

## **Appendix RF Test Data for 2.4GWIFI**

**FCC ID** : 2BRNK-MN-WTHM

**Company** : Guangzhou wangkong Ltd.

**EUT** : indoor air quality transmitter

**Model Number** : MN-WTHM

**Report No.** : CTA25080600601

**Reviewed By** : Eric Wang

## Appendix A: DTS Bandwidth

### Test Result

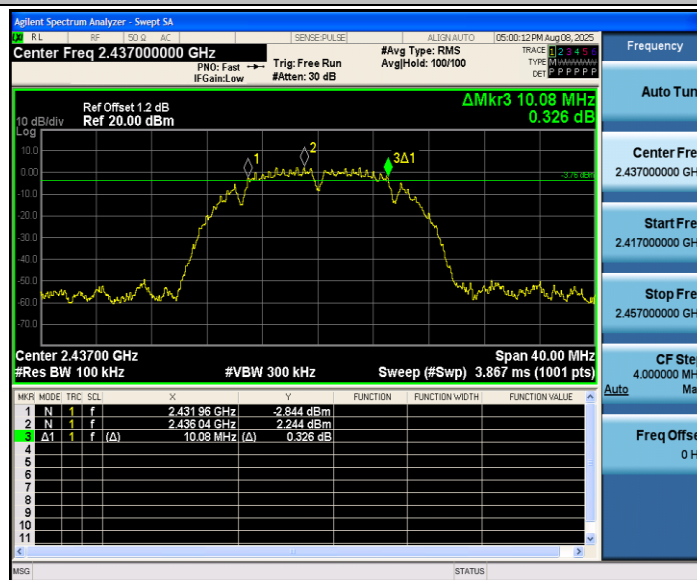
TestMode	Antenna	Frequency[MHz]	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant1	2412	10.040	2407.000	2417.040	0.5	PASS
		2437	10.080	2431.960	2442.040	0.5	PASS
		2462	10.080	2456.960	2467.040	0.5	PASS
11G	Ant1	2412	15.080	2404.480	2419.560	0.5	PASS
		2437	15.080	2429.480	2444.560	0.5	PASS
		2462	15.120	2454.440	2469.560	0.5	PASS
11N20SISO	Ant1	2412	15.120	2404.440	2419.560	0.5	PASS
		2437	15.120	2429.440	2444.560	0.5	PASS
		2462	15.080	2454.480	2469.560	0.5	PASS
11N40SISO	Ant1	2422	35.120	2404.480	2439.600	0.5	PASS
		2437	35.040	2419.480	2454.520	0.5	PASS
		2452	35.040	2434.480	2469.520	0.5	PASS

## Test Graphs

11B\_Ant1\_2412



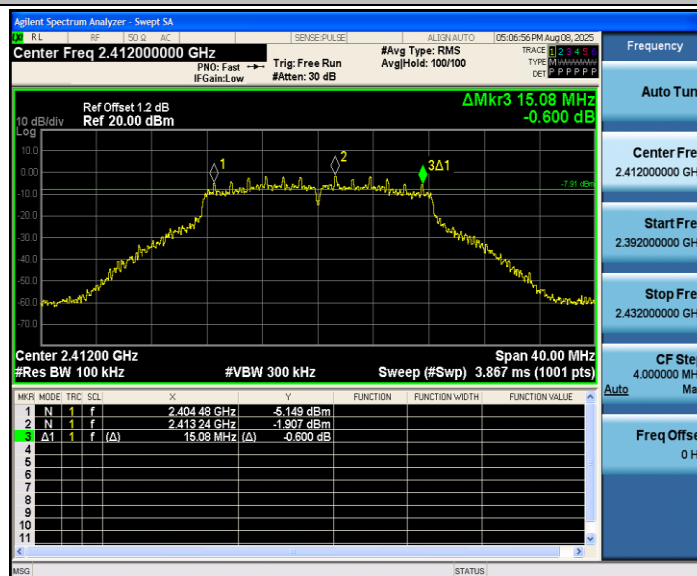
11B\_Ant1\_2437



11B\_Ant1\_2462



11G\_Ant1\_2412

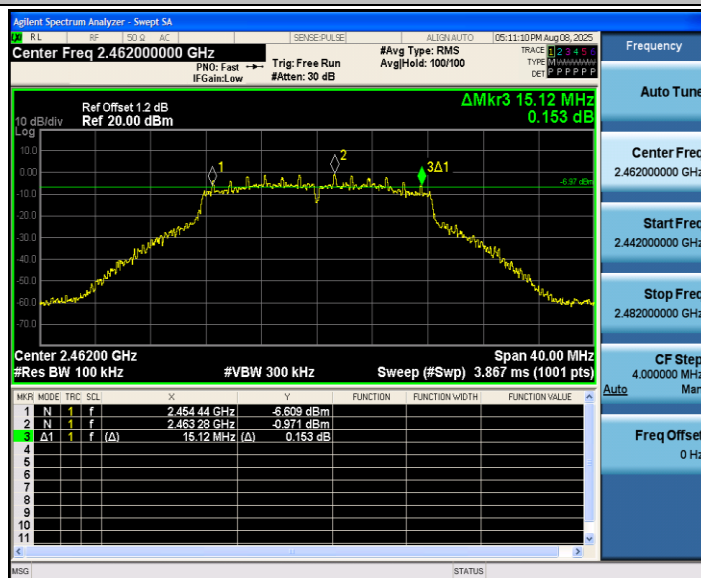


11G\_Ant1\_2437

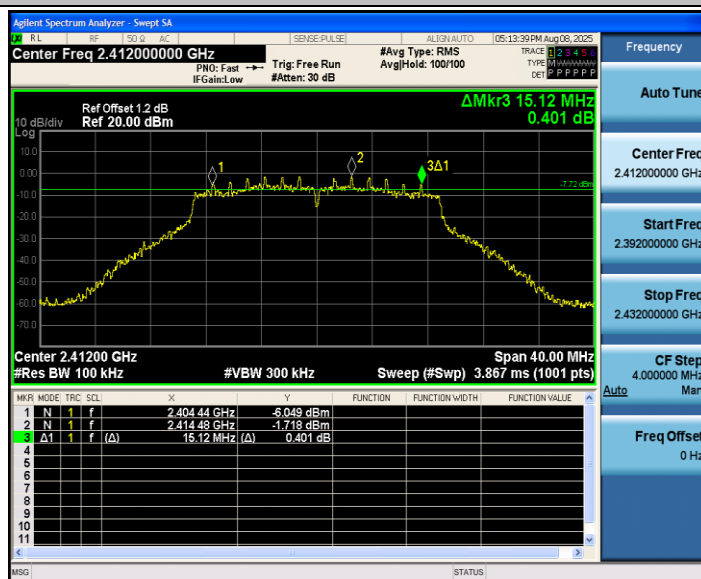




# 11G\_Ant1\_2462



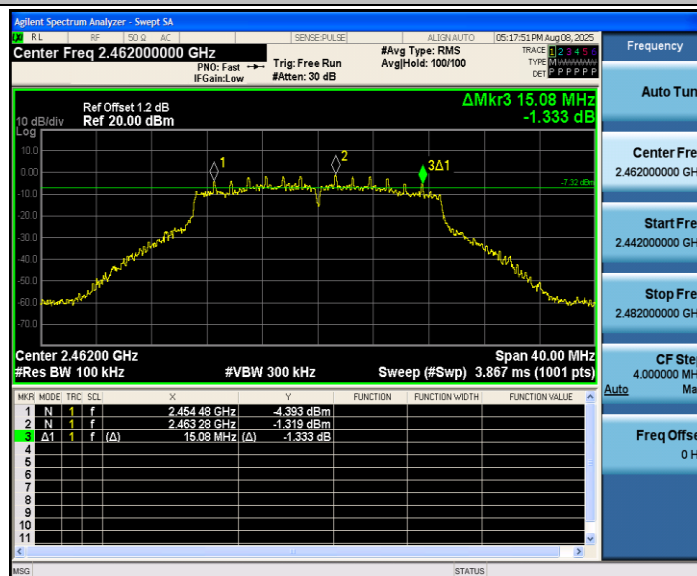
# 11N20SISO\_Ant1\_2412



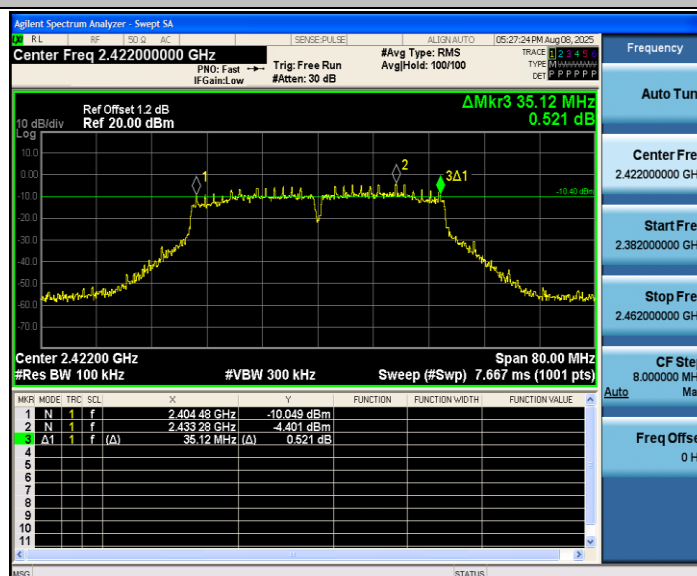
# 11N20SISO\_Ant1\_2437



11N20SISO\_Ant1\_2462



11N40SISO\_Ant1\_2422





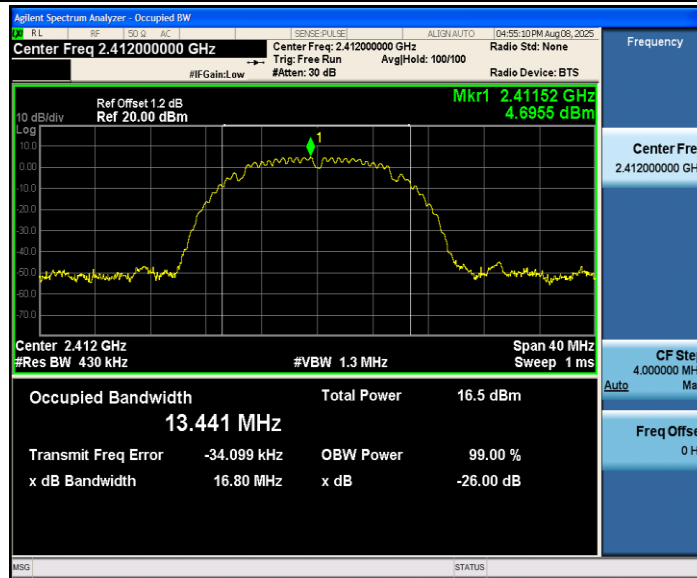
## Appendix B: Occupied Channel Bandwidth

### Test Result

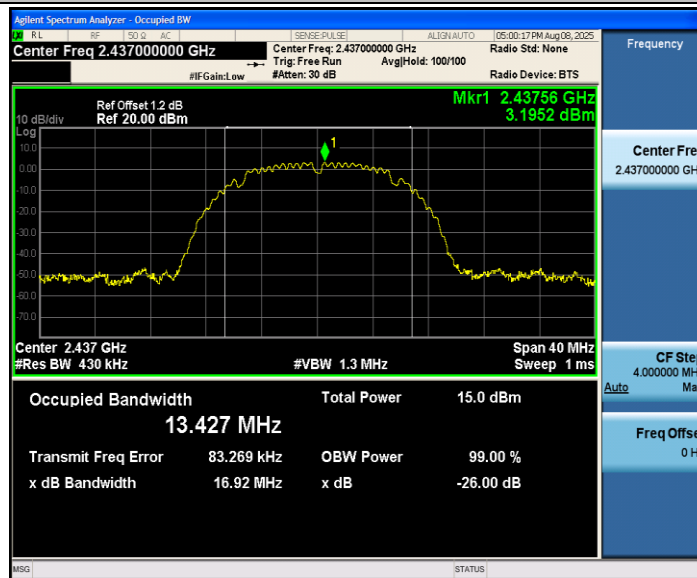
TestMode	Antenna	Channel Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant1	2412	13.441	2405.2454	2418.6864	---	---
		2437	13.427	2430.3698	2443.7968	---	---
		2462	13.411	2455.2570	2468.6680	---	---
11G	Ant1	2412	16.718	2403.6454	2420.3634	---	---
		2437	16.750	2428.7241	2445.4741	---	---
		2462	16.746	2453.6307	2470.3767	---	---
11N20SISO	Ant1	2412	17.865	2403.0367	2420.9017	---	---
		2437	17.832	2428.1611	2445.9931	---	---
		2462	17.822	2453.0797	2470.9017	---	---
11N40SISO	Ant1	2422	36.070	2404.1931	2440.2631	---	---
		2437	36.083	2419.0344	2455.1174	---	---
		2452	35.846	2434.0900	2469.9360	---	---

## Test Graphs

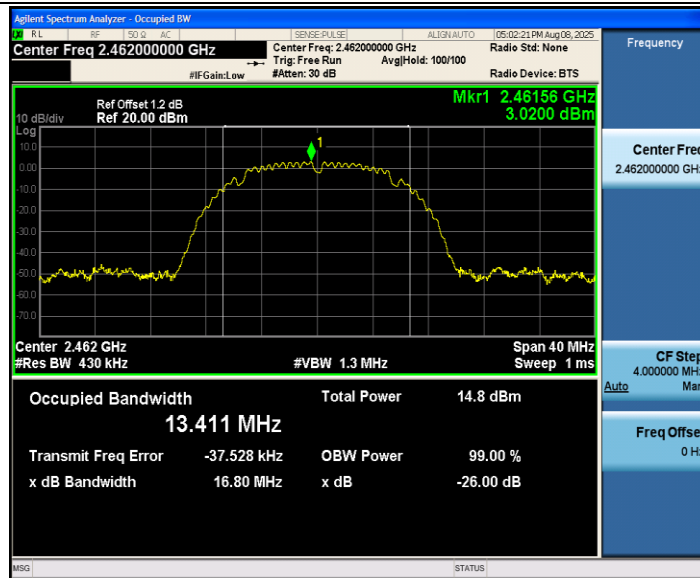
11B\_Ant1\_2412



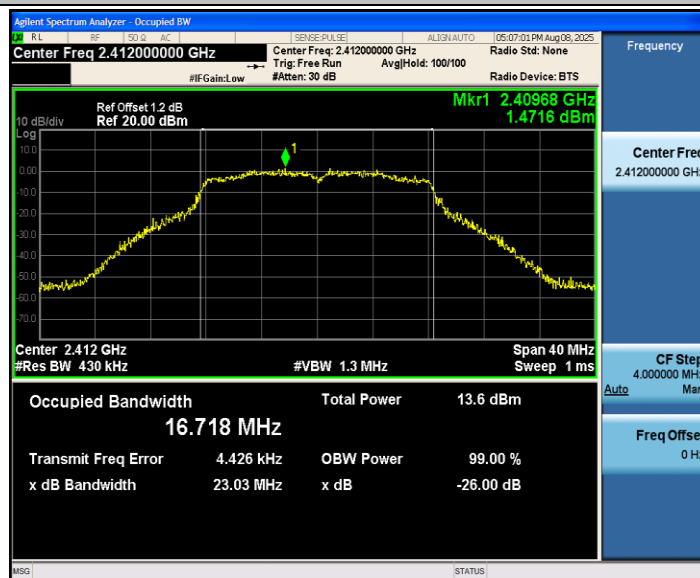
11B\_Ant1\_2437



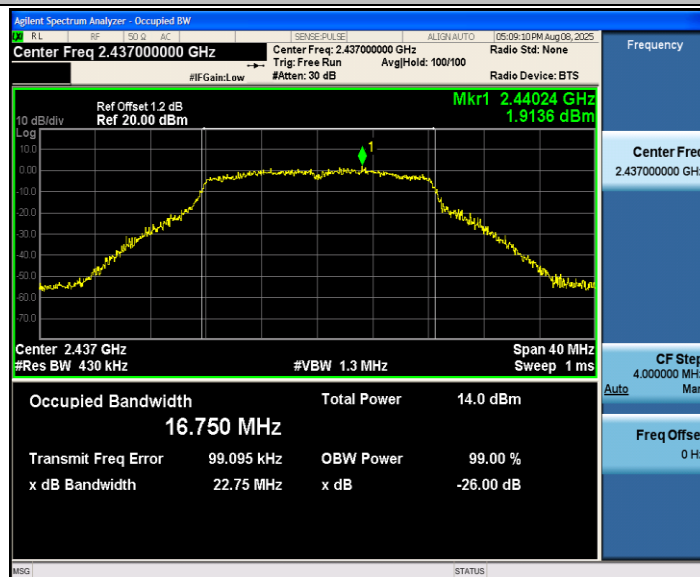
11B\_Ant1\_2462



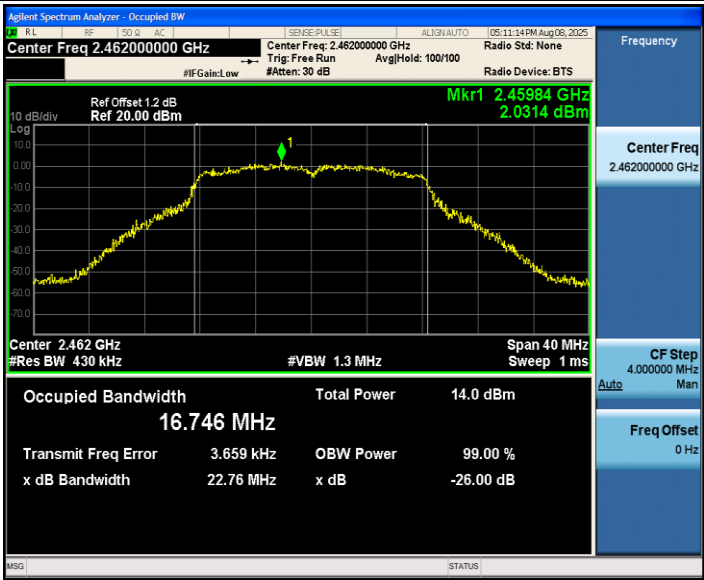
11G\_Ant1\_2412



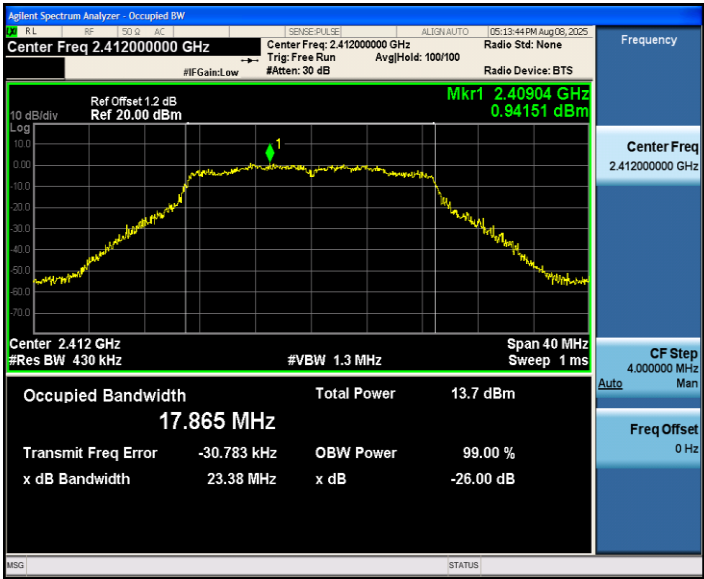
11G\_Ant1\_2437



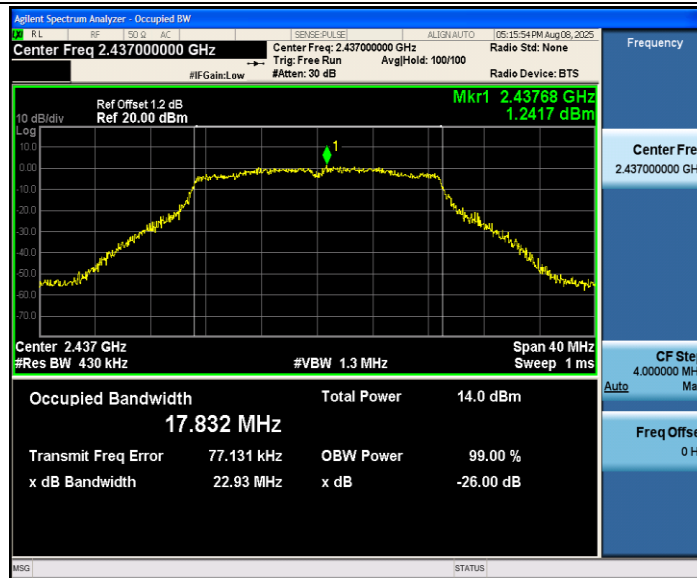
11G\_Ant1\_2462



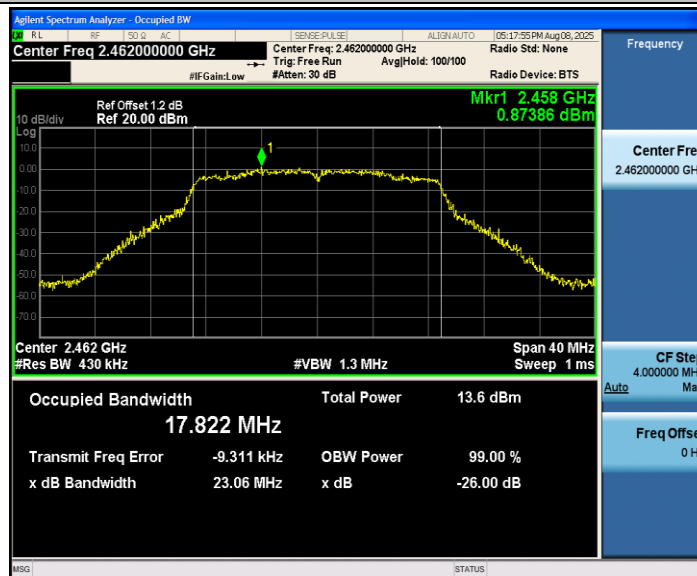
11N20SISO\_Ant1\_2412



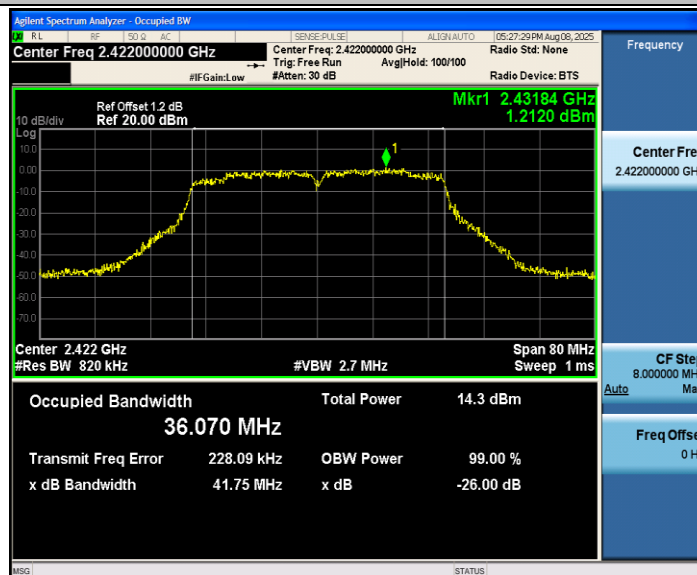
11N20SISO\_Ant1\_2437



11N20SISO\_Ant1\_2462

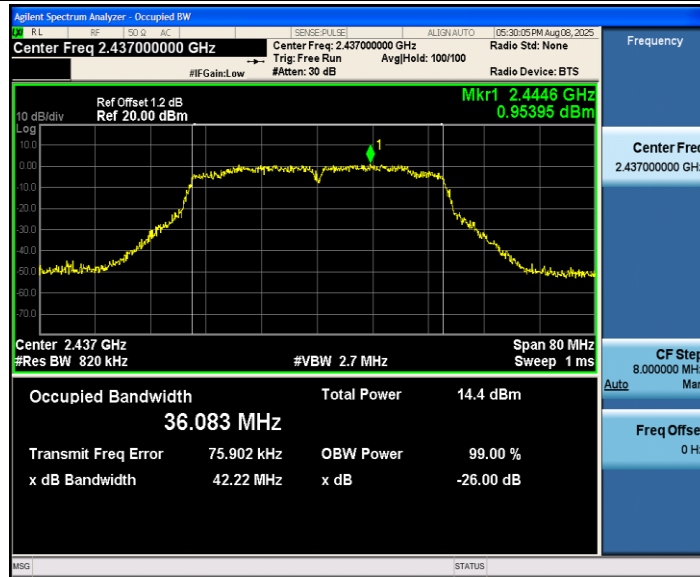


11N40SISO\_Ant1\_2422

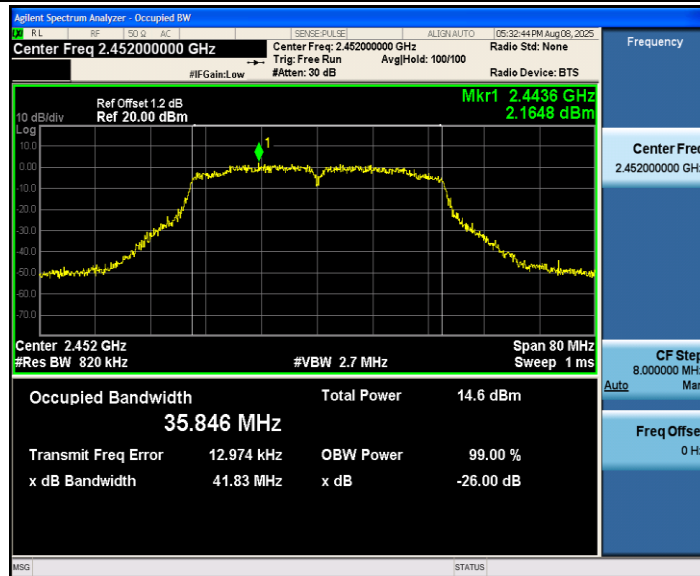




# 11N40SISO\_Ant1\_2437



# 11N40SISO\_Ant1\_2452



## Appendix C: Maximum conducted output power

### Test Result Peak

Test Mode	Antenna	Frequency[MHz]	Peak power [dBm]	Limit [dBm]	Verdict
11B	Ant1	2412	14.46	≤30.00	PASS
		2437	14.86	≤30.00	PASS
		2462	14.70	≤30.00	PASS
11G	Ant1	2412	14.27	≤30.00	PASS
		2437	14.40	≤30.00	PASS
		2462	14.74	≤30.00	PASS
11N20SISO	Ant1	2412	13.98	≤30.00	PASS
		2437	14.41	≤30.00	PASS
		2462	13.94	≤30.00	PASS
11N40SISO	Ant1	2422	14.45	≤30.00	PASS
		2437	14.73	≤30.00	PASS
		2452	14.88	≤30.00	PASS

## Appendix D: Maximum power spectral density

### Test Result

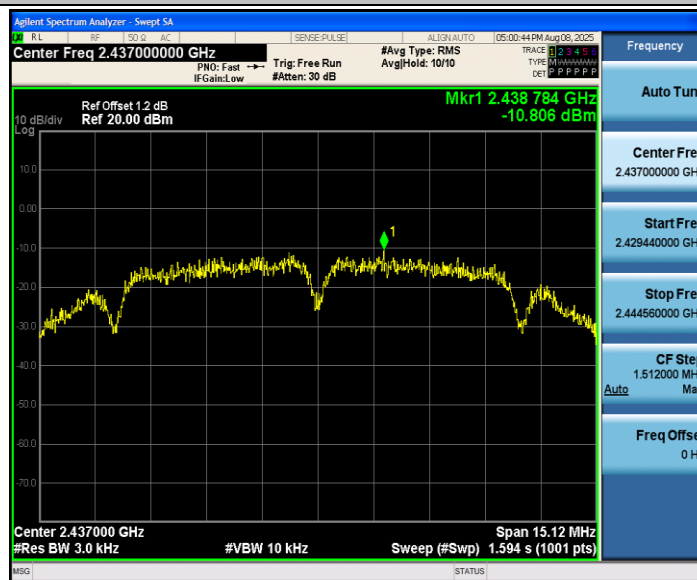
TestMode	Antenna	Frequency[MHz]	Result[dBm/3-100kHz]	Limit[dBm/3kHz]	Verdict
11B	Ant1	2412	-11.31	≤8.00	PASS
		2437	-10.81	≤8.00	PASS
		2462	-11.60	≤8.00	PASS
11G	Ant1	2412	-16.35	≤8.00	PASS
		2437	-15.61	≤8.00	PASS
		2462	-16.32	≤8.00	PASS
11N20SISO	Ant1	2412	-16.10	≤8.00	PASS
		2437	-16.21	≤8.00	PASS
		2462	-14.86	≤8.00	PASS
11N40SISO	Ant1	2422	-19.54	≤8.00	PASS
		2437	-18.79	≤8.00	PASS
		2452	-17.89	≤8.00	PASS

## Test Graphs

11B\_Ant1\_2412



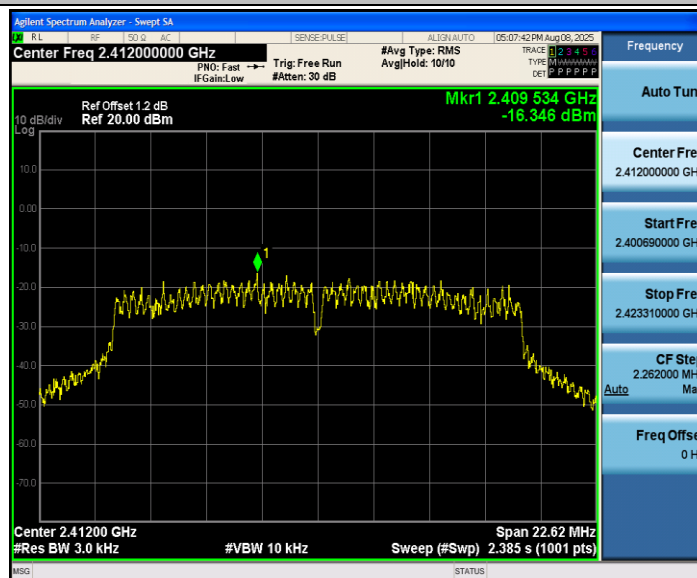
11B\_Ant1\_2437



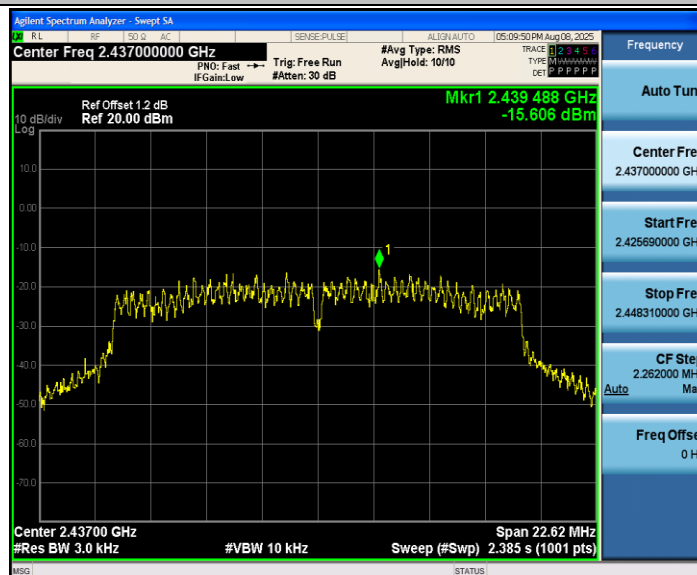
11B\_Ant1\_2462



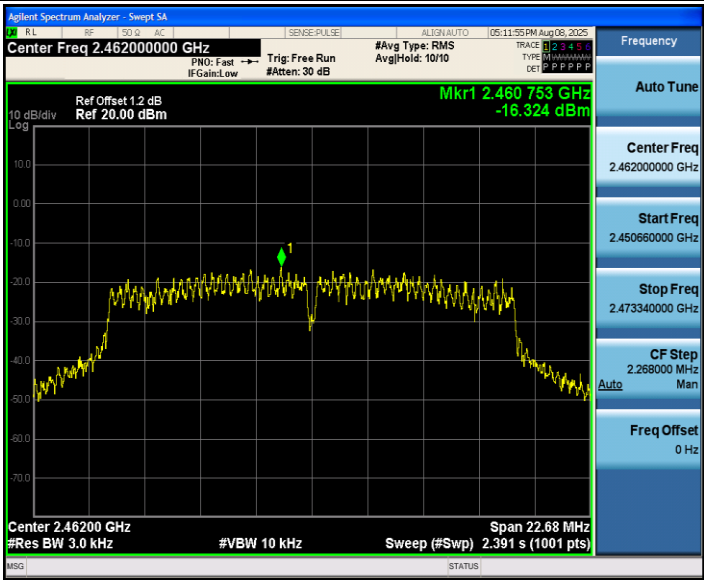
11G\_Ant1\_2412



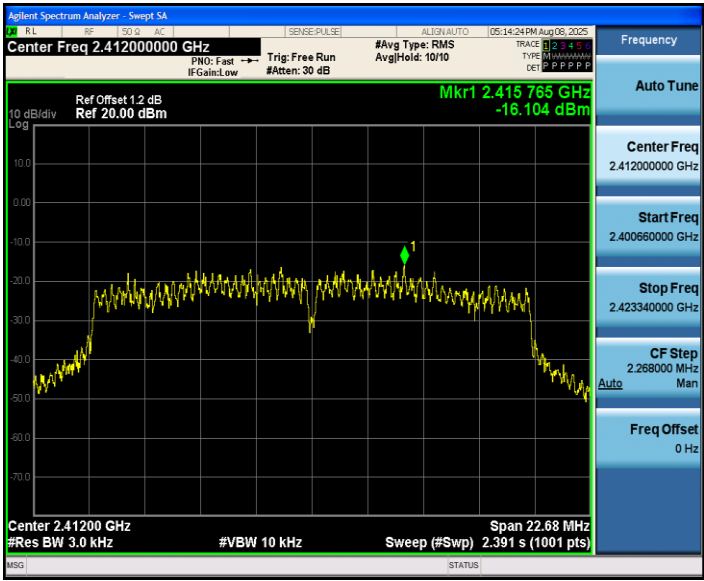
11G\_Ant1\_2437



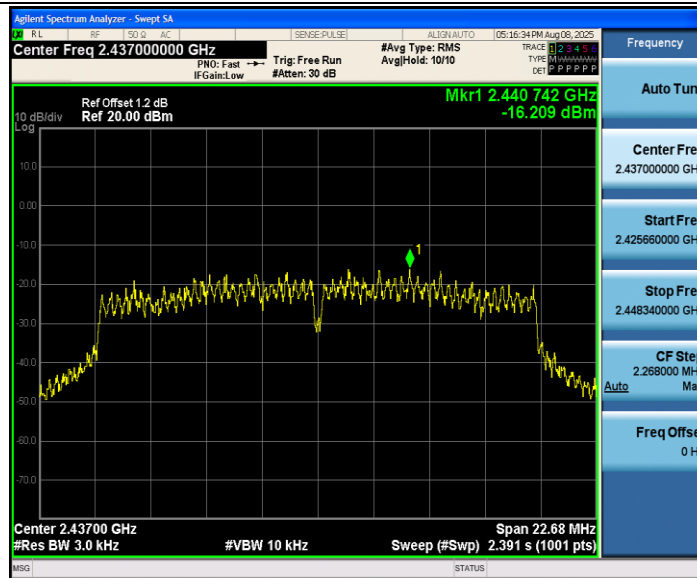
11G\_Ant1\_2462



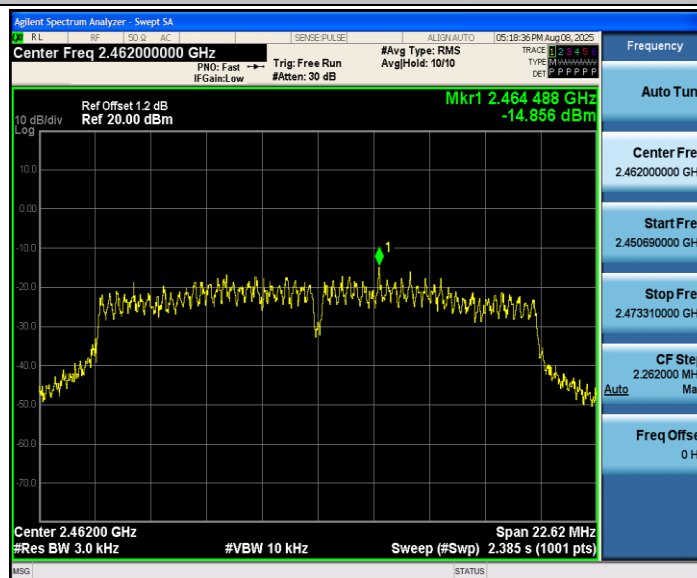
11N20SISO\_Ant1\_2412



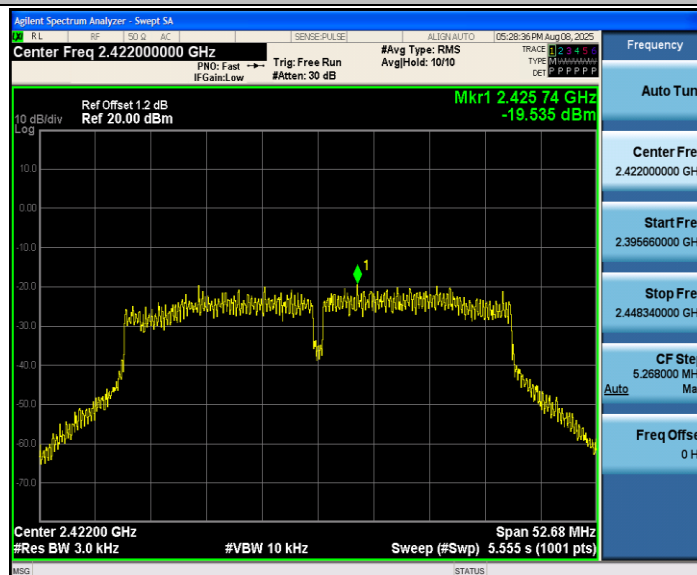
11N20SISO\_Ant1\_2437



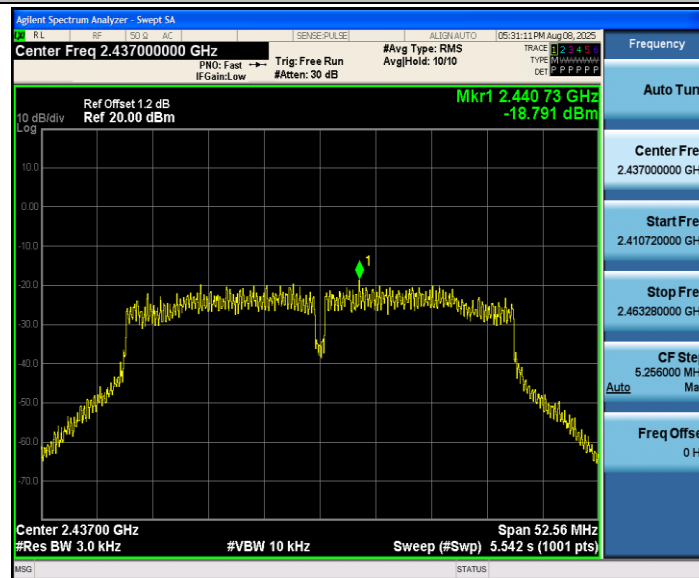
11N20SISO\_Ant1\_2462



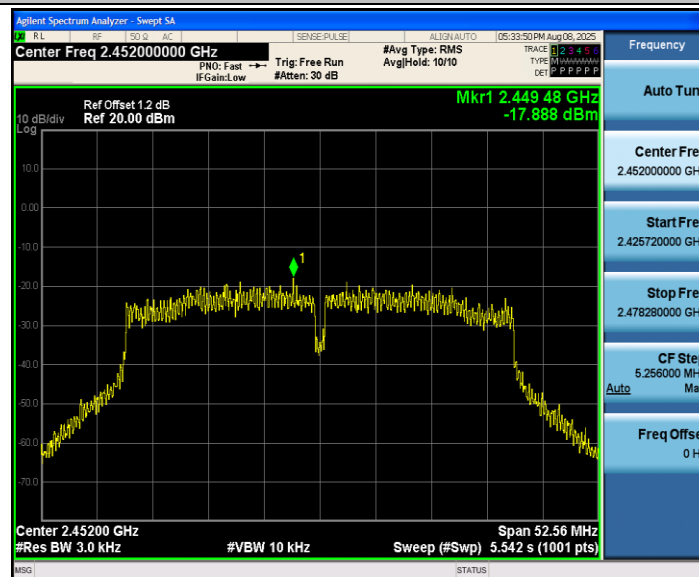
11N40SISO\_Ant1\_2422



# 11N40SISO\_Ant1\_2437



# 11N40SISO\_Ant1\_2452





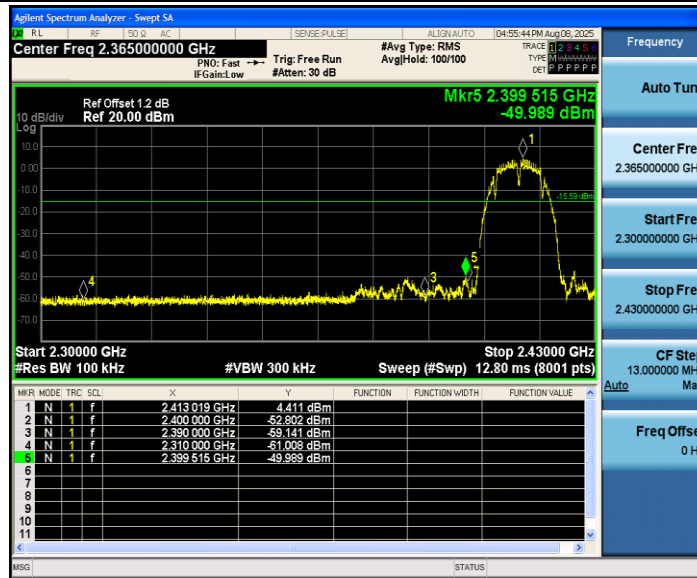
## Appendix E: Band edge measurements

### Test Result

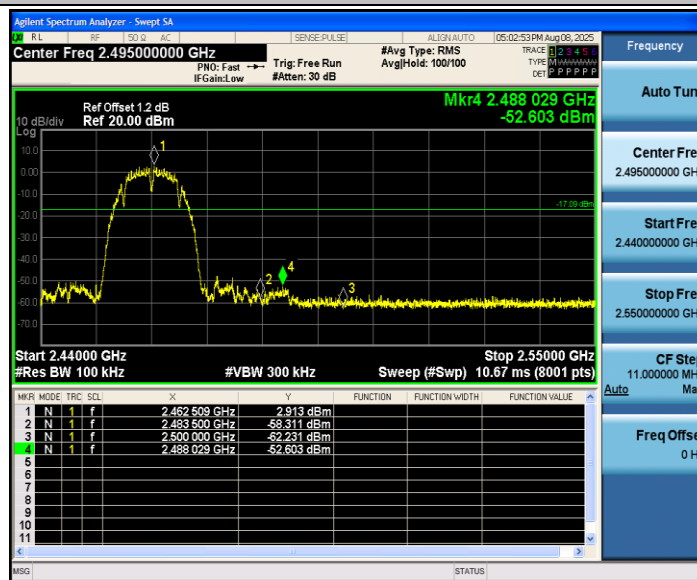
TestMode	Antenna	ChName	Frequency[MHz]	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
11B	Ant1	Low	2412	4.41	-49.99	≤-15.59	PASS
		High	2462	2.91	-52.6	≤-17.09	PASS
11G	Ant1	Low	2412	-1.33	-30.15	≤-21.33	PASS
		High	2462	-1.07	-56.78	≤-21.07	PASS
11N20SISO	Ant1	Low	2412	-1.15	-31.97	≤-21.15	PASS
		High	2462	-1.24	-56.21	≤-21.24	PASS
11N40SISO	Ant1	Low	2422	-4.17	-32.94	≤-24.17	PASS
		High	2452	-3.88	-49.79	≤-23.88	PASS

## Test Graphs

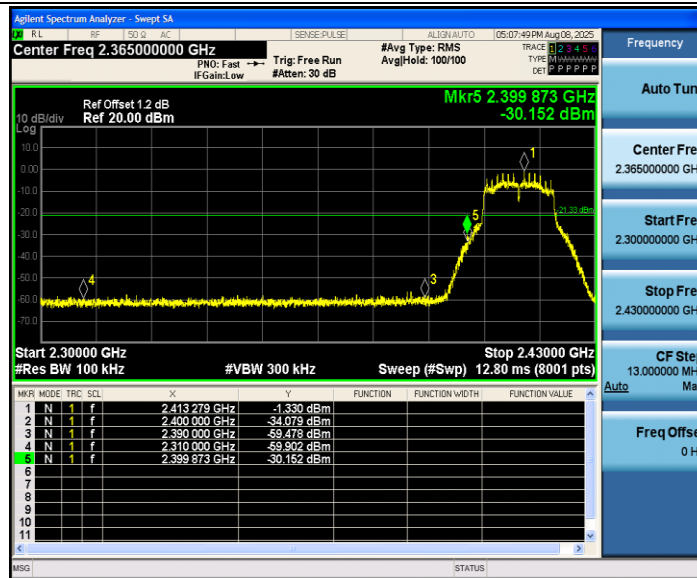
11B\_Ant1\_Low\_2412



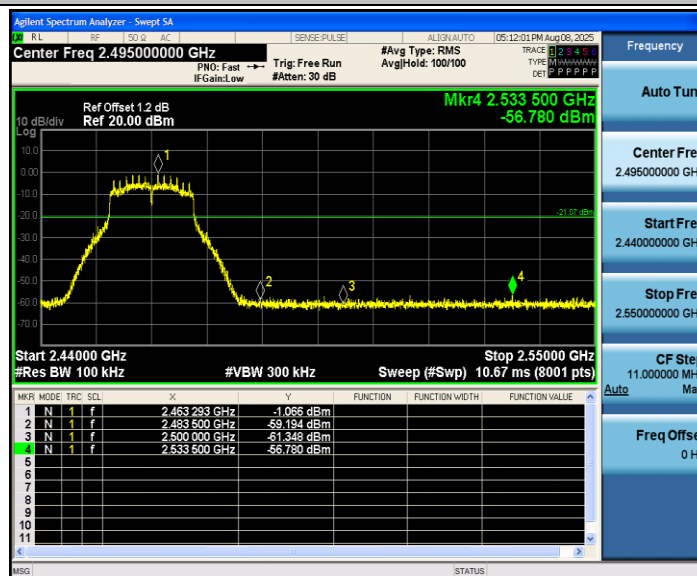
11B\_Ant1\_High\_2462



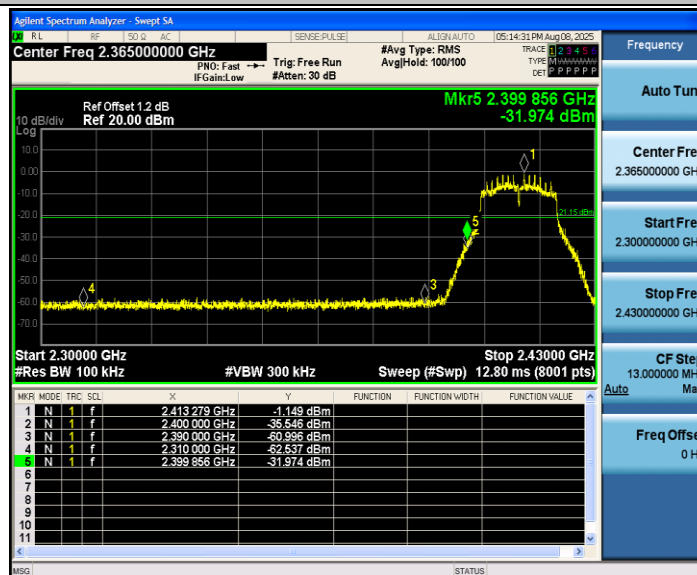
11G\_Ant1\_Low\_2412



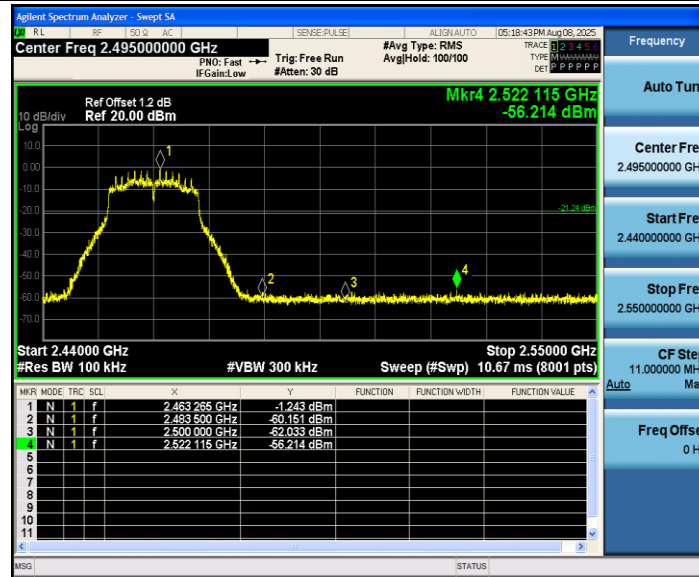
11G\_Ant1\_High\_2462



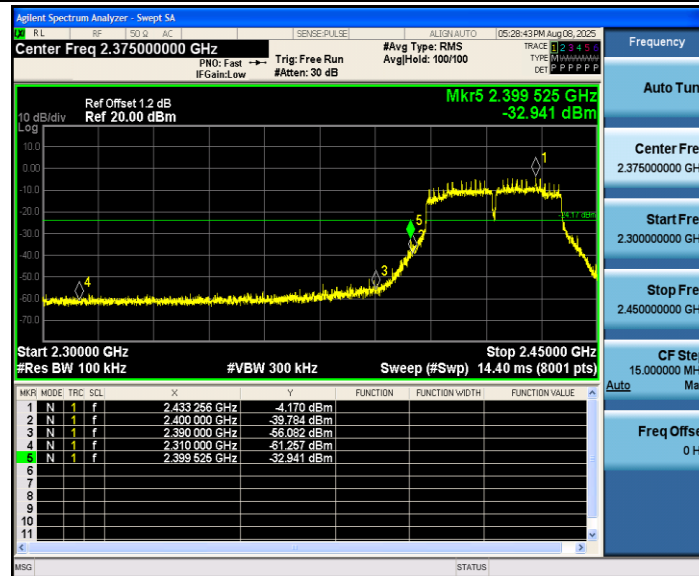
11N20SISO\_Ant1\_Low\_2412



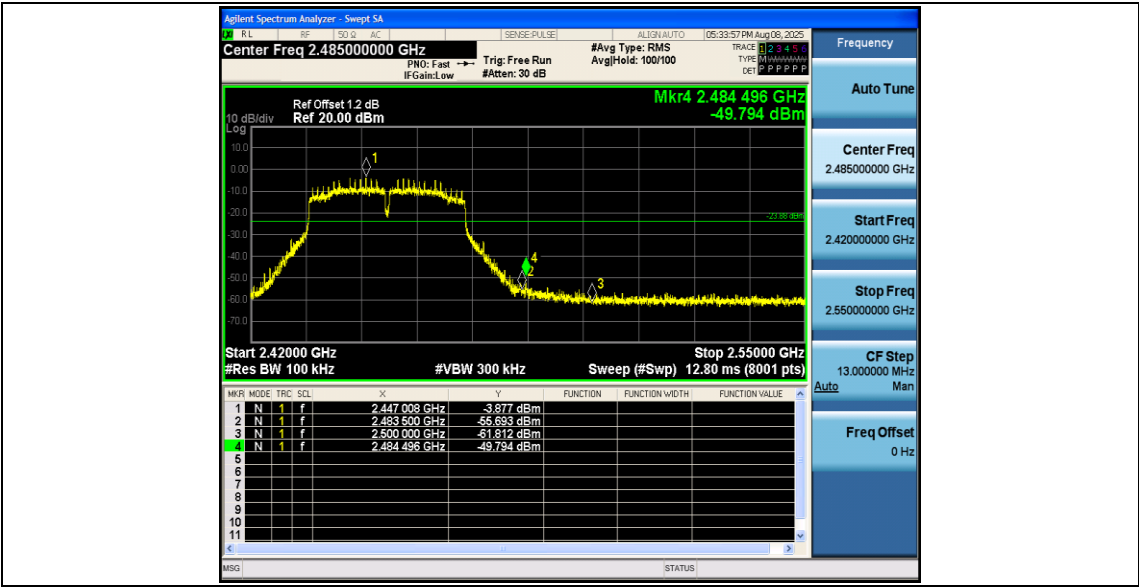
# 11N20SISO\_Ant1\_High\_2462



# 11N40SISO\_Ant1\_Low\_2422



# 11N40SISO\_Ant1\_High\_2452



## Appendix F: Conducted Spurious Emission

### Test Result

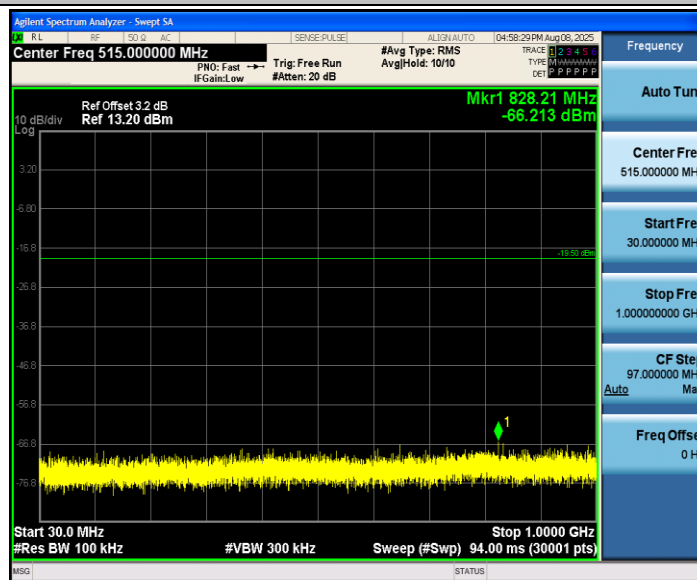
TestMode	Antenna	Frequency[MHz]	FreqRange [Mhz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
11B	Ant1	2412	Reference	0.50	0.50	---	PASS
			30~1000	0.50	-66.21	≤-19.5	PASS
			1000~26500	0.50	-53.49	≤-19.5	PASS
		2437	Reference	2.19	2.19	---	PASS
			30~1000	2.19	-67.15	≤-17.81	PASS
			1000~26500	2.19	-52.63	≤-17.81	PASS
		2462	Reference	1.53	1.53	---	PASS
			30~1000	1.53	-67.7	≤-18.47	PASS
			1000~26500	1.53	-53.65	≤-18.47	PASS
11G	Ant1	2412	Reference	-1.48	-1.48	---	PASS
			30~1000	-1.48	-66.91	≤-21.48	PASS
			1000~26500	-1.48	-53.87	≤-21.48	PASS
		2437	Reference	-1.91	-1.91	---	PASS
			30~1000	-1.91	-66.74	≤-21.91	PASS
			1000~26500	-1.91	-53.69	≤-21.91	PASS
		2462	Reference	-1.35	-1.35	---	PASS
			30~1000	-1.35	-67.02	≤-21.35	PASS
			1000~26500	-1.35	-53.72	≤-21.35	PASS
11N20SISO	Ant1	2412	Reference	-1.54	-1.54	---	PASS
			30~1000	-1.54	-67.43	≤-21.54	PASS
			1000~26500	-1.54	-53.59	≤-21.54	PASS
		2437	Reference	-1.51	-1.51	---	PASS
			30~1000	-1.51	-66.53	≤-21.51	PASS
			1000~26500	-1.51	-53.86	≤-21.51	PASS
		2462	Reference	-1.22	-1.22	---	PASS
			30~1000	-1.22	-67.27	≤-21.22	PASS
			1000~26500	-1.22	-54.1	≤-21.22	PASS
11N40SISO	Ant1	2422	Reference	-4.81	-4.81	---	PASS
			30~1000	-4.81	-67.38	≤-24.81	PASS
			1000~26500	-4.81	-53.69	≤-24.81	PASS
		2437	Reference	-4.91	-4.91	---	PASS
			30~1000	-4.91	-67.33	≤-24.91	PASS
			1000~26500	-4.91	-54.06	≤-24.91	PASS
		2452	Reference	-5.11	-5.11	---	PASS
			30~1000	-5.11	-67.19	≤-25.11	PASS
			1000~26500	-5.11	-53.97	≤-25.11	PASS

## Test Graphs

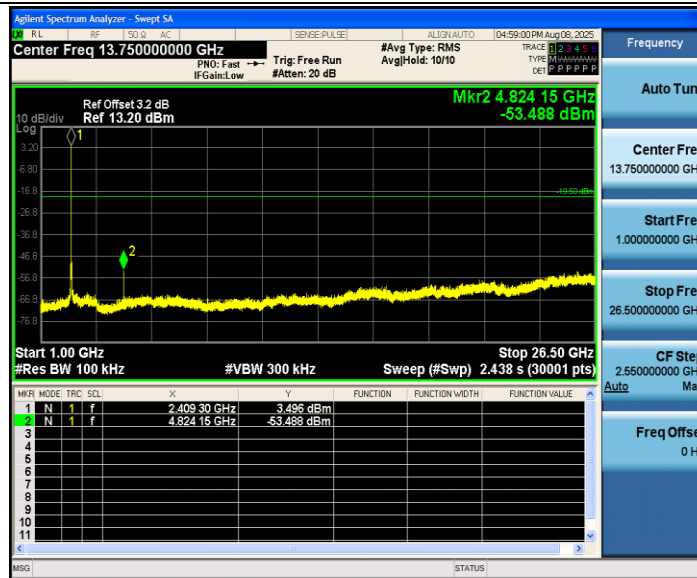
11B\_Ant1\_2412\_0~Reference



11B\_Ant1\_2412\_30~1000



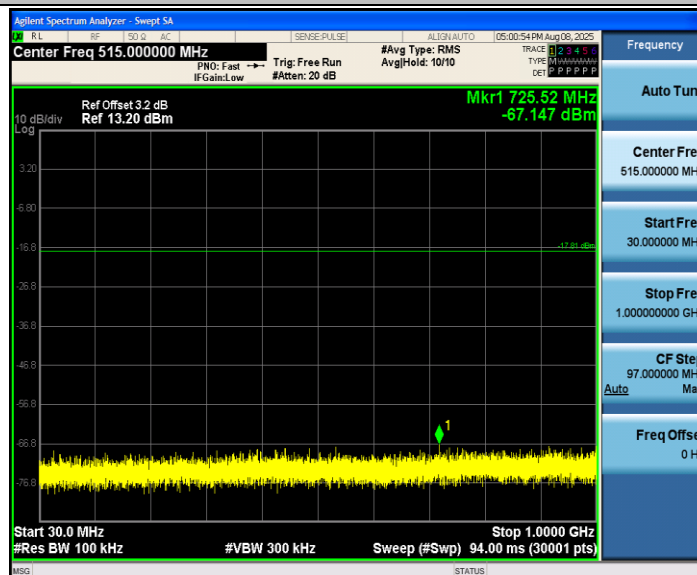
11B\_Ant1\_2412\_1000~26500



11B\_Ant1\_2437\_0~Reference

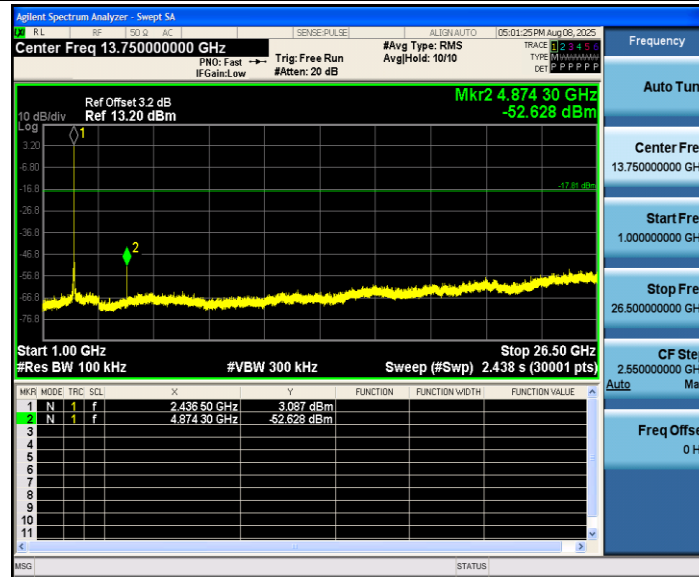


11B\_Ant1\_2437\_30~1000





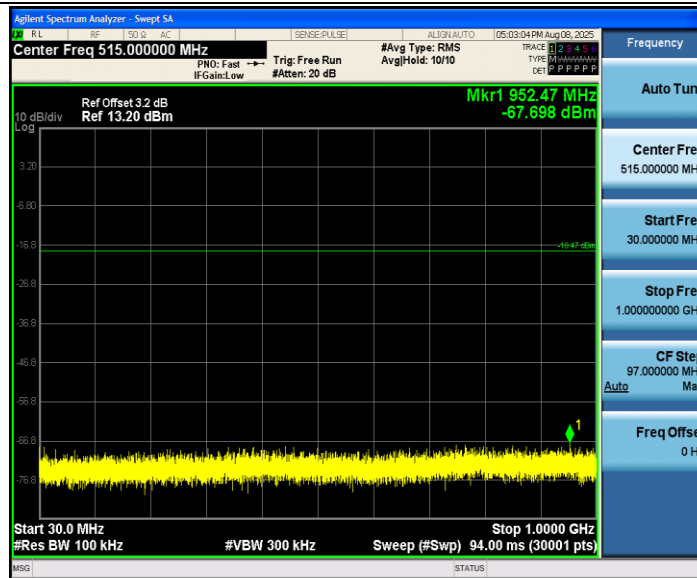
# 11B\_Ant1\_2437\_1000~26500



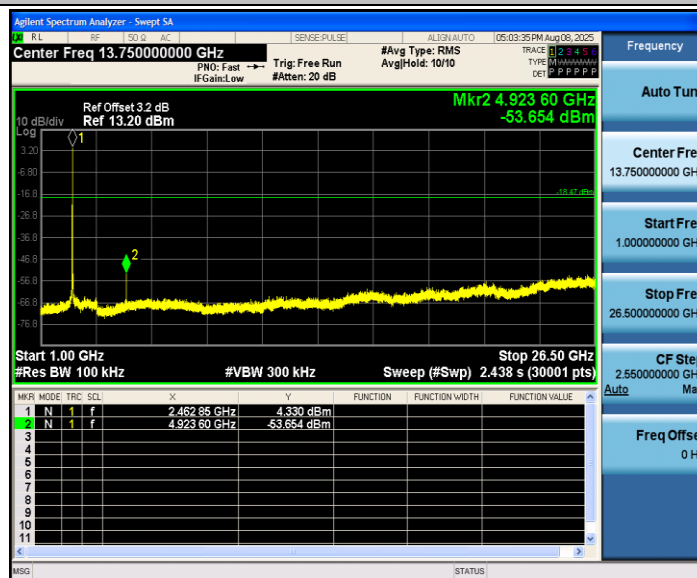
# 11B\_Ant1\_2462\_0~Reference



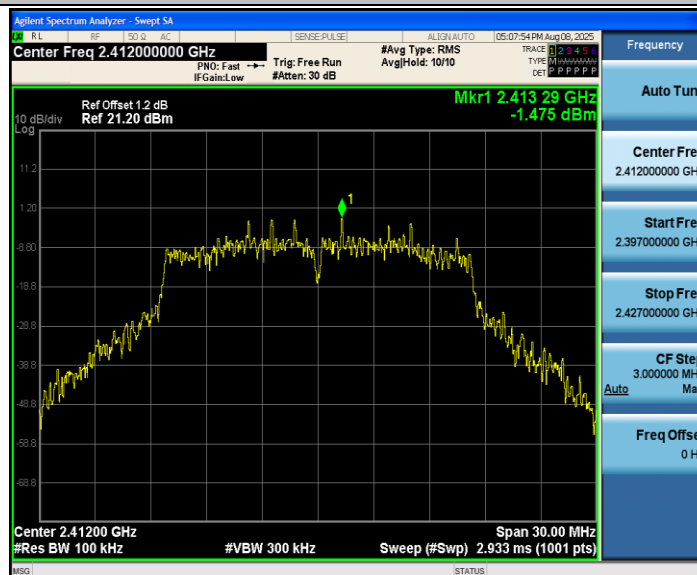
# 11B\_Ant1\_2462\_30~1000



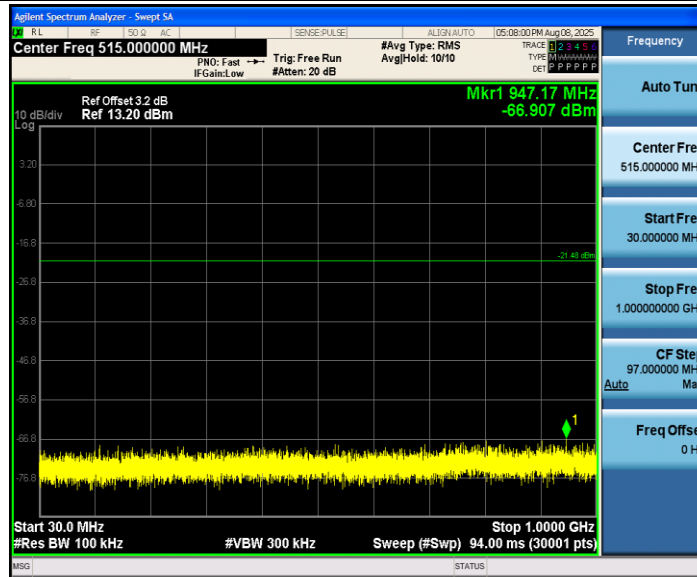
11B\_Ant1\_2462\_1000~26500



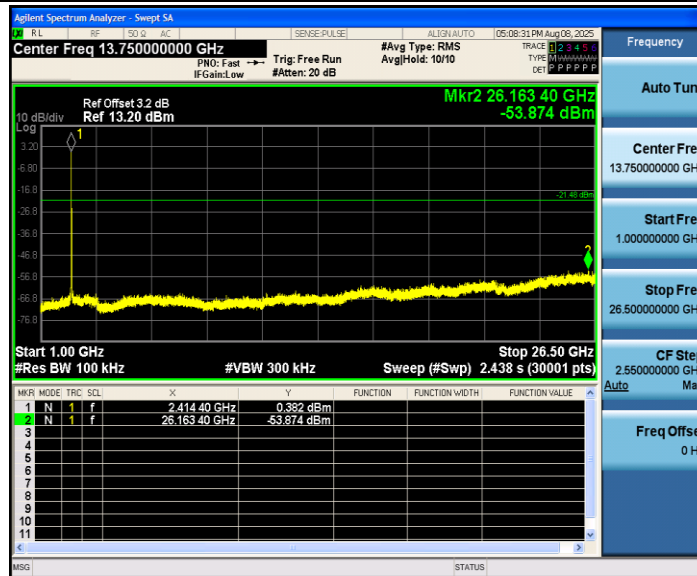
11G\_Ant1\_2412\_0~Reference



# 11G\_Ant1\_2412\_30~1000



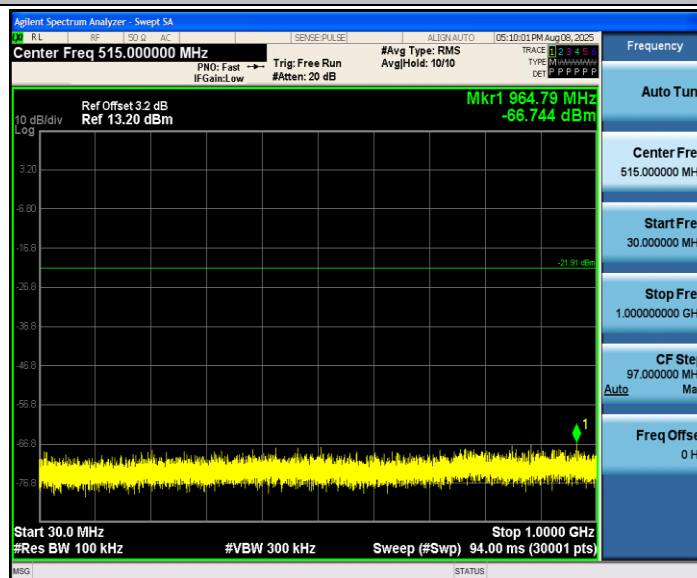
# 11G\_Ant1\_2412\_1000~26500



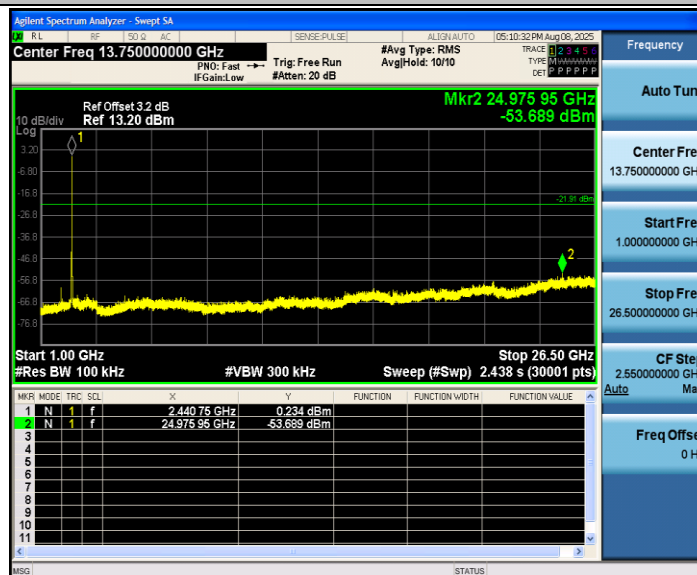
# 11G\_Ant1\_2437\_0~Reference



11G\_Ant1\_2437\_30~1000



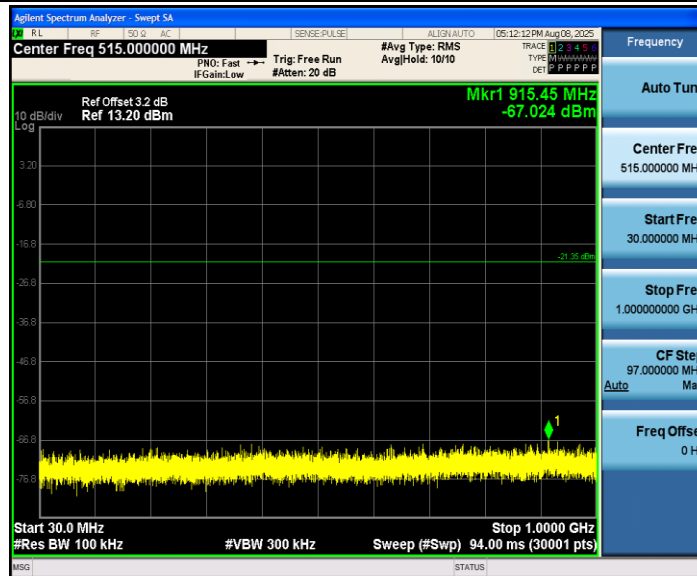
11G\_Ant1\_2437\_1000~26500



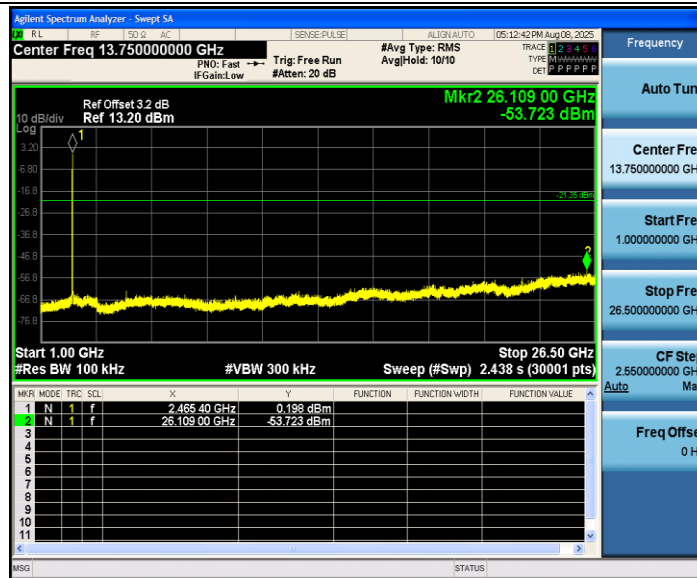
# 11G\_Ant1\_2462\_0~Reference



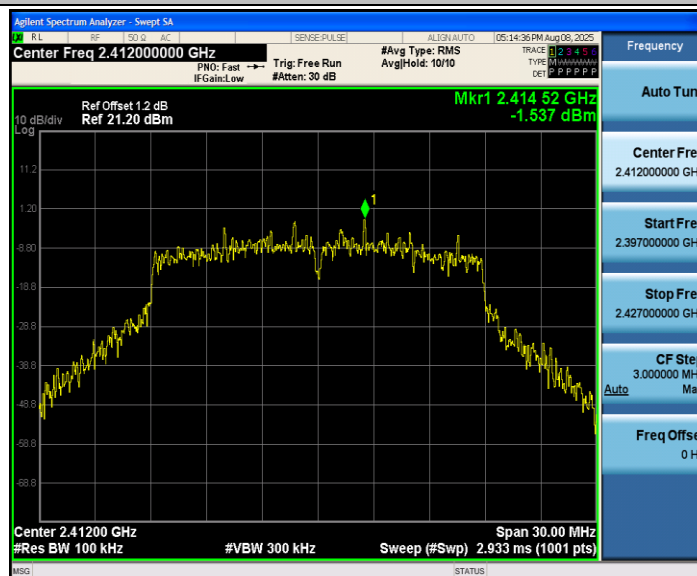
# 11G\_Ant1\_2462\_30~1000



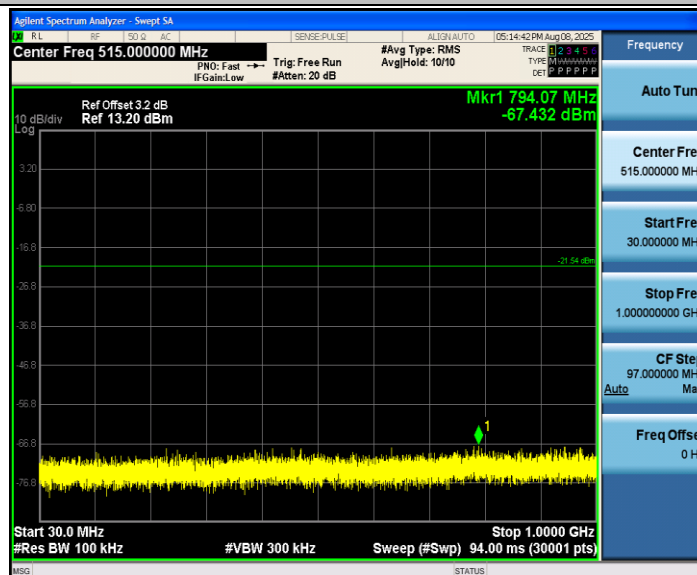
# 11G\_Ant1\_2462\_1000~26500



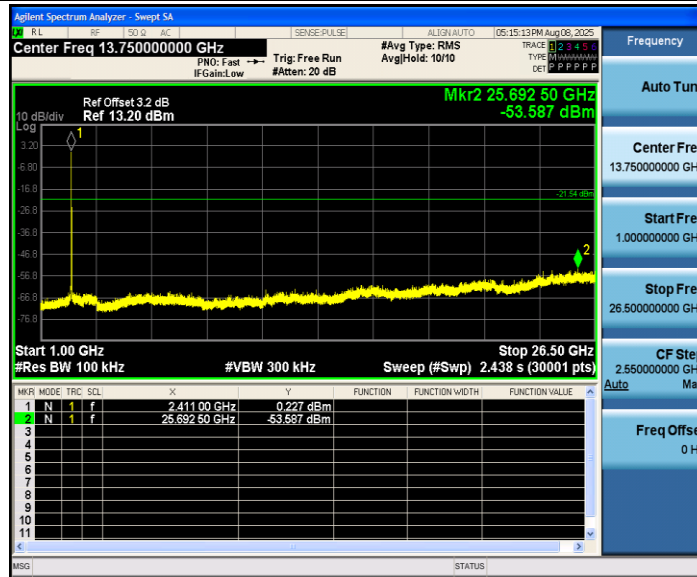
11N20SISO\_Ant1\_2412\_0~Reference



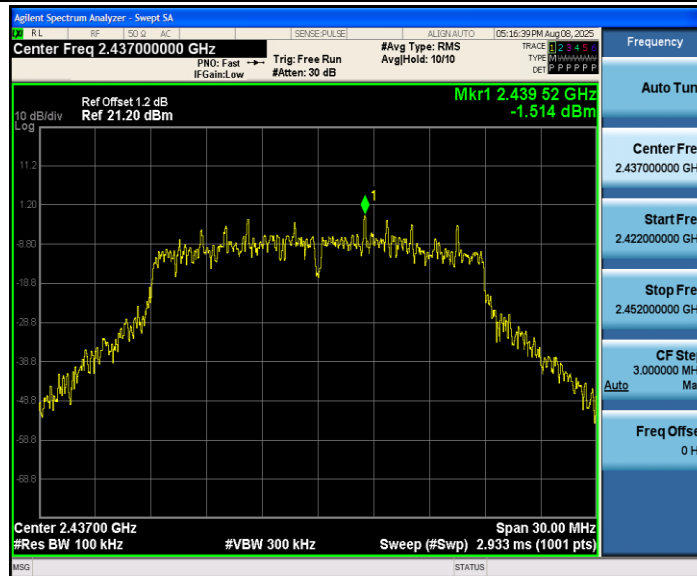
11N20SISO\_Ant1\_2412\_30~1000



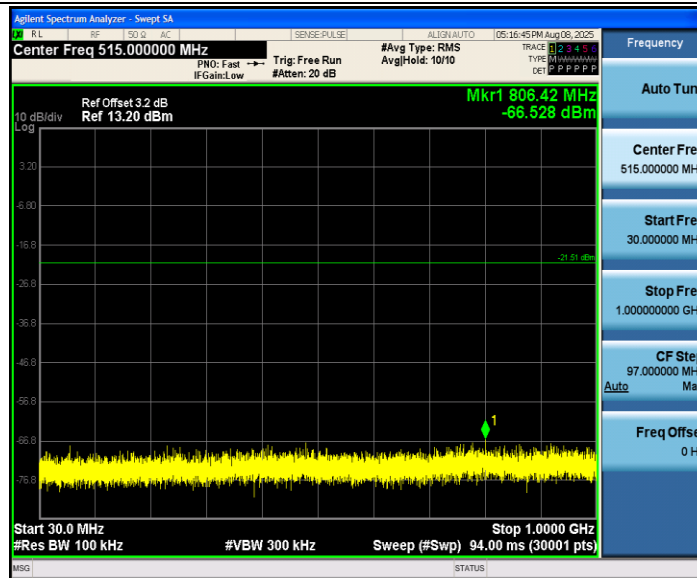
# 11N20SISO\_Ant1\_2412\_1000~26500



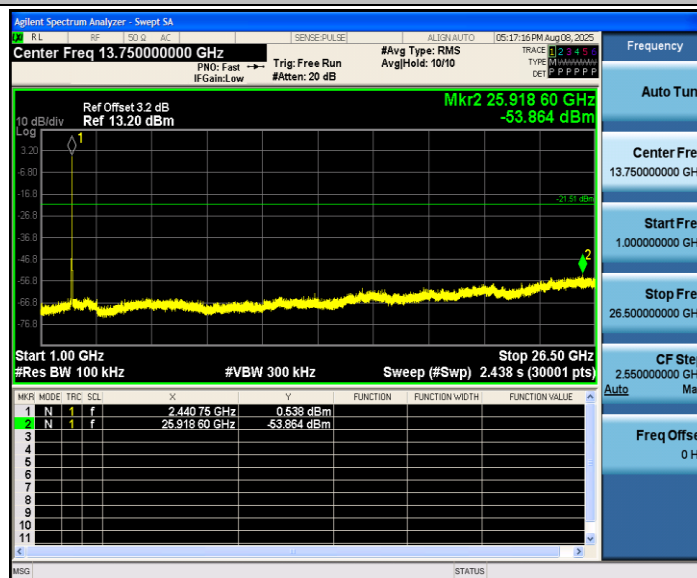
# 11N20SISO\_Ant1\_2437\_0~Reference



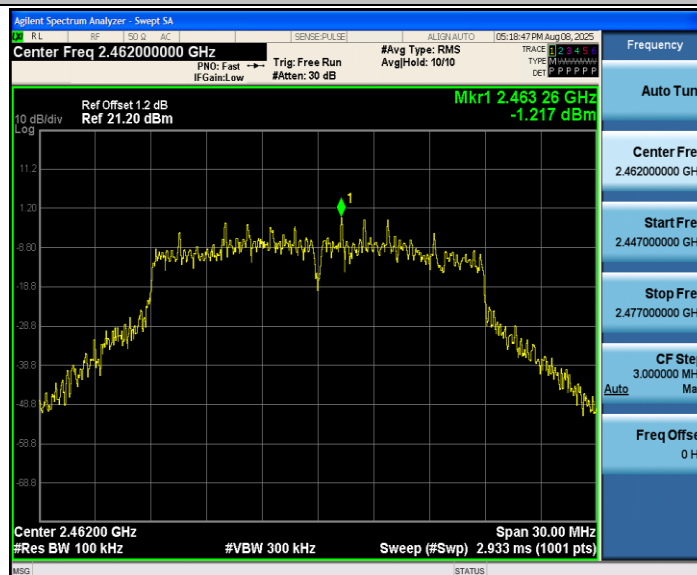
# 11N20SISO\_Ant1\_2437\_30~1000



11N20SISO\_Ant1\_2437\_1000~26500

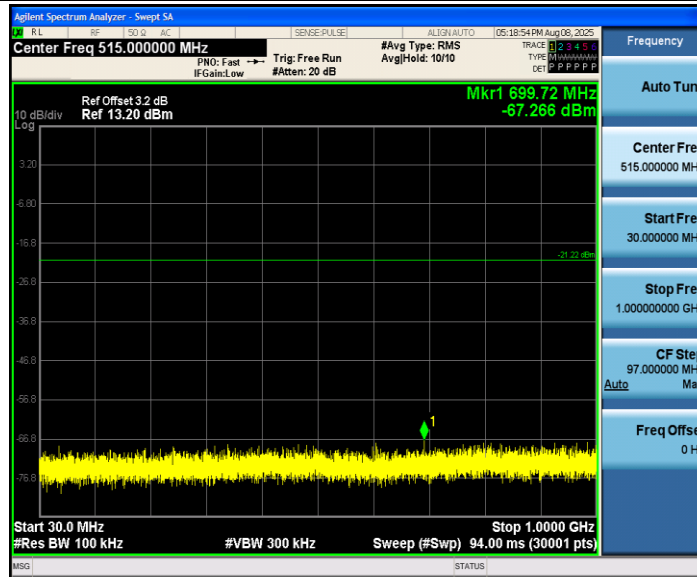


11N20SISO\_Ant1\_2462\_0~Reference

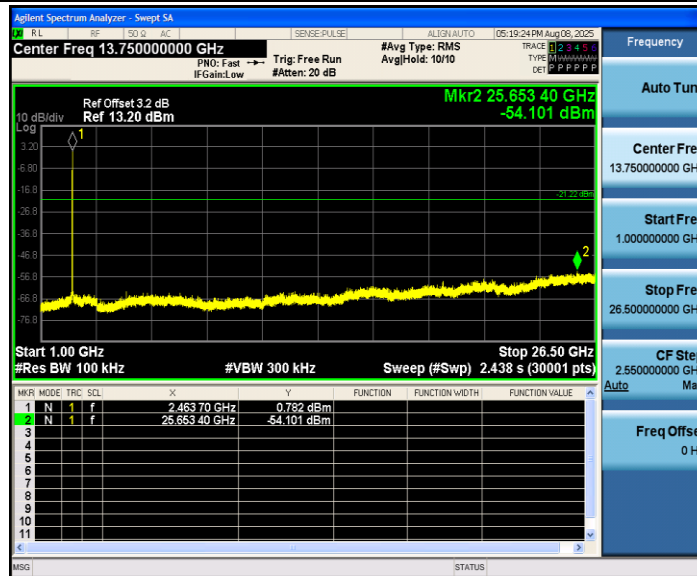




# 11N20SISO\_Ant1\_2462\_30~1000



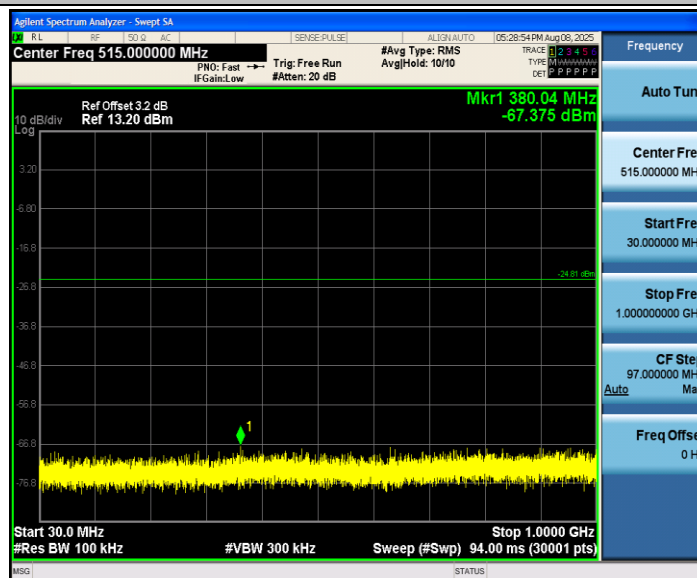
# 11N20SISO\_Ant1\_2462\_1000~26500



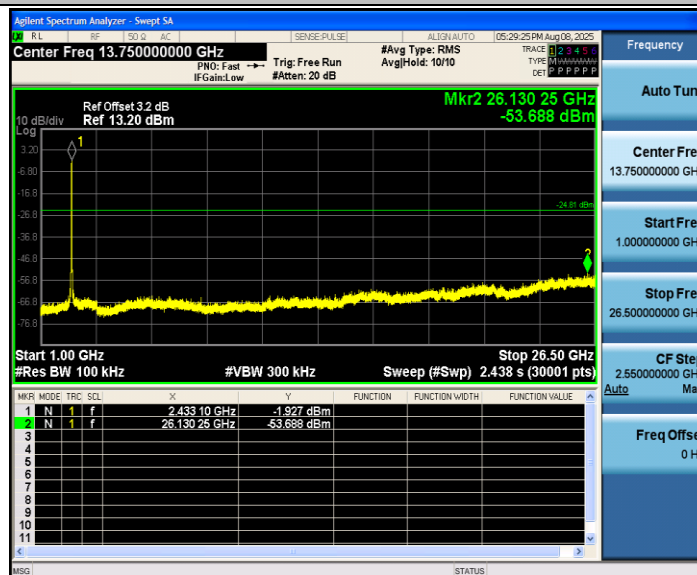
# 11N40SISO\_Ant1\_2422\_0~Reference



11N40SISO\_Ant1\_2422\_30~1000



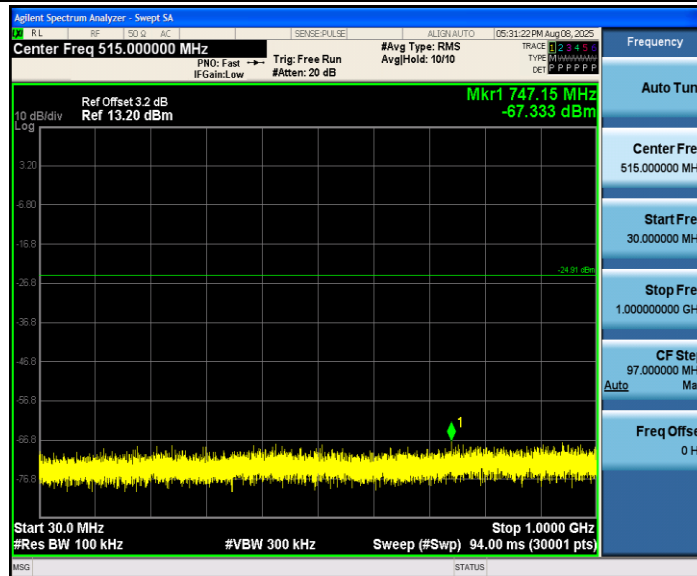
11N40SISO\_Ant1\_2422\_1000~26500



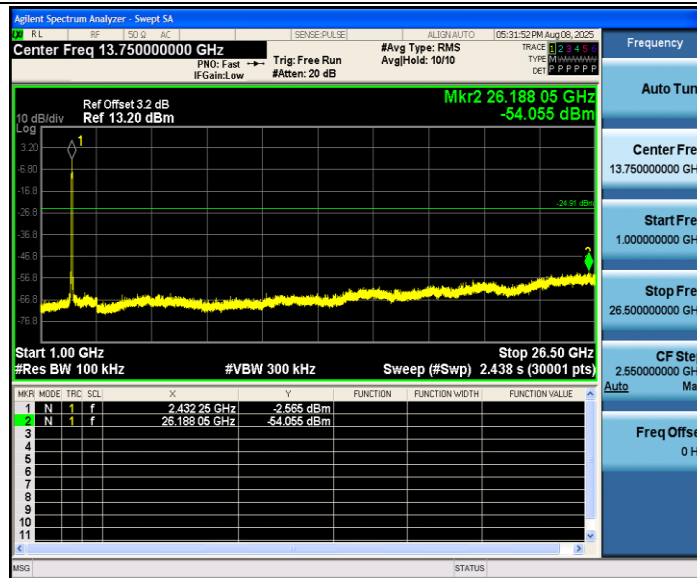
# 11N40SISO\_Ant1\_2437\_0~Reference



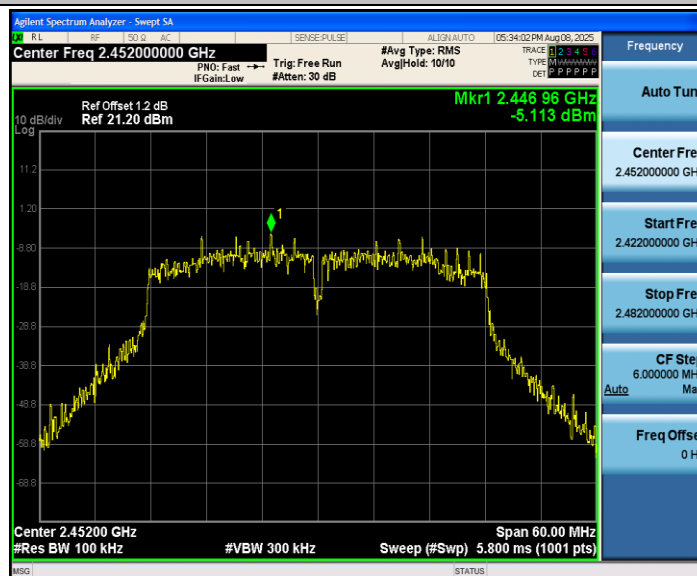
# 11N40SISO\_Ant1\_2437\_30~1000



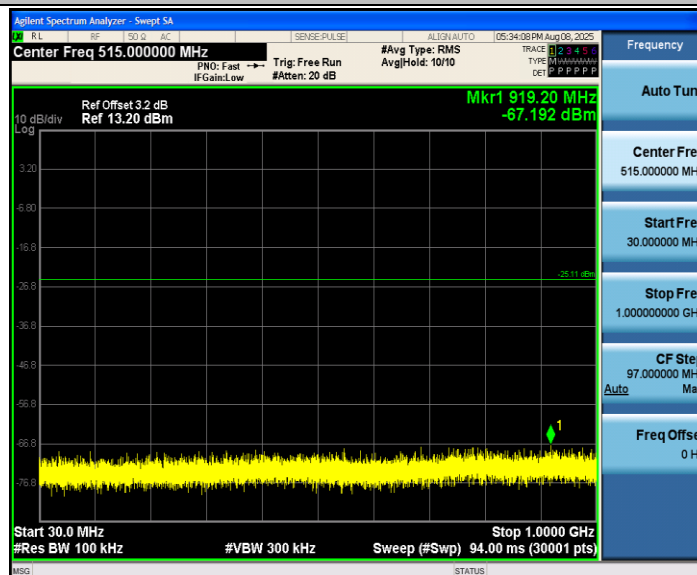
# 11N40SISO\_Ant1\_2437\_1000~26500

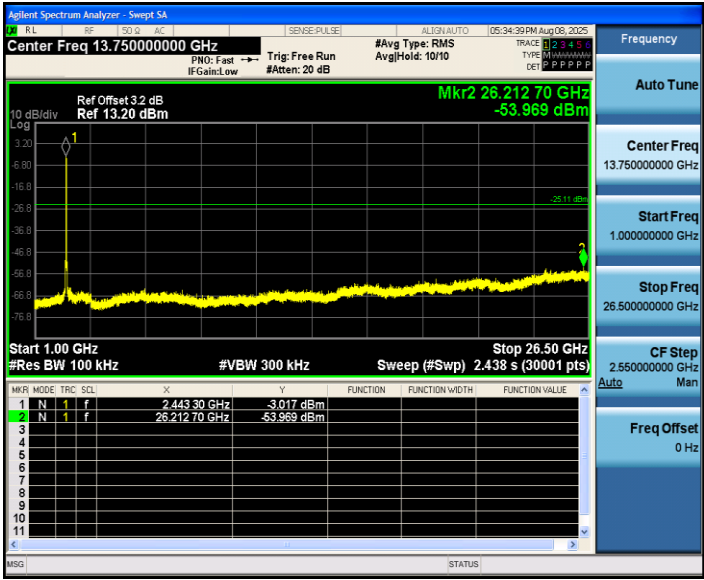


11N40SISO\_Ant1\_2452\_0~Reference



11N40SISO\_Ant1\_2452\_30~1000





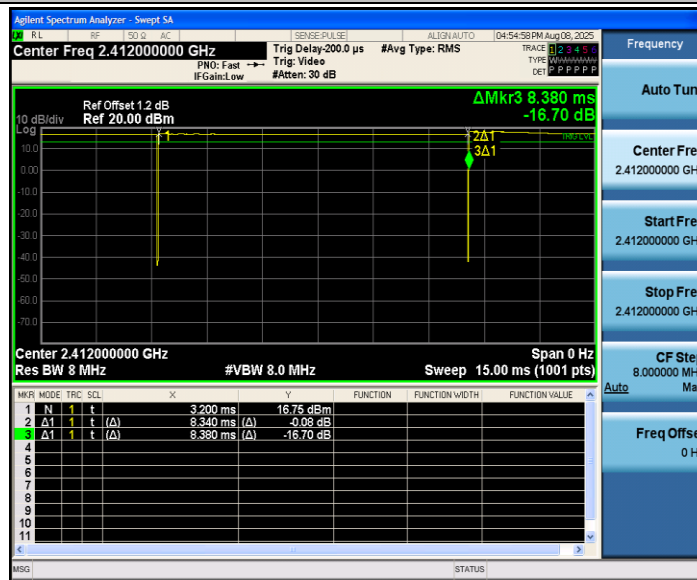
## Appendix G: Duty Cycle

### Test Result

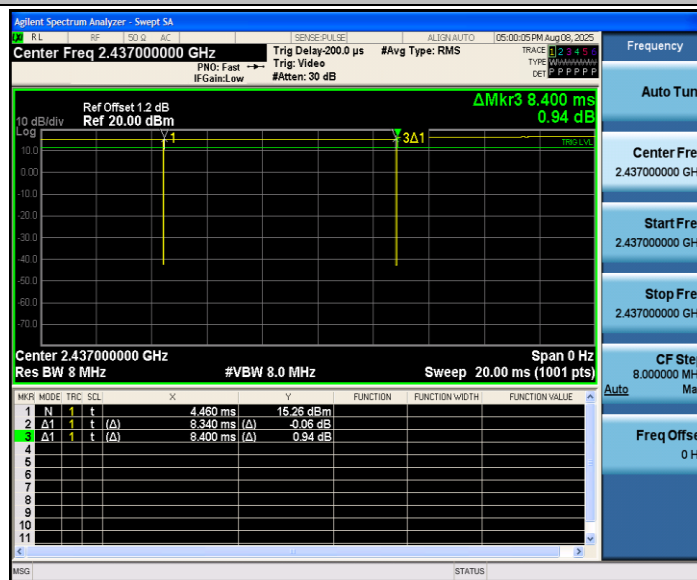
TestMode	Antenna	Frequency[MHz]	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]
11B	Ant1	2412	8.34	8.38	99.52
		2437	8.34	8.40	99.29
		2462	8.34	8.40	99.29
11G	Ant1	2412	0.15	0.20	75.00
		2437	0.15	0.20	75.00
		2462	0.14	0.19	73.68
11N20SISO	Ant1	2412	0.17	0.22	77.27
		2437	0.17	0.22	77.27
		2462	0.17	0.22	77.27
11N40SISO	Ant1	2422	0.18	0.23	78.26
		2437	0.18	0.23	78.26
		2452	0.18	0.23	78.26

## Test Graphs

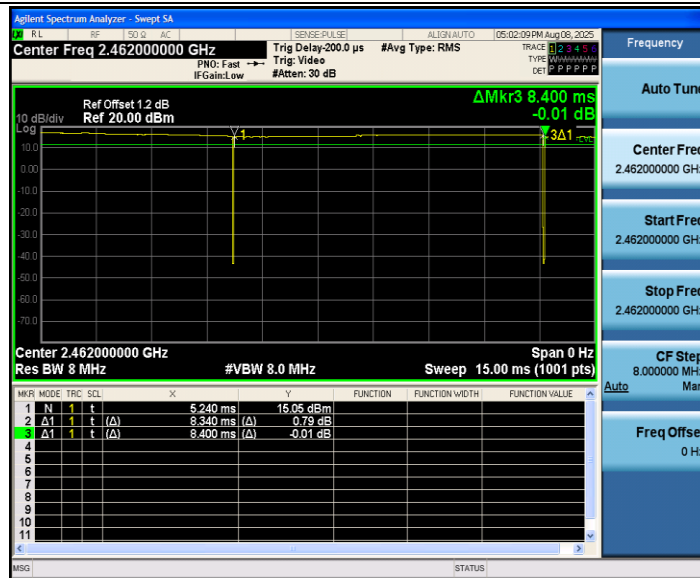
11B\_Ant1\_2412



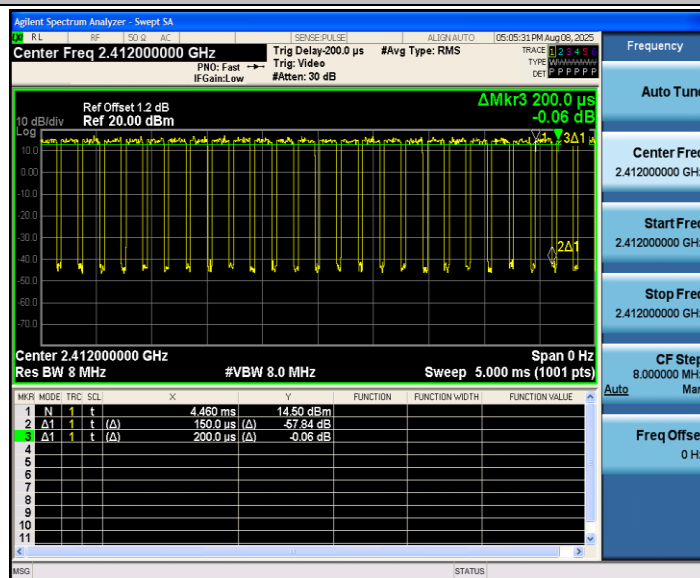
11B\_Ant1\_2437



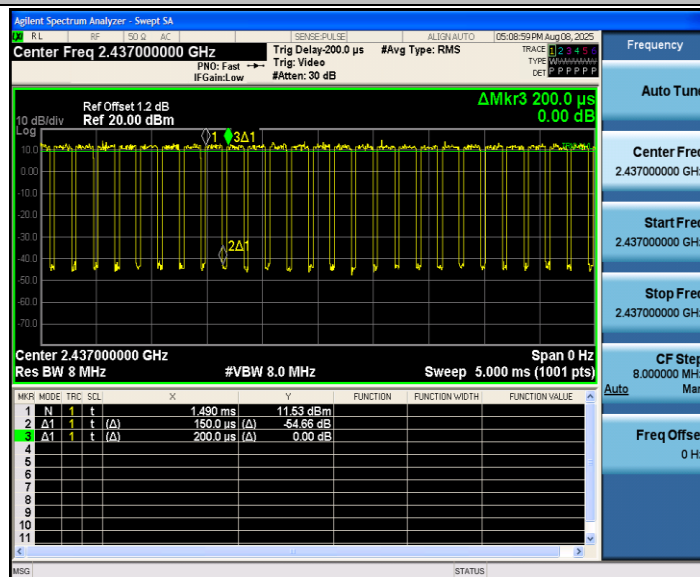
11B\_Ant1\_2462



11G\_Ant1\_2412

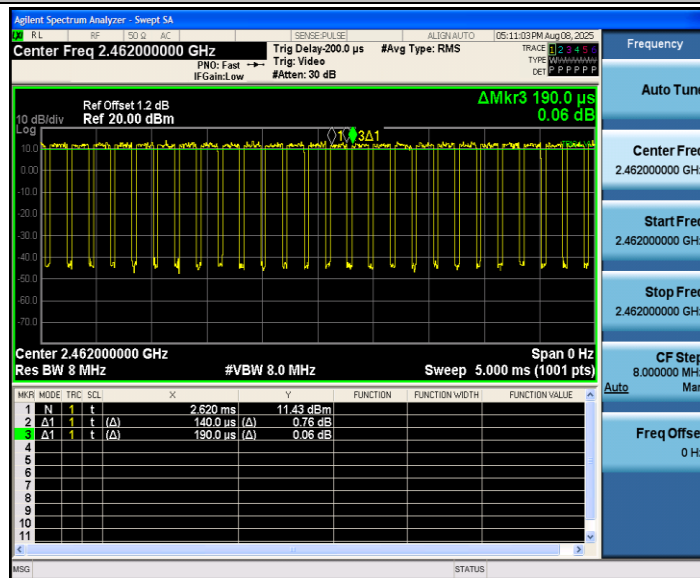


11G\_Ant1\_2437

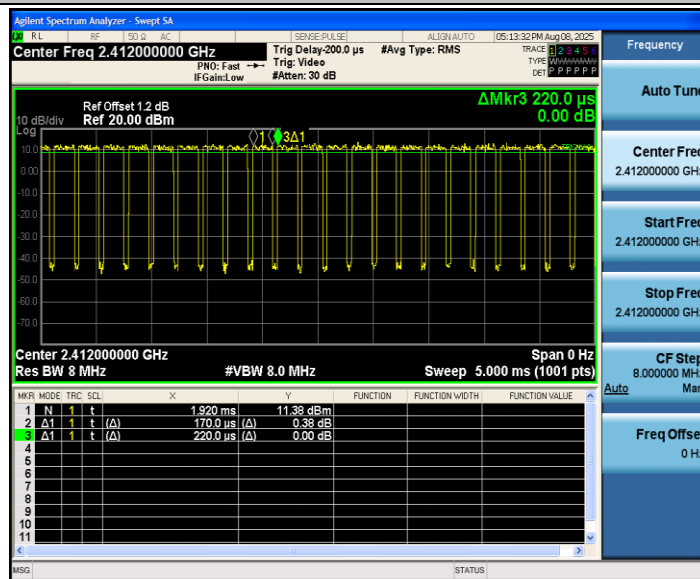




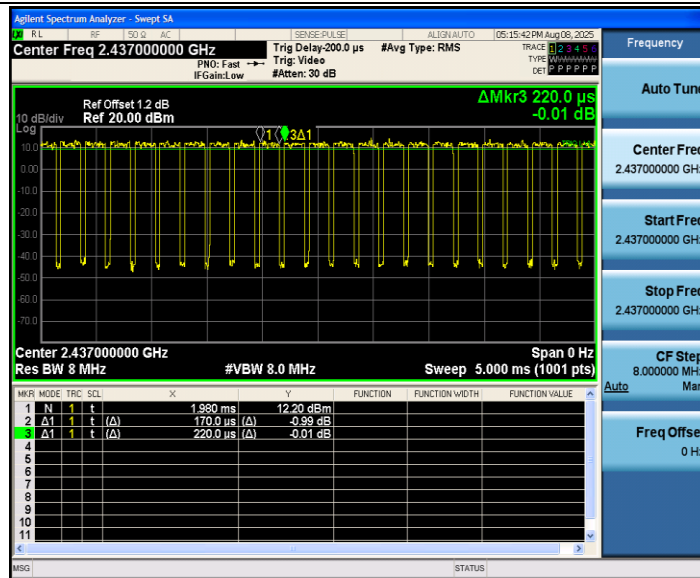
# 11G\_Ant1\_2462



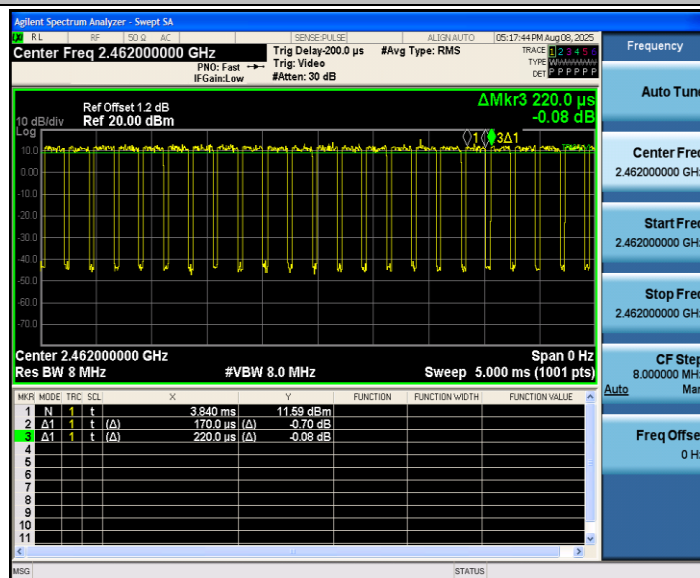
# 11N20SISO\_Ant1\_2412



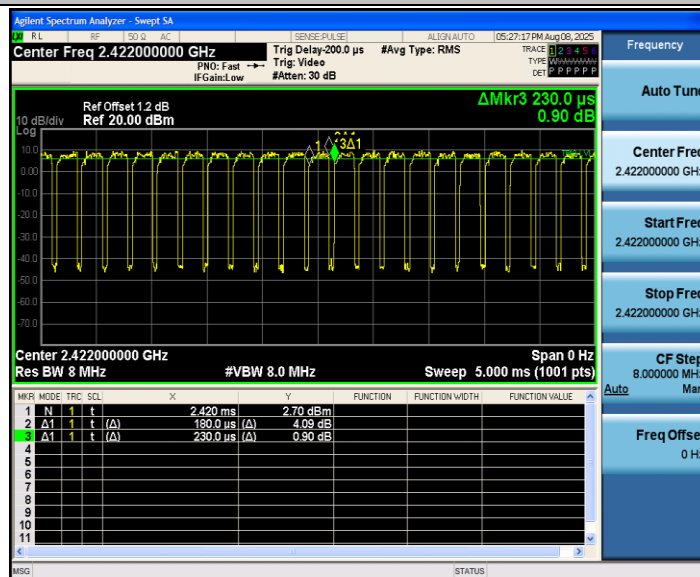
# 11N20SISO\_Ant1\_2437



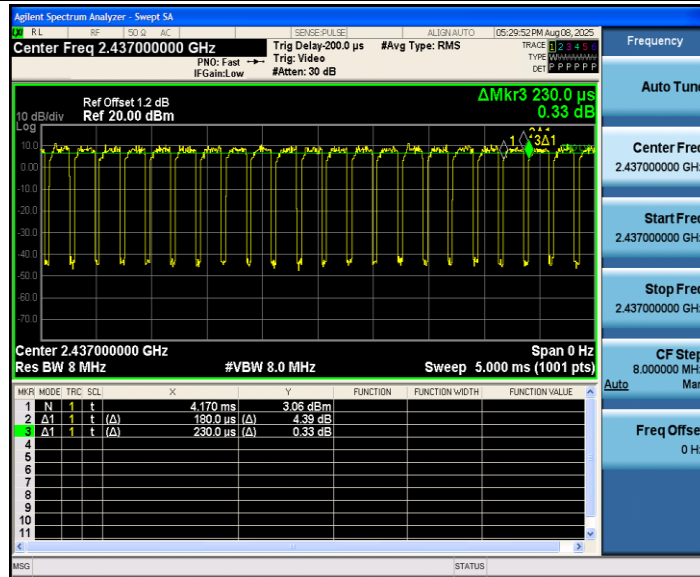
11N20SISO\_Ant1\_2462



11N40SISO\_Ant1\_2422



# 11N40SISO\_Ant1\_2437



# 11N40SISO\_Ant1\_2452

