



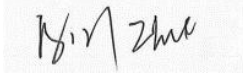

Appendix A

RF Test Data for BT LE (Conducted Measurement)

Product Name: LED Controller

Test Model: SP110E

Environmental Conditions

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



A.1 DTS Bandwidth

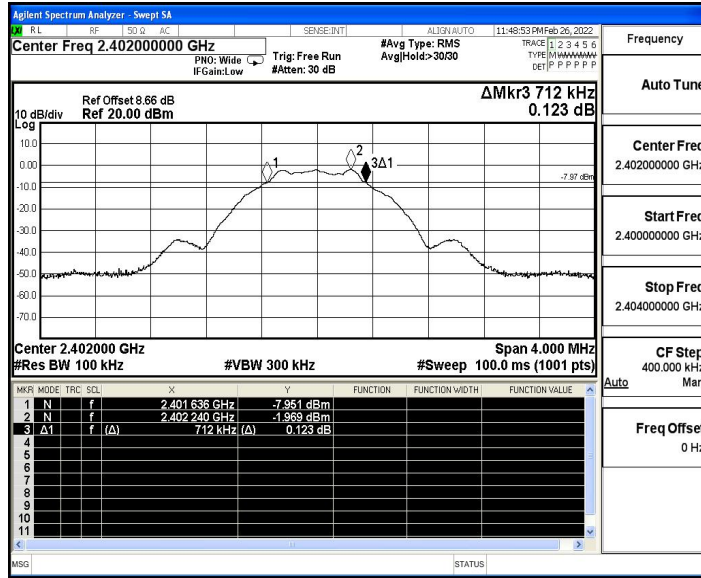
Test Result

TestMode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.712	2401.636	2402.348	0.5	PASS
		2440	0.712	2439.636	2440.348	0.5	PASS
		2480	0.712	2479.636	2480.348	0.5	PASS

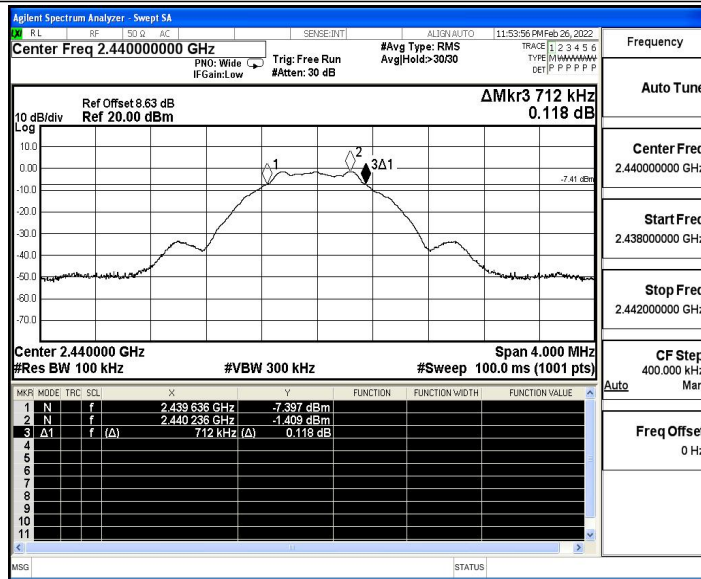


Test Graphs

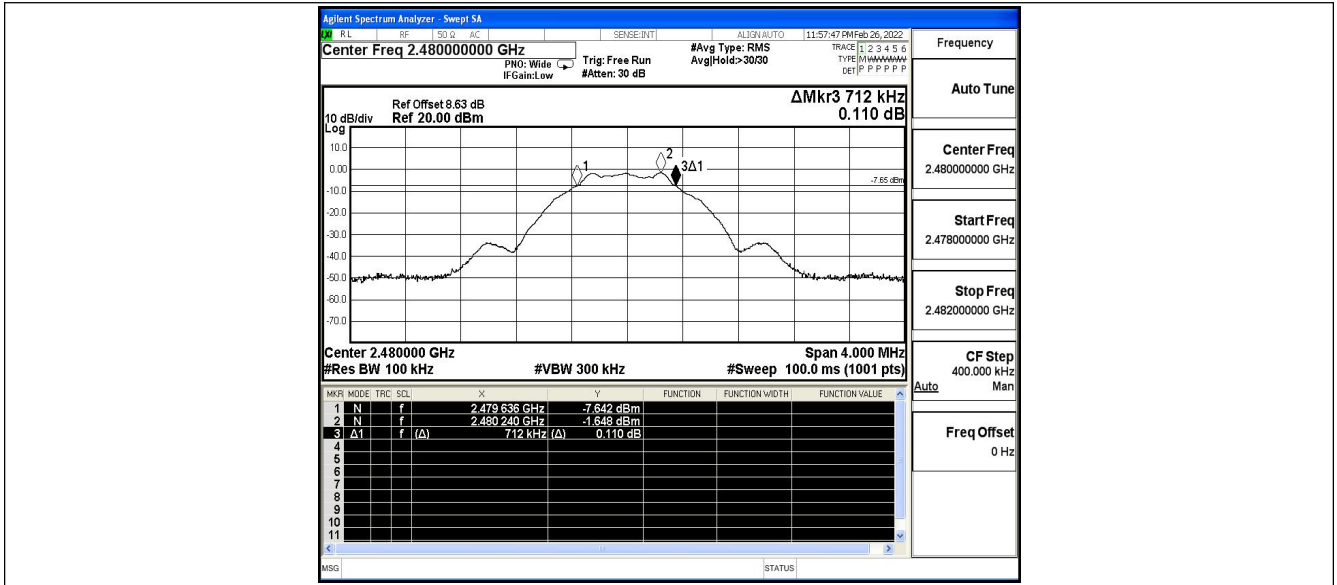
BLE_1M_Ant1_2402



BLE_1M_Ant1_2440



BLE_1M_Ant1_2480





A.2 Maximum peak conducted output power

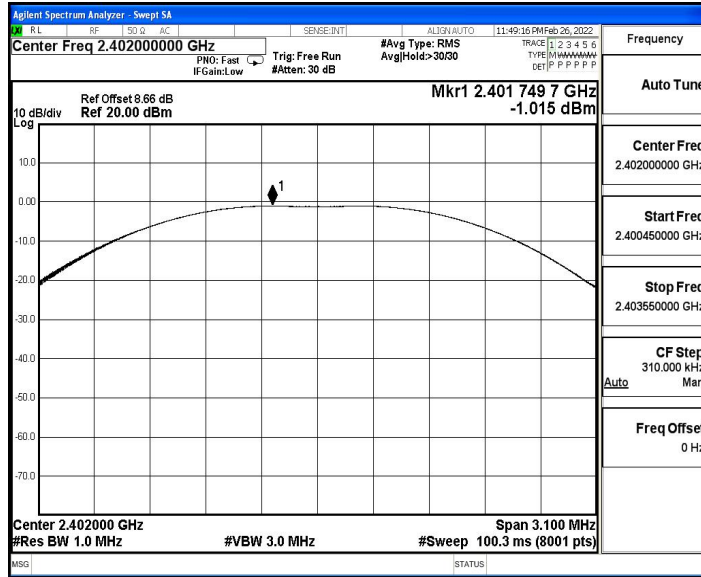
Test Result

TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	-1.02	≤30	PASS
		2440	-0.44	≤30	PASS
		2480	-0.69	≤30	PASS

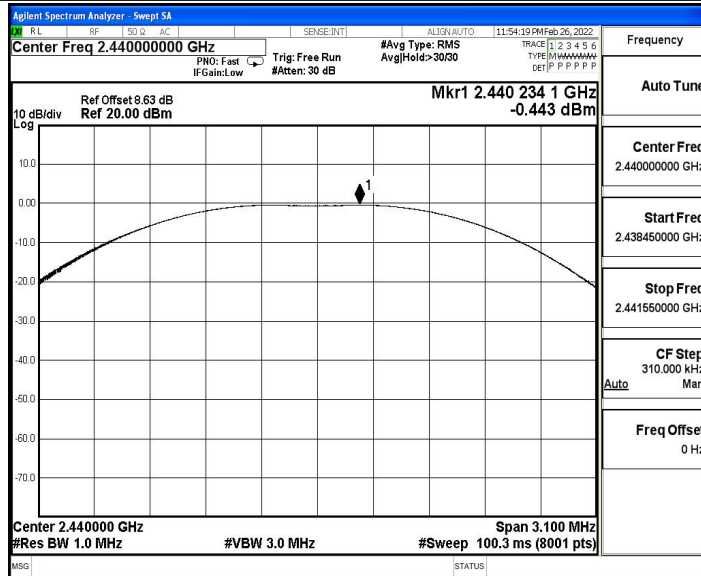


Test Graphs

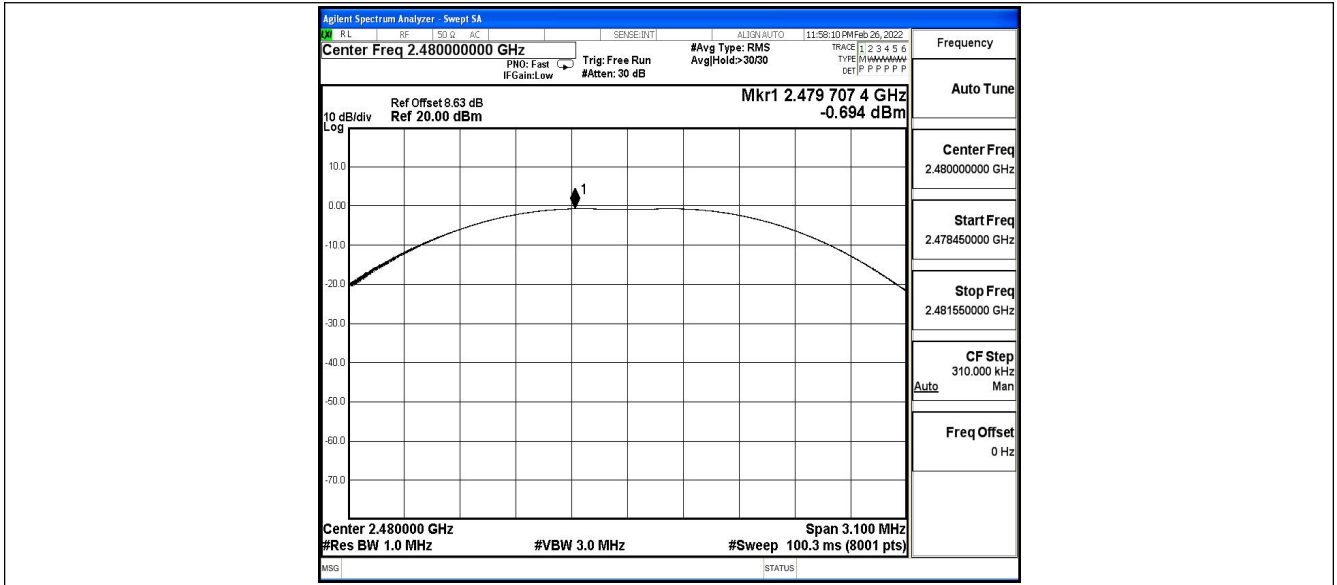
BLE_1M_Ant1_2402



BLE_1M_Ant1_2440



BLE_1M_Ant1_2480





A.3 Maximum power spectral density

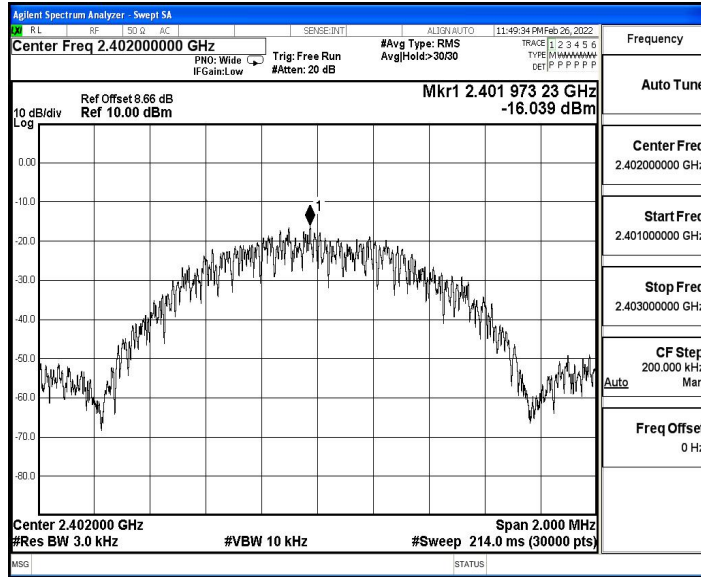
Test Result

TestMode	Antenna	Channel	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-16.04	≤8.00	PASS
		2440	-15.84	≤8.00	PASS
		2480	-15.84	≤8.00	PASS

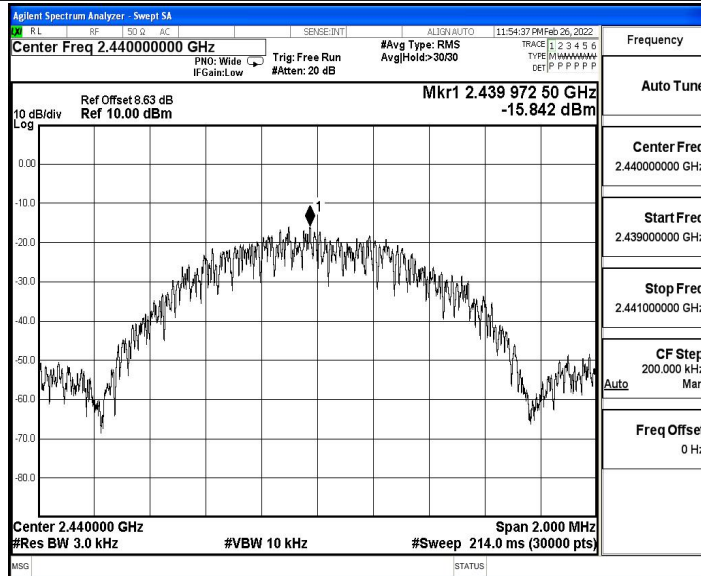


Test Graphs

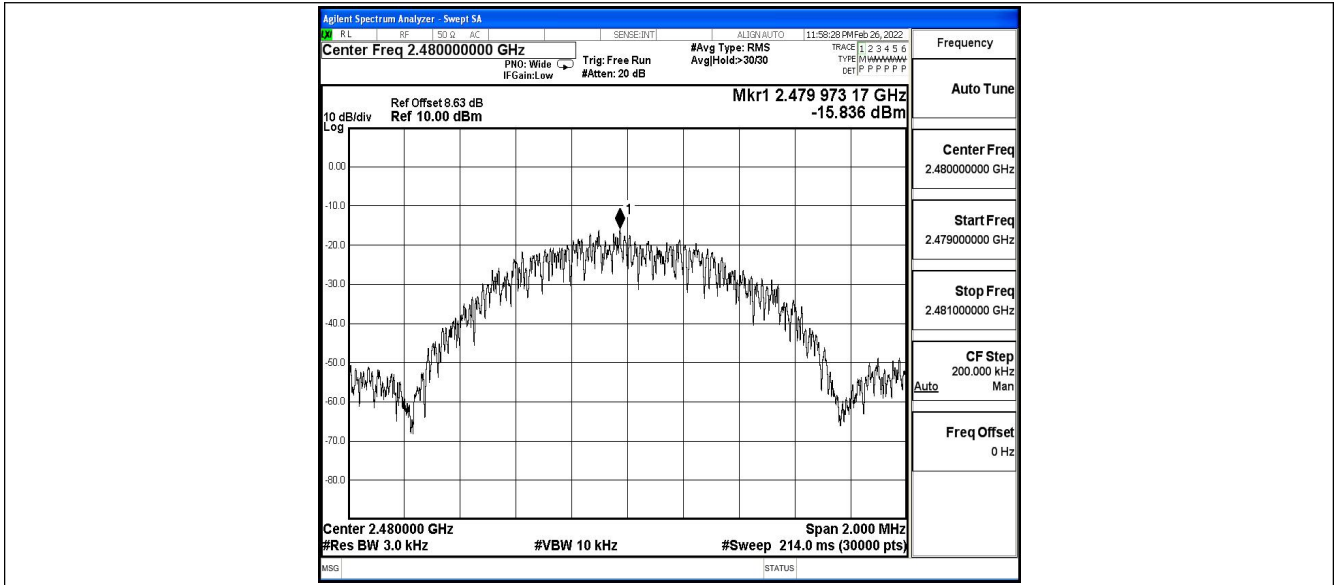
BLE_1M_Ant1_2402



BLE_1M_Ant1_2440



BLE_1M_Ant1_2480





A.4 Band edge measurements

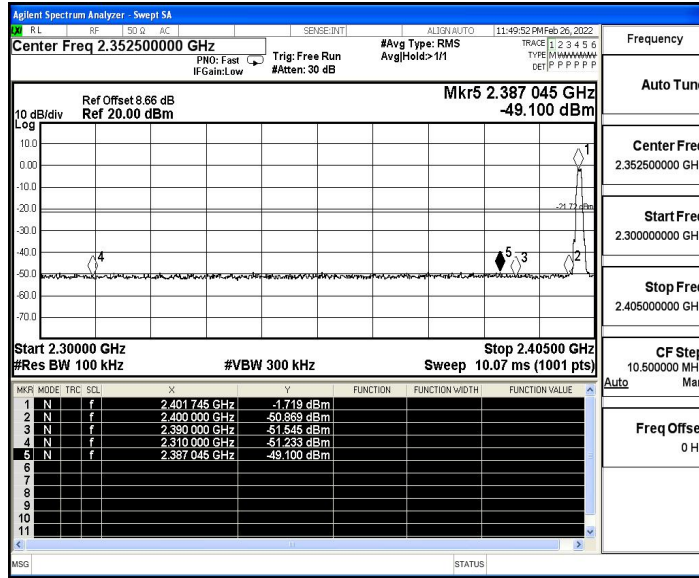
Test Result

TestMode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	-1.72	-49.1	≤-21.72	PASS
		High	2480	-1.39	-47.93	≤-21.39	PASS

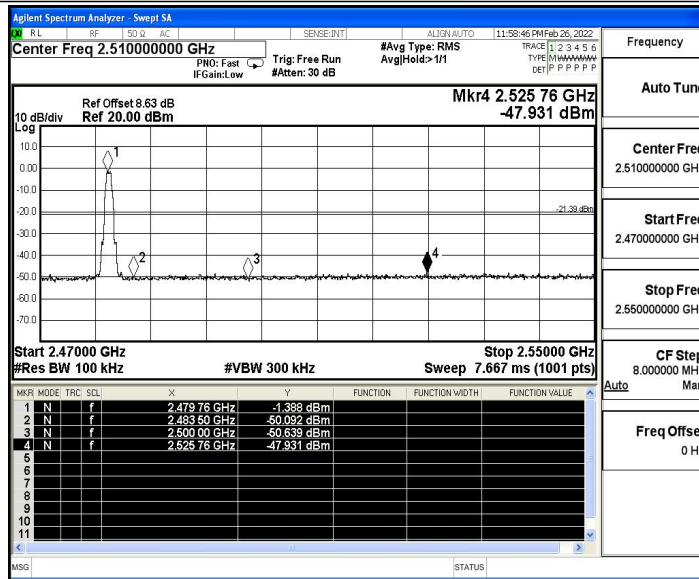


Test Graphs

BLE_1M_Ant1_Low_2402



BLE_1M_Ant1_High_2480





A.5 Conducted Spurious Emission

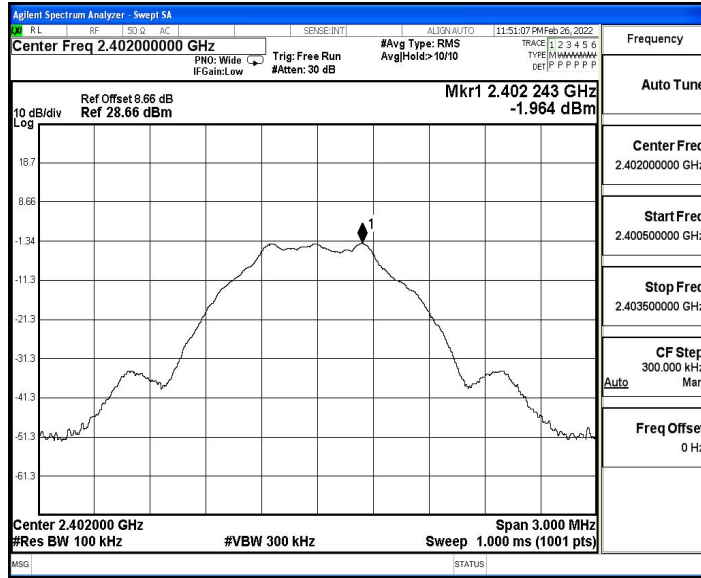
Test Result

TestMode	Antenna	Channel	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	Reference	-1.96	-1.96	---	PASS
			30~1000	-1.96	-60.04	≤ -21.96	PASS
			1000~26500	-1.96	-45.8	≤ -21.96	PASS
		2440	Reference	-1.38	-1.38	---	PASS
			30~1000	-1.38	-60.37	≤ -21.38	PASS
			1000~26500	-1.38	-46.15	≤ -21.38	PASS
		2480	Reference	-1.63	-1.63	---	PASS
			30~1000	-1.63	-60.44	≤ -21.63	PASS
			1000~26500	-1.63	-46.53	≤ -21.63	PASS

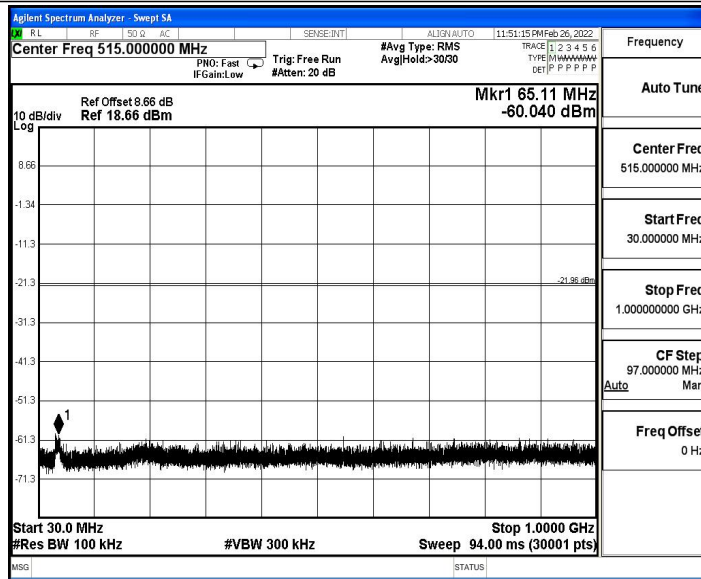


Test Graphs

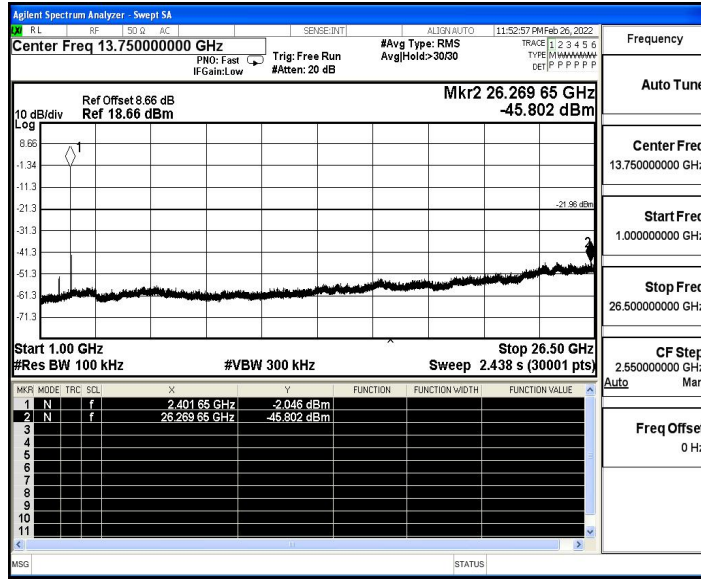
BLE_1M_Ant1_2402_0~Reference



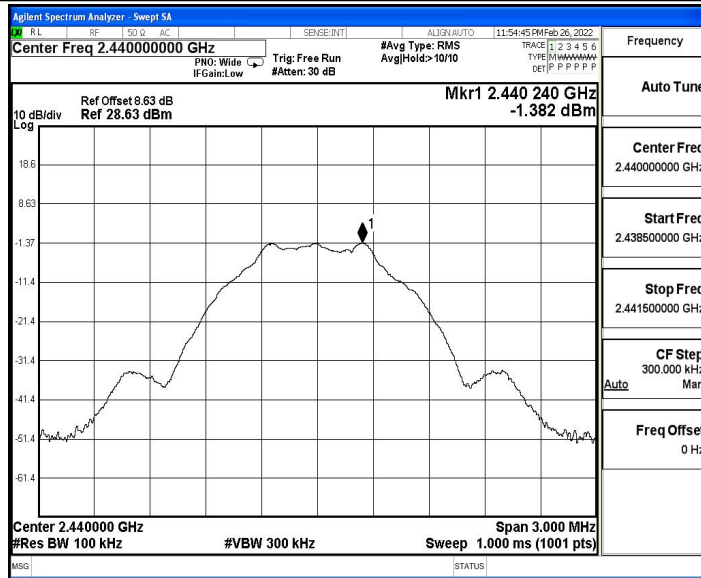
BLE_1M_Ant1_2402_30~1000



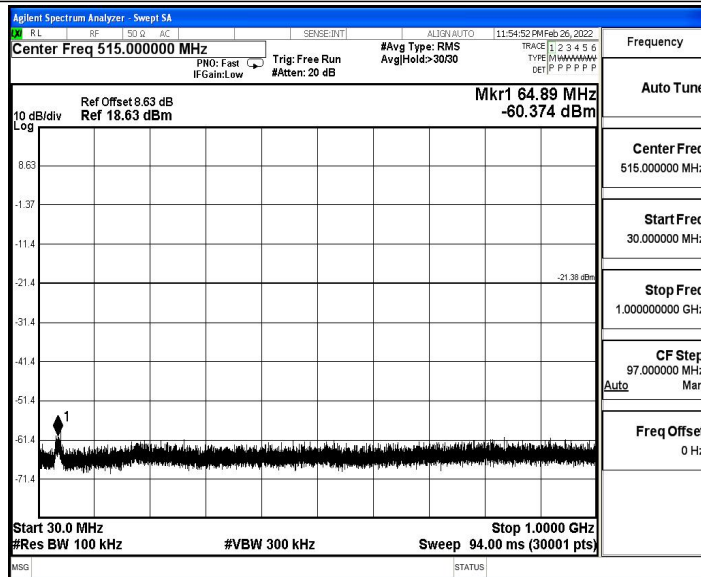
BLE_1M_Ant1_2402_1000~26500



BLE_1M_Ant1_2440_0~Reference

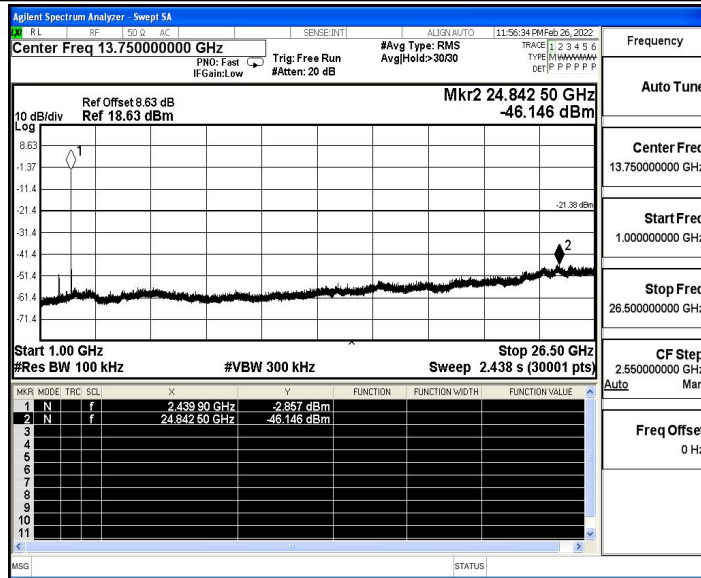


BLE_1M_Ant1_2440_30~1000

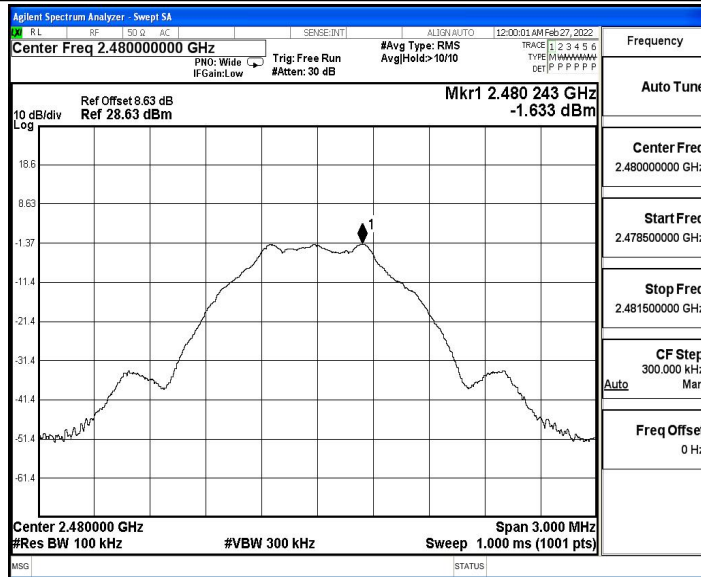




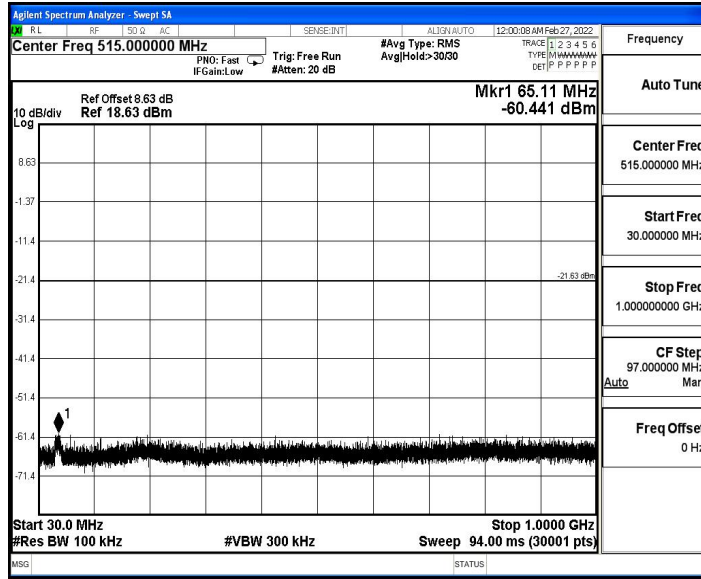
BLE_1M_Ant1_2440_1000~26500



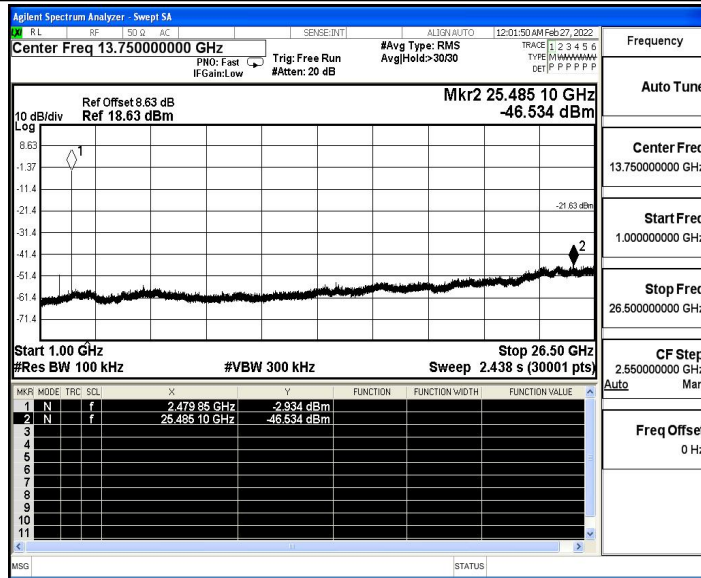
BLE_1M_Ant1_2480_0~Reference



BLE_1M_Ant1_2480_30~1000



BLE_1M_Ant1_2480_1000~26500





A.6 Duty Cycle

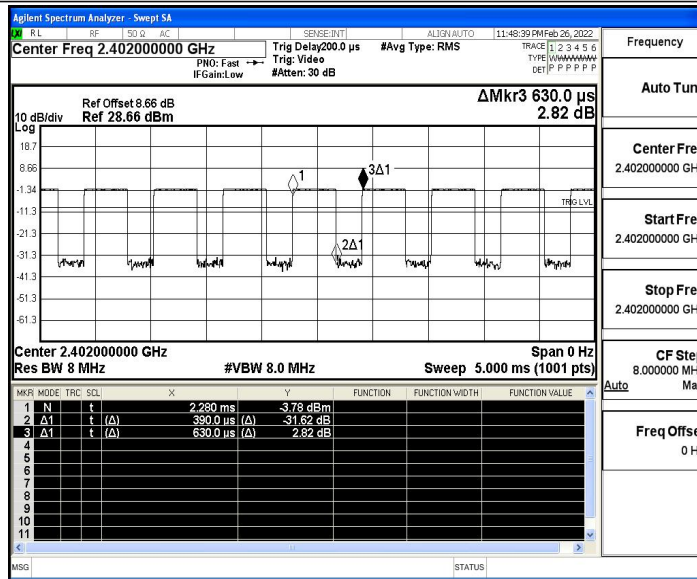
Test Result

TestMode	Antenna	Channel	ON Time [ms]	Period [ms]	X	DC [%]	xFactor	1/T[kHz]
BLE_1M	Ant1	2402	0.39	0.63	0.6190	61.90	2.08	2.63
		2440	0.38	0.63	0.6032	60.32	2.20	2.63
		2480	0.39	0.63	0.6190	61.90	2.08	2.63

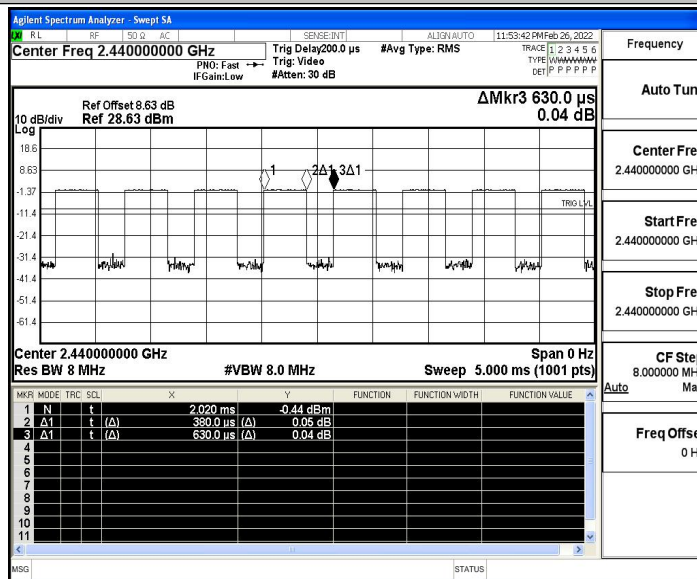


Test Graphs

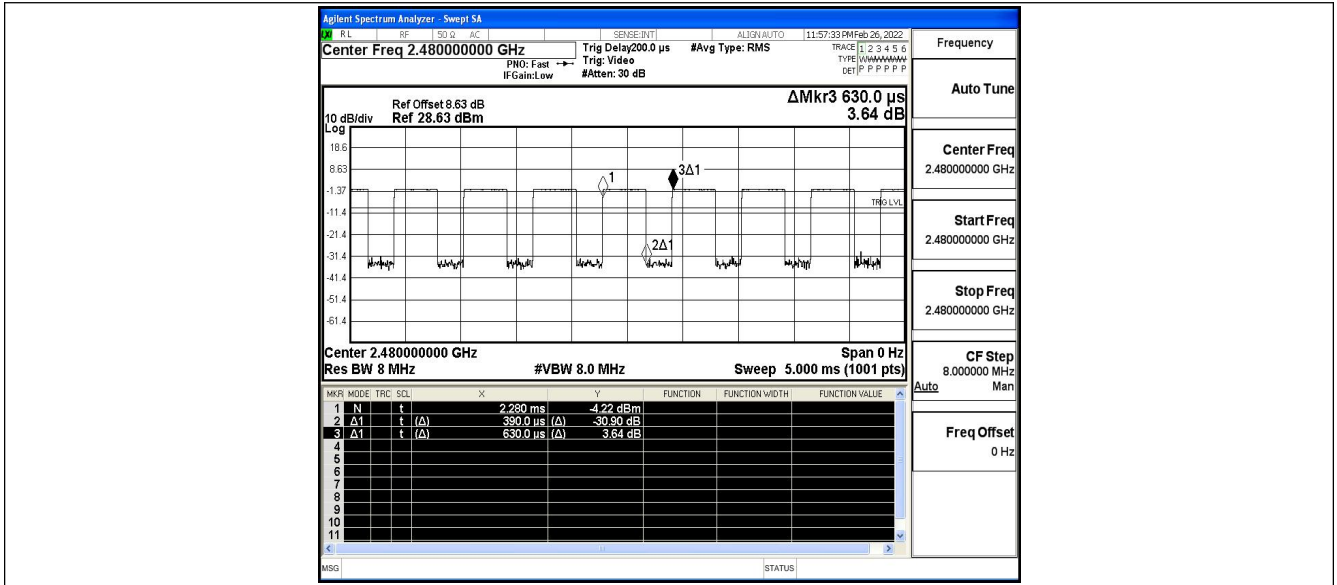
BLE_1M_Ant1_2402



BLE_1M_Ant1_2440



BLE_1M_Ant1_2480





A.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	-47.65	≤-41.20	47.55	≤54	PASS
				AV	2384.525	-46.73	≤-41.20	48.47	≤54	PASS
				AV	2390.000	-47.14	≤-41.20	48.06	≤54	PASS
				Peak	2310.000	-38.44	≤-21.20	56.76	≤74	PASS
				Peak	2385.365	-36.55	≤-21.20	58.65	≤74	PASS
				Peak	2390.000	-38.38	≤-21.20	56.82	≤74	PASS
		High	2480	AV	2483.500	-46.51	≤-41.20	48.69	≤54	PASS
				AV	2499.200	-46.19	≤-41.20	49.01	≤54	PASS
				AV	2500.000	-46.58	≤-41.20	48.62	≤54	PASS
				Peak	2483.500	-38.44	≤-21.20	56.76	≤74	PASS
				Peak	2490.960	-36.21	≤-21.20	58.99	≤74	PASS
				Peak	2500.000	-37.97	≤-21.20	57.23	≤74	PASS

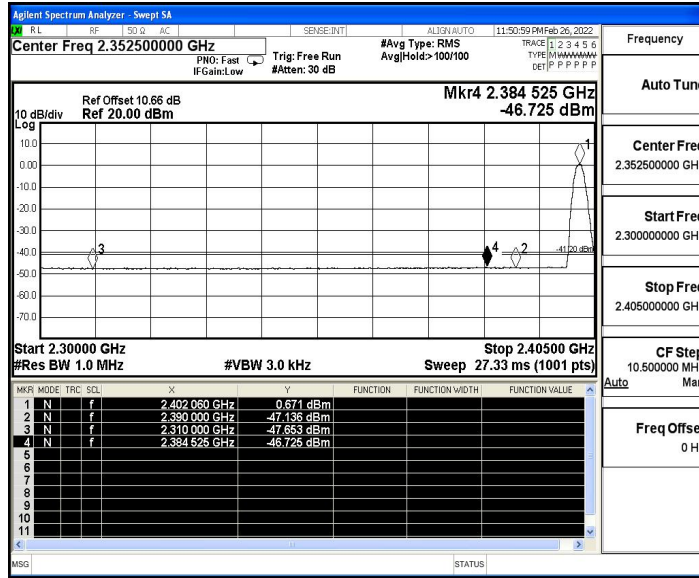
Note:

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.

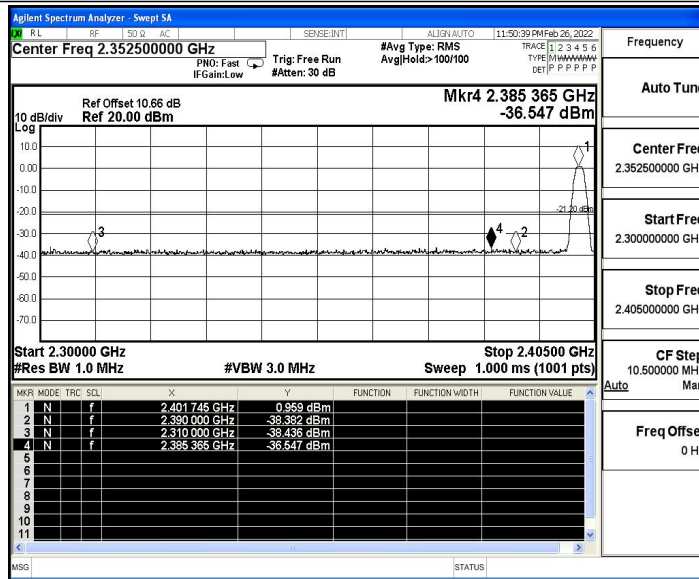


Test Graphs

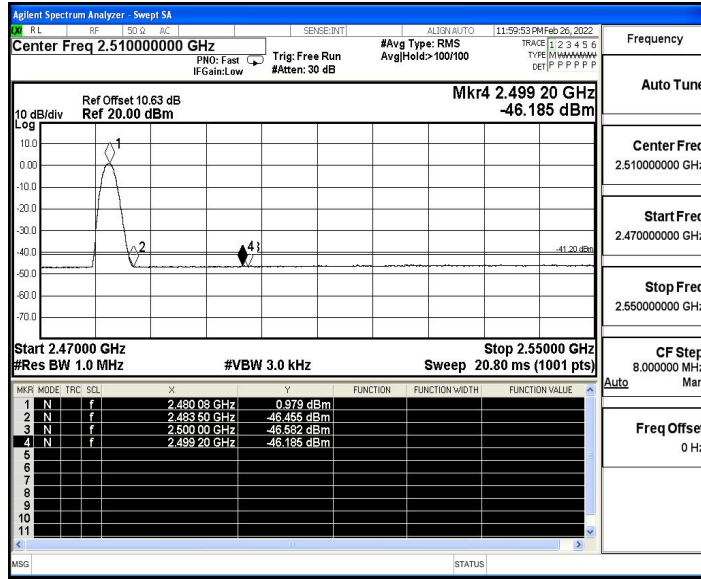
BLE_1M_Ant1_Low_2402_AV



BLE_1M_Ant1_Low_2402_Peak



BLE_1M_Ant1_High_2480_AV



BLE_1M_Ant1_High_2480_Peak

