



Appendix B

RF Test Data for BLE (Conducted Measurement)

Product Name: Portable Bluetooth Speaker with Wireless Charging

Test Model: WJ-202

Environmental Conditions

Temperature:	21.1° C
Relative Humidity:	52.2%
ATM Pressure:	100.0 kPa
Test Engineer:	Jay Li
Supervised by:	Li Huan



B.1 6dB Bandwidth

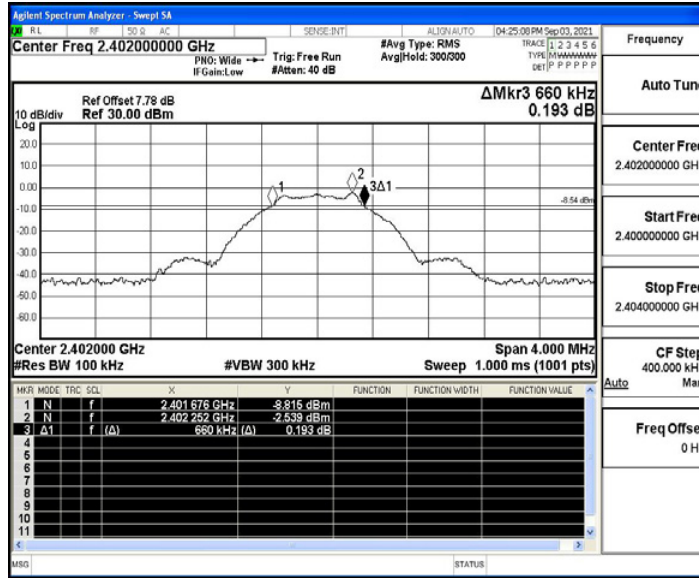
Test Result

TestMode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.660	2401.676	2402.336	≥0.5	PASS
		2440	0.712	2439.644	2440.356	≥0.5	PASS
		2480	0.680	2479.664	2480.344	≥0.5	PASS
BLE_2M	Ant1	2402	1.236	2401.356	2402.592	≥0.5	PASS
		2440	1.160	2439.436	2440.596	≥0.5	PASS
		2480	1.276	2479.336	2480.612	≥0.5	PASS

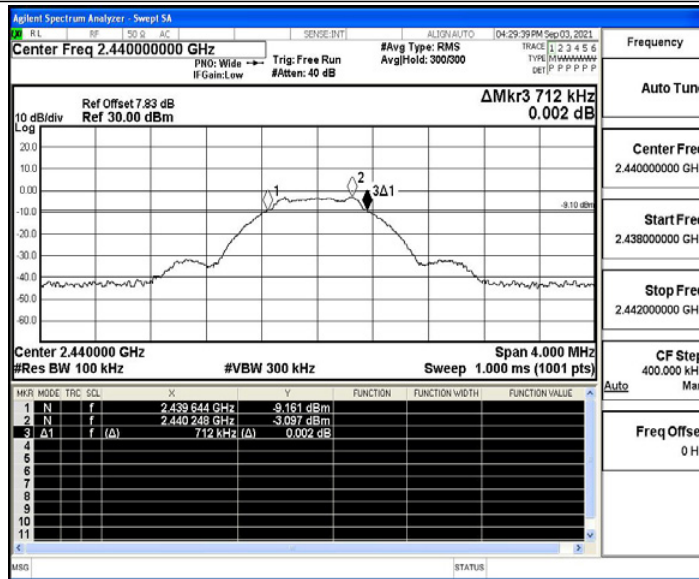


Test Graphs

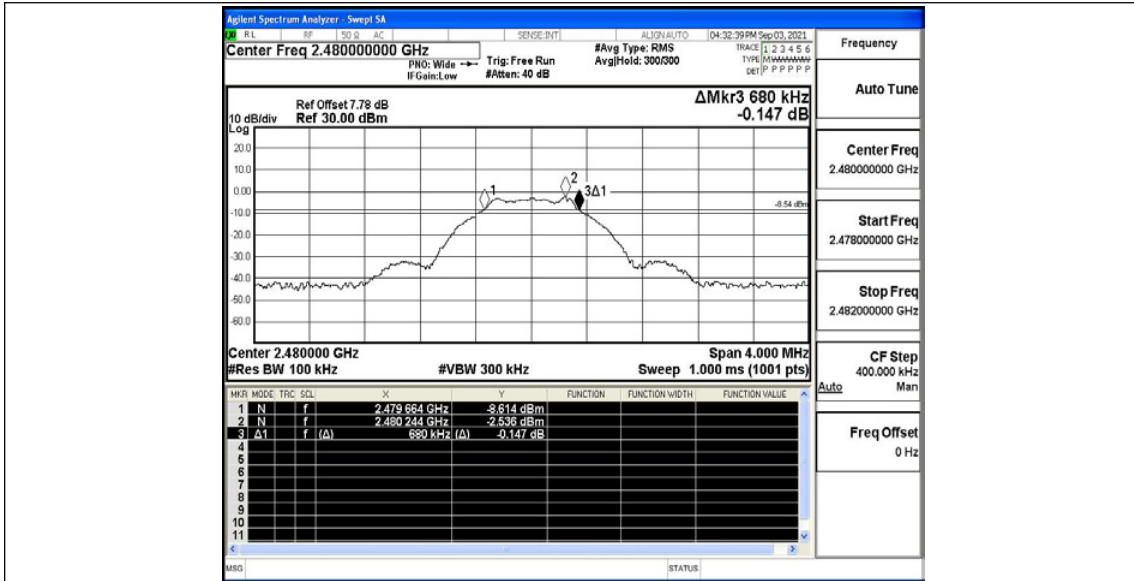
BLE_1M_Ant1_2402



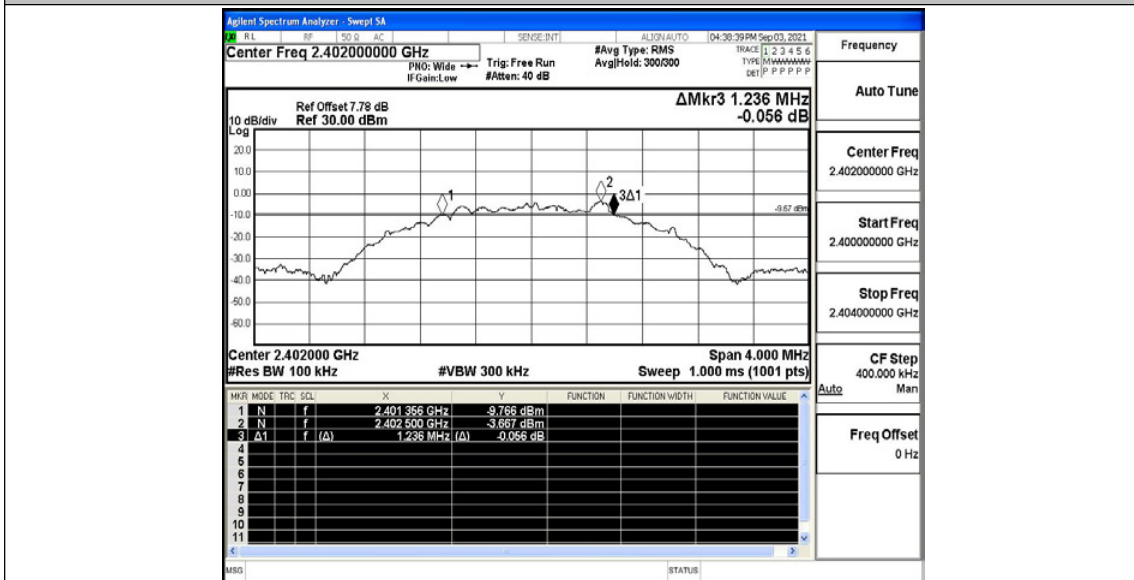
BLE_1M_Ant1_2440



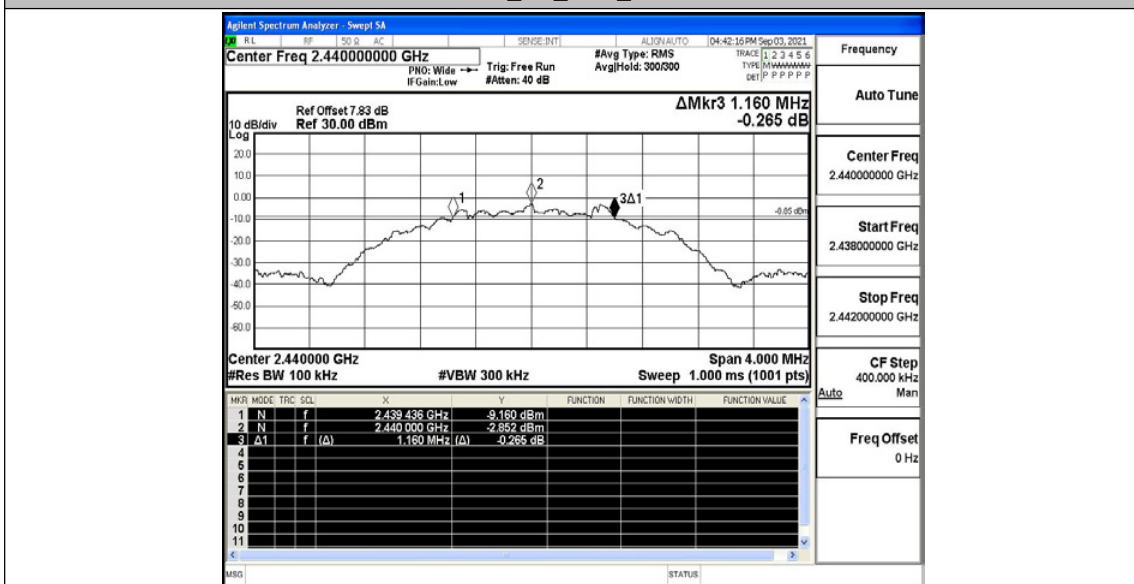
BLE_1M_Ant1_2480



BLE_2M_Ant1_2402

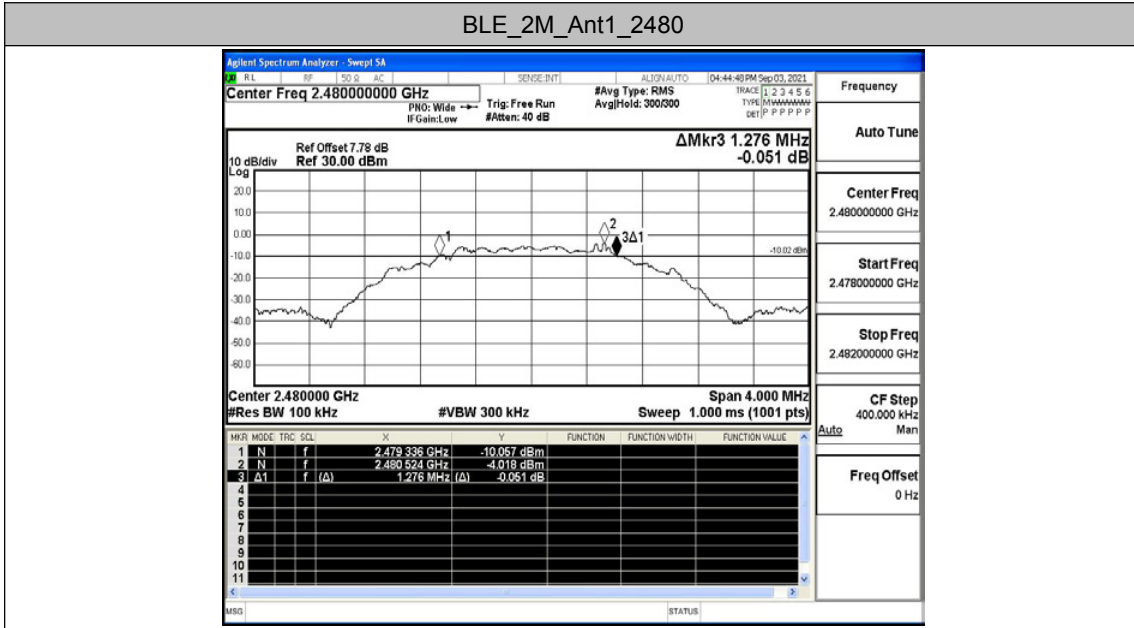


BLE_2M_Ant1_2440





BLE_2M_Ant1_2480





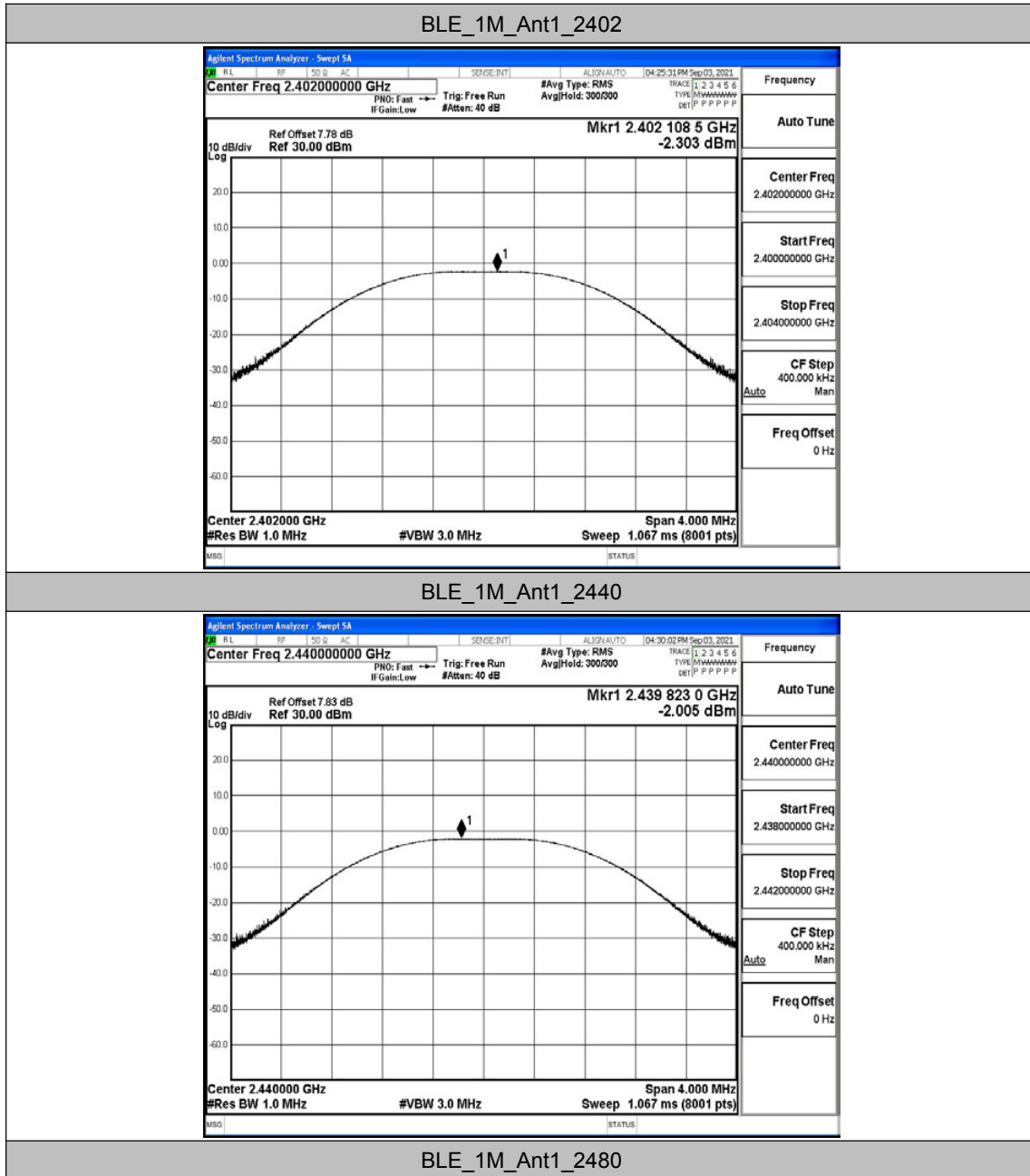
B.2 Maximum conducted output power

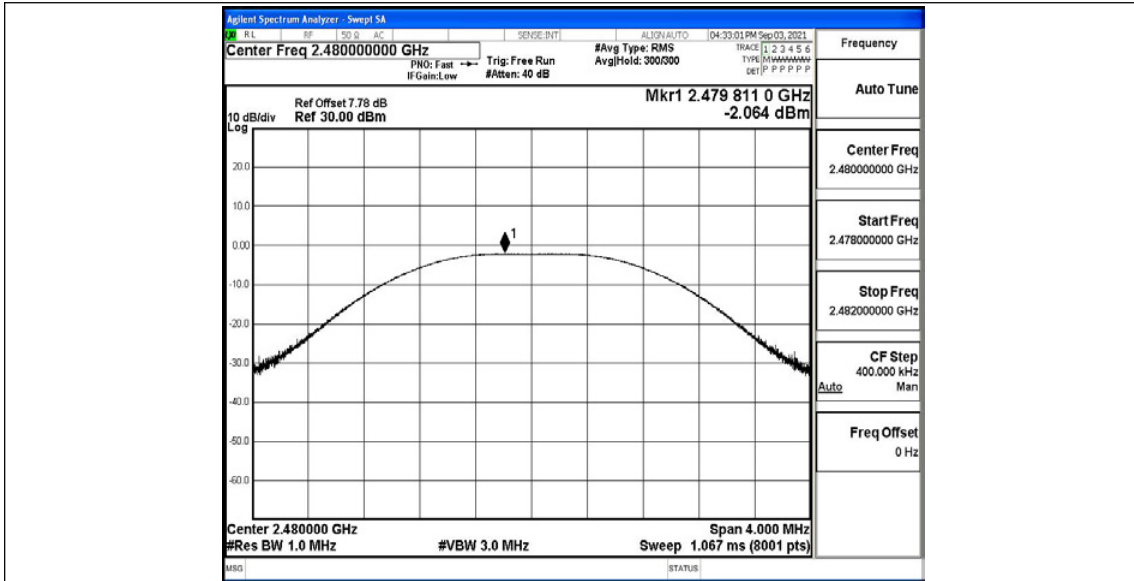
Test Result

TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	-2.3	≤30	PASS
		2440	-2.01	≤30	PASS
		2480	-2.06	≤30	PASS
BLE_2M	Ant1	2402	-2.41	≤30	PASS
		2440	-2.08	≤30	PASS
		2480	-2.15	≤30	PASS

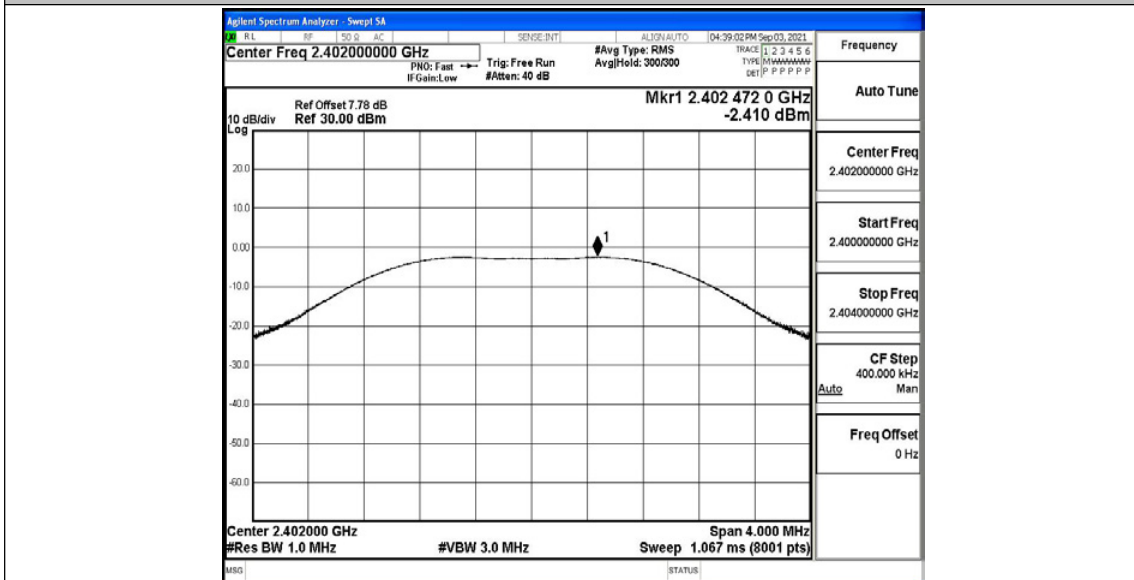


Test Graphs

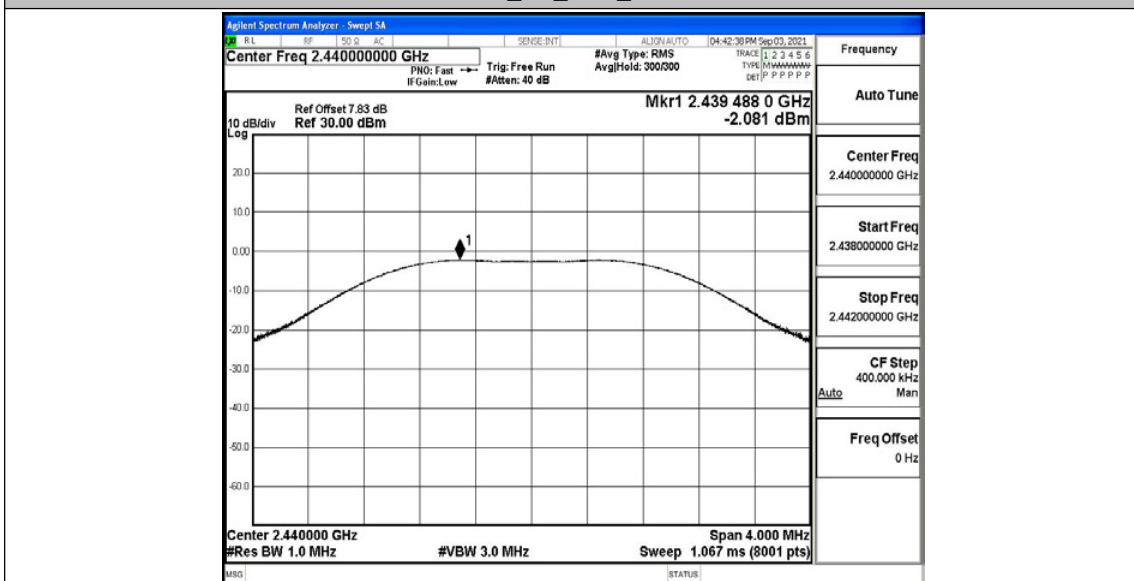




BLE_2M_Ant1_2402

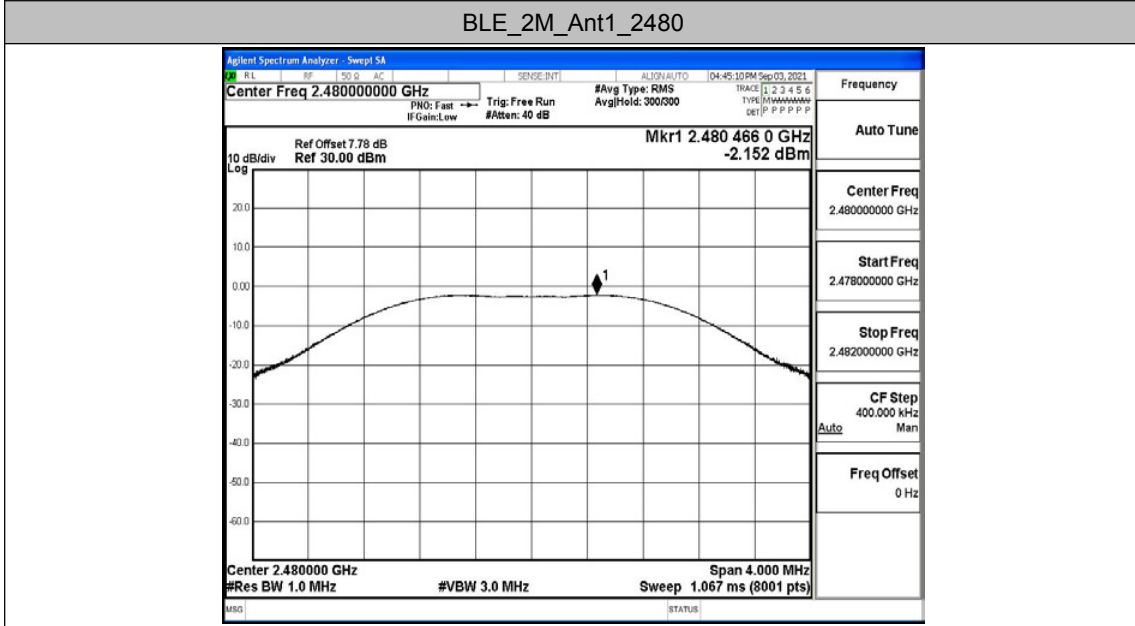


BLE_2M_Ant1_2440





BLE_2M_Ant1_2480





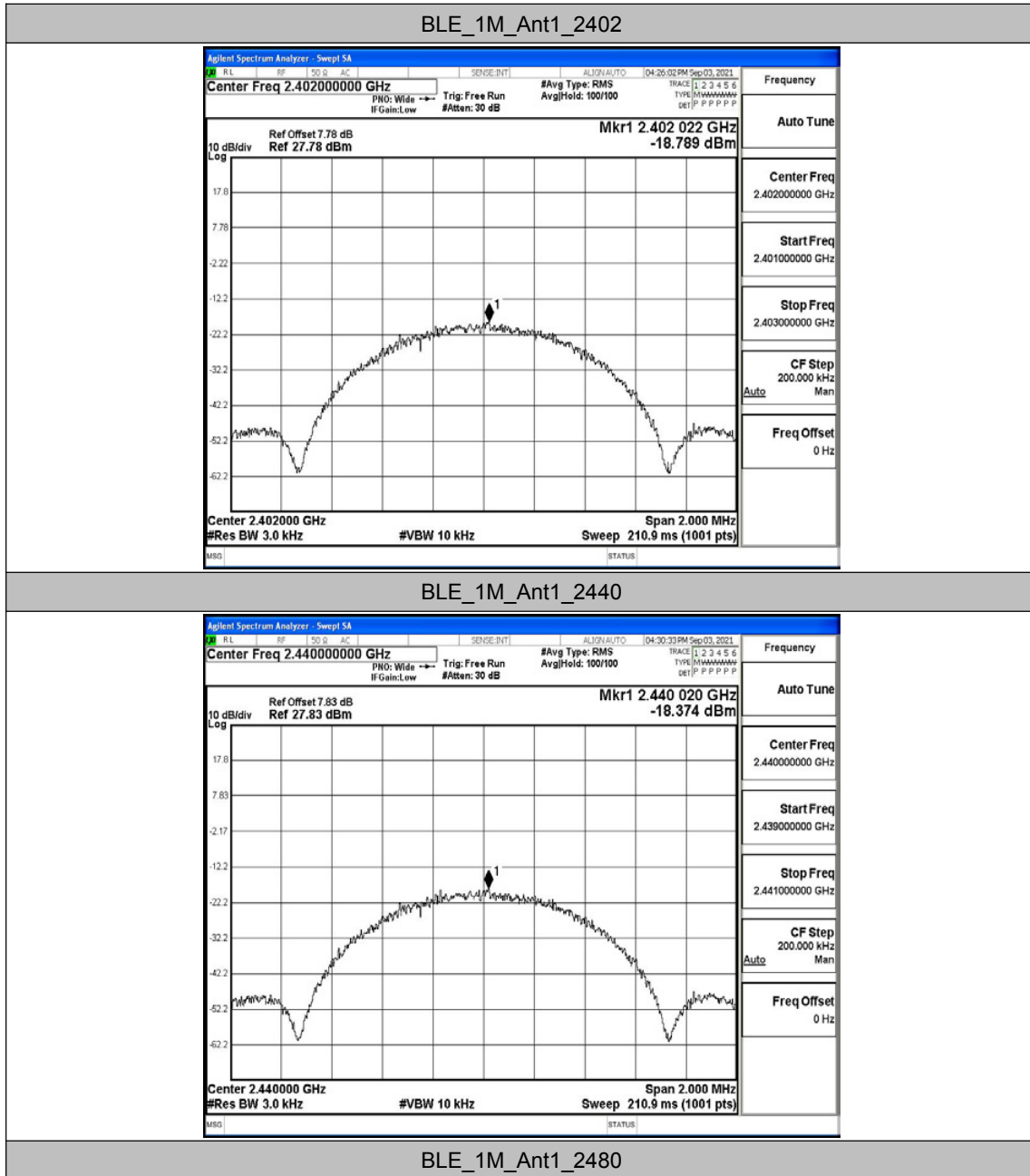
B.3 Maximum power spectral density

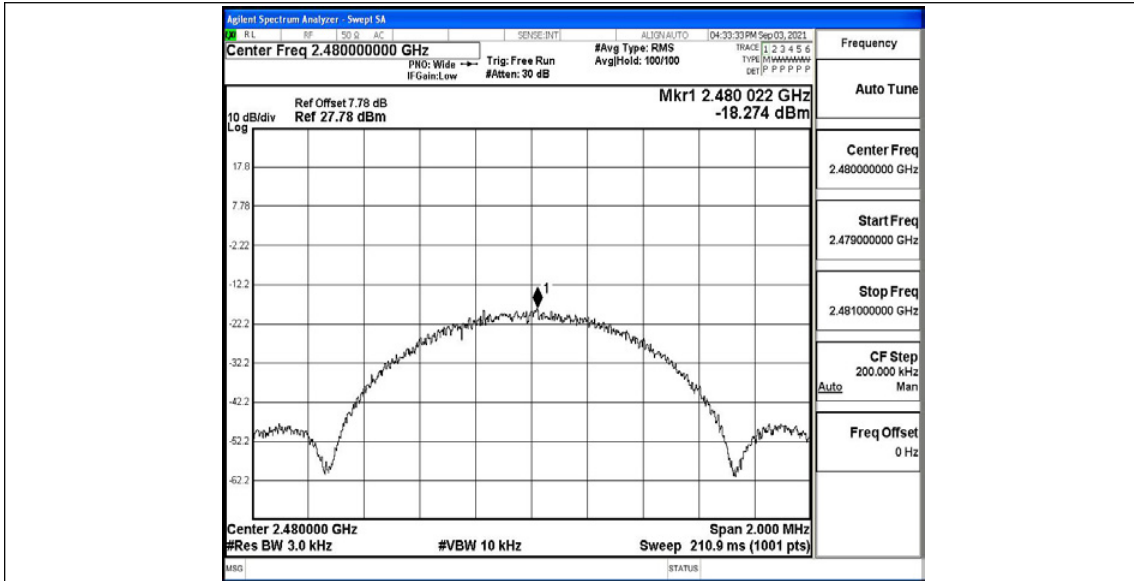
Test Result

TestMode	Antenna	Channel	Result[dBm/3-100kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-18.79	≤8	PASS
		2440	-18.37	≤8	PASS
		2480	-18.27	≤8	PASS
BLE_2M	Ant1	2402	-21.27	≤8	PASS
		2440	-20.88	≤8	PASS
		2480	-20.77	≤8	PASS

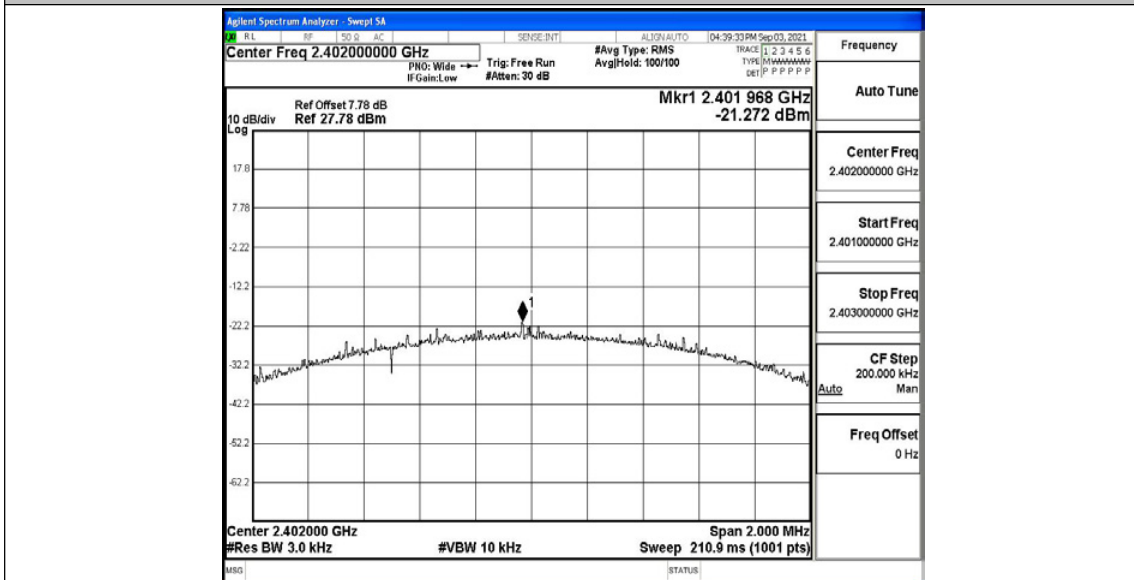


Test Graphs

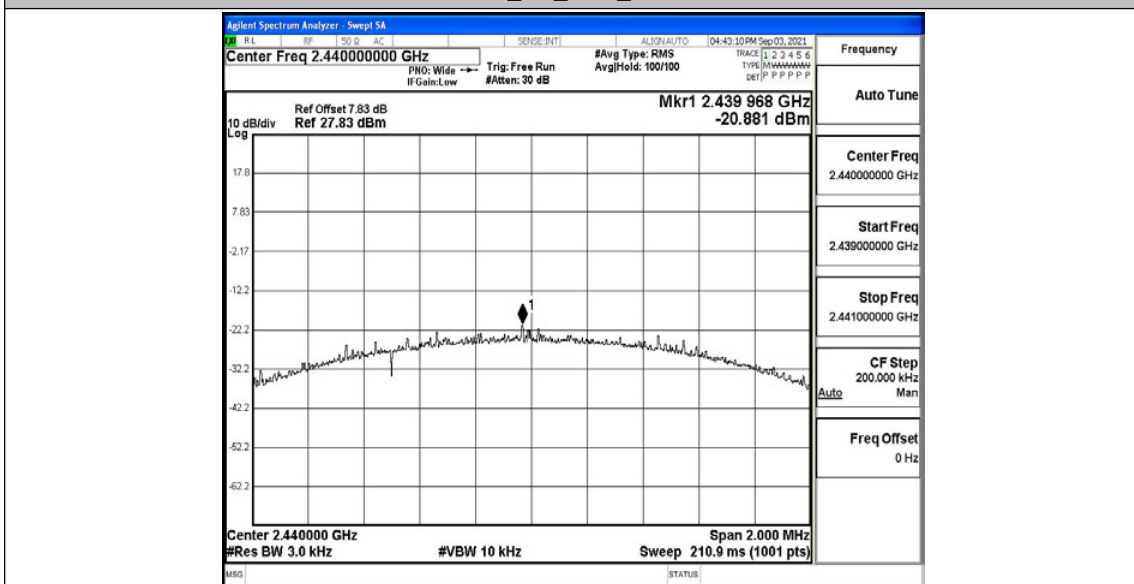




BLE_2M_Ant1_2402

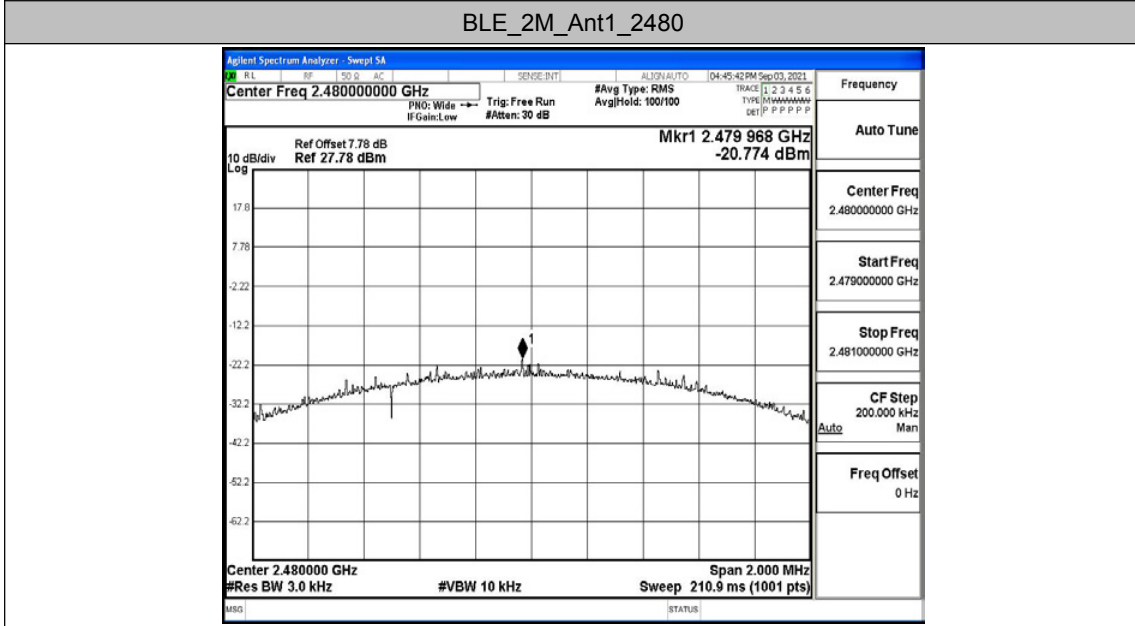


BLE_2M_Ant1_2440





BLE_2M_Ant1_2480





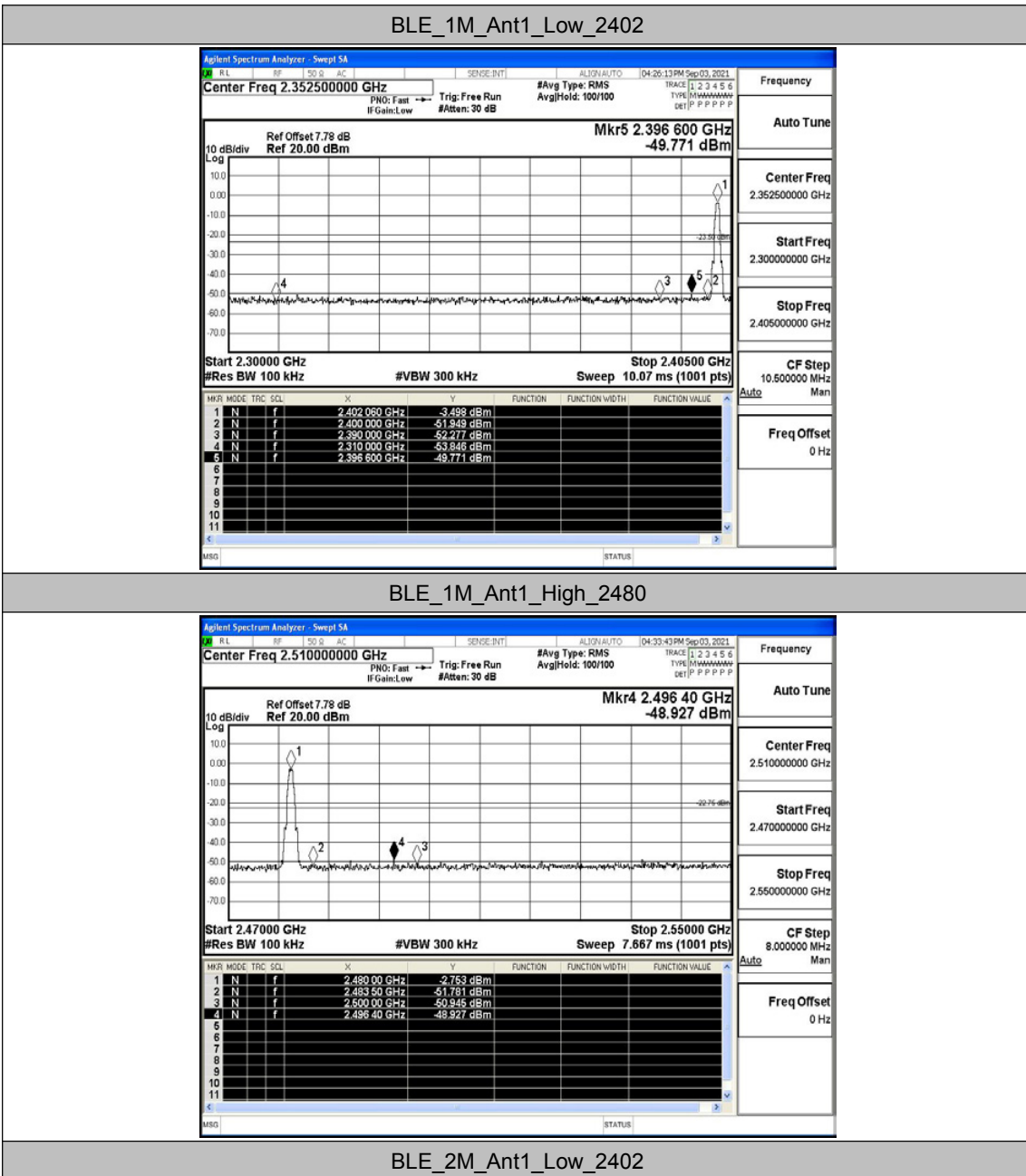
B.4 Band edge measurements

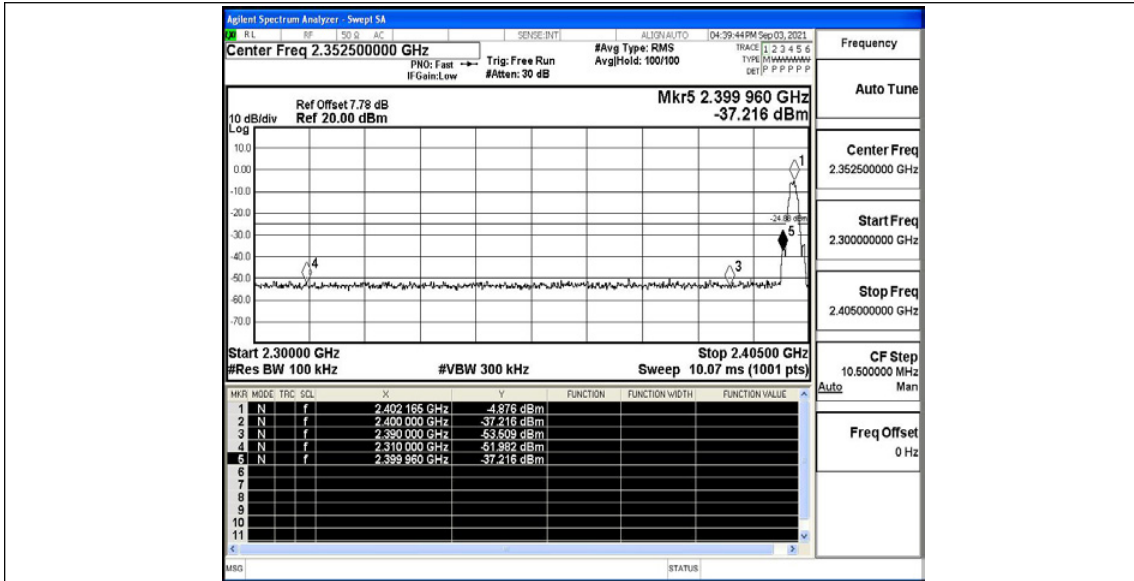
Test Result

TestMode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	-3.50	-49.77	≤ -23.5	PASS
		High	2480	-2.75	-48.93	≤ -22.75	PASS
BLE_2M	Ant1	Low	2402	-4.88	-37.22	≤ -24.88	PASS
		High	2480	-4.74	-49.79	≤ -24.74	PASS

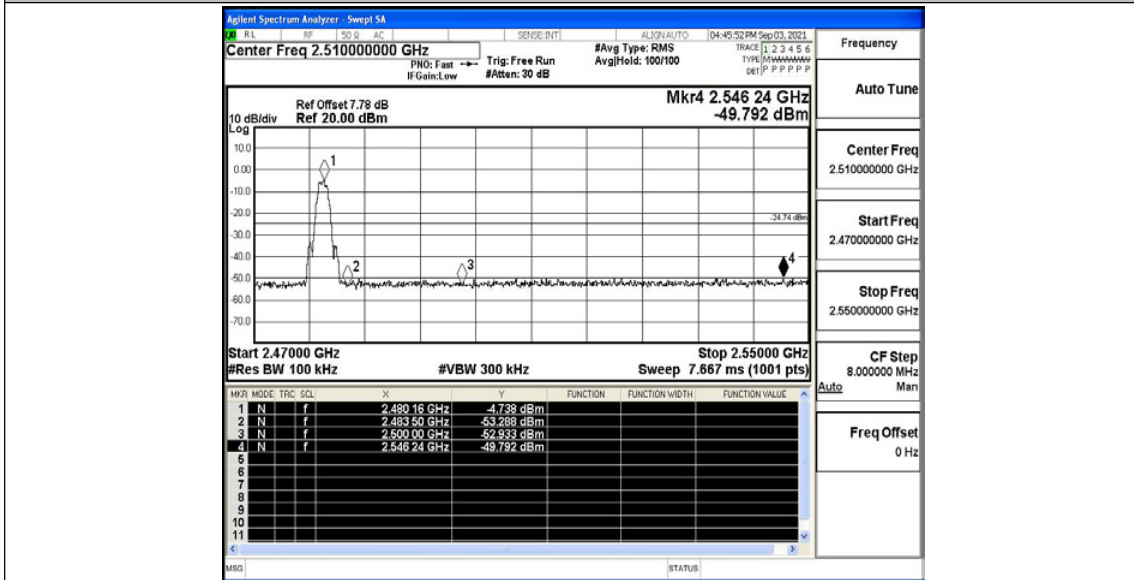


Test Graphs





BLE_2M_Ant1_High_2480





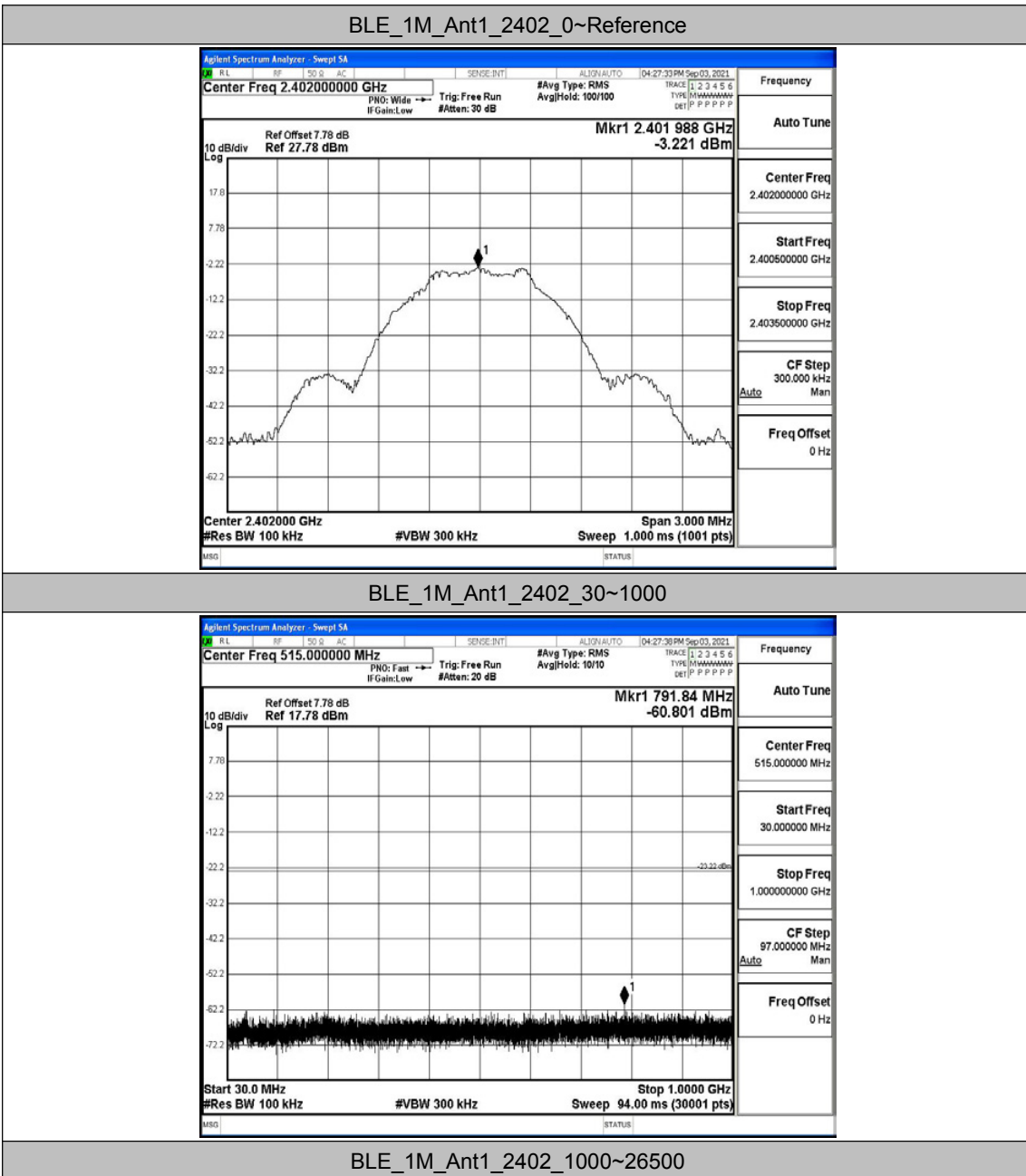
B.5 Conducted Spurious Emission

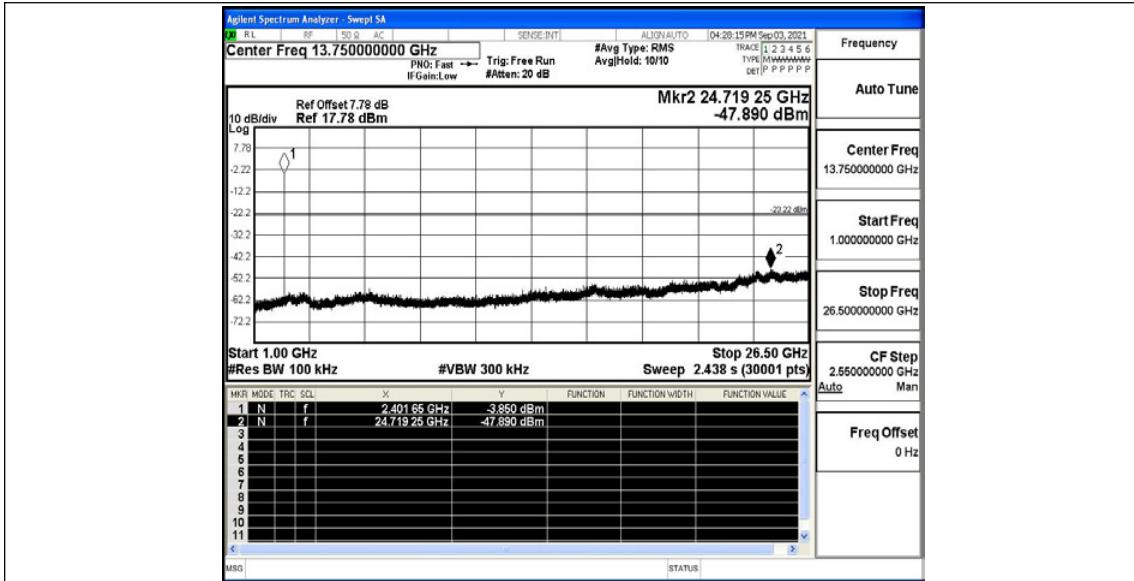
Test Result

TestMode	Antenna	Channel	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	Reference	-3.22	-3.22	---	PASS
			30~1000	-3.22	-60.8	≤-23.22	PASS
			1000~26500	-3.22	-47.89	≤-23.22	PASS
		2440	Reference	-2.36	-2.36	---	PASS
			30~1000	-2.36	-62.51	≤-22.36	PASS
			1000~26500	-2.36	-47.54	≤-22.36	PASS
		2480	Reference	-3.18	-3.18	---	PASS
			30~1000	-3.18	-62.43	≤-23.18	PASS
			1000~26500	-3.18	-46.73	≤-23.18	PASS
BLE_2M	Ant1	2402	Reference	-3.33	-3.33	---	PASS
			30~1000	-3.33	-62.24	≤-23.33	PASS
			1000~26500	-3.33	-47.56	≤-23.33	PASS
		2440	Reference	-3.89	-3.89	---	PASS
			30~1000	-3.89	-62.13	≤-23.89	PASS
			1000~26500	-3.89	-47.83	≤-23.89	PASS
		2480	Reference	-3.45	-3.45	---	PASS
			30~1000	-3.45	-61.89	≤-23.45	PASS
			1000~26500	-3.45	-47.77	≤-23.45	PASS

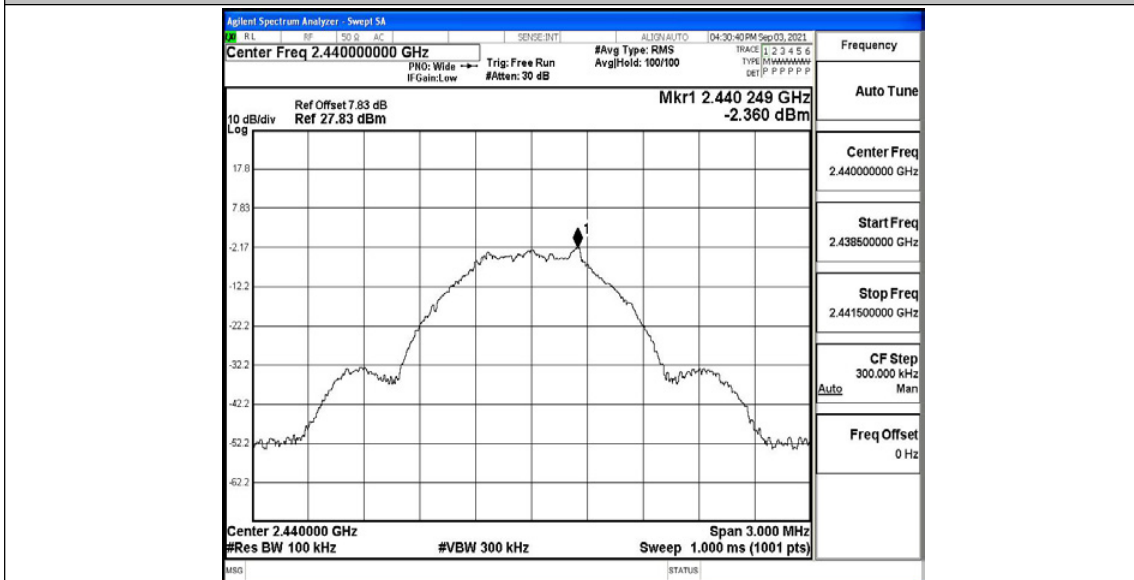


Test Graphs

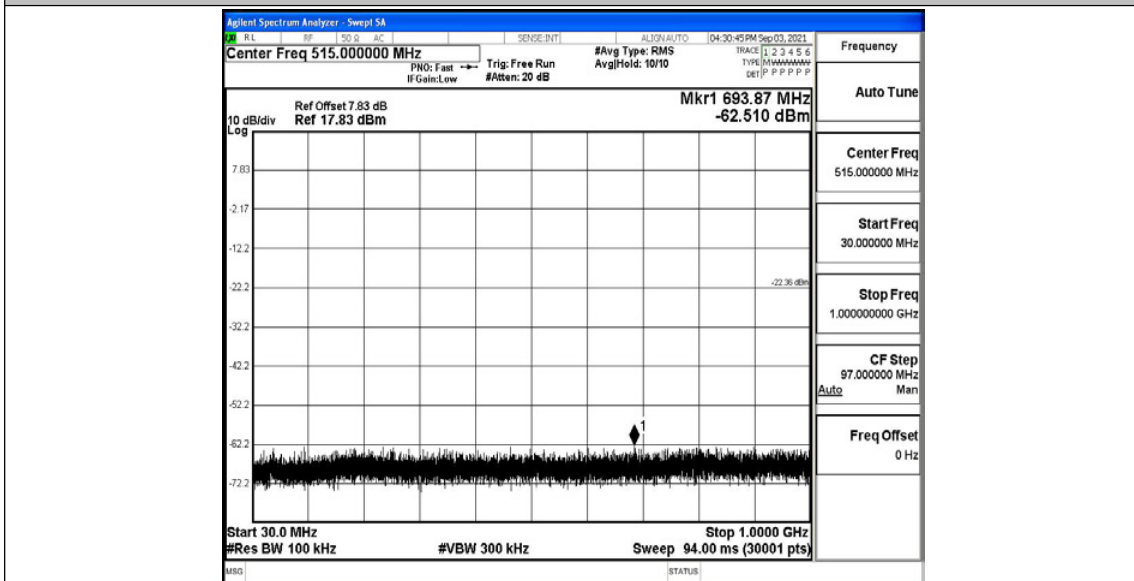




BLE_1M_Ant1_2440_0~Reference

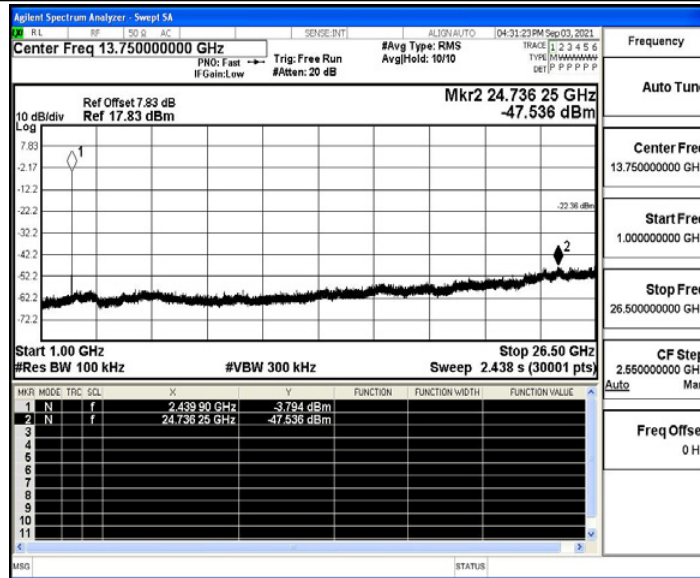


BLE_1M_Ant1_2440_30~1000

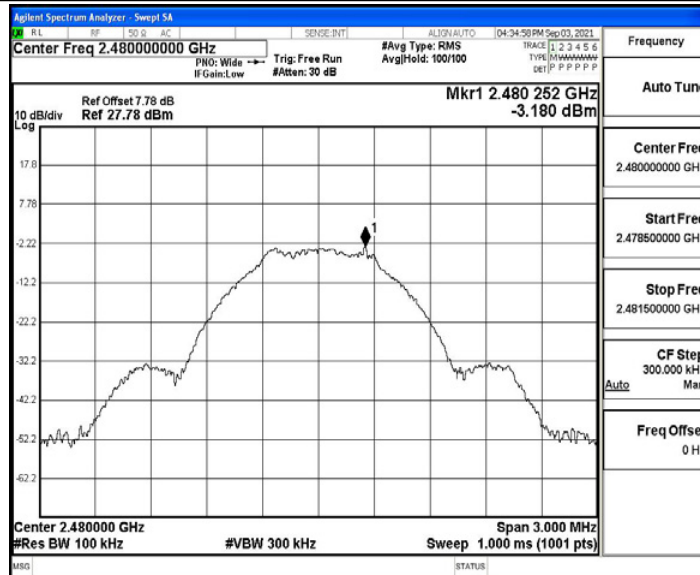




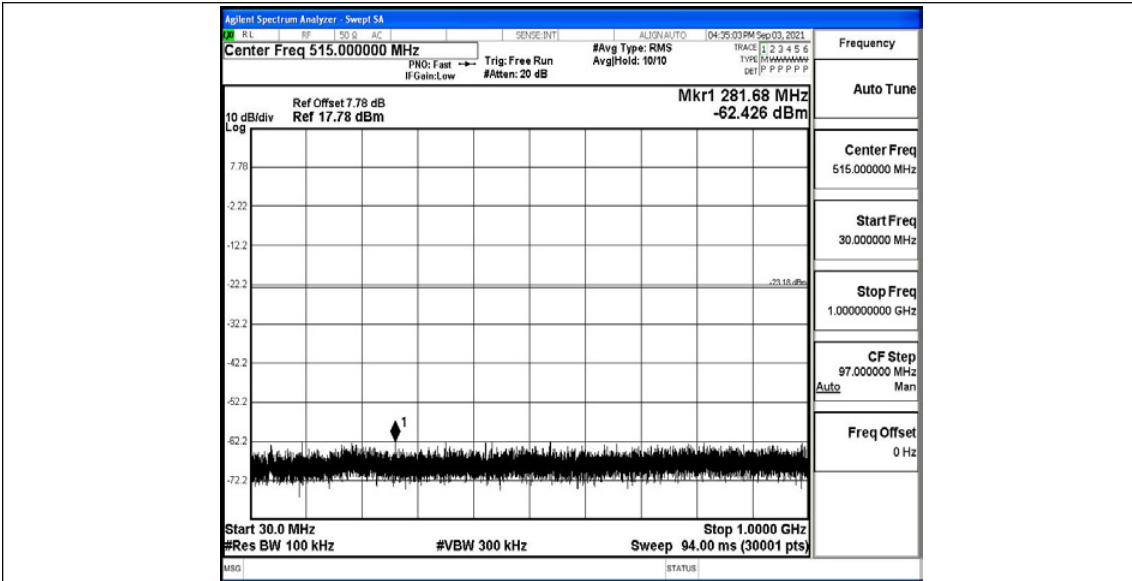
BLE_1M_Ant1_2440_1000~26500



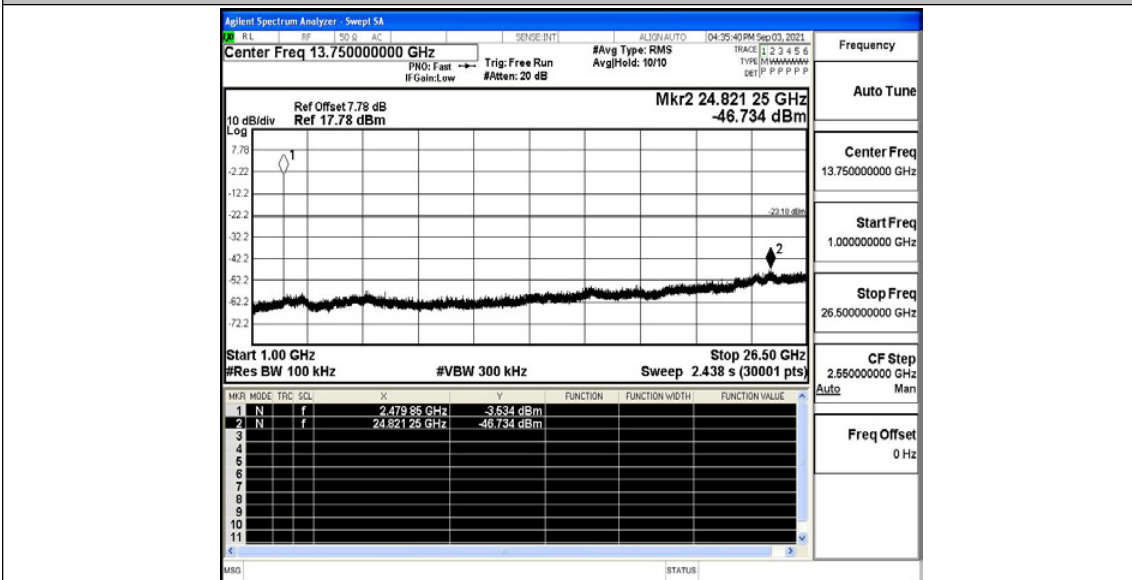
BLE_1M_Ant1_2480_0~Reference



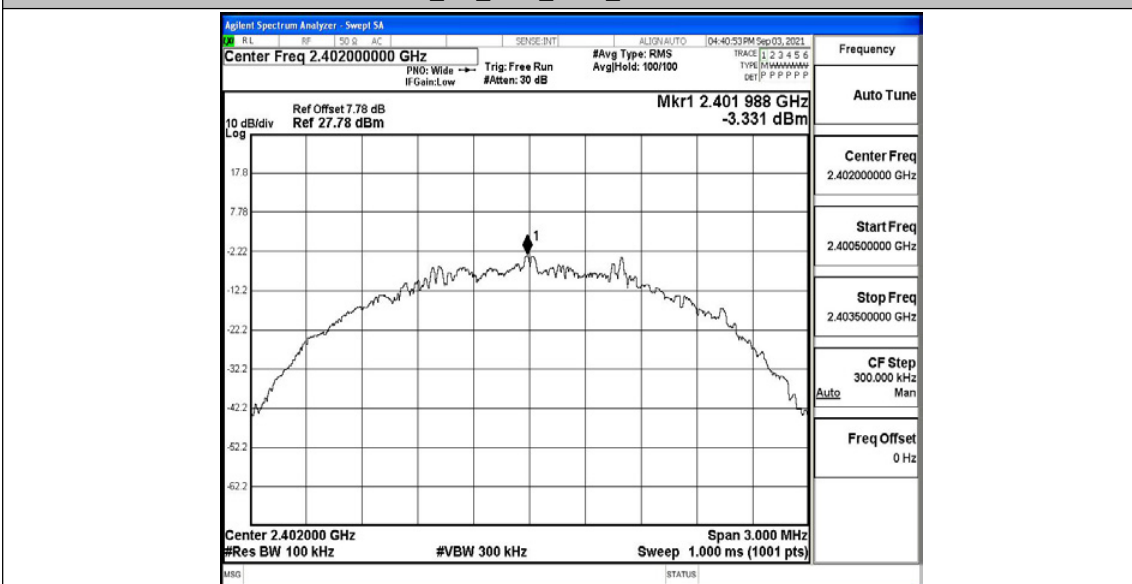
BLE_1M_Ant1_2480_30~1000



BLE_1M_Ant1_2480_1000~26500

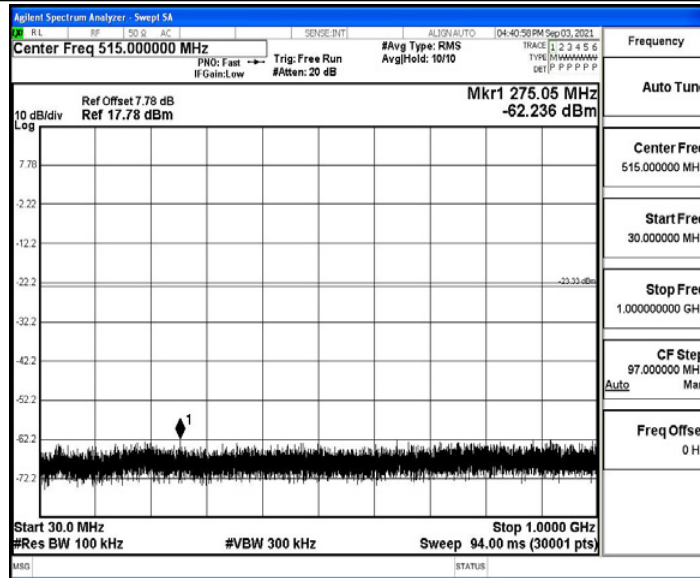


BLE_2M_Ant1_2402_0~Reference

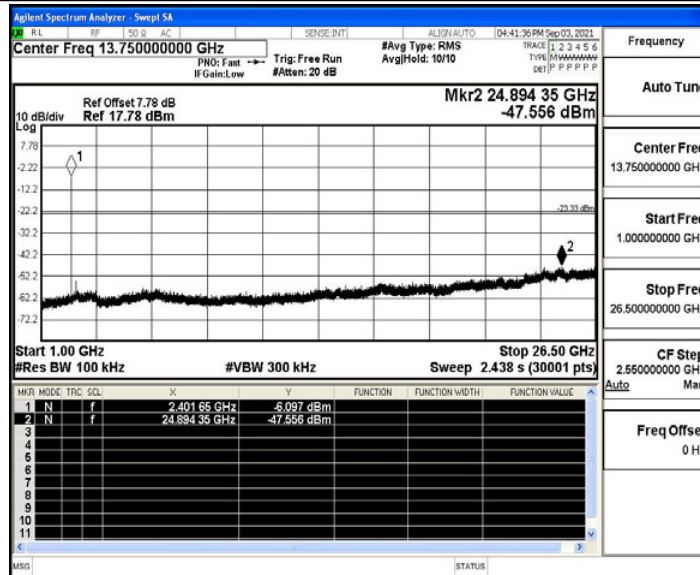




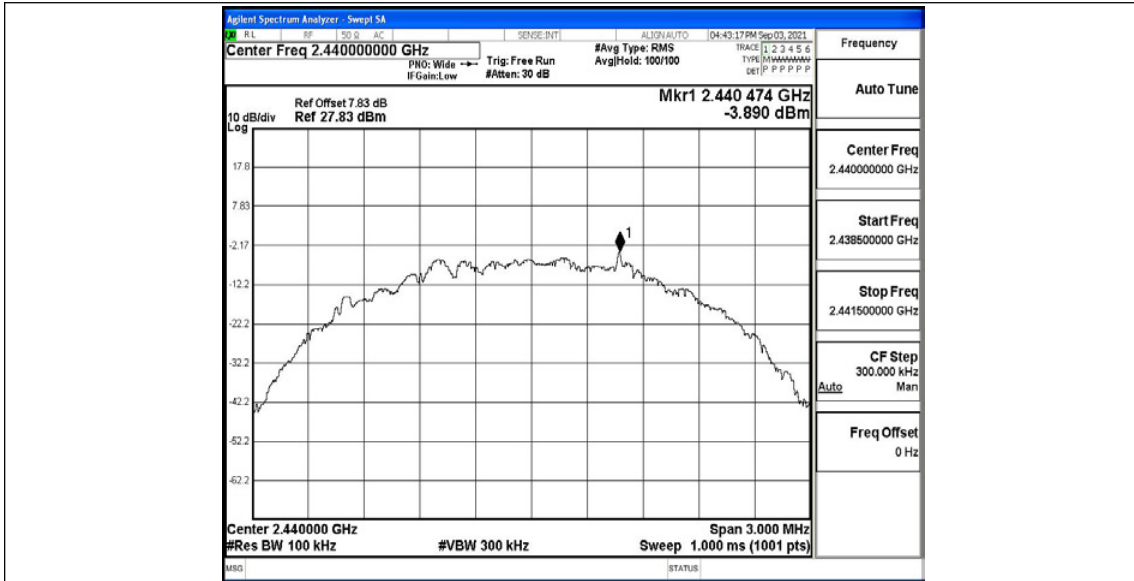
BLE_2M_Ant1_2402_30~1000



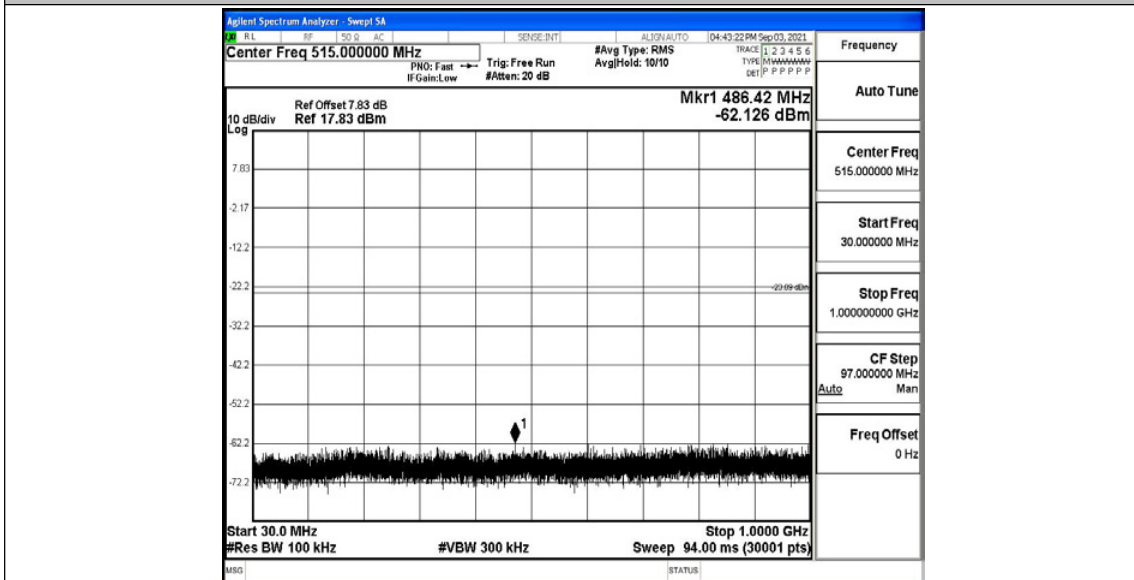
BLE_2M_Ant1_2402_1000~26500



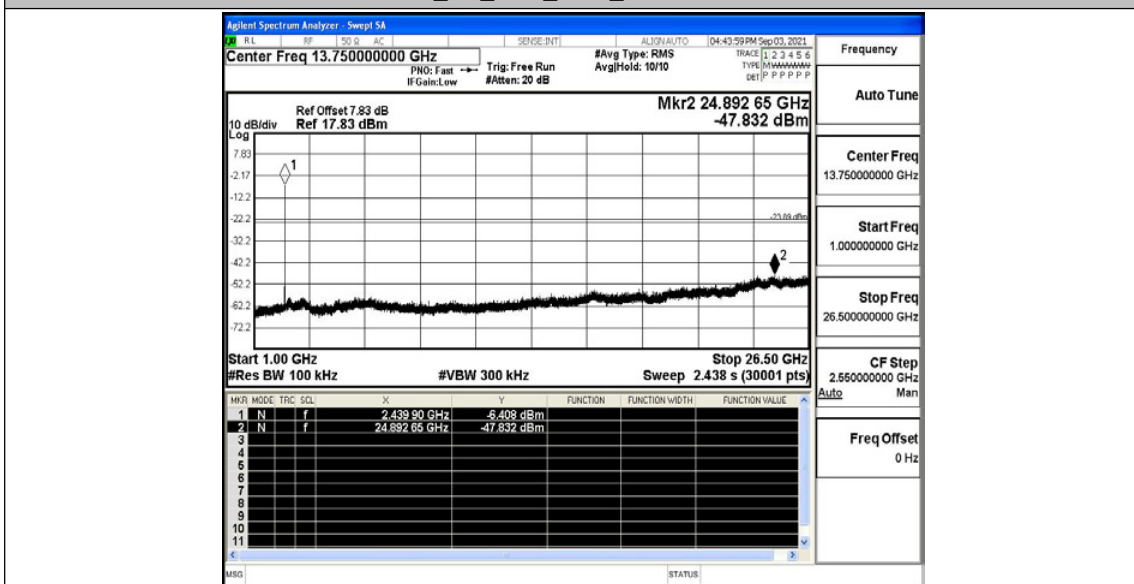
BLE_2M_Ant1_2440_0~Reference



BLE_2M_Ant1_2440_30~1000

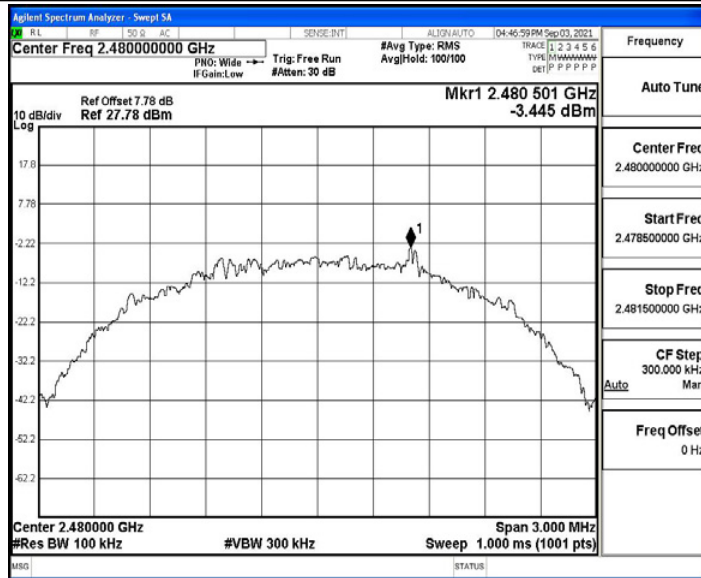


BLE_2M_Ant1_2440_1000~26500

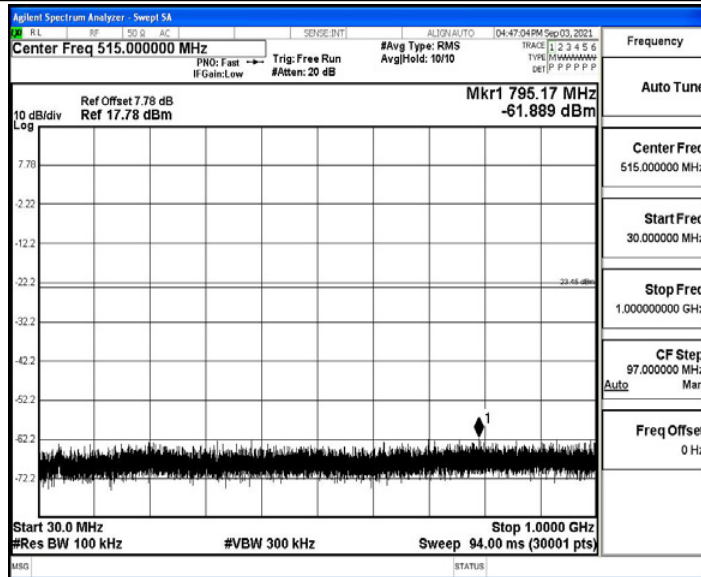




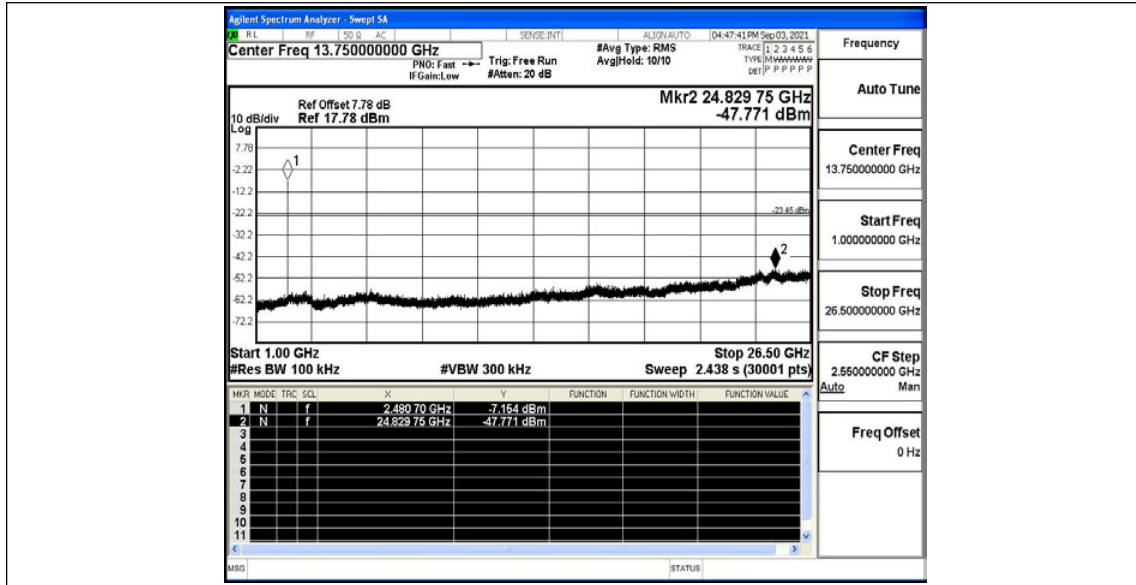
BLE_2M_Ant1_2480_0~Reference



BLE_2M_Ant1_2480_30~1000



BLE_2M_Ant1_2480_1000~26500





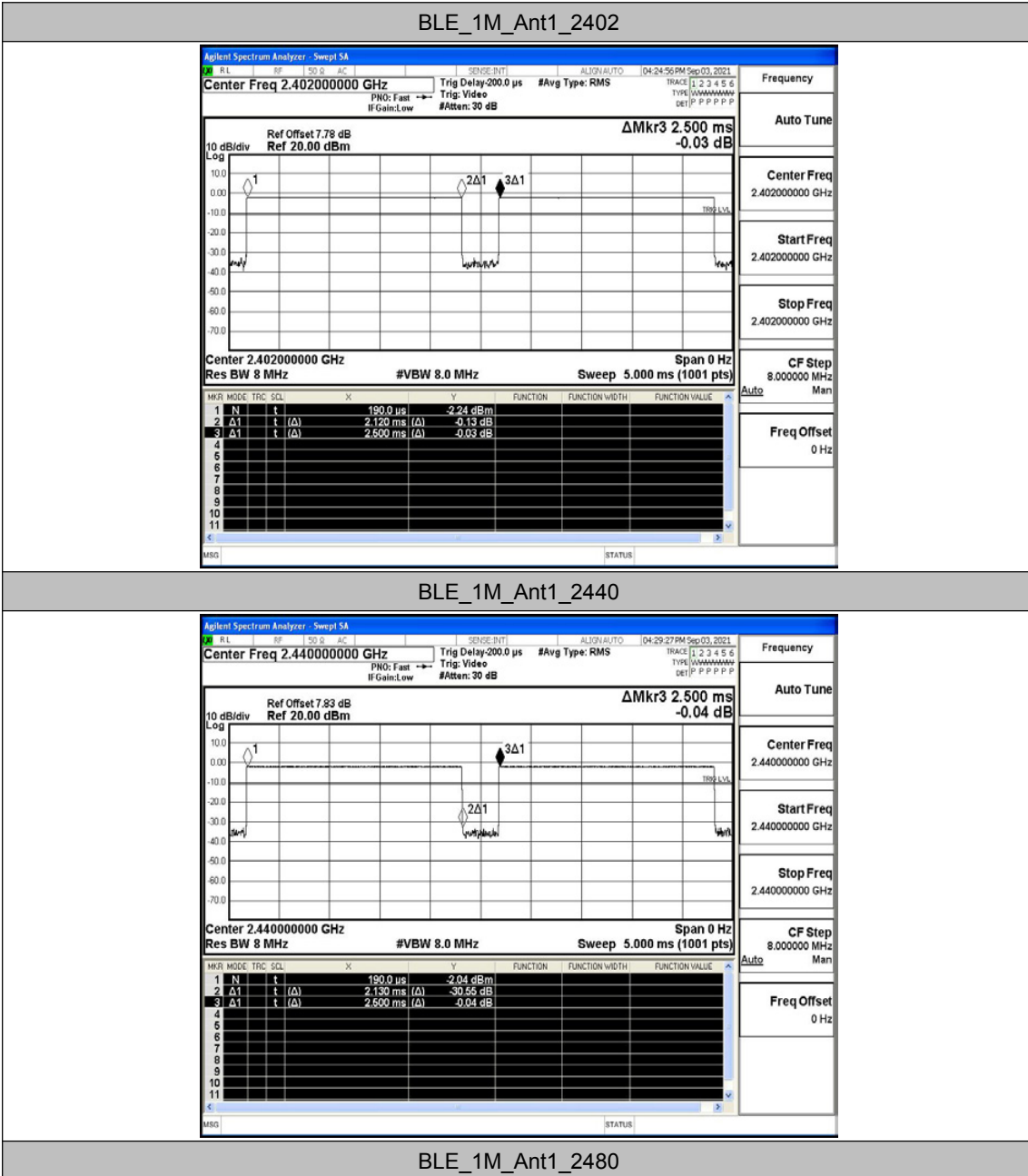
B.6 Duty Cycle

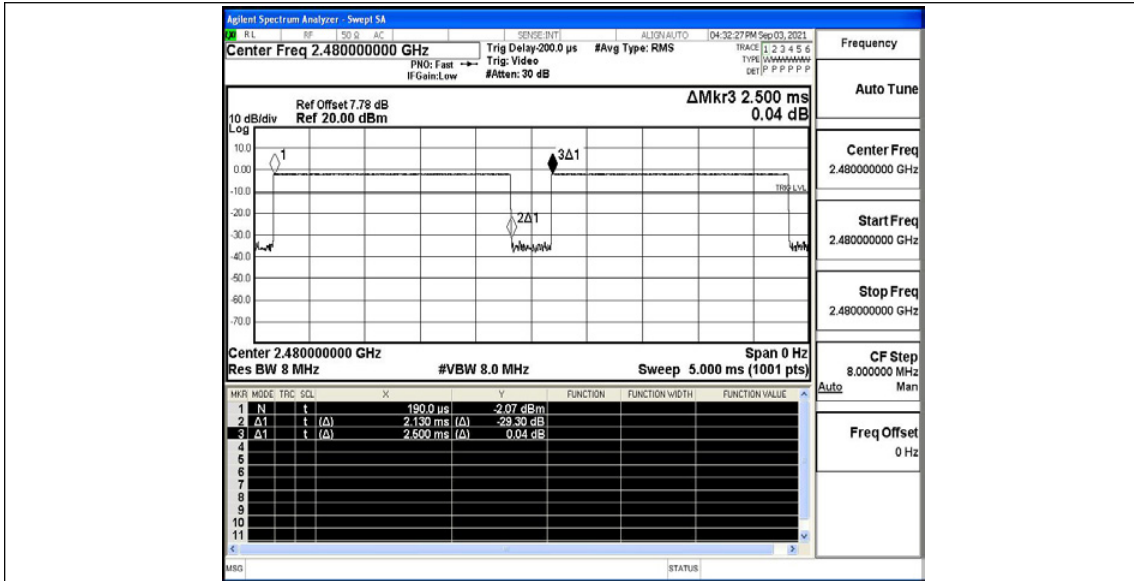
Test Result

TestMode	Antenna	Channel	ON Time [ms]	Period [ms]	X	DC [%]	xFactor	Limit	Verdict
BLE_1M	Ant1	2402	2.12	2.50	0.8480	84.80	0.72	---	PASS
		2440	2.13	2.50	0.8520	85.20	0.70	---	PASS
		2480	2.13	2.50	0.8520	85.20	0.70	---	PASS
BLE_2M	Ant1	2402	1.07	1.88	0.5691	56.91	2.45	---	PASS
		2440	1.07	1.88	0.5691	56.91	2.45	---	PASS
		2480	1.07	1.87	0.5722	57.22	2.42	---	PASS

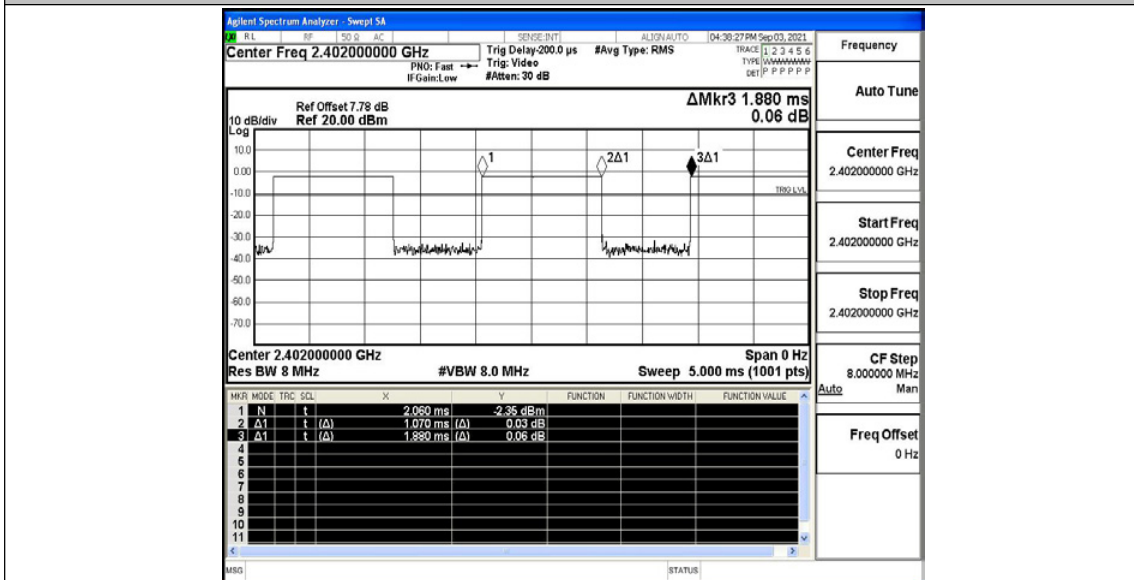


Test Graphs

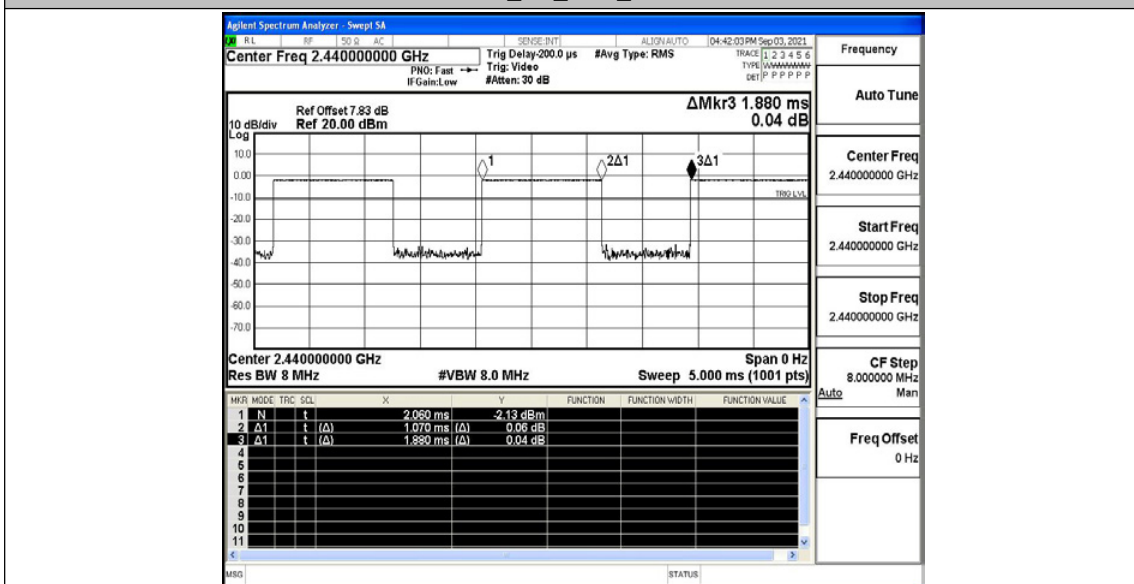




BLE_2M_Ant1_2402

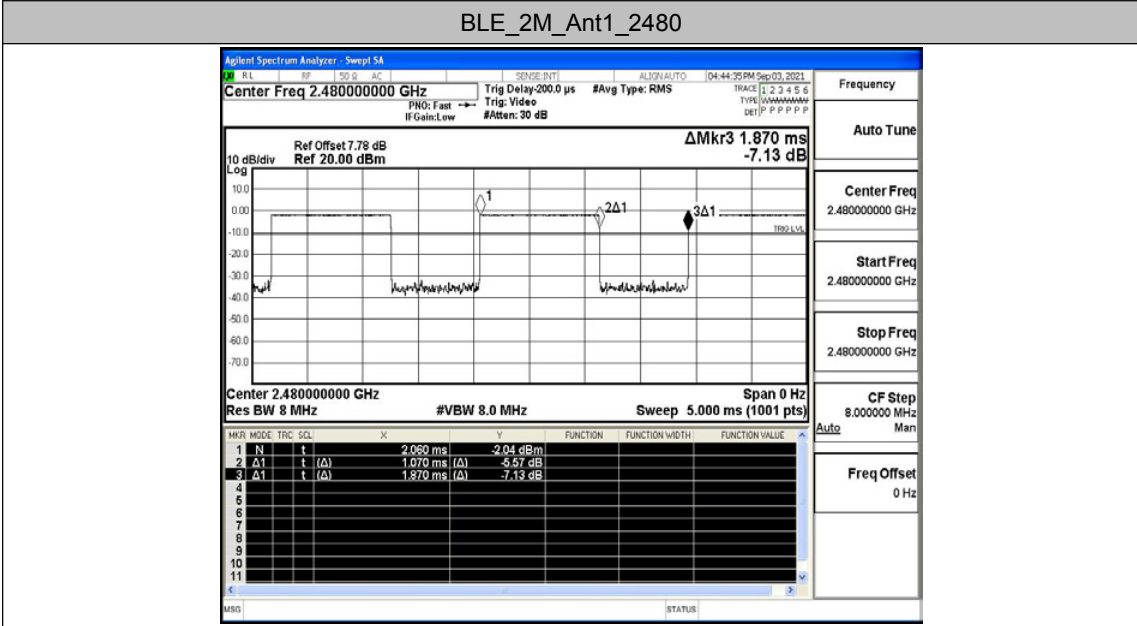


BLE_2M_Ant1_2440





BLE_2M_Ant1_2480





B.7 Emissions in Restricted Bands

Test Result

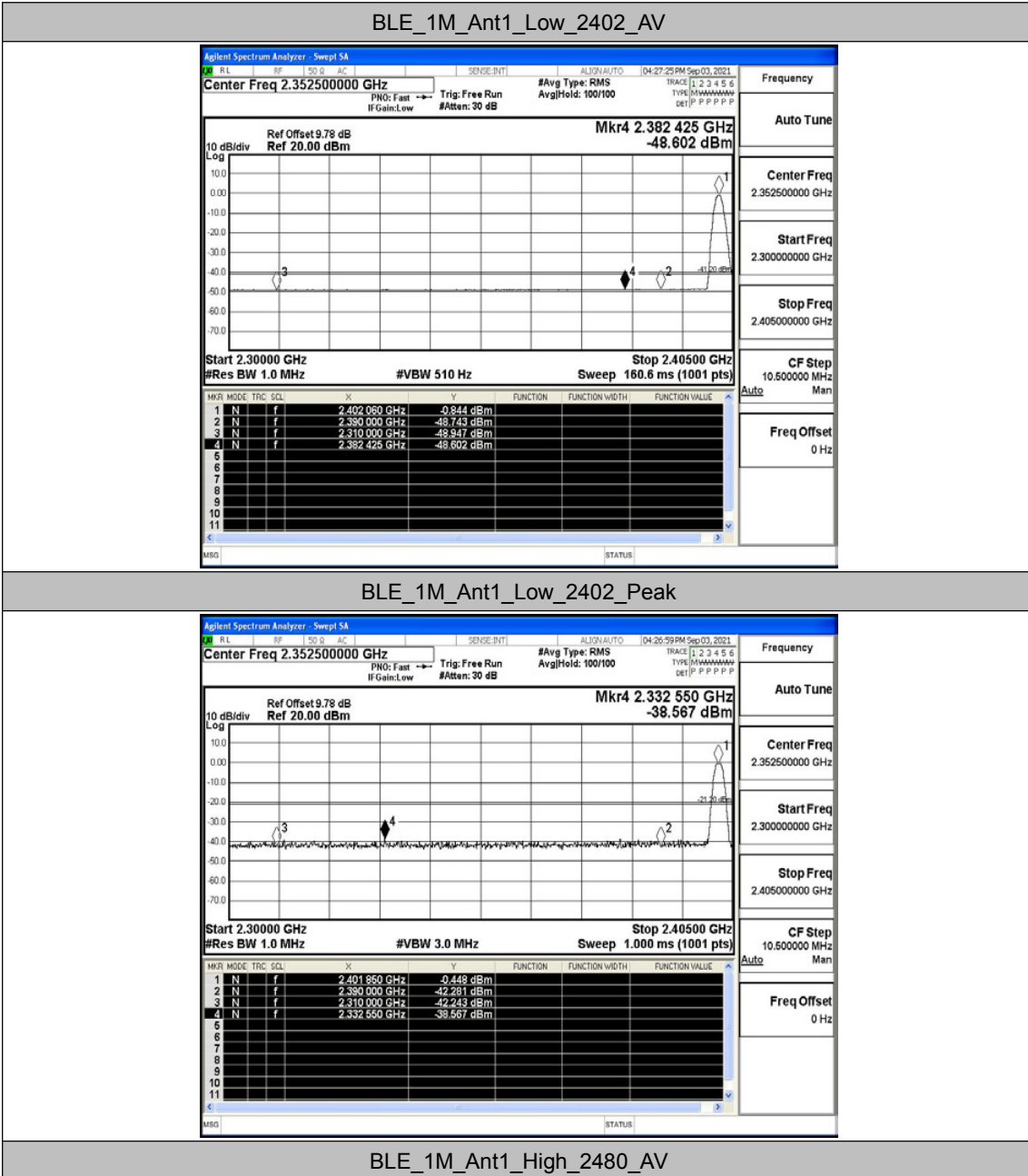
TestMode	Antenna	ChName	Channel	Detector	Freq. [MHz]	Result [dBm]	Limit [dBm]	Result [dBuV/m]	Limit [dBuV/m]	Verdict
BLE_1M	Ant1	Low	2402	AV	2310.000	-48.95	≤-41.20	46.25	≤54	PASS
				AV	2382.425	-48.6	≤-41.20	46.60	≤54	PASS
				AV	2390.000	-48.74	≤-41.20	46.46	≤54	PASS
				Peak	2310.000	-42.24	≤-21.20	52.96	≤74	PASS
				Peak	2332.550	-38.57	≤-21.20	56.63	≤74	PASS
				Peak	2390.000	-42.28	≤-21.20	52.92	≤74	PASS
		High	2480	AV	2483.500	-48.11	≤-41.20	47.09	≤54	PASS
				AV	2499.200	-47.95	≤-41.20	47.25	≤54	PASS
				AV	2500.000	-48.13	≤-41.20	47.07	≤54	PASS
				Peak	2483.500	-40.42	≤-21.20	54.78	≤74	PASS
				Peak	2497.680	-38.92	≤-21.20	56.28	≤74	PASS
				Peak	2500.000	-40.87	≤-21.20	54.33	≤74	PASS
BLE_2M	Ant1	Low	2402	AV	2310.000	-48.97	≤-41.20	46.23	≤54	PASS
				AV	2383.790	-48.36	≤-41.20	46.84	≤54	PASS
				AV	2390.000	-48.42	≤-41.20	46.78	≤54	PASS
				Peak	2310.000	-41.59	≤-21.20	53.61	≤74	PASS
				Peak	2359.955	-38.97	≤-21.20	56.23	≤74	PASS
				Peak	2390.000	-41.78	≤-21.20	53.42	≤74	PASS
		High	2480	AV	2483.500	-47.1	≤-41.20	48.10	≤54	PASS
				AV	2483.520	-47.1	≤-41.20	48.10	≤54	PASS
				AV	2500.000	-48	≤-41.20	47.20	≤54	PASS
				Peak	2483.500	-41.87	≤-21.20	53.33	≤74	PASS
				Peak	2485.200	-39	≤-21.20	56.20	≤74	PASS
				Peak	2500.000	-42.18	≤-21.20	53.02	≤74	PASS

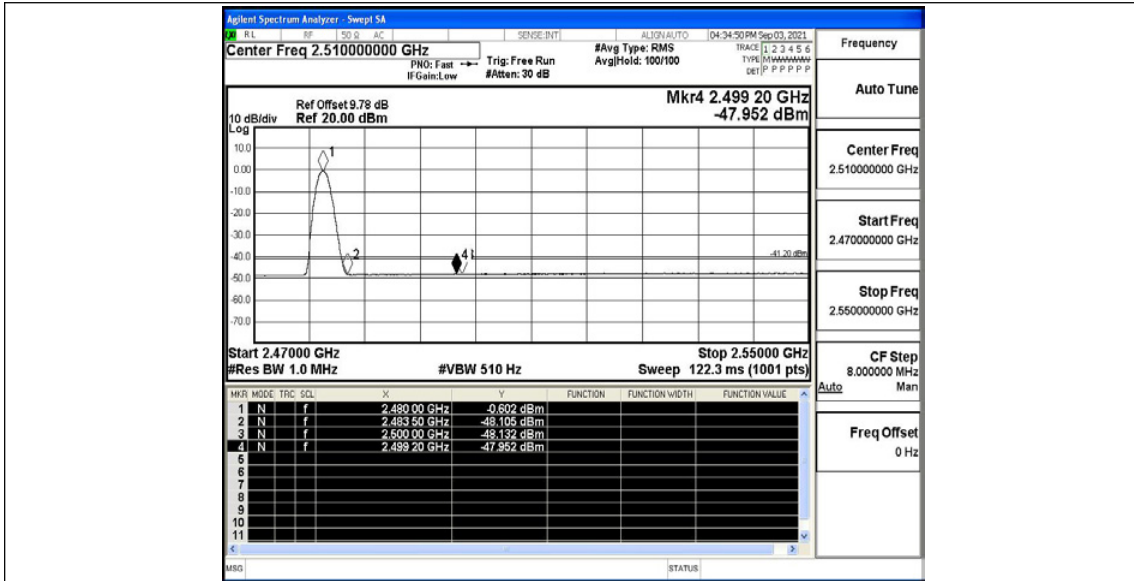
Note:

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.

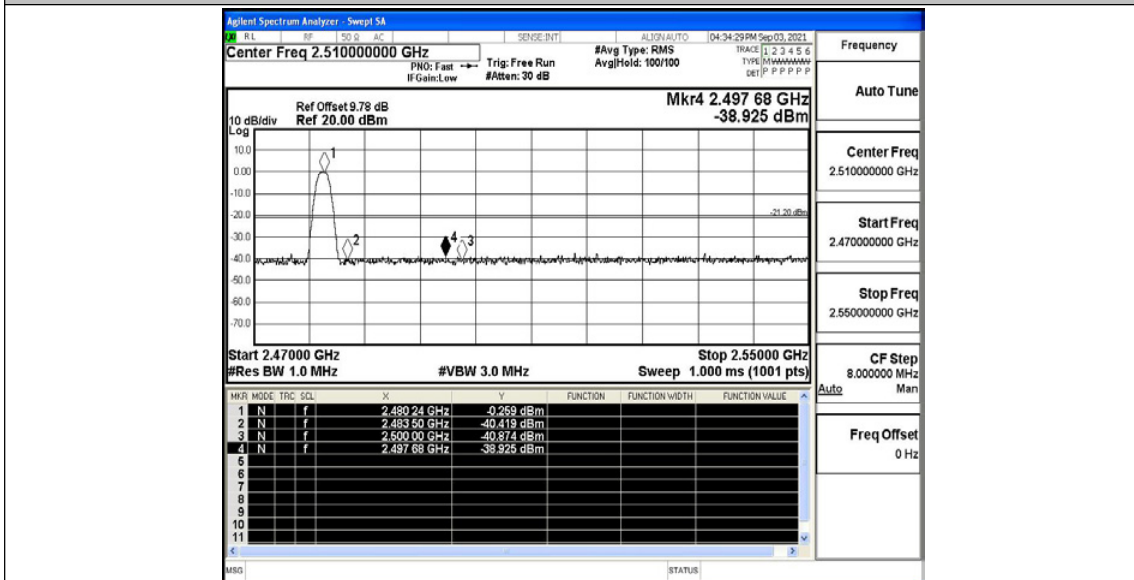


Test Graphs

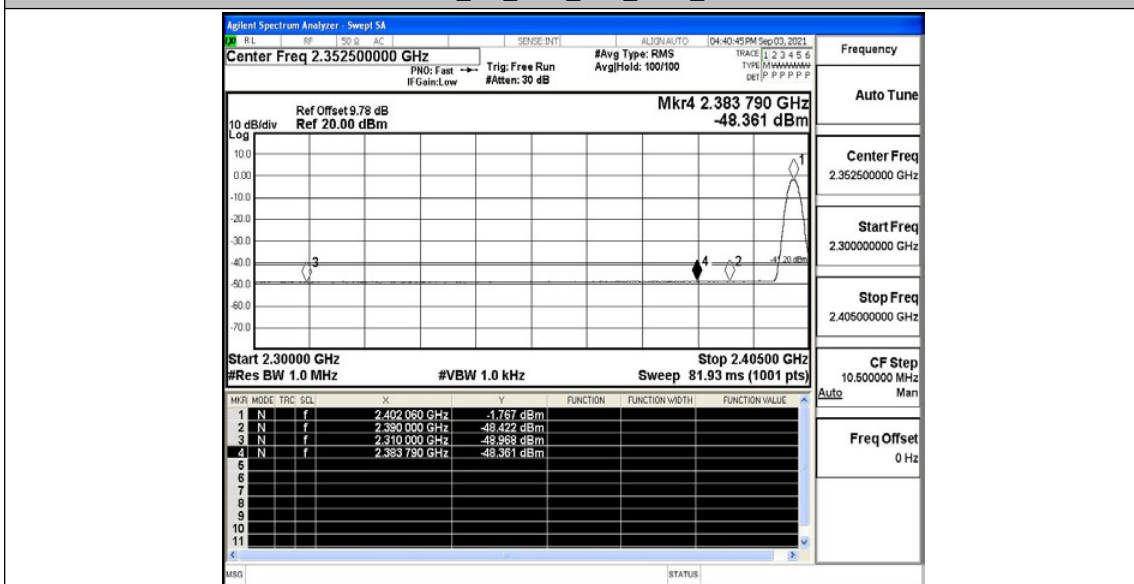




BLE_1M_Ant1_High_2480_Peak

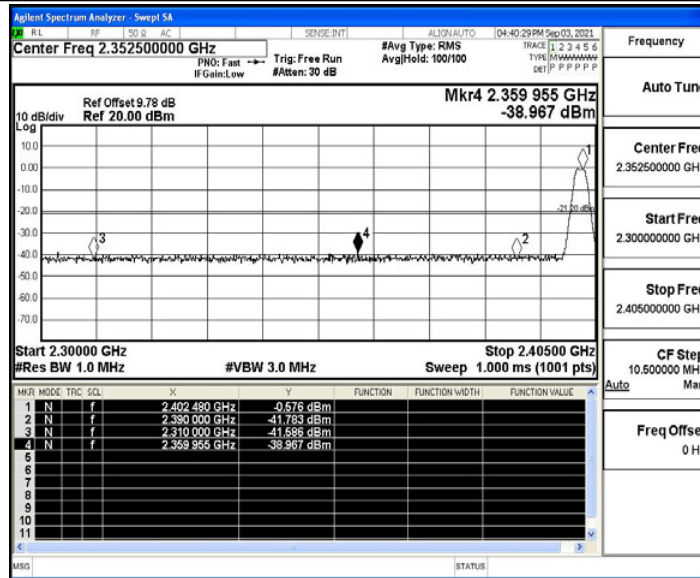


BLE_2M_Ant1_Low_2402_AV

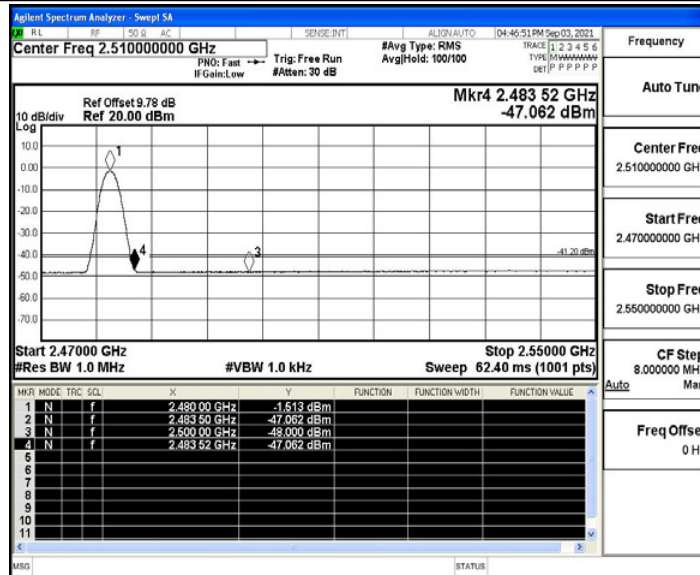




BLE_2M_Ant1_Low_2402_Peak



BLE_2M_Ant1_High_2480_AV



BLE_2M_Ant1_High_2480_Peak

