



Appendix A

RF Test Data for BLE (Conducted Measurement)

Product Name: Oumua

Test Model: Oumua Pro

Environmental Conditions

Temperature:	23.5 ° C
Relative Humidity:	52.2%
ATM Pressure:	100.0 kPa
Test Engineer:	Nick Peng
Supervised by:	Li Huan



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A.1 DTS Bandwidth

Test Result

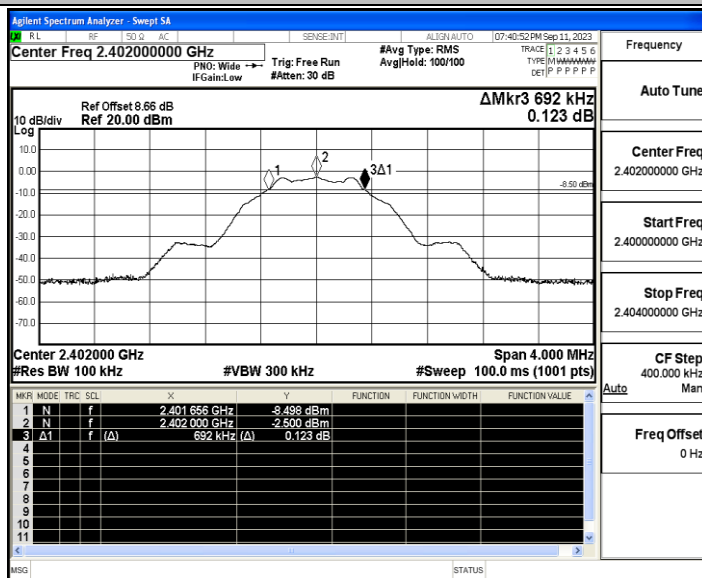
TestMode	Antenna	Frequency (MHz)	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE	Ant	2402	0.692	2401.656	2402.348	0.5	PASS
		2440	0.688	2439.660	2440.348	0.5	PASS
		2480	0.684	2479.660	2480.344	0.5	PASS



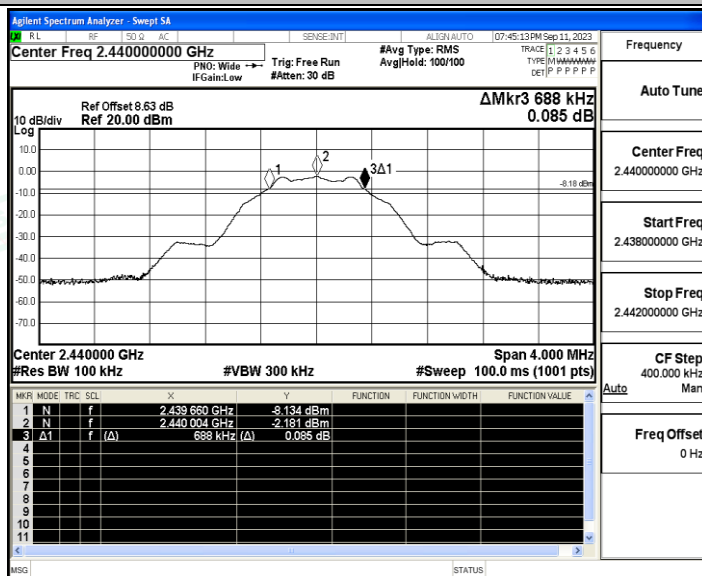


Test Graphs

BLE_Ant_2402



BLE_Ant_2440



BLE_Ant_2480

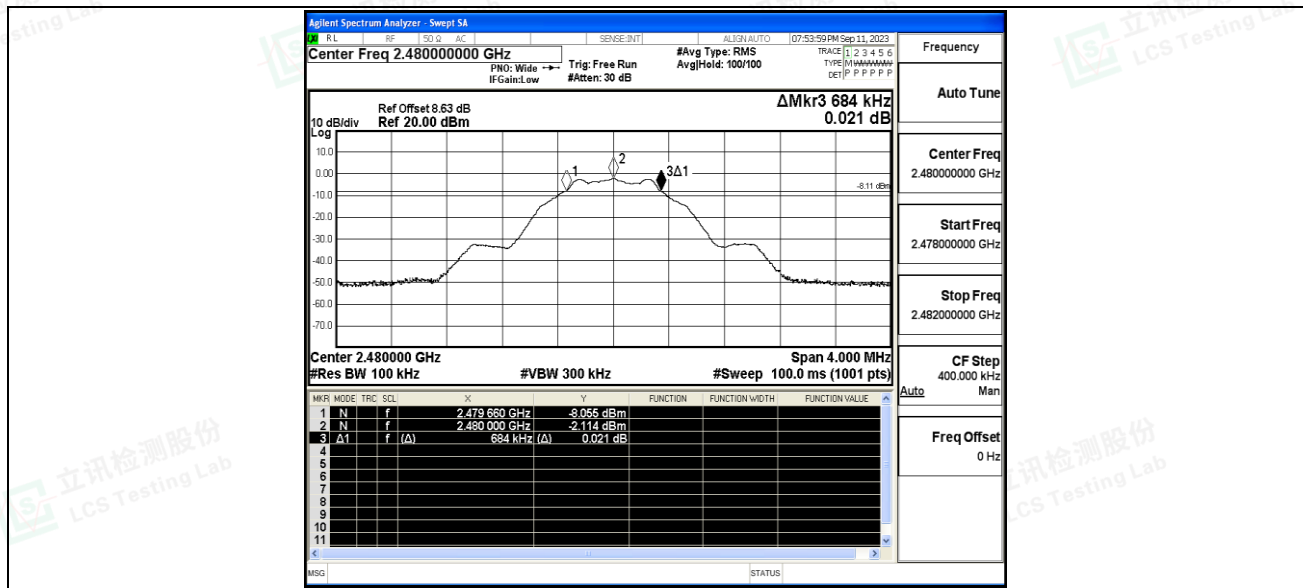


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A.2 Maximum conducted output power

Test Result

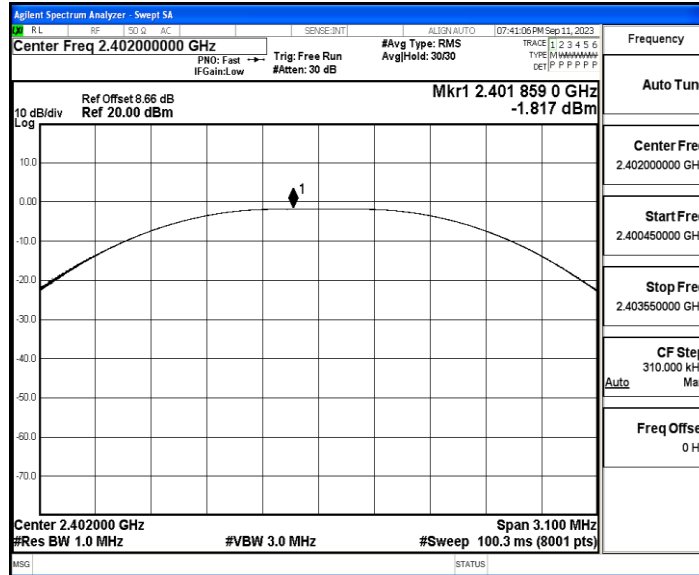
TestMode	Antenna	Frequency (MHz)	Result[dBm]	Limit[dBm]	Verdict
BLE	Ant	2402	-1.82	≤30	PASS
		2440	-1.5	≤30	PASS
		2480	-1.45	≤30	PASS



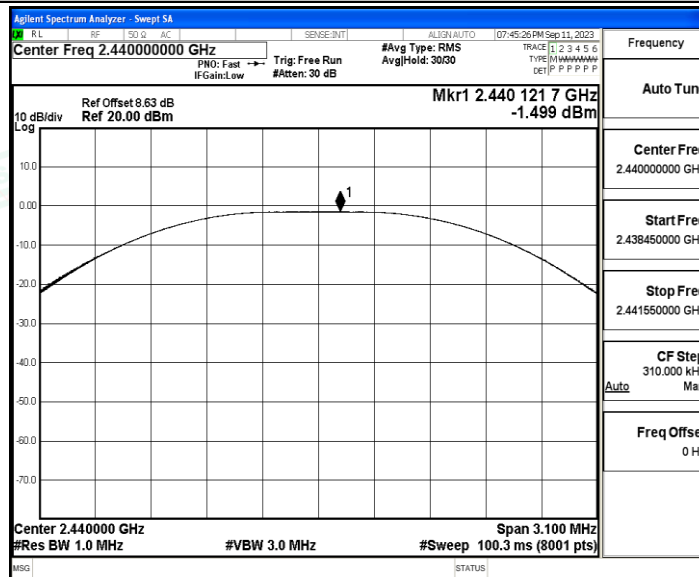


Test Graphs

BLE_Ant_2402



BLE_Ant_2440



BLE_Ant_2480

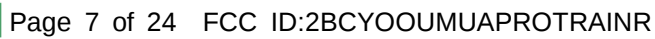


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Agilent Spectrum Analyzer - Sweep SA

Center Freq 2.480000000 GHz

Ref Offset 8.63 dB

Ref 20.00 dBm

Mkr1 2.479 872 1 GHz

-1.450 dBm

Span 3.100 MHz

#Res BW 1.0 MHz

#VBW 3.0 MHz

#Sweep 100.3 ms (8001 pts)

Frequency

Auto Tune

Center Freq 2.480000000 GHz

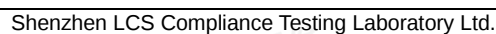
Start Freq 2.478450000 GHz

Stop Freq 2.481550000 GHz

CF Step 310.000 kHz

Auto Man

Freq Offset 0 Hz



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A.3 Maximum power spectral density

Test Result

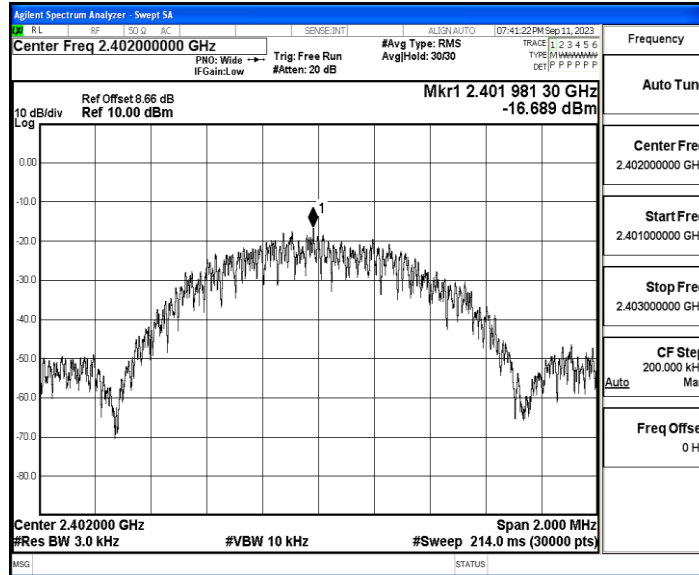
TestMode	Antenna	Frequency (MHz)	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
BLE	Ant	2402	-16.69	≤8.00	PASS
		2440	-16.45	≤8.00	PASS
		2480	-16.38	≤8.00	PASS



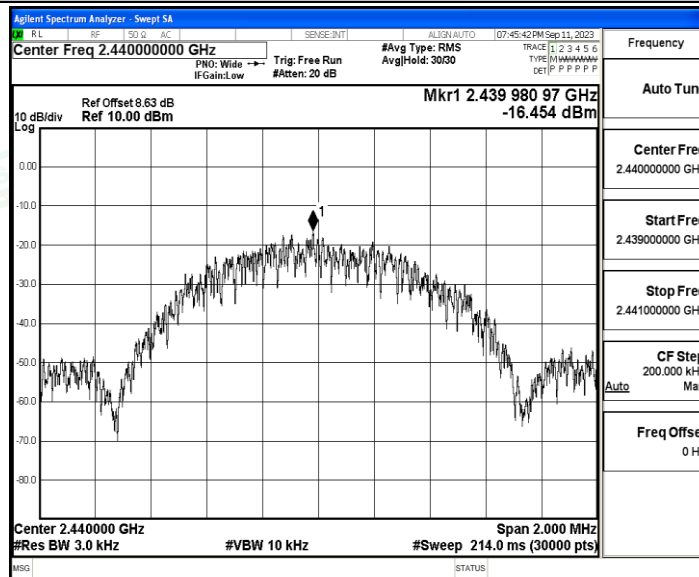


Test Graphs

BLE_Ant_2402



BLE_Ant_2440



BLE_Ant_2480

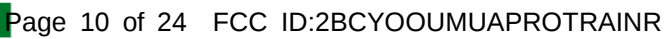


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Agilent Spectrum Analyzer - Sweep SA

RT RF 150.0 AC SENSE INT ALDI/AUTO 07:54:28 PM Sep 11, 2023

Center Freq 2.480000000 GHz PWD: Wide IF Gain: Low Trig: Free Run #Att: 20 dB #Avg Type: RMS Avg Hold: 30/30 TRACE [1 2 3 4 5 6] TYPE [MMMMMMMM] DET [P P P P P P]

Ref Offset 8.63 dB Mkr1 2.479 77 GHz
Ref 10.00 dBm -16.378 dBm

20 dB/div
Log

Center 2.480000 GHz Span 2.000 MHz
#Res BW 3.0 kHz #VBW 10 kHz #Sweep 214.0 ms (30000 pts)

Frequency

Auto Tune

Center Freq 2.480000000 GHz

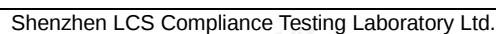
Start Freq 2.479000000 GHz

Stop Freq 2.481000000 GHz

CF Step 200.000 MHz
Auto Man

Freq Offset 0 Hz

MSG STATUS



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A.4 Band edge measurements

Test Result

TestMode	Antenna	ChName	Frequency (MHz)	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE	Ant	Low	2402	-2.61	-57.94	≤-22.61	PASS
		High	2480	-2.25	-57.99	≤-22.25	PASS



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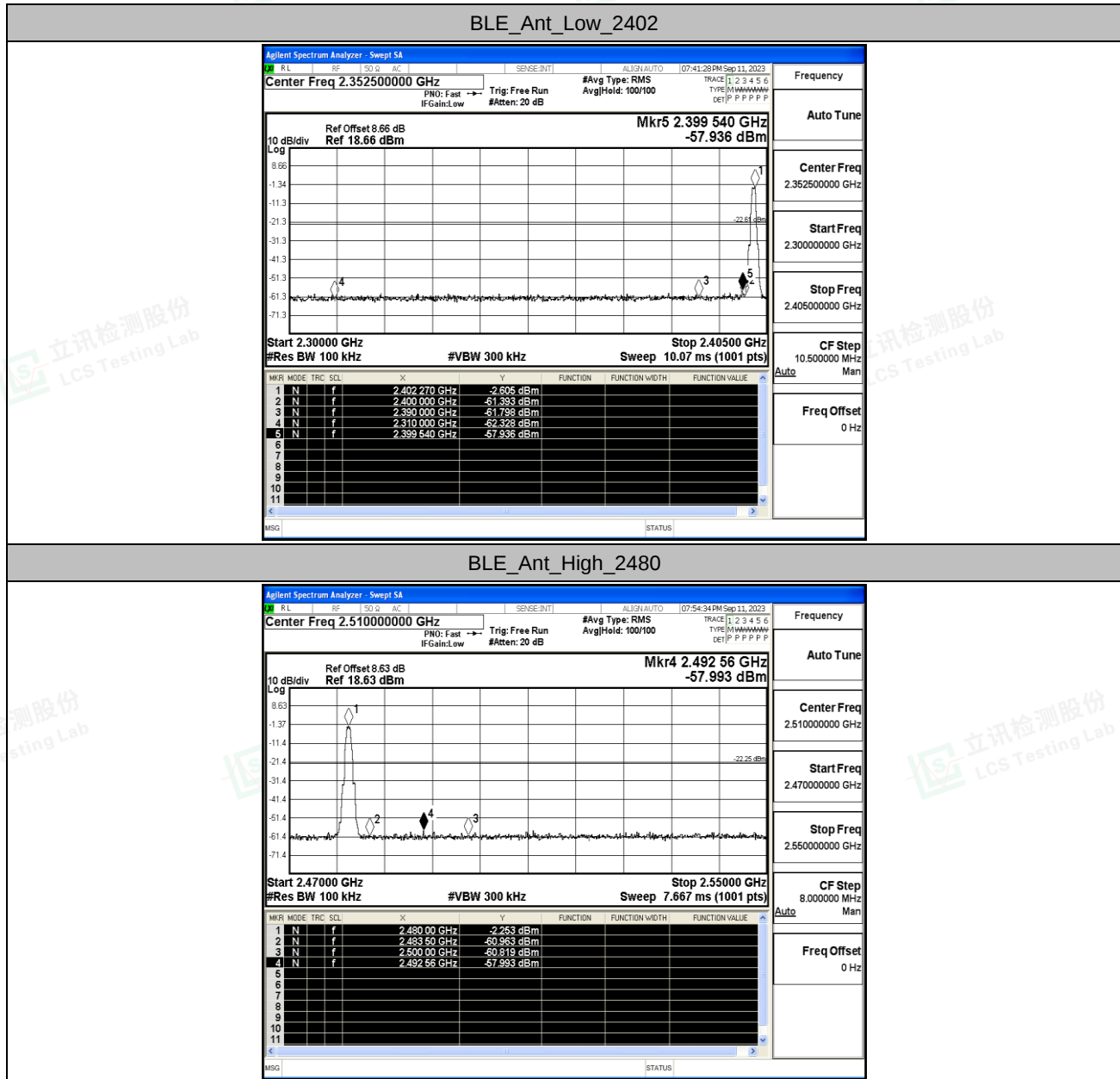
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Test Graphs



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A.5 Conducted Spurious Emission

Test Result

TestMode	Antenna	Frequency (MHz)	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE	Ant	2402	Reference	-2.51	-2.51	---	PASS
			30~1000	-2.51	-60.88	≤ -22.51	PASS
			1000~26500	-2.51	-46.81	≤ -22.51	PASS
		2440	Reference	-2.19	-2.19	---	PASS
			30~1000	-2.19	-60.58	≤ -22.19	PASS
			1000~26500	-2.19	-46.64	≤ -22.19	PASS
		2480	Reference	-2.13	-2.13	---	PASS
			30~1000	-2.13	-60.82	≤ -22.13	PASS
			1000~26500	-2.13	-46.84	≤ -22.13	PASS



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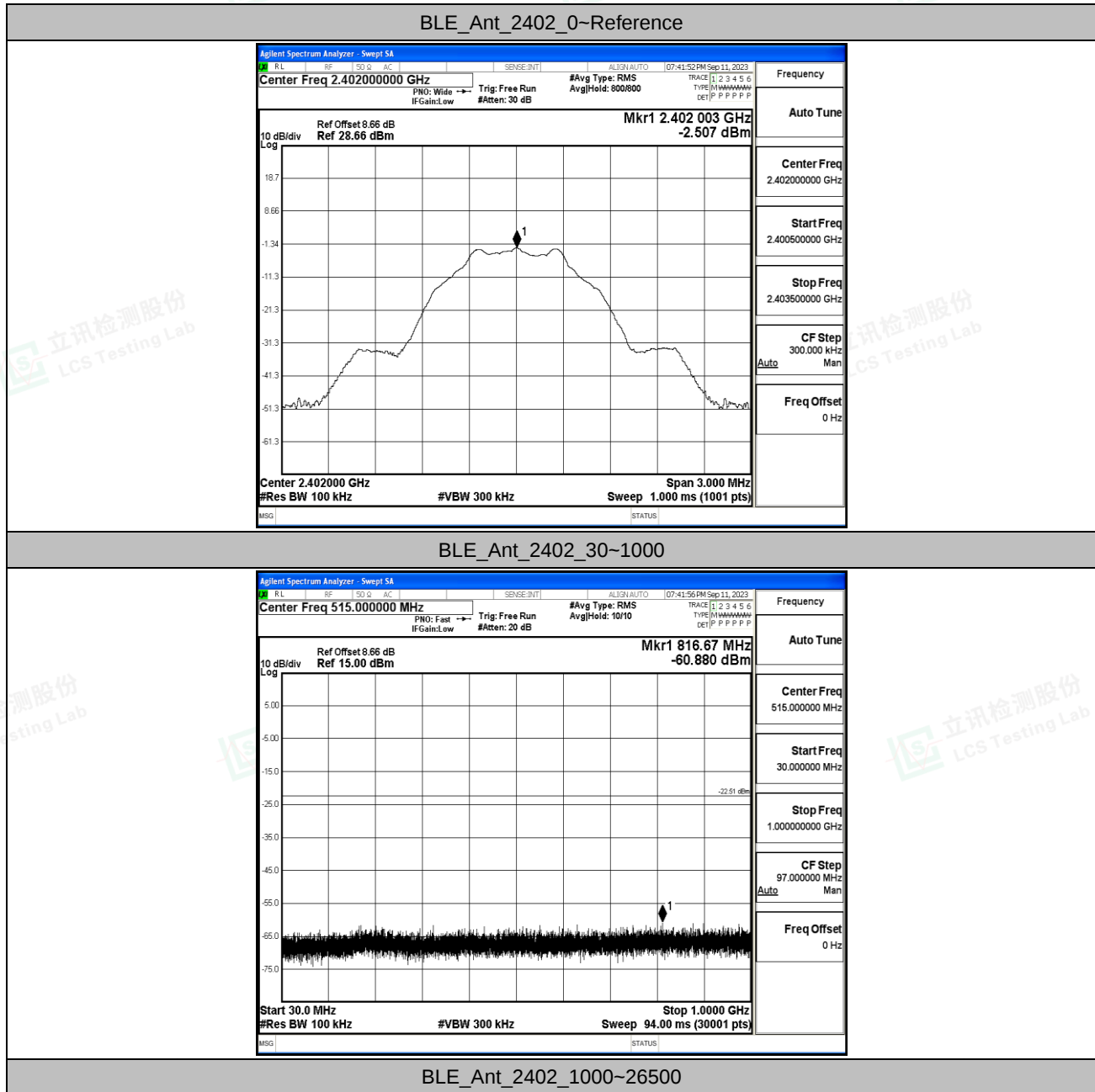
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Test Graphs

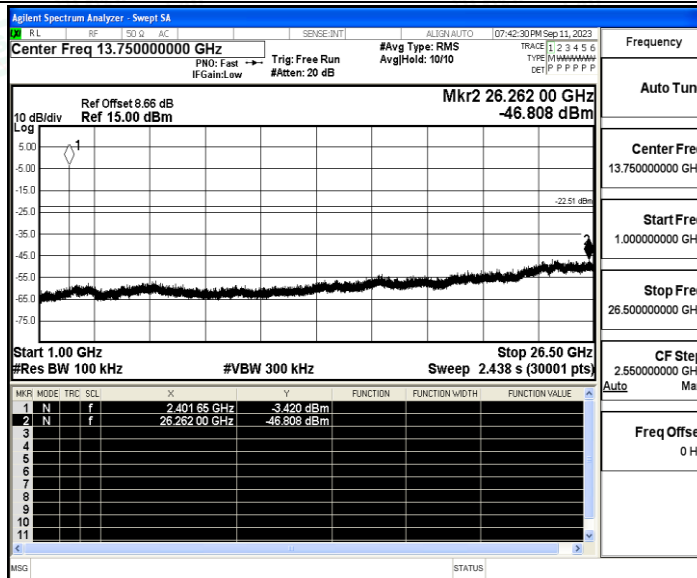


Shenzhen LCS Compliance Testing Laboratory Ltd.

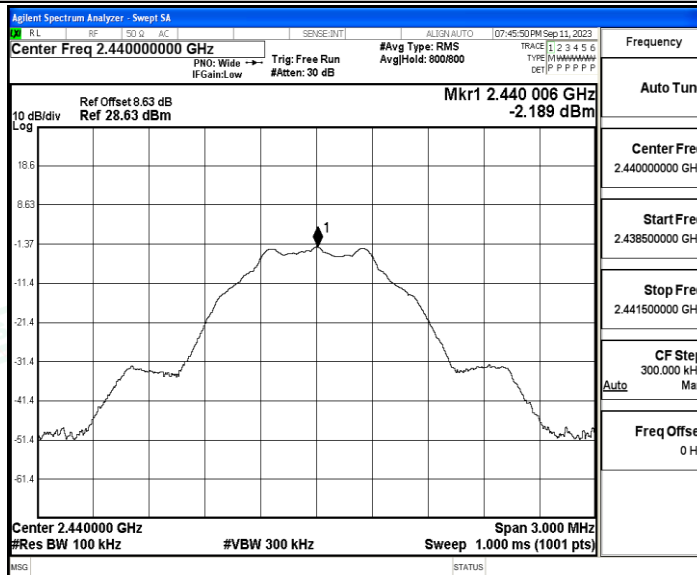
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BLE_Ant_2440_0~Reference



BLE_Ant_2440_30~1000

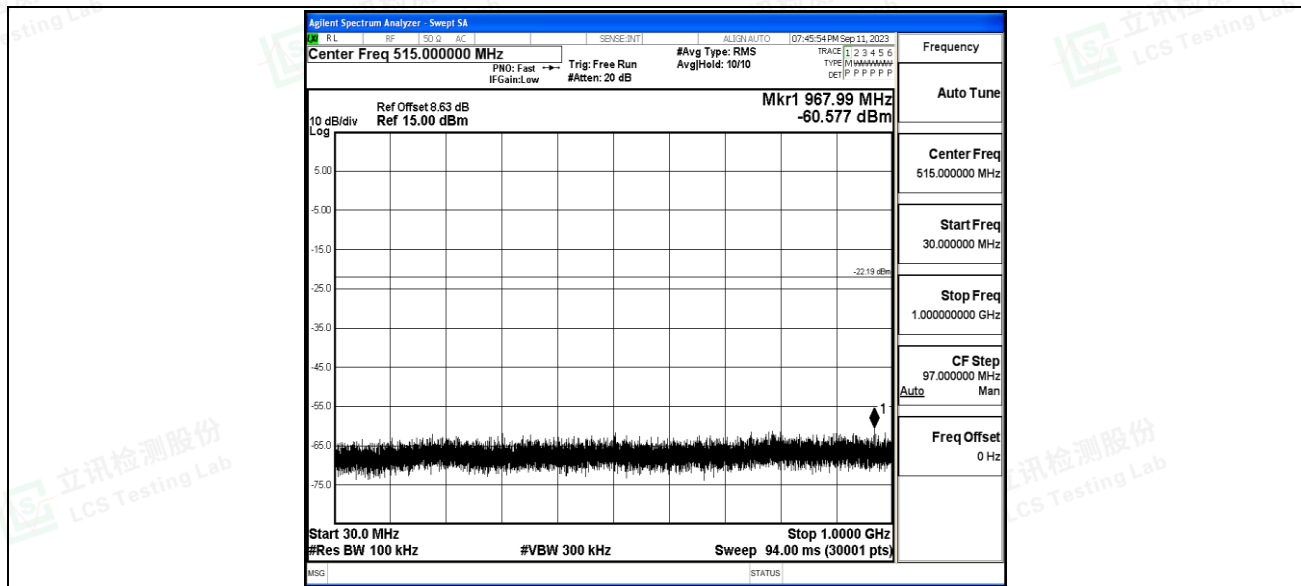


Shenzhen LCS Compliance Testing Laboratory Ltd.

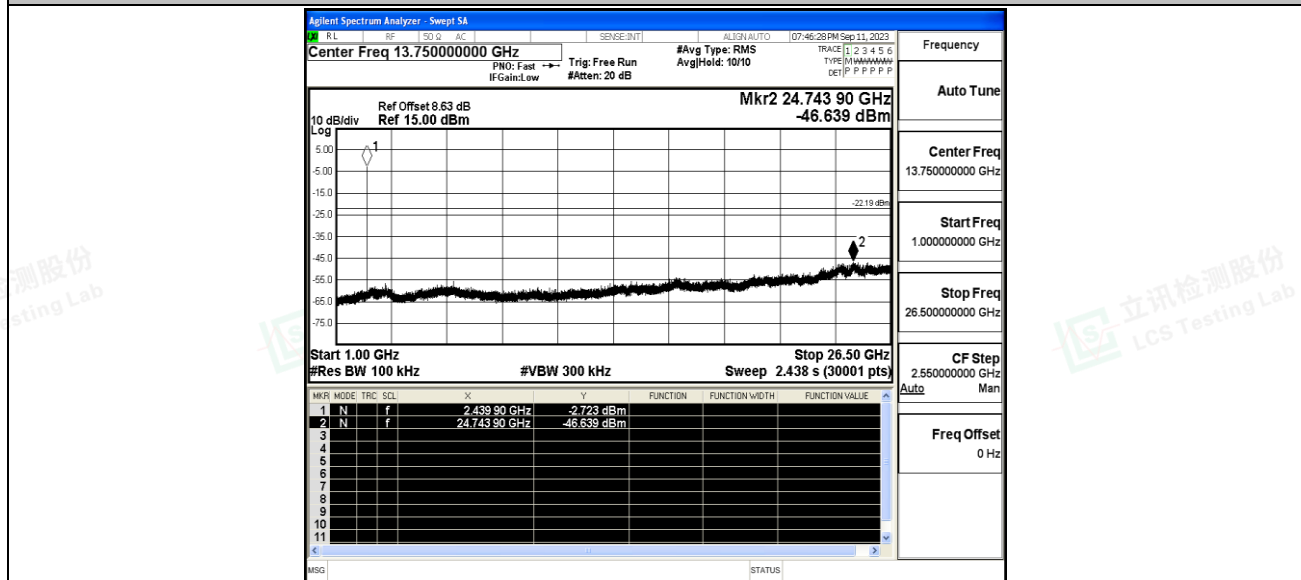
Add: 101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Yabianxueziwei, Shajing Street, Baoan District, Shenzhen, 518000, China

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BLE_Ant_2440_1000~26500



BLE_Ant_2480_0~Reference

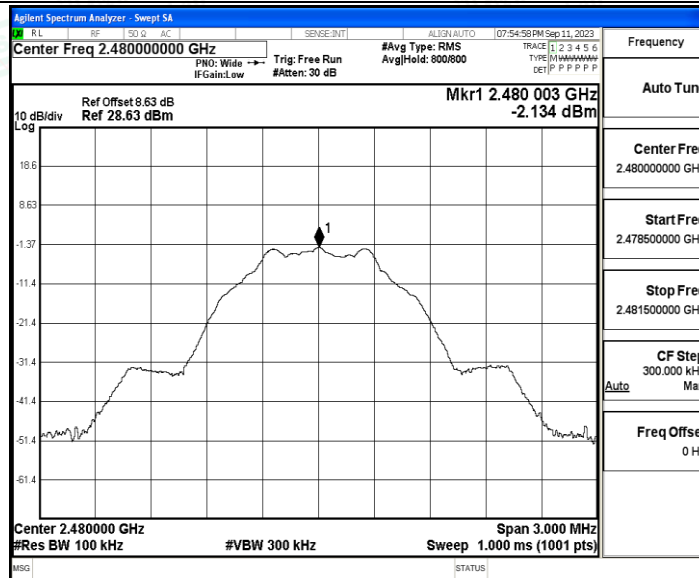


Shenzhen LCS Compliance Testing Laboratory Ltd.

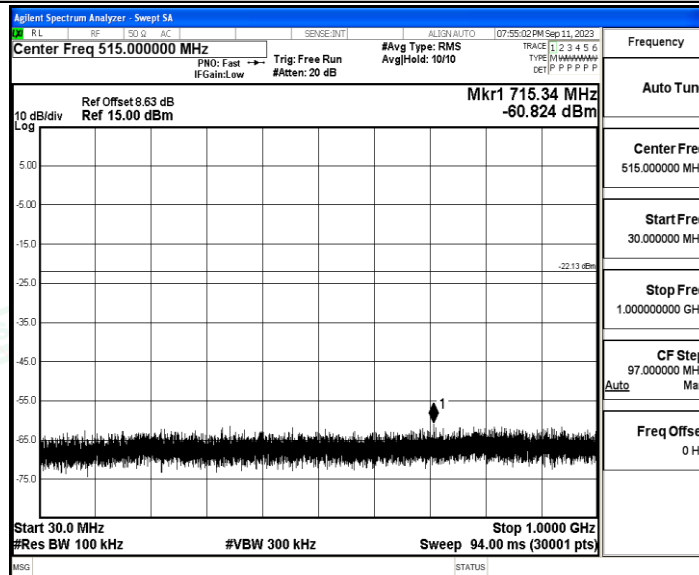
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BLE_Ant_2480_30~1000



BLE_Ant_2480_1000~26500

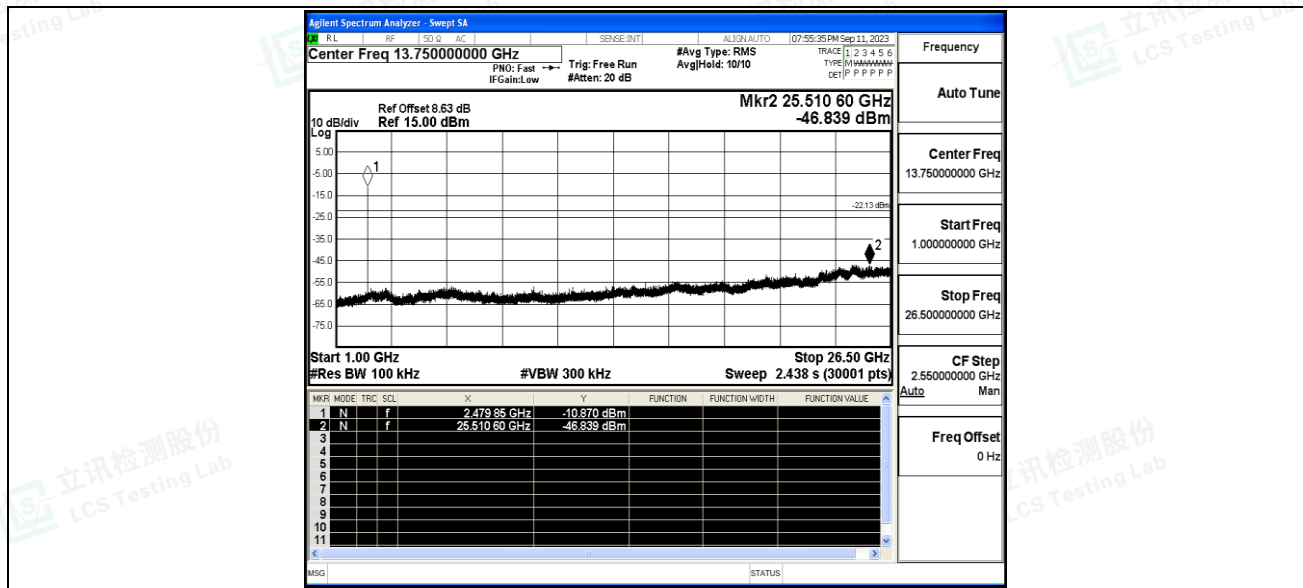


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A.6 Duty Cycle

Test Result

TestMode	Antenna	Frequency (MHz)	ON Time [ms]	Period [ms]	X	DC [%]	xFactor	1/T	Limit	Verdict
BLE	Ant	2402	0.38	0.63	0.6032	60.32	2.20	2.63	---	---
		2440	0.38	0.62	0.6129	61.29	2.13	2.63	---	---
		2480	0.39	0.63	0.6190	61.90	2.08	2.56	---	---





Test Graphs

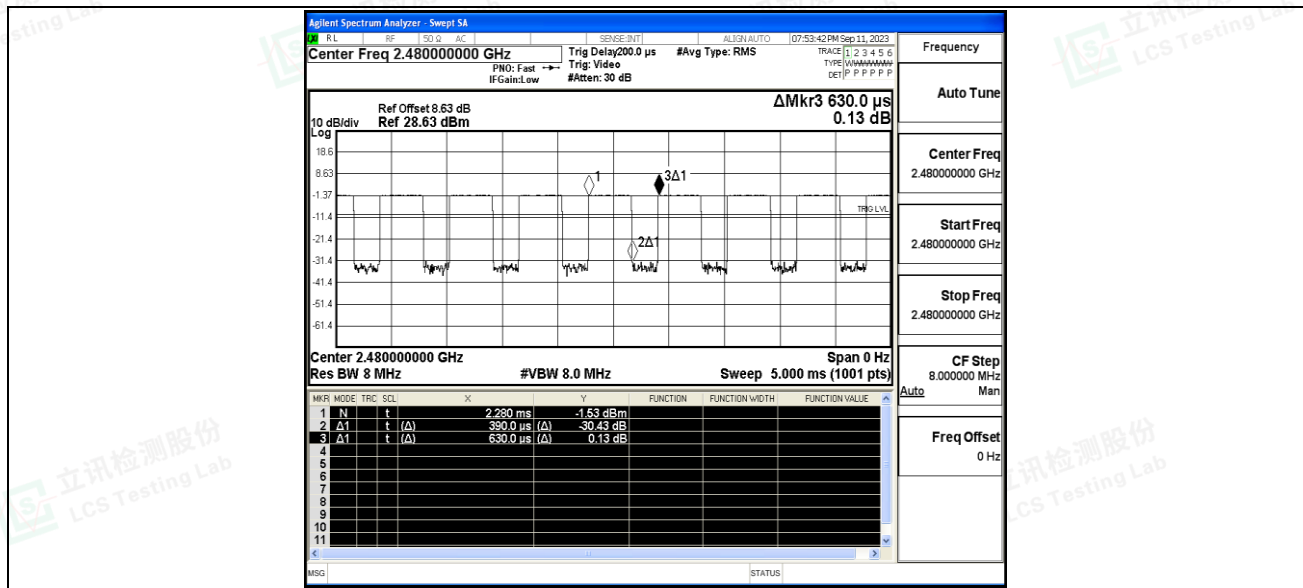


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A.7 Emissions in Restricted Bands

Test Result

TestMode	Antenna	ChName	Frequency (MHz)	Detector	Freq. [MHz]	Result [dBm]	Gain (dBi)	E (dBuV/m)	Limit [dBuV/m]	Verdict
BLE	Ant	Low	2402	AV	2310.000	-57.2	2.5	40.56	≤54	PASS
				AV	2365.730	-56.41	2.5	41.35	≤54	PASS
				AV	2390.000	-56.98	2.5	40.78	≤54	PASS
				Peak	2310.000	-51.06	2.5	46.70	≤74	PASS
				Peak	2330.030	-47.7	2.5	50.06	≤74	PASS
				Peak	2390.000	-49.24	2.5	48.52	≤74	PASS
		High	2480	AV	2483.500	-54.06	2.5	43.70	≤54	PASS
				AV	2483.520	-54.06	2.5	43.70	≤54	PASS
				AV	2500.000	-56.42	2.5	41.34	≤54	PASS
				Peak	2483.500	-50.49	2.5	47.27	≤74	PASS
				Peak	2488.400	-47.46	2.5	50.30	≤74	PASS
				Peak	2500.000	-49.83	2.5	47.93	≤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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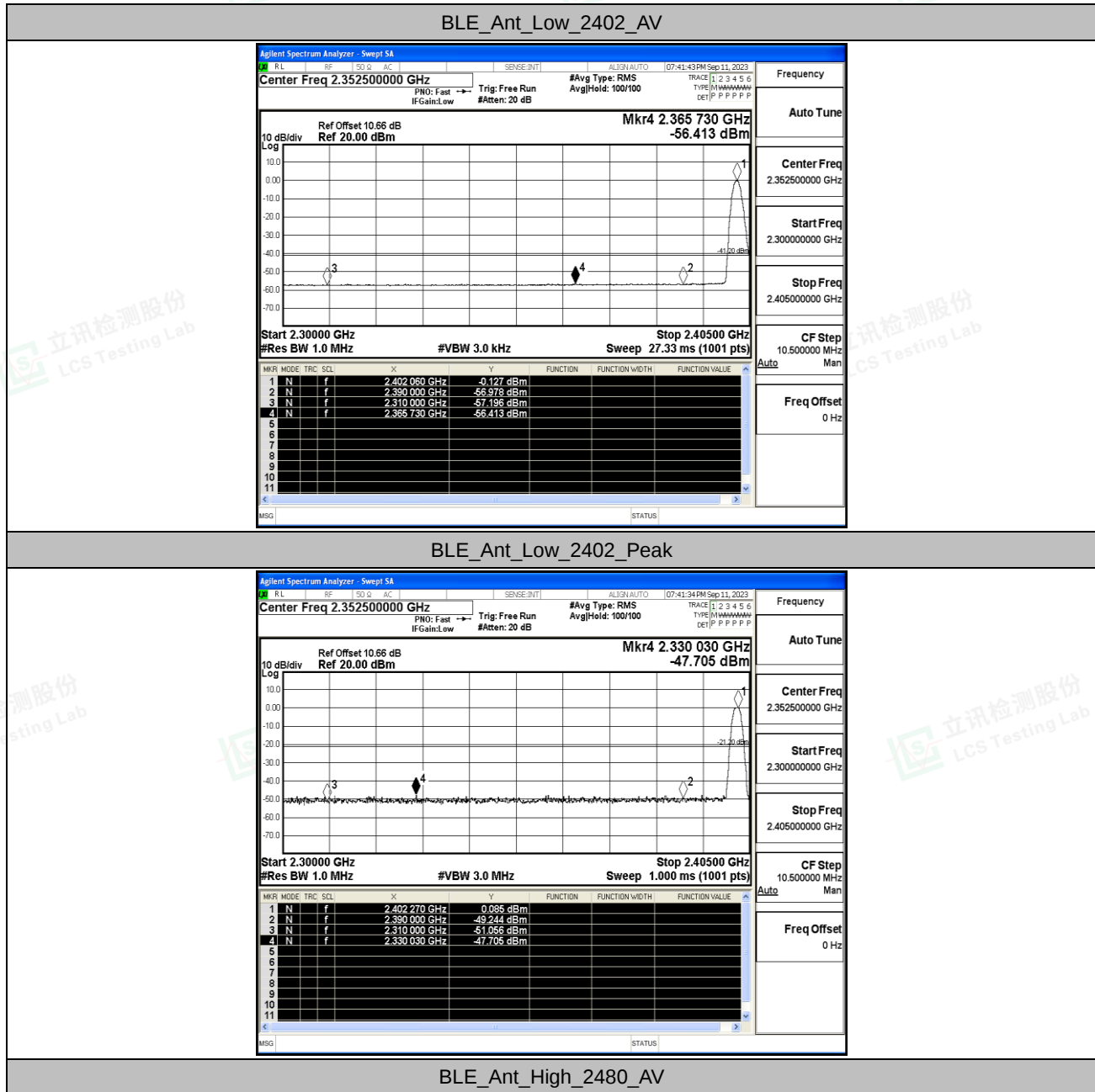
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Test Graphs

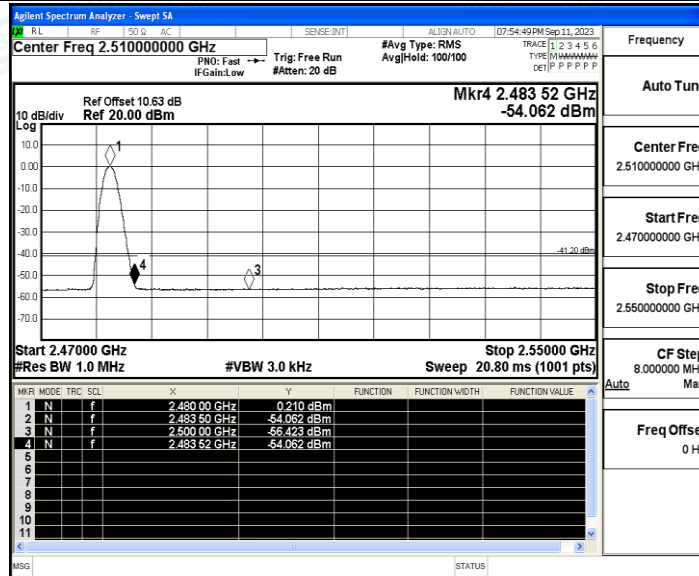


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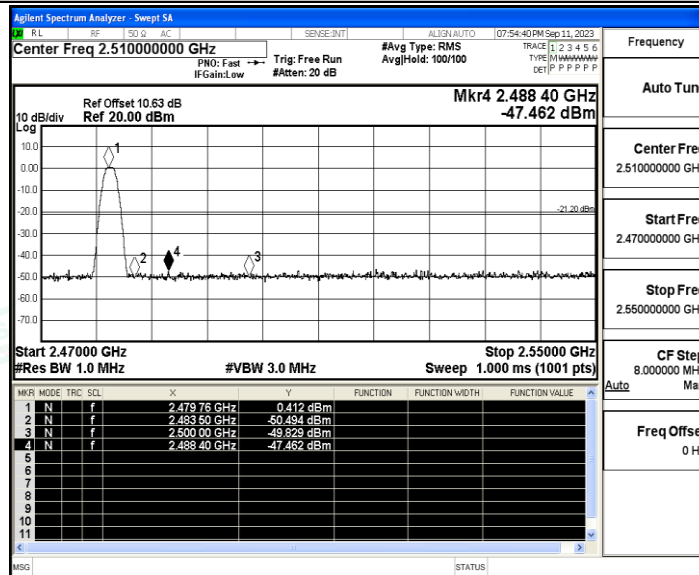
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BLE_Ant_High_2480_Peak



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