



Appendix A

RF Test Data for BT LE (Conducted Measurement)

Product Name: INTELLIGENT LOCK

Test Model: HFAD6300B-R

Environmental Conditions

Temperature:	23.5℃
Relative Humidity:	52.2%
ATM Pressure:	100.0 kPa
Test Engineer:	 Mark Chen
Supervised by:	 Li Huan



A.1 DTS Bandwidth

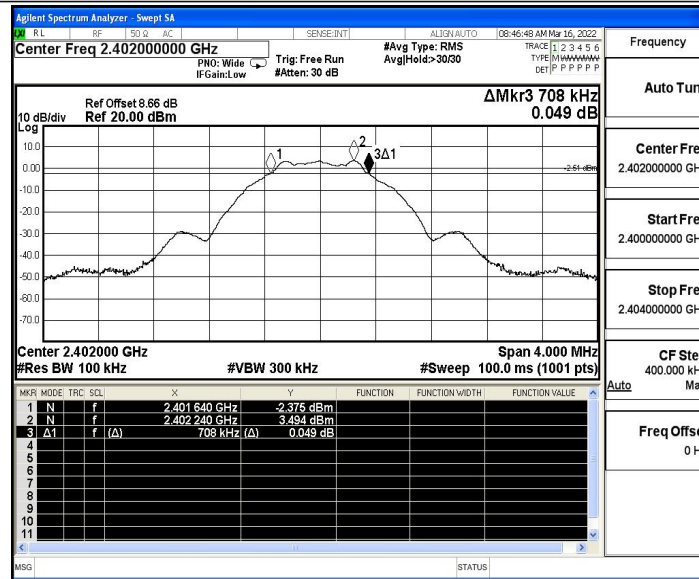
Test Result

TestMode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.708	2401.640	2402.348	0.5	PASS
		2440	0.708	2439.640	2440.348	0.5	PASS
		2480	0.712	2479.640	2480.352	0.5	PASS

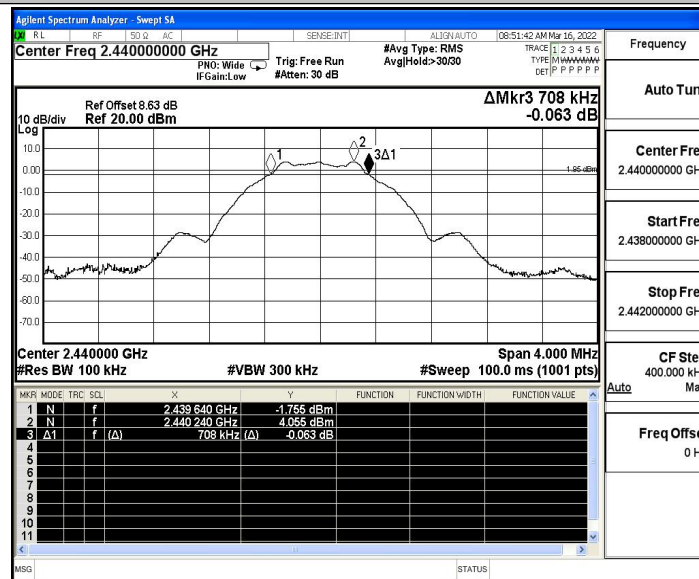


Test Graphs

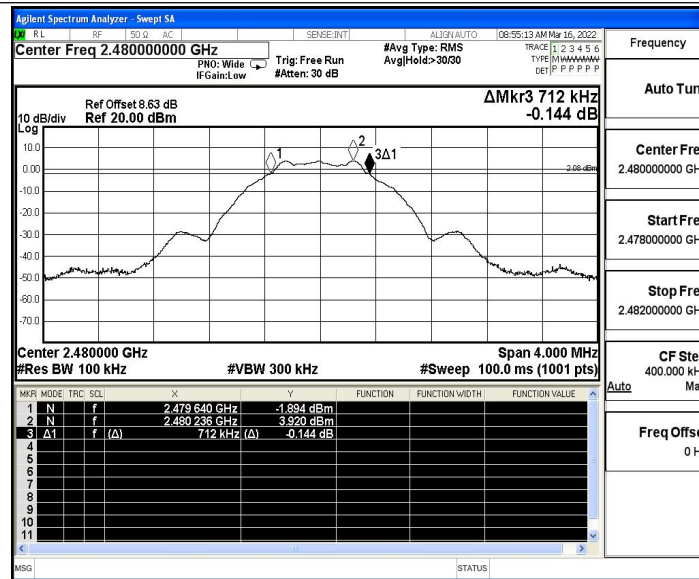
BLE_1M_Ant1_2402



BLE_1M_Ant1_2440



BLE_1M_Ant1_2480





A.2 Maximum peak conducted output power

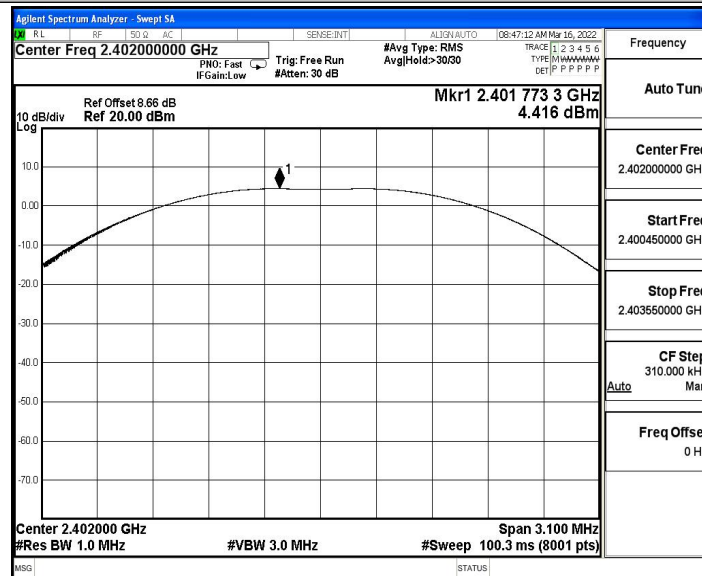
Test Result

TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	4.42	≤30	PASS
		2440	4.98	≤30	PASS
		2480	4.83	≤30	PASS

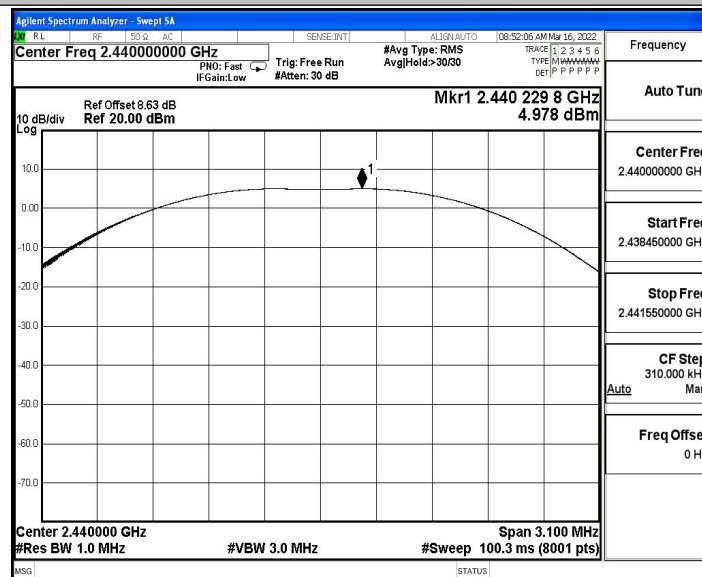


Test Graphs

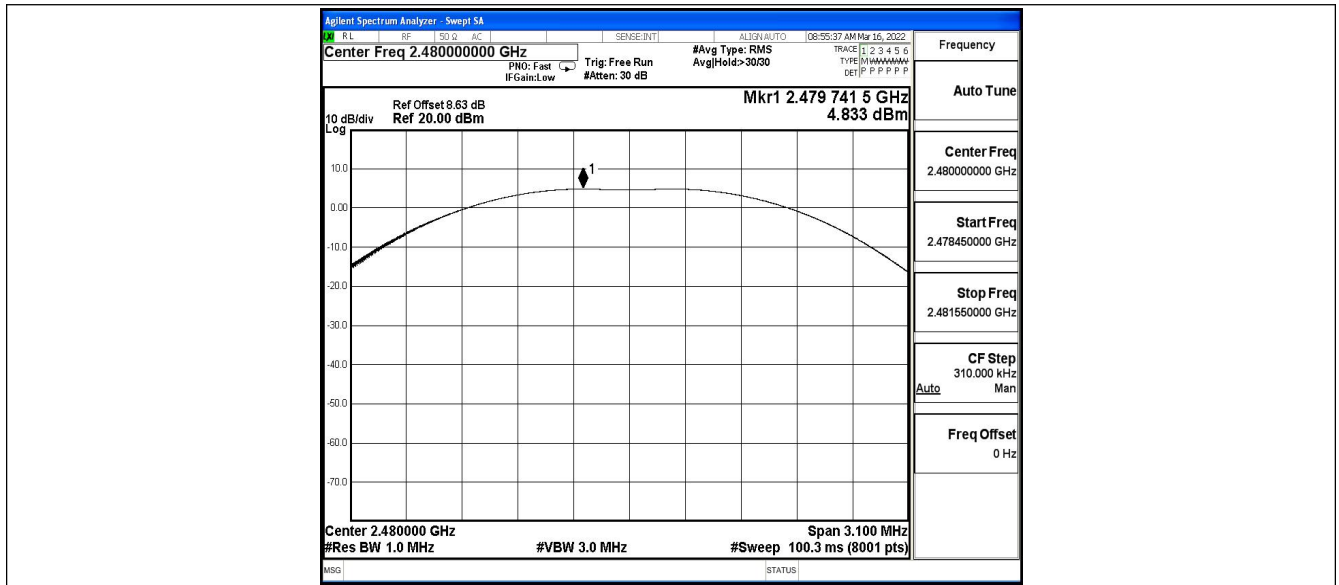
BLE_1M_Ant1_2402



BLE_1M_Ant1_2440



BLE_1M_Ant1_2480





A.3 Maximum power spectral density

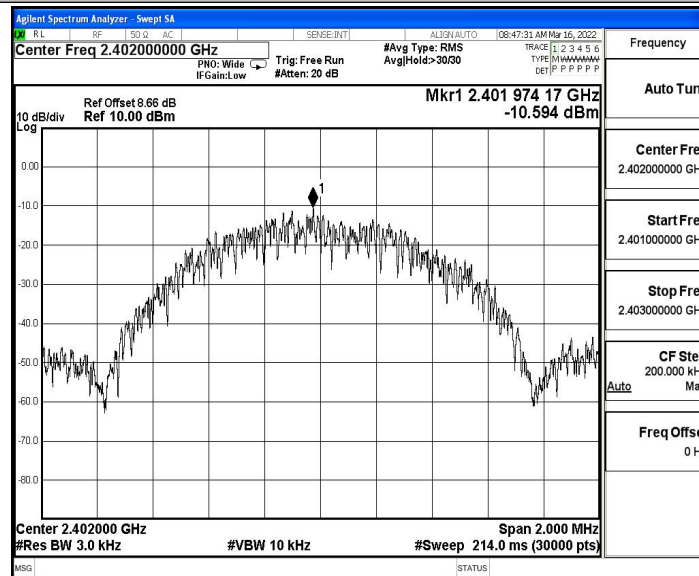
Test Result

TestMode	Antenna	Channel	Result[dBm/3-100kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-10.59	≤8.00	PASS
		2440	-10.09	≤8.00	PASS
		2480	-10.25	≤8.00	PASS

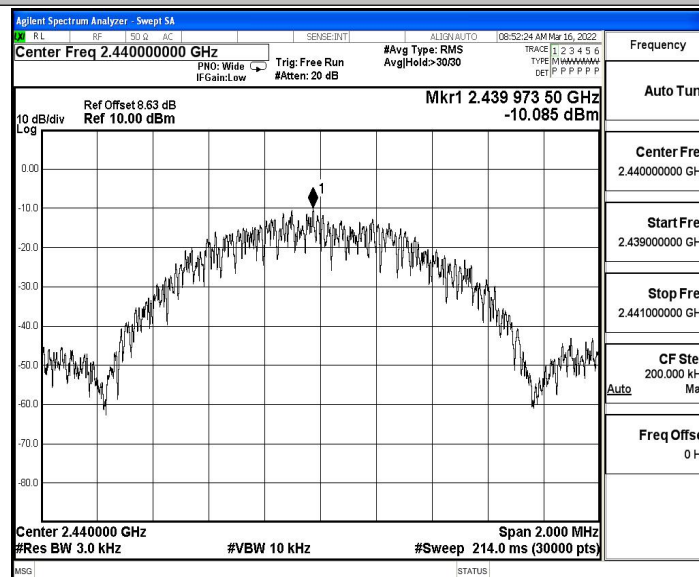


Test Graphs

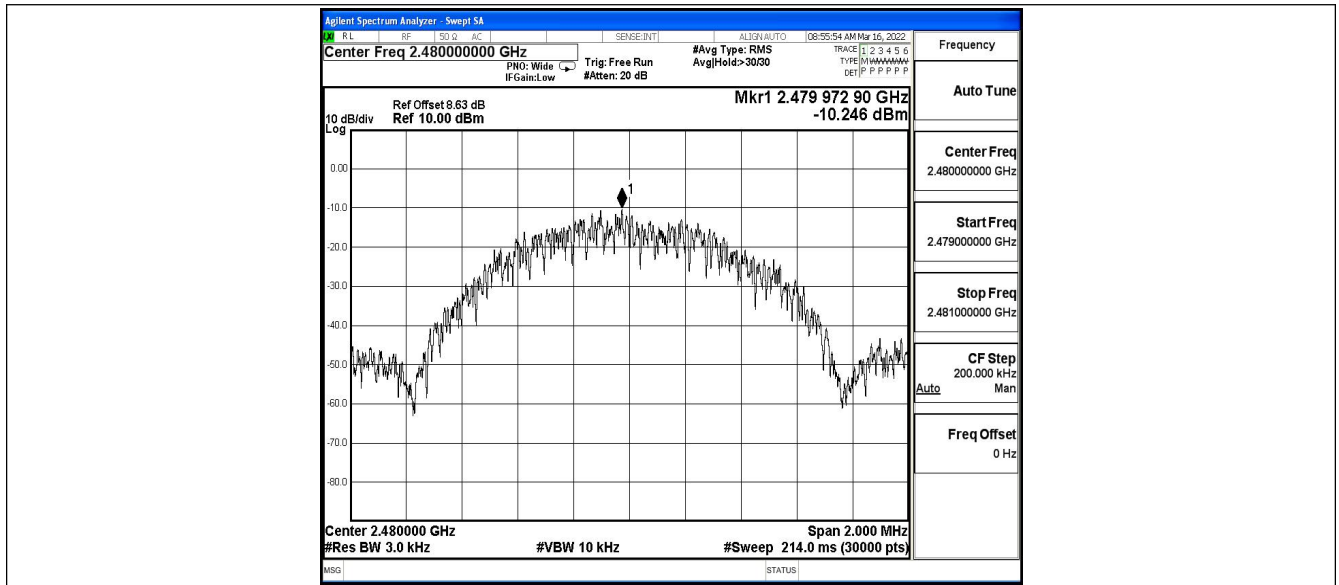
BLE_1M_Ant1_2402



BLE_1M_Ant1_2440



BLE_1M_Ant1_2480





A.4 Band edge measurements

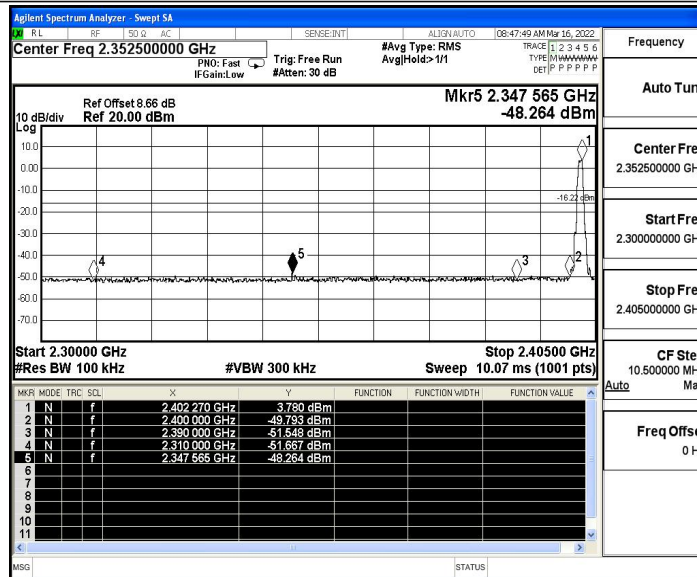
Test Result

TestMode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	3.78	-48.26	≤ -16.22	PASS
		High	2480	4.19	-46.86	≤ -15.82	PASS

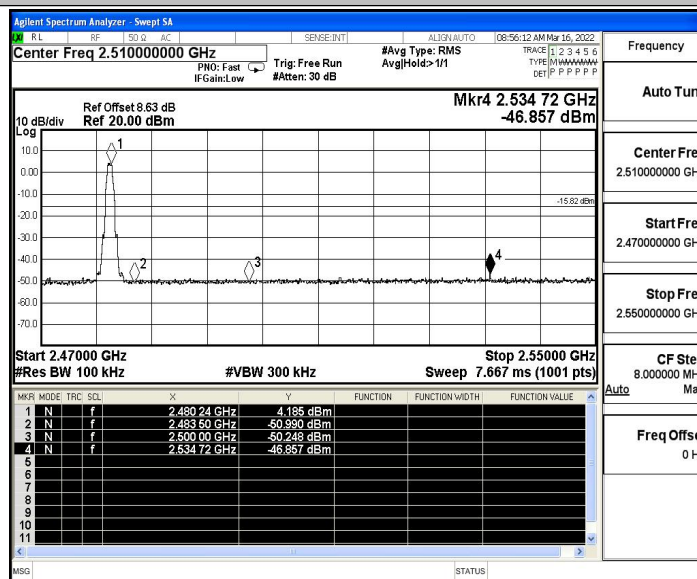


Test Graphs

BLE_1M_Ant1_Low_2402



BLE_1M_Ant1_High_2480





A.5 Conducted Spurious Emission

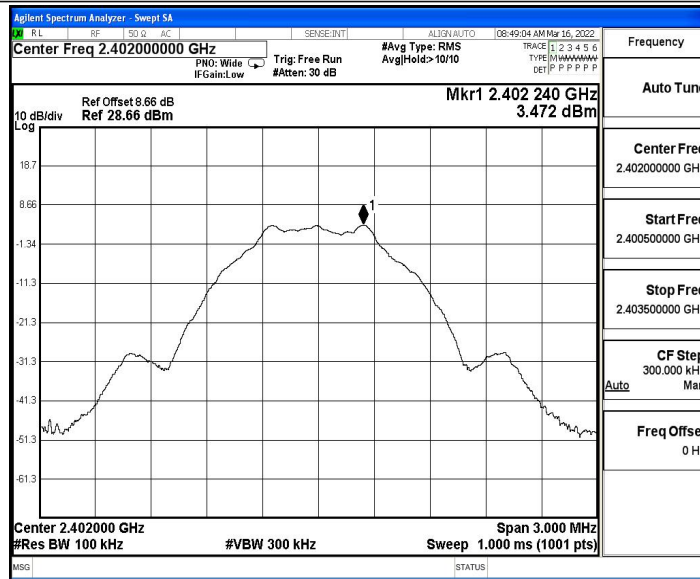
Test Result

TestMode	Antenna	Channel	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	Reference	3.47	3.47	---	PASS
			30~1000	3.47	-61.03	≤ -16.53	PASS
			1000~26500	3.47	-45.56	≤ -16.53	PASS
		2440	Reference	4.07	4.07	---	PASS
			30~1000	4.07	-60.05	≤ -15.93	PASS
			1000~26500	4.07	-46.31	≤ -15.93	PASS
		2480	Reference	3.92	3.92	---	PASS
			30~1000	3.92	-60.79	≤ -16.08	PASS
			1000~26500	3.92	-46.15	≤ -16.08	PASS

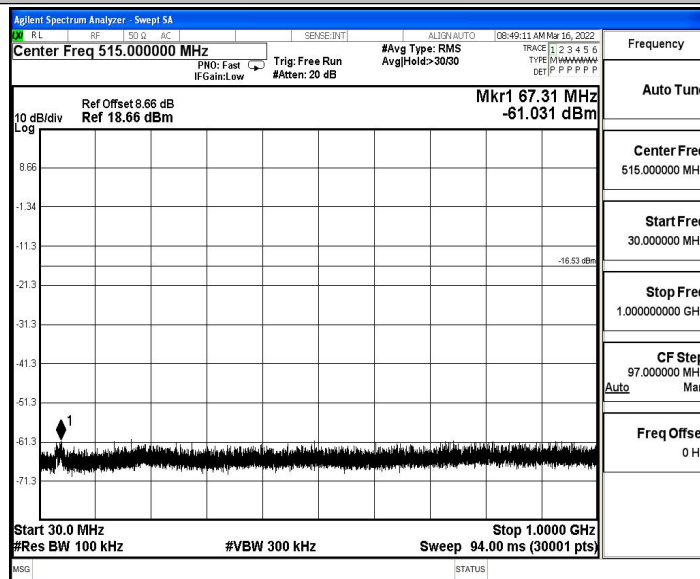


Test Graphs

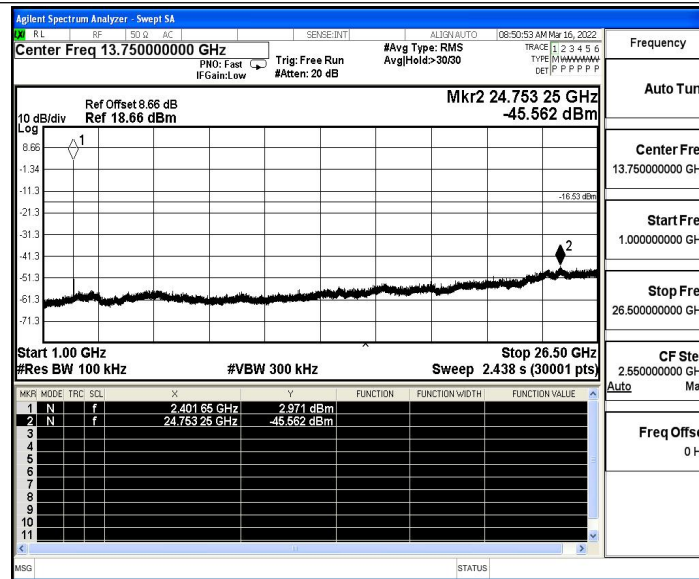
BLE_1M_Ant1_2402_0~Reference



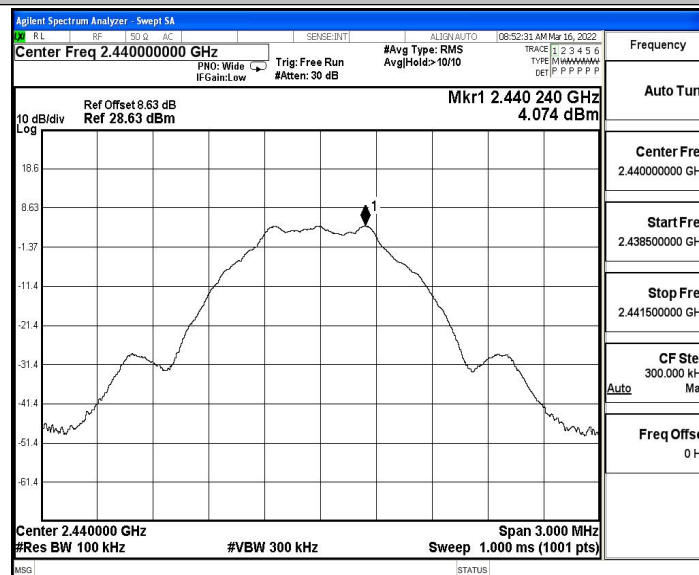
BLE_1M_Ant1_2402_30~1000



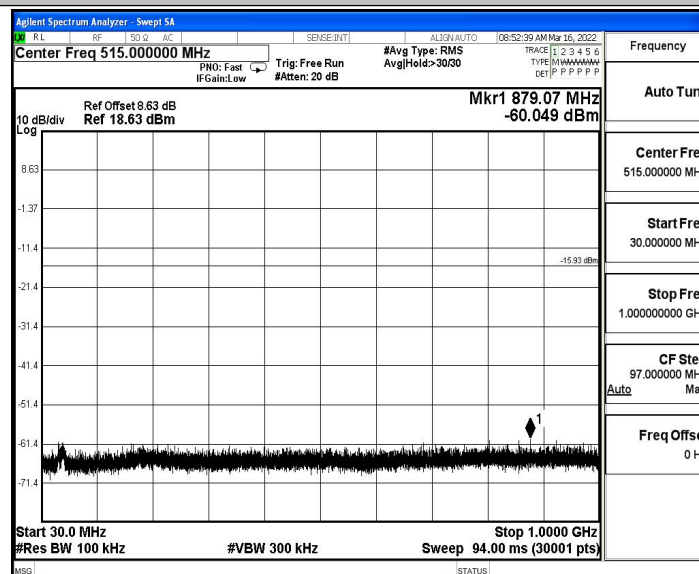
BLE_1M_Ant1_2402_1000~26500



BLE_1M_Ant1_2440_0~Reference

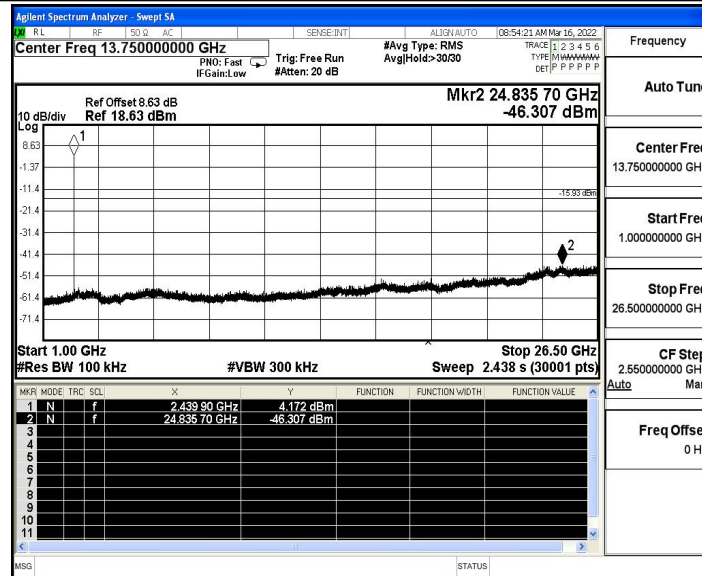


BLE_1M_Ant1_2440_30~1000

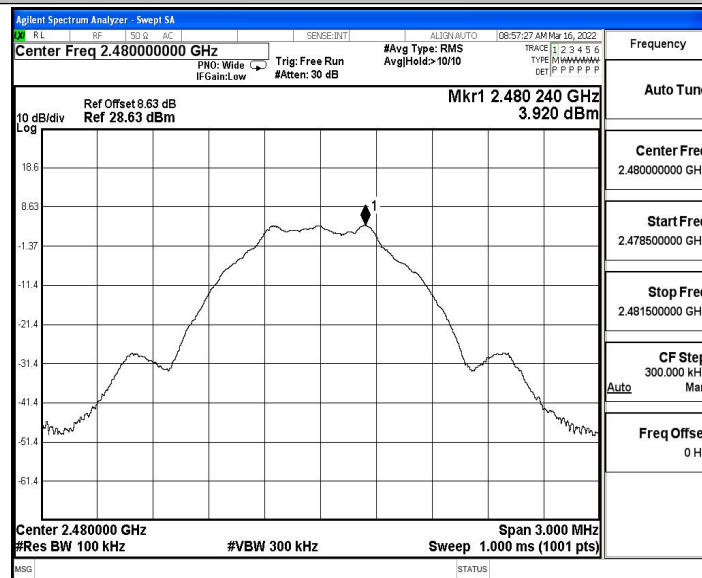




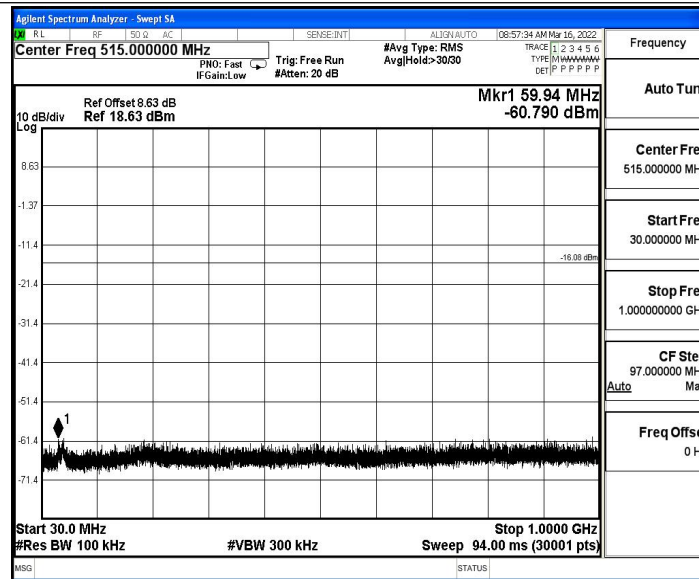
BLE_1M_Ant1_2440_1000~26500



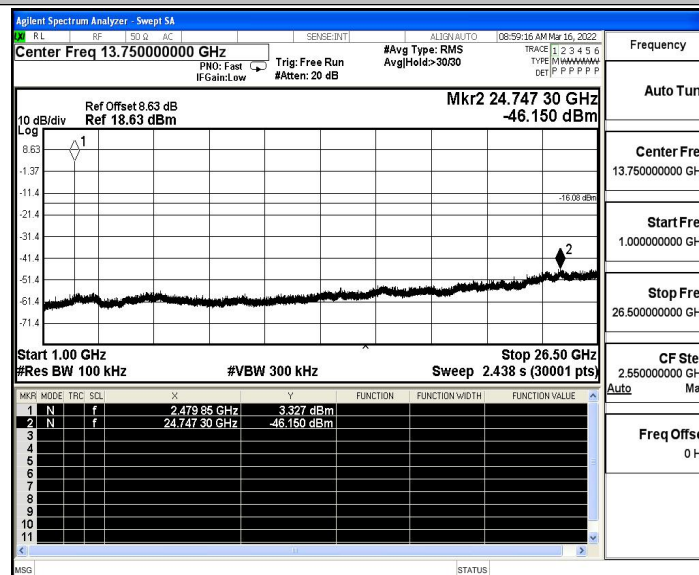
BLE_1M_Ant1_2480_0~Reference



BLE_1M_Ant1_2480_30~1000



BLE_1M_Ant1_2480_1000~26500





A.6 Duty Cycle

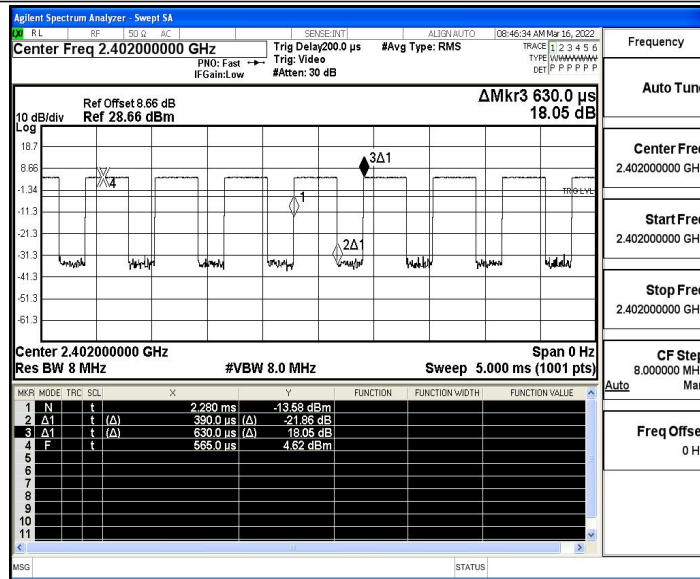
Test Result

TestMode	Antenna	Channel	ON Time [ms]	Period [ms]	X	DC [%]	xFactor	Limit	Verdict
BLE_1M	Ant1	2402	0.39	0.63	0.6190	61.90	2.08	---	---
		2440	0.38	0.63	0.6032	60.32	2.20	---	---
		2480	0.38	0.63	0.6032	60.32	2.20	---	---

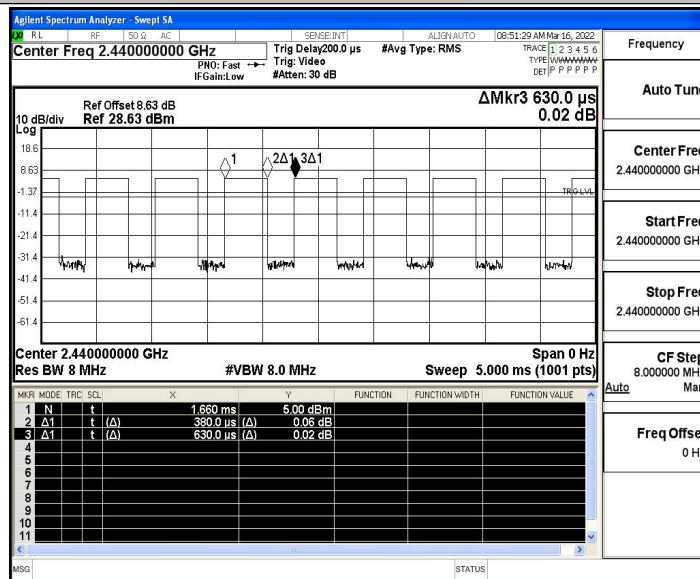


Test Graphs

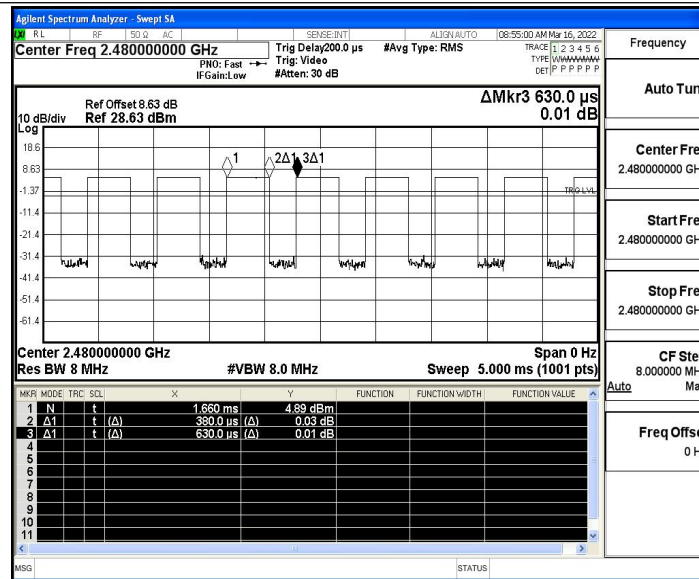
BLE_1M_Ant1_2402



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	-47.51	≤-41.20	47.69	≤54	PASS
				AV	2381.060	-46.72	≤-41.20	48.48	≤54	PASS
				AV	2390.000	-47.37	≤-41.20	47.83	≤54	PASS
				Peak	2310.000	-38.39	≤-21.20	56.81	≤74	PASS
				Peak	2351.345	-36.74	≤-21.20	58.46	≤74	PASS
				Peak	2390.000	-38.78	≤-21.20	56.42	≤74	PASS
		High	2480	AV	2483.500	-45.75	≤-41.20	49.45	≤54	PASS
				AV	2483.520	-45.75	≤-41.20	49.45	≤54	PASS
				AV	2500.000	-46.61	≤-41.20	48.59	≤54	PASS
				Peak	2483.500	-37.6	≤-21.20	57.60	≤74	PASS
				Peak	2496.400	-36.51	≤-21.20	58.69	≤74	PASS
				Peak	2500.000	-38.1	≤-21.20	57.10	≤74	PASS

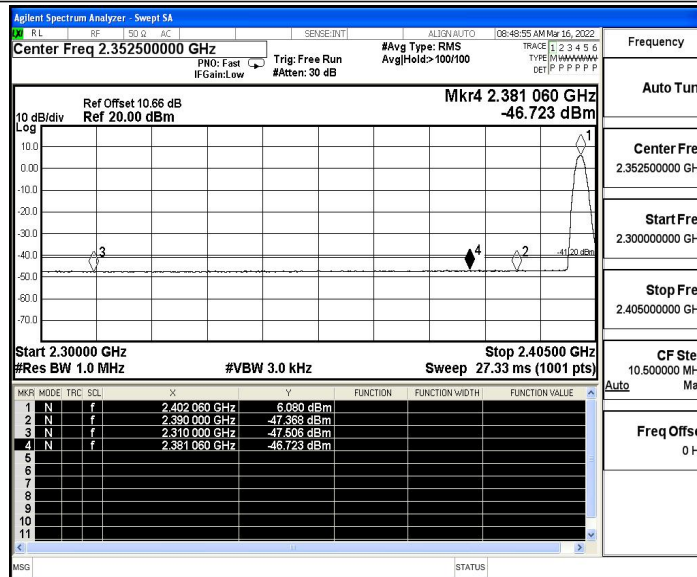
Note:

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.

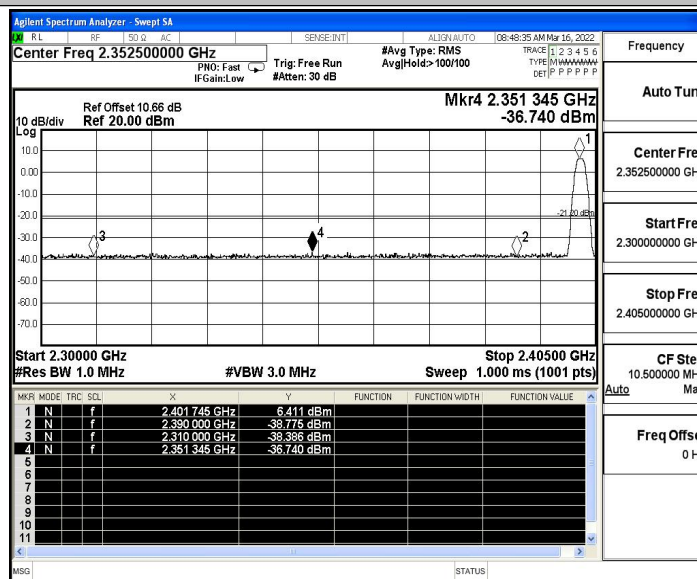


Test Graphs

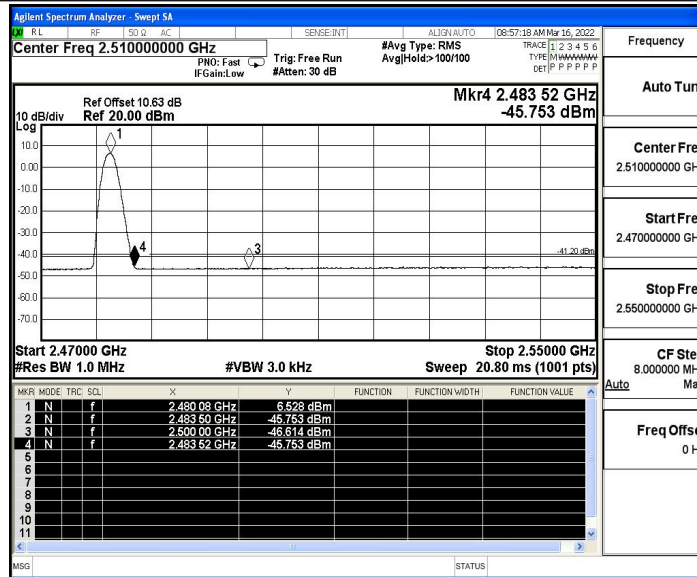
BLE_1M_Ant1_Low_2402_AV



BLE_1M_Ant1_Low_2402_Peak



BLE_1M_Ant1_High_2480_AV



BLE_1M_Ant1_High_2480_Peak

