

FCC ID: 2A54Y-HA111

Applicant: Shenzhen TFIRETEK Technology Co., Ltd.

Address: 204, Building 2, Stech Park, Taoyuan Community, Dalang Street, LongHua District, ShenZhen

Manufacturer: Shenzhen TFIRETEK Technology Co., Ltd.

Address: 204, Building 2, Stech Park, Taoyuan Community, Dalang Street, LongHua District, ShenZhen

Product: Projector

Trade Mark: N/A

Model No.: HA111, HA111-Mini, HA111-Max, HA111-A, HA111-B, HA111-C, HA111-D, HA111-E, HA111-Plus, HA111-Ultra

Date of Receipt: Jul. 10, 2026

Test Date: Jul. 10, 2026 – Sep. 11, 2026

Date of Report: Sep. 11, 2026

Prepared By: Shenzhen DL Testing Technology Co., Ltd.

101-201, Comprehensive Building, Tongzhou Electronics Longgang Factory Area, No.1

Address: Baolong Fifth Road, Baolong Community, Baolong Street, Longgang District, Shenzhen, China

FCC PART 15 E 15.407

Applicable Standards: ANSI C63.10-2020 + Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024
KDB 789033 D02 General U-NII Test Procedures New Rules v02r01

Test Result: Pass

Report Number: DLE-260610104R

1. Duty Cycle

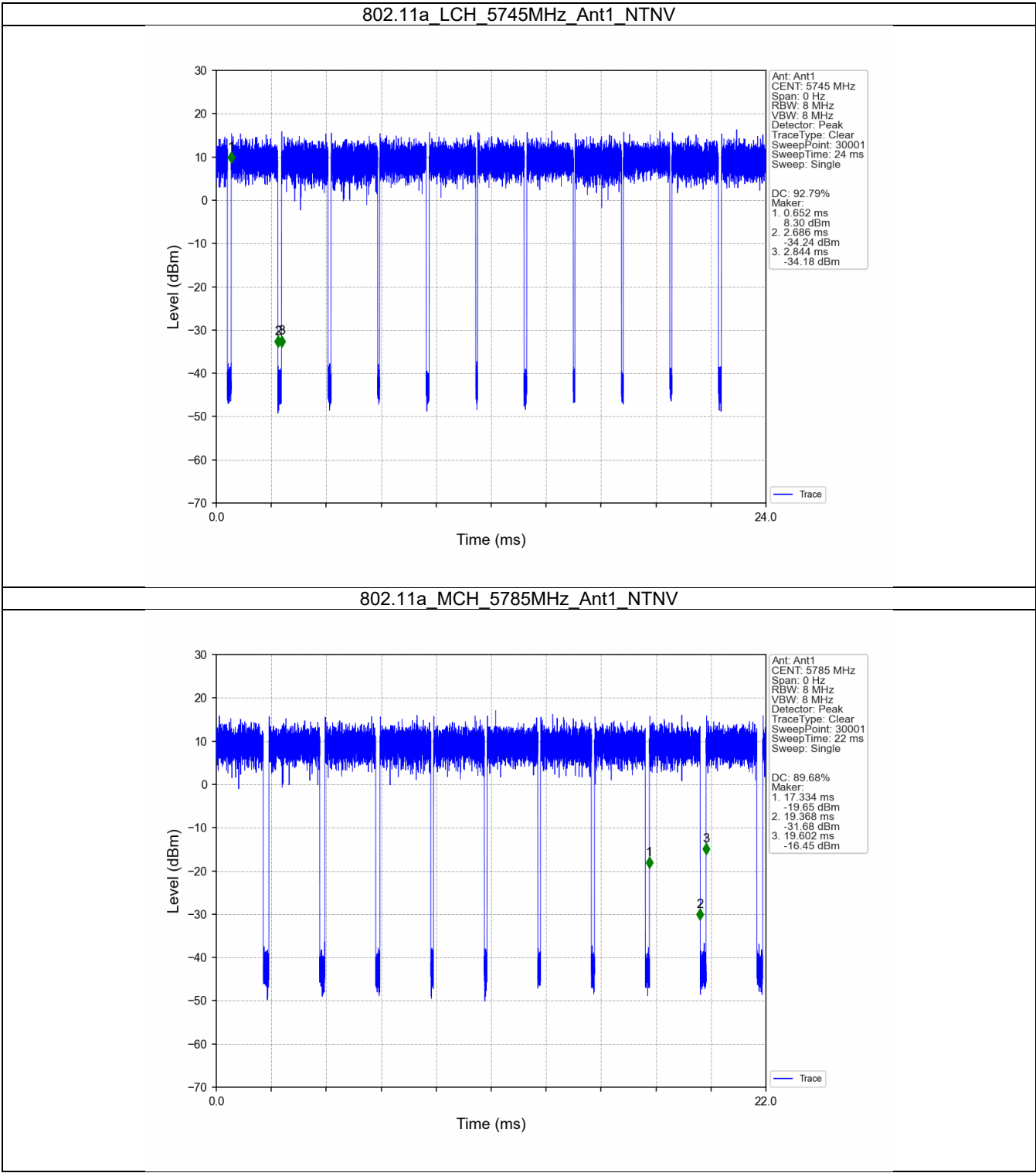
1.1 Test Result

1.1.1 Ant1

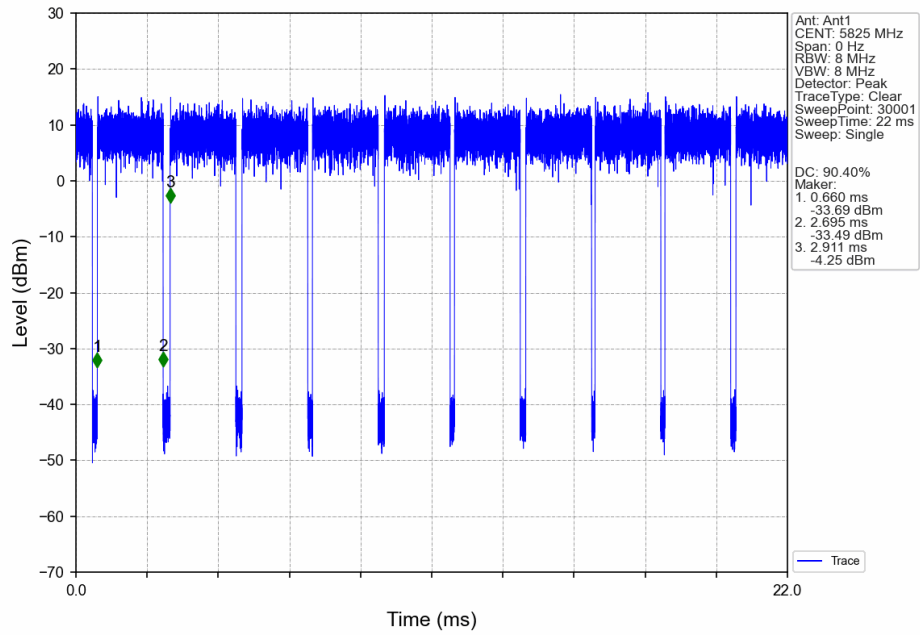
Ant1									
Mode	Tx Type	Frequency (MHz)	RU	RU Pos	T_on (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	Max. DC Variation (%)
802.11a	SISO	5745	/	/	2.034	2.192	92.79	0.32	3.96
		5785	/	/	2.034	2.268	89.68	0.47	5.32
		5825	/	/	2.035	2.251	90.40	0.44	4.55
802.11n (HT20)	SISO	5745	/	/	1.895	2.102	90.15	0.45	4.46
		5785	/	/	1.895	2.101	90.20	0.45	4.01
		5825	/	/	1.894	2.364	80.12	0.96	3.83
802.11n (HT40)	SISO	5755	/	/	0.933	1.149	81.20	0.90	6.91
		5795	/	/	0.934	1.140	81.93	0.87	7.79
802.11ac (VHT20)	SISO	5745	/	/	1.903	2.127	89.47	0.48	5.23
		5785	/	/	1.903	2.128	89.43	0.49	5.24
		5825	/	/	1.902	2.109	90.18	0.45	4.44
802.11ac (VHT40)	SISO	5755	/	/	0.938	1.114	84.20	0.75	8.25
		5795	/	/	0.936	1.171	79.93	0.97	0.03
802.11ax (HEW20)	SISO	5745	SU	/	0.143	0.352	40.63	3.91	15.95
		5785	SU	/	0.143	0.614	23.29	6.33	3.11
		5825	SU	/	0.143	0.378	37.83	4.22	18.91
802.11ax (HEW40)	SISO	5755	SU	/	0.763	1.234	61.83	2.09	4.88
		5795	SU	/	0.763	1.314	58.07	2.36	19.15

1.2 Test Graph

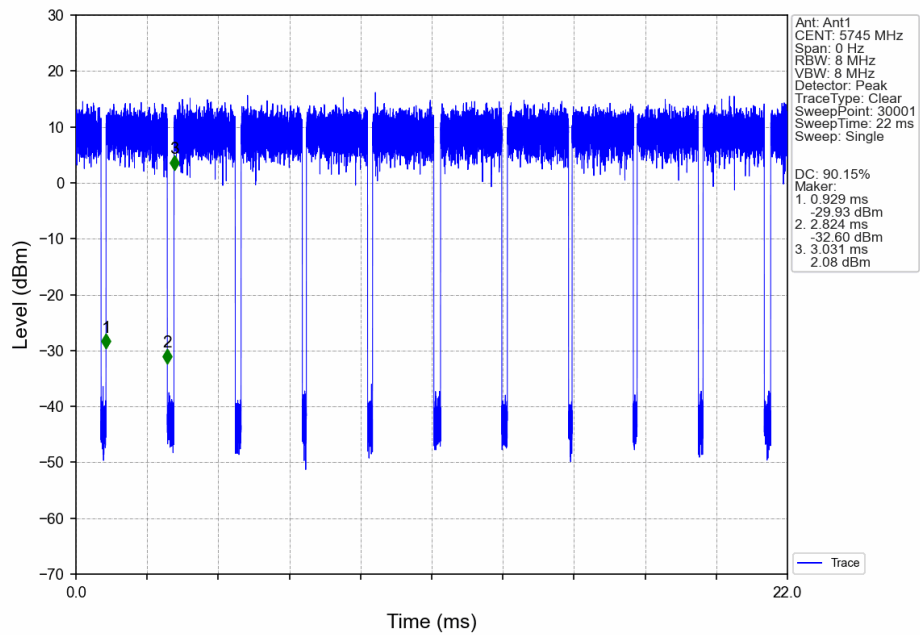
1.2.1 Ant1



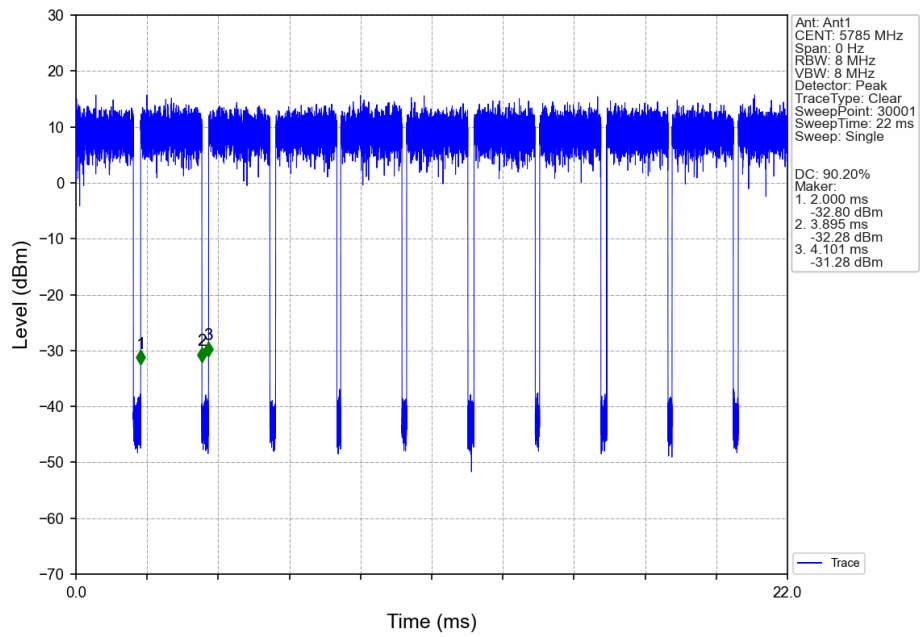
802.11a_HCH_5825MHz_Ant1_NTNV



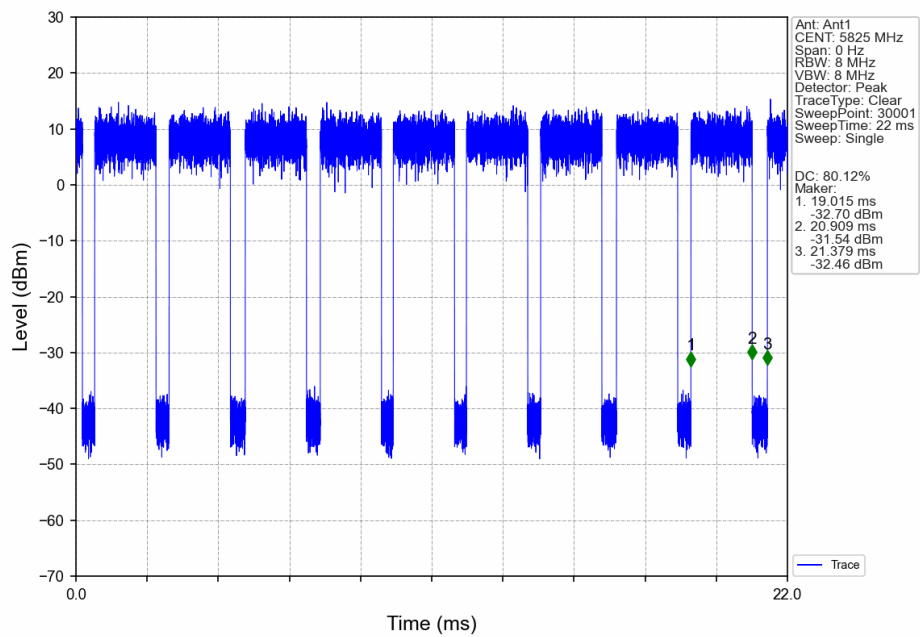
802.11n(HT20)_LCH_5745MHz_Ant1_NTNV



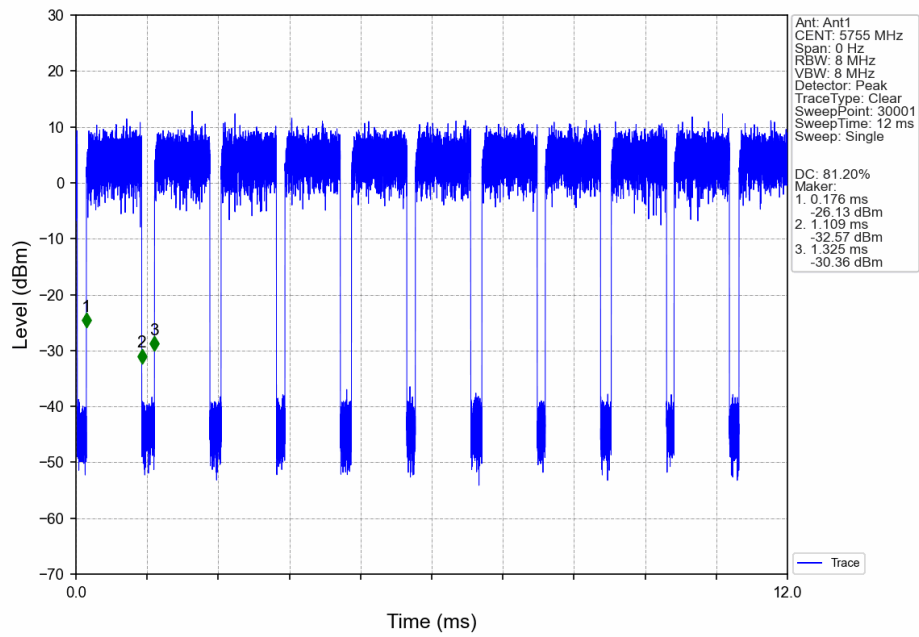
802.11n(HT20)_MCH_5785MHz_Ant1_NTNV



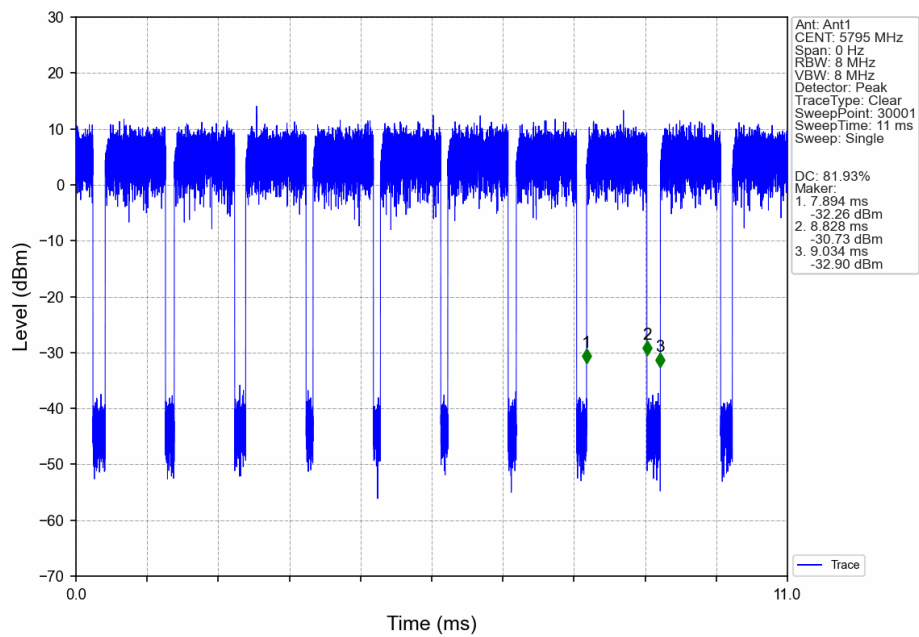
802.11n(HT20)_HCH_5825MHz_Ant1_NTNV



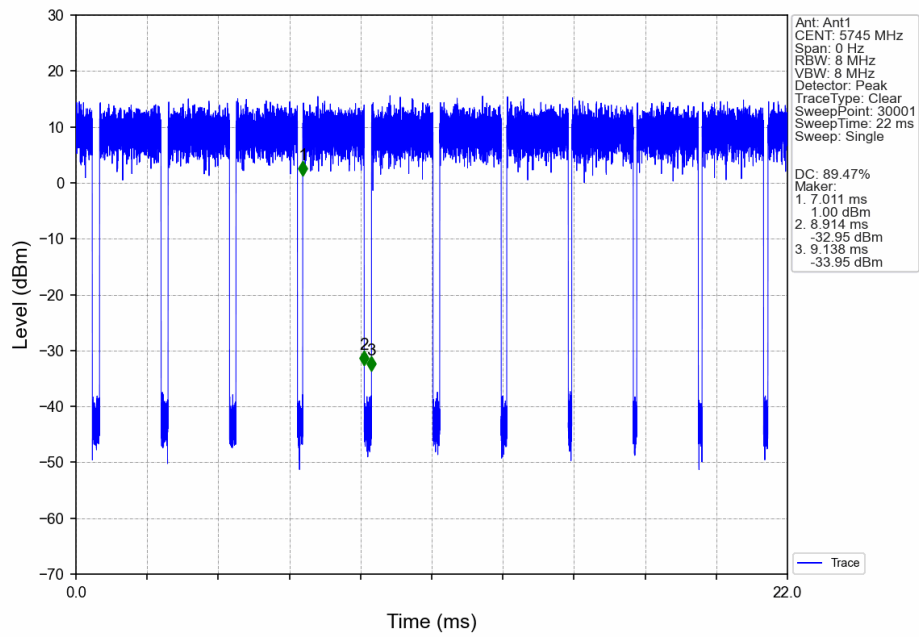
802.11n(HT40) LCH 5755MHz Ant1 NTN



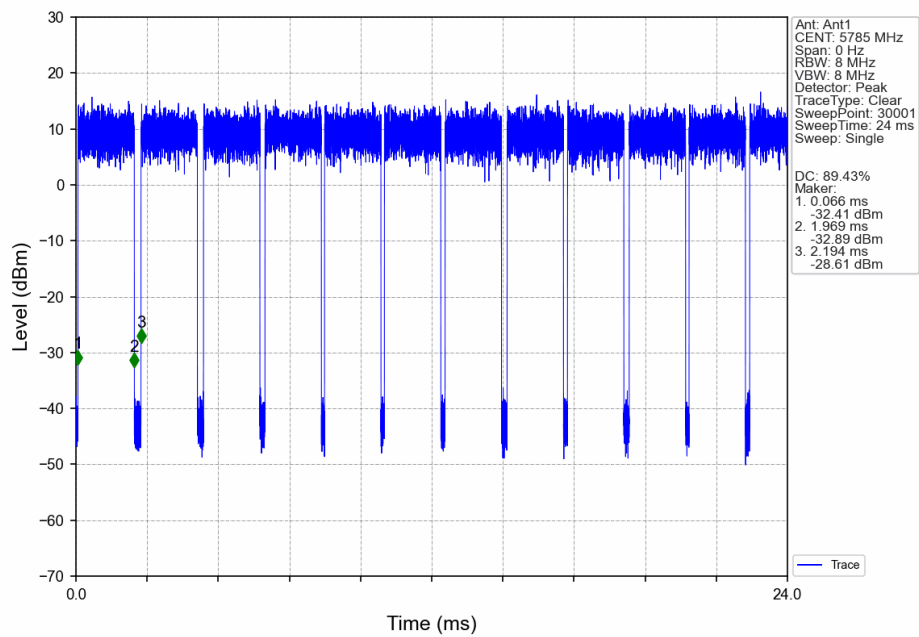
802.11n(HT40) HCH 5795MHz Ant1 NTN



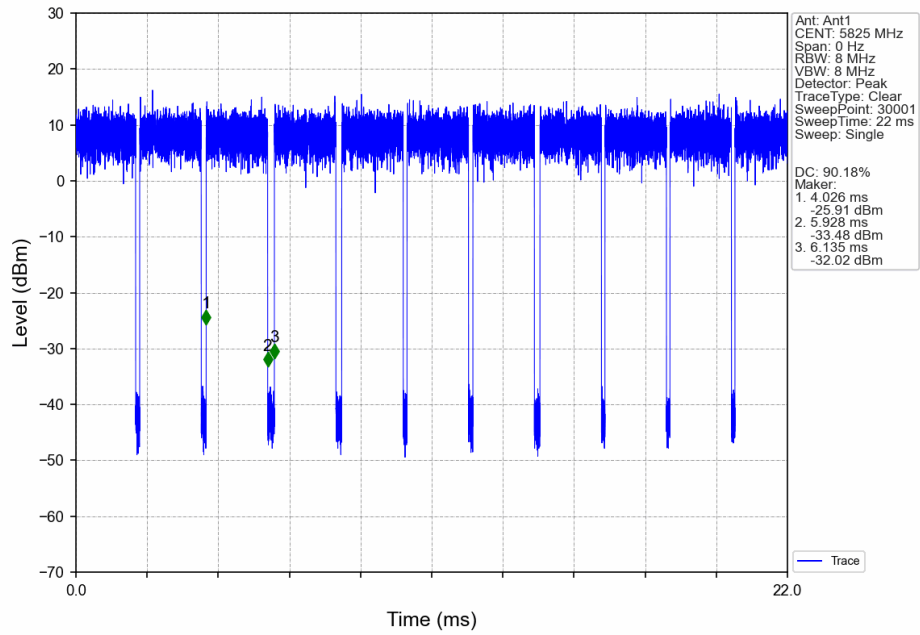
802.11ac(VHT20) LCH_5745MHz_Ant1_NTNV



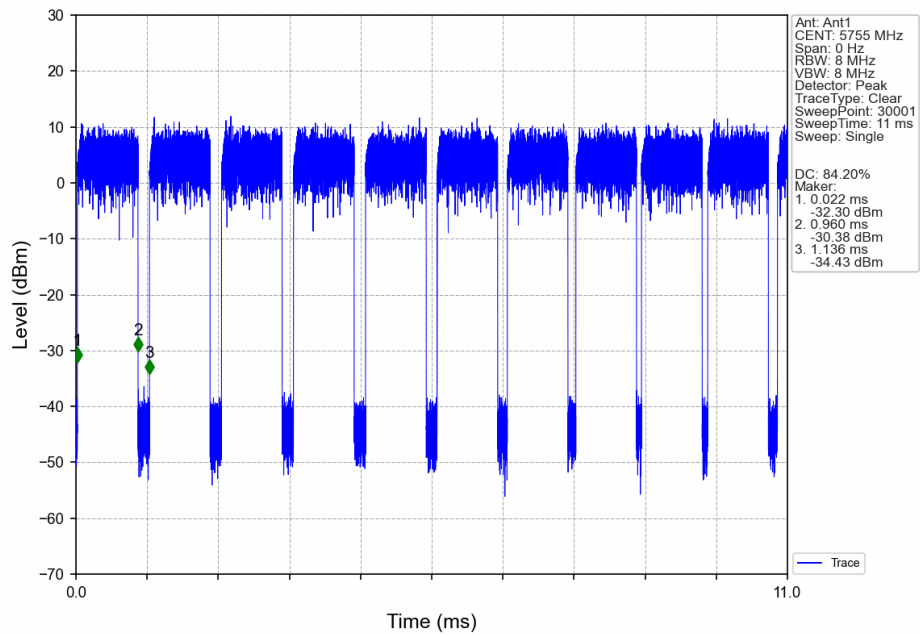
802.11ac(VHT20) MCH_5785MHz_Ant1_NTNV



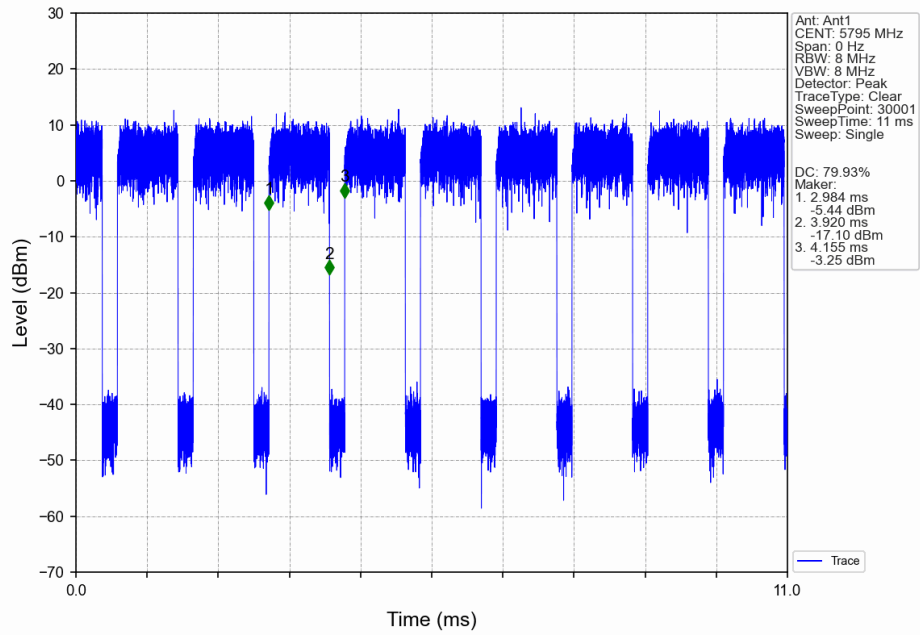
802.11ac(VHT20)_HCH_5825MHz_Ant1_NTNV



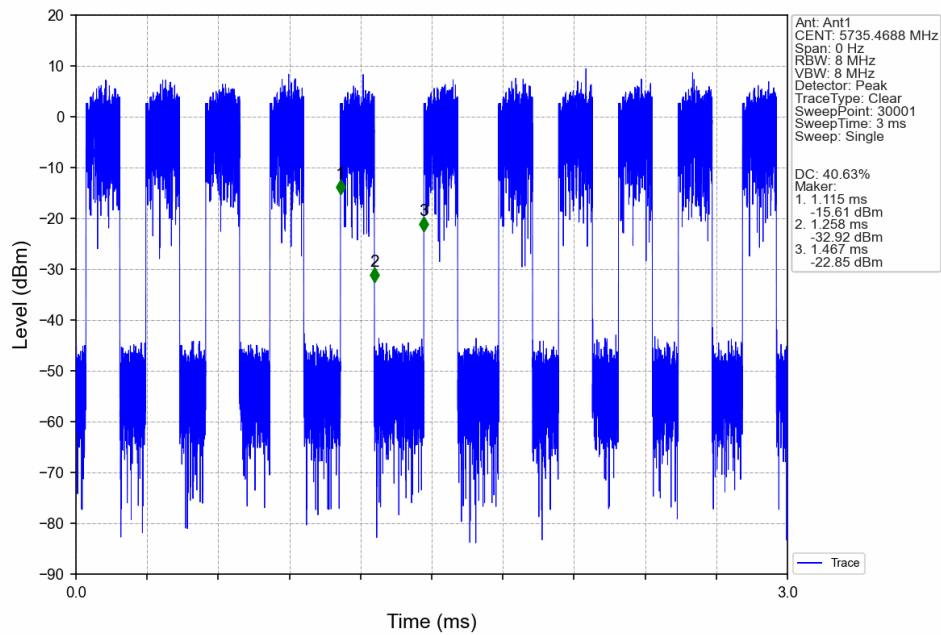
802.11ac(VHT40)_LCH_5755MHz_Ant1_NTNV



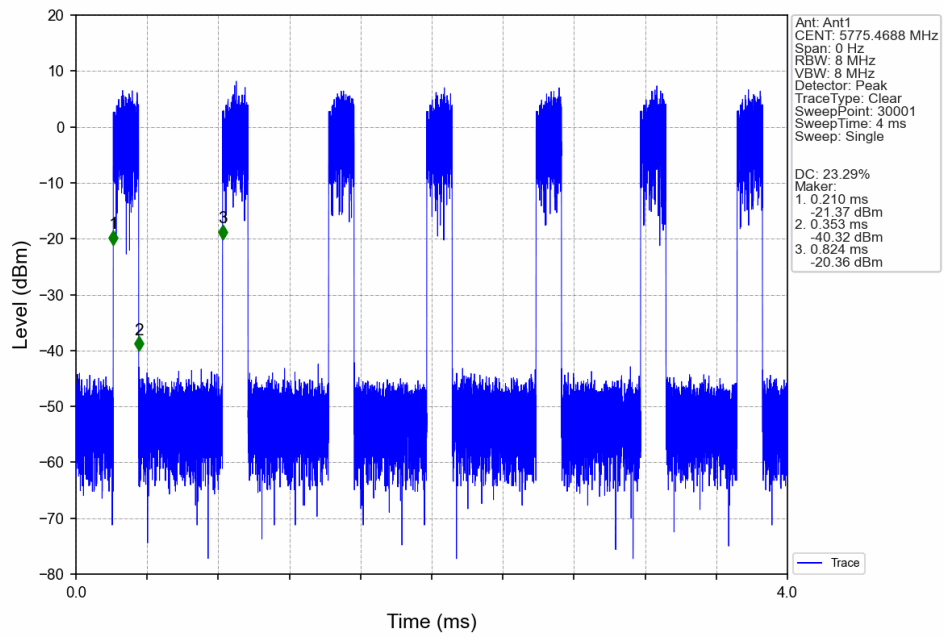
802.11ac(VHT40)_HCH_5795MHz_Ant1_NTNV



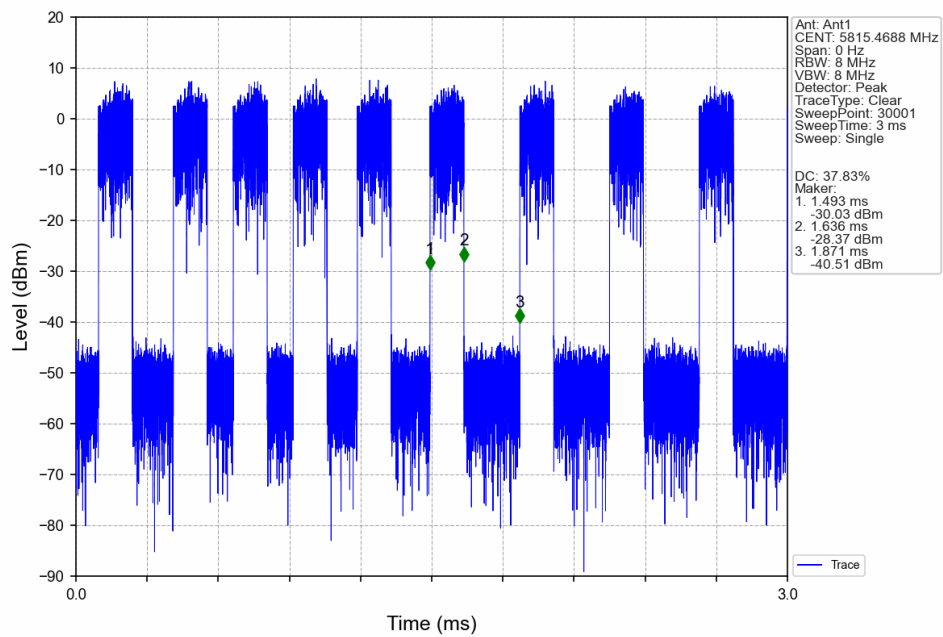
802.11ax(HEW20)_LCH_5745MHz_SU / Ant1 NTN



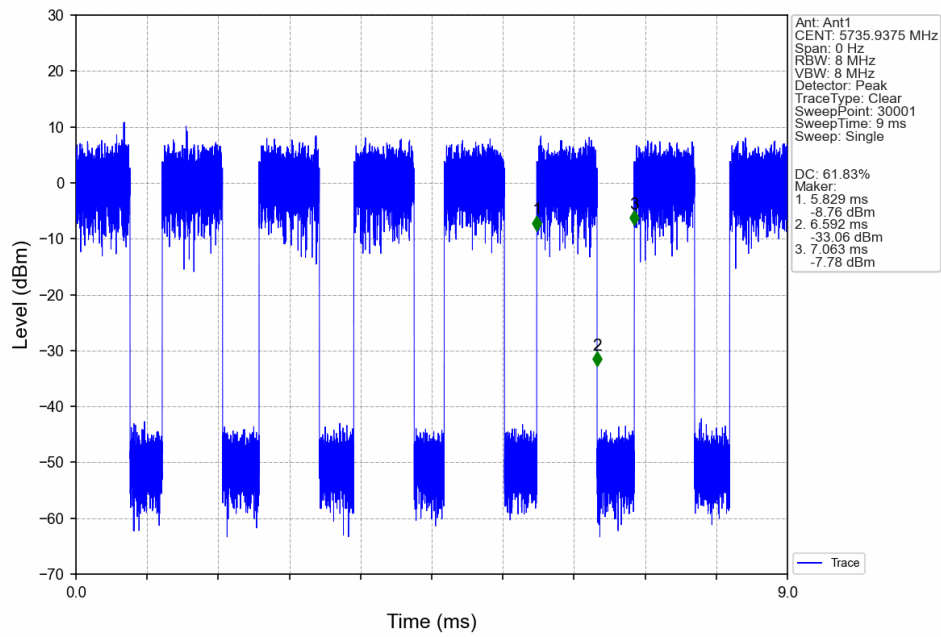
802.11ax(HEW20)_MCH_5785MHz_SU / Ant1_NTNV



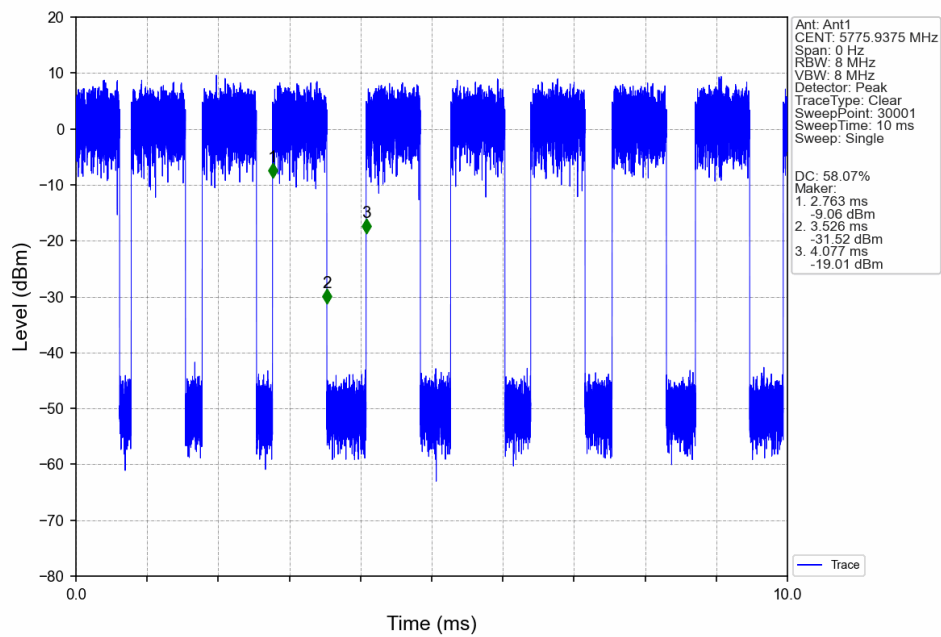
802.11ax(HEW20)_HCH_5825MHz_SU / Ant1_NTNV



802.11ax(HEW40) LCH 5755MHz SU / _Ant1_NTNV



802.11ax(HEW40) HCH 5795MHz SU / Ant1 NTN



2. Bandwidth

2.1 Test Result

2.1.1 OBW

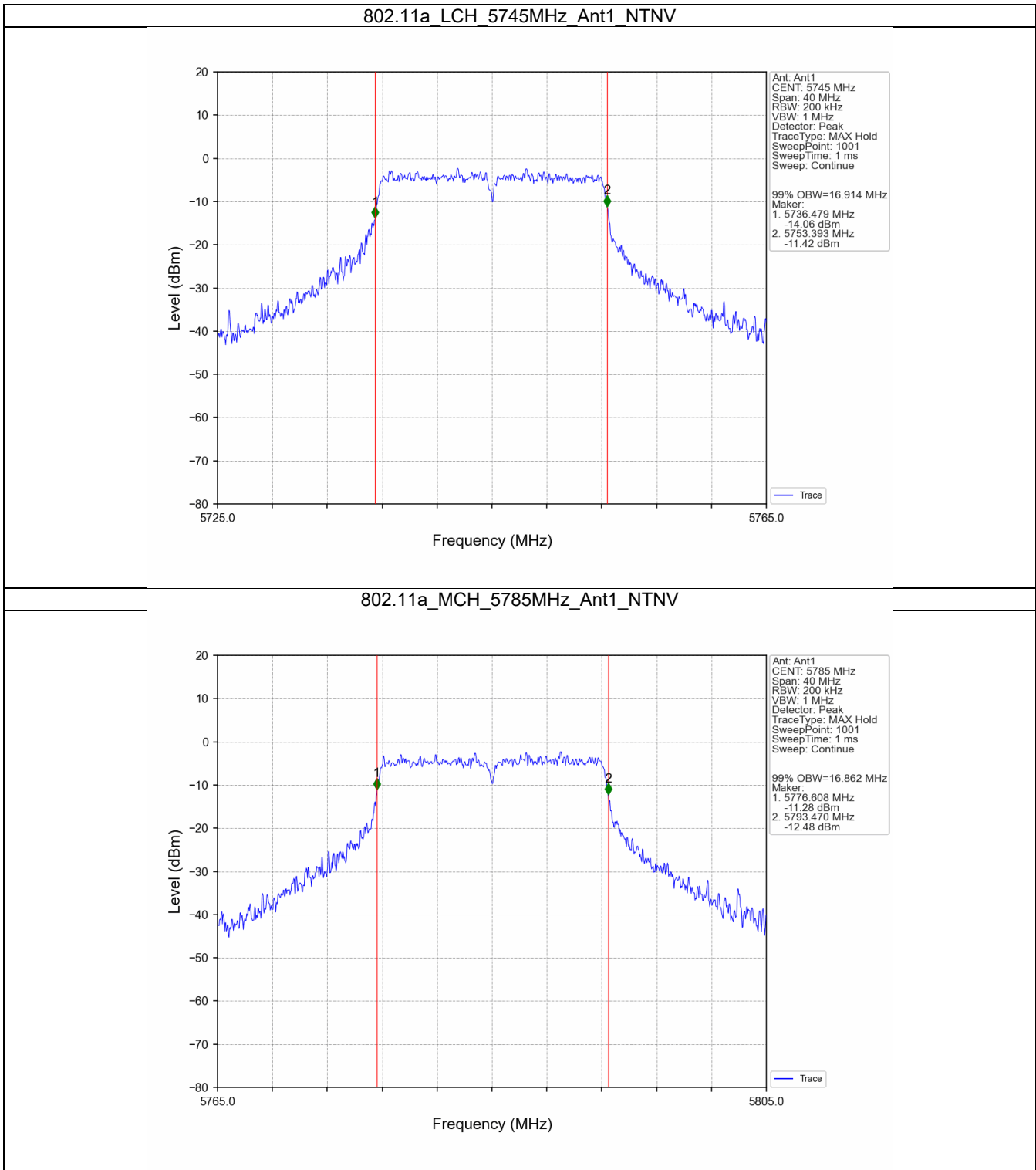
Mode	TX Type	Frequency (MHz)	RU	RU Pos	ANT	99% Occupied Bandwidth (MHz)		Verdict
						Result	Limit	
802.11a	SISO	5745	/	/	1	16.914	/	Pass
		5785	/	/	1	16.862	/	Pass
		5825	/	/	1	16.893	/	Pass
802.11n (HT20)	SISO	5745	/	/	1	18.073	/	Pass
		5785	/	/	1	18.032	/	Pass
		5825	/	/	1	18.094	/	Pass
802.11n (HT40)	SISO	5755	/	/	1	37.354	/	Pass
		5795	/	/	1	37.344	/	Pass
802.11ac (VHT20)	SISO	5745	/	/	1	18.024	/	Pass
		5785	/	/	1	18.012	/	Pass
		5825	/	/	1	18.064	/	Pass
802.11ac (VHT40)	SISO	5755	/	/	1	37.646	/	Pass
		5795	/	/	1	37.573	/	Pass
802.11ax (HEW20)	SISO	5745	SU	/	1	19.145	/	Pass
		5785	SU	/	1	19.085	/	Pass
		5825	SU	/	1	19.127	/	Pass
802.11ax (HEW40)	SISO	5755	SU	/	1	38.594	/	Pass
		5795	SU	/	1	38.406	/	Pass

2.1.2 6dB BW

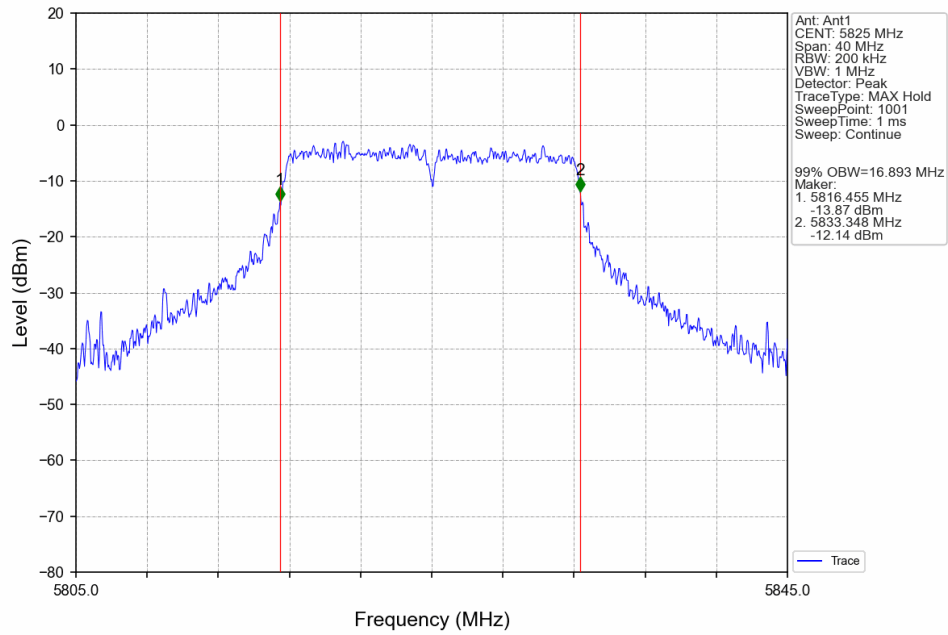
Mode	TX Type	Frequency (MHz)	RU	RU Pos	ANT	6dB Bandwidth (MHz)		Verdict
						Result	Limit	
802.11a	SISO	5745	/	/	1	16.397	>=0.5	Pass
		5785	/	/	1	16.405	>=0.5	Pass
		5825	/	/	1	16.386	>=0.5	Pass
802.11n (HT20)	SISO	5745	/	/	1	17.633	>=0.5	Pass
		5785	/	/	1	17.626	>=0.5	Pass
		5825	/	/	1	17.652	>=0.5	Pass
802.11n (HT40)	SISO	5755	/	/	1	36.398	>=0.5	Pass
		5795	/	/	1	36.364	>=0.5	Pass
802.11ac (VHT20)	SISO	5745	/	/	1	17.644	>=0.5	Pass
		5785	/	/	1	17.653	>=0.5	Pass
		5825	/	/	1	17.620	>=0.5	Pass
802.11ac (VHT40)	SISO	5755	/	/	1	36.363	>=0.5	Pass
		5795	/	/	1	36.393	>=0.5	Pass
802.11ax (HEW20)	SISO	5745	SU	/	1	19.007	>=0.5	Pass
		5785	SU	/	1	19.039	>=0.5	Pass
		5825	SU	/	1	19.090	>=0.5	Pass
802.11ax (HEW40)	SISO	5755	SU	/	1	38.072	>=0.5	Pass
		5795	SU	/	1	38.007	>=0.5	Pass

2.2 Test Graph

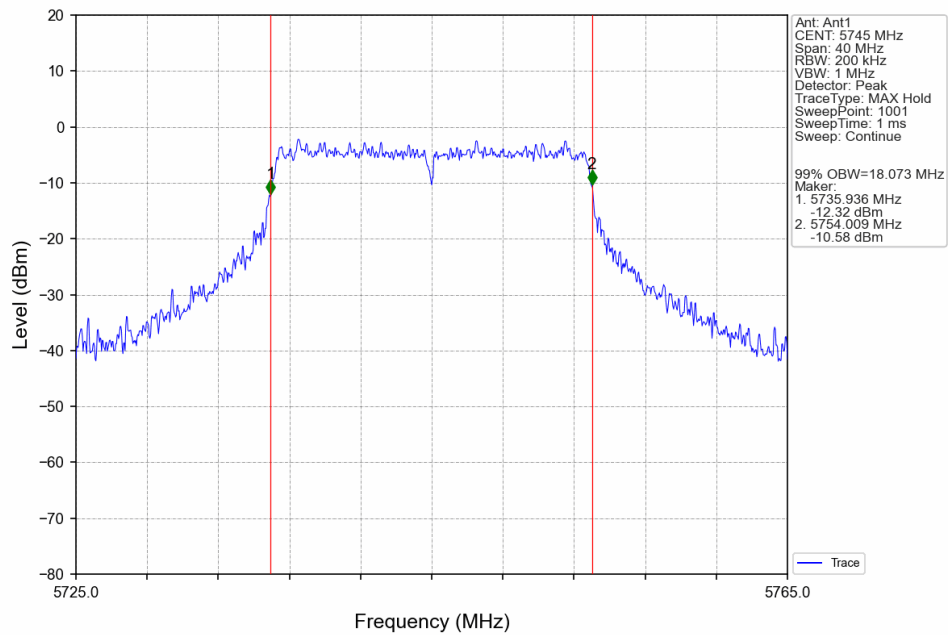
2.2.1 OBW



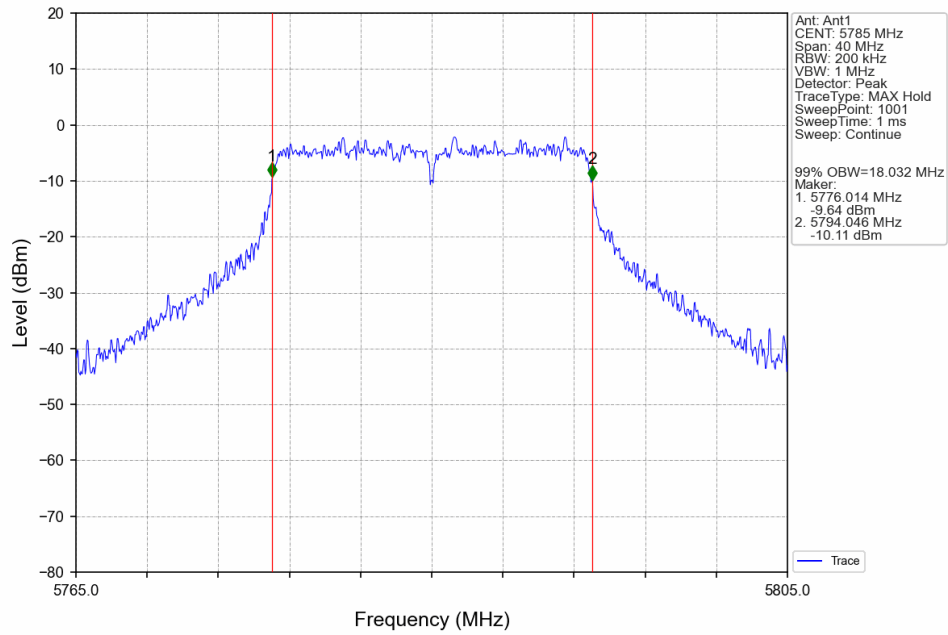
802.11a_HCH_5825MHz_Ant1_NTNV



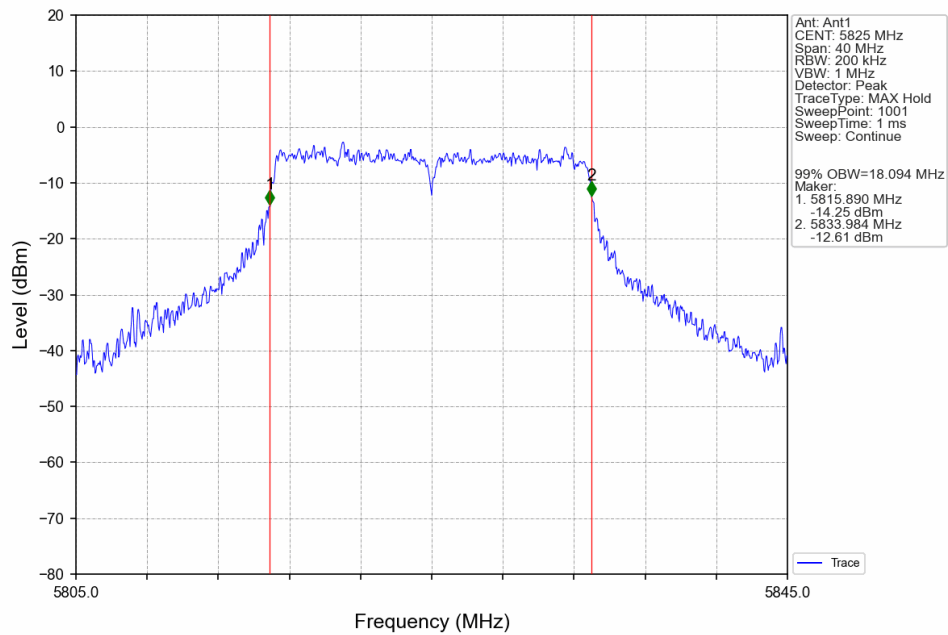
802.11n(HT20) LCH 5745MHz_Ant1_NTNV



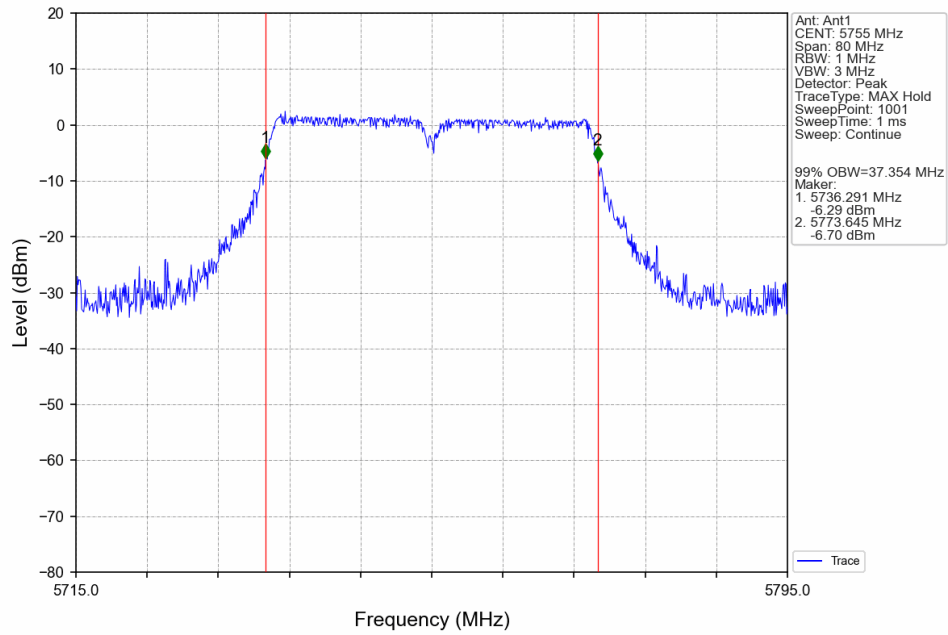
802.11n(HT20)_MCH_5785MHz_Ant1_NTNV



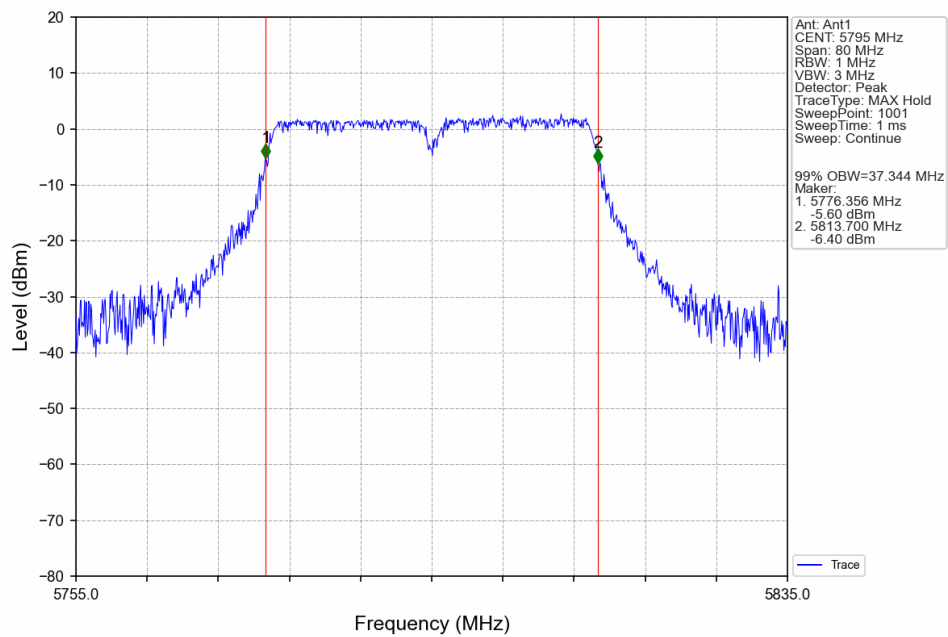
802.11n(HT20)_HCH_5825MHz_Ant1_NTNV



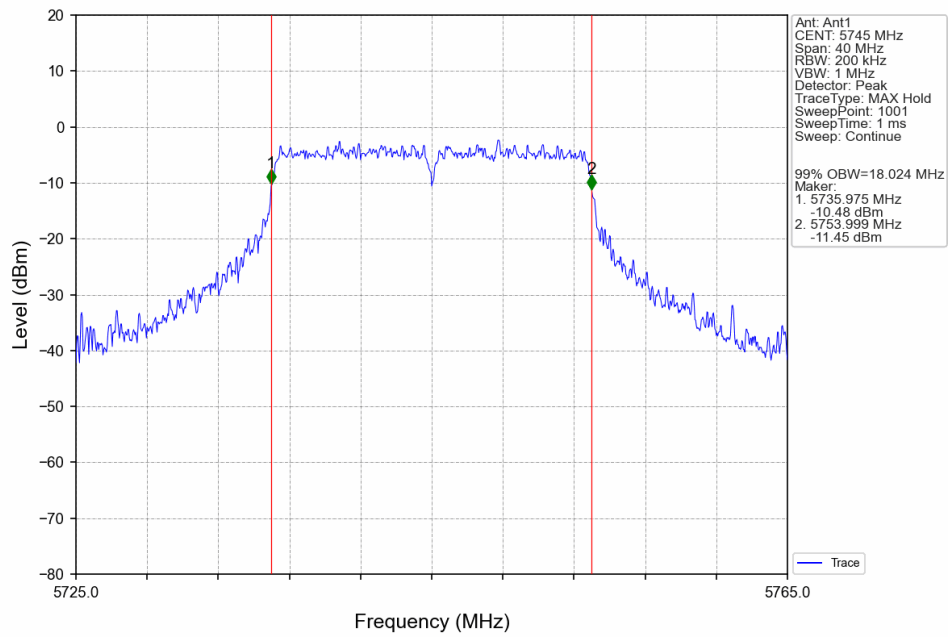
802.11n(HT40) LCH_5755MHz_Ant1_NTNV



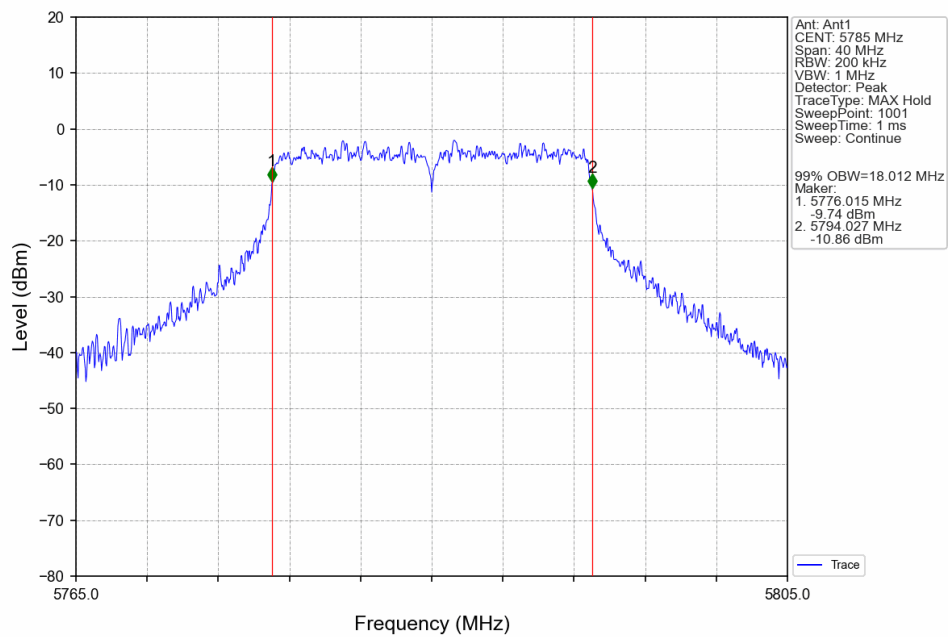
802.11n(HT40) HCH_5795MHz_Ant1_NTNV



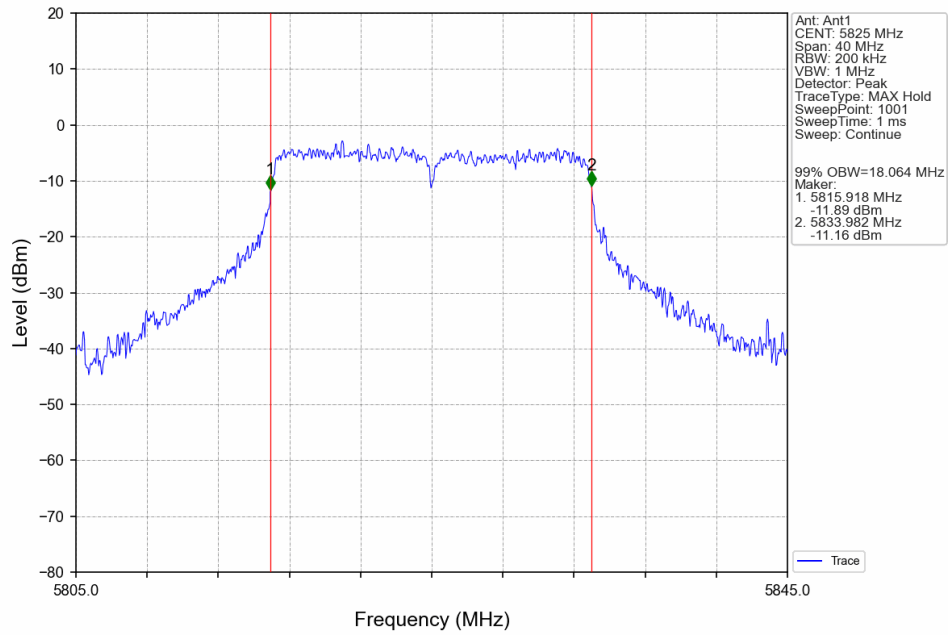
802.11ac(VHT20)_LCH_5745MHz_Ant1_NTNV



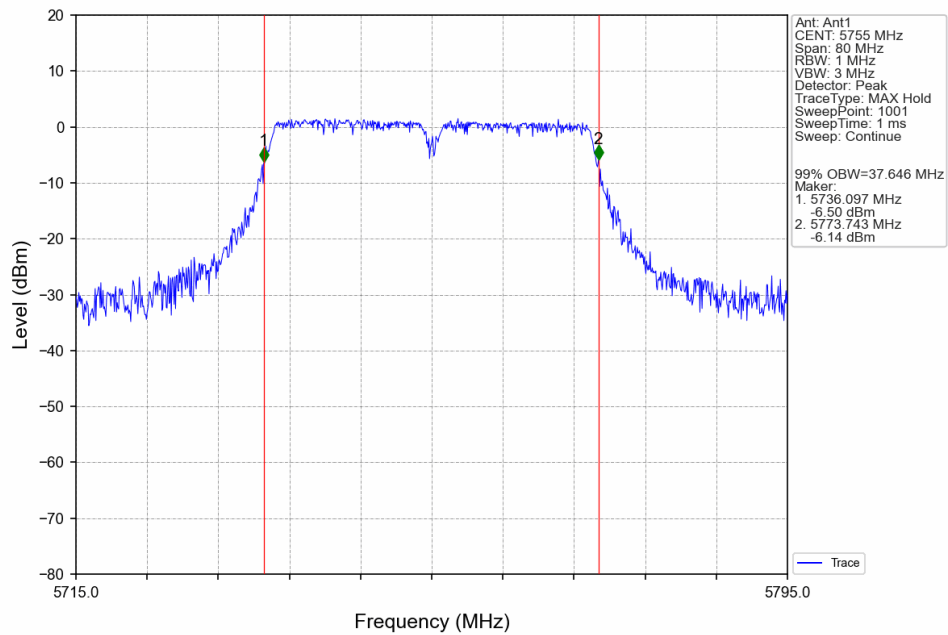
802.11ac(VHT20)_MCH_5785MHz_Ant1_NTNV



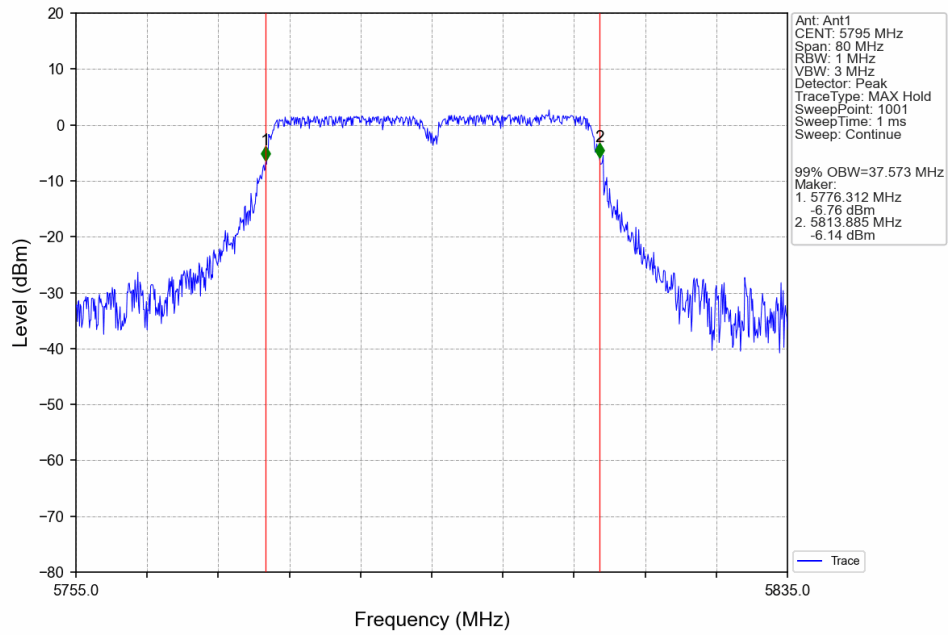
802.11ac(VHT20)_HCH_5825MHz_Ant1_NTNV



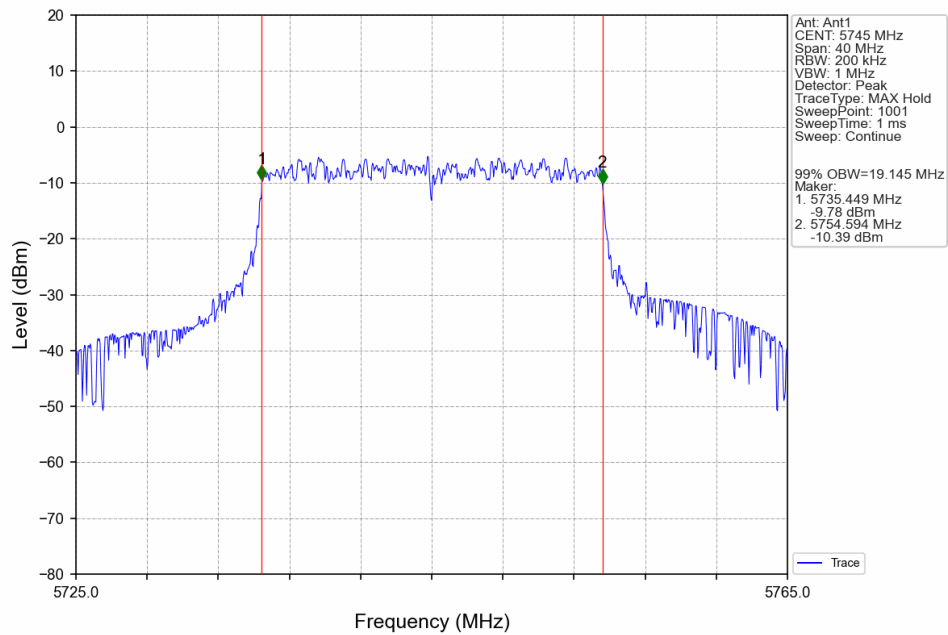
802.11ac(VHT40)_LCH_5755MHz_Ant1_NTNV



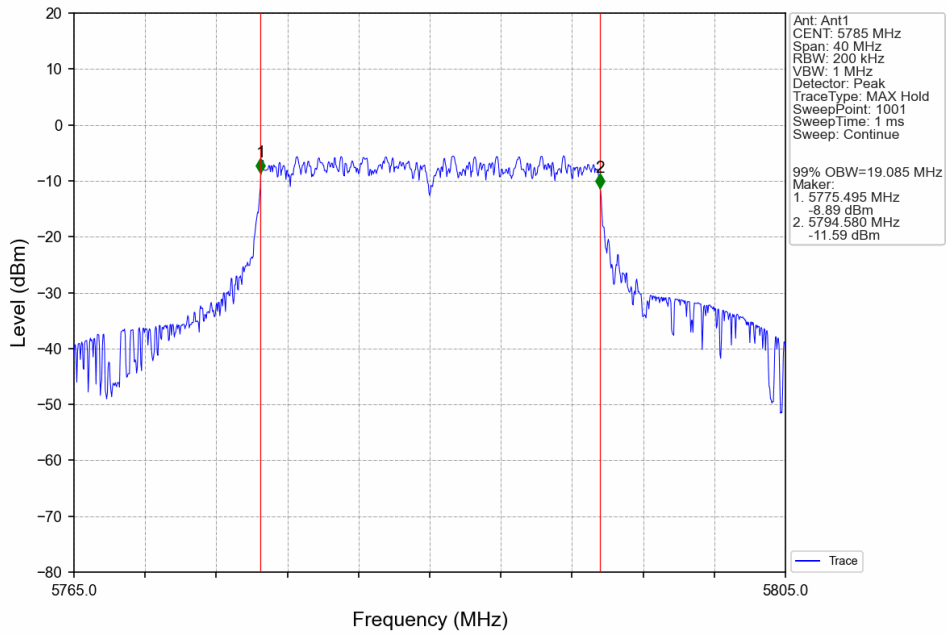
802.11ac(VHT40) HCH_5795MHz_Ant1_NTNV



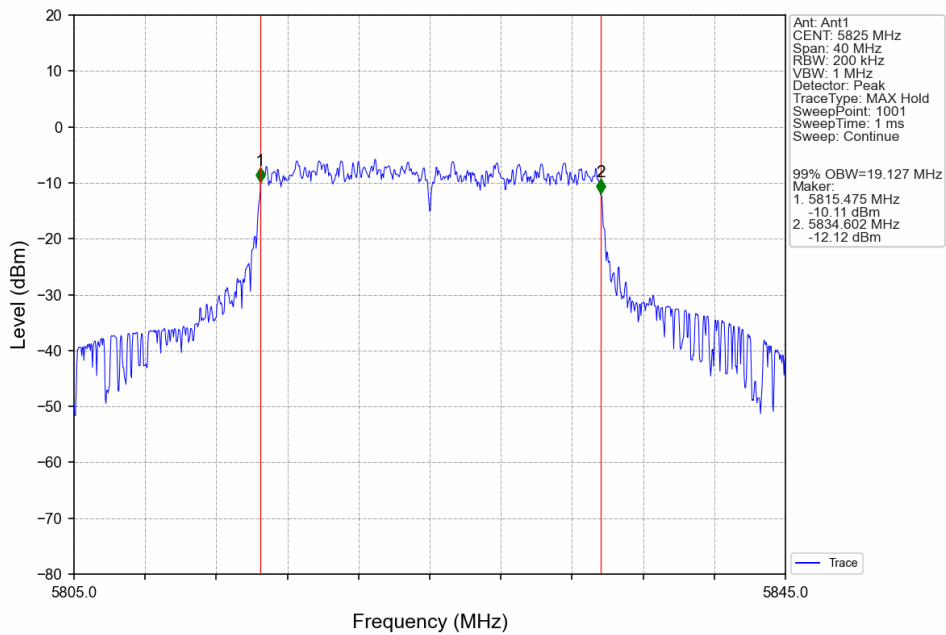
802.11ax(HEW20) LCH_5745MHz_SU / Ant1_NTNV



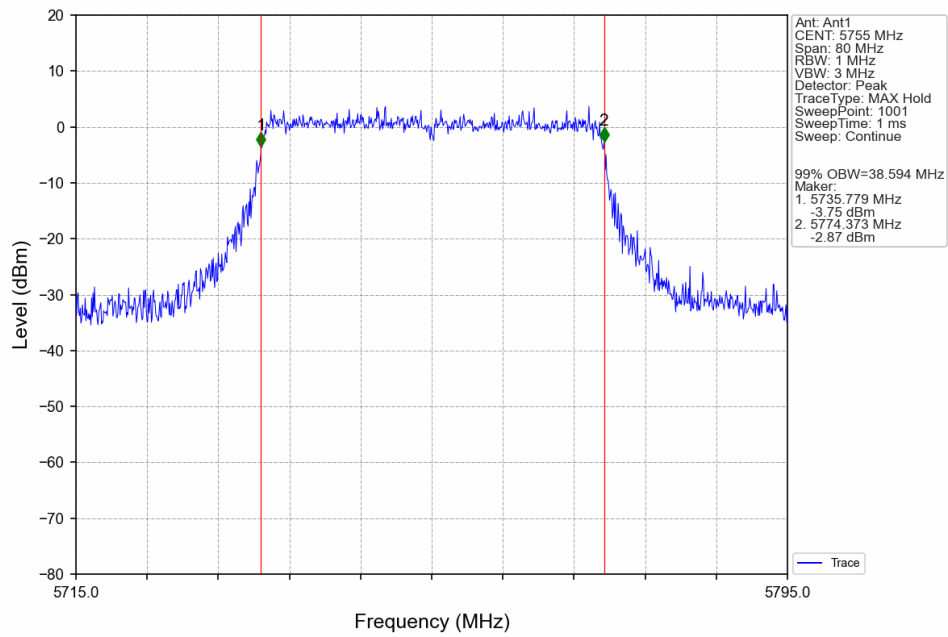
802.11ax(HEW20)_MCH_5785MHz_SU / Ant1_NTNV



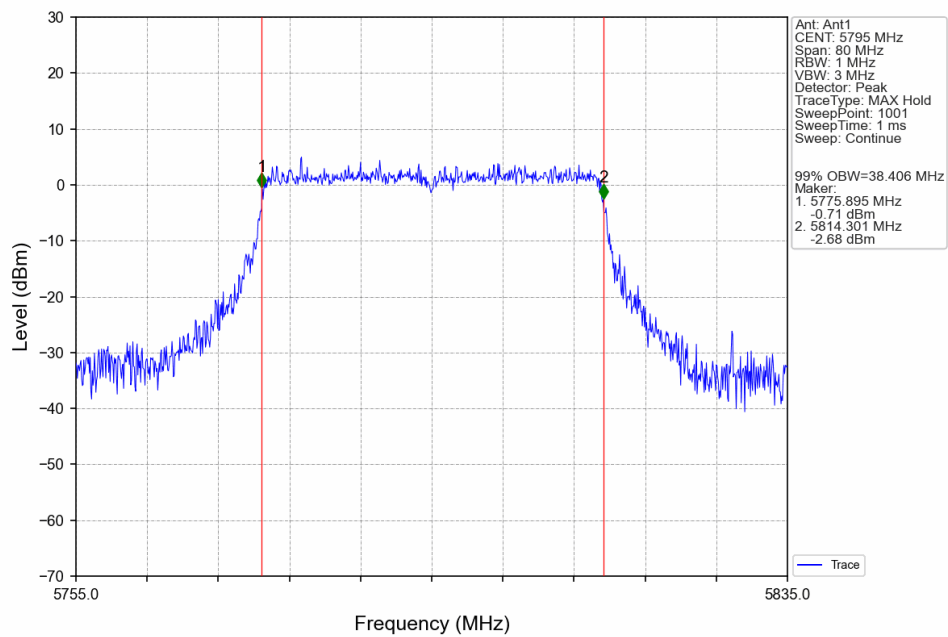
802.11ax(HEW20)_HCH_5825MHz_SU / Ant1_NTNV



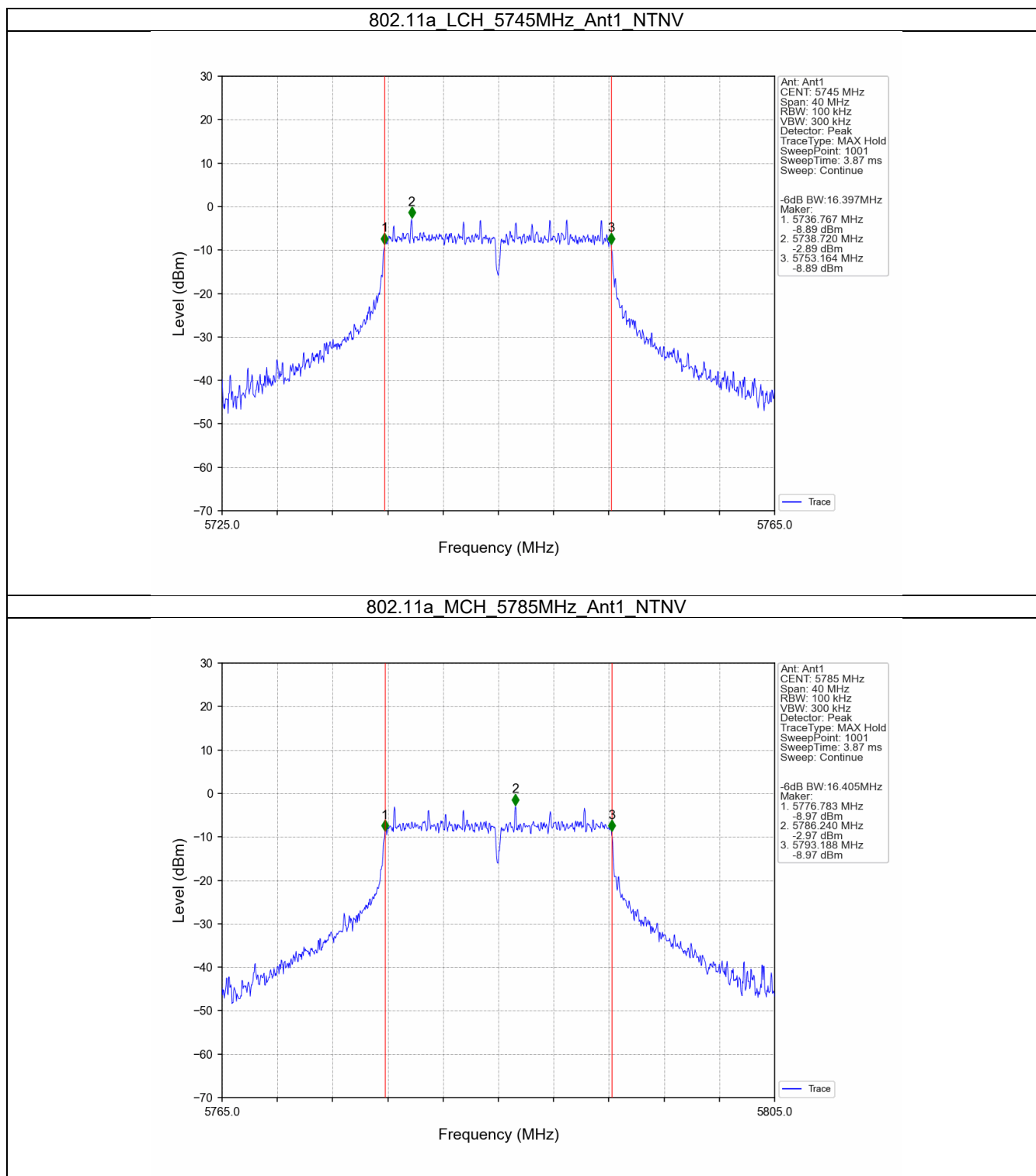
802.11ax(HEW40)_LCH_5755MHz_SU_/_Ant1_NTNV



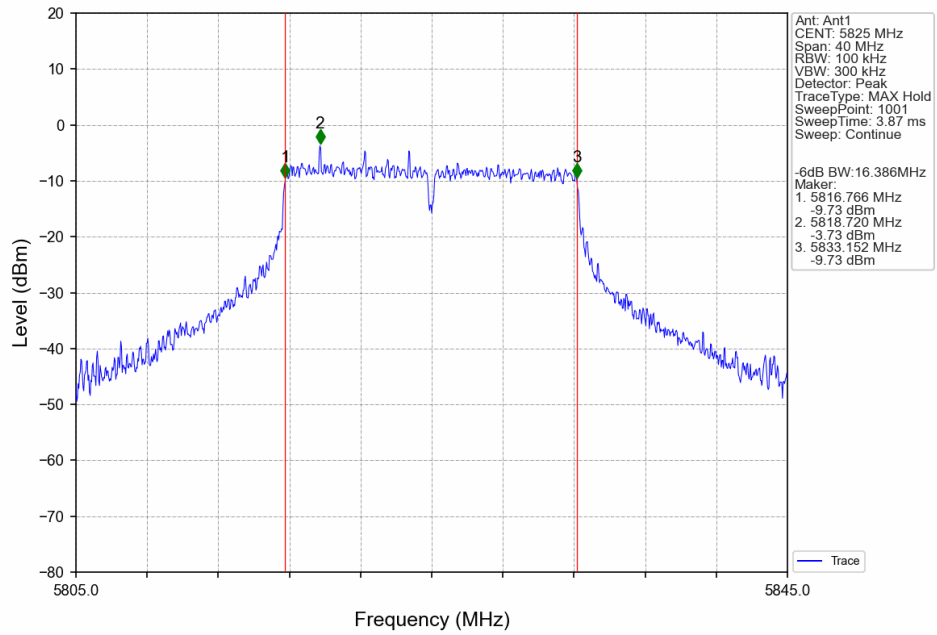
802.11ax(HEW40)_HCH_5795MHz_SU_/_Ant1_NTNV



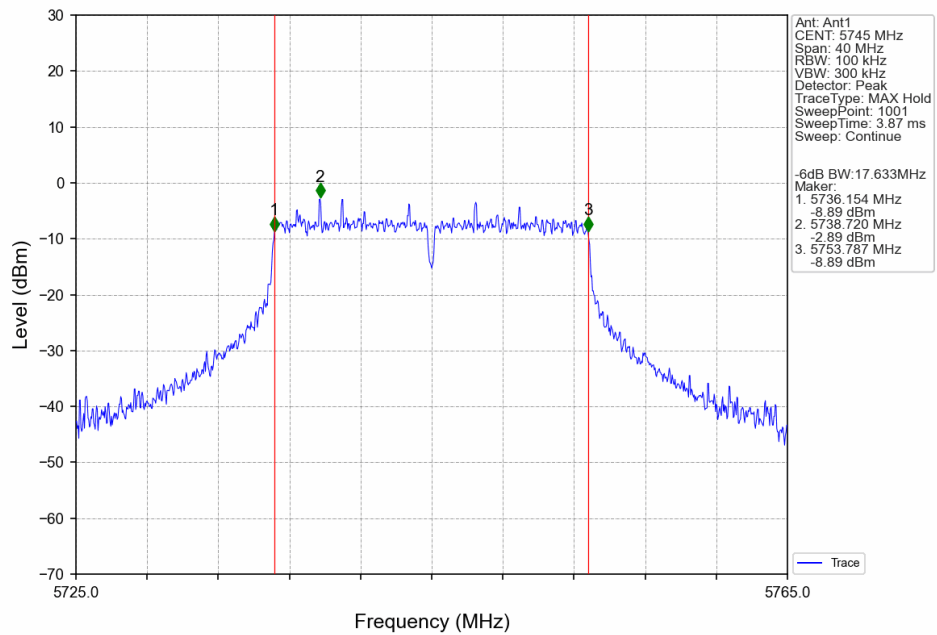
2.2.2 6dB BW



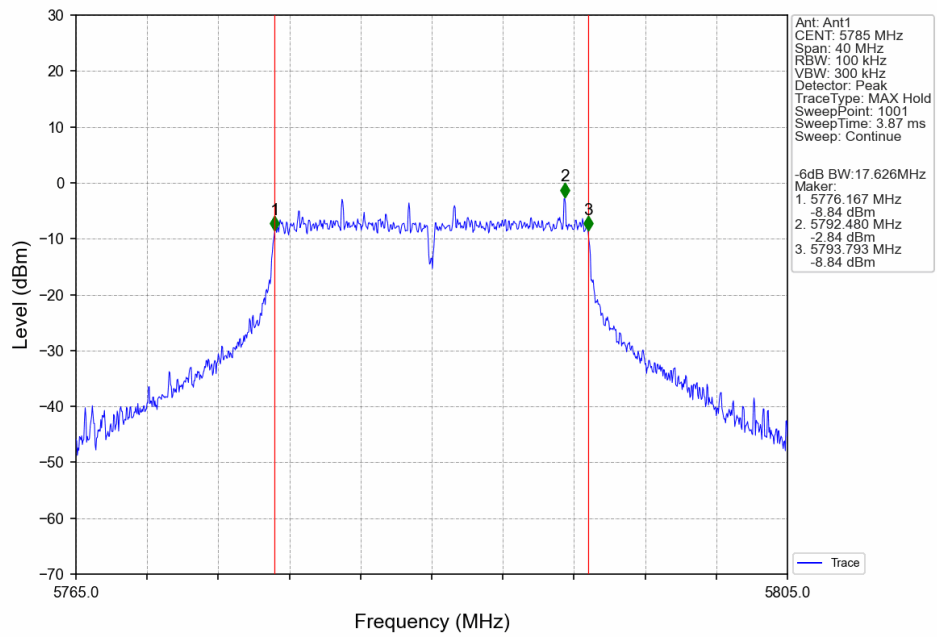
802.11a_HCH_5825MHz_Ant1_NTNV



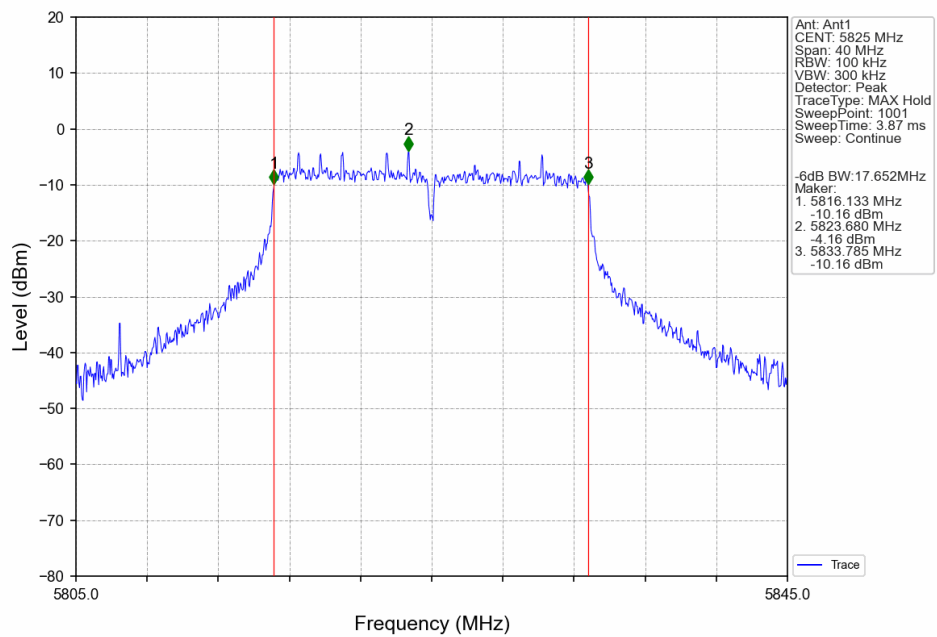
802.11n(HT20)_LCH_5745MHz_Ant1_NTNV



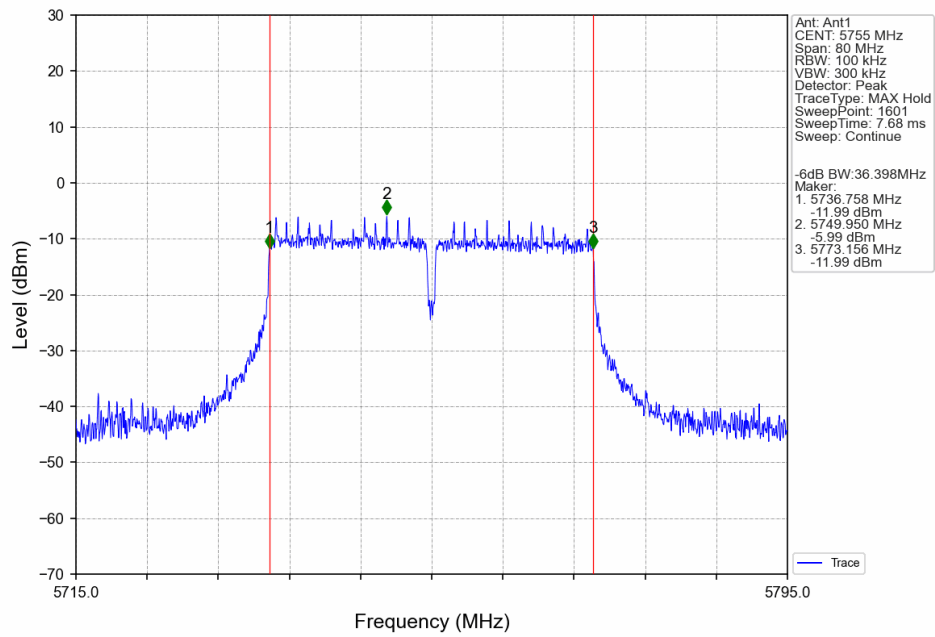
802.11n(HT20)_MCH_5785MHz_Ant1_NTNV



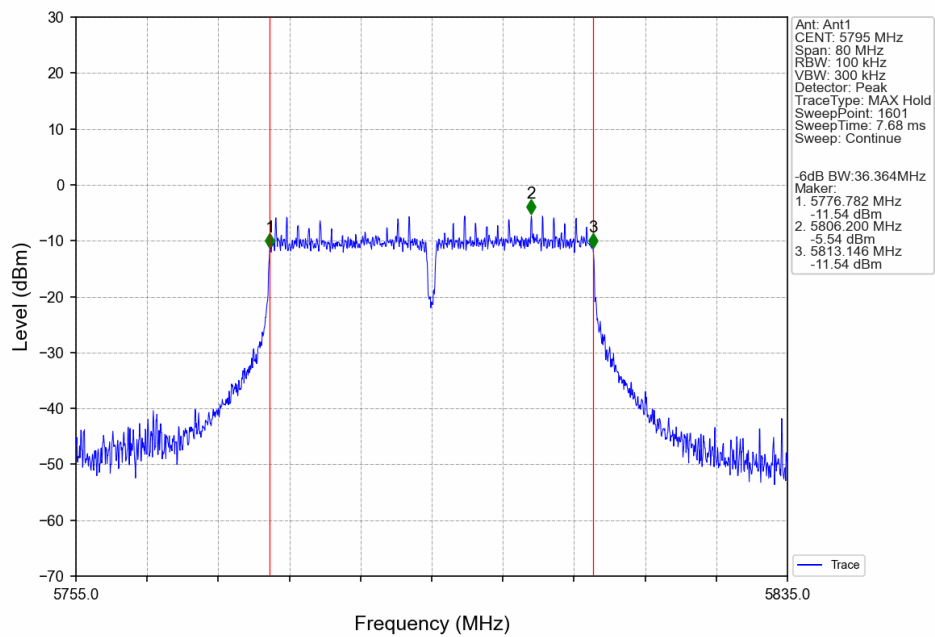
802.11n(HT20)_HCH_5825MHz_Ant1_NTNV



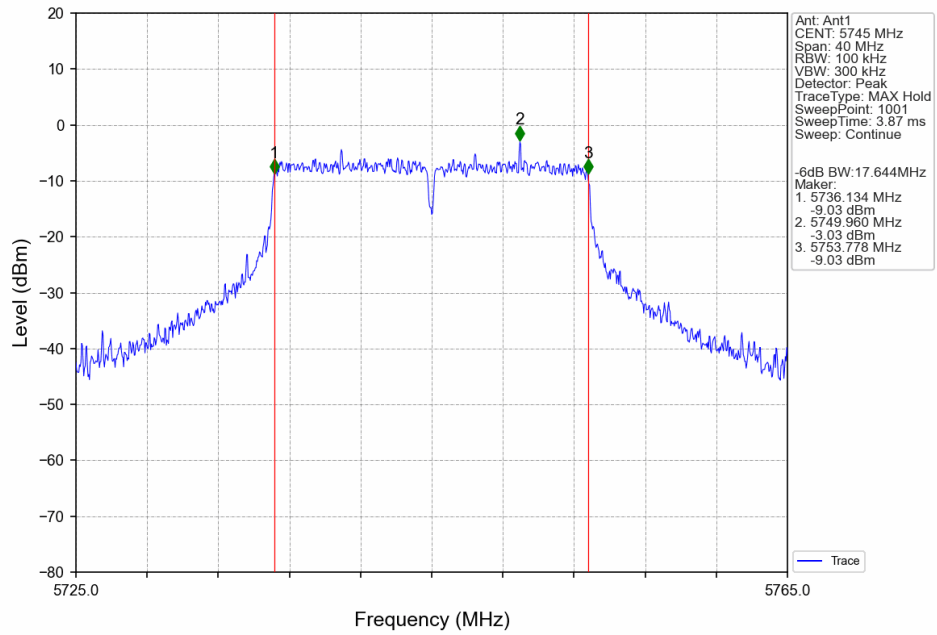
802.11n(HT40) LCH_5755MHz_Ant1_NTNV



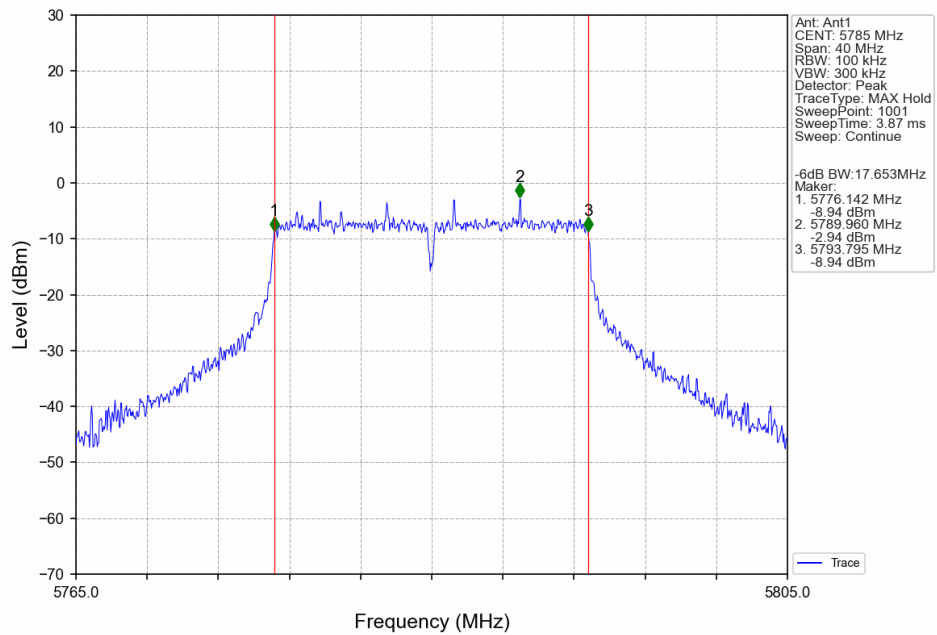
802.11n(HT40) HCH_5795MHz_Ant1_NTNV



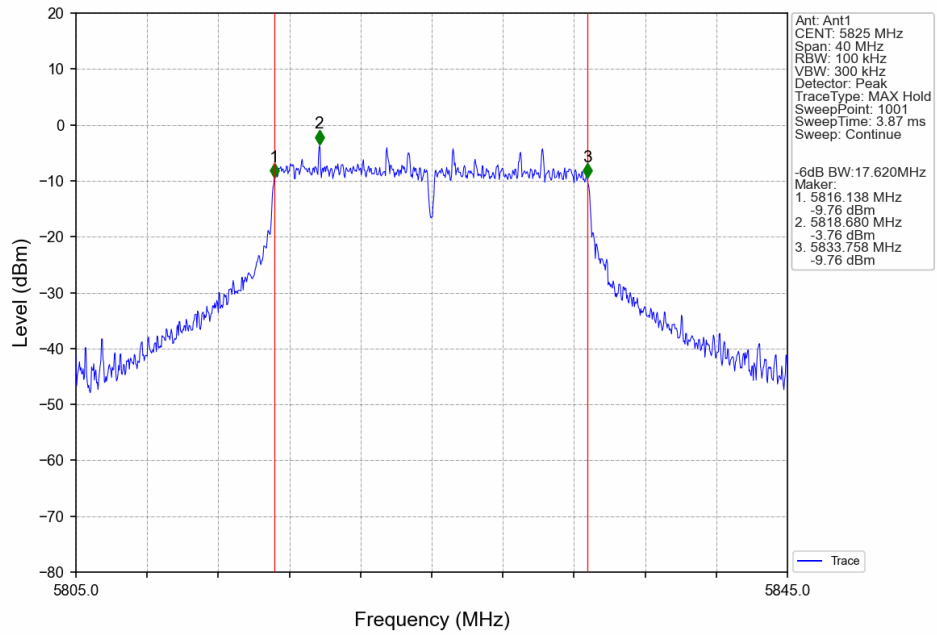
802.11ac(VHT20)_LCH_5745MHz_Ant1_NTNV



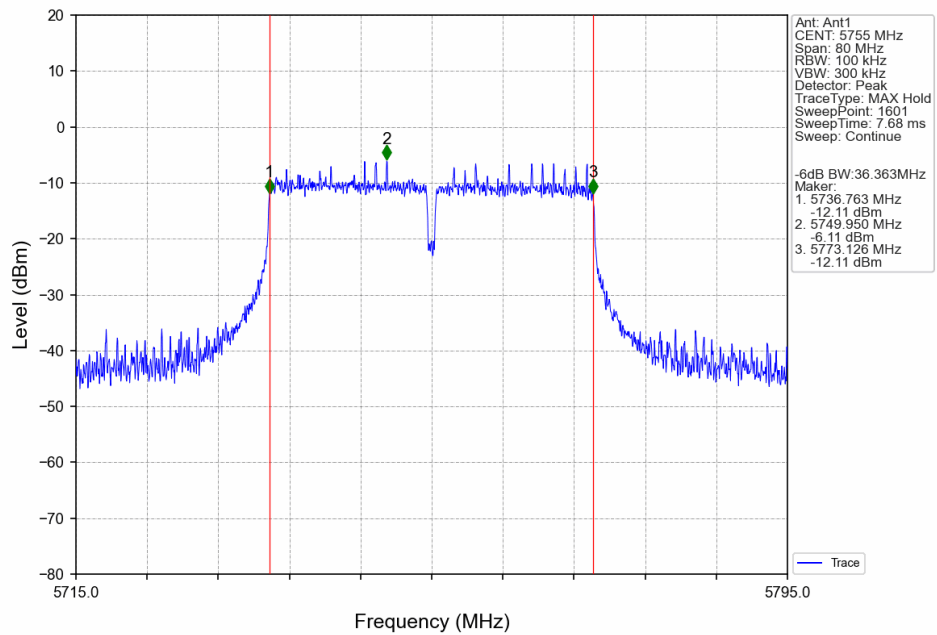
802.11ac(VHT20)_MCH_5785MHz_Ant1_NTNV



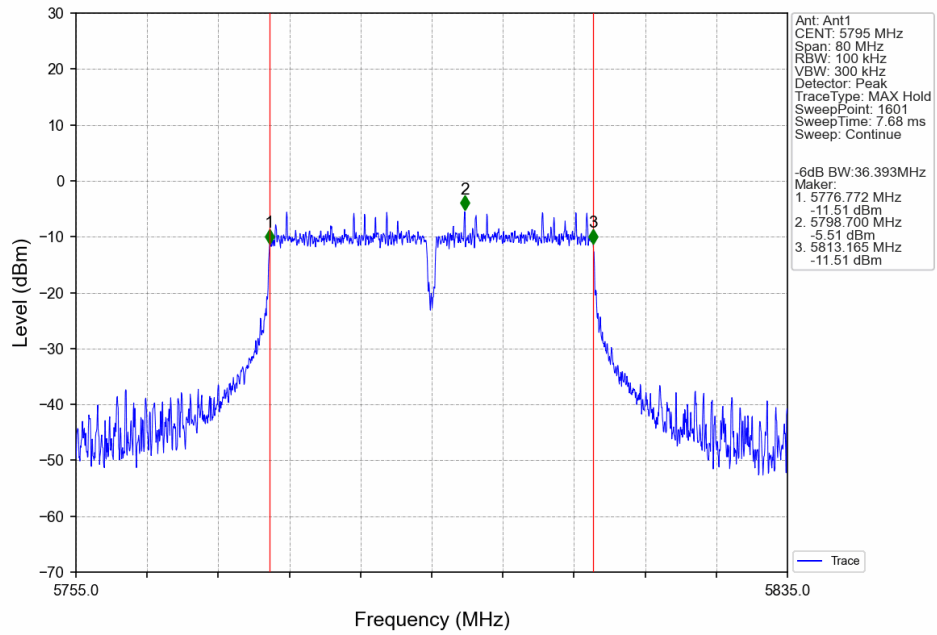
802.11ac(VHT20)_HCH_5825MHz_Ant1_NTNV



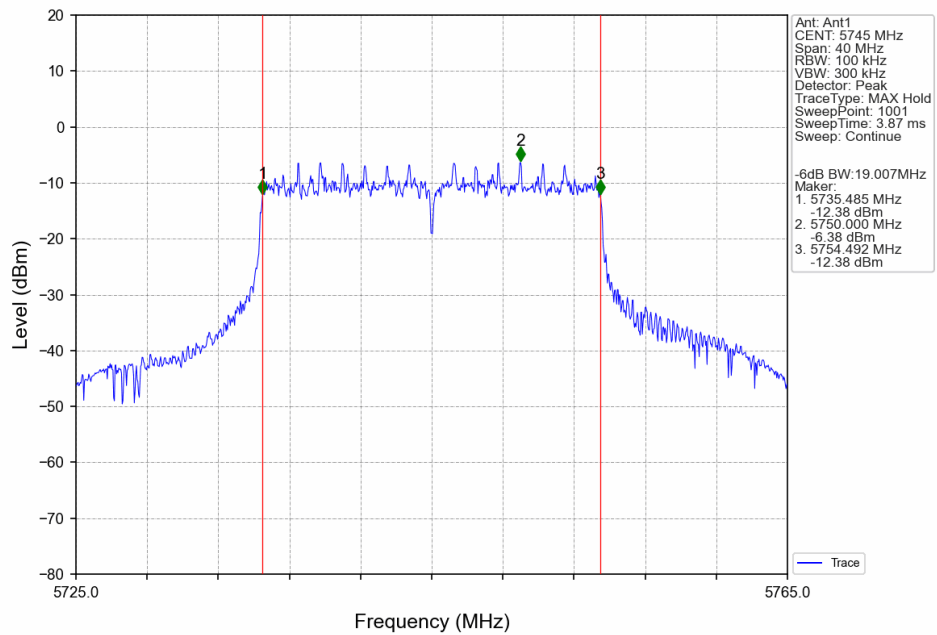
802.11ac(VHT40)_LCH_5755MHz_Ant1_NTNV



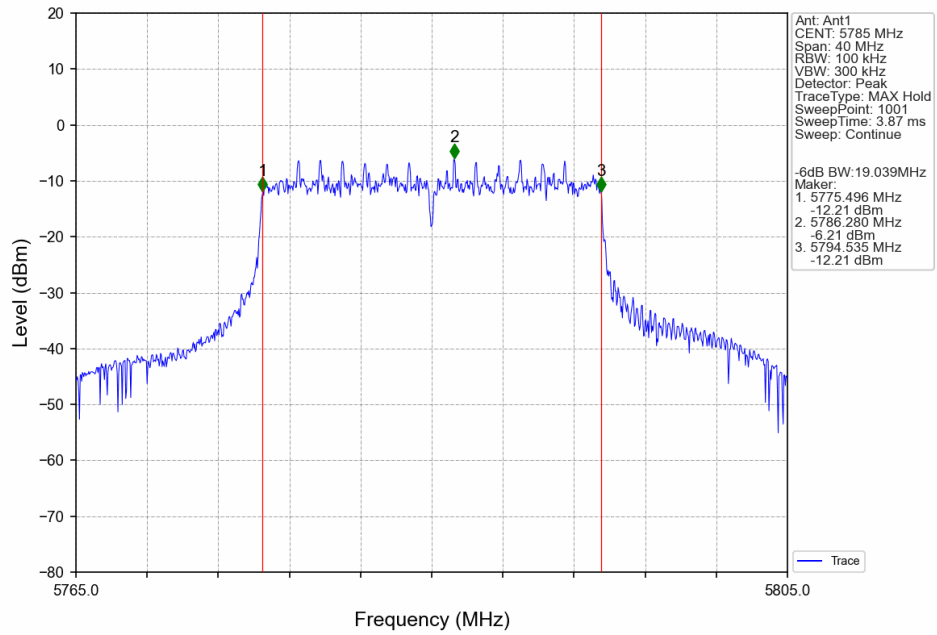
802.11ac(VHT40)_HCH_5795MHz_Ant1_NTNV



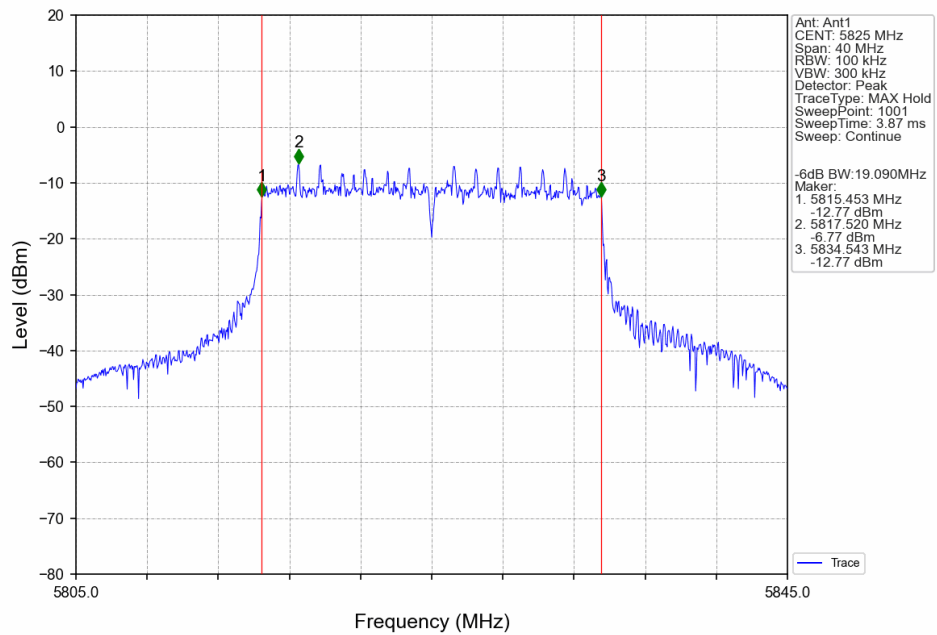
802.11ax(HEW20)_LCH_5745MHz_SU / Ant1 NTN



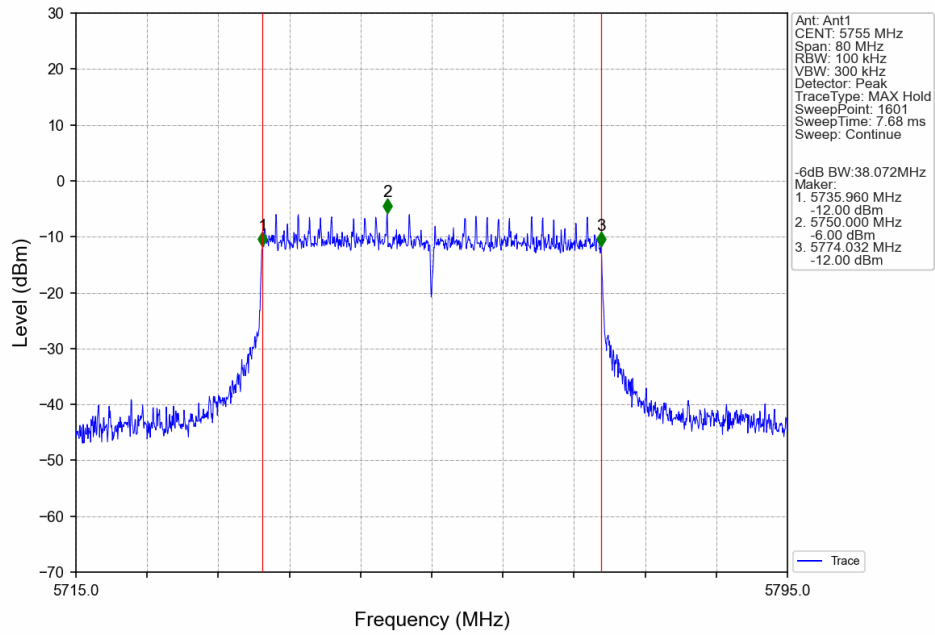
802.11ax(HEW20)_MCH_5785MHz_SU / Ant1_NTNV



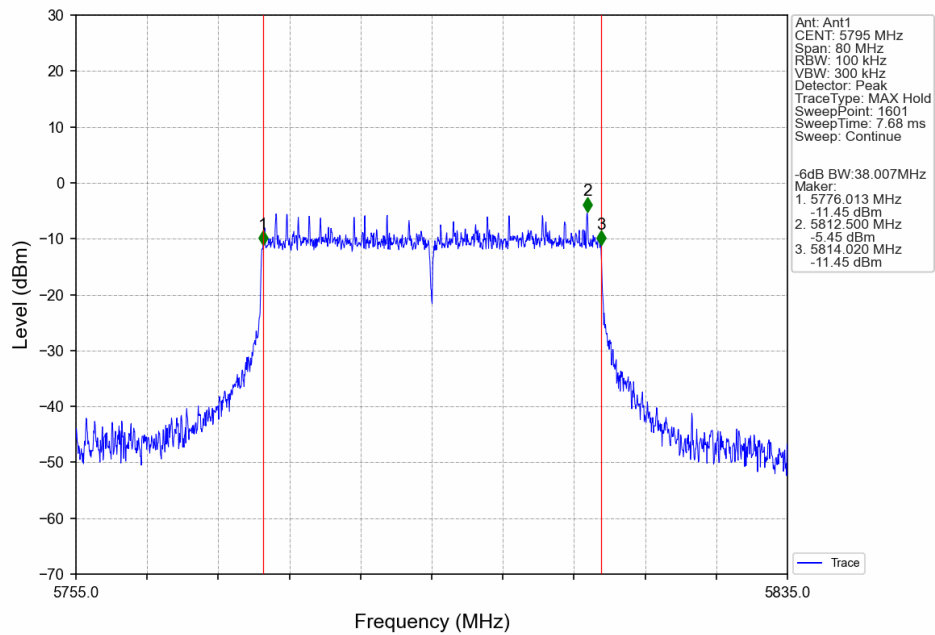
802.11ax(HEW20)_HCH_5825MHz_SU / Ant1_NTNV



802.11ax(HEW40)_LCH_5755MHz_SU_/_Ant1_NTNV



802.11ax(HEW40)_HCH_5795MHz_SU_/_Ant1_NTNV



3. Maximum Conducted Output Power

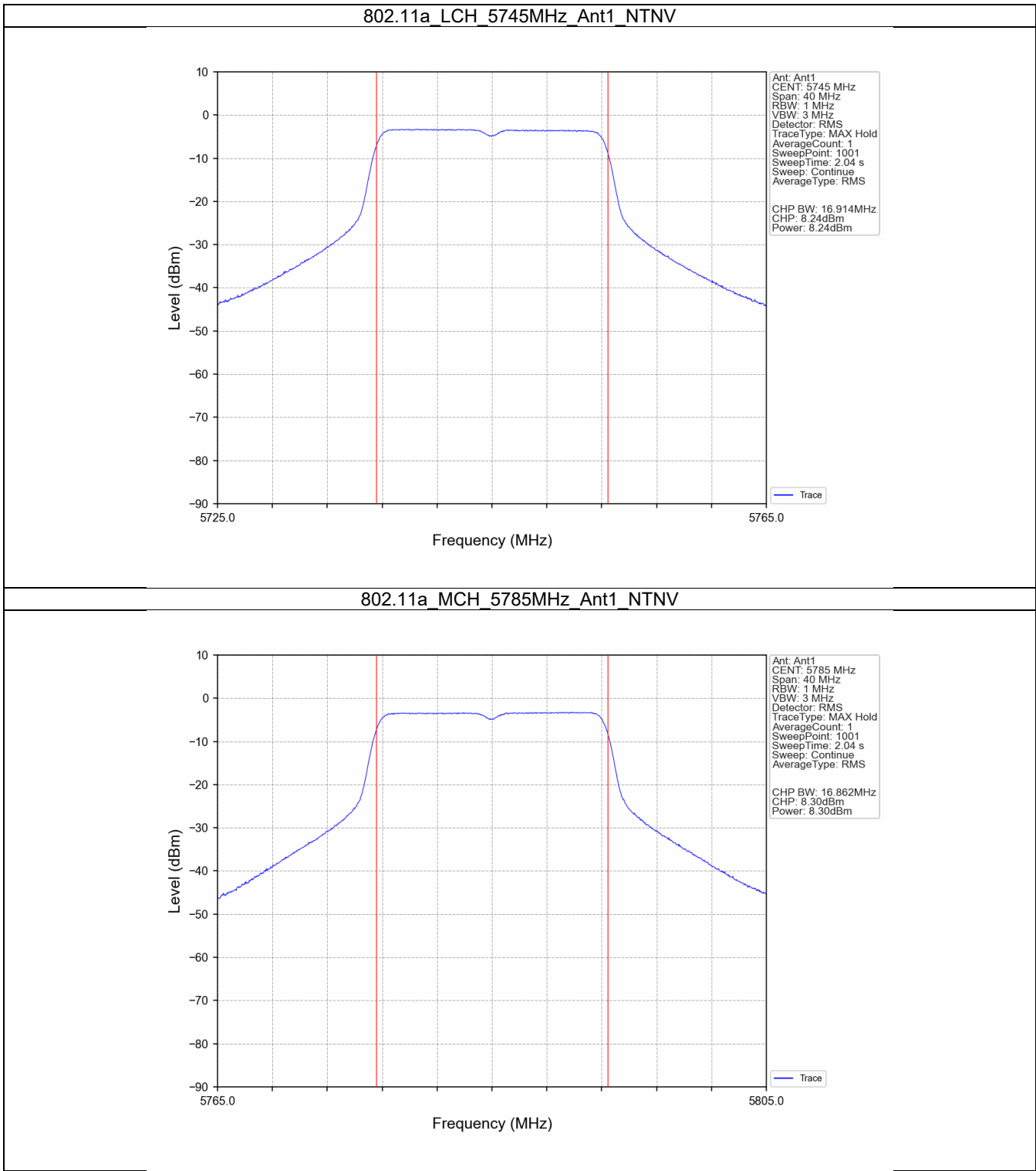
3.1 Test Result

3.1.1 Power

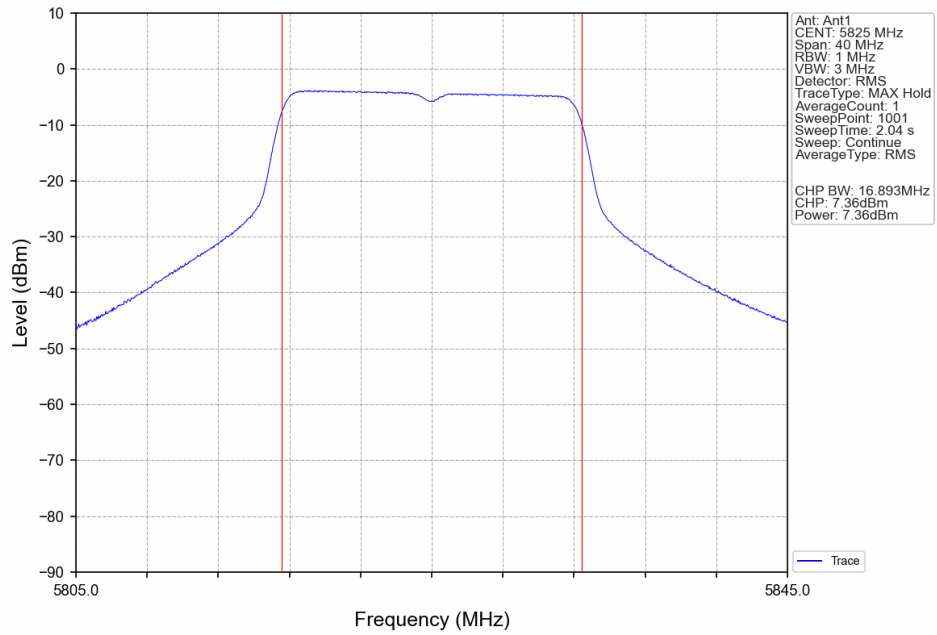
Mode	TX Type	Frequency (MHz)	RU	Maximum Average Conducted Output Power (dBm)				Verdict
				ANT1	Duty Cycle factor	Final Result	Limit	
802.11a	SISO	5745	/	8.24	0.32	8.56	<=30	Pass
		5785	/	8.30	0.47	8.77	<=30	Pass
		5825	/	7.36	0.44	7.80	<=30	Pass
802.11n (HT20)	SISO	5745	/	8.41	0.45	8.86	<=30	Pass
		5785	/	8.38	0.45	8.83	<=30	Pass
		5825	/	7.58	0.96	8.54	<=30	Pass
802.11n (HT40)	SISO	5755	/	8.40	0.90	9.30	<=30	Pass
		5795	/	8.88	0.87	9.75	<=30	Pass
802.11ac (VHT20)	SISO	5745	/	8.45	0.48	8.93	<=30	Pass
		5785	/	8.48	0.49	8.97	<=30	Pass
		5825	/	7.64	0.45	8.09	<=30	Pass
802.11ac (VHT40)	SISO	5755	/	8.37	0.75	9.12	<=30	Pass
		5795	/	8.81	0.97	9.78	<=30	Pass
802.11ax (HEW20)	SISO	5745	SU	5.24	3.91	9.15	<=30	Pass
		5785	SU	5.38	6.33	11.71	<=30	Pass
		5825	SU	4.81	4.22	9.03	<=30	Pass
802.11ax (HEW40)	SISO	5755	SU	8.80	2.09	10.89	<=30	Pass
		5795	SU	9.05	2.36	11.41	<=30	Pass

3.2 Test Graph

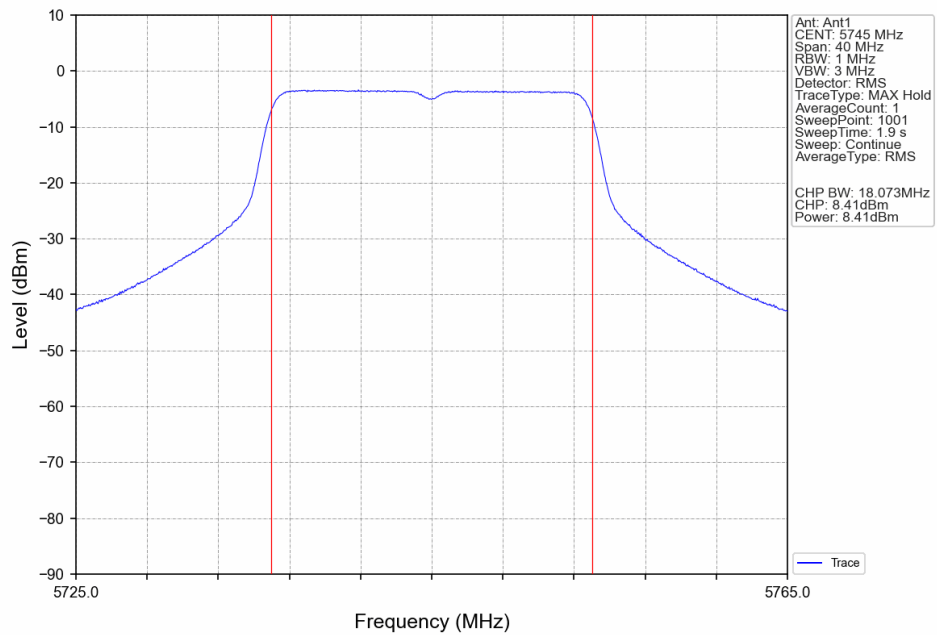
3.2.1 Power



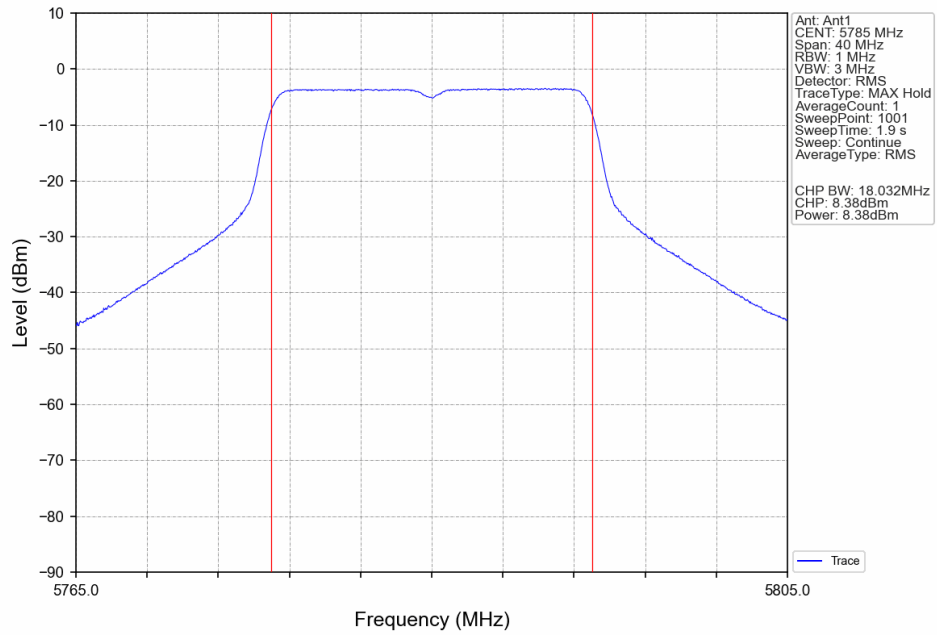
802.11a_HCH_5825MHz_Ant1_NTNV



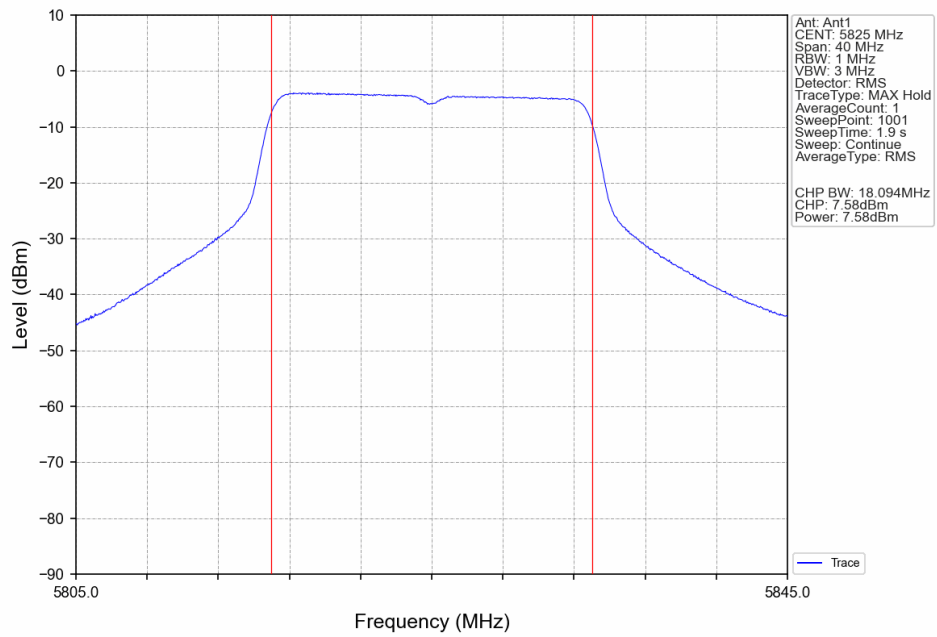
802.11n(HT20)_LCH_5745MHz_Ant1_NTNV



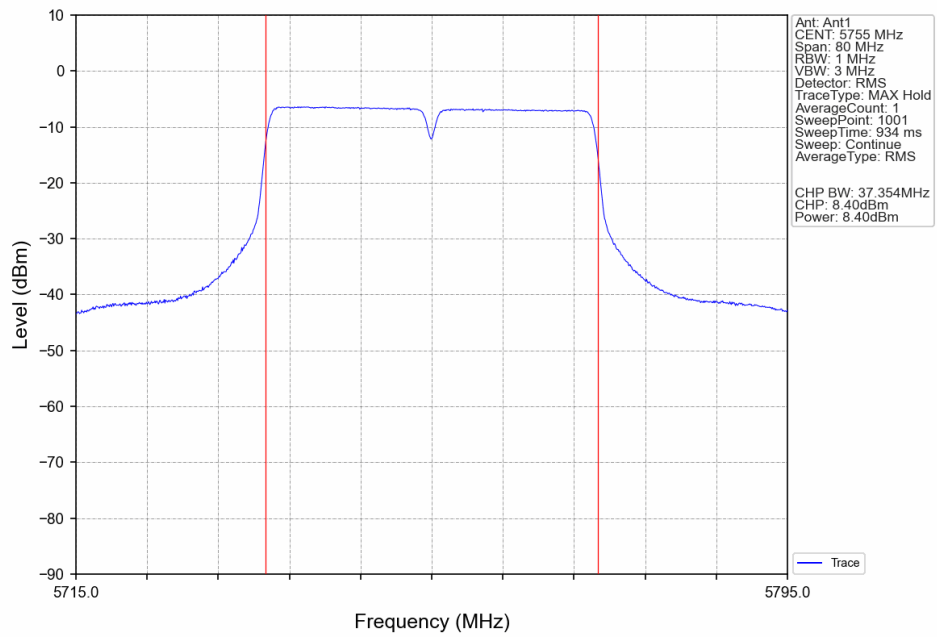
802.11n(HT20) MCH 5785MHz Ant1 NTN



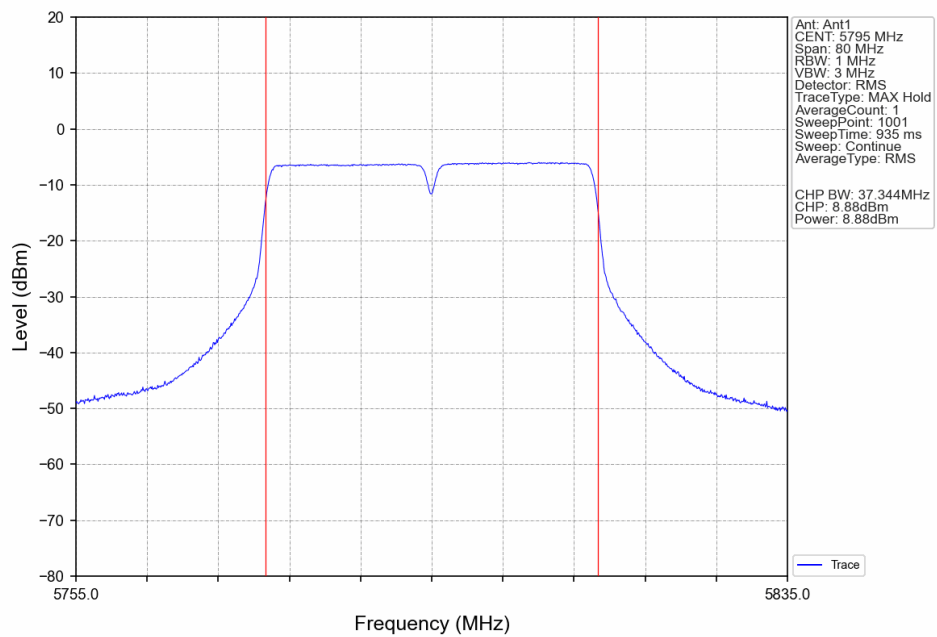
802.11n(HT20) HCH 5825MHz Ant1 NTN



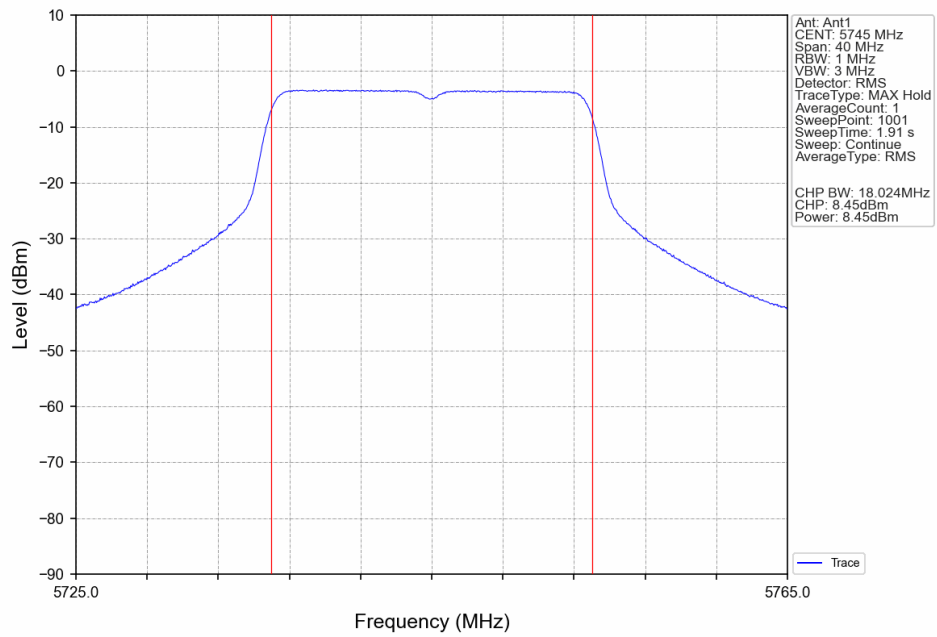
802.11n(HT40) LCH_5755MHz_Ant1_NTNV



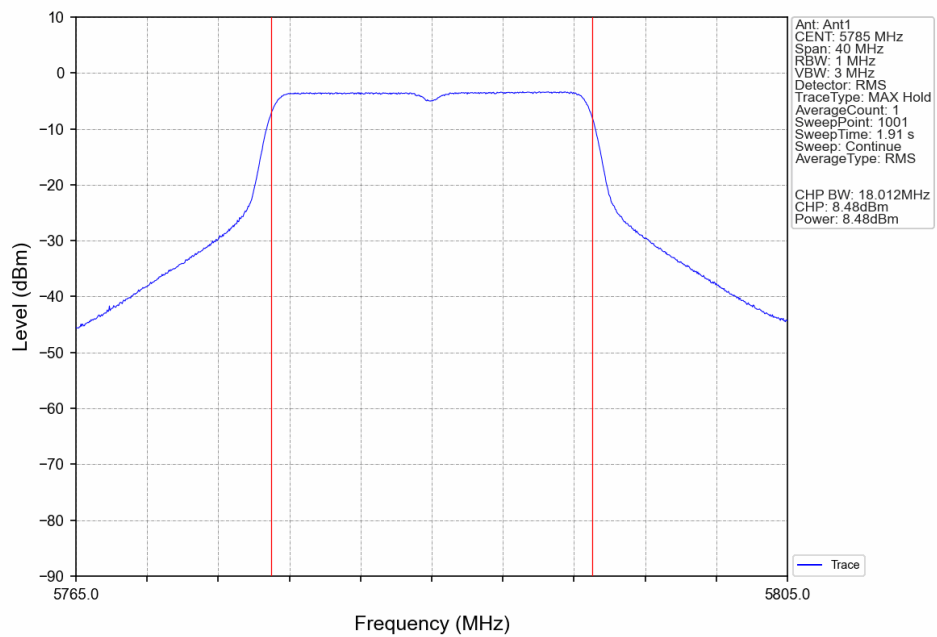
802.11n(HT40) HCH_5795MHz_Ant1_NTNV



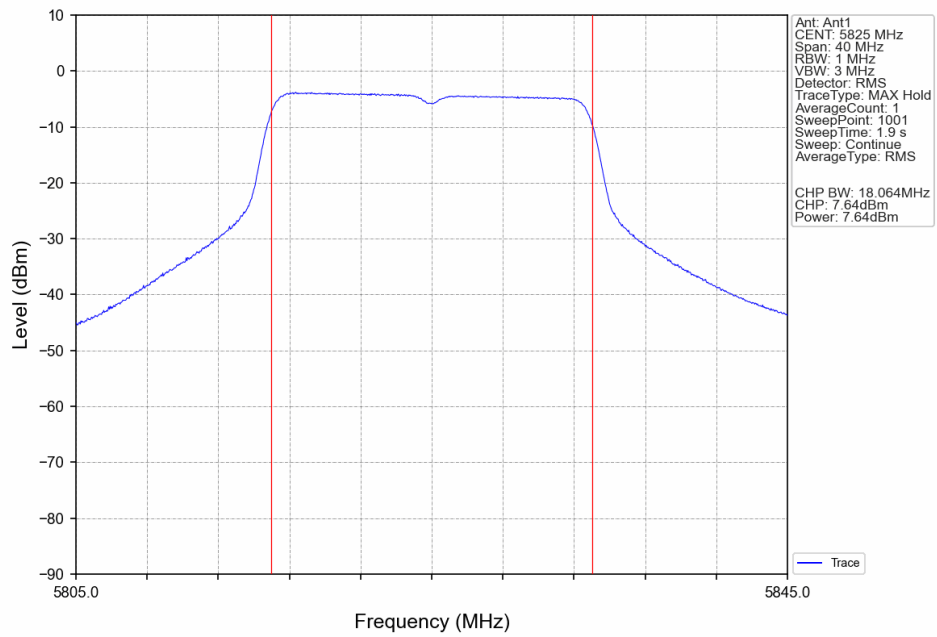
802.11ac(VHT20)_LCH_5745MHz_Ant1_NTNV



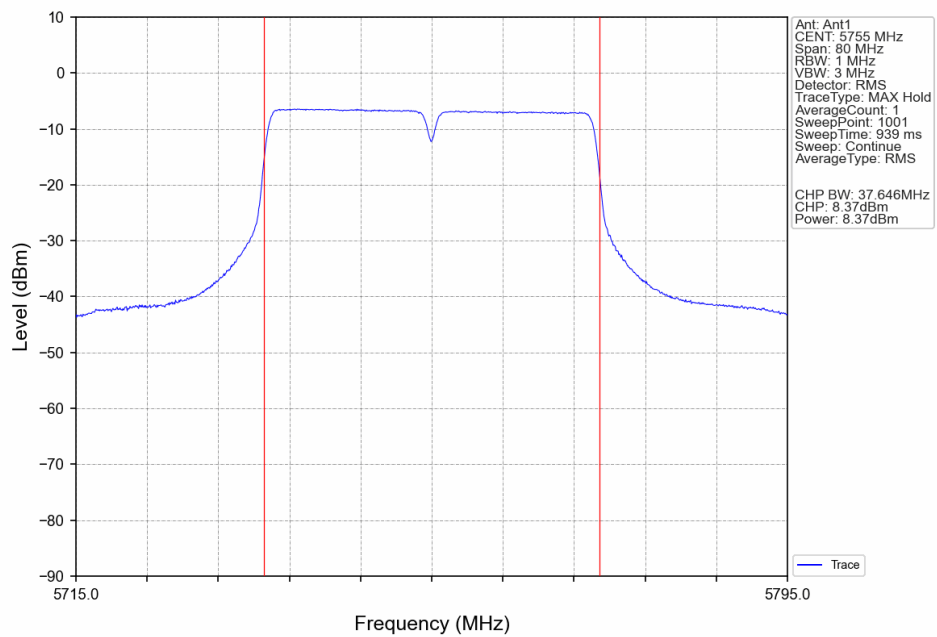
802.11ac(VHT20)_MCH_5785MHz_Ant1_NTNV



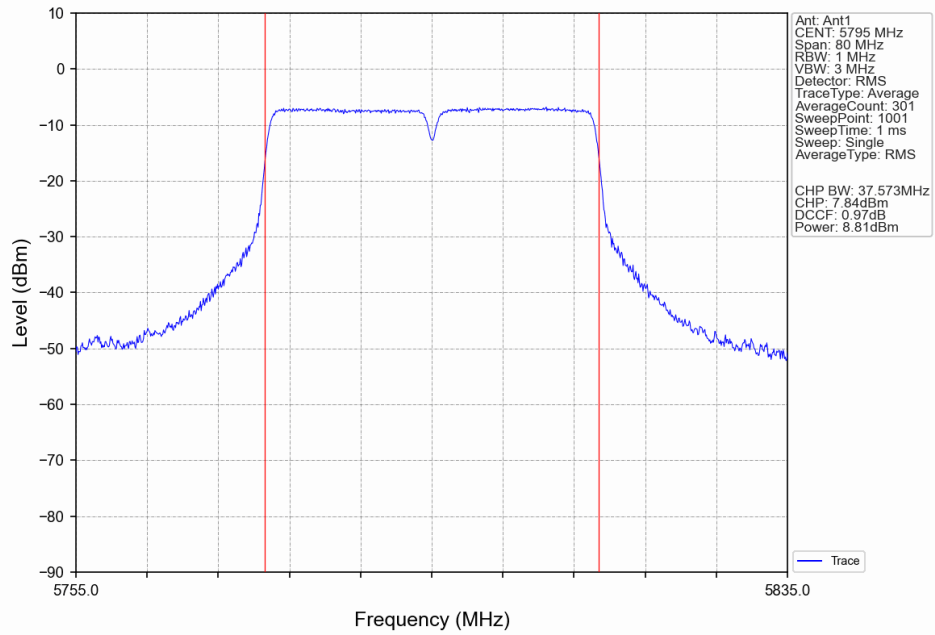
802.11ac(VHT20) HCH_5825MHz_Ant1_NTNV



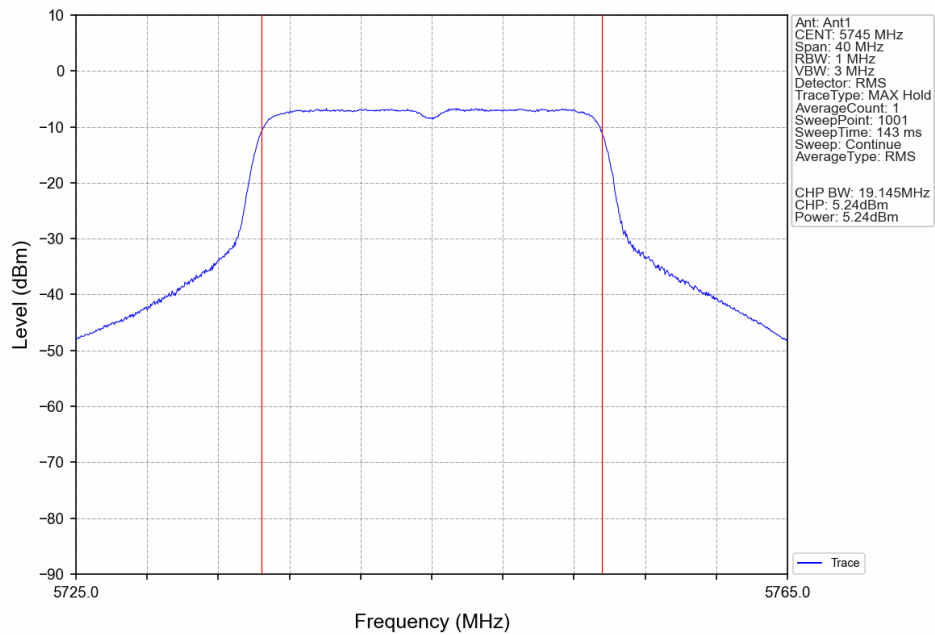
802.11ac(VHT40) LCH_5755MHz_Ant1_NTNV



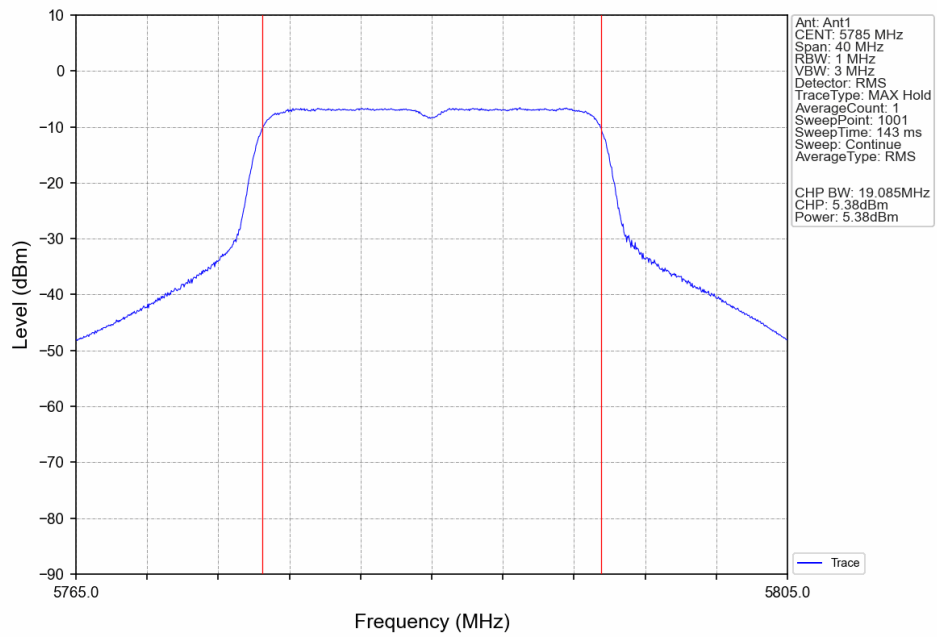
802.11ac(VHT40) HCH_5795MHz_Ant1_NTNV



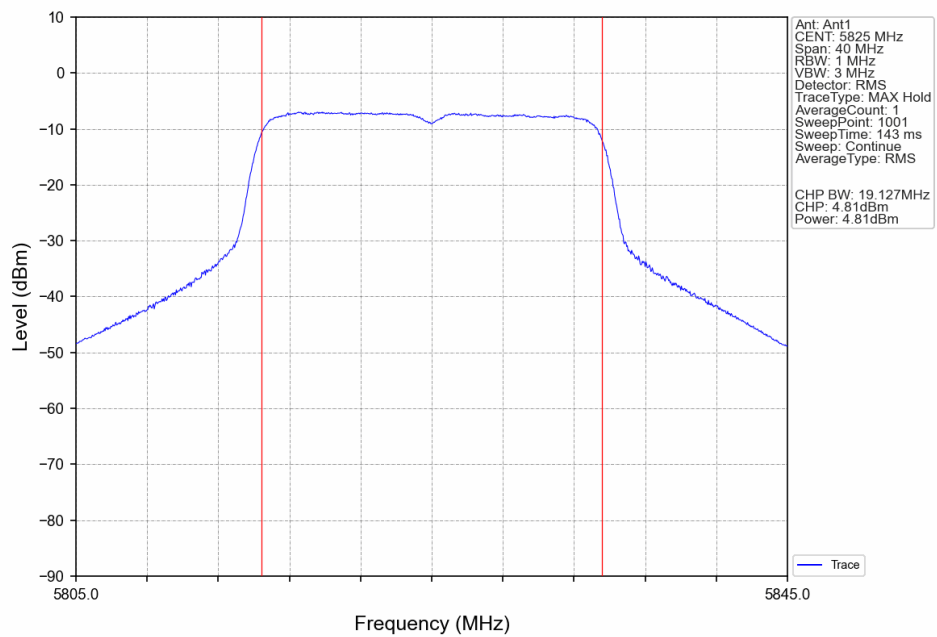
802.11ax(HEW20) LCH_5745MHz_SU / Ant1_NTNV



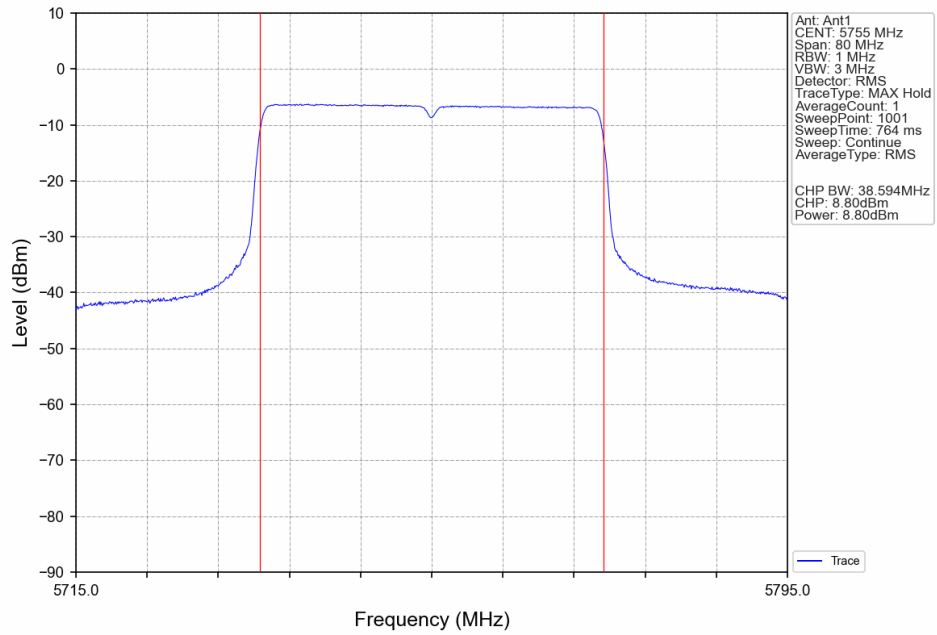
802.11ax(HEW20) MCH 5785MHz SU / Ant1_NTNV



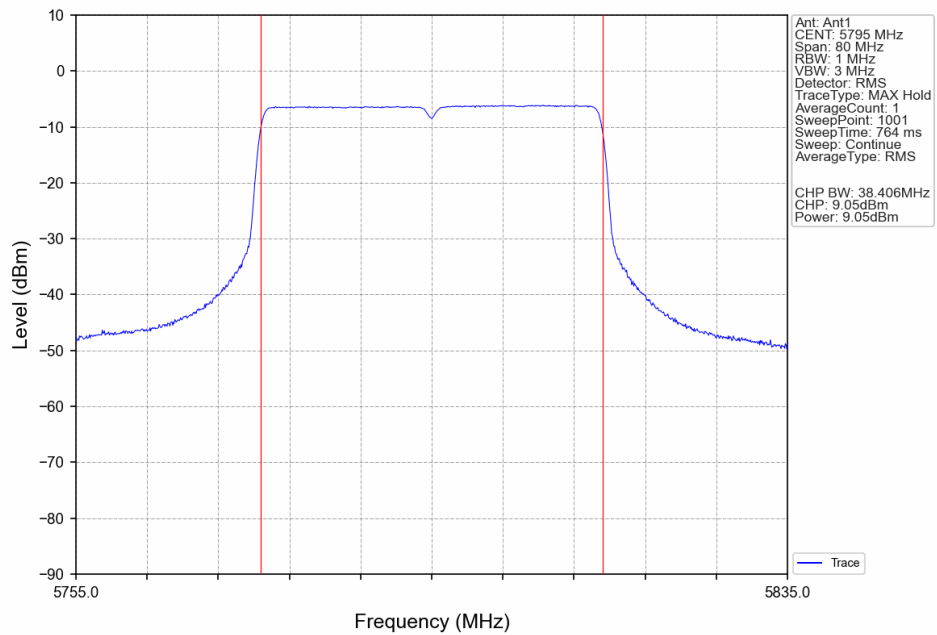
802.11ax(HEW20) HCH 5825MHz SU / Ant1_NTNV



802.11ax(HEW40)_LCH_5755MHz_SU_/_Ant1_NTNV



802.11ax(HEW40)_HCH_5795MHz_SU_/_Ant1_NTNV



4. Maximum Power Spectral Density

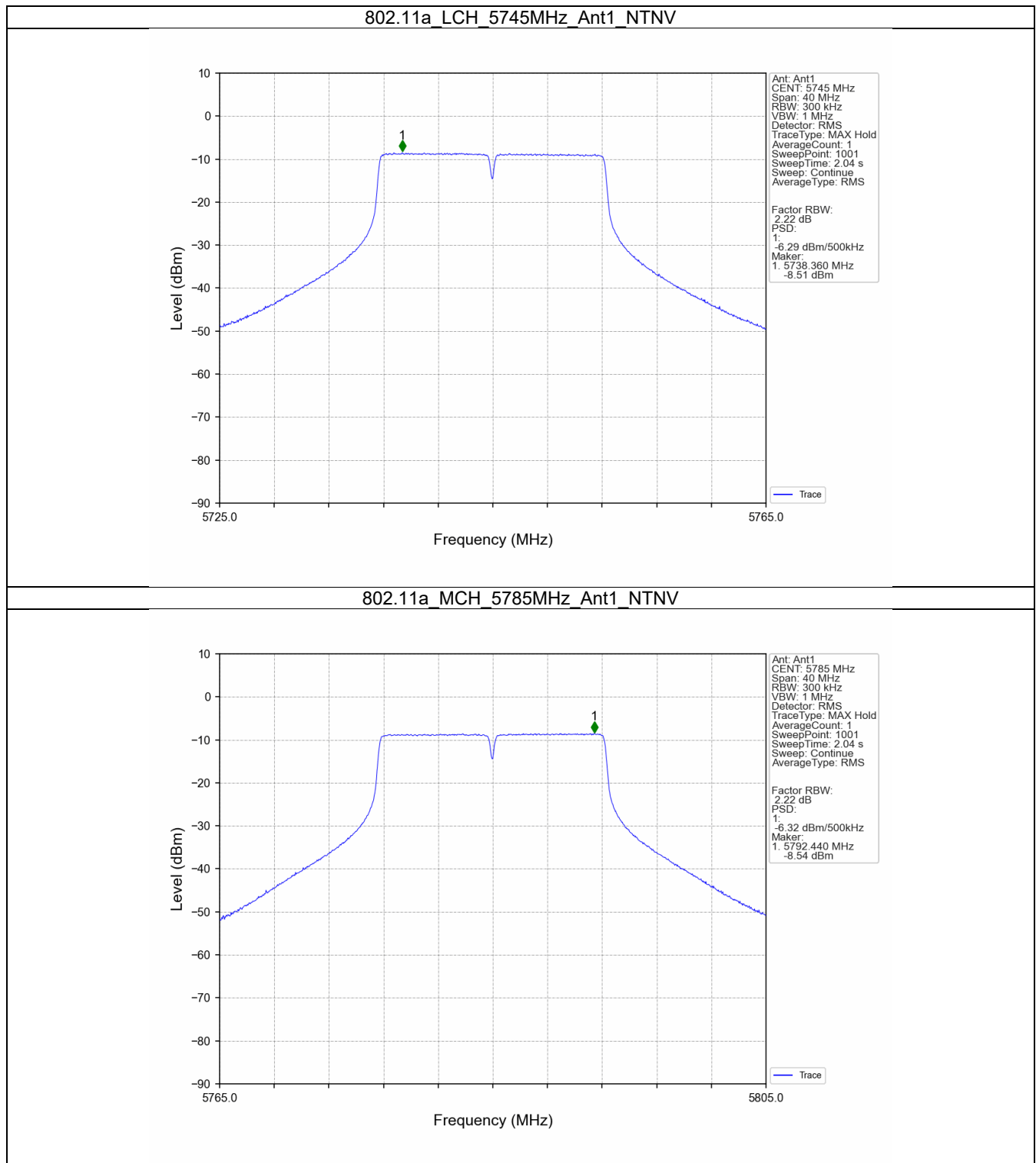
4.1 Test Result

4.1.1 PSD-Band3

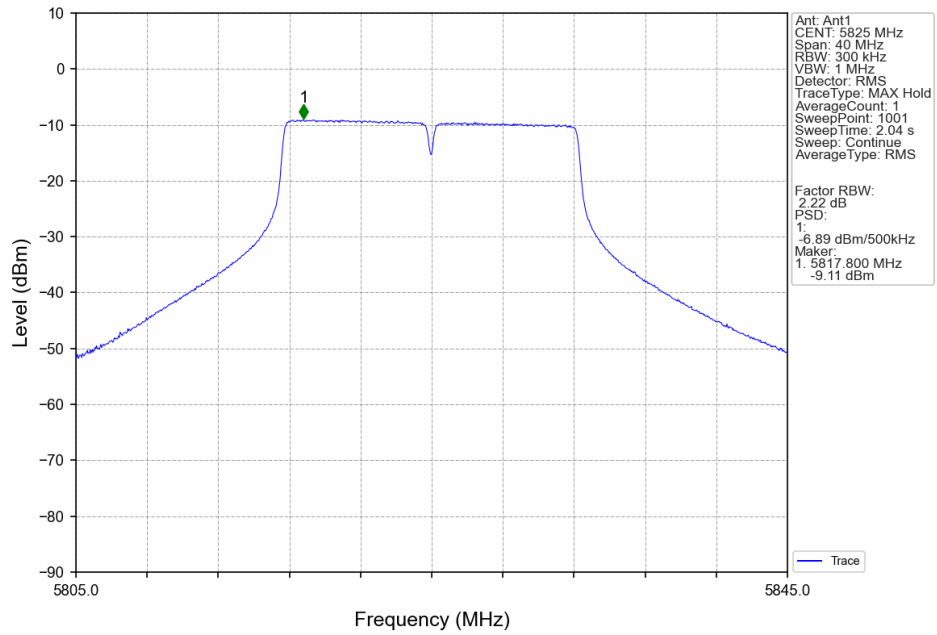
Mode	TX Type	Frequency (MHz)	RU	Maximum PSD (dBm/500kHz)				Verdict
				ANT1	Duty Cycle factor	Final Result	Limit	
802.11a	SISO	5745	/	-6.29	0.32	-5.97	<=30	Pass
		5785	/	-6.32	0.47	-5.85	<=30	Pass
		5825	/	-6.89	0.44	-6.45	<=30	Pass
802.11n (HT20)	SISO	5745	/	-6.38	0.45	-5.93	<=30	Pass
		5785	/	-6.45	0.45	-6.00	<=30	Pass
		5825	/	-6.93	0.96	-5.97	<=30	Pass
802.11n (HT40)	SISO	5755	/	-9.26	0.9	-8.36	<=30	Pass
		5795	/	-9.00	0.87	-8.13	<=30	Pass
802.11ac (VHT20)	SISO	5745	/	-6.23	0.48	-5.75	<=30	Pass
		5785	/	-6.30	0.49	-5.81	<=30	Pass
		5825	/	-6.87	0.45	-6.42	<=30	Pass
802.11ac (VHT40)	SISO	5755	/	-9.27	0.75	-8.52	<=30	Pass
		5795	/	-8.92	0.97	-7.95	<=30	Pass
802.11ax (HEW20)	SISO	5745	SU	-8.73	3.91	-4.82	<=30	Pass
		5785	SU	-8.62	6.33	-2.29	<=30	Pass
		5825	SU	-9.13	4.22	-4.91	<=30	Pass
802.11ax (HEW40)	SISO	5755	SU	-9.22	2.09	-7.13	<=30	Pass
		5795	SU	-9.08	2.36	-6.72	<=30	Pass

4.2 Test Graph

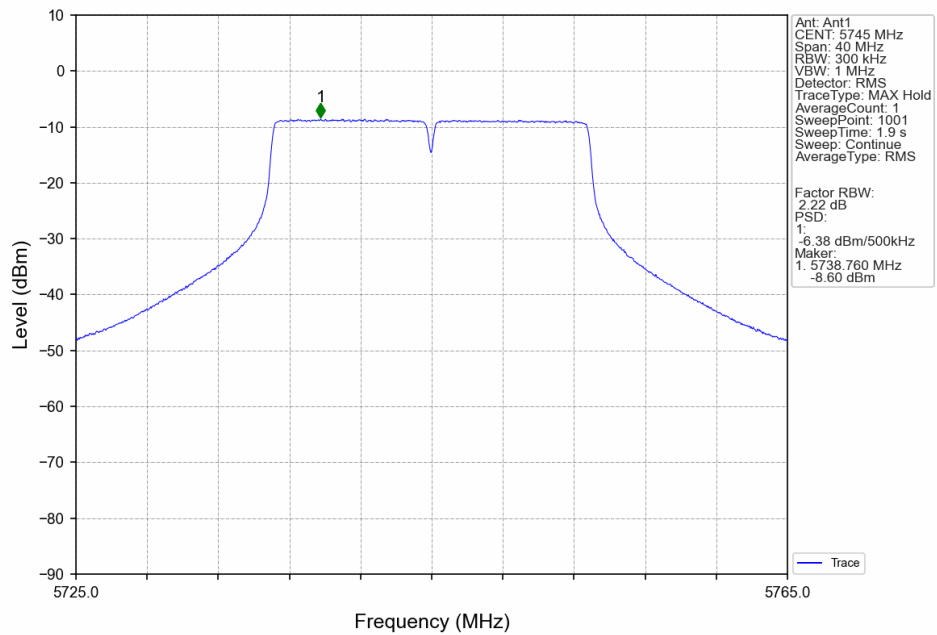
4.2.1 PSD-Band3



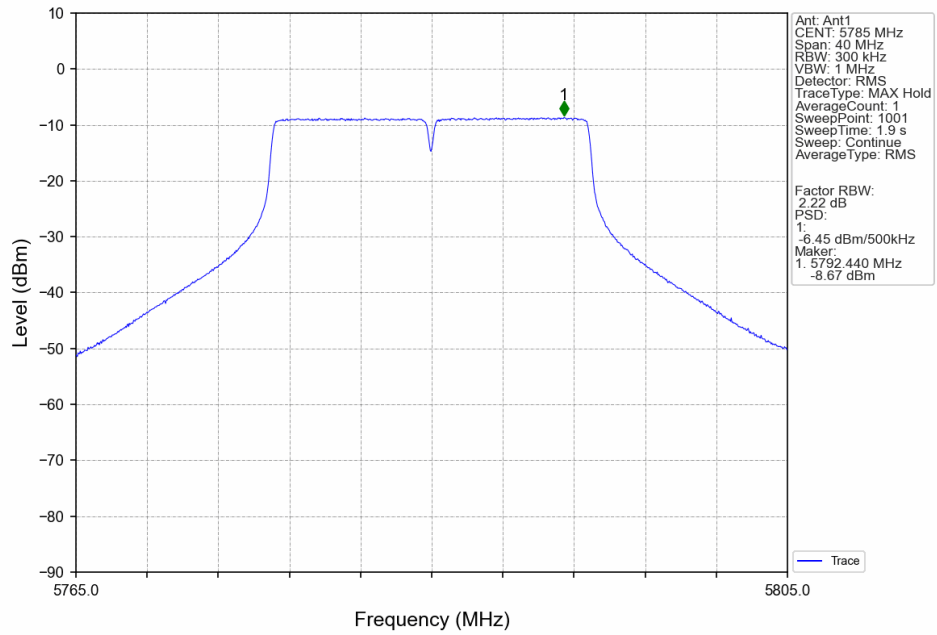
802.11a_HCH_5825MHz_Ant1_NTNV



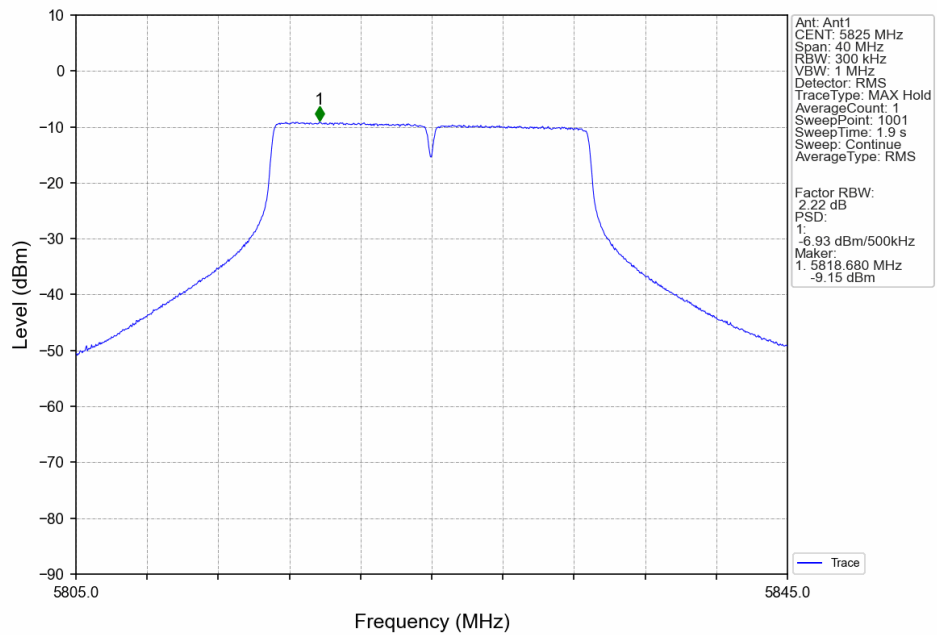
802.11n(HT20)_LCH_5745MHz_Ant1_NTNV



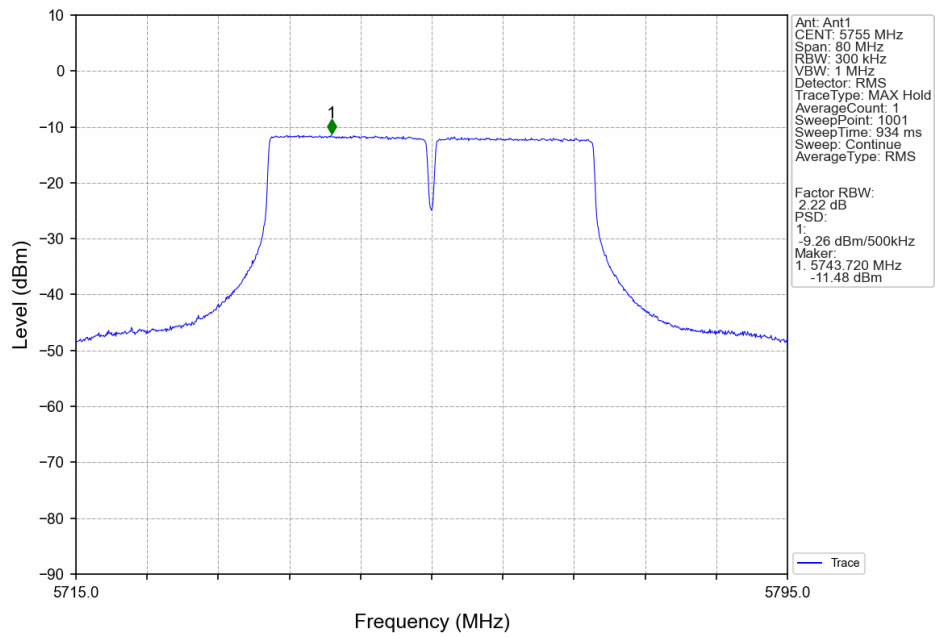
802.11n(HT20)_MCH_5785MHz_Ant1_NTNV



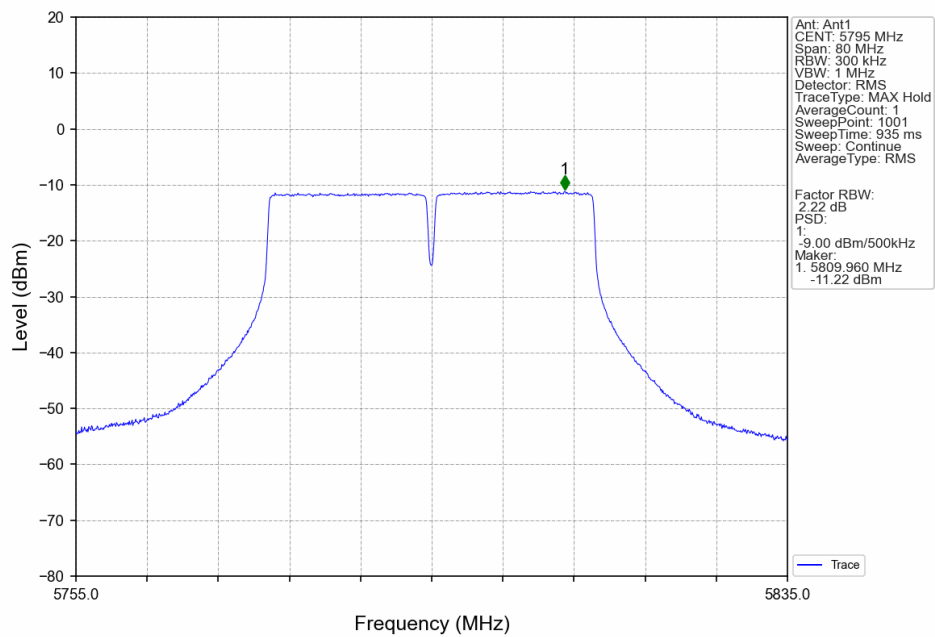
802.11n(HT20)_HCH_5825MHz_Ant1_NTNV



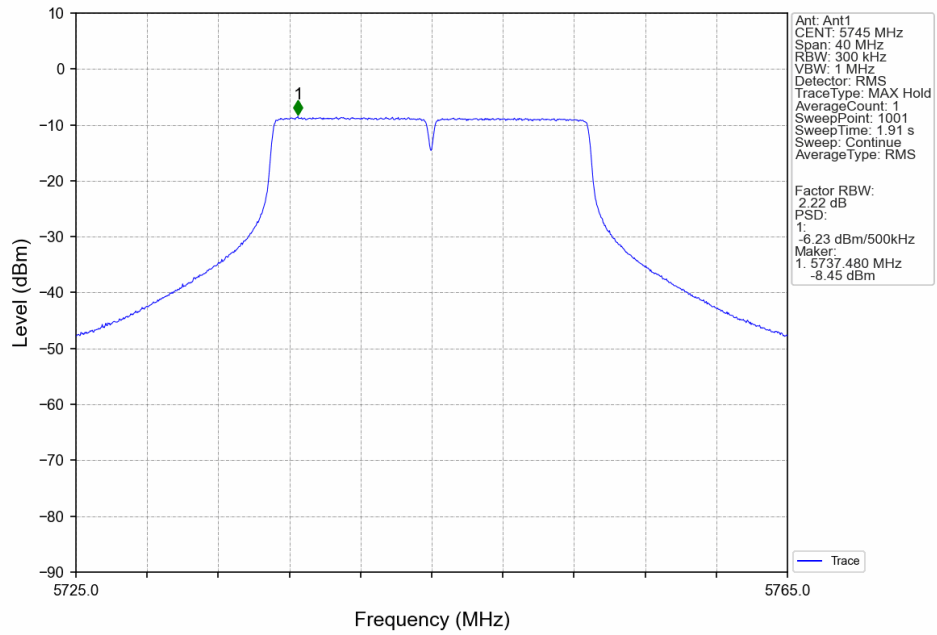
802.11n(HT40) LCH 5755MHz Ant1 NTN



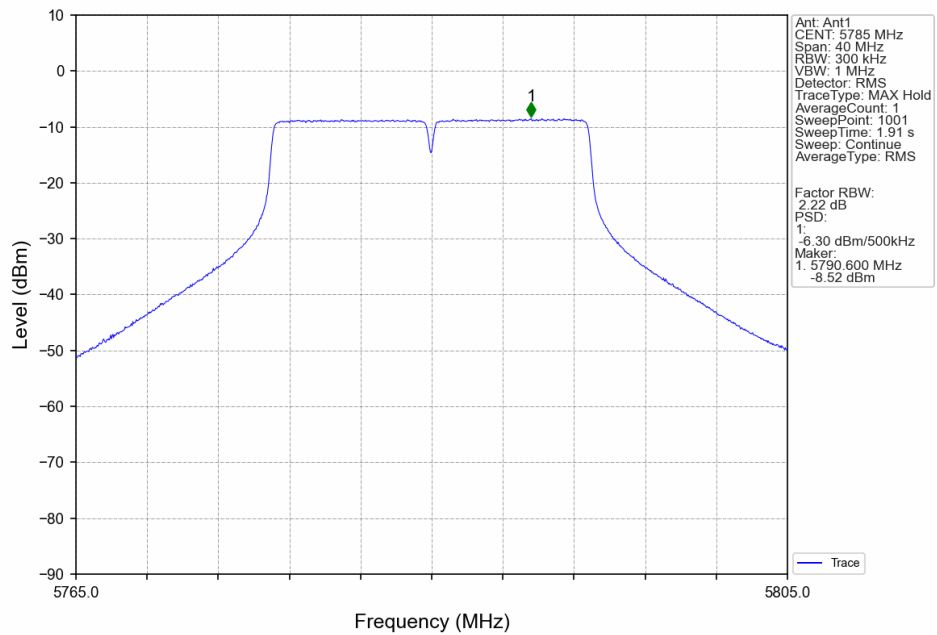
802.11n(HT40) HCH 5795MHz Ant1 NTN



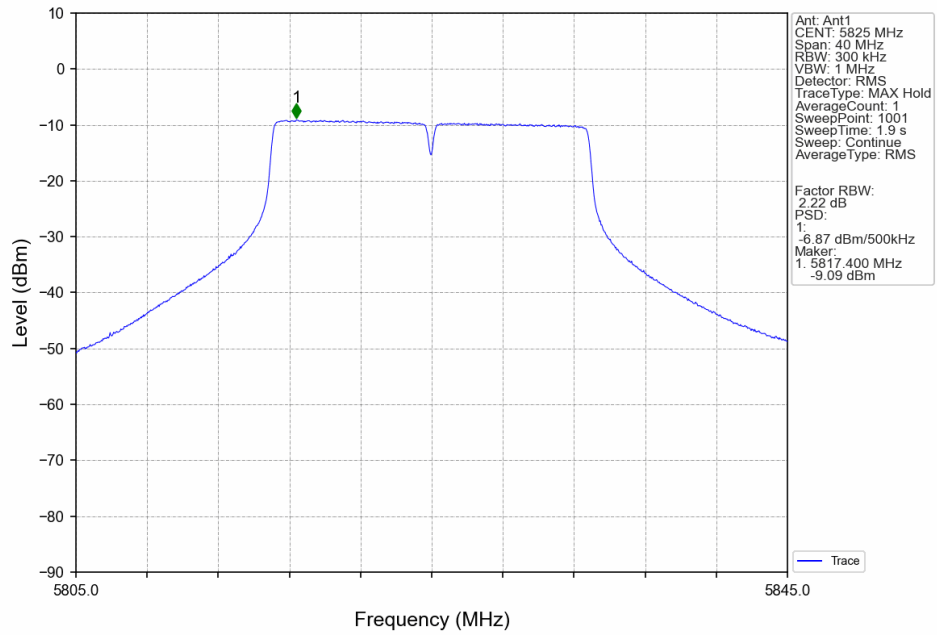
802.11ac(VHT20)_LCH_5745MHz_Ant1_NTNV



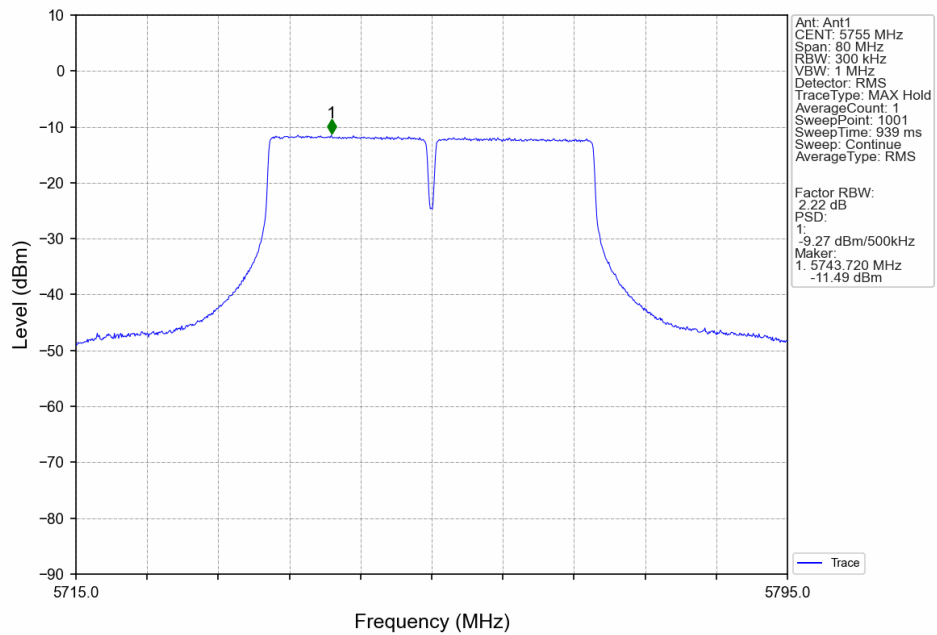
802.11ac(VHT20)_MCH_5785MHz_Ant1_NTNV



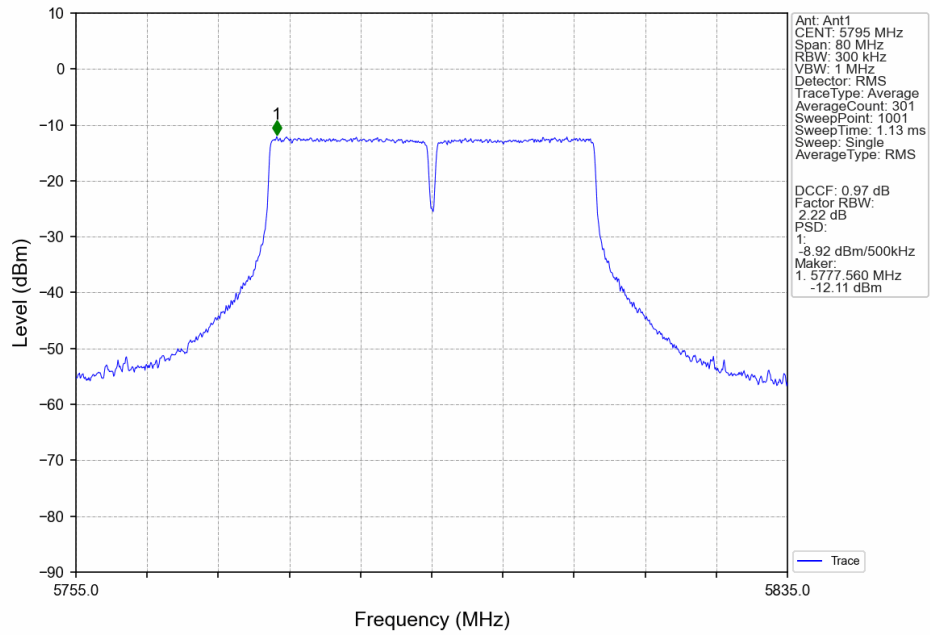
802.11ac(VHT20) HCH 5825MHz Ant1_NTNV



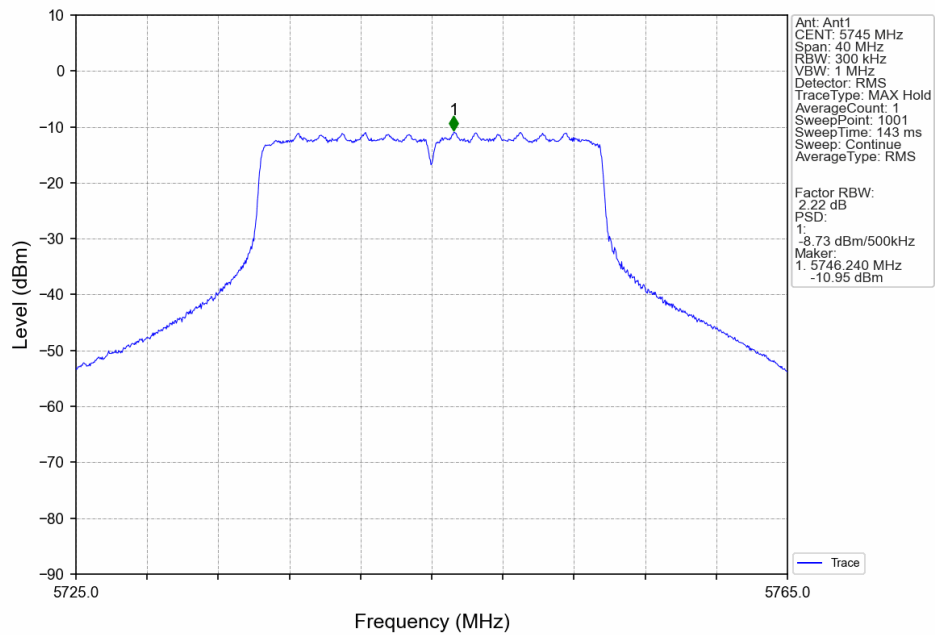
802.11ac(VHT40) LCH 5755MHz Ant1_NTNV



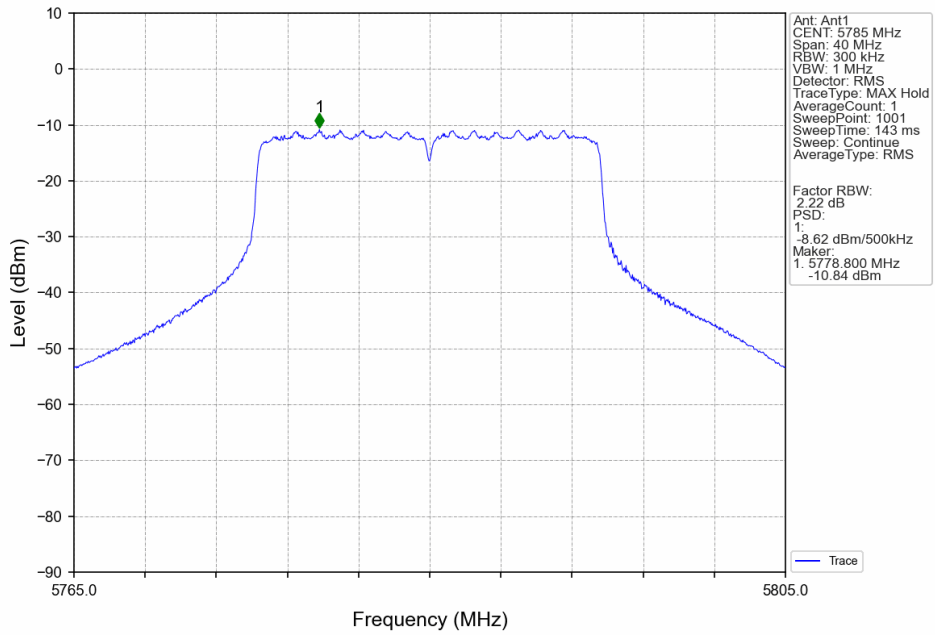
802.11ac(VHT40) HCH_5795MHz_Ant1_NTNV



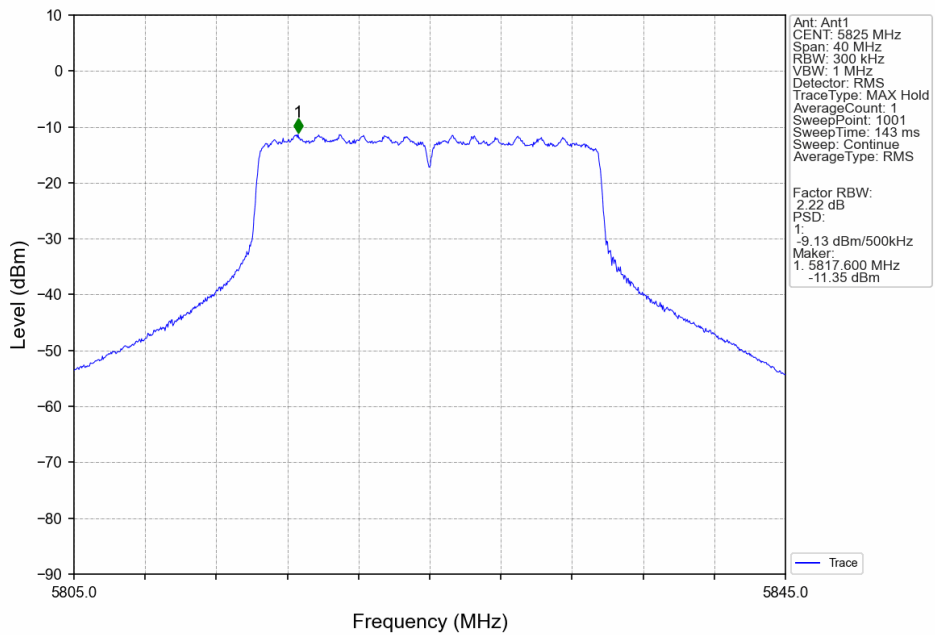
802.11ax(HEW20) LCH_5745MHz_SU / Ant1_NTNV



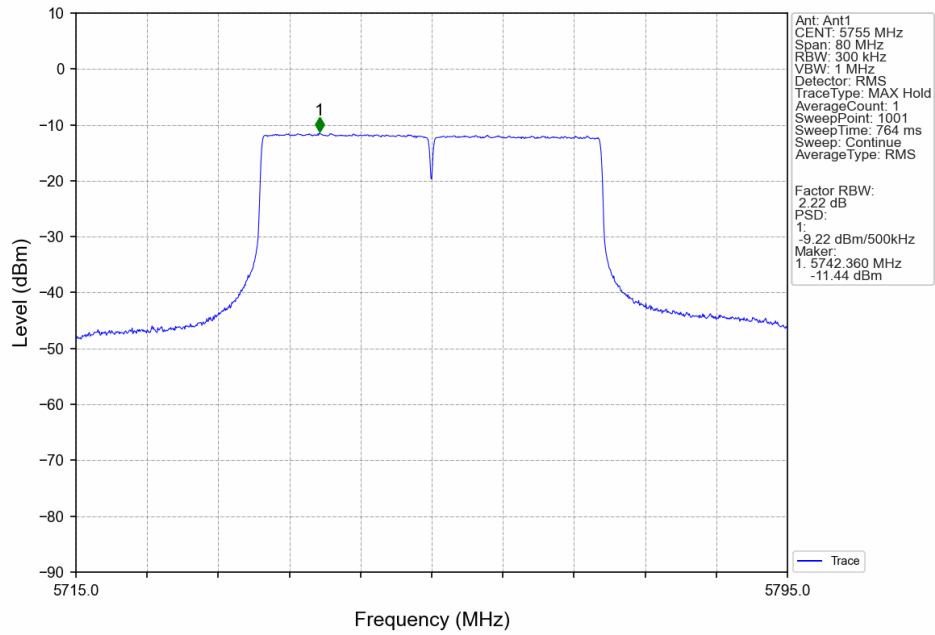
802.11ax(HEW20) MCH 5785MHz SU / Ant1 NTN



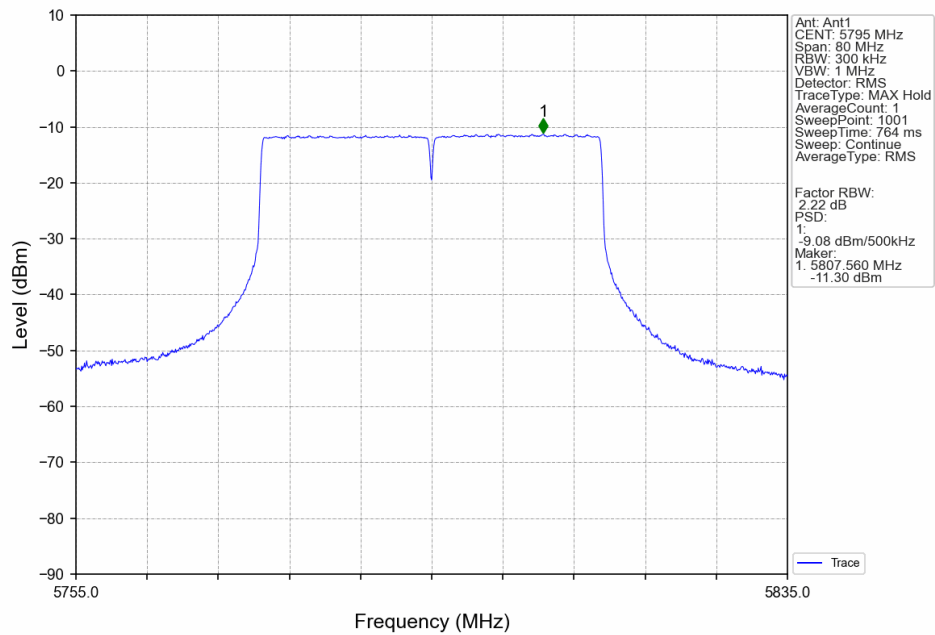
802.11ax(HEW20) HCH 5825MHz SU / Ant1 NTN



802.11ax(HEW40) LCH 5755MHz SU / Ant1_NTNV



802.11ax(HEW40) HCH 5795MHz SU / Ant1_NTNV



5. Band Edge

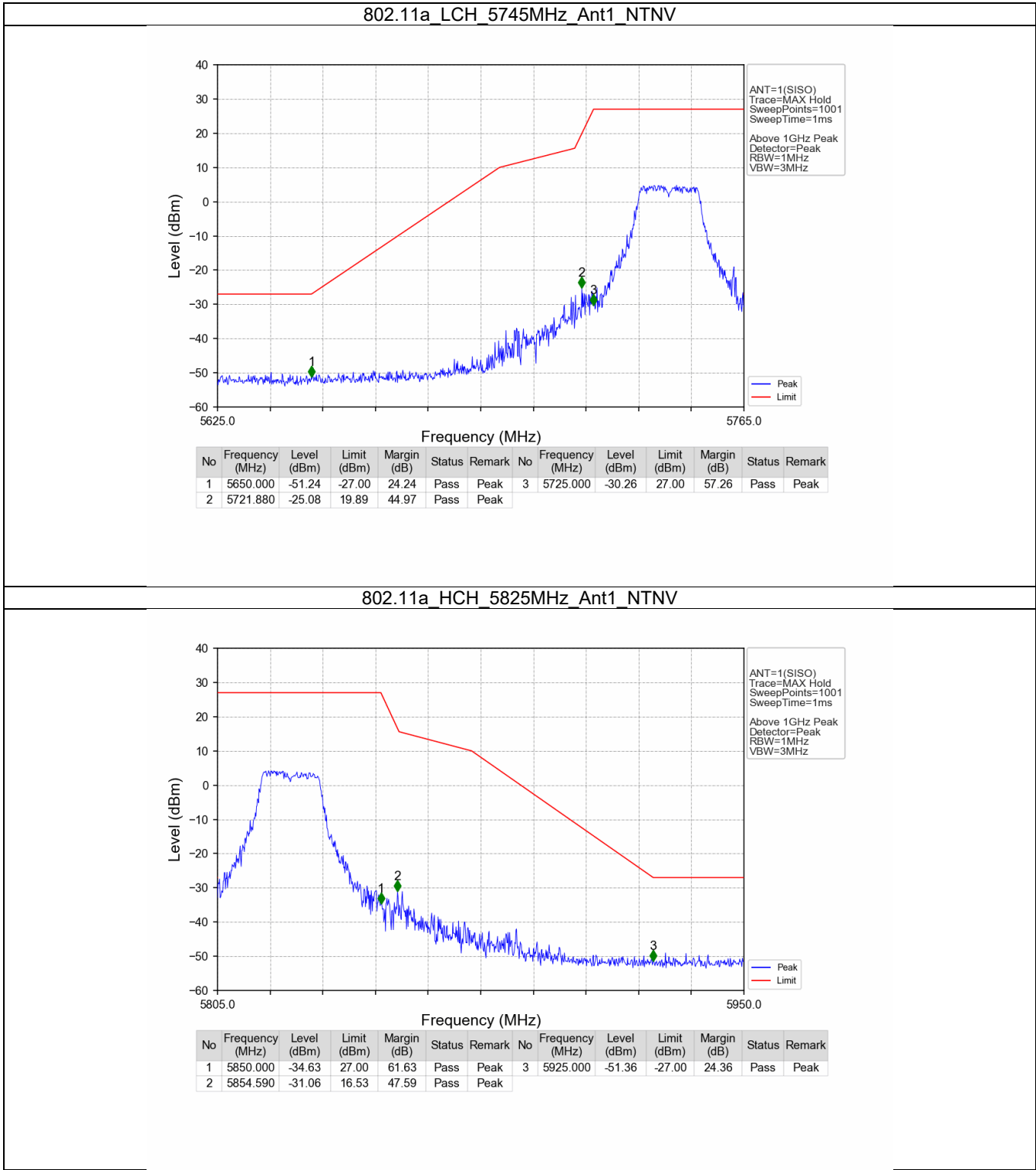
6.1 Test Result

6.1.1 BandEdge

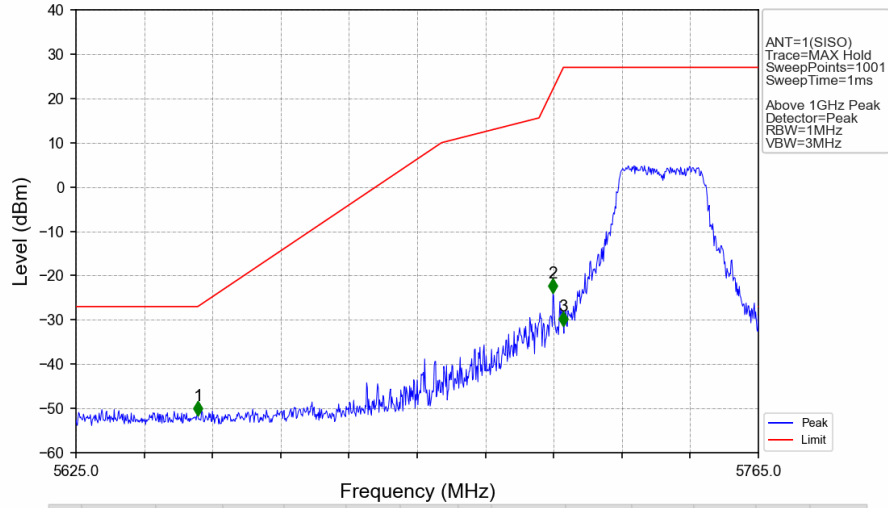
Mode	TX Type	Frequency (MHz)	RU	RU Pos	ANT	Level of Unwanted Emissions (dBm)		Verdict
						Result	Limit	
802.11a	SISO	5745	/	/	1	Refer To Test Graph		Pass
		5825	/	/	1	Refer To Test Graph		Pass
802.11n (HT20)	SISO	5745	/	/	1	Refer To Test Graph		Pass
		5825	/	/	1	Refer To Test Graph		Pass
802.11n (HT40)	SISO	5755	/	/	1	Refer To Test Graph		Pass
		5795	/	/	1	Refer To Test Graph		Pass
802.11ac (VHT20)	SISO	5745	/	/	1	Refer To Test Graph		Pass
		5825	/	/	1	Refer To Test Graph		Pass
802.11ac (VHT40)	SISO	5755	/	/	1	Refer To Test Graph		Pass
		5795	/	/	1	Refer To Test Graph		Pass
802.11ax (HEW20)	SISO	5745	SU	/	1	Refer To Test Graph		Pass
		5825	SU	/	1	Refer To Test Graph		Pass
802.11ax (HEW40)	SISO	5755	SU	/	1	Refer To Test Graph		Pass
		5795	SU	/	1	Refer To Test Graph		Pass

5.2 Test Graph

5.2.1 BandEdge

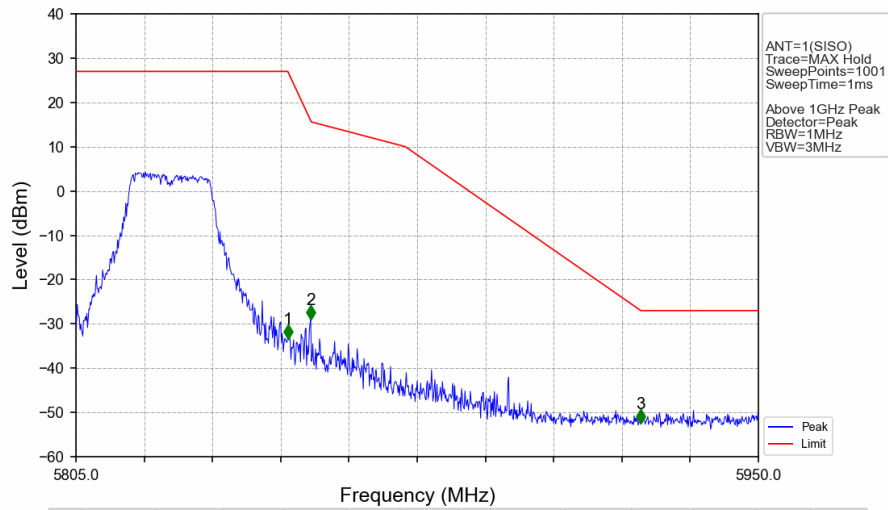


802.11n(HT20) LCH 5745MHz Ant1 NTN



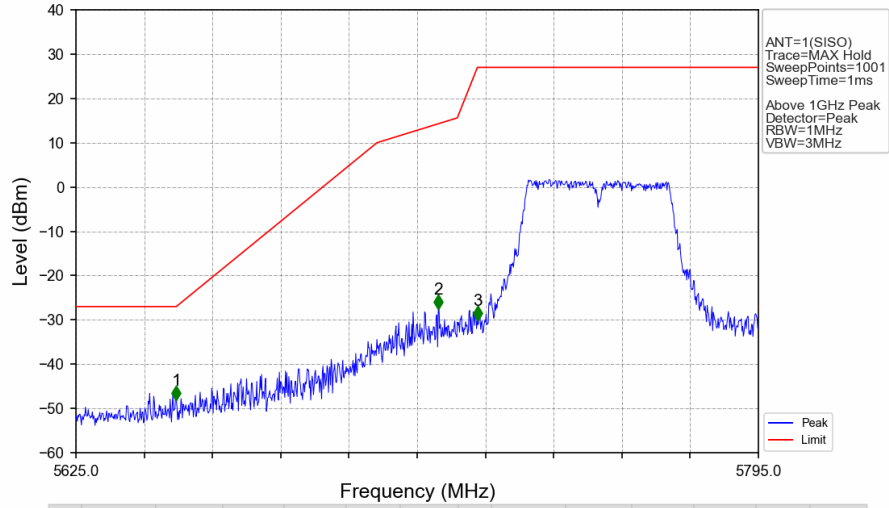
No	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Status	Remark	No	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Status	Remark
1	5650.000	-51.64	-27.00	24.64	Pass	Peak	3	5725.000	-31.34	27.00	58.34	Pass	Peak
2	5722.860	-23.95	22.12	46.07	Pass	Peak							

802.11n(HT20) HCH 5825MHz Ant1 NTN

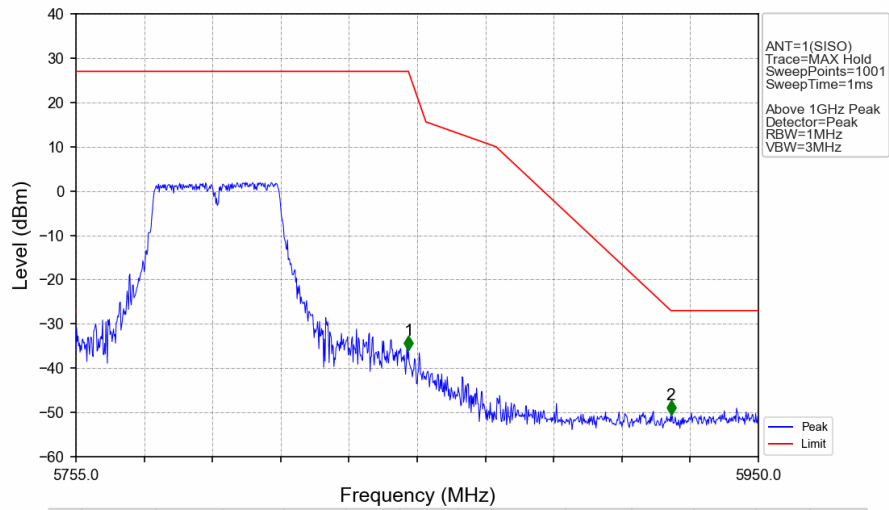


No	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Status	Remark	No	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Status	Remark
1	5850.000	-33.36	27.00	60.36	Pass	Peak	3	5925.000	-52.41	-27.00	25.41	Pass	Peak
2	5854.880	-28.95	15.87	44.82	Pass	Peak							

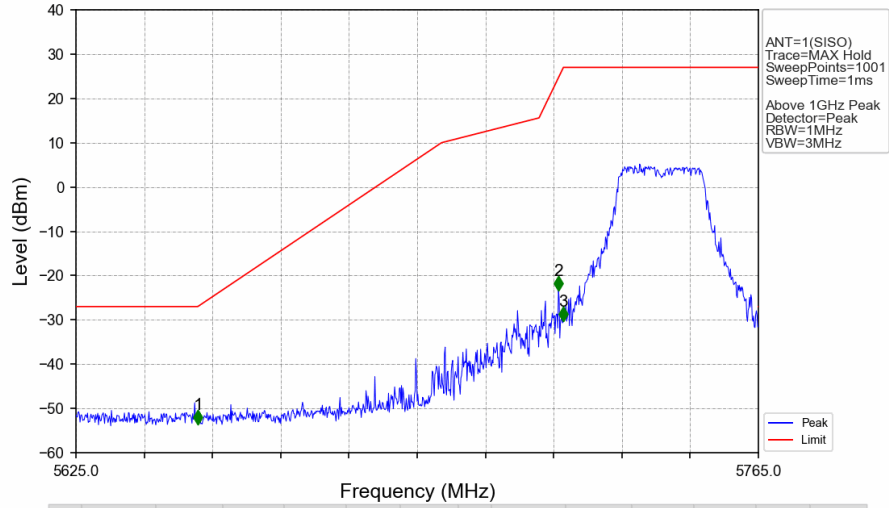
802.11n(HT40)_LCH_5755MHz_Ant1_NTNV



802.11n(HT40)_HCH_5795MHz_Ant1_NTNV

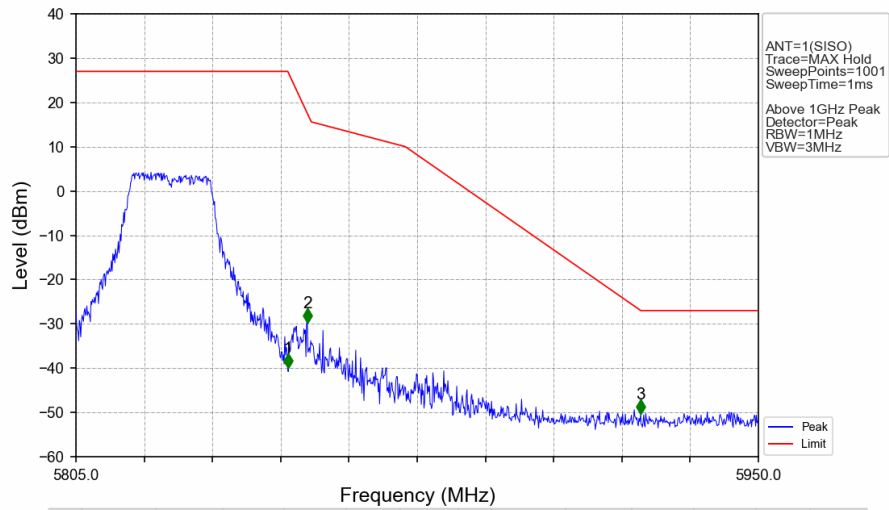


802.11ac(VHT20)_LCH_5745MHz_Ant1_NTNV



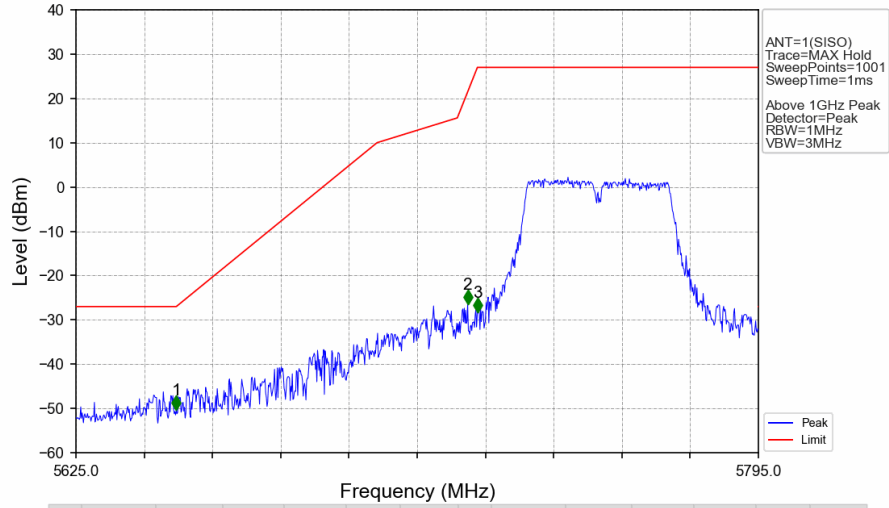
No	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Status	Remark	No	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Status	Remark
1	5650.000	-53.51	-27.00	26.51	Pass	Peak	3	5725.000	-30.22	27.00	57.22	Pass	Peak
2	5723.980	-23.29	24.67	47.96	Pass	Peak							

802.11ac(VHT20)_HCH_5825MHz_Ant1_NTNV



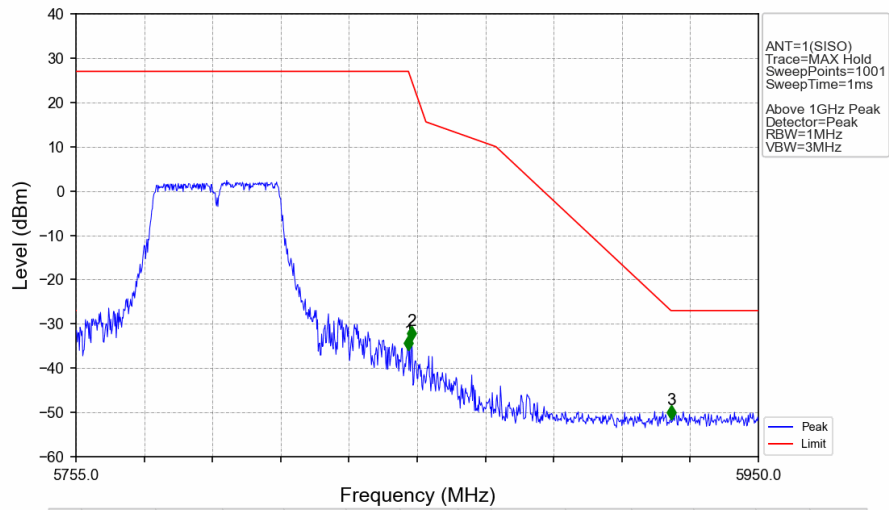
No	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Status	Remark	No	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Status	Remark
1	5850.000	-39.93	27.00	66.93	Pass	Peak	3	5925.000	-50.38	-27.00	23.38	Pass	Peak
2	5854.155	-29.66	17.53	47.19	Pass	Peak							

802.11ac(VHT40)_LCH_5755MHz_Ant1_NTNV



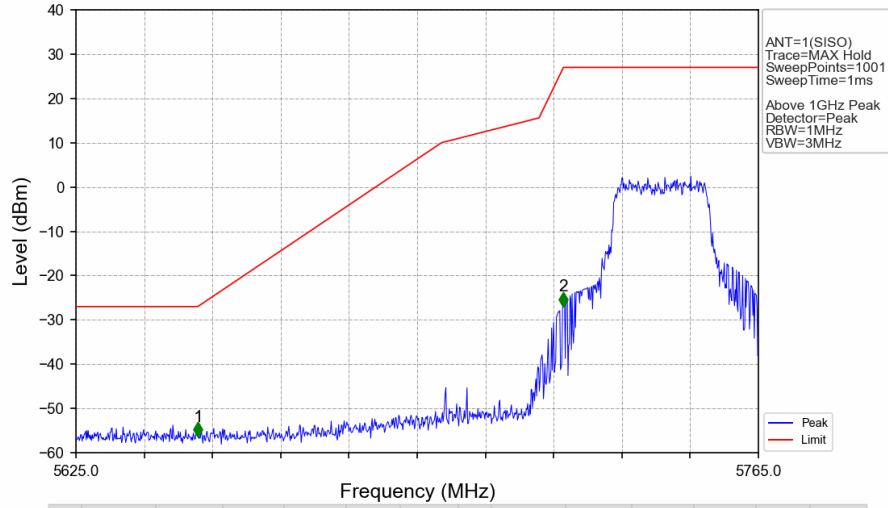
No	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Status	Remark	No	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Status	Remark
1	5650.000	-50.27	-27.00	23.27	Pass	Peak	3	5725.000	-28.29	27.00	55.29	Pass	Peak
2	5722.580	-26.36	21.48	47.84	Pass	Peak							

802.11ac(VHT40)_HCH_5795MHz_Ant1_NTNV

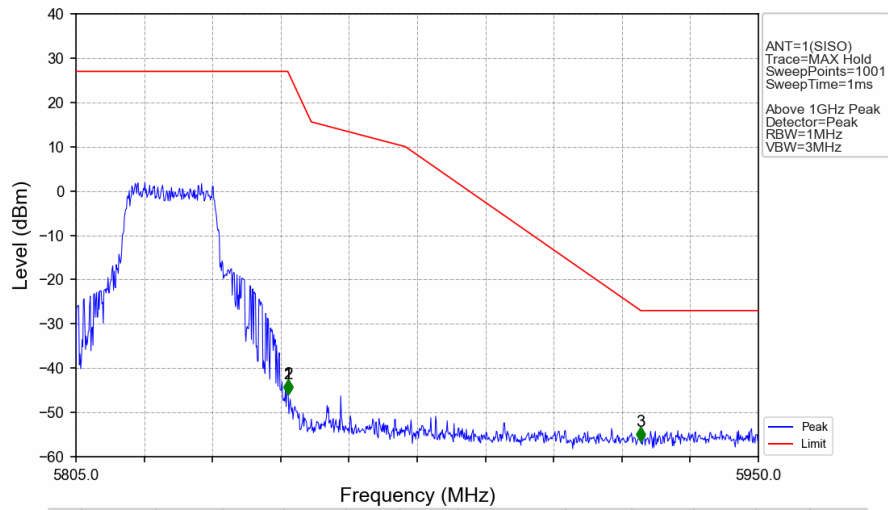


No	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Status	Remark	No	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Status	Remark
1	5850.000	-35.89	27.00	62.89	Pass	Peak	3	5925.000	-51.65	-27.00	24.65	Pass	Peak
2	5850.940	-33.77	24.86	58.63	Pass	Peak							

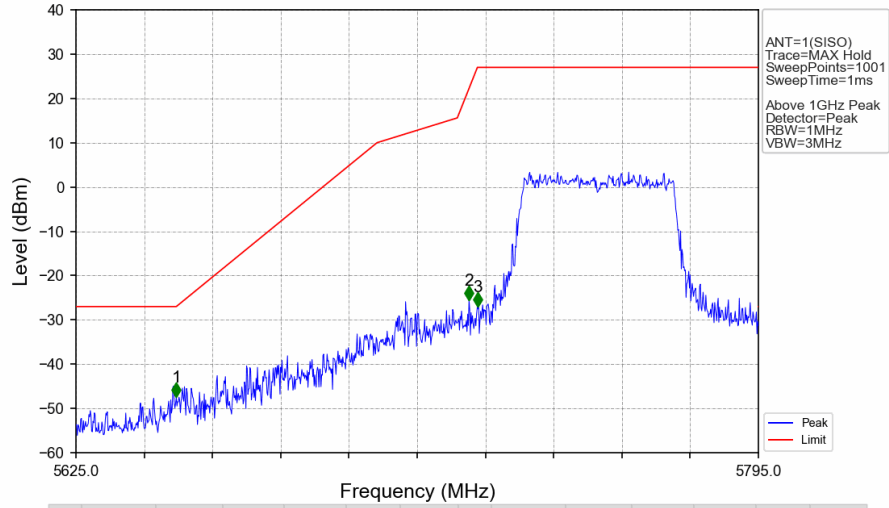
802.11ax(HEW20)_LCH_5745MHz_SU_/_Ant1_NTNV



802.11ax(HEW20)_HCH_5825MHz_SU_/_Ant1_NTNV



802.11ax(HEW40)_LCH_5755MHz_SU_/_Ant1_NTNV



802.11ax(HEW40)_HCH_5795MHz_SU_/_Ant1_NTNV

