

FCC Appendix RF Test Data for BLE

FCC ID : 2BYSR-LH-HC-ZMD-001

Company : Shen Zhen Lamho Photoelectricity & Technology CO.,LTD

EUT : Colorful Letter Lights

Model Number : LH-HC-ZMD-001

Report No. : CTA26091401101

Reviewed By : Eric Wang

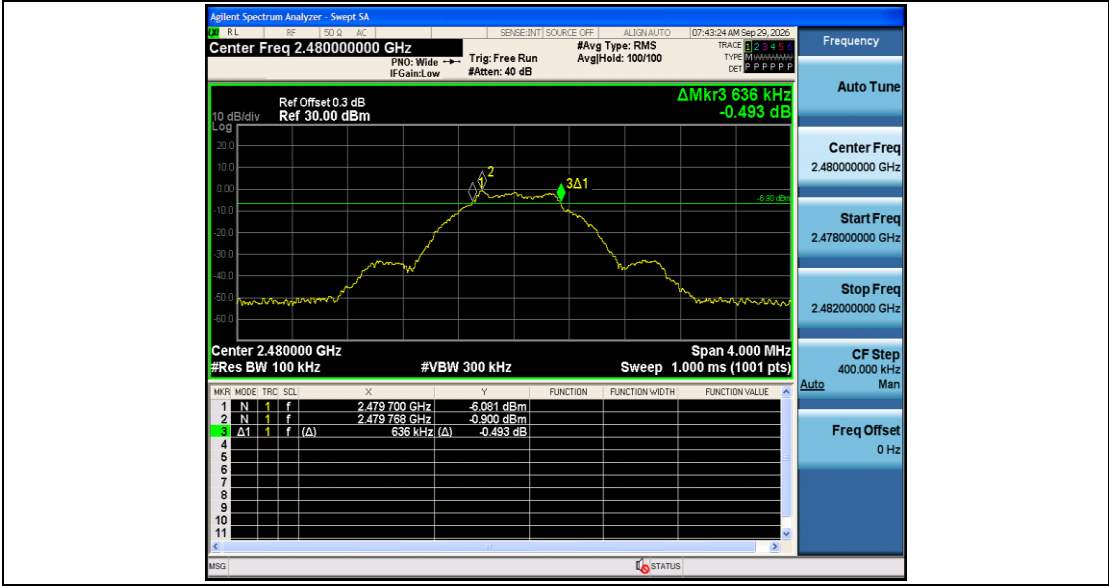
Appendix A: DTS Bandwidth

Test Result

TestMode	Antenna	Freq(MHz)	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.644	2401.692	2402.336	0.5	PASS
		2440	0.636	2439.692	2440.328	0.5	PASS
		2480	0.636	2479.700	2480.336	0.5	PASS

Test Graphs



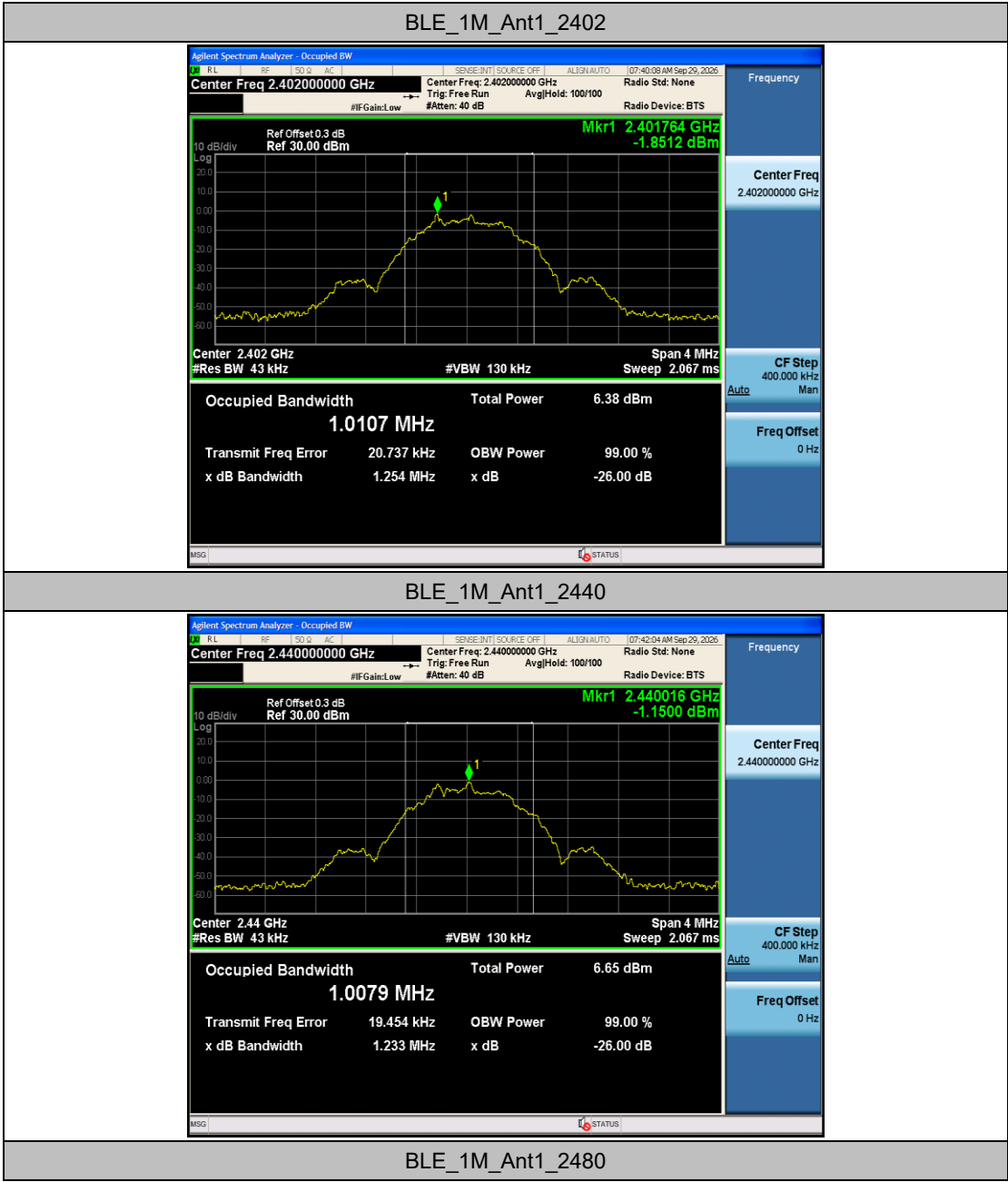


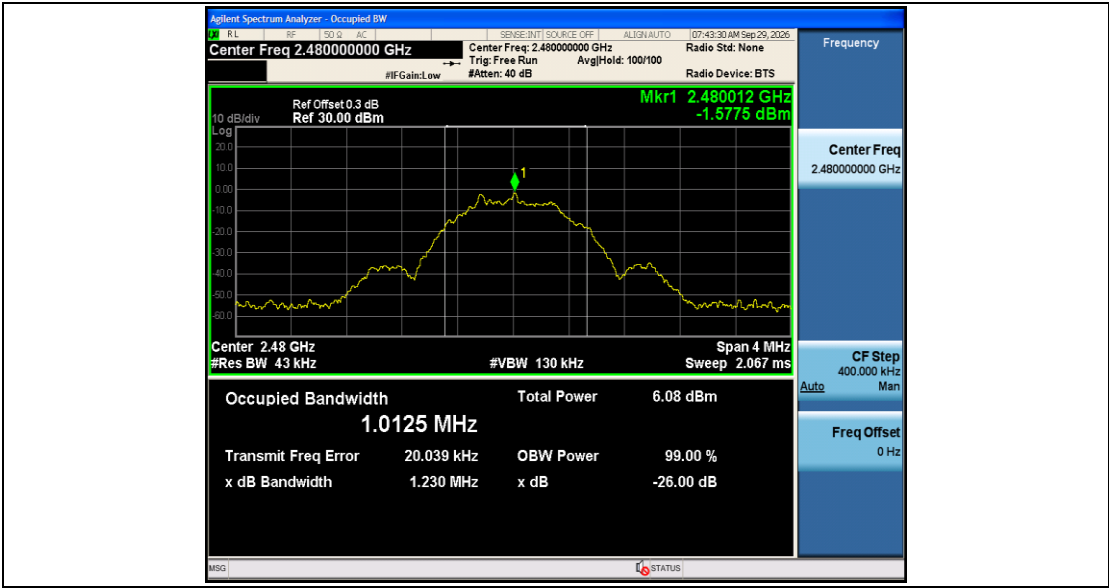
Appendix B: Occupied Channel Bandwidth

Test Result

TestMode	Antenna	Freq(MHz)	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	1.0107	2401.5154	2402.5261	---	---
		2440	1.0079	2439.5155	2440.5234	---	---
		2480	1.0125	2479.5138	2480.5263	---	---

Test Graphs





Appendix C: Maximum conducted output power

Test Result Peak

TestMode	Antenna	Freq(MHz)	Conducted Peak Power[dBm]	Conducted Limit[dBm]	Verdict
BLE_1M	Ant1	2402	-0.06	≤30	PASS
		2440	-0.16	≤30	PASS
		2480	-0.43	≤30	PASS

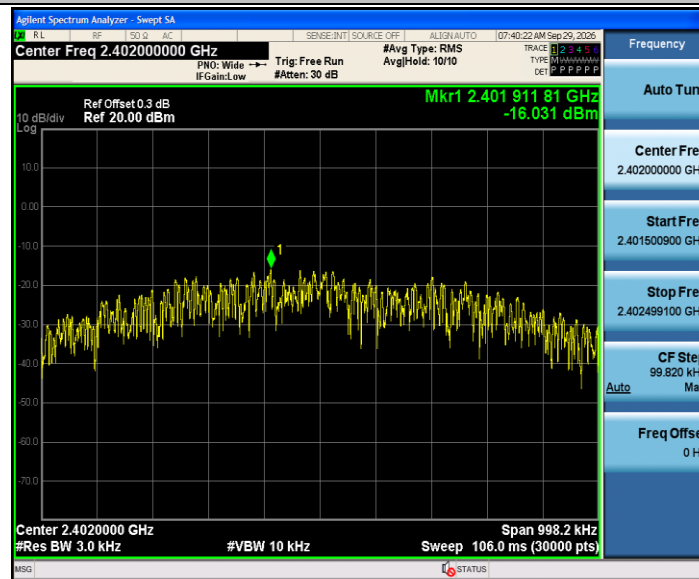
Appendix D: Maximum power spectral density

Test Result

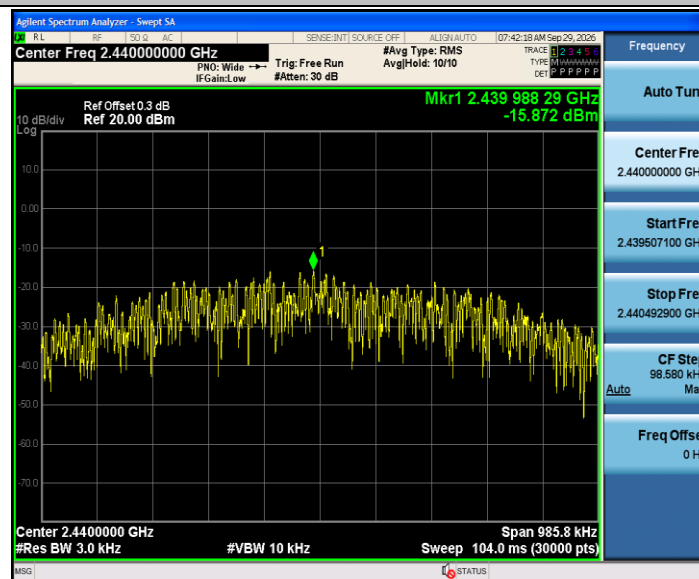
TestMode	Antenna	Freq(MHz)	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-16.03	≤8.00	PASS
		2440	-15.87	≤8.00	PASS
		2480	-15.79	≤8.00	PASS

Test Graphs

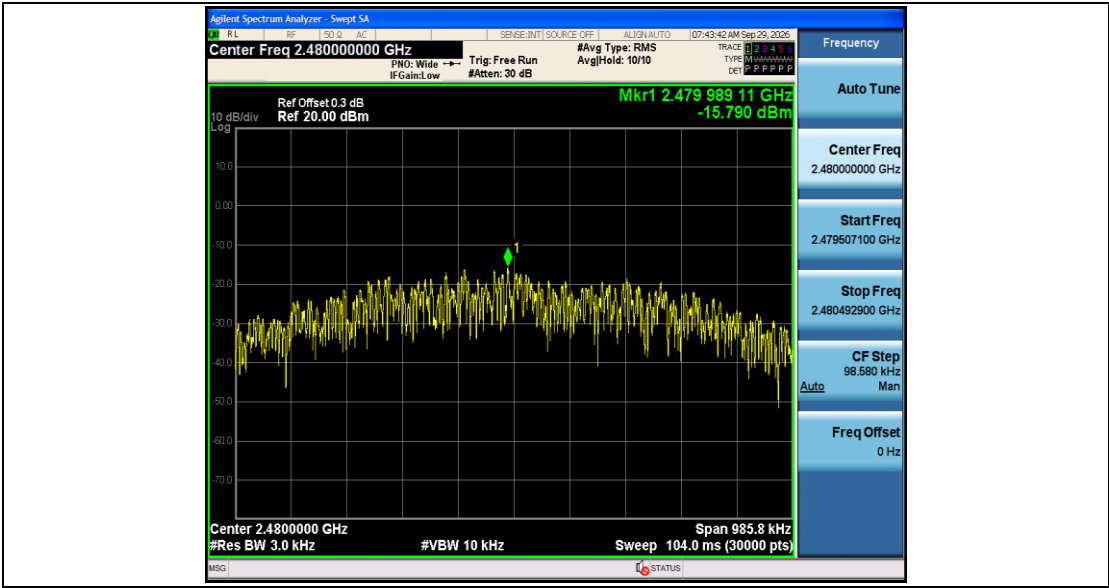
BLE_1M_Ant1_2402



BLE_1M_Ant1_2440



BLE_1M_Ant1_2480

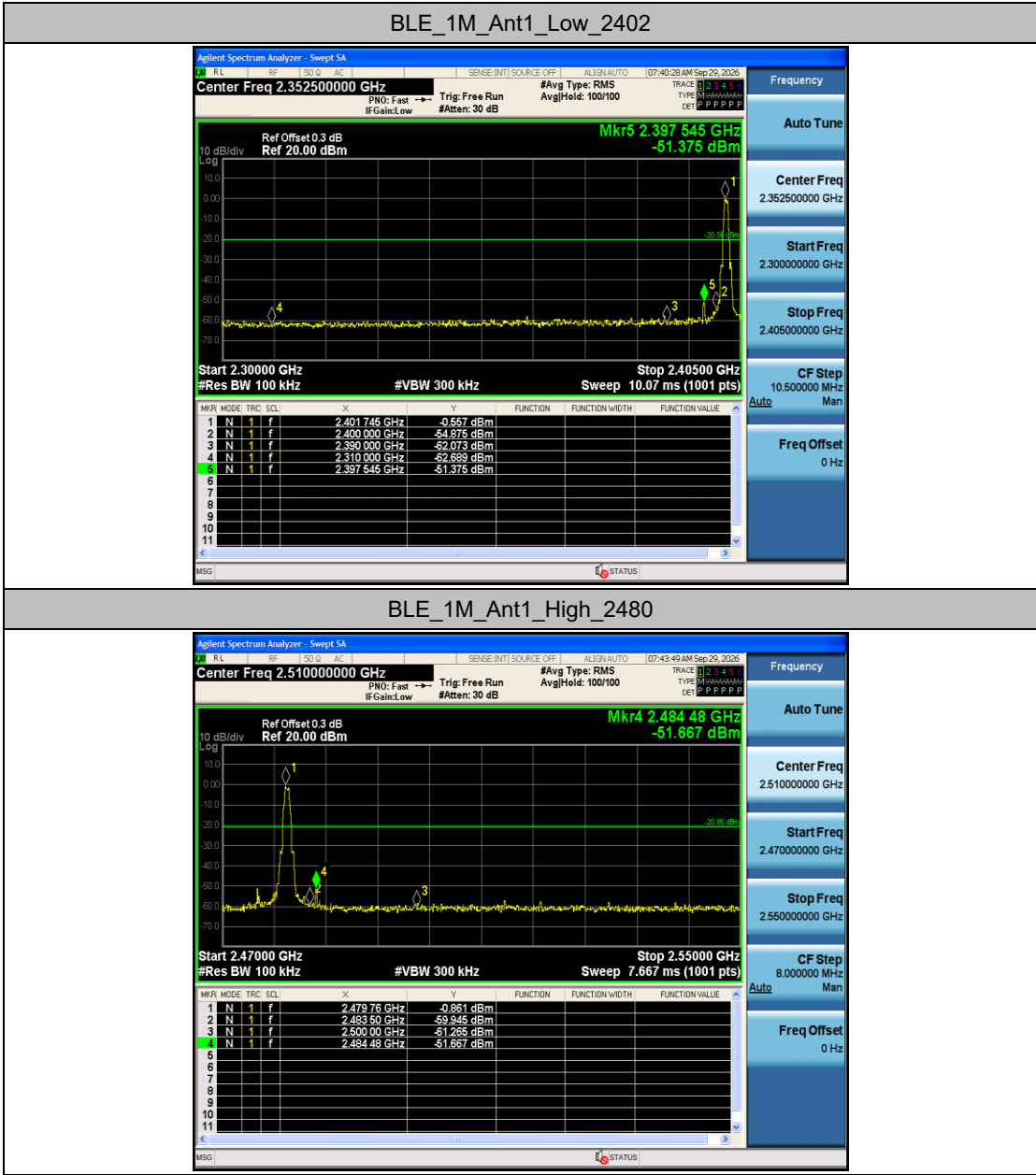


Appendix E: Band edge measurements

Test Result

TestMode	Antenna	Channel	Freq(MHz)	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	-0.56	-51.38	≤-20.56	PASS
		High	2480	-0.86	-51.67	≤-20.86	PASS

Test Graphs

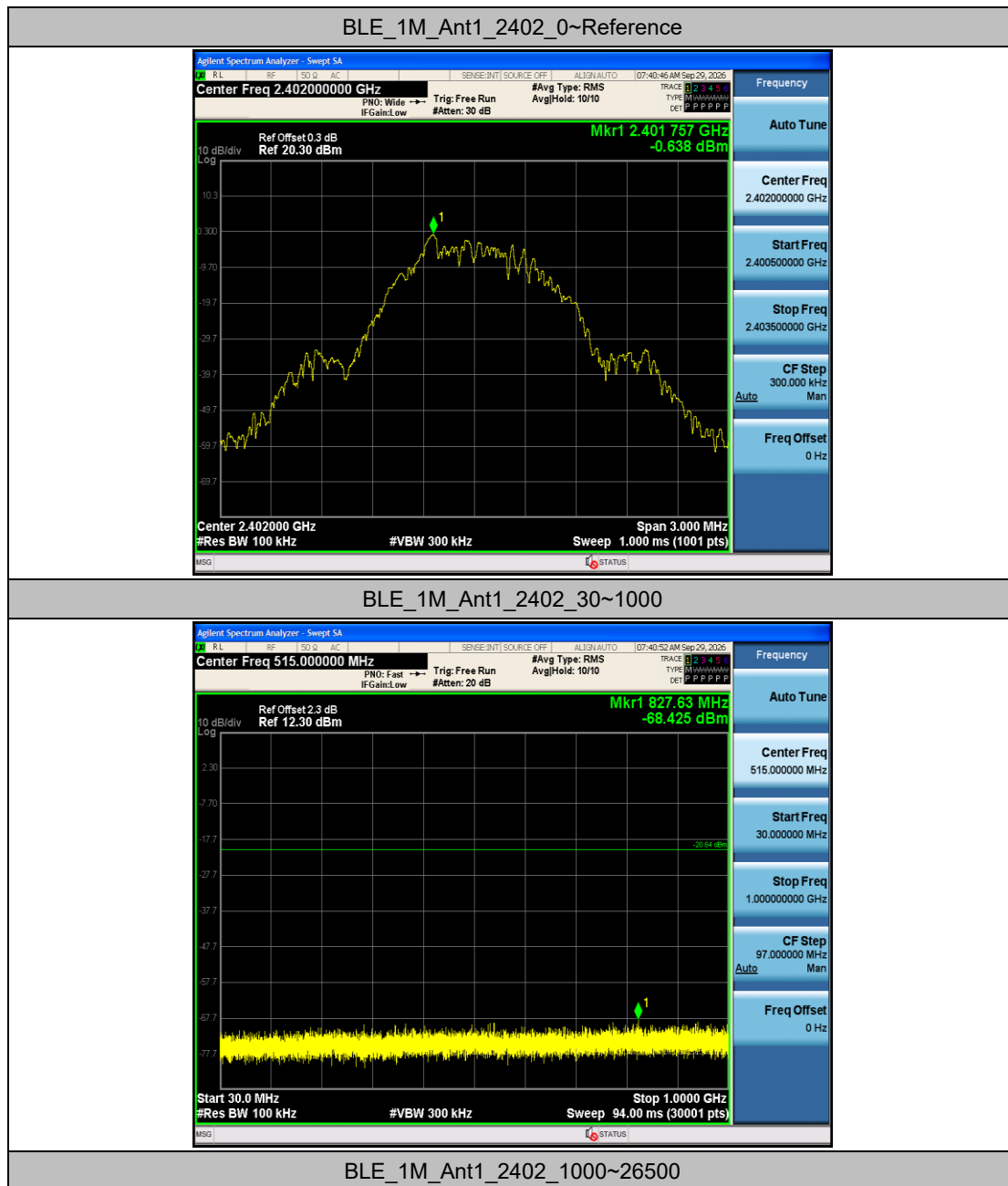


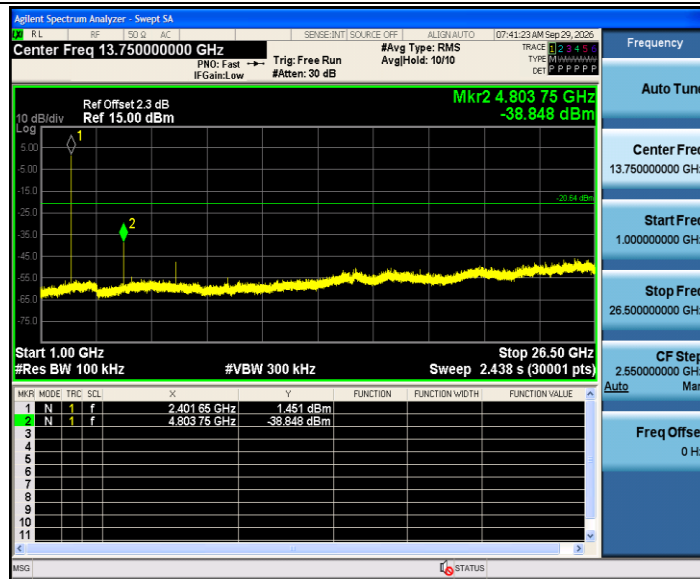
Appendix F: Conducted Spurious Emission

Test Result

TestMode	Antenna	Freq(MHz)	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	Reference	-0.64	-0.64	---	PASS
			30~1000	-0.64	-68.43	≤-20.64	PASS
			1000~26500	-0.64	-38.85	≤-20.64	PASS
		2440	Reference	-0.72	-0.72	---	PASS
			30~1000	-0.72	-68.59	≤-20.72	PASS
			1000~26500	-0.72	-41.78	≤-20.72	PASS
		2480	Reference	-1.82	-1.82	---	PASS
			30~1000	-1.82	-68.36	≤-21.82	PASS
			1000~26500	-1.82	-39.92	≤-21.82	PASS

Test Graphs

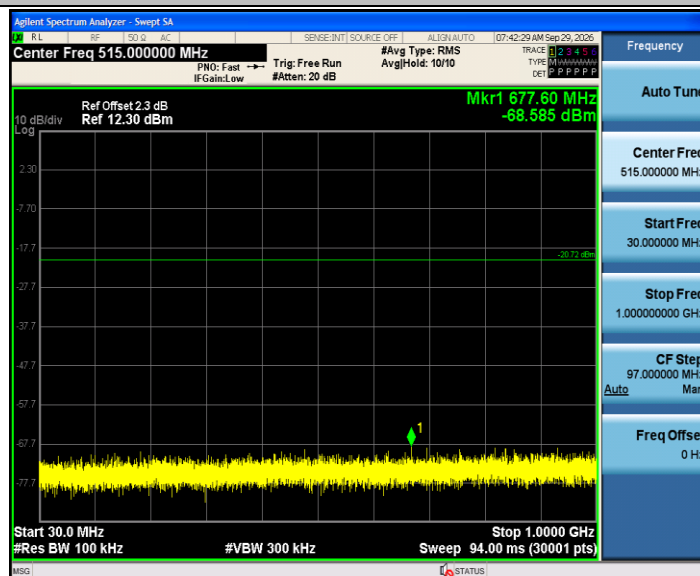




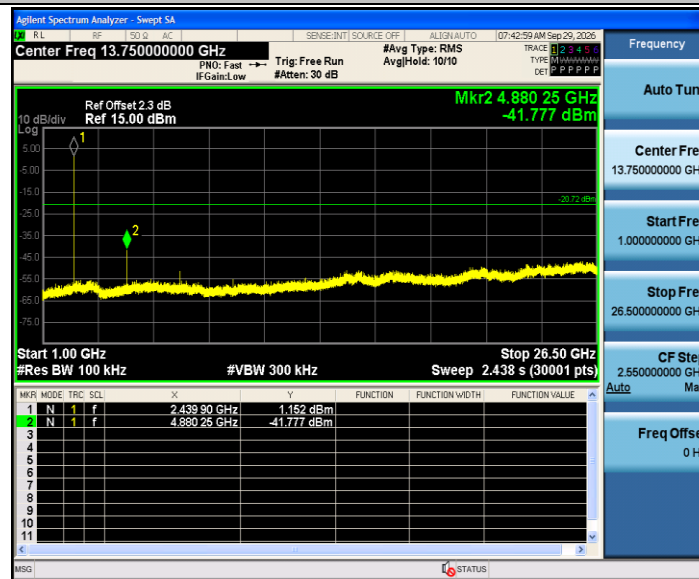
BLE_1M_Ant1_2440_0~Reference



BLE_1M_Ant1_2440_30~1000



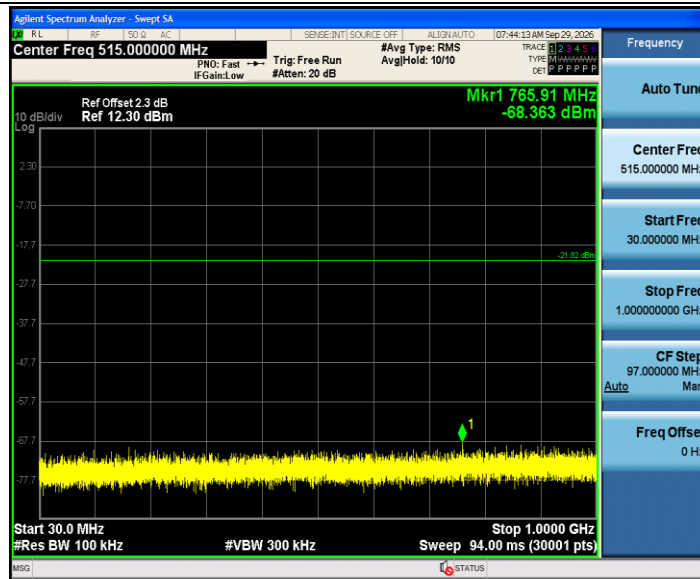
BLE_1M_Ant1_2440_1000~26500



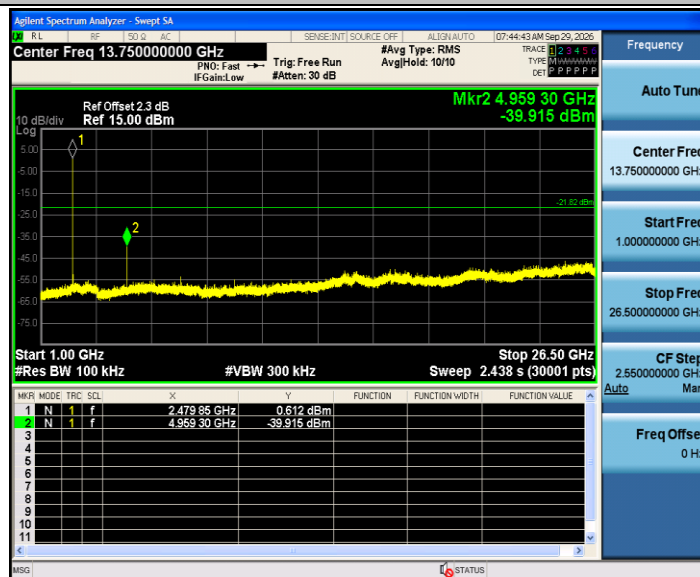
BLE_1M_Ant1_2480_0~Reference



BLE_1M_Ant1_2480_30~1000



BLE_1M_Ant1_2480_1000~26500

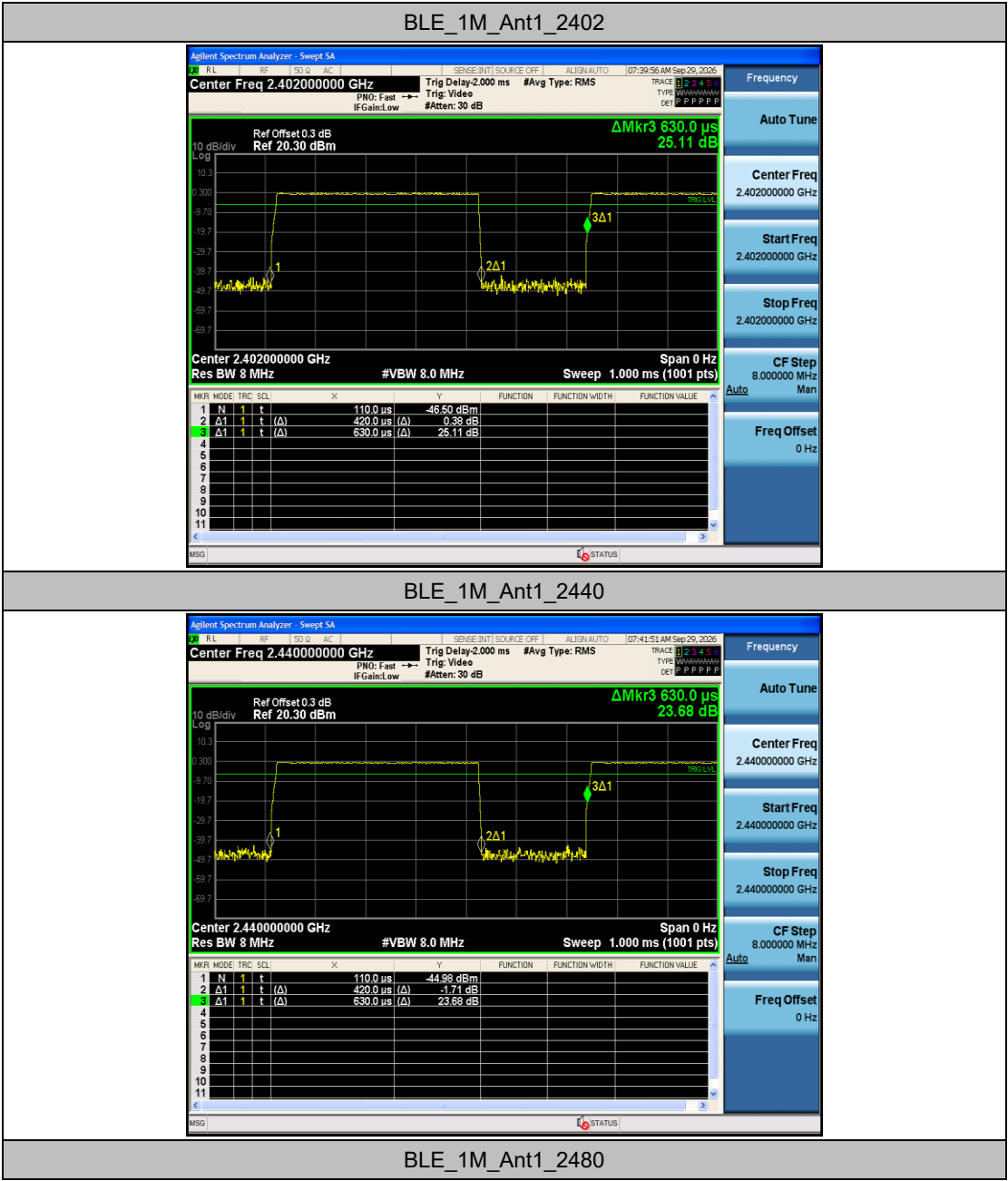


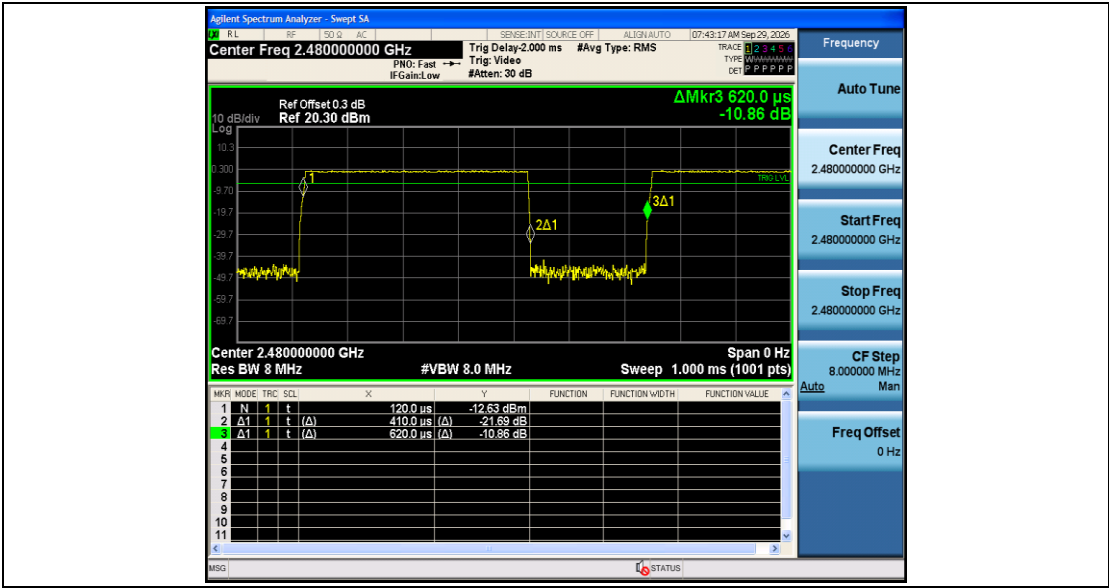
Appendix G: Duty Cycle

Test Result

TestMode	Antenna	Freq(MHz)	ON Time [ms]	Period [ms]	X	DC [%]	xFactor	Limit	Verdict
BLE_1M	Ant1	2402	0.42	0.63	0.6667	66.67	1.76	---	---
		2440	0.42	0.63	0.6667	66.67	1.76	---	---
		2480	0.41	0.62	0.6613	66.13	1.80	---	---

Test Graphs





Appendix H: Emissions in Restricted Bands

Test Result

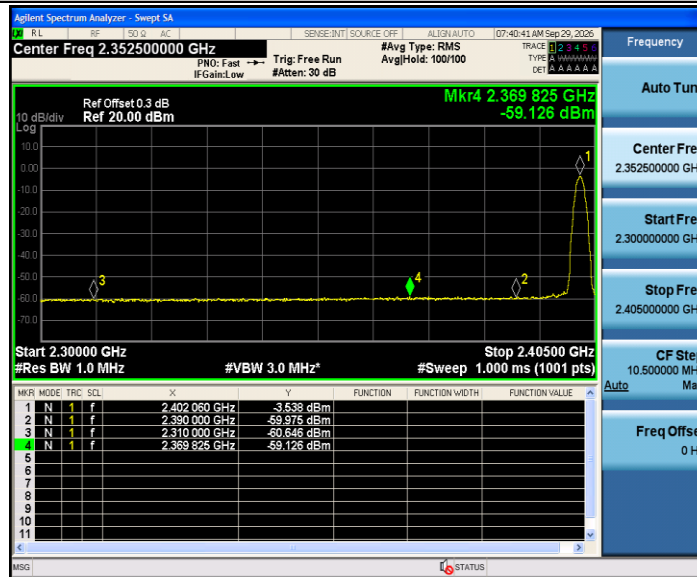
TestMode	Antenna	ChName	Freq (MHz)	Detector	Freq [MHz]	Result [dBm]	Gain [dB]	DC Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Verdict
BLE_1M	Ant1	Low	2402	AV	2310.000	-60.65	2.00	1.76	38.31	≤54	PASS
				AV	2369.825	-59.13	2.00	1.76	39.83	≤54	PASS
				AV	2390.000	-59.98	2.00	1.76	38.98	≤54	PASS
				Peak	2310.000	-51.38	2.00	0.00	45.82	≤74	PASS
				Peak	2362.160	-49.16	2.00	0.00	48.04	≤74	PASS
				Peak	2390.000	-51.58	2.00	0.00	45.62	≤74	PASS
		High	2480	AV	2483.500	-58.19	2.00	1.80	40.81	≤54	PASS
				AV	2484.800	-56.86	2.00	1.80	42.14	≤54	PASS
				AV	2500.000	-59.08	2.00	1.80	39.92	≤54	PASS
				Peak	2483.500	-47.94	2.00	0.00	49.26	≤74	PASS
				Peak	2484.000	-46.86	2.00	0.00	50.34	≤74	PASS
				Peak	2500.000	-52.31	2.00	0.00	44.89	≤74	PASS

Note:

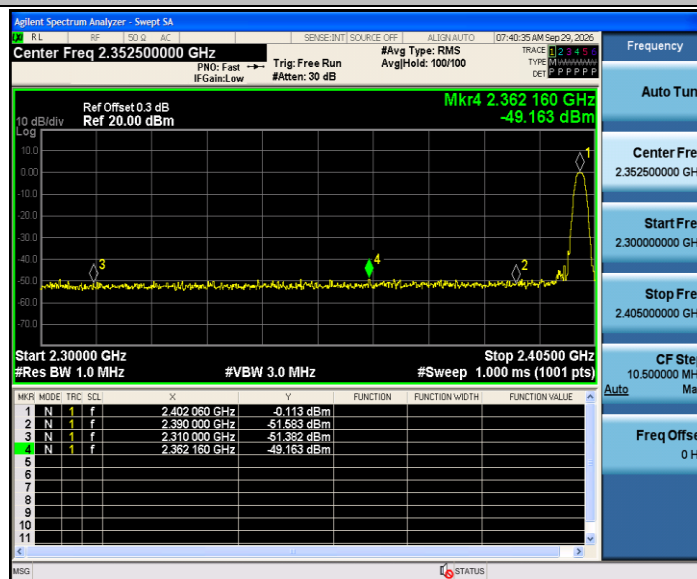
The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.

Test Graphs

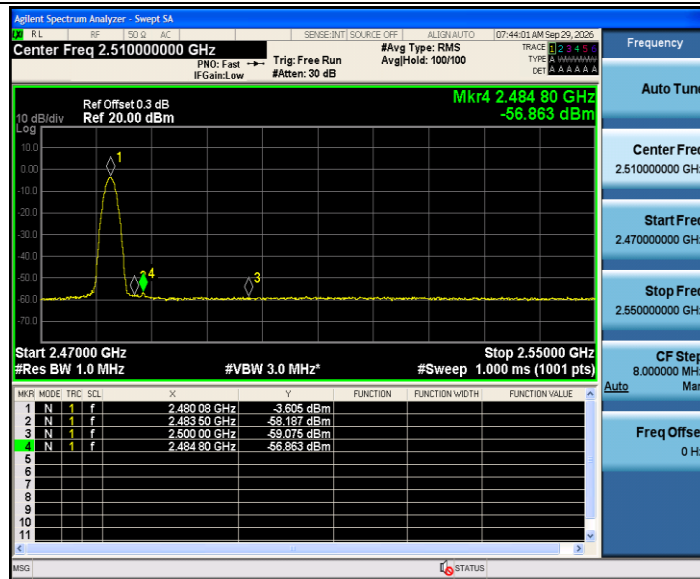
BLE_1M_Ant1_Low_2402_AV



BLE_1M_Ant1_Low_2402_Peak



BLE_1M_Ant1_High_2480_AV



BLE_1M_Ant1_High_2480_Peak

