



RF Test Data for RLAN(5.2G) (Conducted Measurement)

Product Name: Wanbo Projector

Trade Mark: wanbo

Test Model: X5S

FCC ID: 2A7PI-X5S

Environmental Conditions

Temperature:	23.5°C
Relative Humidity:	58%
ATM Pressure:	100.0 kPa
Test Engineer:	Allen Lai
Supervised by:	Max Zhang
NOTE	N/A

Appendix A1: Emission Bandwidth

Test Result

Test Mode	Antenna	Frequency [MHz]	26db EBW [MHz]	FL [MHz]	FH [MHz]	Limit [MHz]	Verdict
11A	Ant1	5180	19.960	5170.040	5190.000	---	---
11A	Ant2	5180	19.760	5170.080	5189.840	---	---
11A	Ant1	5200	19.840	5190.160	5210.000	---	---
11A	Ant2	5200	19.560	5190.280	5209.840	---	---
11A	Ant1	5240	20.000	5230.040	5250.040	---	---
11A	Ant2	5240	19.960	5230.040	5250.000	---	---
11N20MIMO	Ant1	5180	19.880	5170.120	5190.000	---	---
11N20MIMO	Ant2	5180	19.720	5170.160	5189.880	---	---
11N20MIMO	Ant1	5200	19.760	5190.160	5209.920	---	---
11N20MIMO	Ant2	5200	19.760	5190.240	5210.000	---	---
11N20MIMO	Ant1	5240	19.680	5230.280	5249.960	---	---
11N20MIMO	Ant2	5240	19.840	5230.120	5249.960	---	---
11N40MIMO	Ant1	5190	40.240	5169.840	5210.080	---	---
11N40MIMO	Ant2	5190	40.000	5170.080	5210.080	---	---
11N40MIMO	Ant1	5230	40.080	5209.920	5250.000	---	---
11N40MIMO	Ant2	5230	39.920	5210.000	5249.920	---	---
11AC20MIMO	Ant1	5180	20.000	5170.000	5190.000	---	---
11AC20MIMO	Ant2	5180	19.920	5170.080	5190.000	---	---
11AC20MIMO	Ant1	5200	19.960	5190.040	5210.000	---	---
11AC20MIMO	Ant2	5200	19.840	5190.160	5210.000	---	---
11AC20MIMO	Ant1	5240	19.880	5230.160	5250.040	---	---
11AC20MIMO	Ant2	5240	19.840	5230.160	5250.000	---	---





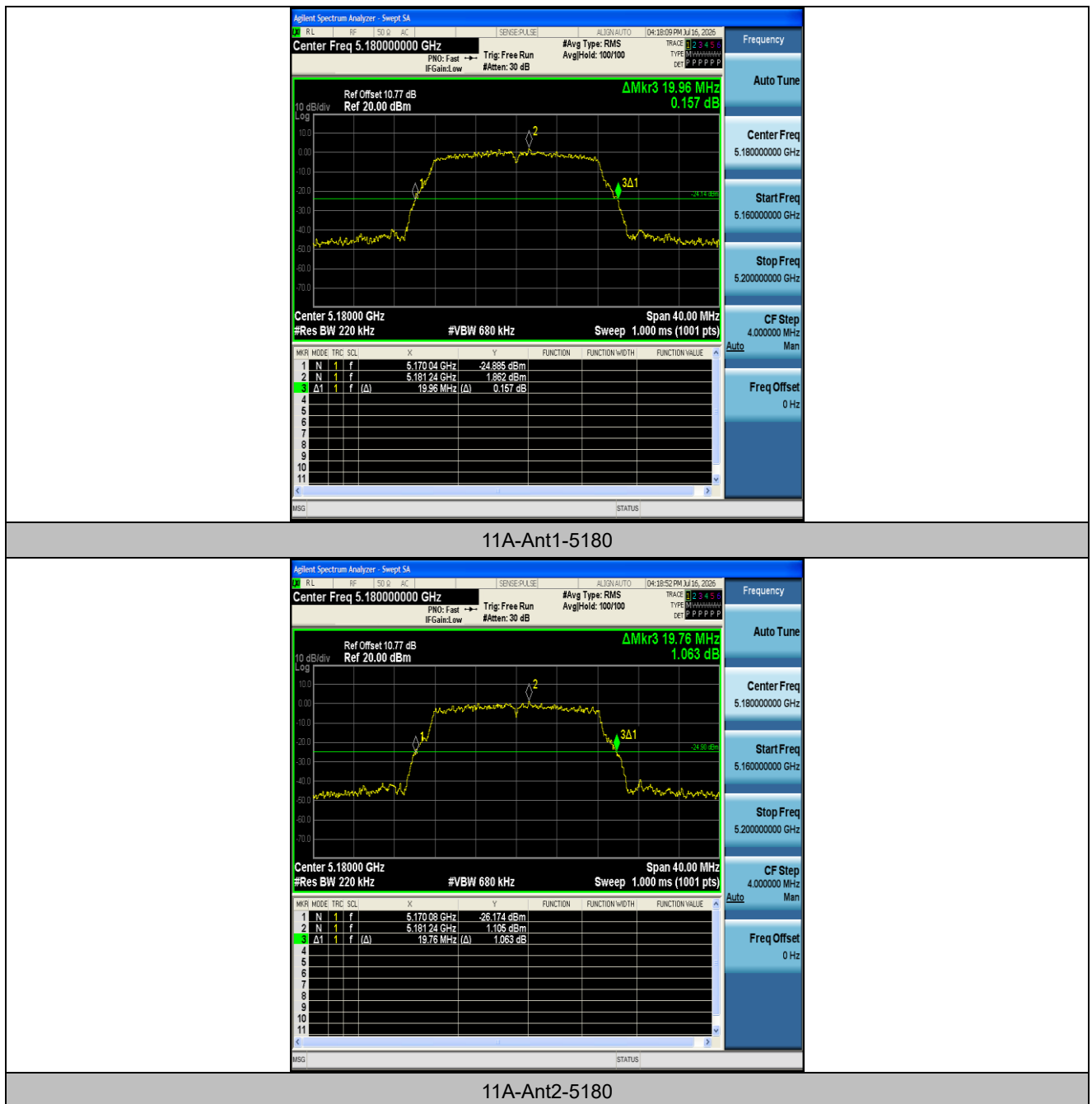
11AC40MIMO	Ant1	5190	39.920	5170.160	5210.080	---	---
11AC40MIMO	Ant2	5190	40.160	5170.080	5210.240	---	---
11AC40MIMO	Ant1	5230	39.920	5210.000	5249.920	---	---
11AC40MIMO	Ant2	5230	39.840	5210.320	5250.160	---	---
11AC80MIMO	Ant1	5210	81.120	5169.520	5250.640	---	---
11AC80MIMO	Ant2	5210	79.840	5170.320	5250.160	---	---

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





Test Graphs





11A-Ant1-5200



11A-Ant2-5200





11A-Ant1-5240



11A-Ant2-5240





11N20MIMO-Ant1-5180



11N20MIMO-Ant2-5180





11N20MIMO-Ant1-5200



11N20MIMO-Ant2-5200





11N20MIMO-Ant1-5240



11N20MIMO-Ant2-5240





11N40MIMO-Ant1-5190



11N40MIMO-Ant2-5190





11N40MIMO-Ant1-5230



11N40MIMO-Ant2-5230





11AC20MIMO-Ant1-5180



11AC20MIMO-Ant2-5180





11AC20MIMO-Ant1-5200



11AC20MIMO-Ant2-5200





11AC40MIMO-Ant1-5190

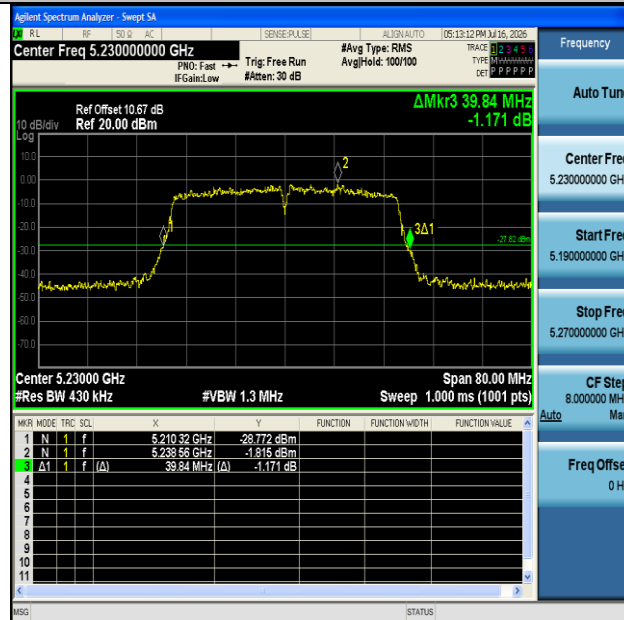


11AC40MIMO-Ant2-5190





11AC40MIMO-Ant1-5230

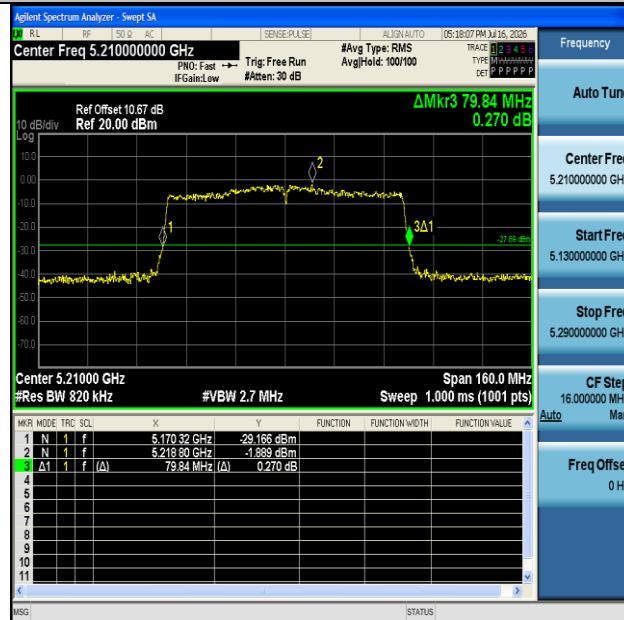


11AC40MIMO-Ant2-5230





11AC80MIMO-Ant1-5210



11AC80MIMO-Ant2-5210





Appendix A2: Occupied channel bandwidth

Test Result

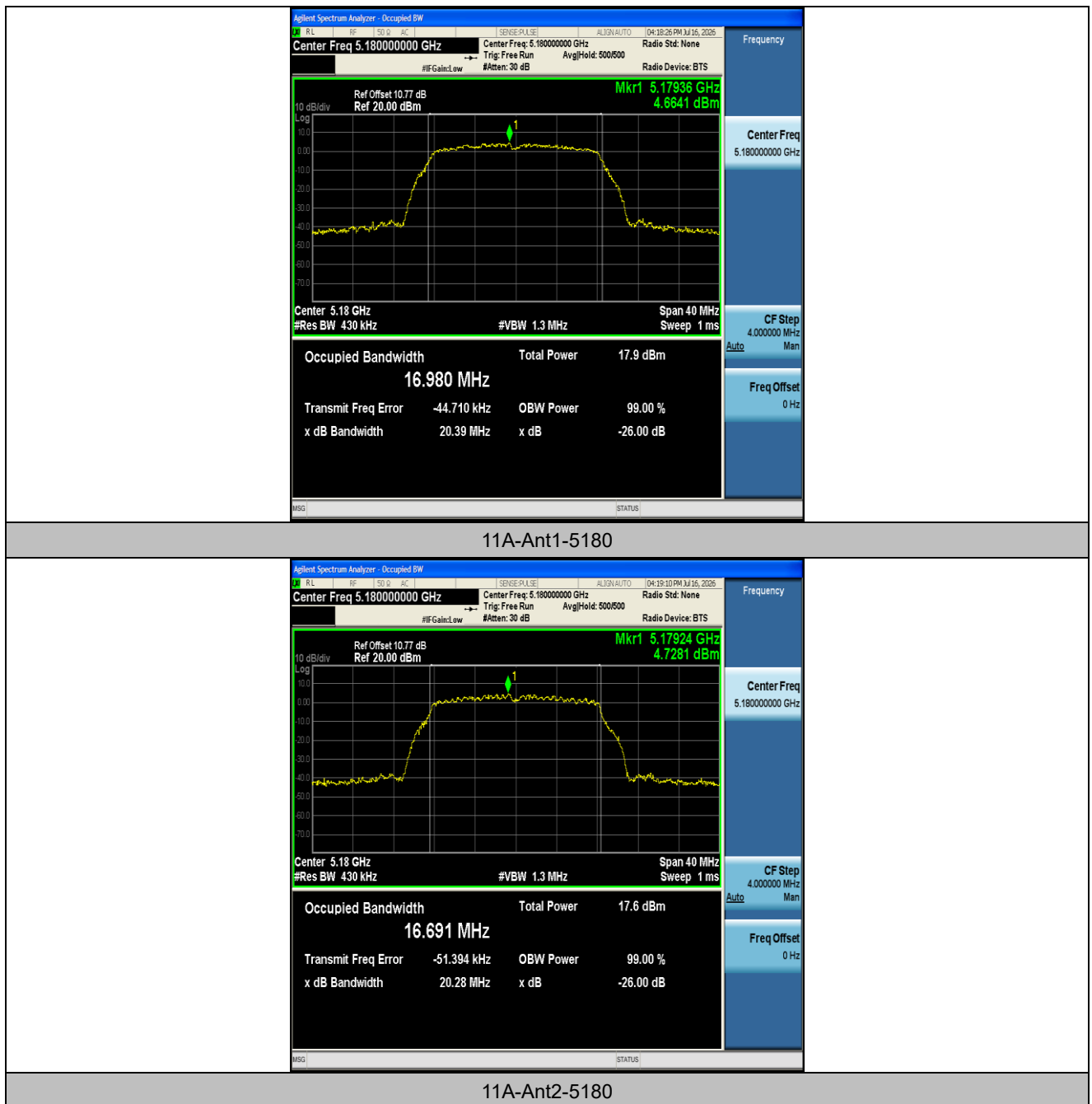
Test Mode	Antenna	Frequency [MHz]	OCB [MHz]	FL [MHz]	FH [MHz]	Limit [MHz]	Verdict
11A	Ant1	5180	16.980	5171.4653	5188.4453	---	---
11A	Ant2	5180	16.691	5171.6031	5188.2941	---	---
11A	Ant1	5200	16.904	5191.5263	5208.4303	---	---
11A	Ant2	5200	16.620	5191.6877	5208.3077	---	---
11A	Ant1	5240	16.929	5231.5283	5248.4573	---	---
11A	Ant2	5240	16.642	5231.6832	5248.3252	---	---
11N20MIMO	Ant1	5180	17.722	5171.1573	5188.8793	---	---
11N20MIMO	Ant2	5180	17.731	5171.1465	5188.8775	---	---
11N20MIMO	Ant1	5200	17.688	5191.2132	5208.9012	---	---
11N20MIMO	Ant2	5200	17.658	5191.2058	5208.8638	---	---
11N20MIMO	Ant1	5240	17.727	5231.2003	5248.9273	---	---
11N20MIMO	Ant2	5240	17.653	5231.2068	5248.8598	---	---
11N40MIMO	Ant1	5190	36.240	5172.0136	5208.2536	---	---
11N40MIMO	Ant2	5190	36.271	5171.9612	5208.2322	---	---
11N40MIMO	Ant1	5230	36.362	5211.9152	5248.2772	---	---
11N40MIMO	Ant2	5230	36.301	5211.8811	5248.1821	---	---
11AC20MIMO	Ant1	5180	17.752	5171.1181	5188.8701	---	---
11AC20MIMO	Ant2	5180	17.710	5171.1367	5188.8467	---	---
11AC20MIMO	Ant1	5200	17.666	5191.2067	5208.8727	---	---
11AC20MIMO	Ant2	5200	17.673	5191.1875	5208.8605	---	---
11AC20MIMO	Ant1	5240	17.681	5231.2239	5248.9049	---	---
11AC20MIMO	Ant2	5240	17.685	5231.1855	5248.8705	---	---
11AC40MIMO	Ant1	5190	36.176	5172.0252	5208.2012	---	---
11AC40MIMO	Ant2	5190	36.186	5171.9907	5208.1767	---	---
11AC40MIMO	Ant1	5230	36.315	5211.9314	5248.2464	---	---
11AC40MIMO	Ant2	5230	36.395	5211.8101	5248.2051	---	---
11AC80MIMO	Ant1	5210	75.812	5172.2829	5248.0949	---	---
11AC80MIMO	Ant2	5210	75.700	5172.2969	5247.9969	---	---

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



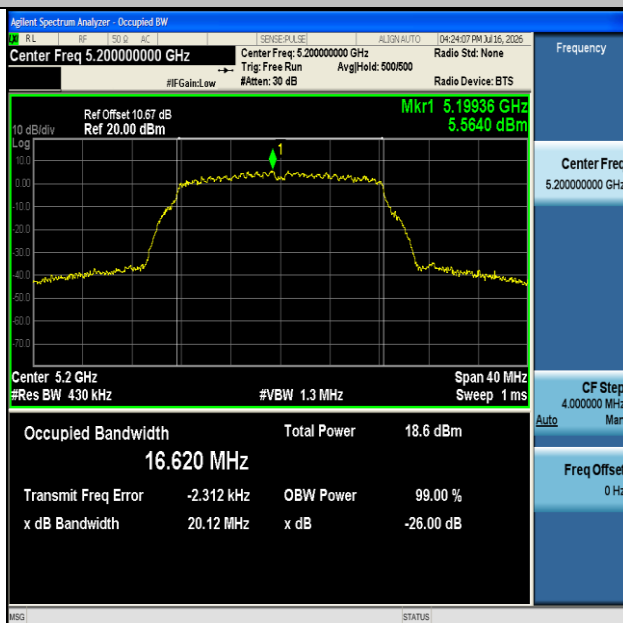


Test Graphs





11A-Ant1-5200



11A-Ant2-5200



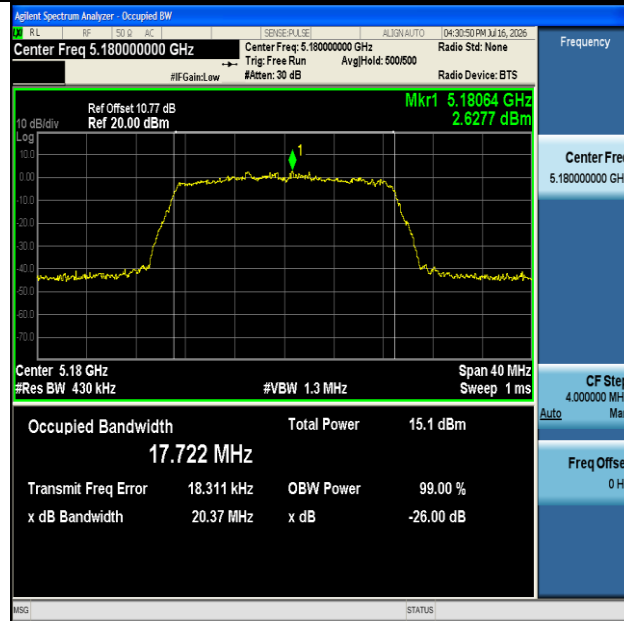


11A-Ant1-5240

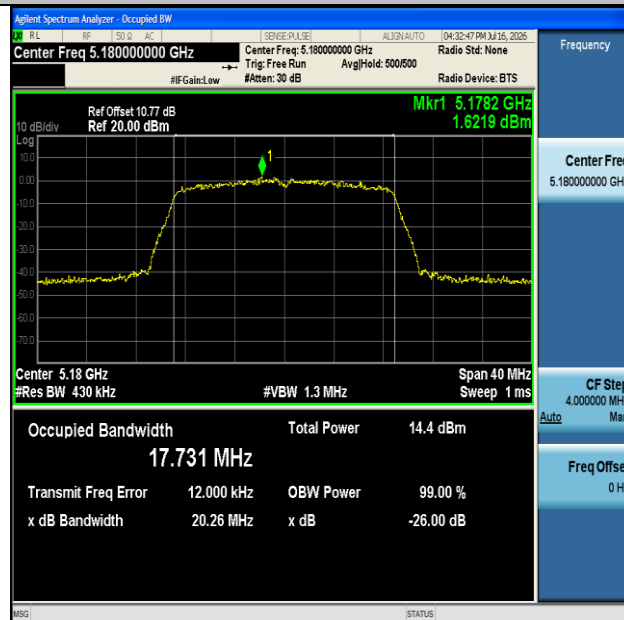


11A-Ant2-5240



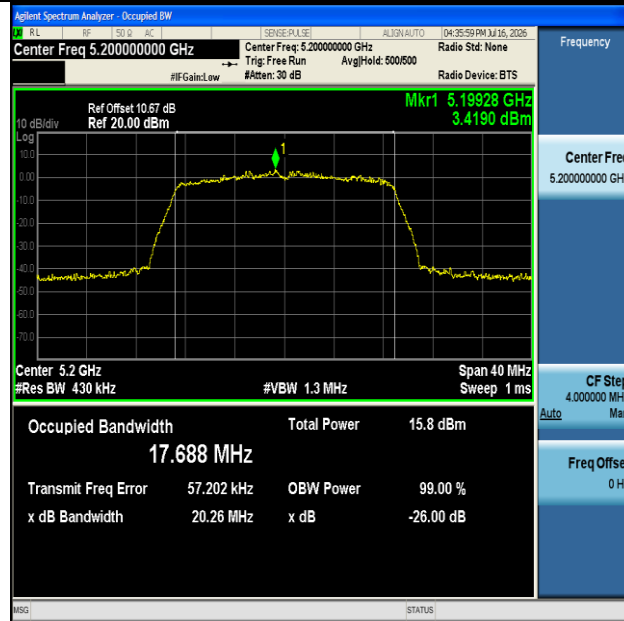


11N20MIMO-Ant1-5180

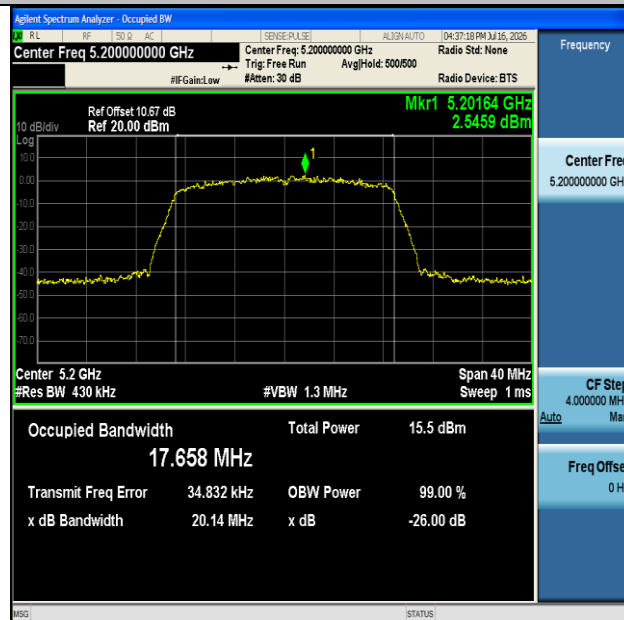


11N20MIMO-Ant2-5180



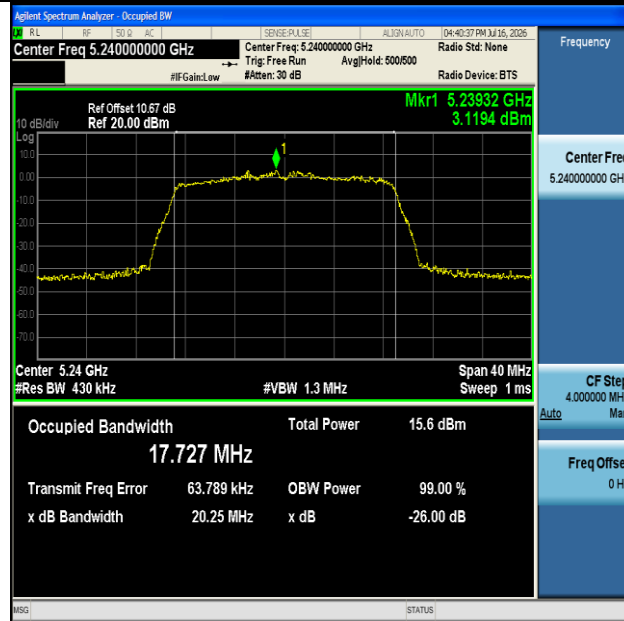


11N20MIMO-Ant1-5200

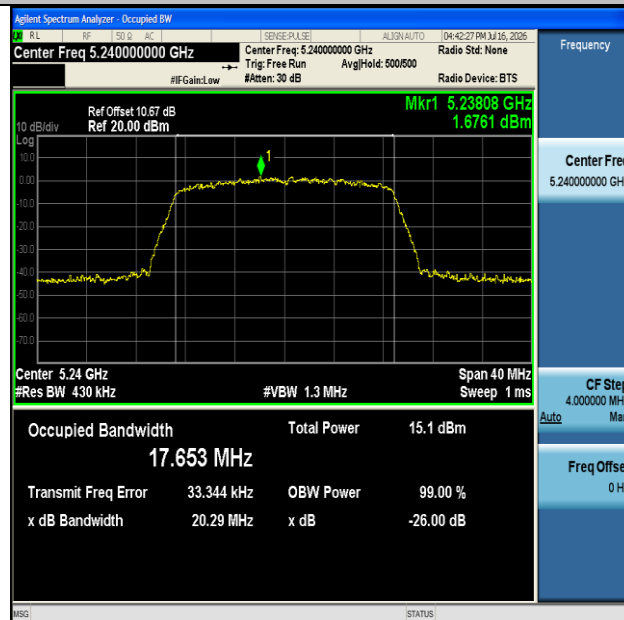


11N20MIMO-Ant2-5200



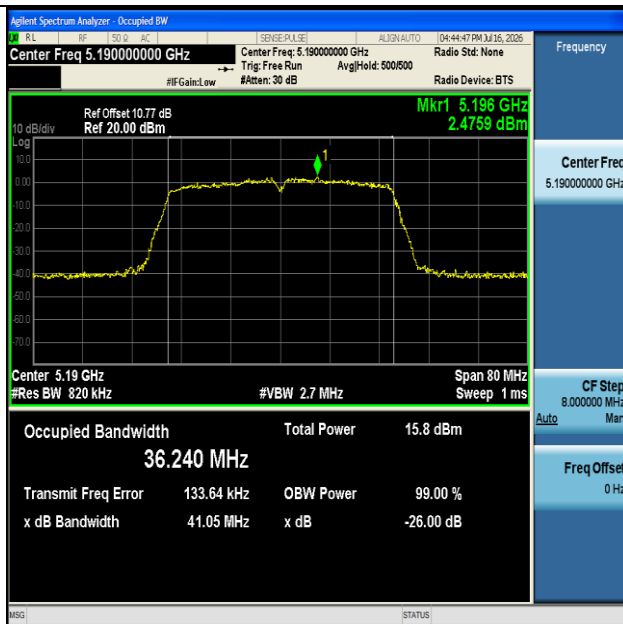


11N20MIMO-Ant1-5240

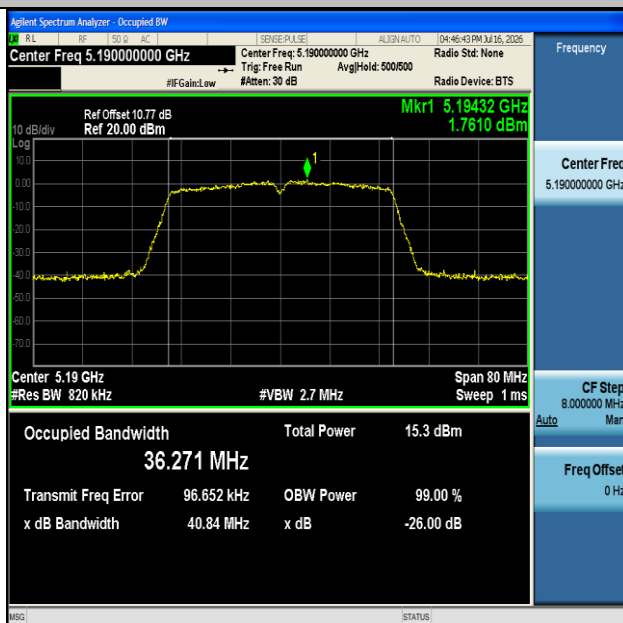


11N20MIMO-Ant2-5240



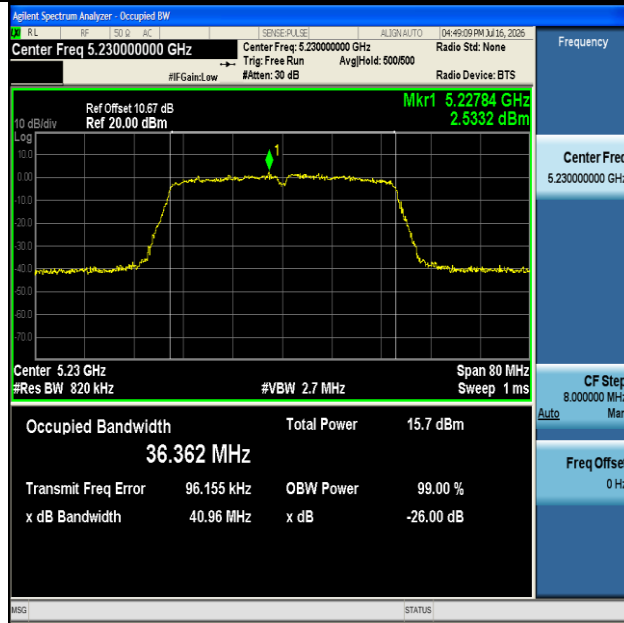


11N40MIMO-Ant1-5190

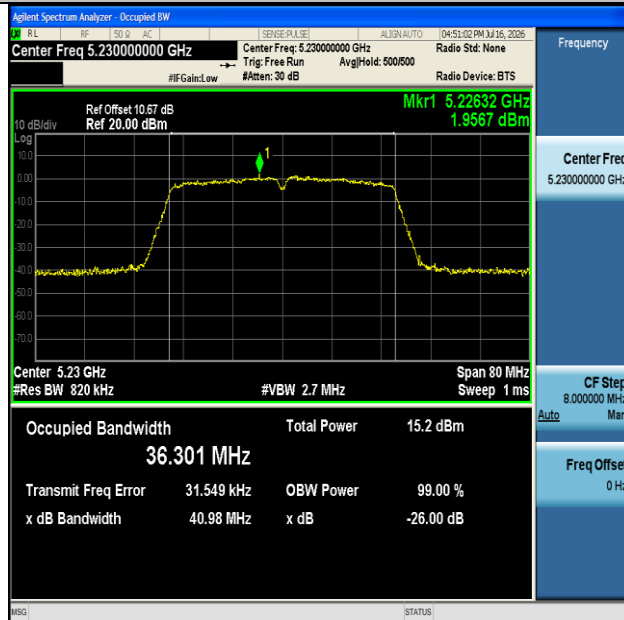


11N40MIMO-Ant2-5190



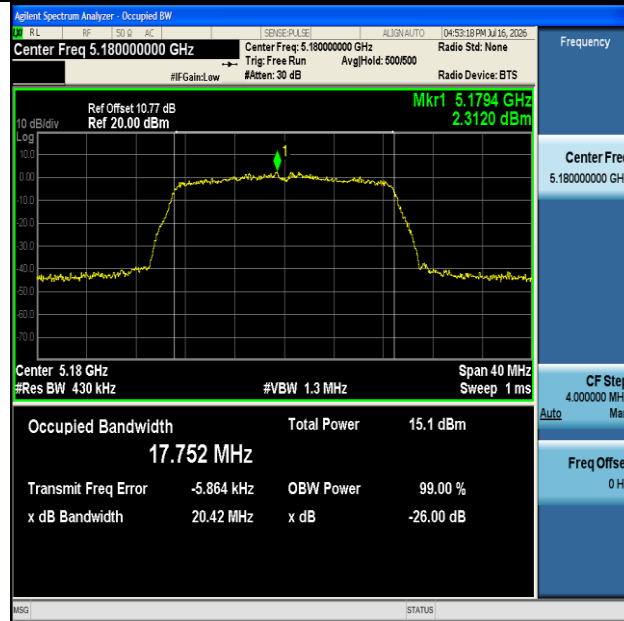


11N40MIMO-Ant1-5230

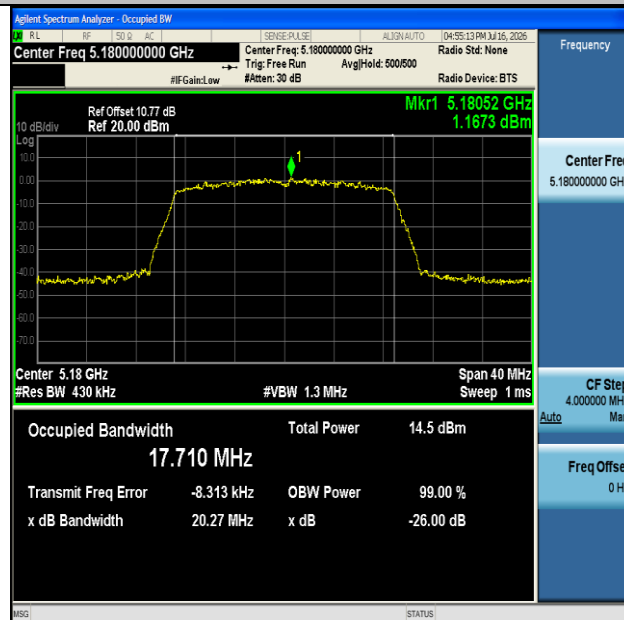


11N40MIMO-Ant2-5230



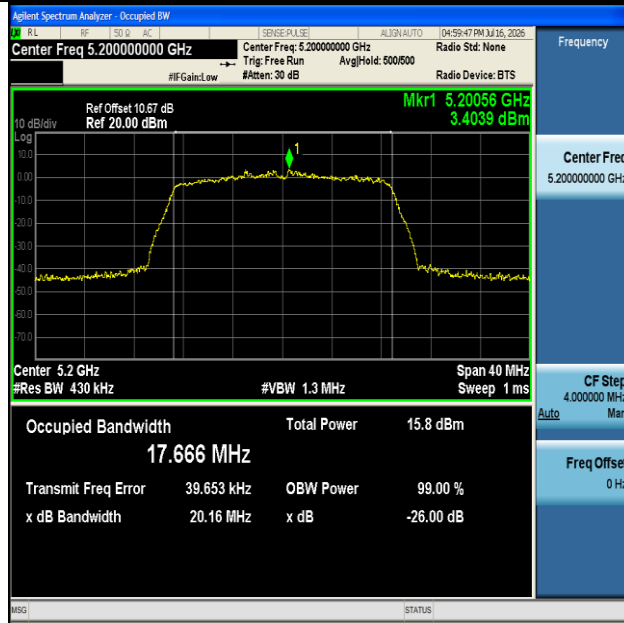


11AC20MIMO-Ant1-5180

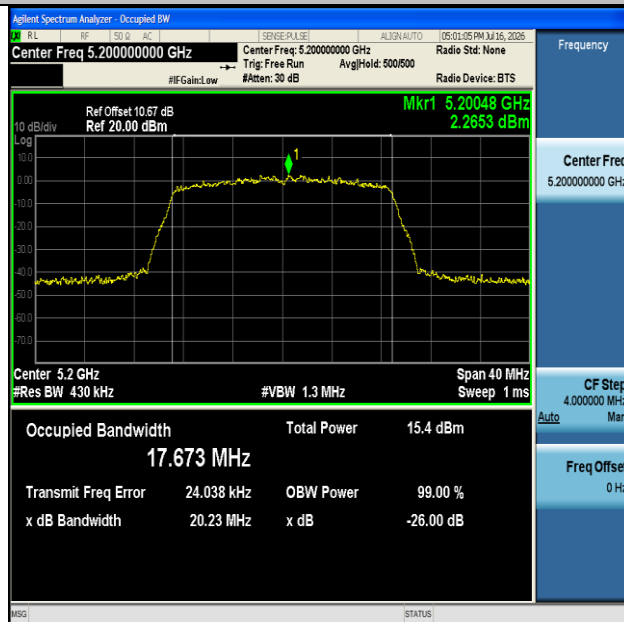


11AC20MIMO-Ant2-5180



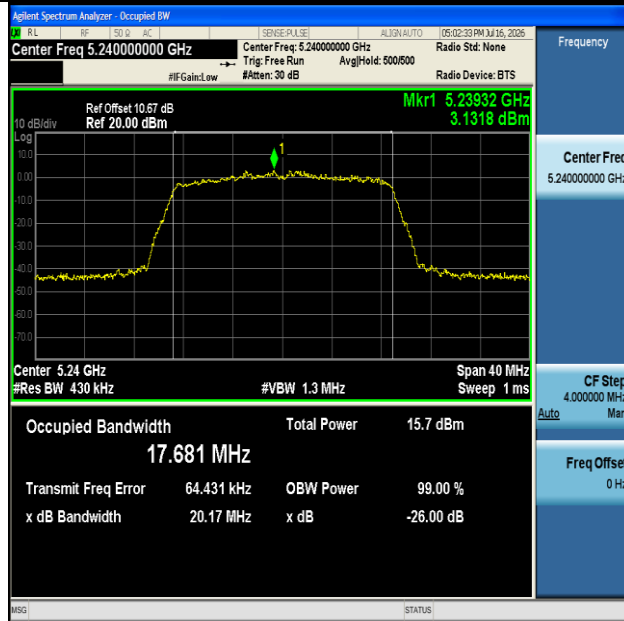


11AC20MIMO-Ant1-5200

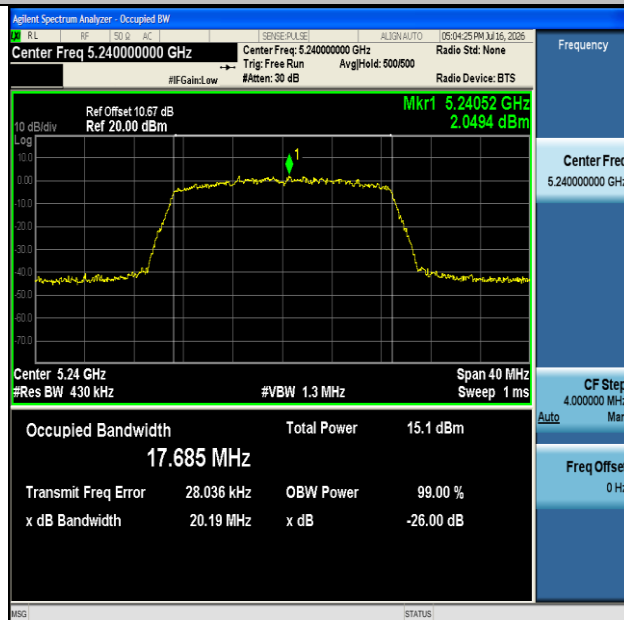


11AC20MIMO-Ant2-5200



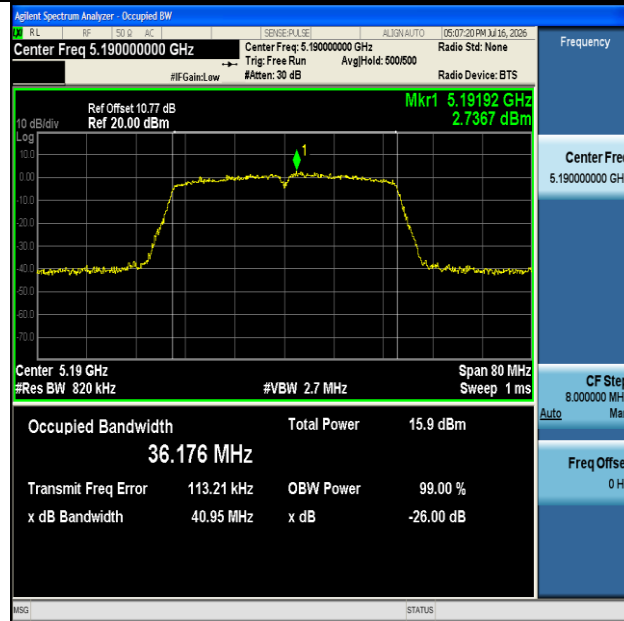


11AC20MIMO-Ant1-5240

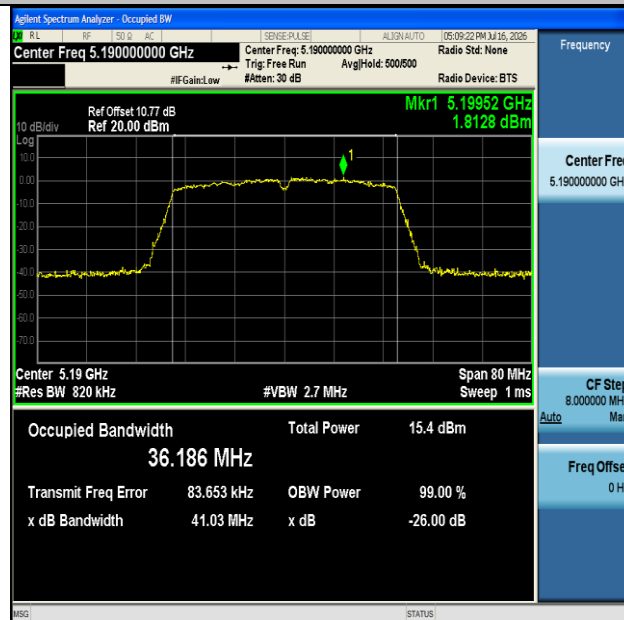


11AC20MIMO-Ant2-5240



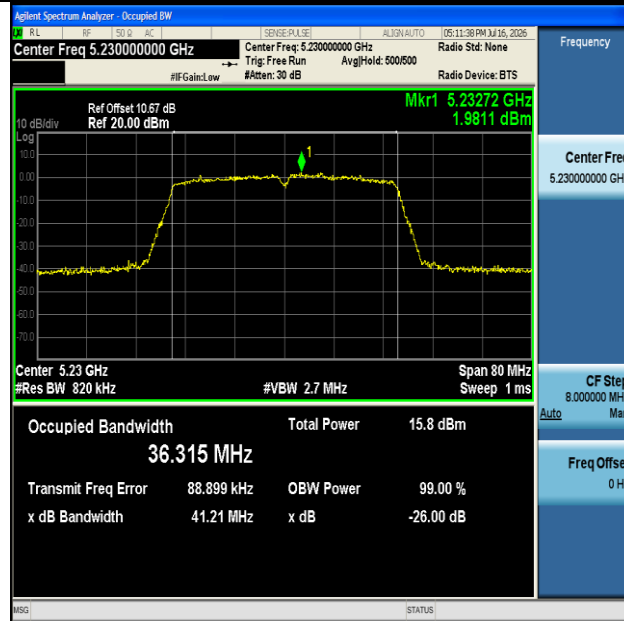


11AC40MIMO-Ant1-5190

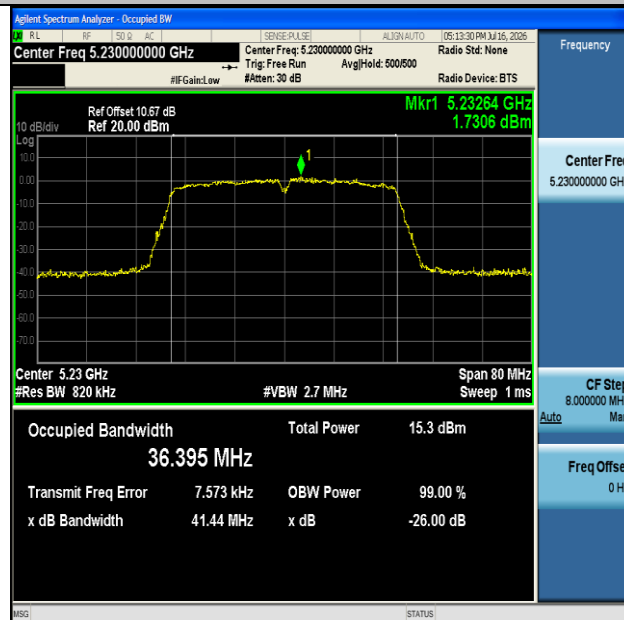


11AC40MIMO-Ant2-5190



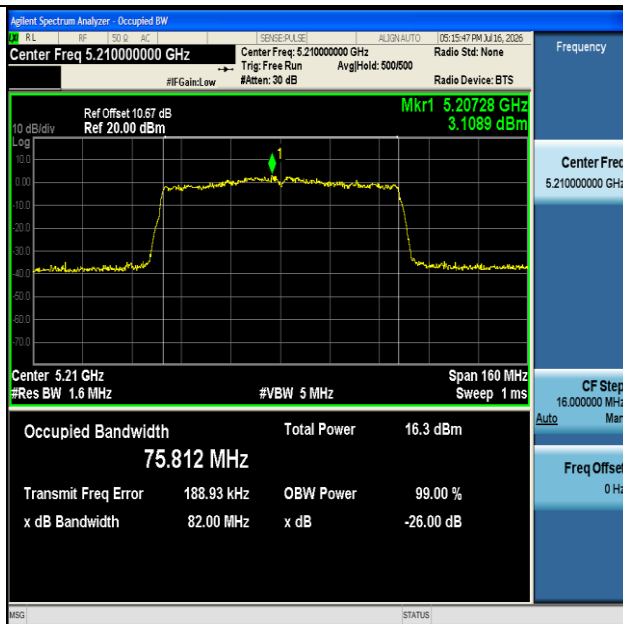


11AC40MIMO-Ant1-5230

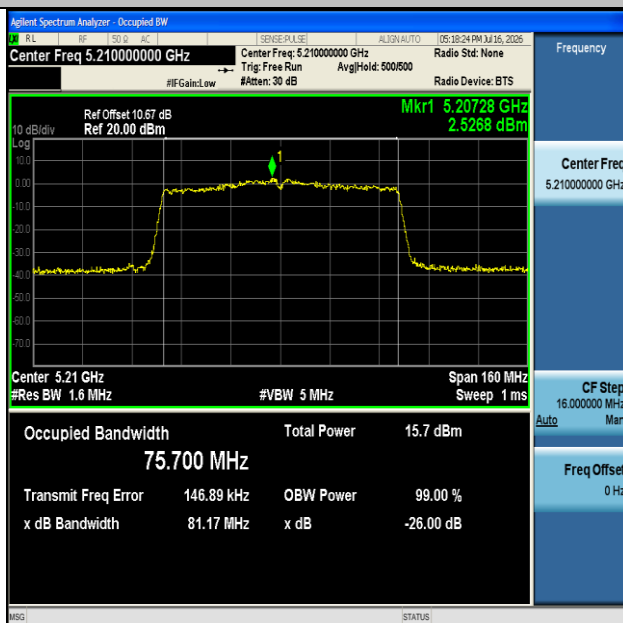


11AC40MIMO-Ant2-5230





11AC80MIMO-Ant1-5210



11AC80MIMO-Ant2-5210





Appendix B: Maximum conducted output power

Test Result

Test Mode	Antenna	Frequency [MHz]	Conducted Power [dBm]	Conducted Limit [dBm]	Verdict
11A	Ant1	5180	11.23	≤23.98	PASS
11A	Ant2	5180	10.61	≤23.98	PASS
11A	Ant1	5200	11.86	≤23.98	PASS
11A	Ant2	5200	11.57	≤23.98	PASS
11A	Ant1	5240	11.71	≤23.98	PASS
11A	Ant2	5240	11.08	≤23.98	PASS
11N20MIMO	Ant1	5180	7.73	≤23.98	PASS
11N20MIMO	Ant2	5180	6.97	≤23.98	PASS
11N20MIMO	total	5180	10.38	≤23.98	PASS
11N20MIMO	Ant1	5200	8.79	≤23.98	PASS
11N20MIMO	Ant2	5200	8.28	≤23.98	PASS
11N20MIMO	total	5200	11.55	≤23.98	PASS
11N20MIMO	Ant1	5240	8.57	≤23.98	PASS
11N20MIMO	Ant2	5240	7.96	≤23.98	PASS
11N20MIMO	total	5240	11.29	≤23.98	PASS
11N40MIMO	Ant1	5190	8.39	≤23.98	PASS
11N40MIMO	Ant2	5190	7.64	≤23.98	PASS
11N40MIMO	total	5190	11.04	≤23.98	PASS
11N40MIMO	Ant1	5230	7.97	≤23.98	PASS
11N40MIMO	Ant2	5230	7.81	≤23.98	PASS
11N40MIMO	total	5230	10.90	≤23.98	PASS
11AC20MIMO	Ant1	5180	8.01	≤23.98	PASS
11AC20MIMO	Ant2	5180	7.04	≤23.98	PASS
11AC20MIMO	total	5180	10.56	≤23.98	PASS
11AC20MIMO	Ant1	5200	8.47	≤23.98	PASS
11AC20MIMO	Ant2	5200	8.32	≤23.98	PASS
11AC20MIMO	total	5200	11.41	≤23.98	PASS
11AC20MIMO	Ant1	5240	8.51	≤23.98	PASS
11AC20MIMO	Ant2	5240	8.02	≤23.98	PASS
11AC20MIMO	total	5240	11.28	≤23.98	PASS
11AC40MIMO	Ant1	5190	8.44	≤23.98	PASS
11AC40MIMO	Ant2	5190	7.61	≤23.98	PASS
11AC40MIMO	total	5190	11.06	≤23.98	PASS
11AC40MIMO	Ant1	5230	8.04	≤23.98	PASS
11AC40MIMO	Ant2	5230	7.45	≤23.98	PASS
11AC40MIMO	total	5230	10.77	≤23.98	PASS
11AC80MIMO	Ant1	5210	8.20	≤23.98	PASS





11AC80MIMO	Ant2	5210	7.29	≤ 23.98	PASS
11AC80MIMO	total	5210	10.78	≤ 23.98	PASS

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





Appendix C: Maximum power spectral density

Test Result

Test Mode	Antenna	Frequency [MHz]	Result [dBm/MHz]	Limit [dBm/MHz]	Verdict
11A	Ant1	5180	0.90	≤11.00	PASS
11A	Ant2	5180	0.33	≤11.00	PASS
11A	Ant1	5200	2.07	≤11.00	PASS
11A	Ant2	5200	1.68	≤11.00	PASS
11A	Ant1	5240	1.80	≤11.00	PASS
11A	Ant2	5240	0.93	≤11.00	PASS
11N20MIMO	Ant1	5180	-2.43	≤11.00	PASS
11N20MIMO	Ant2	5180	-3.16	≤11.00	PASS
11N20MIMO	total	5180	0.23	≤9.45	PASS
11N20MIMO	Ant1	5200	-1.09	≤11.00	PASS
11N20MIMO	Ant2	5200	-1.75	≤11.00	PASS
11N20MIMO	total	5200	1.60	≤9.45	PASS
11N20MIMO	Ant1	5240	-1.52	≤11.00	PASS
11N20MIMO	Ant2	5240	-1.91	≤11.00	PASS
11N20MIMO	total	5240	1.30	≤9.45	PASS
11N40MIMO	Ant1	5190	-4.33	≤11.00	PASS
11N40MIMO	Ant2	5190	-5.05	≤11.00	PASS
11N40MIMO	total	5190	-1.66	≤9.45	PASS
11N40MIMO	Ant1	5230	-5.36	≤11.00	PASS
11N40MIMO	Ant2	5230	-5.45	≤11.00	PASS
11N40MIMO	total	5230	-2.39	≤9.45	PASS
11AC20MIMO	Ant1	5180	-2.04	≤11.00	PASS
11AC20MIMO	Ant2	5180	-3.33	≤11.00	PASS
11AC20MIMO	total	5180	0.37	≤9.45	PASS
11AC20MIMO	Ant1	5200	-1.46	≤11.00	PASS
11AC20MIMO	Ant2	5200	-1.98	≤11.00	PASS
11AC20MIMO	total	5200	1.30	≤9.45	PASS
11AC20MIMO	Ant1	5240	-1.45	≤11.00	PASS
11AC20MIMO	Ant2	5240	-2.17	≤11.00	PASS
11AC20MIMO	total	5240	1.22	≤9.45	PASS
11AC40MIMO	Ant1	5190	-4.59	≤11.00	PASS
11AC40MIMO	Ant2	5190	-5.63	≤11.00	PASS
11AC40MIMO	total	5190	-2.07	≤9.45	PASS
11AC40MIMO	Ant1	5230	-5.31	≤11.00	PASS
11AC40MIMO	Ant2	5230	-5.85	≤11.00	PASS
11AC40MIMO	total	5230	-2.56	≤9.45	PASS
11AC80MIMO	Ant1	5210	-7.01	≤11.00	PASS





11AC80MIMO	Ant2	5210	-8.19	≤11.00	PASS
11AC80MIMO	total	5210	-4.55	≤9.45	PASS

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

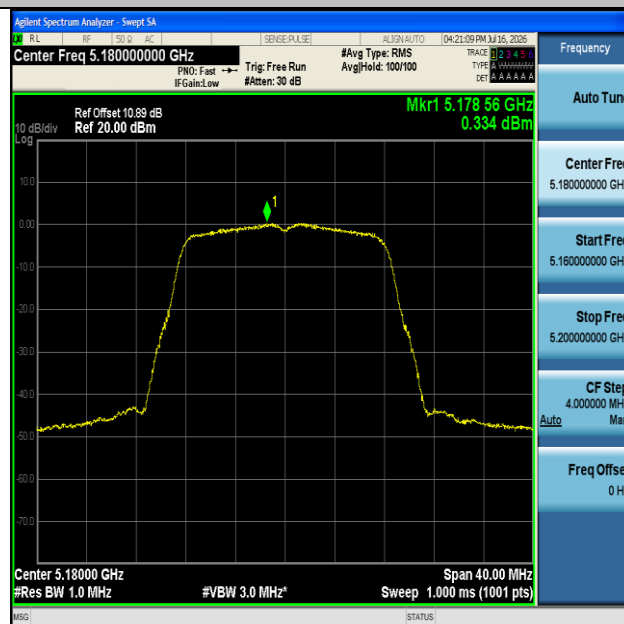




Test Graphs



11A-Ant1-5180-PASS

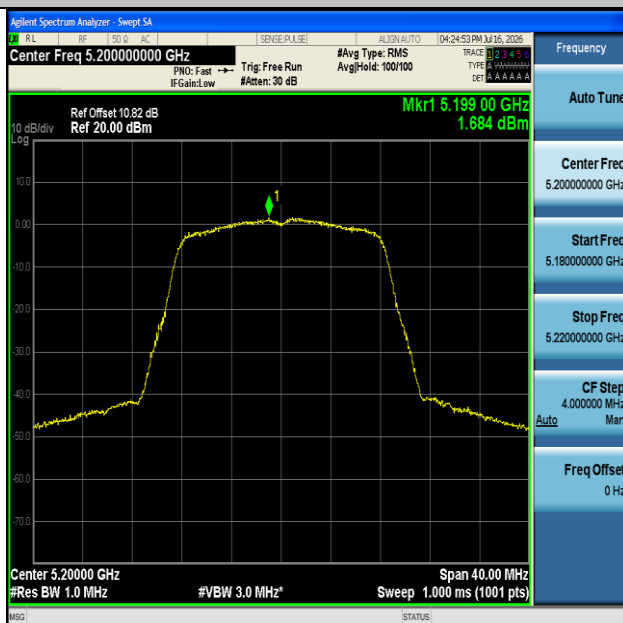


11A-Ant2-5180-PASS





11A-Ant1-5200-PASS

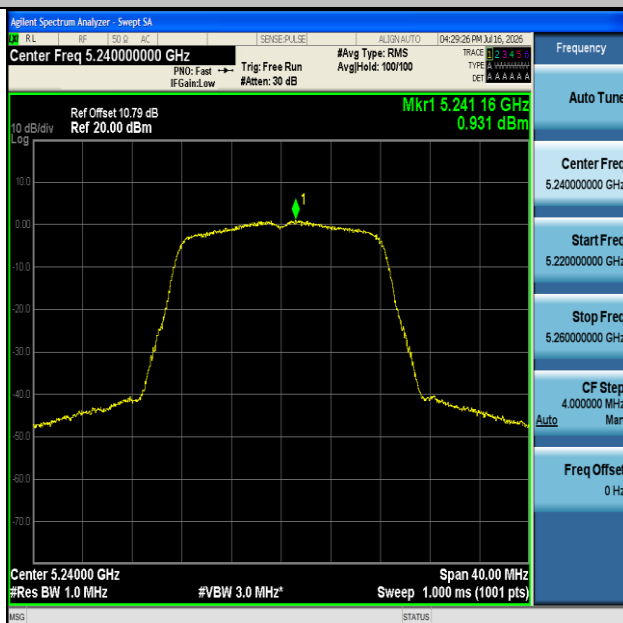


11A-Ant2-5200-PASS



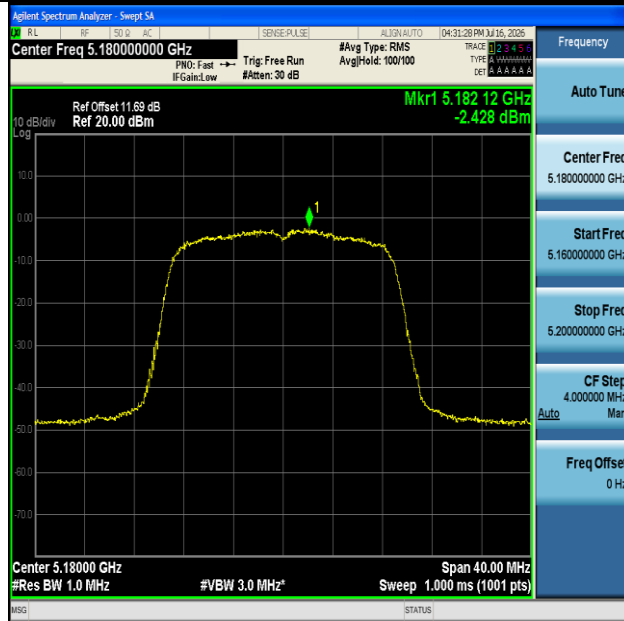


11A-Ant1-5240-PASS

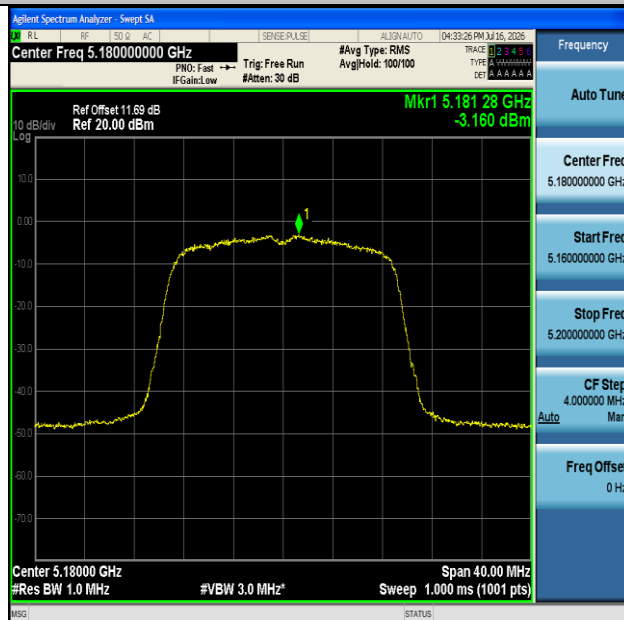


11A-Ant2-5240-PASS



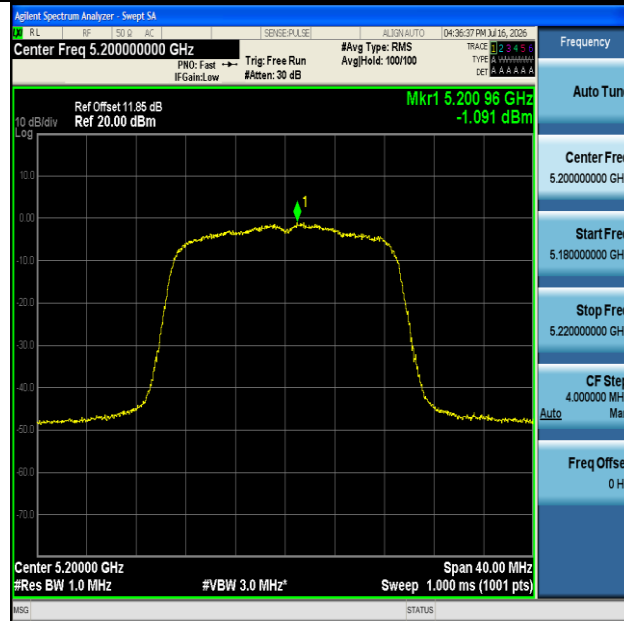


11N20MIMO-Ant1-5180-PASS

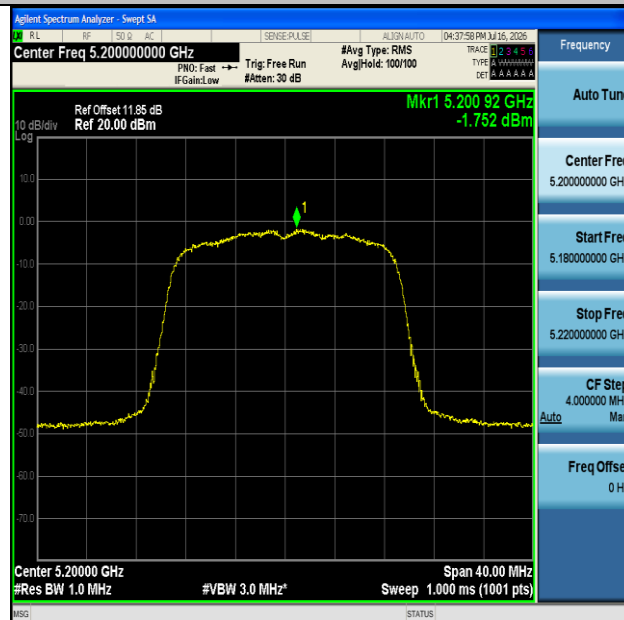


11N20MIMO-Ant2-5180-PASS



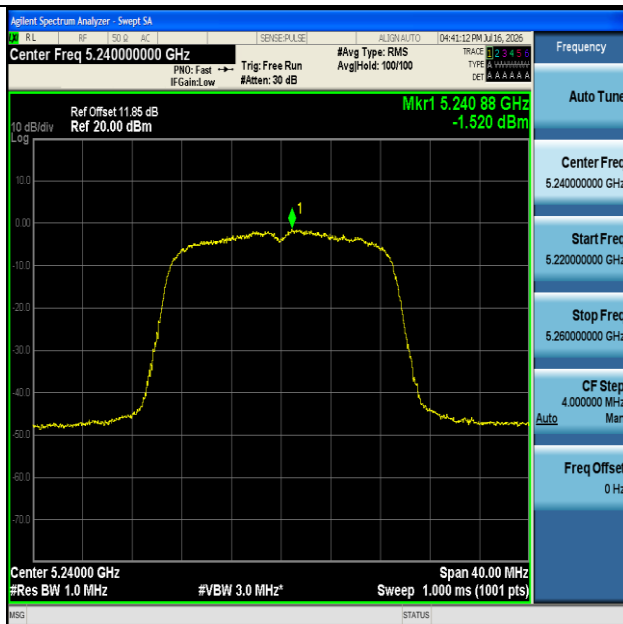


11N20MIMO-Ant1-5200-PASS

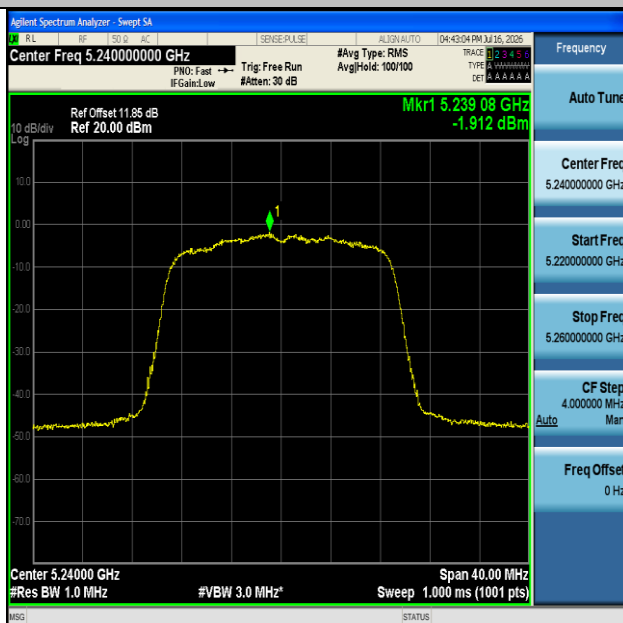


11N20MIMO-Ant2-5200-PASS



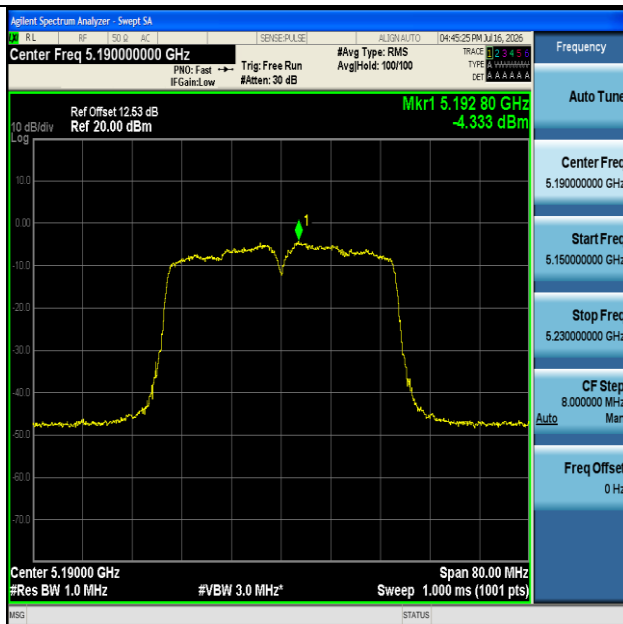


11N20MIMO-Ant1-5240-PASS

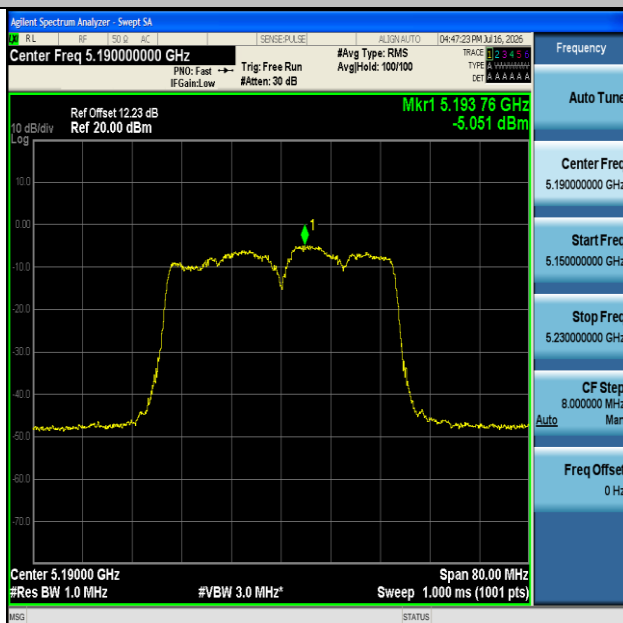


11N20MIMO-Ant2-5240-PASS



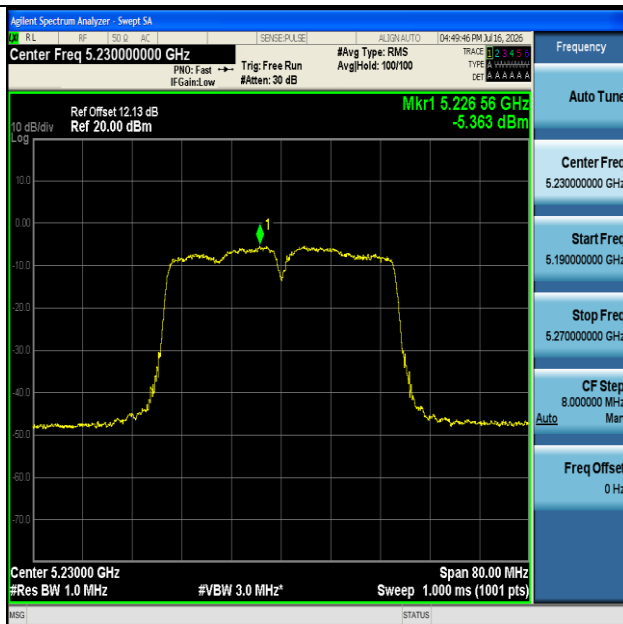


11N40MIMO-Ant1-5190-PASS

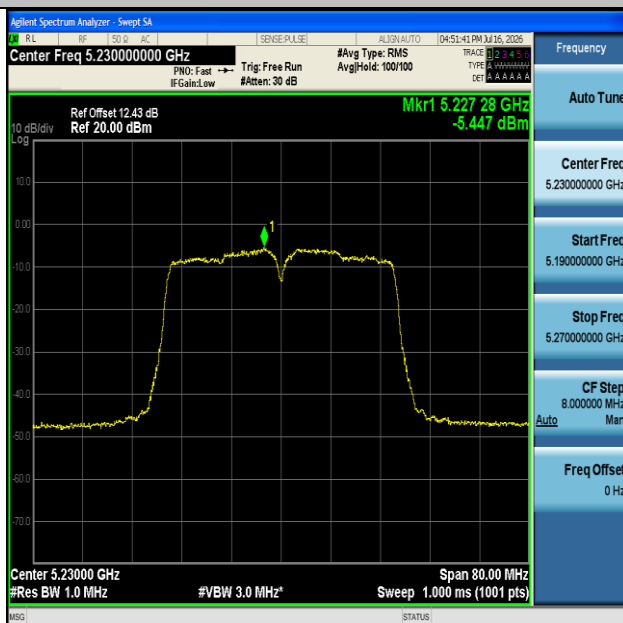


11N40MIMO-Ant2-5190-PASS



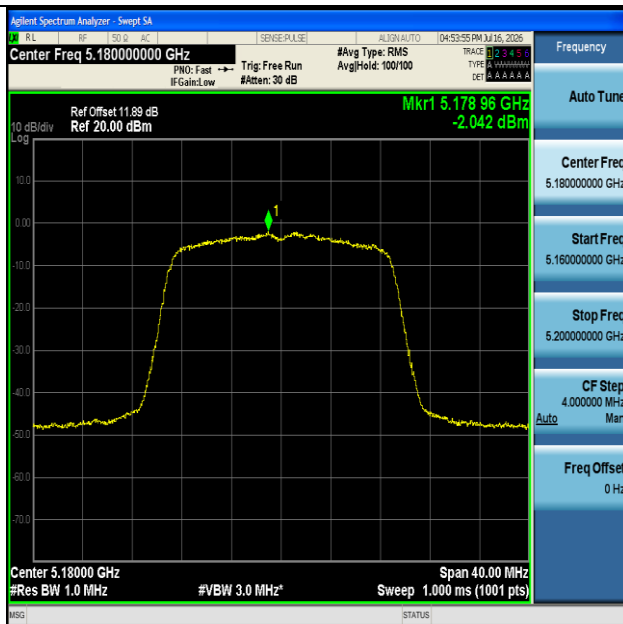


11N40MIMO-Ant1-5230-PASS

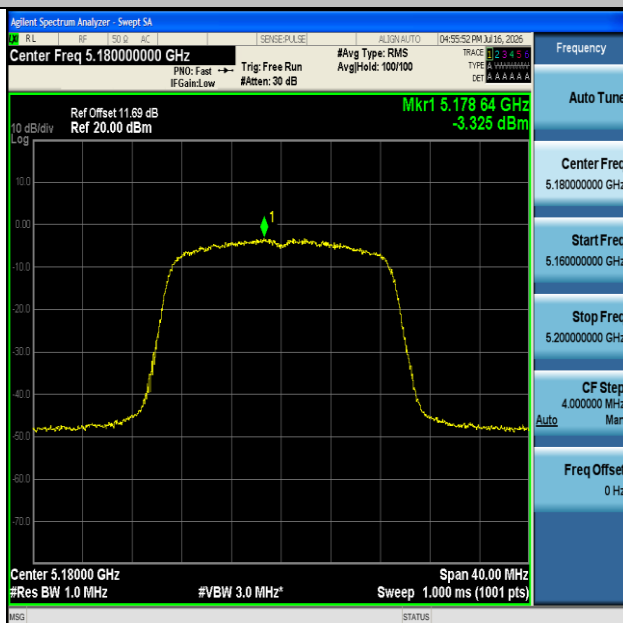


11N40MIMO-Ant2-5230-PASS



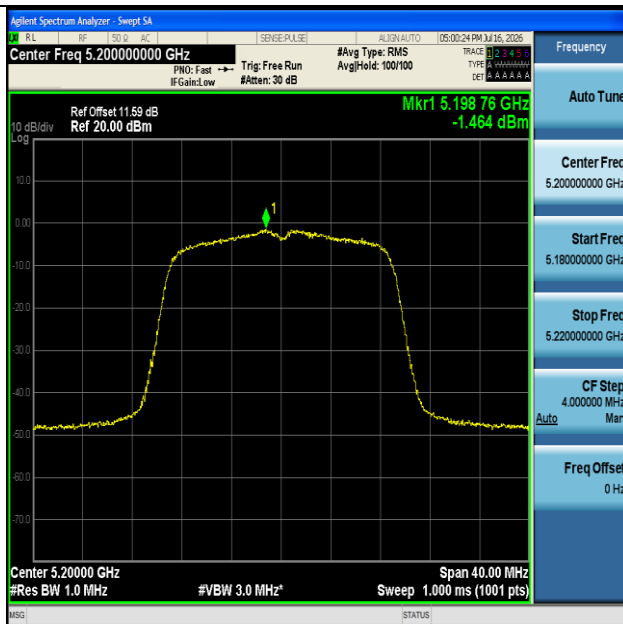


11AC20MIMO-Ant1-5180-PASS

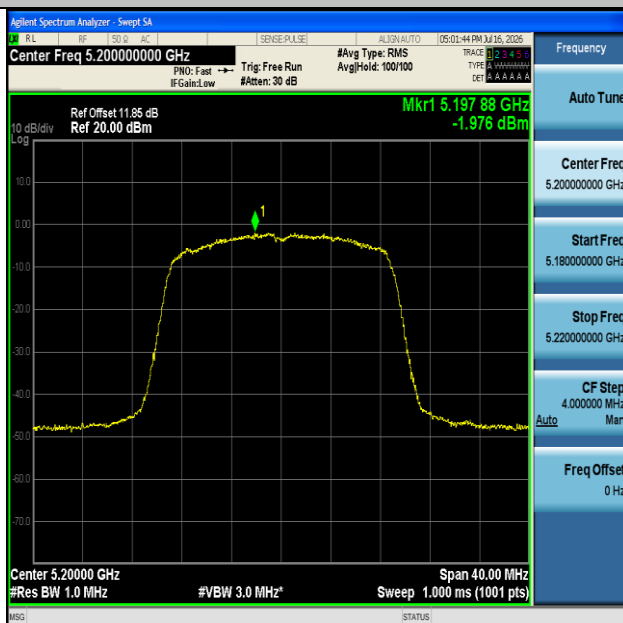


11AC20MIMO-Ant2-5180-PASS



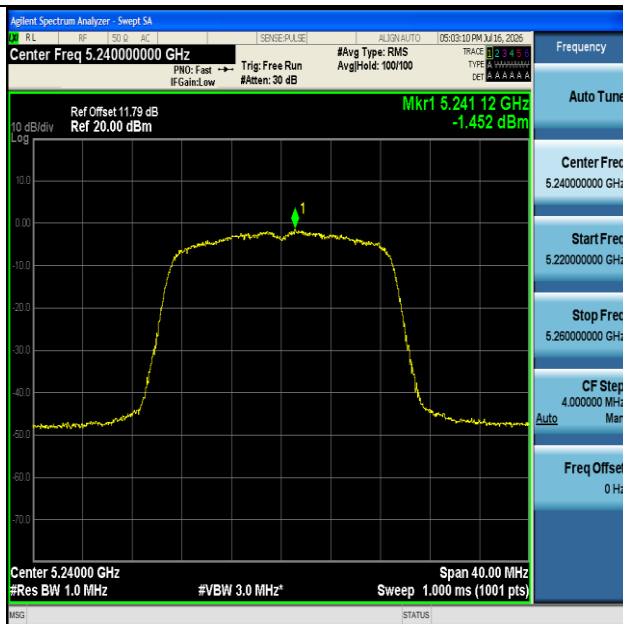


11AC20MIMO-Ant1-5200-PASS

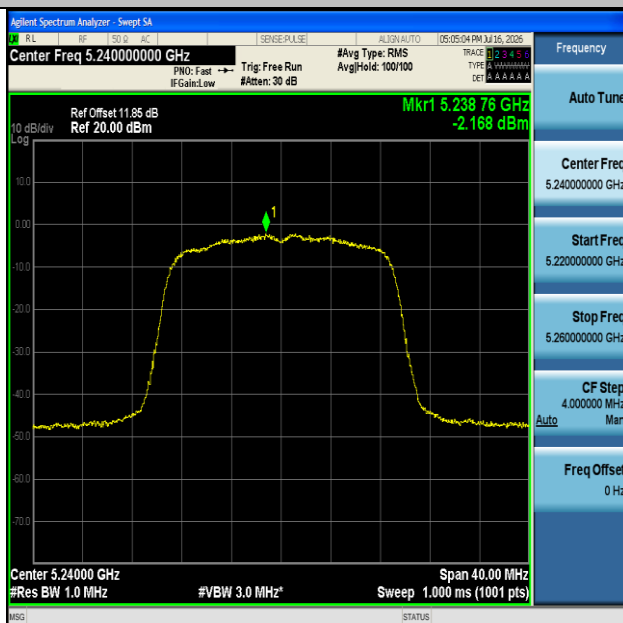


11AC20MIMO-Ant2-5200-PASS



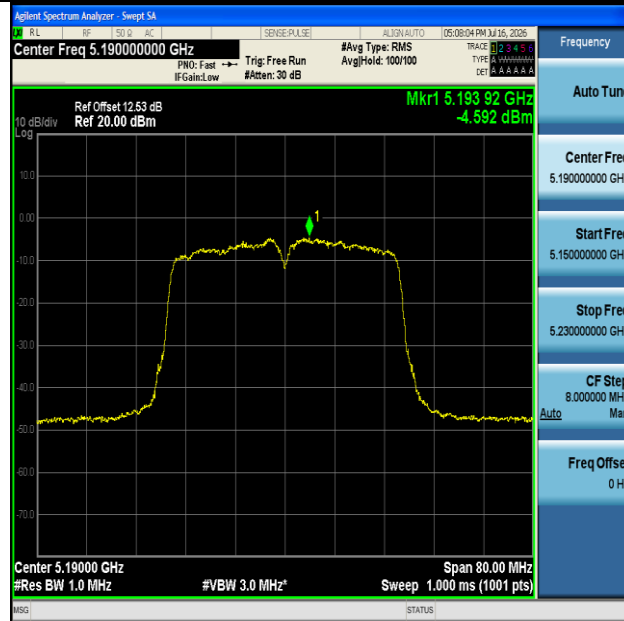


11AC20MIMO-Ant1-5240-PASS

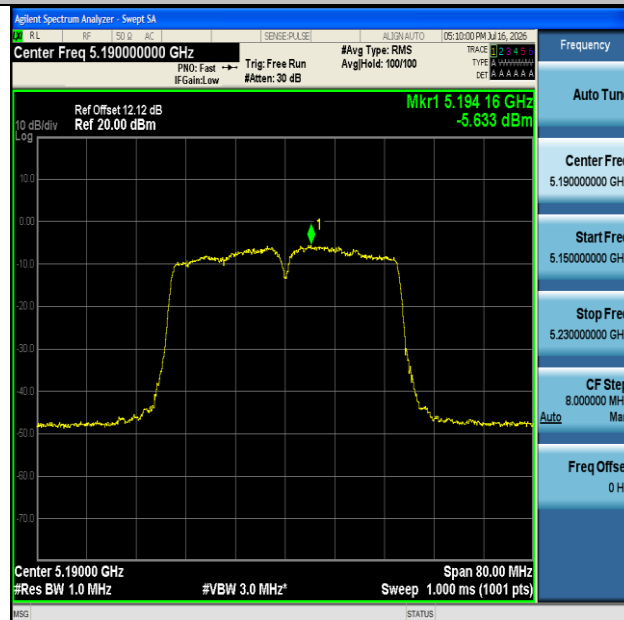


11AC20MIMO-Ant2-5240-PASS



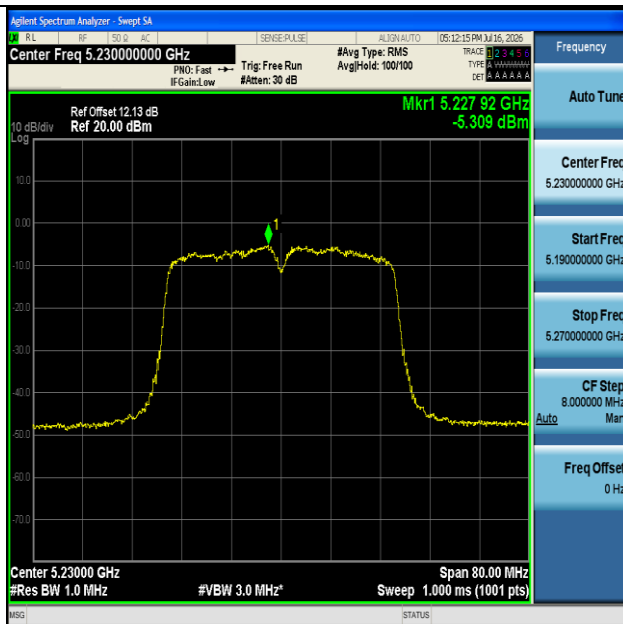


11AC40MIMO-Ant1-5190-PASS

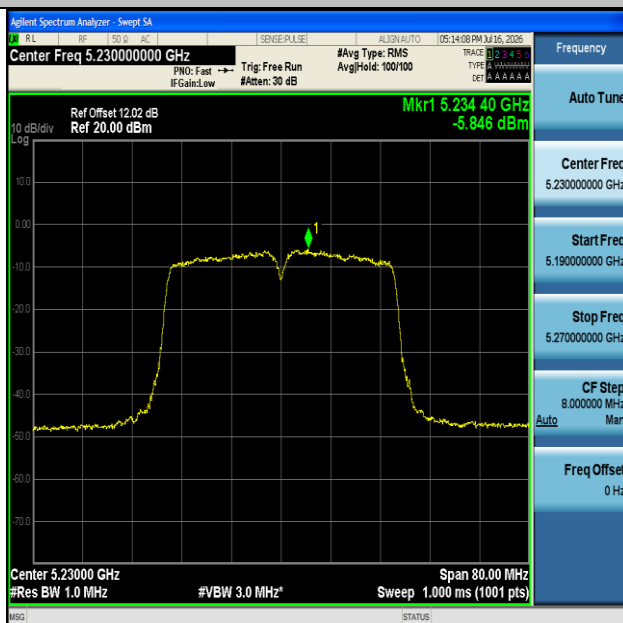


11AC40MIMO-Ant2-5190-PASS





11AC40MIMO-Ant1-5230-PASS

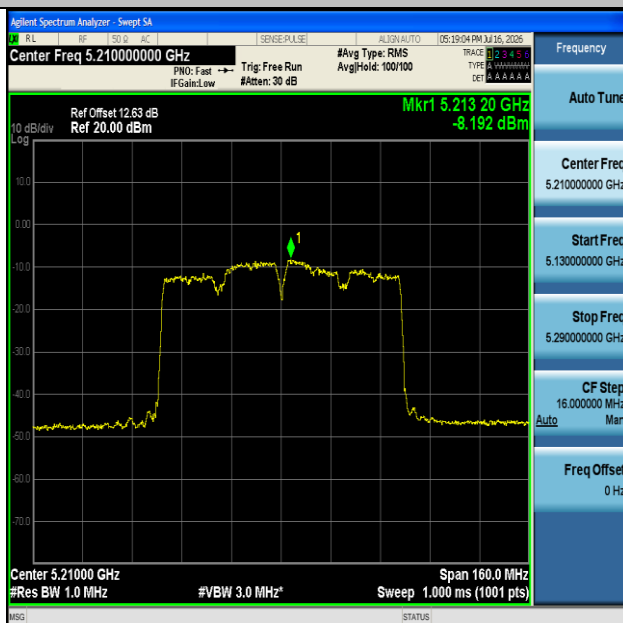


11AC40MIMO-Ant2-5230-PASS





11AC80MIMO-Ant1-5210-PASS



11AC80MIMO-Ant2-5210-PASS





Appendix D: Band edge measurements

Test Result

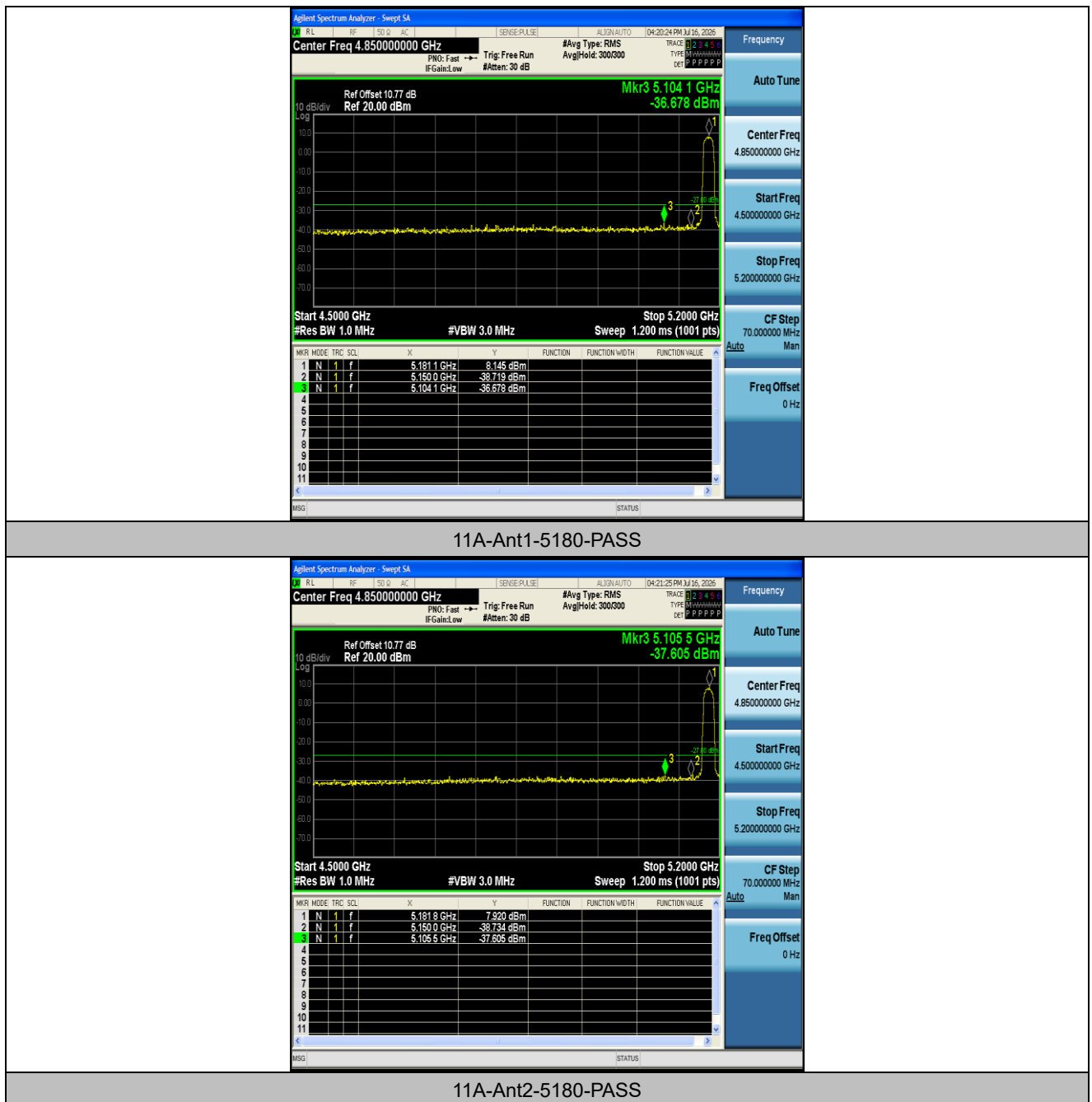
Test Mode	Antenna	Ch. Name	Frequency [MHz]	Result [dBm]	Limit [dBm]	Verdict
11A	Ant1	Low	5180	-36.68	≤ -27	PASS
11A	Ant2	Low	5180	-37.61	≤ -27	PASS
11A	Ant1	High	5240	-36.83	≤ -27	PASS
11A	Ant2	High	5240	-37.21	≤ -27	PASS
11N20MIMO	Ant1	Low	5180	-37.54	≤ -27	PASS
11N20MIMO	Ant2	Low	5180	-37.38	≤ -27	PASS
11N20MIMO	Ant1	High	5240	-37.6	≤ -27	PASS
11N20MIMO	Ant2	High	5240	-36.83	≤ -27	PASS
11N40MIMO	Ant1	Low	5190	-36.79	≤ -27	PASS
11N40MIMO	Ant2	Low	5190	-37.14	≤ -27	PASS
11N40MIMO	Ant1	High	5230	-37.56	≤ -27	PASS
11N40MIMO	Ant2	High	5230	-37.2	≤ -27	PASS
11AC20MIMO	Ant1	Low	5180	-36.9	≤ -27	PASS
11AC20MIMO	Ant2	Low	5180	-37.66	≤ -27	PASS
11AC20MIMO	Ant1	High	5240	-37.52	≤ -27	PASS
11AC20MIMO	Ant2	High	5240	-36.95	≤ -27	PASS
11AC40MIMO	Ant1	Low	5190	-36.95	≤ -27	PASS
11AC40MIMO	Ant2	Low	5190	-37.13	≤ -27	PASS
11AC40MIMO	Ant1	High	5230	-37.26	≤ -27	PASS
11AC40MIMO	Ant2	High	5230	-37.52	≤ -27	PASS
11AC80MIMO	Ant1	Low	5210	-37.08	≤ -27	PASS
11AC80MIMO	Ant1	High	5210	-37.49	≤ -27	PASS
11AC80MIMO	Ant2	Low	5210	-36.32	≤ -27	PASS
11AC80MIMO	Ant2	High	5210	-37.62	≤ -27	PASS

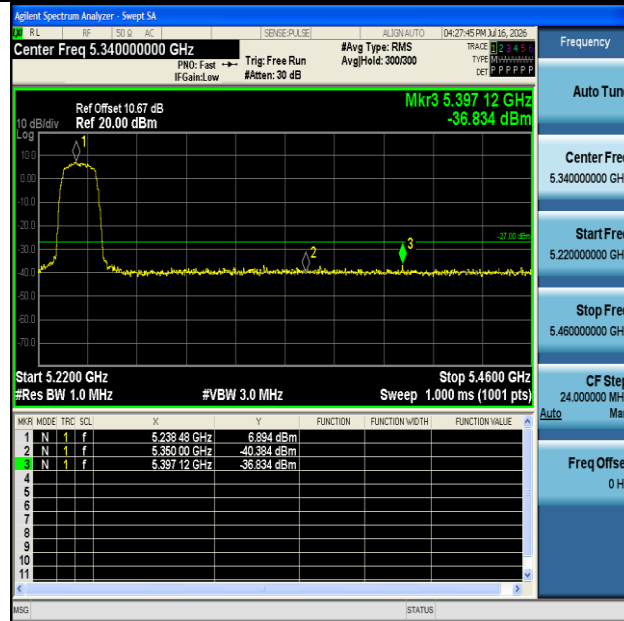
Note: offset(dB) = cable loss(dB) + attenuator factor(dB)+antenna gain(dBi)



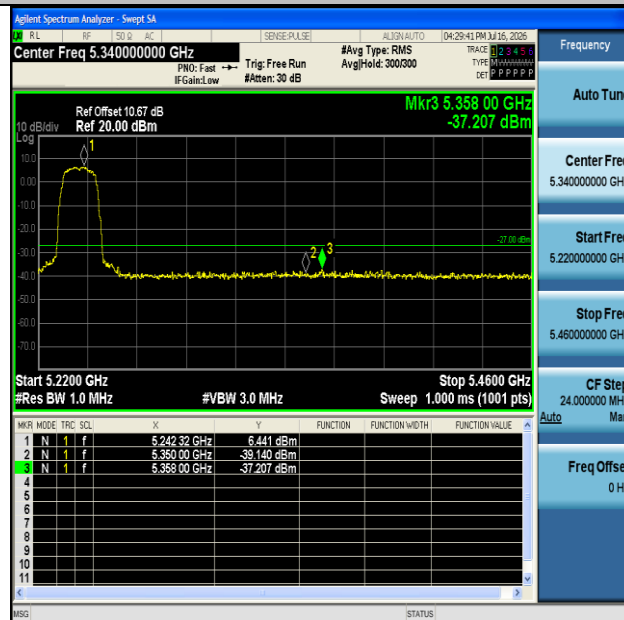


Test Graphs





11A-Ant1-5240-PASS

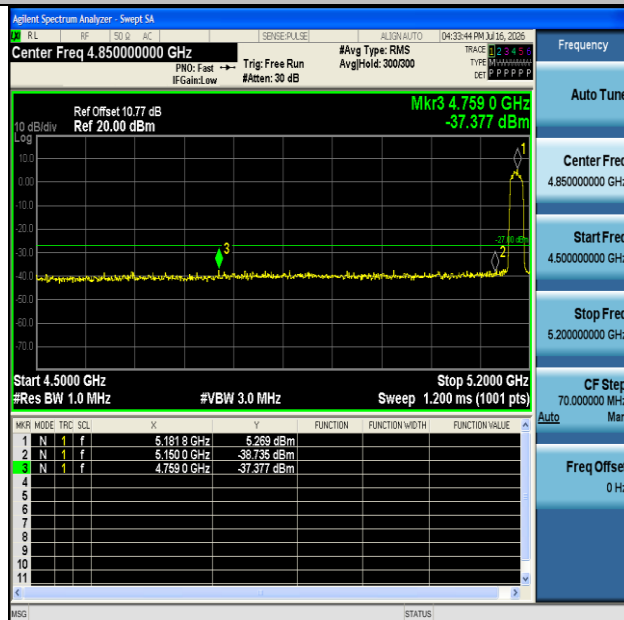


11A-Ant2-5240-PASS





11N20MIMO-Ant1-5180-PASS



11N20MIMO-Ant2-5180-PASS

