



Appendix A

RF Test Data for BLE (Conducted Measurement)

Product Name: RFID handheld reader

Test Model: VANCH-VH

Environmental Conditions

Temperature:	21.5° C
Relative Humidity:	52.6%
ATM Pressure:	100.0 kPa
Test Engineer:	Kay Hu
Supervised by:	Li Huan

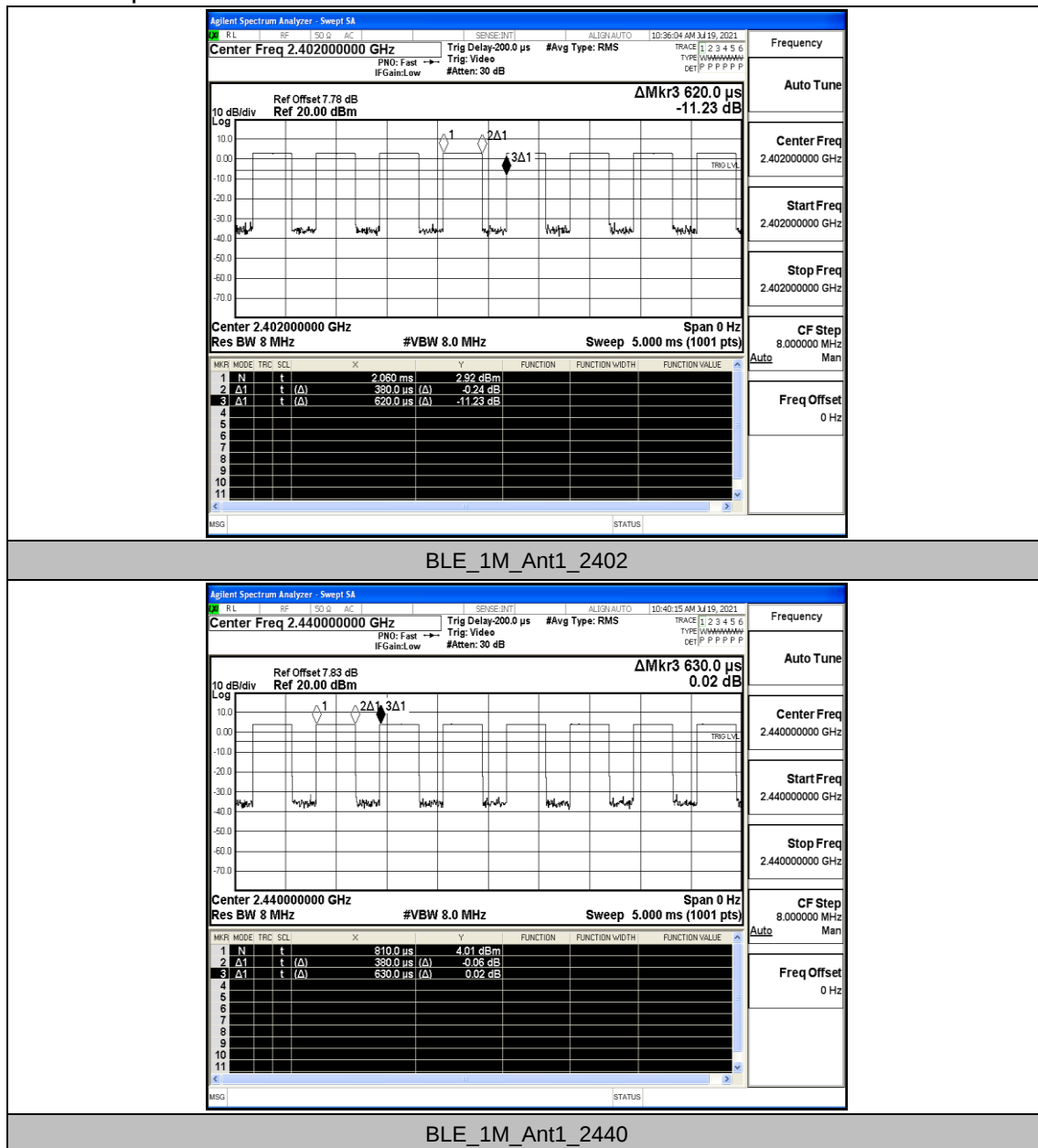


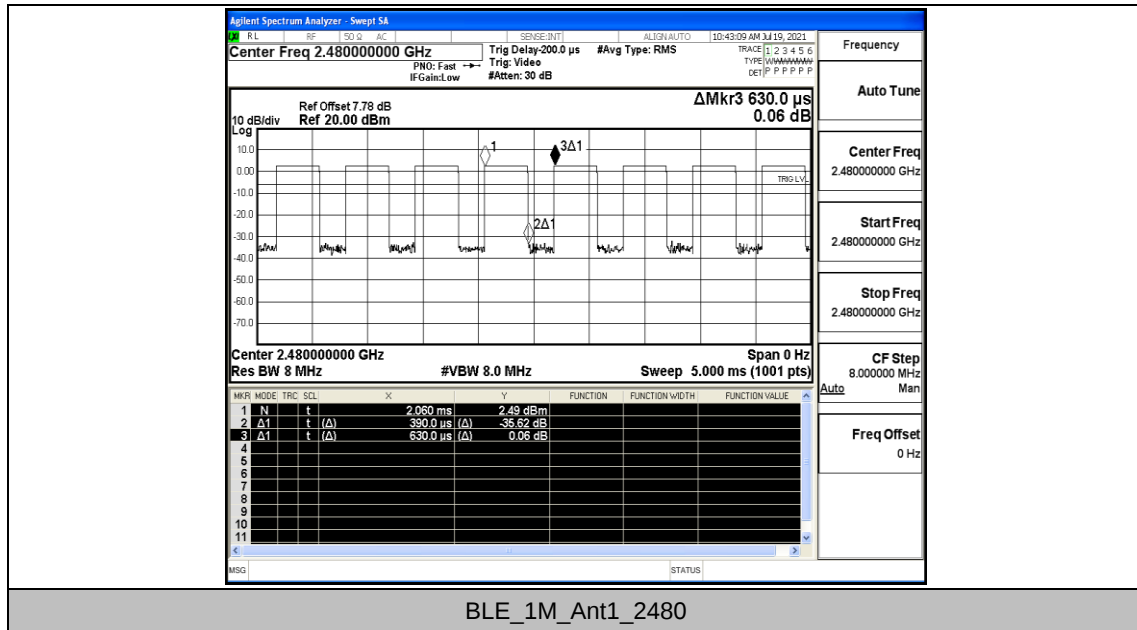
A.1 Duty Cycle

Test Result

TestMode	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	0.63	0.6032	60.32	2.20	---	PASS
		2480	0.39	0.63	0.6190	61.90	2.08	---	PASS

Test Graphs





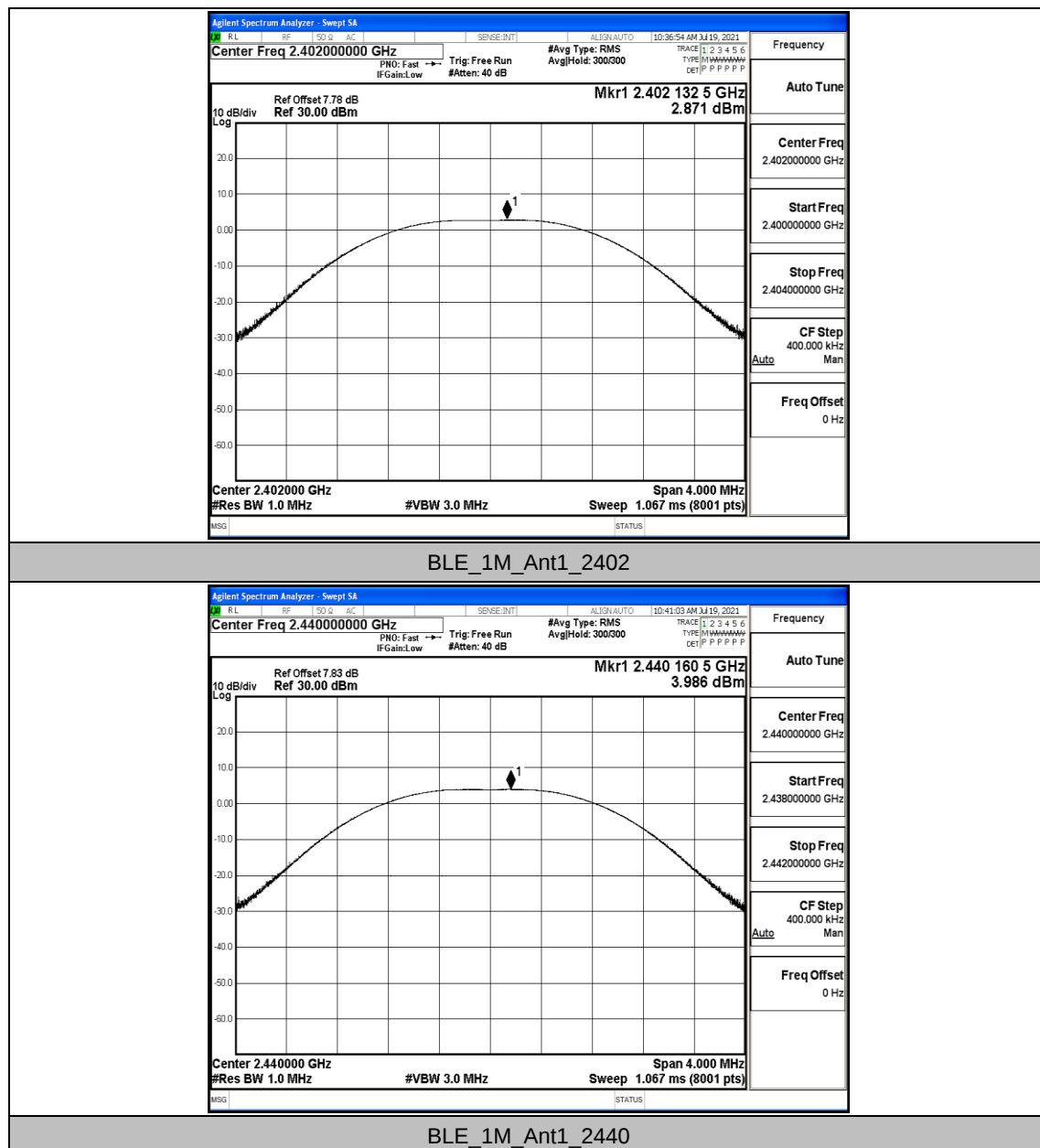


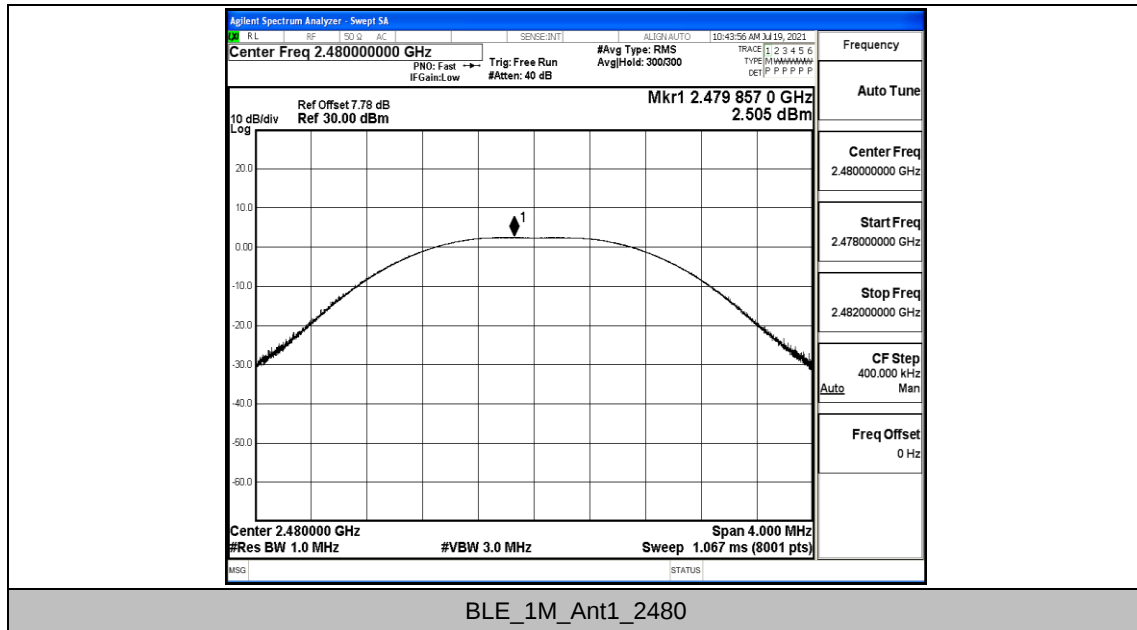
A.2 Maximum conducted output power

Test Result

TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	2.87	≤30	PASS
		2440	3.99	≤30	PASS
		2480	2.51	≤30	PASS

Test Graphs





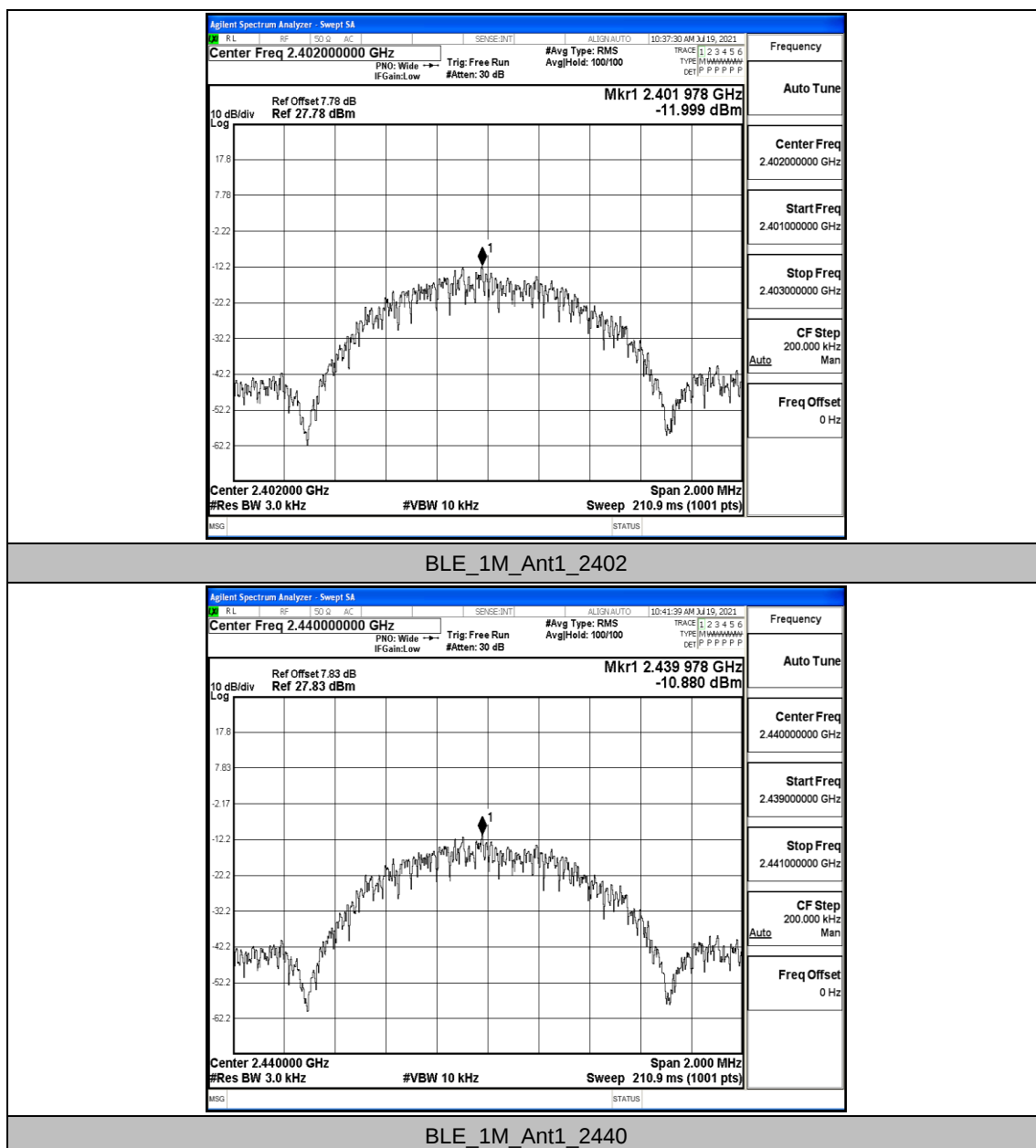


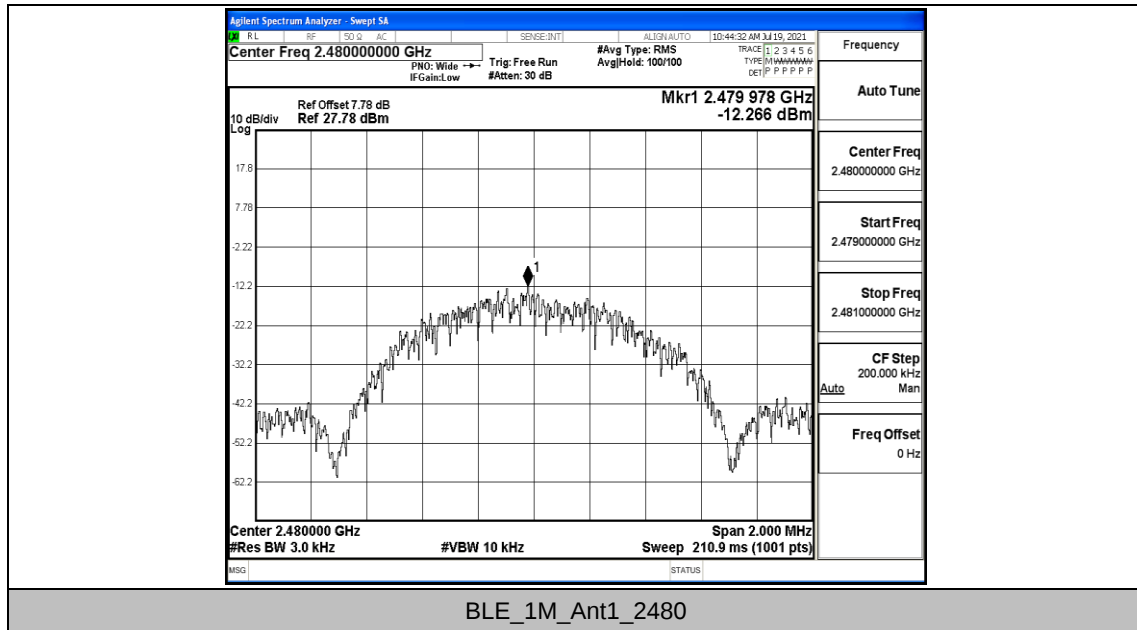
A.3 Maximum power spectral density

Test Result

TestMode	Antenna	Channel	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-12	≤8	PASS
		2440	-10.88	≤8	PASS
		2480	-12.27	≤8	PASS

Test Graphs





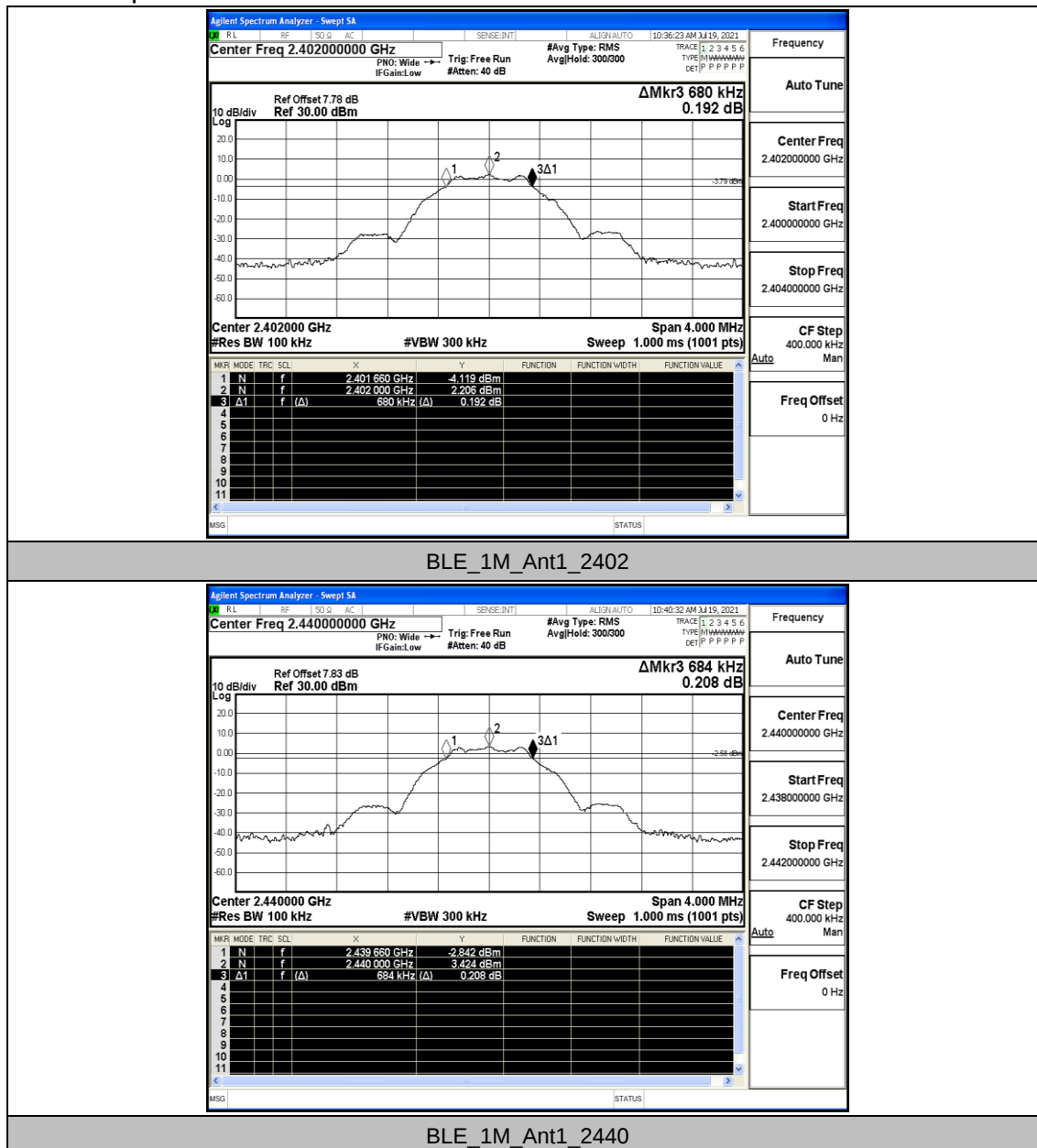


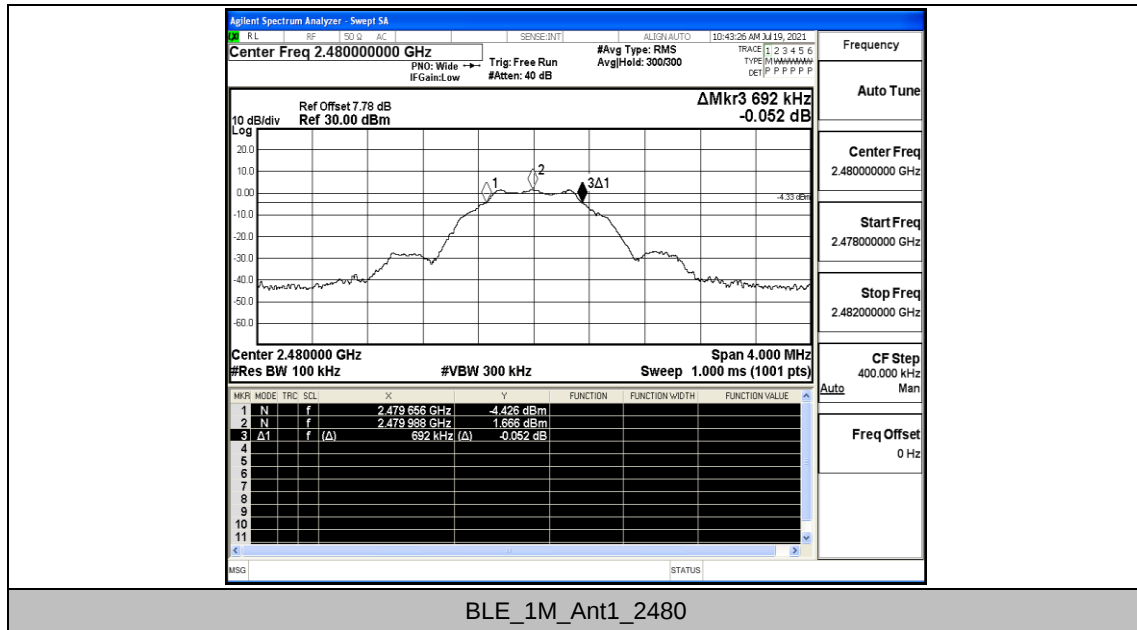
A.4 DTS Bandwidth

Test Result

TestMode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.680	2401.660	2402.340	≥0.5	PASS
		2440	0.684	2439.660	2440.344	≥0.5	PASS
		2480	0.692	2479.656	2480.348	≥0.5	PASS

Test Graphs





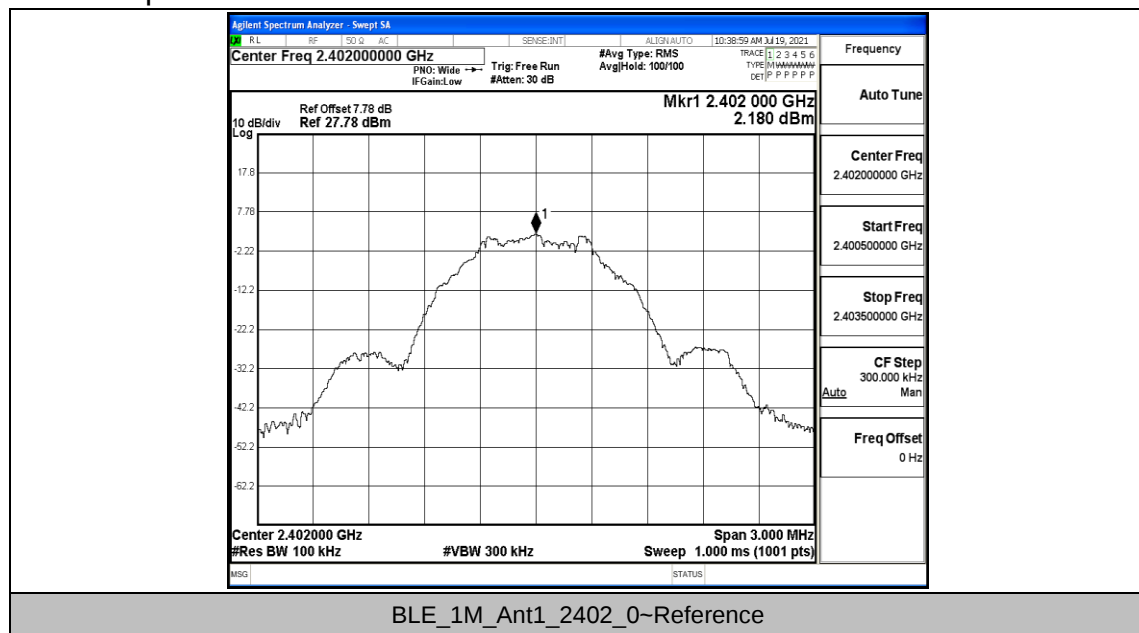


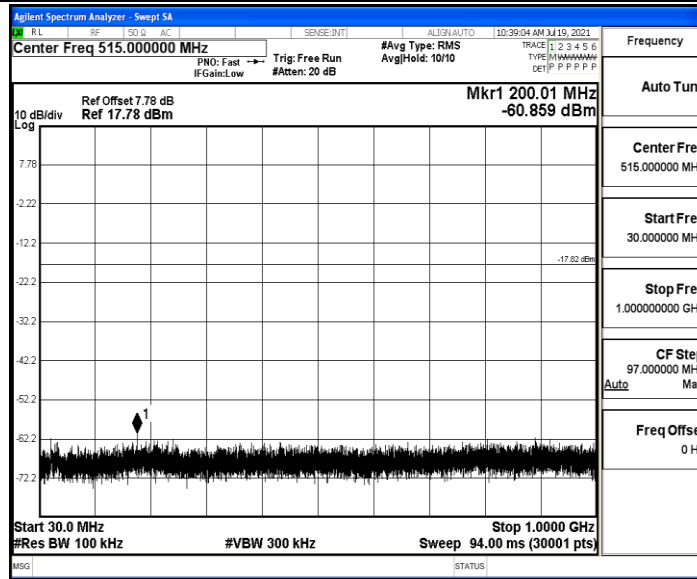
A.5 Conducted Spurious Emission

Test Result

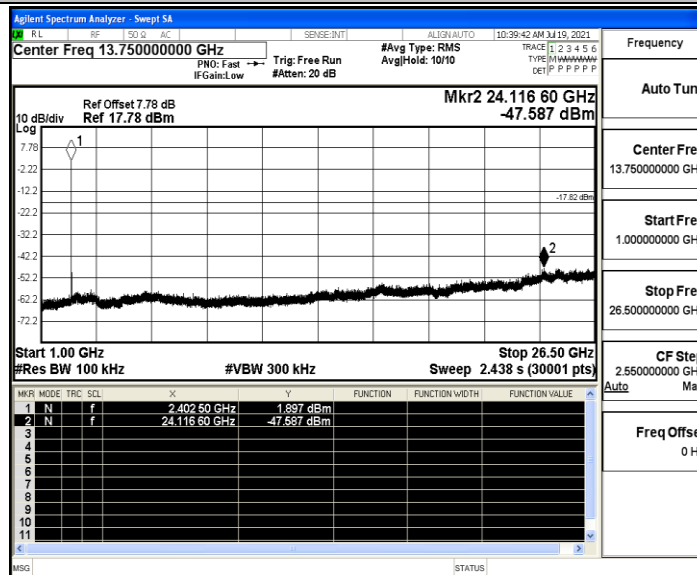
TestMode	Antenna	Channel	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	Reference	2.18	2.18	---	PASS
			30~1000	2.18	-60.86	≤-17.82	PASS
			1000~26500	2.18	-47.59	≤-17.82	PASS
		2440	Reference	3.21	3.21	---	PASS
			30~1000	3.21	-61.08	≤-16.79	PASS
			1000~26500	3.21	-47.49	≤-16.79	PASS
		2480	Reference	1.87	1.87	---	PASS
			30~1000	1.87	-61.03	≤-18.13	PASS
			1000~26500	1.87	-48.25	≤-18.13	PASS

Test Graphs

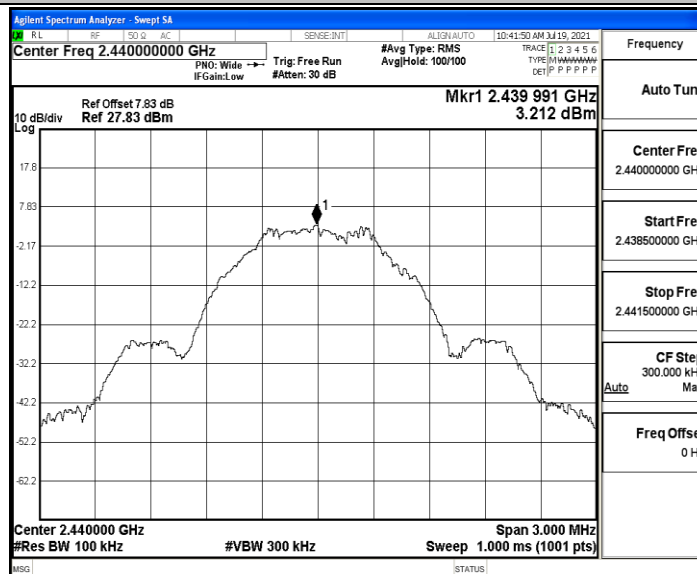




BLE_1M_Ant1_2402_30~1000

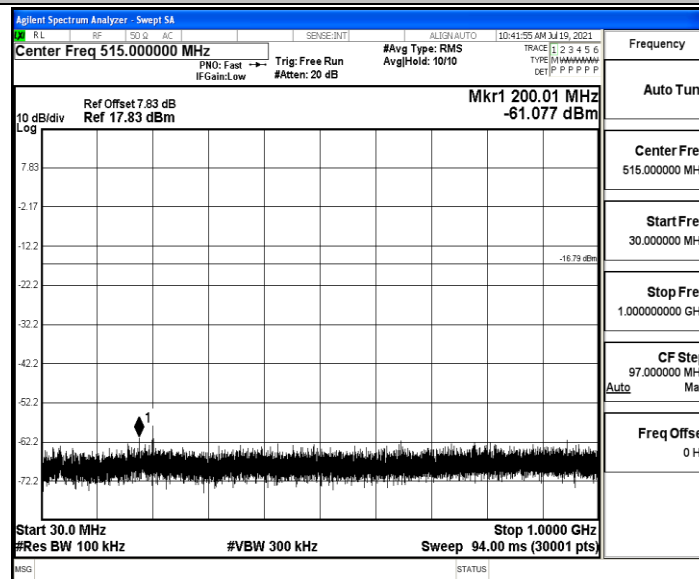


BLE_1M_Ant1_2402_1000~26500

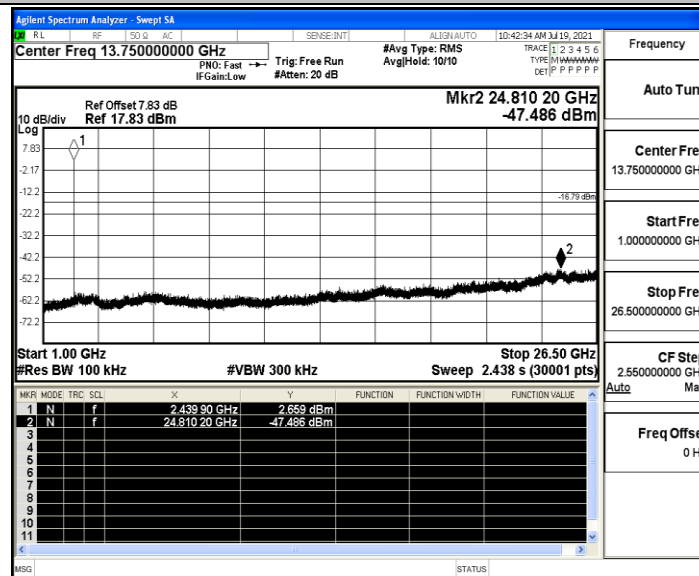




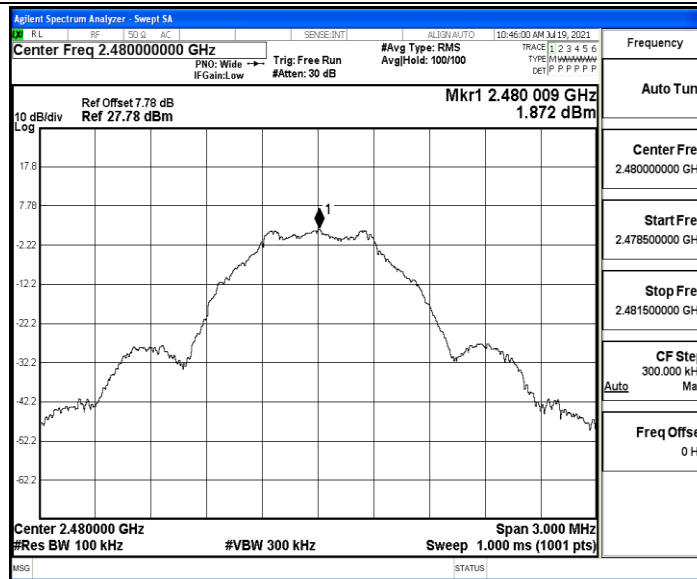
BLE_1M_Ant1_2440_0~Reference



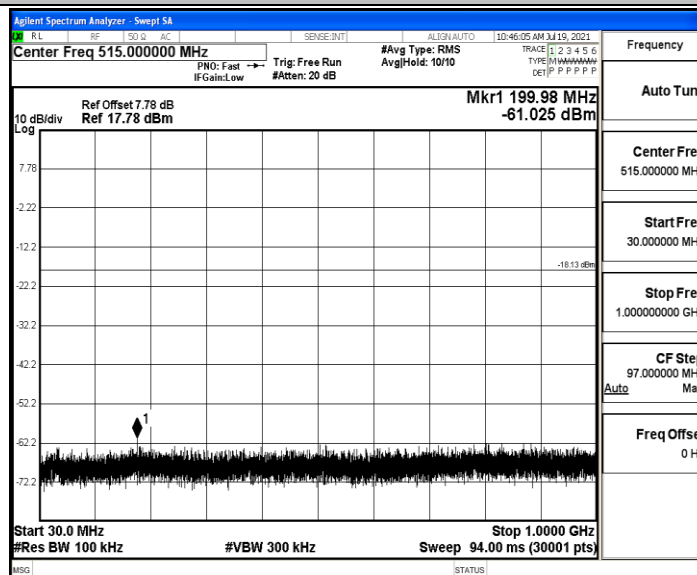
BLE_1M_Ant1_2440_30~1000



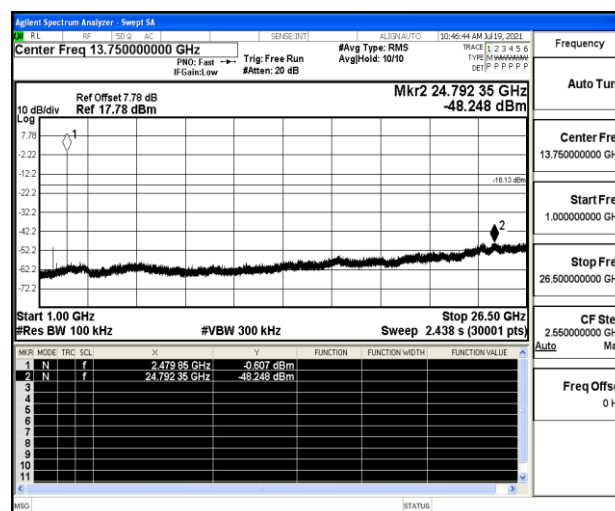
BLE_1M_Ant1_2440_1000~26500



BLE_1M_Ant1_2480_0~Reference



BLE_1M_Ant1_2480_30~1000



BLE_1M_Ant1_2480_1000~26500

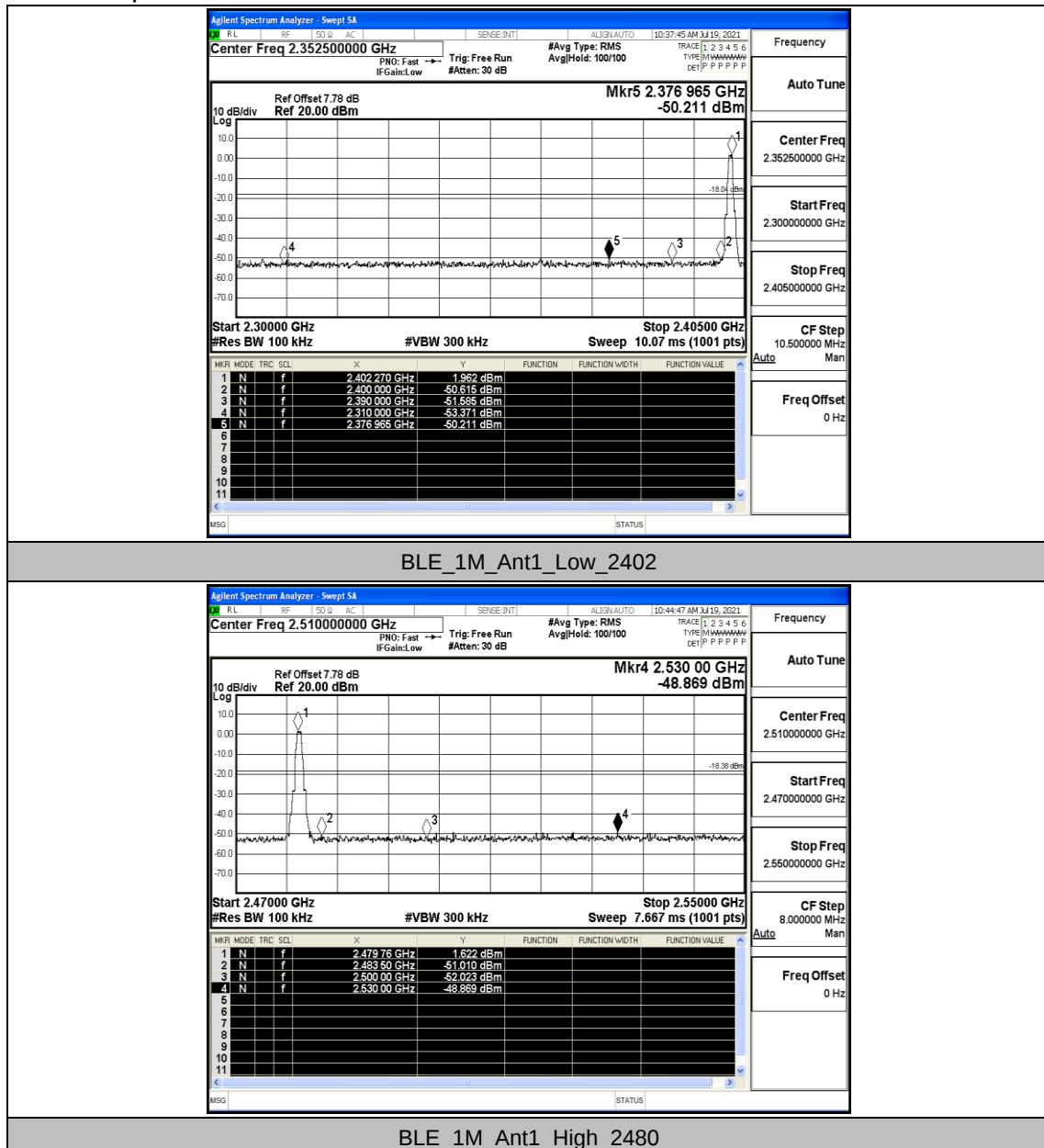


A.6 Band edge measurements

Test Result

TestMode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	1.96	-50.21	≤-18.04	PASS
		High	2480	1.62	-48.87	≤-18.38	PASS

Test Graphs





A.7 Emissions in Restricted Bands

Test Result

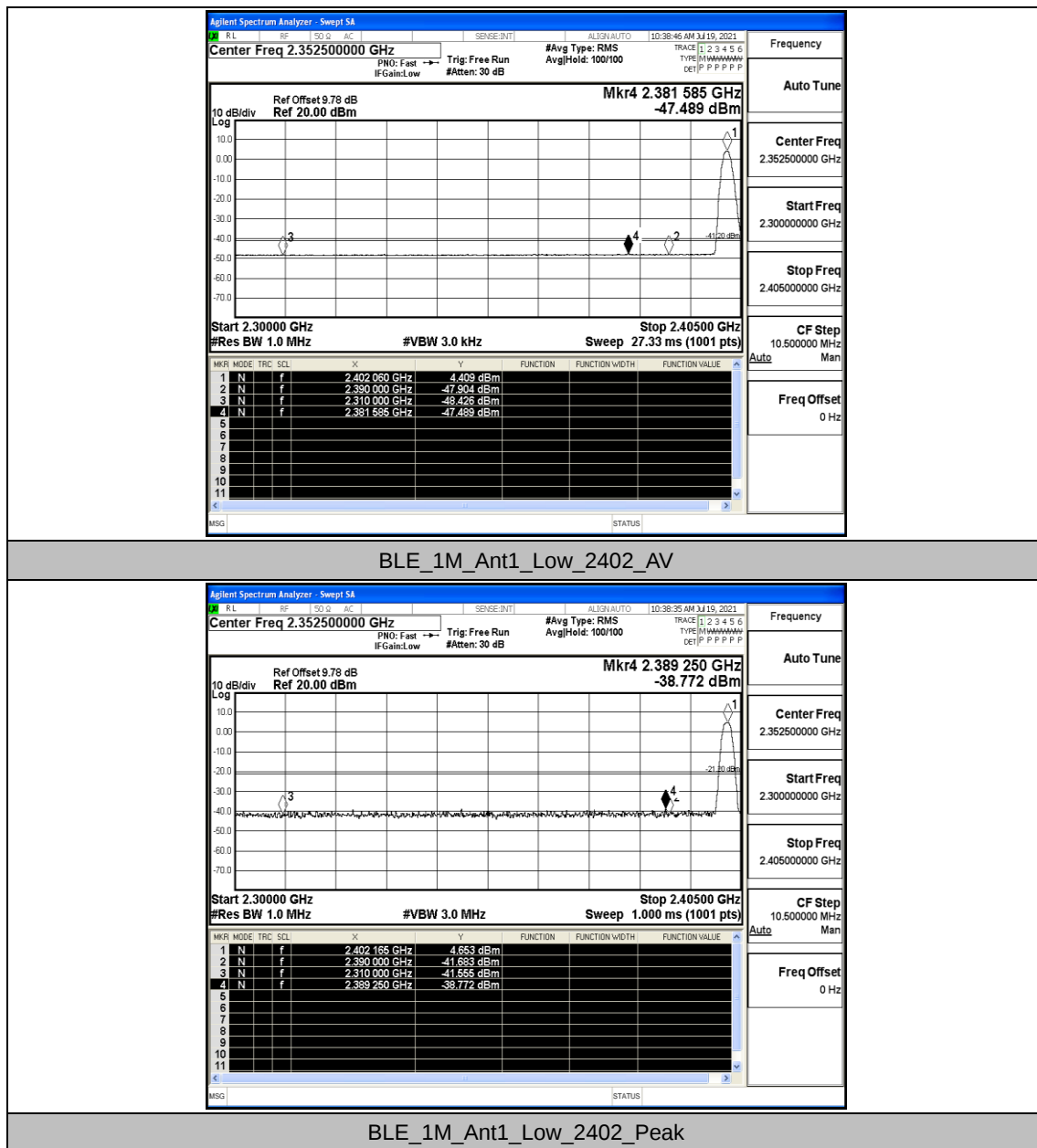
TestMode	Antenna	ChName	Channel	Detector	Freq. [MHz]	Result [dBm]	Limit [dBm]	Result [dBuV/m]	Limit [dBuV/m]	Verdict
BLE_1M	Ant1	Low	2402	AV	2310.000	-48.43	≤-41.20	46.77	≤54	PASS
				AV	2381.585	-47.49	≤-41.20	47.71	≤54	PASS
				AV	2390.000	-47.9	≤-41.20	47.30	≤54	PASS
				Peak	2310.000	-41.56	≤-21.20	53.64	≤74	PASS
				Peak	2389.250	-38.77	≤-21.20	56.43	≤74	PASS
				Peak	2390.000	-41.68	≤-21.20	53.52	≤74	PASS
		High	2480	AV	2483.500	-46.74	≤-41.20	48.46	≤54	PASS
				AV	2483.520	-46.74	≤-41.20	48.46	≤54	PASS
				AV	2500.000	-47.42	≤-41.20	47.78	≤54	PASS
				Peak	2483.500	-41.29	≤-21.20	53.91	≤74	PASS
				Peak	2496.000	-38.64	≤-21.20	56.56	≤74	PASS
				Peak	2500.000	-41.29	≤-21.20	53.91	≤74	PASS

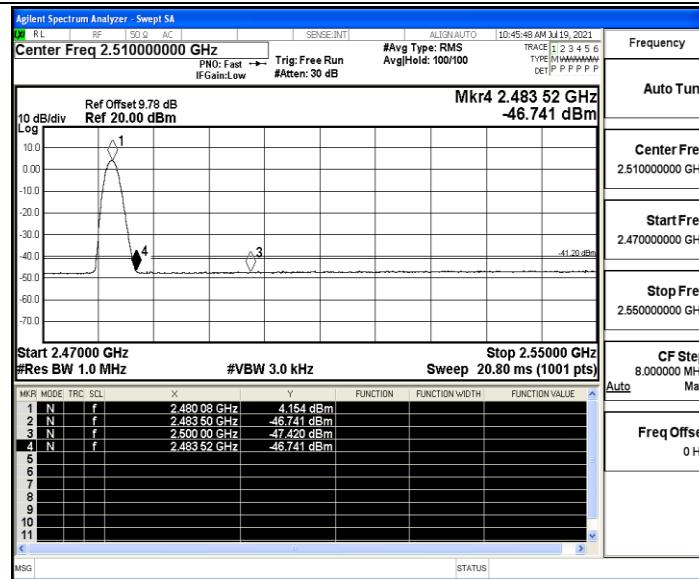
Note:

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.

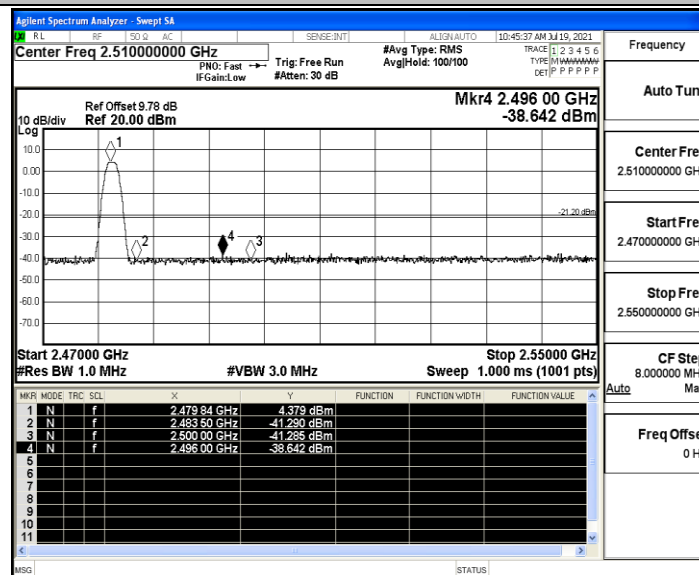


Test Graphs





BLE_1M_Ant1_High_2480_AV



BLE_1M_Ant1_High_2480_Peak