



Appendix A

RF Test Data for BLE (Conducted Measurement)

Product Name: Bluetooth Humidity&Temperature Monitor

Test Model: TP393

Environmental Conditions

Temperature:	21.1 ° C
Relative Humidity:	52.2%
ATM Pressure:	100.0 kPa
Test Engineer:	Mark Chen
Supervised by:	Lihm

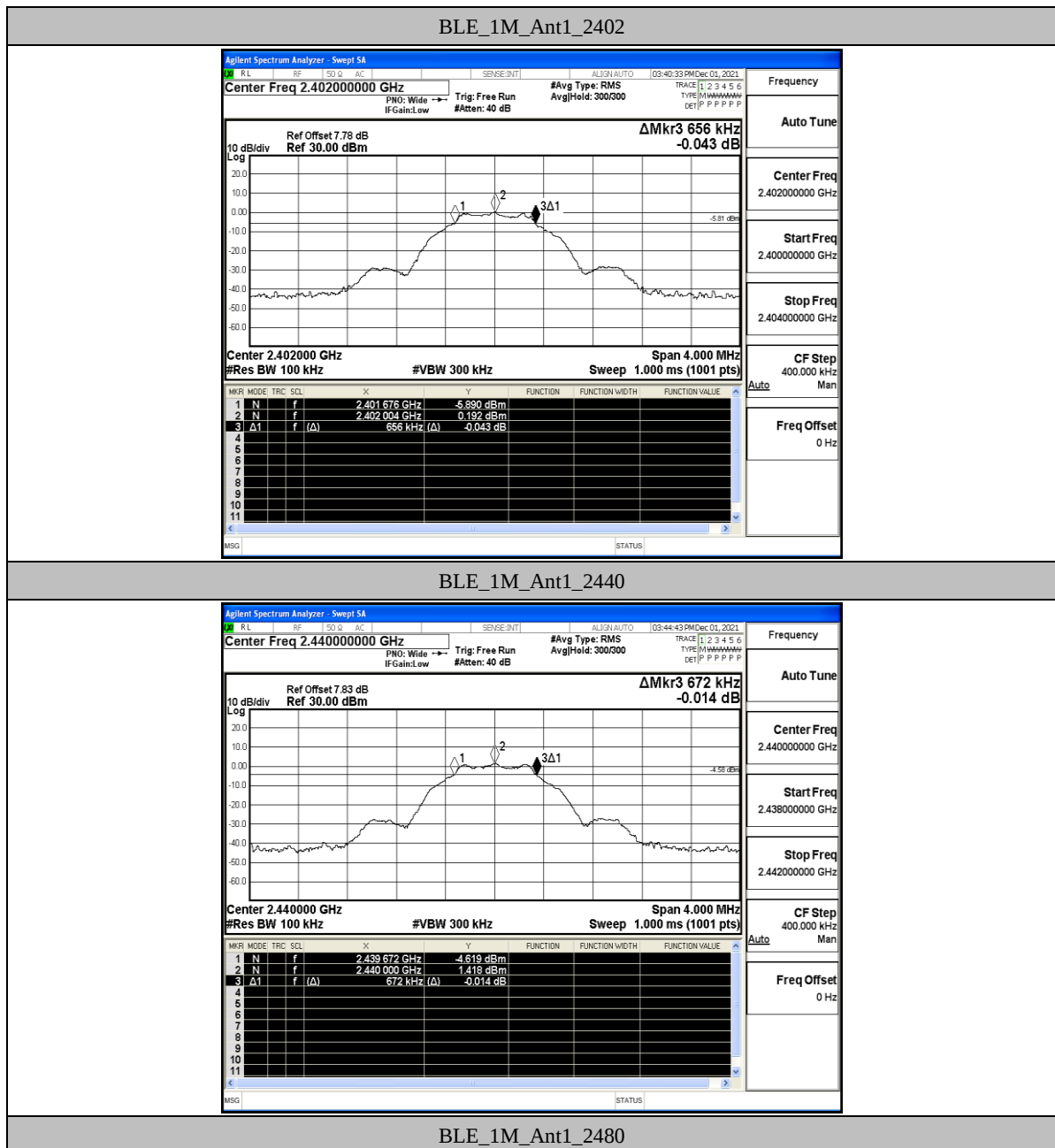


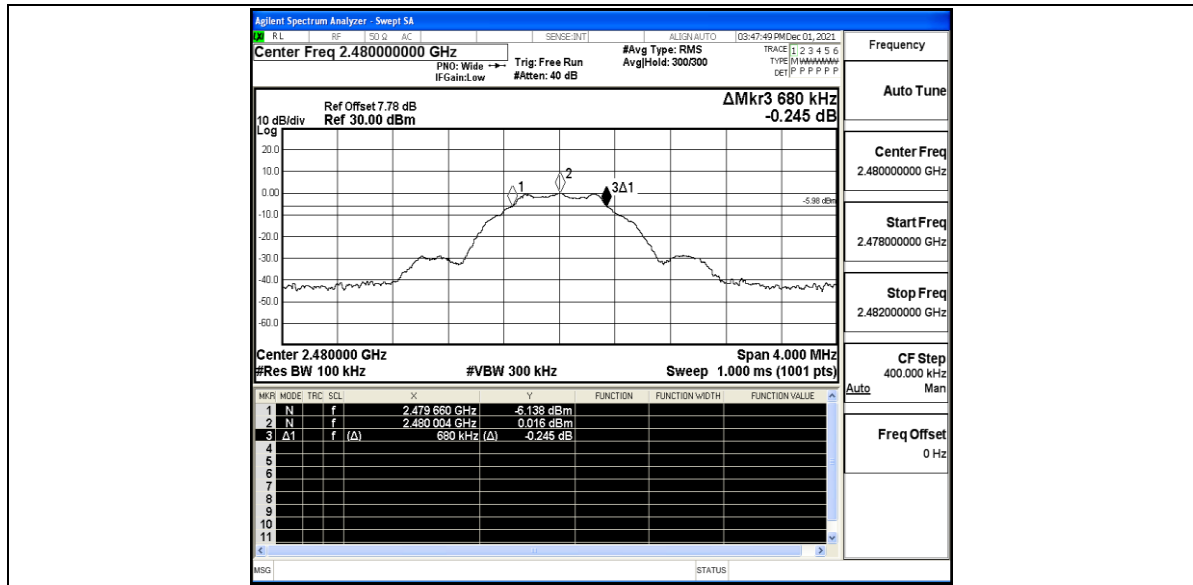
A.1 6dB Bandwidth

Test Result

TestMode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.656	2401.676	2402.332	≥ 0.5	PASS
		2440	0.672	2439.672	2440.344	≥ 0.5	PASS
		2480	0.680	2479.660	2480.340	≥ 0.5	PASS

Test Graphs





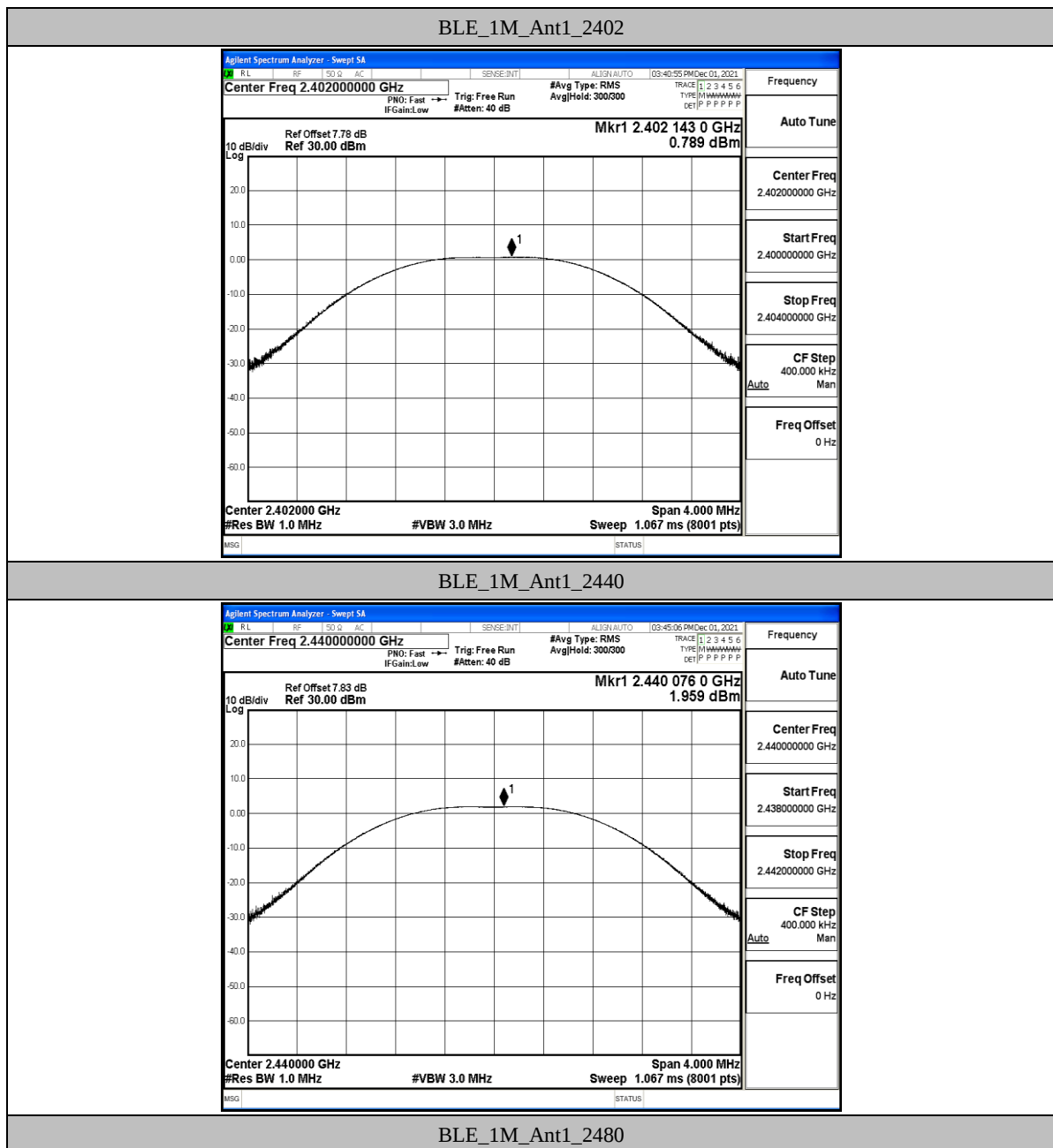


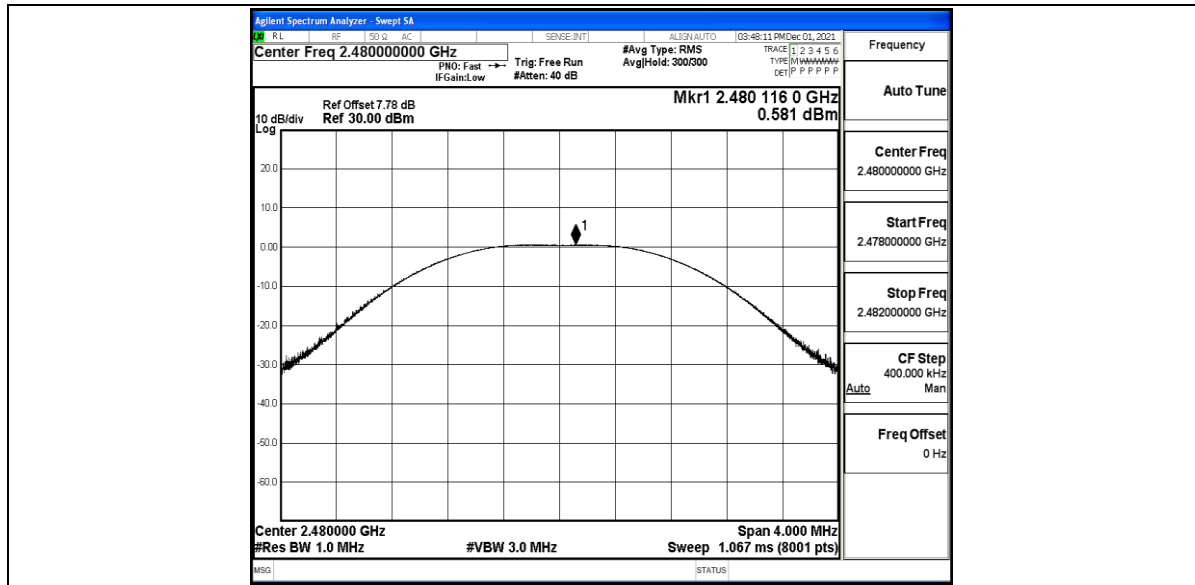
A.2 Maximum conducted output power

Test Result

TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	0.79	≤30	PASS
		2440	1.96	≤30	PASS
		2480	0.58	≤30	PASS

Test Graphs





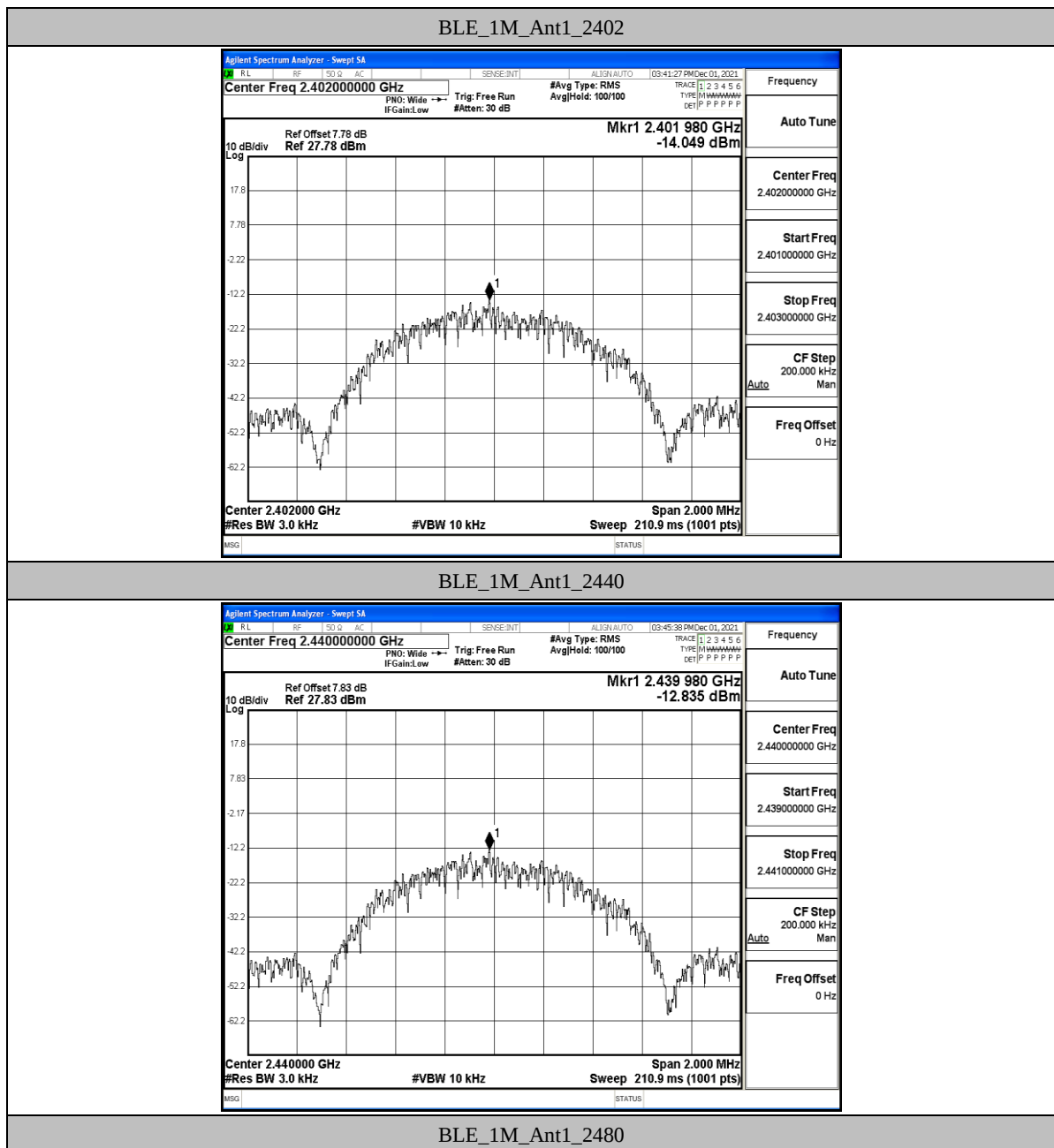


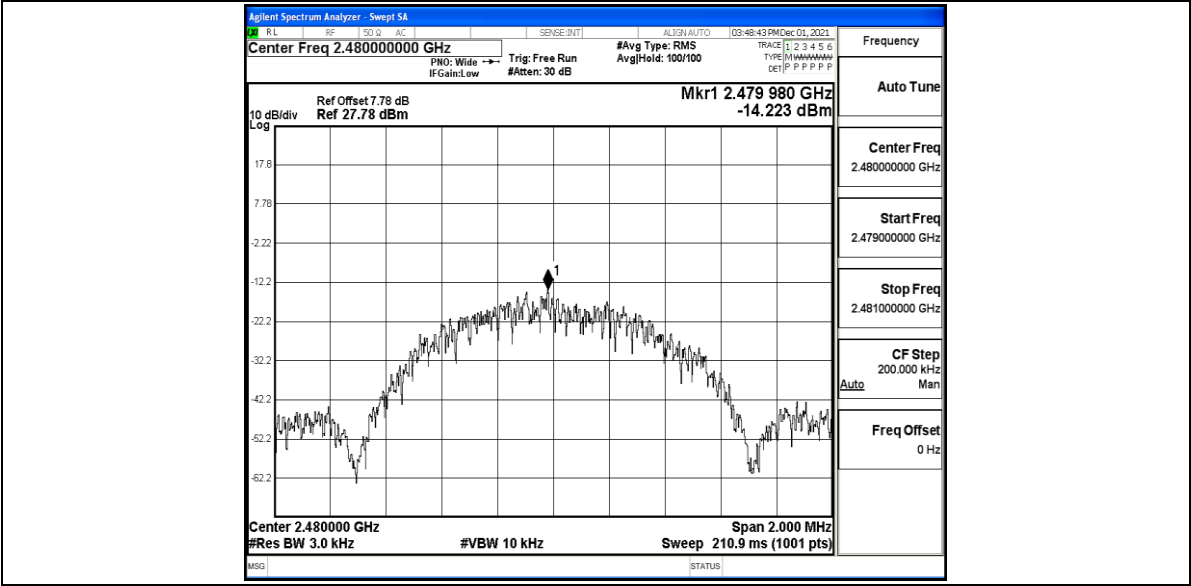
A.3 power spectral density

Test Result

TestMode	Antenna	Channel	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-14.05	≤8	PASS
		2440	-12.84	≤8	PASS
		2480	-14.22	≤8	PASS

Test Graphs





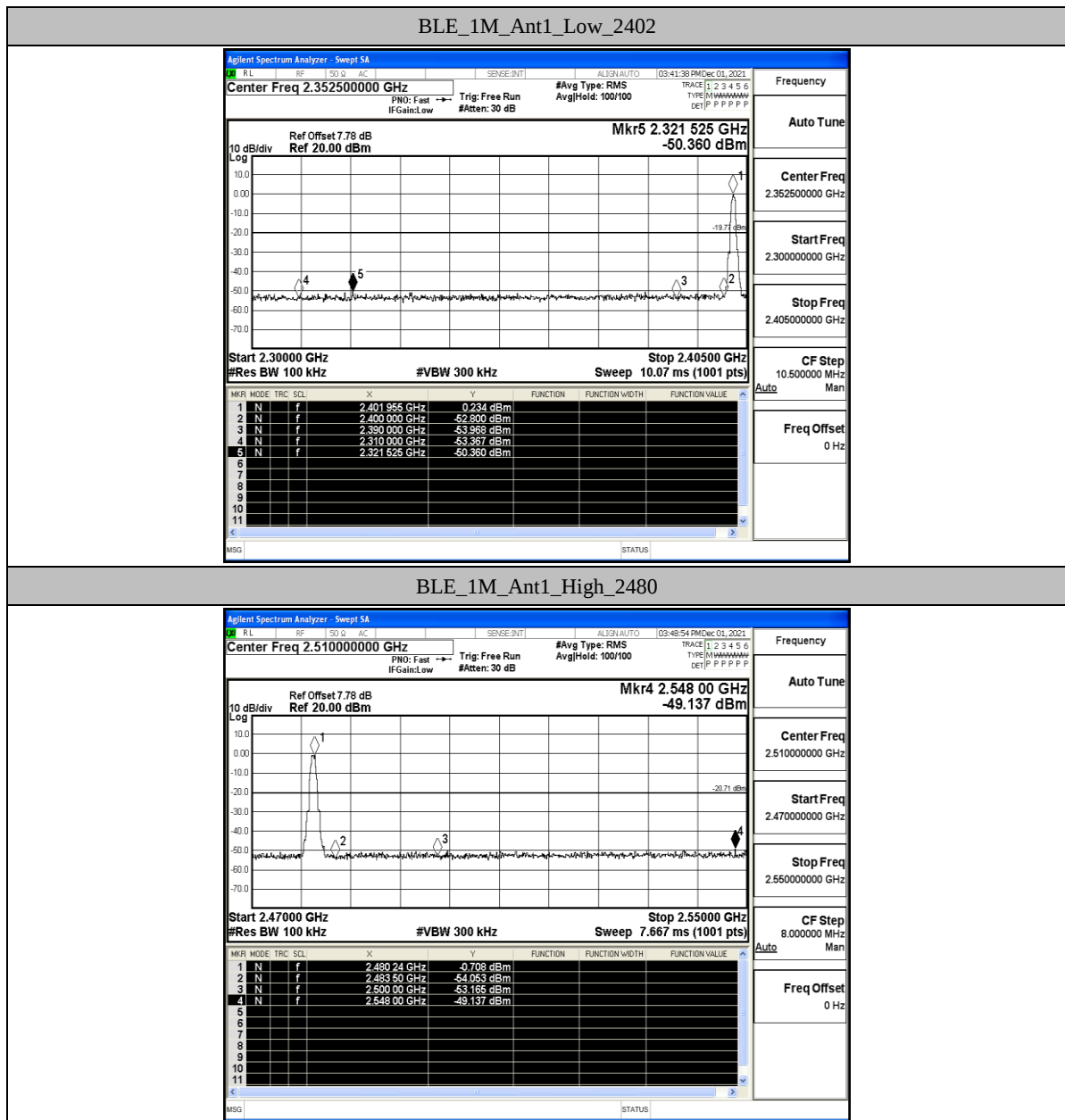


A.4 Band edge measurements

Test Result

TestMode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	0.23	-50.36	≤ -19.77	PASS
		High	2480	-0.71	-49.14	≤ -20.71	PASS

Test Graphs



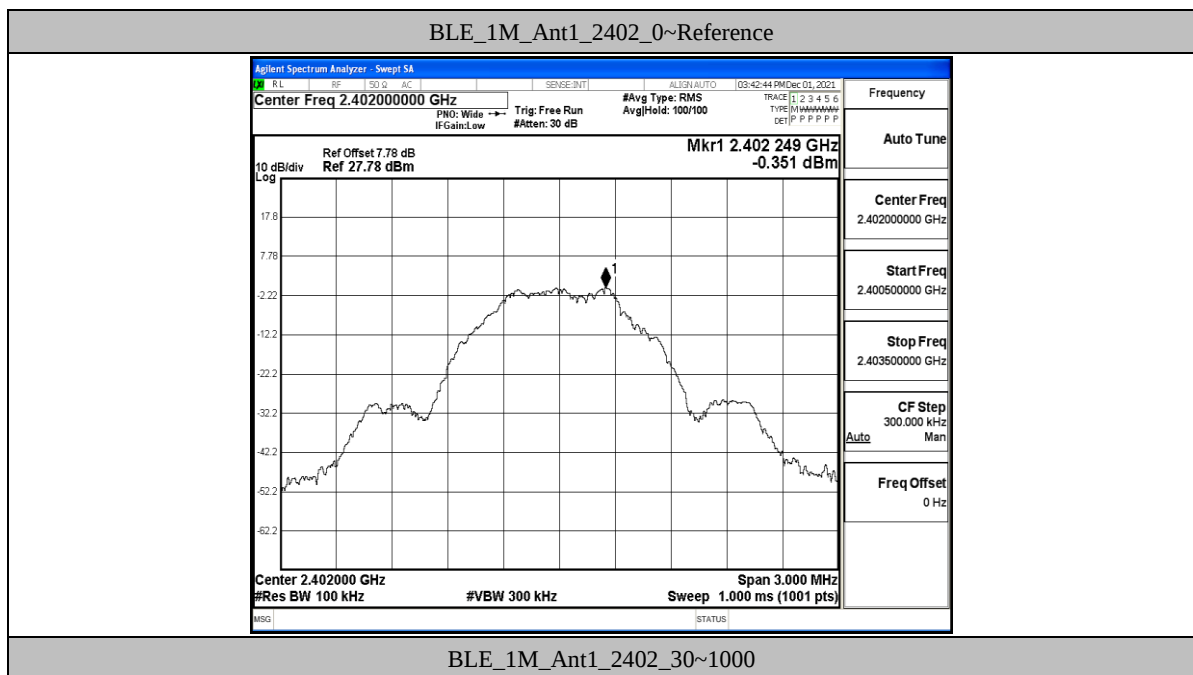


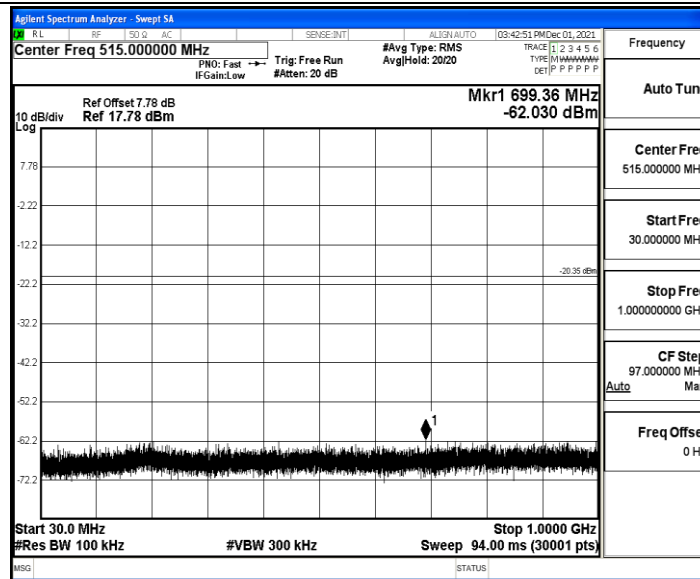
A.5 Conducted Spurious Emission

Test Result

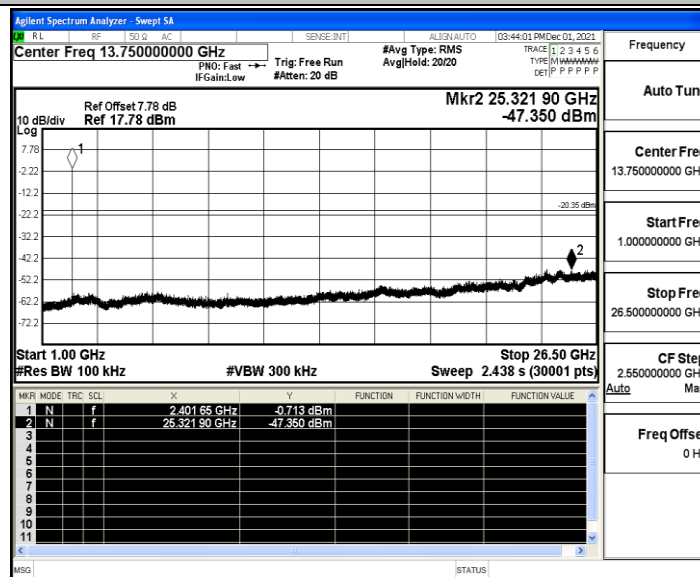
TestMode	Antenna	Channel	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	Reference	-0.35	-0.35	---	PASS
			30~1000	-0.35	-62.03	≤ -20.35	PASS
			1000~26500	-0.35	-47.35	≤ -20.35	PASS
		2440	Reference	1.03	1.03	---	PASS
			30~1000	1.03	-61.79	≤ -18.98	PASS
			1000~26500	1.03	-47.28	≤ -18.98	PASS
		2480	Reference	-0.45	-0.45	---	PASS
			30~1000	-0.45	-62.34	≤ -20.45	PASS
			1000~26500	-0.45	-47	≤ -20.45	PASS

Test Graphs

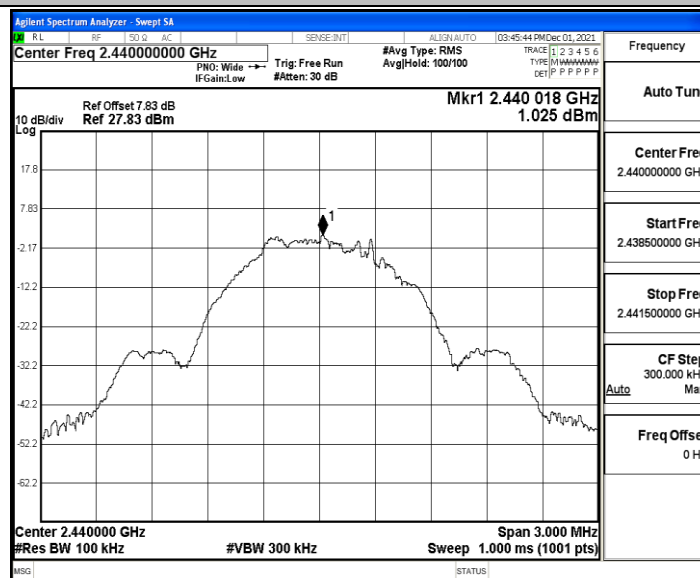




BLE_1M_Ant1_2402_1000~26500

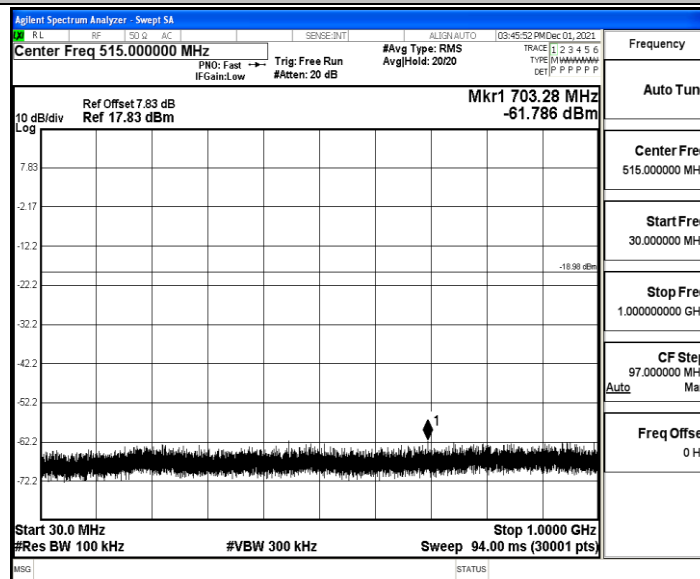


BLE_1M_Ant1_2440_0~Reference

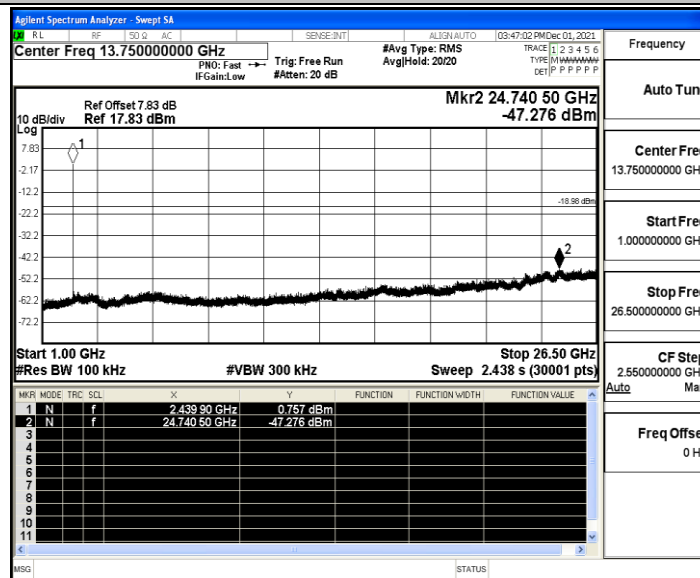




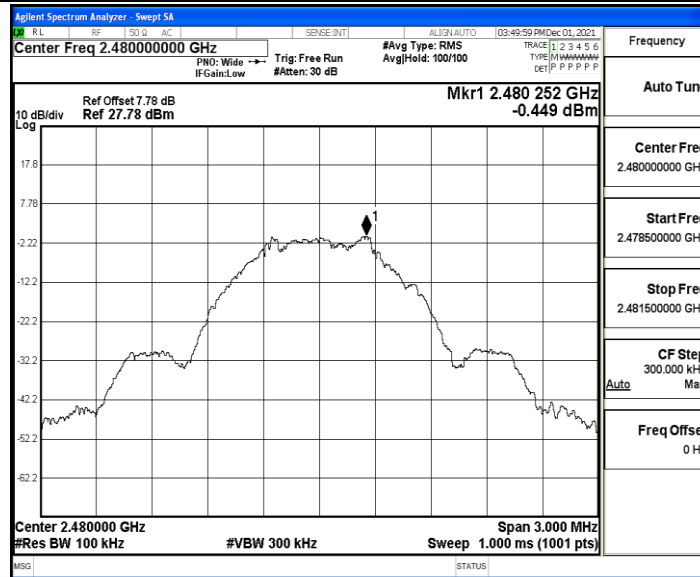
BLE_1M_Ant1_2440_30~1000



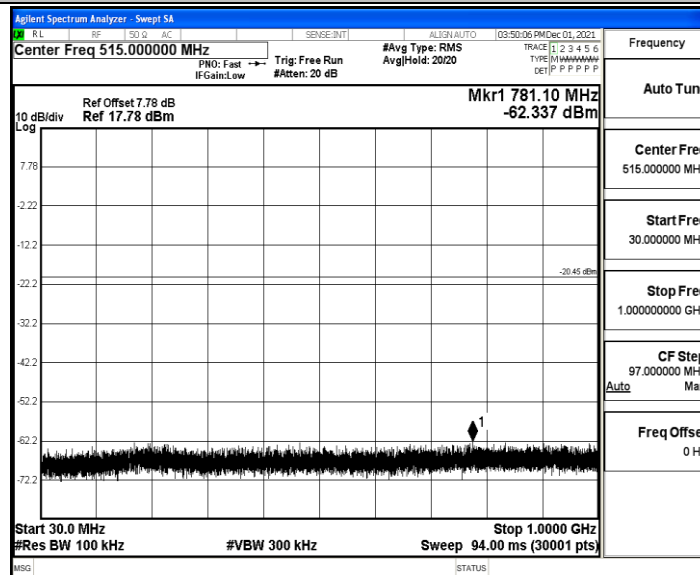
BLE_1M_Ant1_2440_1000~26500



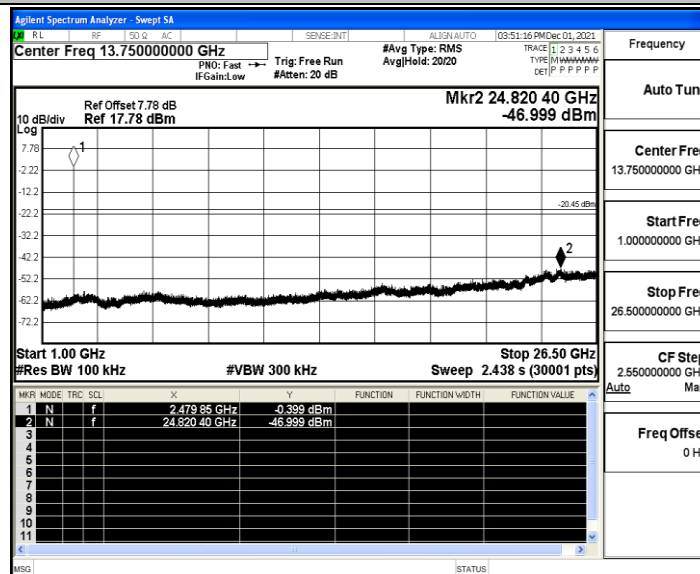
BLE_1M_Ant1_2480_0~Reference



BLE_1M_Ant1_2480_30~1000



BLE_1M_Ant1_2480_1000~26500



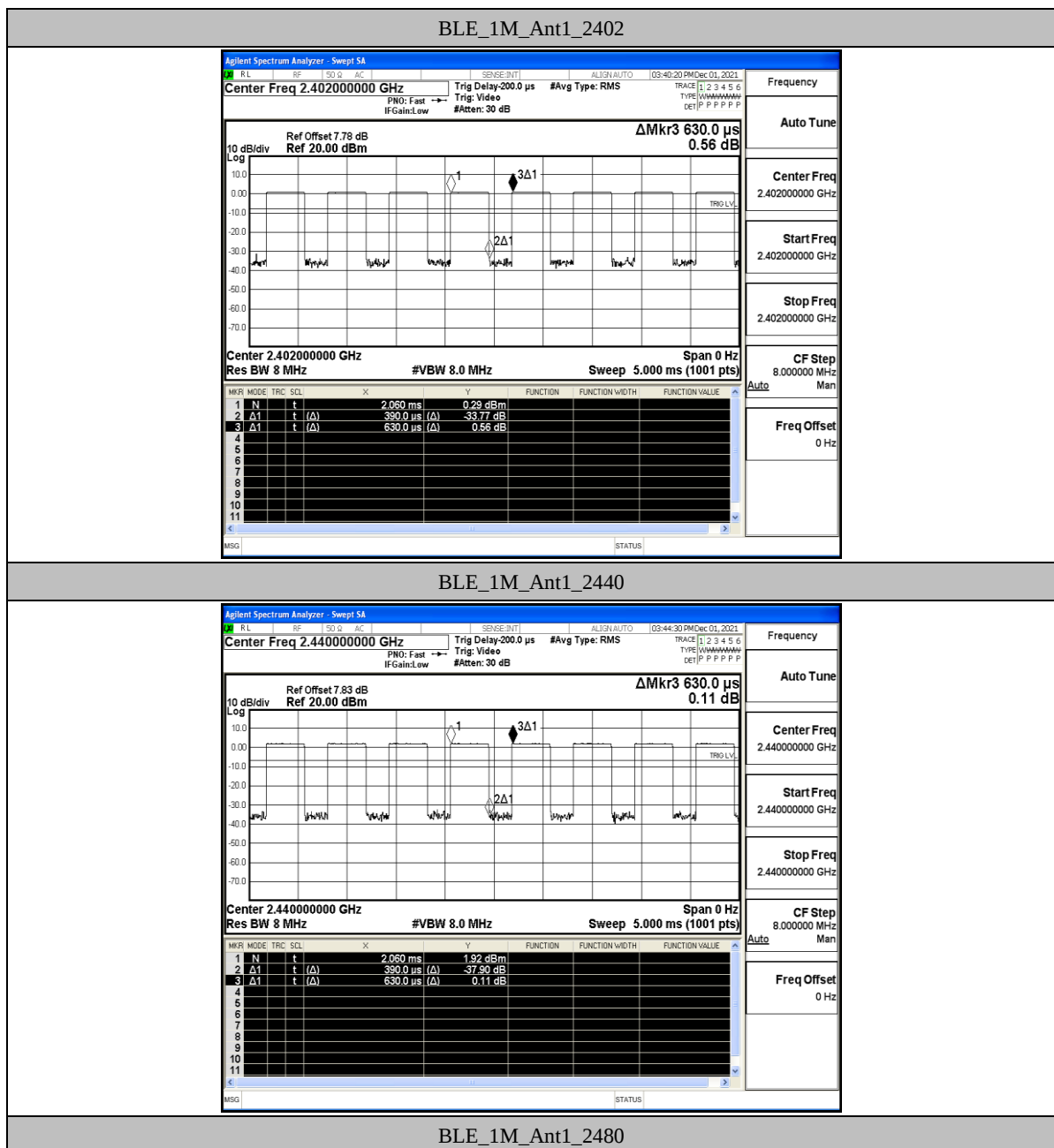


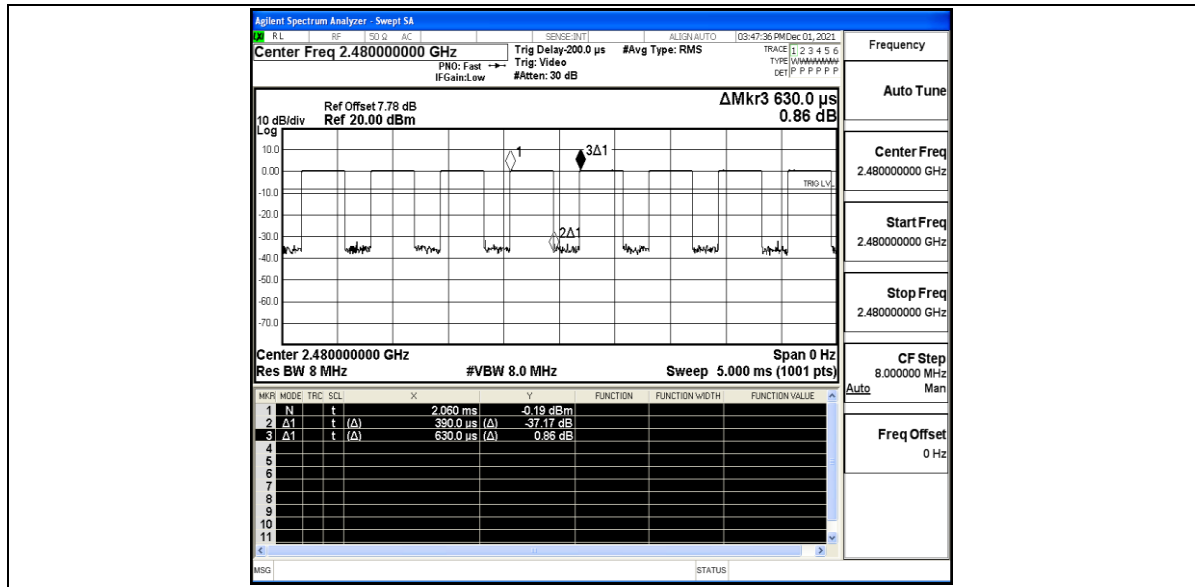
A.6 Duty Cycle

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	---	PASS
		2440	0.39	0.63	0.6190	61.90	2.08	---	PASS
		2480	0.39	0.63	0.6190	61.90	2.08	---	PASS

Test Graphs







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	-48.71	≤-41.20	46.49	≤54	PASS
				AV	2387.885	-47.86	≤-41.20	47.34	≤54	PASS
				AV	2390.000	-48.42	≤-41.20	46.78	≤54	PASS
				Peak	2310.000	-41.88	≤-21.20	53.32	≤74	PASS
				Peak	2364.575	-39.07	≤-21.20	56.13	≤74	PASS
				Peak	2390.000	-42.24	≤-21.20	52.96	≤74	PASS
		High	2480	AV	2483.500	-47.75	≤-41.20	47.45	≤54	PASS
				AV	2484.000	-46.91	≤-41.20	48.29	≤54	PASS
				AV	2500.000	-47.29	≤-41.20	47.91	≤54	PASS
				Peak	2483.500	-42.41	≤-21.20	52.79	≤74	PASS
				Peak	2487.840	-38.54	≤-21.20	56.66	≤74	PASS
				Peak	2500.000	-40.18	≤-21.20	55.02	≤74	PASS

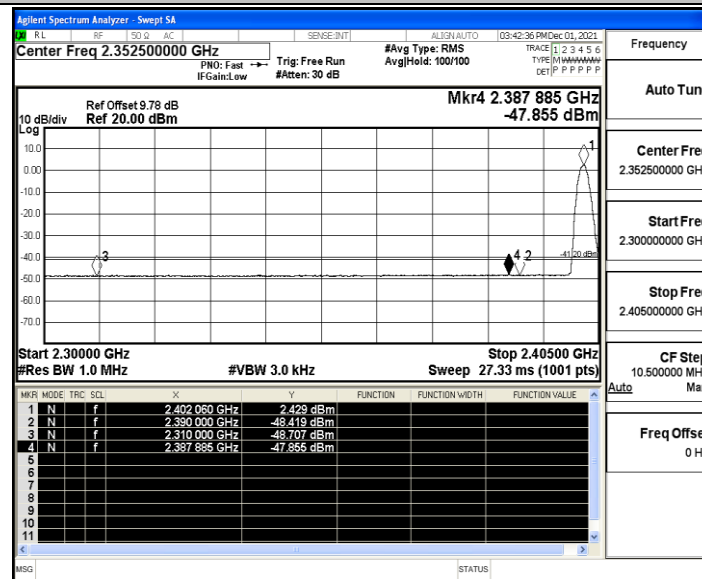
Note:

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.

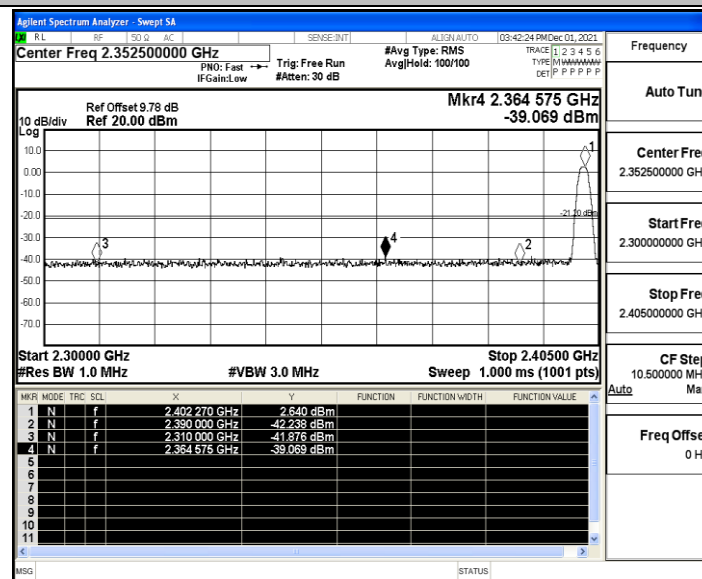


Test Graphs

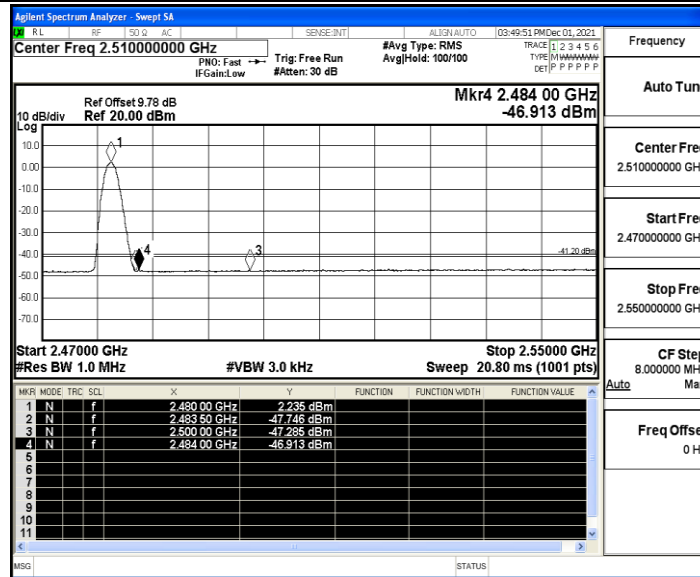
BLE_1M_Ant1_Low_2402_AV



BLE_1M_Ant1_Low_2402_Peak



BLE_1M_Ant1_High_2480_AV



BLE_1M_Ant1_High_2480_Peak

