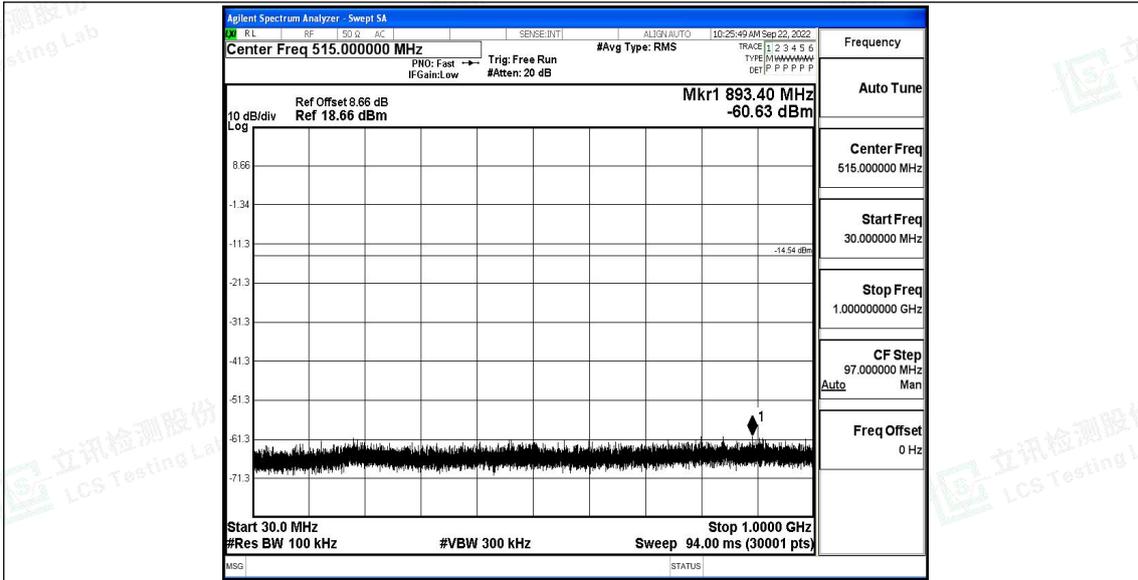


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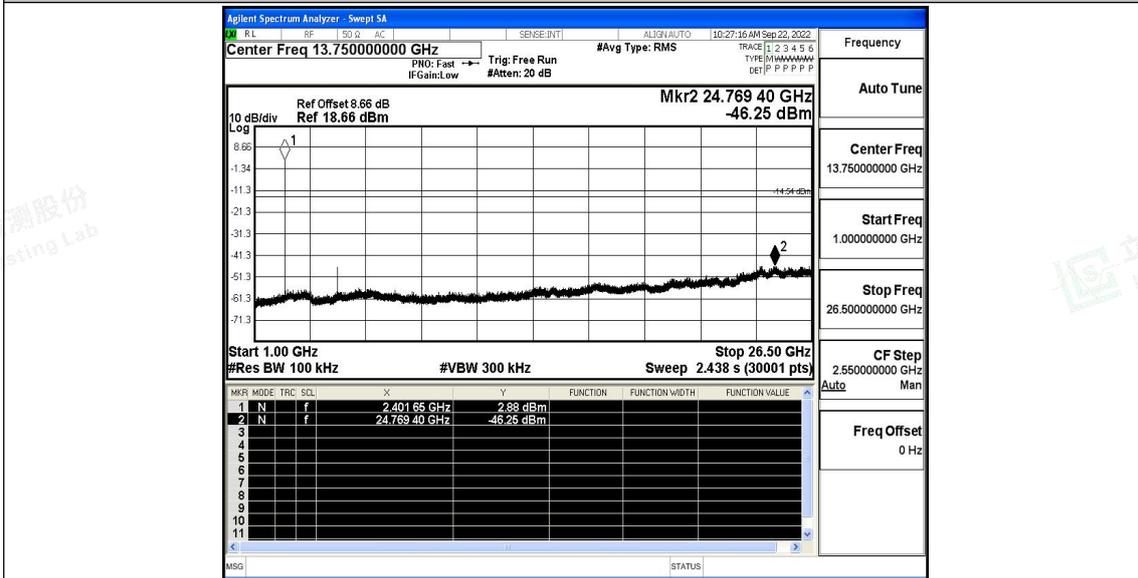
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BLE\_2M\_Ant1\_2402\_1000~26500



BLE\_2M\_Ant1\_2440\_0~Reference

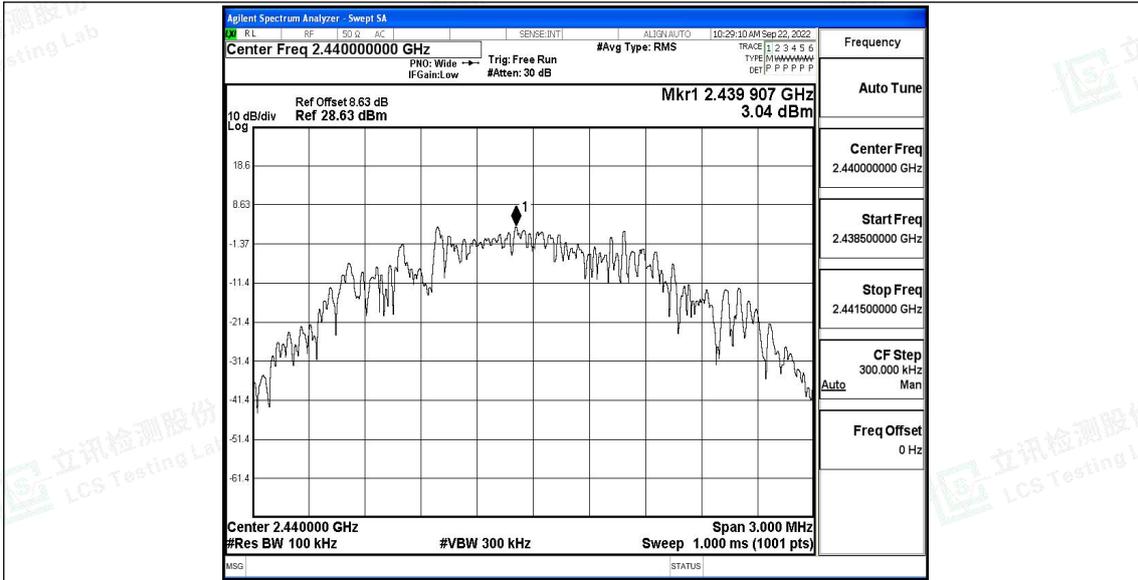


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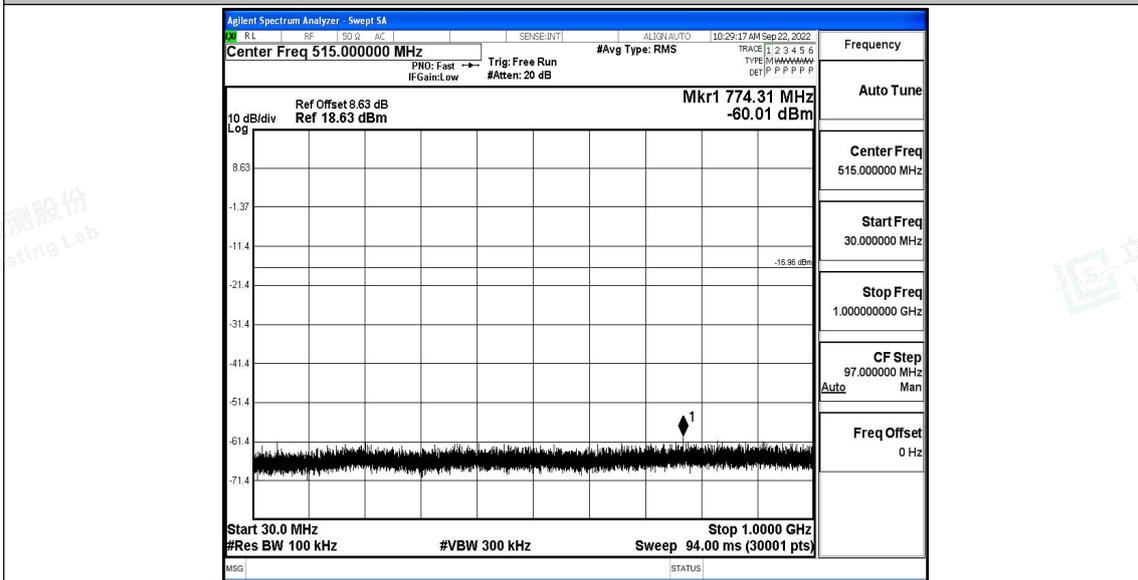
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BLE\_2M\_Ant1\_2440\_30~1000



BLE\_2M\_Ant1\_2440\_1000~26500

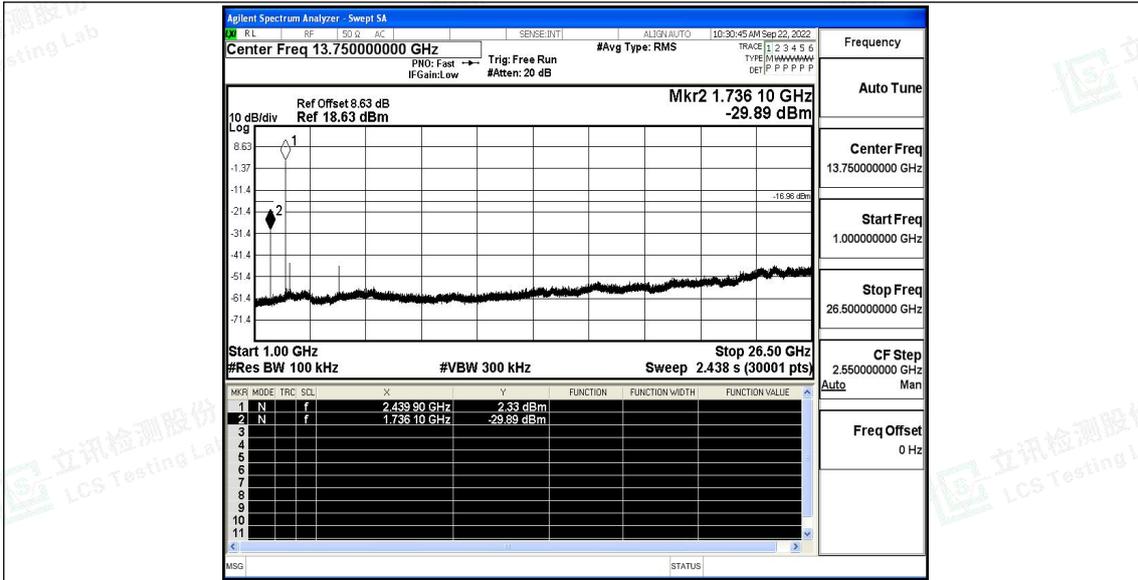


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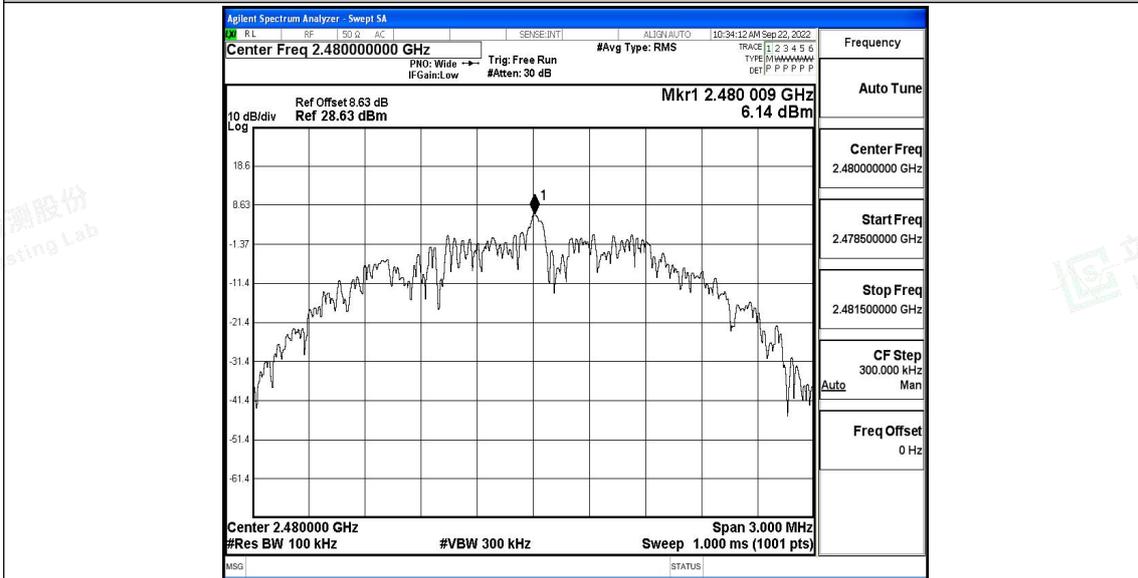
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BLE\_2M\_Ant1\_2480\_0~Reference



BLE\_2M\_Ant1\_2480\_30~100

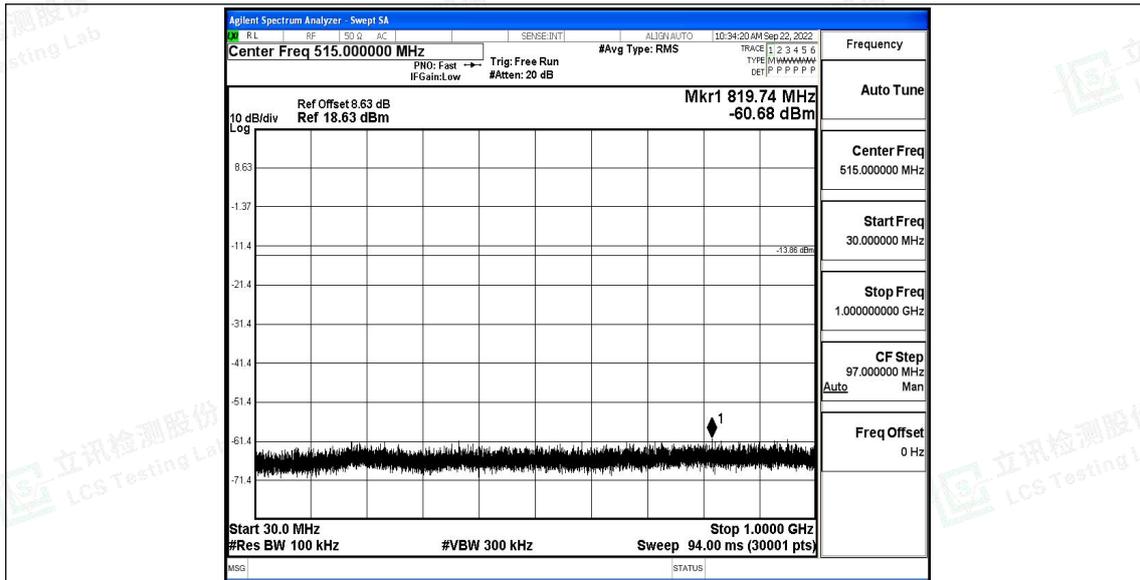


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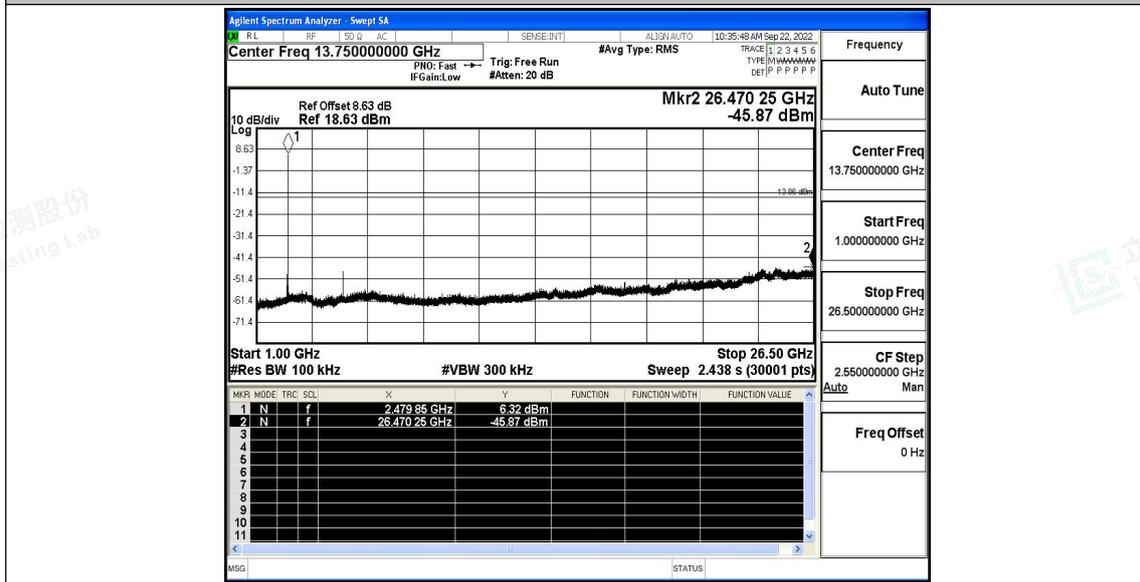
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### B.6 Duty Cycle

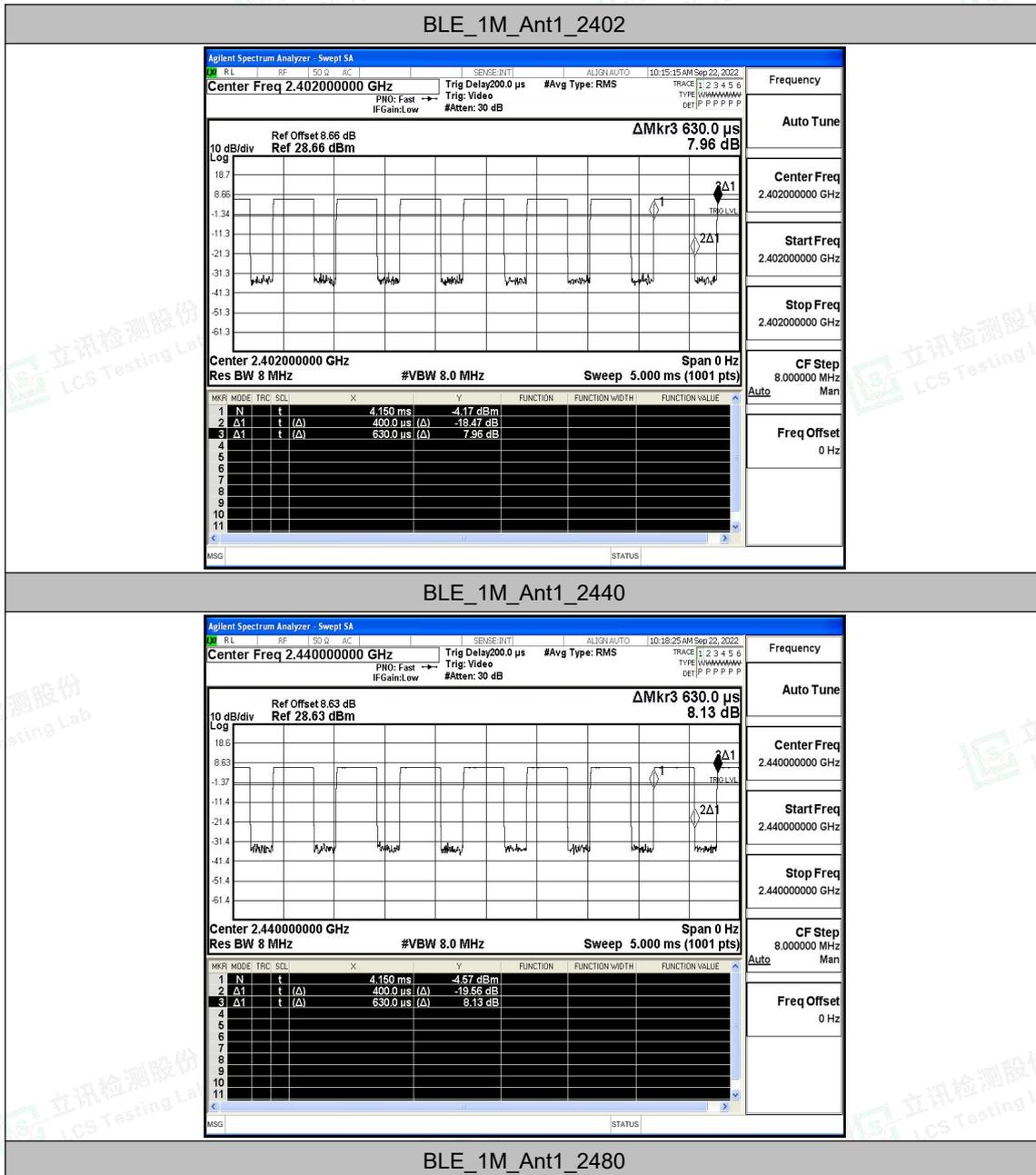
#### Test Result

TestMode	Antenna	Channel	ON Time [ms]	Period [ms]	X	DC [%]	xFactor	1/T	Limit	Verdict
BLE_1M	Ant1	2402	0.40	0.63	0.6349	63.49	1.97	2.50	---	PASS
		2440	0.40	0.63	0.6349	63.49	1.97	2.50	---	PASS
		2480	0.40	0.63	0.6349	63.49	1.97	2.50	---	PASS
BLE_2M	Ant1	2402	0.21	0.62	0.3387	33.87	4.70	4.76	---	PASS
		2440	0.21	0.62	0.3387	33.87	4.70	4.76	---	PASS
		2480	0.21	0.63	0.3333	33.33	4.77	4.76	---	PASS





### Test Graphs

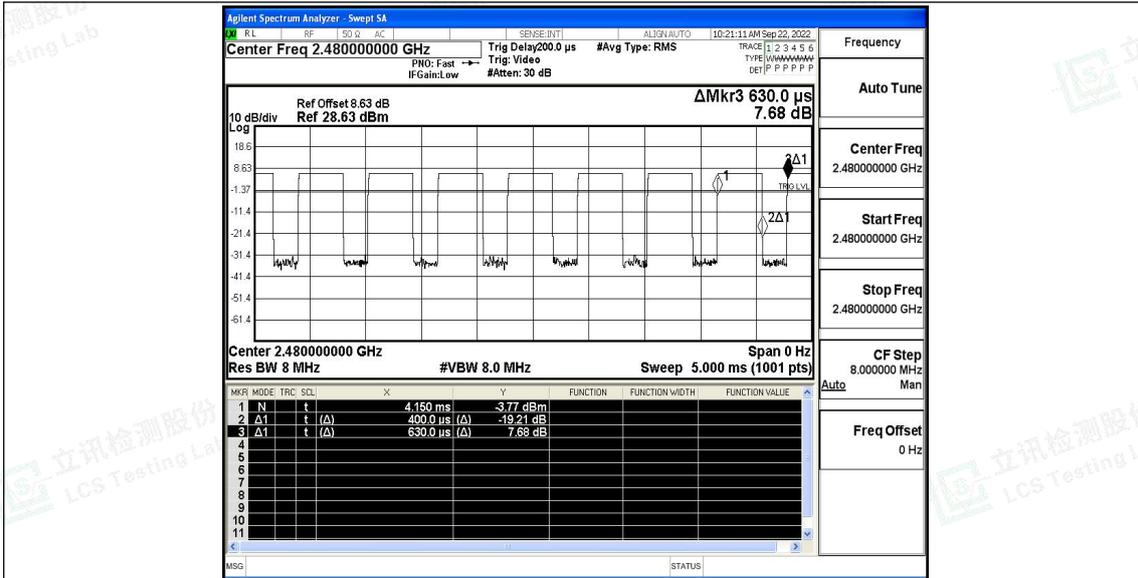


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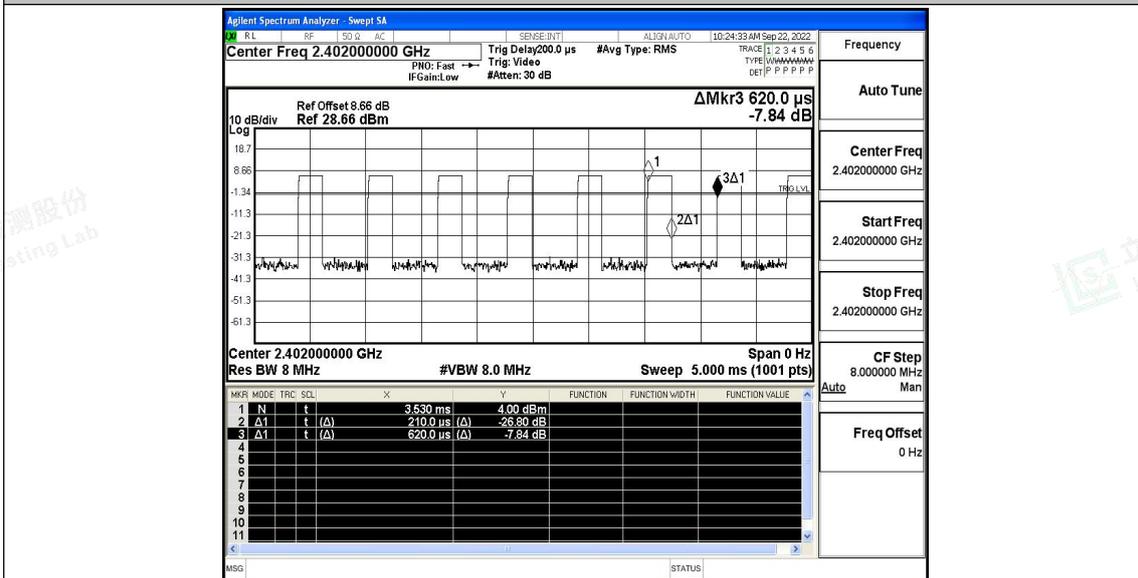
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BLE\_2M\_Ant1\_2402



BLE\_2M\_Ant1\_2440

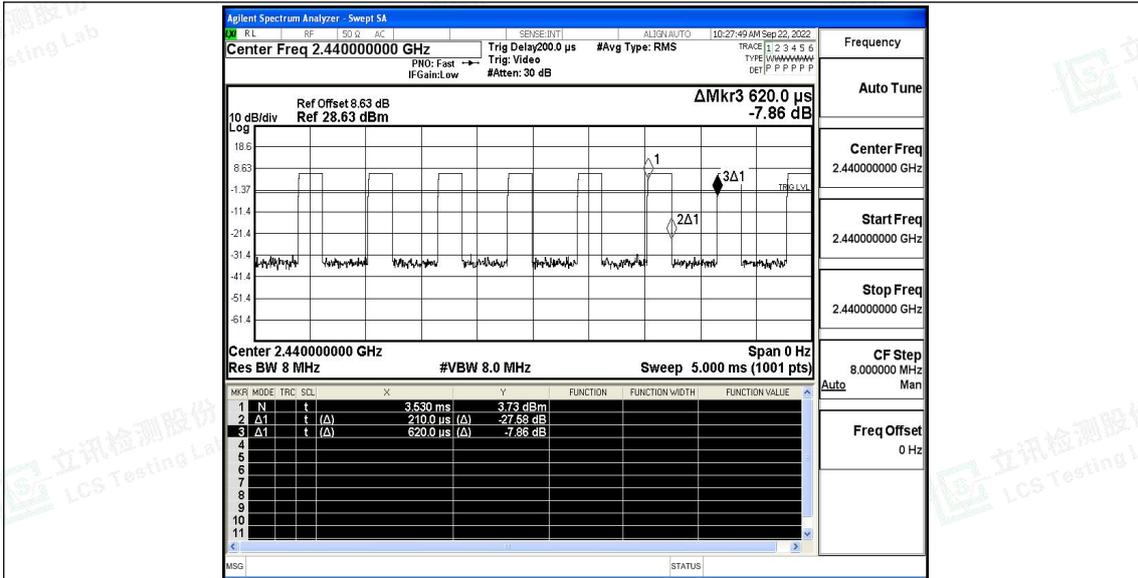


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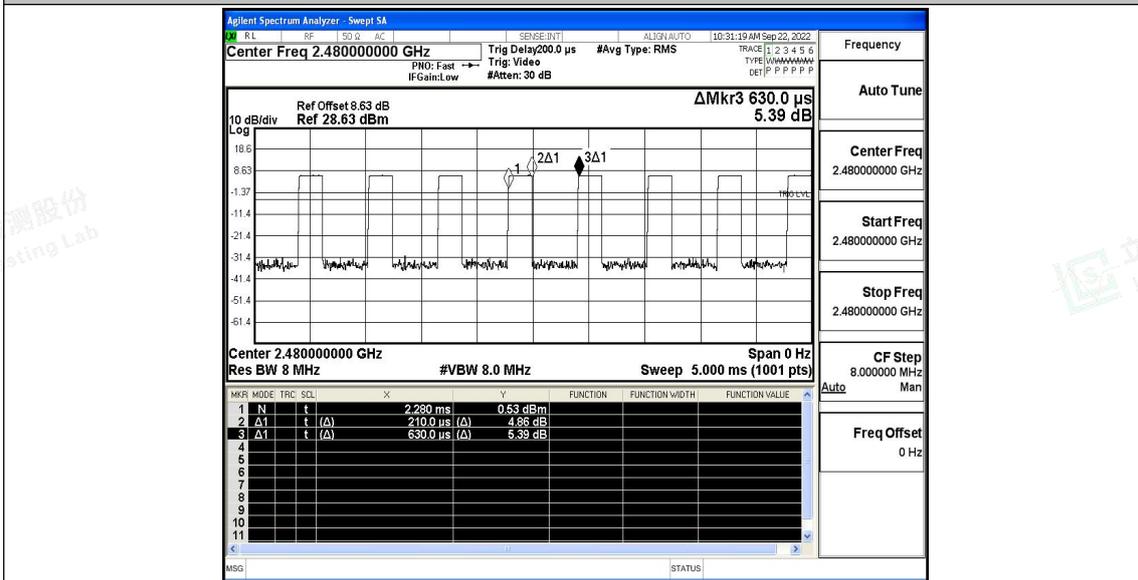
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BLE\_2M\_Ant1\_2480



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## 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	-57.11	≤-41.20	38.09	≤54	PASS
				AV	2389.250	-55.24	≤-41.20	39.96	≤54	PASS
				AV	2390.000	-55.75	≤-41.20	39.45	≤54	PASS
				Peak	2310.000	-50.89	≤-21.20	44.31	≤74	PASS
				Peak	2389.565	-46.27	≤-21.20	48.93	≤74	PASS
				Peak	2390.000	-49.55	≤-21.20	45.65	≤74	PASS
		High	2480	AV	2483.500	-47.9	≤-41.20	47.30	≤54	PASS
				AV	2483.520	-47.9	≤-41.20	47.30	≤54	PASS
				AV	2500.000	-55.79	≤-41.20	39.41	≤54	PASS
				Peak	2483.500	-46.2	≤-21.20	49.00	≤74	PASS
				Peak	2487.760	-43.16	≤-21.20	52.04	≤74	PASS
				Peak	2500.000	-48.63	≤-21.20	46.57	≤74	PASS
BLE_2M	Ant1	Low	2402	AV	2310.000	-56.59	≤-41.20	38.61	≤54	PASS
				AV	2370.770	-55.12	≤-41.20	40.08	≤54	PASS
				AV	2390.000	-55.23	≤-41.20	39.97	≤54	PASS
				Peak	2310.000	-50.76	≤-21.20	44.44	≤74	PASS
				Peak	2378.015	-46.28	≤-21.20	48.92	≤74	PASS
				Peak	2390.000	-50.07	≤-21.20	45.13	≤74	PASS
		High	2480	AV	2483.500	-41.69	≤-41.20	53.51	≤54	PASS
				AV	2483.520	-41.69	≤-41.20	53.51	≤54	PASS
				AV	2500.000	-55.64	≤-41.20	39.56	≤54	PASS
				Peak	2483.500	-35.26	≤-21.20	59.94	≤74	PASS
				Peak	2483.520	-35.26	≤-21.20	59.94	≤74	PASS
				Peak	2500.000	-48.94	≤-21.20	46.26	≤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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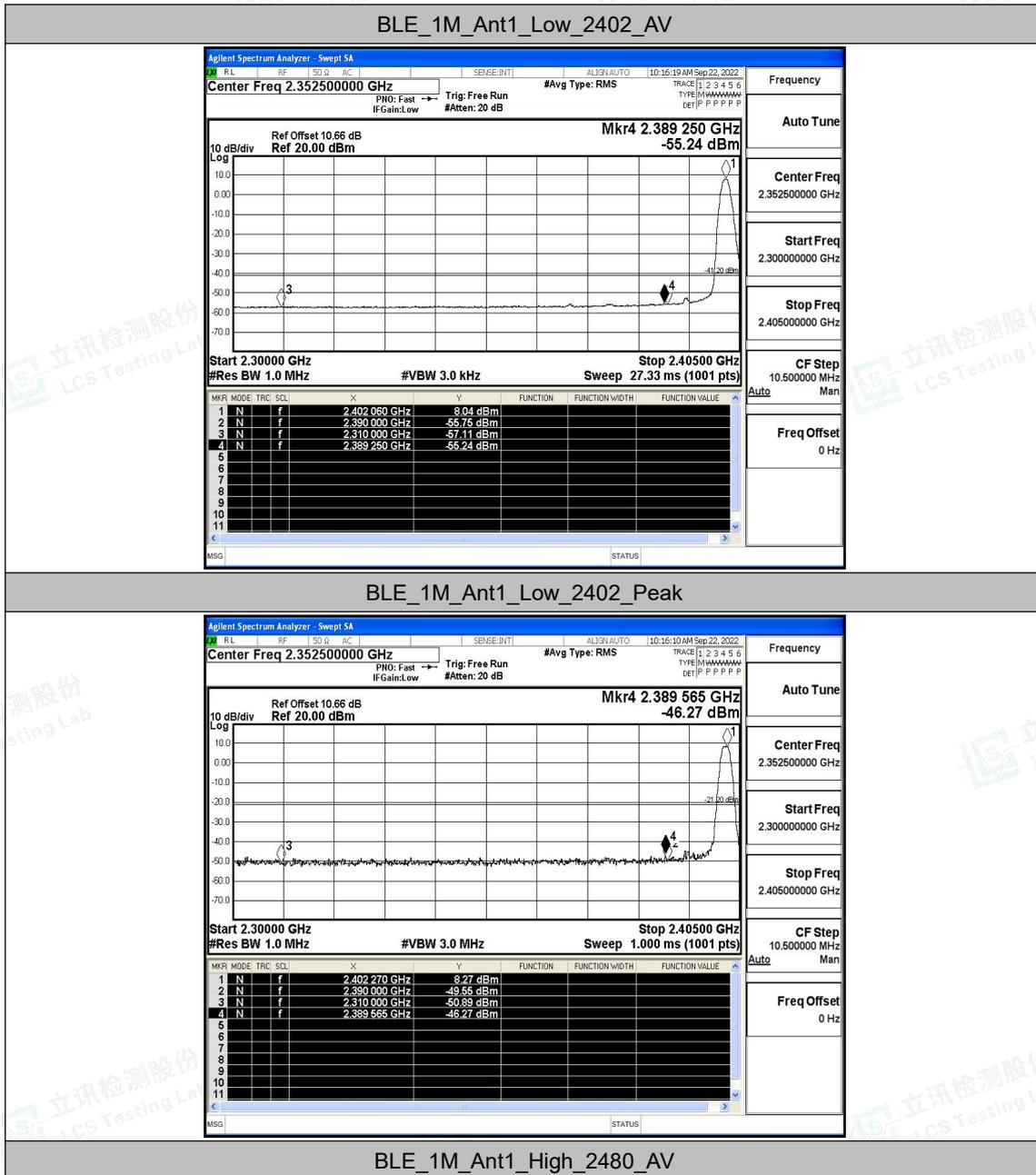
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### Test Graphs

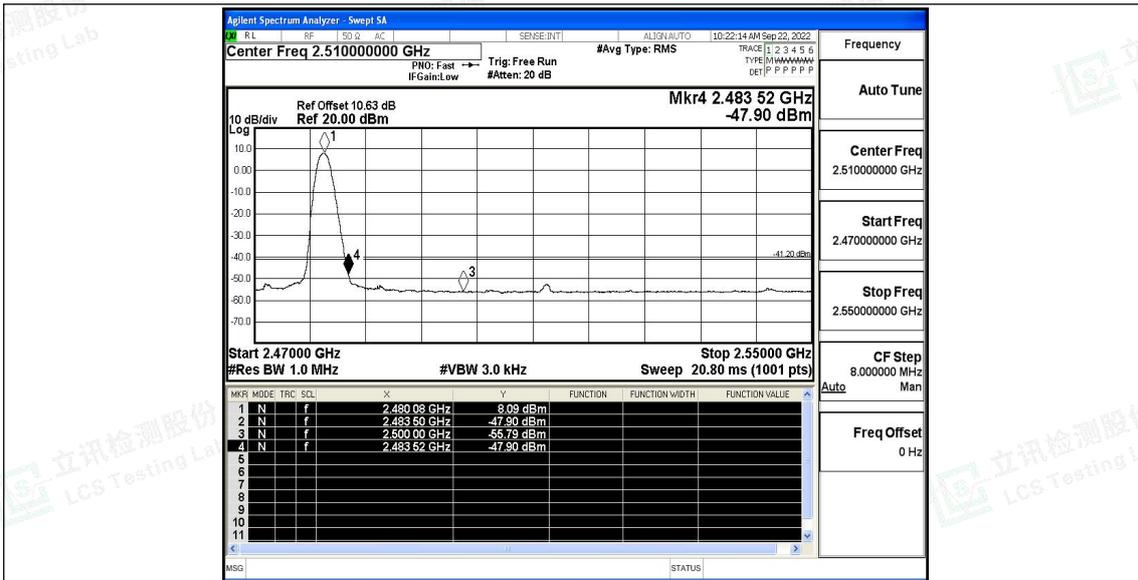


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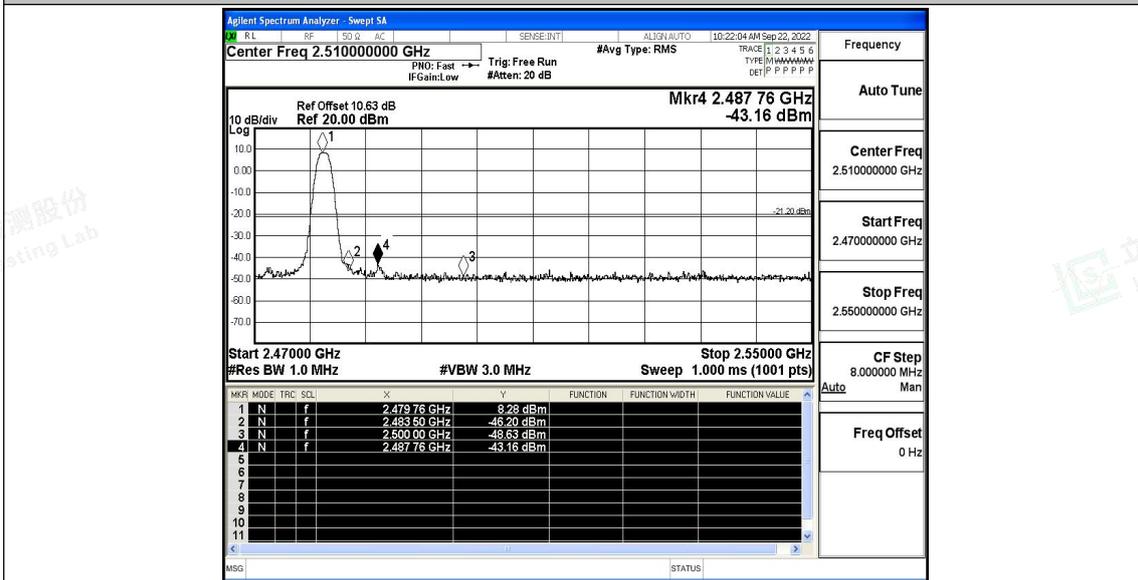
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BLE\_1M\_Ant1\_High\_2480\_Peak



BLE\_2M\_Ant1\_Low\_2402\_AV

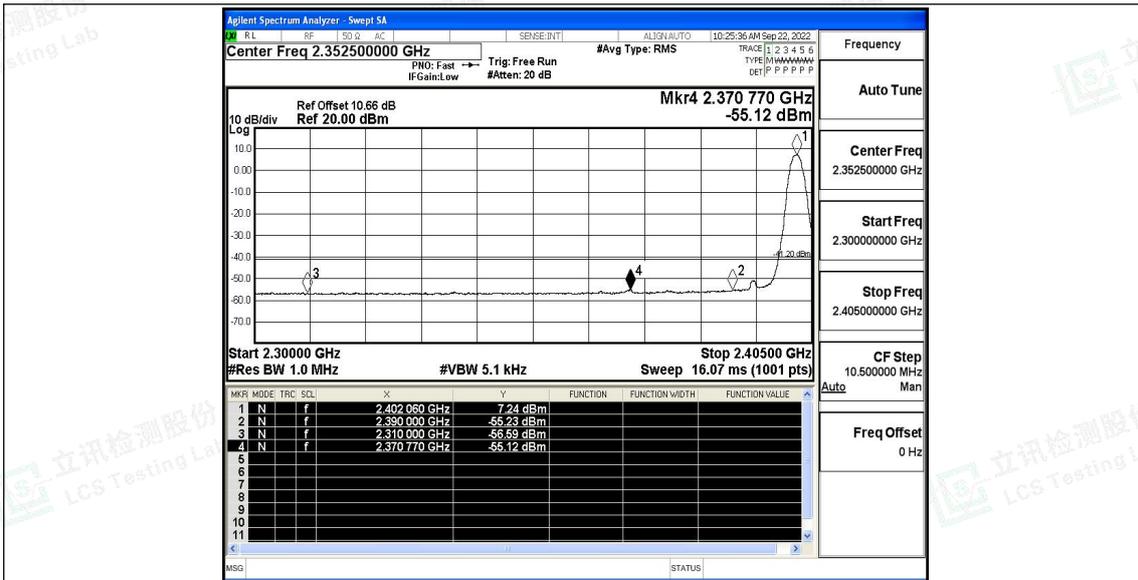


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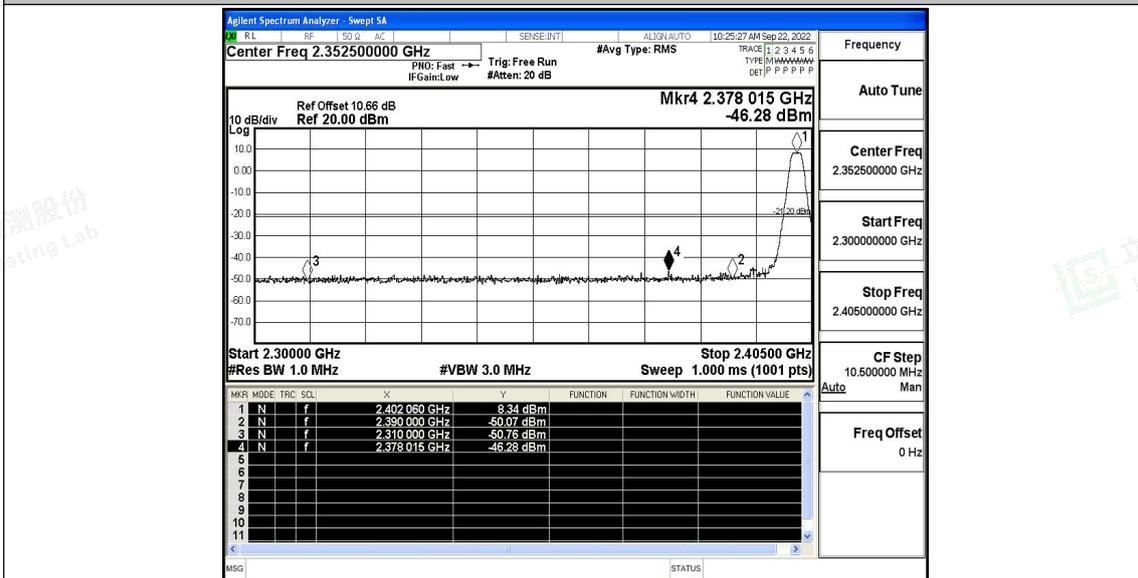
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BLE\_2M\_Ant1\_Low\_2402\_Peak



BLE\_2M\_Ant1\_High\_2480\_AV

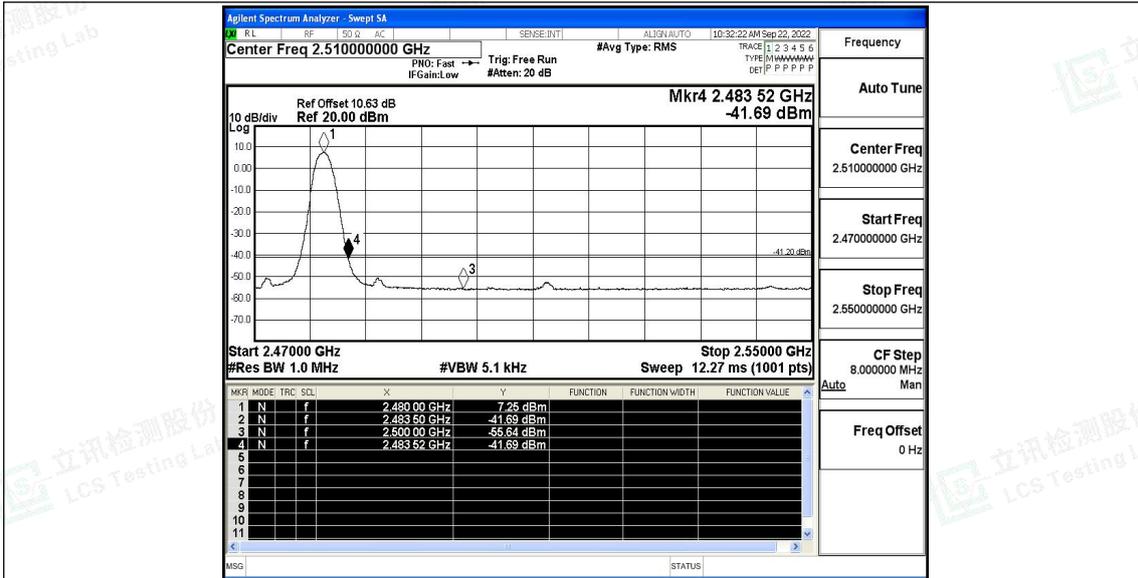


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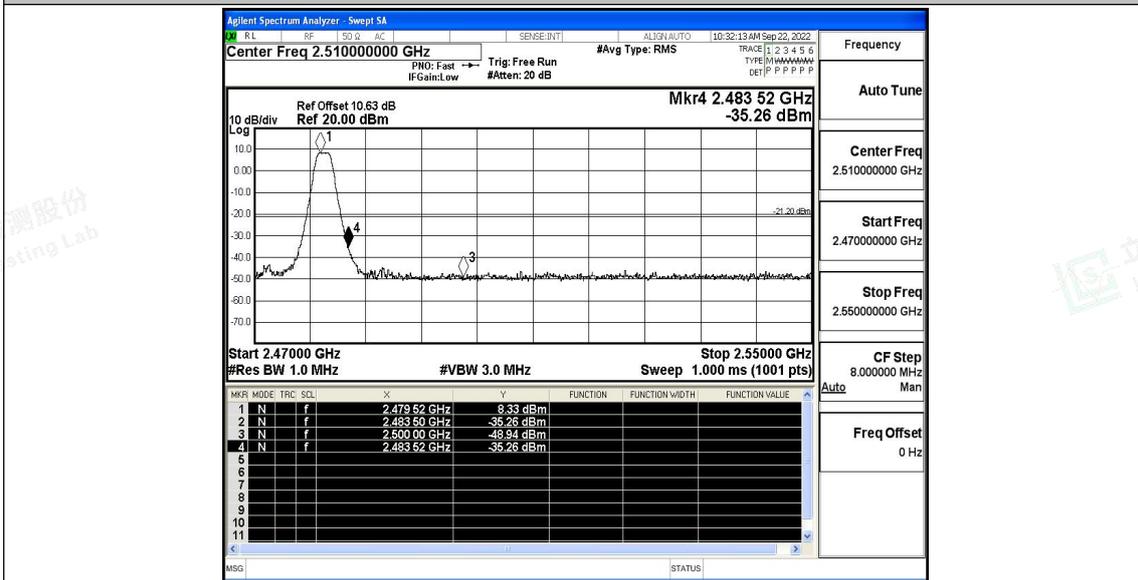
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BLE\_2M\_Ant1\_High\_2480\_Peak



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