FCC ID:2BKLS-HN962

RF Test Report

For

Project No.:	ZKT-240822L10327E-4
Client:	Xuzhou Huiniao Technology Consulting Services Co., Ltd
Manufacturer:	Xuzhou Huiniao Technology Consulting Services Co., Ltd
Product Description:	Smart display
Model :	HN-962
Test Engineer:	Jim Liu
Test Date:	2024-08-25

Test Summary

Item	Result
Duty Cycle	Pass
Bandwidth	Pass
Maximum Conducted Output Power	Pass
Maximum Power Spectral Density	Pass
Frequency Stability	Pass
Form731	Pass

1. Duty Cycle

1.1 Test Result

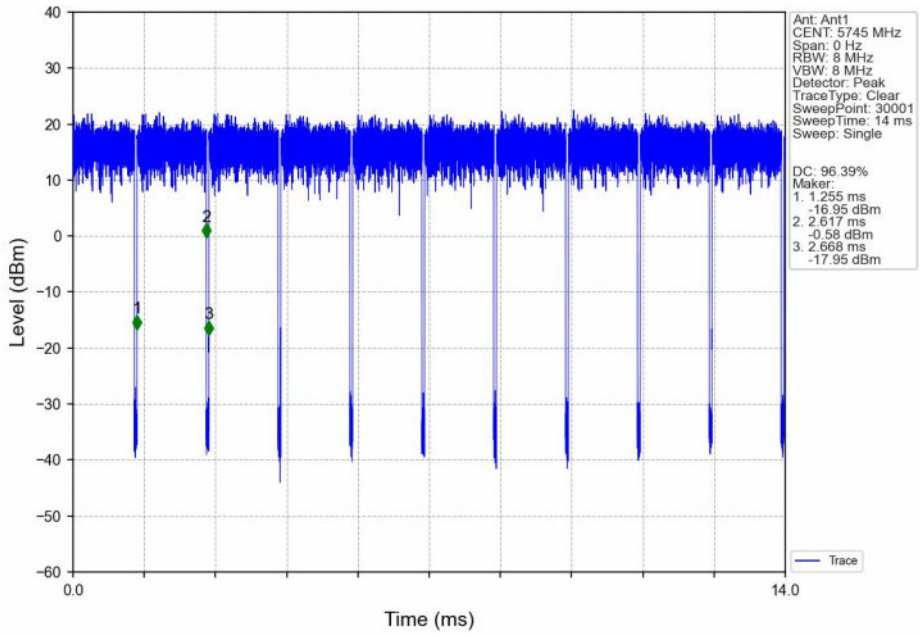
1.1.1 Ant1

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	1.362	1.413	96.39	0.16	0.03
		5785	1.360	1.413	96.25	0.17	0.03
		5825	1.361	1.413	96.32	0.16	0.06
802.11n (HT20)	SISO	5745	1.273	1.325	96.08	0.17	0.03
		5785	1.273	1.325	96.08	0.17	0.00
		5825	1.273	1.325	96.08	0.17	0.06
802.11n (HT40)	SISO	5755	0.632	0.685	92.26	0.35	0.03
		5795	0.632	0.685	92.26	0.35	0.07
802.11ac (VHT20)	SISO	5745	1.277	1.329	96.09	0.17	0.03
		5785	1.277	1.329	96.09	0.17	0.03
		5825	1.276	1.329	96.01	0.18	0.04
802.11ac (VHT40)	SISO	5755	0.633	0.685	92.41	0.34	0.00
		5795	0.632	0.685	92.26	0.35	0.06

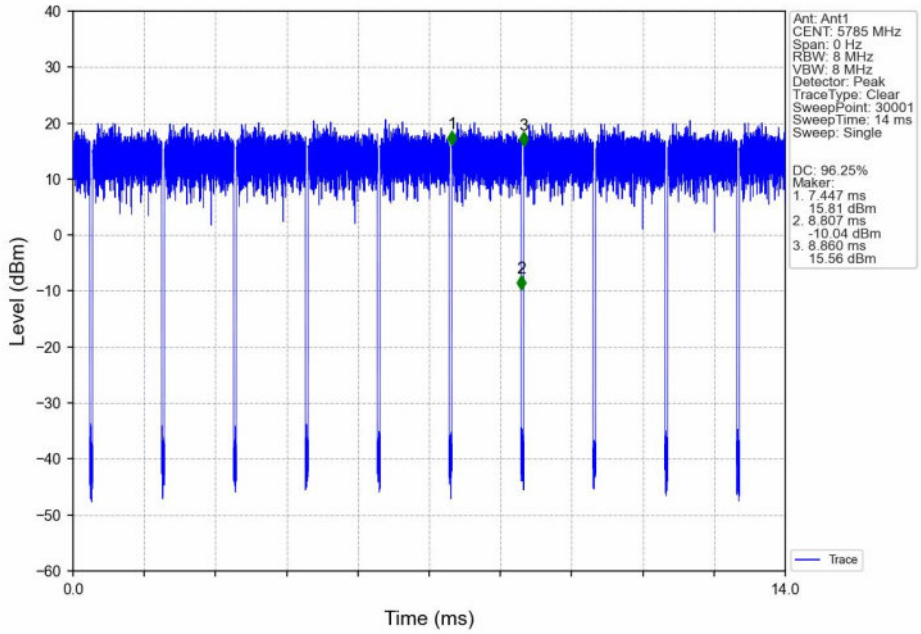
1.2 Test Graph

1.2.1 Ant1

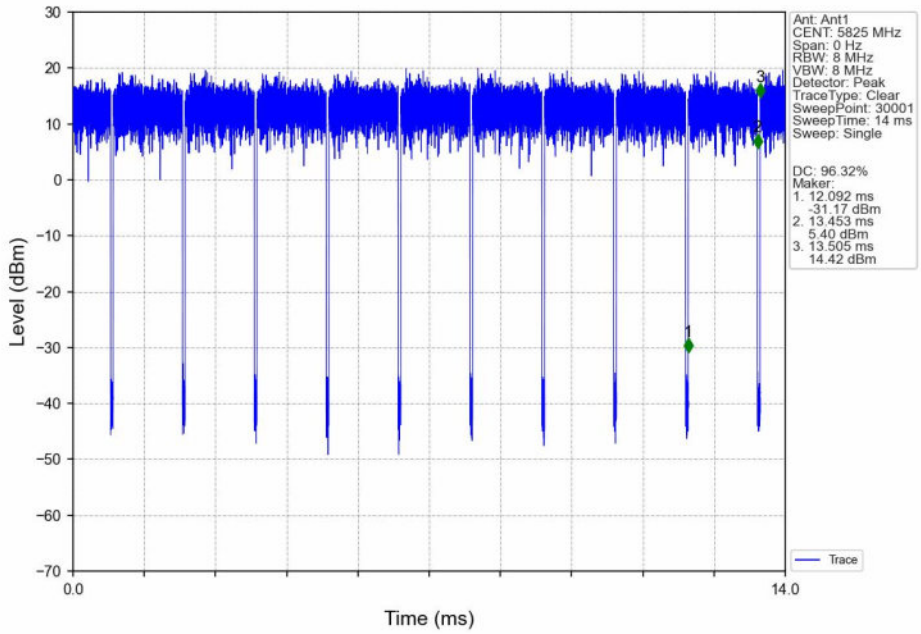
802.11a_LCH_5745MHz_Ant1_NTNV



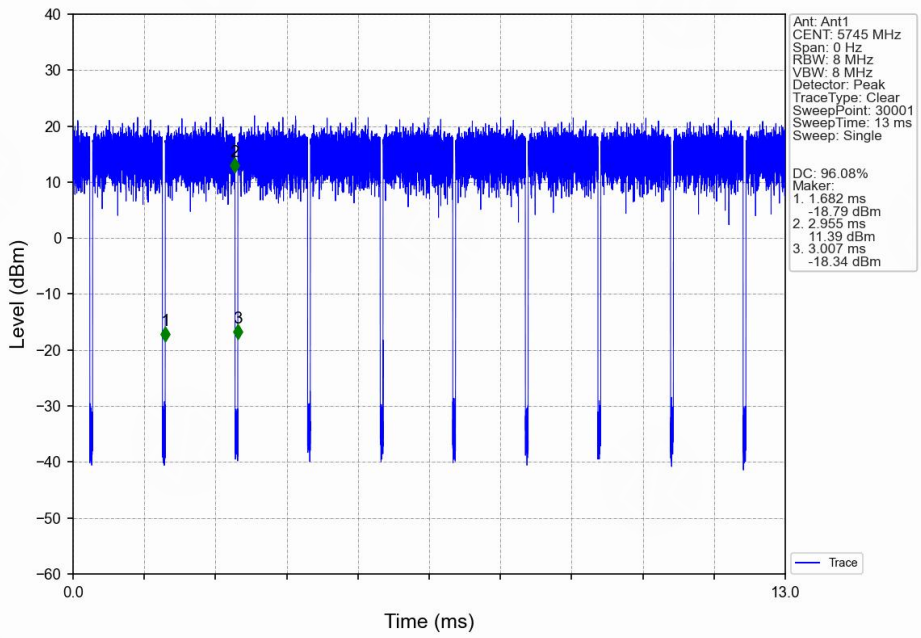
802.11a_MCH_5785MHz_Ant1_NTNV



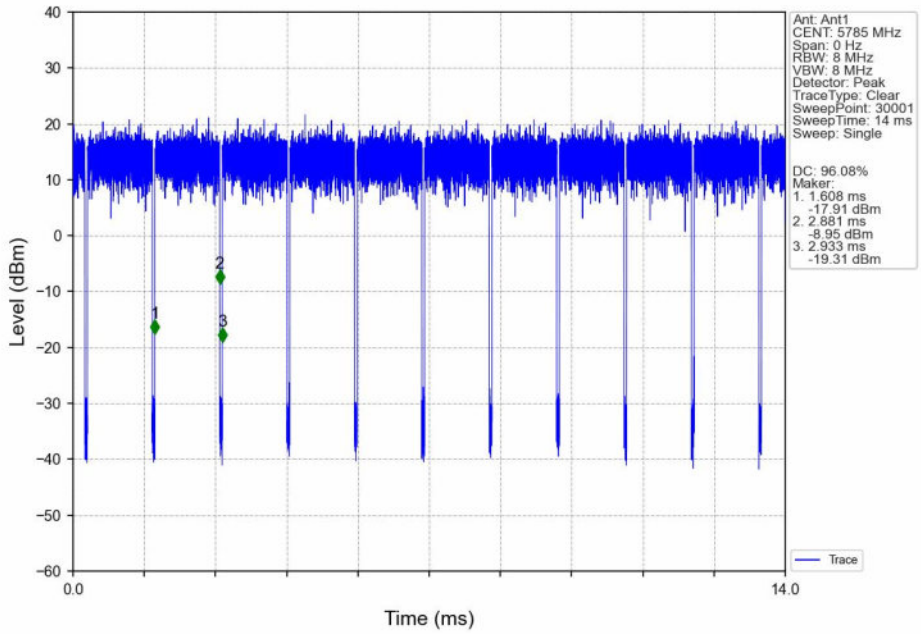
802.11a_HCH_5825MHz_Ant1_NTNV



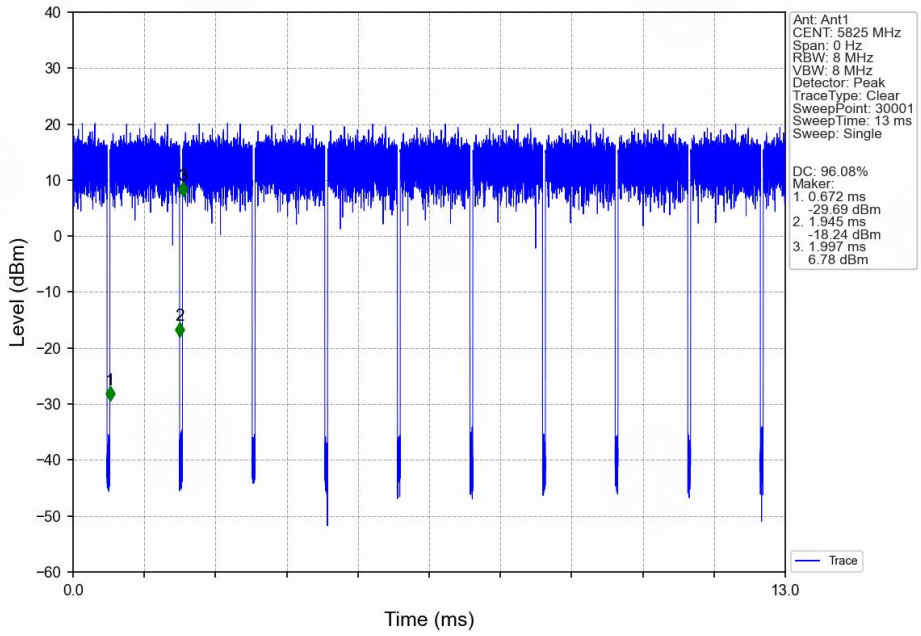
802.11n(HT20)_LCH_5745MHz_Ant1_NTNV



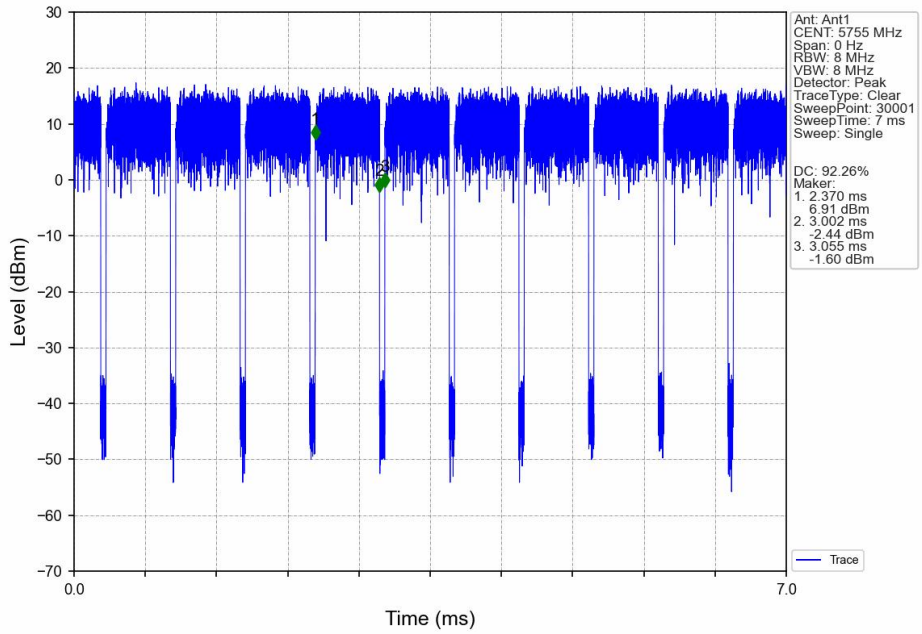
802.11n(HT20)_MCH_5785MHz_Ant1_NTNV



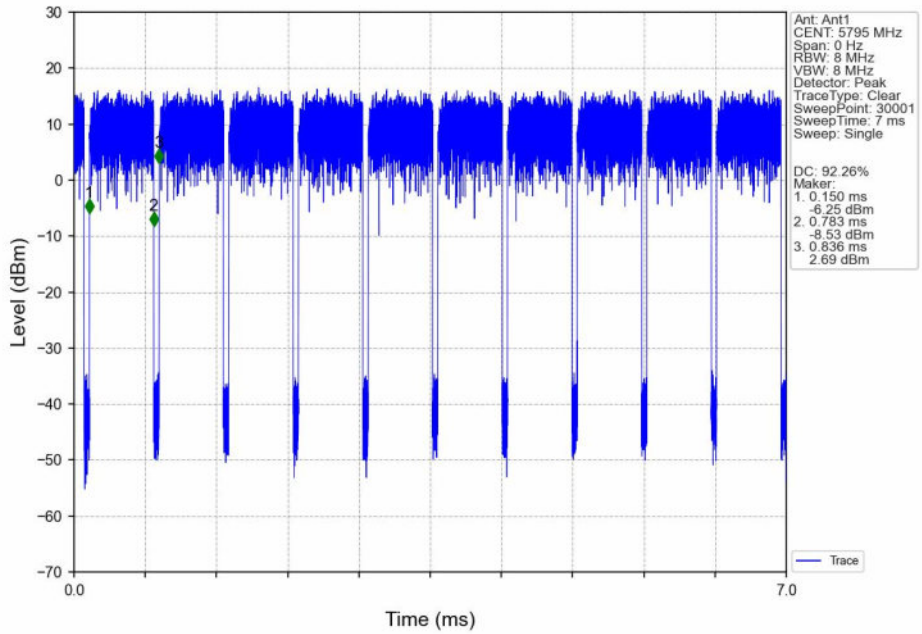
802.11n(HT20)_HCH_5825MHz_Ant1_NTNV



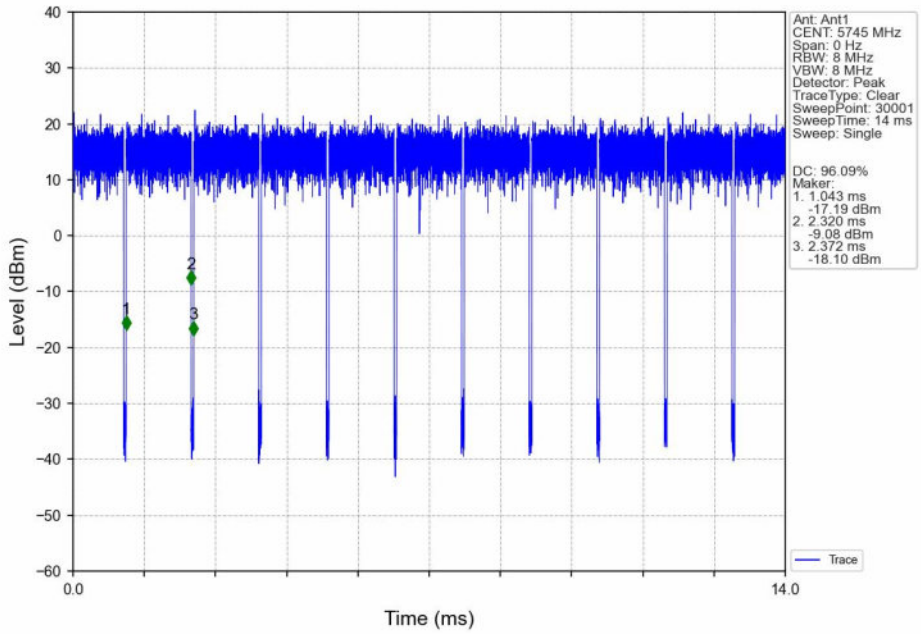
802.11n(HT40)_LCH_5755MHz_Ant1_NTNV



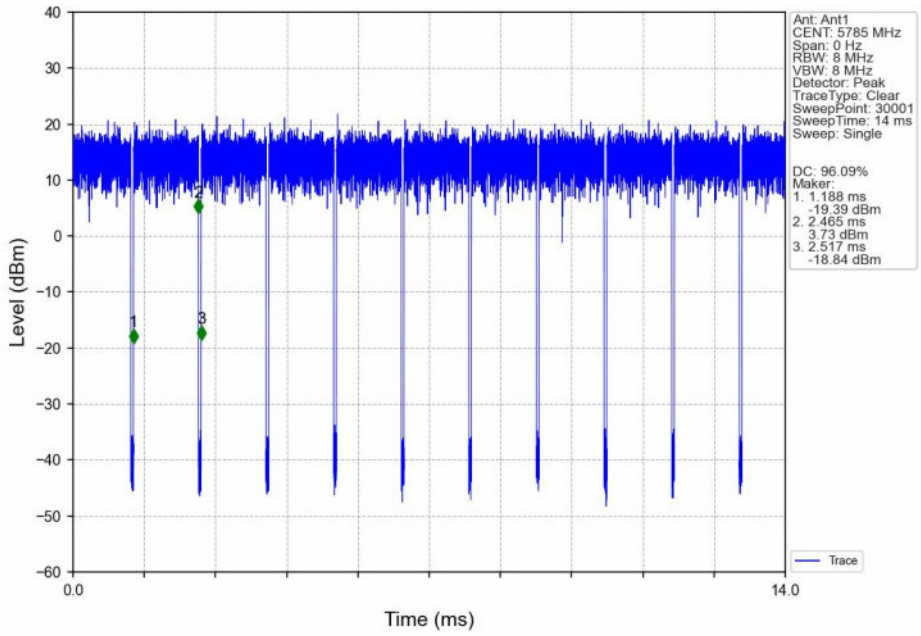
802.11n(HT40)_HCH_5795MHz_Ant1_NTNV



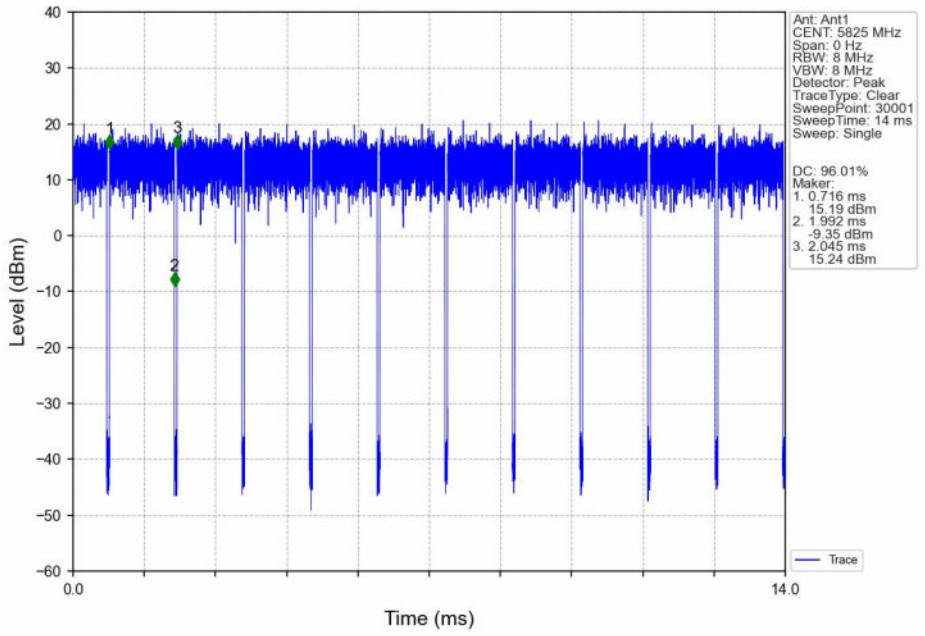
802.11ac(VHT20)_LCH_5745MHz_Ant1_NTNV



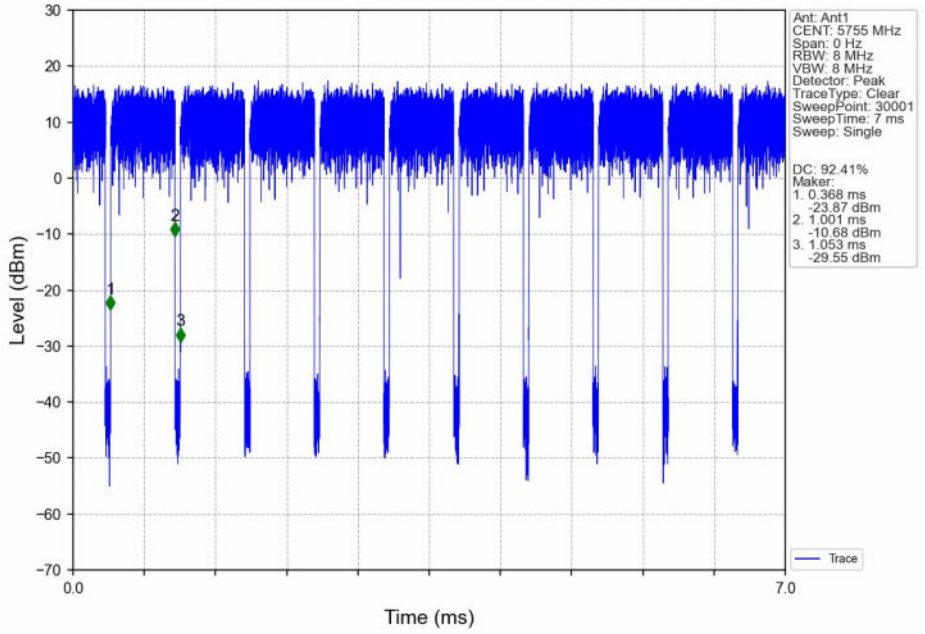
802.11ac(VHT20)_MCH_5785MHz_Ant1_NTNV



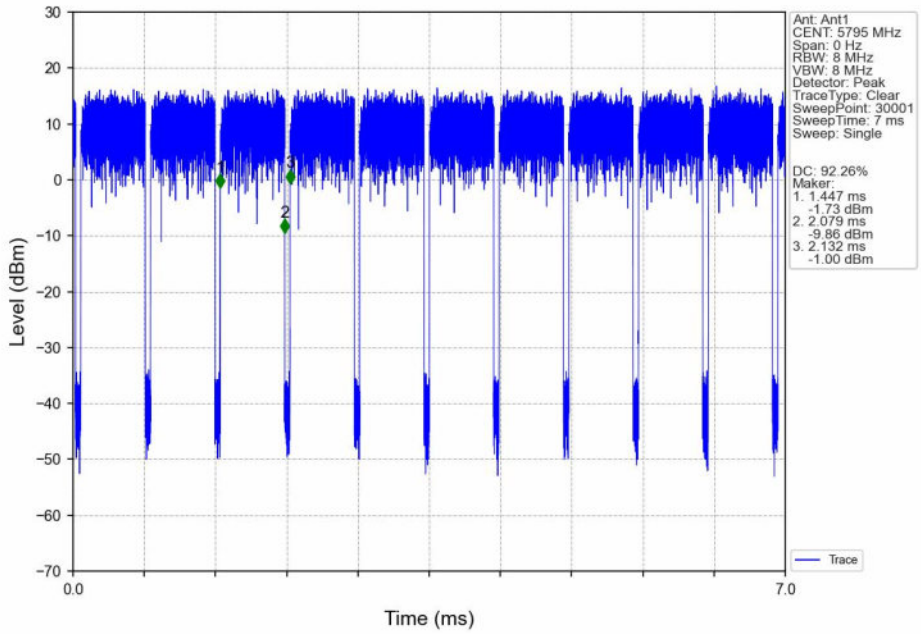
802.11ac(VHT20)_HCH_5825MHz_Ant1_NTNV



802.11ac(VHT40)_LCH_5755MHz_Ant1_NTNV



802.11ac(VHT40)_HCH_5795MHz_Ant1_NTNV



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	5745	1	17.460	/	Pass
		5785	1	17.347	/	Pass
		5825	1	17.267	/	Pass
802.11n (HT20)	SISO	5745	1	18.321	/	Pass
		5785	1	18.275	/	Pass
		5825	1	18.245	/	Pass
802.11n (HT40)	SISO	5755	1	37.231	/	Pass
		5795	1	37.294	/	Pass
802.11ac (VHT20)	SISO	5745	1	18.356	/	Pass
		5785	1	18.339	/	Pass
		5825	1	18.278	/	Pass
802.11ac (VHT40)	SISO	5755	1	37.304	/	Pass
		5795	1	37.323	/	Pass

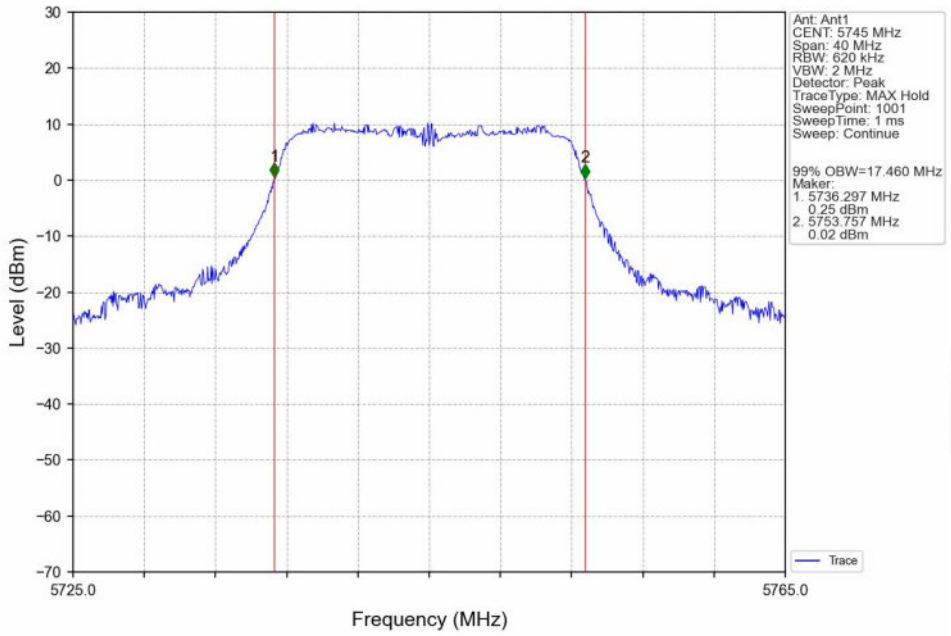
2.1.2 6dB BW

Mode	TX Type	Frequency (MHz)	ANT	6dB Bandwidth (MHz)		Verdict
				Result	Limit	
802.11a	SISO	5745	1	16.303	>=0.5	Pass
		5785	1	16.357	>=0.5	Pass
		5825	1	16.365	>=0.5	Pass
802.11n (HT20)	SISO	5745	1	16.826	>=0.5	Pass
		5785	1	16.836	>=0.5	Pass
		5825	1	17.081	>=0.5	Pass
802.11n (HT40)	SISO	5755	1	35.521	>=0.5	Pass
		5795	1	35.532	>=0.5	Pass
802.11ac (VHT20)	SISO	5745	1	16.686	>=0.5	Pass
		5785	1	16.892	>=0.5	Pass
		5825	1	16.984	>=0.5	Pass
802.11ac (VHT40)	SISO	5755	1	35.531	>=0.5	Pass
		5795	1	35.518	>=0.5	Pass

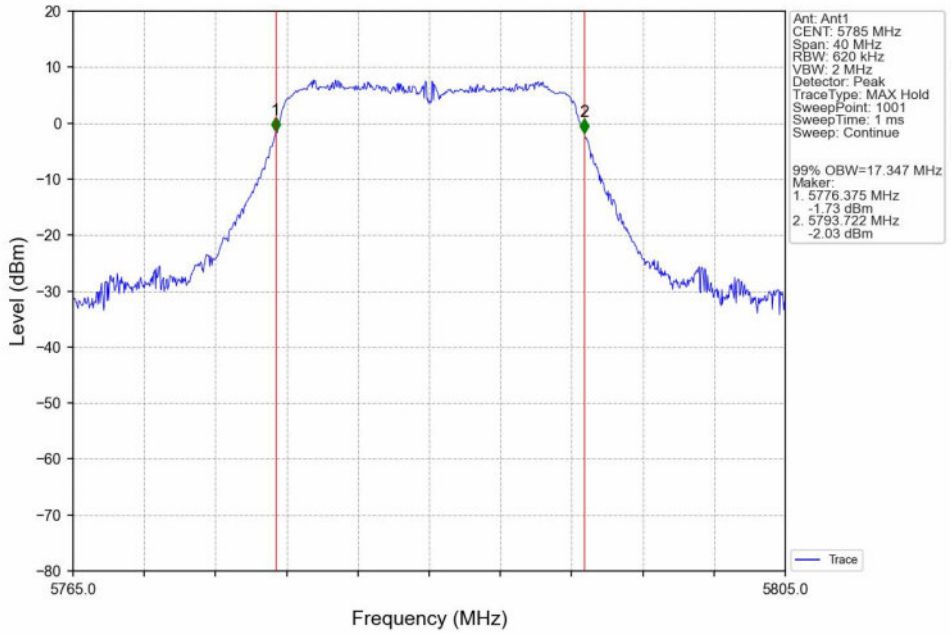
2.2 Test Graph

2.2.1 OBW

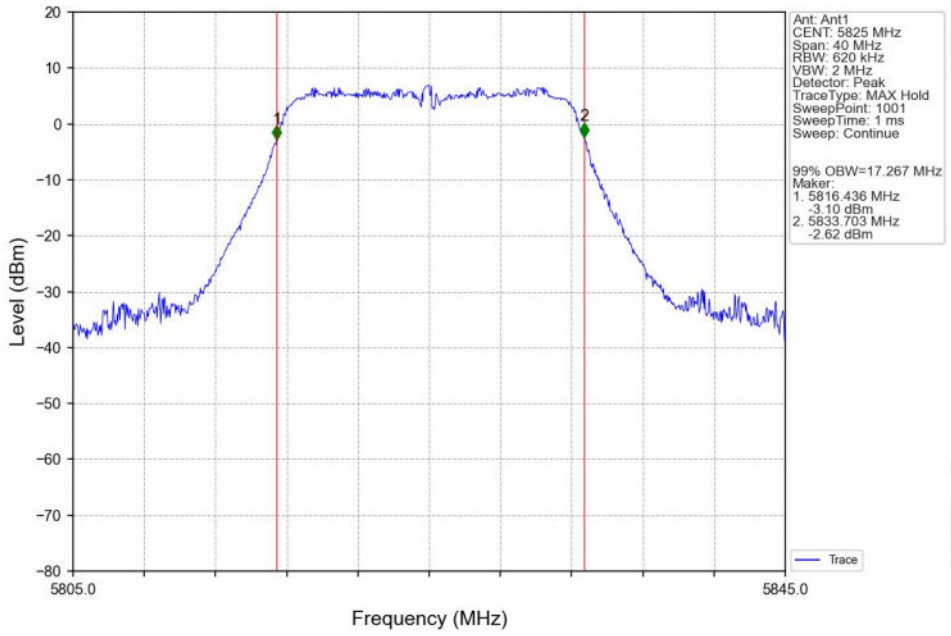
802.11a_LCH_5745MHz_Ant1_NTNV



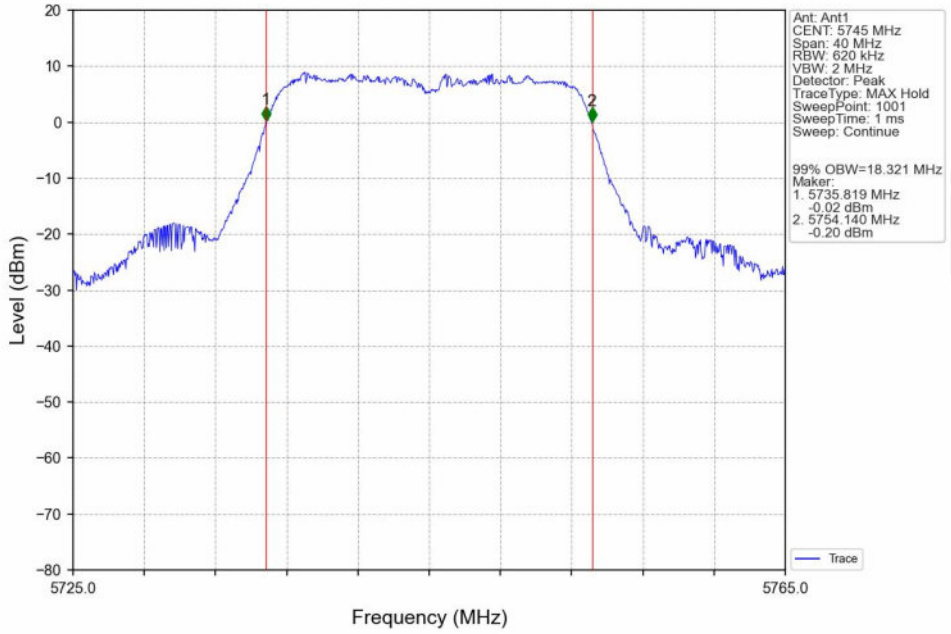
802.11a_MCH_5785MHz_Ant1_NTNV



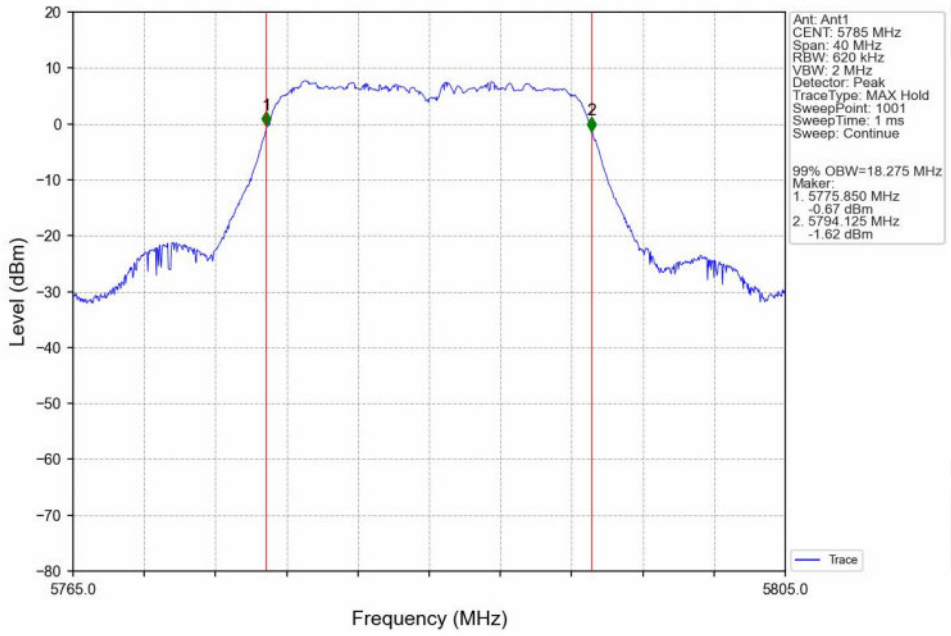
802.11a_HCH_5825MHz_Ant1_NTNV



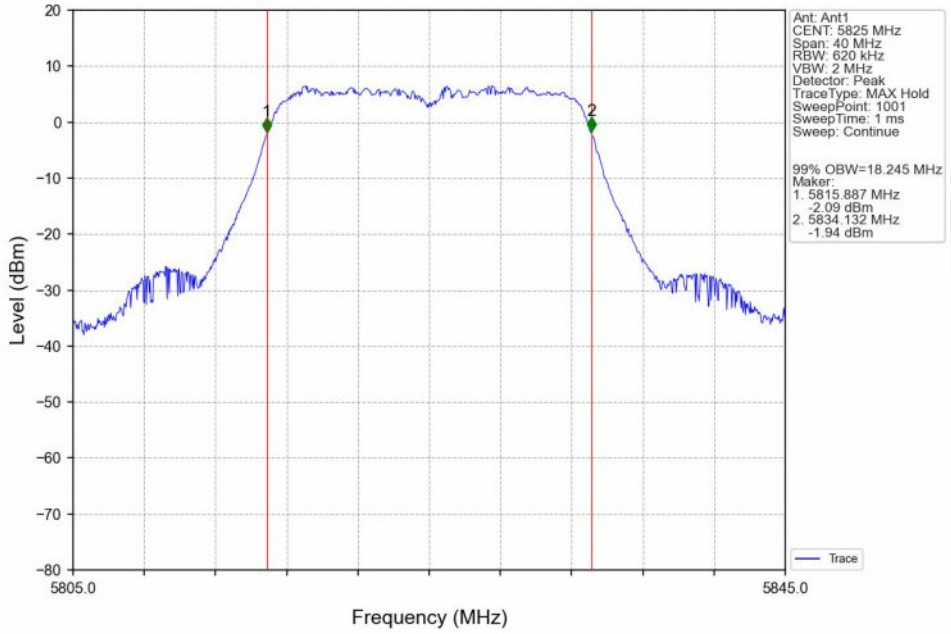
802.11n(HT20)_LCH_5745MHz_Ant1_NTNV



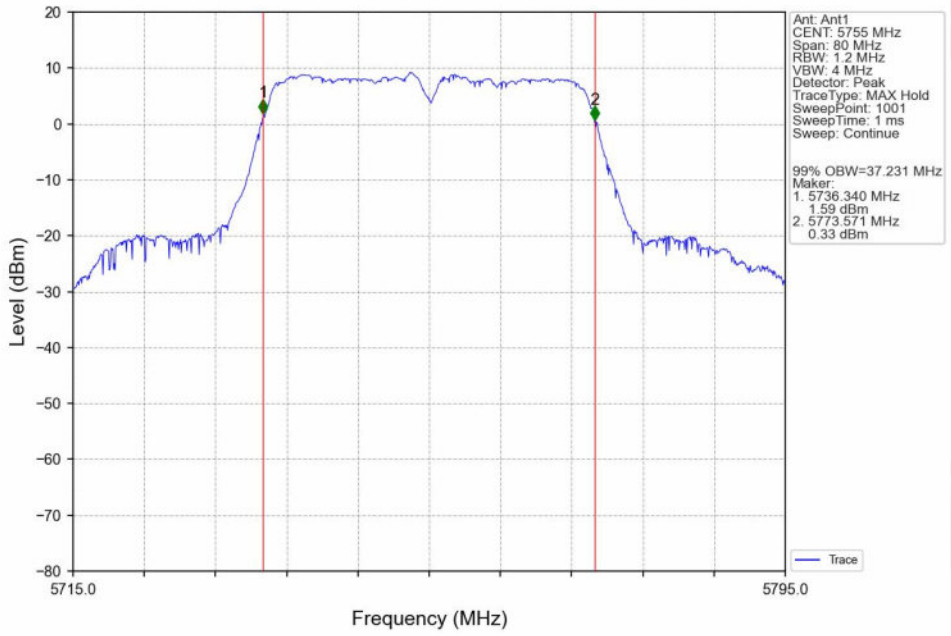
802.11n(HT20)_MCH_5785MHz_Ant1_NTNV



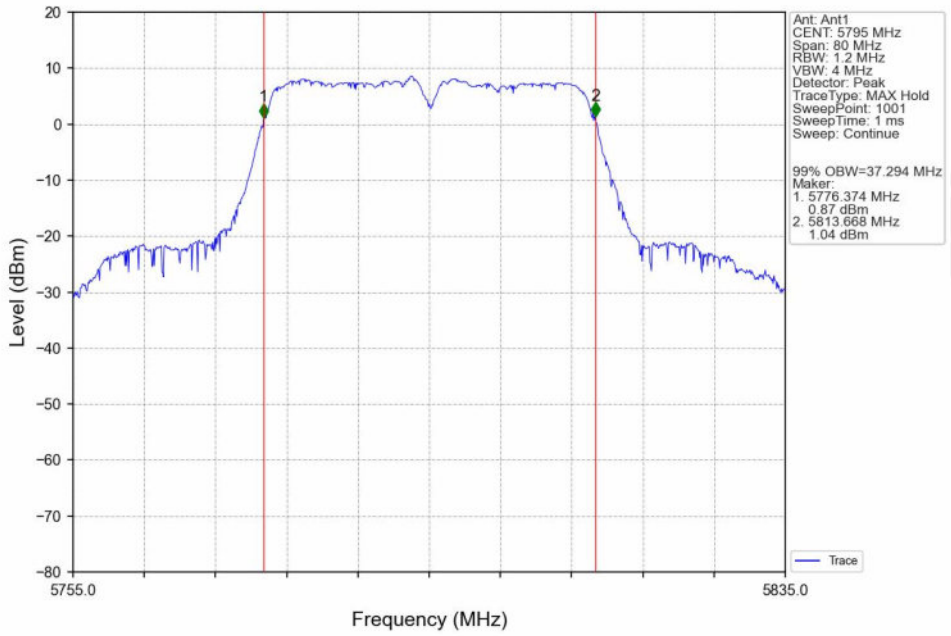
802.11n(HT20)_HCH_5825MHz_Ant1_NTNV



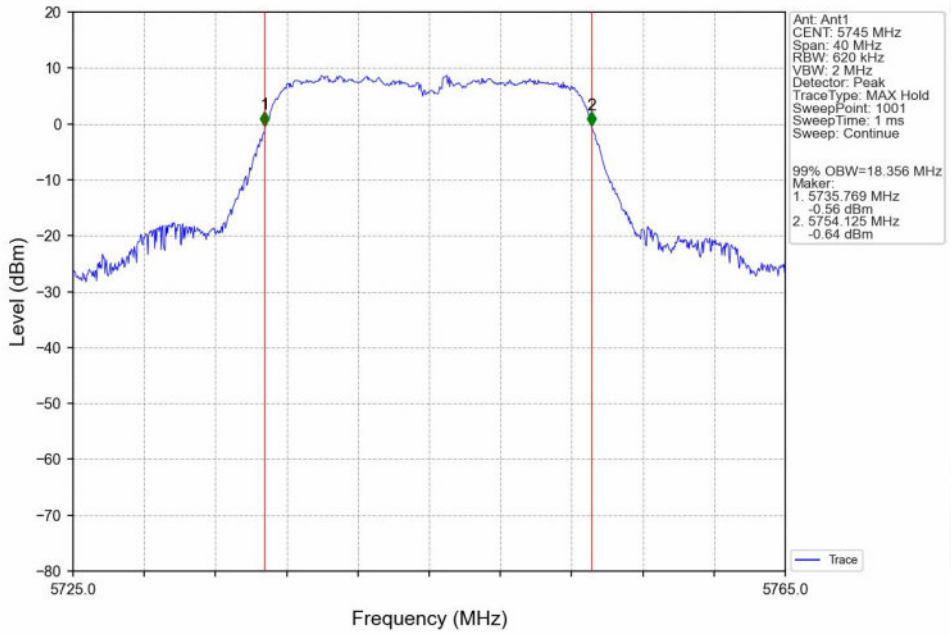
802.11n(HT40)_LCH_5755MHz_Ant1_NTNV



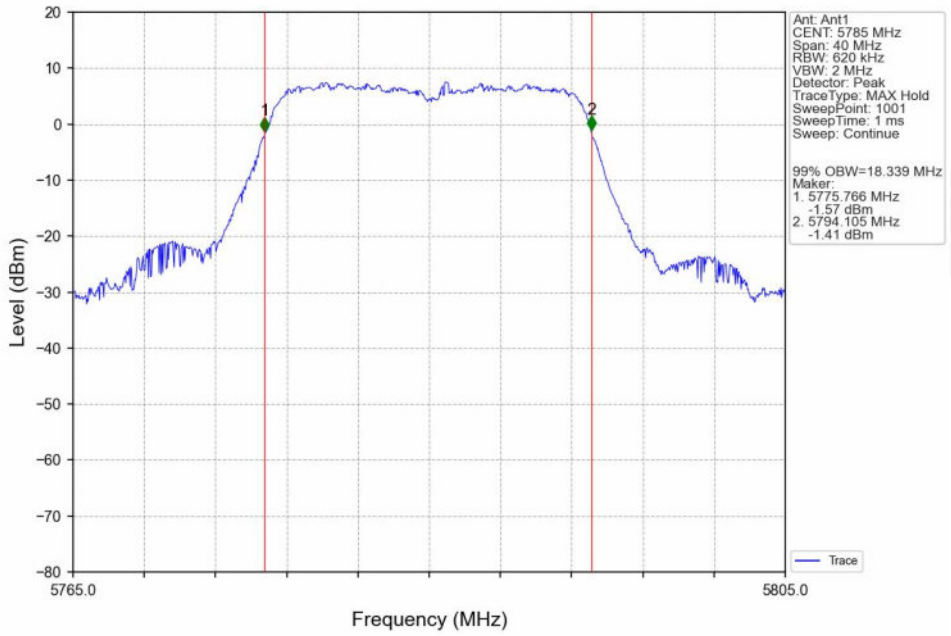
802.11n(HT40)_HCH_5795MHz_Ant1_NTNV



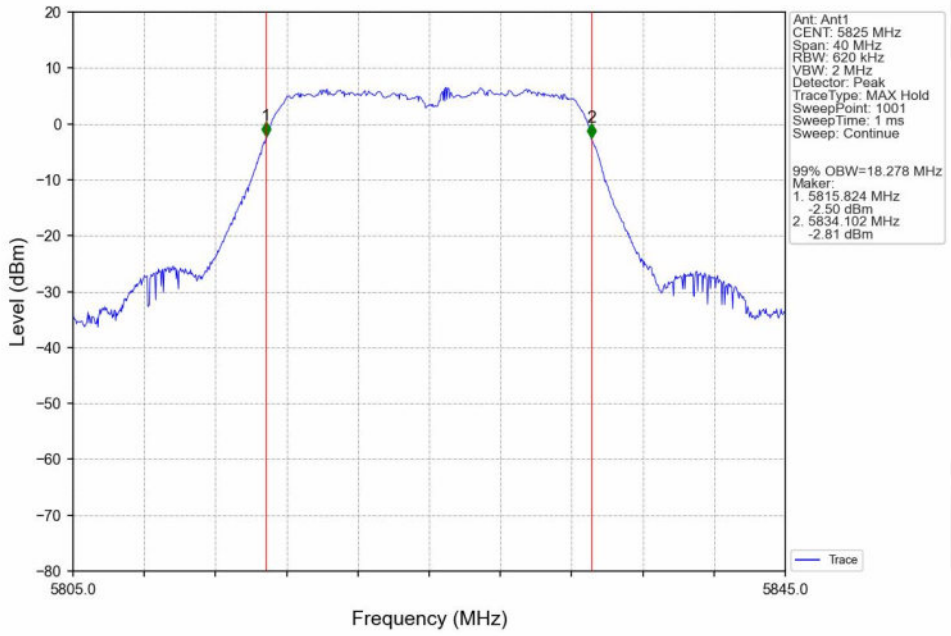
802.11ac(VHT20)_LCH_5745MHz_Ant1_NTNV



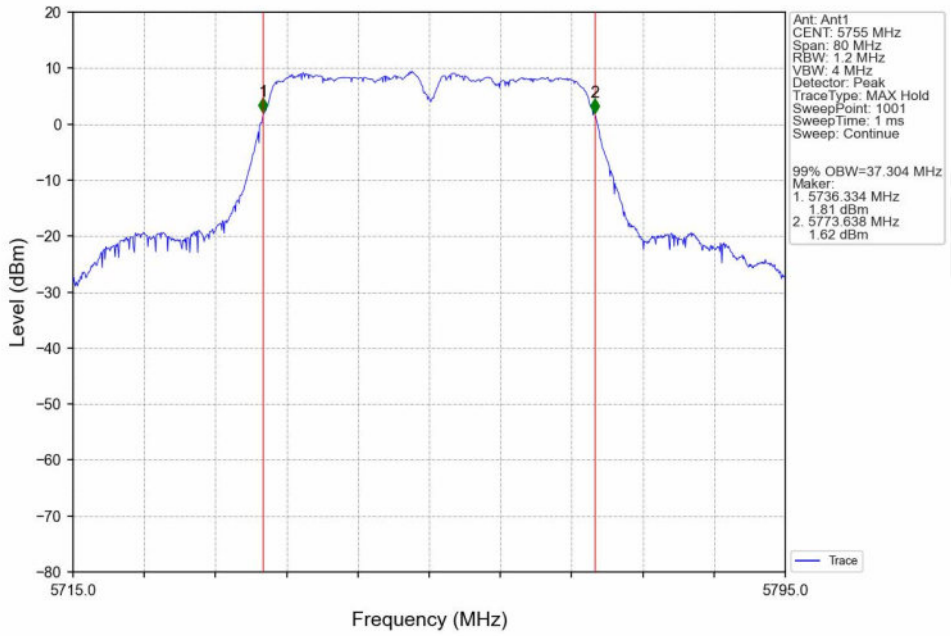
802.11ac(VHT20)_MCH_5785MHz_Ant1_NTNV



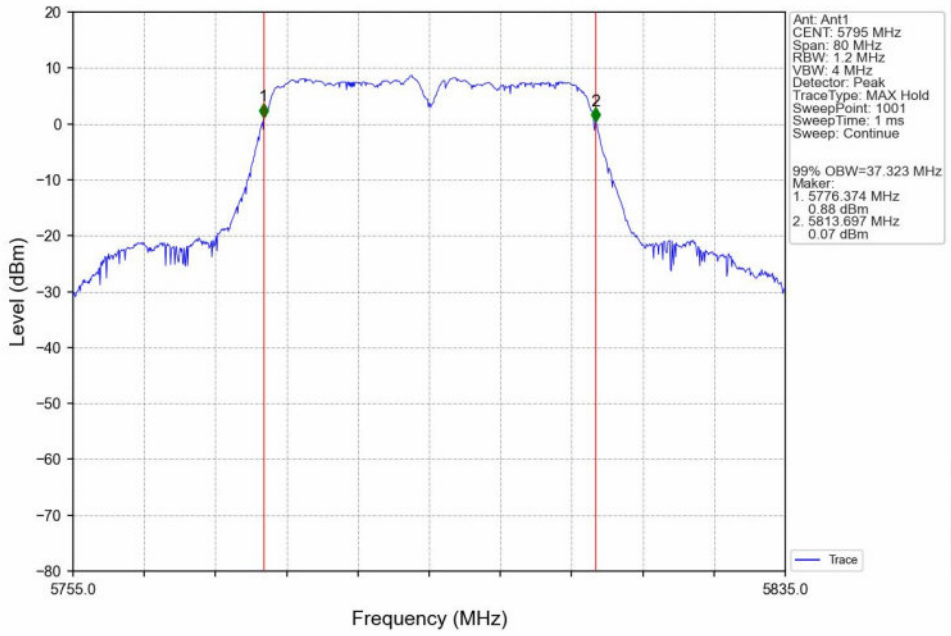
802.11ac(VHT20)_HCH_5825MHz_Ant1_NTNV



802.11ac(VHT40)_LCH_5755MHz_Ant1_NTNV

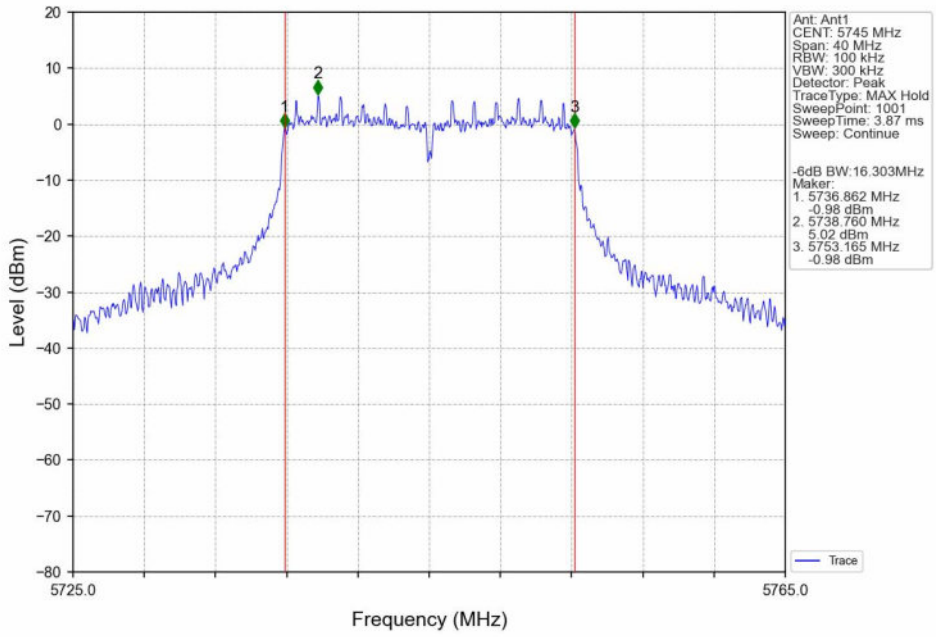


802.11ac(VHT40)_HCH_5795MHz_Ant1_NTNV

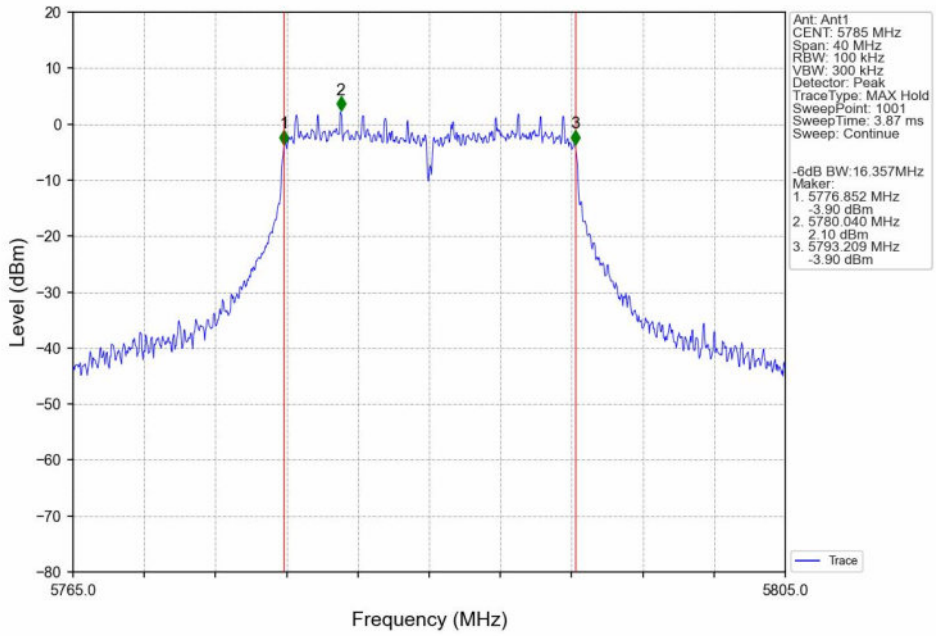


2.2.2 6dB BW

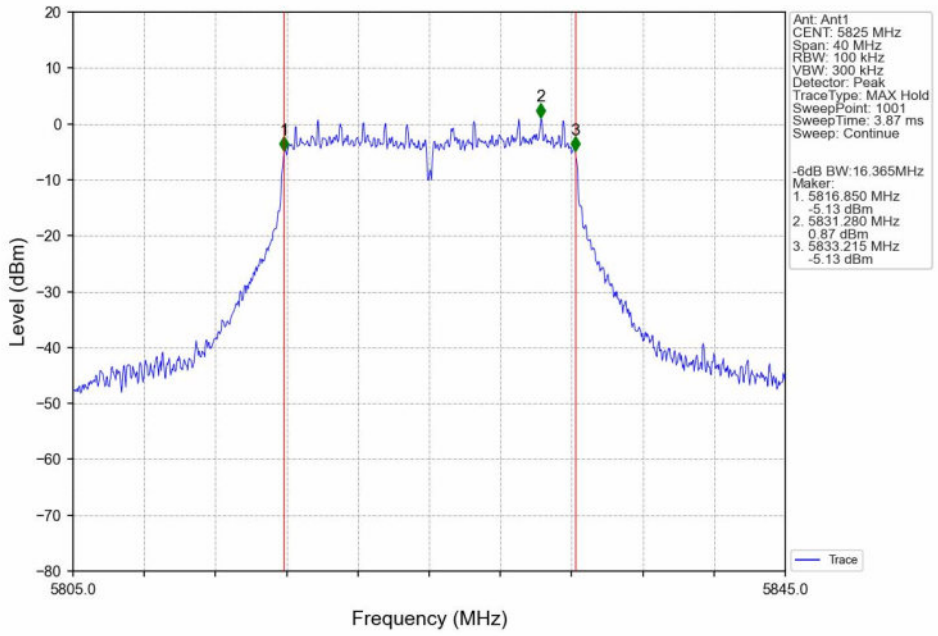
802.11a_LCH_5745MHz_Ant1_NTNV



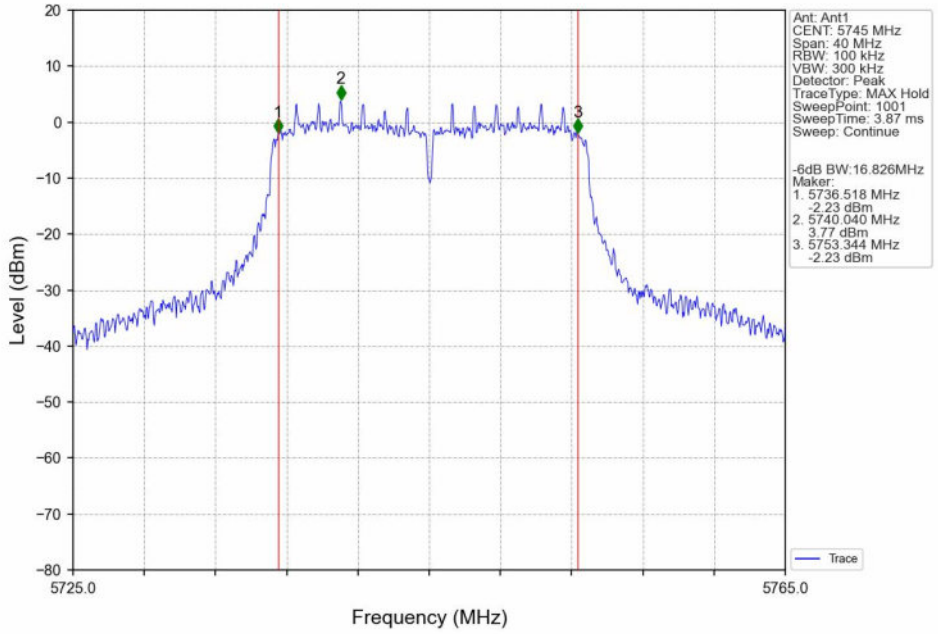
802.11a_MCH_5785MHz_Ant1_NTNV



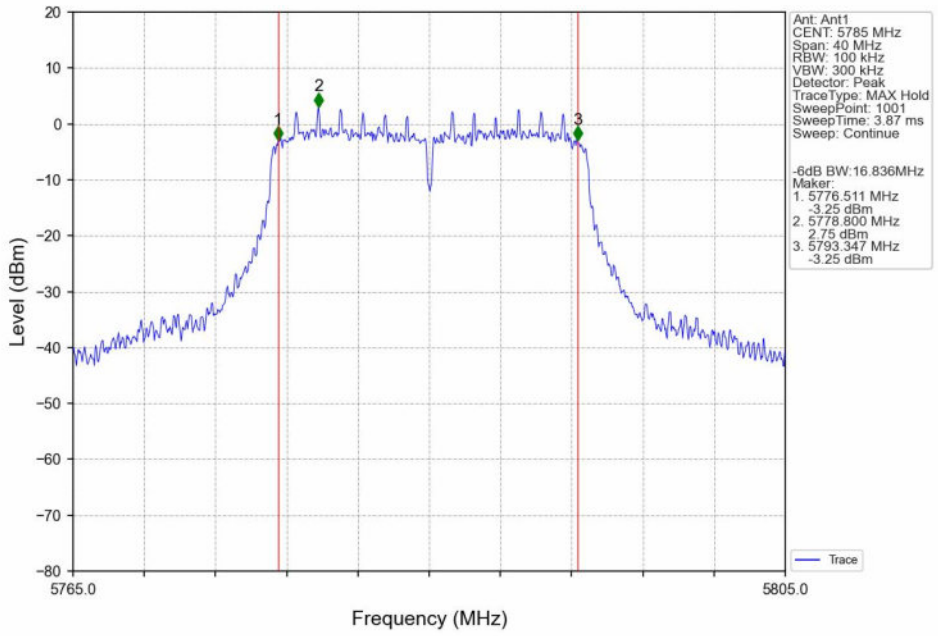
802.11a_HCH_5825MHz_Ant1_NTNV



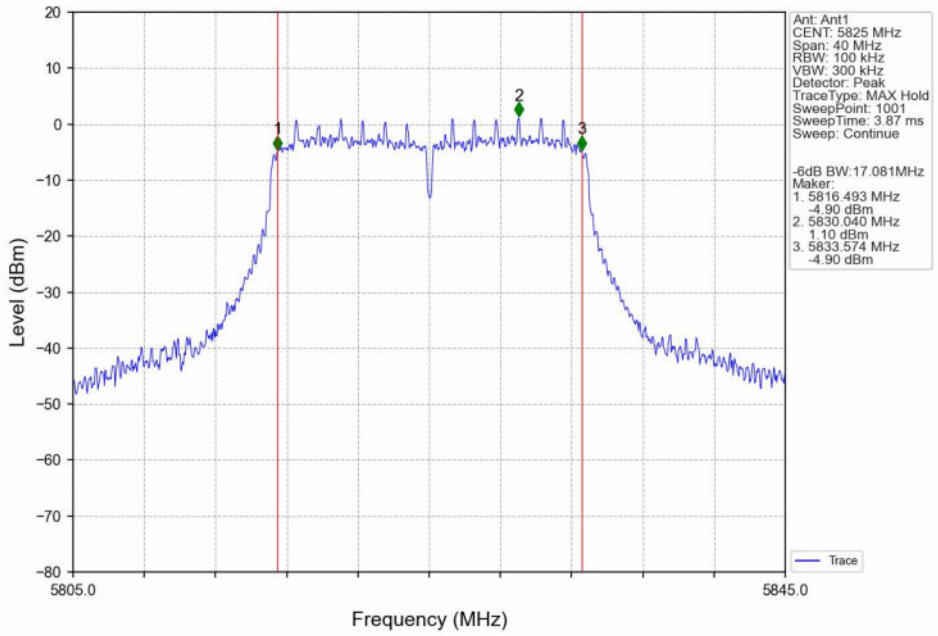
802.11n(HT20)_LCH_5745MHz_Ant1_NTNV



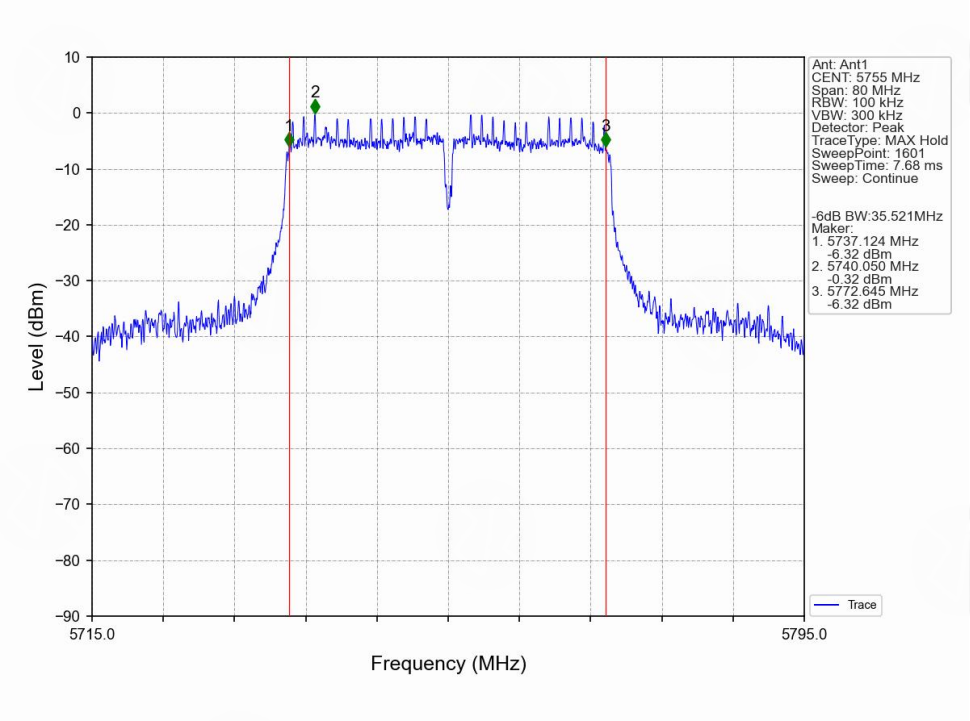
802.11n(HT20)_MCH_5785MHz_Ant1_NTNV



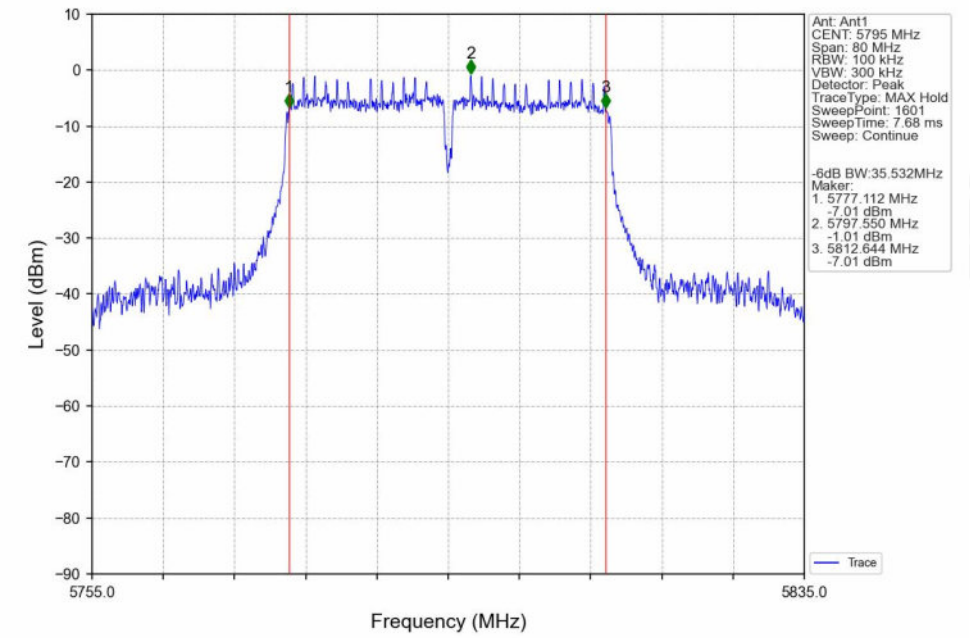
802.11n(HT20)_HCH_5825MHz_Ant1_NTNV



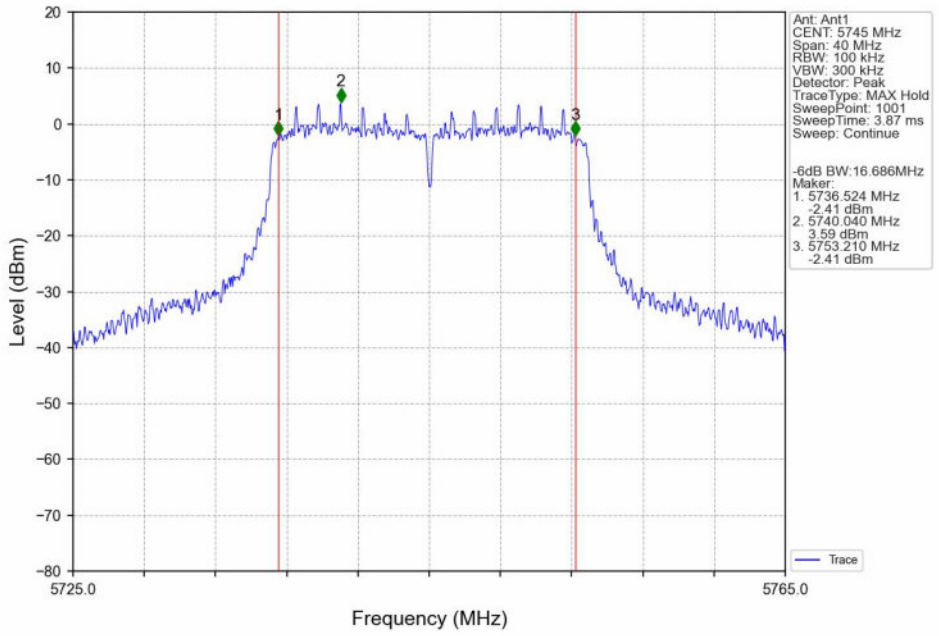
802.11n(HT40)_LCH_5755MHz_Ant1_NTNV



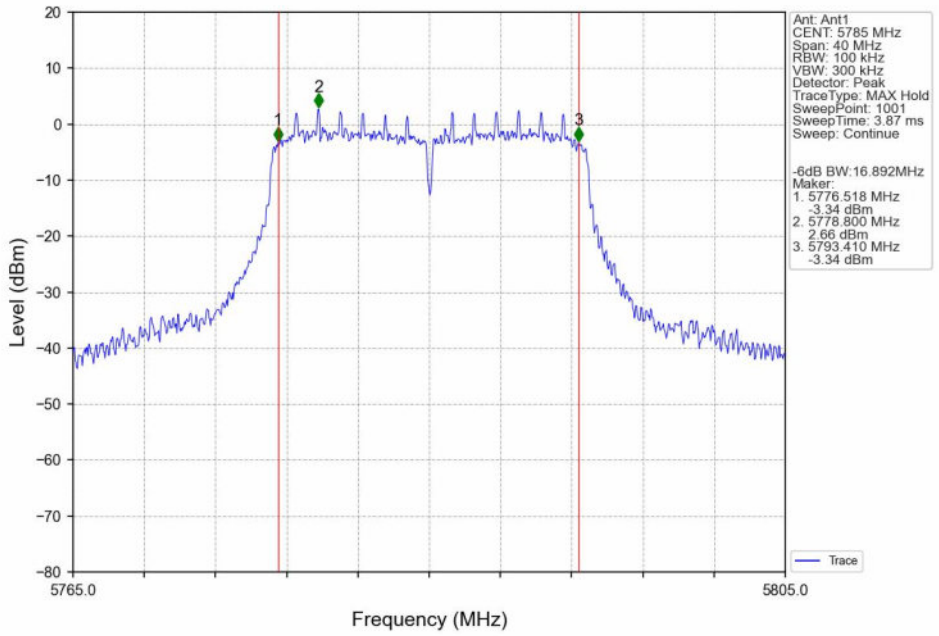
802.11n(HT40)_HCH_5795MHz_Ant1_NTNV



802.11ac(VHT20)_LCH_5745MHz_Ant1_NTNV



802.11ac(VHT20)_MCH_5785MHz_Ant1_NTNV



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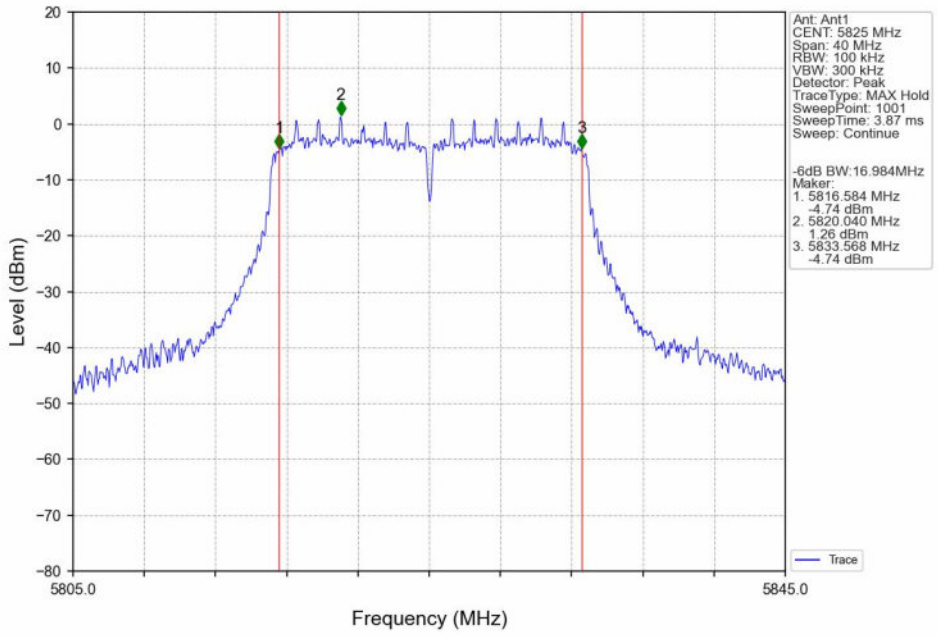
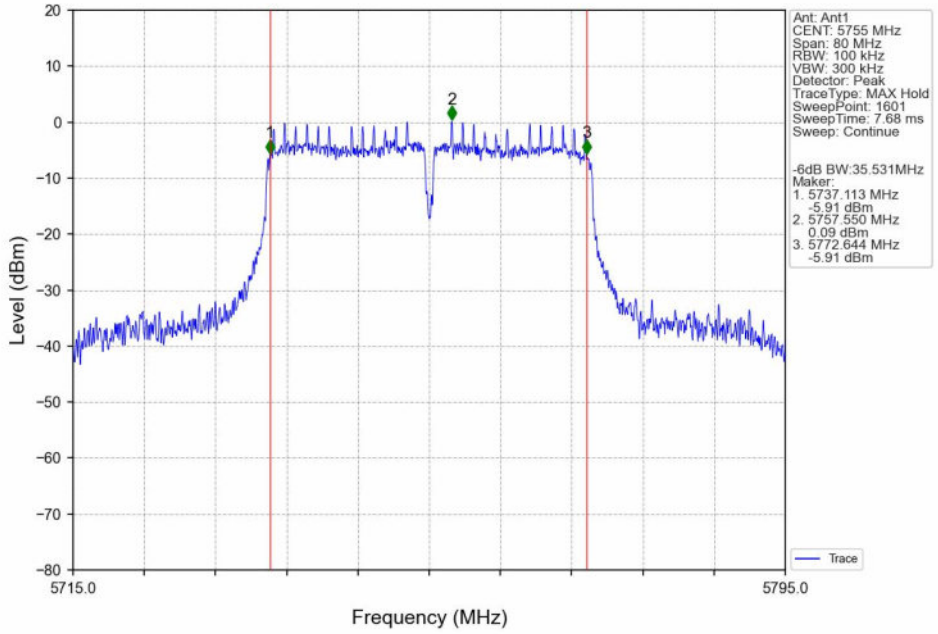
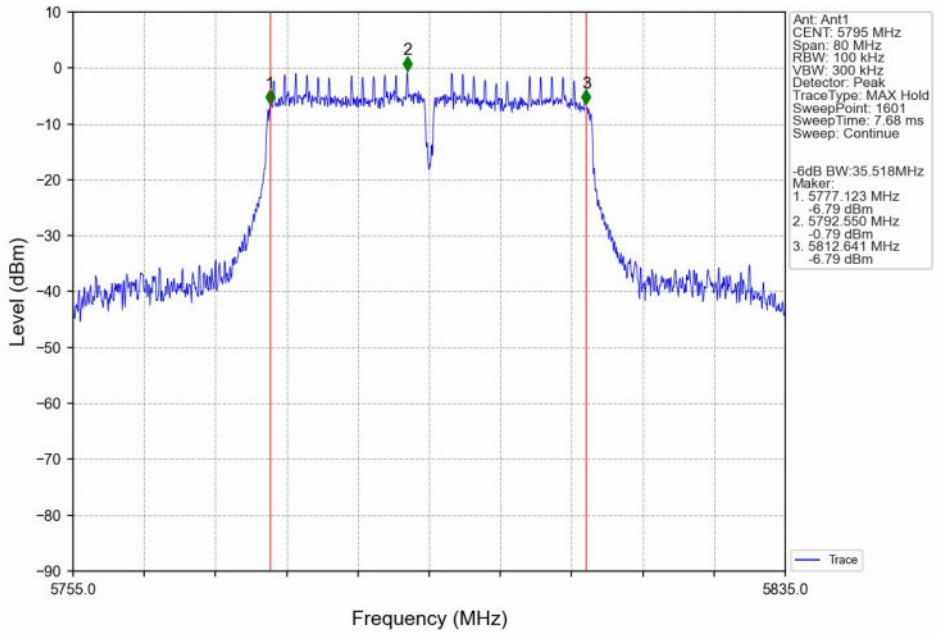


802.11ac(VHT40)_LCH_5755MHz_Ant1_NTNV



802.11ac(VHT40)_HCH_5795MHz_Ant1_NTNV



3. Maximum Conducted Output Power

3.1 Test Result

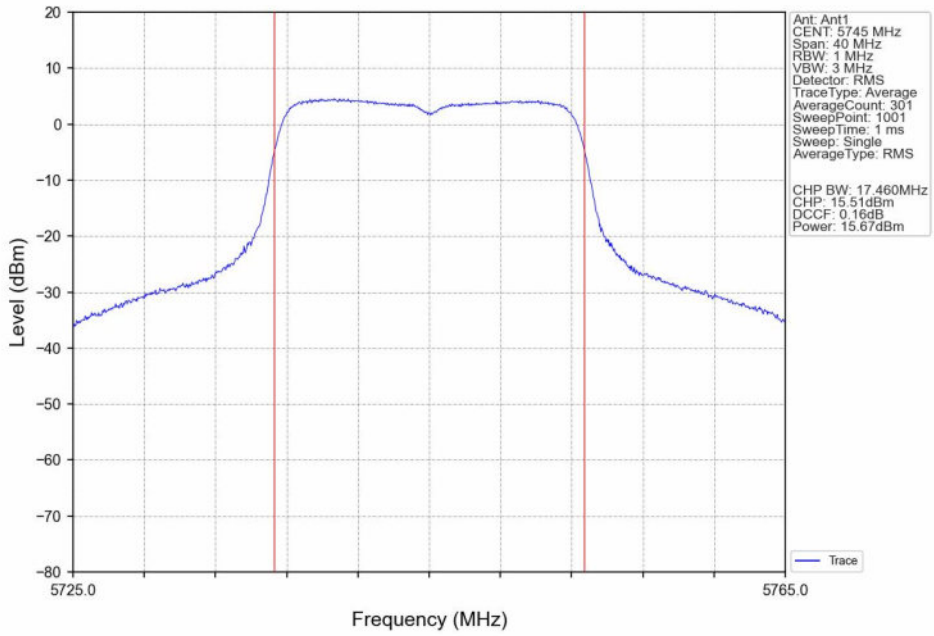
3.1.1 Power

Mode	TX Type	Frequency (MHz)	Maximum Average Conducted Output Power (dBm)		Verdict
			ANT1	Limit	
802.11a	SISO	5745	15.67	<=30	Pass
		5785	13.09	<=30	Pass
		5825	12.23	<=30	Pass
802.11n (HT20)	SISO	5745	14.43	<=30	Pass
		5785	13.44	<=30	Pass
		5825	12.33	<=30	Pass
802.11n (HT40)	SISO	5755	13.78	<=30	Pass
		5795	13.07	<=30	Pass
802.11ac (VHT20)	SISO	5745	14.35	<=30	Pass
		5785	13.43	<=30	Pass
		5825	12.41	<=30	Pass
802.11ac (VHT40)	SISO	5755	14.18	<=30	Pass
		5795	13.16	<=30	Pass
Note1: Antenna Gain: Ant1: 4.86dBi;					

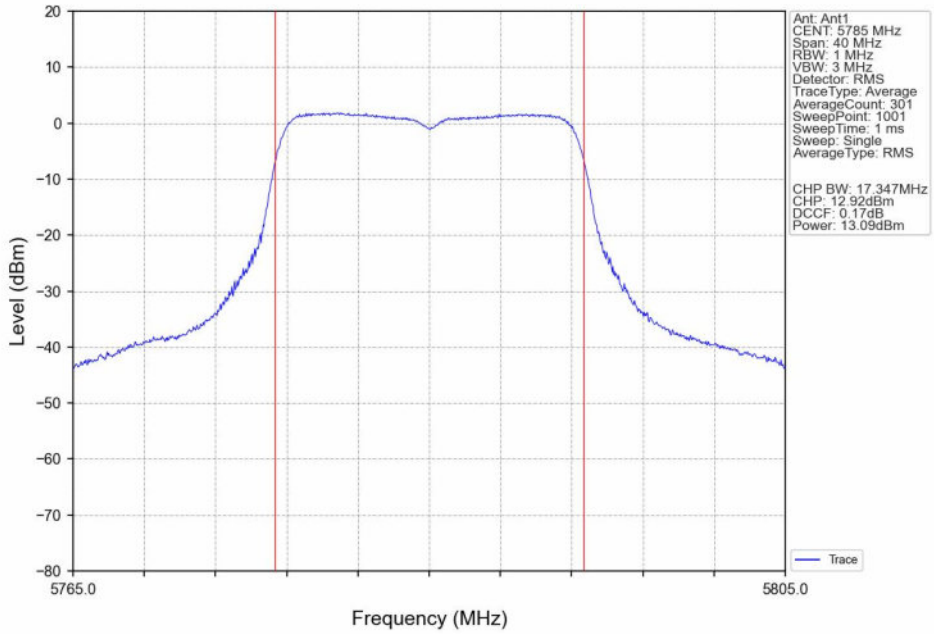
3.2 Test Graph

3.2.1 Power

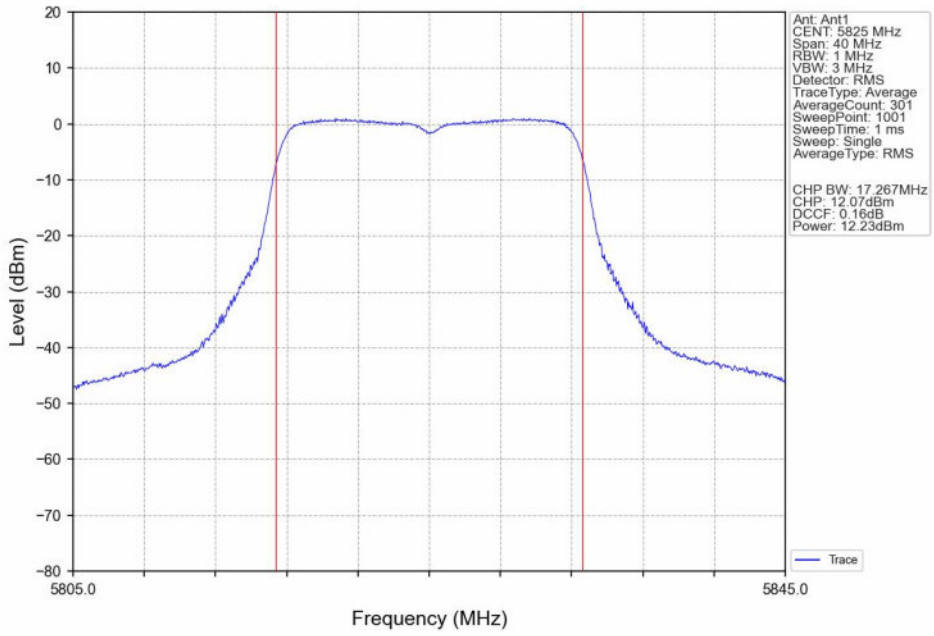
802.11a_LCH_5745MHz_Ant1_NTNV



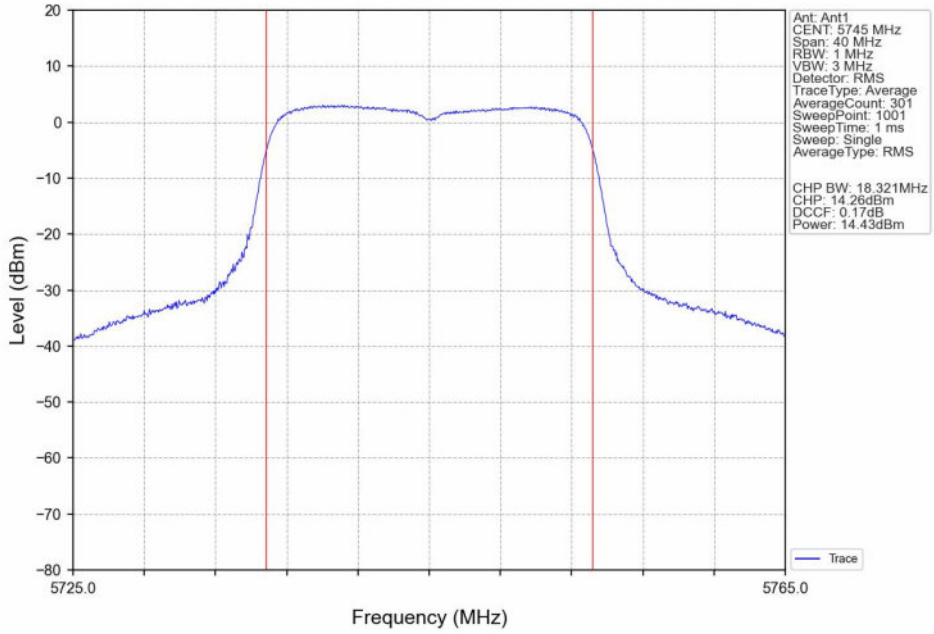
802.11a_MCH_5785MHz_Ant1_NTNV



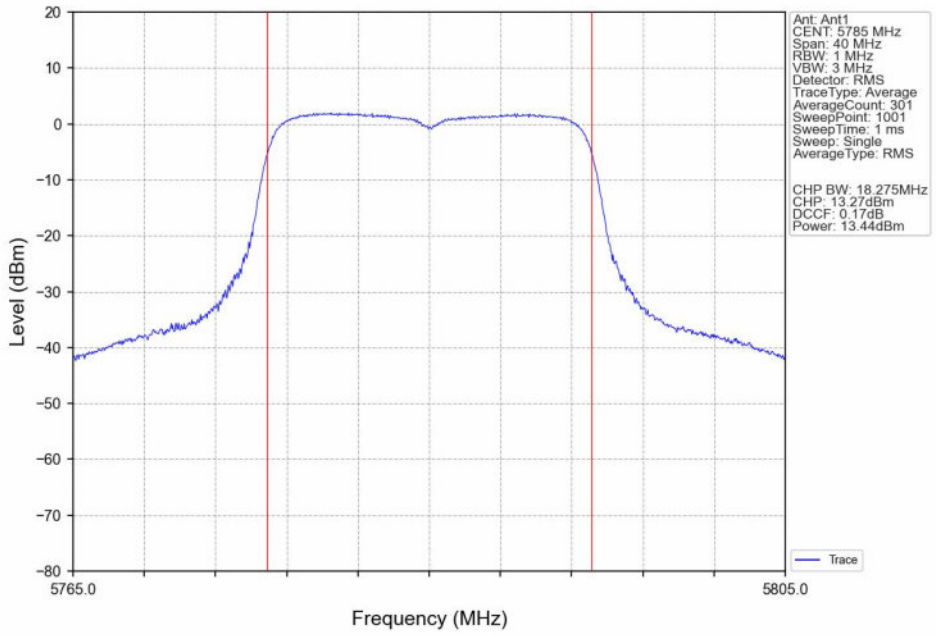
802.11a_HCH_5825MHz_Ant1_NTNV



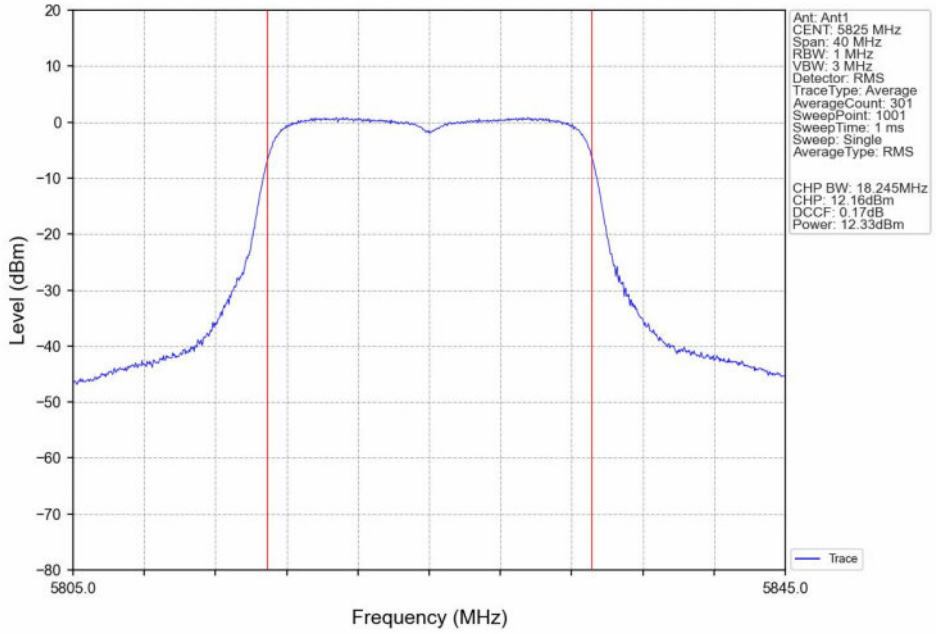
802.11n(HT20)_LCH_5745MHz_Ant1_NTNV



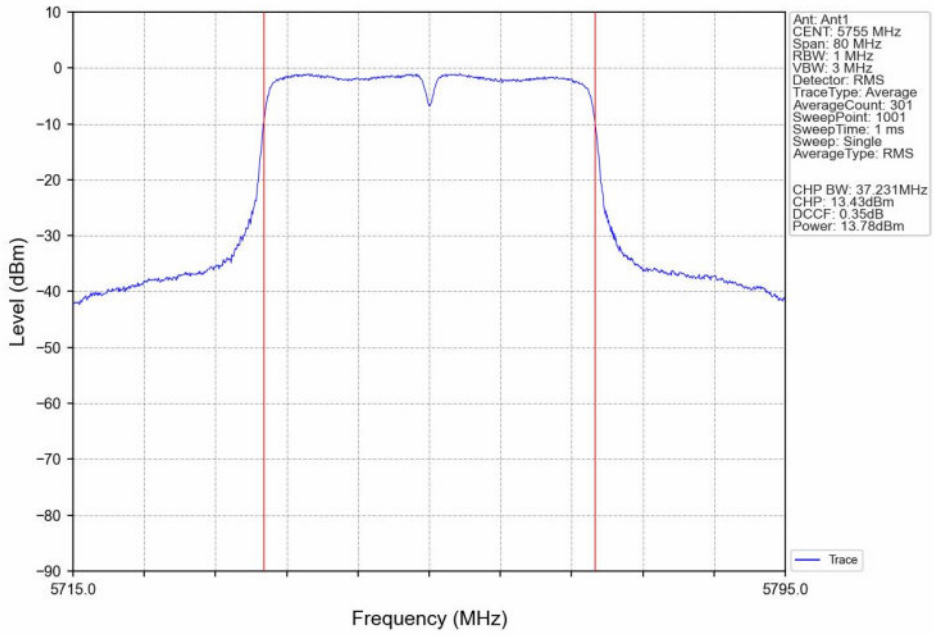
802.11n(HT20)_MCH_5785MHz_Ant1_NTNV



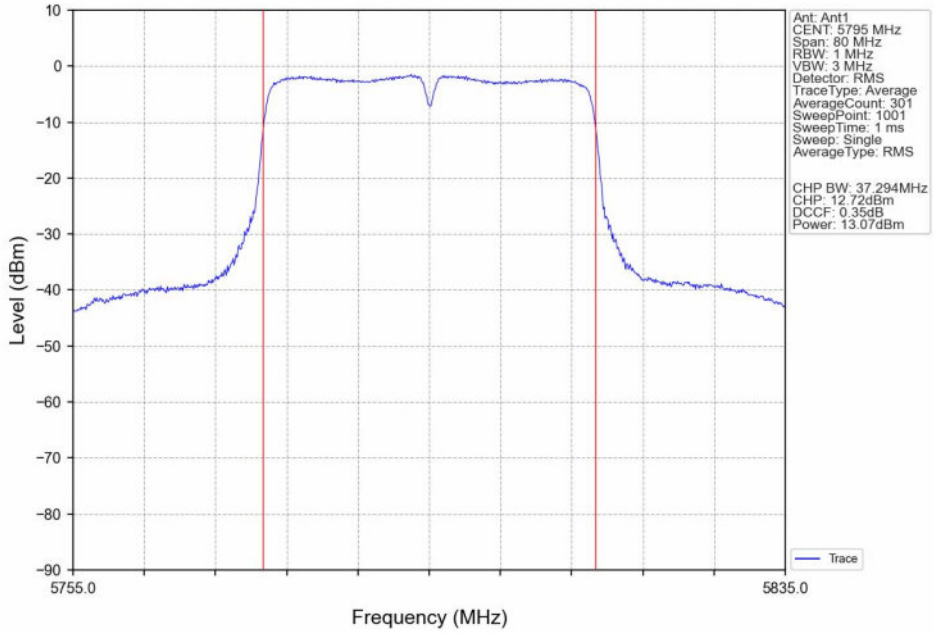
802.11n(HT20)_HCH_5825MHz_Ant1_NTNV



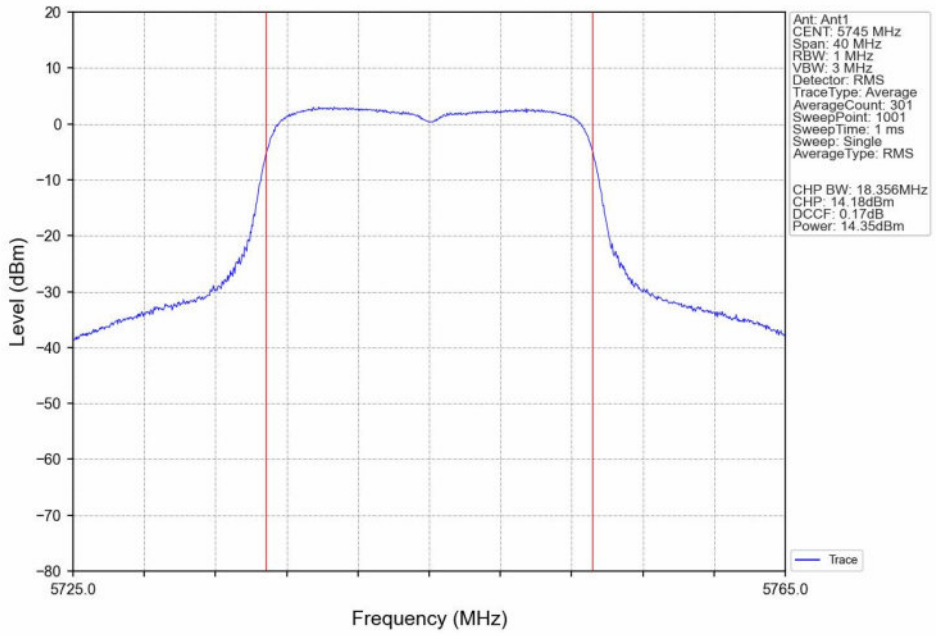
802.11n(HT40)_LCH_5755MHz_Ant1_NTNV



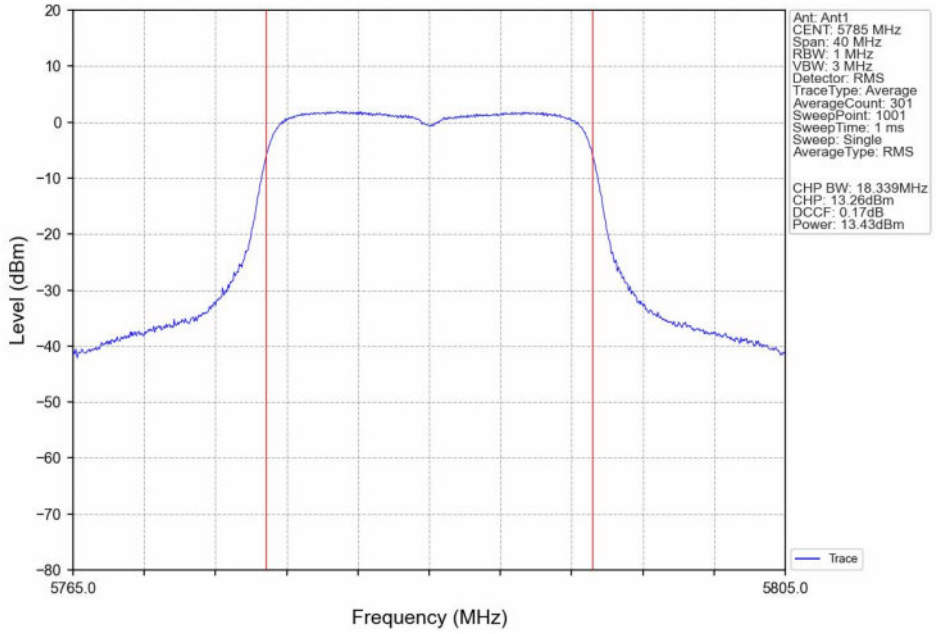
802.11n(HT40)_HCH_5795MHz_Ant1_NTNV



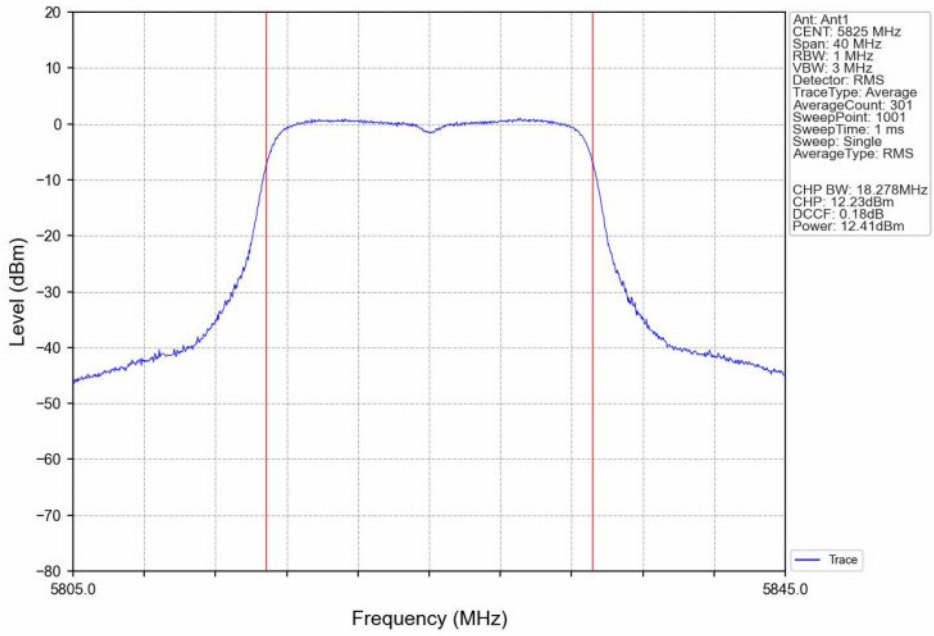
802.11ac(VHT20)_LCH_5745MHz_Ant1_NTNV



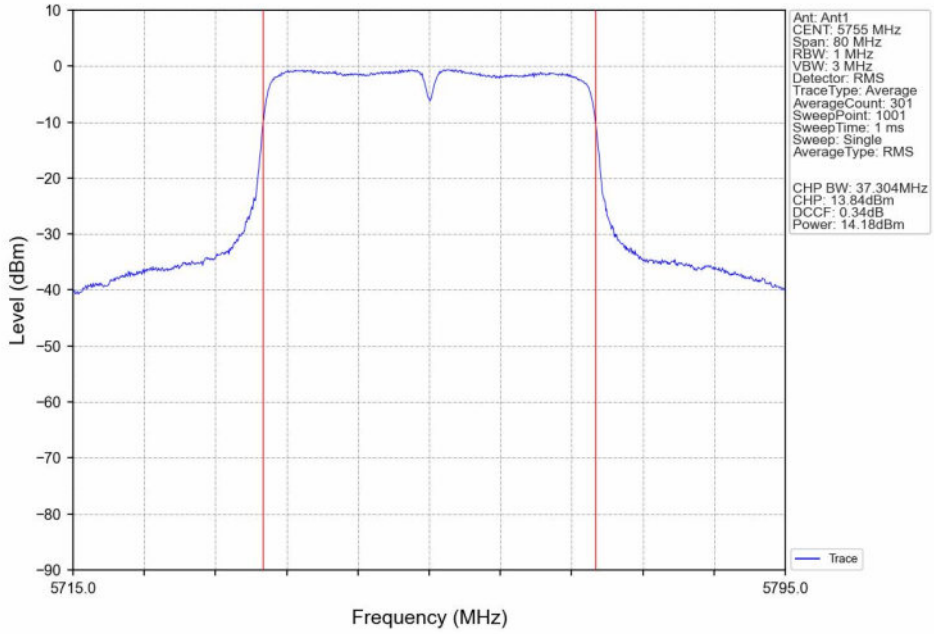
802.11ac(VHT20)_MCH_5785MHz_Ant1_NTNV



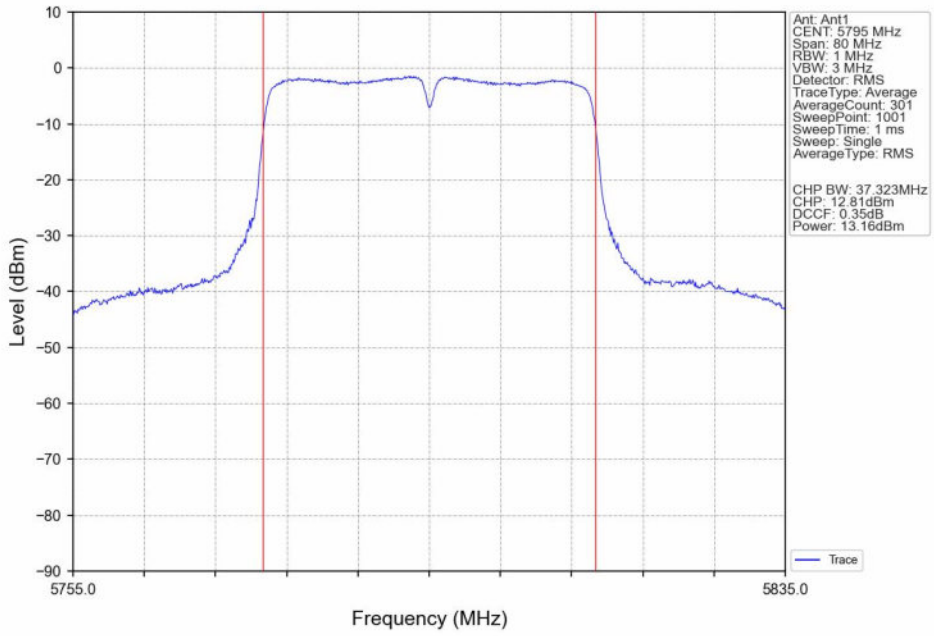
802.11ac(VHT20)_HCH_5825MHz_Ant1_NTNV



802.11ac(VHT40)_LCH_5755MHz_Ant1_NTNV



802.11ac(VHT40)_HCH_5795MHz_Ant1_NTNV



4. Maximum Power Spectral Density

4.1 Test Result

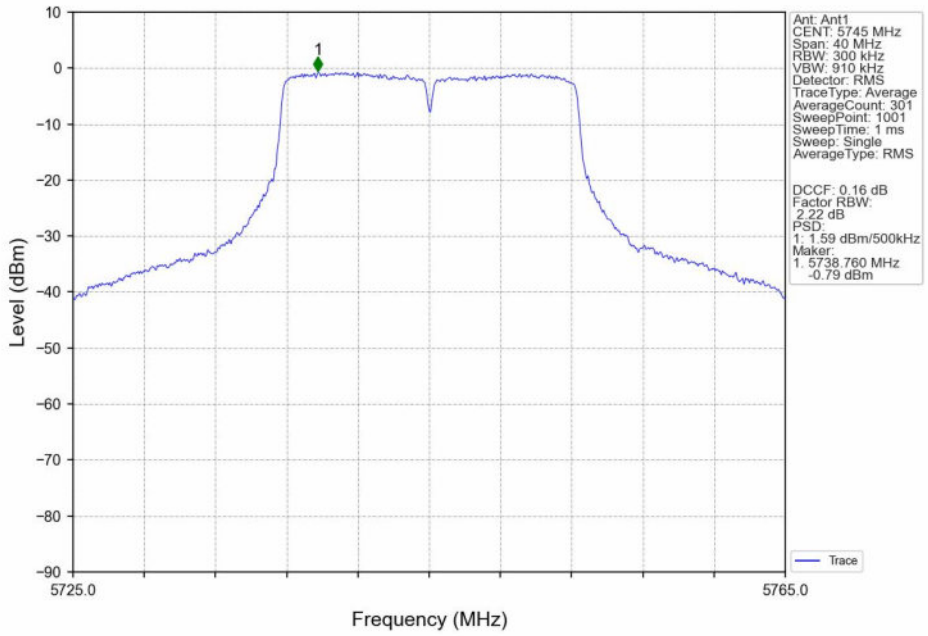
4.1.1 PSD-Band3

Mode	TX Type	Frequency (MHz)	Maximum PSD (dBm/500kHz)		Verdict
			ANT1	Limit	
802.11a	SISO	5745	1.59	<=30	Pass
		5785	-0.90	<=30	Pass
		5825	-2.00	<=30	Pass
802.11n (HT20)	SISO	5745	0.27	<=30	Pass
		5785	-0.77	<=30	Pass
		5825	-1.80	<=30	Pass
802.11n (HT40)	SISO	5755	-3.65	<=30	Pass
		5795	-4.16	<=30	Pass
802.11ac (VHT20)	SISO	5745	0.15	<=30	Pass
		5785	-0.87	<=30	Pass
		5825	-1.94	<=30	Pass
802.11ac (VHT40)	SISO	5755	-3.02	<=30	Pass
		5795	-4.20	<=30	Pass
Note1: Antenna Gain: Ant1: 4.86dBi;					

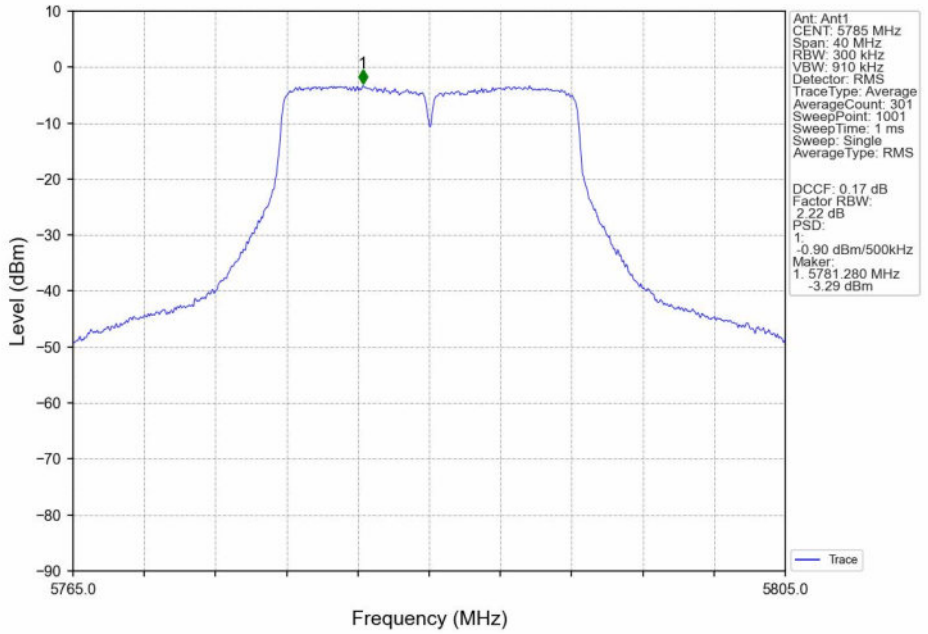
4.2 Test Graph

4.2.1 PSD-Band3

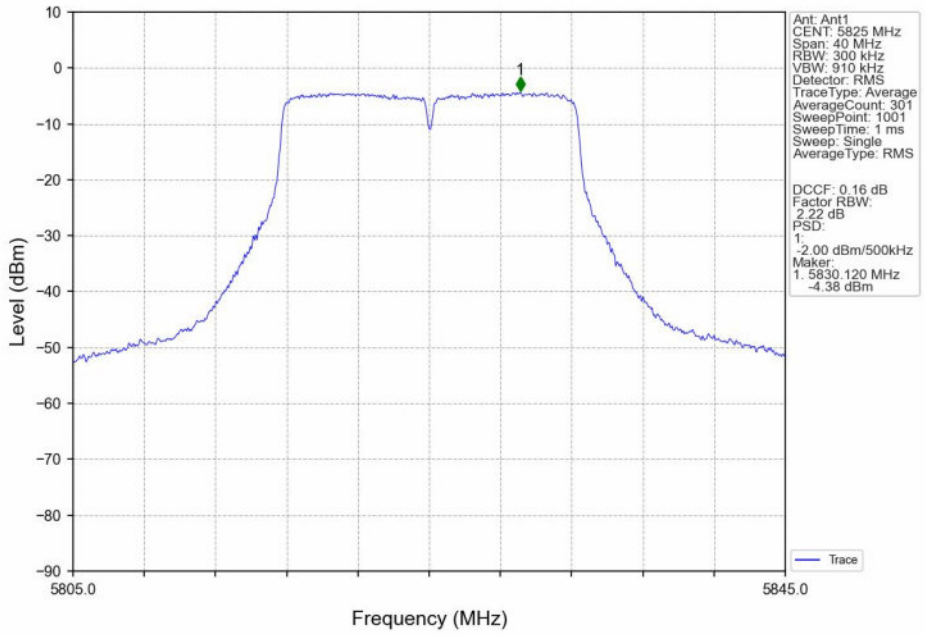
802.11a_LCH_5745MHz_Ant1_NTNV



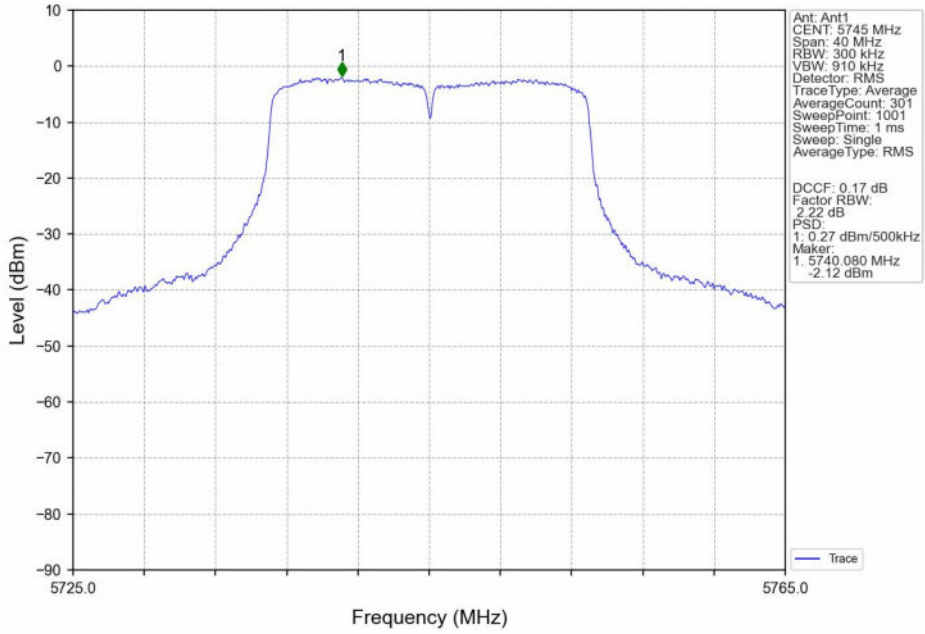
802.11a_MCH_5785MHz_Ant1_NTNV



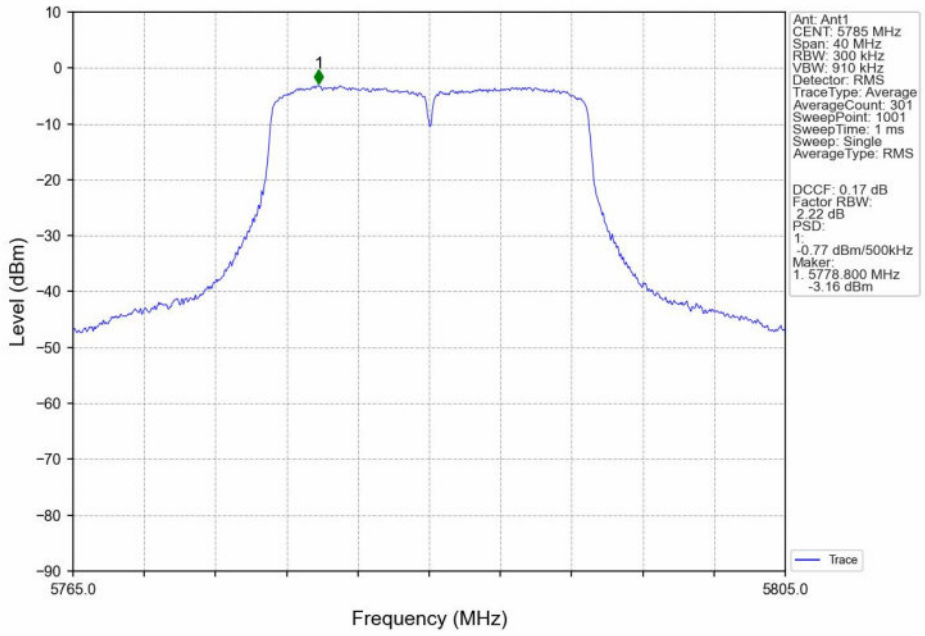
802.11a_HCH_5825MHz_Ant1_NTNV



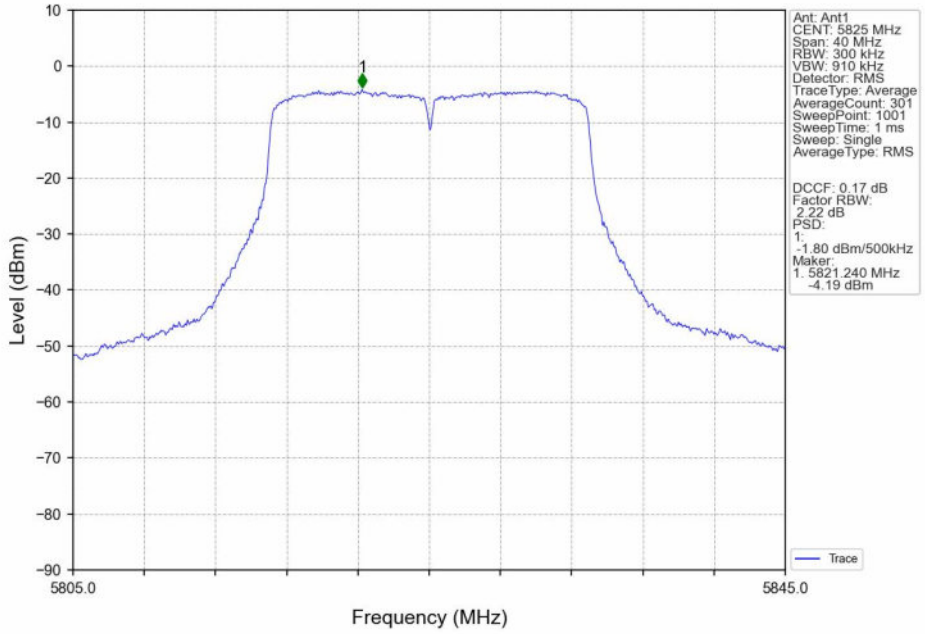
802.11n(HT20)_LCH_5745MHz_Ant1_NTNV



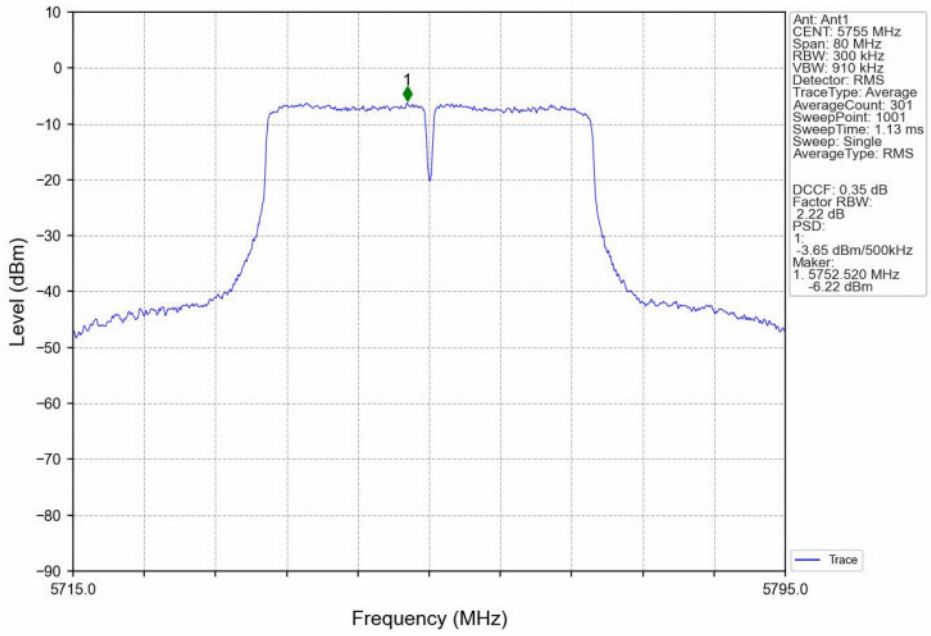
802.11n(HT20)_MCH_5785MHz_Ant1_NTNV



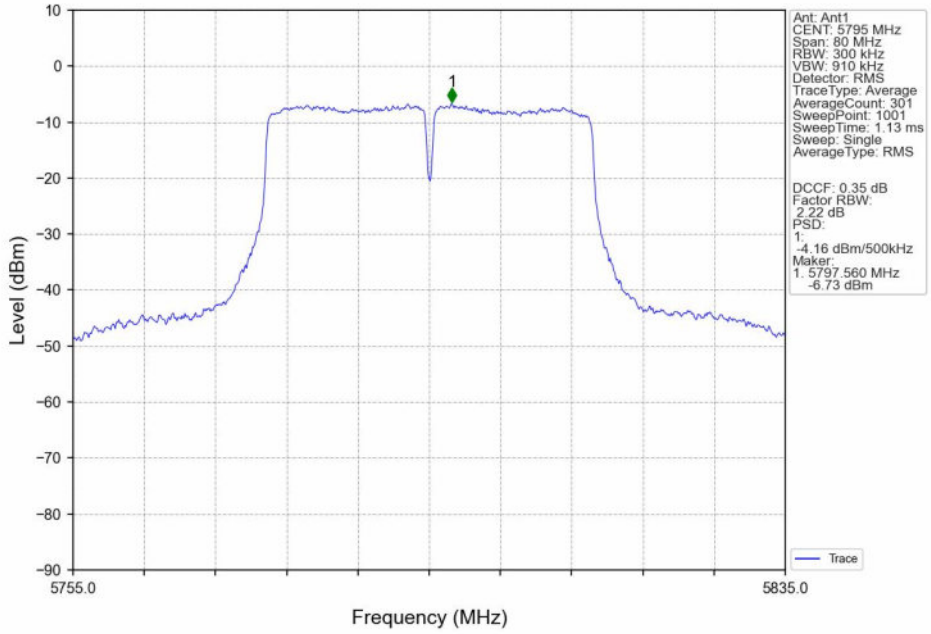
802.11n(HT20)_HCH_5825MHz_Ant1_NTNV



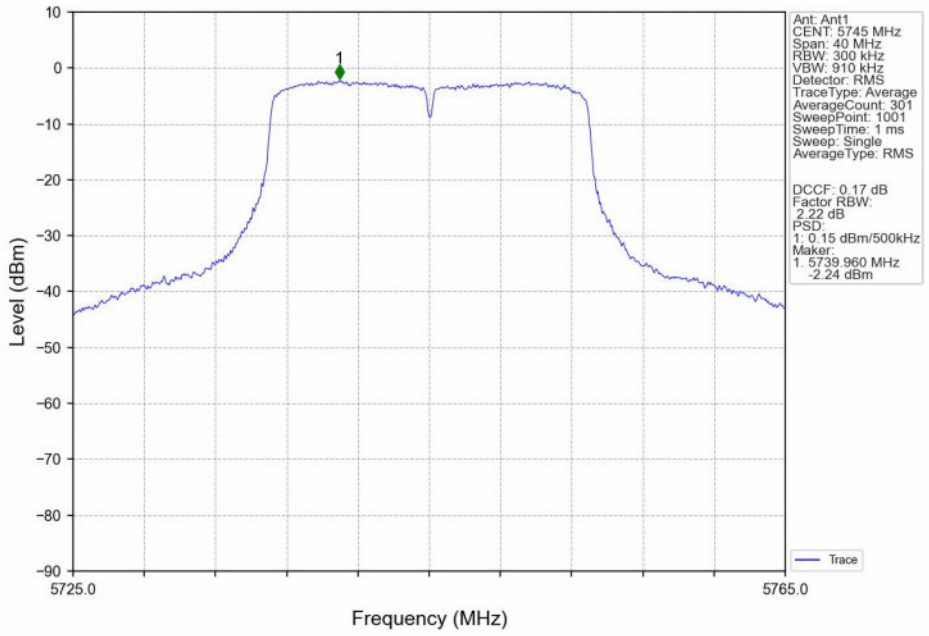
802.11n(HT40)_LCH_5755MHz_Ant1_NTNV



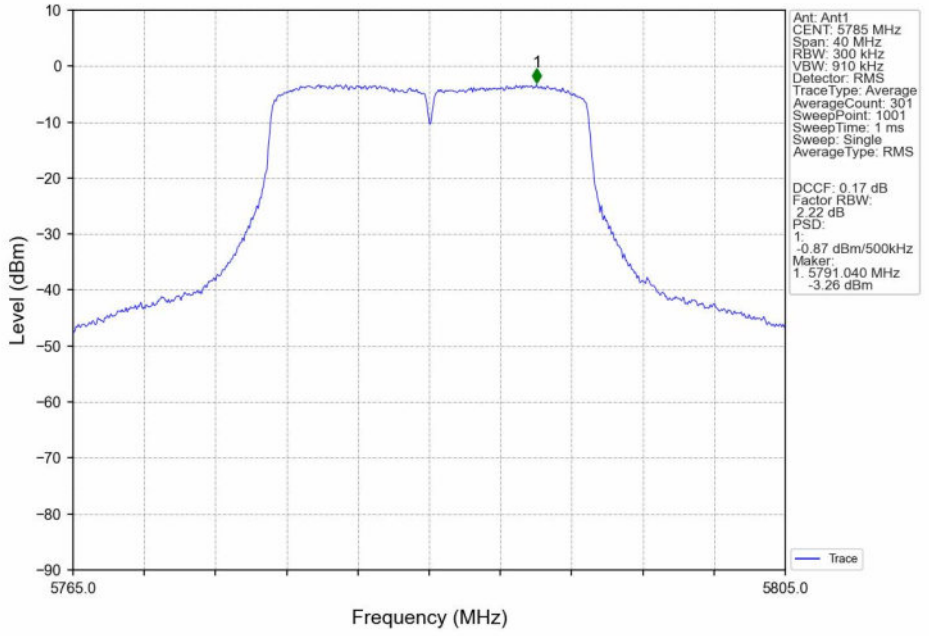
802.11n(HT40)_HCH_5795MHz_Ant1_NTNV



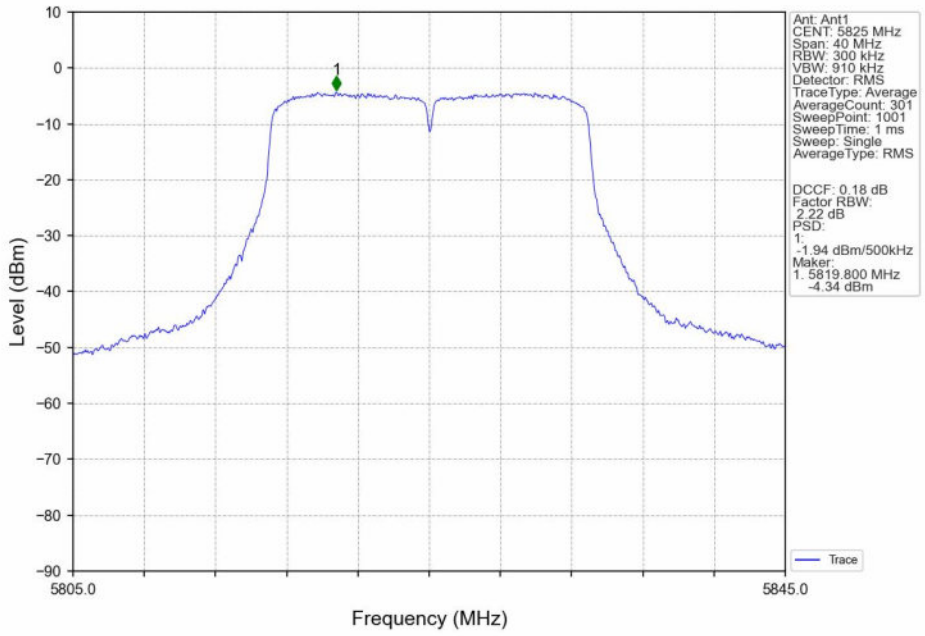
802.11ac(VHT20)_LCH_5745MHz_Ant1_NTNV



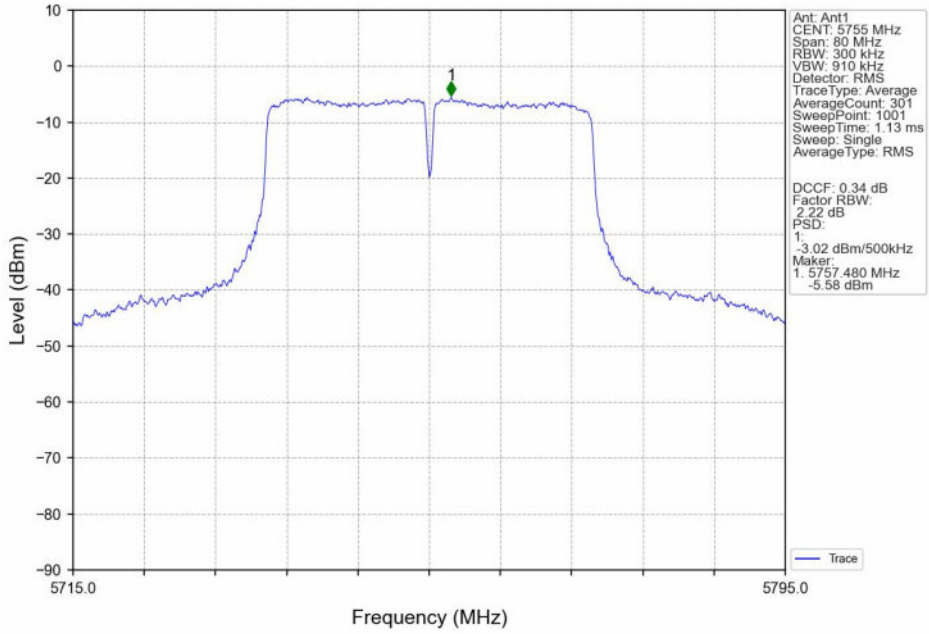
802.11ac(VHT20)_MCH_5785MHz_Ant1_NTNV



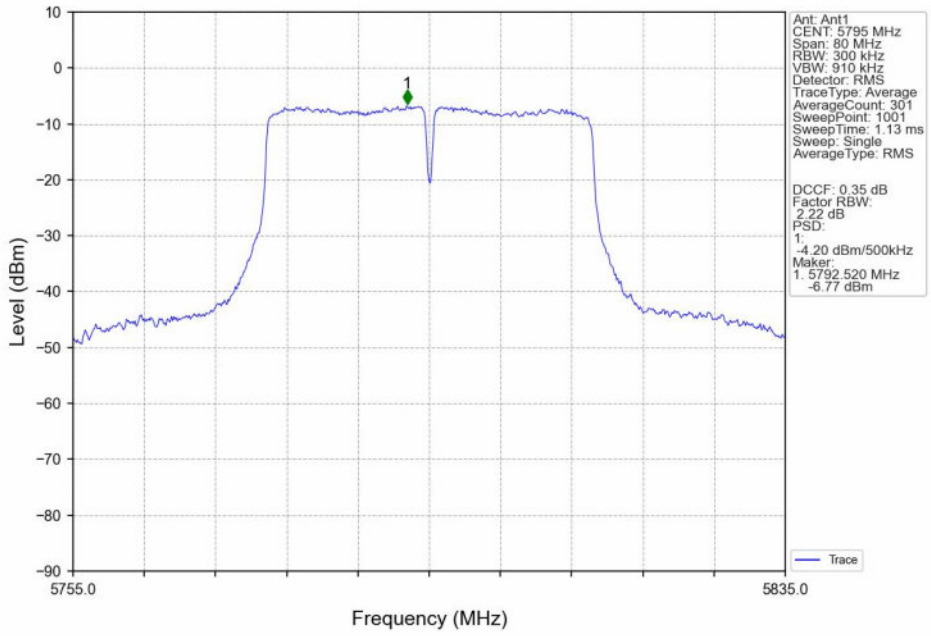
802.11ac(VHT20)_HCH_5825MHz_Ant1_NTNV



802.11ac(VHT40)_LCH_5755MHz_Ant1_NTNV



802.11ac(VHT40)_HCH_5795MHz_Ant1_NTNV



5. Frequency Stability

5.1 Test Result

5.1.1 Ant1

Ant1							
Mode	TX Type	Frequency (MHz)	Temperature (°C)	Voltage (VAC)	Measured Frequency (MHz)	Limit (MHz)	Verdict
802.11a	SISO	5745	20	102	5745.040	5725 to 5850	Pass
				120	5745.040	5725 to 5850	Pass
				138	5745.080	5725 to 5850	Pass
			-30	120	5745.020	5725 to 5850	Pass
			-20	120	5745.020	5725 to 5850	Pass
			-10	120	5745.000	5725 to 5850	Pass
			0	120	5745.020	5725 to 5850	Pass
			10	120	5745.040	5725 to 5850	Pass
			30	120	5745.060	5725 to 5850	Pass
			40	120	5745.020	5725 to 5850	Pass
			50	120	5745.040	5725 to 5850	Pass
		5785	20	102	5785.040	5725 to 5850	Pass
				120	5785.060	5725 to 5850	Pass
				138	5785.020	5725 to 5850	Pass
			-30	120	5785.060	5725 to 5850	Pass
			-20	120	5785.040	5725 to 5850	Pass
			-10	120	5785.060	5725 to 5850	Pass
			0	120	5785.040	5725 to 5850	Pass
			10	120	5785.040	5725 to 5850	Pass
			30	120	5785.020	5725 to 5850	Pass
			40	120	5785.080	5725 to 5850	Pass
			50	120	5785.020	5725 to 5850	Pass
		5825	20	102	5825.060	5725 to 5850	Pass
				120	5825.040	5725 to 5850	Pass
				138	5825.040	5725 to 5850	Pass
			-30	120	5825.040	5725 to 5850	Pass
			-20	120	5825.040	5725 to 5850	Pass
			-10	120	5825.100	5725 to 5850	Pass
			0	120	5825.080	5725 to 5850	Pass
			10	120	5825.060	5725 to 5850	Pass
			30	120	5825.060	5725 to 5850	Pass
			40	120	5825.060	5725 to 5850	Pass
			50	120	5825.060	5725 to 5850	Pass
802.11n (HT20)	SISO	5745	20	102	5745.040	5725 to 5850	Pass
				120	5745.000	5725 to 5850	Pass
				138	5744.960	5725 to 5850	Pass
			-30	120	5745.040	5725 to 5850	Pass
			-20	120	5745.020	5725 to 5850	Pass
			-10	120	5745.020	5725 to 5850	Pass
			0	120	5744.980	5725 to 5850	Pass
			10	120	5745.000	5725 to 5850	Pass
			30	120	5745.040	5725 to 5850	Pass
			40	120	5744.960	5725 to 5850	Pass
			50	120	5745.040	5725 to 5850	Pass
		5785	20	102	5785.060	5725 to 5850	Pass
				120	5785.020	5725 to 5850	Pass

				138	5785.000	5725 to 5850	Pass
			-30	120	5785.000	5725 to 5850	Pass
			-20	120	5785.020	5725 to 5850	Pass
			-10	120	5785.020	5725 to 5850	Pass
			0	120	5785.000	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	5725 to 5850	Pass
		5825	20	102	5825.080	5725 to 5850	Pass
				120	5825.020	5725 to 5850	Pass
				138	5825.020	5725 to 5850	Pass
			-30	120	5825.040	5725 to 5850	Pass
			-20	120	5825.040	5725 to 5850	Pass
			-10	120	5825.020	5725 to 5850	Pass
			0	120	5825.040	5725 to 5850	Pass
			10	120	5825.060	5725 to 5850	Pass
			30	120	5825.060	5725 to 5850	Pass
			40	120	5825.040	5725 to 5850	Pass
			50	120	5825.020	5725 to 5850	Pass
802.11n (HT40)	SISO	5755	20	102	5755.000	5725 to 5850	Pass
				120	5755.000	5725 to 5850	Pass
				138	5754.960	5725 to 5850	Pass
			-30	120	5755.040	5725 to 5850	Pass
			-20	120	5755.040	5725 to 5850	Pass
			-10	120	5755.000	5725 to 5850	Pass
			0	120	5755.040	5725 to 5850	Pass
			10	120	5754.960	5725 to 5850	Pass
			30	120	5754.920	5725 to 5850	Pass
			40	120	5755.040	5725 to 5850	Pass
			50	120	5755.000	5725 to 5850	Pass
		5795	20	102	5795.040	5725 to 5850	Pass
				120	5795.040	5725 to 5850	Pass
				138	5795.000	5725 to 5850	Pass
			-30	120	5795.040	5725 to 5850	Pass
			-20	120	5795.040	5725 to 5850	Pass
			-10	120	5794.920	5725 to 5850	Pass
			0	120	5795.040	5725 to 5850	Pass
			10	120	5795.000	5725 to 5850	Pass
			30	120	5795.000	5725 to 5850	Pass
			40	120	5795.040	5725 to 5850	Pass
			50	120	5795.040	5725 to 5850	Pass
802.11ac (VHT20)	SISO	5745	20	102	5744.960	5725 to 5850	Pass
				120	5744.980	5725 to 5850	Pass
				138	5745.040	5725 to 5850	Pass
			-30	120	5744.960	5725 to 5850	Pass
			-20	120	5744.960	5725 to 5850	Pass
			-10	120	5745.000	5725 to 5850	Pass
			0	120	5745.020	5725 to 5850	Pass
			10	120	5745.000	5725 to 5850	Pass
			30	120	5745.040	5725 to 5850	Pass
			40	120	5745.040	5725 to 5850	Pass
			50	120	5745.000	5725 to 5850	Pass
		5785	20	102	5785.020	5725 to 5850	Pass
				120	5785.040	5725 to 5850	Pass
				138	5784.980	5725 to 5850	Pass
			-30	120	5785.000	5725 to 5850	Pass
			-20	120	5785.020	5725 to 5850	Pass
			-10	120	5785.000	5725 to 5850	Pass

			0	120	5785.060	5725 to 5850	Pass
			10	120	5785.000	5725 to 5850	Pass
			30	120	5784.980	5725 to 5850	Pass
			40	120	5784.980	5725 to 5850	Pass
			50	120	5785.020	5725 to 5850	Pass
		5825	20	102	5824.980	5725 to 5850	Pass
				120	5825.060	5725 to 5850	Pass
				138	5825.020	5725 to 5850	Pass
			-30	120	5824.980	5725 to 5850	Pass
			-20	120	5824.940	5725 to 5850	Pass
			-10	120	5824.980	5725 to 5850	Pass
			0	120	5824.980	5725 to 5850	Pass
			10	120	5824.980	5725 to 5850	Pass
			30	120	5825.000	5725 to 5850	Pass
			40	120	5825.080	5725 to 5850	Pass
			50	120	5825.040	5725 to 5850	Pass
802.11ac (VHT40)	SISO	5755	20	102	5754.960	5725 to 5850	Pass
				120	5755.000	5725 to 5850	Pass
				138	5754.960	5725 to 5850	Pass
			-30	120	5755.000	5725 to 5850	Pass
			-20	120	5754.960	5725 to 5850	Pass
			-10	120	5755.000	5725 to 5850	Pass
			0	120	5755.040	5725 to 5850	Pass
			10	120	5754.960	5725 to 5850	Pass
			30	120	5755.080	5725 to 5850	Pass
			40	120	5755.000	5725 to 5850	Pass
			50	120	5755.000	5725 to 5850	Pass
		5795	20	102	5795.120	5725 to 5850	Pass
				120	5795.040	5725 to 5850	Pass
				138	5795.000	5725 to 5850	Pass
			-30	120	5795.040	5725 to 5850	Pass
			-20	120	5794.960	5725 to 5850	Pass
			-10	120	5795.040	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	5795.040	5725 to 5850	Pass

6. Form731

6.1 Test Result

6.1.1 Form731

Lower Freq (MHz)	High Freq (MHz)	MAX Power (W)	MAX Power (dBm)
5745	5825	0.0369	15.67
5755	5795	0.0262	14.18