Appendix A

RF Test Data for BT LE (Conducted Measurement)

Product Name: Solar LED Bulb String Lights

Test Model: S1030

Environmental Conditions

Temperature:	23.8 ° C
Relative Humidity:	52.1%
ATM Pressure:	100.0 kPa
Test Engineer:	Taylor Hu Taylor Hu
Supervised by:	Li Huan

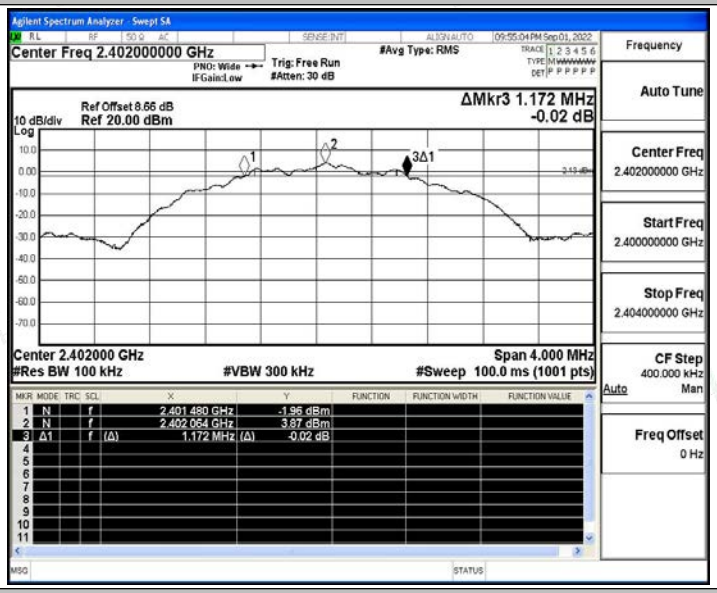
A.1 DTS Bandwidth

Test Result

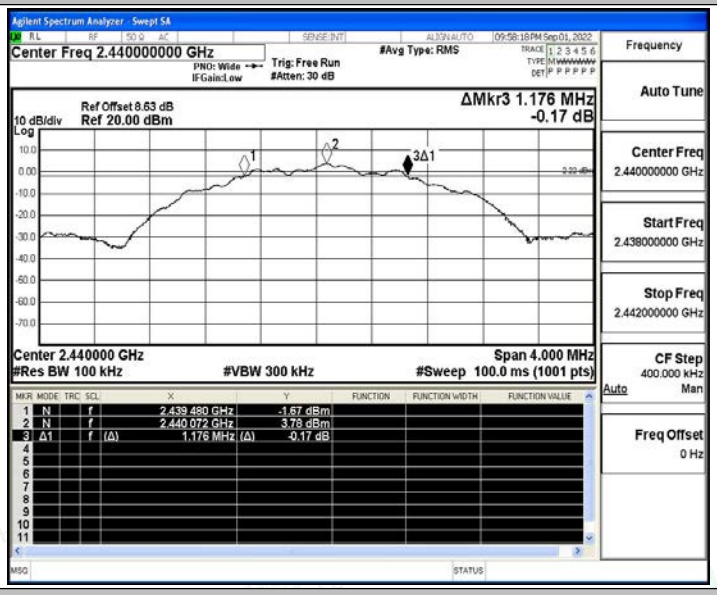
TestMode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	1.172	2401.480	2402.652	0.5	PASS
		2440	1.176	2439.480	2440.656	0.5	PASS
		2480	1.168	2479.480	2480.648	0.5	PASS
BLE_2M	Ant1	2402	1.180	2401.472	2402.652	0.5	PASS
		2440	1.176	2439.480	2440.656	0.5	PASS
		2480	1.168	2479.480	2480.648	0.5	PASS

Test Graphs

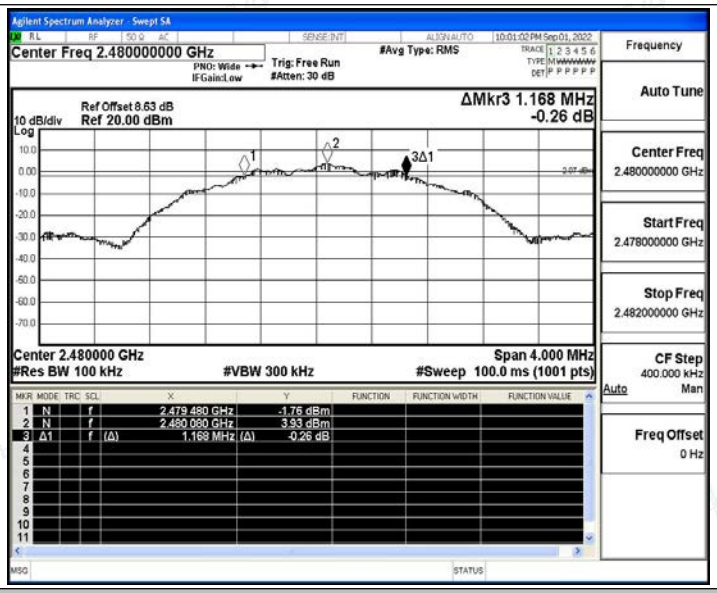
BLE_1M_Ant1_2402



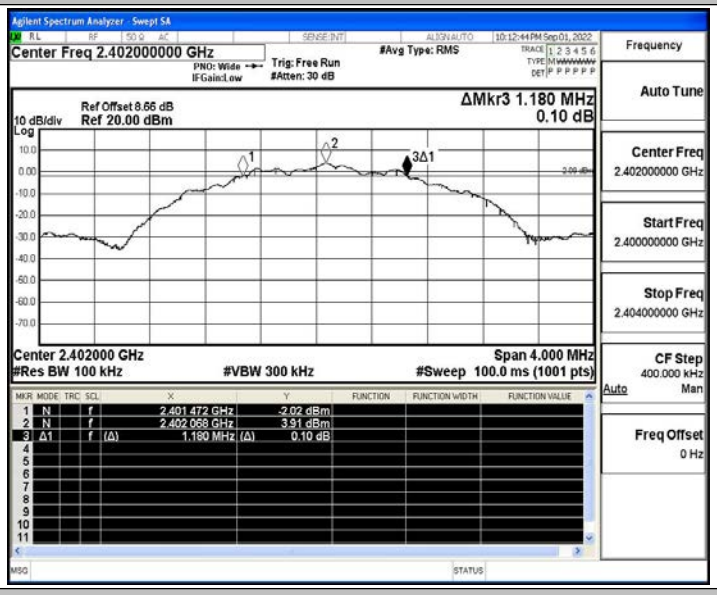
BLE_1M_Ant1_2440



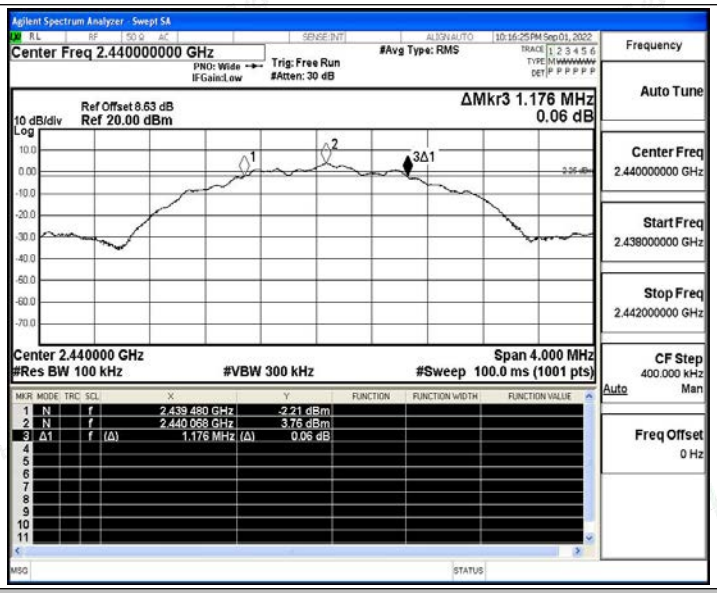
BLE_1M_Ant1_2480



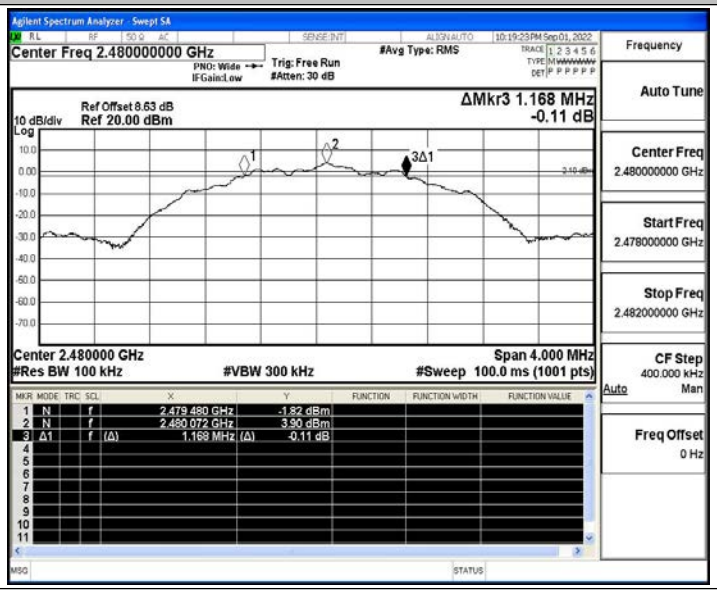
BLE_2M_Ant1_2402



BLE_2M_Ant1_2440



BLE_2M_Ant1_2480



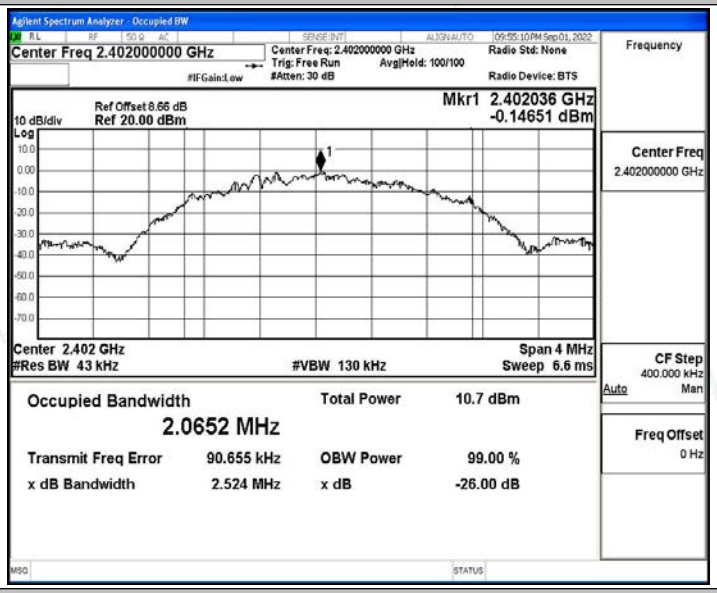
A.2 Occupied Channel Bandwidth

Test Result

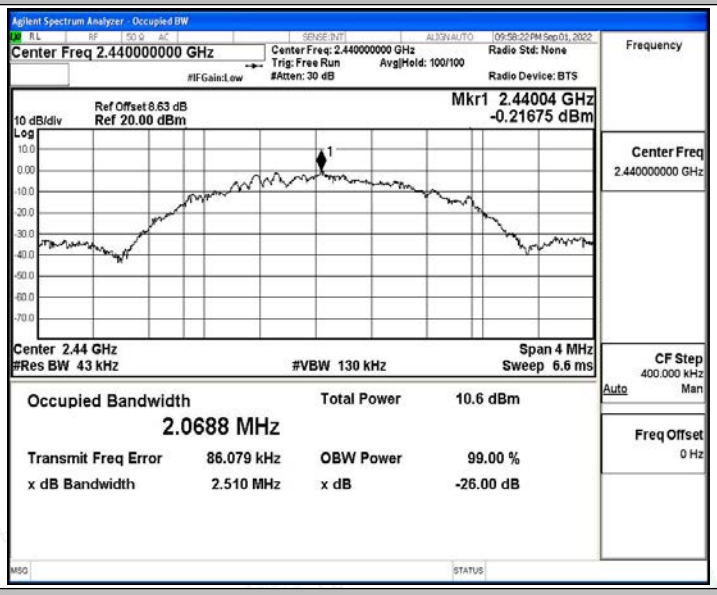
TestMode	Antenna	Channel	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	2.0652	2401.0581	2403.1233	---	---
		2440	2.0688	2439.0517	2441.1205	---	---
		2480	2.0731	2479.0499	2481.1230	---	---
BLE_2M	Ant1	2402	2.0703	2401.0544	2403.1247	---	---
		2440	2.0730	2439.0484	2441.1214	---	---
		2480	2.0707	2479.0518	2481.1225	---	---

Test Graphs

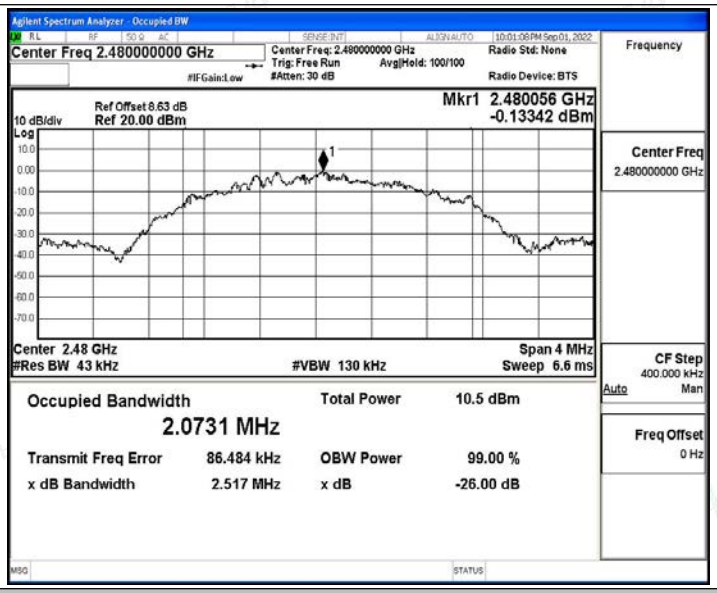
BLE_1M_Ant1_2402



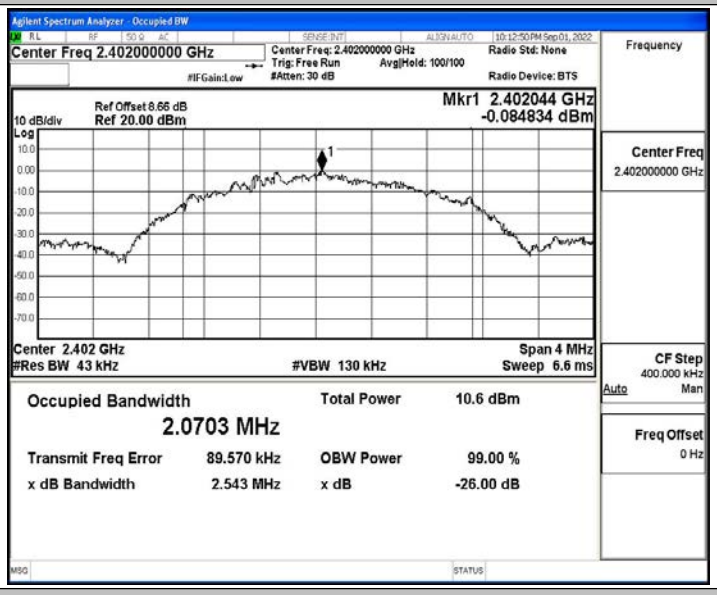
BLE_1M_Ant1_2440



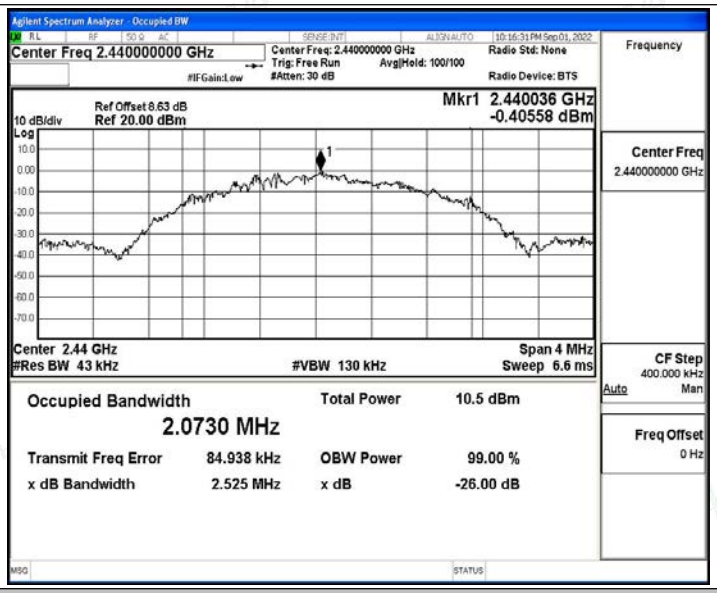
BLE_1M_Ant1_2480



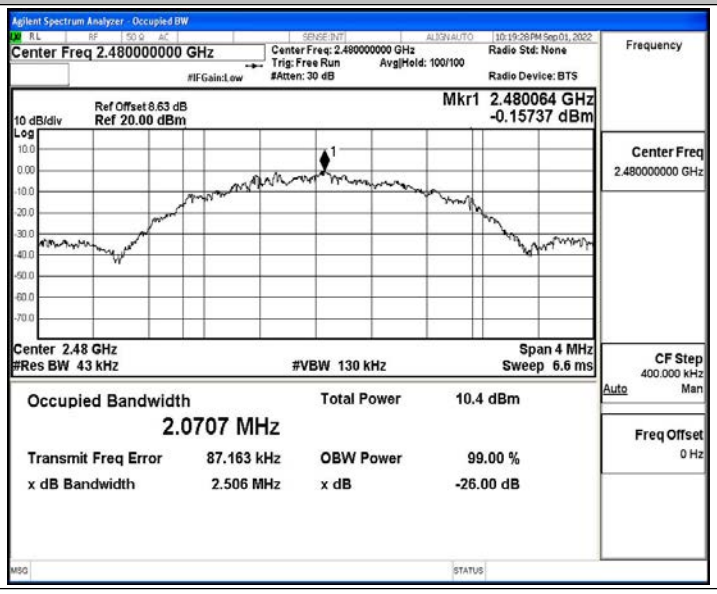
BLE_2M_Ant1_2402



BLE_2M_Ant1_2440



BLE_2M_Ant1_2480



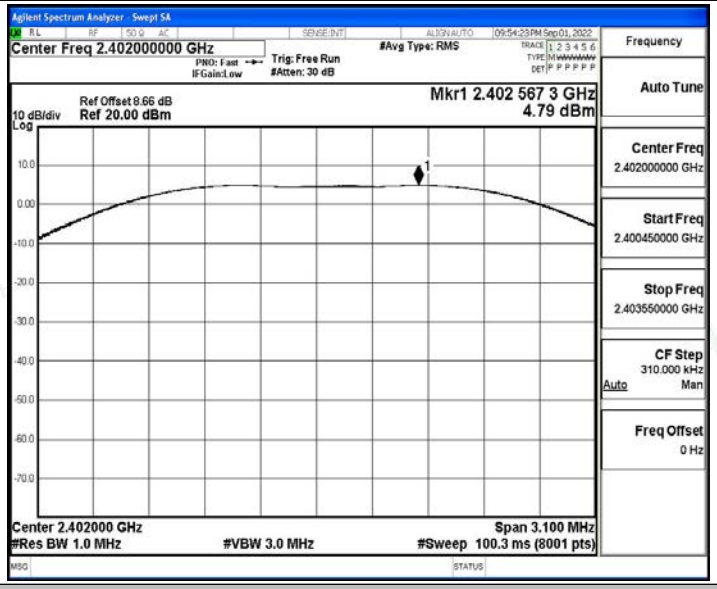
A.3 Maximum peak conducted output power

Test Result

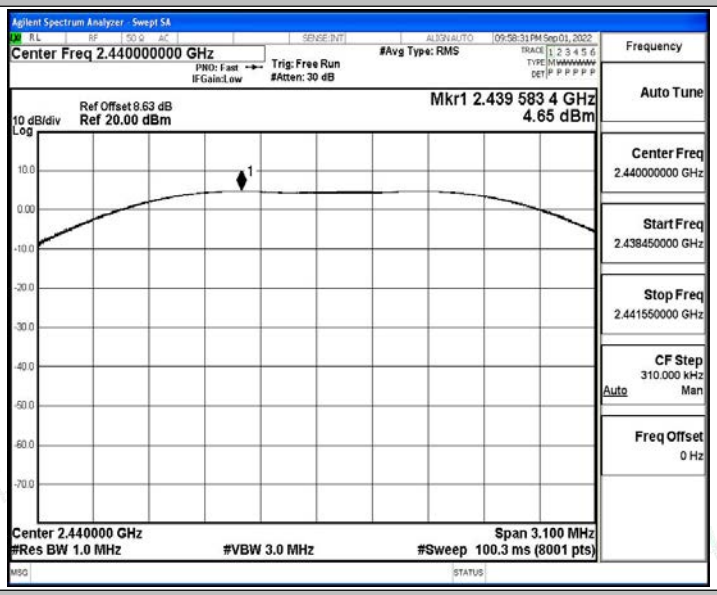
TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	4.79	≤30	PASS
		2440	4.65	≤30	PASS
		2480	4.7	≤30	PASS
BLE_2M	Ant1	2402	4.87	≤30	PASS
		2440	4.69	≤30	PASS
		2480	4.7	≤30	PASS

Test Graphs

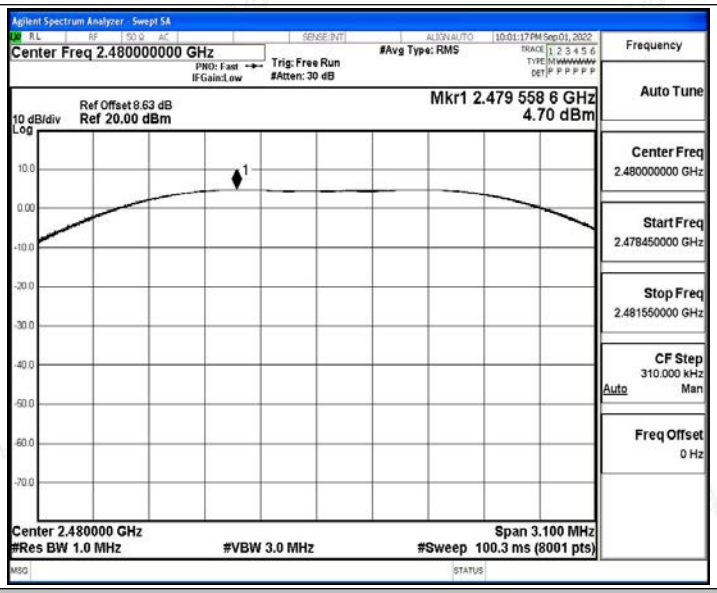
BLE_1M_Ant1_2402



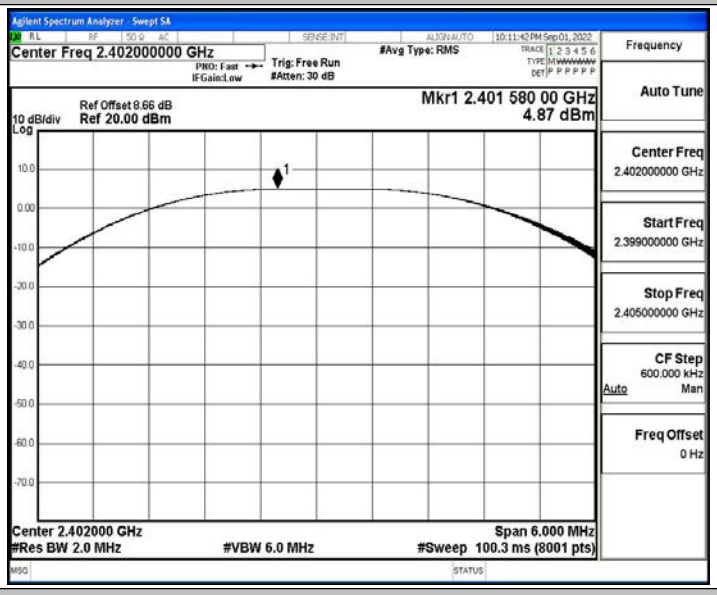
BLE_1M_Ant1_2440



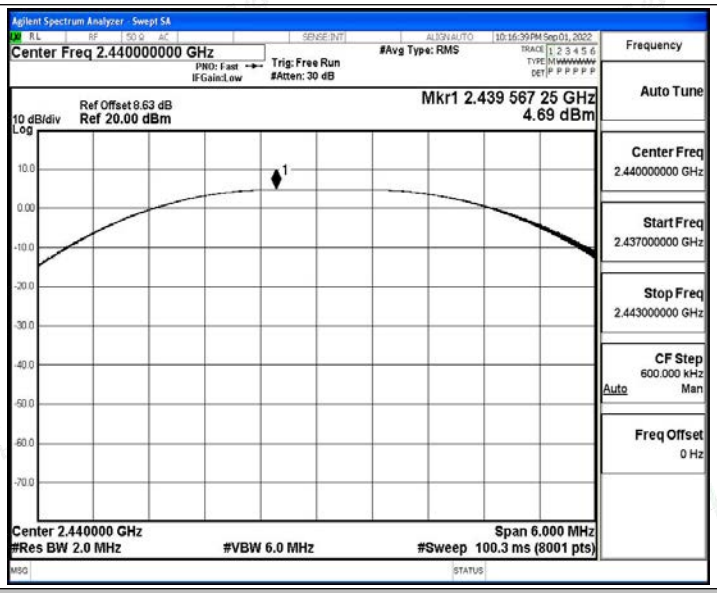
BLE_1M_Ant1_2480



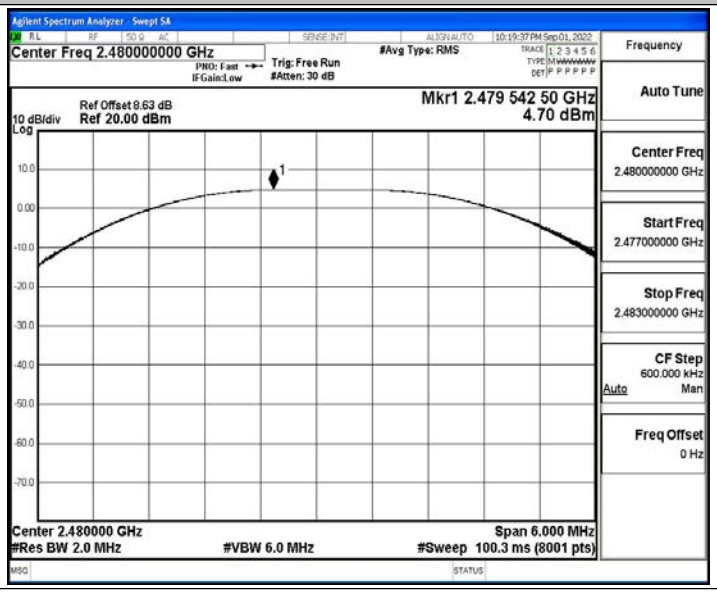
BLE_2M_Ant1_2402



BLE_2M_Ant1_2440



BLE_2M_Ant1_2480



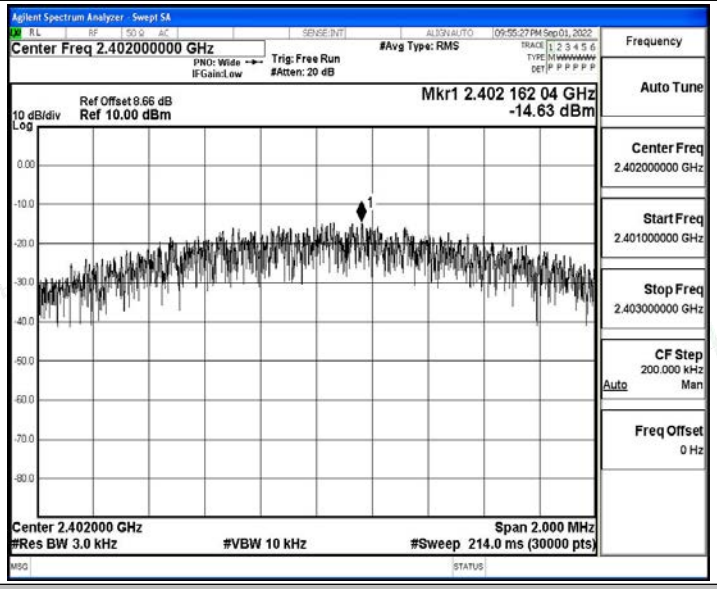
A.4 Maximum power spectral density

Test Result

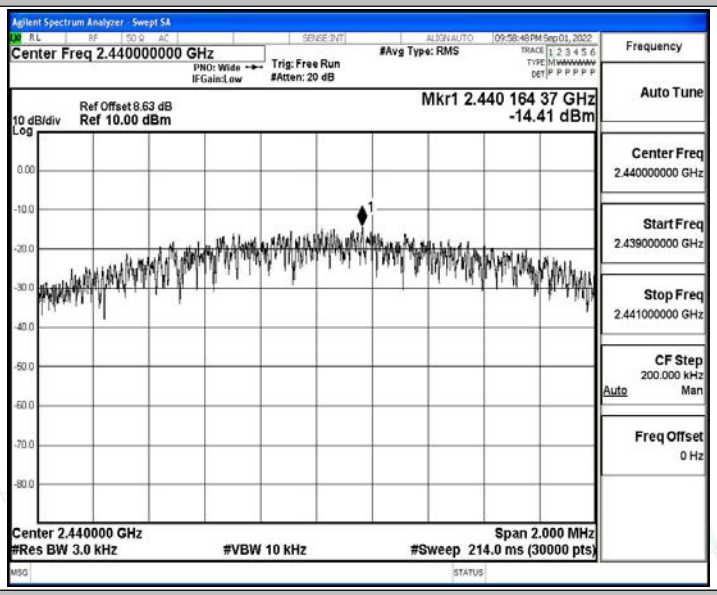
TestMode	Antenna	Channel	Result[dBm/3-100kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-14.63	≤8.00	PASS
		2440	-14.42	≤8.00	PASS
		2480	-14.54	≤8.00	PASS
BLE_2M	Ant1	2402	-13.51	≤8.00	PASS
		2440	-14.04	≤8.00	PASS
		2480	-13.91	≤8.00	PASS

Test Graphs

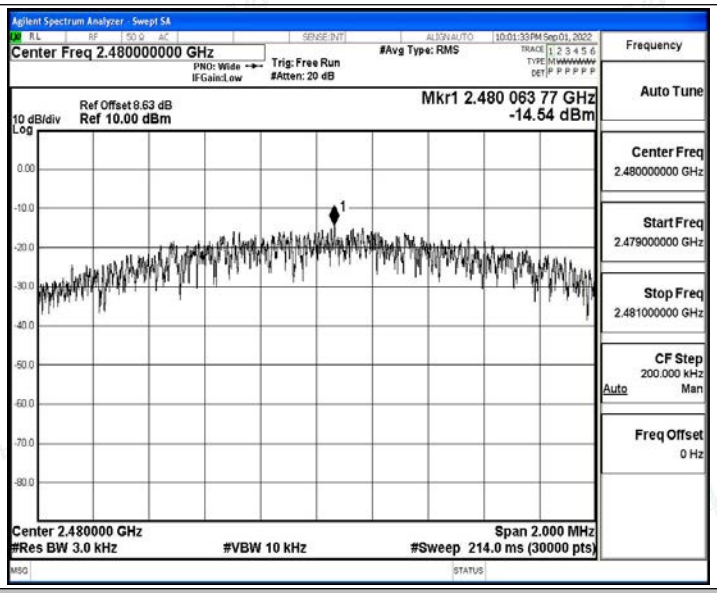
BLE_1M_Ant1_2402



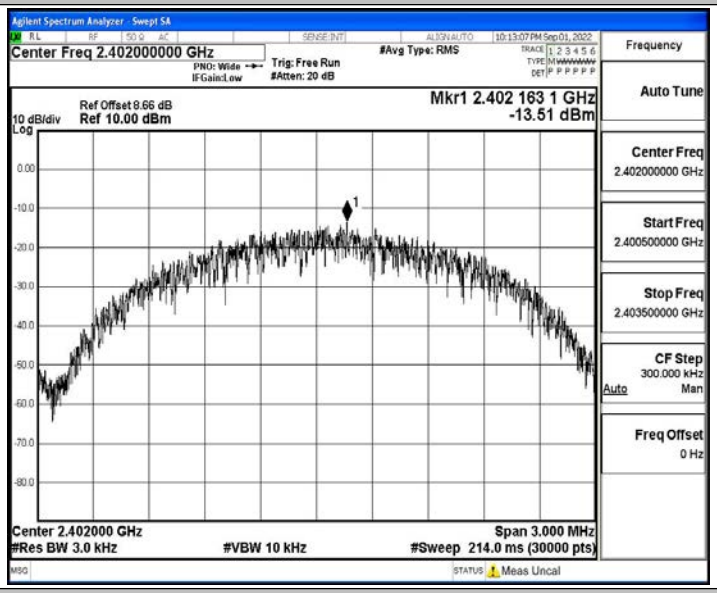
BLE_1M_Ant1_2440



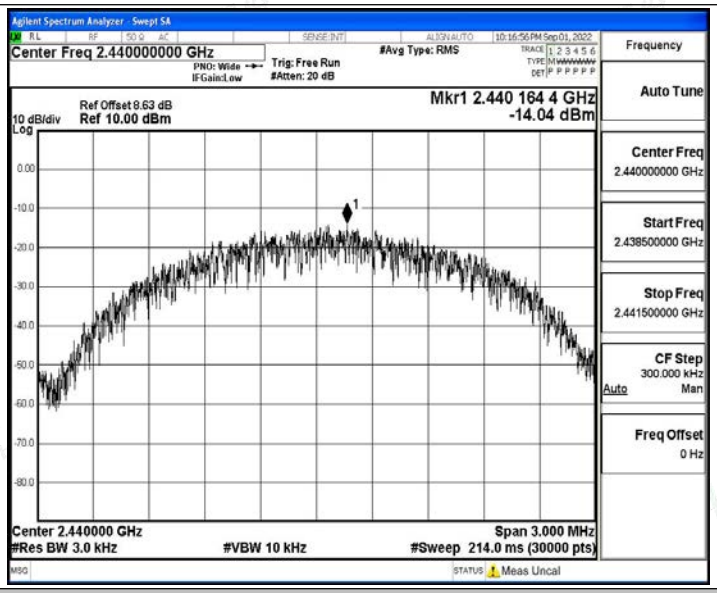
BLE_1M_Ant1_2480



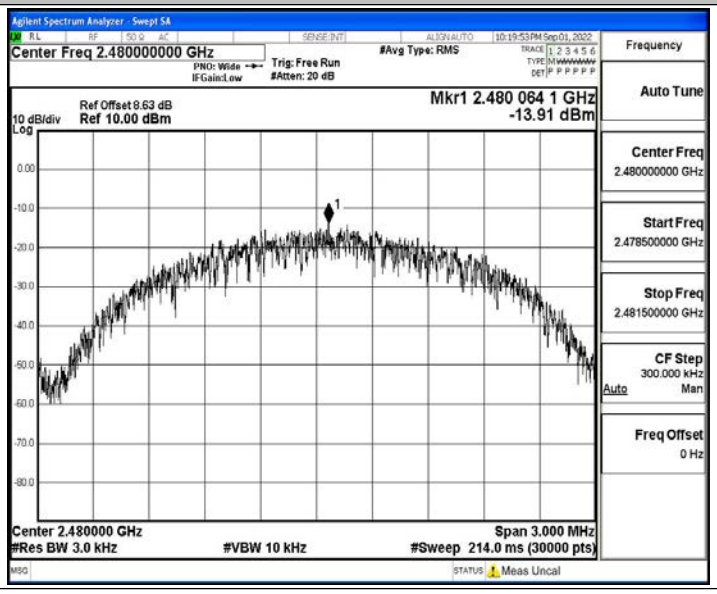
BLE_2M_Ant1_2402



BLE_2M_Ant1_2440



BLE_2M_Ant1_2480



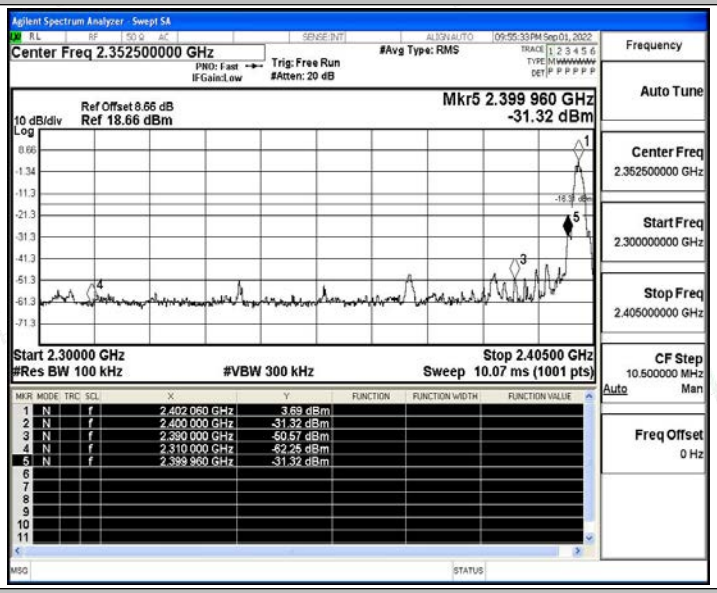
A.5 Band edge measurements

Test Result

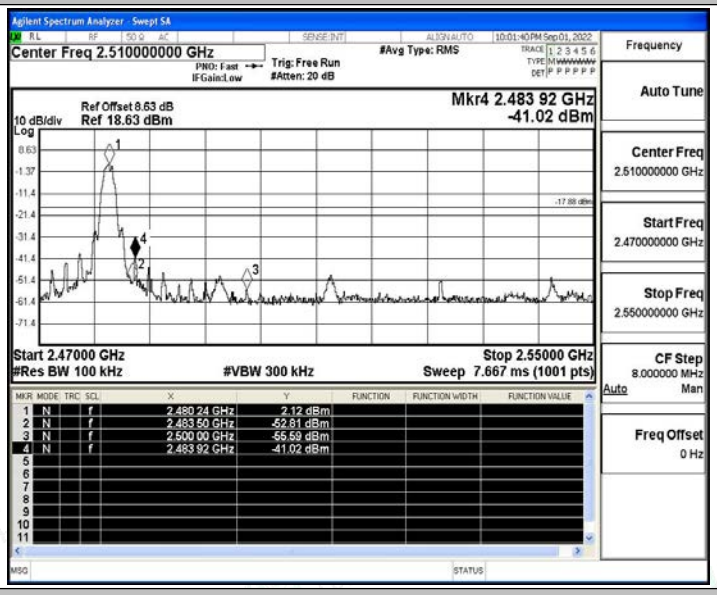
TestMode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	3.69	-31.32	≤-16.31	PASS
		High	2480	2.12	-41.02	≤-17.88	PASS
BLE_2M	Ant1	Low	2402	2.95	-31.33	≤-17.05	PASS
		High	2480	3.44	-41.03	≤-16.56	PASS

Test Graphs

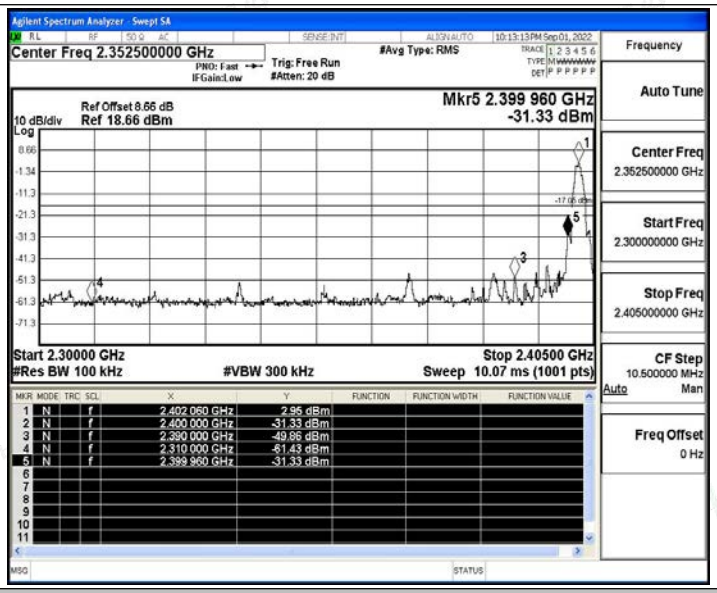
BLE_1M_Ant1_Low_2402



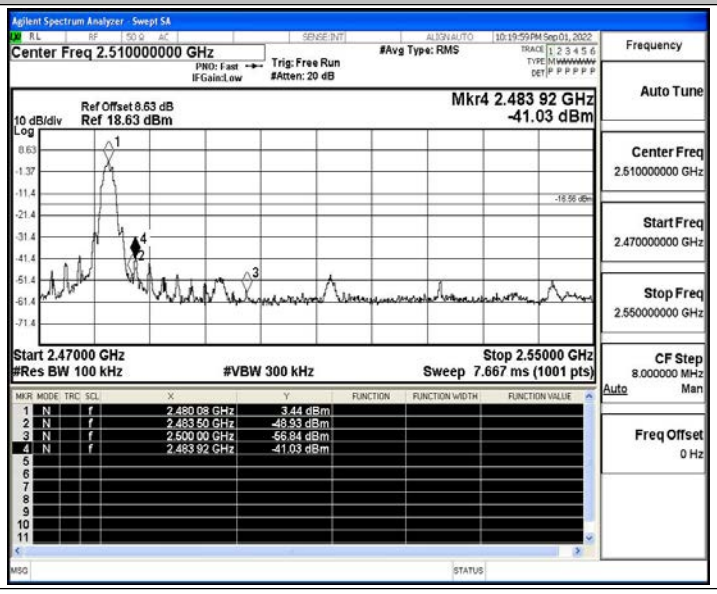
BLE_1M_Ant1_High_2480



BLE_2M_Ant1_Low_2402



BLE_2M_Ant1_High_2480



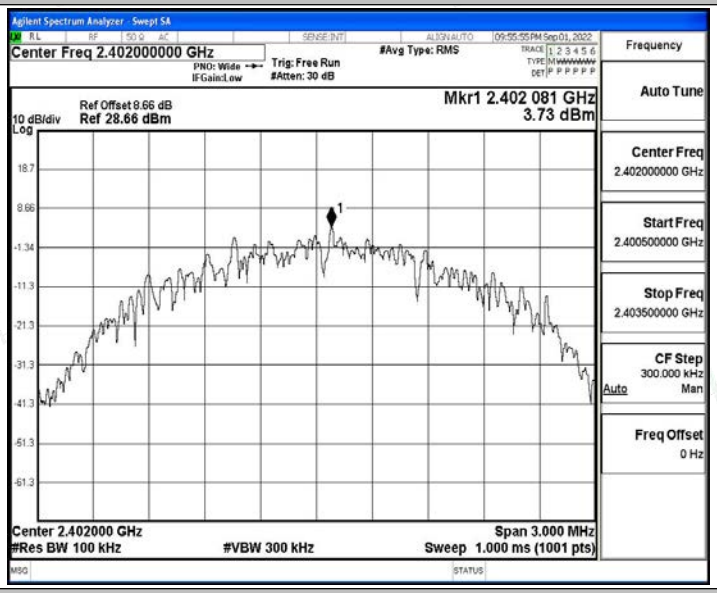
A.6 Conducted Spurious Emission

Test Result

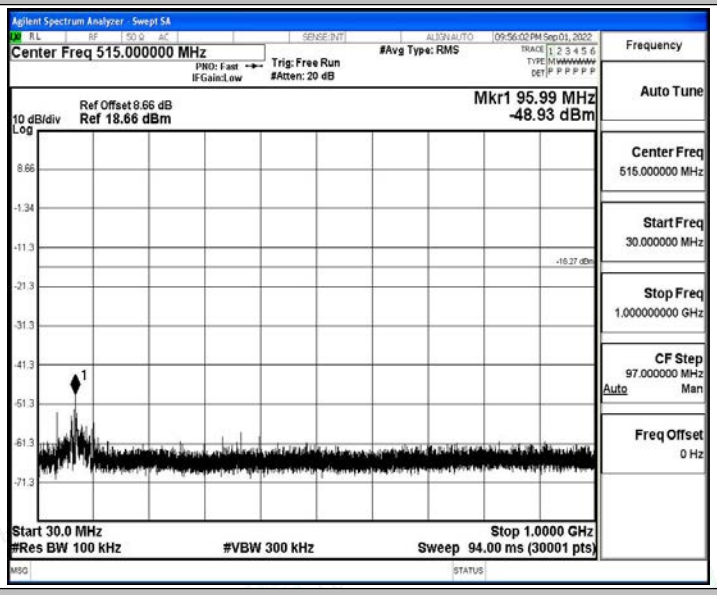
TestMode	Antenna	Channel	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	Reference	3.73	3.73	---	PASS
			30~1000	3.73	-48.93	≤-16.27	PASS
			1000~26500	3.73	-36.11	≤-16.27	PASS
		2440	Reference	1.43	1.43	---	PASS
			30~1000	1.43	-48.74	≤-18.57	PASS
			1000~26500	1.43	-35.98	≤-18.57	PASS
		2480	Reference	3.81	3.81	---	PASS
			30~1000	3.81	-49	≤-16.19	PASS
			1000~26500	3.81	-36.15	≤-16.19	PASS
BLE_2M	Ant1	2402	Reference	1.39	1.39	---	PASS
			30~1000	1.39	-49.48	≤-18.61	PASS
			1000~26500	1.39	-35.55	≤-18.61	PASS
		2440	Reference	1.72	1.72	---	PASS
			30~1000	1.72	-48.84	≤-18.28	PASS
			1000~26500	1.72	-36.02	≤-18.28	PASS
		2480	Reference	0.71	0.71	---	PASS
			30~1000	0.71	-49.35	≤-19.29	PASS
			1000~26500	0.71	-36.16	≤-19.29	PASS

Test Graphs

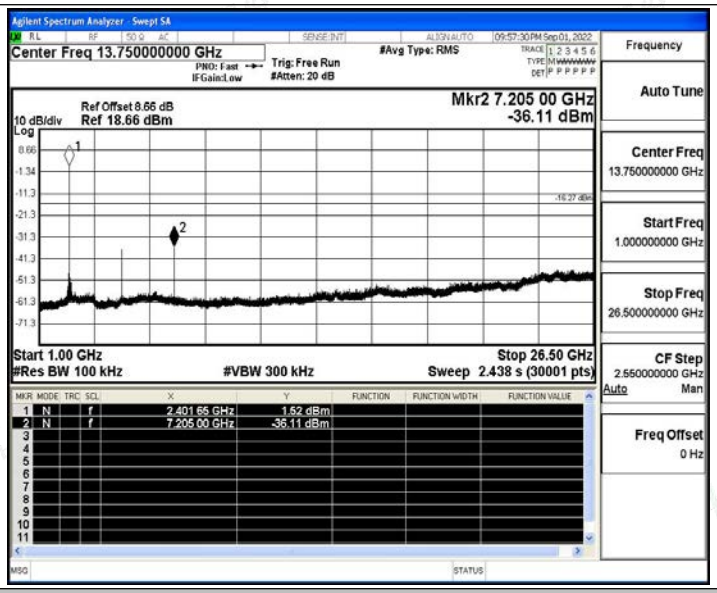
BLE_1M_Ant1_2402_0~Reference



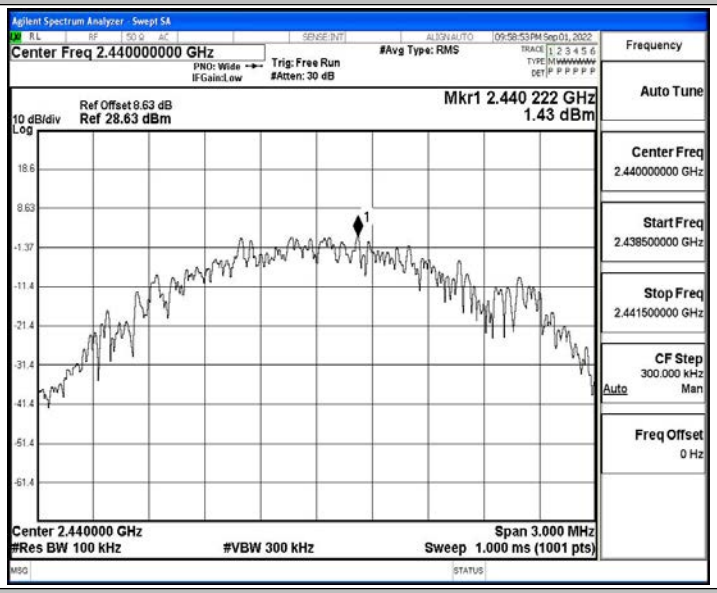
BLE_1M_Ant1_2402_30~1000



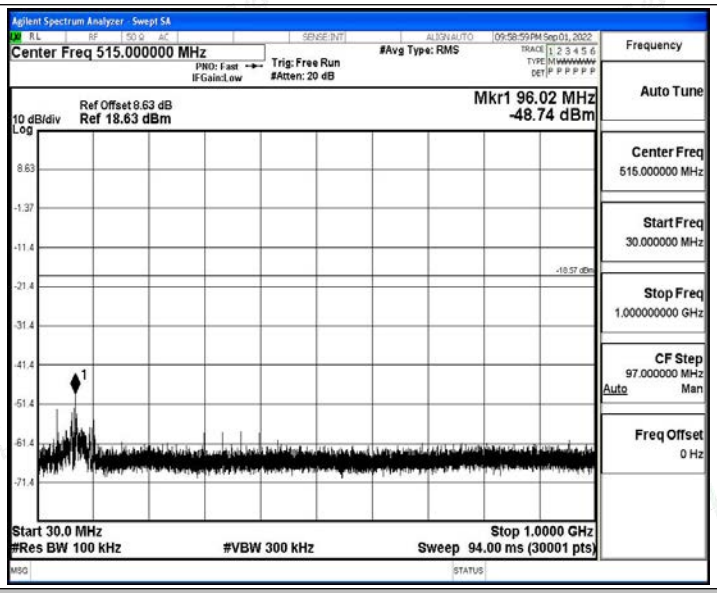
BLE_1M_Ant1_2402_1000~26500



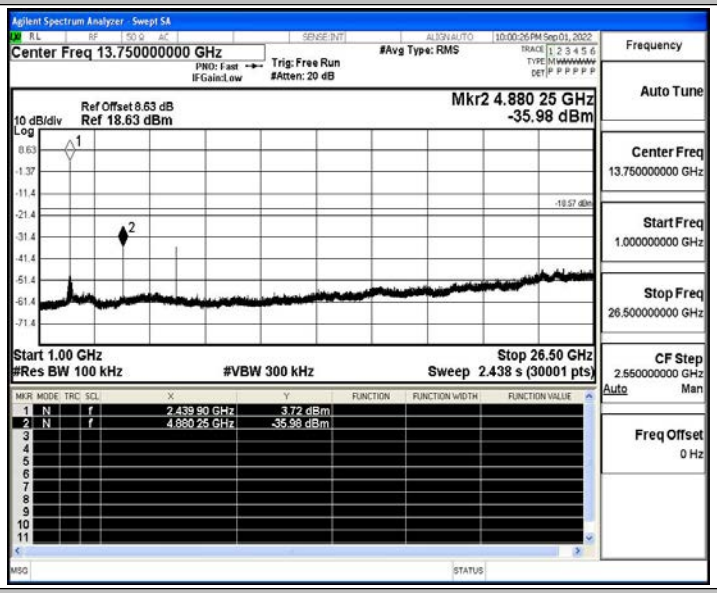
BLE_1M_Ant1_2440_0~Reference



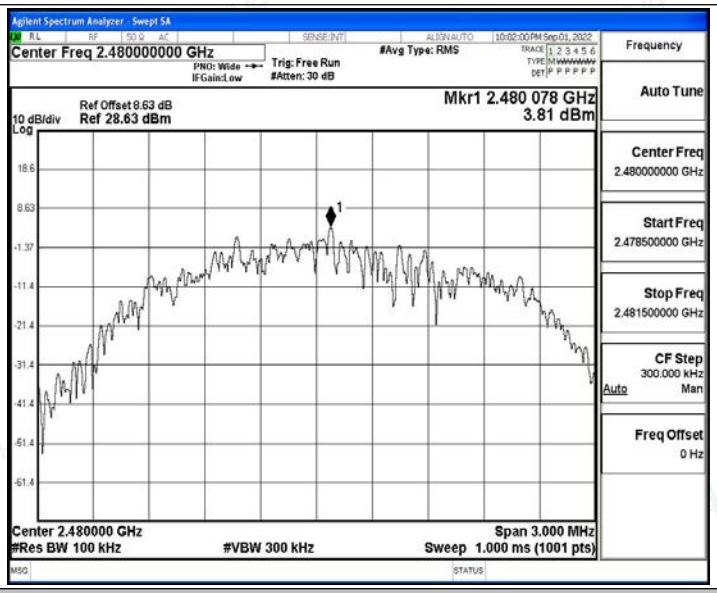
BLE_1M_Ant1_2440_30~1000



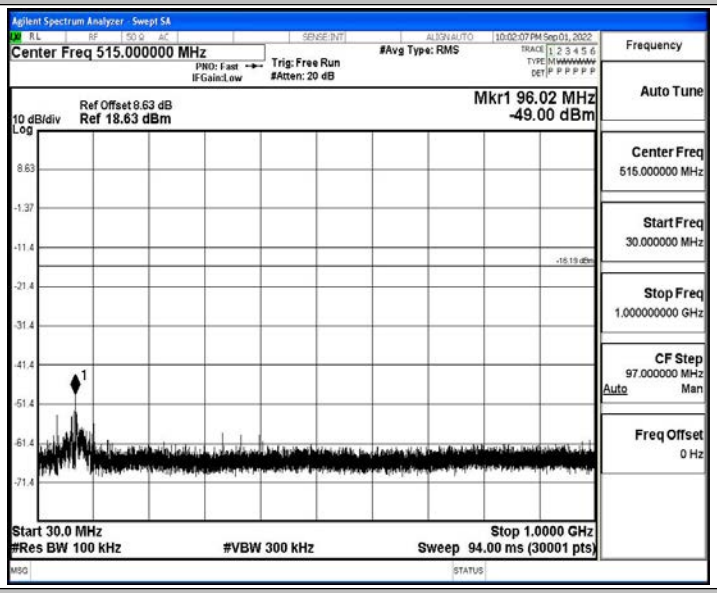
BLE_1M_Ant1_2440_1000~26500



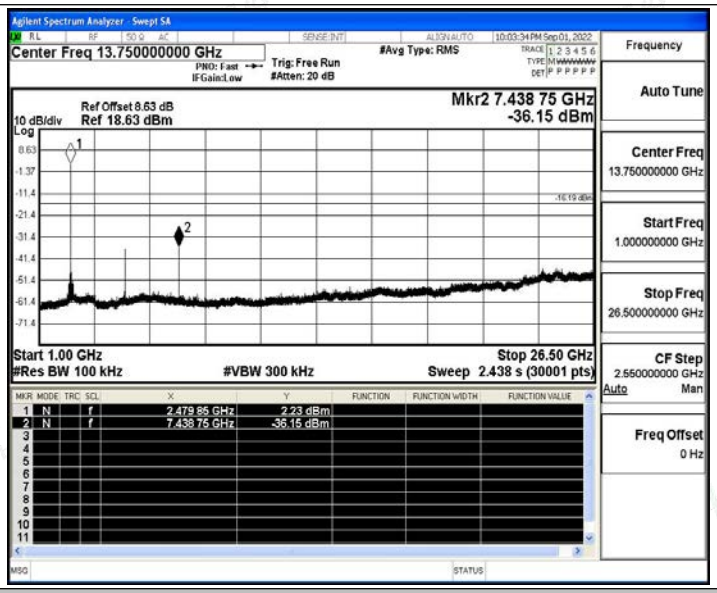
BLE_1M_Ant1_2480_0~Reference



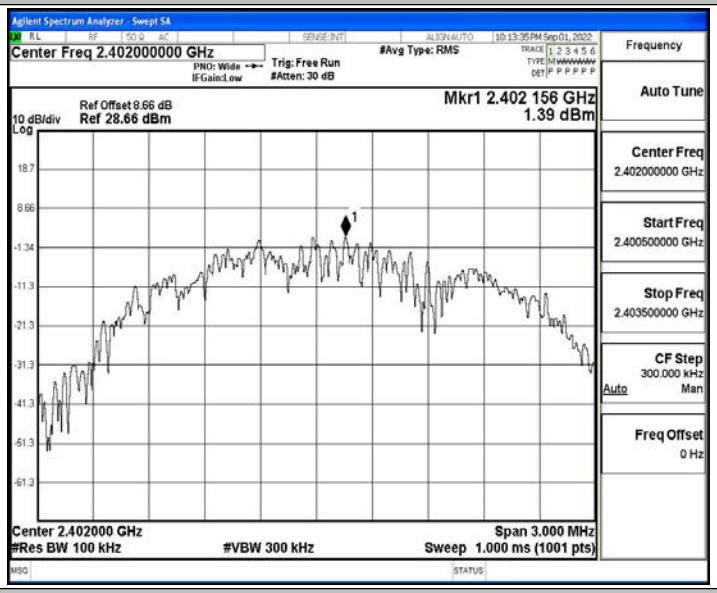
BLE_1M_Ant1_2480_30~1000



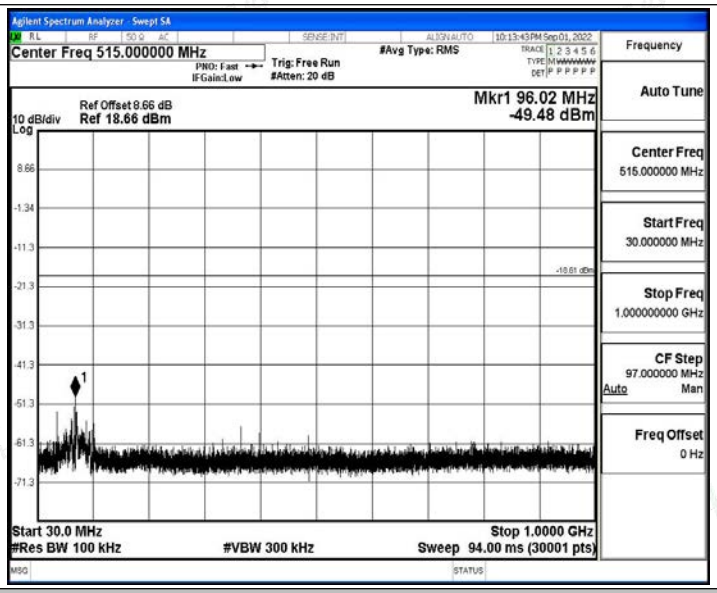
BLE_1M_Ant1_2480_1000~26500



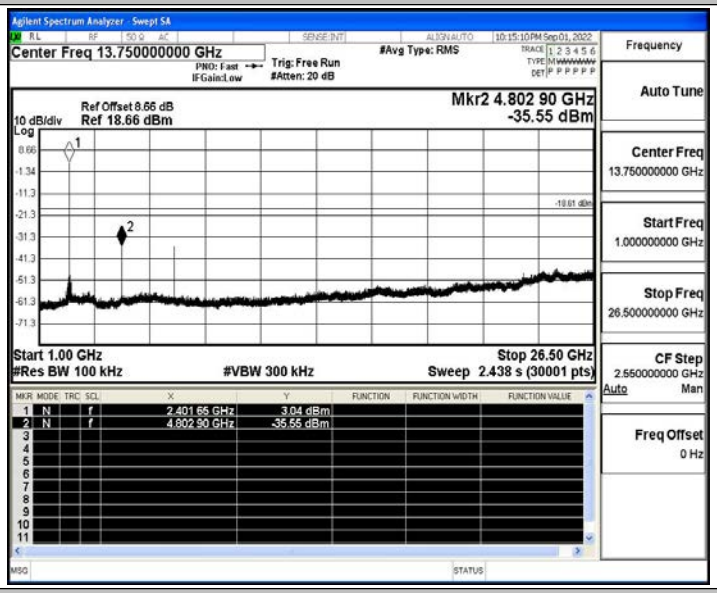
BLE_2M_Ant1_2402_0~Reference



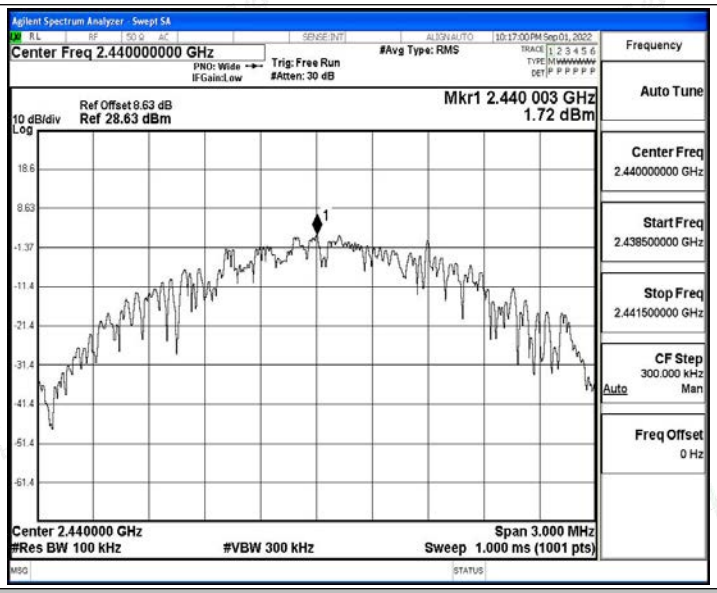
BLE_2M_Ant1_2402_30~1000



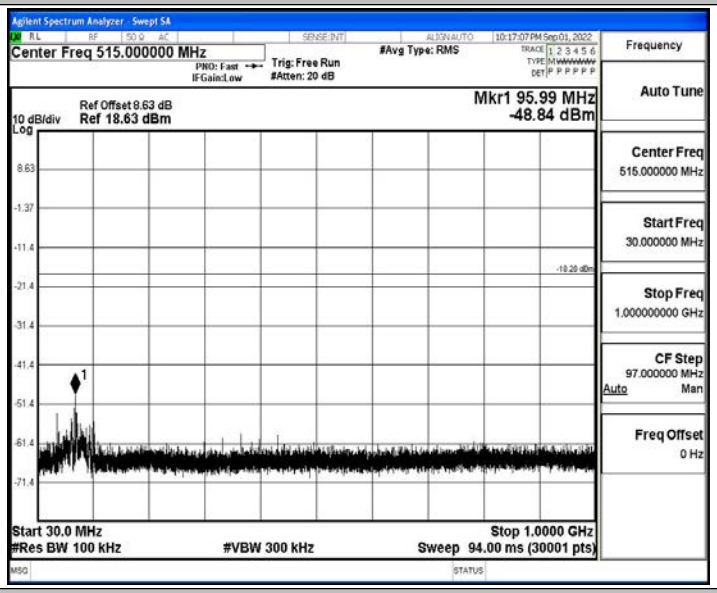
BLE_2M_Ant1_2402_1000~26500



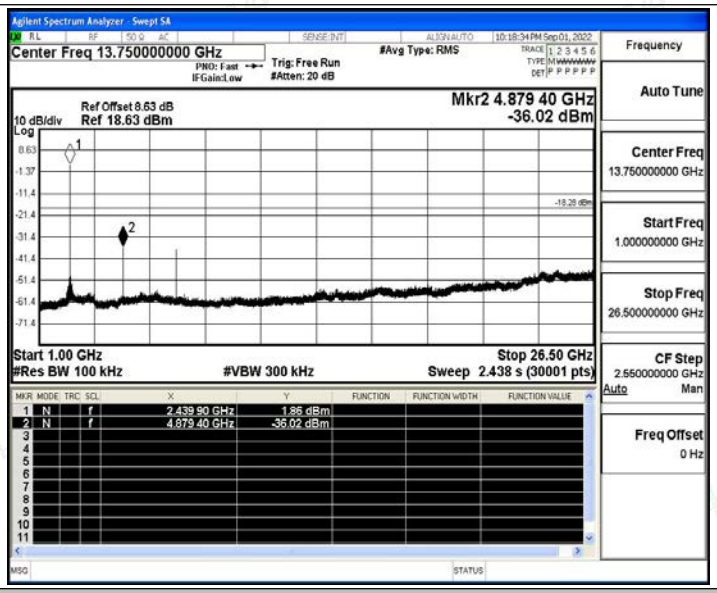
BLE_2M_Ant1_2440_0~Reference



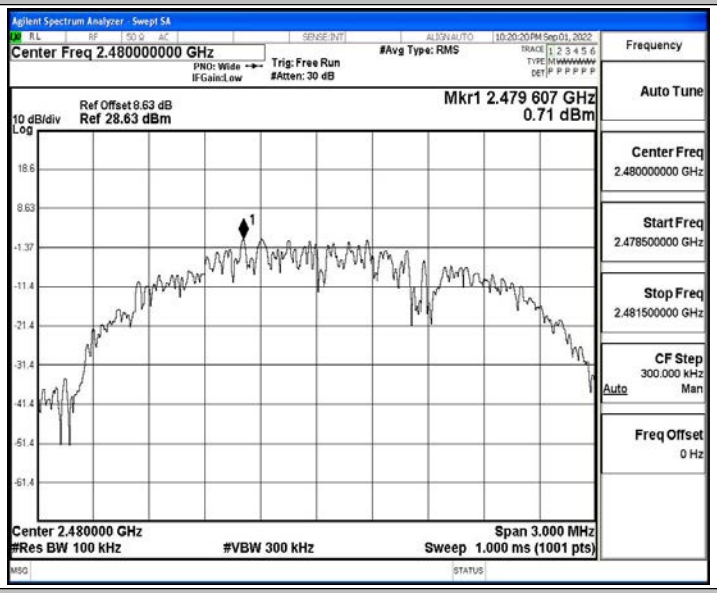
BLE_2M_Ant1_2440_30~1000



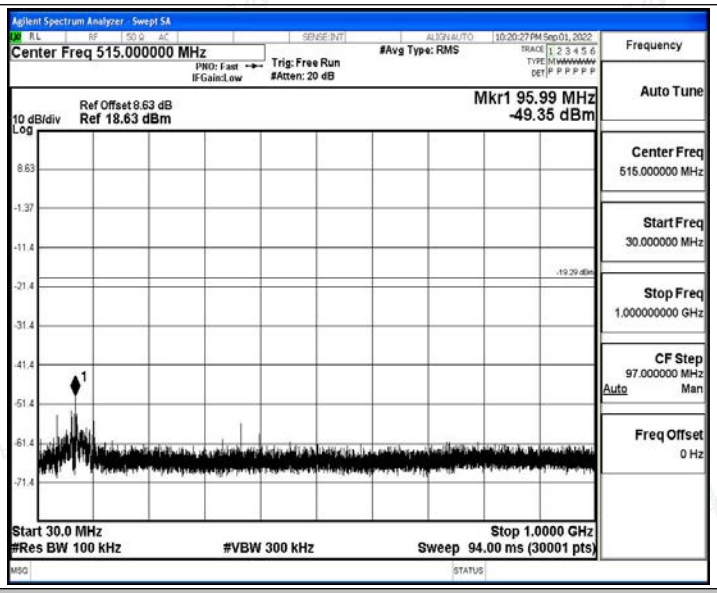
BLE_2M_Ant1_2440_1000~26500



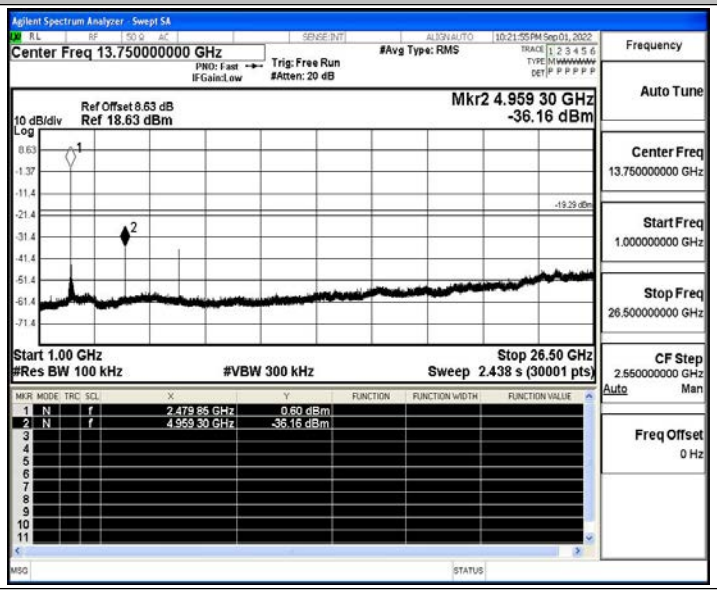
BLE_2M_Ant1_2480_0~Reference



BLE_2M_Ant1_2480_30~1000



BLE_2M_Ant1_2480_1000~26500



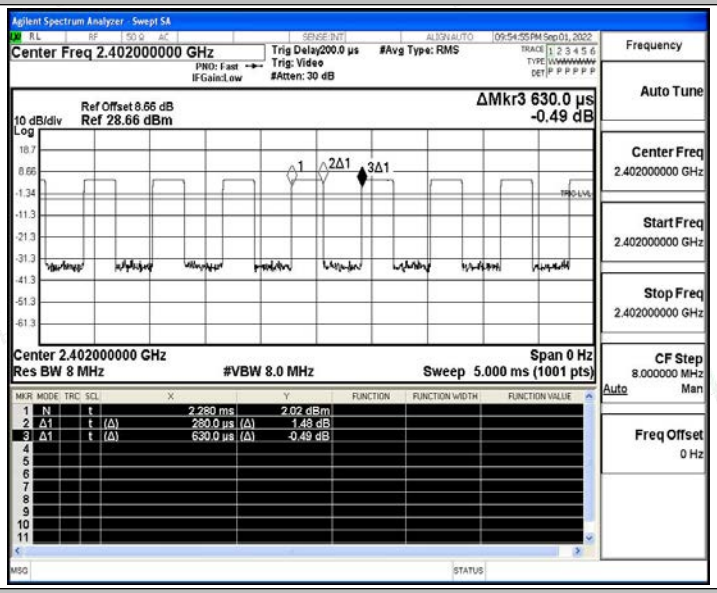
A.7 Duty Cycle

Test Result

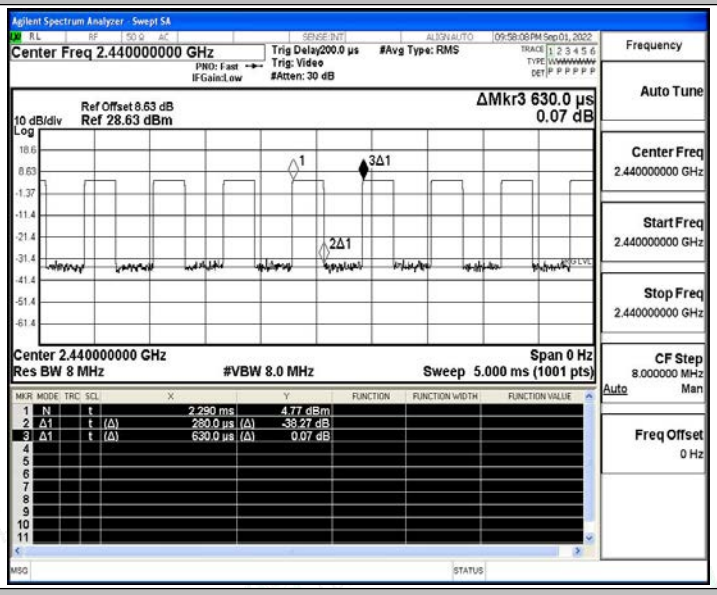
TestMode	Antenna	Channel	ON Time [ms]	Period [ms]	X	DC [%]	xFactor	1/T	Limit	Verdict
BLE_1M	Ant1	2402	0.28	0.63	0.4444	44.44	3.52	3.57	---	---
		2440	0.28	0.63	0.4444	44.44	3.52	3.57	---	---
		2480	0.28	0.63	0.4444	44.44	3.52	3.57	---	---
BLE_2M	Ant1	2402	0.28	0.63	0.4444	44.44	3.52	3.57	---	---
		2440	0.28	0.63	0.4444	44.44	3.52	3.57	---	---
		2480	0.28	0.63	0.4444	44.44	3.52	3.57	---	---

Test Graphs

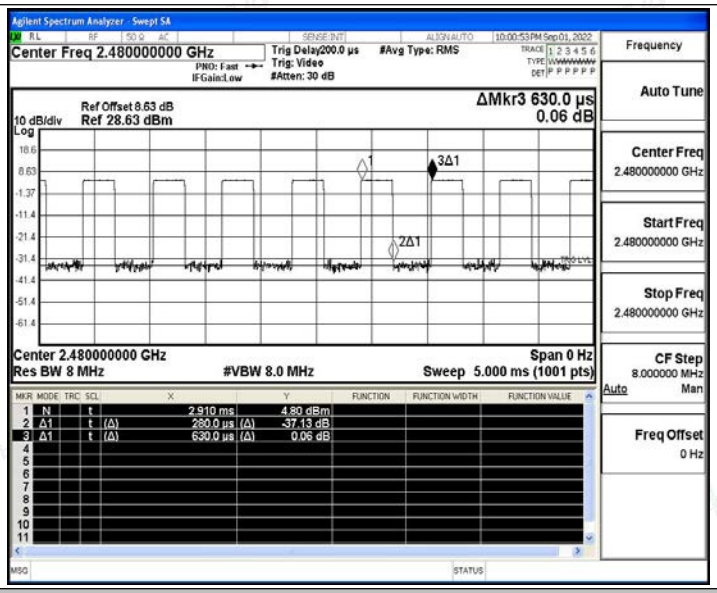
BLE_1M_Ant1_2402



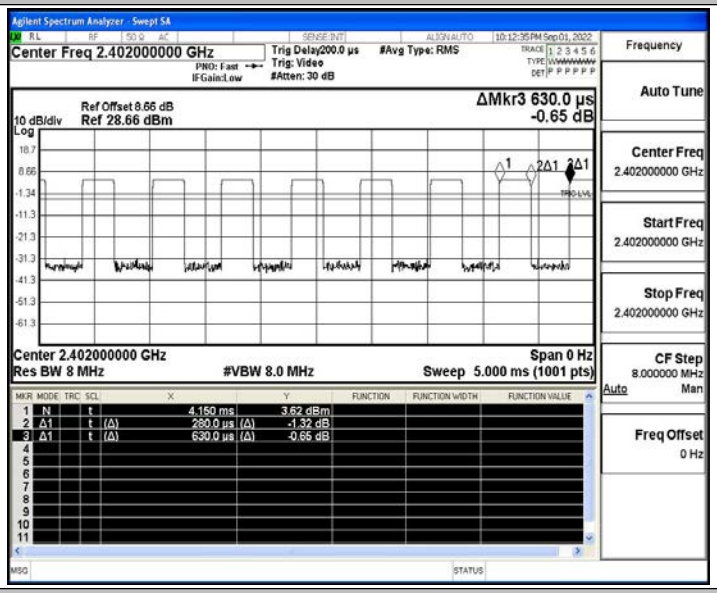
BLE_1M_Ant1_2440



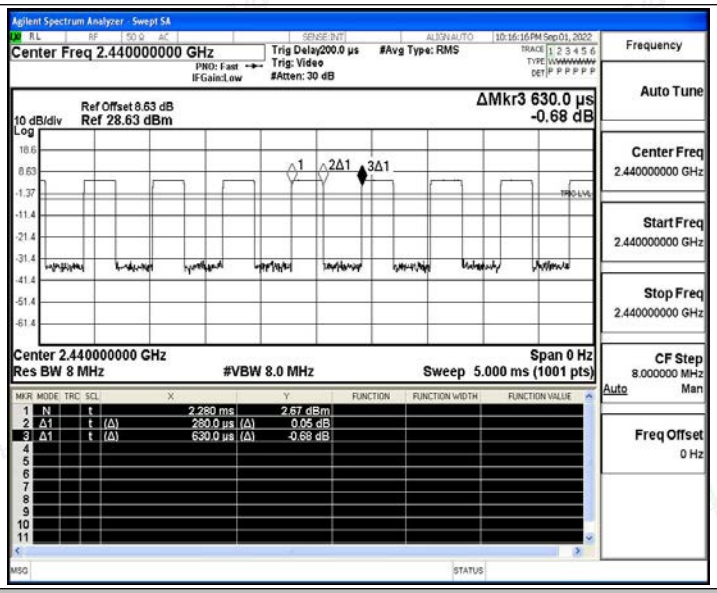
BLE_1M_Ant1_2480



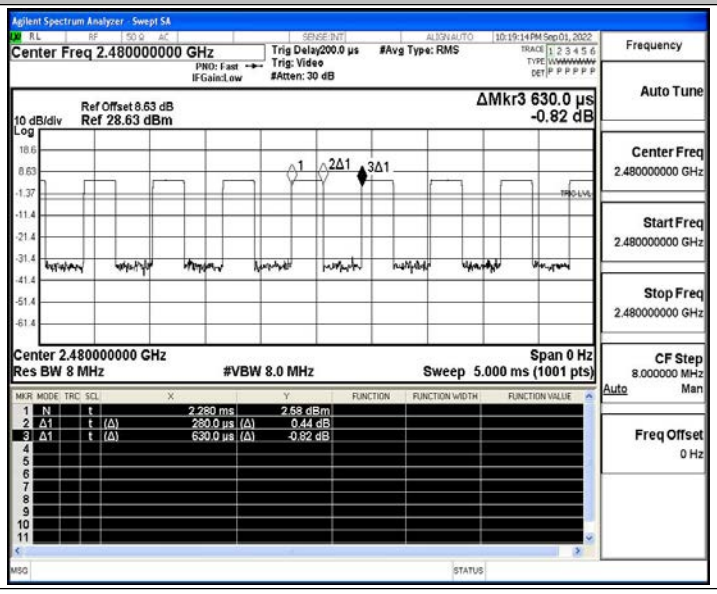
BLE_2M_Ant1_2402



BLE_2M_Ant1_2440



BLE_2M_Ant1_2480



A.8 Emissions in Restricted Bands

Test Result

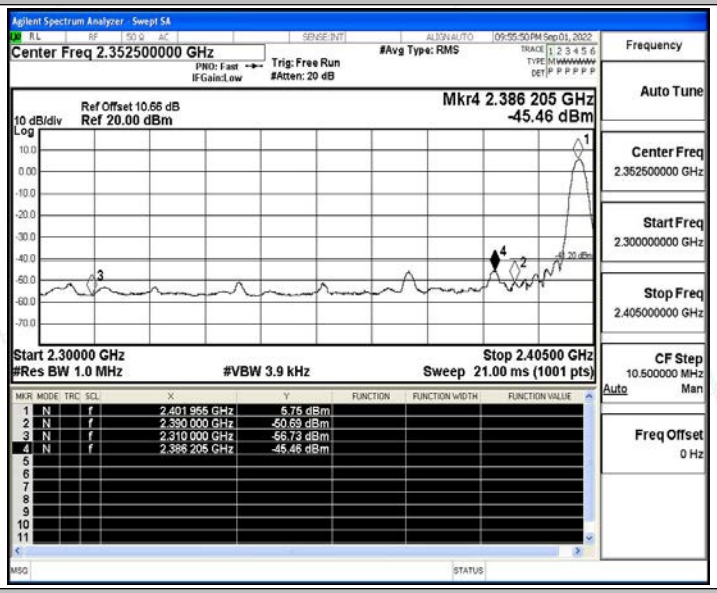
TestMode	Antenna	ChName	Channel	Detector	Freq. [MHz]	Result [dBm]	Limit [dBm]	Result [dBuV/m]	Limit [dBuV/m]	Verdict
BLE_1M	Ant1	Low	2402	AV	2310.000	-56.73	≤-41.20	38.47	≤54	PASS
				AV	2386.205	-45.46	≤-41.20	49.74	≤54	PASS
				AV	2390.000	-50.69	≤-41.20	44.51	≤54	PASS
				Peak	2310.000	-49.85	≤-21.20	45.35	≤74	PASS
				Peak	2369.825	-37.26	≤-21.20	57.94	≤74	PASS
				Peak	2390.000	-45.77	≤-21.20	49.43	≤74	PASS
		High	2480	AV	2483.500	-40.13	≤-41.20	53.07	≤54	PASS
				AV	2483.520	-40.13	≤-41.20	53.07	≤54	PASS
				AV	2500.000	-53.88	≤-41.20	41.32	≤54	PASS
				Peak	2483.500	-35.16	≤-21.20	60.04	≤74	PASS
				Peak	2484.000	-29.44	≤-21.20	65.76	≤74	PASS
				Peak	2500.000	-48.41	≤-21.20	46.79	≤74	PASS
BLE_2M	Ant1	Low	2402	AV	2310.000	-56.35	≤-41.20	38.85	≤54	PASS
				AV	2386.205	-45.42	≤-41.20	49.78	≤54	PASS
				AV	2390.000	-51.06	≤-41.20	44.14	≤54	PASS
				Peak	2310.000	-51.69	≤-21.20	43.51	≤74	PASS
				Peak	2370.350	-36.94	≤-21.20	58.26	≤74	PASS
				Peak	2390.000	-48.29	≤-21.20	46.91	≤74	PASS
		High	2480	AV	2483.500	-44.96	≤-41.20	50.24	≤54	PASS
				AV	2483.600	-44.93	≤-41.20	50.27	≤54	PASS
				AV	2500.000	-56.16	≤-41.20	39.04	≤54	PASS
				Peak	2483.500	-39.26	≤-21.20	55.94	≤74	PASS
				Peak	2483.760	-32.97	≤-21.20	62.23	≤74	PASS
				Peak	2500.000	-48.16	≤-21.20	47.04	≤74	PASS

Note：

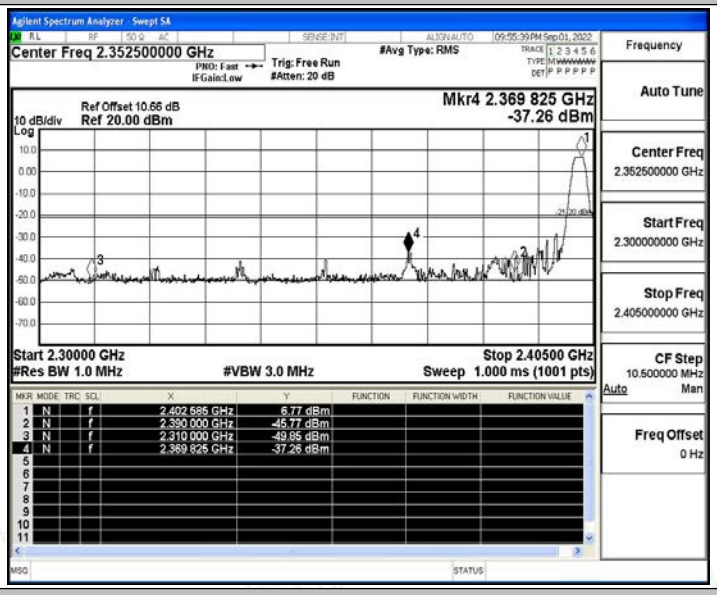
1. The Antenna Gain is compensated in the graph.
2. The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.

Test Graphs

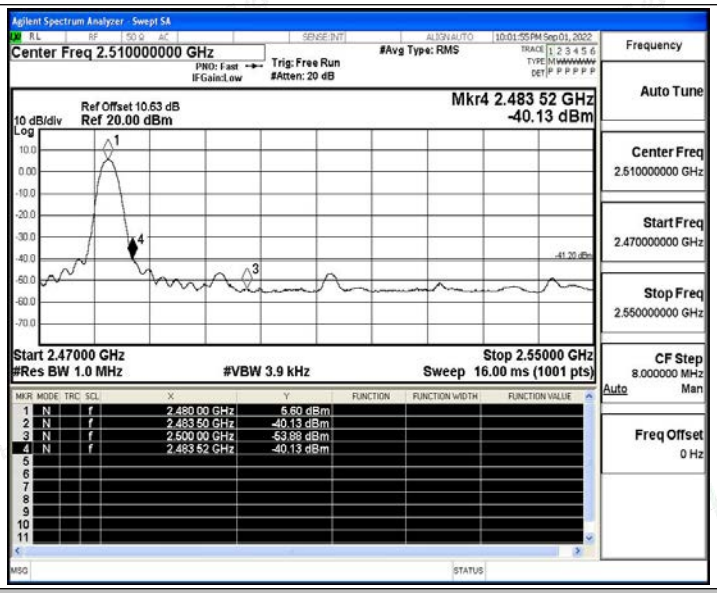
BLE_1M_Ant1_Low_2402_AV



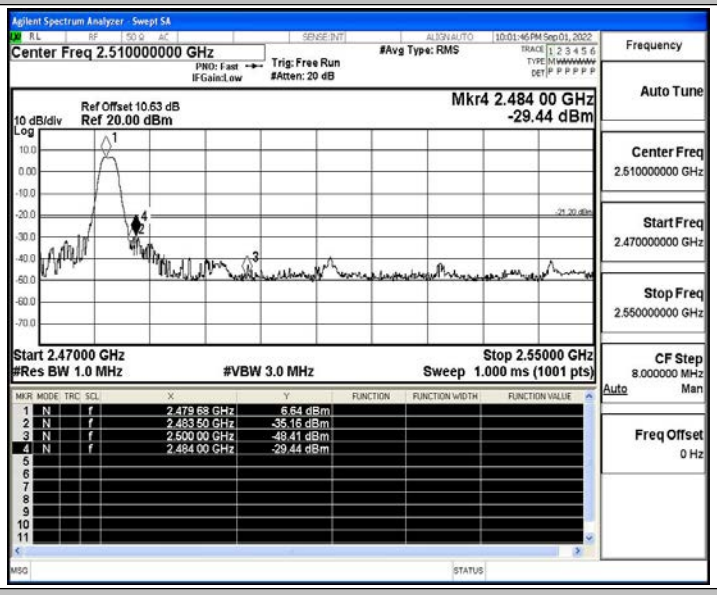
BLE_1M_Ant1_Low_2402_Peak



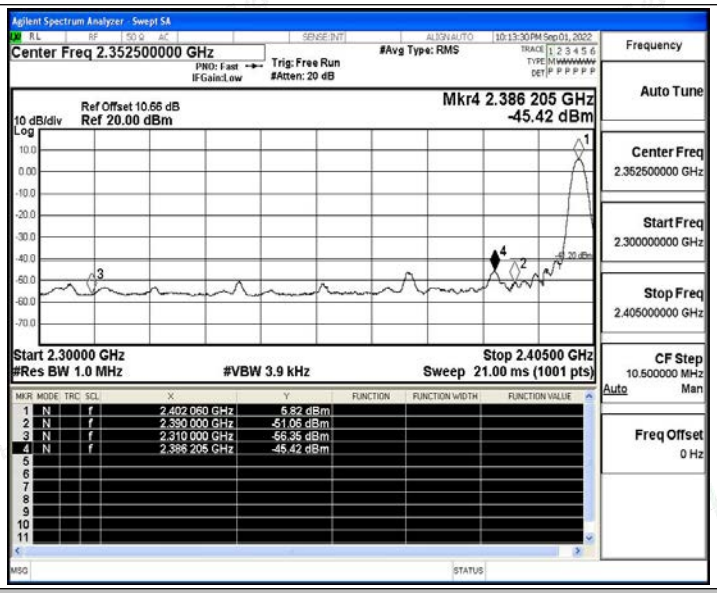
BLE_1M_Ant1_High_2480_AV



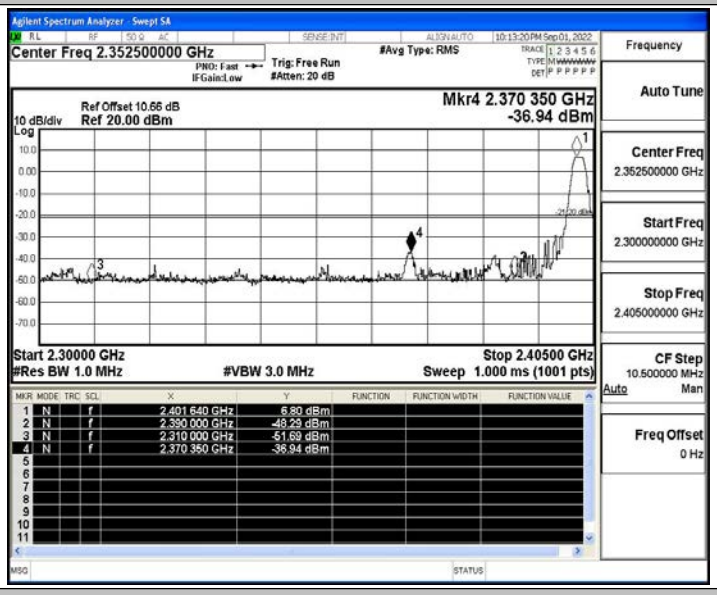
BLE_1M_Ant1_High_2480_Peak



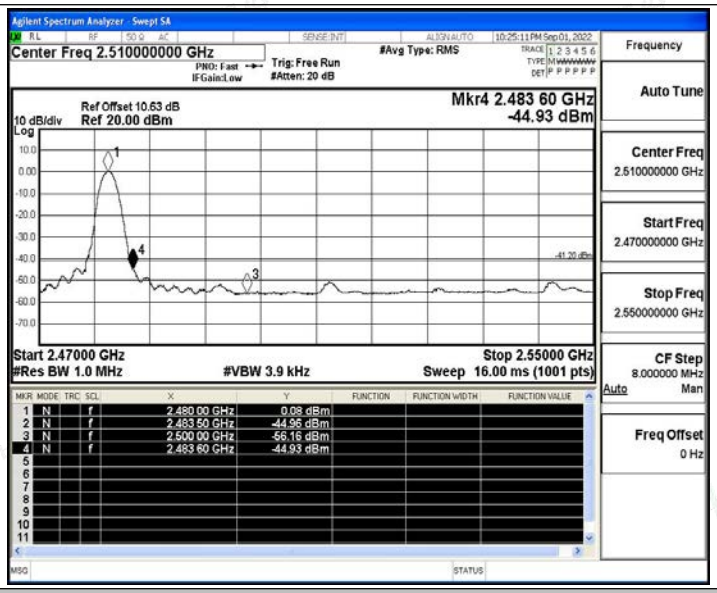
BLE_2M_Ant1_Low_2402_AV



BLE_2M_Ant1_Low_2402_Peak



BLE_2M_Ant1_High_2480_AV



BLE_2M_Ant1_High_2480_Peak