

RF Test Data for WLAN(2.4G) (Conducted Measurement)

Product Name: 4K Dongle

Trade Mark: MSTICK

Test Model: MG-S02L

FCC ID: 2AWC3-MG-S02L

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

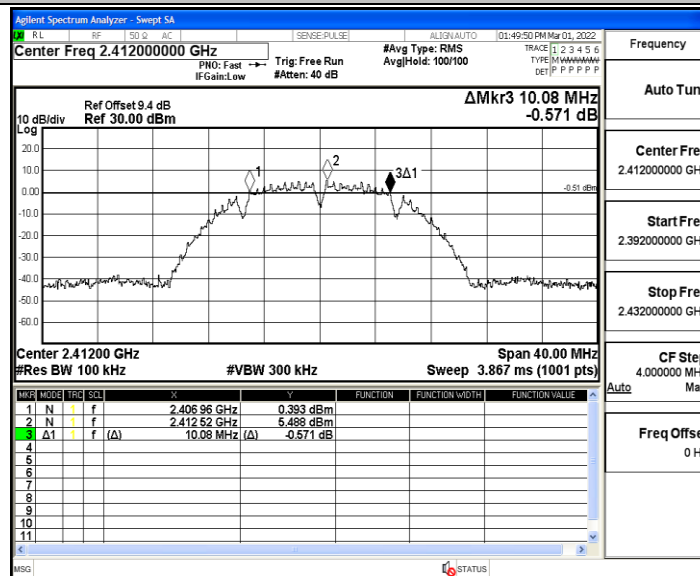
Appendix A: DTS Bandwidth

Test Result

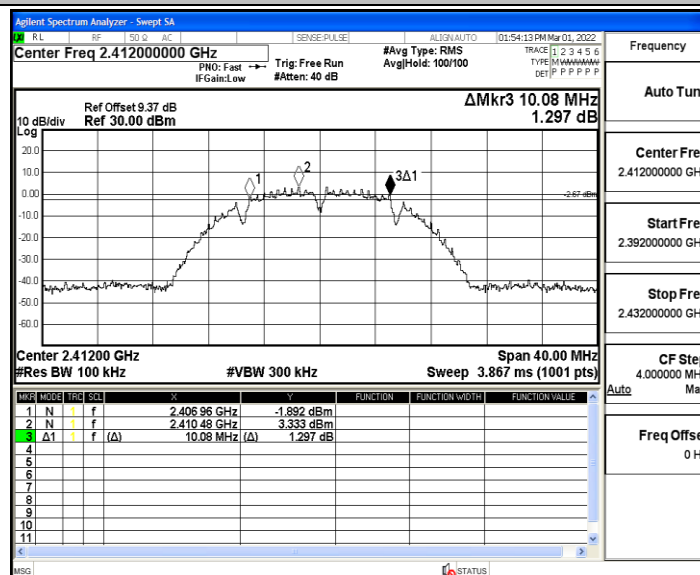
TestMode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant1	2412	10.080	2406.960	2417.040	0.5	PASS
	Ant2	2412	10.080	2406.960	2417.040	0.5	PASS
	Ant1	2437	10.080	2431.960	2442.040	0.5	PASS
	Ant2	2437	10.120	2431.960	2442.080	0.5	PASS
	Ant1	2462	10.040	2456.960	2467.000	0.5	PASS
	Ant2	2462	10.080	2456.960	2467.040	0.5	PASS
11G	Ant1	2412	15.440	2404.080	2419.520	0.5	PASS
	Ant2	2412	16.320	2403.840	2420.160	0.5	PASS
	Ant1	2437	15.040	2429.480	2444.520	0.5	PASS
	Ant2	2437	16.320	2428.840	2445.160	0.5	PASS
	Ant1	2462	15.680	2454.120	2469.800	0.5	PASS
	Ant2	2462	15.120	2454.440	2469.560	0.5	PASS
11N20MIMO	Ant1	2412	16.240	2403.520	2419.760	0.5	PASS
	Ant2	2412	17.600	2403.200	2420.800	0.5	PASS
	Ant1	2437	17.000	2428.480	2445.480	0.5	PASS
	Ant2	2437	16.760	2428.600	2445.360	0.5	PASS
	Ant1	2462	17.080	2453.480	2470.560	0.5	PASS
	Ant2	2462	15.440	2454.120	2469.560	0.5	PASS
11N40MIMO	Ant1	2422	35.040	2404.480	2439.520	0.5	PASS
	Ant2	2422	35.040	2404.400	2439.440	0.5	PASS
	Ant1	2437	34.640	2419.880	2454.520	0.5	PASS
	Ant2	2437	34.960	2419.560	2454.520	0.5	PASS
	Ant1	2452	35.040	2434.480	2469.520	0.5	PASS
	Ant2	2452	35.040	2434.480	2469.520	0.5	PASS

Test Graphs

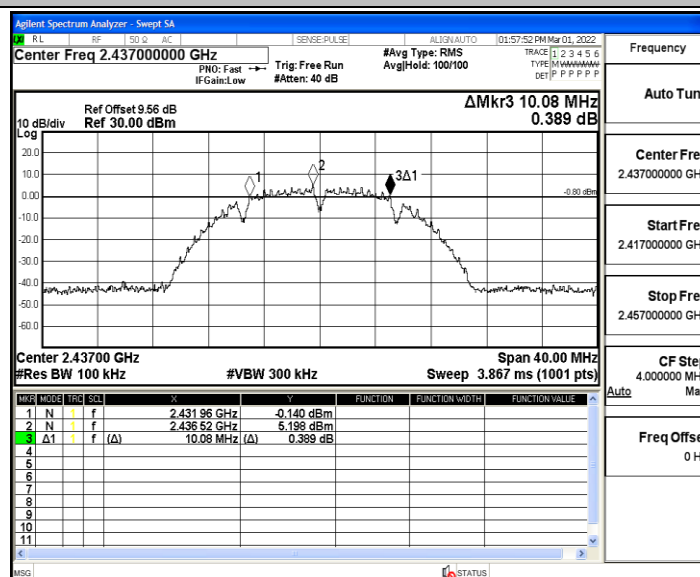
11B_Ant1_2412



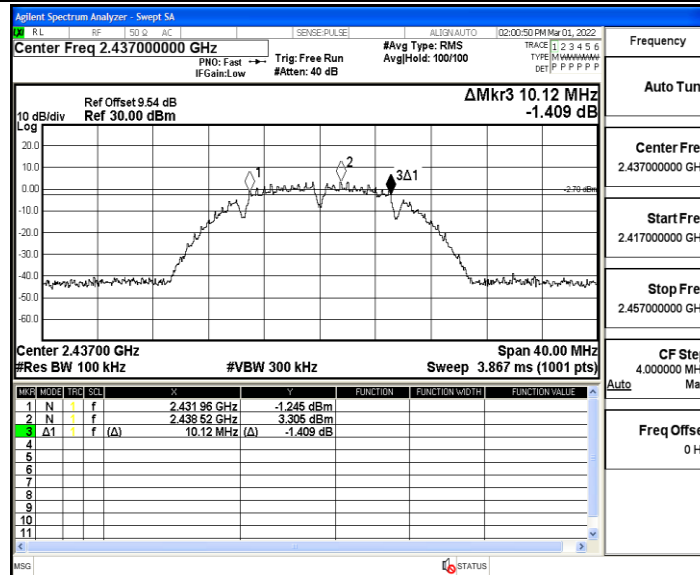
11B_Ant2_2412



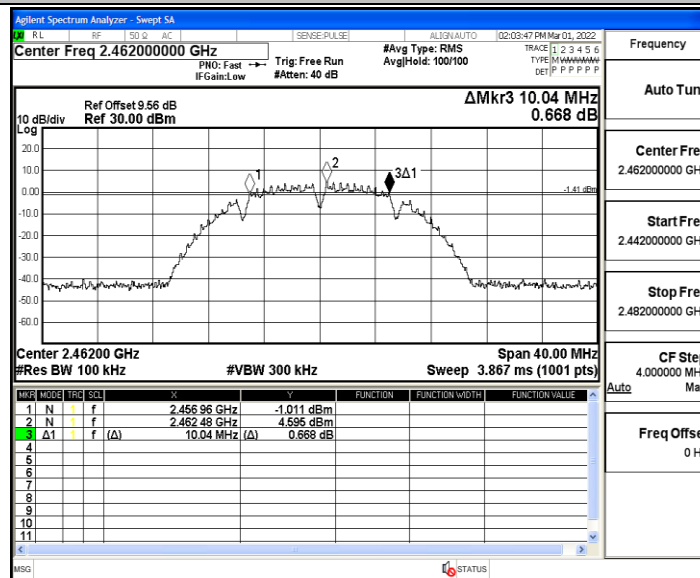
11B_Ant1_2437



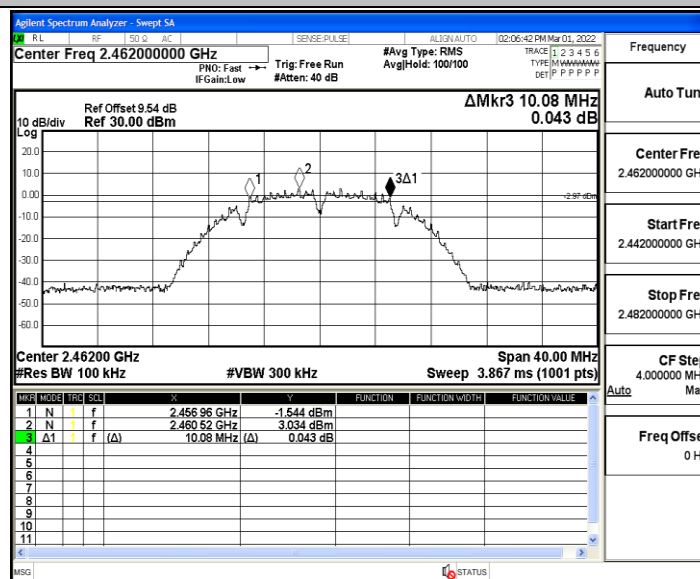
11B_Ant2_2437



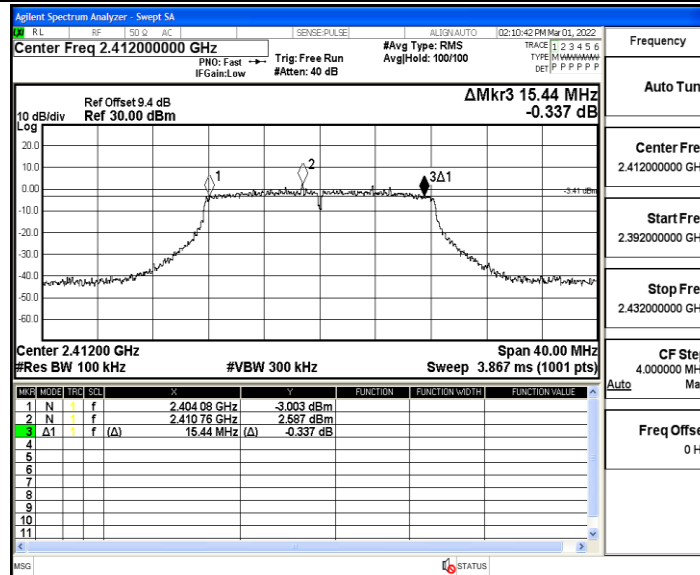
11B_Ant1_2462



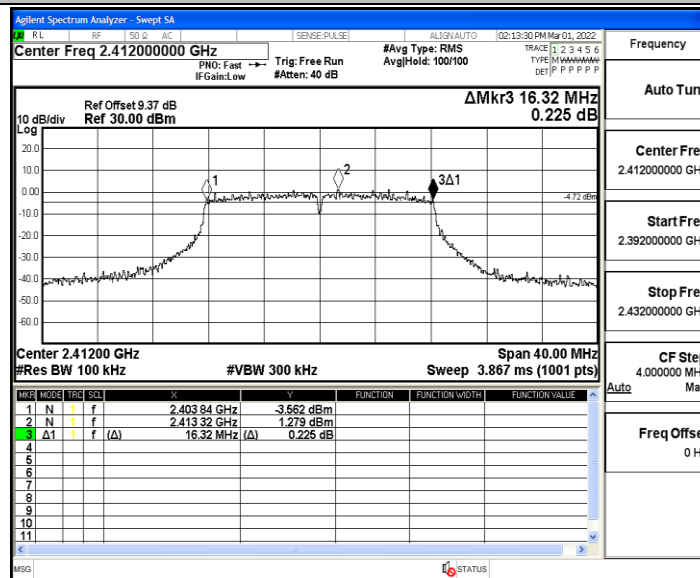
11B_Ant2_2462



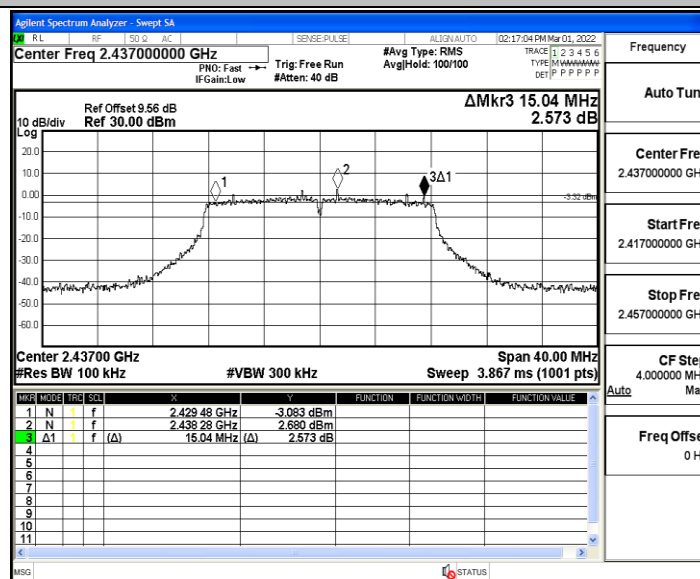
11G_Ant1_2412



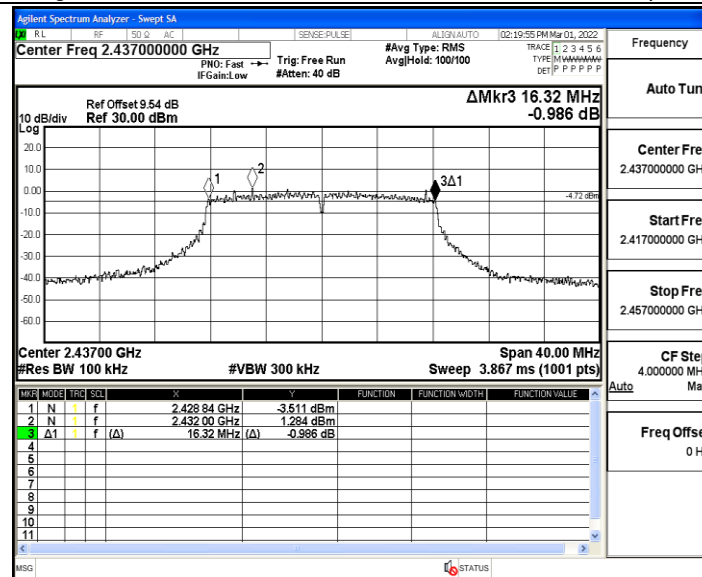
11G_Ant2_2412



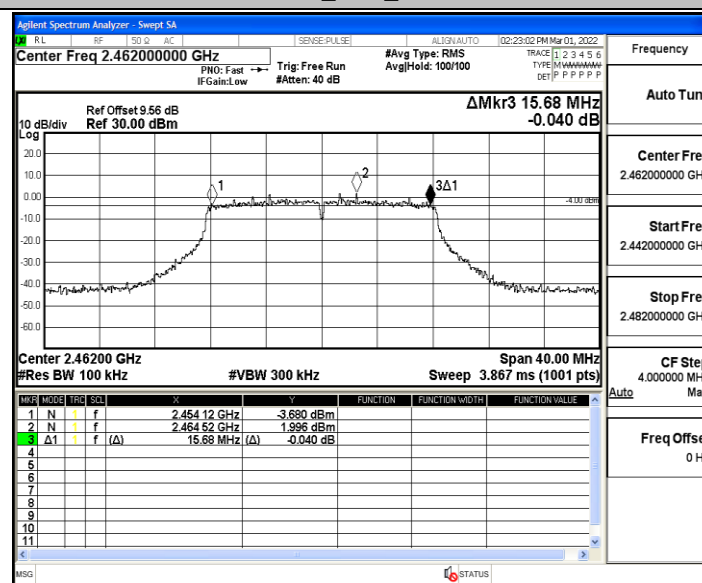
11G_Ant1_2437



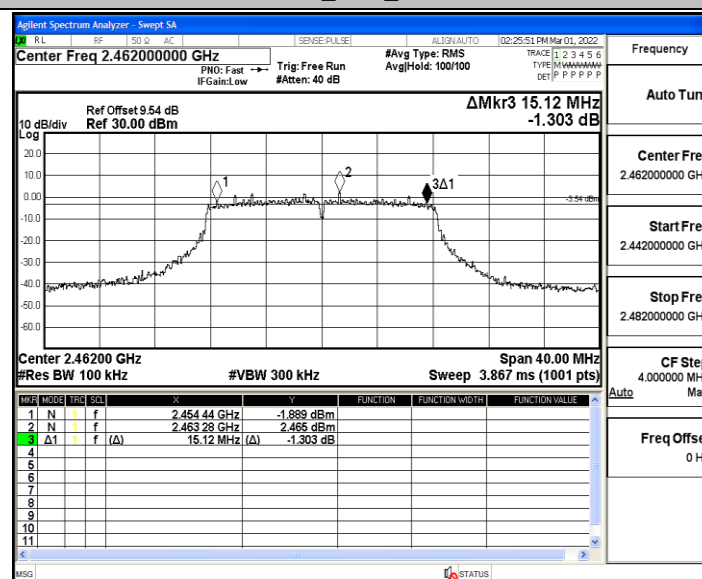
11G_Ant2_2437



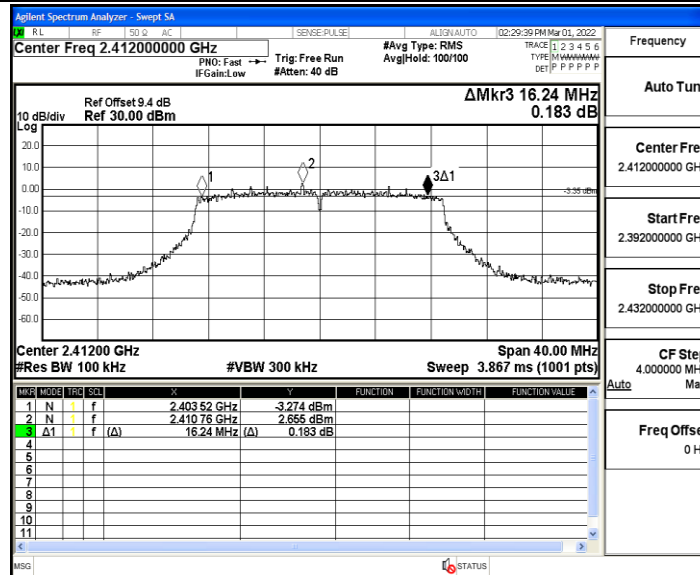
11G_Ant1_2462



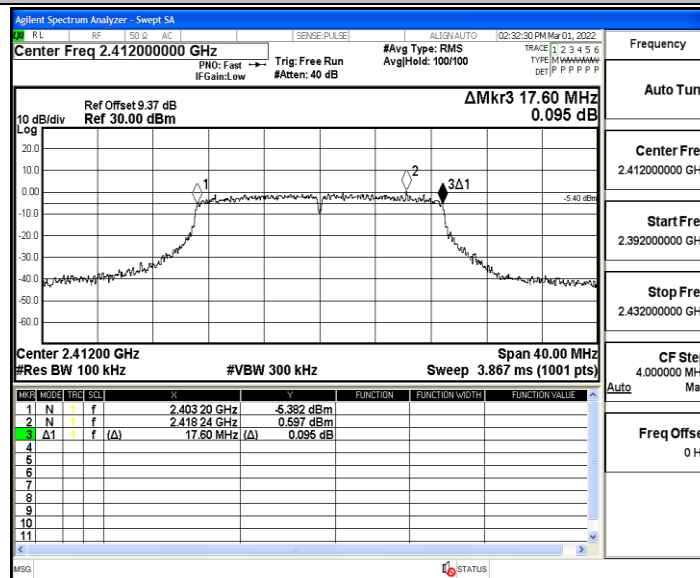
11G_Ant2_2462



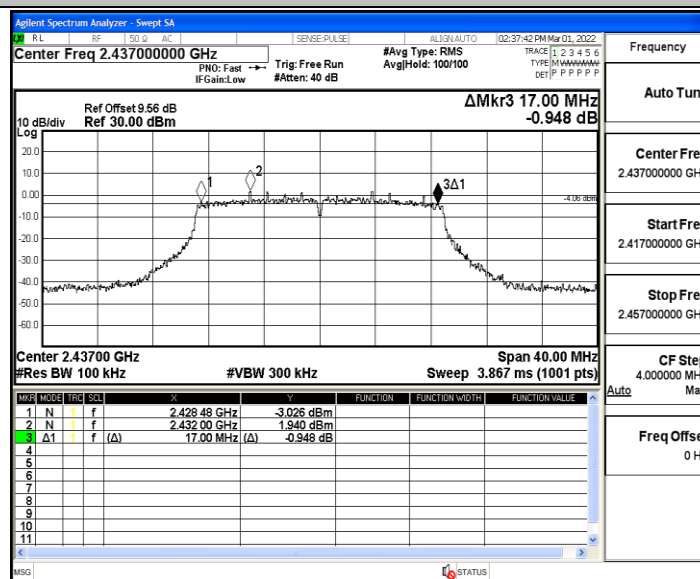
11N20MIMO_Ant1_2412



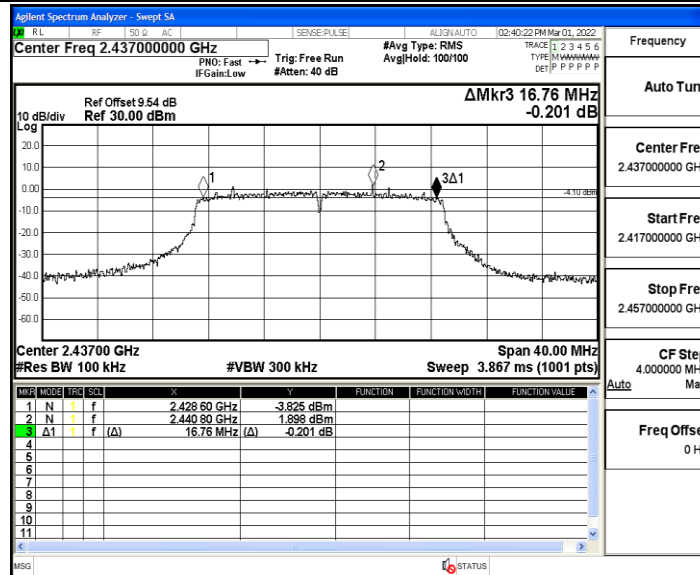
11N20MIMO_Ant2_2412



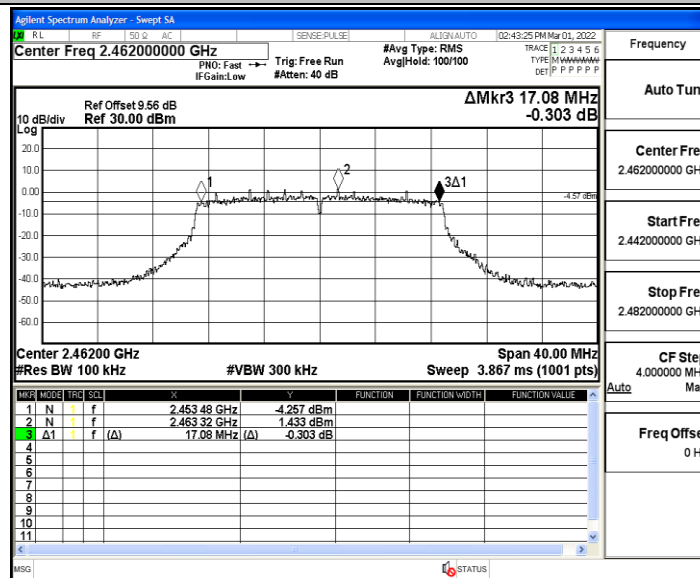
11N20MIMO_Ant1_2437



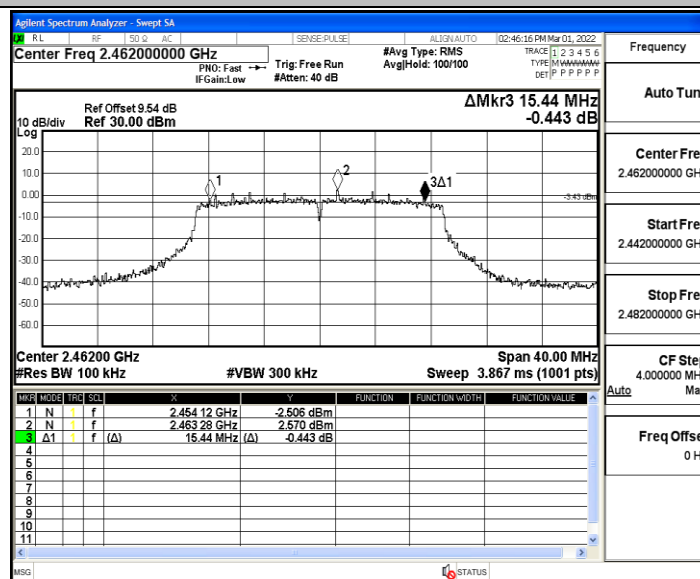
11N20MIMO_Ant2_2437



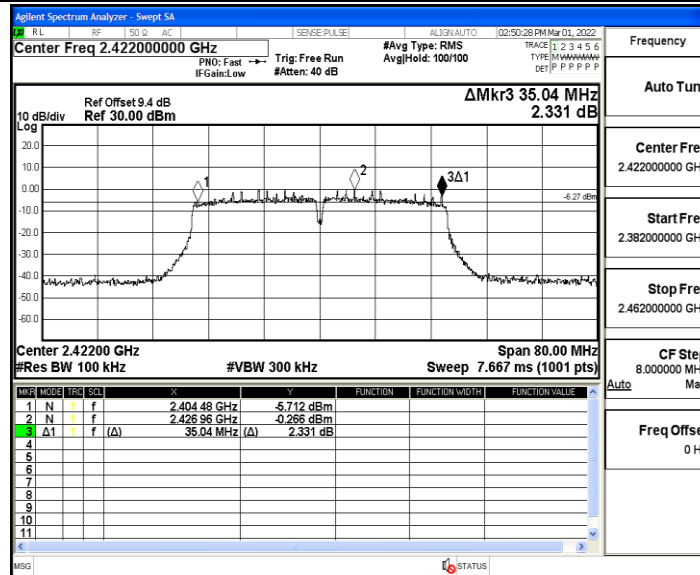
11N20MIMO_Ant1_2462



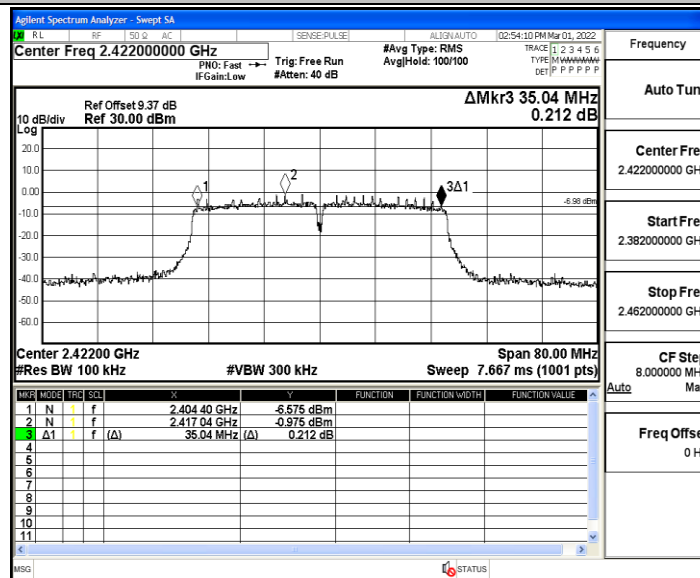
11N20MIMO_Ant2_2462



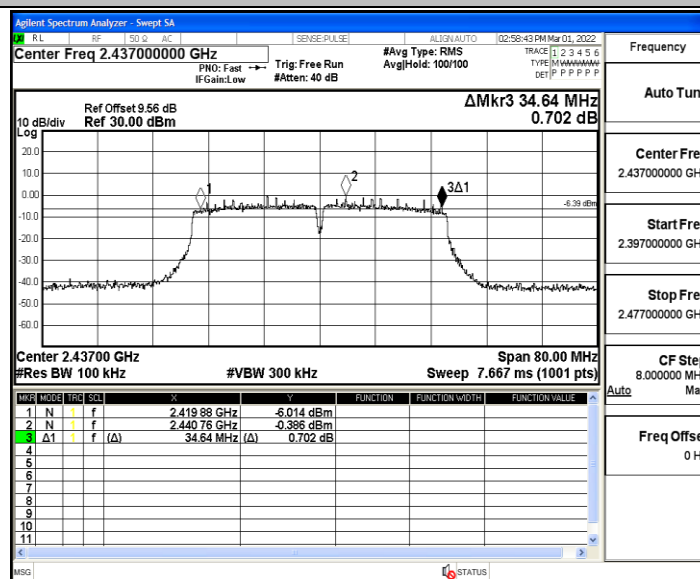
11N40MIMO_Ant1_2422



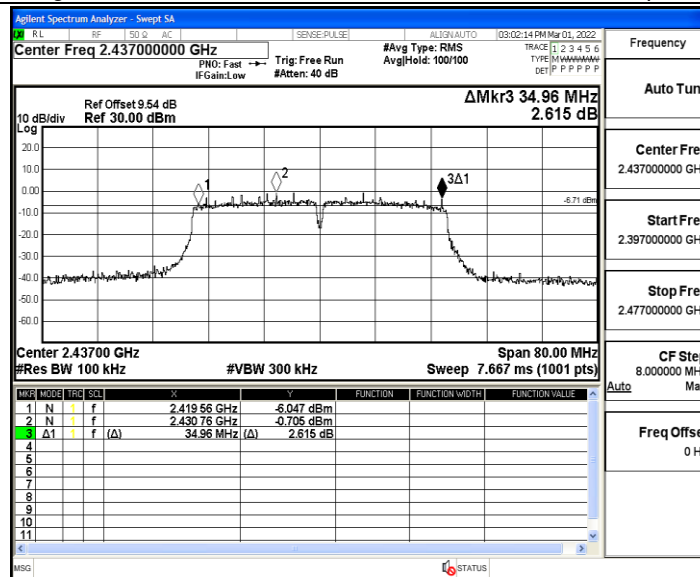
11N40MIMO_Ant2_2422



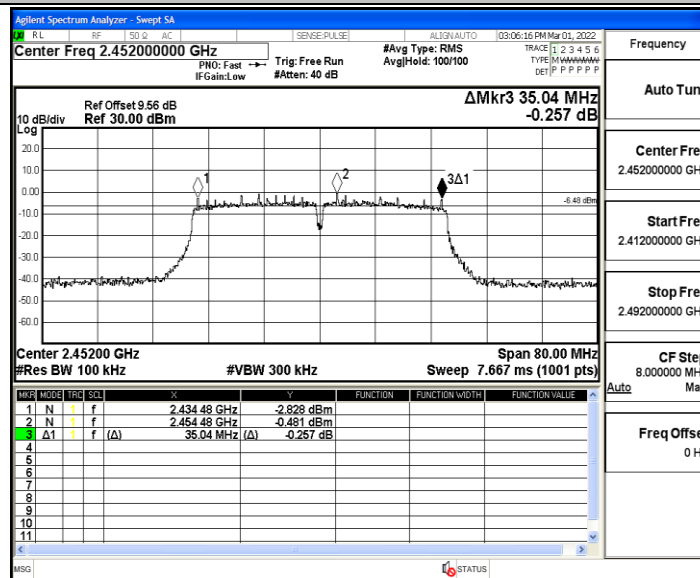
11N40MIMO_Ant1_2437



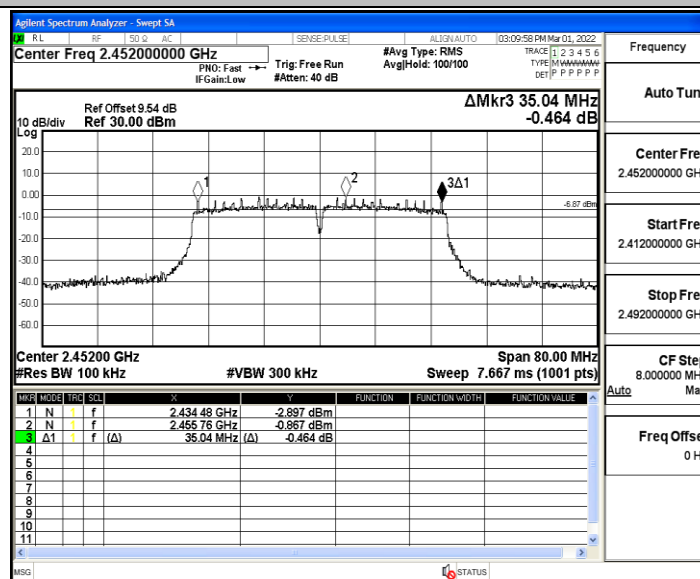
11N40MIMO_Ant2_2437



11N40MIMO_Ant1_2452



11N40MIMO_Ant2_2452



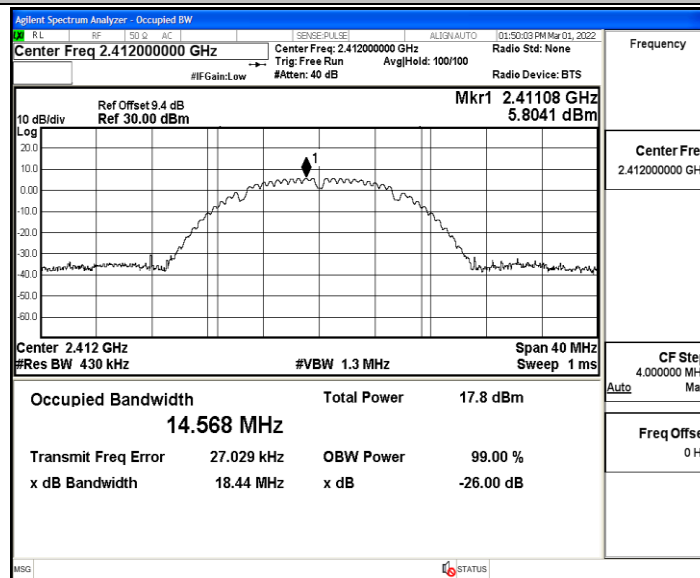
Appendix B: Occupied Channel Bandwidth

Test Result

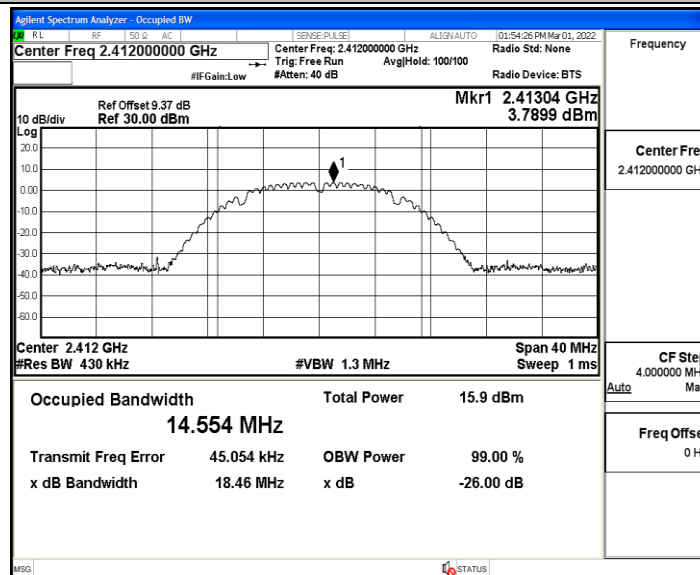
TestMode	Antenna	Channel	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant1	2412	14.568	2404.743	2419.311	---	PASS
	Ant2	2412	14.554	2404.768	2419.322	---	PASS
	Ant1	2437	14.663	2429.658	2444.321	---	PASS
	Ant2	2437	14.613	2429.712	2444.325	---	PASS
	Ant1	2462	14.679	2454.694	2469.373	---	PASS
	Ant2	2462	14.637	2454.715	2469.352	---	PASS
11G	Ant1	2412	16.709	2403.680	2420.389	---	PASS
	Ant2	2412	16.600	2403.724	2420.324	---	PASS
	Ant1	2437	16.713	2428.677	2445.390	---	PASS
	Ant2	2437	16.651	2428.697	2445.348	---	PASS
	Ant1	2462	16.762	2453.674	2470.436	---	PASS
	Ant2	2462	16.588	2453.746	2470.334	---	PASS
11N20MIMO	Ant1	2412	17.868	2403.102	2420.970	---	PASS
	Ant2	2412	17.831	2403.127	2420.958	---	PASS
	Ant1	2437	17.802	2428.117	2445.919	---	PASS
	Ant2	2437	17.881	2428.084	2445.965	---	PASS
	Ant1	2462	17.864	2453.134	2470.998	---	PASS
	Ant2	2462	17.845	2453.122	2470.967	---	PASS
11N40MIMO	Ant1	2422	36.196	2403.917	2440.113	---	PASS
	Ant2	2422	36.273	2403.856	2440.129	---	PASS
	Ant1	2437	36.282	2418.898	2455.180	---	PASS
	Ant2	2437	36.264	2418.869	2455.133	---	PASS
	Ant1	2452	36.251	2433.903	2470.154	---	PASS
	Ant2	2452	36.189	2433.952	2470.141	---	PASS

Test Graphs

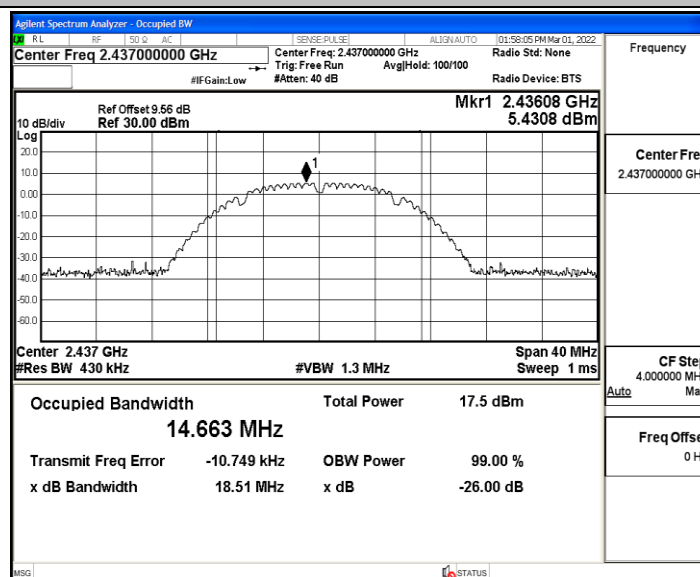
11B_Ant1_2412



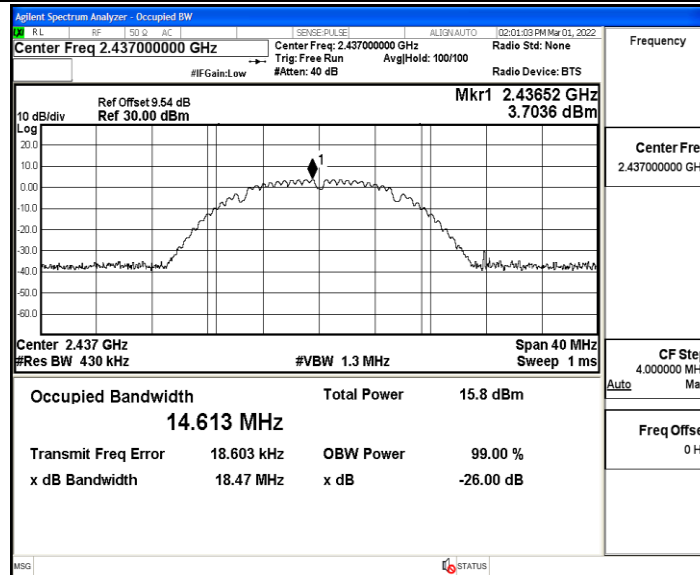
11B_Ant2_2412



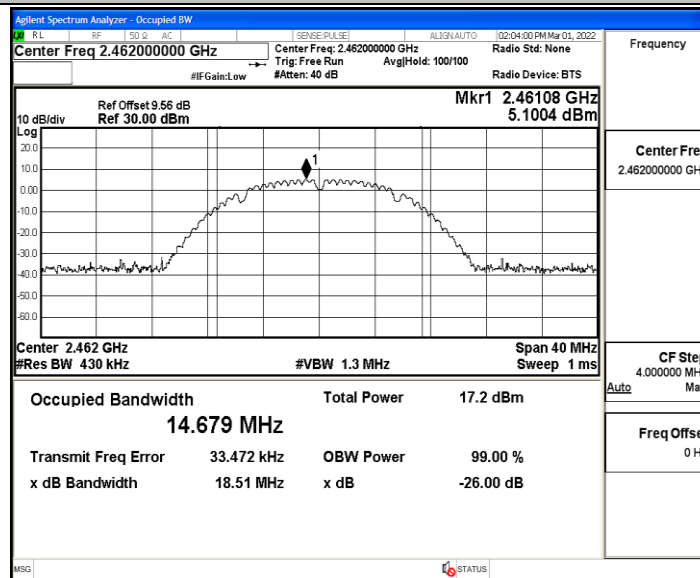
11B_Ant1_2437



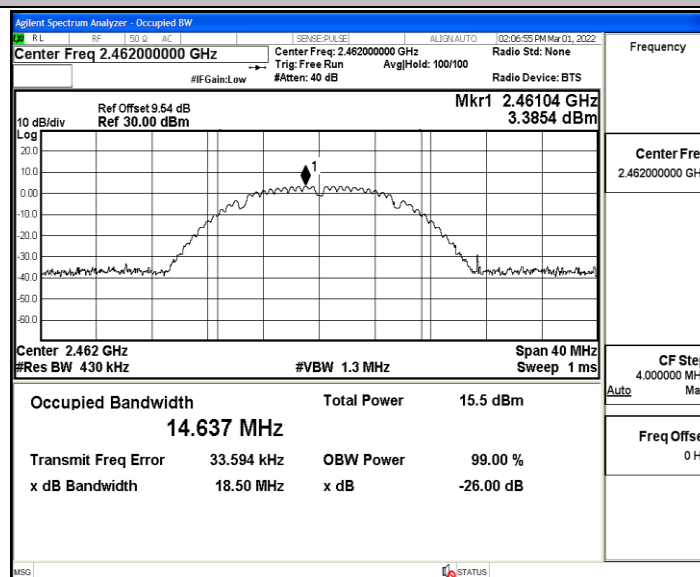
11B_Ant2_2437



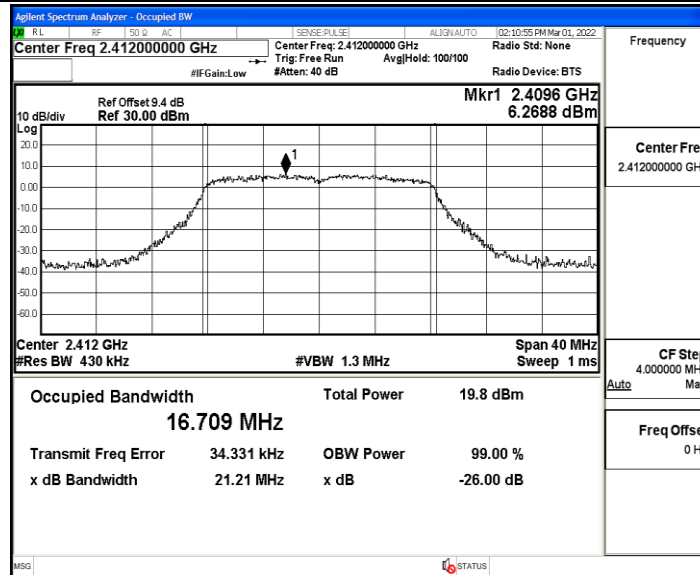
11B_Ant1_2462



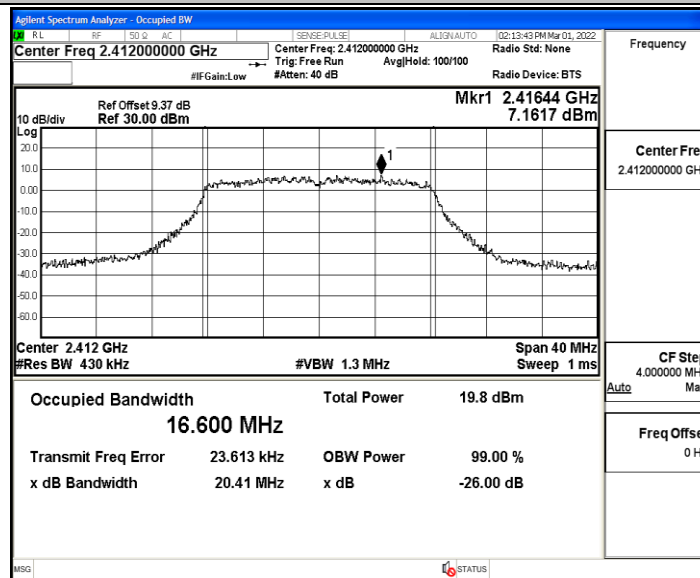
11B_Ant2_2462



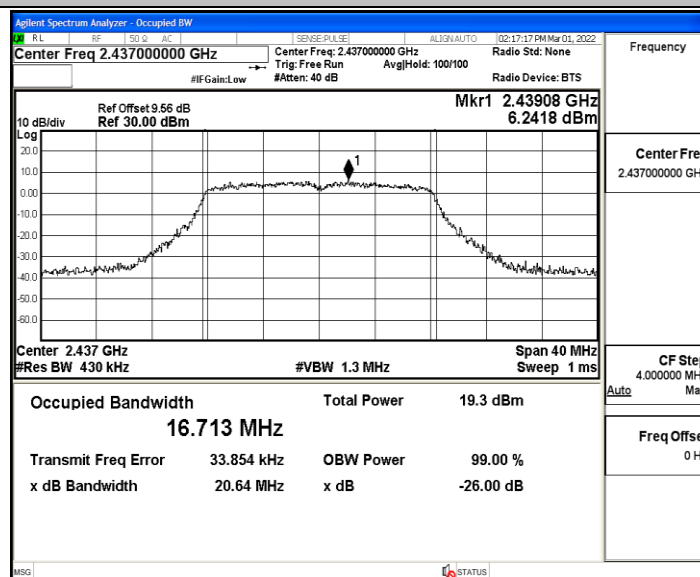
11G_Ant1_2412



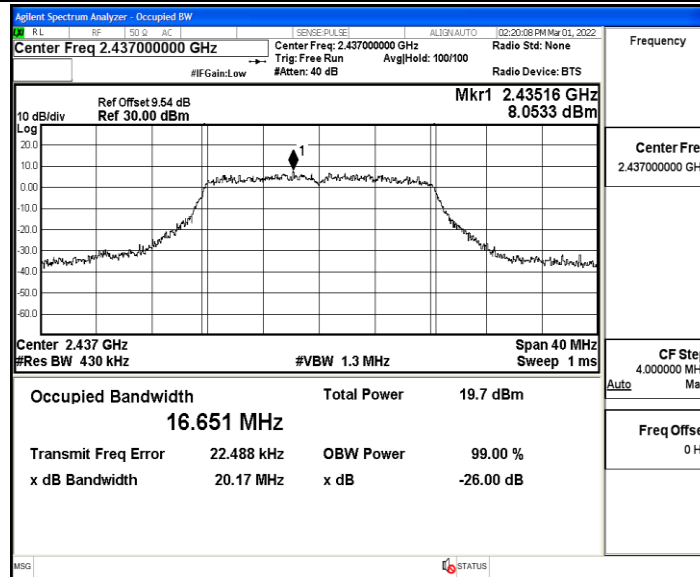
11G_Ant2_2412



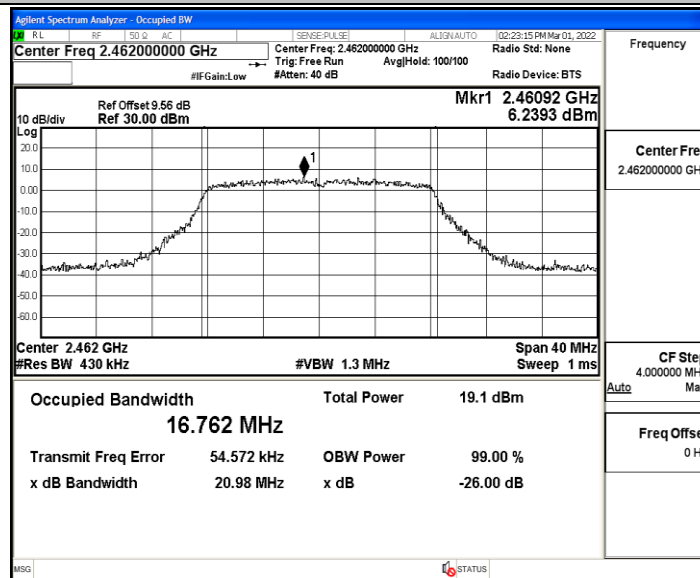
11G_Ant1_2437



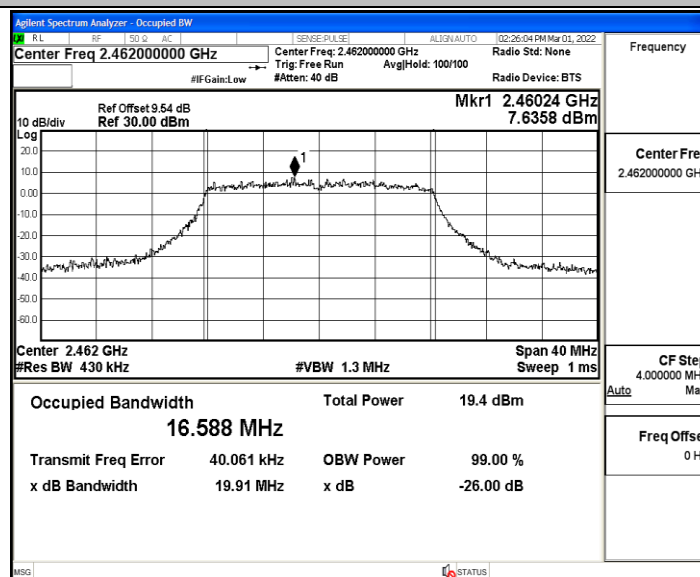
11G_Ant2_2437



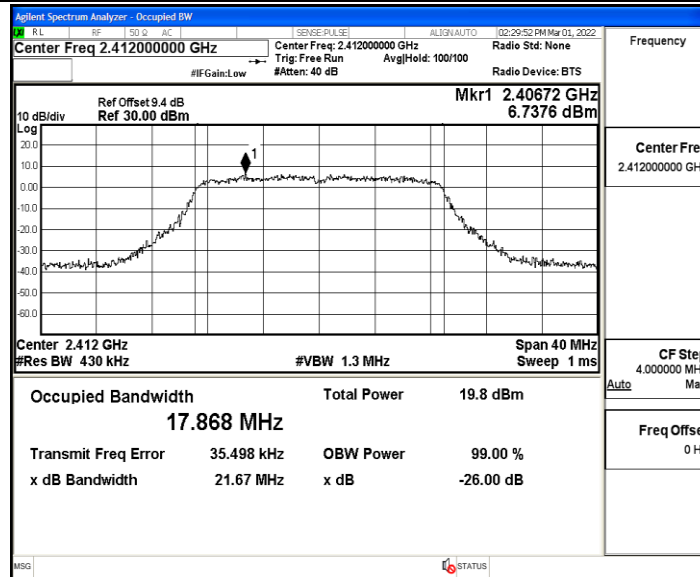
11G_Ant1_2462



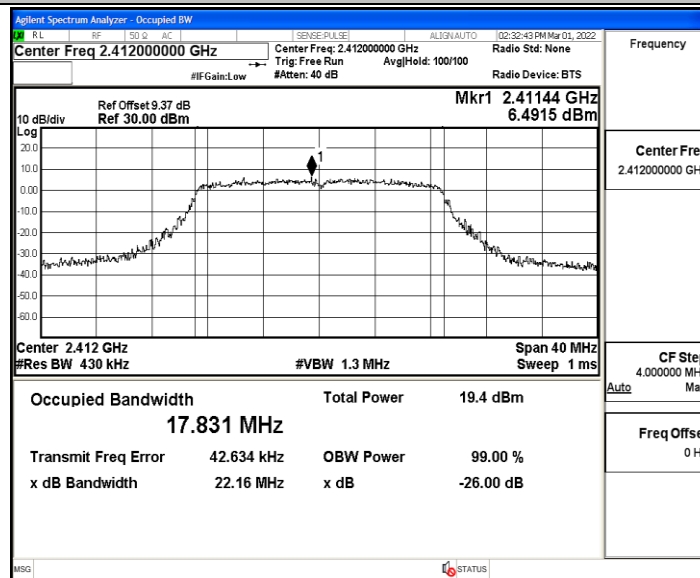
11G_Ant2_2462



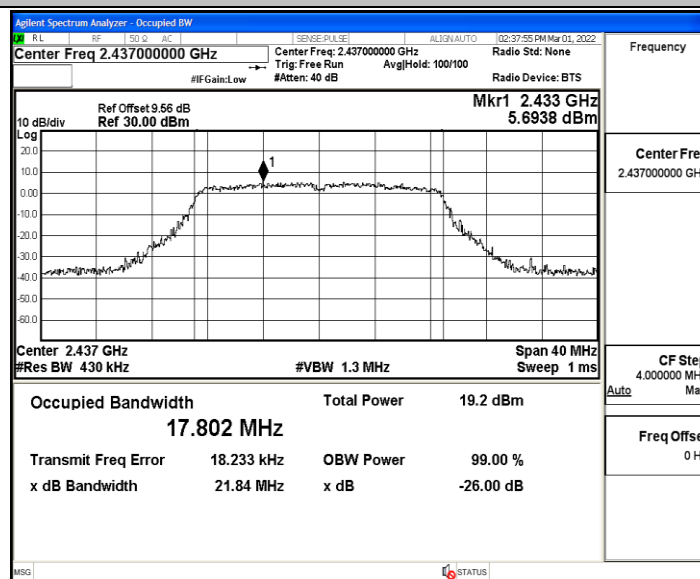
11N20MIMO_Ant1_2412



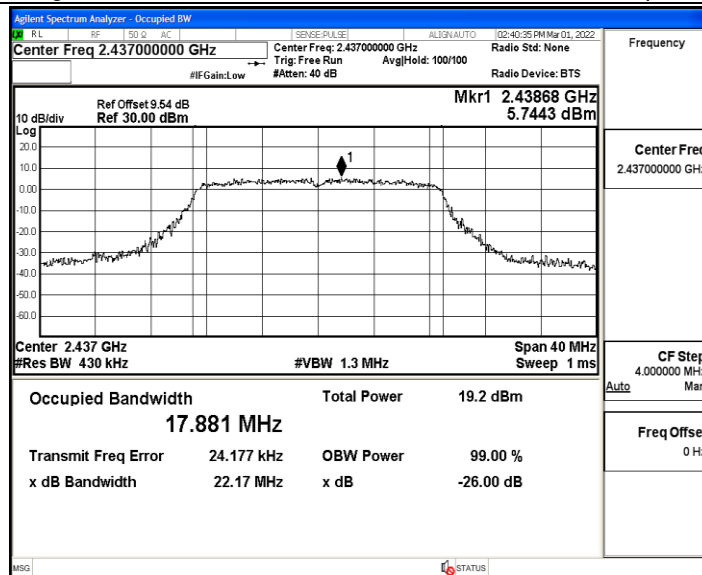
11N20MIMO_Ant2_2412



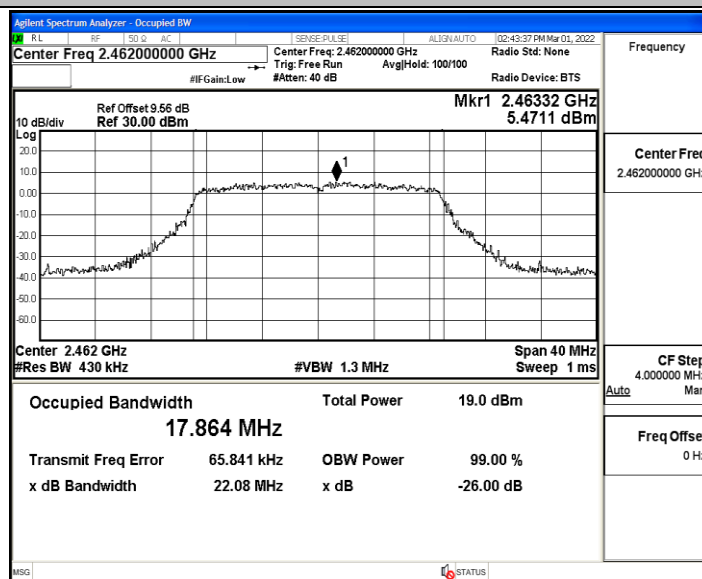
11N20MIMO_Ant1_2437



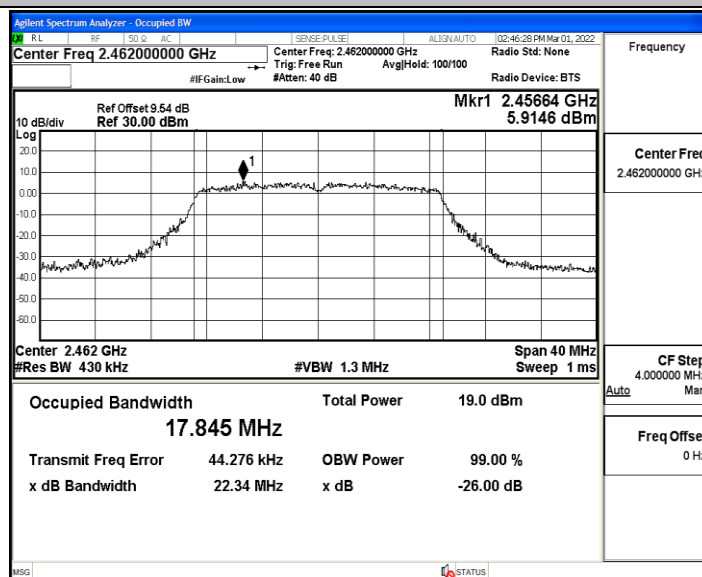
11N20MIMO_Ant2_2437



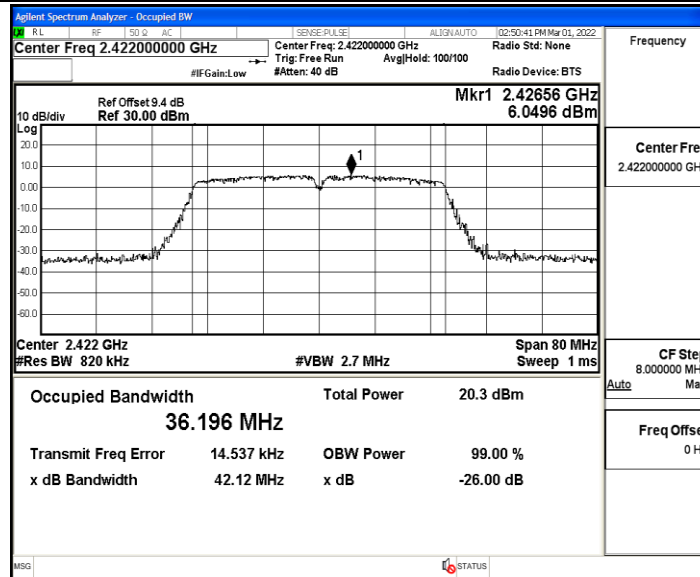
11N20MIMO_Ant1_2462



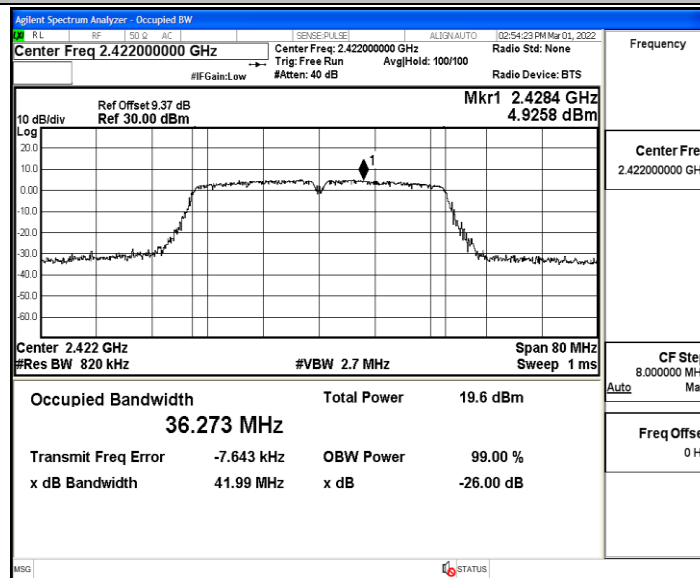
11N20MIMO_Ant2_2462



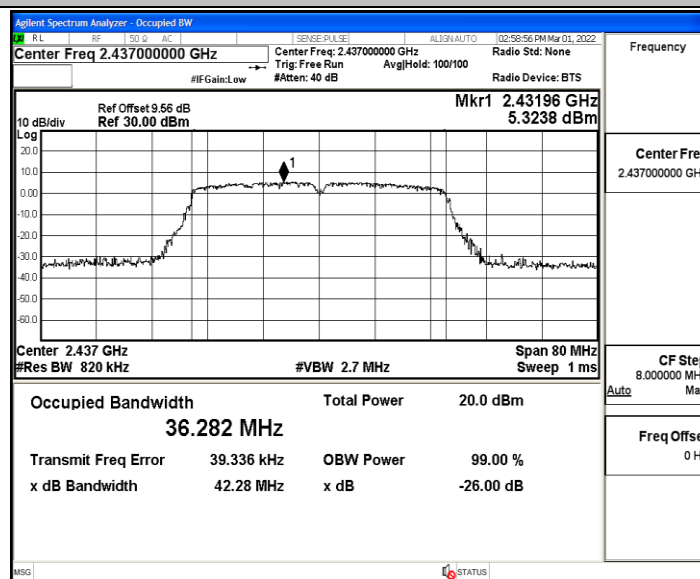
11N40MIMO_Ant1_2422



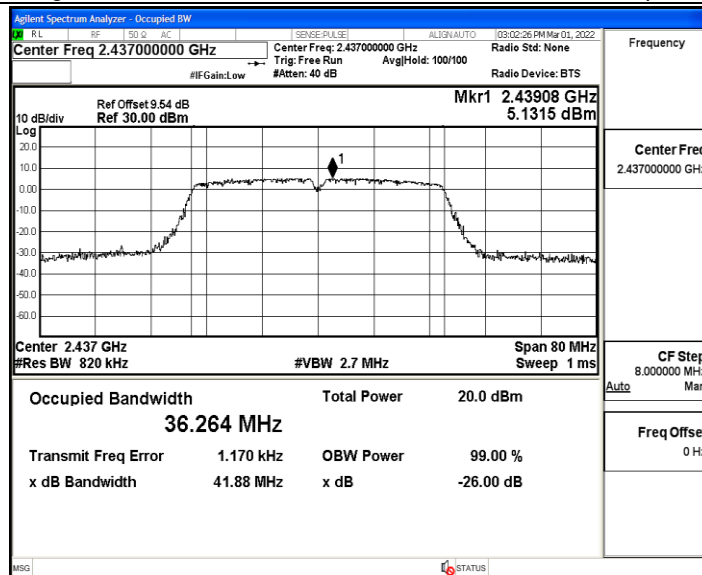
11N40MIMO_Ant2_2422



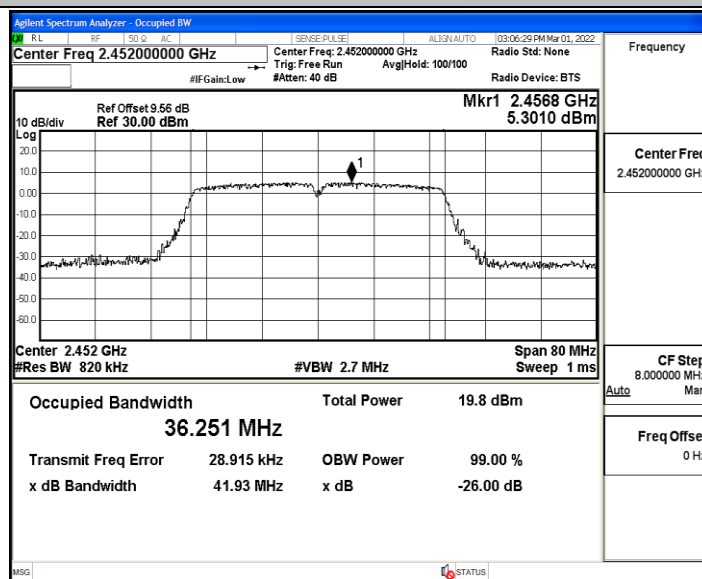
11N40MIMO_Ant1_2437



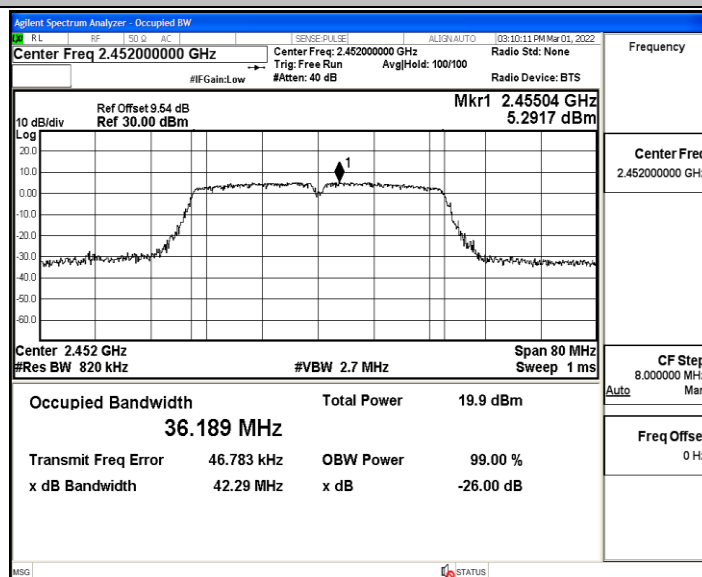
11N40MIMO_Ant2_2437



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	14.86	≤30	PASS
	Ant2	2412	12.74	≤30	PASS
	Ant1	2437	14.54	≤30	PASS
	Ant2	2437	12.87	≤30	PASS
	Ant1	2462	14.26	≤30	PASS
	Ant2	2462	12.26	≤30	PASS
11G	Ant1	2412	14.13	≤30	PASS
	Ant2	2412	13.53	≤30	PASS
	Ant1	2437	13.33	≤30	PASS
	Ant2	2437	13.43	≤30	PASS
	Ant1	2462	13.17	≤30	PASS
	Ant2	2462	13.10	≤30	PASS
11N20MIMO	Ant1	2412	14.13	≤30	PASS
	Ant2	2412	13.44	≤30	PASS
	total	2412	16.81	≤30	PASS
	Ant1	2437	13.23	≤30	PASS
	Ant2	2437	13.11	≤30	PASS
	total	2437	16.18	≤30	PASS
	Ant1	2462	13.00	≤30	PASS
	Ant2	2462	12.63	≤30	PASS
	total	2462	15.83	≤30	PASS
11N40MIMO	Ant1	2422	13.95	≤30	PASS
	Ant2	2422	13.16	≤30	PASS
	total	2422	16.58	≤30	PASS
	Ant1	2437	13.32	≤30	PASS
	Ant2	2437	13.46	≤30	PASS
	total	2437	16.40	≤30	PASS
	Ant1	2452	13.32	≤30	PASS
	Ant2	2452	13.16	≤30	PASS
	total	2452	16.25	≤30	PASS

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

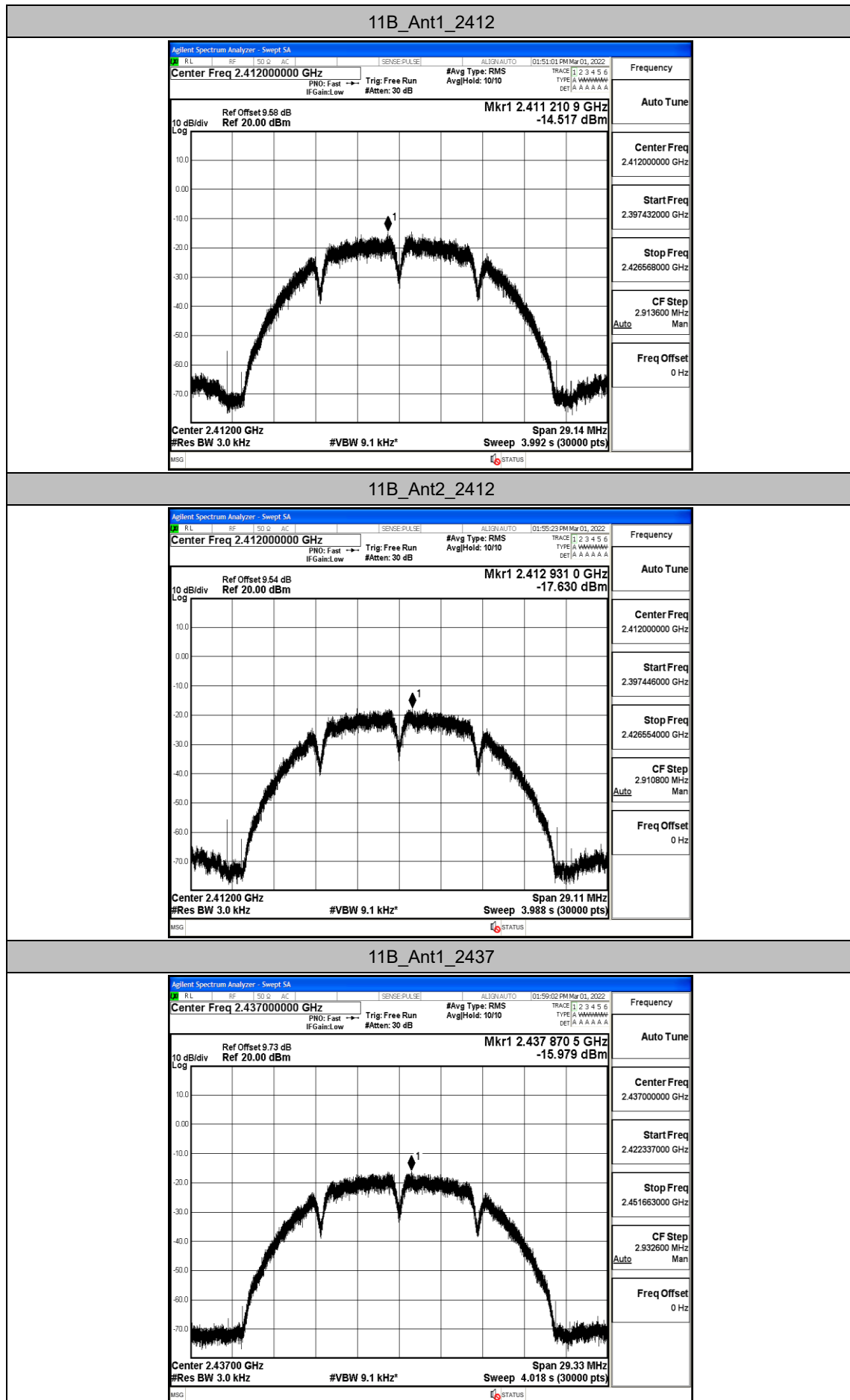
Appendix D: Maximum power spectral density

Test Result

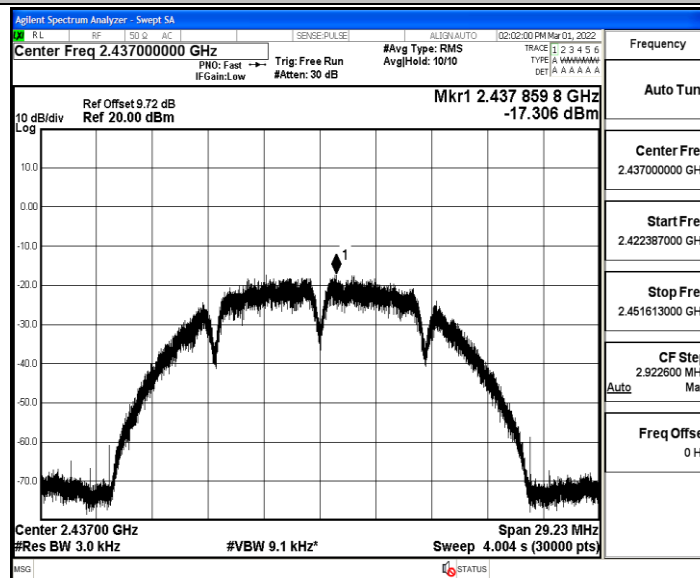
TestMode	Antenna	Channel	Result[dBm/3-100kHz]	Limit[dBm/3kHz]	Verdict
11B	Ant1	2412	-14.52	≤8	PASS
	Ant2	2412	-17.63	≤8	PASS
	Ant1	2437	-15.98	≤8	PASS
	Ant2	2437	-17.31	≤8	PASS
	Ant1	2462	-16.08	≤8	PASS
	Ant2	2462	-18.09	≤8	PASS
11G	Ant1	2412	-15.45	≤8	PASS
	Ant2	2412	-16.89	≤8	PASS
	Ant1	2437	-16.3	≤8	PASS
	Ant2	2437	-16.29	≤8	PASS
	Ant1	2462	-17.43	≤8	PASS
	Ant2	2462	-16.67	≤8	PASS
11N20MIMO	Ant1	2412	-15.74	≤8	PASS
	Ant2	2412	-16.58	≤8	PASS
	total	2412	-13.13	≤8	PASS
	Ant1	2437	-16.2	≤8	PASS
	Ant2	2437	-16.64	≤8	PASS
	total	2437	-13.40	≤8	PASS
	Ant1	2462	-17.48	≤8	PASS
	Ant2	2462	-17.14	≤8	PASS
	total	2462	-14.30	≤8	PASS
11N40MIMO	Ant1	2422	-17.74	≤8	PASS
	Ant2	2422	-17.78	≤8	PASS
	total	2422	-14.75	≤8	PASS
	Ant1	2437	-18.8	≤8	PASS
	Ant2	2437	-17.09	≤8	PASS
	total	2437	-14.85	≤8	PASS
	Ant1	2452	-18.39	≤8	PASS
	Ant2	2452	-19.24	≤8	PASS
	total	2452	-15.78	≤8	PASS

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

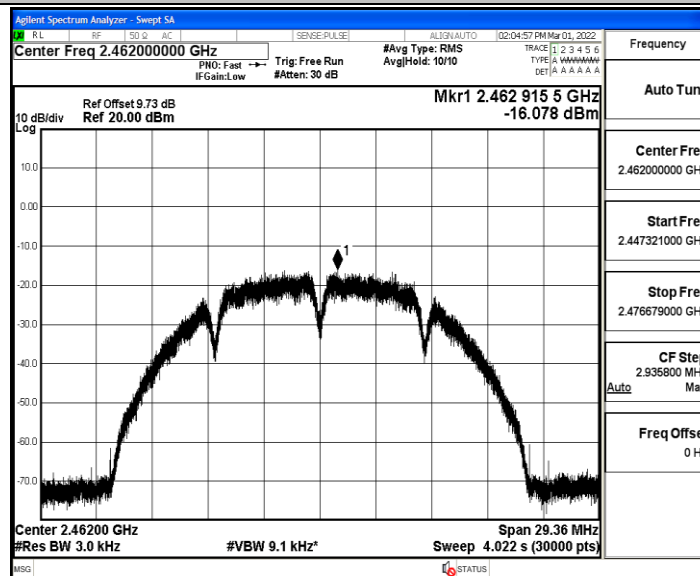
Test Graphs



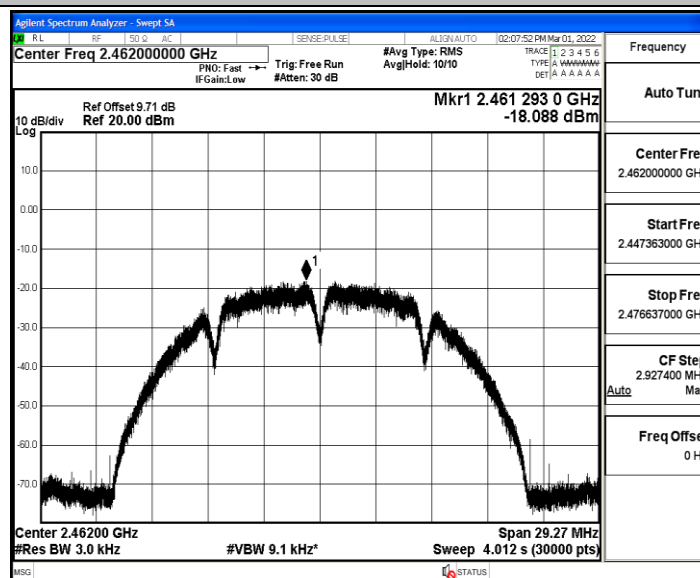
11B_Ant2_2437



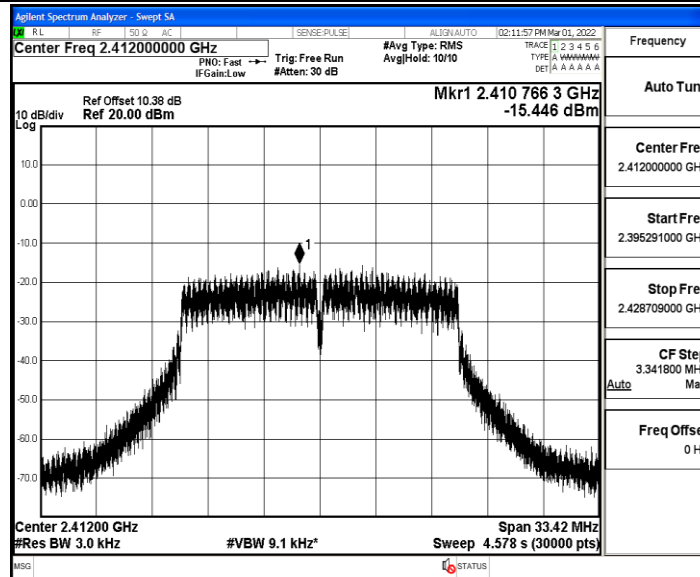
11B_Ant1_2462



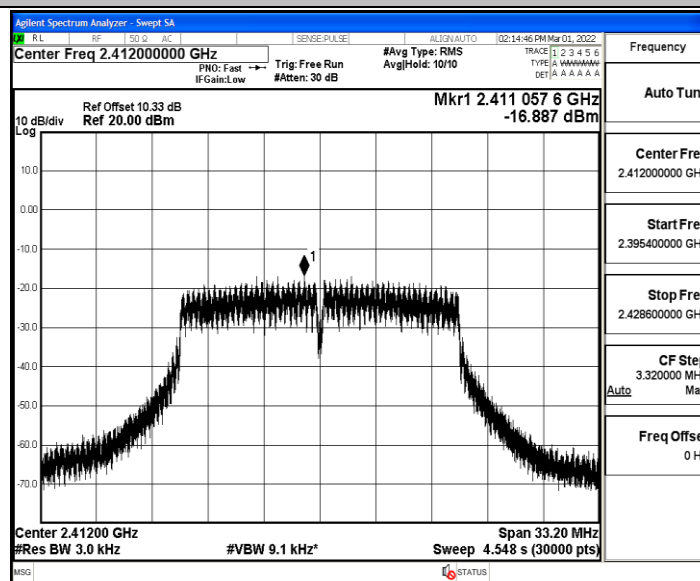
11B_Ant2_2462



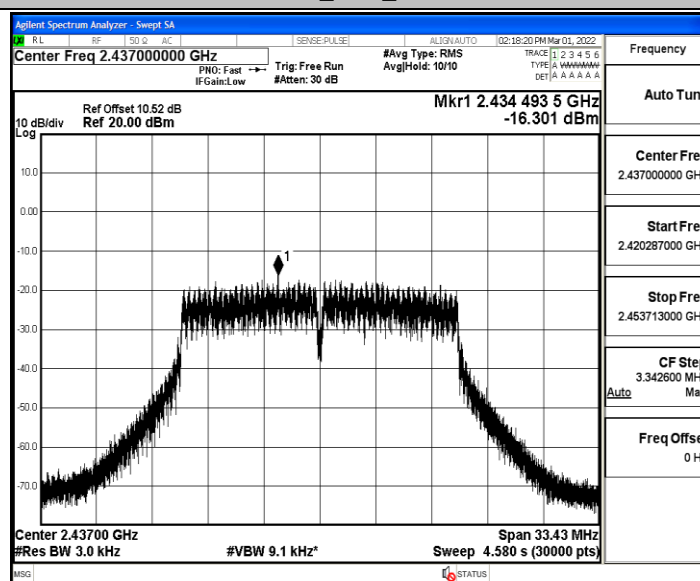
11G_Ant1_2412



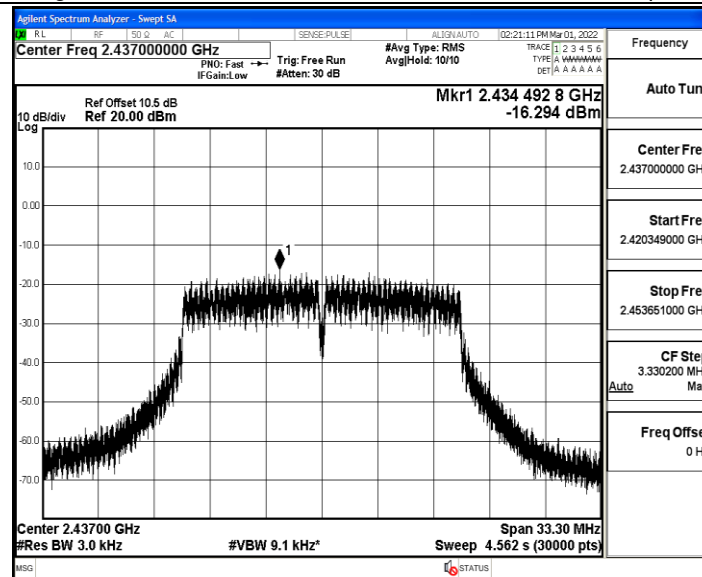
11G_Ant2_2412



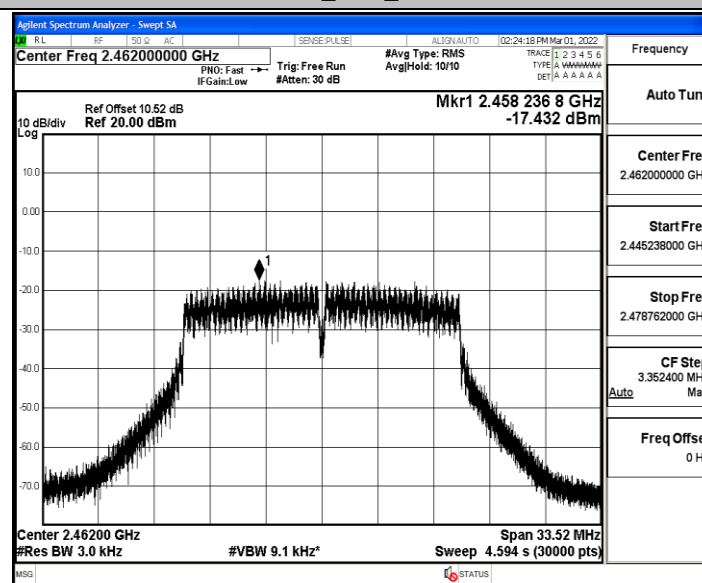
11G_Ant1_2437



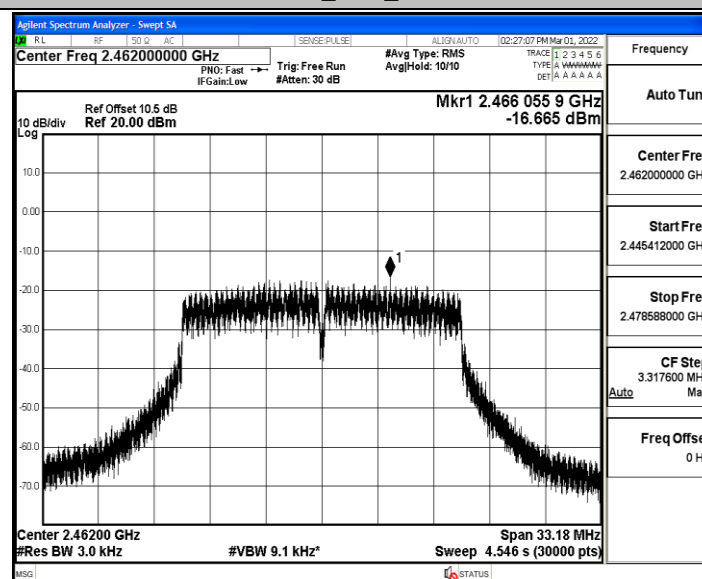
11G_Ant2_2437



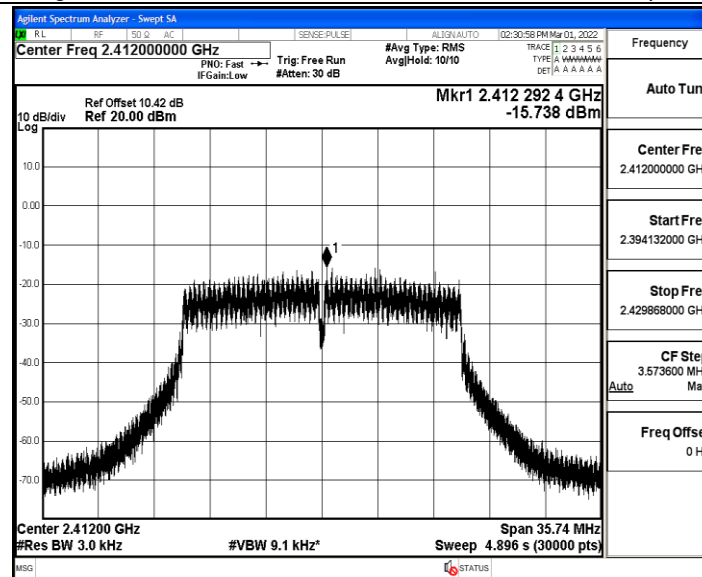
11G_Ant1_2462



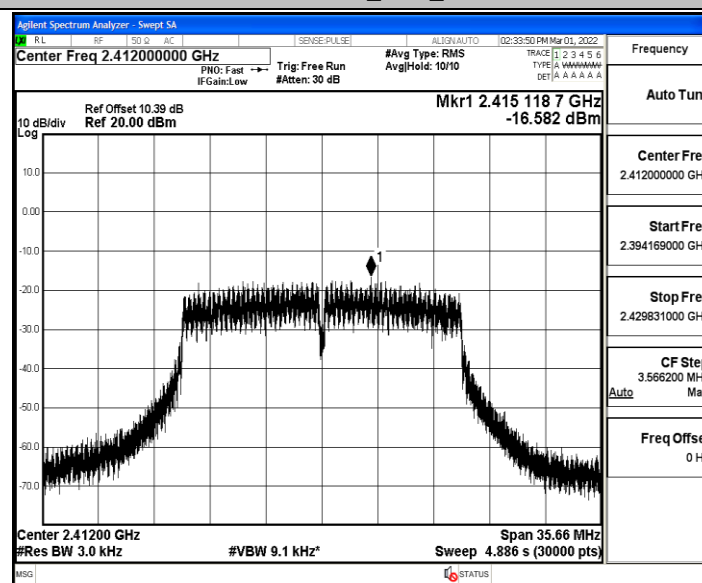
11G_Ant2_2462



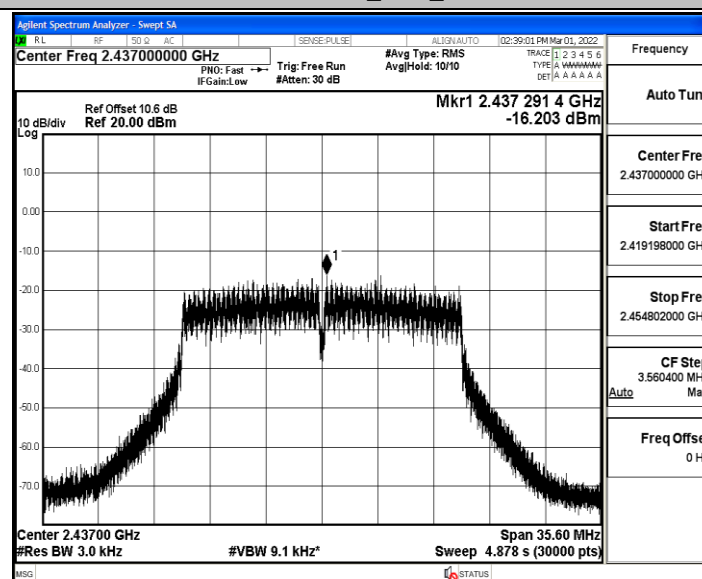
11N20MIMO_Ant1_2412



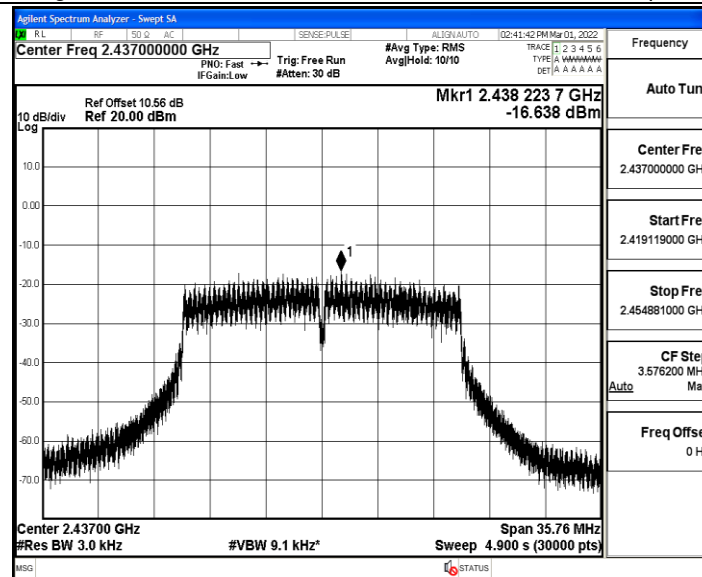
11N20MIMO_Ant2_2412



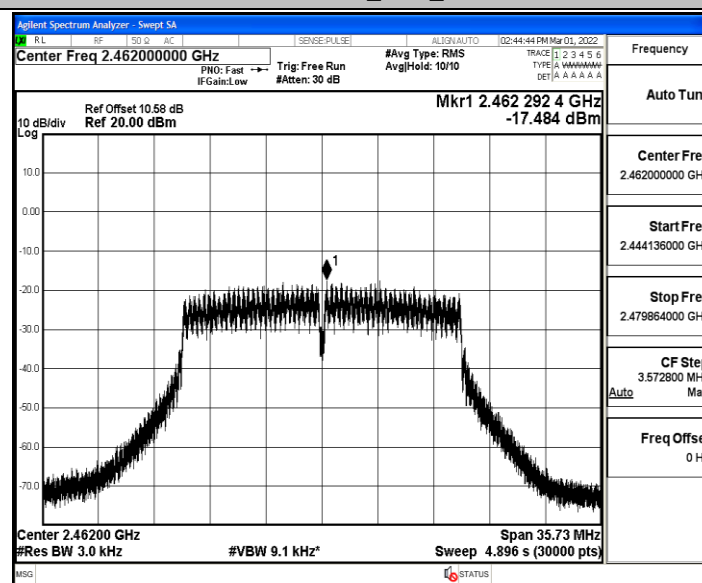
11N20MIMO_Ant1_2437



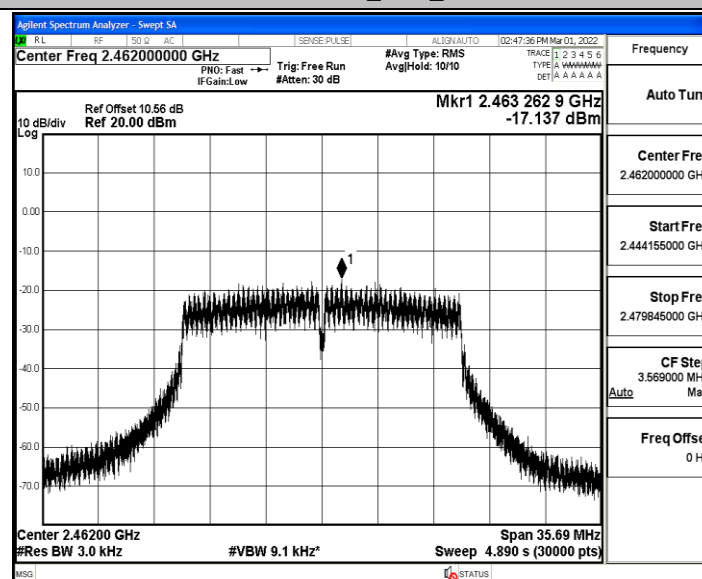
11N20MIMO_Ant2_2437



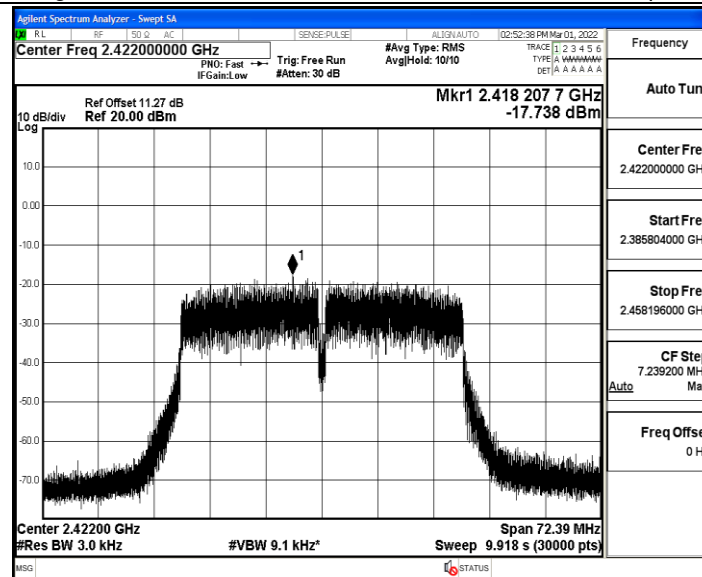
11N20MIMO_Ant1_2462



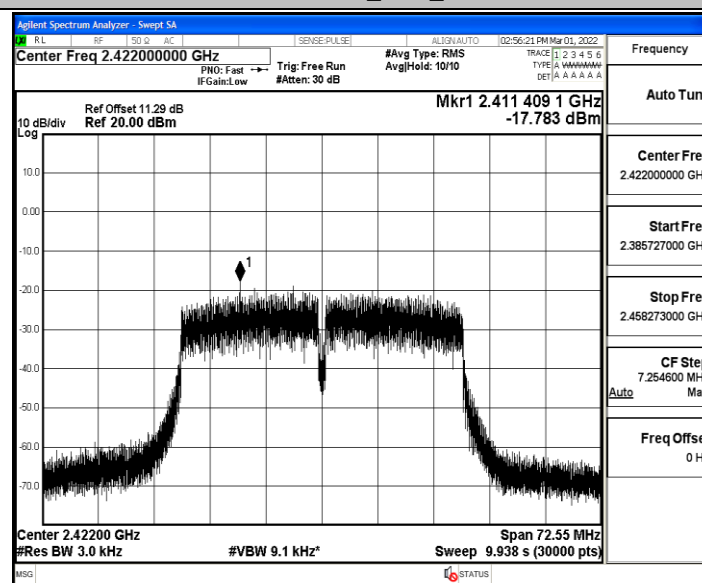
11N20MIMO_Ant2_2462



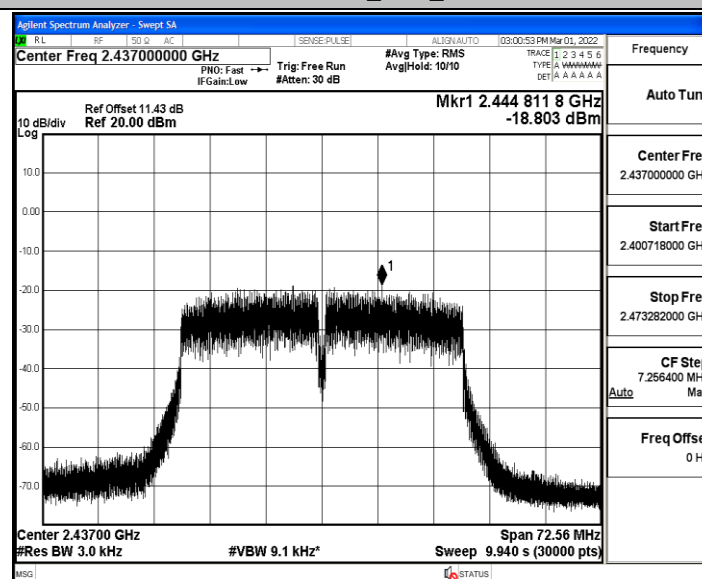
11N40MIMO_Ant1_2422



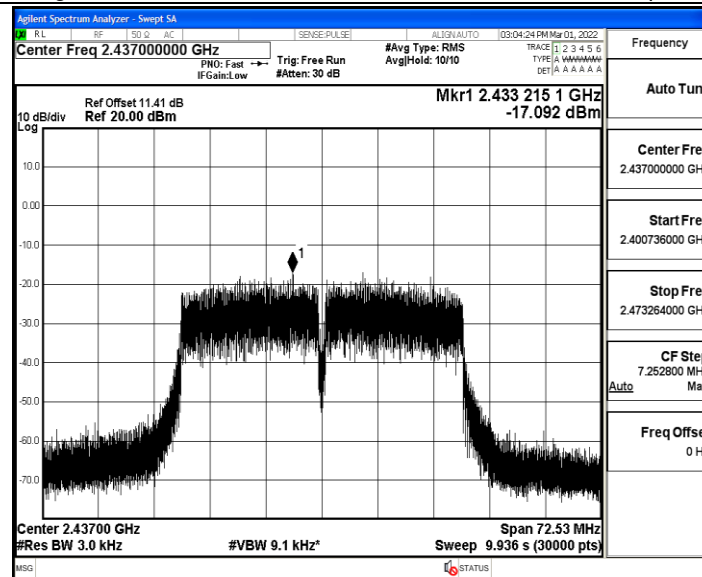
11N40MIMO_Ant2_2422



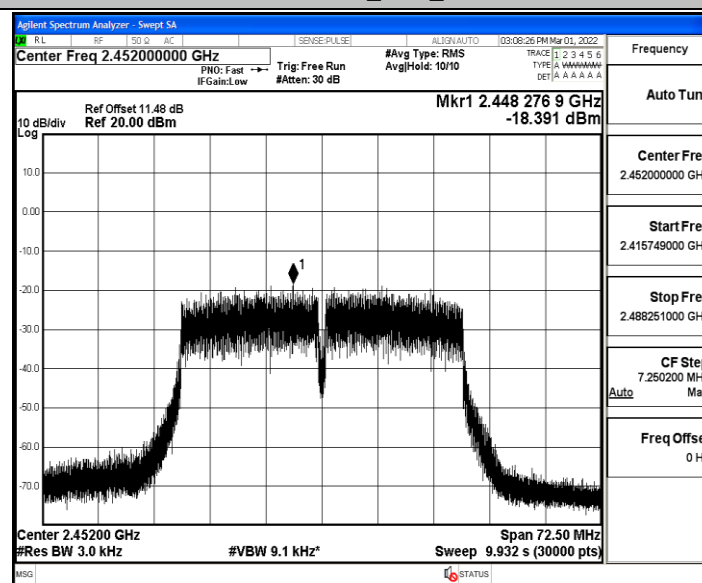
11N40MIMO_Ant1_2437



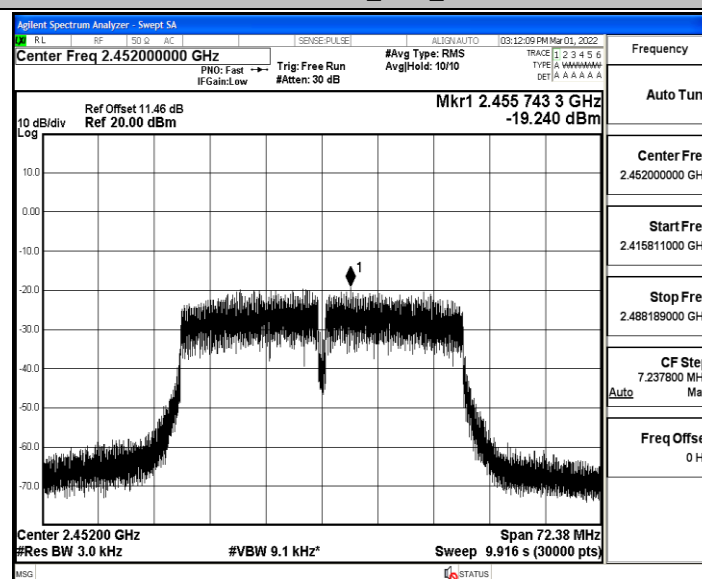
11N40MIMO_Ant2_2437



11N40MIMO_Ant1_2452



11N40MIMO_Ant2_2452



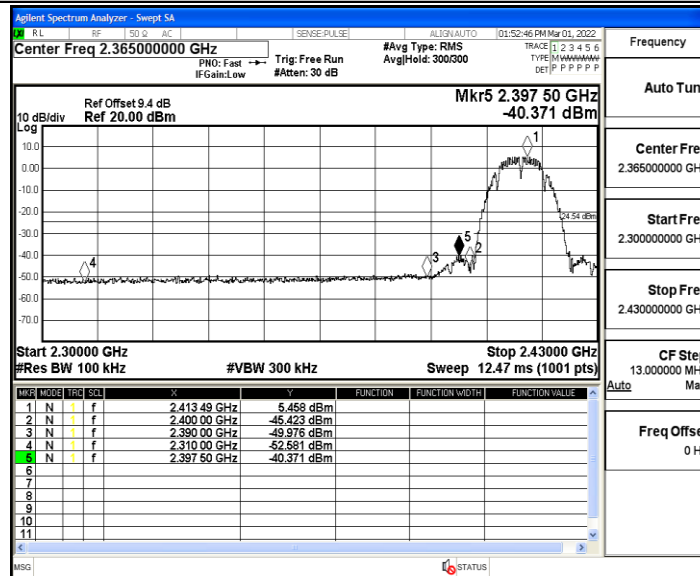
Appendix E: Band edge measurements

Test Result

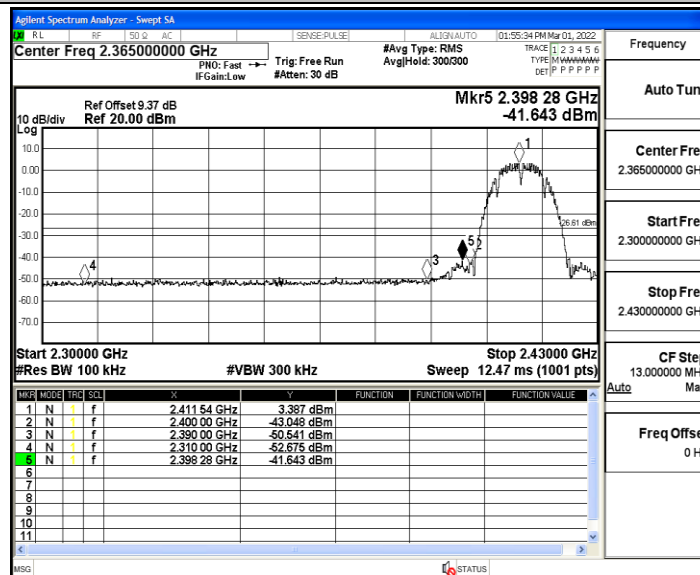
TestMode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
11B	Ant1	Low	2412	5.46	-40.37	≤-24.54	PASS
	Ant2	Low	2412	3.39	-41.64	≤-26.61	PASS
	Ant1	High	2462	4.87	-47.98	≤-25.13	PASS
	Ant2	High	2462	3.28	-48.45	≤-26.72	PASS
11G	Ant1	Low	2412	3.43	-35.82	≤-26.57	PASS
	Ant2	Low	2412	2.93	-33.05	≤-27.07	PASS
	Ant1	High	2462	1.87	-46.92	≤-28.13	PASS
	Ant2	High	2462	1.94	-45.11	≤-28.06	PASS
11N20MIMO	Ant1	Low	2412	2.76	-33.29	≤-27.24	PASS
	Ant2	Low	2412	2.58	-32.41	≤-27.43	PASS
	Ant1	High	2462	1.94	-47.76	≤-28.06	PASS
	Ant2	High	2462	2.54	-44.33	≤-27.46	PASS
11N40MIMO	Ant1	Low	2422	0.10	-38.68	≤-29.9	PASS
	Ant2	Low	2422	-0.62	-35.83	≤-30.62	PASS
	Ant1	High	2452	-0.29	-47.4	≤-30.29	PASS
	Ant2	High	2452	-0.50	-39.69	≤-30.5	PASS

Test Graphs

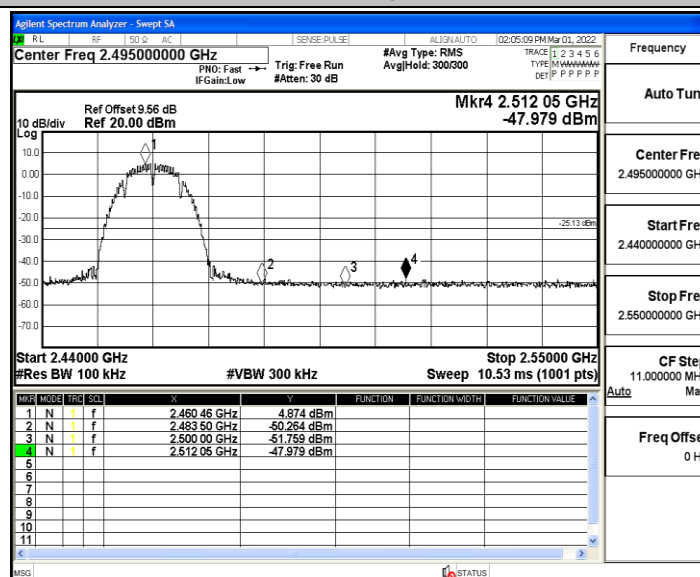
11B_Ant1_Low_2412



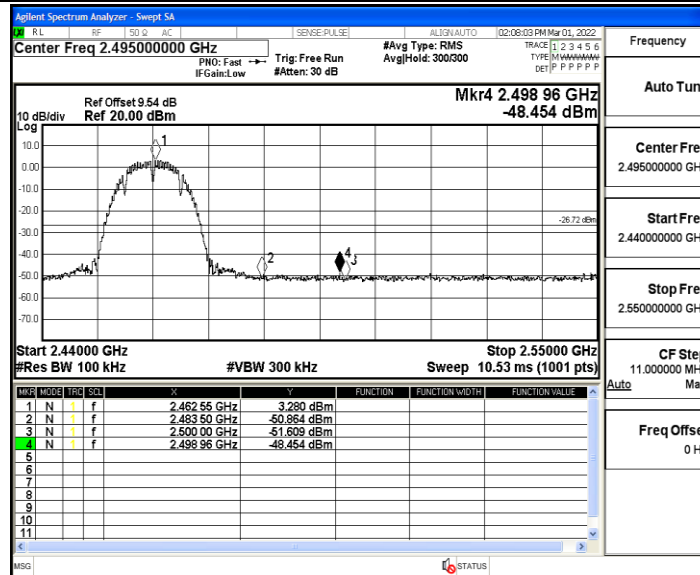
11B_Ant2_Low_2412



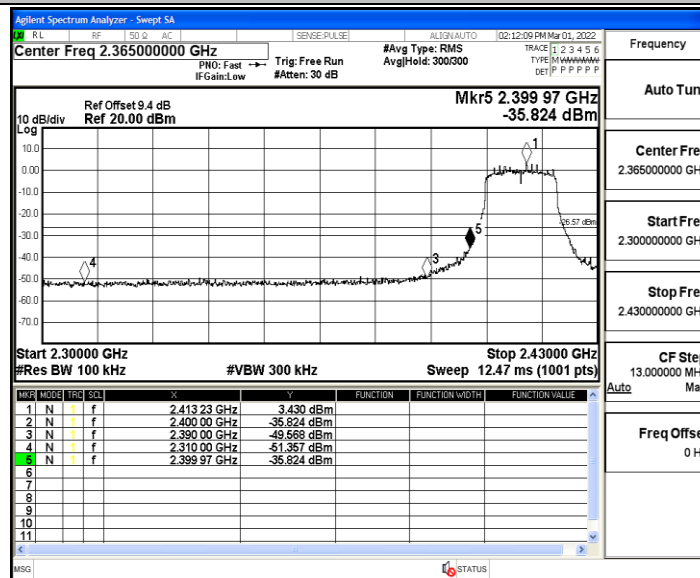
11B_Ant1_High_2462



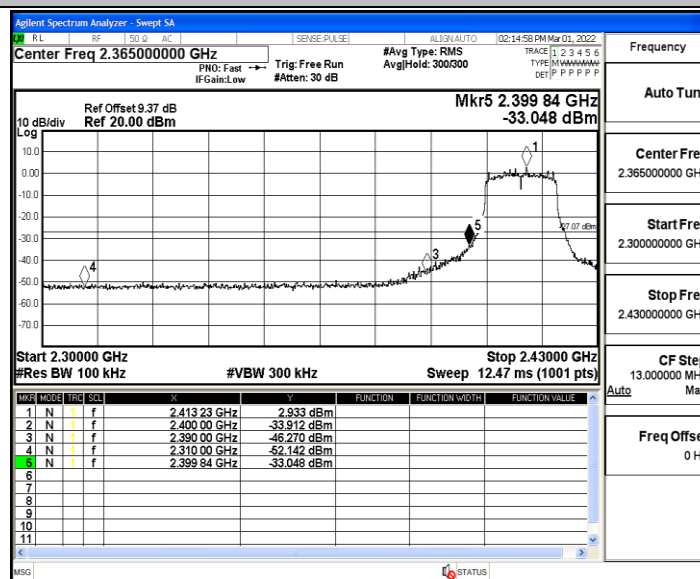
11B_Ant2_High_2462



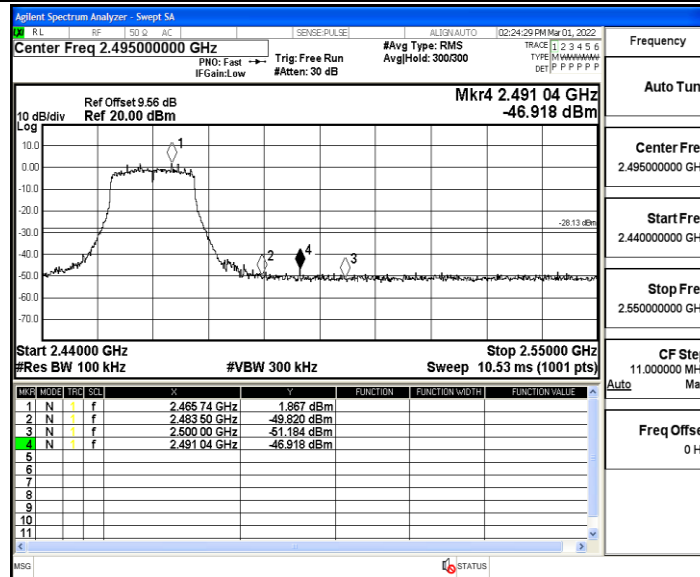
11G_Ant1_Low_2412



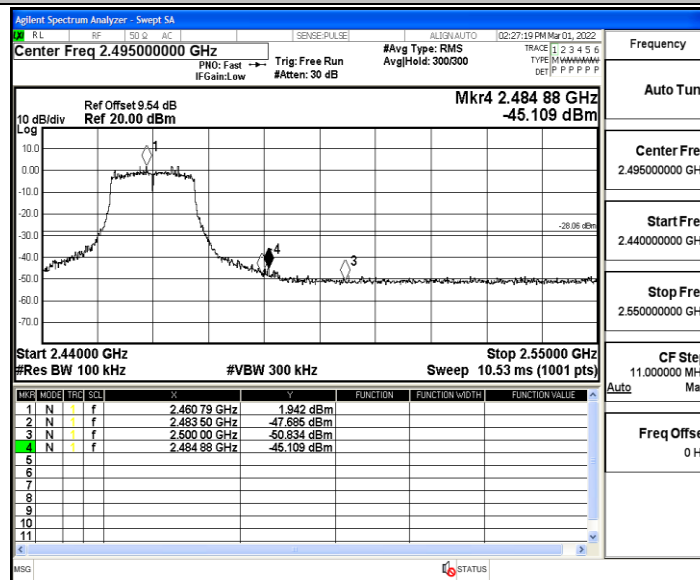
11G_Ant2_Low_2412



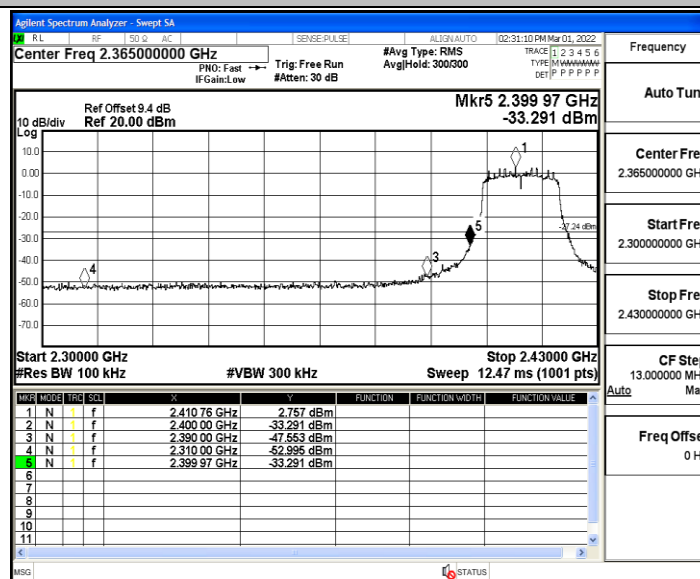
11G_Ant1_High_2462



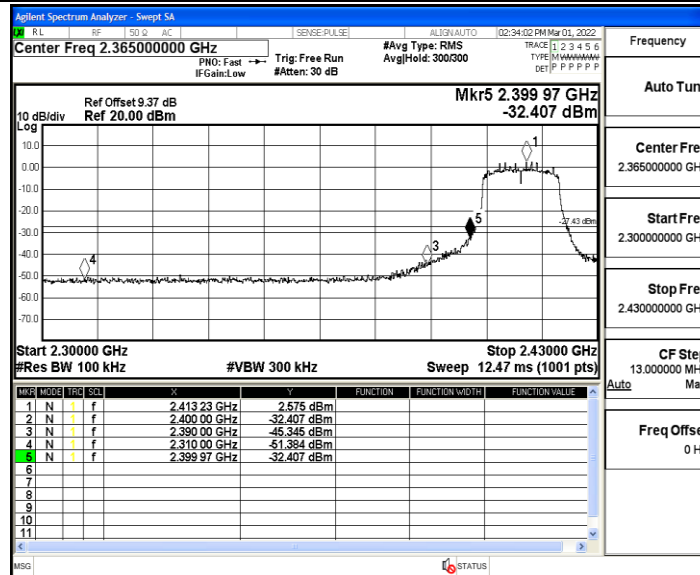
11G_Ant2_High_2462



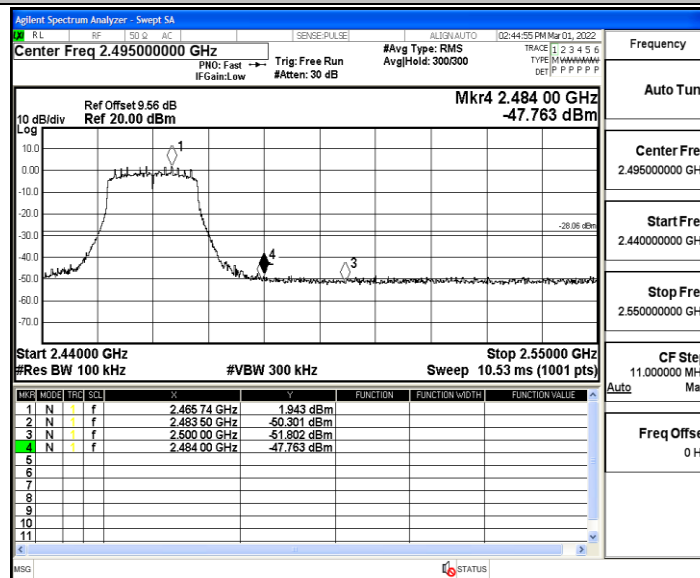
11N20MIMO_Ant1_Low_2412



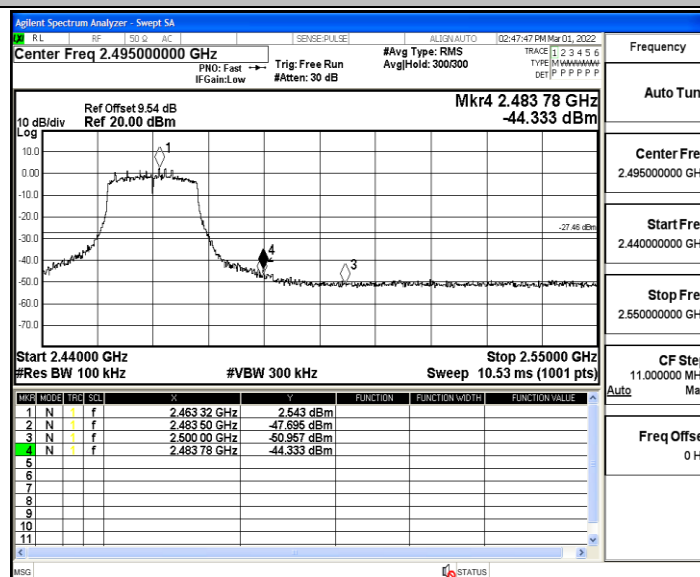
11N20MIMO_Ant2_Low_2412



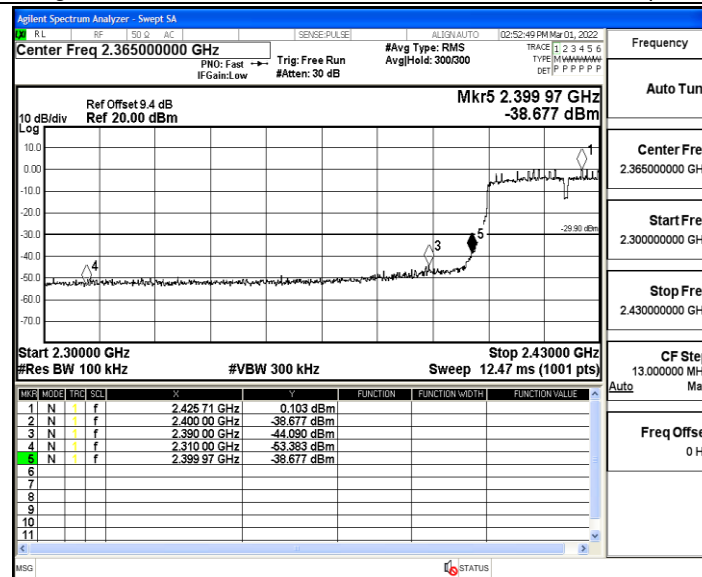
11N20MIMO_Ant1_High_2462



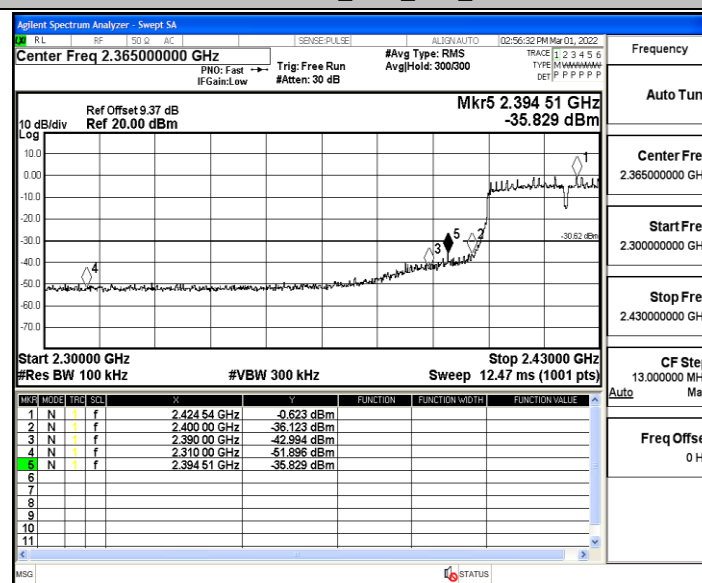
11N20MIMO_Ant2_High_2462



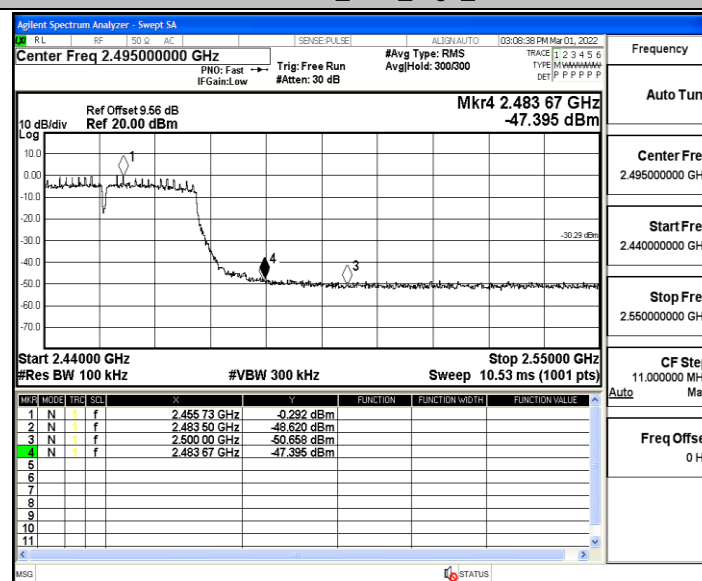
11N40MIMO_Ant1_Low_2422



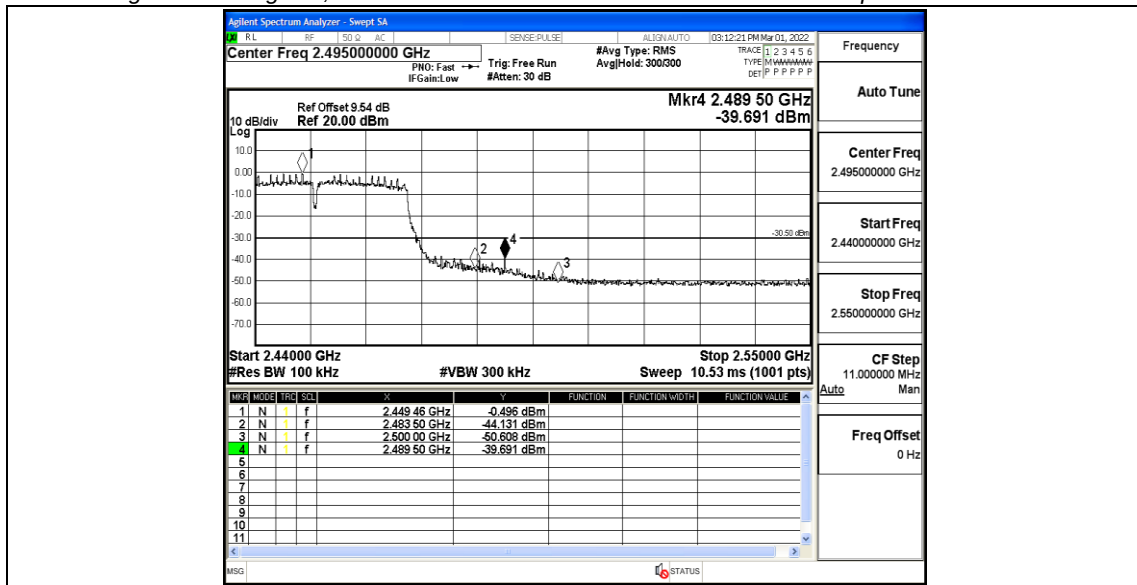
11N40MIMO_Ant2_Low_2422



11N40MIMO_Ant1_High_2452



11N40MIMO_Ant2_High_2452



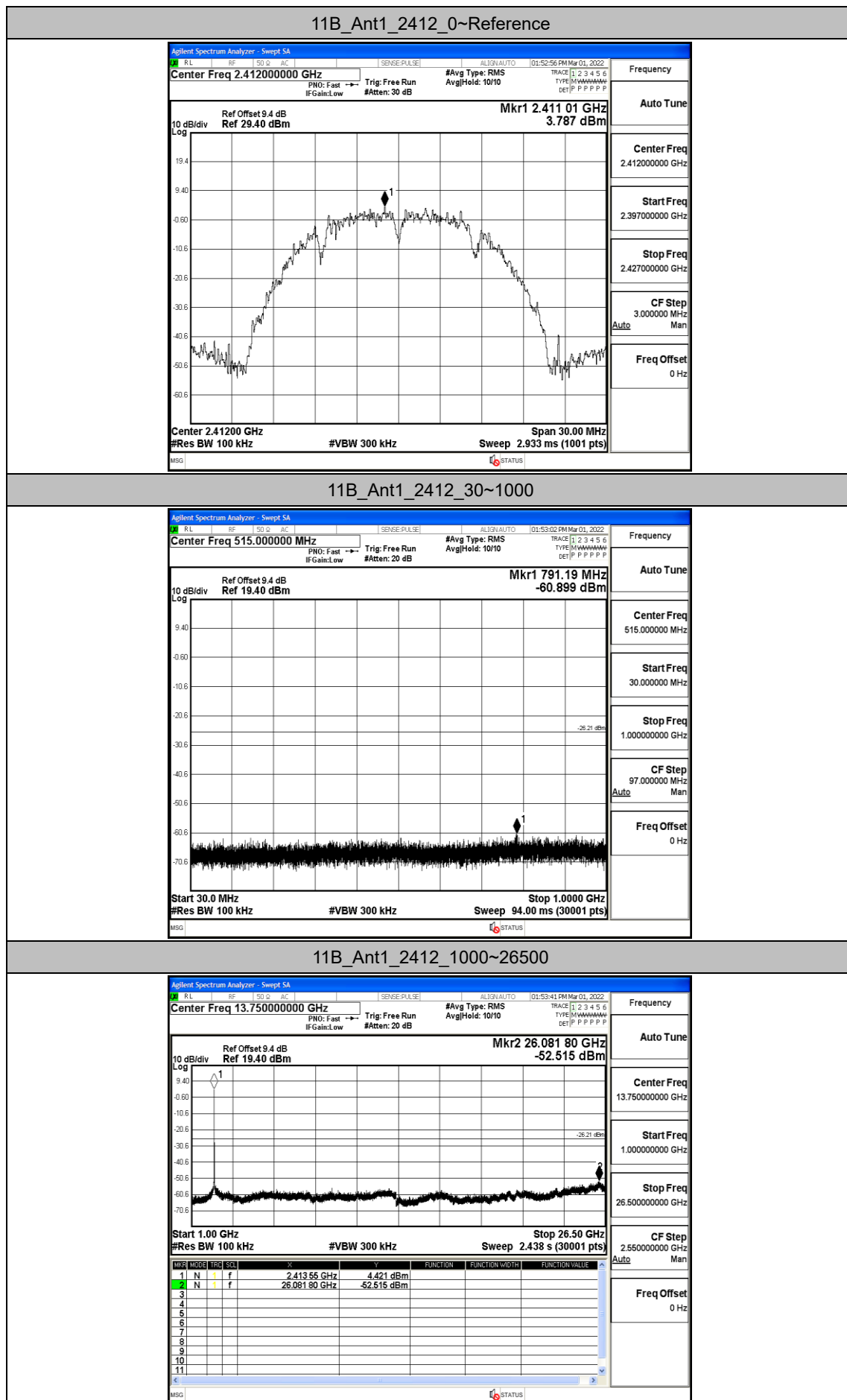
Appendix F: Conducted Spurious Emission

Test Result

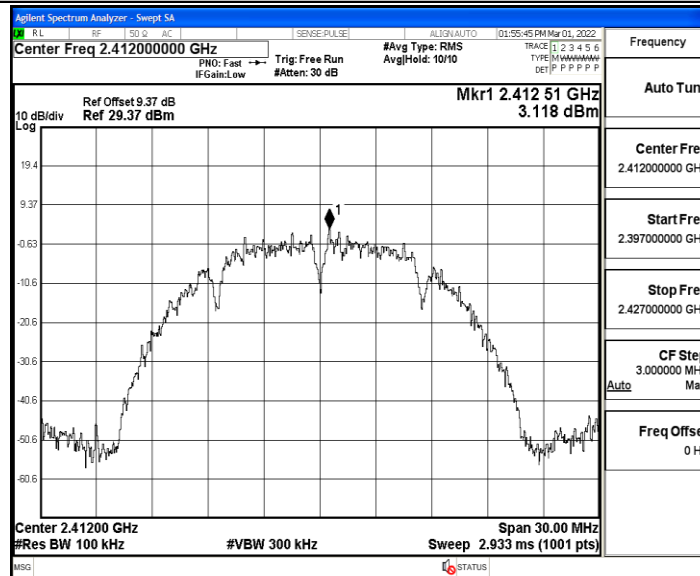
TestMode	Antenna	Channel	FreqRange [Mhz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
11B	Ant1	2412	Reference	3.79	3.79	---	PASS
			30~1000	3.79	-60.9	≤-26.21	PASS
			1000~26500	3.79	-52.52	≤-26.21	PASS
	Ant2	2412	Reference	3.12	3.12	---	PASS
			30~1000	3.12	-61.28	≤-26.88	PASS
			1000~26500	3.12	-50.82	≤-26.88	PASS
	Ant1	2437	Reference	3.56	3.56	---	PASS
			30~1000	3.56	-60.88	≤-26.44	PASS
			1000~26500	3.56	-52.78	≤-26.44	PASS
	Ant2	2437	Reference	2.03	2.03	---	PASS
			30~1000	2.03	-61.08	≤-27.97	PASS
			1000~26500	2.03	-51.57	≤-27.97	PASS
	Ant1	2462	Reference	3.06	3.06	---	PASS
			30~1000	3.06	-60.42	≤-26.94	PASS
			1000~26500	3.06	-51.83	≤-26.94	PASS
	Ant2	2462	Reference	2.33	2.33	---	PASS
			30~1000	2.33	-61.58	≤-27.67	PASS
			1000~26500	2.33	-52.14	≤-27.67	PASS
11G	Ant1	2412	Reference	2.25	2.25	---	PASS
			30~1000	2.25	-61.03	≤-27.75	PASS
			1000~26500	2.25	-52.71	≤-27.75	PASS
	Ant2	2412	Reference	-0.67	-0.67	---	PASS
			30~1000	-0.67	-61.15	≤-30.67	PASS
			1000~26500	-0.67	-52.11	≤-30.67	PASS
	Ant1	2437	Reference	-0.83	-0.83	---	PASS
			30~1000	-0.83	-60.77	≤-30.83	PASS
			1000~26500	-0.83	-52.56	≤-30.83	PASS
	Ant2	2437	Reference	0.75	0.75	---	PASS
			30~1000	0.75	-61.34	≤-29.25	PASS
			1000~26500	0.75	-51.73	≤-29.25	PASS
	Ant1	2462	Reference	2.19	2.19	---	PASS
			30~1000	2.19	-61	≤-27.81	PASS
			1000~26500	2.19	-44.38	≤-27.81	PASS
	Ant2	2462	Reference	1.81	1.81	---	PASS
			30~1000	1.81	-61.21	≤-28.19	PASS
			1000~26500	1.81	-51.63	≤-28.19	PASS
11N20MIMO	Ant1	2412	Reference	-0.66	-0.66	---	PASS
			30~1000	-0.66	-60.88	≤-30.66	PASS
			1000~26500	-0.66	-45.96	≤-30.66	PASS
	Ant2	2412	Reference	-0.64	-0.64	---	PASS

TestMode	Antenna	Channel	FreqRange [Mhz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
			30~1000	-0.64	-61.16	≤-30.64	PASS
			1000~26500	-0.64	-51.76	≤-30.64	PASS
	Ant1	2437	Reference	1.55	1.55	---	PASS
			30~1000	1.55	-60.96	≤-28.45	PASS
			1000~26500	1.55	-43.93	≤-28.45	PASS
	Ant2	2437	Reference	1.70	1.70	---	PASS
			30~1000	1.70	-61.37	≤-28.3	PASS
			1000~26500	1.70	-51.2	≤-28.3	PASS
	Ant1	2462	Reference	-1.38	-1.38	---	PASS
			30~1000	-1.38	-60.94	≤-31.38	PASS
			1000~26500	-1.38	-52.31	≤-31.38	PASS
	Ant2	2462	Reference	-0.95	-0.95	---	PASS
			30~1000	-0.95	-61.33	≤-30.95	PASS
			1000~26500	-0.95	-52.39	≤-30.95	PASS
11N40MIMO	Ant1	2422	Reference	-0.51	-0.51	---	PASS
			30~1000	-0.51	-61.08	≤-30.51	PASS
			1000~26500	-0.51	-52.39	≤-30.51	PASS
	Ant2	2422	Reference	-0.79	-0.79	---	PASS
			30~1000	-0.79	-61.08	≤-30.79	PASS
			1000~26500	-0.79	-51.78	≤-30.79	PASS
	Ant1	2437	Reference	-2.77	-2.77	---	PASS
			30~1000	-2.77	-60.17	≤-32.77	PASS
			1000~26500	-2.77	-52.17	≤-32.77	PASS
	Ant2	2437	Reference	-1.44	-1.44	---	PASS
			30~1000	-1.44	-61.27	≤-31.44	PASS
			1000~26500	-1.44	-50.58	≤-31.44	PASS
	Ant1	2452	Reference	-2.03	-2.03	---	PASS
			30~1000	-2.03	-61.22	≤-32.03	PASS
			1000~26500	-2.03	-52.23	≤-32.03	PASS
	Ant2	2452	Reference	-1.43	-1.43	---	PASS
			30~1000	-1.43	-60.4	≤-31.43	PASS
			1000~26500	-1.43	-52	≤-31.43	PASS

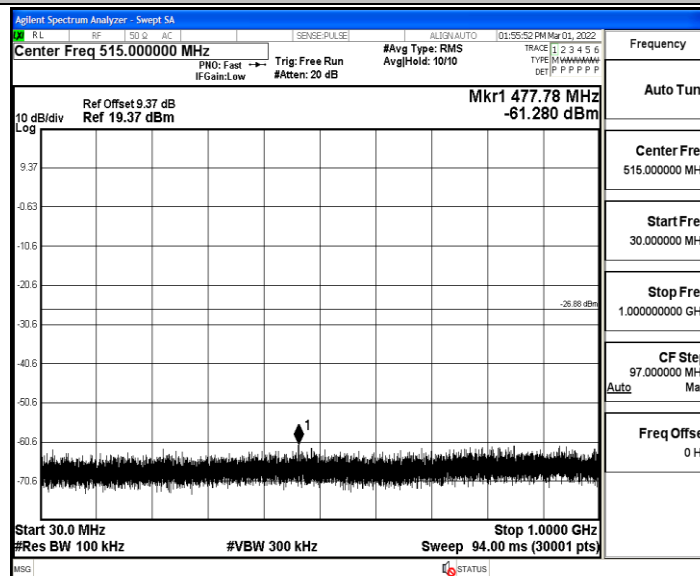
Test Graphs



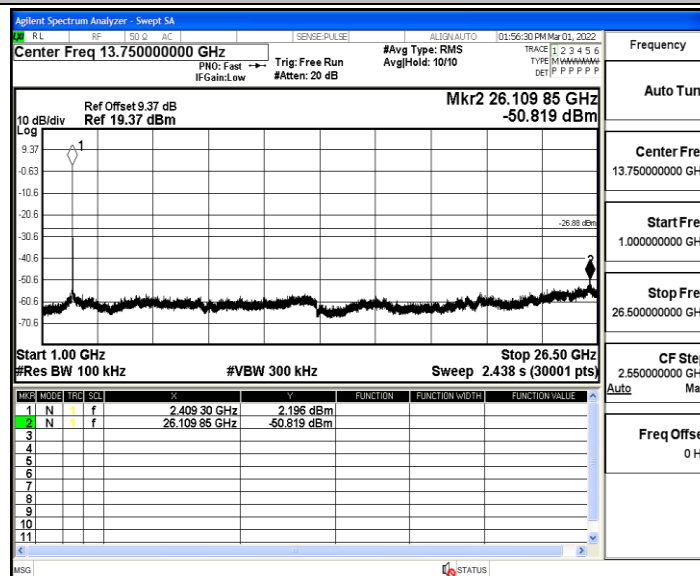
11B_Ant2_2412_0~Reference



11B_Ant2_2412_30~1000



11B_Ant2_2412_1000~26500



11B_Ant1_2437_0~Reference