Appendix Test Data

Report No.:	18220WC10109304	Test Date:	2021.7.9~8.11
Test Engineer:	Tony.He	Auditor:	Edward.Pan
Temperature:	24.3℃	Relative Humidity:	56.3%
Pressure:	1012 hPa		

1. Duty Cycle

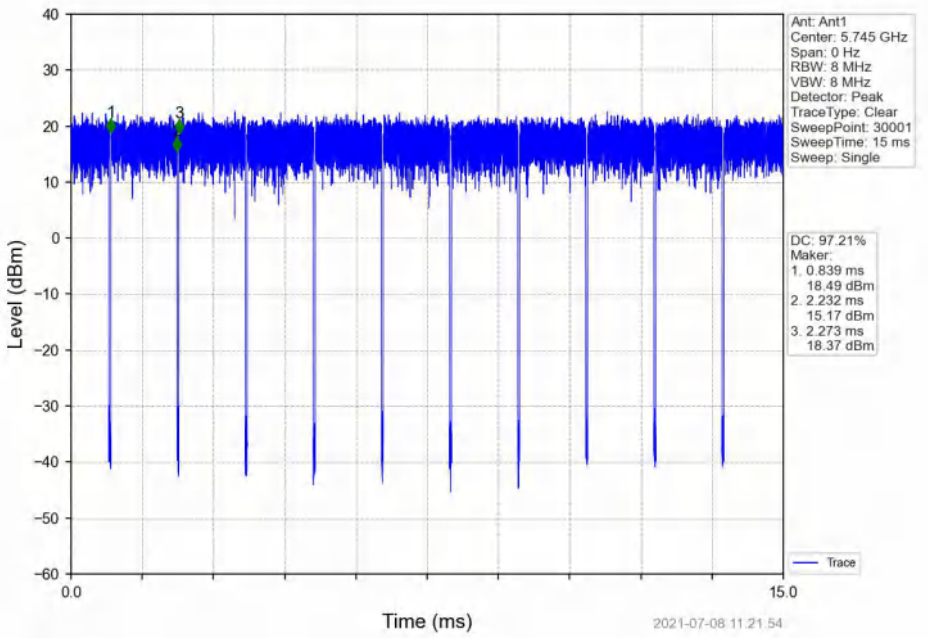
1.1 Ant1

1.1.1 Test Result

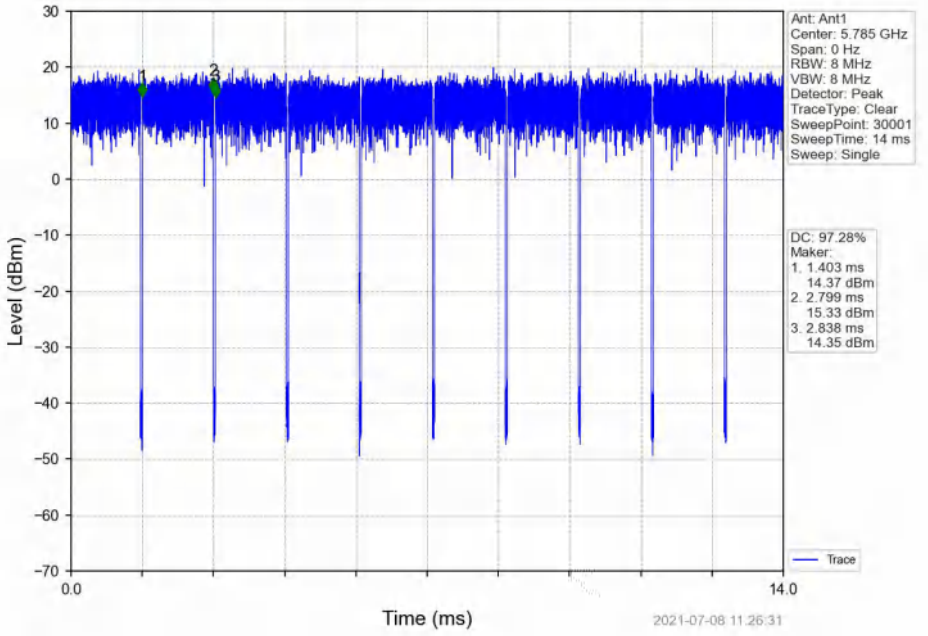
Ant1							
Mode	TX Type	Frequency (MHz)	T_on (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	Max. DC Variation (%)
802.11a	SISO	5745	1.39	1.43	97.21	0.12	0.00
		5785	1.40	1.44	97.28	0.12	0.03
		5825	1.40	1.43	97.35	0.12	0.03
802.11n (HT20)	MIMO	5745	1.31	1.35	97.03	0.13	0.03
		5785	1.31	1.35	97.10	0.13	0.03
		5825	1.31	1.35	97.10	0.13	0.03
802.11n (HT40)	MIMO	5755	0.65	0.69	94.32	0.25	0.00
		5795	0.65	0.69	94.32	0.25	0.00
802.11ac (VHT20)	MIMO	5745	1.32	1.36	97.05	0.13	0.03
		5785	1.31	1.35	96.97	0.13	0.04
		5825	1.32	1.35	97.12	0.13	0.03
802.11ac (VHT40)	MIMO	5755	0.66	0.69	94.24	0.26	0.03
		5795	0.66	0.69	94.39	0.25	0.03
802.11ac (VHT80)	MIMO	5775	0.32	0.36	88.71	0.52	0.08

1.1.2 Test Graph

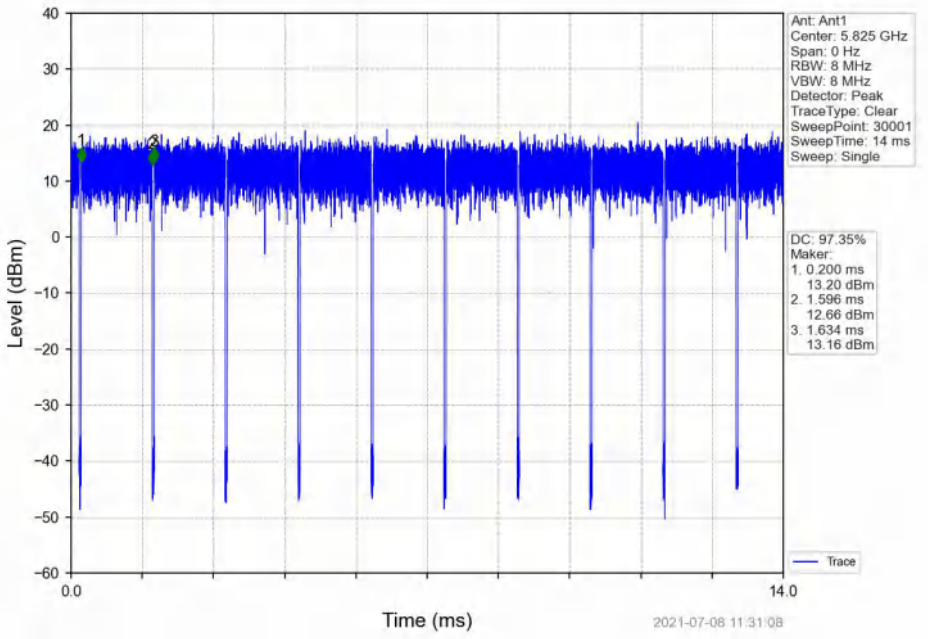
802.11a_LCH_5745MHz_Ant1_NTNV



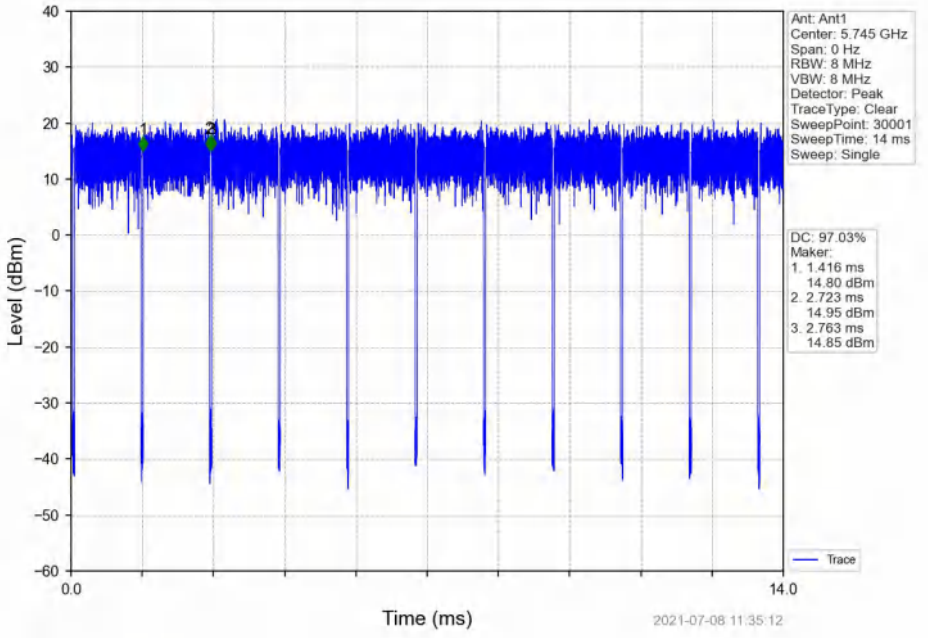
802.11a_MCH_5785MHz_Ant1_NTNV



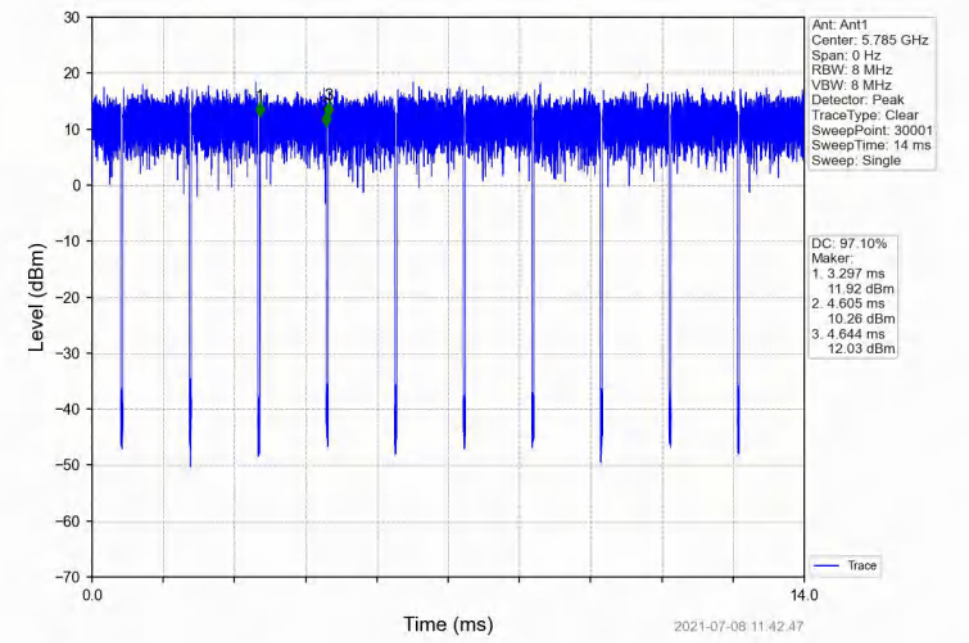
802.11a_HCH_5825MHz_Ant1_NTNV



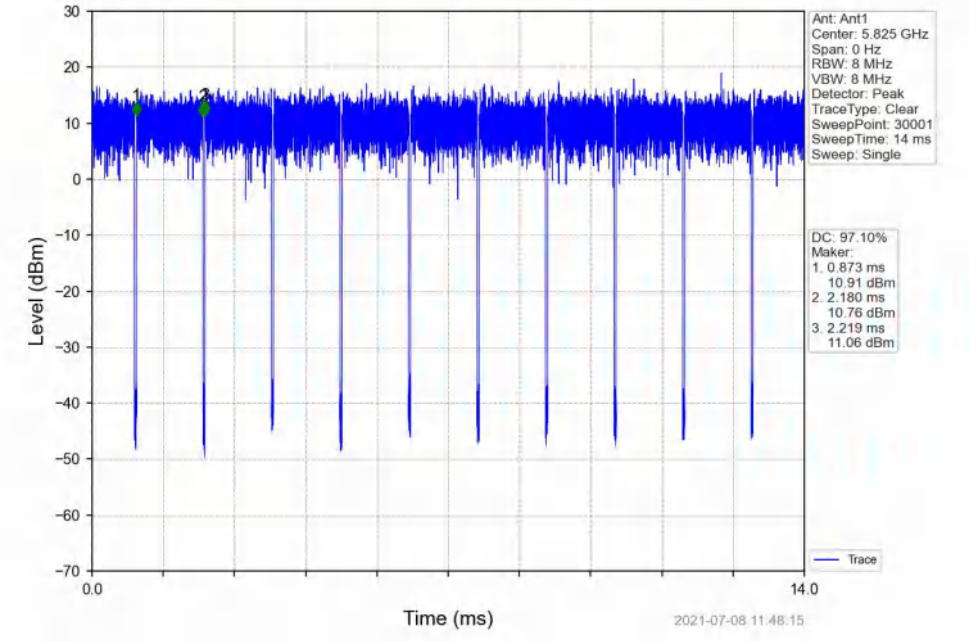
802.11n(HT20)_LCH_5745MHz_Ant1_NTNV



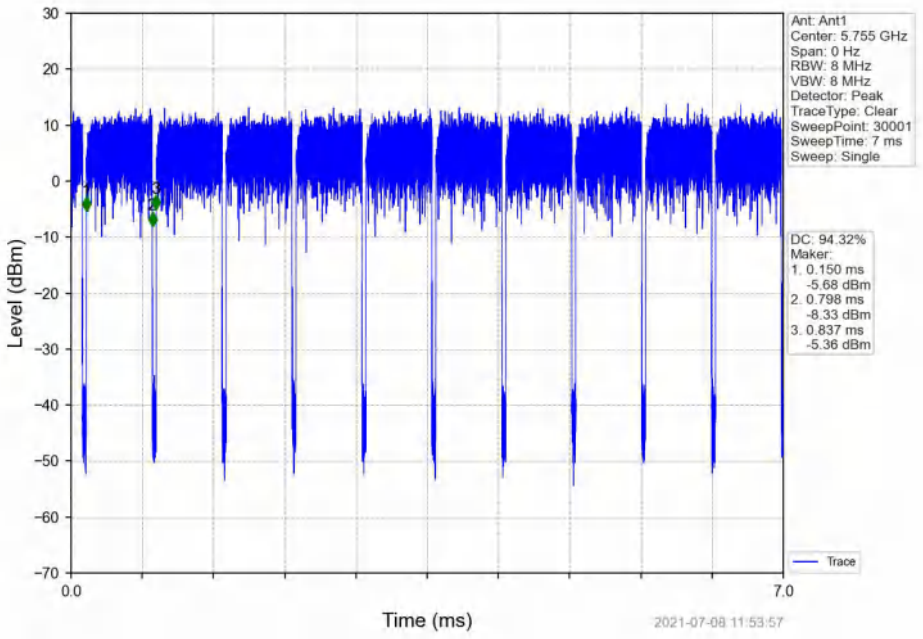
802.11n(HT20)_MCH_5785MHz_Ant1_NTNV



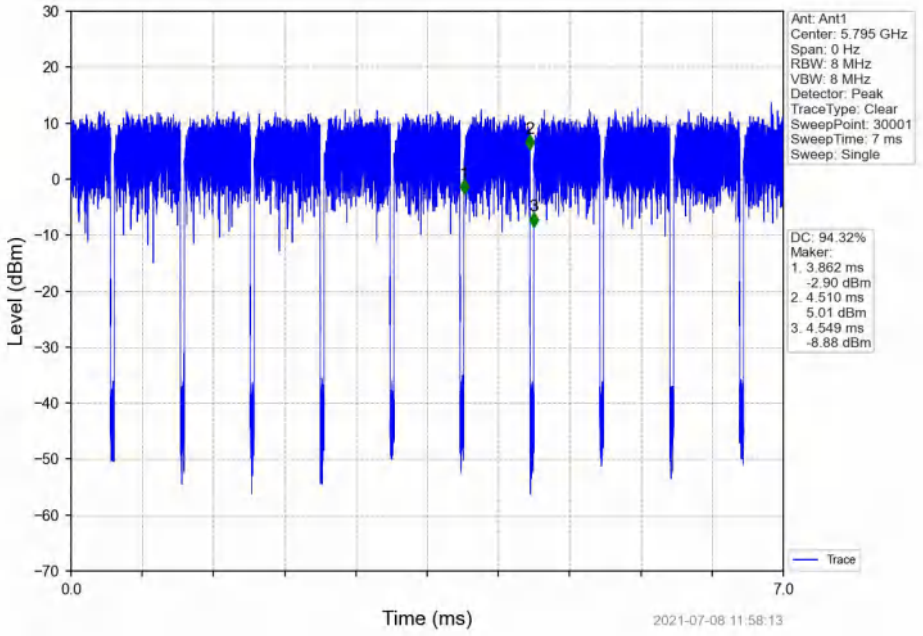
802.11n(HT20)_HCH_5825MHz_Ant1_NTNV



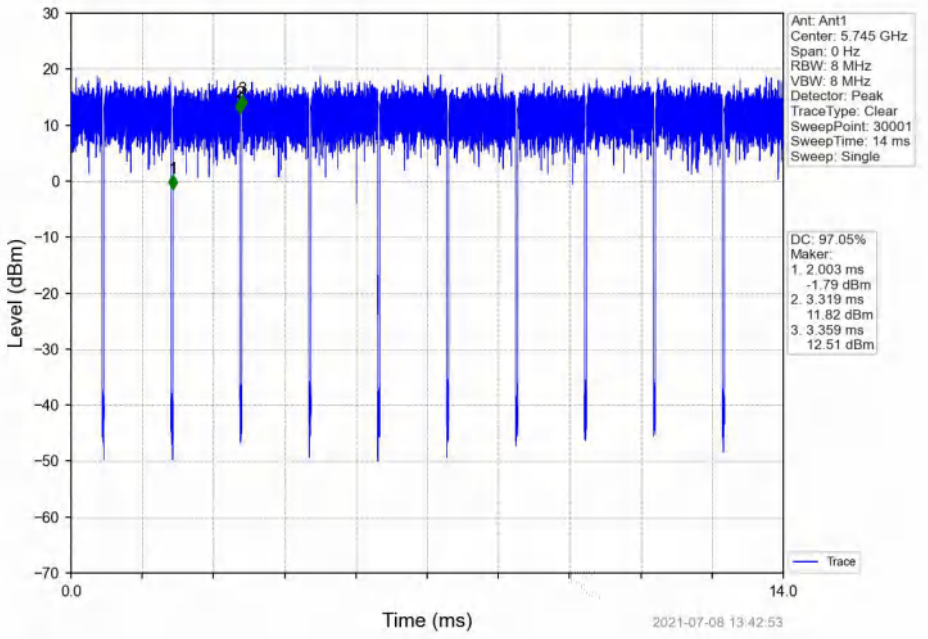
802.11n(HT40)_LCH_5755MHz_Ant1_NTNV



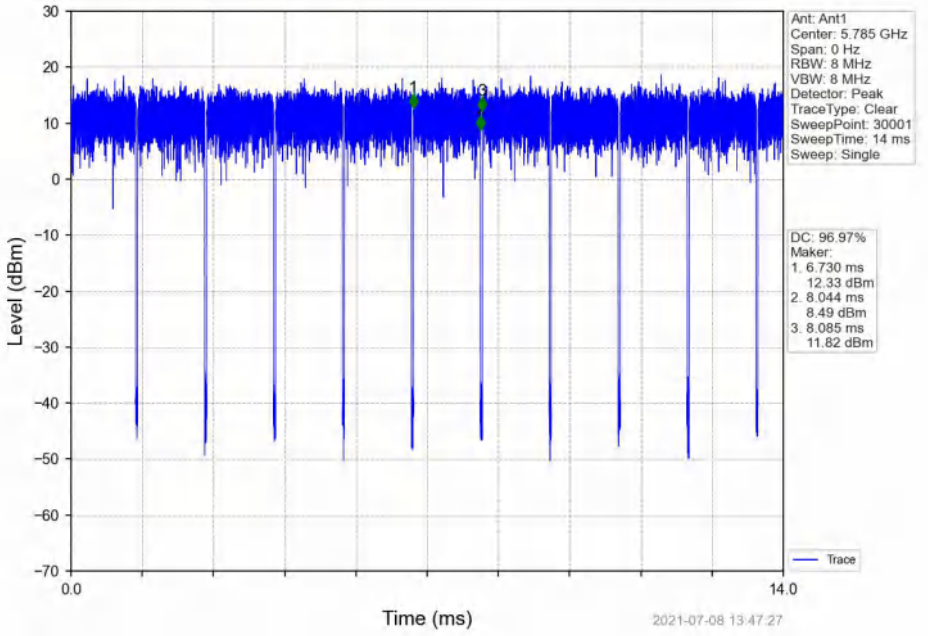
802.11n(HT40)_HCH_5795MHz_Ant1_NTNV



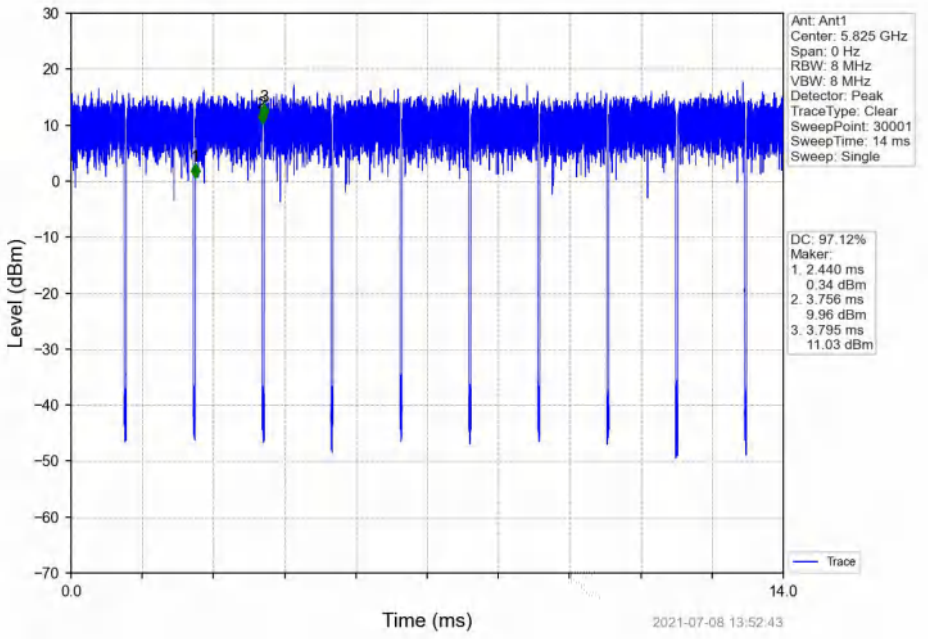
802.11ac(VHT20)_LCH_5745MHz_Ant1_NTNV



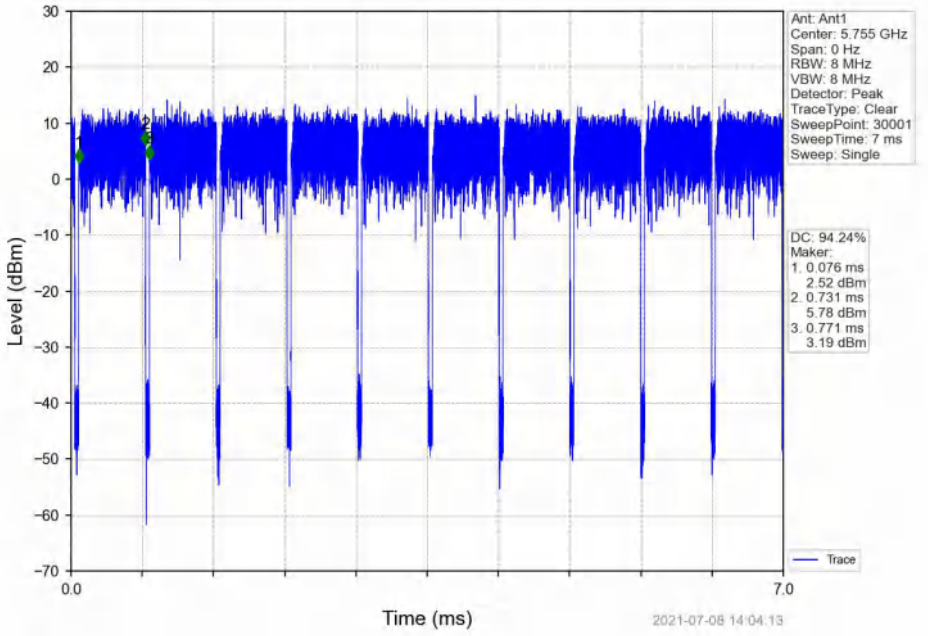
802.11ac(VHT20)_MCH_5785MHz_Ant1_NTNV



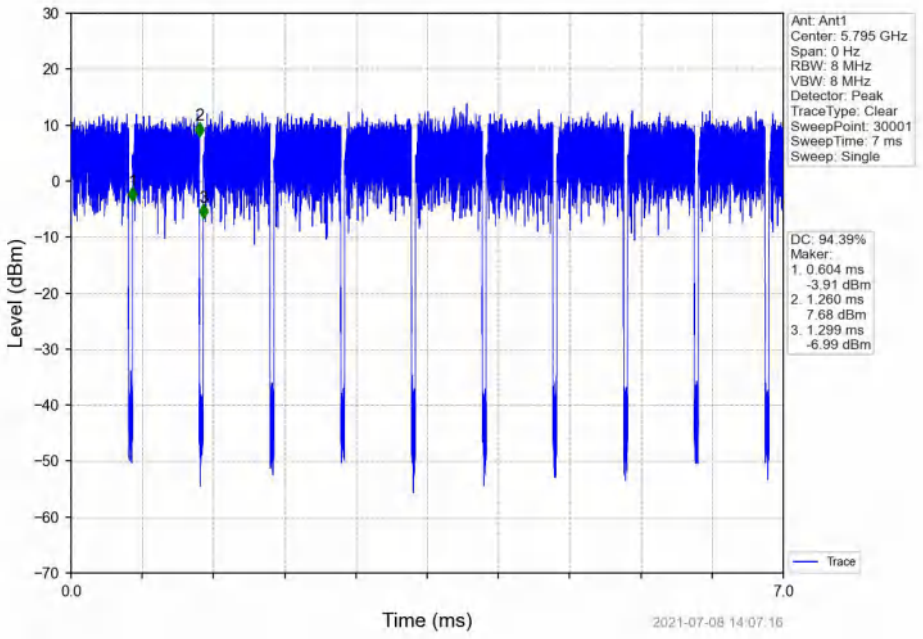
802.11ac(VHT20)_HCH_5825MHz_Ant1_NTNV



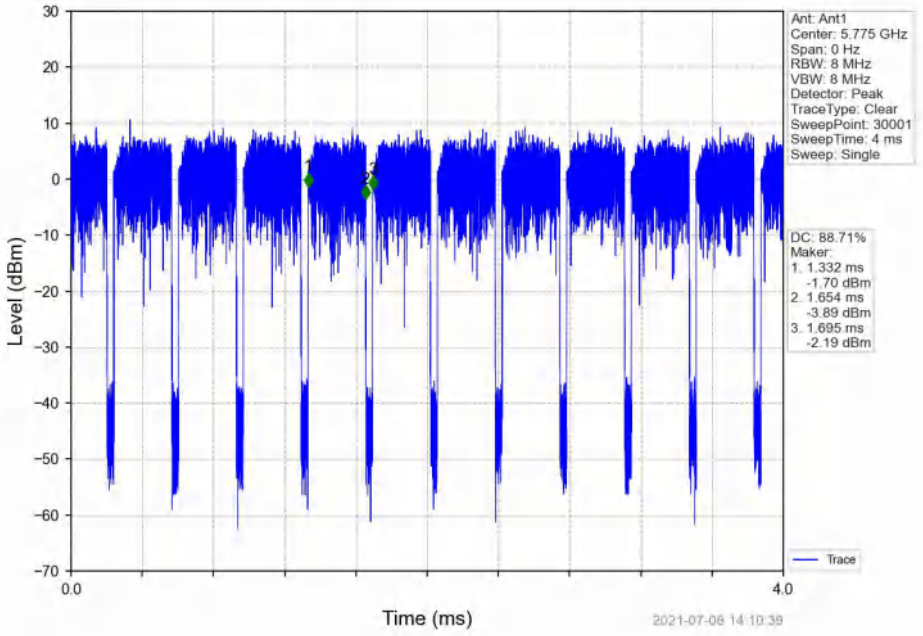
802.11ac(VHT40)_LCH_5755MHz_Ant1_NTNV



802.11ac(VHT40)_HCH_5795MHz_Ant1_NTNV



802.11ac(VHT80)_MCH_5775MHz_Ant1_NTNV



2. Bandwidth

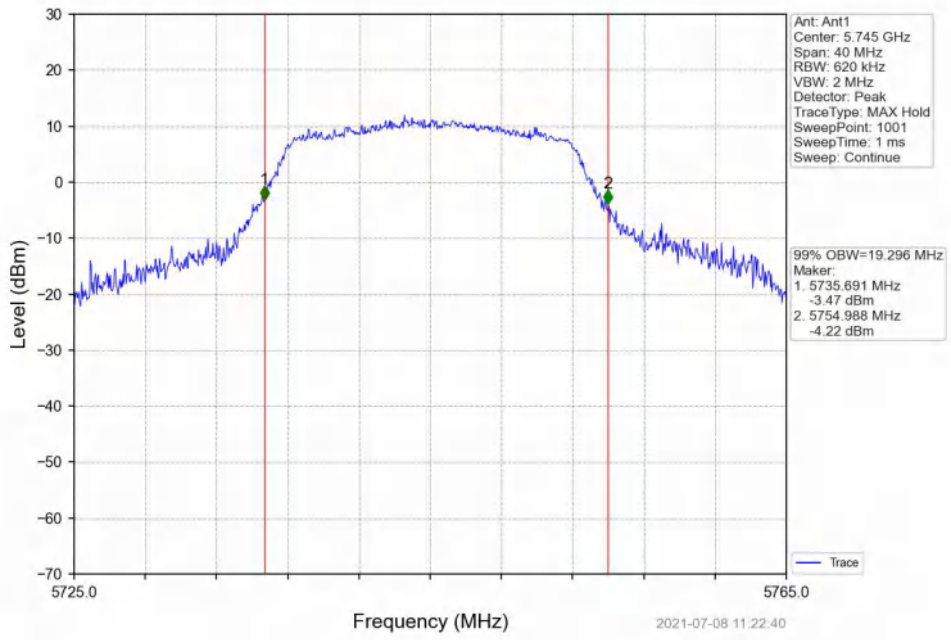
2.1 OBW

2.1.1 Test Result

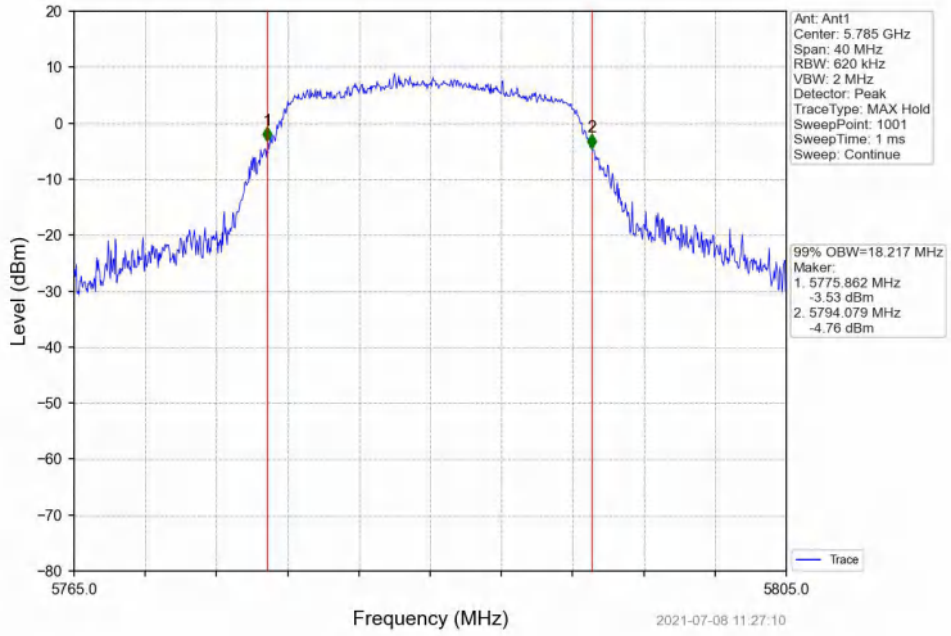
Mode	TX Type	Frequency (MHz)	Ant	99% Occupied Bandwidth (MHz)	Limit	Verdict
802.11a	SISO	5745	1	19.30	/	Pass
		5785	1	18.22	/	Pass
		5825	1	18.58	/	Pass
802.11n (HT20)	MIMO	5745	1	18.95	/	Pass
		5785	1	18.83	/	Pass
		5825	1	19.08	/	Pass
802.11n (HT40)	MIMO	5755	1	36.97	/	Pass
		5795	1	36.85	/	Pass
802.11ac (VHT20)	MIMO	5745	1	18.88	/	Pass
		5785	1	18.79	/	Pass
		5825	1	18.84	/	Pass
802.11ac (VHT40)	MIMO	5755	1	36.82	/	Pass
		5795	1	36.66	/	Pass
802.11ac (VHT80)	MIMO	5775	1	76.55	/	Pass

2.1.2 Test Graph

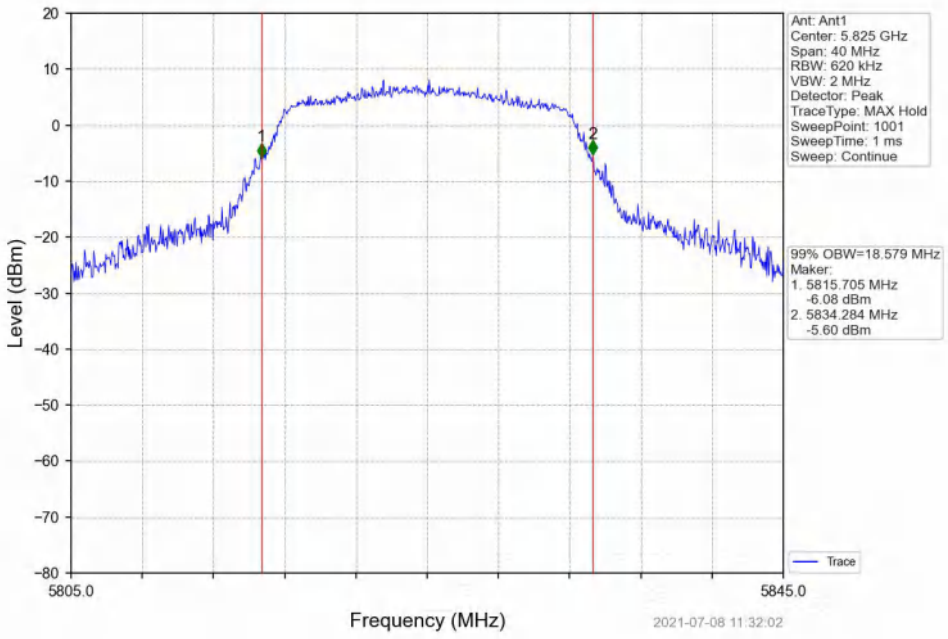
802.11a_LCH_5745MHz_Ant1_NTNV



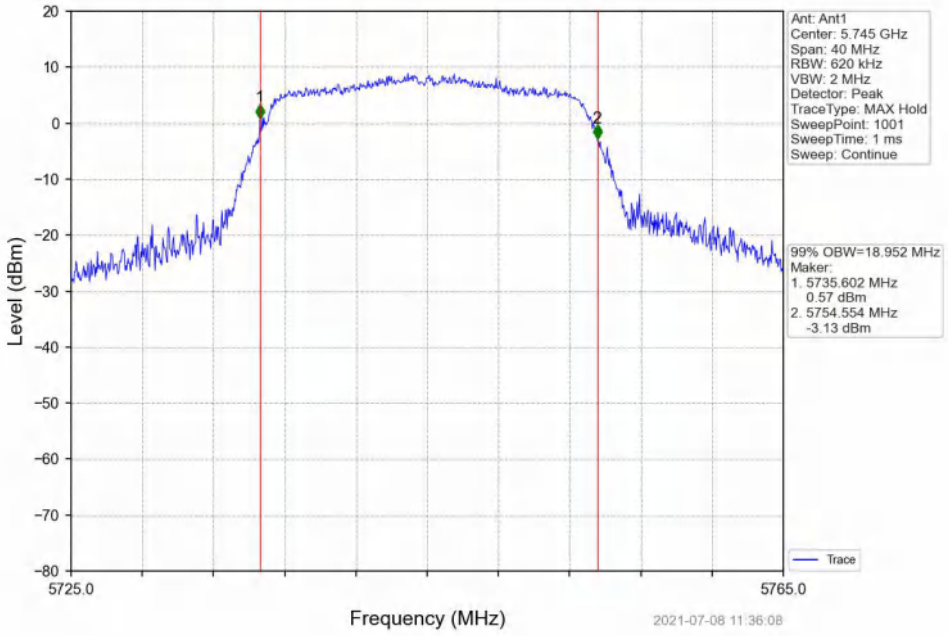
802.11a_MCH_5785MHz_Ant1_NTNV



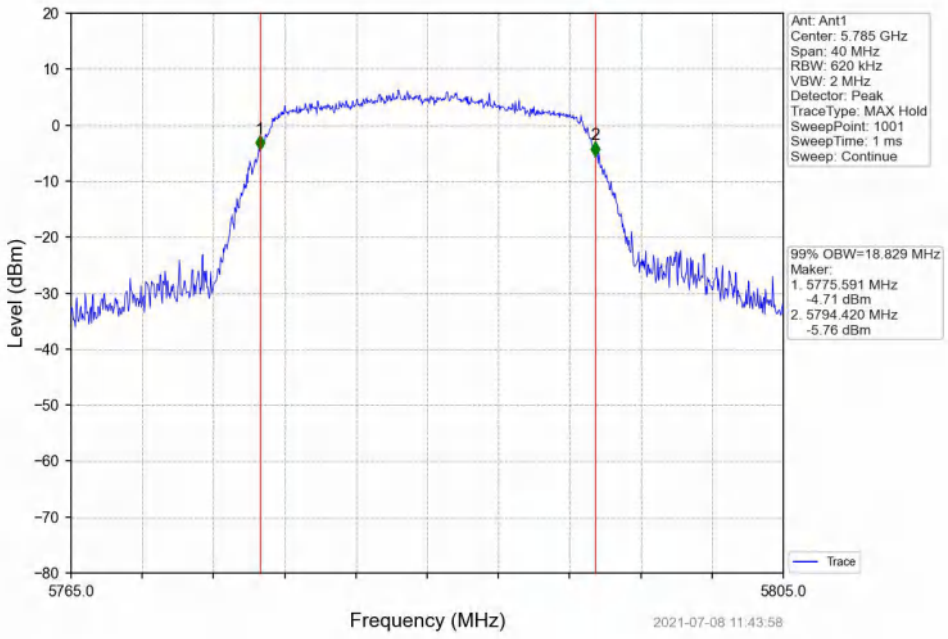
802.11a_HCH_5825MHz_Ant1_NTNV



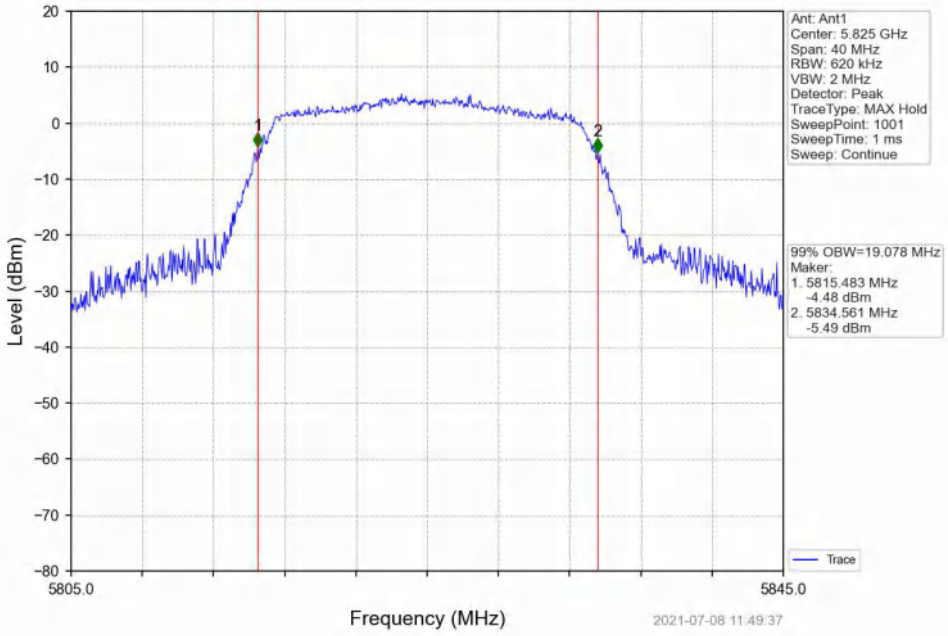
802.11n(HT20)_LCH_5745MHz_Ant1_NTNV



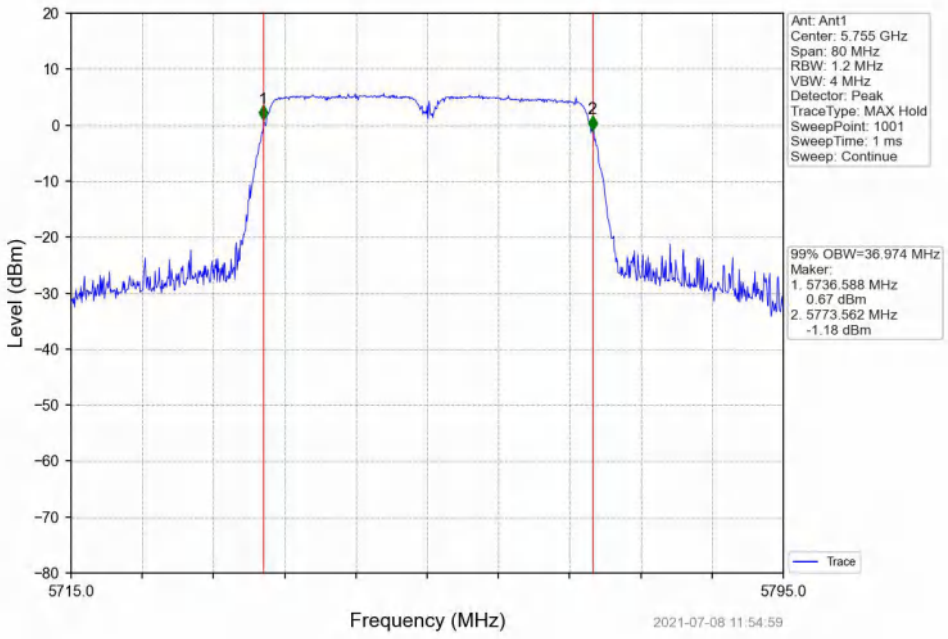
802.11n(HT20)_MCH_5785MHz_Ant1_NTNV



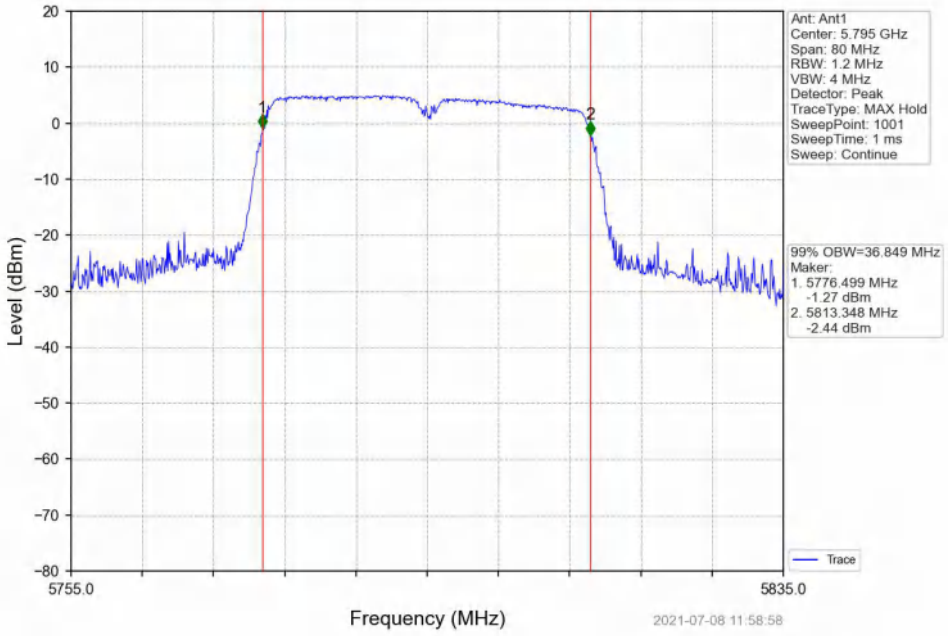
802.11n(HT20)_HCH_5825MHz_Ant1_NTNV



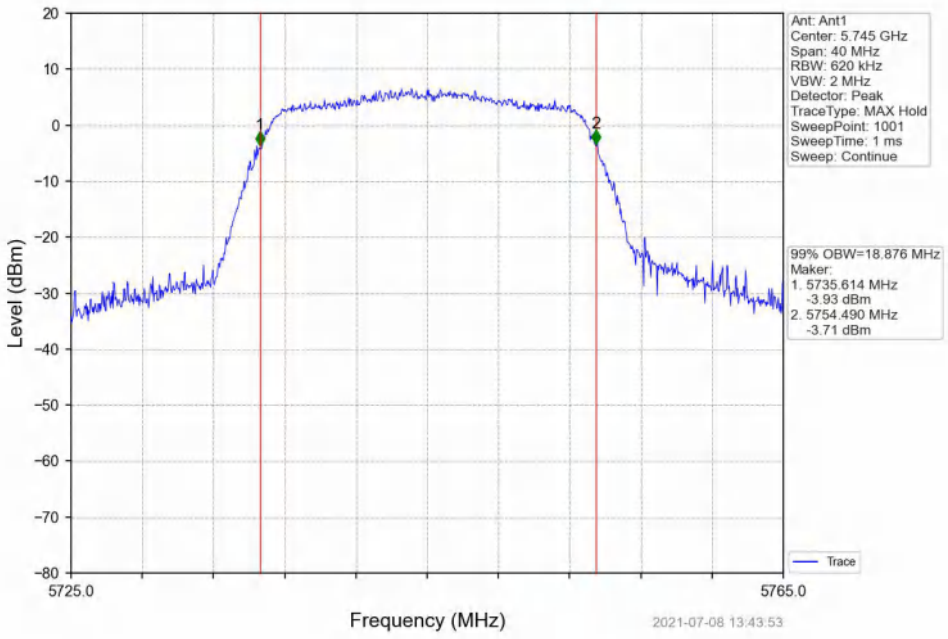
802.11n(HT40)_LCH_5755MHz_Ant1_NTNV



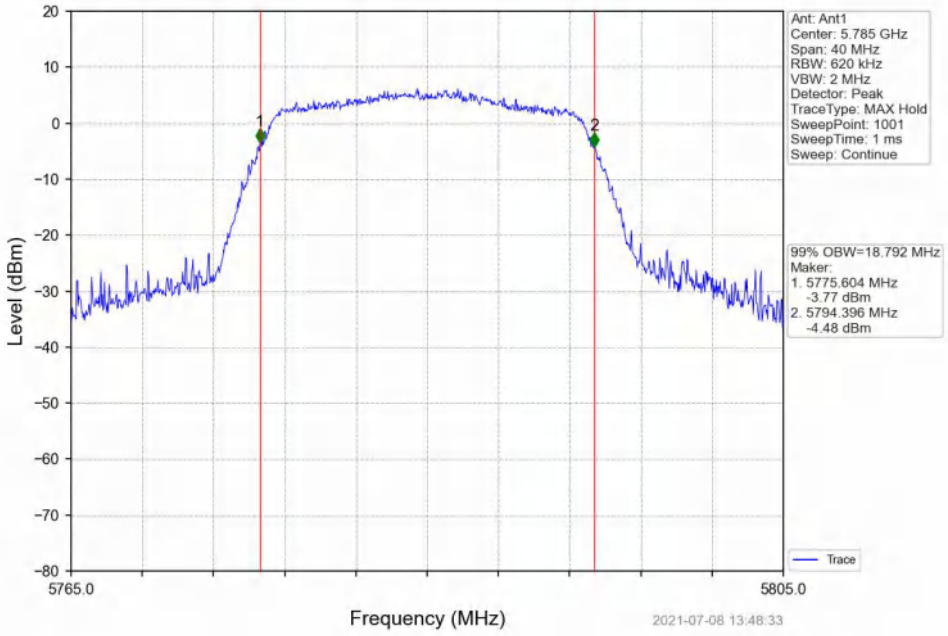
802.11n(HT40)_HCH_5795MHz_Ant1_NTNV



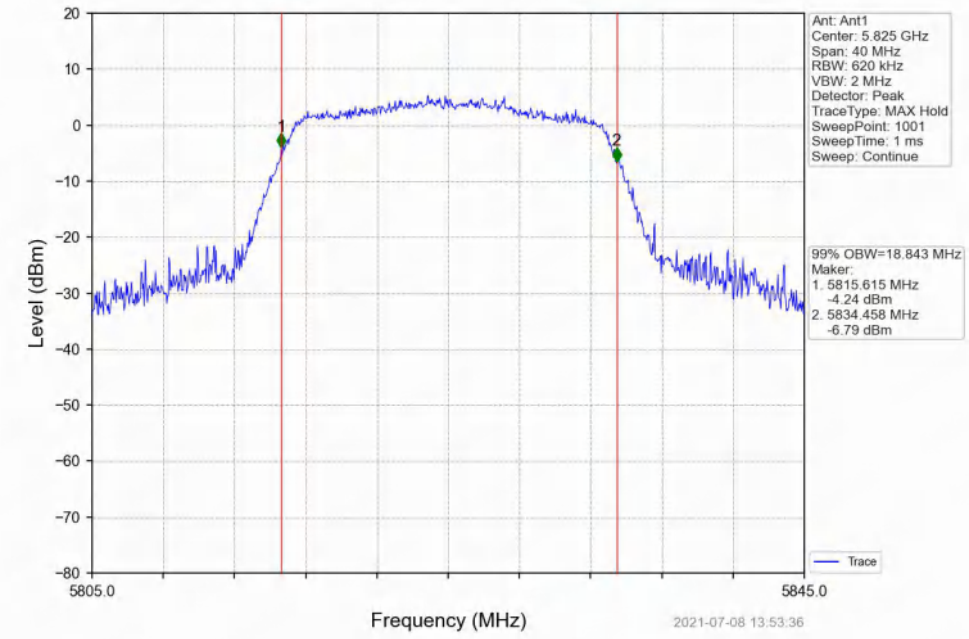
802.11ac(VHT20)_LCH_5745MHz_Ant1_NTNV



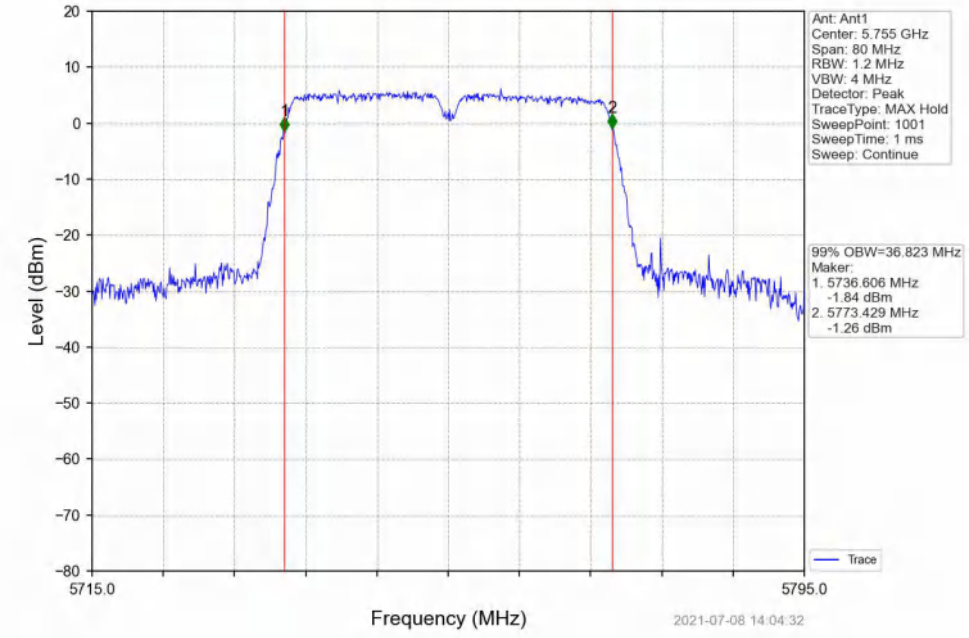
802.11ac(VHT20)_MCH_5785MHz_Ant1_NTNV



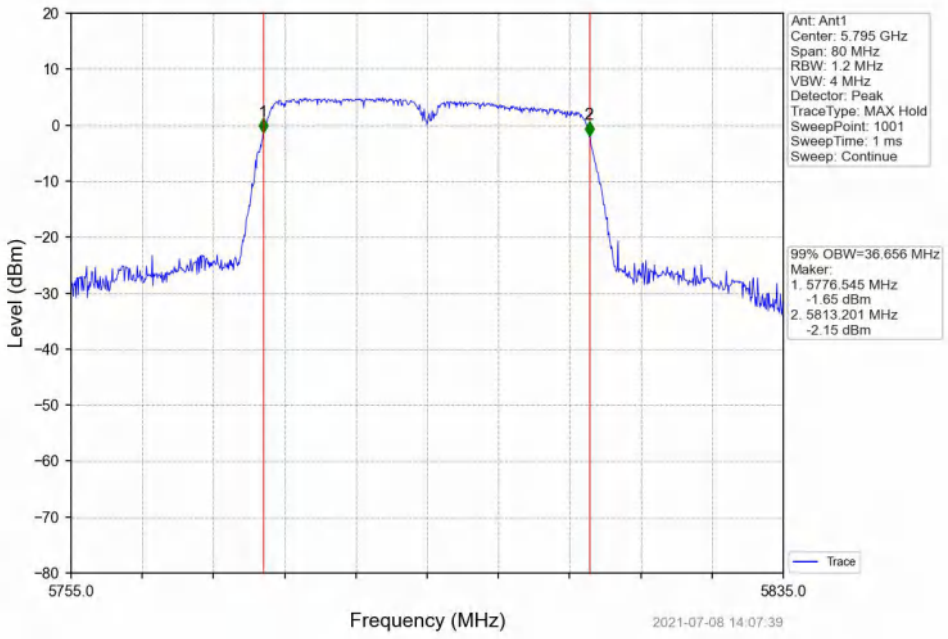
802.11ac(VHT20)_HCH_5825MHz_Ant1_NTNV



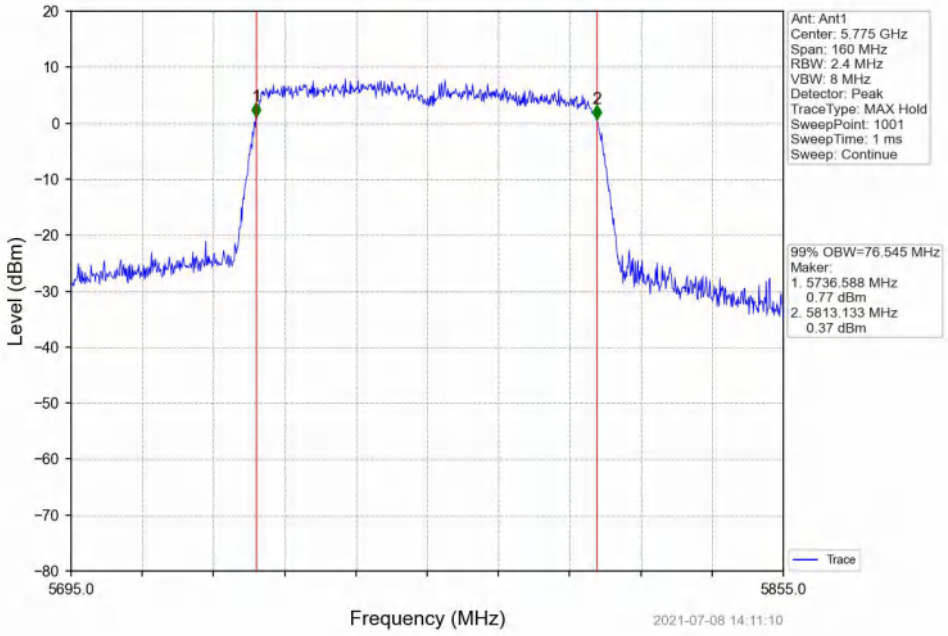
802.11ac(VHT40)_LCH_5755MHz_Ant1_NTNV



802.11ac(VHT40)_HCH_5795MHz_Ant1_NTNV



802.11ac(VHT80)_MCH_5775MHz_Ant1_NTNV



2.2 6dB BW

2.2.1 Test Result

Test Mode	Antenna	Channel	6db EBW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	Ant1	5745	16.440	5736.840	5753.280	0.5	PASS
		5785	16.400	5776.840	5793.240	0.5	PASS
		5825	16.440	5816.840	5833.280	0.5	PASS
11N20SISO	Ant1	5745	17.680	5736.200	5753.880	0.5	PASS
		5785	17.640	5776.240	5793.880	0.5	PASS
		5825	17.680	5816.200	5833.880	0.5	PASS
11N40SISO	Ant1	5755	36.240	5737.080	5773.320	0.5	PASS
		5795	36.240	5777.080	5813.320	0.5	PASS
11AC20SISO	Ant1	5745	17.600	5736.240	5753.840	0.5	PASS
		5785	17.640	5776.240	5793.880	0.5	PASS
		5825	17.600	5816.240	5833.840	0.5	PASS
11AC40SISO	Ant1	5755	36.240	5737.080	5773.320	0.5	PASS
		5795	36.080	5777.160	5813.240	0.5	PASS
11AC80SISO	Ant1	5775	75.520	5737.400	5812.920	0.5	PASS

2.2.2 Test Graph

11A_Ant1_5745

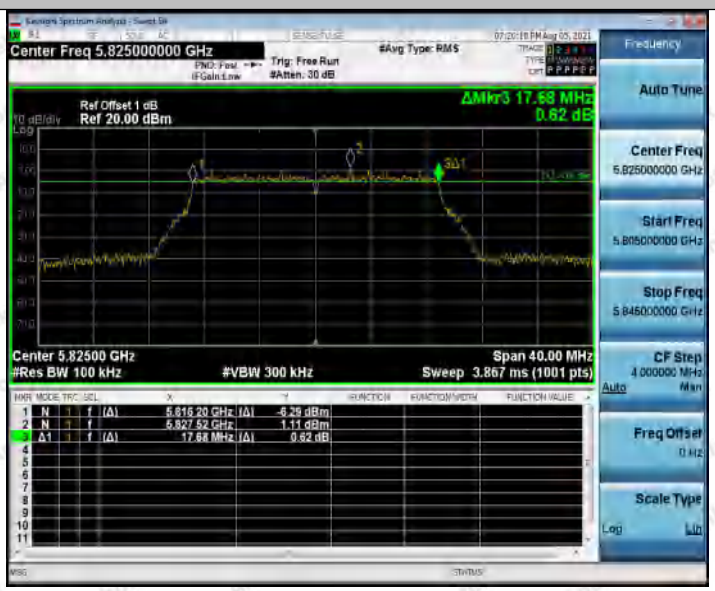
11A_Ant1_5785

11A_Ant1_5825

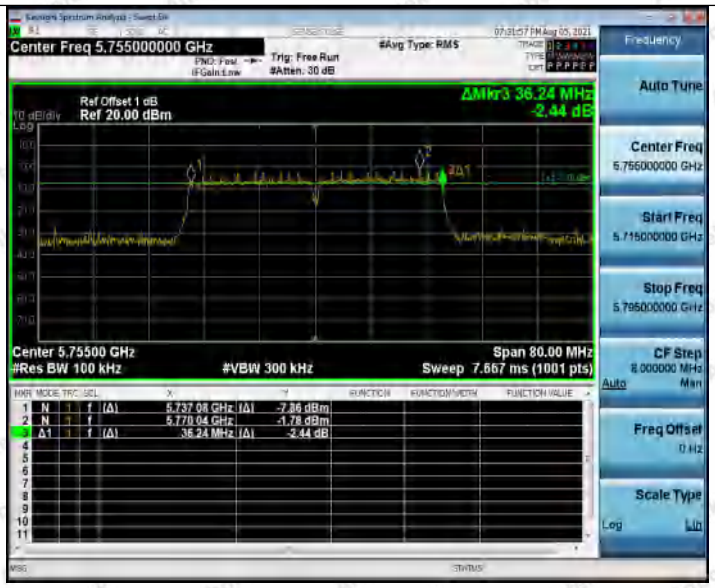
11N20SISO_Ant1_5745

11N20SISO_Ant1_5785

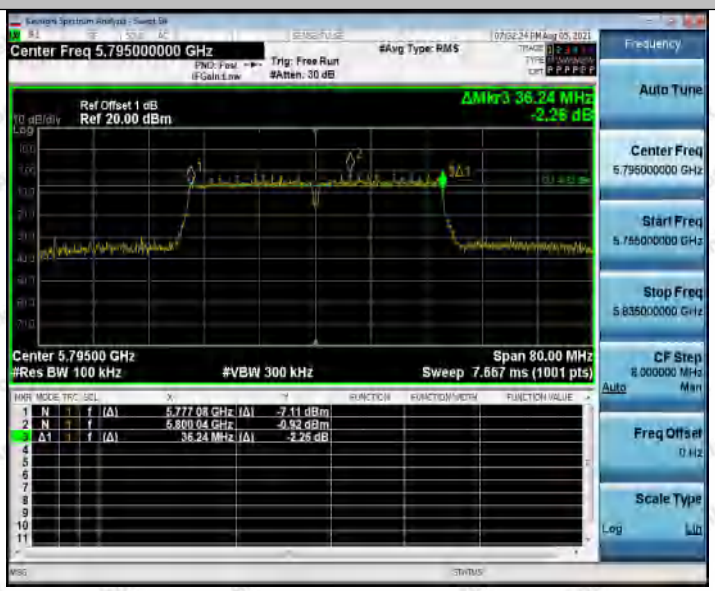
11N20SISO_Ant1_5825



11N40SISO_Ant1_5755



11N40SISO_Ant1_5795

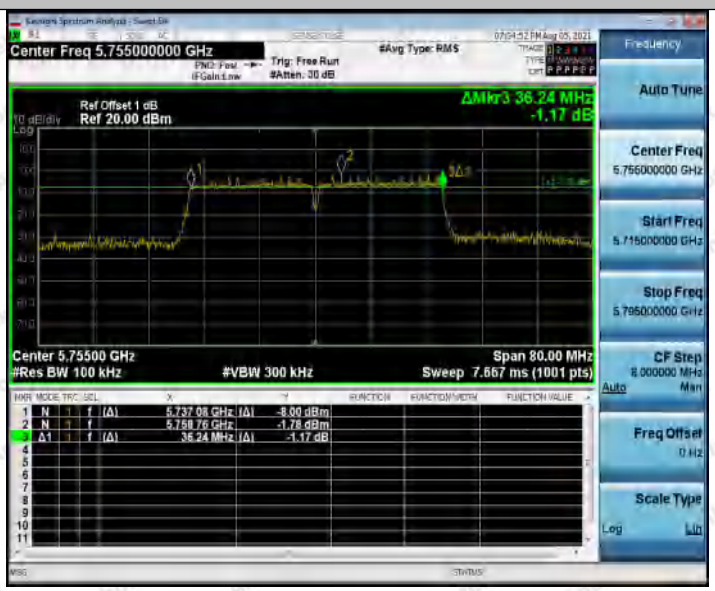


11AC20SISO_Ant1_5745

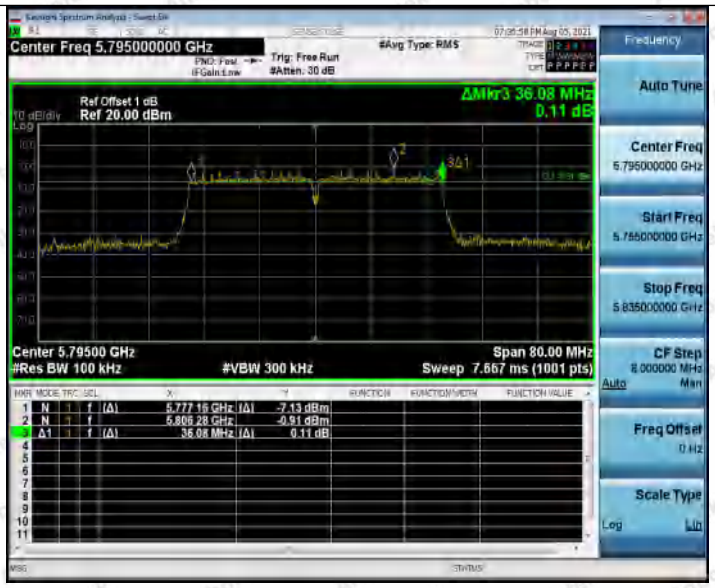
11AC20SISO_Ant1_5785

11AC20SISO_Ant1_5825

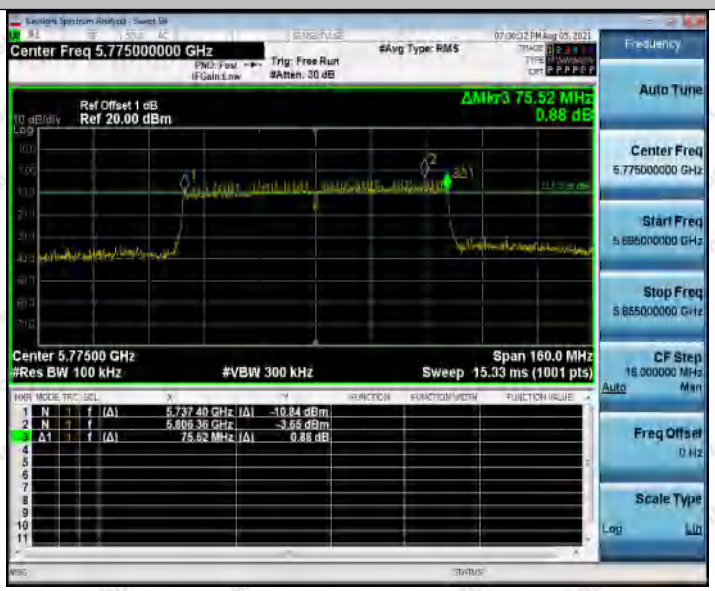
11AC40SISO_Ant1_5755



11AC40SISO_Ant1_5795



11AC80SISO_Ant1_5775



3. Maximum Conducted Output Power

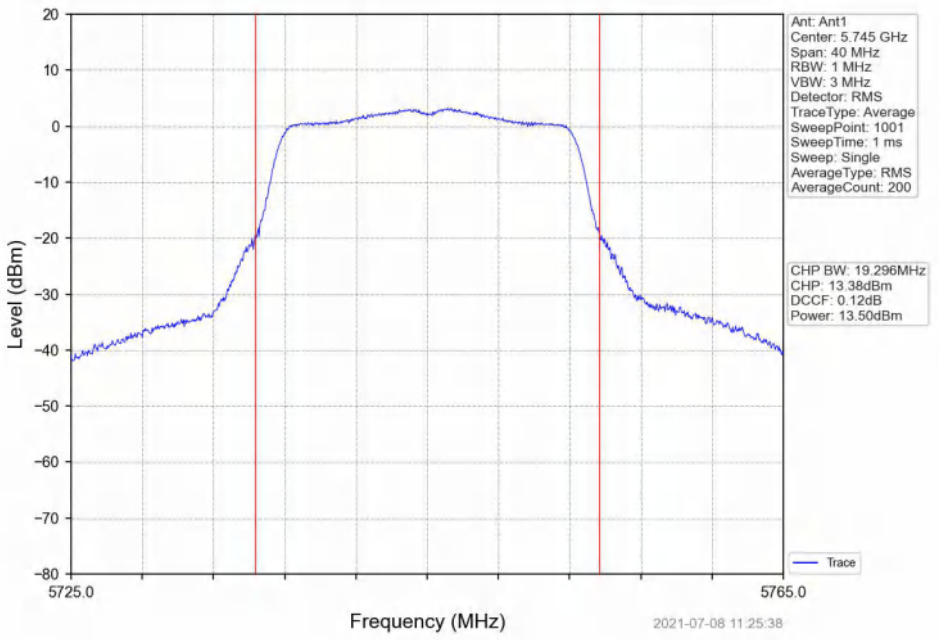
3.1 Power

3.1.1 Test Result

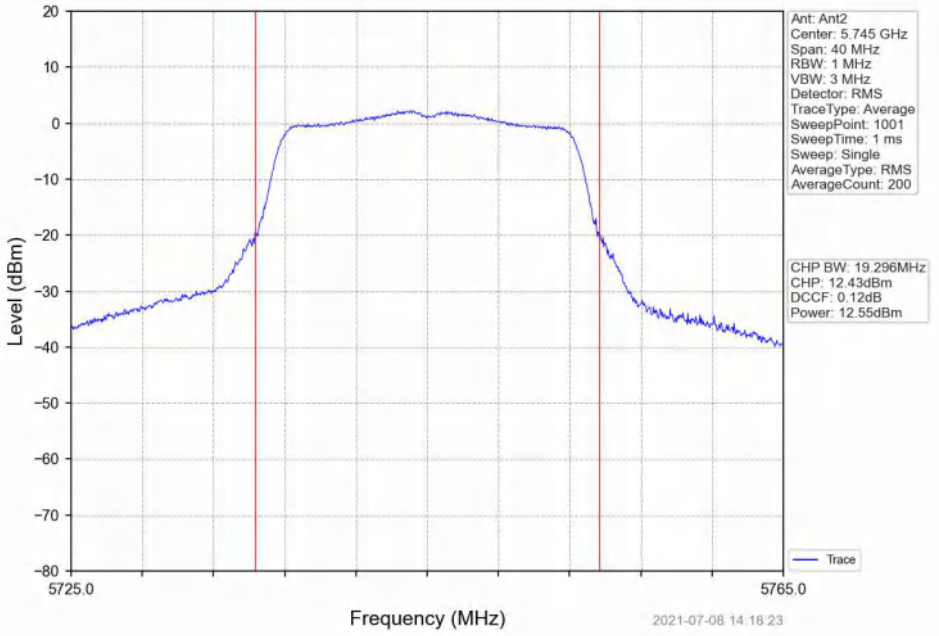
Mode	TX Type	Frequency (MHz)	Measured Average Output Power (dBm)				Verdict
			Ant1	Ant2	Sum	Limit	
802.11a	SISO	5745	13.50	12.55	/	<=30	Pass
		5785	12.74	11.33	/	<=30	Pass
		5825	11.56	10.36	/	<=30	Pass
802.11n (HT20)	MIMO	5745	11.31	10.01	13.72	<=30	Pass
		5785	10.57	8.80	12.78	<=30	Pass
		5825	9.54	7.80	11.77	<=30	Pass
802.11n (HT40)	MIMO	5755	10.52	9.53	13.06	<=30	Pass
		5795	9.75	8.42	12.15	<=30	Pass
802.11ac (VHT20)	MIMO	5745	11.25	10.03	13.69	<=30	Pass
		5785	10.58	8.77	12.78	<=30	Pass
		5825	9.59	7.98	11.87	<=30	Pass
802.11ac (VHT40)	MIMO	5755	10.49	9.62	13.09	<=30	Pass
		5795	9.64	8.38	12.07	<=30	Pass
802.11ac (VHT80)	MIMO	5775	10.37	9.19	12.83	<=30	Pass
Note1: Antenna Gain: Ant1: 1.83dBi; Ant2: 1.61dBi;							

3.1.2 Test Graph

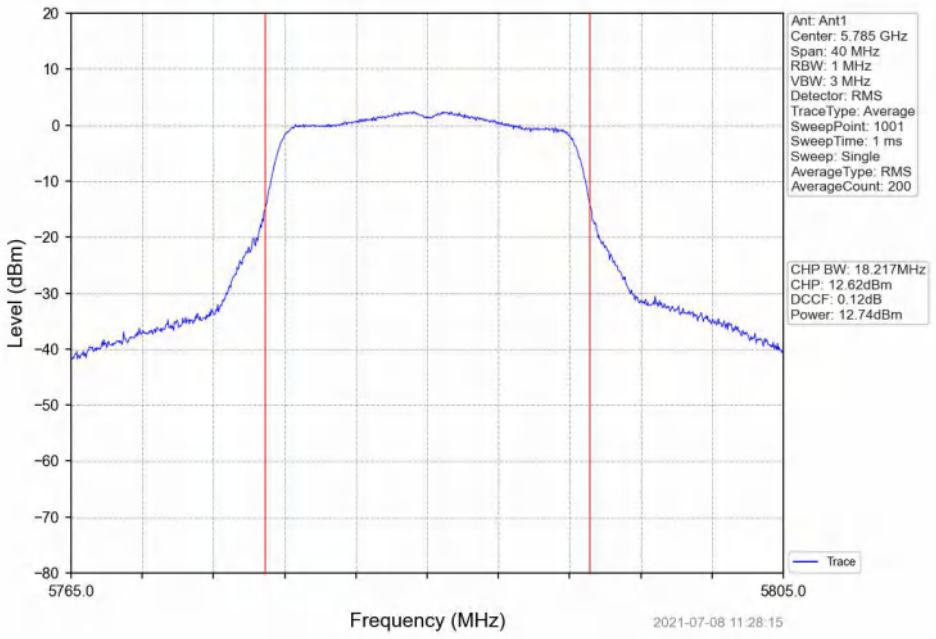
802.11a_LCH_5745MHz_Ant1_NTNV



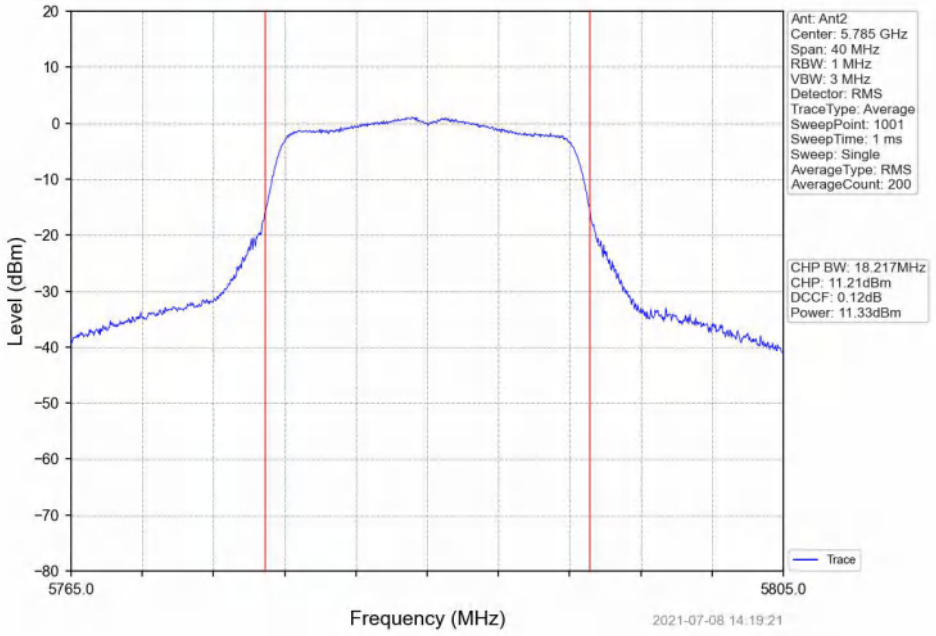
802.11a_LCH_5745MHz_Ant2_NTNV



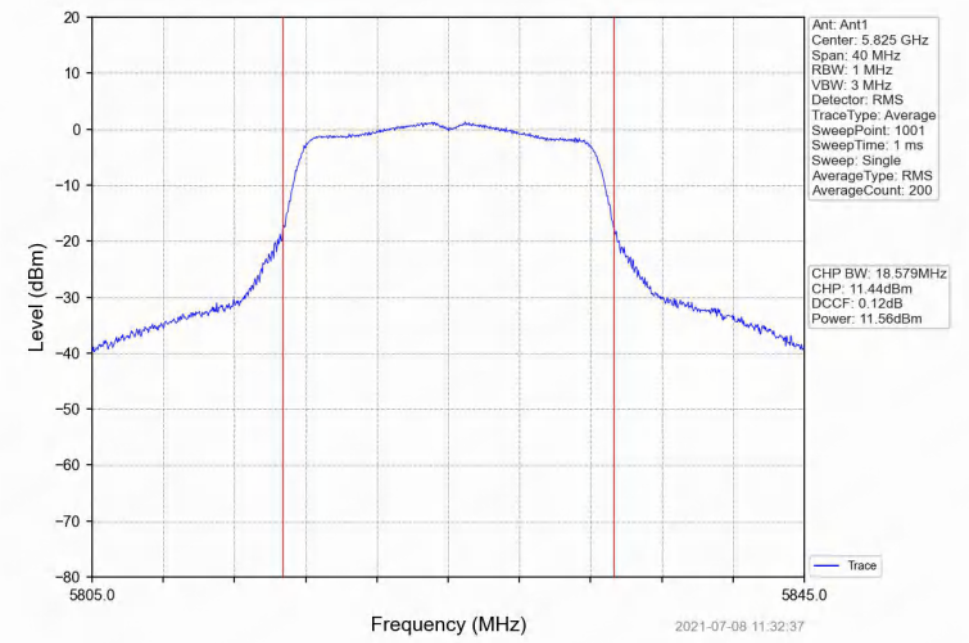
802.11a_MCH_5785MHz_Ant1_NTNV



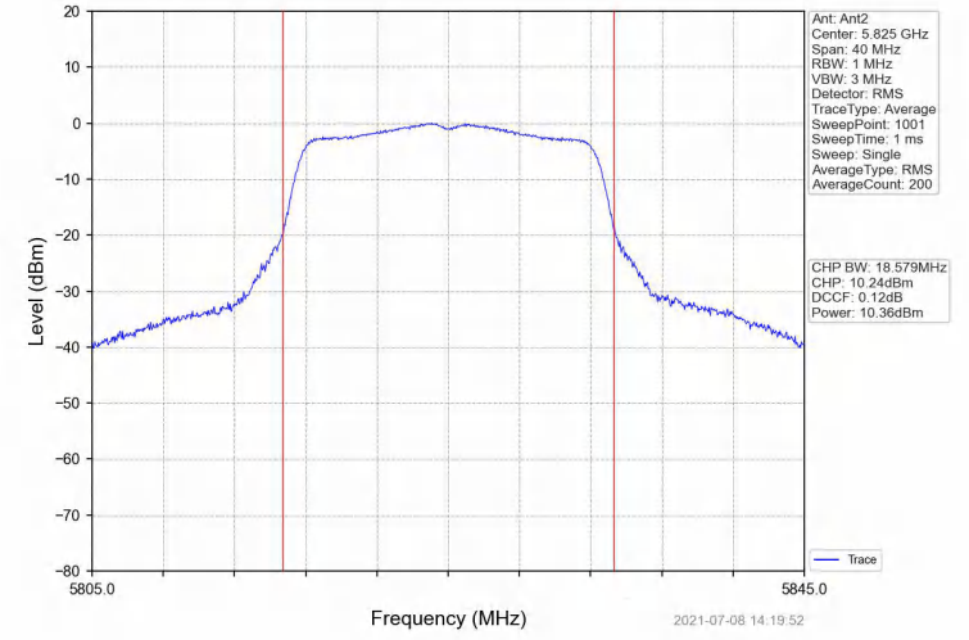
802.11a_MCH_5785MHz_Ant2_NTNV



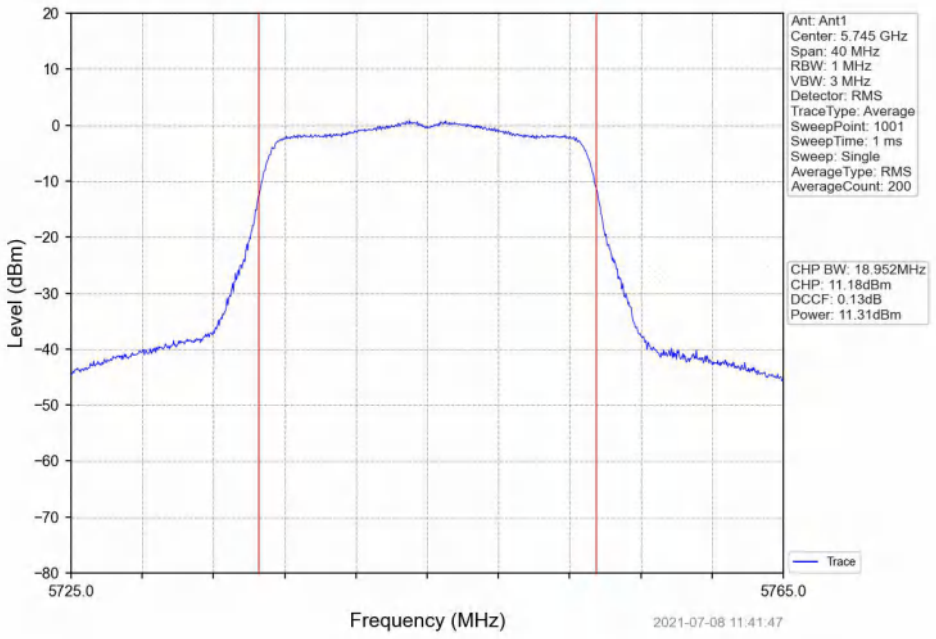
802.11a_HCH_5825MHz_Ant1_NTNV



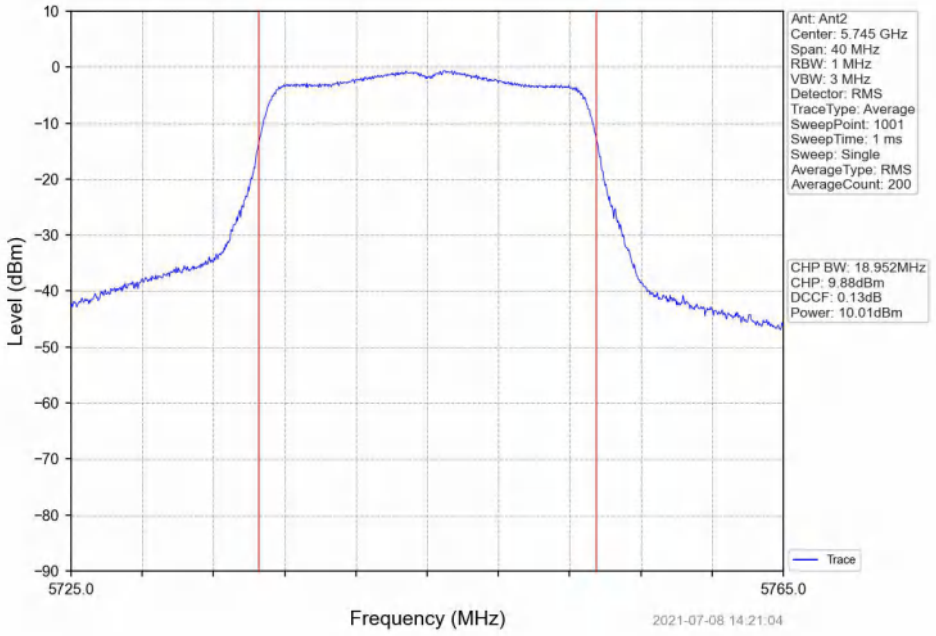
802.11a_HCH_5825MHz_Ant2_NTNV



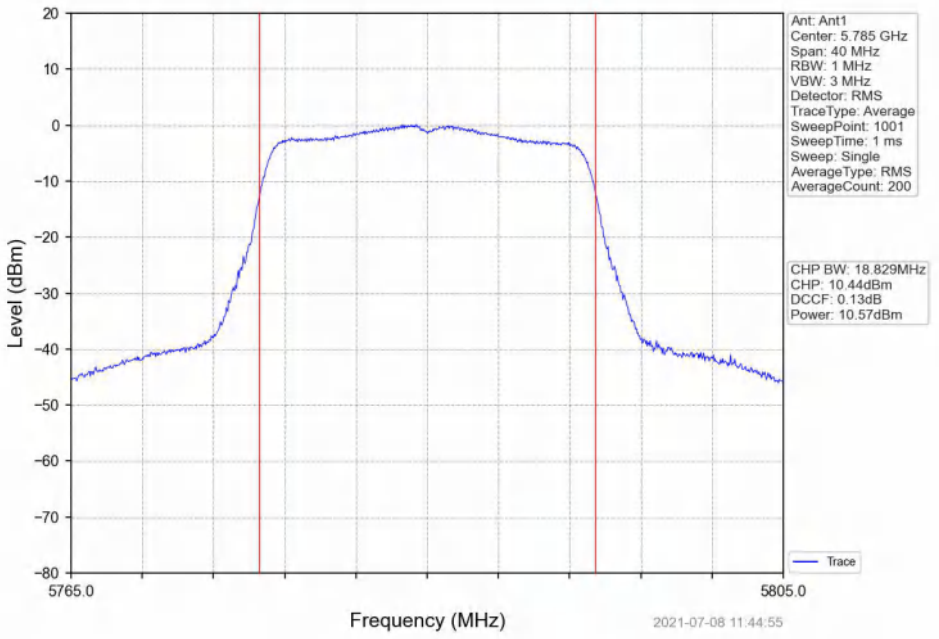
802.11n(HT20)_LCH_5745MHz_Ant1_NTNV



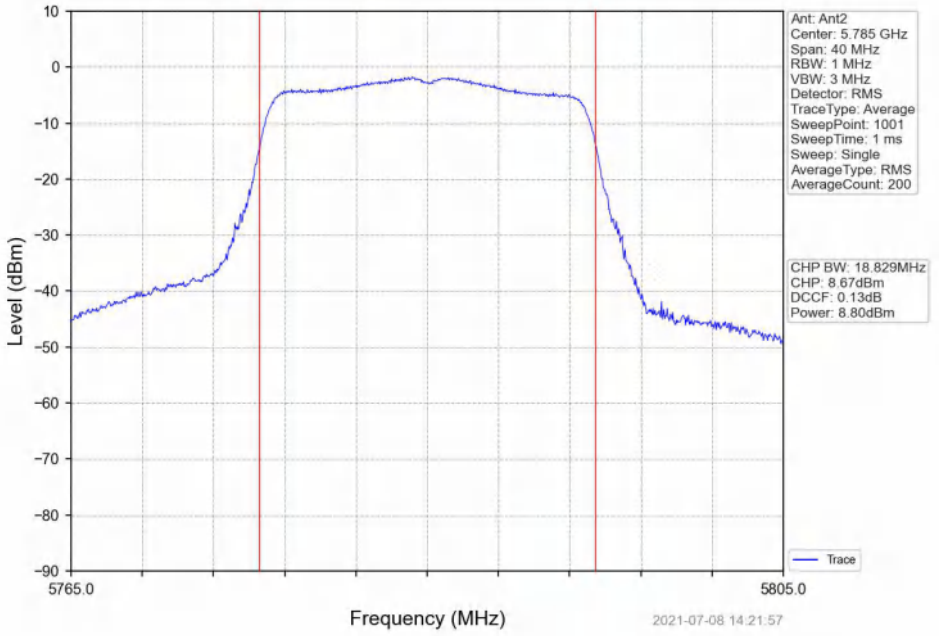
802.11n(HT20)_LCH_5745MHz_Ant2_NTNV



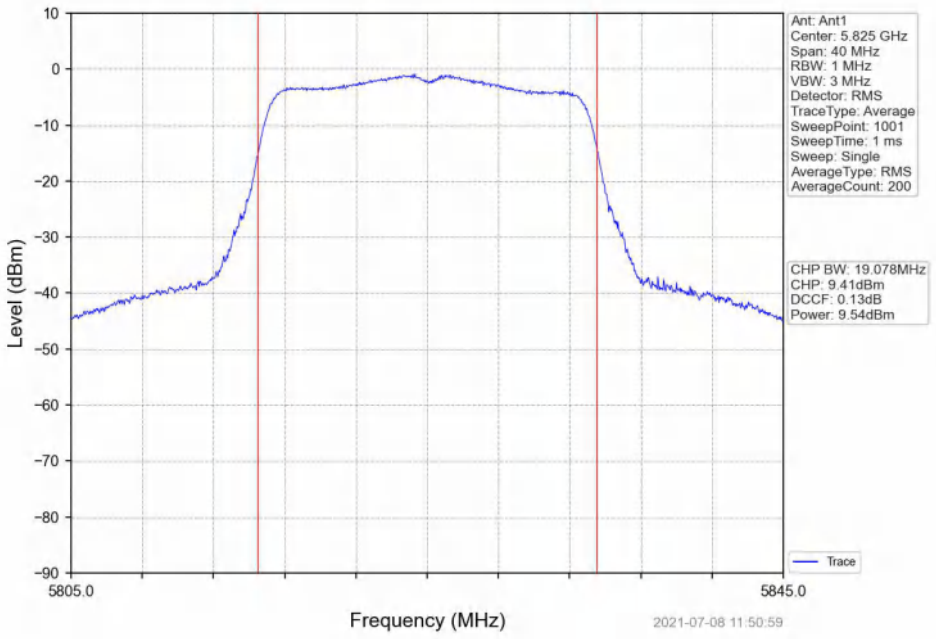
802.11n(HT20)_MCH_5785MHz_Ant1_NTNV



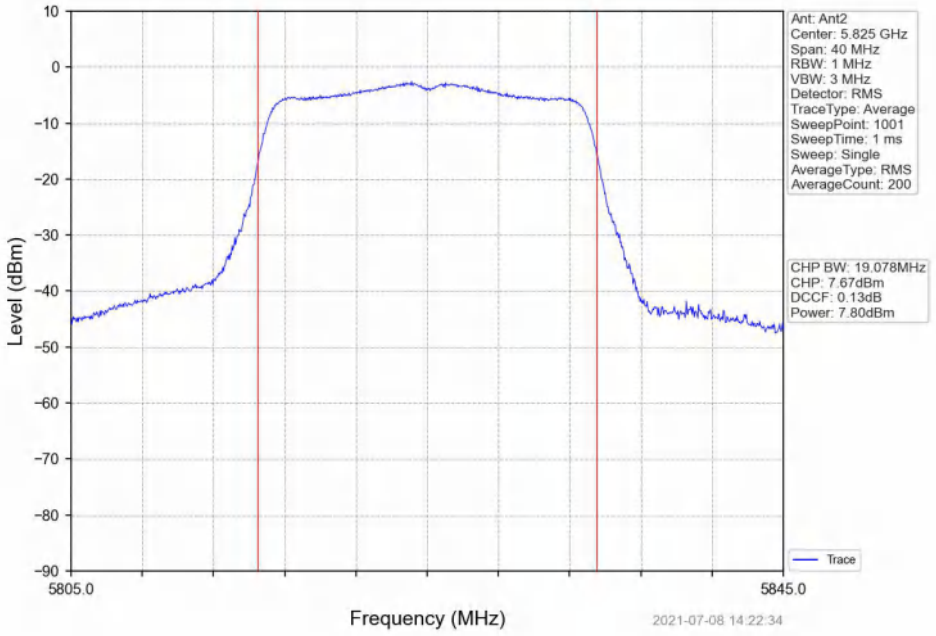
802.11n(HT20)_MCH_5785MHz_Ant2_NTNV



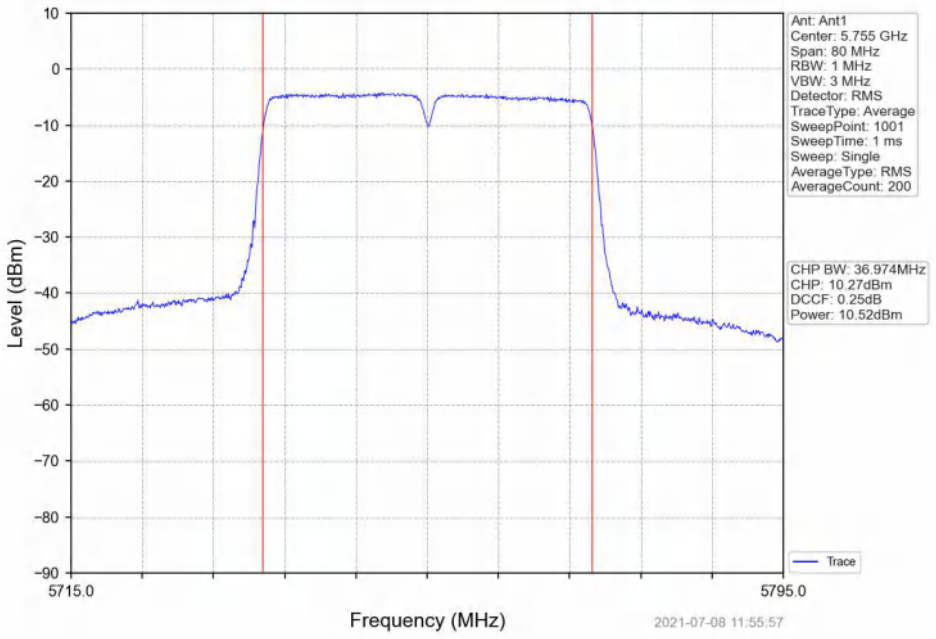
802.11n(HT20)_HCH_5825MHz_Ant1_NTNV



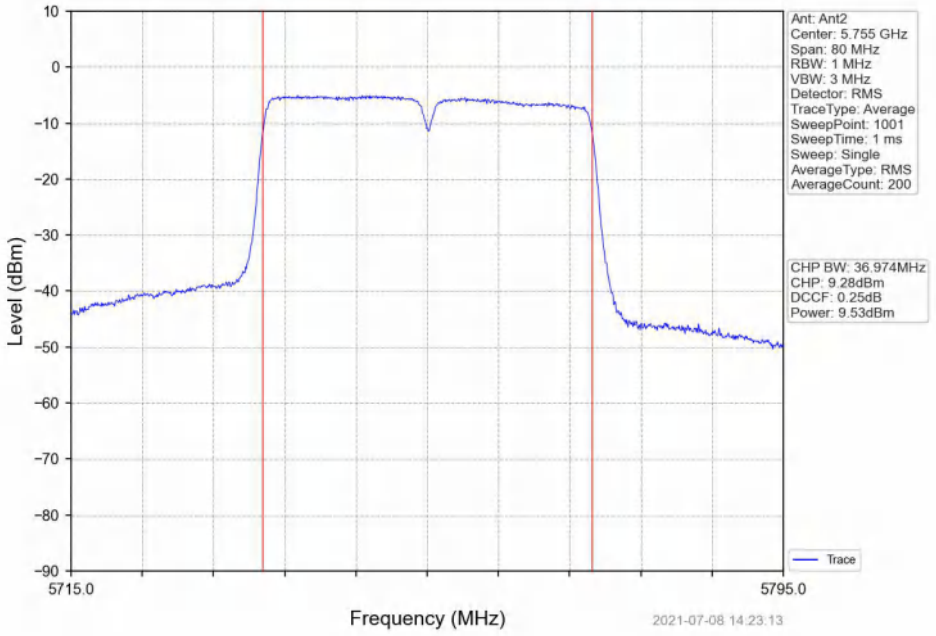
802.11n(HT20)_HCH_5825MHz_Ant2_NTNV



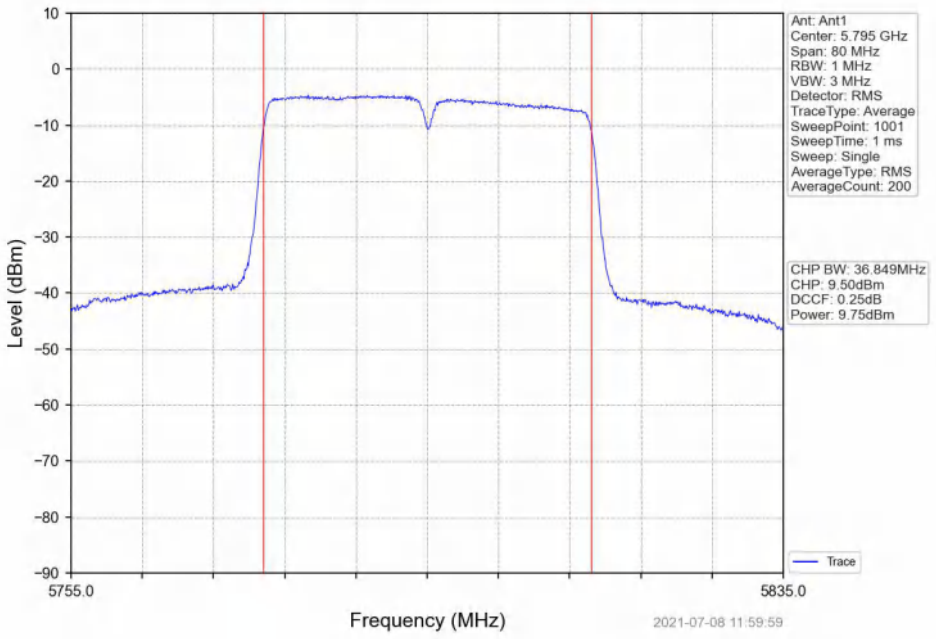
802.11n(HT40)_LCH_5755MHz_Ant1_NTNV



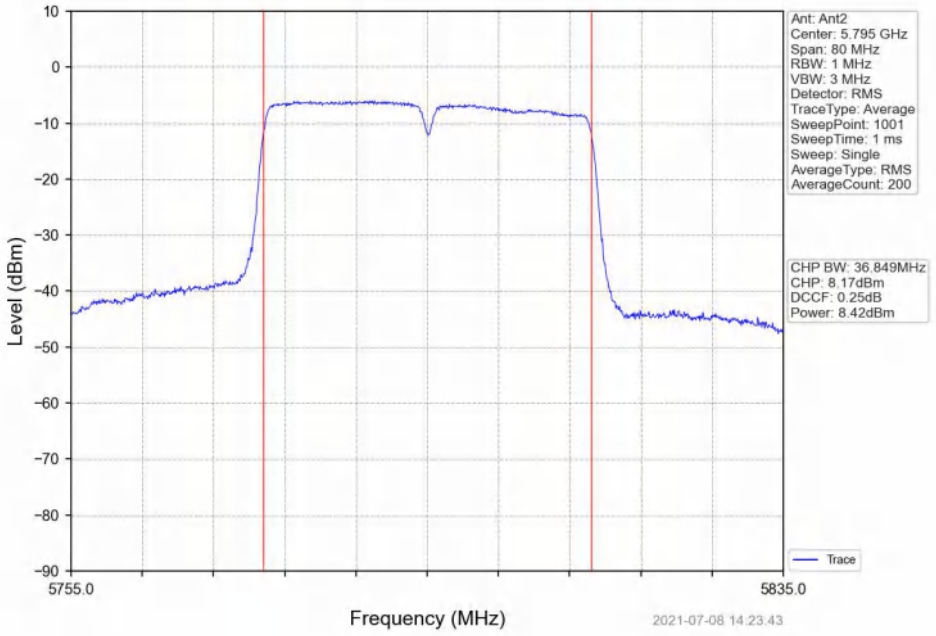
802.11n(HT40)_LCH_5755MHz_Ant2_NTNV



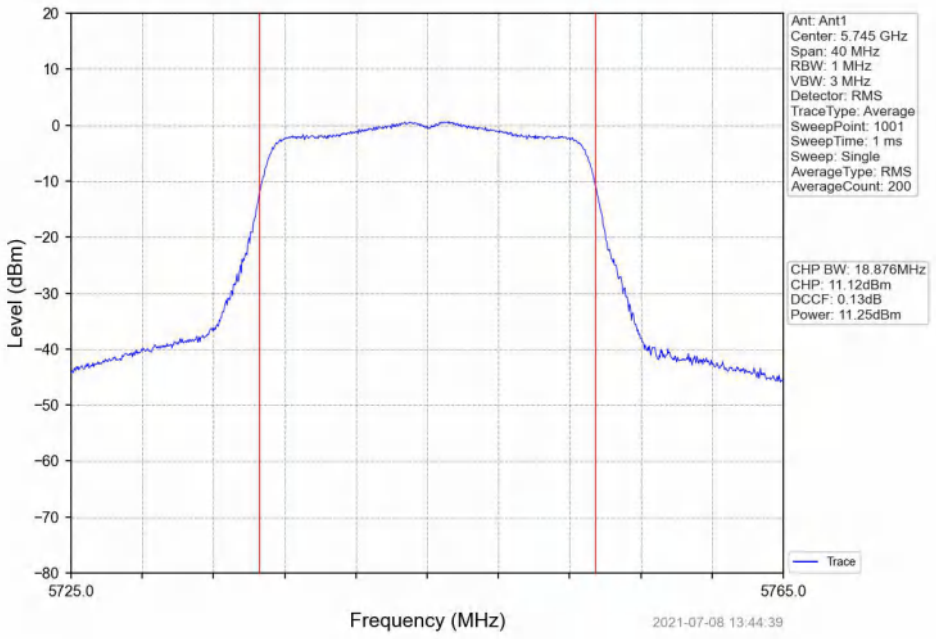
802.11n(HT40)_HCH_5795MHz_Ant1_NTNV



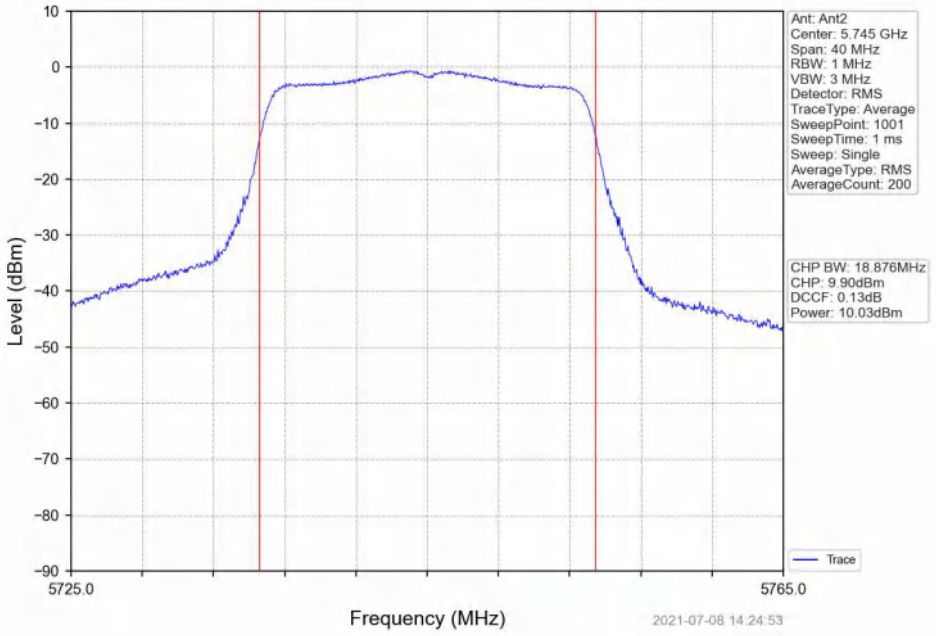
802.11n(HT40)_HCH_5795MHz_Ant2_NTNV



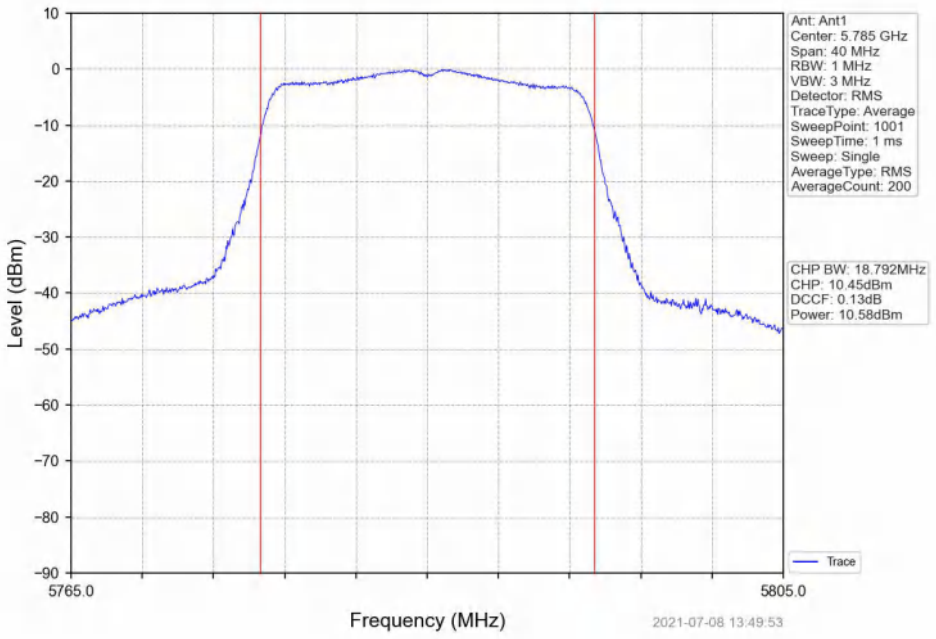
802.11ac(VHT20)_LCH_5745MHz_Ant1_NTNV



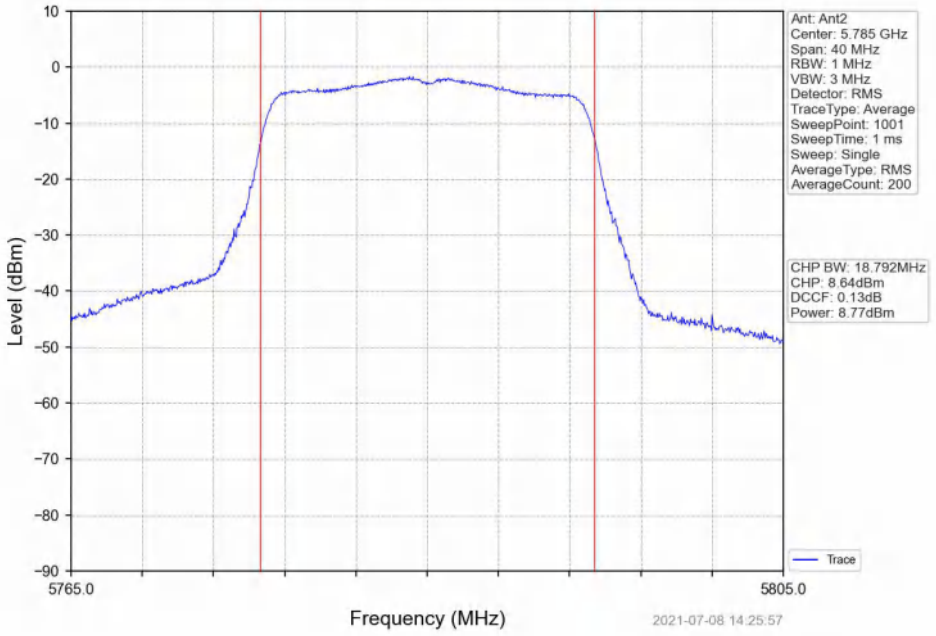
802.11ac(VHT20)_LCH_5745MHz_Ant2_NTNV



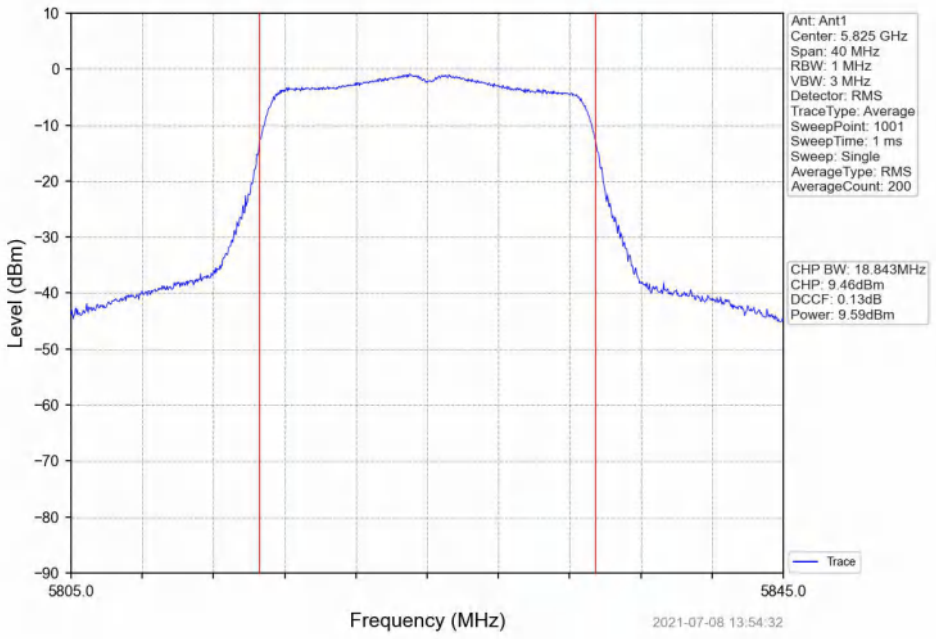
802.11ac(VHT20)_MCH_5785MHz_Ant1_NTNV



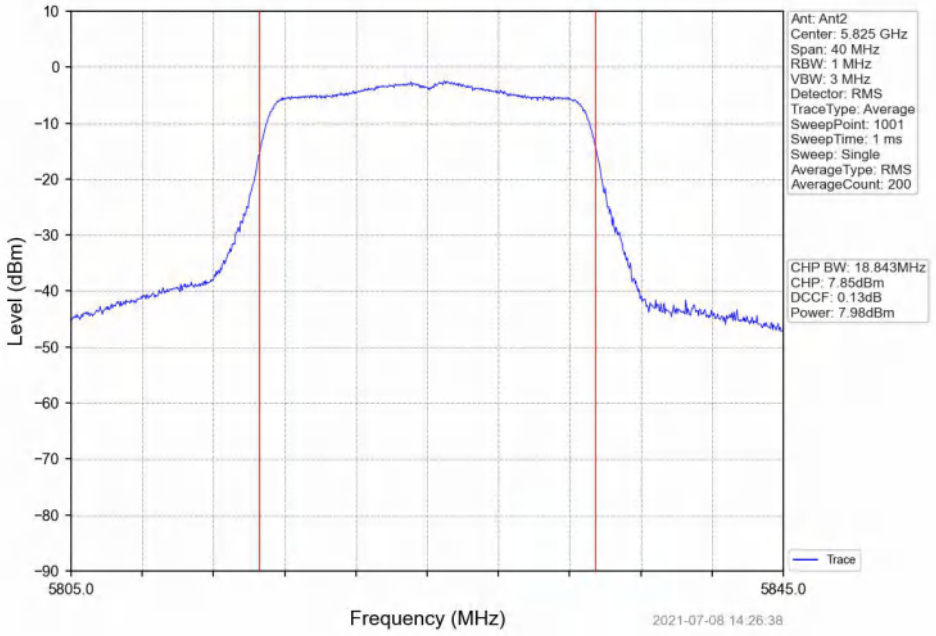
802.11ac(VHT20)_MCH_5785MHz_Ant2_NTNV



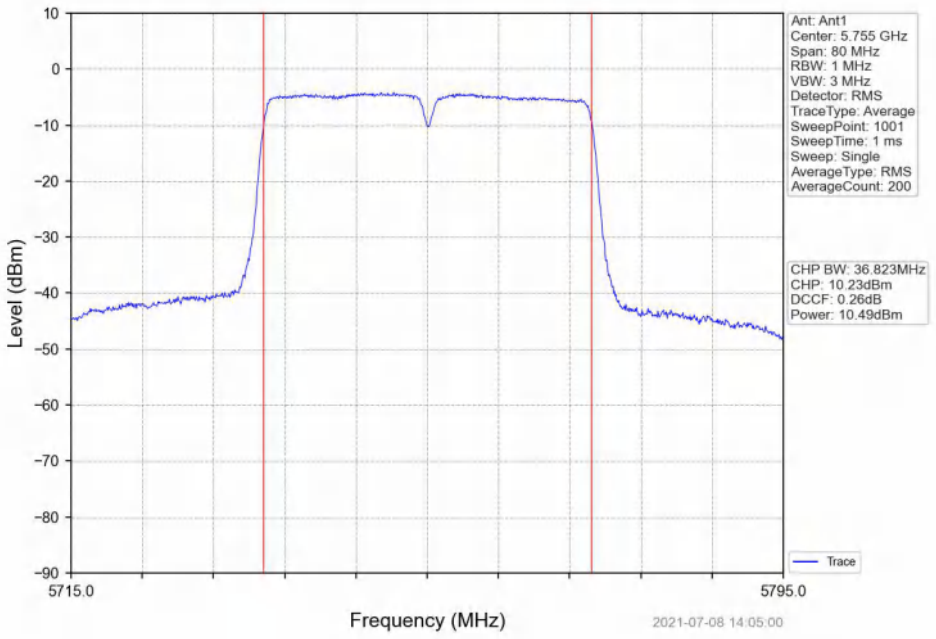
802.11ac(VHT20)_HCH_5825MHz_Ant1_NTNV



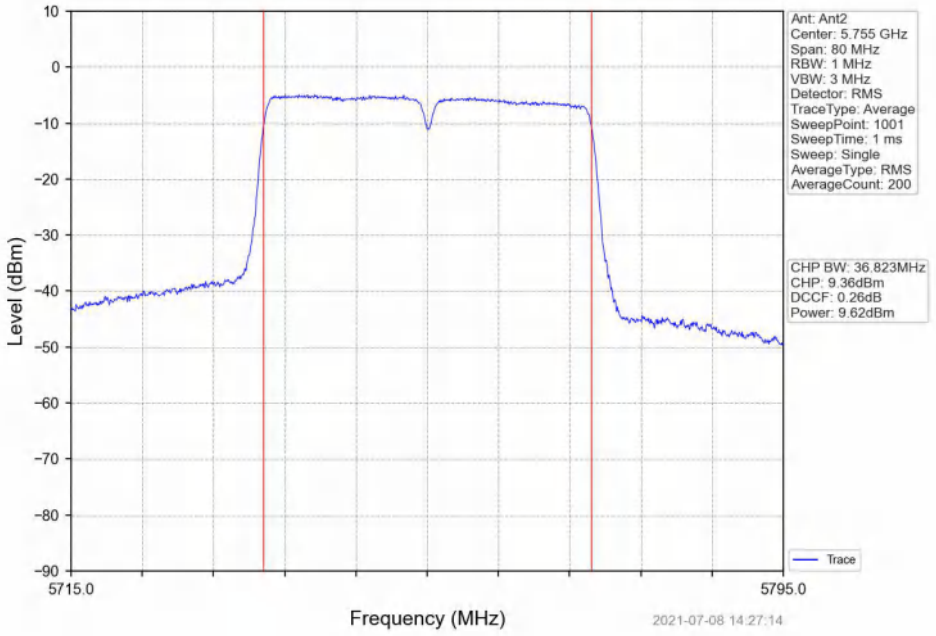
802.11ac(VHT20)_HCH_5825MHz_Ant2_NTNV



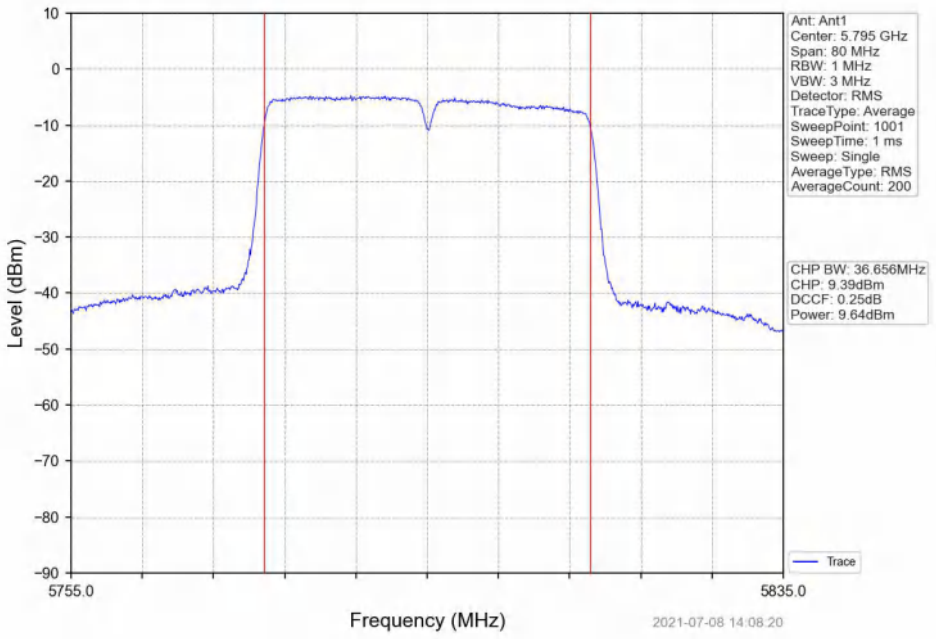
802.11ac(VHT40)_LCH_5755MHz_Ant1_NTNV



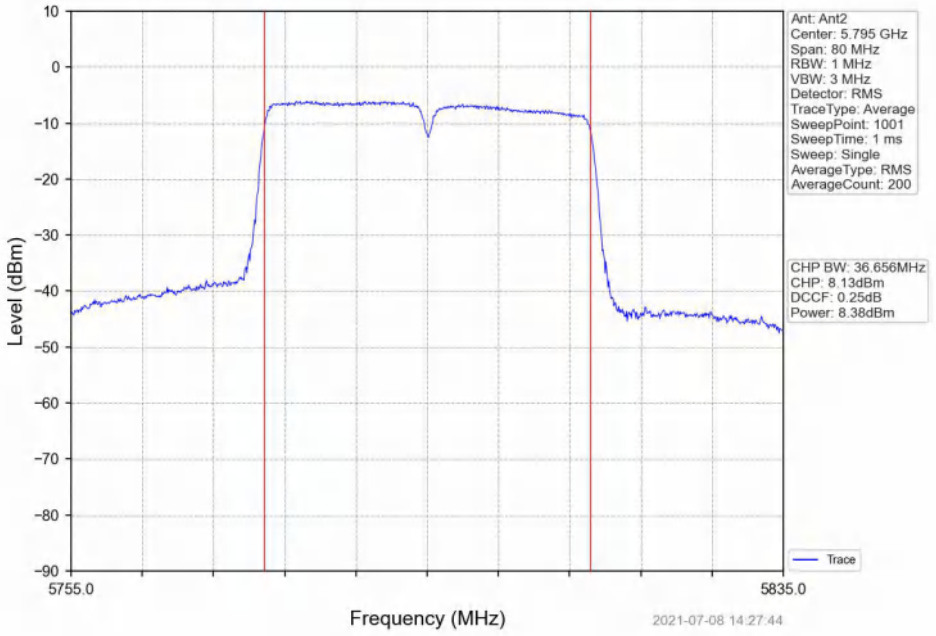
802.11ac(VHT40)_LCH_5755MHz_Ant2_NTNV



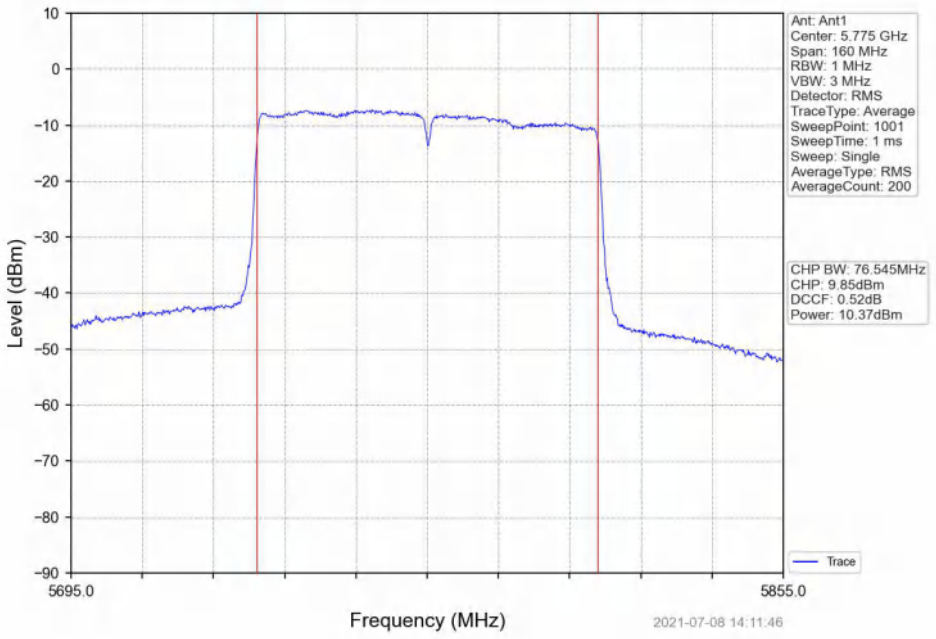
802.11ac(VHT40)_HCH_5795MHz_Ant1_NTNV



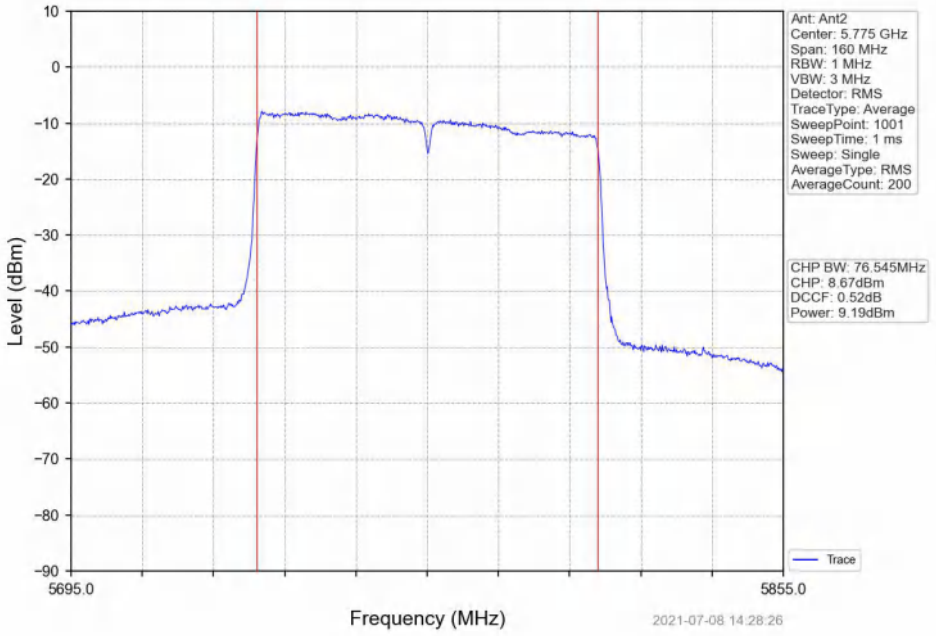
802.11ac(VHT40)_HCH_5795MHz_Ant2_NTNV



802.11ac(VHT80)_MCH_5775MHz_Ant1_NTNV



802.11ac(VHT80)_MCH_5775MHz_Ant2_NTNV



4. Maximum Power Spectral Density

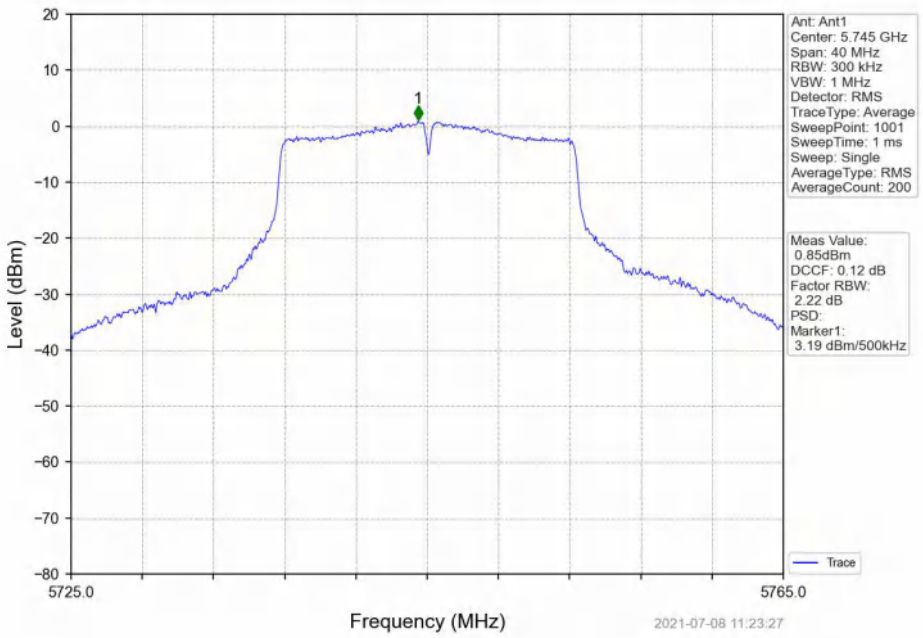
4.1 PSD-Band3

4.1.1 Test Result

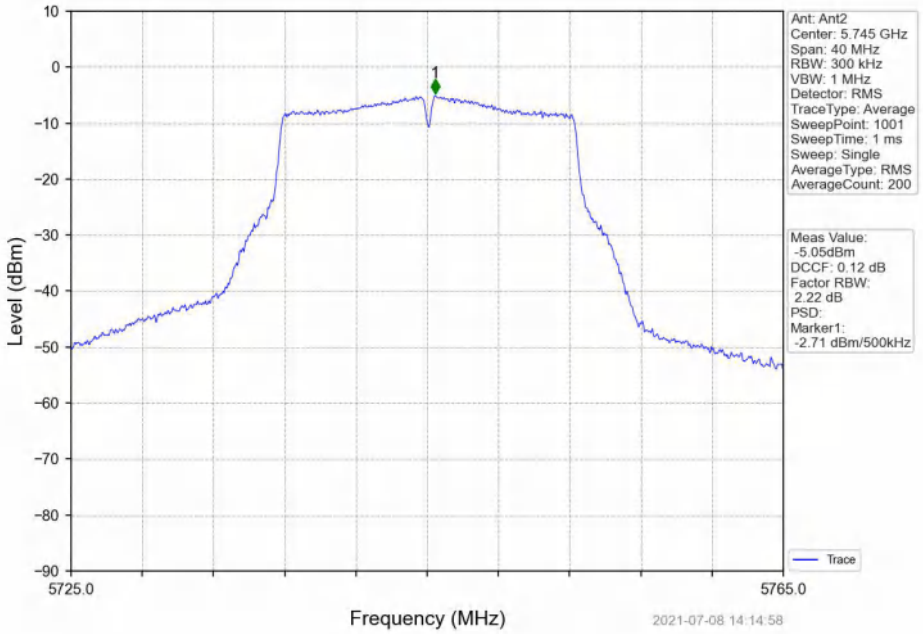
Mode	TX Type	Frequency (MHz)	Maximum PSD (dBm/500kHz)				Verdict
			Ant1	Ant2	Sum	Limit	
802.11a	SISO	5745	3.19	-2.71	/	<=30	Pass
		5785	-0.19	-4.05	/	<=30	Pass
		5825	-1.36	-2.60	/	<=30	Pass
802.11n (HT20)	MIMO	5745	0.36	-3.20	1.76	<=30	Pass
		5785	-2.56	-4.17	-0.37	<=30	Pass
		5825	-3.73	-5.13	-1.45	<=30	Pass
802.11n (HT40)	MIMO	5755	-7.04	-7.56	-4.42	<=30	Pass
		5795	-7.17	-8.56	-4.94	<=30	Pass
802.11ac (VHT20)	MIMO	5745	-1.98	-3.07	0.39	<=30	Pass
		5785	-2.45	-4.22	-0.23	<=30	Pass
		5825	-3.43	-4.97	-1.23	<=30	Pass
802.11ac (VHT40)	MIMO	5755	-6.93	-7.61	-4.41	<=30	Pass
		5795	-7.48	-8.68	-5.05	<=30	Pass
802.11ac (VHT80)	MIMO	5775	-9.54	-10.33	-7.23	<=30	Pass
Note1: Antenna Gain: Ant1: 1.83dBi; Ant2: 1.61dBi;							

4.1.2 Test Graph

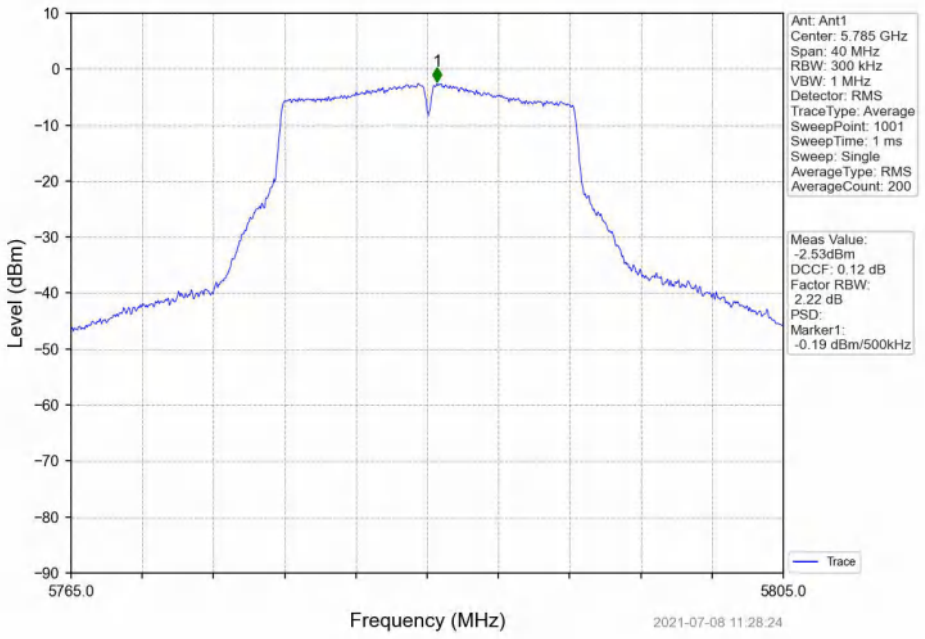
802.11a_LCH_5745MHz_Ant1_NTNV



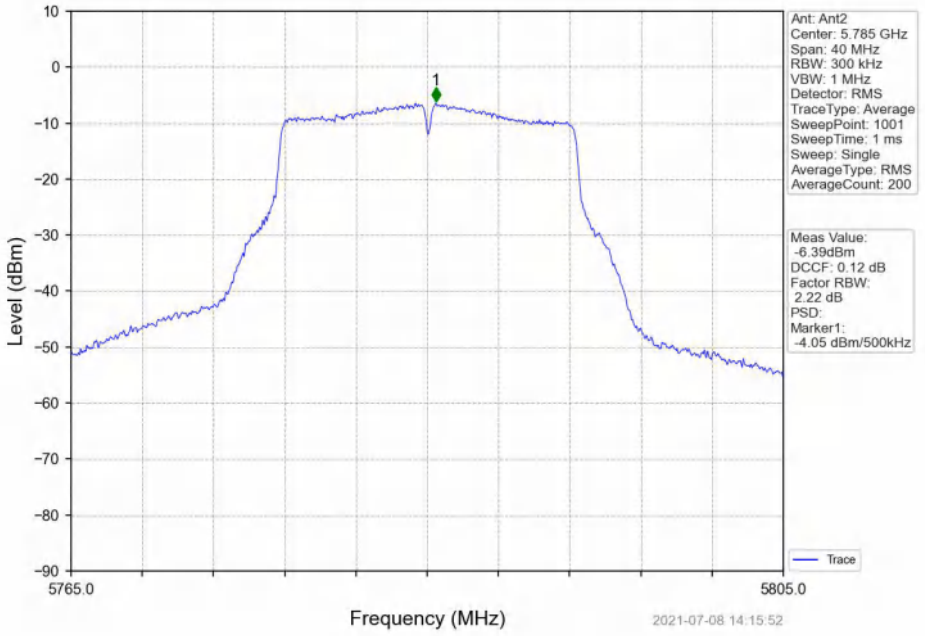
802.11a_LCH_5745MHz_Ant2_NTNV



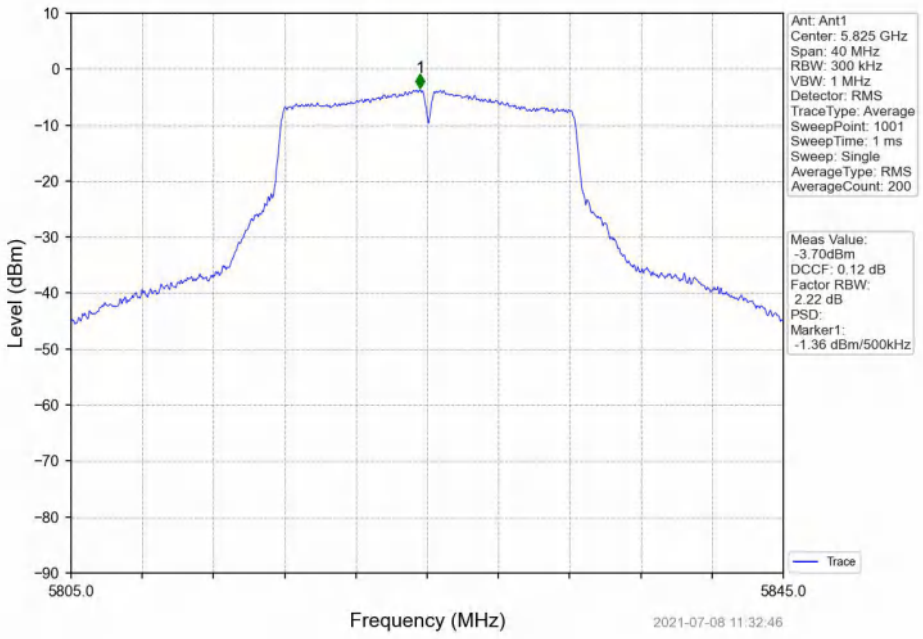
802.11a_MCH_5785MHz_Ant1_NTNV



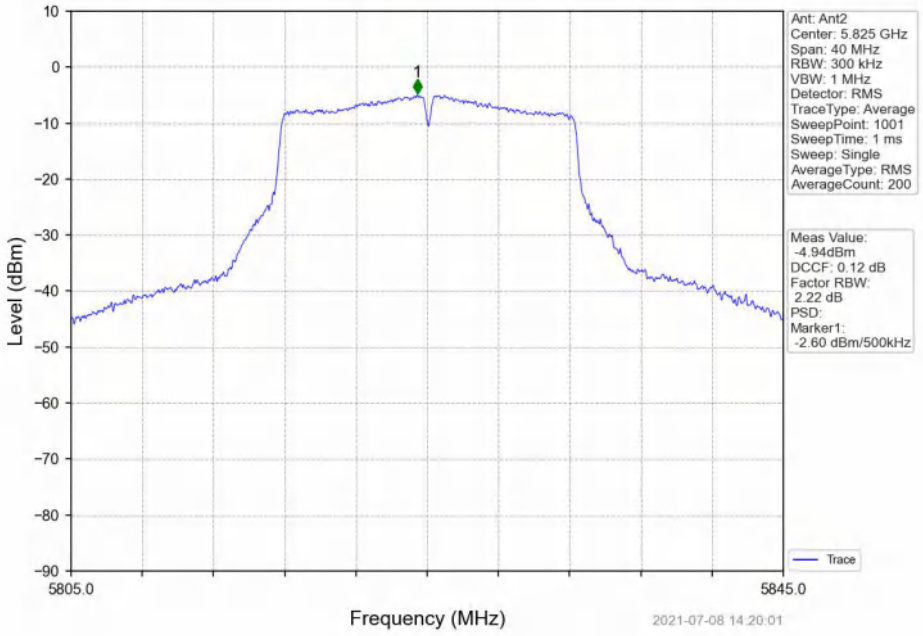
802.11a_MCH_5785MHz_Ant2_NTNV



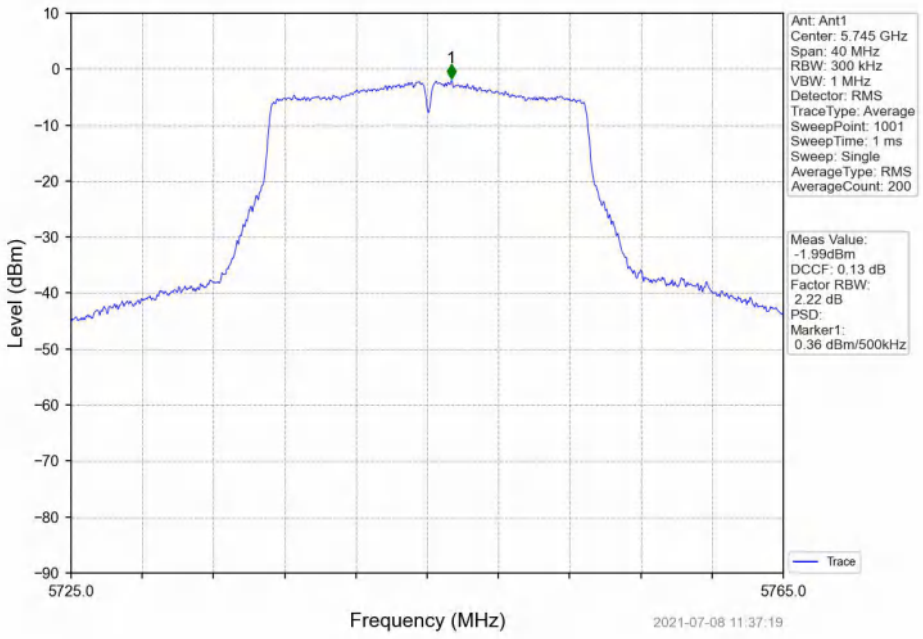
802.11a_HCH_5825MHz_Ant1_NTNV



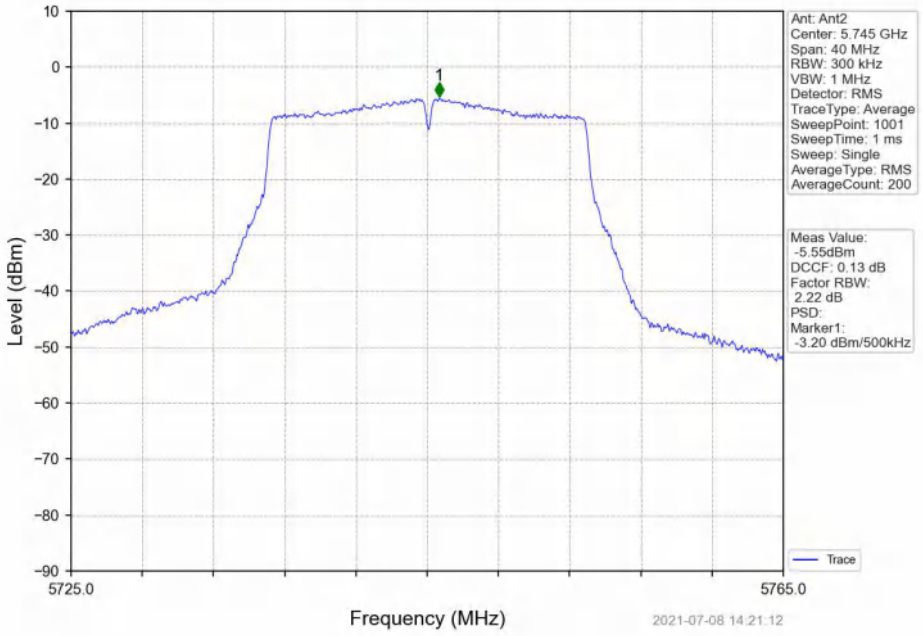
802.11a_HCH_5825MHz_Ant2_NTNV



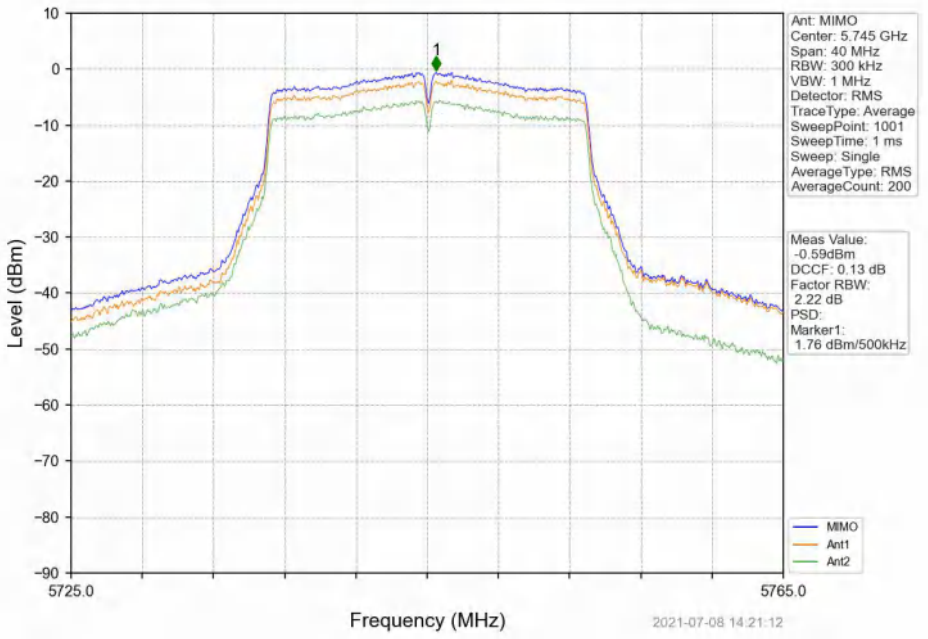
802.11n(HT20)_LCH_5745MHz_Ant1_NTNV



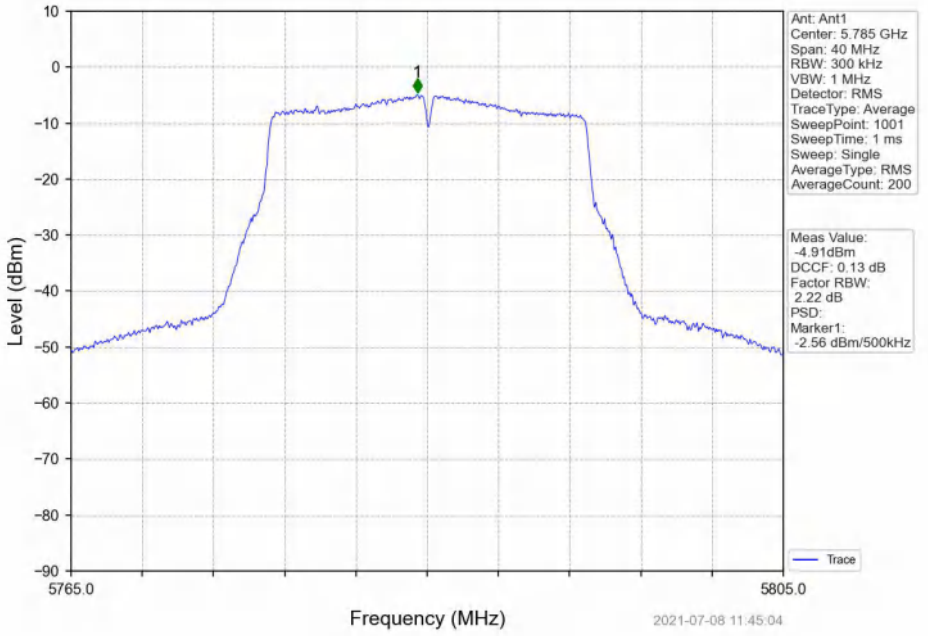
802.11n(HT20)_LCH_5745MHz_Ant2_NTNV



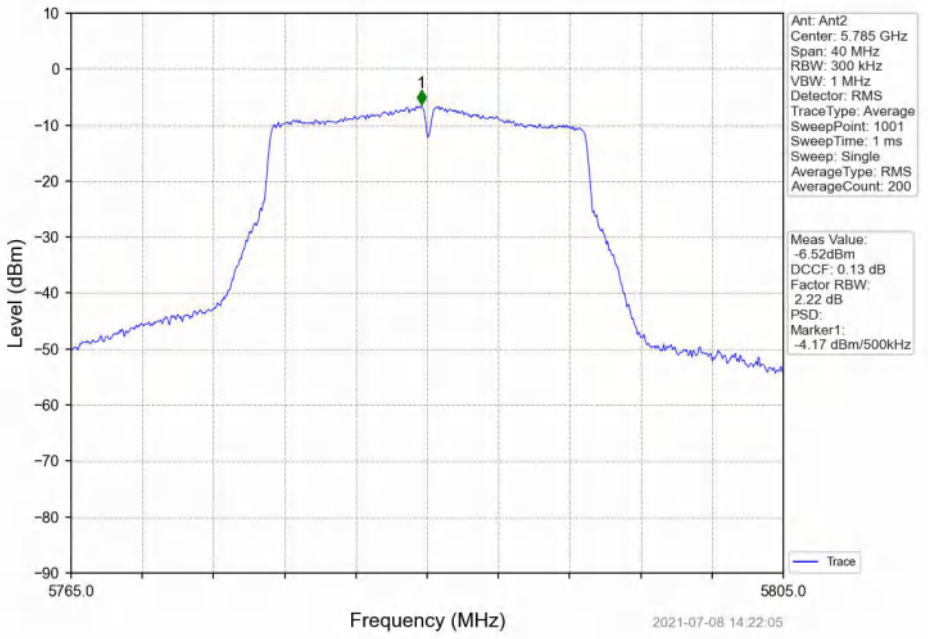
802.11n(HT20)_LCH_5745MHz_MIMO_NTNV



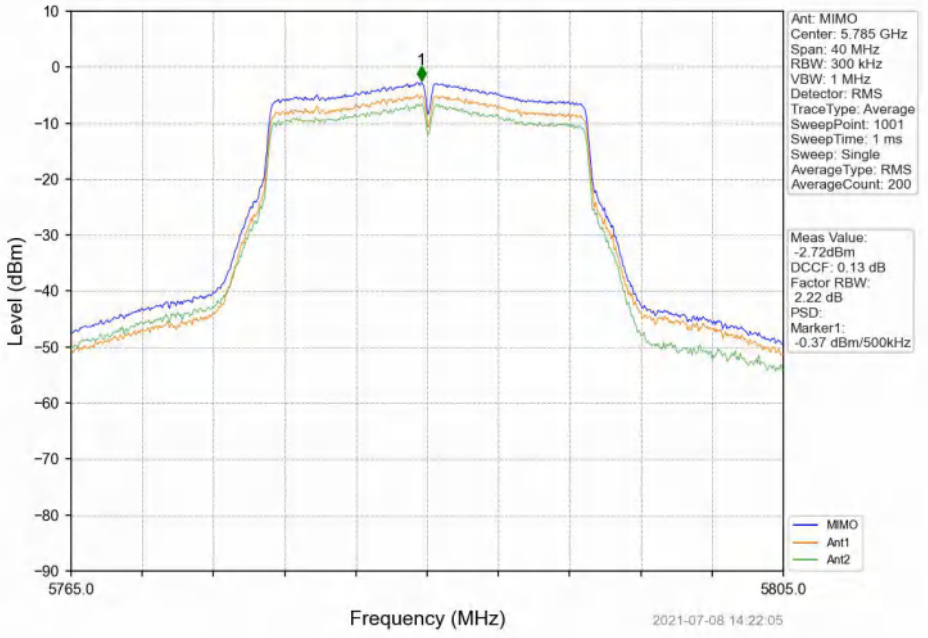
802.11n(HT20)_MCH_5785MHz_Ant1_NTNV



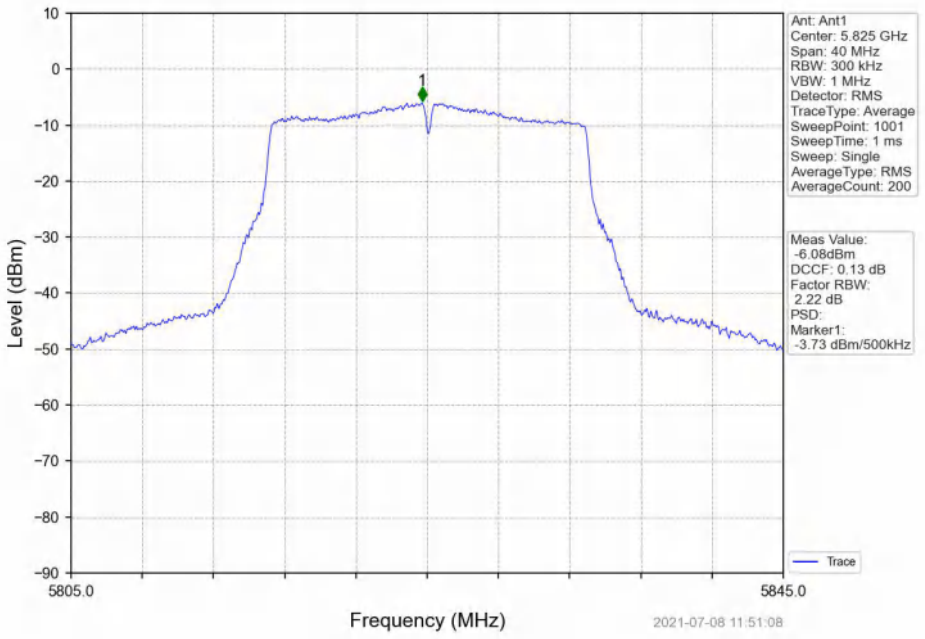
802.11n(HT20)_MCH_5785MHz_Ant2_NTNV



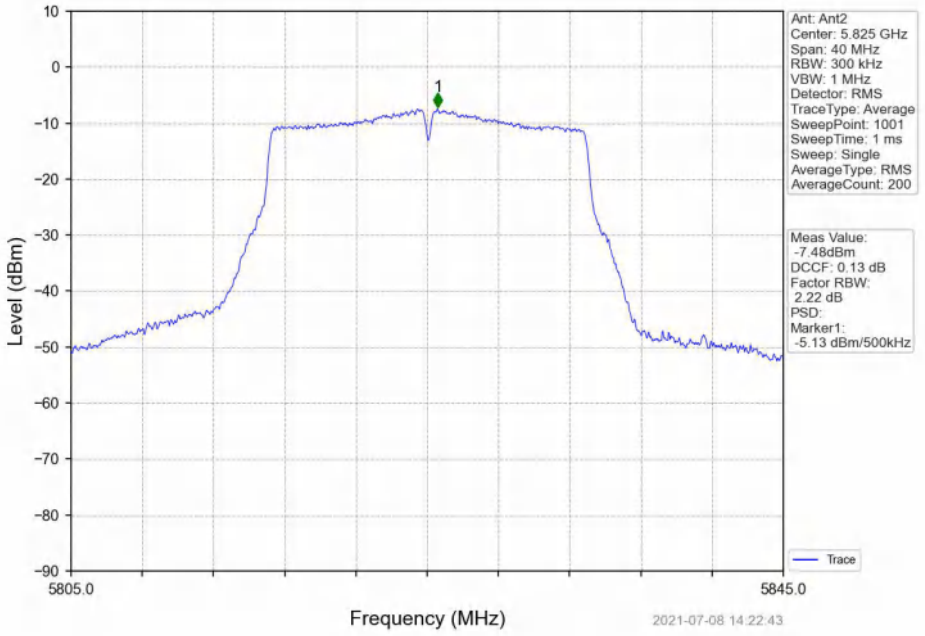
802.11n(HT20)_MCH_5785MHz_MIMO_NTNV



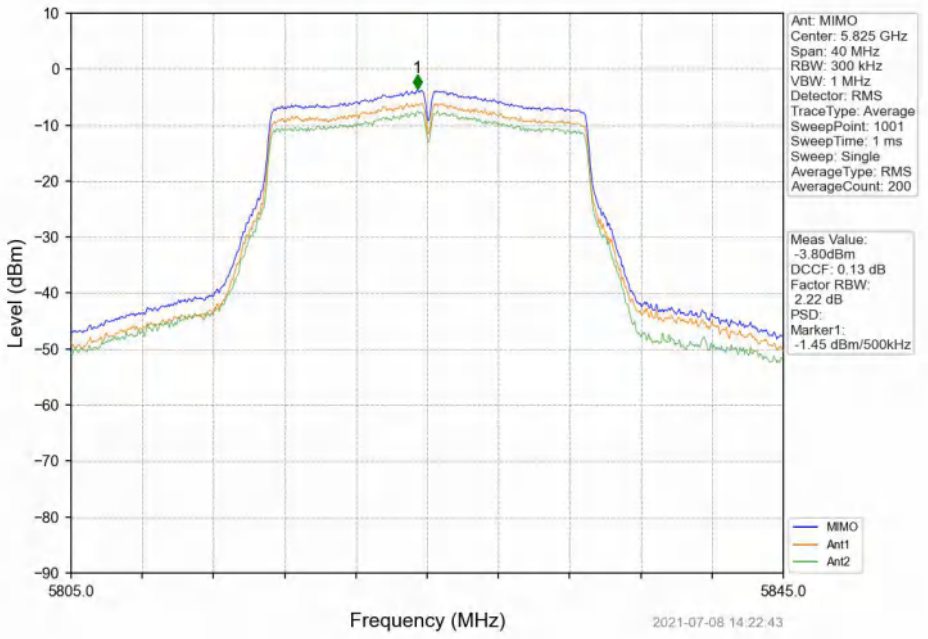
802.11n(HT20)_HCH_5825MHz_Ant1_NTNV



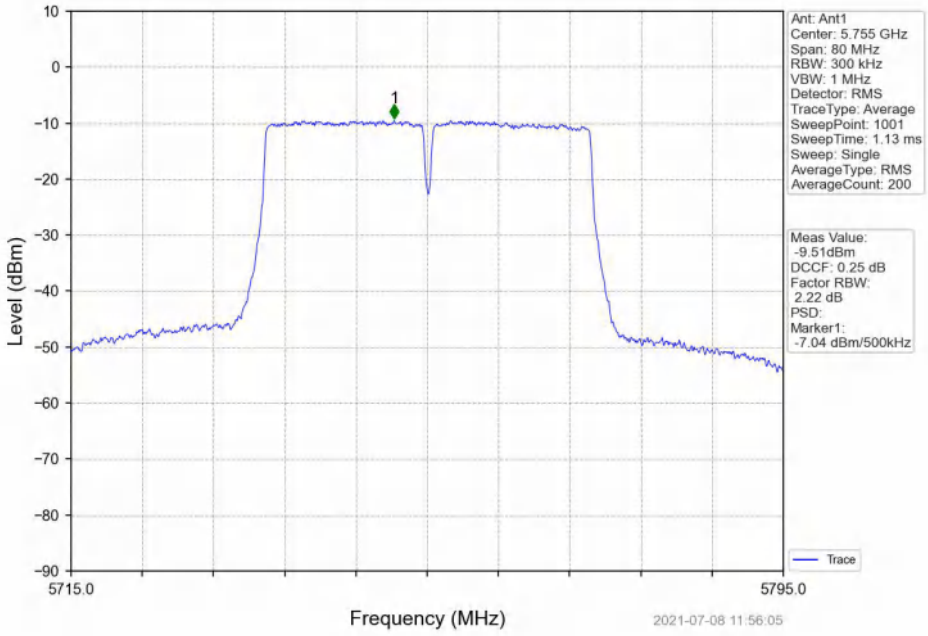
802.11n(HT20)_HCH_5825MHz_Ant2_NTNV



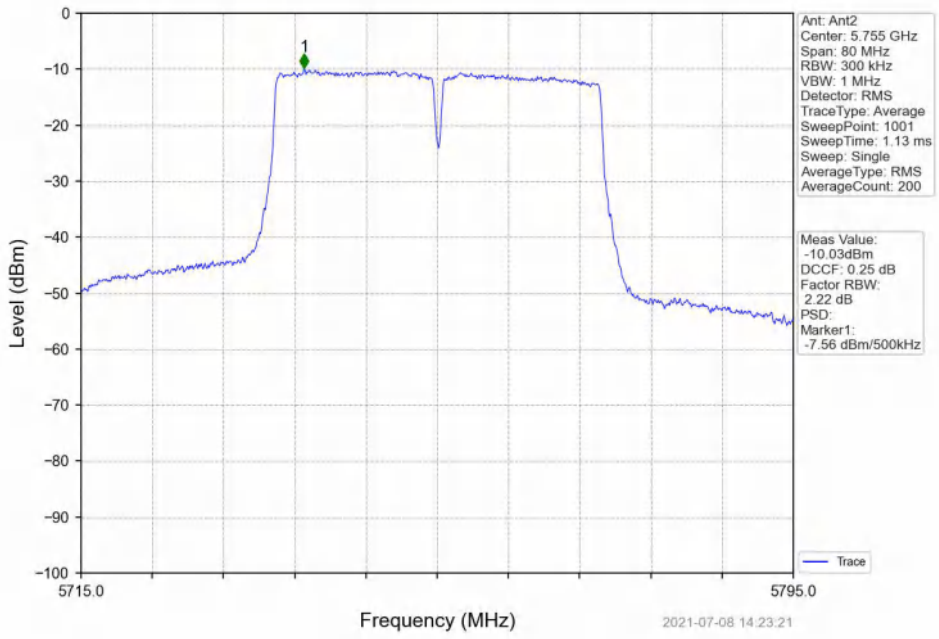
802.11n(HT20)_HCH_5825MHz_MIMO_NTNV



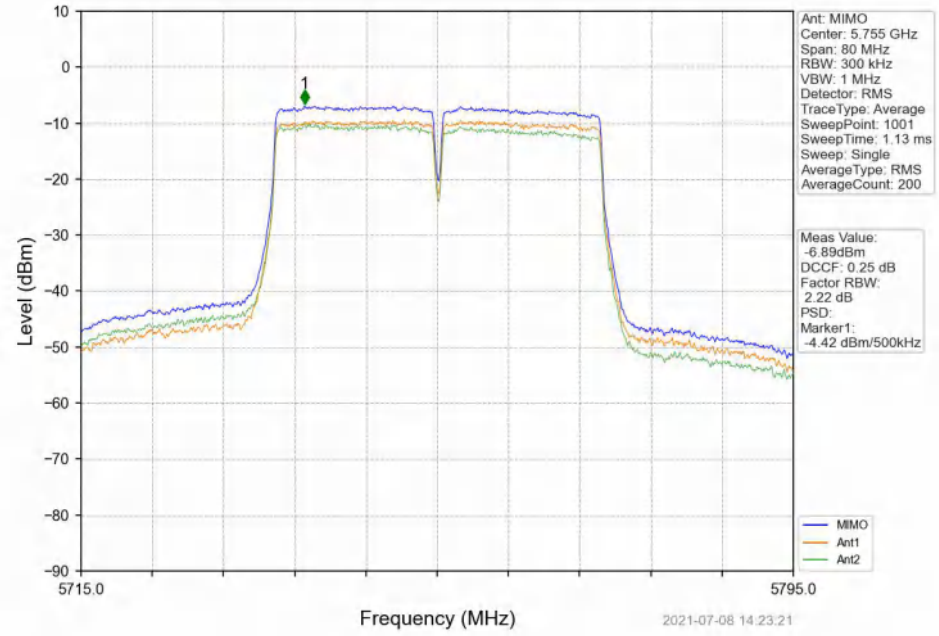
802.11n(HT40)_LCH_5755MHz_Ant1_NTNV



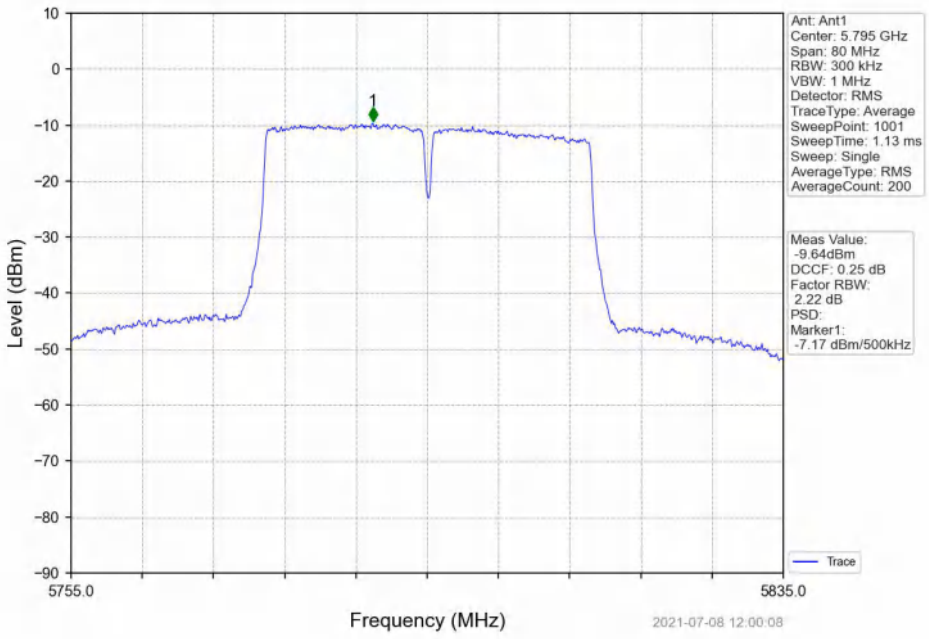
802.11n(HT40)_LCH_5755MHz_Ant2_NTNV



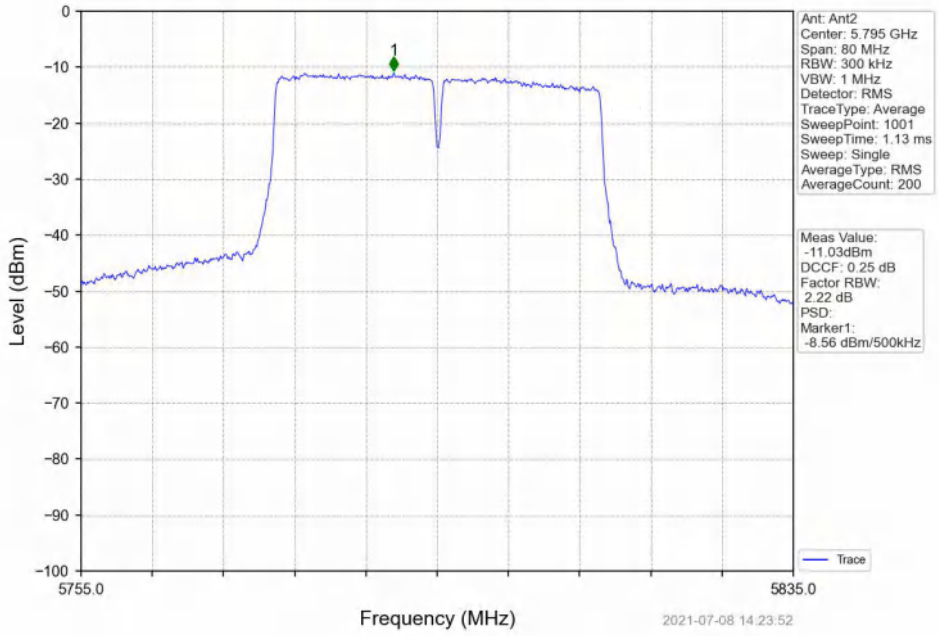
802.11n(HT40)_LCH_5755MHz_MIMO_NTNV



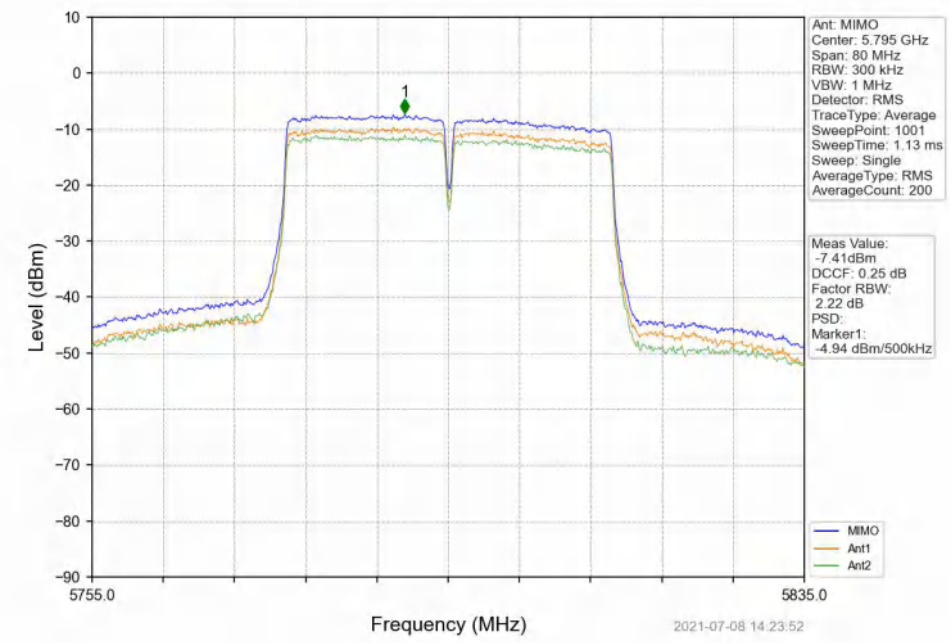
802.11n(HT40)_HCH_5795MHz_Ant1_NTNV



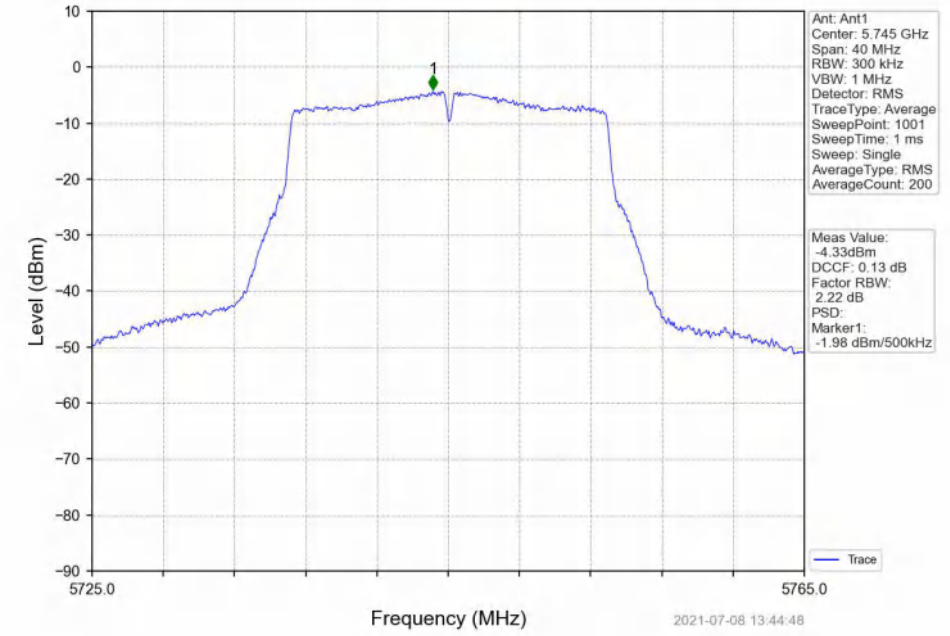
802.11n(HT40)_HCH_5795MHz_Ant2_NTNV



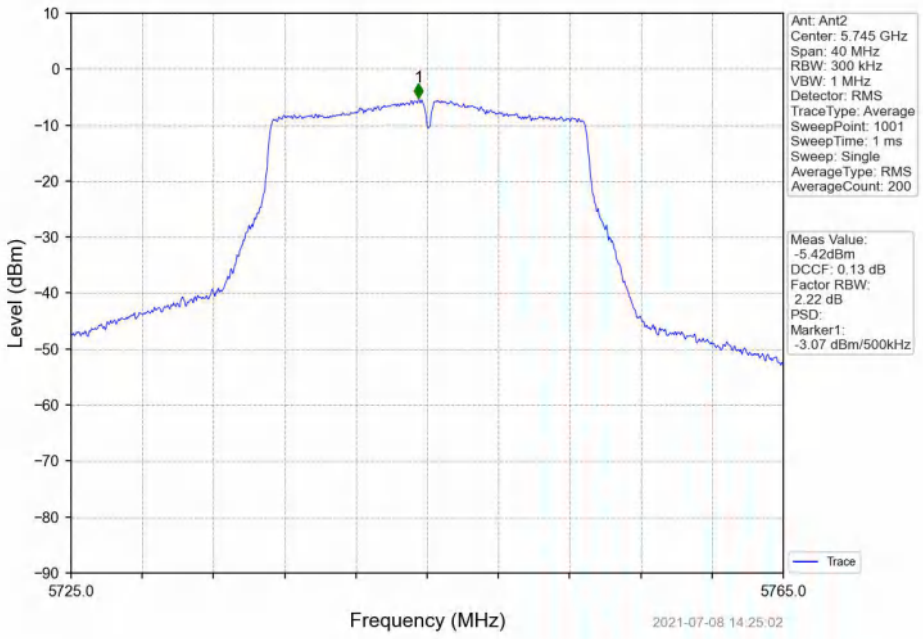
802.11n(HT40)_HCH_5795MHz_MIMO_NTNV



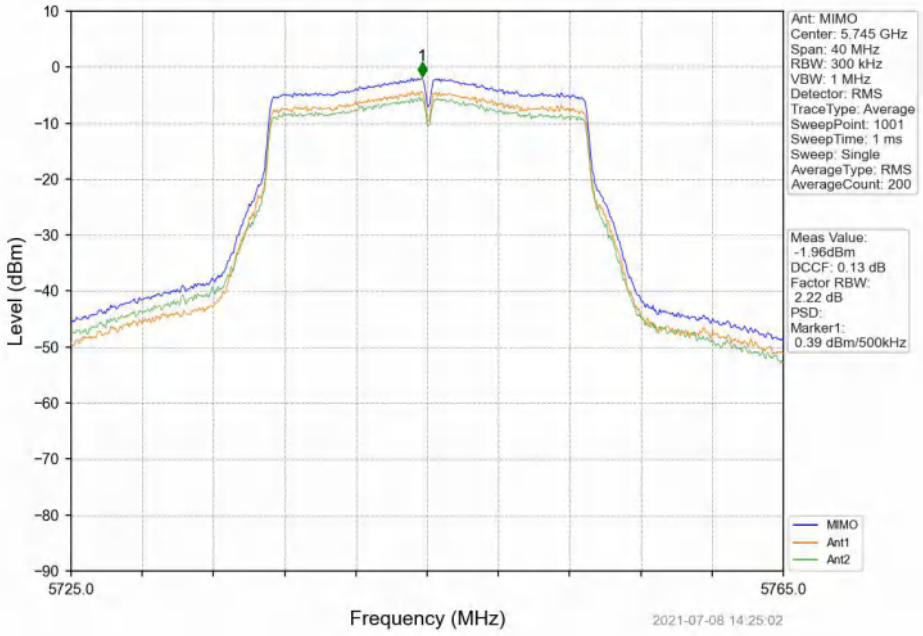
802.11ac(VHT20)_LCH_5745MHz_Ant1_NTNV



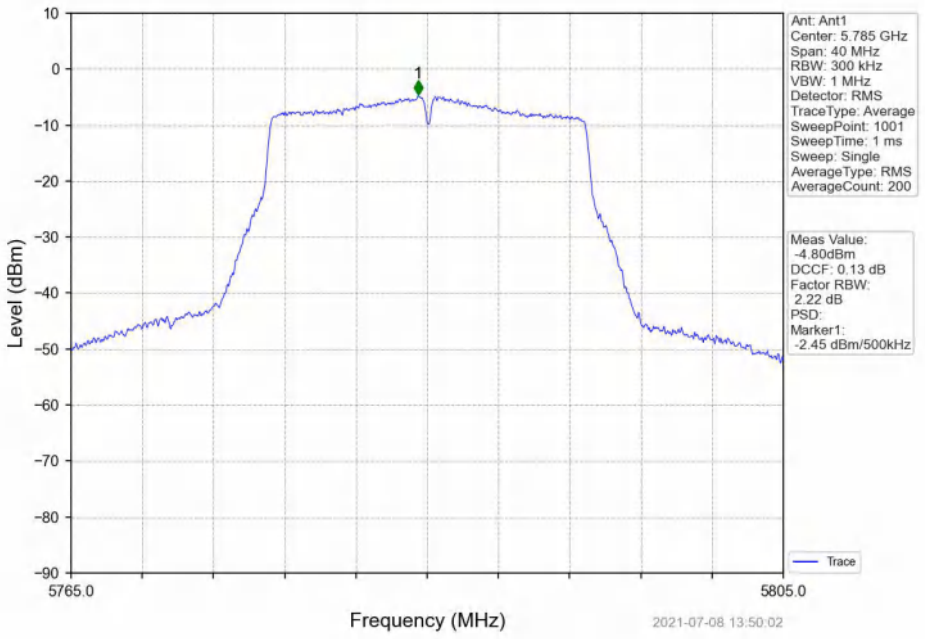
802.11ac(VHT20)_LCH_5745MHz_Ant2_NTNV



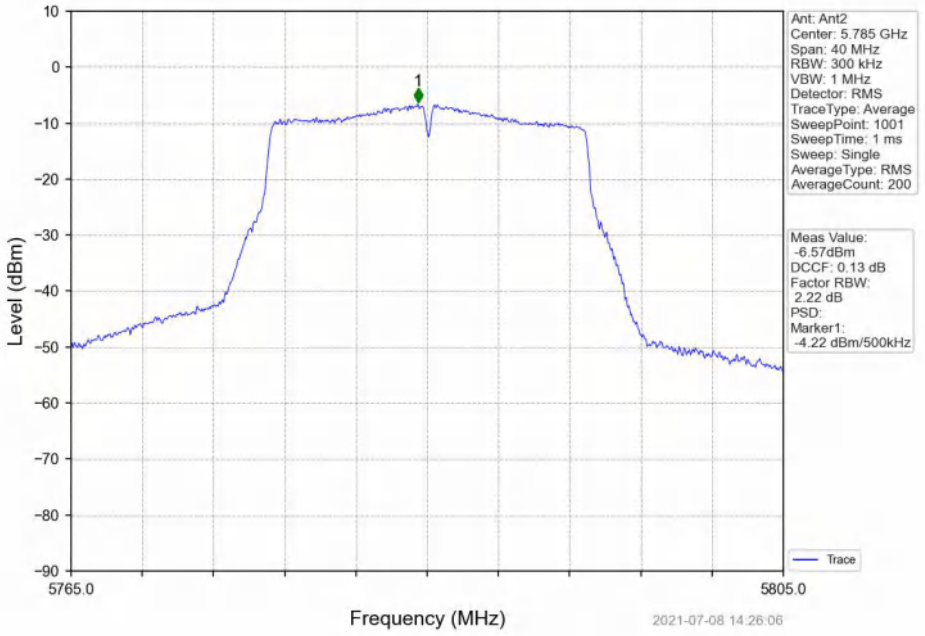
802.11ac(VHT20)_LCH_5745MHz_MIMO_NTNV



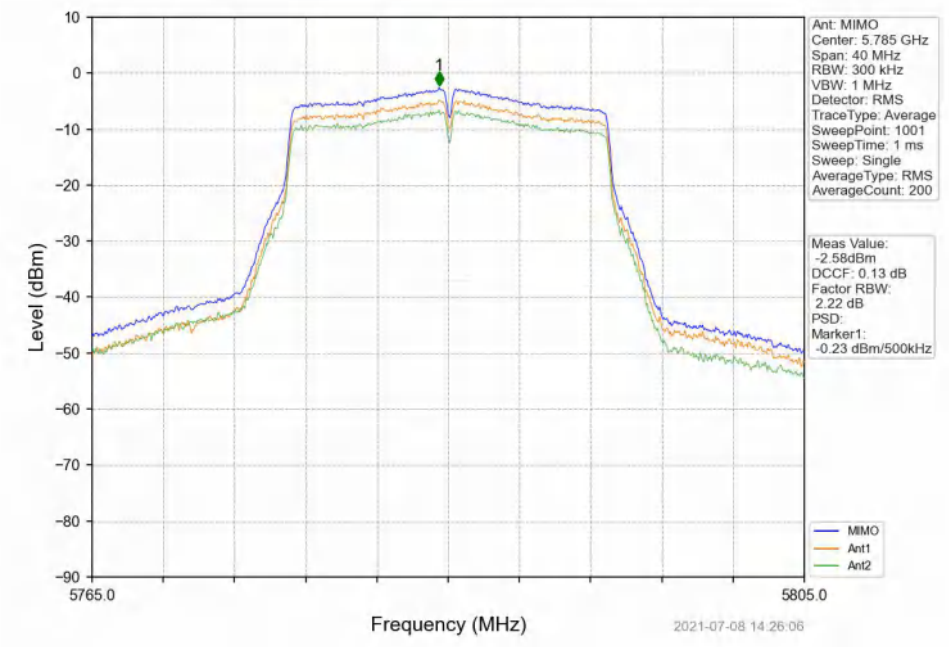
802.11ac(VHT20)_MCH_5785MHz_Ant1_NTNV



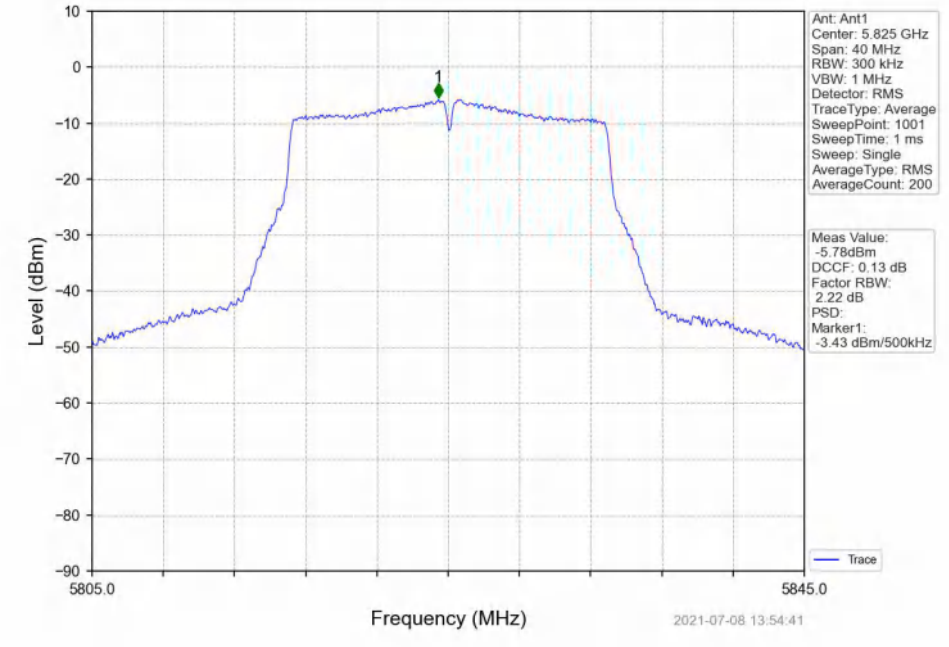
802.11ac(VHT20)_MCH_5785MHz_Ant2_NTNV



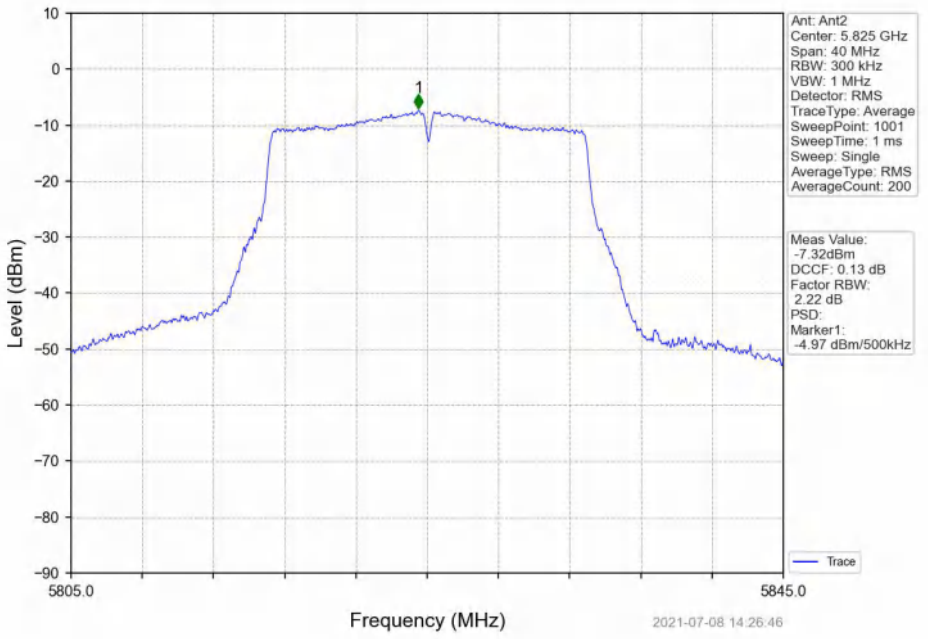
802.11ac(VHT20)_MCH_5785MHz_MIMO_NTNV



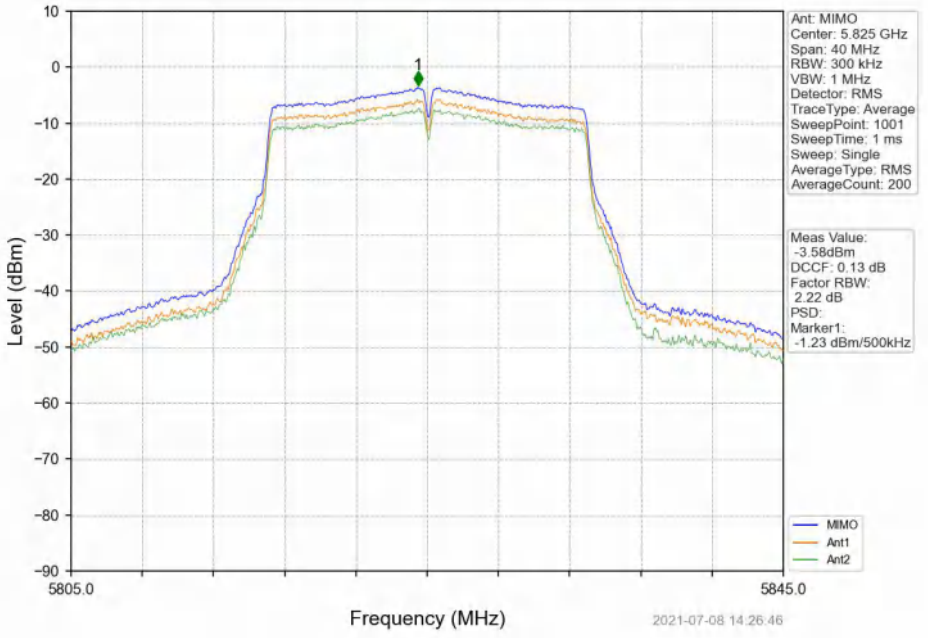
802.11ac(VHT20)_HCH_5825MHz_Ant1_NTNV



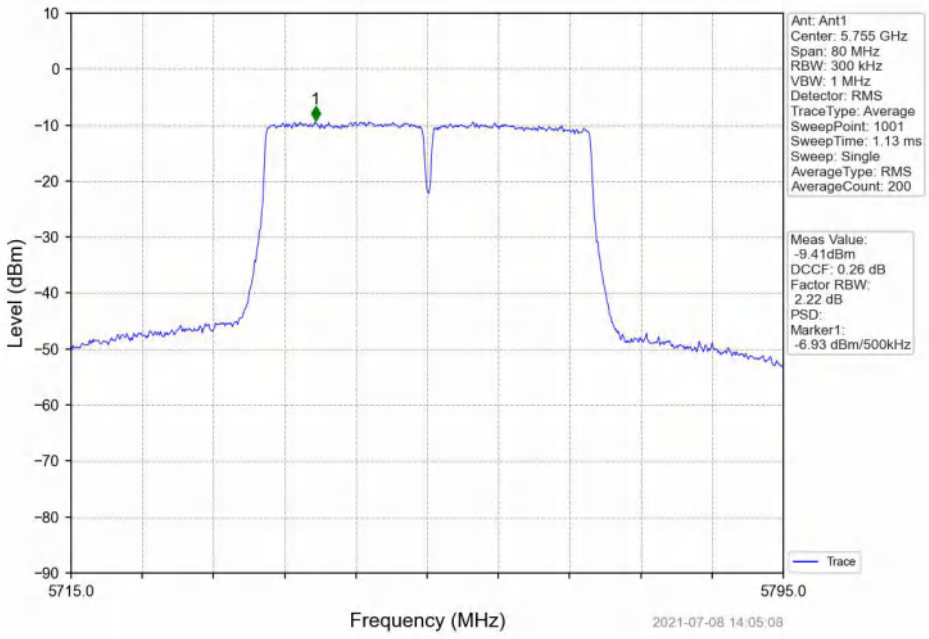
802.11ac(VHT20)_HCH_5825MHz_Ant2_NTNV



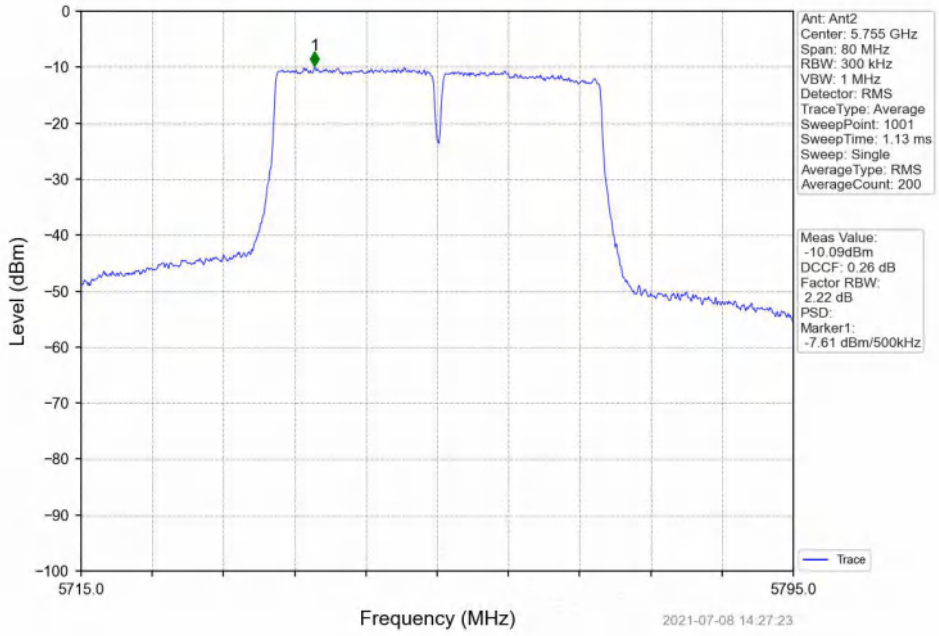
802.11ac(VHT20)_HCH_5825MHz_MIMO_NTNV



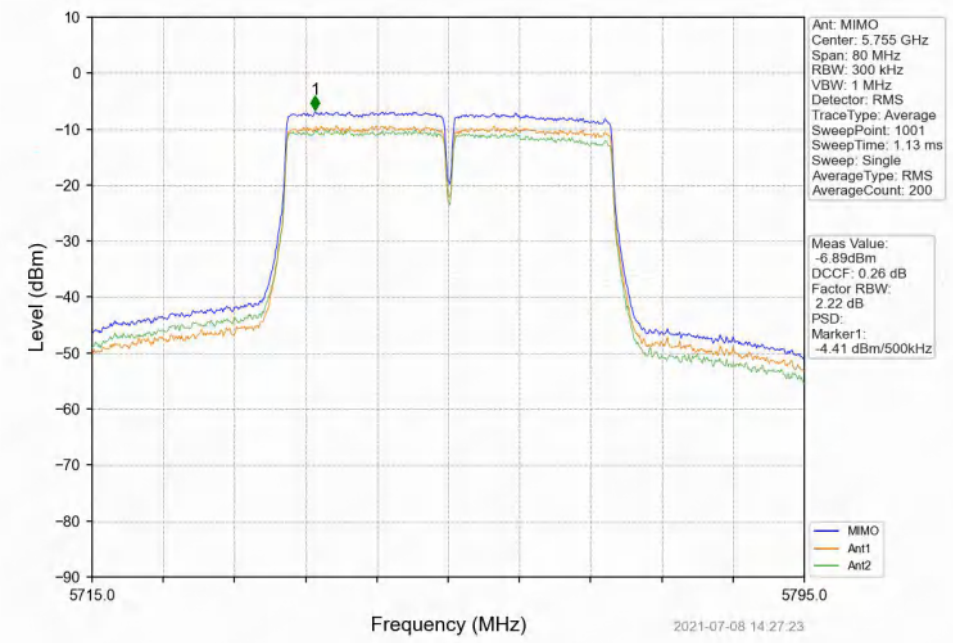
802.11ac(VHT40)_LCH_5755MHz_Ant1_NTNV



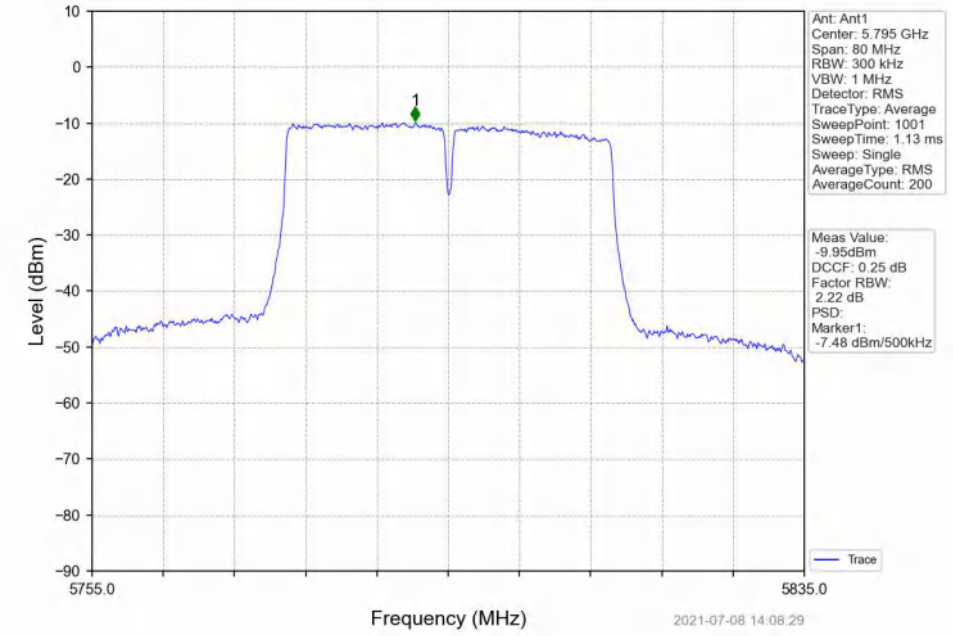
802.11ac(VHT40)_LCH_5755MHz_Ant2_NTNV



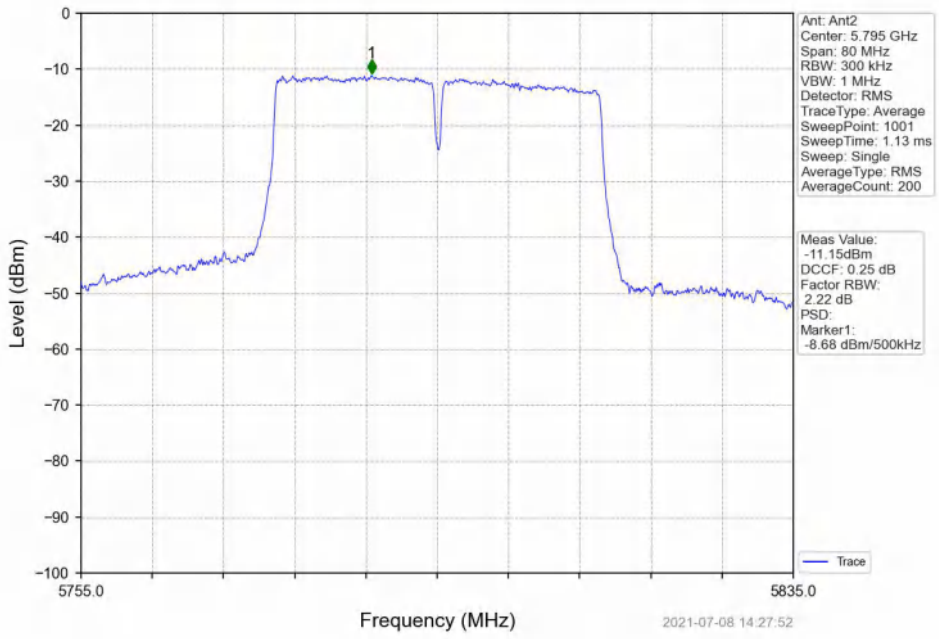
802.11ac(VHT40)_LCH_5755MHz_MIMO_NTNV



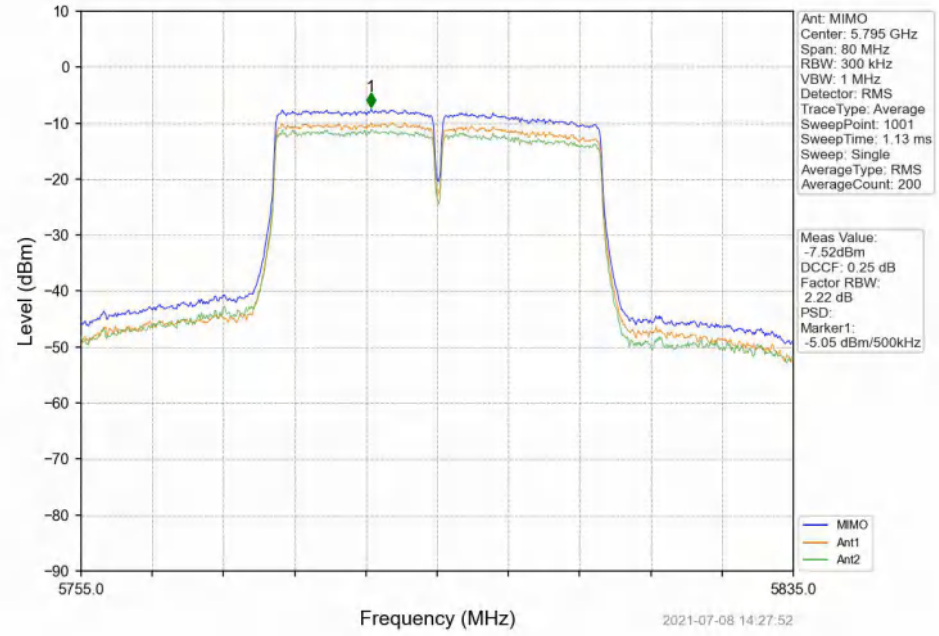
802.11ac(VHT40)_HCH_5795MHz_Ant1_NTNV



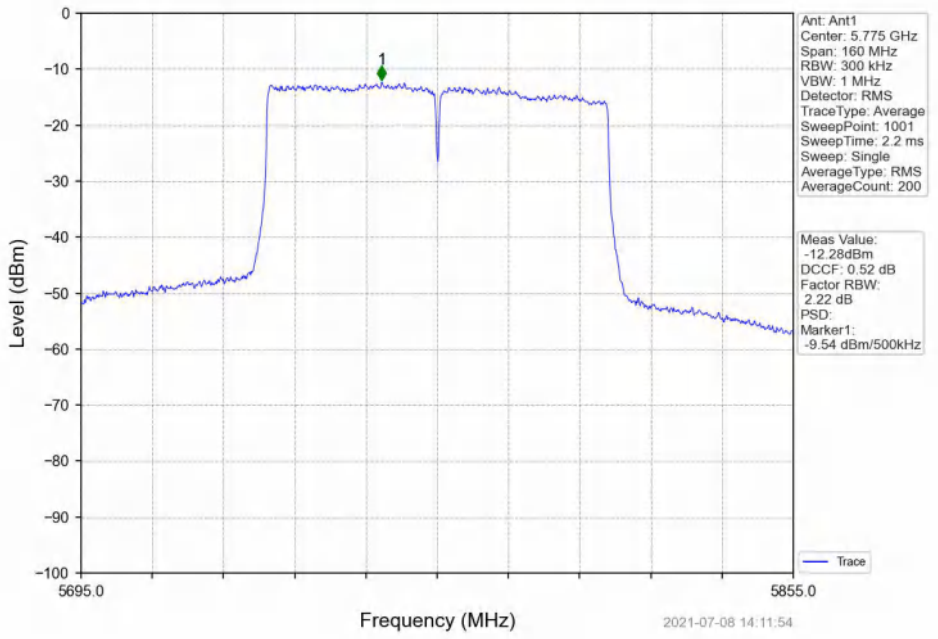
802.11ac(VHT40)_HCH_5795MHz_Ant2_NTNV



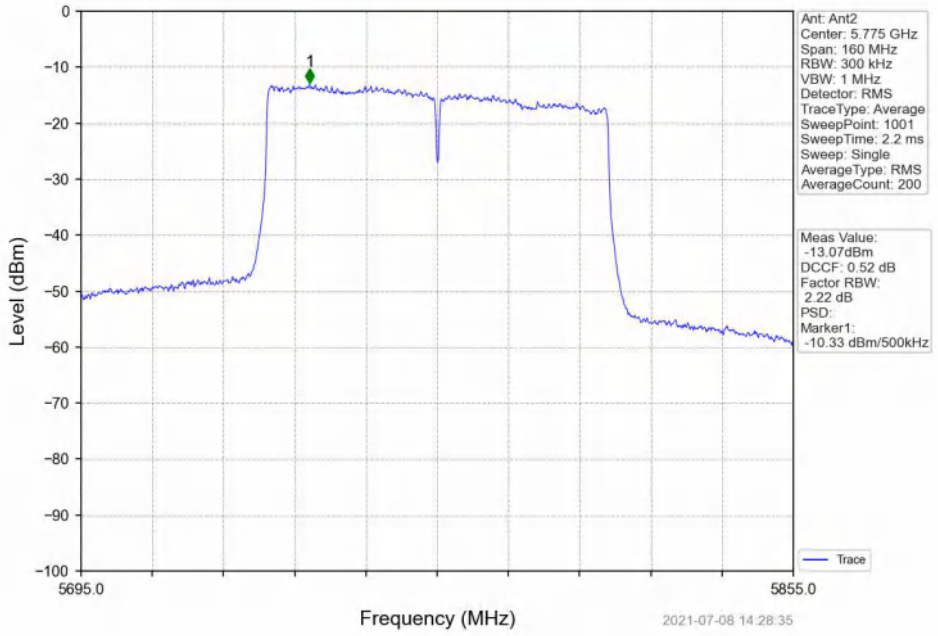
802.11ac(VHT40)_HCH_5795MHz_MIMO_NTNV



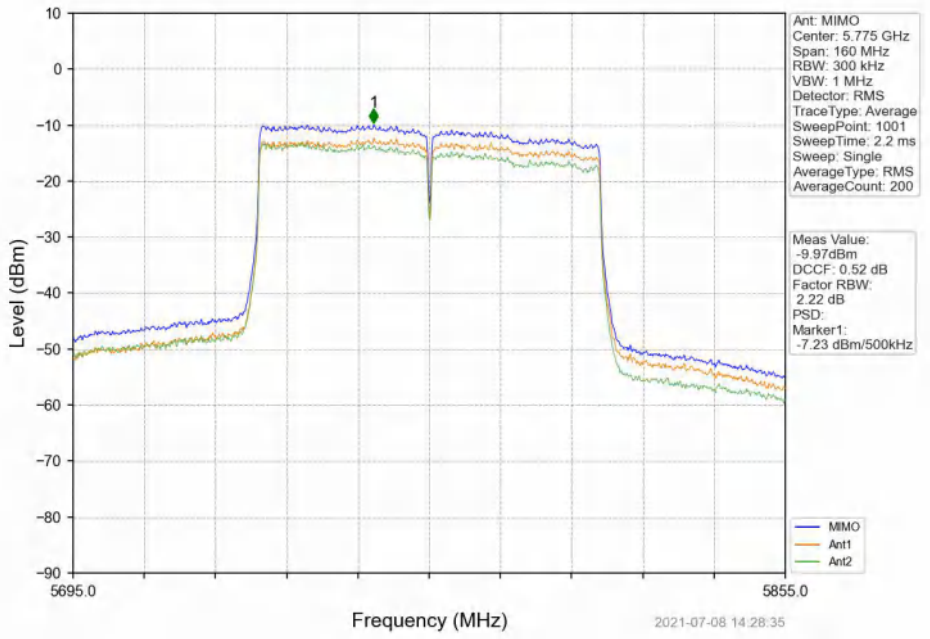
802.11ac(VHT80)_MCH_5775MHz_Ant1_NTNV



802.11ac(VHT80)_MCH_5775MHz_Ant2_NTNV



802.11ac(VHT80)_MCH_5775MHz_MIMO_NTNV



5. Frequency Stability

5.1 Ant1

5.1.1 Test Result

Ant1							
Mode	TX Type	Frequency (MHz)	Temperature (°C)	Voltage (VAC)	Measured Frequency (MHz)	Limit	Verdict
802.11a	SISO	5745	20	102	5745.080	5737 to 5753	Pass
				120	5745.000	5737 to 5753	Pass
				138	5745.040	5737 to 5753	Pass
			-30	120	5745.100	5737 to 5753	Pass
			-20	120	5745.020	5725 to 5850	Pass
			-10	120	5745.140	5725 to 5850	Pass
			0	120	5745.040	5725 to 5850	Pass
			10	120	5745.060	5725 to 5850	Pass
			30	120	5745.020	5725 to 5850	Pass
			40	120	5745.080	5725 to 5850	Pass
			50	120	5745.080	5737 to 5753	Pass
		5785	20	102	5785.080	5777 to 5793	Pass
				120	5785.080	5777 to 5793	Pass
				138	5785.060	5777 to 5793	Pass
			-30	120	5785.040	5777 to 5793	Pass
			-20	120	5785.080	5725 to 5850	Pass
			-10	120	5785.040	5725 to 5850	Pass
			0	120	5785.100	5725 to 5850	Pass
			10	120	5785.040	5725 to 5850	Pass
			30	120	5785.000	5725 to 5850	Pass
			40	120	5784.980	5725 to 5850	Pass
			50	120	5785.040	5777 to 5793	Pass
		5825	20	102	5825.060	5817 to 5833	Pass
				120	5825.020	5817 to 5833	Pass
				138	5825.020	5817 to 5833	Pass
			-30	120	5825.040	5817 to 5833	Pass
			-20	120	5825.020	5725 to 5850	Pass
			-10	120	5825.000	5725 to 5850	Pass
			0	120	5825.000	5725 to 5850	Pass
			10	120	5825.040	5725 to 5850	Pass
			30	120	5825.040	5725 to 5850	Pass
			40	120	5825.020	5725 to 5850	Pass
			50	120	5825.040	5817 to 5833	Pass
802.11n (HT20)	MIMO	5745	20	102	5745.040	5737 to 5753	Pass
				120	5745.040	5737 to 5753	Pass
				138	5745.080	5737 to 5753	Pass
			-30	120	5745.040	5737 to 5753	Pass
			-20	120	5745.060	5725 to 5850	Pass
			-10	120	5745.000	5725 to 5850	Pass
			0	120	5745.080	5725 to 5850	Pass
			10	120	5745.020	5725 to 5850	Pass
			30	120	5745.020	5725 to 5850	Pass
			40	120	5745.060	5725 to 5850	Pass
			50	120	5745.040	5737 to 5753	Pass
		5785	20	102	5784.980	5777 to 5793	Pass
				120	5785.000	5777 to 5793	Pass
				138	5785.060	5777 to 5793	Pass
			-30	120	5785.000	5777 to 5793	Pass
			-20	120	5785.040	5725 to 5850	Pass

			-10	120	5784.980	5725 to 5850	Pass
			0	120	5785.060	5725 to 5850	Pass
			10	120	5784.980	5725 to 5850	Pass
			30	120	5785.000	5725 to 5850	Pass
			40	120	5785.060	5725 to 5850	Pass
			50	120	5785.040	5777 to 5793	Pass
		5825	20	102	5825.040	5817 to 5833	Pass
				120	5824.960	5817 to 5833	Pass
				138	5824.980	5817 to 5833	Pass
			-30	120	5825.080	5817 to 5833	Pass
			-20	120	5825.000	5725 to 5850	Pass
			-10	120	5825.060	5725 to 5850	Pass
			0	120	5825.020	5725 to 5850	Pass
			10	120	5825.020	5725 to 5850	Pass
			30	120	5825.020	5725 to 5850	Pass
			40	120	5825.040	5725 to 5850	Pass
			50	120	5825.080	5817 to 5833	Pass
802.11n (HT40)	MIMO	5755	20	102	5755.160	5739 to 5771	Pass
				120	5755.080	5739 to 5771	Pass
				138	5755.120	5739 to 5771	Pass
			-30	120	5755.080	5739 to 5771	Pass
			-20	120	5755.120	5725 to 5850	Pass
			-10	120	5755.080	5725 to 5850	Pass
			0	120	5755.080	5725 to 5850	Pass
			10	120	5755.040	5725 to 5850	Pass
			30	120	5755.080	5725 to 5850	Pass
			40	120	5755.160	5725 to 5850	Pass
			50	120	5755.040	5739 to 5771	Pass
		5795	20	102	5795.000	5779 to 5811	Pass
				120	5795.000	5779 to 5811	Pass
				138	5795.000	5779 to 5811	Pass
			-30	120	5795.000	5779 to 5811	Pass
			-20	120	5795.080	5725 to 5850	Pass
			-10	120	5794.960	5725 to 5850	Pass
			0	120	5795.040	5725 to 5850	Pass
			10	120	5795.040	5725 to 5850	Pass
			30	120	5795.000	5725 to 5850	Pass
			40	120	5795.040	5725 to 5850	Pass
			50	120	5795.000	5779 to 5811	Pass
802.11ac (VHT20)	MIMO	5745	20	102	5745.080	5737 to 5753	Pass
				120	5745.040	5737 to 5753	Pass
				138	5745.060	5737 to 5753	Pass
			-30	120	5745.040	5737 to 5753	Pass
			-20	120	5745.060	5725 to 5850	Pass
			-10	120	5745.080	5725 to 5850	Pass
			0	120	5745.100	5725 to 5850	Pass
			10	120	5745.100	5725 to 5850	Pass
			30	120	5745.040	5725 to 5850	Pass
			40	120	5745.020	5725 to 5850	Pass
			50	120	5745.060	5737 to 5753	Pass
		5785	20	102	5785.060	5777 to 5793	Pass
				120	5785.080	5777 to 5793	Pass
				138	5785.040	5777 to 5793	Pass
			-30	120	5785.040	5777 to 5793	Pass
			-20	120	5785.020	5725 to 5850	Pass
			-10	120	5784.960	5725 to 5850	Pass
			0	120	5784.980	5725 to 5850	Pass
			10	120	5785.060	5725 to 5850	Pass
			30	120	5785.000	5725 to 5850	Pass
			40	120	5785.040	5725 to 5850	Pass
			50	120	5784.980	5777 to 5793	Pass

		5825	20	102	5824.980	5817 to 5833	Pass
				120	5825.020	5817 to 5833	Pass
				138	5825.020	5817 to 5833	Pass
			-30	120	5825.060	5817 to 5833	Pass
			-20	120	5825.040	5725 to 5850	Pass
			-10	120	5825.040	5725 to 5850	Pass
			0	120	5825.000	5725 to 5850	Pass
			10	120	5824.940	5725 to 5850	Pass
			30	120	5825.020	5725 to 5850	Pass
			40	120	5825.020	5725 to 5850	Pass
			50	120	5825.040	5817 to 5833	Pass
802.11ac (VHT40)	MIMO	5755	20	102	5755.120	5739 to 5771	Pass
				120	5755.120	5739 to 5771	Pass
				138	5755.080	5739 to 5771	Pass
			-30	120	5755.080	5739 to 5771	Pass
			-20	120	5755.120	5725 to 5850	Pass
			-10	120	5755.120	5725 to 5850	Pass
			0	120	5755.040	5725 to 5850	Pass
			10	120	5755.160	5725 to 5850	Pass
			30	120	5755.120	5725 to 5850	Pass
			40	120	5755.080	5725 to 5850	Pass
			50	120	5755.040	5739 to 5771	Pass
		5795	20	102	5795.000	5779 to 5811	Pass
				120	5795.120	5779 to 5811	Pass
				138	5795.080	5779 to 5811	Pass
			-30	120	5795.040	5779 to 5811	Pass
			-20	120	5795.040	5725 to 5850	Pass
			-10	120	5795.040	5725 to 5850	Pass
			0	120	5795.000	5725 to 5850	Pass
			10	120	5795.040	5725 to 5850	Pass
			30	120	5795.000	5725 to 5850	Pass
			40	120	5795.080	5725 to 5850	Pass
			50	120	5794.960	5779 to 5811	Pass
802.11ac (VHT80)	MIMO	5775	20	102	5775.000	5743 to 5807	Pass
				120	5775.075	5743 to 5807	Pass
				138	5775.000	5743 to 5807	Pass
			-30	120	5775.000	5743 to 5807	Pass
			-20	120	5775.000	5725 to 5850	Pass
			-10	120	5775.075	5725 to 5850	Pass
			0	120	5775.075	5725 to 5850	Pass
			10	120	5775.075	5725 to 5850	Pass
			30	120	5775.075	5725 to 5850	Pass
			40	120	5775.000	5725 to 5850	Pass
			50	120	5775.075	5743 to 5807	Pass

---End---