



Appendix A

RF Test Data for 2.4G BLE (Conducted Measurement)

Product Name: Bluetooth Humidity&Temperature Monitor

Test Model: TP357

Environmental Conditions

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

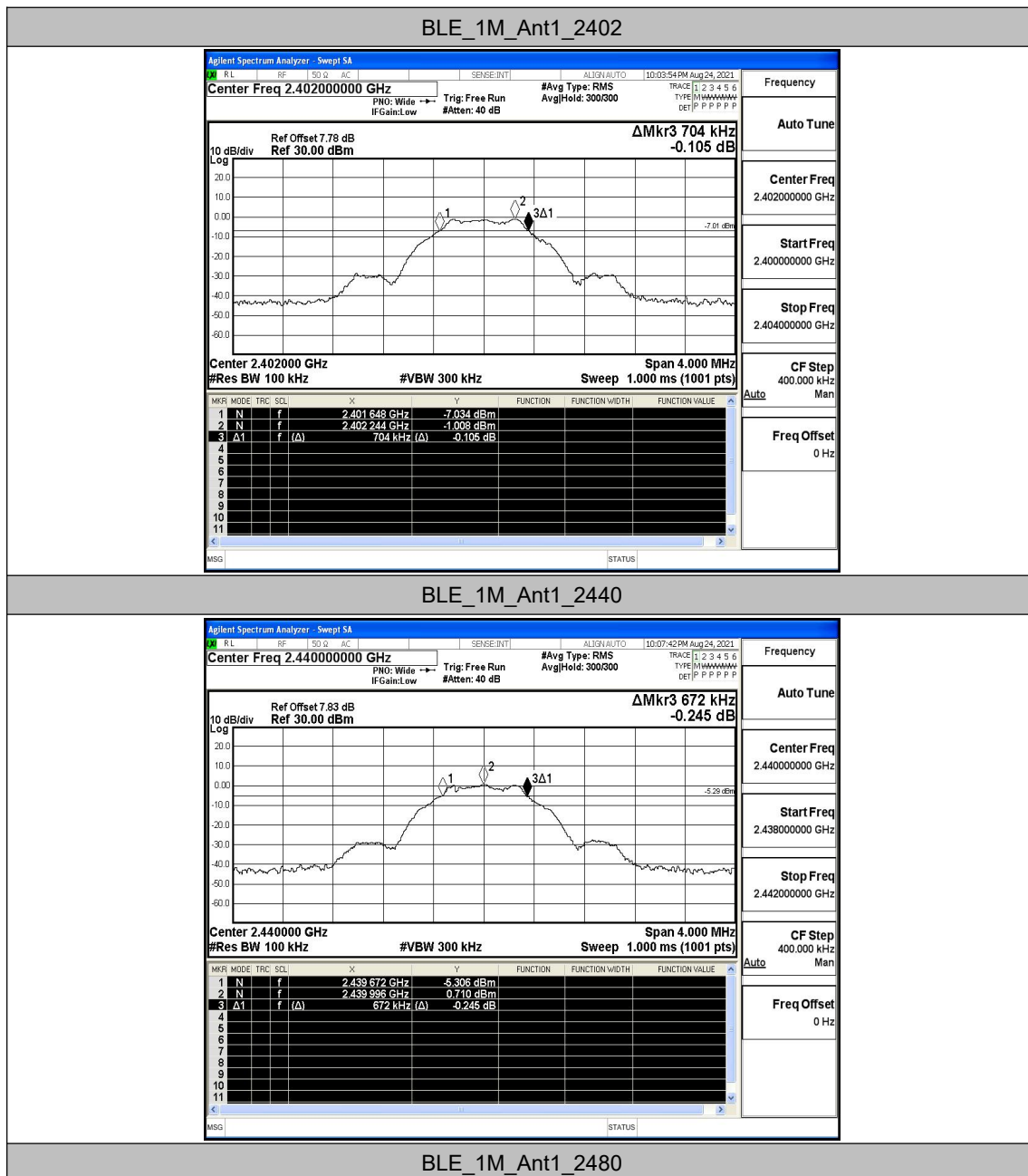


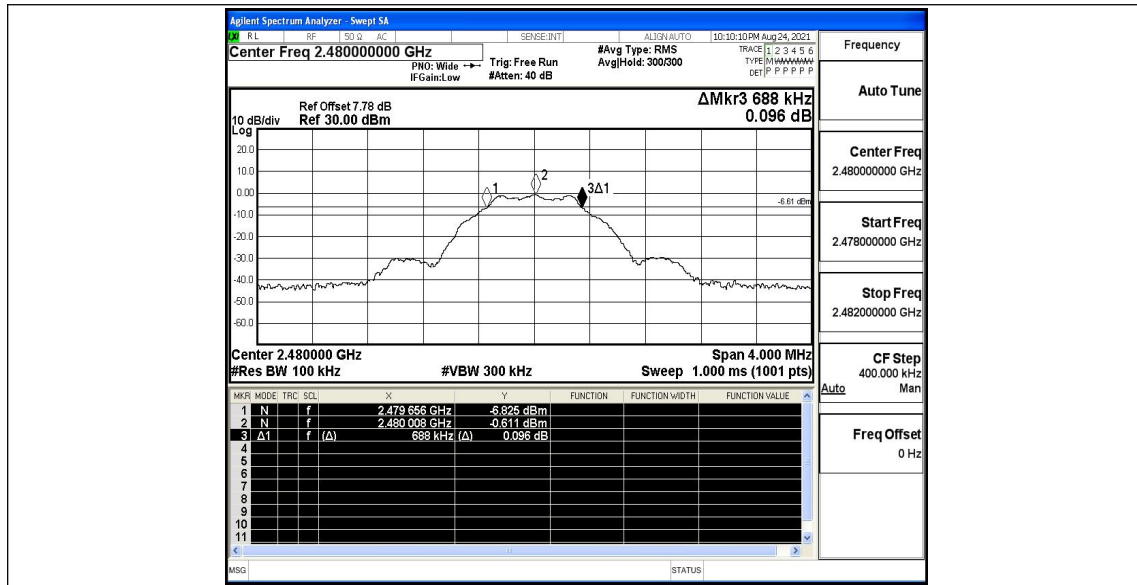
A.1 6dB Bandwidth

Test Result

TestMode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.704	2401.648	2402.352	≥0.5	PASS
		2440	0.672	2439.672	2440.344	≥0.5	PASS
		2480	0.688	2479.656	2480.344	≥0.5	PASS

Test Graphs





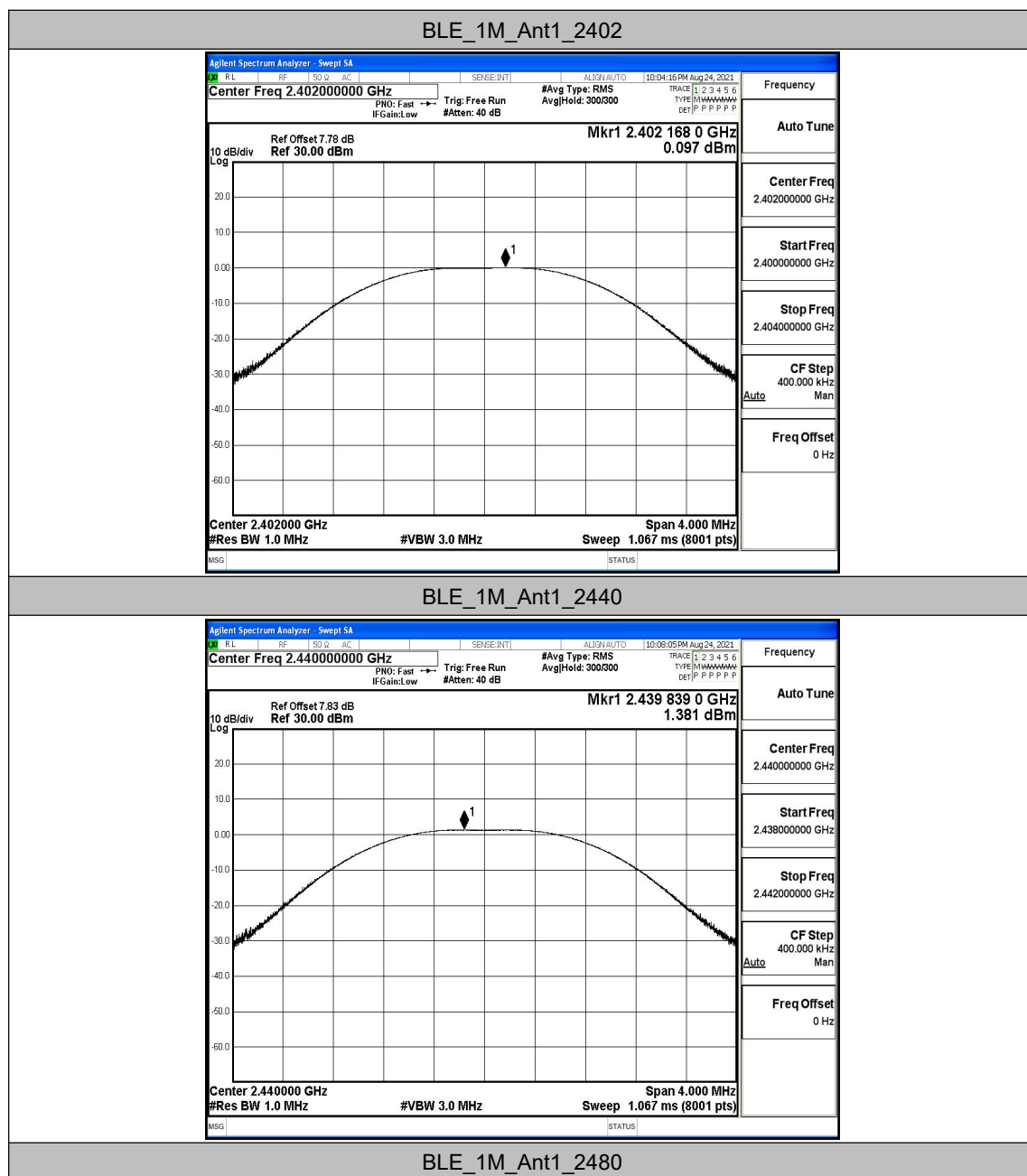


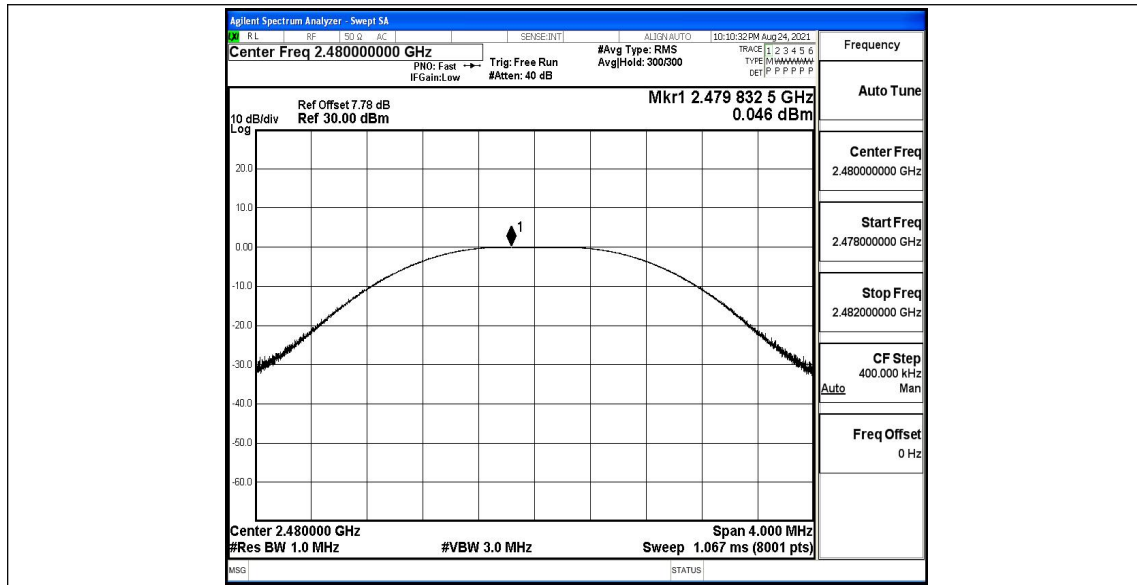
A.2 Maximum conducted output power

Test Result

TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	0.1	≤30	PASS
		2440	1.38	≤30	PASS
		2480	0.05	≤30	PASS

Test Graphs





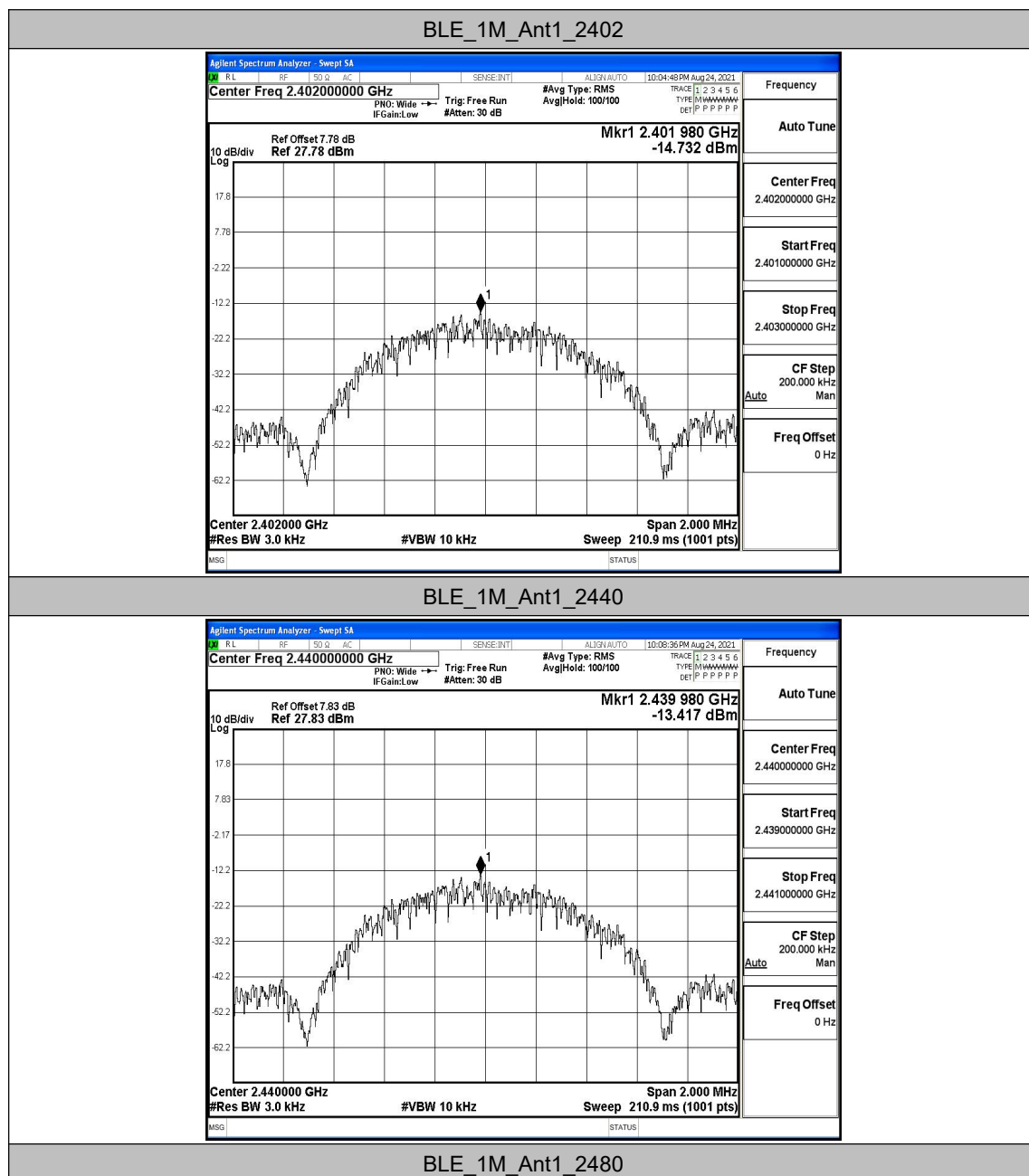


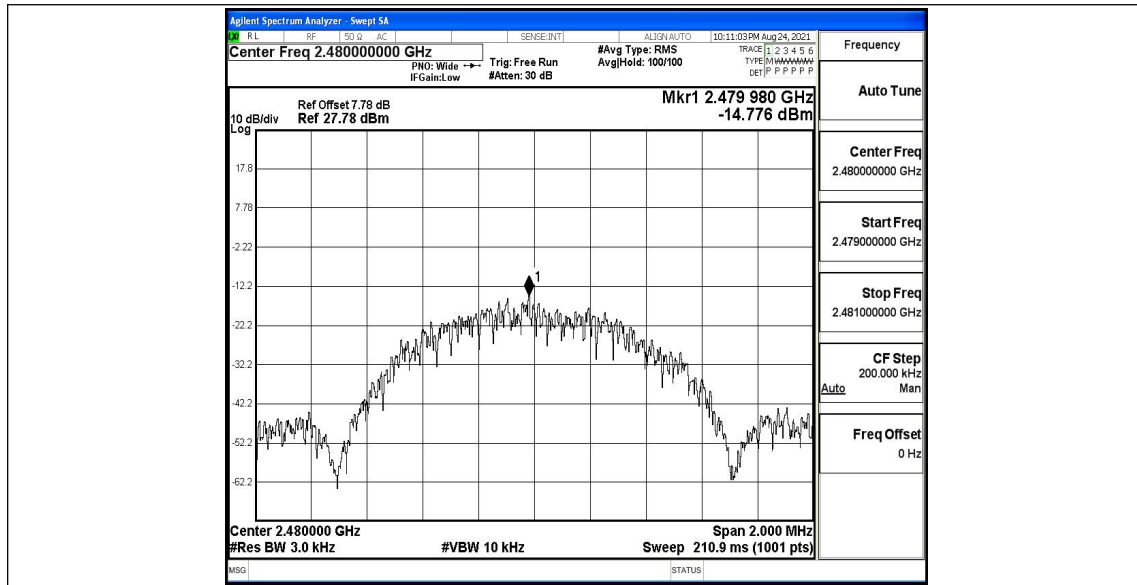
A.3 Power spectral density

Test Result

TestMode	Antenna	Channel	Result[dBm/3-100kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-14.73	≤8	PASS
		2440	-13.42	≤8	PASS
		2480	-14.78	≤8	PASS

Test Graphs





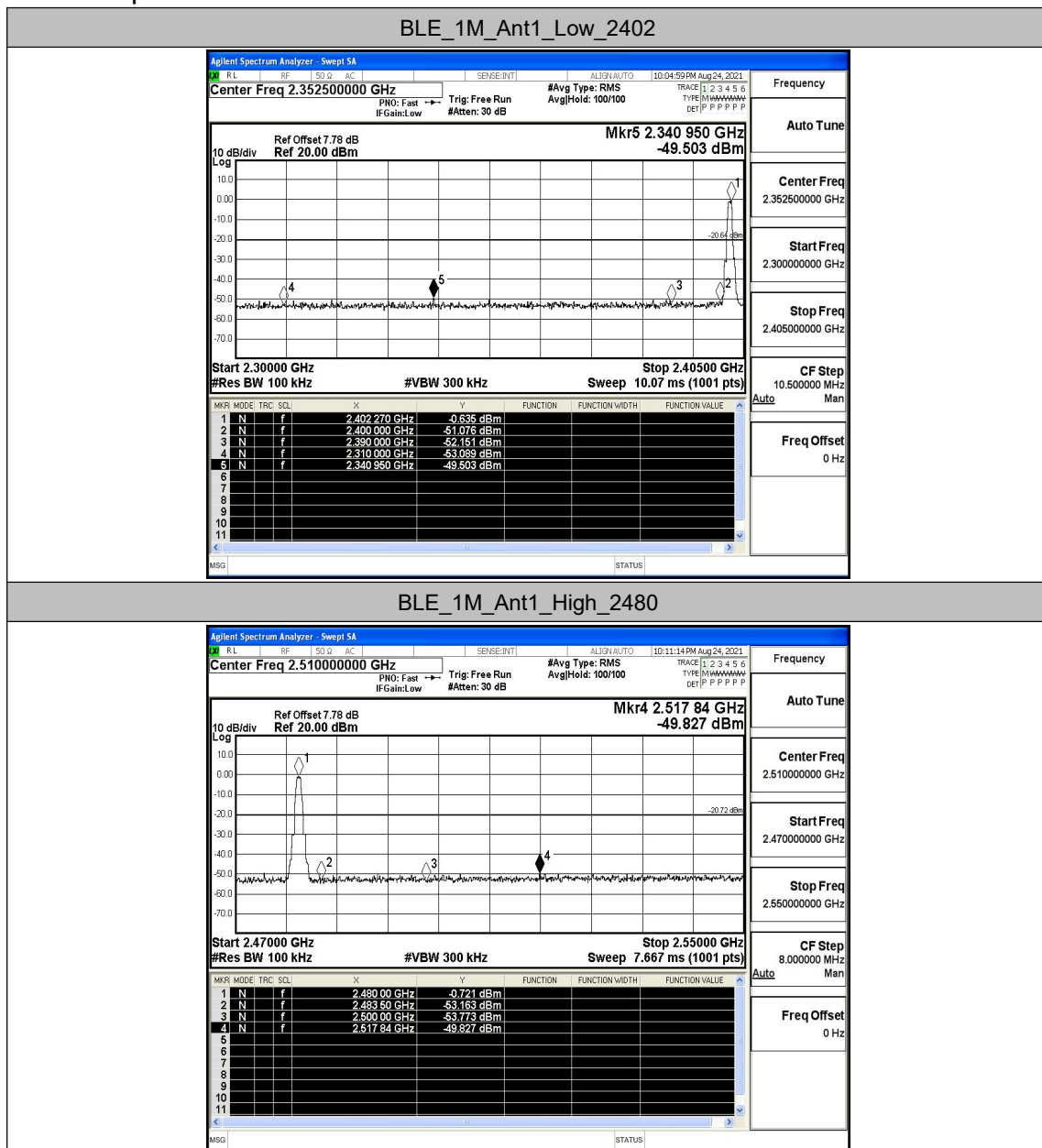


A.4 Band edge measurements

Test Result

TestMode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	-0.64	-49.5	≤-20.64	PASS
		High	2480	-0.72	-49.83	≤-20.72	PASS

Test Graphs



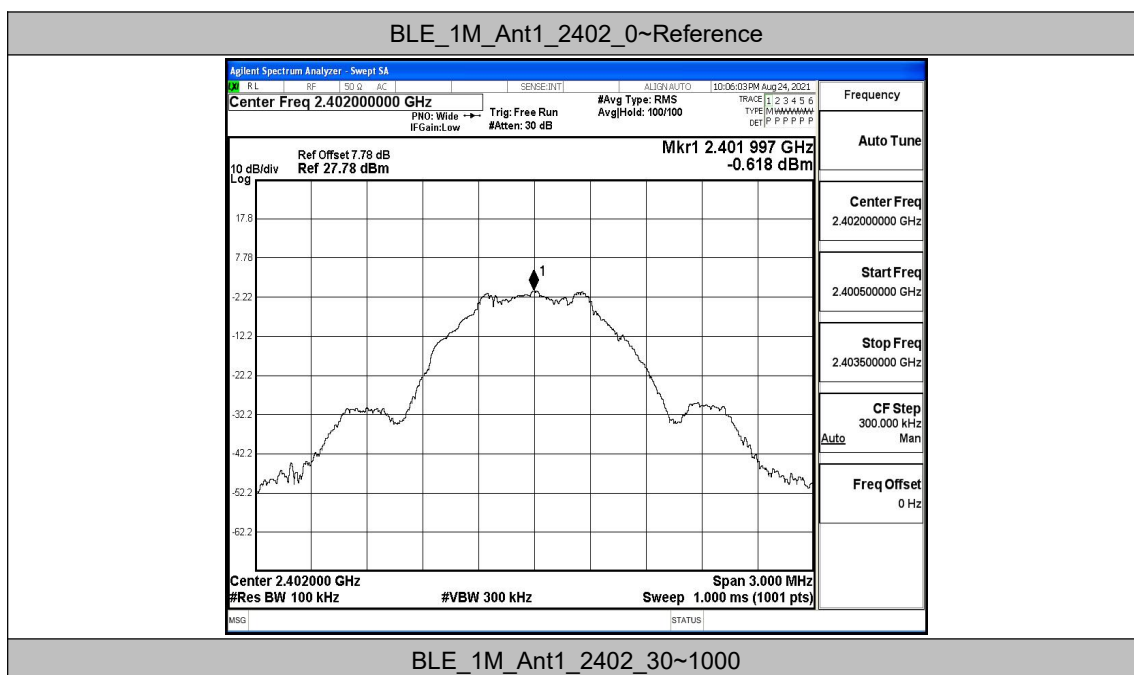


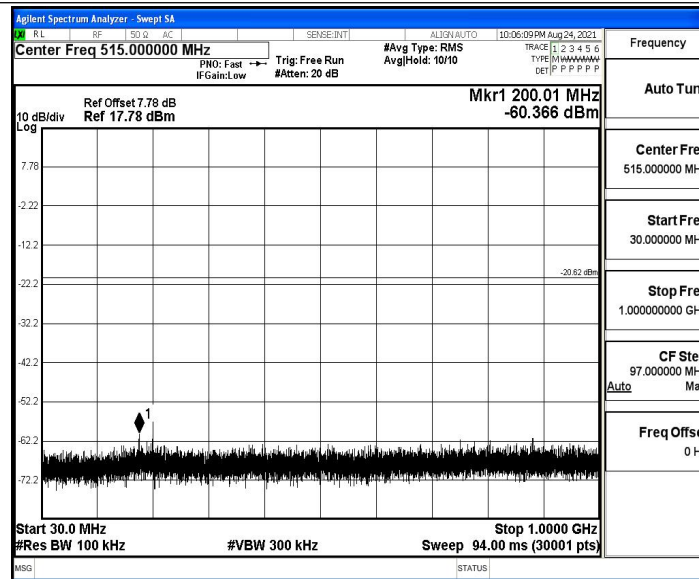
A.5 Conducted Spurious Emission

Test Result

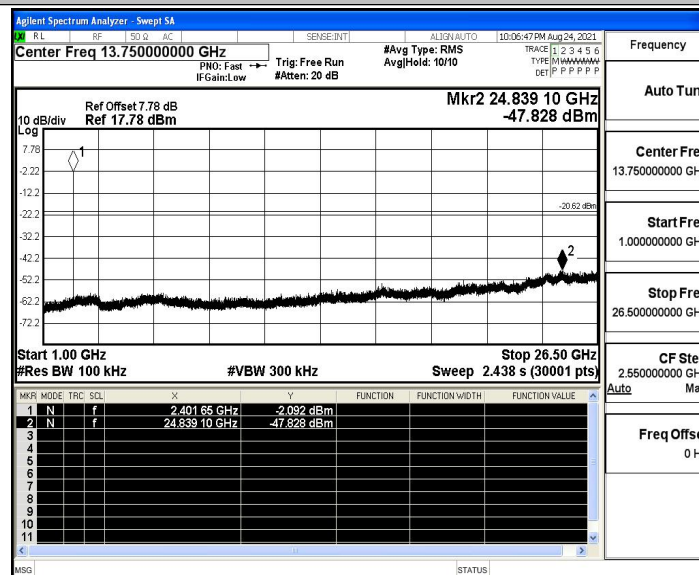
TestMode	Antenna	Channel	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	Reference	-0.62	-0.62	---	PASS
			30~1000	-0.62	-60.37	≤-20.62	PASS
			1000~26500	-0.62	-47.83	≤-20.62	PASS
		2440	Reference	0.68	0.68	---	PASS
			30~1000	0.68	-60.87	≤-19.32	PASS
			1000~26500	0.68	-47.28	≤-19.32	PASS
		2480	Reference	-0.58	-0.58	---	PASS
			30~1000	-0.58	-61.36	≤-20.58	PASS
			1000~26500	-0.58	-47.41	≤-20.58	PASS

Test Graphs

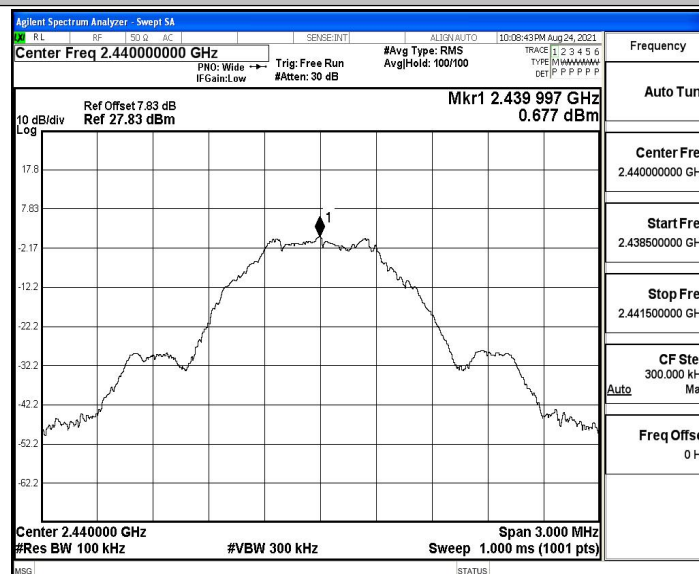




BLE_1M_Ant1_2402_1000~26500

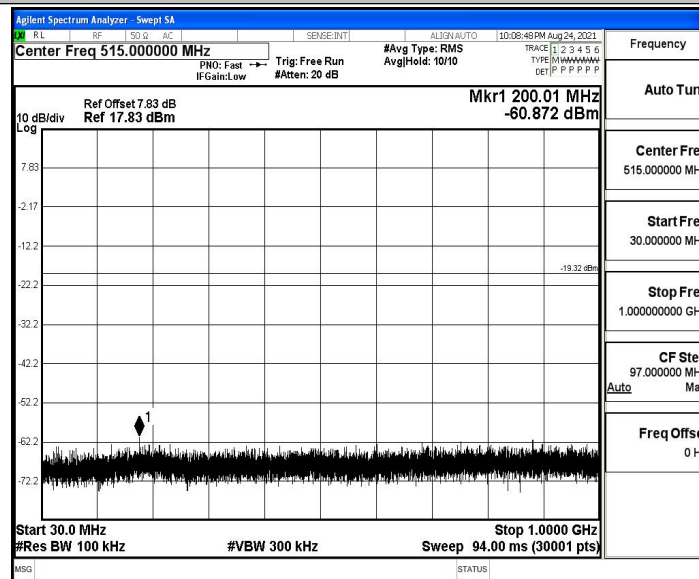


BLE_1M_Ant1_2440_0~Reference

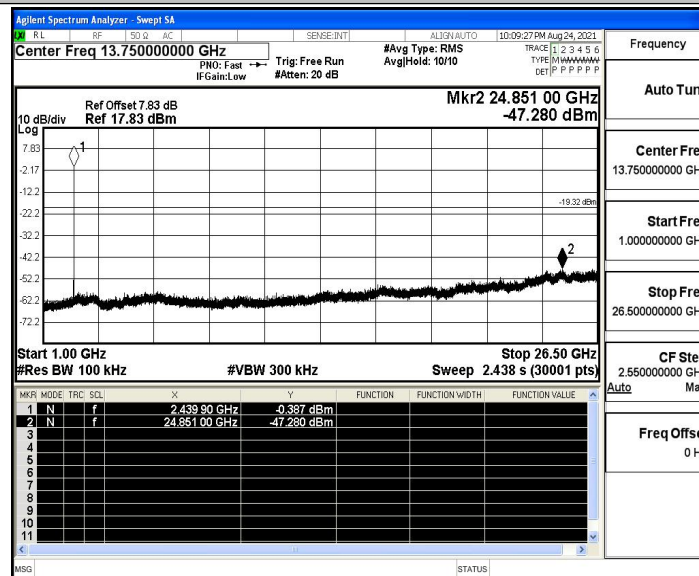




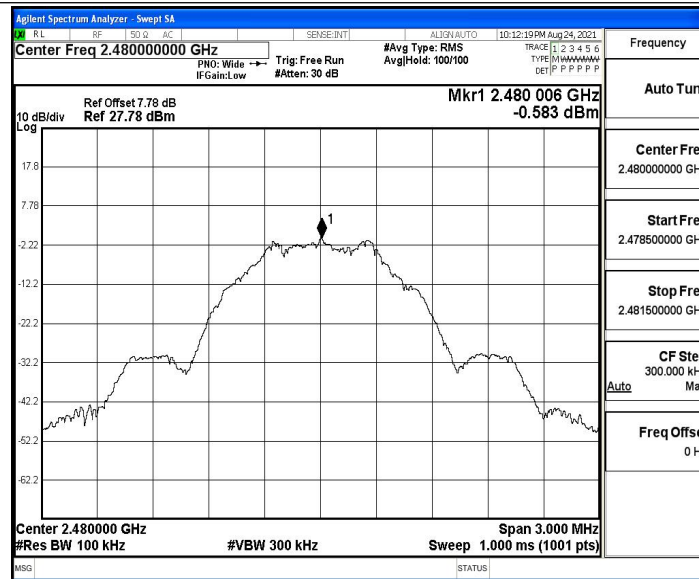
BLE_1M_Ant1_2440_30~1000



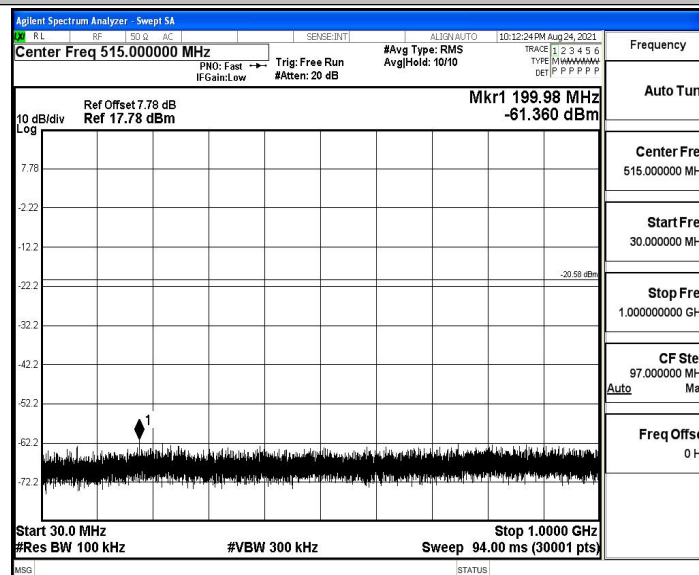
BLE_1M_Ant1_2440_1000~26500



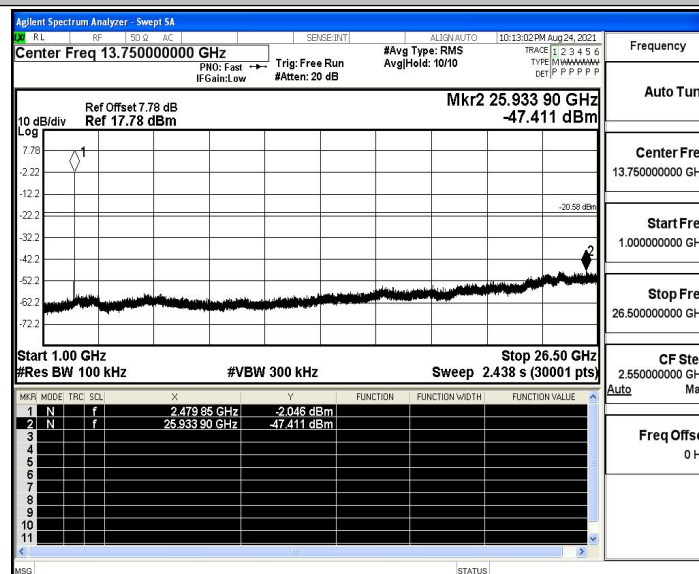
BLE_1M_Ant1_2480_0~Reference



BLE_1M_Ant1_2480_30~1000



BLE_1M_Ant1_2480_1000~26500



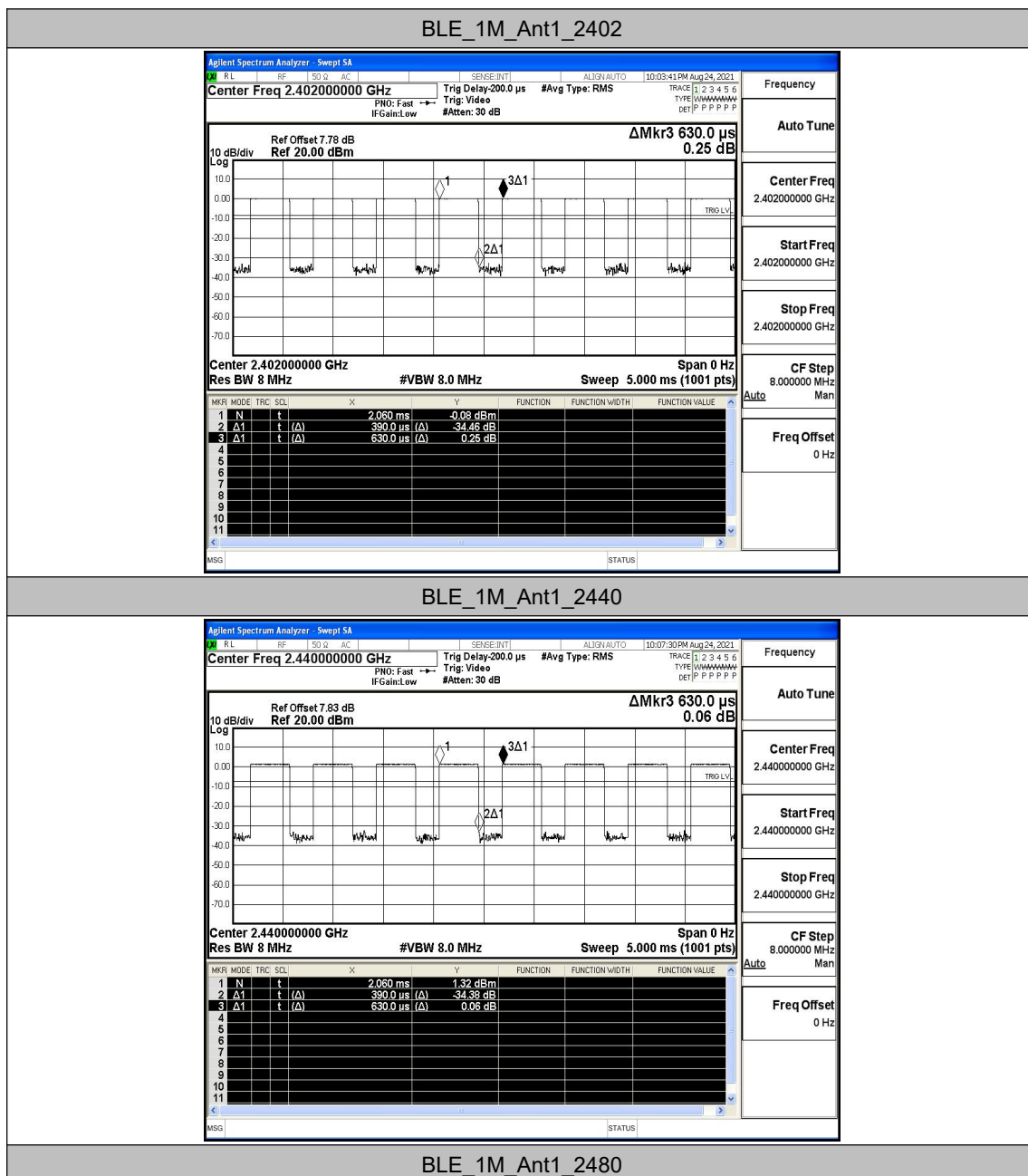


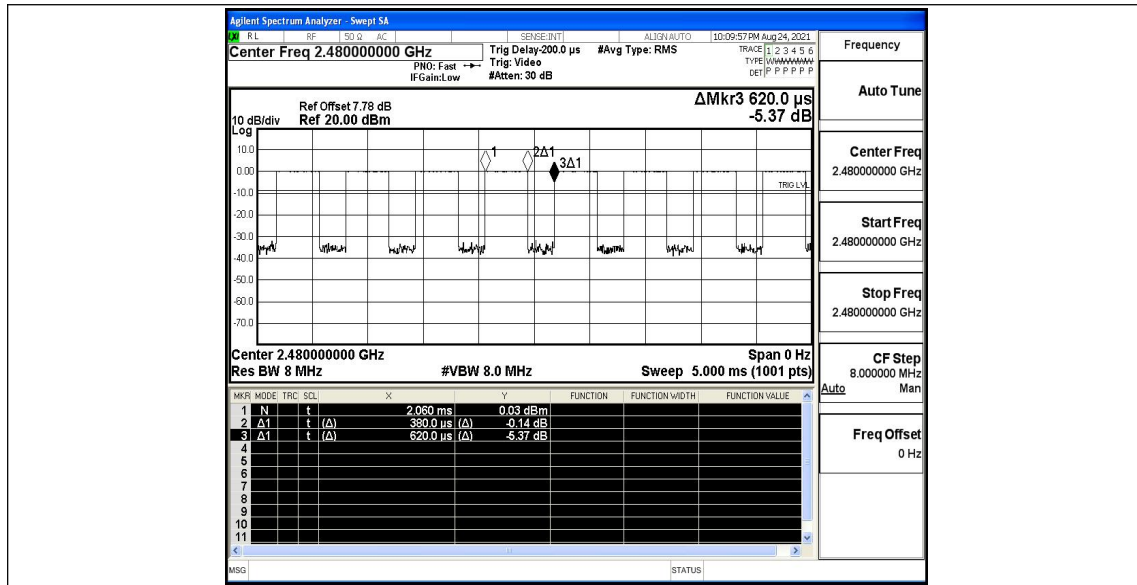
A.6 Duty Cycle

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	0.38	0.62	0.6129	61.29	2.13	---	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	-48.26	≤-41.20	46.94	≤54	PASS
				AV	2363.735	-47.78	≤-41.20	47.42	≤54	PASS
				AV	2390.000	-48.14	≤-41.20	47.06	≤54	PASS
				Peak	2310.000	-41.56	≤-21.20	53.64	≤74	PASS
				Peak	2383.685	-39.15	≤-21.20	56.05	≤74	PASS
				Peak	2390.000	-42.16	≤-21.20	53.04	≤74	PASS
		High	2480	AV	2483.500	-47.47	≤-41.20	47.73	≤54	PASS
				AV	2495.600	-47.18	≤-41.20	48.02	≤54	PASS
				AV	2500.000	-47.53	≤-41.20	47.67	≤54	PASS
				Peak	2483.500	-42.49	≤-21.20	52.71	≤74	PASS
				Peak	2488.080	-38.7	≤-21.20	56.50	≤74	PASS
				Peak	2500.000	-41.5	≤-21.20	53.70	≤74	PASS

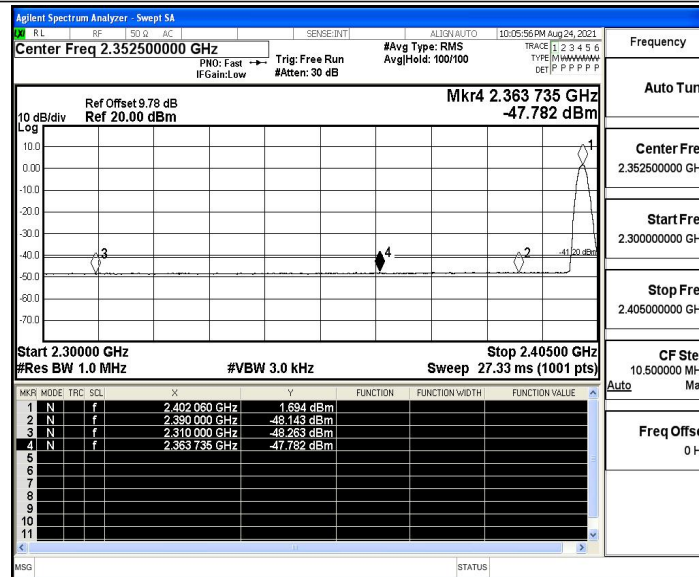
Note:

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.

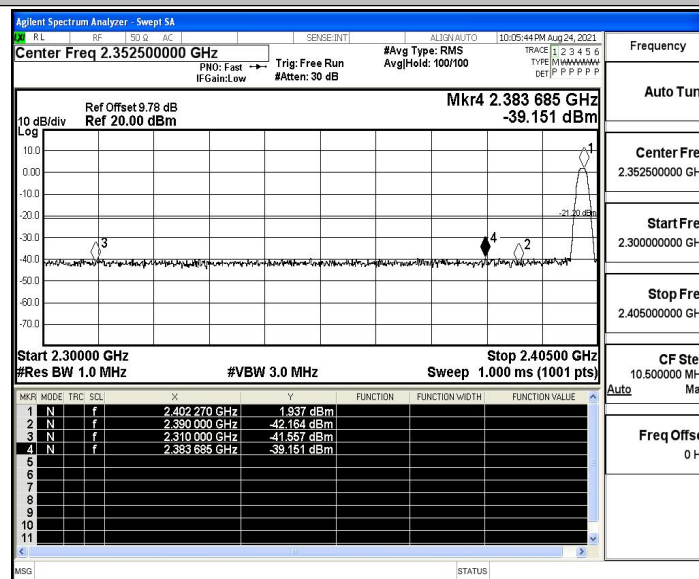


Test Graphs

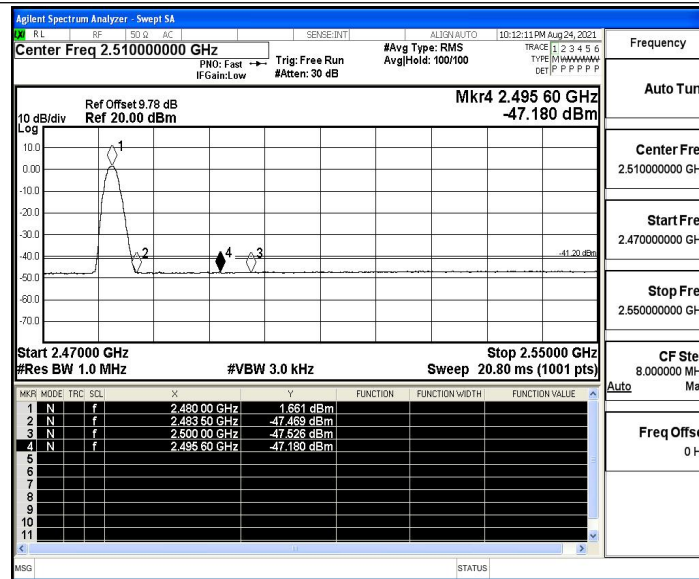
BLE_1M_Ant1_Low_2402_AV



BLE_1M_Ant1_Low_2402_Peak



BLE_1M_Ant1_High_2480_AV



BLE_1M_Ant1_High_2480_Peak

