



Appendix Test Data for WLAN(2. 4G) (Conducted Measurement)

Product Name: WIFI TOUCH SCREEN KARAOKE SYSTEM

Trade Mark: SingingMachine

Test Model: System 1

FCC ID: 2AAXO-ISM9080

Environmental Conditions

Temperature:	23.5℃
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
11B	Ant1	2412	10.200	2406.920	2417.120	0.5	PASS
11B	Ant1	2437	10.200	2431.920	2442.120	0.5	PASS
11B	Ant1	2462	10.200	2456.920	2467.120	0.5	PASS
11G	Ant1	2412	16.200	2403.880	2420.080	0.5	PASS
11G	Ant1	2437	16.240	2428.880	2445.120	0.5	PASS
11G	Ant1	2462	16.200	2453.880	2470.080	0.5	PASS
11N20SISO	Ant1	2412	17.200	2403.400	2420.600	0.5	PASS
11N20SISO	Ant1	2437	17.000	2428.400	2445.400	0.5	PASS
11N20SISO	Ant1	2462	17.280	2453.360	2470.640	0.5	PASS

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



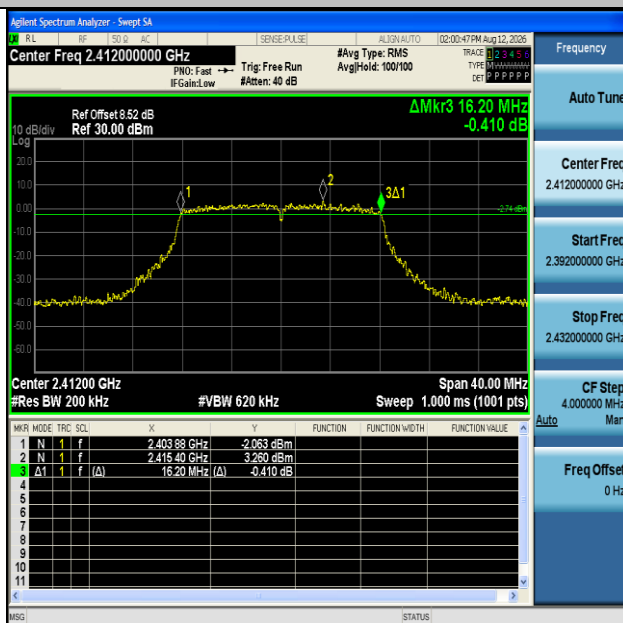


Test Graphs



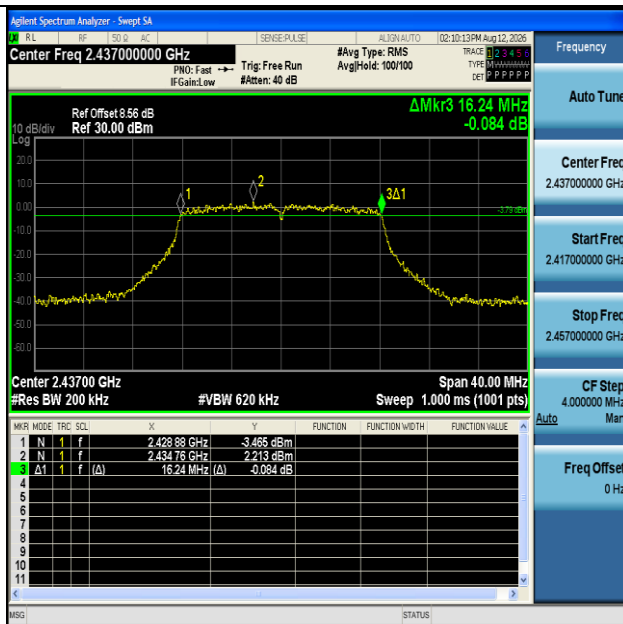


11B-Ant1-2462-PASS

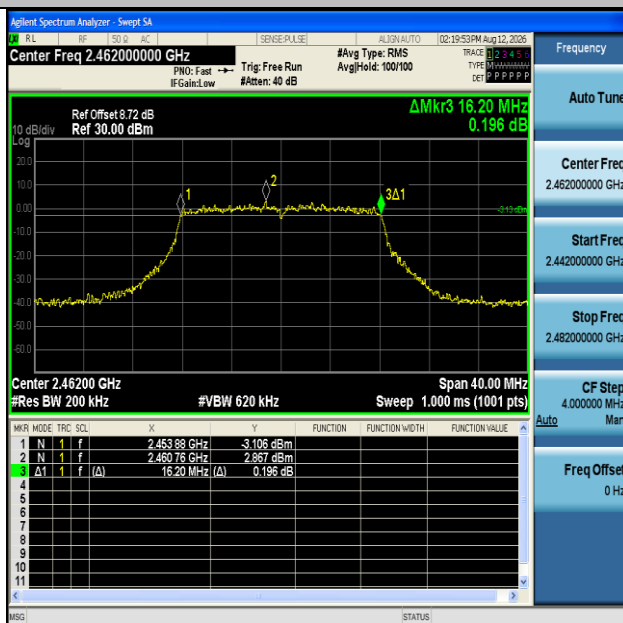


11G-Ant1-2412-PASS



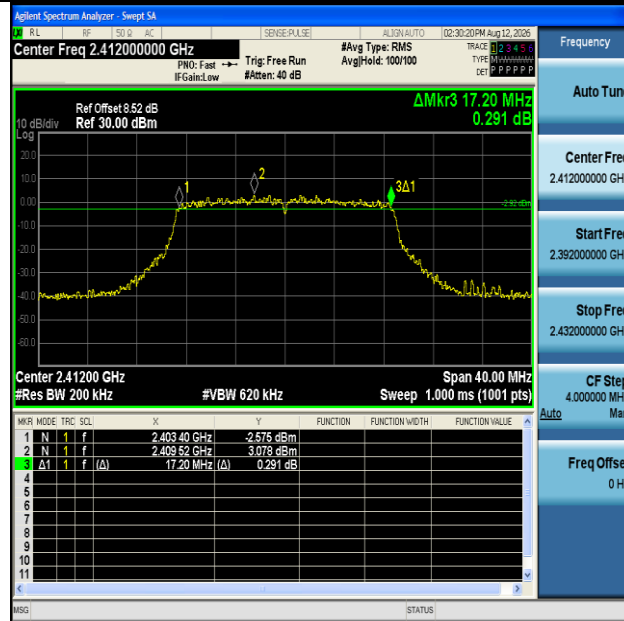


11G-Ant1-2437-PASS



11G-Ant1-2462-PASS





11N20SISO-Ant1-2412-PASS



11N20SISO-Ant1-2437-PASS





11N20SISO-Ant1-2462-PASS





Appendix B: Occupied Channel Bandwidth

Test Result

Test Mode	Antenna	Channel Frequency [MHz]	OCB [MHz]	FL [MHz]	FH [MHz]	Limit [MHz]	Verdict
11B	Ant1	2412	14.762	2404.6113	2419.3733	---	---
11B	Ant1	2437	14.812	2429.5694	2444.3814	---	---
11B	Ant1	2462	14.767	2454.6060	2469.3730	---	---
11G	Ant1	2412	16.683	2403.6657	2420.3487	---	---
11G	Ant1	2437	16.727	2428.6117	2445.3387	---	---
11G	Ant1	2462	16.761	2453.6629	2470.4239	---	---
11N20SISO	Ant1	2412	17.850	2403.1197	2420.9697	---	---
11N20SISO	Ant1	2437	17.833	2428.0702	2445.9032	---	---
11N20SISO	Ant1	2462	17.838	2453.0771	2470.9151	---	---

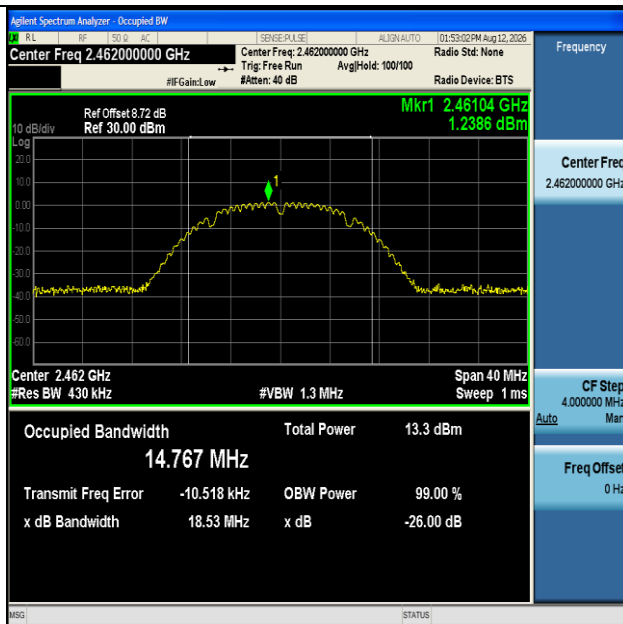
Note: offset(dB) = cable loss(dB) + attenuator factor(dB)



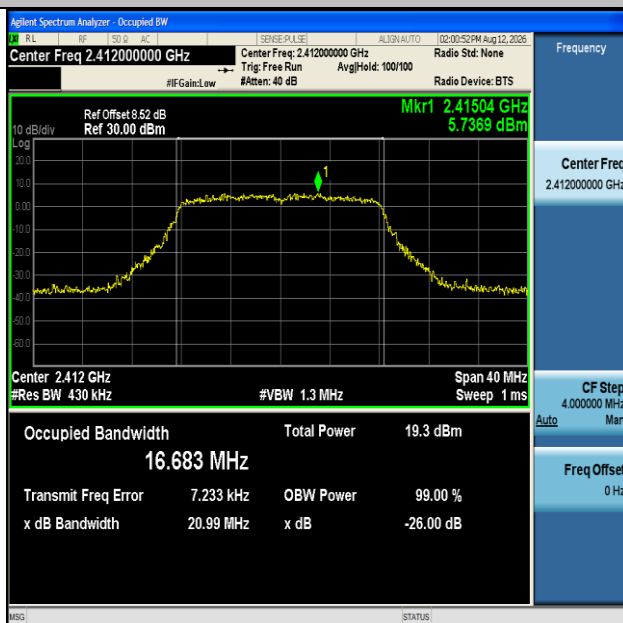


Test Graphs



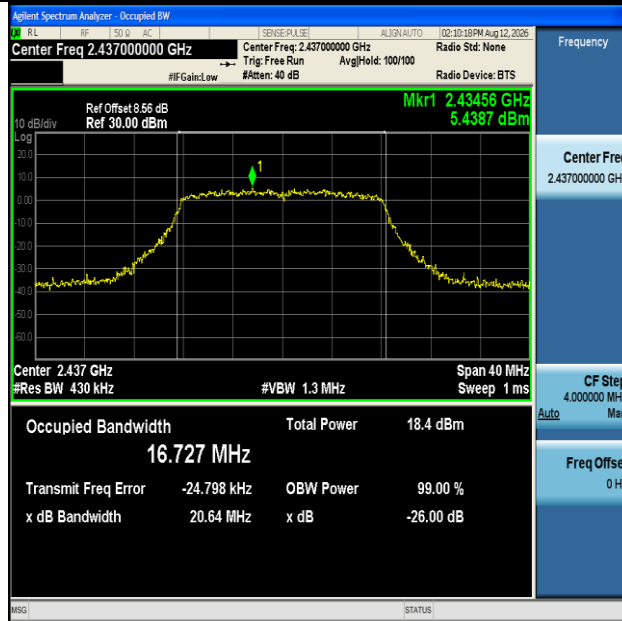


11B-Ant1-2462

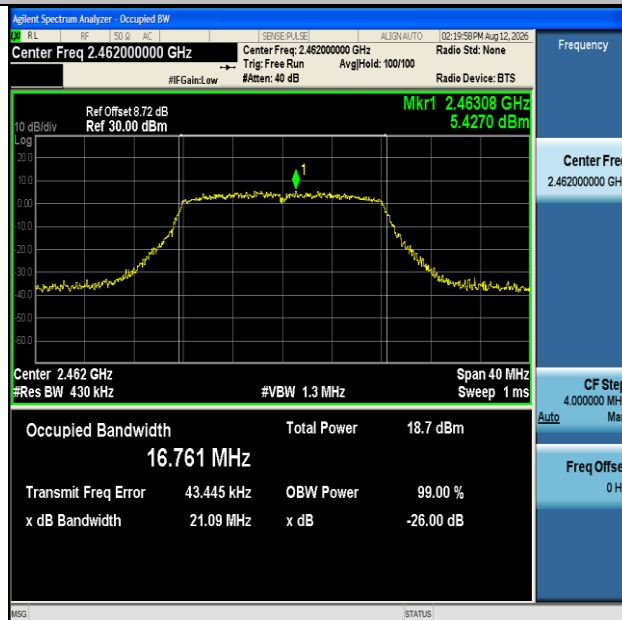


11G-Ant1-2412



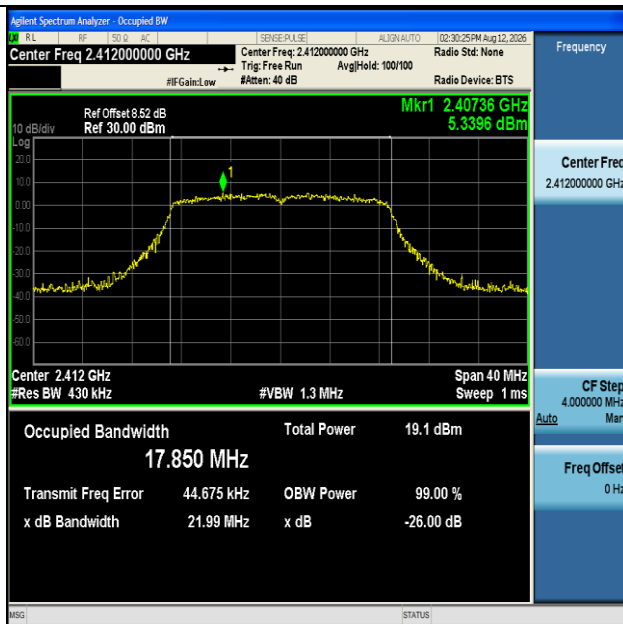


11G-Ant1-2437

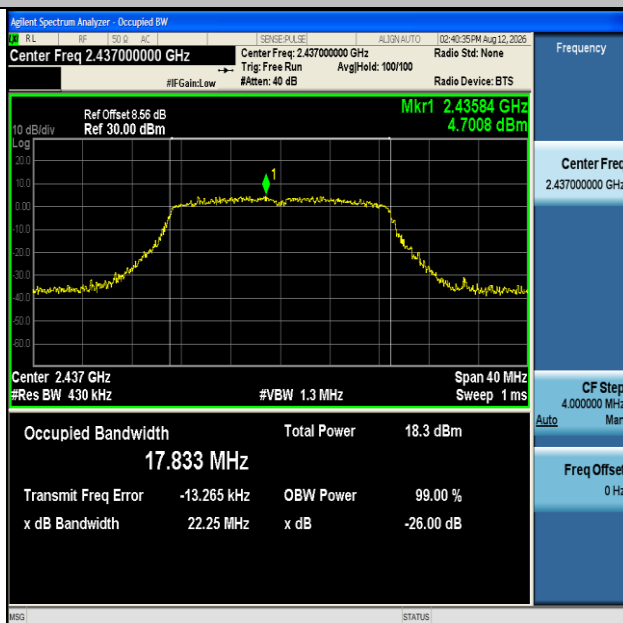


11G-Ant1-2462



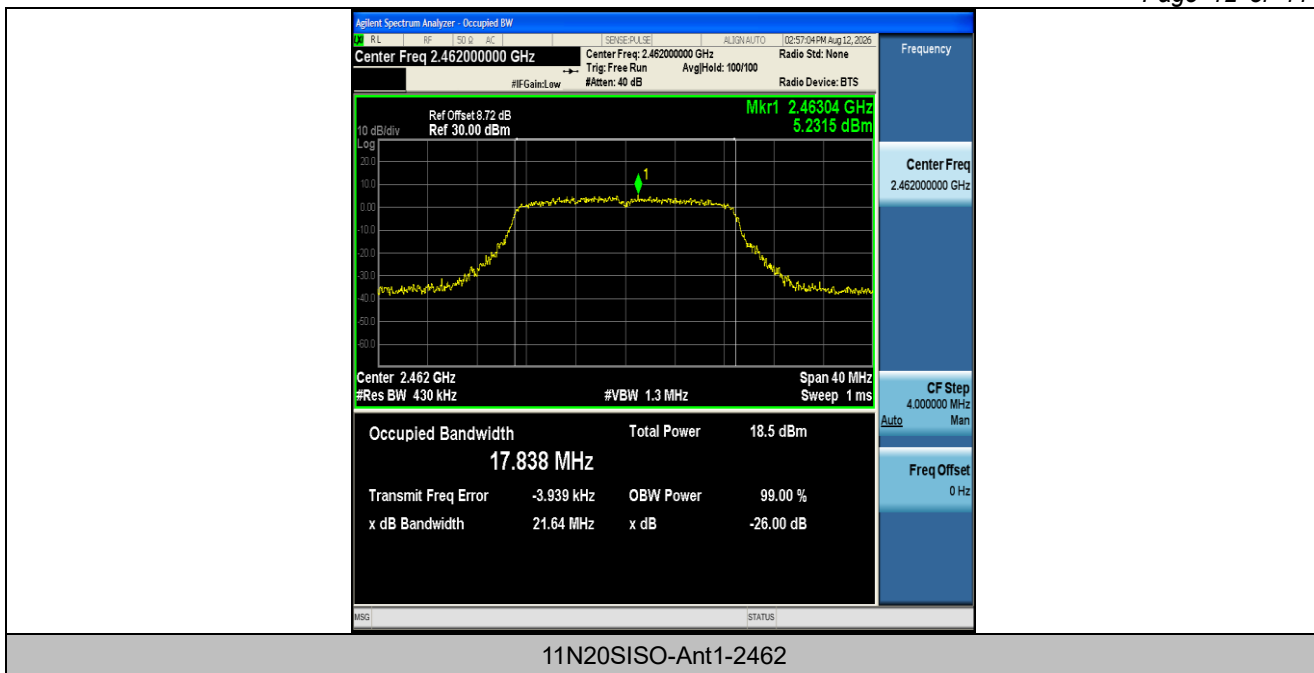


11N20SISO-Ant1-2412



11N20SISO-Ant1-2437







Appendix C: Maximum Average conducted output power

Test Result

Test Mode	Antenna	Frequency [MHz]	Conducted Power [dBm]	Conducted Limit [dBm]	Verdict
11B	Ant1	2412	10.72	≤30.00	PASS
11B	Ant1	2437	9.62	≤30.00	PASS
11B	Ant1	2462	10.31	≤30.00	PASS
11G	Ant1	2412	13.45	≤30.00	PASS
11G	Ant1	2437	12.55	≤30.00	PASS
11G	Ant1	2462	12.71	≤30.00	PASS
11N20SISO	Ant1	2412	13.21	≤30.00	PASS
11N20SISO	Ant1	2437	12.46	≤30.00	PASS
11N20SISO	Ant1	2462	12.73	≤30.00	PASS

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





Appendix D: Maximum Average power spectral density

Test Result

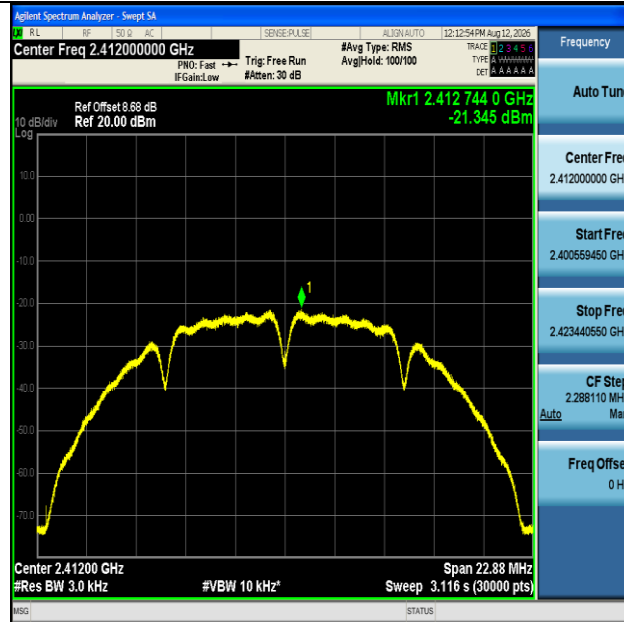
Test Mode	Antenna	Frequency [MHz]	Result [dBm/3kHz]	Limit [dBm/3kHz]	Verdict
11B	Ant1	2412	-21.35	≤8.00	PASS
11B	Ant1	2437	-22.68	≤8.00	PASS
11B	Ant1	2462	-21.99	≤8.00	PASS
11G	Ant1	2412	-17.67	≤8.00	PASS
11G	Ant1	2437	-18.79	≤8.00	PASS
11G	Ant1	2462	-17.60	≤8.00	PASS
11N20SISO	Ant1	2412	-17.56	≤8.00	PASS
11N20SISO	Ant1	2437	-18.72	≤8.00	PASS
11N20SISO	Ant1	2462	-18.59	≤8.00	PASS

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

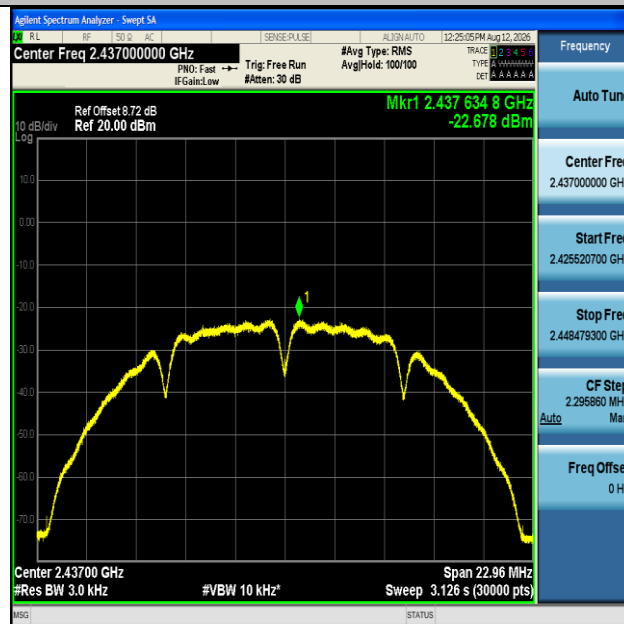




Test Graphs

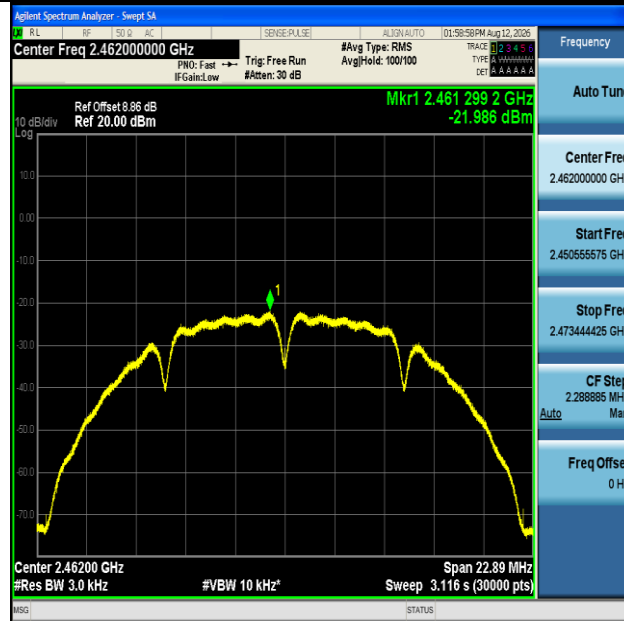


11B-Ant1-2412-PASS

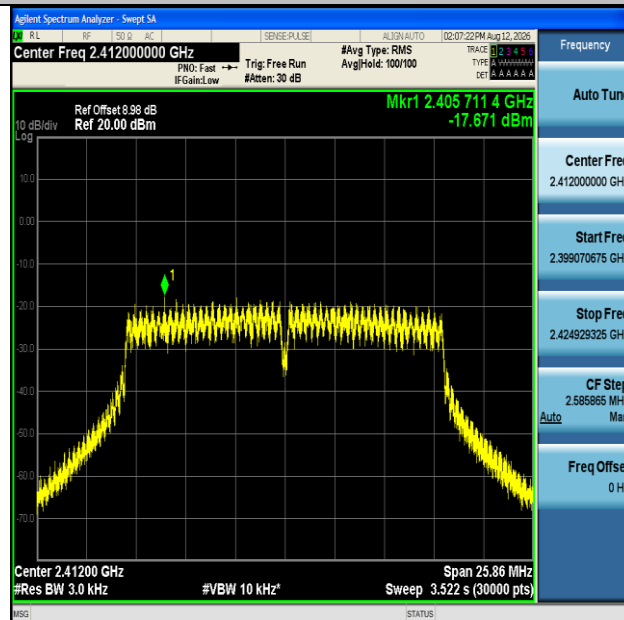


11B-Ant1-2437-PASS



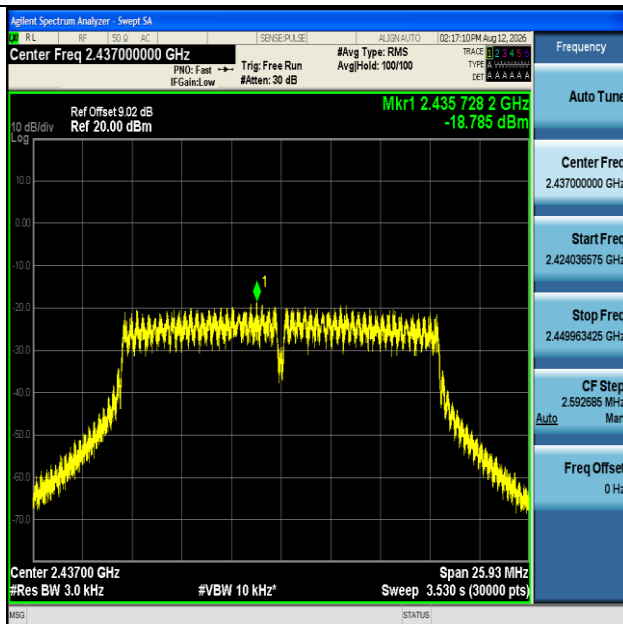


11B-Ant1-2462-PASS

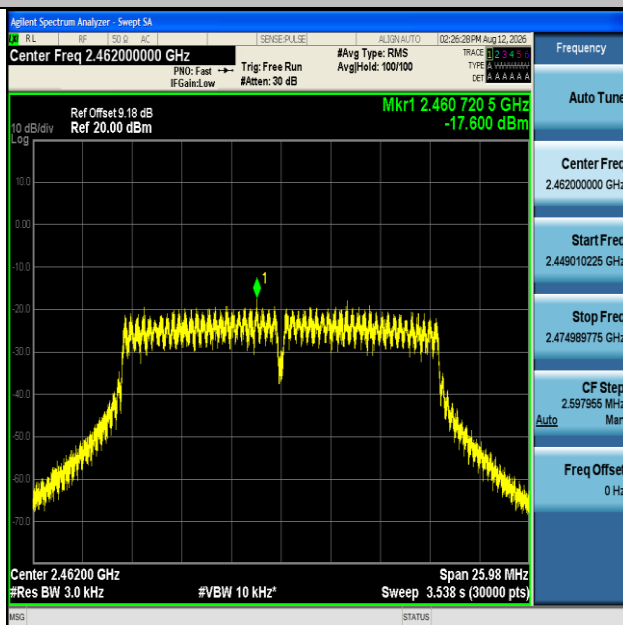


11G-Ant1-2412-PASS



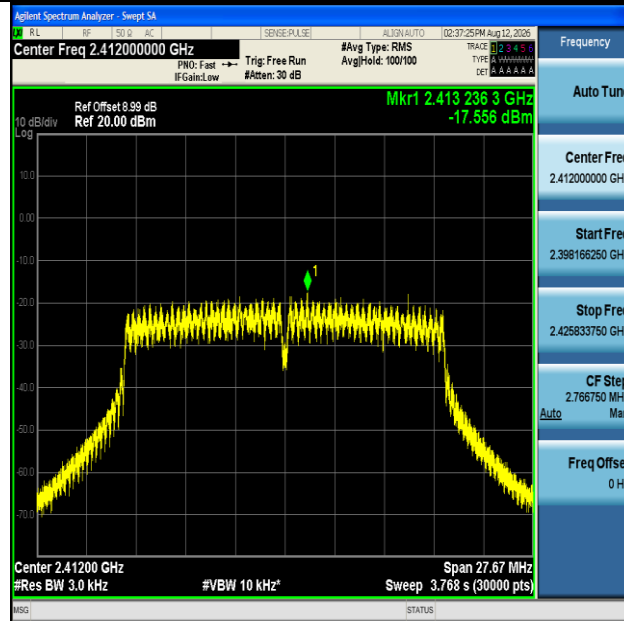


11G-Ant1-2437-PASS

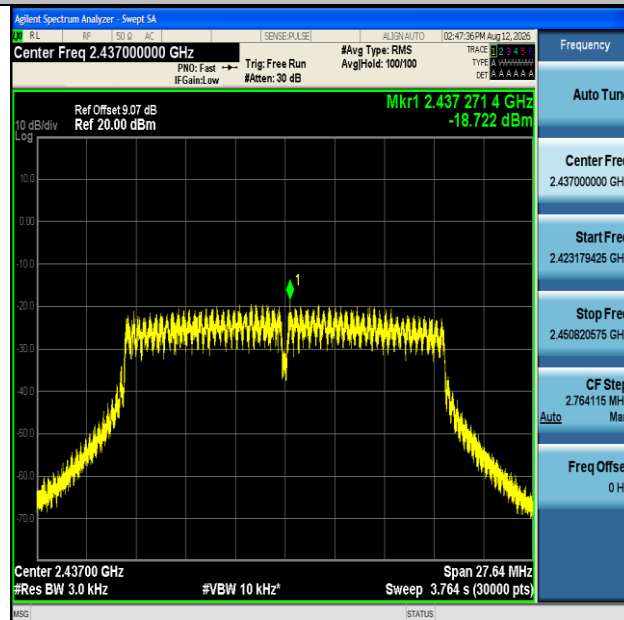


11G-Ant1-2462-PASS



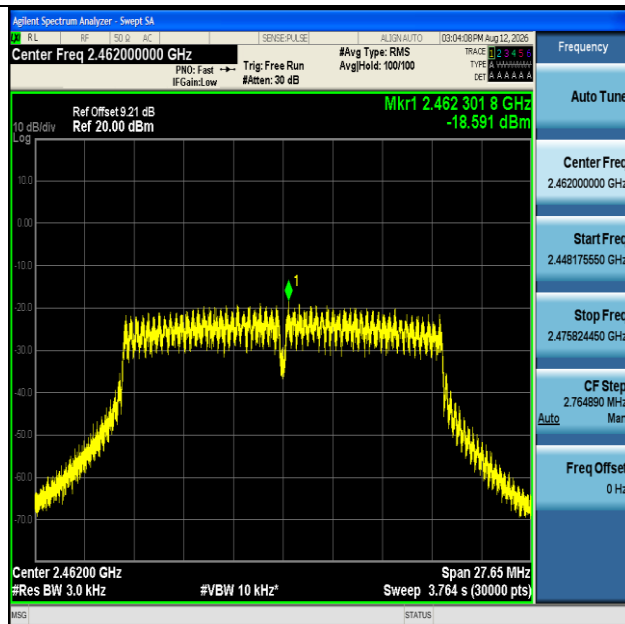


11N20SISO-Ant1-2412-PASS



11N20SISO-Ant1-2437-PASS





11N20SISO-Ant1-2462-PASS





Appendix E: Band edge measurements

Test Result

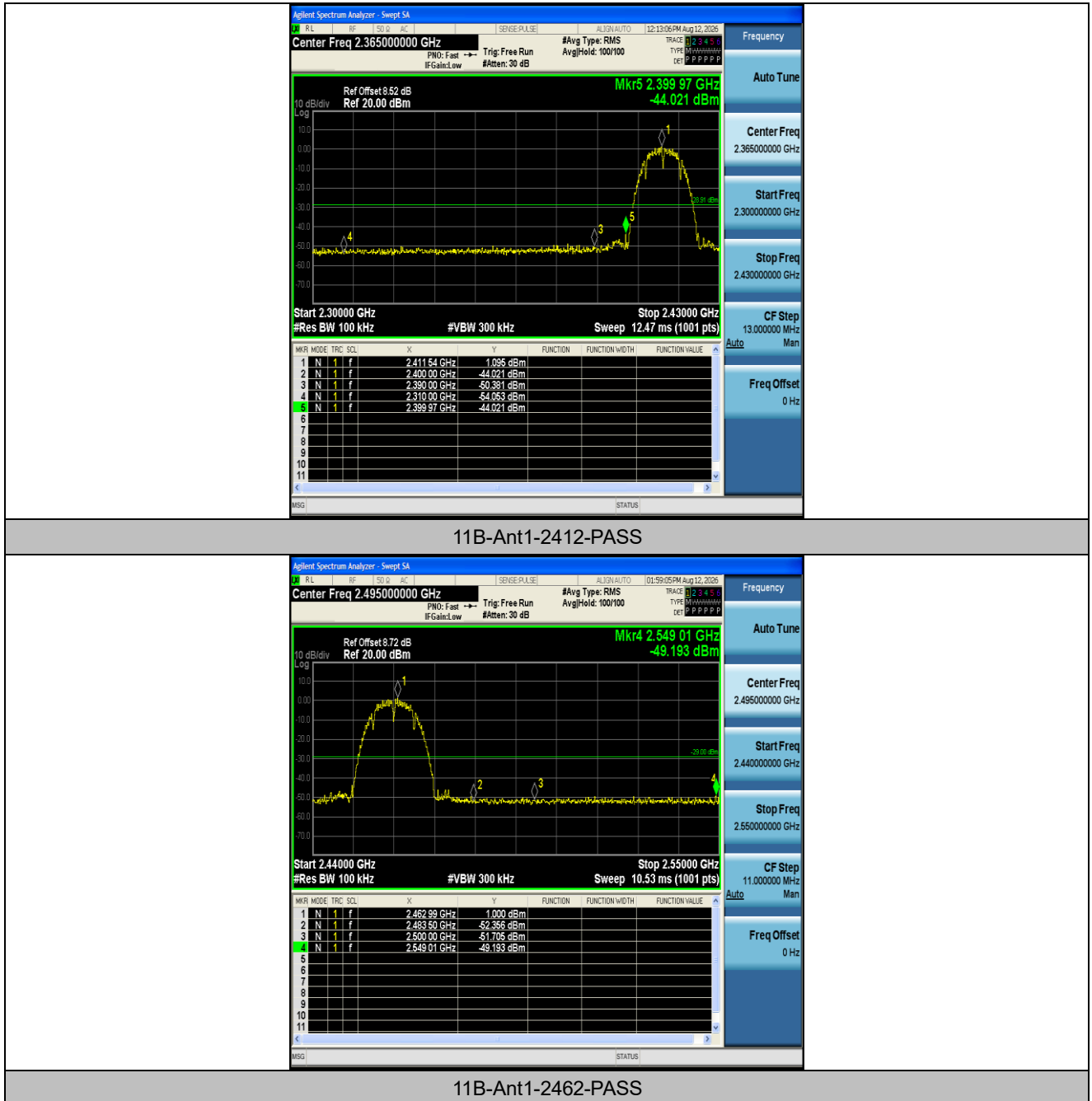
Test Mode	Antenna	Ch. Name	Frequency.[MHz]	Ref. Level [dBm]	Result [dBm]	Limit [dBm]	Verdict
11B	Ant1	Low	2412	1.10	-44.02	≤-28.91	PASS
11B	Ant1	High	2462	1.00	-49.19	≤-29	PASS
11G	Ant1	Low	2412	2.19	-38.04	≤-27.81	PASS
11G	Ant1	High	2462	1.35	-48.69	≤-28.65	PASS
11N20SISO	Ant1	Low	2412	2.29	-36.89	≤-27.71	PASS
11N20SISO	Ant1	High	2462	1.03	-48.55	≤-28.97	PASS

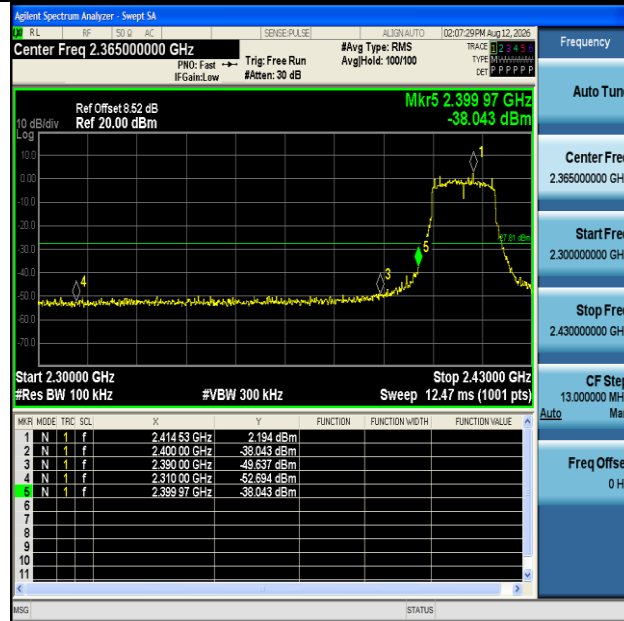
Note: offset(dB) = cable loss(dB) + attenuator factor(dB)



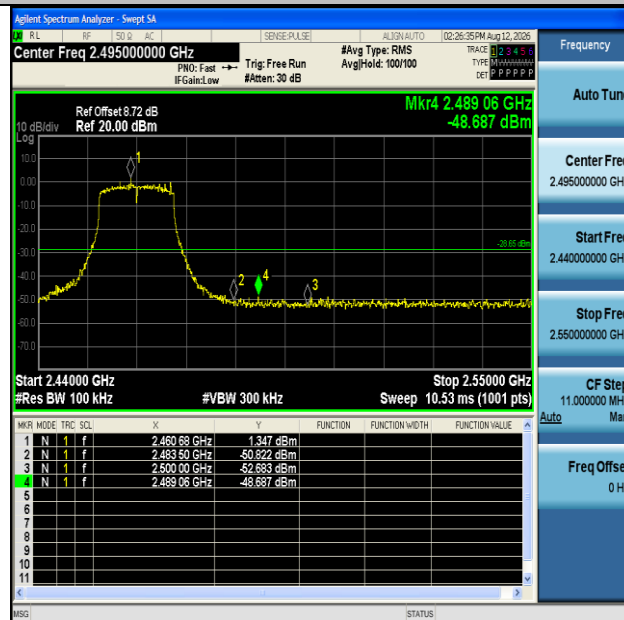


Test Graphs



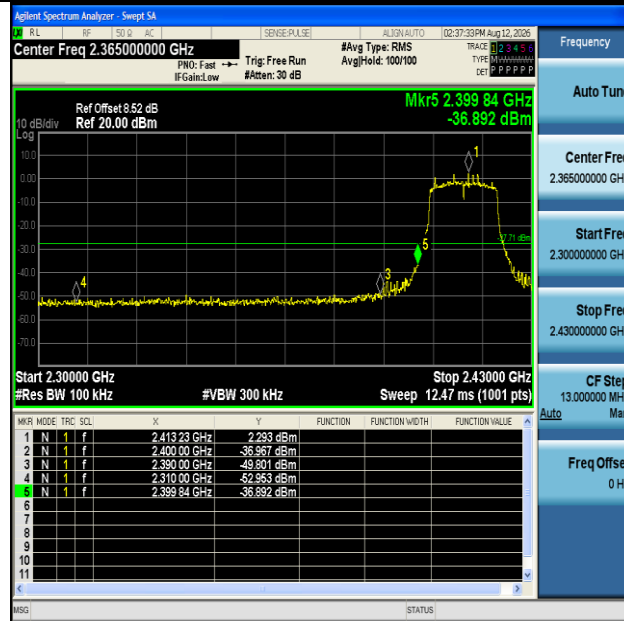


11G-Ant1-2412-PASS

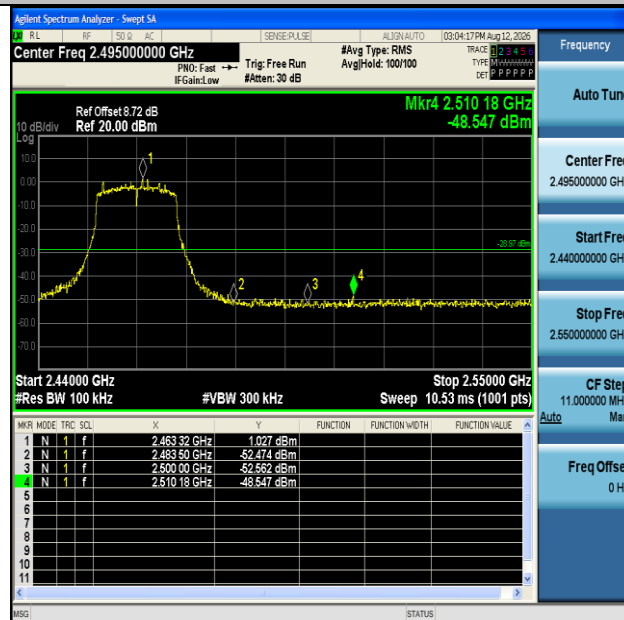


11G-Ant1-2462-PASS





11N20SISO-Ant1-2412-PASS



11N20SISO-Ant1-2462-PASS





Appendix F: Conducted Spurious Emission

Test Result

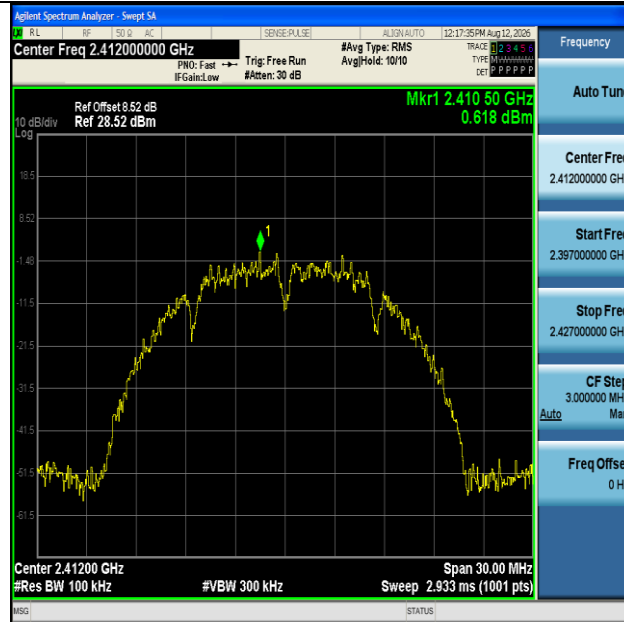
Test Mode	Antenna	Frequency [MHz]	Freq. Range [Mhz]	Ref. Level [dBm]	Result [dBm]	Limit [dBm]	Verdict
11B	Ant1	2412	0~Reference	0.62	0.62	---	PASS
11B	Ant1	2412	30~1000	0.62	-63.35	≤-29.38	PASS
11B	Ant1	2412	1000~26500	0.62	-38.19	≤-29.38	PASS
11B	Ant1	2437	0~Reference	-0.74	-0.74	---	PASS
11B	Ant1	2437	30~1000	-0.74	-62.82	≤-30.74	PASS
11B	Ant1	2437	1000~26500	-0.74	-37.62	≤-30.74	PASS
11B	Ant1	2462	0~Reference	-0.66	-0.66	---	PASS
11B	Ant1	2462	30~1000	-0.66	-63.29	≤-30.66	PASS
11B	Ant1	2462	1000~26500	-0.66	-37.52	≤-30.66	PASS
11G	Ant1	2412	0~Reference	1.23	1.23	---	PASS
11G	Ant1	2412	30~1000	1.23	-63.12	≤-28.77	PASS
11G	Ant1	2412	1000~26500	1.23	-37.37	≤-28.77	PASS
11G	Ant1	2437	0~Reference	-1.92	-1.92	---	PASS
11G	Ant1	2437	30~1000	-1.92	-62.55	≤-31.92	PASS
11G	Ant1	2437	1000~26500	-1.92	-38.33	≤-31.92	PASS
11G	Ant1	2462	0~Reference	-1.68	-1.68	---	PASS
11G	Ant1	2462	30~1000	-1.68	-63.03	≤-31.68	PASS
11G	Ant1	2462	1000~26500	-1.68	-37.18	≤-31.68	PASS
11N20SISO	Ant1	2412	0~Reference	0.53	0.53	---	PASS
11N20SISO	Ant1	2412	30~1000	0.53	-63.49	≤-29.47	PASS
11N20SISO	Ant1	2412	1000~26500	0.53	-38.61	≤-29.47	PASS
11N20SISO	Ant1	2437	0~Reference	0.49	0.49	---	PASS
11N20SISO	Ant1	2437	30~1000	0.49	-62.51	≤-29.51	PASS
11N20SISO	Ant1	2437	1000~26500	0.49	-37.14	≤-29.51	PASS
11N20SISO	Ant1	2462	0~Reference	-0.28	-0.28	---	PASS
11N20SISO	Ant1	2462	30~1000	-0.28	-63.85	≤-30.28	PASS
11N20SISO	Ant1	2462	1000~26500	-0.28	-38.09	≤-30.28	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.

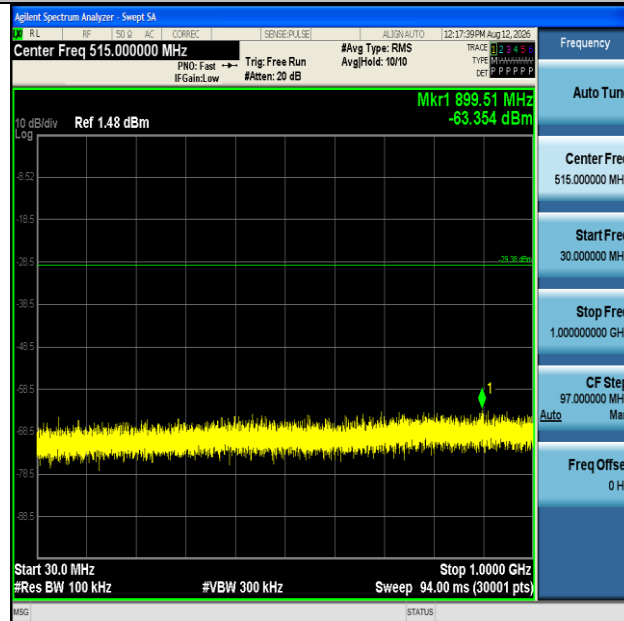




Test Graphs

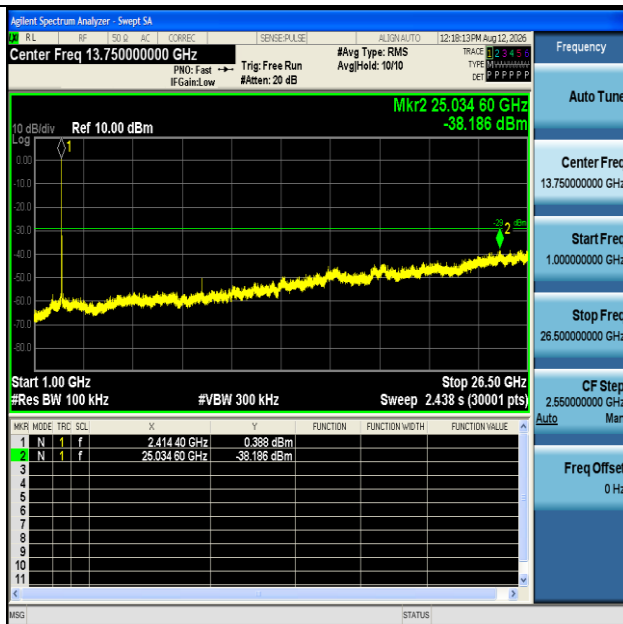


11B-Ant1-2412-0~Reference-PASS

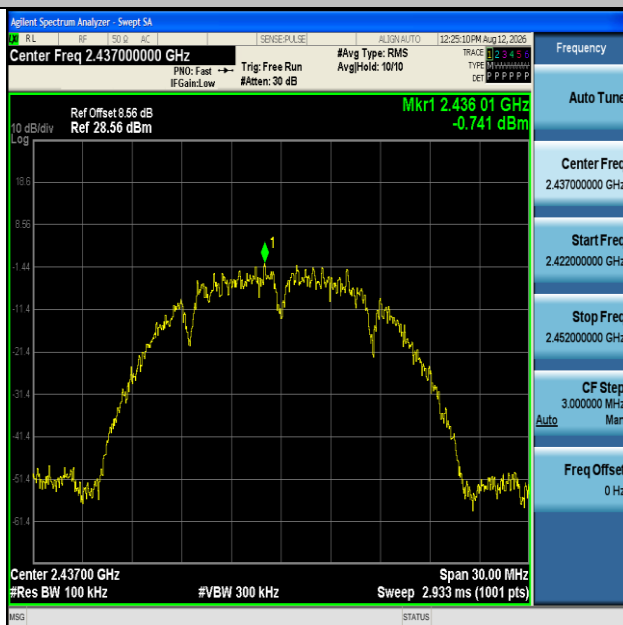


11B-Ant1-2412-30~1000-PASS



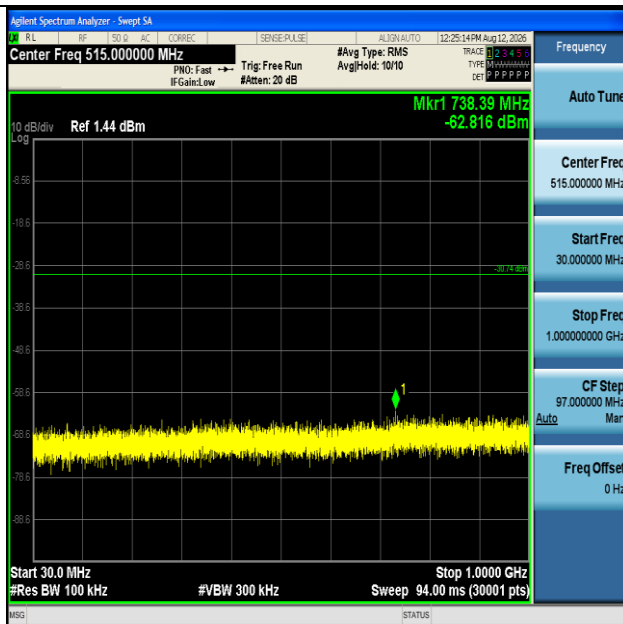


11B-Ant1-2412-1000~26500-PASS

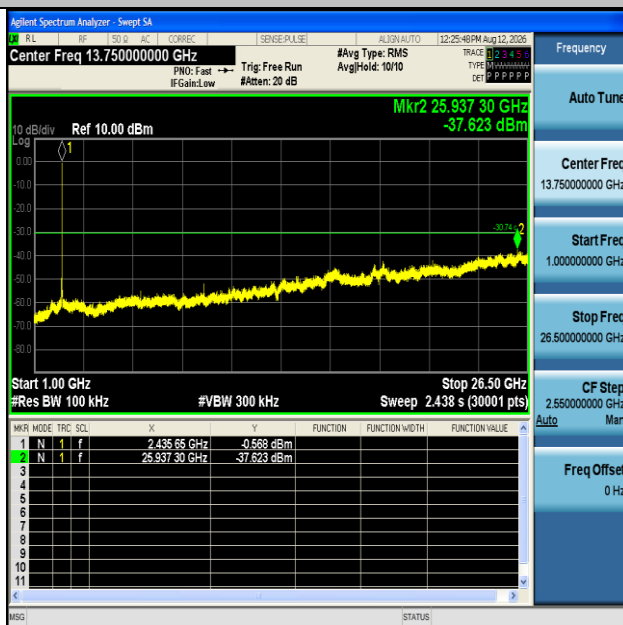


11B-Ant1-2437-0~Reference-PASS



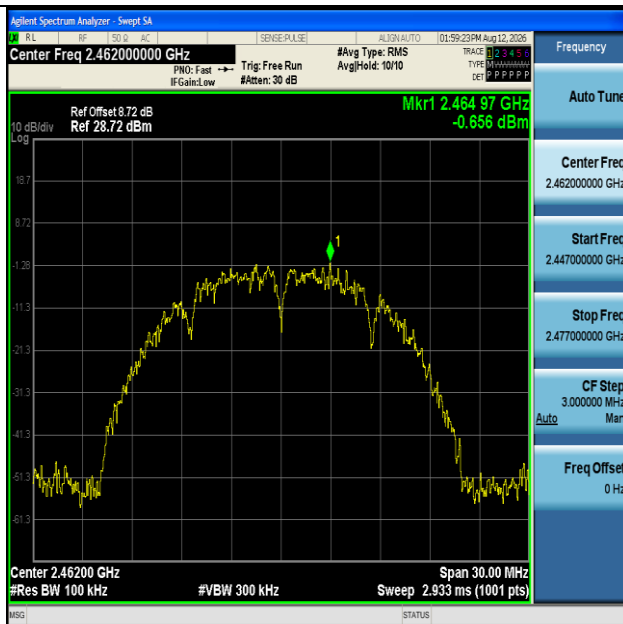


11B-Ant1-2437-30~1000-PASS

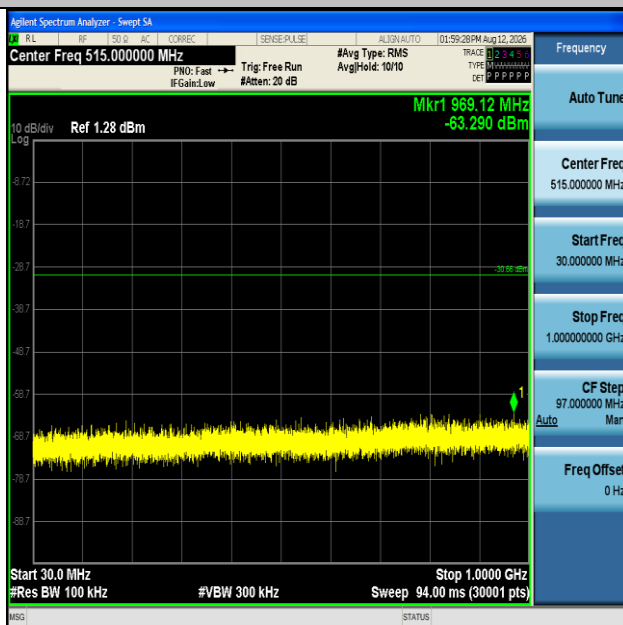


11B-Ant1-2437-1000~26500-PASS



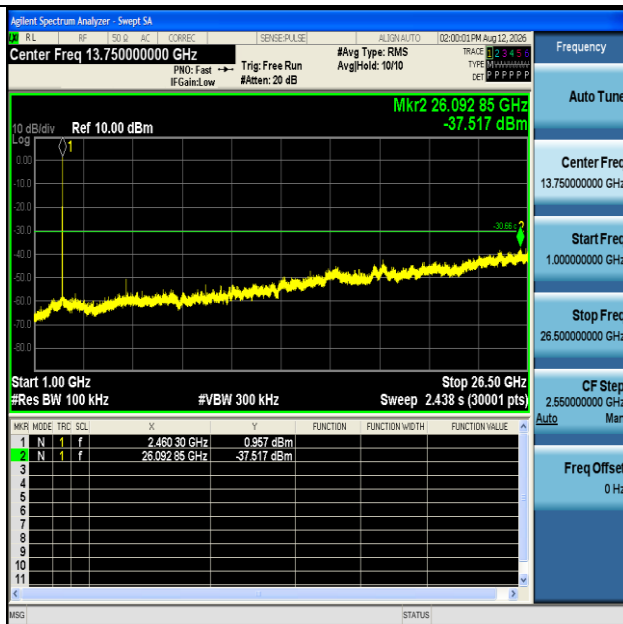


11B-Ant1-2462-0~Reference-PASS

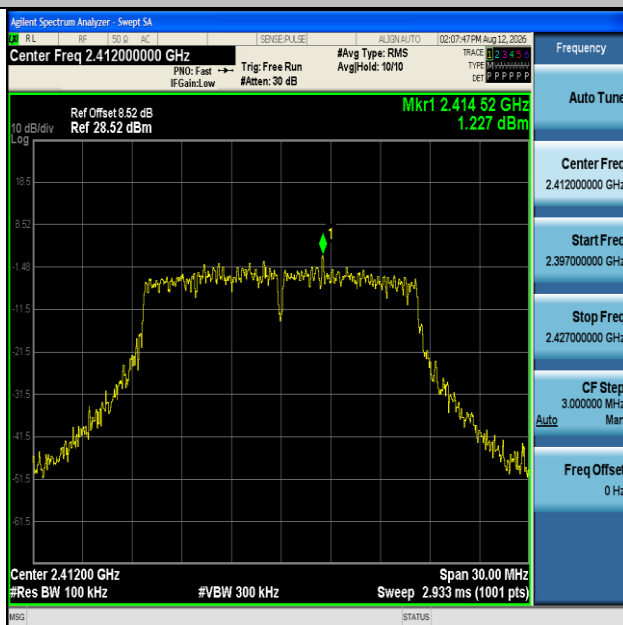


11B-Ant1-2462-30~1000-PASS



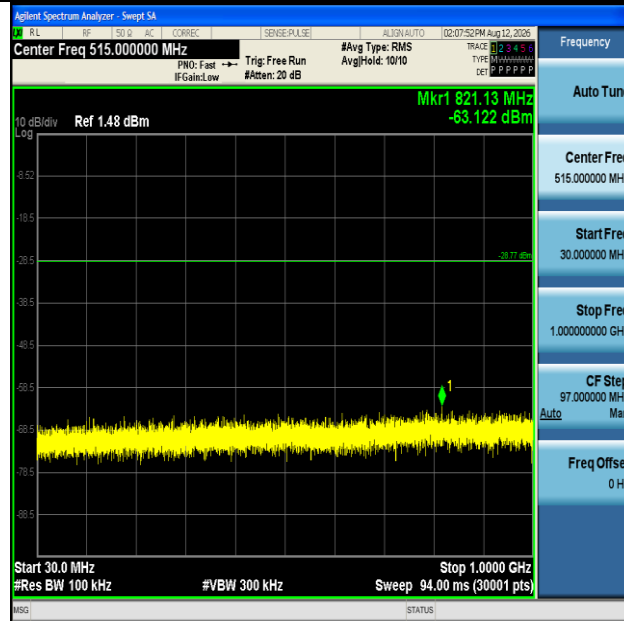


11B-Ant1-2462-1000~26500-PASS

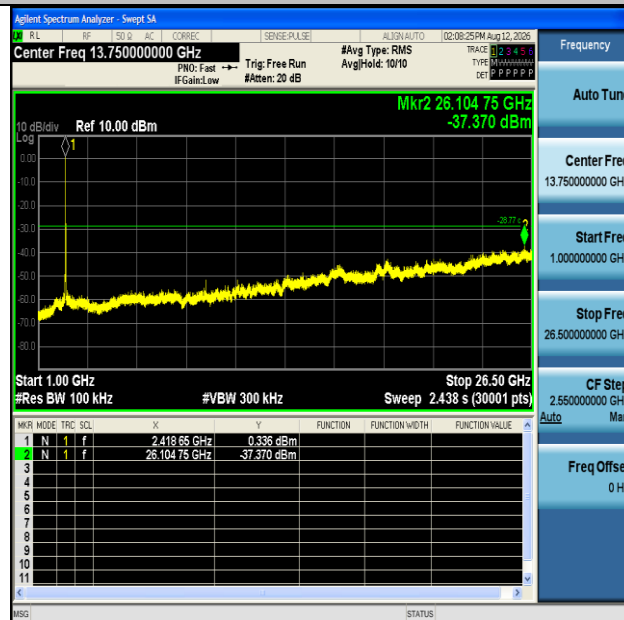


11G-Ant1-2412-0~Reference-PASS



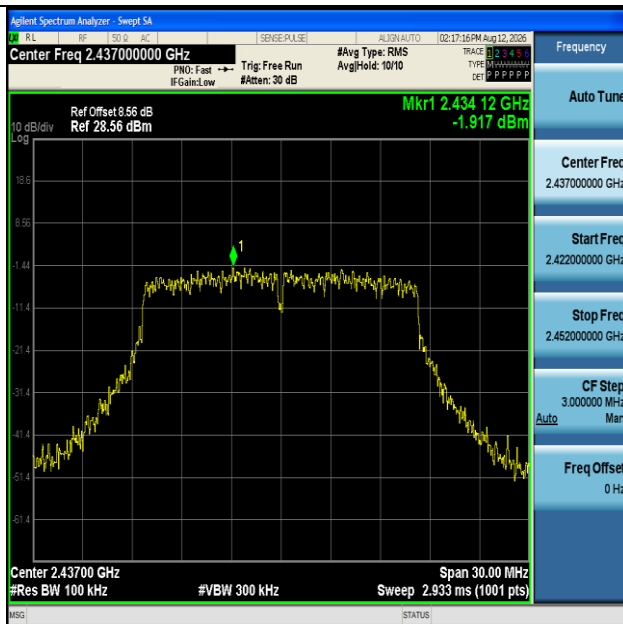


11G-Ant1-2412-30~1000-PASS

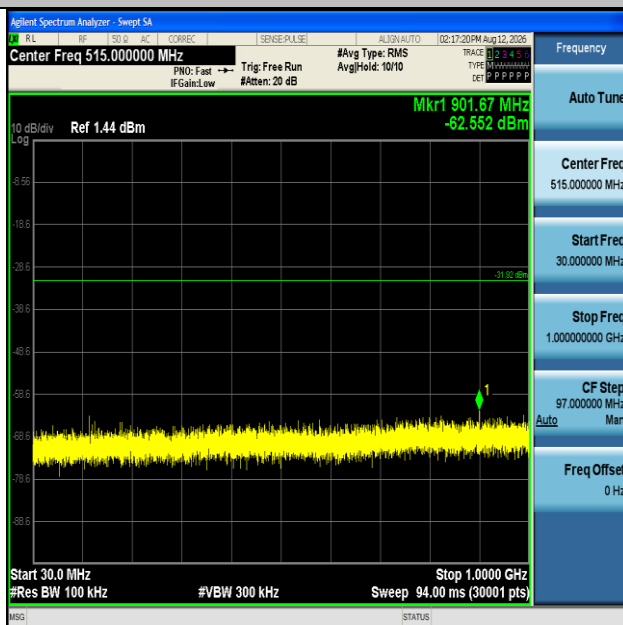


11G-Ant1-2412-1000~26500-PASS



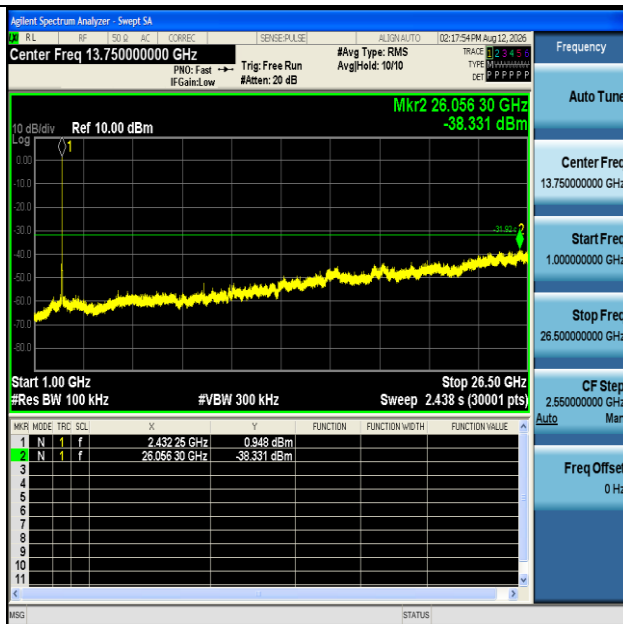


11G-Ant1-2437-0~Reference-PASS

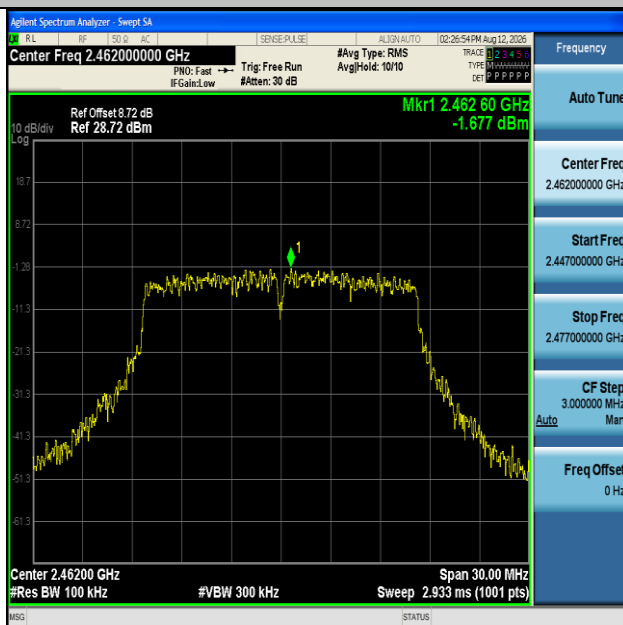


11G-Ant1-2437-30~1000-PASS



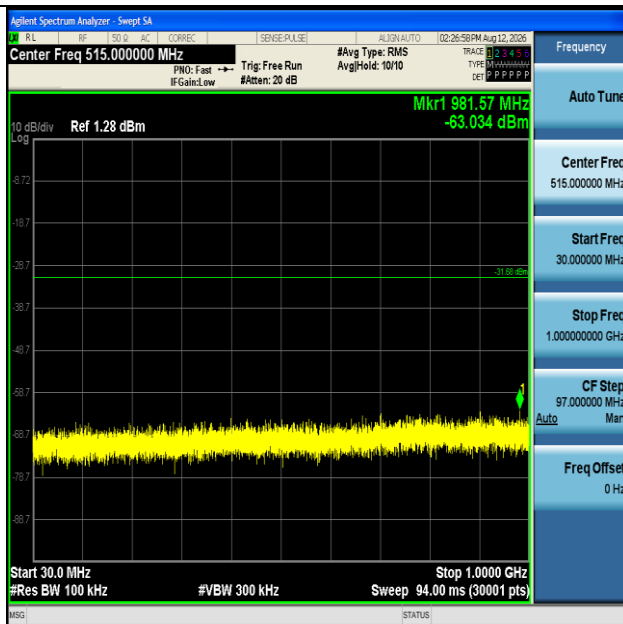


11G-Ant1-2437-1000~26500-PASS

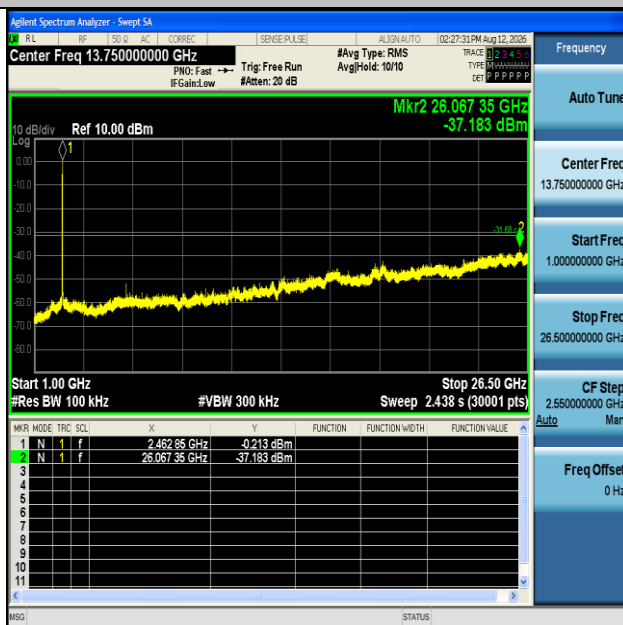


11G-Ant1-2462-0~Reference-PASS





11G-Ant1-2462-30~1000-PASS

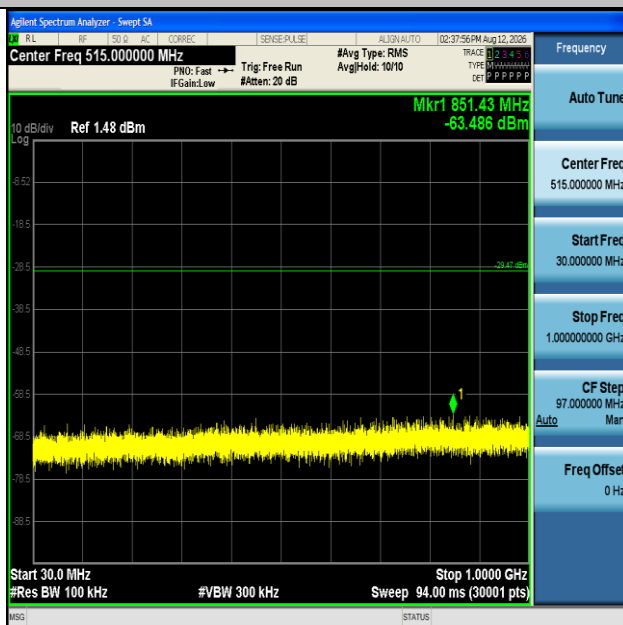


11G-Ant1-2462-1000~26500-PASS



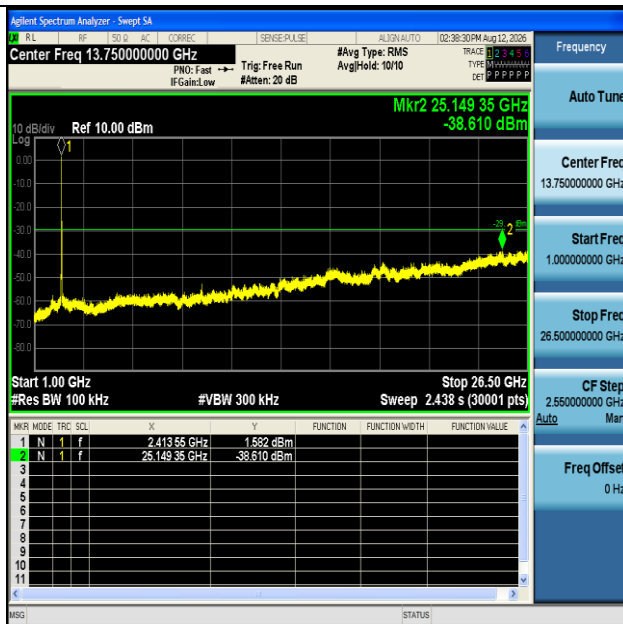


11N20SISO-Ant1-2412-0~Reference-PASS

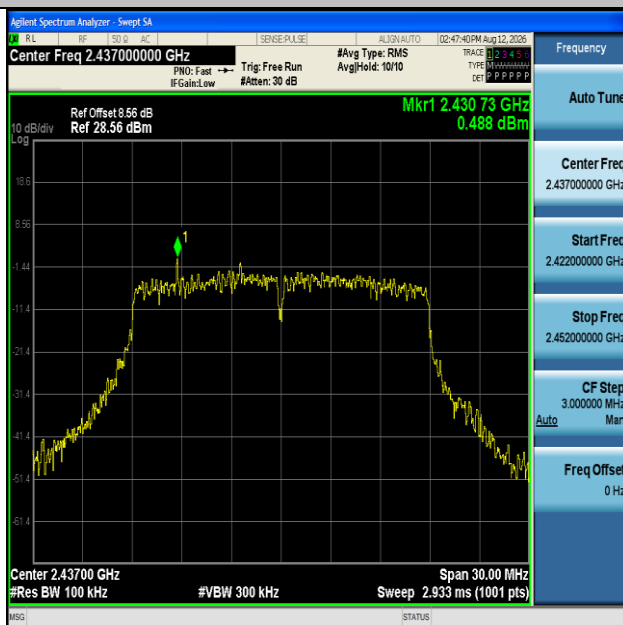


11N20SISO-Ant1-2412-30~1000-PASS



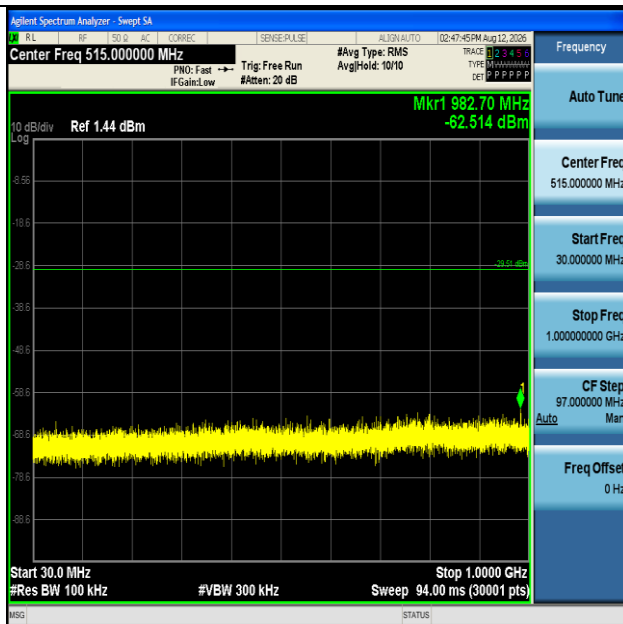


11N20SISO-Ant1-2412-1000~26500-PASS

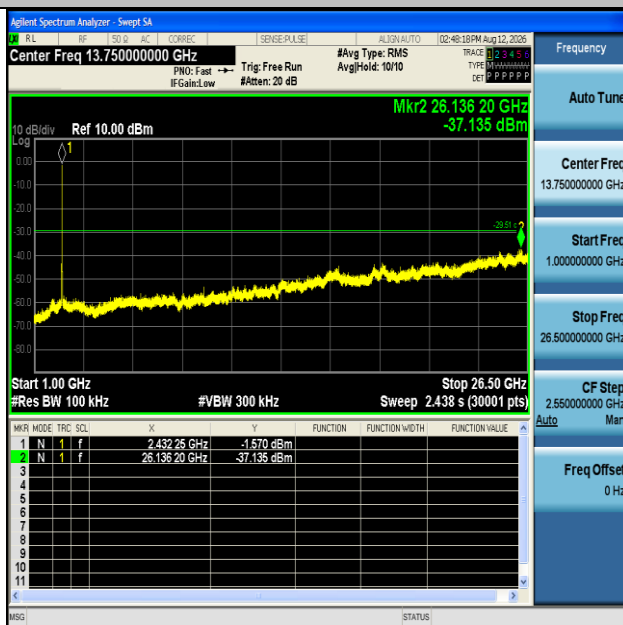


11N20SISO-Ant1-2437-0~Reference-PASS



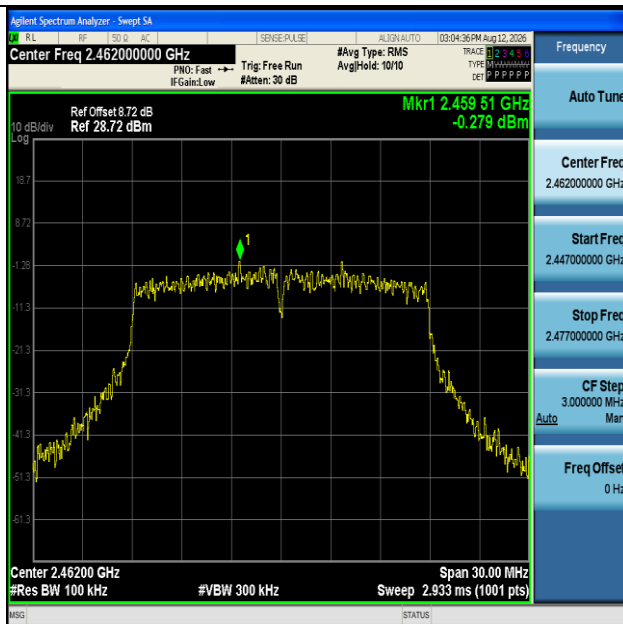


11N20SISO-Ant1-2437-30~1000-PASS

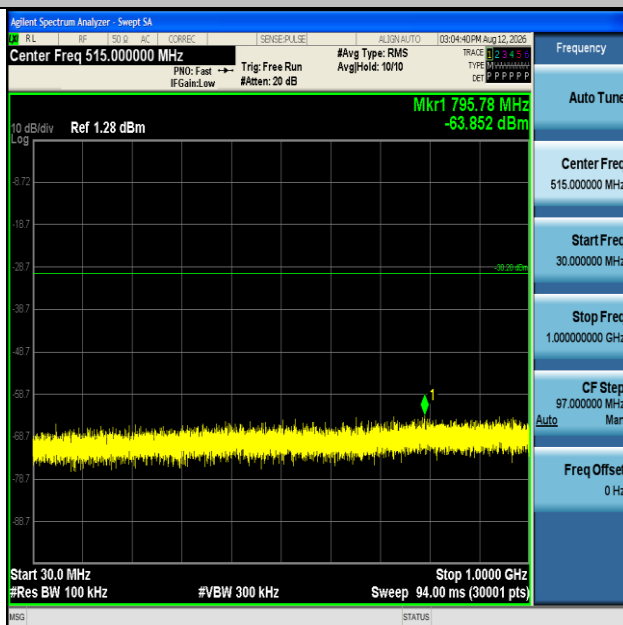


11N20SISO-Ant1-2437-1000~26500-PASS



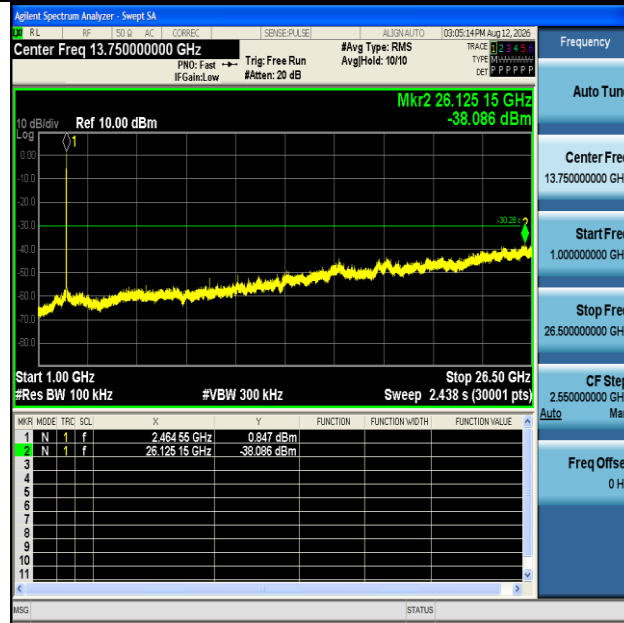


11N20SISO-Ant1-2462-0~Reference-PASS



11N20SISO-Ant1-2462-30~1000-PASS





11N20SISO-Ant1-2462-1000~26500-PASS





Appendix G: Duty Cycle

Test Result

Test Mode	Antenna	Frequency [MHz]	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]	Factor
11B	Ant1	2412	12.42	12.89	96.35	0.16
11B	Ant1	2437	12.42	12.89	96.35	0.16
11B	Ant1	2462	12.42	12.84	96.73	0.14
11G	Ant1	2412	2.06	2.29	89.96	0.46
11G	Ant1	2437	2.06	2.29	89.96	0.46
11G	Ant1	2462	2.07	2.30	90.00	0.46
11N20SISO	Ant1	2412	1.92	2.14	89.72	0.47
11N20SISO	Ant1	2437	1.92	2.16	88.89	0.51
11N20SISO	Ant1	2462	1.92	2.15	89.30	0.49

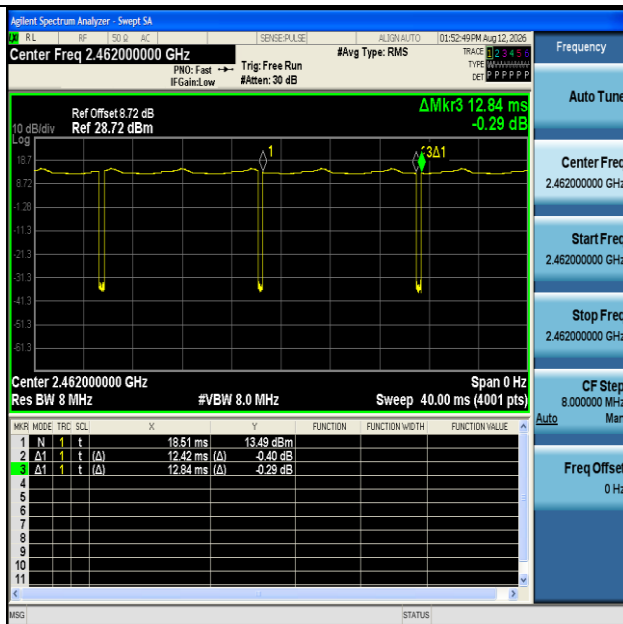
Note: offset(dB) = cable loss(dB) + attenuator factor(dB)



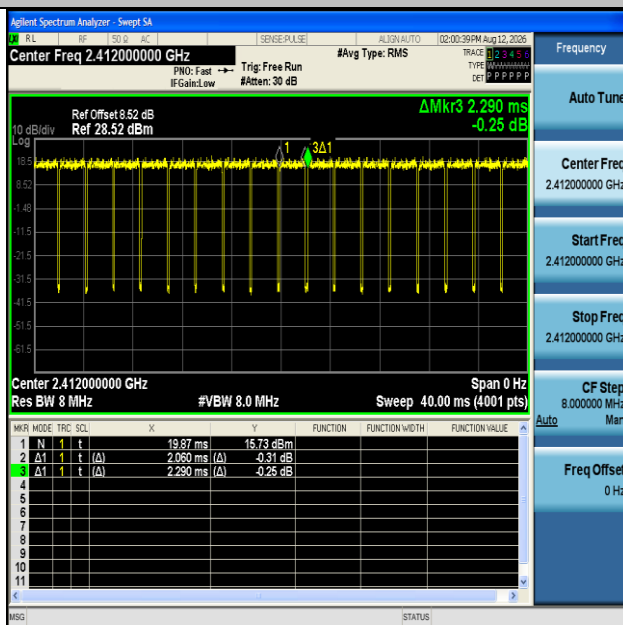


Test Graphs



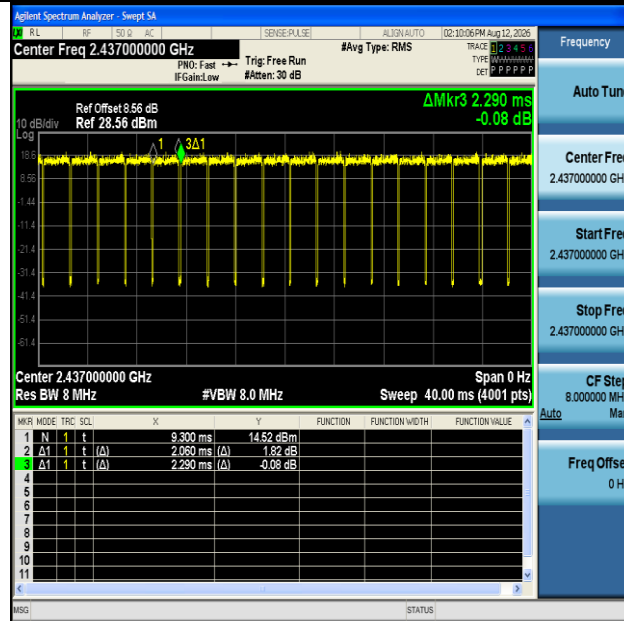


NTNV-11B-Ant1-2462

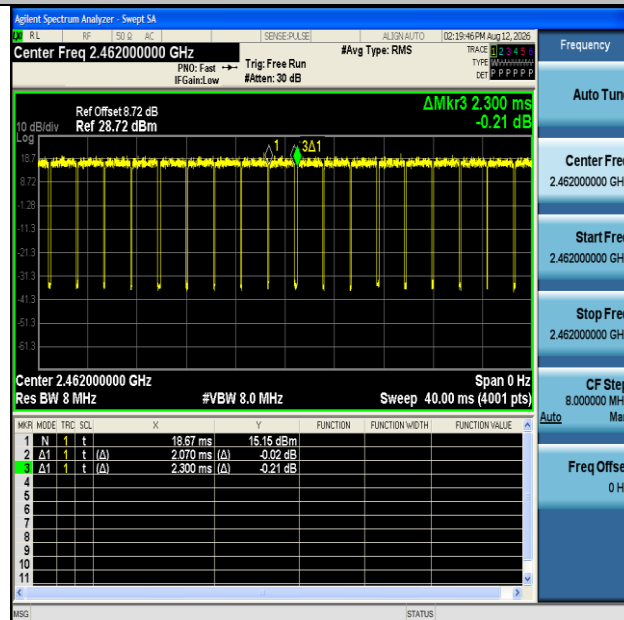


NTNV-11G-Ant1-2412



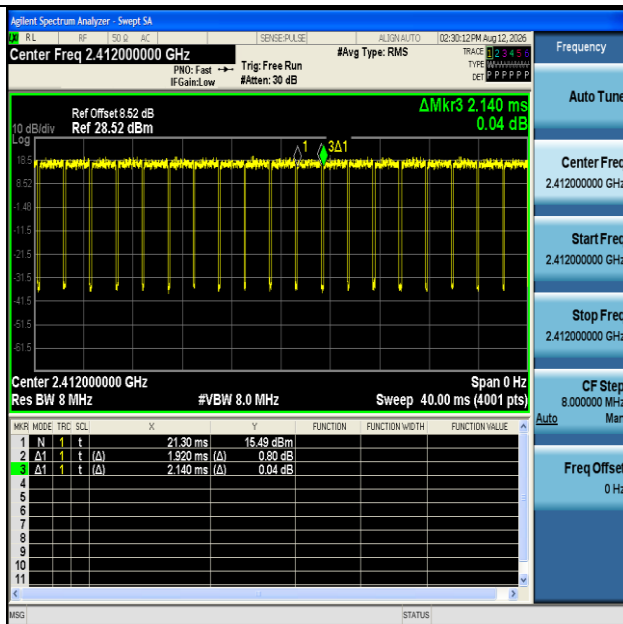


NTNV-11G-Ant1-2437

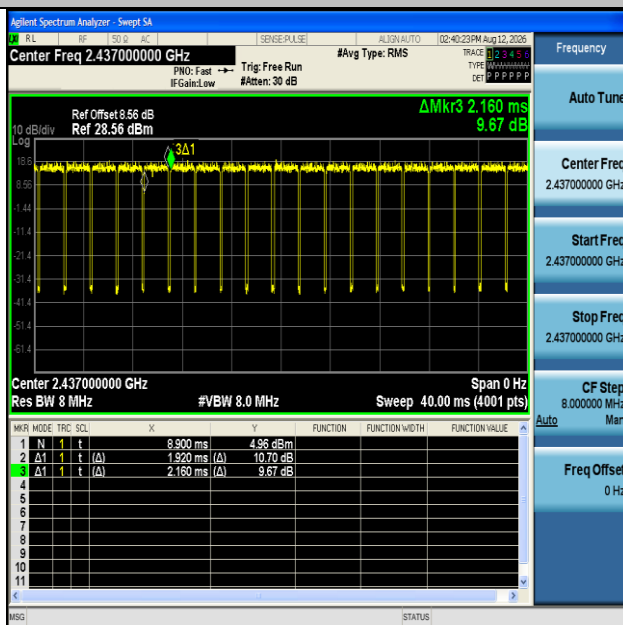


NTNV-11G-Ant1-2462



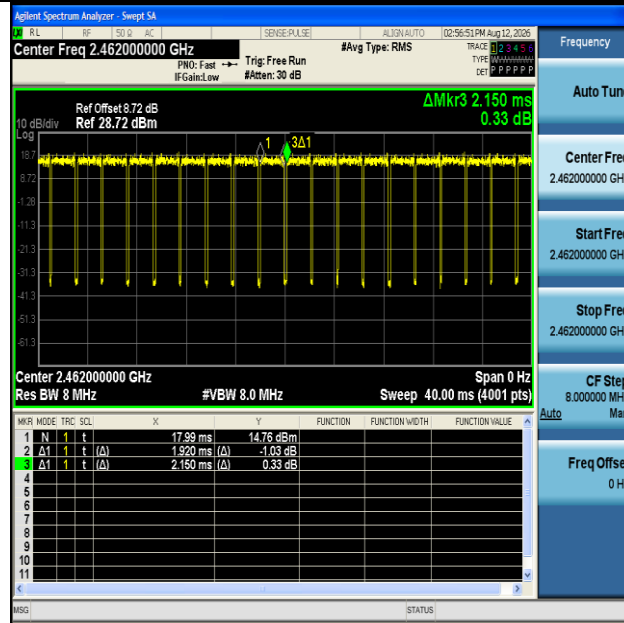


NTVN-11N20SISO-Ant1-2412



NTVN-11N20SISO-Ant1-2437





NTNV-11N20SISO-Ant1-2462

