



Appendix A

RF Test Data for BLE (Conducted Measurement)

Product Name: Smart LED Ceiling light

Test Model: ZL-CWB24-RGBCW-8UN

Environmental Conditions

Temperature:	23.7° C
Relative Humidity:	52.3%
ATM Pressure:	100.0 kPa
Test Engineer:	Ling Zhu
Supervised by:	Li Huan

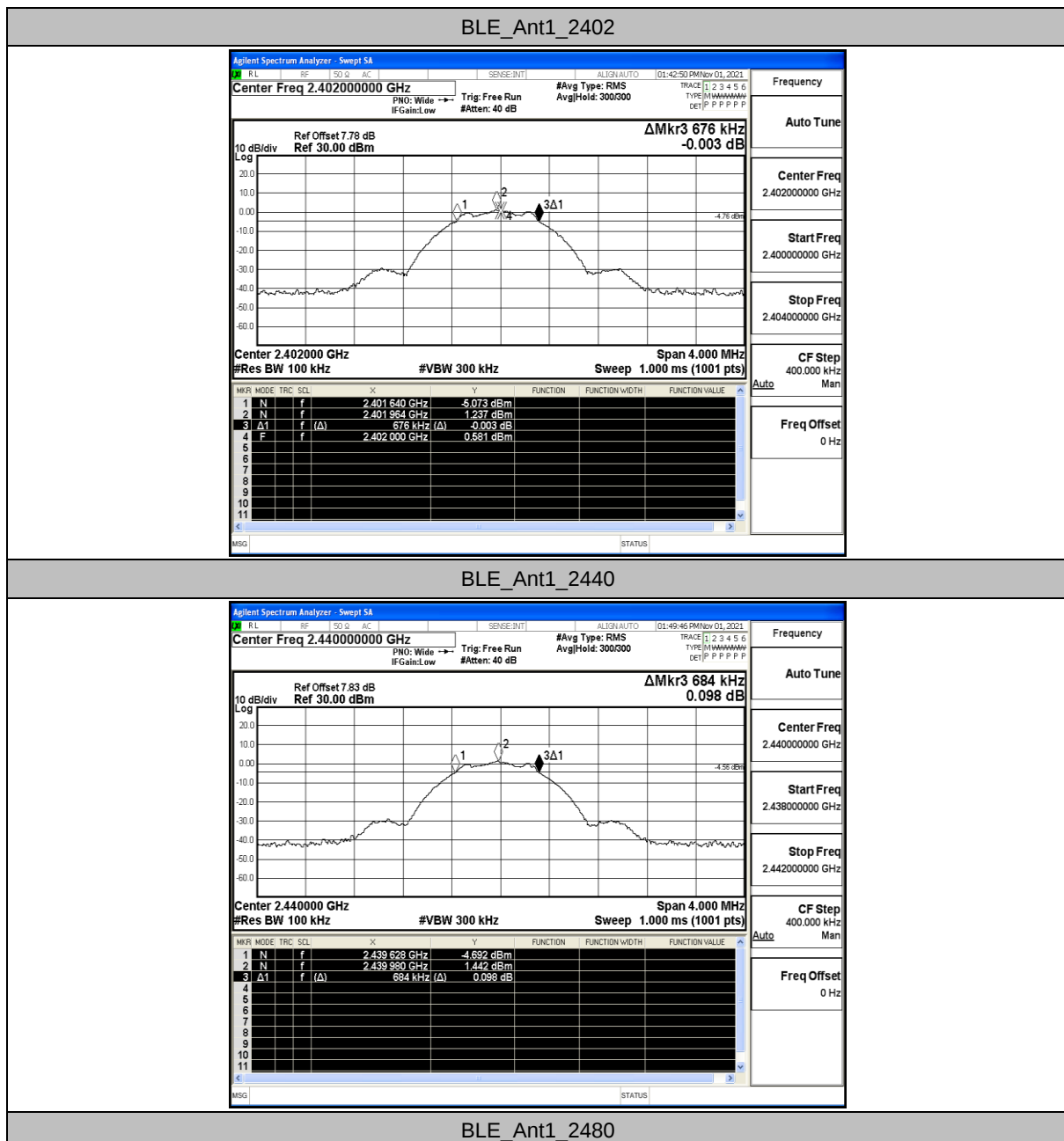


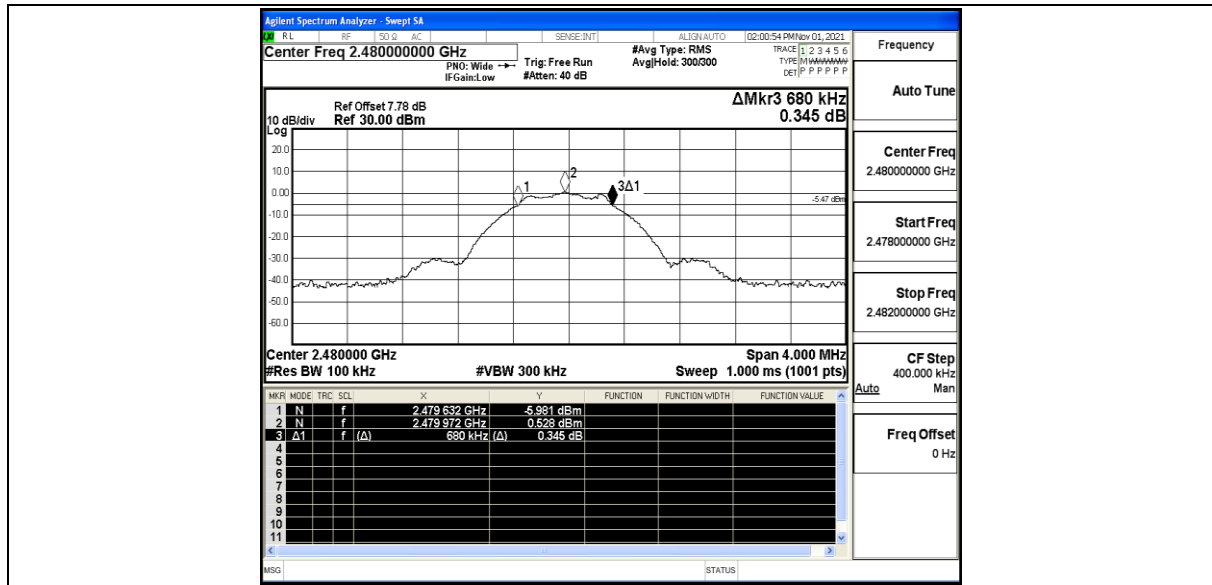
A.1 6dB Bandwidth

Test Result

TestMode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE	Ant1	2402	0.676	2401.640	2402.316	≥0.5	PASS
		2440	0.684	2439.628	2440.312	≥0.5	PASS
		2480	0.680	2479.632	2480.312	≥0.5	PASS

Test Graphs





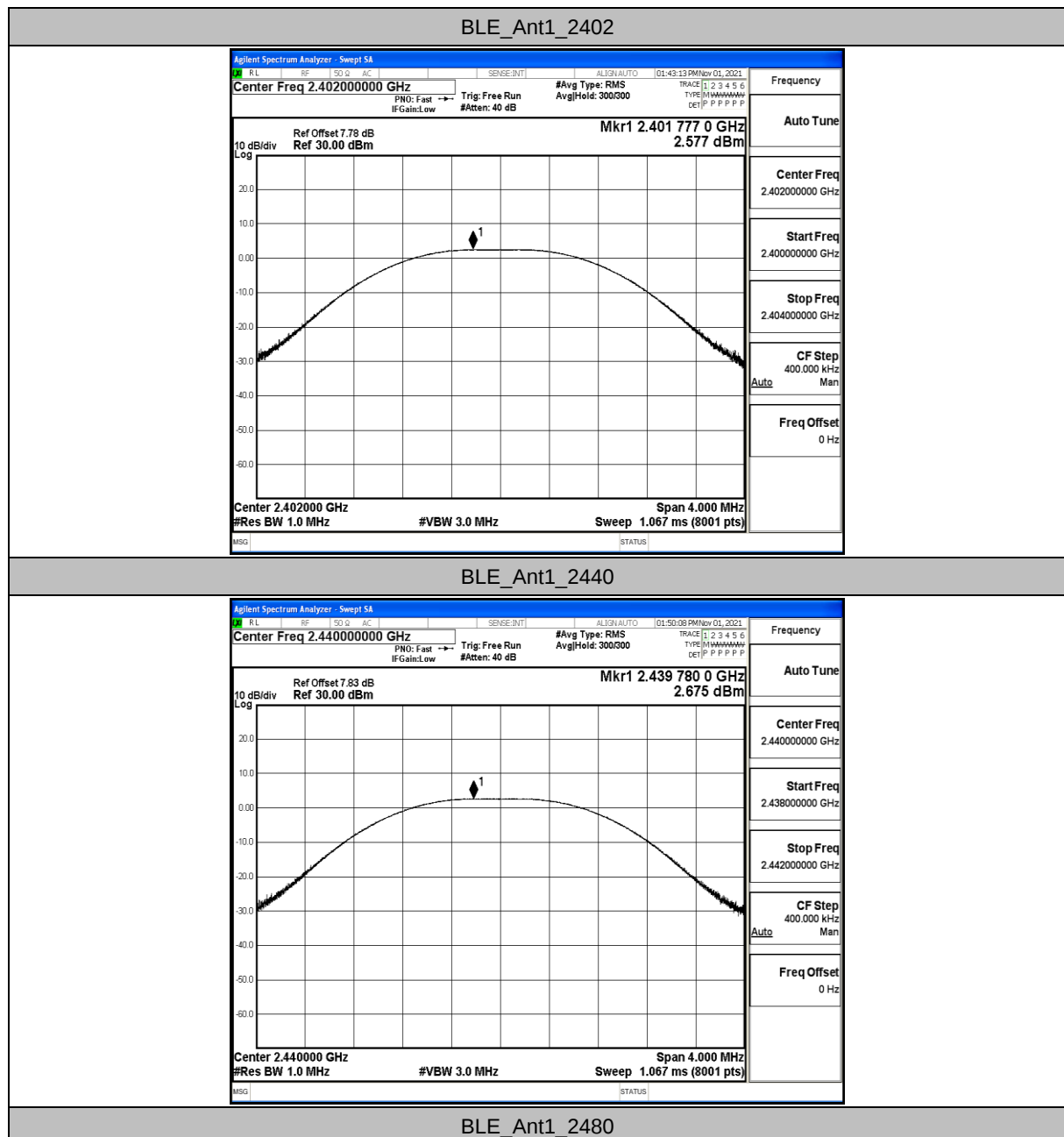


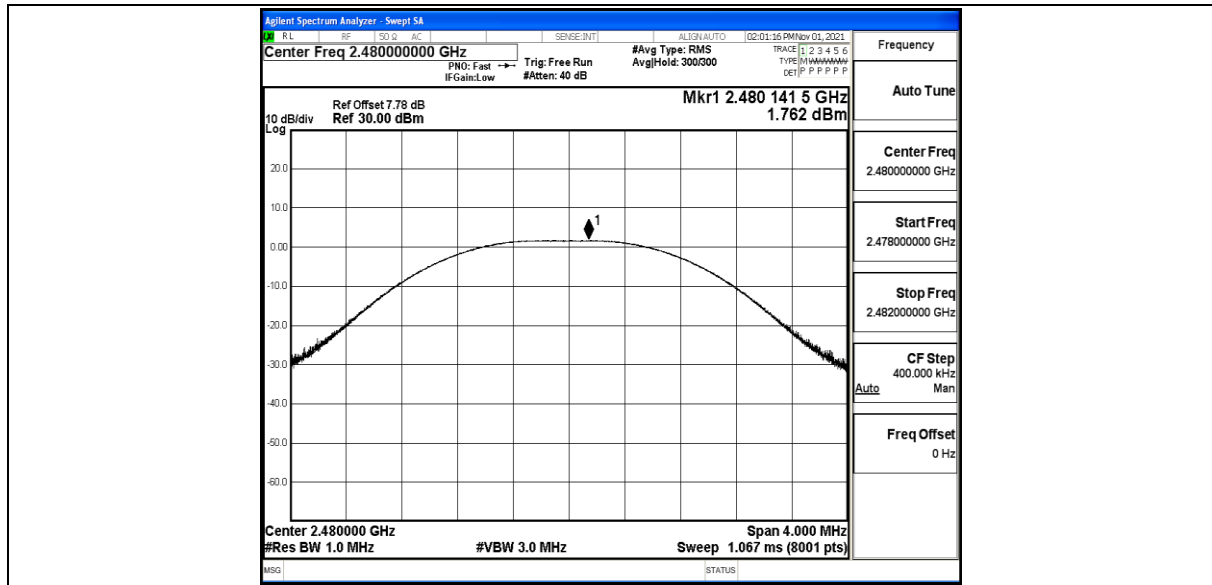
A.2 Maximum conducted output power

Test Result

TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
BLE	Ant1	2402	2.58	≤30	PASS
		2440	2.68	≤30	PASS
		2480	1.76	≤30	PASS

Test Graphs





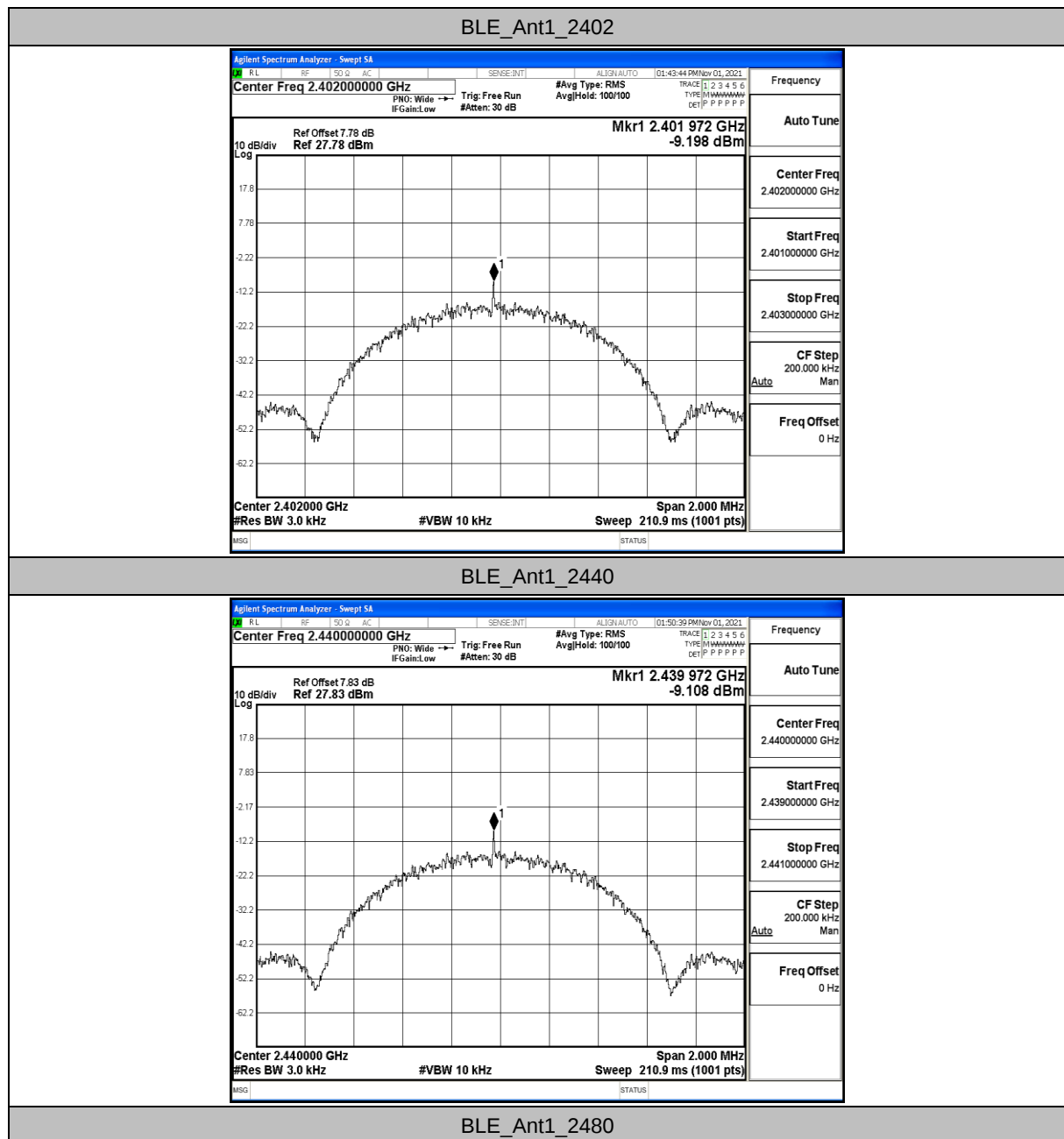


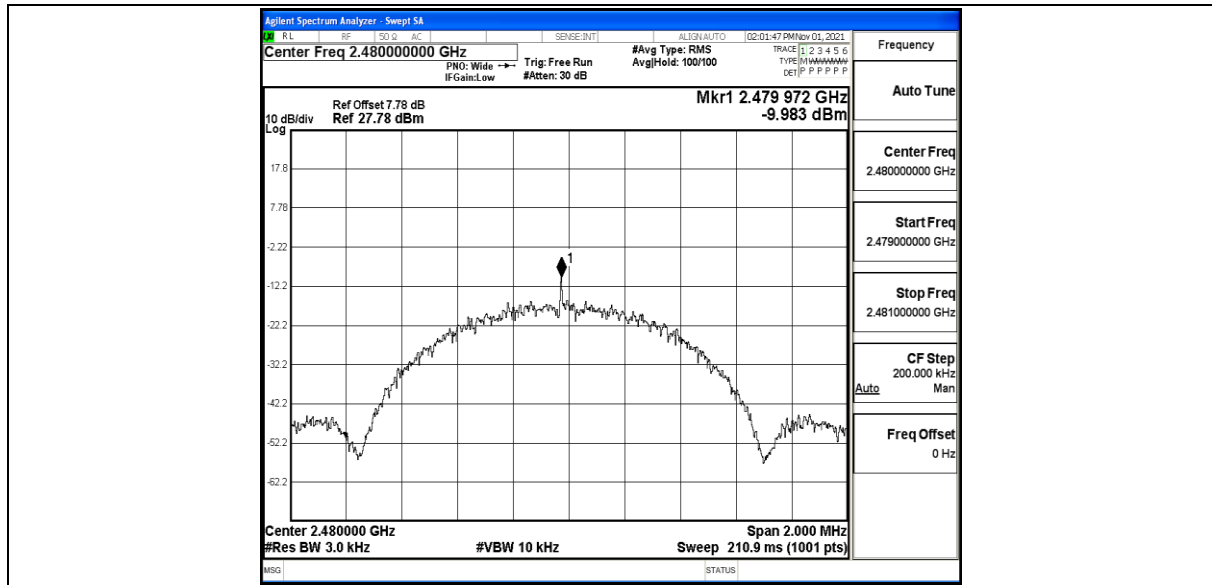
A.3 Maximum power spectral density

Test Result

TestMode	Antenna	Channel	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
BLE	Ant1	2402	-9.2	≤8	PASS
		2440	-9.11	≤8	PASS
		2480	-9.98	≤8	PASS

Test Graphs





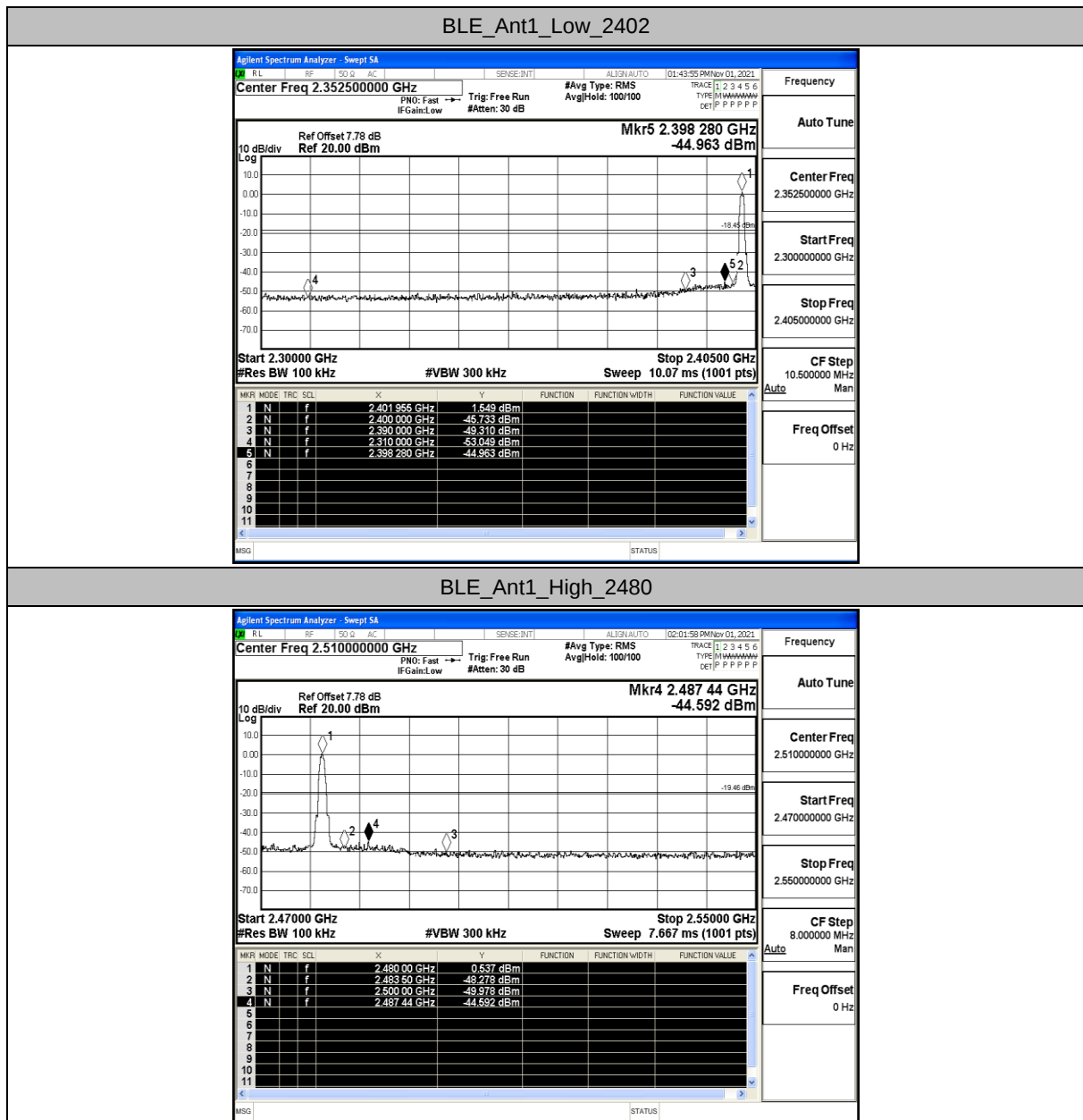


A.4 Band edge measurements

Test Result

TestMode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE	Ant1	Low	2402	1.55	-44.96	≤-18.45	PASS
		High	2480	0.54	-44.59	≤-19.46	PASS

Test Graphs



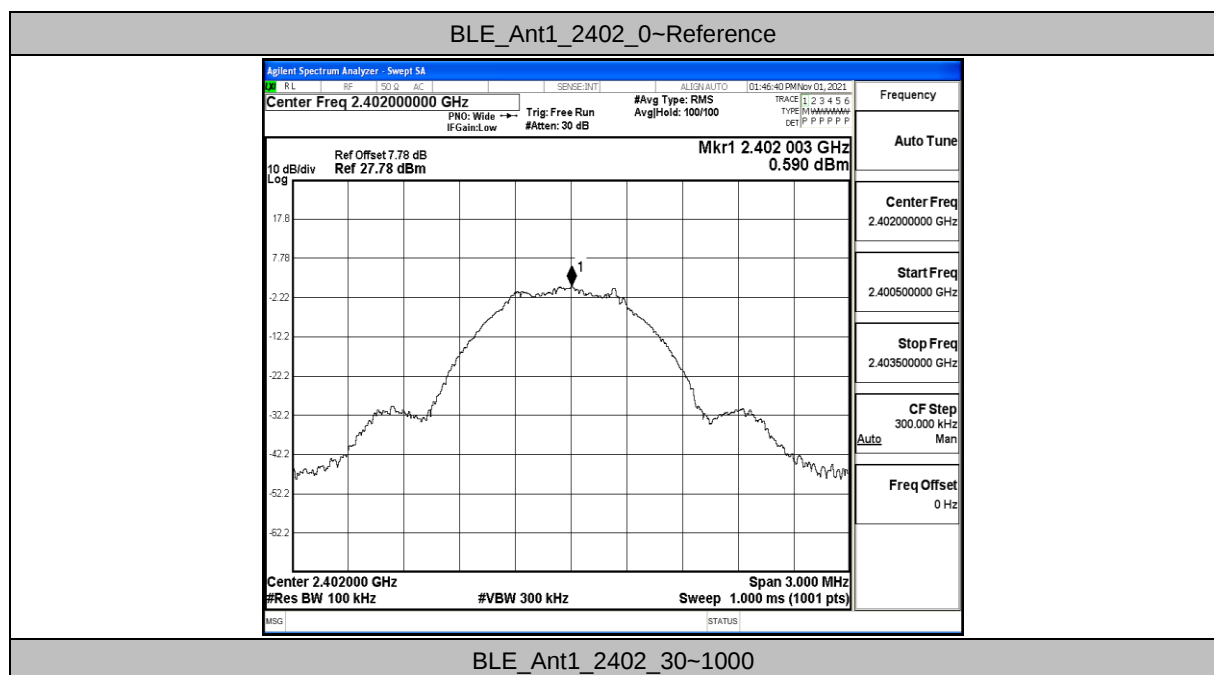


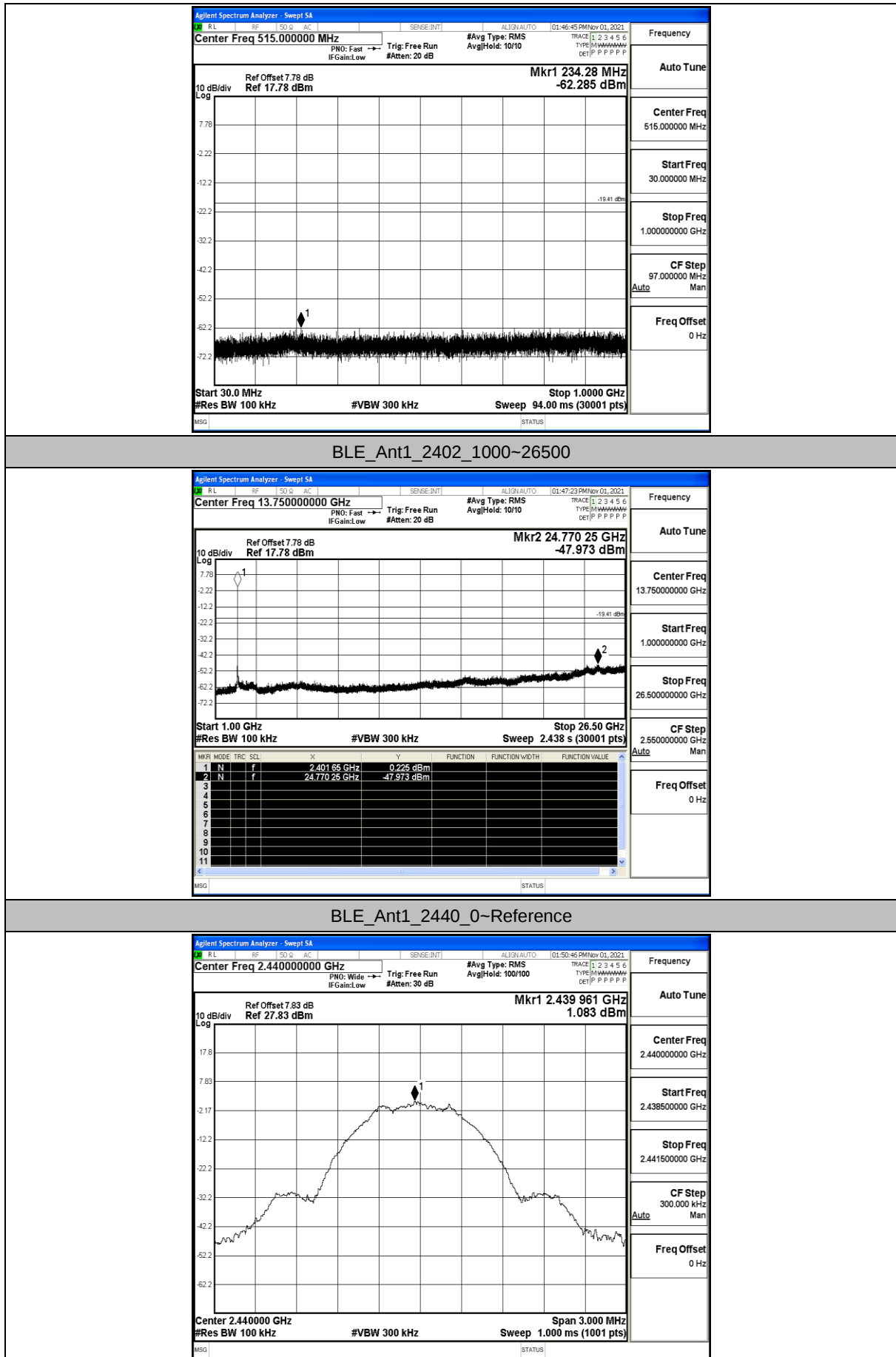
A.5 Conducted Spurious Emission

Test Result

TestMode	Antenna	Channel	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE	Ant1	2402	Reference	0.59	0.59	---	PASS
			30~1000	0.59	-62.29	≤-19.41	PASS
			1000~26500	0.59	-47.97	≤-19.41	PASS
		2440	Reference	1.08	1.08	---	PASS
			30~1000	1.08	-61.74	≤-18.92	PASS
			1000~26500	1.08	-46.99	≤-18.92	PASS
		2480	Reference	-0.13	-0.13	---	PASS
			30~1000	-0.13	-61.51	≤-20.13	PASS
			1000~26500	-0.13	-47.4	≤-20.13	PASS

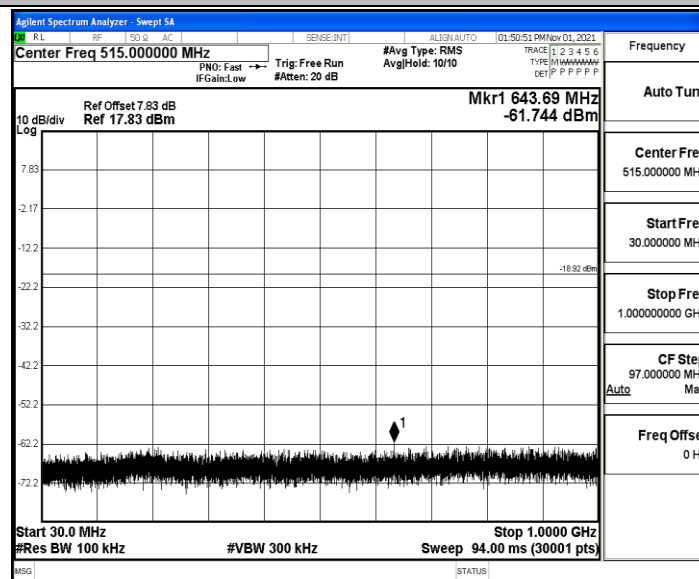
Test Graphs



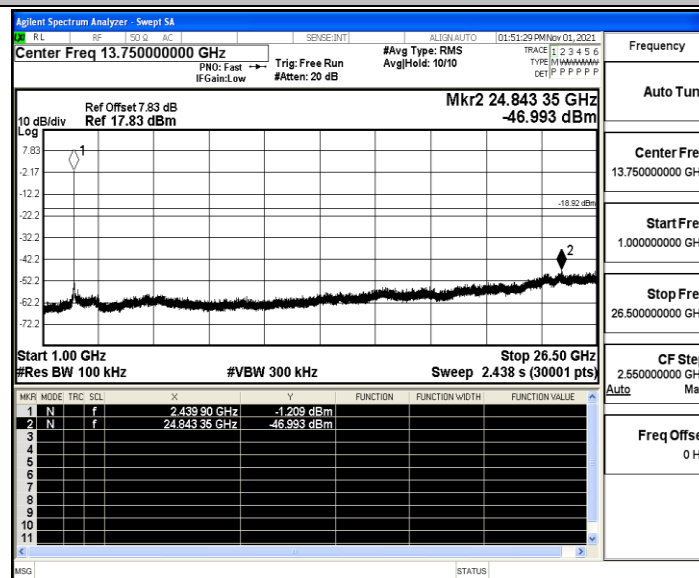




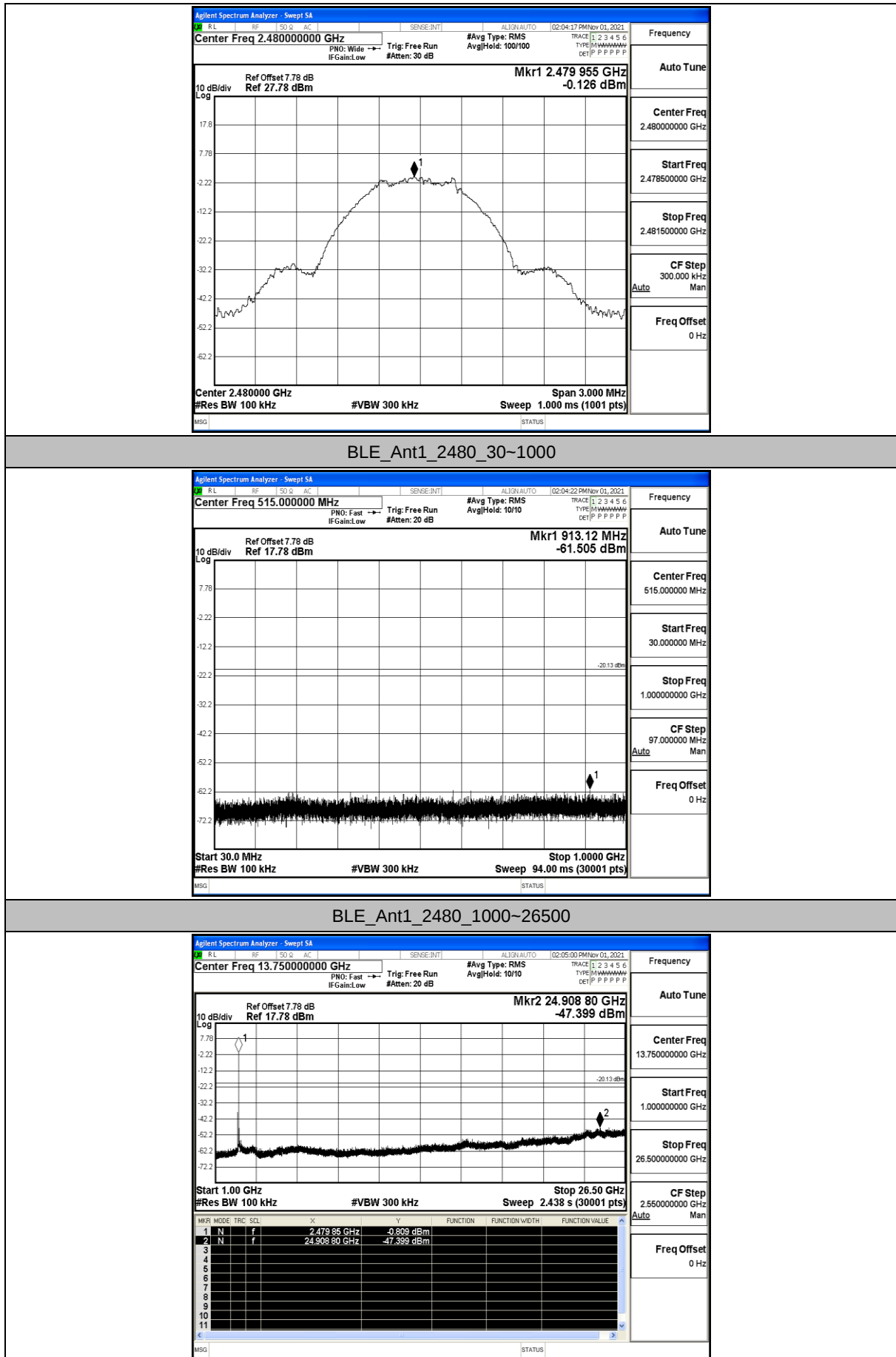
BLE_Ant1_2440_30~1000



BLE_Ant1_2440_1000~26500



BLE_Ant1_2480_0~Reference





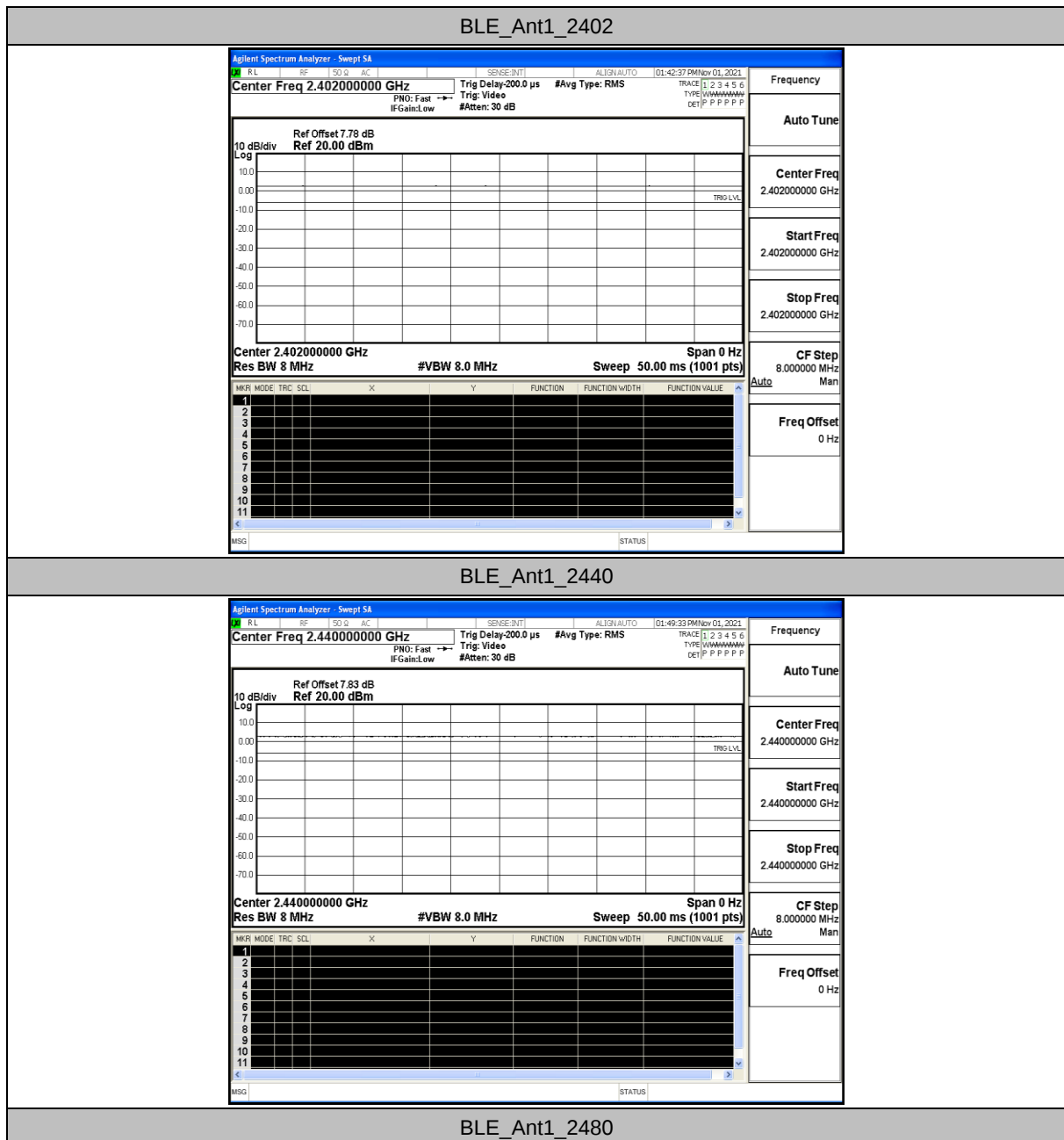
A.6 Duty Cycle

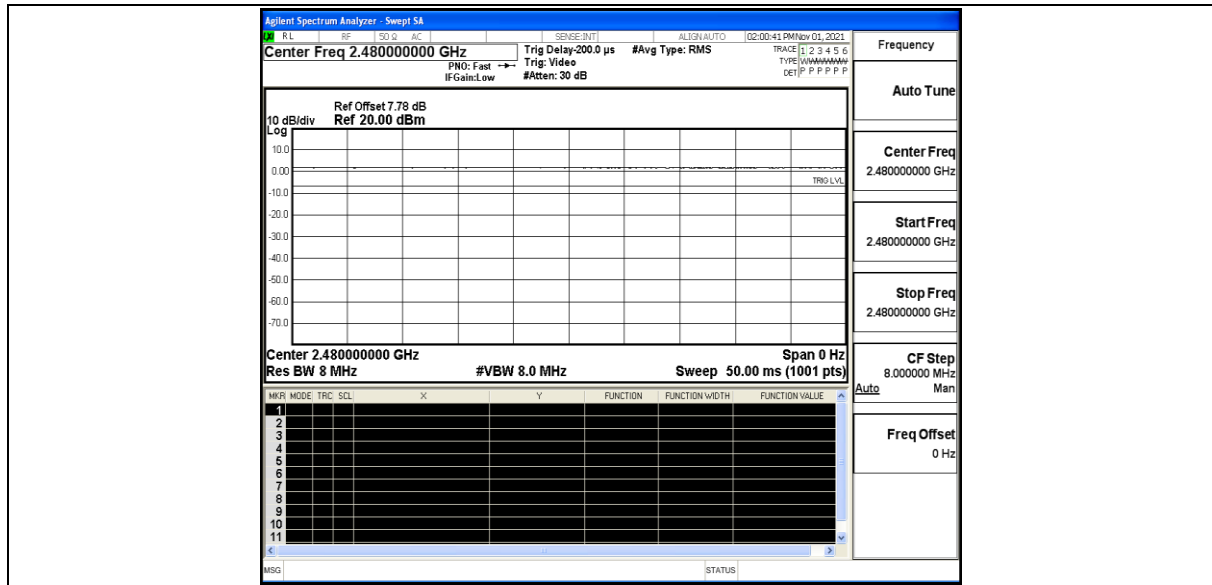
Test Result

TestMode	Antenna	Channel	ON Time [ms]	Period [ms]	X	DC [%]	xFactor	Limit	Verdict
BLE	Ant1	2402	50.00	50.00	1.0000	100.00	0.00	---	PASS
		2440	50.00	50.00	1.0000	100.00	0.00	---	PASS
		2480	50.00	50.00	1.0000	100.00	0.00	---	PASS



Test Graphs







A.7 Emissions in Restricted Bands

Test Result

TestMode	Channel	Detector	Freq. [MHz]	Result [dBm]	Limit [dBm]	Result [dBuV/m]	Limit [dBuV/m]	Verdict
BLE	2402	AV	2310.000	-49.51	≤-41.20	45.69	≤54	PASS
		AV	2389.985	-45.44	≤-41.20	49.76	≤54	PASS
		AV	2390.000	-45.44	≤-41.20	49.76	≤54	PASS
		Peak	2310.000	-45.12	≤-21.20	50.08	≤74	PASS
		Peak	2389.880	-36.86	≤-21.20	58.34	≤74	PASS
		Peak	2390.000	-37.78	≤-21.20	57.42	≤74	PASS
	2480	AV	2483.500	-43.73	≤-41.20	51.47	≤54	PASS
		AV	2483.520	-43.72	≤-41.20	51.48	≤54	PASS
		AV	2500.000	-47.26	≤-41.20	47.94	≤54	PASS
		Peak	2483.500	-36.85	≤-21.20	58.35	≤74	PASS
		Peak	2486.160	-34.81	≤-21.20	60.39	≤74	PASS
		Peak	2500.000	-41.66	≤-21.20	53.54	≤74	PASS

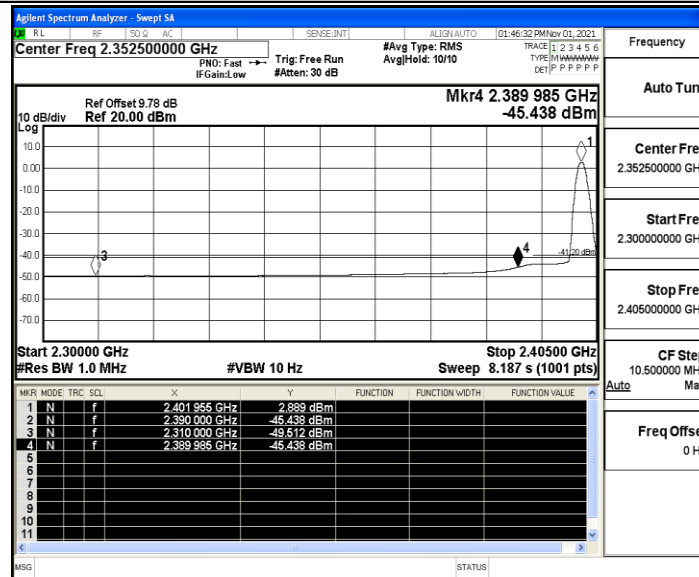
Note:

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.

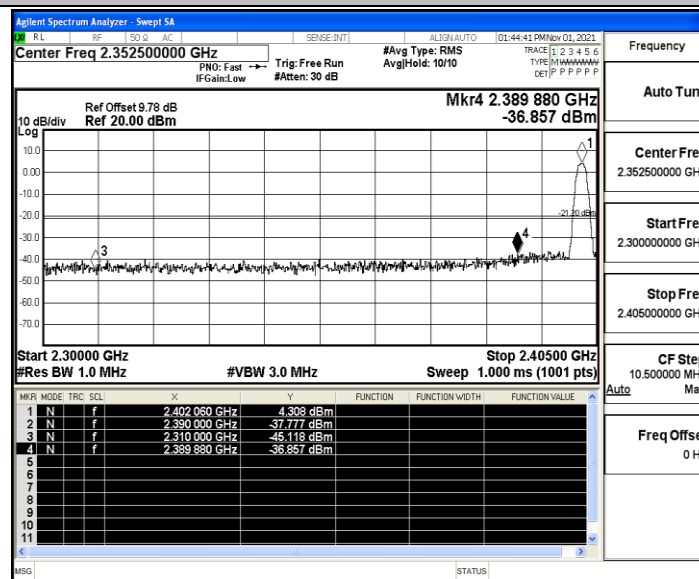


Test Graphs

BLE_Ant1_Low_2402_AV



BLE_Ant1_Low_2402_Peak



BLE_Ant1_High_2480_AV

