



CTC Laboratories, Inc.

Appendix for 5G WIFI

FCC ID: 2AR24-AIBOX30M

Applicant: Shenzhen Absen Optoelectronic Co.,Ltd

**Address: 18-20F Building 3A, Cloud Park, Bantian,
Longgang District, Shenzhen, China**

Product Name: LED Multimedia Processor

EUT Model: Ai Box3.0 M

RF Module Model: ZK-7668U



Table of Contents

Appendix A1: Emission Bandwidth	3
Test Result.....	3
Test Graphs	5
Appendix A2: Occupied channel bandwidth.....	28
Test Result.....	28
Test Graphs	30
Appendix A3: Min emission bandwidth	53
Test Result.....	53
Test Graphs	54
Appendix B: Maximum conducted output power	66
Test Result.....	66
Appendix C: Maximum power spectral density	69
Test Result.....	69
Test Graphs	72
Appendix D: Frequency Stability.....	95
Test Result.....	95



Appendix A1: Emission Bandwidth

Test Result

TestMode	Antenna	Channel	26db EBW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	Ant1	5180	19.720	5169.960	5189.680	---	PASS
	Ant2	5180	19.560	5170.080	5189.640	---	PASS
	Ant1	5200	19.640	5190.000	5209.640	---	PASS
	Ant2	5200	19.680	5190.040	5209.720	---	PASS
	Ant1	5240	20.000	5230.080	5250.080	---	PASS
	Ant2	5240	19.640	5230.040	5249.680	---	PASS
	Ant1	5745	23.280	5733.120	5756.400	---	PASS
	Ant2	5745	21.920	5733.680	5755.600	---	PASS
	Ant1	5785	26.360	5771.400	5797.760	---	PASS
	Ant2	5785	25.640	5771.520	5797.160	---	PASS
	Ant1	5825	27.080	5810.760	5837.840	---	PASS
	Ant2	5825	23.840	5813.240	5837.080	---	PASS
11N20MIMO	Ant1	5180	20.040	5169.880	5189.920	---	PASS
	Ant2	5180	20.080	5169.840	5189.920	---	PASS
	Ant1	5200	20.240	5189.800	5210.040	---	PASS
	Ant2	5200	20.120	5189.800	5209.920	---	PASS
	Ant1	5240	20.080	5229.880	5249.960	---	PASS
	Ant2	5240	20.000	5229.880	5249.880	---	PASS
	Ant1	5745	20.600	5734.400	5755.000	---	PASS
	Ant2	5745	20.200	5734.800	5755.000	---	PASS
	Ant1	5785	21.280	5774.360	5795.640	---	PASS
	Ant2	5785	20.560	5774.400	5794.960	---	PASS
	Ant1	5825	25.080	5812.720	5837.800	---	PASS
	Ant2	5825	21.600	5814.120	5835.720	---	PASS
11N40MIMO	Ant1	5190	40.720	5169.520	5210.240	---	PASS
	Ant2	5190	40.560	5169.680	5210.240	---	PASS
	Ant1	5230	40.480	5209.600	5250.080	---	PASS
	Ant2	5230	40.480	5209.600	5250.080	---	PASS
	Ant1	5755	45.920	5732.360	5778.280	---	PASS
	Ant2	5755	45.760	5732.440	5778.200	---	PASS
	Ant1	5795	42.160	5773.960	5816.120	---	PASS
	Ant2	5795	42.880	5772.280	5815.160	---	PASS



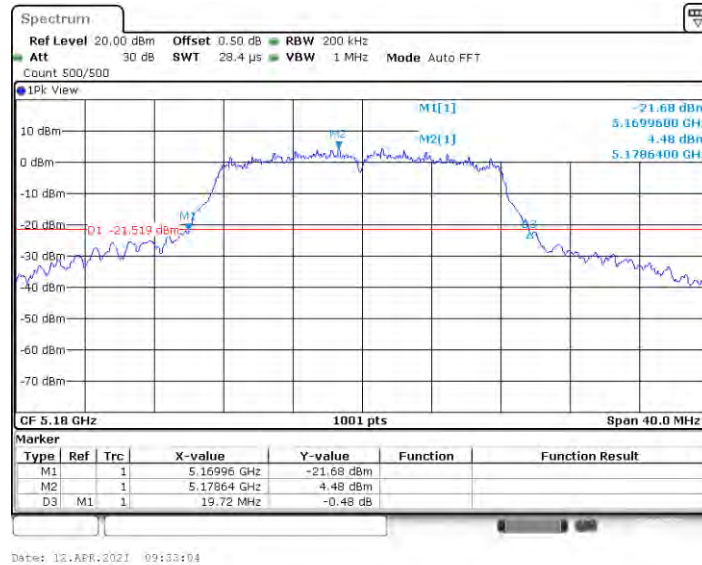
CTC Laboratories, Inc.

11AC20MIMO	Ant1	5180	19.800	5169.960	5189.760	---	PASS
	Ant2	5180	19.960	5169.880	5189.840	---	PASS
	Ant1	5200	20.120	5189.840	5209.960	---	PASS
	Ant2	5200	19.920	5189.920	5209.840	---	PASS
	Ant1	5240	20.120	5229.880	5250.000	---	PASS
	Ant2	5240	20.040	5229.880	5249.920	---	PASS
	Ant1	5745	20.360	5734.800	5755.160	---	PASS
	Ant2	5745	20.240	5734.680	5754.920	---	PASS
	Ant1	5785	22.600	5773.160	5795.760	---	PASS
	Ant2	5785	20.320	5774.600	5794.920	---	PASS
	Ant1	5825	22.600	5813.120	5835.720	---	PASS
	Ant2	5825	20.320	5814.600	5834.920	---	PASS
11AC40MIMO	Ant1	5190	40.960	5169.520	5210.480	---	PASS
	Ant2	5190	40.240	5169.600	5209.840	---	PASS
	Ant1	5230	40.880	5209.440	5250.320	---	PASS
	Ant2	5230	40.160	5209.920	5250.080	---	PASS
	Ant1	5755	47.520	5733.640	5781.160	---	PASS
	Ant2	5755	40.640	5734.520	5775.160	---	PASS
	Ant1	5795	54.240	5768.200	5822.440	---	PASS
	Ant2	5795	40.160	5774.760	5814.920	---	PASS
11AC80MIMO	Ant1	5210	80.480	5169.200	5249.680	---	PASS
	Ant2	5210	79.840	5170.000	5249.840	---	PASS
	Ant1	5775	80.160	5734.840	5815.000	---	PASS
	Ant2	5775	79.840	5735.000	5814.840	---	PASS

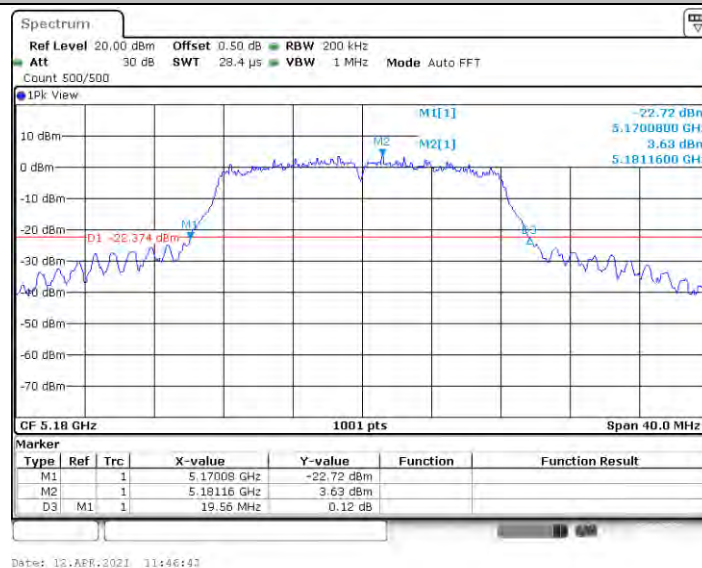


Test Graphs

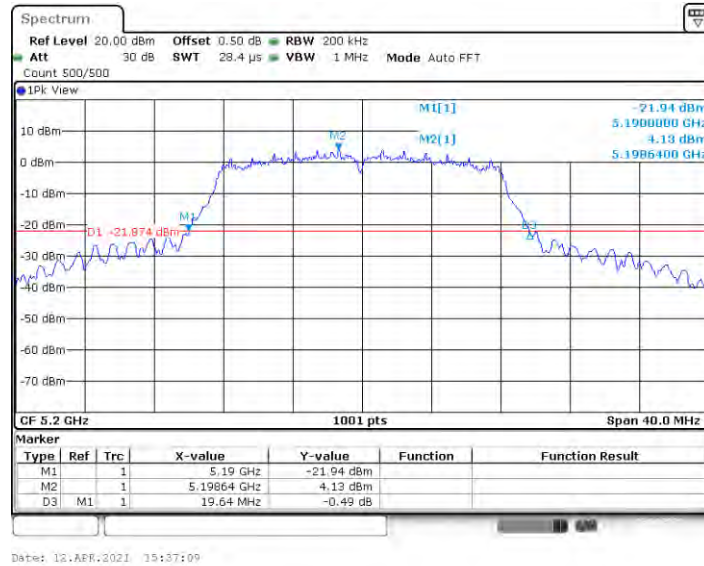
11A_Ant1_5180



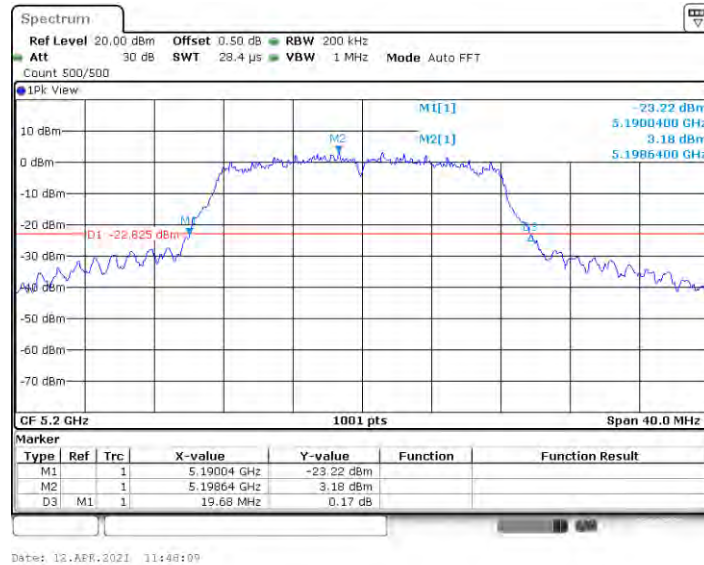
11A_Ant2_5180



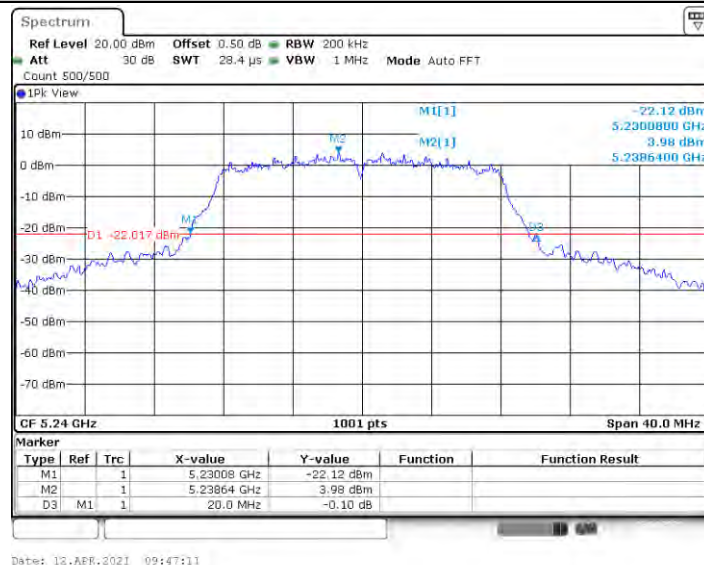
11A_Ant1_5200



11A_Ant2_5200

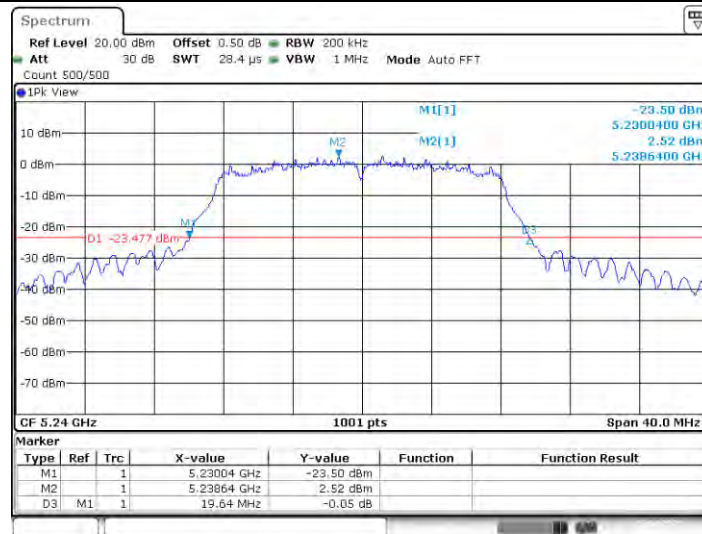


11A_Ant1_5240





11A_Ant2_5240



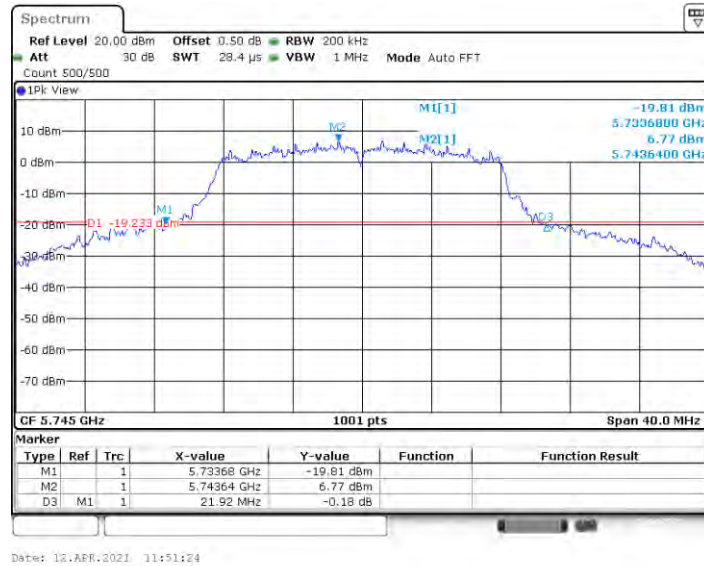
Date: 12.APR.2021 11:49:34

11A_Ant1_5745

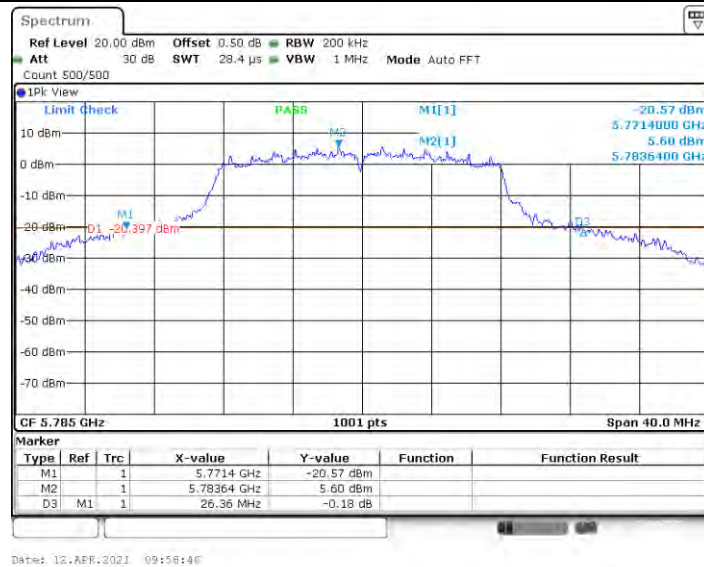


Date: 12.APR.2021 09:50:15

11A_Ant2_5745



11A_Ant1_5785



11A_Ant2_5785



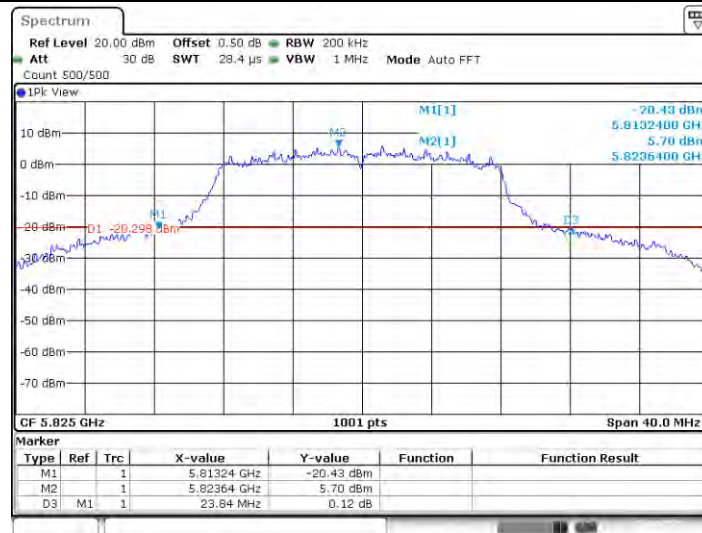


11A_Ant1_5825



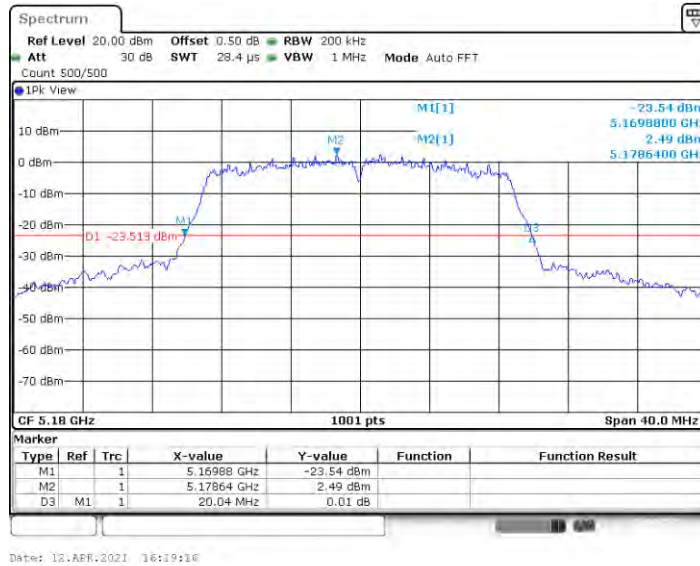
Dates: 12.APR.2021 10:02:07

11A_Ant2_5825

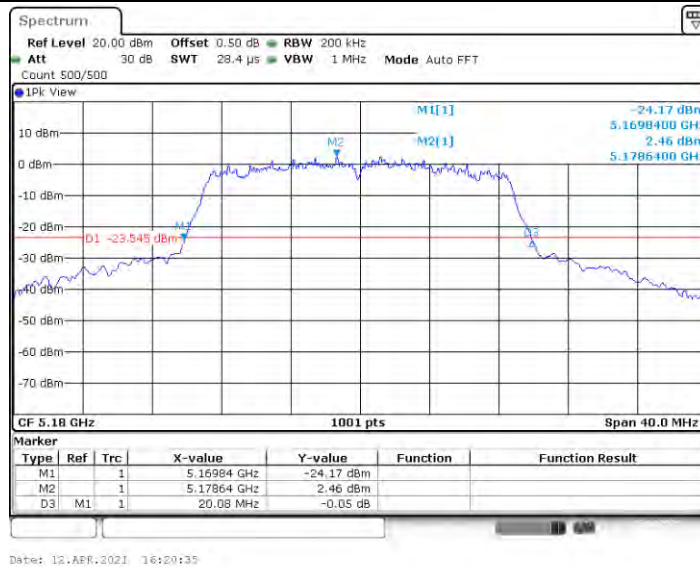


Dates: 12.APR.2021 11:55:28

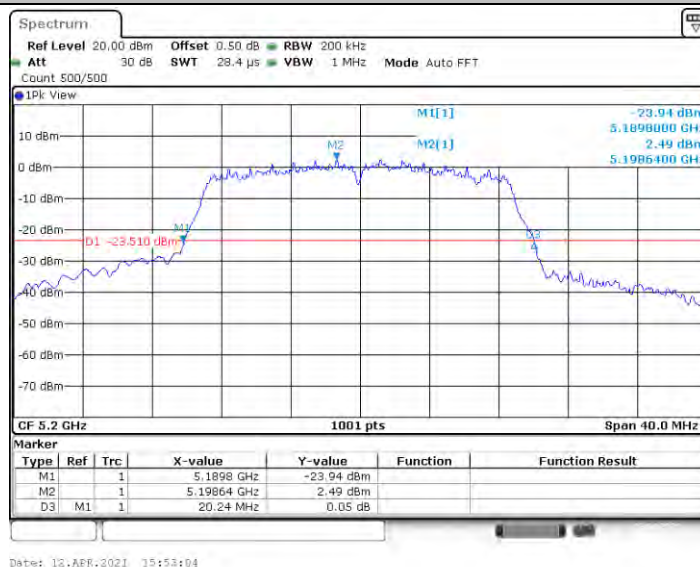
11N20MIMO_Ant1_5180



11N20MIMO_Ant2_5180

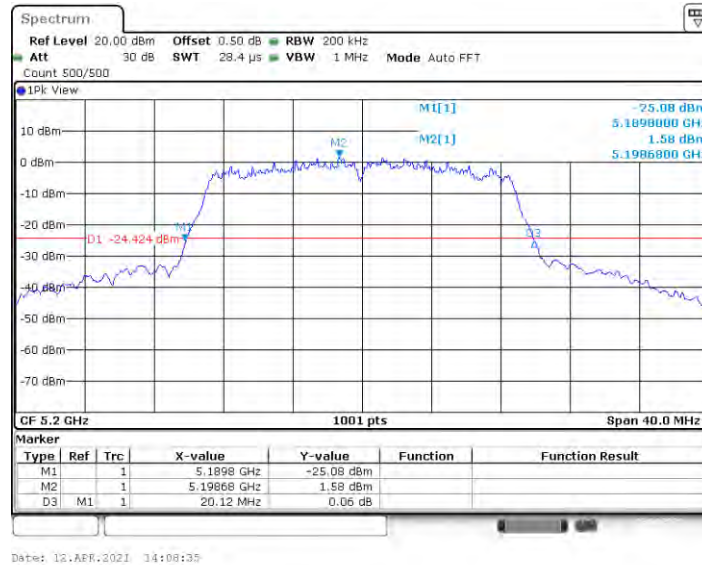


11N20MIMO_Ant1_5200

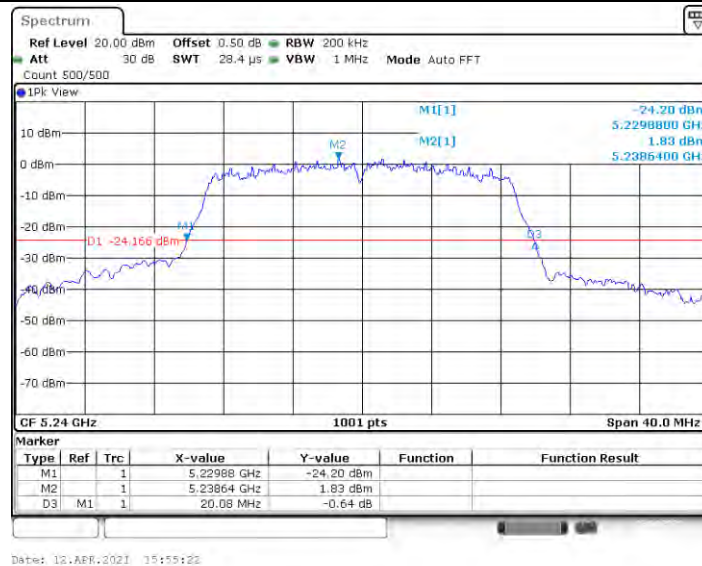




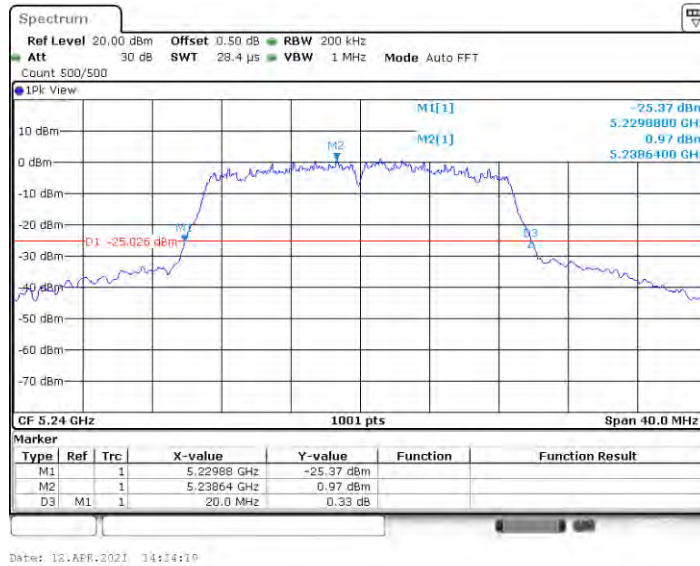
11N20MIMO_Ant2_5200



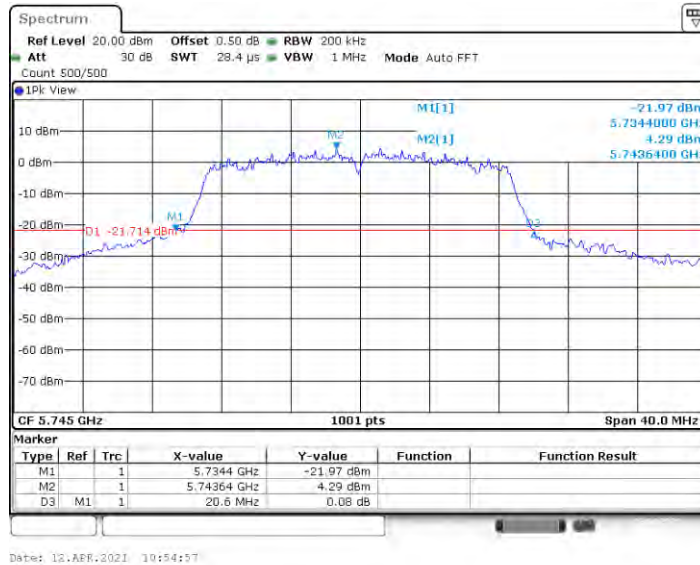
11N20MIMO_Ant1_5240



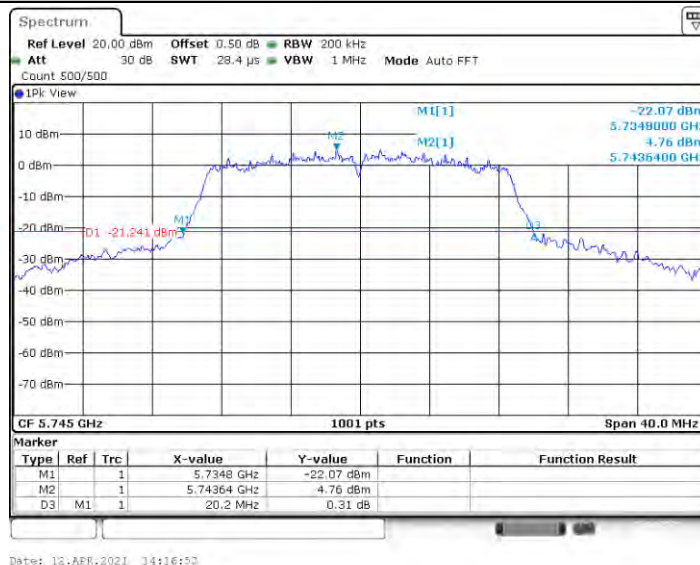
11N20MIMO_Ant2_5240



11N20MIMO_Ant1_5745

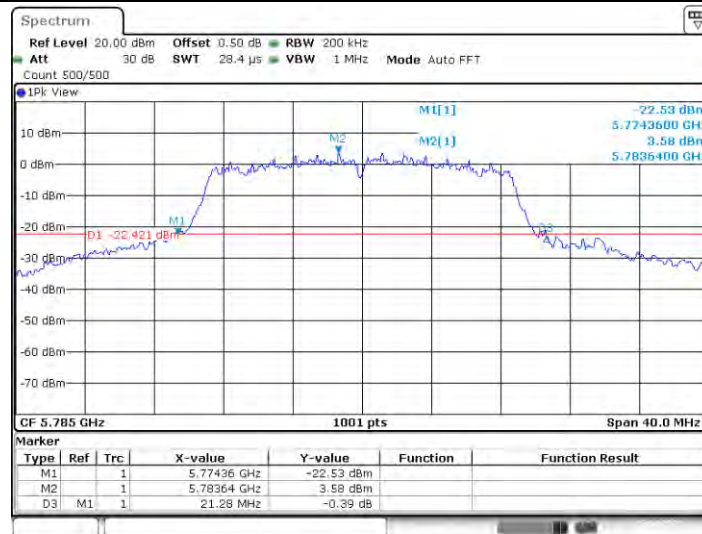


11N20MIMO_Ant2_5745



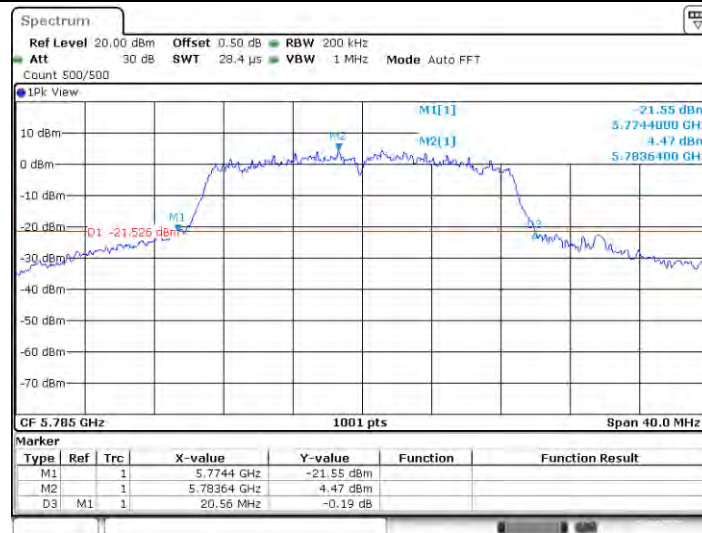


11N20MIMO_Ant1_5785



Dates: 12.APR.2021 10:57:12

11N20MIMO_Ant2_5785

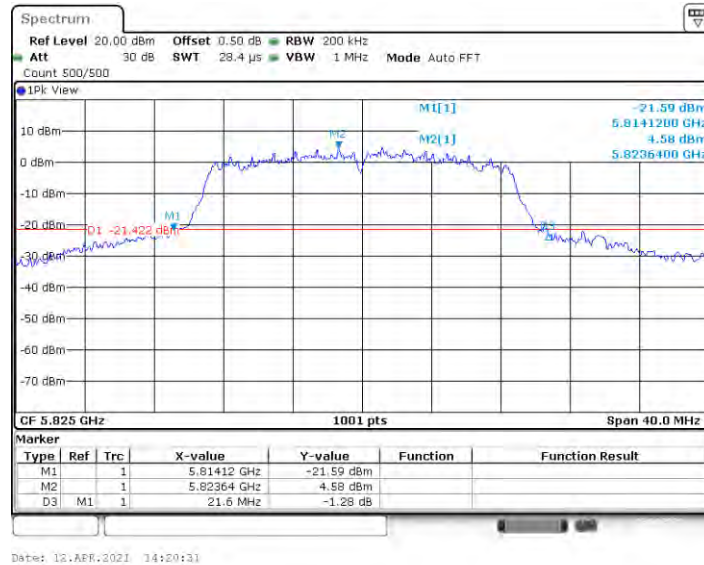


Dates: 12.APR.2021 14:18:42

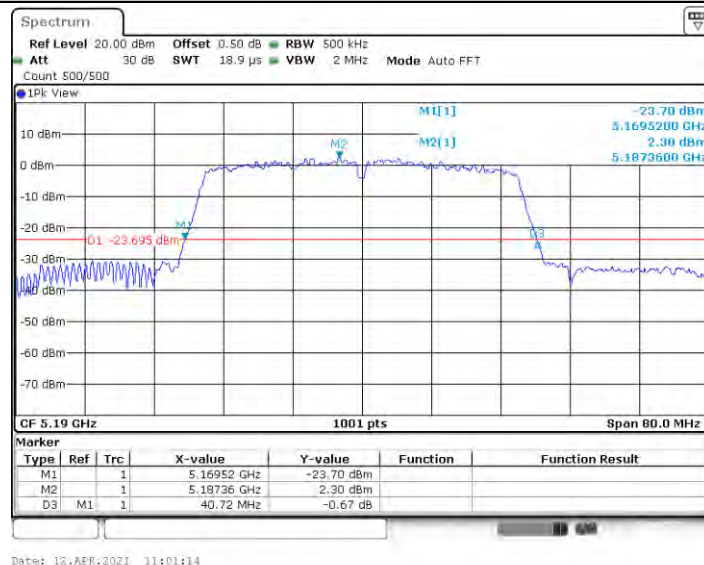
11N20MIMO_Ant1_5825



11N20MIMO_Ant2_5825

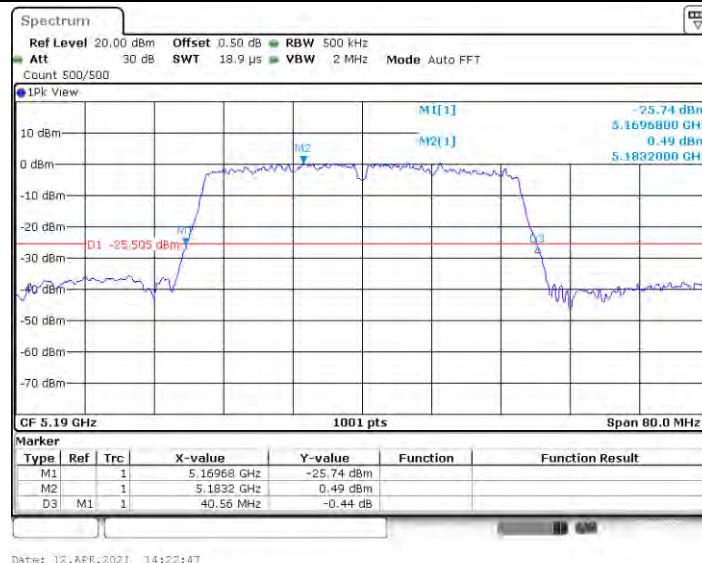


11N40MIMO_Ant1_5190

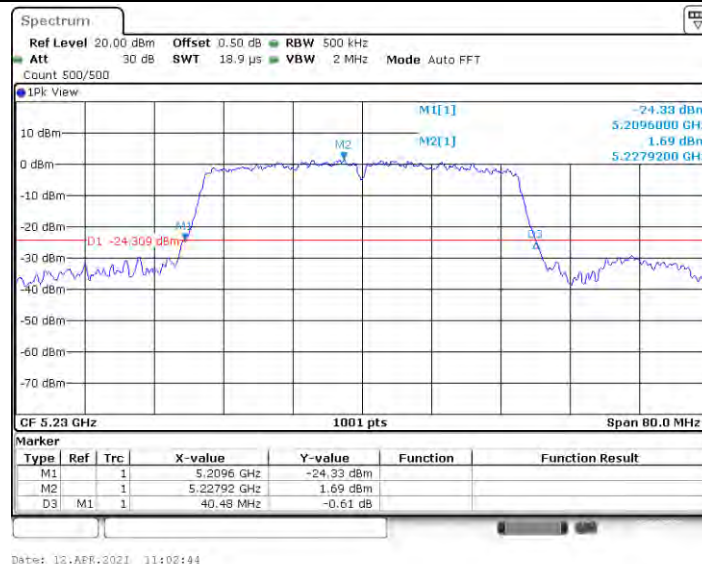




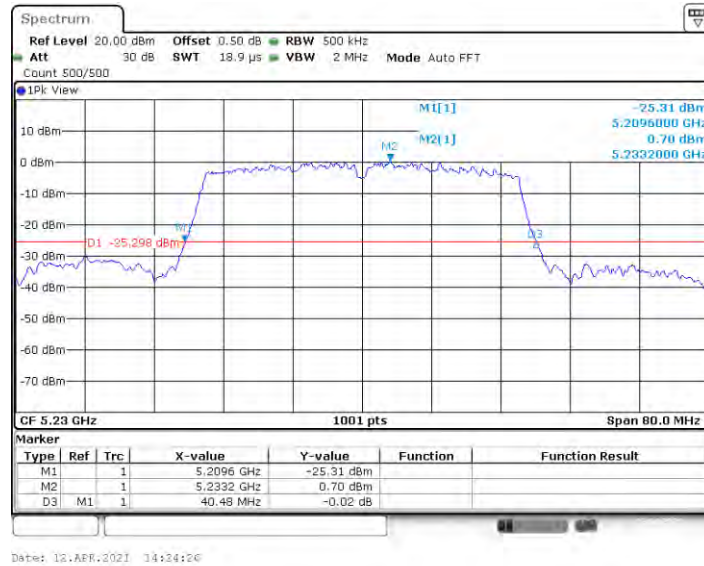
11N40MIMO_Ant2_5190



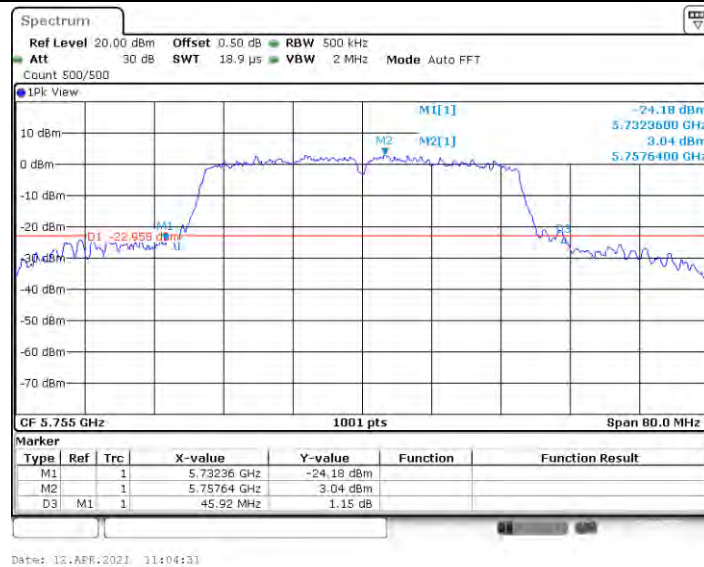
11N40MIMO_Ant1_5230



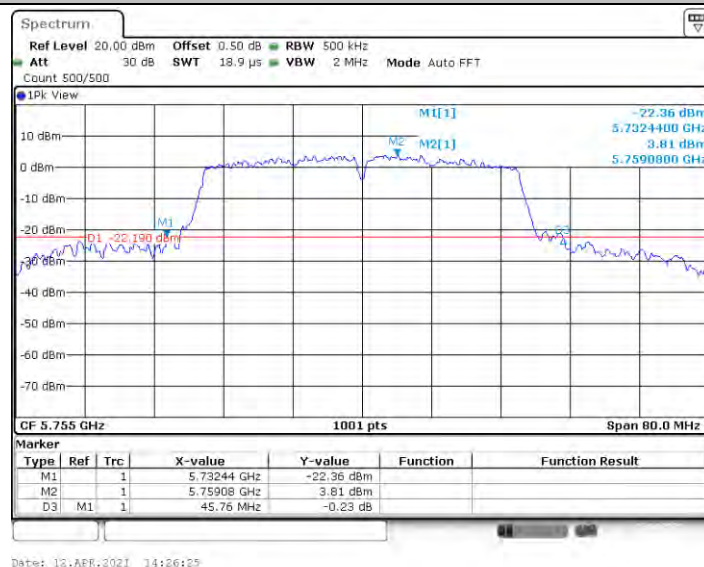
11N40MIMO_Ant2_5230



11N40MIMO_Ant1_5755

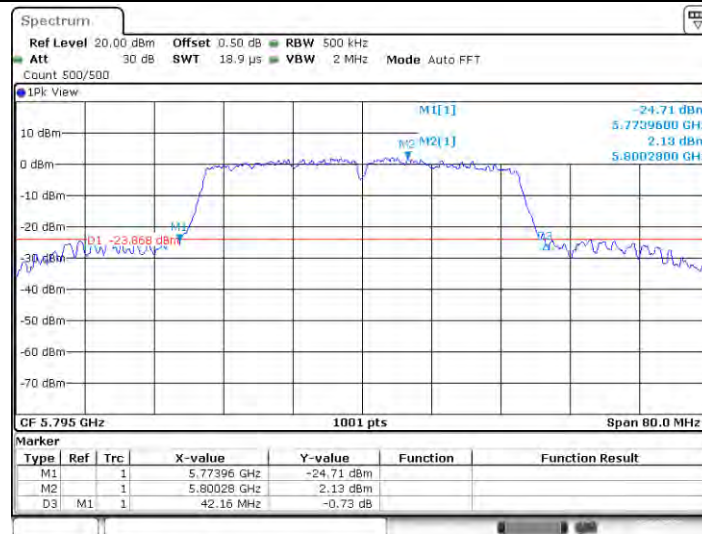


11N40MIMO_Ant2_5755



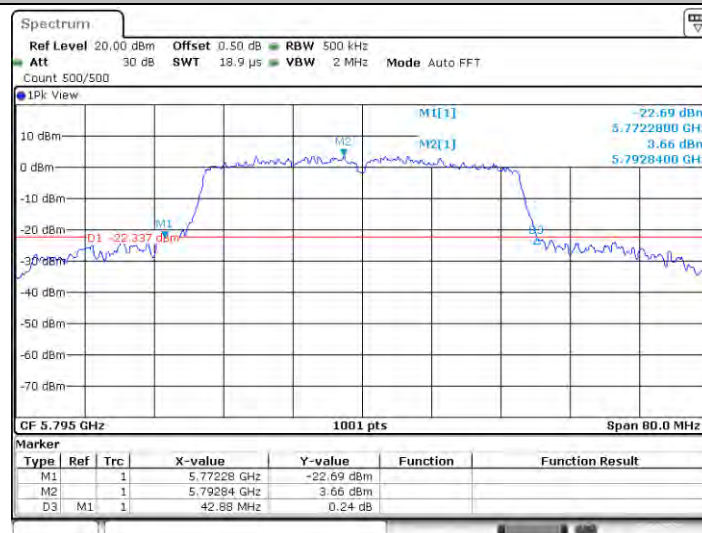


11N40MIMO_Ant1_5795



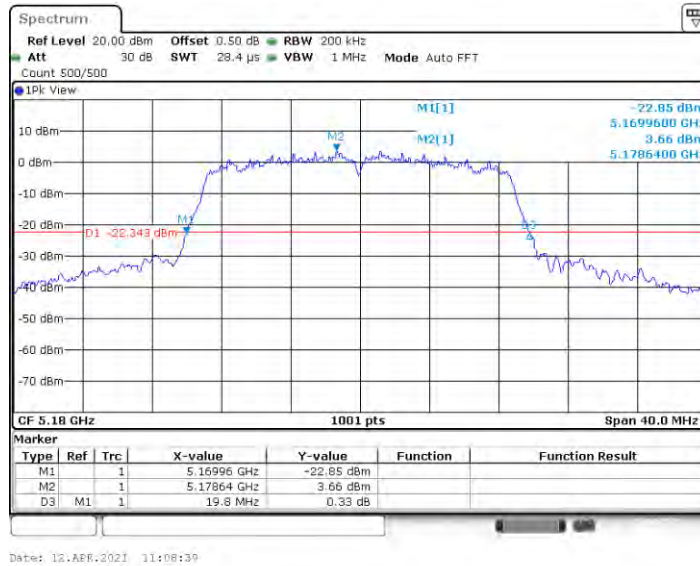
Date: 12.APR.2021 11:06:29

11N40MIMO_Ant2_5795

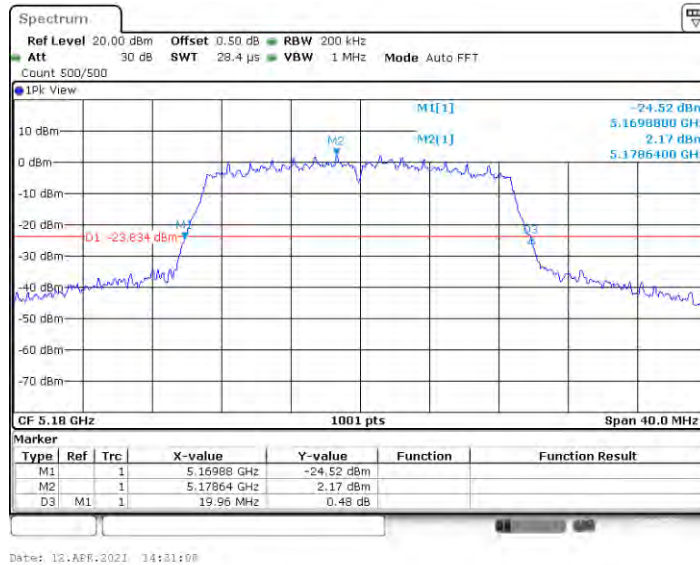


Date: 12.APR.2021 14:28:29

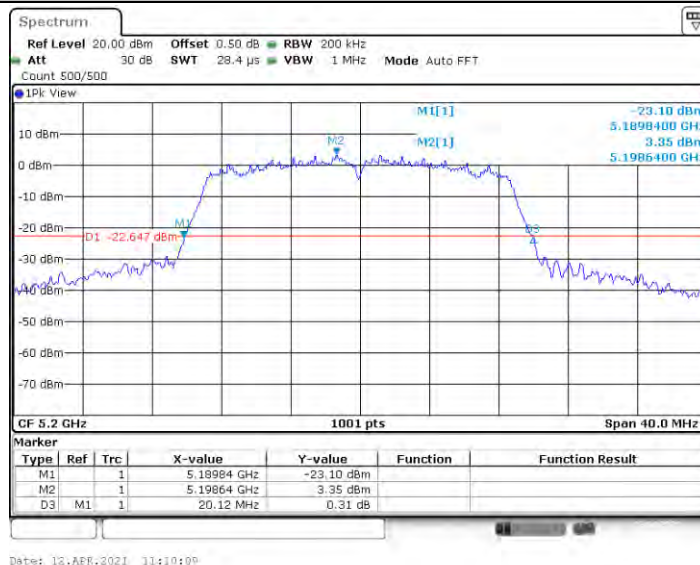
11AC20MIMO_Ant1_5180



11AC20MIMO_Ant2_5180

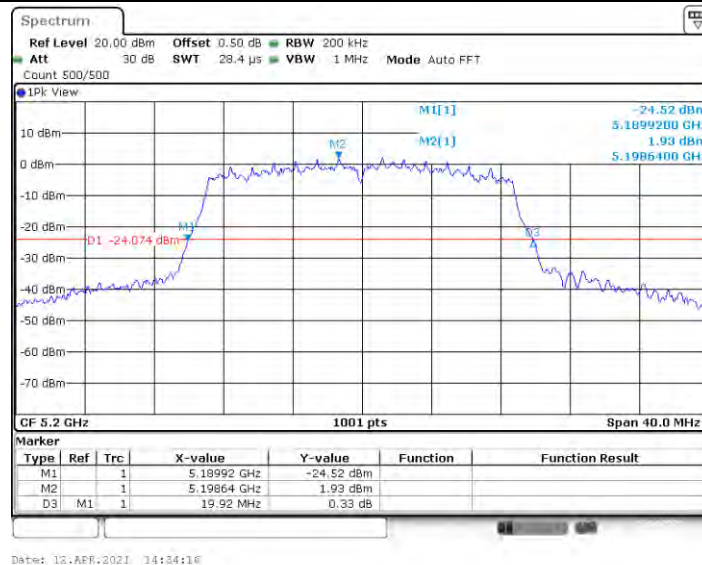


11AC20MIMO_Ant1_5200

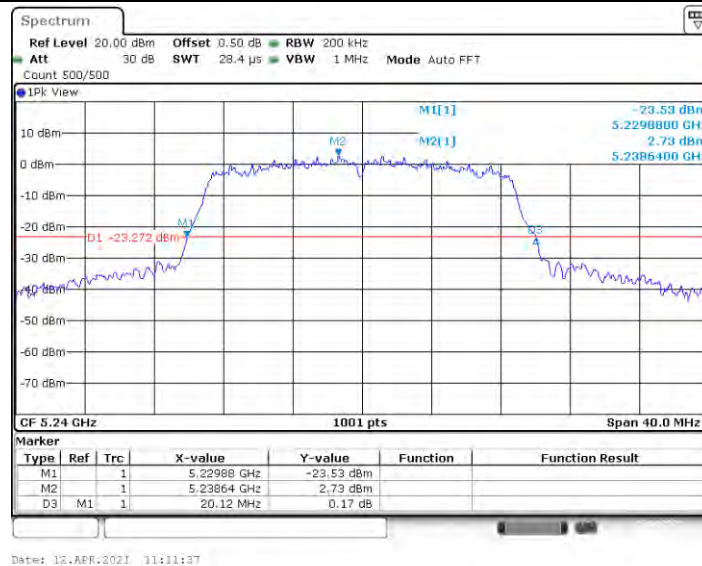




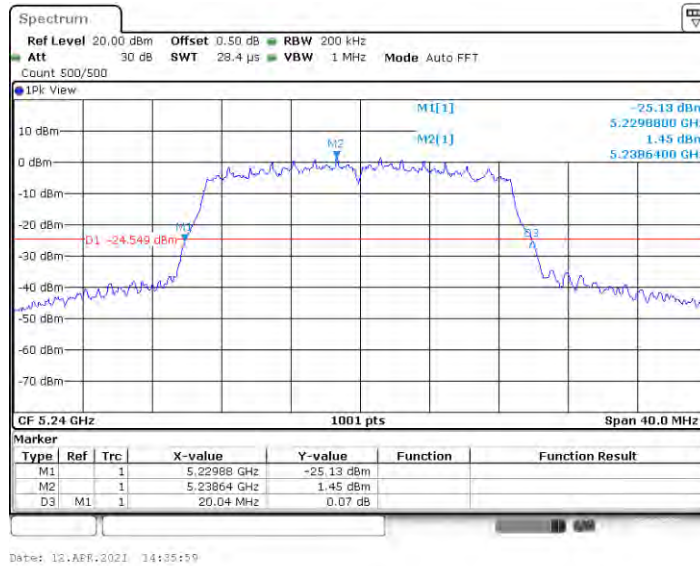
11AC20MIMO_Ant2_5200



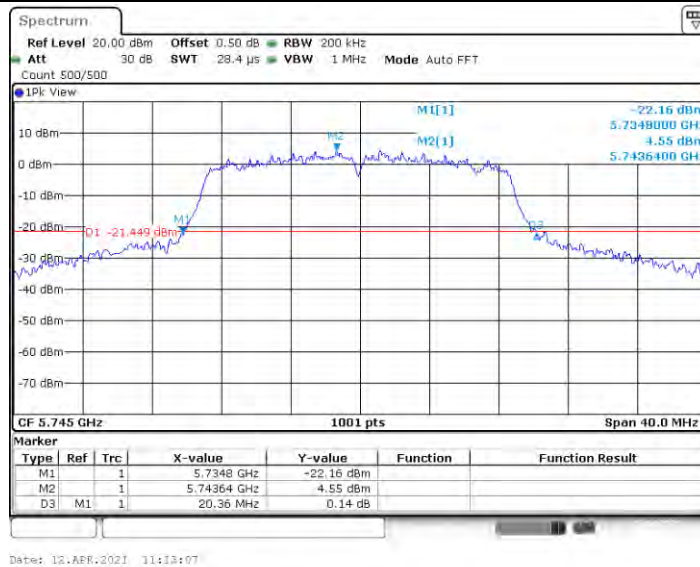
11AC20MIMO_Ant1_5240



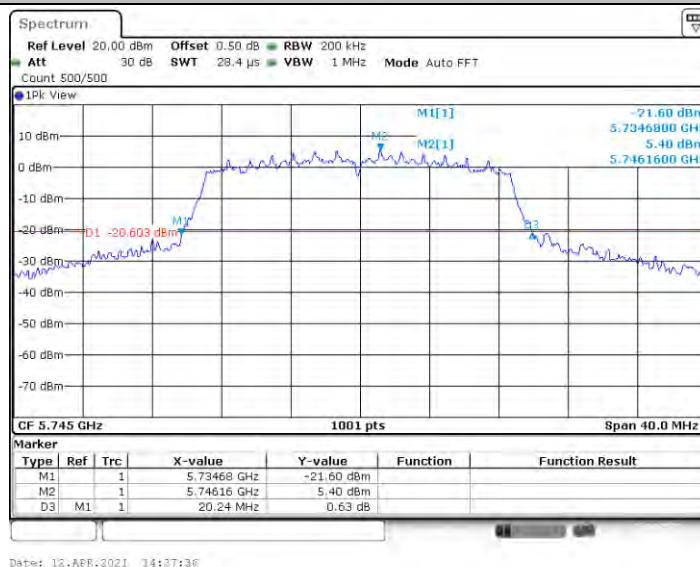
11AC20MIMO_Ant2_5240



11AC20MIMO_Ant1_5745

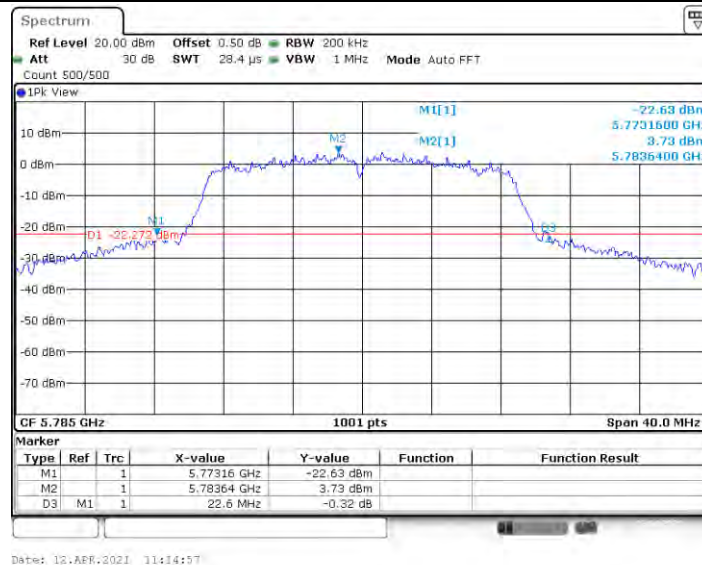


11AC20MIMO_Ant2_5745

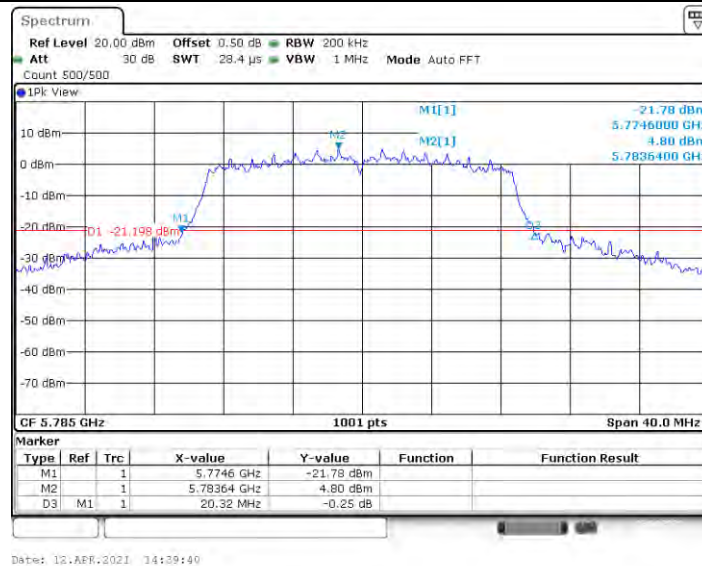




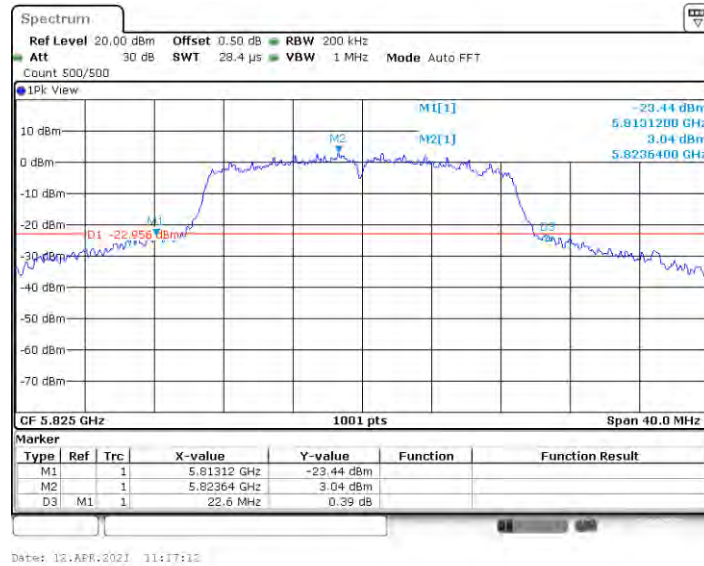
11AC20MIMO_Ant1_5785



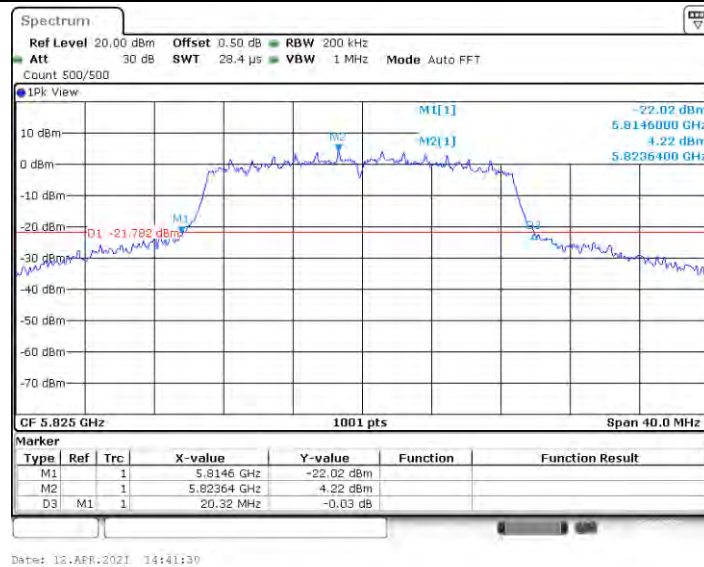
11AC20MIMO_Ant2_5785



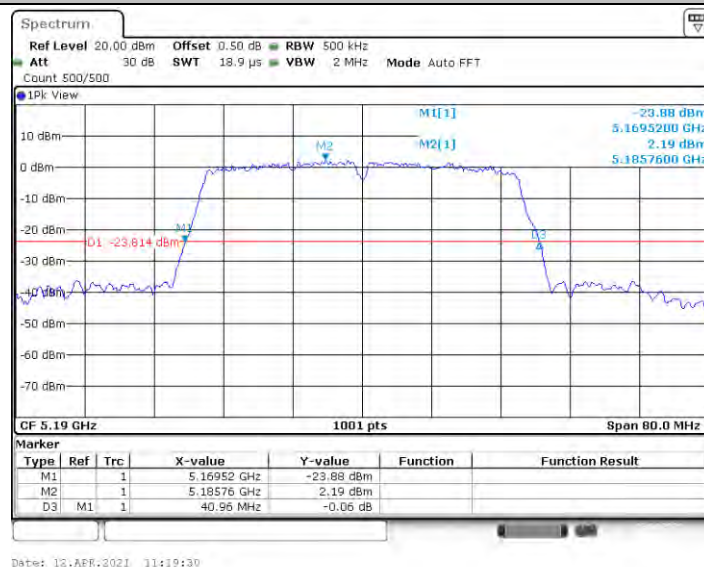
11AC20MIMO_Ant1_5825



11AC20MIMO_Ant2_5825

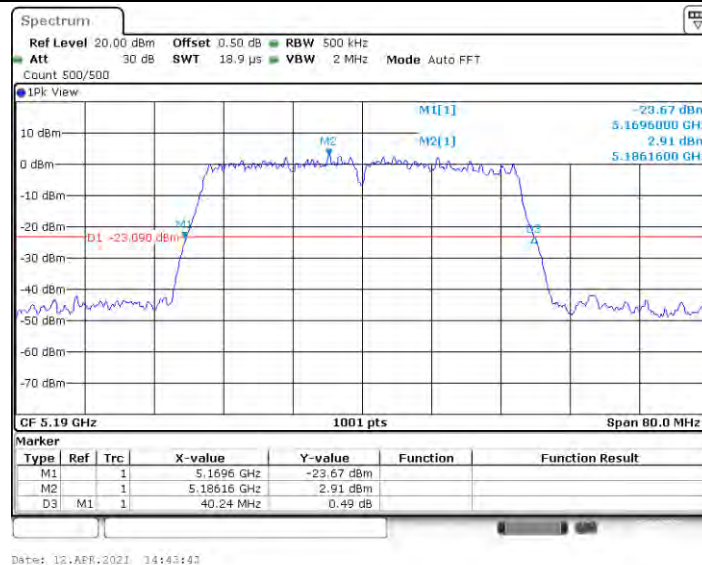


11AC40MIMO_Ant1_5190

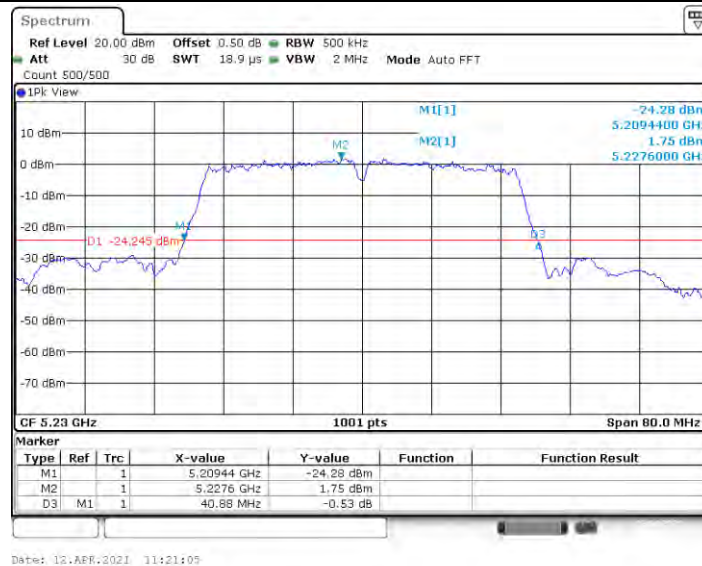




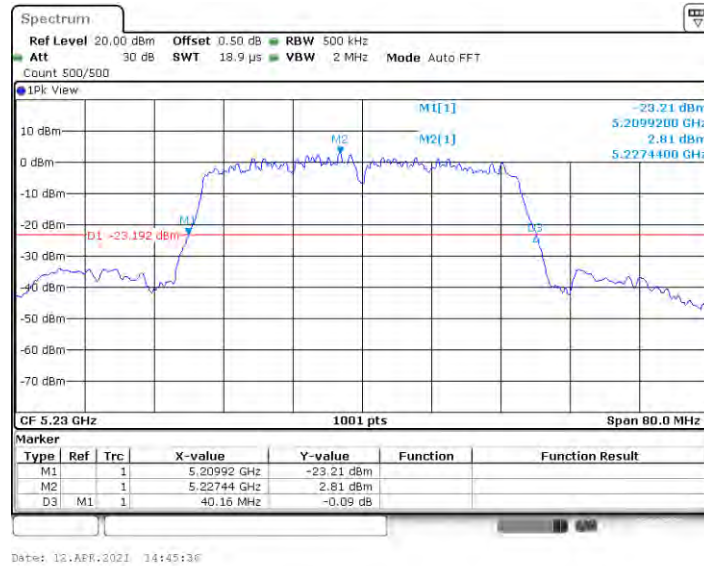
11AC40MIMO_Ant2_5190



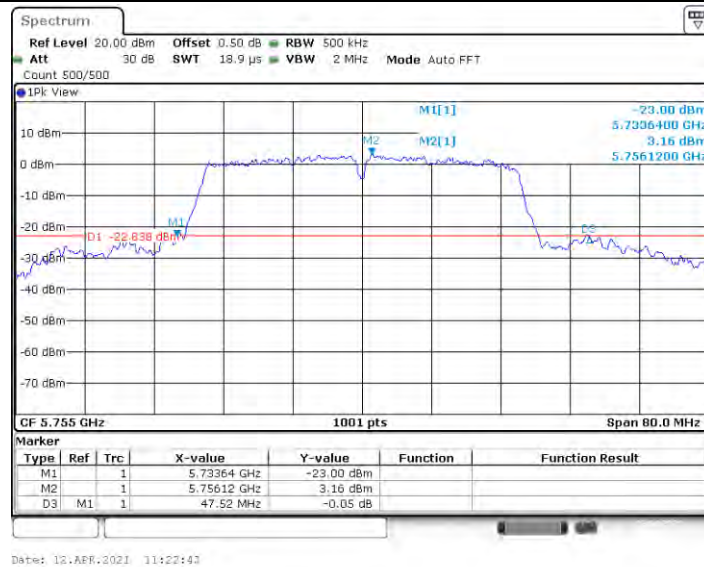
11AC40MIMO_Ant1_5230



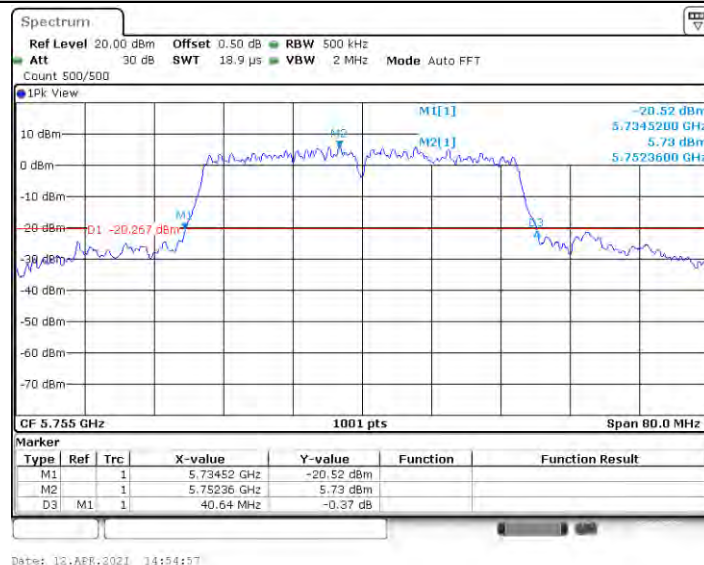
11AC40MIMO_Ant2_5230



11AC40MIMO_Ant1_5755

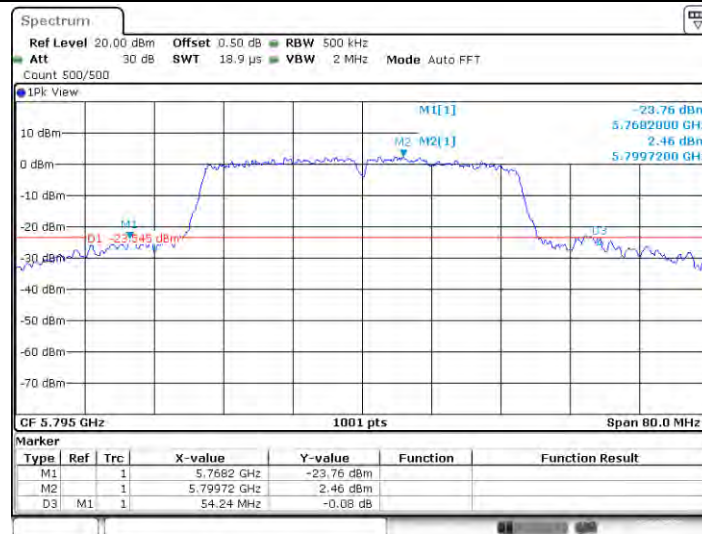


11AC40MIMO_Ant2_5755



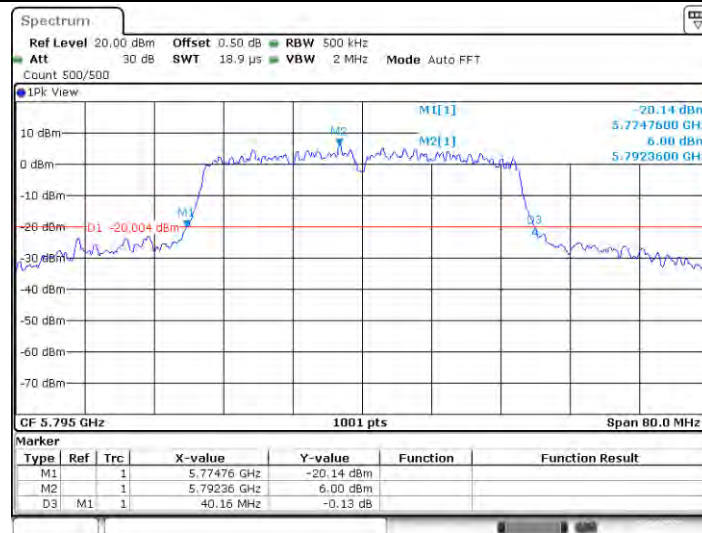


11AC40MIMO_Ant1_5795



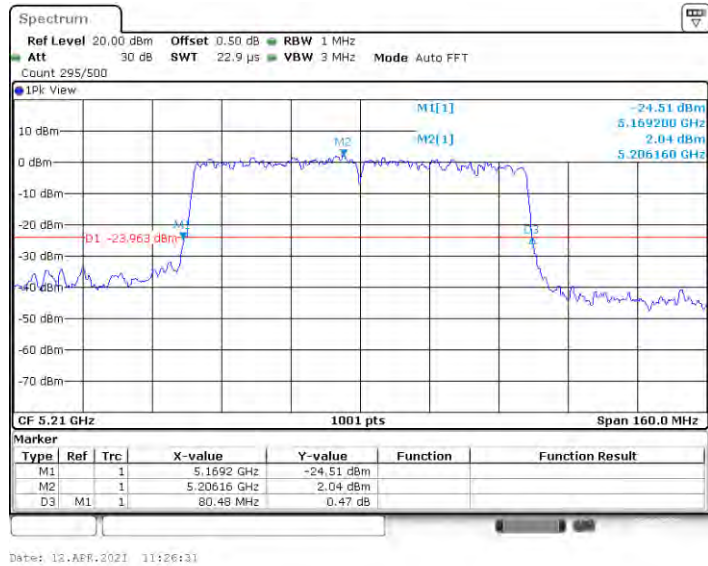
Dates: 12.APR.2021 11:24:32

11AC40MIMO_Ant2_5795

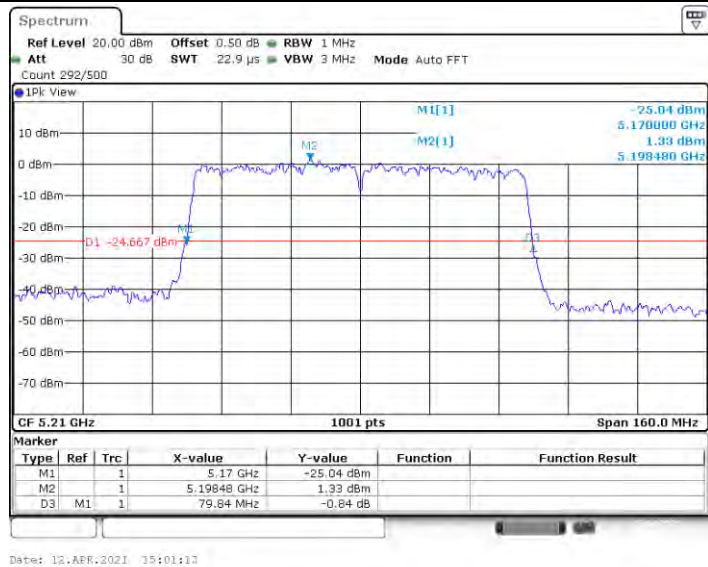


Dates: 12.APR.2021 14:57:32

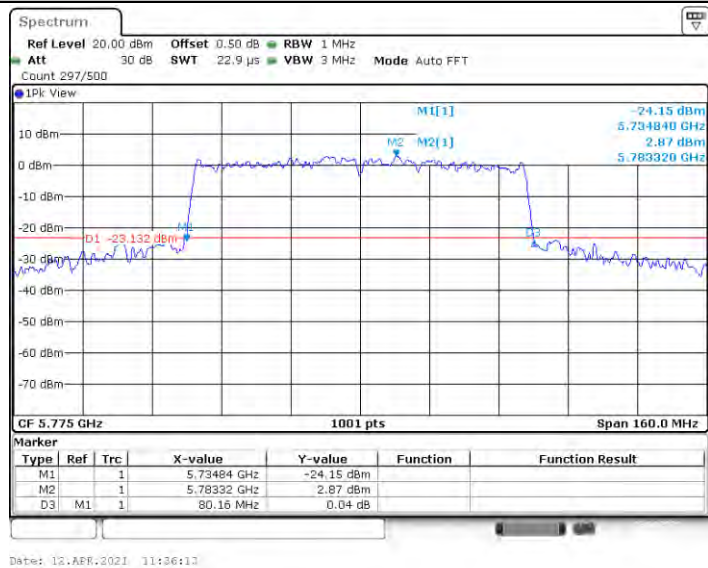
11AC80MIMO_Ant1_5210



11AC80MIMO_Ant2_5210

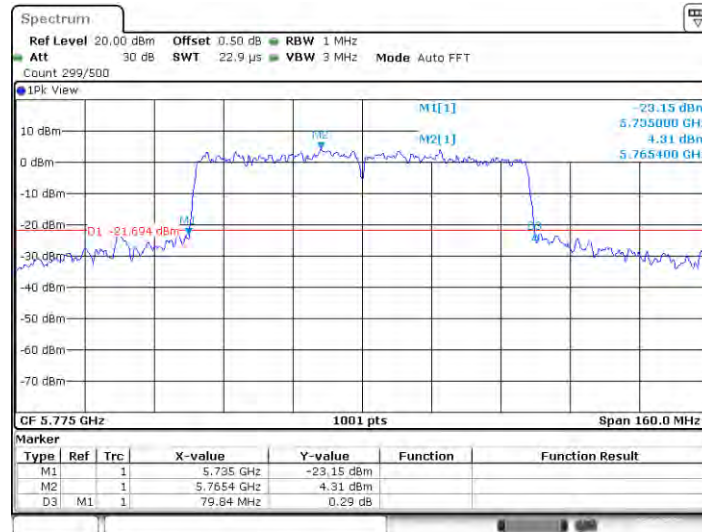


11AC80MIMO_Ant1_5775





11AC80MIMO_Ant2_5775



Date: 12.APR.2021 15:02:52



Appendix A2: Occupied channel bandwidth

Test Result

TestMode	Antenna	Channel	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	Ant1	5180	16.863	5171.369	5188.232	---	PASS
	Ant2	5180	17.103	5171.289	5188.392	---	PASS
	Ant1	5200	16.823	5191.568	5208.392	---	PASS
	Ant2	5200	16.983	5191.329	5208.312	---	PASS
	Ant1	5240	17.103	5231.289	5248.392	---	PASS
	Ant2	5240	16.983	5231.449	5248.432	---	PASS
	Ant1	5745	17.502	5736.049	5753.551	---	PASS
	Ant2	5745	17.582	5736.009	5753.591	---	PASS
	Ant1	5785	17.742	5776.009	5793.751	---	PASS
	Ant2	5785	17.343	5776.329	5793.671	---	PASS
	Ant1	5825	17.542	5816.129	5833.671	---	PASS
	Ant2	5825	17.303	5816.209	5833.511	---	PASS
11N20MIMO	Ant1	5180	18.182	5170.729	5188.911	---	PASS
	Ant2	5180	17.902	5170.969	5188.871	---	PASS
	Ant1	5200	18.022	5190.849	5208.871	---	PASS
	Ant2	5200	17.982	5190.849	5208.831	---	PASS
	Ant1	5240	18.022	5230.849	5248.871	---	PASS
	Ant2	5240	17.942	5230.889	5248.831	---	PASS
	Ant1	5745	18.062	5735.849	5753.911	---	PASS
	Ant2	5745	18.182	5735.769	5753.951	---	PASS
	Ant1	5785	18.102	5775.889	5793.991	---	PASS
	Ant2	5785	18.222	5775.729	5793.951	---	PASS
	Ant1	5825	18.422	5815.729	5834.151	---	PASS
	Ant2	5825	18.302	5815.769	5834.071	---	PASS
11N40MIMO	Ant1	5190	36.284	5171.698	5207.982	---	PASS
	Ant2	5190	36.044	5171.778	5207.822	---	PASS
	Ant1	5230	36.364	5211.618	5247.982	---	PASS
	Ant2	5230	36.284	5211.698	5247.982	---	PASS
	Ant1	5755	36.523	5736.698	5773.222	---	PASS
	Ant2	5755	36.444	5736.698	5773.142	---	PASS
	Ant1	5795	36.603	5776.698	5813.302	---	PASS
	Ant2	5795	36.364	5776.698	5813.062	---	PASS



CTC Laboratories, Inc.

11AC20MIMO	Ant1	5180	17.902	5170.929	5188.831	---	PASS
	Ant2	5180	17.742	5171.009	5188.751	---	PASS
	Ant1	5200	17.702	5191.049	5208.751	---	PASS
	Ant2	5200	17.782	5190.929	5208.711	---	PASS
	Ant1	5240	17.822	5231.009	5248.831	---	PASS
	Ant2	5240	17.742	5231.009	5248.751	---	PASS
	Ant1	5745	18.022	5735.889	5753.911	---	PASS
	Ant2	5745	17.782	5735.929	5753.711	---	PASS
	Ant1	5785	18.142	5775.809	5793.951	---	PASS
	Ant2	5785	17.782	5775.969	5793.751	---	PASS
	Ant1	5825	18.182	5815.729	5833.911	---	PASS
	Ant2	5825	17.862	5815.889	5833.751	---	PASS
11AC40MIMO	Ant1	5190	36.284	5171.778	5208.062	---	PASS
	Ant2	5190	36.284	5171.698	5207.982	---	PASS
	Ant1	5230	36.683	5211.538	5248.222	---	PASS
	Ant2	5230	36.444	5211.618	5248.062	---	PASS
	Ant1	5755	36.683	5736.538	5773.222	---	PASS
	Ant2	5755	36.444	5736.618	5773.062	---	PASS
	Ant1	5795	36.444	5776.538	5812.982	---	PASS
	Ant2	5795	36.603	5776.459	5813.062	---	PASS
11AC80MIMO	Ant1	5210	76.084	5171.958	5248.042	---	PASS
	Ant2	5210	76.404	5171.479	5247.882	---	PASS
	Ant1	5775	76.723	5736.479	5813.202	---	PASS
	Ant2	5775	76.723	5736.479	5813.202	---	PASS

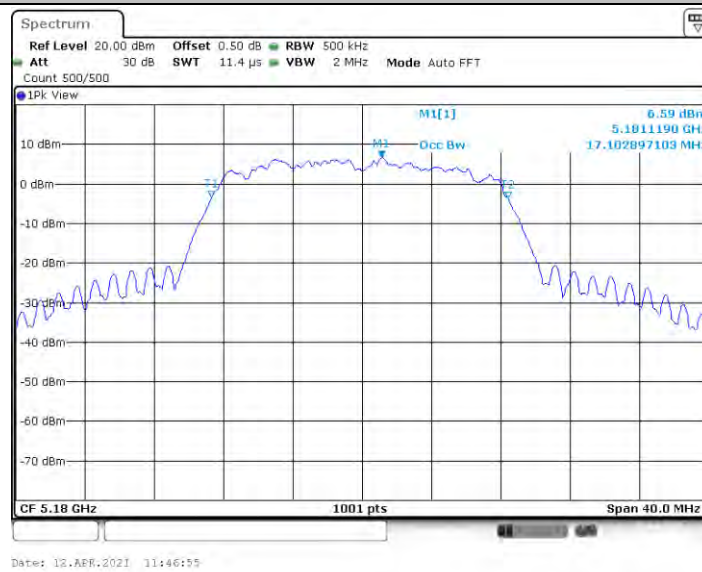


Test Graphs

11A_Ant1_5180



11A_Ant2_5180



11A_Ant1_5200



11A_Ant2_5200



11A_Ant1_5240





11A_Ant2_5240



11A_Ant1_5745



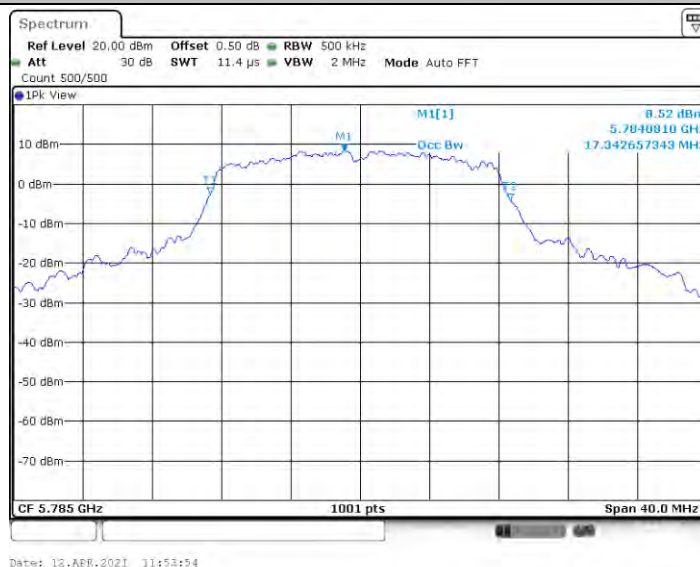
11A_Ant2_5745



11A_Ant1_5785



11A_Ant2_5785





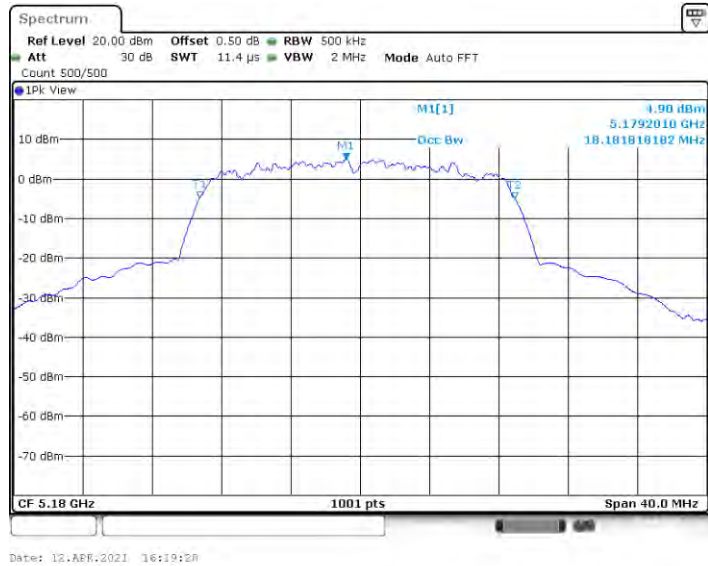
11A_Ant1_5825



11A_Ant2_5825



11N20MIMO_Ant1_5180



11N20MIMO_Ant2_5180



11N20MIMO_Ant1_5200





11N20MIMO_Ant2_5200



11N20MIMO_Ant1_5240



11N20MIMO_Ant2_5240



11N20MIMO_Ant1_5745



11N20MIMO_Ant2_5745





11N20MIMO_Ant1_5785



Date: 12.APR.2021 10:57:44

11N20MIMO_Ant2_5785



Date: 12.APR.2021 14:19:15

11N20MIMO_Ant1_5825



11N20MIMO_Ant2_5825



11N40MIMO_Ant1_5190





11N40MIMO_Ant2_5190



11N40MIMO_Ant1_5230



11N40MIMO_Ant2_5230



11N40MIMO_Ant1_5755



11N40MIMO_Ant2_5755





11N40MIMO_Ant1_5795



Date: 12.APR.2021 11:06:56

11N40MIMO_Ant2_5795



Date: 12.APR.2021 14:29:00

11AC20MIMO_Ant1_5180



11AC20MIMO_Ant2_5180



11AC20MIMO_Ant1_5200





11AC20MIMO_Ant2_5200



11AC20MIMO_Ant1_5240



11AC20MIMO_Ant2_5240



11AC20MIMO_Ant1_5745



11AC20MIMO_Ant2_5745





11AC20MIMO_Ant1_5785



11AC20MIMO_Ant2_5785



11AC20MIMO_Ant1_5825



11AC20MIMO_Ant2_5825

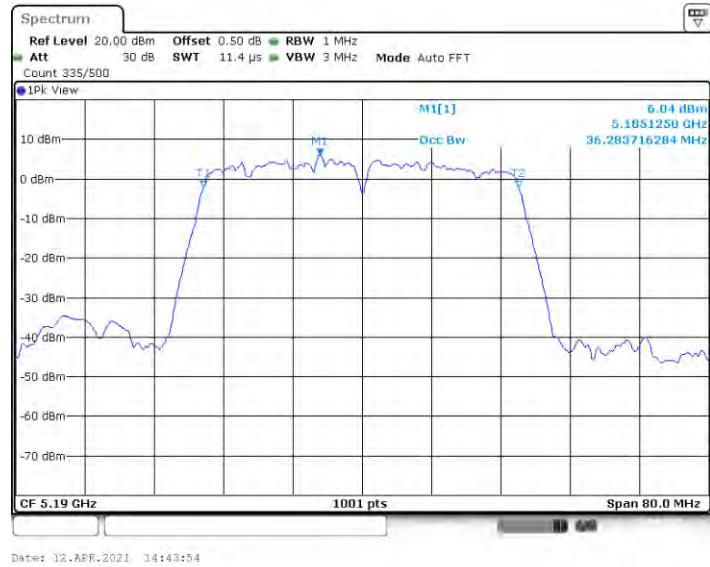


11AC40MIMO_Ant1_5190

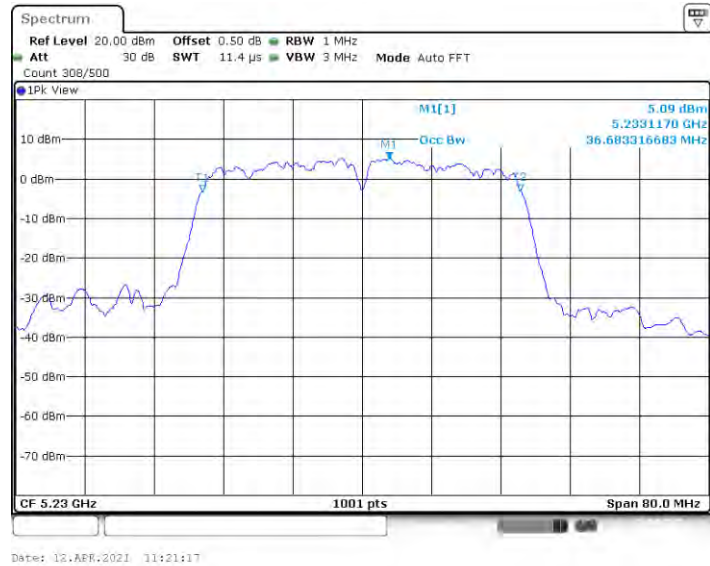




11AC40MIMO_Ant2_5190



11AC40MIMO_Ant1_5230



11AC40MIMO_Ant2_5230



11AC40MIMO_Ant1_5755



11AC40MIMO_Ant2_5755

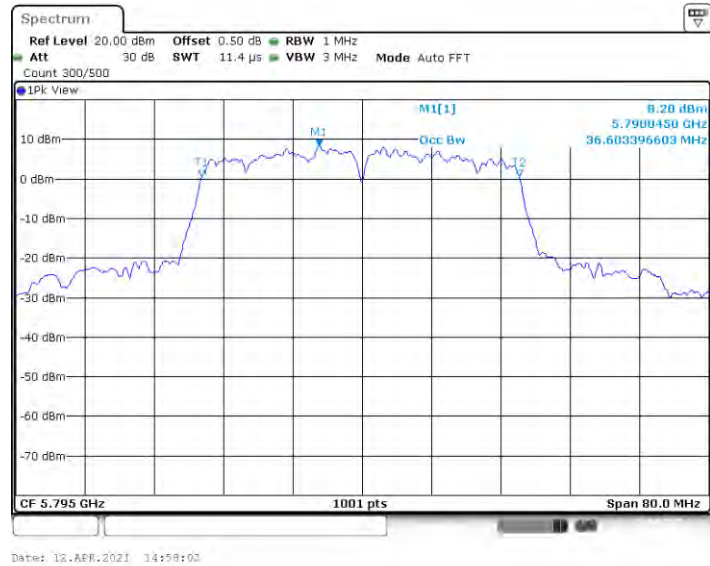




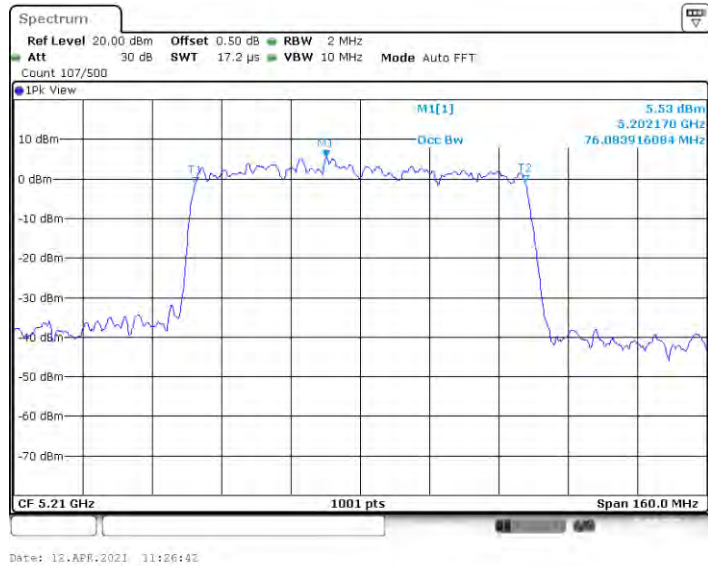
11AC40MIMO_Ant1_5795



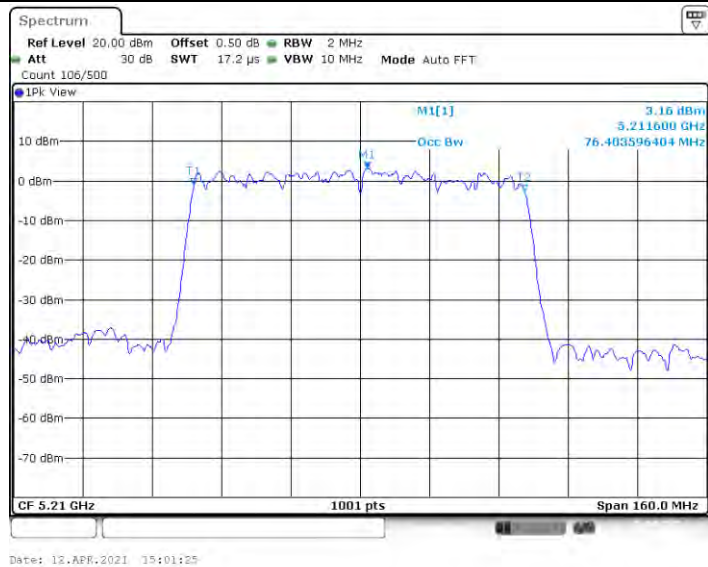
11AC40MIMO_Ant2_5795



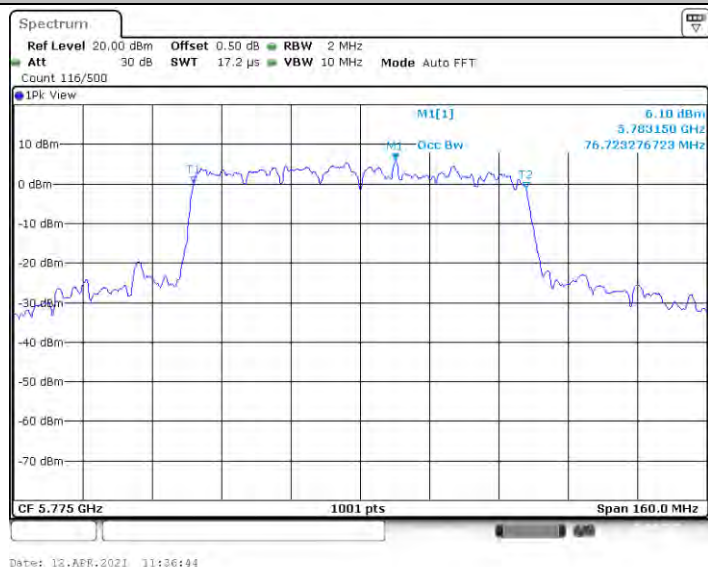
11AC80MIMO_Ant1_5210



11AC80MIMO_Ant2_5210

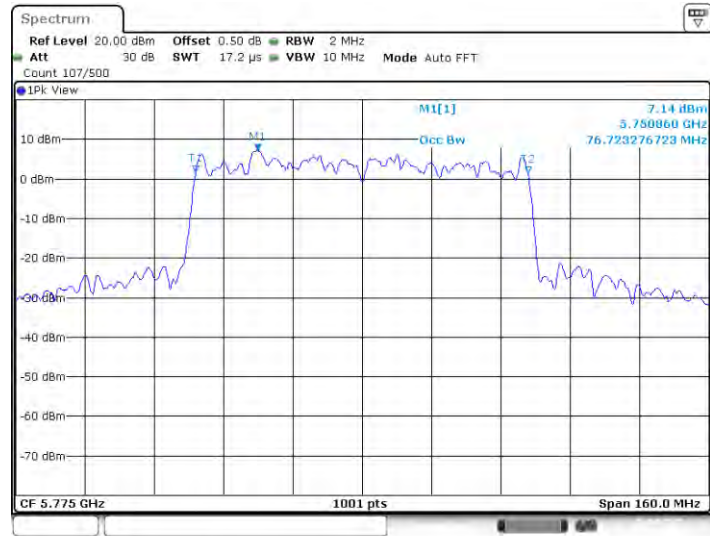


11AC80MIMO_Ant1_5775





11AC80MIMO_Ant2_5775



Date: 18.APR.2021 15:02:22



Appendix A3: Min emission bandwidth

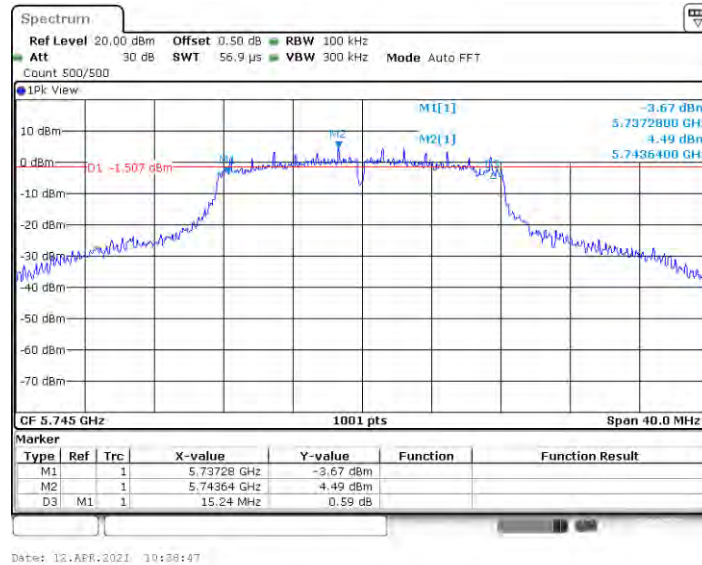
Test Result

TestMode	Antenna	Channel	6db EBW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	Ant1	5745	15.240	5737.280	5752.520	0.5	PASS
	Ant2	5745	15.160	5737.320	5752.480	0.5	PASS
	Ant1	5785	15.240	5777.280	5792.520	0.5	PASS
	Ant2	5785	15.200	5777.280	5792.480	0.5	PASS
	Ant1	5825	15.200	5817.280	5832.480	0.5	PASS
	Ant2	5825	15.200	5817.280	5832.480	0.5	PASS
11N20MIMO	Ant1	5745	15.200	5737.280	5752.480	0.5	PASS
	Ant2	5745	15.200	5737.280	5752.480	0.5	PASS
	Ant1	5785	15.200	5777.280	5792.480	0.5	PASS
	Ant2	5785	15.560	5776.960	5792.520	0.5	PASS
	Ant1	5825	15.200	5817.280	5832.480	0.5	PASS
	Ant2	5825	15.200	5817.280	5832.480	0.5	PASS
11N40MIMO	Ant1	5755	35.280	5737.240	5772.520	0.5	PASS
	Ant2	5755	35.280	5737.240	5772.520	0.5	PASS
	Ant1	5795	35.280	5777.240	5812.520	0.5	PASS
	Ant2	5795	35.280	5777.240	5812.520	0.5	PASS
11AC20MIMO	Ant1	5745	15.200	5737.280	5752.480	0.5	PASS
	Ant2	5745	15.760	5736.720	5752.480	0.5	PASS
	Ant1	5785	15.200	5777.280	5792.480	0.5	PASS
	Ant2	5785	16.360	5776.720	5793.080	0.5	PASS
	Ant1	5825	15.200	5817.280	5832.480	0.5	PASS
	Ant2	5825	15.760	5816.720	5832.480	0.5	PASS
11AC40MIMO	Ant1	5755	35.280	5737.240	5772.520	0.5	PASS
	Ant2	5755	35.280	5737.240	5772.520	0.5	PASS
	Ant1	5795	35.280	5777.240	5812.520	0.5	PASS
	Ant2	5795	35.280	5777.240	5812.520	0.5	PASS
11AC80MIMO	Ant1	5775	76.000	5736.600	5812.600	0.5	PASS
	Ant2	5775	76.000	5736.600	5812.600	0.5	PASS

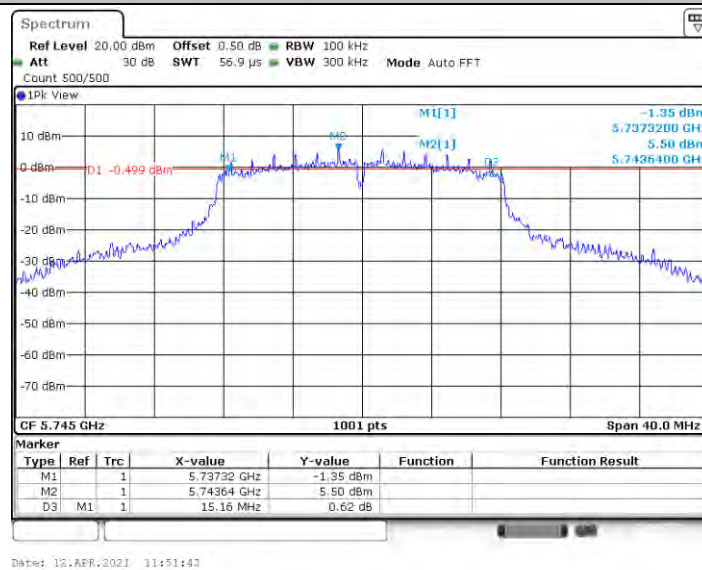


Test Graphs

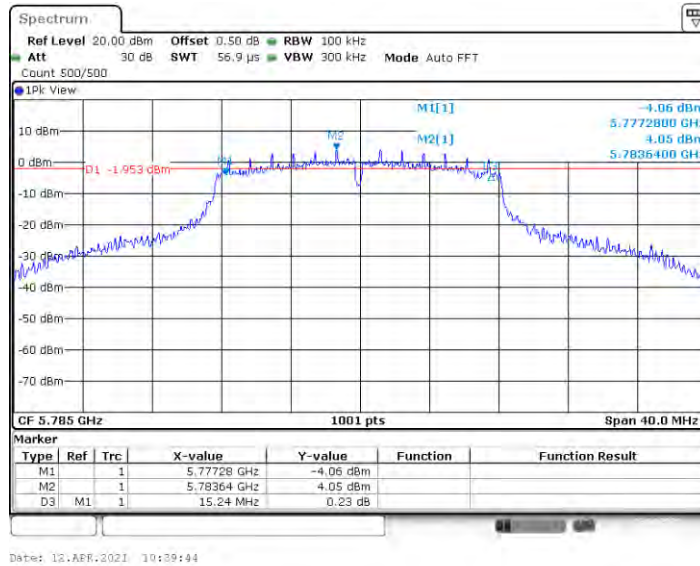
11A_Ant1_5745



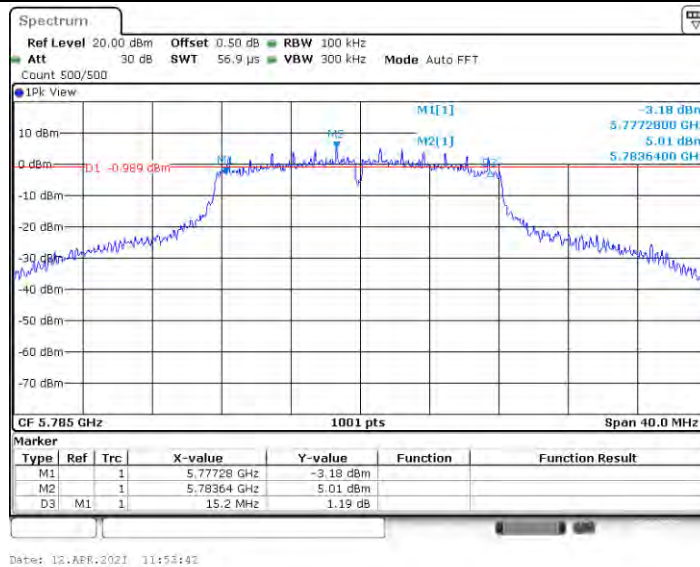
11A_Ant2_5745



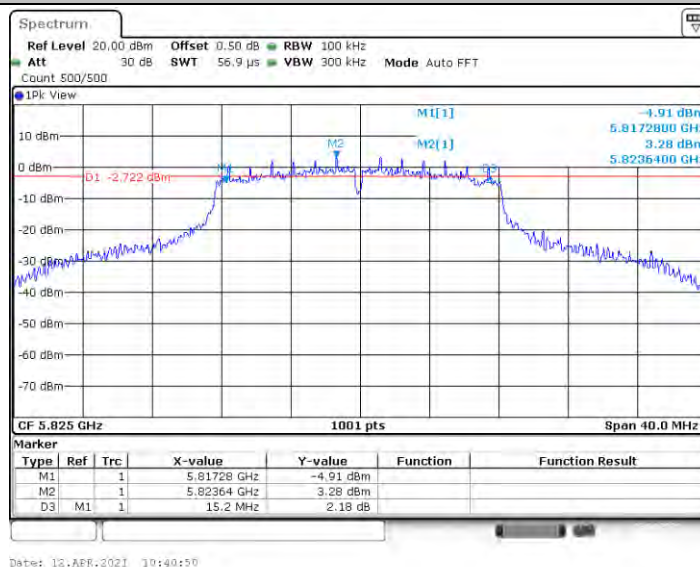
11A_Ant1_5785



11A_Ant2_5785

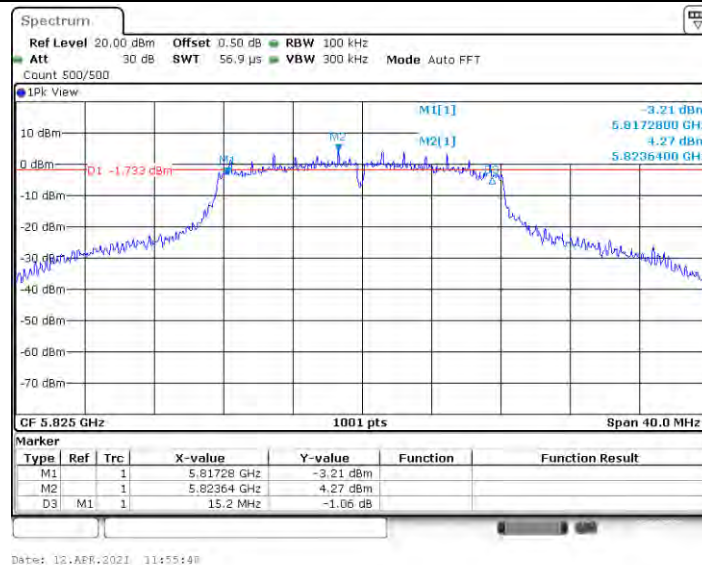


11A_Ant1_5825

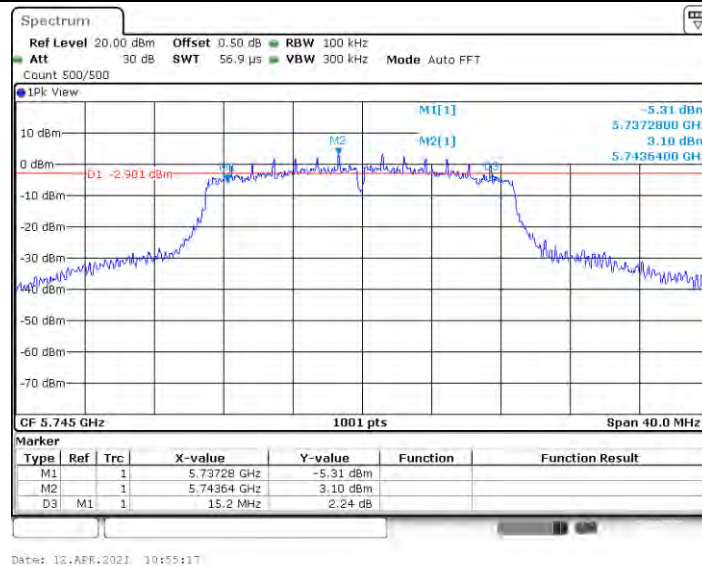




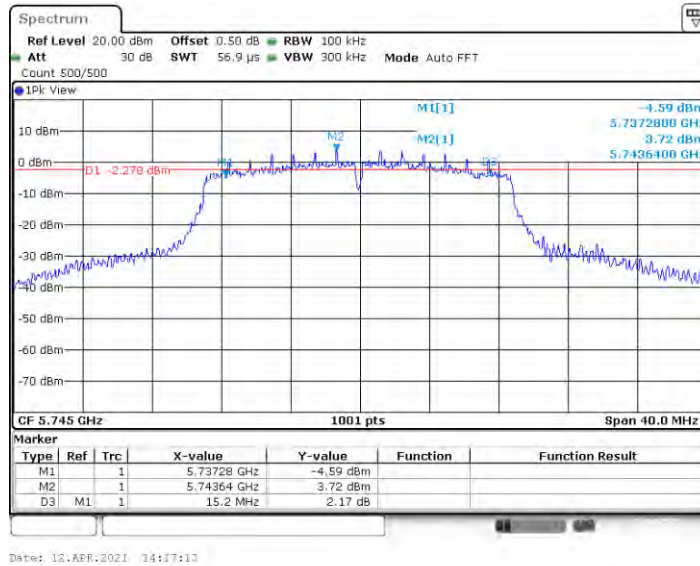
11A_Ant2_5825



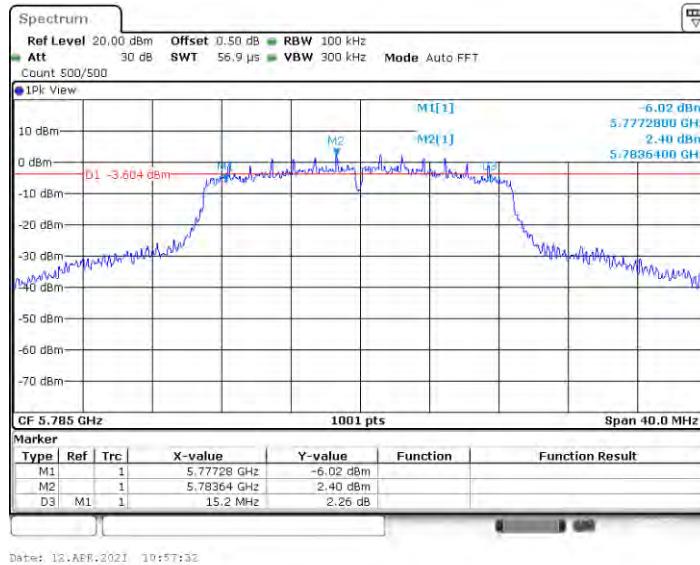
11N20MIMO_Ant1_5745



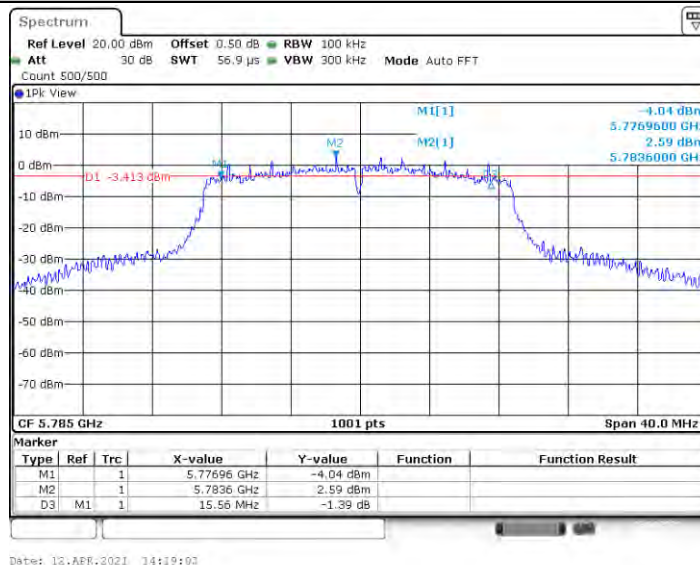
11N20MIMO_Ant2_5745



11N20MIMO_Ant1_5785

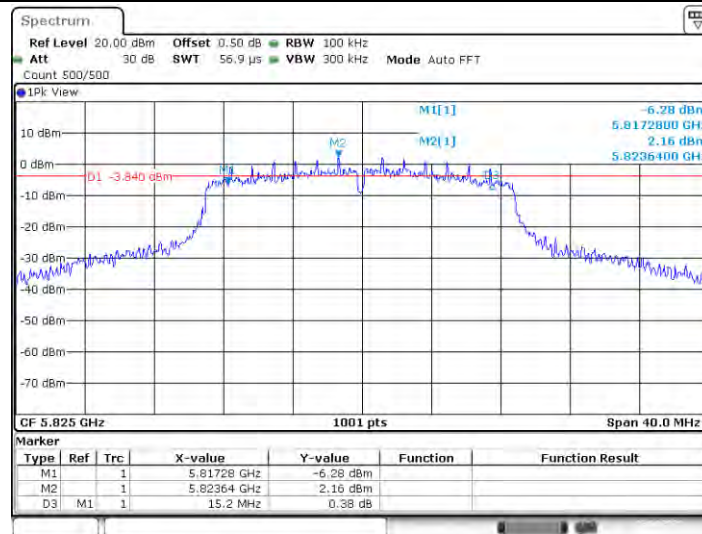


11N20MIMO_Ant2_5785



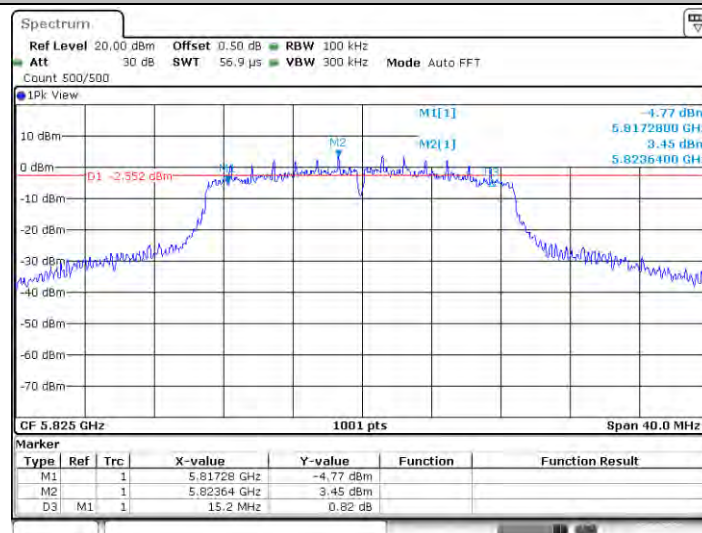


11N20MIMO_Ant1_5825



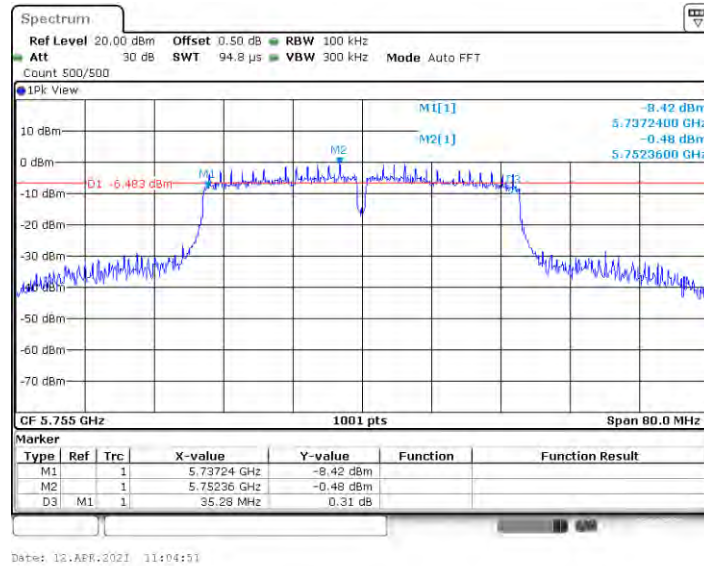
Date: 12.APR.2021 10:59:20

11N20MIMO_Ant2_5825

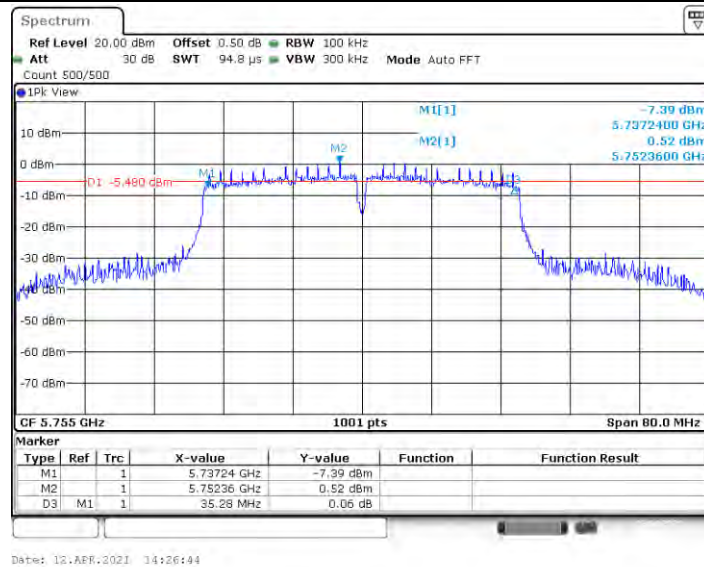


Date: 12.APR.2021 14:50:51

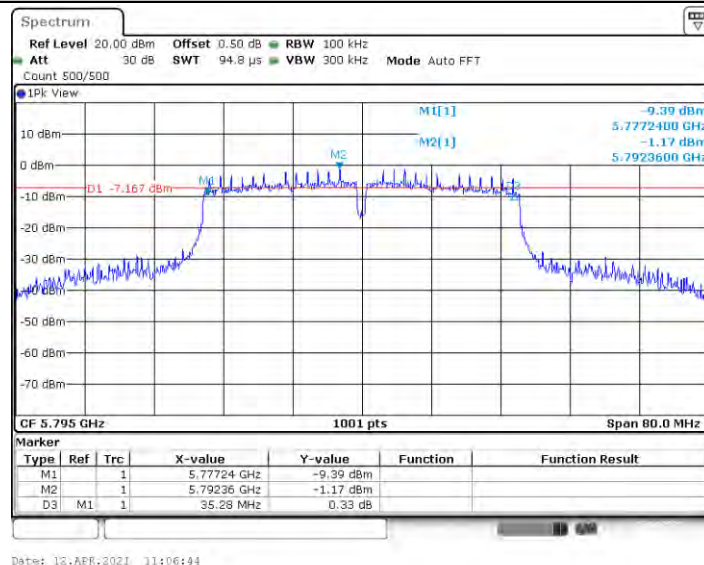
11N40MIMO_Ant1_5755



11N40MIMO_Ant2_5755

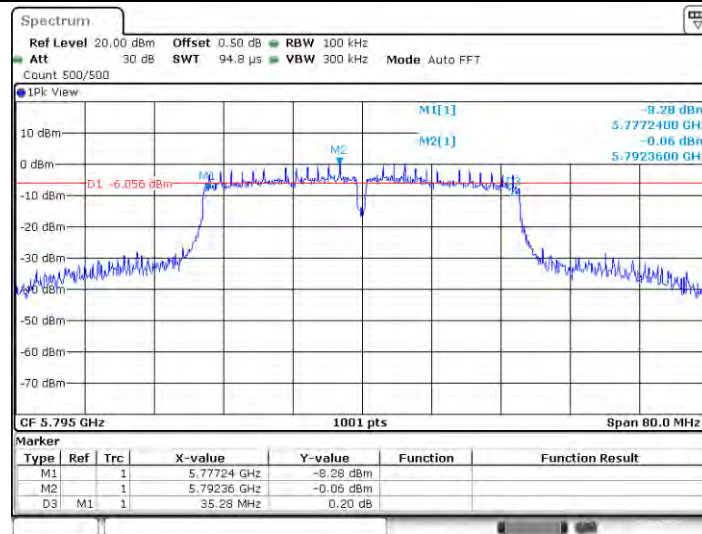


11N40MIMO_Ant1_5795



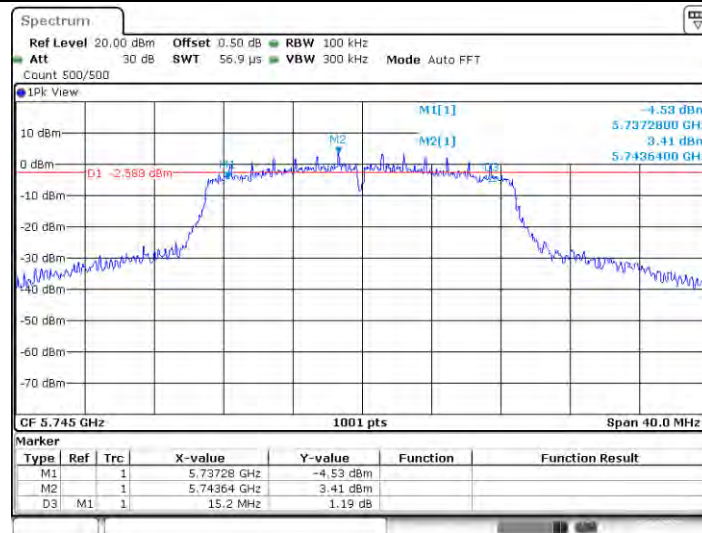


11N40MIMO_Ant2_5795



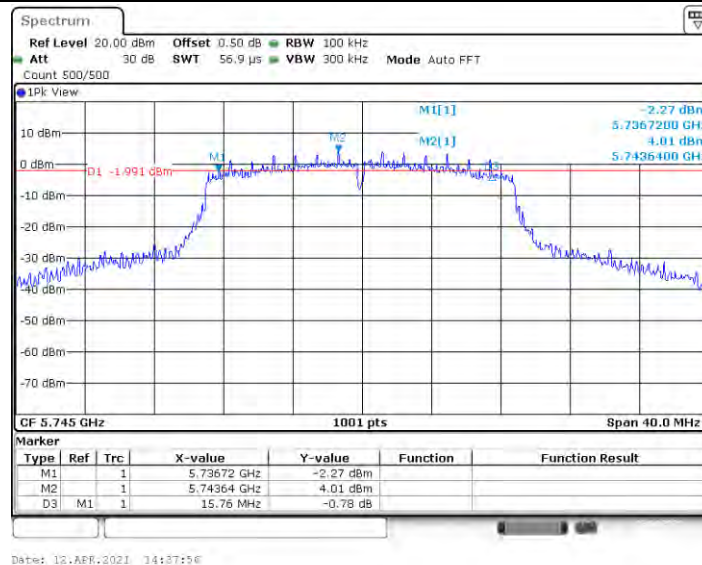
Date: 12.APR.2021 14:38:49

11AC20MIMO_Ant1_5745

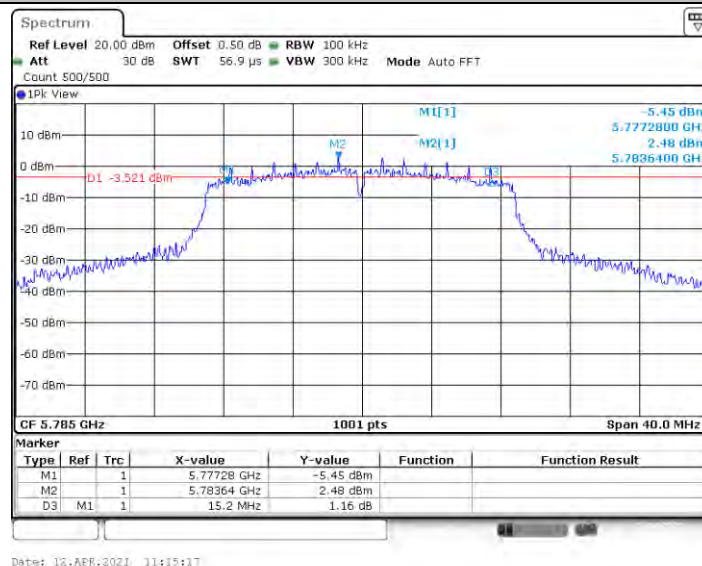


Date: 12.APR.2021 11:13:28

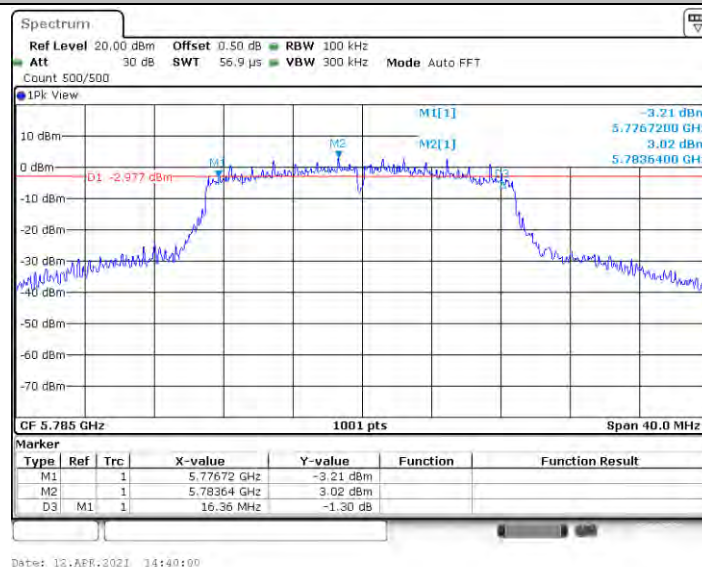
11AC20MIMO_Ant2_5745



11AC20MIMO_Ant1_5785

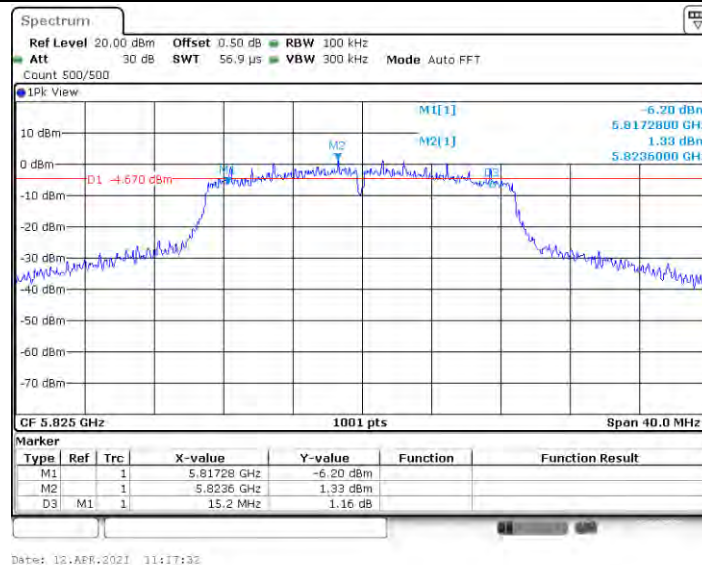


11AC20MIMO_Ant2_5785

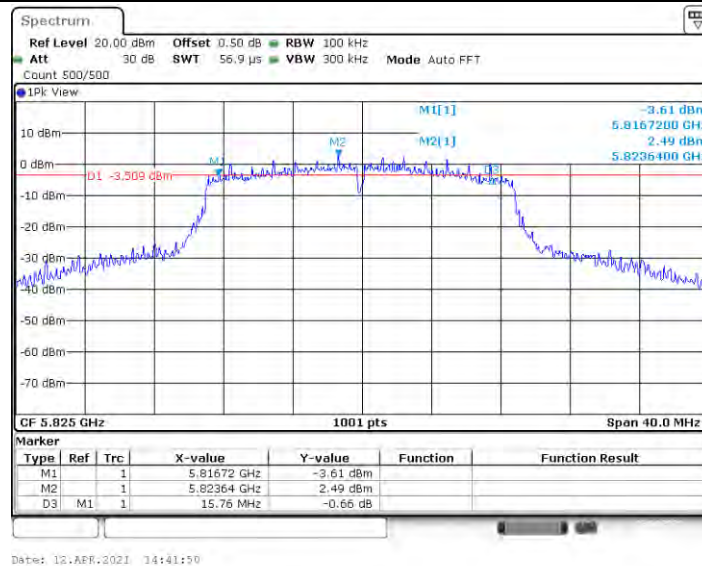




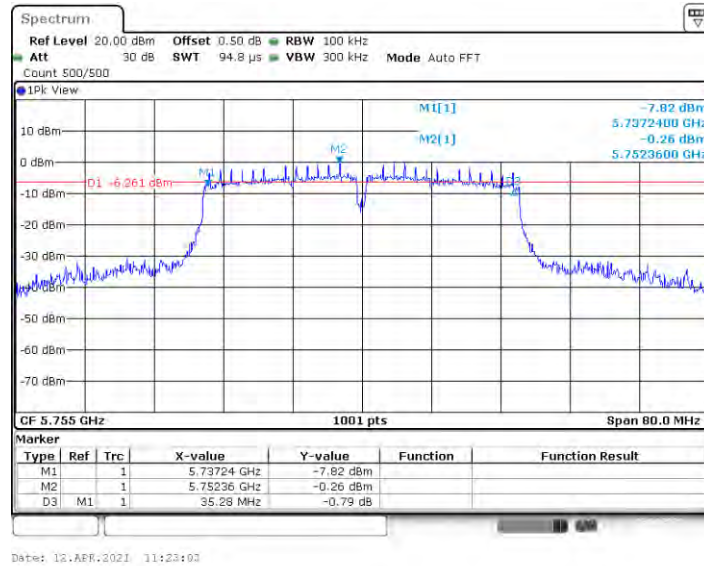
11AC20MIMO_Ant1_5825



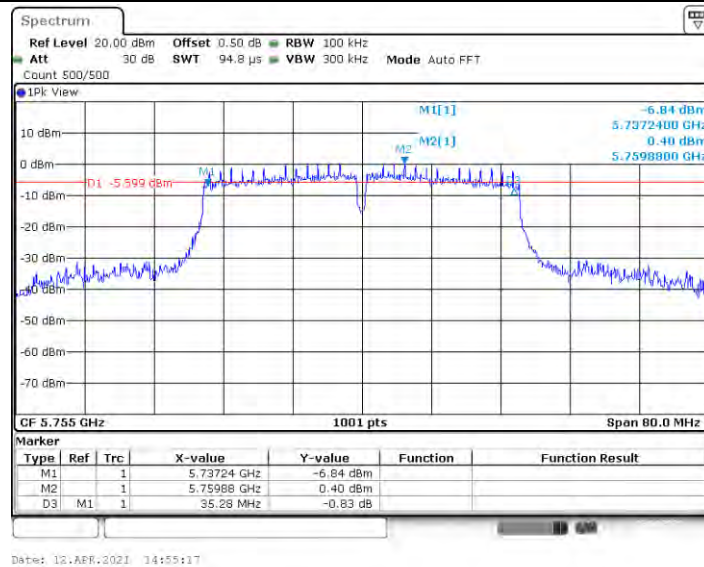
11AC20MIMO_Ant2_5825



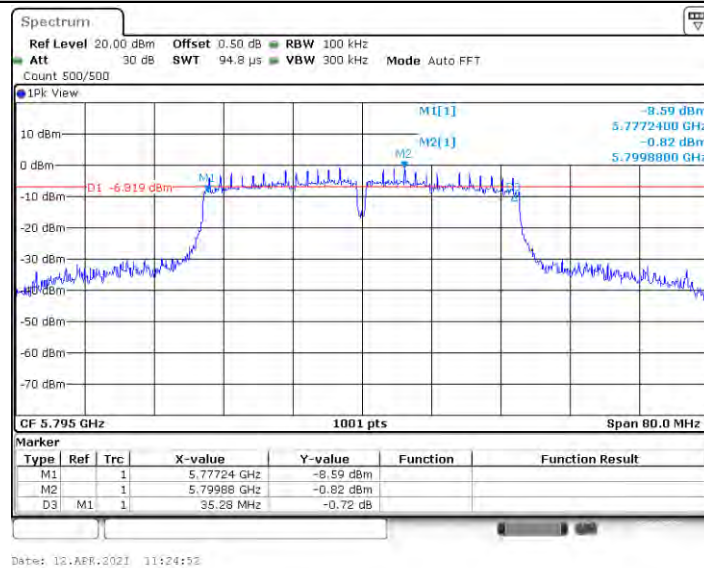
11AC40MIMO_Ant1_5755



11AC40MIMO_Ant2_5755

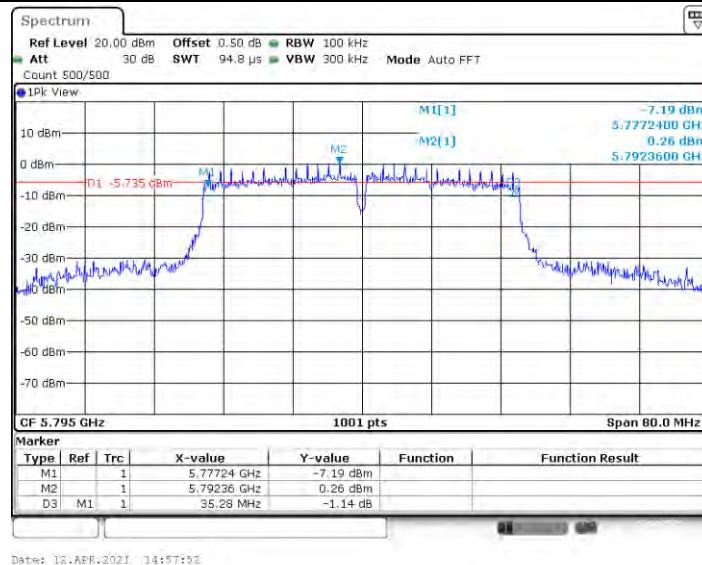


11AC40MIMO_Ant1_5795

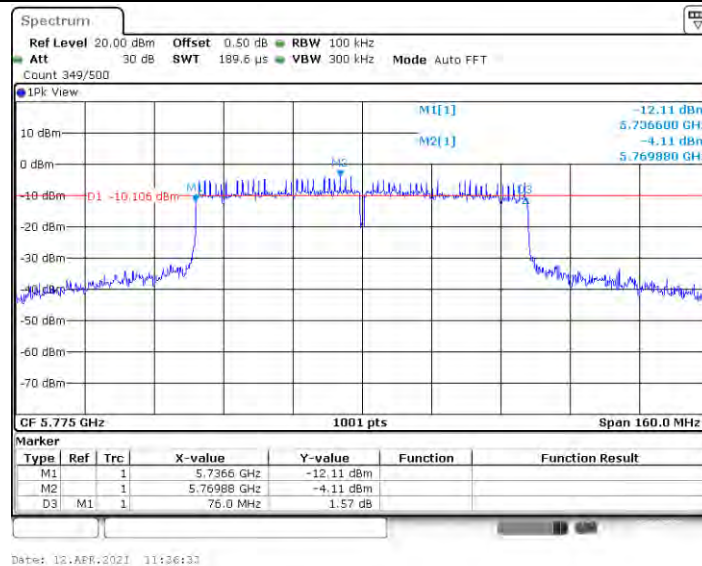




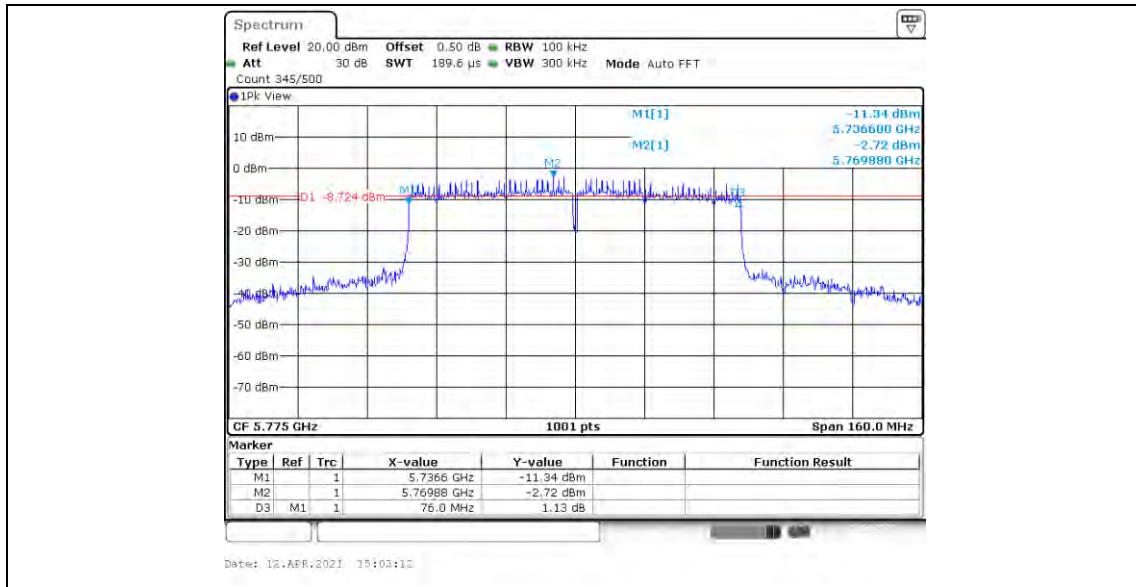
11AC40MIMO_Ant2_5795



11AC80MIMO_Ant1_5775



11AC80MIMO_Ant2_5775





Appendix B: Maximum conducted output power

Test Result

TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
11A	Ant1	5180	14.79	<=30	PASS
	Ant2	5180	13.50	<=30	PASS
	Ant1	5200	14.00	<=30	PASS
	Ant2	5200	12.83	<=30	PASS
	Ant1	5240	14.11	<=30	PASS
	Ant2	5240	11.88	<=30	PASS
	Ant1	5745	15.32	<=30	PASS
	Ant2	5745	15.13	<=30	PASS
	Ant1	5785	14.82	<=30	PASS
	Ant2	5785	14.79	<=30	PASS
	Ant1	5825	14.22	<=30	PASS
	Ant2	5825	14.36	<=30	PASS
11N20MIMO	Ant1	5180	13.06	<=30	PASS
	Ant2	5180	11.41	<=30	PASS
	total	5180	15.30	<=30	PASS
	Ant1	5200	12.75	<=30	PASS
	Ant2	5200	11.01	<=30	PASS
	total	5200	15.00	<=30	PASS
	Ant1	5240	12.35	<=30	PASS
	Ant2	5240	10.62	<=30	PASS
	total	5240	14.60	<=30	PASS
	Ant1	5745	13.38	<=30	PASS
	Ant2	5745	13.87	<=30	PASS
	total	5745	16.60	<=30	PASS
	Ant1	5785	12.95	<=30	PASS
	Ant2	5785	13.49	<=30	PASS
	total	5785	16.20	<=30	PASS
	Ant1	5825	12.39	<=30	PASS
	Ant2	5825	13.13	<=30	PASS
	total	5825	15.80	<=30	PASS



CTC Laboratories, Inc.

11N40MIMO	Ant1	5190	12.86	<=30	PASS
	Ant2	5190	11.13	<=30	PASS
	total	5190	15.10	<=30	PASS
	Ant1	5230	12.43	<=30	PASS
	Ant2	5230	10.63	<=30	PASS
	total	5230	14.60	<=30	PASS
	Ant1	5755	13.28	<=30	PASS
	Ant2	5755	13.85	<=30	PASS
	total	5755	16.60	<=30	PASS
	Ant1	5795	12.79	<=30	PASS
	Ant2	5795	13.42	<=30	PASS
	total	5795	16.10	<=30	PASS
11AC20MIMO	Ant1	5180	13.36	<=30	PASS
	Ant2	5180	11.72	<=30	PASS
	total	5180	15.60	<=30	PASS
	Ant1	5200	13.09	<=30	PASS
	Ant2	5200	11.48	<=30	PASS
	total	5200	15.40	<=30	PASS
	Ant1	5240	12.62	<=30	PASS
	Ant2	5240	11.10	<=30	PASS
	total	5240	14.90	<=30	PASS
	Ant1	5745	13.99	<=30	PASS
	Ant2	5745	14.26	<=30	PASS
	total	5745	17.10	<=30	PASS
	Ant1	5785	13.19	<=30	PASS
	Ant2	5785	13.91	<=30	PASS
	total	5785	16.60	<=30	PASS
	Ant1	5825	12.78	<=30	PASS
	Ant2	5825	13.60	<=30	PASS
	total	5825	16.20	<=30	PASS
11AC40MIMO	Ant1	5190	13.18	<=30	PASS
	Ant2	5190	11.44	<=30	PASS
	total	5190	15.40	<=30	PASS
	Ant1	5230	12.67	<=30	PASS
	Ant2	5230	10.95	<=30	PASS
	total	5230	14.90	<=30	PASS
	Ant1	5755	13.52	<=30	PASS
	Ant2	5755	14.08	<=30	PASS
	total	5755	16.80	<=30	PASS
	Ant1	5795	13.05	<=30	PASS
	Ant2	5795	13.73	<=30	PASS
	total	5795	16.40	<=30	PASS



CTC Laboratories, Inc.

11AC80MIMO	Ant1	5210	13.11	≤ 30	PASS
	Ant2	5210	11.46	≤ 30	PASS
	total	5210	15.40	≤ 30	PASS
	Ant1	5775	12.94	≤ 30	PASS
	Ant2	5775	11.63	≤ 30	PASS
	total	5775	15.30	≤ 30	PASS

Note: The Duty Cycle Factor is compensated in the graph.



Appendix C: Maximum power spectral density

Test Result

TestMode	Antenna	Channel	Result [dBm/MHz]	Limit[dBm/MHz]	Verdict
11A	Ant1	5180	4.07	<=17	PASS
	Ant2	5180	2.93	<=17	PASS
	Ant1	5200	3.38	<=17	PASS
	Ant2	5200	2.29	<=17	PASS
	Ant1	5240	3.45	<=17	PASS
	Ant2	5240	1.01	<=17	PASS
	Ant1	5745	1.78	<=30	PASS
	Ant2	5745	1.52	<=30	PASS
	Ant1	5785	1.24	<=30	PASS
	Ant2	5785	1.17	<=30	PASS
	Ant1	5825	0.86	<=30	PASS
	Ant2	5825	0.94	<=30	PASS
11N20MIMO	Ant1	5180	2.16	<=17	PASS
	Ant2	5180	0.40	<=17	PASS
	total	5180	4.38	17	PASS
	Ant1	5200	1.94	<=17	PASS
	Ant2	5200	0.08	<=17	PASS
	total	5200	4.12	17	PASS
	Ant1	5240	1.31	<=17	PASS
	Ant2	5240	-0.38	<=17	PASS
	total	5240	3.56	17	PASS
	Ant1	5745	-0.22	<=30	PASS
	Ant2	5745	0.20	<=30	PASS
	total	5745	3.01	30	PASS
	Ant1	5785	-0.90	<=30	PASS
	Ant2	5785	-0.23	<=30	PASS
	total	5785	2.46	30	PASS
	Ant1	5825	-1.46	<=30	PASS
	Ant2	5825	-0.53	<=30	PASS
	total	5825	2.04	30	PASS



CTC Laboratories, Inc.

11N40MIMO	Ant1	5190	-1.34	<=17	PASS
	Ant2	5190	-3.23	<=17	PASS
	total	5190	0.83	17	PASS
	Ant1	5230	-1.98	<=17	PASS
	Ant2	5230	-3.56	<=17	PASS
	total	5230	0.31	17	PASS
	Ant1	5755	-3.80	<=30	PASS
	Ant2	5755	-3.22	<=30	PASS
	total	5755	-0.49	30	PASS
	Ant1	5795	-4.41	<=30	PASS
	Ant2	5795	-3.55	<=30	PASS
	total	5795	-0.95	30	PASS
11AC20MIMO	Ant1	5180	2.42	<=17	PASS
	Ant2	5180	0.79	<=17	PASS
	total	5180	4.69	17	PASS
	Ant1	5200	2.27	<=17	PASS
	Ant2	5200	0.60	<=17	PASS
	total	5200	4.53	17	PASS
	Ant1	5240	1.83	<=17	PASS
	Ant2	5240	0.04	<=17	PASS
	total	5240	4.04	17	PASS
	Ant1	5745	0.50	<=30	PASS
	Ant2	5745	0.55	<=30	PASS
	total	5745	3.54	30	PASS
	Ant1	5785	-0.43	<=30	PASS
	Ant2	5785	0.33	<=30	PASS
	total	5785	2.98	30	PASS
	Ant1	5825	-0.89	<=30	PASS
	Ant2	5825	-0.09	<=30	PASS
	total	5825	2.54	30	PASS
11AC40MIMO	Ant1	5190	-1.03	<=17	PASS
	Ant2	5190	-2.86	<=17	PASS
	total	5190	1.16	17	PASS
	Ant1	5230	-1.59	<=17	PASS
	Ant2	5230	-3.35	<=17	PASS
	total	5230	0.63	17	PASS
	Ant1	5755	-3.42	<=30	PASS
	Ant2	5755	-2.95	<=30	PASS
	total	5755	-0.17	30	PASS
	Ant1	5795	-4.01	<=30	PASS
	Ant2	5795	-3.35	<=30	PASS
	total	5795	-0.66	30	PASS



CTC Laboratories, Inc.

11AC80MIMO	Ant1	5210	-5.76	≤ 17	PASS
	Ant2	5210	-7.13	≤ 17	PASS
	total	5210	-3.38	17	PASS
	Ant1	5775	-8.22	≤ 30	PASS
	Ant2	5775	-9.35	≤ 30	PASS
	total	5775	-5.74	30	PASS

Note: 1.The Result and Limit Unit is dBm/500 kHz in the band 5.725–5.85 GHz.
2.The Duty Cycle Factor and RBW Factor is compensated in the graph.

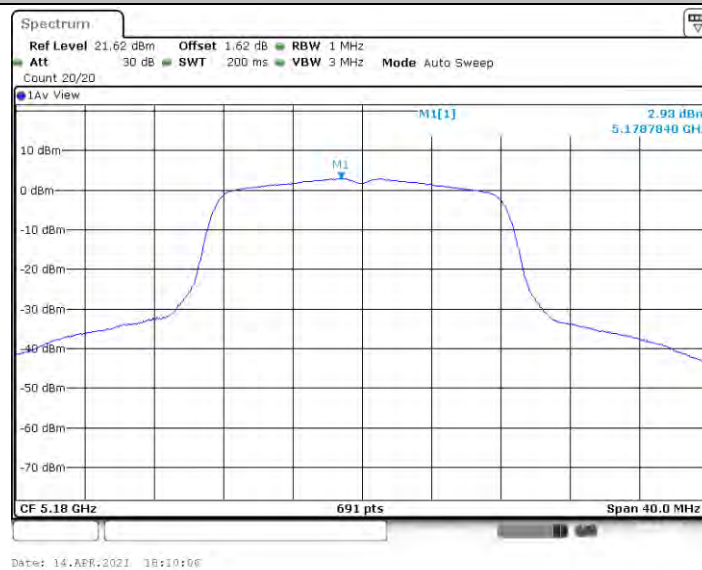


Test Graphs

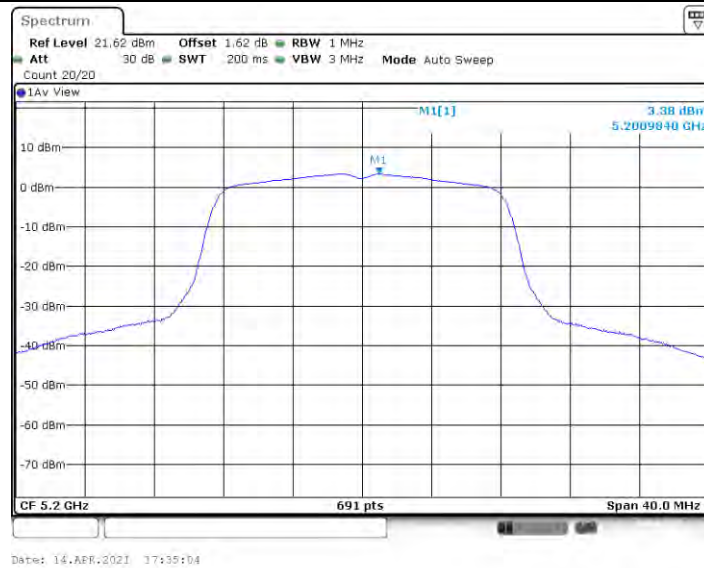
11A_Ant1_5180



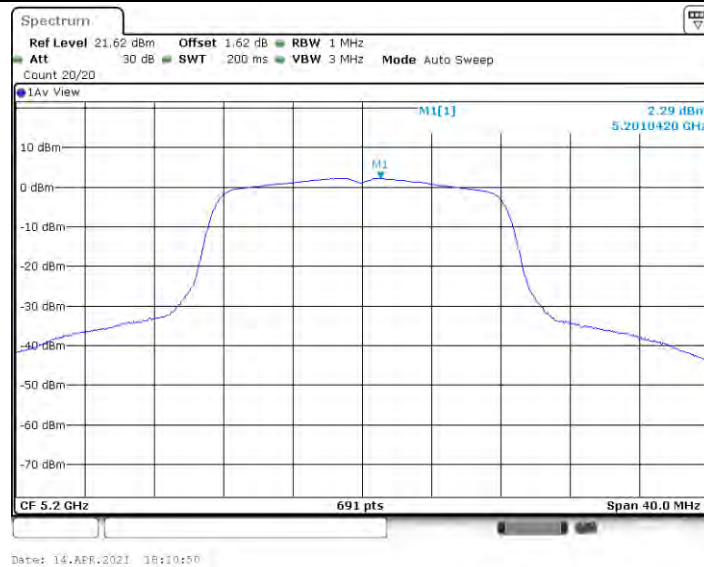
11A_Ant2_5180



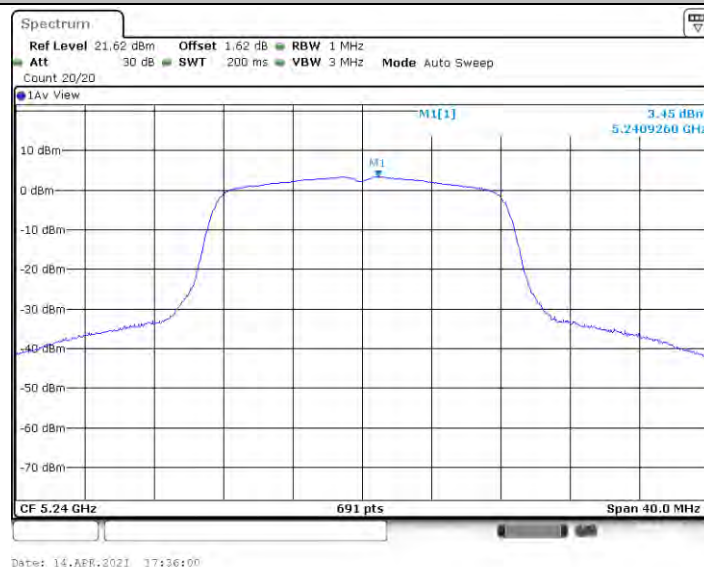
11A_Ant1_5200



11A_Ant2_5200

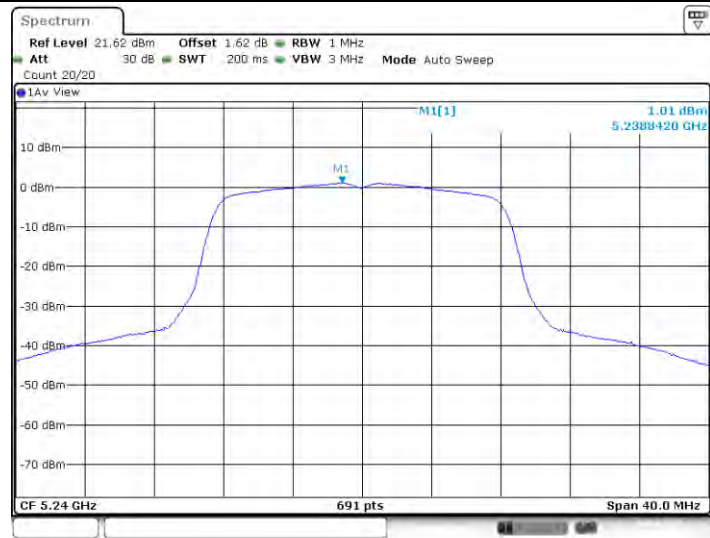


11A_Ant1_5240



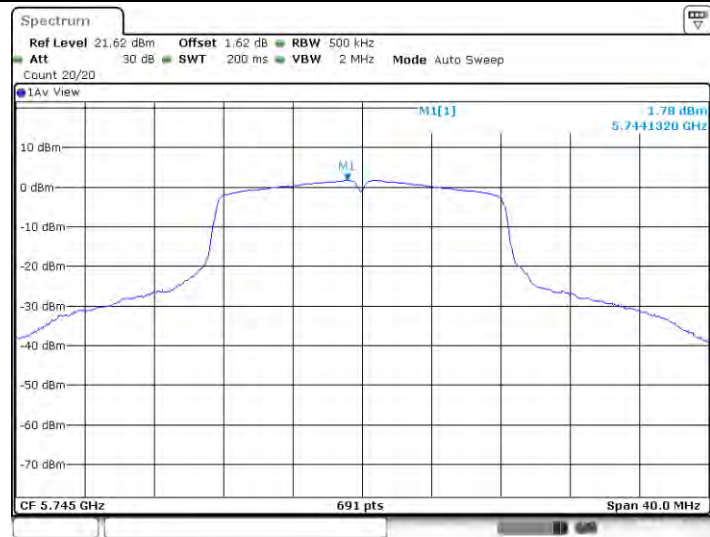


11A_Ant2_5240



Date: 14.APR.2021 18:14:11

11A_Ant1_5745



Date: 14.APR.2021 17:36:55

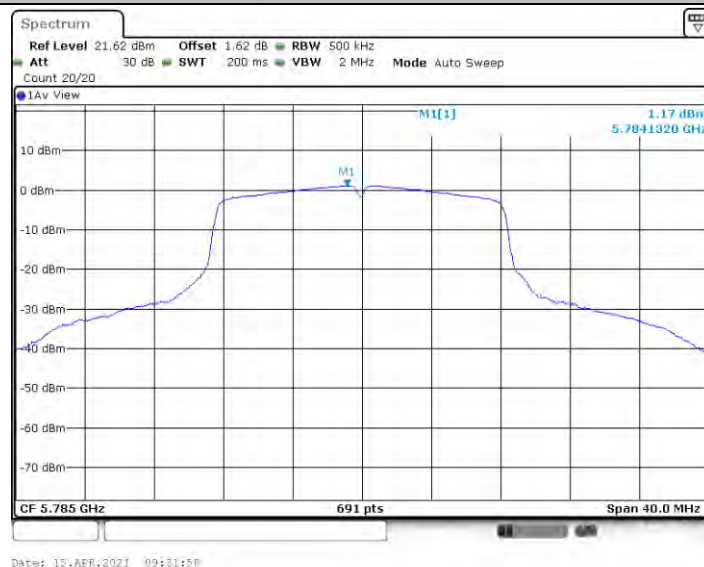
11A_Ant2_5745



11A_Ant1_5785



11A_Ant2_5785





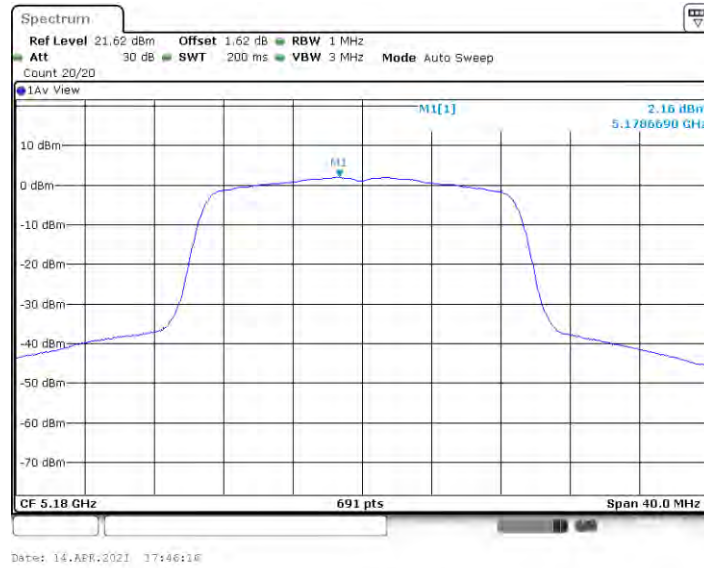
11A_Ant1_5825



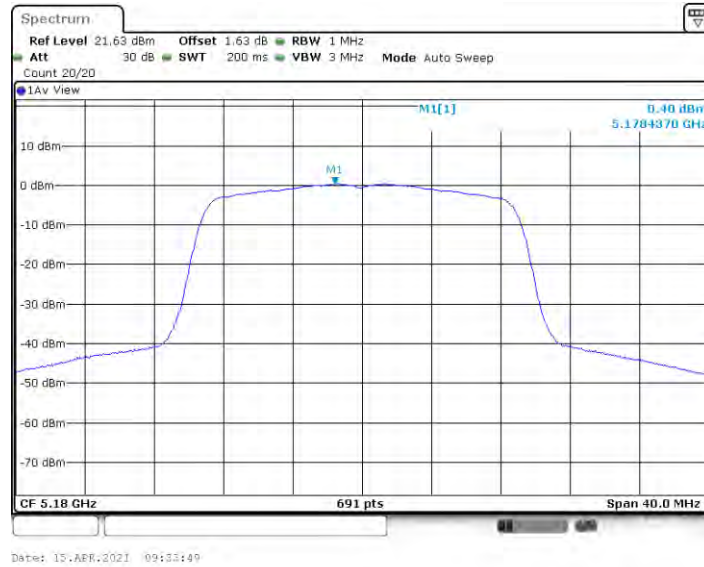
11A_Ant2_5825



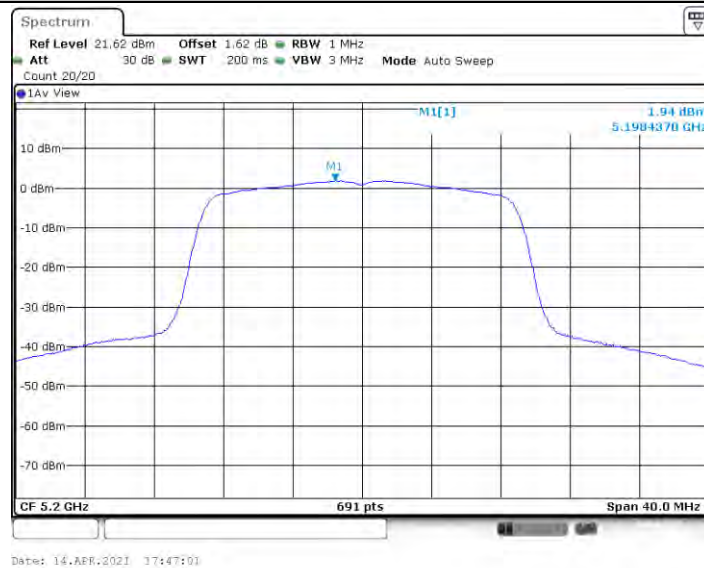
11N20MIMO_Ant1_5180



11N20MIMO_Ant2_5180

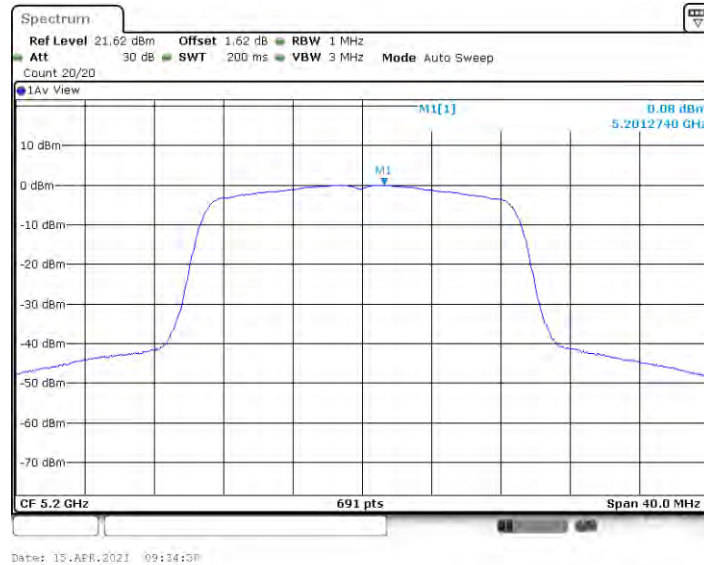


11N20MIMO_Ant1_5200

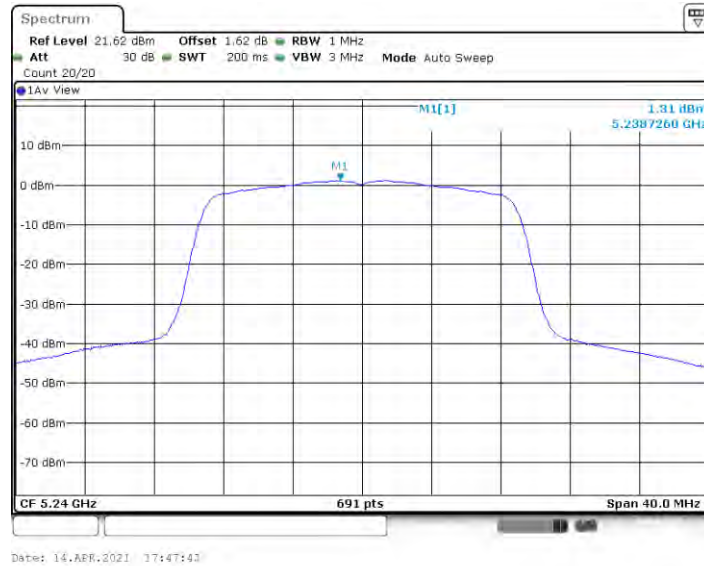




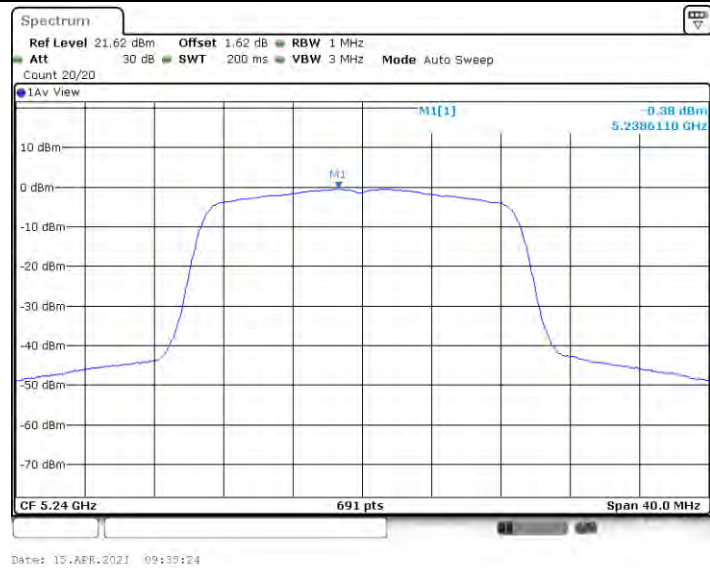
11N20MIMO_Ant2_5200



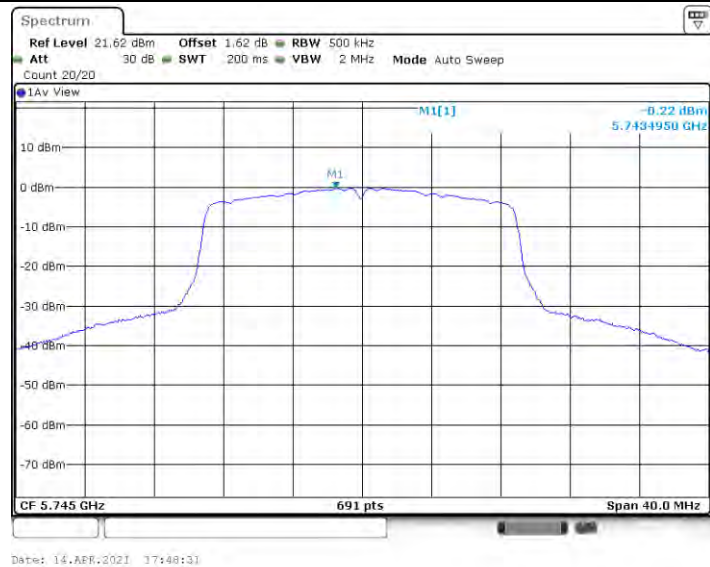
11N20MIMO_Ant1_5240



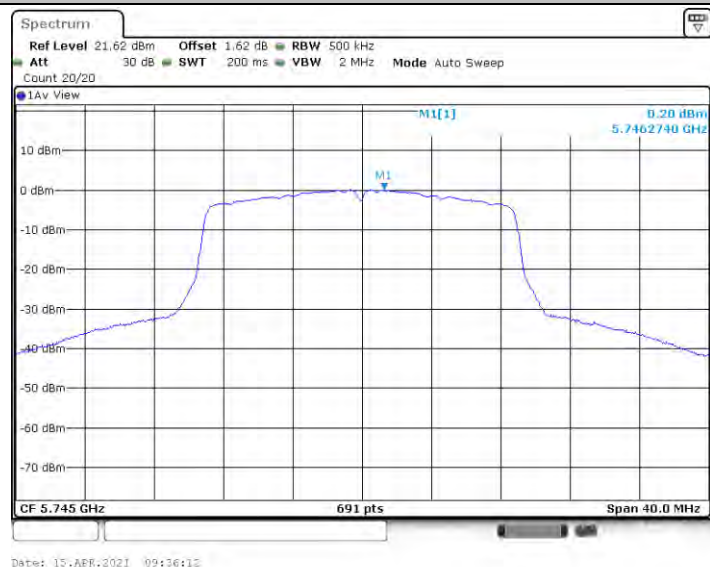
11N20MIMO_Ant2_5240



11N20MIMO_Ant1_5745

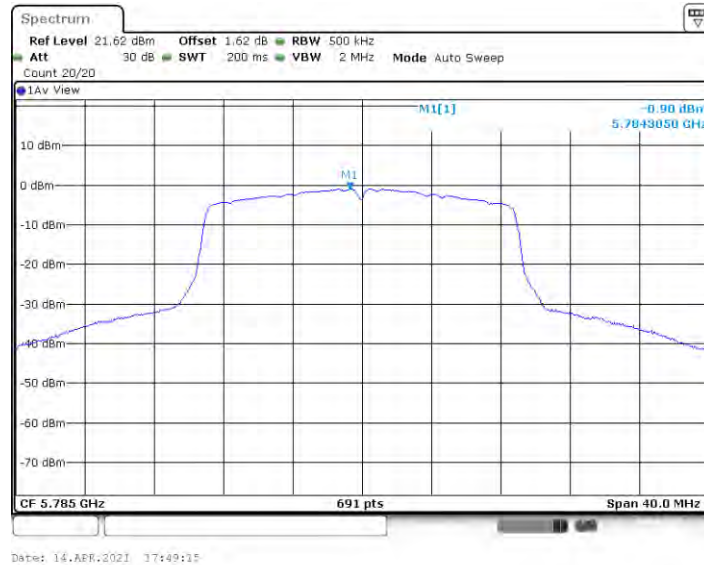


11N20MIMO_Ant2_5745

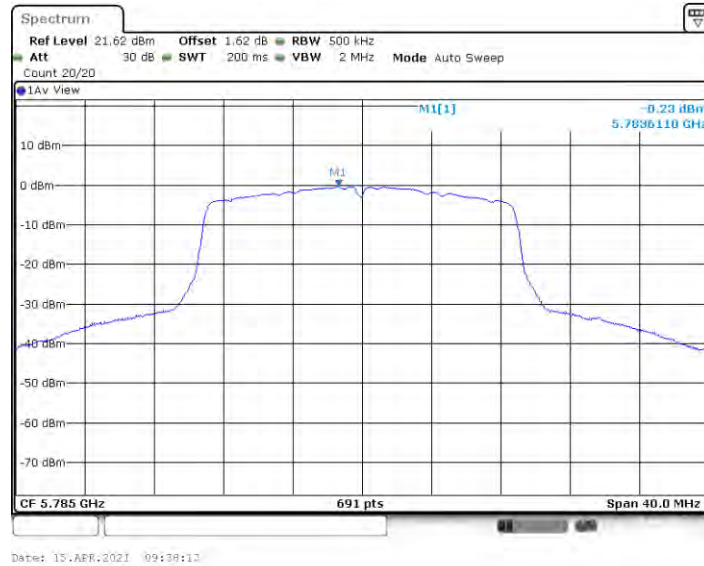




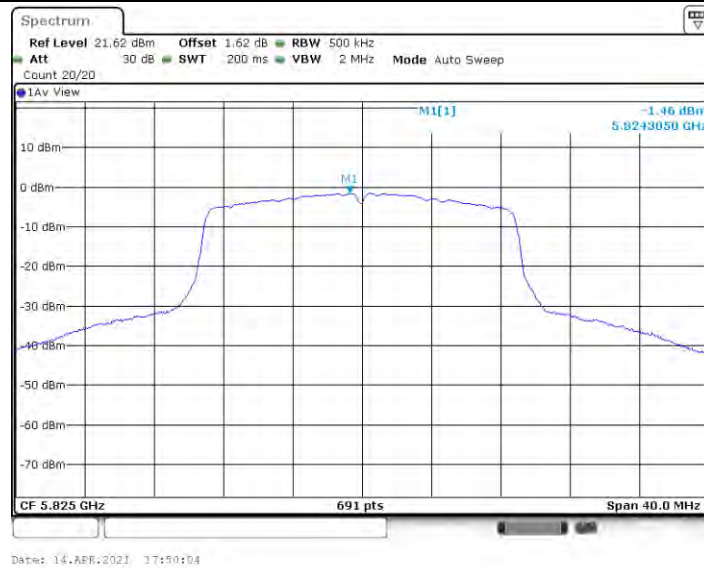
11N20MIMO_Ant1_5785



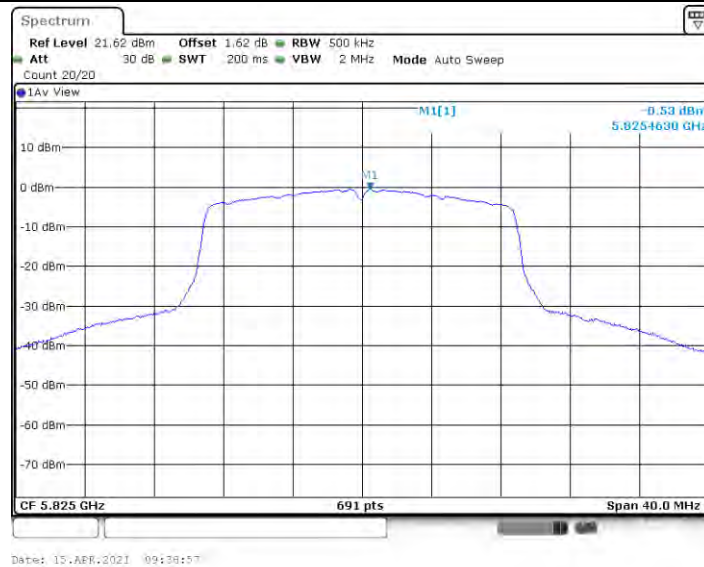
11N20MIMO_Ant2_5785



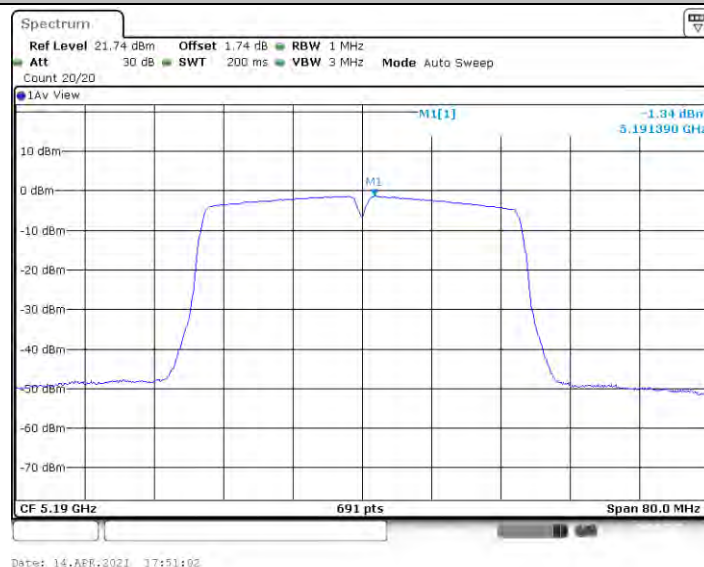
11N20MIMO_Ant1_5825



11N20MIMO_Ant2_5825

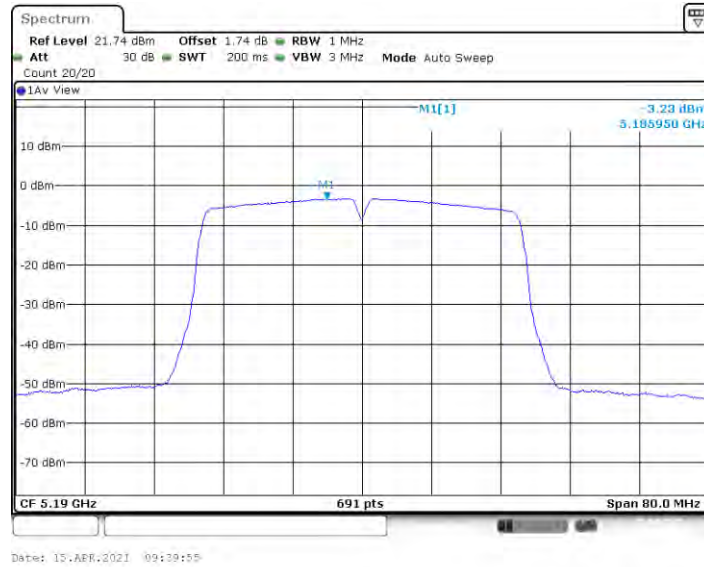


11N40MIMO_Ant1_5190

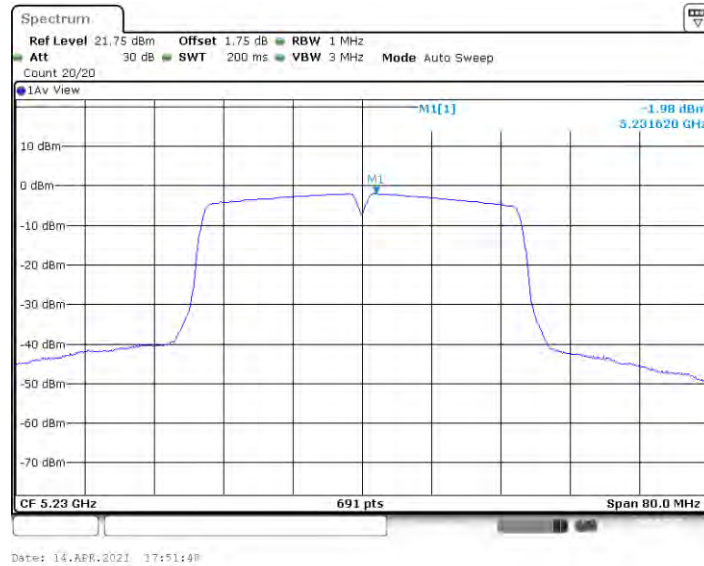




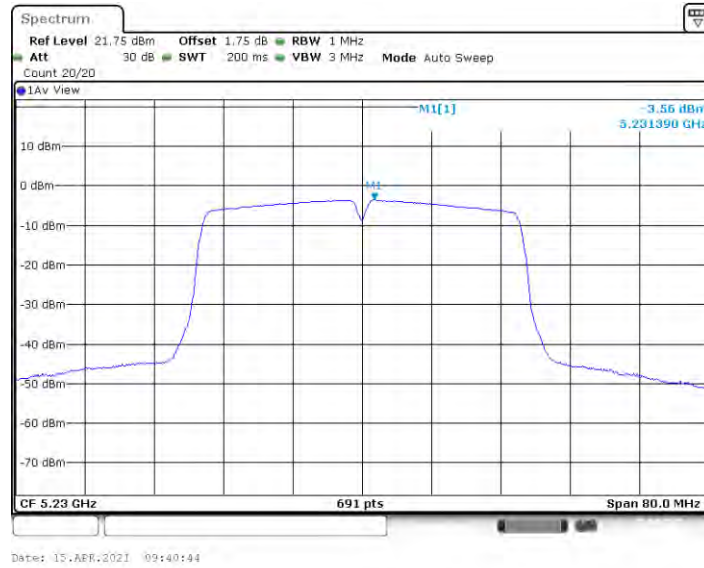
11N40MIMO_Ant2_5190



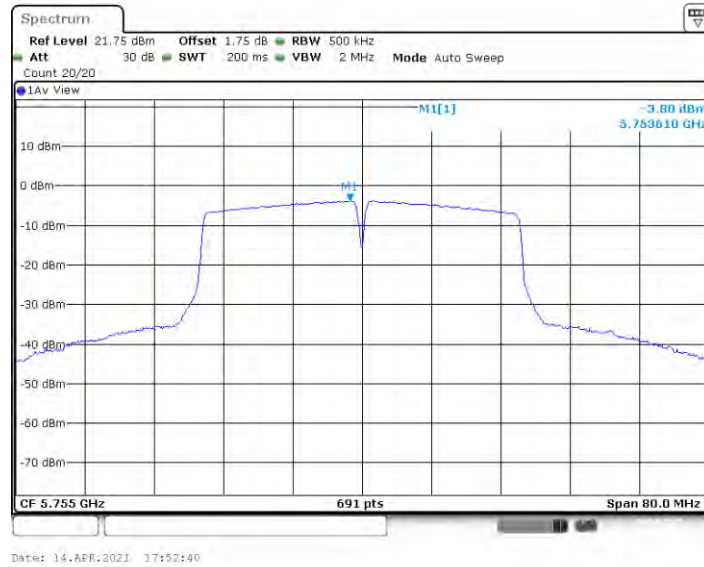
11N40MIMO_Ant1_5230



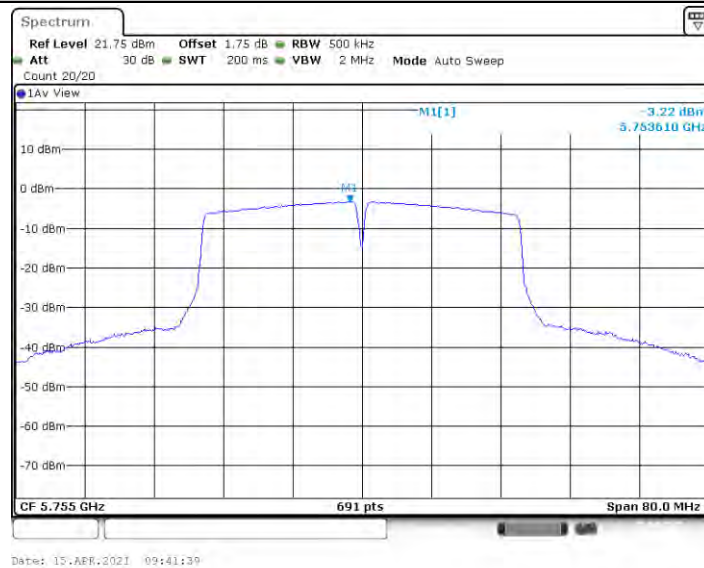
11N40MIMO_Ant2_5230



11N40MIMO_Ant1_5755

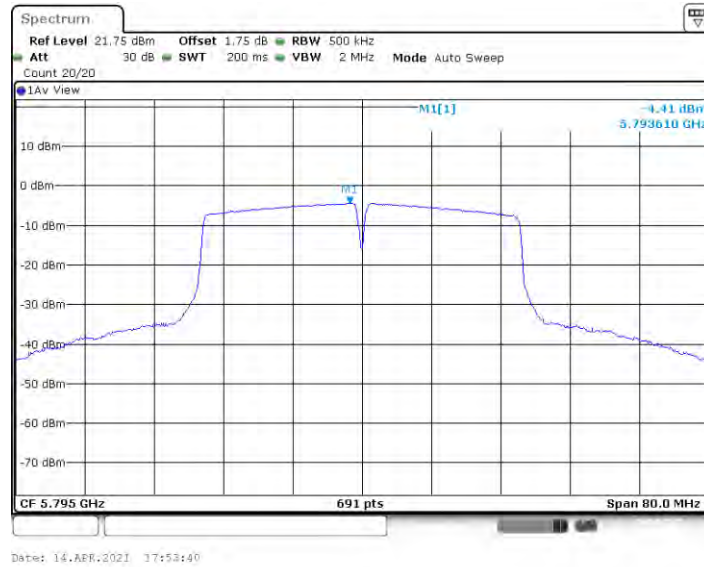


11N40MIMO_Ant2_5755

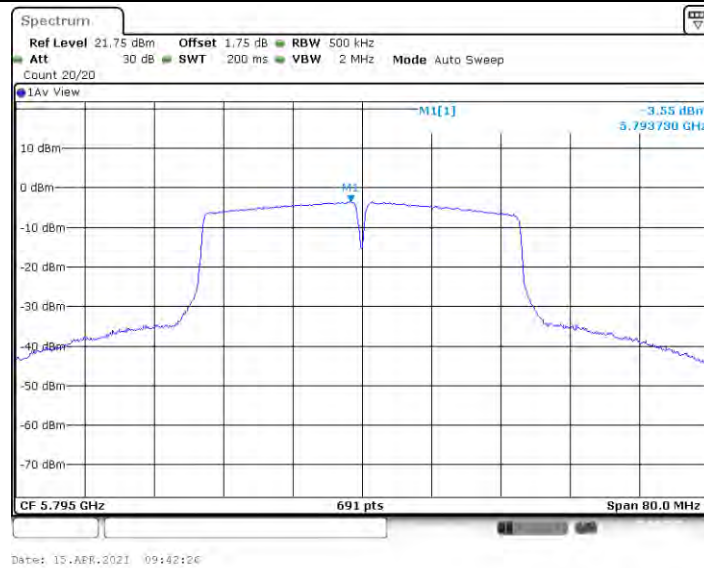




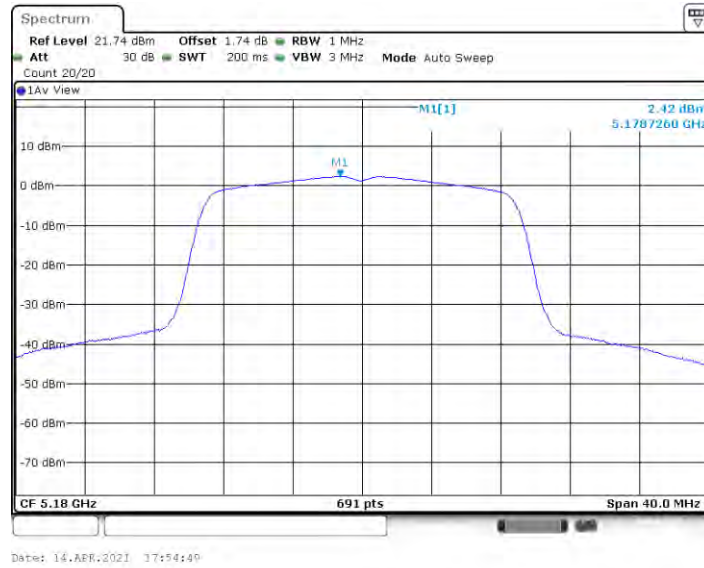
11N40MIMO_Ant1_5795



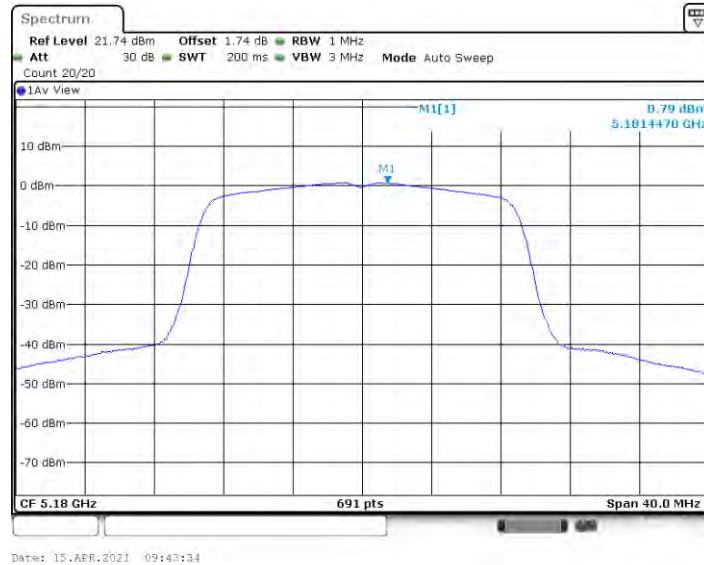
11N40MIMO_Ant2_5795



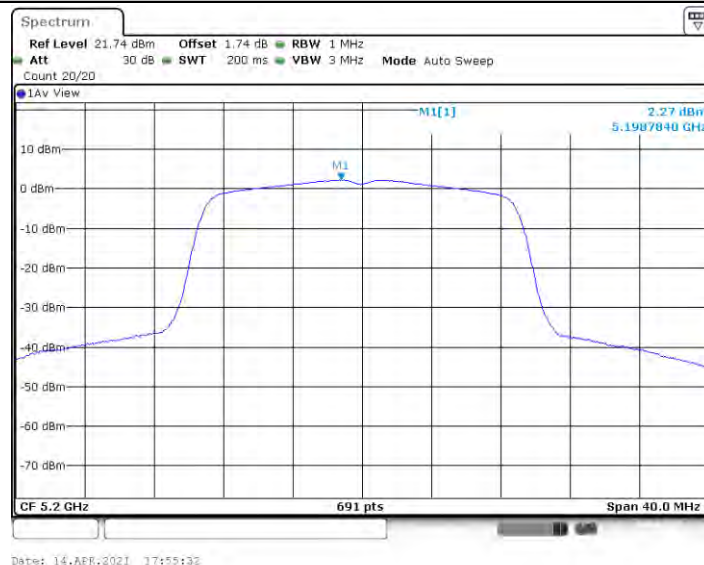
11AC20MIMO_Ant1_5180



11AC20MIMO_Ant2_5180

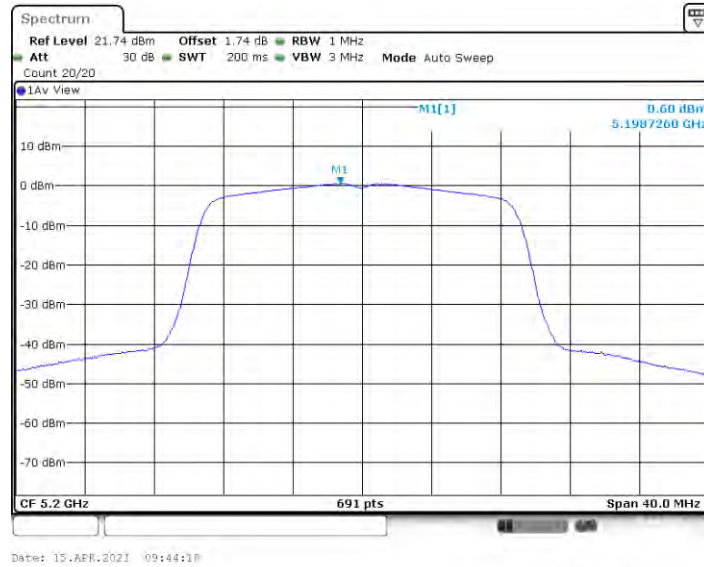


11AC20MIMO_Ant1_5200

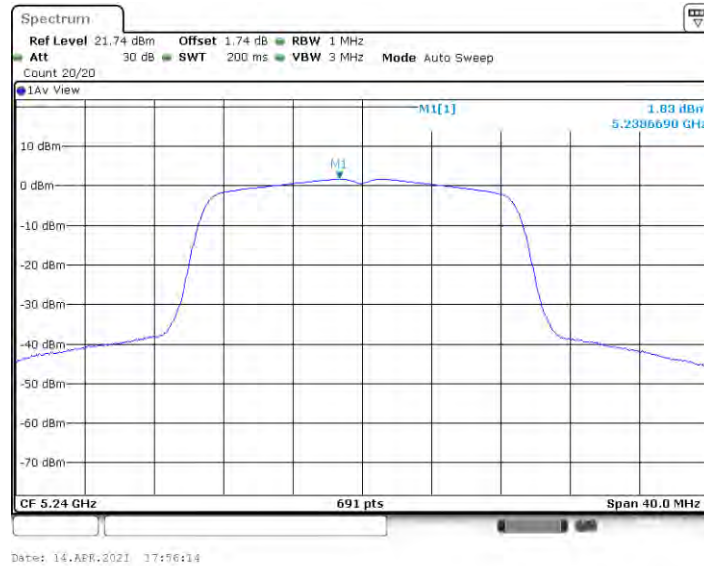




11AC20MIMO_Ant2_5200



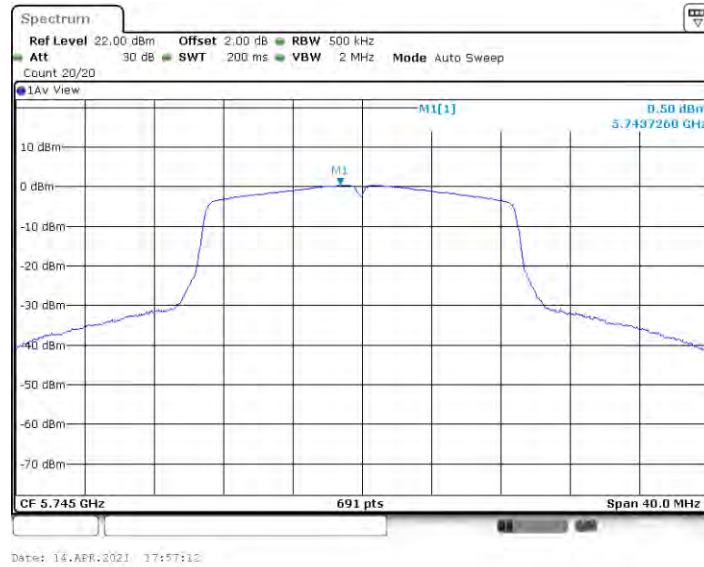
11AC20MIMO_Ant1_5240



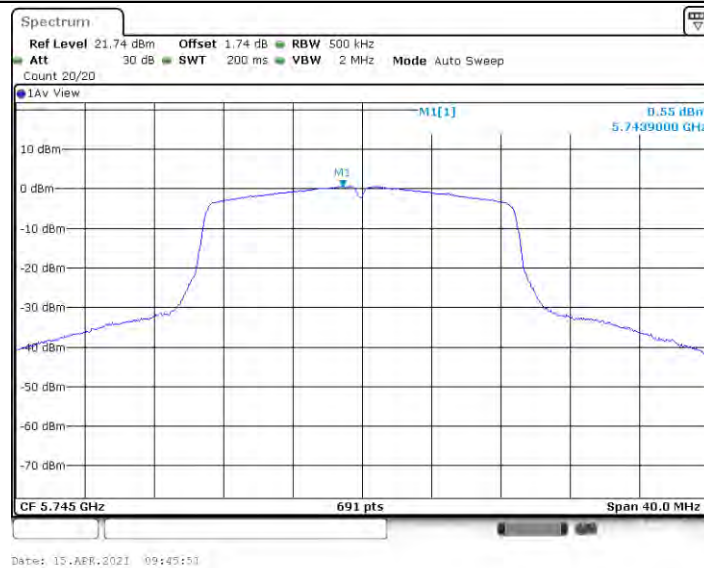
11AC20MIMO_Ant2_5240



11AC20MIMO_Ant1_5745

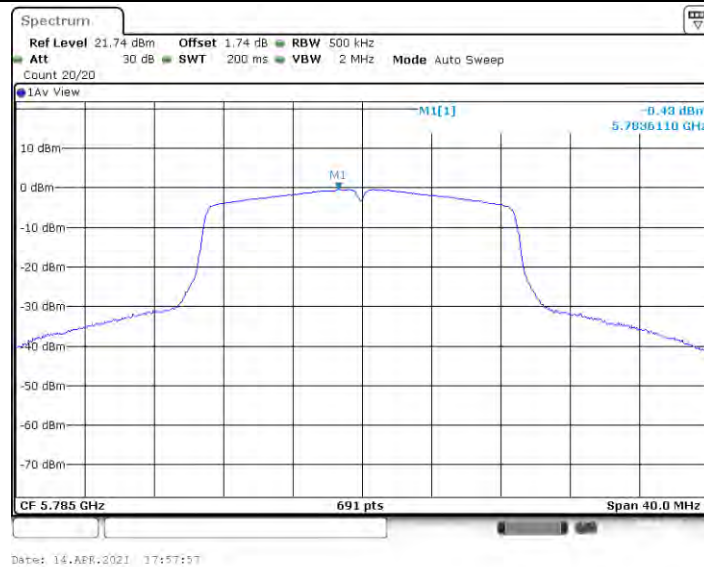


11AC20MIMO_Ant2_5745





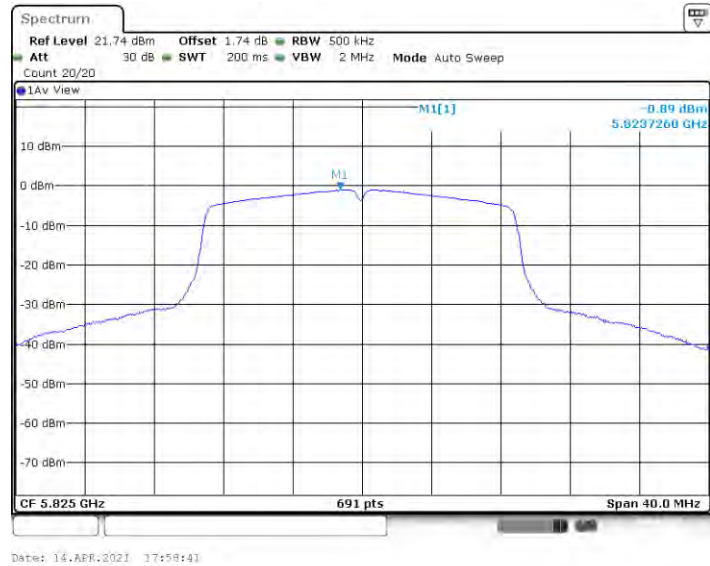
11AC20MIMO_Ant1_5785



11AC20MIMO_Ant2_5785



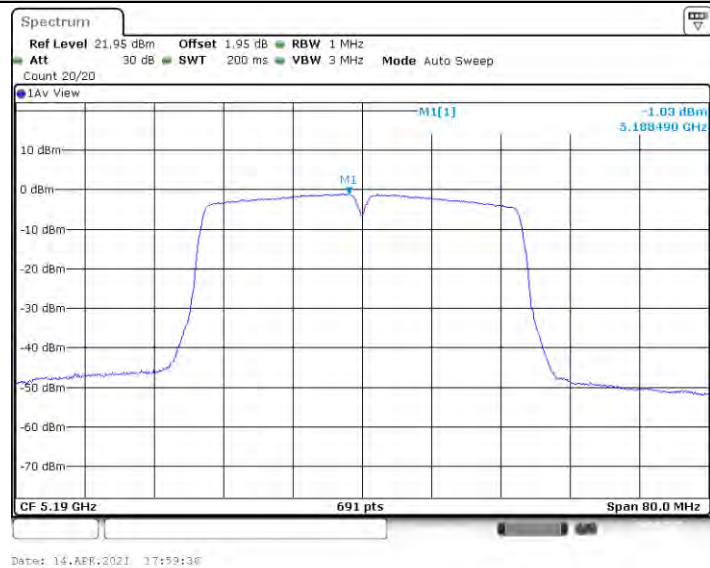
11AC20MIMO_Ant1_5825



11AC20MIMO_Ant2_5825

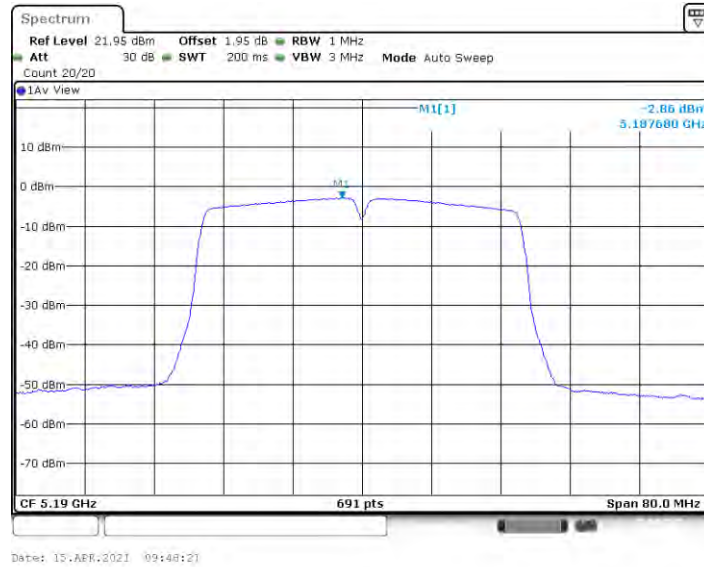


11AC40MIMO_Ant1_5190

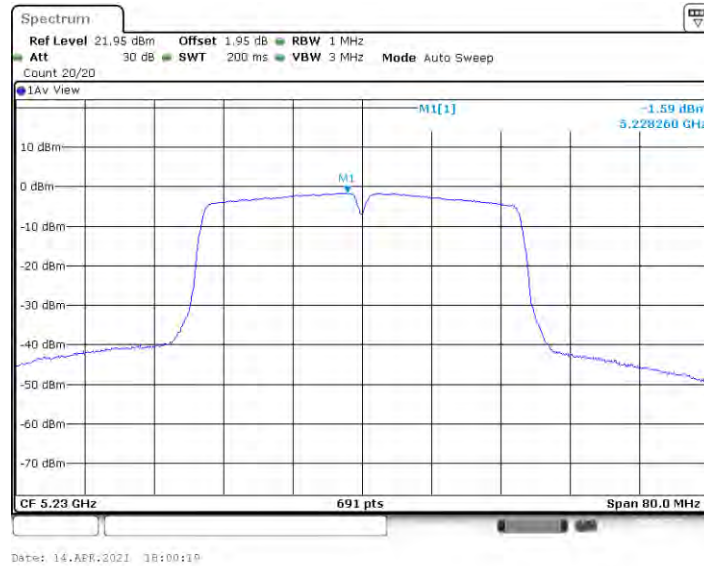




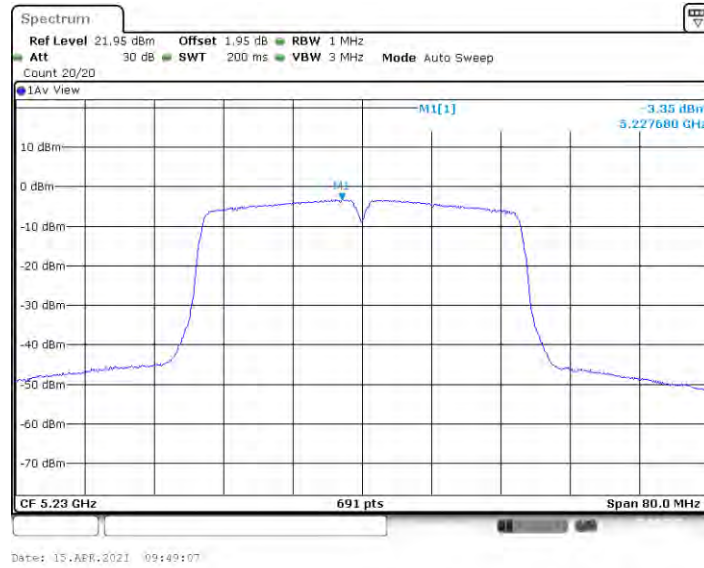
11AC40MIMO_Ant2_5190



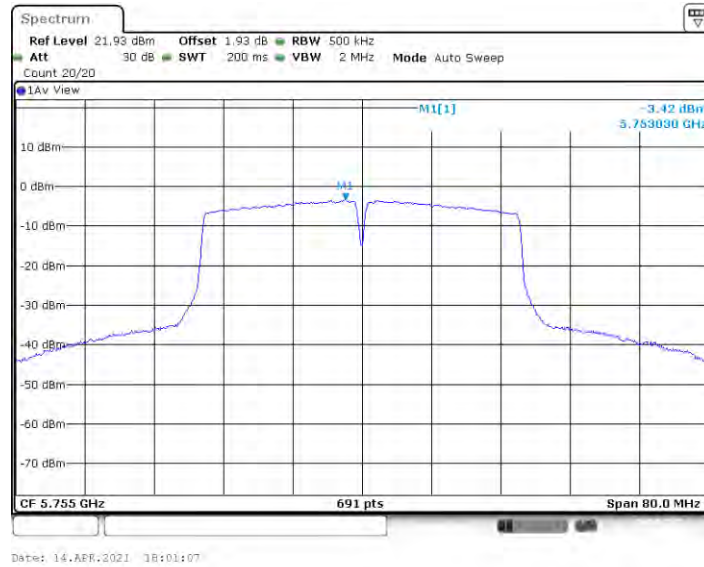
11AC40MIMO_Ant1_5230



11AC40MIMO_Ant2_5230



11AC40MIMO_Ant1_5755

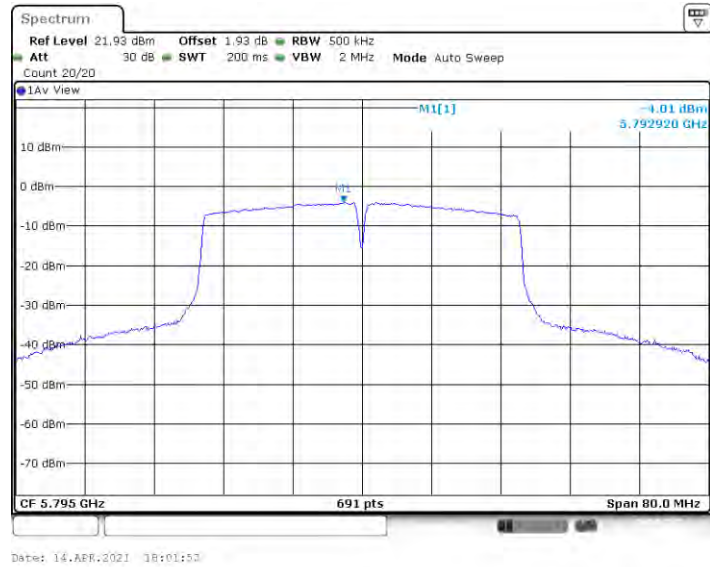


11AC40MIMO_Ant2_5755

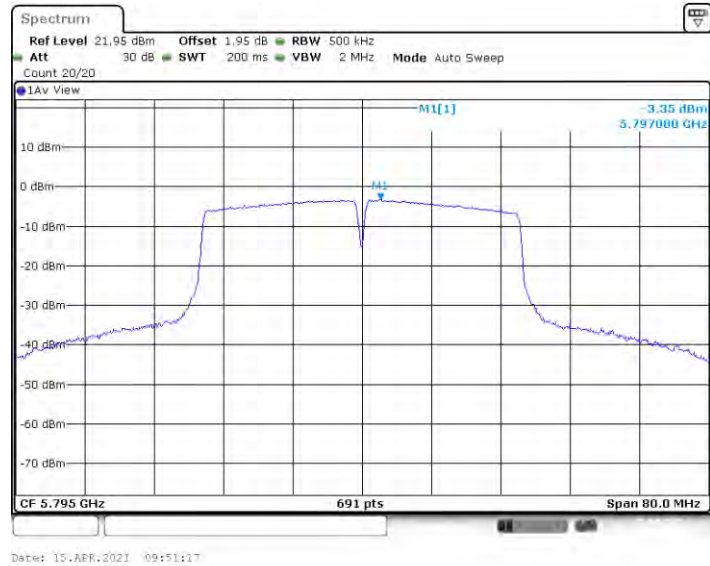




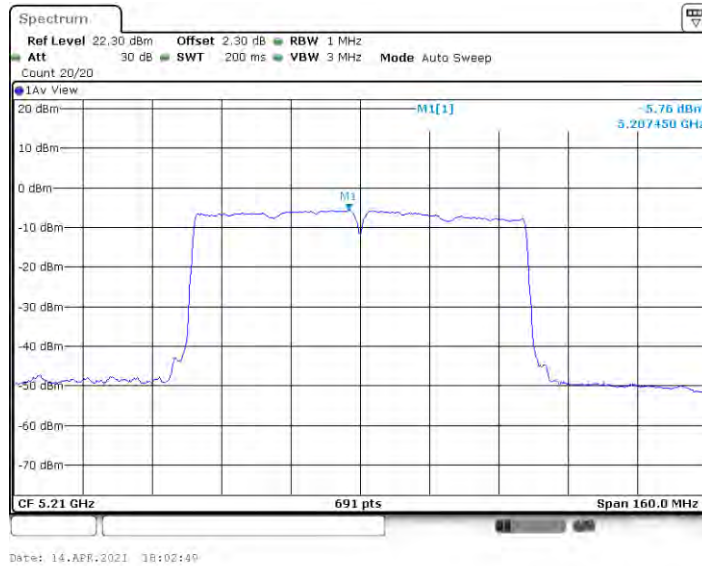
11AC40MIMO_Ant1_5795



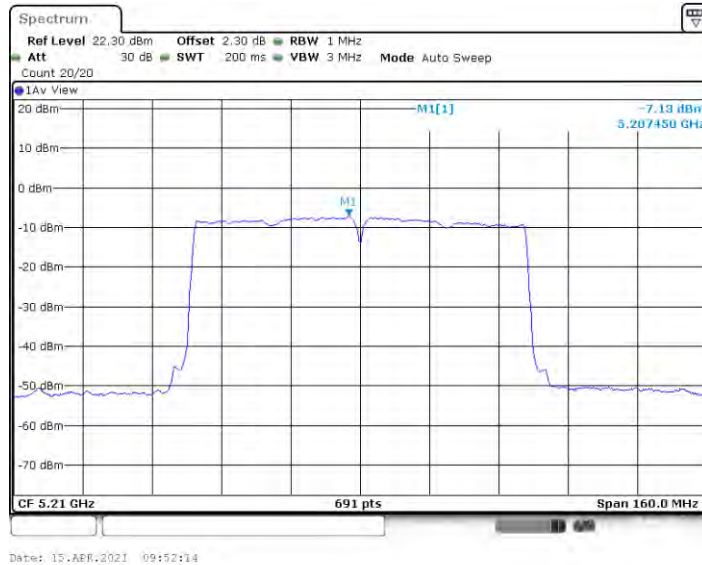
11AC40MIMO_Ant2_5795



11AC80MIMO_Ant1_5210



11AC80MIMO_Ant2_5210

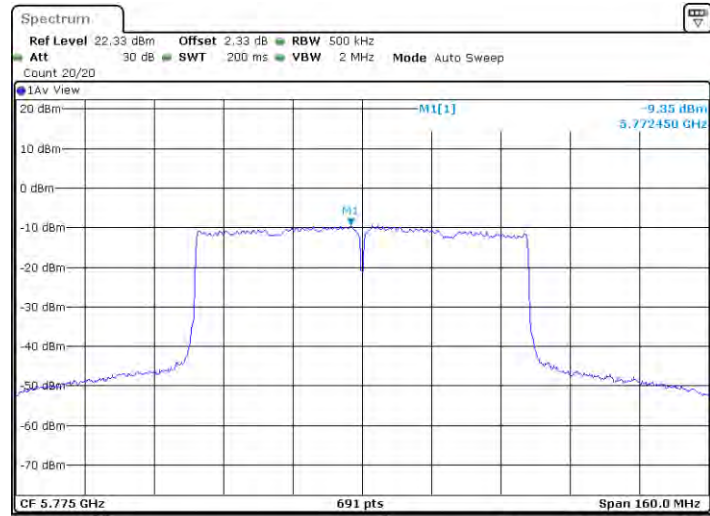


11AC80MIMO_Ant1_5775





11AC80MIMO_Ant2_5775



Date: 15.APR.2021 10:02:30



Appendix D: Frequency Stability

Test Result

Voltage								
TestMode	Antenna	Channel	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
20MHz	Ant1	5180	NV	NT	-99900	-19.285714	± 20	PASS
			LV	NT	-99900	-19.285714	± 20	PASS
			HV	NT	-99900	-19.285714	± 20	PASS
		5200	NV	NT	-99900	-19.211538	± 20	PASS
			LV	NT	-99900	-19.211538	± 20	PASS
			HV	NT	-99900	-19.211538	± 20	PASS
		5240	NV	NT	-100900	-19.255725	± 20	PASS
			LV	NT	-100900	-19.255725	± 20	PASS
			HV	NT	-100900	-19.255725	± 20	PASS
		5745	NV	NT	-109900	-19.129678	± 20	PASS
			LV	NT	-109900	-19.129678	± 20	PASS
			HV	NT	-109900	-19.129678	± 20	PASS
		5785	NV	NT	-110900	-19.170268	± 20	PASS
			LV	NT	-110900	-19.170268	± 20	PASS
			HV	NT	-110900	-19.170268	± 20	PASS
		5825	NV	NT	-111900	-19.210300	± 20	PASS
			LV	NT	-111900	-19.210300	± 20	PASS
			HV	NT	-111900	-19.210300	± 20	PASS
40MHz	Ant1	5190	NV	NT	-99900	-19.248555	± 20	PASS
			LV	NT	-99900	-19.248555	± 20	PASS
			HV	NT	-99900	-19.248555	± 20	PASS
		5230	NV	NT	-100900	-19.292543	± 20	PASS
			LV	NT	-100900	-19.292543	± 20	PASS
			HV	NT	-99900	-19.101338	± 20	PASS
		5755	NV	NT	-109900	-19.096438	± 20	PASS
			LV	NT	-109900	-19.096438	± 20	PASS
			HV	NT	-109900	-19.096438	± 20	PASS
		5795	NV	NT	-110900	-19.137187	± 20	PASS
			LV	NT	-110900	-19.137187	± 20	PASS
			HV	NT	-110900	-19.137187	± 20	PASS
80MHz	Ant1	5210	NV	NT	-99900	-19.174664	± 20	PASS
			LV	NT	-99900	-19.174664	± 20	PASS
			HV	NT	-99900	-19.174664	± 20	PASS
		5775	NV	NT	-110900	-19.203463	± 20	PASS
			LV	NT	-110900	-19.203463	± 20	PASS
			HV	NT	-110900	-19.203463	± 20	PASS



Temperature								
TestMode	Antenna	Channel	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
20MHz	Ant1	5180	NV	-10	-99900	-19.285714	± 20	PASS
			NV	0	-99900	-19.285714	± 20	PASS
			NV	10	-99900	-19.285714	± 20	PASS
			NV	20	-99900	-19.285714	± 20	PASS
			NV	30	-98900	-19.092664	± 20	PASS
			NV	40	-98900	-19.092664	± 20	PASS
		5200	NV	-10	-99900	-19.211538	± 20	PASS
			NV	0	-99900	-19.211538	± 20	PASS
			NV	10	-99900	-19.211538	± 20	PASS
			NV	20	-99900	-19.211538	± 20	PASS
			NV	30	-99900	-19.211538	± 20	PASS
			NV	40	-99900	-19.211538	± 20	PASS
		5240	NV	-10	-99900	-19.064885	± 20	PASS
			NV	0	-99900	-19.064885	± 20	PASS
			NV	10	-99900	-19.064885	± 20	PASS
			NV	20	-99900	-19.064885	± 20	PASS
			NV	30	-99900	-19.064885	± 20	PASS
			NV	40	-99900	-19.064885	± 20	PASS
		5745	NV	-10	-109900	-19.129678	± 20	PASS
			NV	0	-109900	-19.129678	± 20	PASS
			NV	10	-109900	-19.129678	± 20	PASS
			NV	20	-109900	-19.129678	± 20	PASS
			NV	30	-109900	-19.129678	± 20	PASS
			NV	40	-109900	-19.129678	± 20	PASS
		5785	NV	-10	-110900	-19.170268	± 20	PASS
			NV	0	-110900	-19.170268	± 20	PASS
			NV	10	-110900	-19.170268	± 20	PASS
			NV	20	-110900	-19.170268	± 20	PASS
			NV	30	-110900	-19.170268	± 20	PASS
			NV	40	-110900	-19.170268	± 20	PASS
		5825	NV	-10	-111900	-19.210300	± 20	PASS
			NV	0	-111900	-19.210300	± 20	PASS
			NV	10	-111900	-19.210300	± 20	PASS
			NV	20	-111900	-19.210300	± 20	PASS
			NV	30	-111900	-19.210300	± 20	PASS
			NV	40	-111900	-19.210300	± 20	PASS
40MHz	Ant1	5190	NV	-10	-98900	-19.055877	± 20	PASS
			NV	0	-98900	-19.055877	± 20	PASS
			NV	10	-98900	-19.055877	± 20	PASS
			NV	20	-98900	-19.055877	± 20	PASS



CTC Laboratories, Inc.

			NV	30	-98900	-19.055877	± 20	PASS
			NV	40	-98900	-19.055877	± 20	PASS
		5230	NV	-10	-99900	-19.101338	± 20	PASS
			NV	0	-99900	-19.101338	± 20	PASS
			NV	10	-99900	-19.101338	± 20	PASS
			NV	20	-99900	-19.101338	± 20	PASS
			NV	30	-99900	-19.101338	± 20	PASS
			NV	40	-99900	-19.101338	± 20	PASS
		5755	NV	-10	-109900	-19.096438	± 20	PASS
			NV	0	-109900	-19.096438	± 20	PASS
			NV	10	-109900	-19.096438	± 20	PASS
			NV	20	-109900	-19.096438	± 20	PASS
			NV	30	-109900	-19.096438	± 20	PASS
			NV	40	-109900	-19.096438	± 20	PASS
		5795	NV	-10	-110900	-19.137187	± 20	PASS
			NV	0	-110900	-19.137187	± 20	PASS
			NV	10	-110900	-19.137187	± 20	PASS
			NV	20	-110900	-19.137187	± 20	PASS
			NV	30	-110900	-19.137187	± 20	PASS
			NV	40	-110900	-19.137187	± 20	PASS
80MHz	Ant1	5210	NV	-10	-99900	-19.174664	± 20	PASS
			NV	0	-99900	-19.174664	± 20	PASS
			NV	10	-99900	-19.174664	± 20	PASS
			NV	20	-99900	-19.174664	± 20	PASS
			NV	30	-98900	-18.982726	± 20	PASS
			NV	40	-98900	-18.982726	± 20	PASS
		5775	NV	-10	-109900	-19.030303	± 20	PASS
			NV	0	-109900	-19.030303	± 20	PASS
			NV	10	-109900	-19.030303	± 20	PASS
			NV	20	-109900	-19.030303	± 20	PASS
			NV	30	-109900	-19.030303	± 20	PASS
			NV	40	-109900	-19.030303	± 20	PASS