

## Appendix Test Data for WLAN(2.4G) (Conducted Measurement)

Product Name: 4K Set Top Box

Trade Mark: OptiSigns

Test Model: ARD3

FCC ID: 2AOVU-ARD3

### Environmental Conditions

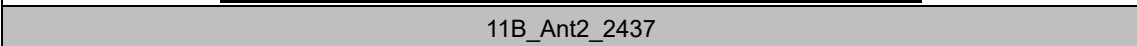
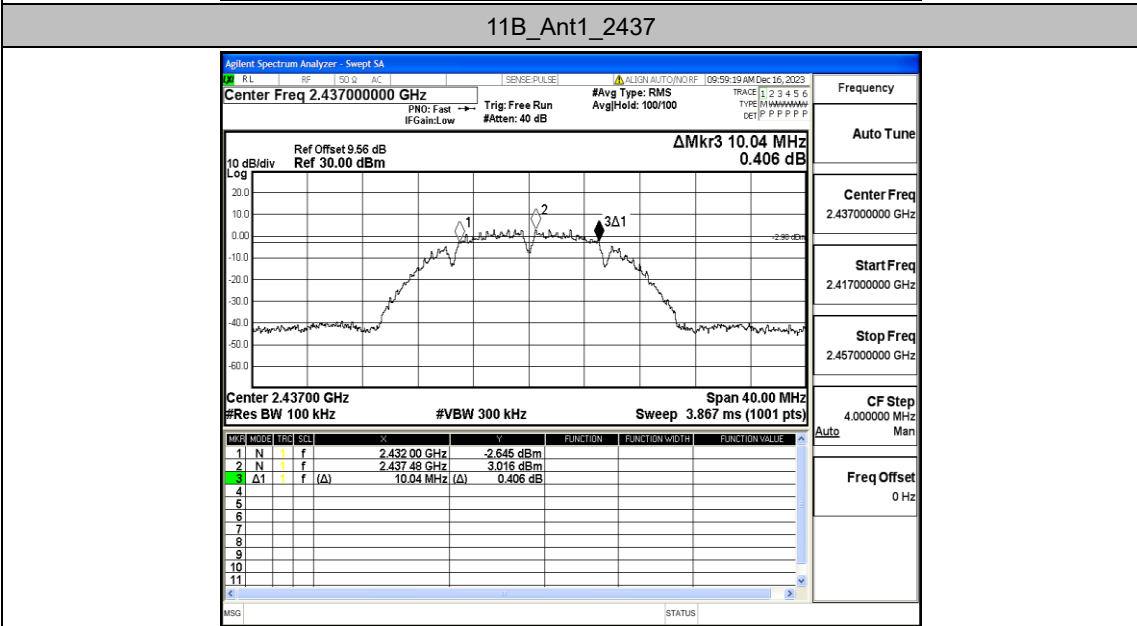
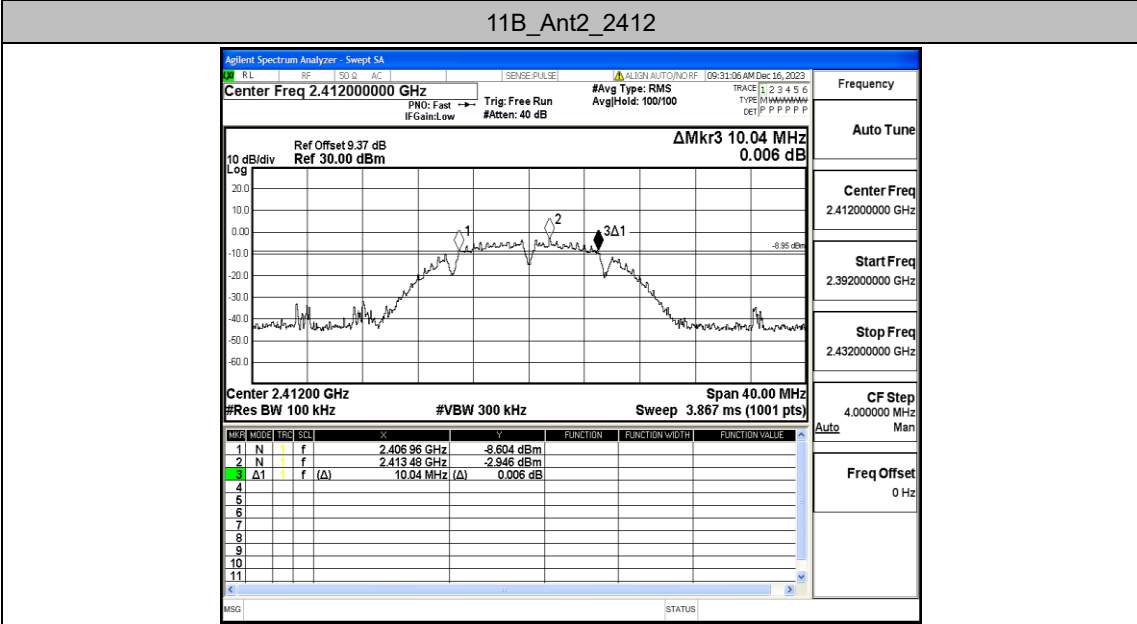
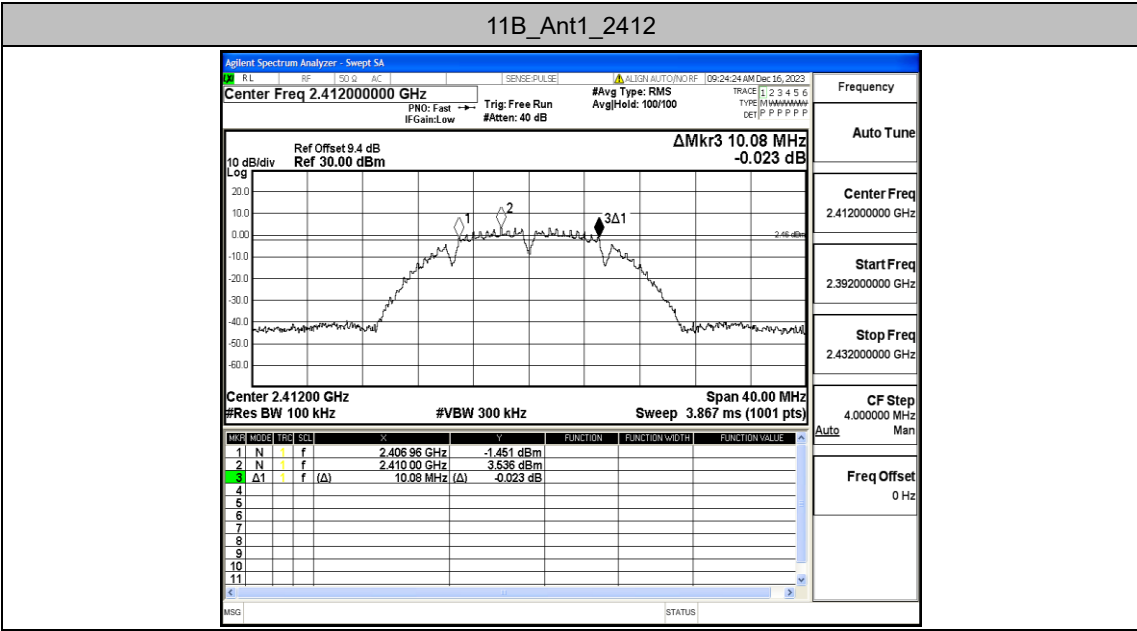
Temperature:	25.5°C
Relative Humidity:	55%
ATM Pressure:	100.0 kPa
Test Engineer:	Anna Hu
Supervised by:	Hugo Chen
NOTE	N/A

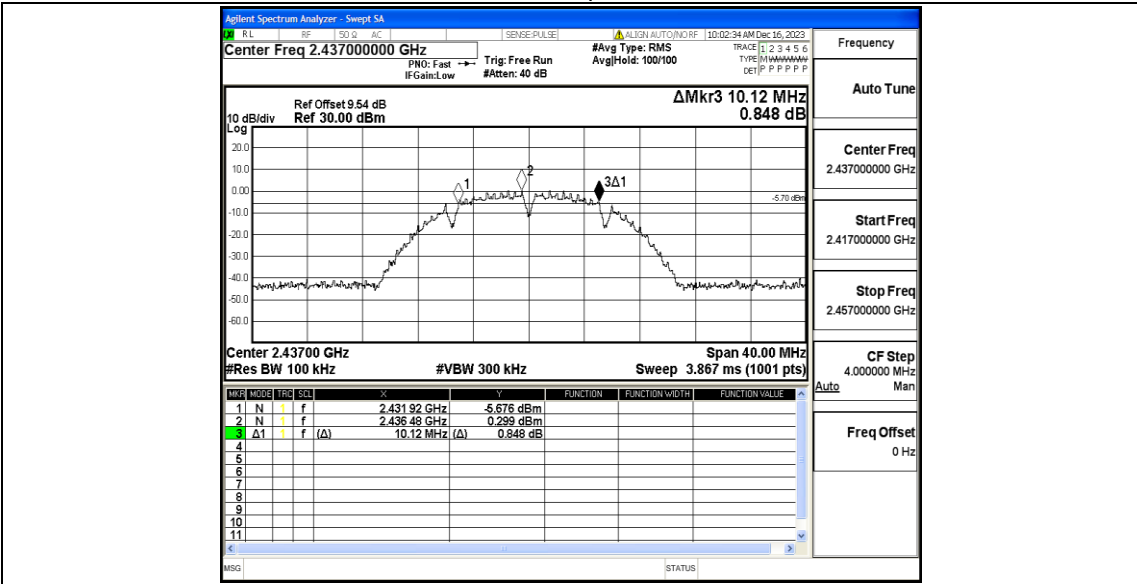
## Appendix A: DTS Bandwidth

### Test Result

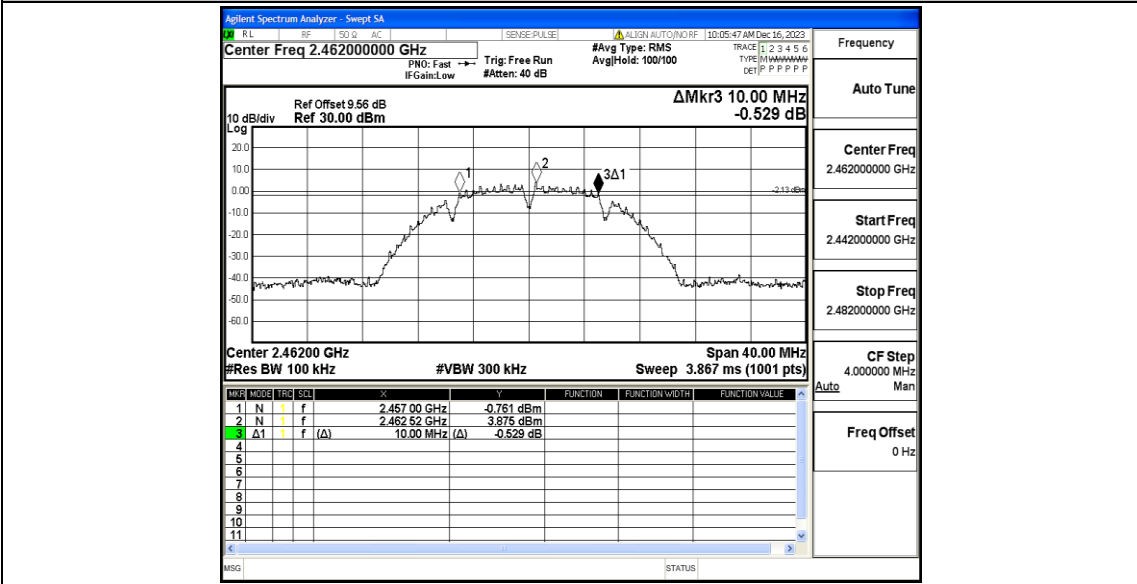
TestMode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant1	2412	10.080	2406.960	2417.040	0.5	PASS
	Ant2	2412	10.040	2406.960	2417.000	0.5	PASS
	Ant1	2437	10.040	2432.000	2442.040	0.5	PASS
	Ant2	2437	10.120	2431.920	2442.040	0.5	PASS
	Ant1	2462	10.000	2457.000	2467.000	0.5	PASS
	Ant2	2462	10.040	2457.000	2467.040	0.5	PASS
11G	Ant1	2412	15.680	2404.120	2419.800	0.5	PASS
	Ant2	2412	16.360	2403.800	2420.160	0.5	PASS
	Ant1	2437	16.320	2428.840	2445.160	0.5	PASS
	Ant2	2437	15.680	2428.880	2444.560	0.5	PASS
	Ant1	2462	16.280	2453.880	2470.160	0.5	PASS
	Ant2	2462	16.080	2453.840	2469.920	0.5	PASS
11N20MIMO	Ant1	2412	16.680	2403.480	2420.160	0.5	PASS
	Ant2	2412	16.440	2403.480	2419.920	0.5	PASS
	Ant1	2437	17.040	2428.480	2445.520	0.5	PASS
	Ant2	2437	16.280	2428.640	2444.920	0.5	PASS
	Ant1	2462	16.760	2453.640	2470.400	0.5	PASS
	Ant2	2462	16.000	2453.880	2469.880	0.5	PASS
11N40MIMO	Ant1	2422	34.800	2404.480	2439.280	0.5	PASS
	Ant2	2422	33.120	2405.360	2438.480	0.5	PASS
	Ant1	2437	35.040	2419.480	2454.520	0.5	PASS
	Ant2	2437	33.840	2420.680	2454.520	0.5	PASS
	Ant1	2452	35.120	2434.480	2469.600	0.5	PASS
	Ant2	2452	35.040	2434.480	2469.520	0.5	PASS

Test Graphs

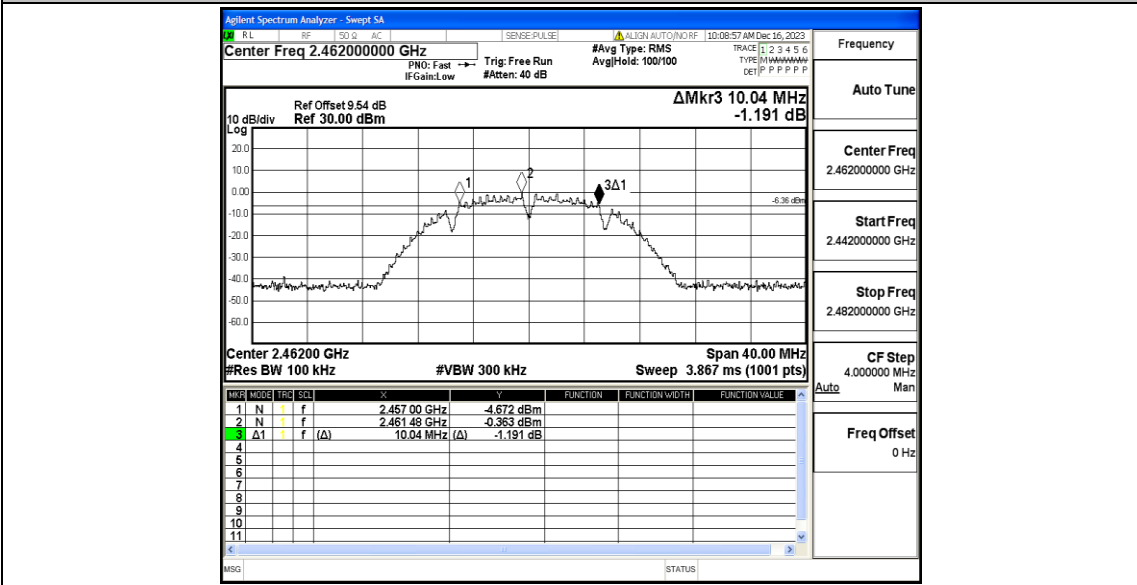




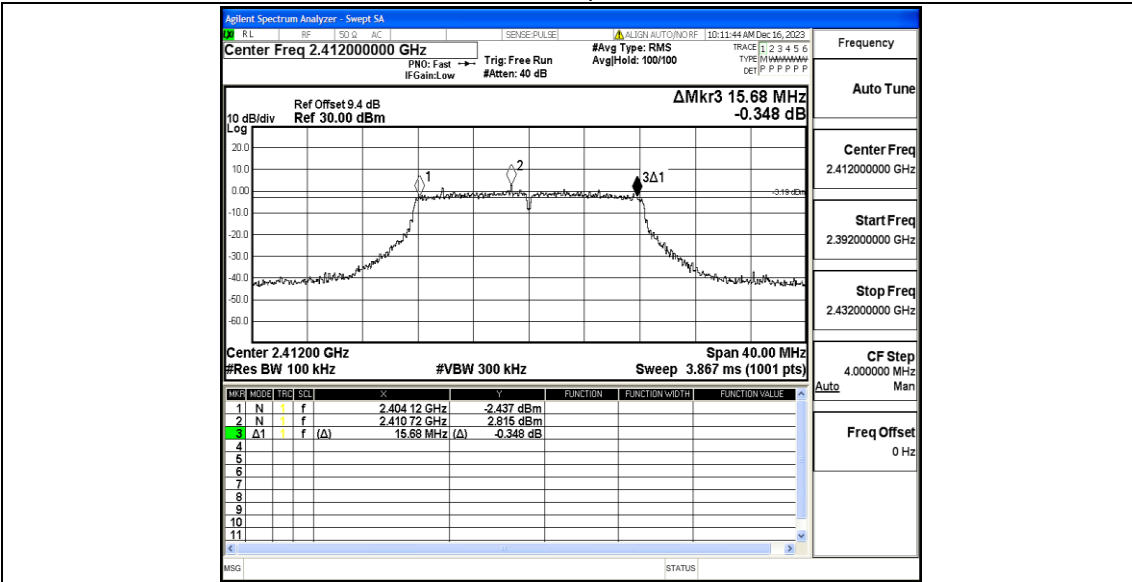
11B\_Ant1\_2462



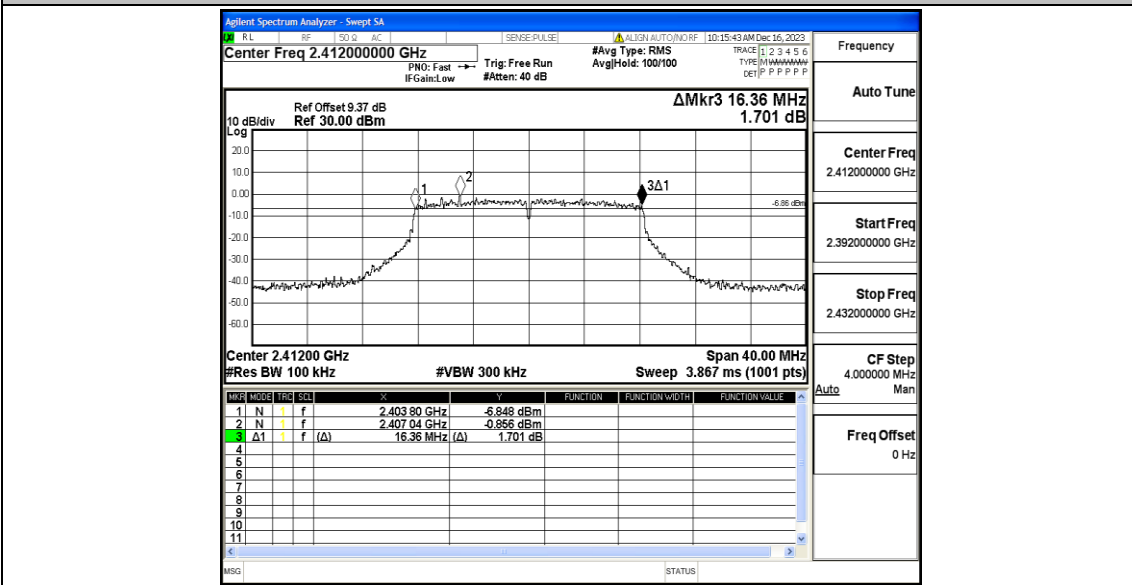
11B\_Ant2\_2462



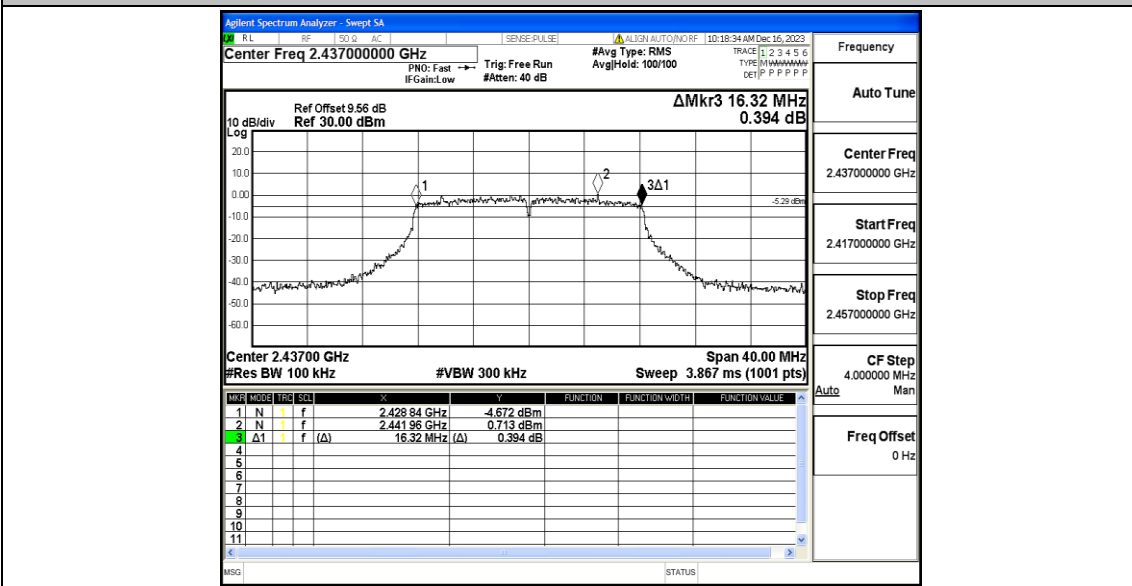
11G\_Ant1\_2412



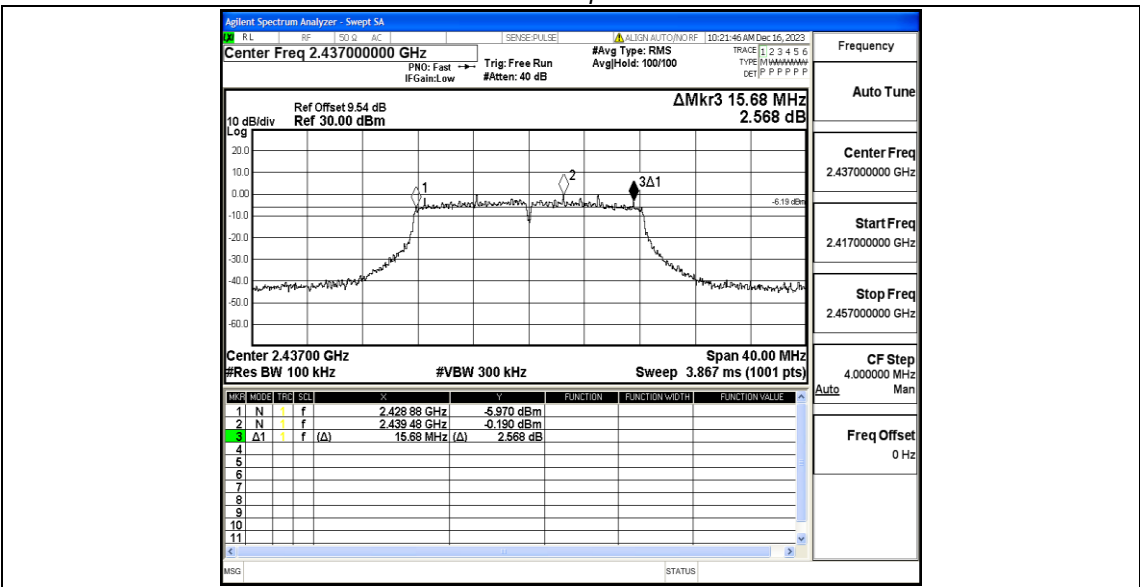
11G\_Ant2\_2412



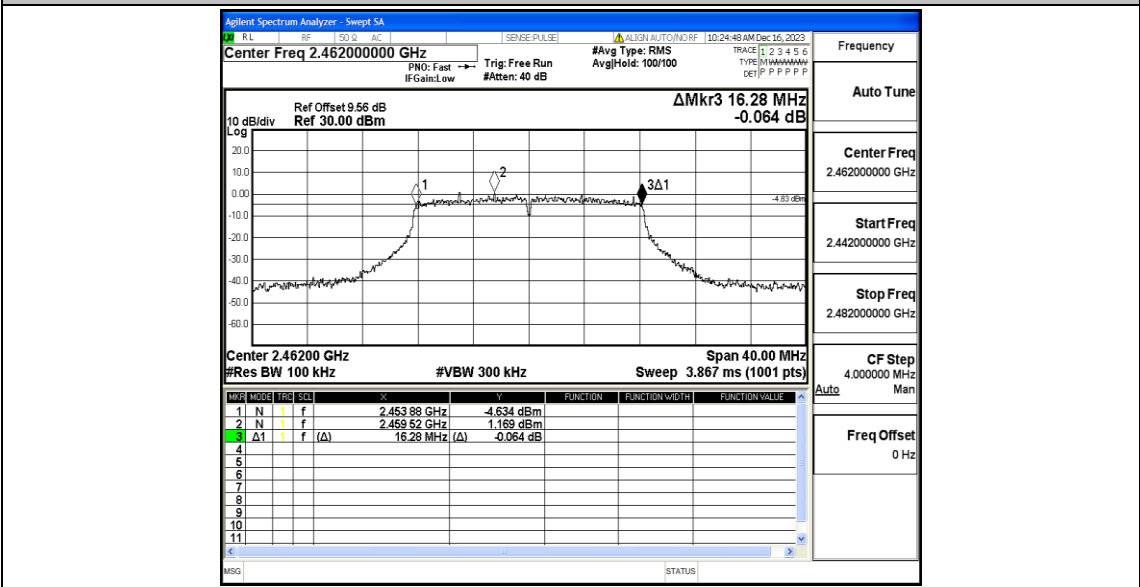
11G\_Ant1\_2437



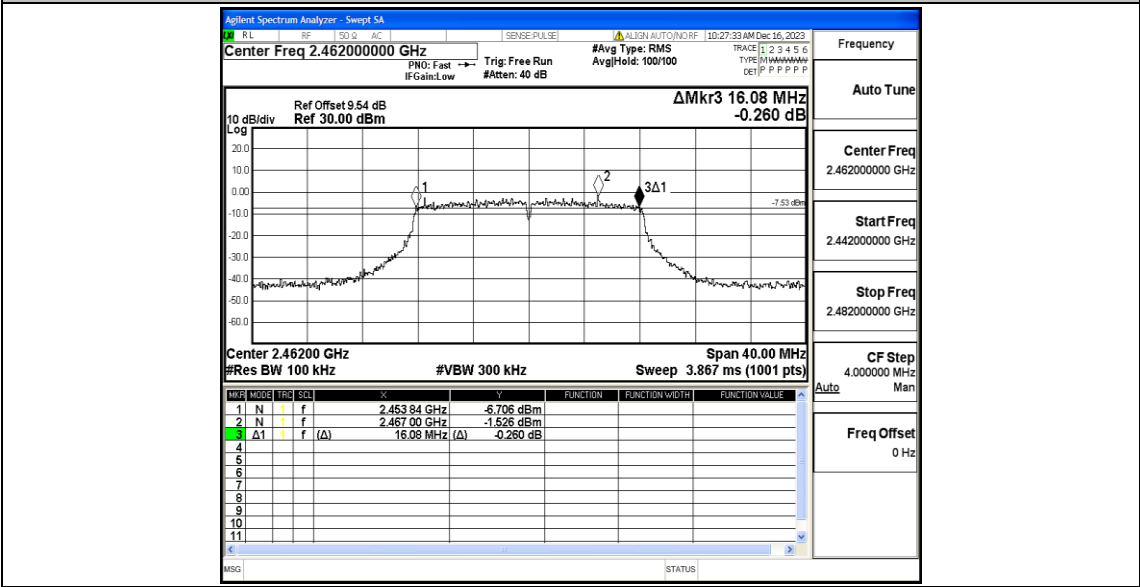
11G\_Ant2\_2437



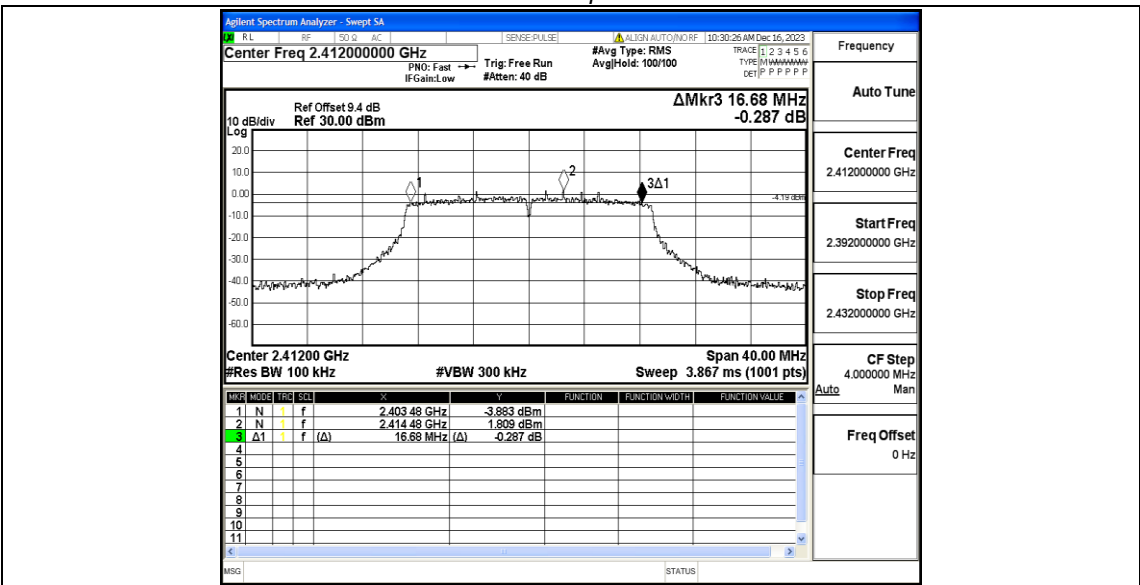
11G\_Ant1\_2462



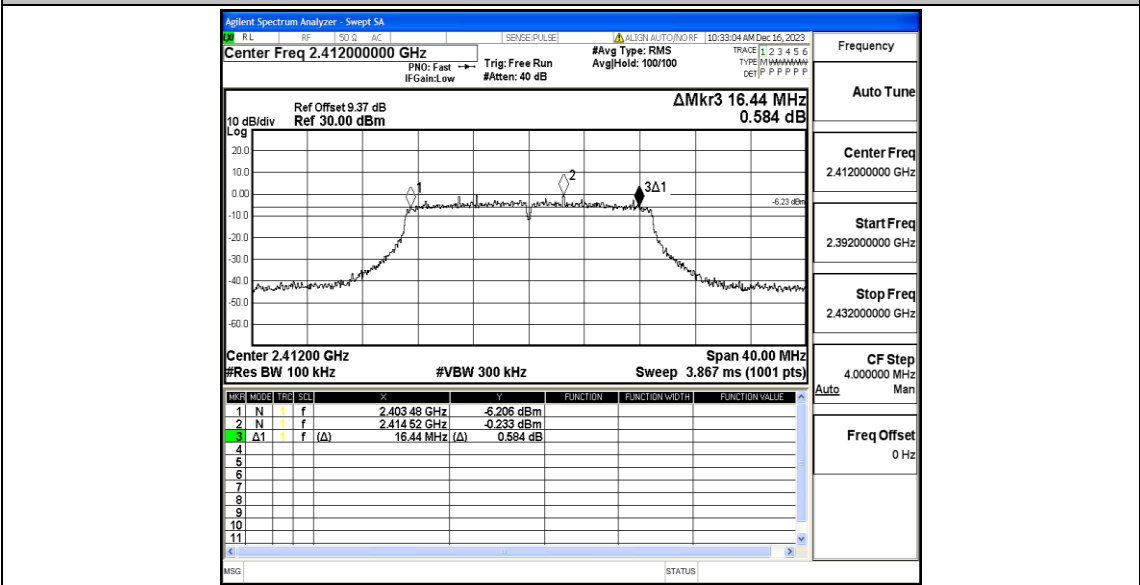
11G\_Ant2\_2462



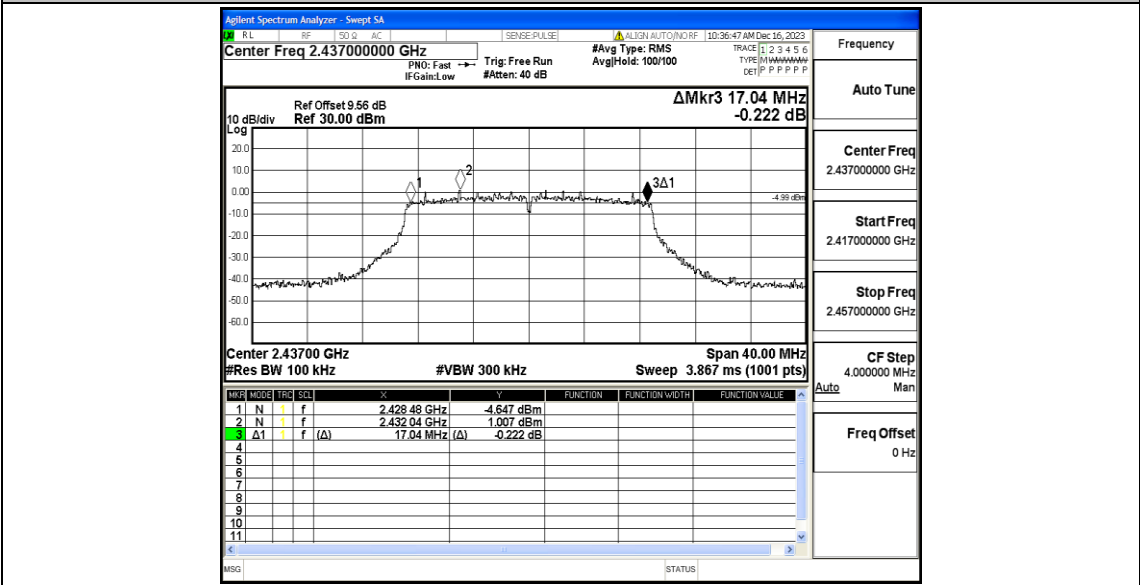
11N20MIMO\_Ant1\_2412



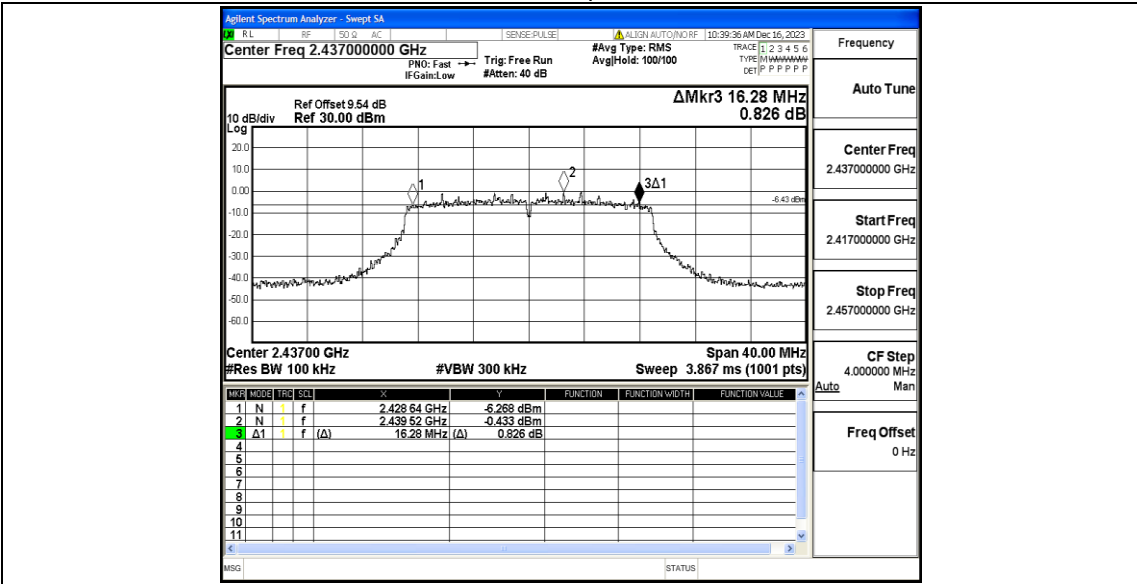
11N20MIMO\_Ant2\_2412



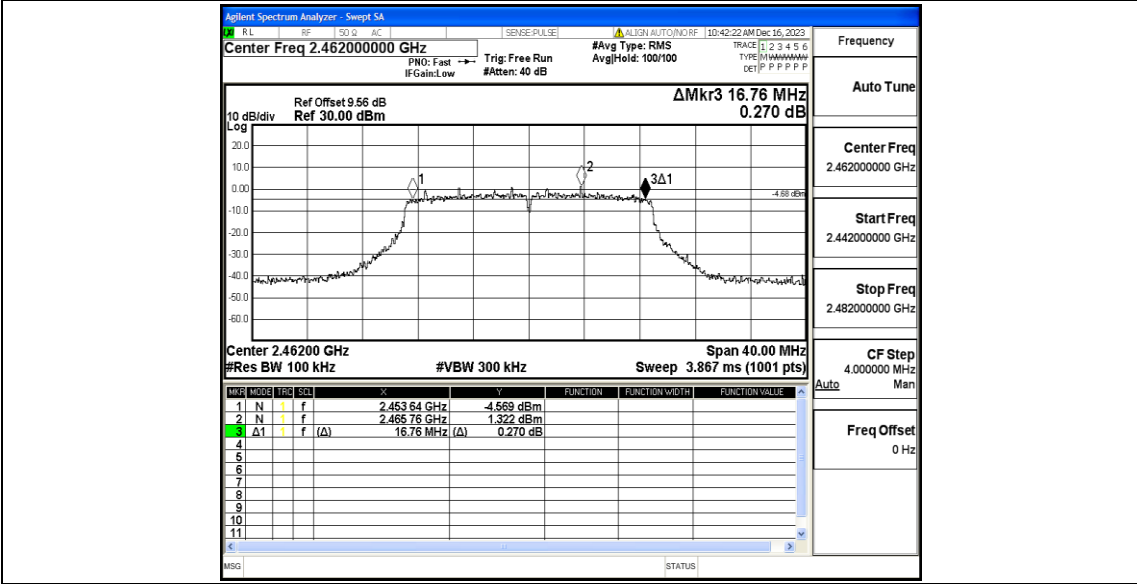
11N20MIMO\_Ant1\_2437



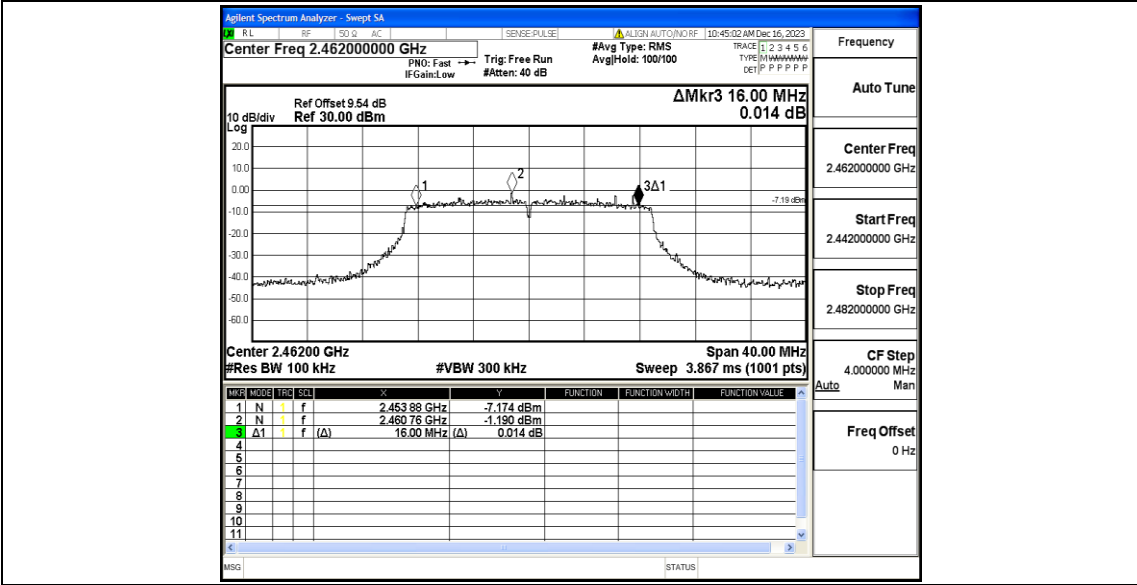
11N20MIMO\_Ant2\_2437



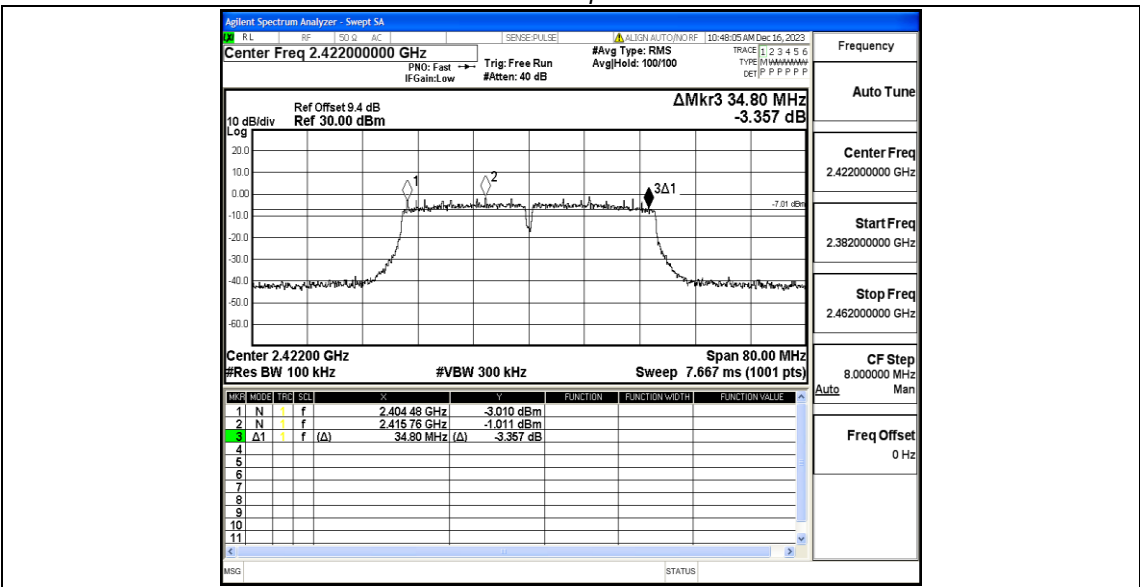
11N20MIMO\_Ant1\_2462



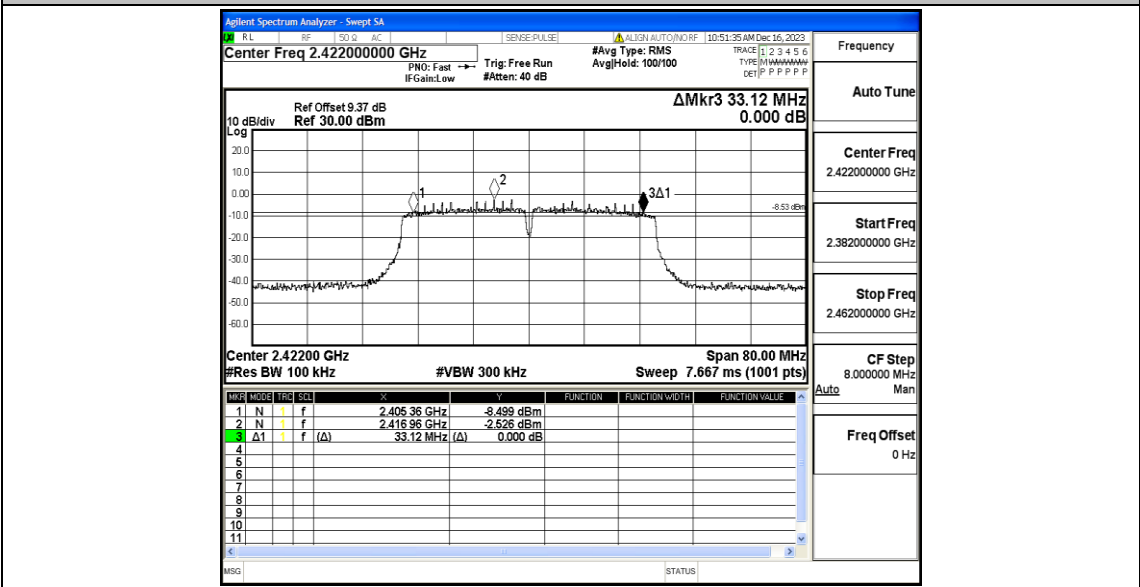
11N20MIMO\_Ant2\_2462



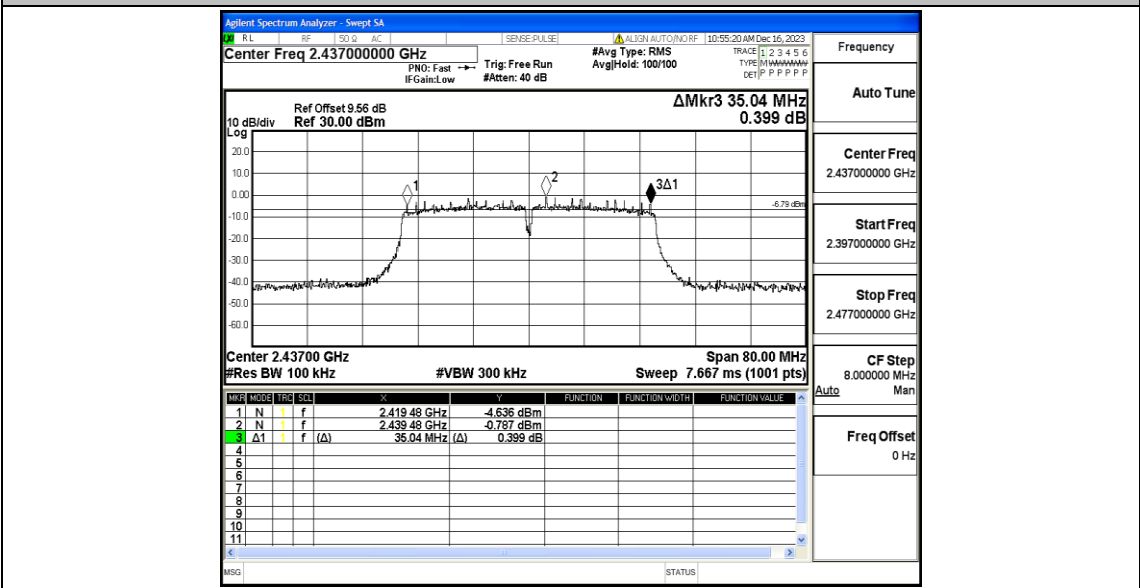
11N40MIMO\_Ant1\_2422



11N40MIMO\_Ant2\_2422

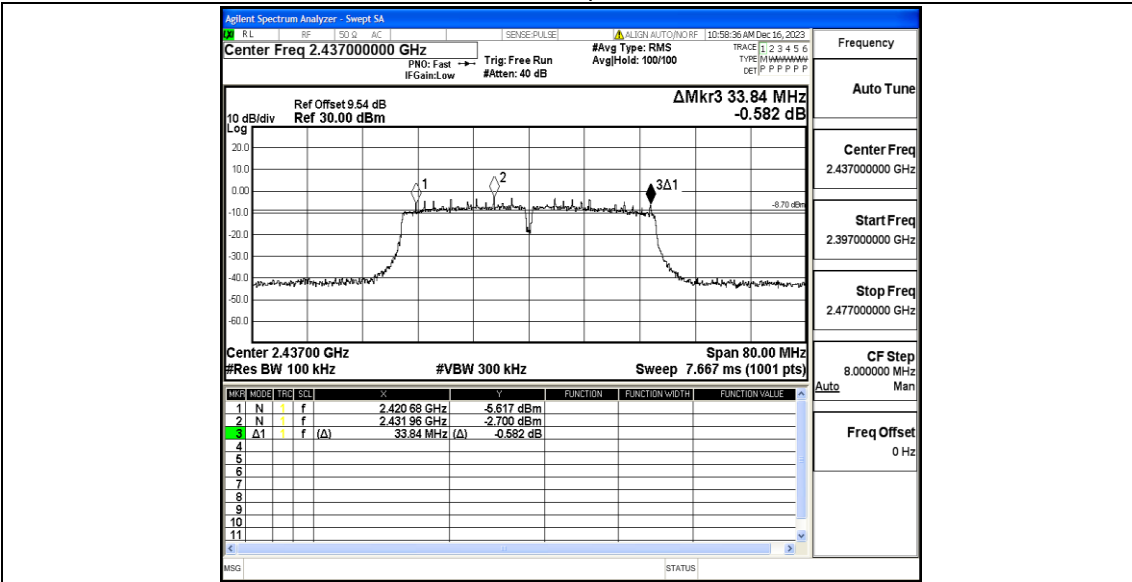


11N40MIMO\_Ant1\_2437

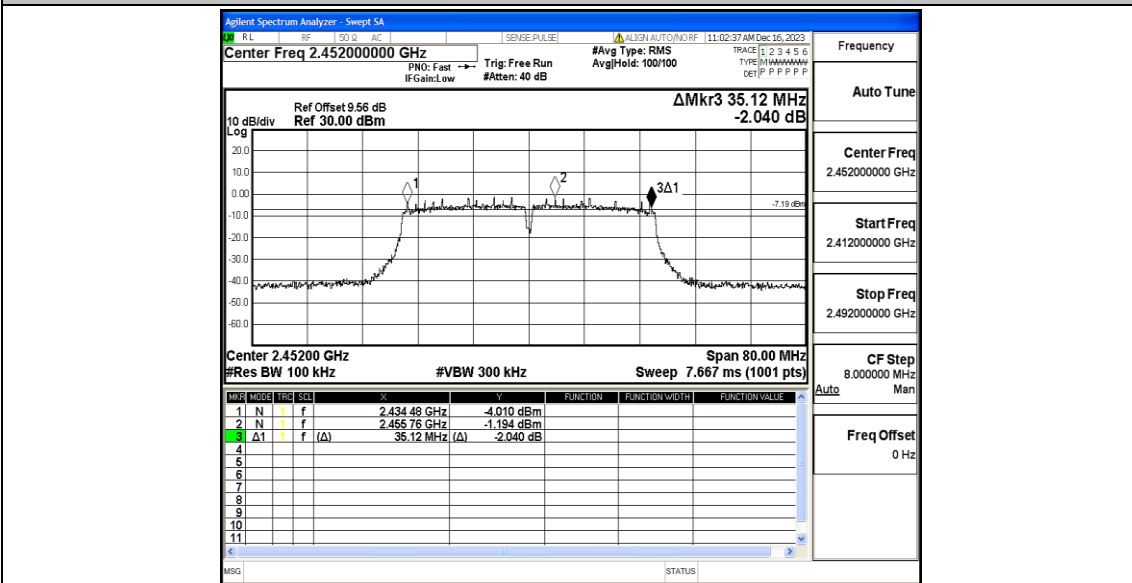


11N40MIMO\_Ant2\_2437

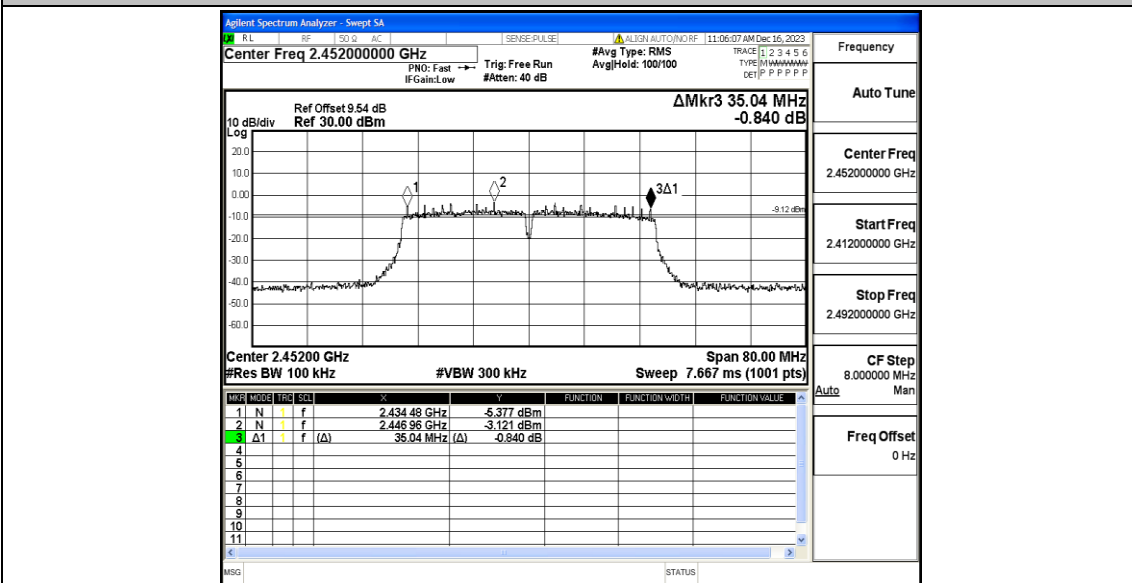




11N40MIMO\_Ant1\_2452



11N40MIMO\_Ant2\_2452

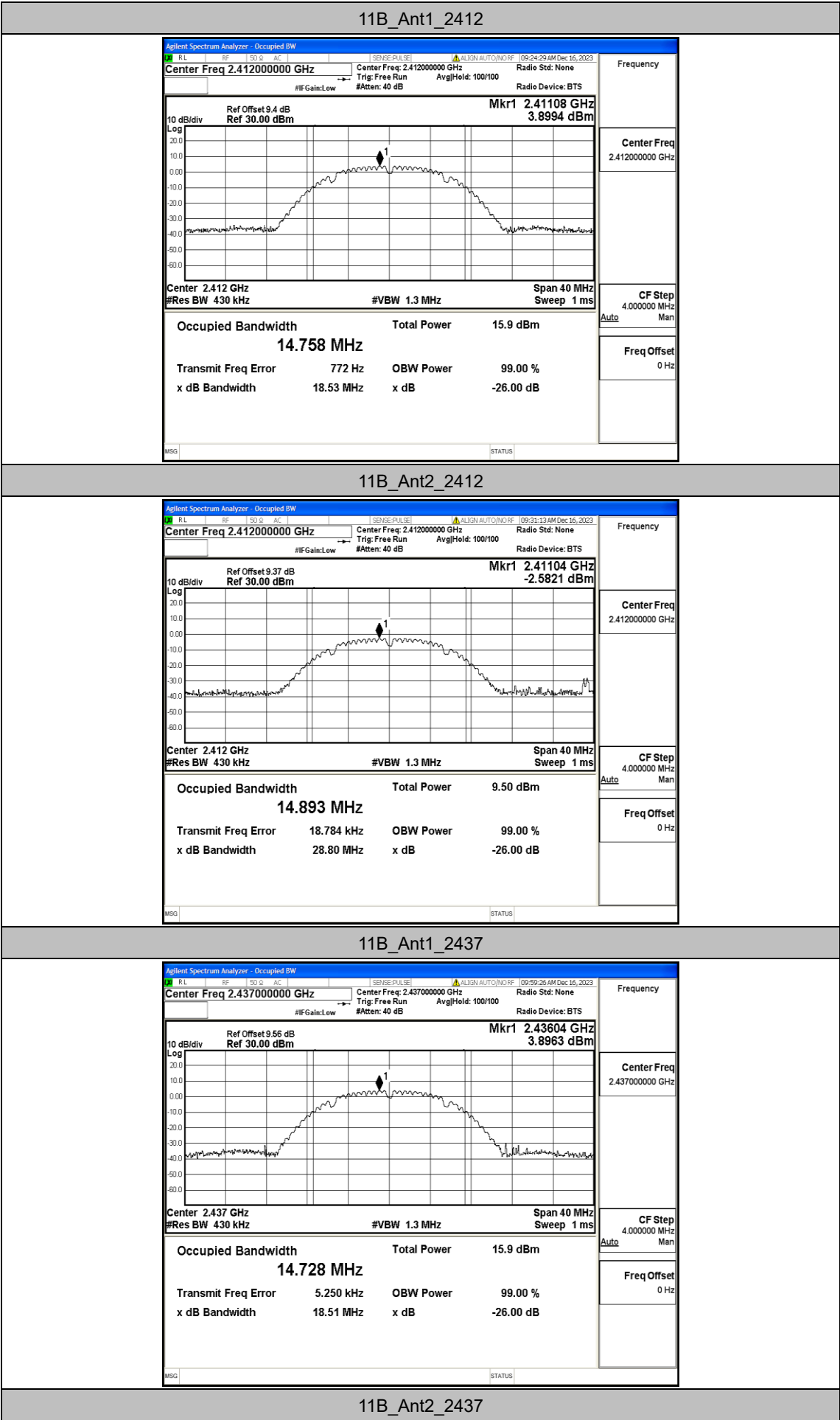


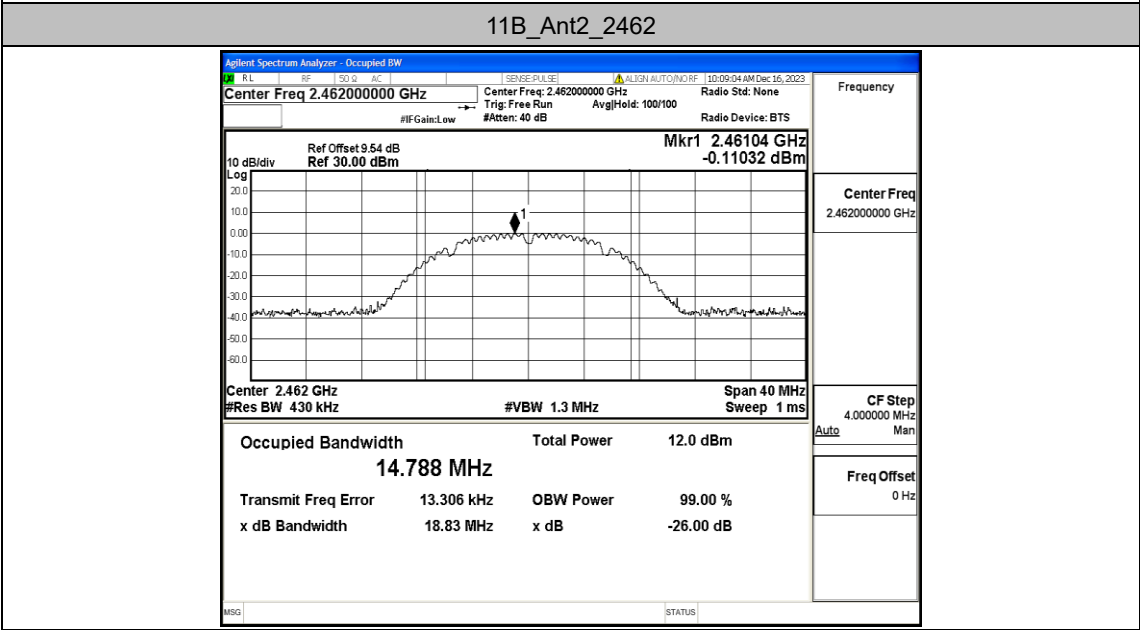
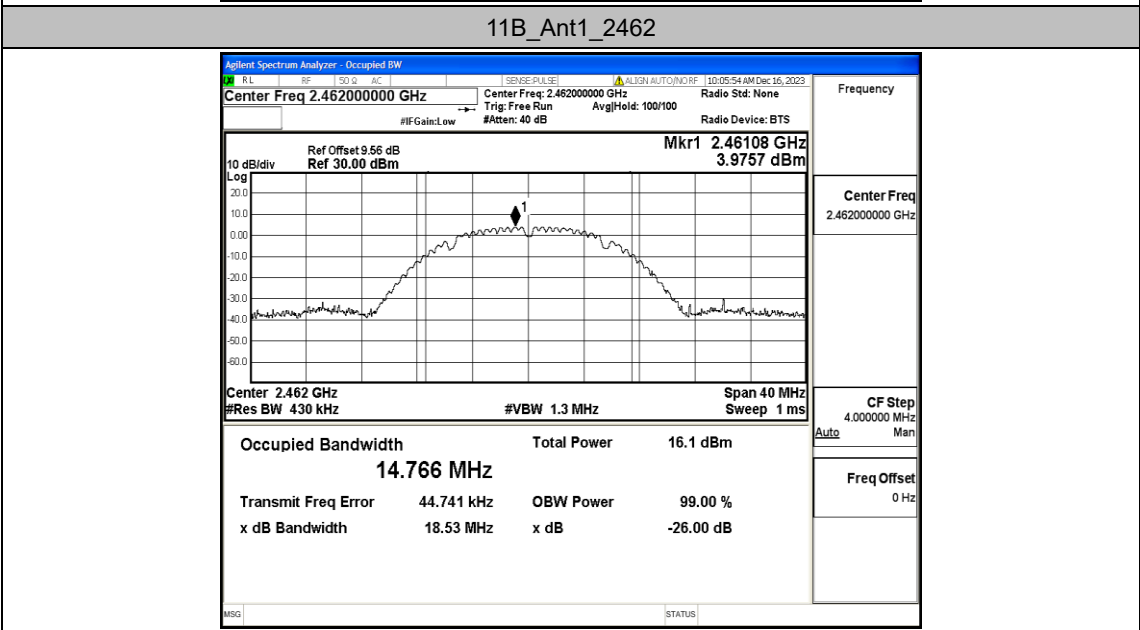
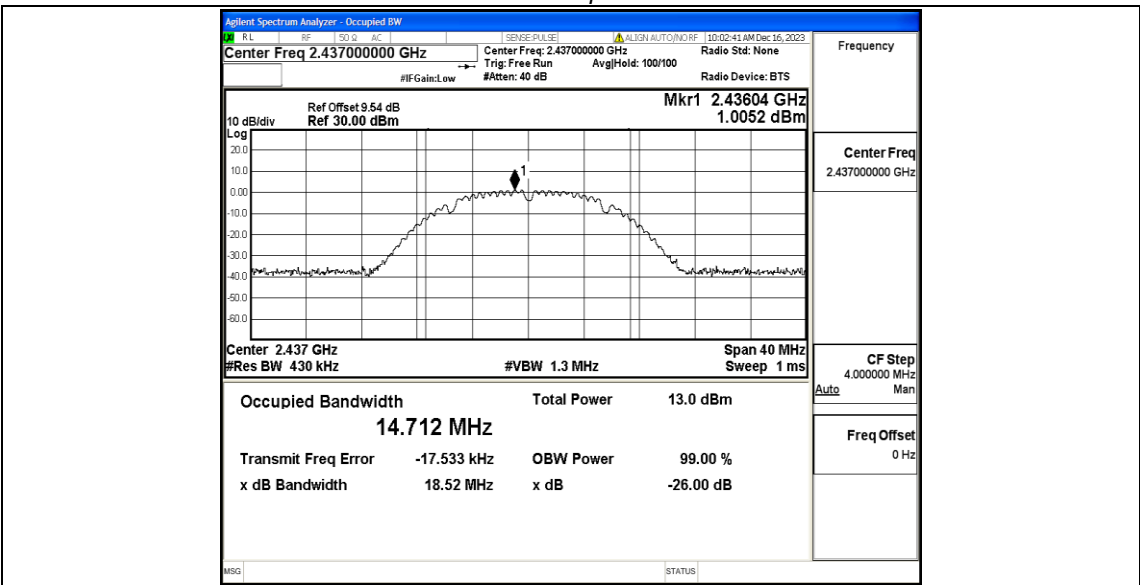
## Appendix B: Occupied Channel Bandwidth

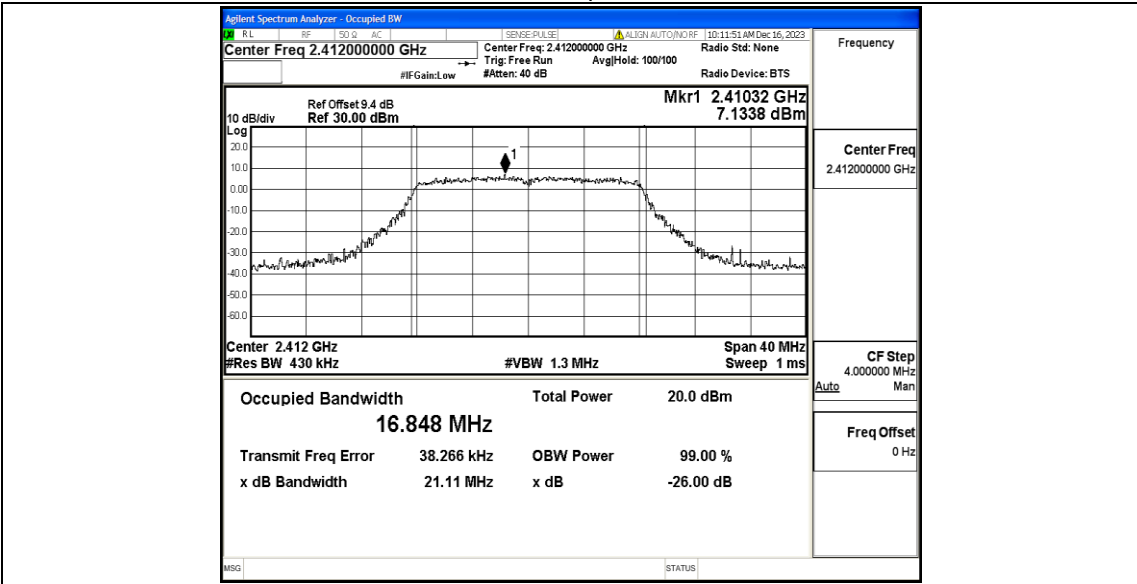
### Test Result

TestMode	Antenna	Channel	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant1	2412	14.758	2404.6218	2419.3798	---	---
	Ant2	2412	14.893	2404.5723	2419.4653	---	---
	Ant1	2437	14.728	2429.6413	2444.3693	---	---
	Ant2	2437	14.712	2429.6265	2444.3385	---	---
	Ant1	2462	14.766	2454.6617	2469.4277	---	---
	Ant2	2462	14.788	2454.6193	2469.4073	---	---
11G	Ant1	2412	16.848	2403.6143	2420.4623	---	---
	Ant2	2412	16.647	2403.7124	2420.3594	---	---
	Ant1	2437	16.769	2428.6552	2445.4242	---	---
	Ant2	2437	16.599	2428.7472	2445.3462	---	---
	Ant1	2462	16.725	2453.6822	2470.4072	---	---
	Ant2	2462	16.625	2453.7089	2470.3339	---	---
11N20MIMO	Ant1	2412	17.827	2403.1039	2420.9309	---	---
	Ant2	2412	17.794	2403.1425	2420.9365	---	---
	Ant1	2437	17.811	2428.1438	2445.9548	---	---
	Ant2	2437	17.837	2428.1060	2445.9430	---	---
	Ant1	2462	17.878	2453.0855	2470.9635	---	---
	Ant2	2462	17.851	2453.0852	2470.9362	---	---
11N40MIMO	Ant1	2422	36.256	2403.9221	2440.1781	---	---
	Ant2	2422	36.202	2403.9187	2440.1207	---	---
	Ant1	2437	36.202	2418.9984	2455.2004	---	---
	Ant2	2437	36.274	2418.8924	2455.1664	---	---
	Ant1	2452	36.393	2433.8205	2470.2135	---	---
	Ant2	2452	36.236	2433.9260	2470.1620	---	---

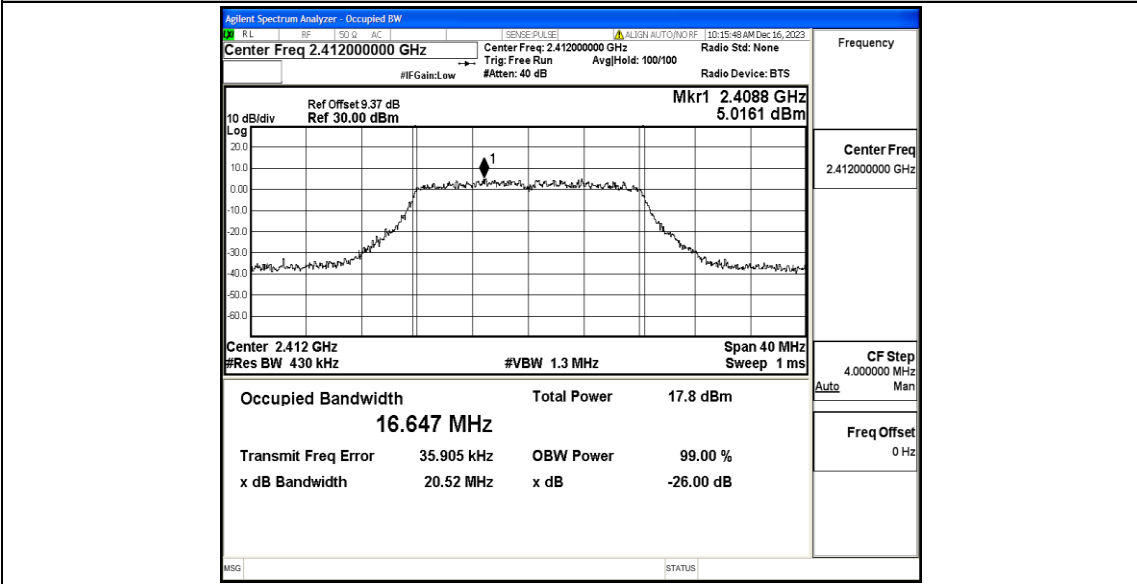
Test Graphs



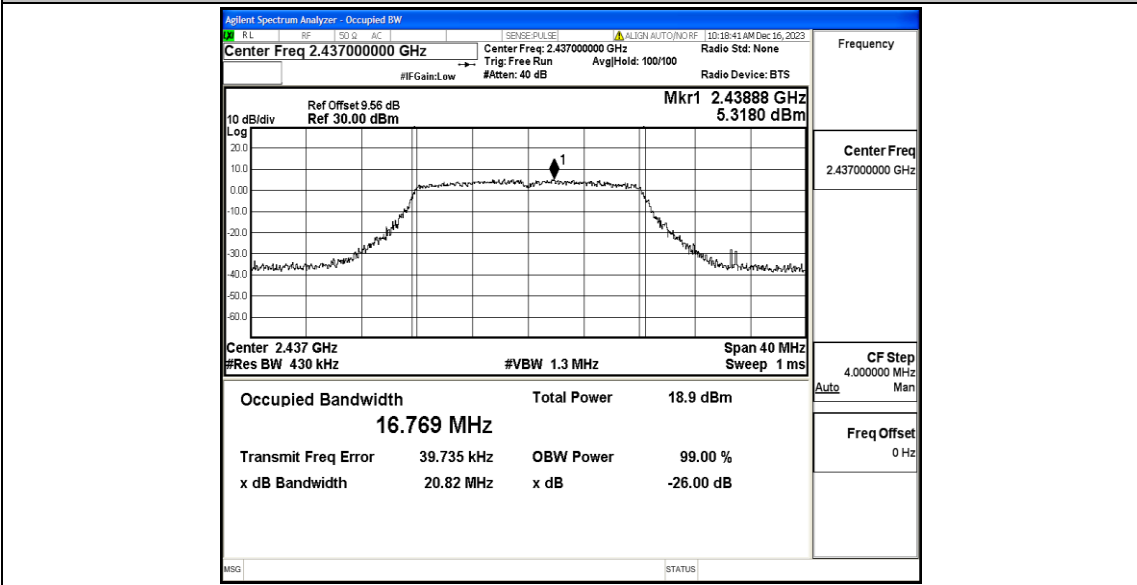




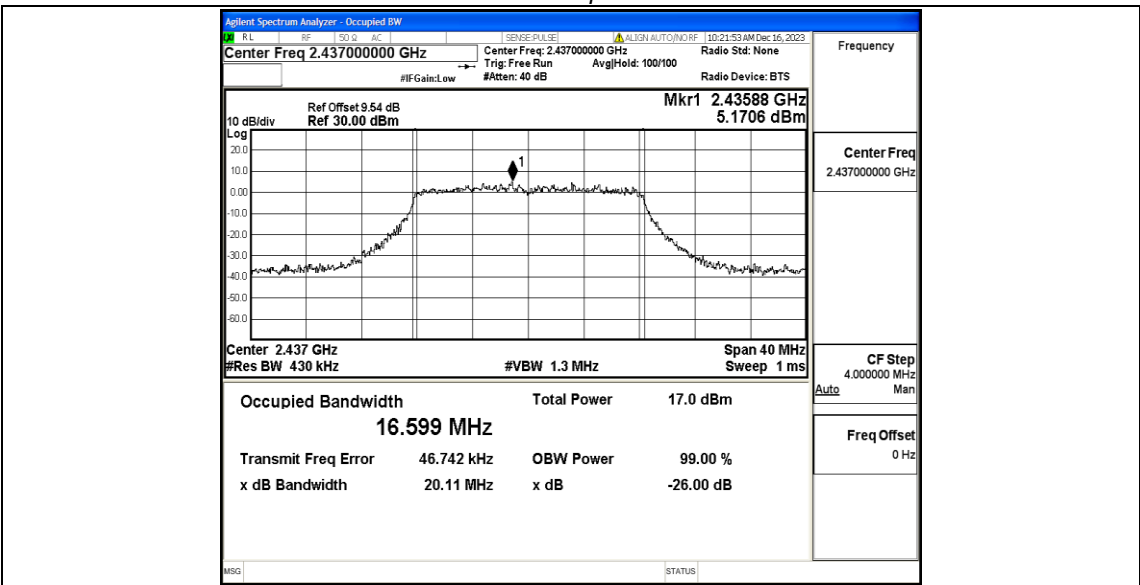
11G\_Ant2\_2412



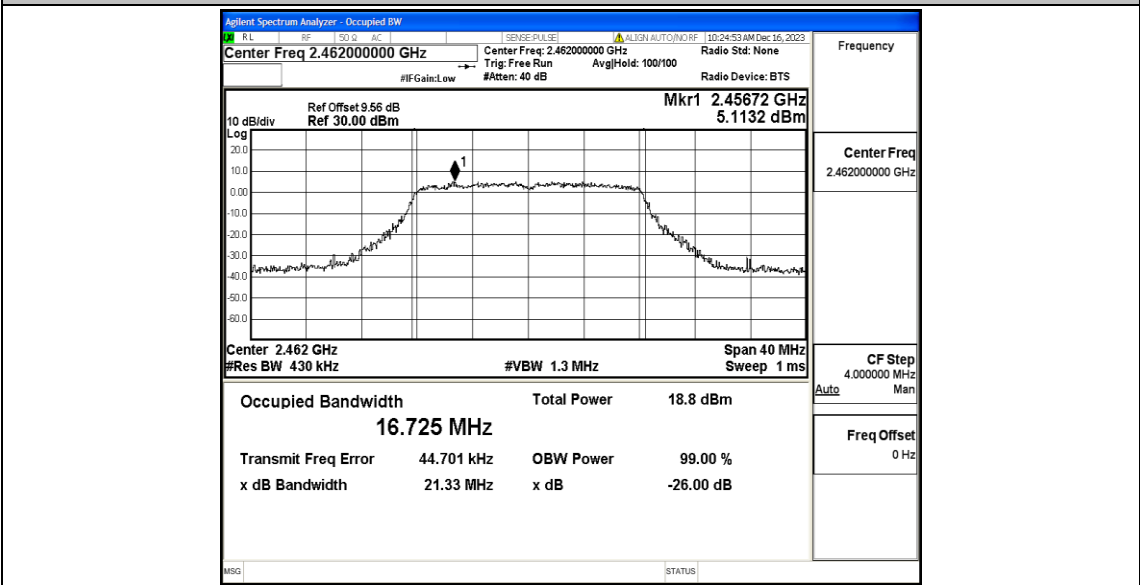
11G\_Ant1\_2437



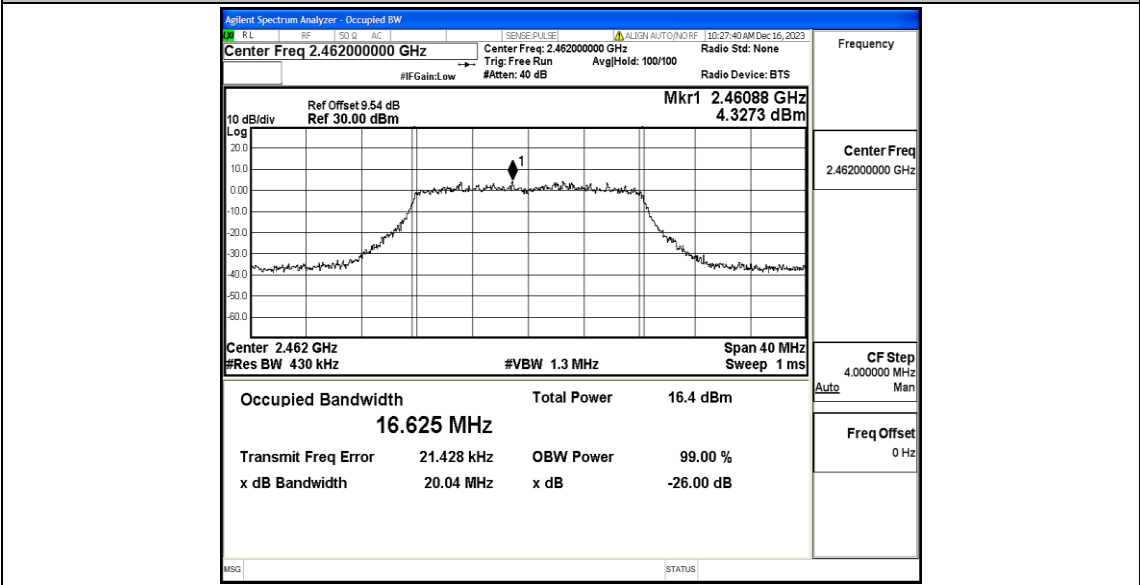
11G\_Ant2\_2437



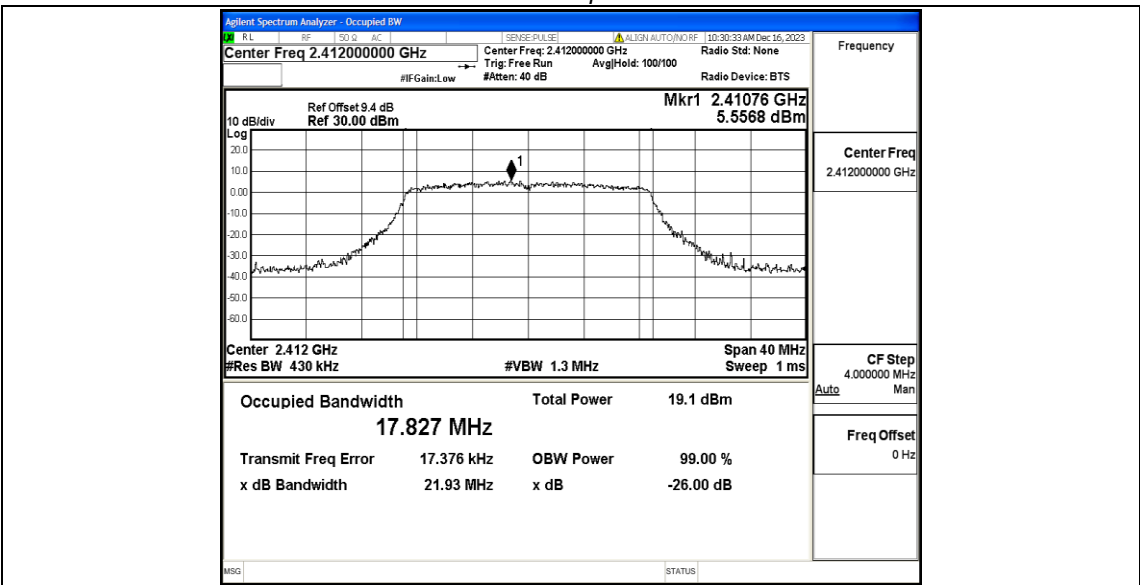
11G\_Ant1\_2462



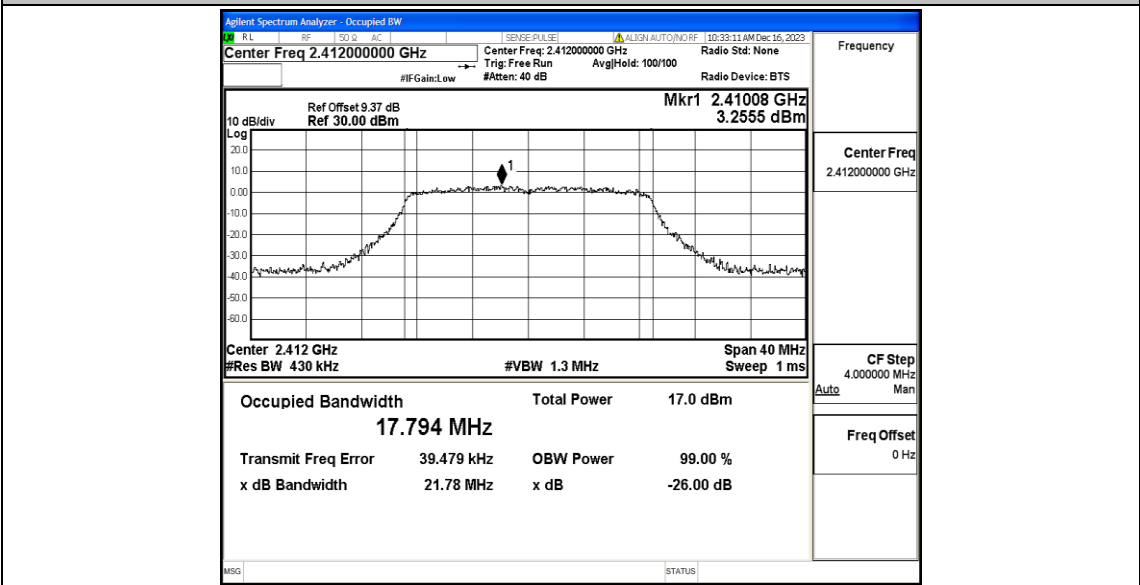
11G\_Ant2\_2462



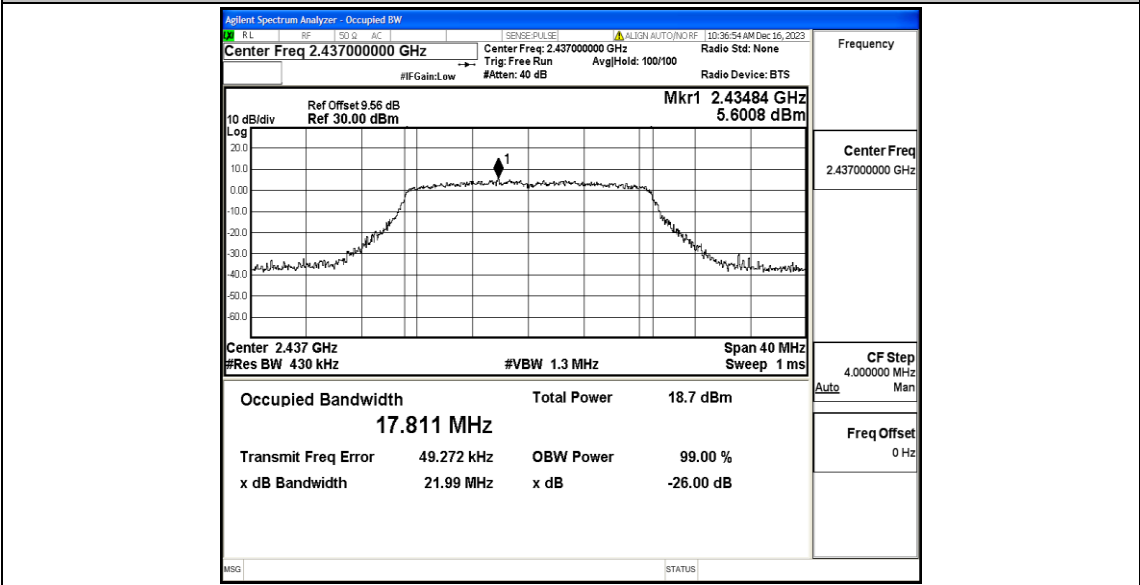
11N20MIMO\_Ant1\_2412



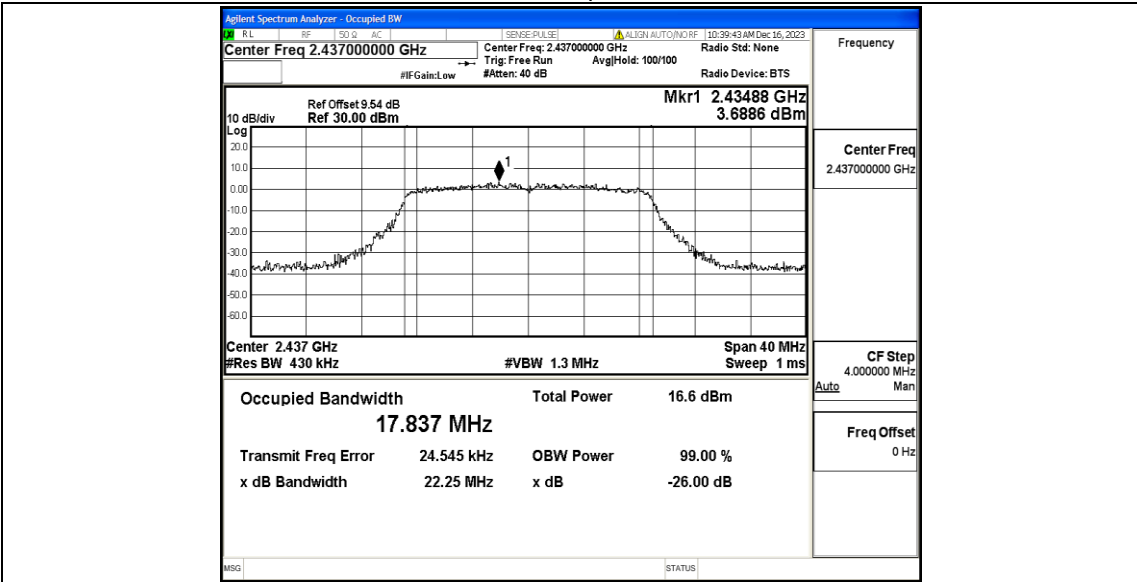
11N20MIMO\_Ant2\_2412



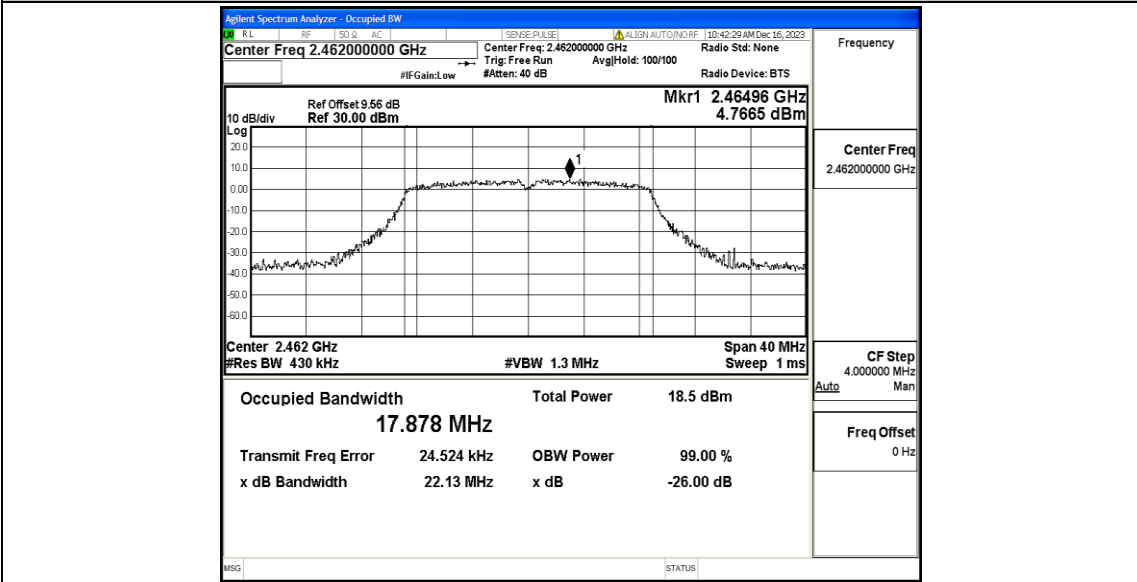
11N20MIMO\_Ant1\_2437



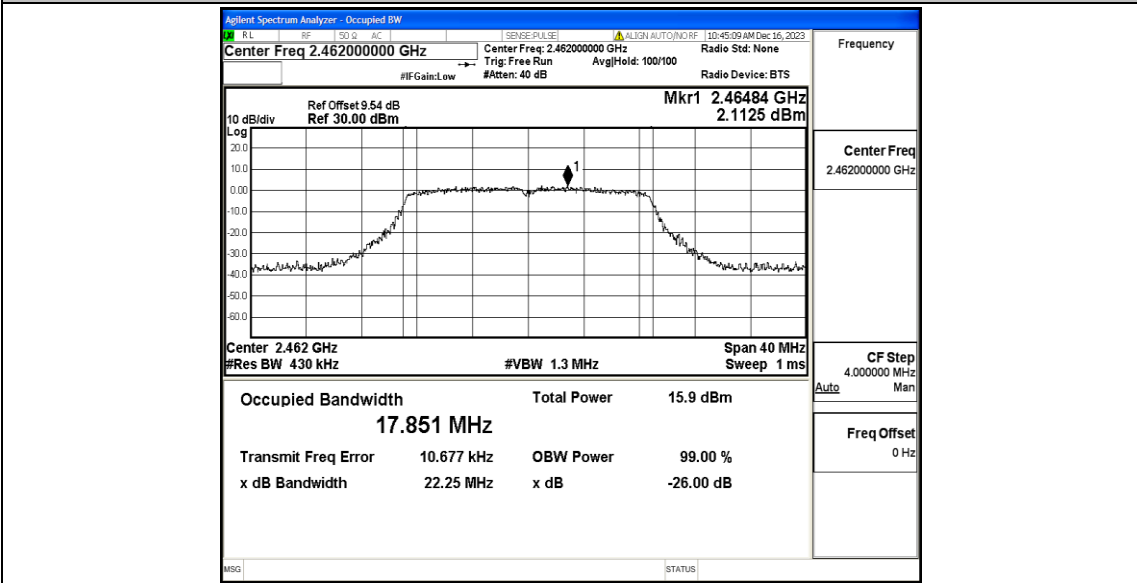
11N20MIMO\_Ant2\_2437



11N20MIMO\_Ant1\_2462

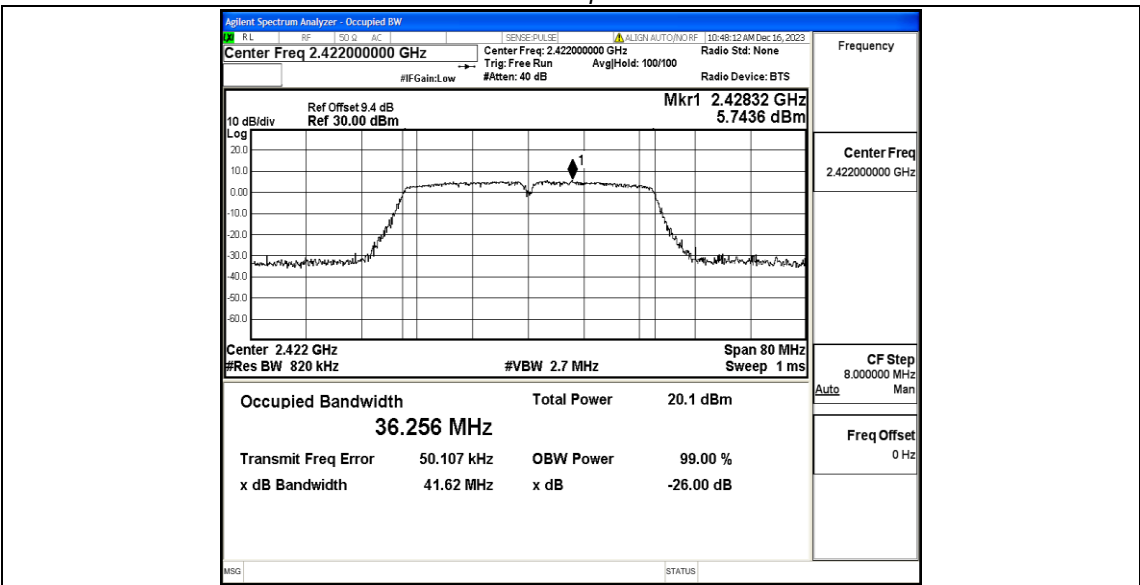


11N20MIMO\_Ant2\_2462

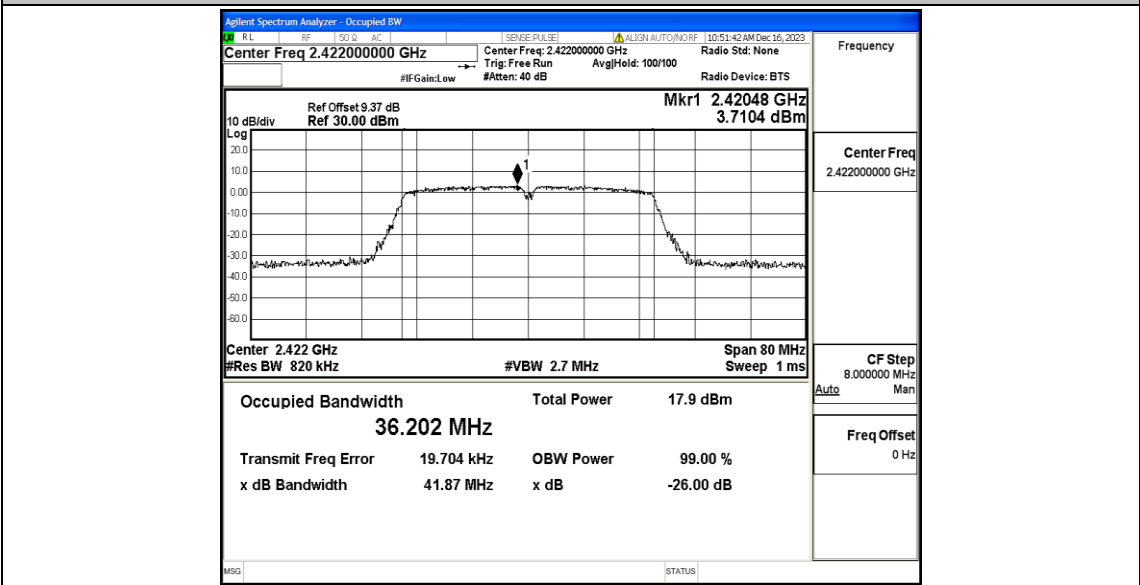


11N40MIMO\_Ant1\_2422

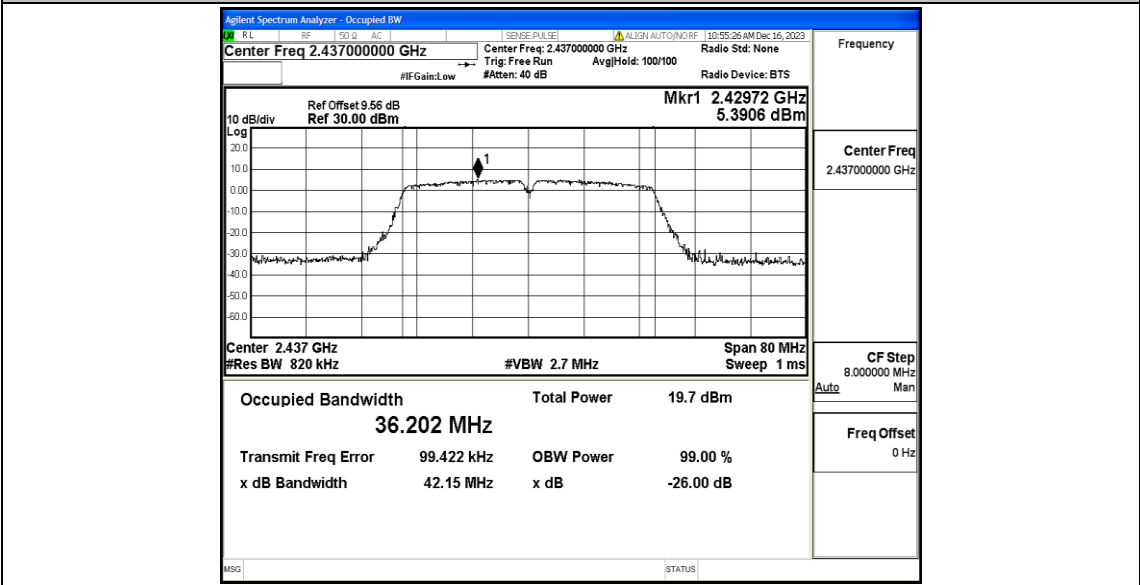




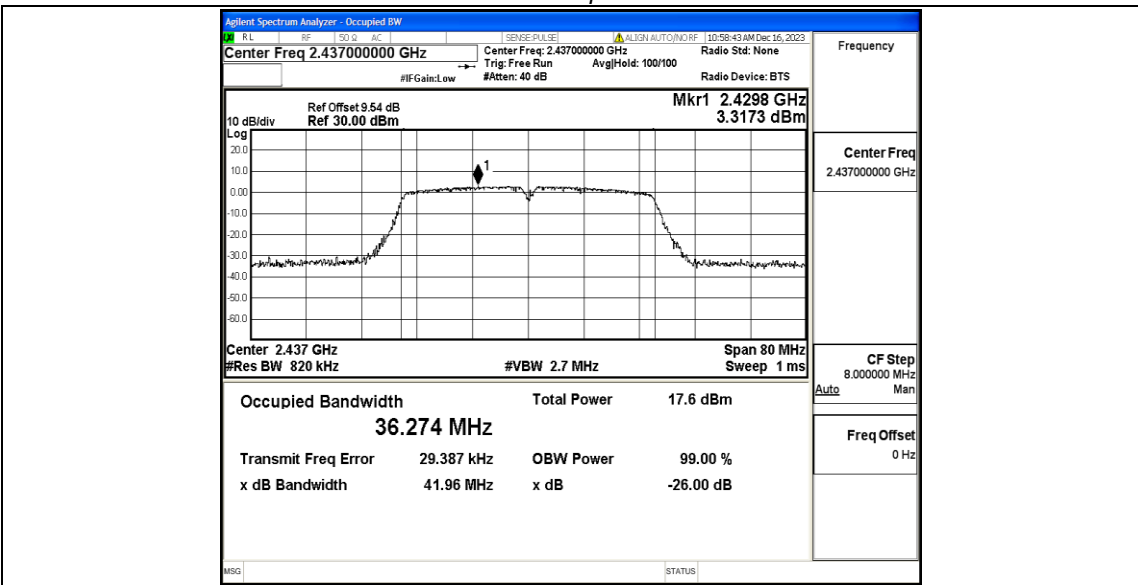
11N40MIMO\_Ant2\_2422



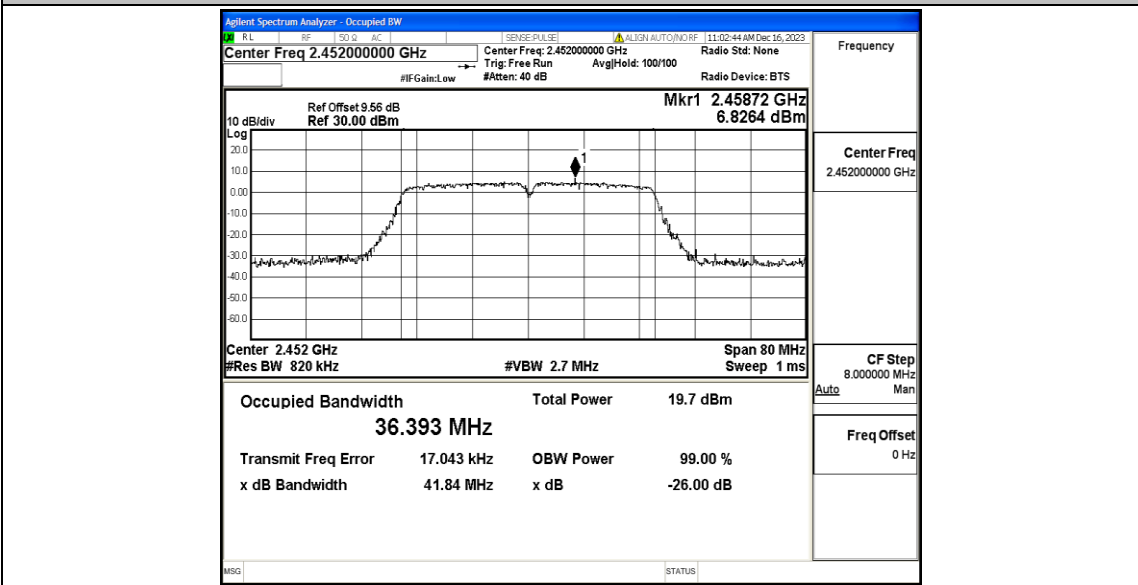
11N40MIMO\_Ant1\_2437



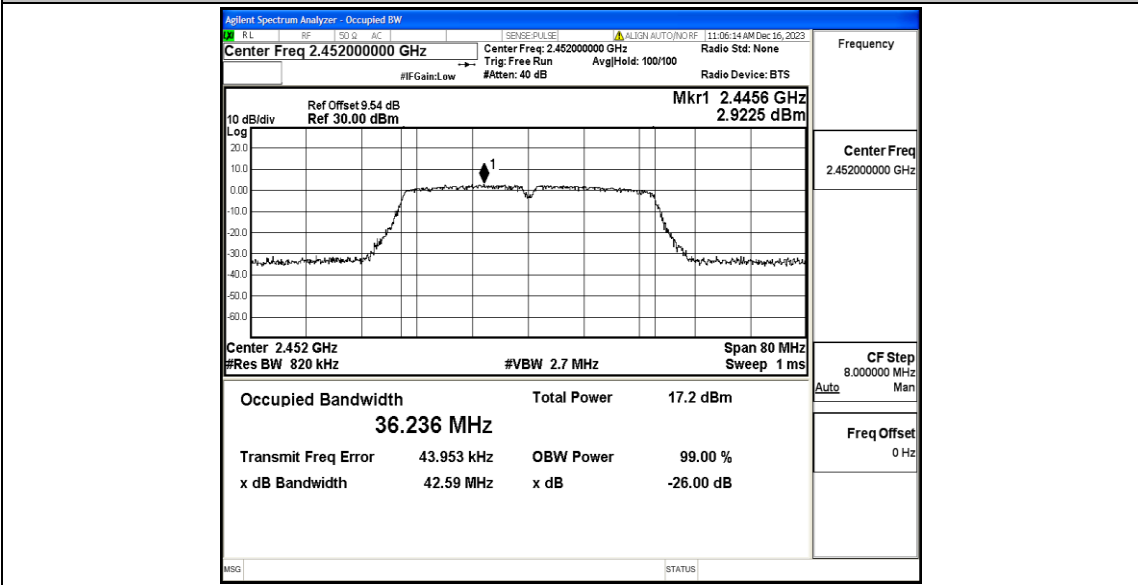
11N40MIMO\_Ant2\_2437



11N40MIMO\_Ant1\_2452



11N40MIMO\_Ant2\_2452



## Appendix C: Maximum conducted output power

### Test Result

TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
11B	Ant1	2412	13.01	≤30.00	PASS
	Ant2	2412	10.80	≤30.00	PASS
	Ant1	2437	12.97	≤30.00	PASS
	Ant2	2437	10.07	≤30.00	PASS
	Ant1	2462	13.05	≤30.00	PASS
	Ant2	2462	9.10	≤30.00	PASS
11G	Ant1	2412	14.17	≤30.00	PASS
	Ant2	2412	11.44	≤30.00	PASS
	Ant1	2437	13.08	≤30.00	PASS
	Ant2	2437	11.06	≤30.00	PASS
	Ant1	2462	12.86	≤30.00	PASS
	Ant2	2462	10.29	≤30.00	PASS
11N20MIMO	Ant1	2412	13.25	≤30.00	PASS
	Ant2	2412	10.97	≤30.00	PASS
	total	2412	15.27	≤30.00	PASS
	Ant1	2437	12.79	≤30.00	PASS
	Ant2	2437	10.84	≤30.00	PASS
	total	2437	14.93	≤30.00	PASS
	Ant1	2462	12.54	≤30.00	PASS
	Ant2	2462	11.25	≤30.00	PASS
total	2462	14.95	≤30.00	PASS	
11N40MIMO	Ant1	2422	13.37	≤30.00	PASS
	Ant2	2422	11.30	≤30.00	PASS
	total	2422	15.47	≤30.00	PASS
	Ant1	2437	13.11	≤30.00	PASS
	Ant2	2437	11.10	≤30.00	PASS
	total	2437	15.23	≤30.00	PASS
	Ant1	2452	12.78	≤30.00	PASS
	Ant2	2452	10.24	≤30.00	PASS
	total	2452	14.70	≤30.00	PASS

Note: The Duty Cycle Factor is compensated in the test result.

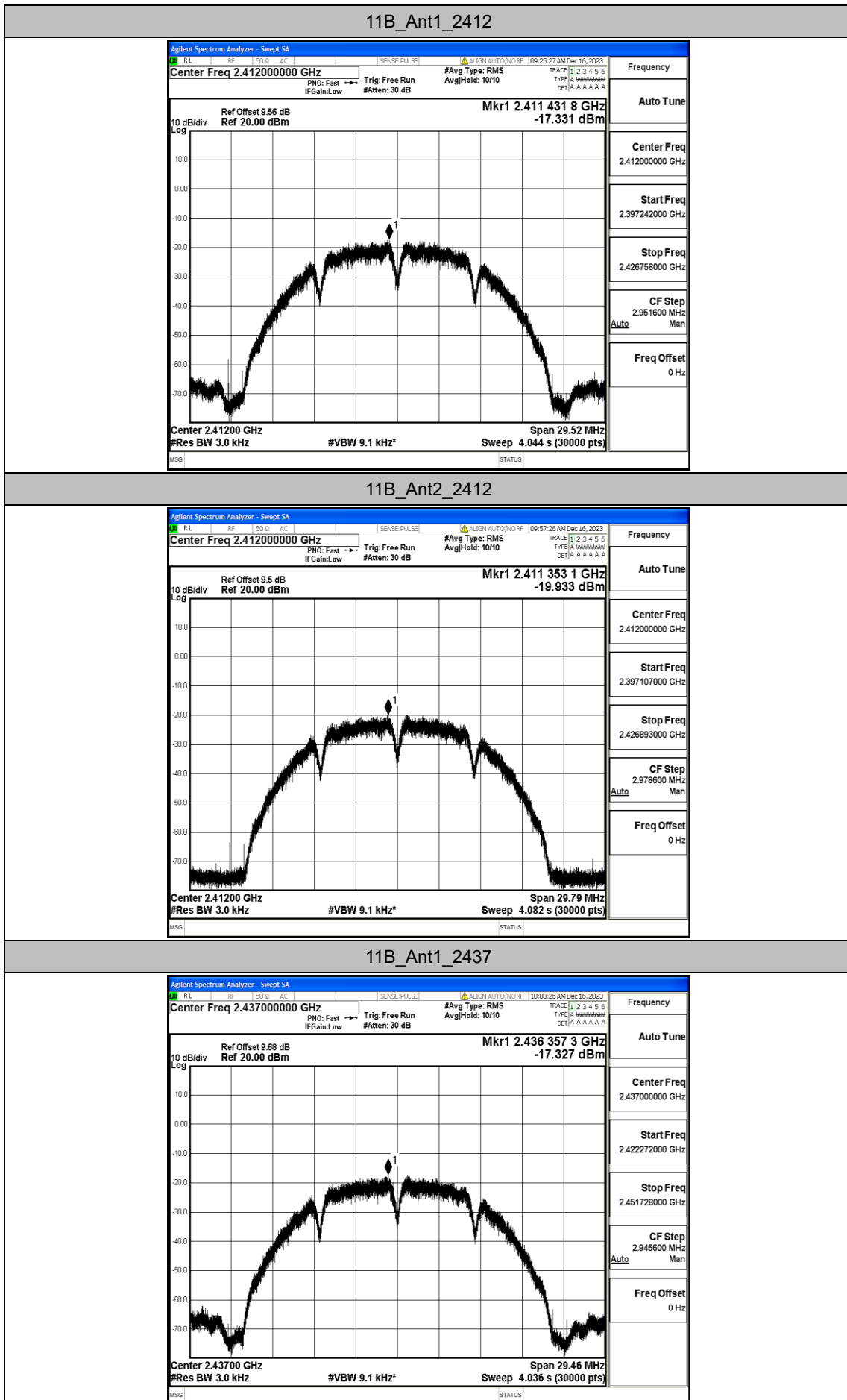
## Appendix D: Maximum power spectral density

### Test Result

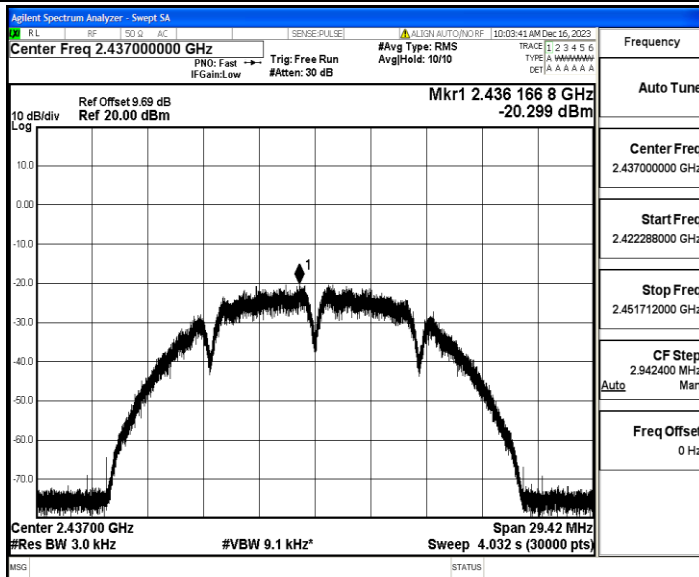
TestMode	Antenna	Channel	Result[dBm/3-100kHz]	Limit[dBm/3kHz]	Verdict
11B	Ant1	2412	-17.33	≤8.00	PASS
	Ant2	2412	-19.93	≤8.00	PASS
	Ant1	2437	-17.33	≤8.00	PASS
	Ant2	2437	-20.3	≤8.00	PASS
	Ant1	2462	-16.98	≤8.00	PASS
	Ant2	2462	-21.4	≤8.00	PASS
11G	Ant1	2412	-16.53	≤8.00	PASS
	Ant2	2412	-18.14	≤8.00	PASS
	Ant1	2437	-17.05	≤8.00	PASS
	Ant2	2437	-19.49	≤8.00	PASS
	Ant1	2462	-17.01	≤8.00	PASS
	Ant2	2462	-19.39	≤8.00	PASS
11N20MIMO	Ant1	2412	-17.29	≤8.00	PASS
	Ant2	2412	-18.53	≤8.00	PASS
	total	2412	-14.86	≤8.00	PASS
	Ant1	2437	-17.38	≤8.00	PASS
	Ant2	2437	-19.52	≤8.00	PASS
	total	2437	-15.31	≤8.00	PASS
	Ant1	2462	-17.98	≤8.00	PASS
	Ant2	2462	-19.13	≤8.00	PASS
	total	2462	-15.51	≤8.00	PASS
11N40MIMO	Ant1	2422	-19.35	≤8.00	PASS
	Ant2	2422	-21.22	≤8.00	PASS
	total	2422	-17.17	≤8.00	PASS
	Ant1	2437	-19.82	≤8.00	PASS
	Ant2	2437	-21.77	≤8.00	PASS
	total	2437	-17.68	≤8.00	PASS
	Ant1	2452	-19.36	≤8.00	PASS
	Ant2	2452	-21.38	≤8.00	PASS
	total	2452	-17.24	≤8.00	PASS

Note: The Duty Cycle Factor is compensated in the test result.

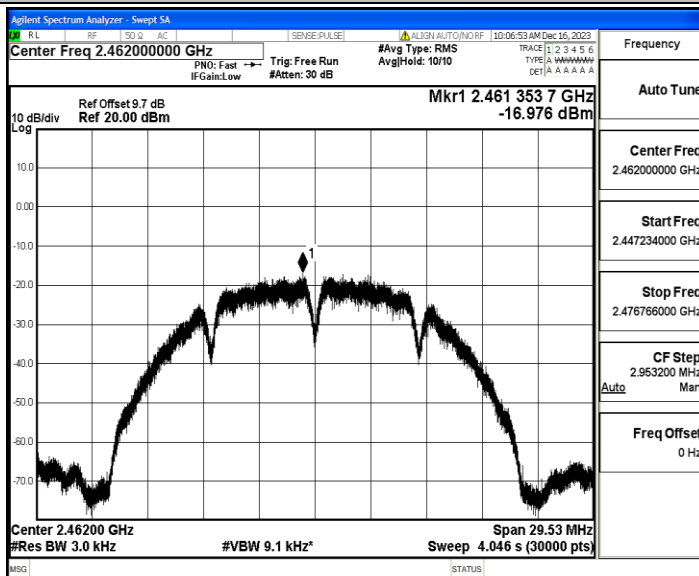
Test Graphs



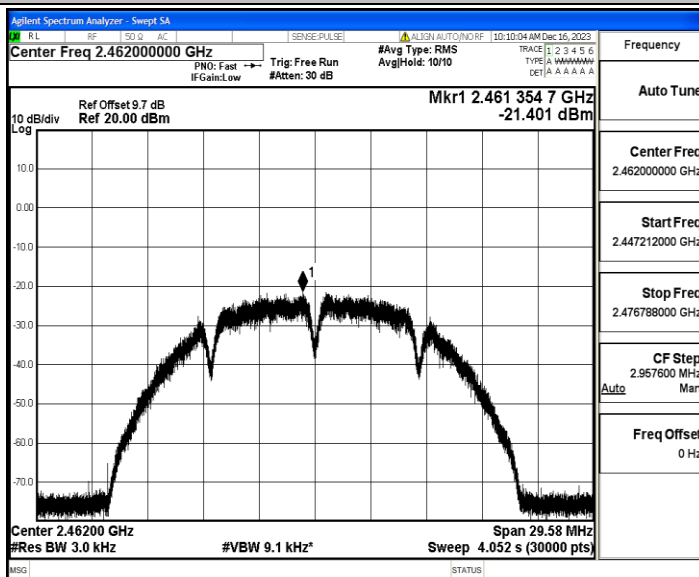
11B\_Ant2\_2437



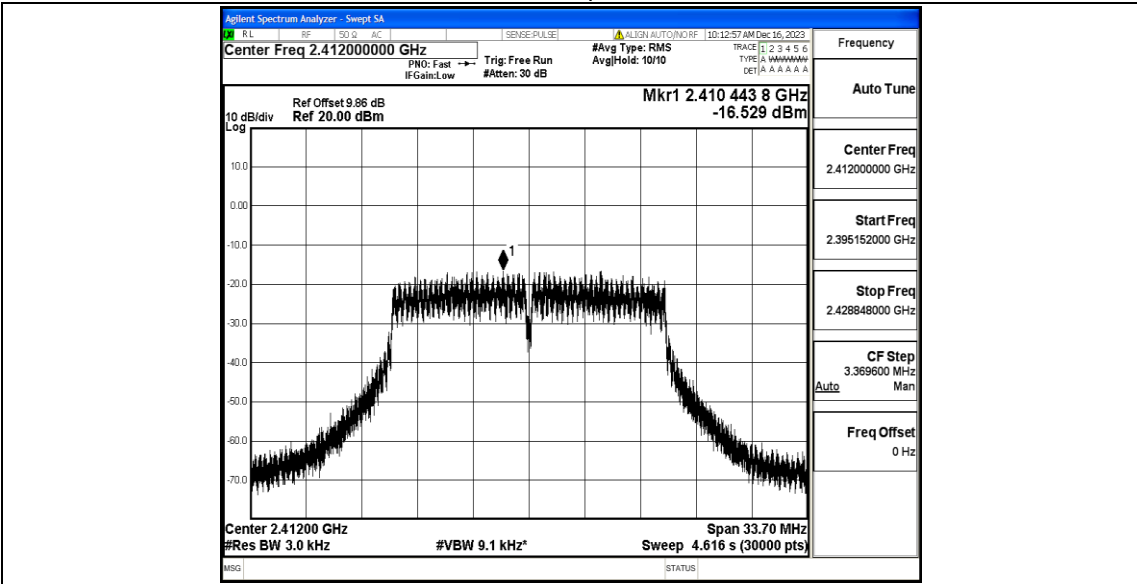
11B\_Ant1\_2462



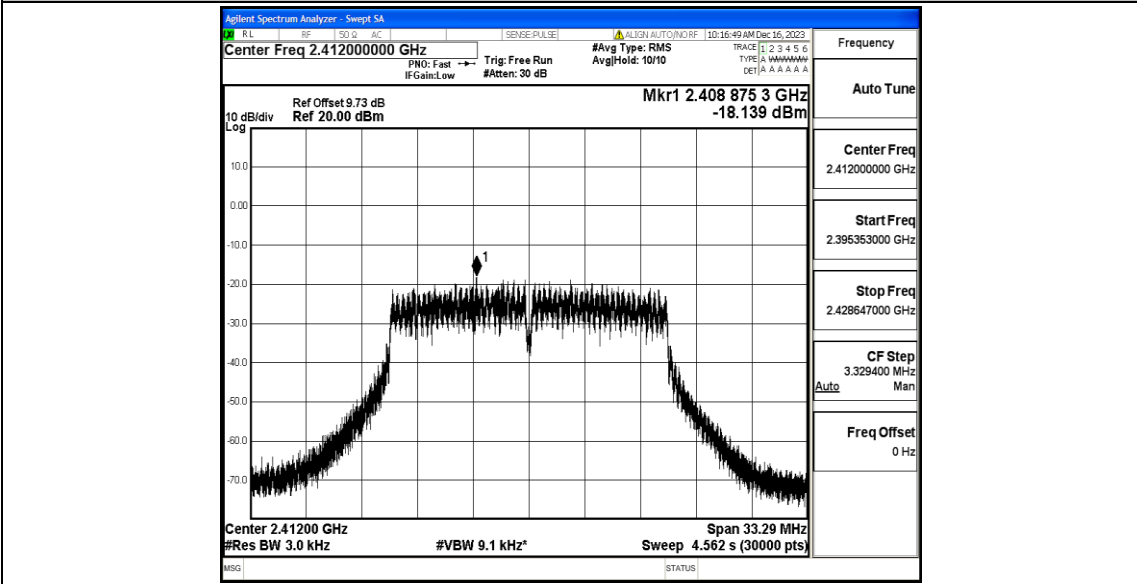
11B\_Ant2\_2462



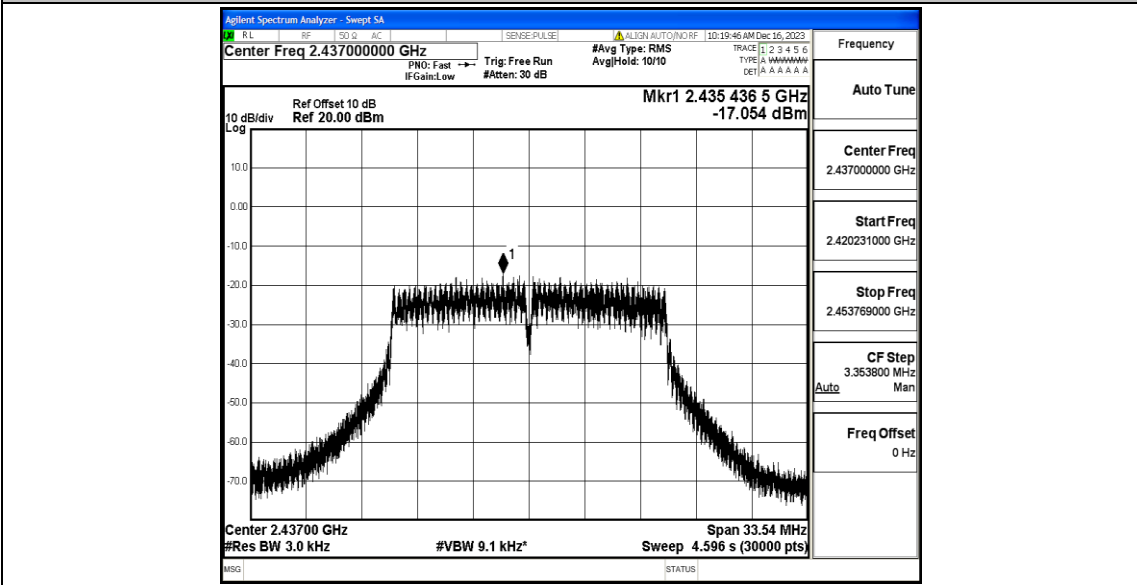
11G\_Ant1\_2412



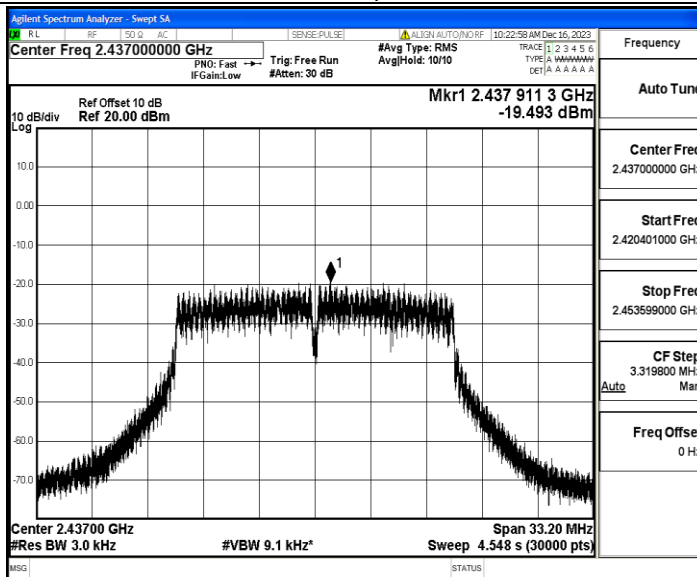
11G\_Ant2\_2412



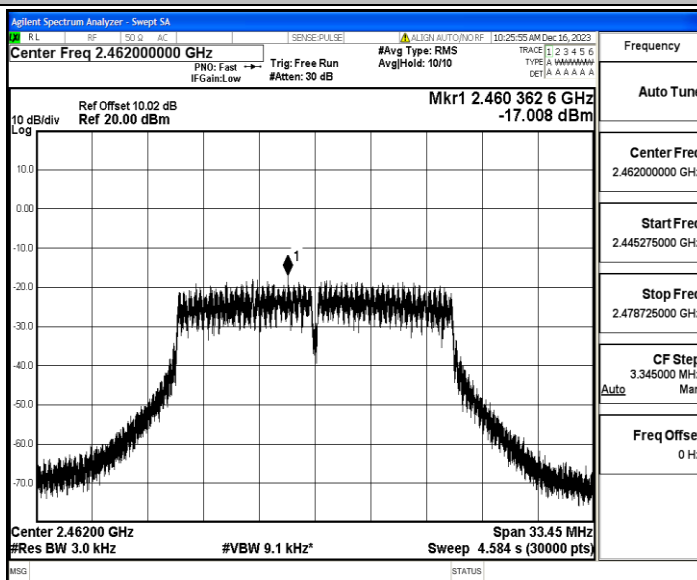
11G\_Ant1\_2437



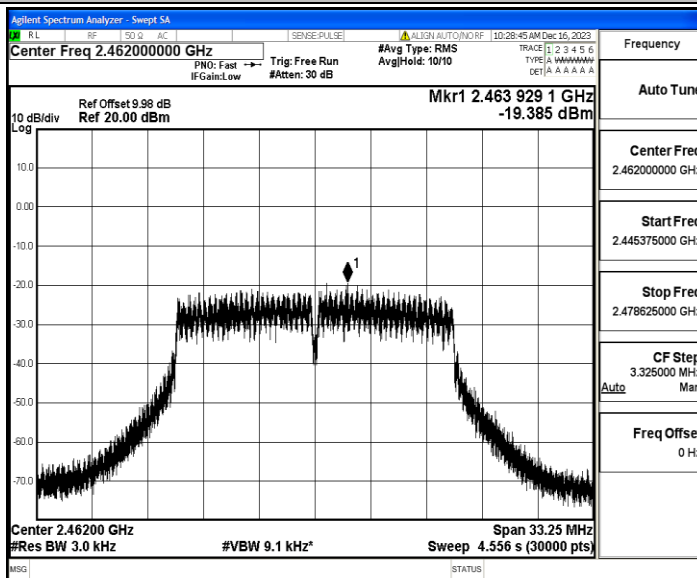
11G\_Ant2\_2437



11G\_Ant1\_2462

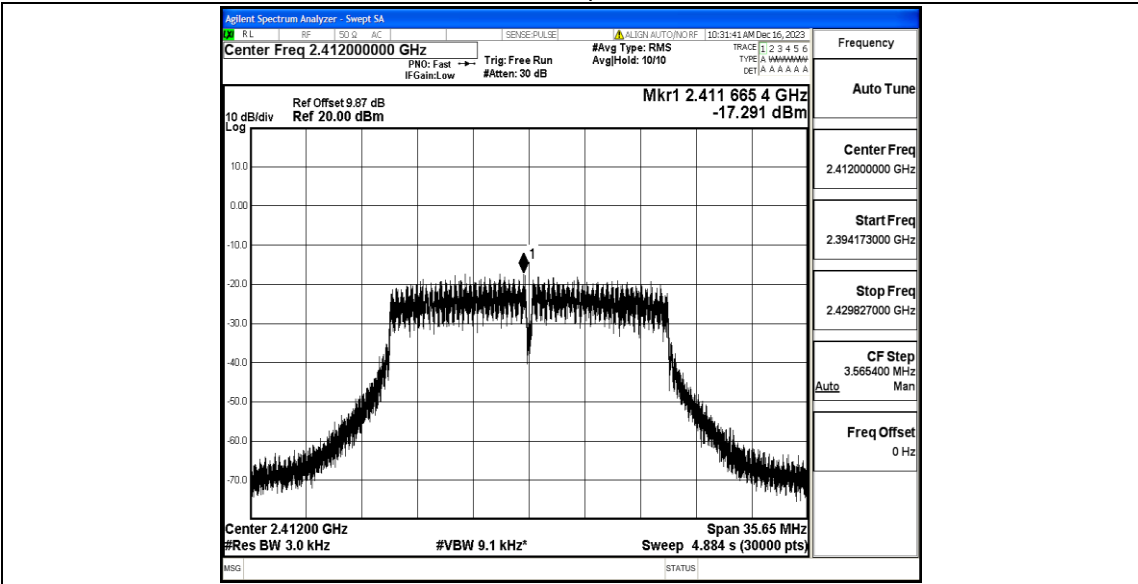


11G\_Ant2\_2462

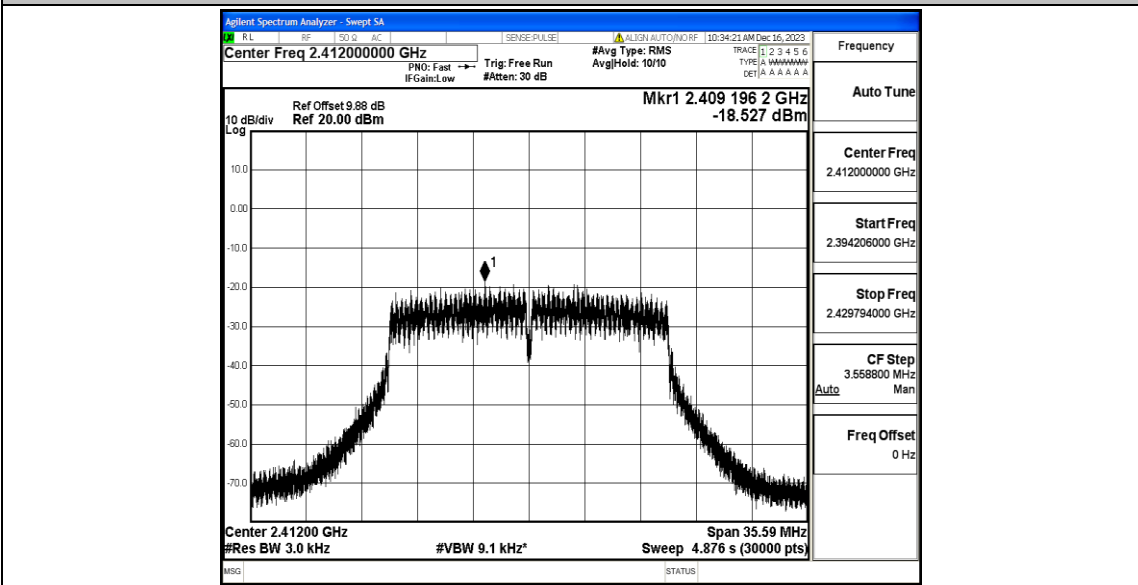


11N20MIMO\_Ant1\_2412

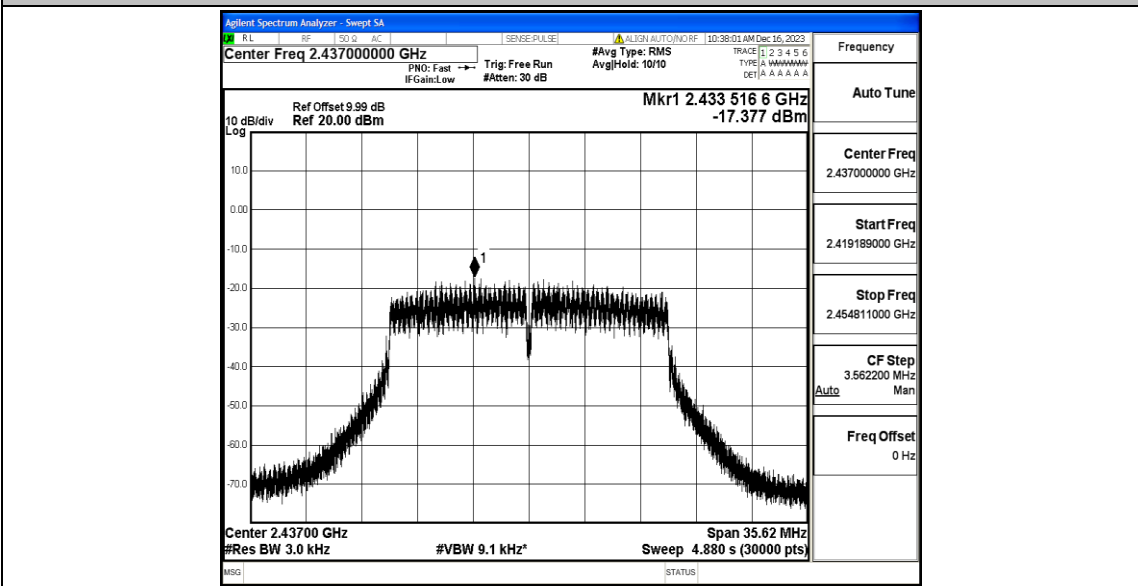




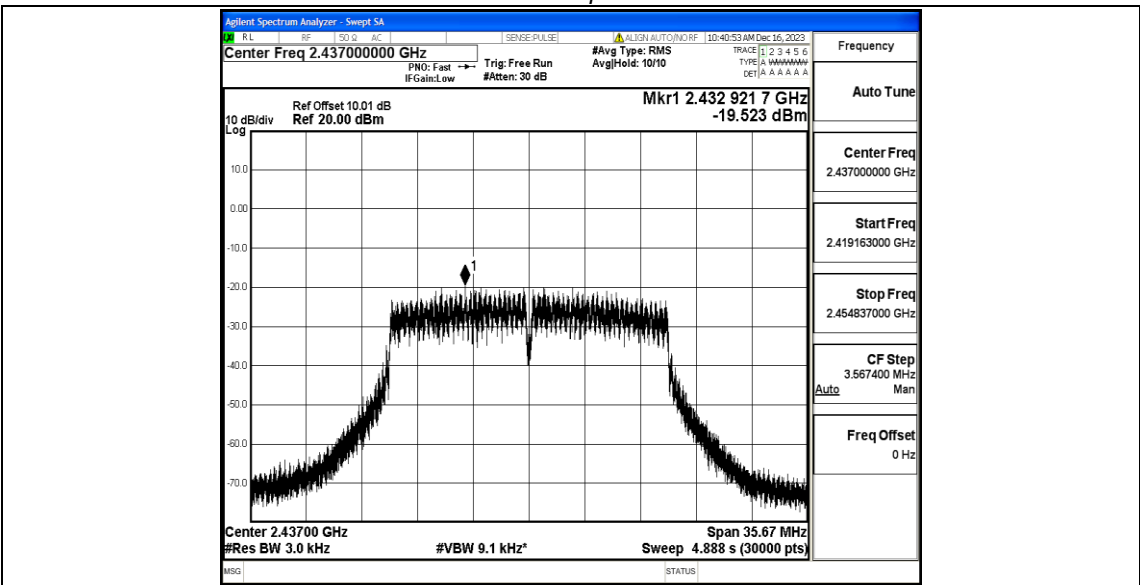
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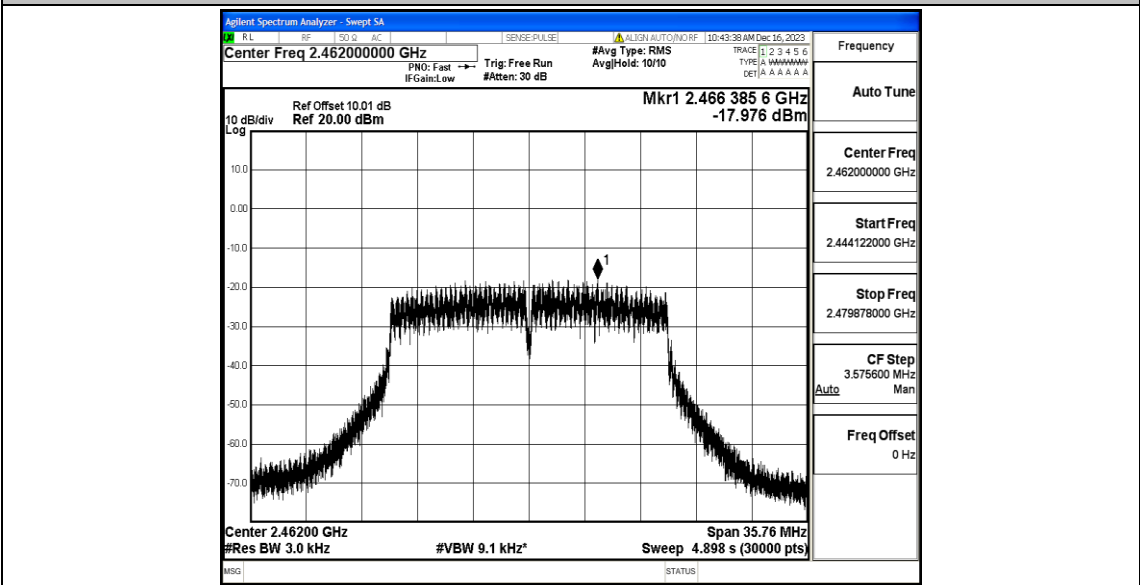
11N20MIMO\_Ant1\_2437



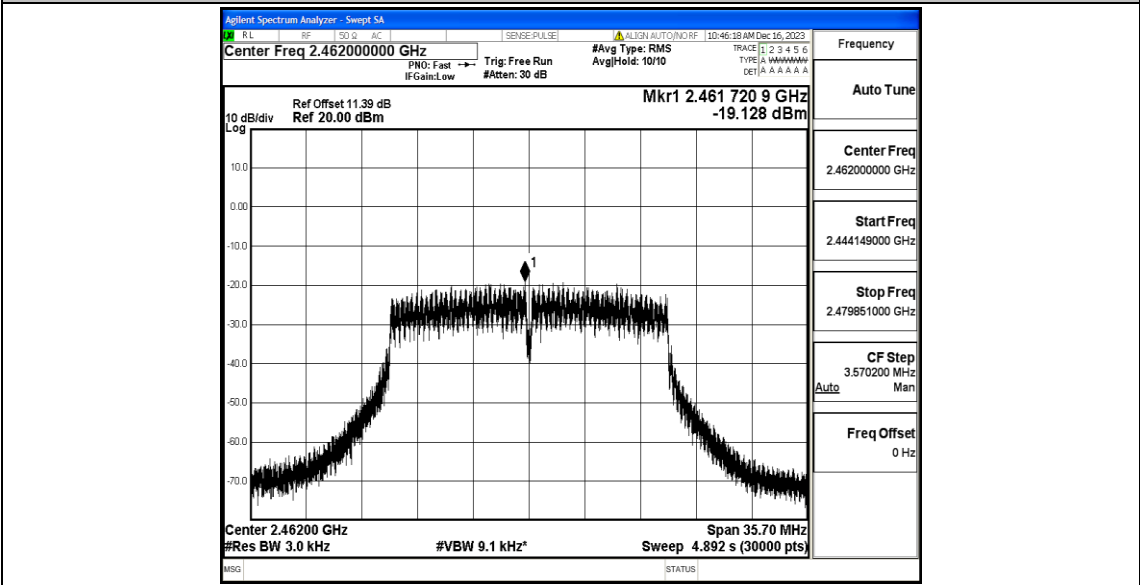
11N20MIMO\_Ant2\_2437



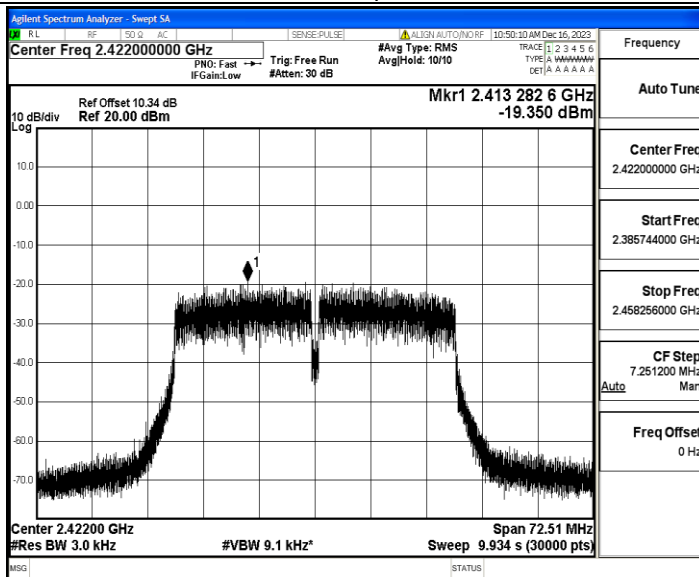
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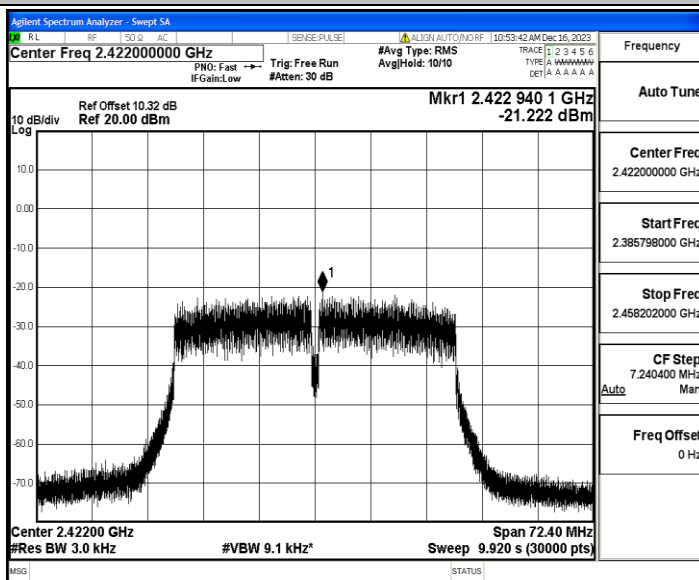
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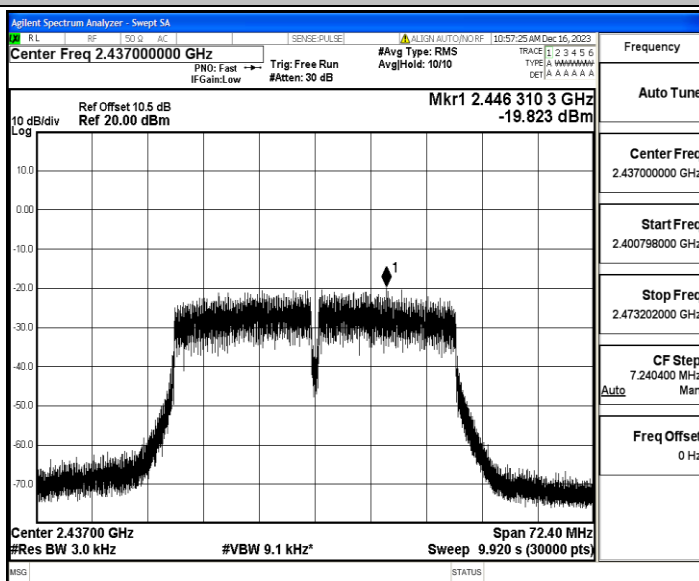
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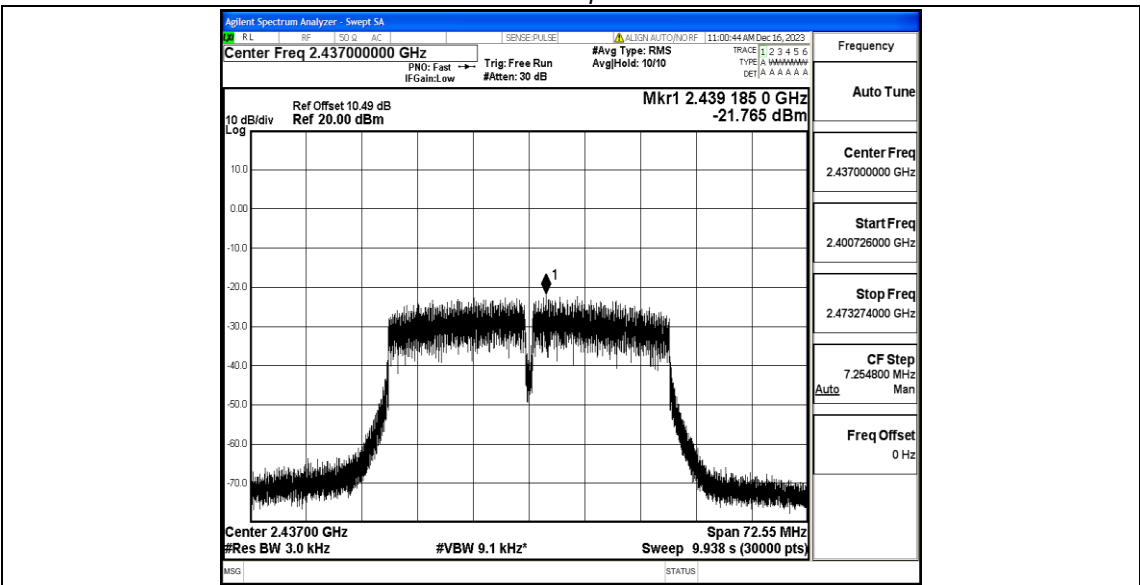
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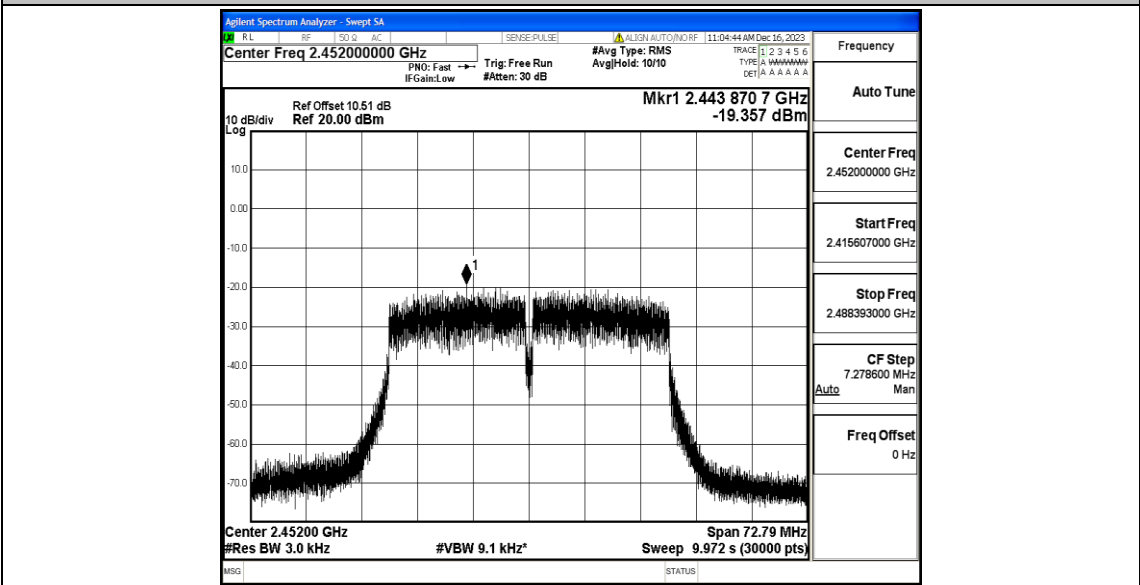
11N40MIMO\_Ant1\_2437



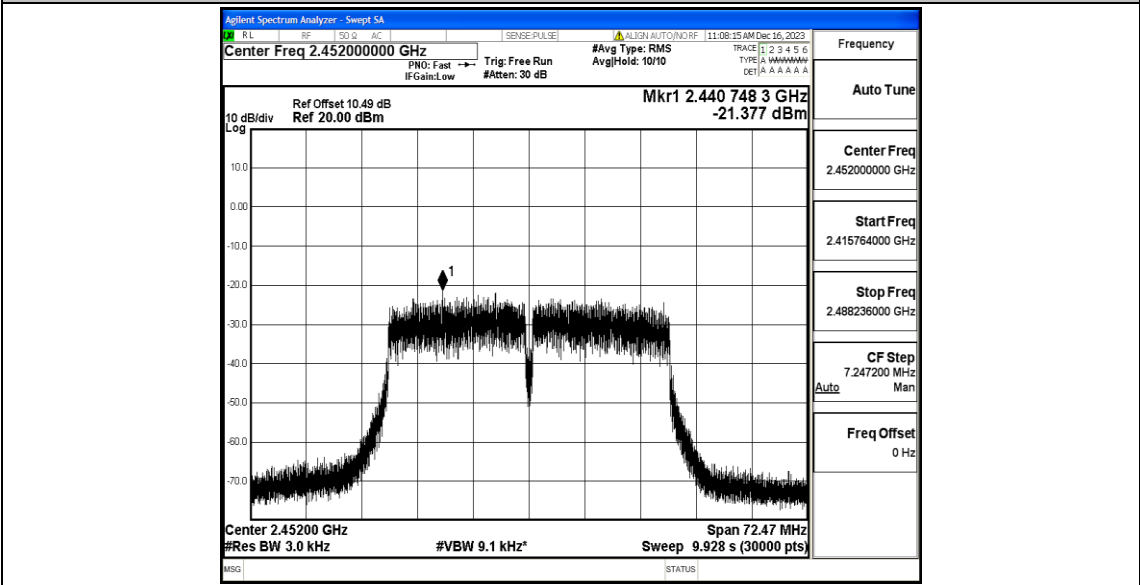
11N40MIMO\_Ant2\_2437



11N40MIMO\_Ant1\_2452



11N40MIMO\_Ant2\_2452



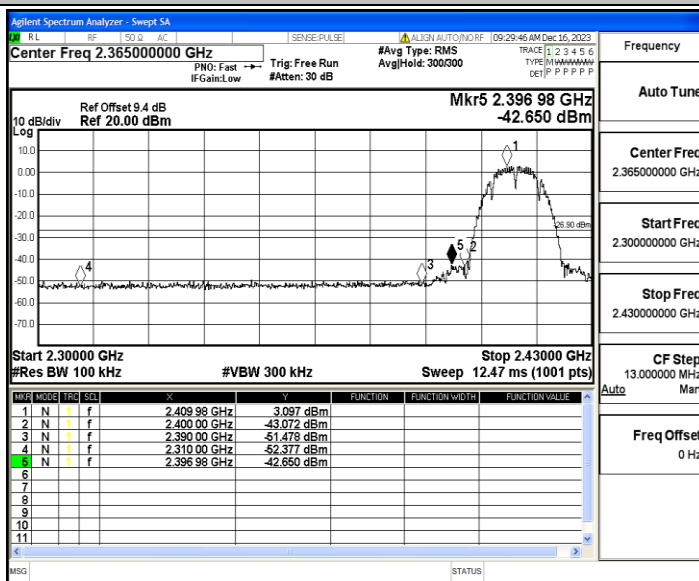
## Appendix E: Band edge measurements

### Test Result

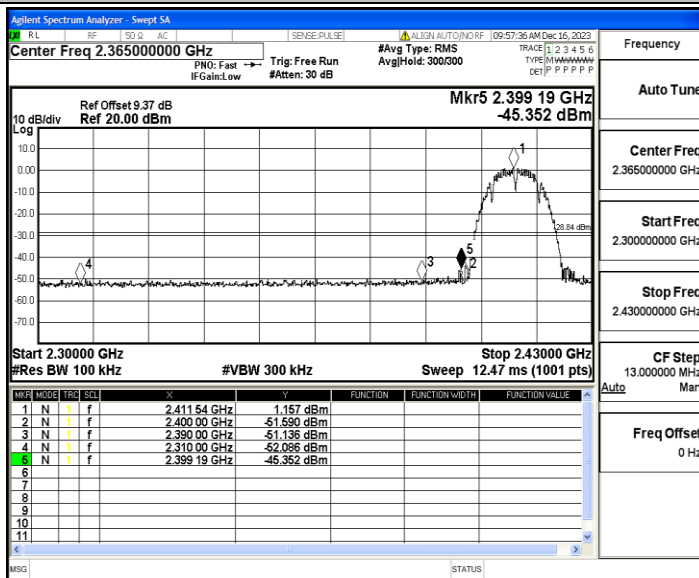
TestMode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
11B	Ant1	Low	2412	3.10	-42.65	≤-26.9	PASS
	Ant2	Low	2412	1.16	-45.35	≤-28.84	PASS
	Ant1	High	2462	3.56	-48.5	≤-26.44	PASS
	Ant2	High	2462	-0.28	-49.09	≤-30.28	PASS
11G	Ant1	Low	2412	3.55	-34.84	≤-26.45	PASS
	Ant2	Low	2412	-0.06	-37.65	≤-30.06	PASS
	Ant1	High	2462	1.58	-47.35	≤-28.42	PASS
	Ant2	High	2462	-0.50	-48.7	≤-30.5	PASS
11N20MIMO	Ant1	Low	2412	2.33	-35	≤-27.67	PASS
	Ant2	Low	2412	-0.30	-37.16	≤-30.3	PASS
	Ant1	High	2462	2.16	-48.53	≤-27.84	PASS
	Ant2	High	2462	-0.68	-48.35	≤-30.68	PASS
11N40MIMO	Ant1	Low	2422	-0.60	-38.15	≤-30.6	PASS
	Ant2	Low	2422	-2.46	-41.24	≤-32.46	PASS
	Ant1	High	2452	-1.20	-43.04	≤-31.2	PASS
	Ant2	High	2452	-3.11	-46.15	≤-33.11	PASS

Test Graphs

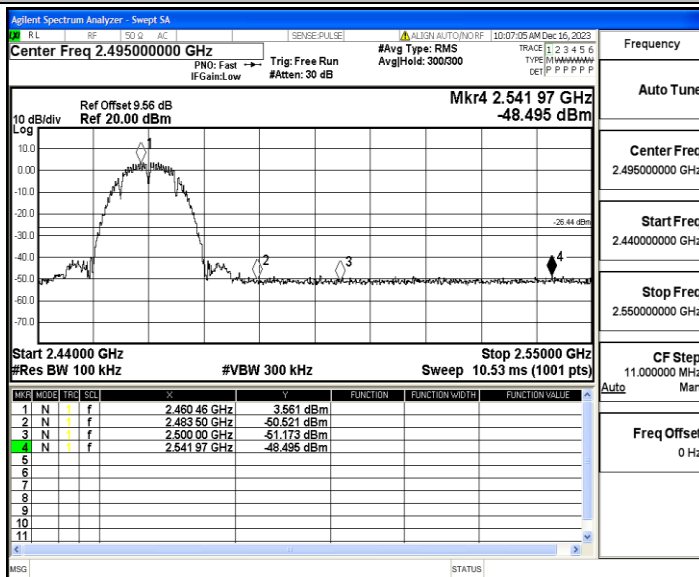
11B\_Ant1\_Low\_2412



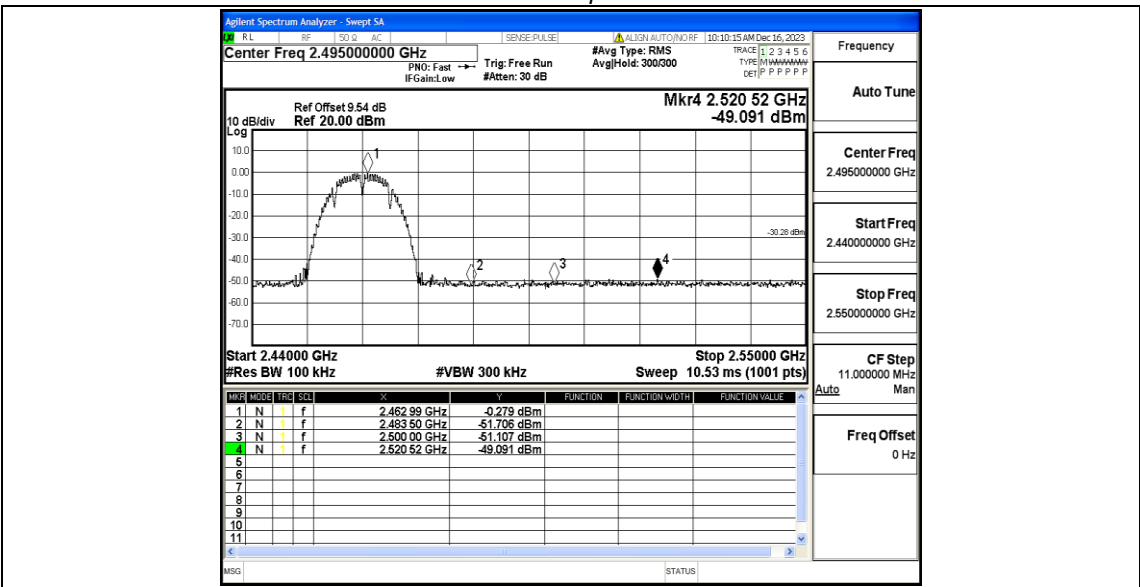
11B\_Ant2\_Low\_2412



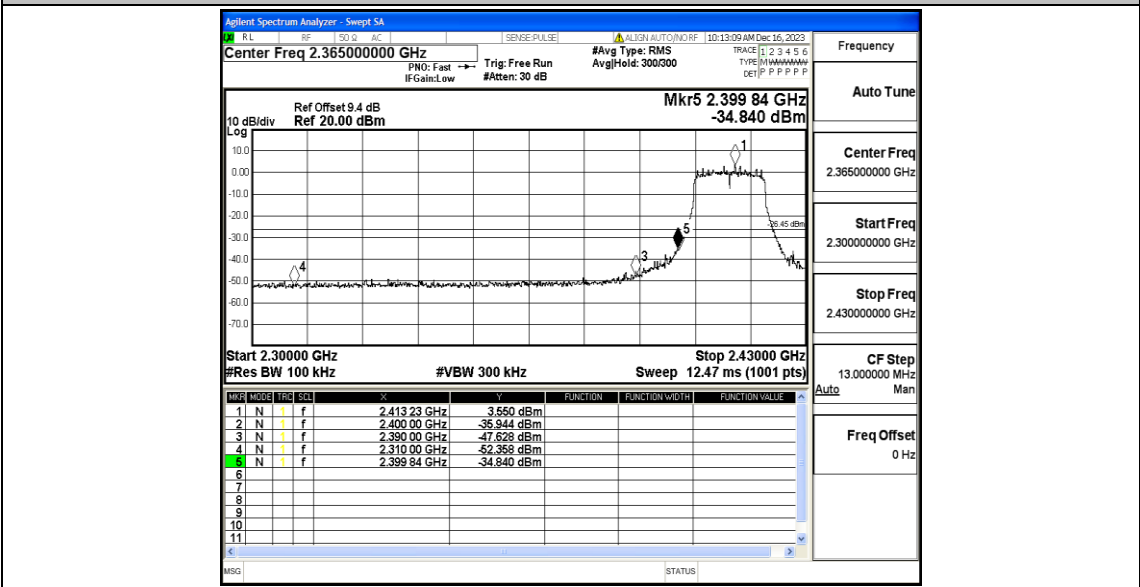
11B\_Ant1\_High\_2462



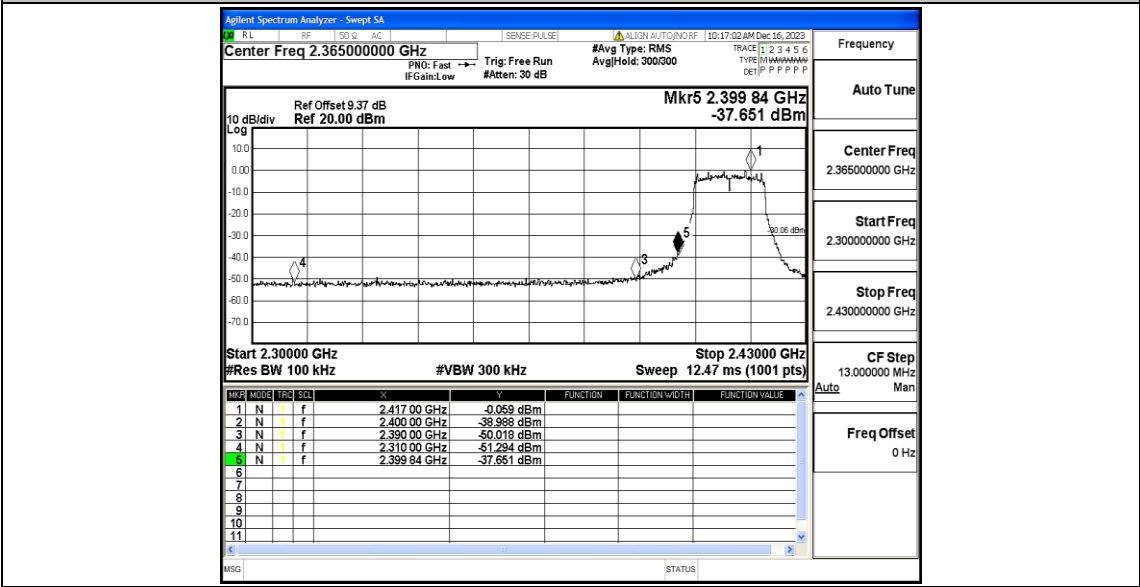
11B\_Ant2\_High\_2462



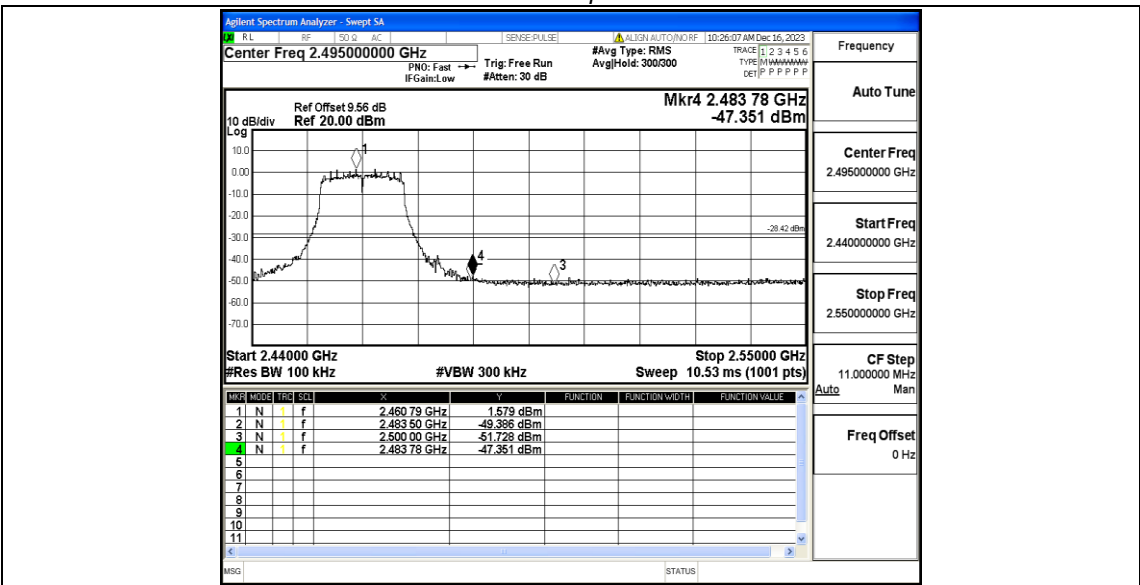
11G\_Ant1\_Low\_2412



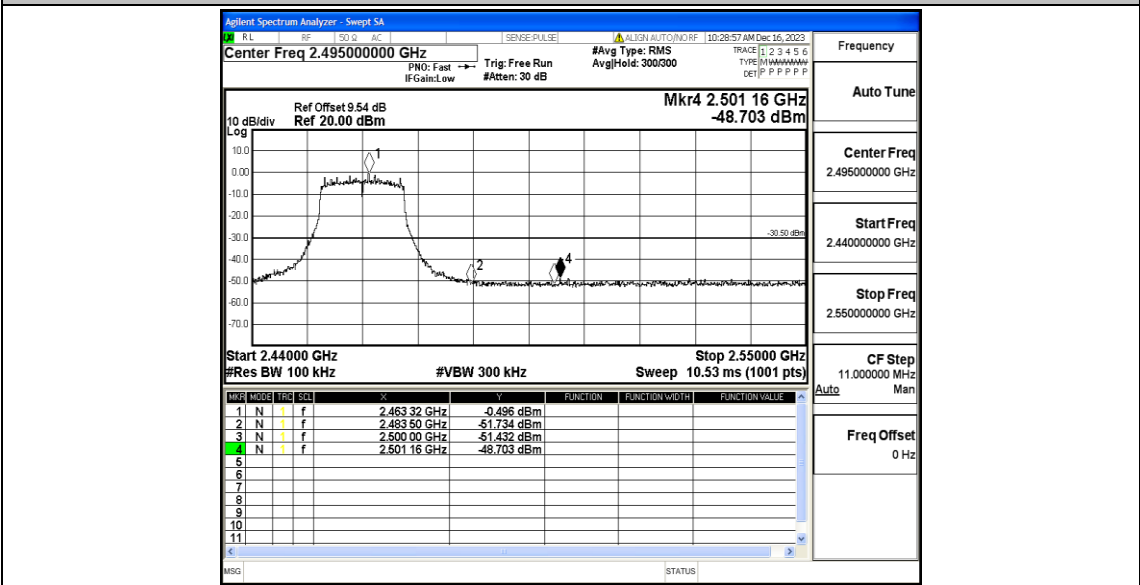
11G\_Ant2\_Low\_2412



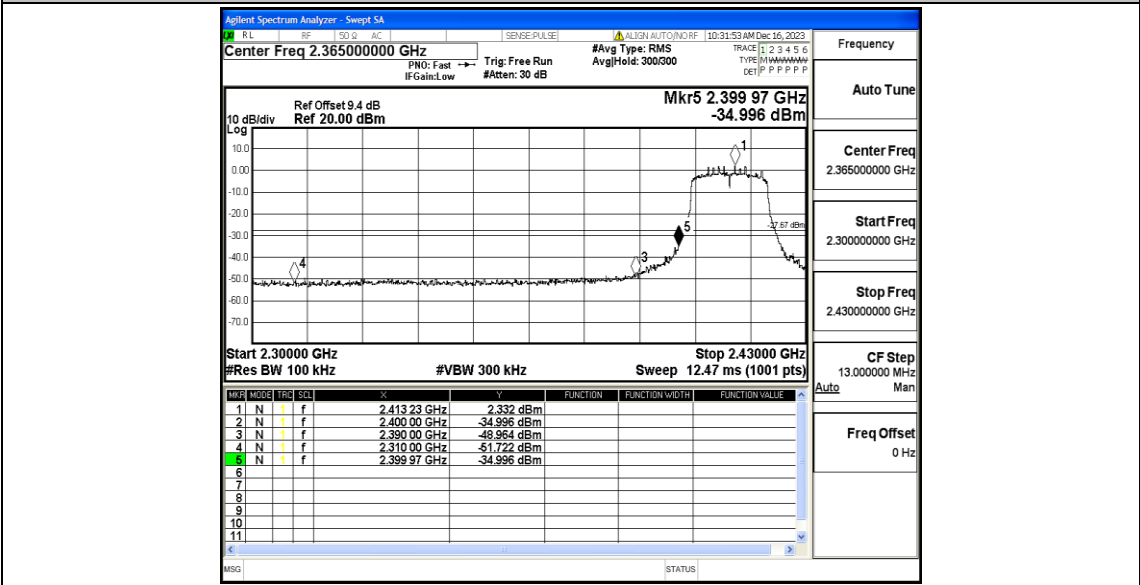
11G\_Ant1\_High\_2462



11G\_Ant2\_High\_2462



11N20MIMO\_Ant1\_Low\_2412



11N20MIMO\_Ant2\_Low\_2412