



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

Product Name: Wanbo Projector

Trade Mark: wanbo

Test Model: Cube 2S

FCC ID: 2A7PI-CUBE2

Environmental Conditions

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

Appendix A1: Emission Bandwidth

Test Result

Test Mode	Antenna	Frequency [MHz]	26db EBW [MHz]	FL [MHz]	FH [MHz]	Limit [MHz]	Verdict
11A	Ant1	5180	19.840	5170.200	5190.040	---	---
11A	Ant2	5180	19.360	5170.440	5189.800	---	---
11A	Ant1	5200	19.480	5190.440	5209.920	---	---
11A	Ant2	5200	19.400	5190.520	5209.920	---	---
11A	Ant1	5240	19.800	5230.400	5250.200	---	---
11A	Ant2	5240	19.280	5230.600	5249.880	---	---
11N20MIMO	Ant1	5180	20.000	5170.120	5190.120	---	---
11N20MIMO	Ant2	5180	19.840	5170.200	5190.040	---	---
11N20MIMO	Ant1	5200	19.720	5190.320	5210.040	---	---
11N20MIMO	Ant2	5200	19.800	5190.280	5210.080	---	---
11N20MIMO	Ant1	5240	19.560	5230.400	5249.960	---	---
11N20MIMO	Ant2	5240	19.920	5230.200	5250.120	---	---
11N40MIMO	Ant1	5190	39.680	5170.240	5209.920	---	---
11N40MIMO	Ant2	5190	39.760	5170.320	5210.080	---	---
11N40MIMO	Ant1	5230	39.840	5210.240	5250.080	---	---
11N40MIMO	Ant2	5230	40.400	5209.680	5250.080	---	---
11AC20MIMO	Ant1	5180	19.840	5170.080	5189.920	---	---
11AC20MIMO	Ant2	5180	19.880	5170.040	5189.920	---	---
11AC20MIMO	Ant1	5200	19.720	5190.280	5210.000	---	---
11AC20MIMO	Ant2	5200	19.760	5190.200	5209.960	---	---
11AC20MIMO	Ant1	5240	19.760	5230.240	5250.000	---	---
11AC20MIMO	Ant2	5240	19.960	5230.120	5250.080	---	---
11AC40MIMO	Ant1	5190	40.400	5170.000	5210.400	---	---





11AC40MIMO	Ant2	5190	40.000	5170.160	5210.160	---	---
11AC40MIMO	Ant1	5230	40.320	5210.160	5250.480	---	---
11AC40MIMO	Ant2	5230	40.400	5210.160	5250.560	---	---
11AC80MIMO	Ant1	5210	81.280	5169.680	5250.960	---	---
11AC80MIMO	Ant2	5210	80.480	5169.840	5250.320	---	---

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



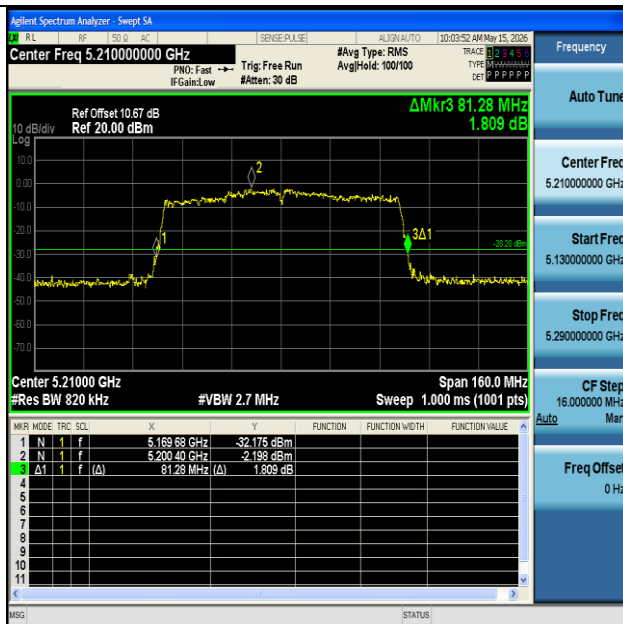


11AC40MIMO-Ant1-5230

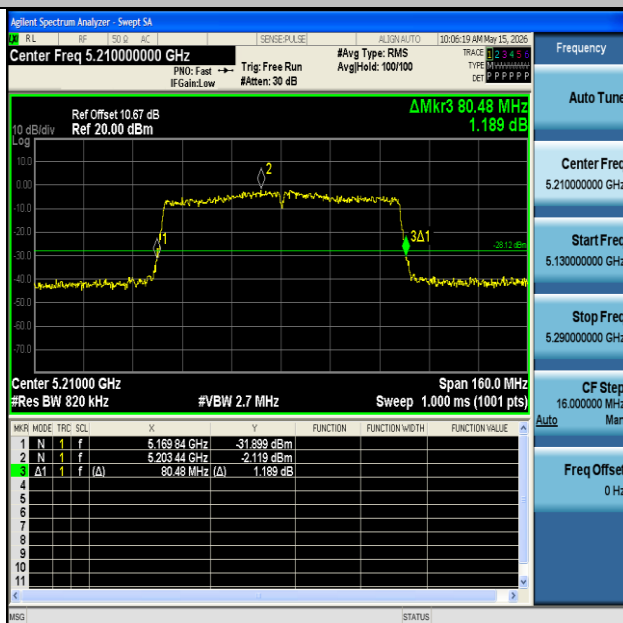


11AC40MIMO-Ant2-5230





11AC80MIMO-Ant1-5210



11AC80MIMO-Ant2-5210





Appendix A2: Occupied channel bandwidth

Test Result

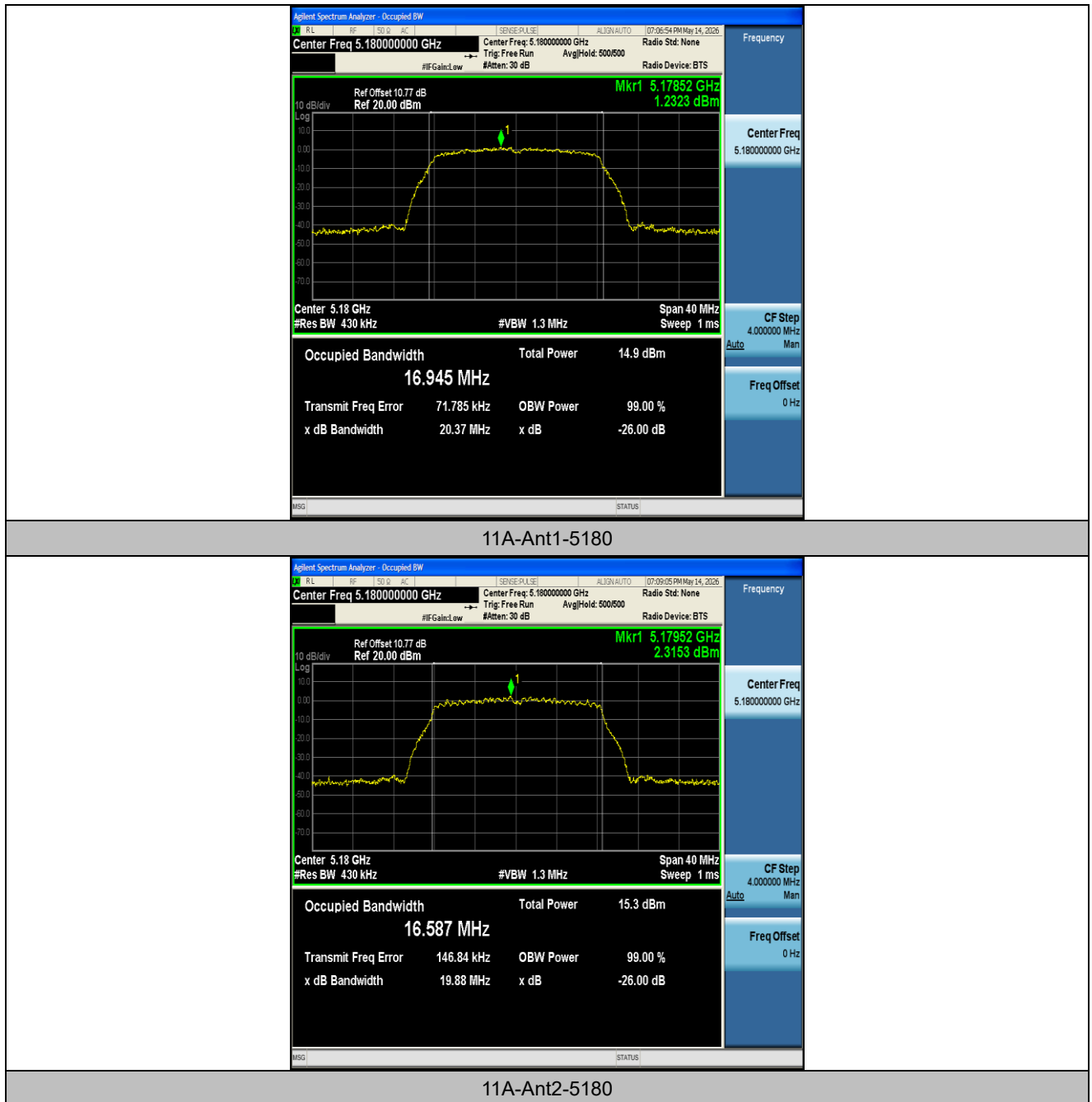
Test Mode	Antenna	Frequency [MHz]	OCB [MHz]	FL [MHz]	FH [MHz]	Limit [MHz]	Verdict
11A	Ant1	5180	16.945	5171.5993	5188.5443	---	---
11A	Ant2	5180	16.587	5171.8533	5188.4403	---	---
11A	Ant1	5200	16.898	5191.7232	5208.6212	---	---
11A	Ant2	5200	16.508	5191.9409	5208.4489	---	---
11A	Ant1	5240	16.931	5231.7085	5248.6395	---	---
11A	Ant2	5240	16.549	5231.9198	5248.4688	---	---
11N20MIMO	Ant1	5180	17.774	5171.2738	5189.0478	---	---
11N20MIMO	Ant2	5180	17.692	5171.2871	5188.9791	---	---
11N20MIMO	Ant1	5200	17.682	5191.3254	5209.0074	---	---
11N20MIMO	Ant2	5200	17.651	5191.3384	5208.9894	---	---
11N20MIMO	Ant1	5240	17.705	5231.3020	5249.0070	---	---
11N20MIMO	Ant2	5240	17.666	5231.3340	5249.0000	---	---
11N40MIMO	Ant1	5190	36.279	5172.1022	5208.3812	---	---
11N40MIMO	Ant2	5190	36.265	5172.0665	5208.3315	---	---
11N40MIMO	Ant1	5230	36.346	5212.0246	5248.3706	---	---
11N40MIMO	Ant2	5230	36.317	5211.9941	5248.3111	---	---
11AC20MIMO	Ant1	5180	17.725	5171.1715	5188.8965	---	---
11AC20MIMO	Ant2	5180	17.741	5171.1653	5188.9063	---	---
11AC20MIMO	Ant1	5200	17.644	5191.2828	5208.9268	---	---
11AC20MIMO	Ant2	5200	17.651	5191.2726	5208.9236	---	---
11AC20MIMO	Ant1	5240	17.716	5231.2983	5249.0143	---	---
11AC20MIMO	Ant2	5240	17.708	5231.2755	5248.9835	---	---
11AC40MIMO	Ant1	5190	36.221	5172.1408	5208.3618	---	---
11AC40MIMO	Ant2	5190	36.238	5172.0616	5208.2996	---	---
11AC40MIMO	Ant1	5230	36.263	5212.0513	5248.3143	---	---
11AC40MIMO	Ant2	5230	36.276	5212.0230	5248.2990	---	---
11AC80MIMO	Ant1	5210	75.798	5172.4530	5248.2510	---	---
11AC80MIMO	Ant2	5210	75.714	5172.3941	5248.1081	---	---

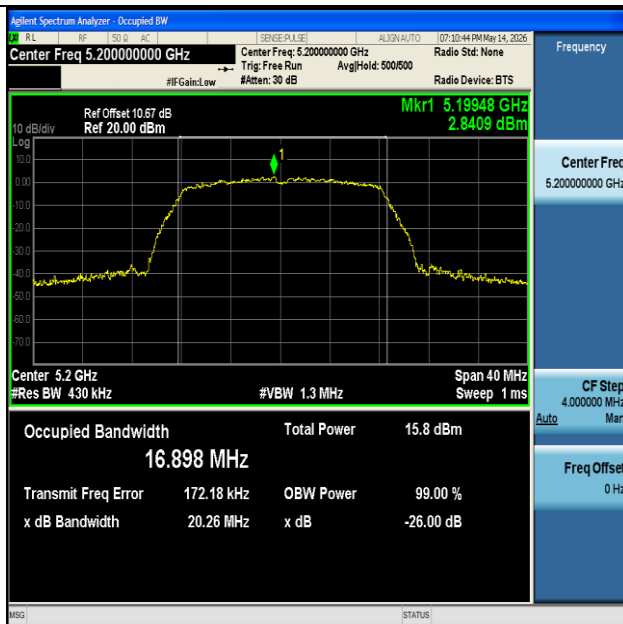
Note: offset(dB) = cable loss(dB) + attenuator factor(dB)



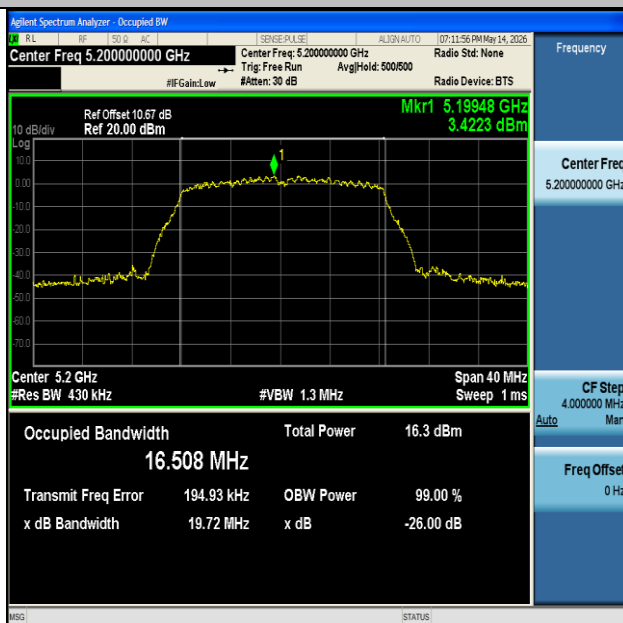


Test Graphs



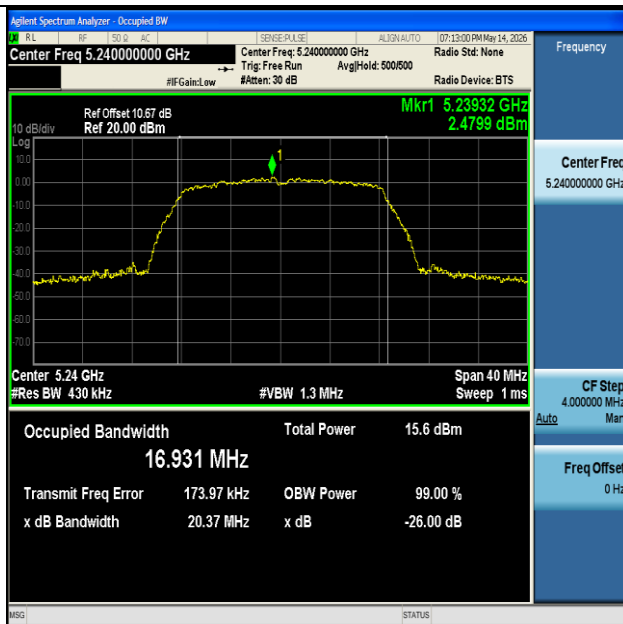


11A-Ant1-5200

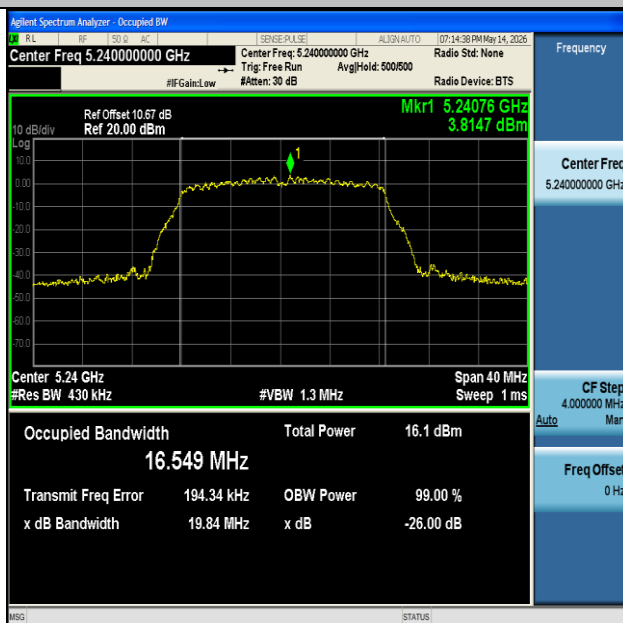


11A-Ant2-5200



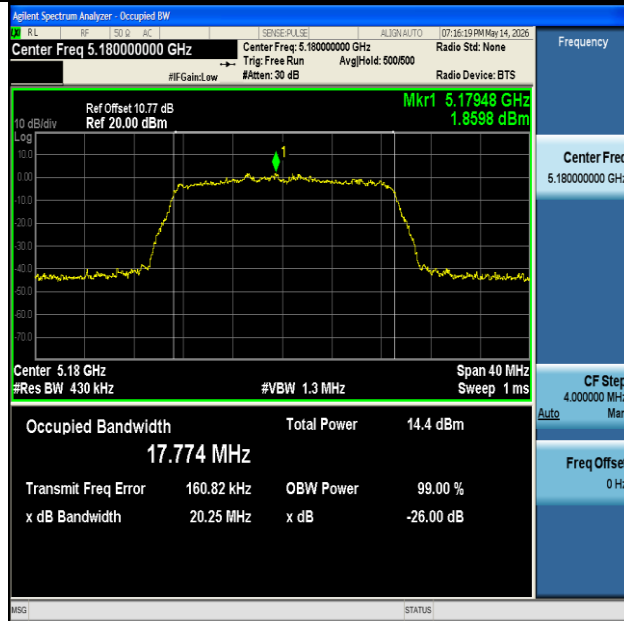


11A-Ant1-5240

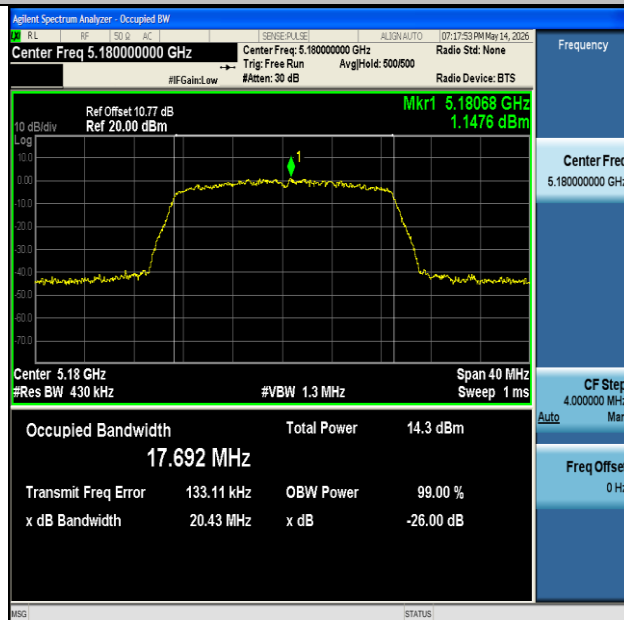


11A-Ant2-5240



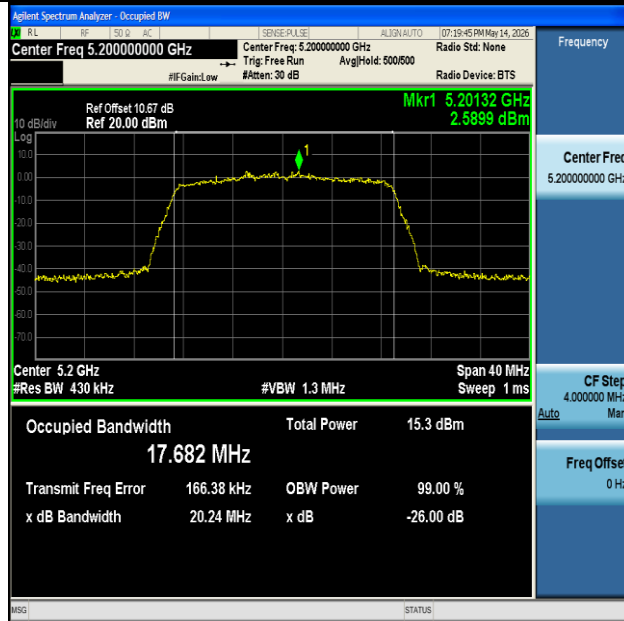


11N20MIMO-Ant1-5180

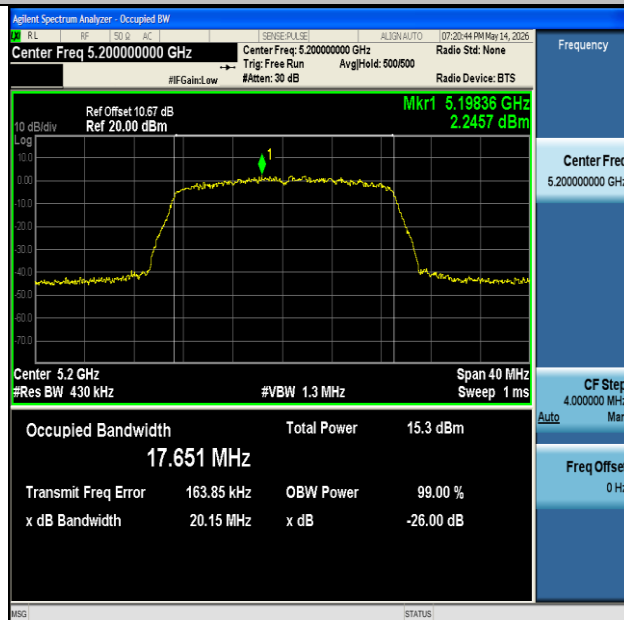


11N20MIMO-Ant2-5180



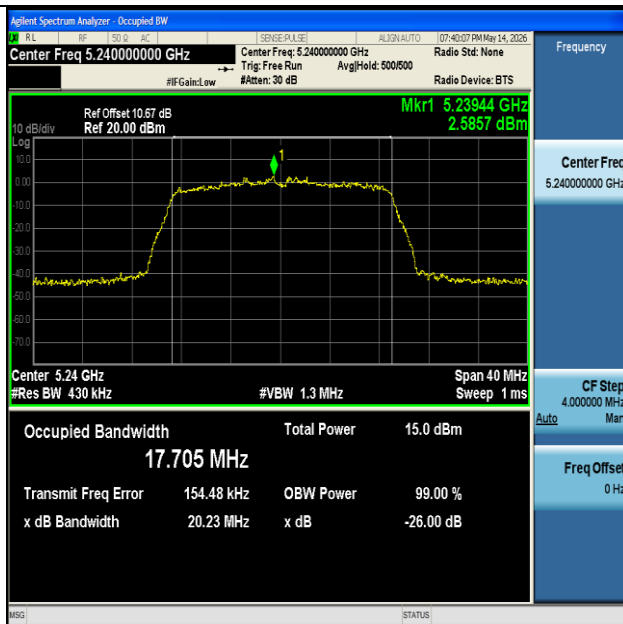


11N20MIMO-Ant1-5200

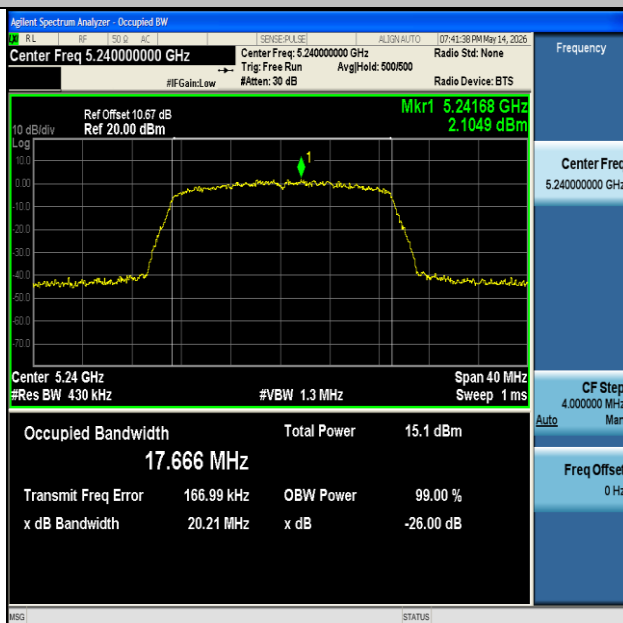


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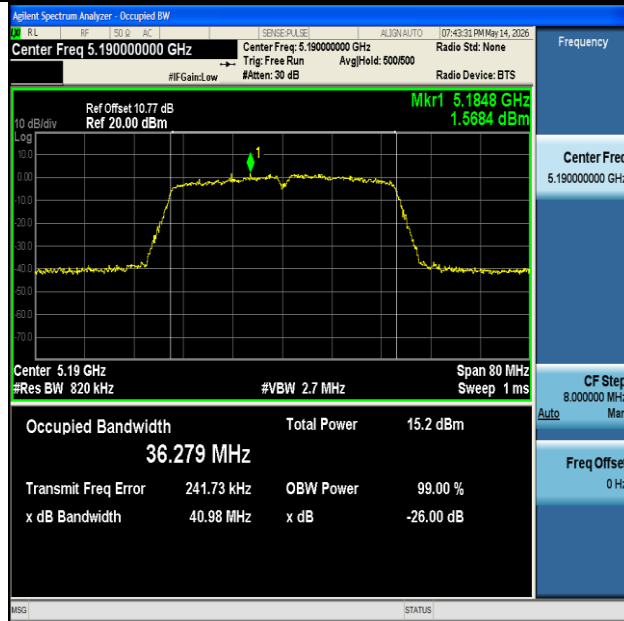


11N20MIMO-Ant1-5240



11N20MIMO-Ant2-5240



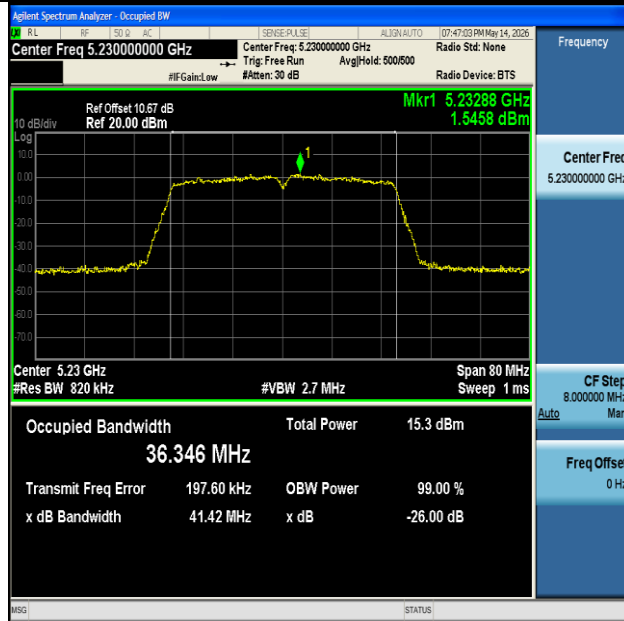


11N40MIMO-Ant1-5190

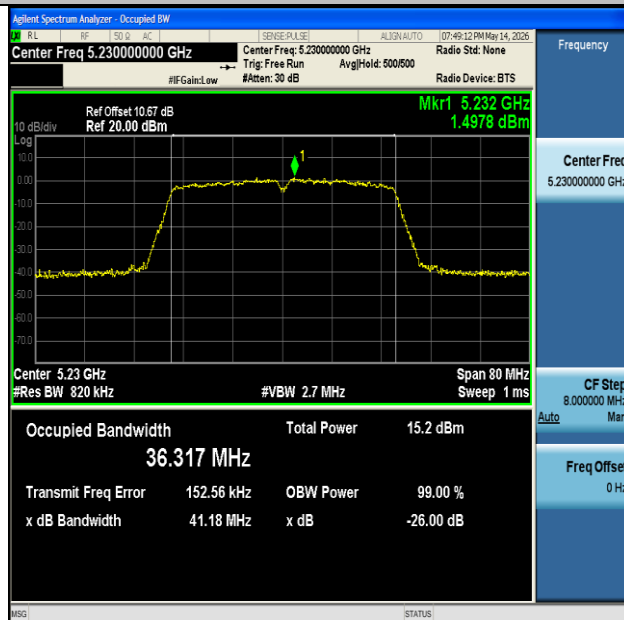


11N40MIMO-Ant2-5190



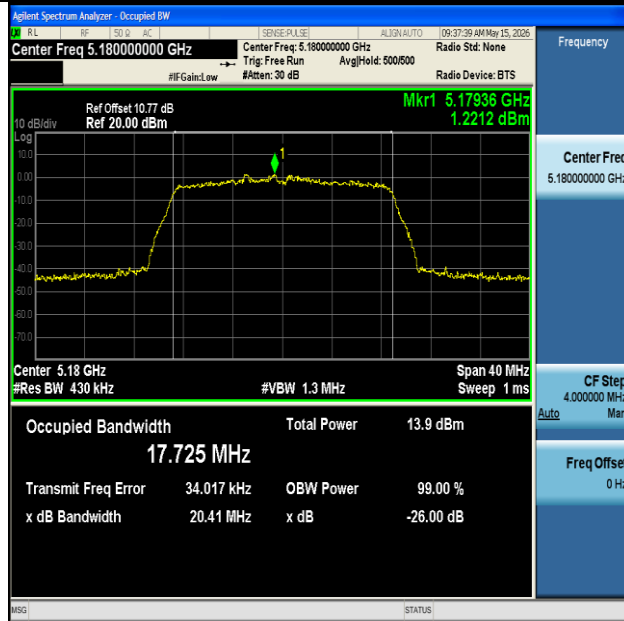


11N40MIMO-Ant1-5230

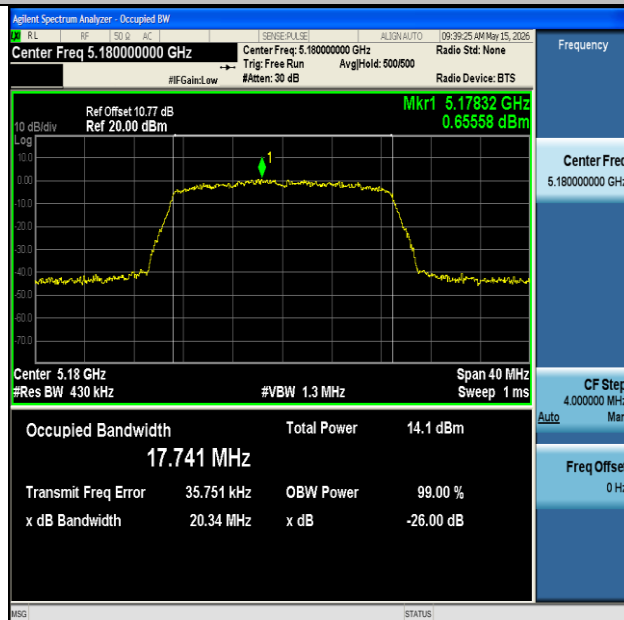


11N40MIMO-Ant2-5230



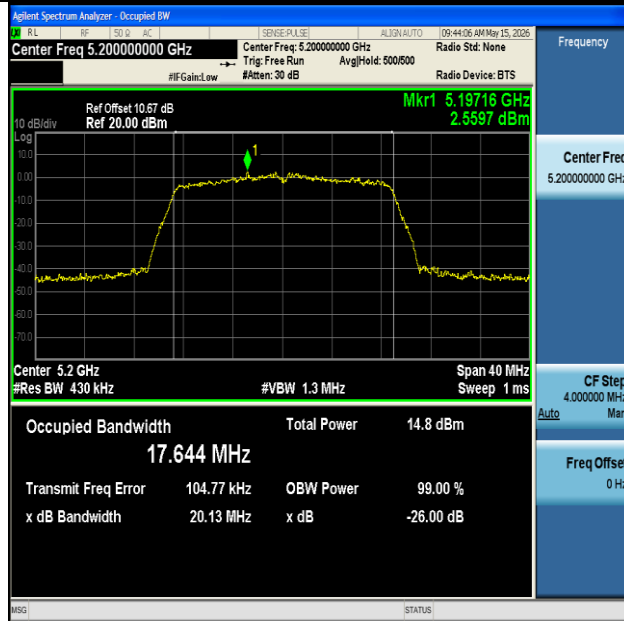


11AC20MIMO-Ant1-5180

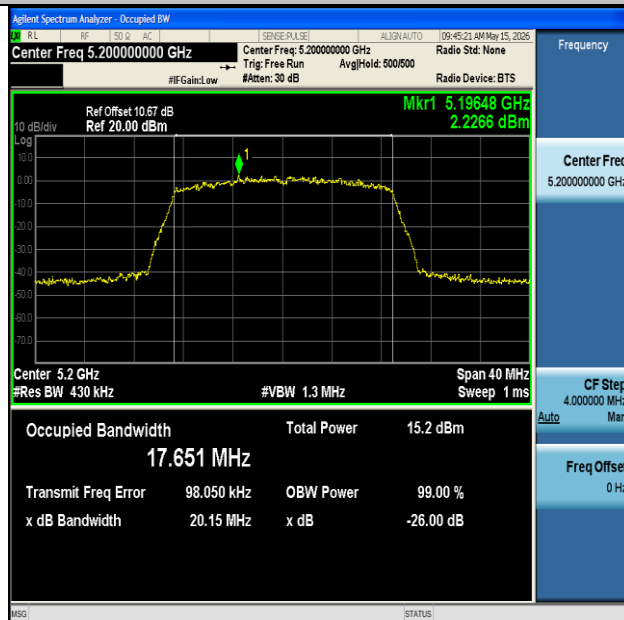


11AC20MIMO-Ant2-5180



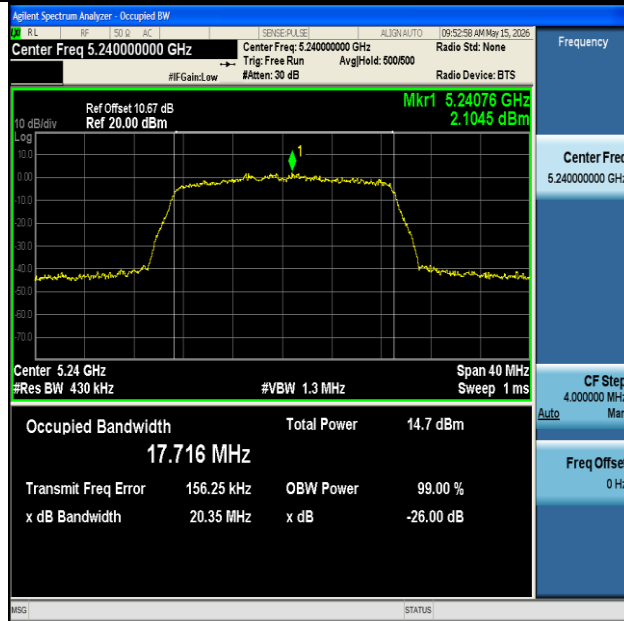


11AC20MIMO-Ant1-5200



11AC20MIMO-Ant2-5200



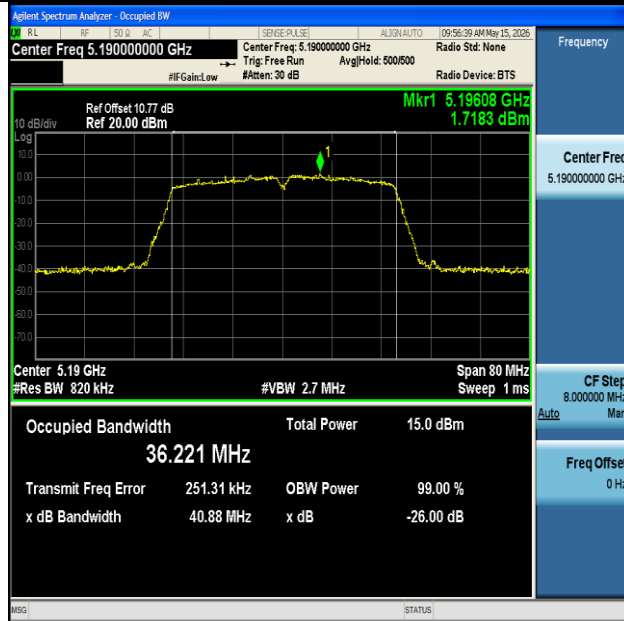


11AC20MIMO-Ant1-5240



11AC20MIMO-Ant2-5240



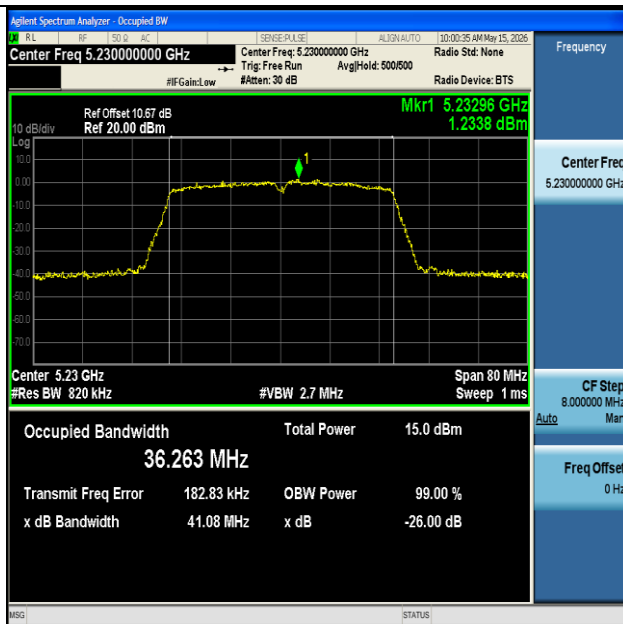


11AC40MIMO-Ant1-5190

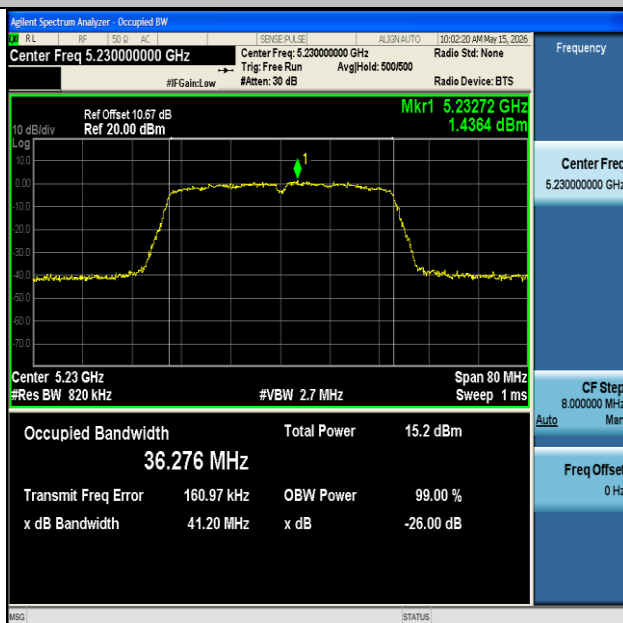


11AC40MIMO-Ant2-5190



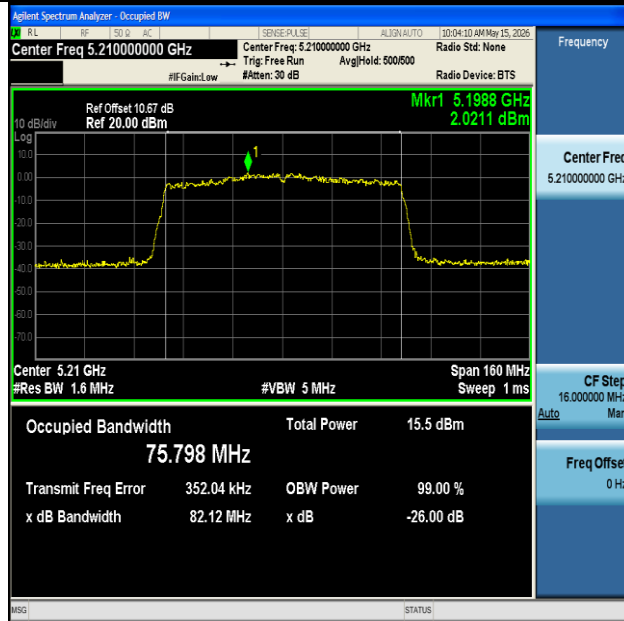


11AC40MIMO-Ant1-5230

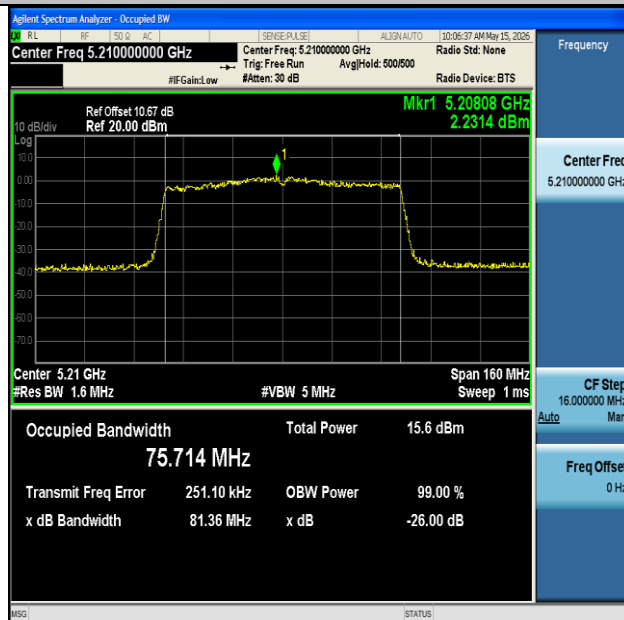


11AC40MIMO-Ant2-5230





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	8.29	≤23.13	PASS
11A	Ant2	5180	8.17	≤23.98	PASS
11A	Ant1	5200	9.23	≤23.13	PASS
11A	Ant2	5200	9.20	≤23.98	PASS
11A	Ant1	5240	8.97	≤23.13	PASS
11A	Ant2	5240	8.98	≤23.98	PASS
11N20MIMO	Ant1	5180	7.27	≤23.13	PASS
11N20MIMO	Ant2	5180	7.16	≤23.98	PASS
11N20MIMO	total	5180	10.23	≤23.13	PASS
11N20MIMO	Ant1	5200	7.90	≤23.13	PASS
11N20MIMO	Ant2	5200	8.18	≤23.98	PASS
11N20MIMO	total	5200	11.05	≤23.13	PASS
11N20MIMO	Ant1	5240	7.98	≤23.13	PASS
11N20MIMO	Ant2	5240	7.75	≤23.98	PASS
11N20MIMO	total	5240	10.88	≤23.13	PASS
11N40MIMO	Ant1	5190	7.57	≤23.13	PASS
11N40MIMO	Ant2	5190	7.44	≤23.98	PASS
11N40MIMO	total	5190	10.52	≤23.13	PASS
11N40MIMO	Ant1	5230	7.58	≤23.13	PASS
11N40MIMO	Ant2	5230	7.47	≤23.98	PASS
11N40MIMO	total	5230	10.54	≤23.13	PASS
11AC20MIMO	Ant1	5180	6.56	≤23.13	PASS
11AC20MIMO	Ant2	5180	7.07	≤23.98	PASS
11AC20MIMO	total	5180	9.83	≤23.13	PASS
11AC20MIMO	Ant1	5200	7.85	≤23.13	PASS
11AC20MIMO	Ant2	5200	7.80	≤23.98	PASS
11AC20MIMO	total	5200	10.84	≤23.13	PASS
11AC20MIMO	Ant1	5240	7.70	≤23.13	PASS
11AC20MIMO	Ant2	5240	7.84	≤23.98	PASS
11AC20MIMO	total	5240	10.78	≤23.13	PASS
11AC40MIMO	Ant1	5190	7.59	≤23.13	PASS
11AC40MIMO	Ant2	5190	7.77	≤23.98	PASS
11AC40MIMO	total	5190	10.69	≤23.13	PASS
11AC40MIMO	Ant1	5230	7.36	≤23.13	PASS
11AC40MIMO	Ant2	5230	7.77	≤23.98	PASS
11AC40MIMO	total	5230	10.58	≤23.13	PASS
11AC80MIMO	Ant1	5210	7.50	≤23.13	PASS





11AC80MIMO	Ant2	5210	7.00	≤ 23.98	PASS
11AC80MIMO	total	5210	10.27	≤ 23.13	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	-2.03	≤10.15	PASS
11A	Ant2	5180	-1.97	≤11.00	PASS
11A	Ant1	5200	-0.88	≤10.15	PASS
11A	Ant2	5200	-0.81	≤11.00	PASS
11A	Ant1	5240	-1.25	≤10.15	PASS
11A	Ant2	5240	-1.16	≤11.00	PASS
11N20MIMO	Ant1	5180	-2.91	≤10.15	PASS
11N20MIMO	Ant2	5180	-2.76	≤11.00	PASS
11N20MIMO	total	5180	0.18	≤7.15	PASS
11N20MIMO	Ant1	5200	-1.87	≤10.15	PASS
11N20MIMO	Ant2	5200	-1.99	≤11.00	PASS
11N20MIMO	total	5200	1.08	≤7.15	PASS
11N20MIMO	Ant1	5240	-1.89	≤10.15	PASS
11N20MIMO	Ant2	5240	-2.45	≤11.00	PASS
11N20MIMO	total	5240	0.85	≤7.15	PASS
11N40MIMO	Ant1	5190	-5.31	≤10.15	PASS
11N40MIMO	Ant2	5190	-5.19	≤11.00	PASS
11N40MIMO	total	5190	-2.24	≤7.15	PASS
11N40MIMO	Ant1	5230	-5.80	≤10.15	PASS
11N40MIMO	Ant2	5230	-5.99	≤11.00	PASS
11N40MIMO	total	5230	-2.88	≤7.15	PASS
11AC20MIMO	Ant1	5180	-3.65	≤10.15	PASS
11AC20MIMO	Ant2	5180	-2.86	≤11.00	PASS
11AC20MIMO	total	5180	-0.23	≤7.15	PASS
11AC20MIMO	Ant1	5200	-1.91	≤10.15	PASS
11AC20MIMO	Ant2	5200	-2.12	≤11.00	PASS
11AC20MIMO	total	5200	1.00	≤7.15	PASS
11AC20MIMO	Ant1	5240	-2.63	≤10.15	PASS
11AC20MIMO	Ant2	5240	-2.24	≤11.00	PASS
11AC20MIMO	total	5240	0.58	≤7.15	PASS
11AC40MIMO	Ant1	5190	-5.43	≤10.15	PASS
11AC40MIMO	Ant2	5190	-5.43	≤11.00	PASS
11AC40MIMO	total	5190	-2.42	≤7.15	PASS
11AC40MIMO	Ant1	5230	-5.86	≤10.15	PASS
11AC40MIMO	Ant2	5230	-5.48	≤11.00	PASS
11AC40MIMO	total	5230	-2.66	≤7.15	PASS
11AC80MIMO	Ant1	5210	-7.84	≤10.15	PASS





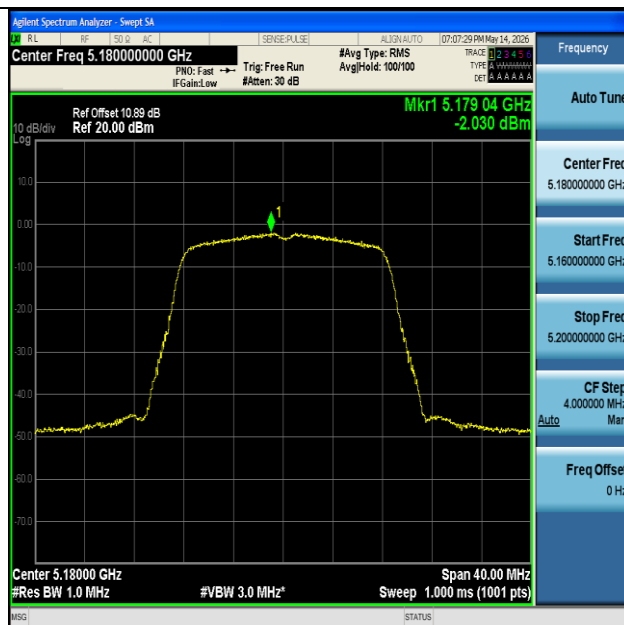
11AC80MIMO	Ant2	5210	-8.51	≤11.00	PASS
11AC80MIMO	total	5210	-5.15	≤7.15	PASS

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

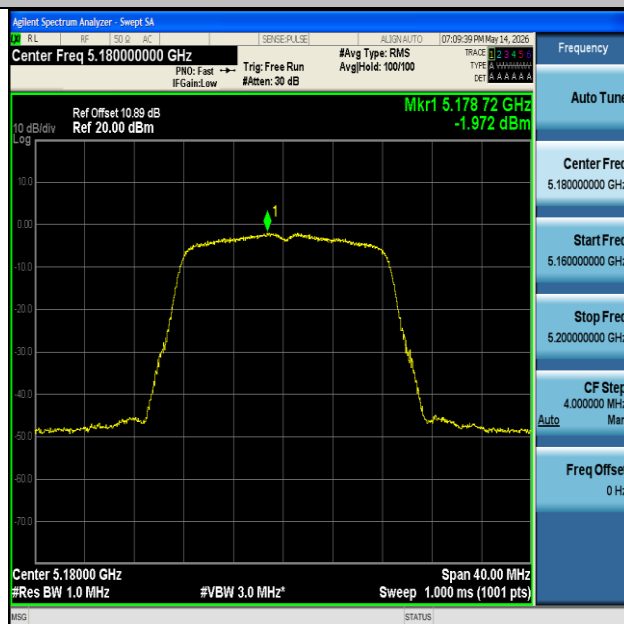




Test Graphs



11A-Ant1-5180-PASS



11A-Ant2-5180-PASS



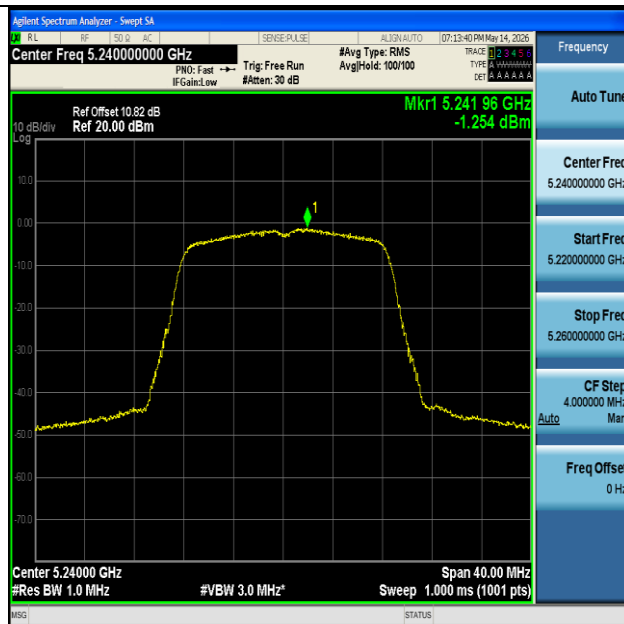


11A-Ant1-5200-PASS

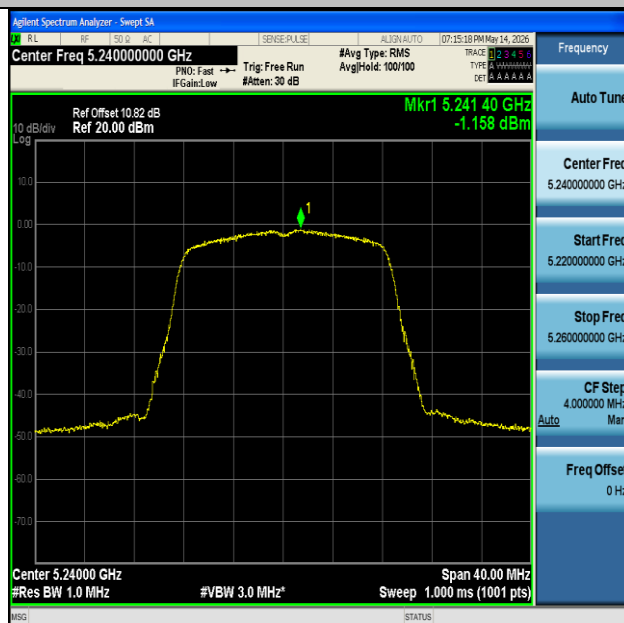


11A-Ant2-5200-PASS



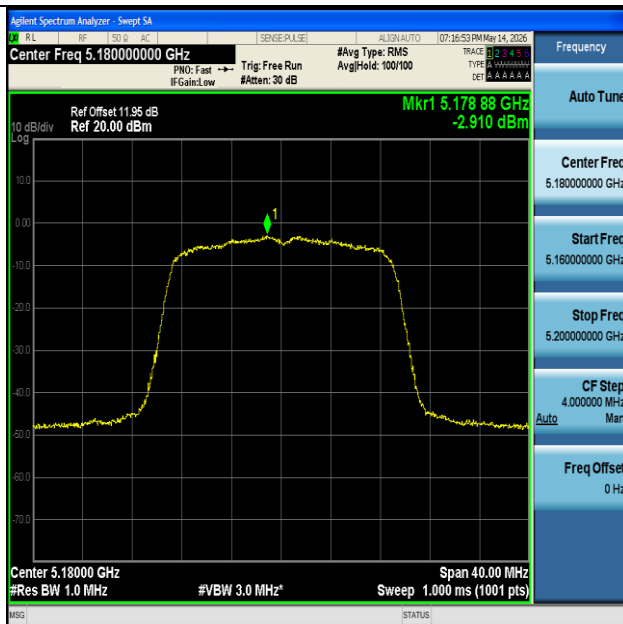


11A-Ant1-5240-PASS

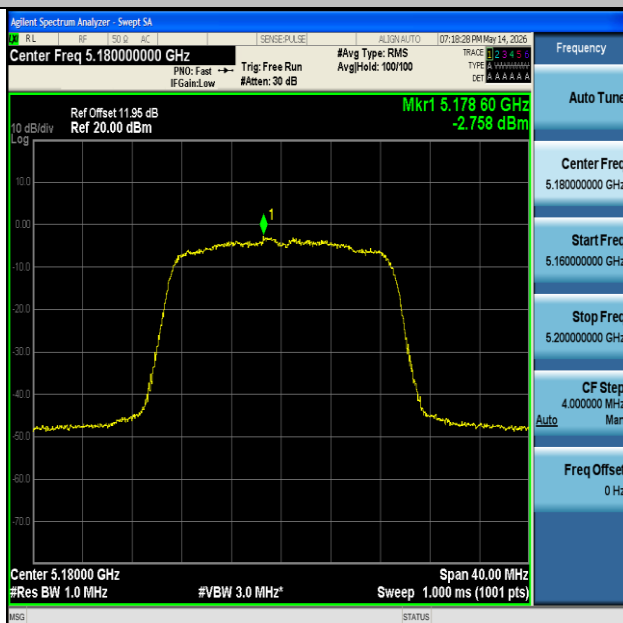


11A-Ant2-5240-PASS





11N20MIMO-Ant1-5180-PASS

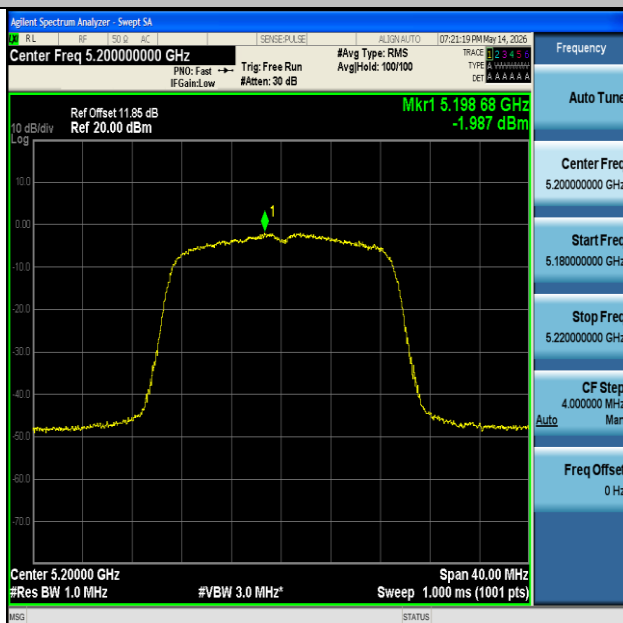


11N20MIMO-Ant2-5180-PASS



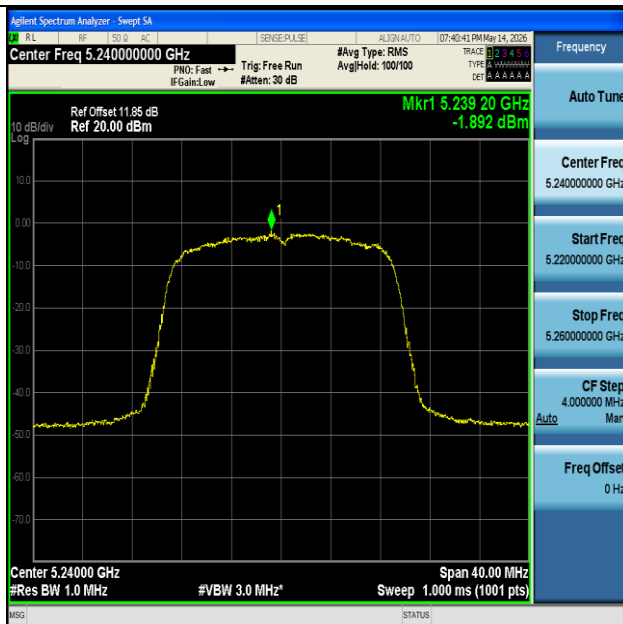


11N20MIMO-Ant1-5200-PASS

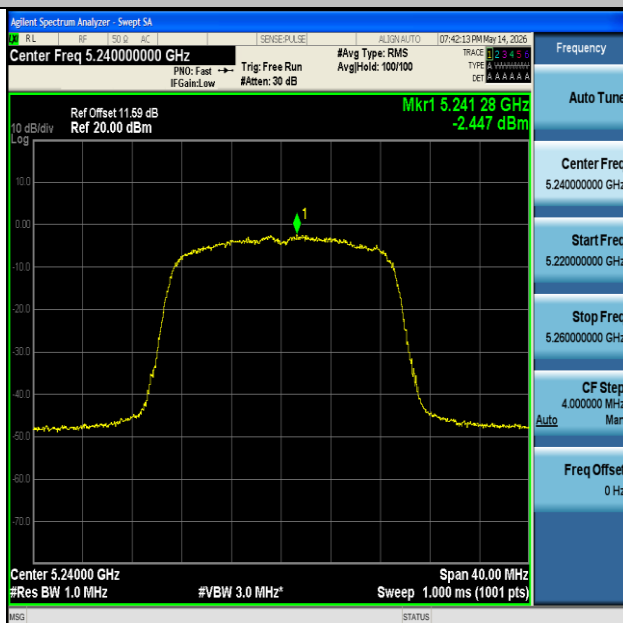


11N20MIMO-Ant2-5200-PASS



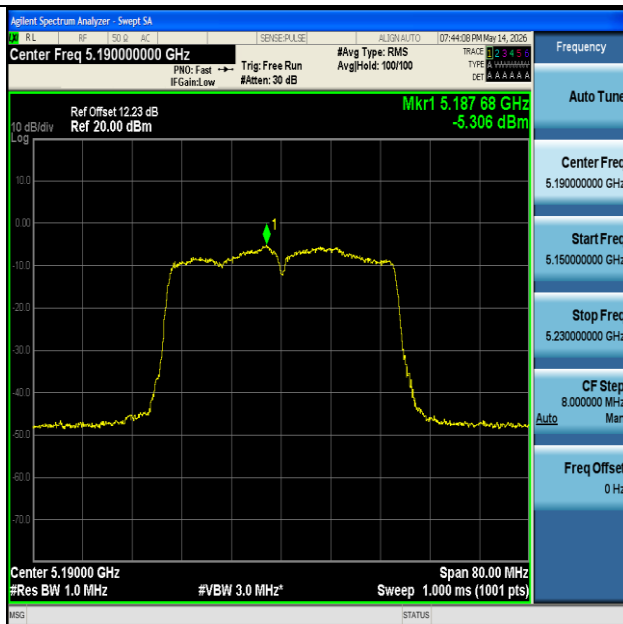


11N20MIMO-Ant1-5240-PASS

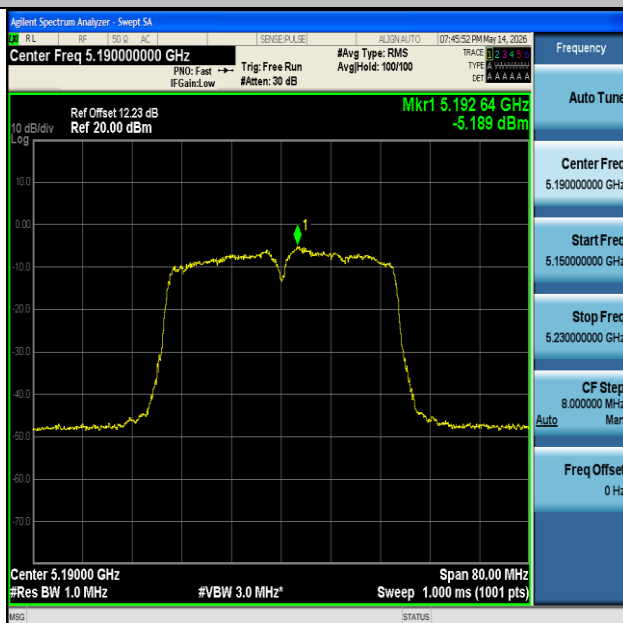


11N20MIMO-Ant2-5240-PASS



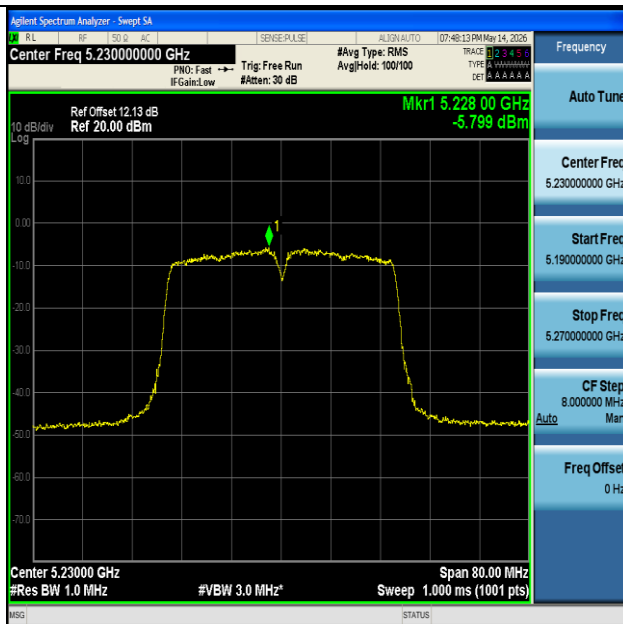


11N40MIMO-Ant1-5190-PASS

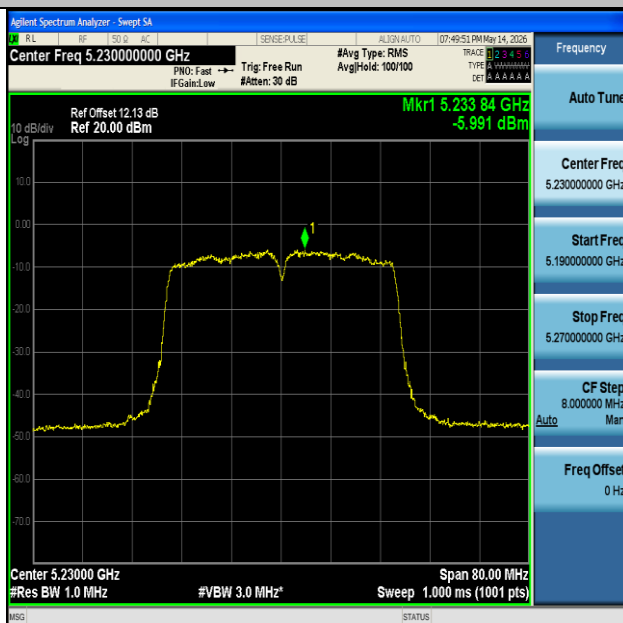


11N40MIMO-Ant2-5190-PASS



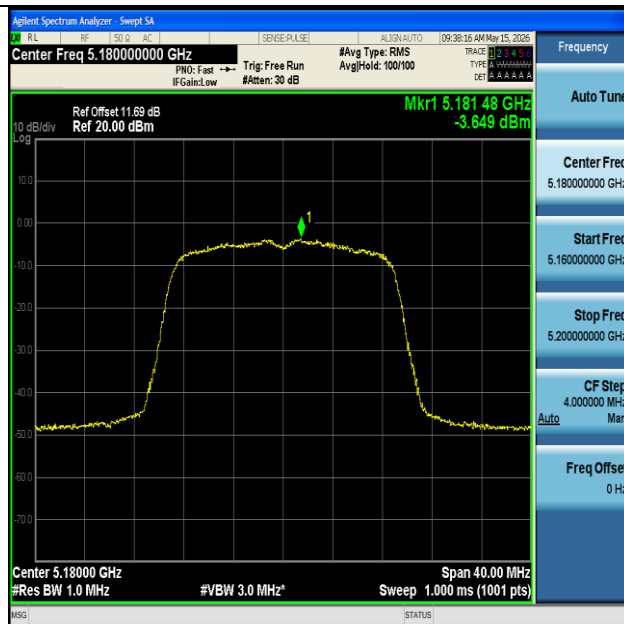


11N40MIMO-Ant1-5230-PASS

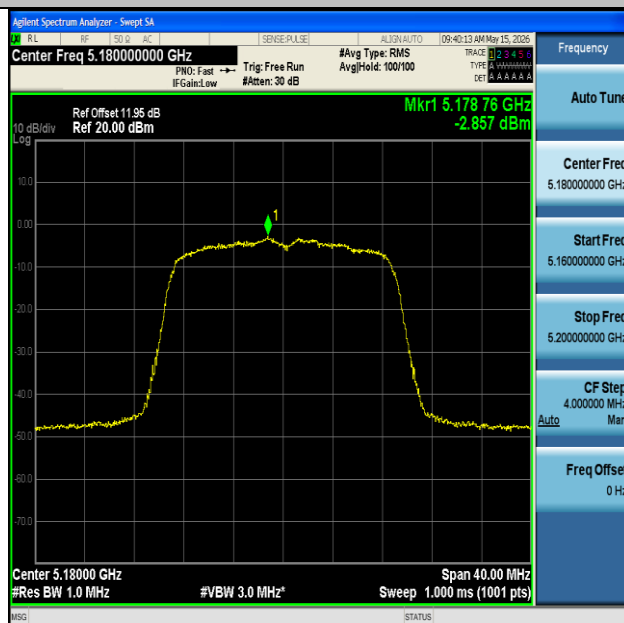


11N40MIMO-Ant2-5230-PASS



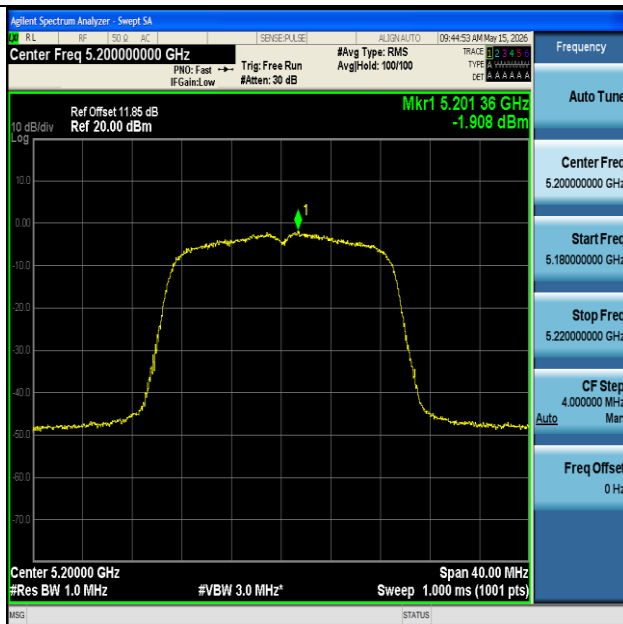


11AC20MIMO-Ant1-5180-PASS

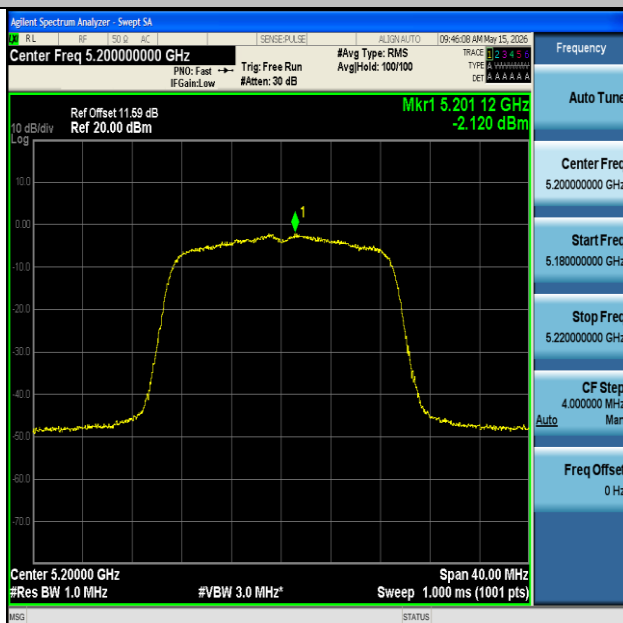


11AC20MIMO-Ant2-5180-PASS



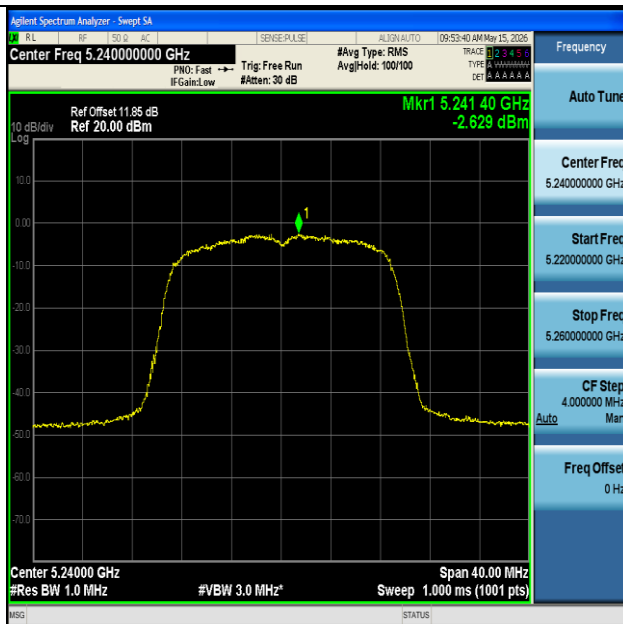


11AC20MIMO-Ant1-5200-PASS

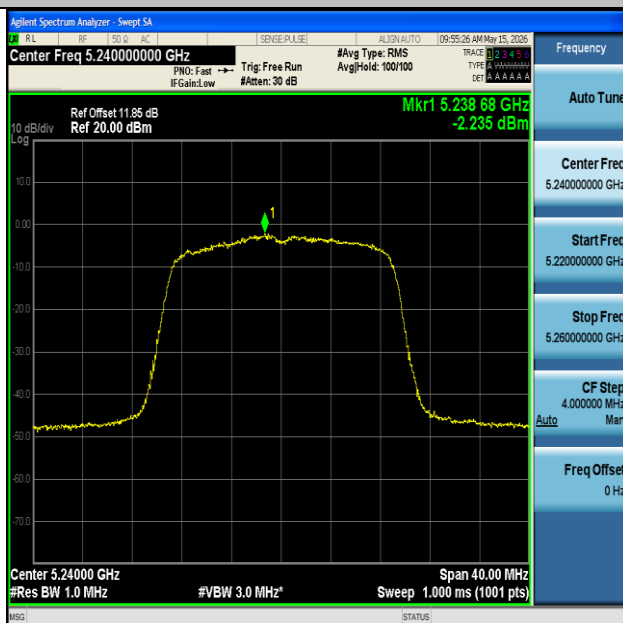


11AC20MIMO-Ant2-5200-PASS



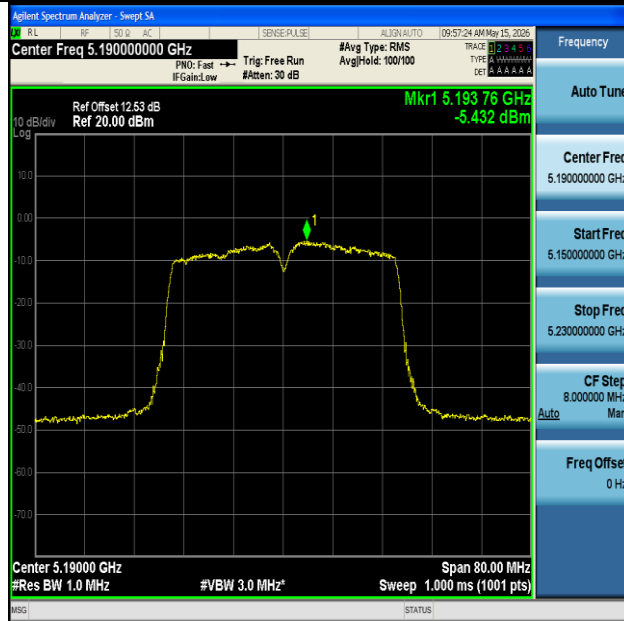


11AC20MIMO-Ant1-5240-PASS

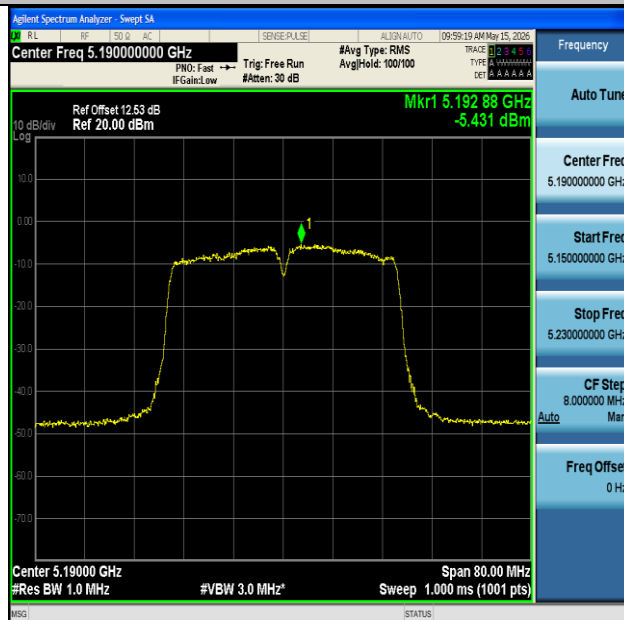


11AC20MIMO-Ant2-5240-PASS



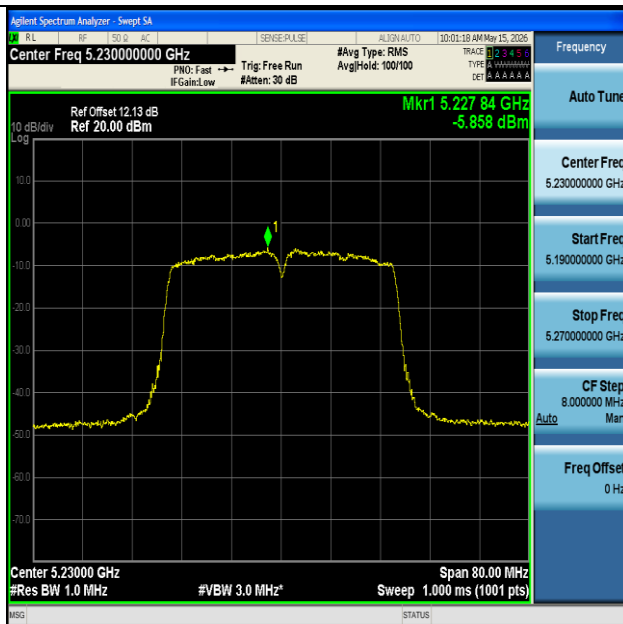


11AC40MIMO-Ant1-5190-PASS

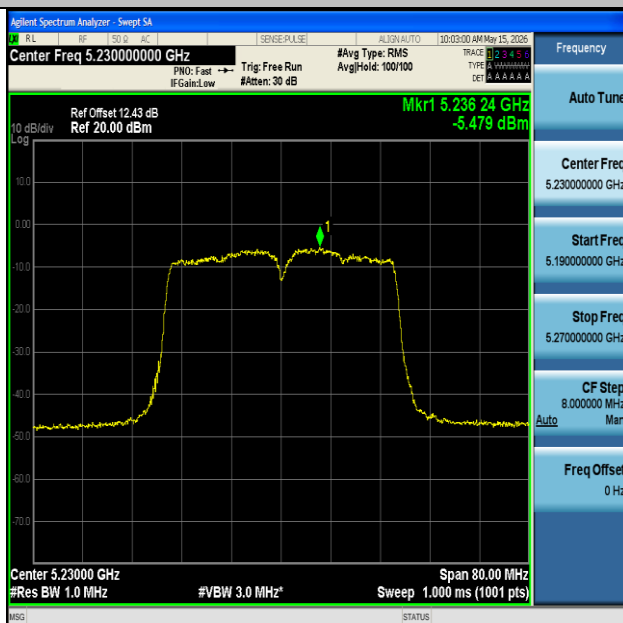


11AC40MIMO-Ant2-5190-PASS



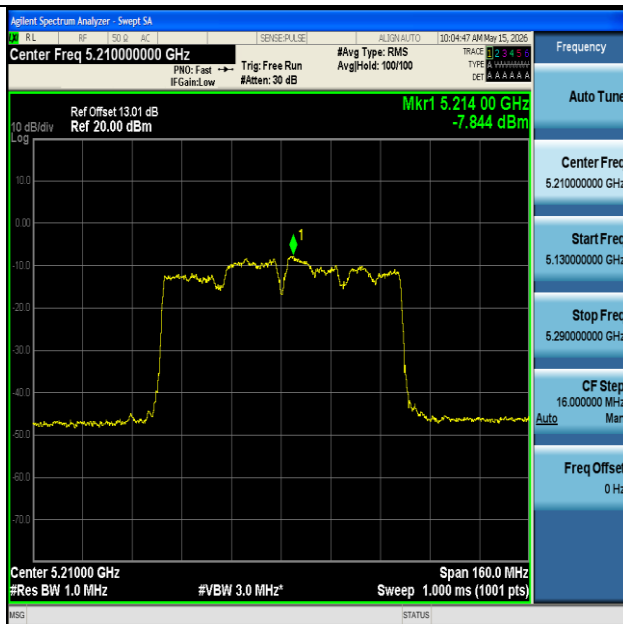


11AC40MIMO-Ant1-5230-PASS

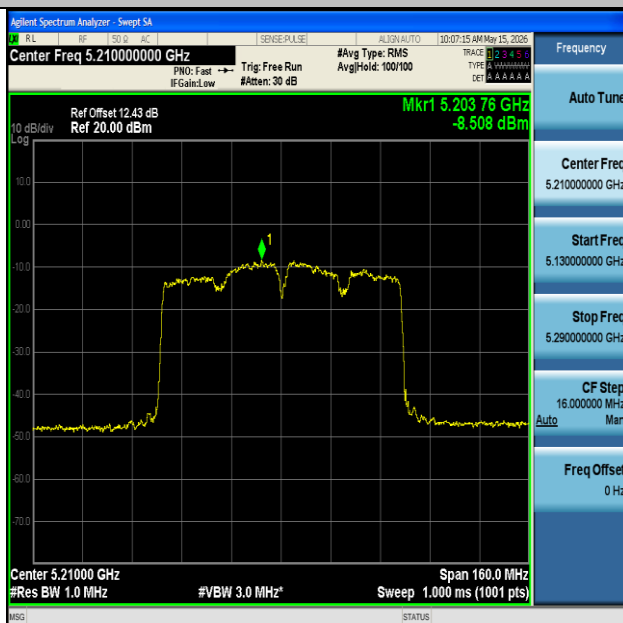


11AC40MIMO-Ant2-5230-PASS





11AC80MIMO-Ant1-5210-PASS



11AC80MIMO-Ant2-5210-PASS





Appendix D: Band edge measurements

Test Result

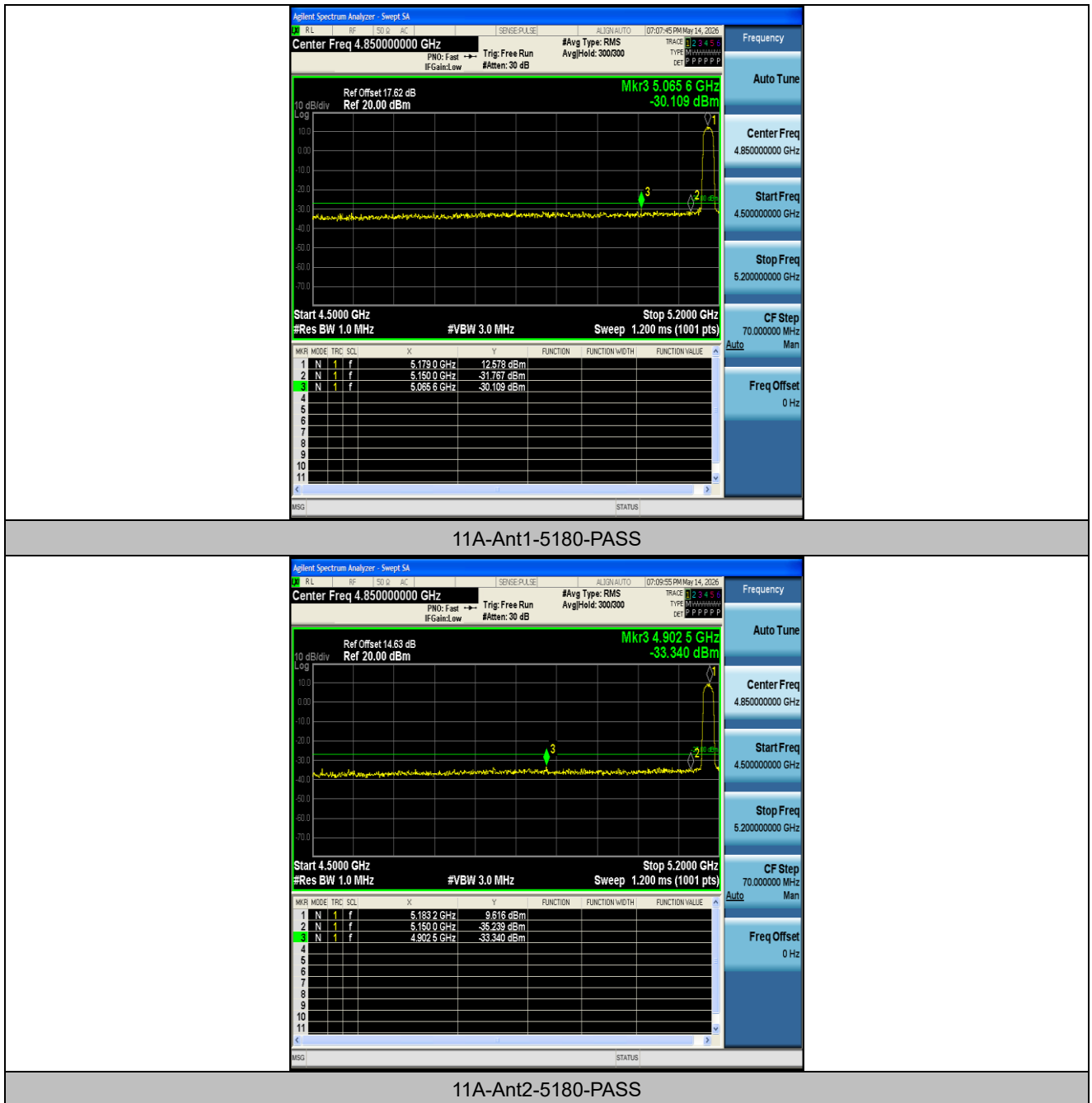
Test Mode	Antenna	Ch. Name	Frequency [MHz]	Result [dBm]	Limit [dBm]	Verdict
11A	Ant1	Low	5180	-30.11	≤ -27	PASS
11A	Ant2	Low	5180	-33.34	≤ -27	PASS
11A	Ant1	High	5240	-29.96	≤ -27	PASS
11A	Ant2	High	5240	-34.04	≤ -27	PASS
11N20MIMO	Ant1	Low	5180	-30.54	≤ -27	PASS
11N20MIMO	Ant2	Low	5180	-33.57	≤ -27	PASS
11N20MIMO	Ant1	High	5240	-30.69	≤ -27	PASS
11N20MIMO	Ant2	High	5240	-33.18	≤ -27	PASS
11N40MIMO	Ant1	Low	5190	-30.35	≤ -27	PASS
11N40MIMO	Ant2	Low	5190	-33.36	≤ -27	PASS
11N40MIMO	Ant1	High	5230	-30.72	≤ -27	PASS
11N40MIMO	Ant2	High	5230	-33.94	≤ -27	PASS
11AC20MIMO	Ant1	Low	5180	-30.32	≤ -27	PASS
11AC20MIMO	Ant2	Low	5180	-33.33	≤ -27	PASS
11AC20MIMO	Ant1	High	5240	-30.83	≤ -27	PASS
11AC20MIMO	Ant2	High	5240	-33.1	≤ -27	PASS
11AC40MIMO	Ant1	Low	5190	-31.07	≤ -27	PASS
11AC40MIMO	Ant2	Low	5190	-33.45	≤ -27	PASS
11AC40MIMO	Ant1	High	5230	-30.54	≤ -27	PASS
11AC40MIMO	Ant2	High	5230	-33.31	≤ -27	PASS
11AC80MIMO	Ant1	Low	5210	-30.32	≤ -27	PASS
11AC80MIMO	Ant1	High	5210	-30.95	≤ -27	PASS
11AC80MIMO	Ant2	Low	5210	-32.94	≤ -27	PASS
11AC80MIMO	Ant2	High	5210	-33.89	≤ -27	PASS

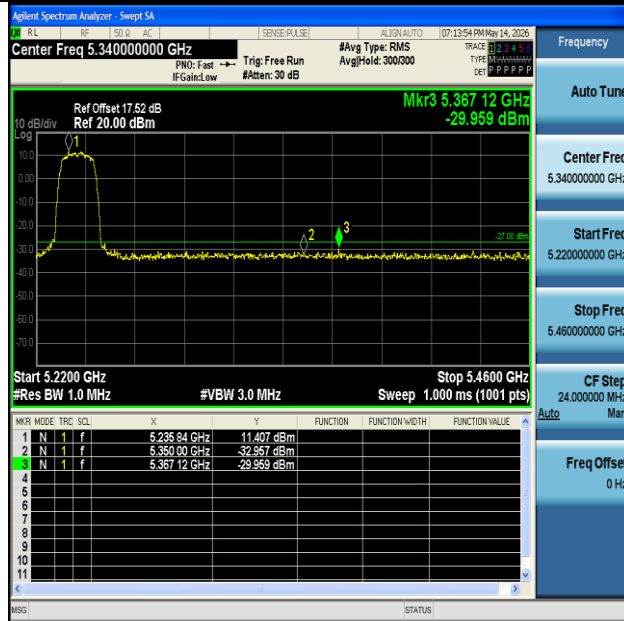
Note: offset(dB) = cable loss(dB) + attenuator factor(dB)+antenna gain(dBi)



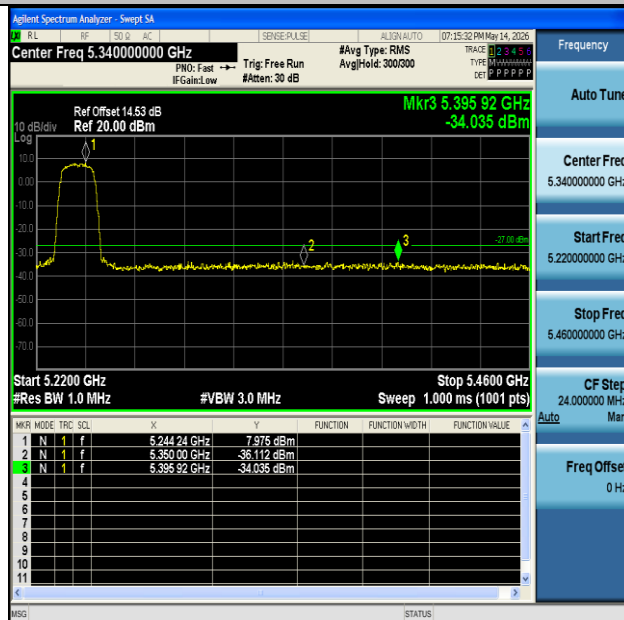


Test Graphs





11A-Ant1-5240-PASS

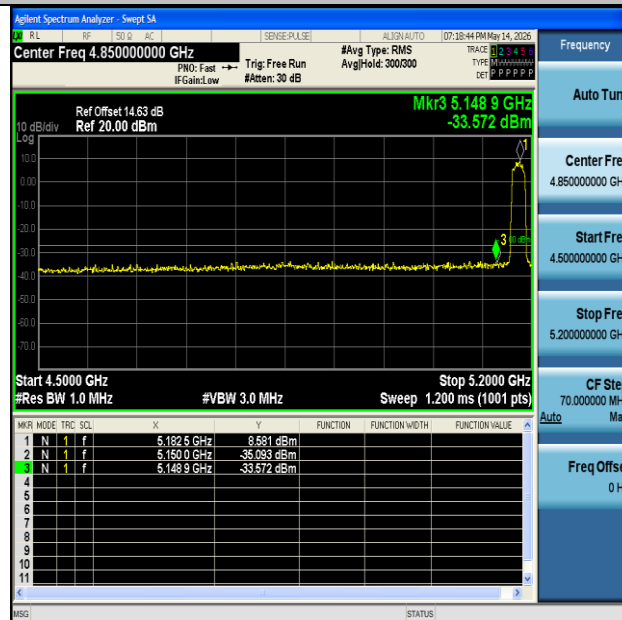


11A-Ant2-5240-PASS





11N20MIMO-Ant1-5180-PASS



11N20MIMO-Ant2-5180-PASS

