

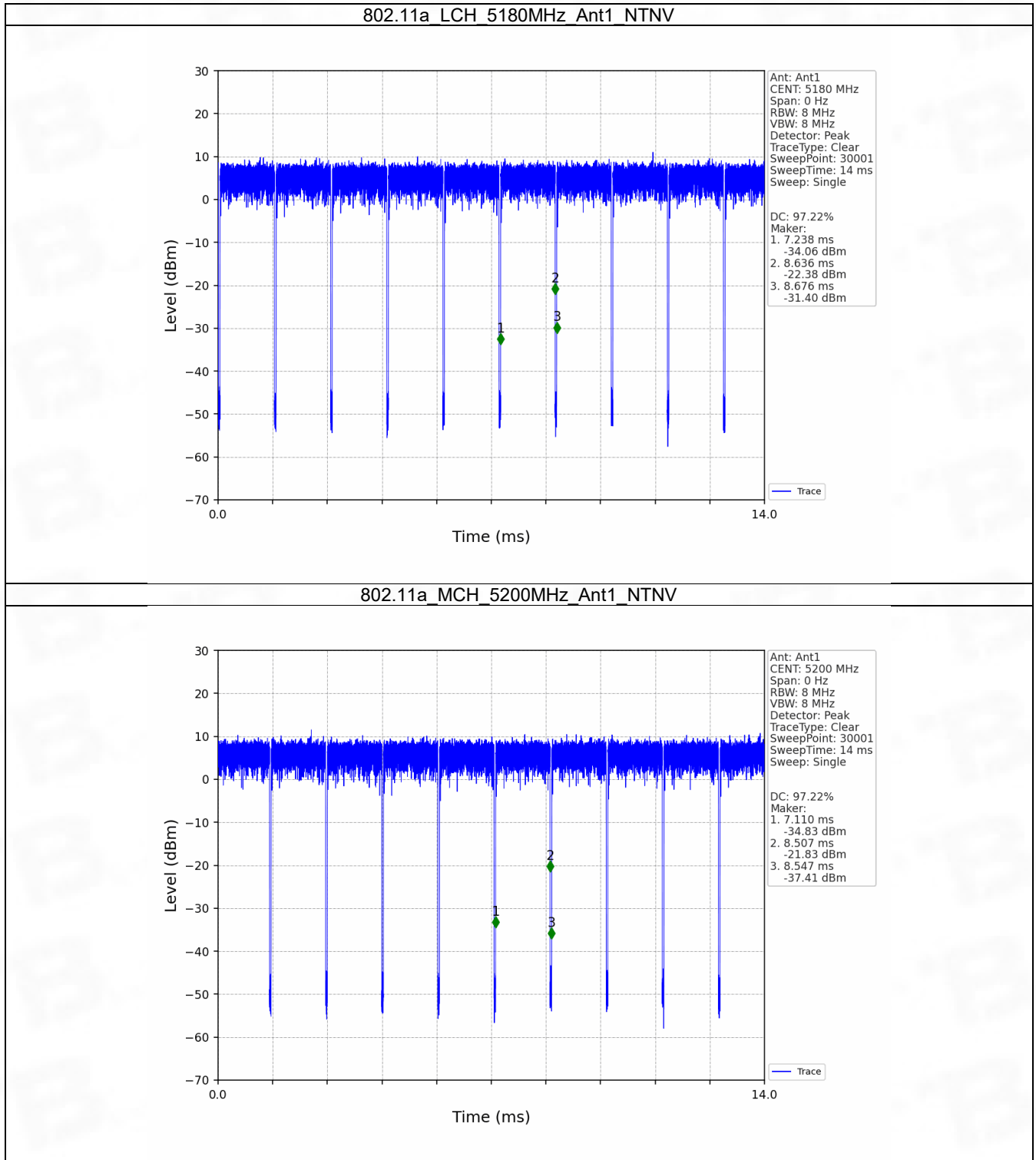
Appendix – 5G WIFI

1. Duty Cycle

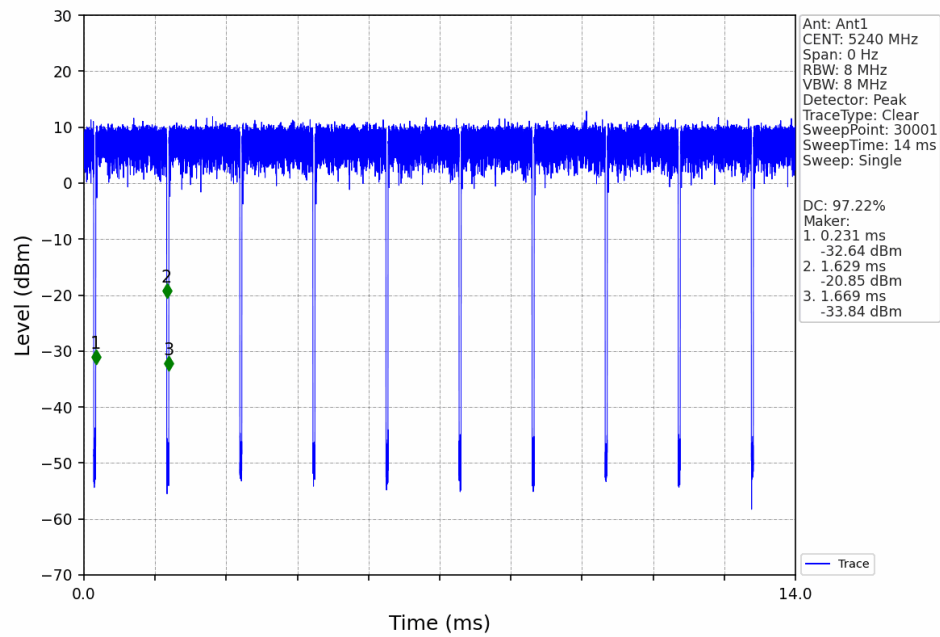
1.1 Test Result

Ant1							
Mode	TX Type	Frequency (MHz)	T_on (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	Max. DC Variation (%)
802.11a	SISO	5180	1.398	1.438	97.22	0.12	0.03
		5200	1.397	1.437	97.22	0.12	0.03
		5240	1.398	1.438	97.22	0.12	0.03
		5745	1.397	1.438	97.15	0.13	0.03
		5785	1.398	1.438	97.22	0.12	0.03
		5825	1.398	1.439	97.15	0.13	0.06
802.11n (HT20)	SISO	5180	1.309	1.349	97.03	0.13	0.03
		5200	1.309	1.350	96.96	0.13	0.03
		5240	1.309	1.350	96.96	0.13	0.03
		5745	1.309	1.350	96.96	0.13	0.04
		5785	1.309	1.349	97.03	0.13	0.07
		5825	1.309	1.349	97.03	0.13	0.03
802.11ac (VHT20)	SISO	5180	1.317	1.358	96.98	0.13	0.03
		5200	1.317	1.358	96.98	0.13	0.04
		5240	1.317	1.358	96.98	0.13	0.03
		5745	1.317	1.358	96.98	0.13	0.03
		5785	1.317	1.358	96.98	0.13	0.03
		5825	1.318	1.358	97.05	0.13	0.07

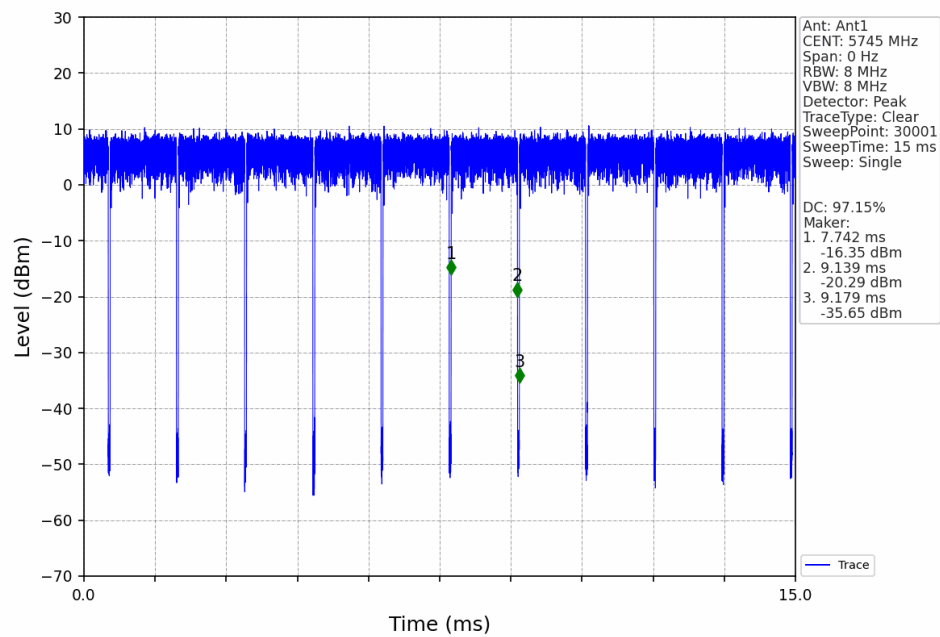
1.2 Test Graph



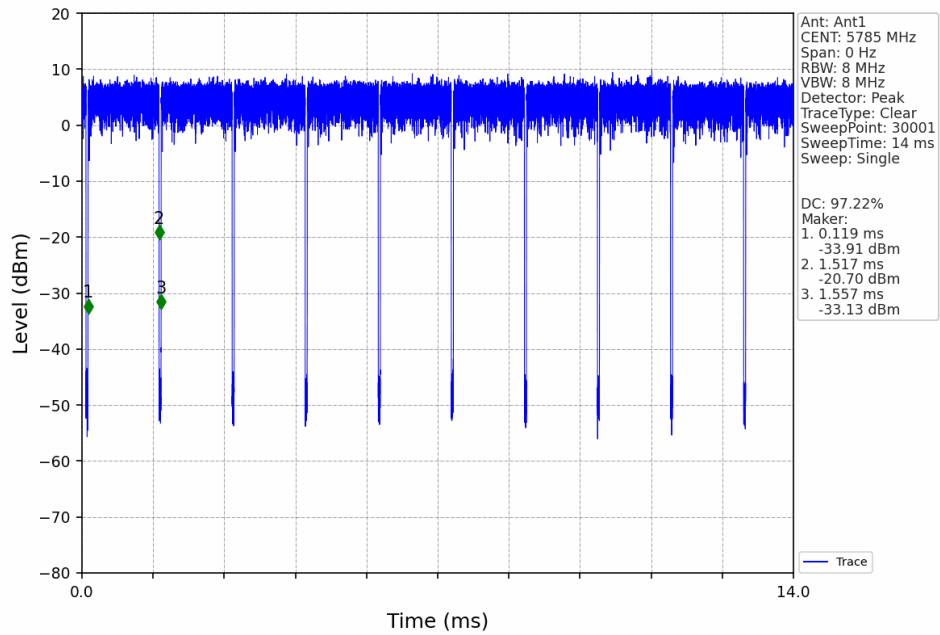
802.11a_HCH_5240MHz_Ant1_NTNV



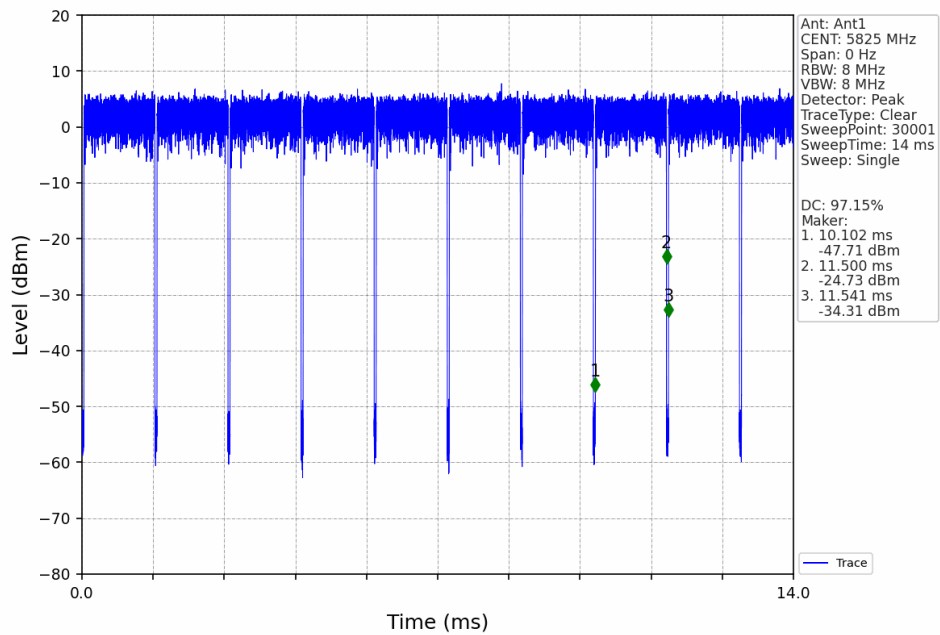
802.11a_LCH_5745MHz_Ant1_NTNV



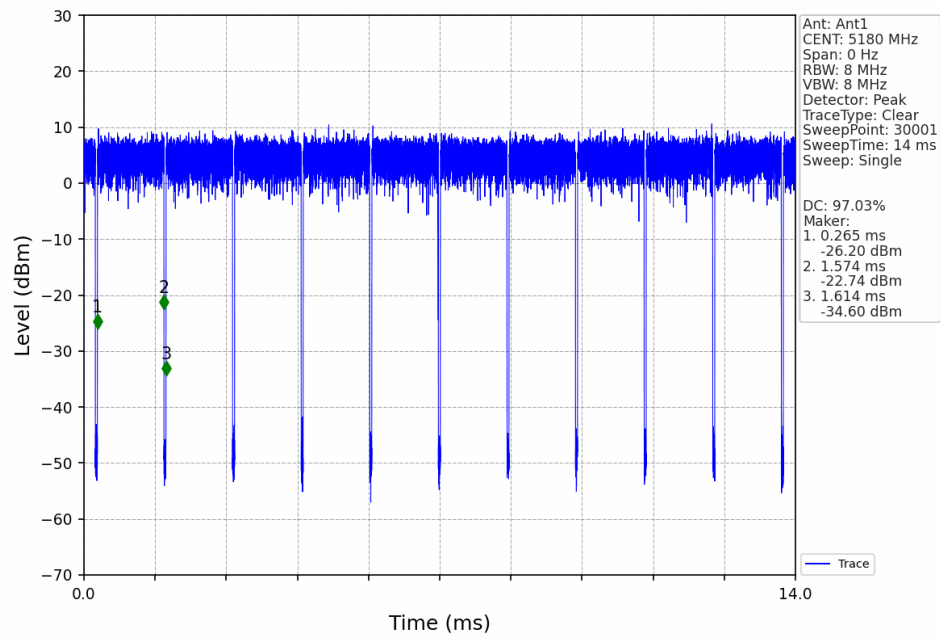
802.11a_MCH_5785MHz_Ant1_NTNV



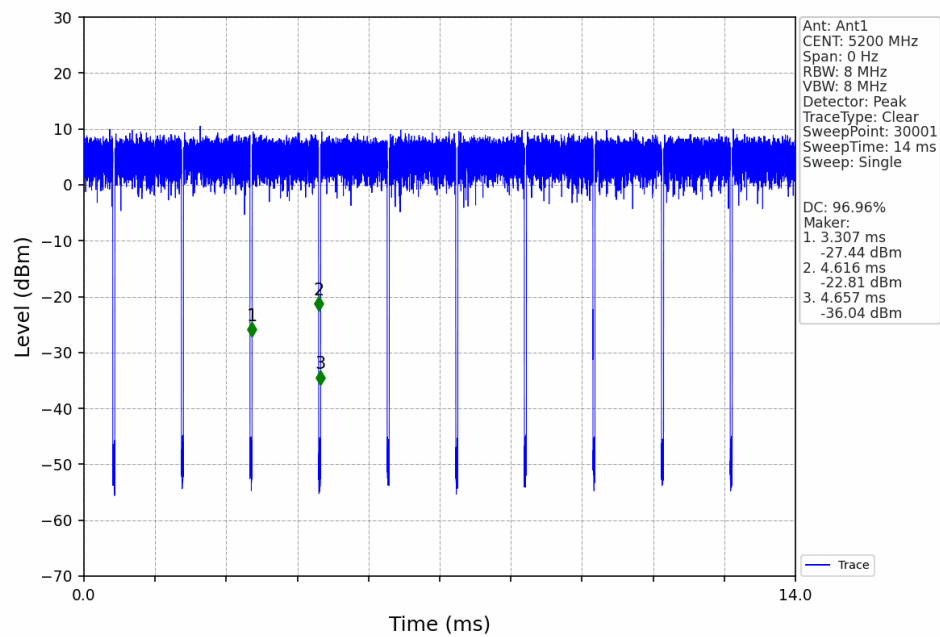
802.11a_HCH_5825MHz_Ant1_NTNV



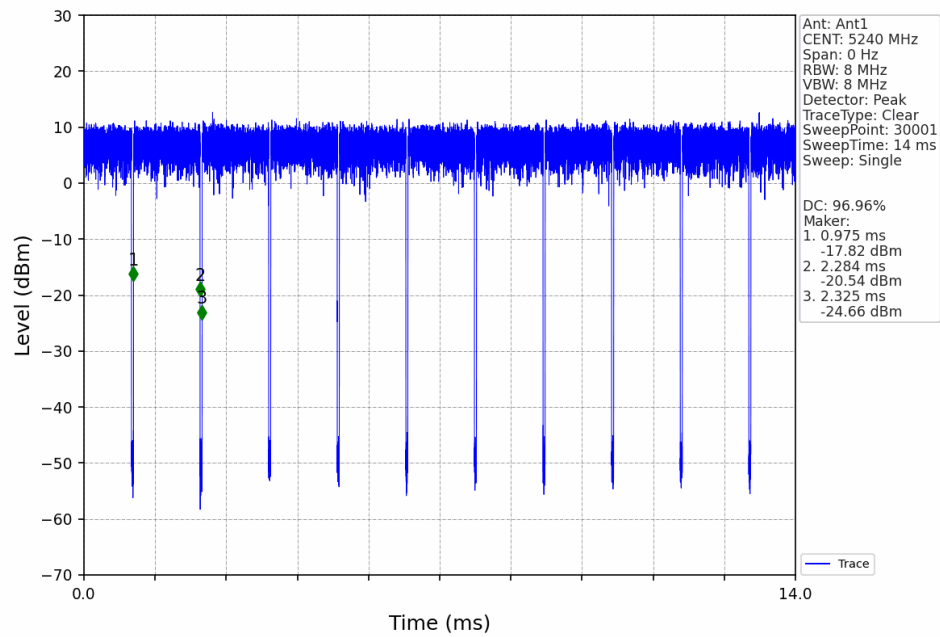
802.11n(HT20)_LCH_5180MHz_Ant1_NTNV



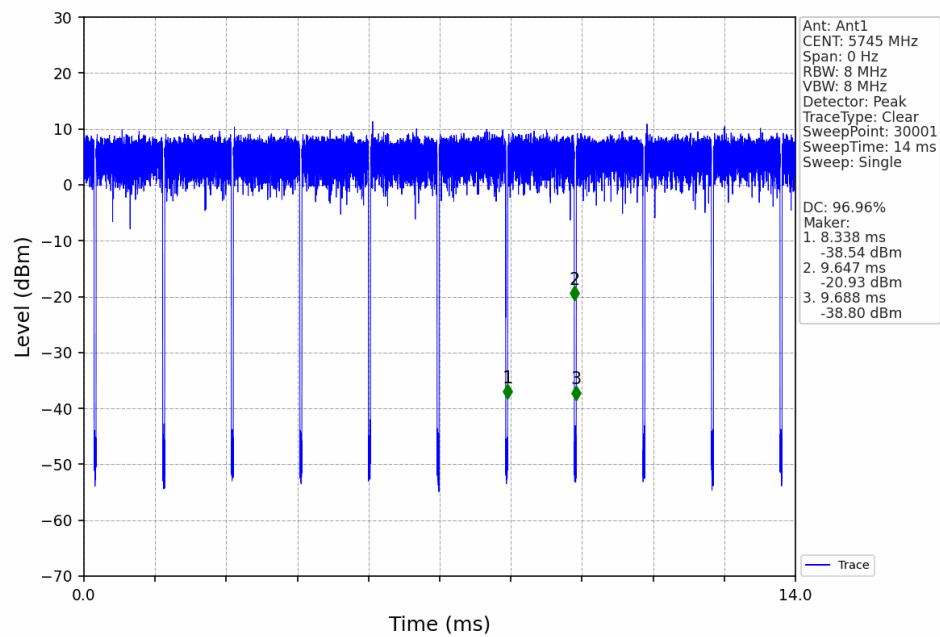
802.11n(HT20)_MCH_5200MHz_Ant1_NTNV



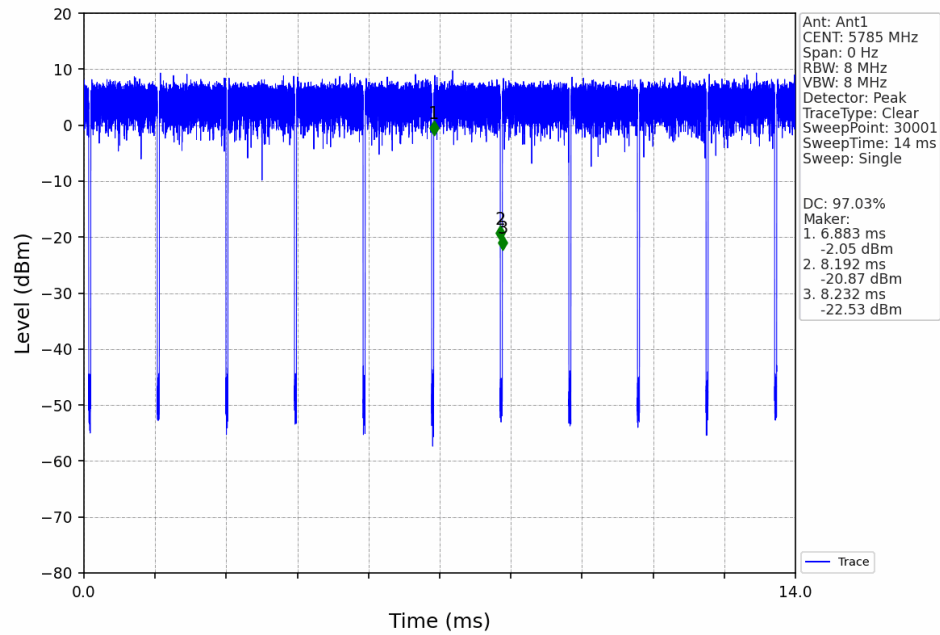
802.11n(HT20) HCH_5240MHz_Ant1_NTNV



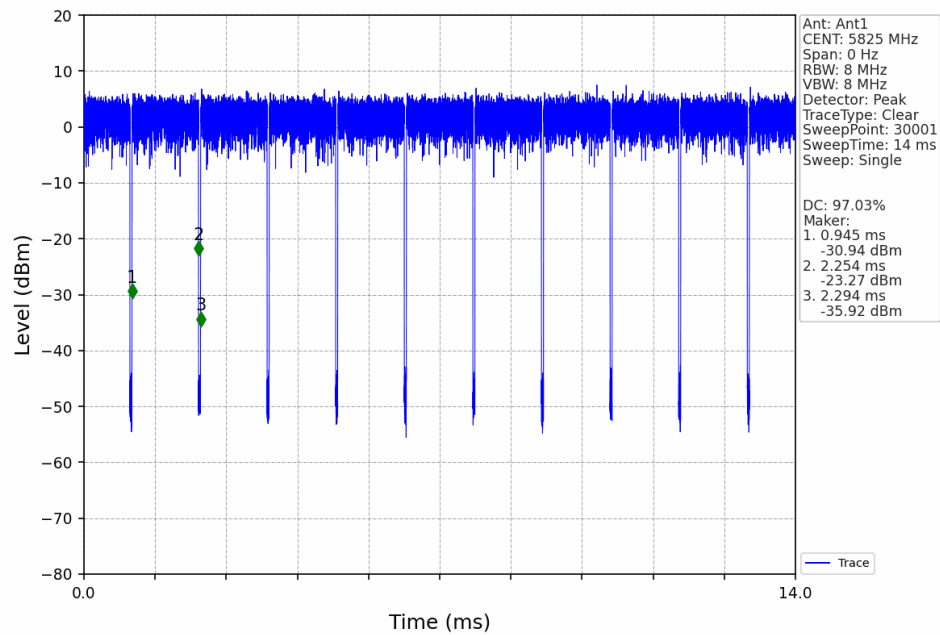
802.11n(HT20) LCH_5745MHz_Ant1_NTNV



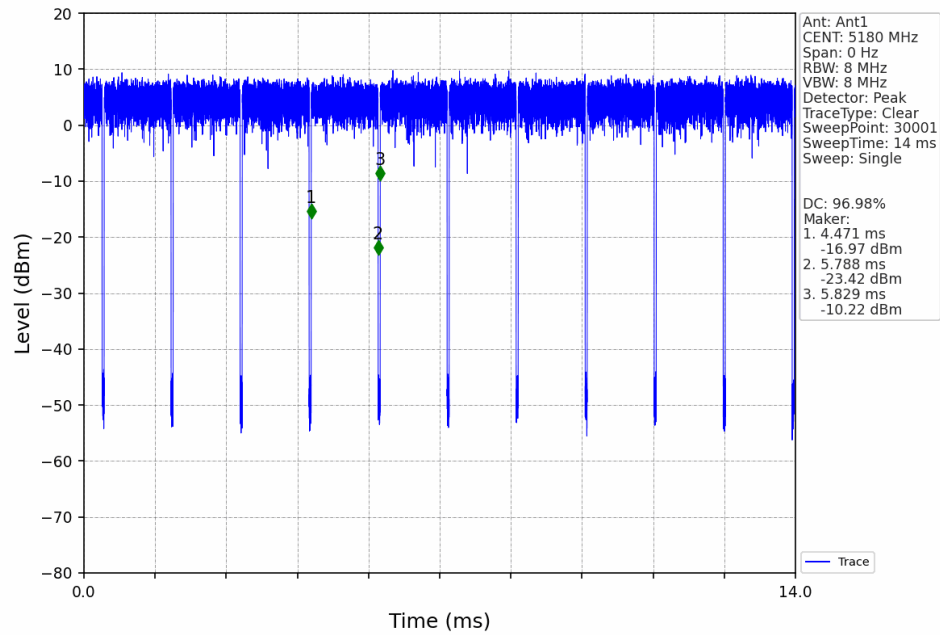
802.11n(HT20) MCH_5785MHz_Ant1_NTNV



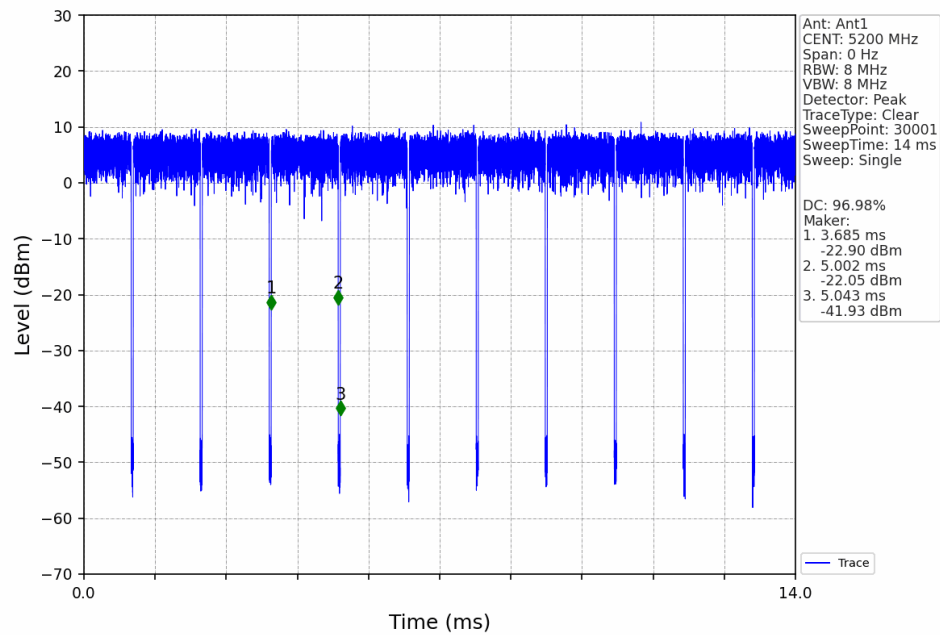
802.11n(HT20) HCH_5825MHz_Ant1_NTNV



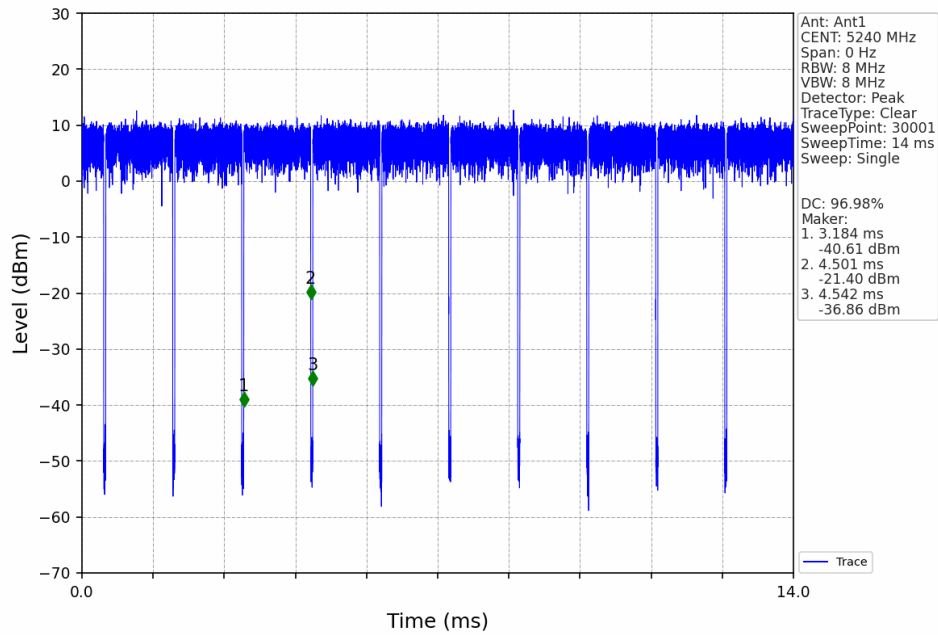
802.11ac(VHT20) LCH_5180MHz_Ant1_NTNV



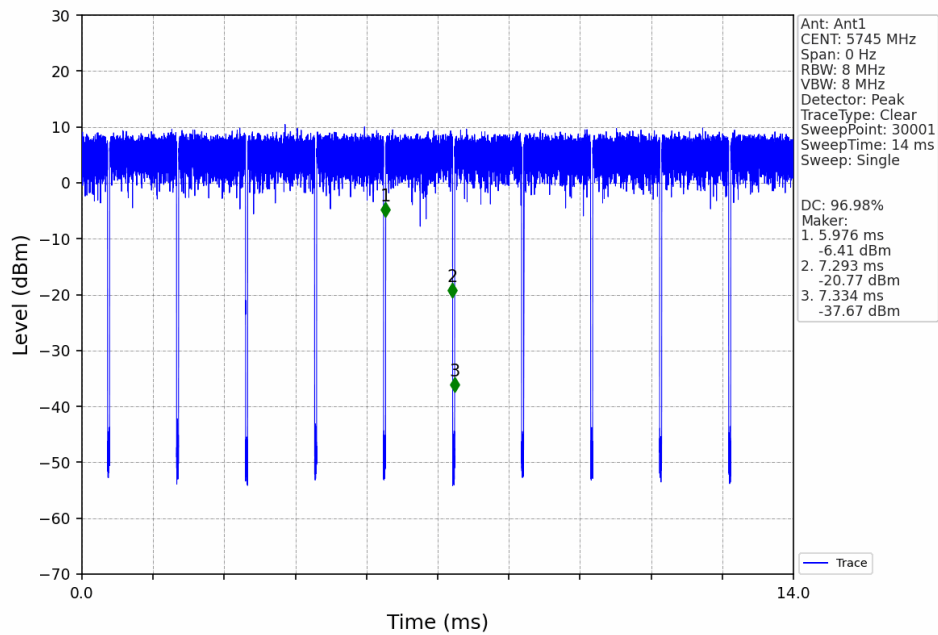
802.11ac(VHT20) MCH_5200MHz_Ant1_NTNV



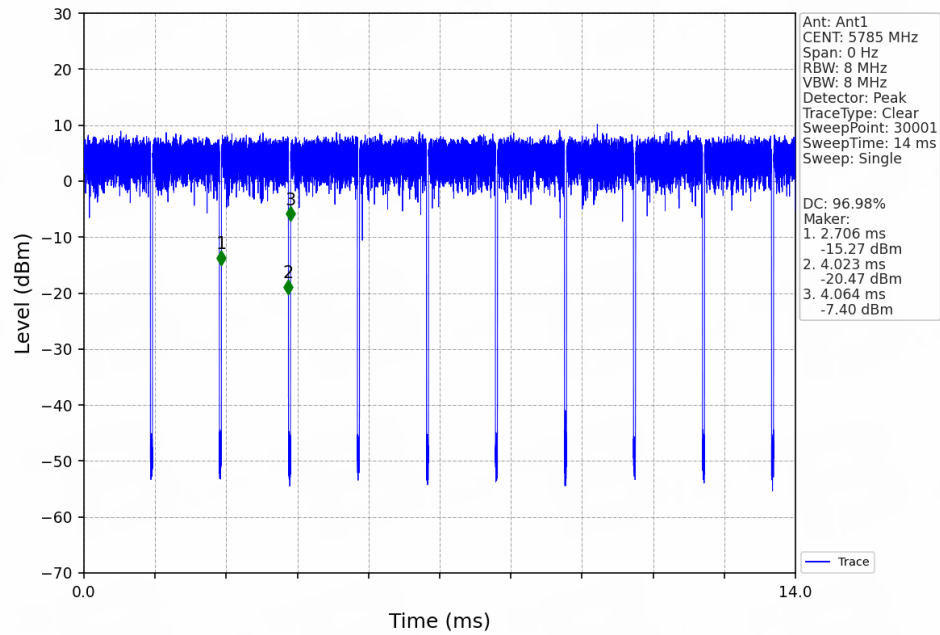
802.11ac(VHT20)_HCH_5240MHz_Ant1_NTNV



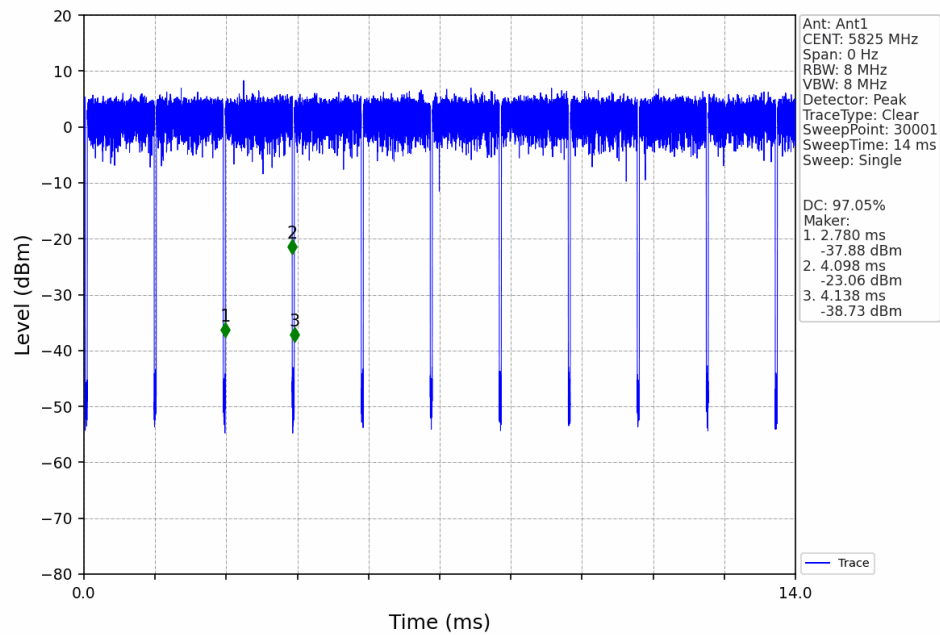
802.11ac(VHT20)_LCH_5745MHz_Ant1_NTNV



802.11ac(VHT20)_MCH_5785MHz_Ant1_NTNV



802.11ac(VHT20)_HCH_5825MHz_Ant1_NTNV



2. Bandwidth

2.1 Test Result

2.1.1 OBW

Mode	TX Type	Frequency (MHz)	ANT	99% Occupied Bandwidth (MHz)		Verdict
				Result	Limit	
802.11a	SISO	5180	1	17.600	/	Pass
		5200	1	17.464	/	Pass
		5240	1	17.377	/	Pass
		5745	1	19.025	/	Pass
		5785	1	18.855	/	Pass
		5825	1	18.695	/	Pass
802.11n (HT20)	SISO	5180	1	18.527	/	Pass
		5200	1	18.724	/	Pass
		5240	1	18.597	/	Pass
		5745	1	19.504	/	Pass
		5785	1	19.306	/	Pass
		5825	1	19.348	/	Pass
802.11ac (VHT20)	SISO	5180	1	18.798	/	Pass
		5200	1	18.591	/	Pass
		5240	1	18.718	/	Pass
		5745	1	19.268	/	Pass
		5785	1	19.167	/	Pass
		5825	1	19.398	/	Pass

2.1.2 26dB BW

Mode	TX Type	Frequency (MHz)	ANT	26dB Bandwidth (MHz)		Verdict
				Result	Limit	
802.11a	SISO	5180	1	25.646		Pass
		5200	1	24.561		Pass
		5240	1	25.719		Pass
802.11n (HT20)	SISO	5180	1	27.488		Pass
		5200	1	27.502		Pass
		5240	1	26.897		Pass
802.11ac (VHT20)	SISO	5180	1	27.366		Pass
		5200	1	26.614		Pass
		5240	1	25.690		Pass

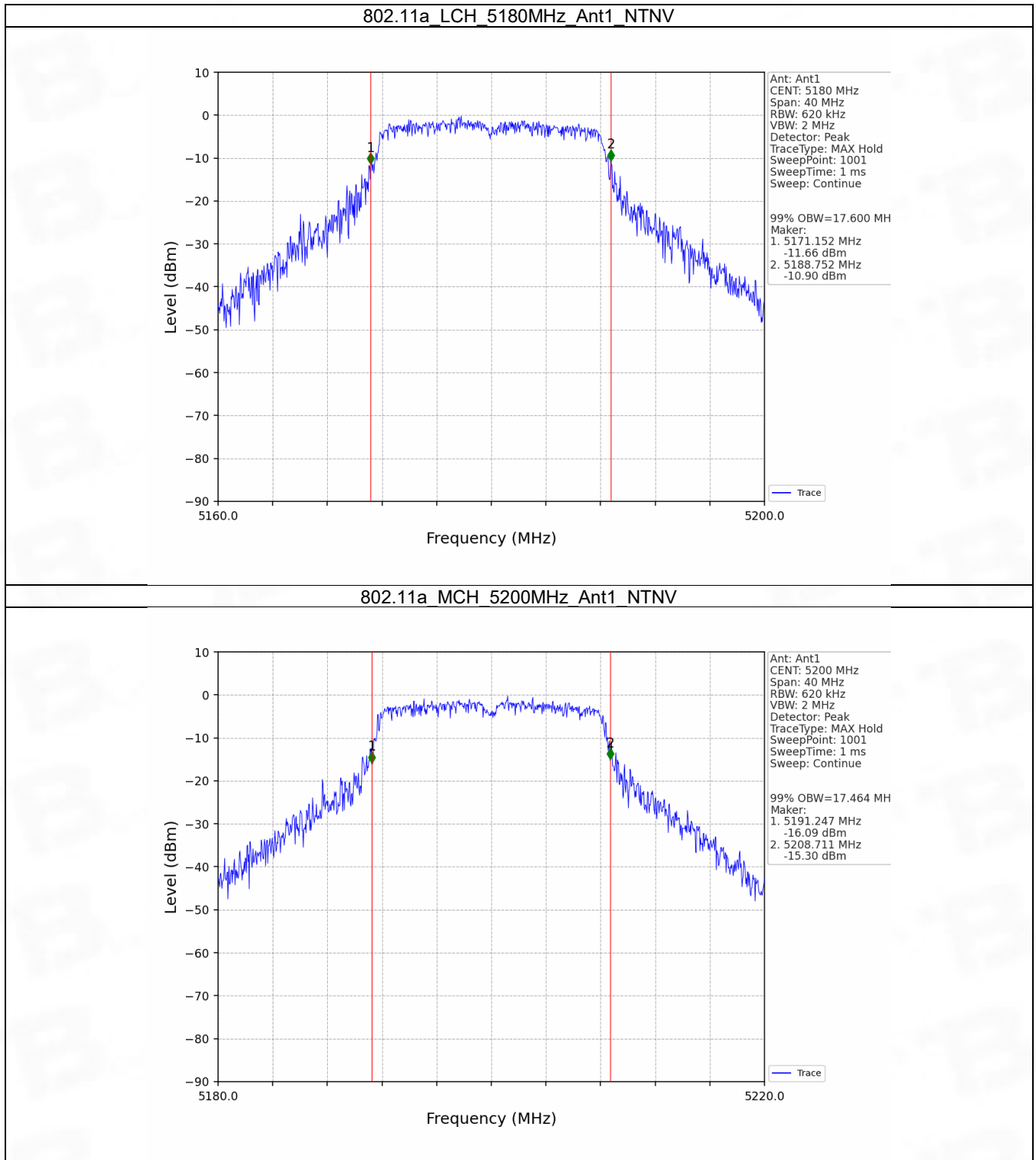
2.1.3 6dB BW

Mode	TX Type	Frequency (MHz)	ANT	6dB Bandwidth (MHz)		Verdict
				Result	Limit	
802.11a	SISO	5745	1	15.519	≥ 0.5	Pass
		5785	1	16.021	≥ 0.5	Pass
		5825	1	15.763	≥ 0.5	Pass
802.11n (HT20)	SISO	5745	1	15.177	≥ 0.5	Pass
		5785	1	15.719	≥ 0.5	Pass
		5825	1	15.764	≥ 0.5	Pass
802.11ac	SISO	5745	1	15.503	≥ 0.5	Pass

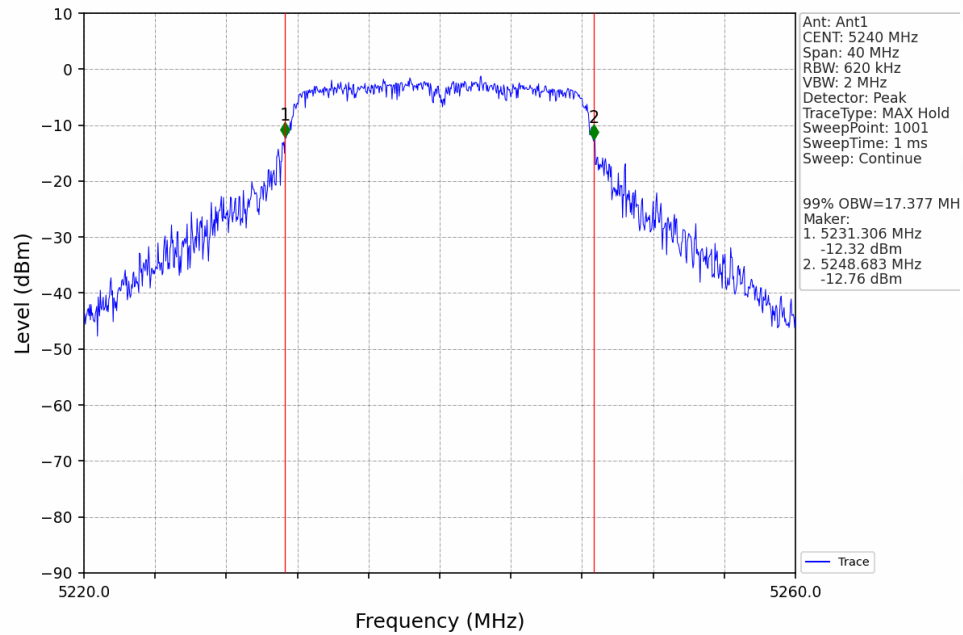
(VHT20)		5785	1	15.751	≥ 0.5	Pass
		5825	1	15.368	≥ 0.5	Pass

2.2 Test Graph

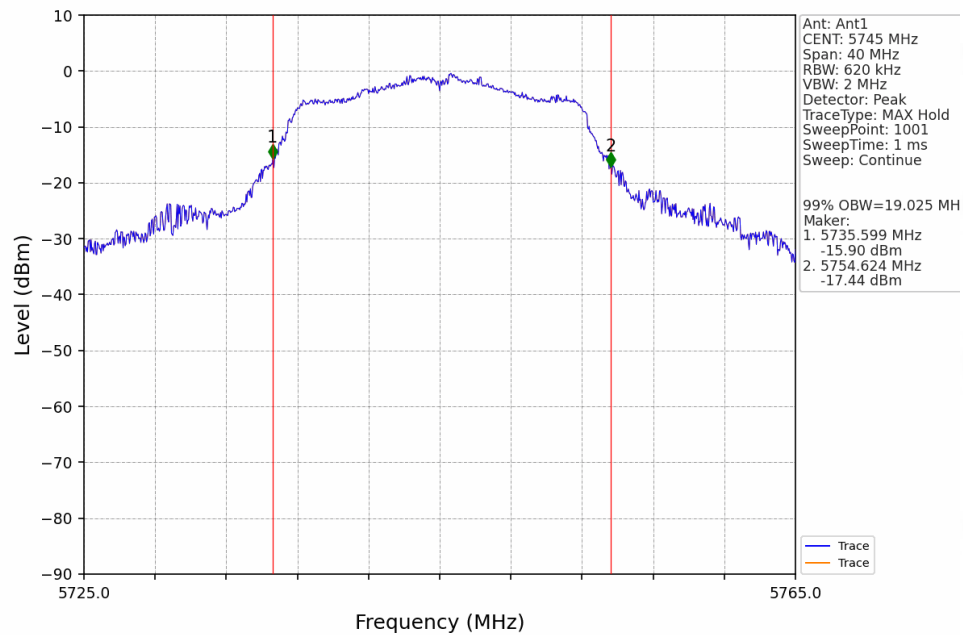
2.2.1 OBW



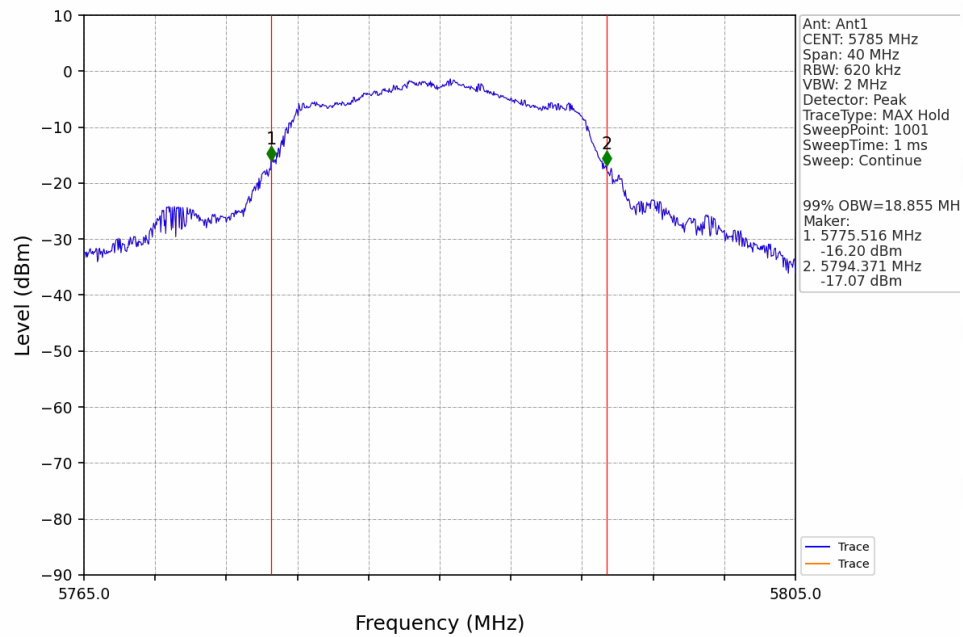
802.11a_HCH_5240MHz_Ant1_NTNV



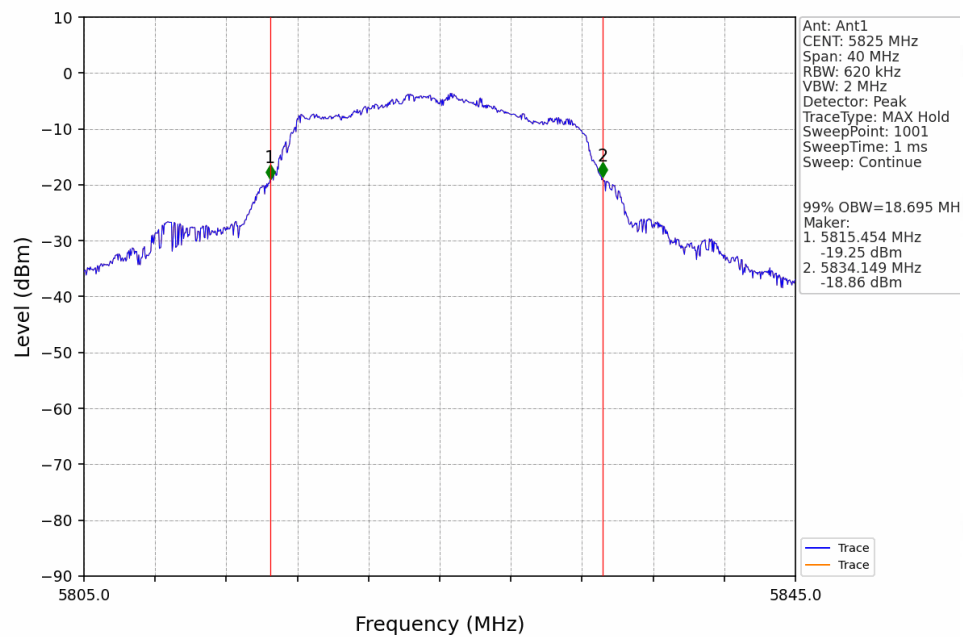
802.11a_LCH_5745MHz_Ant1_NTNV



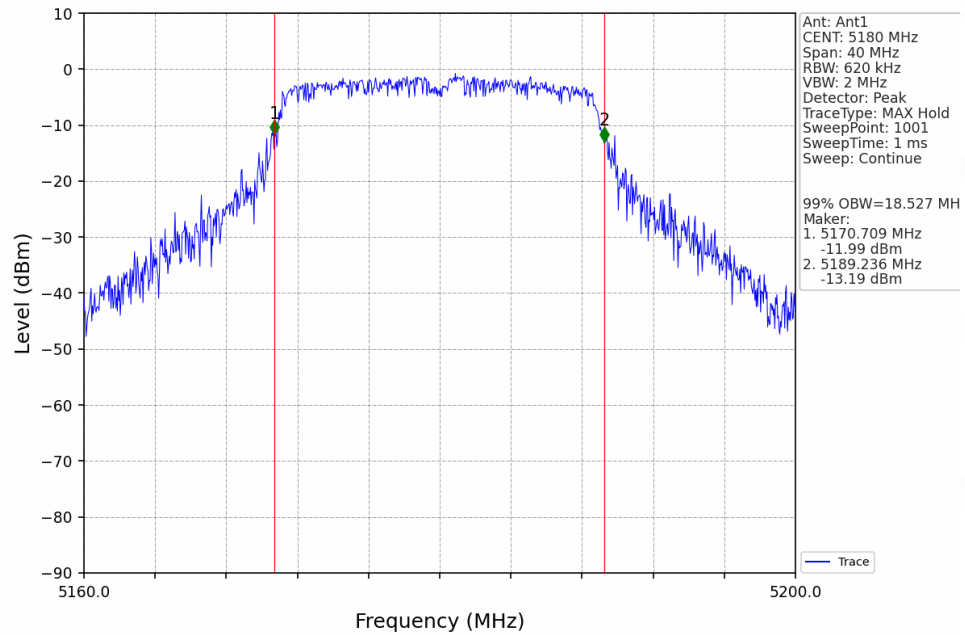
802.11a_MCH_5785MHz_Ant1_NTNV



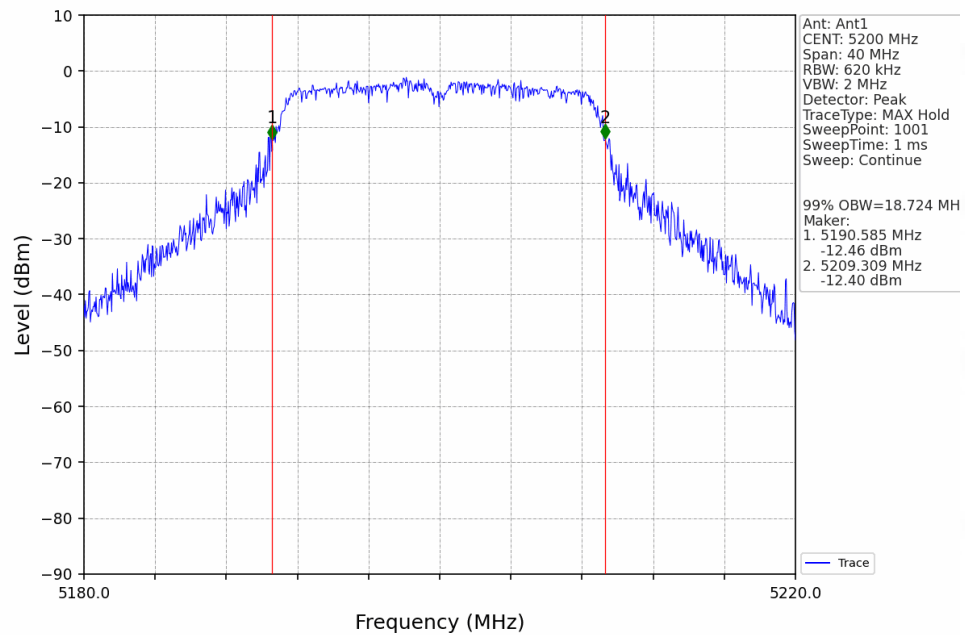
802.11a_HCH_5825MHz_Ant1_NTNV



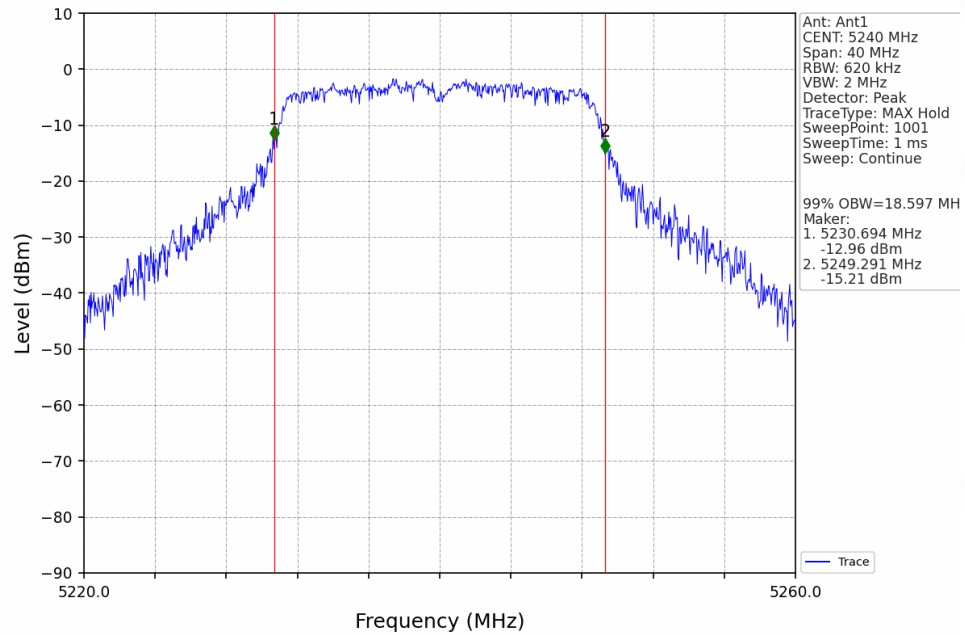
802.11n(HT20)_LCH_5180MHz_Ant1_NTNV



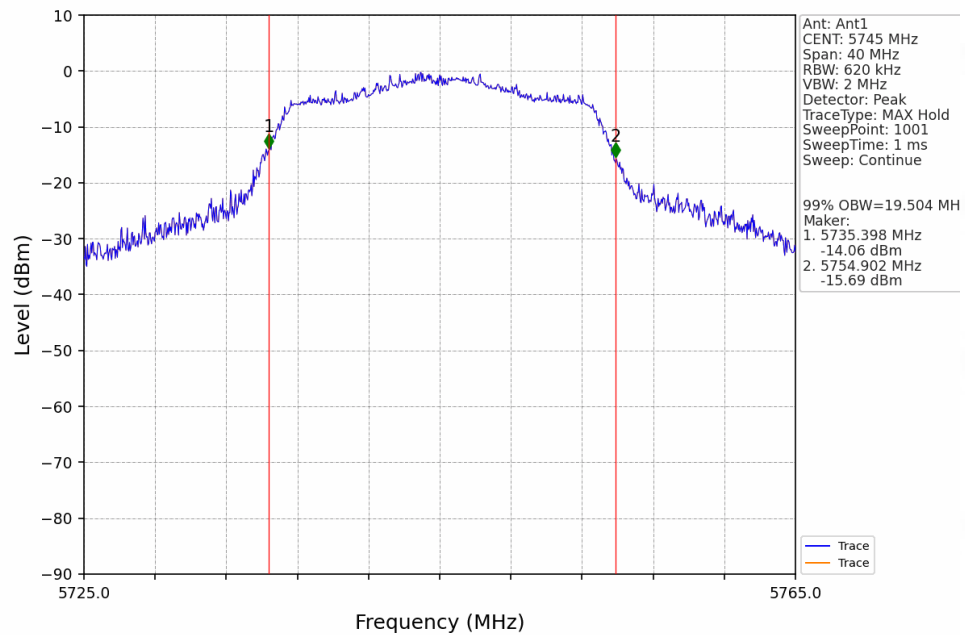
802.11n(HT20)_MCH_5200MHz_Ant1_NTNV



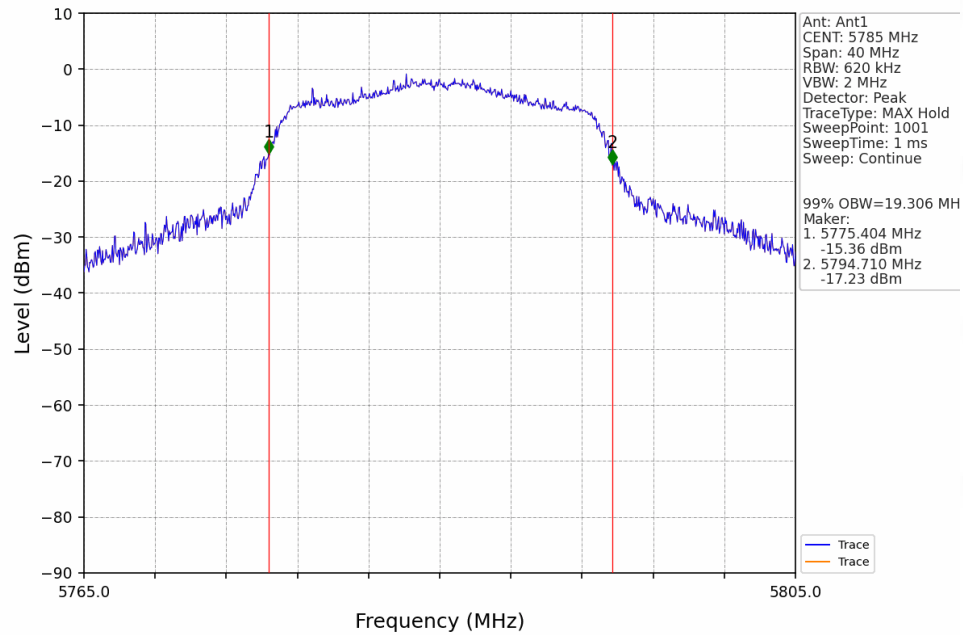
802.11n(HT20) HCH_5240MHz_Ant1_NTNV



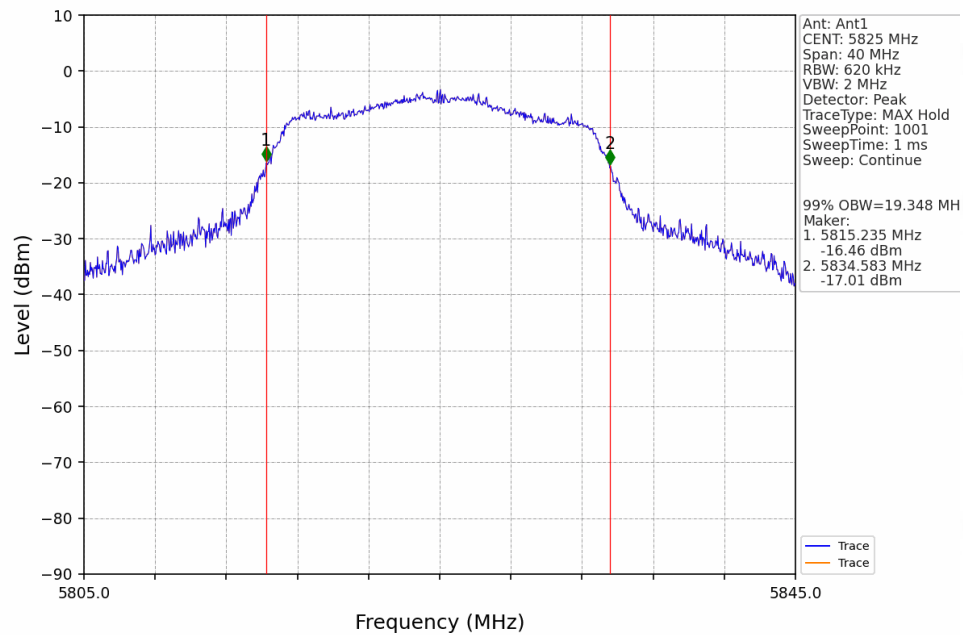
802.11n(HT20) LCH_5745MHz_Ant1_NTNV



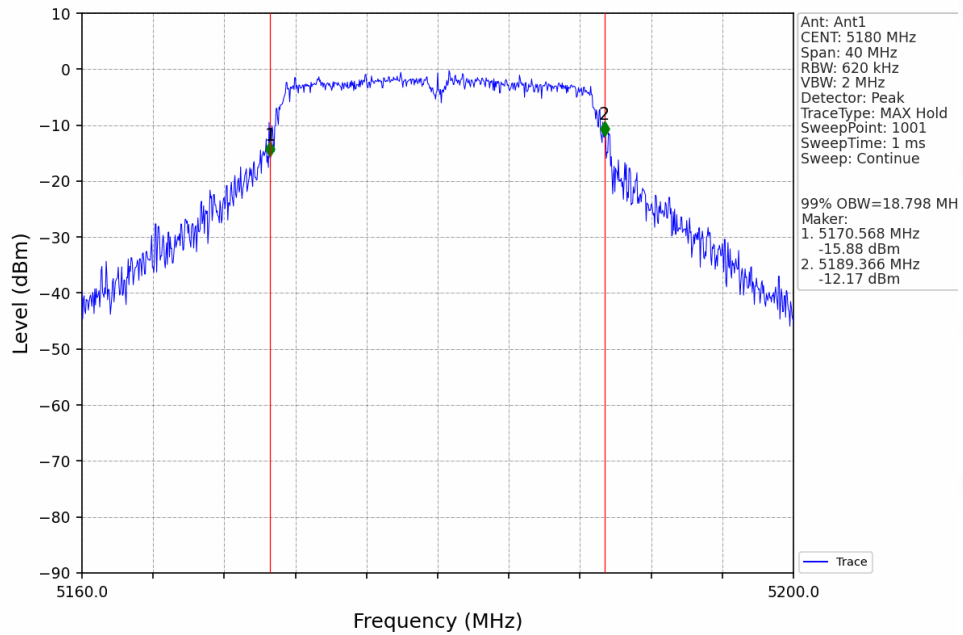
802.11n(HT20) MCH_5785MHz_Ant1_NTNV



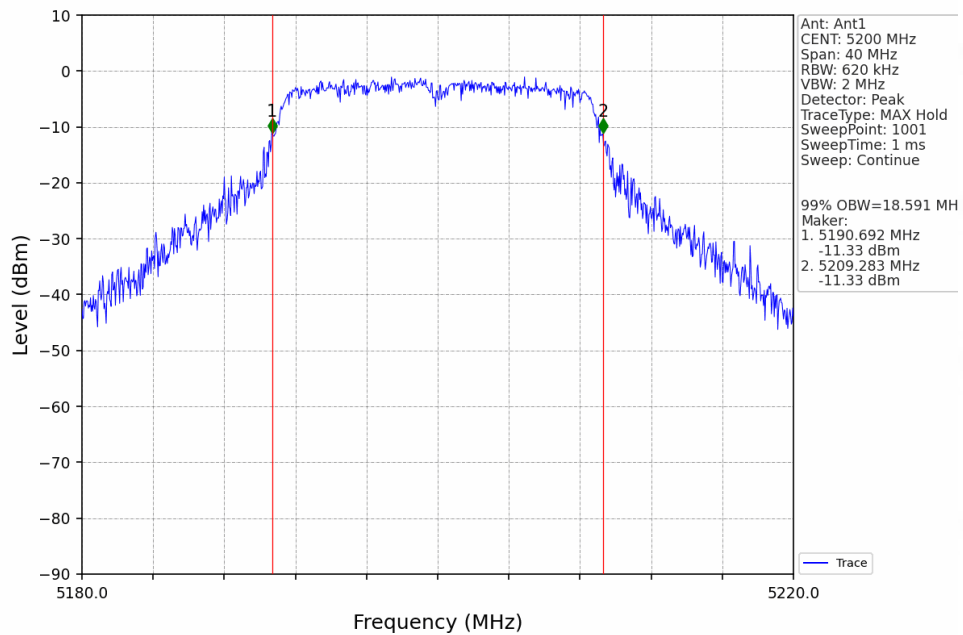
802.11n(HT20) HCH_5825MHz_Ant1_NTNV



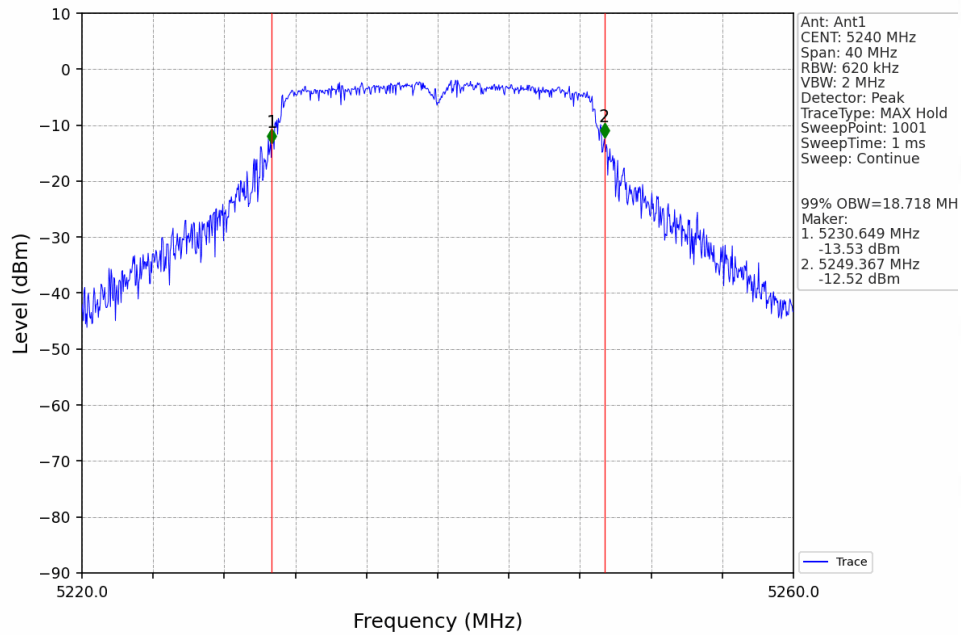
802.11ac(VHT20) LCH_5180MHz_Ant1_NTNV



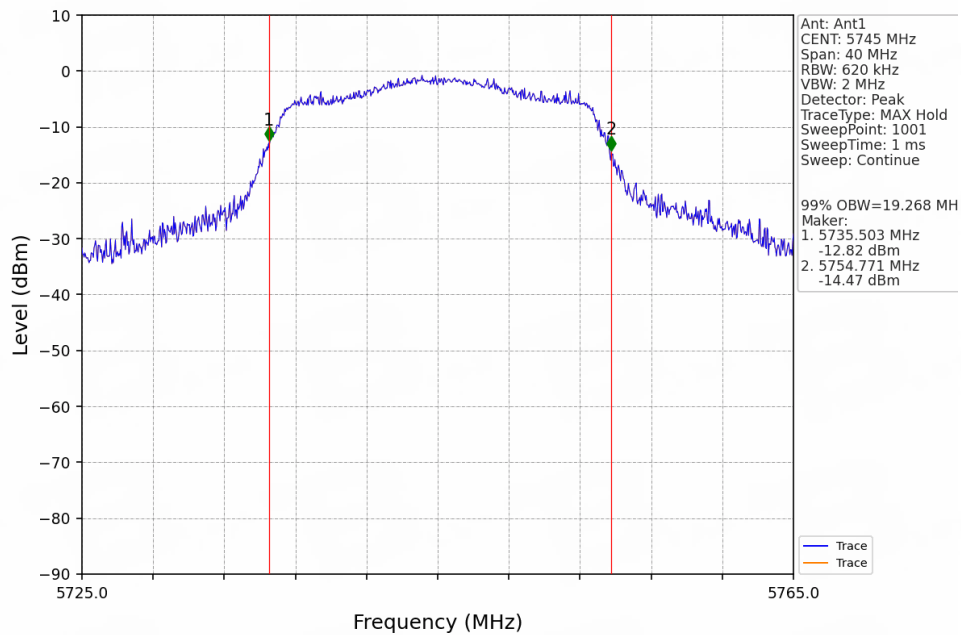
802.11ac(VHT20) MCH_5200MHz_Ant1_NTNV



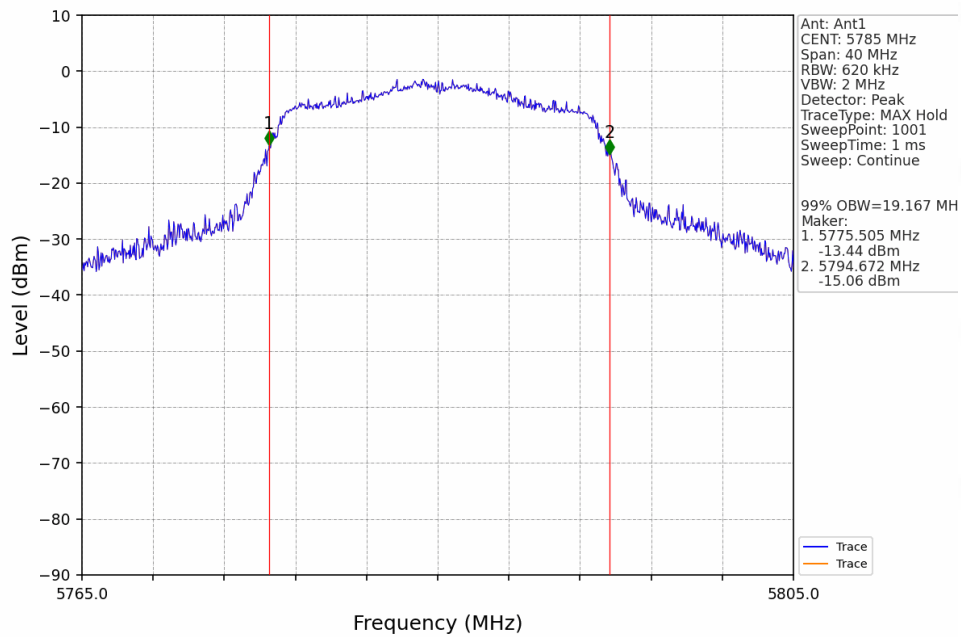
802.11ac(VHT20)_HCH_5240MHz_Ant1_NTNV



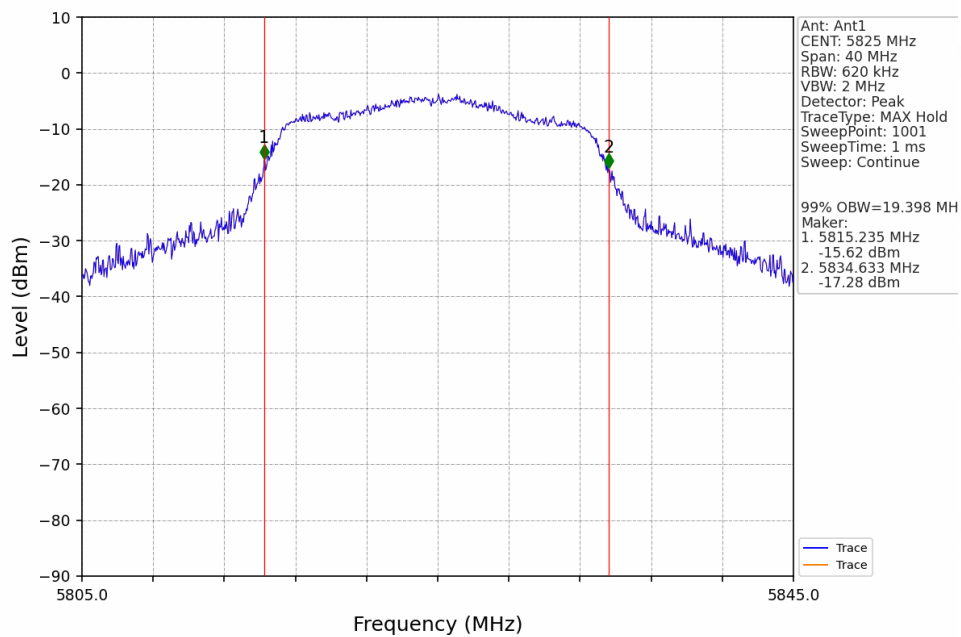
802.11ac(VHT20)_LCH_5745MHz_Ant1_NTNV



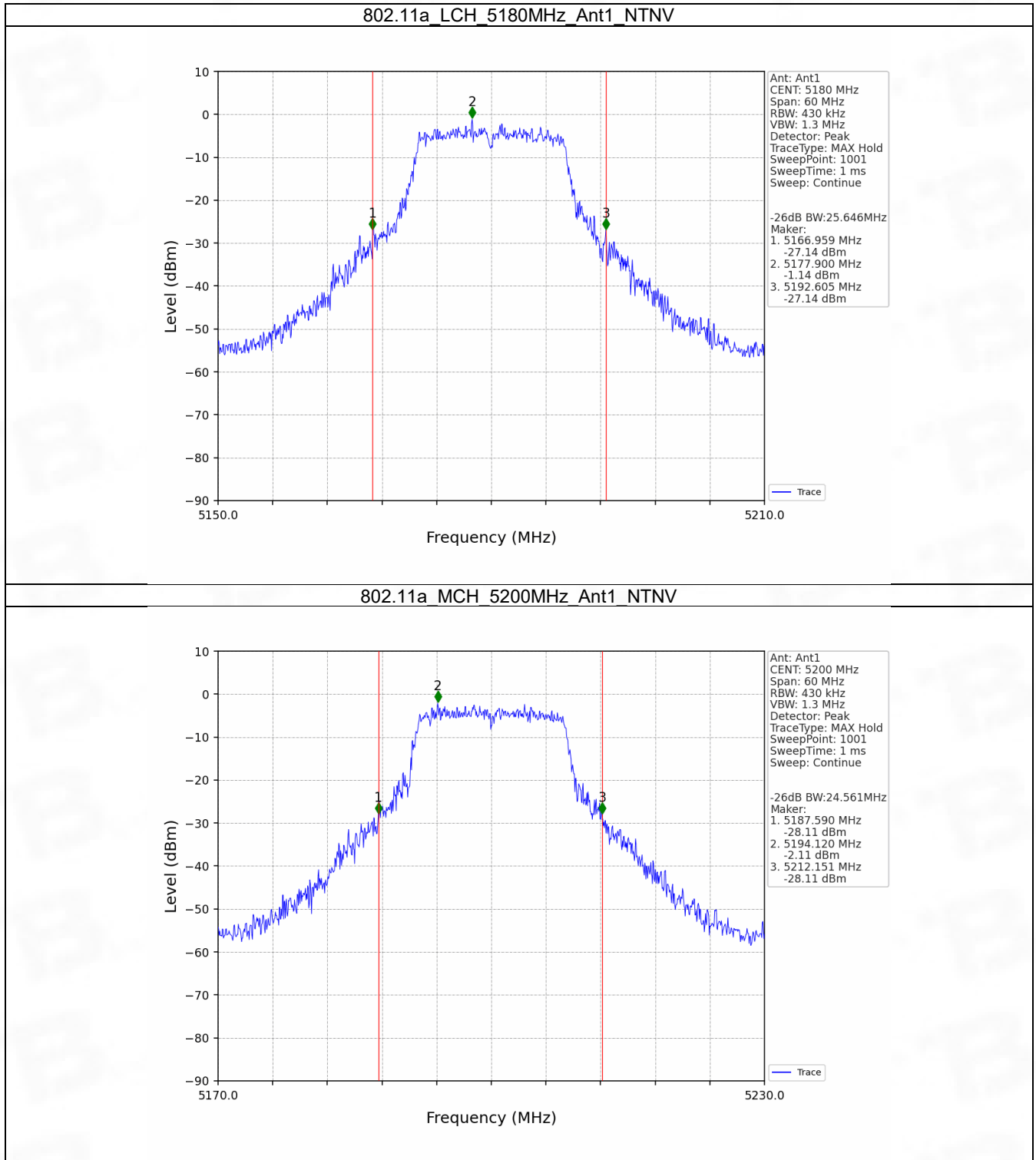
802.11ac(VHT20)_MCH_5785MHz_Ant1_NTNV



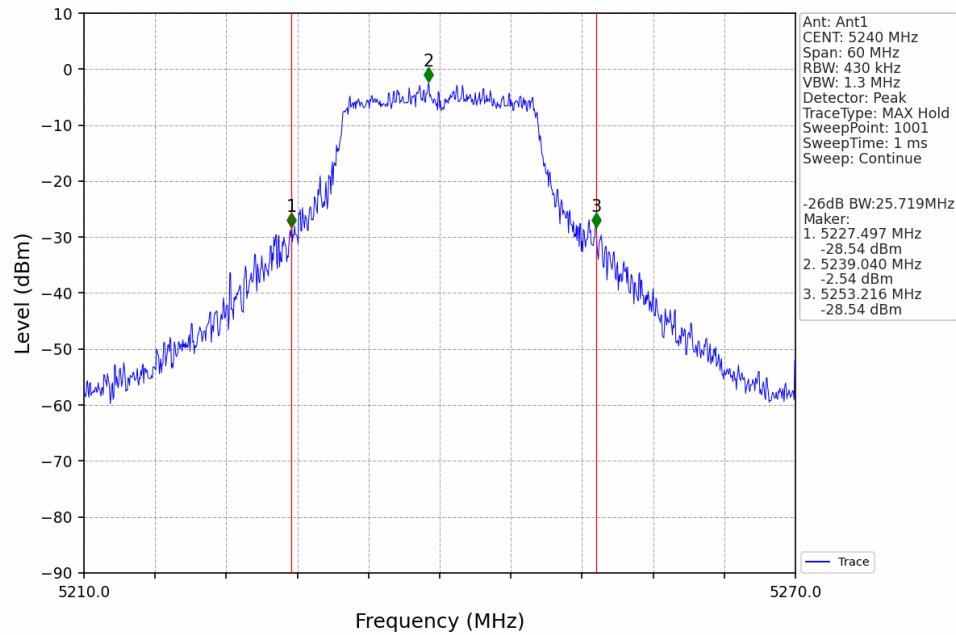
802.11ac(VHT20)_HCH_5825MHz_Ant1_NTNV



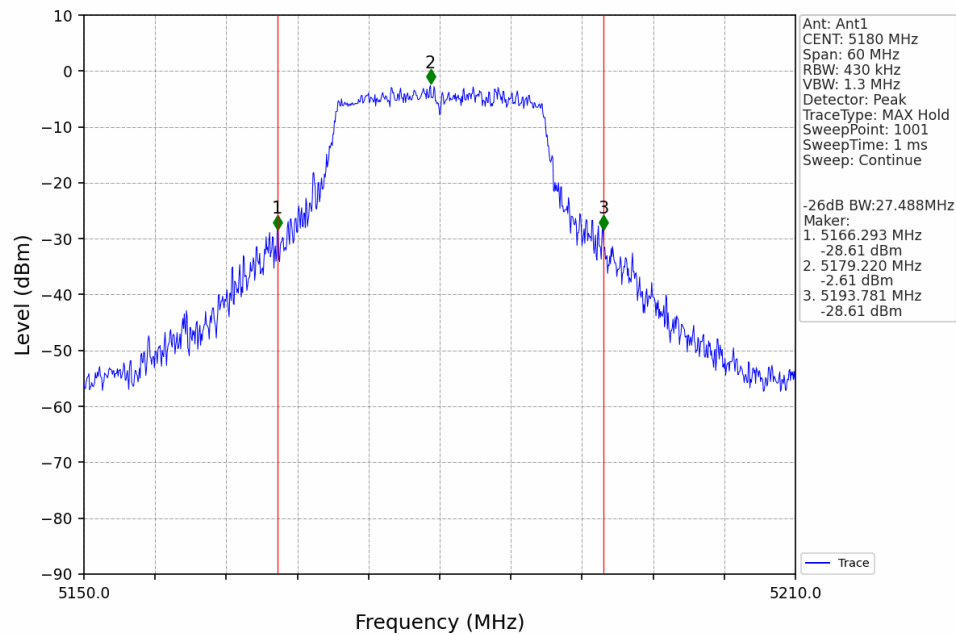
2.2.2 26dB BW



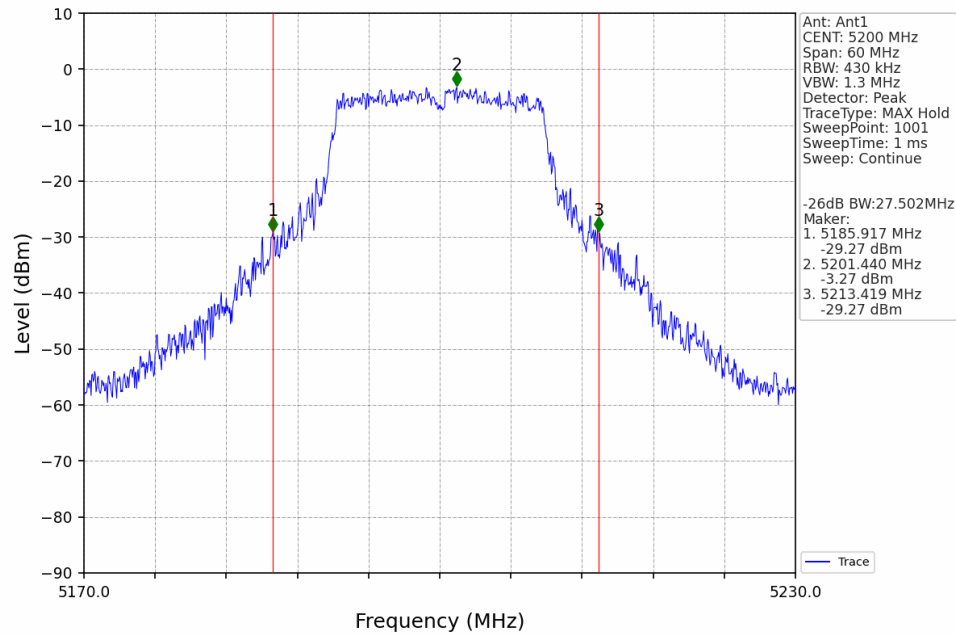
802.11a_HCH_5240MHz_Ant1_NTNV



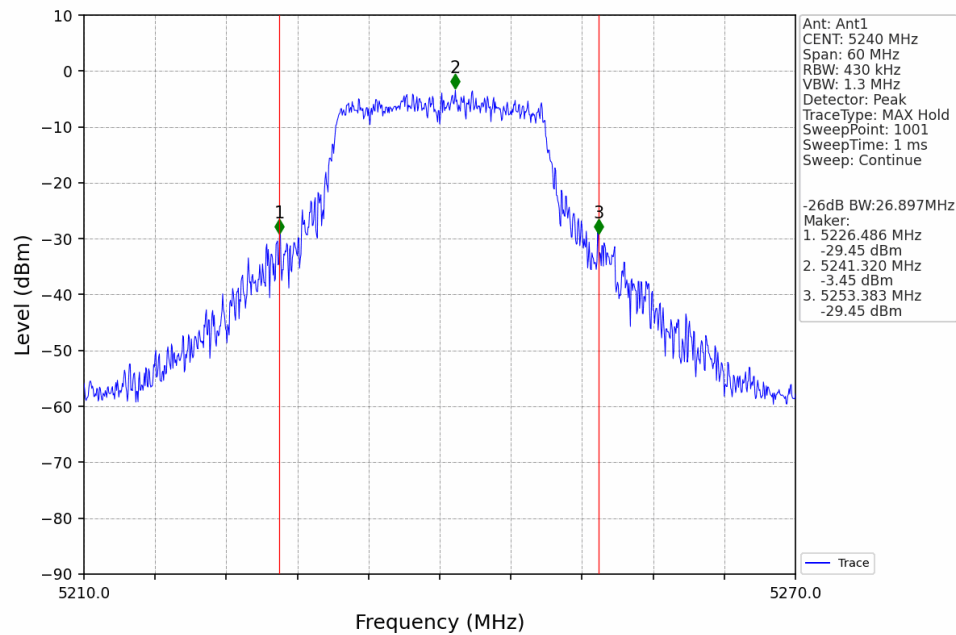
802.11n(HT20)_LCH_5180MHz_Ant1_NTNV



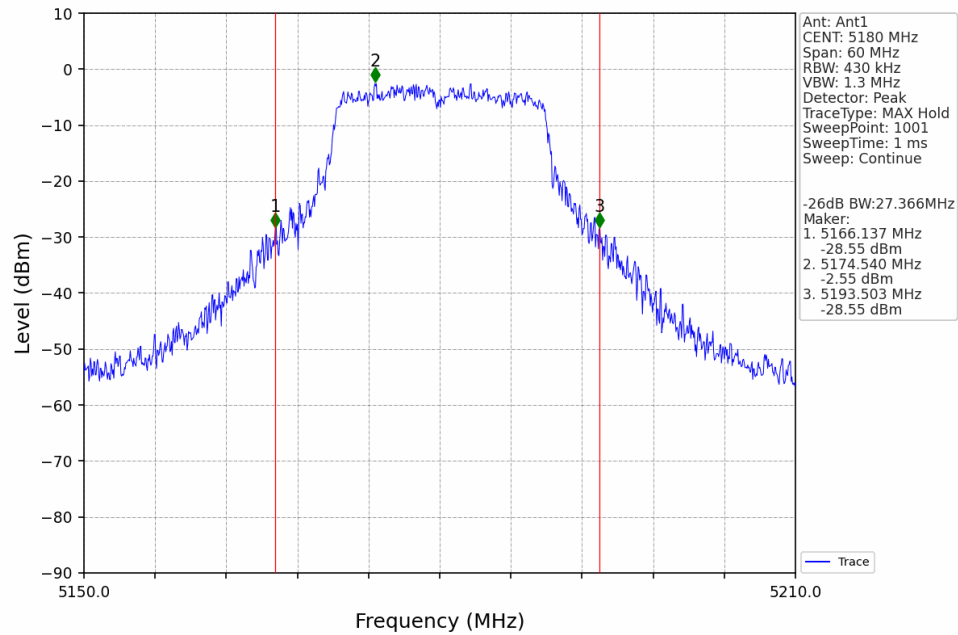
802.11n(HT20) MCH_5200MHz_Ant1_NTNV



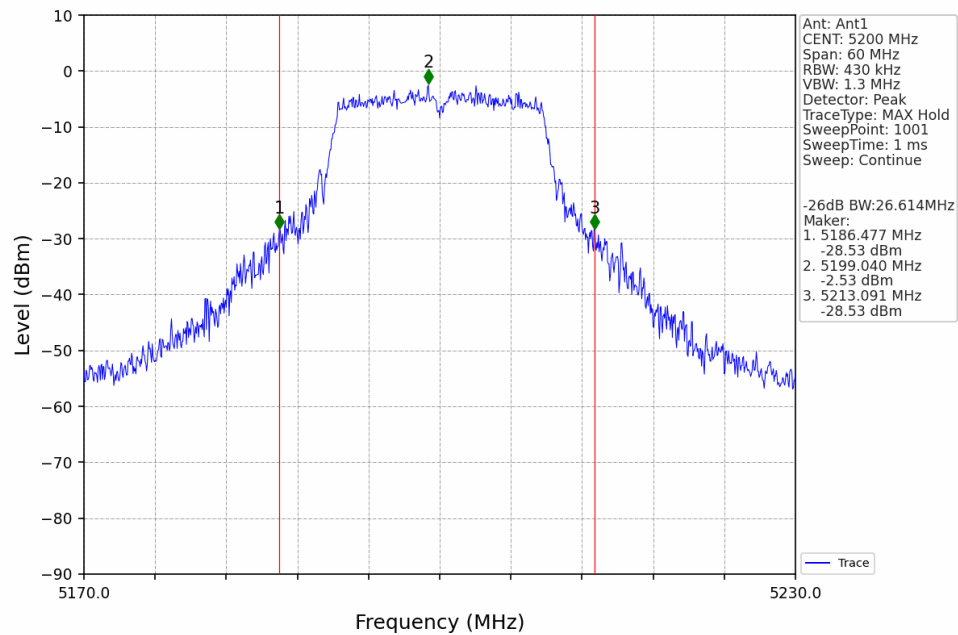
802.11n(HT20) HCH_5240MHz_Ant1_NTNV

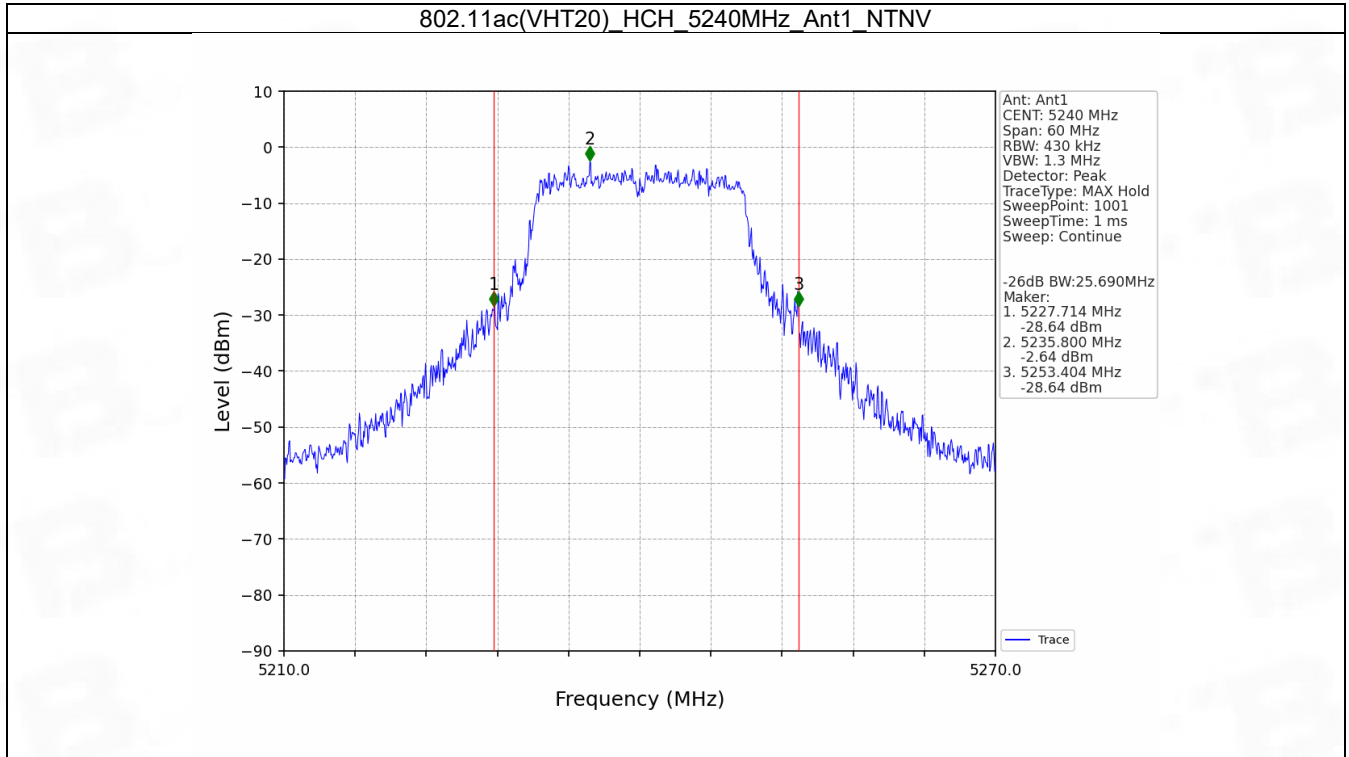


802.11ac(VHT20) LCH_5180MHz_Ant1_NTNV

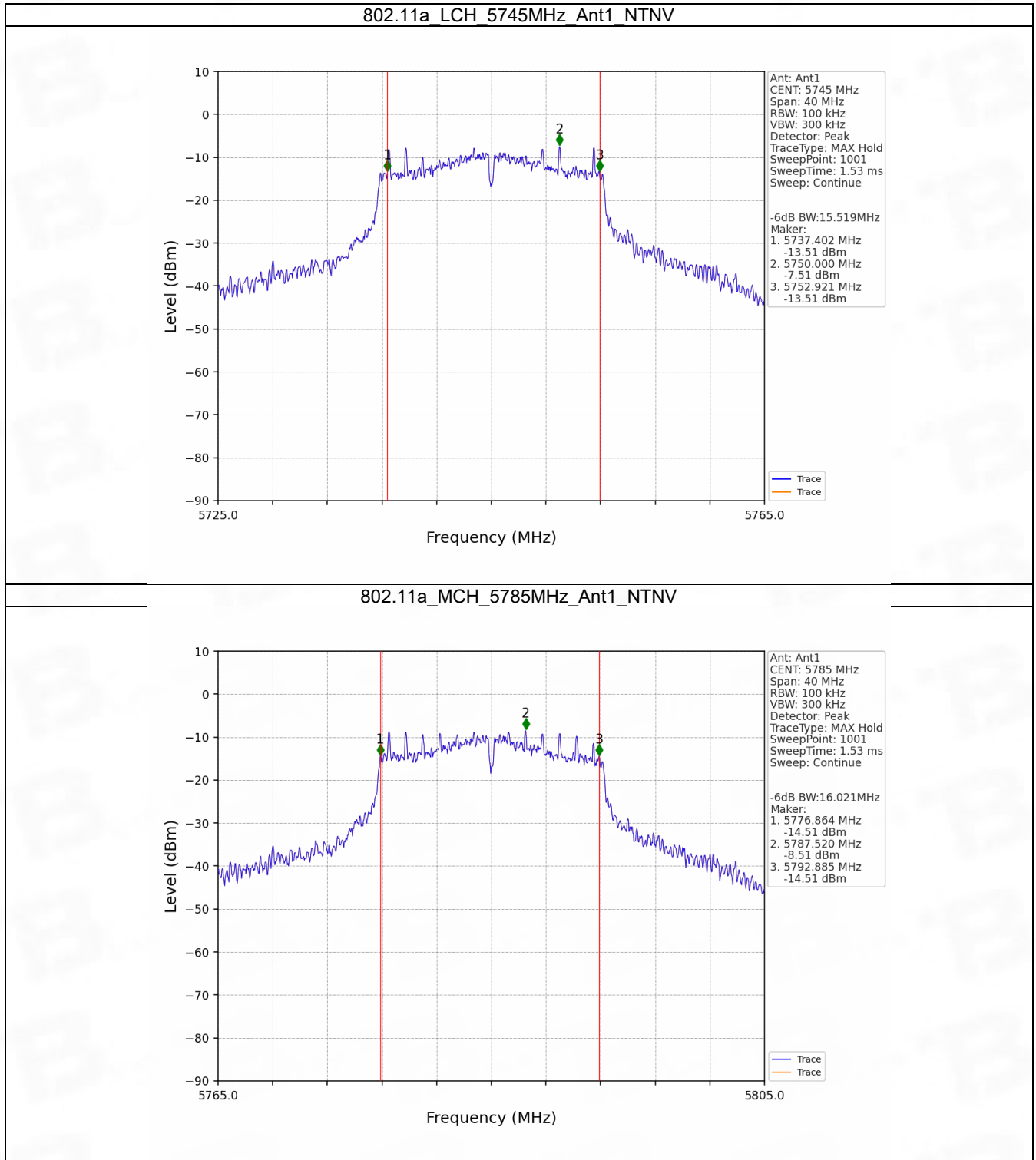


802.11ac(VHT20) MCH_5200MHz_Ant1_NTNV

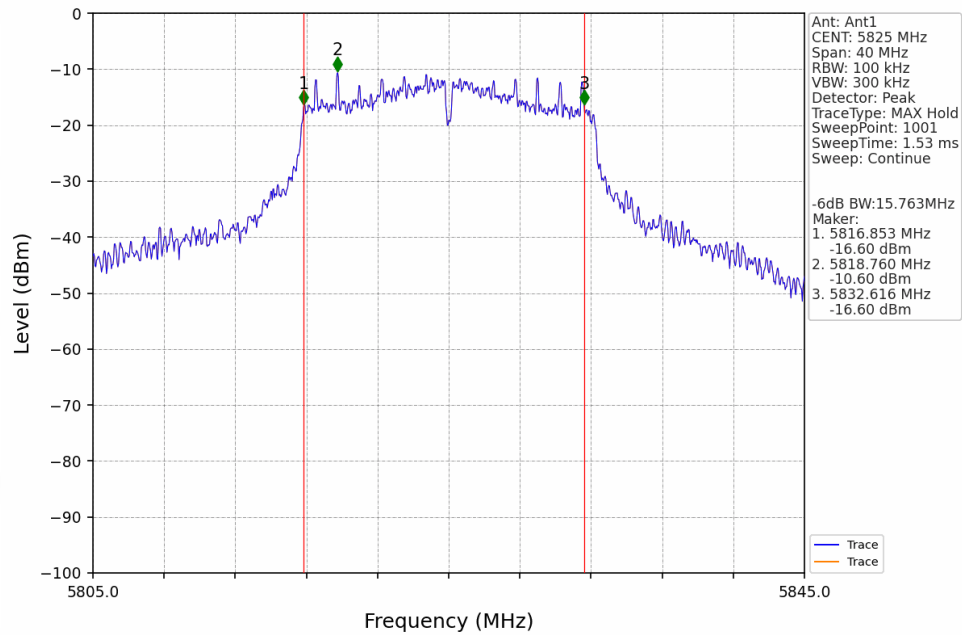




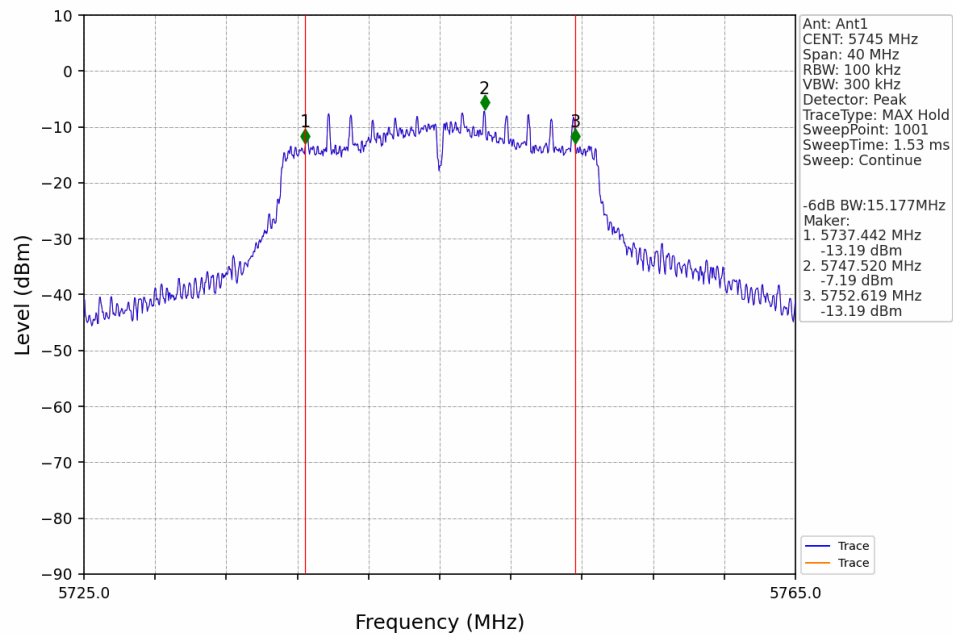
2.2.3 6dB BW



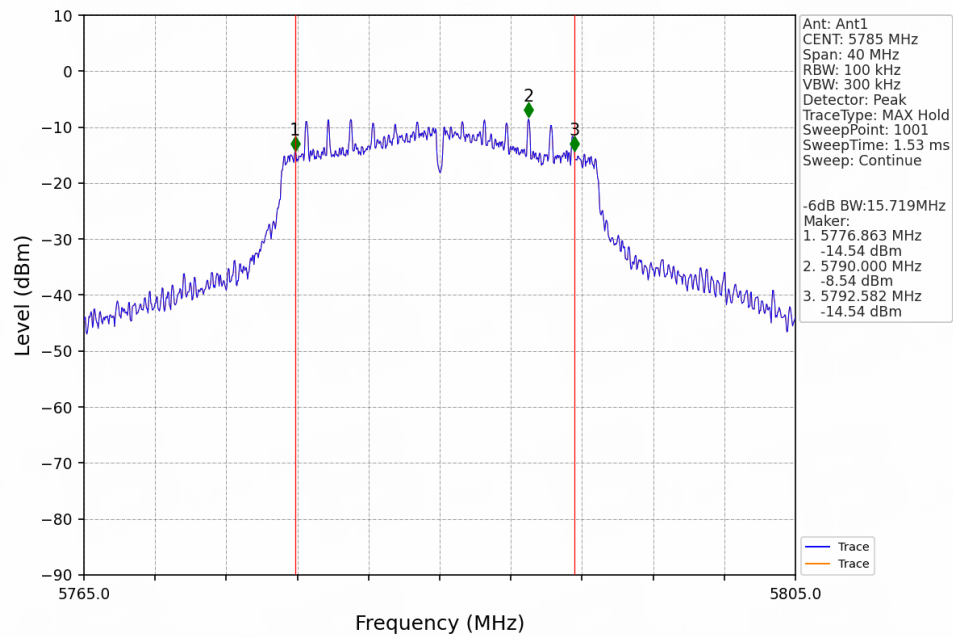
802.11a_HCH_5825MHz_Ant1_NTNV



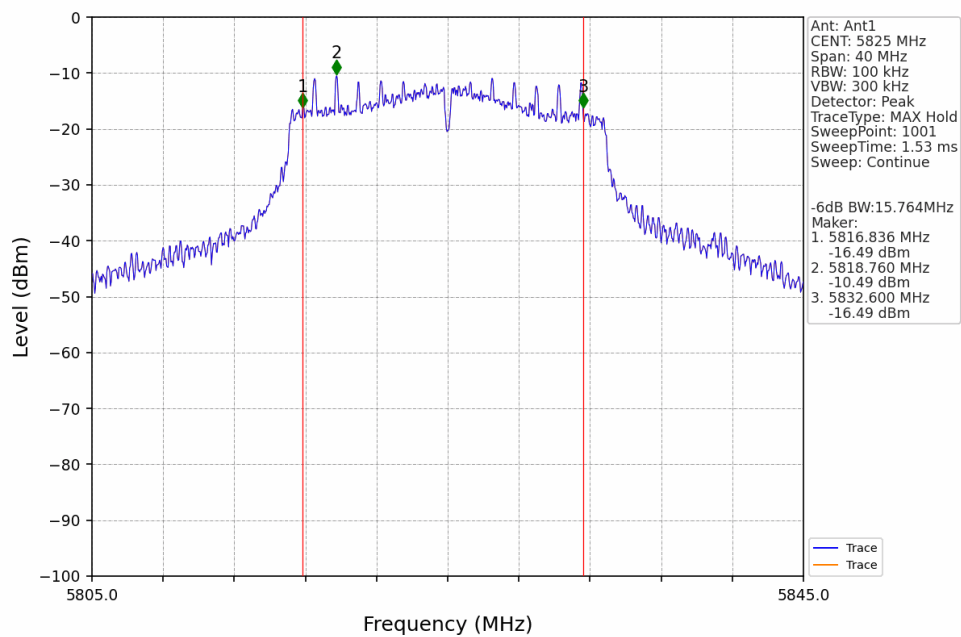
802.11n(HT20)_LCH_5745MHz_Ant1_NTNV



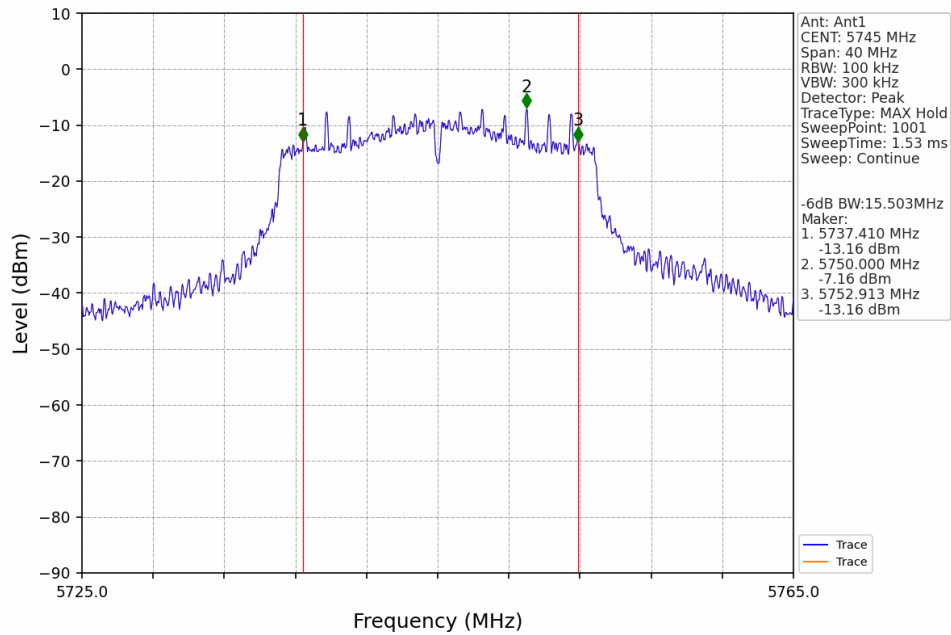
802.11n(HT20) MCH_5785MHz_Ant1_NTNV



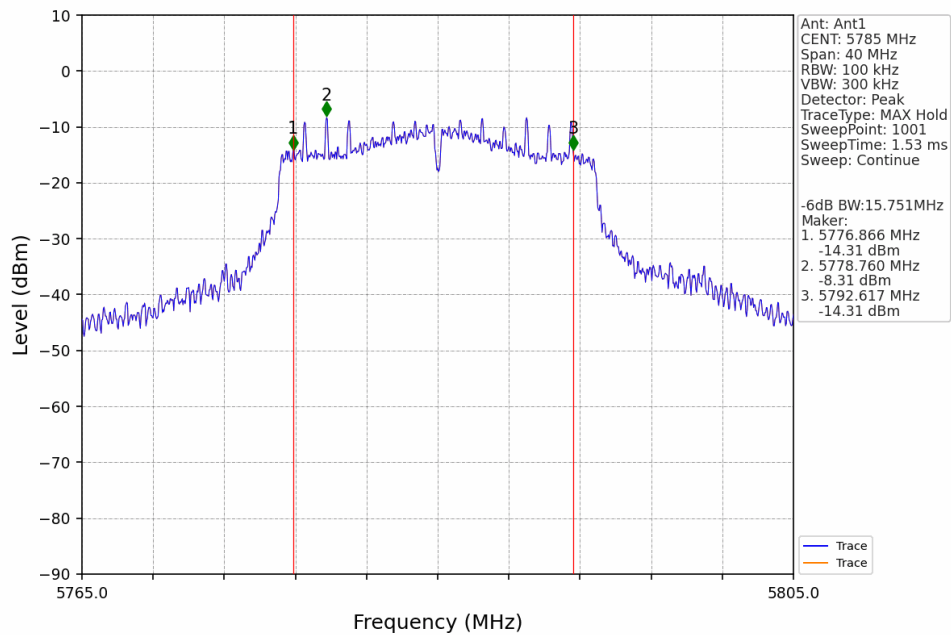
802.11n(HT20) HCH_5825MHz_Ant1_NTNV

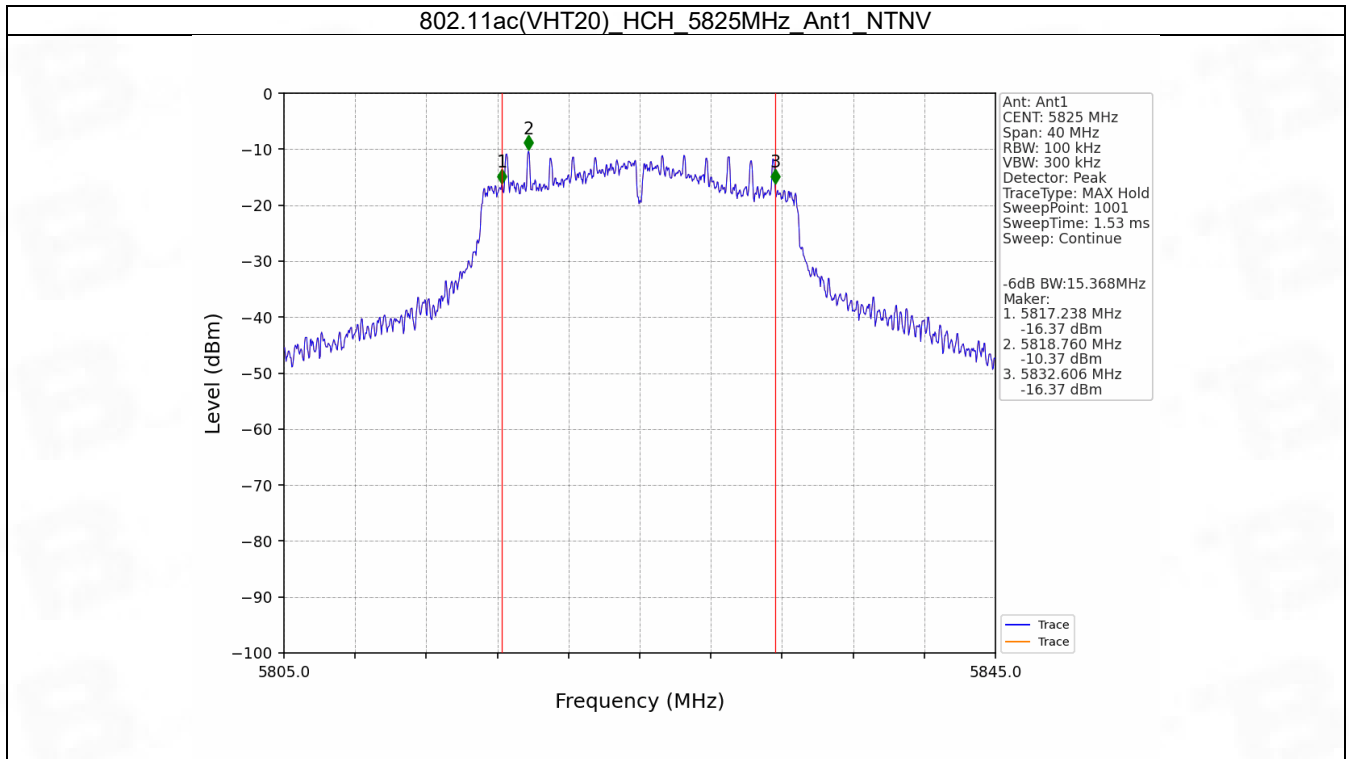


802.11ac(VHT20) LCH_5745MHz_Ant1_NTNV



802.11ac(VHT20) MCH_5785MHz_Ant1_NTNV





3. Maximum Conducted Output Power

3.1 Test Result

Mode	TX Type	Frequency (MHz)	Maximum Average Conducted Output Power (dBm)		Verdict
			ANT1	Limit	
802.11a	SISO	5180	3.67	<=23.98	Pass
		5200	3.85	<=23.98	Pass
		5240	5.12	<=23.98	Pass
		5745	3.72	<=30	Pass
		5785	2.80	<=30	Pass
		5825	0.56	<=30	Pass
802.11n (HT20)	SISO	5180	2.60	<=23.98	Pass
		5200	3.44	<=23.98	Pass
		5240	4.76	<=23.98	Pass
		5745	3.59	<=30	Pass
		5785	2.52	<=30	Pass
		5825	0.34	<=30	Pass
802.11ac (VHT20)	SISO	5180	2.89	<=23.98	Pass
		5200	3.37	<=23.98	Pass
		5240	4.77	<=23.98	Pass
		5745	3.68	<=30	Pass
		5785	2.64	<=30	Pass
		5825	0.31	<=30	Pass
Note1: Antenna Gain: Ant1: 4.14dBi; Note2: Test result contains DCCF					

4. Maximum Power Spectral Density

4.1 Test Result

4.1.1 PSD

Mode	TX Type	Frequency (MHz)	Maximum PSD (dBm/MHz)		Verdict
			ANT1	Limit	
802.11a	SISO	5180	-5.86	≤ 11	Pass
		5200	-5.64	≤ 11	Pass
		5240	-4.36	≤ 11	Pass
802.11n (HT20)	SISO	5180	-7.11	≤ 11	Pass
		5200	-6.23	≤ 11	Pass
		5240	-4.82	≤ 11	Pass
802.11ac (VHT20)	SISO	5180	-6.73	≤ 11	Pass
		5200	-6.18	≤ 11	Pass
		5240	-4.76	≤ 11	Pass

Note1: Antenna Gain: Ant1: 4.14dBi;
Note2: Test result contains DCCF

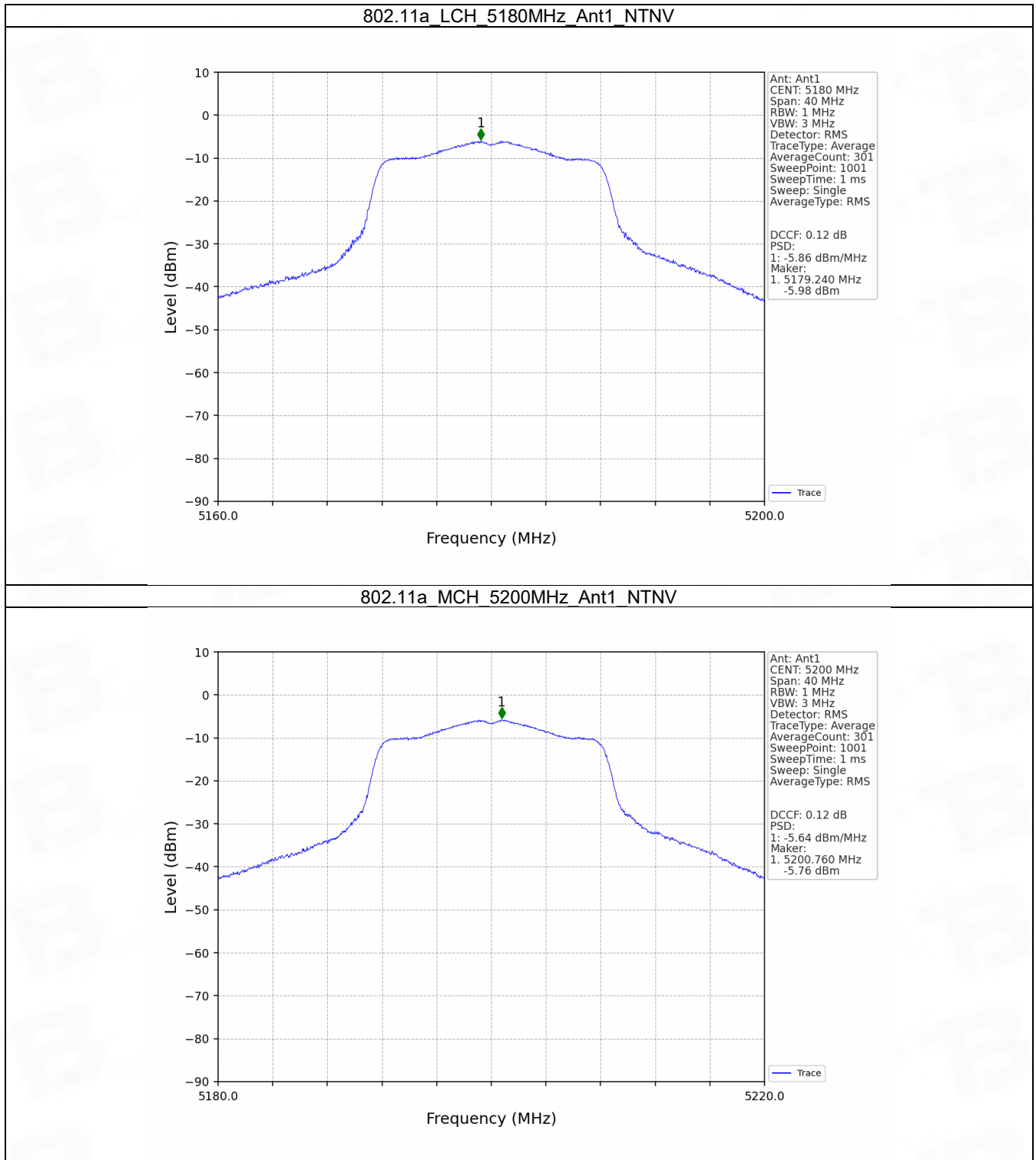
4.1.2 PSD-Band3

Mode	TX Type	Frequency (MHz)	Maximum PSD (dBm/500kHz)		Verdict
			ANT1	Limit	
802.11a	SISO	5745	-8.42	≤ 30	Pass
		5785	-9.10	≤ 30	Pass
		5825	-11.34	≤ 30	Pass
802.11n (HT20)	SISO	5745	-8.79	≤ 30	Pass
		5785	-9.79	≤ 30	Pass
		5825	-11.88	≤ 30	Pass
802.11ac (VHT20)	SISO	5745	-8.65	≤ 30	Pass
		5785	-9.56	≤ 30	Pass
		5825	-11.99	≤ 30	Pass

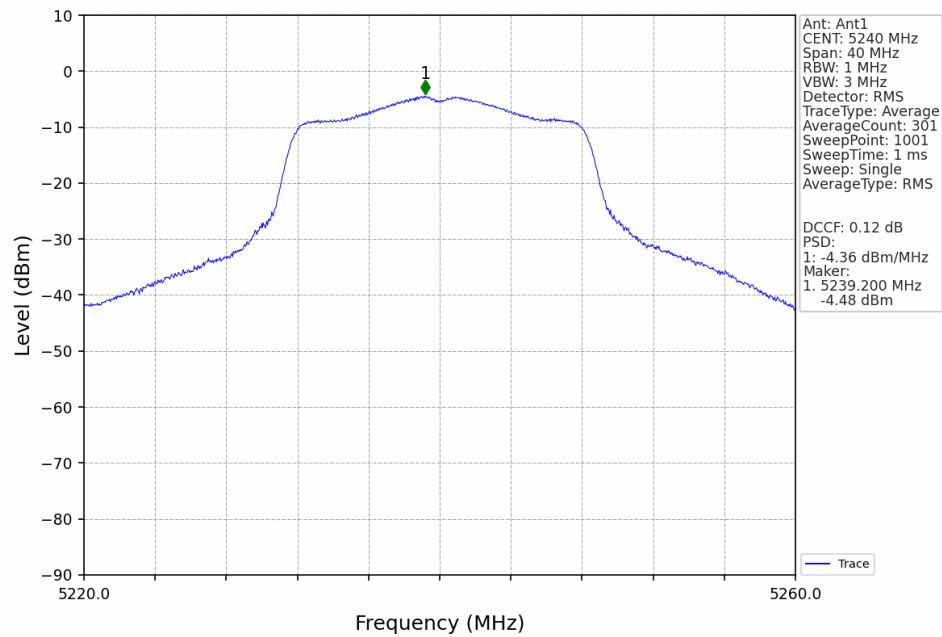
Note1: Antenna Gain: Ant1: 4.14dBi;
Note2: Test result contains DCCF and RBW Factor= $10 \cdot \log(500\text{kHz}/300\text{kHz})=2.22$

4.2 Test Graph

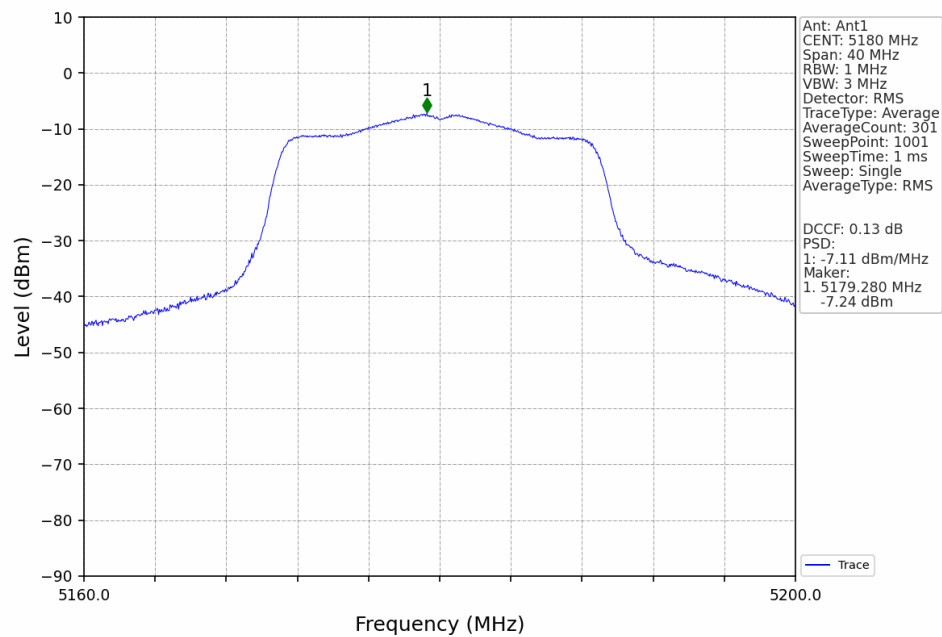
4.2.1 PSD



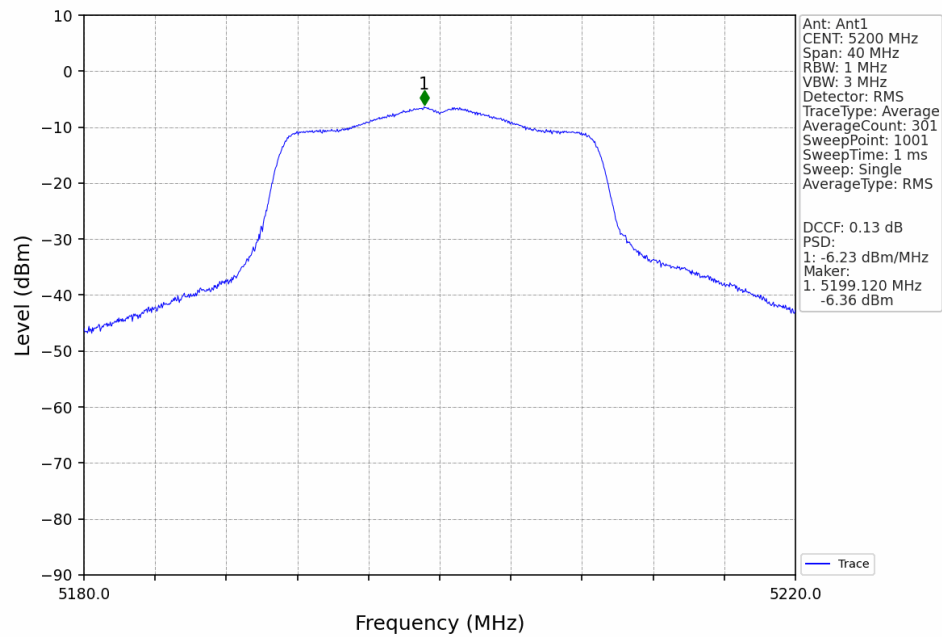
802.11a_HCH_5240MHz_Ant1_NTNV



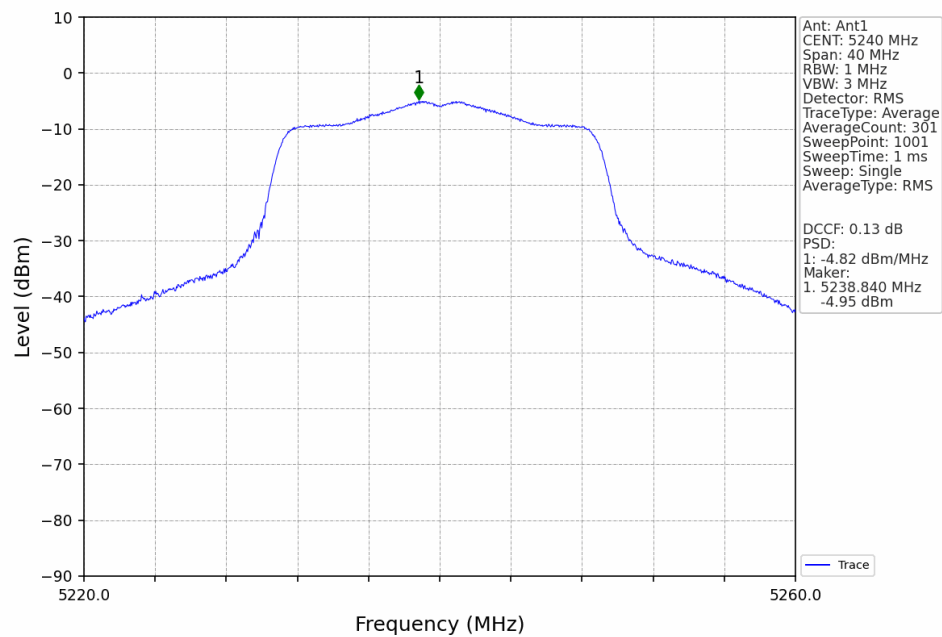
802.11n(HT20)_LCH_5180MHz_Ant1_NTNV



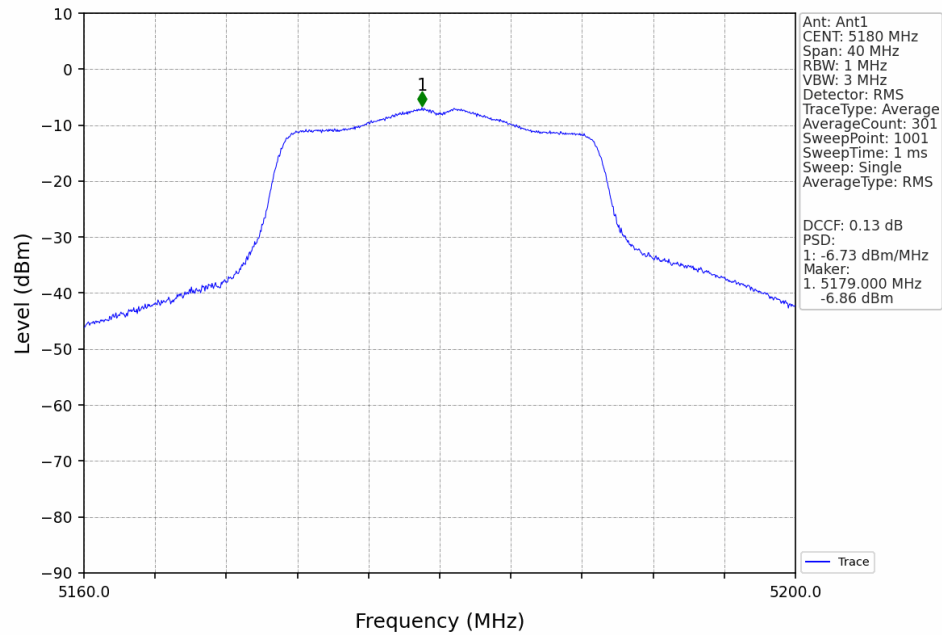
802.11n(HT20) MCH_5200MHz_Ant1_NTNV



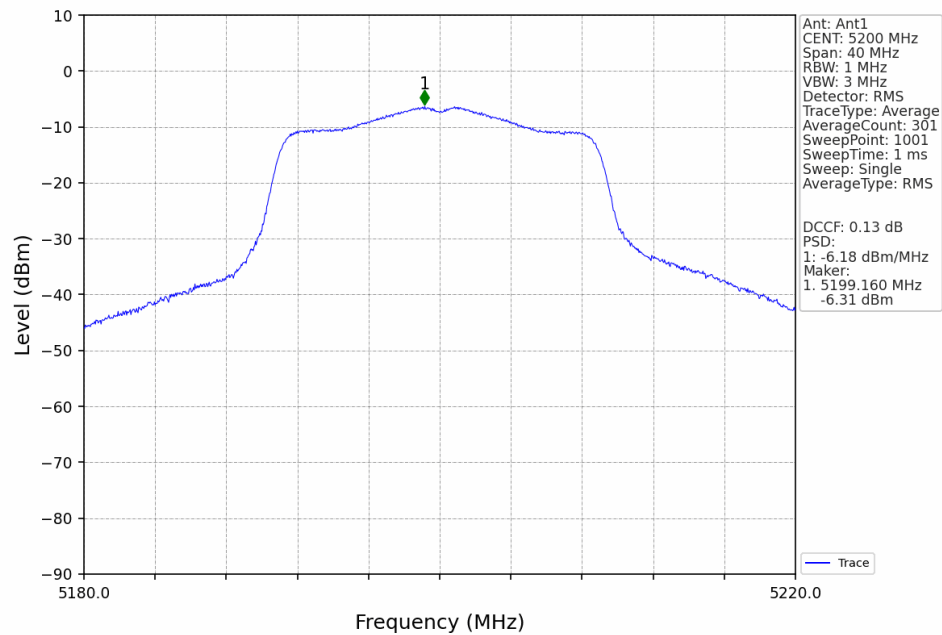
802.11n(HT20) HCH_5240MHz_Ant1_NTNV

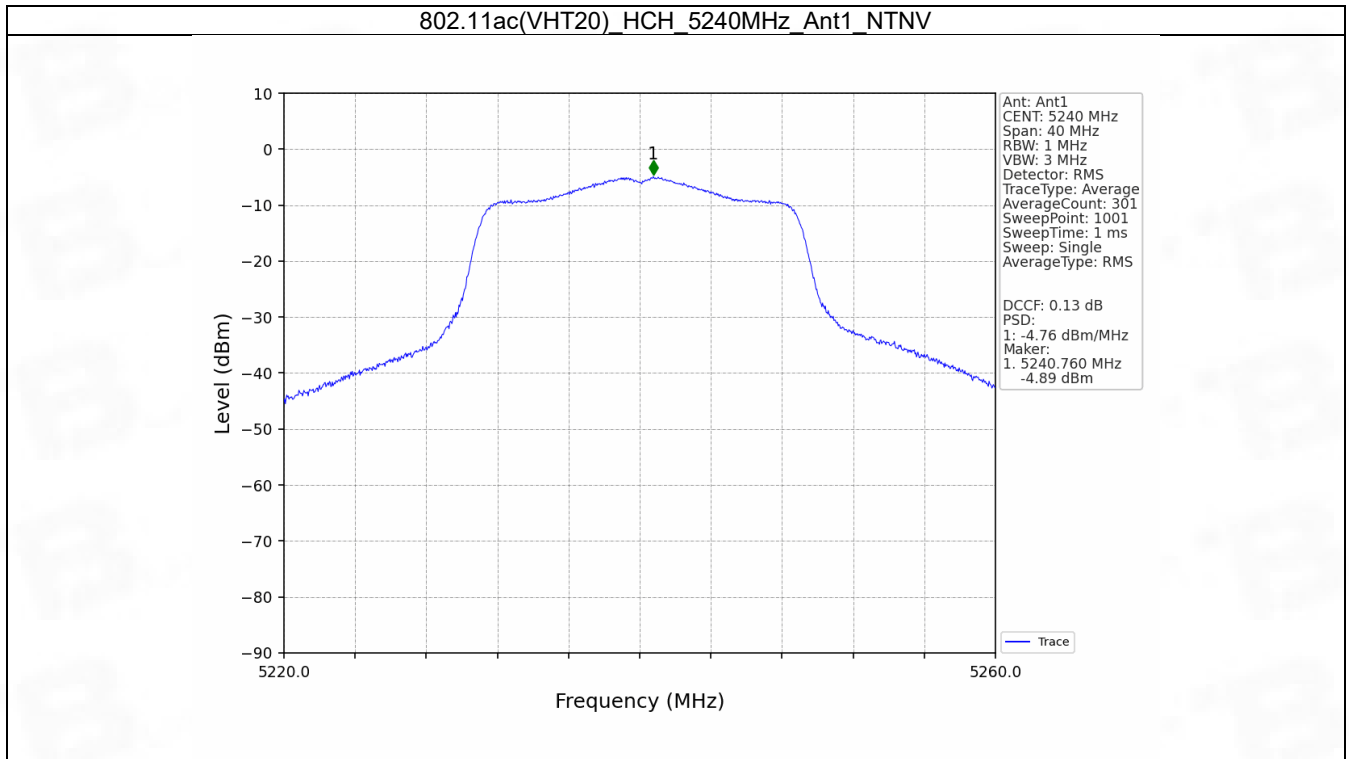


802.11ac(VHT20)_LCH_5180MHz_Ant1_NTNV

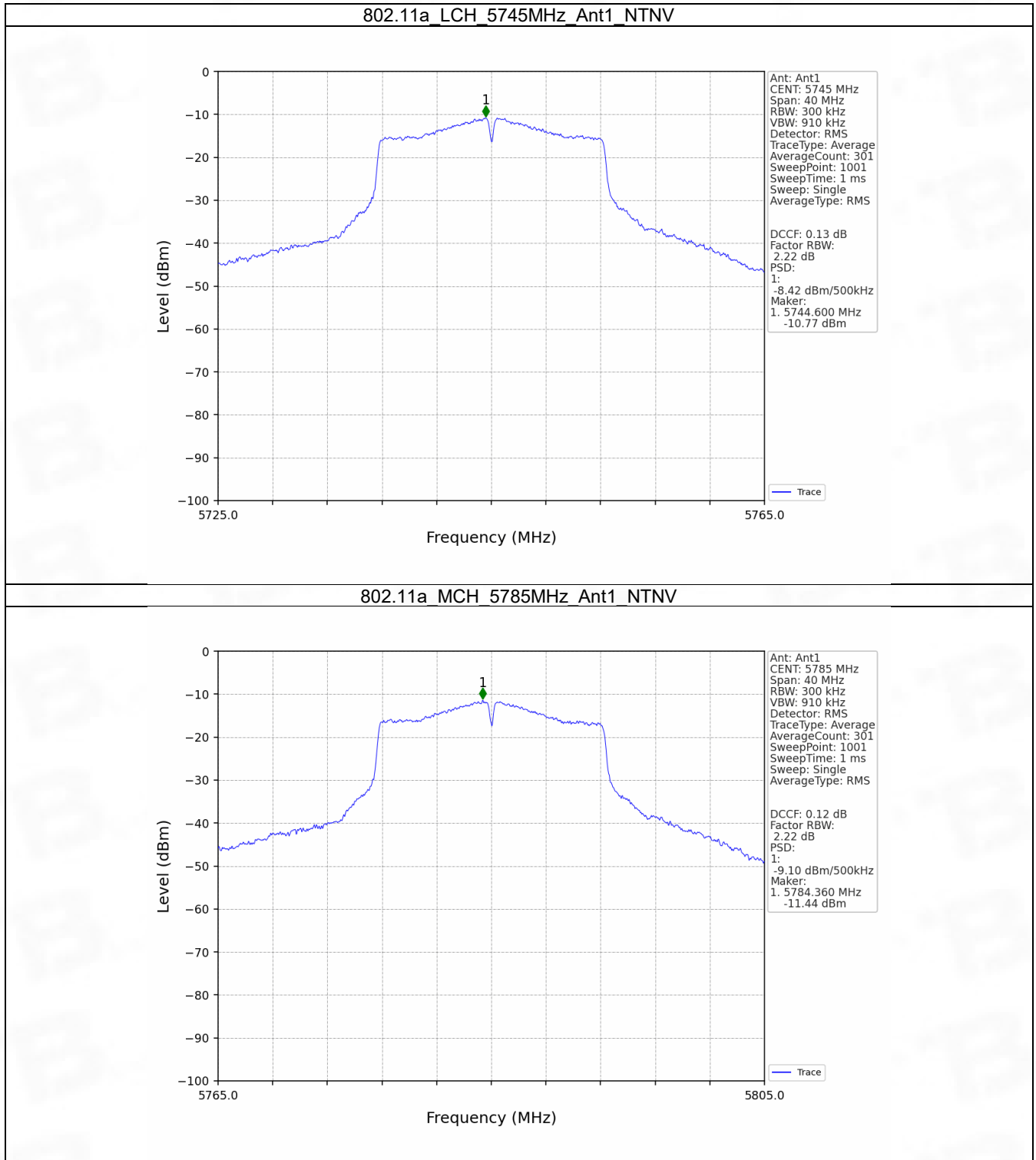


802.11ac(VHT20)_MCH_5200MHz_Ant1_NTNV

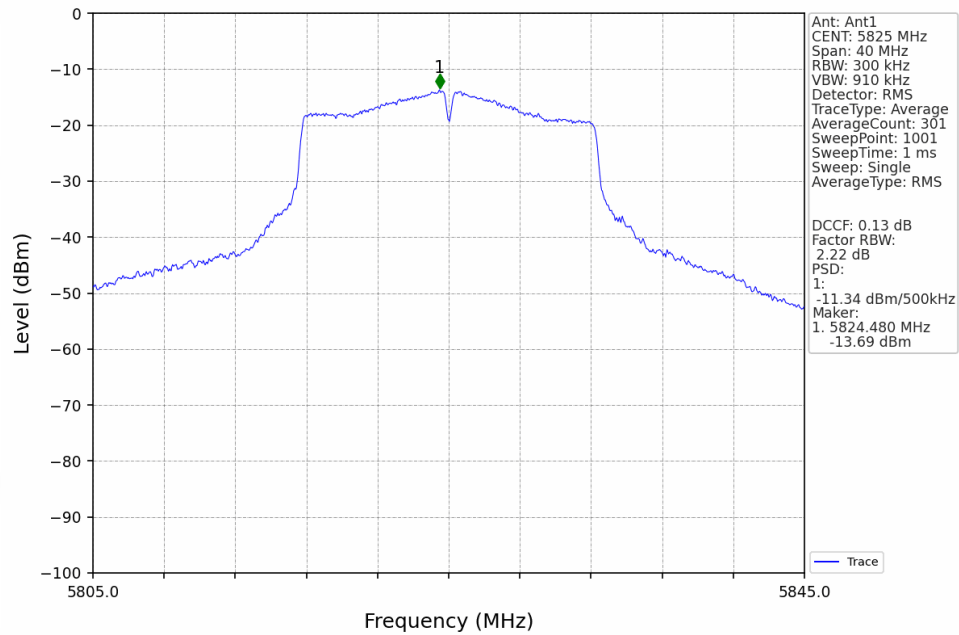




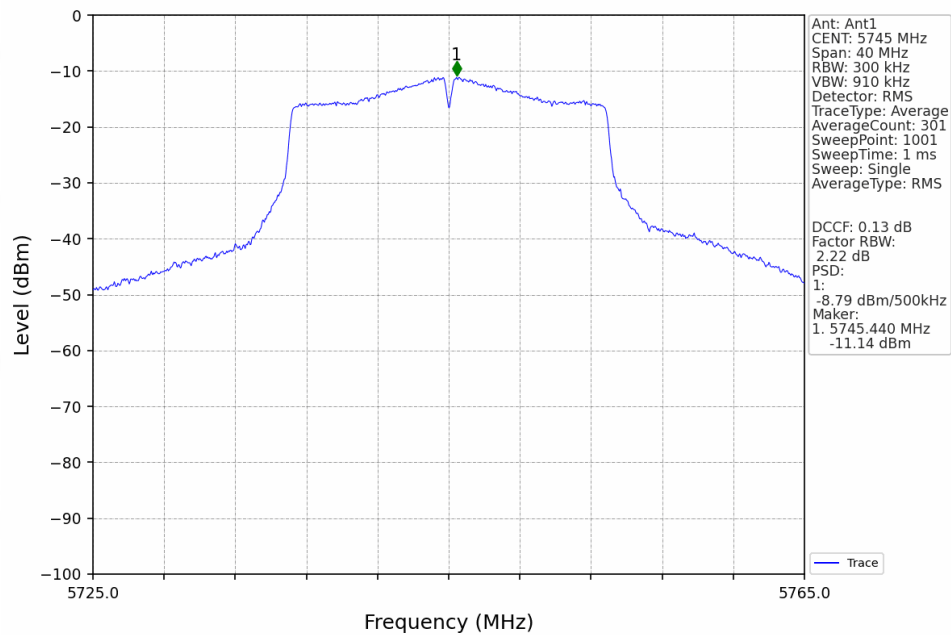
4.2.2 PSD-Band3



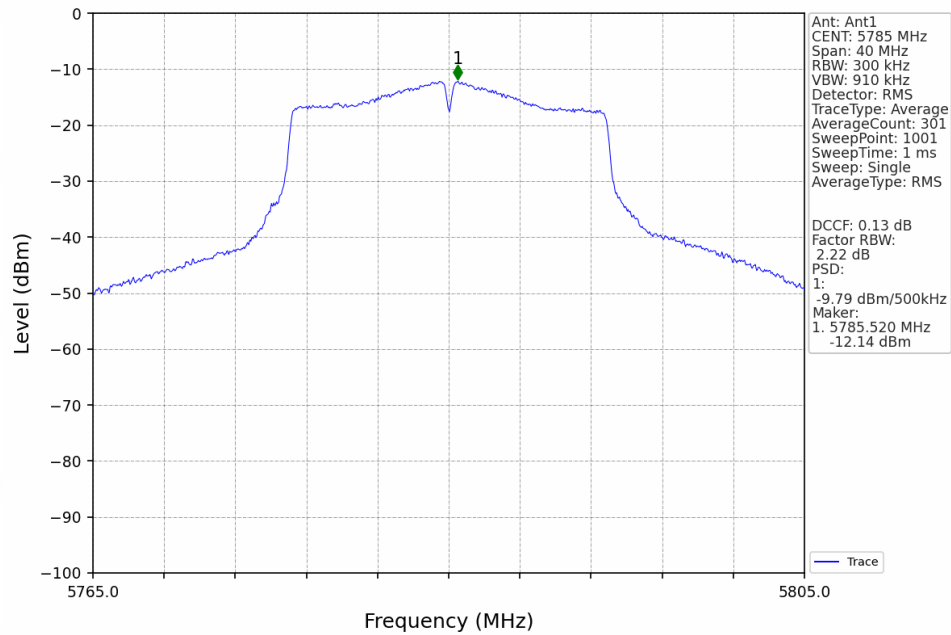
802.11a_HCH_5825MHz_Ant1_NTNV



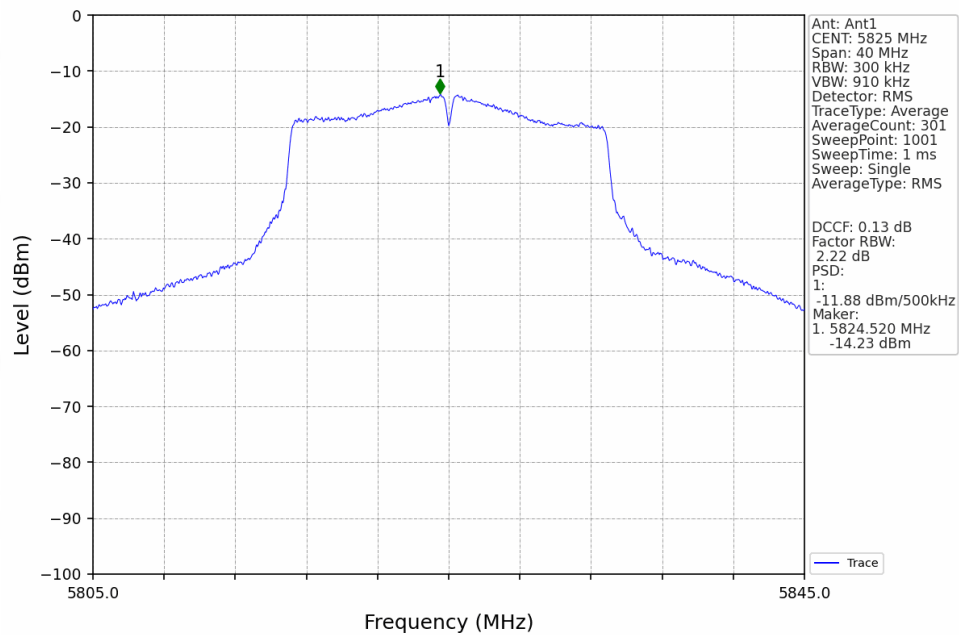
802.11n(HT20)_LCH_5745MHz_Ant1_NTNV



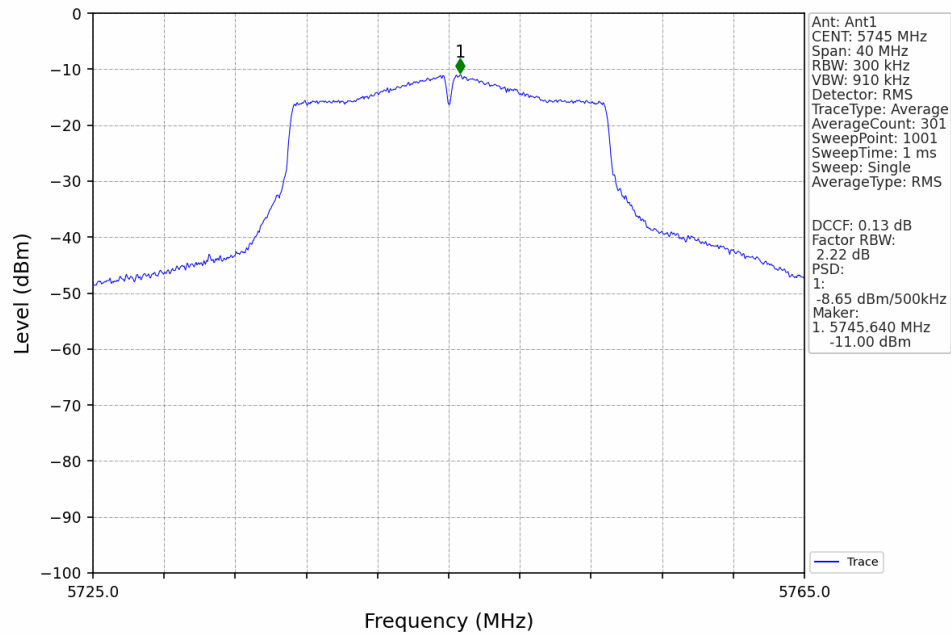
802.11n(HT20)_MCH_5785MHz_Ant1_NTNV



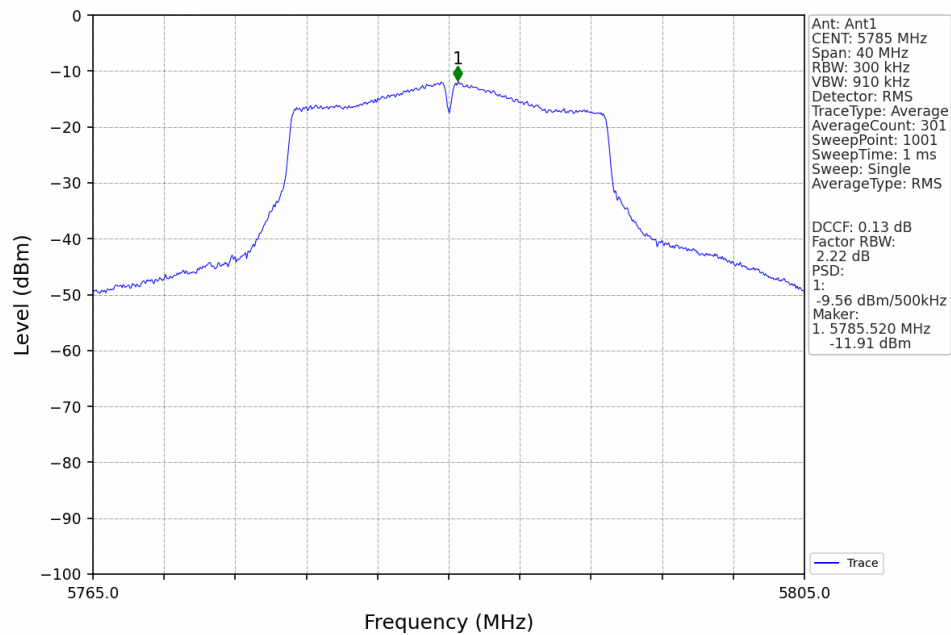
802.11n(HT20)_HCH_5825MHz_Ant1_NTNV

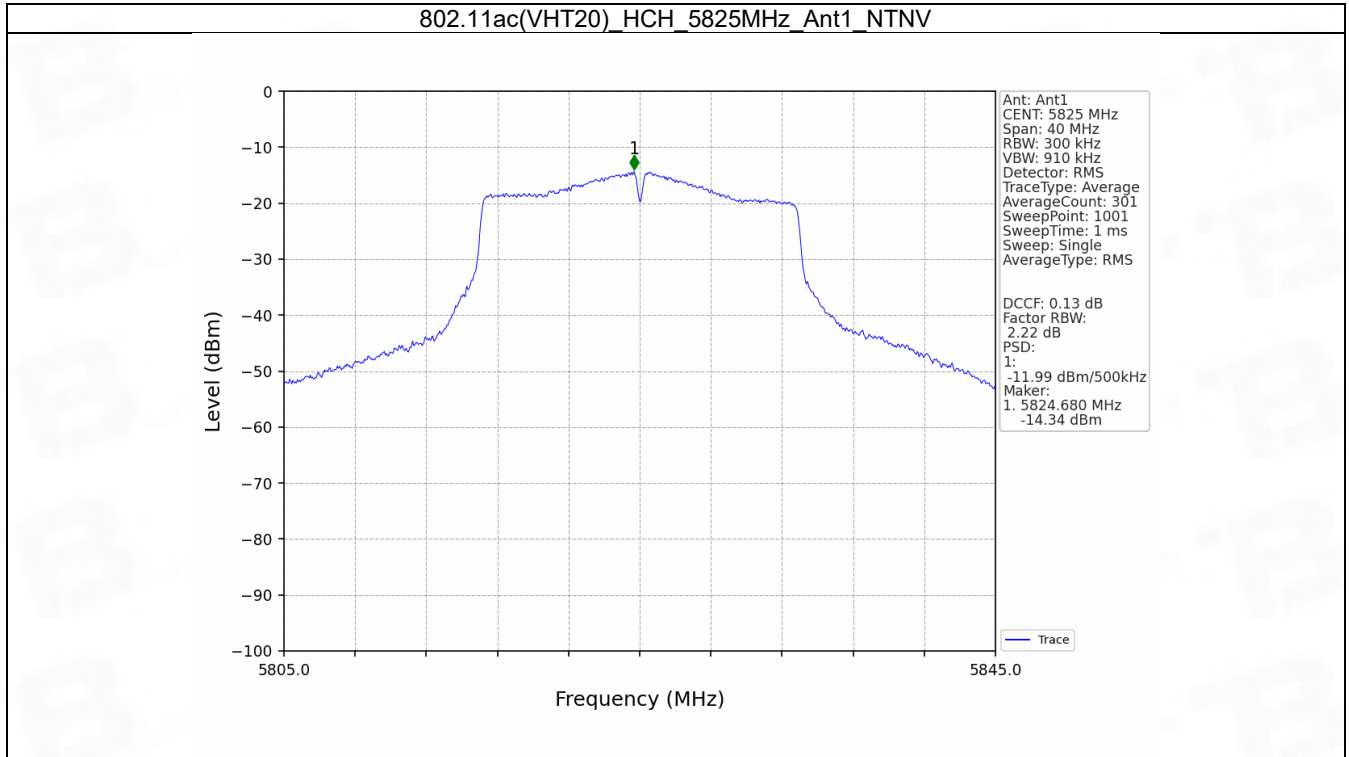


802.11ac(VHT20) LCH_5745MHz_Ant1_NTNV



802.11ac(VHT20) MCH_5785MHz_Ant1_NTNV





5. Unwanted Emissions In Restricted Frequency Bands

5.1 Test Result

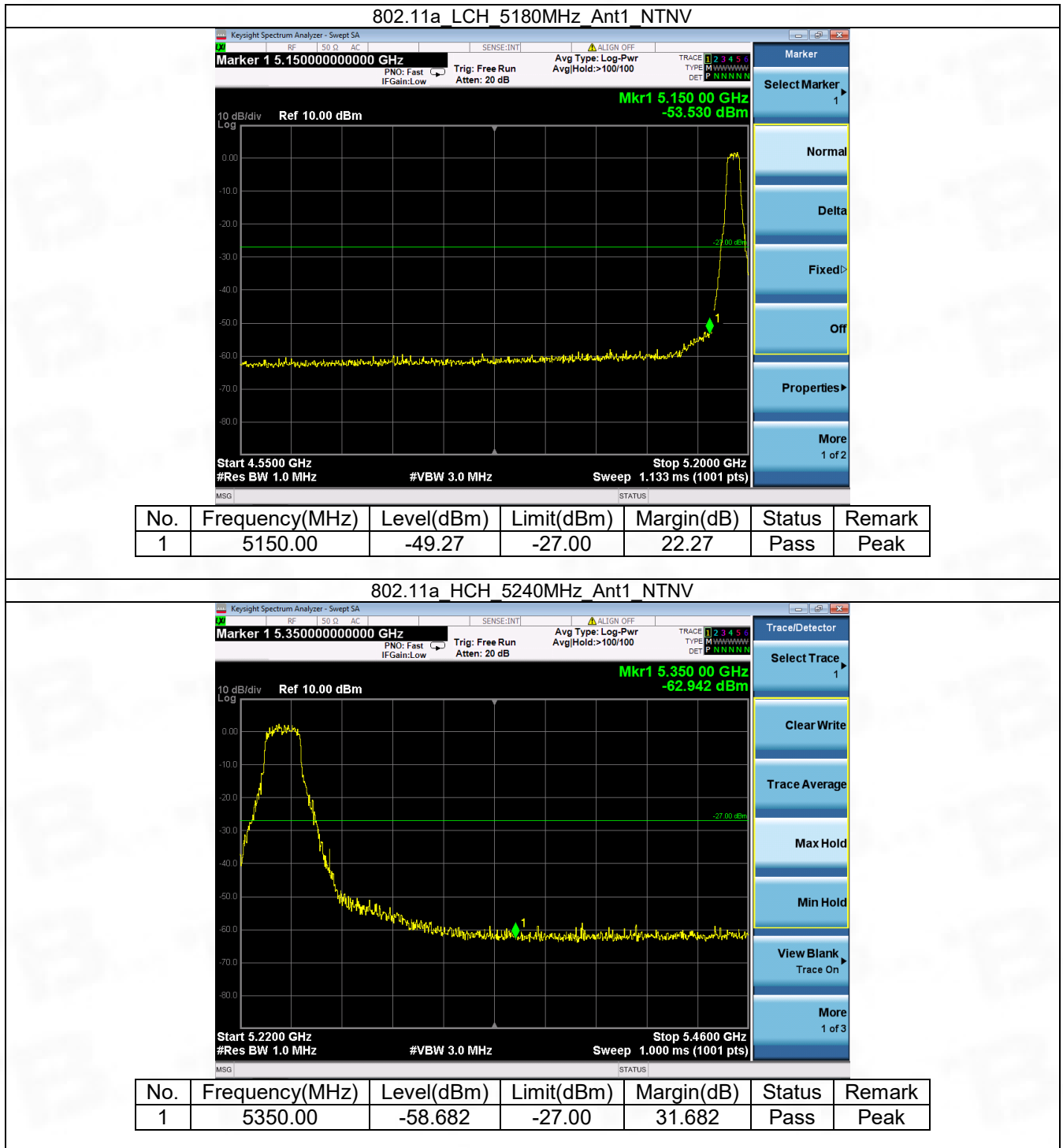
5.1.1 RSE

Mode	TX Type	Frequency (MHz)	ANT	Level of Unwanted Emissions (dBm)		Verdict
				Result	Limit	
802.11a	SISO	5180	1	Refer To Test Graph		Pass
		5200	1	Refer To Test Graph		Pass
		5240	1	Refer To Test Graph		Pass
		5745	1	Refer To Test Graph		Pass
		5785	1	Refer To Test Graph		Pass
		5825	1	Refer To Test Graph		Pass
802.11n (HT20)	SISO	5180	1	Refer To Test Graph		Pass
		5200	1	Refer To Test Graph		Pass
		5240	1	Refer To Test Graph		Pass
		5745	1	Refer To Test Graph		Pass
		5785	1	Refer To Test Graph		Pass
		5825	1	Refer To Test Graph		Pass
802.11ac (VHT20)	SISO	5180	1	Refer To Test Graph		Pass
		5200	1	Refer To Test Graph		Pass
		5240	1	Refer To Test Graph		Pass
		5745	1	Refer To Test Graph		Pass
		5785	1	Refer To Test Graph		Pass
		5825	1	Refer To Test Graph		Pass

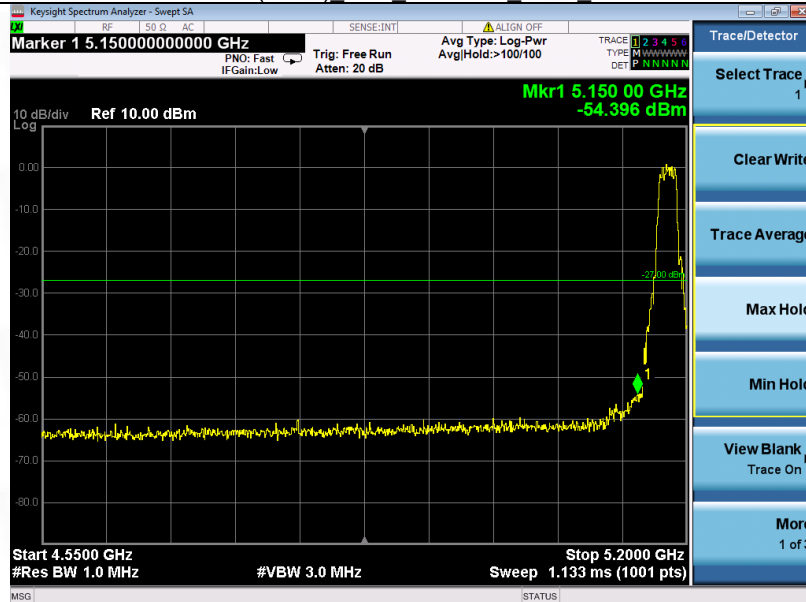
Margin=Limit-Level, Level is EIRP

5.2 Test Graph

5.2.1 RSE

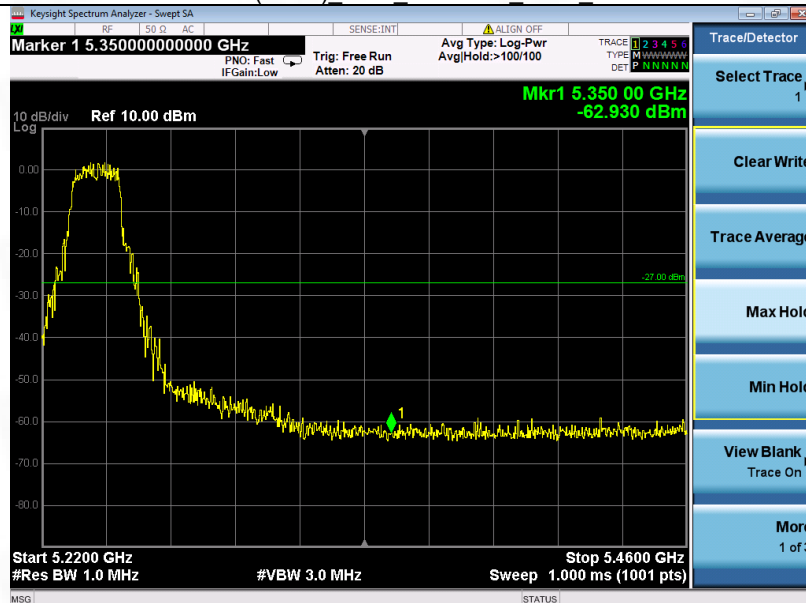


802.11n(HT20) LCH 5180MHz Ant1_NTNV



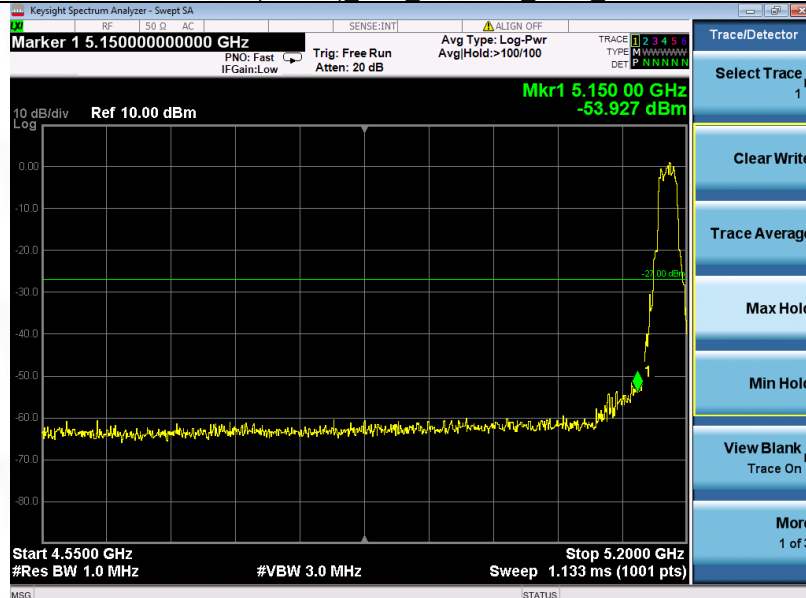
No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dB)	Status	Remark
1	5150.00	-50.126	-27.00	23.126	Pass	Peak

802.11n(HT20) HCH 5240MHz Ant1_NTNV



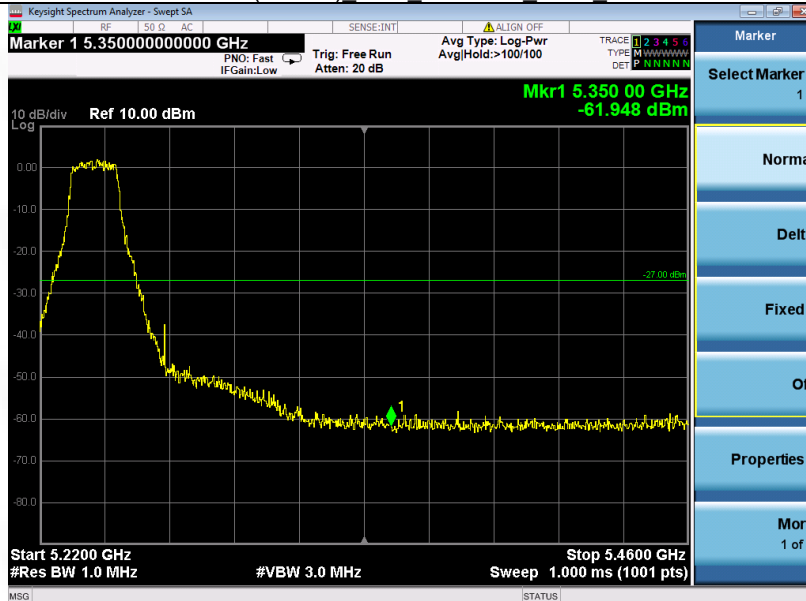
No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dB)	Status	Remark
1	5350.00	-58.66	-27.00	31.66	Pass	Peak

802.11ac(VHT20) LCH 5180MHz Ant1 NTV



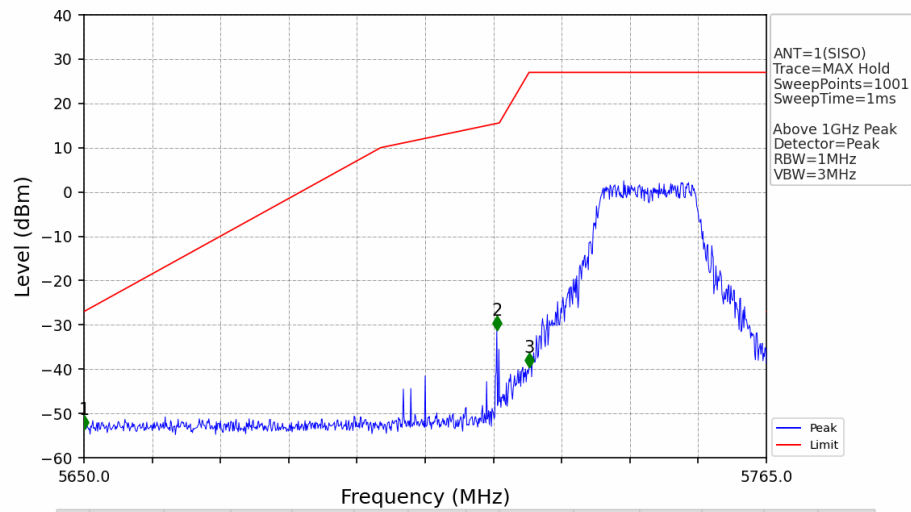
No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dB)	Status	Remark
1	5150.00	-49.657	-27.00	22.657	Pass	Peak

802.11ac(VHT20) HCH 5240MHz Ant1 NTV



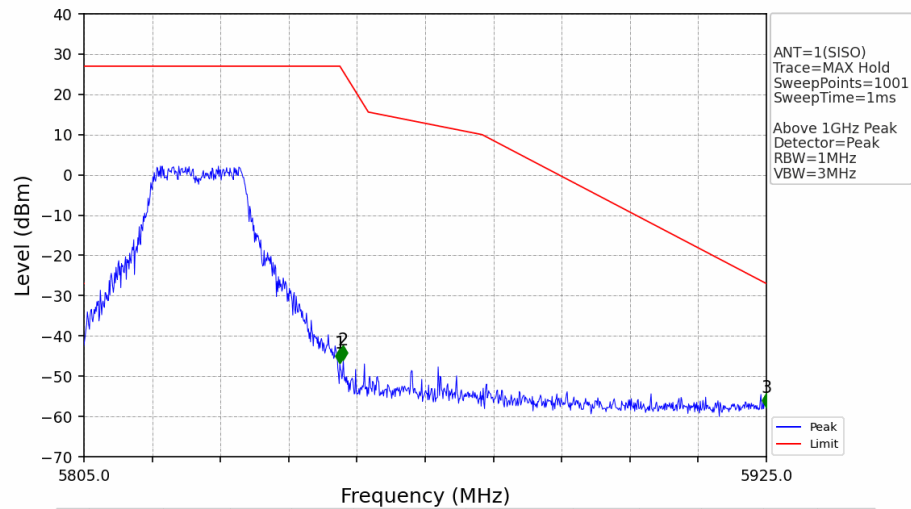
No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dB)	Status	Remark
1	5350.00	-57.678	-27.00	30.678	Pass	Peak

802.11a LCH 5745MHz_Ant1_NTNV



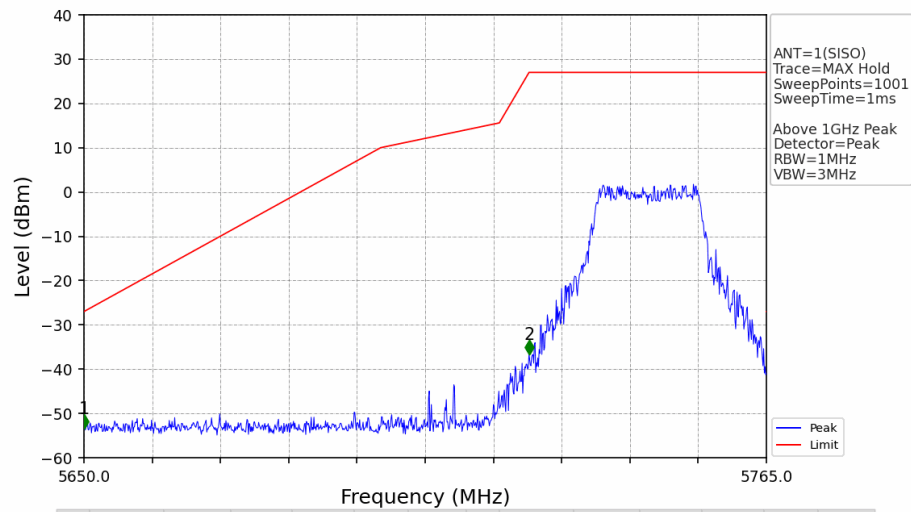
No	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Status	Remark	No	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Status	Remark
1	5650.000	-49.40	-27.00	22.40	Pass	Peak	3	5725.000	-35.48	27.00	62.48	Pass	Peak
2	5719.575	-26.95	15.48	42.43	Pass	Peak							

802.11a HCH 5825MHz_Ant1_NTNV

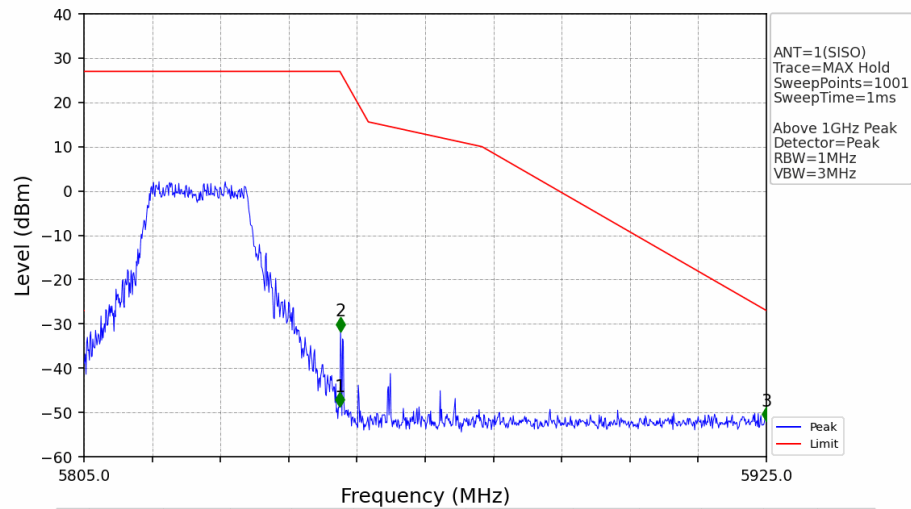


No	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Status	Remark	No	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Status	Remark
1	5850.000	-42.62	27.00	69.62	Pass	Peak	3	5925.000	-53.61	-27.00	26.61	Pass	Peak
2	5850.600	-41.84	25.63	67.47	Pass	Peak							

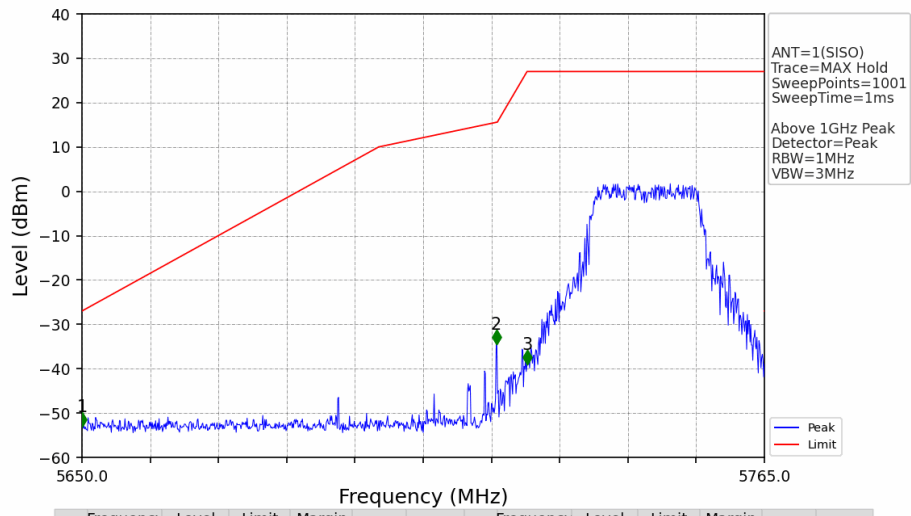
802.11n(HT20) LCH 5745MHz Ant1_NTNV



802.11n(HT20) HCH 5825MHz Ant1_NTNV

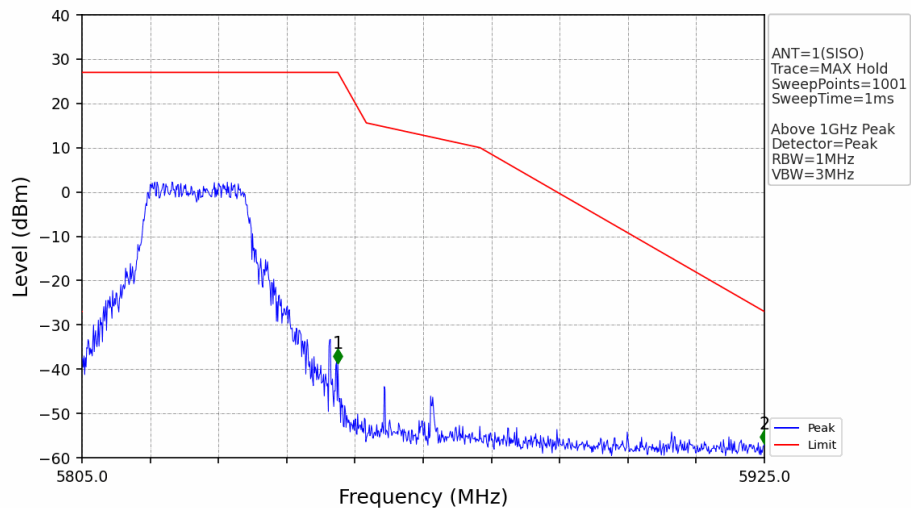


802.11ac(VHT20) LCH_5745MHz_Ant1_NTNV



No	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Status	Remark	No	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Status	Remark
1	5650.000	-48.80	-27.00	21.80	Pass	Peak	3	5725.000	-34.90	27.00	61.90	Pass	Peak
2	5719.805	-30.38	15.55	45.93	Pass	Peak							

802.11ac(VHT20) HCH_5825MHz_Ant1_NTNV



No	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Status	Remark	No	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Status	Remark
1	5850.000	-34.54	27.00	61.54	Pass	Peak	2	5925.000	-52.66	-27.00	25.66	Pass	Peak

6. Frequency Stability

6.1 Test Result

Ant1							
Mode	Tx Type	Frequency (MHz)	Temperature (°C)	Voltage (VAC)	Measured Frequency (MHz)	Limit (MHz)	Verdict
Carrier Wave	SISO	5180	20	102	5179.971	5150 to 5250	Pass
				120	5179.971	5150 to 5250	Pass
				138	5179.971	5150 to 5250	Pass
			-30	120	5179.972	5150 to 5250	Pass
			-20	120	5179.972	5150 to 5250	Pass
			-10	120	5179.972	5150 to 5250	Pass
			0	120	5179.972	5150 to 5250	Pass
			10	120	5179.972	5150 to 5250	Pass
			30	120	5179.973	5150 to 5250	Pass
			40	120	5179.973	5150 to 5250	Pass
			50	120	5179.973	5150 to 5250	Pass
		5200	20	102	5199.971	5150 to 5250	Pass
				120	5199.972	5150 to 5250	Pass
				138	5199.972	5150 to 5250	Pass
			-30	120	5199.973	5150 to 5250	Pass
			-20	120	5199.973	5150 to 5250	Pass
			-10	120	5199.973	5150 to 5250	Pass
			0	120	5199.973	5150 to 5250	Pass
			10	120	5199.973	5150 to 5250	Pass
			30	120	5199.973	5150 to 5250	Pass
			40	120	5199.973	5150 to 5250	Pass
			50	120	5199.973	5150 to 5250	Pass
		5240	20	102	5239.973	5150 to 5250	Pass
				120	5239.973	5150 to 5250	Pass
				138	5239.973	5150 to 5250	Pass
			-30	120	5239.973	5150 to 5250	Pass
			-20	120	5239.973	5150 to 5250	Pass
			-10	120	5239.973	5150 to 5250	Pass
			0	120	5239.973	5150 to 5250	Pass
			10	120	5239.973	5150 to 5250	Pass
			30	120	5239.974	5150 to 5250	Pass
			40	120	5239.974	5150 to 5250	Pass
			50	120	5239.974	5150 to 5250	Pass
		5745	20	102	5744.694	5725 to 5850	Pass
				120	5745.219	5725 to 5850	Pass
				138	5744.648	5725 to 5850	Pass
			-30	120	5744.651	5725 to 5850	Pass
			-20	120	5744.646	5725 to 5850	Pass
			-10	120	5744.643	5725 to 5850	Pass
			0	120	5745.250	5725 to 5850	Pass
			10	120	5744.651	5725 to 5850	Pass
			30	120	5744.633	5725 to 5850	Pass
			40	120	5744.618	5725 to 5850	Pass
			50	120	5744.650	5725 to 5850	Pass
		5785	20	102	5784.966	5725 to 5850	Pass
				120	5784.966	5725 to 5850	Pass
				138	5784.965	5725 to 5850	Pass
			-30	120	5784.965	5725 to 5850	Pass
			-20	120	5784.965	5725 to 5850	Pass

			-10	120	5784.965	5725 to 5850	Pass
			0	120	5784.965	5725 to 5850	Pass
			10	120	5784.965	5725 to 5850	Pass
			30	120	5784.965	5725 to 5850	Pass
			40	120	5784.965	5725 to 5850	Pass
			50	120	5784.965	5725 to 5850	Pass
		5825	20	102	5824.965	5725 to 5850	Pass
				120	5824.965	5725 to 5850	Pass
				138	5824.965	5725 to 5850	Pass
			-30	120	5824.965	5725 to 5850	Pass
			-20	120	5824.965	5725 to 5850	Pass
			-10	120	5824.965	5725 to 5850	Pass
			0	120	5824.965	5725 to 5850	Pass
			10	120	5824.965	5725 to 5850	Pass
			30	120	5824.965	5725 to 5850	Pass
			40	120	5824.965	5725 to 5850	Pass
			50	120	5824.965	5725 to 5850	Pass