



Appendix A

RF Test Data for BLE (Conducted Measurement)

Product Name: Smart Thermometer

Test Model: SU501

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

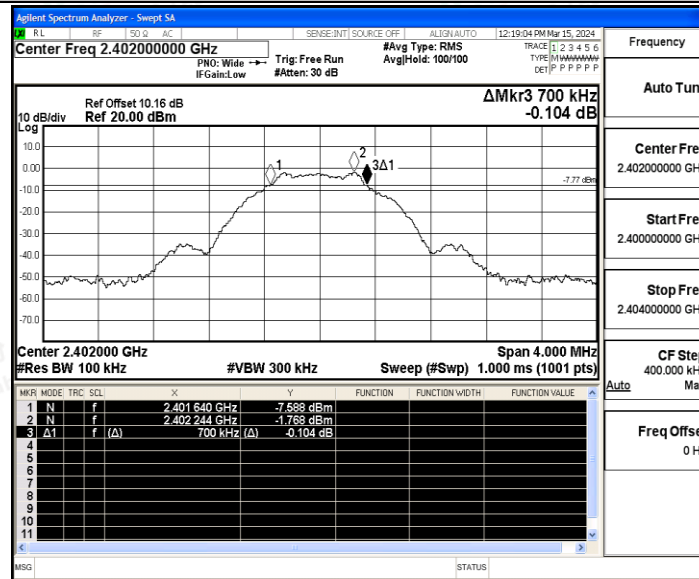
TestMode	Antenna	Frequency[MHz]	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE	Ant	2402	0.700	2401.640	2402.340	0.5	PASS
		2440	0.692	2439.640	2440.332	0.5	PASS
		2480	0.712	2479.632	2480.344	0.5	PASS



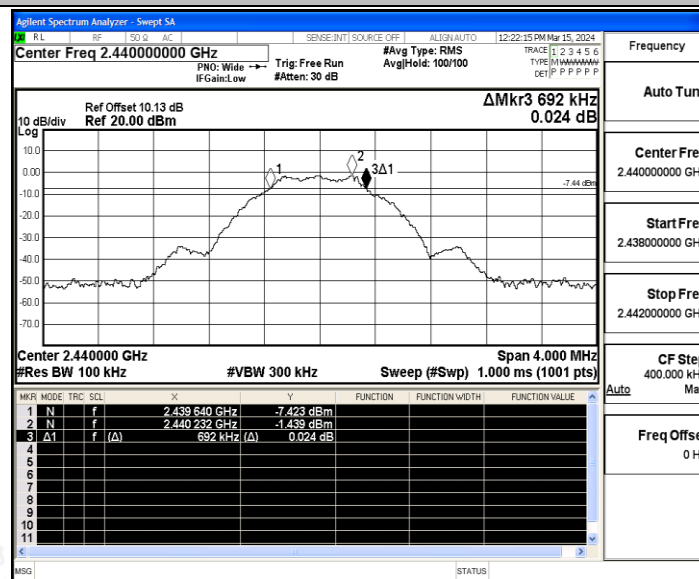


Test Graphs

BLE_Ant_2402

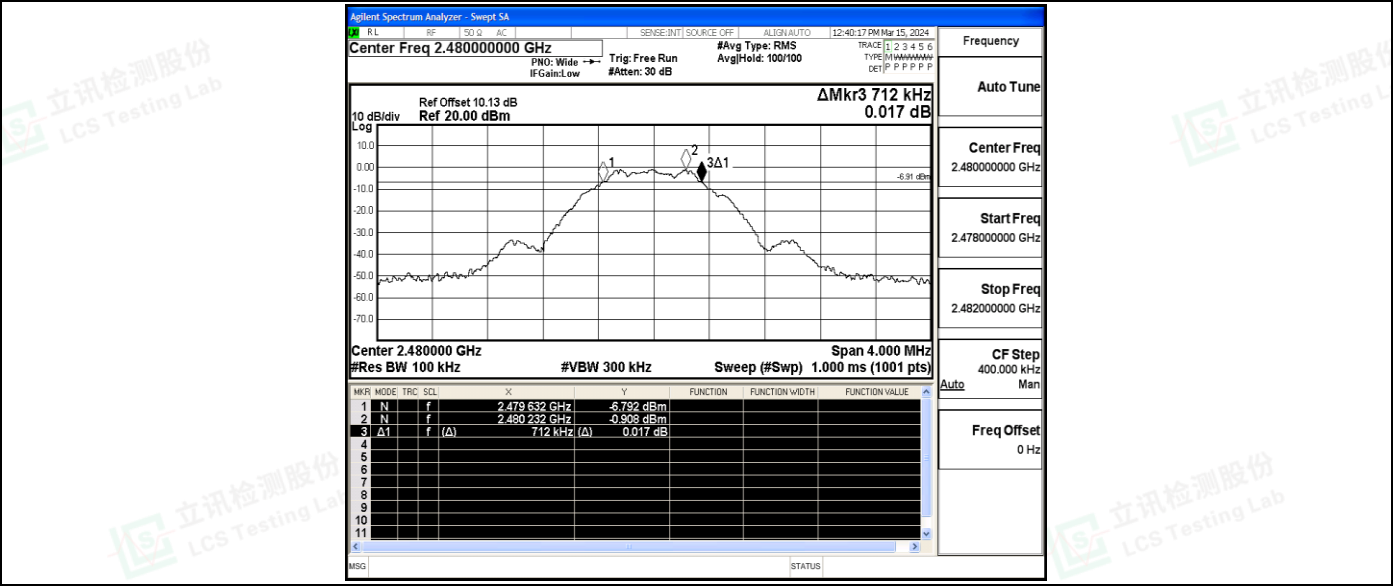


BLE_Ant_2440



BLE_Ant_2480







A.2 Maximum conducted output power

Test Result

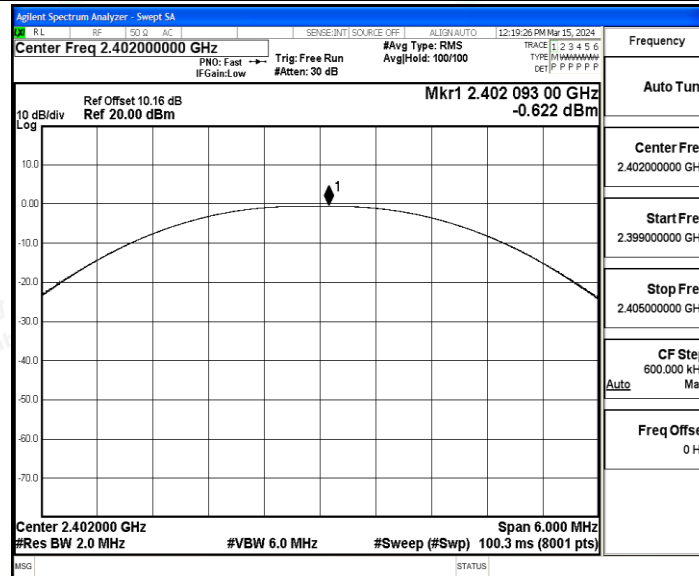
TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
BLE	Ant	2402	-0.62	≤30	PASS
		2440	0.11	≤30	PASS
		2480	0.25	≤30	PASS



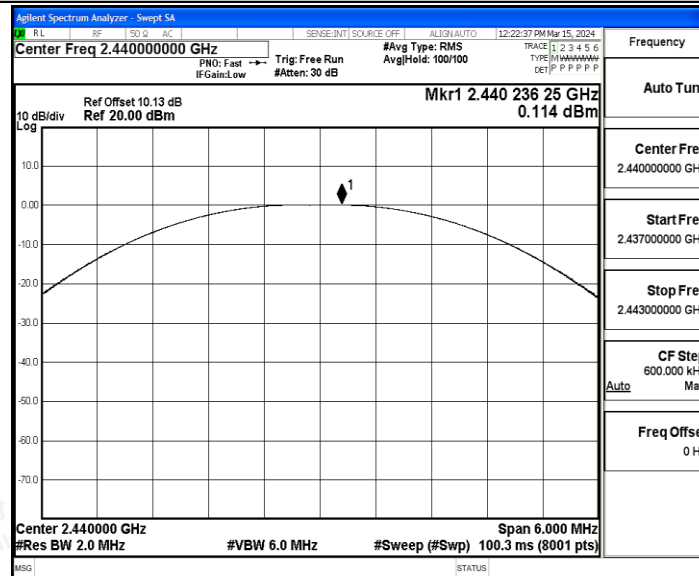


Test Graphs

BLE_Ant_2402

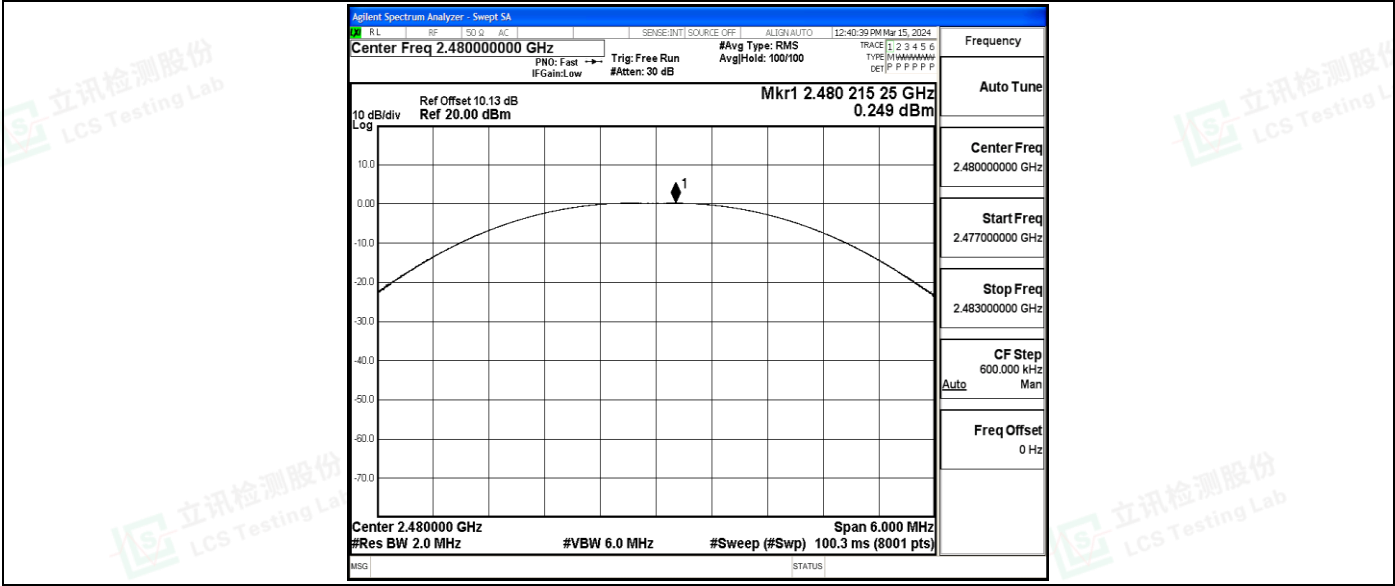


BLE_Ant_2440



BLE_Ant_2480







A.3 Maximum power spectral density

Test Result

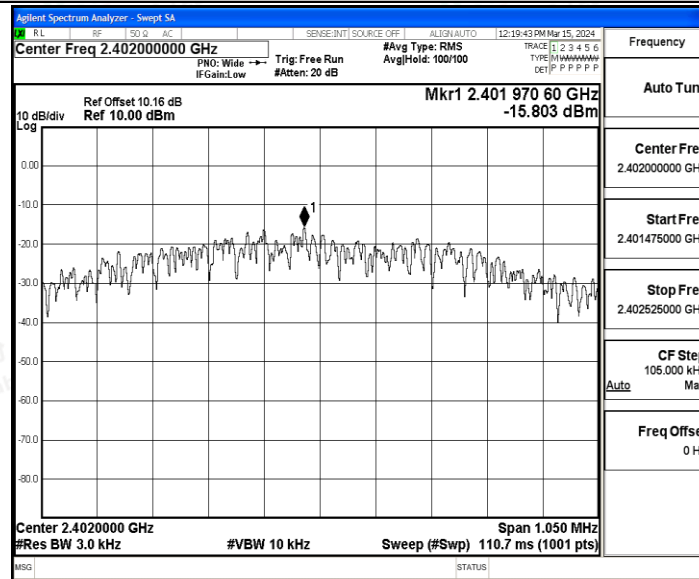
TestMode	Antenna	Frequency[MHz]	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
BLE	Ant	2402	-15.80	≤8.00	PASS
		2440	-15.06	≤8.00	PASS
		2480	-14.99	≤8.00	PASS



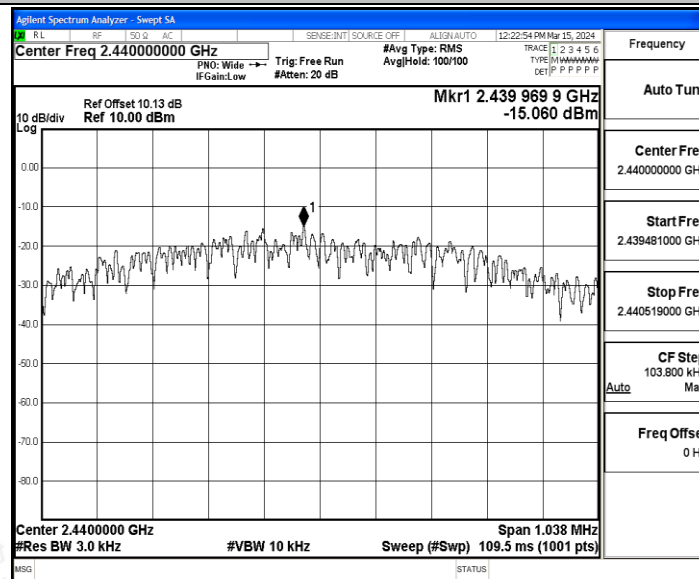


Test Graphs

BLE_Ant_2402

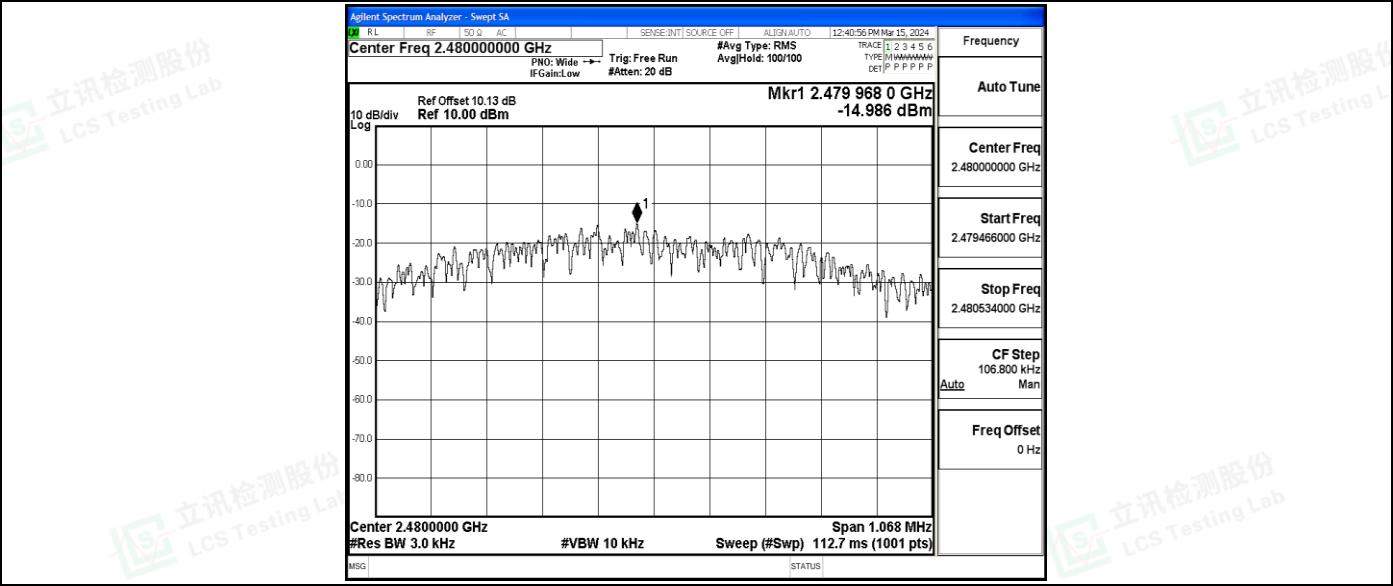


BLE_Ant_2440



BLE_Ant_2480







A.4 Band edge measurements

Test Result

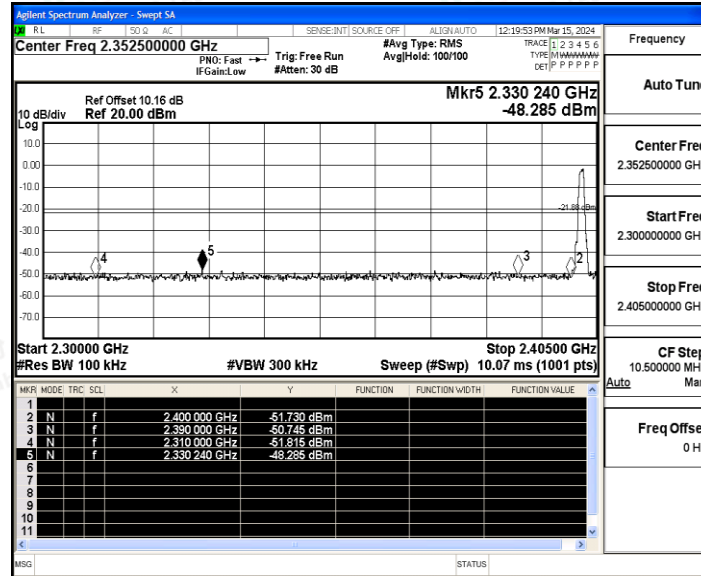
TestMode	Antenna	ChName	Frequency[MHz]	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE	Ant	Low	2402	-1.88	-48.29	≤-21.88	PASS
		High	2480	-0.88	-48.04	≤-20.88	PASS



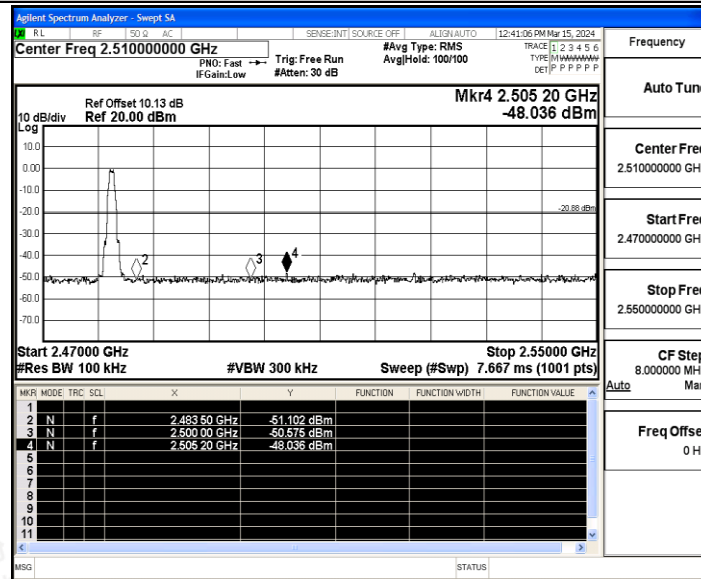


Test Graphs

BLE_Ant_Low_2402



BLE_Ant_High_2480





A.5 Conducted Spurious Emission

Test Result

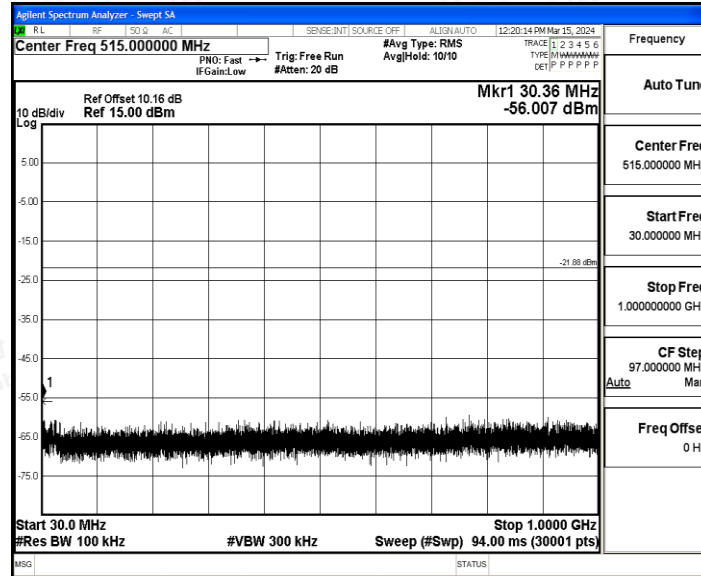
TestMode	Antenna	Frequency[MHz]	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE	Ant	2402	30~1000	-1.88	-56.01	≤-21.88	PASS
			1000~26500	-1.88	-46.86	≤-21.88	PASS
		2440	30~1000	-1.03	-51.02	≤-21.03	PASS
			1000~26500	-1.03	-47.37	≤-21.03	PASS
		2480	30~1000	-0.88	-56.46	≤-20.88	PASS
			1000~26500	-0.88	-47.5	≤-20.88	PASS



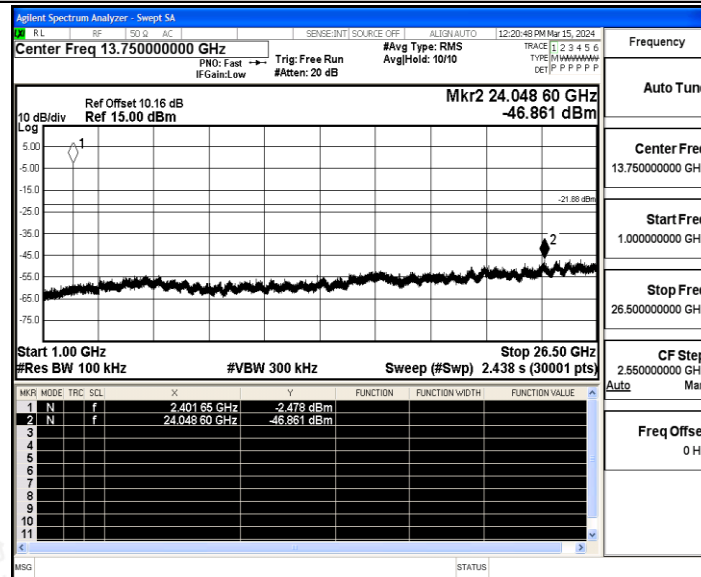


Test Graphs

BLE_Ant_2402_30~1000

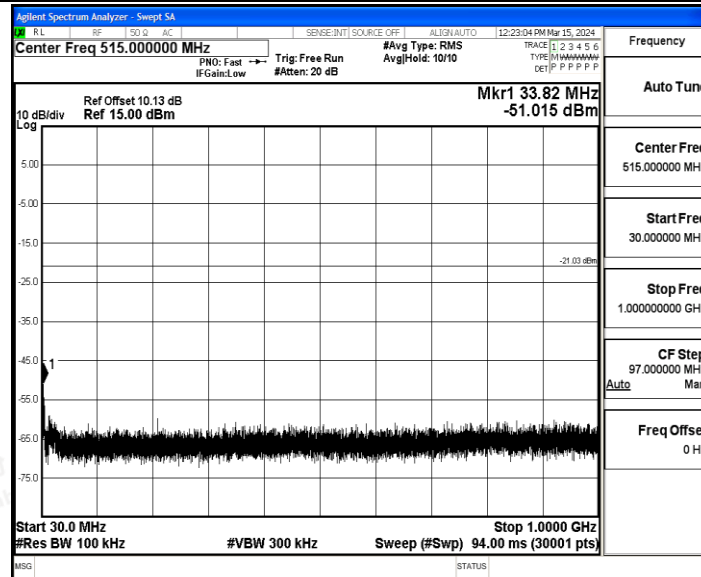


BLE_Ant_2402_1000~26500

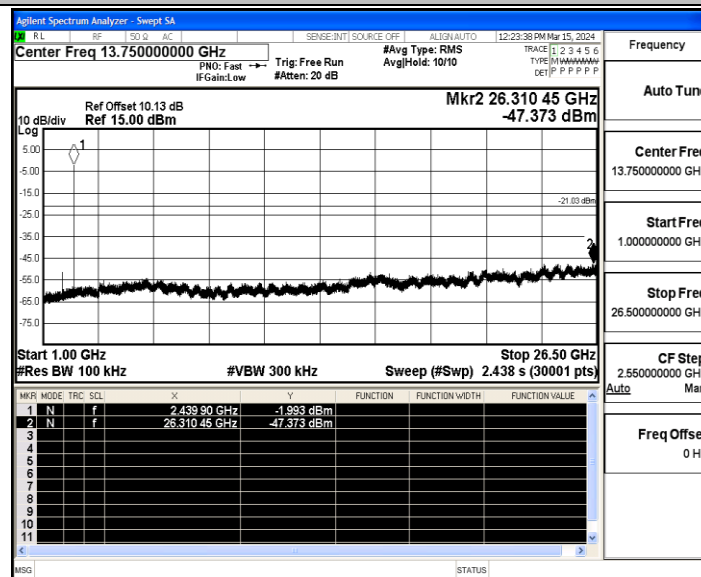


BLE_Ant_2440_30~1000

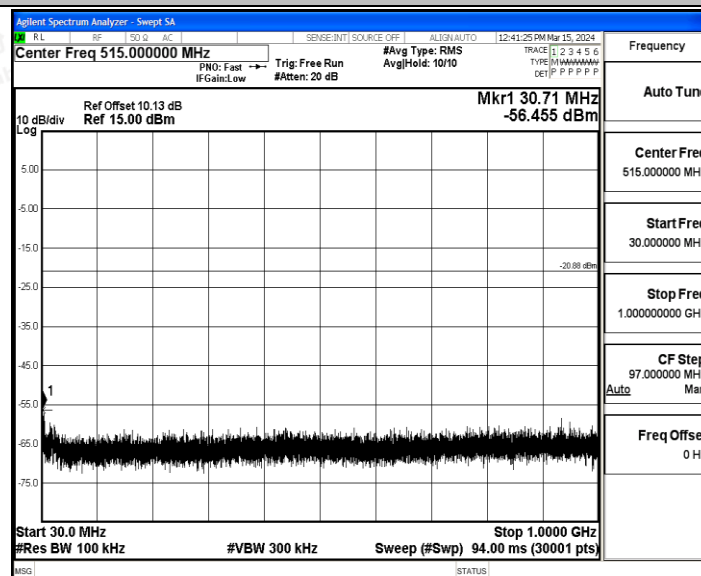


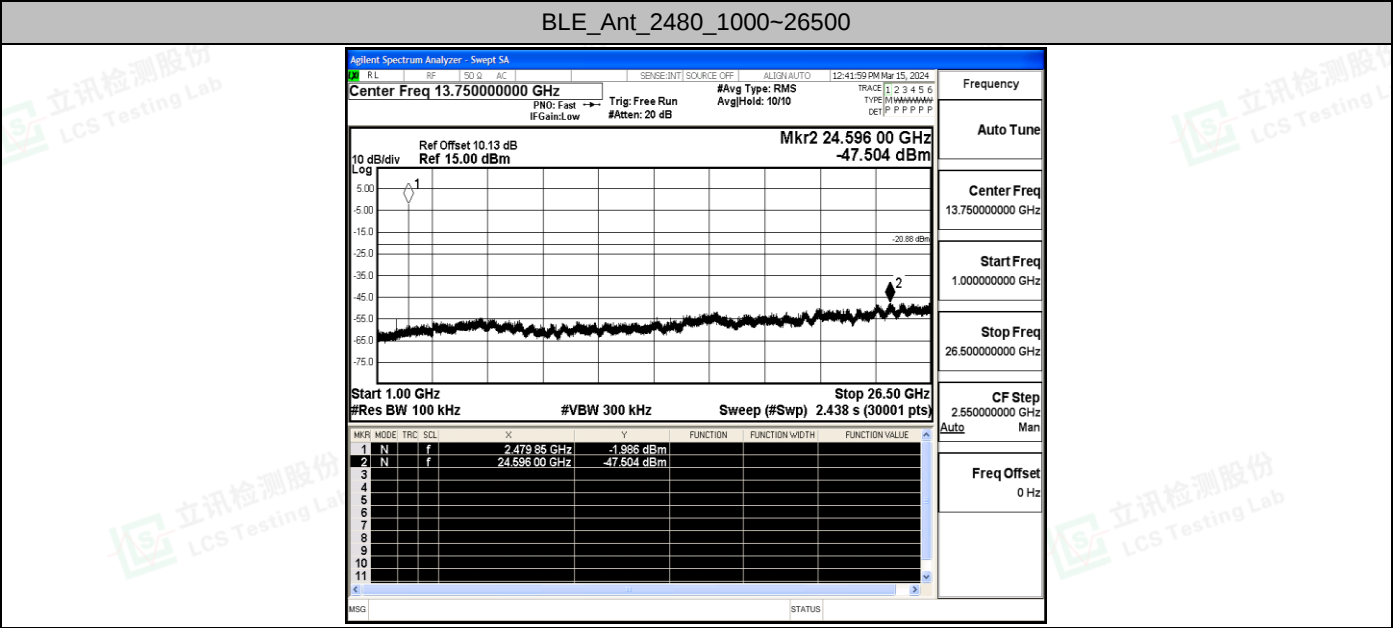


BLE_Ant_2440_1000~26500



BLE_Ant_2480_30~1000







Test Result

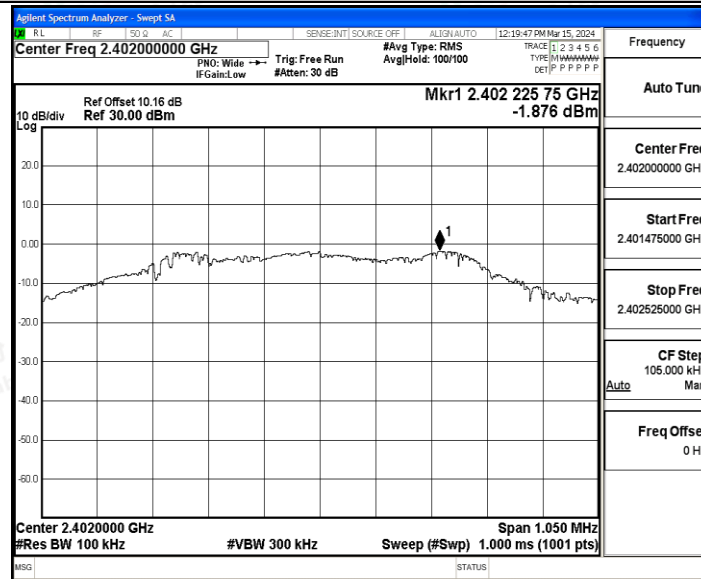
TestMode	Antenna	Freq(MHz)	Max.Point[MHz]	Result[dBm]
BLE	Ant	2402	2402.23	-1.88
		2440	2440.24	-1.03
		2480	2480.24	-0.88



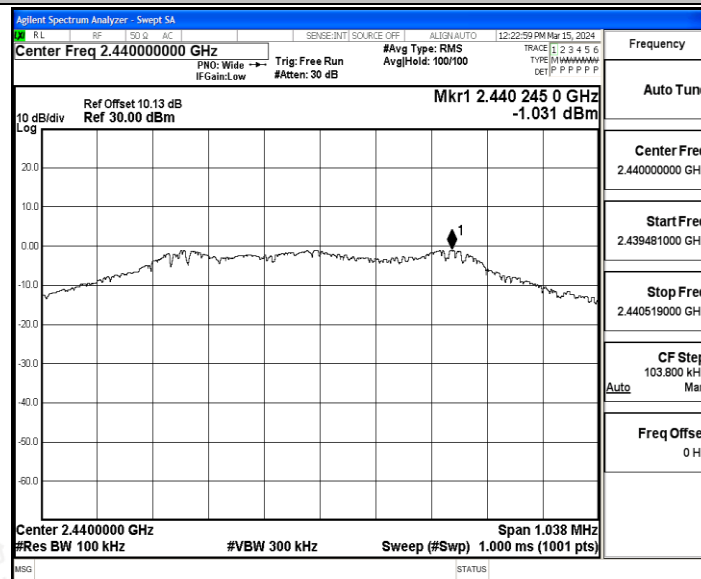


Test Graphs

BLE_Ant_2402

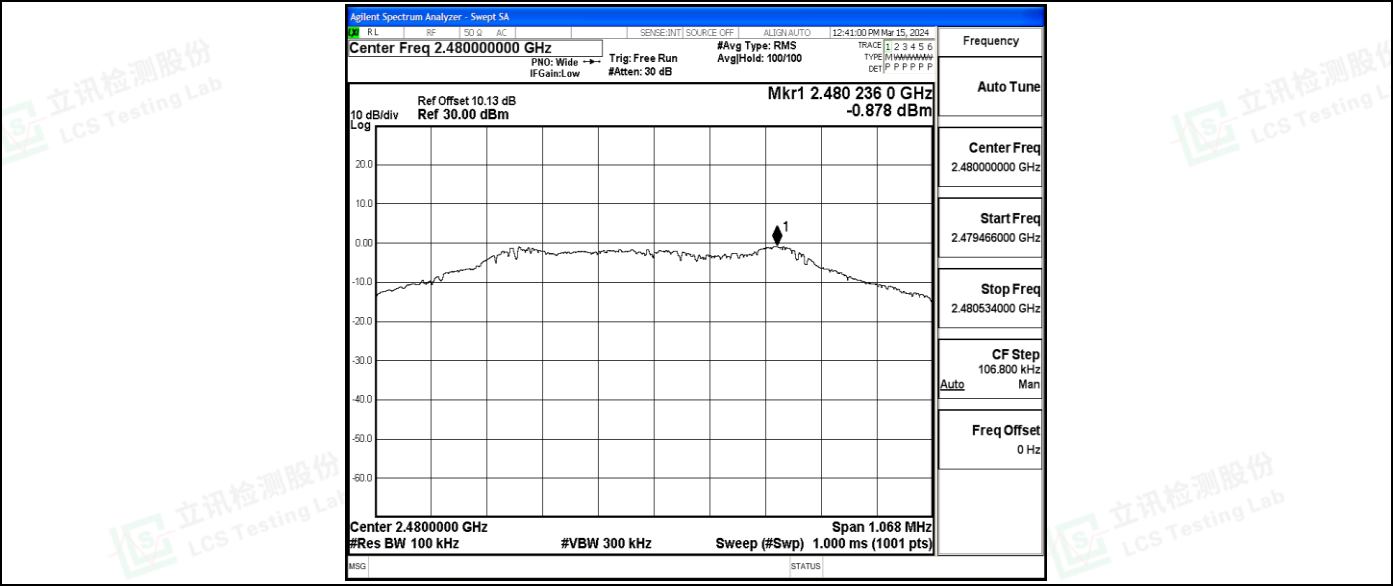


BLE_Ant_2440



BLE_Ant_2480







A.6 Duty Cycle

Test Result

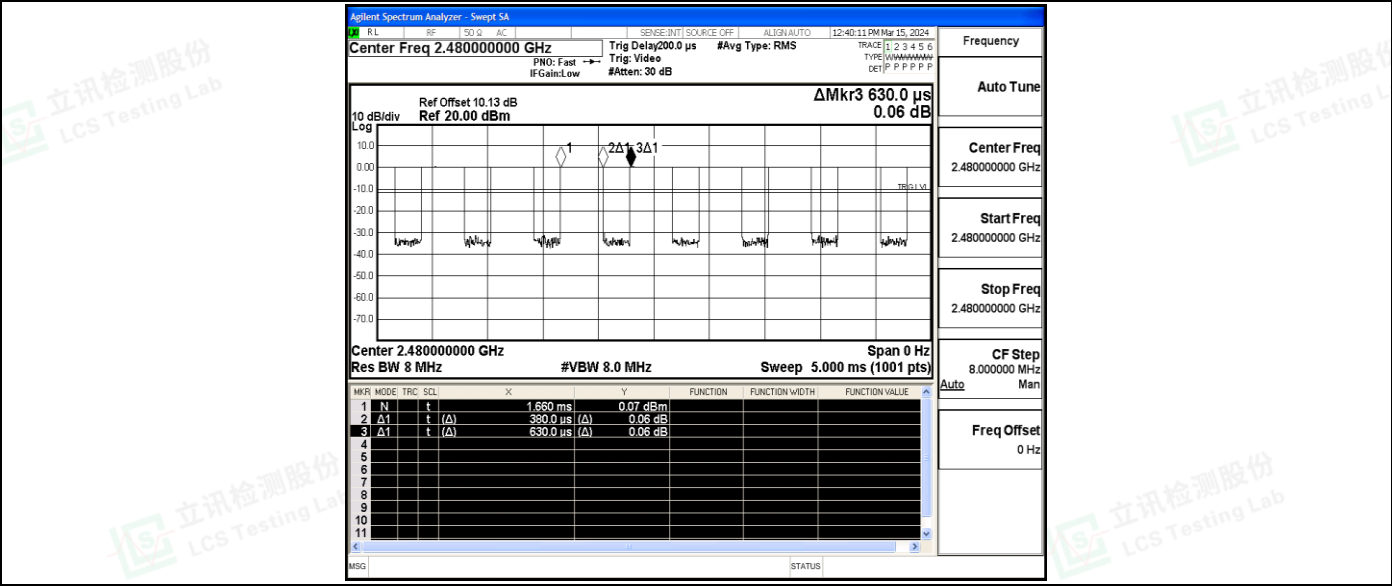
TestMode	Antenna	Frequency[MHz]	ON Time [ms]	Period [ms]	Duty Cycle [%]	Duty Cycle Factor[dB]	1/T Factor[dB]
BLE	Ant	2402	0.38	0.63	60.32	2.20	2.63
		2440	0.38	0.63	60.32	2.20	2.63
		2480	0.38	0.63	60.32	2.20	2.63





Test Graphs







A.7 Emissions in Restricted Bands

Test Result

TestModel	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	-46.07	≤-41.20	49.13	≤54	PASS
				AV	2385.050	-44.78	≤-41.20	50.42	≤54	PASS
				AV	2390.000	-45.83	≤-41.20	49.37	≤54	PASS
				Peak	2310.000	-39.24	≤-21.20	55.96	≤74	PASS
				Peak	2337.275	-36.32	≤-21.20	58.88	≤74	PASS
				Peak	2390.000	-39.09	≤-21.20	56.11	≤74	PASS
		High	2480	AV	2483.500	-45.47	≤-41.20	49.73	≤54	PASS
				AV	2491.200	-44.8	≤-41.20	50.40	≤54	PASS
				AV	2500.000	-45.62	≤-41.20	49.58	≤54	PASS
				Peak	2483.500	-39.97	≤-21.20	55.23	≤74	PASS
				Peak	2494.080	-37.78	≤-21.20	57.42	≤74	PASS
				Peak	2500.000	-39.53	≤-21.20	55.67	≤74	PASS

Note:

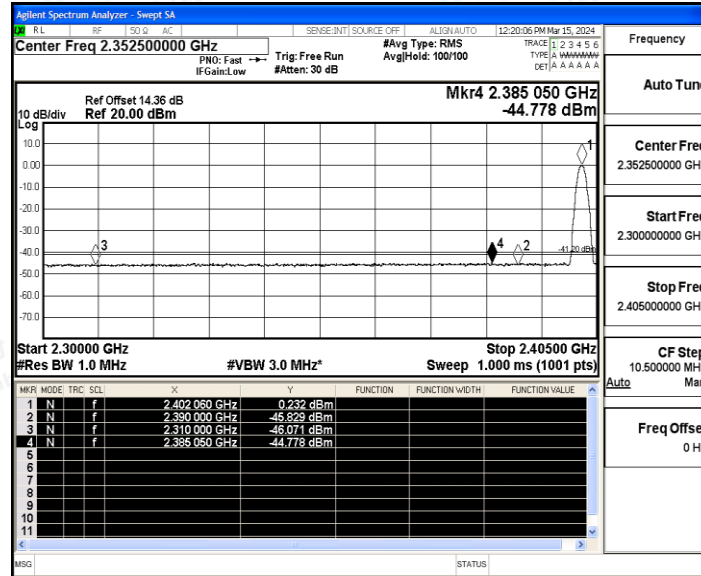
- 1. The Antenna Gain is compensated in the graph. The Correction Factor is compensated in the graph.
- 2. The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.



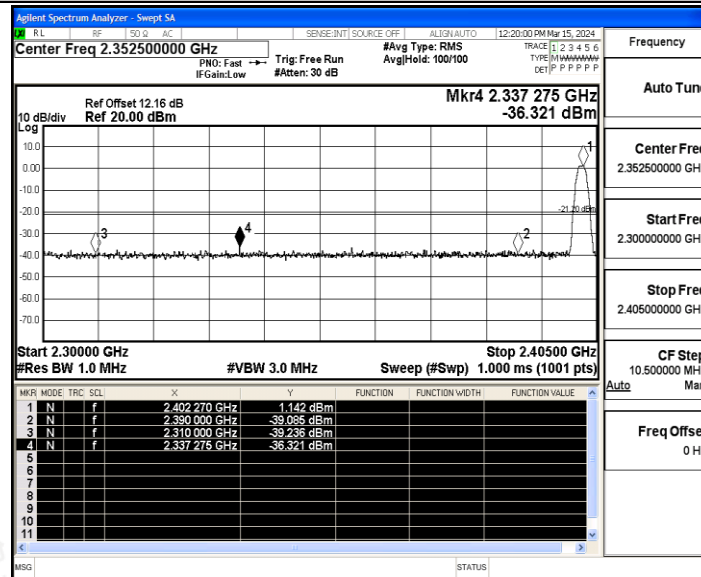


Test Graphs

BLE_Ant_Low_2402_AV

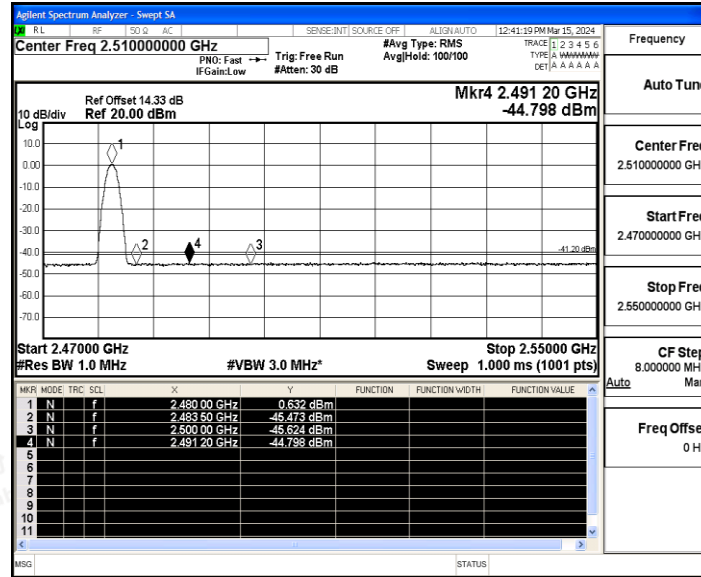


BLE_Ant_Low_2402_Peak



BLE_Ant_High_2480_AV





BLE_Ant_High_2480_Peak

