



Appendix B

RF Test Data for BLE (Conducted Measurement)

Product Name: Aroma diffuser (dual mode with bluetooth speaker)

Test Model: SAD-10010

Environmental Conditions

Temperature:	23.7° C
Relative Humidity:	52.3%
ATM Pressure:	100.0 kPa
Test Engineer:	Monkey Li
Supervised by:	Li huan

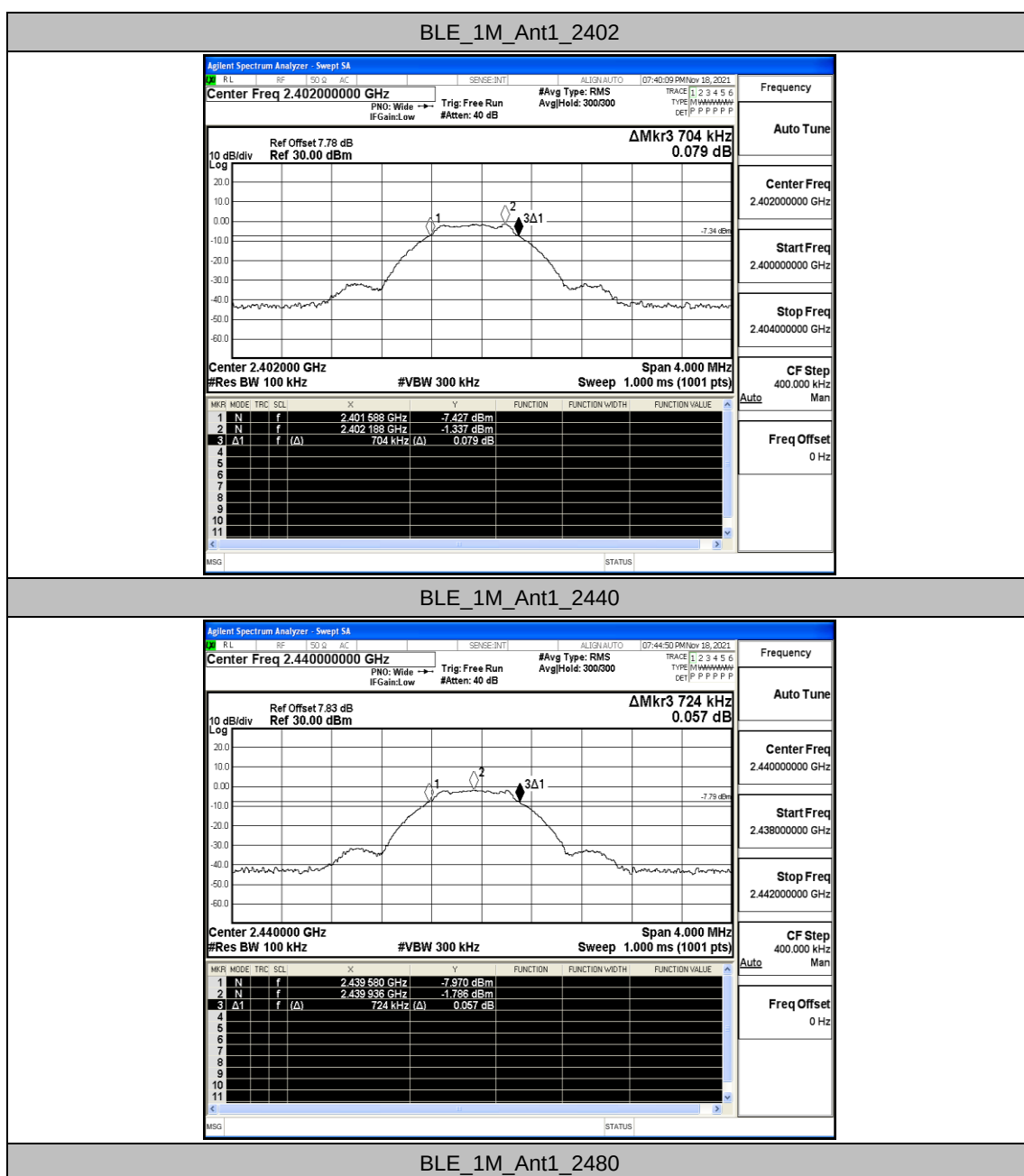


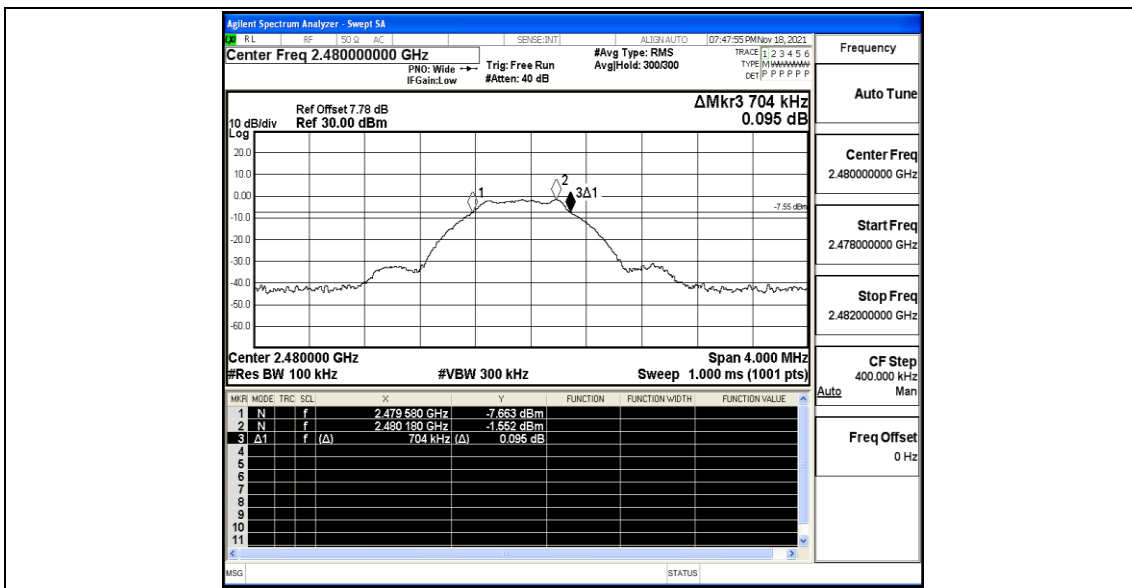
B.1 6dB Bandwidth

Test Result

TestMode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.704	2401.588	2402.292	≥0.5	PASS
		2440	0.724	2439.580	2440.304	≥0.5	PASS
		2480	0.704	2479.580	2480.284	≥0.5	PASS

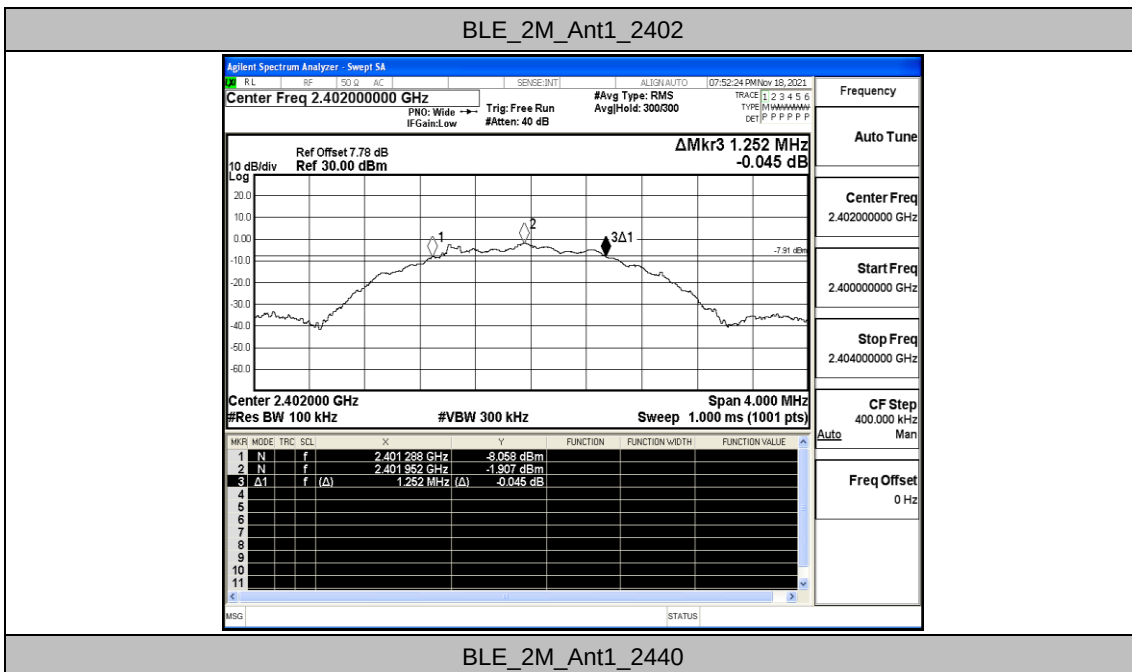
Test Graphs

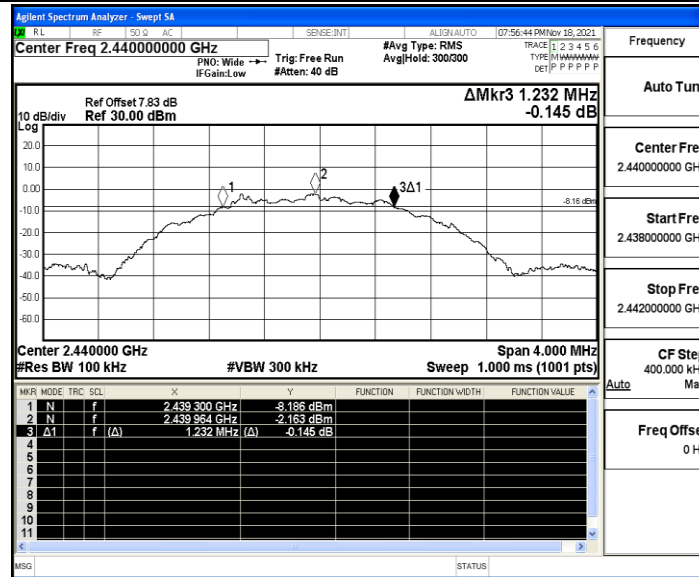




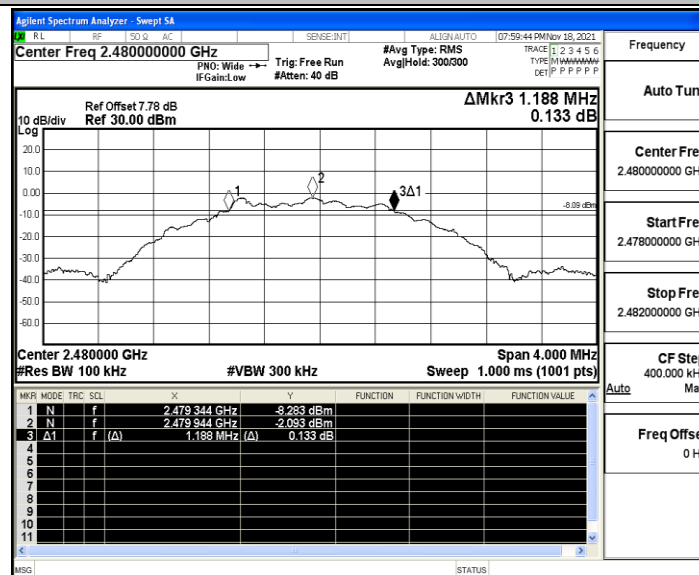
TestMode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_2M	Ant1	2402	1.252	2401.288	2402.540	≥0.5	PASS
		2440	1.232	2439.300	2440.532	≥0.5	PASS
		2480	1.188	2479.344	2480.532	≥0.5	PASS

Test Graphs





BLE_2M_Ant1_2480



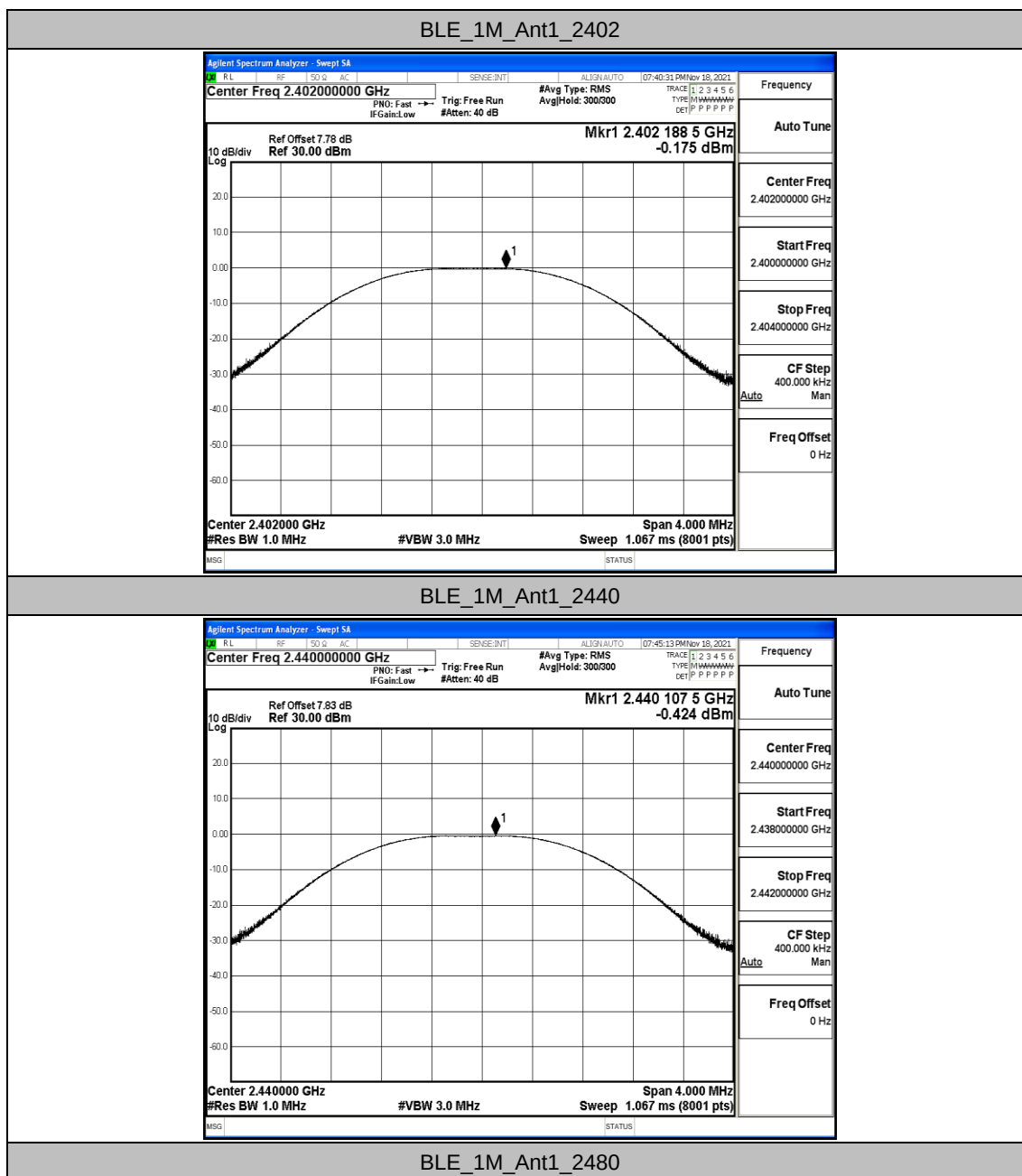


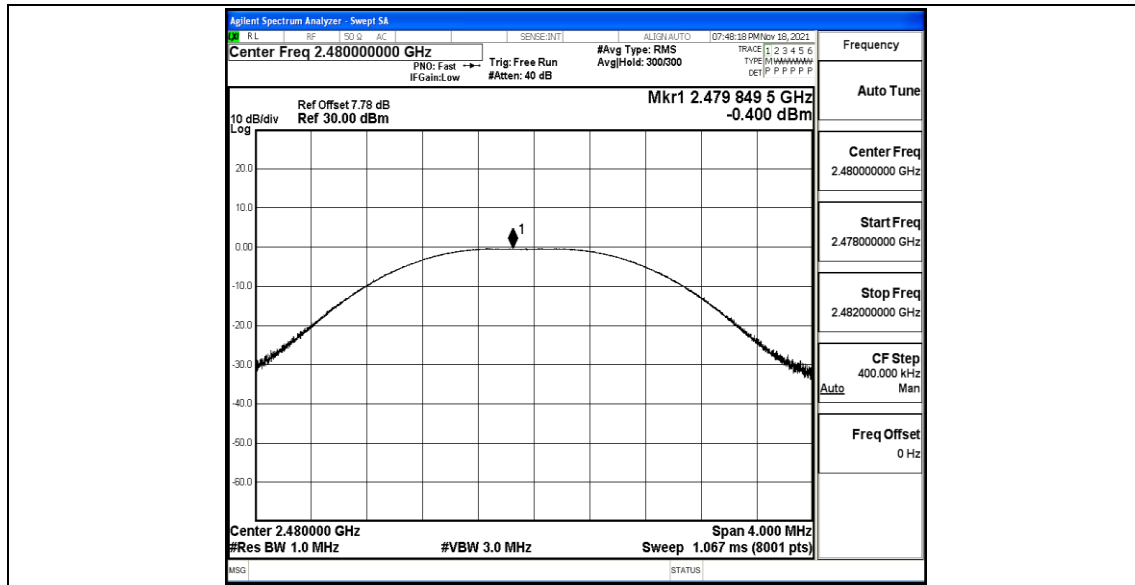
B.2 Maximum conducted output power

Test Result

TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	-0.18	≤30	PASS
		2440	-0.42	≤30	PASS
		2480	-0.4	≤30	PASS

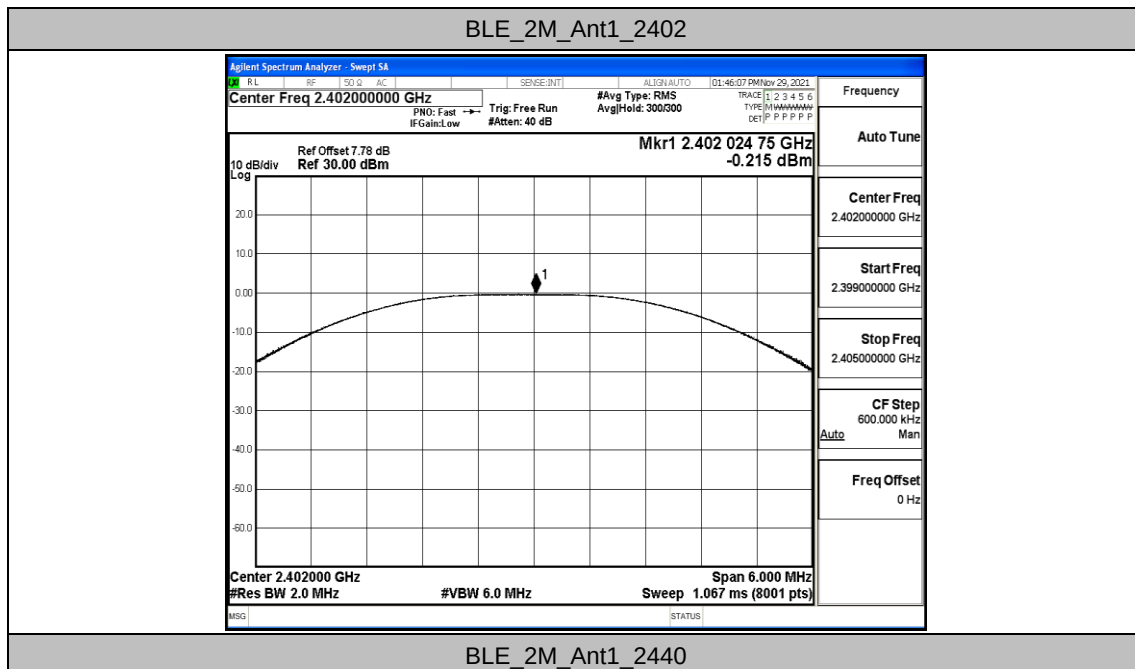
Test Graphs

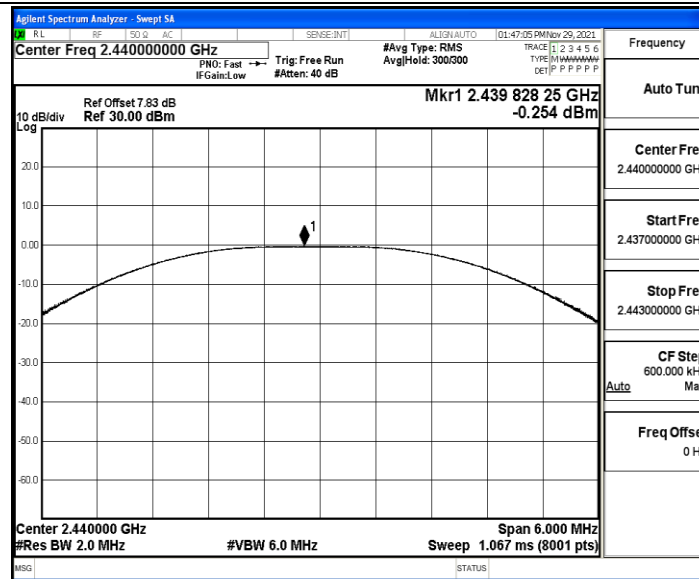




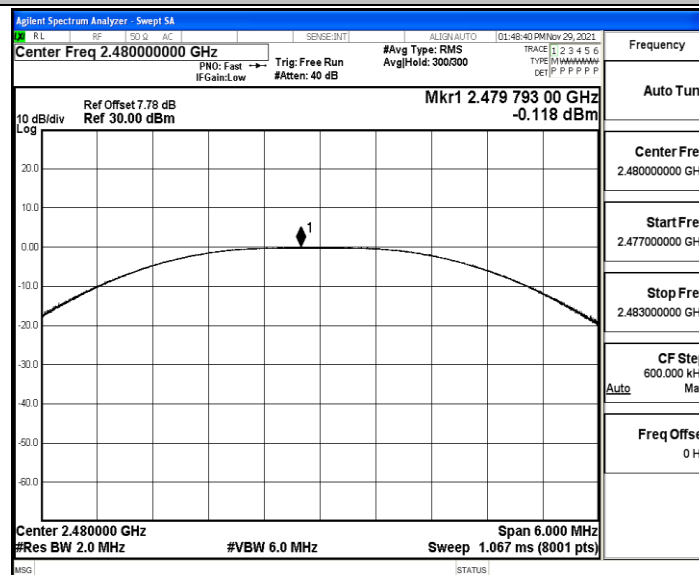
TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
BLE_2M	Ant1	2402	-0.22	≤30	PASS
		2440	-0.25	≤30	PASS
		2480	-0.12	≤30	PASS

Test Graphs





BLE_2M_Ant1_2480



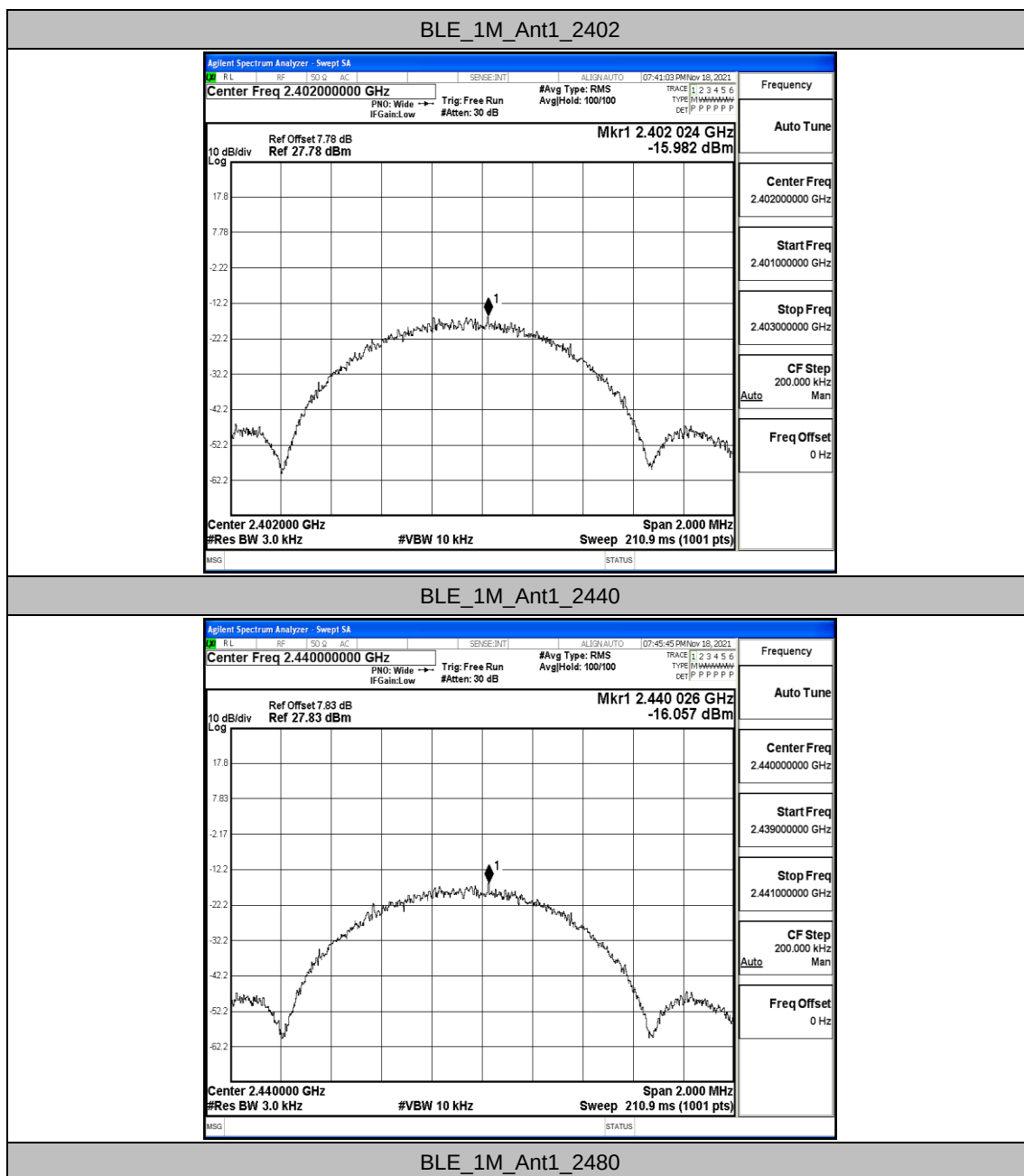


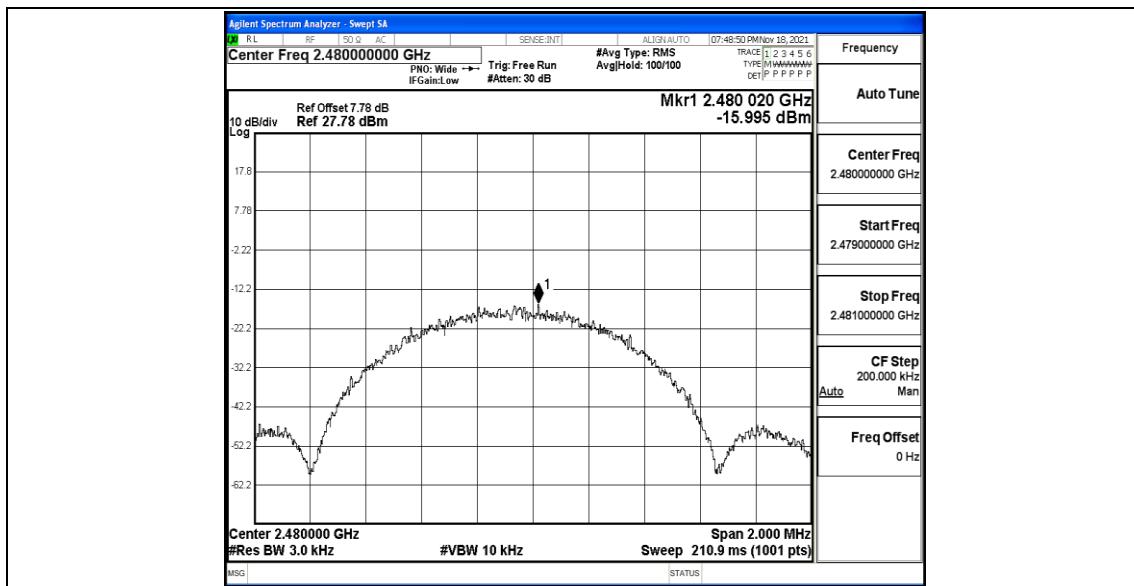
B.3 Maximum power spectral density

Test Result

TestMode	Antenna	Channel	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-15.98	≤8	PASS
		2440	-16.06	≤8	PASS
		2480	-16	≤8	PASS

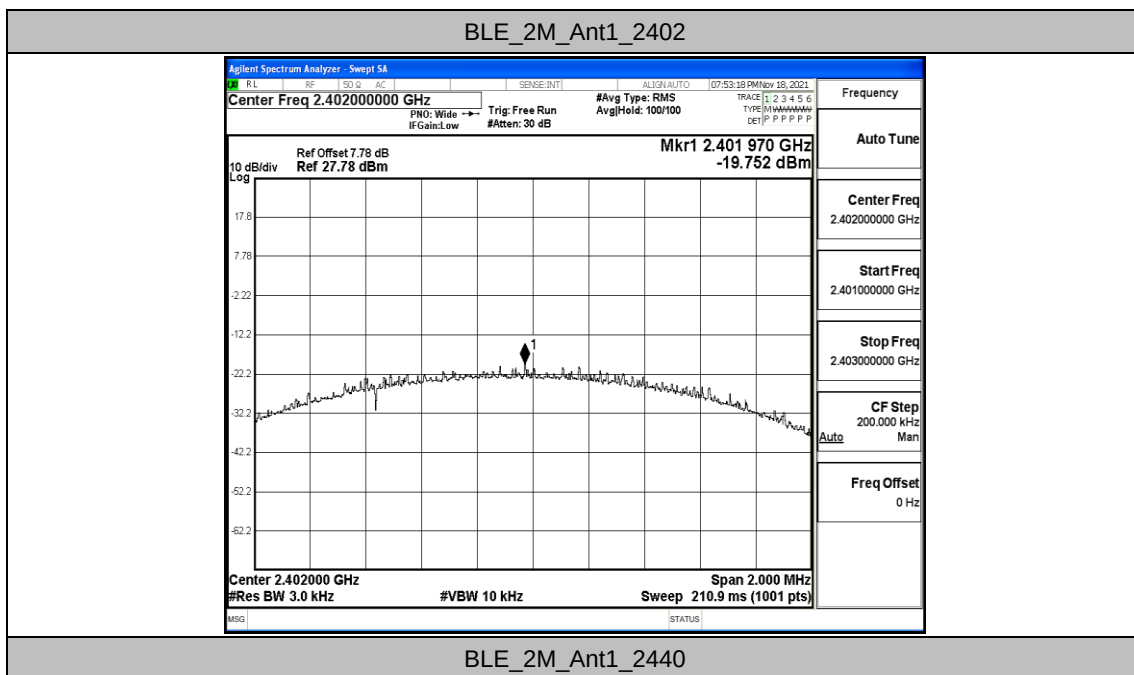
Test Graphs



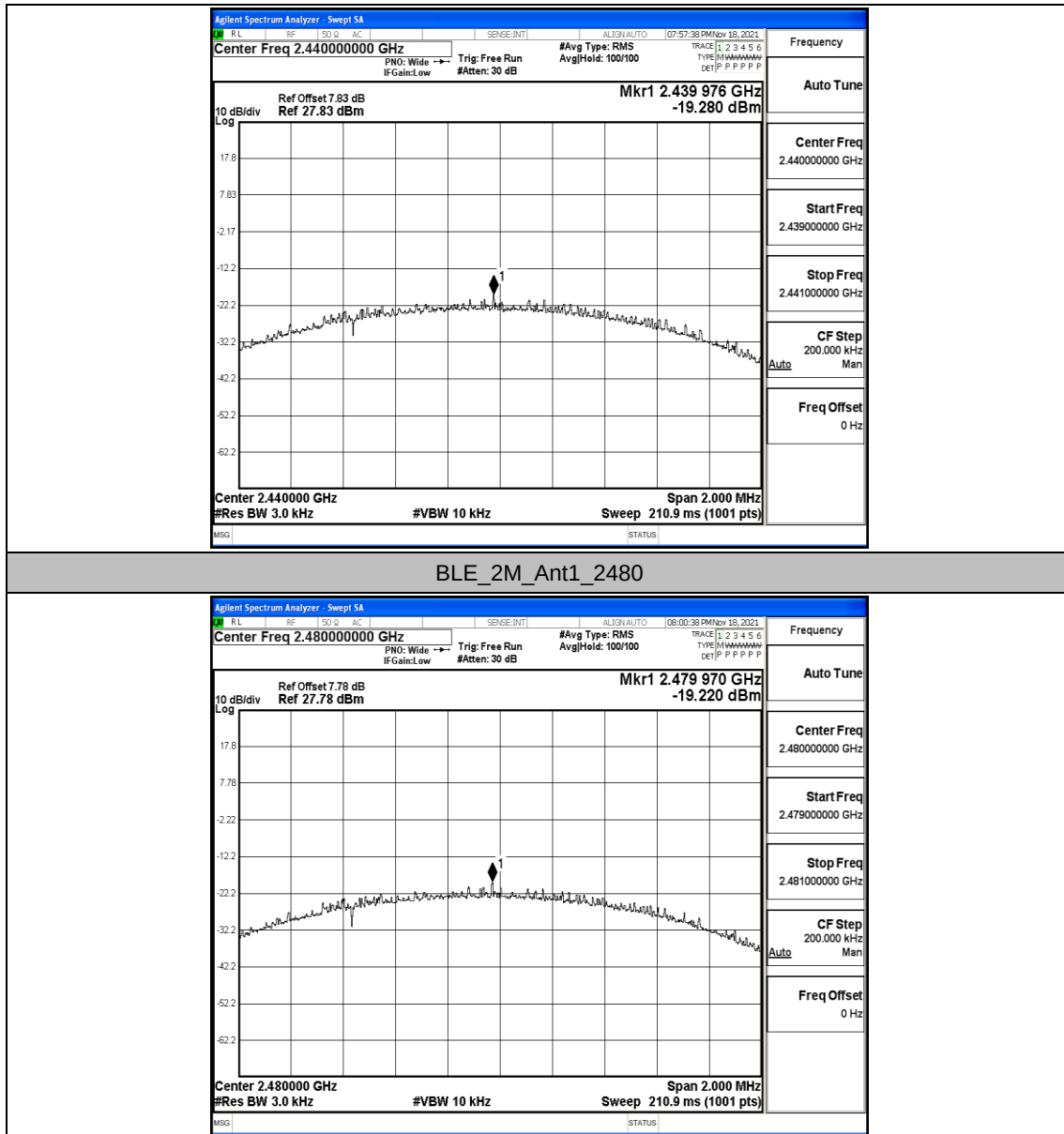


TestMode	Antenna	Channel	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
BLE_2M	Ant1	2402	-19.75	≤8	PASS
		2440	-19.28	≤8	PASS
		2480	-19.22	≤8	PASS

Test Graphs



BLE_2M_Ant1_2440



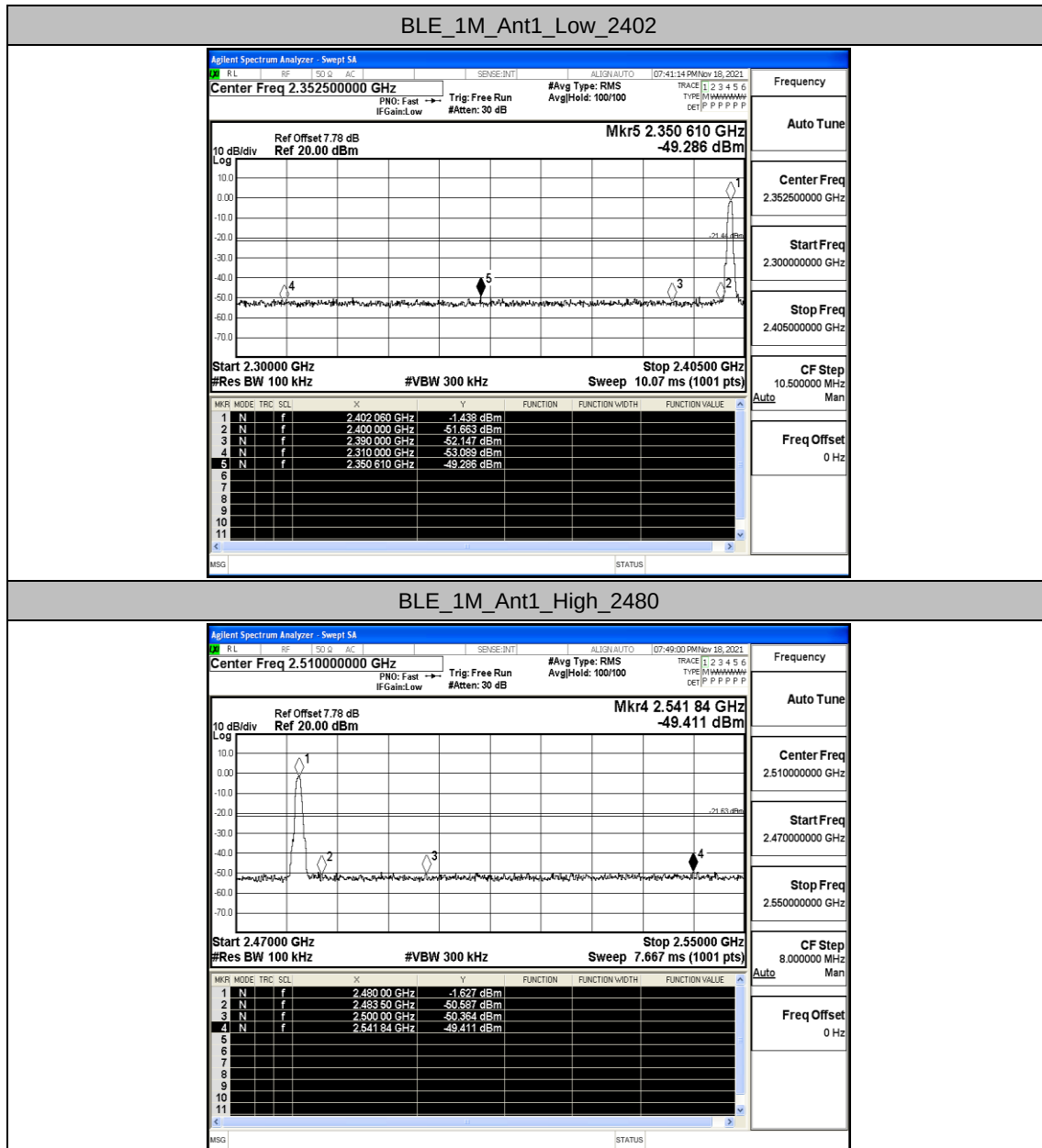


B.4 Band edge measurements

Test Result

TestMode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	-1.44	-49.29	≤-21.44	PASS
		High	2480	-1.63	-49.41	≤-21.63	PASS

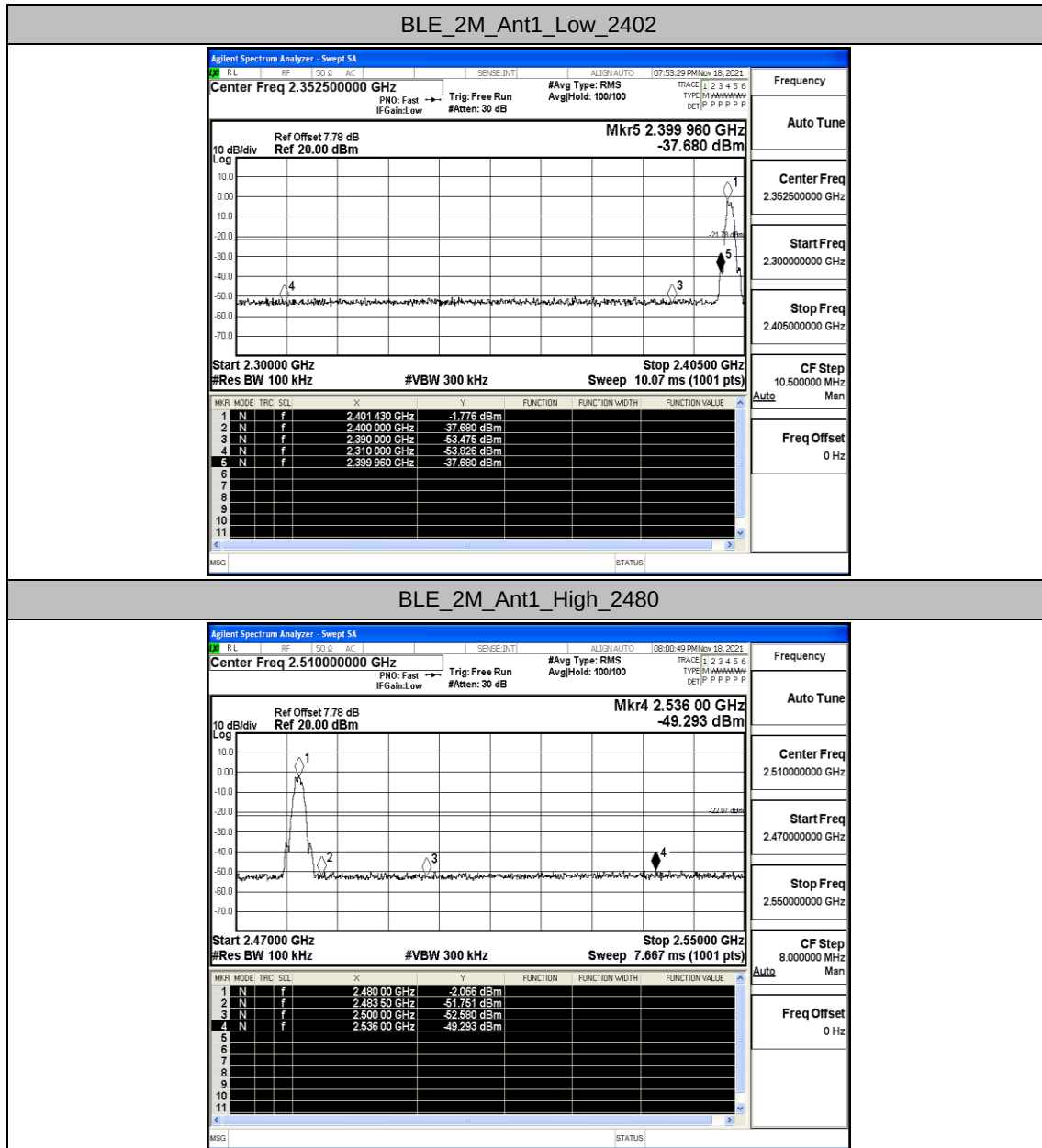
Test Graphs





TestMode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_2M	Ant1	Low	2402	-1.78	-37.68	≤-21.78	PASS
		High	2480	-2.07	-49.29	≤-22.07	PASS

Test Graphs



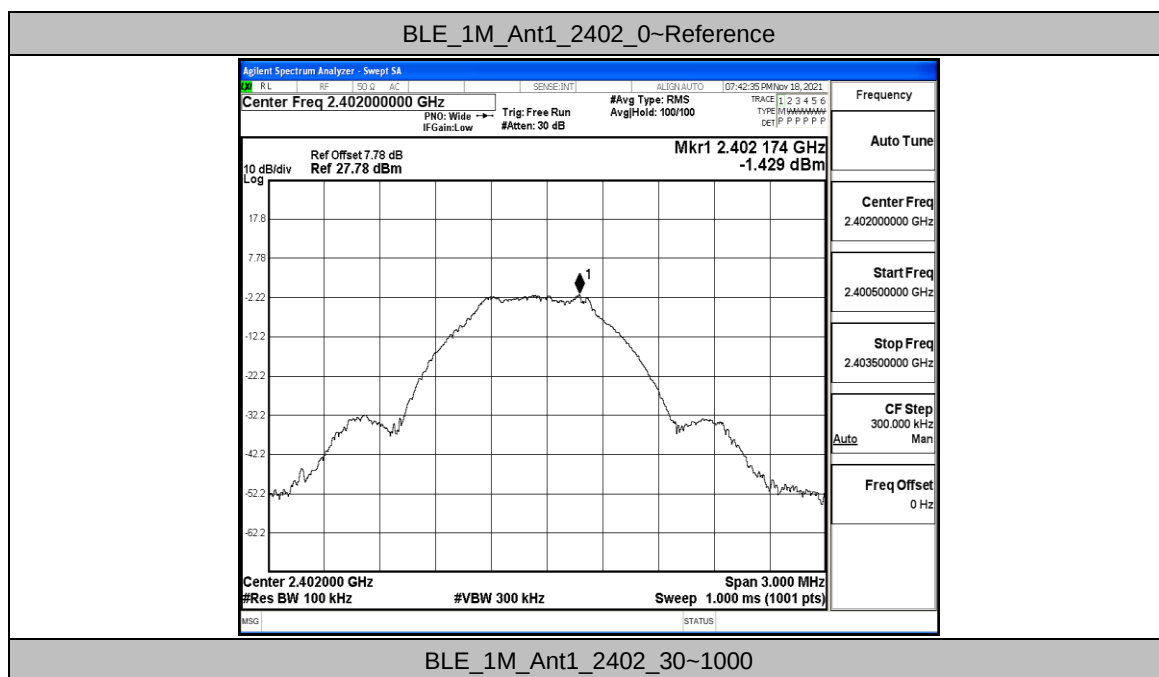


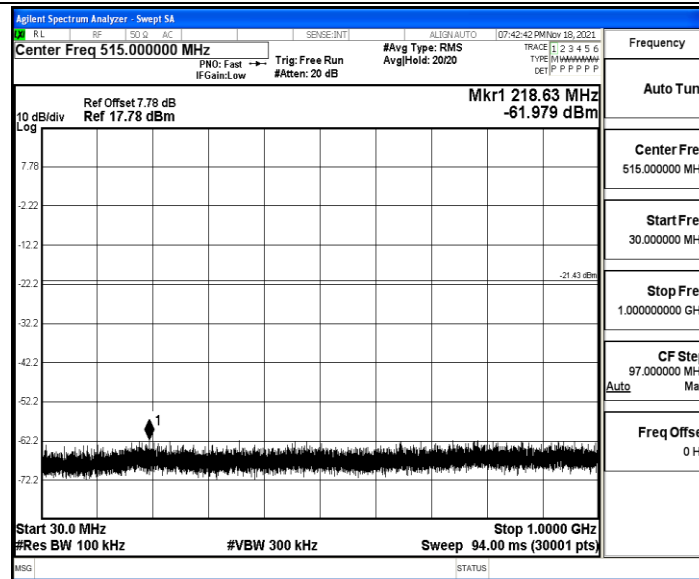
B.5 Conducted Spurious Emission

Test Result

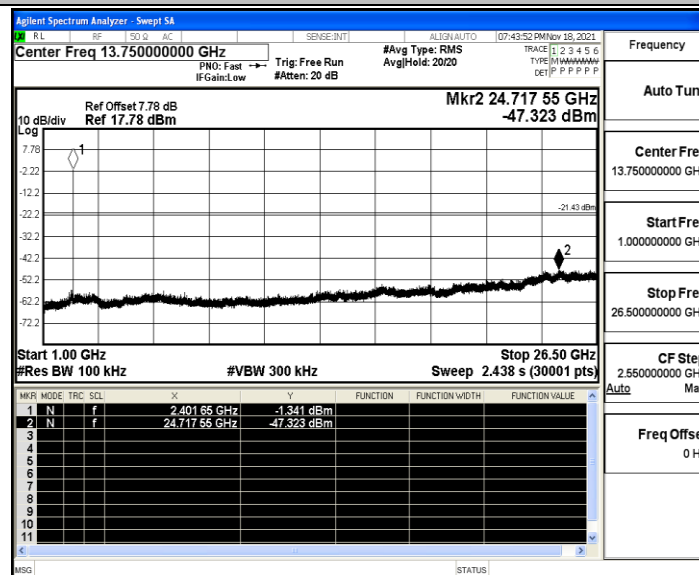
TestMode	Antenna	Channel	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	Reference	-1.43	-1.43	---	PASS
			30~1000	-1.43	-61.98	≤-21.43	PASS
			1000~26500	-1.43	-47.32	≤-21.43	PASS
		2440	Reference	-1.71	-1.71	---	PASS
			30~1000	-1.71	-61.25	≤-21.71	PASS
			1000~26500	-1.71	-46.67	≤-21.71	PASS
		2480	Reference	-1.61	-1.61	---	PASS
			30~1000	-1.61	-60.99	≤-21.61	PASS
			1000~26500	-1.61	-47.34	≤-21.61	PASS

Test Graphs

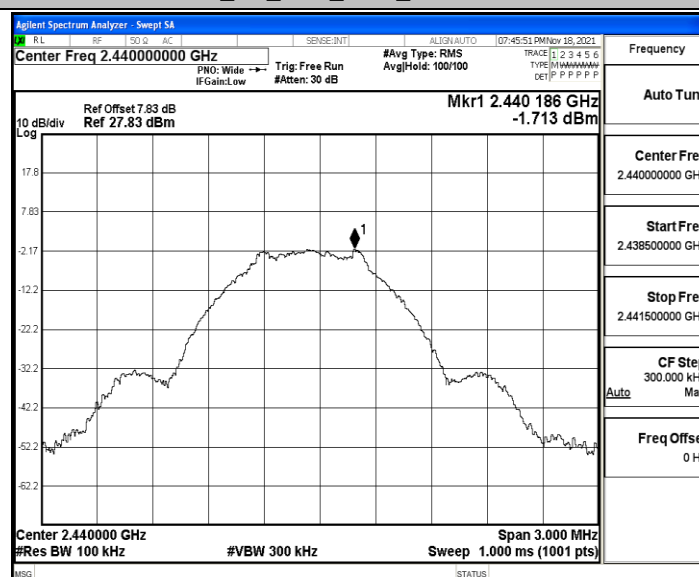




BLE_1M_Ant1_2402_1000~26500

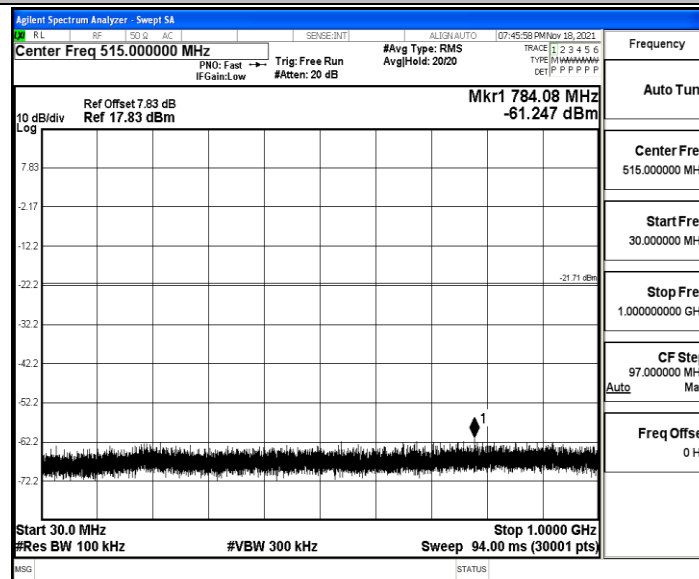


BLE_1M_Ant1_2440_0~Reference

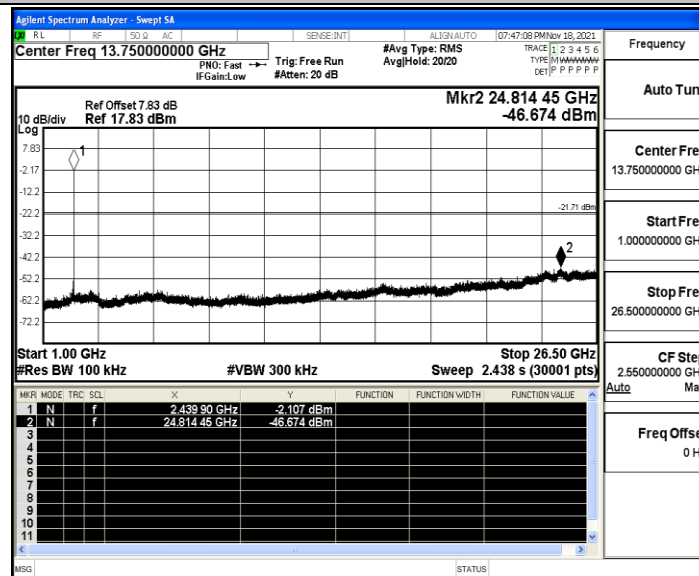




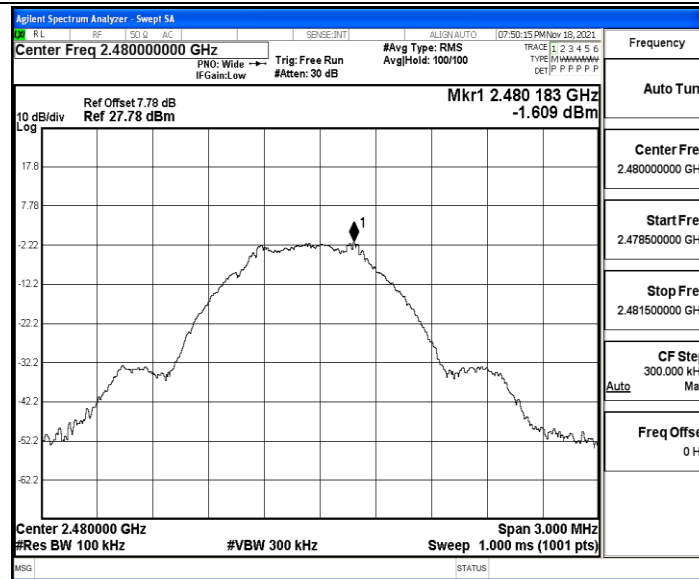
BLE_1M_Ant1_2440_30~1000



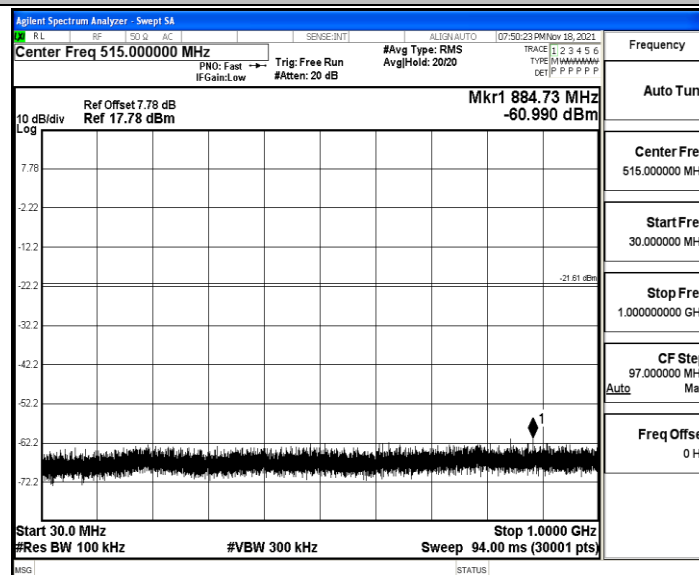
BLE_1M_Ant1_2440_1000~26500



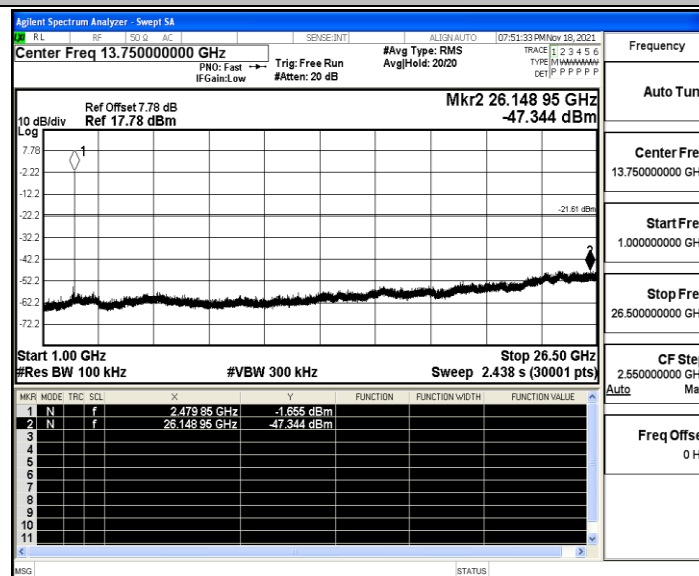
BLE_1M_Ant1_2480_0~Reference



BLE_1M_Ant1_2480_30~1000



BLE_1M_Ant1_2480_1000~26500

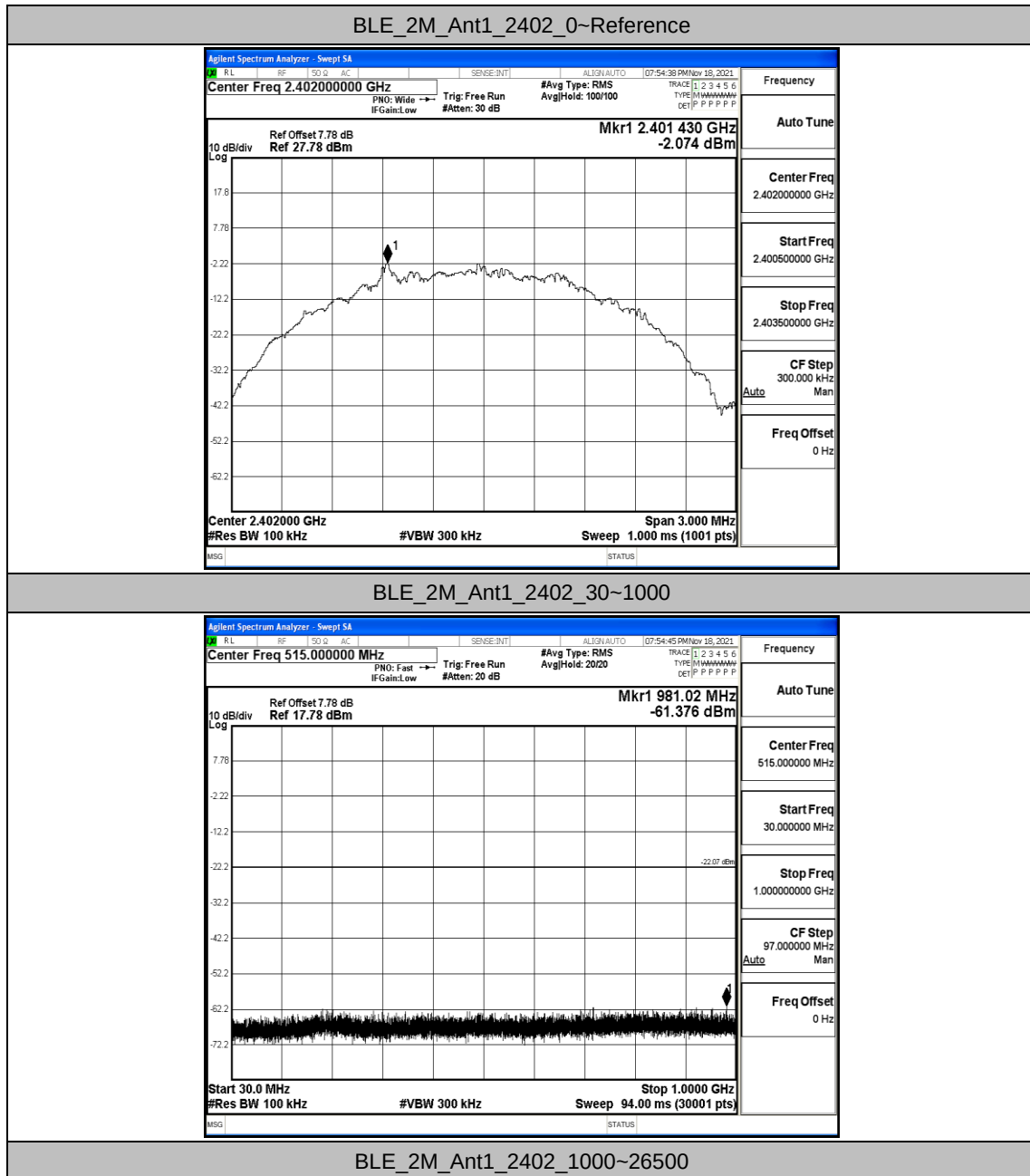


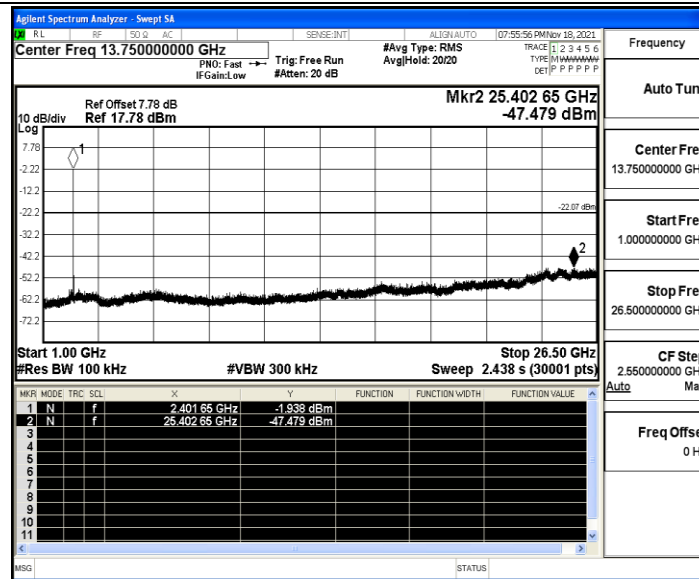


TestMode	Antenna	Channel	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_2M	Ant1	2402	Reference	-2.07	-2.07	---	PASS
			30~1000	-2.07	-61.38	≤ -22.07	PASS
			1000~26500	-2.07	-47.48	≤ -22.07	PASS
		2440	Reference	-2.28	-2.28	---	PASS
			30~1000	-2.28	-61.26	≤ -22.28	PASS
			1000~26500	-2.28	-47.07	≤ -22.28	PASS
		2480	Reference	-2.19	-2.19	---	PASS
			30~1000	-2.19	-61.68	≤ -22.19	PASS
			1000~26500	-2.19	-46.42	≤ -22.19	PASS

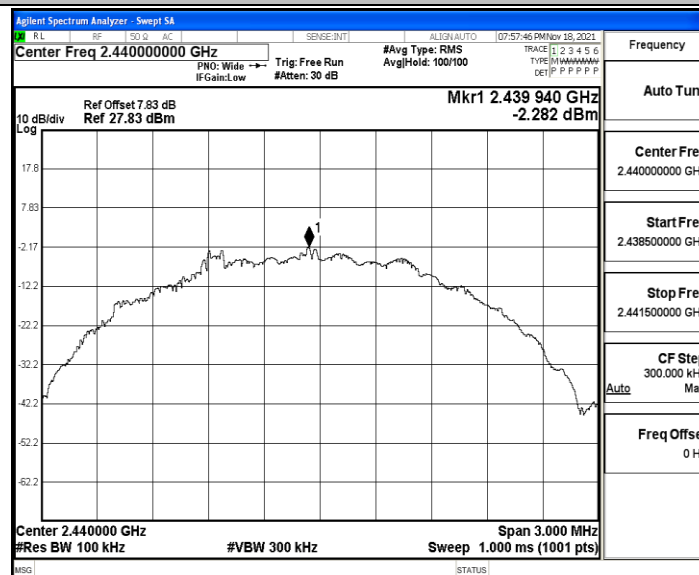


Test Graphs

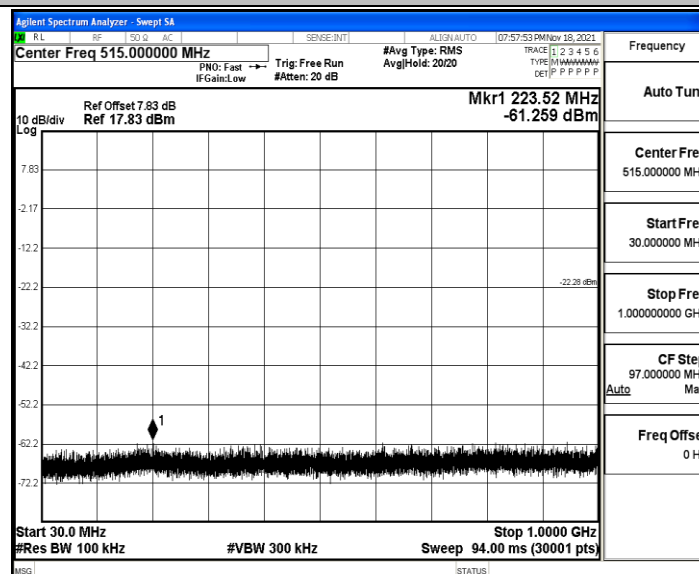




BLE_2M_Ant1_2440_0~Reference

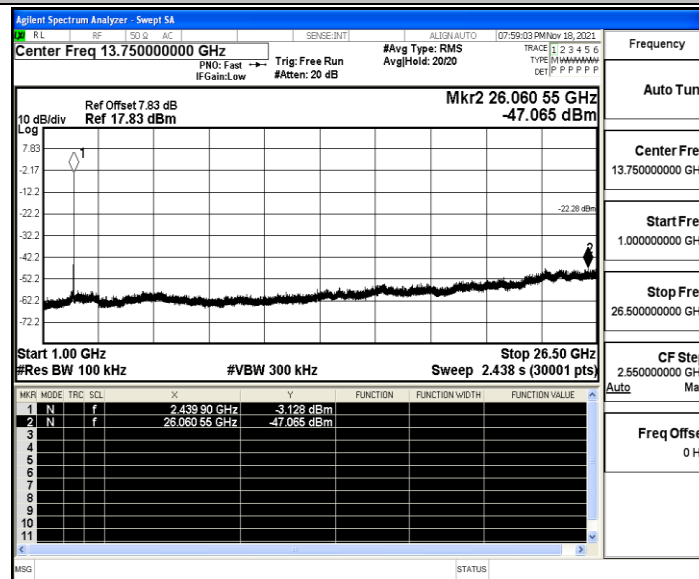


BLE_2M_Ant1_2440_30~1000

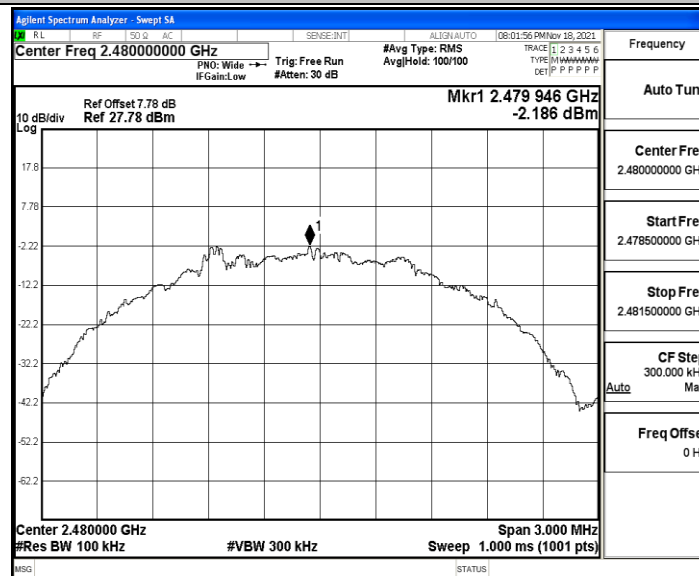




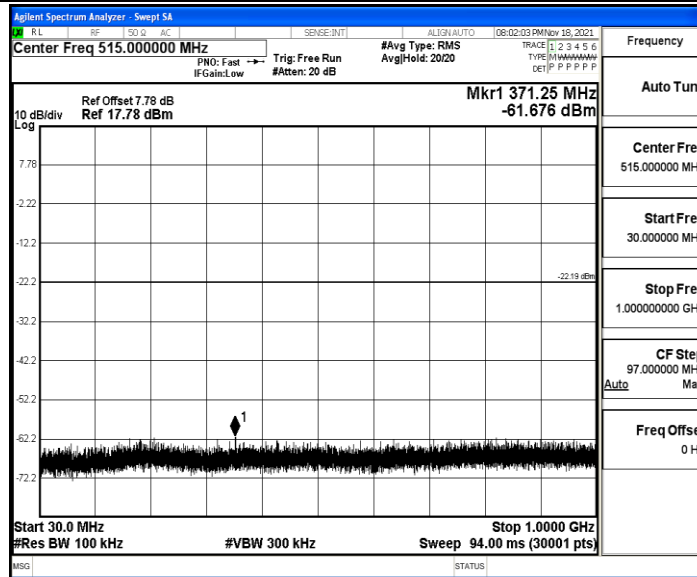
BLE_2M_Ant1_2440_1000~26500



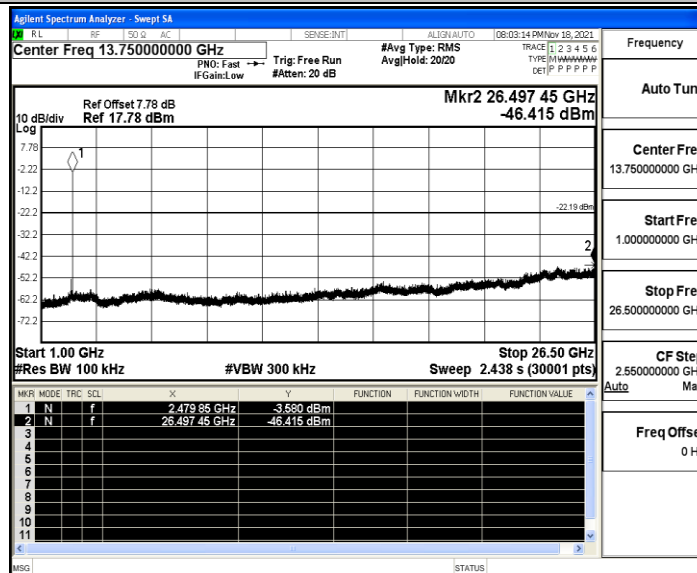
BLE_2M_Ant1_2480_0~Reference



BLE_2M_Ant1_2480_30~1000



BLE_2M_Ant1_2480_1000-26500



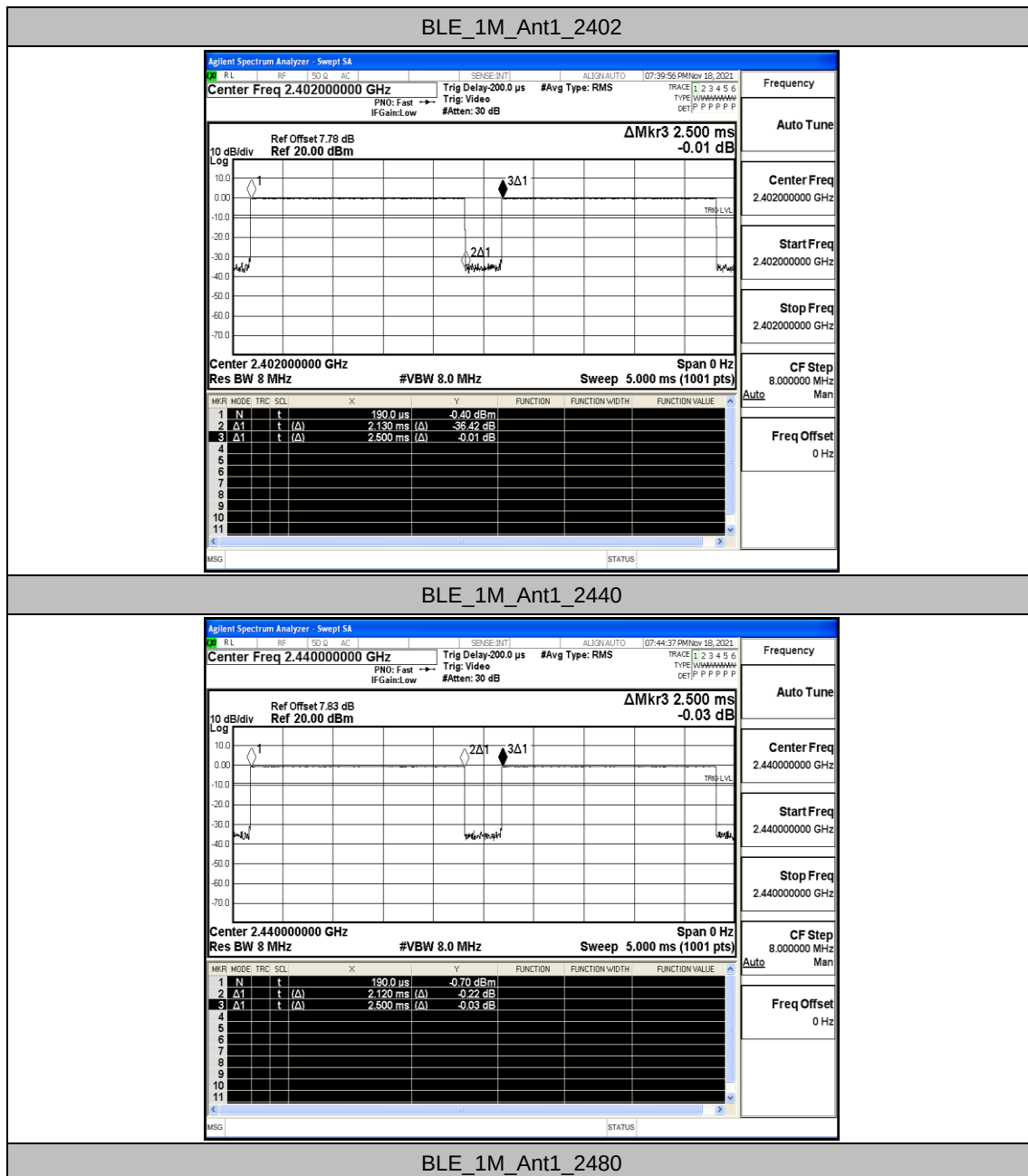


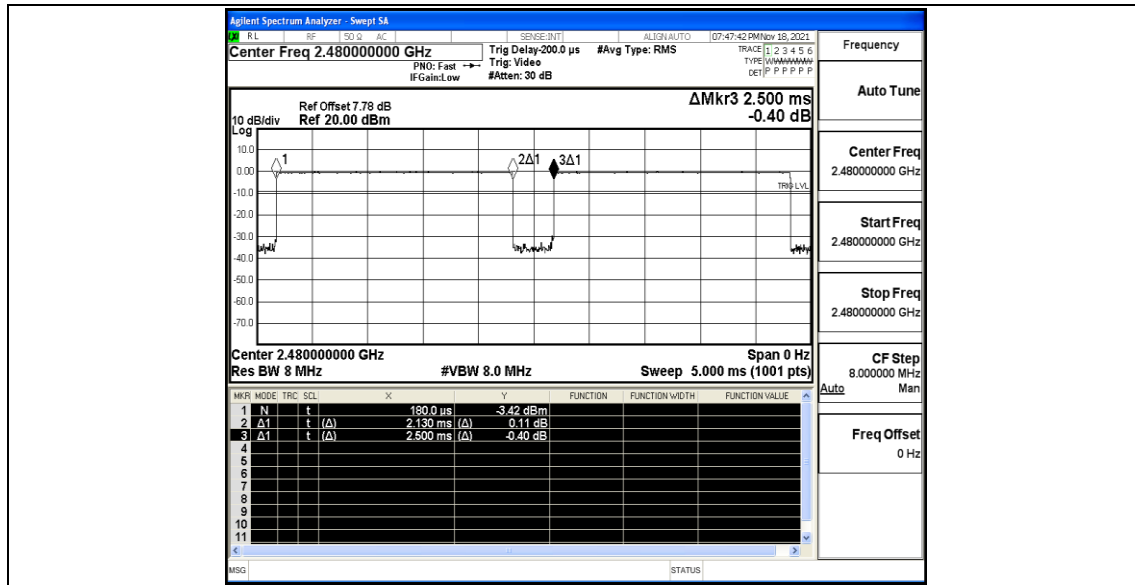
B.6 Duty Cycle

Test Result

TestMode	Antenna	Channel	ON Time [ms]	Period [ms]	X	DC [%]	xFactor	Limit	Verdict
BLE_1M	Ant1	2402	2.13	2.50	0.8520	85.20	0.70	---	PASS
		2440	2.12	2.50	0.8480	84.80	0.72	---	PASS
		2480	2.13	2.50	0.8520	85.20	0.70	---	PASS

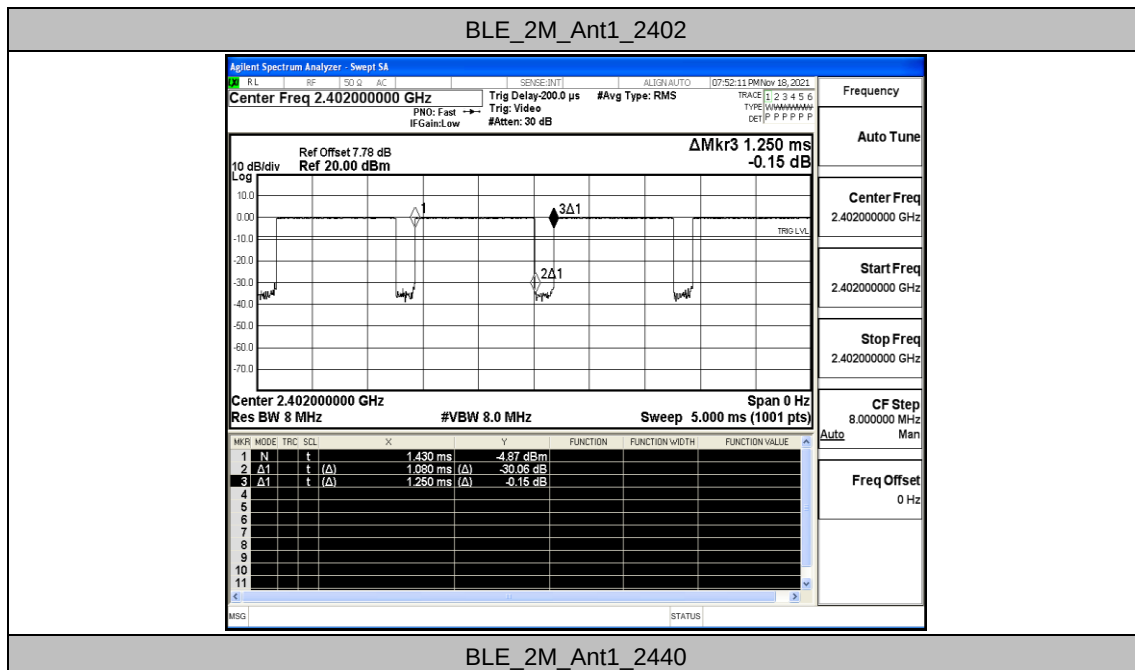
Test Graphs

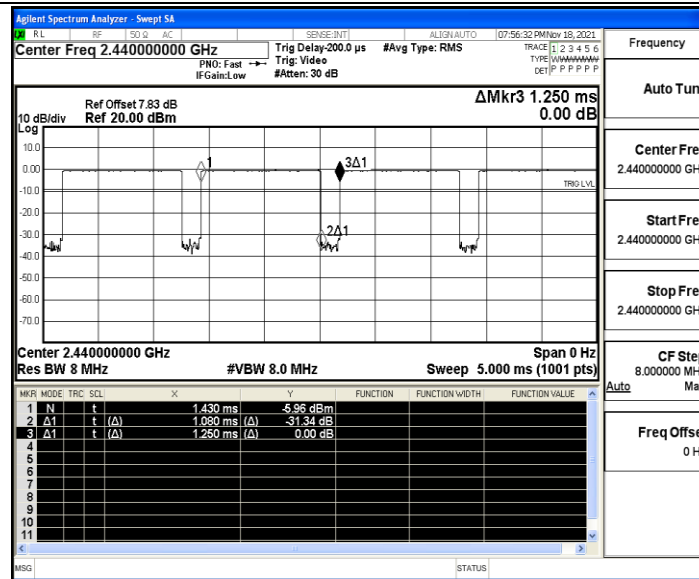




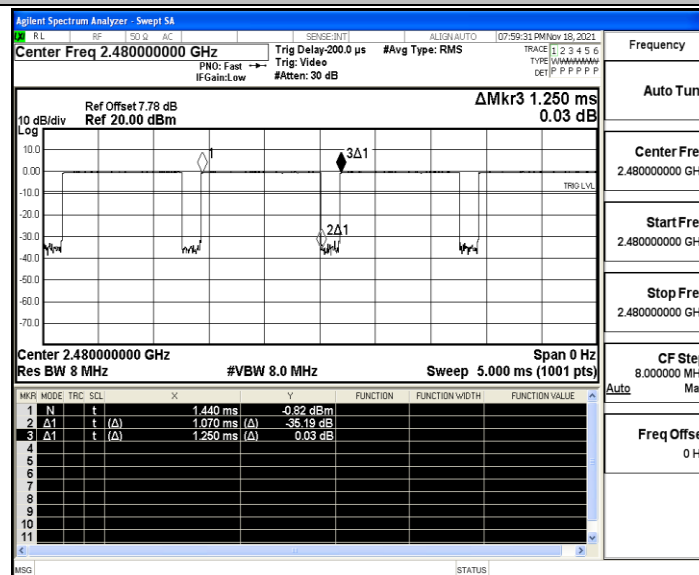
TestMode	Antenna	Channel	ON Time [ms]	Period [ms]	X	DC [%]	xFactor	Limit	Verdict
BLE_2M	Ant1	2402	1.08	1.25	0.8640	86.40	0.63	---	PASS
		2440	1.08	1.25	0.8640	86.40	0.63	---	PASS
		2480	1.07	1.25	0.8560	85.60	0.68	---	PASS

Test Graphs





BLE_2M_Ant1_2480





B.7 Emissions in Restricted Bands

Test Result

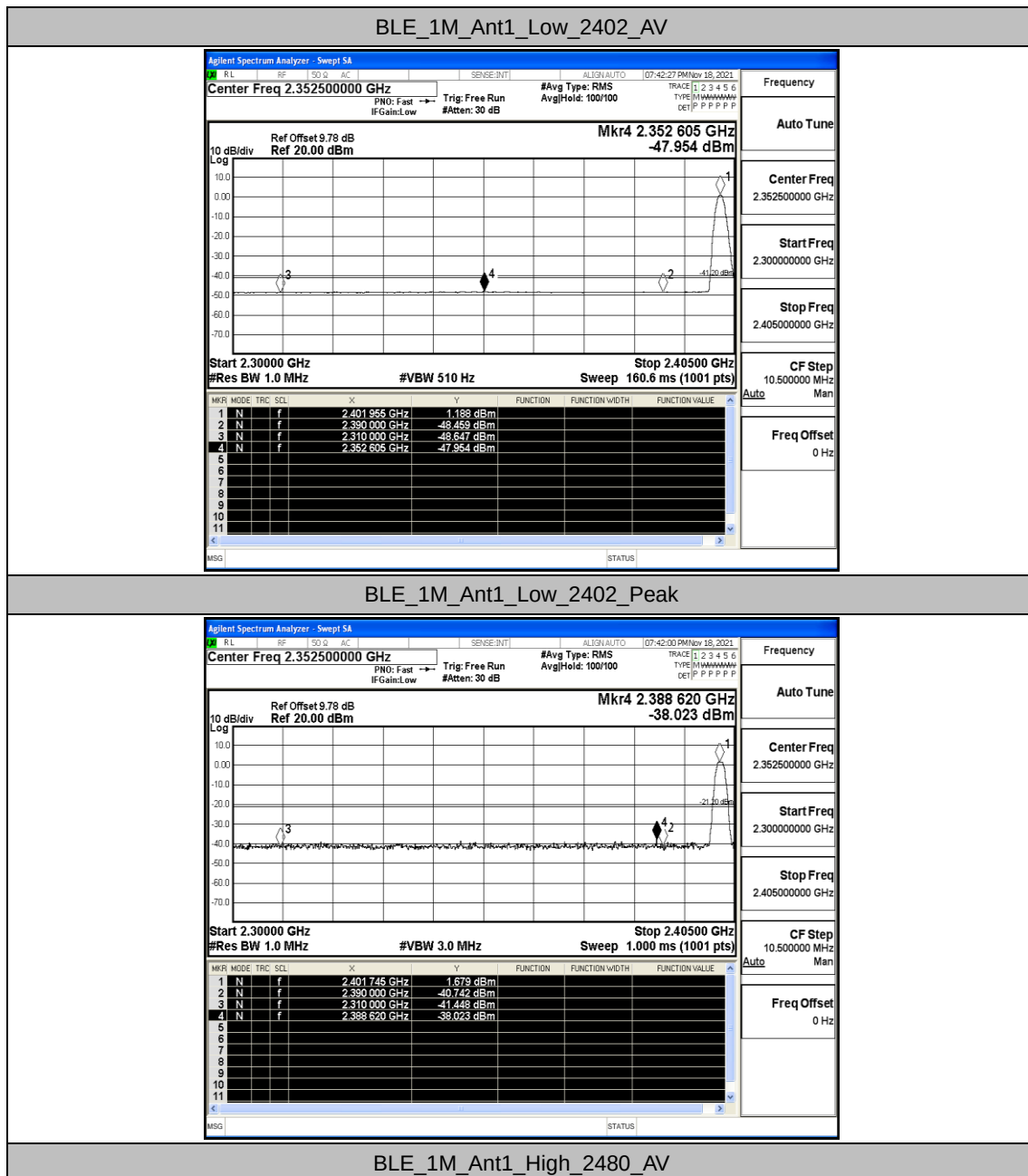
TestMode	Antenna	ChName	Channel	Detector	Freq. [MHz]	Result [dBm]	Limit [dBm]	Result [dBuV/m]	Limit [dBuV/m]	Verdict
BLE_1M	Ant1	Low	2402	AV	2310.000	-48.65	≤-41.20	46.55	≤54	PASS
				AV	2352.605	-47.95	≤-41.20	47.25	≤54	PASS
				AV	2390.000	-48.46	≤-41.20	46.74	≤54	PASS
				Peak	2310.000	-41.45	≤-21.20	53.75	≤74	PASS
				Peak	2388.620	-38.02	≤-21.20	57.18	≤74	PASS
				Peak	2390.000	-40.74	≤-21.20	54.46	≤74	PASS
		High	2480	AV	2483.500	-47.75	≤-41.20	47.45	≤54	PASS
				AV	2483.520	-47.75	≤-41.20	47.45	≤54	PASS
				AV	2500.000	-47.81	≤-41.20	47.39	≤54	PASS
				Peak	2483.500	-40.12	≤-21.20	55.08	≤74	PASS
				Peak	2492.560	-38.6	≤-21.20	56.60	≤74	PASS
				Peak	2500.000	-41.02	≤-21.20	54.18	≤74	PASS

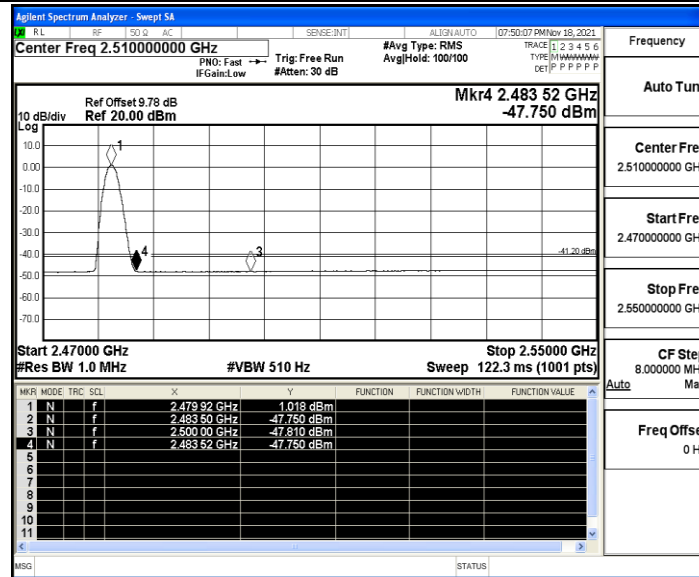
Note:

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.

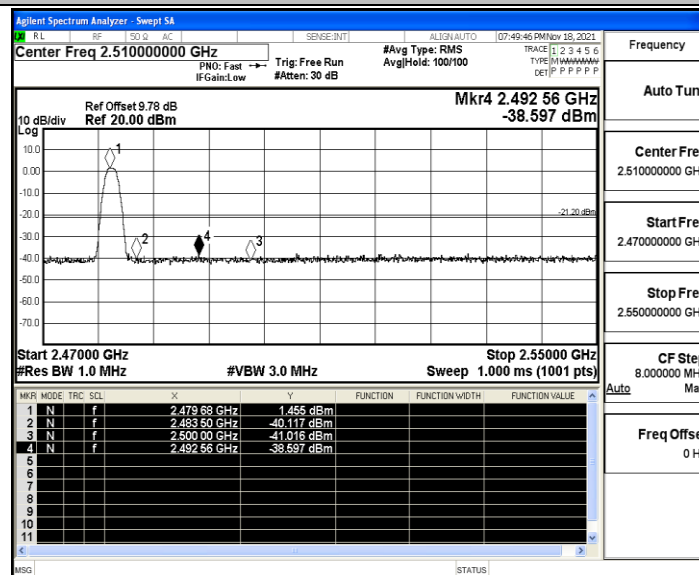


Test Graphs





BLE_1M_Ant1_High_2480_Peak





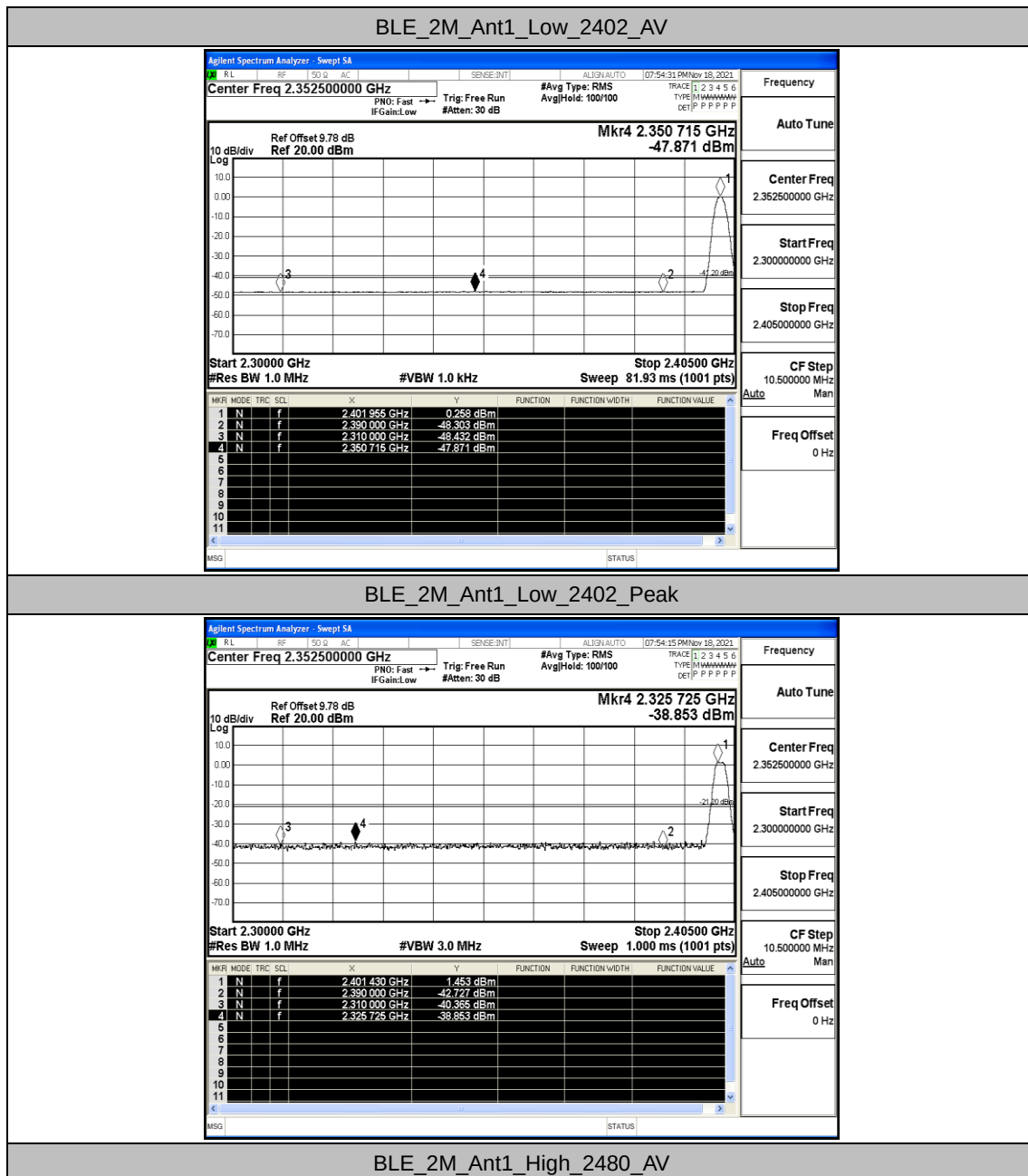
TestMode	Antenna	ChName	Channel	Detector	Freq. [MHz]	Result [dBm]	Limit [dBm]	Result [dBuV/m]	Limit [dBuV/m]	Verdict
BLE_2M	Ant1	Low	2402	AV	2310.000	-48.43	≤-41.20	46.77	≤54	PASS
				AV	2350.715	-47.87	≤-41.20	47.33	≤54	PASS
				AV	2390.000	-48.3	≤-41.20	46.90	≤54	PASS
				Peak	2310.000	-40.37	≤-21.20	54.83	≤74	PASS
				Peak	2325.725	-38.85	≤-21.20	56.35	≤74	PASS
				Peak	2390.000	-42.73	≤-21.20	52.47	≤74	PASS
		High	2480	AV	2483.500	-46.73	≤-41.20	48.47	≤54	PASS
				AV	2483.520	-46.73	≤-41.20	48.47	≤54	PASS
				AV	2500.000	-47.78	≤-41.20	47.42	≤54	PASS
				Peak	2483.500	-40.42	≤-21.20	54.78	≤74	PASS
				Peak	2498.560	-38.91	≤-21.20	56.29	≤74	PASS
				Peak	2500.000	-40.71	≤-21.20	54.49	≤74	PASS

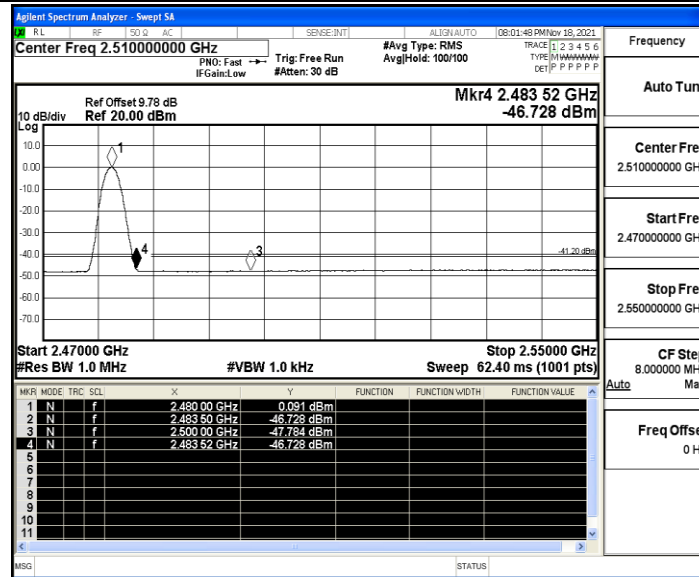
Note:

- The Antenna Gain is compensated in the graph.
- 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_2M_Ant1_High_2480_Peak

