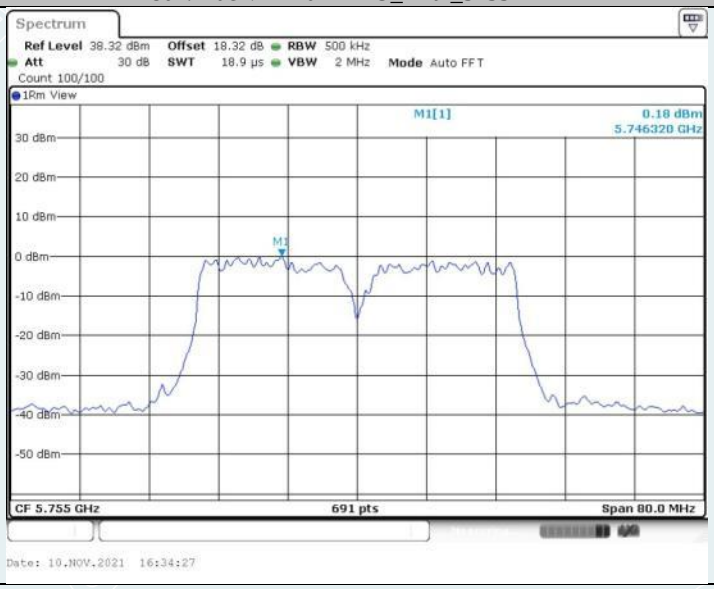
802.11ac VHT40 MIMO_Ant2_5670MHz

802.11ac VHT40 MIMO_Ant1_5755MHz



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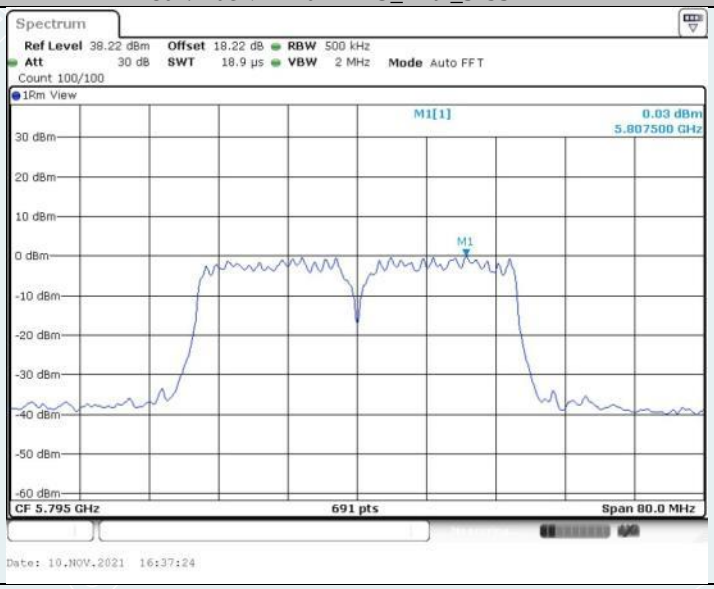
802.11ac VHT40 MIMO_Ant1_5795MHz



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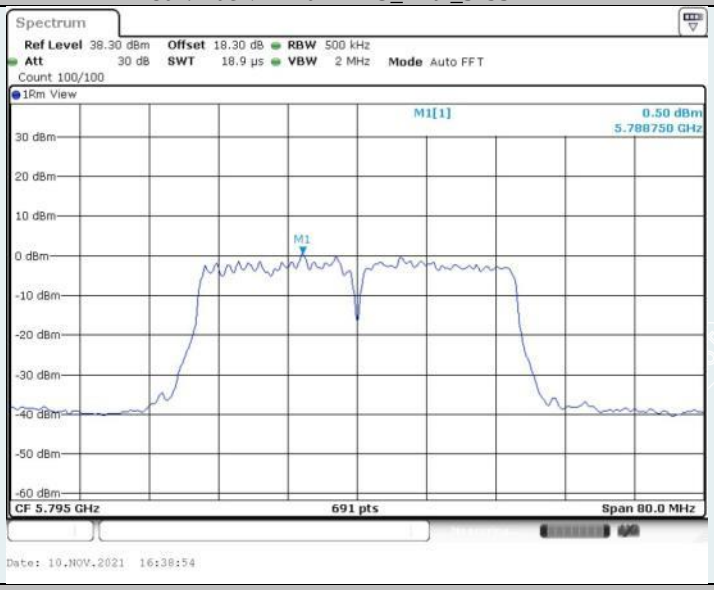

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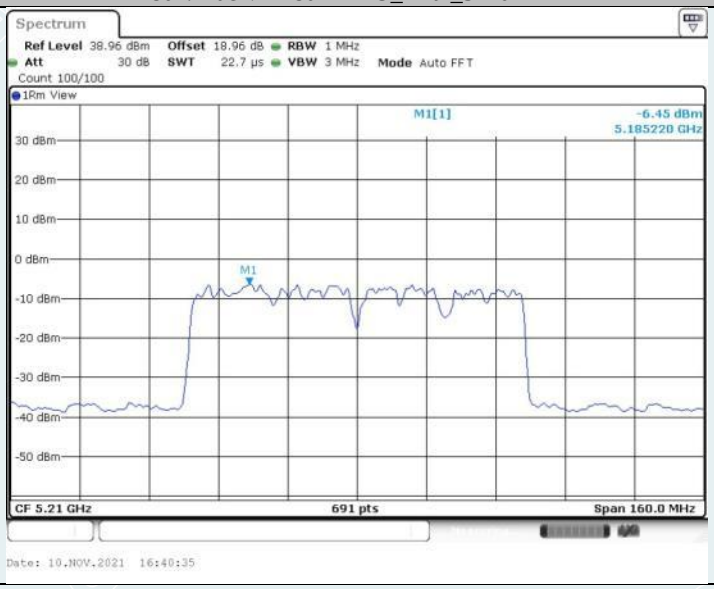

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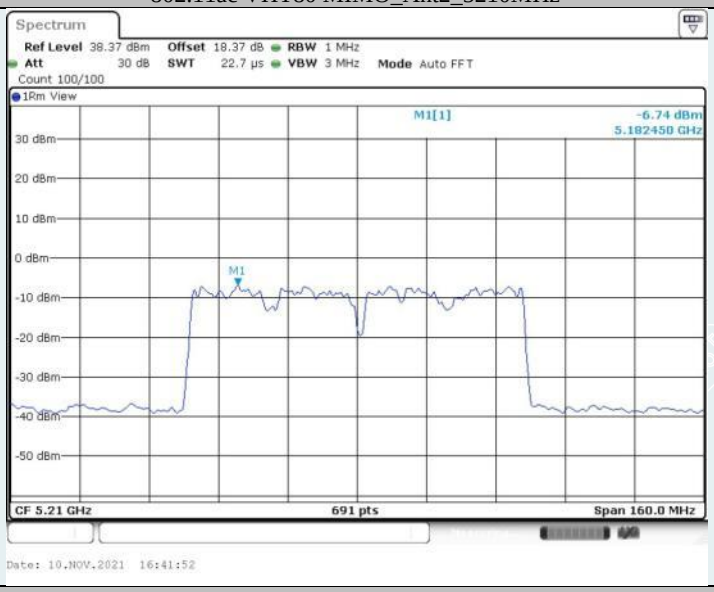

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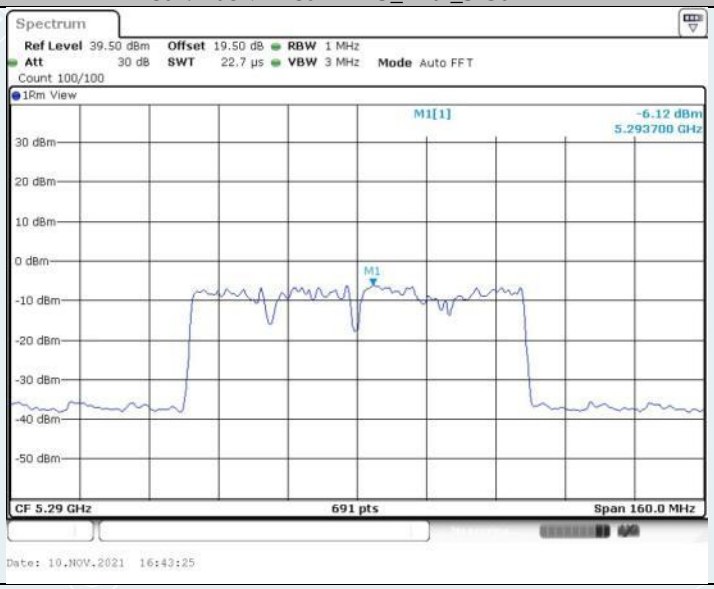

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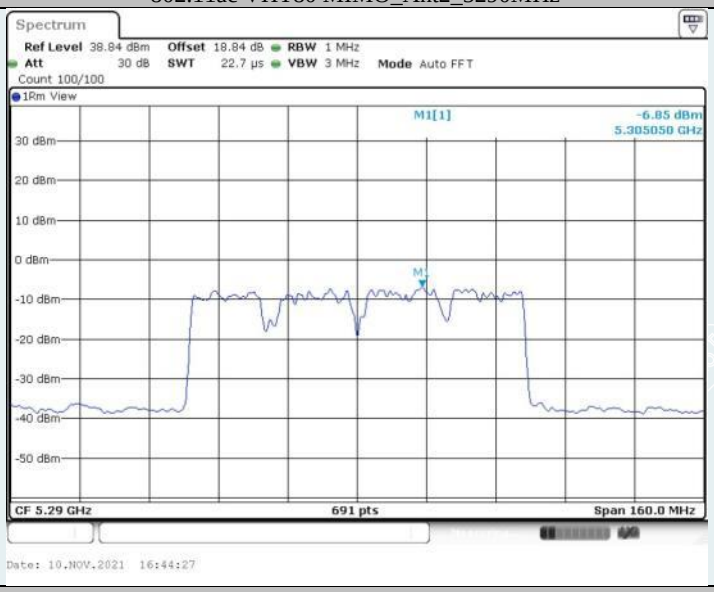

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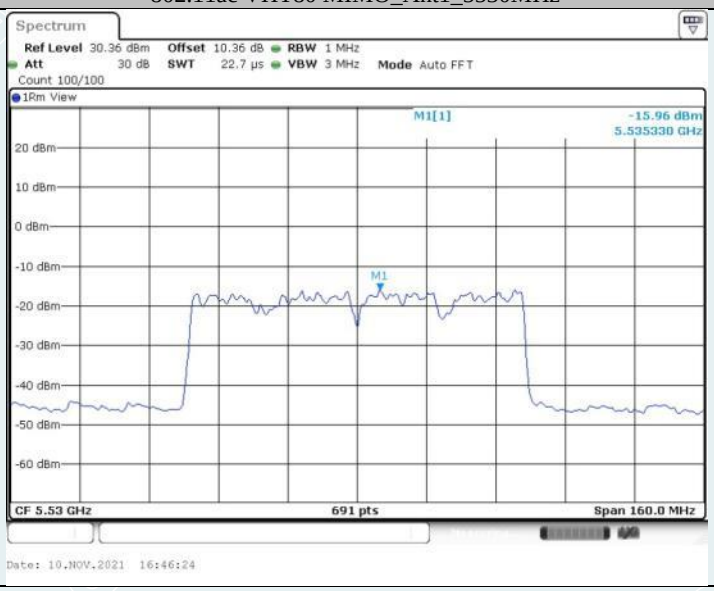

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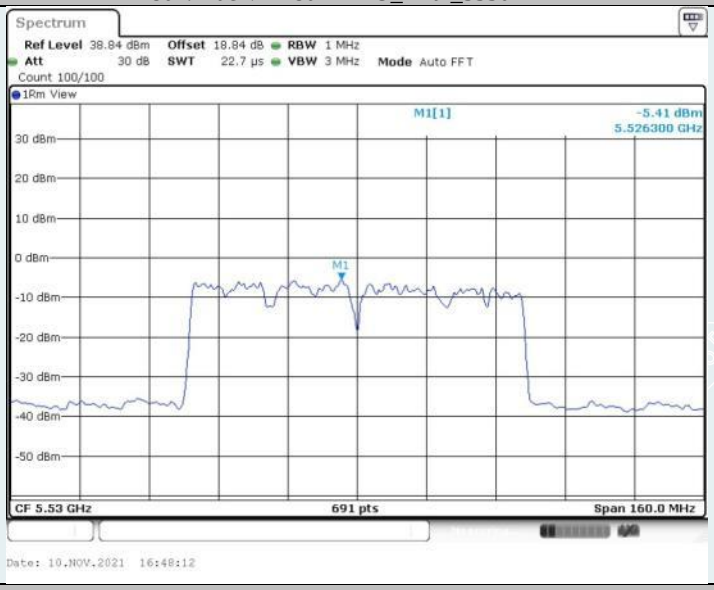

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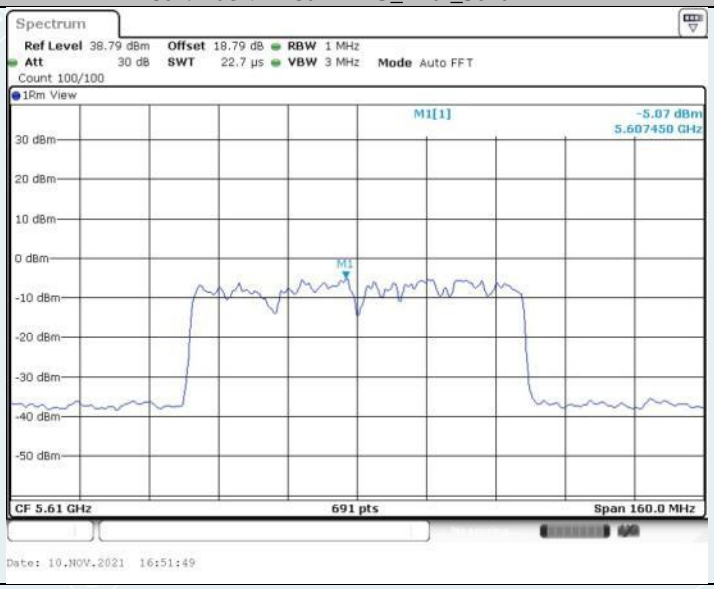

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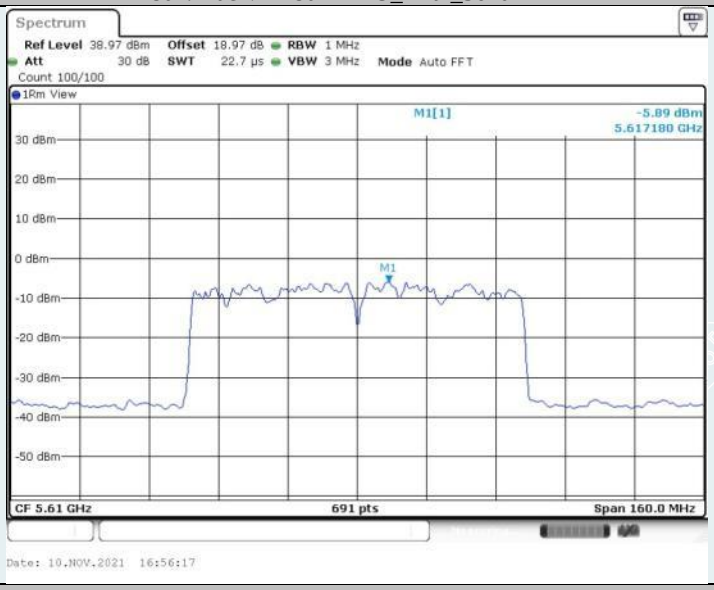

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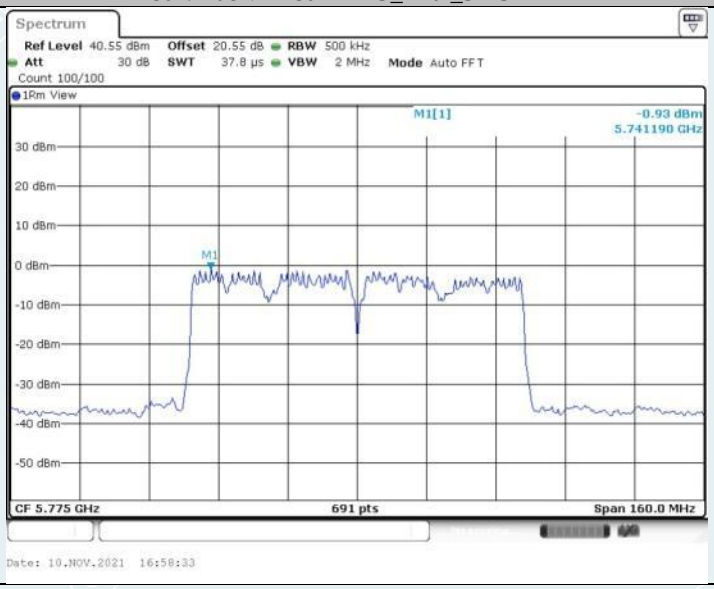

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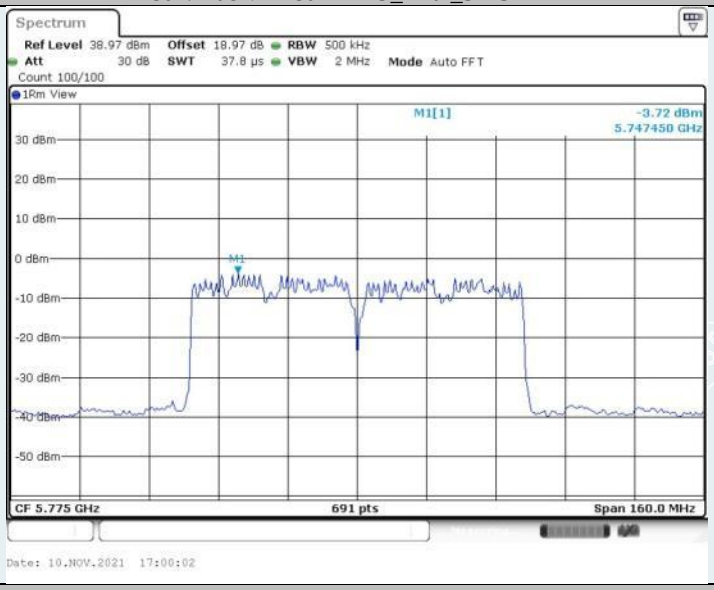

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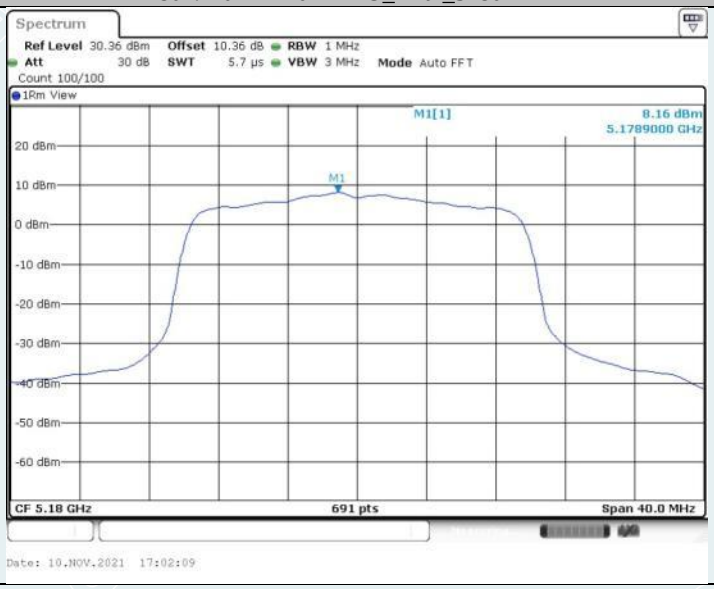

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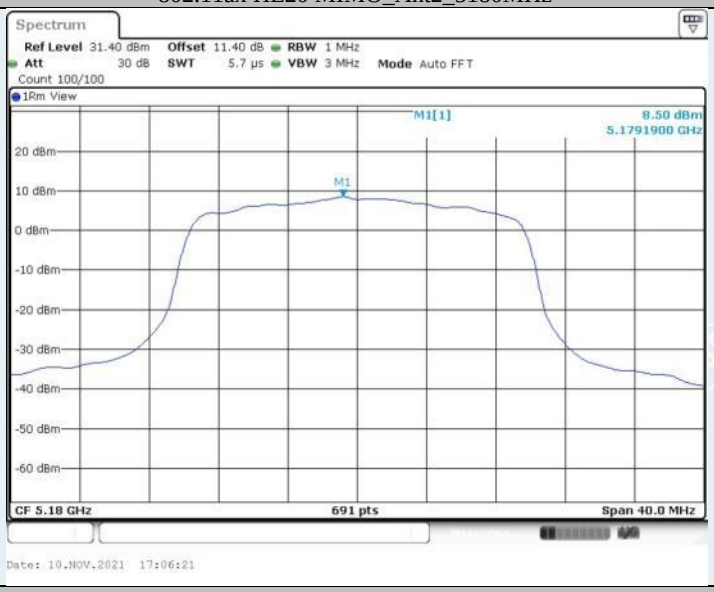

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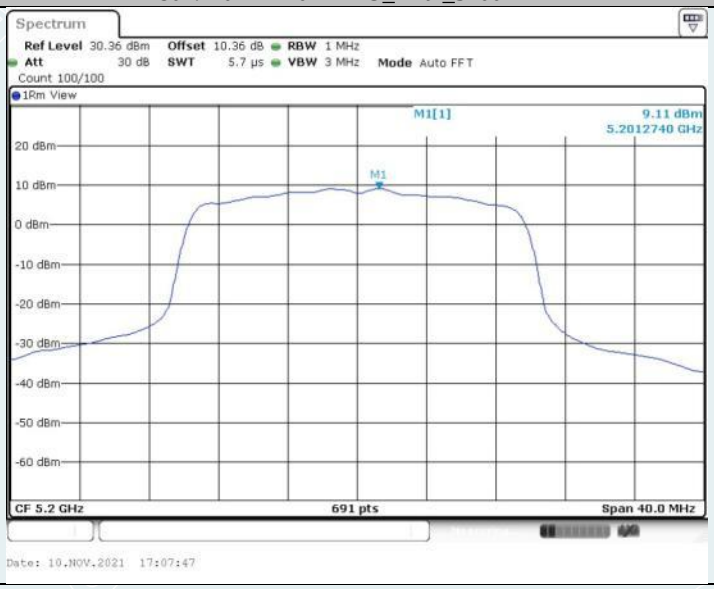
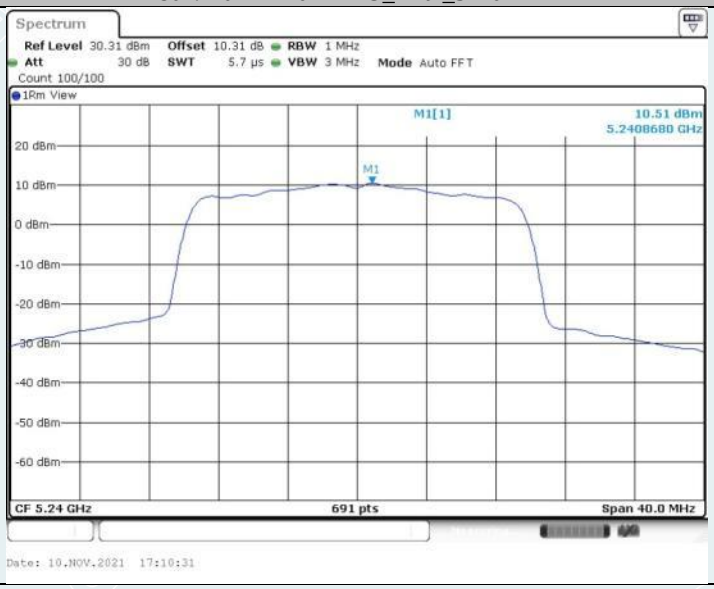
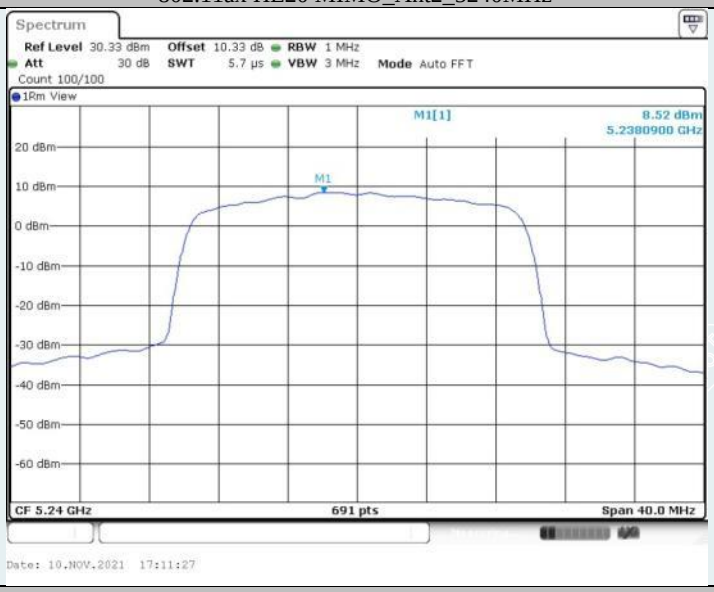


802.11ax HE20 MIMO_Ant2_5200MHz

802.11ax HE20 MIMO_Ant1_5240MHz



802.11ax HE20 MIMO_Ant2_5240MHz



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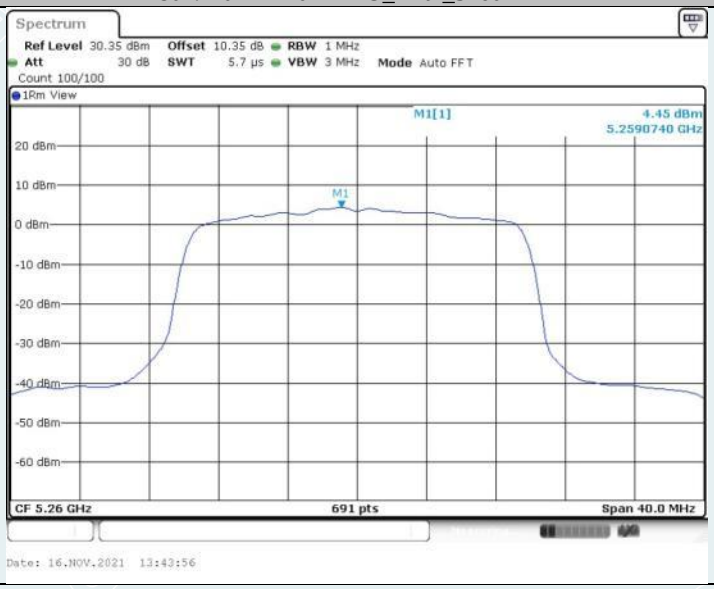

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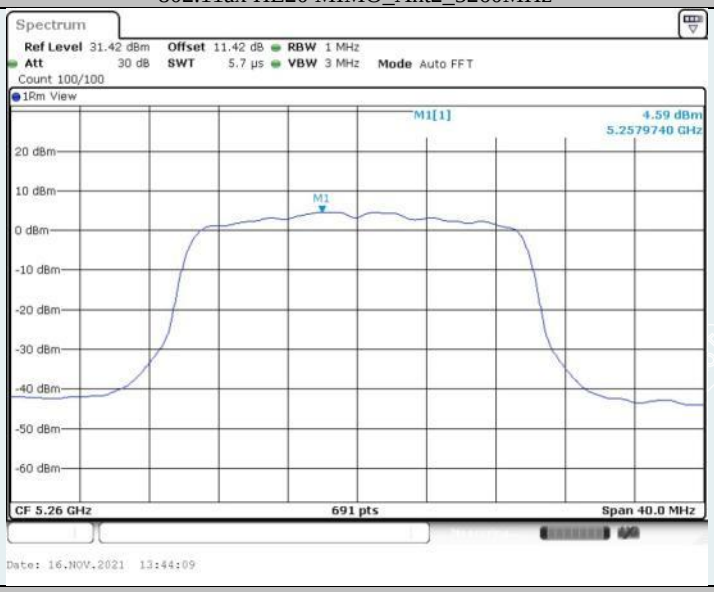
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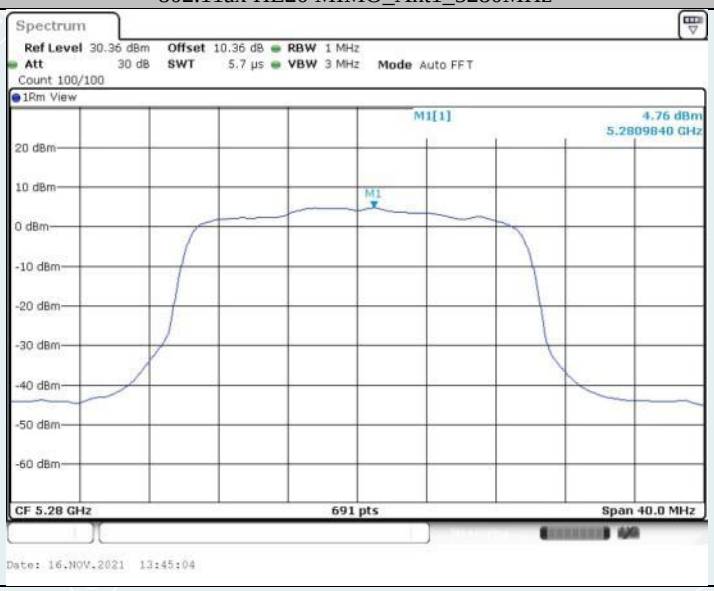

802.11ax HE20 MIMO_Ant2_5280MHz

802.11ax HE20 MIMO_Ant1_5320MHz

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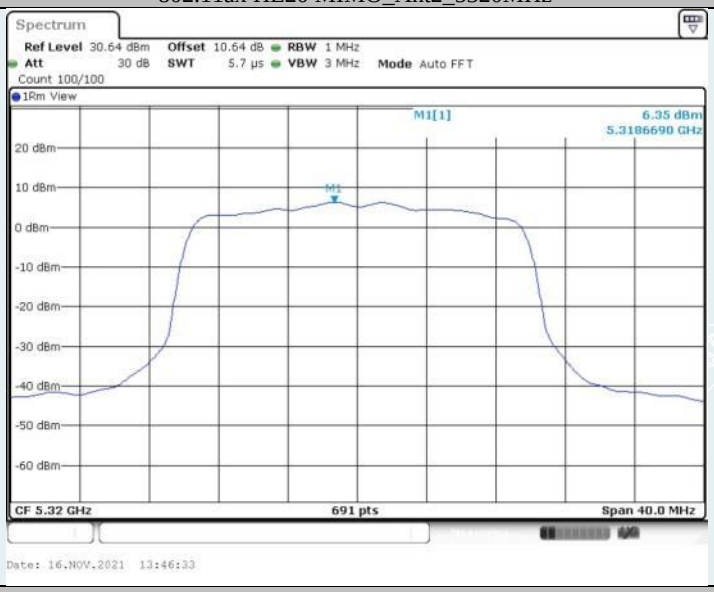
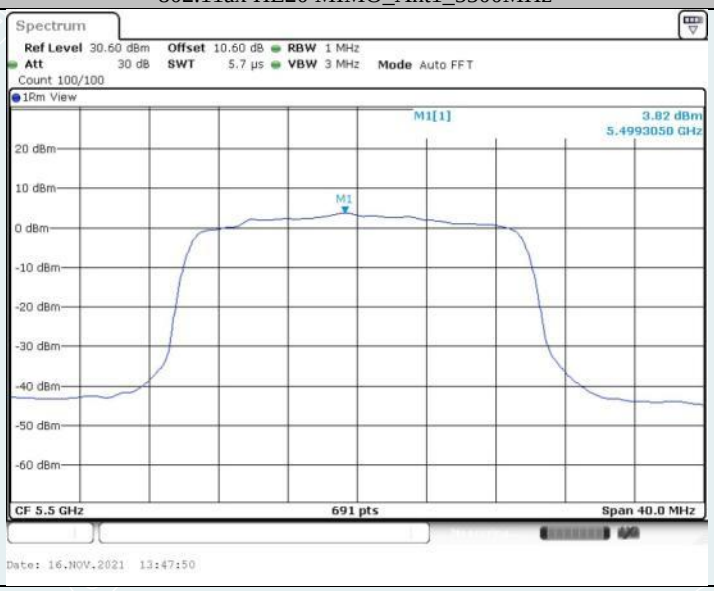


802.11ax HE20 MIMO_Ant1_5500MHz



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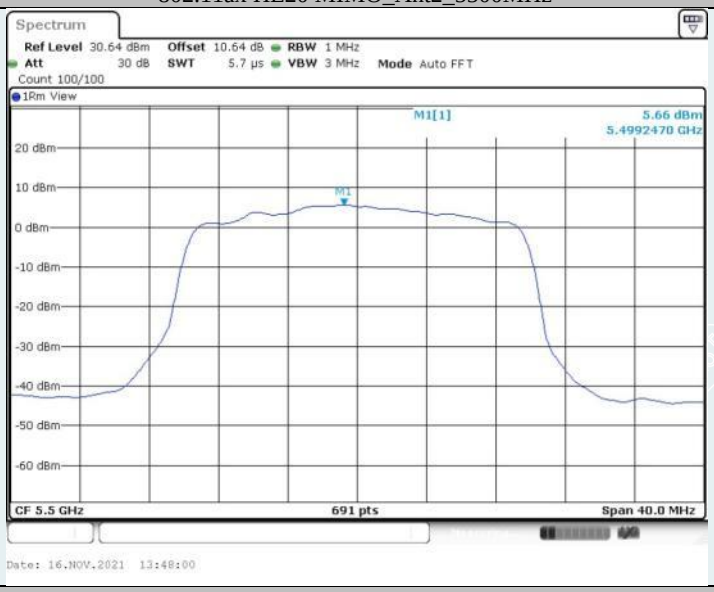
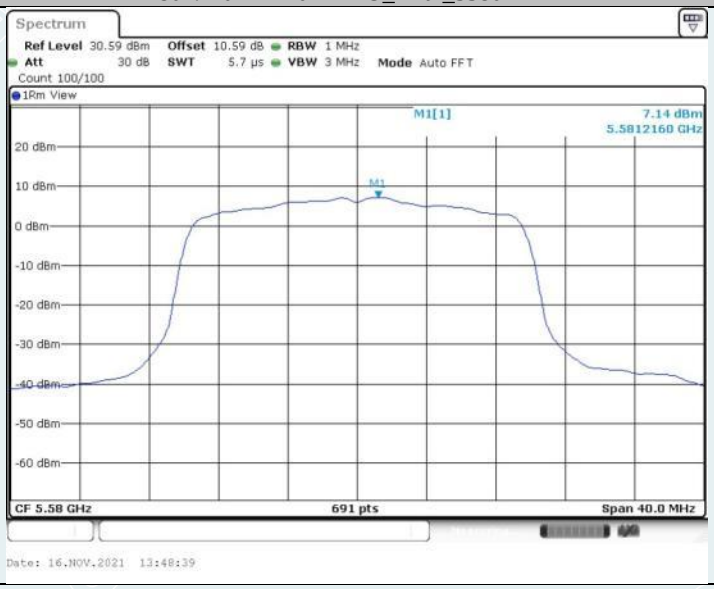


802.11ax HE20 MIMO_Ant1_5580MHz



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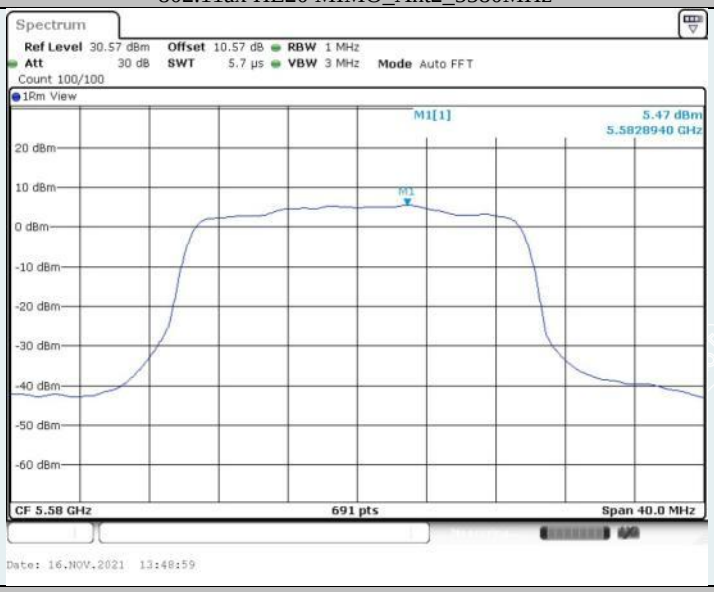
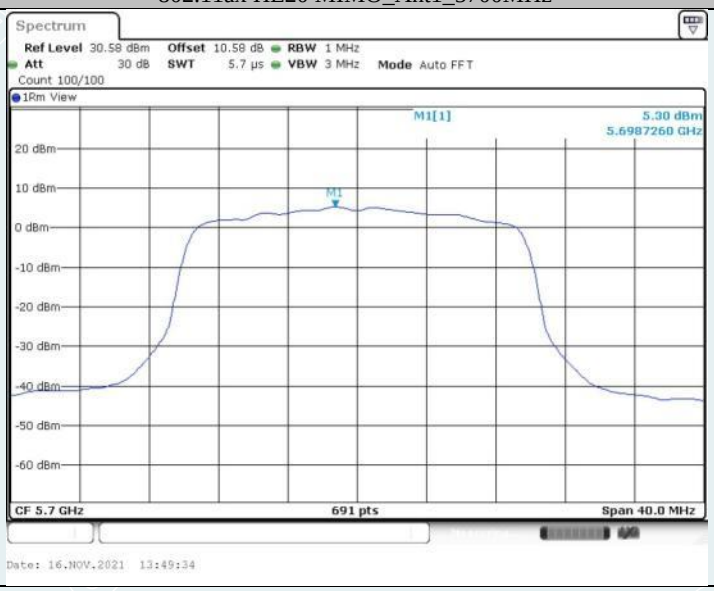


802.11ax HE20 MIMO_Ant1_5700MHz



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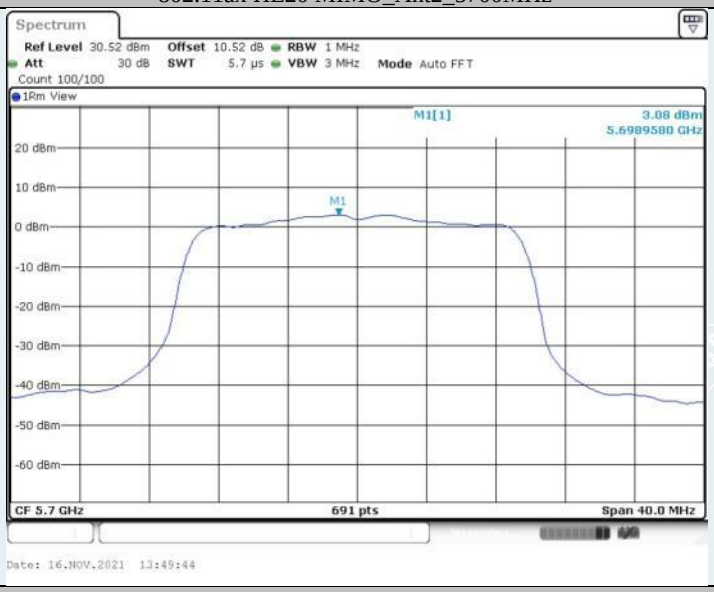

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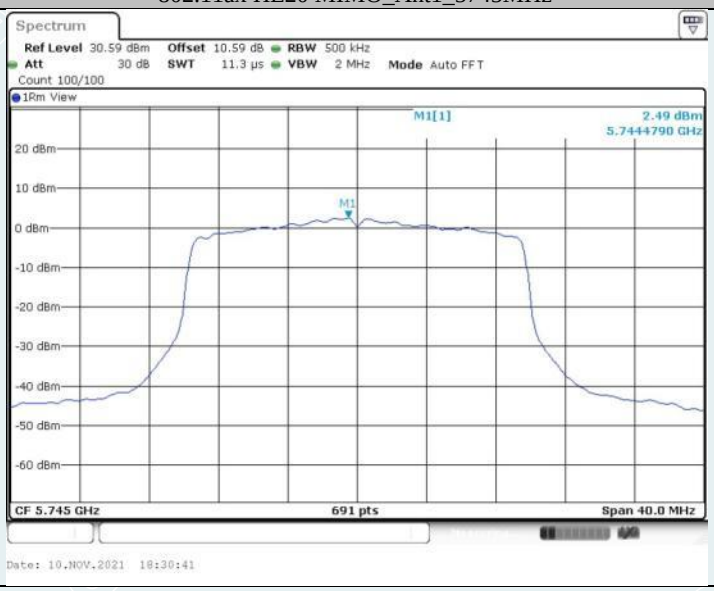

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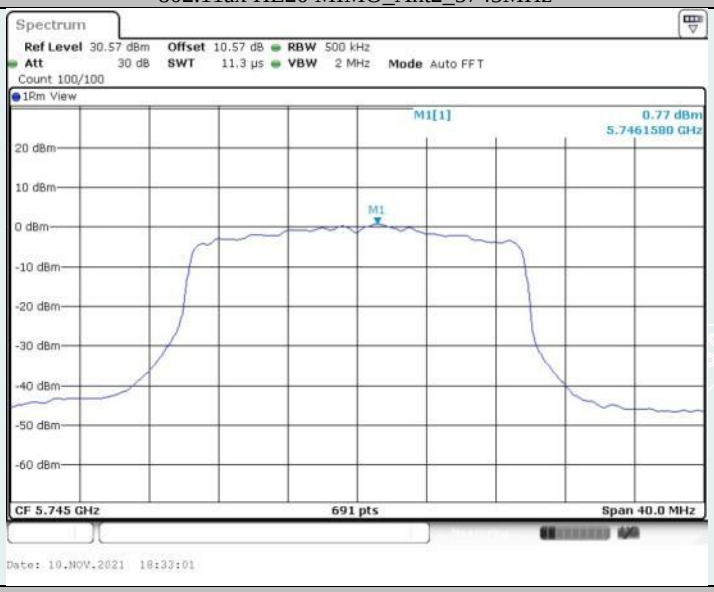
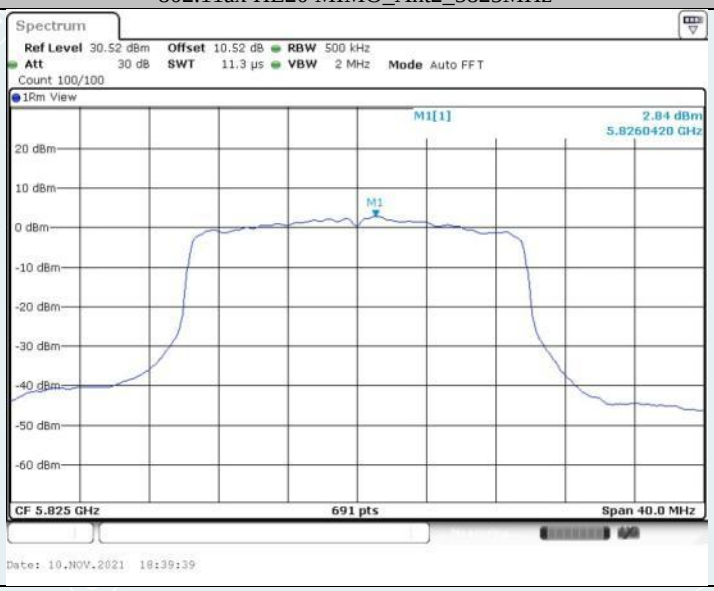


802.11ax HE20 MIMO_Ant1_5785MHz

802.11ax HE20 MIMO_Ant2_5785MHz

802.11ax HE20 MIMO_Ant2_5825MHz



802.11ax HE40 MIMO_Ant1_5190MHz

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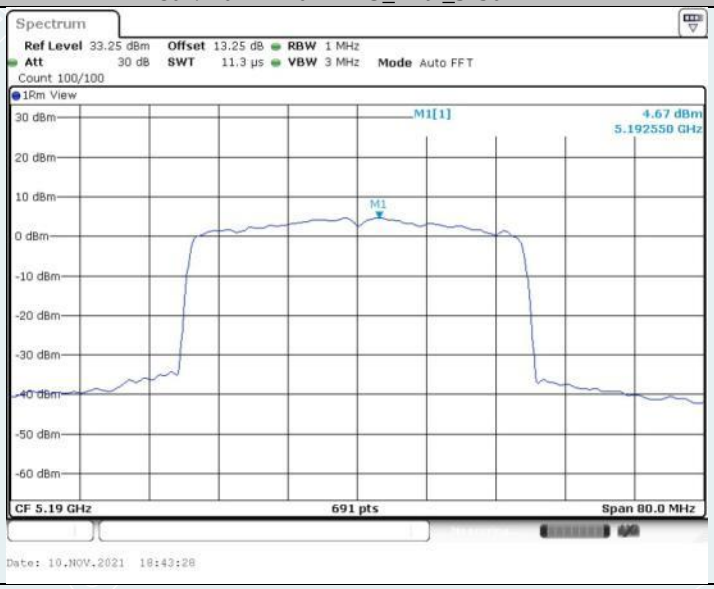
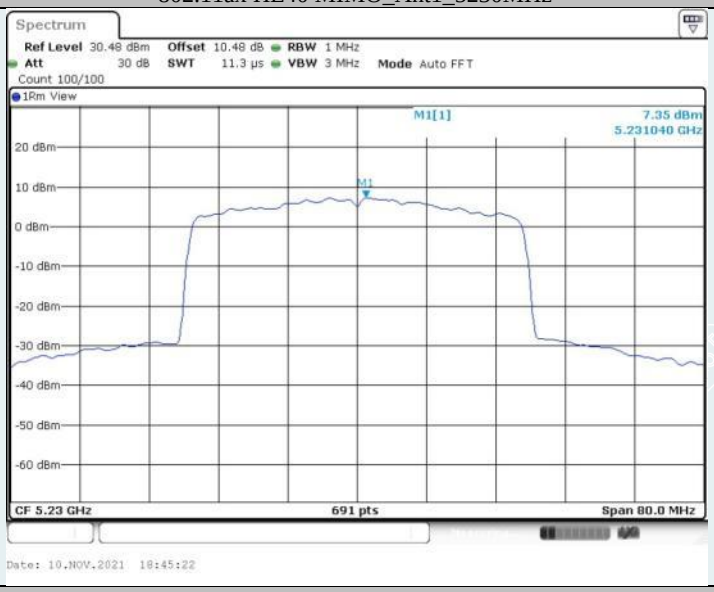


802.11ax HE40 MIMO_Ant1_5230MHz



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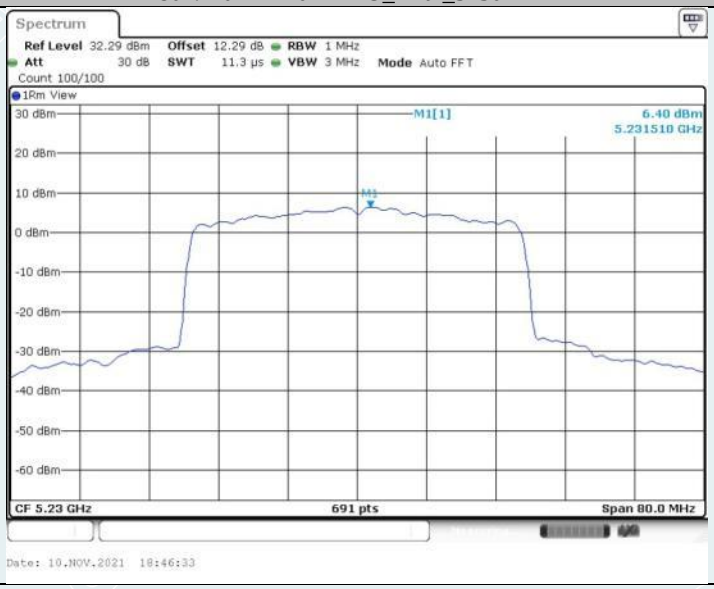

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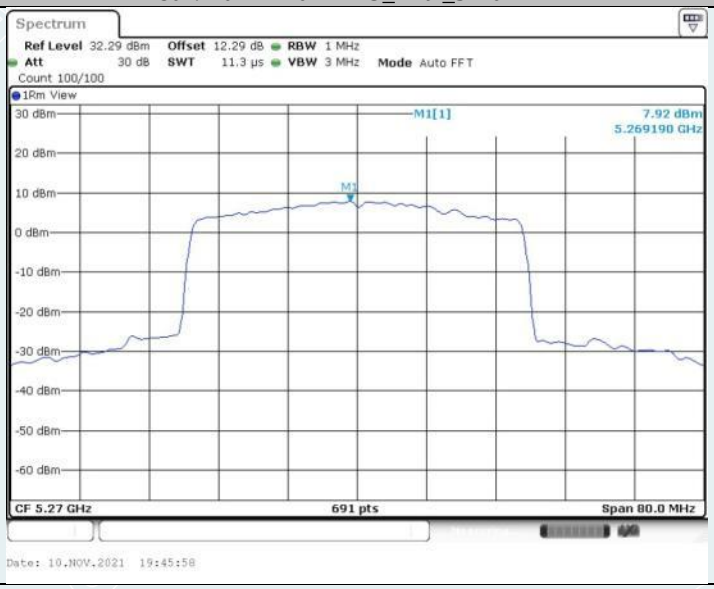

802.11ax HE40 MIMO_Ant1_5310MHz

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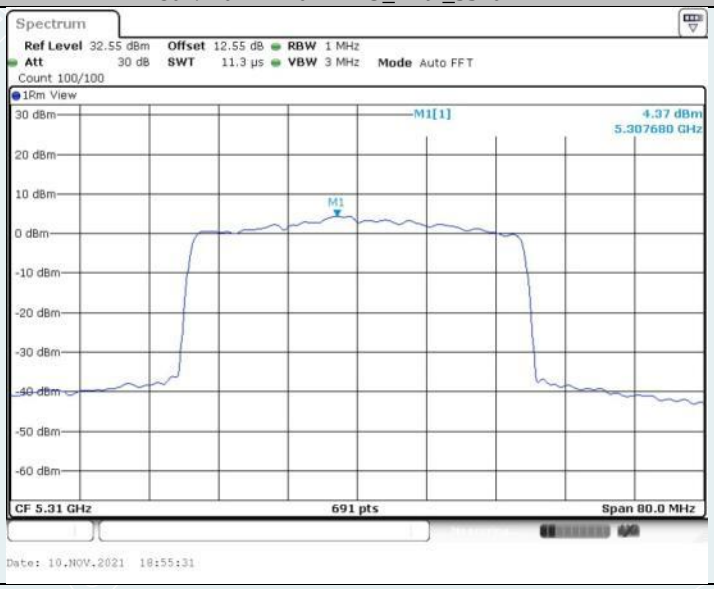
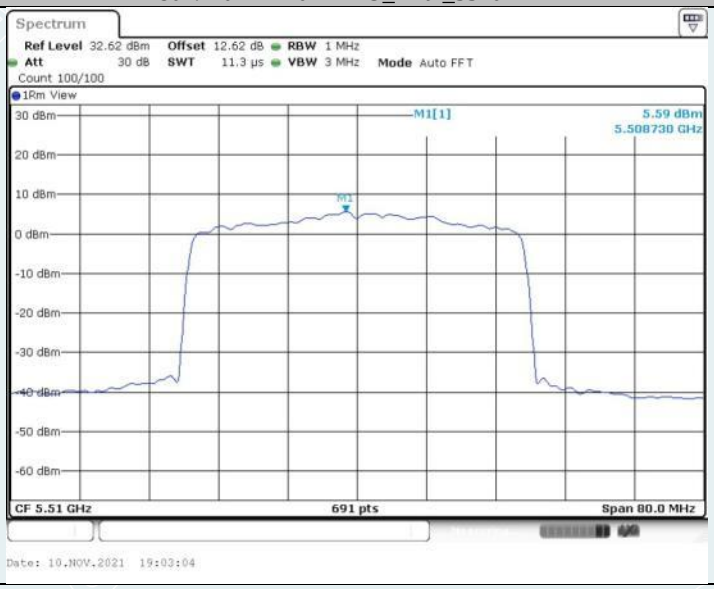


802.11ax HE40 MIMO_Ant1_5510MHz

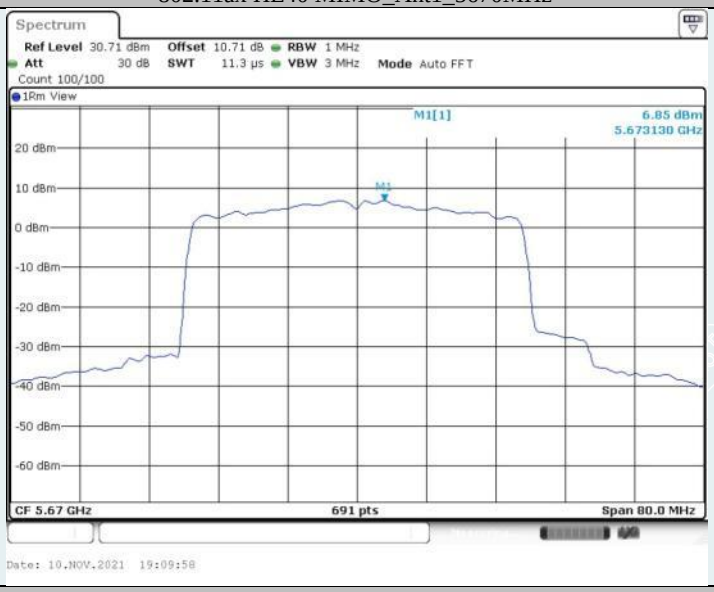
802.11ax HE40 MIMO_Ant2_5510MHz



802.11ax HE40 MIMO_Ant1_5550MHz

802.11ax HE40 MIMO_Ant2_5550MHz

802.11ax HE40 MIMO_Ant1_5670MHz



802.11ax HE40 MIMO_Ant2_5670MHz

802.11ax HE40 MIMO_Ant1_5755MHz

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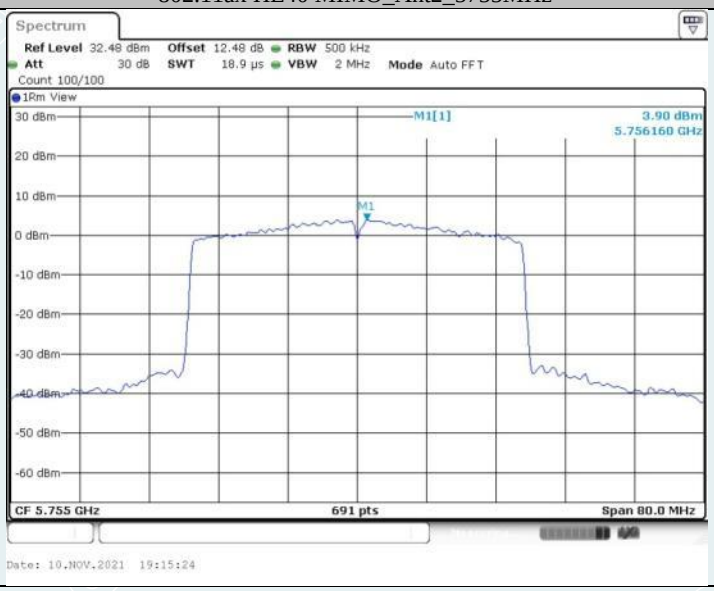

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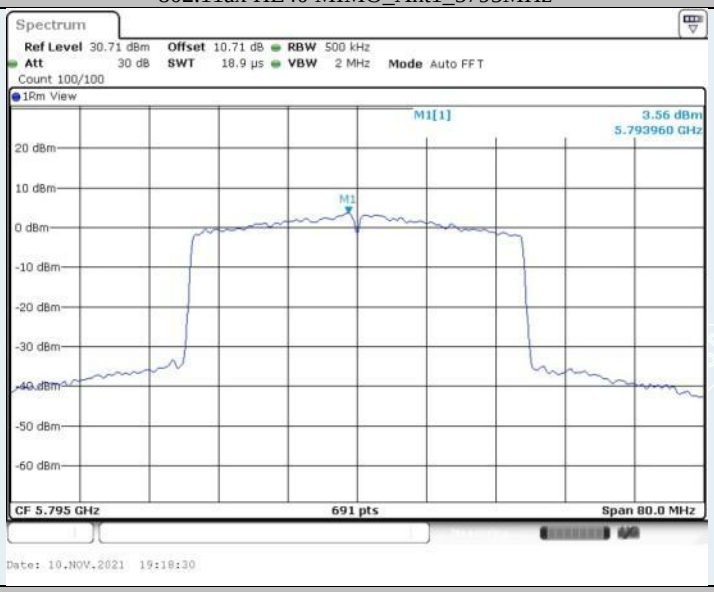
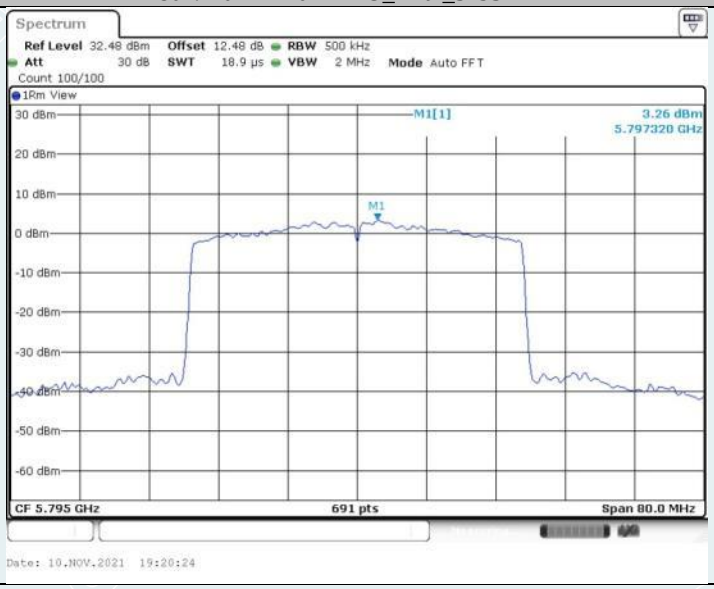


802.11ax HE40 MIMO_Ant2_5795MHz



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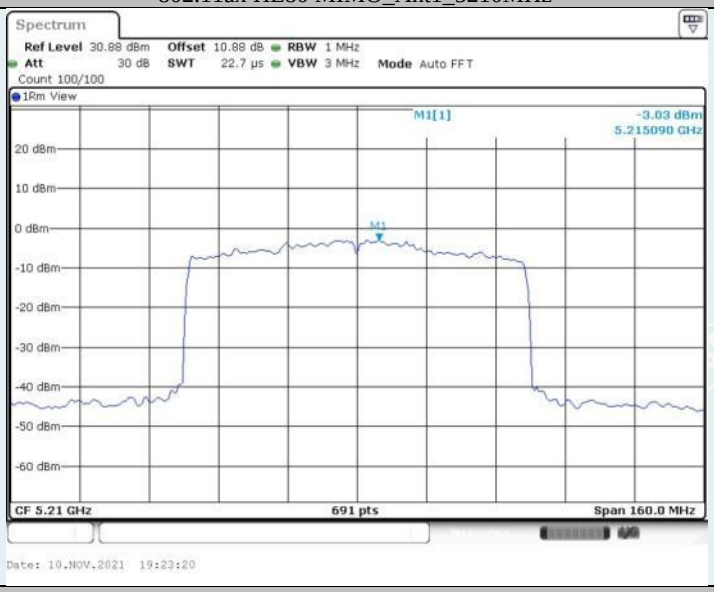
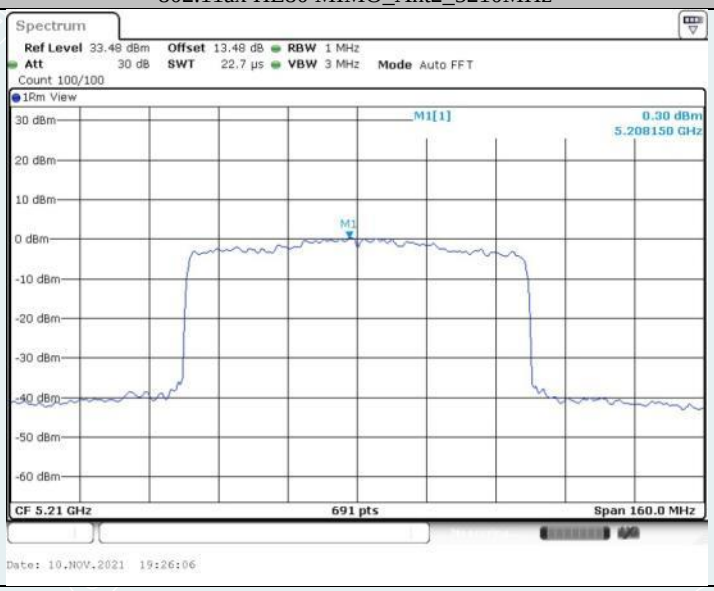
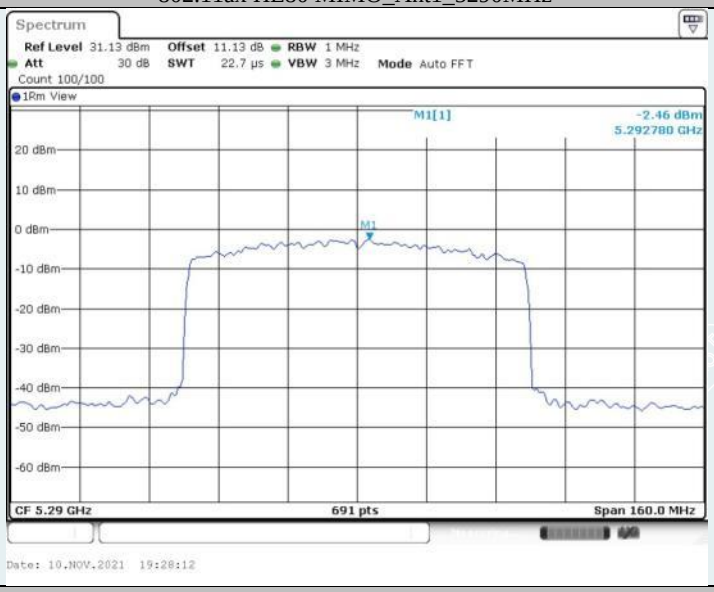


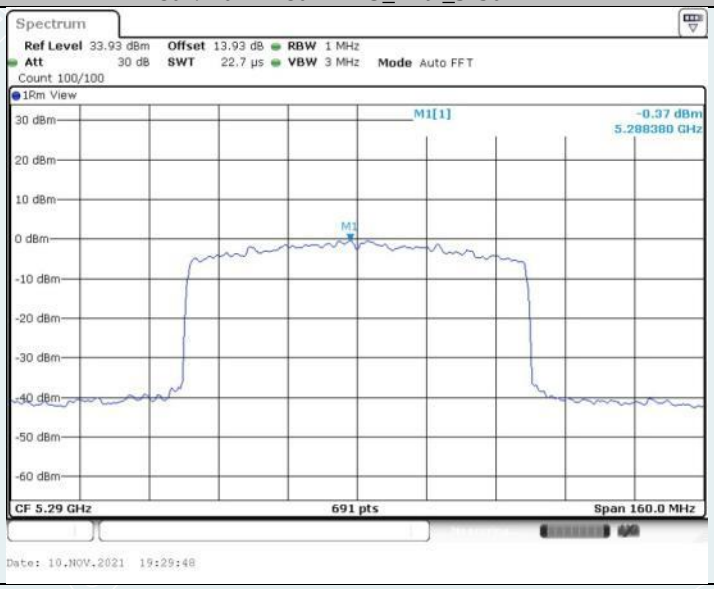
802.11ax HE80 MIMO_Ant2_5210MHz



802.11ax HE80 MIMO_Ant1_5290MHz



802.11ax HE80 MIMO_Ant2_5290MHz



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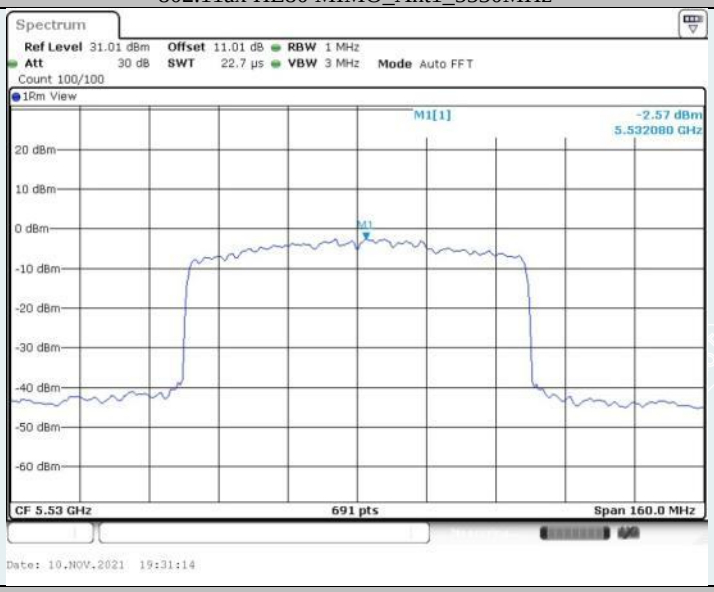
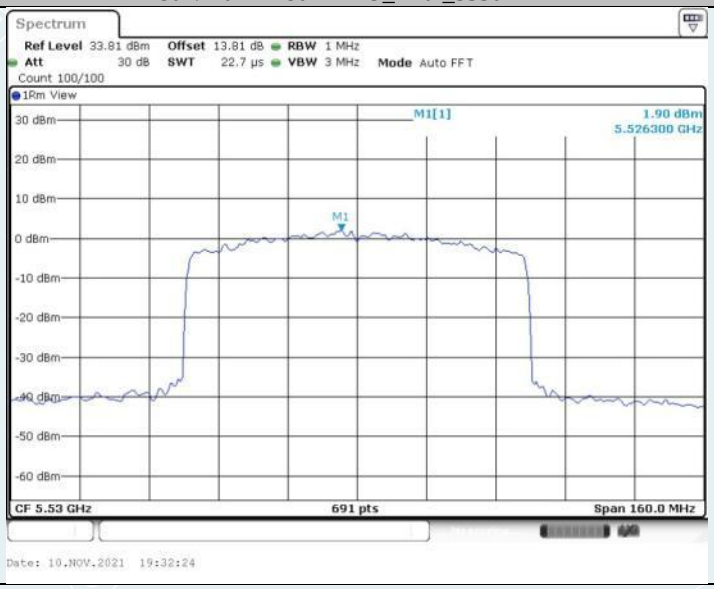
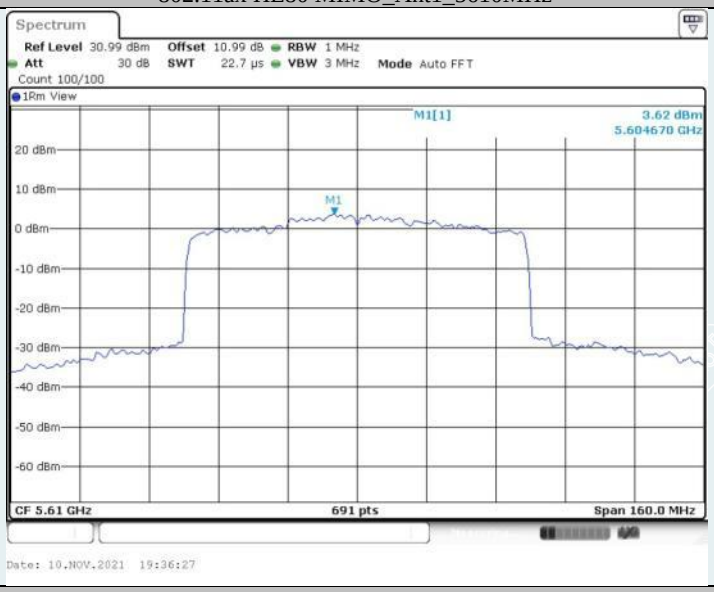


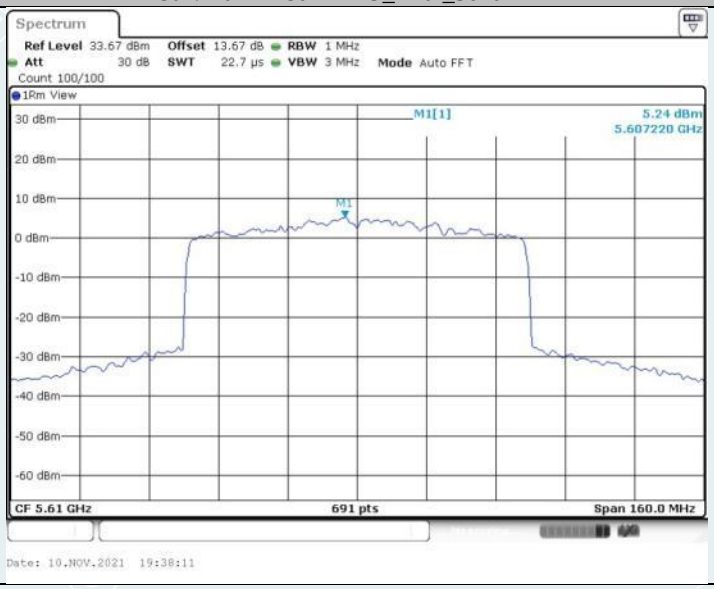
802.11ax HE80 MIMO_Ant2_5530MHz



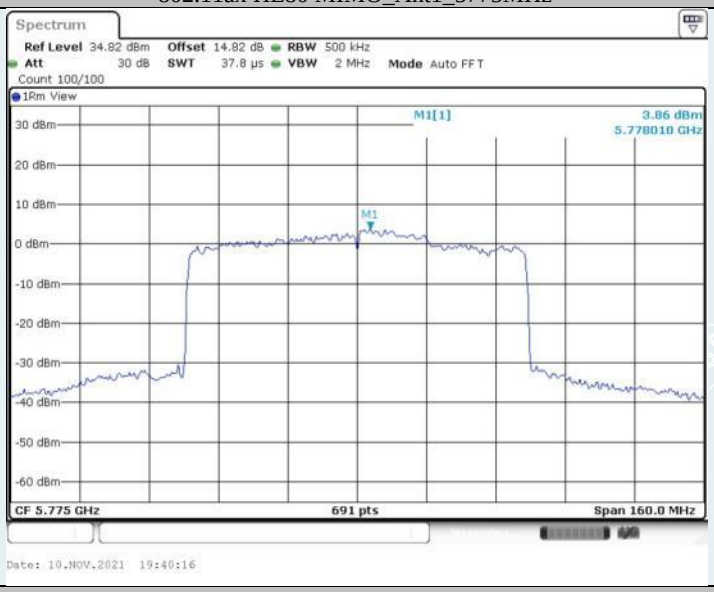
802.11ax HE80 MIMO_Ant1_5610MHz



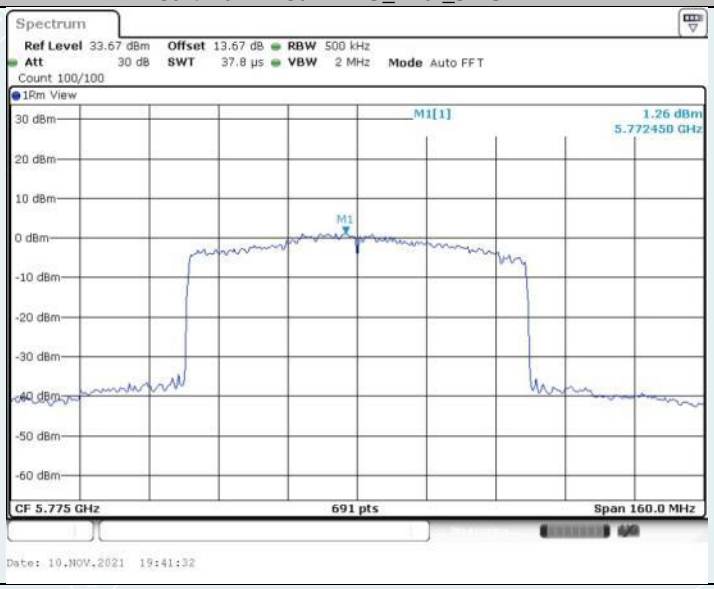
802.11ax HE80 MIMO_Ant2_5610MHz



802.11ax HE80 MIMO_Ant1_5775MHz



802.11ax HE80 MIMO_Ant2_5775MHz



11. FREQUENCY STABILITY

11.1.LIMITS

According to §15.407(g), manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the users manual.

11.2.TEST PROCEDURES

(1) Frequency stability with respect to ambient temperature

a) Supply the EUT with a nominal ac voltage or install a new or fully charged battery in the EUT.If possible, a dummy load shall be connected to the EUT because an antenna near the metallic walls of an environmental test chamber could affect the output frequency of the EUT. If the EUT is equipped with a permanently attached, adjustable-length antenna, then the EUT shall be placed in the center of the chamber with the antenna adjusted to the shortest length possible.Turn ON the EUT and tune it to one of the number of frequencies shown in §ANSI C63.10-2013(5.6).

b) Couple the unlicensed wireless device output to the measuring instrument by connecting an antenna to the measuring instrument with a suitable length of coaxial cable and placing the measuring antenna near the EUT (e.g., 15 cm away), or by connecting a dummy load to the measuring instrument, through an attenuator if necessary.

NOTE—An instrument that has an adequate level of accuracy as specified by the procuring or regulatory agency is the recommended measuring instrument.

c) Adjust the location of the measurement antenna and the controls on the measurement instrument to obtain a suitable signal level (i.e., a level that will not overload the measurement instrument but is strong enough to allow measurement of the operating or fundamental frequency of the EUT).

d) Turn the EUT OFF and place it inside the environmental temperature chamber. For devices that have oscillator heaters, energize only the heater circuit.

e) Set the temperature control on the chamber to the highest specified in the regulatory requirements for the type of device and allow the oscillator heater and the chamber temperature to stabilize.

f) While maintaining a constant temperature inside the environmental chamber, turn the EUT ON and record the operating frequency at startup, and at 2 minutes, 5 minutes, and 10 minutes after the EUT is energized. Four measurements in total are made.

g) Measure the frequency at each of frequencies specified in §ANSI C63.10-2013(5.6).

h) Switch OFF the EUT but do not switch OFF the oscillator heater.

i) Lower the chamber temperature by not more that 10°C, and allow the temperature inside the chamber to stabilize.

j) Repeat step f) through step i) down to the lowest specified temperature.

(2) Frequency stability when varying supply voltage

a) Supply the EUT with nominal voltage or install a new or fully charged battery in the EUT. Turn ON the EUT and couple its output to a frequency counter or other frequency-measuring instrument.

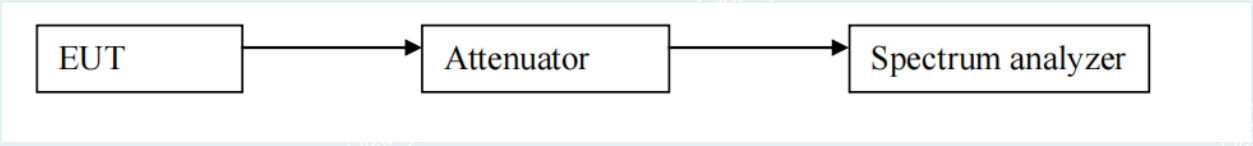
NOTE—An instrument that has an adequate level of accuracy as specified by the procuring or regulatory agency is the recommended measuring instrument.

b) Tune the EUT to one of the number of frequencies required in §ANSI C63.10-2013(5.6). Adjust the location of the measurement antenna and the controls on the measurement instrument to obtain a suitable signal level (i.e., a level that will not overload the measurement instrument but is strong enough to allow measurement of the operating or fundamental frequency of the EUT).

c) Measure the frequency at each of the frequencies specified in §ANSI C63.10-2013(5.6).

d) Repeat the above procedure at 85% and 115% of the nominal supply voltage as described in §ANSI C63.10-2013(5.13).

11.3.TEST SETUP



11.4.TEST RESULTS

Tested By	Lu Wei	**Tested Date**	2021/11/10~2021/11/12
Environmental Conditions	23.9℃/47%RH	**Test Voltage**	AC120V/60Hz

Voltage								
TestMode	Antenna	Frequency (MHz)	Voltage [Vdc]	Temperature (℃)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
802.11a	Ant1	5180	NV	NT	-3000	-0.579151	20	PASS
			LV	NT	-3000	-0.579151	20	PASS
			HV	NT	-2000	-0.3861	20	PASS
	Ant2	5180	NV	NT	16000	3.088803	20	PASS
			LV	NT	16000	3.088803	20	PASS
			HV	NT	17000	3.281853	20	PASS
	Ant1	5200	NV	NT	5000	0.961538	20	PASS
			LV	NT	5000	0.961538	20	PASS
			HV	NT	6000	1.153846	20	PASS
	Ant2	5200	NV	NT	16000	3.076923	20	PASS
			LV	NT	16000	3.076923	20	PASS
			HV	NT	17000	3.269231	20	PASS
	Ant1	5240	NV	NT	6000	1.145038	20	PASS
			LV	NT	5000	0.954198	20	PASS
			HV	NT	6000	1.145038	20	PASS
	Ant2	5240	NV	NT	20000	3.816794	20	PASS
			LV	NT	20000	3.816794	20	PASS
			HV	NT	20000	3.816794	20	PASS
	Ant1	5260	NV	NT	6000	1.140684	20	PASS
			LV	NT	6000	1.140684	20	PASS
			HV	NT	7000	1.330798	20	PASS
	Ant2	5260	NV	NT	20000	3.802281	20	PASS
			LV	NT	19000	3.612167	20	PASS
			HV	NT	20000	3.802281	20	PASS
	Ant1	5280	NV	NT	4000	0.757576	20	PASS
			LV	NT	5000	0.94697	20	PASS
			HV	NT	5000	0.94697	20	PASS
	Ant2	5280	NV	NT	20000	3.787879	20	PASS
			LV	NT	20000	3.787879	20	PASS
			HV	NT	19000	3.598485	20	PASS
	Ant1	5320	NV	NT	4000	0.75188	20	PASS
			LV	NT	5000	0.93985	20	PASS
			HV	NT	5000	0.93985	20	PASS
	Ant2	5320	NV	NT	8000	1.503759	20	PASS
			LV	NT	10000	1.879699	20	PASS
			HV	NT	11000	2.067669	20	PASS
	Ant1	5500	NV	NT	6000	1.090909	20	PASS
			LV	NT	3000	0.545455	20	PASS

			HV	NT	4000	0.727273	20	PASS
	Ant2	5500	NV	NT	19000	3.454545	20	PASS
			LV	NT	20000	3.636364	20	PASS
			HV	NT	20000	3.636364	20	PASS
	Ant1	5580	NV	NT	10000	1.792115	20	PASS
			LV	NT	10000	1.792115	20	PASS
			HV	NT	11000	1.971326	20	PASS
	Ant2	5580	NV	NT	23000	4.121864	20	PASS
			LV	NT	24000	4.301075	20	PASS
			HV	NT	24000	4.301075	20	PASS
	Ant1	5700	NV	NT	15000	2.631579	20	PASS
			LV	NT	16000	2.807018	20	PASS
			HV	NT	16000	2.807018	20	PASS
	Ant2	5700	NV	NT	29000	5.087719	20	PASS
			LV	NT	31000	5.438596	20	PASS
			HV	NT	32000	5.614035	20	PASS
	Ant1	5745	NV	NT	20000	3.481288	20	PASS
			LV	NT	21000	3.655352	20	PASS
			HV	NT	22000	3.829417	20	PASS
	Ant2	5745	NV	NT	37000	6.440383	20	PASS
			LV	NT	35000	6.092254	20	PASS
			HV	NT	34000	5.91819	20	PASS
	Ant1	5785	NV	NT	21000	3.630078	20	PASS
			LV	NT	21000	3.630078	20	PASS
			HV	NT	22000	3.802939	20	PASS
	Ant2	5785	NV	NT	23000	3.975799	20	PASS
			LV	NT	25000	4.321521	20	PASS
			HV	NT	27000	4.667243	20	PASS
	Ant1	5825	NV	NT	21000	3.60515	20	PASS
			LV	NT	21000	3.60515	20	PASS
			HV	NT	21000	3.60515	20	PASS
	Ant2	5825	NV	NT	23000	3.948498	20	PASS
			LV	NT	25000	4.291845	20	PASS
			HV	NT	26000	4.463519	20	PASS

Temperature								
TestMode	Antenna	Frequency (MHz)	Voltage [Vdc]	Temperature (℃)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
	Ant1	5180	NV	-5	-1000	-0.19305	20	PASS
			NV	0	-1000	-0.19305	20	PASS
			NV	10	0	0	20	PASS
			NV	20	0	0	20	PASS

			NV	30	0	0	20	PASS
			NV	40	1000	0.19305	20	PASS
			NV	45	1000	0.19305	20	PASS
	Ant2	5180	NV	-5	17000	3.281853	20	PASS
			NV	0	17000	3.281853	20	PASS
			NV	10	16000	3.088803	20	PASS
			NV	20	17000	3.281853	20	PASS
			NV	30	17000	3.281853	20	PASS
			NV	40	17000	3.281853	20	PASS
			NV	45	17000	3.281853	20	PASS
	Ant1	5200	NV	-5	7000	1.346154	20	PASS
			NV	0	7000	1.346154	20	PASS
			NV	10	7000	1.346154	20	PASS
			NV	20	8000	1.538462	20	PASS
			NV	30	8000	1.538462	20	PASS
			NV	40	8000	1.538462	20	PASS
			NV	45	9000	1.730769	20	PASS
	Ant2	5200	NV	-5	17000	3.269231	20	PASS
			NV	0	18000	3.461538	20	PASS
			NV	10	17000	3.269231	20	PASS
			NV	20	18000	3.461538	20	PASS
			NV	30	18000	3.461538	20	PASS
			NV	40	18000	3.461538	20	PASS
			NV	45	18000	3.461538	20	PASS
	Ant1	5240	NV	-5	7000	1.335878	20	PASS
			NV	0	7000	1.335878	20	PASS
			NV	10	7000	1.335878	20	PASS
			NV	20	7000	1.335878	20	PASS
			NV	30	7000	1.335878	20	PASS
			NV	40	7000	1.335878	20	PASS
			NV	45	7000	1.335878	20	PASS
	Ant2	5240	NV	-5	20000	3.816794	20	PASS
			NV	0	20000	3.816794	20	PASS
			NV	10	20000	3.816794	20	PASS
			NV	20	20000	3.816794	20	PASS
			NV	30	20000	3.816794	20	PASS
			NV	40	20000	3.816794	20	PASS
			NV	45	20000	3.816794	20	PASS
	Ant1	5260	NV	-5	7000	1.330798	20	PASS
			NV	0	7000	1.330798	20	PASS
			NV	10	7000	1.330798	20	PASS
			NV	20	7000	1.330798	20	PASS

			NV	30	8000	1.520913	20	PASS
			NV	40	7000	1.330798	20	PASS
			NV	45	8000	1.520913	20	PASS
	Ant2	5260	NV	-5	20000	3.802281	20	PASS
			NV	0	20000	3.802281	20	PASS
			NV	10	20000	3.802281	20	PASS
			NV	20	20000	3.802281	20	PASS
			NV	30	20000	3.802281	20	PASS
			NV	40	20000	3.802281	20	PASS
			NV	45	20000	3.802281	20	PASS
	Ant1	5280	NV	-5	6000	1.136364	20	PASS
			NV	0	6000	1.136364	20	PASS
			NV	10	6000	1.136364	20	PASS
			NV	20	6000	1.136364	20	PASS
			NV	30	6000	1.136364	20	PASS
			NV	40	6000	1.136364	20	PASS
			NV	45	6000	1.136364	20	PASS
	Ant2	5280	NV	-5	19000	3.598485	20	PASS
			NV	0	19000	3.598485	20	PASS
			NV	10	19000	3.598485	20	PASS
			NV	20	19000	3.598485	20	PASS
			NV	30	19000	3.598485	20	PASS
			NV	40	19000	3.598485	20	PASS
			NV	45	19000	3.598485	20	PASS
	Ant1	5320	NV	-5	7000	1.315789	20	PASS
			NV	0	7000	1.315789	20	PASS
			NV	10	7000	1.315789	20	PASS
			NV	20	7000	1.315789	20	PASS
			NV	30	7000	1.315789	20	PASS
			NV	40	7000	1.315789	20	PASS
			NV	45	8000	1.503759	20	PASS
	Ant2	5320	NV	-5	13000	2.443609	20	PASS
			NV	0	15000	2.819549	20	PASS
			NV	10	15000	2.819549	20	PASS
			NV	20	16000	3.007519	20	PASS
			NV	30	17000	3.195489	20	PASS
			NV	40	17000	3.195489	20	PASS
			NV	45	17000	3.195489	20	PASS
	Ant1	5500	NV	-5	2000	0.363636	20	PASS
			NV	0	2000	0.363636	20	PASS
			NV	10	2000	0.363636	20	PASS
			NV	20	3000	0.545455	20	PASS

			NV	30	3000	0.545455	20	PASS
			NV	40	3000	0.545455	20	PASS
			NV	45	4000	0.727273	20	PASS
	Ant2	5500	NV	-5	22000	4.000000	20	PASS
			NV	0	23000	4.181818	20	PASS
			NV	10	23000	4.181818	20	PASS
			NV	20	24000	4.363636	20	PASS
			NV	30	24000	4.363636	20	PASS
			NV	40	24000	4.363636	20	PASS
			NV	45	25000	4.545455	20	PASS
	Ant1	5580	NV	-5	12000	2.150538	20	PASS
			NV	0	13000	2.329749	20	PASS
			NV	10	13000	2.329749	20	PASS
			NV	20	14000	2.508961	20	PASS
			NV	30	14000	2.508961	20	PASS
			NV	40	14000	2.508961	20	PASS
			NV	45	14000	2.508961	20	PASS
	Ant2	5580	NV	-5	25000	4.480287	20	PASS
			NV	0	26000	4.659498	20	PASS
			NV	10	27000	4.83871	20	PASS
			NV	20	27000	4.83871	20	PASS
			NV	30	27000	4.83871	20	PASS
			NV	40	27000	4.83871	20	PASS
			NV	45	27000	4.83871	20	PASS
	Ant1	5700	NV	-5	17000	2.982456	20	PASS
			NV	0	18000	3.157895	20	PASS
			NV	10	19000	3.333333	20	PASS
			NV	20	19000	3.333333	20	PASS
			NV	30	19000	3.333333	20	PASS
			NV	40	19000	3.333333	20	PASS
			NV	45	19000	3.333333	20	PASS
	Ant2	5700	NV	-5	33000	5.789474	20	PASS
			NV	0	36000	6.315789	20	PASS
			NV	10	37000	6.491228	20	PASS
			NV	20	37000	6.491228	20	PASS
			NV	30	38000	6.666667	20	PASS
			NV	40	38000	6.666667	20	PASS
			NV	45	39000	6.842105	20	PASS
	Ant1	5745	NV	-5	22000	3.829417	20	PASS
			NV	0	23000	4.003481	20	PASS
			NV	10	22000	3.829417	20	PASS
			NV	20	22000	3.829417	20	PASS

			NV	30	23000	4.003481	20	PASS
			NV	40	23000	4.003481	20	PASS
			NV	45	23000	4.003481	20	PASS
	Ant2	5745	NV	-5	34000	5.91819	20	PASS
			NV	0	32000	5.570061	20	PASS
			NV	10	32000	5.570061	20	PASS
			NV	20	32000	5.570061	20	PASS
			NV	30	31000	5.395997	20	PASS
			NV	40	31000	5.395997	20	PASS
			NV	45	31000	5.395997	20	PASS
	Ant1	5785	NV	-5	22000	3.802939	20	PASS
			NV	0	23000	3.975799	20	PASS
			NV	10	23000	3.975799	20	PASS
			NV	20	24000	4.14866	20	PASS
			NV	30	24000	4.14866	20	PASS
			NV	40	23000	3.975799	20	PASS
			NV	45	23000	3.975799	20	PASS
	Ant2	5785	NV	-5	26000	4.494382	20	PASS
			NV	0	27000	4.667243	20	PASS
			NV	10	27000	4.667243	20	PASS
			NV	20	27000	4.667243	20	PASS
			NV	30	27000	4.667243	20	PASS
			NV	40	27000	4.667243	20	PASS
			NV	45	27000	4.667243	20	PASS
	Ant1	5825	NV	-5	20000	3.433476	20	PASS
			NV	0	21000	3.60515	20	PASS
			NV	10	20000	3.433476	20	PASS
			NV	20	21000	3.60515	20	PASS
			NV	30	21000	3.60515	20	PASS
			NV	40	20000	3.433476	20	PASS
			NV	45	20000	3.433476	20	PASS
	Ant2	5825	NV	-5	26000	4.463519	20	PASS
			NV	0	27000	4.635193	20	PASS
			NV	10	27000	4.635193	20	PASS
			NV	20	27000	4.635193	20	PASS
			NV	30	28000	4.806867	20	PASS
			NV	40	28000	4.806867	20	PASS
			NV	45	29000	4.978541	20	PASS

Note: 1.This report records the worst case of temperature change test observation time 0/2/5/10min .
2.Test Voltage-NV: AC120V/60Hz, Test Voltage-LV: AC102V/60Hz, Test Voltage-HV: AC138V/60Hz.
3.Temperature Range: -5℃~45℃, Temperature-NT: 24℃.

APPENDIX A. PHOTOGRAPH OF THE TEST CONNECTION DIAGRAM

Please refer to the attached document E202109052880-Test setup photo.

APPENDIX B. PHOTOGRAPH OF THE EUT

Please refer to the attached document E202109052880-EUT Photo.

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