



Appendix A

RF Test Data for BT LE (Conducted Measurement)

Product Name: Asset Tracking Tag

Test Model: VLVBA2R

Environmental Conditions

Temperature:	23.8° C
Relative Humidity:	54.2%
ATM Pressure:	100.0 kPa
Test Engineer:	Jerry Chu
Supervised by:	Jay Luo





A.1 DTS Bandwidth

Test Result

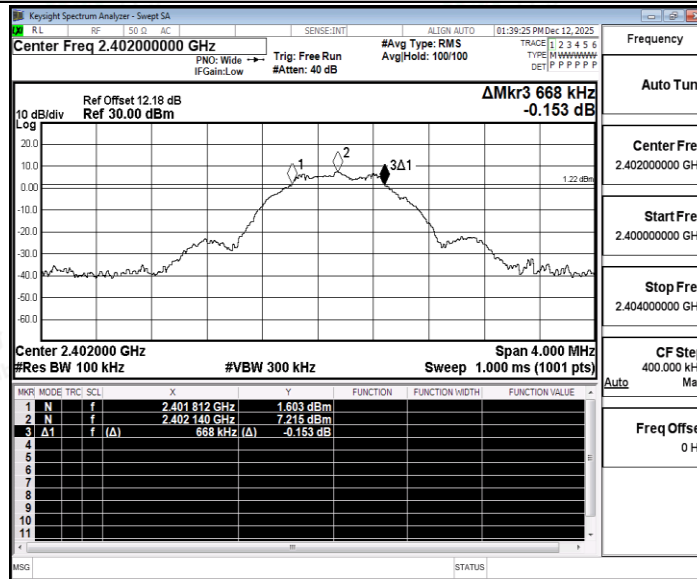
TestMode	Antenna	Freq(MHz)	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.668	2401.812	2402.480	0.5	PASS
		2440	0.668	2439.816	2440.484	0.5	PASS
		2480	0.688	2479.804	2480.492	0.5	PASS



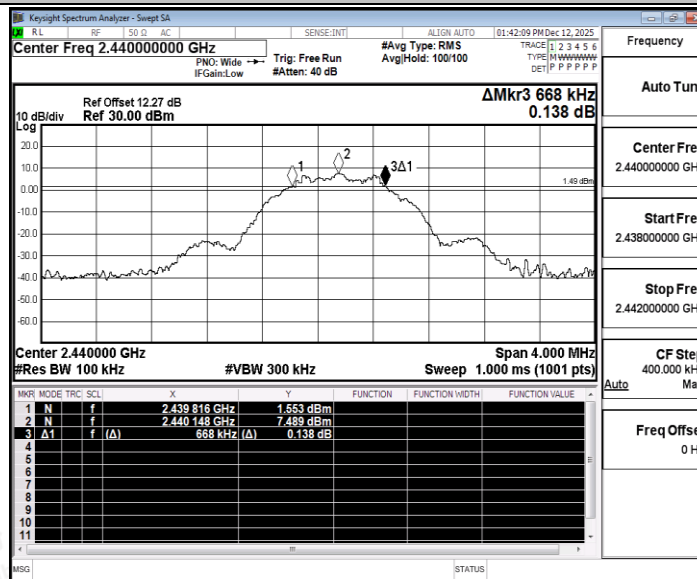


Test Graphs

BLE_1M_Ant1_2402



BLE_1M_Ant1_2440



BLE_1M_Ant1_2480

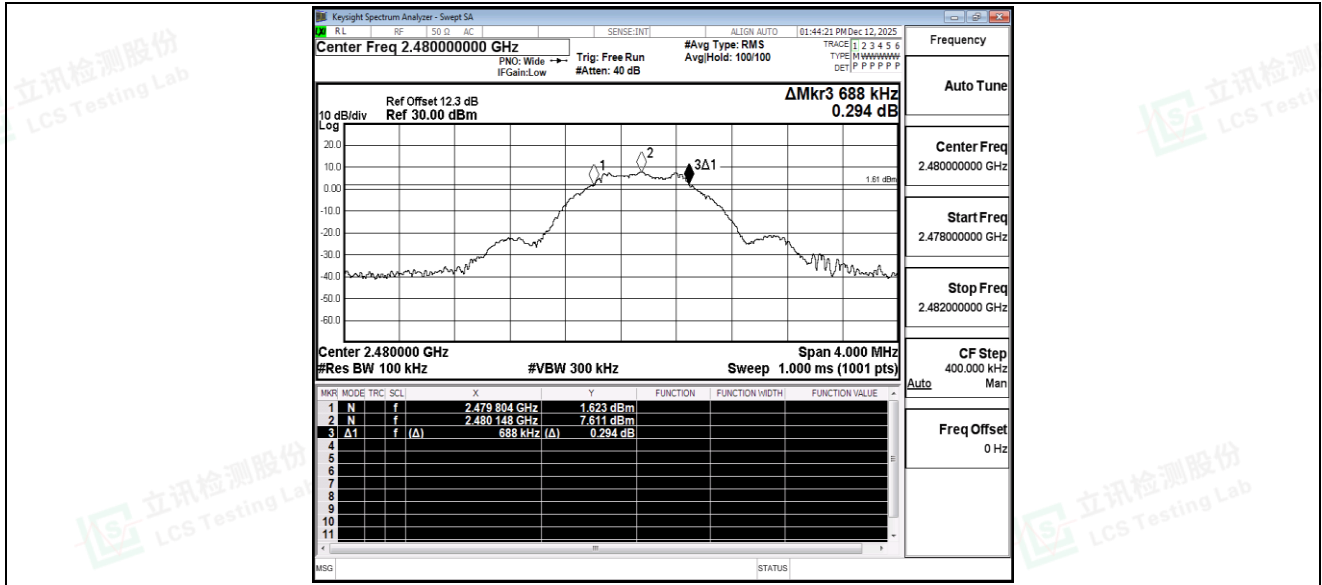


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A.2 Maximum Peak Conducted Output Power

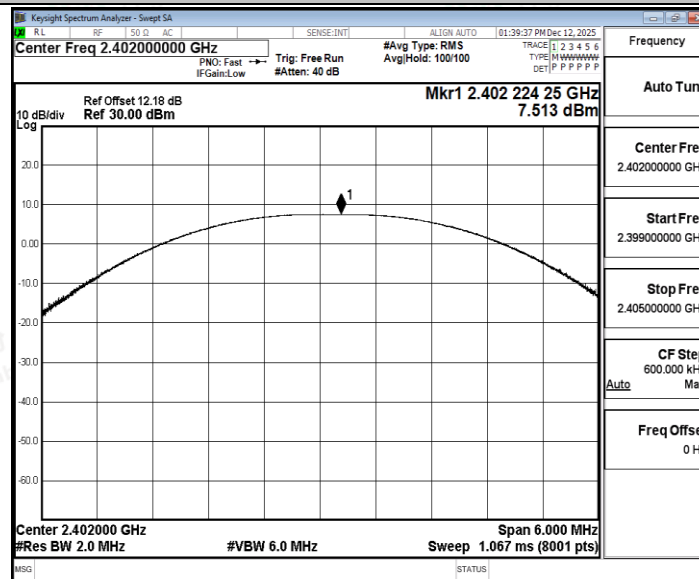
Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	BLE 1M	2402	Ant1	7.51	30	Pass
NVNT	BLE 1M	2440	Ant1	7.78	30	Pass
NVNT	BLE 1M	2480	Ant1	8.40	30	Pass



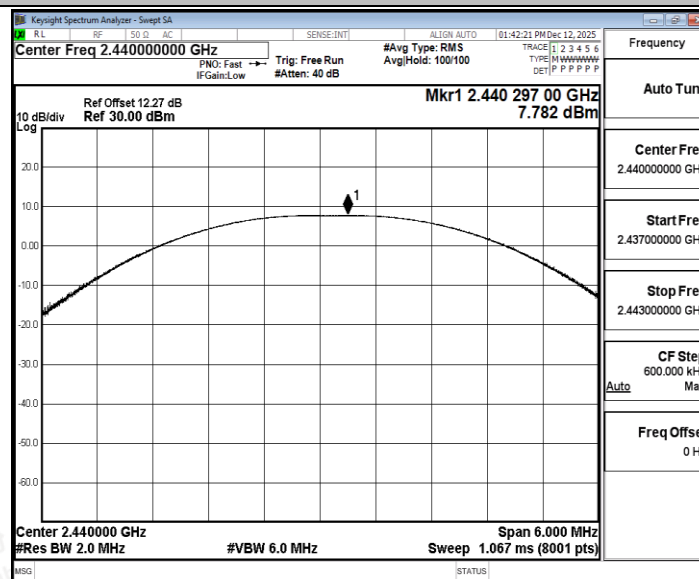


Test Graphs Peak

BLE_1M_Ant1_2402



BLE_1M_Ant1_2440



BLE_1M_Ant1_2480

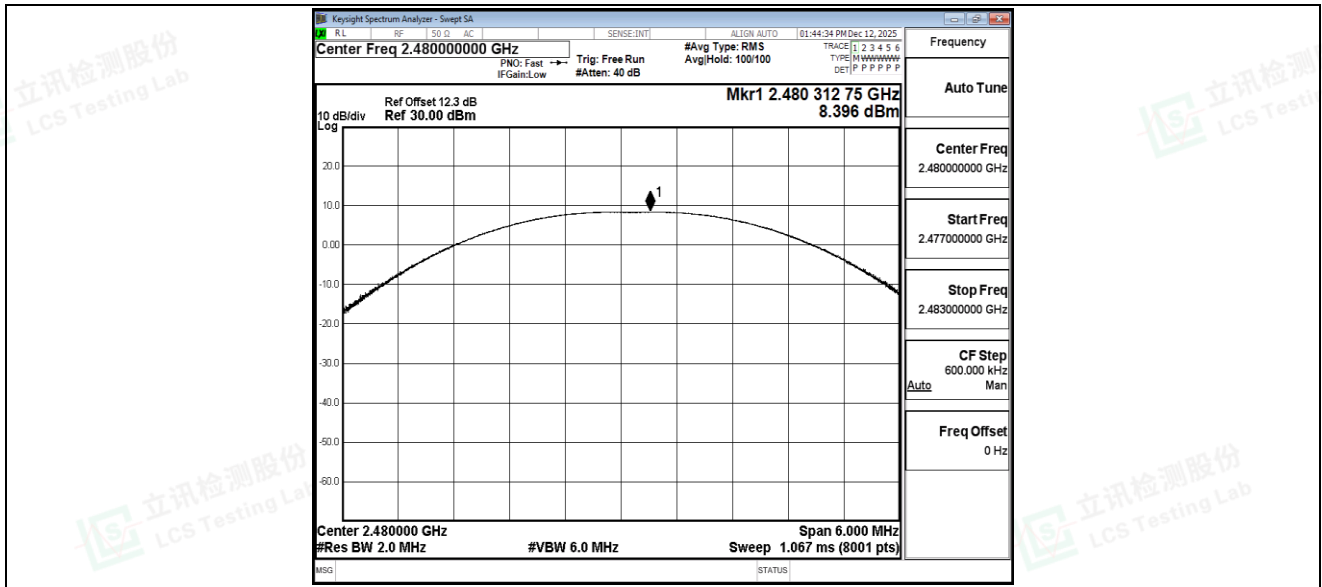


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A.3 Maximum Power Spectral Density Level

Test Result

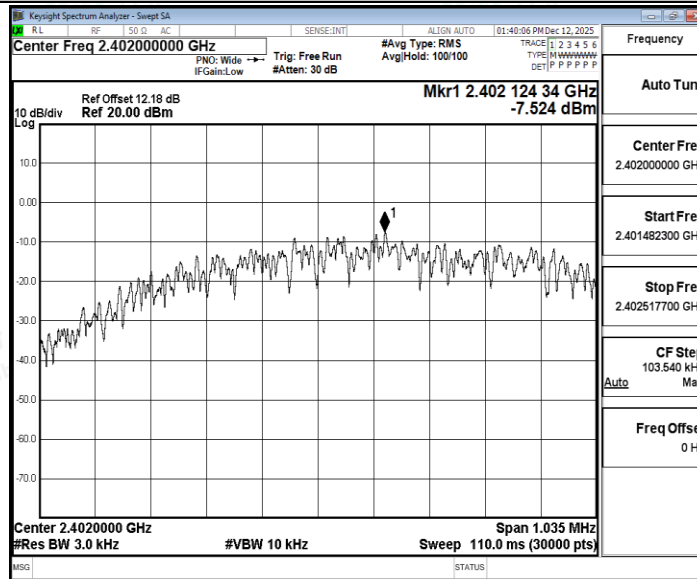
TestMode	Antenna	Freq(MHz)	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-7.52	≤8.00	PASS
		2440	-7.67	≤8.00	PASS
		2480	-7.16	≤8.00	PASS



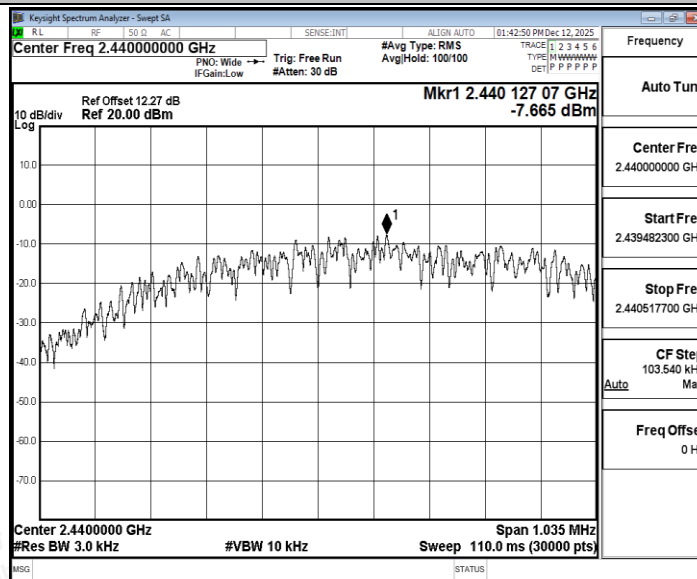


Test Graphs

BLE_1M_Ant1_2402



BLE_1M_Ant1_2440



BLE_1M_Ant1_2480

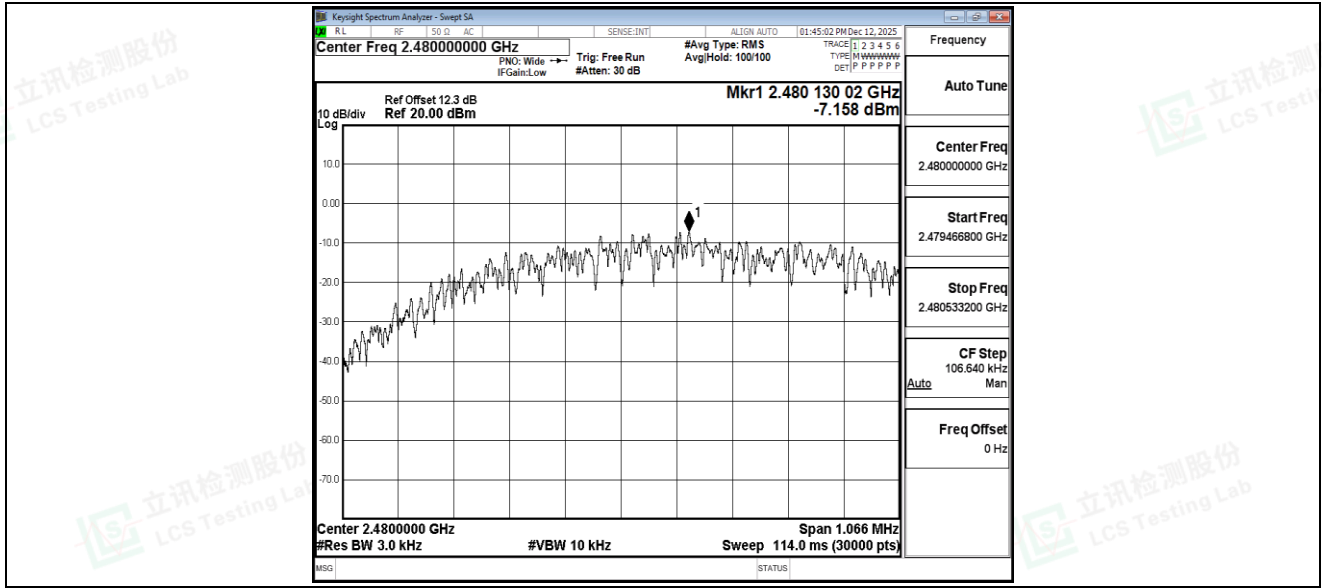


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A.4 Band Edge

Test Result

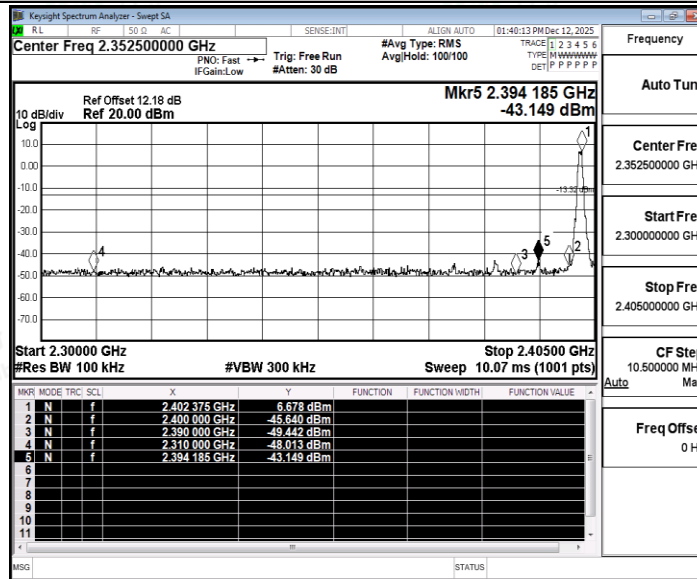
TestMode	Antenna	ChName	Freq(MHz)	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	6.68	-43.15	≤-13.32	PASS
		High	2480	7.28	-42.68	≤-12.72	PASS



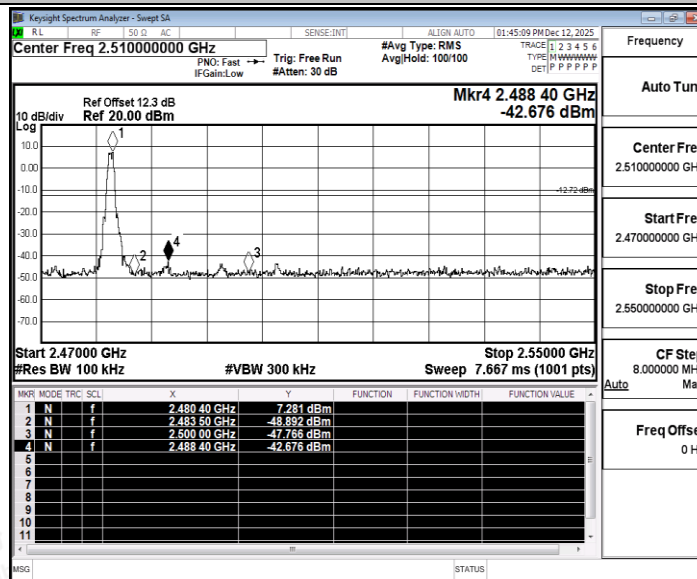


Test Graphs

BLE_1M_Ant1_Low_2402



BLE_1M_Ant1_High_2480



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A.5 Conducted RF Spurious Emission

Test Result

TestMode	Antenna	Freq(MHz)	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	Reference	7.34	7.34	---	PASS
			30~1000	7.34	-68.71	≤-12.66	PASS
			1000~26500	7.34	-29.92	≤-12.66	PASS
		2440	Reference	7.19	7.19	---	PASS
			30~1000	7.19	-69.16	≤-12.81	PASS
			1000~26500	7.19	-31.46	≤-12.81	PASS
		2480	Reference	6.11	6.11	---	PASS
			30~1000	6.11	-69.07	≤-13.89	PASS
			1000~26500	6.11	-33.2	≤-13.89	PASS



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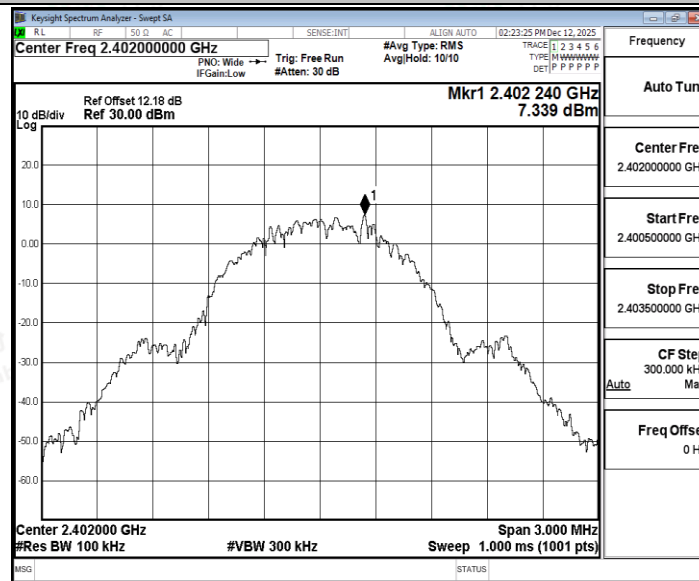
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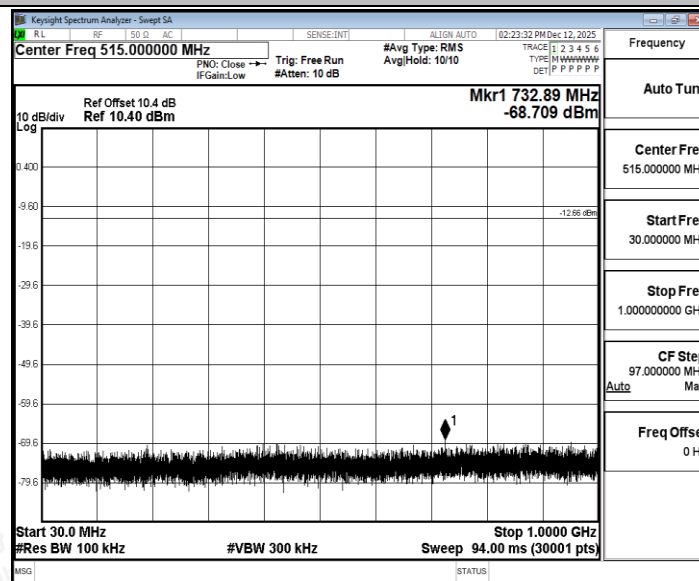


Test Graphs

BLE_1M_Ant1_2402_0~Reference



BLE_1M_Ant1_2402_30~1000



BLE_1M_Ant1_2402_1000~26500

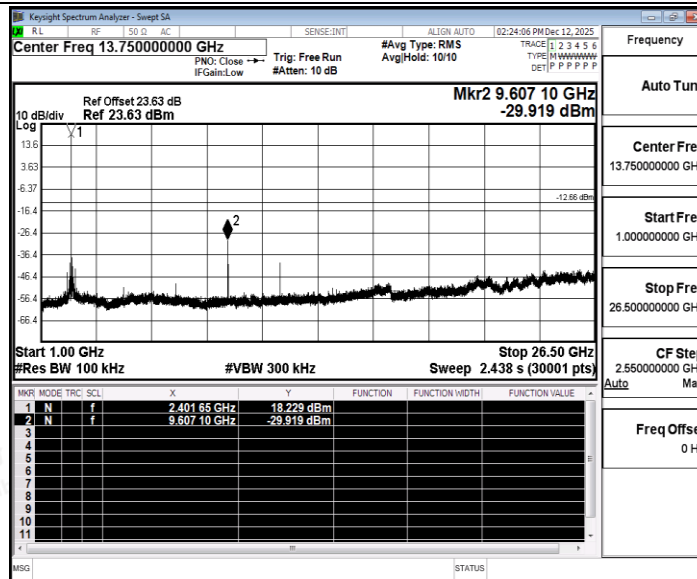


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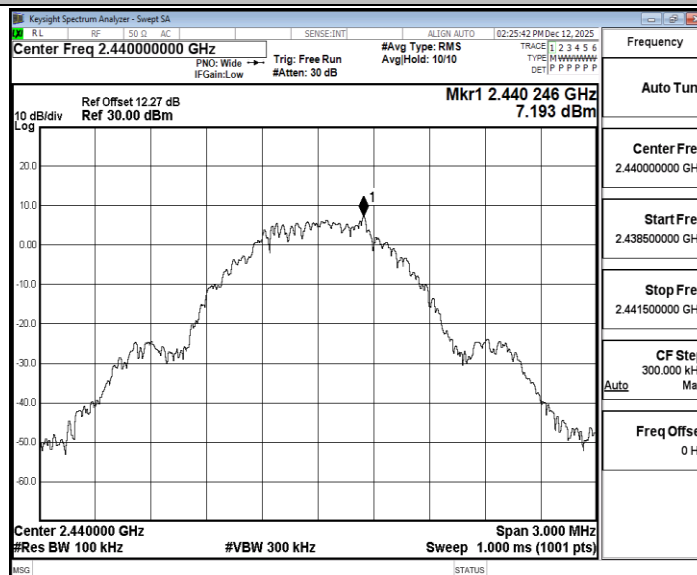
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BLE_1M_Ant1_2440_0~Reference



BLE_1M_Ant1_2440_30~1000

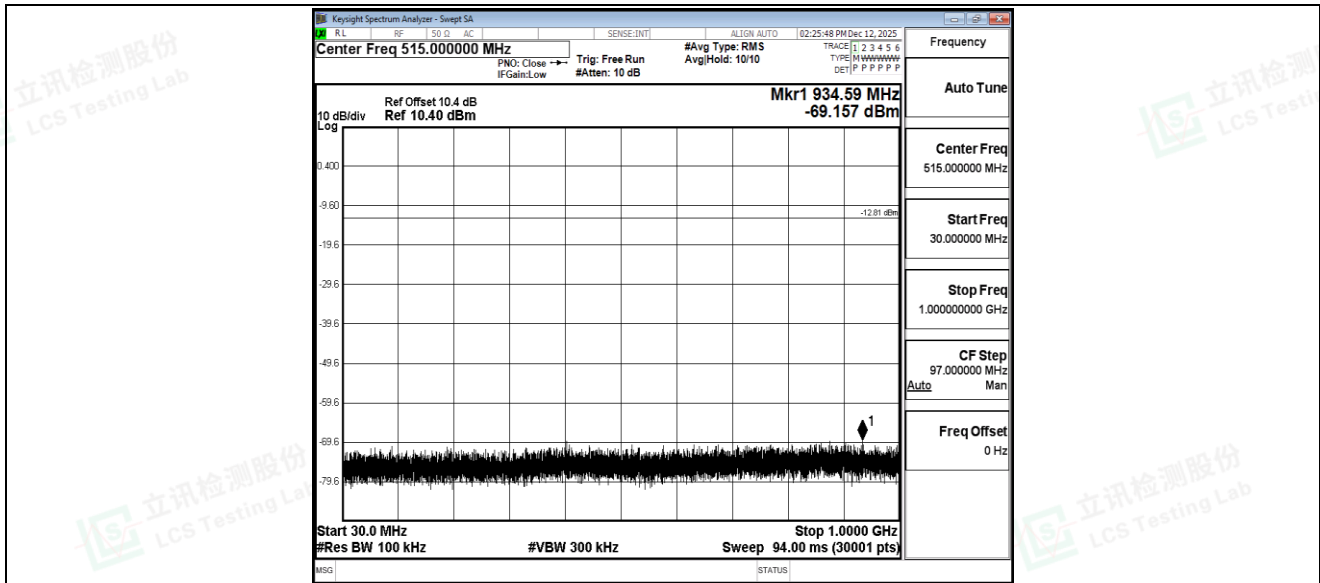


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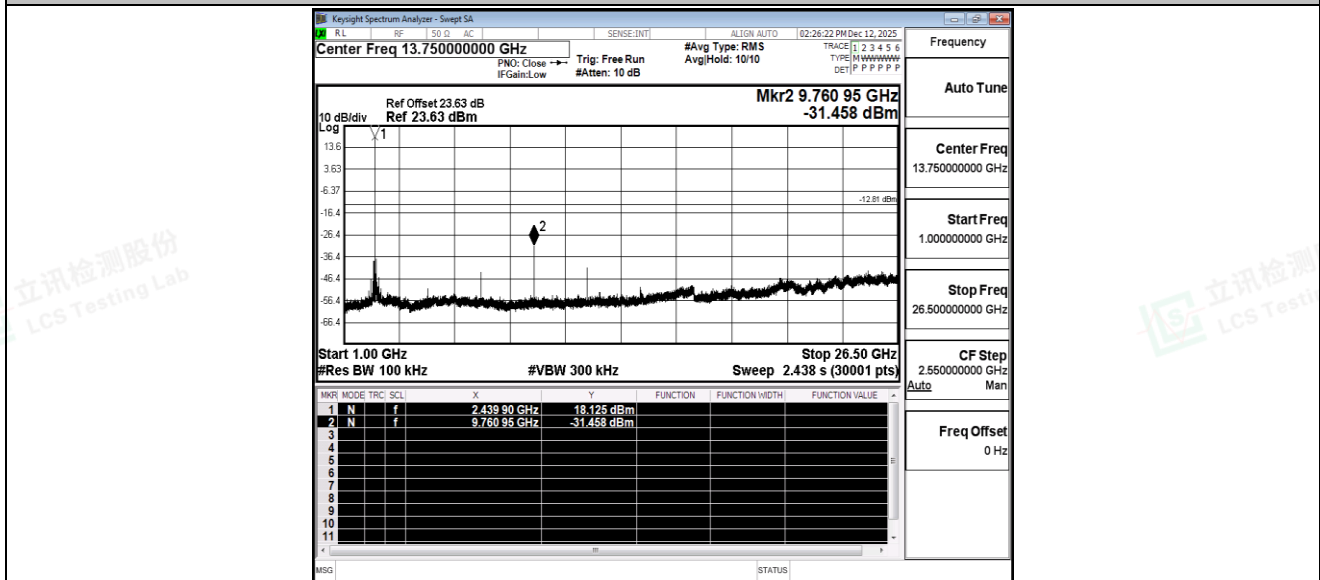
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BLE_1M_Ant1_2440_1000~26500



BLE_1M_Ant1_2480_0~Reference

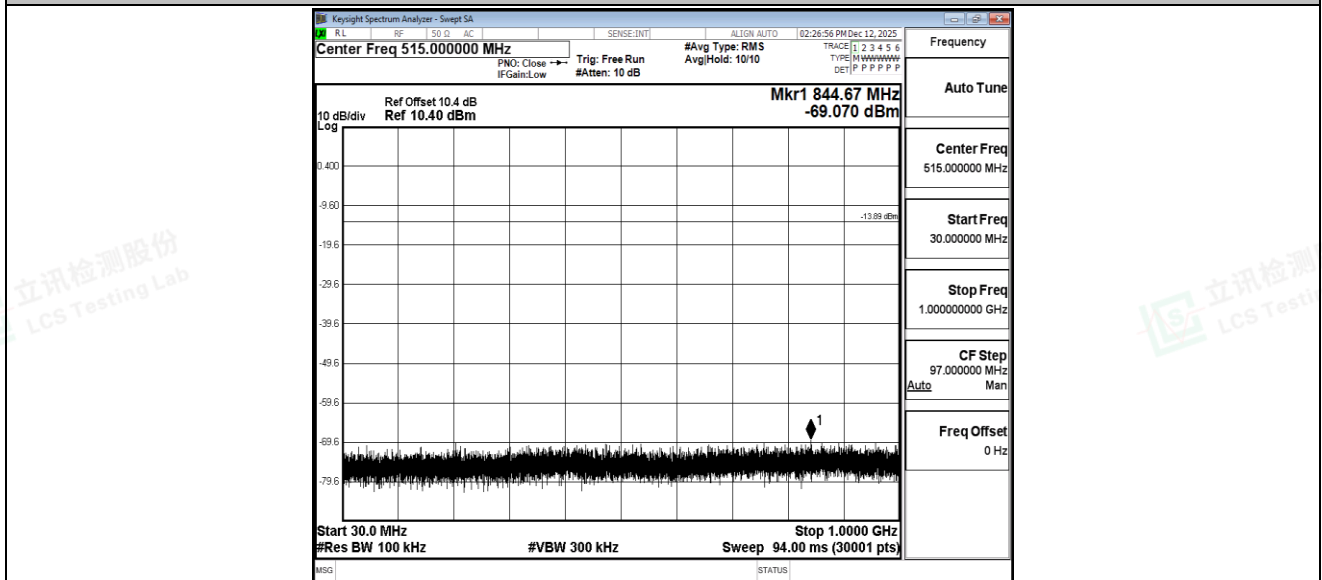
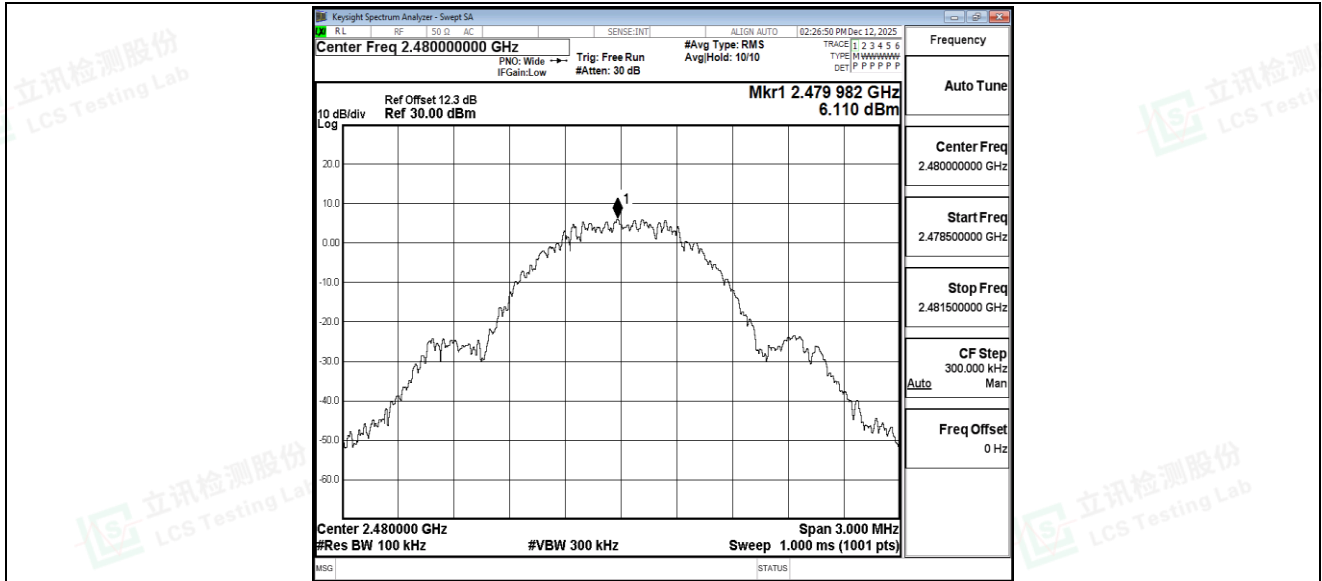


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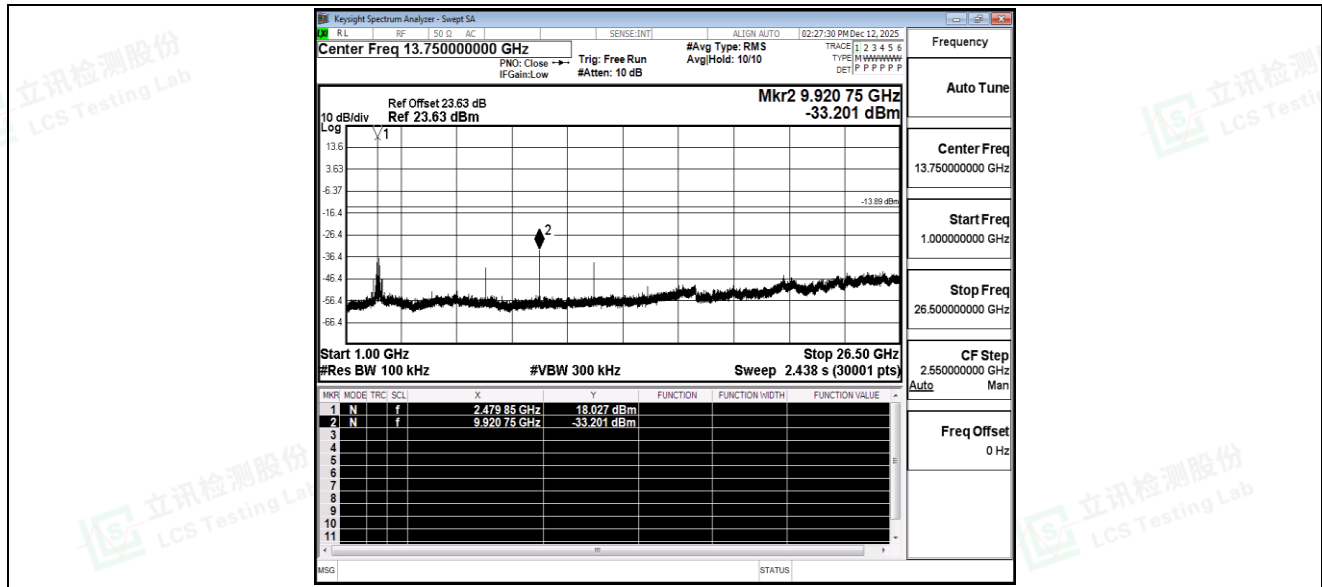


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A.6 Duty Cycle

Test Result

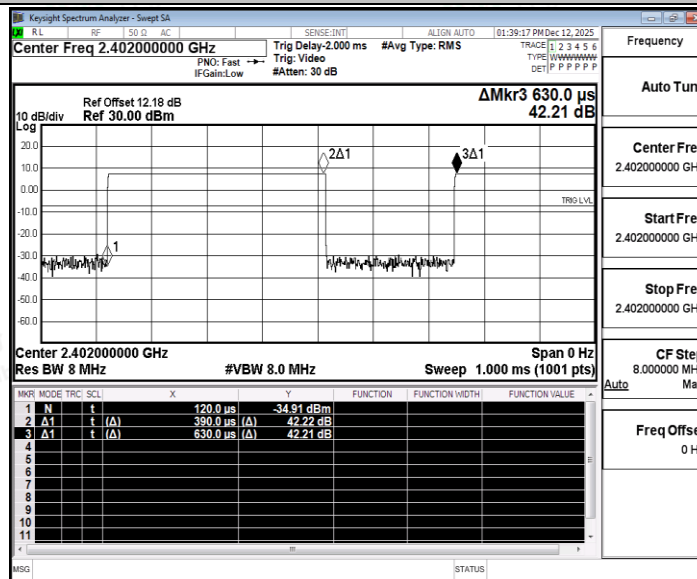
TestMode	Antenna	Freq(MHz)	ON Time [ms]	Period [ms]	X	DC [%]	xFactor	Limit	Verdict
BLE_1M	Ant1	2402	0.39	0.63	0.6190	61.90	2.08	---	---
		2440	0.40	0.63	0.6349	63.49	1.97	---	---
		2480	0.40	0.63	0.6349	63.49	1.97	---	---



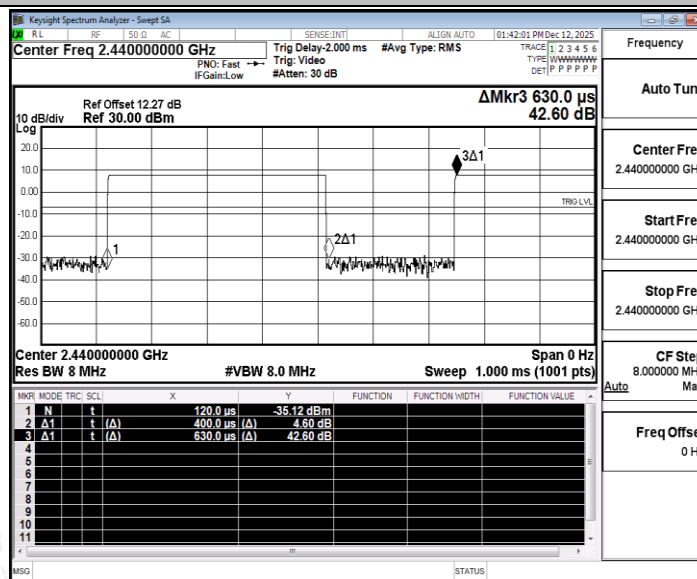


Test Graphs

BLE_1M_Ant1_2402



BLE_1M_Ant1_2440



BLE_1M_Ant1_2480

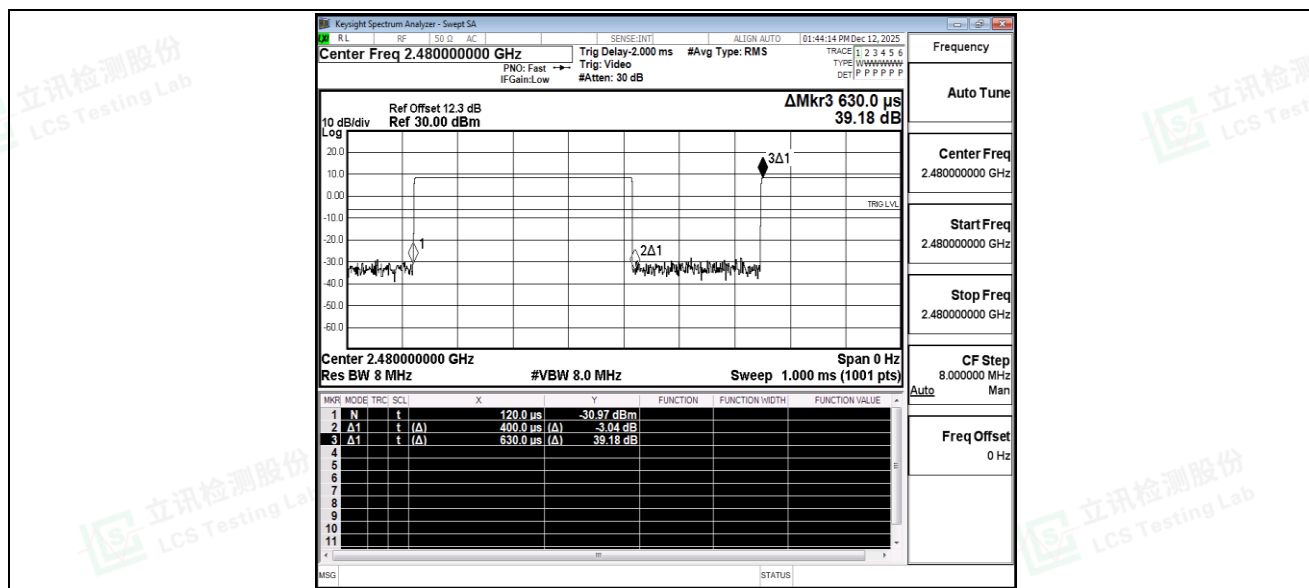


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A.7 Restrict Band

Test Result

TestMode	Antenna	ChName	Freq(MHz)	Detector	Freq [MHz]	Result [dBm]	Gain [dBi]	DC Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Verdict
BLE_1M	Ant1	Low	2402	AV	2310.000	-56.75	2.3	2.08	42.89	≤54	PASS
				AV	2386.205	-48.59	2.3	2.08	51.05	≤54	PASS
				AV	2390.000	-56.99	2.3	2.08	42.65	≤54	PASS
				Peak	2310.000	-49.27	2.3	0.00	48.29	≤74	PASS
				Peak	2386.205	-39.41	2.3	0.00	58.15	≤74	PASS
				Peak	2390.000	-43.62	2.3	0.00	53.94	≤74	PASS
		High	2480	AV	2483.500	-52.81	2.3	1.97	46.72	≤54	PASS
				AV	2496.160	-47.96	2.3	1.97	51.57	≤54	PASS
				AV	2500.000	-55.72	2.3	1.97	43.81	≤54	PASS
				Peak	2483.500	-43.66	2.3	0.00	53.90	≤74	PASS
				Peak	2483.680	-34.71	2.3	0.00	62.85	≤74	PASS
				Peak	2500.000	-45.19	2.3	0.00	52.37	≤74	PASS

Note:

1. 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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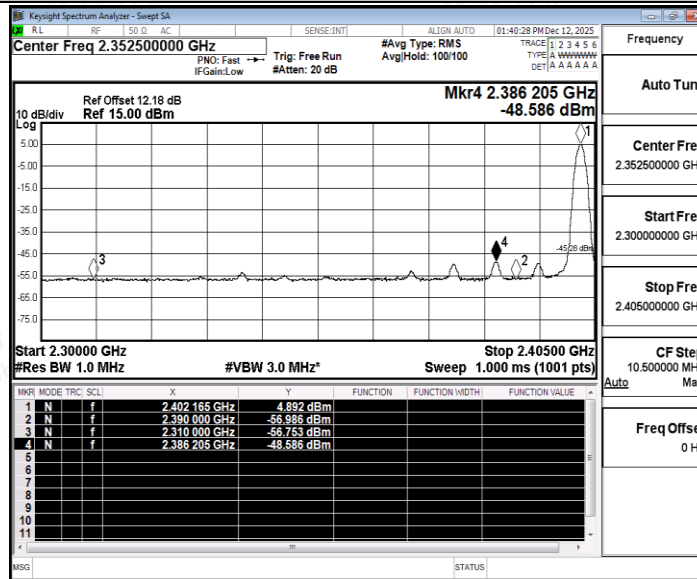
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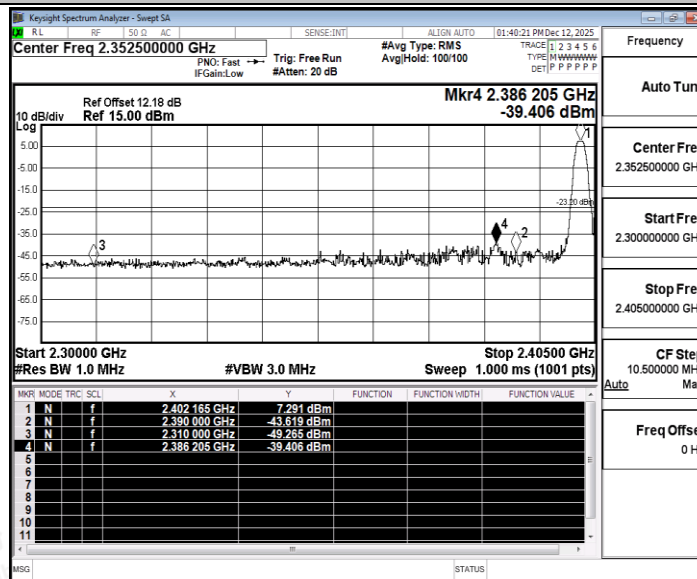


Test Graphs

BLE_1M_Ant1_Low_2402_AV



BLE_1M_Ant1_Low_2402_Peak



BLE_1M_Ant1_High_2480_AV

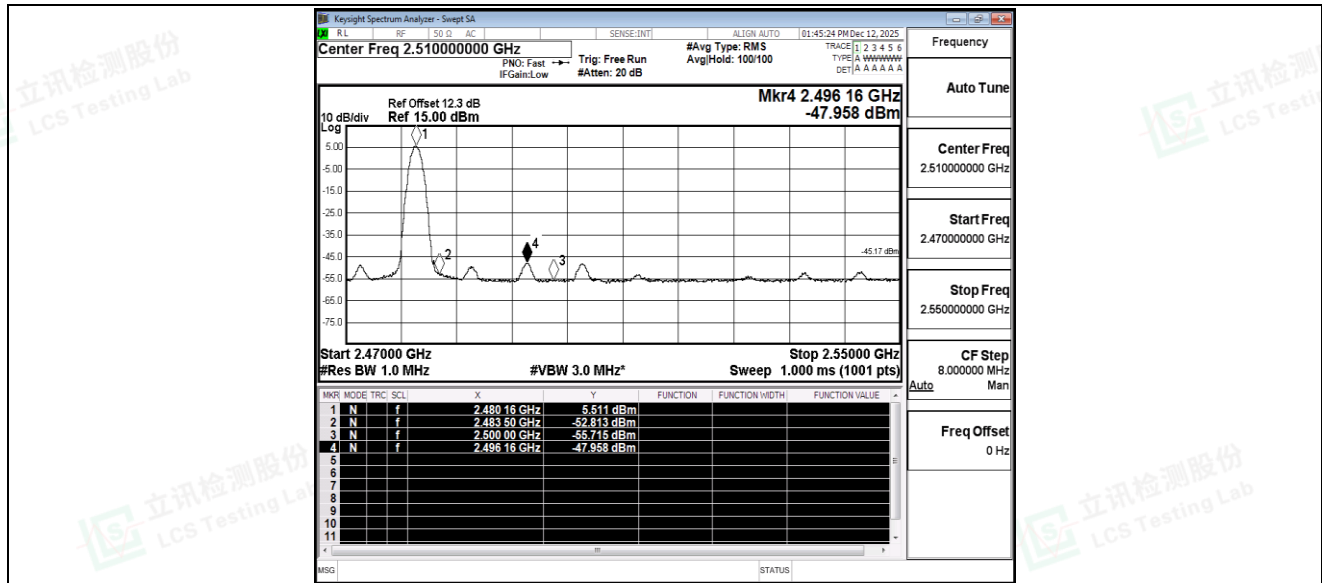


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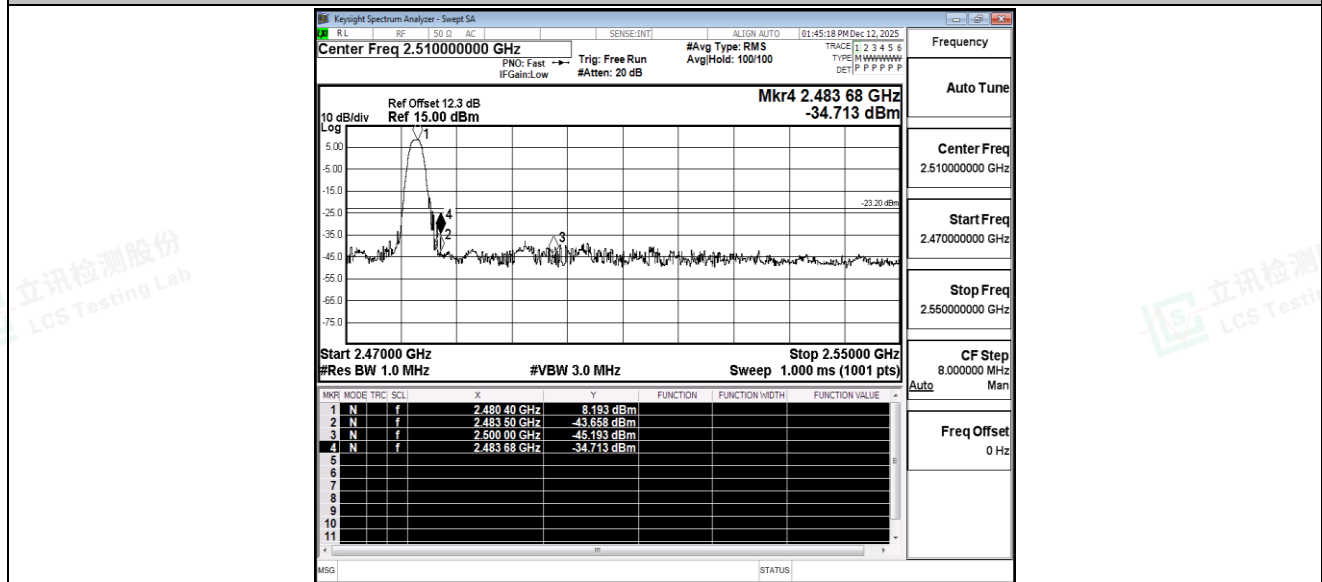
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BLE_1M_Ant1_High_2480_Peak



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