



Shenzhen CTL Testing Technology Co., Ltd.

Floor 1-A, Baisha Technology Park, No.3011,
Shaheji Road, Nanshan District, Shenzhen, China 518055
Tel: +86-755-89486194 E-mail: ctl@ctl-lab.com

Annex for 5G Wi-Fi Band 2A

Test Report No.: CTL2509126021-WF02

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FCC ID: SMQ-UWM1

1. Duty Cycle

1.1 Test Result

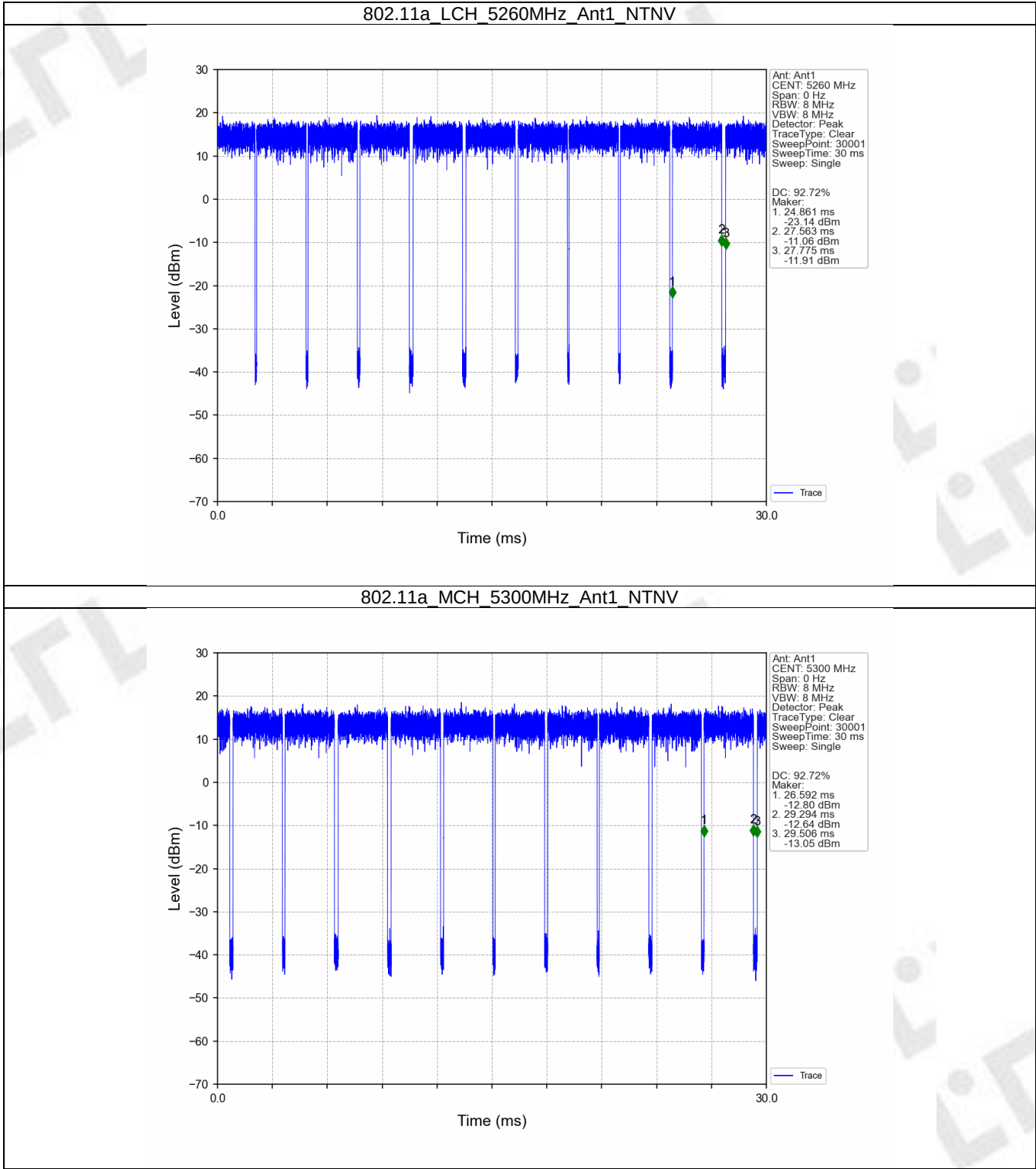
1.1.1 Ant1

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	5260	/	/	2.702	2.914	92.72	0.33	4.23
		5300	/	/	2.702	2.914	92.72	0.33	2.99
		5320	/	/	2.702	2.972	90.92	0.41	3.76
802.11n (HT20)	SISO	5260	/	/	2.513	2.725	92.22	0.35	4.51
		5300	/	/	2.515	2.699	93.18	0.31	3.89
		5320	/	/	2.514	2.726	92.22	0.35	4.85
802.11n (HT40)	SISO	5270	/	/	1.232	1.399	88.06	0.55	6.10
		5310	/	/	1.232	1.389	88.70	0.52	5.47
802.11ac (VHT20)	SISO	5260	/	/	2.522	2.724	92.58	0.33	4.14
		5300	/	/	2.522	2.707	93.17	0.31	3.54
		5320	/	/	2.522	2.715	92.89	0.32	3.51
802.11ac (VHT40)	SISO	5270	/	/	1.237	1.448	85.43	0.68	8.81
		5310	/	/	1.236	1.448	85.36	0.69	5.67
802.11ac (VHT80)	SISO	5290	/	/	0.596	0.807	73.85	1.32	13.68
802.11ax (HEW20)	SISO	5260	SU	/	1.917	2.134	89.83	0.47	5.19
		5300	SU	/	1.917	2.134	89.83	0.47	4.82
		5320	SU	/	1.917	2.125	90.21	0.45	5.69
802.11ax (HEW40)	SISO	5270	SU	/	0.979	1.185	82.62	0.83	9.08
		5310	SU	/	0.979	1.186	82.55	0.83	8.26
802.11ax (HEW80)	SISO	5290	SU	/	0.489	0.676	72.34	1.41	12.41

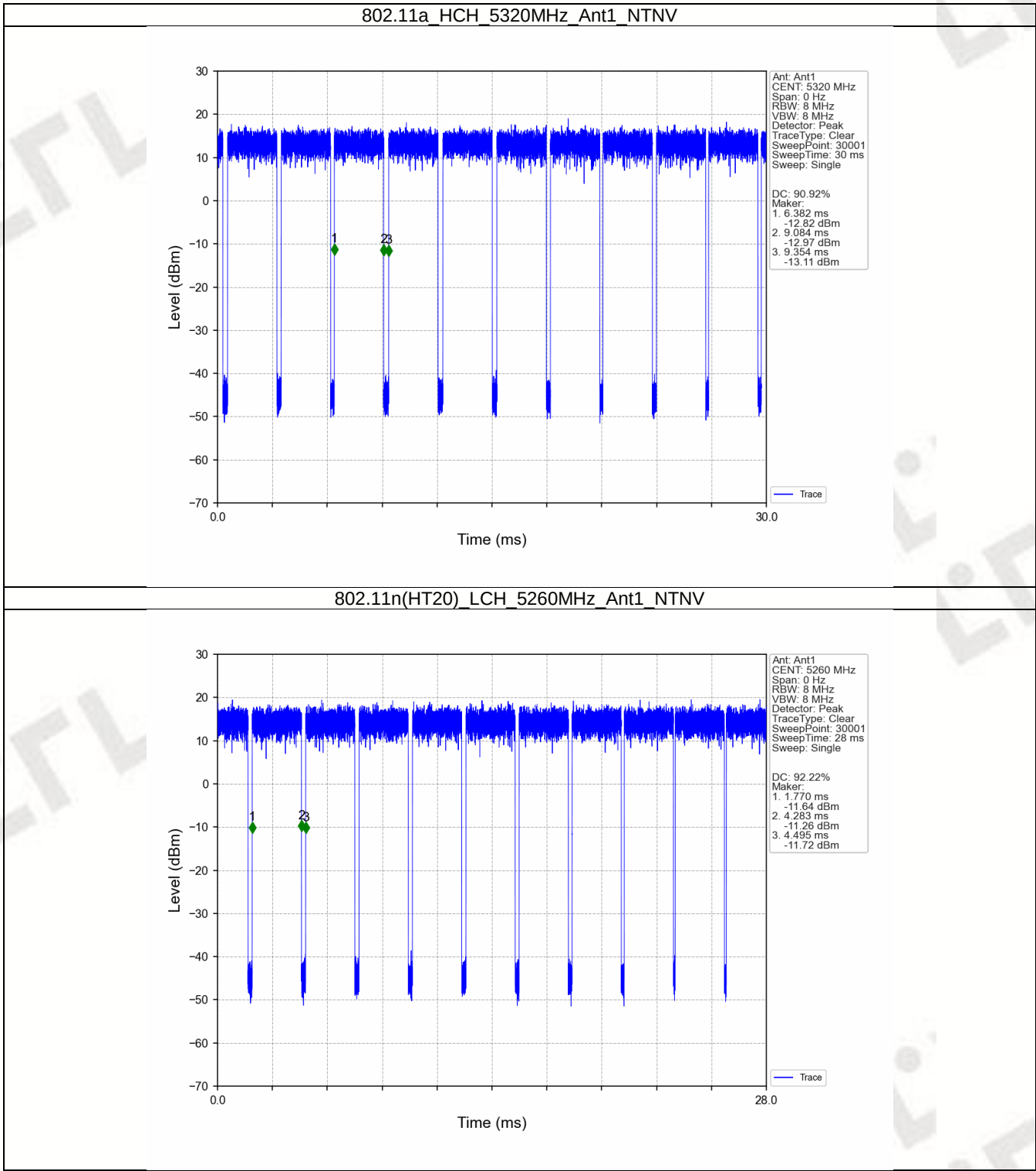
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1.2 Test Graph

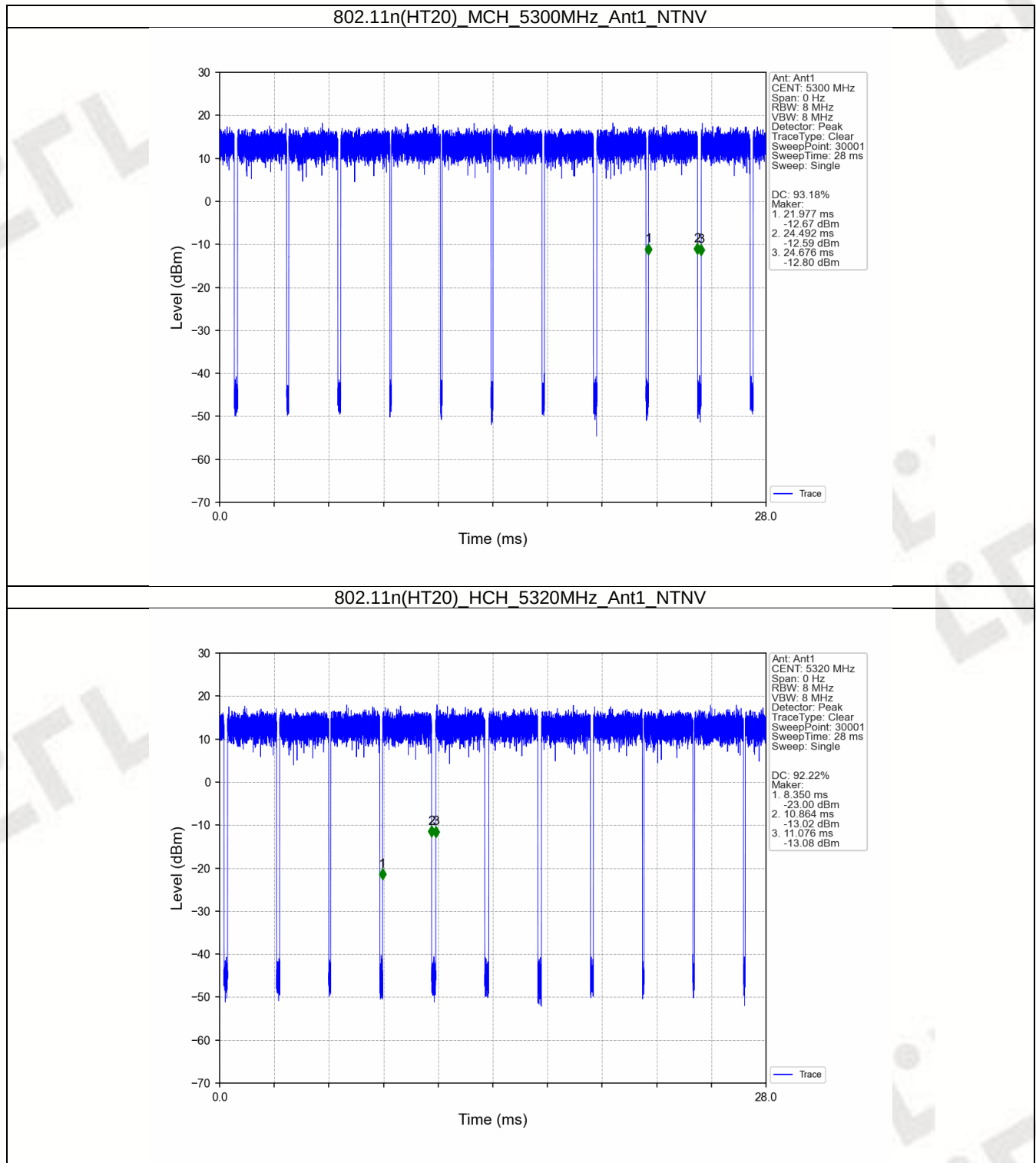
1.2.1 Ant1



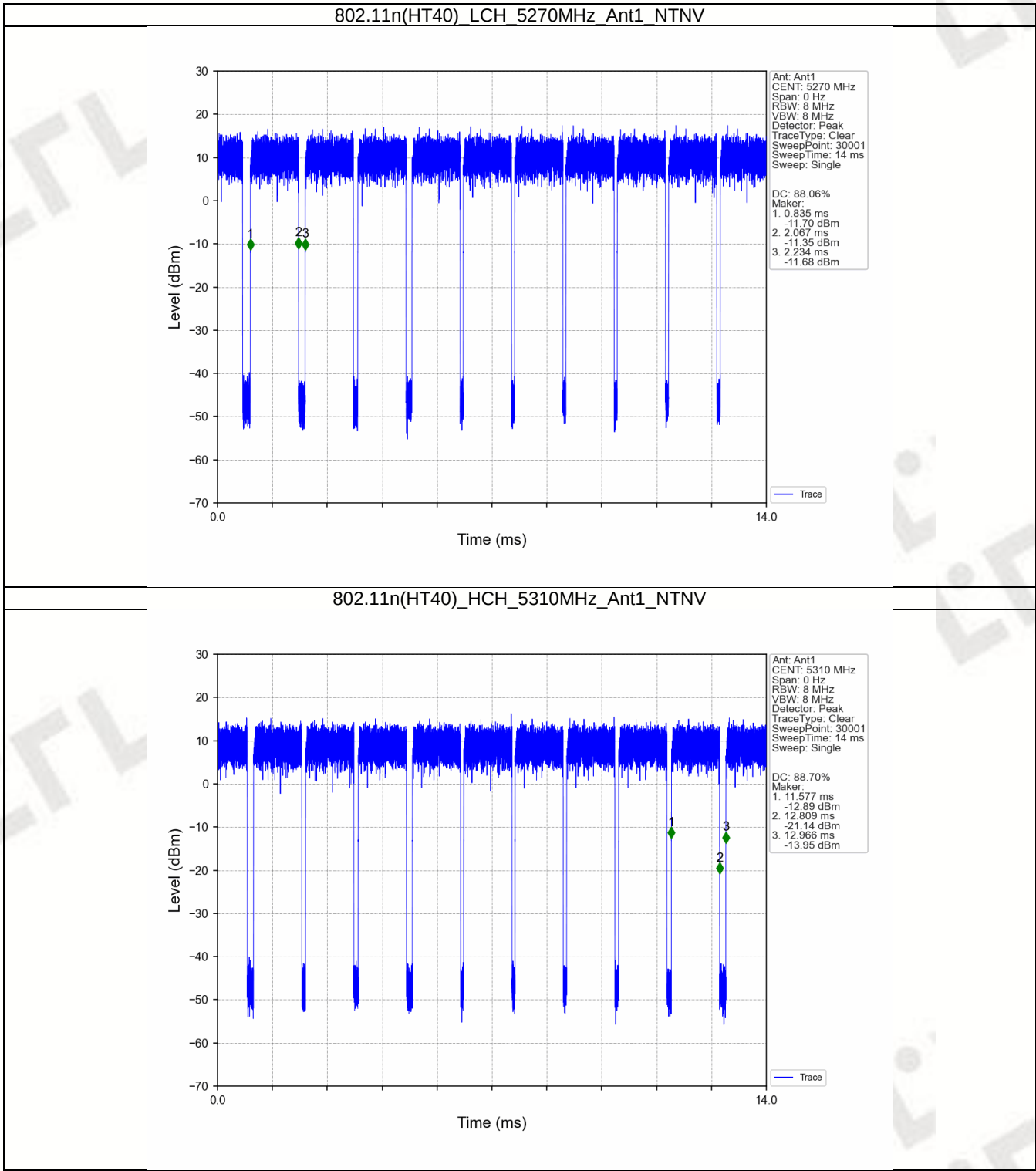
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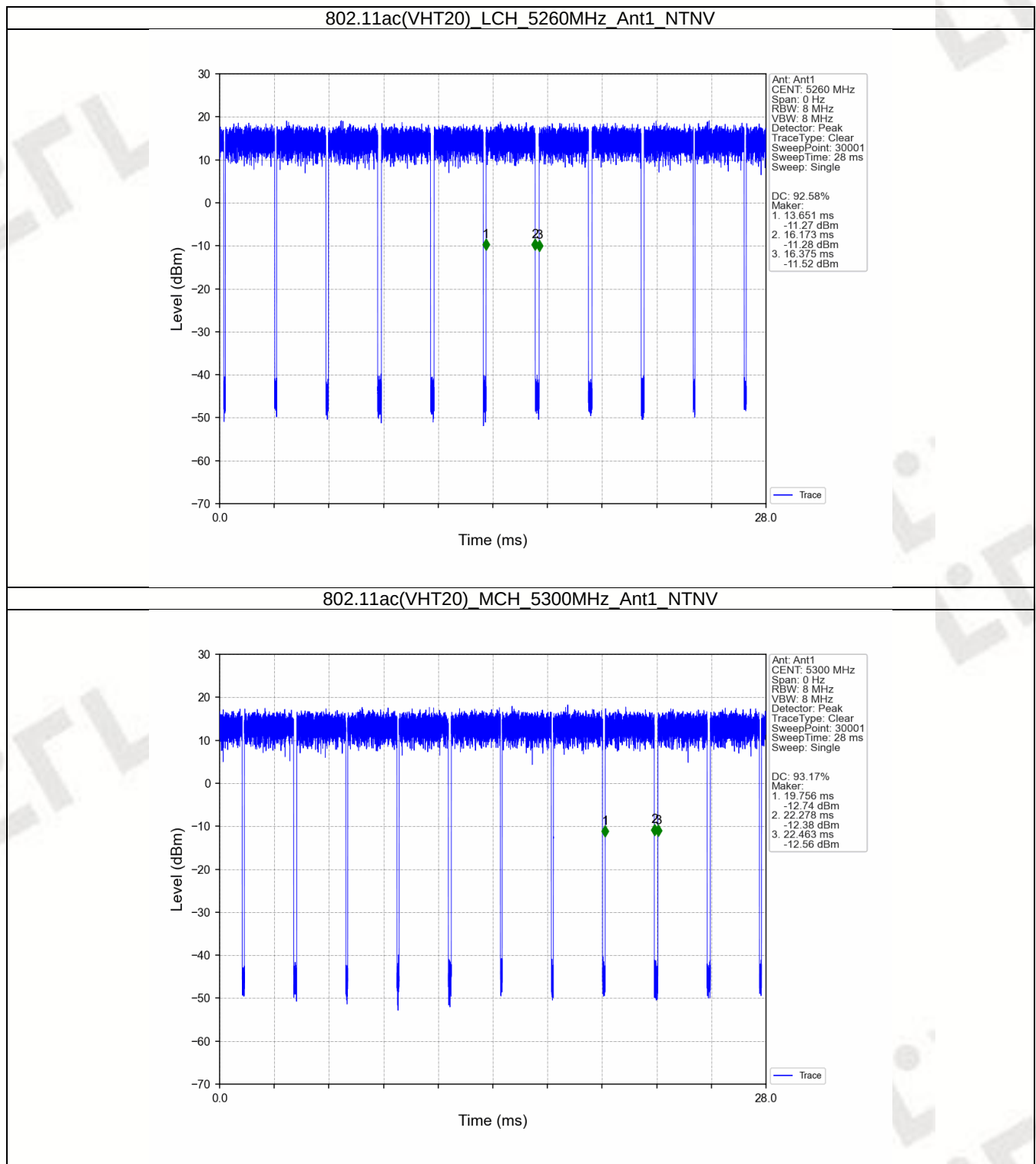
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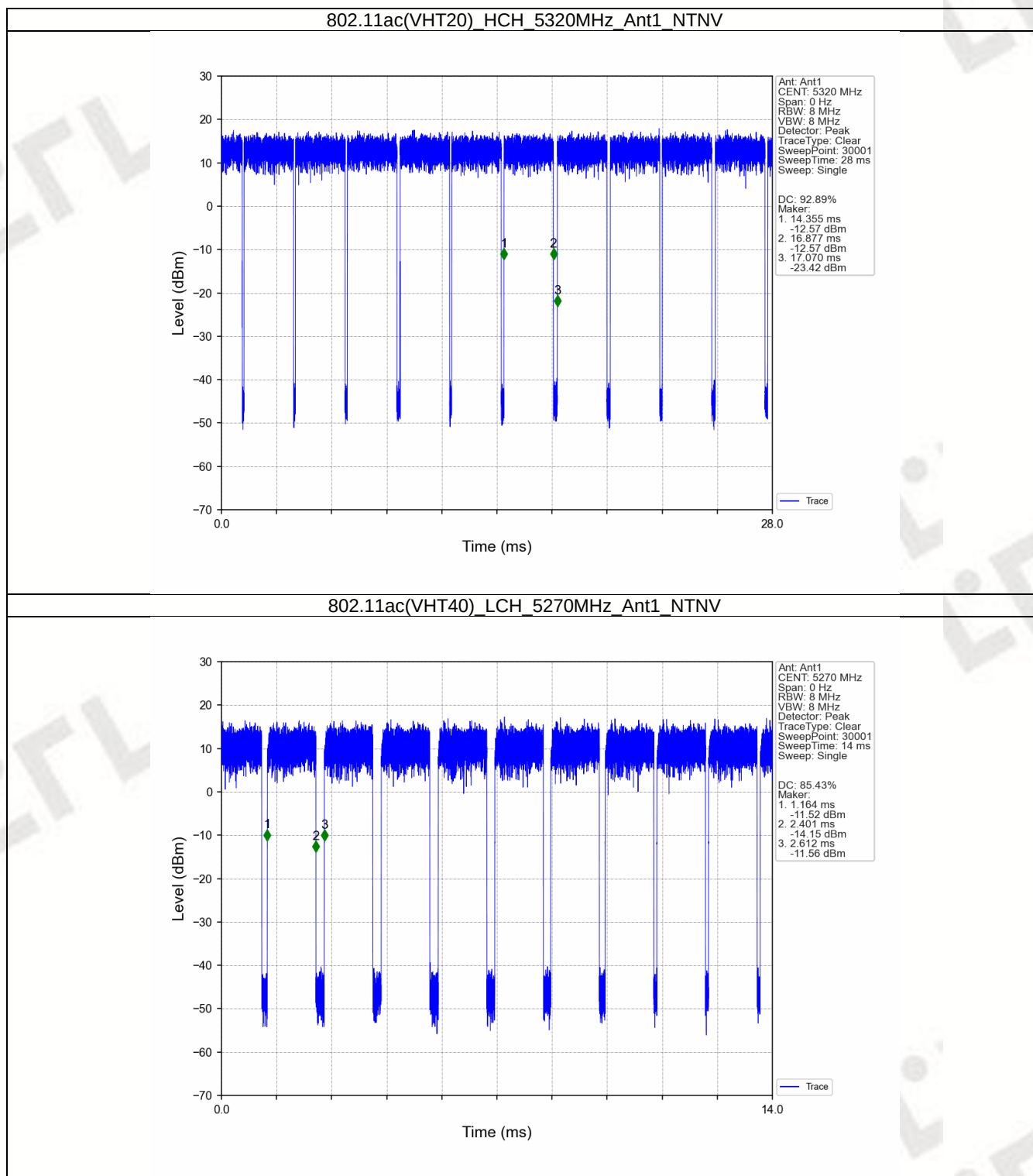
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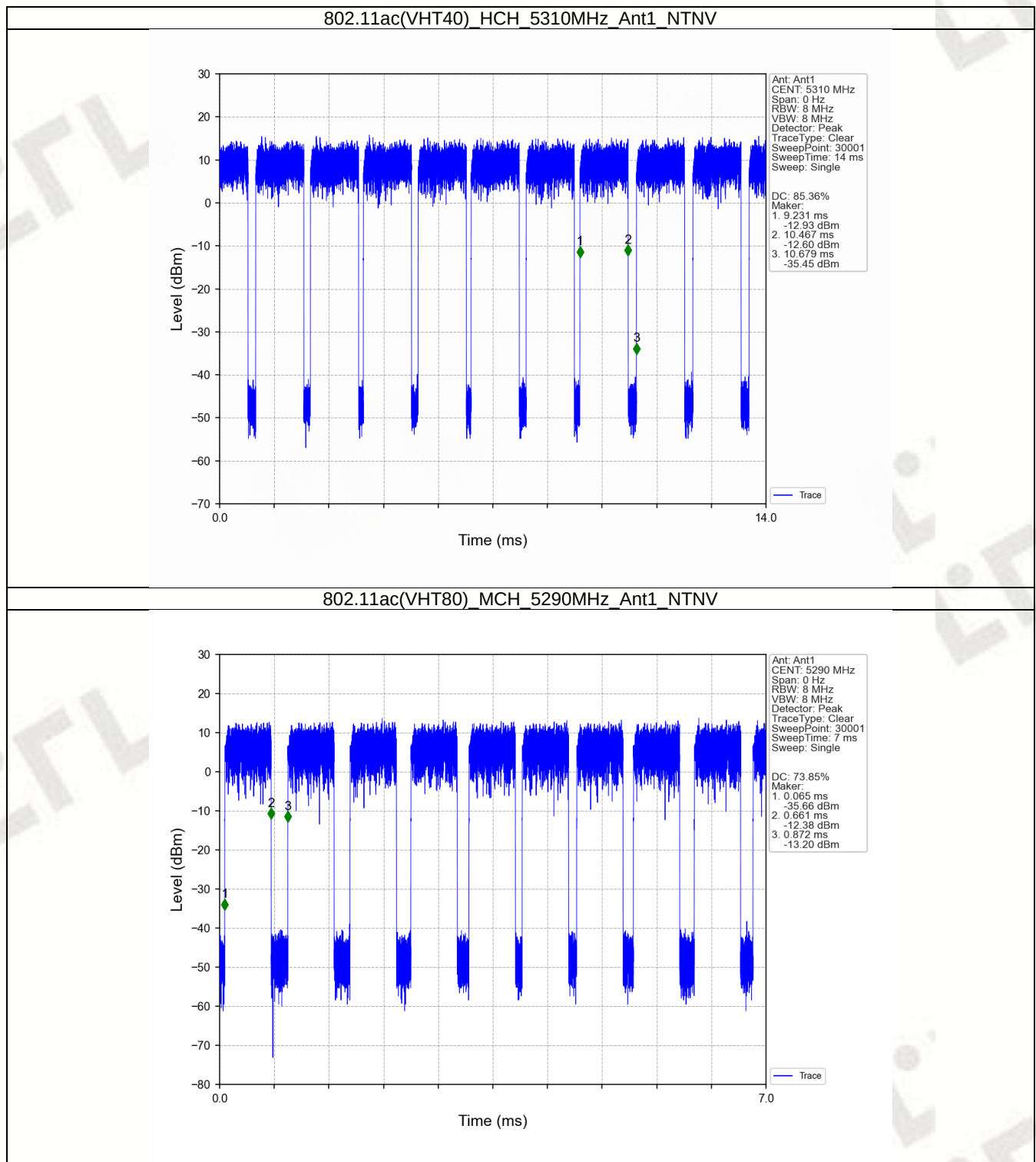
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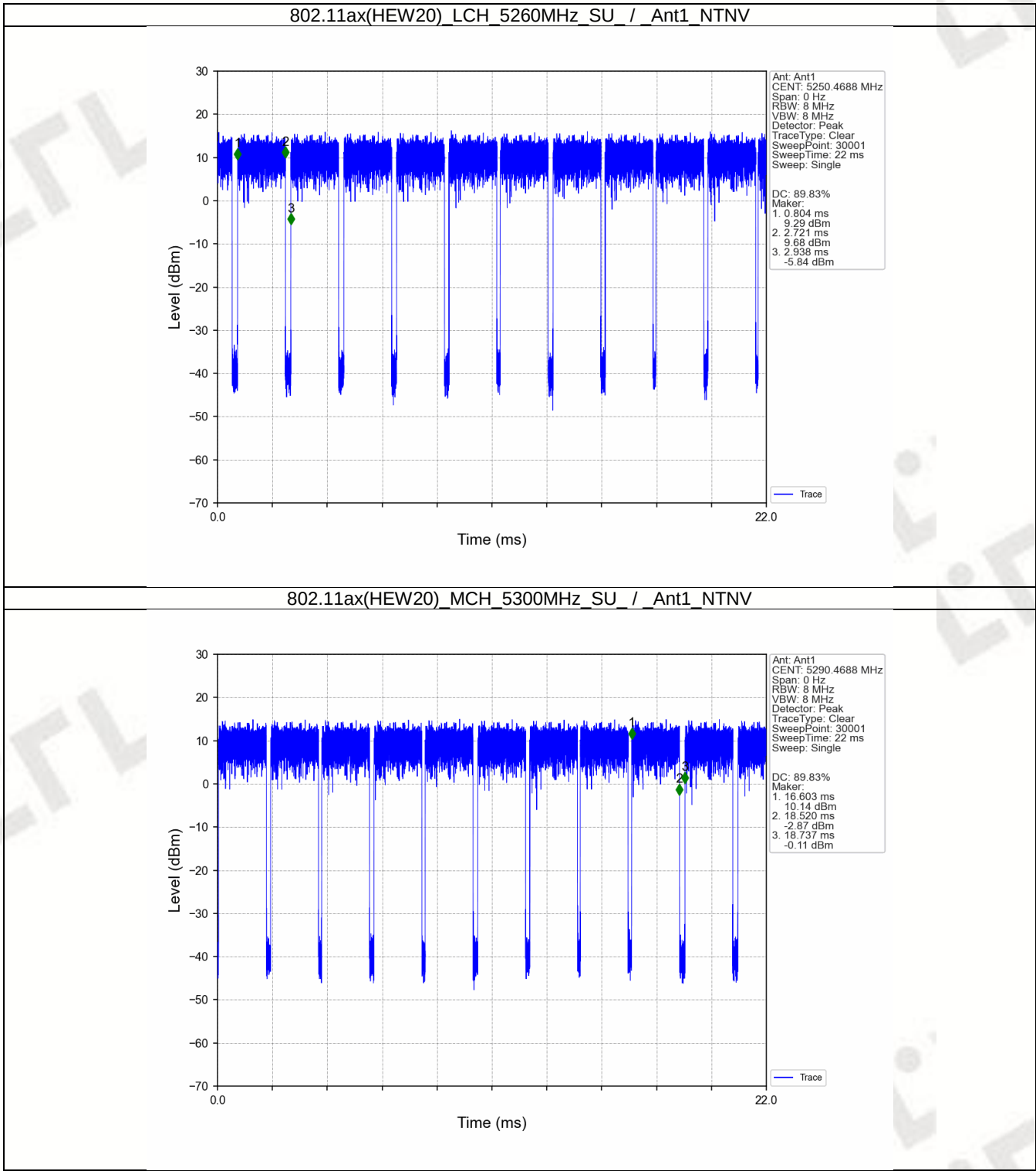
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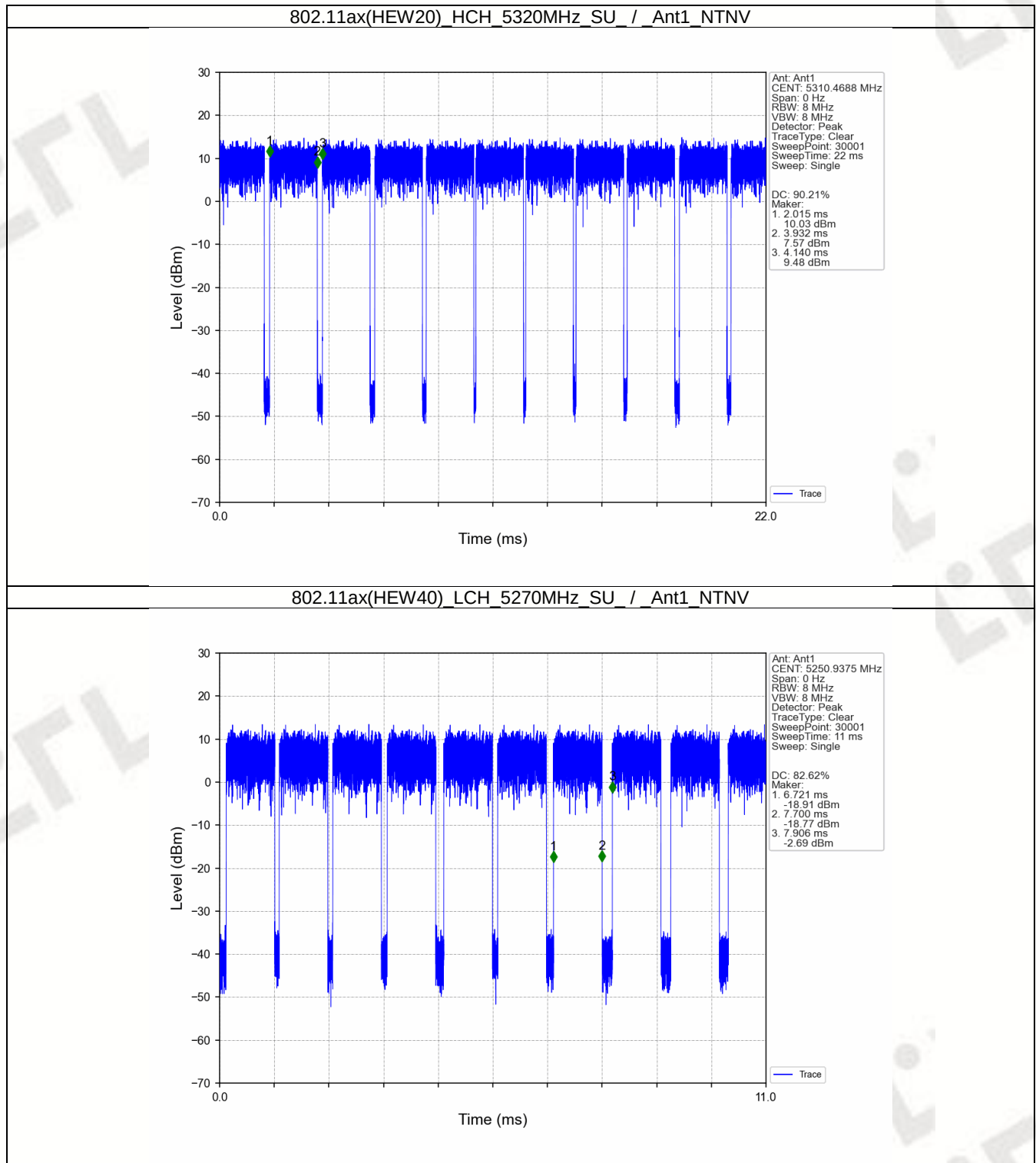
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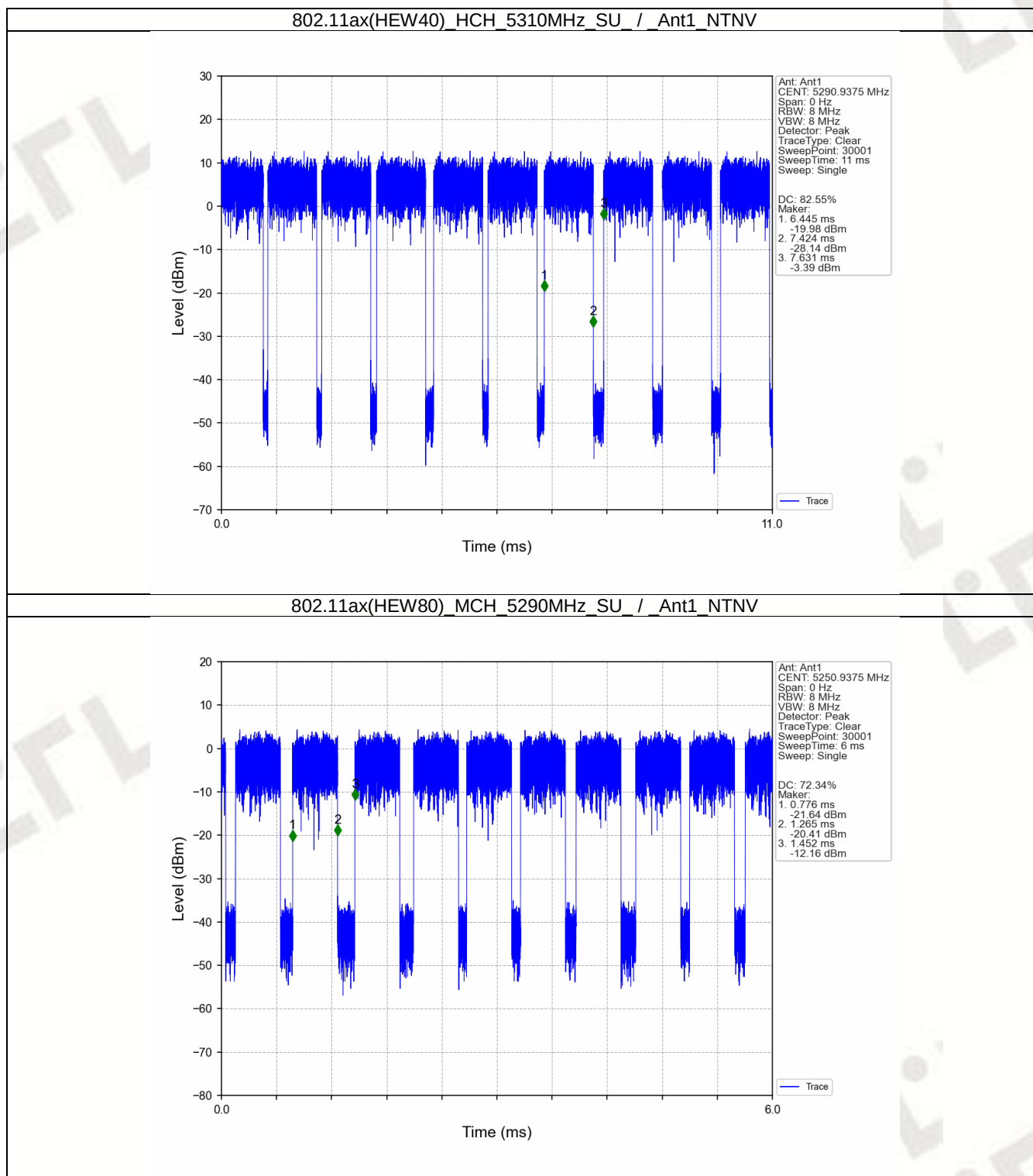
FCC ID: SMQ-UWM1



FCC ID: SMQ-UWM1



FCC ID: SMQ-UWM1



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	5260	/	/	1	17.622	/	Pass
		5300	/	/	1	17.624	/	Pass
		5320	/	/	1	17.648	/	Pass
802.11n (HT20)	SISO	5260	/	/	1	18.506	/	Pass
		5300	/	/	1	18.587	/	Pass
		5320	/	/	1	18.569	/	Pass
802.11n (HT40)	SISO	5270	/	/	1	37.197	/	Pass
		5310	/	/	1	37.294	/	Pass
802.11ac (VHT20)	SISO	5260	/	/	1	18.477	/	Pass
		5300	/	/	1	18.547	/	Pass
		5320	/	/	1	18.545	/	Pass
802.11ac (VHT40)	SISO	5270	/	/	1	37.145	/	Pass
		5310	/	/	1	37.124	/	Pass
802.11ac (VHT80)	SISO	5290	/	/	1	75.376	/	Pass
802.11ax (HEW20)	SISO	5260	SU	/	1	19.239	/	Pass
		5300	SU	/	1	19.223	/	Pass
		5320	SU	/	1	19.316	/	Pass
802.11ax (HEW40)	SISO	5270	SU	/	1	38.301	/	Pass
		5310	SU	/	1	38.283	/	Pass
802.11ax (HEW80)	SISO	5290	SU	/	1	76.866	/	Pass

2.1.2 26dB BW

Mode	TX Type	Frequency (MHz)	RU	RU Pos	ANT	26dB Bandwidth (MHz)		Verdict
						Result	Limit	
802.11a	SISO	5260	/	/	1	23.254	/	Pass
		5300	/	/	1	22.148	/	Pass
		5320	/	/	1	23.098	/	Pass
802.11n (HT20)	SISO	5260	/	/	1	23.008	/	Pass
		5300	/	/	1	23.128	/	Pass
		5320	/	/	1	23.011	/	Pass
802.11n (HT40)	SISO	5270	/	/	1	43.420	/	Pass
		5310	/	/	1	42.913	/	Pass
802.11ac (VHT20)	SISO	5260	/	/	1	23.014	/	Pass
		5300	/	/	1	22.823	/	Pass
		5320	/	/	1	22.948	/	Pass
802.11ac (VHT40)	SISO	5270	/	/	1	43.005	/	Pass
		5310	/	/	1	43.024	/	Pass
802.11ac (VHT80)	SISO	5290	/	/	1	81.211	/	Pass
802.11ax (HEW20)	SISO	5260	SU	/	1	22.098	/	Pass
		5300	SU	/	1	22.218	/	Pass

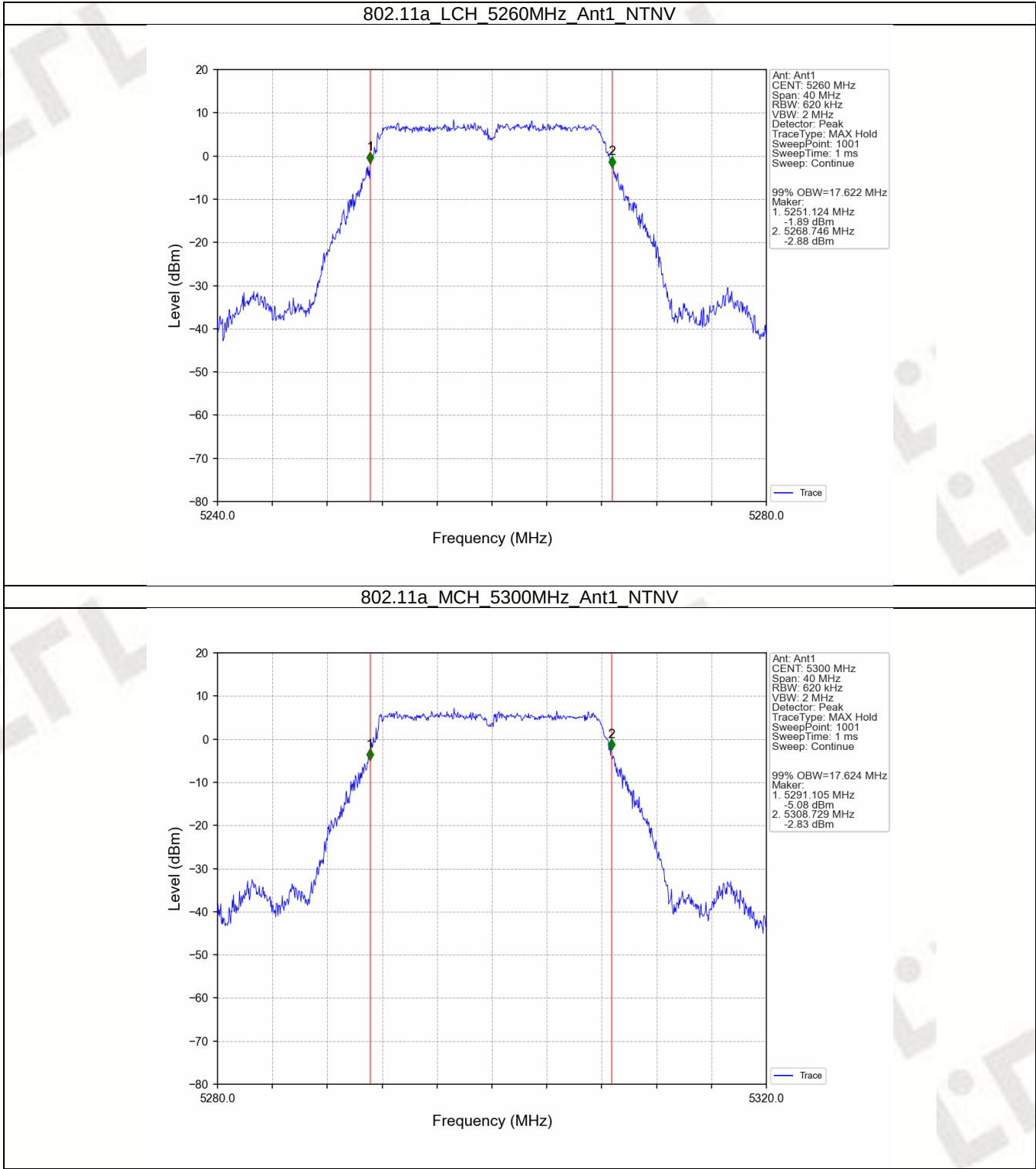
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		5320	SU	/	1	22.397	/	Pass
802.11ax (HEW40)	SISO	5270	SU	/	1	42.237	/	Pass
		5310	SU	/	1	42.243	/	Pass
802.11ax (HEW80)	SISO	5290	SU	/	1	81.725	/	Pass

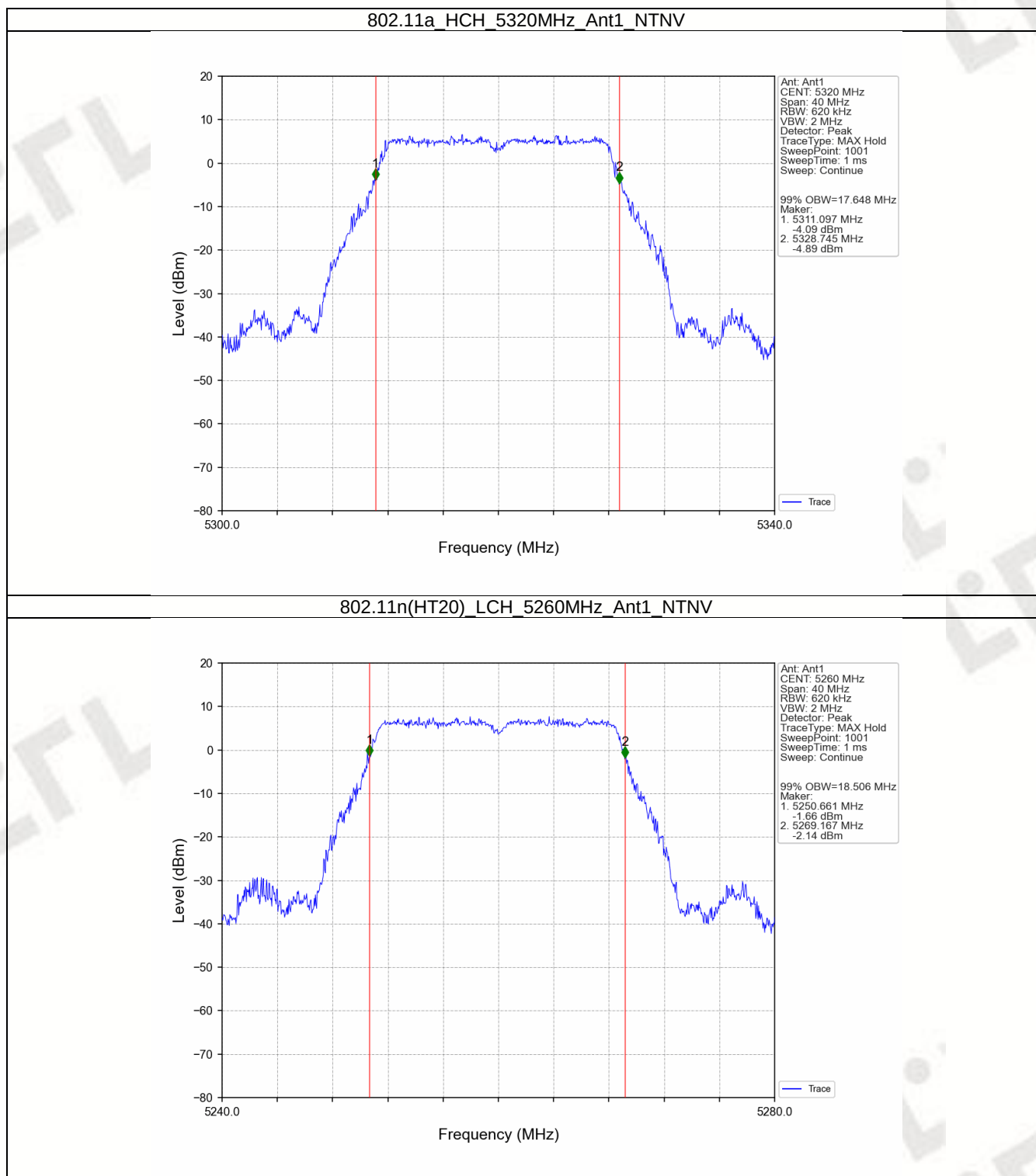
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2.2 Test Graph

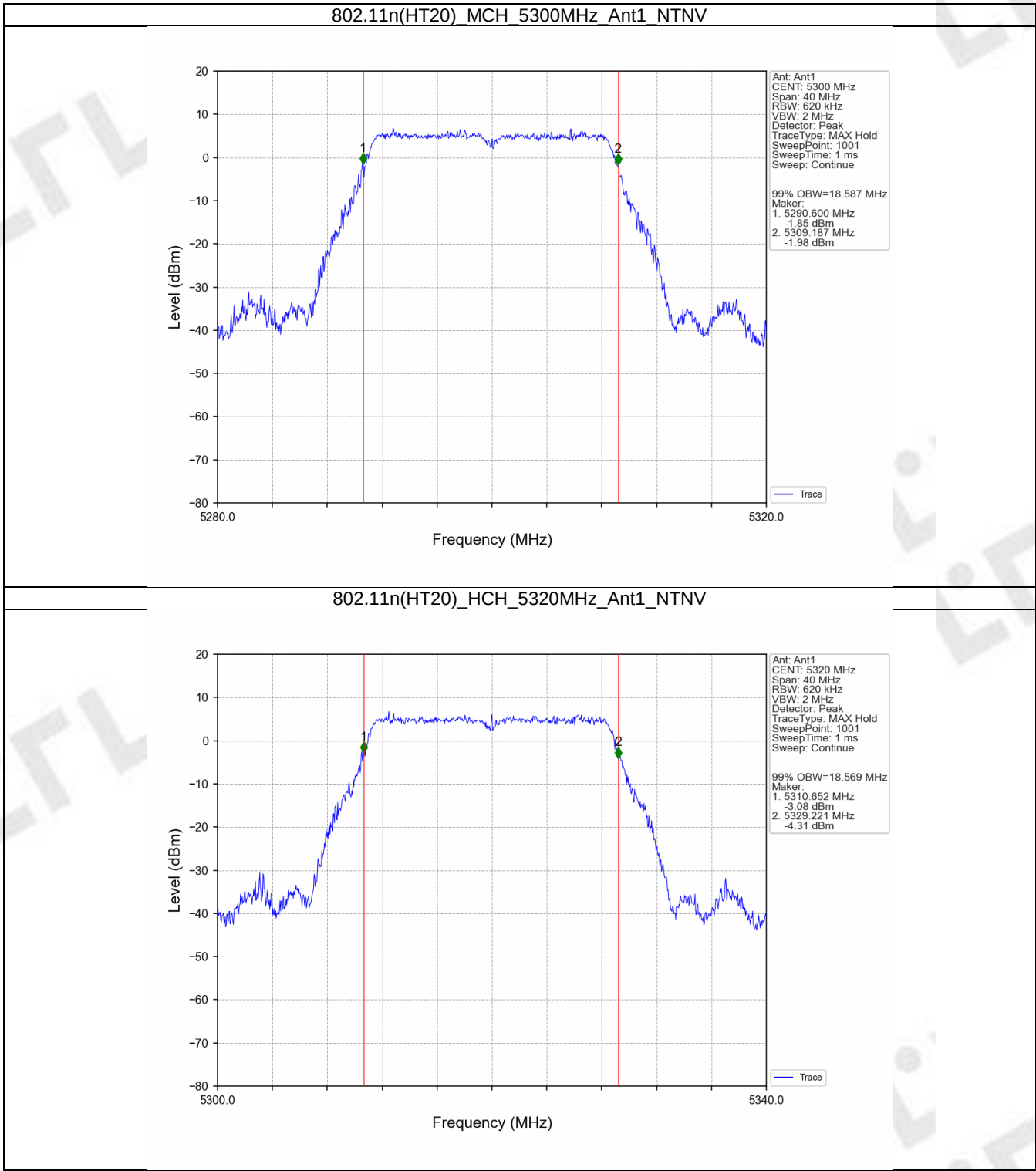
2.2.1 OBW



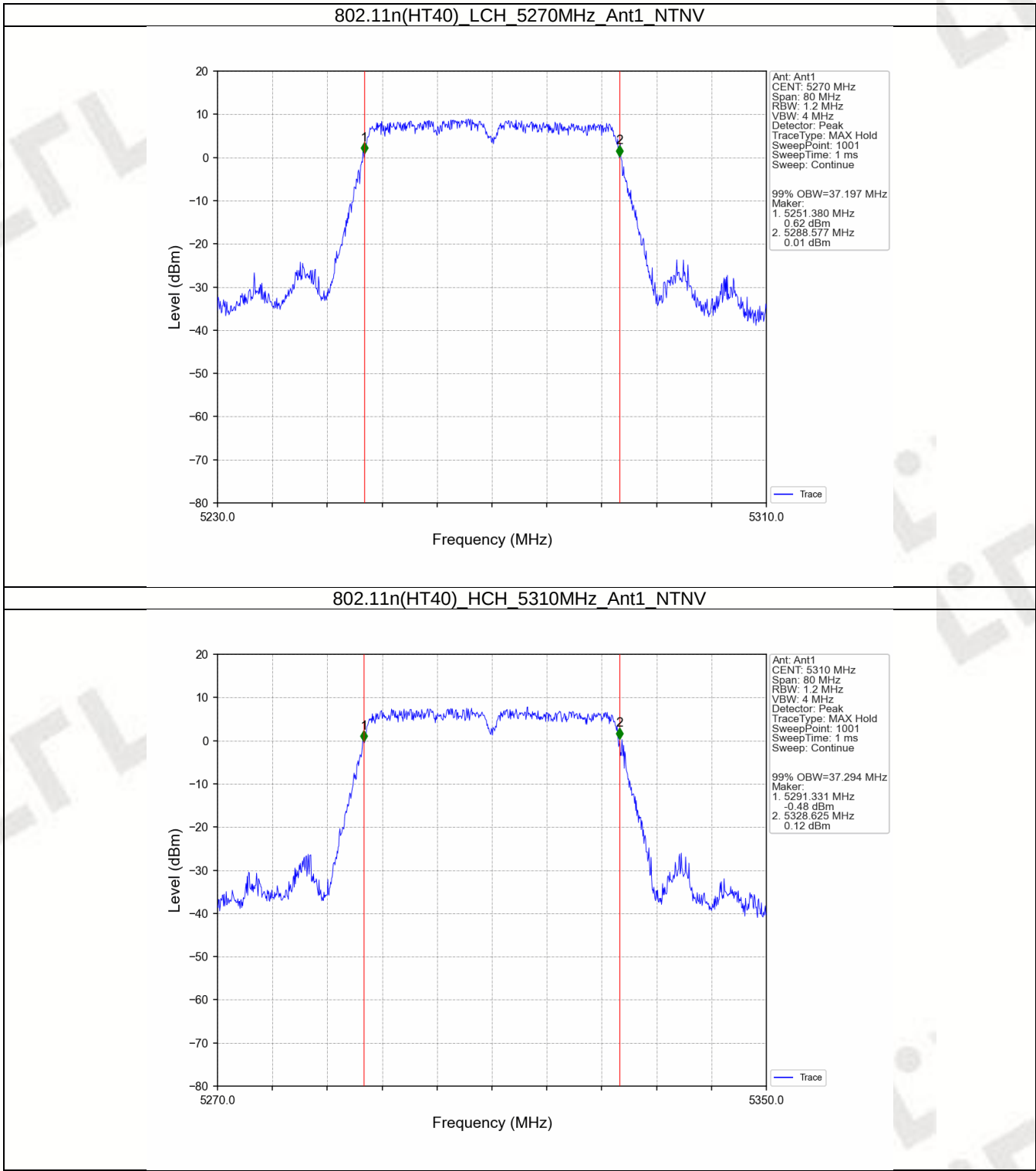
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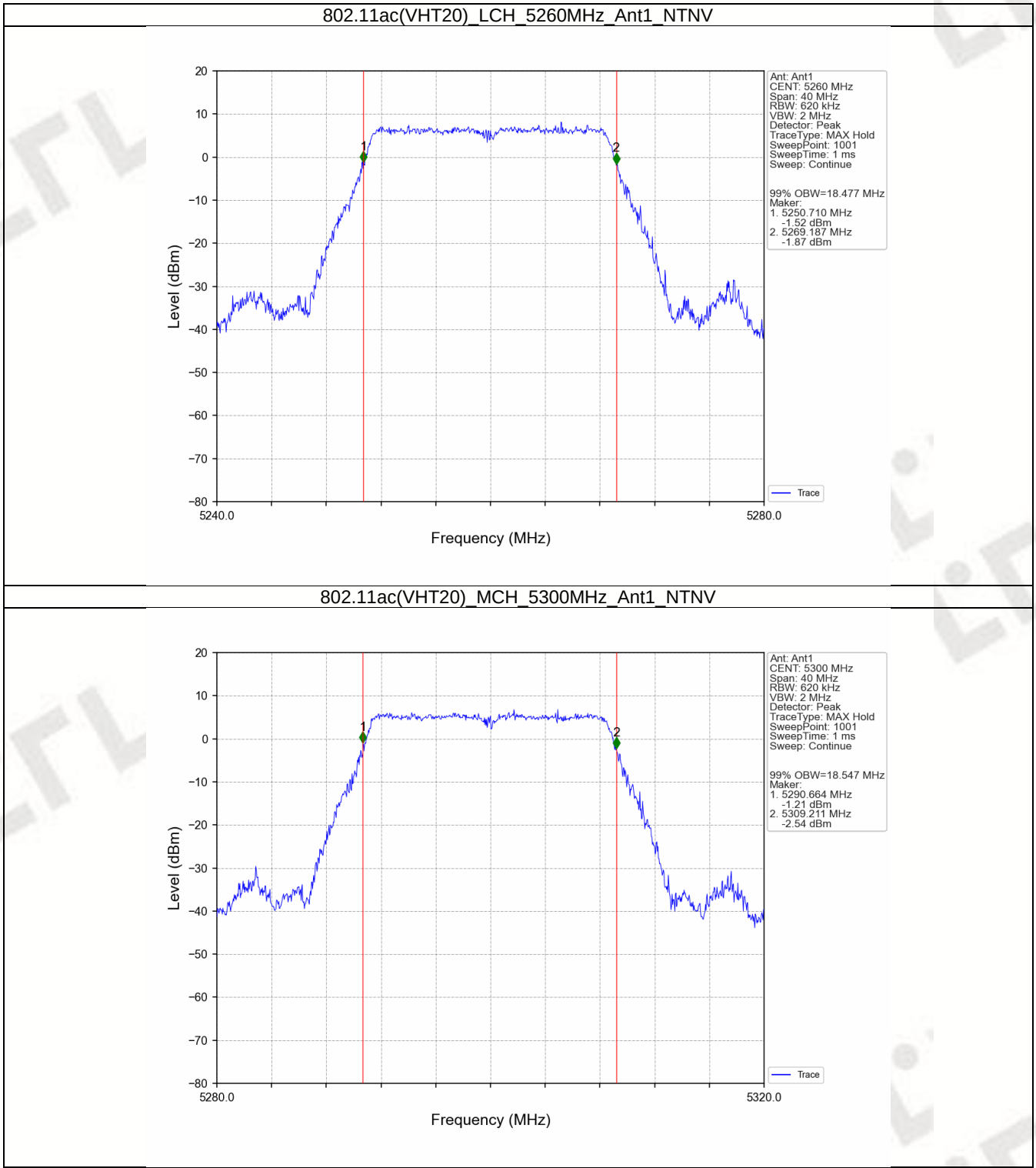
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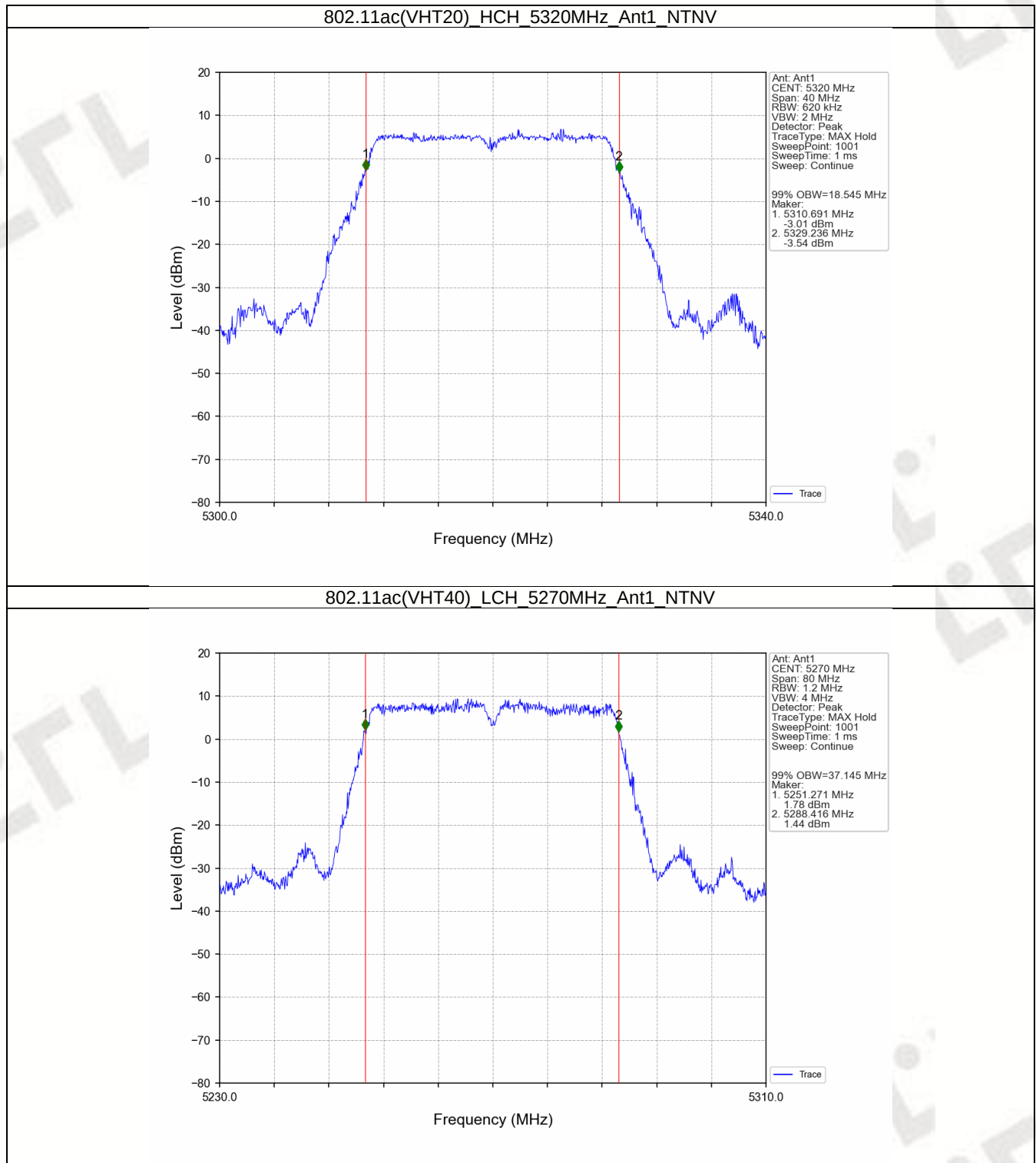
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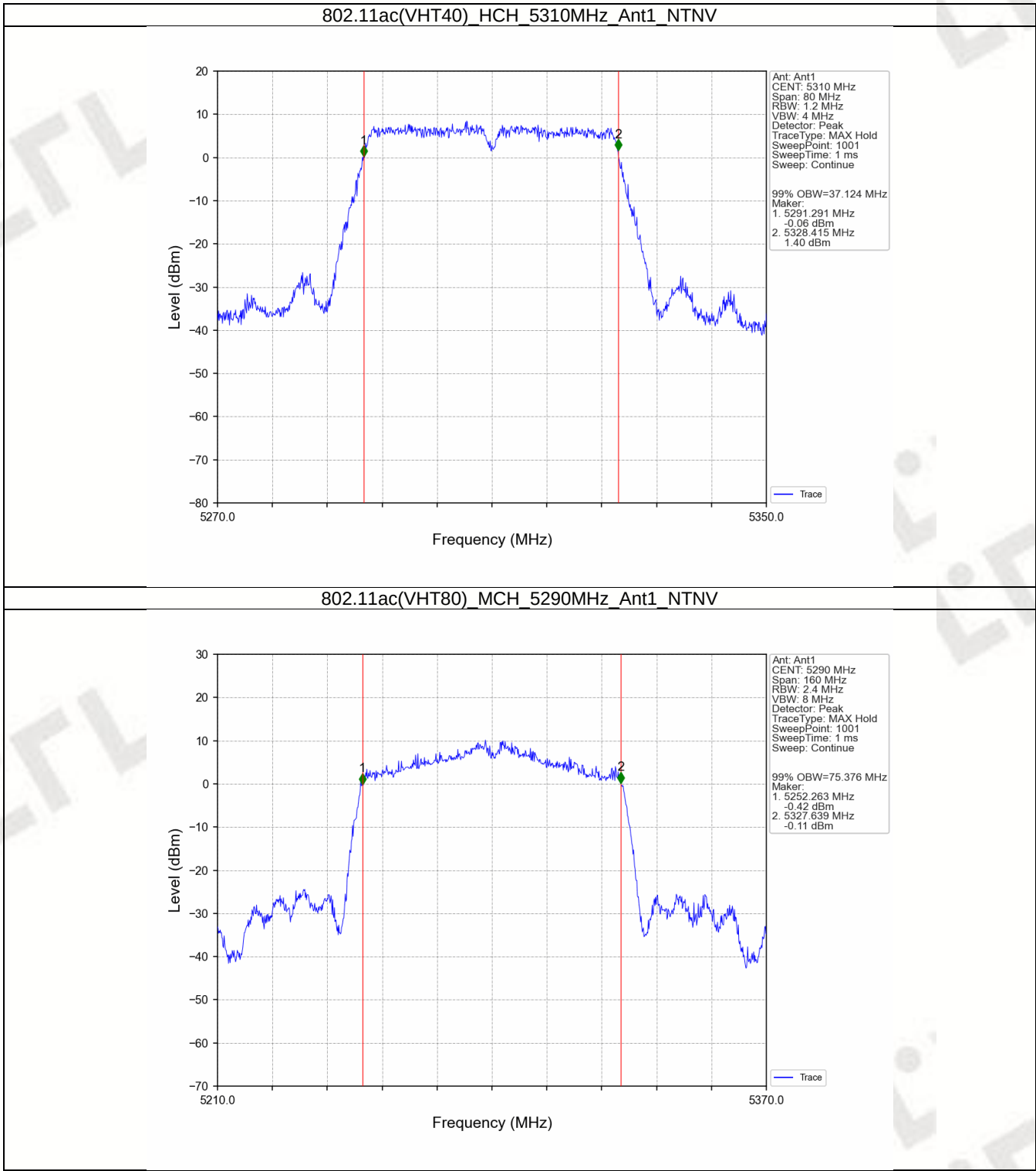
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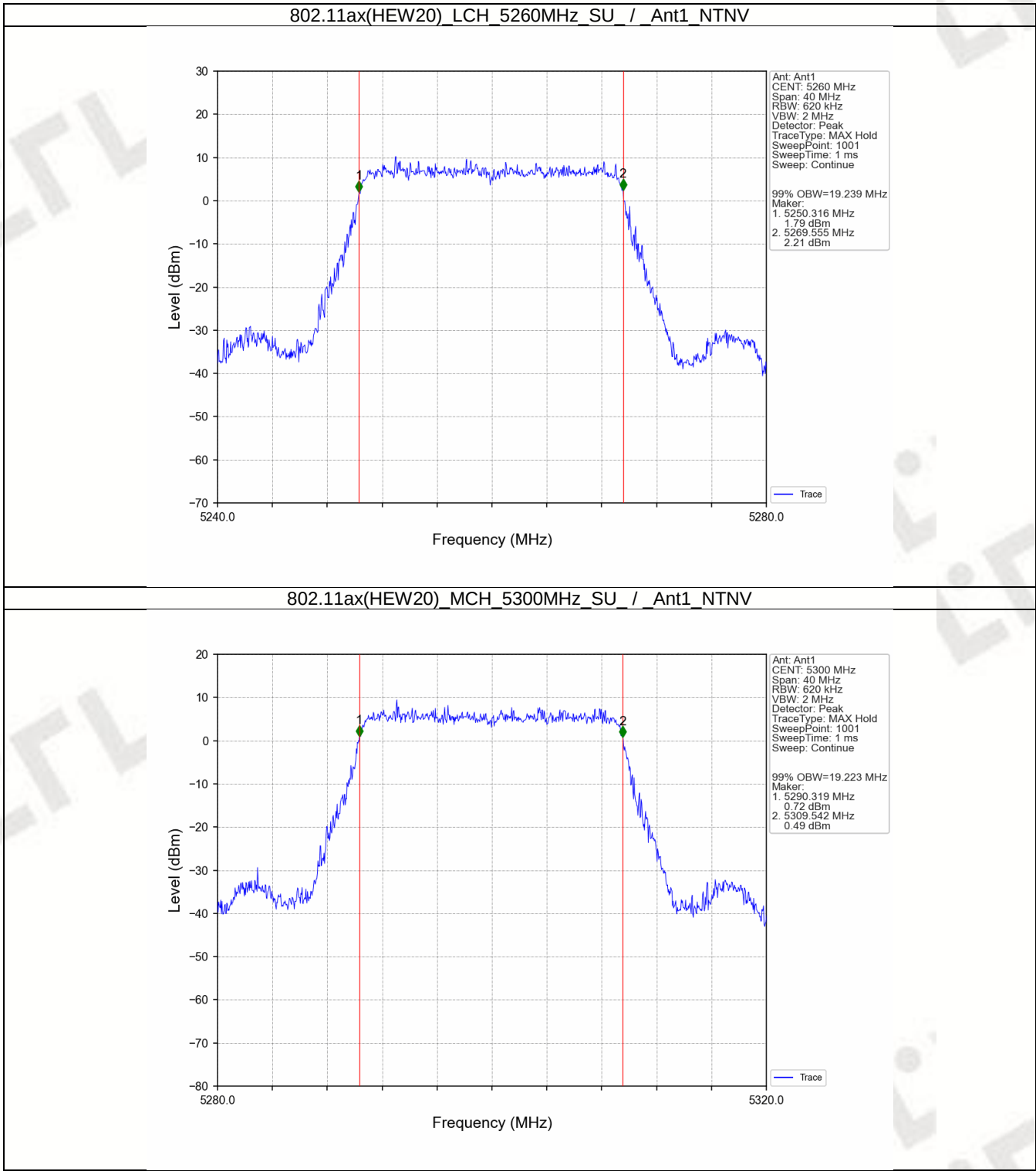
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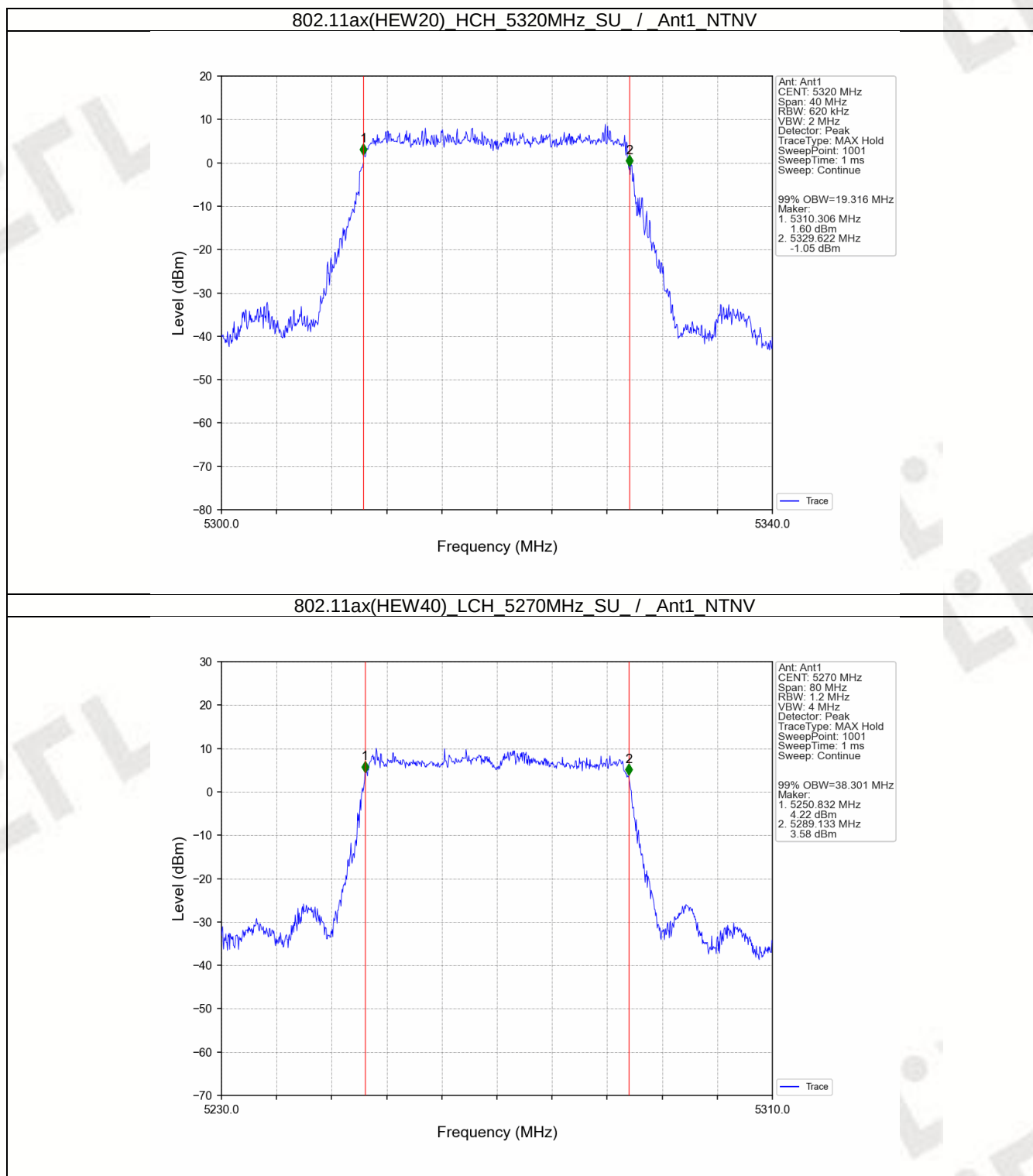
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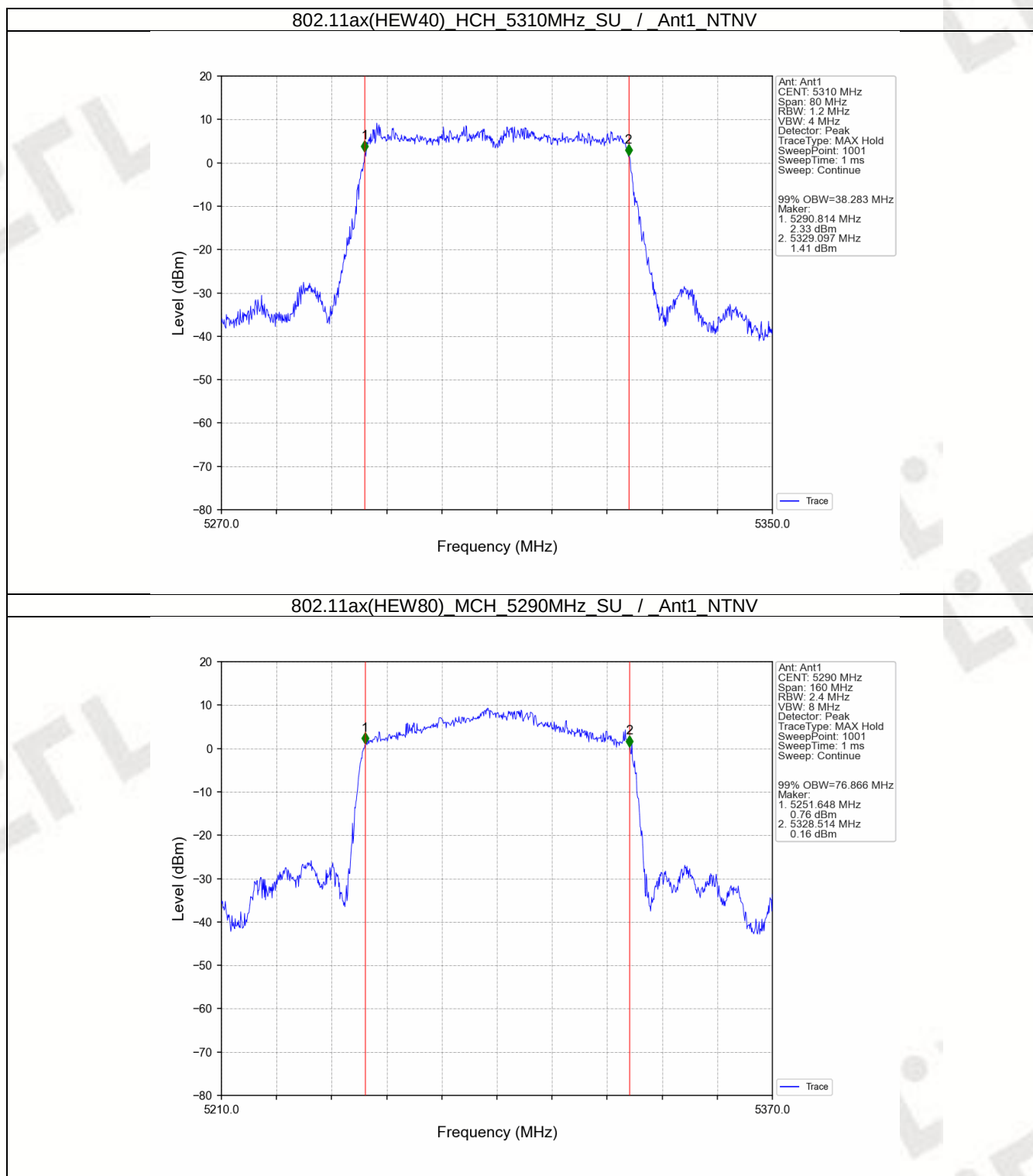
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FCC ID: SMQ-UWM1

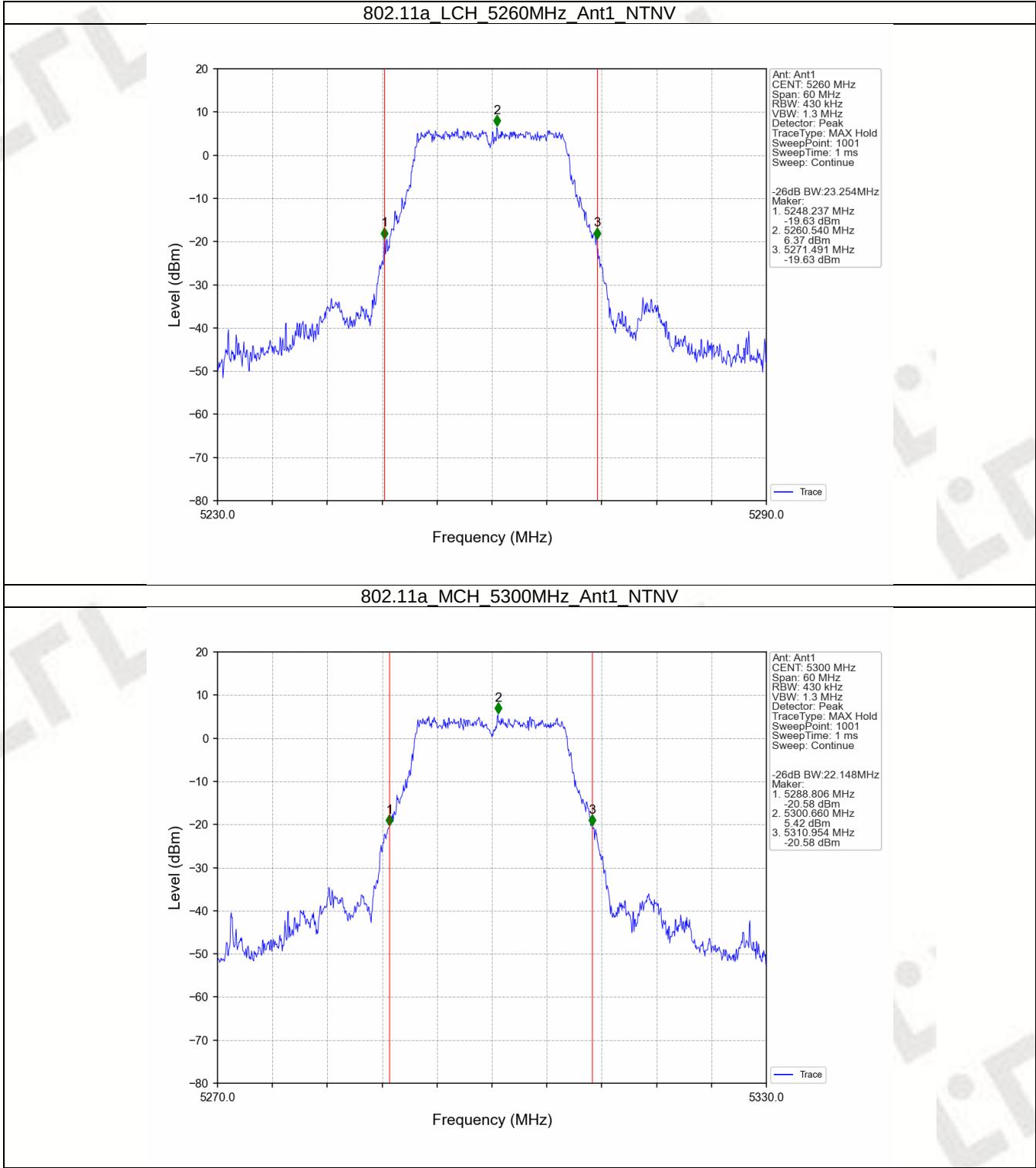


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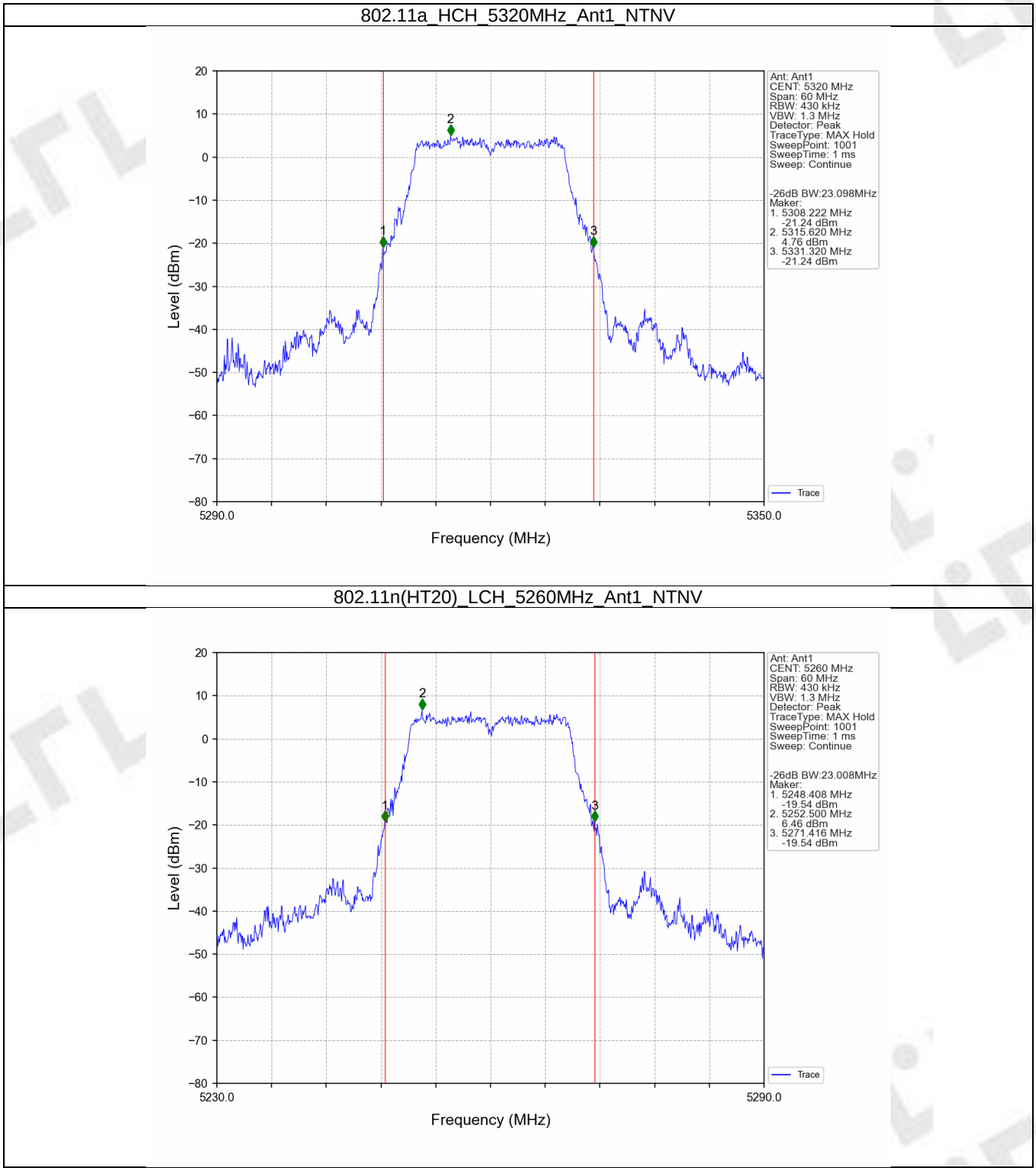


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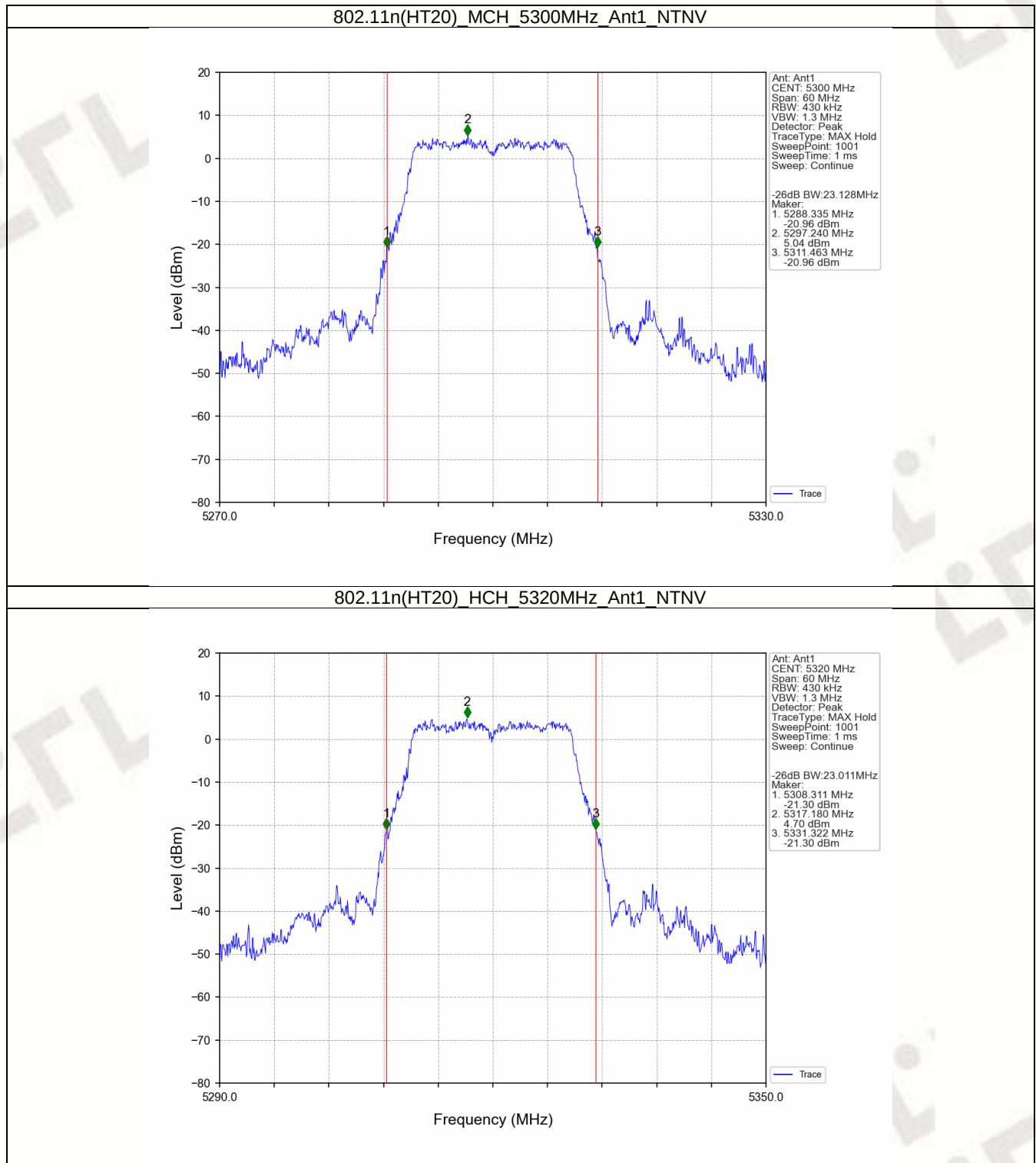
2.2.2 26dB BW



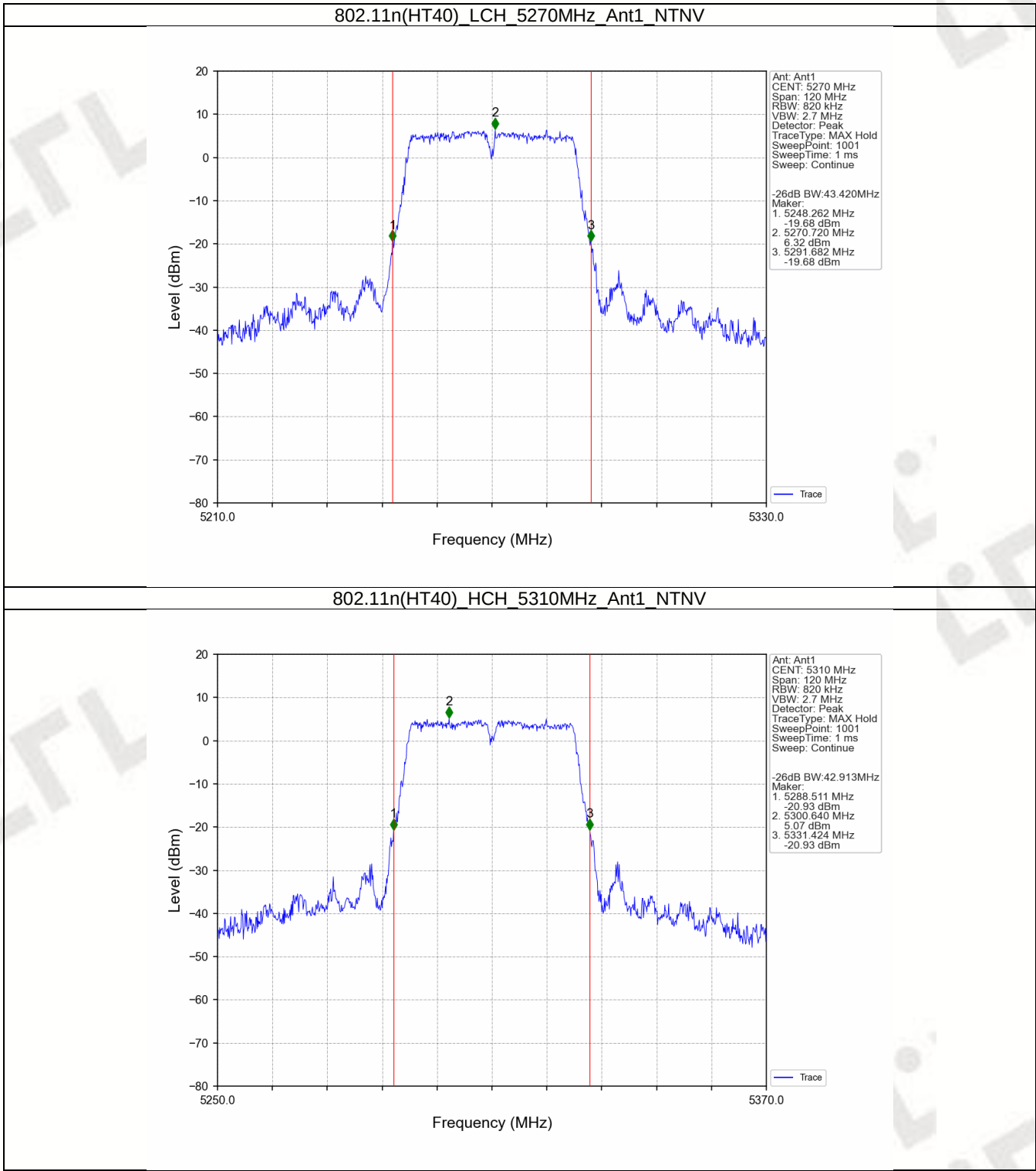
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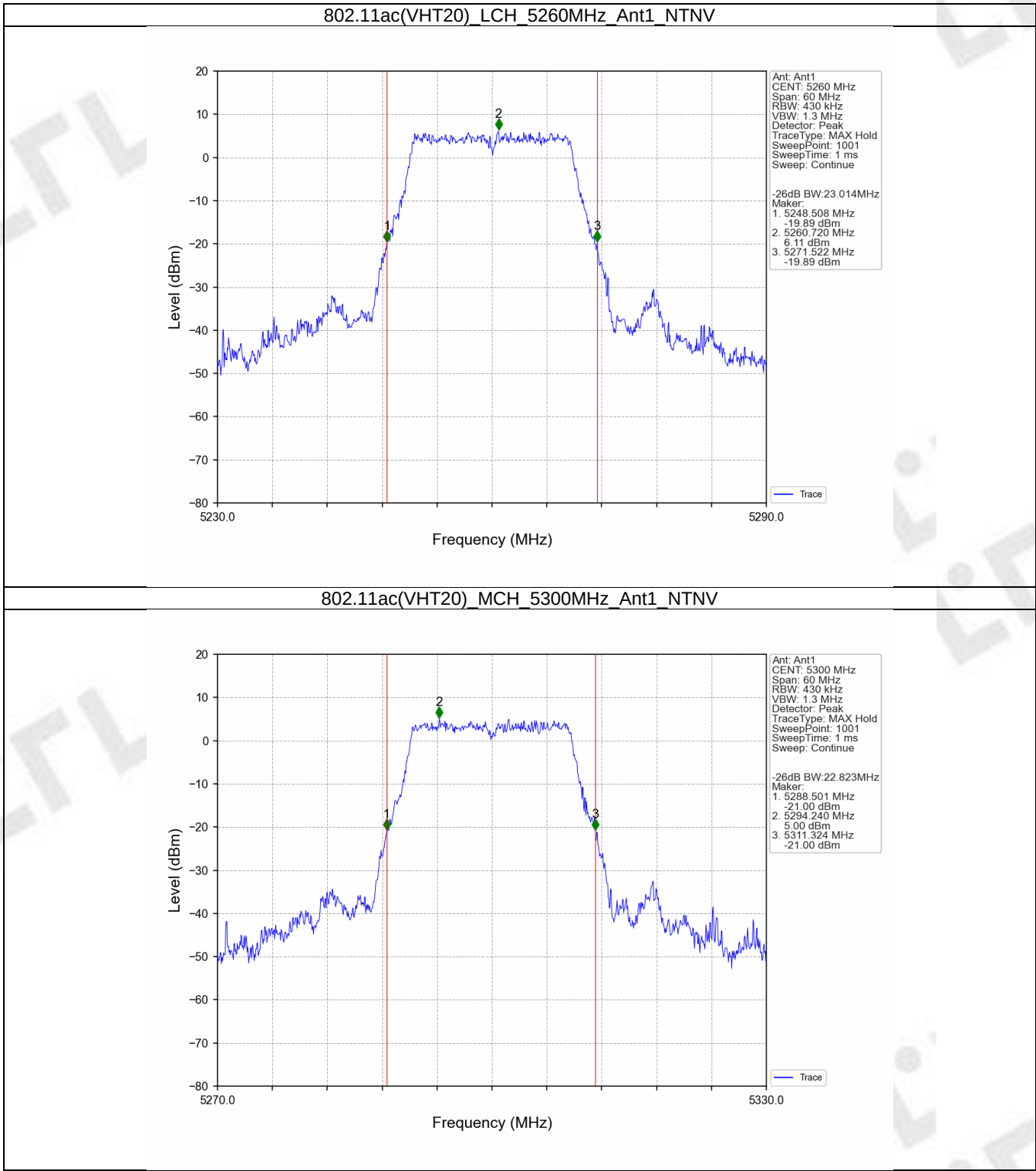
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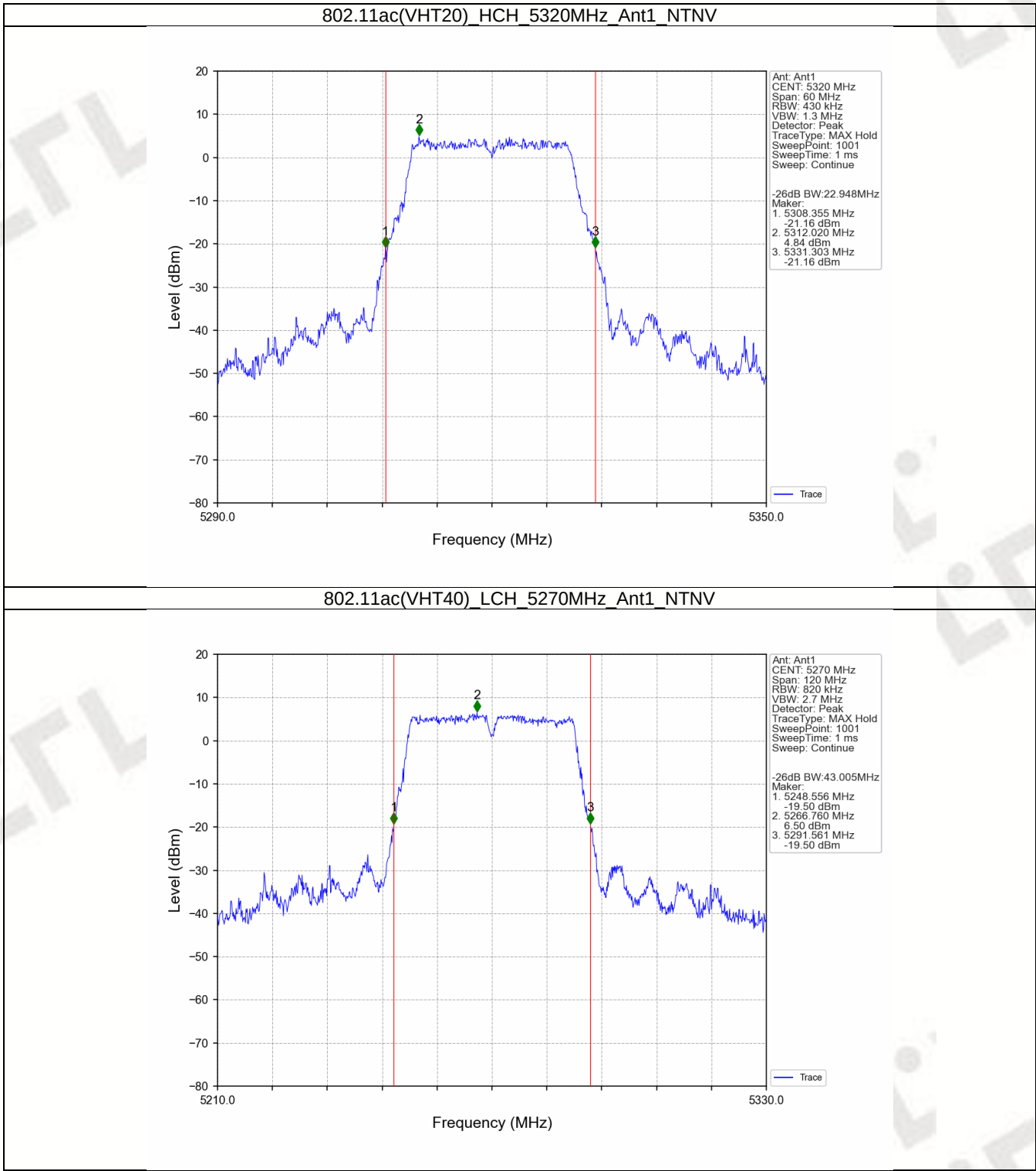
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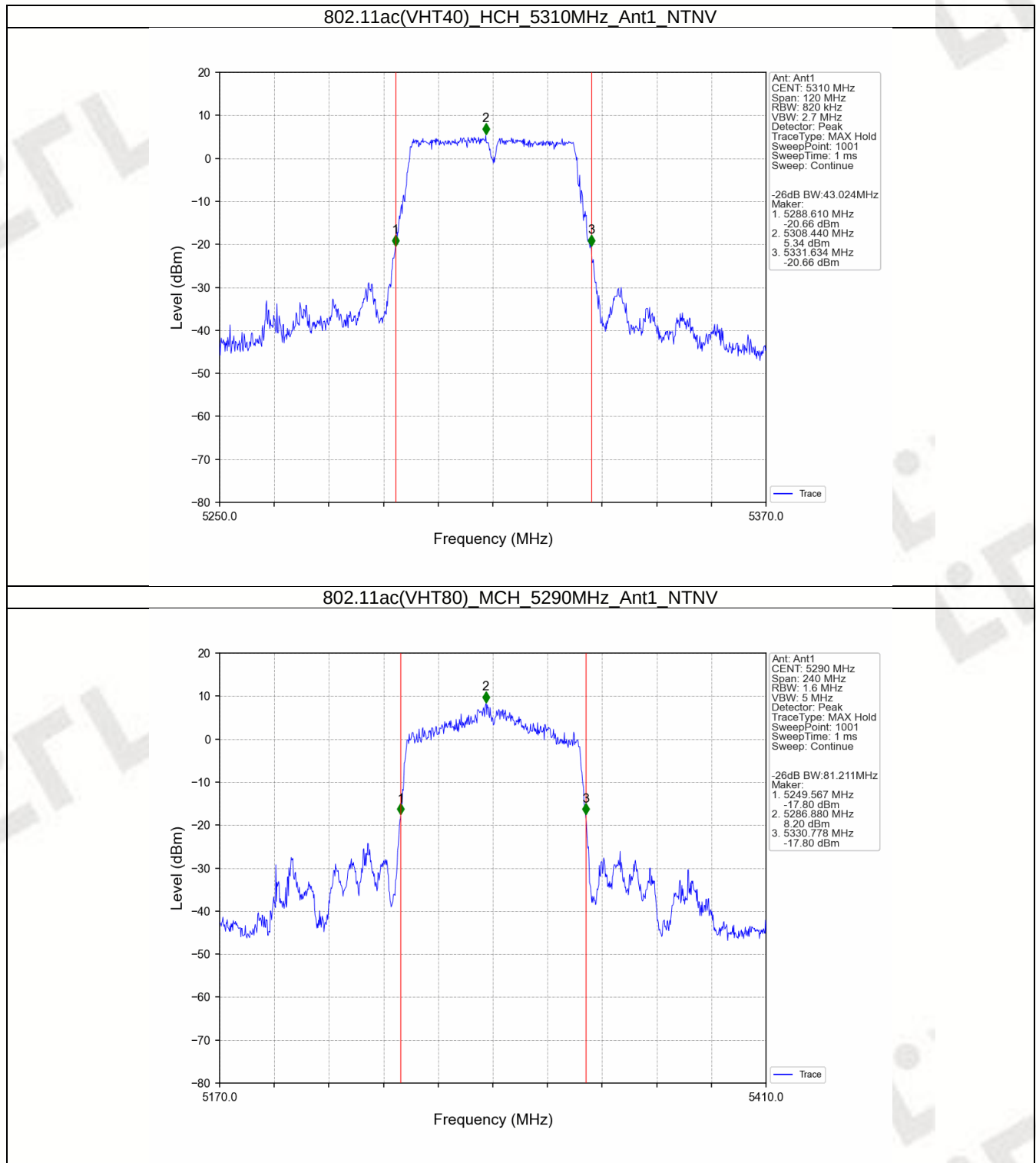
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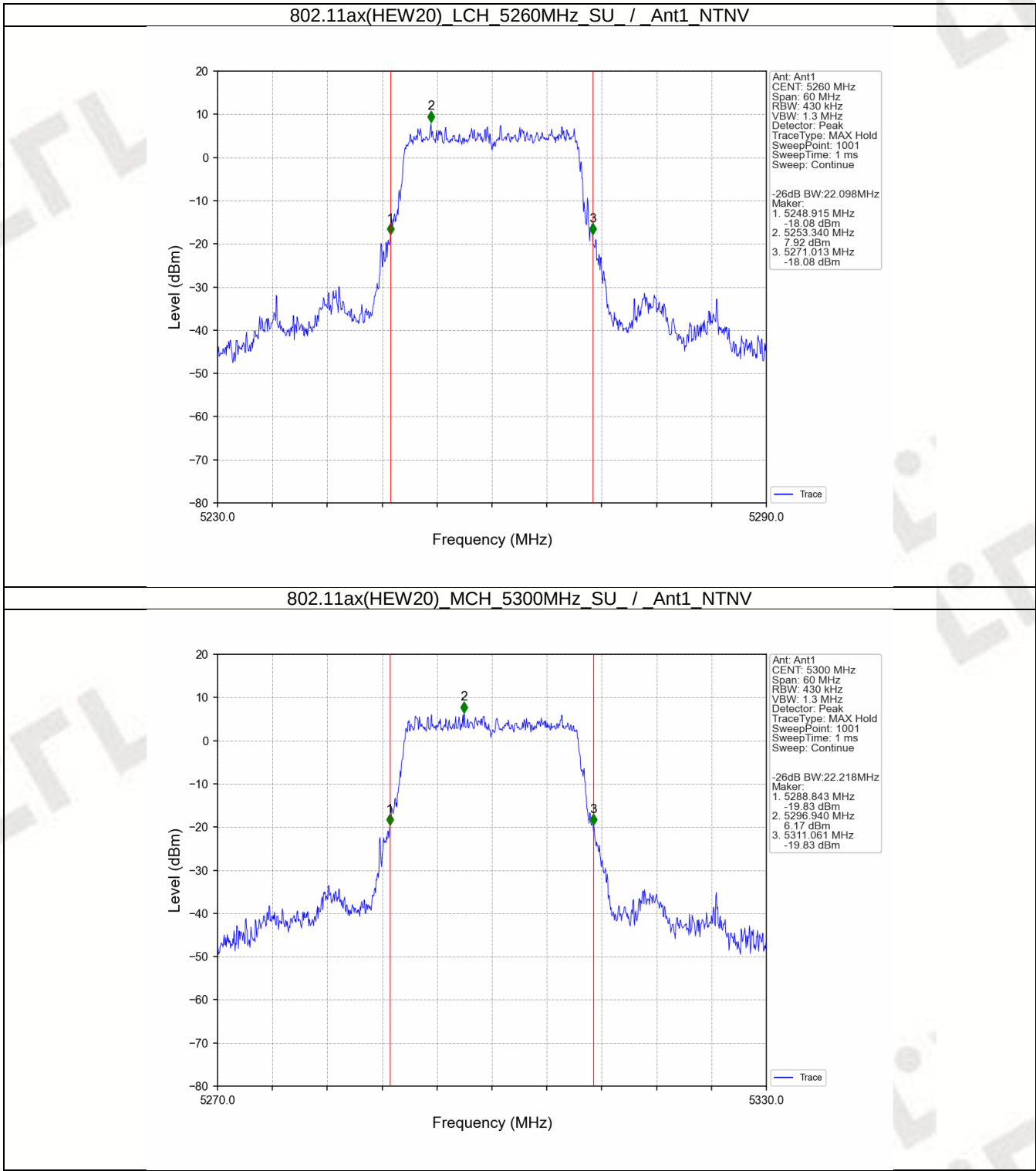
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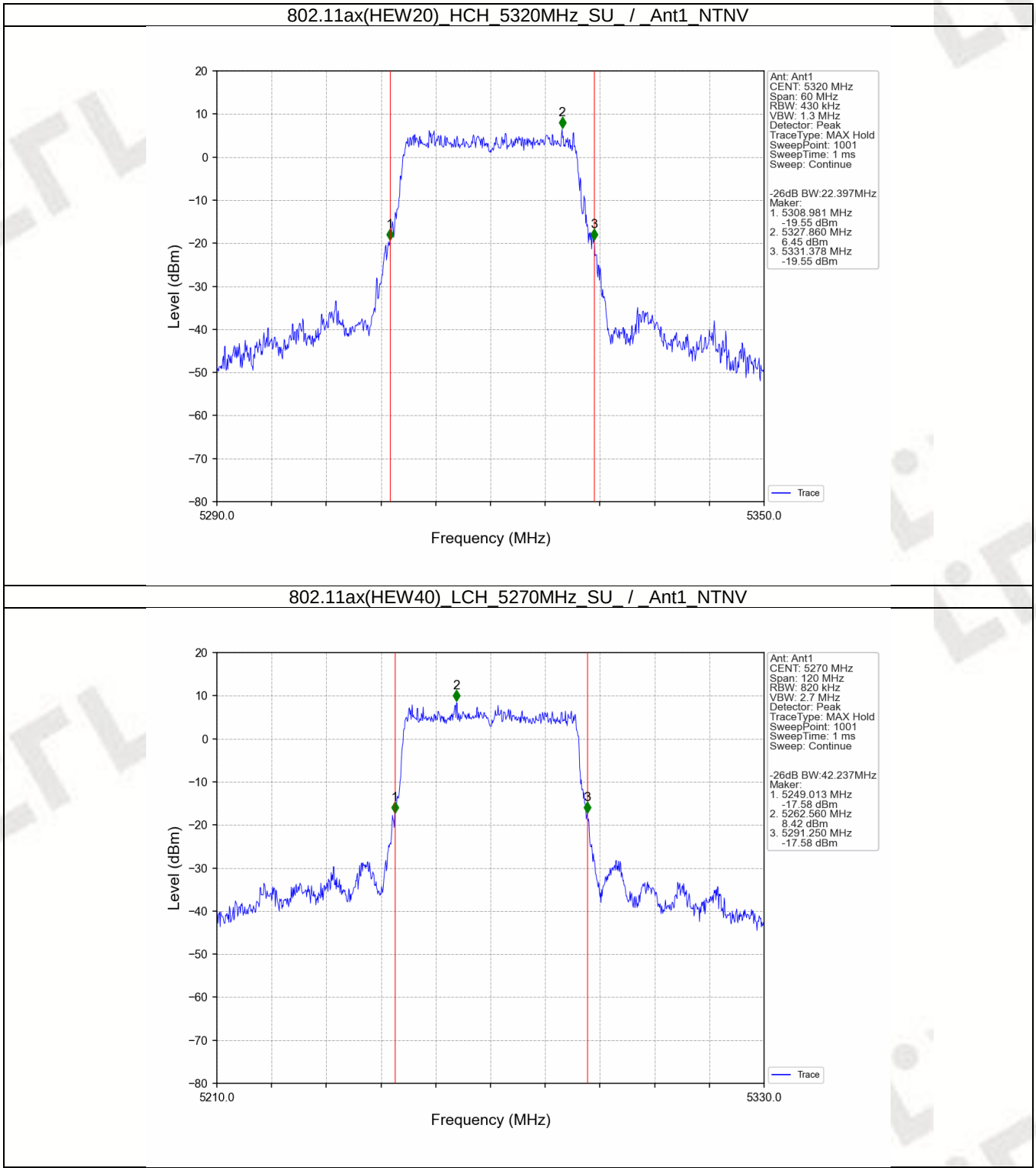
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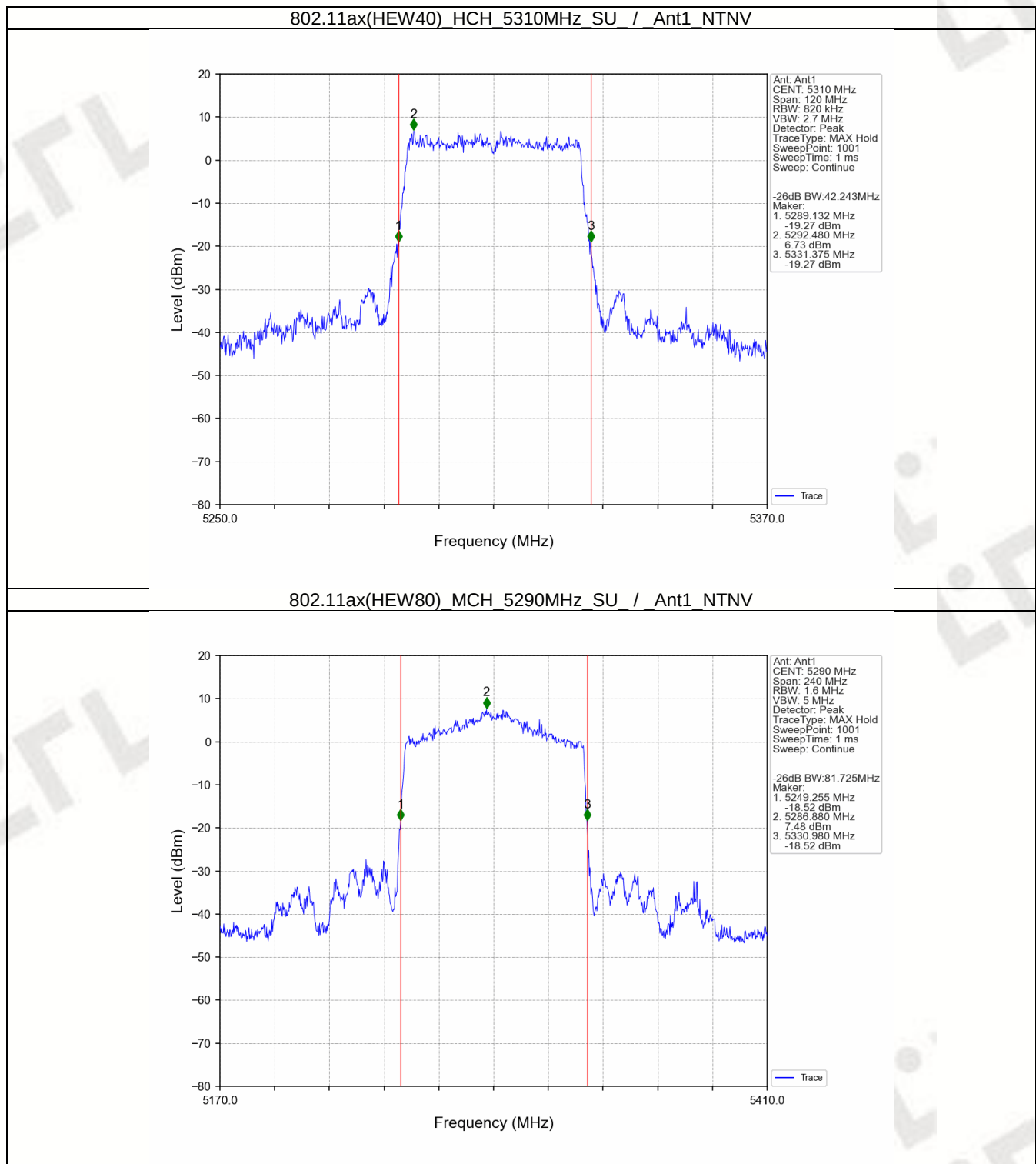
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FCC ID: SMQ-UWM1



FCC ID: SMQ-UWM1



3. Maximum Conducted Output Power

3.1 Test Result

3.1.1 Power

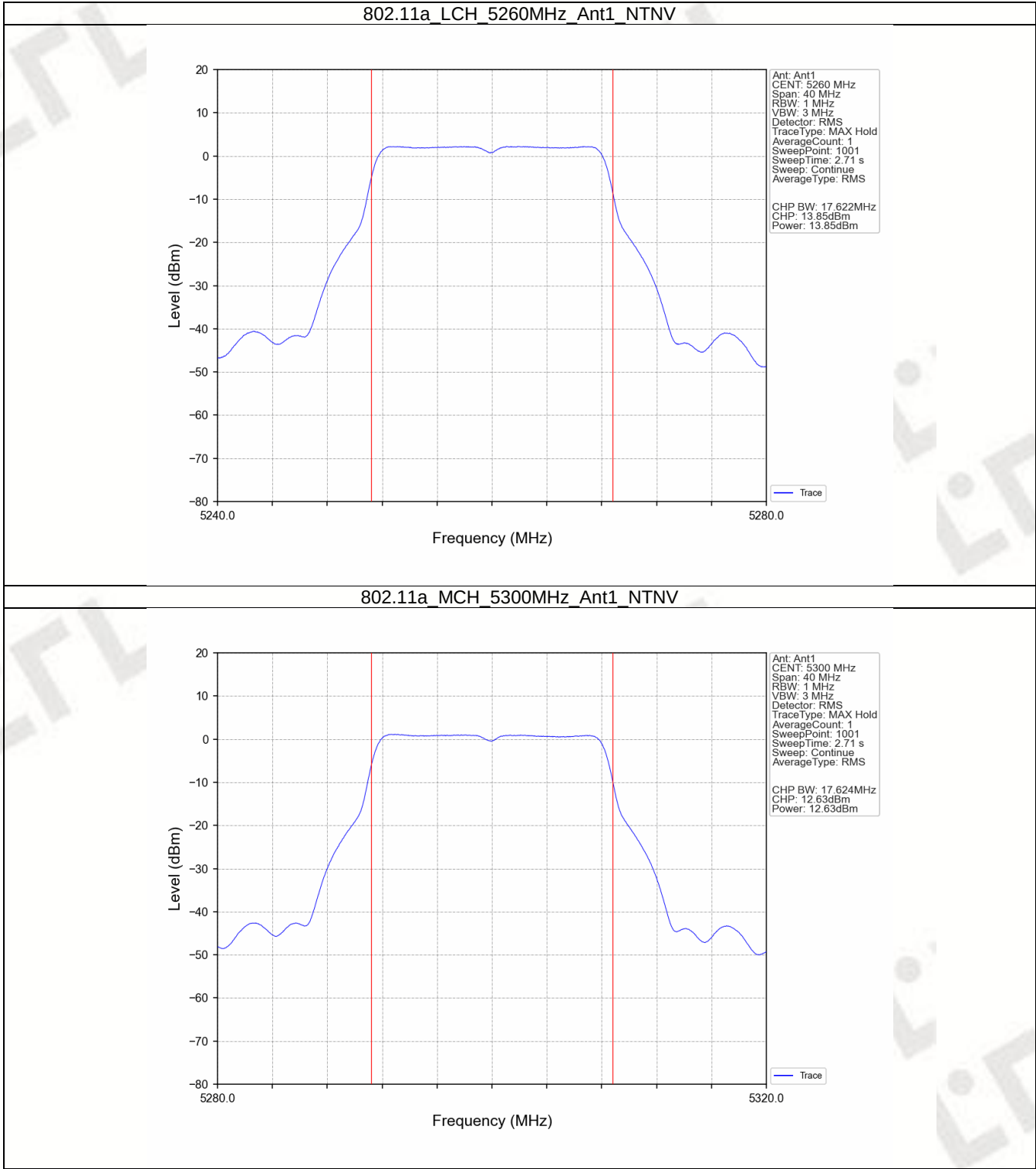
Mode	TX Type	Frequency (MHz)	RU	RU Pos	Maximum Average Conducted Output Power (dBm)		Verdict
					ANT1	Limit	
802.11a	SISO	5260	/	/	13.85	<=23.98	Pass
		5300	/	/	12.63	<=23.98	Pass
		5320	/	/	12.38	<=23.98	Pass
802.11n (HT20)	SISO	5260	/	/	13.78	<=23.98	Pass
		5300	/	/	12.60	<=23.98	Pass
		5320	/	/	12.38	<=23.98	Pass
802.11n (HT40)	SISO	5270	/	/	13.91	<=23.98	Pass
		5310	/	/	12.73	<=23.98	Pass
802.11ac (VHT20)	SISO	5260	/	/	13.81	<=23.98	Pass
		5300	/	/	12.67	<=23.98	Pass
		5320	/	/	12.41	<=23.98	Pass
802.11ac (VHT40)	SISO	5270	/	/	13.98	<=23.98	Pass
		5310	/	/	12.80	<=23.98	Pass
802.11ac (VHT80)	SISO	5290	/	/	11.89	<=23.98	Pass
802.11ax (HEW20)	SISO	5260	SU	/	13.58	<=23.98	Pass
		5300	SU	/	12.43	<=23.98	Pass
		5320	SU	/	12.18	<=23.98	Pass
802.11ax (HEW40)	SISO	5270	SU	/	13.59	<=23.98	Pass
		5310	SU	/	12.50	<=23.98	Pass
802.11ax (HEW80)	SISO	5290	SU	/	11.77	<=23.98	Pass

Note1: Antenna Gain: Ant1: 2.14dBi;

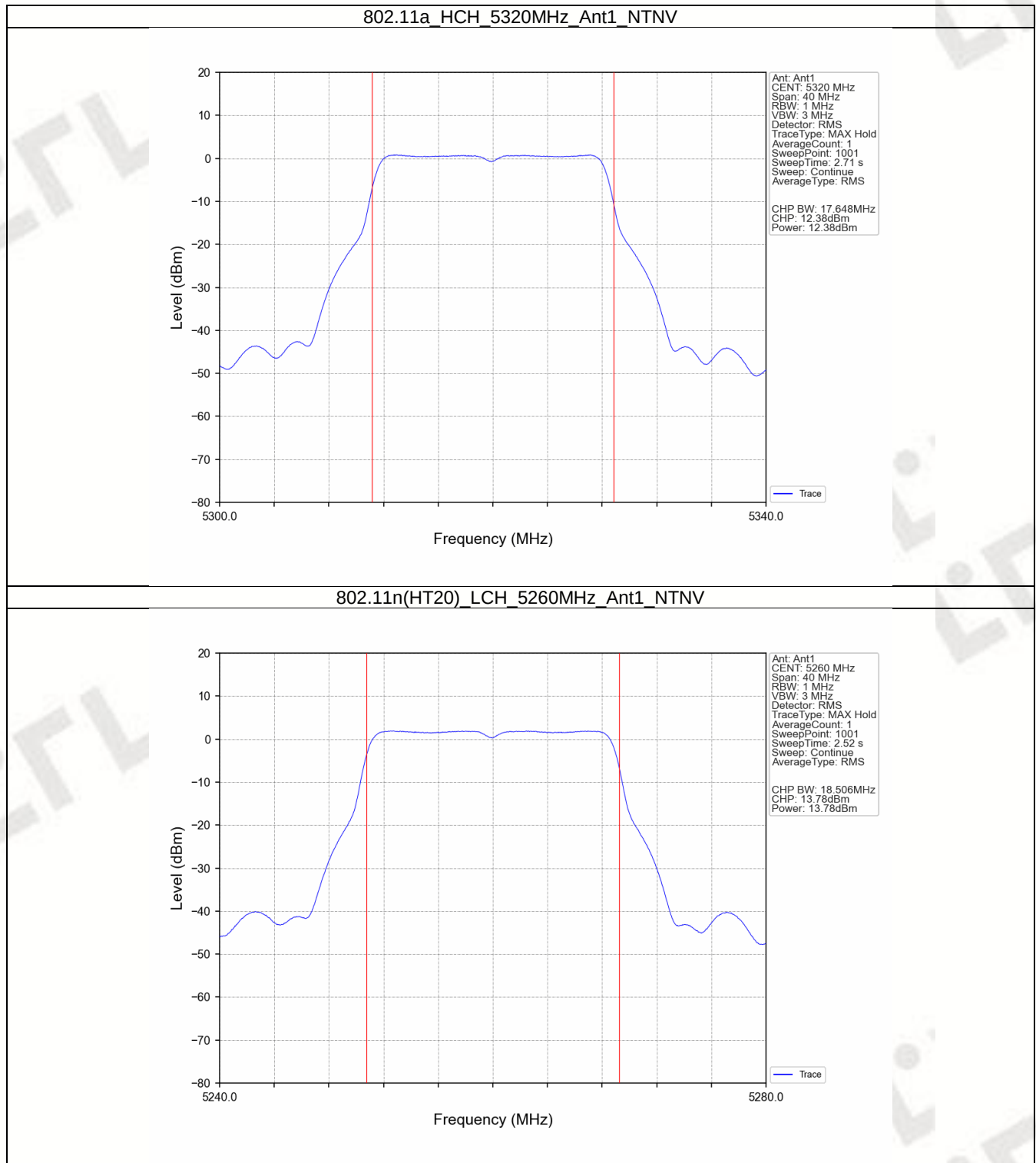
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3.2 Test Graph

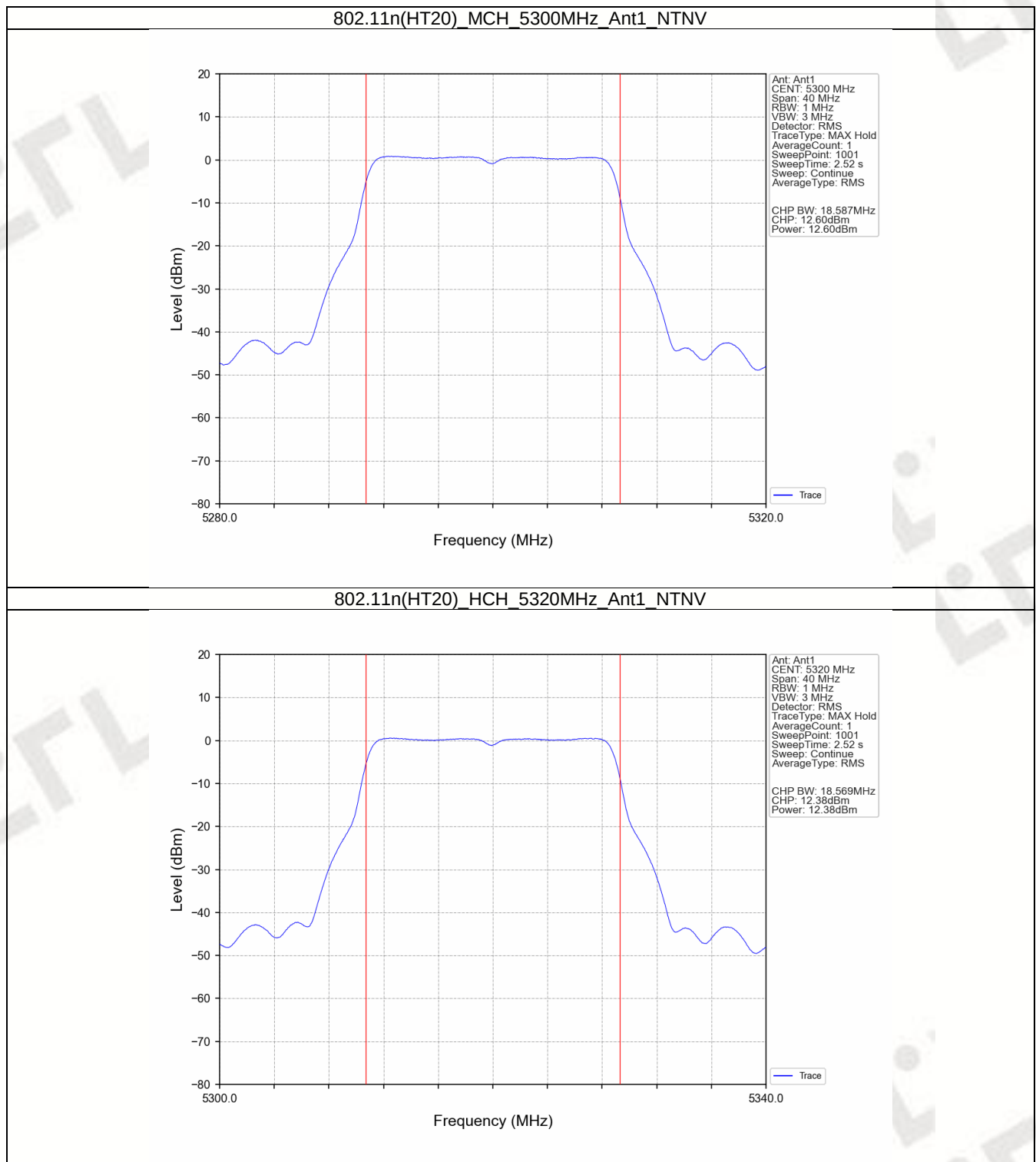
3.2.1 Power



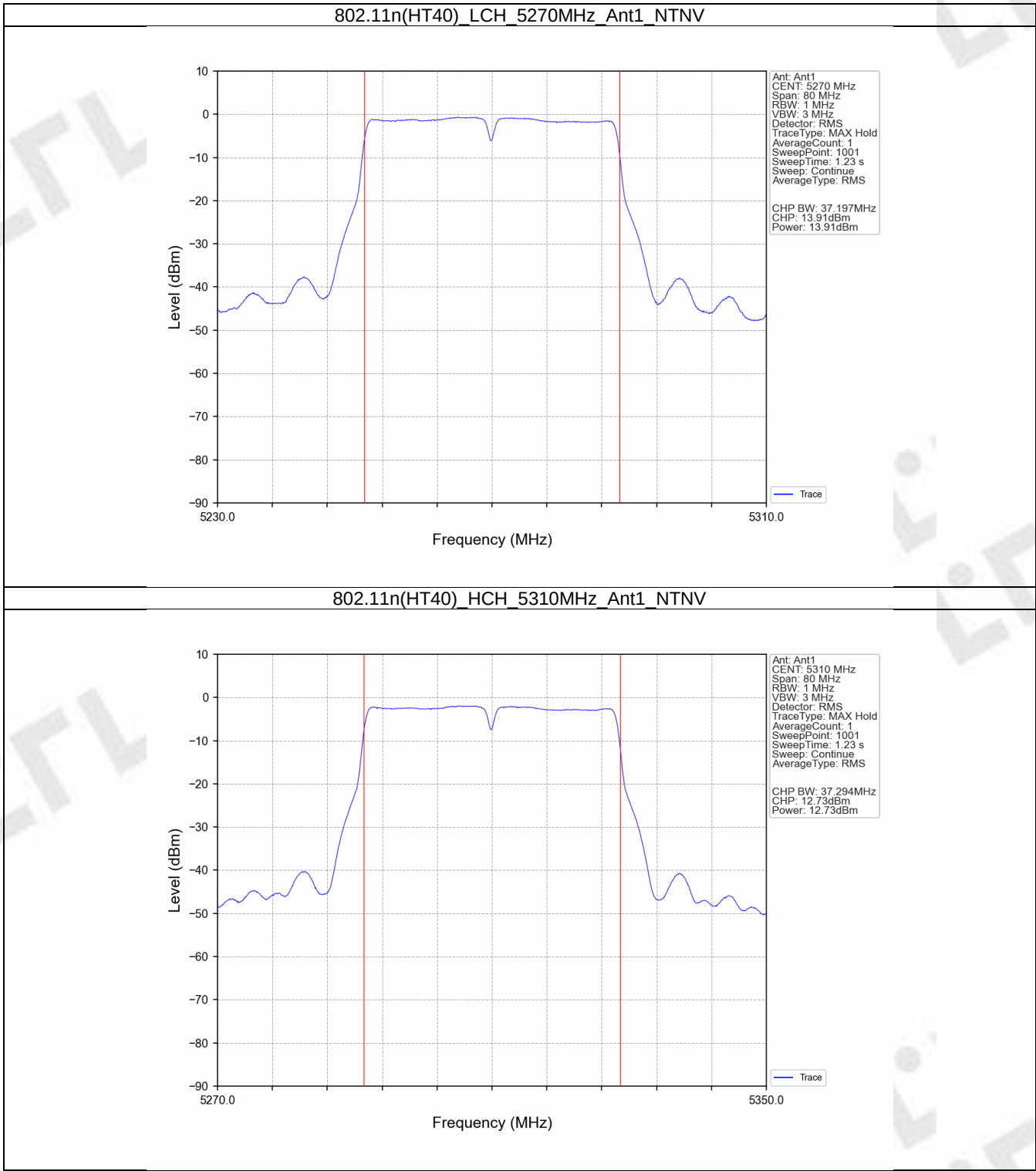
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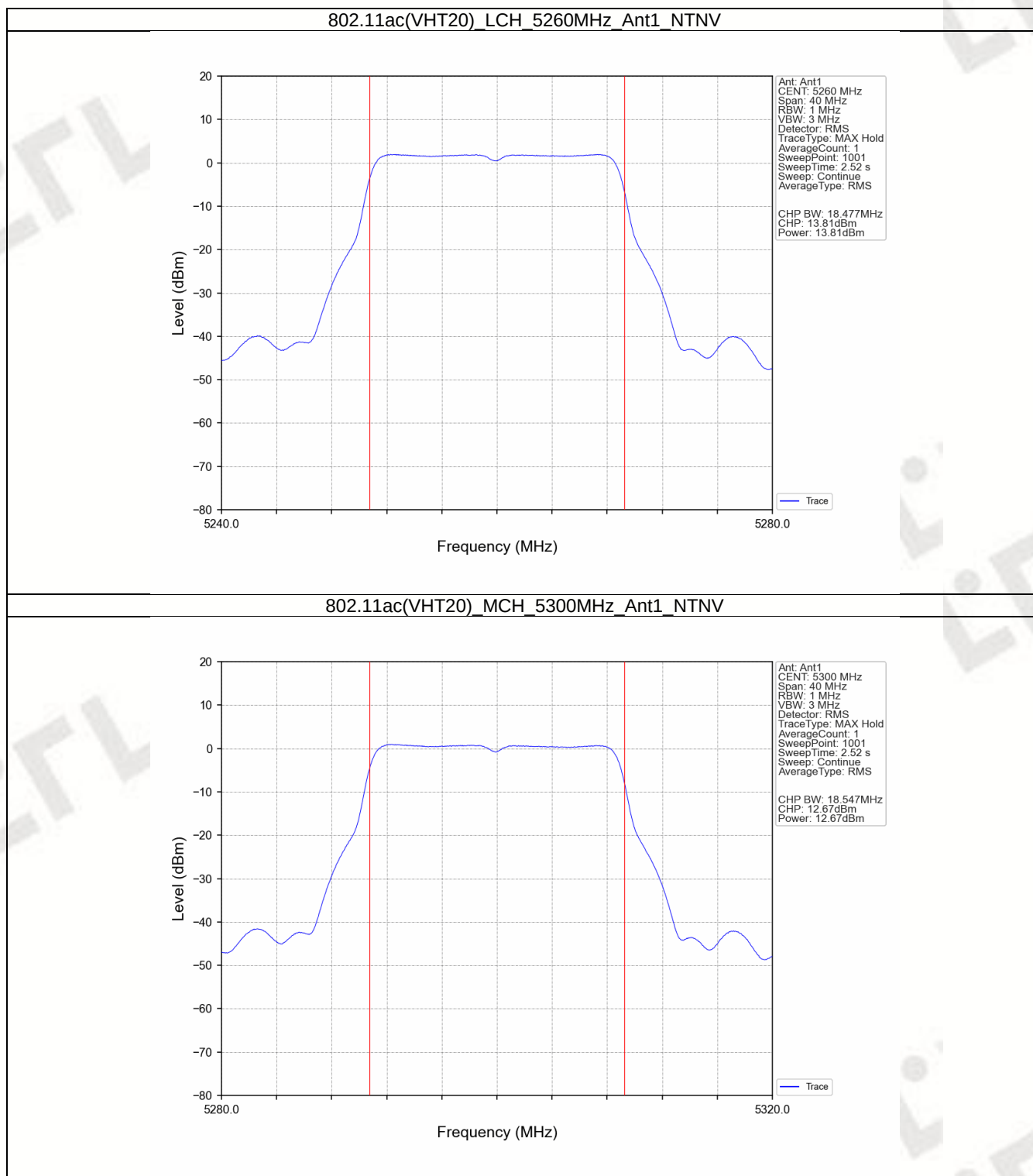
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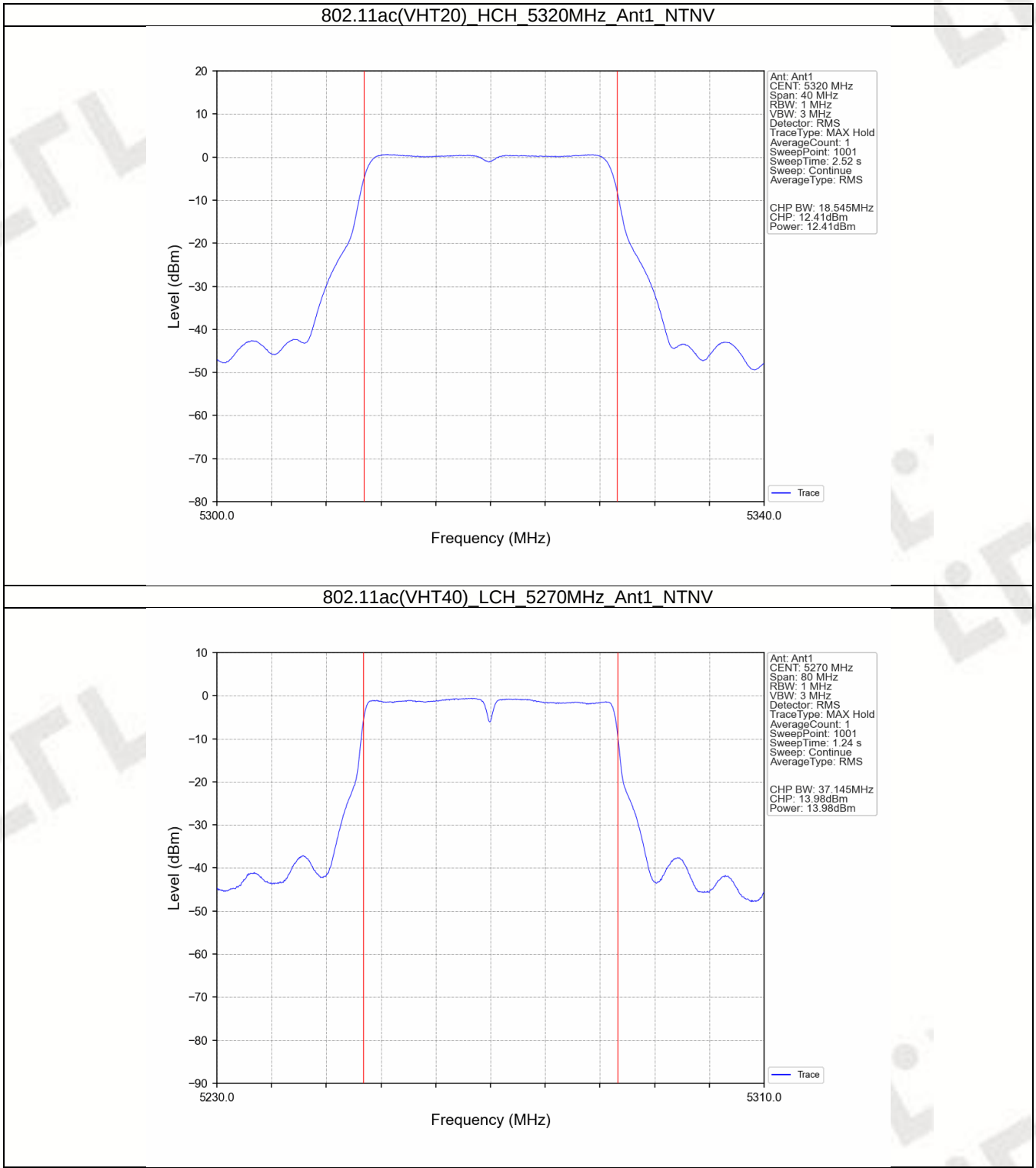
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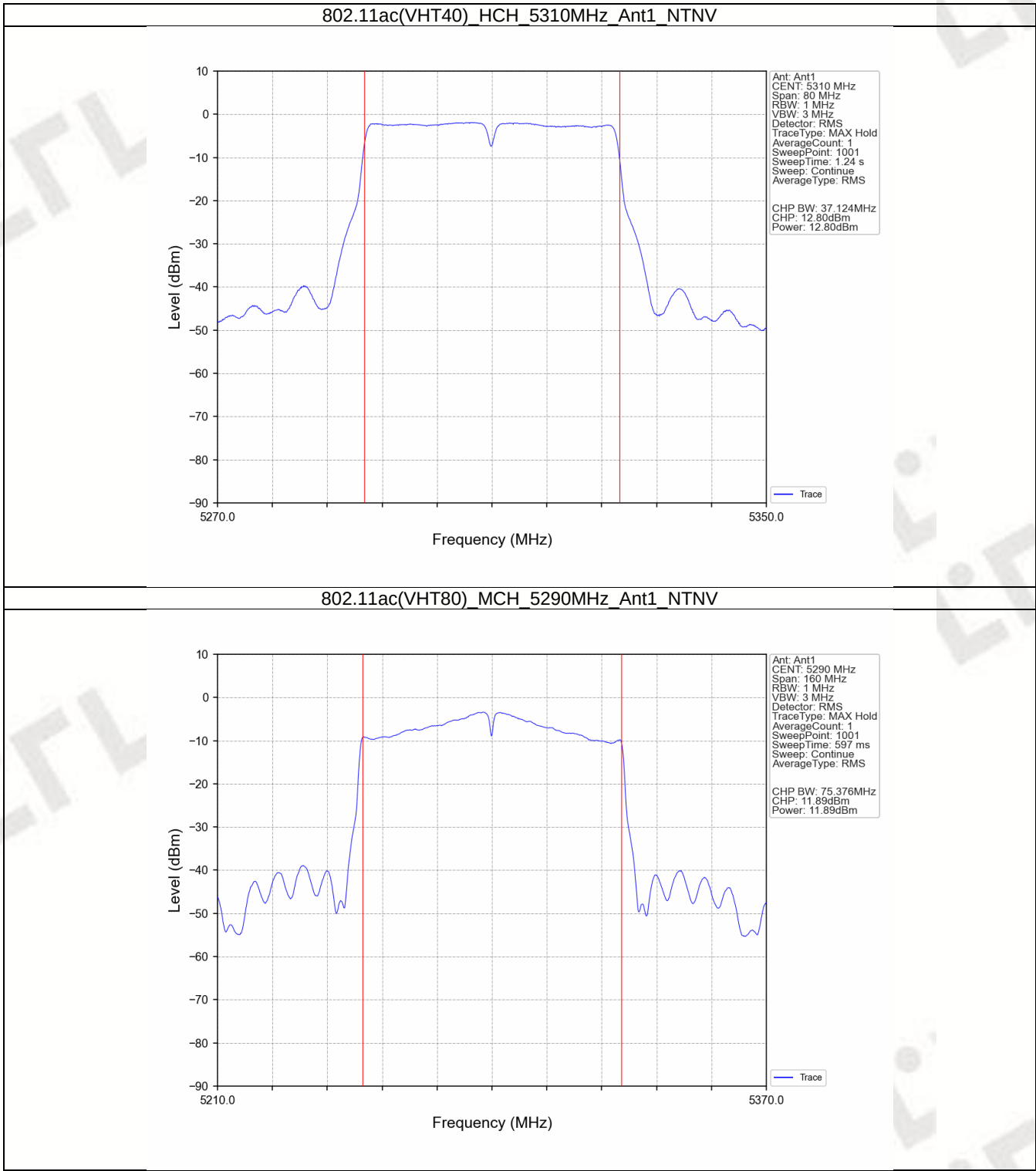
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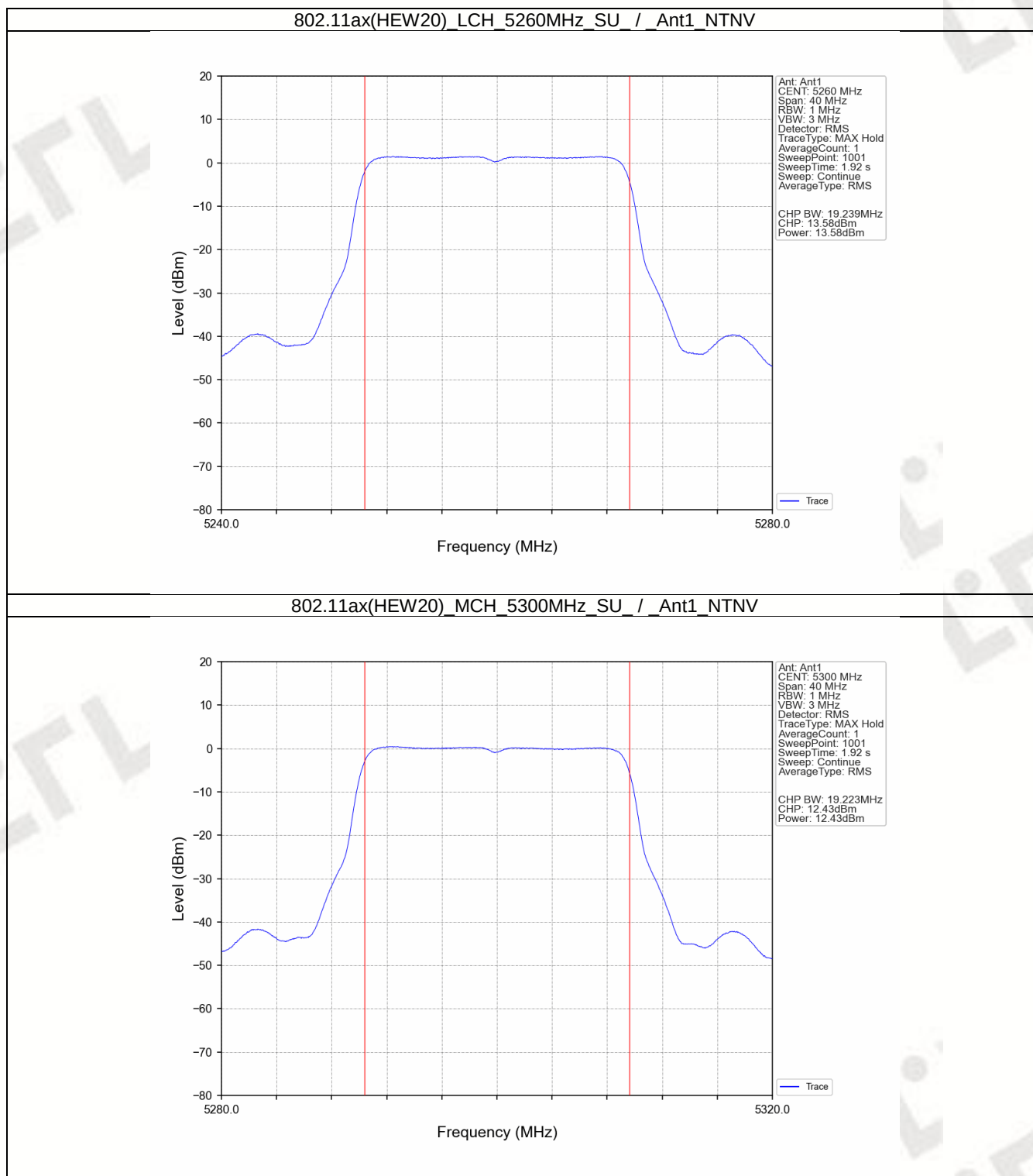
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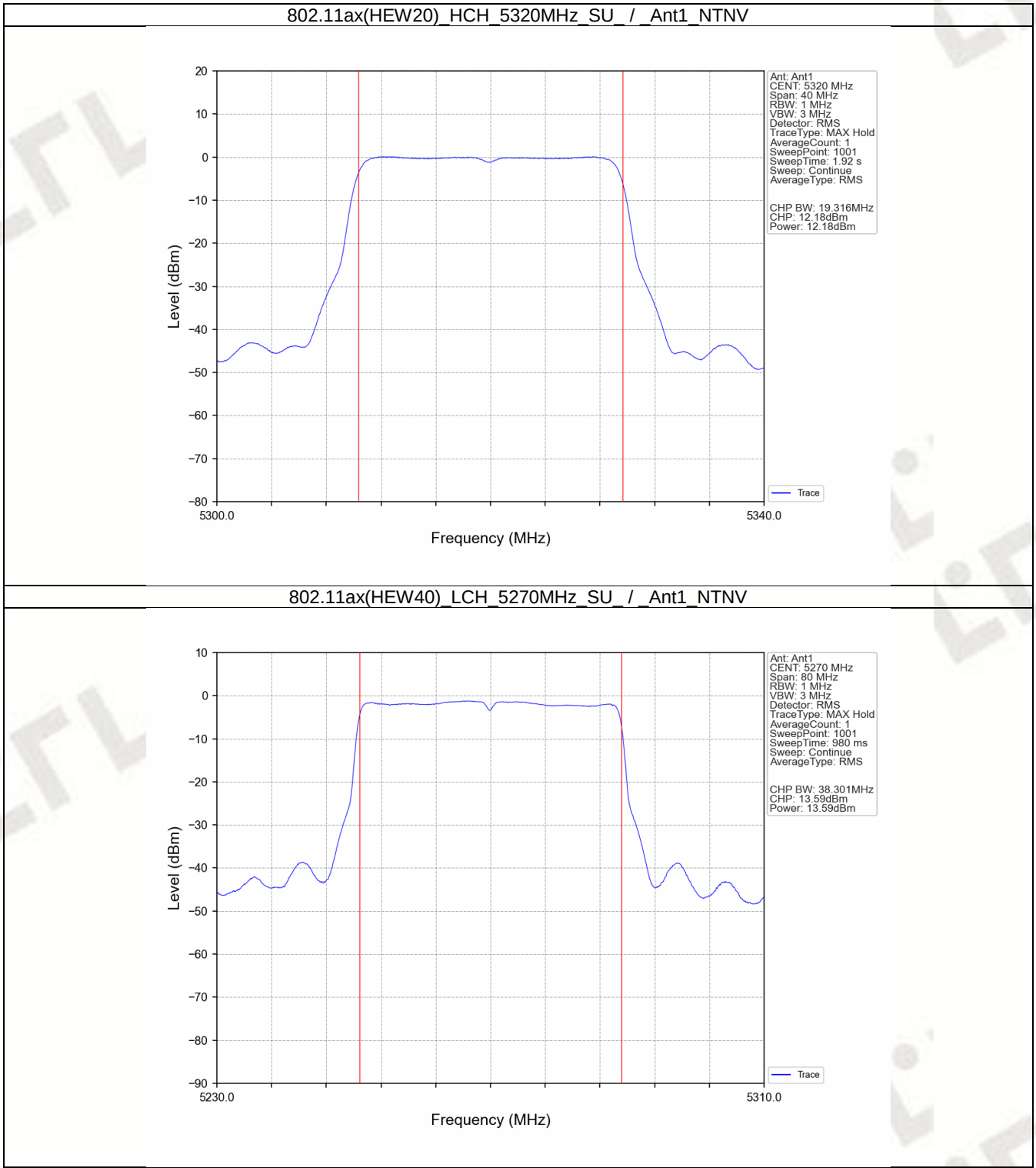
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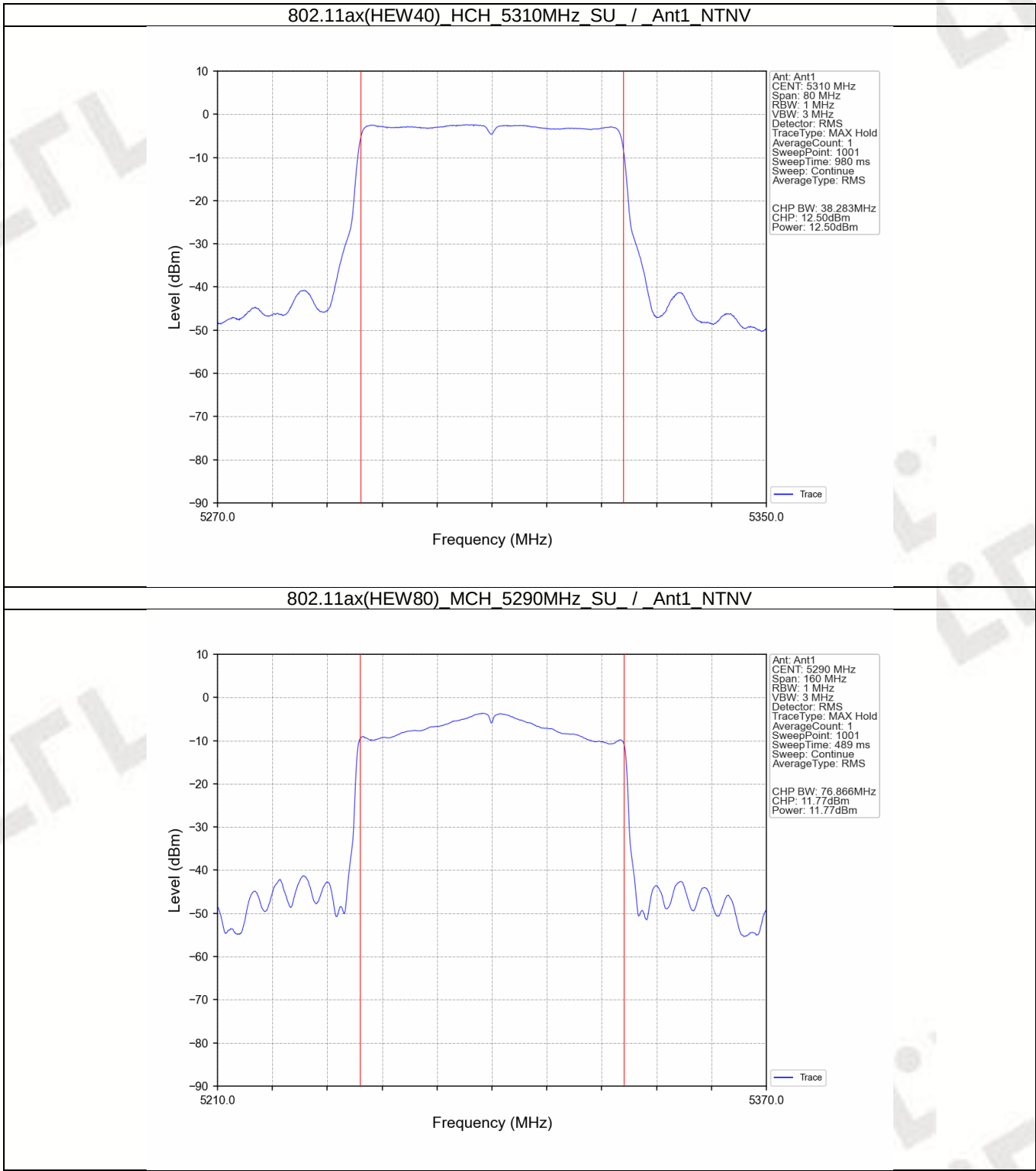
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FCC ID: SMQ-UWM1



FCC ID: SMQ-UWM1



4. Maximum Power Spectral Density

4.1 Test Result

4.1.1 PSD

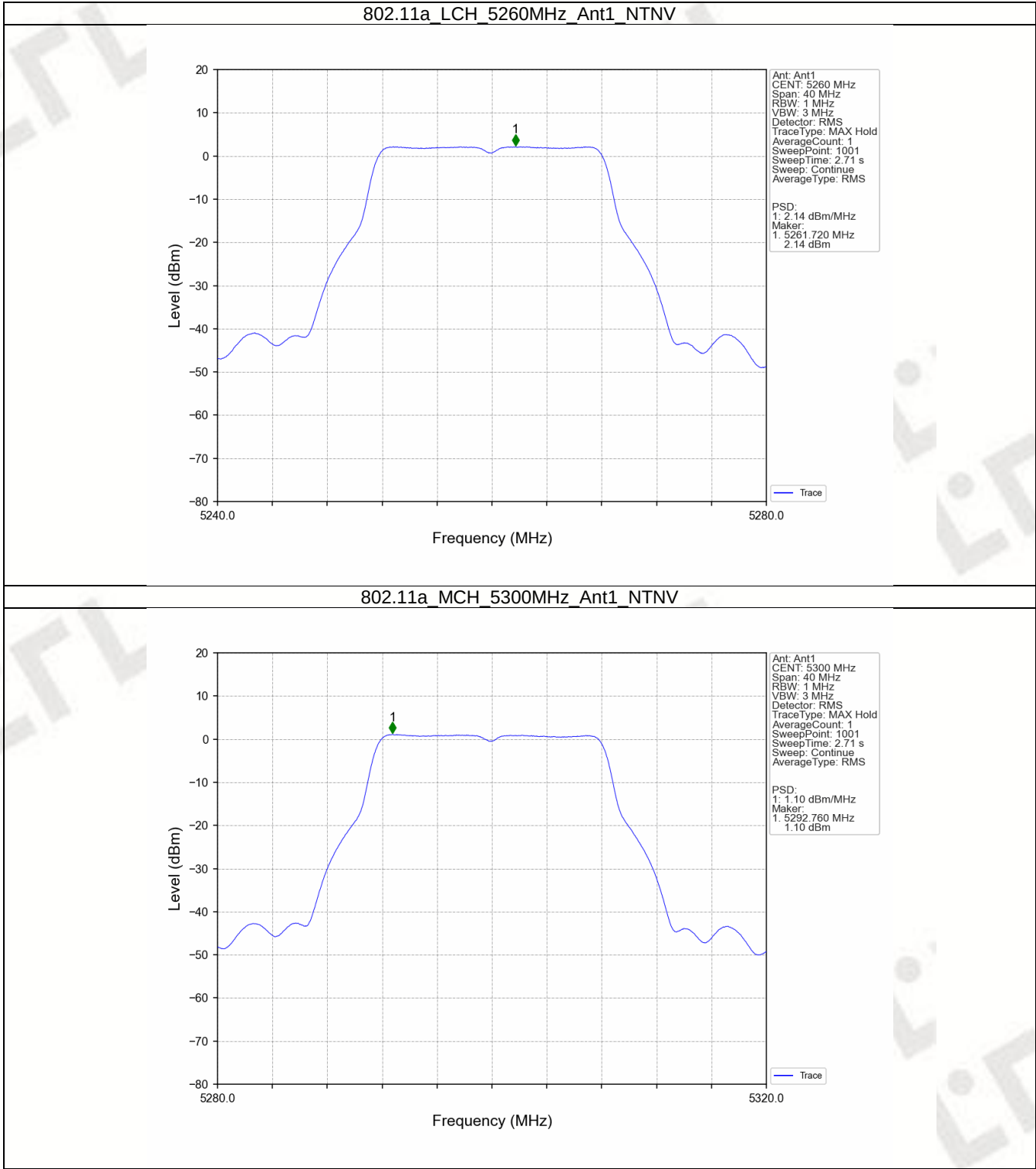
Mode	TX Type	Frequency (MHz)	RU	RU Pos	Maximum PSD (dBm/MHz)		Verdict
					ANT1	Limit	
802.11a	SISO	5260	/	/	2.14	<=11	Pass
		5300	/	/	1.10	<=11	Pass
		5320	/	/	0.77	<=11	Pass
802.11n (HT20)	SISO	5260	/	/	1.86	<=11	Pass
		5300	/	/	0.83	<=11	Pass
		5320	/	/	0.51	<=11	Pass
802.11n (HT40)	SISO	5270	/	/	-0.76	<=11	Pass
		5310	/	/	-1.99	<=11	Pass
802.11ac (VHT20)	SISO	5260	/	/	1.90	<=11	Pass
		5300	/	/	0.91	<=11	Pass
		5320	/	/	0.56	<=11	Pass
802.11ac (VHT40)	SISO	5270	/	/	-0.72	<=11	Pass
		5310	/	/	-1.97	<=11	Pass
802.11ac (VHT80)	SISO	5290	/	/	-3.47	<=11	Pass
802.11ax (HEW20)	SISO	5260	SU	/	1.40	<=11	Pass
		5300	SU	/	0.41	<=11	Pass
		5320	SU	/	0.06	<=11	Pass
802.11ax (HEW40)	SISO	5270	SU	/	-1.28	<=11	Pass
		5310	SU	/	-2.47	<=11	Pass
802.11ax (HEW80)	SISO	5290	SU	/	-3.66	<=11	Pass

Note1: Antenna Gain: Ant1: 2.14dBi;

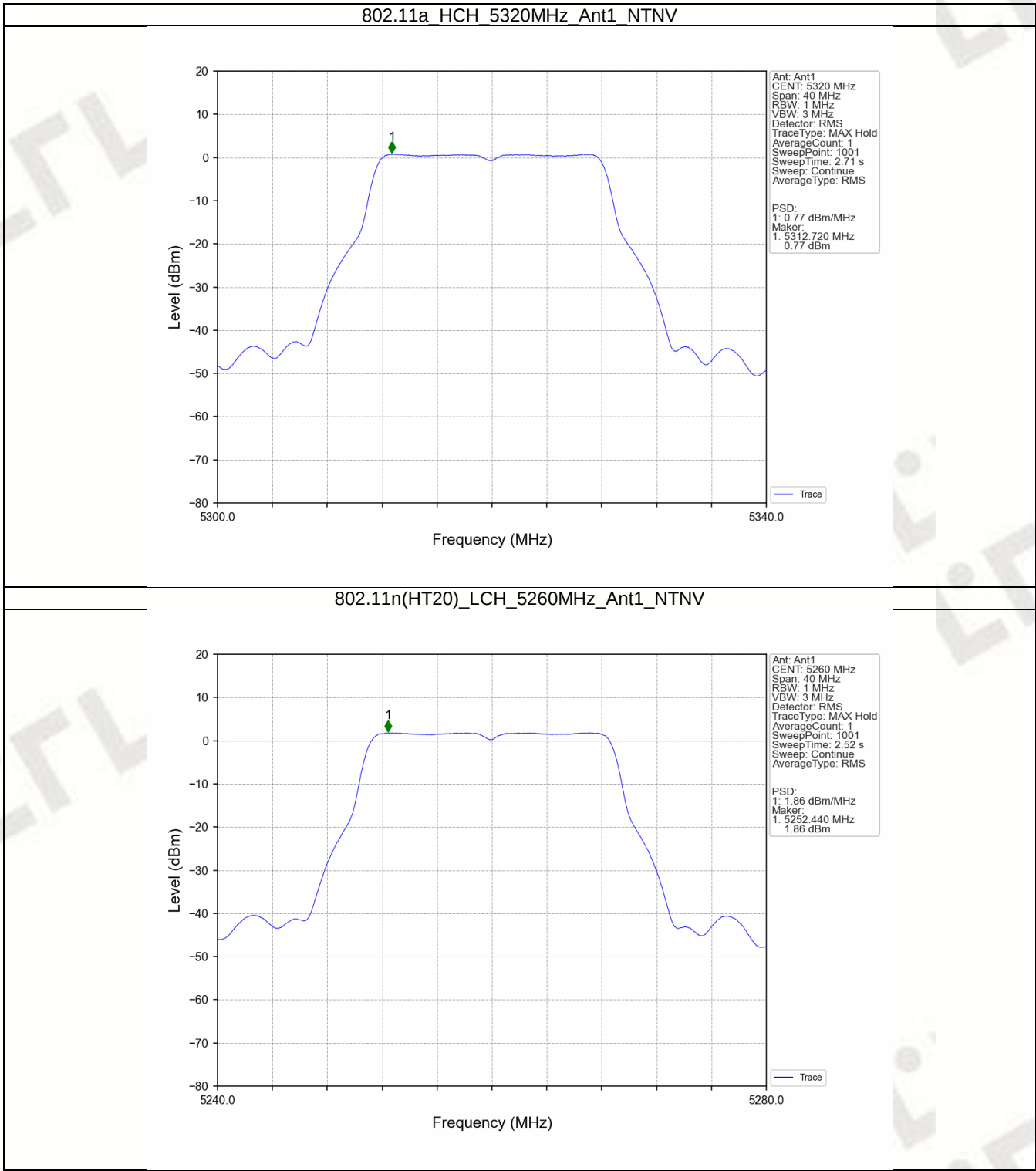
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4.2 Test Graph

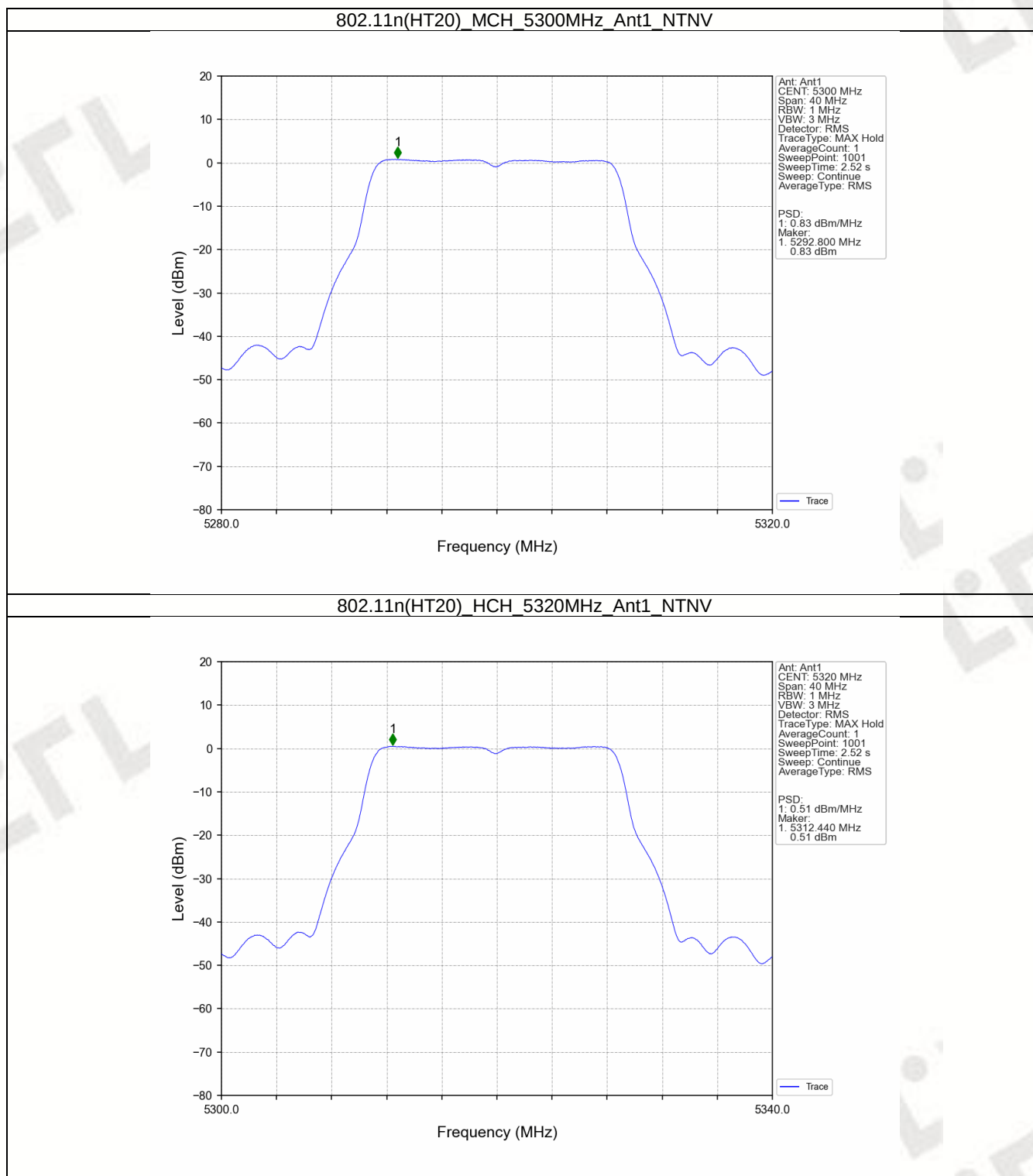
4.2.1 PSD



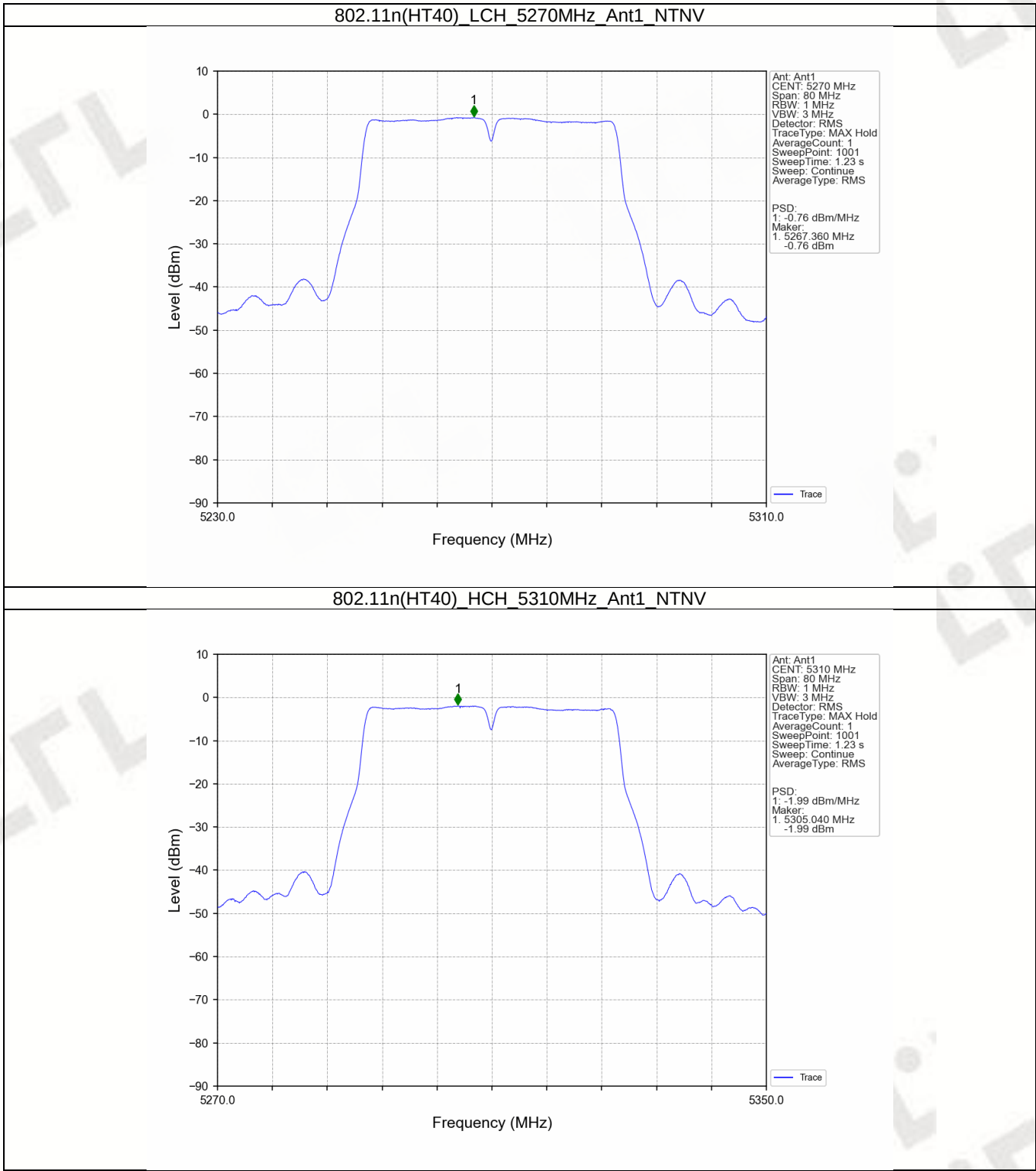
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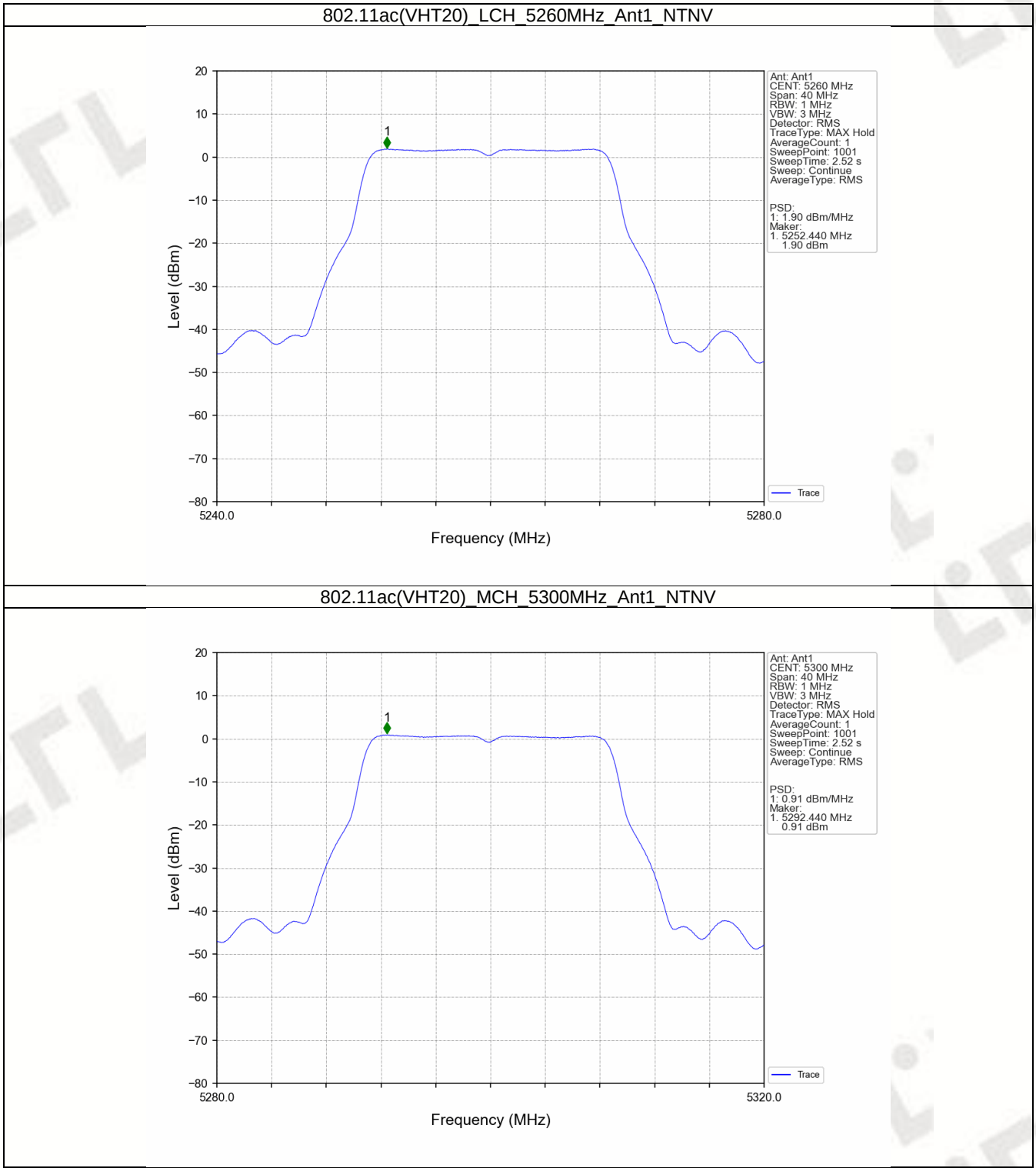
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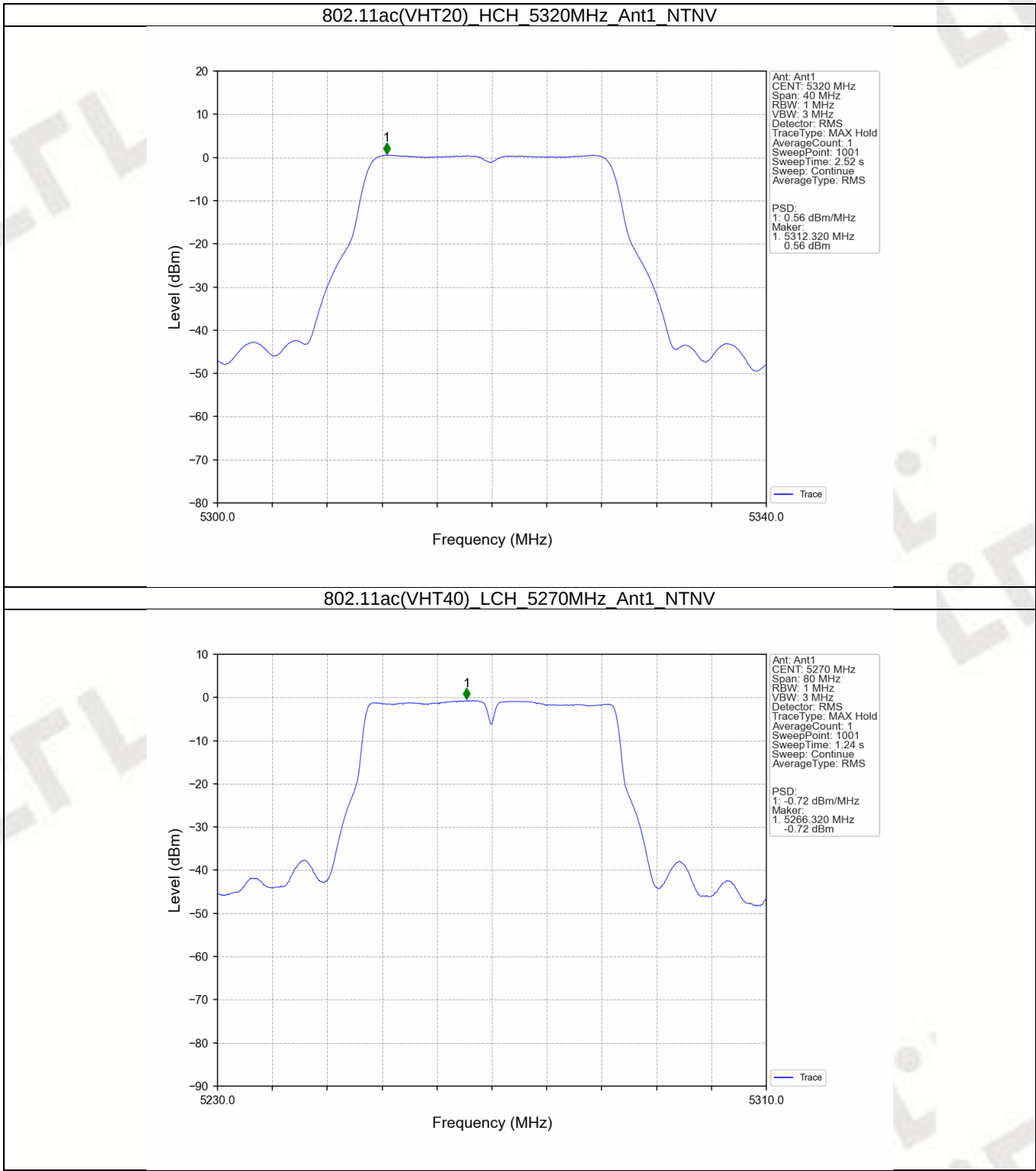
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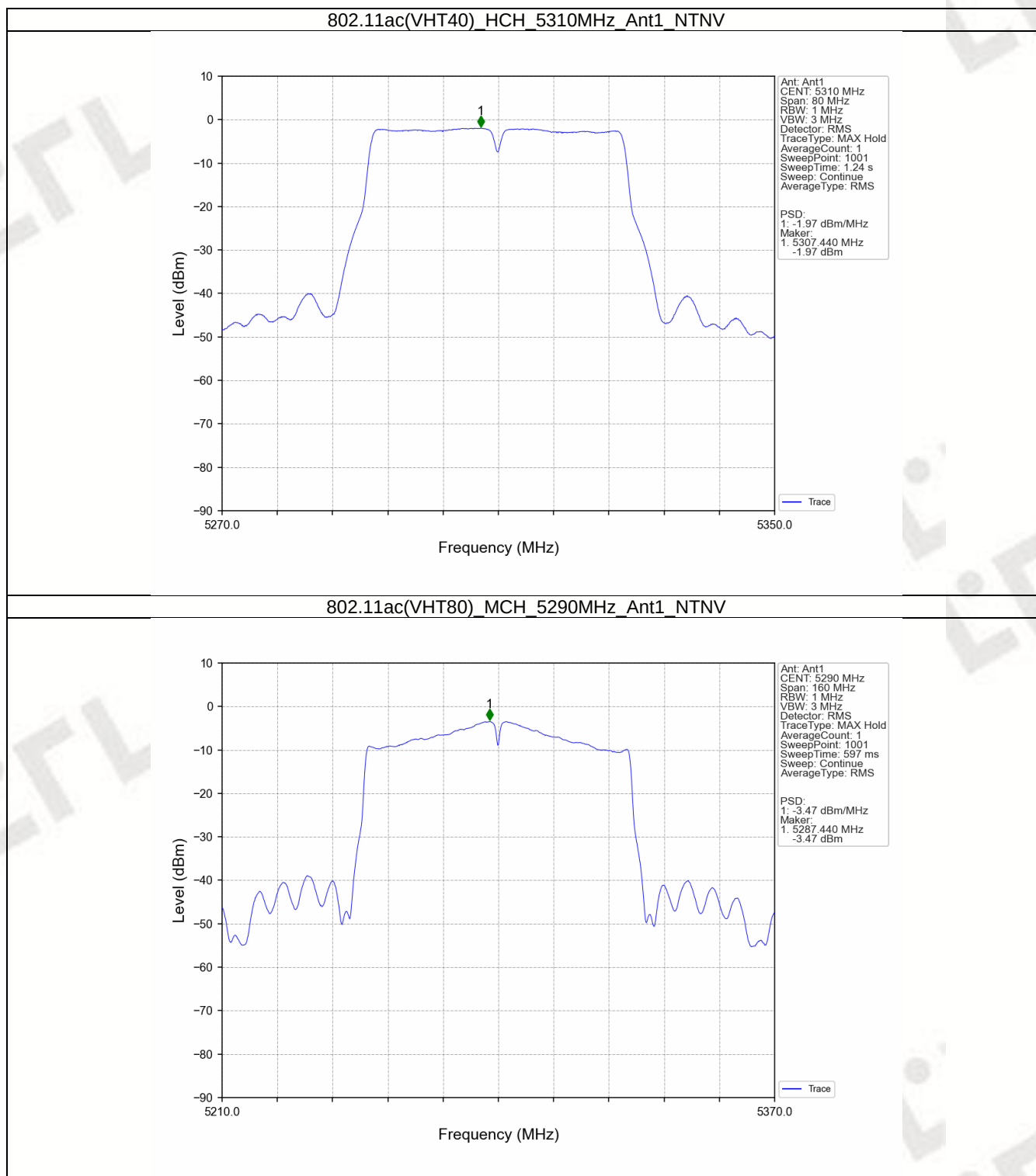
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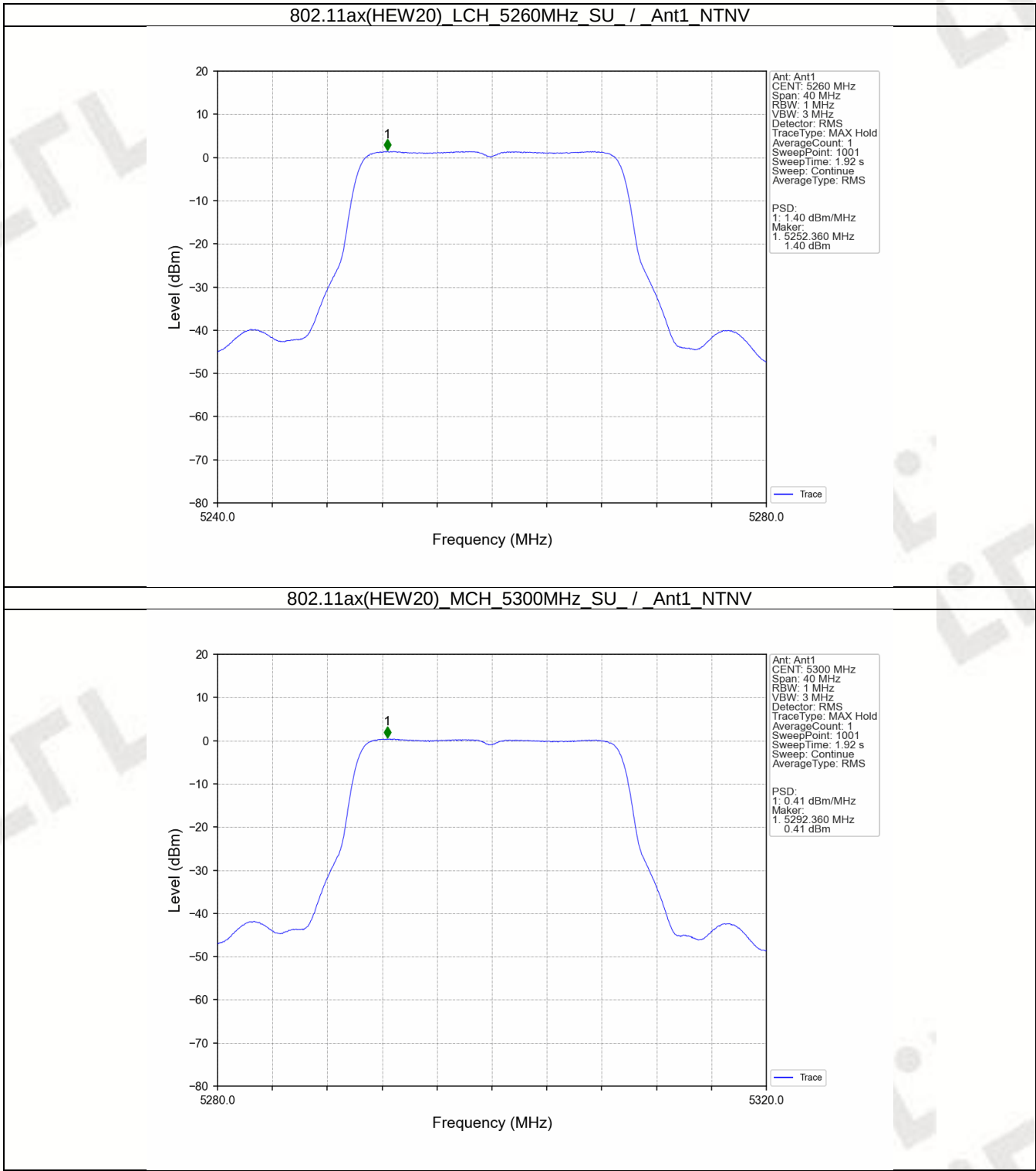
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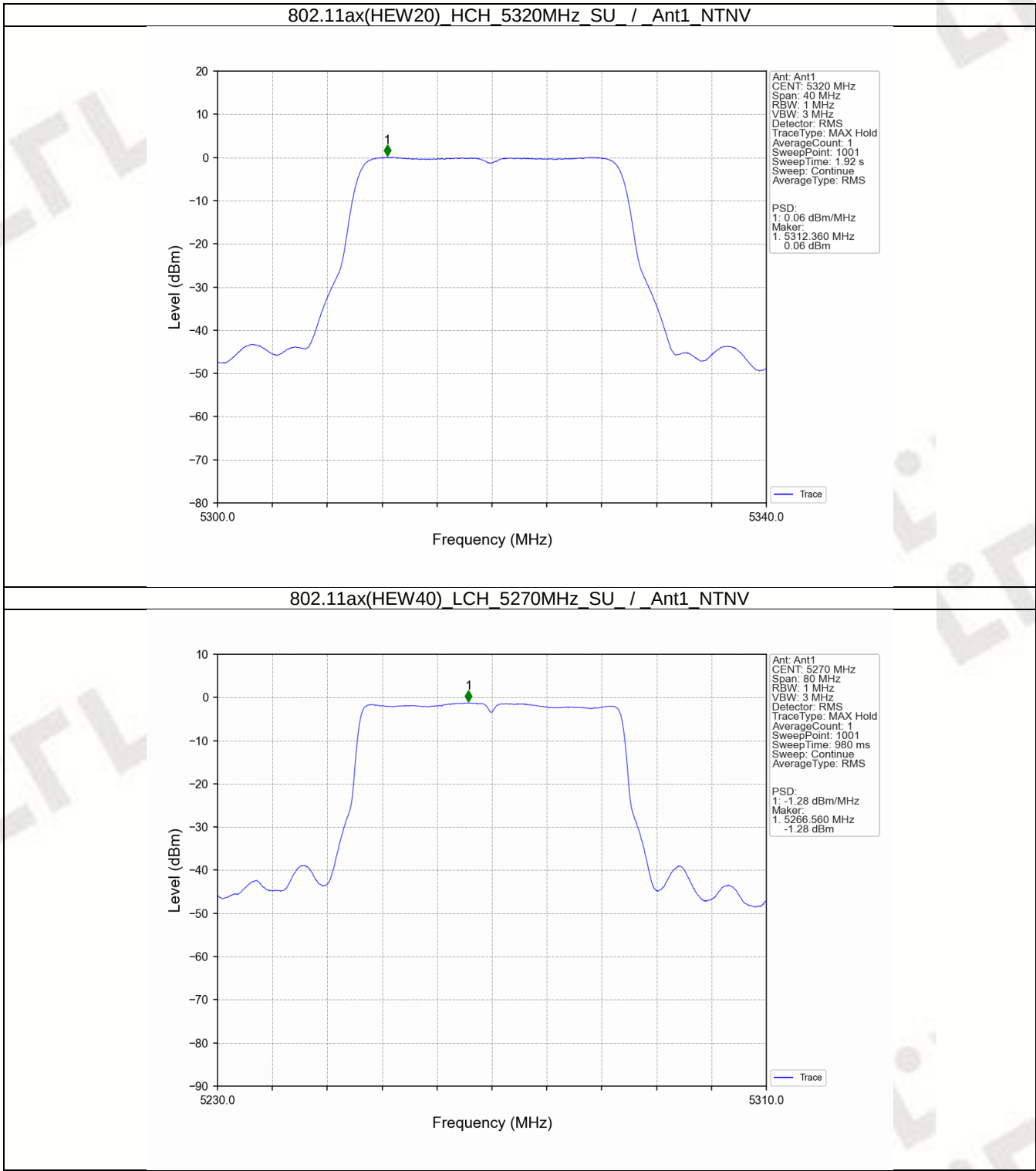
FCC ID: SMQ-UWM1



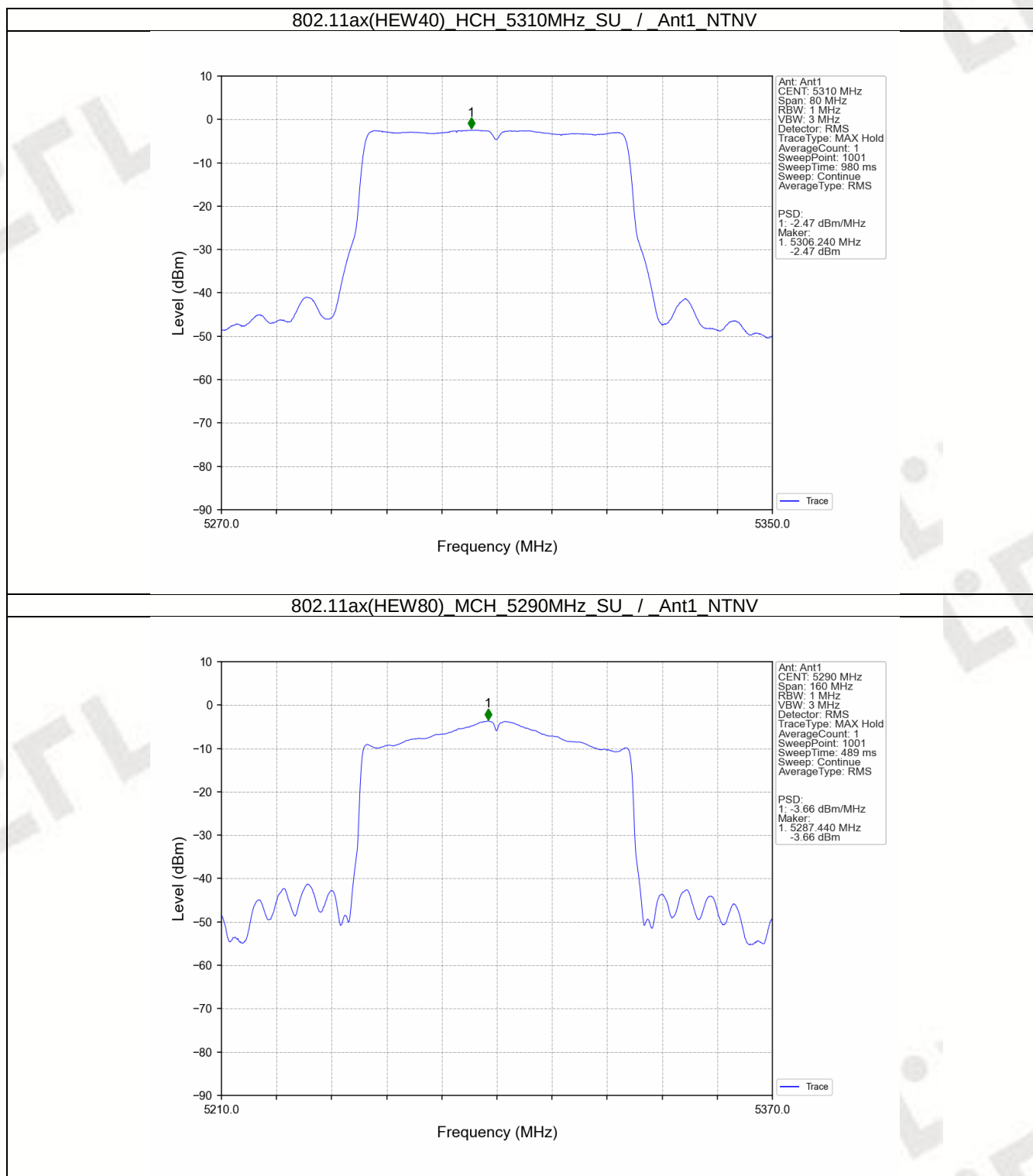
FCC ID: SMQ-UWM1



FCC ID: SMQ-UWM1



FCC ID: SMQ-UWM1



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	5260	20	2.805	5259.898	5250 to 5350	Pass
				3.300	5259.898	5250 to 5350	Pass
				3.795	5259.898	5250 to 5350	Pass
			-30	3.300	5259.898	5250 to 5350	Pass
			-20	3.300	5259.898	5250 to 5350	Pass
			-10	3.300	5259.898	5250 to 5350	Pass
			0	3.300	5259.899	5250 to 5350	Pass
			10	3.300	5259.899	5250 to 5350	Pass
			30	3.300	5259.899	5250 to 5350	Pass
			40	3.300	5259.899	5250 to 5350	Pass
			50	3.300	5259.899	5250 to 5350	Pass
		5300	20	2.805	5299.897	5250 to 5350	Pass
				3.300	5299.897	5250 to 5350	Pass
				3.795	5299.897	5250 to 5350	Pass
			-30	3.300	5299.898	5250 to 5350	Pass
			-20	3.300	5299.898	5250 to 5350	Pass
			-10	3.300	5299.898	5250 to 5350	Pass
			0	3.300	5299.898	5250 to 5350	Pass
			10	3.300	5299.898	5250 to 5350	Pass
			30	3.300	5299.898	5250 to 5350	Pass
			40	3.300	5299.898	5250 to 5350	Pass
			50	3.300	5299.898	5250 to 5350	Pass
		5320	20	2.805	5319.897	5250 to 5350	Pass
				3.300	5319.897	5250 to 5350	Pass
				3.795	5319.897	5250 to 5350	Pass
			-30	3.300	5319.897	5250 to 5350	Pass
			-20	3.300	5319.897	5250 to 5350	Pass
			-10	3.300	5319.897	5250 to 5350	Pass
			0	3.300	5319.897	5250 to 5350	Pass
			10	3.300	5319.897	5250 to 5350	Pass
			30	3.300	5319.897	5250 to 5350	Pass
			40	3.300	5319.898	5250 to 5350	Pass
			50	3.300	5319.897	5250 to 5350	Pass
		5270	20	2.805	5269.898	5250 to 5350	Pass
				3.300	5269.898	5250 to 5350	Pass
				3.795	5269.898	5250 to 5350	Pass
			-30	3.300	5269.898	5250 to 5350	Pass
			-20	3.300	5269.898	5250 to 5350	Pass
			-10	3.300	5269.898	5250 to 5350	Pass
			0	3.300	5269.898	5250 to 5350	Pass
			10	3.300	5269.898	5250 to 5350	Pass
			30	3.300	5269.899	5250 to 5350	Pass
			40	3.300	5269.899	5250 to 5350	Pass
			50	3.300	5269.899	5250 to 5350	Pass
		5310	20	2.805	5309.897	5250 to 5350	Pass
				3.300	5309.897	5250 to 5350	Pass
				3.795	5309.897	5250 to 5350	Pass

FCC ID: SMQ-UWM1

			-30	3.300	5309.897	5250 to 5350	Pass
			-20	3.300	5309.898	5250 to 5350	Pass
			-10	3.300	5309.898	5250 to 5350	Pass
			0	3.300	5309.898	5250 to 5350	Pass
			10	3.300	5309.898	5250 to 5350	Pass
			30	3.300	5309.898	5250 to 5350	Pass
			40	3.300	5309.898	5250 to 5350	Pass
			50	3.300	5309.898	5250 to 5350	Pass
		5290	20	2.805	5289.898	5250 to 5350	Pass
				3.300	5289.898	5250 to 5350	Pass
				3.795	5289.898	5250 to 5350	Pass
			-30	3.300	5289.898	5250 to 5350	Pass
			-20	3.300	5289.898	5250 to 5350	Pass
			-10	3.300	5289.898	5250 to 5350	Pass
			0	3.300	5289.898	5250 to 5350	Pass
			10	3.300	5289.898	5250 to 5350	Pass
			30	3.300	5289.898	5250 to 5350	Pass
			40	3.300	5289.898	5250 to 5350	Pass
			50	3.300	5289.898	5250 to 5350	Pass