



Appendix A

RF Test Data for BLE (Conducted Measurement)

Product Name: TRAC Watch

Test Model: TRAC Watch

Environmental Conditions

Temperature:	23.5 ° C
Relative Humidity:	52.2%
ATM Pressure:	100.0 kPa
Test Engineer:	monkey.Li
Supervised by:	Lih

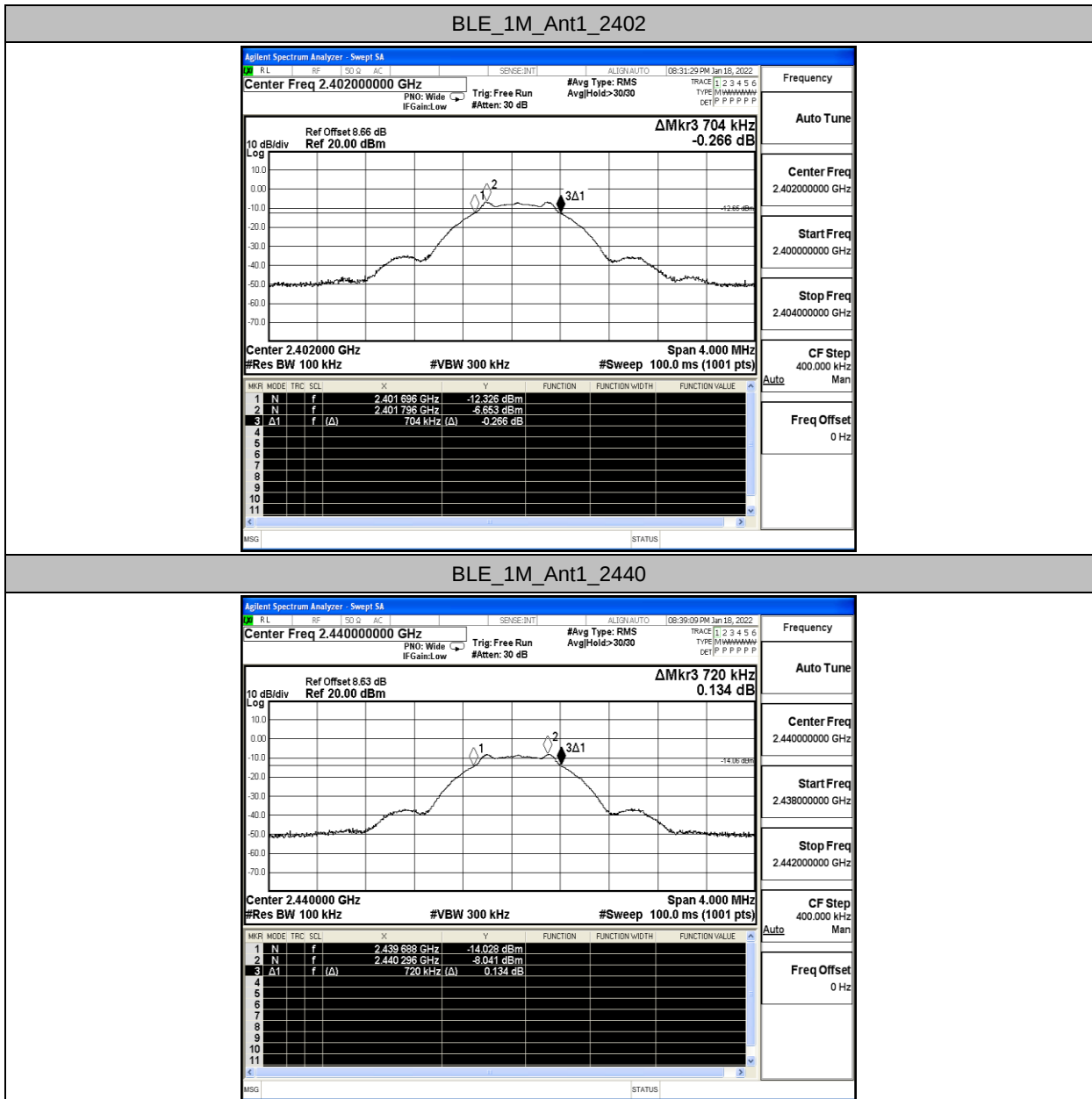


A.1 6dB Bandwidth

Test Result

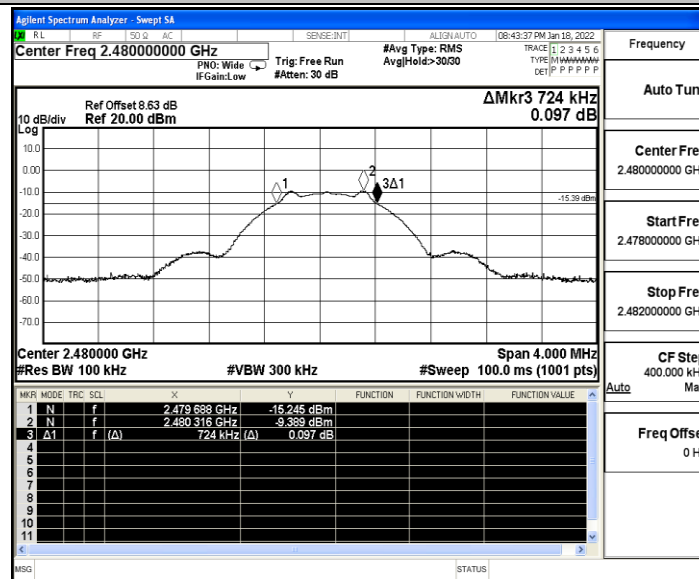
TestMode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.704	2401.696	2402.400	0.5	PASS
		2440	0.720	2439.688	2440.408	0.5	PASS
		2480	0.724	2479.688	2480.412	0.5	PASS
BLE_2M	Ant1	2402	1.384	2401.352	2402.736	0.5	PASS
		2440	1.244	2439.284	2440.528	0.5	PASS
		2480	1.244	2479.284	2480.528	0.5	PASS

Test Graphs

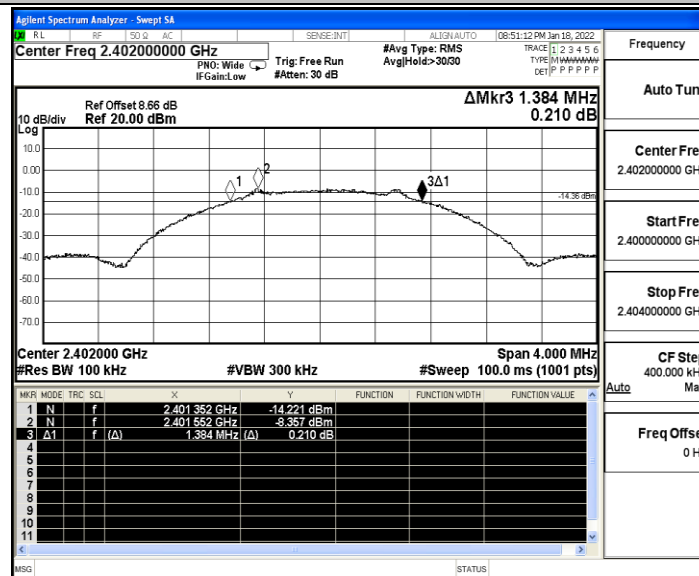




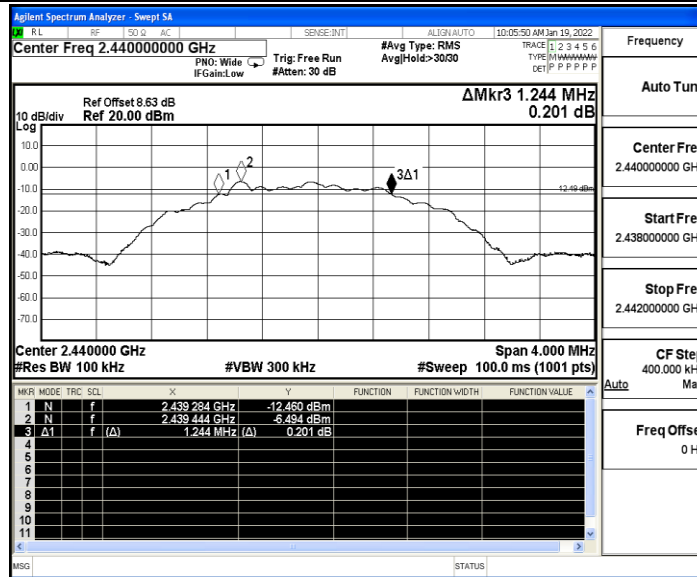
BLE_1M_Ant1_2480



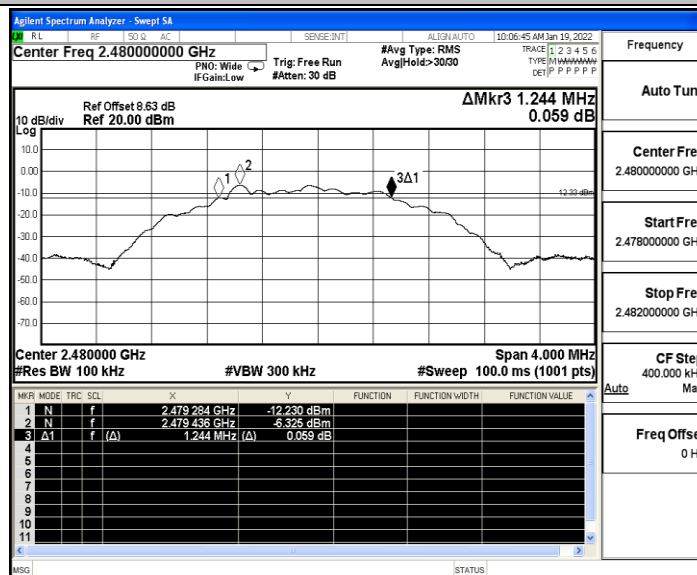
BLE_2M_Ant1_2402



BLE_2M_Ant1_2440



BLE_2M_Ant1_2480



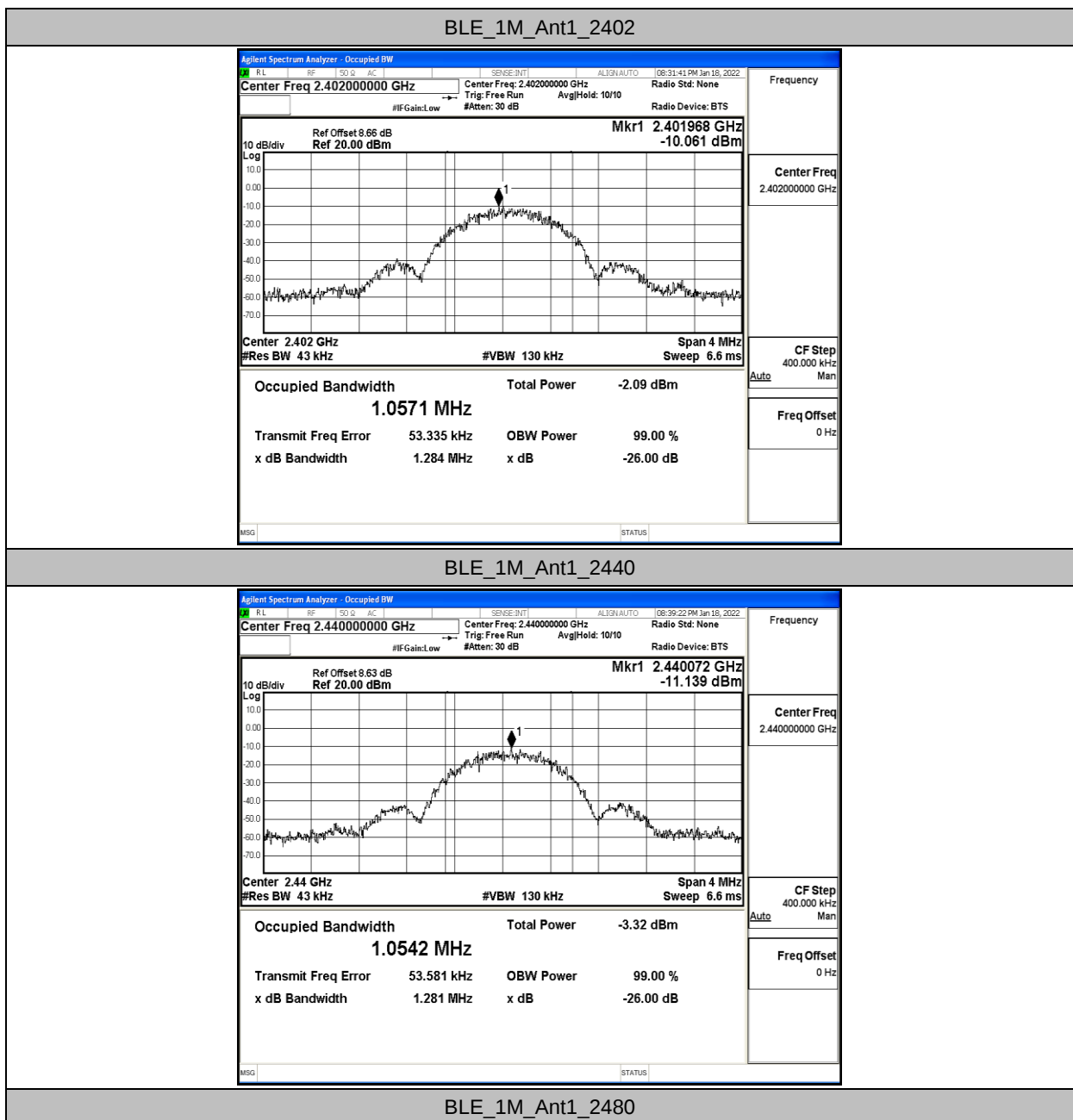


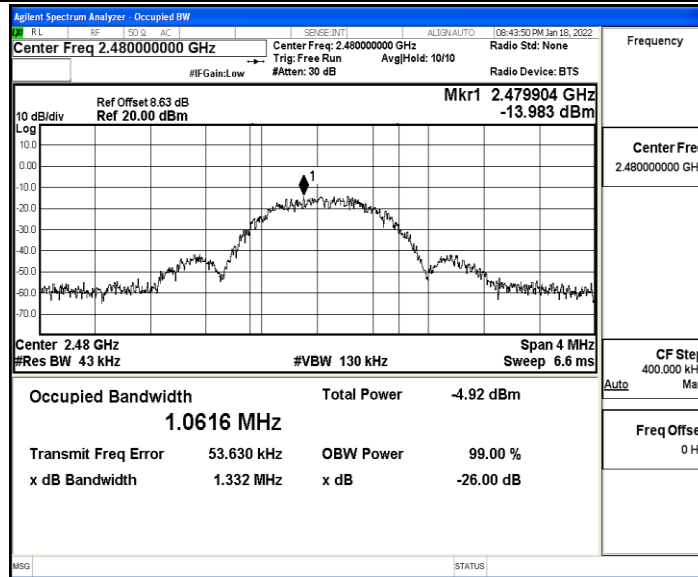
A.2 Occupied Channel Bandwidth

Test Result

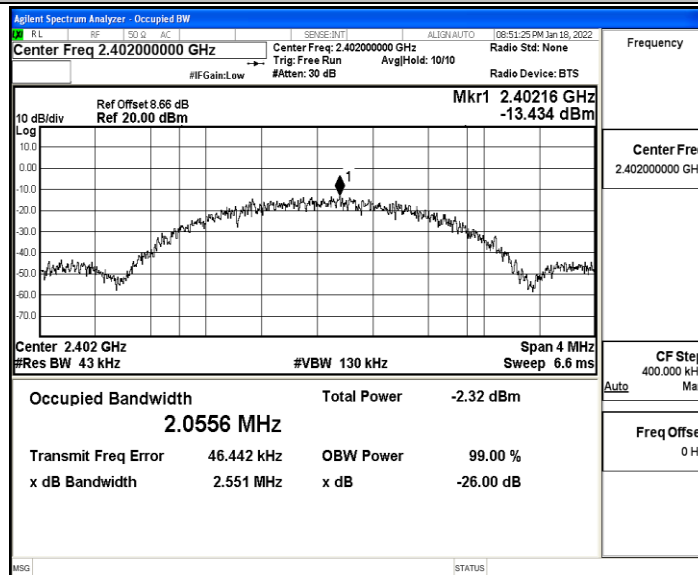
TestMode	Antenna	Channel	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	1.0571	2401.525	2402.582	---	---
		2440	1.0542	2439.526	2440.581	---	---
		2480	1.0616	2479.523	2480.584	---	---
BLE_2M	Ant1	2402	2.0556	2401.019	2403.074	---	---
		2440	2.0296	2438.938	2440.968	---	---
		2480	2.0224	2478.926	2480.949	---	---

Test Graphs

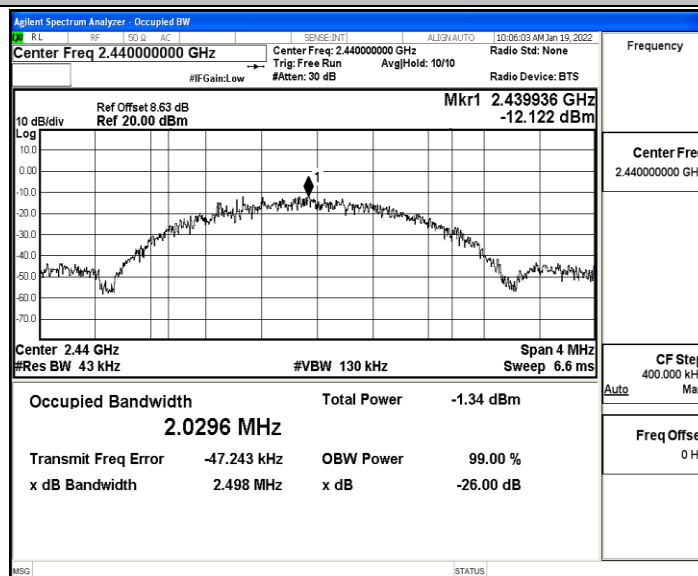




BLE_2M_Ant1_2402

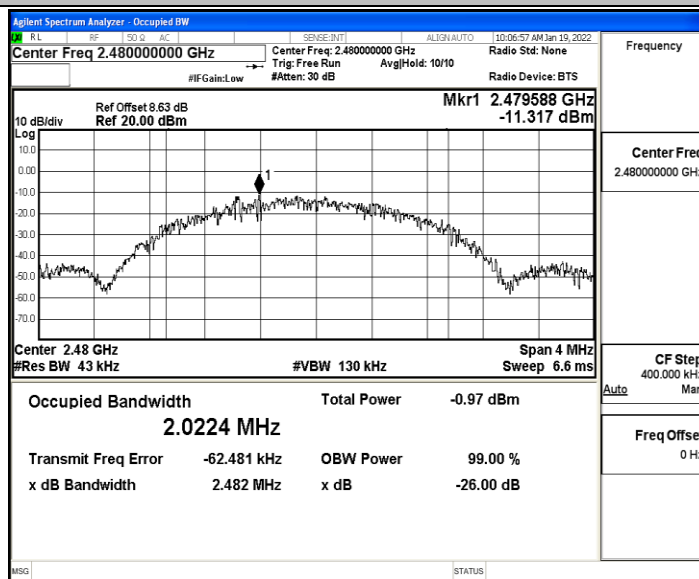


BLE_2M_Ant1_2440





BLE_2M_Ant1_2480



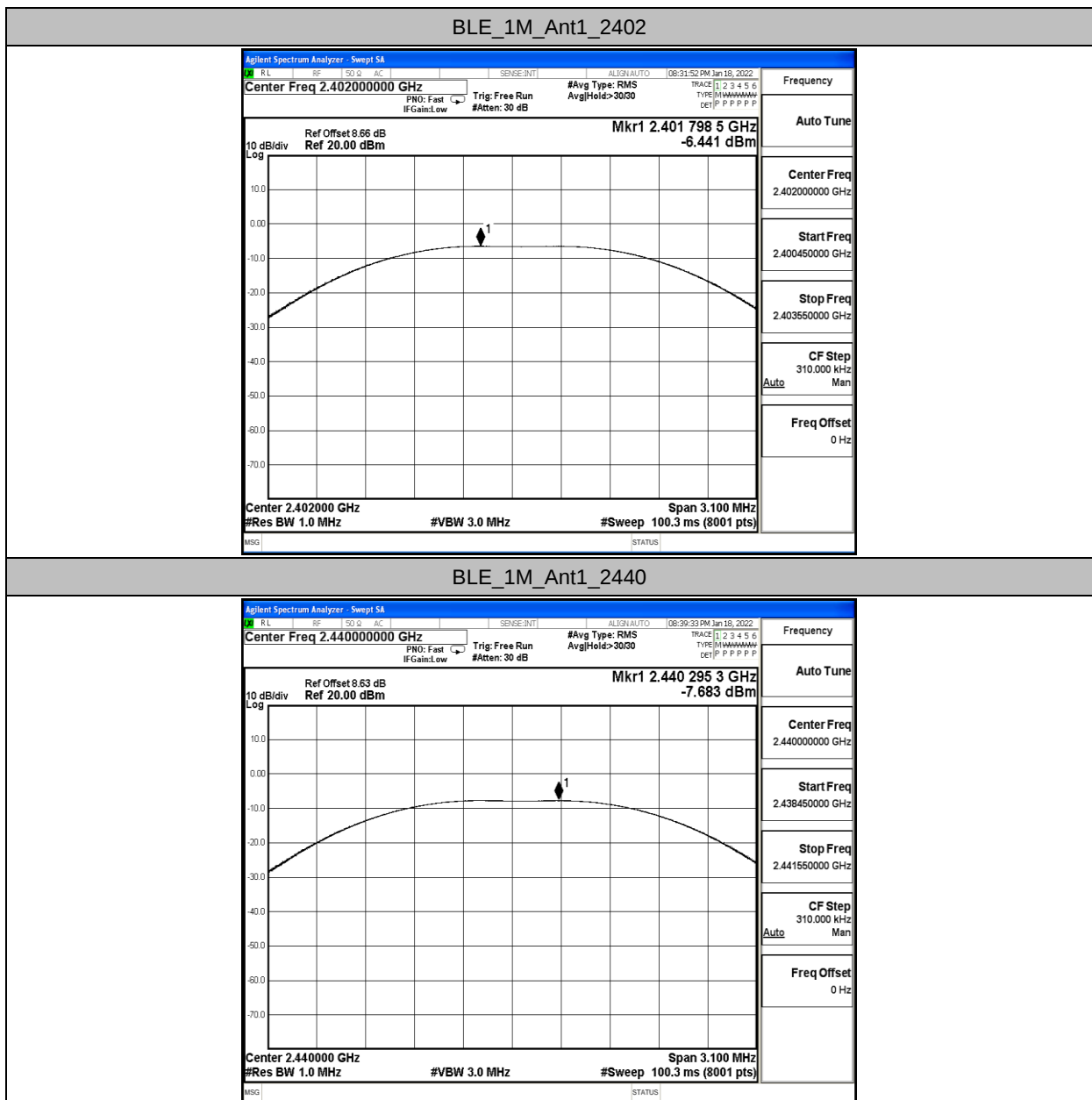


A.3 Maximum conducted output power

Test Result

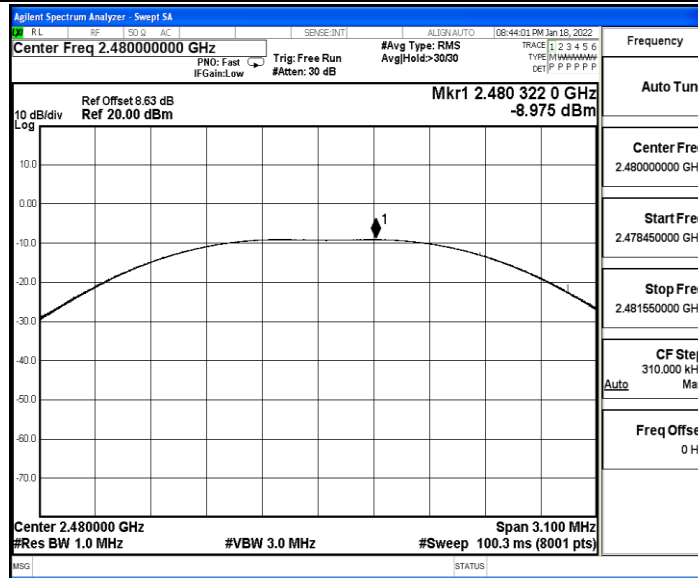
TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	-6.44	≤30	PASS
		2440	-7.68	≤30	PASS
		2480	-8.98	≤30	PASS
BLE_2M	Ant1	2402	-6.63	≤30	PASS
		2440	-7.57	≤30	PASS
		2480	-8.97	≤30	PASS

Test Graphs

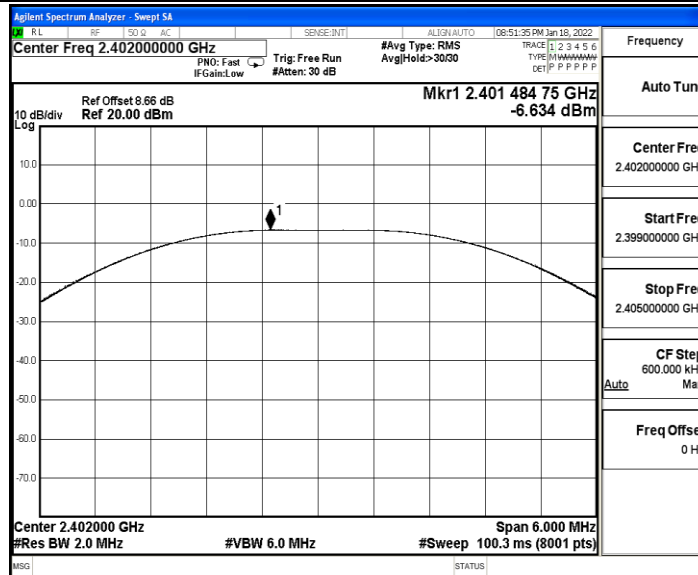




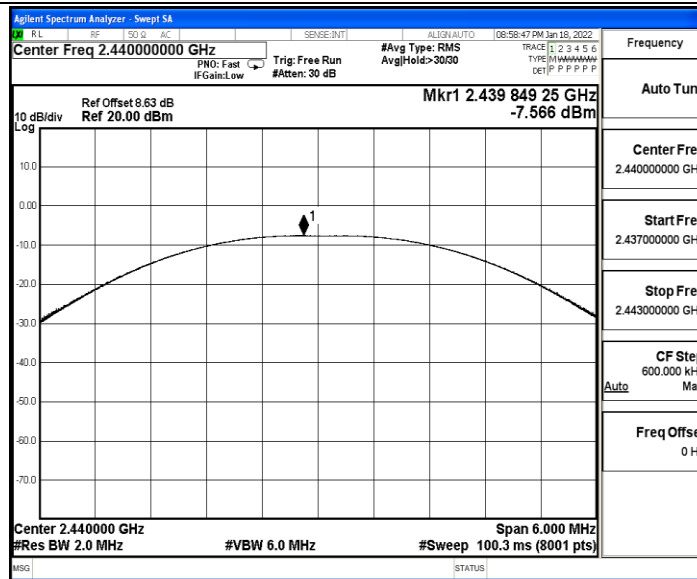
BLE_1M_Ant1_2480



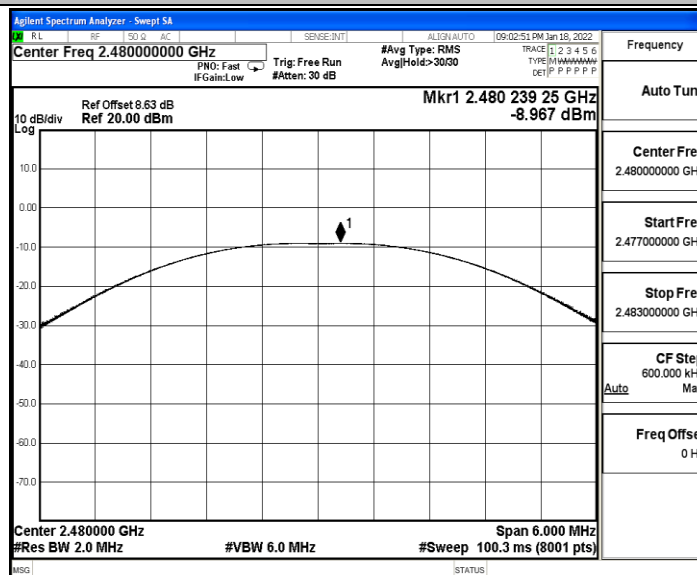
BLE_2M_Ant1_2402



BLE_2M_Ant1_2440



BLE_2M_Ant1_2480



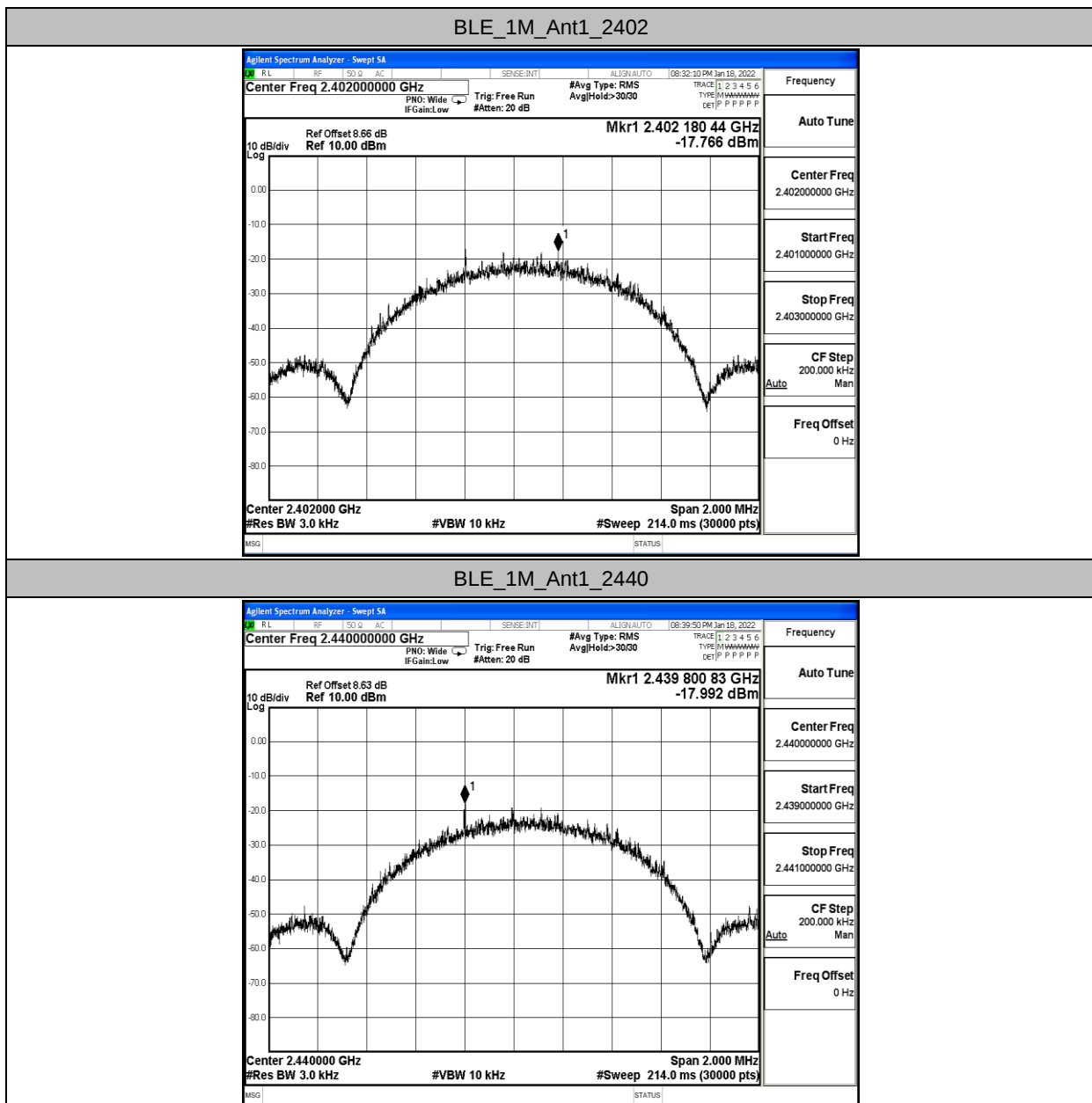


A.4 Maximum power spectral density

Test Result

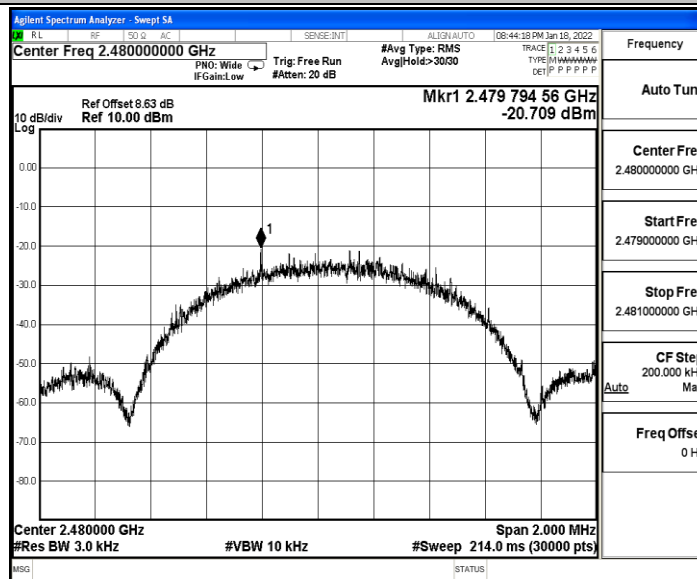
TestMode	Antenna	Channel	Result[dBm/3-100kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-17.77	≤8.00	PASS
		2440	-17.99	≤8.00	PASS
		2480	-20.71	≤8.00	PASS
BLE_2M	Ant1	2402	-20.59	≤8.00	PASS
		2440	-23.46	≤8.00	PASS
		2480	-23.19	≤8.00	PASS

Test Graphs

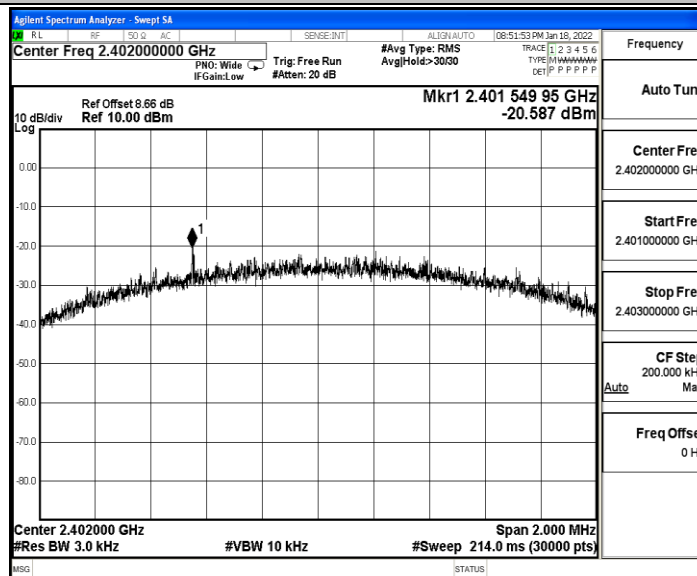




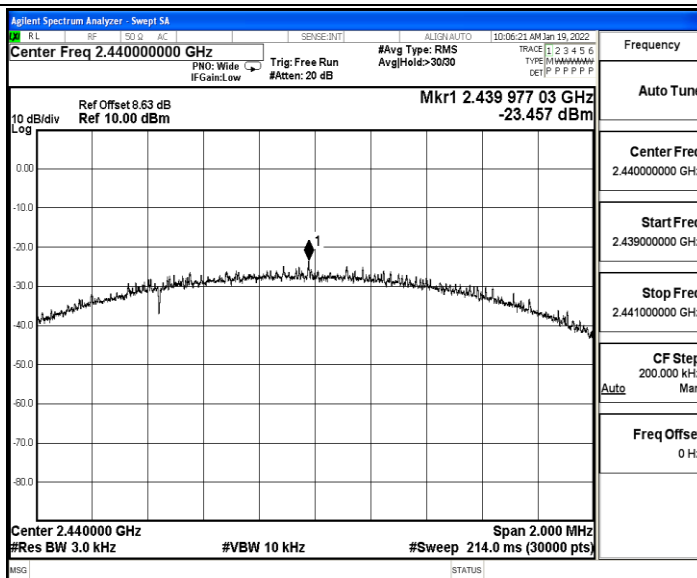
BLE_1M_Ant1_2480



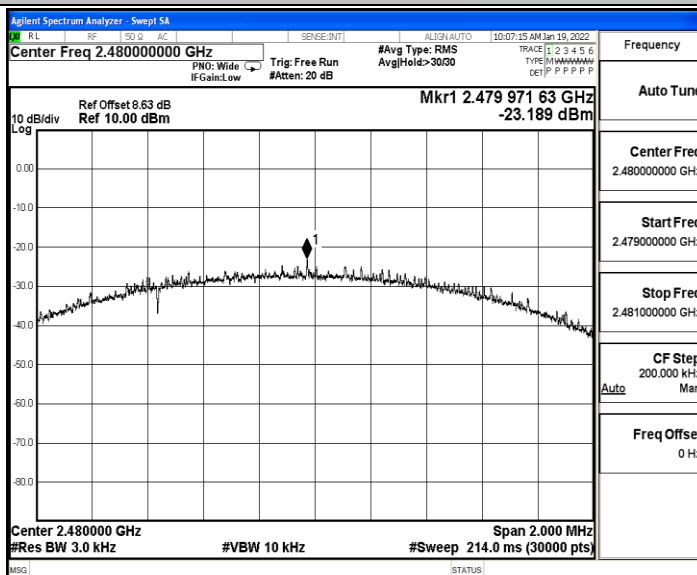
BLE_2M_Ant1_2402



BLE_2M_Ant1_2440



BLE_2M_Ant1_2480



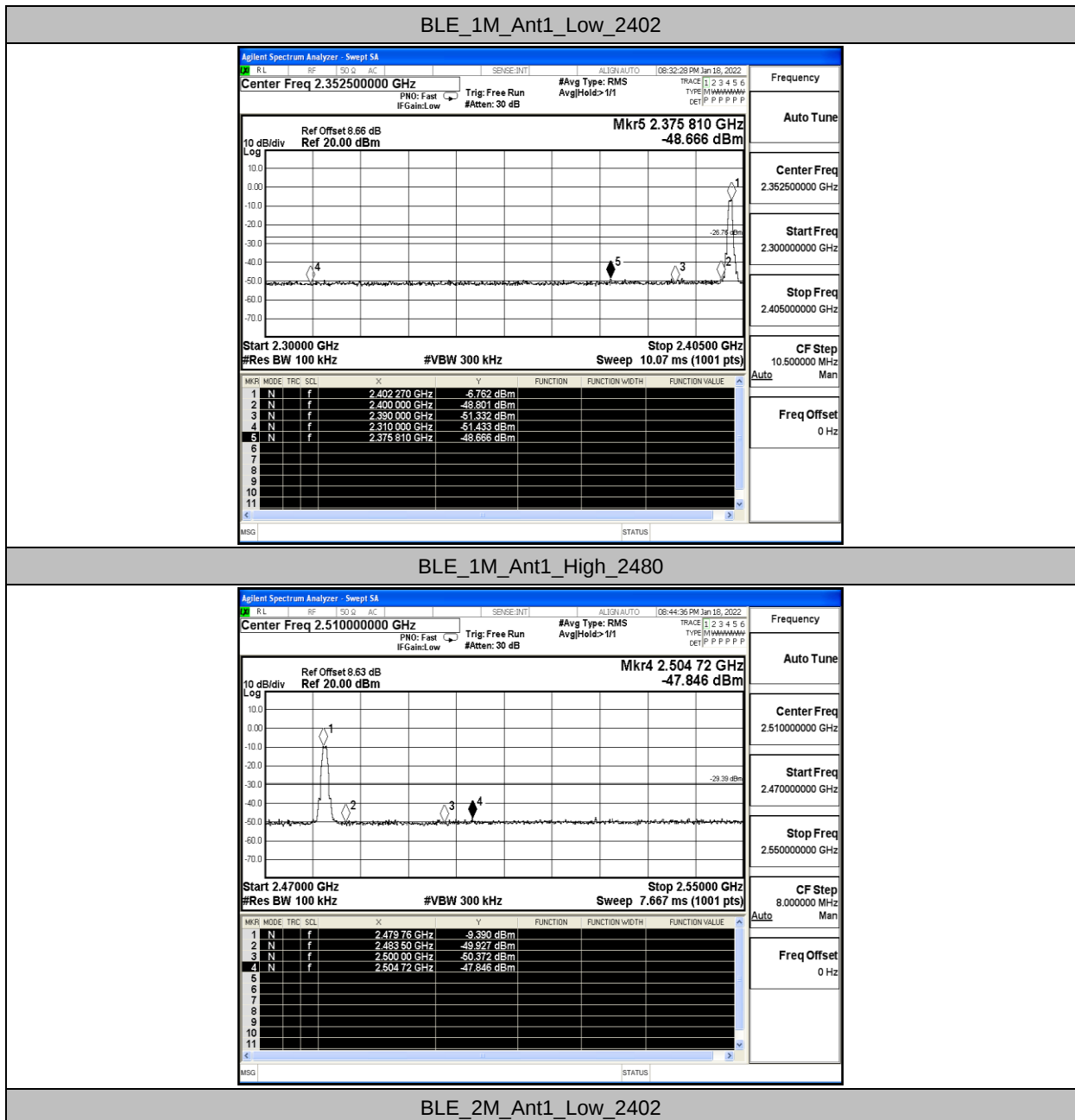


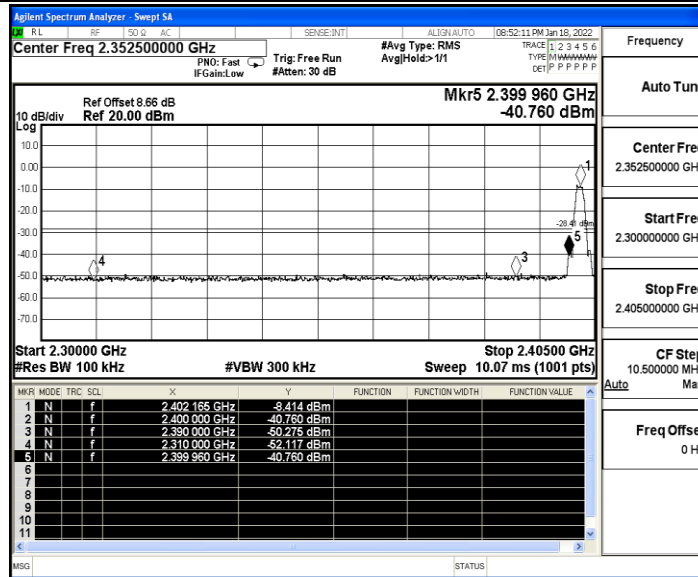
A.5 Band edge measurements

Test Result

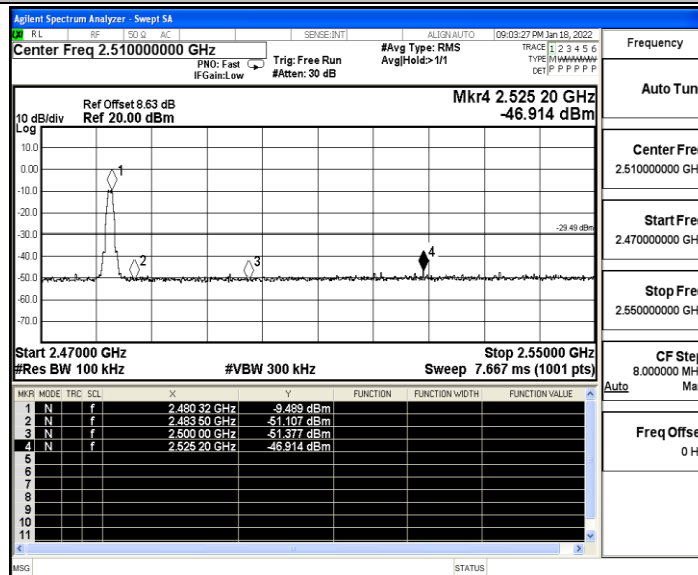
TestMode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	-6.76	-48.67	≤-26.76	PASS
		High	2480	-9.39	-47.85	≤-29.39	PASS
BLE_2M	Ant1	Low	2402	-8.41	-40.76	≤-28.41	PASS
		High	2480	-9.49	-46.91	≤-29.49	PASS

Test Graphs





BLE_2M_Ant1_High_2480





A.6 Conducted Spurious Emission

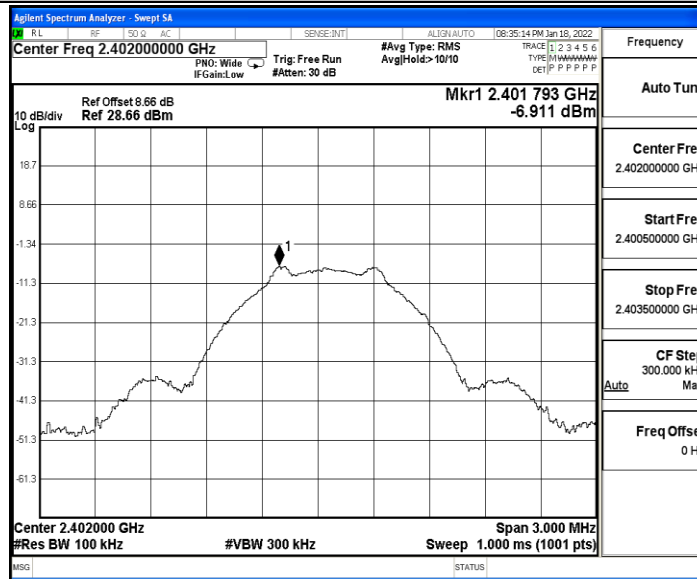
Test Result

TestMode	Antenna	Channel	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	Reference	-6.91	-6.91	---	PASS
			30~1000	-6.91	-56.89	≤-26.91	PASS
			1000~26500	-6.91	-45.98	≤-26.91	PASS
		2440	Reference	-8.17	-8.17	---	PASS
			30~1000	-8.17	-57.54	≤-28.17	PASS
			1000~26500	-8.17	-46.58	≤-28.17	PASS
		2480	Reference	-9.85	-9.85	---	PASS
			30~1000	-9.85	-46.59	≤-29.85	PASS
			1000~26500	-9.85	-42.4	≤-29.85	PASS
BLE_2M	Ant1	2402	Reference	-8.56	-8.56	---	PASS
			30~1000	-8.56	-55.9	≤-28.56	PASS
			1000~26500	-8.56	-46.16	≤-28.56	PASS
		2440	Reference	-8.46	-8.46	---	PASS
			30~1000	-8.46	-57.02	≤-28.46	PASS
			1000~26500	-8.46	-46.19	≤-28.46	PASS
		2480	Reference	-10.16	-10.16	---	PASS
			30~1000	-10.16	-57.52	≤-30.16	PASS
			1000~26500	-10.16	-39.34	≤-30.16	PASS

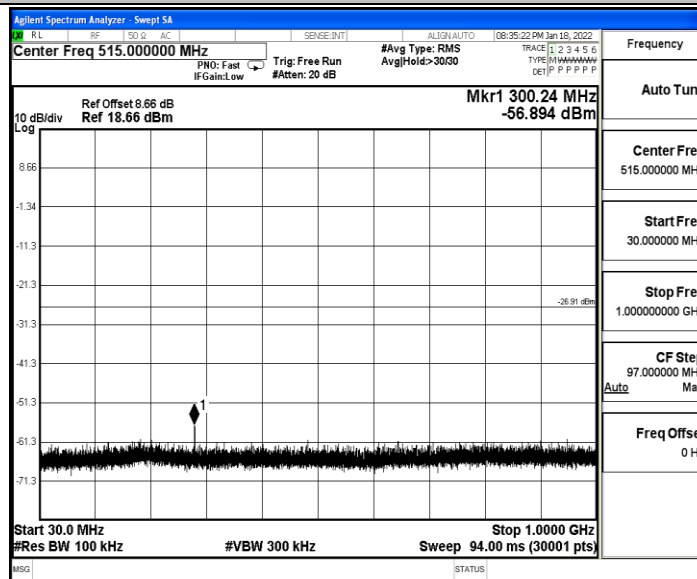


Test Graphs

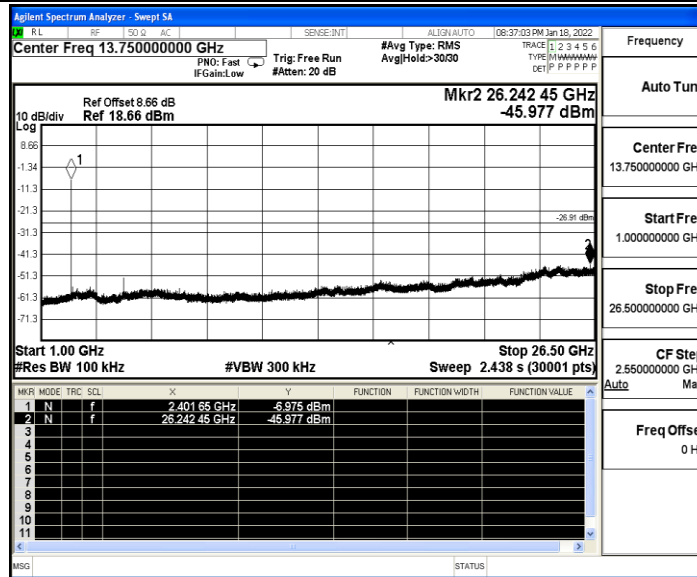
BLE_1M_Ant1_2402_0~Reference



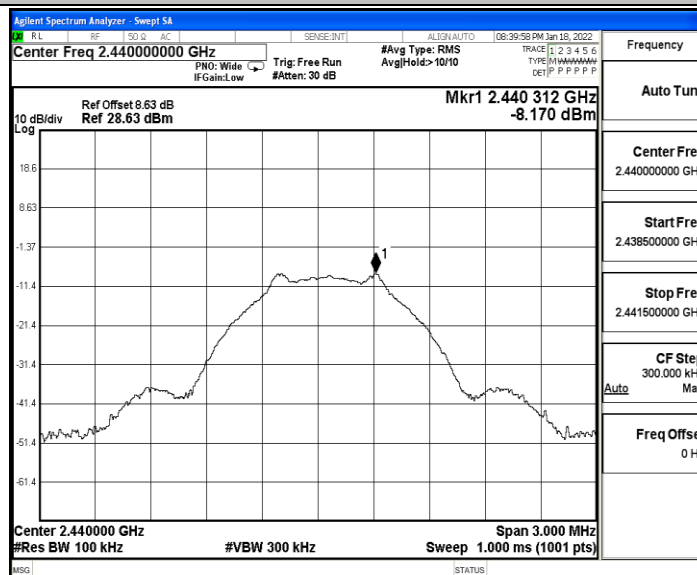
BLE_1M_Ant1_2402_30~1000



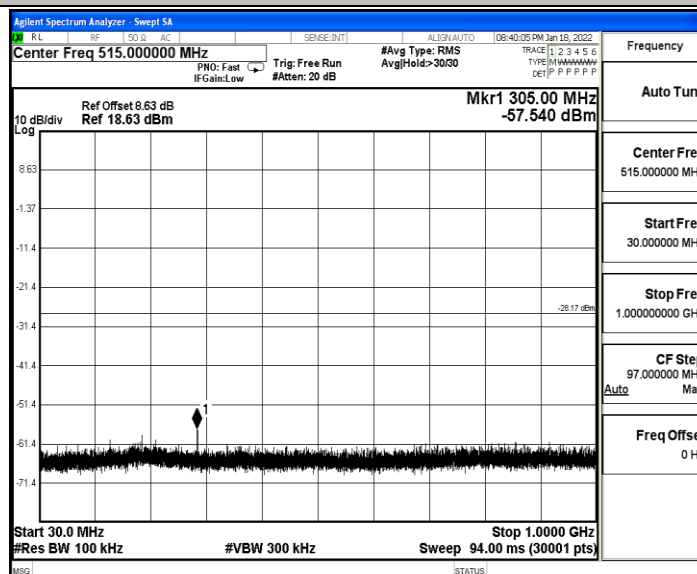
BLE_1M_Ant1_2402_1000~26500



BLE_1M_Ant1_2440_0-Reference

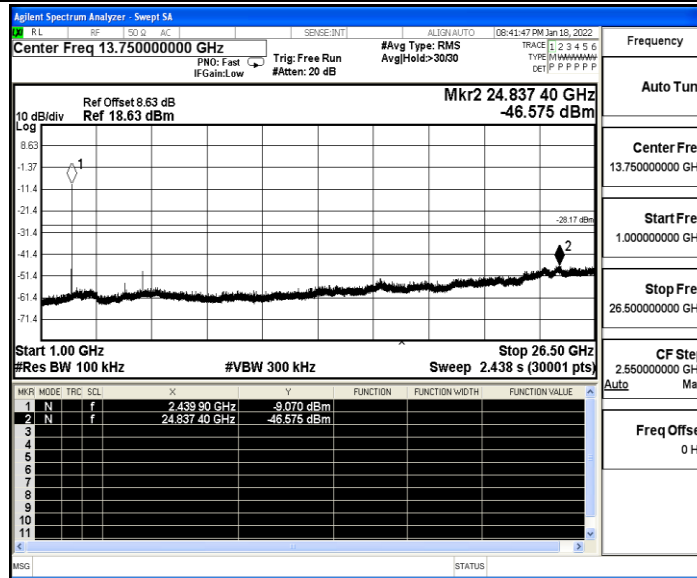


BLE_1M_Ant1_2440_30-1000

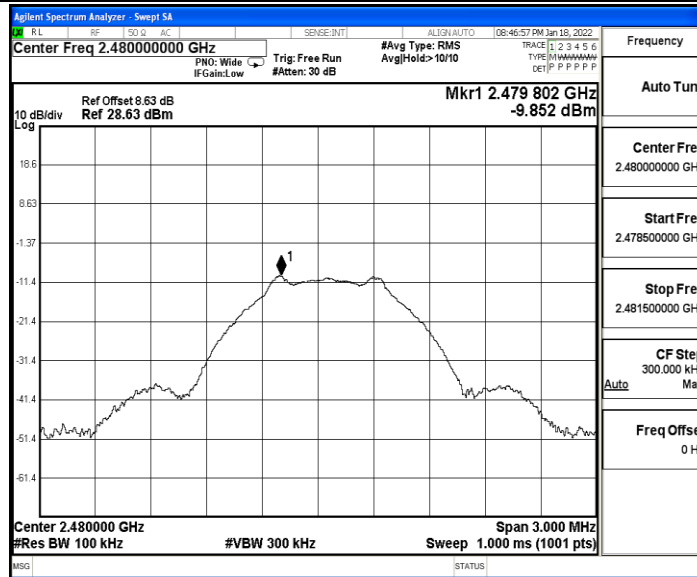




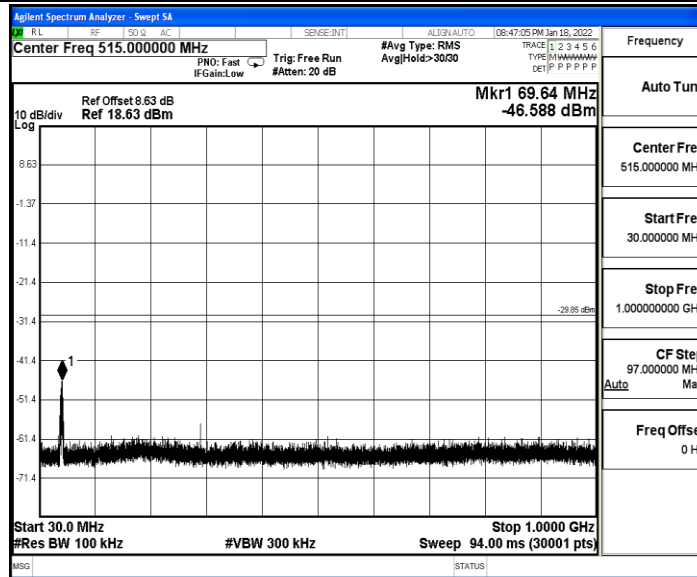
BLE_1M_Ant1_2440_1000~26500



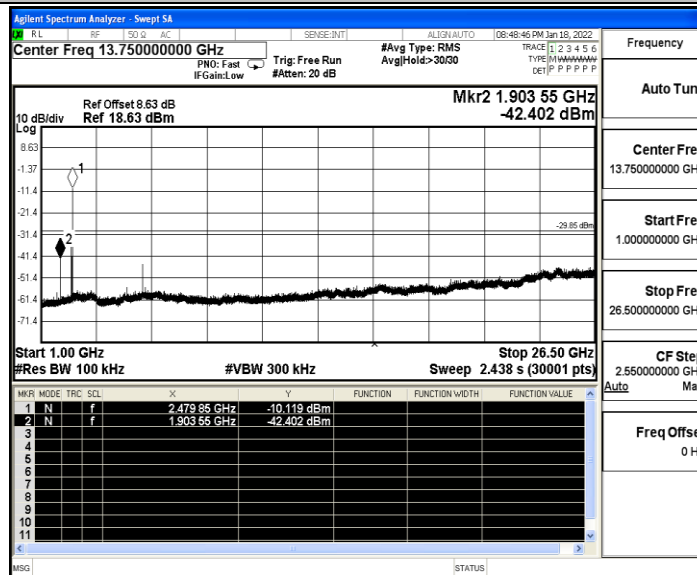
BLE_1M_Ant1_2480_0~Reference



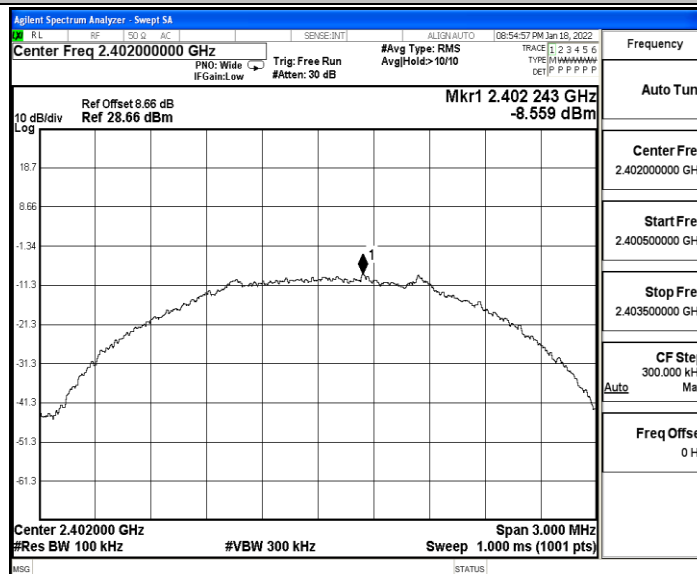
BLE_1M_Ant1_2480_30~1000



BLE_1M_Ant1_2480_1000~26500

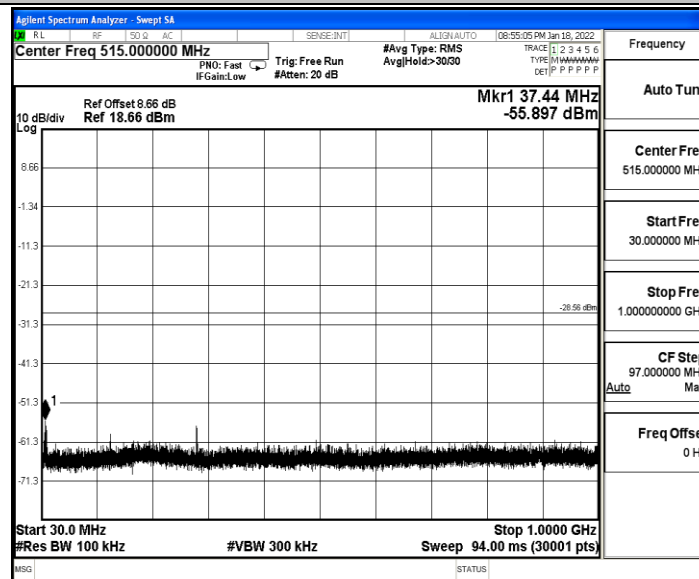


BLE_2M_Ant1_2402_0~Reference

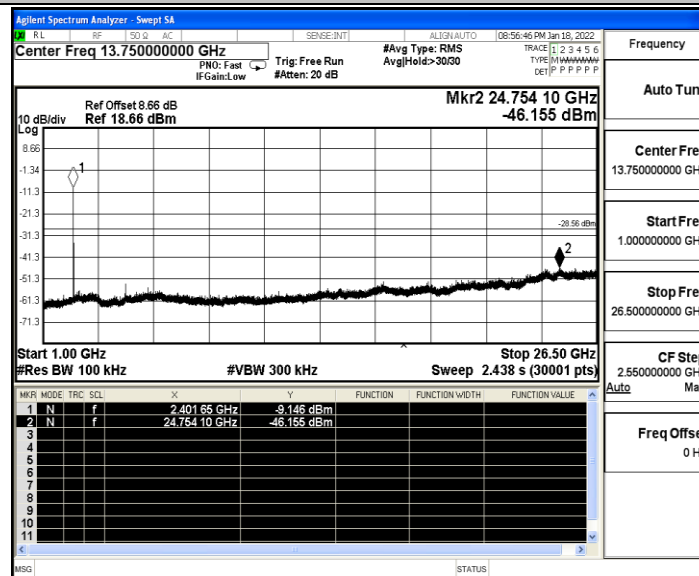




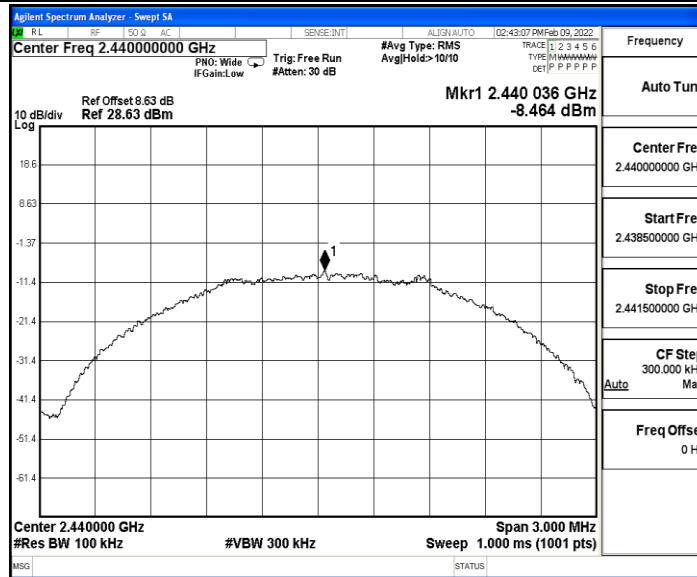
BLE_2M_Ant1_2402_30~1000



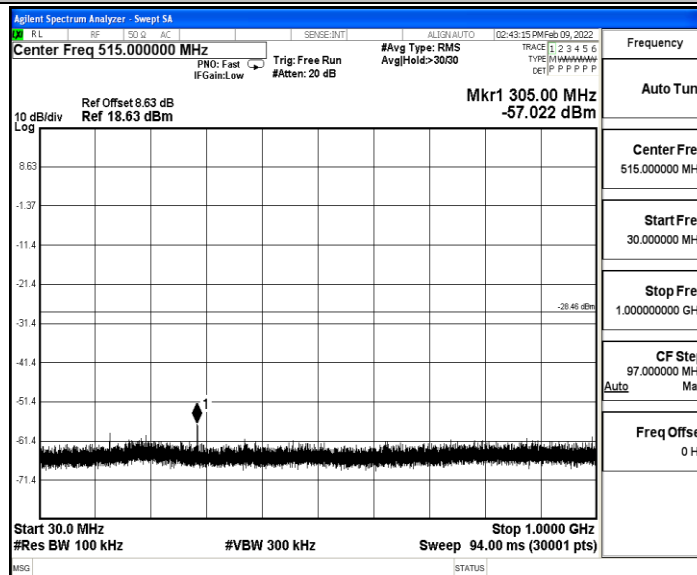
BLE_2M_Ant1_2402_1000~26500



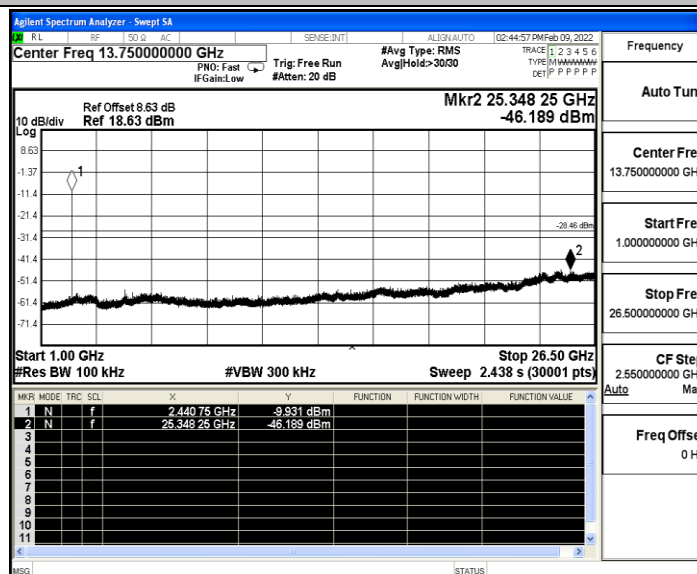
BLE_2M_Ant1_2440_0~Reference



BLE_2M_Ant1_2440_30~1000

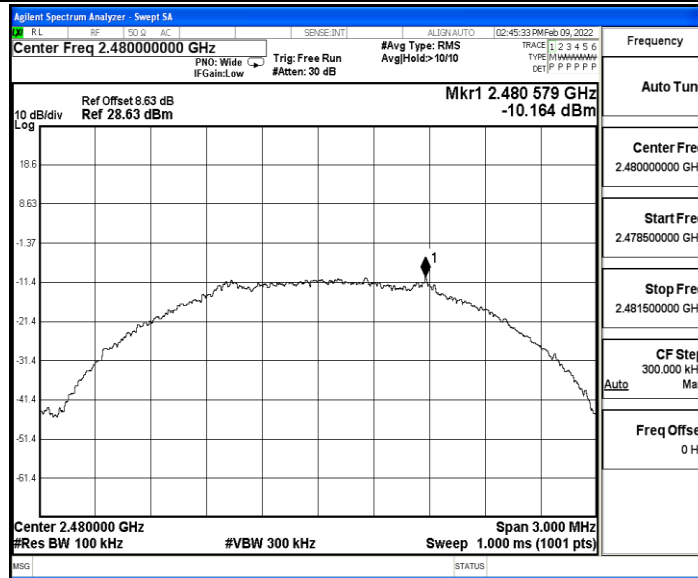


BLE_2M_Ant1_2440_1000~26500

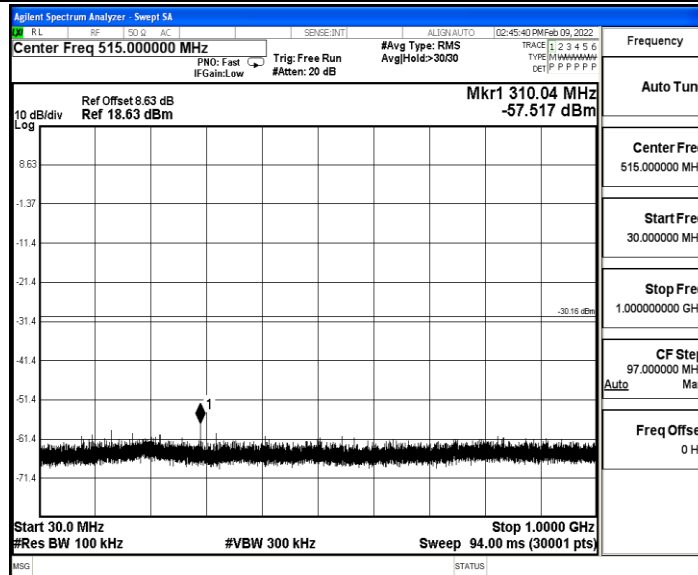




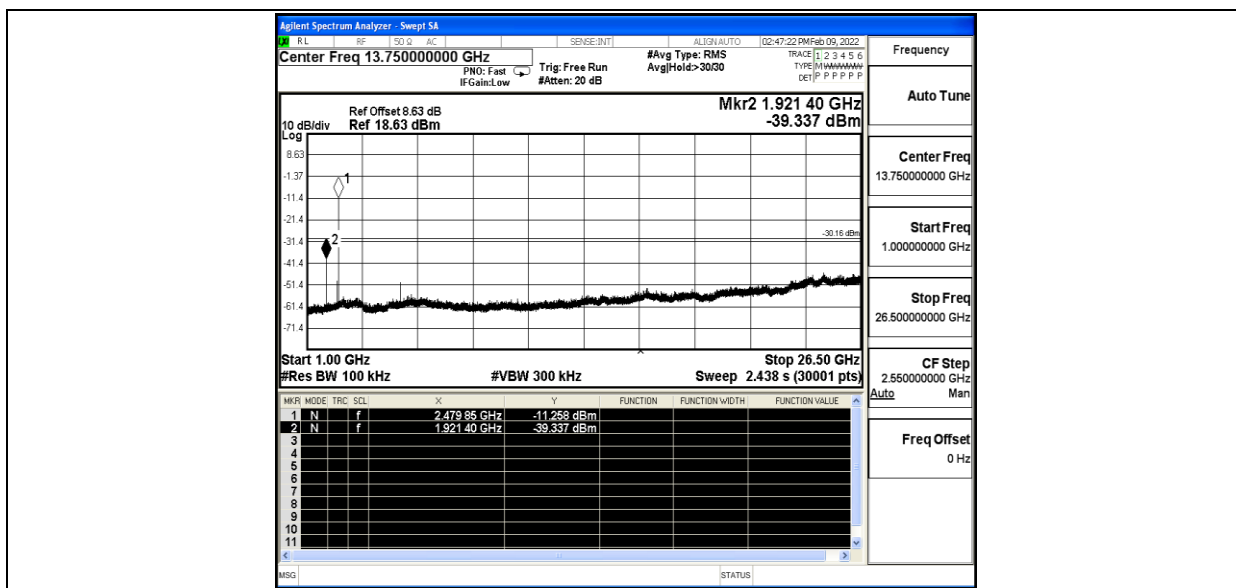
BLE_2M_Ant1_2480_0-Reference



BLE_2M_Ant1_2480_30-1000



BLE_2M_Ant1_2480_1000-26500



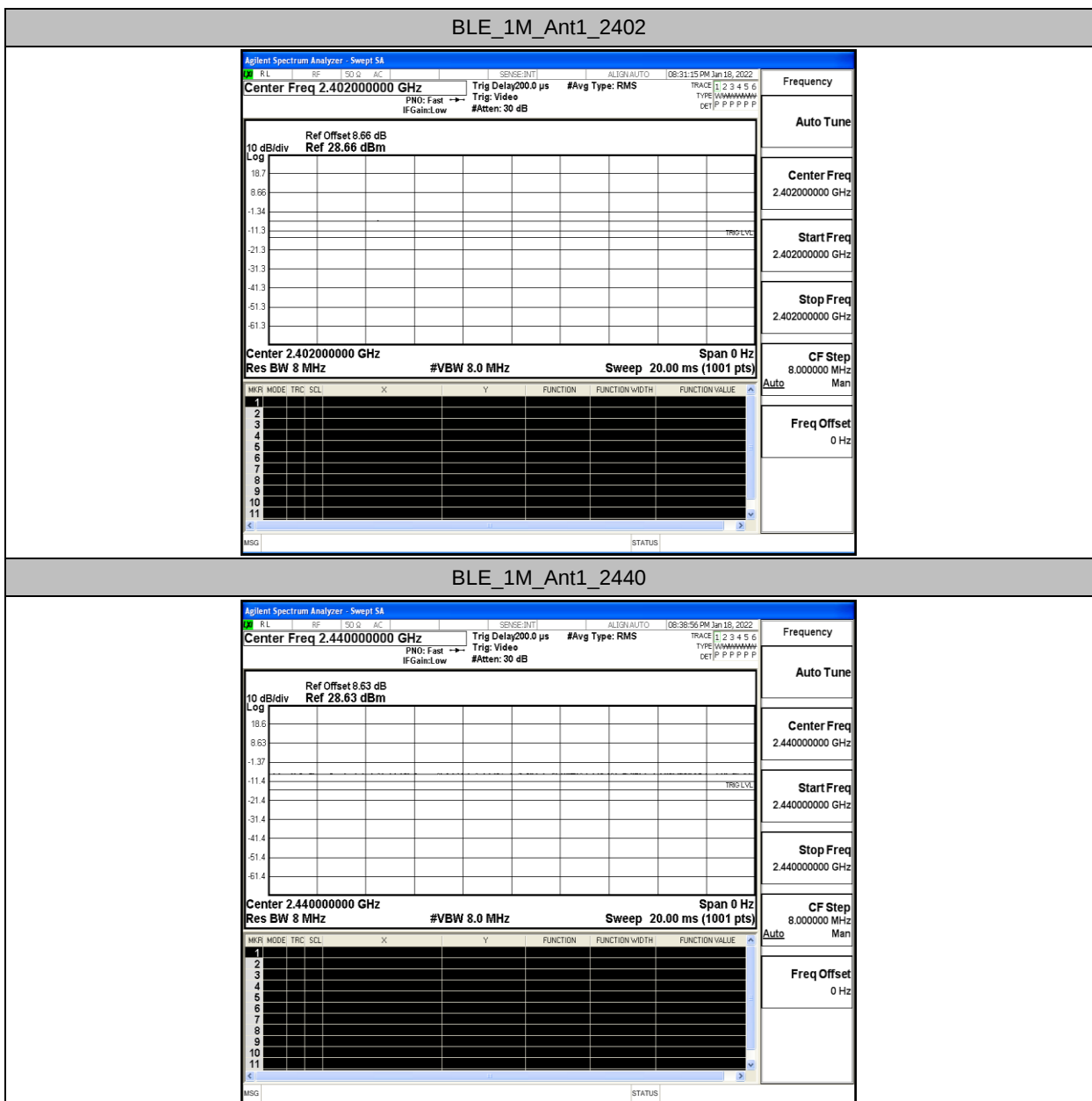


A.7 Duty Cycle

Test Result

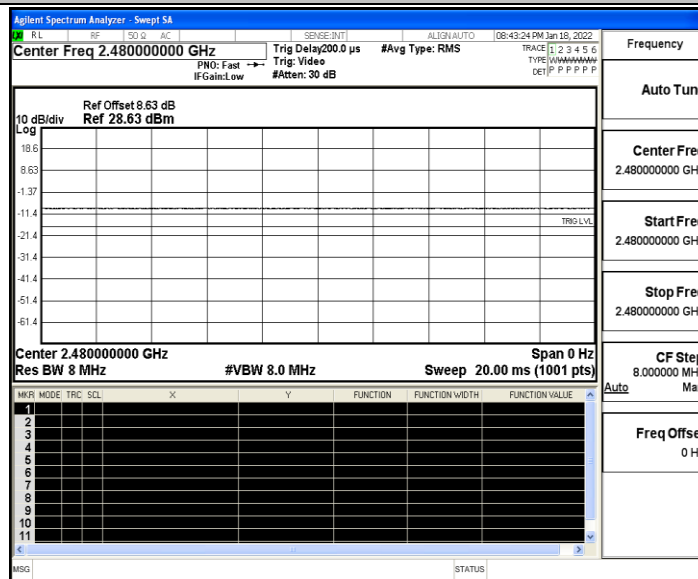
TestMode	Antenna	Channel	ON Time [ms]	Period [ms]	X	DC [%]	xFactor	Limit	Verdict
BLE_1M	Ant1	2402	20.00	20.00	1.0000	100.00	0.00	---	---
		2440	20.00	20.00	1.0000	100.00	0.00	---	---
		2480	20.00	20.00	1.0000	100.00	0.00	---	---
BLE_2M	Ant1	2402	20.00	20.00	1.0000	100.00	0.00	---	---
		2440	20.00	20.00	1.0000	100.00	0.00	---	---
		2480	20.00	20.00	1.0000	100.00	0.00	---	---

Test Graphs

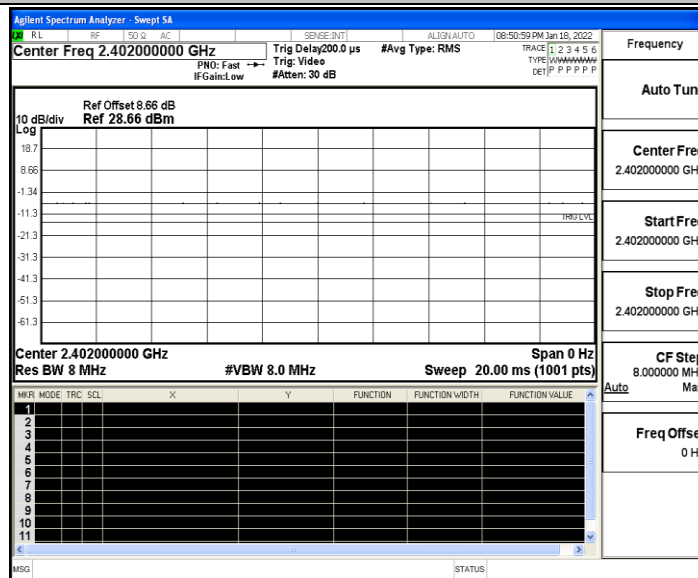




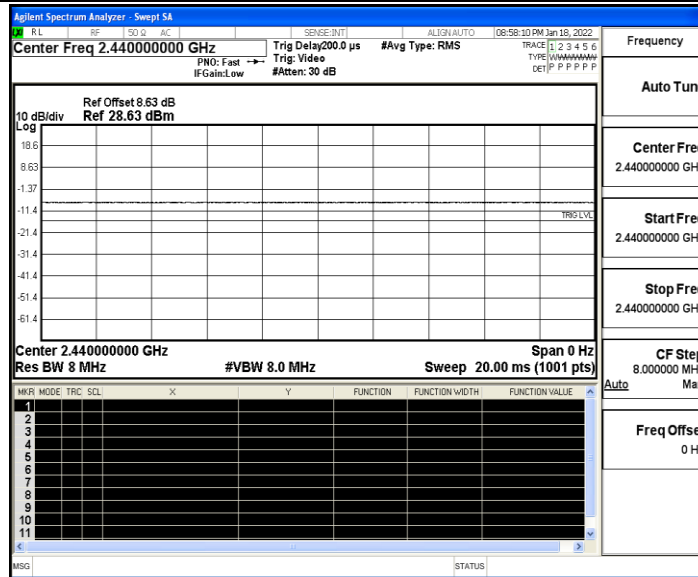
BLE_1M_Ant1_2480



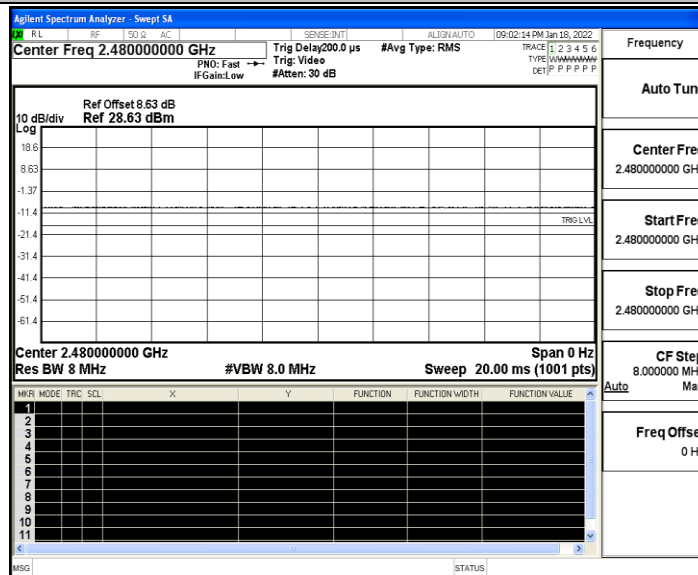
BLE_2M_Ant1_2402



BLE_2M_Ant1_2440



BLE_2M_Ant1_2480





E.8 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	-48.71	≤-41.20	46.49	≤54	PASS
				AV	2365.835	-47.86	≤-41.20	47.34	≤54	PASS
				AV	2390.000	-48.36	≤-41.20	46.84	≤54	PASS
				Peak	2310.000	-39.5	≤-21.20	55.70	≤74	PASS
				Peak	2336.120	-36.39	≤-21.20	58.81	≤74	PASS
				Peak	2390.000	-37.92	≤-21.20	57.28	≤74	PASS
		High	2480	AV	2483.500	-47.86	≤-41.20	47.34	≤54	PASS
				AV	2499.440	-47.74	≤-41.20	47.46	≤54	PASS
				AV	2500.000	-47.76	≤-41.20	47.44	≤54	PASS
				Peak	2483.500	-38.49	≤-21.20	56.71	≤74	PASS
				Peak	2486.400	-36.24	≤-21.20	58.96	≤74	PASS
				Peak	2500.000	-38.08	≤-21.20	57.12	≤74	PASS
BLE_2M	Ant1	Low	2402	AV	2310.000	-48.7	≤-41.20	46.50	≤54	PASS
				AV	2387.885	-48.29	≤-41.20	46.91	≤54	PASS
				AV	2390.000	-48.31	≤-41.20	46.89	≤54	PASS
				Peak	2310.000	-38.83	≤-21.20	56.37	≤74	PASS
				Peak	2389.880	-36.49	≤-21.20	58.71	≤74	PASS
				Peak	2390.000	-38.49	≤-21.20	56.71	≤74	PASS
		High	2480	AV	2483.500	-47.86	≤-41.20	47.34	≤54	PASS
				AV	2499.760	-47.76	≤-41.20	47.44	≤54	PASS
				AV	2500.000	-47.78	≤-41.20	47.42	≤54	PASS
				Peak	2483.500	-37.98	≤-21.20	57.22	≤74	PASS
				Peak	2491.600	-36.49	≤-21.20	58.71	≤74	PASS
				Peak	2500.000	-37.61	≤-21.20	57.59	≤74	PASS

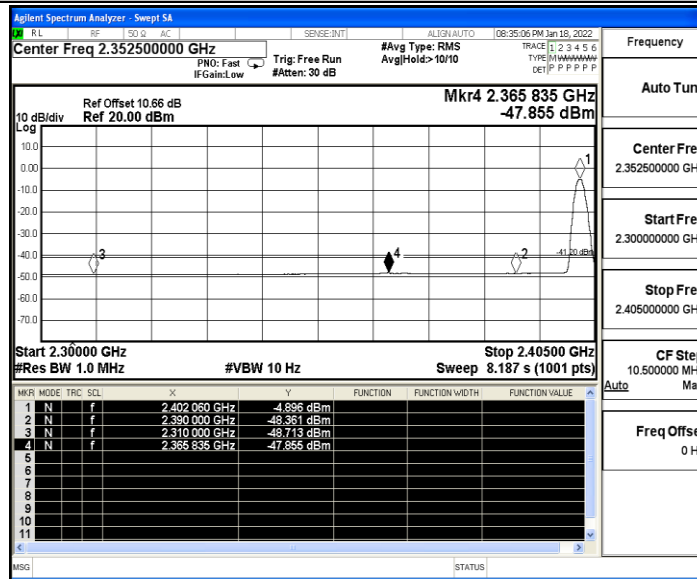
Note:

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.

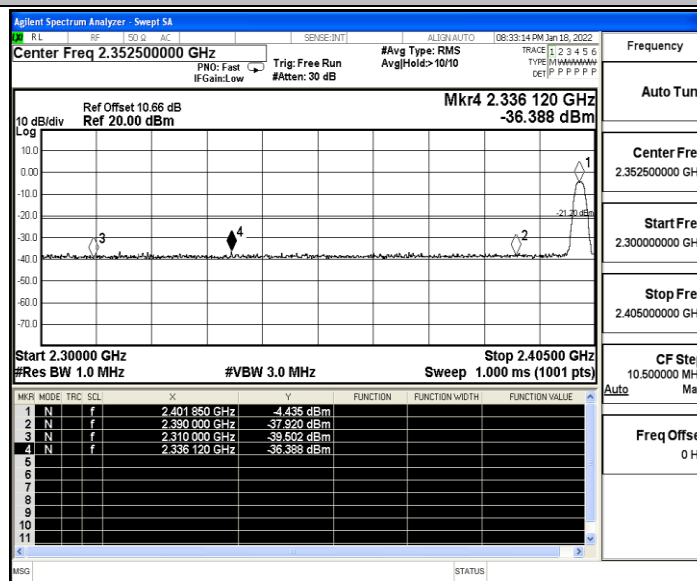


Test Graphs

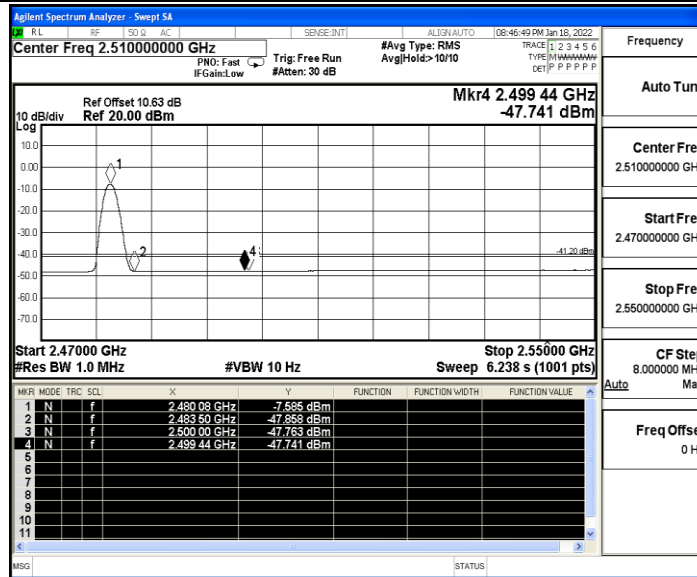
BLE_1M_Ant1_Low_2402_AV



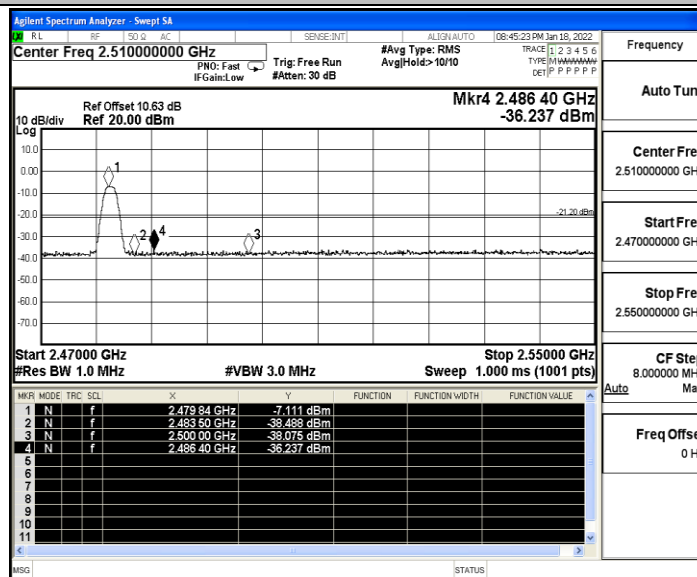
BLE_1M_Ant1_Low_2402_Peak



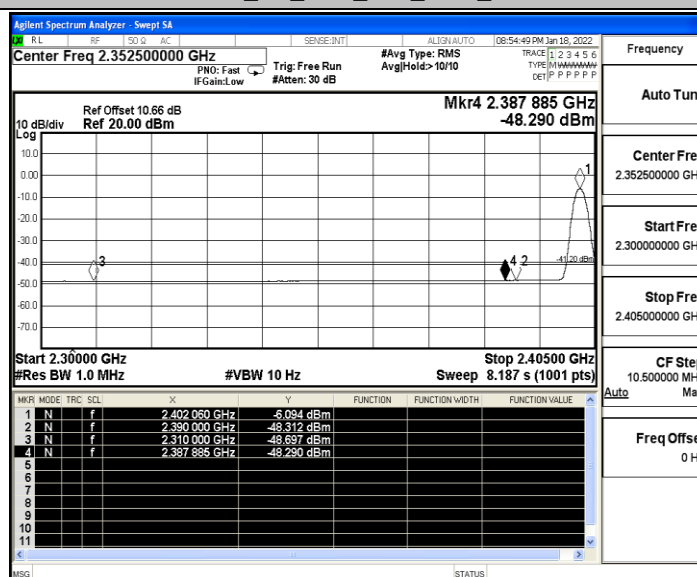
BLE_1M_Ant1_High_2480_AV



BLE_1M_Ant1_High_2480_Peak

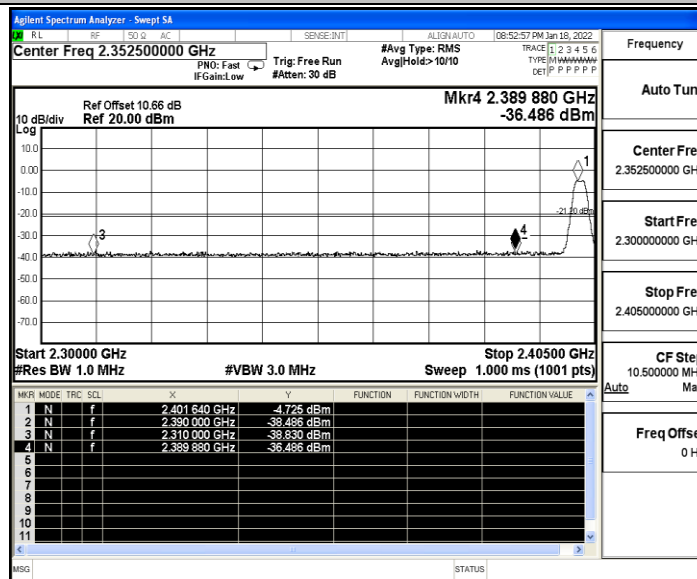


BLE_2M_Ant1_Low_2402_AV

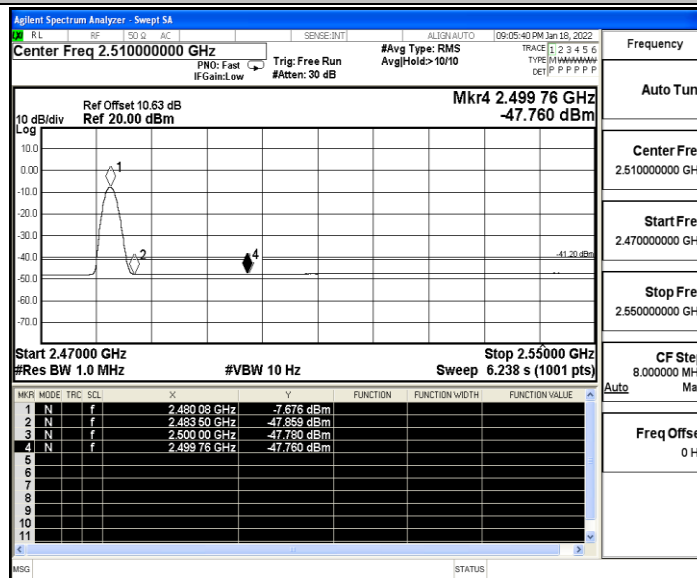




BLE_2M_Ant1_Low_2402_Peak



BLE_2M_Ant1_High_2480_AV



BLE_2M_Ant1_High_2480_Peak

