



Appendix Test Data for BLE (Conducted Measurement)

Product Name: GravaStar Mercury X Air Wireless Gaming Mouse

Trade Mark: GravaStar

Test Model: GS X AIR

FCC ID: 2ASXF-GSXAIR

Environmental Conditions

Temperature:	23.5°C
Relative Humidity:	58%
ATM Pressure:	100.0 kPa
Test Engineer:	Allen Lai
Supervised by:	Max Zhang
NOTE	N/A

Appendix A: DTS Bandwidth

Test Result

Test Mode	Antenna	Frequency [MHz]	DTS BW [MHz]	FL [MHz]	FH [MHz]	Limit [MHz]	Verdict
BLE_1M	Ant1	2402	0.724	2401.644	2402.368	0.5	PASS
BLE_1M	Ant1	2440	0.684	2439.656	2440.340	0.5	PASS
BLE_1M	Ant1	2480	0.692	2479.660	2480.352	0.5	PASS

Note: offset(dB) = cable loss(dB) + attenuator factor(dB)





Test Graphs





BLE_1M-Ant1-2480-PASS





Appendix B: Occupied Channel Bandwidth

Test Result

Test Mode	Antenna	Frequency [MHz]	OCB [MHz]	FL [MHz]	FH [MHz]	Limit [MHz]	Verdict
BLE_1M	Ant1	2402	1.0235	2401.4983	2402.5218	---	---
BLE_1M	Ant1	2440	1.0333	2439.4930	2440.5263	---	---
BLE_1M	Ant1	2480	1.0283	2479.4969	2480.5252	---	---

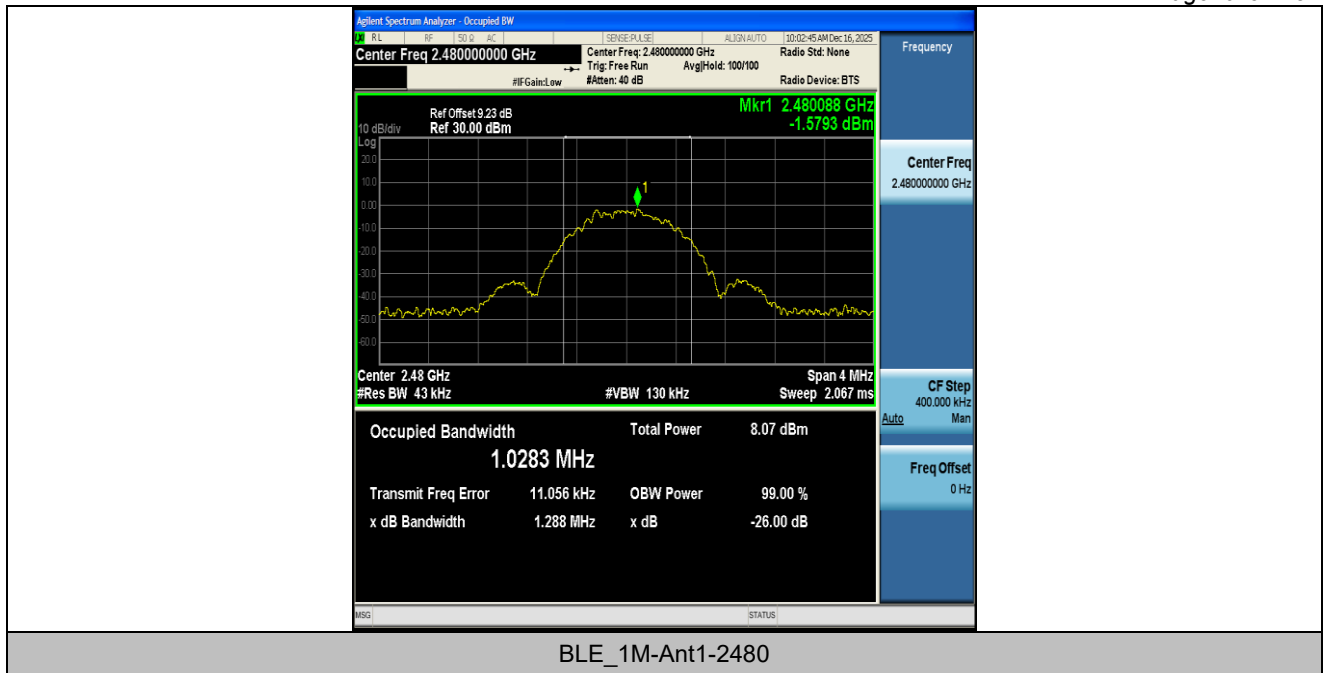
Note: offset(dB) = cable loss(dB) + attenuator factor(dB)





Test Graphs







Appendix C: Maximum peak conducted output power

Test Result Peak

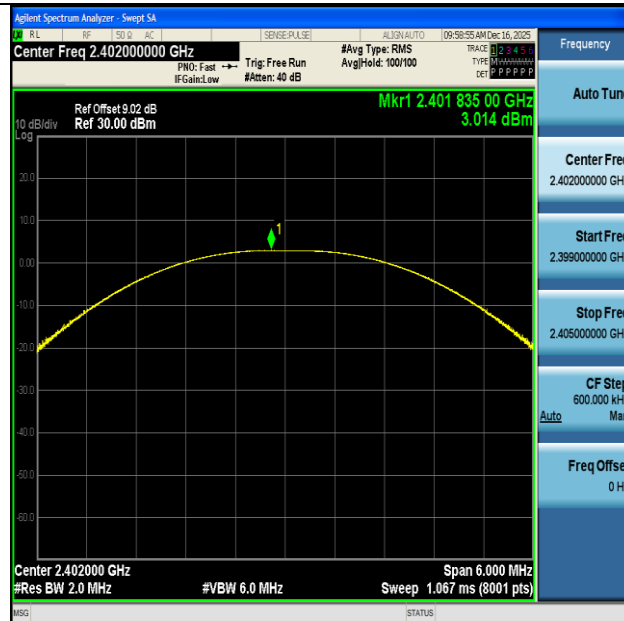
Test Mode	Antenna	Frequency [MHz]	Conducted Peak Power [dBm]	Conducted Limit [dBm]	Verdict
BLE_1M	Ant1	2402	3.01	≤30	PASS
BLE_1M	Ant1	2440	2.25	≤30	PASS
BLE_1M	Ant1	2480	1.77	≤30	PASS

Note: offset(dB) = cable loss(dB) + attenuator factor(dB)

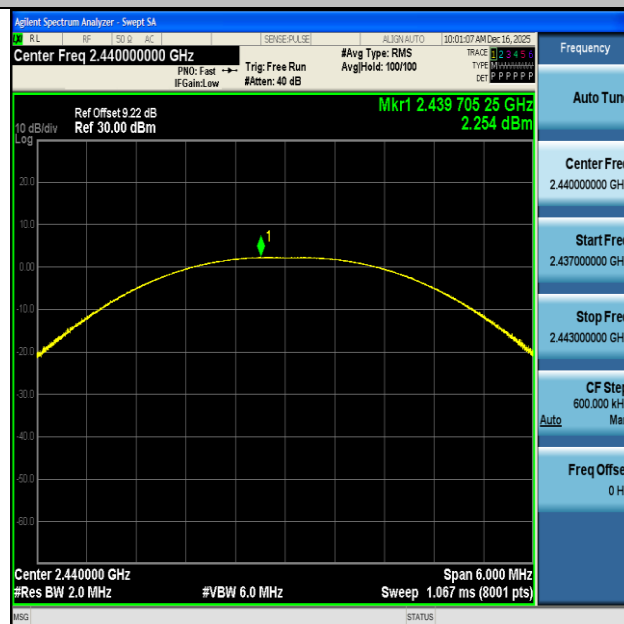




Test Graphs Peak

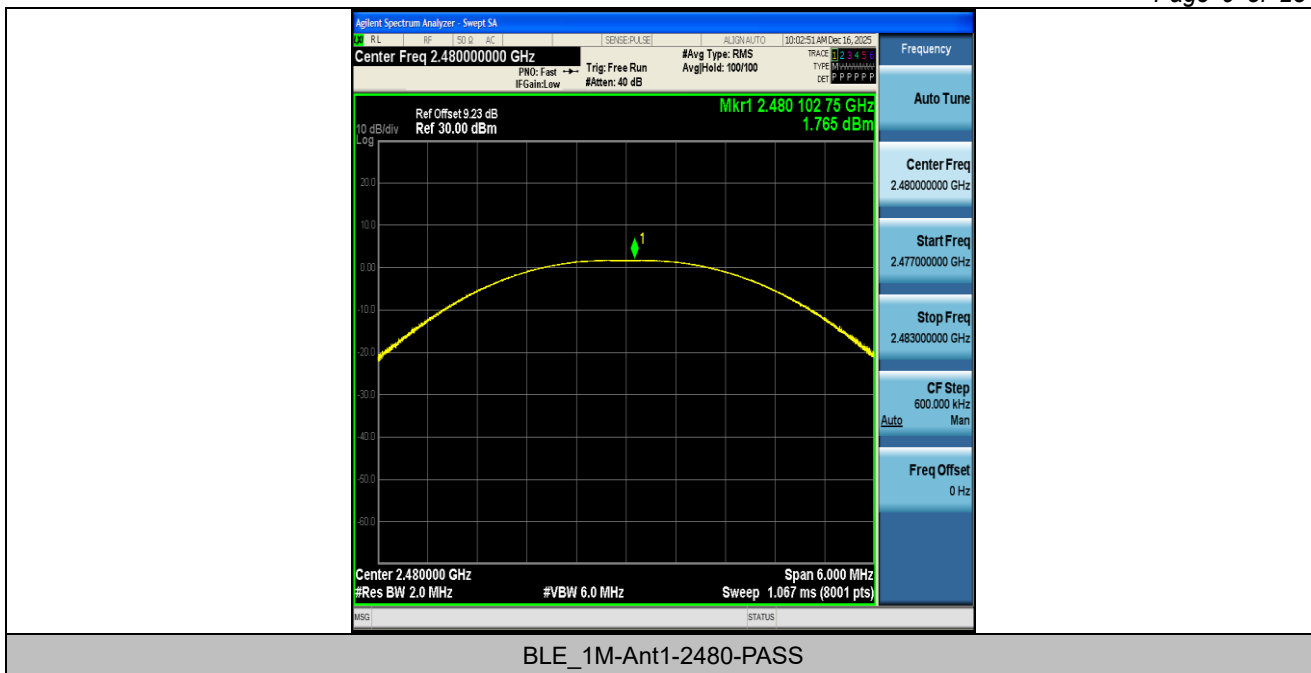


BLE_1M-Ant1-2402-PASS



BLE_1M-Ant1-2440-PASS







Appendix D: Maximum peak power spectral density

Test Result

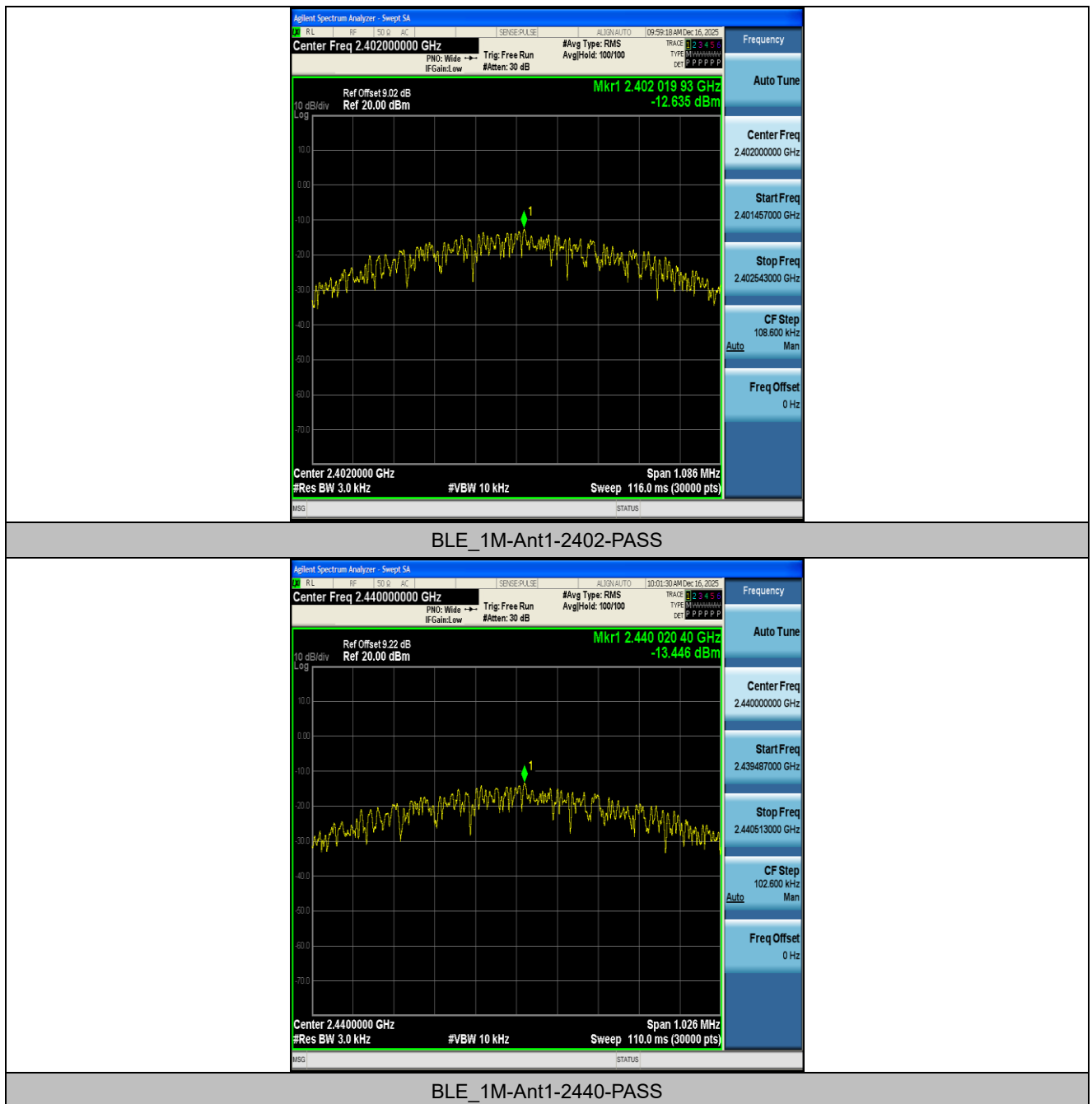
Test Mode	Antenna	Frequency [MHz]	Result [dBm/3kHz]	Limit [dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-12.64	≤8.00	PASS
BLE_1M	Ant1	2440	-13.45	≤8.00	PASS
BLE_1M	Ant1	2480	-13.60	≤8.00	PASS

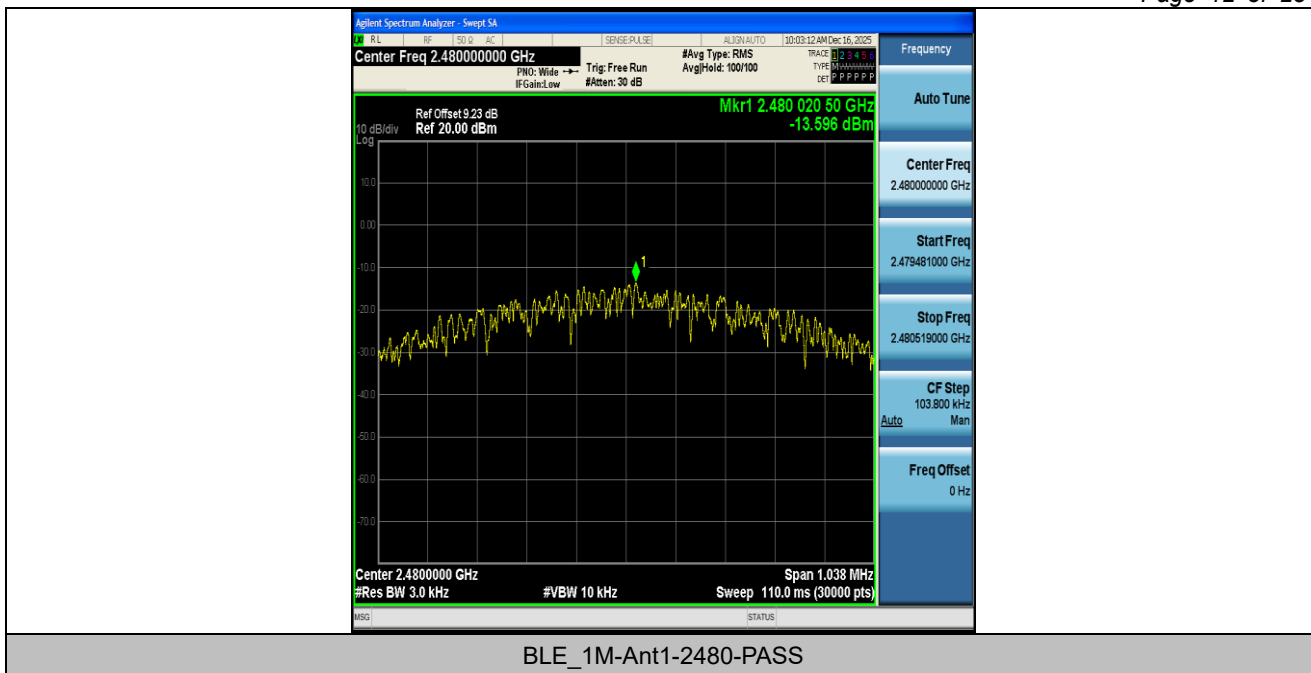
Note: offset(dB) = cable loss(dB) + attenuator factor(dB)





Test Graphs







Appendix E: Band edge measurements

Test Result

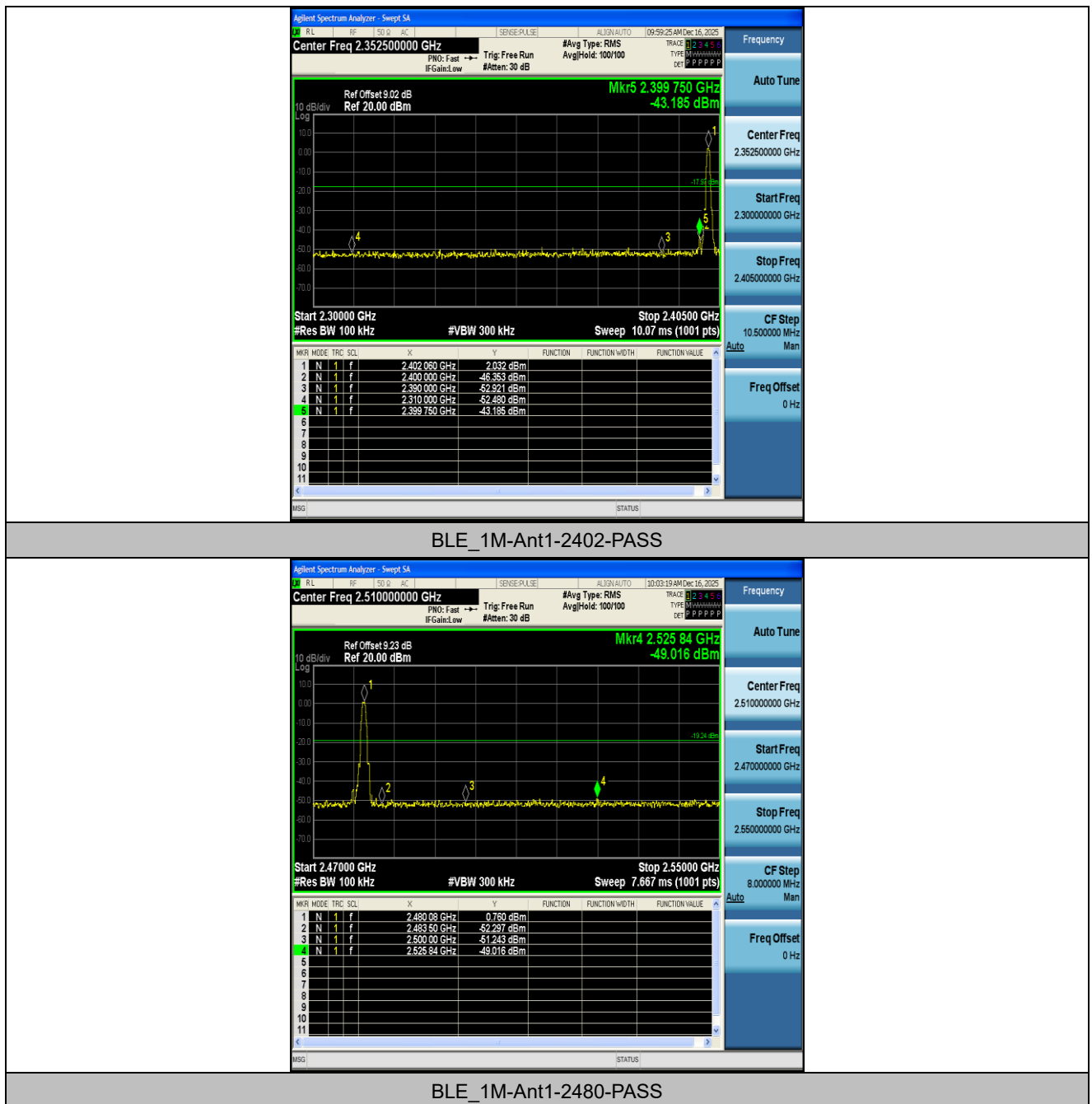
Test Mode	Antenna	Ch. Name	Frequency [MHz]	Ref. Level [dBm]	Result [dBm]	Limit [dBm]	Verdict
BLE_1M	Ant1	Low	2402	2.03	-43.19	≤-17.97	PASS
BLE_1M	Ant1	High	2480	0.76	-49.02	≤-19.24	PASS

Note: offset(dB) = cable loss(dB) + attenuator factor(dB)





Test Graphs





Appendix F: Conducted Spurious Emission

Test Result

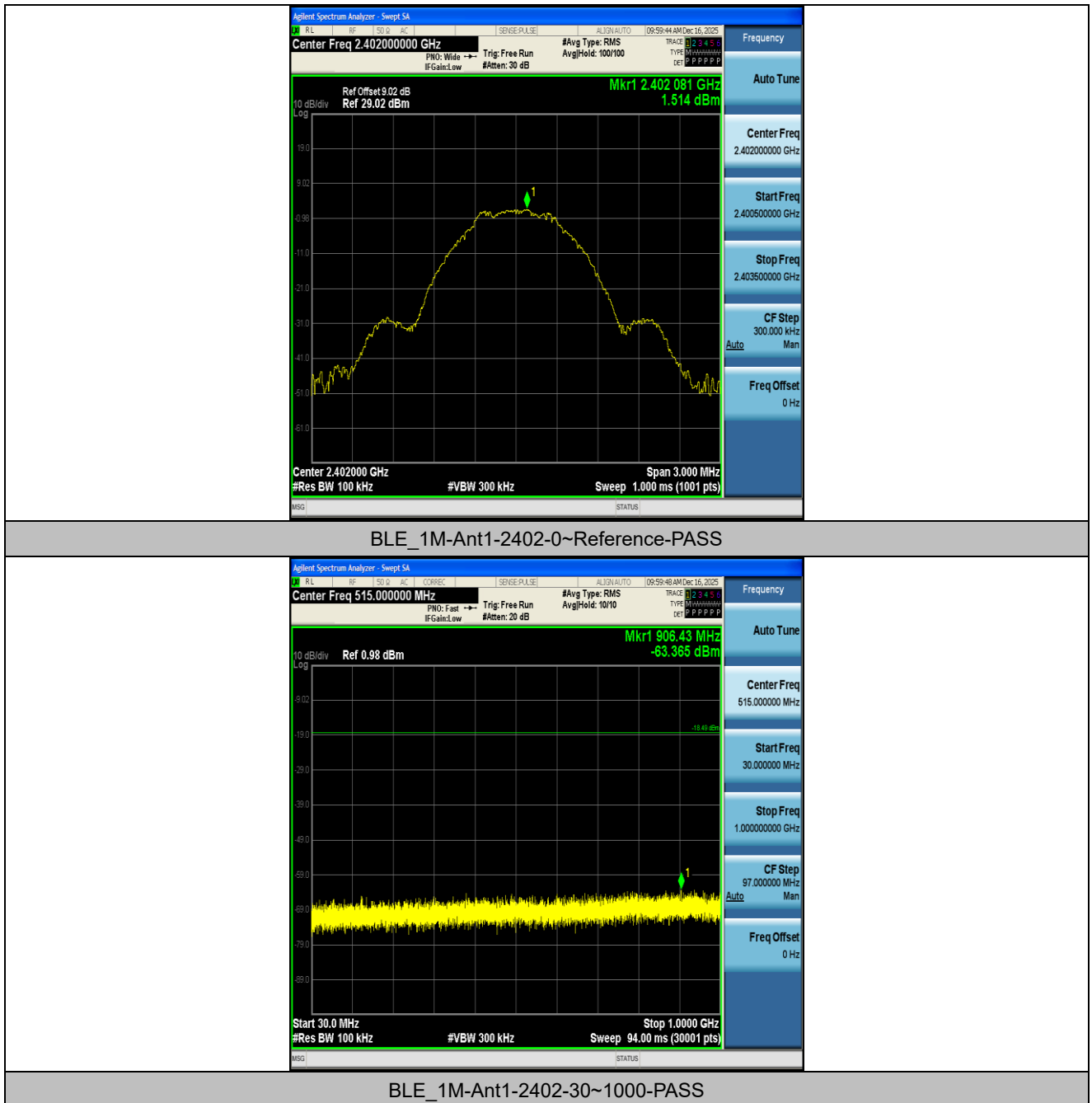
Test Mode	Antenna	Frequency [MHz]	Freq. Range [MHz]	Ref. Level [dBm]	Result [dBm]	Limit [dBm]	Verdict
BLE_1M	Ant1	2402	0~Reference	1.51	1.51	---	PASS
BLE_1M	Ant1	2402	30~1000	1.51	-63.37	≤-18.49	PASS
BLE_1M	Ant1	2402	1000~26500	1.51	-37.28	≤-18.49	PASS
BLE_1M	Ant1	2440	0~Reference	0.88	0.88	---	PASS
BLE_1M	Ant1	2440	30~1000	0.88	-62.75	≤-19.12	PASS
BLE_1M	Ant1	2440	1000~26500	0.88	-37.43	≤-19.12	PASS
BLE_1M	Ant1	2480	0~Reference	0.41	0.41	---	PASS
BLE_1M	Ant1	2480	30~1000	0.41	-63.04	≤-19.59	PASS
BLE_1M	Ant1	2480	1000~26500	0.41	-37.69	≤-19.59	PASS

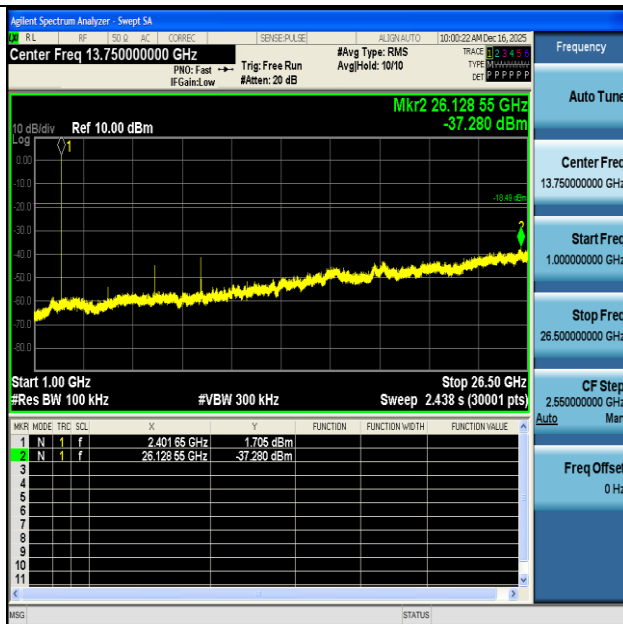
Note: offset(dB) in Reference test plots = cable loss(dB) + attenuator factor(dB); For spurious emissions plots from 30MHz to 26.5GHz, the cable loss and attenuator factors have been set in the 'Input Correction' of the Spectrum Analyzer during the test.



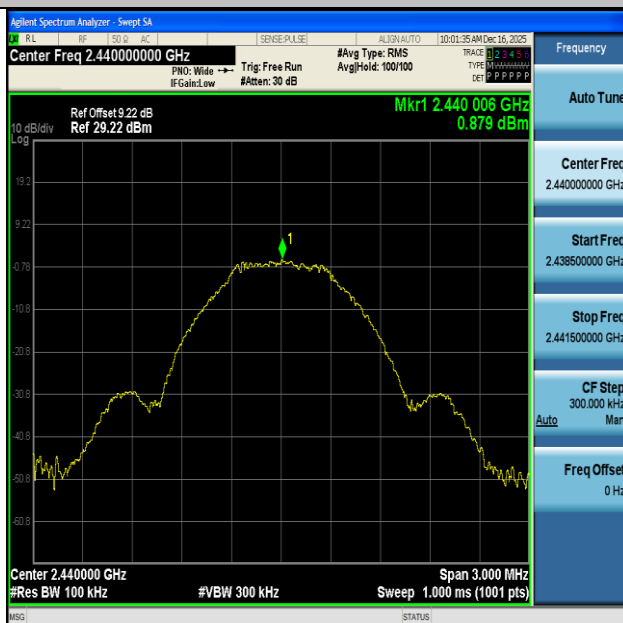


Test Graphs



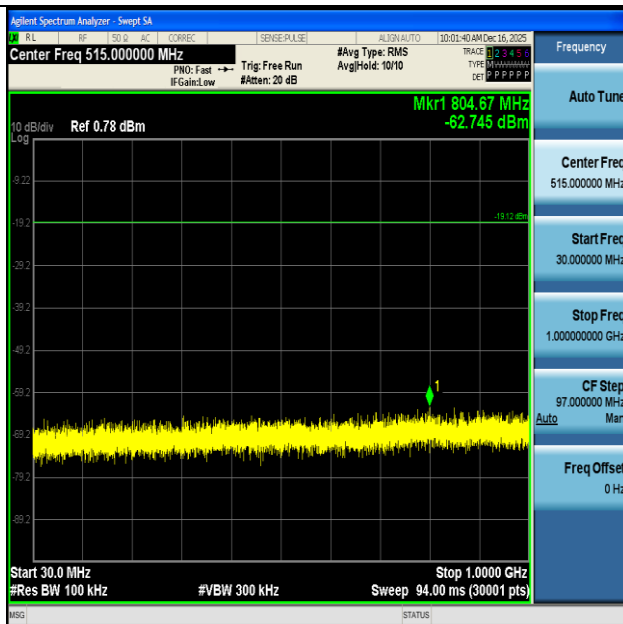


BLE_1M-Ant1-2402-1000~26500-PASS

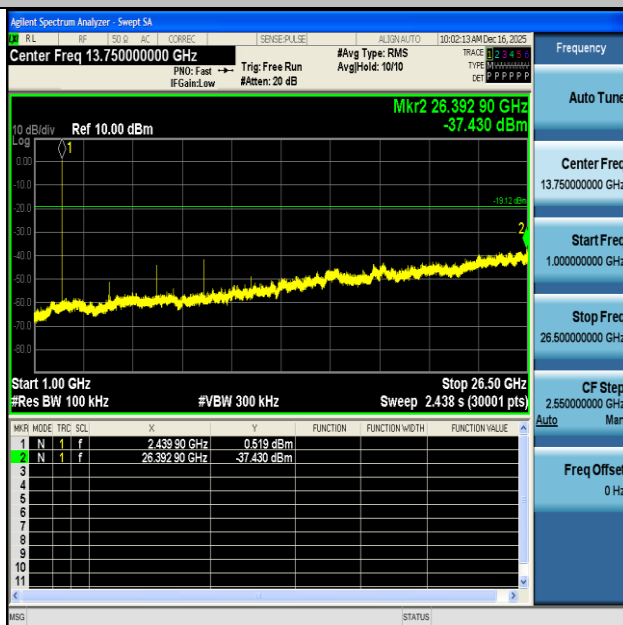


BLE_1M-Ant1-2440-0~Reference-PASS





BLE_1M-Ant1-2440-30~1000-PASS

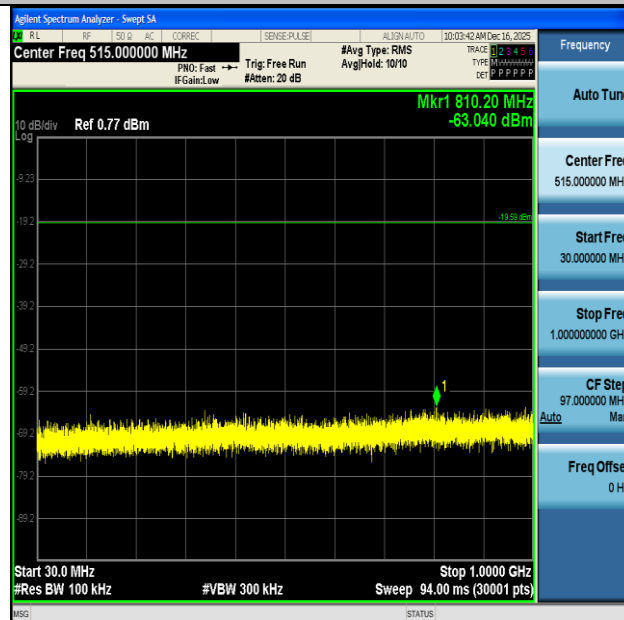


BLE_1M-Ant1-2440-1000~26500-PASS



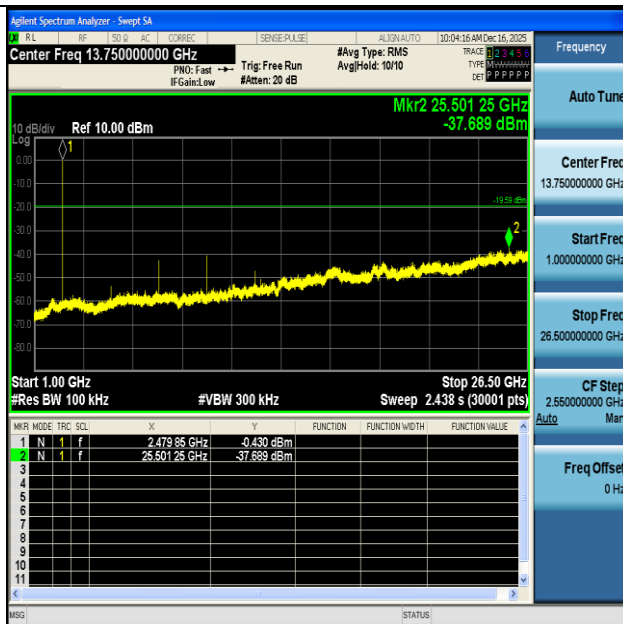


BLE_1M-Ant1-2480-0~Reference-PASS



BLE_1M-Ant1-2480-30~1000-PASS





BLE_1M-Ant1-2480-1000~26500-PASS





Appendix G: Duty Cycle

Test Result

Test Mode	Antenna	Frequency [MHz]	ON Time [ms]	Period [ms]	Duty Cycle [%]	Duty Cycle Factor [dB]
BLE_1M	Ant1	2402	0.41	0.64	64.06	1.93
BLE_1M	Ant1	2440	0.41	0.64	64.06	1.93
BLE_1M	Ant1	2480	0.41	0.64	64.06	1.93

Note: offset(dB) = cable loss(dB) + attenuator factor(dB)





Test Graphs

