

A.3 MAXIMUM POWER SPECTRAL DENSITY

Test Date	2022/02/15 ~ 03/31	Temp./Hum.	16 ~ 23°C/65 ~ 65%
Cable Loss	1.9dB	Tested By	Sam Chang
Test Voltage	AC 120V 60Hz (Via AC Adapter)		
Simultaneous Factor $10 \log(N_{\text{ANT}})$ (Note: where N_{ANT} is the number of outputs)		3dB	

A.3.1 Power Spectral Density Result

● OFDM Modulation

SKU#1 (with INPAQ Antenna)

Mode	U-NII Band	Centre Frequency (MHz)	Power Spectral Density (dBm/MHz) Note 2		Directional Antenna Gain (dBi) Note 4	Max. e.i.r.p Density (dBm/MHz) Note 3	Limit (dBm/MHz)
			ANT A (AUX)	ANT B (Main)			
802.11ax-HE20	5	5955	-7.017	-7.085	3.76	-3.257	-1
		6175	-7.418	-7.469	3.76	-3.658	
		6415	-6.676	-6.312	3.67	-2.642	
	6	6435	-6.891	-7.563	3.67	-3.221	
		6475	-6.969	-7.244	3.67	-3.299	
		6515	-6.937	-7.126	3.67	-3.267	
	7	6535	-7.676	-7.542	3.67	-3.872	
		6695	-8.110	-8.014	3.67	-4.344	
		6855	-7.808	-8.075	3.53	-4.278	
	8	6875	-7.697	-7.280	3.53	-3.750	
		6995	-6.307	-6.214	3.53	-2.684	
		7115	-10.264	-10.380	3.53	-6.734	
802.11ax-HE40	5	5965	-7.099	-7.679	3.76	-3.339	-1
		6165	-7.301	-7.485	3.76	-3.541	
		6405	-6.321	-6.835	3.67	-2.651	
	6	6445	-6.725	-7.695	3.67	-3.055	
		6485	-6.786	-6.985	3.67	-3.116	
		6525	-6.474	-6.423	3.67	-2.753	
	7	6685	-6.883	-7.022	3.67	-3.213	
		6845	-7.721	-7.811	3.67	-4.051	
		6885	-7.632	-7.906	3.53	-4.102	
	8	7005	-7.126	-7.775	3.53	-3.596	
		7085	-7.140	-7.478	3.53	-3.610	

Note: 1. All results have been included cable loss and Simultaneous Factor [Please refer to KDB 662911 E 2) c)]

2. Each output of PSD = individual spectrum value +10 log (Nant)

3. Max. e.i.r.p Density= The Max. of Power Spectral Density [ANT A (AUX) or ANT B (Main)]+ Directional Antenna Gain

4. According to KDB 662911 D01 d) ii), transmit signals are completely uncorrelated, then

Directional gain = $10 \log[(10^{G1/10} + 10^{G2/10} + \dots + 10^{GN/10})/N_{\text{ANT}}]$ dBi

Directional gain: 5925MHz: $10 \log[(10^{4.1/10} + 10^{3.4/10})/2]$ = 3.76dBi /

6525MHz: $10 \log[(10^{4.1/10} + 10^{3.2/10})/2]$ = 3.67dBi /7125MHz: $10 \log[(10^{4.2/10} + 10^{2.3/10})/2]$ = 3.53dBi

The MIMO is uncorrelated and supported SDM(Spatial Division Multiplexing) mode only. This radio device doesn't support beamforming and Cyclic Delay Diversity (CDD).

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Mode	U-NII Band	Centre Frequency (MHz)	Power Spectral Density (dBm/MHz) Note 2		Directional Antenna Gain (dBi) Note 4	Max. e.i.r.p Density (dBm/MHz) Note 3	Limit (dBm/MHz)
			ANT A (AUX)	ANT B (Main)			
802.11ax-HE80	5	5985	-6.527	-6.417	3.76	-2.657	-1
		6145	-6.271	-6.349	3.76	-2.511	
		6385	-6.288	-5.998	3.67	-2.328	
	6	6465	-6.666	-6.435	3.67	-2.765	
		6545	-6.531	-6.292	3.67	-2.622	
	7	6625	-7.082	-6.856	3.67	-3.186	
		6705	-7.032	-7.156	3.67	-3.362	
		6785	-7.431	-7.518	3.67	-3.761	
	8	6865	-7.591	-7.627	3.53	-4.061	
		6945	-7.299	-7.402	3.53	-3.769	
		7025	-7.233	-7.420	3.53	-3.703	
802.11ax-HE160	5	6025	-6.313	-6.175	3.76	-2.415	-1
		6185	-6.482	-6.558	3.76	-2.722	
		6345	-6.085	-5.936	3.67	-2.266	
	6	6505	-6.575	-6.338	3.67	-2.668	
		6665	-7.174	-6.906	3.67	-3.236	
	7	6825	-7.232	-7.256	3.67	-3.562	
		6985	-7.118	-7.053	3.53	-3.523	

Note: 1. All results have been included cable loss and Simultaneous Factor [Please refer to KDB 662911 E 2) c)]

2. Each output of PSD = individual spectrum value +10 log (Nant)

3. Max. e.i.r.p Density= The Max. of Power Spectral Density [ANT A (AUX) or ANT B (Main)]+ Directional Antenna Gain

4. According to KDB 662911 D01 d) ii), transmit signals are completely uncorrelated, then

Directional gain = $10 \log[(10^{G1/10} + 10^{G2/10} + \dots + 10^{GN/10})/N_{ANT}]$ dBi

Directional gain: 5925MHz: $10 \log[(10^{4.1/10} + 10^{3.4/10})/2] = 3.76$ dBi /

6525MHz: $10 \log[(10^{4.1/10} + 10^{3.2/10})/2] = 3.67$ dBi / 7125MHz: $10 \log[(10^{4.2/10} + 10^{2.3/10})/2] = 3.53$ dBi

The MIMO is uncorrelated and supported SDM(Spatial Division Multiplexing) mode only. This radio device doesn't support beamforming and Cyclic Delay Diversity (CDD).

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SKU#2 (with LUXSHARE-ICT Antenna)

Mode	U-NII Band	Centre Frequency (MHz)	Power Spectral Density (dBm/MHz) Note 2		Directional Antenna Gain (dBi) Note 4	Max. e.i.r.p Density (dBm/MHz) Note 3	Limit (dBm/MHz)
			ANT A (AUX)	ANT B (Main)			
802.11ax-HE20	5	5955	-7.017	-7.085	3.89	-3.127	-1
		6175	-7.418	-7.469	3.89	-3.528	
		6415	-6.676	-6.312	2.48	-3.832	
	6	6435	-6.891	-7.563	2.48	-4.411	
		6475	-6.969	-7.244	2.48	-4.489	
		6515	-6.937	-7.126	2.48	-4.457	
	7	6535	-7.676	-7.542	2.48	-5.062	
		6695	-8.110	-8.014	2.48	-5.534	
		6855	-7.808	-8.075	-2.94	-10.748	
	8	6875	-7.697	-7.280	-2.94	-10.220	
		6995	-6.307	-6.214	-2.94	-9.154	
		7115	-10.264	-10.380	-2.94	-13.204	
802.11ax-HE40	5	5965	-7.099	-7.679	3.89	-3.209	-1
		6165	-7.301	-7.485	3.89	-3.411	
		6405	-6.321	-6.835	2.48	-3.841	
	6	6445	-6.725	-7.695	2.48	-4.245	
		6485	-6.786	-6.985	2.48	-4.306	
	7	6525	-6.474	-6.423	2.48	-3.943	
		6685	-6.883	-7.022	2.48	-4.403	
		6845	-7.721	-7.811	2.48	-5.241	
	8	6885	-7.632	-7.906	-2.94	-10.572	
		7005	-7.126	-7.775	-2.94	-10.066	
		7085	-7.140	-7.478	-2.94	-10.080	

Note: 1. All results have been included cable loss and Simultaneous Factor [Please refer to KDB 662911 E 2) c)]

2. Each output of PSD = individual spectrum value +10 log (Nant)

3. Max. e.i.r.p Density= The Max. of Power Spectral Density [ANT A (AUX) or ANT B (Main)]+ Directional Antenna Gain

4. According to KDB 662911 D01 d) ii), transmit signals are completely uncorrelated, then

Directional gain = $10 \log[(10^{G1/10} + 10^{G2/10} + \dots + 10^{GN/10})/N_{ANT}]$ dBi

Directional gain: 5925MHz: $10 \log[(10^{2.9/10} + 10^{4.7/10})/2] = 3.89\text{dBi}$ /

6525MHz: $10 \log[(10^{3.4/10} + 10^{1.3/10})/2] = 2.48\text{dBi}$ /7125MHz: $10 \log[(10^{-4.9/10} + 10^{-1.6/10})/2] = -2.94\text{dBi}$

The MIMO is uncorrelated and supported SDM(Spatial Division Multiplexing) mode only. This radio device doesn't support beamforming and Cyclic Delay Diversity (CDD).

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Mode	U-NII Band	Centre Frequency (MHz)	Power Spectral Density (dBm/MHz) Note 2		Directional Antenna Gain (dBi) Note 4	Max. e.i.r.p Density (dBm/MHz) Note 3	Limit (dBm/MHz)
			ANT A (AUX)	ANT B (Main)			
802.11ax-HE80	5	5985	-6.527	-6.417	3.89	-2.527	-1
		6145	-6.271	-6.349	3.89	-2.381	
		6385	-6.288	-5.998	2.48	-3.518	
	6	6465	-6.666	-6.435	2.48	-3.955	
		6545	-6.531	-6.292	2.48	-3.812	
	7	6625	-7.082	-6.856	2.48	-4.376	
		6705	-7.032	-7.156	2.48	-4.552	
		6785	-7.431	-7.518	2.48	-4.951	
	8	6865	-7.591	-7.627	-2.94	-10.531	
		6945	-7.299	-7.402	-2.94	-10.239	
		7025	-7.233	-7.420	-2.94	-10.173	
802.11ax-HE160	5	6025	-6.313	-6.175	3.89	-2.285	-1
		6185	-6.482	-6.558	3.89	-2.592	
		6345	-6.085	-5.936	2.48	-3.456	
	6	6505	-6.575	-6.338	2.48	-3.858	
		6665	-7.174	-6.906	2.48	-4.426	
	7	6825	-7.232	-7.256	2.48	-4.752	
		6985	-7.118	-7.053	-2.94	-9.993	

Note: 1. All results have been included cable loss and Simultaneous Factor [Please refer to KDB 662911 E 2) c)]

2. Each output of PSD = individual spectrum value +10 log (Nant)

3. Max. e.i.r.p Density= The Max. of Power Spectral Density [ANT A (AUX) or ANT B (Main)]+ Directional Antenna Gain

4. According to KDB 662911 D01 d) ii), transmit signals are completely uncorrelated, then

Directional gain = $10 \log[(10^{G1/10} + 10^{G2/10} + \dots + 10^{GN/10})/N_{ANT}]$ dBi

Directional gain: 5925MHz: $10 \log[(10^{2.9/10} + 10^{4.7/10})/2] = 3.89$ dBi /

6525MHz: $10 \log[(10^{3.4/10} + 10^{1.3/10})/2] = 2.48$ dBi /7125MHz: $10 \log[(10^{-4.9/10} + 10^{-1.6/10})/2] = -2.94$ dBi

The MIMO is uncorrelated and supported SDM(Spatial Division Multiplexing) mode only. This radio device doesn't support beamforming and Cyclic Delay Diversity (CDD).

● OFDMA Modulation

SKU#1 (with INPAQ Antenna)

Tones	RU Index	Mode	U-NII Band	Centre Frequency (MHz)	Power Spectral Density (dBm/MHz) ^{Note 3}		Directional Antenna Gain (dBi) ^{Note 5}	Max. e.i.r.p Density (dBm/MHz) ^{Note 4}	Limit (dBm/MHz)
					ANT A (AUX)	ANT B (Main)			
26T	8	802.11ax- HE20	5	5955	-6.959	-7.405	3.76	-3.199	-1
52T	39	802.11ax- HE20	5	5955	-6.839	-7.130	3.76	-3.079	
106T	54	802.11ax- HE20	5	5955	-7.076	-7.301	3.76	-3.316	
242T	S61	802.11ax- HE160	8	6985	-6.648	-7.364	3.53	-3.118	
484T	65	802.11ax- HE80	5	5985	-7.015	-7.261	3.76	-3.255	
996T	67	802.11ax- HE80	5	5985	-7.132	-7.630	3.76	-3.372	

Note: 1. All results have been included cable loss and Simultaneous Factor [Please refer to KDB 662911 E 2) c)]
2. After preliminary test, we present worst case with maximum power of each RU type.
3. Each output of PSD = individual spectrum value +10 log (Nant)
4. Max. e.i.r.p Density= The Max. of Power Spectral Density [ANT A (AUX) or ANT B (Main)]+ Directional Antenna Gain.
5. According to KDB 662911 D01 d) ii), transmit signals are completely uncorrelated, then
Directional gain = $10 \log[(10^{G1/10} + 10^{G2/10} + \dots + 10^{GN/10})/N_{ANT}]$ dBi
Directional gain: 5925MHz: $10 \log[(10^{4.1/10} + 10^{3.4/10})/2] = 3.76\text{dBi}$ /
6525MHz: $10 \log[(10^{4.1/10} + 10^{3.2/10})/2] = 3.67\text{dBi}$ /7125MHz: $10 \log[(10^{4.2/10} + 10^{2.3/10})/2] = 3.53\text{dBi}$
The MIMO is uncorrelated and supported SDM(Spatial Division Multiplexing) mode only. This radio device doesn't support beamforming and Cyclic Delay Diversity (CDD).

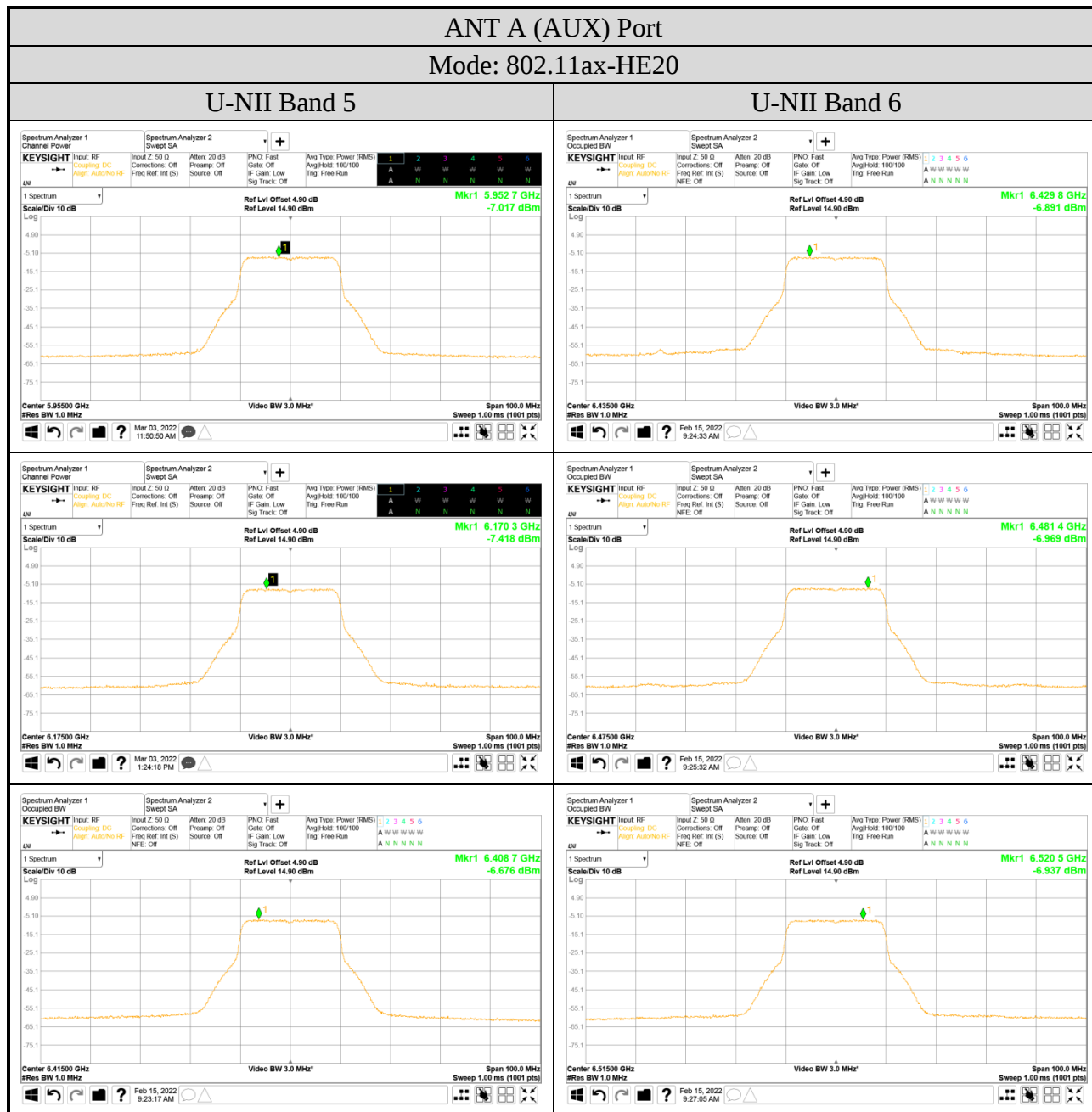
SKU#2 (with LUXSHARE-ICT Antenna)

Tones	RU Index	Mode	U-NII Band	Centre Frequency (MHz)	Power Spectral Density (dBm/MHz) ^{Note 3}		Directional Antenna Gain (dBi) ^{Note 5}	Max. e.i.r.p Density (dBm/MHz) ^{Note 4}	Limit (dBm/MHz)
					ANT A (AUX)	ANT B (Main)			
26T	8	802.11ax- HE20	5	5955	-6.959	-7.405	3.89	-3.069	-1
52T	39	802.11ax- HE20	5	5955	-6.839	-7.130	3.89	-2.949	
106T	54	802.11ax- HE20	5	5955	-7.076	-7.301	3.89	-3.186	
242T	S61	802.11ax- HE160	8	6985	-6.648	-7.364	-2.94	-9.588	
484T	65	802.11ax- HE80	5	5985	-7.015	-7.261	3.89	-3.125	
996T	67	802.11ax- HE80	5	5985	-7.132	-7.630	3.89	-3.242	

Note: 1. All results have been included cable loss and Simultaneous Factor [Please refer to KDB 662911 E 2) c)]
2. After preliminary test, we present worst case with maximum power of each RU type.
3. Each output of PSD = individual spectrum value +10 log (Nant)
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Directional gain = $10 \log[(10^{G1/10} + 10^{G2/10} + \dots + 10^{GN/10})/N_{ANT}]$ dBi
Directional gain: 5925MHz: $10 \log[(10^{2.9/10} + 10^{4.7/10})/2] = 3.89\text{dBi}$ /
6525MHz: $10 \log[(10^{3.4/10} + 10^{1.3/10})/2] = 2.48\text{dBi}$ /7125MHz: $10 \log[(10^{-4.9/10} + 10^{-1.6/10})/2] = -2.94\text{dBi}$
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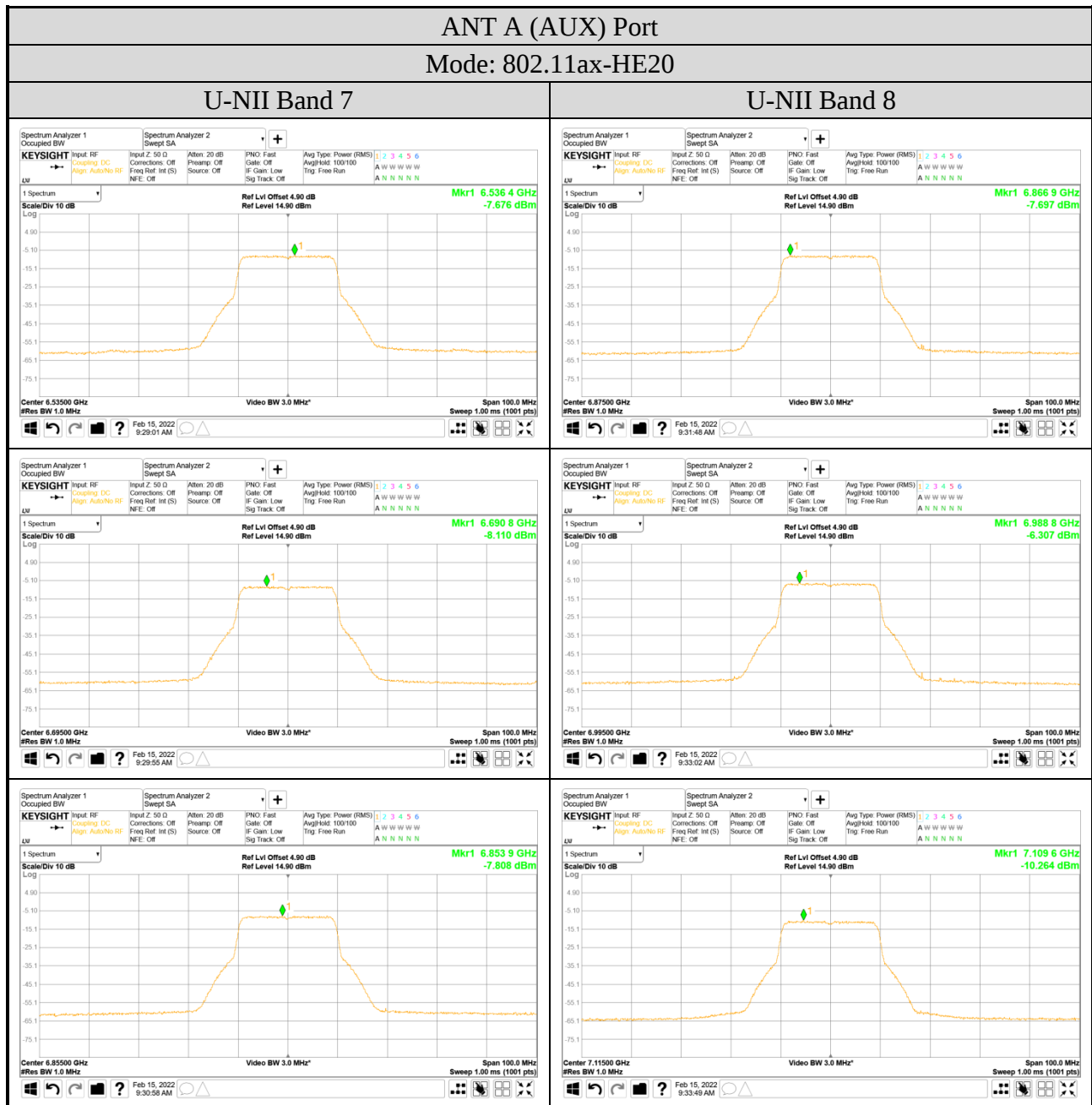
A.3.2 Measurement Plots

● OFDM Modulation



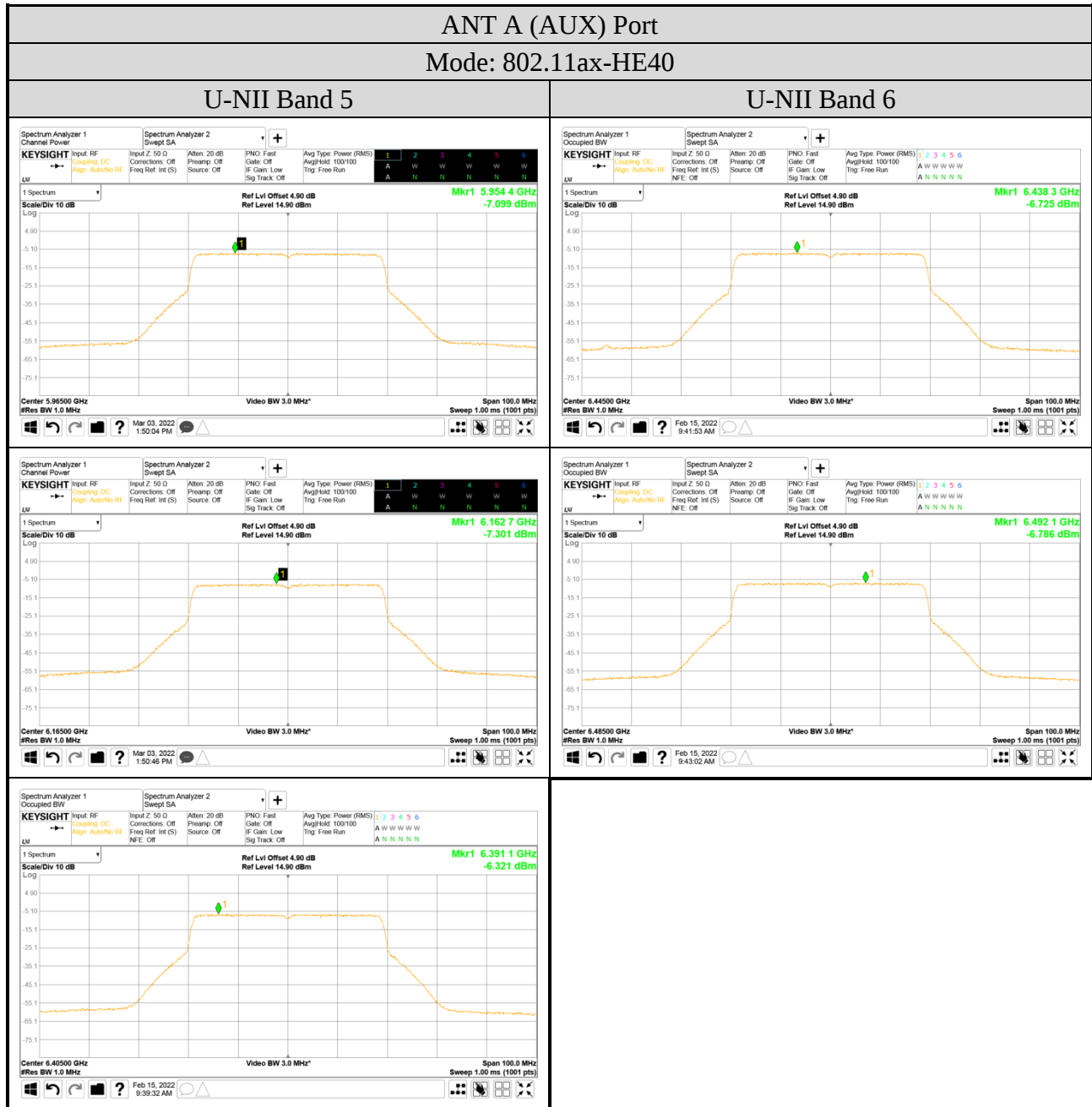
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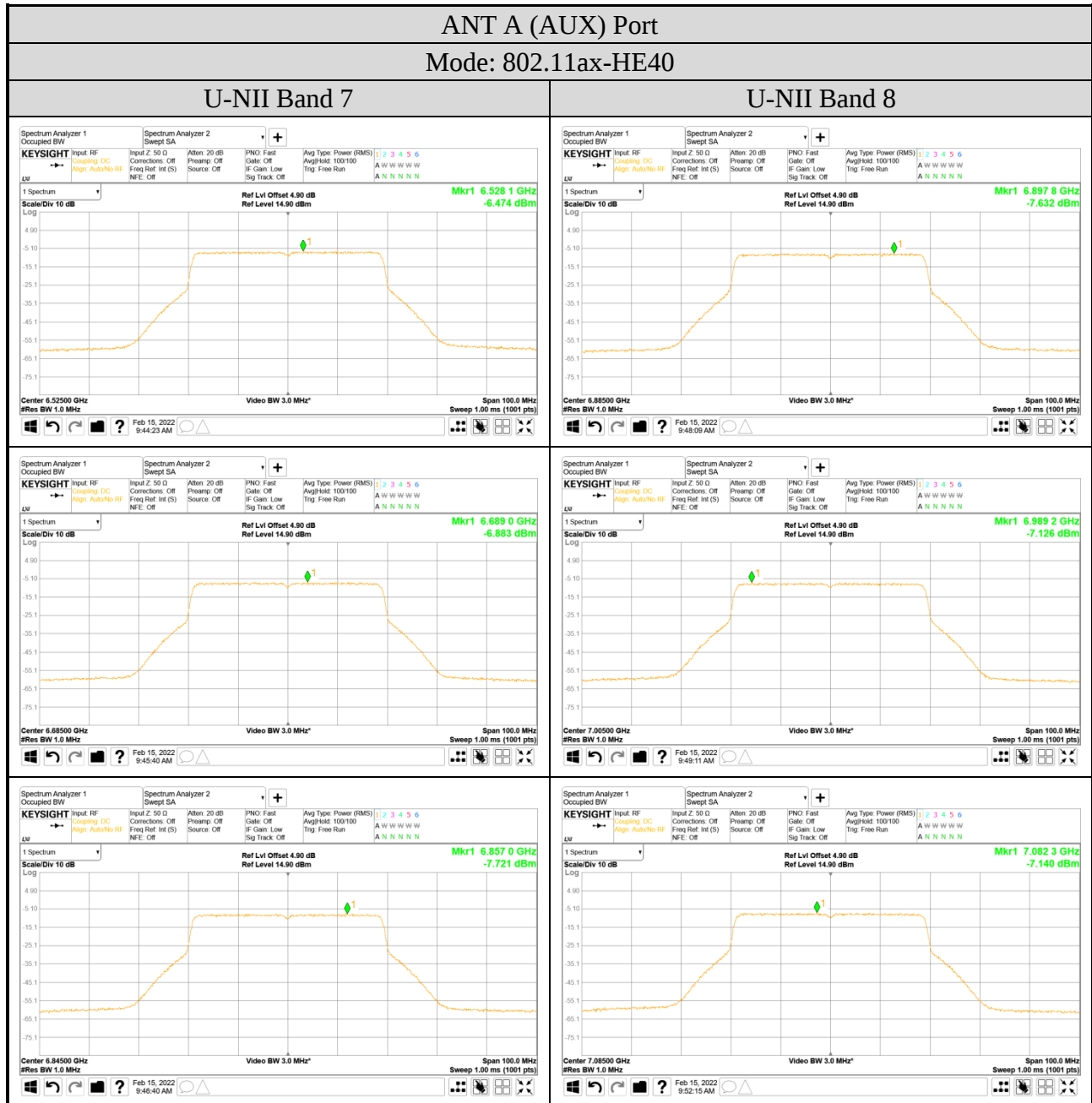
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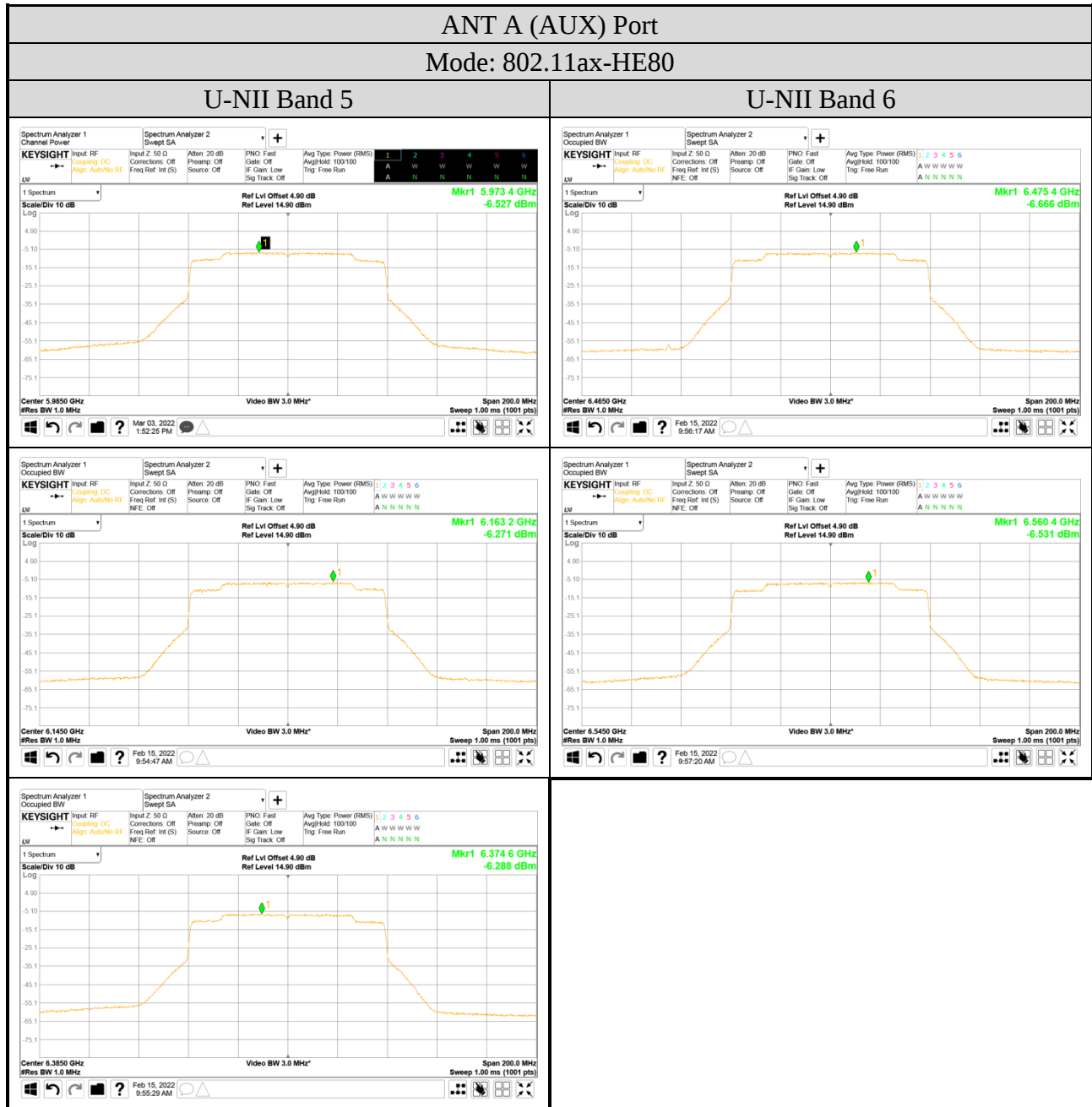
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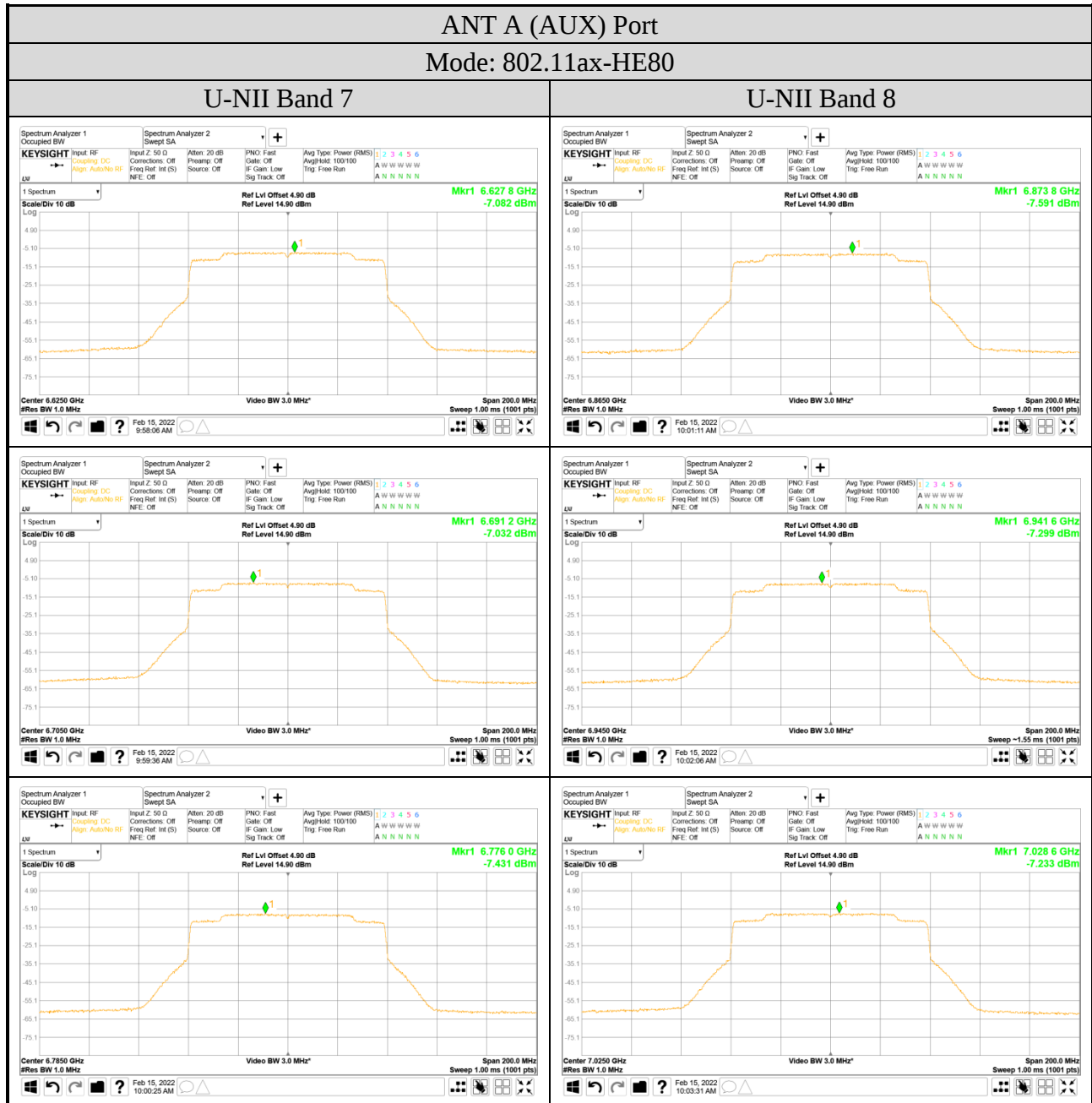
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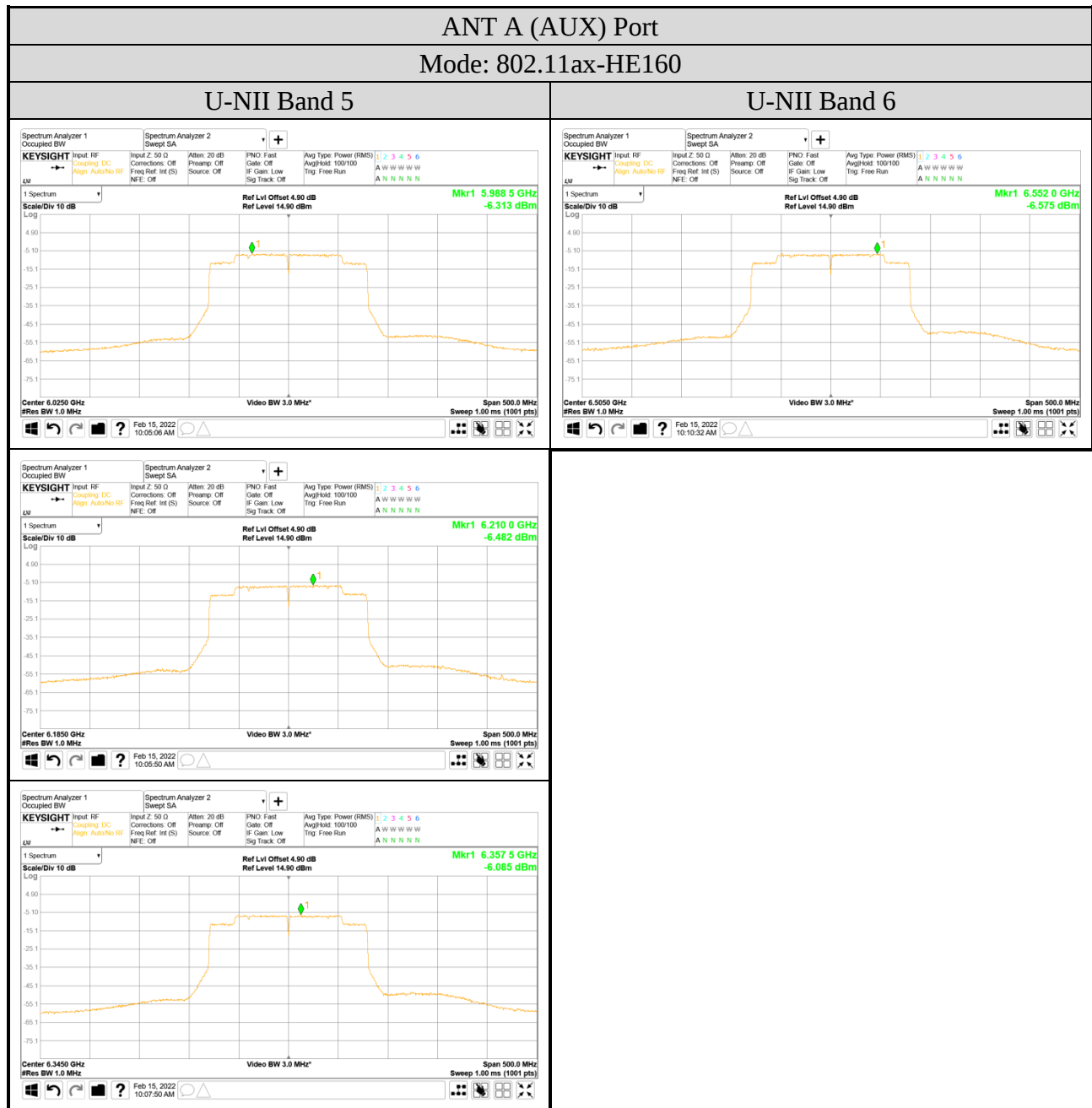
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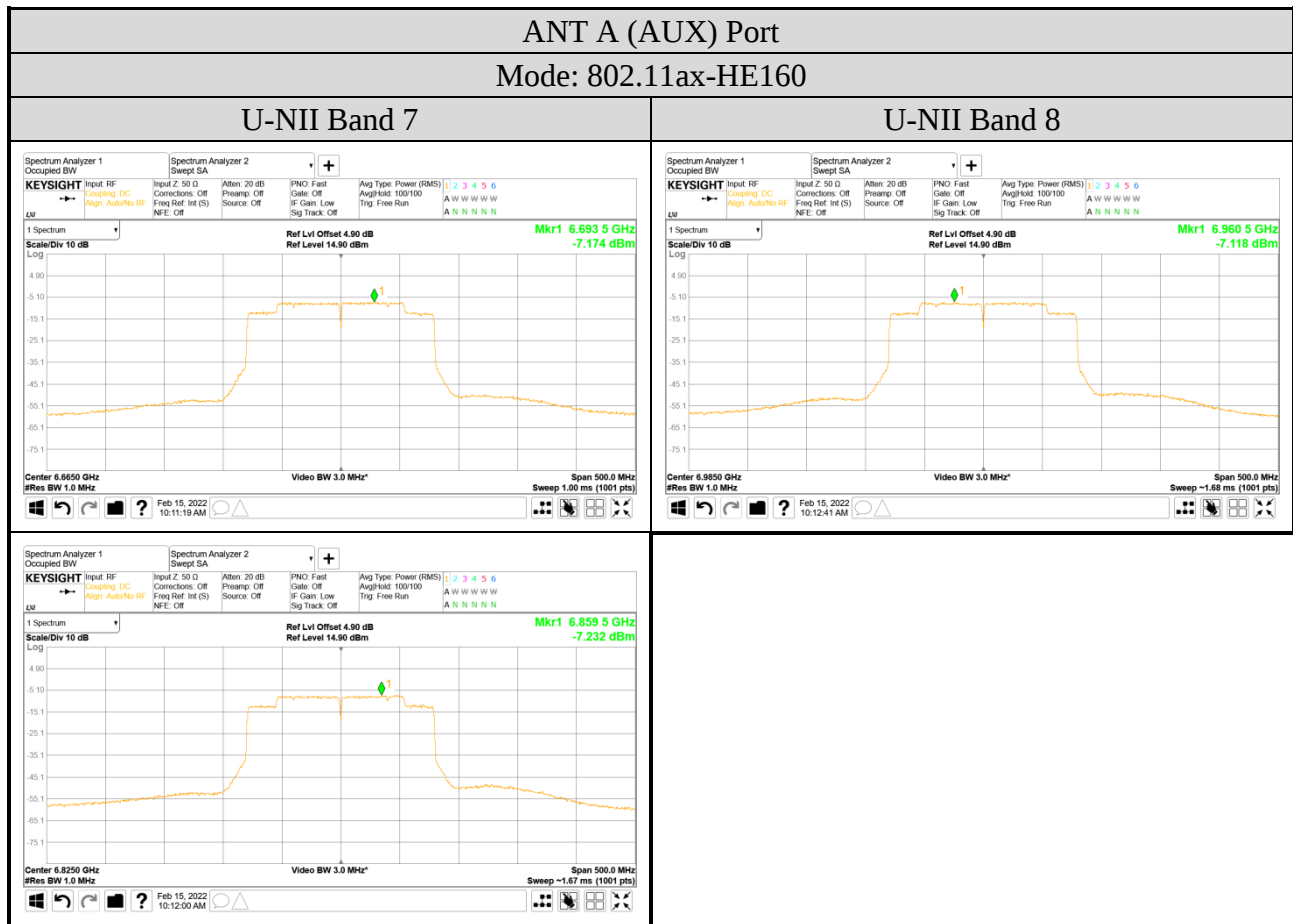
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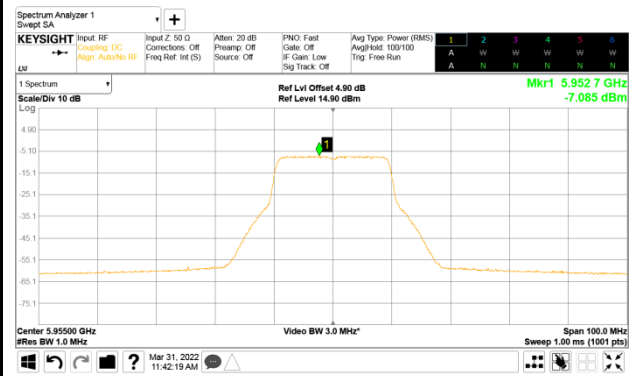
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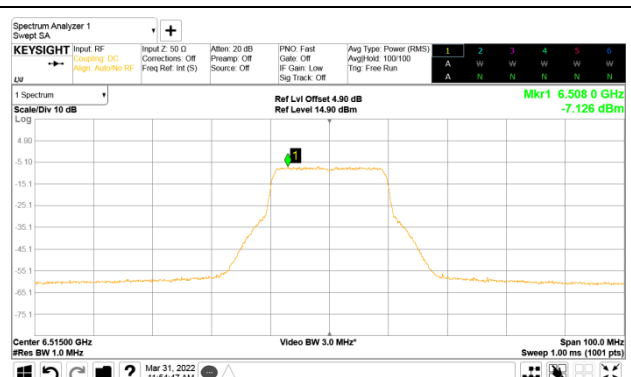
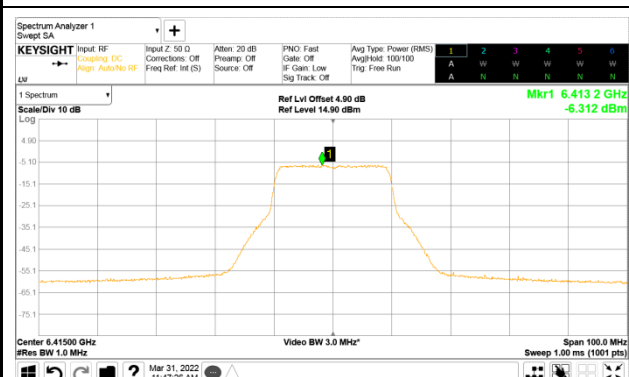
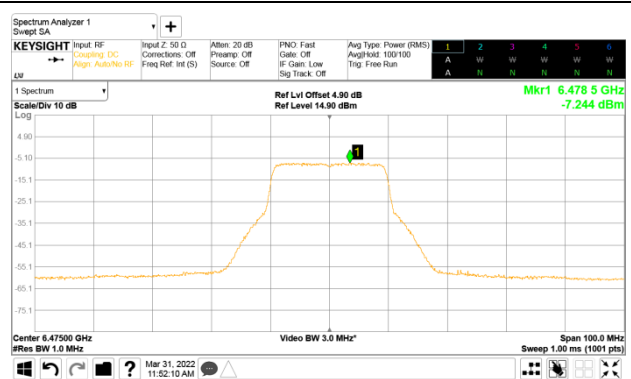
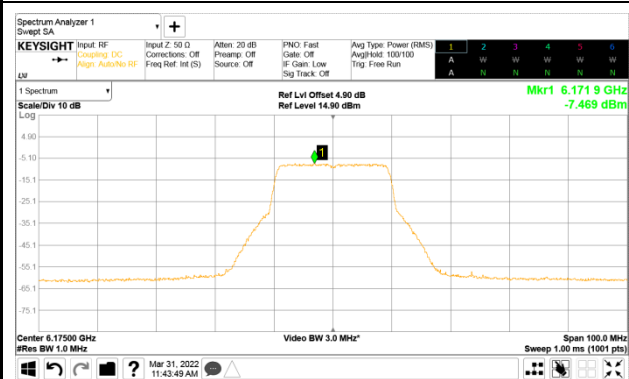
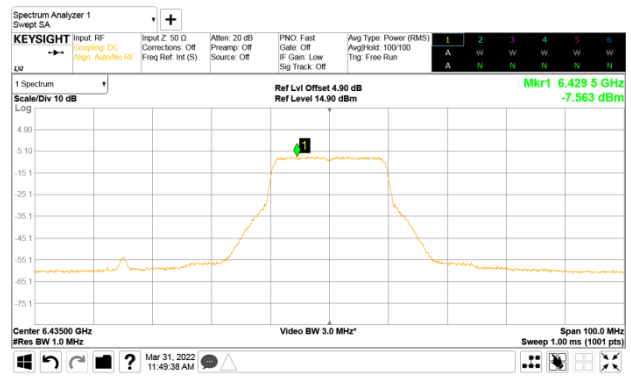
ANT B (Main) Port

Mode: 802.11ax-HE20

U-NII Band 5

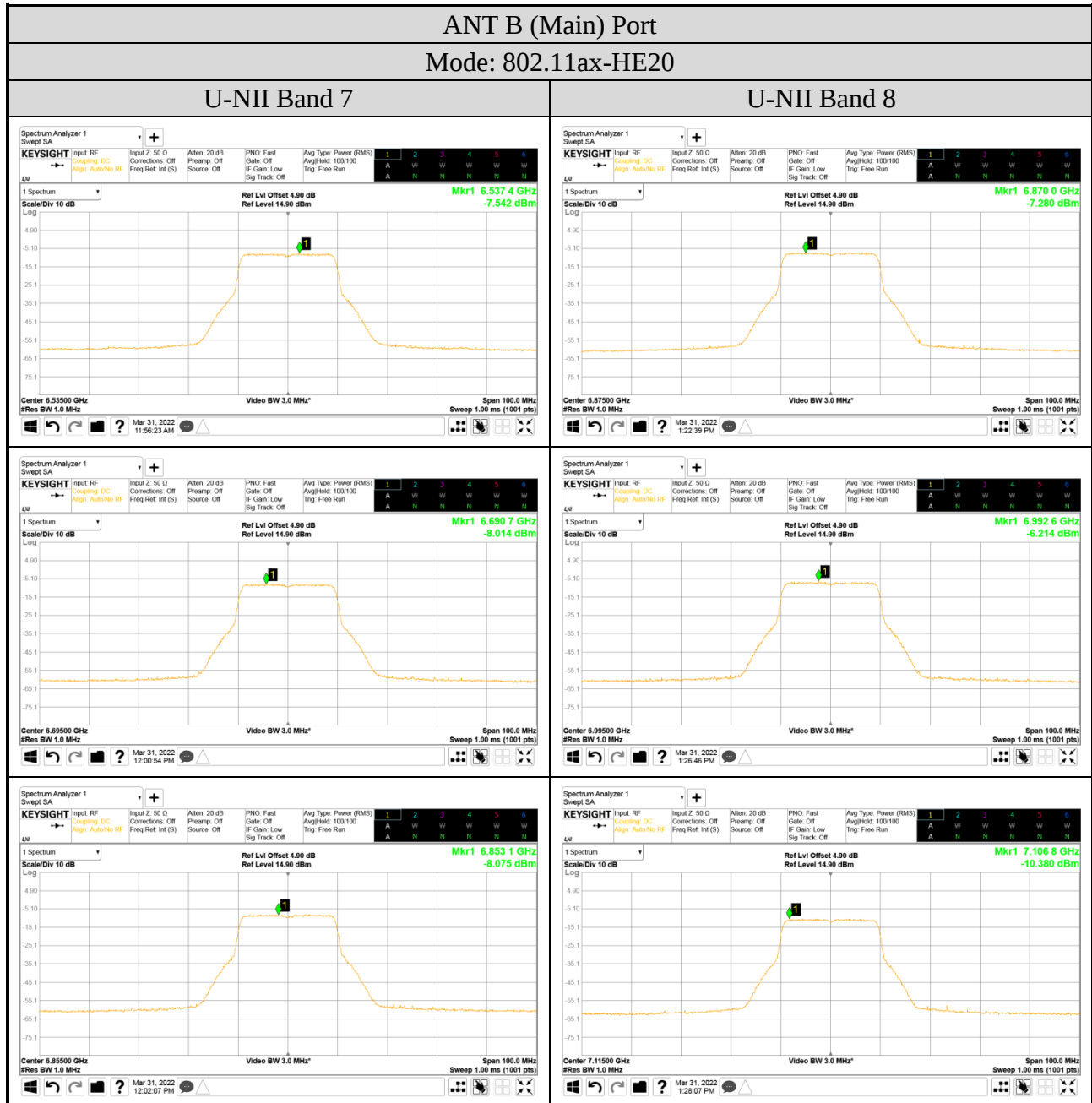


U-NII Band 6



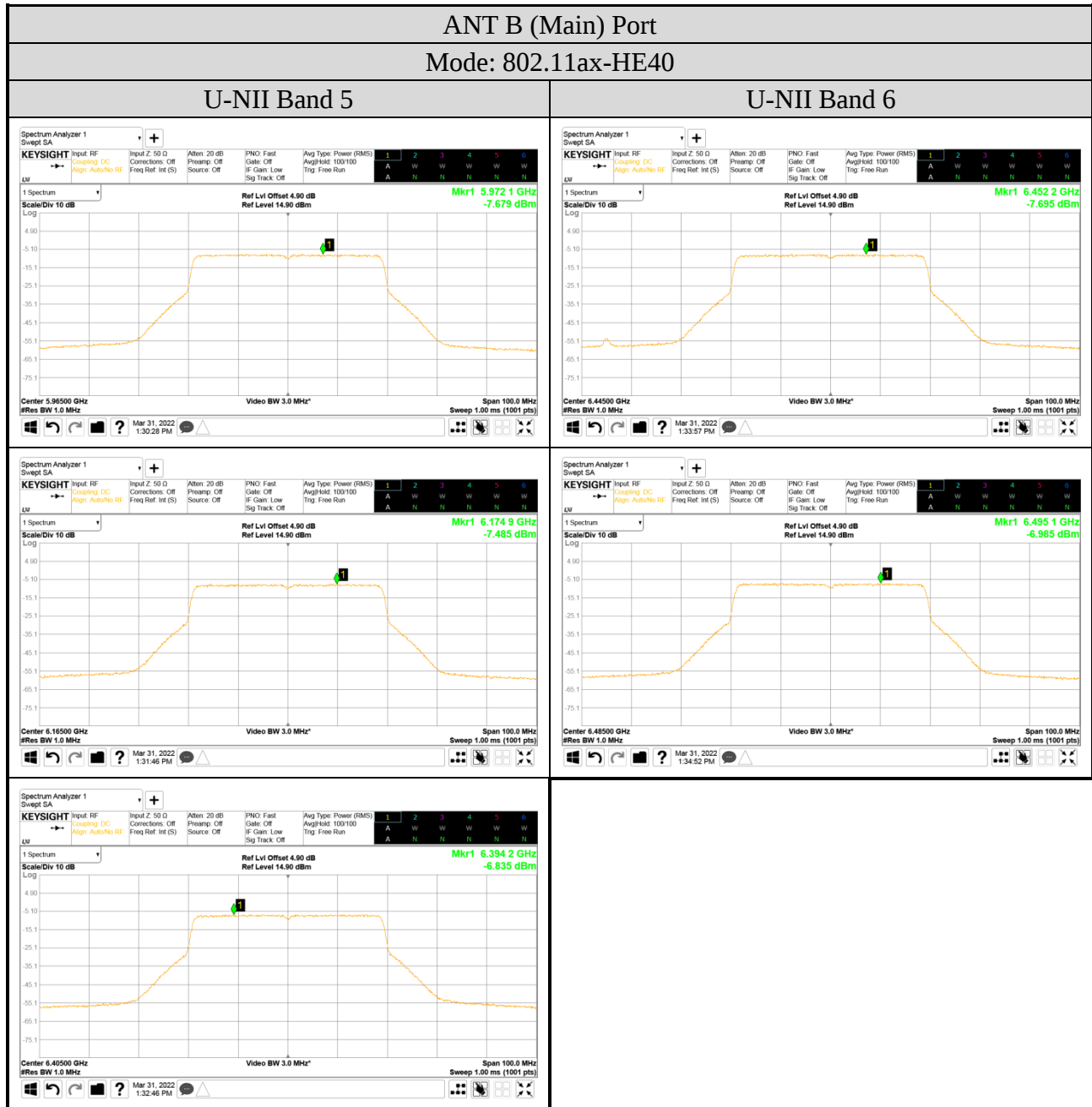
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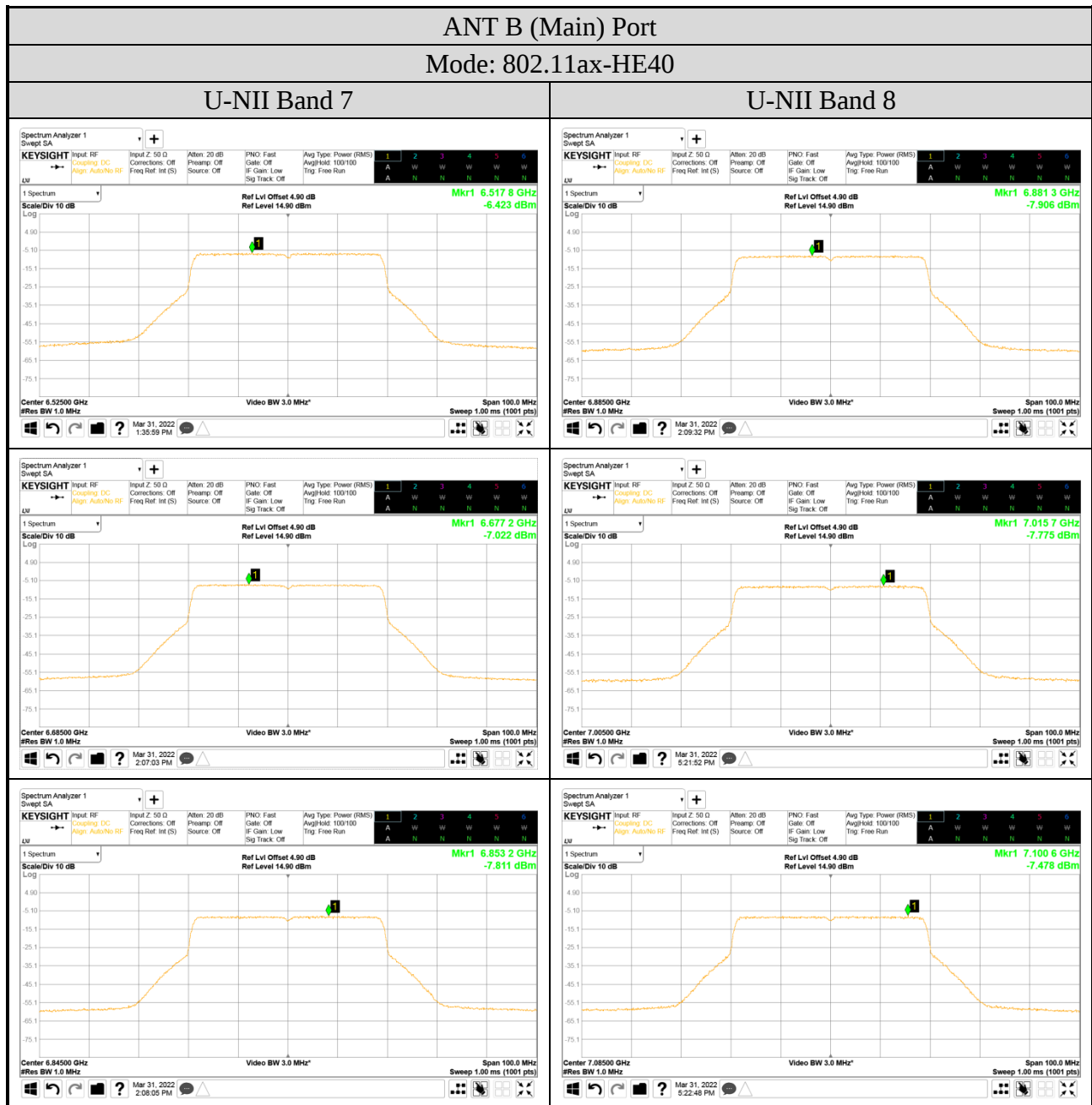
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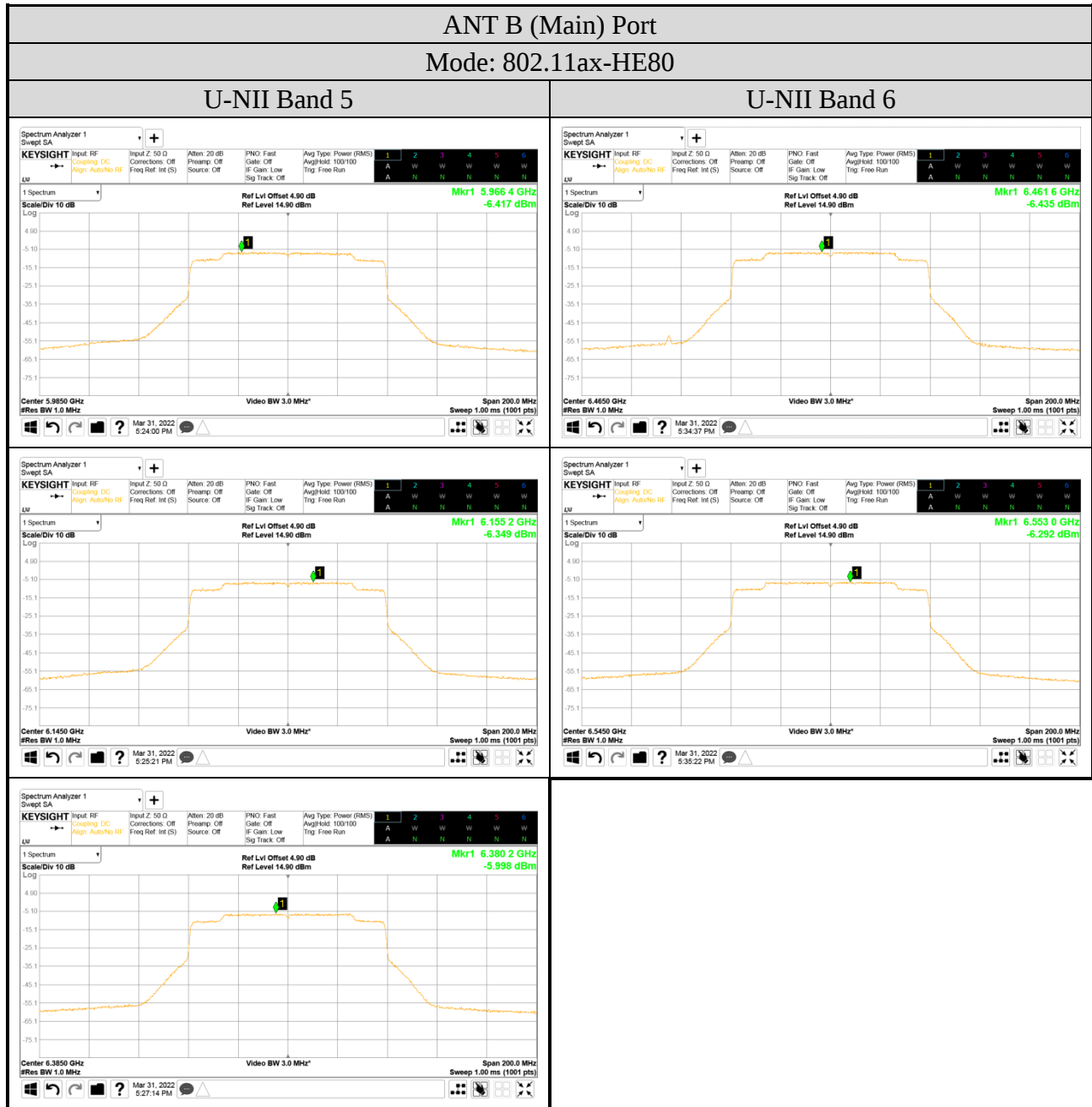
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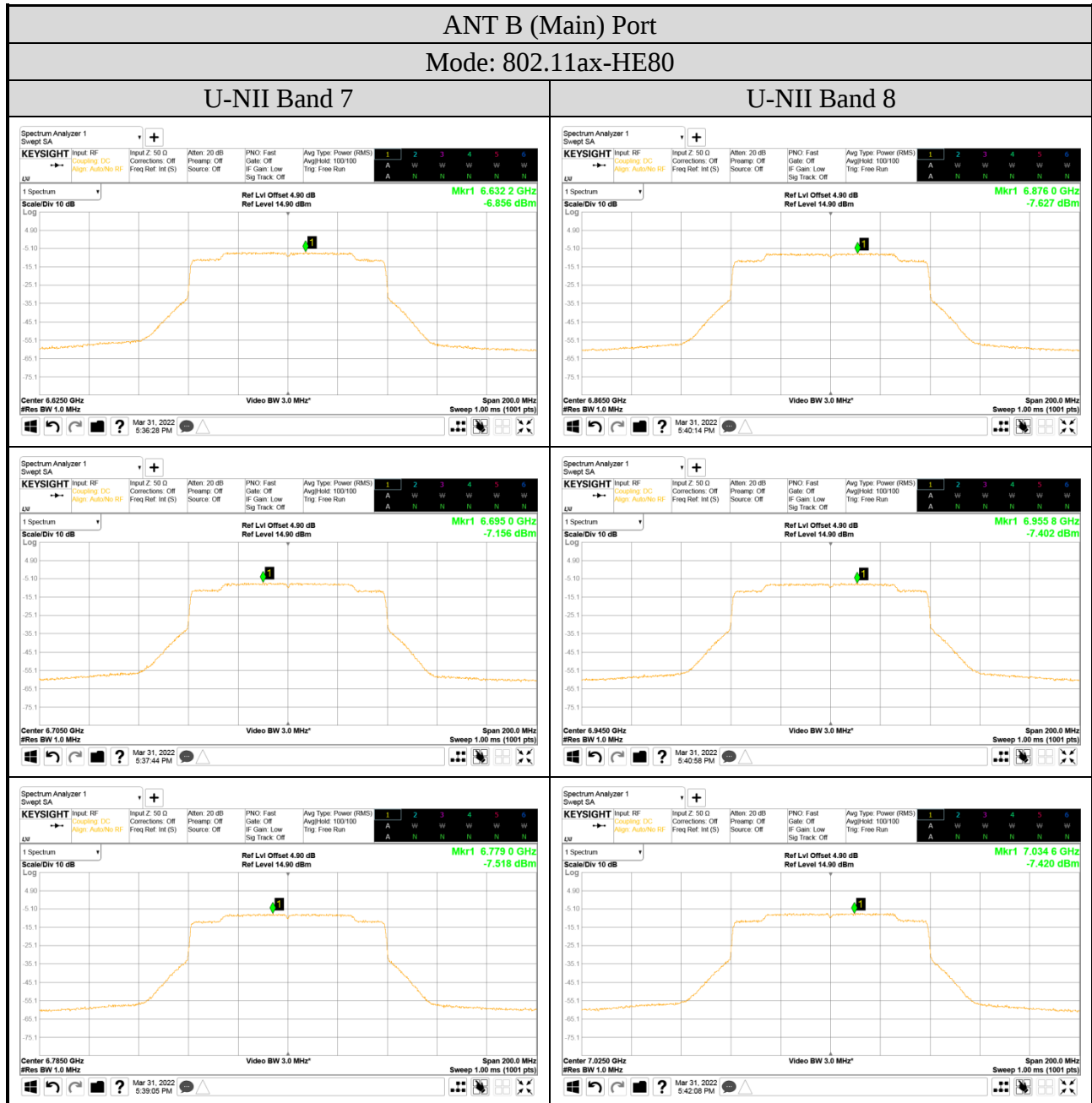
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