

FCC Appendix RF Test Data for BLE

FCC ID : **R38YLCPK23**

Company : **Yulong Computer Telecommunication Scientific
(Shenzhen) Co., Ltd**

EUT : **Smart Phone**

Model Number : **K23**

Report No. : **CTA26032500714**

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	0.648	2439.688	2440.336	0.5	PASS
		2480	0.644	2479.692	2480.336	0.5	PASS
BLE_2M	Ant1	2402	1.120	2401.448	2402.568	0.5	PASS
		2440	1.092	2439.448	2440.540	0.5	PASS
		2480	1.140	2479.440	2480.580	0.5	PASS

Test Graphs





BLE_2M_Ant1_2402



BLE_2M_Ant1_2440



BLE_2M_Ant1_2480

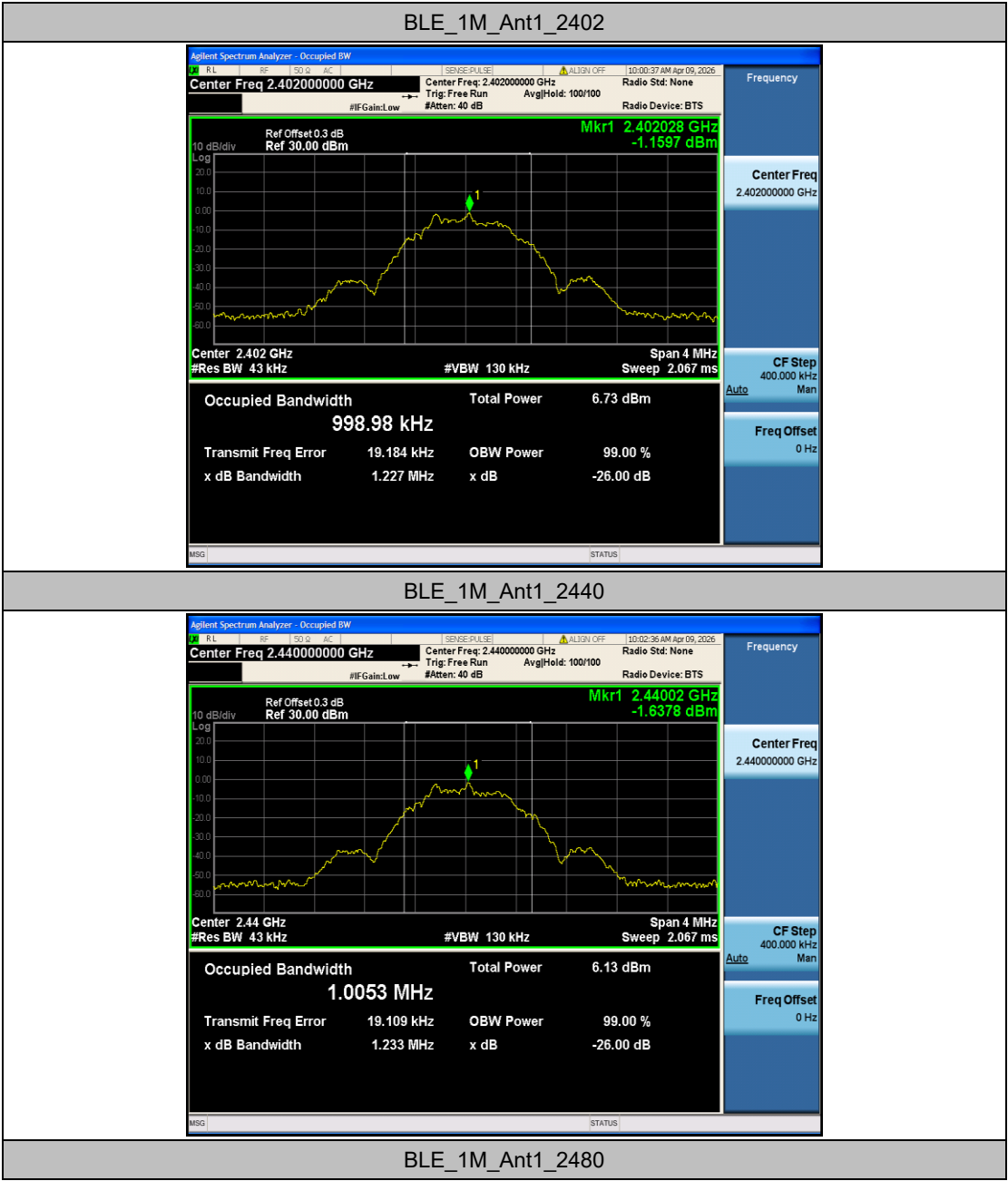


Appendix B: Occupied Channel Bandwidth

Test Result

TestMode	Antenna	Freq(MHz)	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.99898	2401.5197	2402.5187	---	---
		2440	1.0053	2439.5165	2440.5218	---	---
		2480	1.0082	2479.5178	2480.5260	---	---
BLE_2M	Ant1	2402	2.0004	2401.0320	2403.0324	---	---
		2440	2.0060	2439.0312	2441.0372	---	---
		2480	2.0301	2479.0178	2481.0479	---	---

Test Graphs





BLE_2M_Ant1_2402



BLE_2M_Ant1_2440



BLE_2M_Ant1_2480



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	0.08	≤30	PASS
		2440	-0.55	≤30	PASS
		2480	-0.78	≤30	PASS
BLE_2M	Ant1	2402	0.03	≤30	PASS
		2440	-0.51	≤30	PASS
		2480	-0.79	≤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	-15.89	≤8.00	PASS
		2440	-16.01	≤8.00	PASS
		2480	-16.35	≤8.00	PASS
BLE_2M	Ant1	2402	-17.75	≤8.00	PASS
		2440	-18.11	≤8.00	PASS
		2480	-18.40	≤8.00	PASS

Agilent Spectrum Analyzer - Swept SA

Center Freq 2.40200000 GHz

Ref Offset 0.3 dB
Ref 20.00 dBm

Mkr1 2.40199087 GHz
-15.893 dBm

Span 998.2 kHz

Center 2.4020000 GHz

#Res BW 3.0 kHz

#VBW 10 kHz

Sweep 106.0 ms (30000 pts)

Frequency

Auto Tune

Center Freq
2.40200000 GHz

Start Freq
2.401500900 GHz

Stop Freq
2.402499100 GHz

CF Step
99.820 kHz
Man

Freq Offset
0 Hz

Agilent Spectrum Analyzer - Swept SA

Center Freq 2.44000000 GHz

Ref Offset 0.3 dB
Ref 20.00 dBm

Mkr1 2.43998984 GHz
-16.012 dBm

Span 1.004 MHz

Center 2.4400000 GHz

#Res BW 3.0 kHz

#VBW 10 kHz

Sweep 106.0 ms (30000 pts)

Frequency

Auto Tune

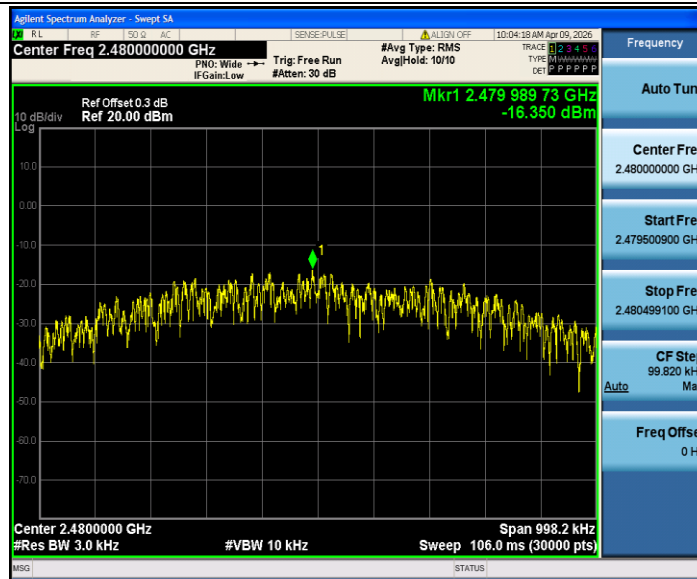
Center Freq
2.44000000 GHz

Start Freq
2.439497800 GHz

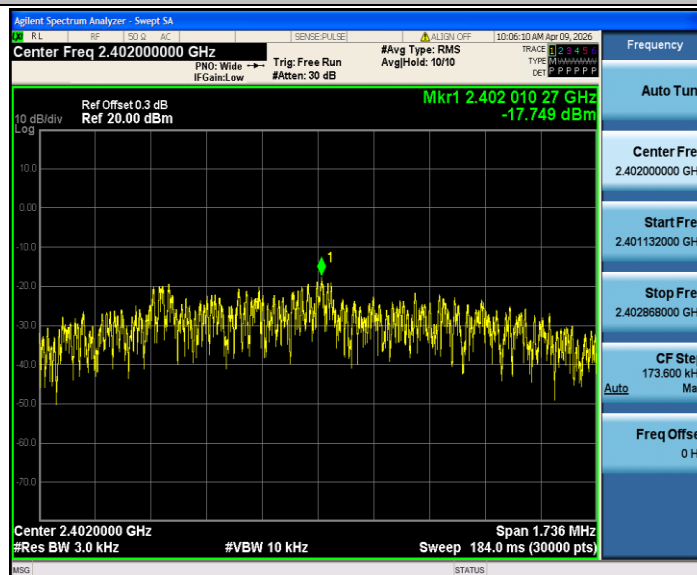
Stop Freq
2.440502200 GHz

CF Step
100.440 kHz
Man

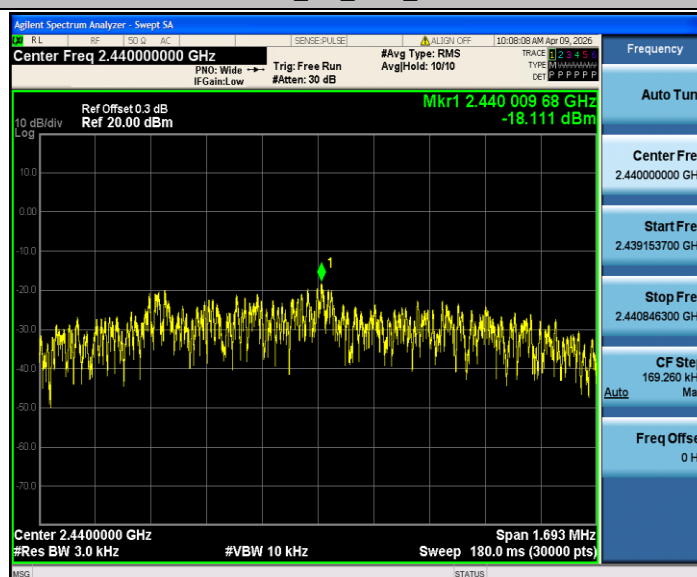
Freq Offset
0 Hz



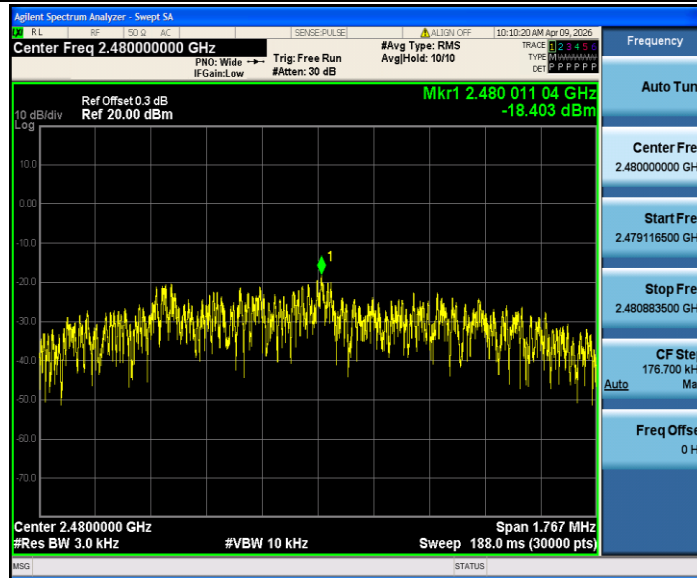
BLE_2M_Ant1_2402



BLE_2M_Ant1_2440



BLE_2M_Ant1_2480

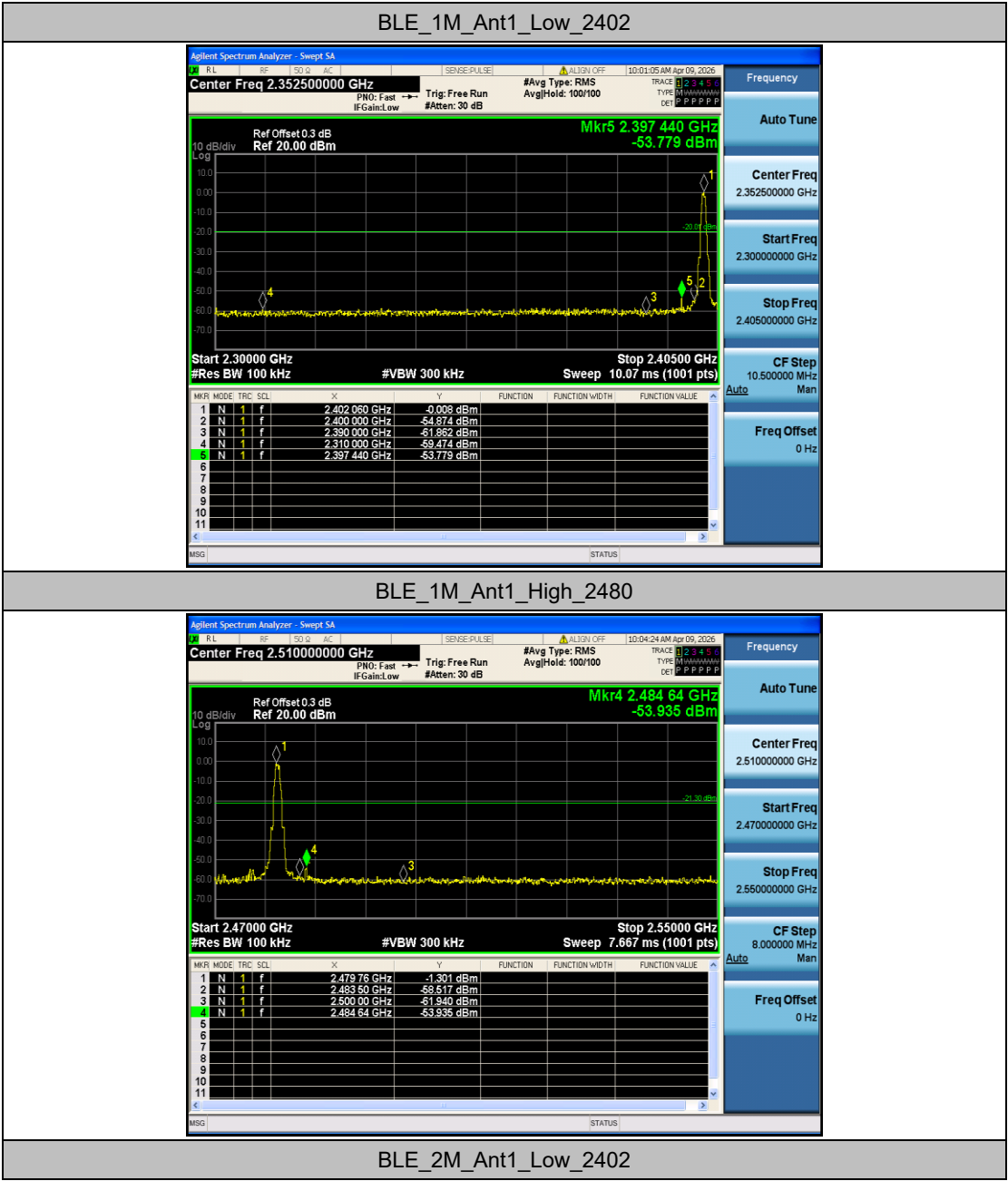


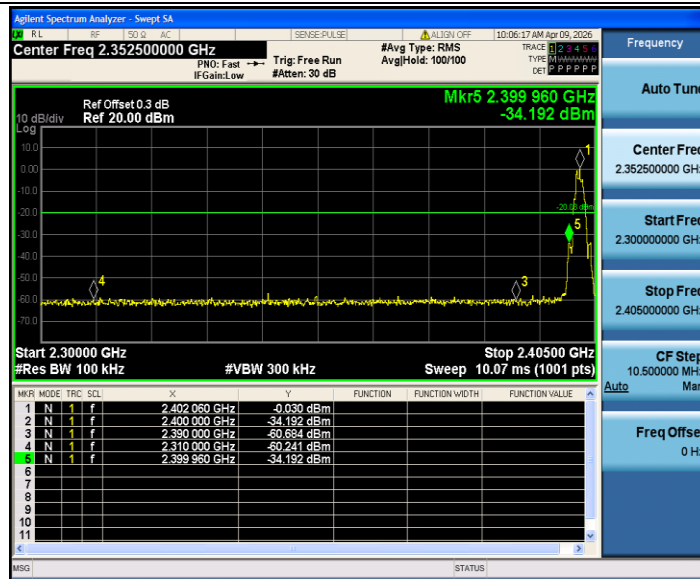
Appendix E: Band edge measurements

Test Result

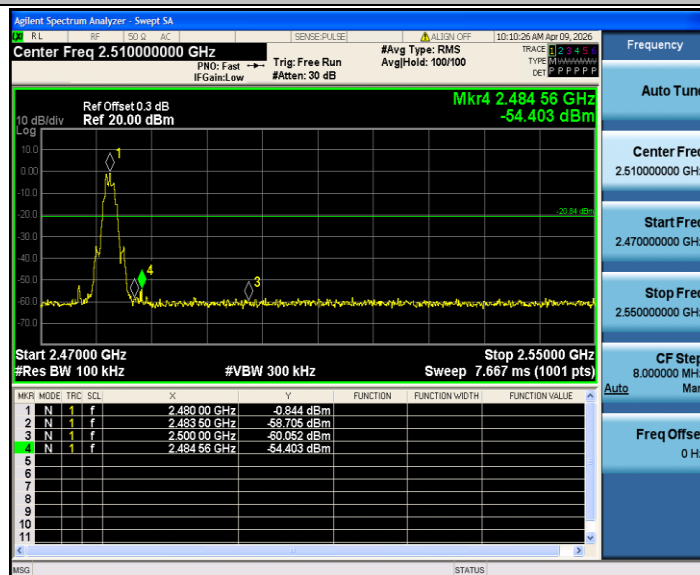
TestMode	Antenna	Channel	Freq(MHz)	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	-0.01	-53.78	≤-20.01	PASS
		High	2480	-1.30	-53.94	≤-21.3	PASS
BLE_2M	Ant1	Low	2402	-0.03	-34.19	≤-20.03	PASS
		High	2480	-0.84	-54.4	≤-20.84	PASS

Test Graphs





BLE_2M_Ant1_High_2480



Appendix F: Conducted Spurious Emission

Test Result

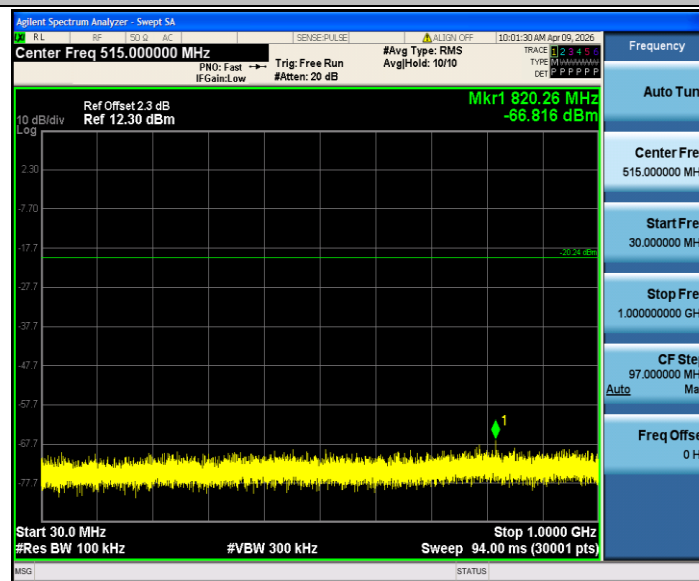
TestMode	Antenna	Freq(MHz)	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	Reference	-0.24	-0.24	---	PASS
			30~1000	-0.24	-66.82	≤-20.24	PASS
			1000~26500	-0.24	-41.37	≤-20.24	PASS
		2440	Reference	-1.27	-1.27	---	PASS
			30~1000	-1.27	-67.36	≤-21.27	PASS
			1000~26500	-1.27	-44.55	≤-21.27	PASS
		2480	Reference	-3.03	-3.03	---	PASS
			30~1000	-3.03	-67.56	≤-23.03	PASS
			1000~26500	-3.03	-42.65	≤-23.03	PASS
BLE_2M	Ant1	2402	Reference	-0.30	-0.30	---	PASS
			30~1000	-0.30	-68.47	≤-20.3	PASS
			1000~26500	-0.30	-44.13	≤-20.3	PASS
		2440	Reference	-4.20	-4.20	---	PASS
			30~1000	-4.20	-68.14	≤-24.2	PASS
			1000~26500	-4.20	-49.91	≤-24.2	PASS
		2480	Reference	-1.91	-1.91	---	PASS
			30~1000	-1.91	-67.83	≤-21.91	PASS
			1000~26500	-1.91	-46.67	≤-21.91	PASS

Test Graphs

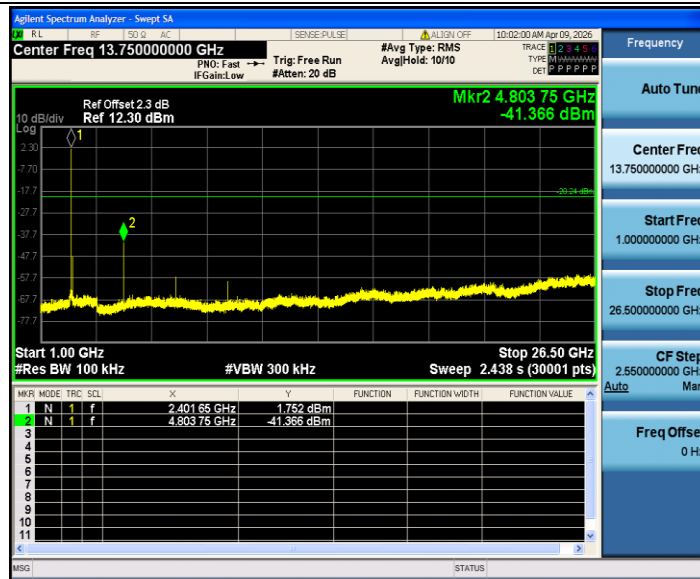
BLE_1M_Ant1_2402_0~Reference



BLE_1M_Ant1_2402_30~1000



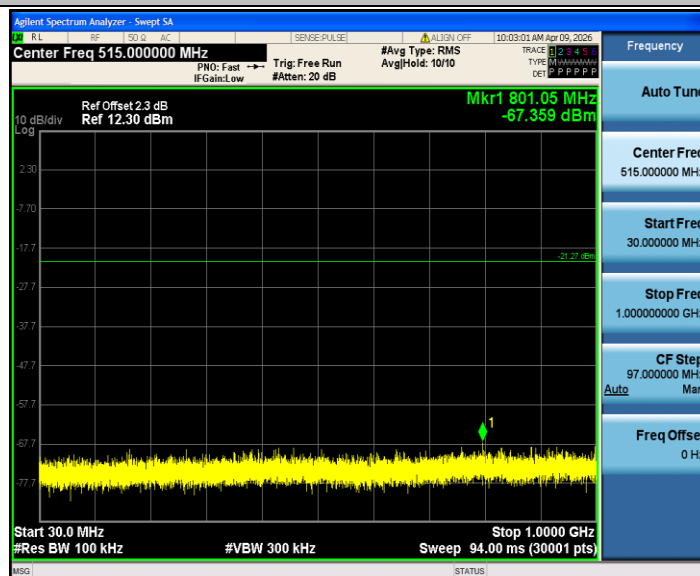
BLE_1M_Ant1_2402_1000~26500



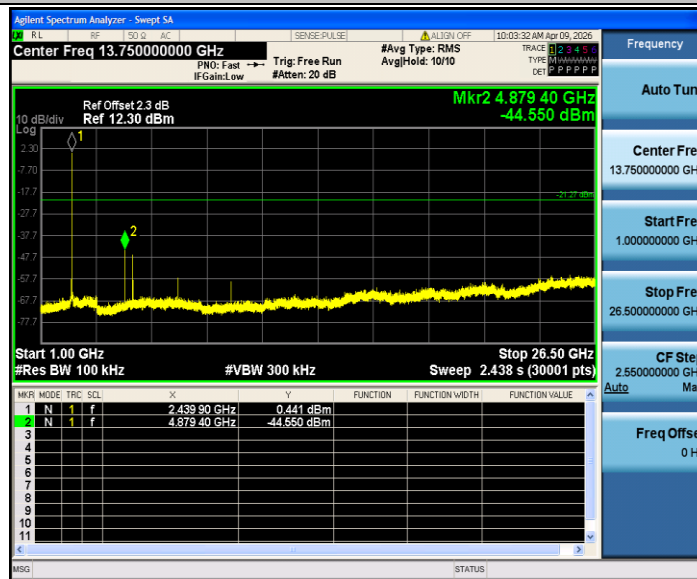
BLE_1M_Ant1_2440_0~Reference



BLE_1M_Ant1_2440_30~1000



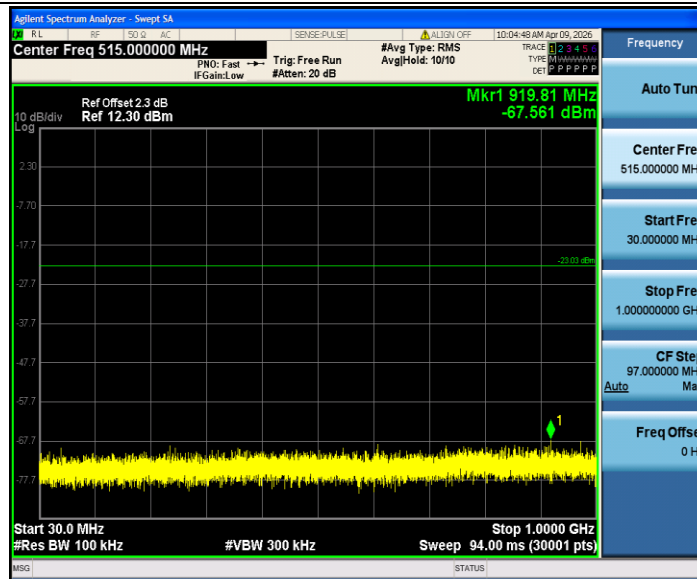
BLE_1M_Ant1_2440_1000~26500



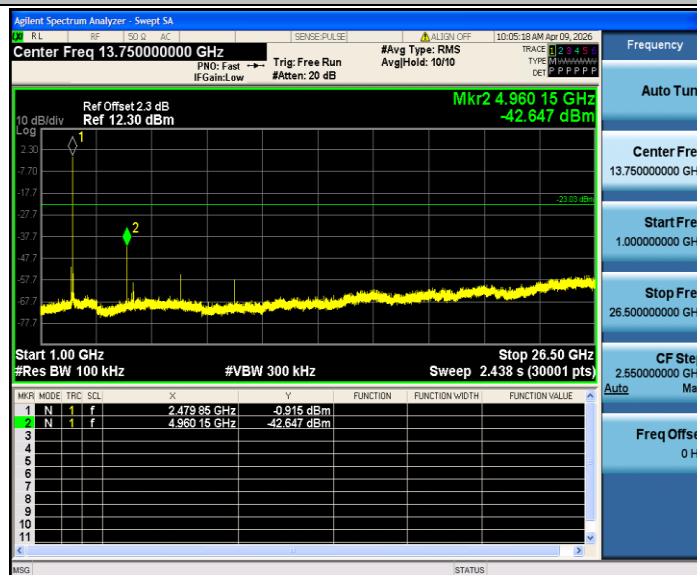
BLE_1M_Ant1_2480_0~Reference



BLE_1M_Ant1_2480_30~1000



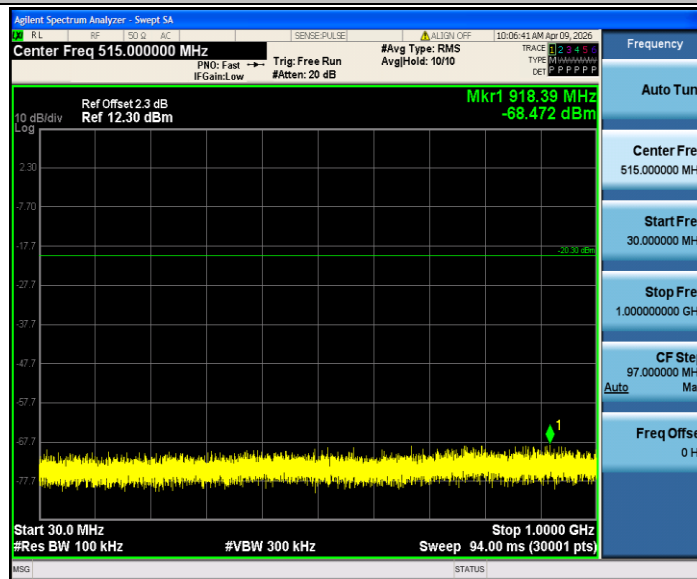
BLE_1M_Ant1_2480_1000~26500



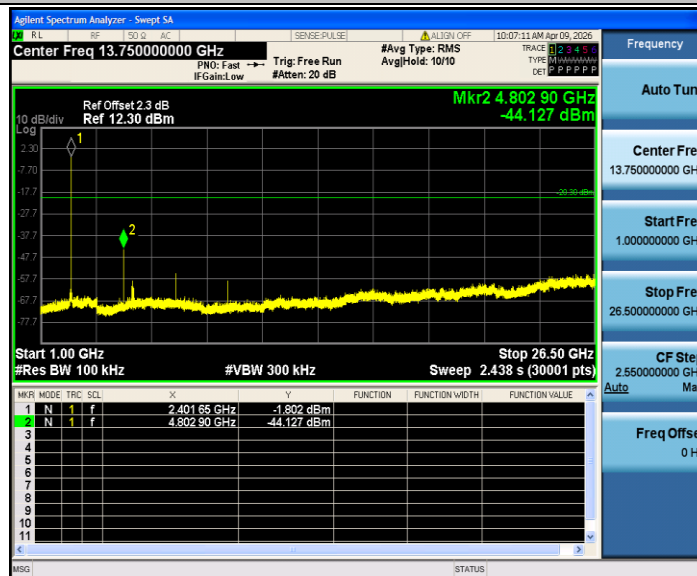
BLE_2M_Ant1_2402_0~Reference



BLE_2M_Ant1_2402_30~1000



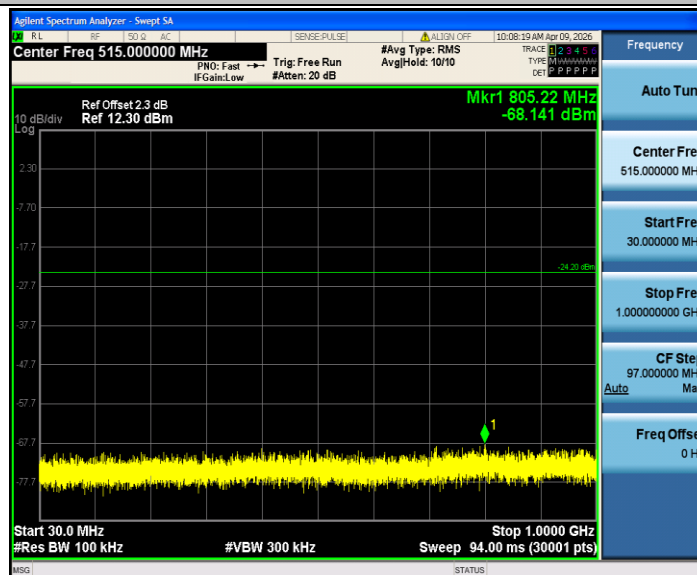
BLE_2M_Ant1_2402_1000~26500



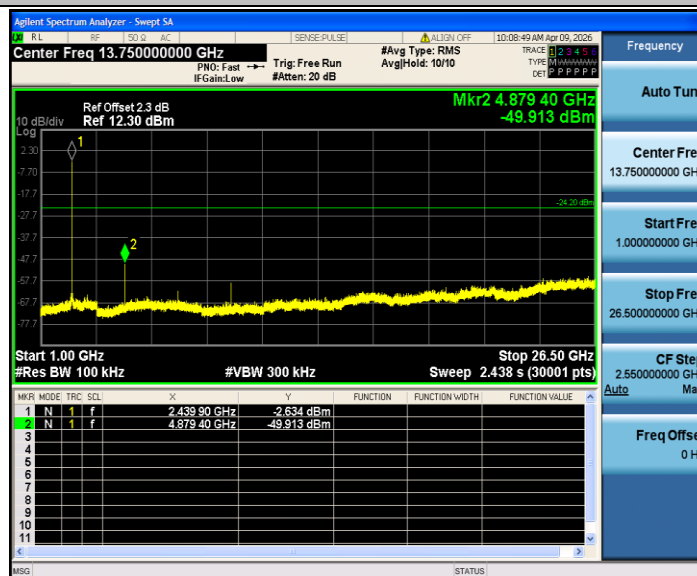
BLE_2M_Ant1_2440_0~Reference



BLE_2M_Ant1_2440_30~1000



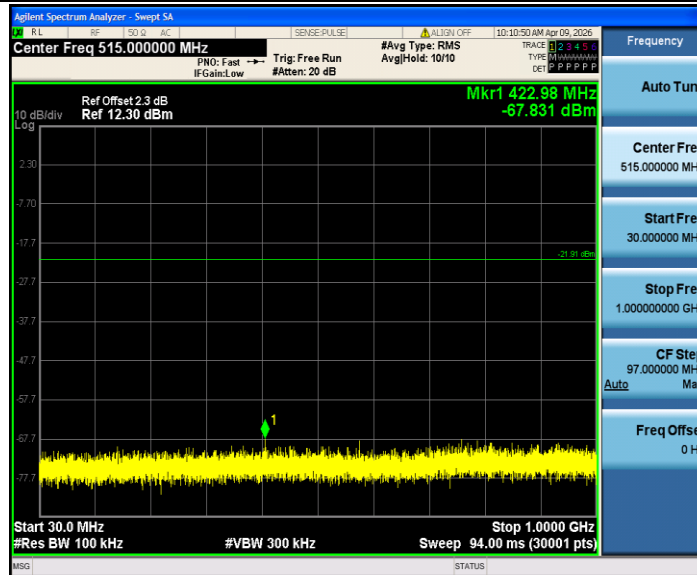
BLE_2M_Ant1_2440_1000~26500



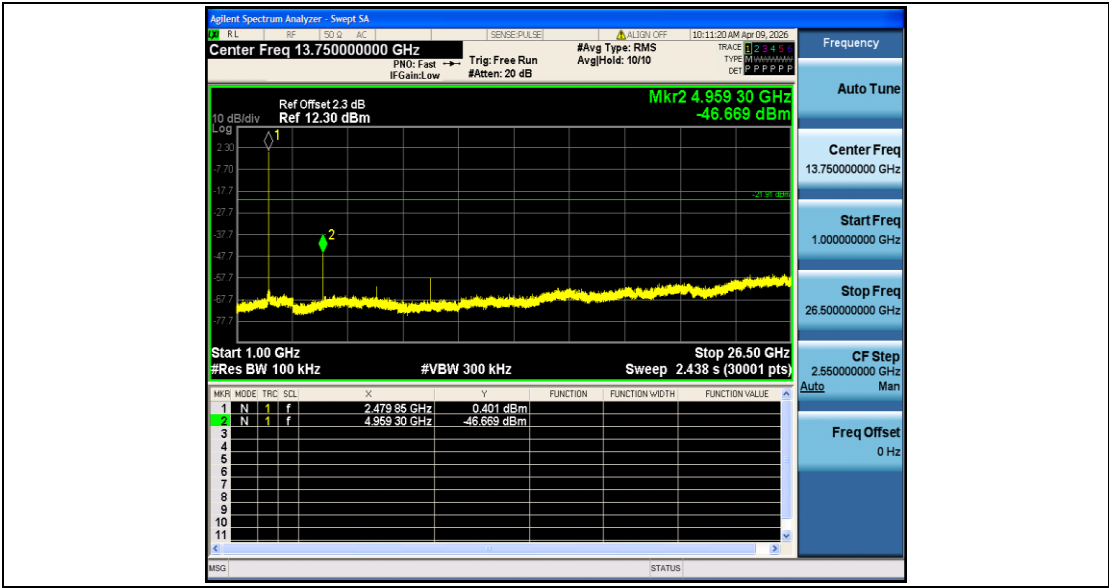
BLE_2M_Ant1_2480_0~Reference



BLE_2M_Ant1_2480_30~1000



BLE_2M_Ant1_2480_1000~26500



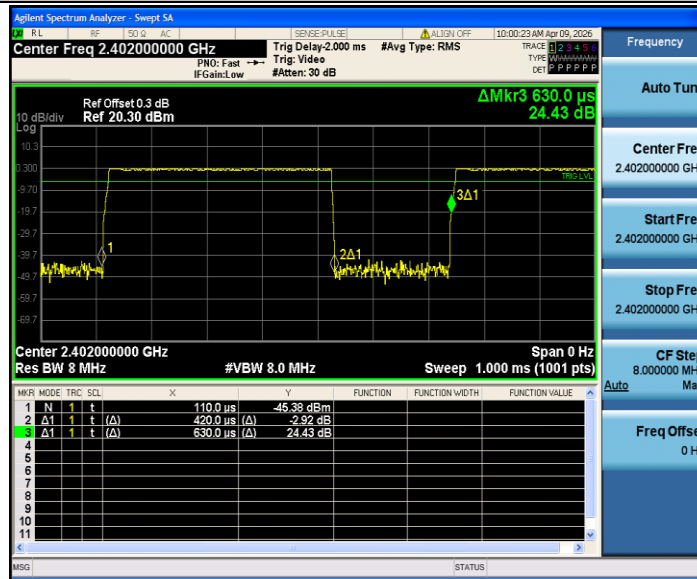
Appendix G: Duty Cycle

Test Result

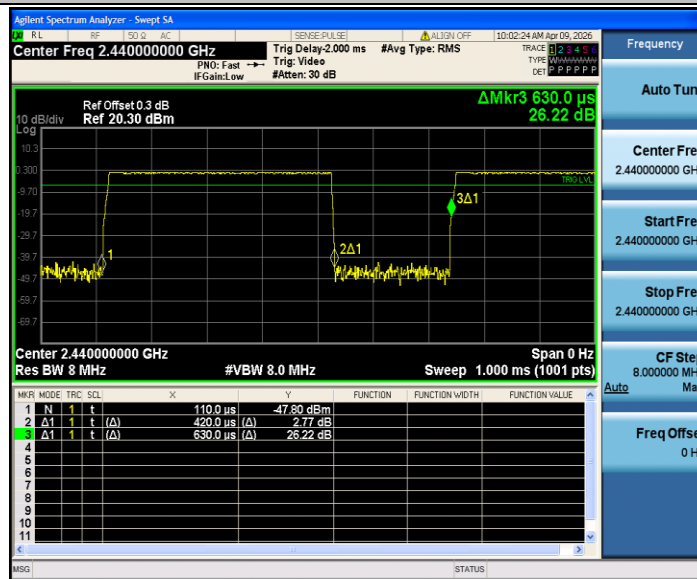
TestMode	Antenna	Freq(MHz)	ON Time [ms]	Period [ms]	X	DC [%]	xFactor	Limit	Verdict
BLE_1M	Ant1	2402	0.42	0.63	0.6667	66.67	1.76	---	---
		2440	0.42	0.63	0.6667	66.67	1.76	---	---
		2480	0.41	0.62	0.6613	66.13	1.80	---	---
BLE_2M	Ant1	2402	0.22	0.62	0.3548	35.48	4.50	---	---
		2440	0.23	0.63	0.3651	36.51	4.38	---	---
		2480	0.22	0.62	0.3548	35.48	4.50	---	---

Test Graphs

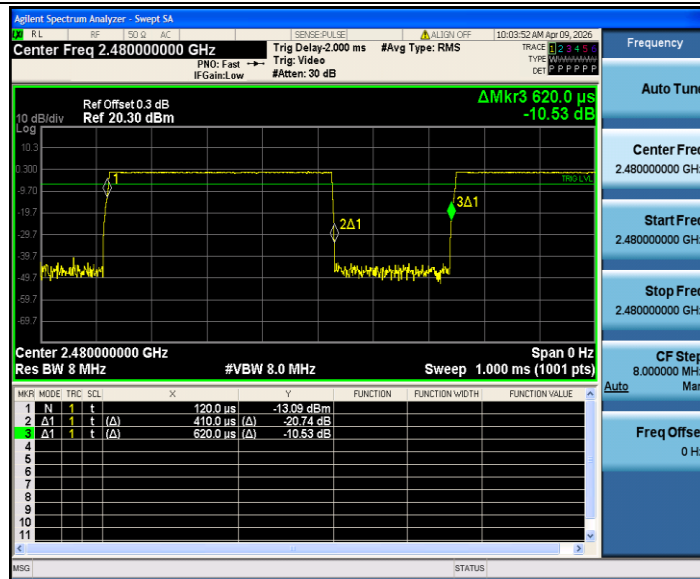
BLE_1M_Ant1_2402



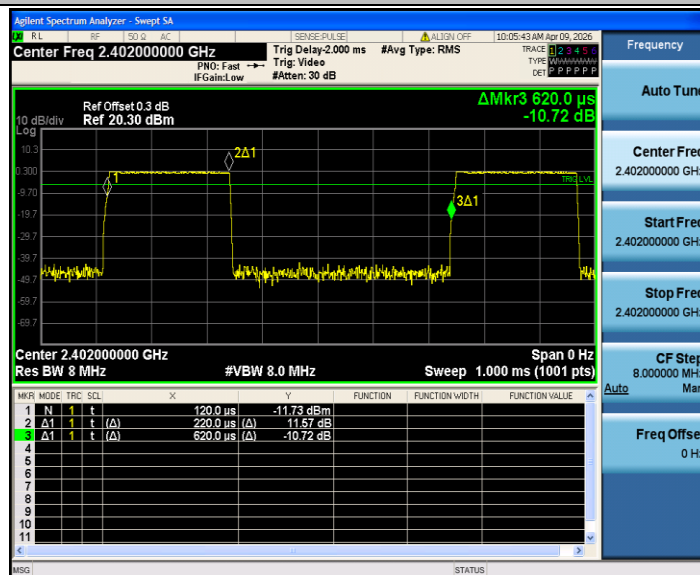
BLE_1M_Ant1_2440



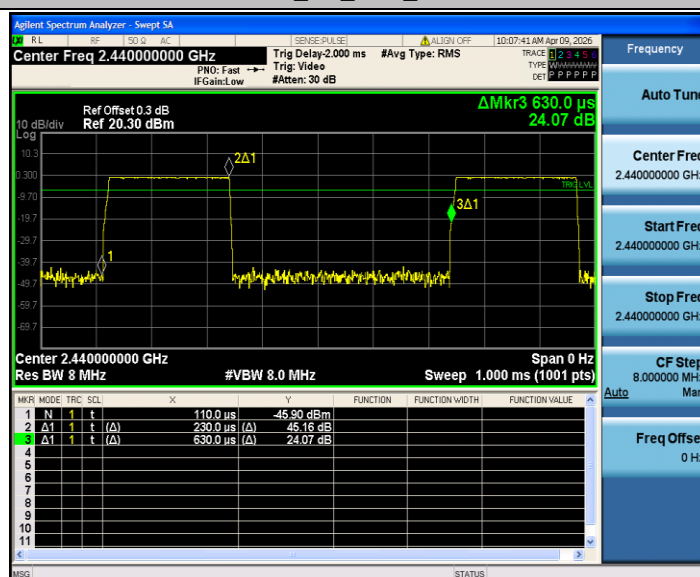
BLE_1M_Ant1_2480



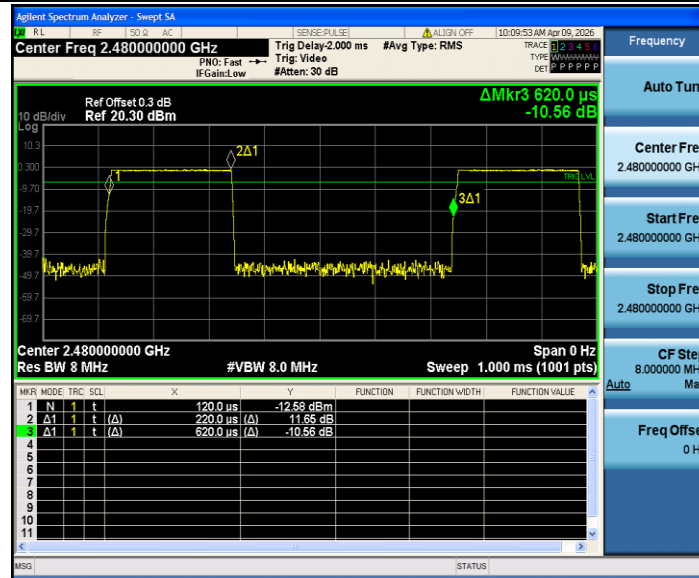
BLE_2M_Ant1_2402



BLE_2M_Ant1_2440



BLE_2M_Ant1_2480



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	-59.69	2.00	1.76	39.27	≤54	PASS
				AV	2376.545	-58.61	2.00	1.76	40.35	≤54	PASS
				AV	2390.000	-58.74	2.00	1.76	40.22	≤54	PASS
				Peak	2310.000	-52.12	2.00	0.00	45.08	≤74	PASS
				Peak	2363.315	-48.21	2.00	0.00	48.99	≤74	PASS
				Peak	2390.000	-49.77	2.00	0.00	47.43	≤74	PASS
		High	2480	AV	2483.500	-57.94	2.00	1.80	41.06	≤54	PASS
				AV	2484.160	-57.31	2.00	1.80	41.69	≤54	PASS
				AV	2500.000	-59.63	2.00	1.80	39.37	≤54	PASS
				Peak	2483.500	-48.62	2.00	0.00	48.58	≤74	PASS
				Peak	2484.320	-47.67	2.00	0.00	49.53	≤74	PASS
				Peak	2500.000	-51.97	2.00	0.00	45.23	≤74	PASS
BLE_2M	Ant1	Low	2402	AV	2310.000	-59.98	2.00	4.50	41.72	≤54	PASS
				AV	2375.495	-58.71	2.00	4.50	42.99	≤54	PASS
				AV	2390.000	-59.23	2.00	4.50	42.47	≤54	PASS
				Peak	2310.000	-52.34	2.00	0.00	44.86	≤74	PASS
				Peak	2374.235	-46.99	2.00	0.00	50.21	≤74	PASS
				Peak	2390.000	-51.99	2.00	0.00	45.21	≤74	PASS
		High	2480	AV	2483.500	-58.29	2.00	4.50	43.41	≤54	PASS
				AV	2485.040	-57.57	2.00	4.50	44.13	≤54	PASS
				AV	2500.000	-59.21	2.00	4.50	42.49	≤54	PASS
				Peak	2483.500	-48.6	2.00	0.00	48.60	≤74	PASS
				Peak	2484.640	-42.87	2.00	0.00	54.33	≤74	PASS
				Peak	2500.000	-51.59	2.00	0.00	45.61	≤74	PASS

Note:

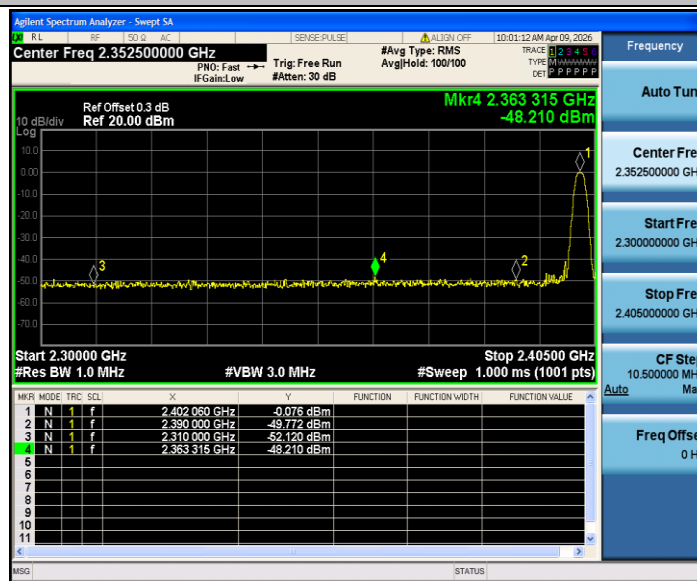
The limit in dBm for average detector is conversion from 54dBUV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.

Test Graphs

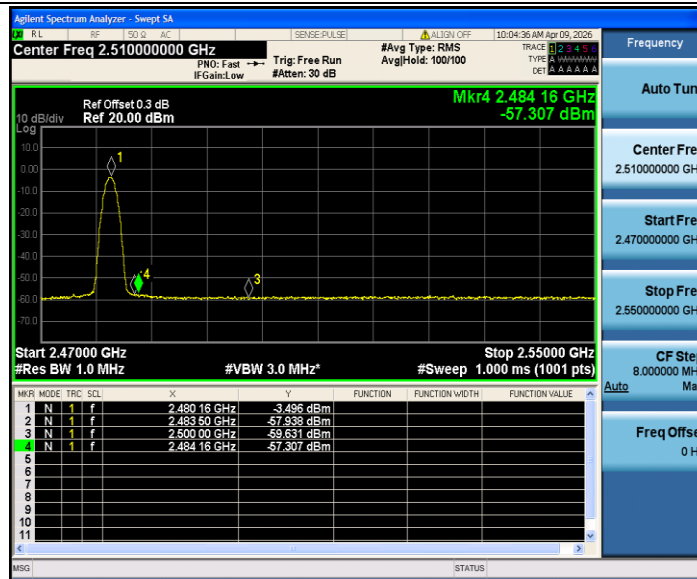
BLE_1M_Ant1_Low_2402_AV



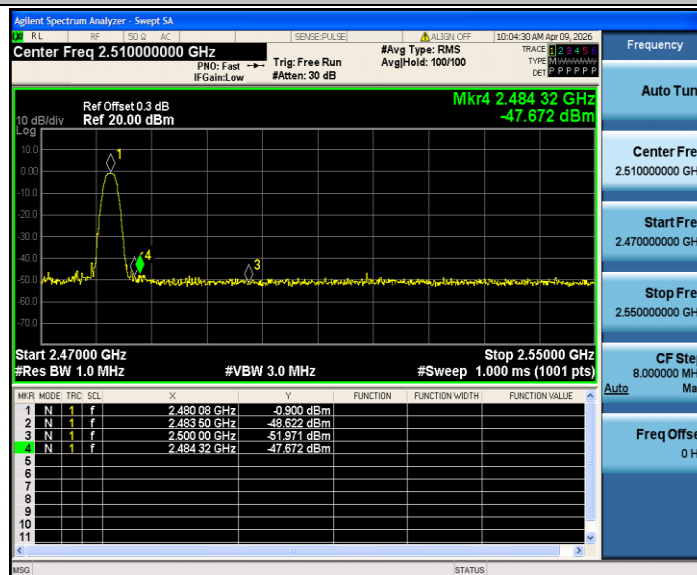
BLE_1M_Ant1_Low_2402_Peak



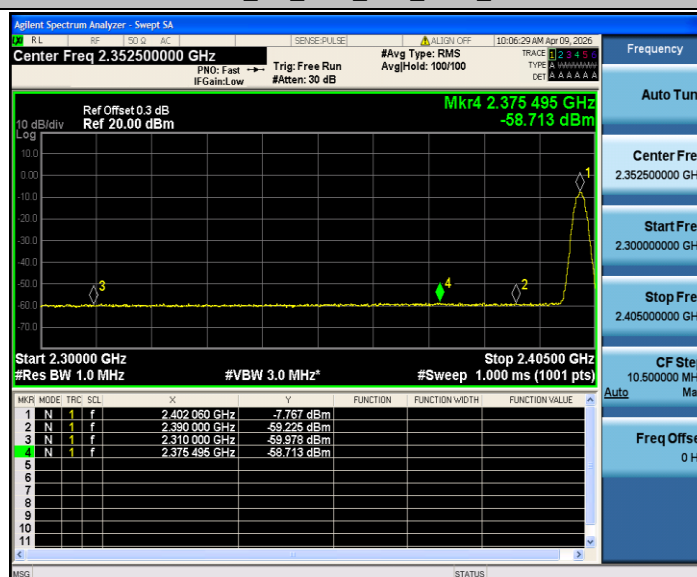
BLE_1M_Ant1_High_2480_AV



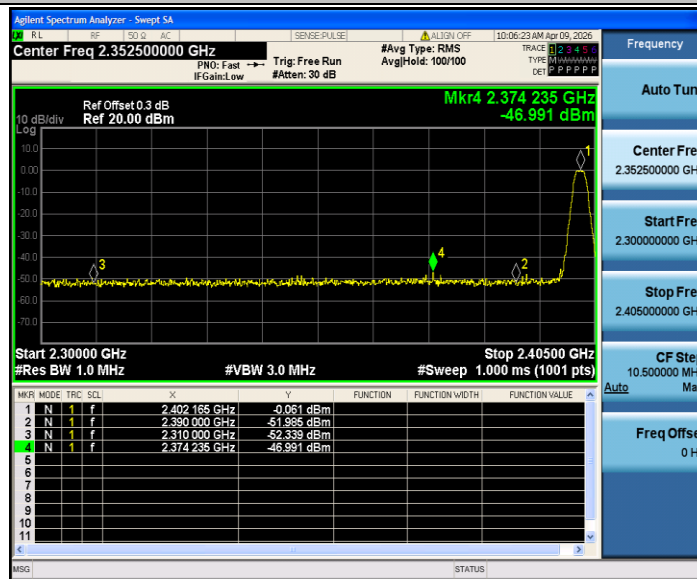
BLE_1M_Ant1_High_2480_Peak



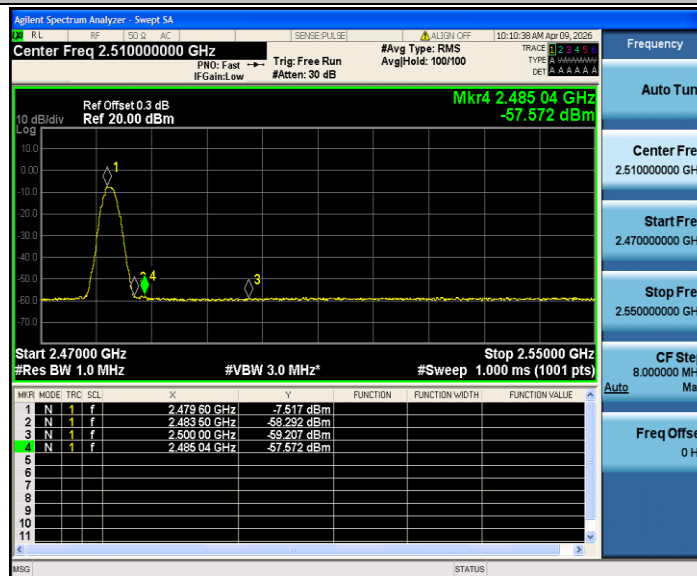
BLE_2M_Ant1_Low_2402_AV



BLE_2M_Ant1_Low_2402_Peak



BLE_2M_Ant1_High_2480_AV



BLE_2M_Ant1_High_2480_Peak

