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Annex for 5G Wi-Fi Band 3

Test Report No.: CTL2509126021-WF02

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FCC ID: SMQ-UWM1

1. Duty Cycle

1.1 Test Result

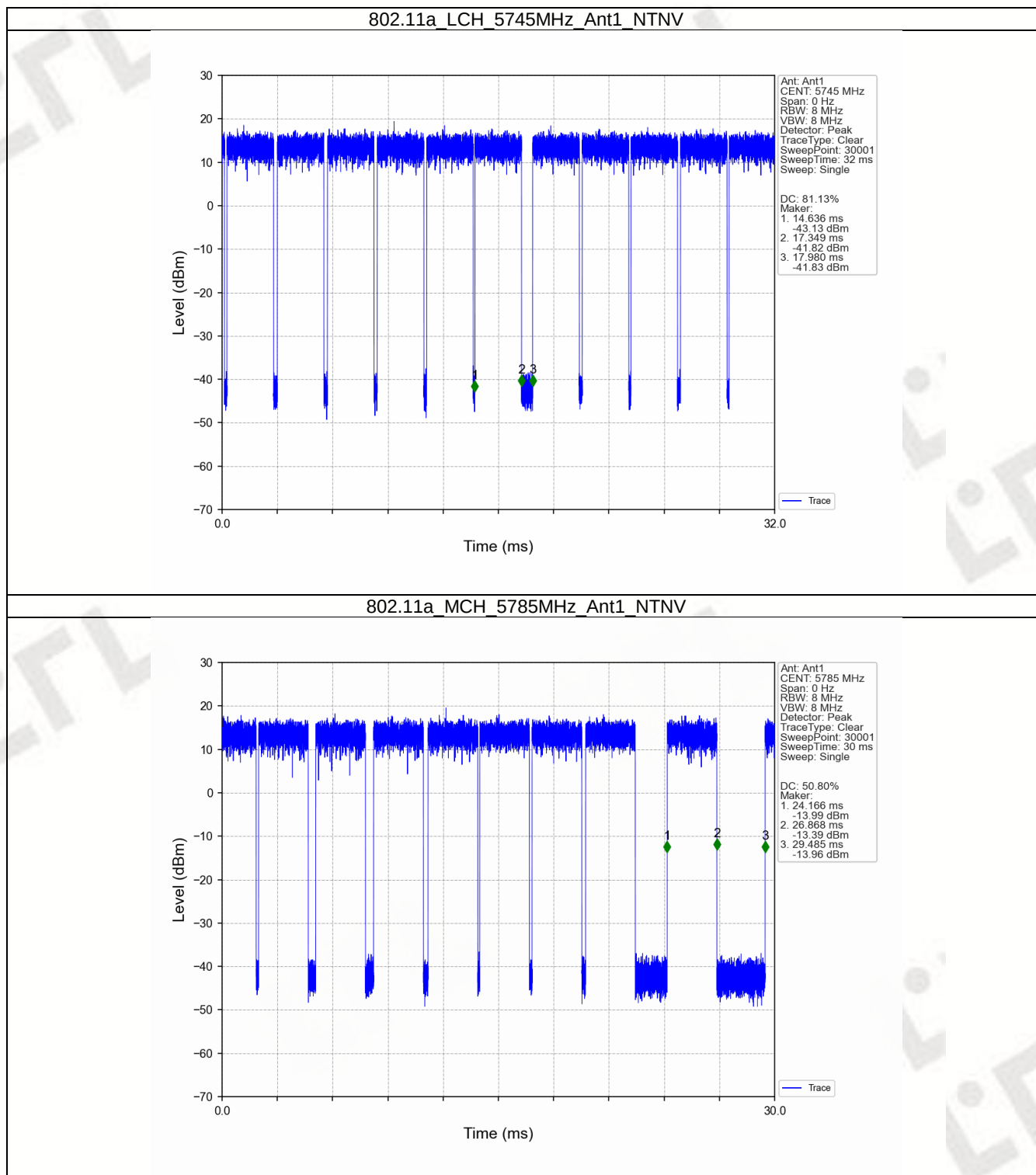
1.1.1 Ant1

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	/	/	2.713	3.344	81.13	0.91	15.92
		5785	/	/	2.702	5.319	50.80	2.94	45.55
		5825	/	/	2.702	2.954	91.47	0.39	3.21
802.11n (HT20)	SISO	5745	/	/	2.524	2.715	92.97	0.32	4.53
		5785	/	/	2.525	2.856	88.41	0.53	8.77
		5825	/	/	2.515	2.766	90.93	0.41	3.71
802.11n (HT40)	SISO	5755	/	/	1.232	1.435	85.85	0.66	7.64
		5795	/	/	1.232	1.444	85.32	0.69	7.56
802.11ac (VHT20)	SISO	5745	/	/	2.522	2.907	86.76	0.62	9.32
		5785	/	/	2.522	7.576	33.29	4.78	59.46
		5825	/	/	2.522	2.782	90.65	0.43	3.95
802.11ac (VHT40)	SISO	5755	/	/	1.236	1.686	73.31	1.35	18.99
		5795	/	/	1.236	1.496	82.62	0.83	5.87
802.11ac (VHT80)	SISO	5775	/	/	0.595	0.797	74.65	1.27	13.99
802.11ax (HEW20)	SISO	5745	SU	/	1.918	2.135	89.84	0.47	6.06
		5785	SU	/	1.917	2.125	90.21	0.45	4.86
		5825	SU	/	1.917	2.135	89.79	0.47	5.22
802.11ax (HEW40)	SISO	5755	SU	/	0.979	1.140	85.88	0.66	5.78
		5795	SU	/	0.979	3.502	27.96	5.54	59.30
802.11ax (HEW80)	SISO	5775	SU	/	0.489	0.695	70.36	1.53	15.60

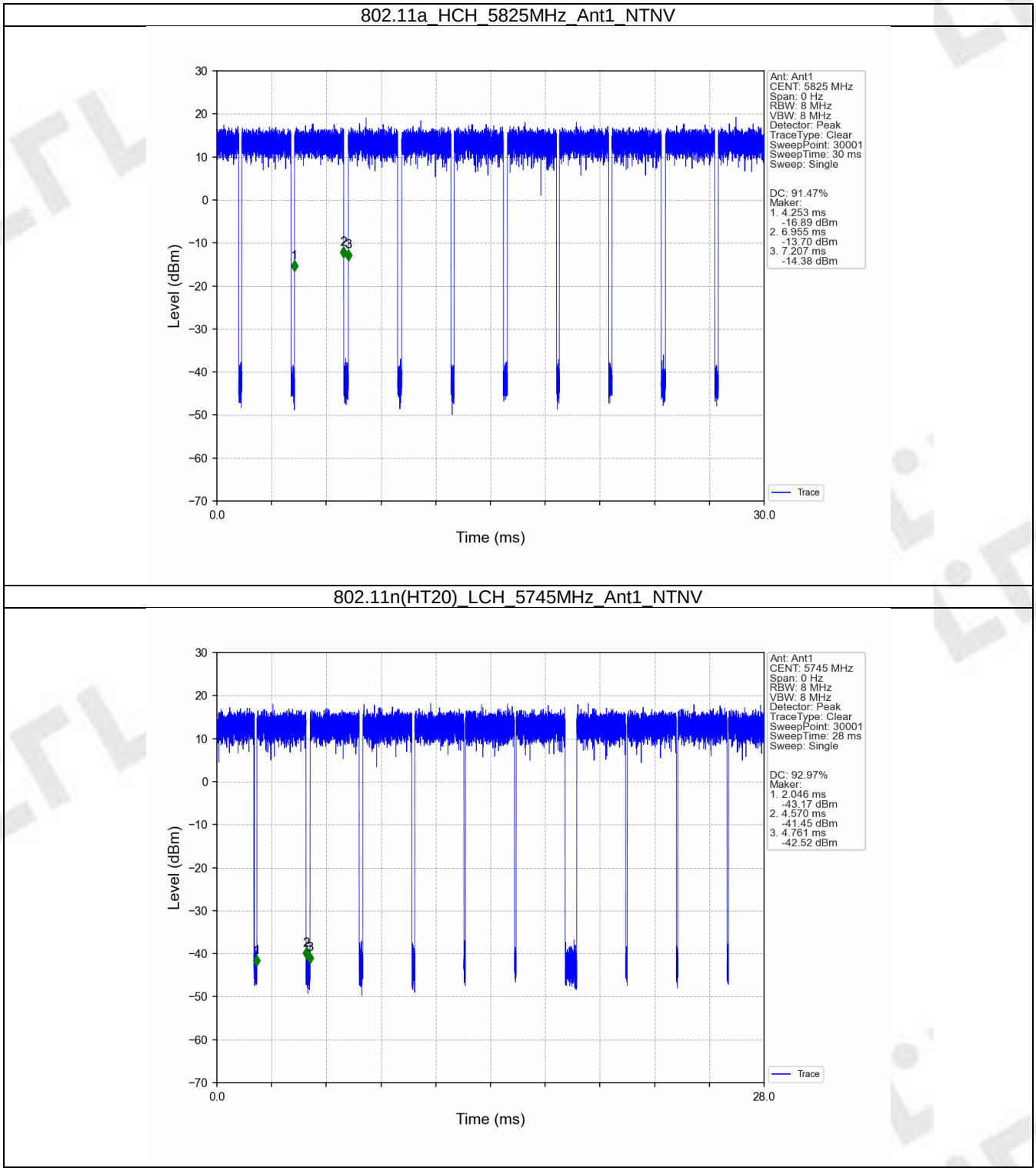
FCC ID: SMQ-UWM1

1.2 Test Graph

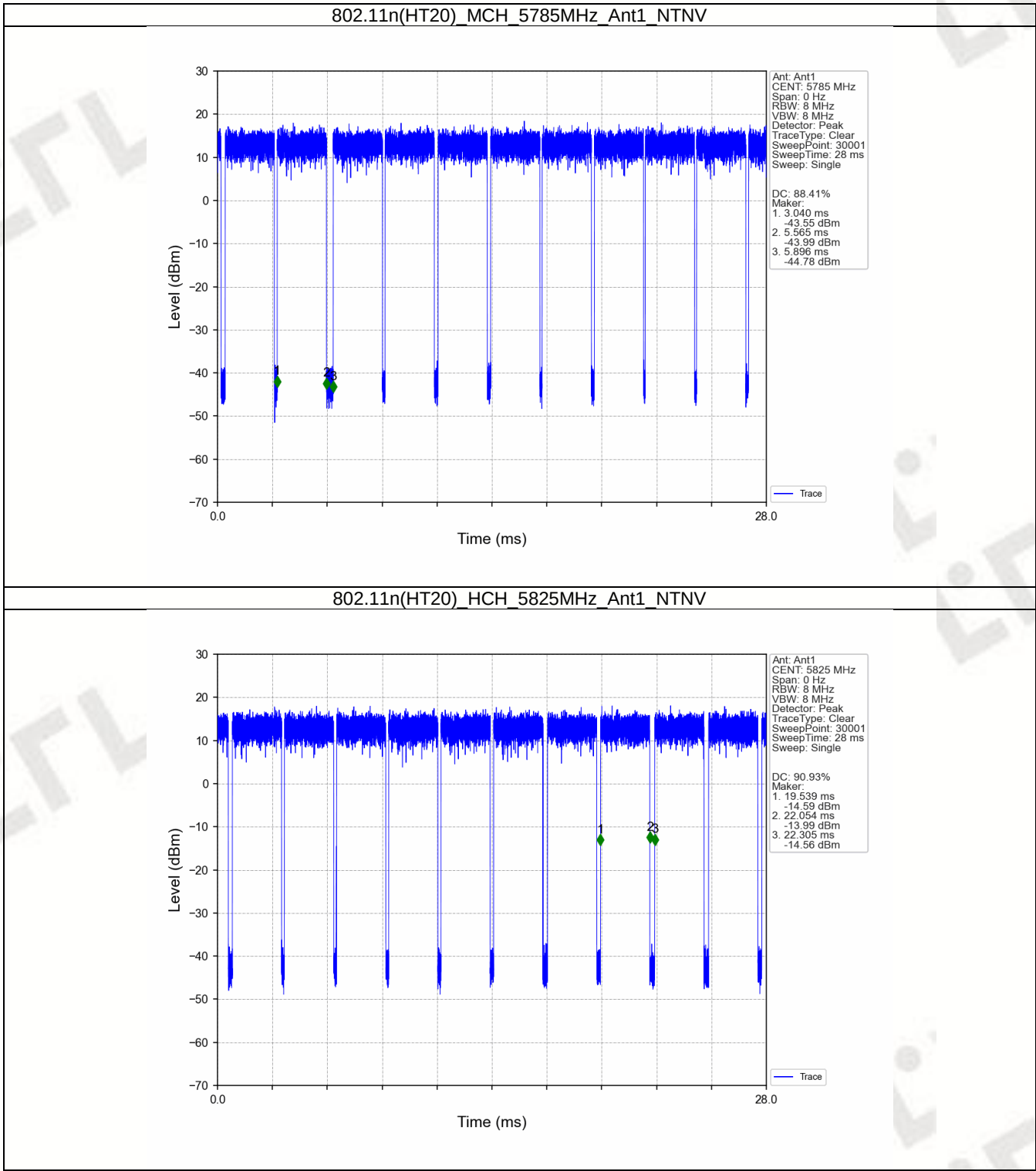
1.2.1 Ant1



FCC ID: SMQ-UWM1

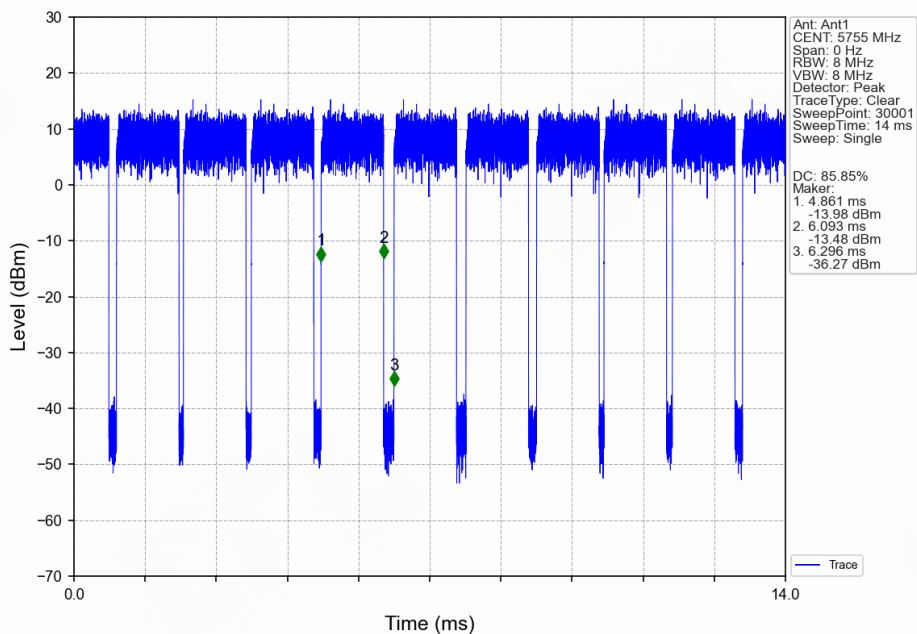


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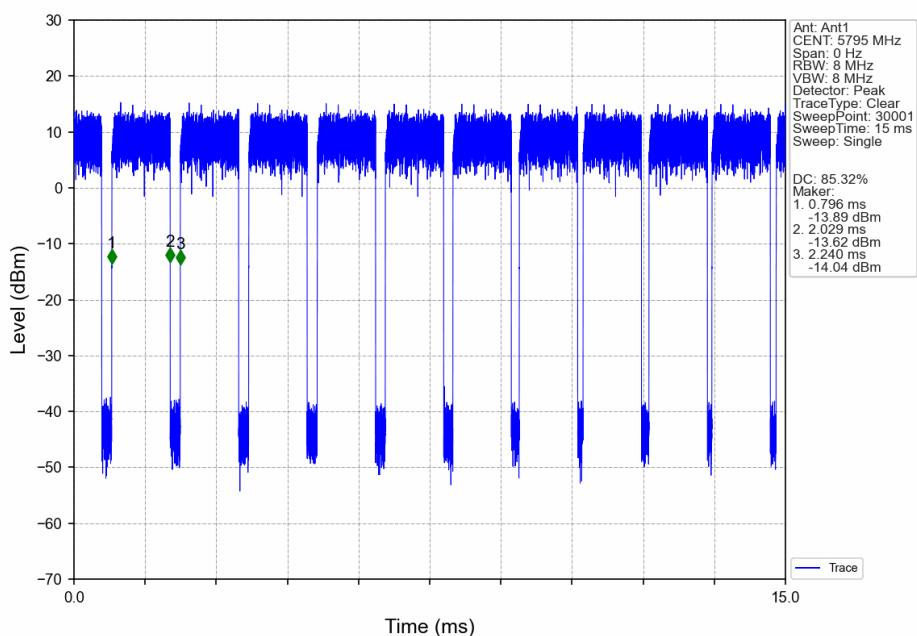


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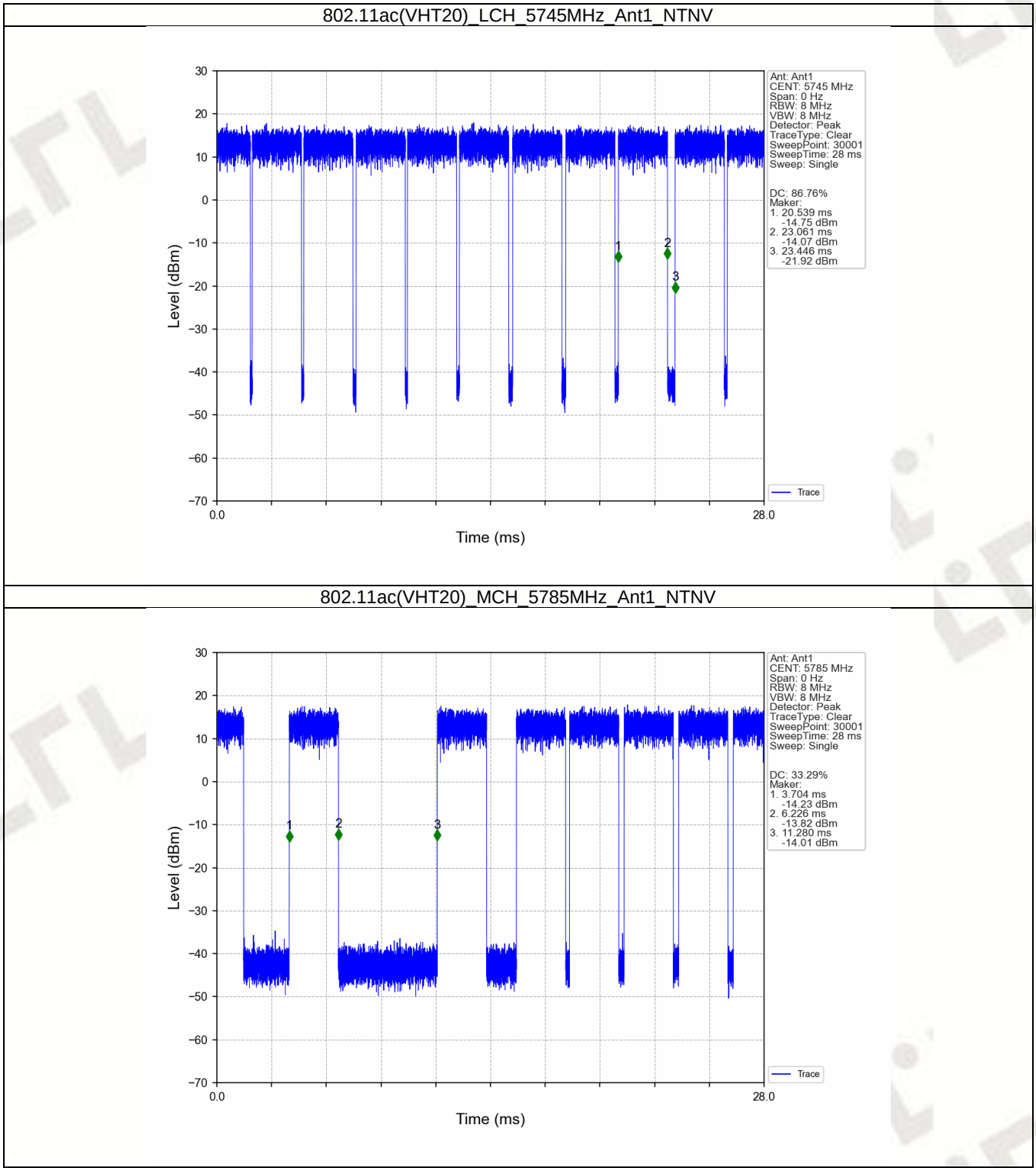
802.11n(HT40)_LCH_5755MHz_Ant1_NTNV



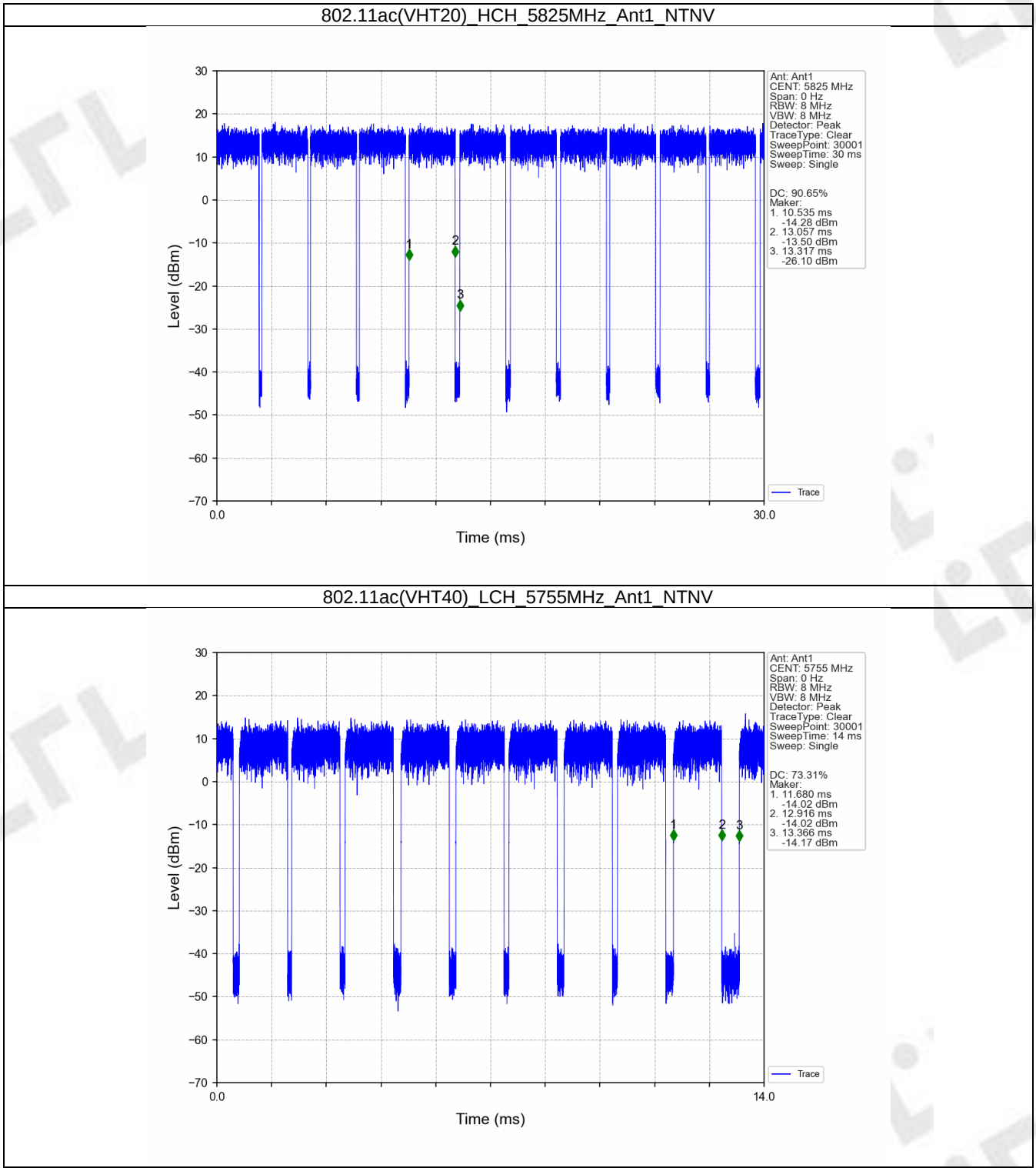
802.11n(HT40)_HCH_5795MHz_Ant1_NTNV



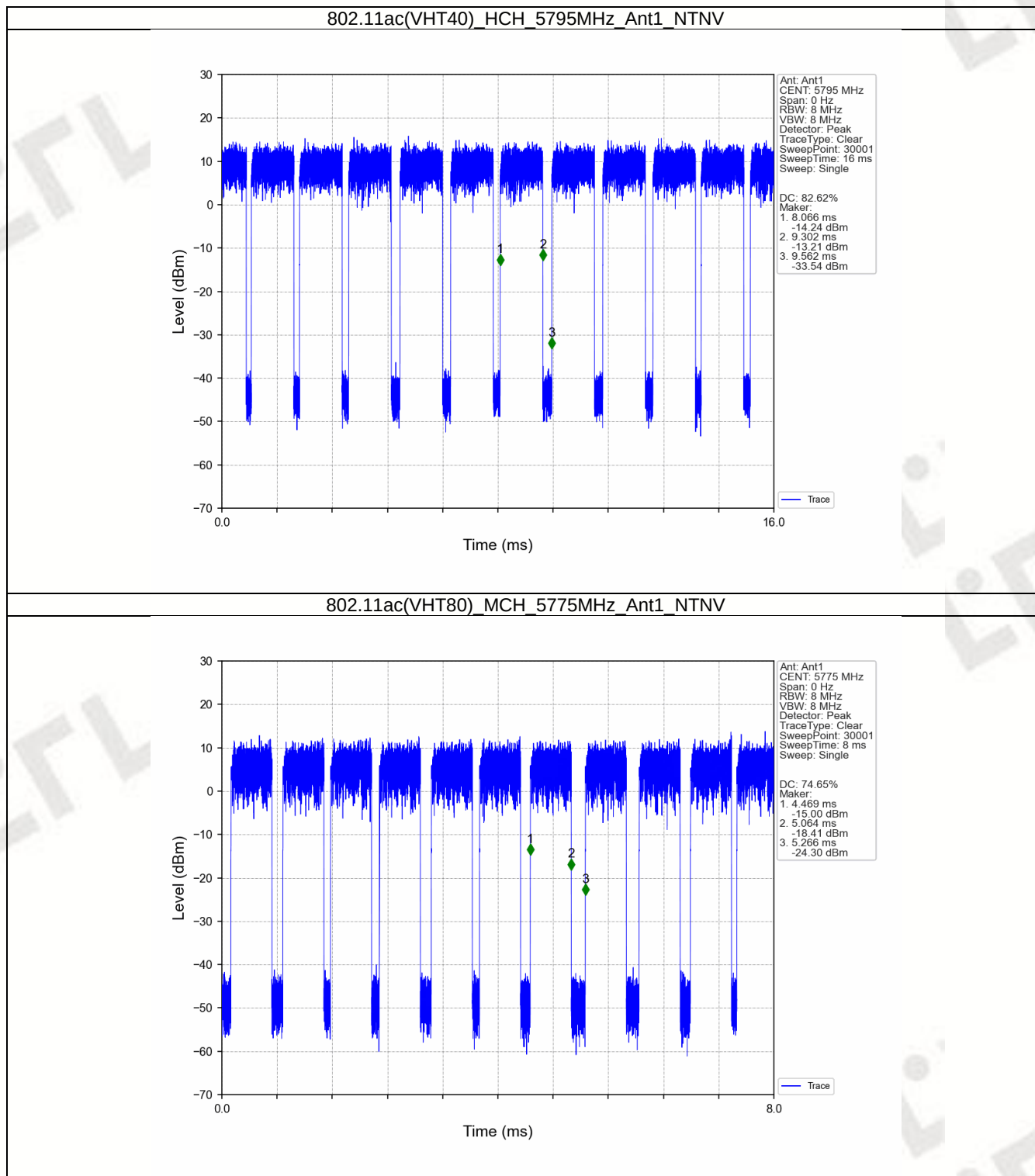
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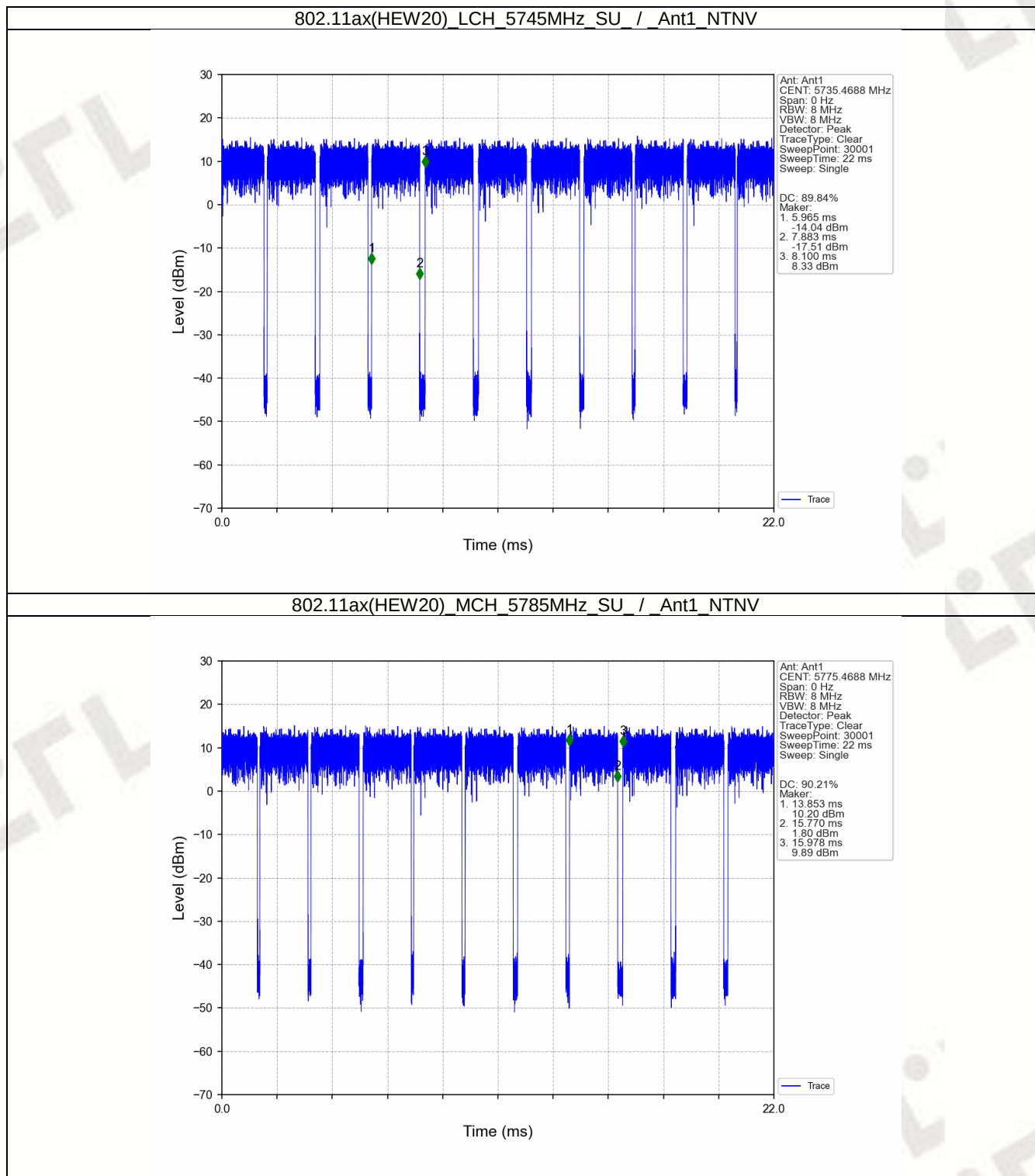
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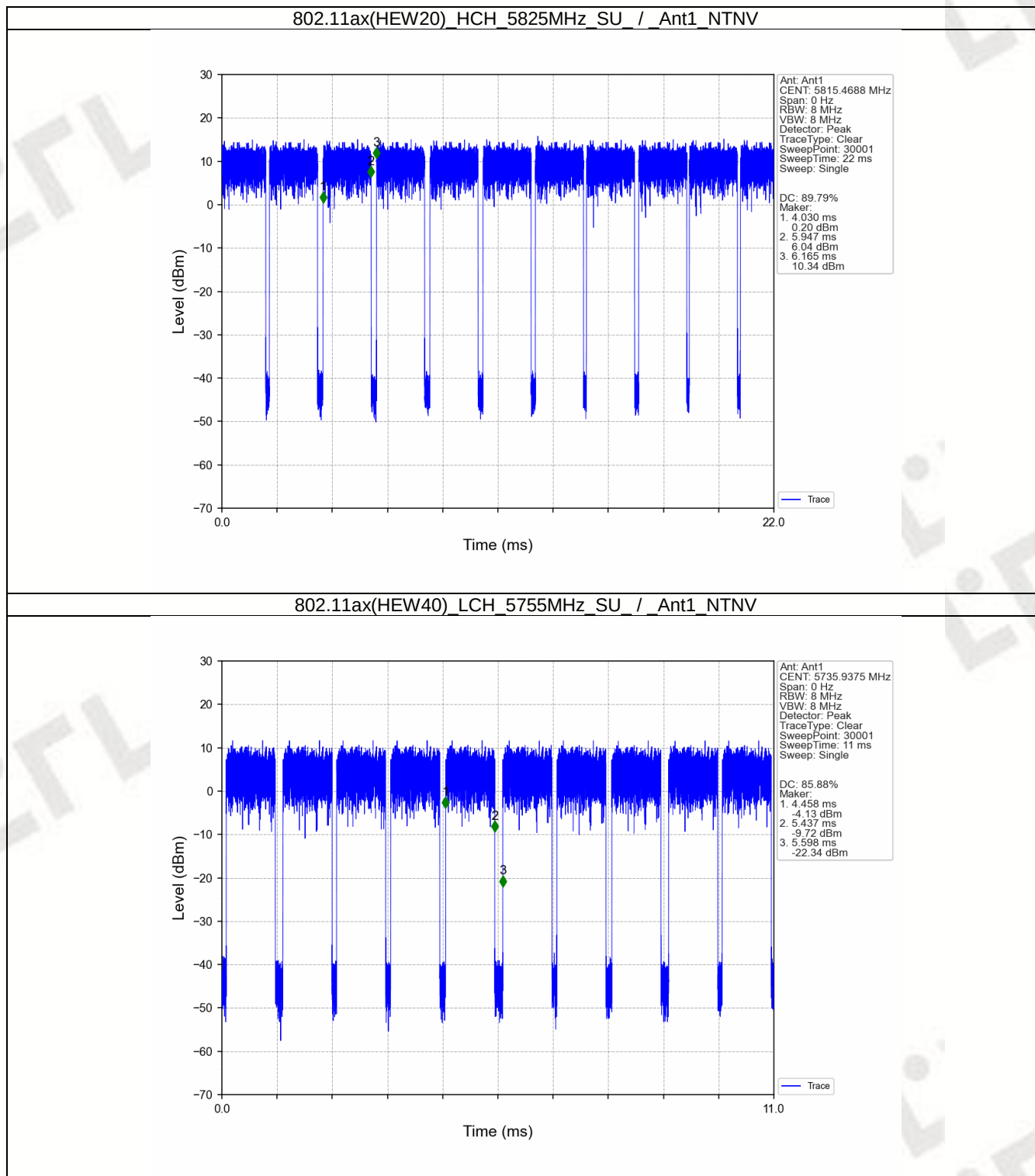
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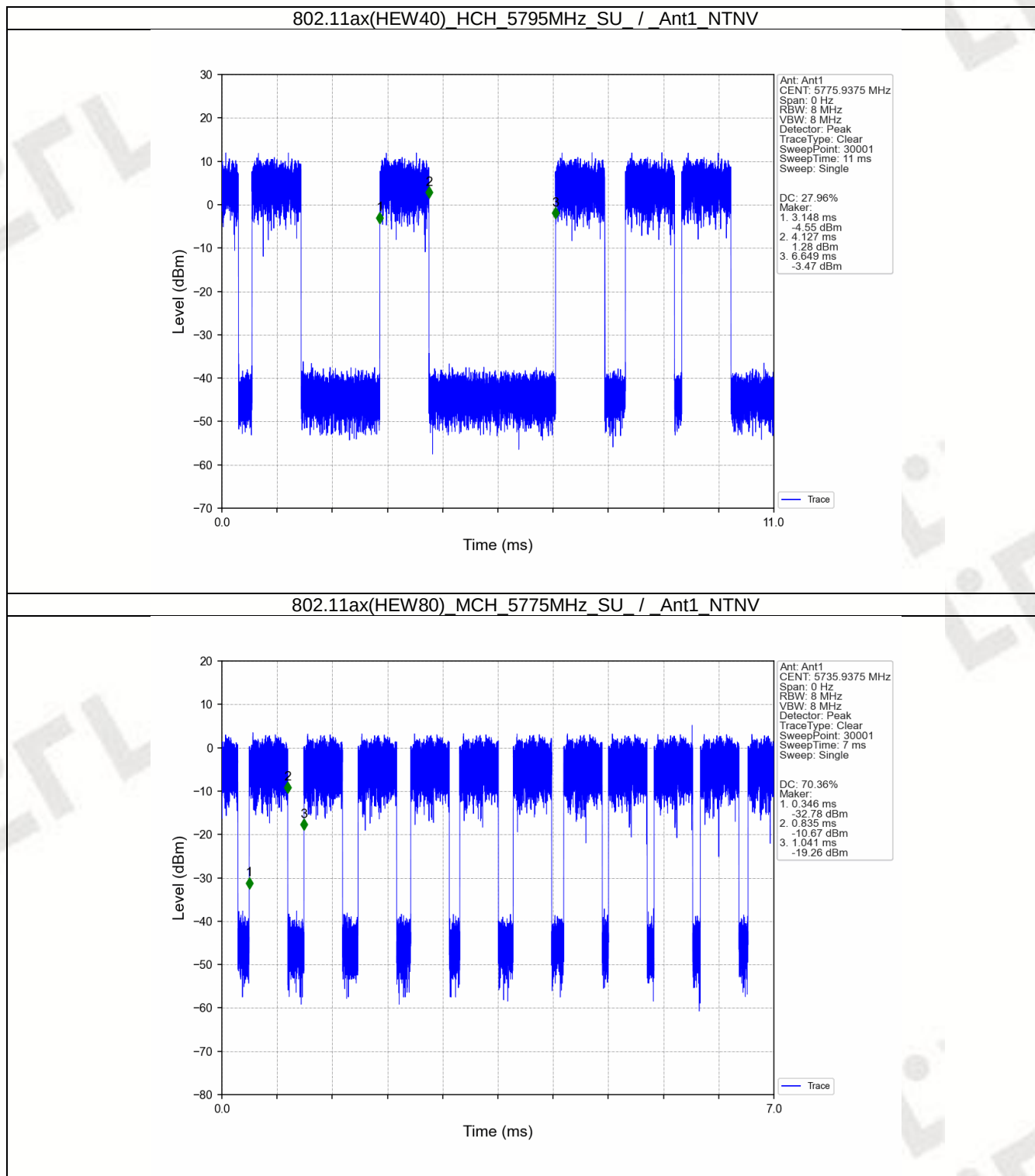


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FCC ID: SMQ-UWM1





FCC ID: SMQ-UWM1

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	17.630	/	Pass
		5785	/	/	1	17.540	/	Pass
		5825	/	/	1	17.594	/	Pass
802.11n (HT20)	SISO	5745	/	/	1	18.607	/	Pass
		5785	/	/	1	18.474	/	Pass
		5825	/	/	1	18.629	/	Pass
802.11n (HT40)	SISO	5755	/	/	1	37.032	/	Pass
		5795	/	/	1	37.185	/	Pass
802.11ac (VHT20)	SISO	5745	/	/	1	18.558	/	Pass
		5785	/	/	1	18.545	/	Pass
		5825	/	/	1	18.516	/	Pass
802.11ac (VHT40)	SISO	5755	/	/	1	37.357	/	Pass
		5795	/	/	1	37.204	/	Pass
802.11ac (VHT80)	SISO	5775	/	/	1	75.397	/	Pass
802.11ax (HEW20)	SISO	5745	SU	/	1	19.380	/	Pass
		5785	SU	/	1	19.317	/	Pass
		5825	SU	/	1	19.320	/	Pass
802.11ax (HEW40)	SISO	5755	SU	/	1	38.329	/	Pass
		5795	SU	/	1	38.191	/	Pass
802.11ax (HEW80)	SISO	5775	SU	/	1	77.077	/	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	16.410	>=0.5	Pass
		5785	/	/	1	16.381	>=0.5	Pass
		5825	/	/	1	16.377	>=0.5	Pass
802.11n (HT20)	SISO	5745	/	/	1	17.614	>=0.5	Pass
		5785	/	/	1	17.606	>=0.5	Pass
		5825	/	/	1	17.541	>=0.5	Pass
802.11n (HT40)	SISO	5755	/	/	1	36.395	>=0.5	Pass
		5795	/	/	1	36.357	>=0.5	Pass
802.11ac (VHT20)	SISO	5745	/	/	1	17.593	>=0.5	Pass
		5785	/	/	1	17.597	>=0.5	Pass
		5825	/	/	1	17.576	>=0.5	Pass
802.11ac (VHT40)	SISO	5755	/	/	1	36.380	>=0.5	Pass
		5795	/	/	1	36.344	>=0.5	Pass
802.11ac (VHT80)	SISO	5775	/	/	1	53.830	>=0.5	Pass
802.11ax	SISO	5745	SU	/	1	18.663	>=0.5	Pass

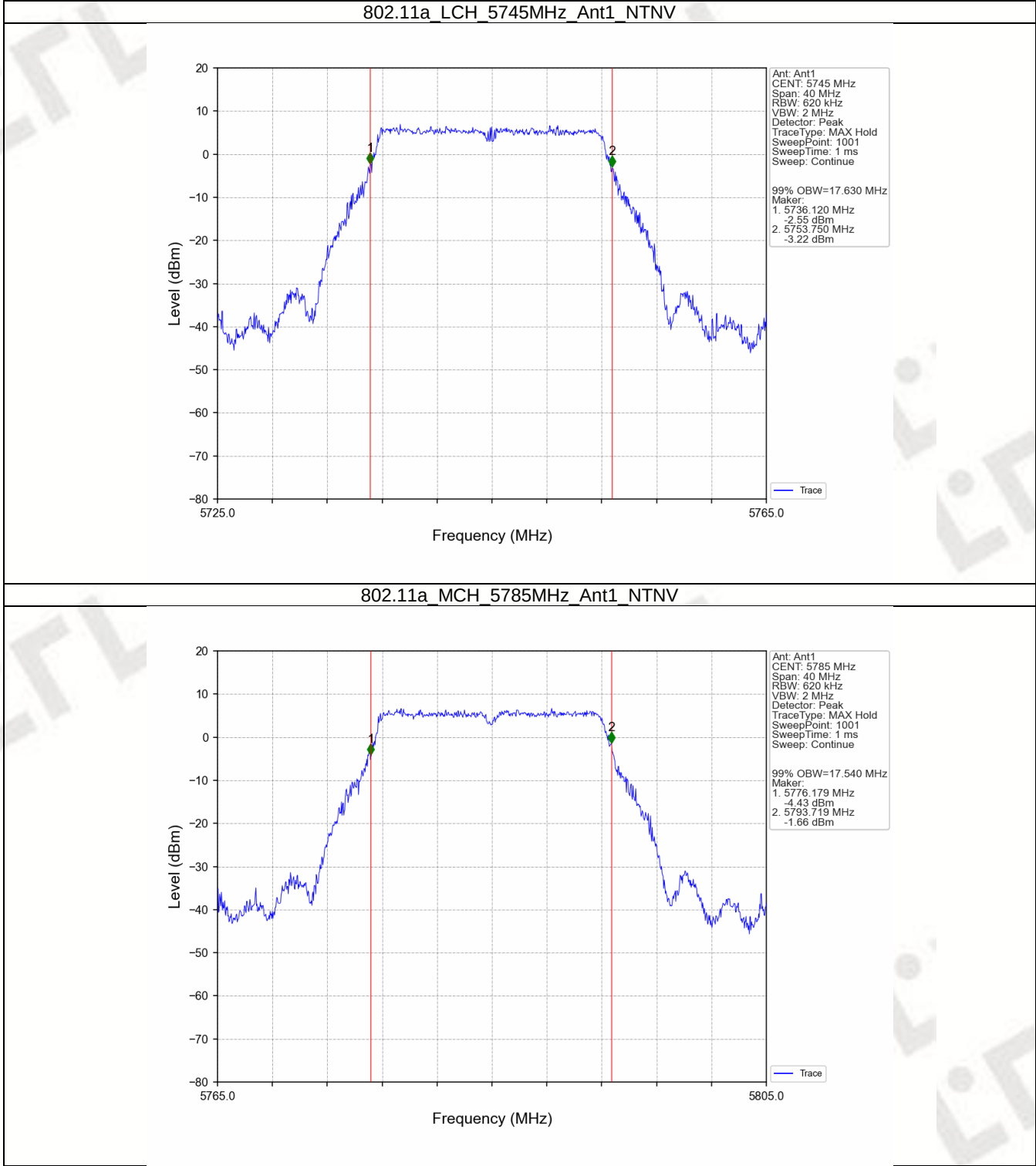
FCC ID: SMQ-UWM1

(HEW20)		5785	SU	/	1	18.769	≥ 0.5	Pass
		5825	SU	/	1	18.555	≥ 0.5	Pass
802.11ax (HEW40)	SISO	5755	SU	/	1	37.811	≥ 0.5	Pass
		5795	SU	/	1	38.034	≥ 0.5	Pass
802.11ax (HEW80)	SISO	5775	SU	/	1	60.010	≥ 0.5	Pass

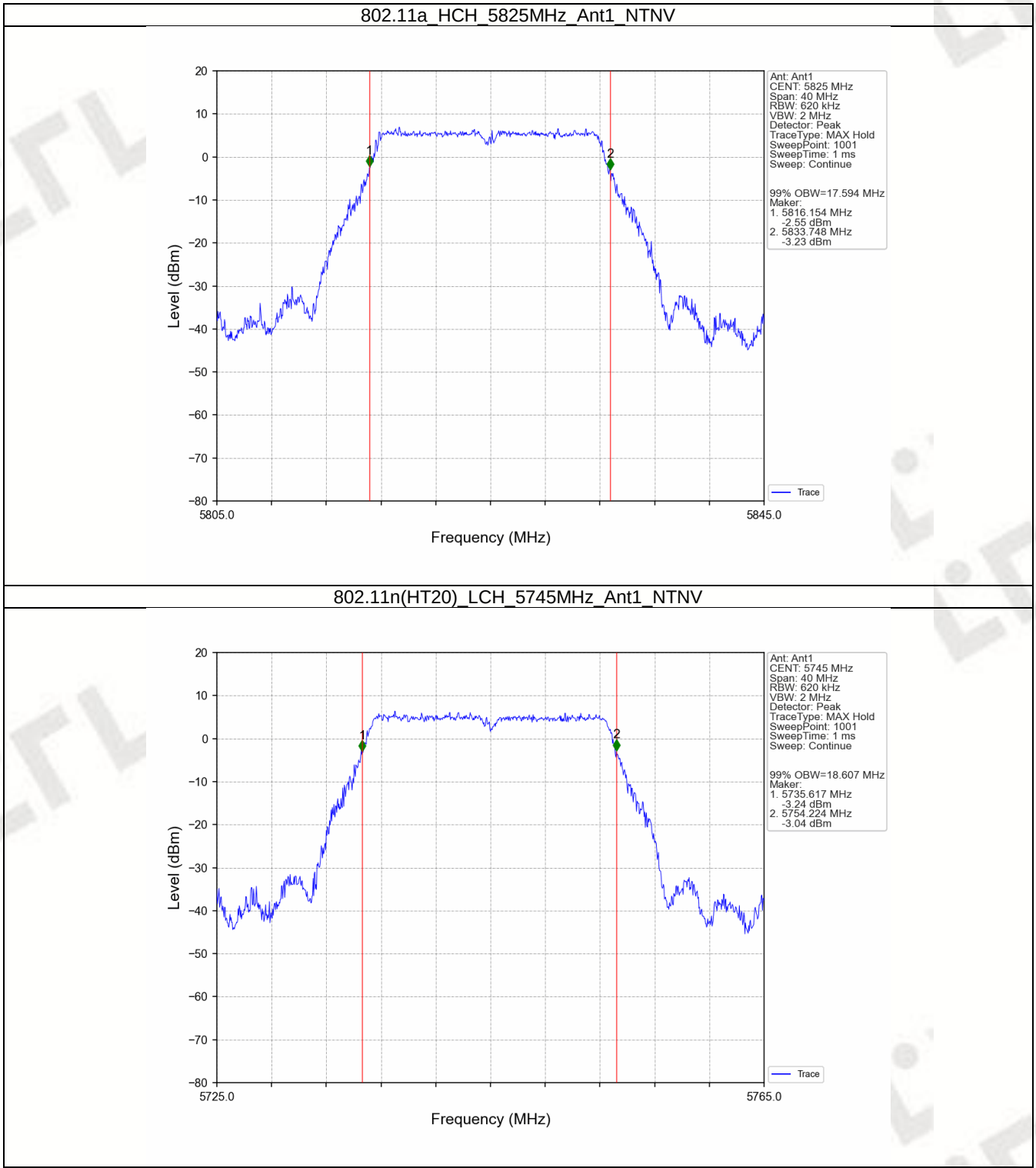
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2.2 Test Graph

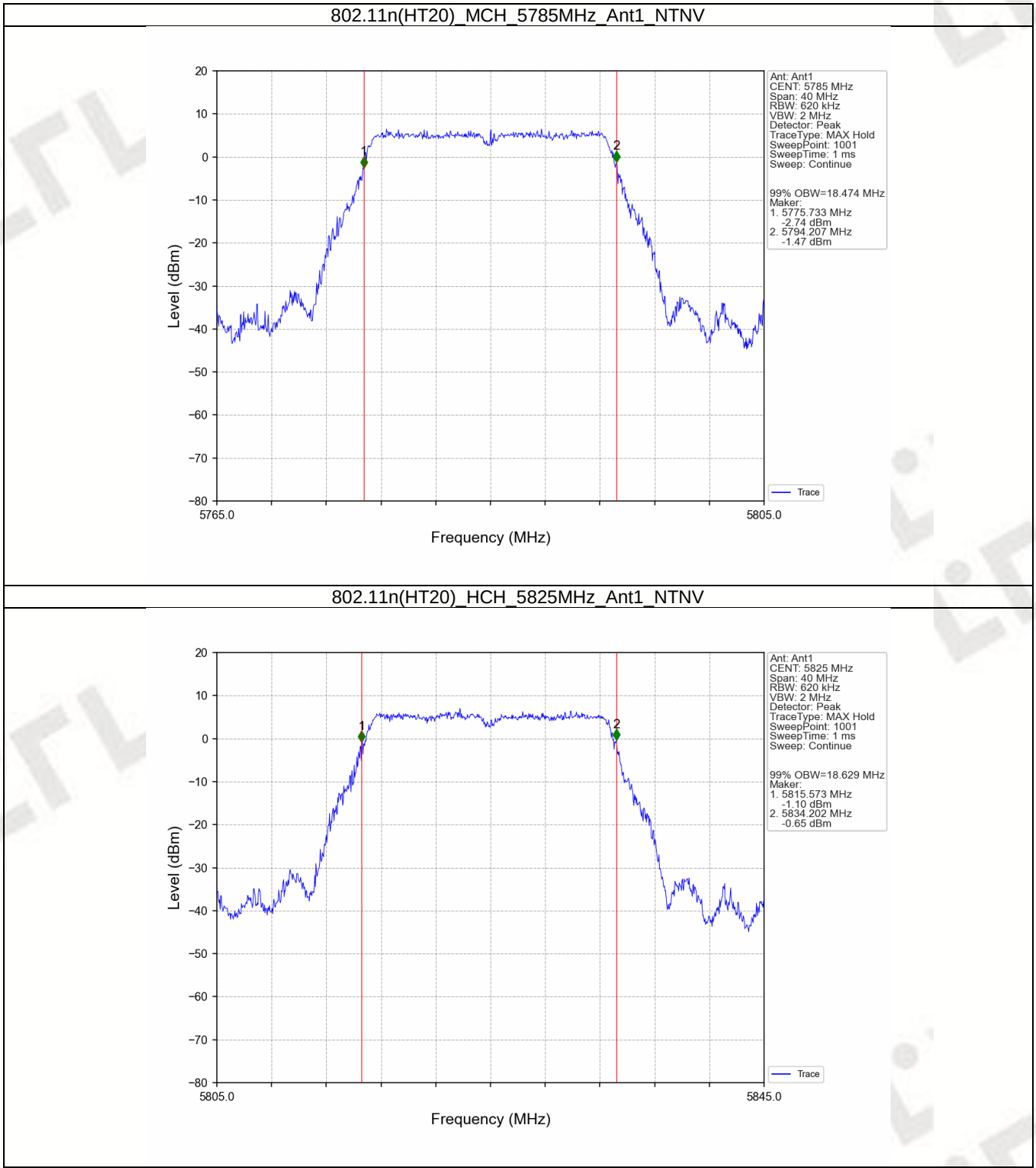
2.2.1 OBW



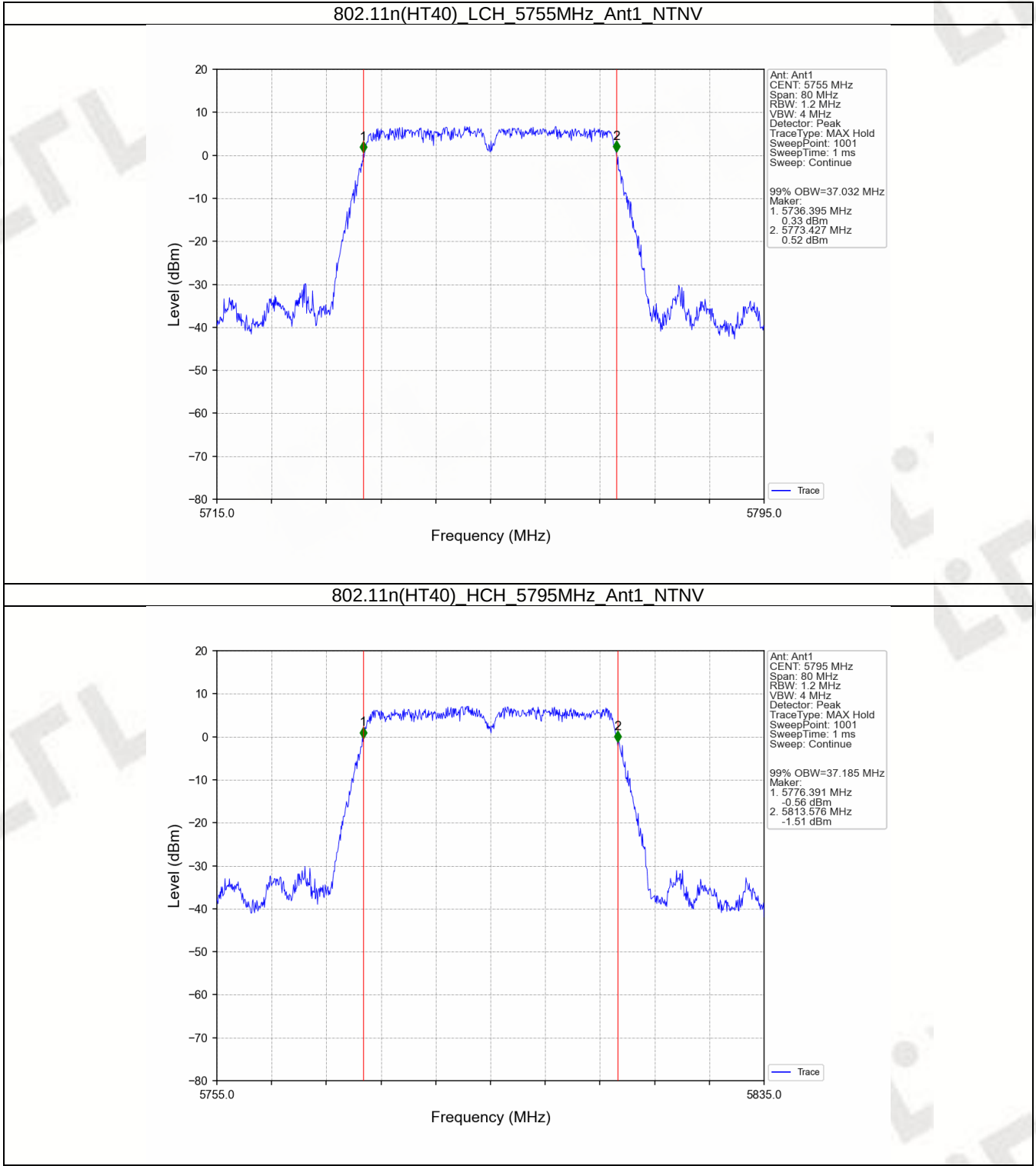
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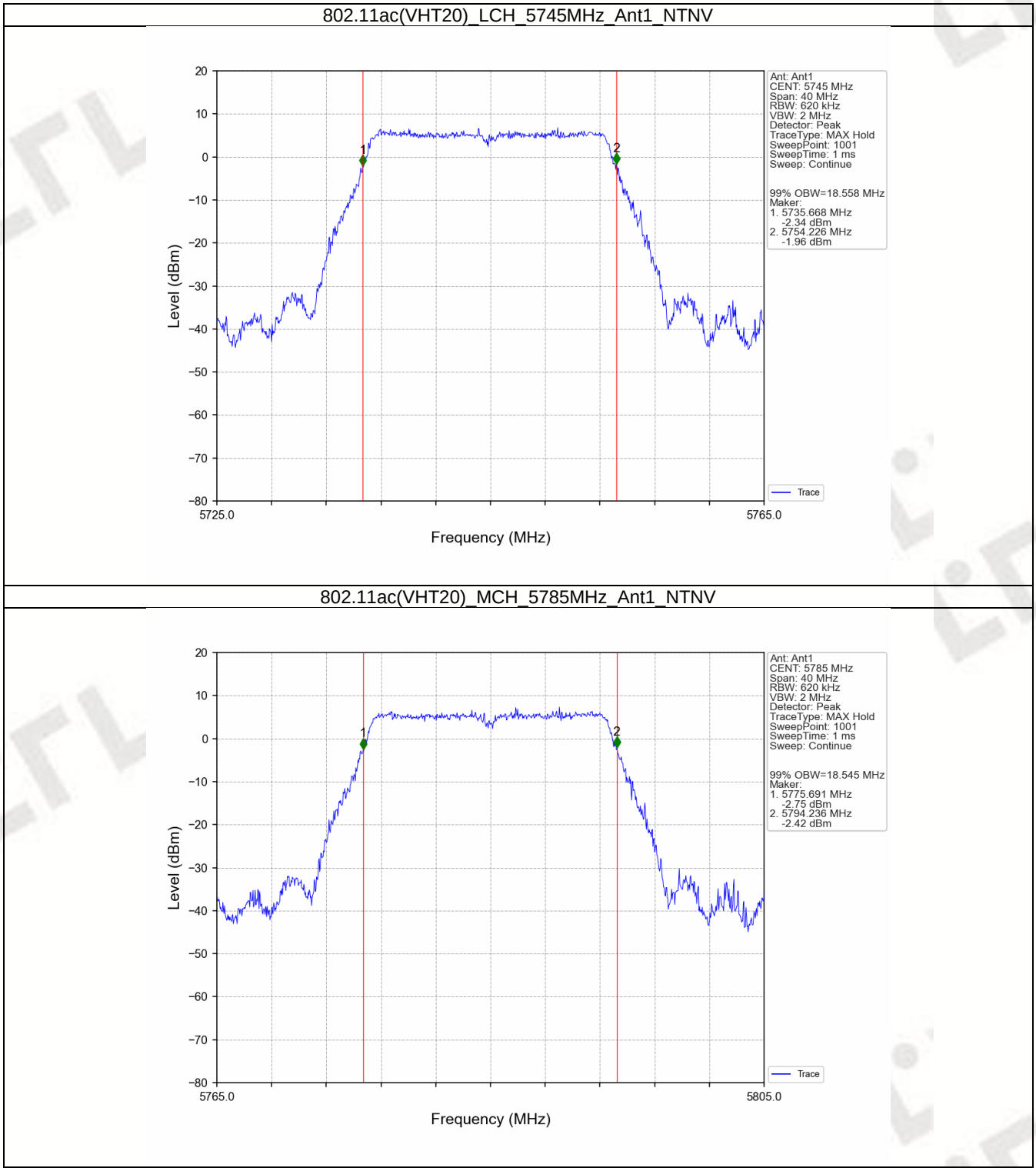
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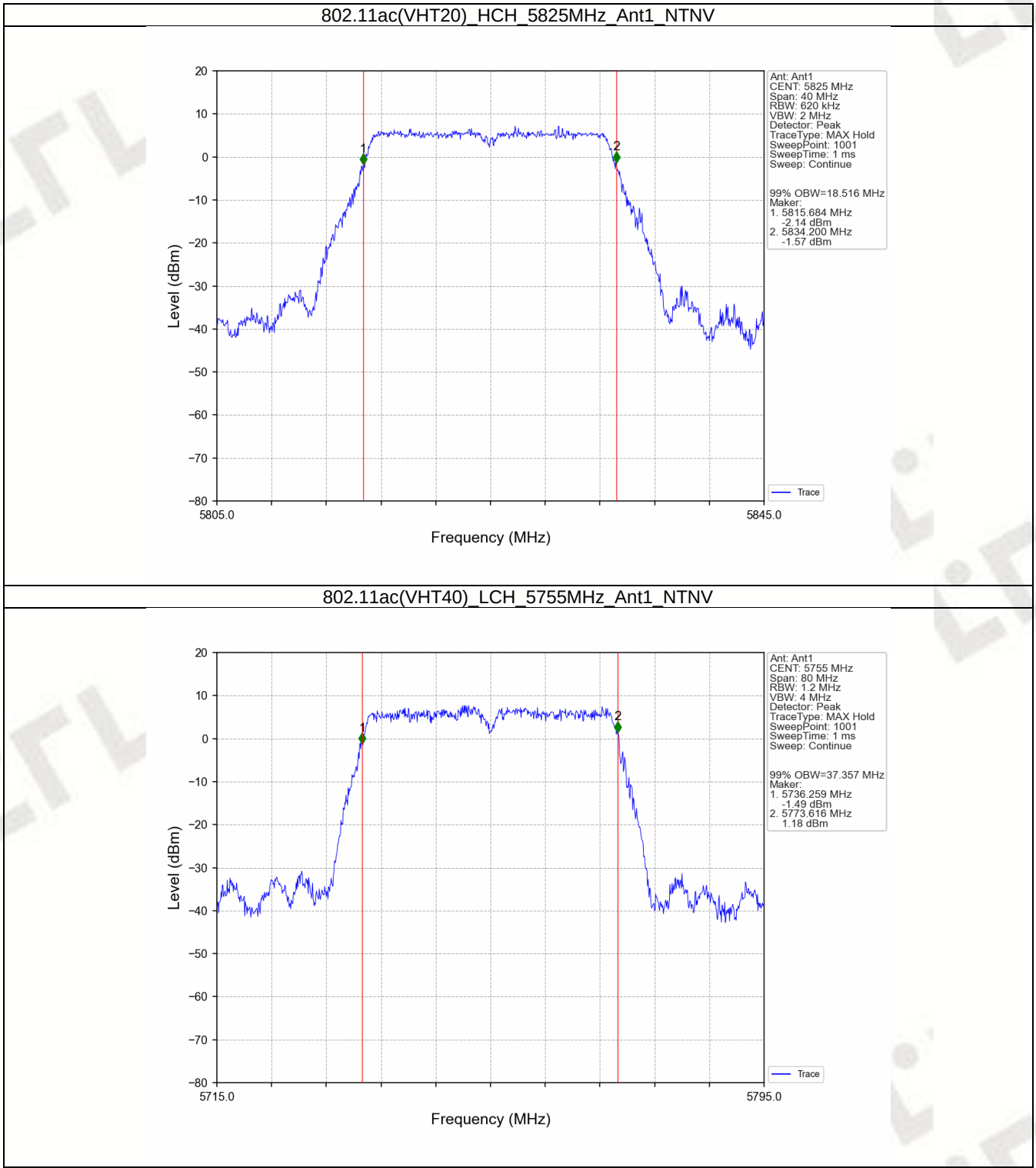
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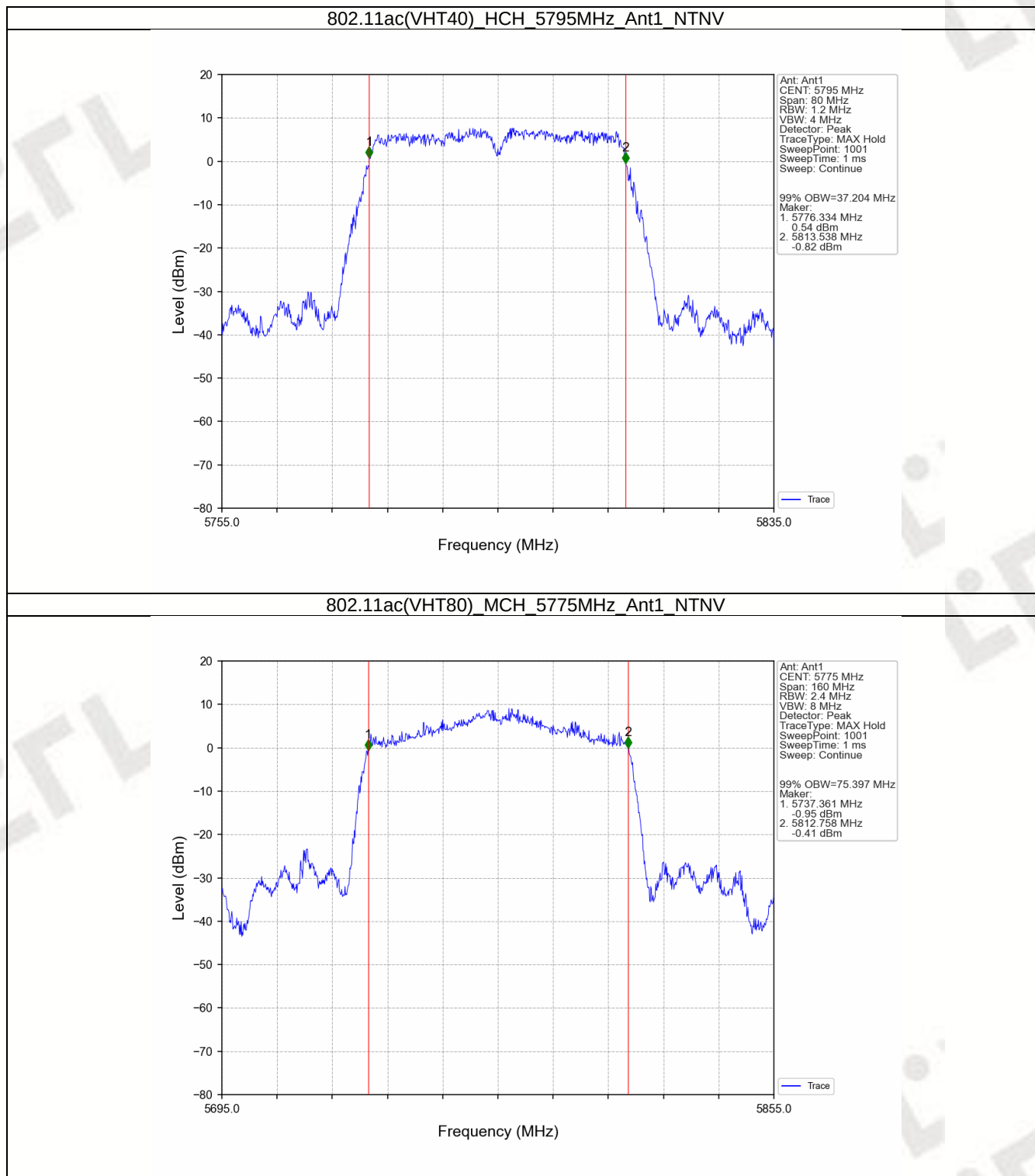
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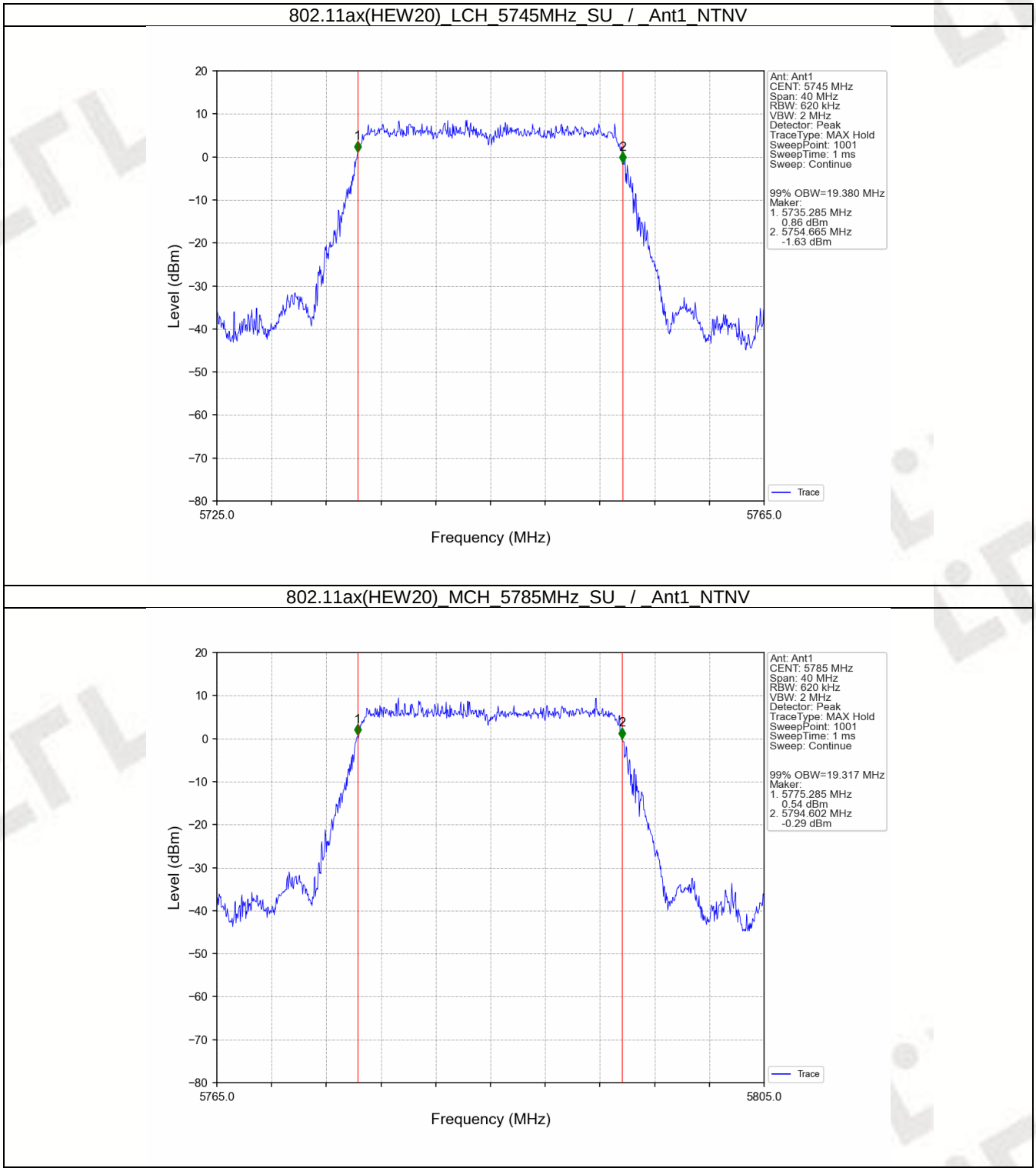
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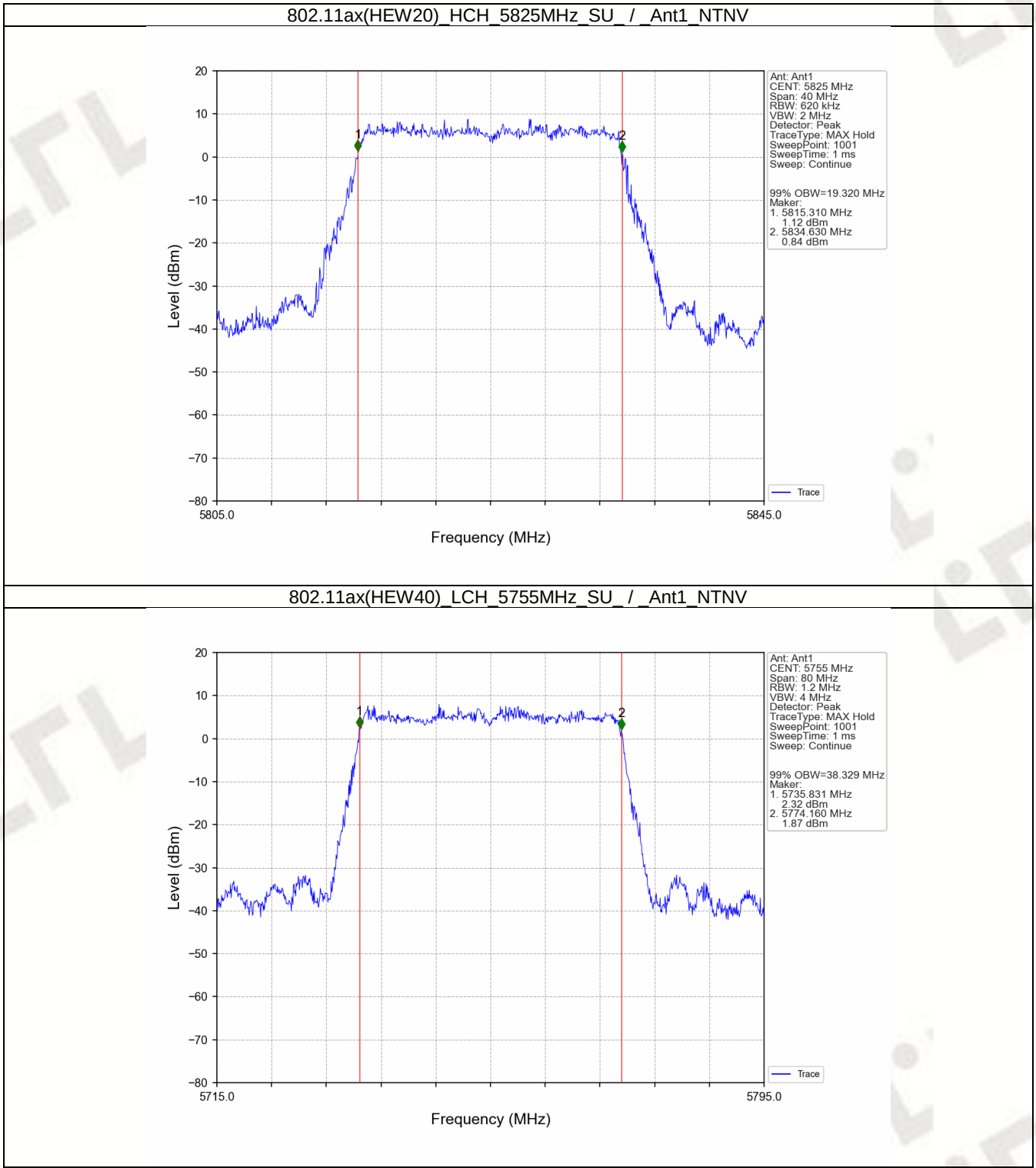
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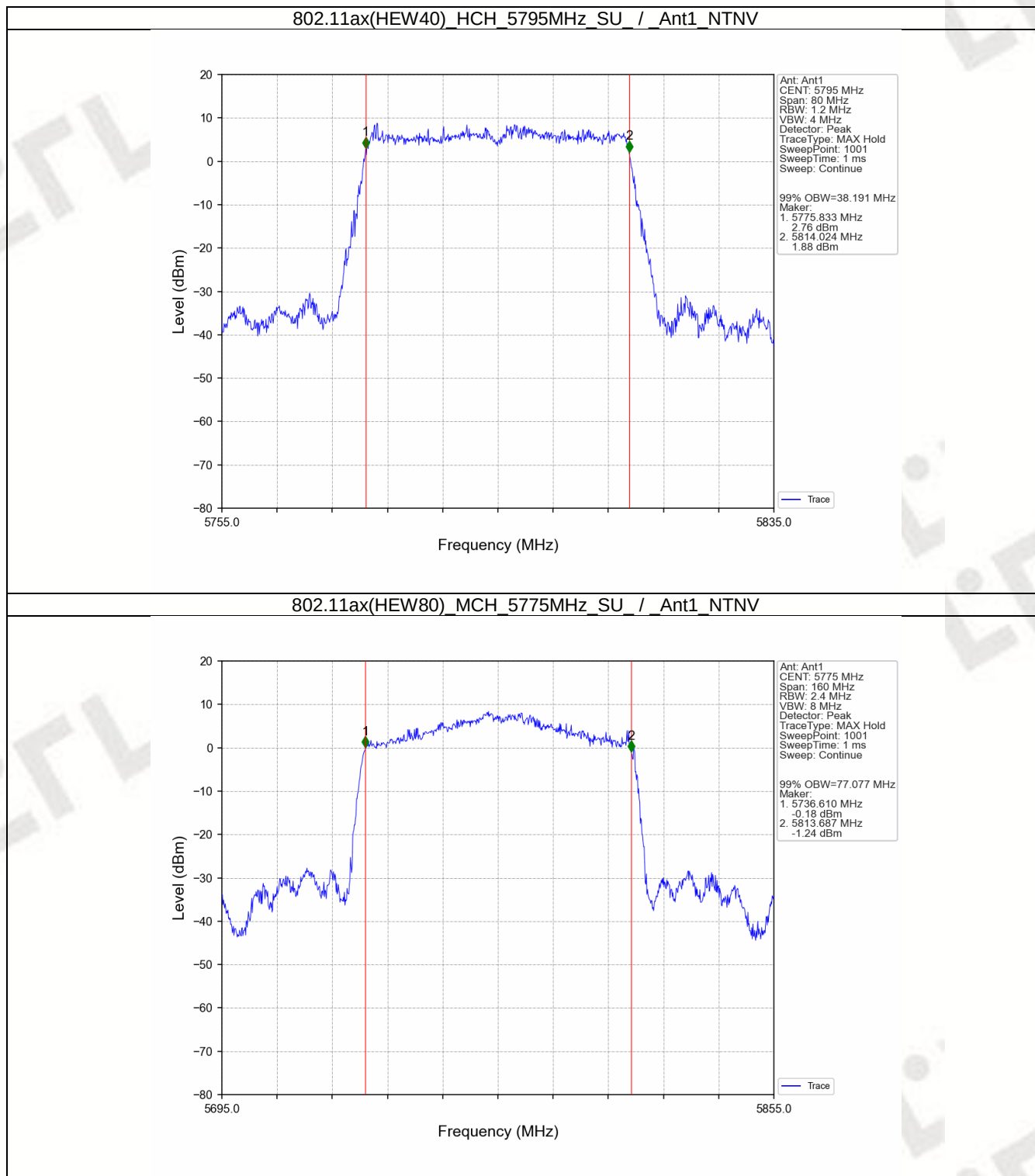
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FCC ID: SMQ-UWM1

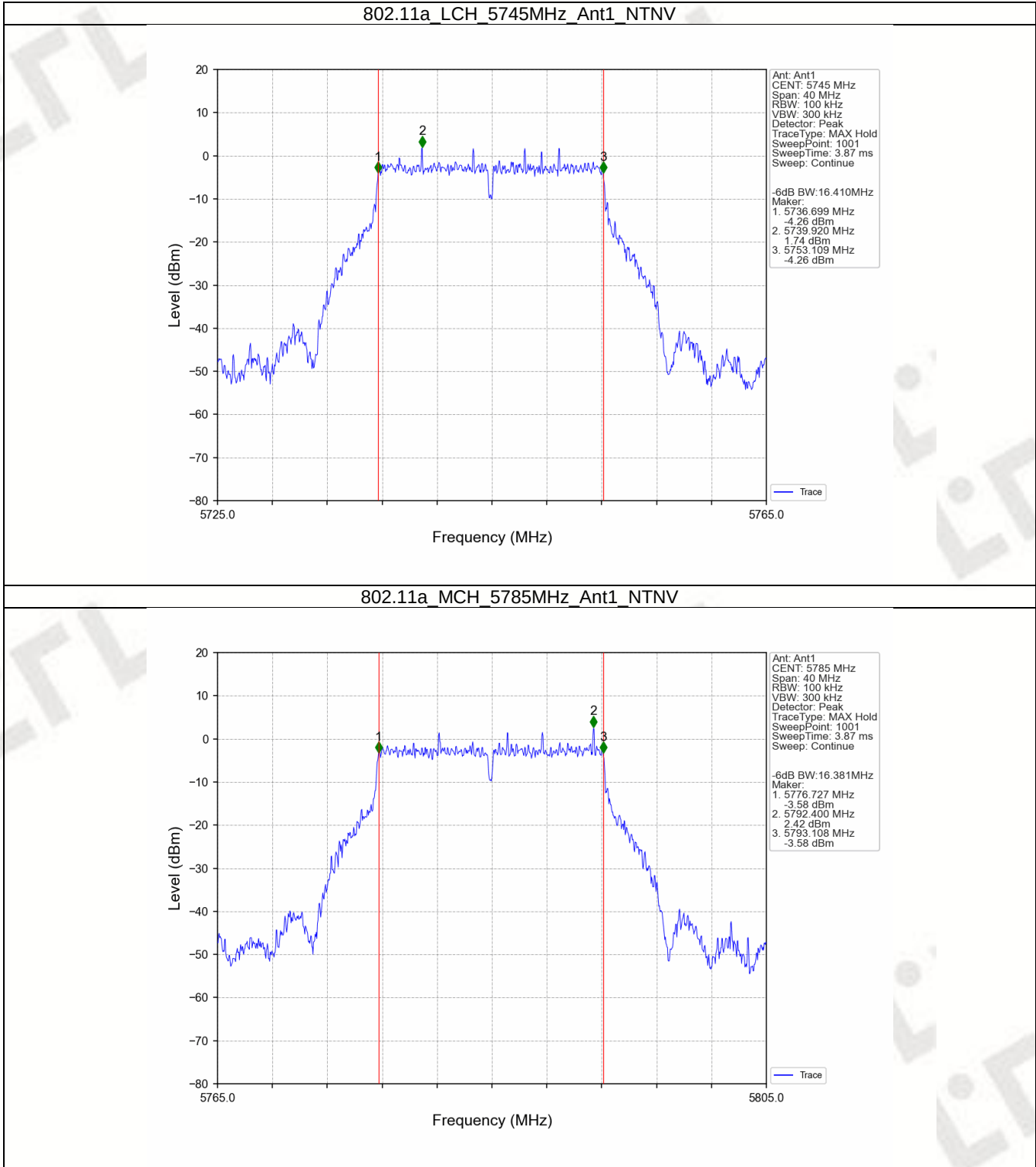


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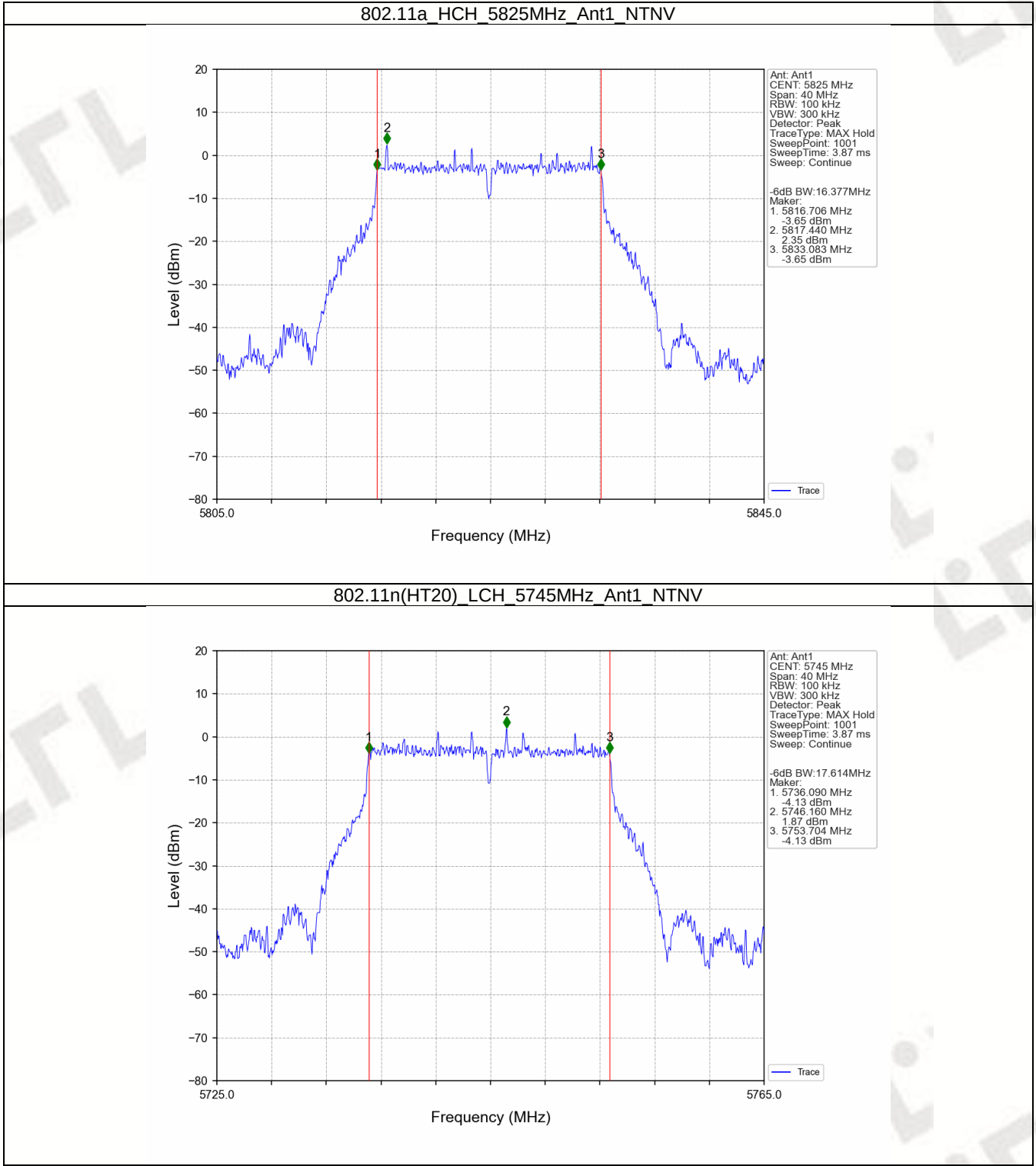


FCC ID: SMQ-UWM1

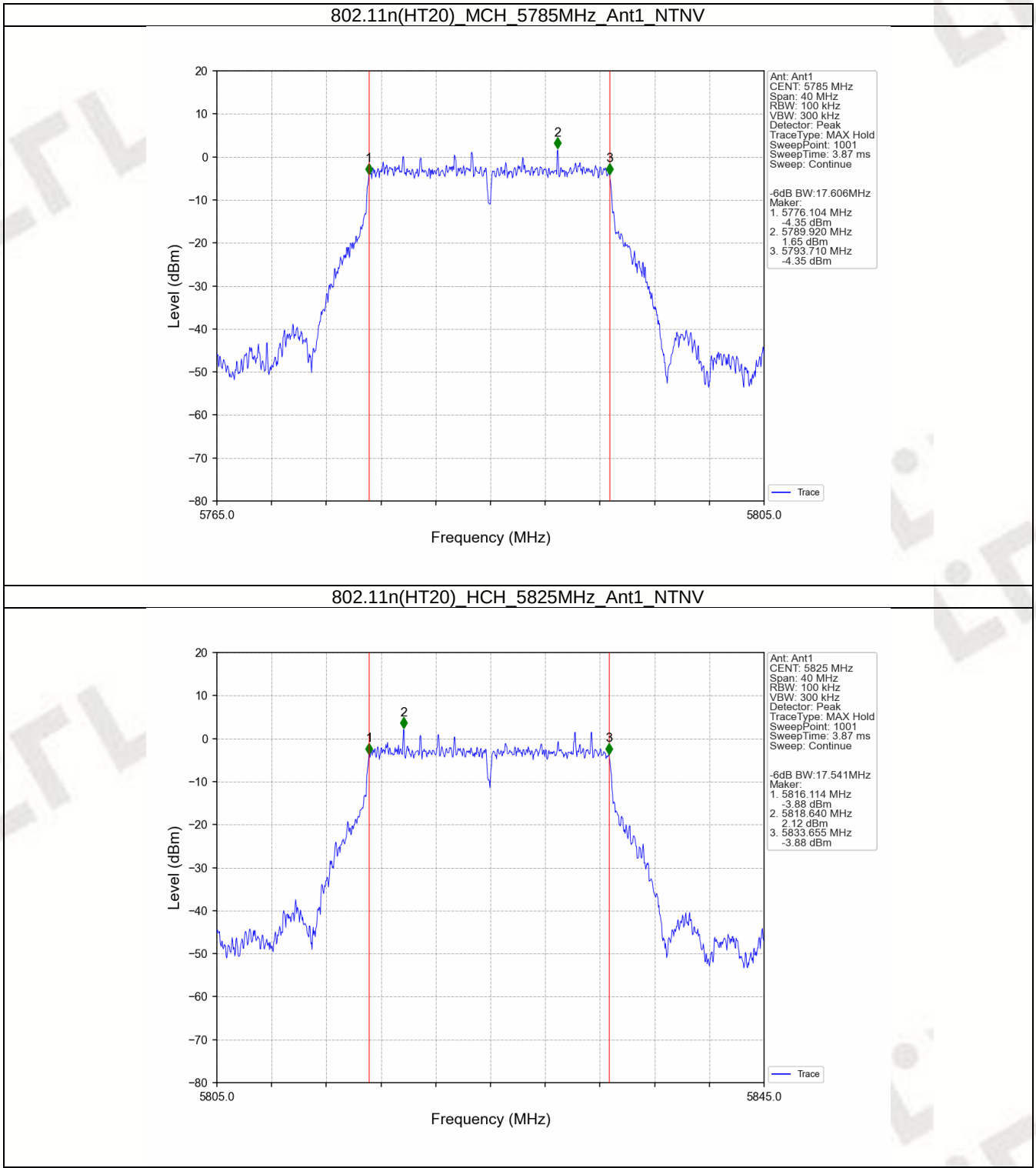
2.2.2 6dB BW



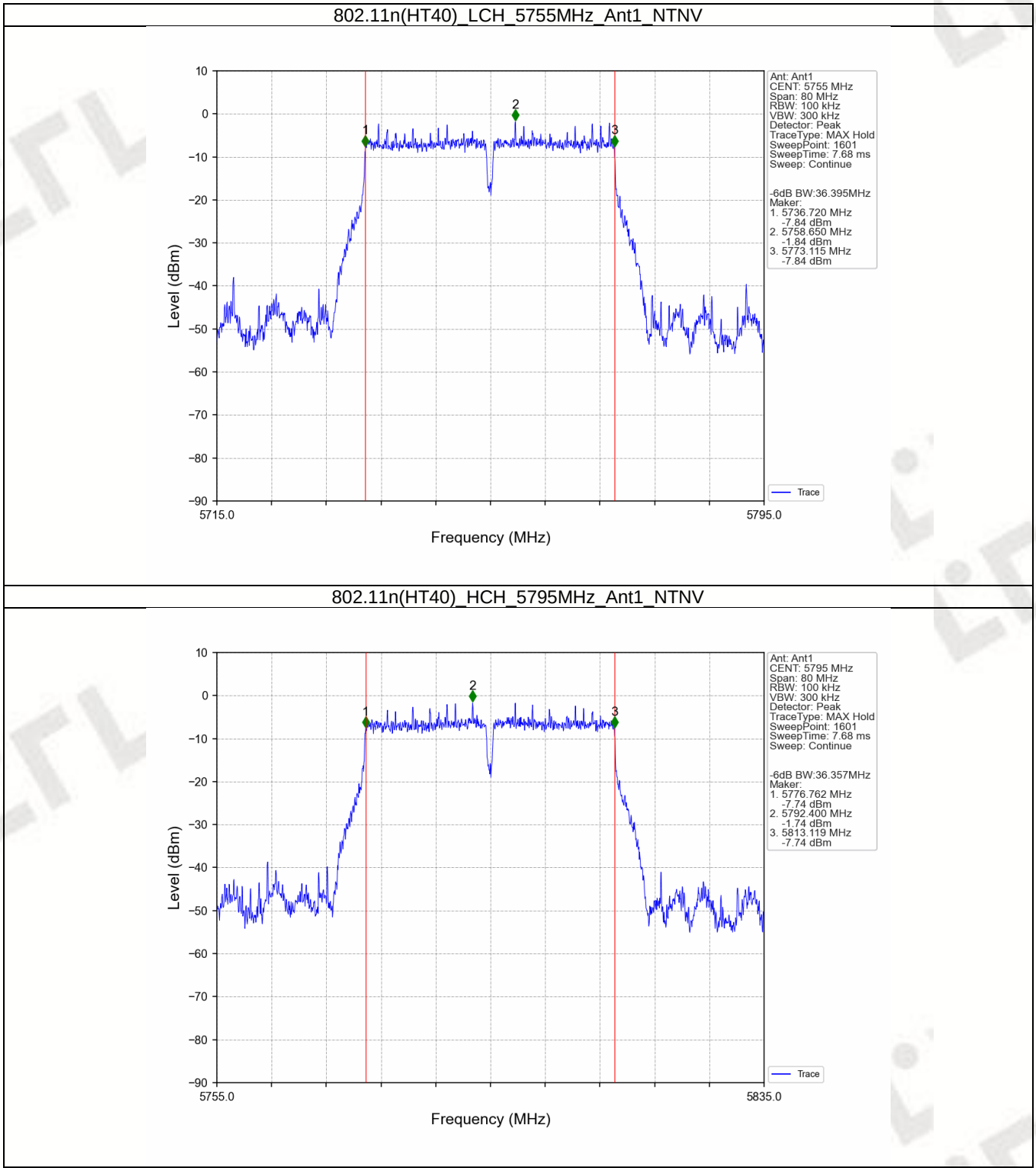
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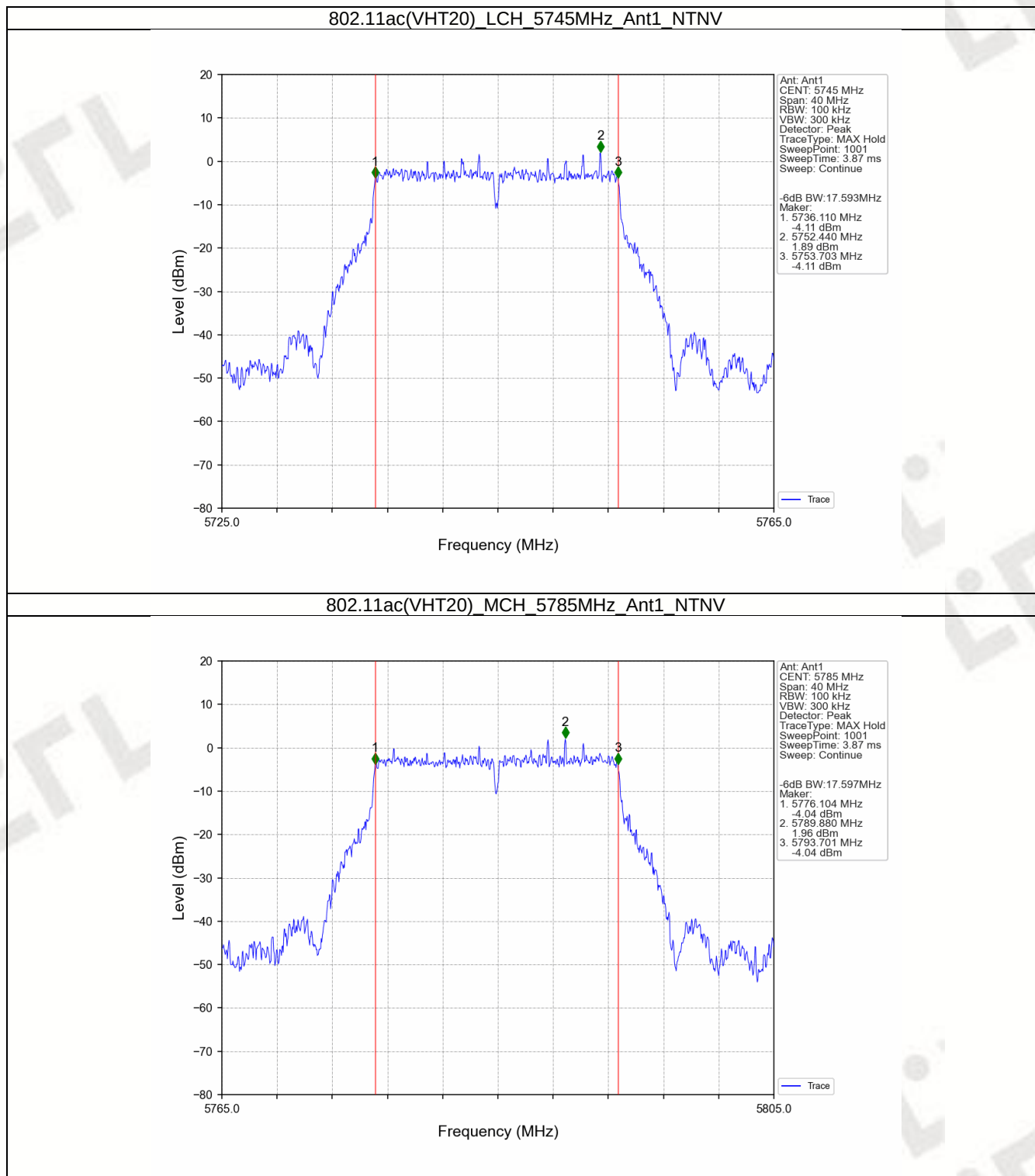
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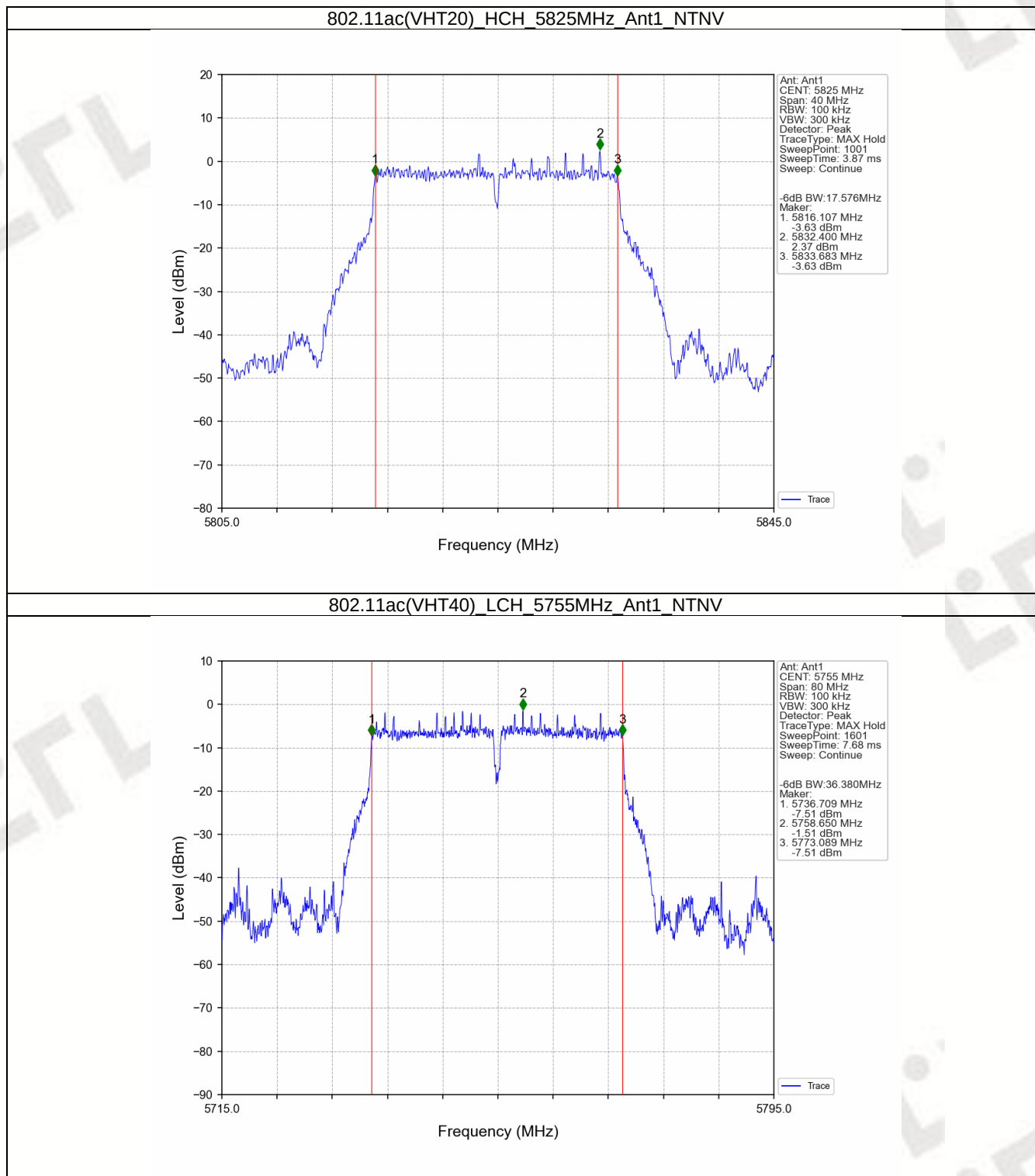
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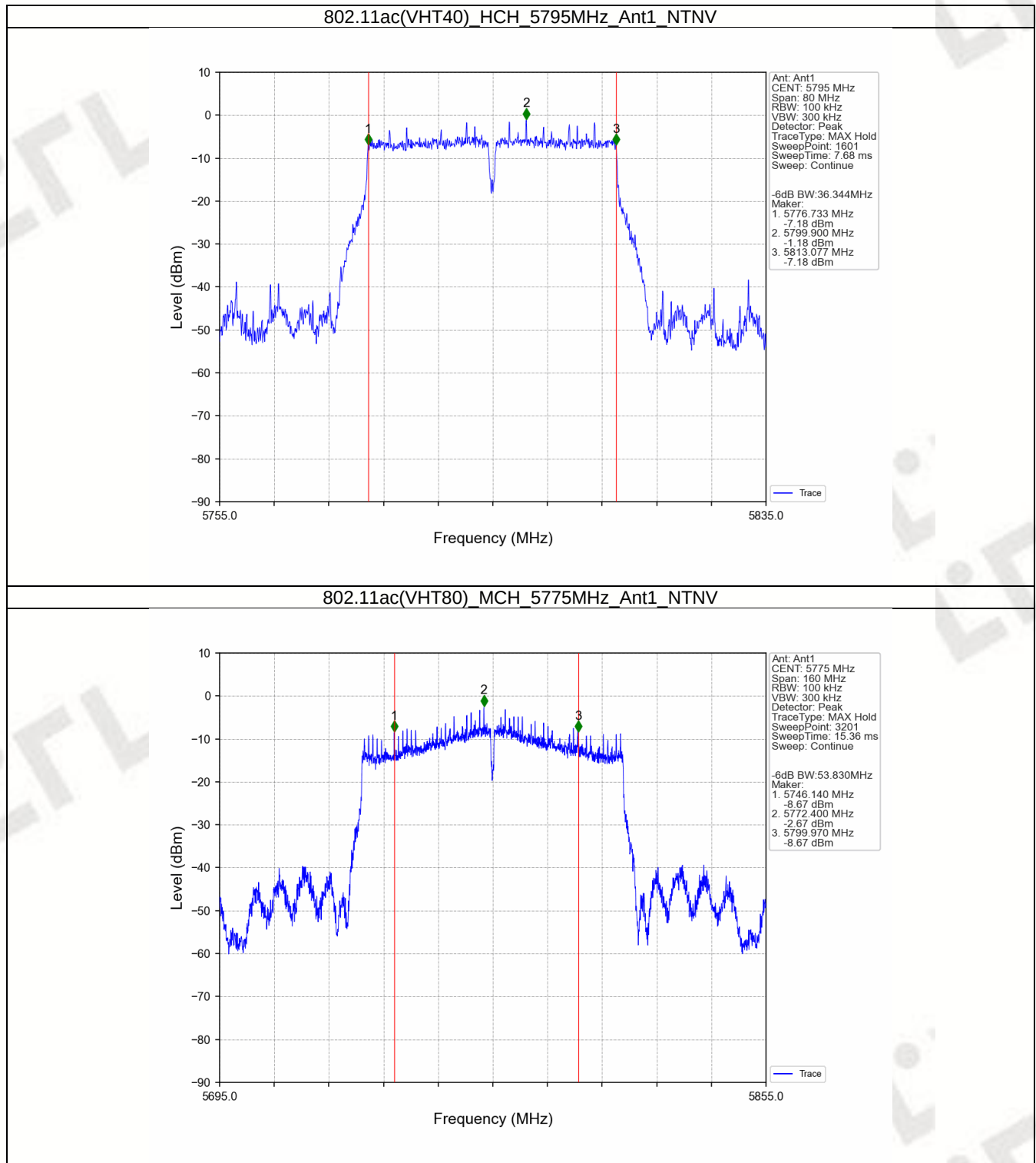
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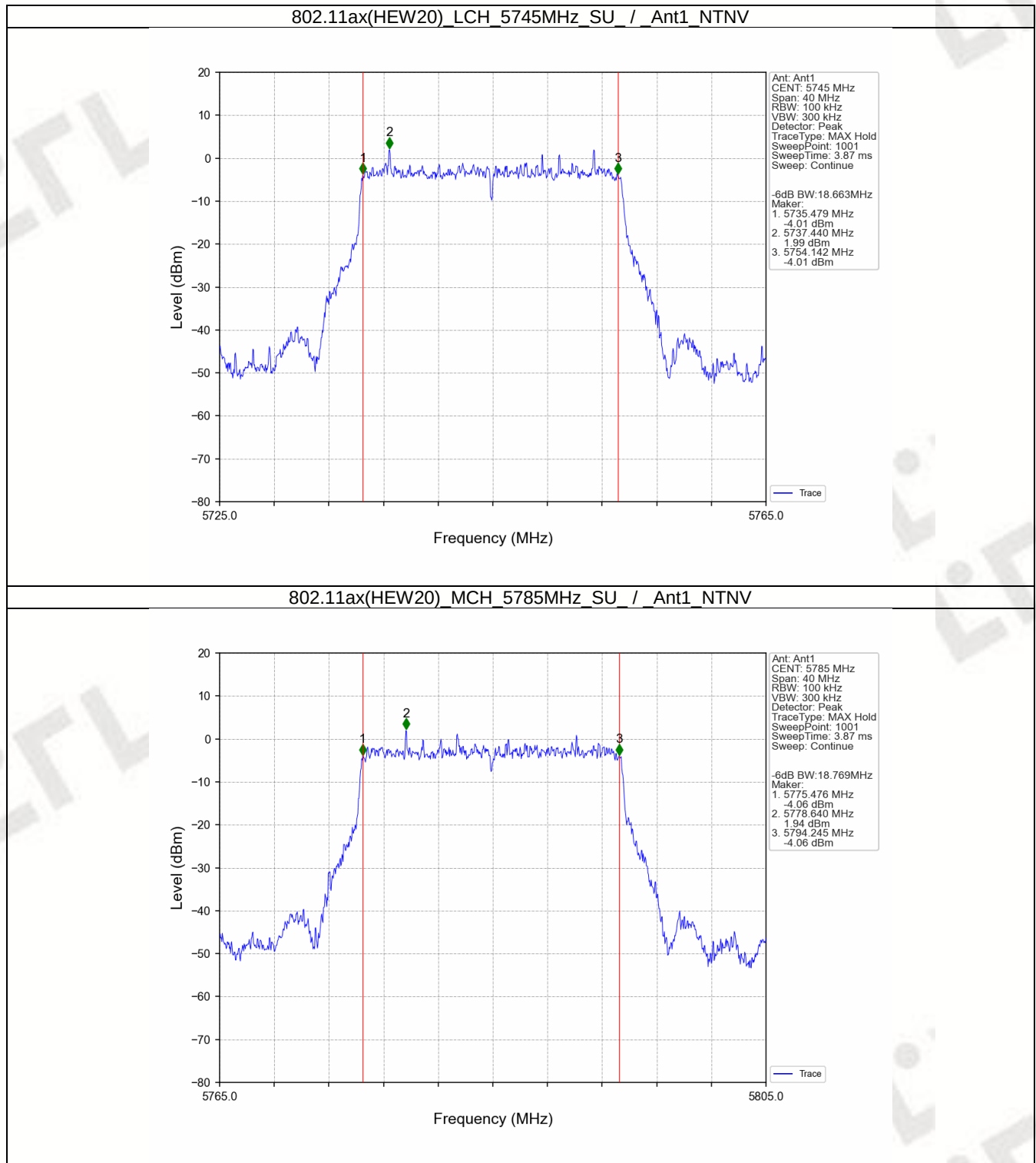
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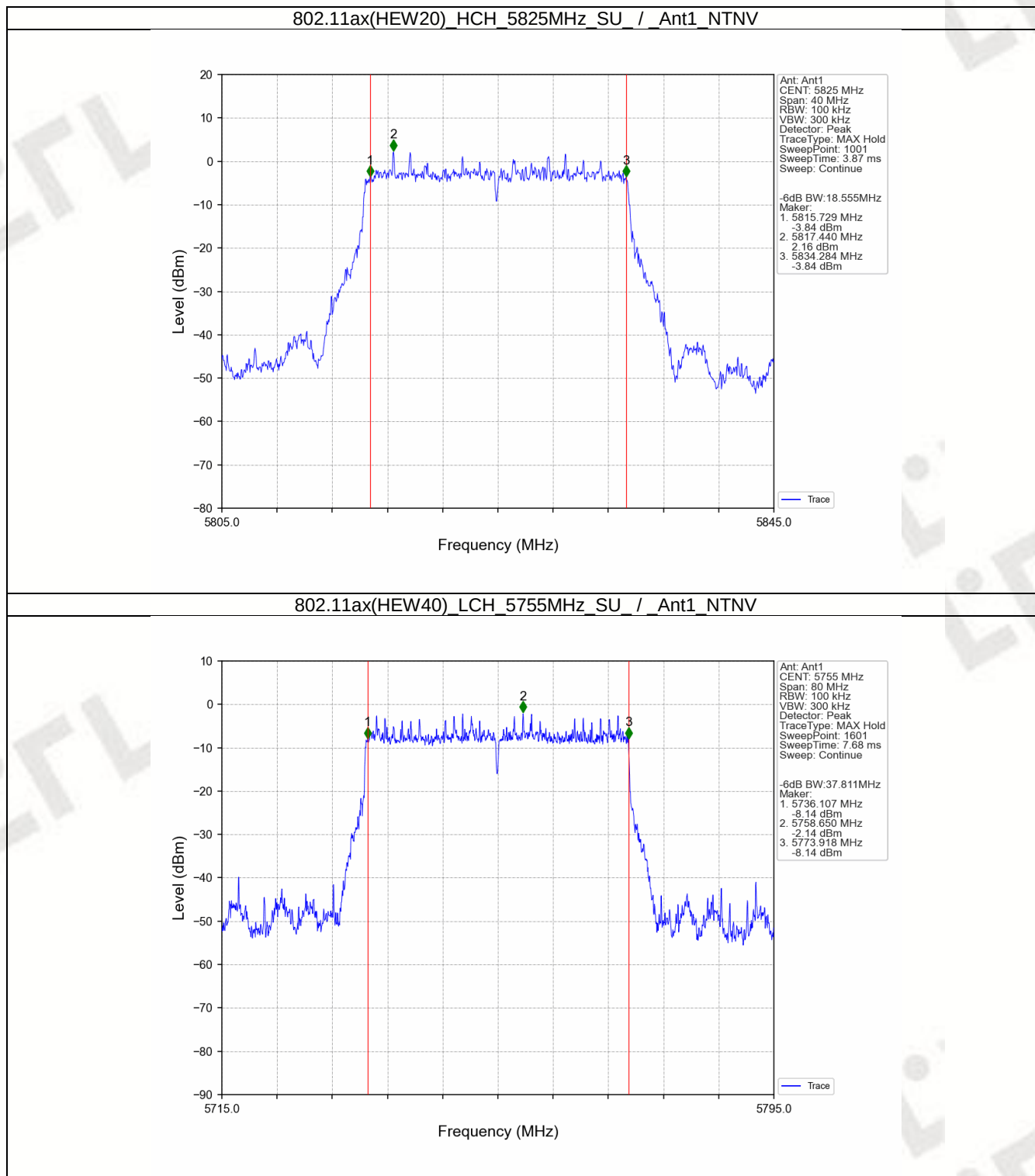
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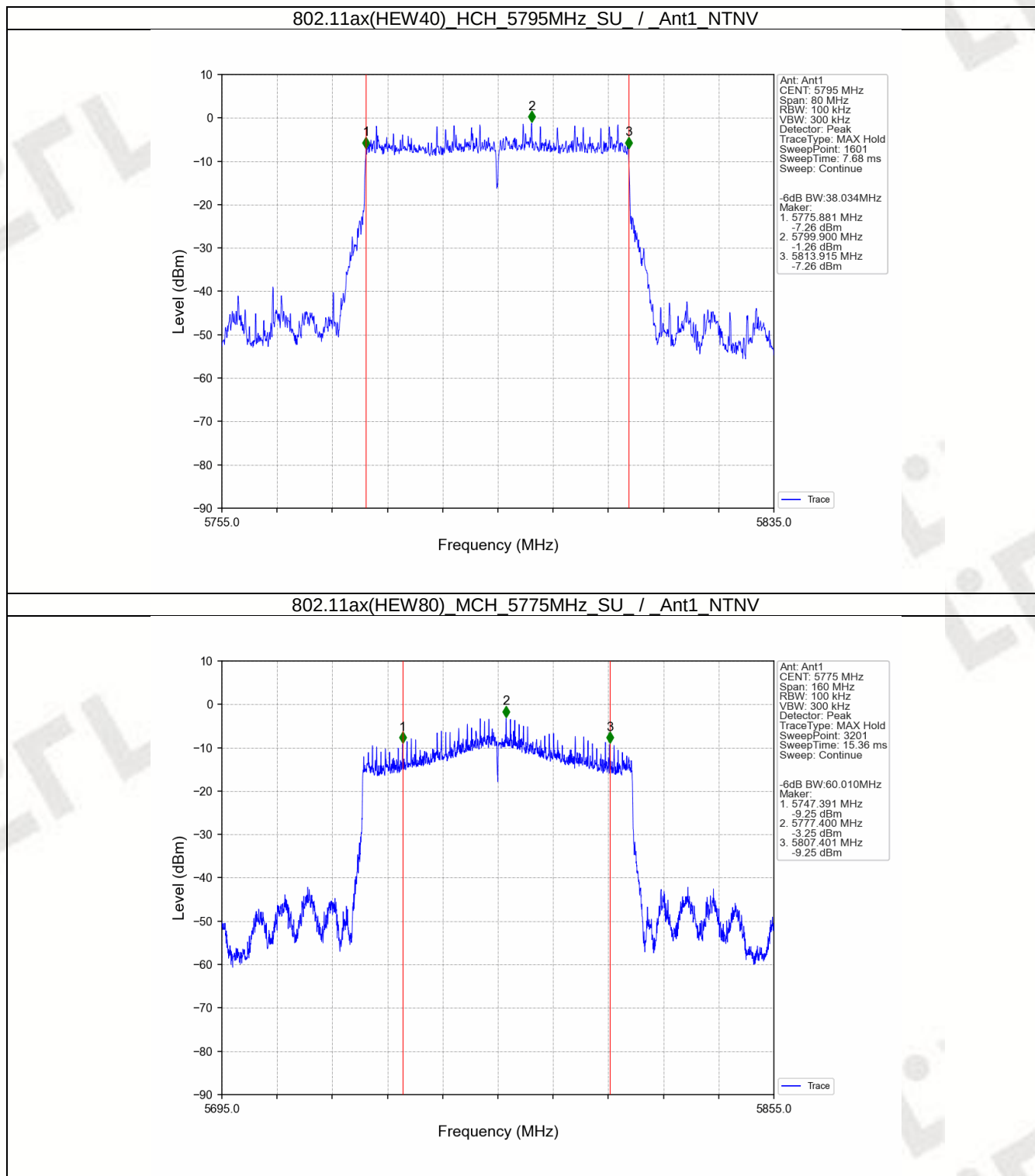
FCC ID: SMQ-UWM1



FCC ID: SMQ-UWM1



FCC ID: SMQ-UWM1



3. Maximum Conducted Output Power

3.1 Test Result

3.1.1 Power

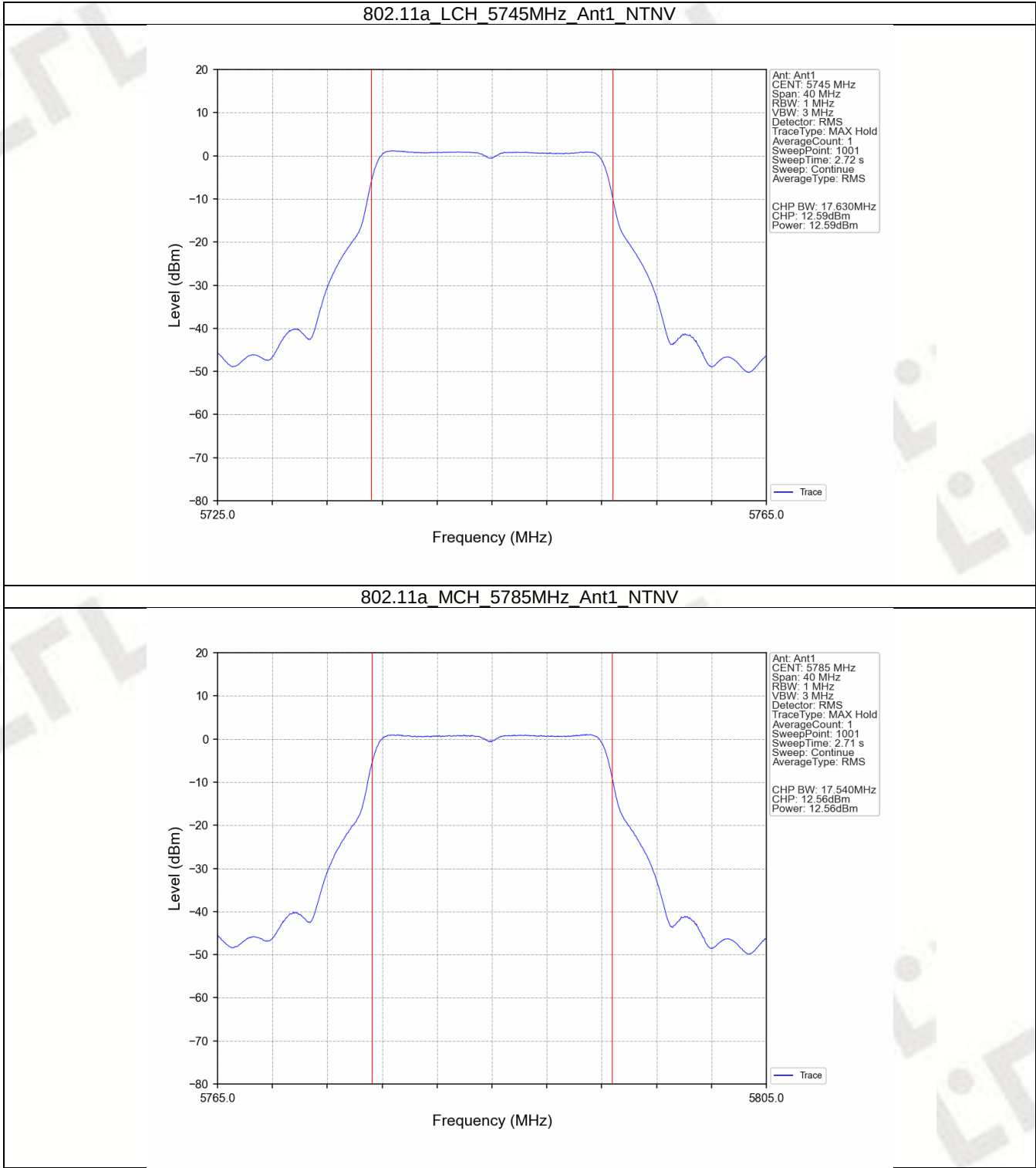
Mode	TX Type	Frequency (MHz)	RU	RU Pos	Maximum Average Conducted Output Power (dBm)		Verdict
					ANT1	Limit	
802.11a	SISO	5745	/	/	12.59	<=30	Pass
		5785	/	/	12.56	<=30	Pass
		5825	/	/	12.50	<=30	Pass
802.11n (HT20)	SISO	5745	/	/	12.37	<=30	Pass
		5785	/	/	12.42	<=30	Pass
		5825	/	/	12.43	<=30	Pass
802.11n (HT40)	SISO	5755	/	/	11.99	<=30	Pass
		5795	/	/	12.13	<=30	Pass
802.11ac (VHT20)	SISO	5745	/	/	12.60	<=30	Pass
		5785	/	/	12.66	<=30	Pass
		5825	/	/	12.57	<=30	Pass
802.11ac (VHT40)	SISO	5755	/	/	12.46	<=30	Pass
		5795	/	/	12.36	<=30	Pass
802.11ac (VHT80)	SISO	5775	/	/	11.24	<=30	Pass
802.11ax (HEW20)	SISO	5745	SU	/	12.54	<=30	Pass
		5785	SU	/	12.70	<=30	Pass
		5825	SU	/	12.59	<=30	Pass
802.11ax (HEW40)	SISO	5755	SU	/	11.67	<=30	Pass
		5795	SU	/	12.38	<=30	Pass
802.11ax (HEW80)	SISO	5775	SU	/	11.01	<=30	Pass

Note1: Antenna Gain: Ant1: 2.91dBi;

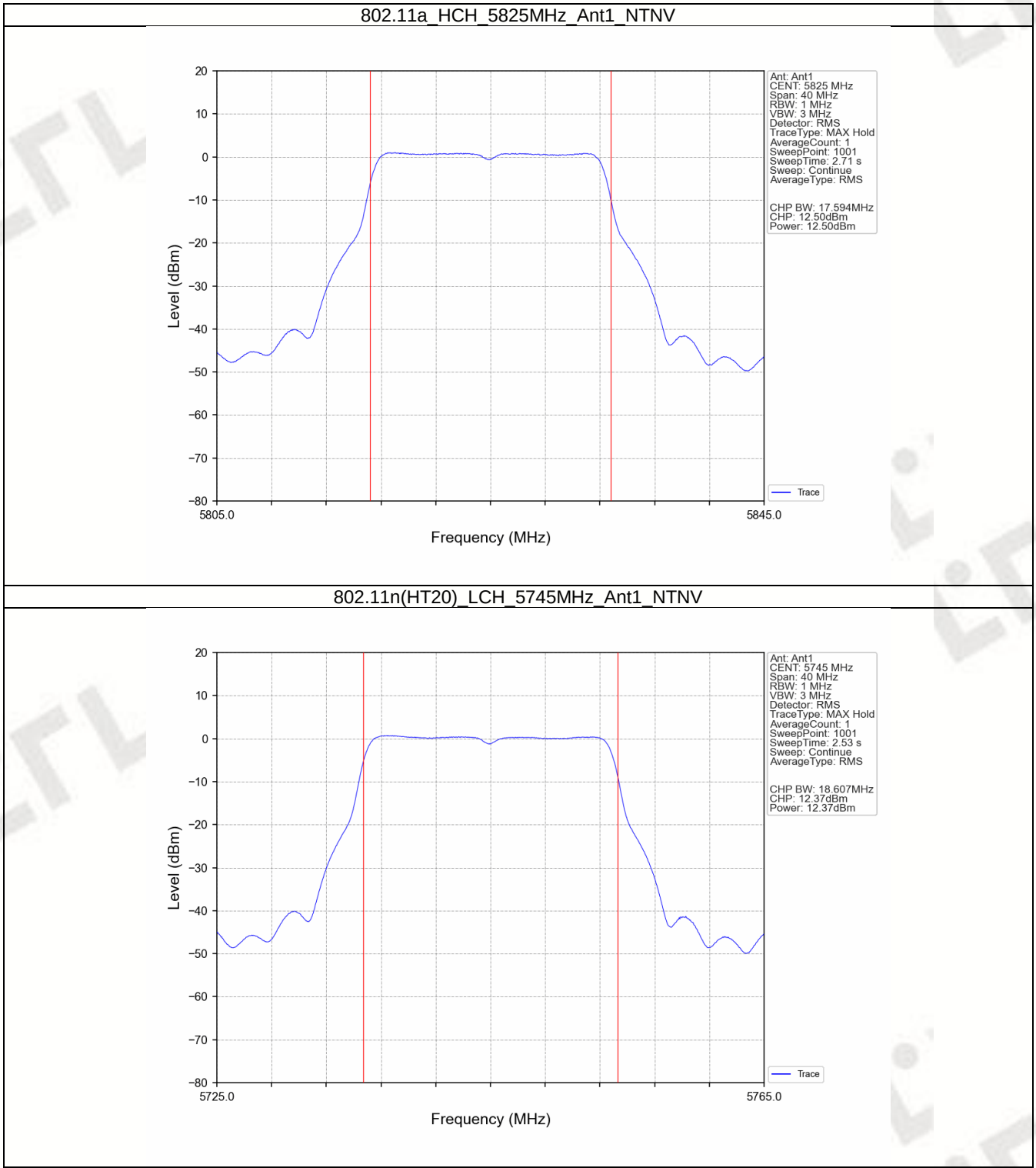
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3.2 Test Graph

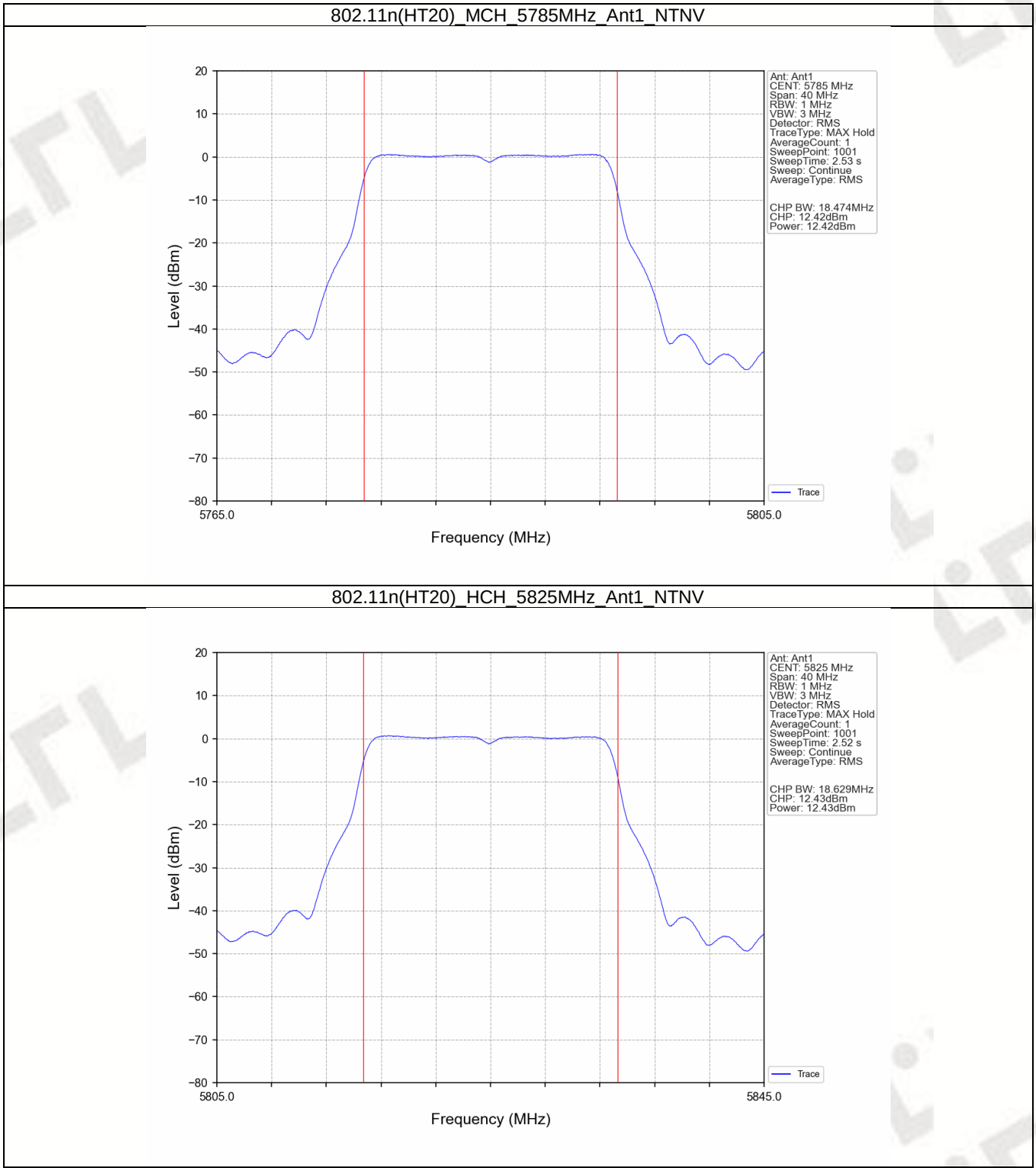
3.2.1 Power



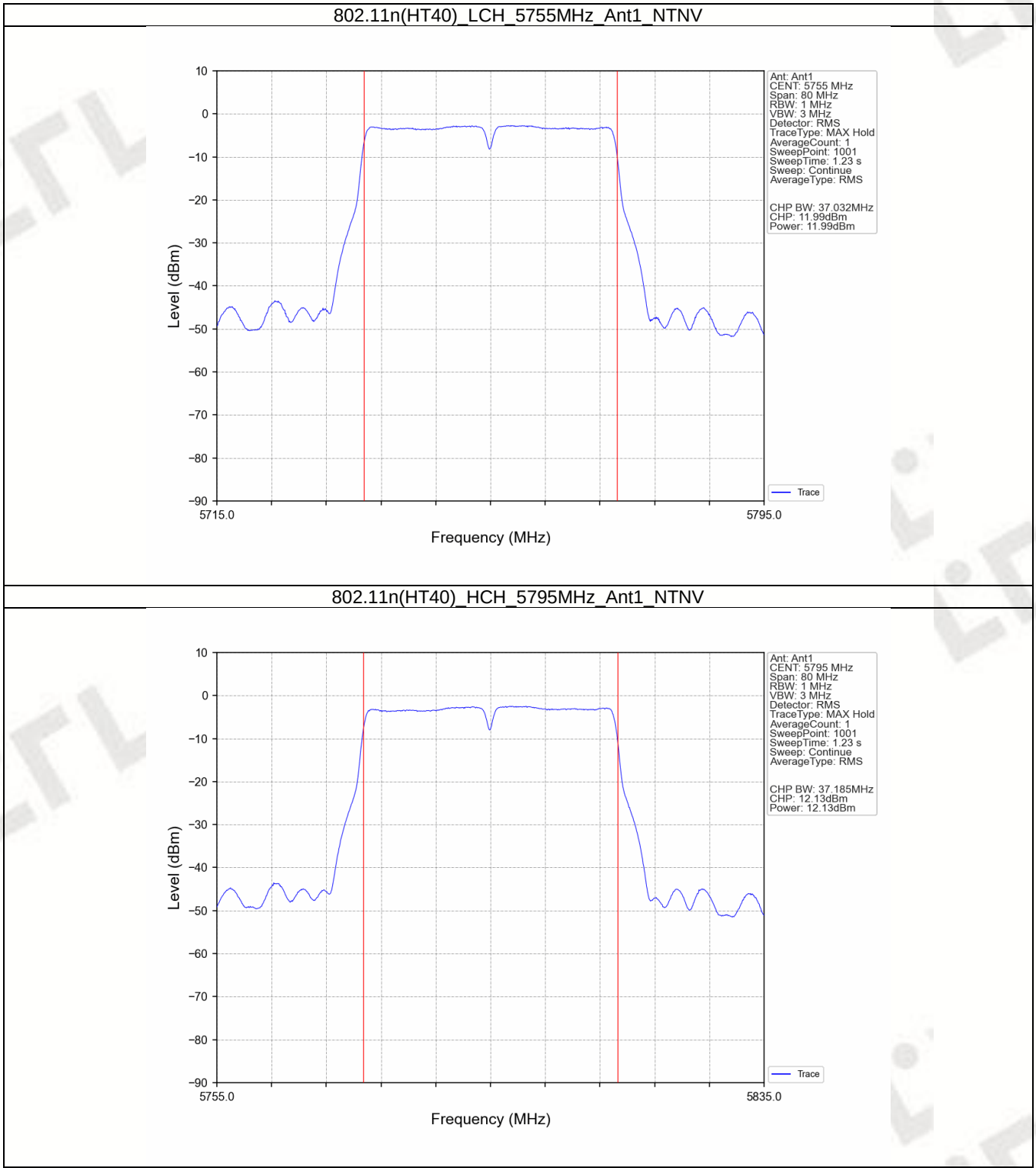
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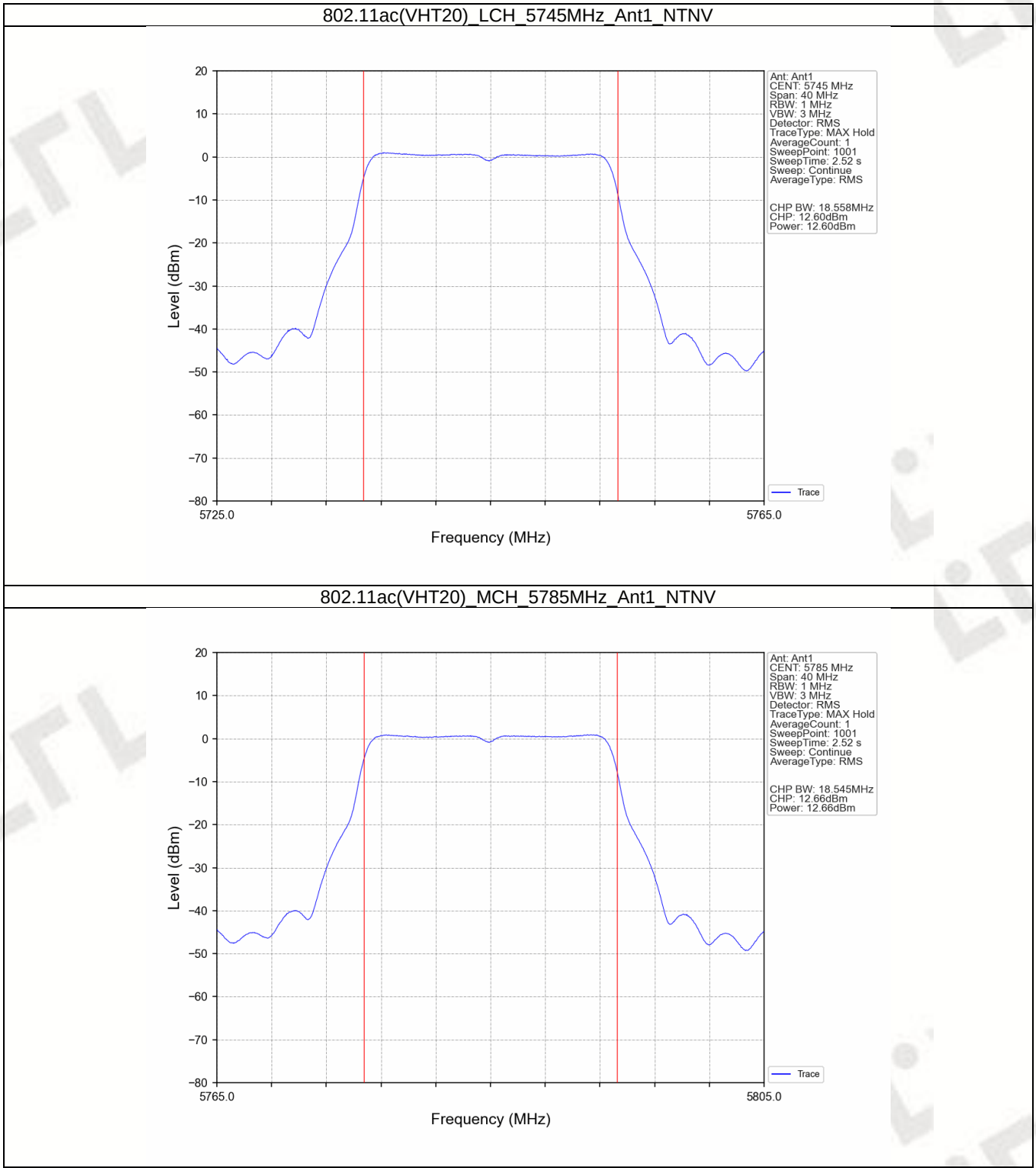
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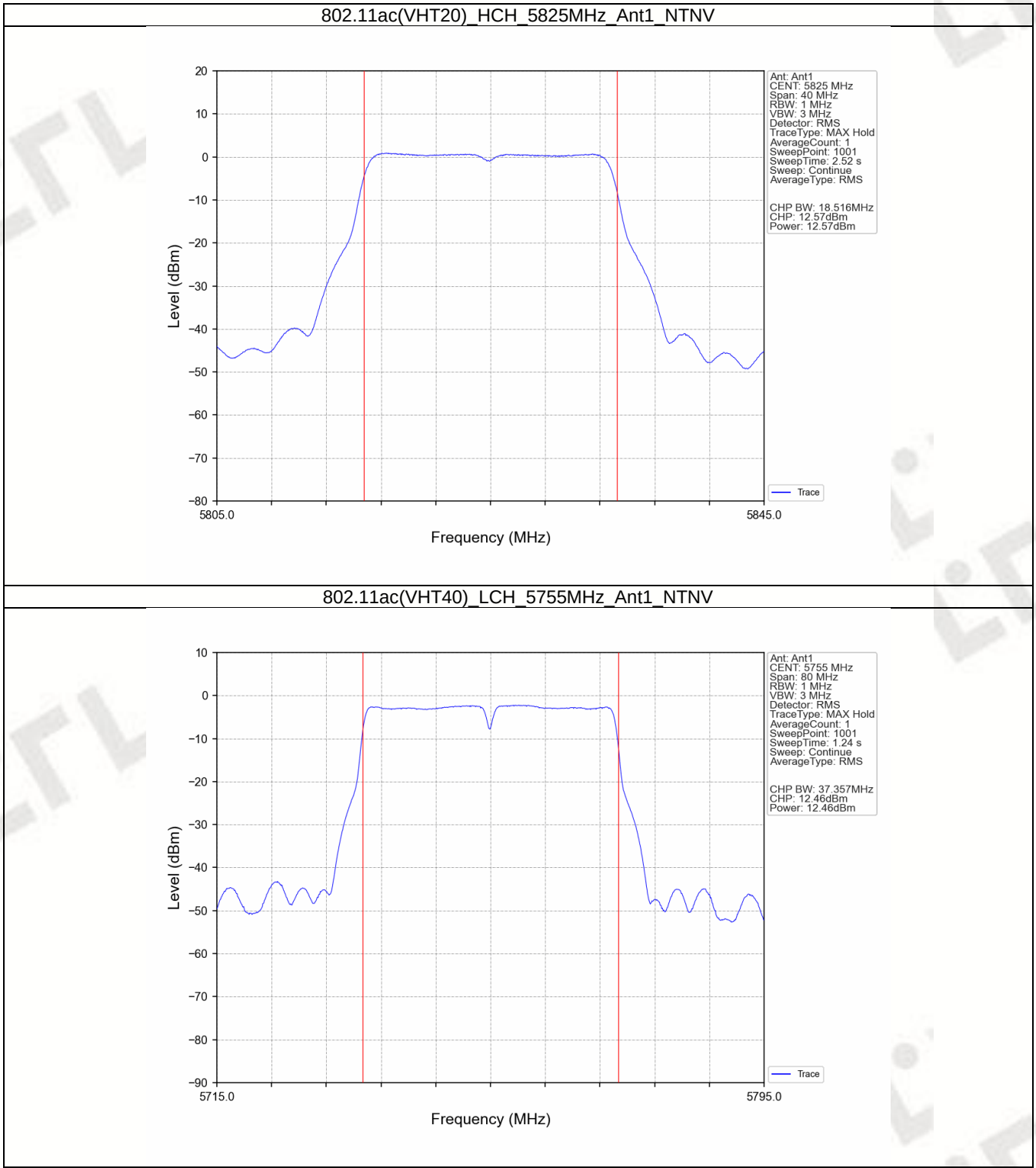
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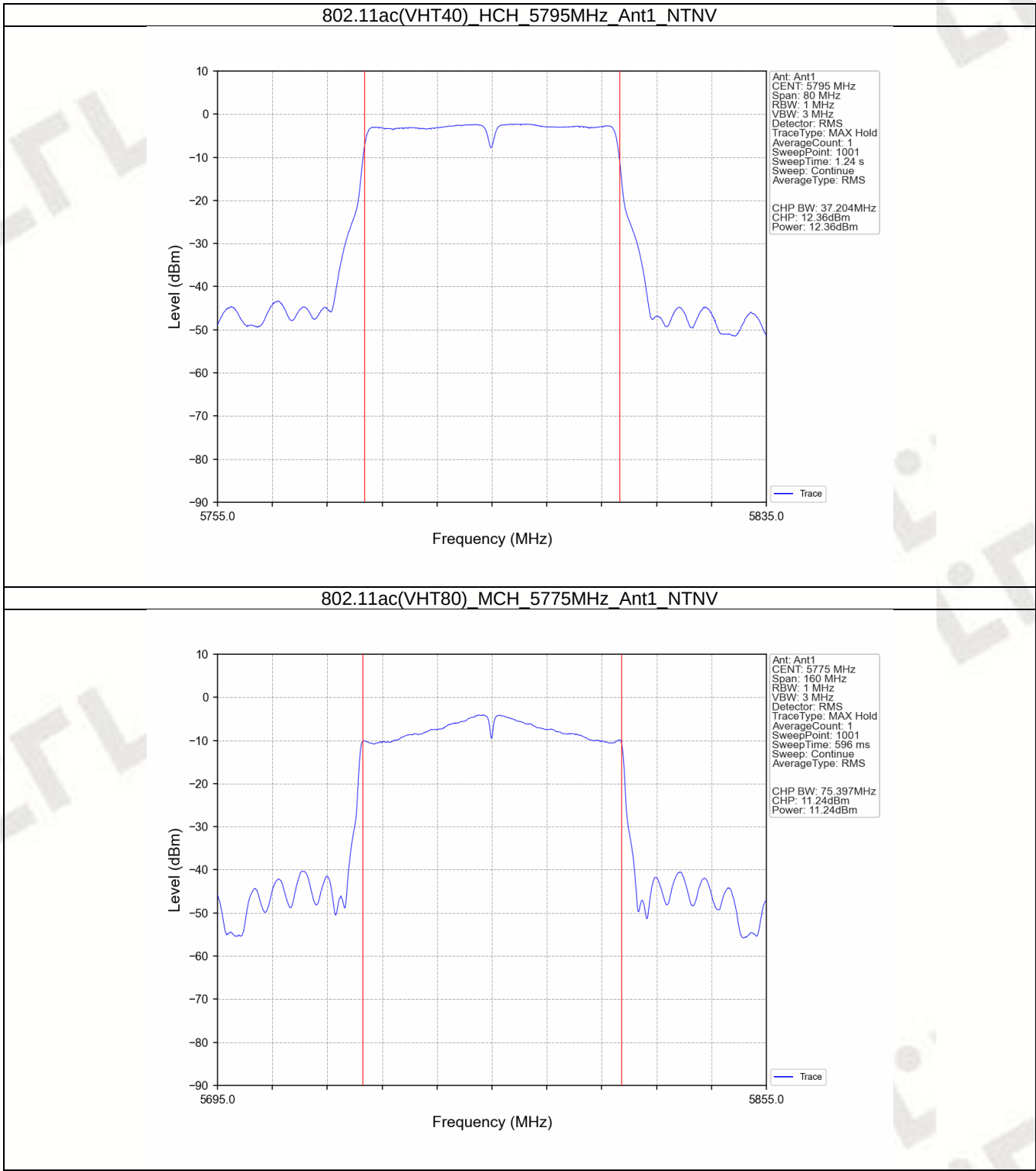
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FCC ID: SMQ-UWM1

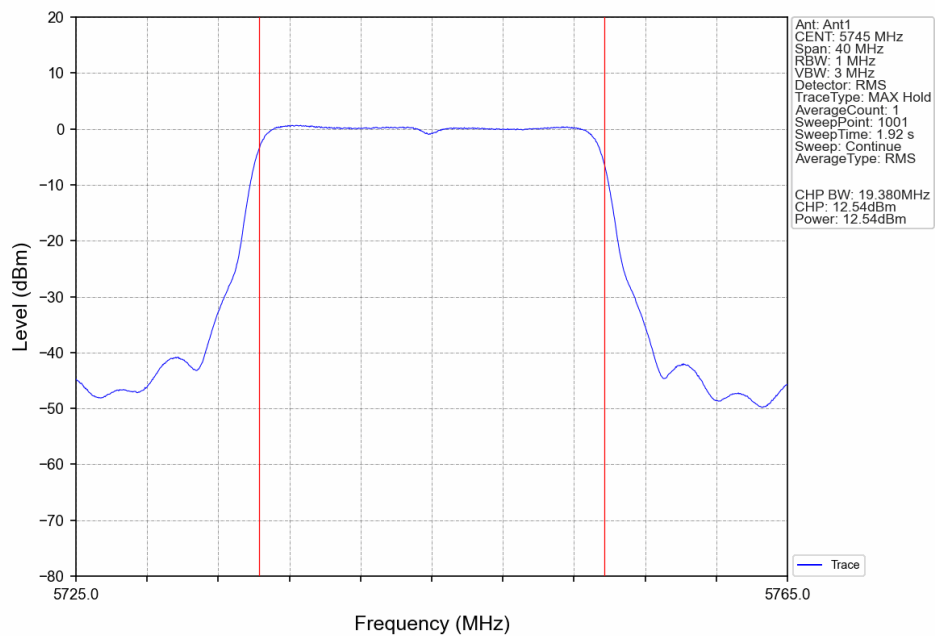


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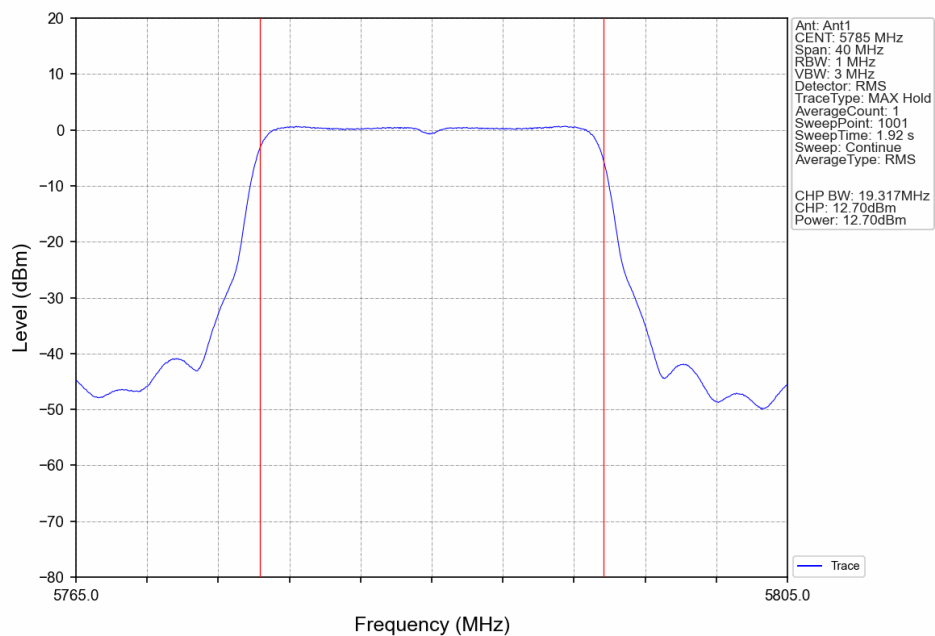


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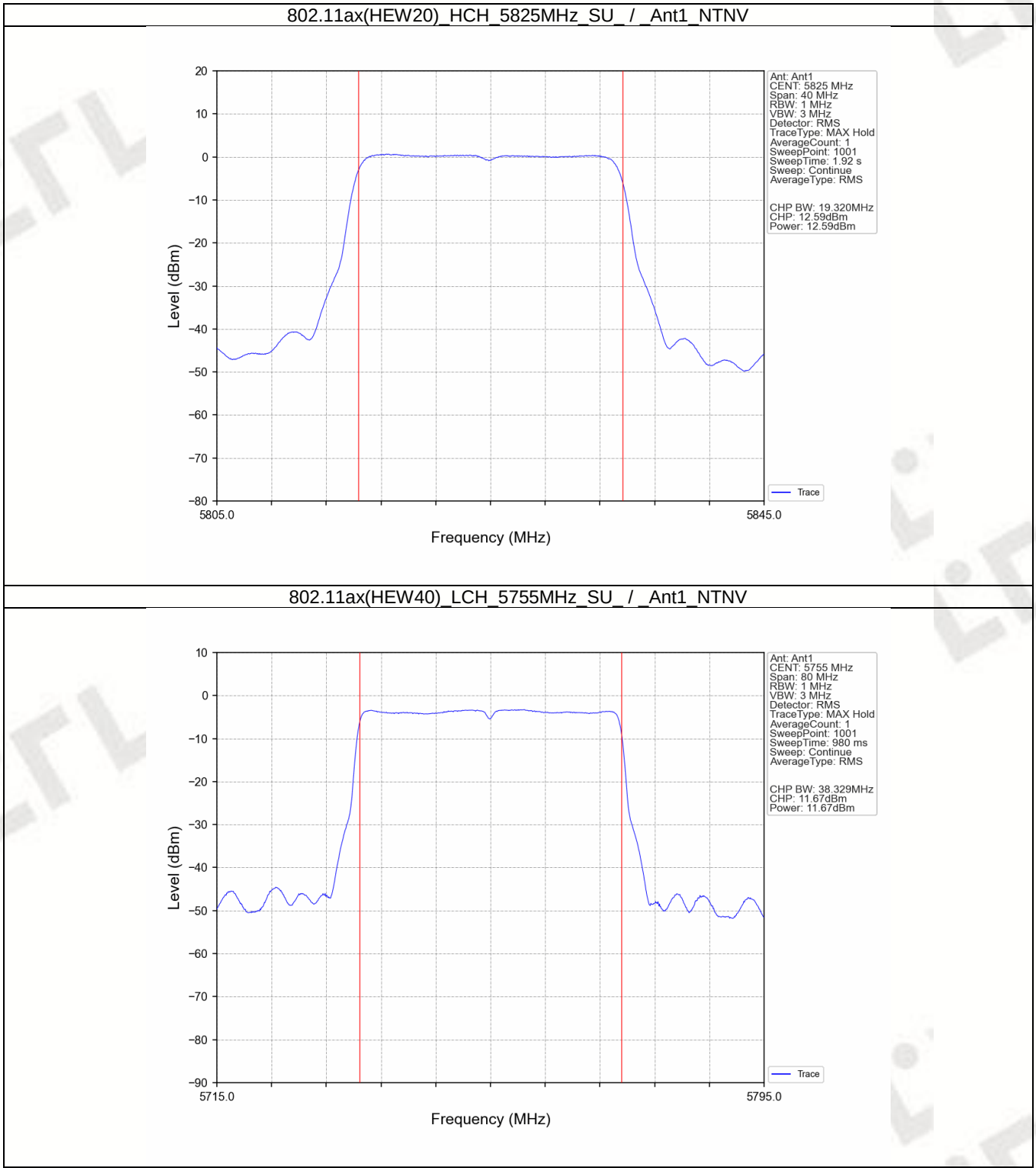
802.11ax(HEW20)_LCH_5745MHz_SU_/_Ant1_NTNV



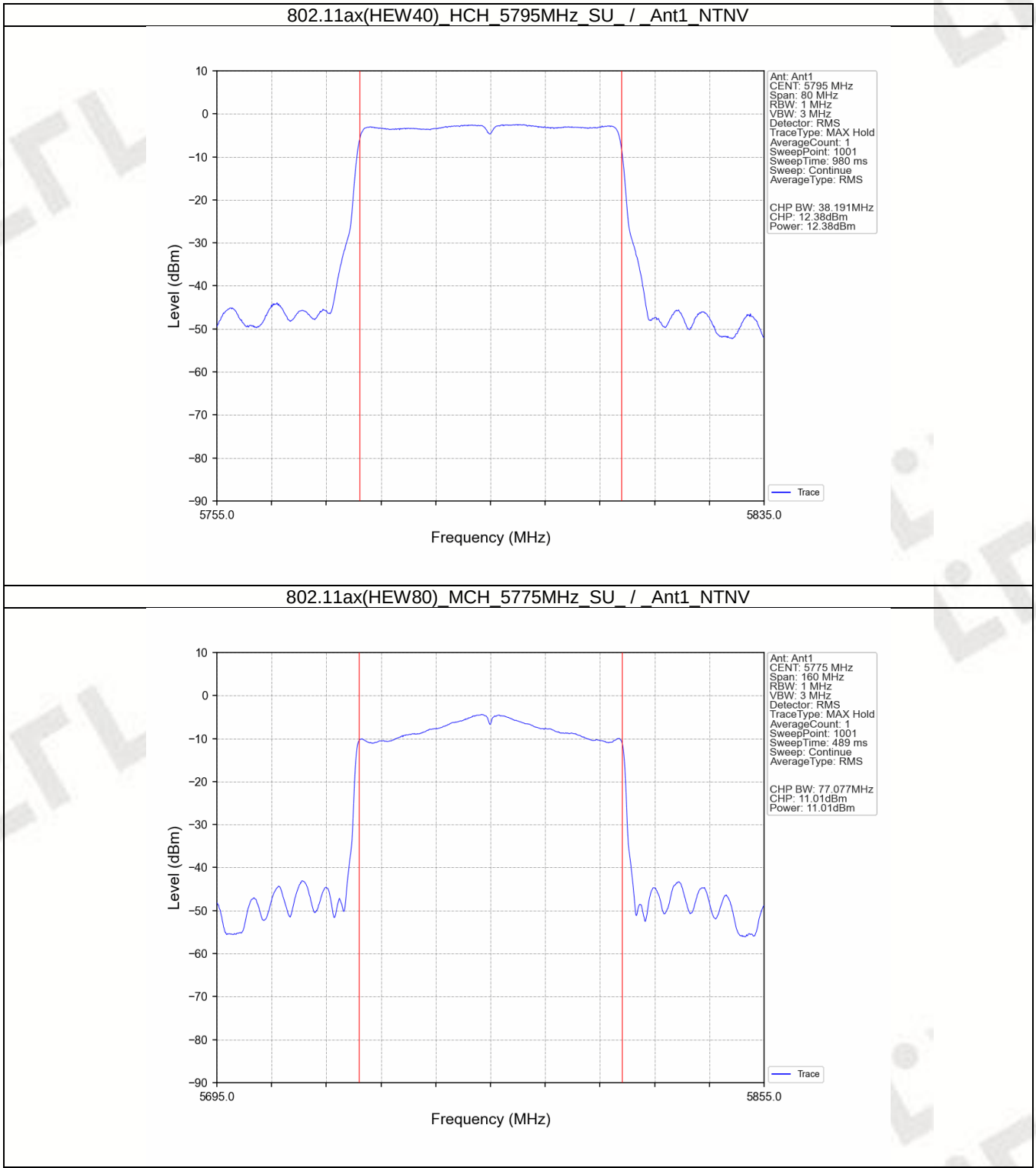
802.11ax(HEW20)_MCH_5785MHz_SU_/_Ant1_NTNV



FCC ID: SMQ-UWM1



FCC ID: SMQ-UWM1



4. Maximum Power Spectral Density

4.1 Test Result

4.1.1 PSD-Band3

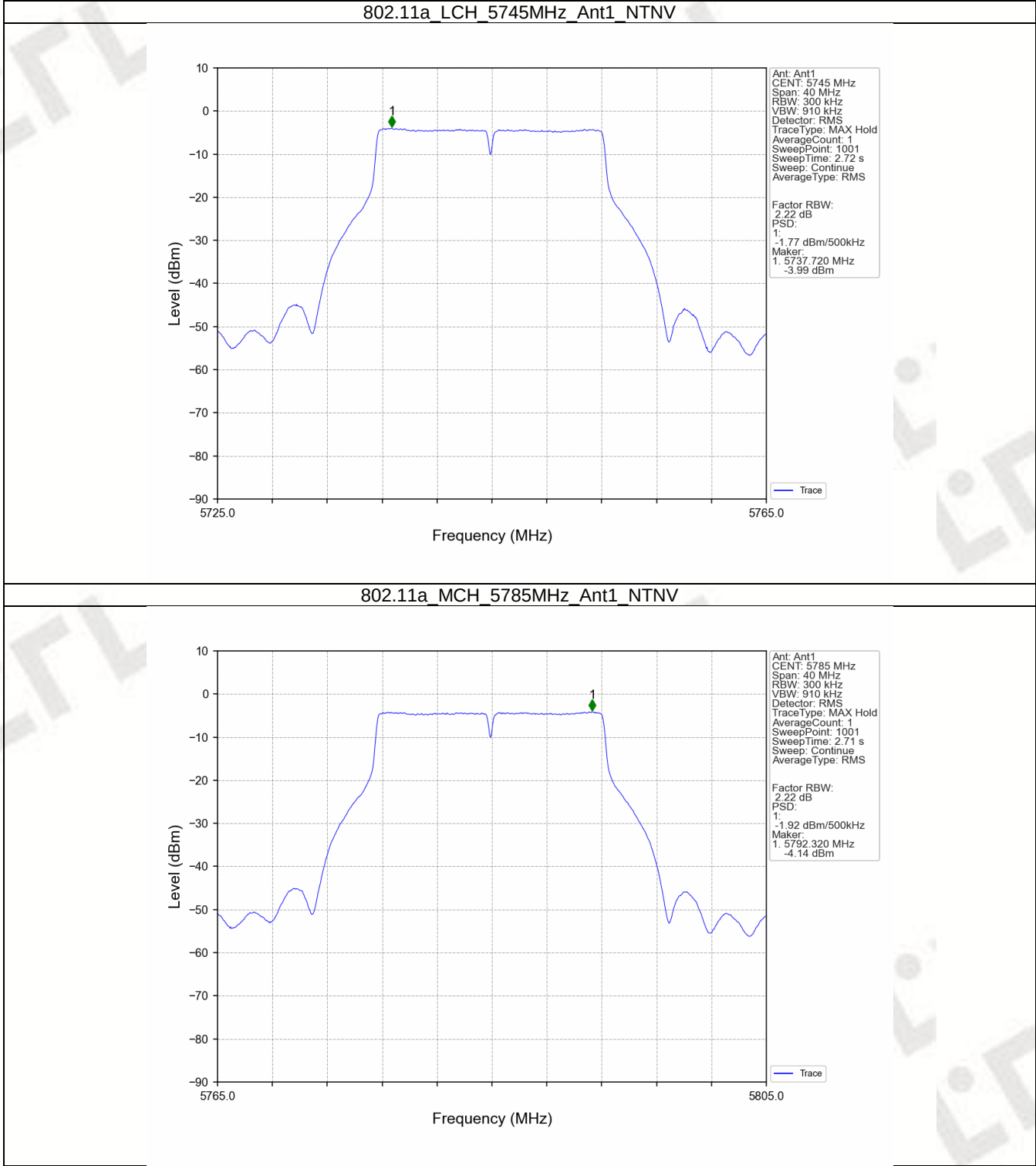
Mode	TX Type	Frequency (MHz)	RU	RU Pos	Maximum PSD (dBm/500kHz)		Verdict
					ANT1	Limit	
802.11a	SISO	5745	/	/	-1.77	<=30	Pass
		5785	/	/	-1.92	<=30	Pass
		5825	/	/	-1.94	<=30	Pass
802.11n (HT20)	SISO	5745	/	/	-2.15	<=30	Pass
		5785	/	/	-2.30	<=30	Pass
		5825	/	/	-2.22	<=30	Pass
802.11n (HT40)	SISO	5755	/	/	-5.43	<=30	Pass
		5795	/	/	-5.29	<=30	Pass
802.11ac (VHT20)	SISO	5745	/	/	-1.84	<=30	Pass
		5785	/	/	-1.91	<=30	Pass
		5825	/	/	-1.95	<=30	Pass
802.11ac (VHT40)	SISO	5755	/	/	-5.01	<=30	Pass
		5795	/	/	-4.96	<=30	Pass
802.11ac (VHT80)	SISO	5775	/	/	-6.65	<=30	Pass
802.11ax (HEW20)	SISO	5745	SU	/	-2.33	<=30	Pass
		5785	SU	/	-2.24	<=30	Pass
		5825	SU	/	-2.27	<=30	Pass
802.11ax (HEW40)	SISO	5755	SU	/	-5.94	<=30	Pass
		5795	SU	/	-5.31	<=30	Pass
802.11ax (HEW80)	SISO	5775	SU	/	-7.22	<=30	Pass

Note1: Antenna Gain: Ant1: 2.91dBi;

FCC ID: SMQ-UWM1

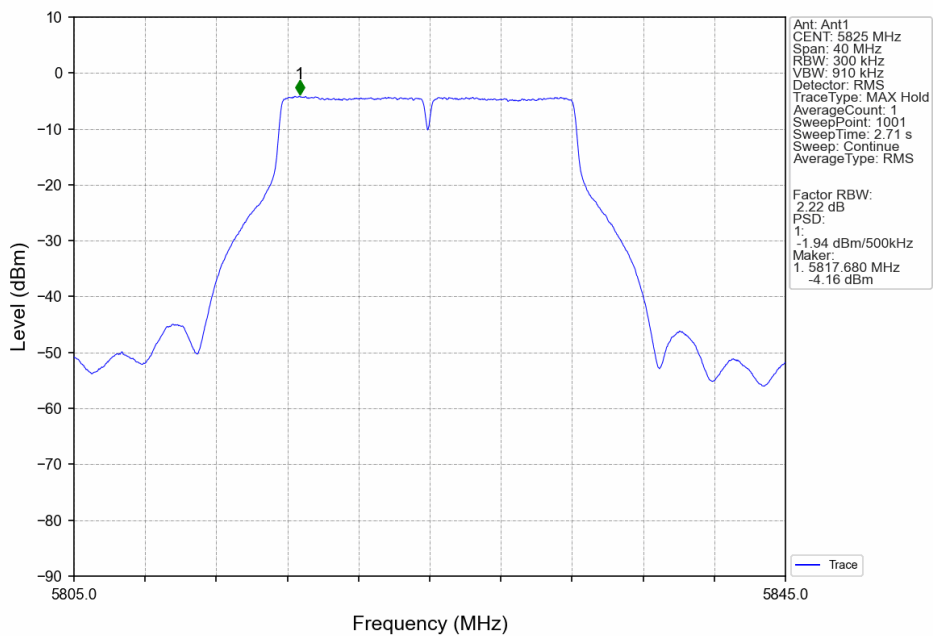
4.2 Test Graph

4.2.1 PSD-Band3

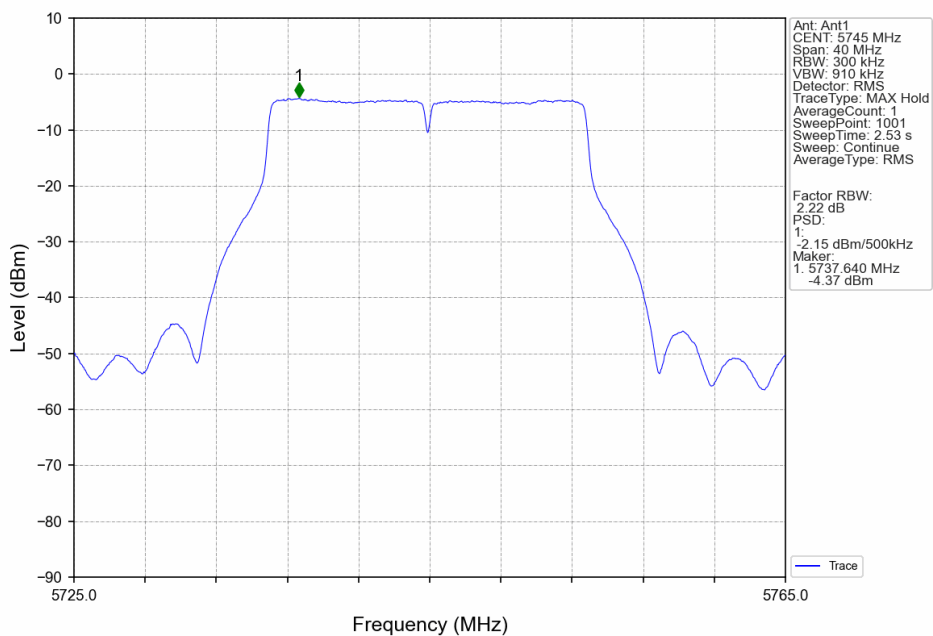


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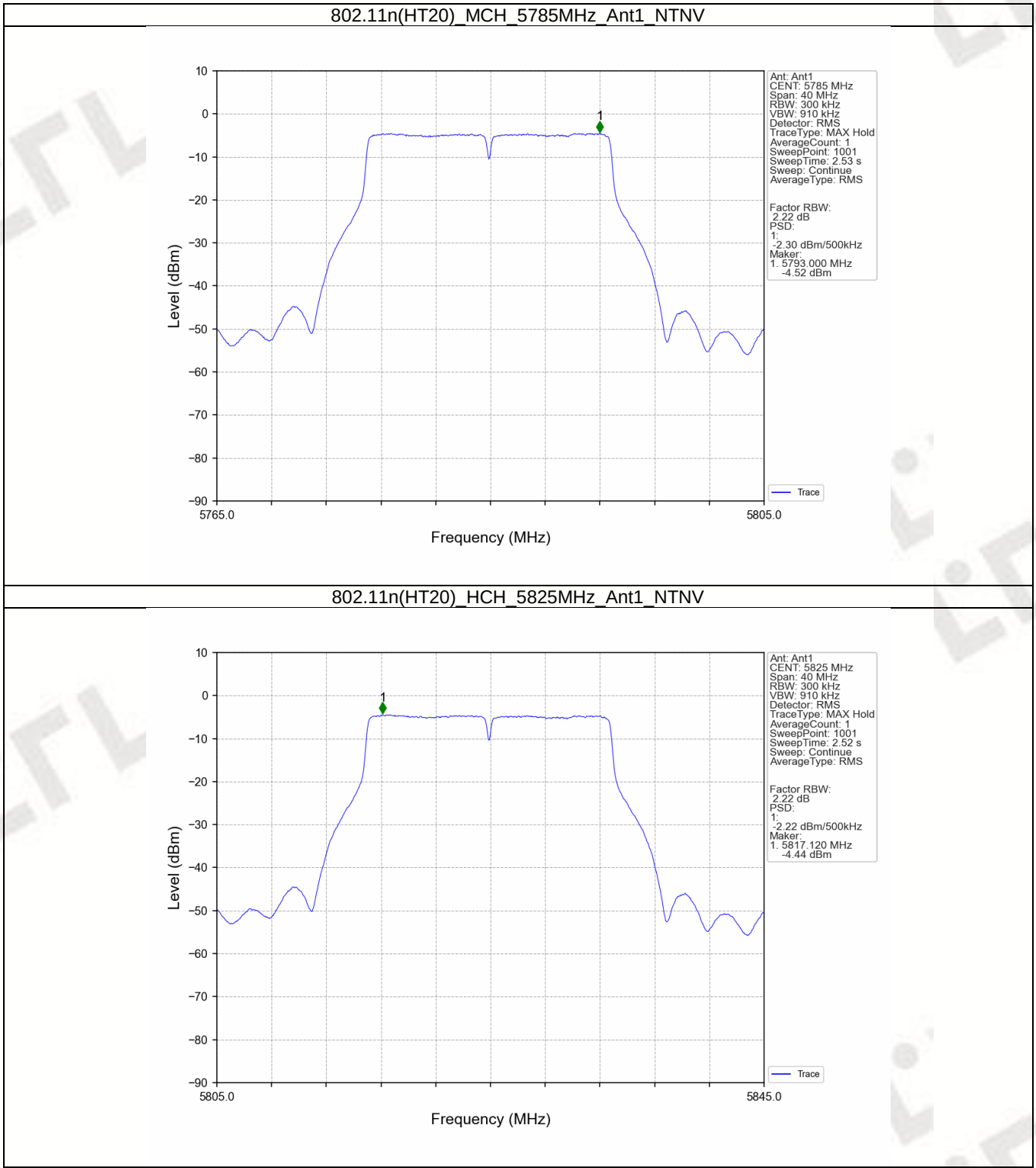
802.11a_HCH_5825MHz_Ant1_NTNV



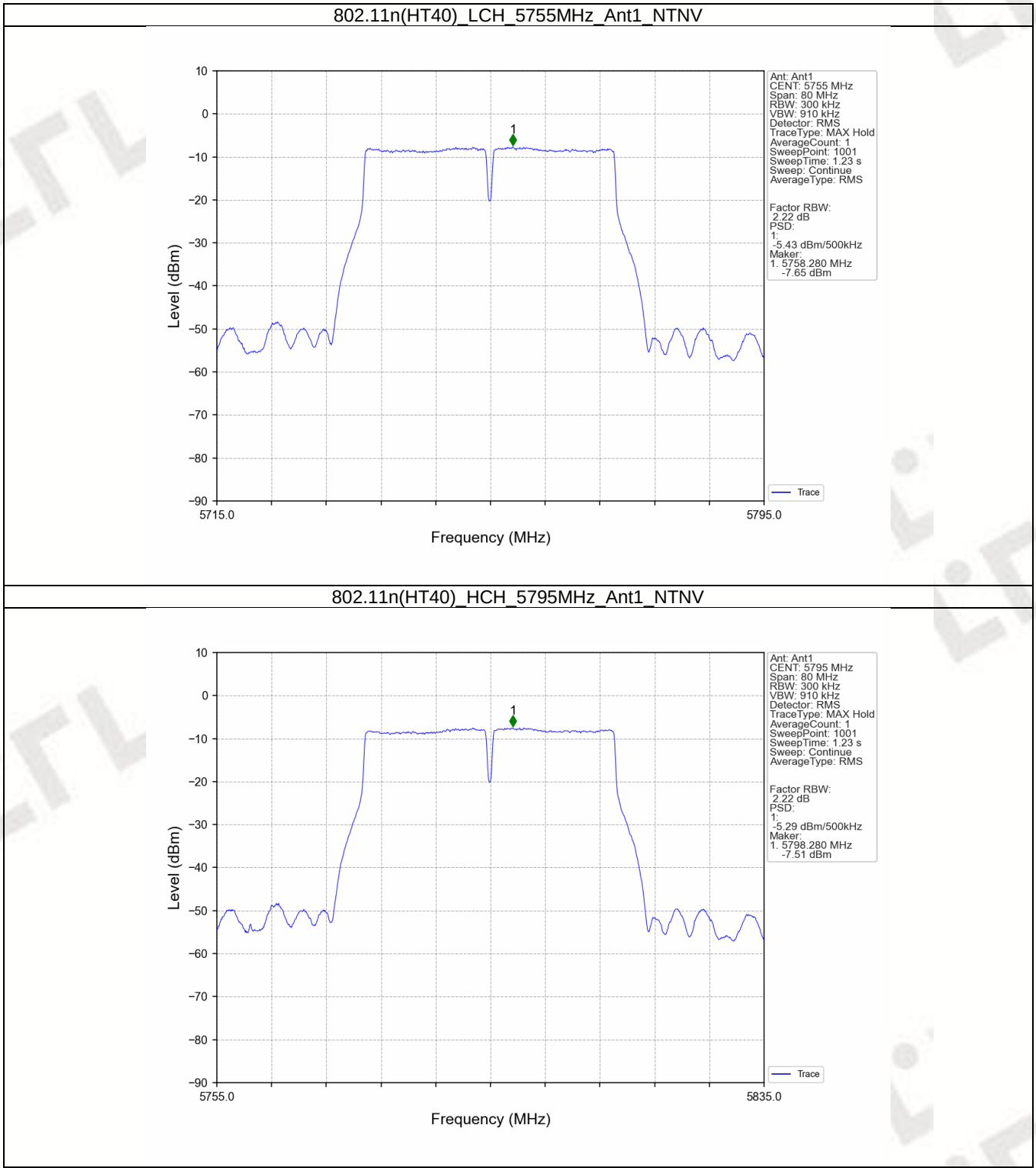
802.11n(HT20)_LCH_5745MHz_Ant1_NTNV



FCC ID: SMQ-UWM1

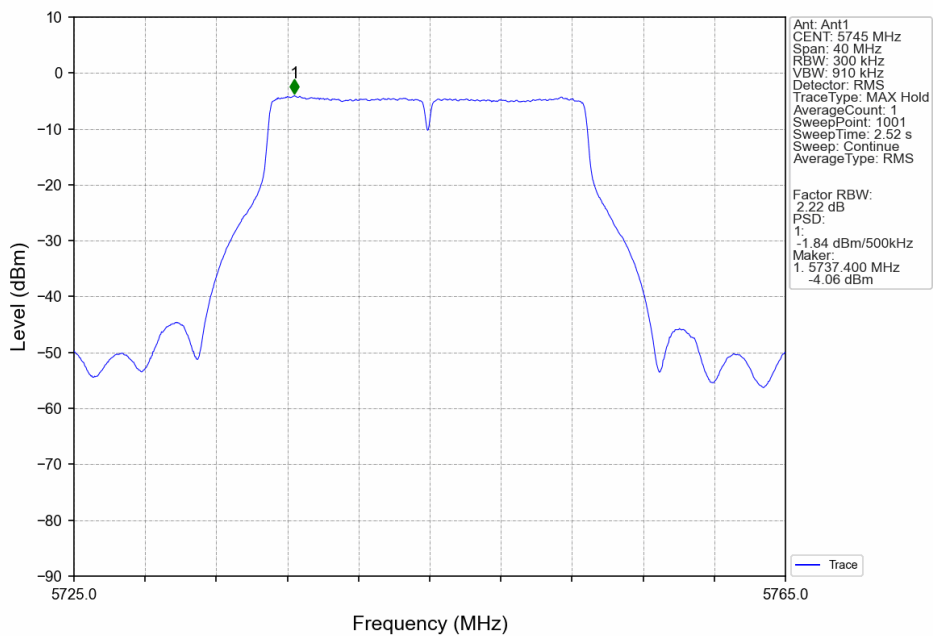


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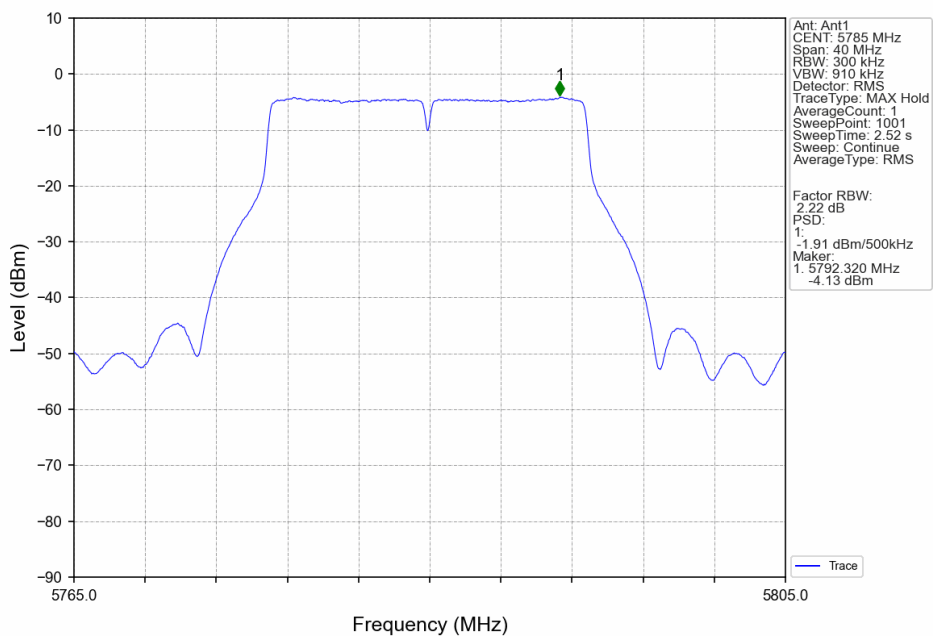


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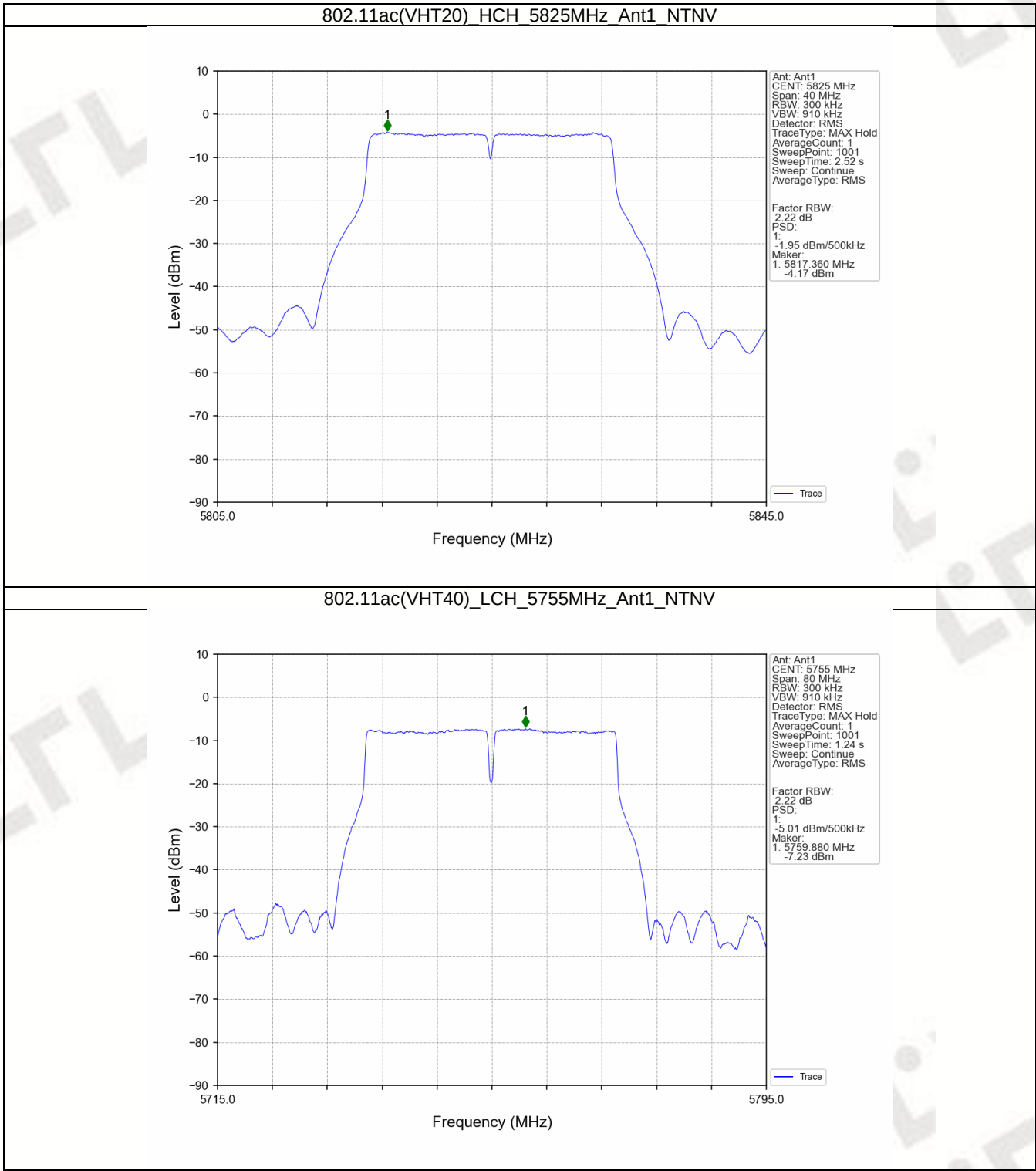
802.11ac(VHT20)_LCH_5745MHz_Ant1_NTNV



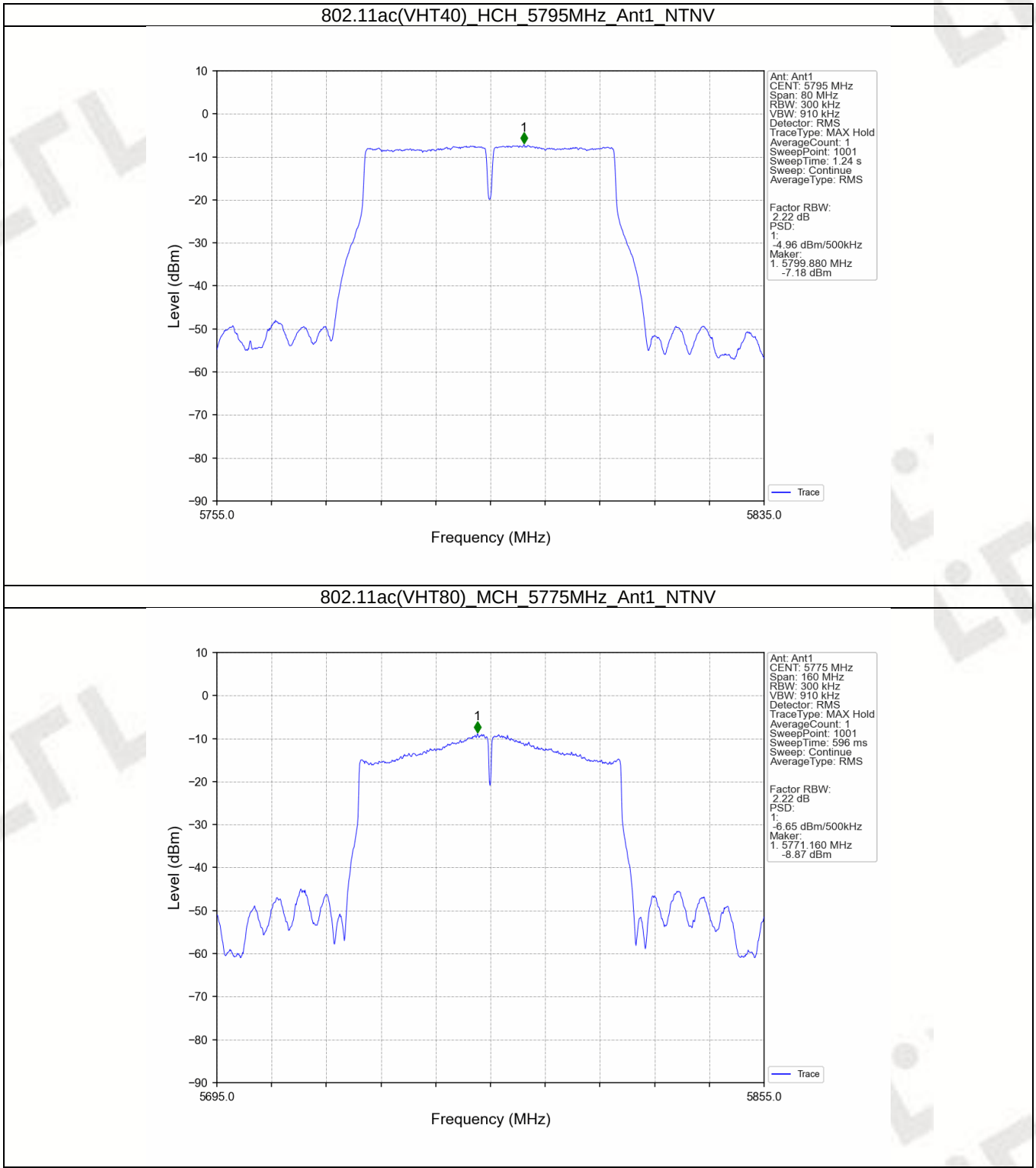
802.11ac(VHT20)_MCH_5785MHz_Ant1_NTNV



FCC ID: SMQ-UWM1

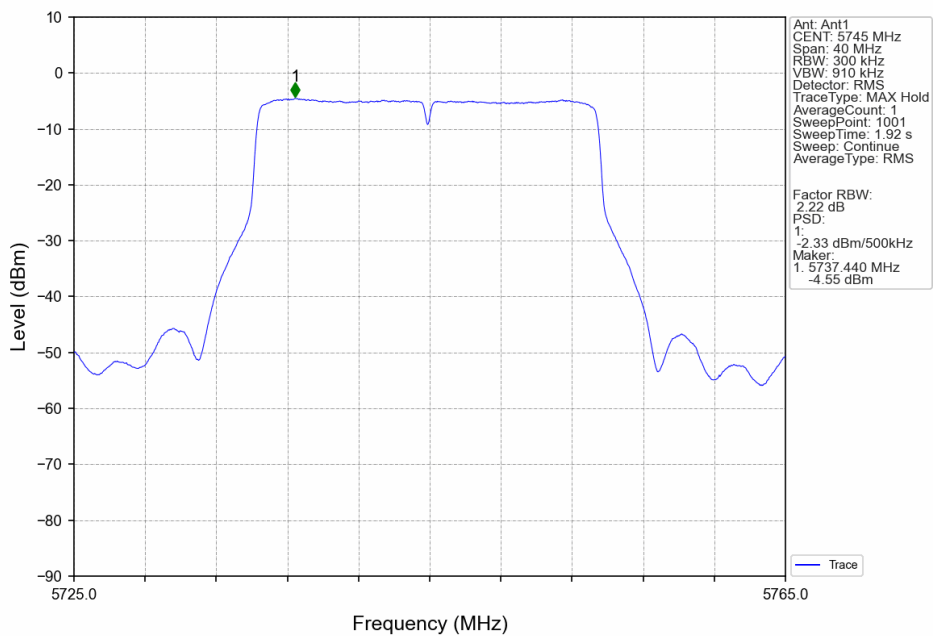


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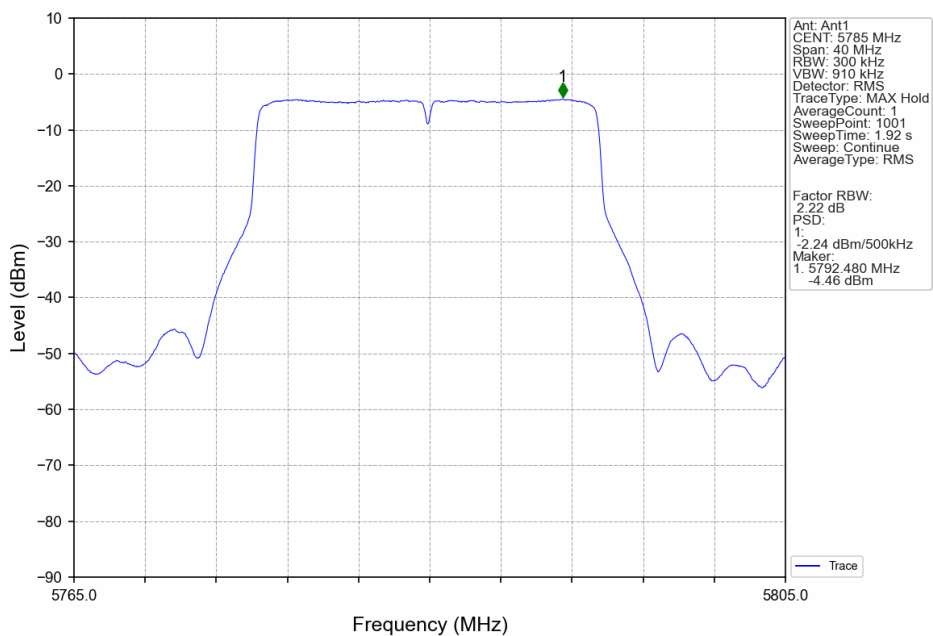


FCC ID: SMQ-UWM1

802.11ax(HEW20)_LCH_5745MHz_SU_/_Ant1_NTNV

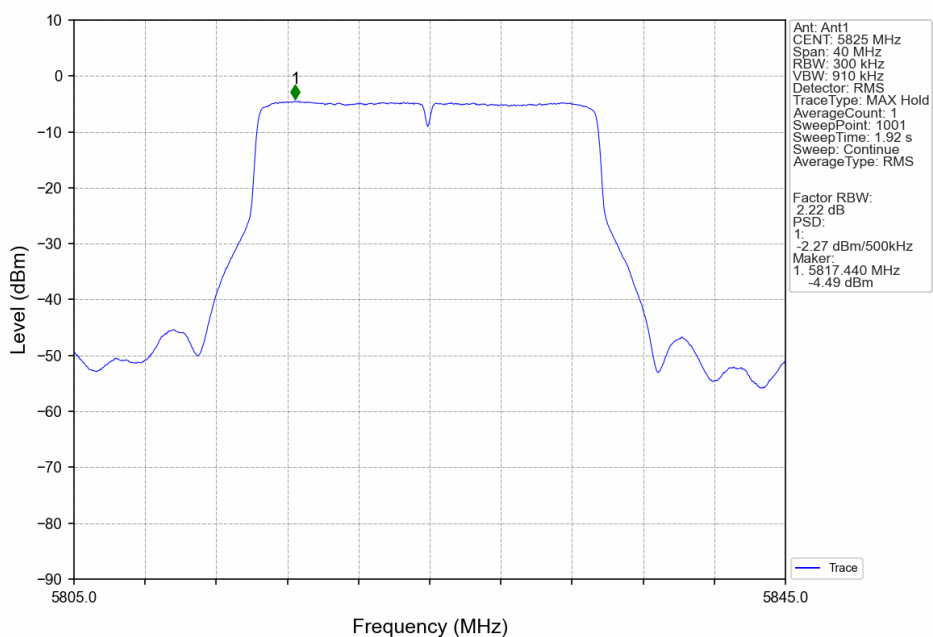


802.11ax(HEW20)_MCH_5785MHz_SU_/_Ant1_NTNV

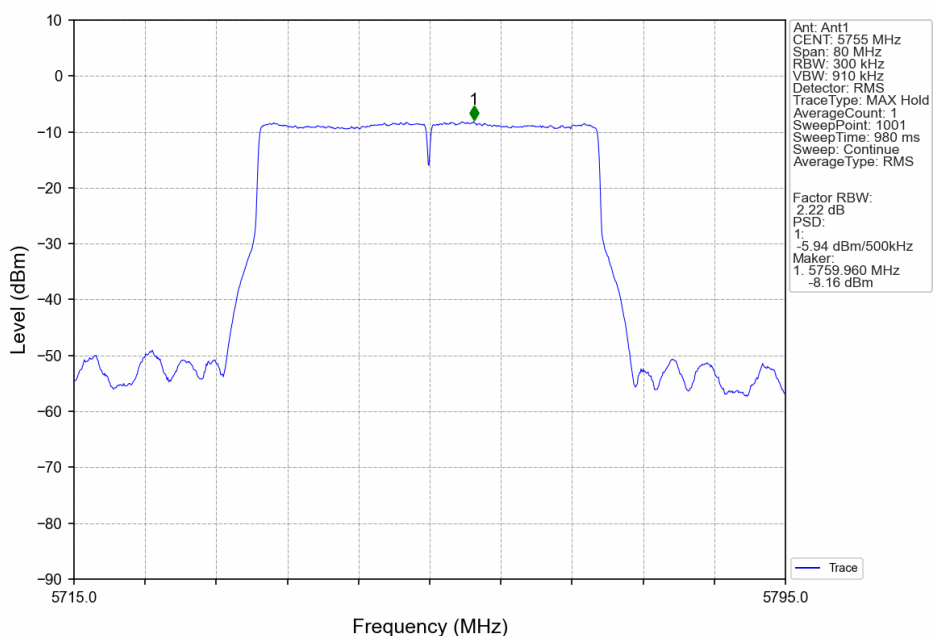


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802.11ax(HEW20)_HCH_5825MHz_SU_ / _Ant1_NTNV

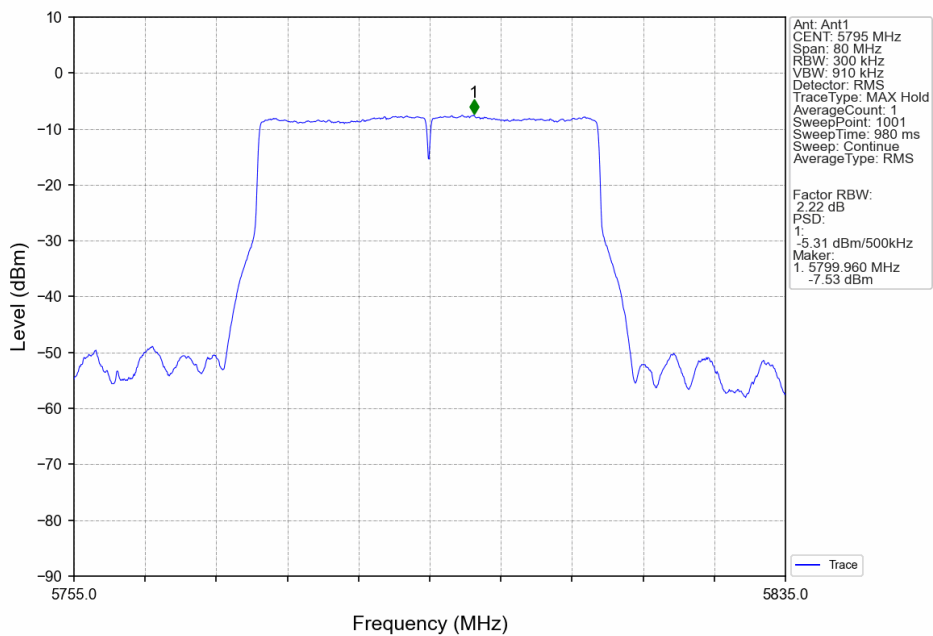


802.11ax(HEW40)_LCH_5755MHz_SU_ / _Ant1_NTNV

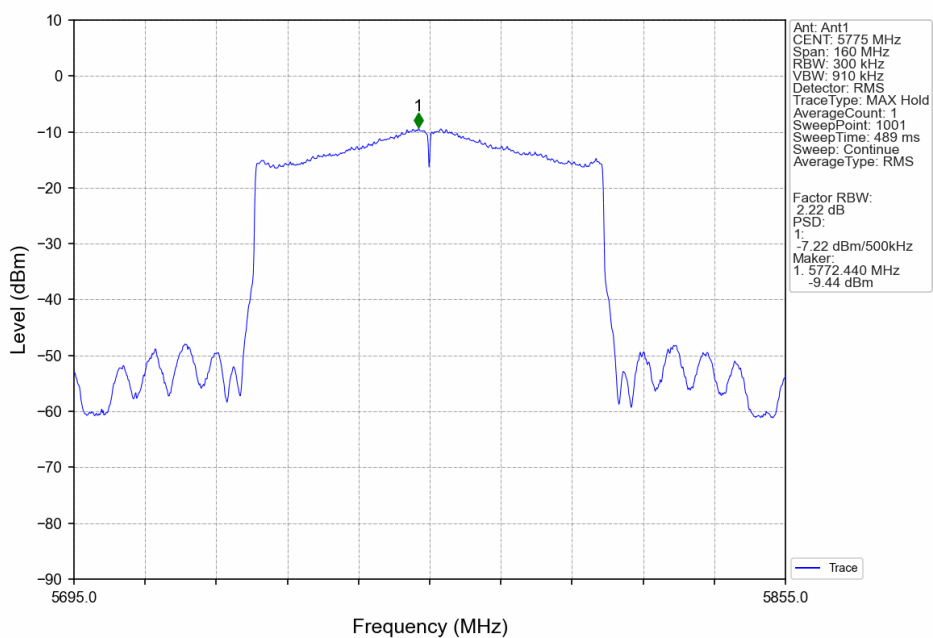


FCC ID: SMQ-UWM1

802.11ax(HEW40)_HCH_5795MHz_SU_ / _Ant1_NTNV



802.11ax(HEW80)_MCH_5775MHz_SU_ / _Ant1_NTNV



FCC ID: SMQ-UWM1

5. Frequency Stability

5.1 Test Result

5.1.1 Ant1

Ant1							
Mode	Tx Type	Frequency (MHz)	Temperature (°C)	Voltage (VDC)	Measured Frequency (MHz)	Limit (MHz)	Verdict
Carrier Wave	SISO	5745	20	2.805	5744.890	5725 to 5850	Pass
				3.300	5744.890	5725 to 5850	Pass
				3.795	5744.890	5725 to 5850	Pass
			-30	3.300	5744.890	5725 to 5850	Pass
			-20	3.300	5744.890	5725 to 5850	Pass
			-10	3.300	5744.890	5725 to 5850	Pass
			0	3.300	5744.890	5725 to 5850	Pass
			10	3.300	5744.890	5725 to 5850	Pass
			30	3.300	5744.891	5725 to 5850	Pass
			40	3.300	5744.891	5725 to 5850	Pass
			50	3.300	5744.891	5725 to 5850	Pass
		5785	20	2.805	5784.890	5725 to 5850	Pass
				3.300	5784.890	5725 to 5850	Pass
				3.795	5784.890	5725 to 5850	Pass
			-30	3.300	5784.890	5725 to 5850	Pass
			-20	3.300	5784.890	5725 to 5850	Pass
			-10	3.300	5784.890	5725 to 5850	Pass
			0	3.300	5784.890	5725 to 5850	Pass
			10	3.300	5784.890	5725 to 5850	Pass
			30	3.300	5784.890	5725 to 5850	Pass
			40	3.300	5784.890	5725 to 5850	Pass
			50	3.300	5784.890	5725 to 5850	Pass
		5825	20	2.805	5824.890	5725 to 5850	Pass
				3.300	5824.890	5725 to 5850	Pass
				3.795	5824.890	5725 to 5850	Pass
			-30	3.300	5824.890	5725 to 5850	Pass
			-20	3.300	5824.890	5725 to 5850	Pass
			-10	3.300	5824.890	5725 to 5850	Pass
			0	3.300	5824.889	5725 to 5850	Pass
			10	3.300	5824.890	5725 to 5850	Pass
			30	3.300	5824.890	5725 to 5850	Pass
			40	3.300	5824.890	5725 to 5850	Pass
			50	3.300	5824.890	5725 to 5850	Pass
		5755	20	2.805	5754.891	5725 to 5850	Pass
				3.300	5754.891	5725 to 5850	Pass
				3.795	5754.891	5725 to 5850	Pass
			-30	3.300	5754.891	5725 to 5850	Pass
			-20	3.300	5754.891	5725 to 5850	Pass
			-10	3.300	5754.891	5725 to 5850	Pass
			0	3.300	5754.891	5725 to 5850	Pass
			10	3.300	5754.891	5725 to 5850	Pass
			30	3.300	5754.891	5725 to 5850	Pass
			40	3.300	5754.891	5725 to 5850	Pass
			50	3.300	5754.891	5725 to 5850	Pass
		5795	20	2.805	5794.890	5725 to 5850	Pass
				3.300	5794.890	5725 to 5850	Pass

FCC ID: SMQ-UWM1

				3.795	5794.890	5725 to 5850	Pass
			-30	3.300	5794.890	5725 to 5850	Pass
			-20	3.300	5794.890	5725 to 5850	Pass
			-10	3.300	5794.890	5725 to 5850	Pass
			0	3.300	5794.890	5725 to 5850	Pass
			10	3.300	5794.890	5725 to 5850	Pass
			30	3.300	5794.891	5725 to 5850	Pass
			40	3.300	5794.891	5725 to 5850	Pass
			50	3.300	5794.890	5725 to 5850	Pass
		5775	20	2.805	5774.890	5725 to 5850	Pass
				3.300	5774.890	5725 to 5850	Pass
				3.795	5774.890	5725 to 5850	Pass
			-30	3.300	5774.890	5725 to 5850	Pass
			-20	3.300	5774.890	5725 to 5850	Pass
			-10	3.300	5774.890	5725 to 5850	Pass
			0	3.300	5774.890	5725 to 5850	Pass
			10	3.300	5774.890	5725 to 5850	Pass
			30	3.300	5774.890	5725 to 5850	Pass
			40	3.300	5774.890	5725 to 5850	Pass
			50	3.300	5774.890	5725 to 5850	Pass