



Appendix A

RF Test Data for BLE (Conducted Measurement)

Product Name: ROBOSHINE i6

Test Model: i6

Environmental Conditions

Temperature:	23.1°C
Relative Humidity:	52.3%
ATM Pressure:	100.0 kPa
Test Engineer:	Jay Luo
Supervised by:	Nick Peng





A.1 DTS Bandwidth

Test Result

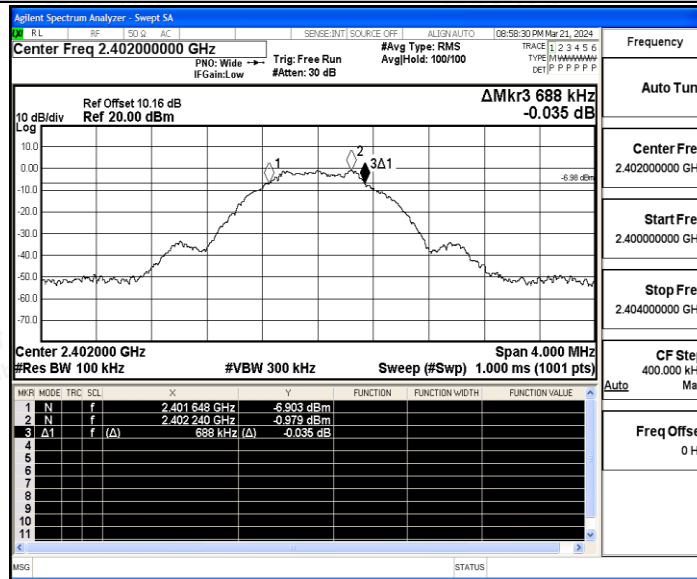
TestMode	Antenna	Frequency[MHz]	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE	Ant	2402	0.688	2401.648	2402.336	0.5	PASS
		2440	0.696	2439.648	2440.344	0.5	PASS
		2480	0.688	2479.656	2480.344	0.5	PASS



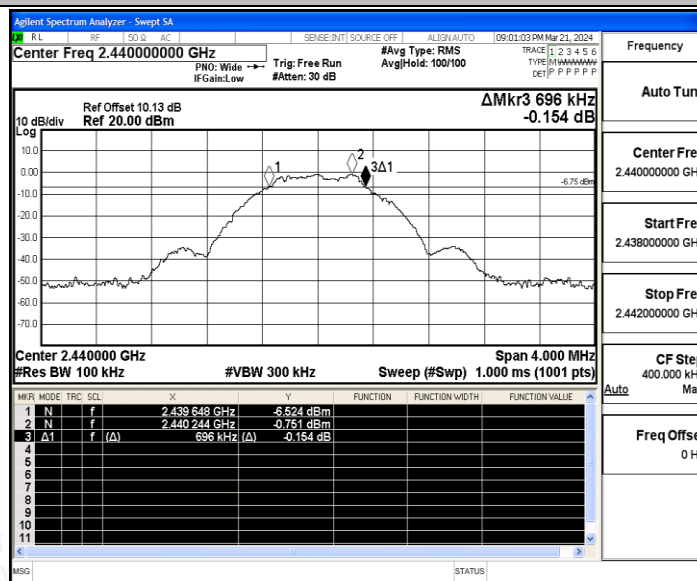


Test Graphs

BLE_Ant_2402



BLE_Ant_2440



BLE_Ant_2480

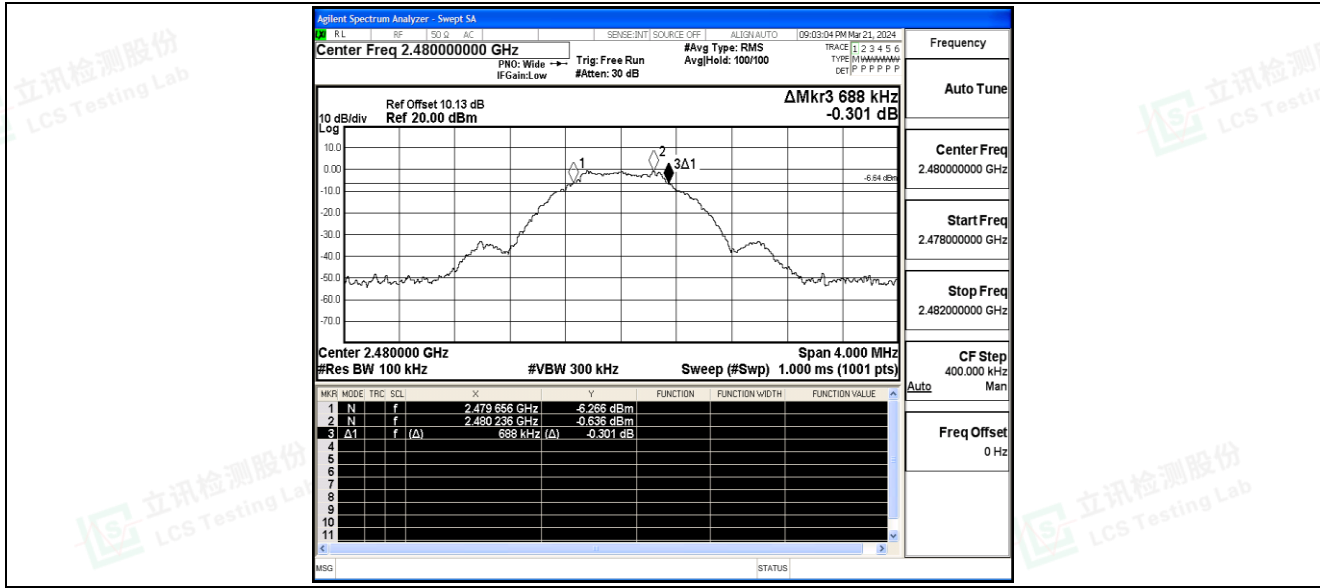


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A.2 Maximum conducted output power

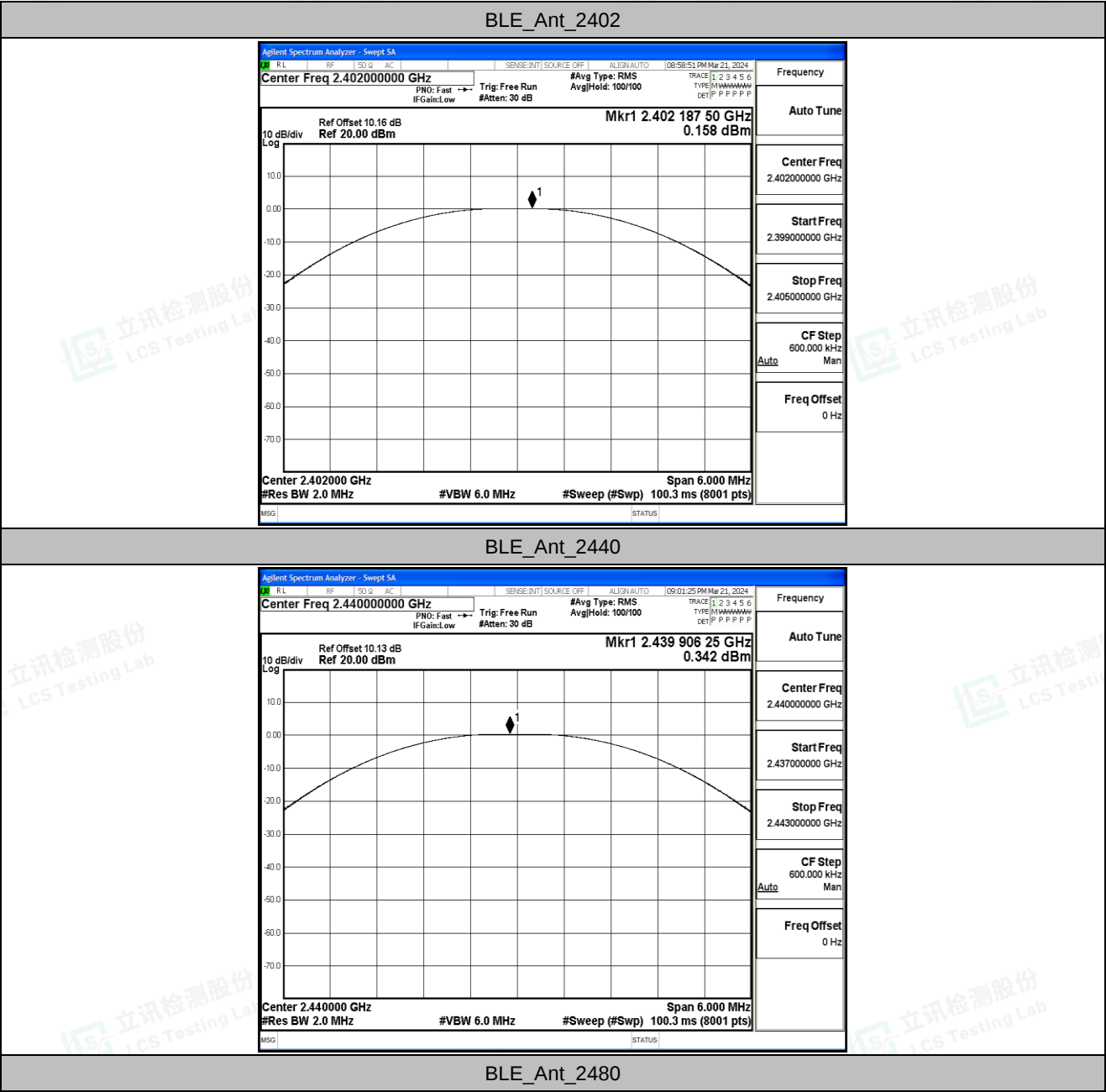
Test Result

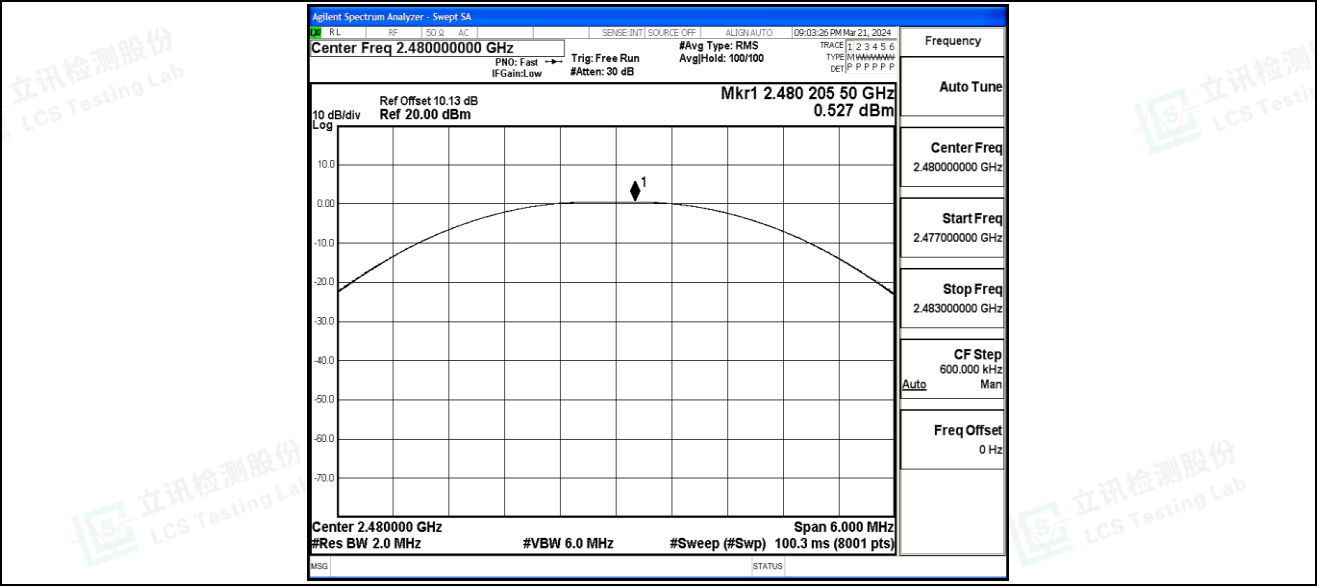
TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
BLE	Ant	2402	0.16	≤30	PASS
		2440	0.34	≤30	PASS
		2480	0.53	≤30	PASS





Test Graphs







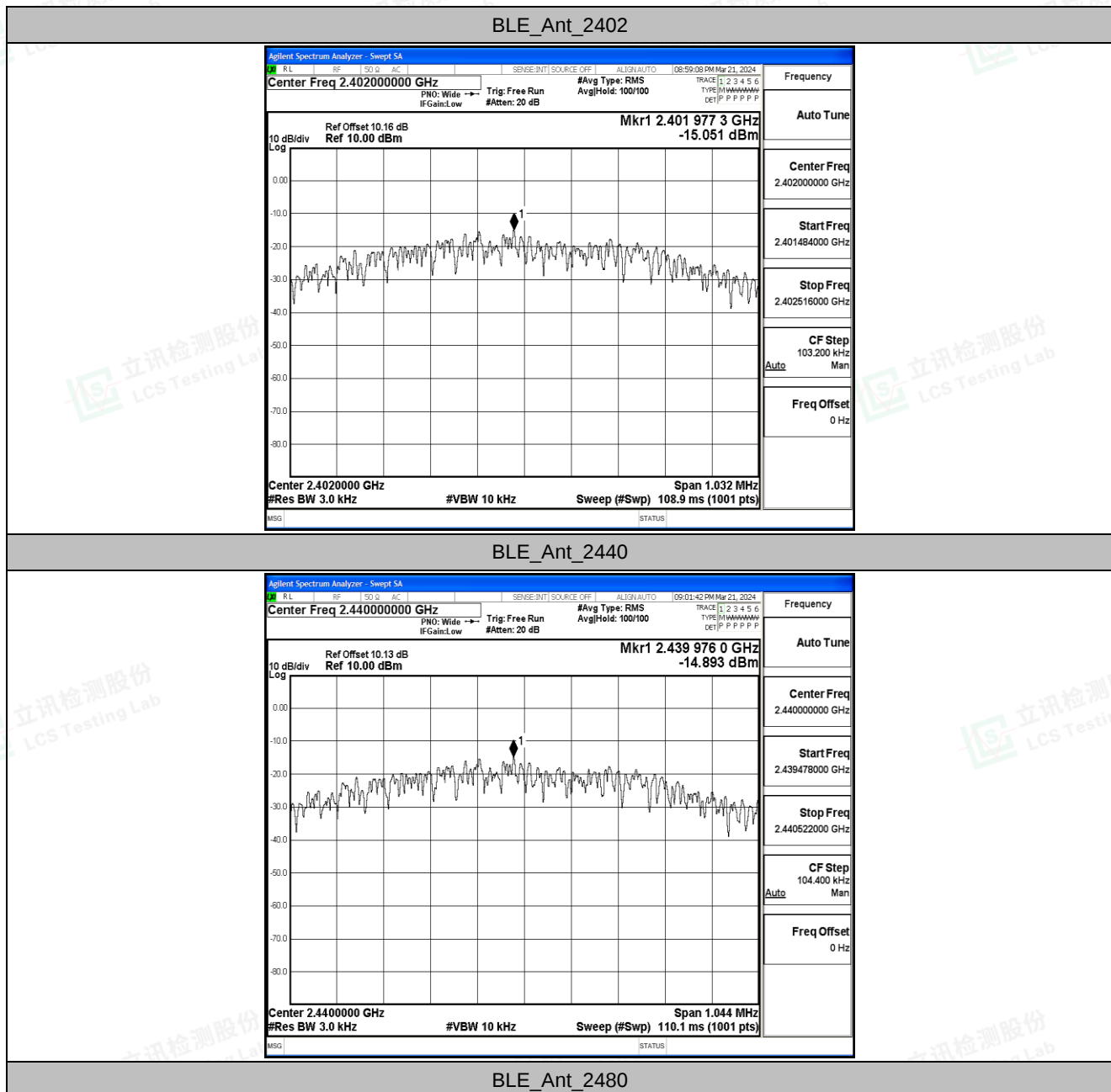
A.3 Maximum power spectral density

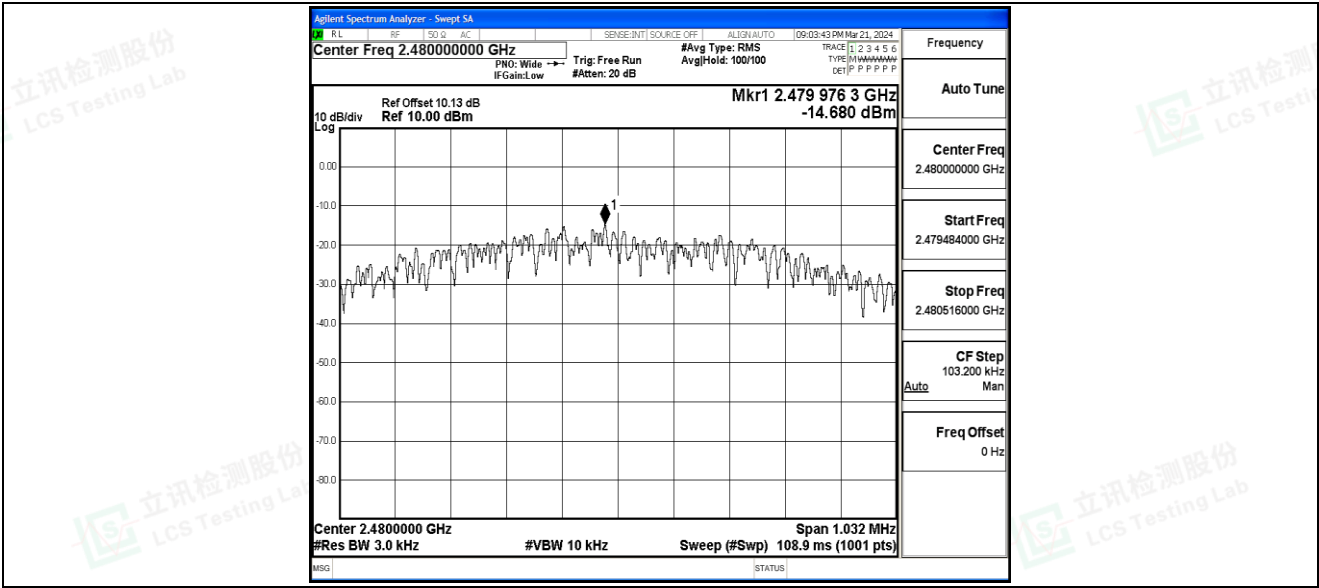
Test Result

TestMode	Antenna	Frequency[MHz]	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
BLE	Ant	2402	-15.05	≤8.00	PASS
		2440	-14.89	≤8.00	PASS
		2480	-14.68	≤8.00	PASS



Test Graphs







A.4 Band edge measurements

Test Result

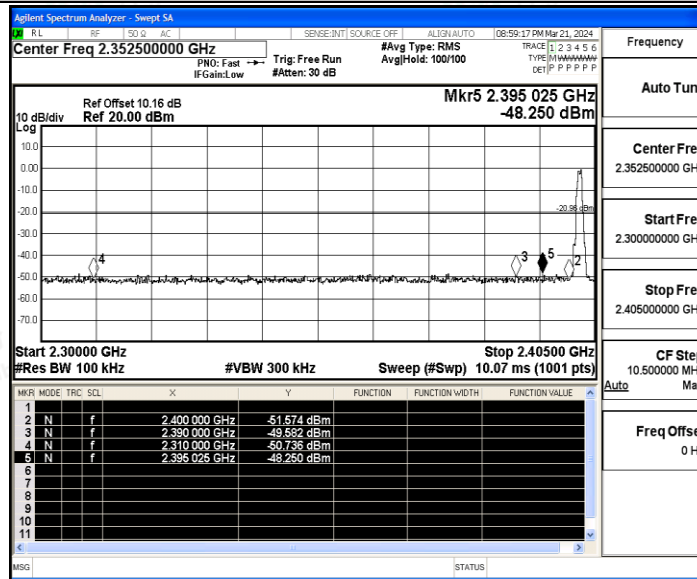
TestMode	Antenna	ChName	Frequency[MHz]	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE	Ant	Low	2402	-0.96	-48.25	≤-20.96	PASS
		High	2480	-0.60	-48.02	≤-20.6	PASS



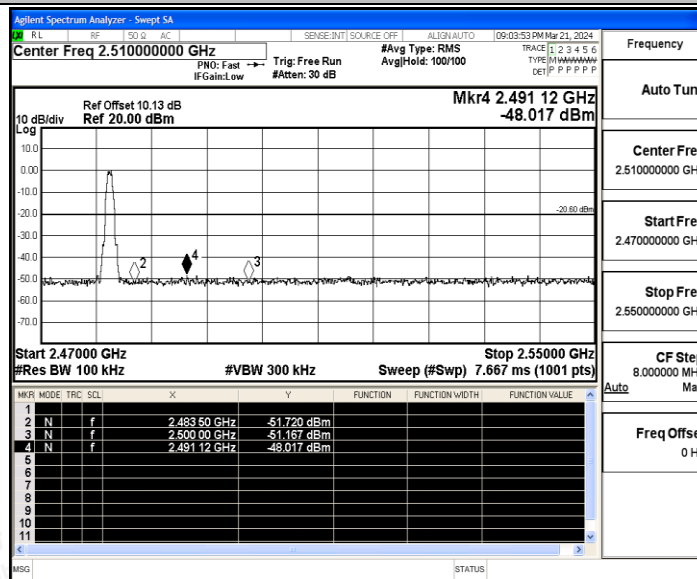


Test Graphs

BLE_Ant_Low_2402



BLE_Ant_High_2480



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A.5 Conducted Spurious Emission

Test Result

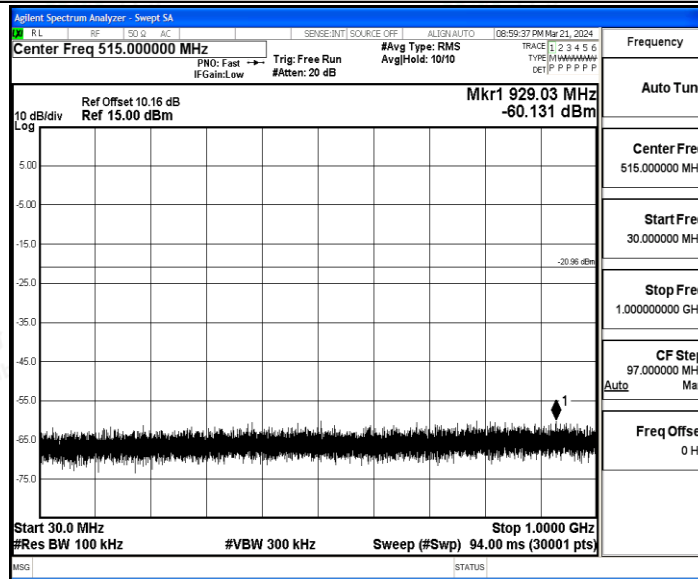
TestMode	Antenna	Frequency[MHz]	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE	Ant	2402	30~1000	-0.96	-60.13	≤-20.96	PASS
			1000~26500	-0.96	-47.48	≤-20.96	PASS
		2440	30~1000	-0.80	-59.54	≤-20.8	PASS
			1000~26500	-0.80	-46.71	≤-20.8	PASS
		2480	30~1000	-0.60	-59.28	≤-20.6	PASS
			1000~26500	-0.60	-47.15	≤-20.6	PASS



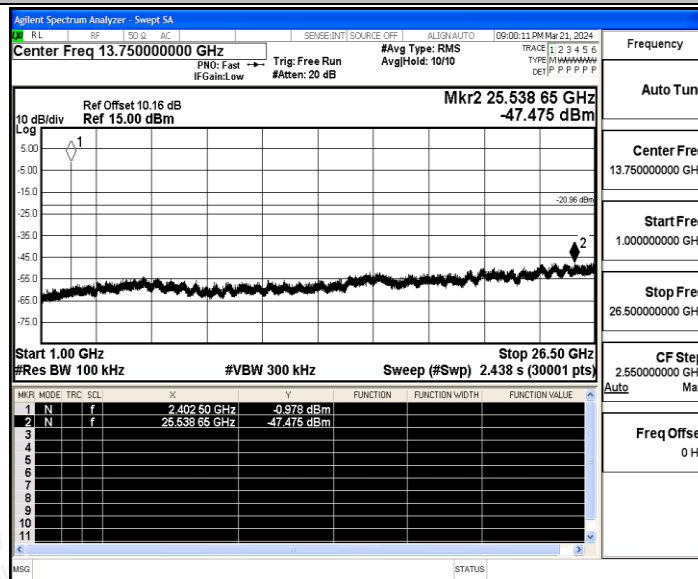


Test Graphs

BLE_Ant_2402_30~1000



BLE_Ant_2402_1000~26500



BLE_Ant_2440_30~1000

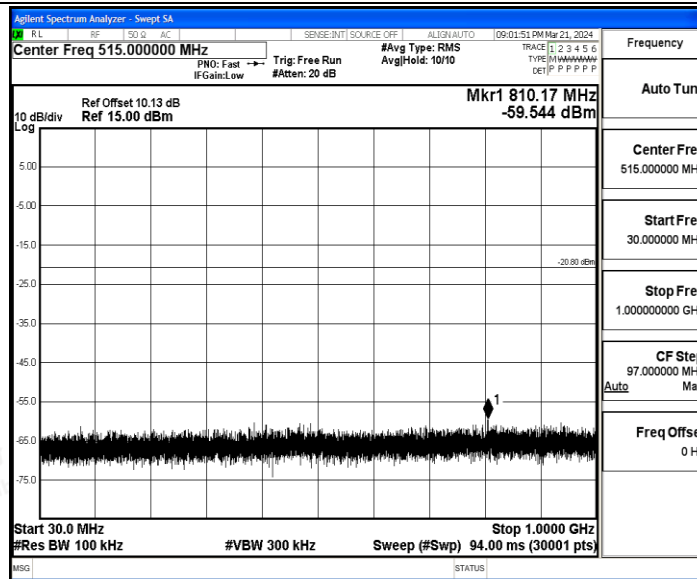


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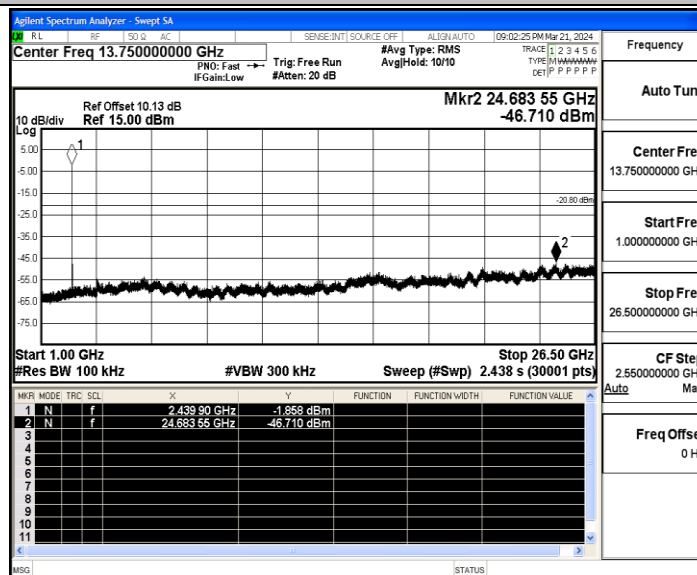
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BLE_Ant_2440_1000~26500



BLE_Ant_2480_30~1000

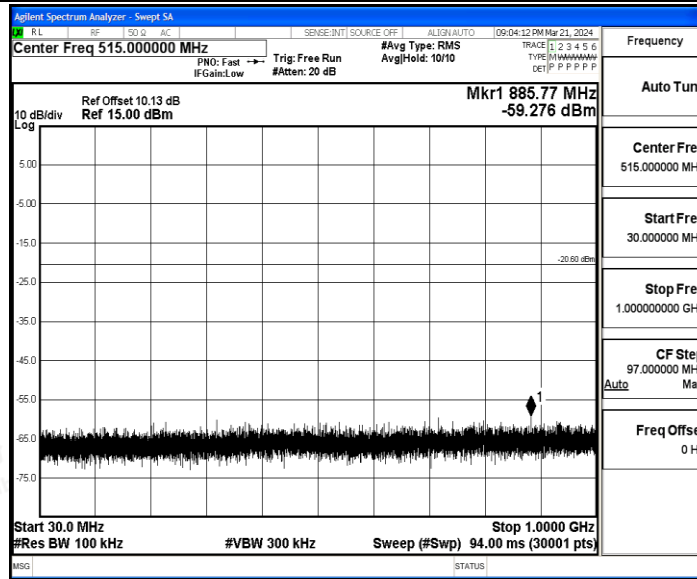


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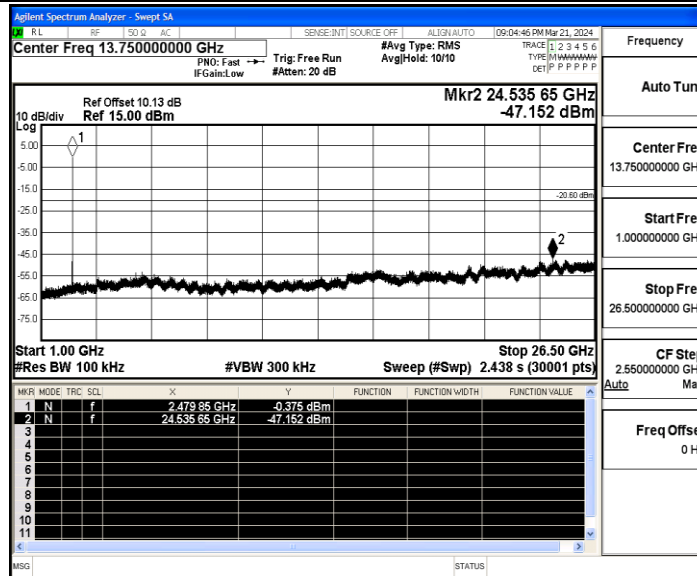
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BLE_Ant_2480_1000~26500



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Reference level measurement

Test Result

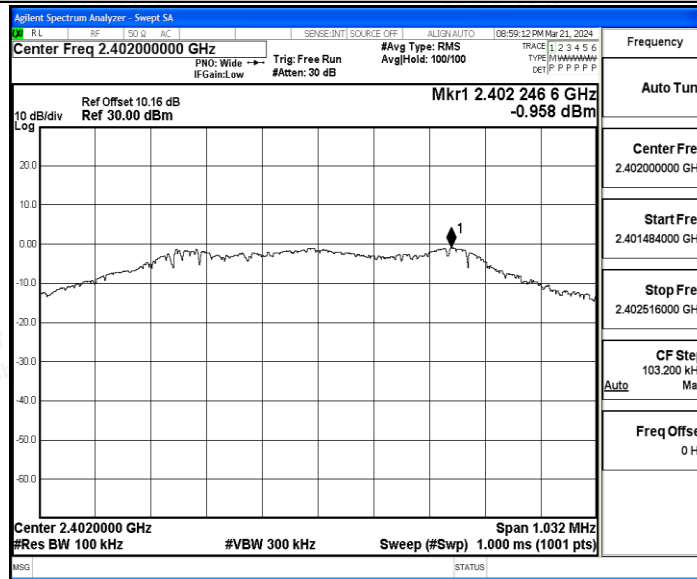
TestMode	Antenna	Freq(MHz)	Max.Point[MHz]	Result[dBm]
BLE	Ant	2402	2402.25	-0.96
		2440	2440.24	-0.80
		2480	2480.24	-0.60



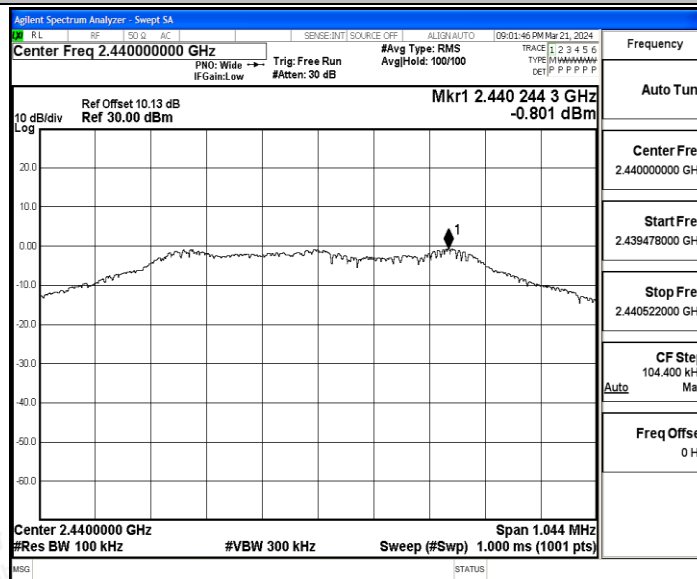


Test Graphs

BLE_Ant_2402



BLE_Ant_2440



BLE_Ant_2480

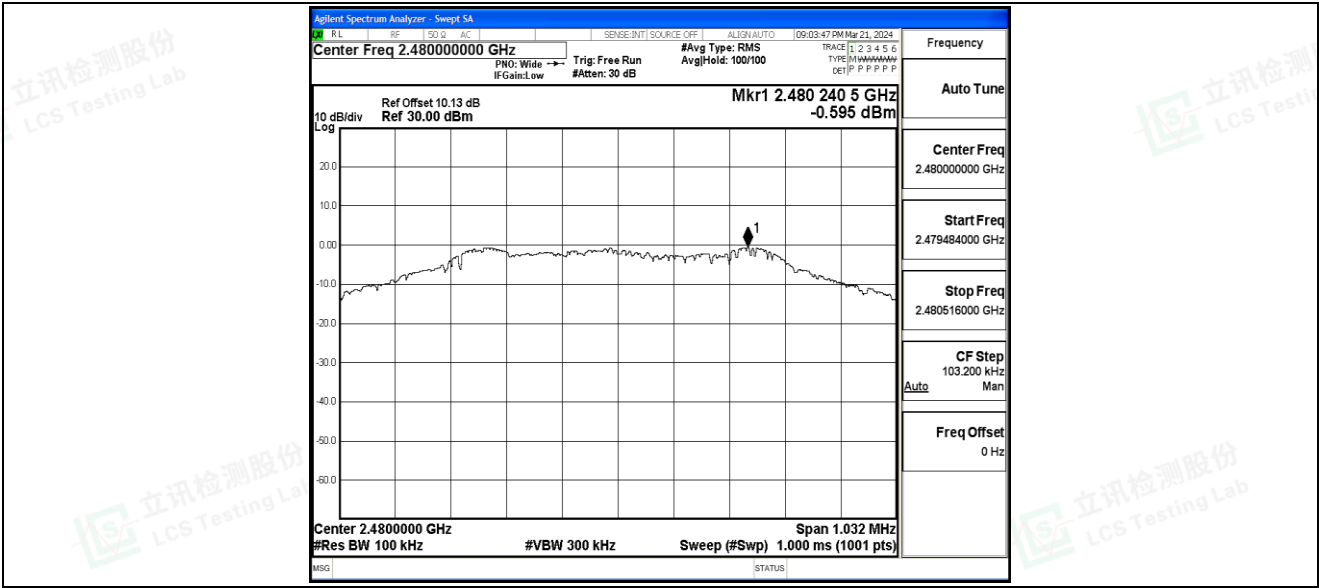


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A.6 Duty Cycle

Test Result

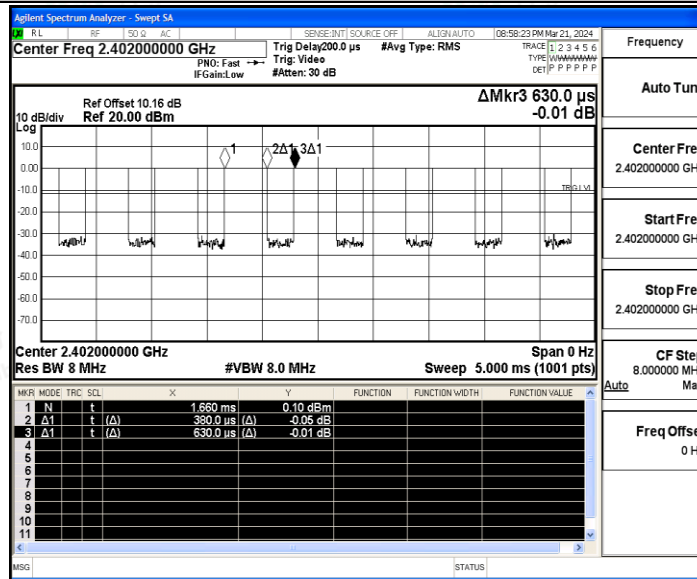
TestMode	Antenna	Frequency[MHz]	ON Time [ms]	Period [ms]	Duty Cycle [%]	Duty Cycle Factor[dB]	1/T Factor[dB]
BLE	Ant	2402	0.38	0.63	60.32	2.20	2.63
		2440	0.38	0.63	60.32	2.20	2.63
		2480	0.38	0.63	60.32	2.20	2.63



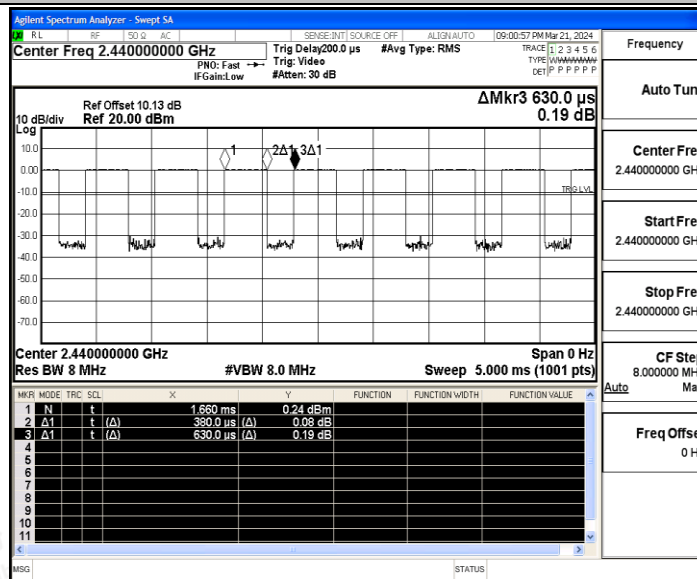


Test Graphs

BLE_Ant_2402



BLE_Ant_2440



BLE_Ant_2480

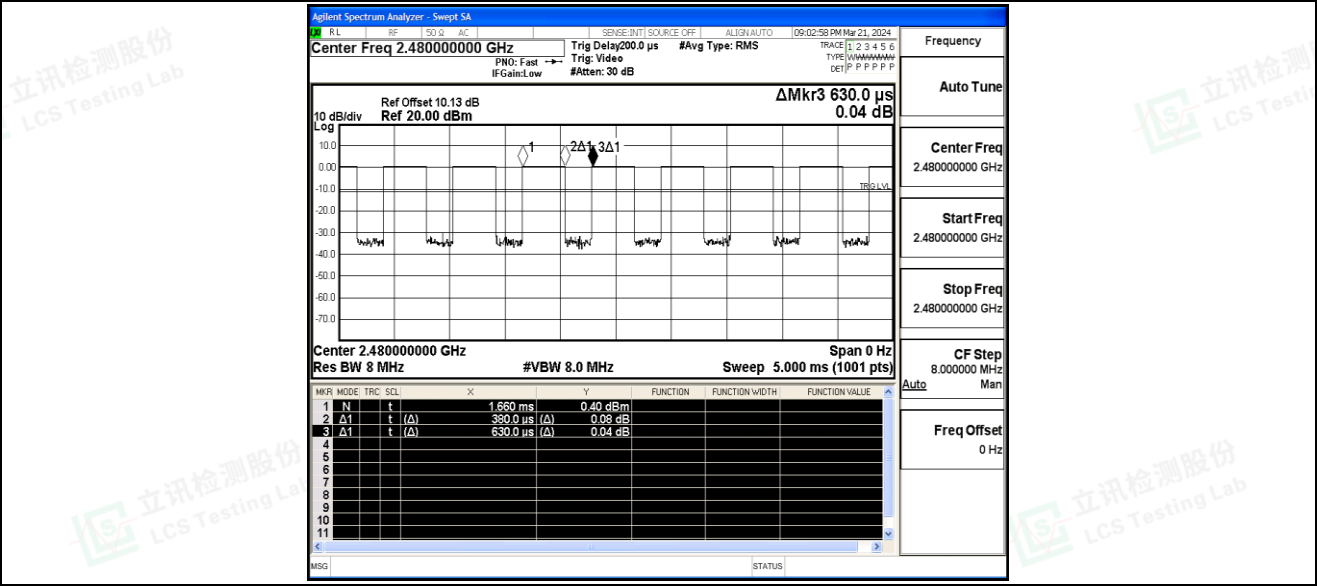


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A.7 Emissions in Restricted Bands

Test Result

TestMode	Antenna	Channel Name	Frequency [MHz]	Detector	Freq [MHz]	Result [dBm]	Limit [dBm]	Result [dBuV/m]	Limit [dBuV/m]	Verdict
BLE	Ant	Low	2402	AV	2310.000	-46.23	≤-41.20	48.97	≤54	PASS
				AV	2383.370	-44.98	≤-41.20	50.22	≤54	PASS
				AV	2390.000	-45.55	≤-41.20	49.65	≤54	PASS
				Peak	2310.000	-40.74	≤-21.20	54.46	≤74	PASS
				Peak	2362.055	-35.91	≤-21.20	59.29	≤74	PASS
				Peak	2390.000	-40.53	≤-21.20	54.67	≤74	PASS
		High	2480	AV	2483.500	-45.59	≤-41.20	49.61	≤54	PASS
				AV	2499.680	-44.65	≤-41.20	50.55	≤54	PASS
				AV	2500.000	-45.92	≤-41.20	49.28	≤54	PASS
				Peak	2483.500	-40.31	≤-21.20	54.89	≤74	PASS
				Peak	2499.440	-37.32	≤-21.20	57.88	≤74	PASS
				Peak	2500.000	-38.4	≤-21.20	56.80	≤74	PASS

Note:

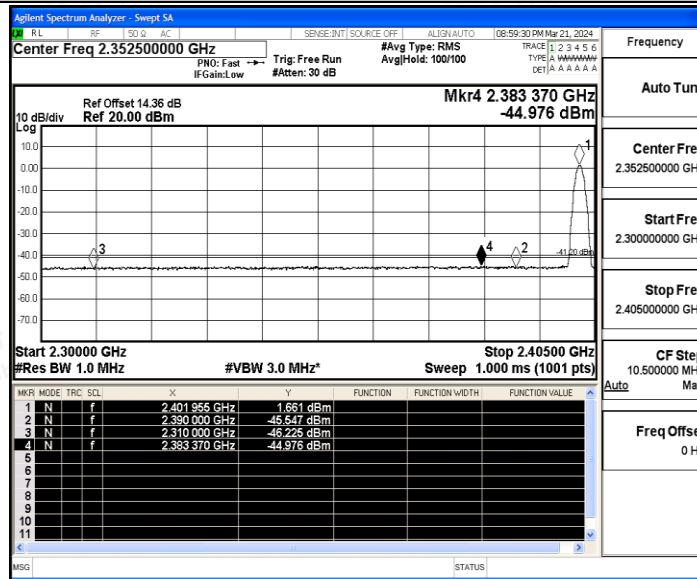
1. The Antenna Gain is compensated in the graph. The Correction Factor is compensated in the graph.
2. The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.



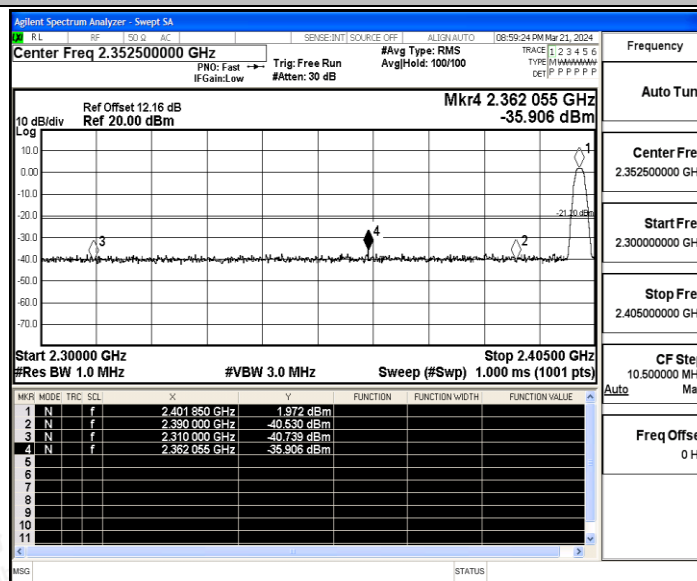


Test Graphs

BLE_Ant_Low_2402_AV



BLE_Ant_Low_2402_Peak



BLE_Ant_High_2480_AV

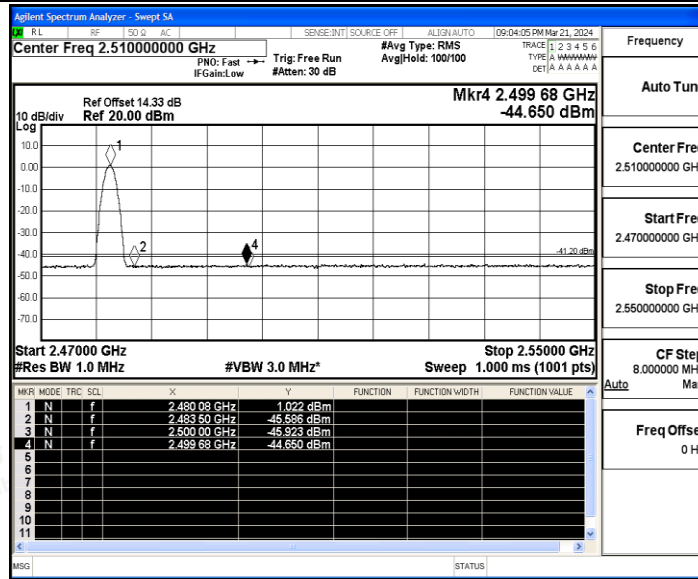


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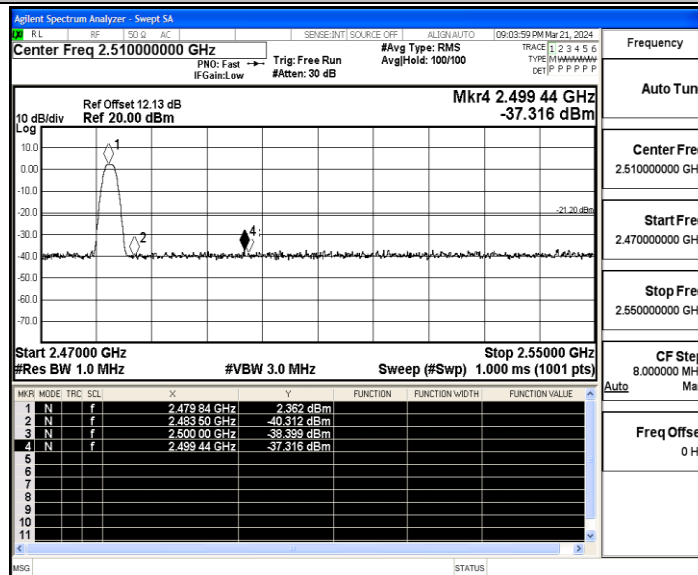
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BLE_Ant_High_2480_Peak



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