



Appendix Test Data for BLE (Conducted Measurement)

Product Name: Multifunctional Ring Mouse

Trade Mark: Qring

Test Model: D13

FCC ID: 2A66I-D13

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	0.676	2401.668	2402.344	0.5	PASS
BLE_1M	Ant1	2440	0.672	2439.680	2440.352	0.5	PASS
BLE_1M	Ant1	2480	0.684	2479.656	2480.340	0.5	PASS

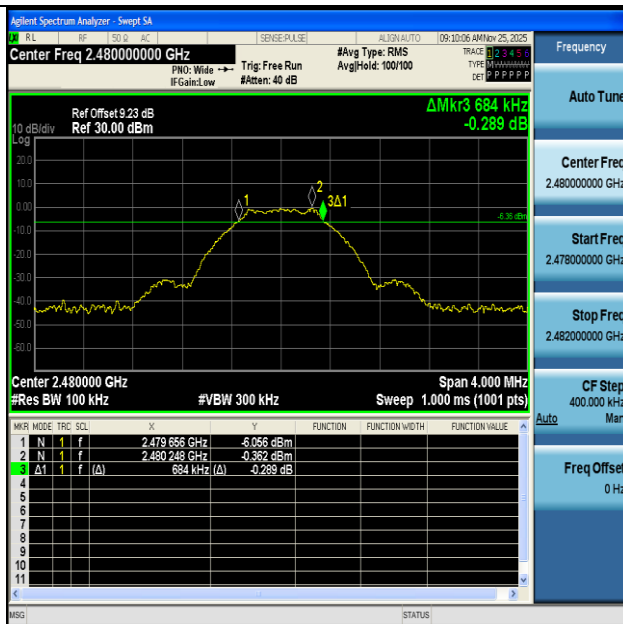
Note: offset(dB) = cable loss(dB) + attenuator factor(dB)





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	1.0318	2401.4947	2402.5265	---	---
BLE_1M	Ant1	2440	1.0243	2439.4952	2440.5195	---	---
BLE_1M	Ant1	2480	1.0276	2479.4923	2480.5199	---	---

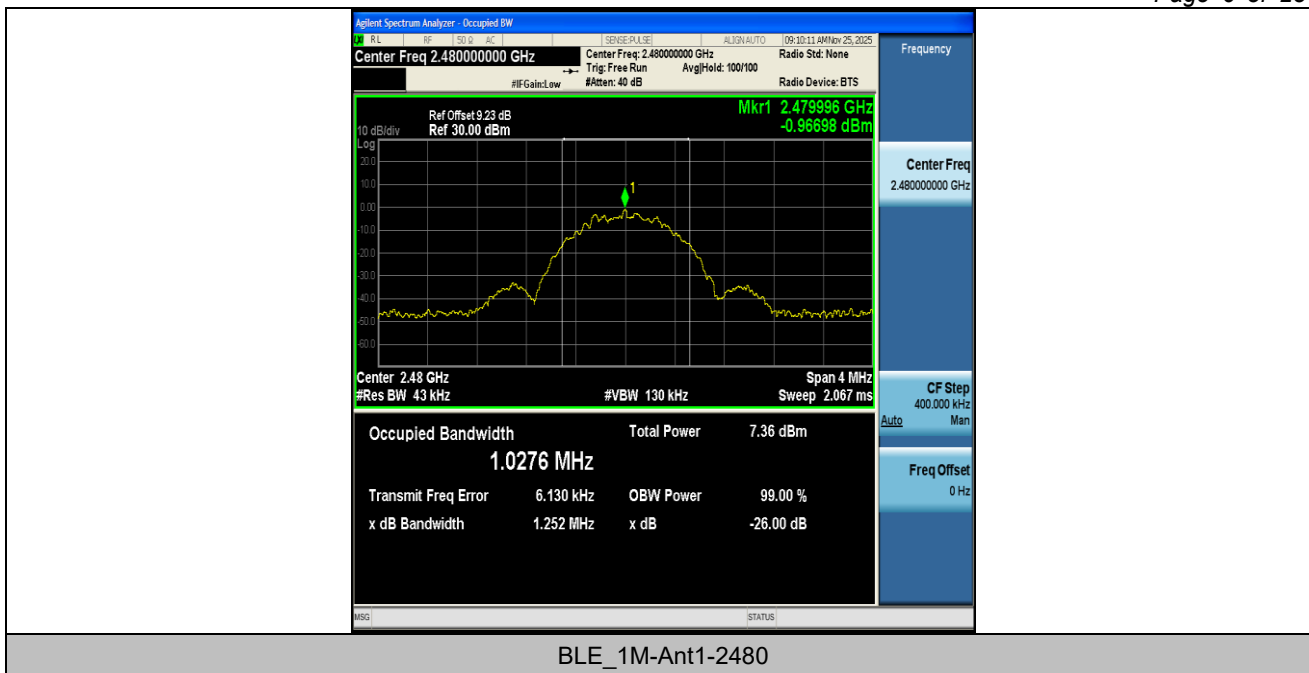
Note: offset(dB) = cable loss(dB) + attenuator factor(dB)





Test Graphs







Appendix C: Maximum peak conducted output power

Test Result Peak

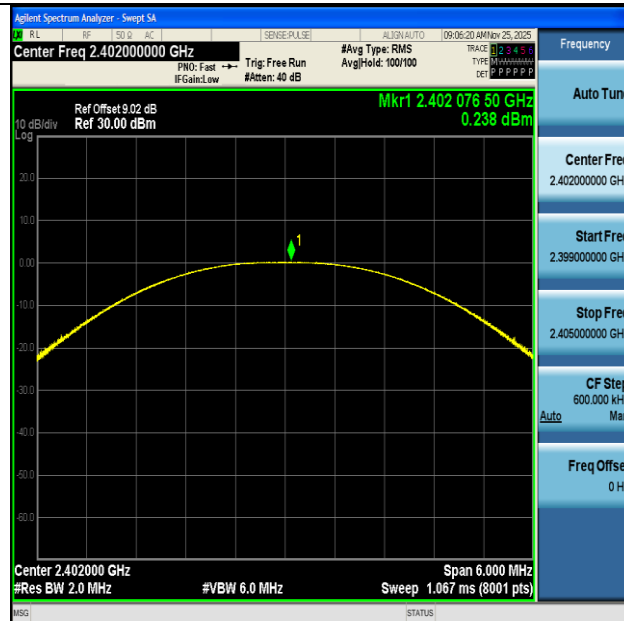
Test Mode	Antenna	Frequency [MHz]	Conducted Peak Power [dBm]	Conducted Limit [dBm]	Verdict
BLE_1M	Ant1	2402	0.24	≤30	PASS
BLE_1M	Ant1	2440	0.82	≤30	PASS
BLE_1M	Ant1	2480	0.81	≤30	PASS

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

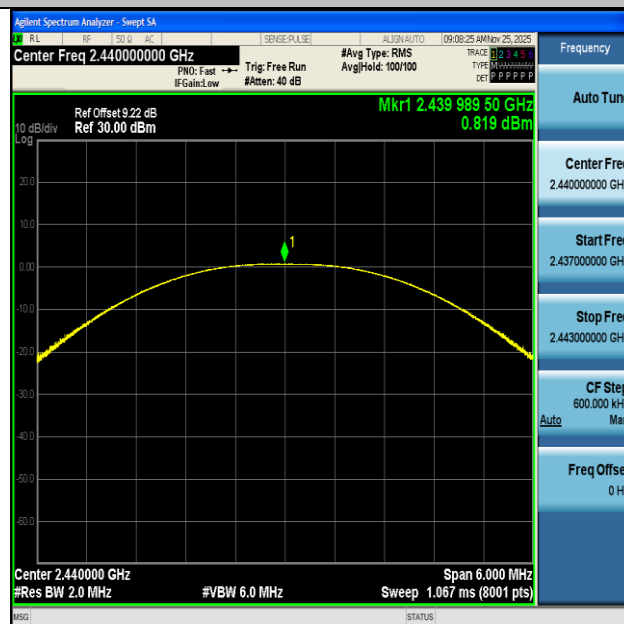




Test Graphs Peak

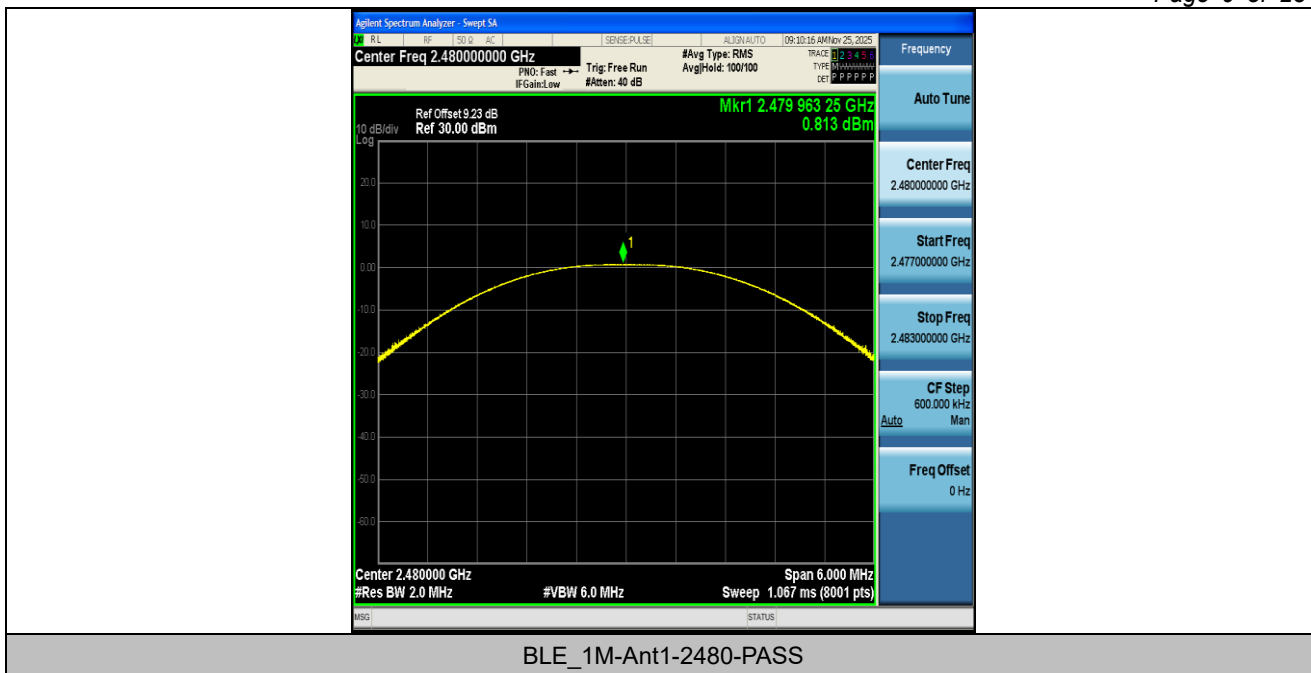


BLE_1M-Ant1-2402-PASS



BLE_1M-Ant1-2440-PASS







Appendix D: Maximum peak power spectral density

Test Result

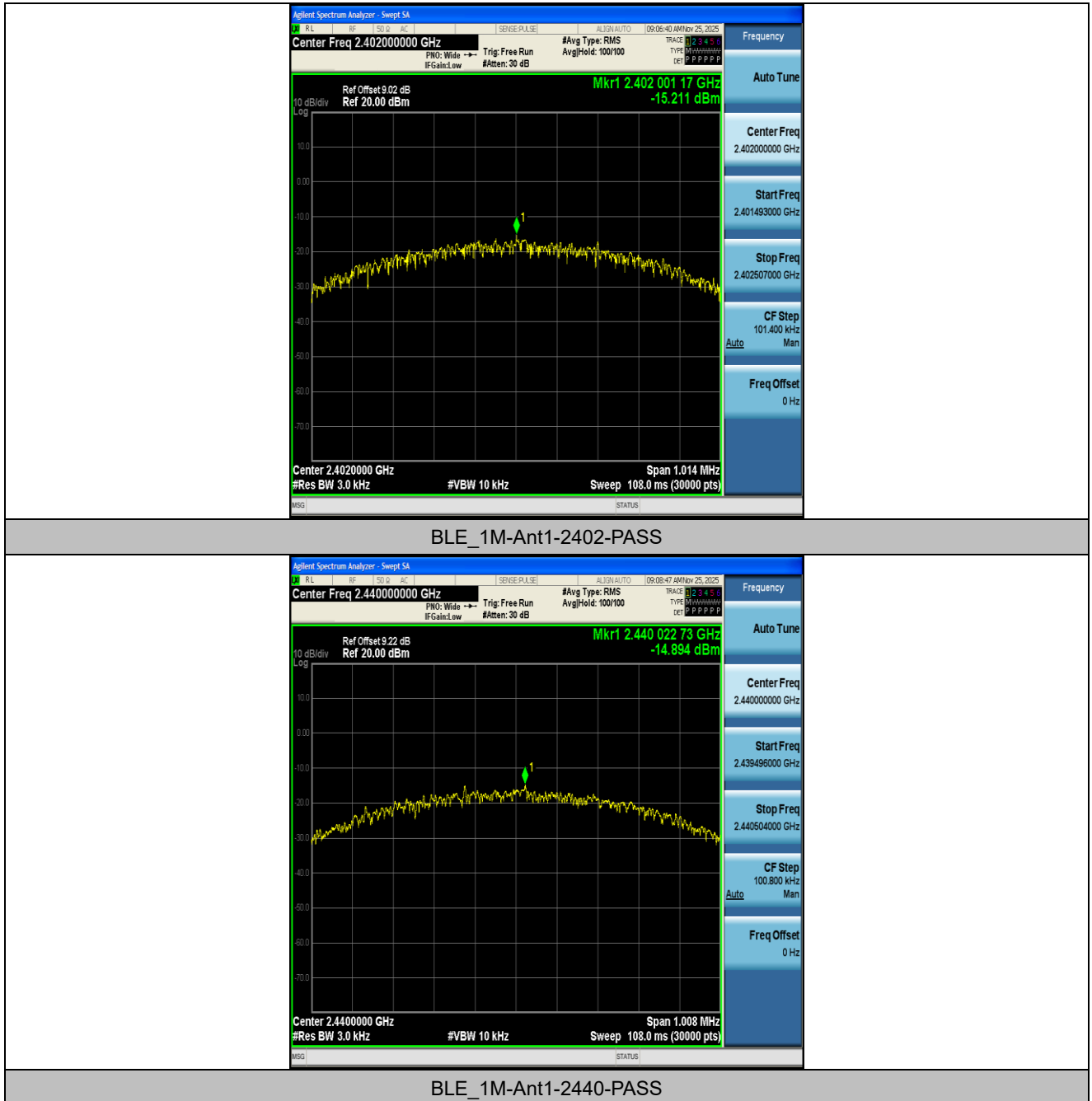
Test Mode	Antenna	Frequency [MHz]	Result [dBm/3kHz]	Limit [dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-15.21	≤8.00	PASS
BLE_1M	Ant1	2440	-14.89	≤8.00	PASS
BLE_1M	Ant1	2480	-15.80	≤8.00	PASS

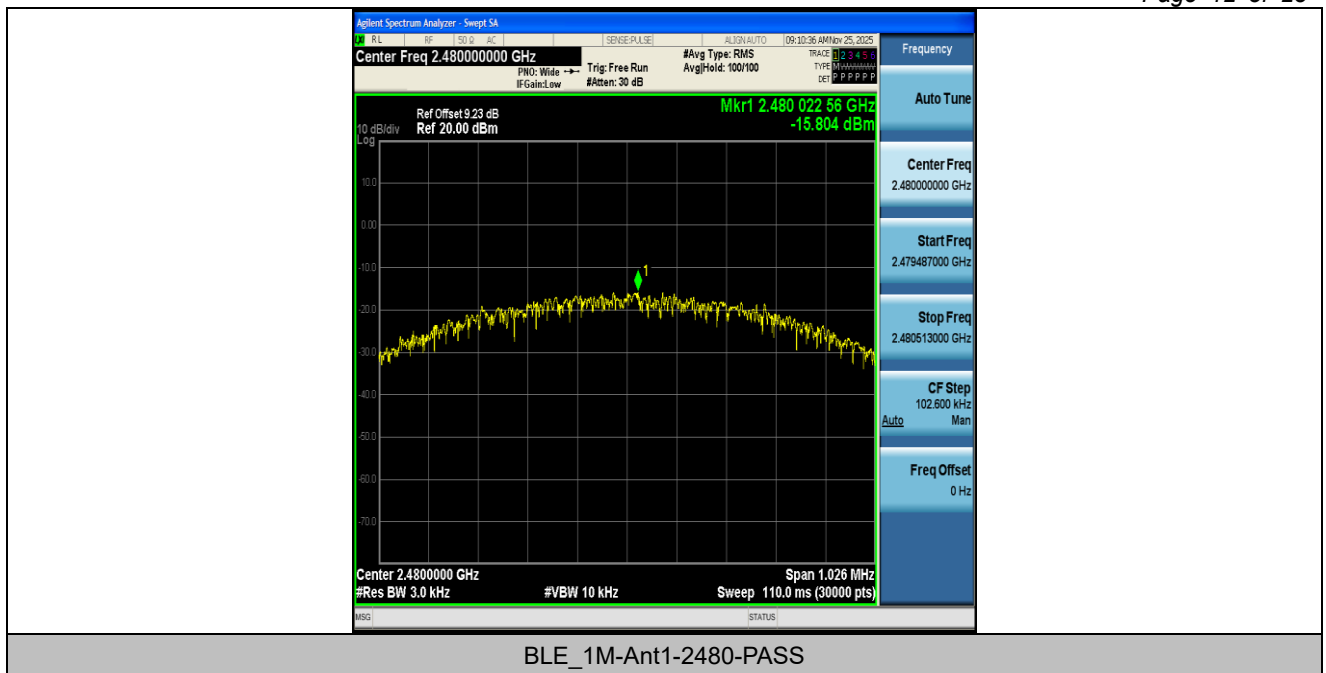
Note: offset(dB) = cable loss(dB) + attenuator factor(dB)





Test Graphs







Appendix E: Band edge measurements

Test Result

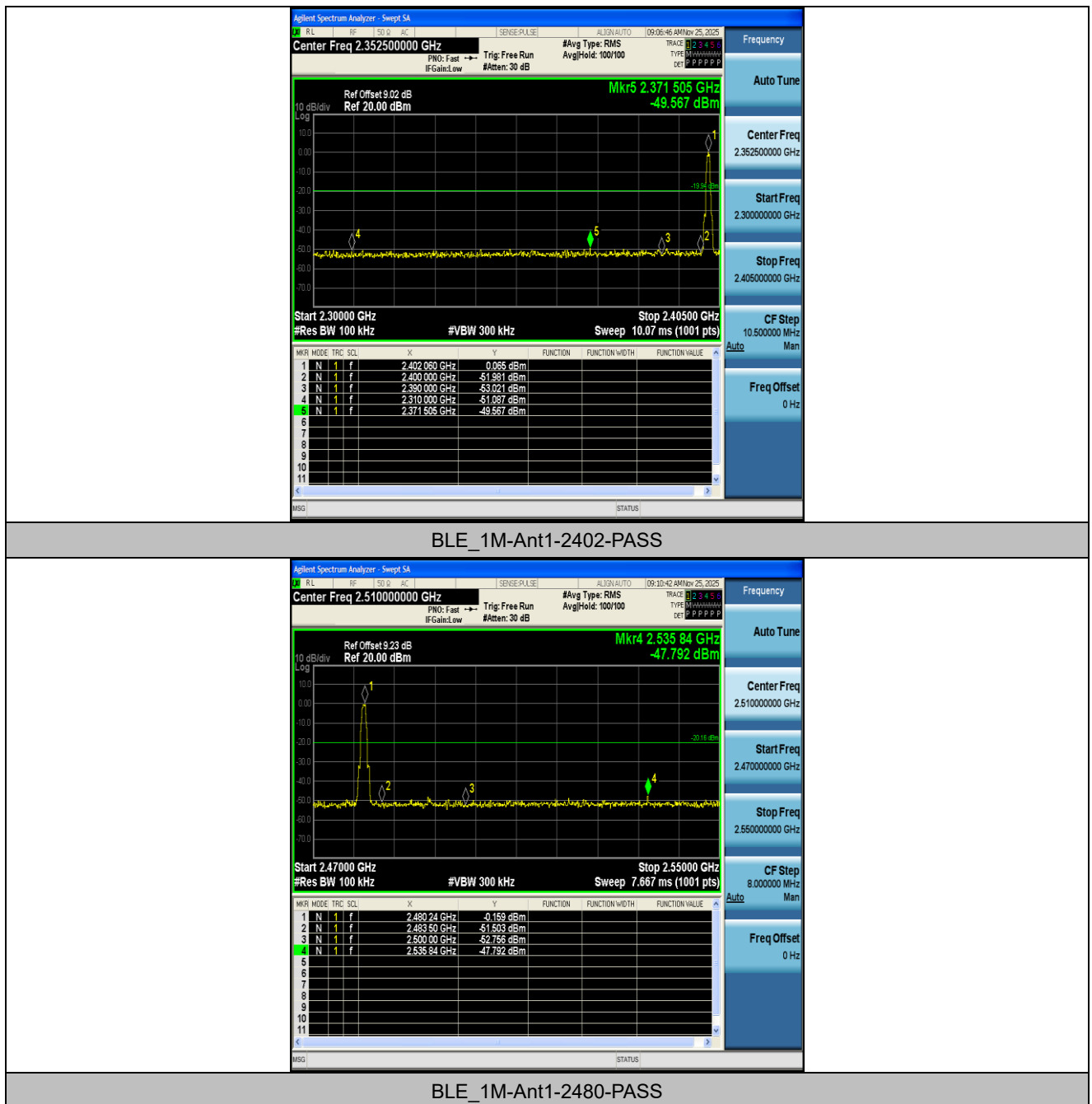
Test Mode	Antenna	Ch. Name	Frequency [MHz]	Ref. Level [dBm]	Result [dBm]	Limit [dBm]	Verdict
BLE_1M	Ant1	Low	2402	0.07	-49.57	≤ -19.94	PASS
BLE_1M	Ant1	High	2480	-0.16	-47.79	≤ -20.16	PASS

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





Test Graphs





Appendix F: Conducted Spurious Emission

Test Result

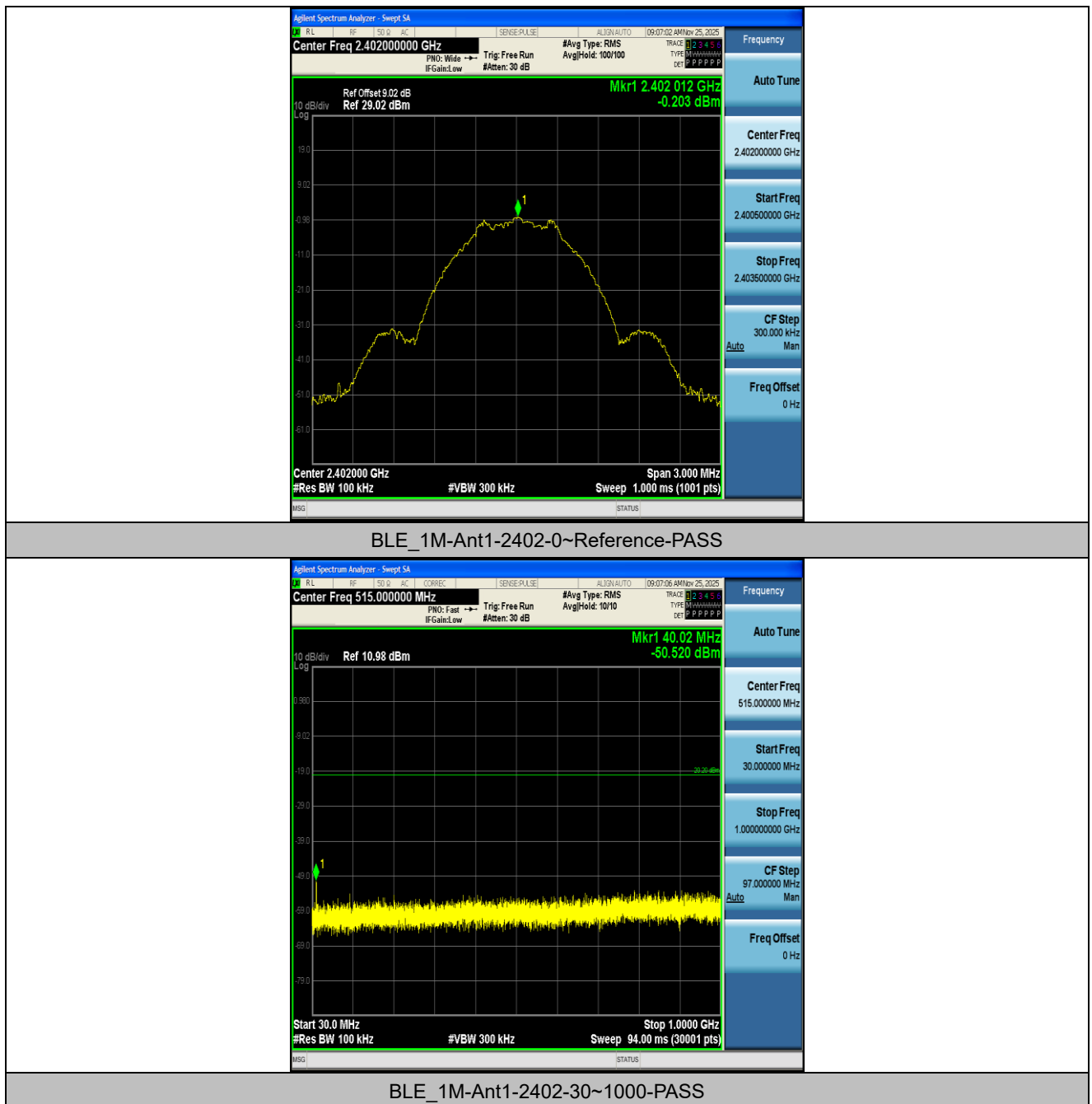
Test Mode	Antenna	Frequency [MHz]	Freq. Range [MHz]	Ref. Level [dBm]	Result [dBm]	Limit [dBm]	Verdict
BLE_1M	Ant1	2402	0~Reference	-0.20	-0.20	---	PASS
BLE_1M	Ant1	2402	30~1000	-0.20	-50.52	≤-20.2	PASS
BLE_1M	Ant1	2402	1000~26500	-0.20	-27.32	≤-20.2	PASS
BLE_1M	Ant1	2440	0~Reference	-0.51	-0.51	---	PASS
BLE_1M	Ant1	2440	30~1000	-0.51	-52.3	≤-20.51	PASS
BLE_1M	Ant1	2440	1000~26500	-0.51	-26.94	≤-20.51	PASS
BLE_1M	Ant1	2480	0~Reference	-0.30	-0.30	---	PASS
BLE_1M	Ant1	2480	30~1000	-0.30	-51.73	≤-20.3	PASS
BLE_1M	Ant1	2480	1000~26500	-0.30	-27.06	≤-20.3	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



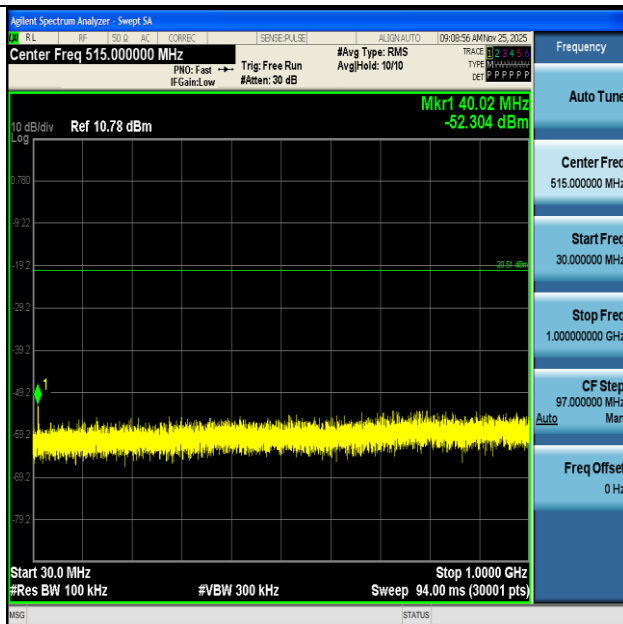


BLE_1M-Ant1-2402-1000~26500-PASS

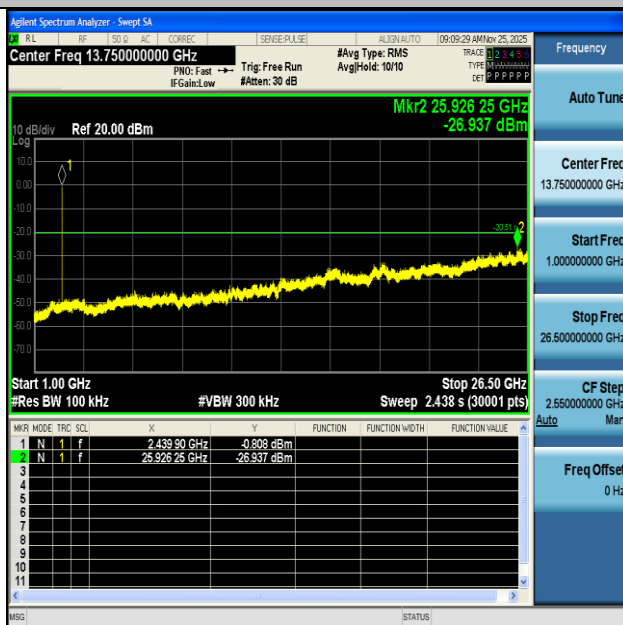


BLE_1M-Ant1-2440-0~Reference-PASS





BLE_1M-Ant1-2440-30~1000-PASS

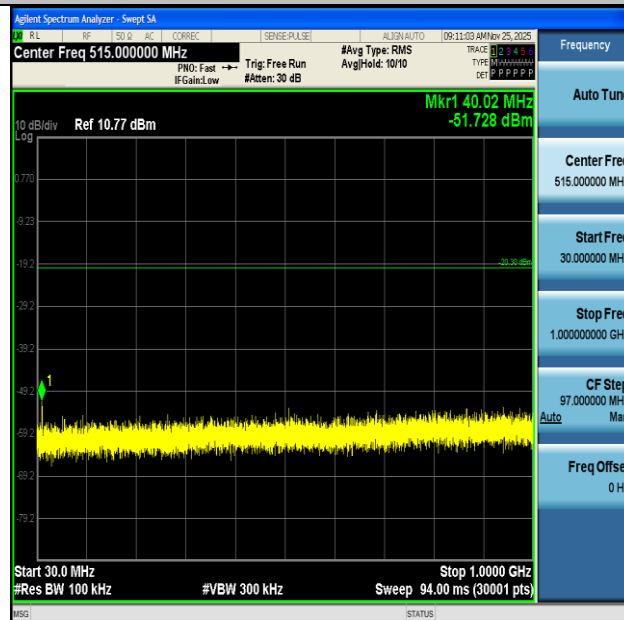


BLE_1M-Ant1-2440-1000~26500-PASS



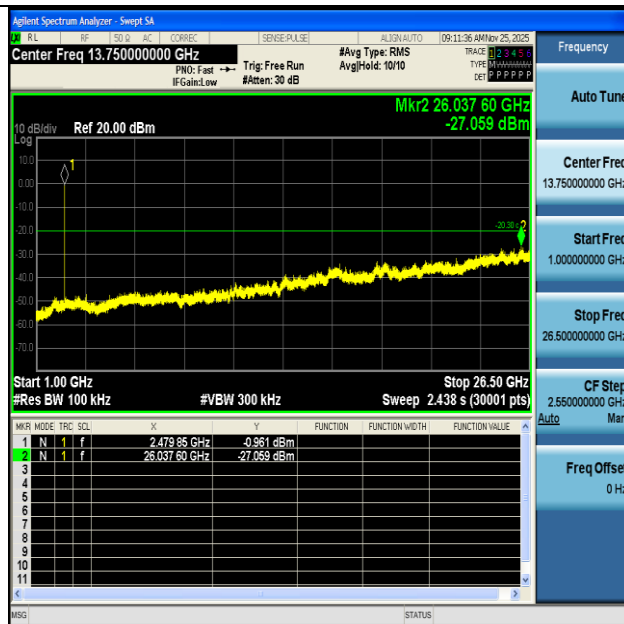


BLE_1M-Ant1-2480-0~Reference-PASS



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	2.13	2.50	85.20	0.70
BLE_1M	Ant1	2440	2.14	2.50	85.60	0.68
BLE_1M	Ant1	2480	2.14	2.50	85.60	0.68

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





Test Graphs



