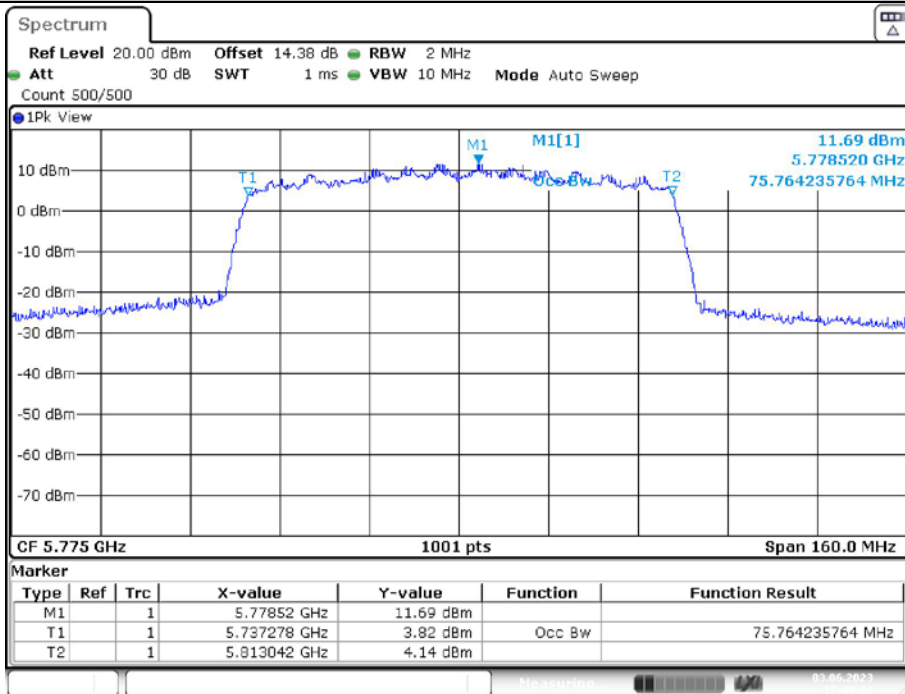
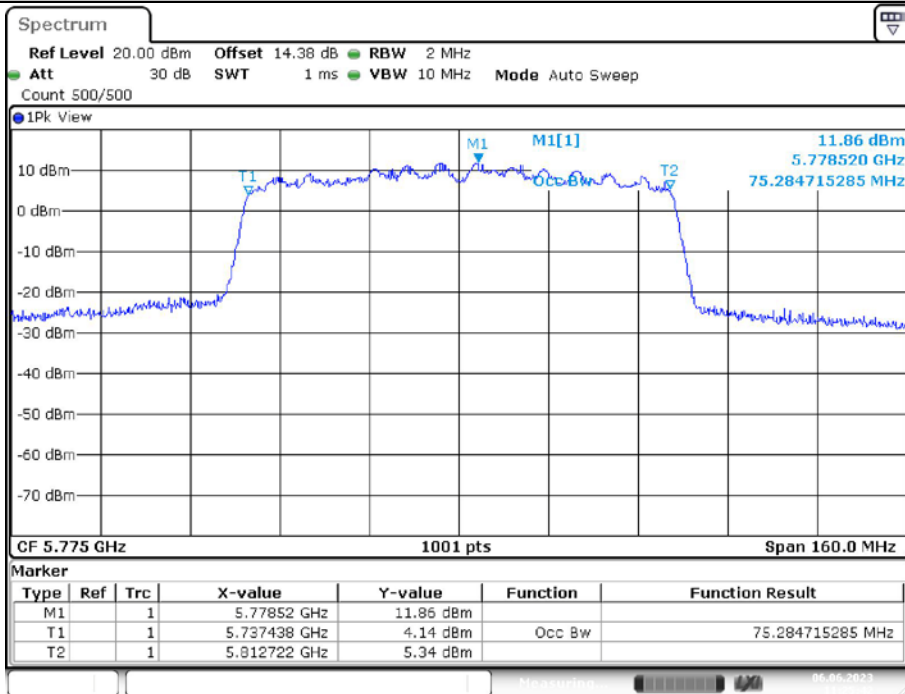


11AC80MIMO_Ant1_5775



Date: 3.JUN.2023 17:49:02

11AC80MIMO_Ant2_5775

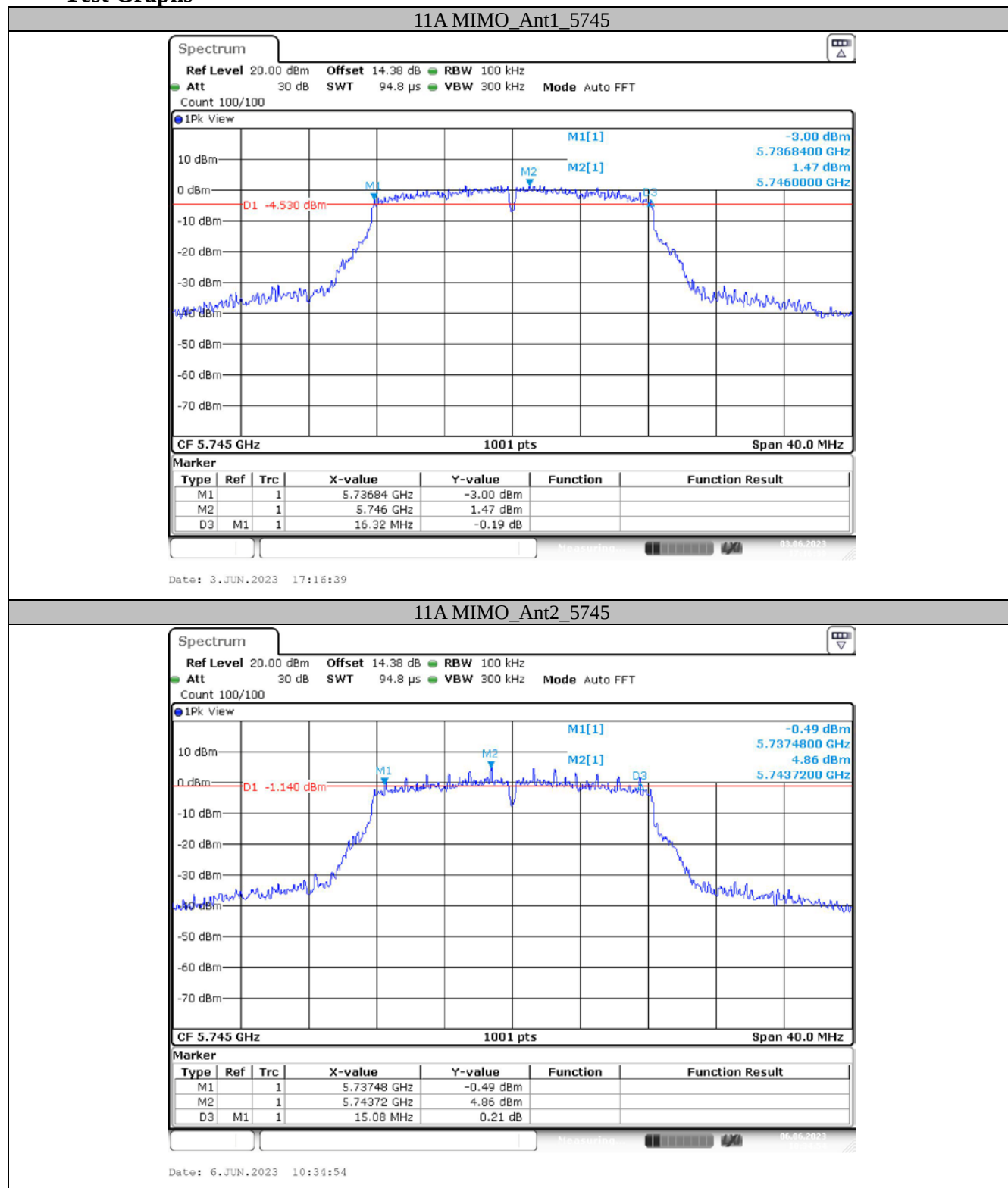


Date: 6.JUN.2023 11:25:42

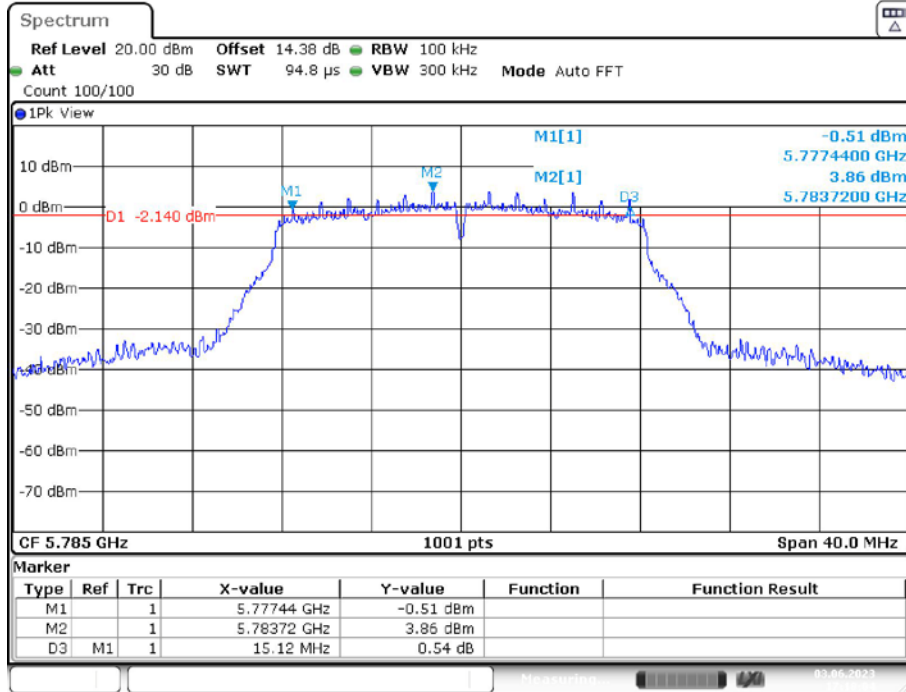
Appendix A3: Min Emission Bandwidth**5725-5850 MHz**

Test Mode	Channel	Antenna	6db EBW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A MIMO	5745	Ant1	16.32	5736.84	5753.16	0.5	PASS
		Ant2	15.08	5737.48	5752.56	0.5	PASS
	5785	Ant1	15.12	5777.44	5792.56	0.5	PASS
		Ant2	15.08	5777.44	5792.52	0.5	PASS
	5825	Ant1	15.44	5817.44	5832.88	0.5	PASS
		Ant2	15.12	5817.44	5832.56	0.5	PASS
11N20MIMO	5745	Ant1	15.12	5737.44	5752.56	0.5	PASS
		Ant2	16.16	5736.60	5752.76	0.5	PASS
	5785	Ant1	15.12	5777.40	5792.52	0.5	PASS
		Ant2	16.52	5776.60	5793.12	0.5	PASS
	5825	Ant1	16.08	5817.08	5833.16	0.5	PASS
		Ant2	15.08	5817.44	5832.52	0.5	PASS
11N40MIMO	5755	Ant1	35.04	5737.48	5772.52	0.5	PASS
		Ant2	35.04	5737.48	5772.52	0.5	PASS
	5795	Ant1	35.12	5777.48	5812.60	0.5	PASS
		Ant2	35.12	5777.48	5812.60	0.5	PASS
11AC20MIMO	5745	Ant1	15.32	5737.24	5752.56	0.5	PASS
		Ant2	15.12	5737.44	5752.56	0.5	PASS
	5785	Ant1	15.12	5777.44	5792.56	0.5	PASS
		Ant2	15.08	5777.44	5792.52	0.5	PASS
	5825	Ant1	15.12	5817.44	5832.56	0.5	PASS
		Ant2	15.08	5817.44	5832.52	0.5	PASS
11AC40MIMO	5755	Ant1	35.12	5737.48	5772.60	0.5	PASS
		Ant2	35.04	5737.48	5772.52	0.5	PASS
	5795	Ant1	35.12	5777.48	5812.60	0.5	PASS
		Ant2	35.12	5777.48	5812.60	0.5	PASS
11AC80MIMO	5775	Ant1	72.64	5737.40	5810.04	0.5	PASS
		Ant2	66.40	5746.20	5812.60	0.5	PASS

Test Graphs

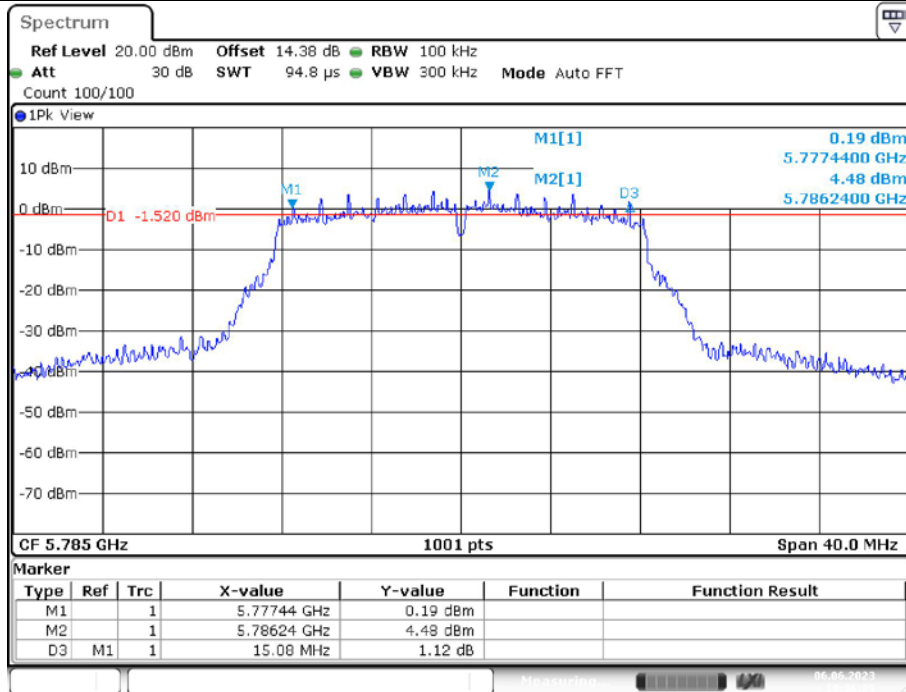


11A MIMO_Ant1_5785



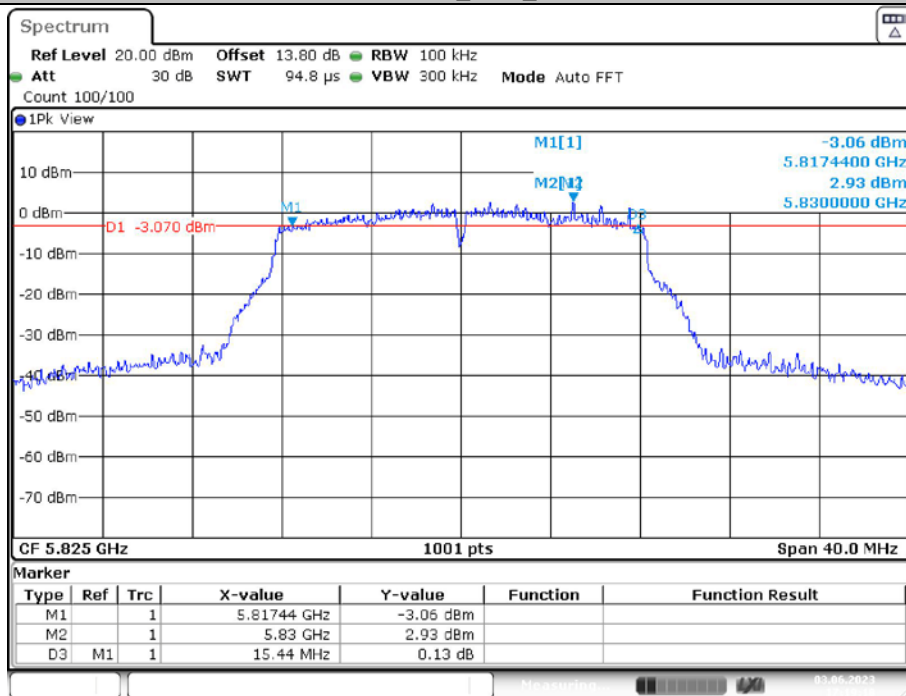
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11A MIMO_Ant2_5785

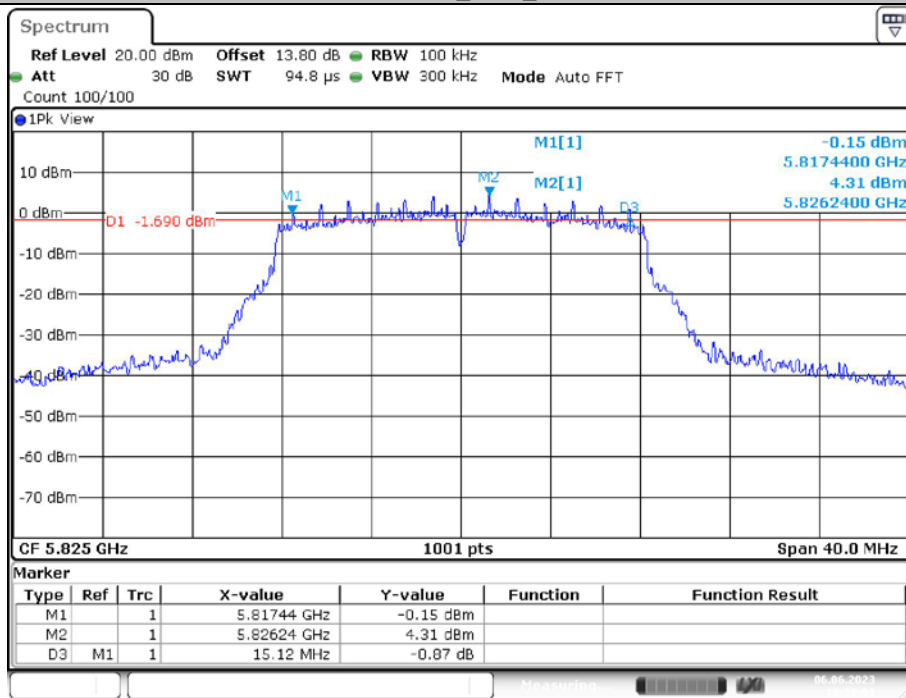


Date: 6.JUN.2023 10:36:25

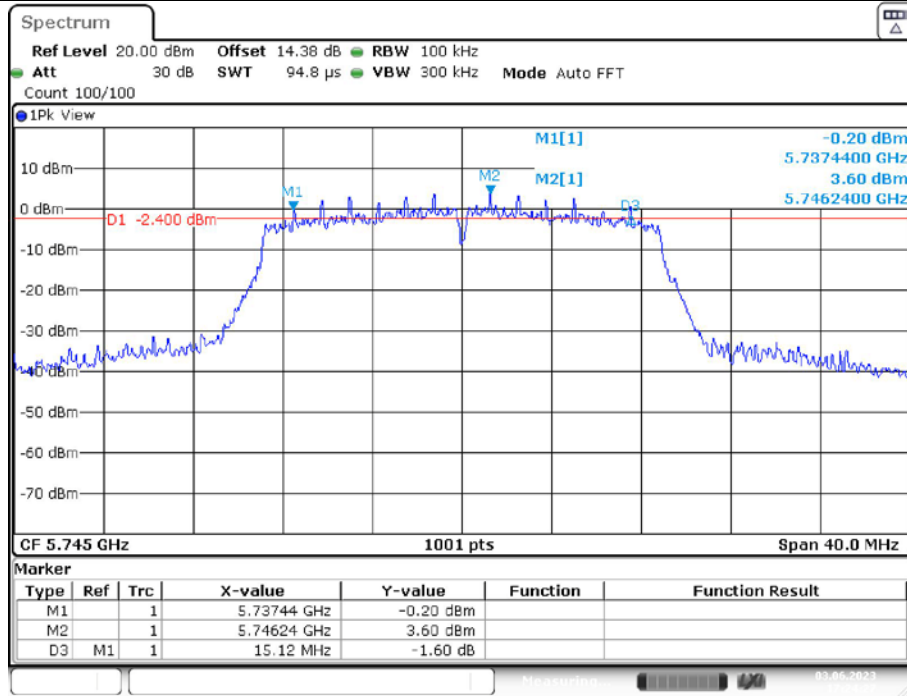
11A MIMO_Ant1_5825



11A MIMO_Ant2_5825

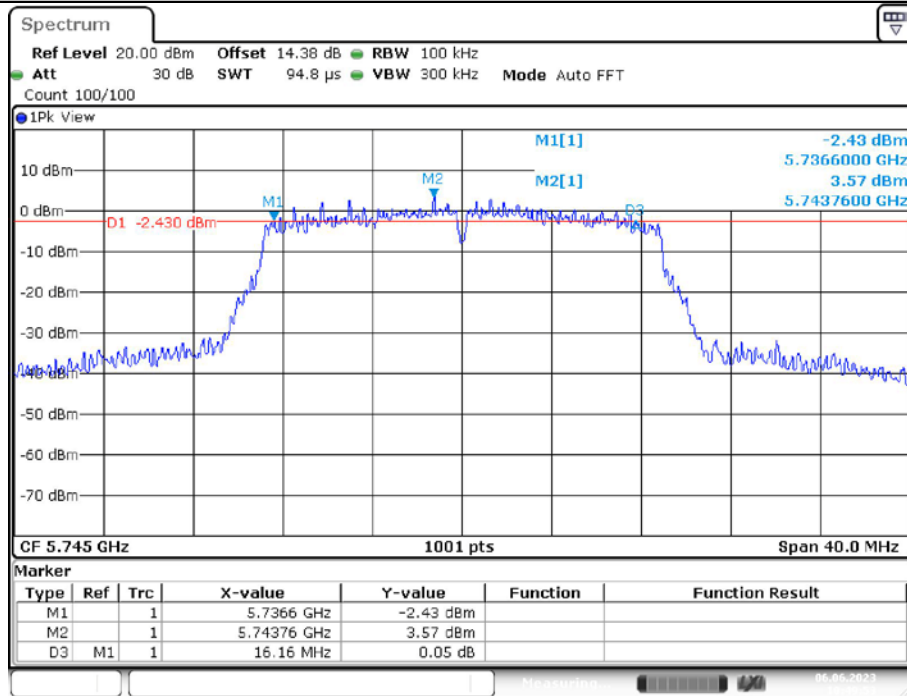


11N20MIMO_Ant1_5745



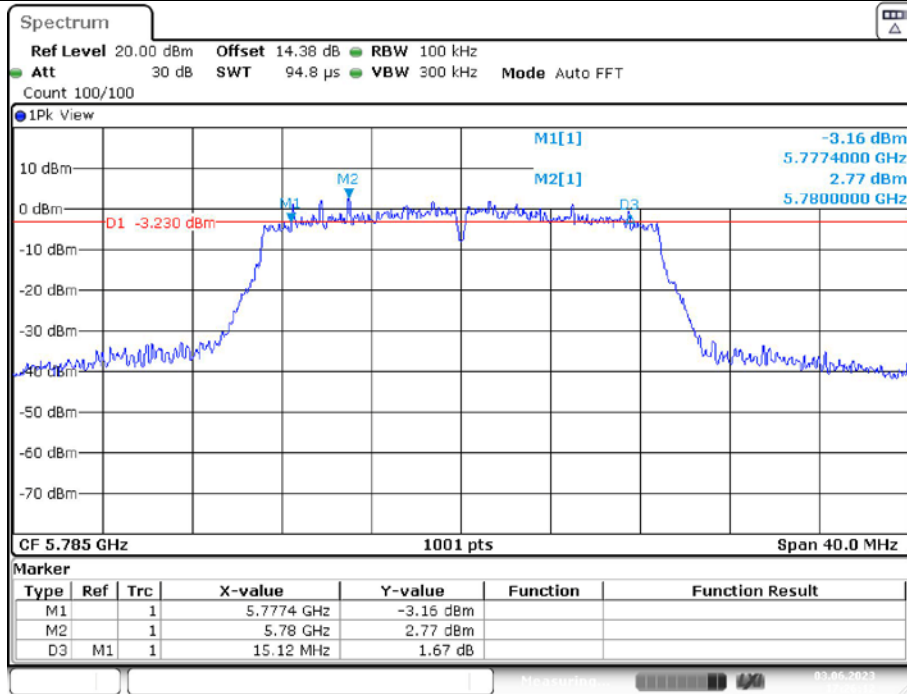
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11N20MIMO_Ant2_5745



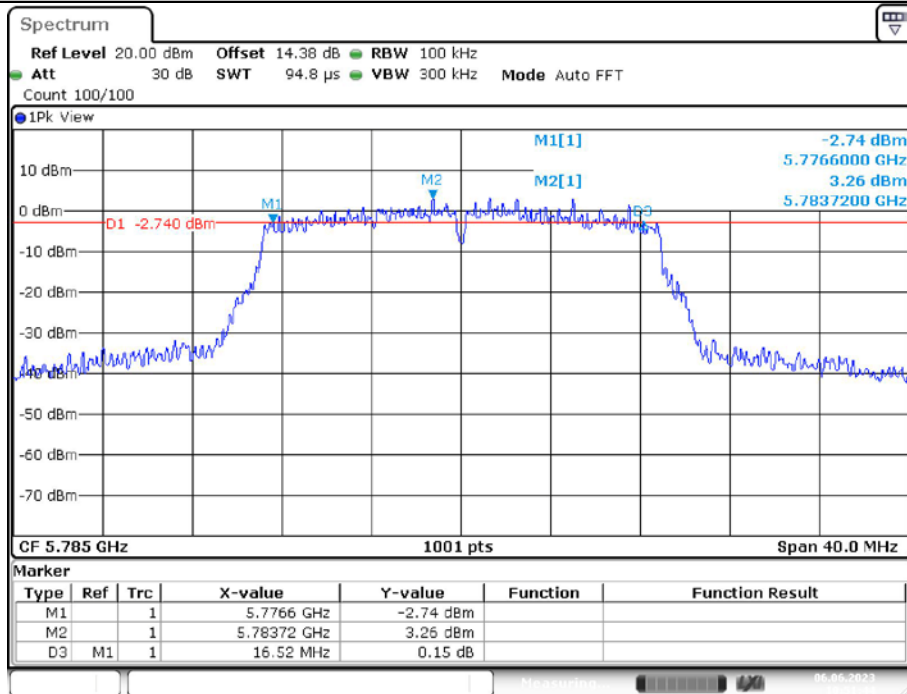
Date: 6.JUN.2023 10:49:53

11N20MIMO_Ant1_5785

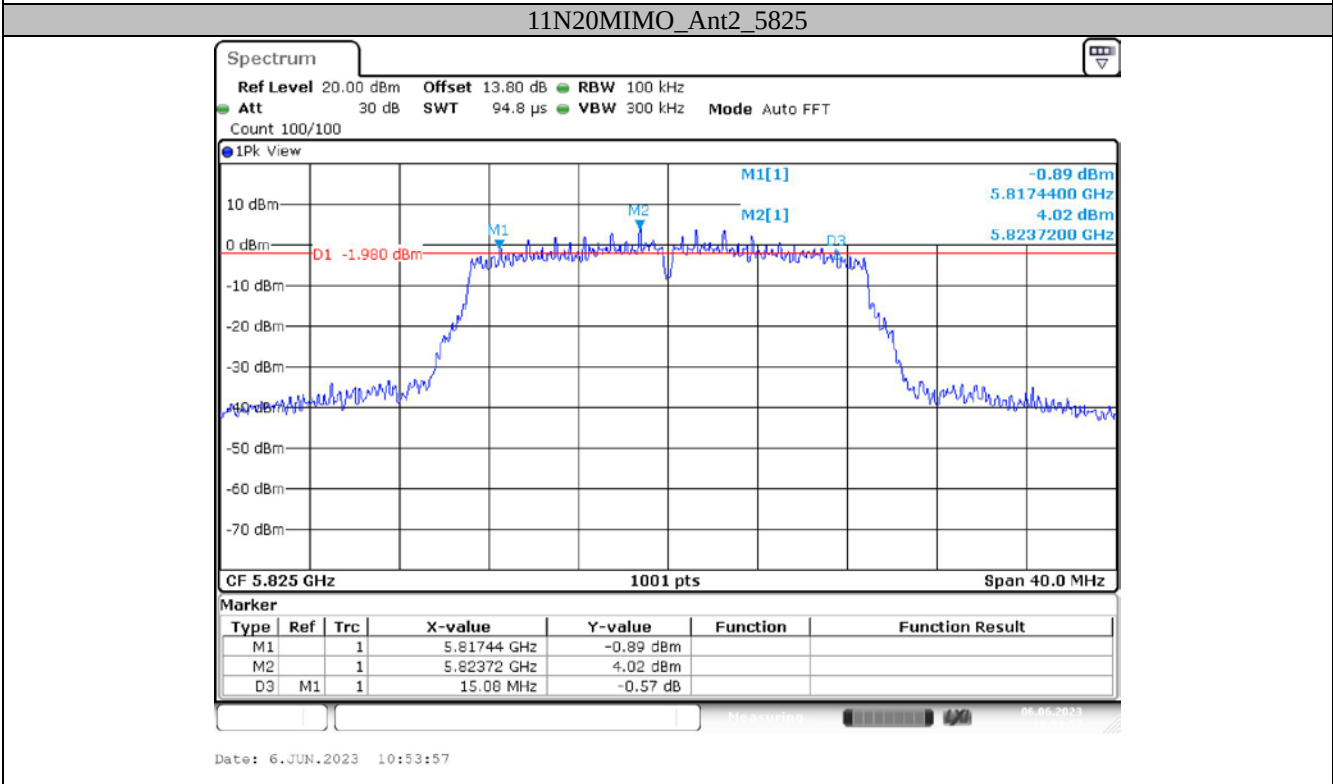
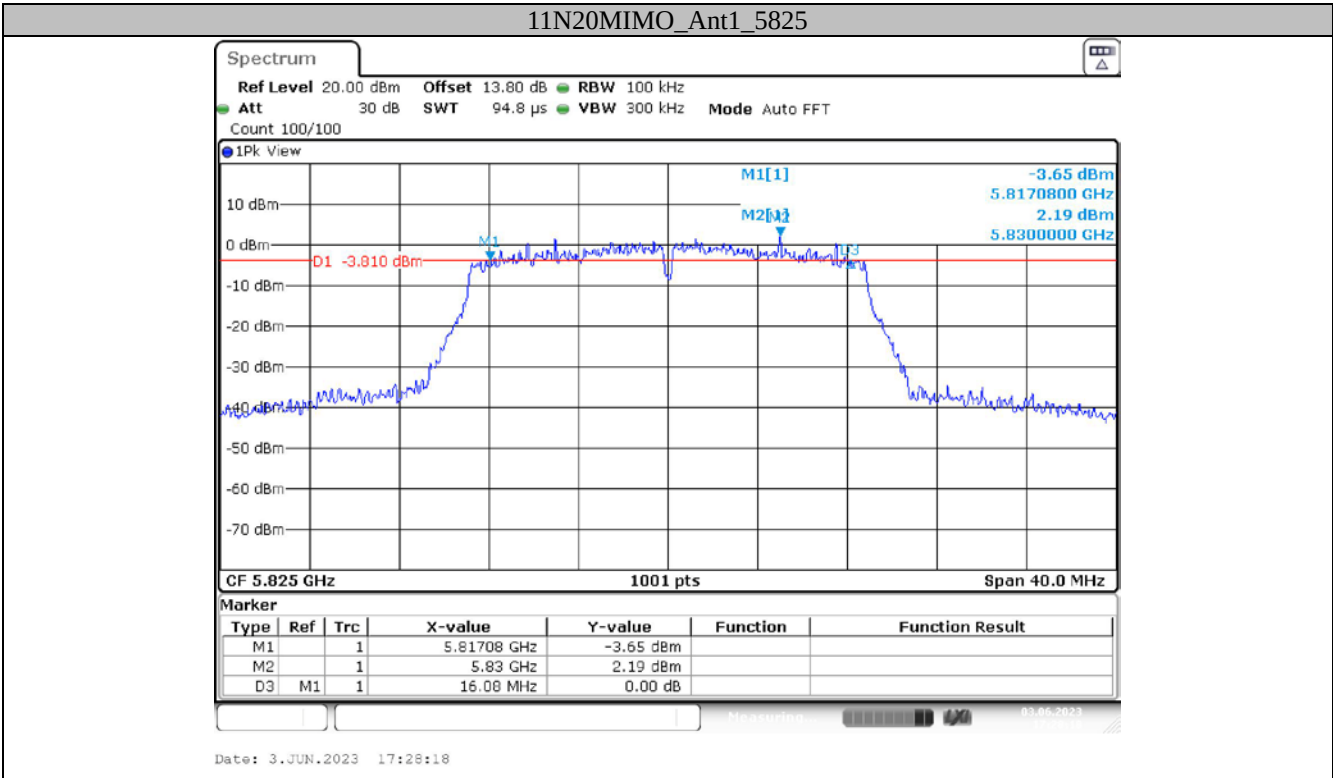


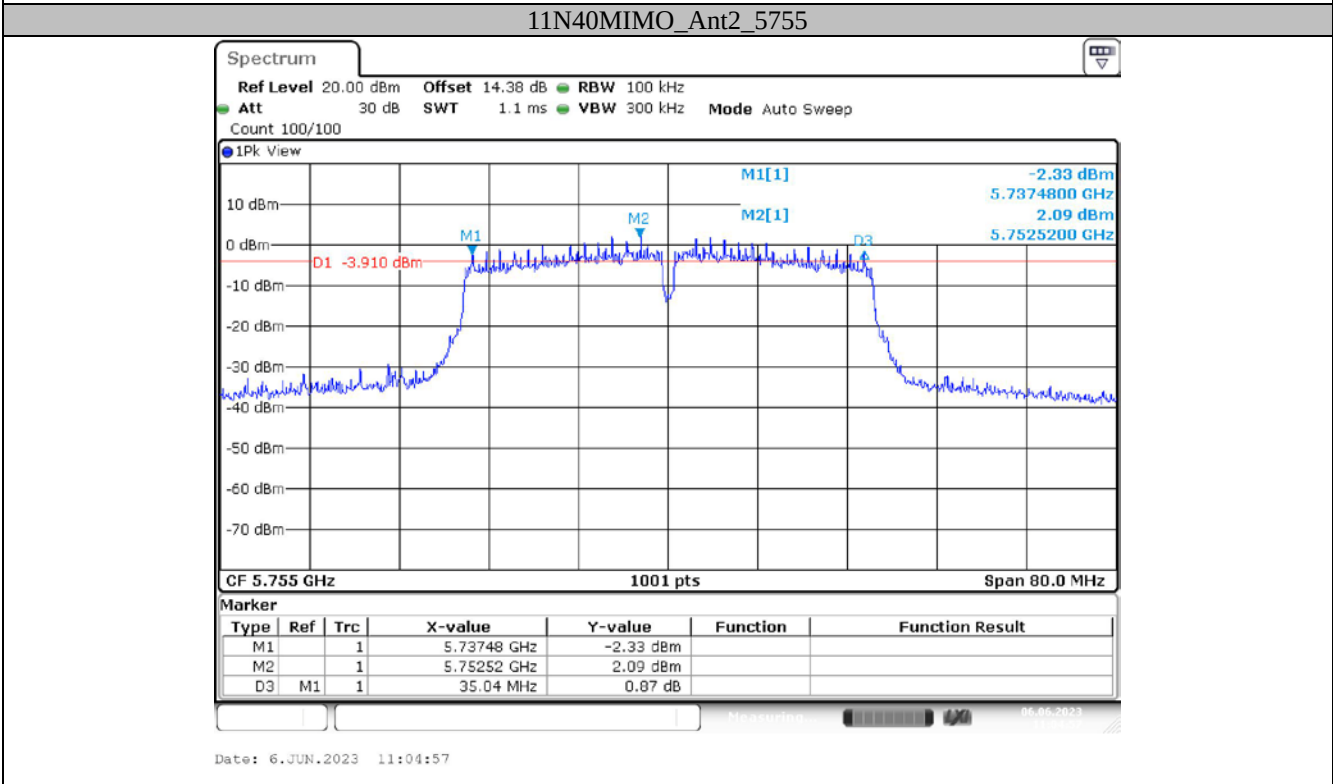
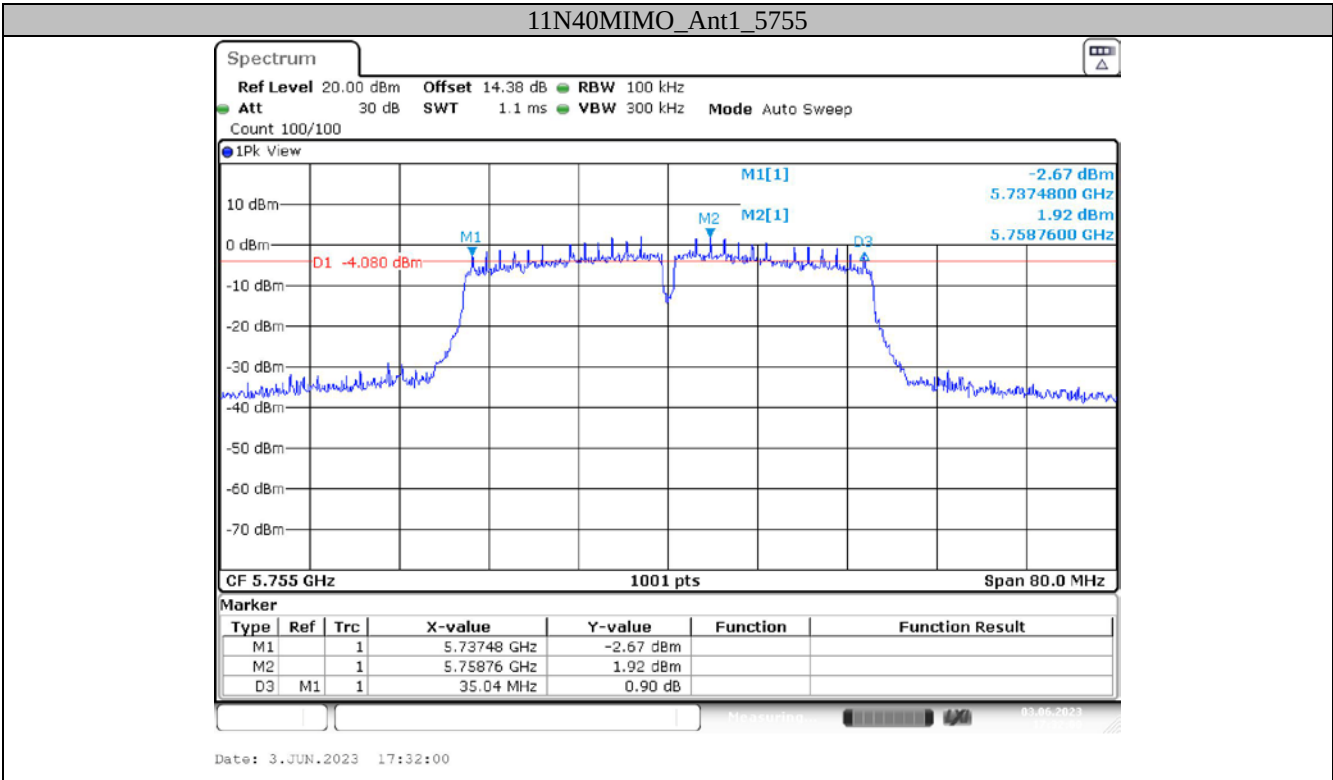
Date: 3.JUN.2023 17:26:12

11N20MIMO_Ant2_5785

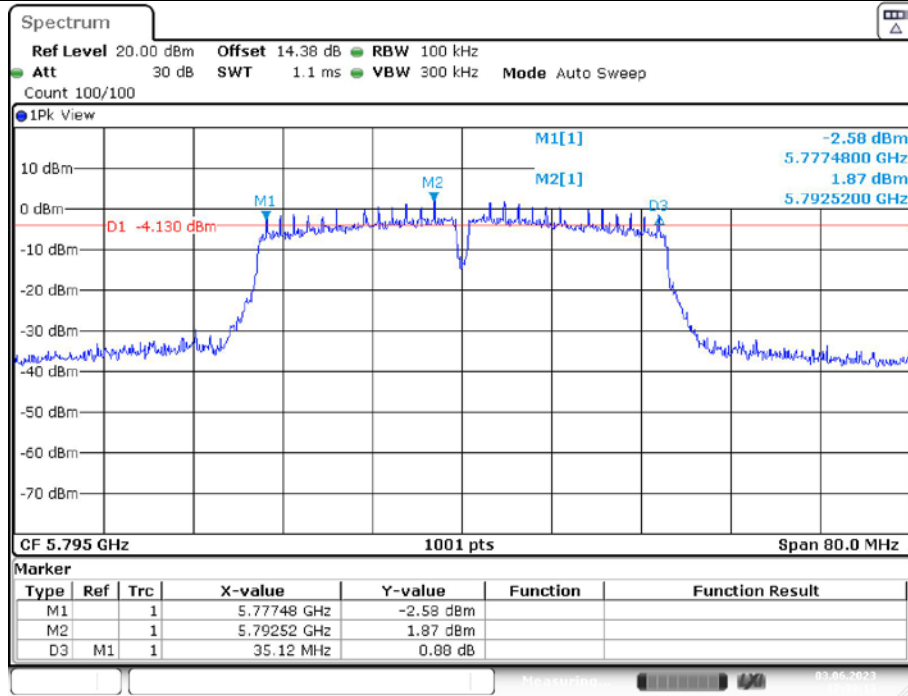


Date: 6.JUN.2023 10:51:44



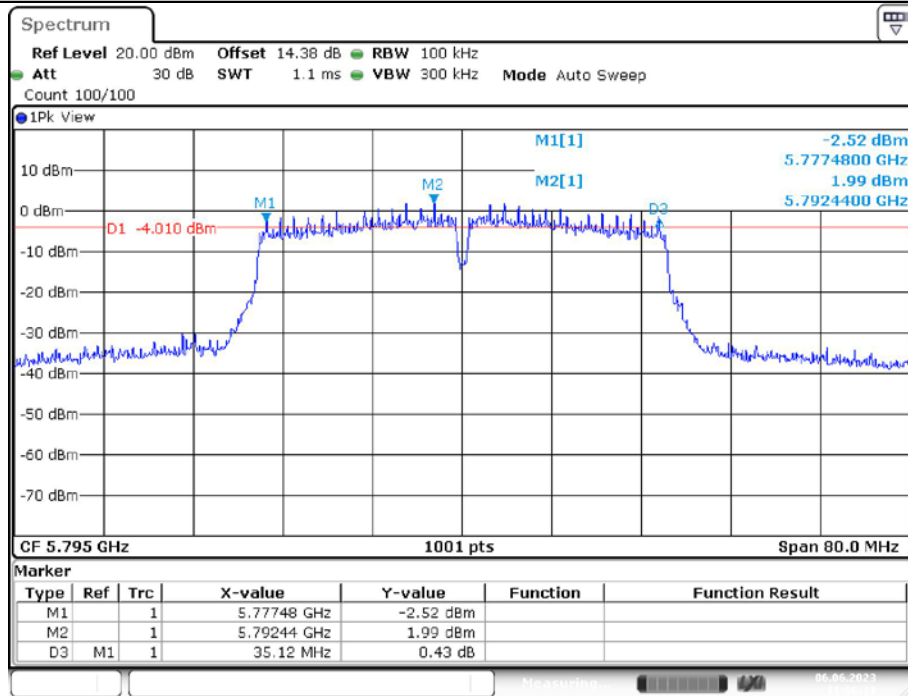


11N40MIMO_Ant1_5795



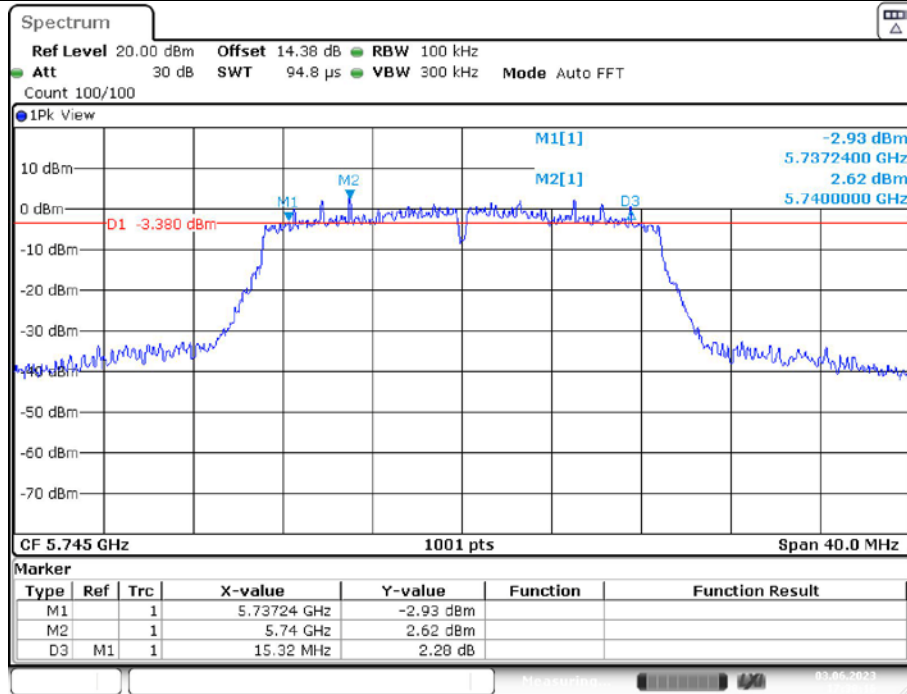
Date: 3.JUN.2023 17:33:12

11N40MIMO_Ant2_5795



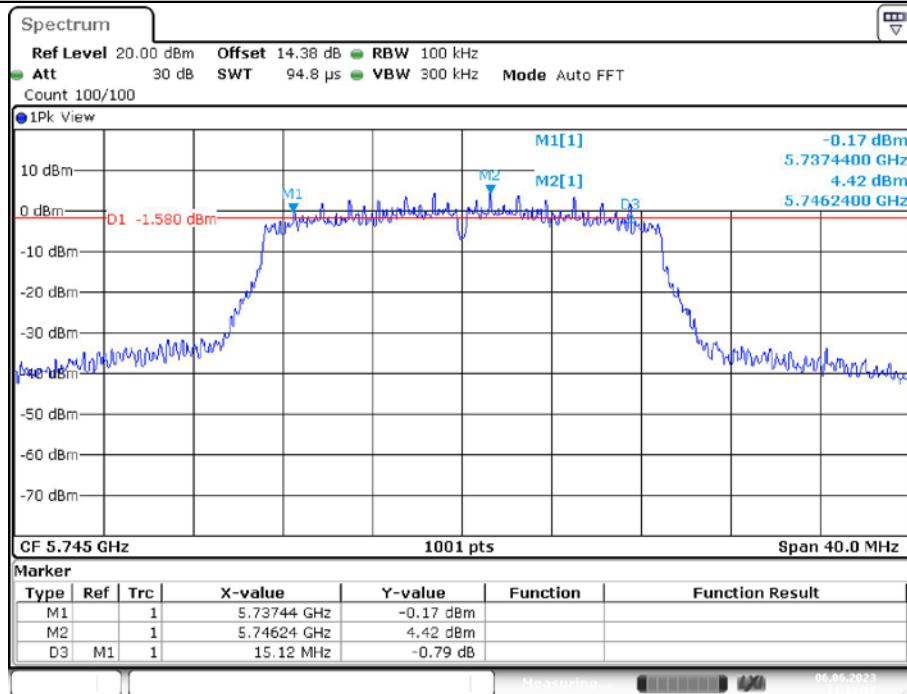
Date: 6.JUN.2023 11:06:11

11AC20MIMO_Ant1_5745

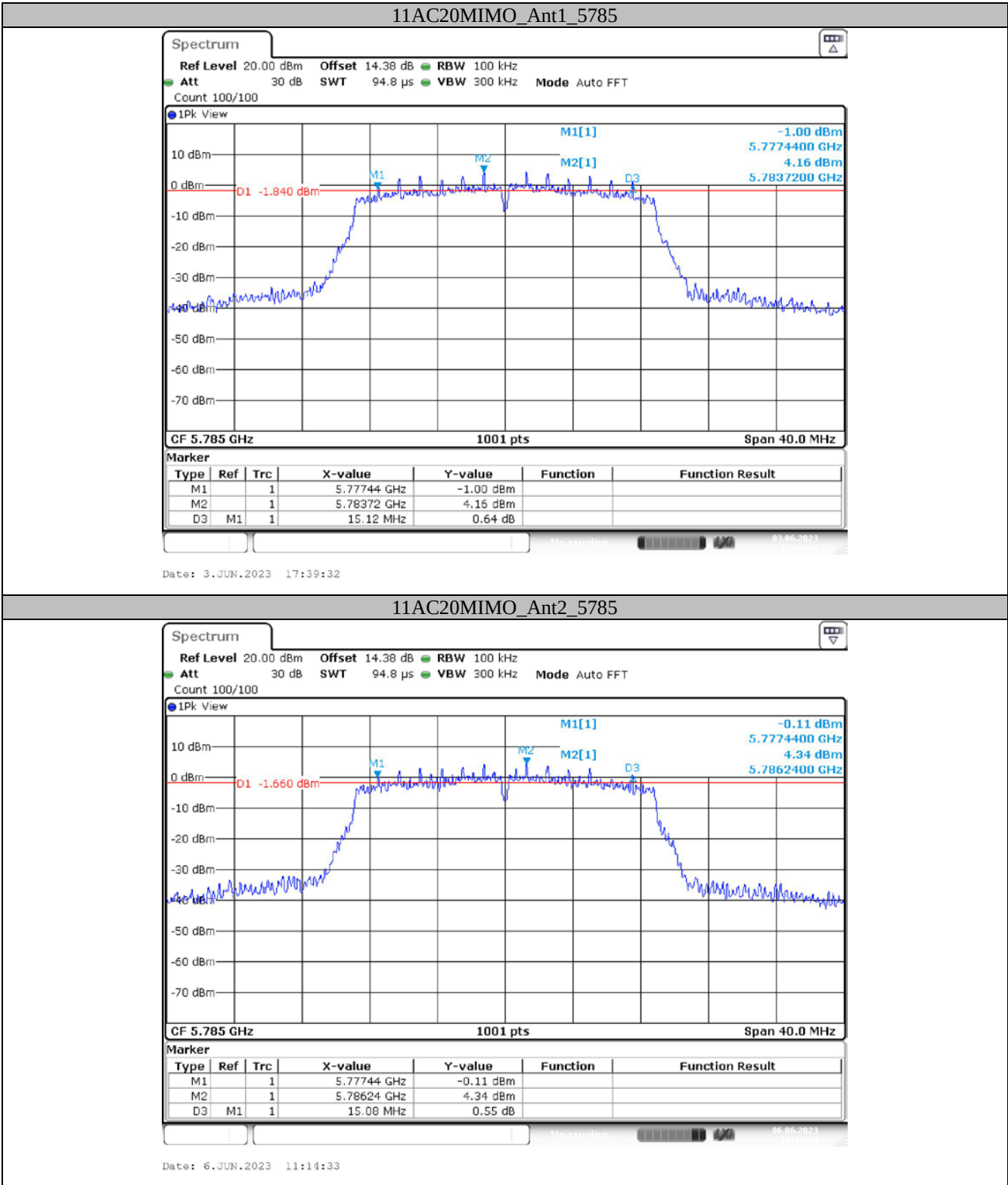


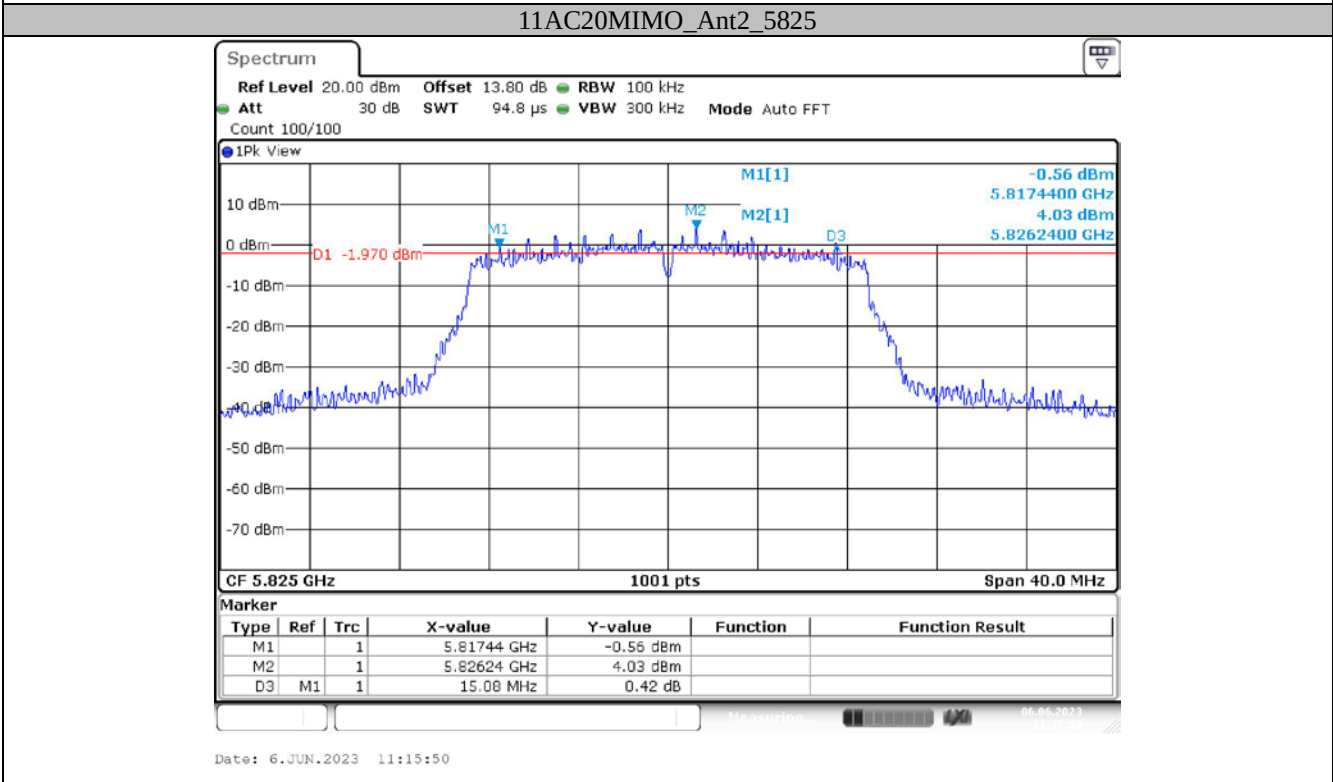
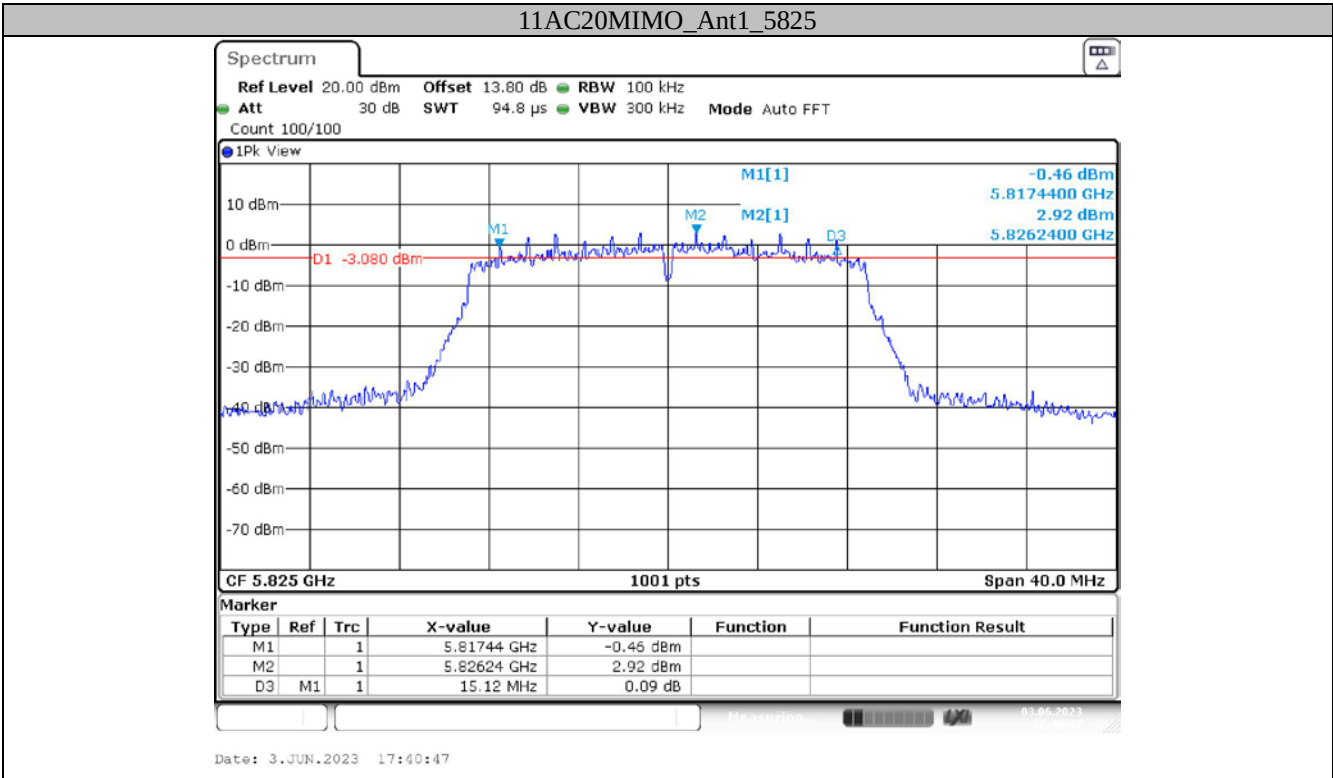
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11AC20MIMO_Ant2_5745

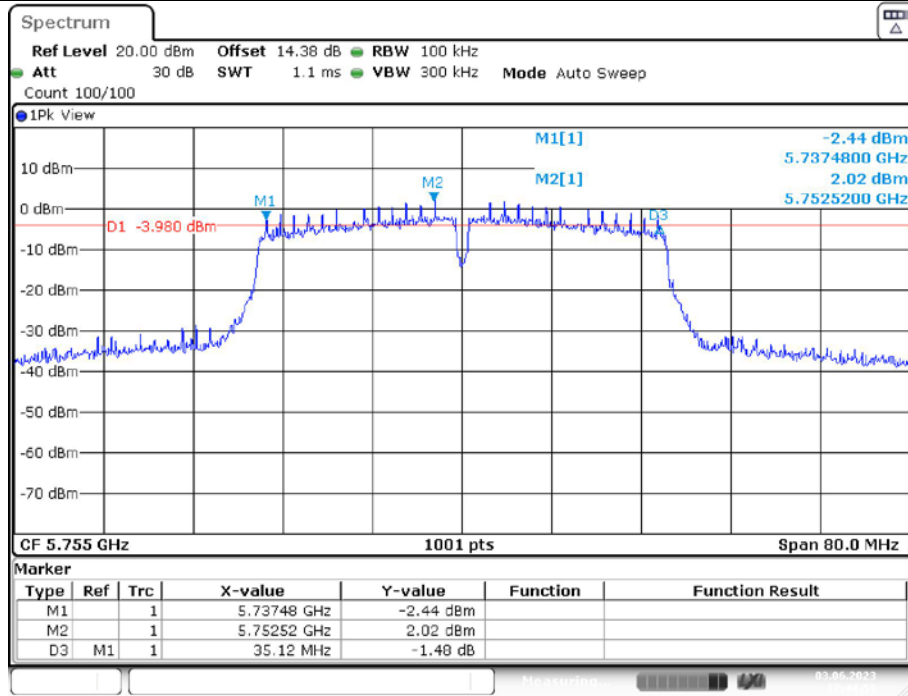


Date: 6.JUN.2023 11:13:07

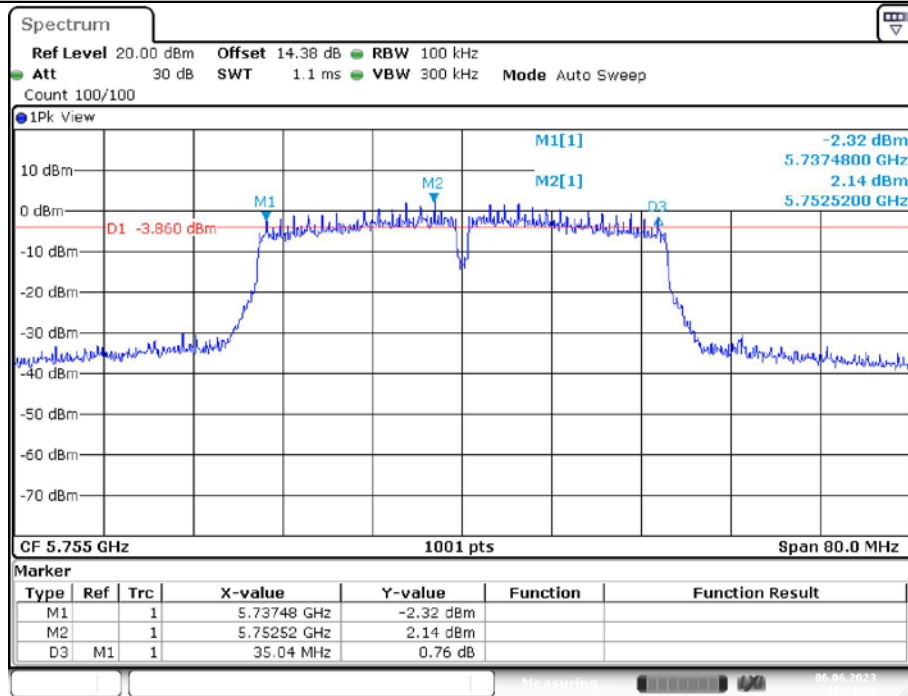




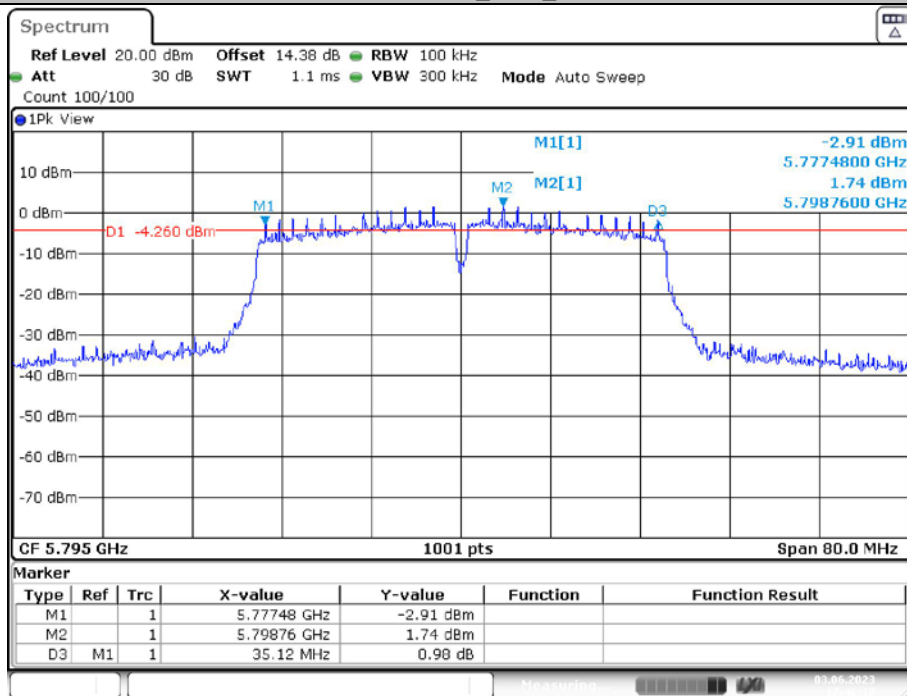
11AC40MIMO_Ant1_5755



11AC40MIMO_Ant2_5755

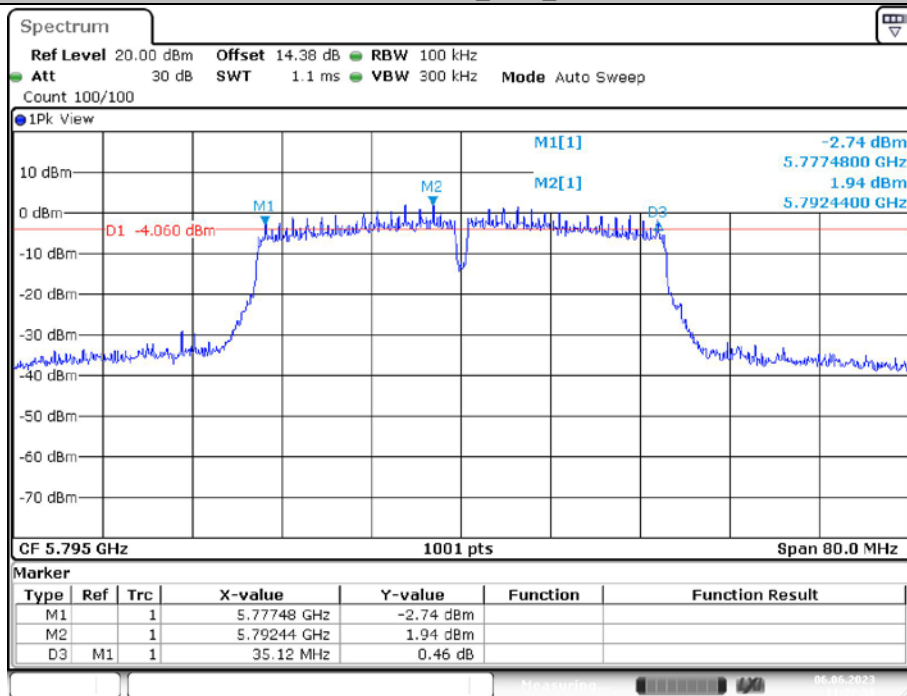


11AC40MIMO_Ant1_5795

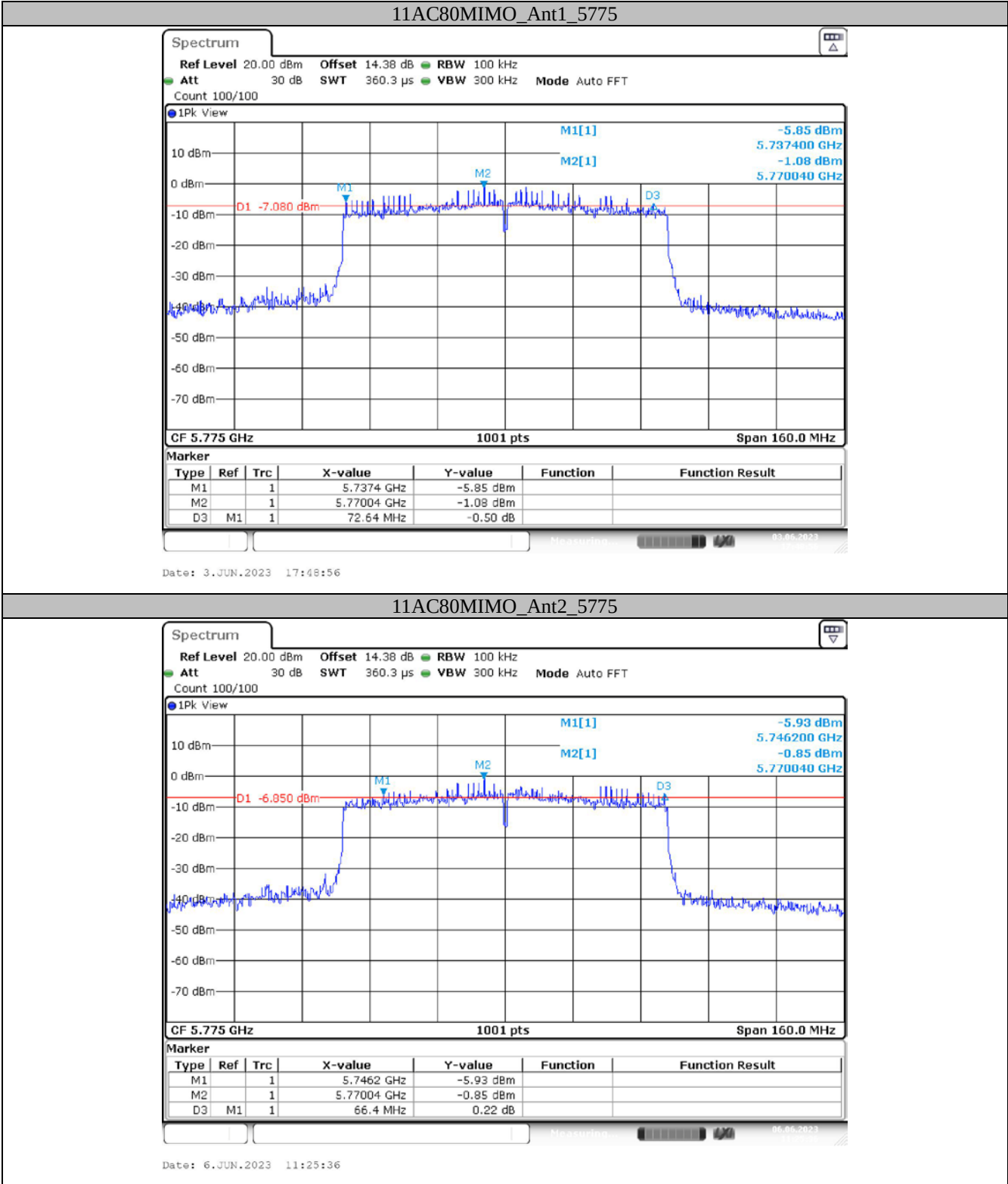


Date: 3.JUN.2023 17:46:17

11AC40MIMO_Ant2_5795



Date: 6.JUN.2023 11:22:50



Appendix B: Maximum Conducted Average Output Power**5150-5250 MHz**

Test Mode	Channel	Antenna	Result[dBm]	Limit[MHz]	Verdict
11A MIMO	5180	Ant1	13.93	<=23.98	PASS
		Ant2	12.82	<=23.98	PASS
		Total	16.42	<=23.98	PASS
	5200	Ant1	13.47	<=23.98	PASS
		Ant2	12.43	<=23.98	PASS
		Total	15.99	<=23.98	PASS
	5240	Ant1	13.76	<=23.98	PASS
		Ant2	12.49	<=23.98	PASS
		Total	16.18	<=23.98	PASS
11N20MIMO	5180	Ant1	13.20	<=23.98	PASS
		Ant2	12.28	<=23.98	PASS
		Total	15.77	<=23.98	PASS
	5200	Ant1	12.85	<=23.98	PASS
		Ant2	12.10	<=23.98	PASS
		Total	15.50	<=23.98	PASS
	5240	Ant1	13.09	<=23.98	PASS
		Ant2	12.07	<=23.98	PASS
		Total	15.62	<=23.98	PASS
11N40MIMO	5190	Ant1	13.26	<=23.98	PASS
		Ant2	12.21	<=23.98	PASS
		Total	15.78	<=23.98	PASS
	5230	Ant1	13.38	<=23.98	PASS
		Ant2	12.32	<=23.98	PASS
		Total	15.89	<=23.98	PASS

Test Mode	Channel	Antenna	Result[dBm]	Limit[MHz]	Verdict
11AC20MIMO	5180	Ant1	13.24	≤ 23.98	PASS
		Ant2	12.34	≤ 23.98	PASS
		Total	15.82	≤ 23.98	PASS
	5200	Ant1	12.78	≤ 23.98	PASS
		Ant2	12.08	≤ 23.98	PASS
		Total	15.45	≤ 23.98	PASS
	5240	Ant1	13.18	≤ 23.98	PASS
		Ant2	12.07	≤ 23.98	PASS
		Total	15.67	≤ 23.98	PASS
11AC40MIMO	5190	Ant1	13.21	≤ 23.98	PASS
		Ant2	12.18	≤ 23.98	PASS
		Total	15.78	≤ 23.98	PASS
	5230	Ant1	13.37	≤ 23.98	PASS
		Ant2	12.39	≤ 23.98	PASS
		Total	15.92	≤ 23.98	PASS
11AC80MIMO	5210	Ant1	13.27	≤ 23.98	PASS
		Ant2	12.4	≤ 23.98	PASS
		Total	15.87	≤ 23.98	PASS

Note 1: The device is client.

Note 2: The maximum antenna gain is 1.64 dBi.

The device employed Cyclic Delay Diversity (CDD) for 802.11 MIMO transmitting, per KDB 662911 D01 Multiple Transmitter Output v02r01, for power measurements on IEEE 802.11 devices:

Array Gain = 0dB (i.e., no array gain) For $N_{ANT} \leq 4$;

So: Directional gain=1.64dBi <6dBi

5725-5850 MHz

Test Mode	Channel	Antenna	Result[dBm]	Limit[MHz]	Verdict
11A MIMO	5745	Ant1	15.11	<=30	PASS
		Ant2	15.11	<=30	PASS
		Total	18.12	<=30	PASS
	5785	Ant1	15.11	<=30	PASS
		Ant2	15.12	<=30	PASS
		Total	18.13	<=30	PASS
	5825	Ant1	14.99	<=30	PASS
		Ant2	14.71	<=30	PASS
		Total	17.86	<=30	PASS
11N20MIMO	5745	Ant1	14.40	<=30	PASS
		Ant2	14.83	<=30	PASS
		Total	17.63	<=30	PASS
	5785	Ant1	14.46	<=30	PASS
		Ant2	14.67	<=30	PASS
		Total	17.58	<=30	PASS
	5825	Ant1	14.34	<=30	PASS
		Ant2	14.35	<=30	PASS
		Total	17.36	<=30	PASS
11N40MIMO	5755	Ant1	14.76	<=30	PASS
		Ant2	14.74	<=30	PASS
		Total	17.75	<=30	PASS
	5795	Ant1	14.71	<=30	PASS
		Ant2	14.70	<=30	PASS
		Total	17.72	<=30	PASS

Test Mode	Channel	Antenna	Result[dBm]	Limit[MHz]	Verdict
11AC20MIMO	5745	Ant1	14.41	<=30	PASS
		Ant2	14.77	<=30	PASS
		Total	17.60	<=30	PASS
	5785	Ant1	14.40	<=30	PASS
		Ant2	14.72	<=30	PASS
		Total	17.57	<=30	PASS
	5825	Ant1	14.38	<=30	PASS
		Ant2	14.35	<=30	PASS
		Total	17.38	<=30	PASS
11AC40MIMO	5755	Ant1	14.64	<=30	PASS
		Ant2	14.86	<=30	PASS
		Total	17.76	<=30	PASS
	5795	Ant1	14.77	<=30	PASS
		Ant2	14.80	<=30	PASS
		Total	17.80	<=30	PASS
11AC80MIMO	5775	Ant1	14.54	<=30	PASS
		Ant2	14.64	<=30	PASS
		Total	17.60	<=30	PASS

Note: The maximum antenna gain is 3.56 dBi.

The device employed Cyclic Delay Diversity (CDD) for 802.11 MIMO transmitting, per KDB 662911 D01 Multiple Transmitter Output v02r01, for power measurements on IEEE 802.11 devices:

Array Gain = 0dB (i.e., no array gain) For $N_{ANT} \leq 4$;

So: Directional gain=3.56 dBi <6dBi

Appendix C: Maximum Power Spectral Density**5150-5250 MHz:**

Test Mode	Channel	Antenna	Result[dBm/MHz]	Limit[dBm/MHz]	Verdict
11A MIMO	5180	Ant1	3.68	≤11.00	PASS
		Ant2	2.53	≤11.00	PASS
		Total	6.15	≤11.00	PASS
	5200	Ant1	3.13	≤11.00	PASS
		Ant2	2.2	≤11.00	PASS
		Total	5.7	≤11.00	PASS
	5240	Ant1	3.51	≤11.00	PASS
		Ant2	2.24	≤11.00	PASS
		Total	5.93	≤11.00	PASS
11N20MIMO	5180	Ant1	2.69	≤11.00	PASS
		Ant2	1.59	≤11.00	PASS
		Total	5.19	≤11.00	PASS
	5200	Ant1	2.32	≤11.00	PASS
		Ant2	1.61	≤11.00	PASS
		Total	4.99	≤11.00	PASS
	5240	Ant1	2.63	≤11.00	PASS
		Ant2	1.72	≤11.00	PASS
		Total	5.21	≤11.00	PASS
11N40MIMO	5190	Ant1	-0.14	≤11.00	PASS
		Ant2	-1.15	≤11.00	PASS
		Total	2.93	≤11.00	PASS
	5230	Ant1	-0.09	≤11.00	PASS
		Ant2	-0.98	≤11.00	PASS
		Total	2.5	≤11.00	PASS
11AC20MIMO	5180	Ant1	2.9	≤11.00	PASS
		Ant2	1.92	≤11.00	PASS
		Total	5.45	≤11.00	PASS
	5200	Ant1	2.26	≤11.00	PASS
		Ant2	1.76	≤11.00	PASS
		Total	5.03	≤11.00	PASS
	5240	Ant1	2.68	≤11.00	PASS
		Ant2	1.65	≤11.00	PASS
		Total	5.21	≤11.00	PASS

Test Mode	Channel	Antenna	Result[dBm/MHz]	Limit[dBm/MHz]	Verdict
11AC40MIMO	5190	Ant1	-0.18	≤ 11.00	PASS
		Ant2	-1.32	≤ 11.00	PASS
		Total	2.3	≤ 11.00	PASS
	5230	Ant1	0.04	≤ 11.00	PASS
		Ant2	-1.08	≤ 11.00	PASS
		Total	2.48	≤ 11.00	PASS
11AC80MIMO	5210	Ant1	-3.37	≤ 11.00	PASS
		Ant2	-3.89	≤ 11.00	PASS
		Total	-0.61	≤ 11.00	PASS

Note: The maximum antenna gain is 1.64dBi.

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

The device employed Cyclic Delay Diversity (CDD) for 802.11 MIMO transmitting, per KDB 662911 D01 Multiple Transmitter Output v02r01, for power spectral density (PSD) measurements on the devices

Array Gain = $10 \log(N_{\text{ANT}}/N_{\text{ss}})$ dB

So:

Directional gain= $G_{\text{ANT}} + \text{Array Gain} = 1.64 + 10 * \log(2/1) = 4.65 \text{dBi} < 6 \text{ dBi}$

5725-5850 MHz:

Test Mode	Channel	Antenna	Result[dBm/500kHz]	Limit[dBm/500kHz]	Verdict
11A MIMO	5745	Ant1	2.2	≤29.43	PASS
		Ant2	2.1	≤29.43	PASS
		Total	5.16	≤29.43	PASS
	5785	Ant1	2.08	≤29.43	PASS
		Ant2	2.16	≤29.43	PASS
		Total	5.13	≤29.43	PASS
	5825	Ant1	1.87	≤29.43	PASS
		Ant2	1.64	≤29.43	PASS
		Total	4.77	≤29.43	PASS
11N20MIMO	5745	Ant1	1.08	≤29.43	PASS
		Ant2	1.59	≤29.43	PASS
		Total	4.35	≤29.43	PASS
	5785	Ant1	1.57	≤29.43	PASS
		Ant2	1.68	≤29.43	PASS
		Total	4.64	≤29.43	PASS
	5825	Ant1	1.09	≤29.43	PASS
		Ant2	1.21	≤29.43	PASS
		Total	4.16	≤29.43	PASS
11N40MIMO	5755	Ant1	-1.72	≤29.43	PASS
		Ant2	-1.62	≤29.43	PASS
		Total	1.34	≤29.43	PASS
	5795	Ant1	-1.79	≤29.43	PASS
		Ant2	-1.92	≤29.43	PASS
		Total	1.16	≤29.43	PASS
11AC20MIMO	5745	Ant1	1.14	≤29.43	PASS
		Ant2	1.68	≤29.43	PASS
		Total	4.43	≤29.43	PASS
	5785	Ant1	1.07	≤29.43	PASS
		Ant2	1.49	≤29.43	PASS
		Total	4.3	≤29.43	PASS
	5825	Ant1	1.11	≤29.43	PASS
		Ant2	1.43	≤29.43	PASS
		Total	4.28	≤29.43	PASS

Test Mode	Channel	Antenna	Result[dBm/500kHz]	Limit[dBm/500kHz]	Verdict
11AC40MIMO	5755	Ant1	-1.81	≤ 29.43	PASS
		Ant2	-1.31	≤ 29.43	PASS
		Total	1.46	≤ 29.43	PASS
	5795	Ant1	-1.68	≤ 29.43	PASS
		Ant2	-1.72	≤ 29.43	PASS
		Total	1.31	≤ 29.43	PASS
11AC80MIMO	5775	Ant1	-4.52	≤ 29.43	PASS
		Ant2	-4.68	≤ 29.43	PASS
		Total	-1.59	≤ 29.43	PASS

Note: The maximum antenna gain is 3.56 dBi.

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

The device employed Cyclic Delay Diversity (CDD) for 802.11 MIMO transmitting, per KDB 662911 D01 Multiple Transmitter Output v02r01, for power spectral density (PSD) measurements on the devices

$$\text{Array Gain} = 10 \log(N_{\text{ANT}}/N_{\text{ss}})\text{dB}$$

So:

Directional gain= $G_{\text{ANT}} + \text{Array Gain} = 3.56 + 10 * \log(2/1) = 6.57\text{dBi} < 6\text{ dBi}$
the limit should be reduce $(6.57-6)\text{dB} = 0.57\text{dB}$

Test Graphs

