



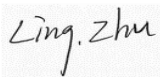
Appendix A

RF Test Data for BT LE (Conducted Measurement)

Product Name: Andromeda

Test Model: ETCS2A-M2

Environmental Conditions

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



A.1 DTS Bandwidth

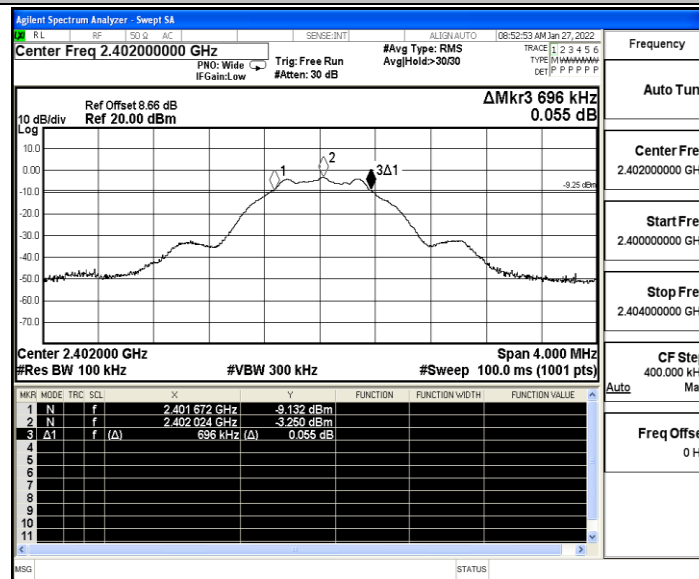
Test Result

TestMode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.696	2401.672	2402.368	0.5	PASS
		2440	0.692	2439.672	2440.364	0.5	PASS
		2480	0.700	2479.668	2480.368	0.5	PASS
BLE_2M	Ant1	2402	1.124	2401.460	2402.584	0.5	PASS
		2440	1.124	2439.464	2440.588	0.5	PASS
		2480	1.128	2479.460	2480.588	0.5	PASS

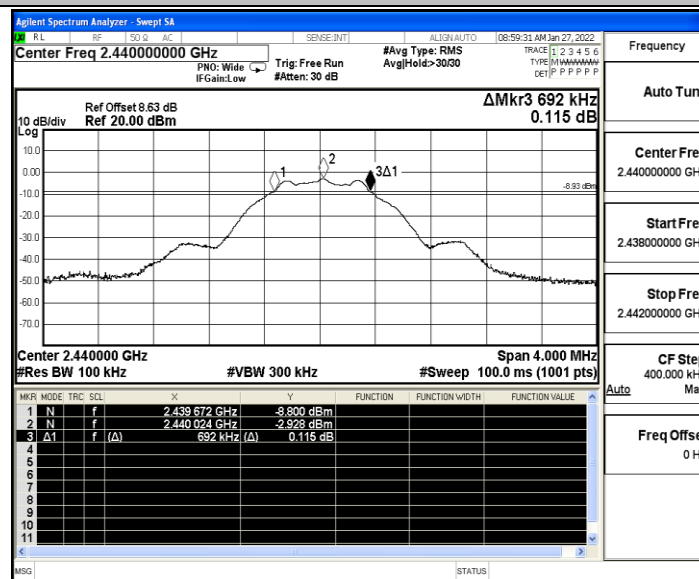


Test Graphs

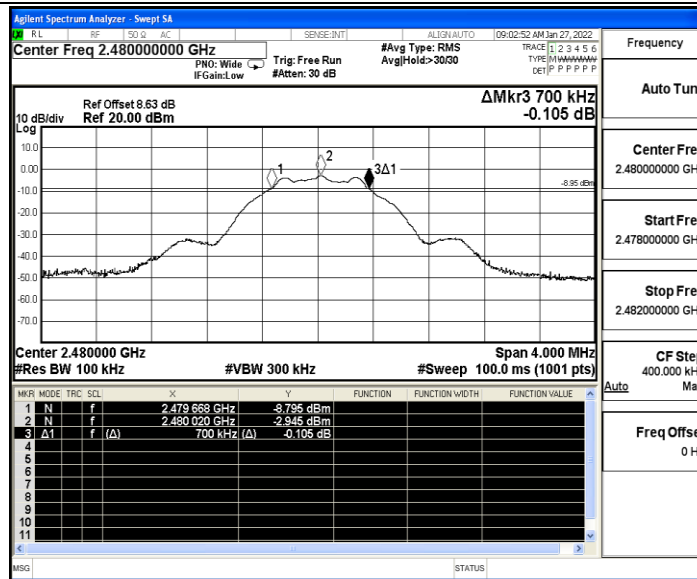
BLE_1M_Ant1_2402



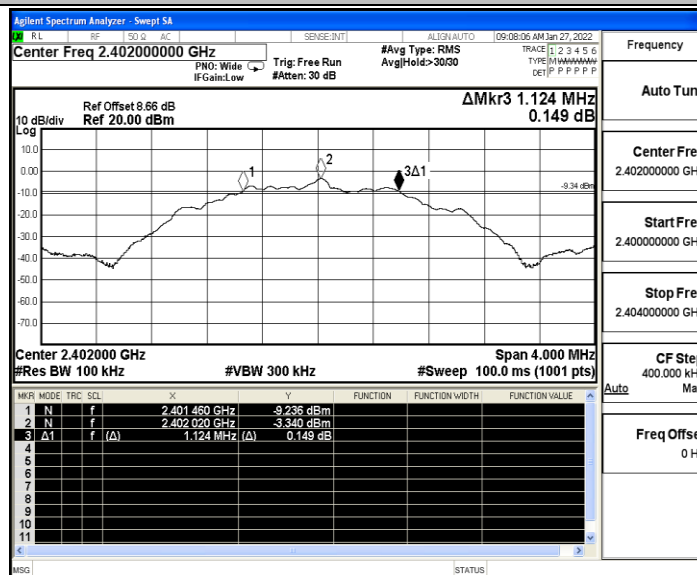
BLE_1M_Ant1_2440



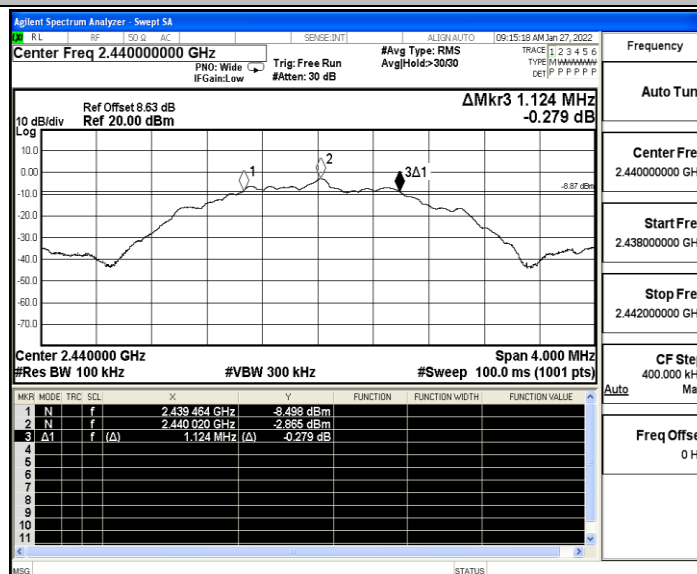
BLE_1M_Ant1_2480



BLE_2M_Ant1_2402

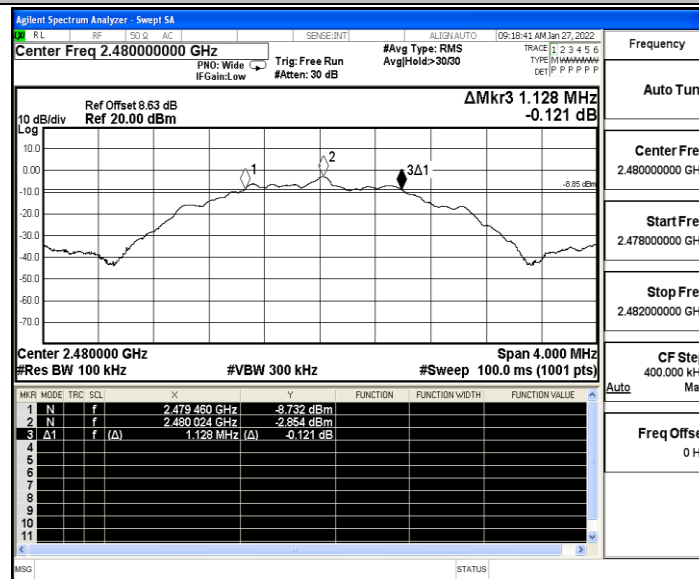


BLE_2M_Ant1_2440





BLE_2M_Ant1_2480





A.2 Maximum peak conducted output power

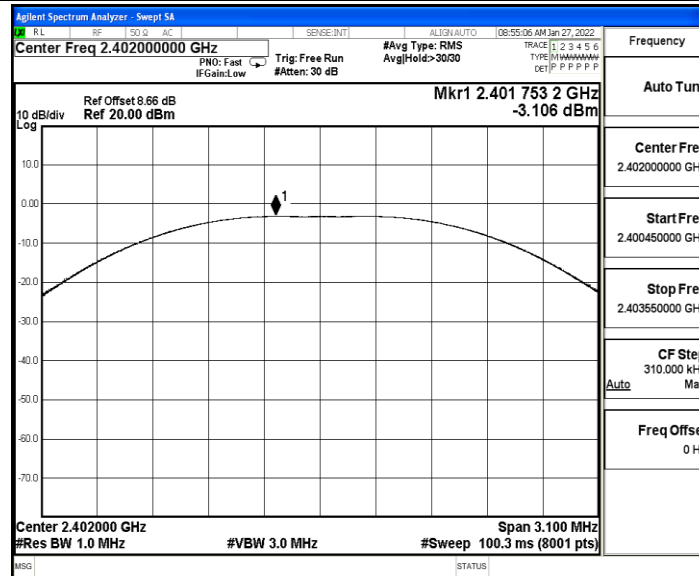
Test Result

TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	-3.11	≤ 30	PASS
		2440	-2.72	≤ 30	PASS
		2480	-2.61	≤ 30	PASS
BLE_2M	Ant1	2402	-3.06	≤ 30	PASS
		2440	-2.35	≤ 30	PASS
		2480	-2.6	≤ 30	PASS

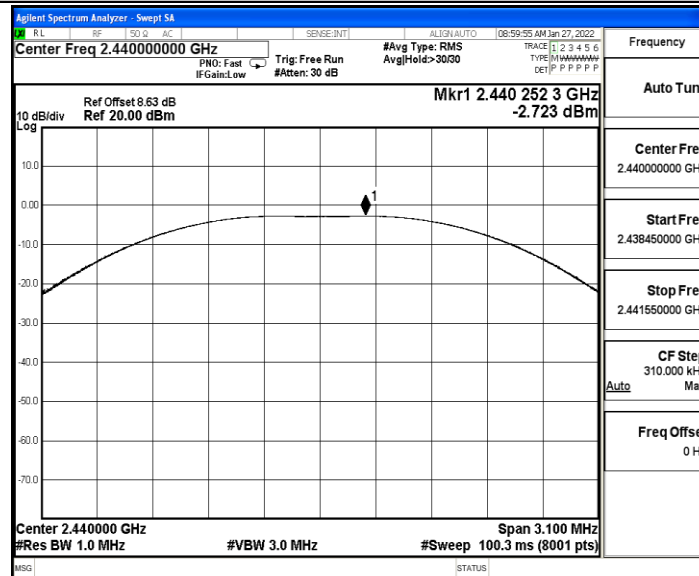


Test Graphs

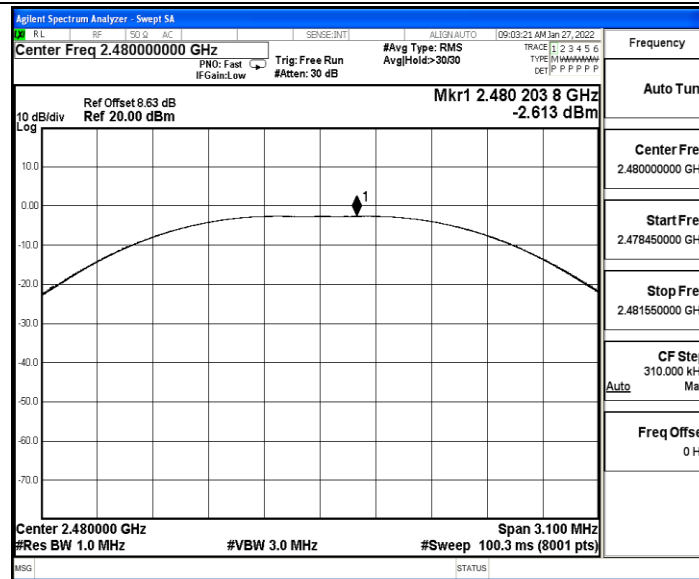
BLE_1M_Ant1_2402



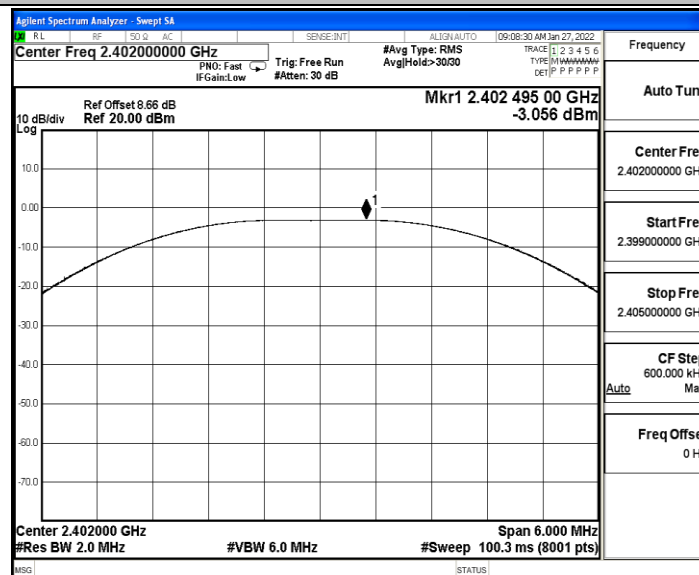
BLE_1M_Ant1_2440



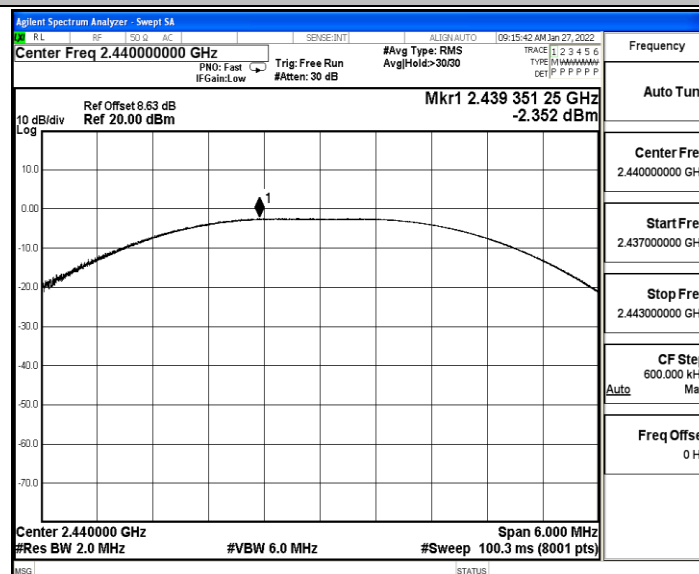
BLE_1M_Ant1_2480



BLE_2M_Ant1_2402

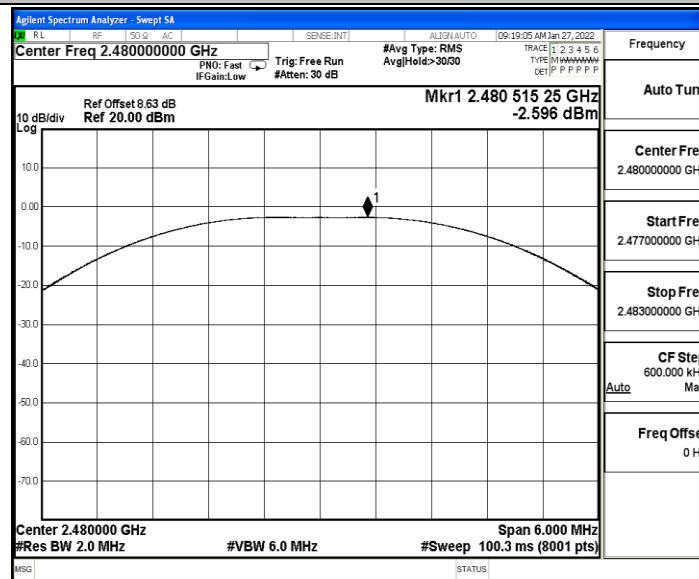


BLE_2M_Ant1_2440





BLE_2M_Ant1_2480





A.3 Maximum power spectral density

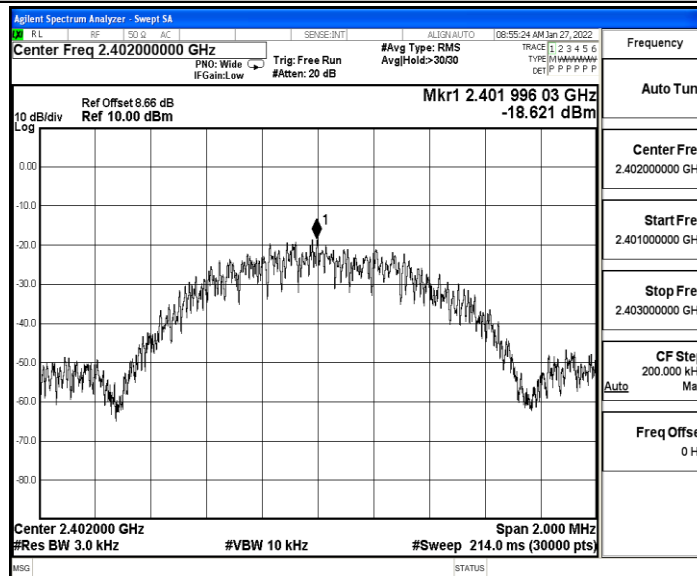
Test Result

TestMode	Antenna	Channel	Result[dBm/3-100kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-18.62	≤8.00	PASS
		2440	-18.3	≤8.00	PASS
		2480	-18.2	≤8.00	PASS
BLE_2M	Ant1	2402	-20.34	≤8.00	PASS
		2440	-20	≤8.00	PASS
		2480	-19.97	≤8.00	PASS

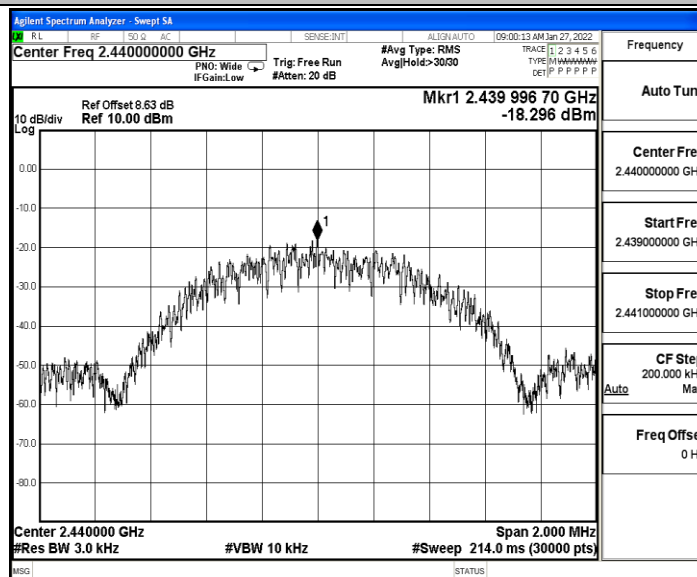


Test Graphs

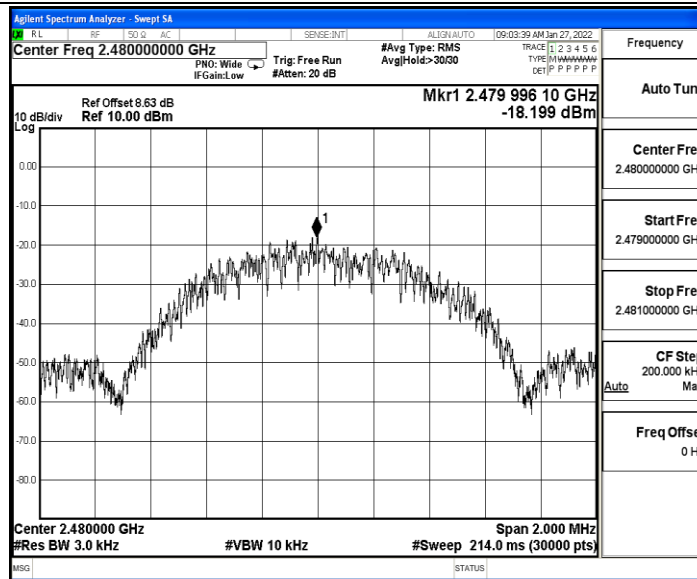
BLE_1M_Ant1_2402



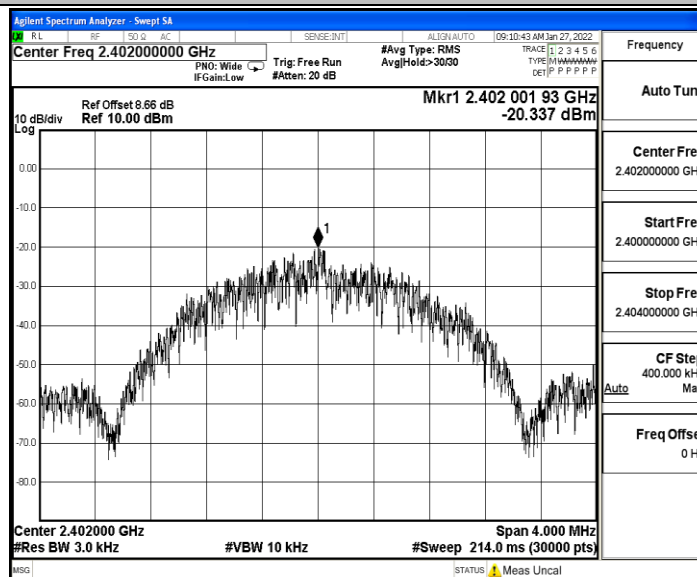
BLE_1M_Ant1_2440



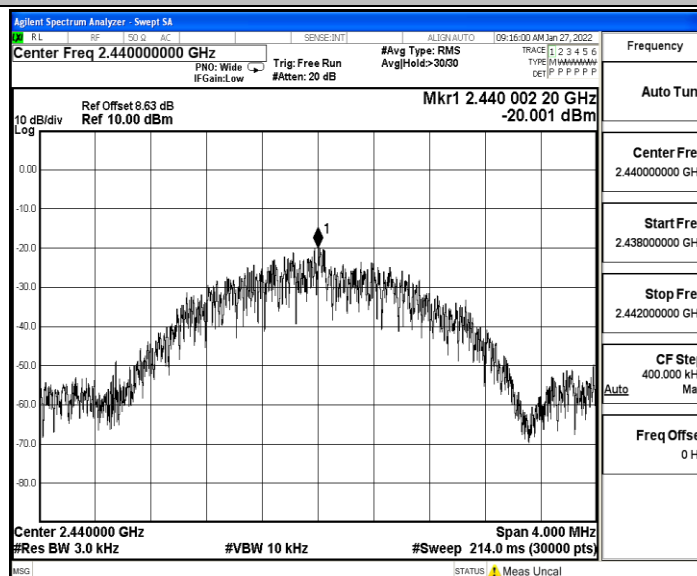
BLE_1M_Ant1_2480



BLE_2M_Ant1_2402

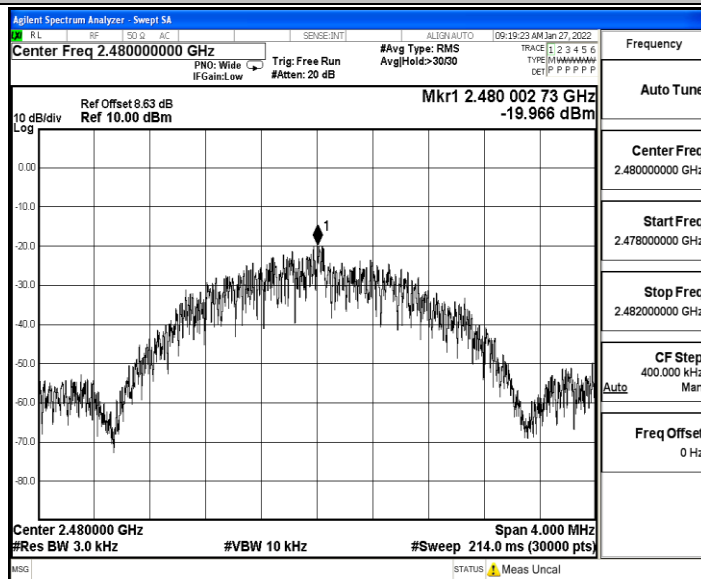


BLE_2M_Ant1_2440





BLE_2M_Ant1_2480





A.4 Band edge measurements

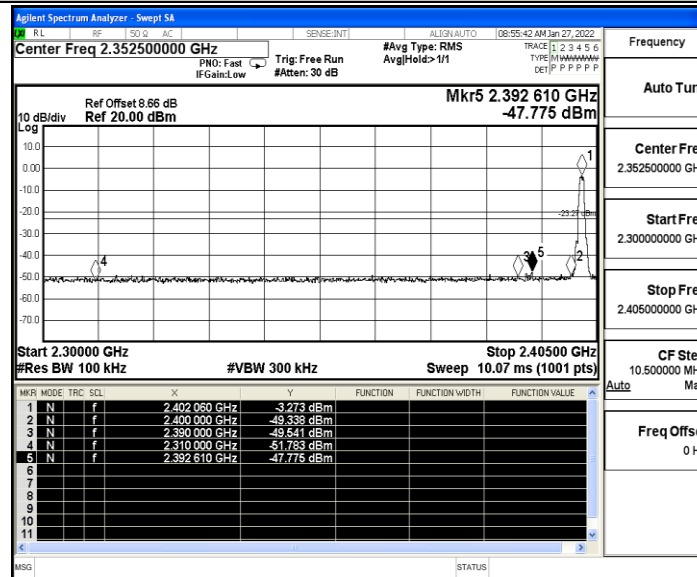
Test Result

TestMode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	-3.27	-47.78	≤ -23.27	PASS
		High	2480	-2.72	-47.82	≤ -22.72	PASS
BLE_2M	Ant1	Low	2402	-3.91	-35.47	≤ -23.91	PASS
		High	2480	-2.69	-47.66	≤ -22.69	PASS

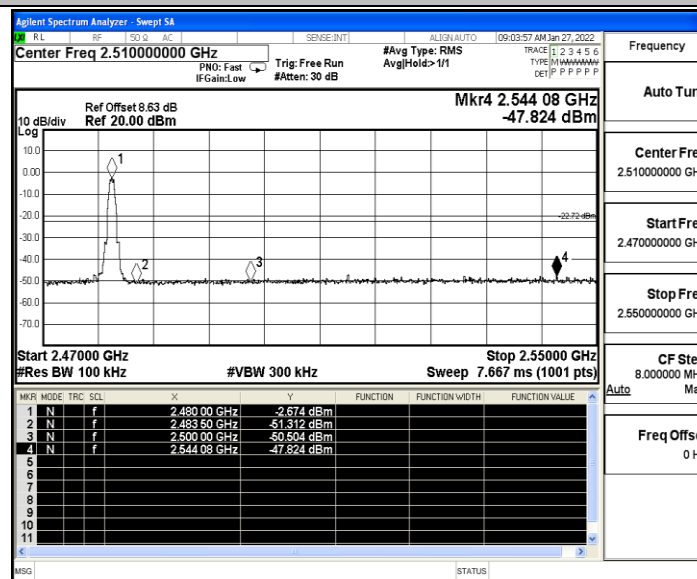


Test Graphs

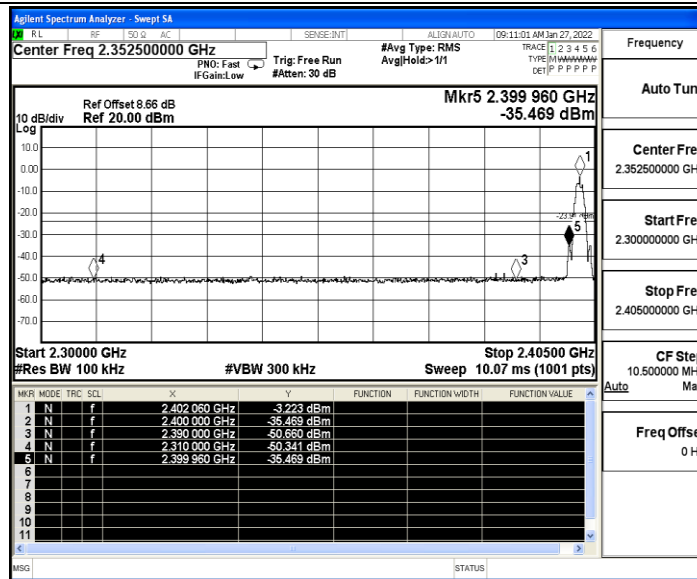
BLE_1M_Ant1_Low_2402



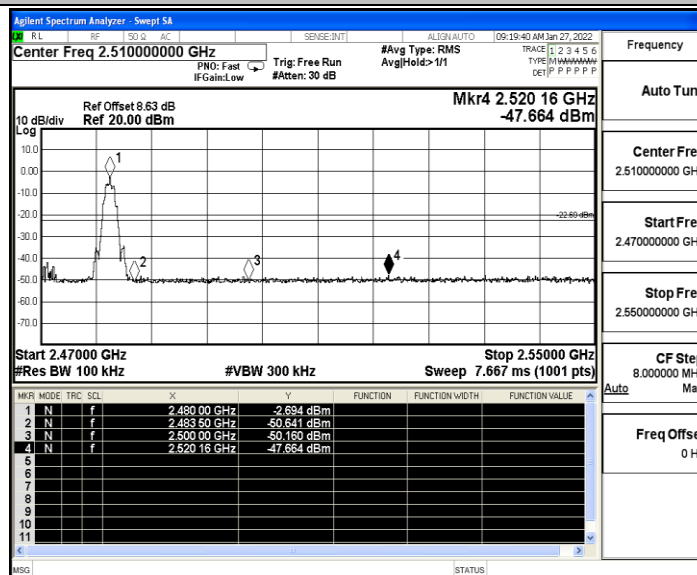
BLE_1M_Ant1_High_2480



BLE_2M_Ant1_Low_2402



BLE_2M_Ant1_High_2480





A.5 Conducted Spurious Emission

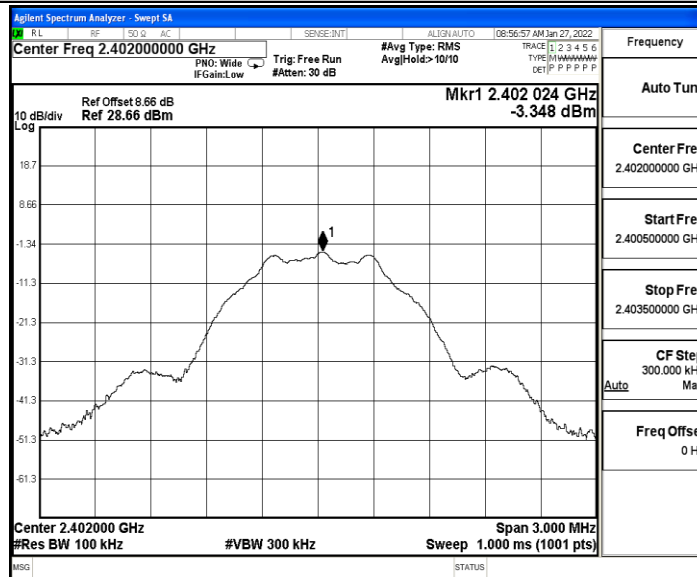
Test Result

TestMode	Antenna	Channel	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	Reference	-3.35	-3.35	---	PASS
			30~1000	-3.35	-47.51	≤ -23.35	PASS
			1000~26500	-3.35	-45.98	≤ -23.35	PASS
		2440	Reference	-2.92	-2.92	---	PASS
			30~1000	-2.92	-47.13	≤ -22.92	PASS
			1000~26500	-2.92	-46.44	≤ -22.92	PASS
		2480	Reference	-2.77	-2.77	---	PASS
			30~1000	-2.77	-47.09	≤ -22.77	PASS
			1000~26500	-2.77	-45.67	≤ -22.77	PASS
BLE_2M	Ant1	2402	Reference	-3.33	-3.33	---	PASS
			30~1000	-3.33	-46.94	≤ -23.33	PASS
			1000~26500	-3.33	-28.19	≤ -23.33	PASS
		2440	Reference	-2.85	-2.85	---	PASS
			30~1000	-2.85	-47.19	≤ -22.85	PASS
			1000~26500	-2.85	-39.15	≤ -22.85	PASS
		2480	Reference	-2.84	-2.84	---	PASS
			30~1000	-2.84	-46.89	≤ -22.84	PASS
			1000~26500	-2.84	-46.28	≤ -22.84	PASS

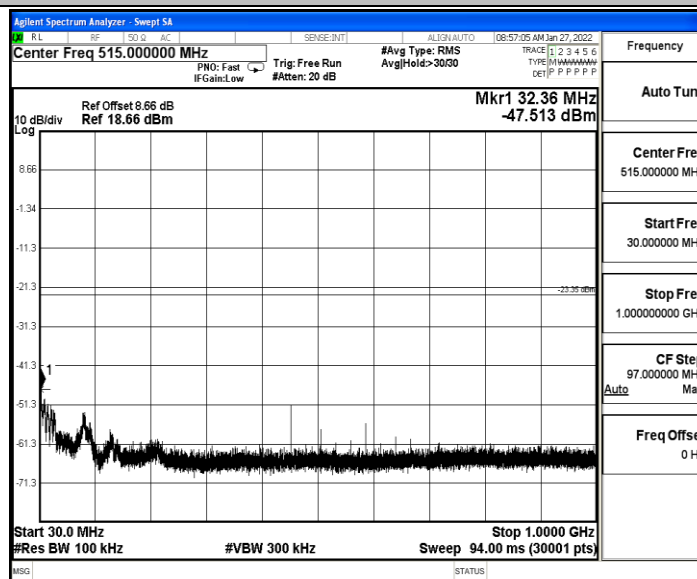


Test Graphs

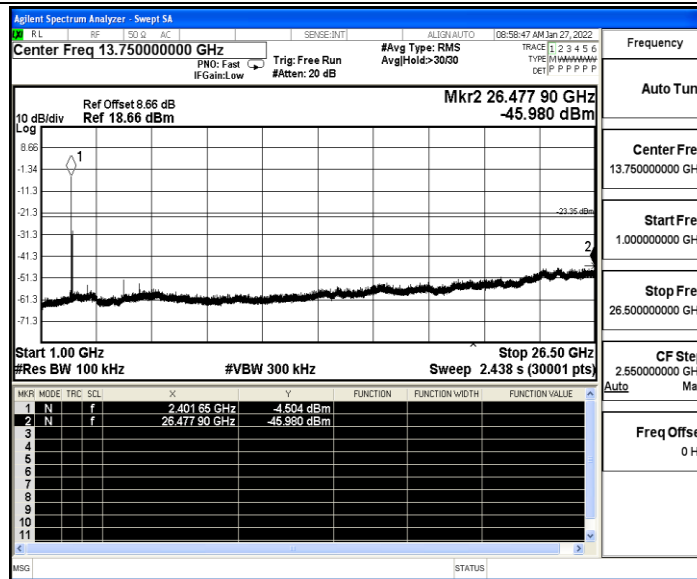
BLE_1M_Ant1_2402_0~Reference



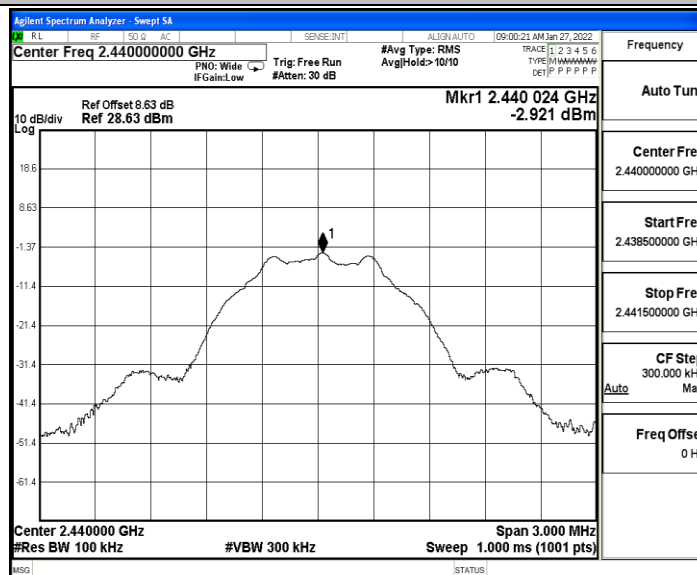
BLE_1M_Ant1_2402_30~1000



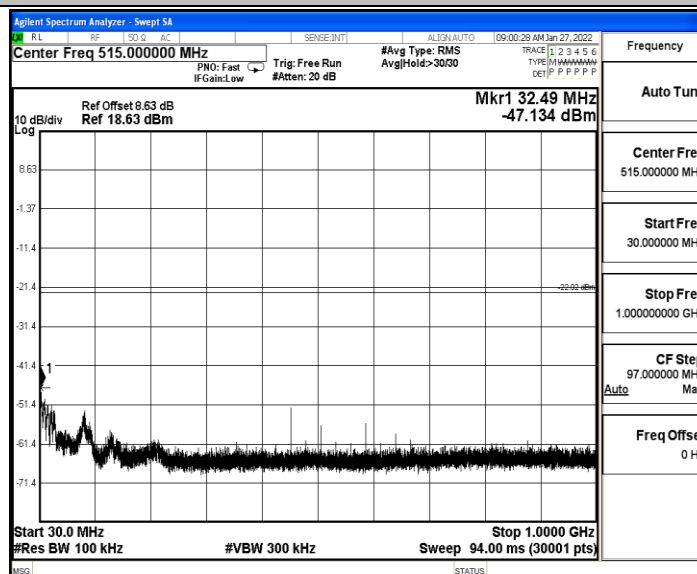
BLE_1M_Ant1_2402_1000~26500



BLE_1M_Ant1_2440_0~Reference

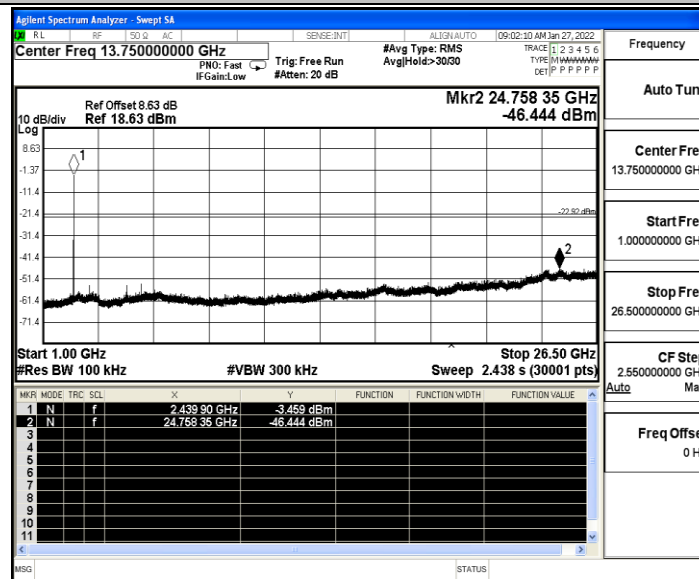


BLE_1M_Ant1_2440_30~1000

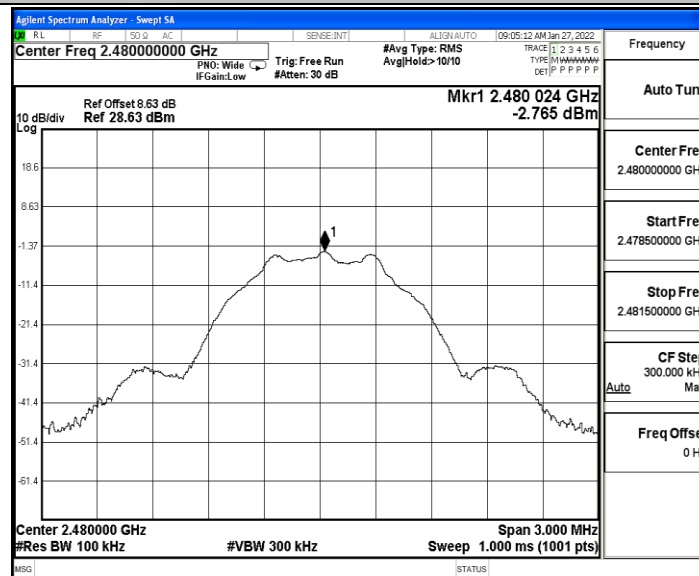




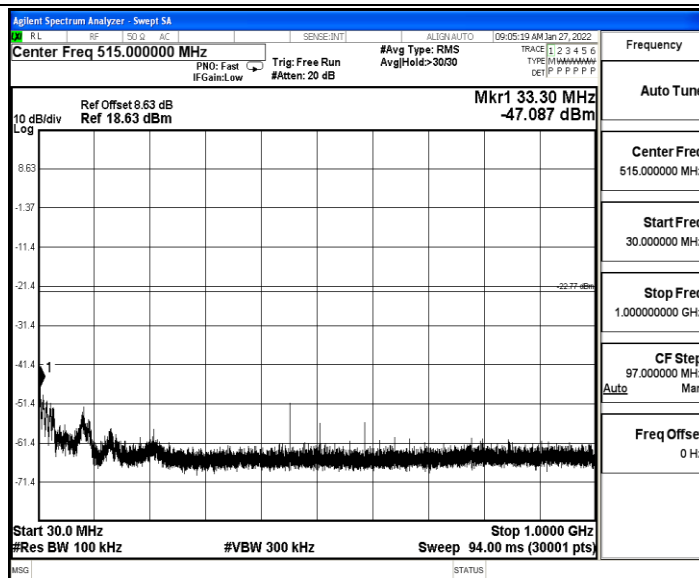
BLE_1M_Ant1_2440_1000~26500



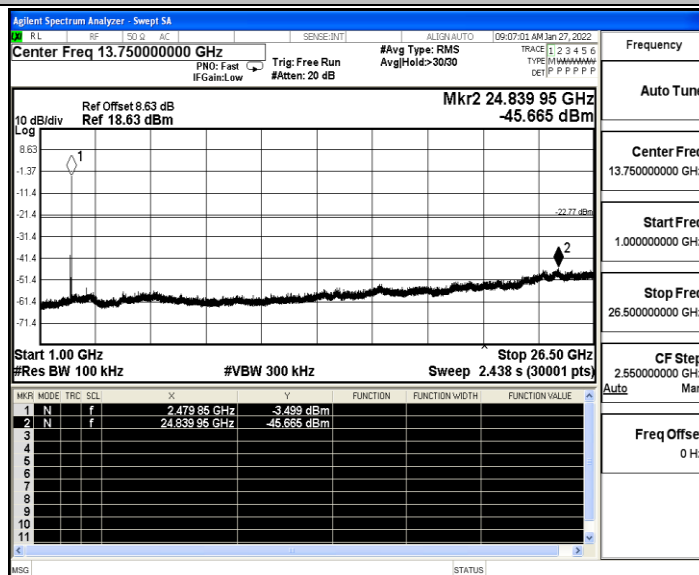
BLE_1M_Ant1_2480_0~Reference



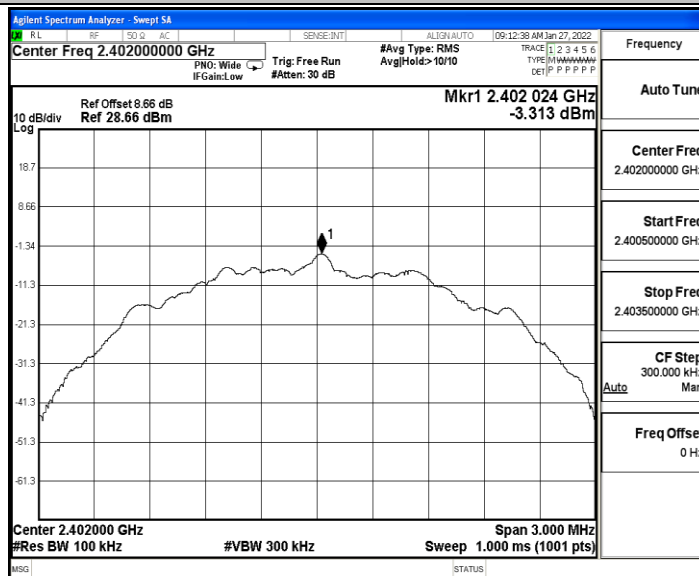
BLE_1M_Ant1_2480_30~1000



BLE_1M_Ant1_2480_1000~26500

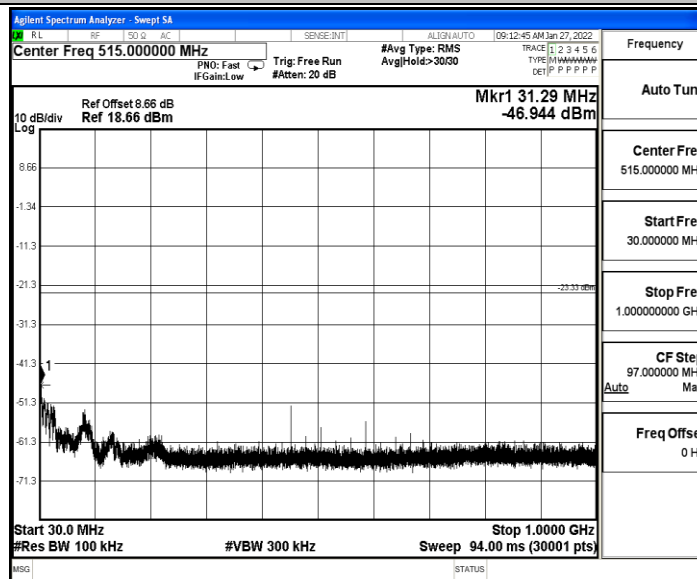


BLE_2M_Ant1_2402_0~Reference

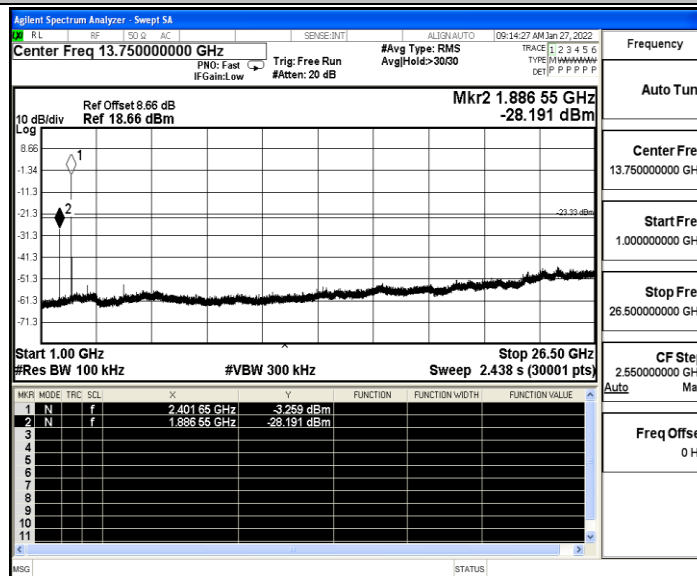




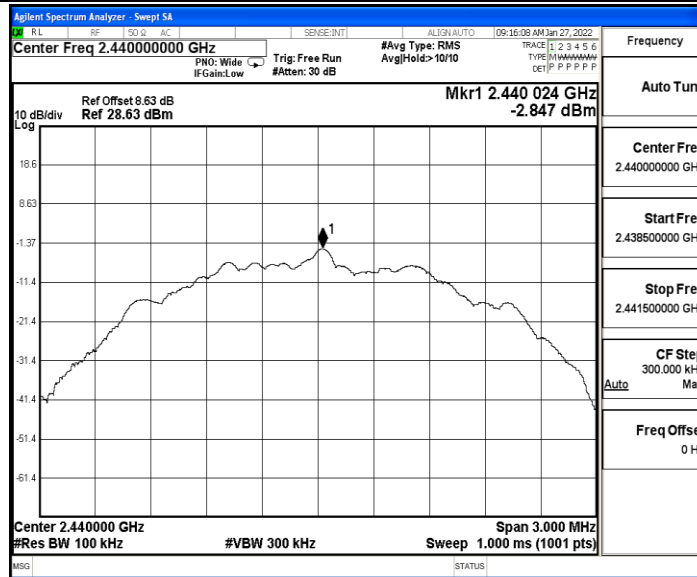
BLE_2M_Ant1_2402_30~1000



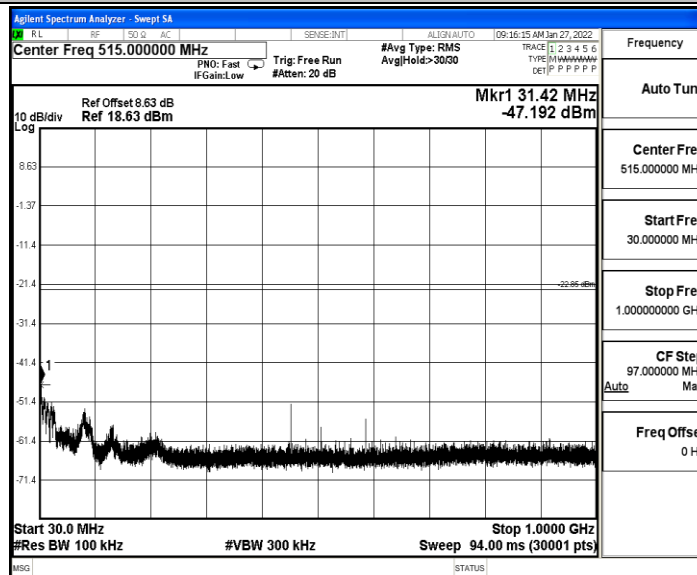
BLE_2M_Ant1_2402_1000~26500



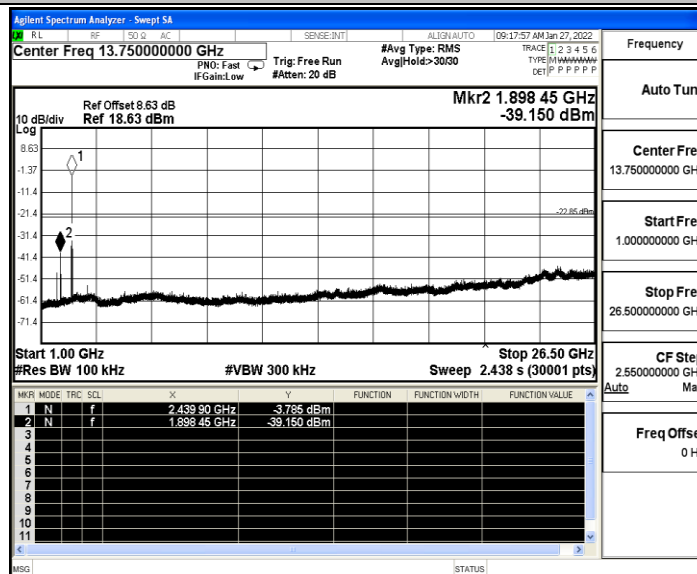
BLE_2M_Ant1_2440_0~Reference



BLE_2M_Ant1_2440_30~1000

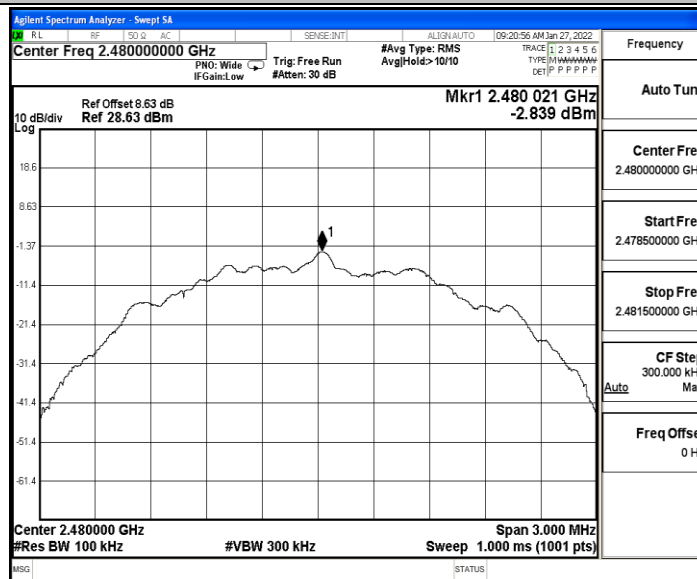


BLE_2M_Ant1_2440_1000~26500

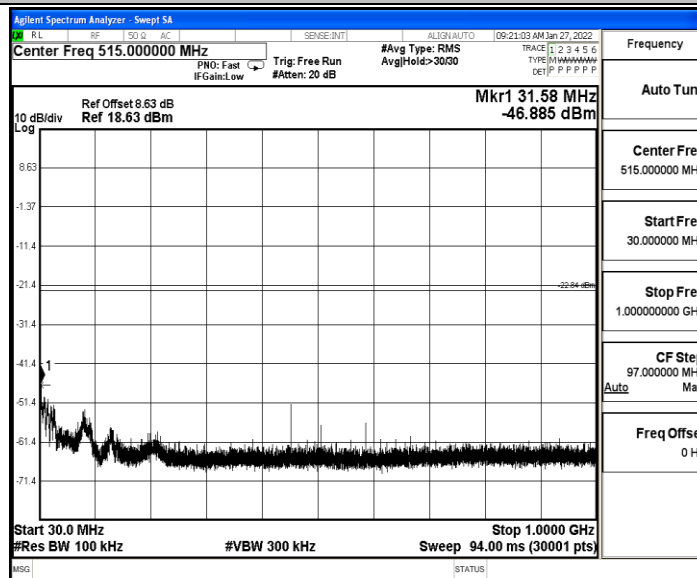




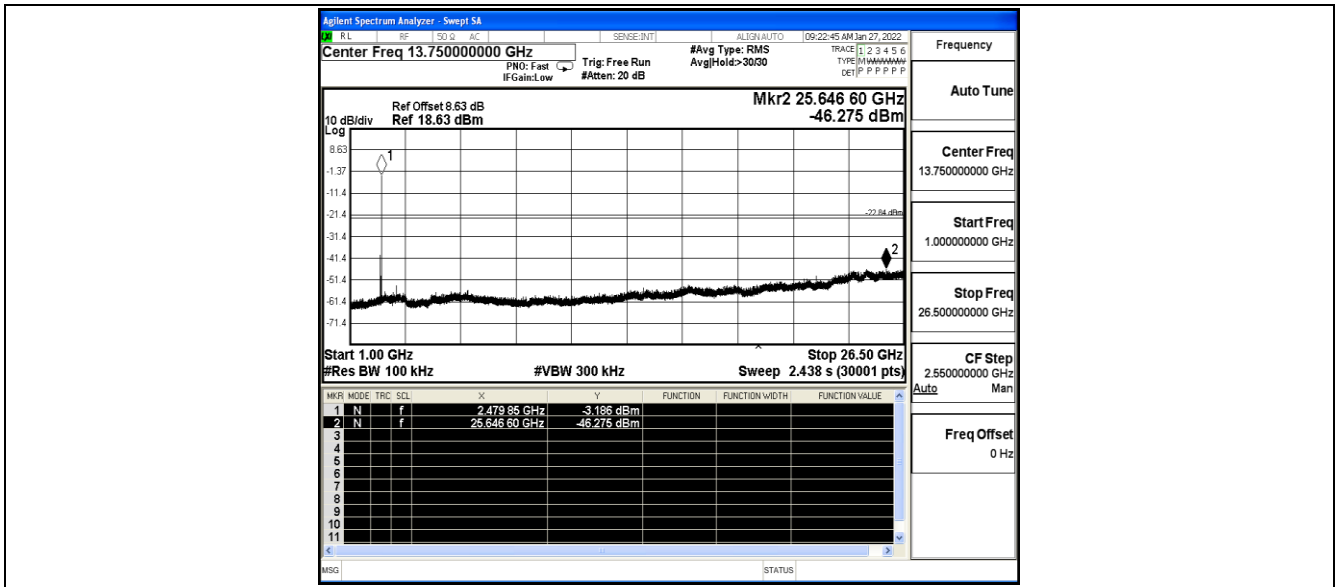
BLE_2M_Ant1_2480_0~Reference



BLE_2M_Ant1_2480_30~1000



BLE_2M_Ant1_2480_1000~26500





A.6 Duty Cycle

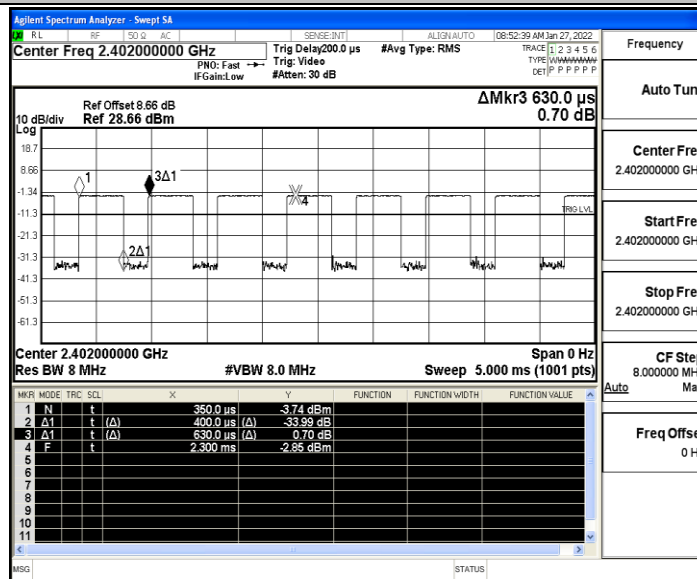
Test Result

TestMode	Antenna	Channel	ON Time [ms]	Period [ms]	X	DC [%]	xFactor	Limit	Verdict
BLE_1M	Ant1	2402	0.40	0.63	0.6349	63.49	1.97	---	---
		2440	0.39	0.62	0.6290	62.90	2.01	---	---
		2480	0.39	0.62	0.6290	62.90	2.01	---	---
BLE_2M	Ant1	2402	0.21	0.62	0.3387	33.87	4.70	---	---
		2440	0.21	0.62	0.3387	33.87	4.70	---	---
		2480	0.21	0.62	0.3387	33.87	4.70	---	---

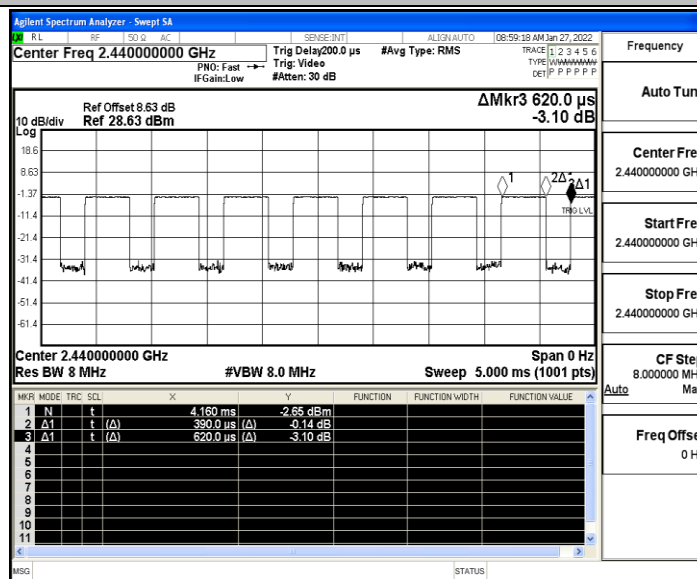


Test Graphs

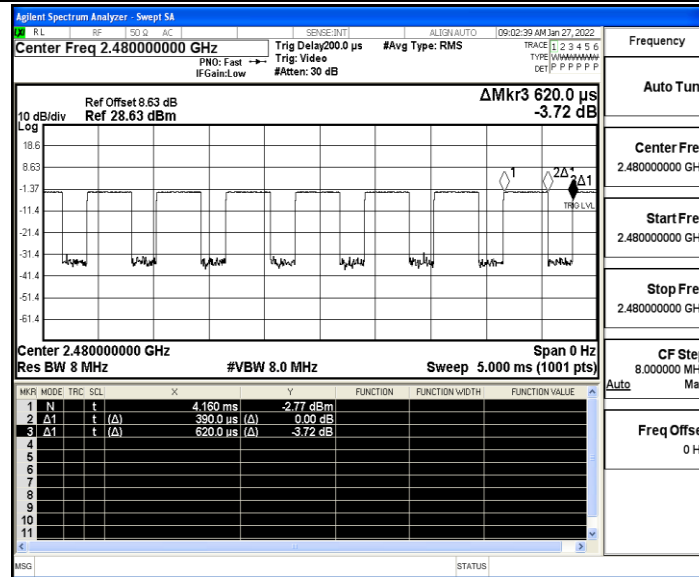
BLE_1M_Ant1_2402



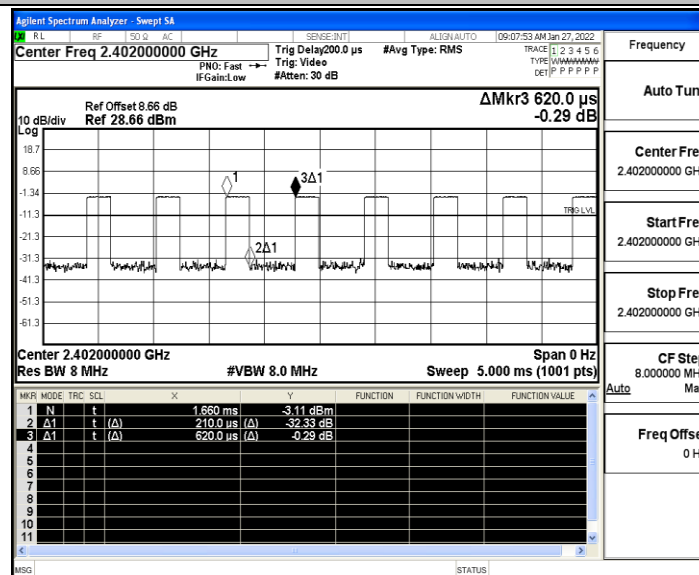
BLE_1M_Ant1_2440



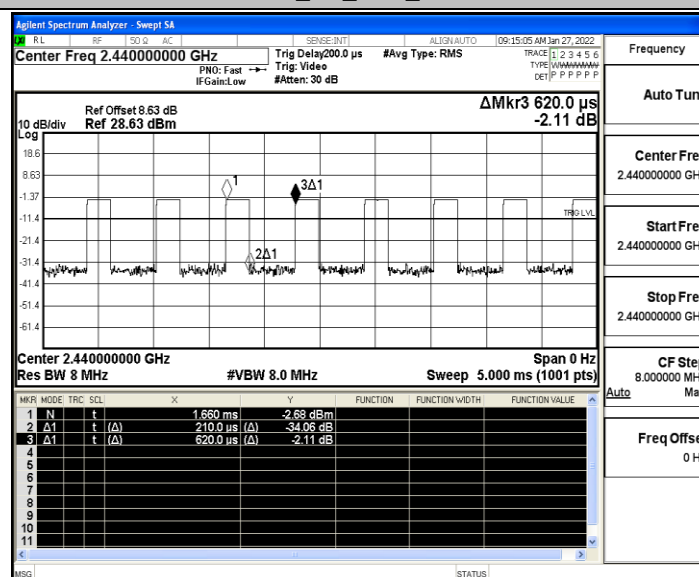
BLE_1M_Ant1_2480



BLE_2M_Ant1_2402

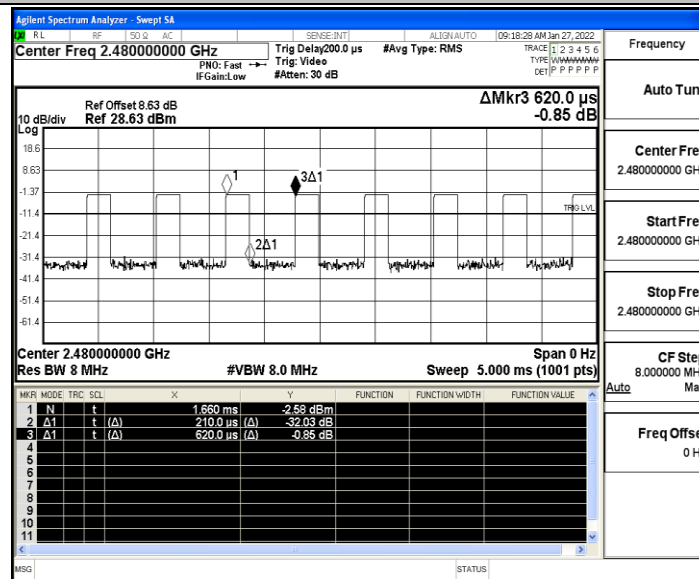


BLE_2M_Ant1_2440





BLE_2M_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	-47.79	≤-41.20	47.41	≤54	PASS
				AV	2384.840	-46.87	≤-41.20	48.33	≤54	PASS
				AV	2390.000	-47.43	≤-41.20	47.77	≤54	PASS
				Peak	2310.000	-39.13	≤-21.20	56.07	≤74	PASS
				Peak	2373.290	-36.89	≤-21.20	58.31	≤74	PASS
				Peak	2390.000	-38.85	≤-21.20	56.35	≤74	PASS
		High	2480	AV	2483.500	-46.59	≤-41.20	48.61	≤54	PASS
				AV	2485.760	-46.27	≤-41.20	48.93	≤54	PASS
				AV	2500.000	-46.64	≤-41.20	48.56	≤54	PASS
				Peak	2483.500	-37.54	≤-21.20	57.66	≤74	PASS
				Peak	2491.920	-36.11	≤-21.20	59.09	≤74	PASS
				Peak	2500.000	-38.06	≤-21.20	57.14	≤74	PASS
BLE_2M	Ant1	Low	2402	AV	2310.000	-46.98	≤-41.20	48.22	≤54	PASS
				AV	2380.010	-46.29	≤-41.20	48.91	≤54	PASS
				AV	2390.000	-46.67	≤-41.20	48.53	≤54	PASS
				Peak	2310.000	-37.77	≤-21.20	57.43	≤74	PASS
				Peak	2375.915	-37.1	≤-21.20	58.10	≤74	PASS
				Peak	2390.000	-38.14	≤-21.20	57.06	≤74	PASS
		High	2480	AV	2483.500	-45.15	≤-41.20	50.05	≤54	PASS
				AV	2483.520	-45.15	≤-41.20	50.05	≤54	PASS
				AV	2500.000	-45.81	≤-41.20	49.39	≤54	PASS
				Peak	2483.500	-37.6	≤-21.20	57.60	≤74	PASS
				Peak	2493.040	-36.31	≤-21.20	58.89	≤74	PASS
				Peak	2500.000	-38.12	≤-21.20	57.08	≤74	PASS

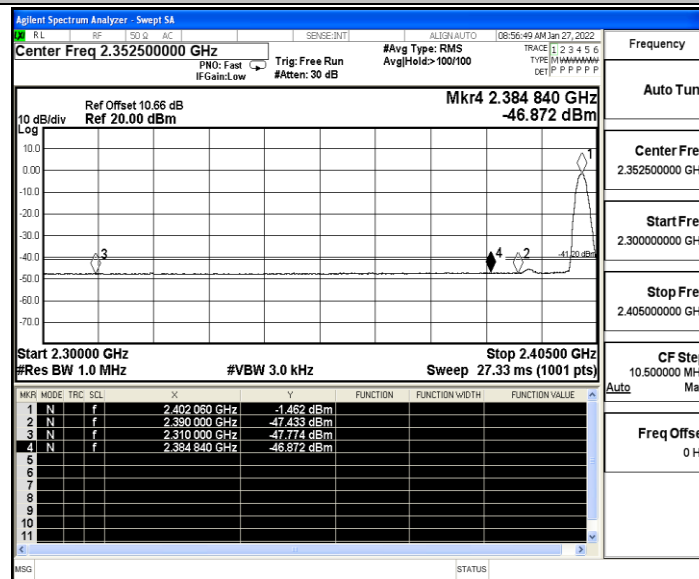
Note:

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.

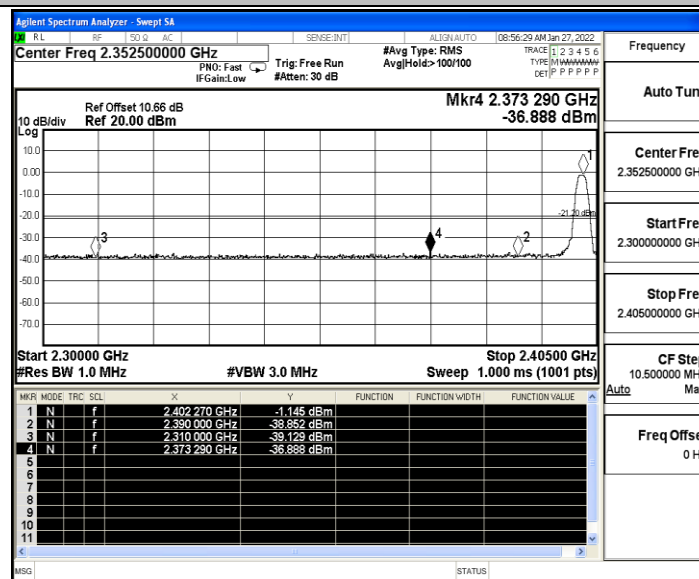


Test Graphs

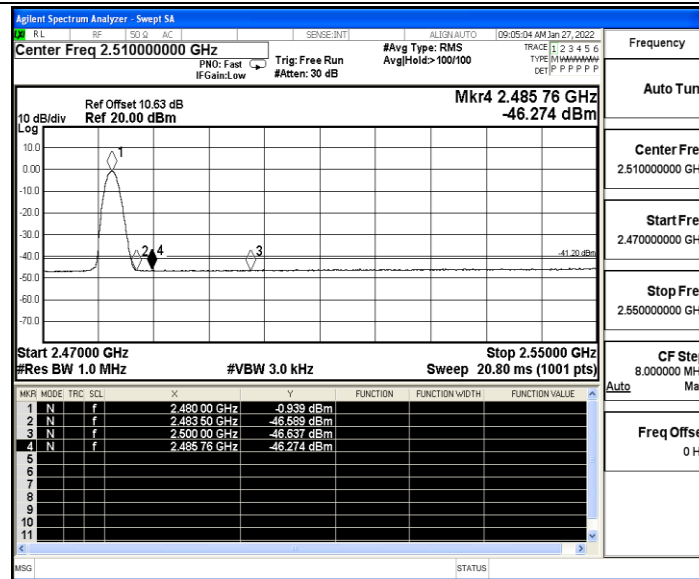
BLE_1M_Ant1_Low_2402_AV



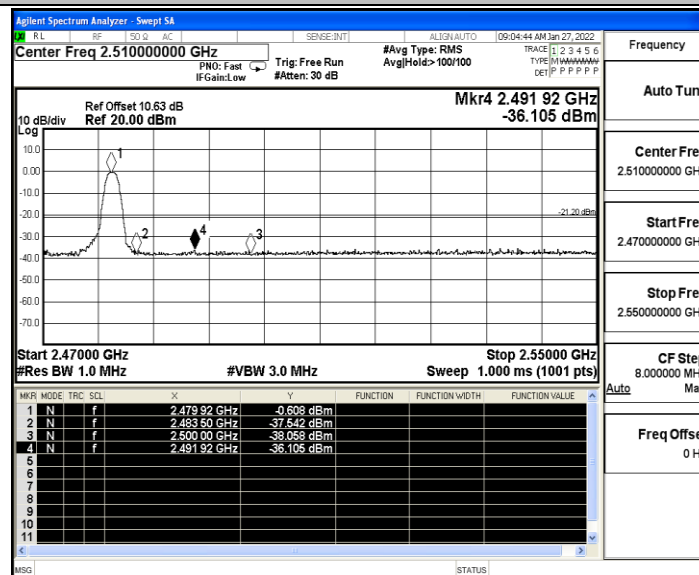
BLE_1M_Ant1_Low_2402_Peak



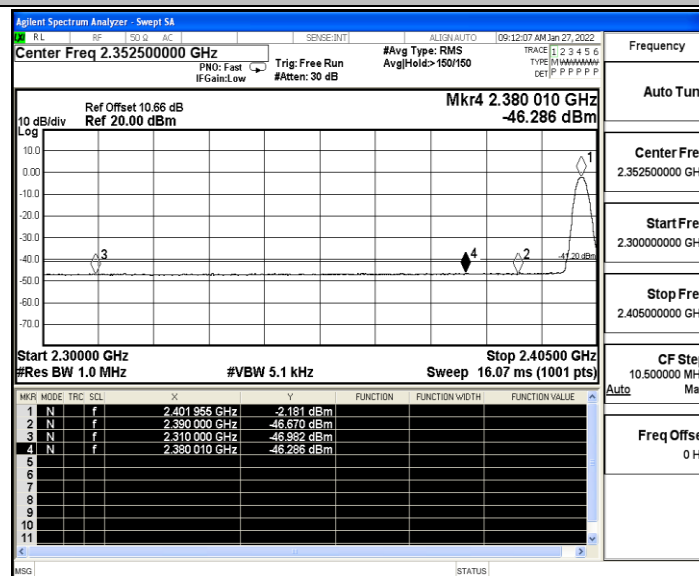
BLE_1M_Ant1_High_2480_AV



BLE_1M_Ant1_High_2480_Peak

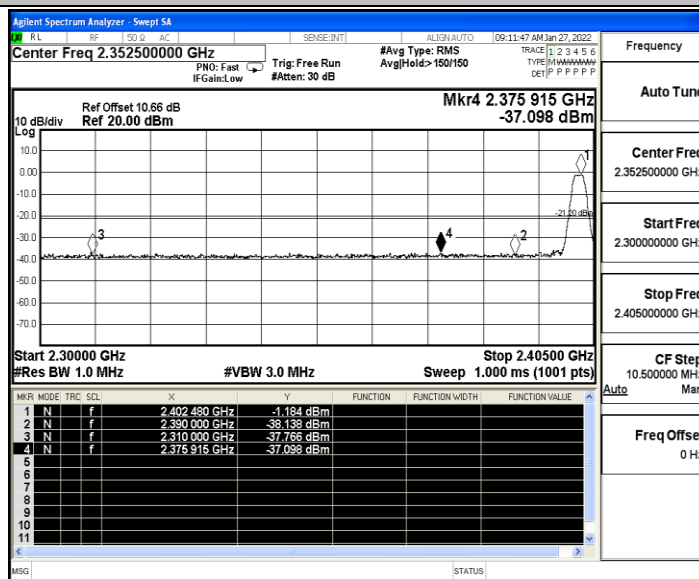


BLE_2M_Ant1_Low_2402_AV

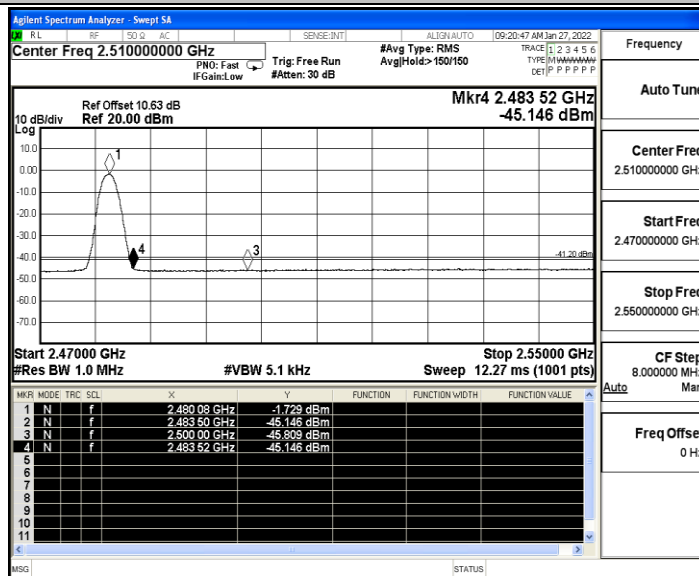




BLE_2M_Ant1_Low_2402_Peak



BLE_2M_Ant1_High_2480_AV



BLE_2M_Ant1_High_2480_Peak

