



Appendix A

RF Test Data for BLE (Conducted Measurement)

Product Name: Smart Gateway

Test Model: GB03C

Environmental Conditions

Temperature:	22.3° C
Relative Humidity:	53.7%
ATM Pressure:	100.0 kPa
Test Engineer:	Kay Hu
Supervised by:	Li huan

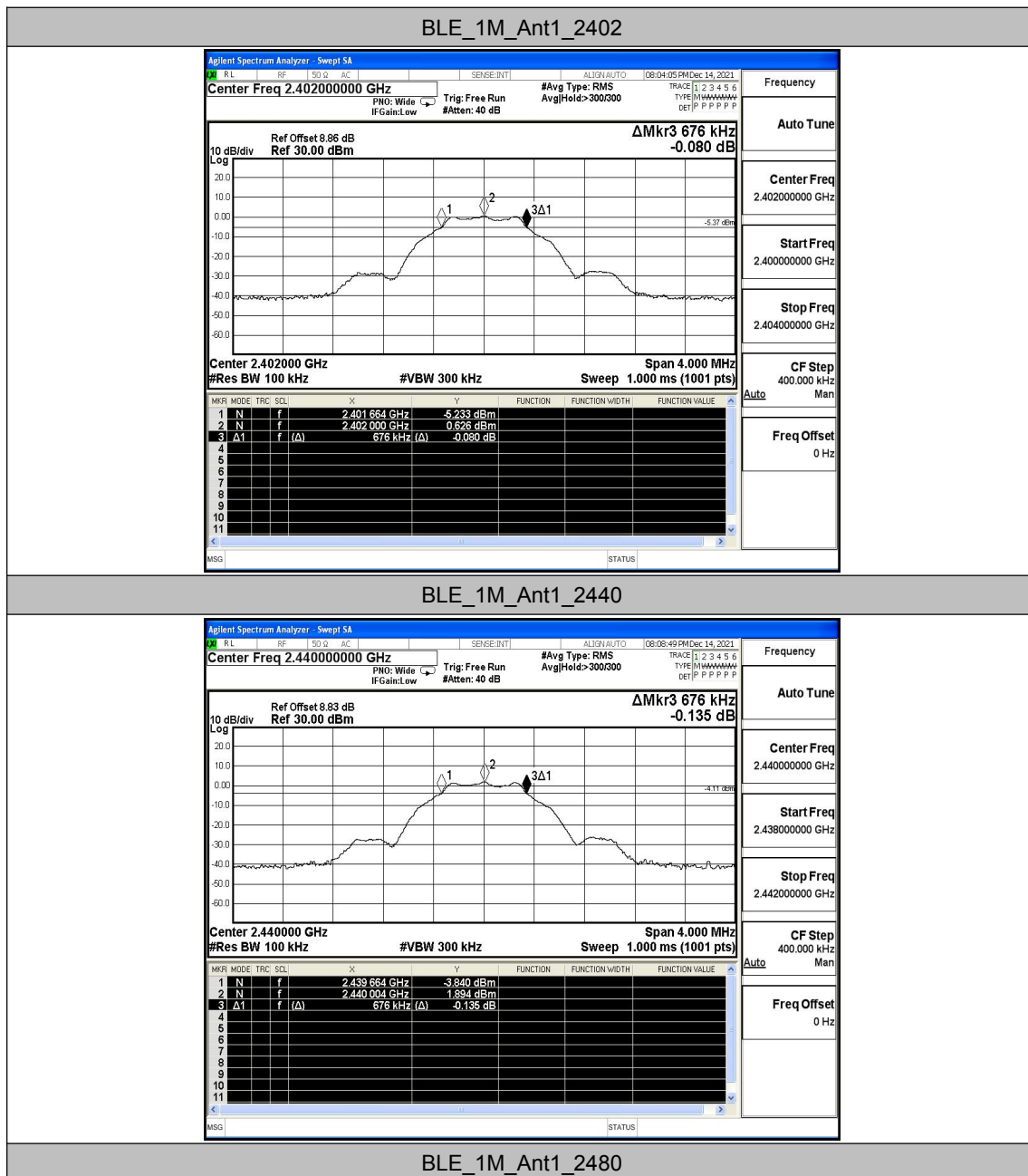


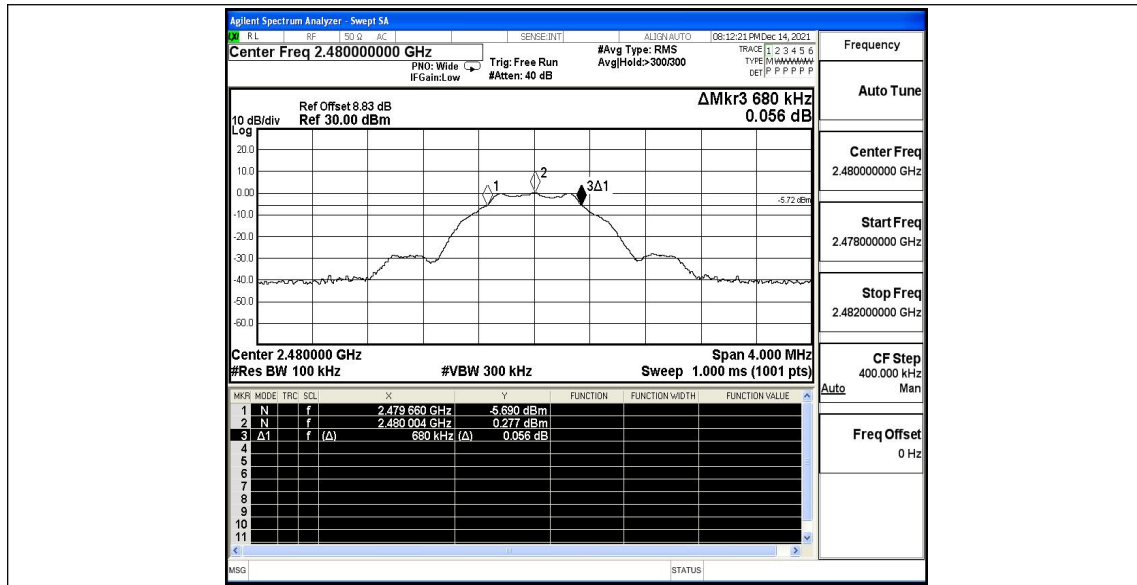
A.1 6dB Bandwidth

Test Result

Test Mode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.676	2401.664	2402.340	≥ 0.5	PASS
		2440	0.676	2439.664	2440.340	≥ 0.5	PASS
		2480	0.680	2479.660	2480.340	≥ 0.5	PASS

Test Graphs





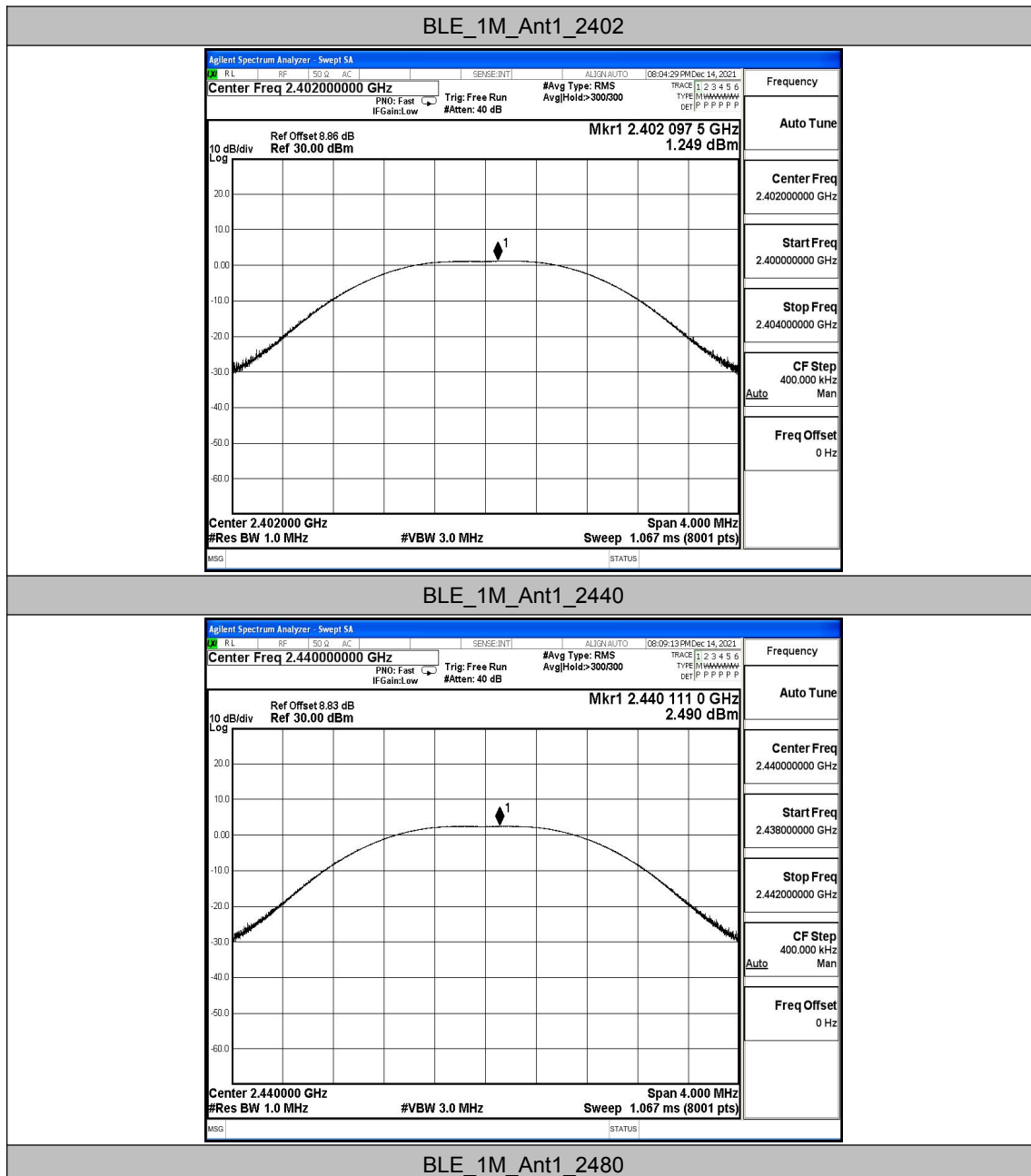


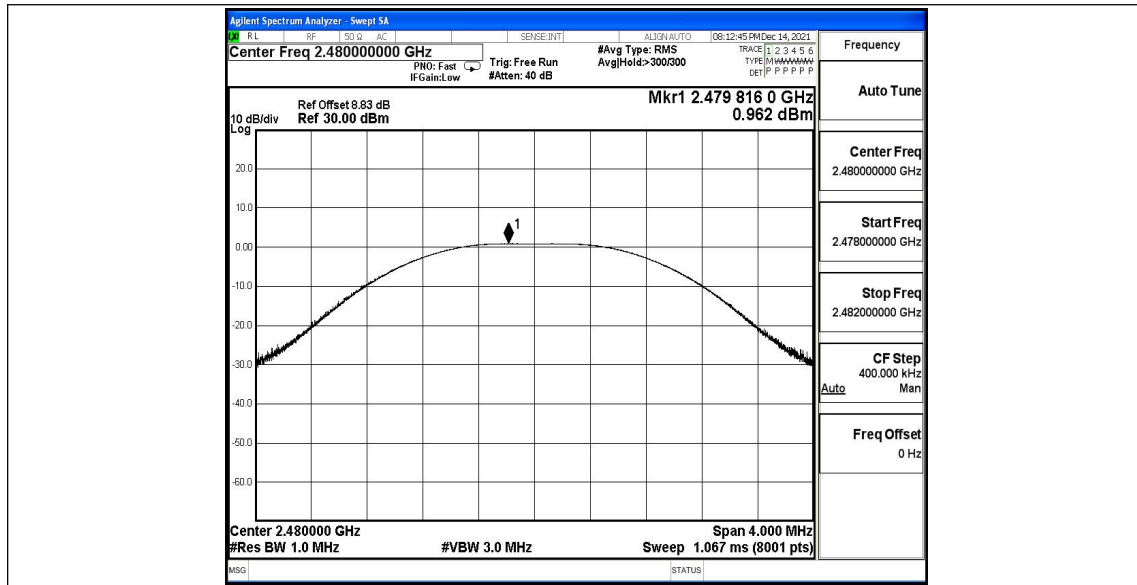
A.2 Maximum conducted output power

Test Result

Test Mode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	1.25	≤30	PASS
		2440	2.49	≤30	PASS
		2480	0.96	≤30	PASS

Test Graphs





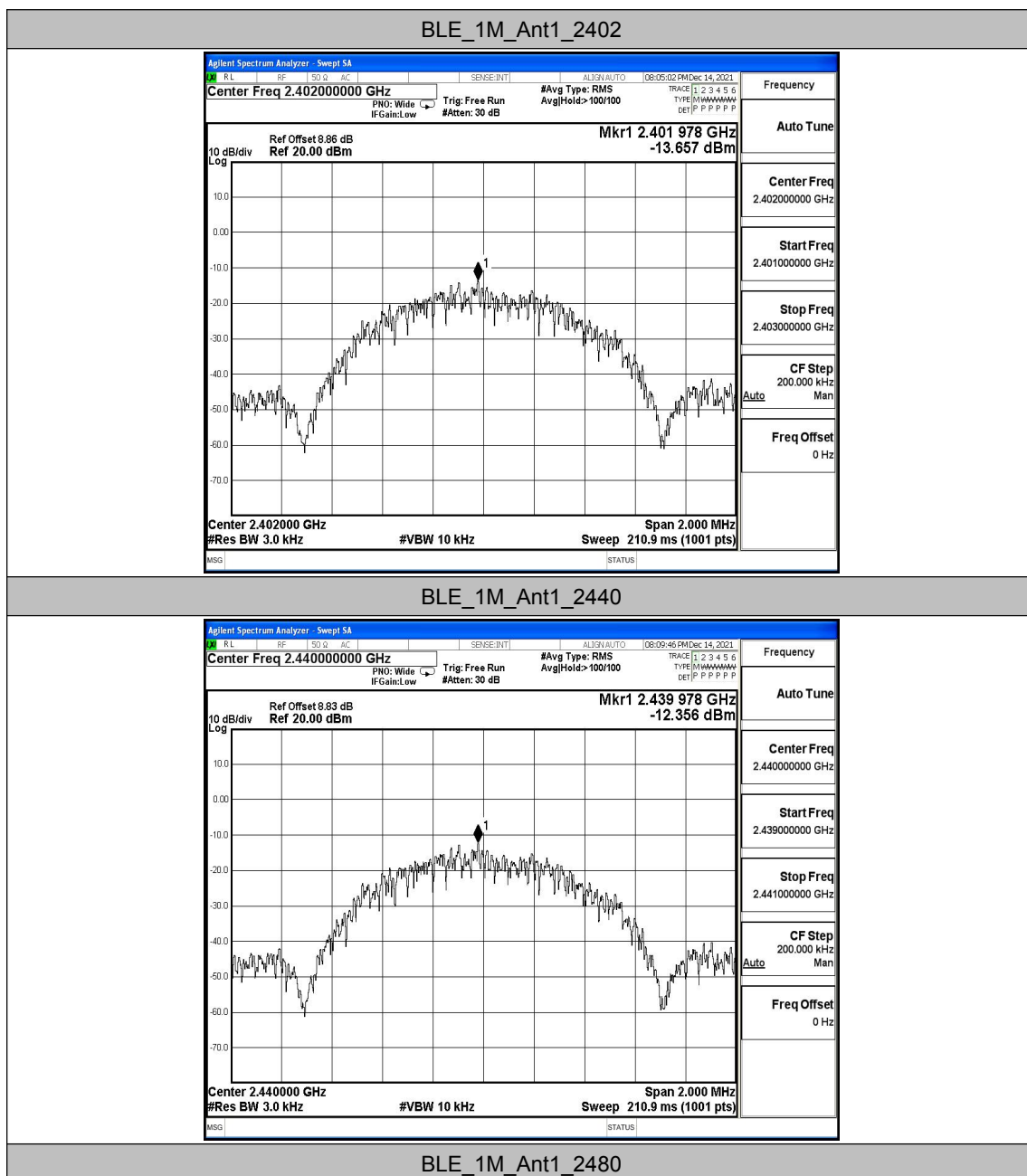


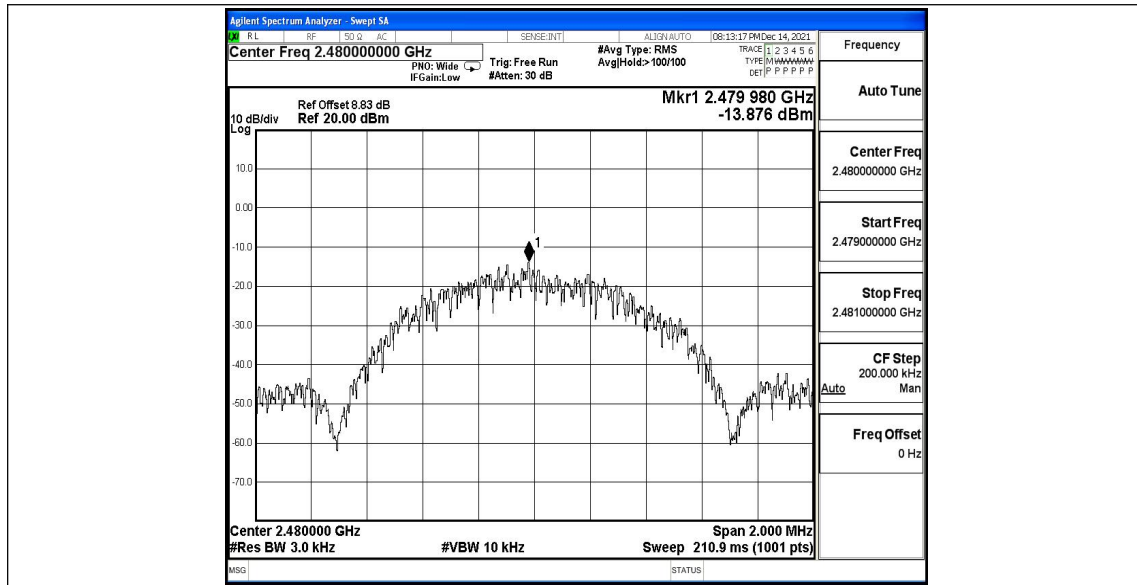
A.3 Maximum power spectral density

Test Result

Test Mode	Antenna	Channel	Result[dBm/3-100kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-13.66	≤8	PASS
		2440	-12.36	≤8	PASS
		2480	-13.88	≤8	PASS

Test Graphs





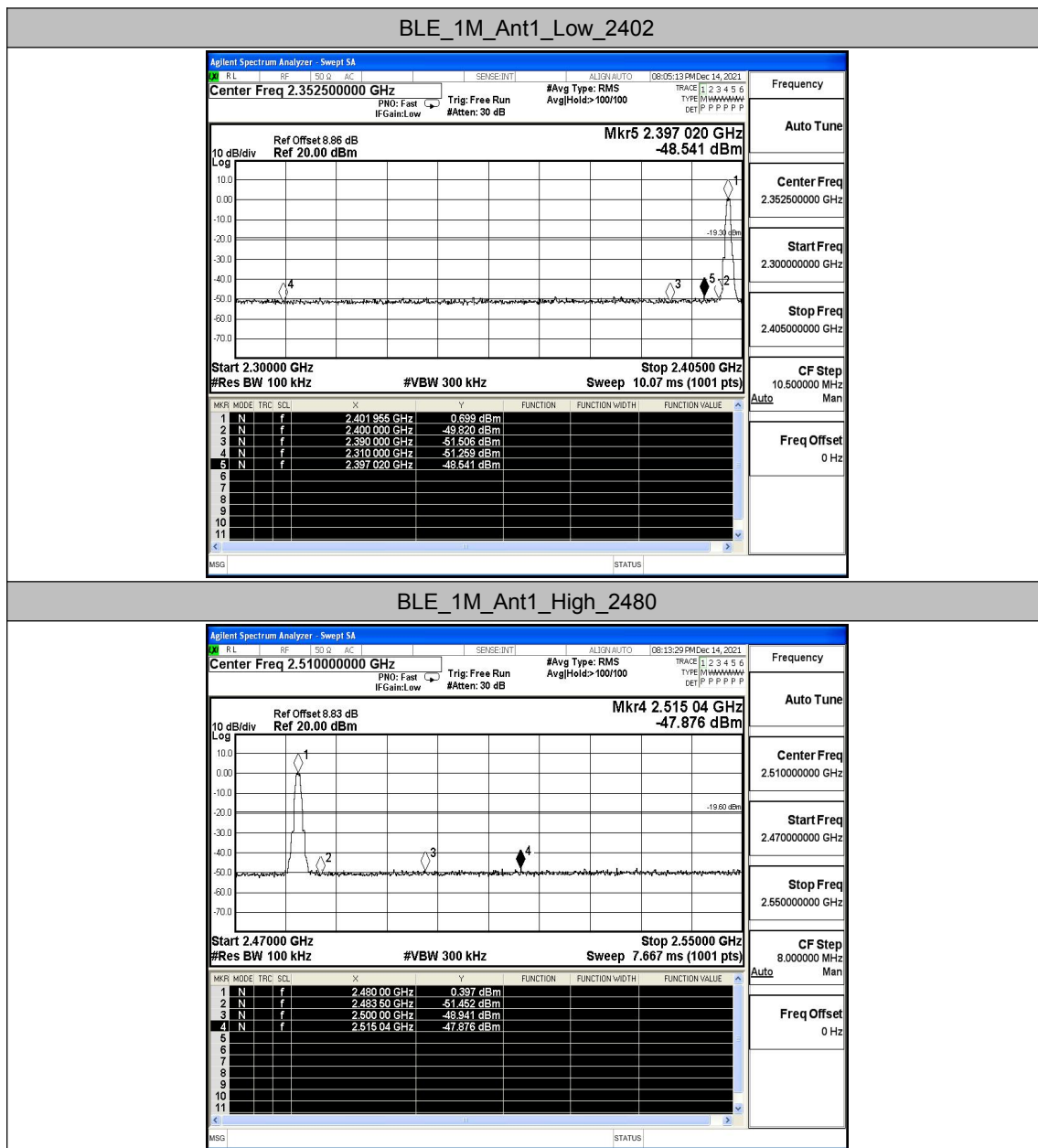


A.4 Band edge measurements

Test Result

Test Mode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	0.70	-48.54	≤-19.3	PASS
		High	2480	0.40	-47.88	≤-19.6	PASS

Test Graphs



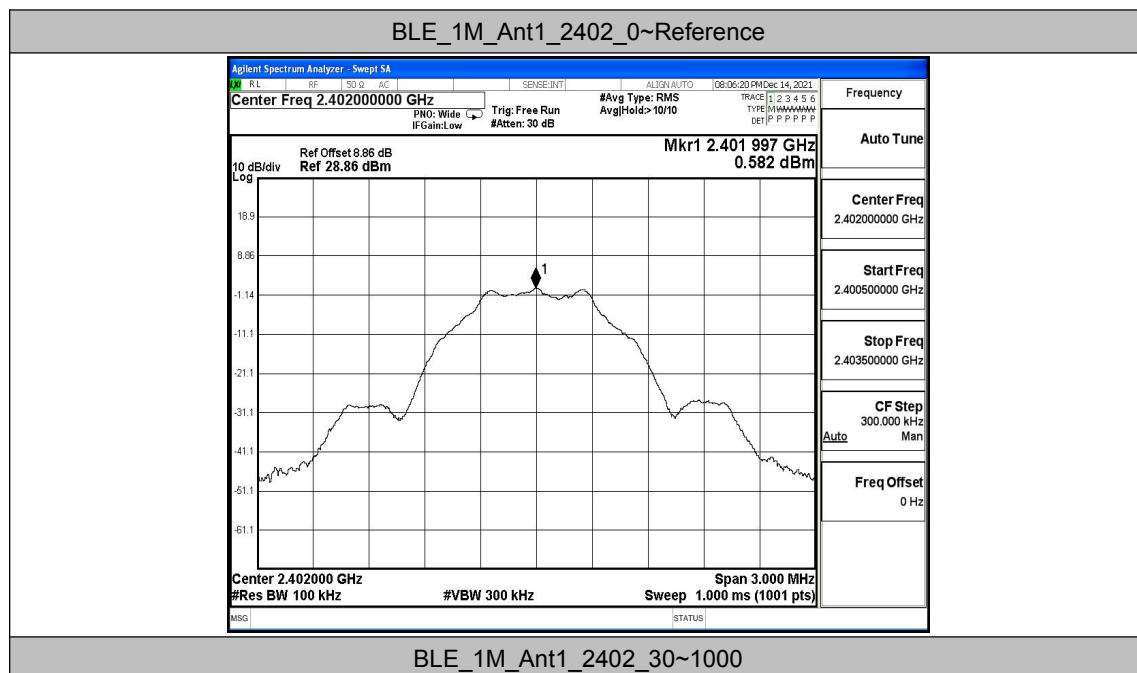


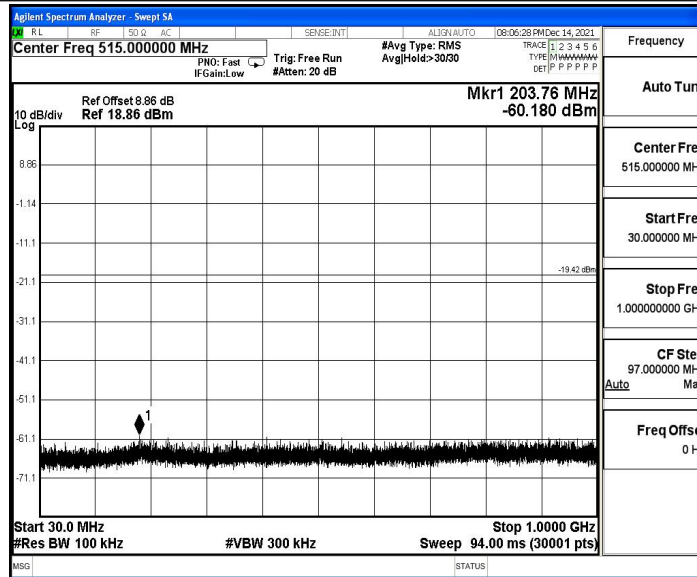
A.5 Conducted Spurious Emission

Test Result

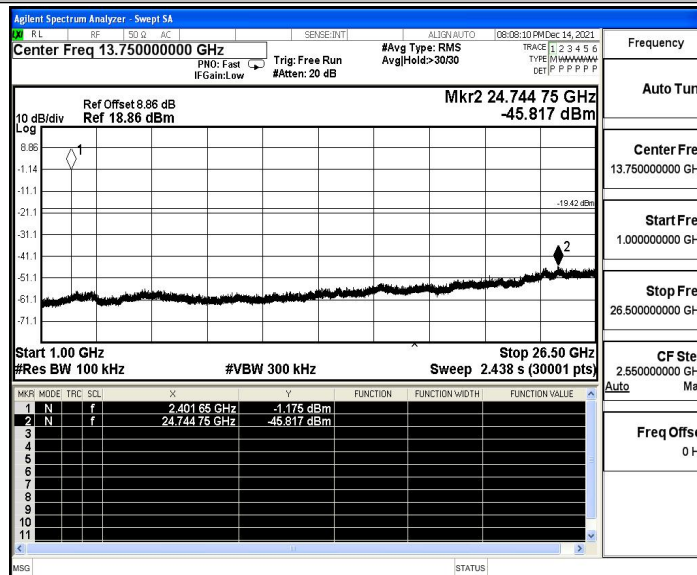
Test Mode	Antenna	Channel	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	Reference	0.58	0.58	---	PASS
			30~1000	0.58	-60.18	≤-19.42	PASS
			1000~26500	0.58	-45.82	≤-19.42	PASS
		2440	Reference	1.82	1.82	---	PASS
			30~1000	1.82	-60.46	≤-18.18	PASS
			1000~26500	1.82	-46.29	≤-18.18	PASS
		2480	Reference	0.25	0.25	---	PASS
			30~1000	0.25	-60.87	≤-19.75	PASS
			1000~26500	0.25	-46.22	≤-19.75	PASS

Test Graphs

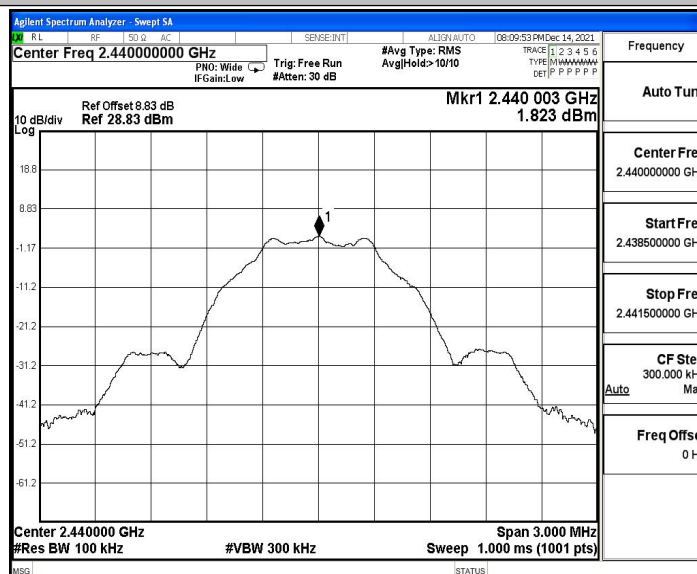




BLE_1M_Ant1_2402_1000~26500

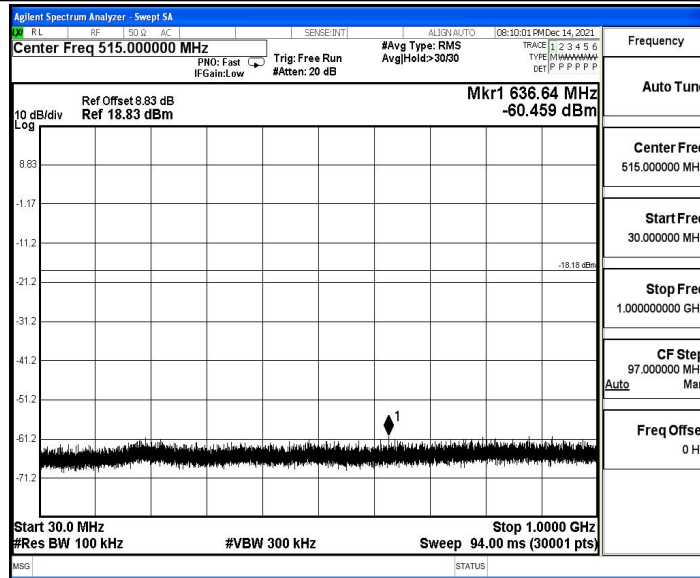


BLE_1M_Ant1_2440_0~Reference

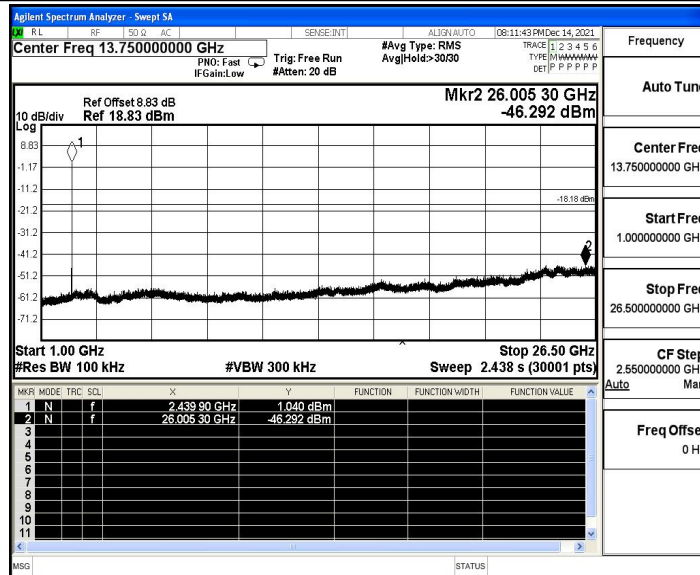




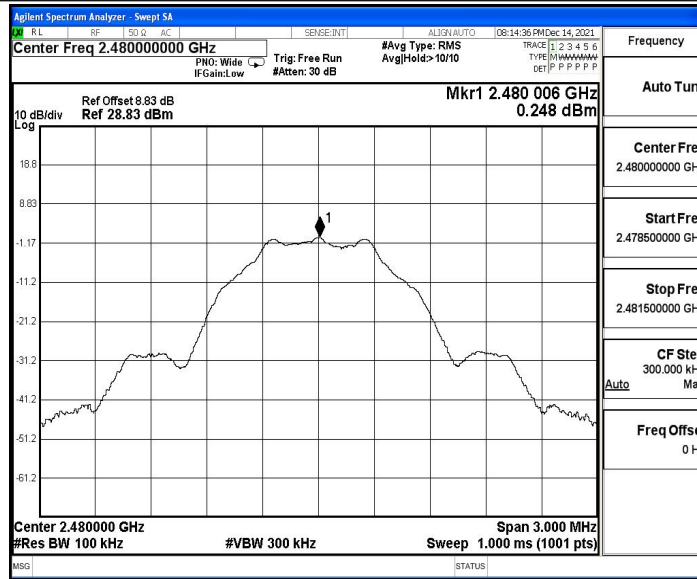
BLE_1M_Ant1_2440_30~1000



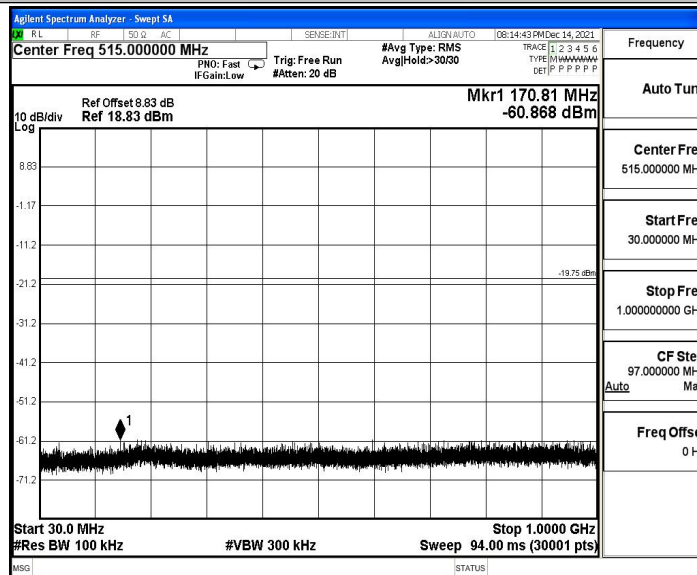
BLE_1M_Ant1_2440_1000~26500



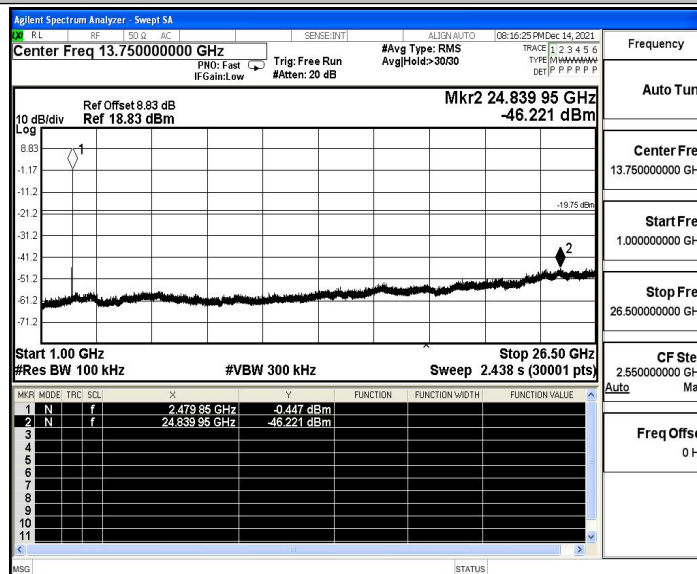
BLE_1M_Ant1_2480_0~Reference



BLE_1M_Ant1_2480_30~1000



BLE_1M_Ant1_2480_1000~26500



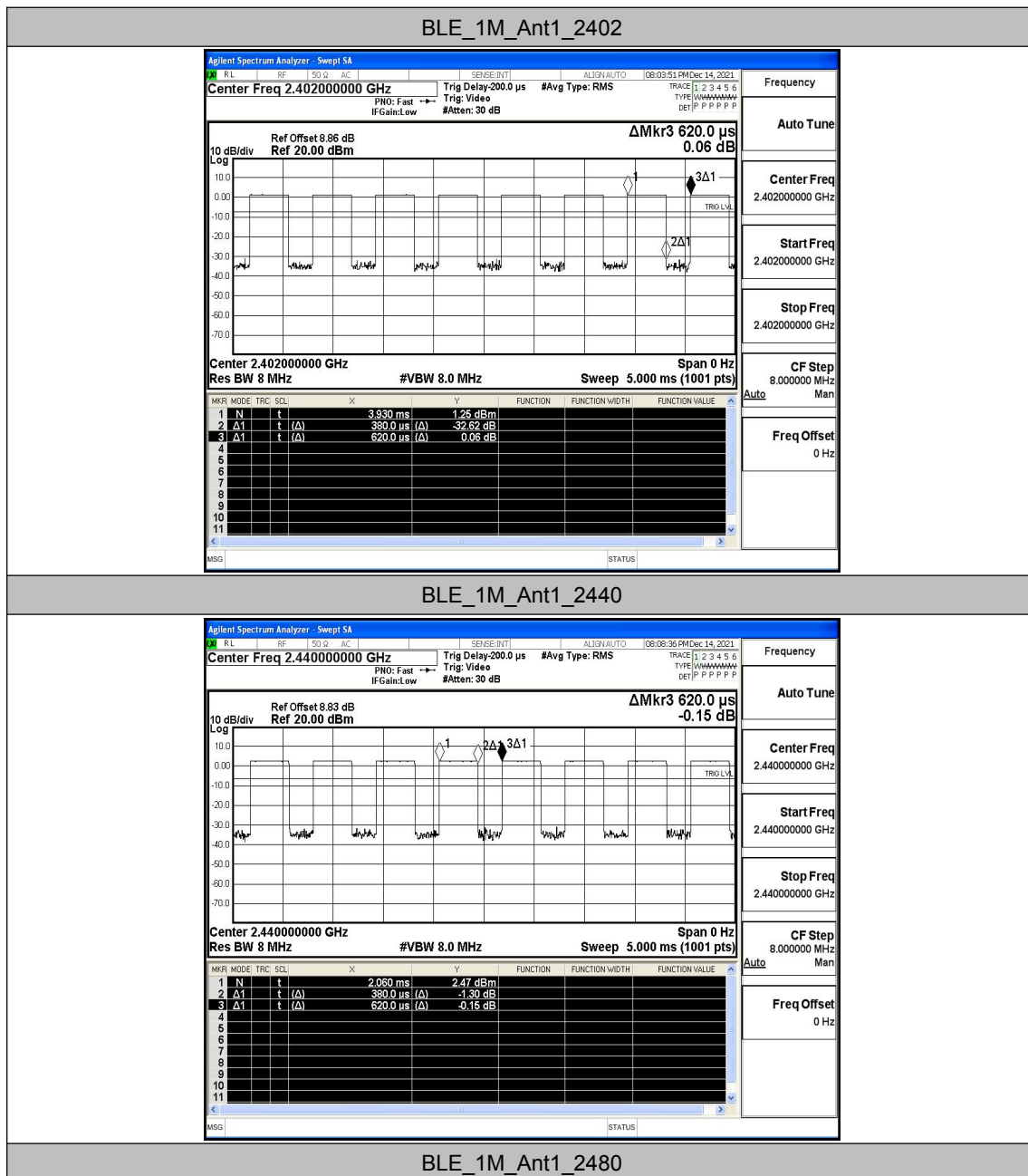


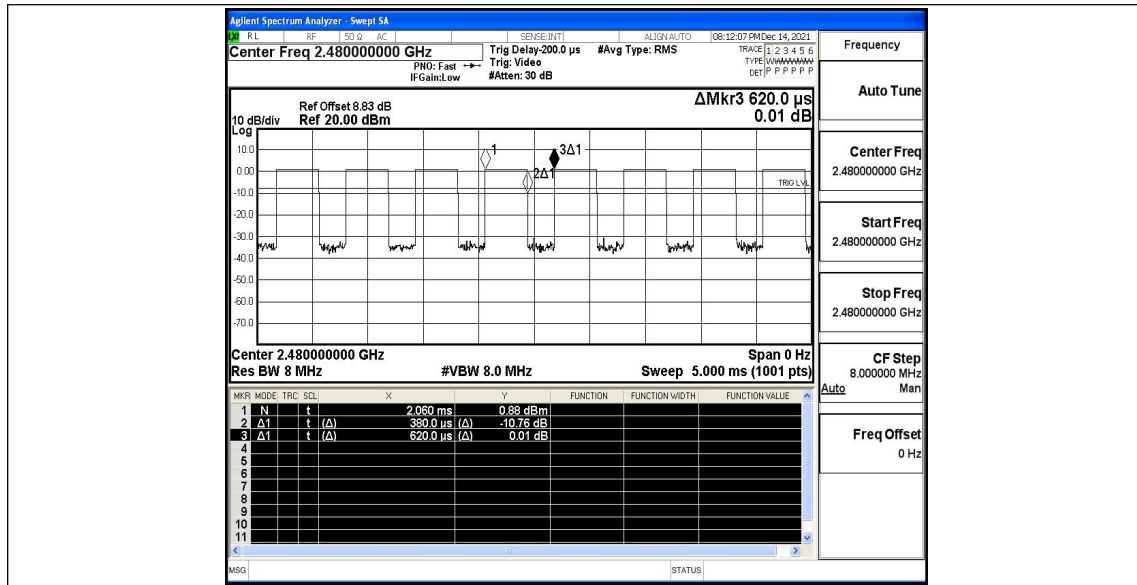
A.6 Duty Cycle

Test Result

Test Mode	Antenna	Channel	ON Time [ms]	Period [ms]	X	DC [%]	xFactor	Limit	Verdict
BLE_1M	Ant1	2402	0.38	0.62	0.6129	61.29	2.13	---	PASS
		2440	0.38	0.62	0.6129	61.29	2.13	---	PASS
		2480	0.38	0.62	0.6129	61.29	2.13	---	PASS

Test Graphs







A.7 Emissions in Restricted Bands

Test Result

Test Mode	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	-47.36	≤-41.20	47.84	≤54	PASS
				AV	2387.990	-46.73	≤-41.20	48.47	≤54	PASS
				AV	2390.000	-47.09	≤-41.20	48.11	≤54	PASS
				Peak	2310.000	-37.96	≤-21.20	57.24	≤74	PASS
				Peak	2365.310	-36.09	≤-21.20	59.11	≤74	PASS
				Peak	2390.000	-38.31	≤-21.20	56.89	≤74	PASS
		High	2480	AV	2483.500	-46.23	≤-41.20	48.97	≤54	PASS
				AV	2494.080	-45.95	≤-41.20	49.25	≤54	PASS
				AV	2500.000	-46.47	≤-41.20	48.73	≤54	PASS
				Peak	2483.500	-37.76	≤-21.20	57.44	≤74	PASS
				Peak	2485.440	-35.99	≤-21.20	59.21	≤74	PASS
				Peak	2500.000	-37.48	≤-21.20	57.72	≤74	PASS

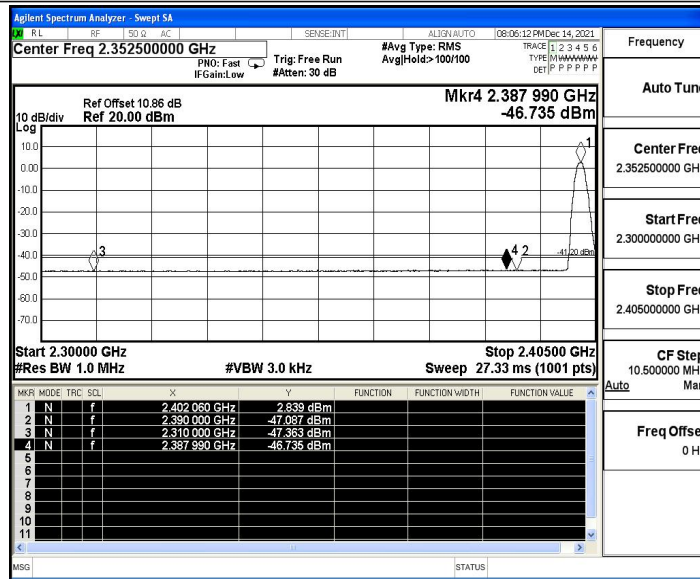
Note:

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.

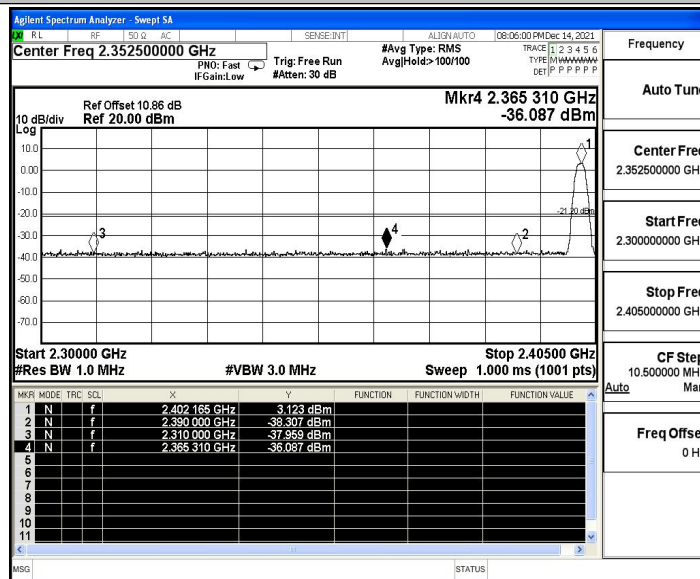


Test Graphs

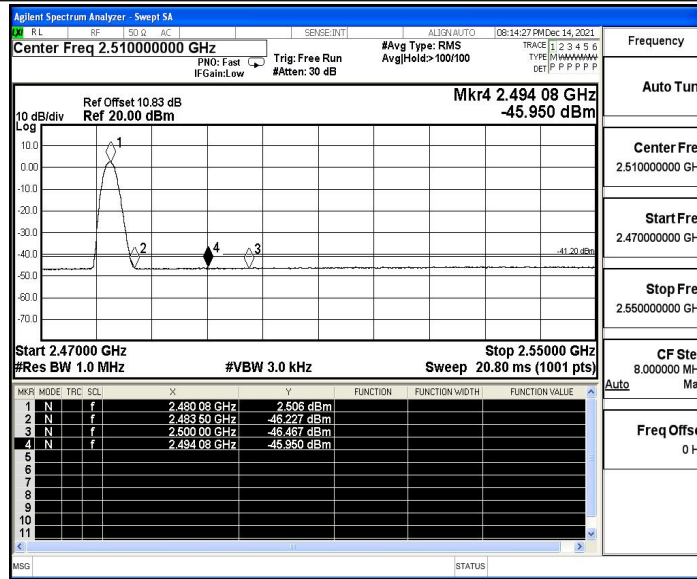
BLE_1M_Ant1_Low_2402_AV



BLE_1M_Ant1_Low_2402_Peak



BLE_1M_Ant1_High_2480_AV



BLE_1M_Ant1_High_2480_Peak

