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A.3 MAXIMUM POWER SPECTRAL DENSITY

Test Date	2022/01/05~03/31	Temp./Hum.	17~22°C/62~70%
Cable Loss	1.90dB	Tested By	Sam Chang
Test Voltage	AC 120V 60Hz (Via AC Adapter)		
Simultaneous Factor 10 log(N_{ANT})(Note: where N_{ANT} is the number of outputs)			3dB

A.3.1 Power Spectral Density Result

- OFDM Modulation

Mode	U-NII Band	Centre Frequency (MHz)	Power Spectral Density (dBm/MHz)		Duty Cycle Factor [10log(1/x)] Note 2	Max Antenna Gain(dBi)		e.i.r.p Density (dBm/MHz) Note 3		Limit (dBm/MHz)
			ANT A (AUX)	ANT B (Main)		AUX	Main	AUX	Main	
802.11a	5	5955	-5.970	-6.320	N/A	-2.7	1.3	-8.670	-5.020	-1
		6175	-6.620	-6.590				-9.320	-5.290	
		6415	-6.065	-6.550				-8.765	-5.250	
	6	6435	-6.287	-6.390				-8.987	-5.090	
		6475	-6.282	-6.417				-8.982	-5.117	
		6515	-6.539	-6.486				-9.239	-5.186	
	7	6535	-7.319	-7.095		-3.0	1.1	-10.319	-5.995	
		6695	-8.120	-7.475				-11.120	-6.375	
		6855	-7.425	-7.670				-10.425	-6.570	
	8	6875	-7.300	-7.725				-10.300	-6.625	
		6995	-7.007	-7.634				-10.007	-6.534	
		7115	-12.819	-12.373		0.1	3.4	-12.719	-8.973	

Note: 1. All results have been included cable loss.
2. When duty cycle is less than 98% (0.98) that duty cycle factor 10log(1/x) is needed to add in conducted test items measured in average detector. Duty cycle > 98% [Please refer to report section 3.7]. So it doesn't add Duty Cycle Factor
3. Each output of e.i.r.p Density (dBm/MHz) = individual spectrum value (dBm/MHz) + Duty Cycle Factor + Antenna Gain (dBi)..

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Mode	U-NII Band	Centre Frequency (MHz)	Power Spectral Density (dBm/MHz) Note 2		Duty Cycle Factor [10log(1/x)] Note 3	Directional Antenna Gain (dBi) Note 5	e.i.r.p Density (dBm/MHz) Note 4		Limit (dBm/MHz)
			ANT A (AUX)	ANT B (Main)			AUX	Main	
802.11n-HT20	5	5955	-7.285	-7.324	N/A	-0.25	-7.535	-7.574	-1
		6175	-7.573	-7.609			-7.823	-7.859	
		6415	-7.470	-7.637			-7.720	-7.887	
	6	6435	-7.195	-7.525			-7.445	-7.775	
		6475	-7.417	-7.519			-7.667	-7.769	
		6515	-6.993	-7.012			-7.243	-7.262	
	7	6535	-7.656	-8.512		-0.48	-8.136	-8.992	
		6695	-7.109	-7.797			-7.589	-8.277	
		6855	-7.444	-7.635			-7.924	-8.115	
	8	6875	-7.103	-7.617			-7.583	-8.097	
		6995	-7.003	-7.280			-7.483	-7.760	
		7115	-14.332	-13.698		2.06	-12.272	-11.638	
802.11n-HT40	5	5965	-5.703	-6.101	N/A	-0.25	-5.953	-6.351	-1
		6165	-6.400	-6.753			-6.650	-7.003	
		6405	-6.223	-6.648			-6.473	-6.898	
	6	6445	-6.453	-6.754			-6.703	-7.004	
		6485	-6.313	-6.860			-6.563	-7.110	
	7	6525	-6.390	-6.596			-6.640	-6.846	
		6685	-7.155	-7.733		-0.48	-7.635	-8.213	
		6845	-7.560	-8.182			-8.040	-8.662	
	8	6885	-7.771	-7.884			-8.251	-8.364	
		7005	-7.567	-7.891			-8.047	-8.371	
		7085	-7.281	-7.933		2.06	-5.221	-5.873	
802.11ac-VHT80	5	5985	-7.285	-7.326	N/A	-0.25	-7.535	-7.576	-1
		6145	-7.128	-7.169			-7.378	-7.419	
		6385	-7.450	-7.584			-7.700	-7.834	
	6	6465	-7.336	-7.405			-7.586	-7.655	
		6545	-7.026	-7.072		-0.48	-7.506	-7.552	
	7	6625	-7.697	-8.033			-8.177	-8.513	
		6705	-7.836	-7.935			-8.316	-8.415	
		6785	-8.081	-8.266			-8.561	-8.746	
	8	6865	-8.264	-8.432			-8.744	-8.912	
		6945	-7.956	-8.028			-8.436	-8.508	
		7025	-8.126	-8.310		2.06	-6.066	-6.250	
802.11ac-VHT160	5	6025	-7.204	-7.305	N/A	-0.25	-7.454	-7.555	-1
		6185	-6.910	-7.025			-7.160	-7.275	
		6345	-6.633	-6.907			-6.883	-7.157	
	6	6505	-7.090	-7.106			-7.340	-7.356	
	7	6665	-7.701	-7.748		-0.48	-8.181	-8.228	
		6825	-7.750	-7.874			-8.230	-8.354	
	8	6985	-8.054	-8.120		2.06	-5.994	-6.060	

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 (N_{ANT})

3. When duty cycle is less than 98% (0.98) that duty cycle factor 10log(1/x) is needed to add in conducted test items measured in average detector. Duty cycle > 98% [Please refer to report section 3.7]. So it doesn't add Duty Cycle Factor

4. e.i.r.p Density= Power Spectral Density+ Directional Antenna Gain

5. According to KDB 662911 D01 d) ii), transmit signals are completely uncorrelated, then
Directional gain = 10 log[($10^{G1/10} + 10^{G2/10} + \ldots + 10^{GN/10}$)/$N_{ANT}$] dBi
Directional gain: 5925MHz: Directional gain = 10 log[($10^{1.3/10} + 10^{-2.7/10}$)/2]= -0.25dBi
6525MHz: Directional gain = 10 log[($10^{1.1/10} + 10^{-3.0/10}$)/2]= -0.48dBi
7125MHz: Directional gain = 10 log[($10^{2.4/10} + 10^{0.1/10}$)/2]= 2.06dBi
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		Duty Cycle Factor [10log(1/x)] Note 3	Directional Antenna Gain (dBi) Note 5	e.i.r.p Density (dBm/MHz) Note 4		Limit (dBm/MHz)
			ANT A (AUX)	ANT B (Main)			AUX	Main	
802.11ax-HE20	5	5955	-6.670	-6.403	N/A	-0.25	-6.920	-6.653	-1
		6175	-7.042	-6.748			-7.292	-6.998	
		6415	-6.854	-6.719			-7.104	-6.969	
	6	6435	-6.984	-7.393			-7.234	-7.643	
		6475	-6.971	-7.299			-7.221	-7.549	
		6515	-7.005	-7.528			-7.255	-7.778	
	7	6535	-7.873	-7.880		-0.48	-8.353	-8.360	
		6695	-7.231	-7.028			-7.711	-7.508	
		6855	-7.706	-7.063			-8.186	-7.543	
	8	6875	-7.029	-7.570			-7.509	-8.050	
		6995	-7.262	-7.281			-7.742	-7.761	
		7115	-14.409	-13.798		2.06	-12.349	-11.738	
802.11ax-HE40	5	5965	-6.302	-6.450	N/A	-0.25	-6.552	-6.700	-1
		6165	-7.076	-7.103			-7.326	-7.353	
		6405	-6.550	-6.569			-6.800	-6.819	
	6	6445	-6.973	-7.040			-7.223	-7.290	
		6485	-6.402	-6.767			-6.652	-7.017	
	7	6525	-6.277	-6.674			-6.527	-6.924	
		6685	-6.674	-6.804		-0.48	-7.154	-7.284	
		6845	-7.222	-7.627			-7.702	-8.107	
	8	6885	-7.304	-8.206			-7.784	-8.686	
		7005	-6.911	-6.970			-7.391	-7.450	
		7085	-6.779	-7.032		2.06	-4.719	-4.972	
802.11ax-HE80	5	5985	-7.258	-7.348	N/A	-0.25	-7.508	-7.598	-1
		6145	-7.215	-7.282			-7.465	-7.532	
		6385	-7.318	-7.431			-7.568	-7.681	
	6	6465	-7.538	-7.610			-7.788	-7.860	
		6545	-7.243	-7.322		-0.48	-7.723	-7.802	
	7	6625	-7.966	-8.063			-8.446	-8.543	
		6705	-8.123	-8.227			-8.603	-8.707	
		6785	-8.257	-8.345			-8.737	-8.825	
	8	6865	-8.536	-8.634			-9.016	-9.114	
		6945	-8.357	-8.455			-8.837	-8.935	
		7025	-8.535	-8.659		2.06	-6.475	-6.599	
802.11ax-HE160	5	6025	-6.883	-6.912	N/A	-0.25	-7.133	-7.162	-1
		6185	-7.071	-7.162			-7.321	-7.412	
		6345	-6.736	-6.776			-6.986	-7.026	
	6	6505	-7.218	-7.357			-7.468	-7.607	
	7	6665	-7.728	-7.769		-0.48	-8.208	-8.249	
		6825	-8.069	-8.100			-8.549	-8.580	
	8	6985	-8.103	-8.134		2.06	-6.043	-6.074	

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 (N_{ANT})
3. When duty cycle is less than 98% (0.98) that duty cycle factor 10log(1/x) is needed to add in conducted test items measured in average detector.
Duty cycle > 98% [Please refer to report section 3.7]. So it doesn't add Duty Cycle Factor
4. e.i.r.p Density= Power Spectral Density+ Directional Antenna Gain
5. According to KDB 662911 D01 d) ii), transmit signals are completely uncorrelated, then
Directional gain = 10 log[($10^{G1/10} + 10^{G2/10} + \ldots + 10^{GN/10}$)/$N_{ANT}$] dBi
Directional gain: 5925MHz: Directional gain = 10 log[($10^{1.3/10} + 10^{-2.7/10}$)/2]= -0.25dBi
6525MHz: Directional gain = 10 log[($10^{1.1/10} + 10^{-3.0/10}$)/2]= -0.48dBi
7125MHz: Directional gain = 10 log[($10^{3.4/10} + 10^{0.1/10}$)/2]= 2.06dBi
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

Tones	RU Index	Mode	U-NII Band	Centre Frequency (MHz)	Power Spectral Density (dBm/MHz) Note 2		Duty Cycle Factor [10log(1/x)] Note 3	Directional Antenna Gain (dBi) Note 6	e.i.r.p Density (dBm/MHz) Note 4		Limit (dBm/MHz)
					ANT A (AUX)	ANT B (Main)			AUX	Main	
26T	18	802.11ax- HE80	8	7025	-7.684	-7.788	N/A	2.06	-5.624	-5.728	-1
52T	37	802.11ax- HE40	8	7085	-6.375	-6.414	N/A	2.06	-4.315	-4.354	
106T	53	802.11ax- HE40	8	7085	-6.312	-6.388	N/A	2.06	-4.252	-4.328	
242T	S61	802.11ax- HE160	8	6985	-6.660	-6.717	N/A	2.06	-4.600	-4.657	
484T	S65	802.11ax- HE160	8	6985	-8.308	-8.327	N/A	2.06	-6.248	-6.267	
996T	67	802.11ax- HE160	8	6985	-7.925	-8.012	N/A	2.06	-5.865	-5.952	

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. When duty cycle is less than 98% (0.98) that duty cycle factor 10log(1/x) is needed to add in conducted test items measured in average detector.
Duty cycle > 98% [Please refer to report section 3.7]. So it doesn't add Duty Cycle Factor
4. e.i.r.p Density= Power Spectral Density+ Directional Antenna Gain
5. After preliminary test, we present worst case with maximum power of each RU type.
6. According to KDB 662911 D01 d) ii), transmit signals are completely uncorrelated, then
Directional gain = 10 log[($10^{G1/10} + 10^{G2/10} + \ldots + 10^{GN/10}$)/$N_{ANT}$] dBi
Directional gain: 5925MHz: Directional gain = 10 log[($10^{1.3/10} + 10^{-2.7/10}$)/2]= -0.25dBi
6525MHz: Directional gain = 10 log[($10^{1.1/10} + 10^{-3.0/10}$)/2]= -0.48dBi
7125MHz: Directional gain = 10 log[($10^{3.4/10} + 10^{0.1/10}$)/2]= 2.06dBi
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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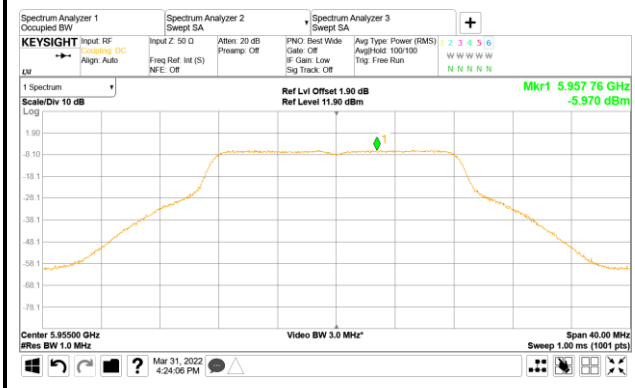
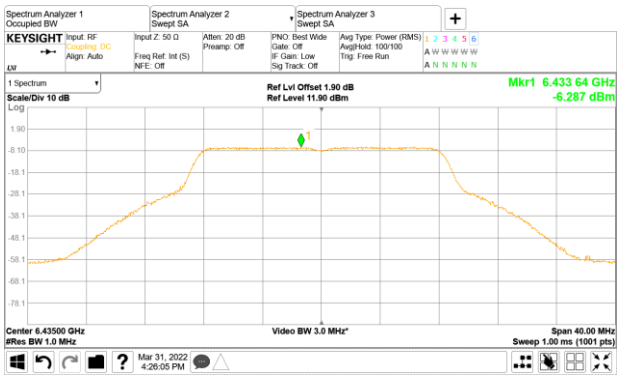
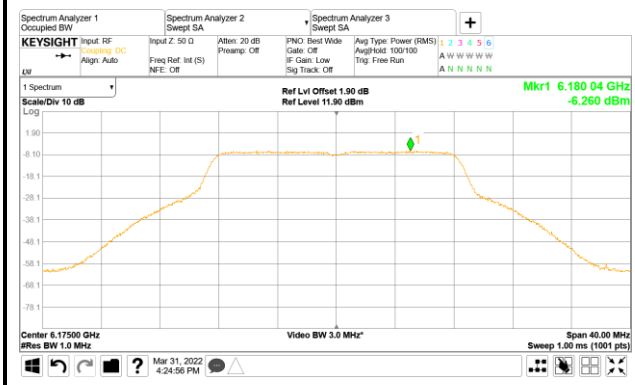
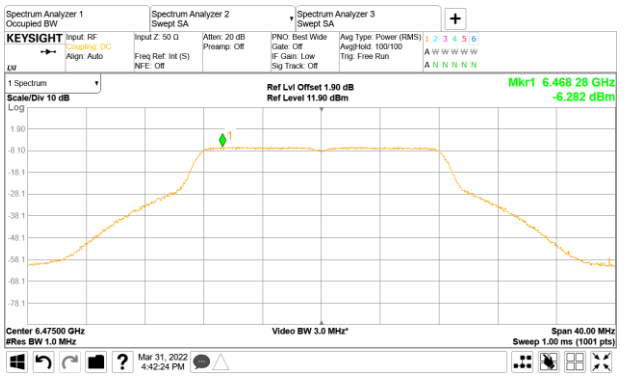
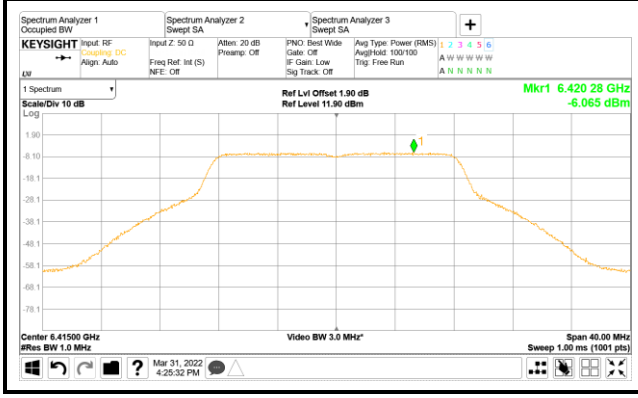
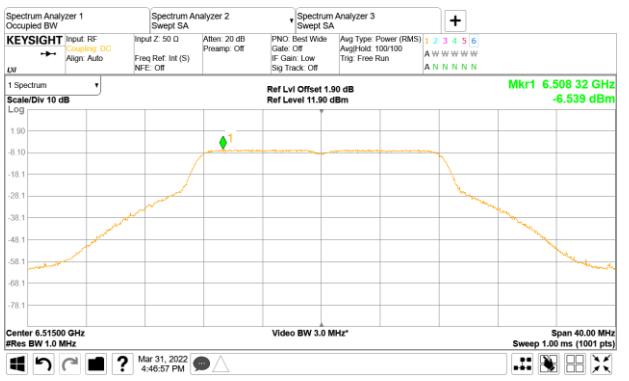
A.3.2 Measurement Plots

- **For ANT A (AUX) Port**
- OFDM Modulation

Mode: 802.11a	
ANT A (AUX) Port	
U-NII Band 5	U-NII Band 6
	
	
	

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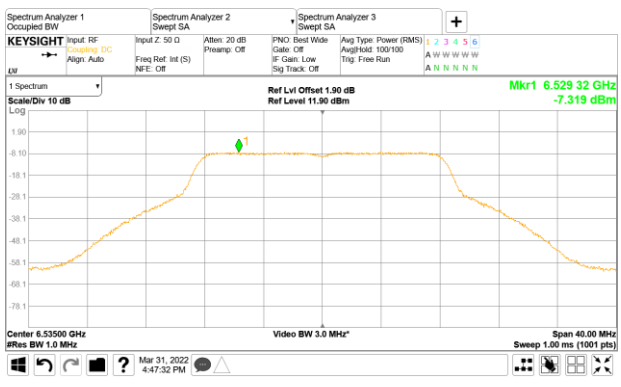
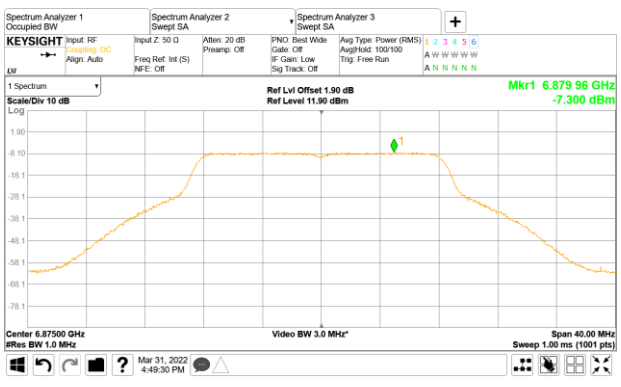
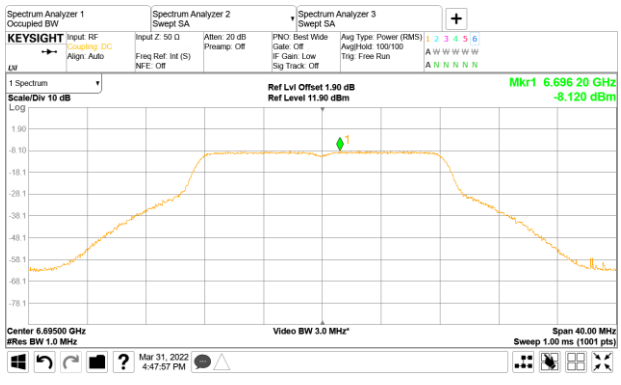
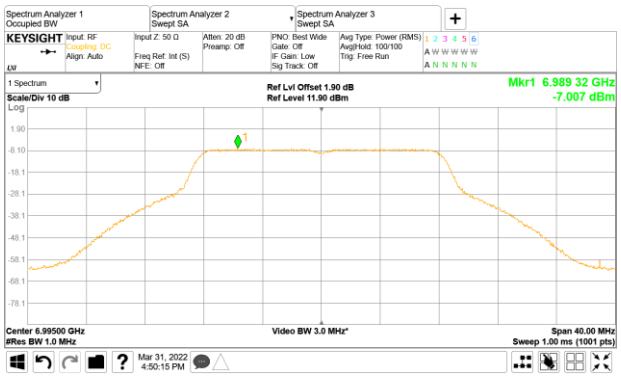
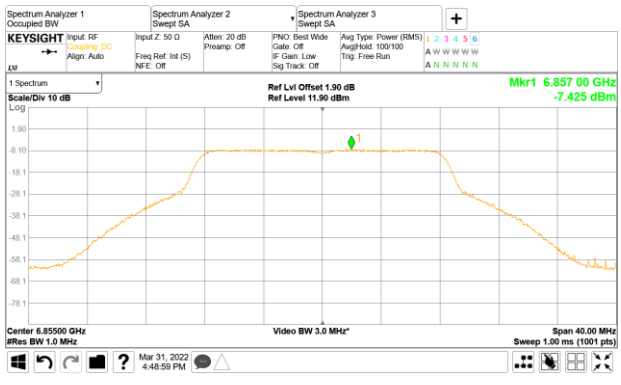
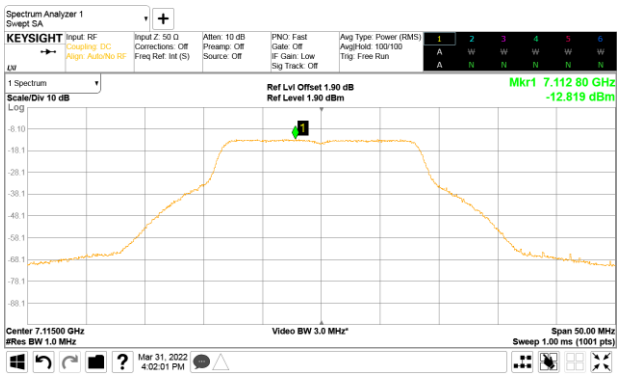
Mode: 802.11a	
ANT A (AUX) Port	
U-NII Band 7	U-NII Band 8
	
	
	

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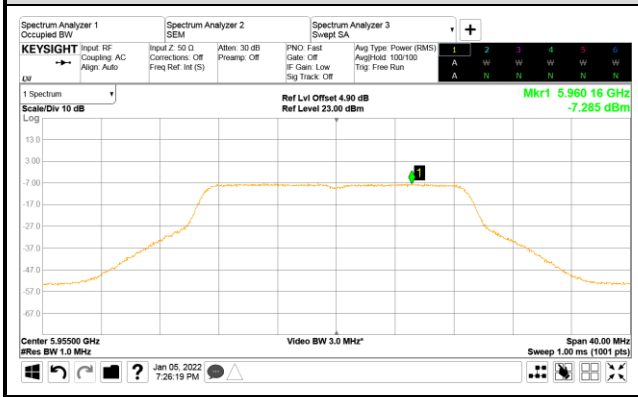
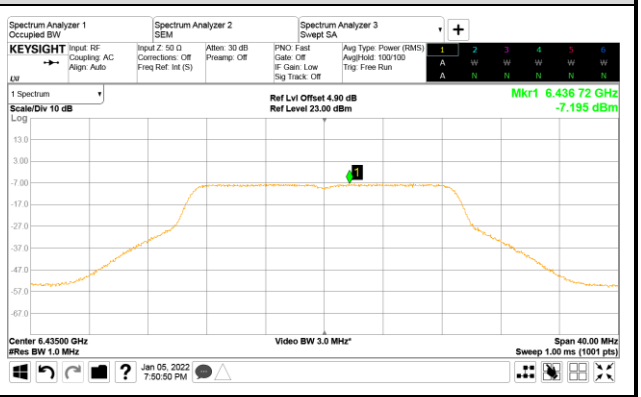
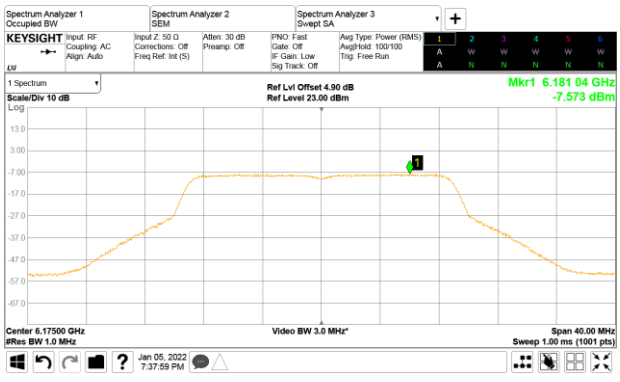
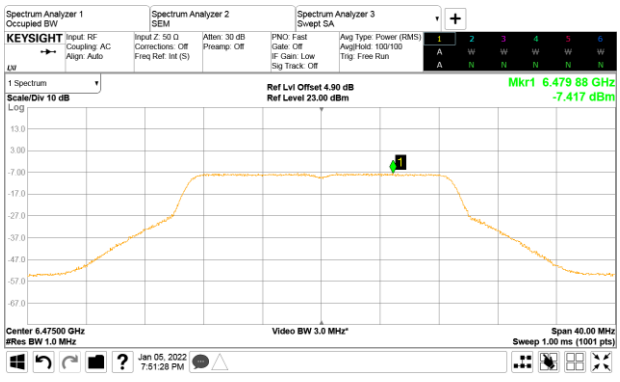
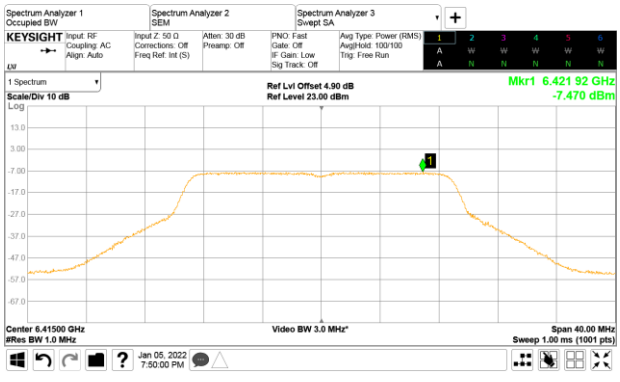
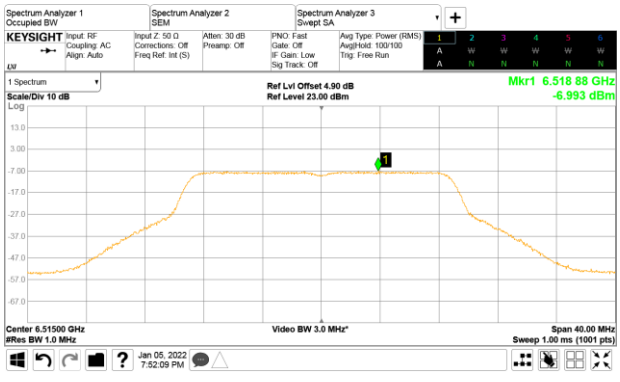
Mode: 802.11n-HT20	
ANT A (AUX) Port	
U-NII Band 5	U-NII Band 6
	
	
	

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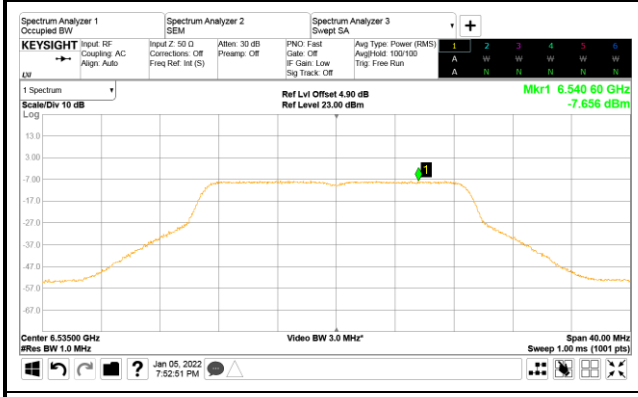
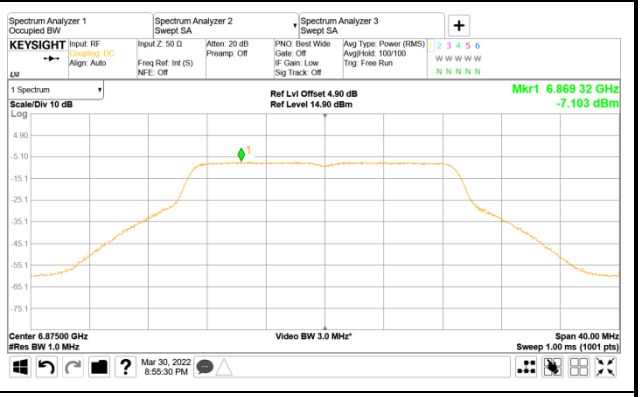
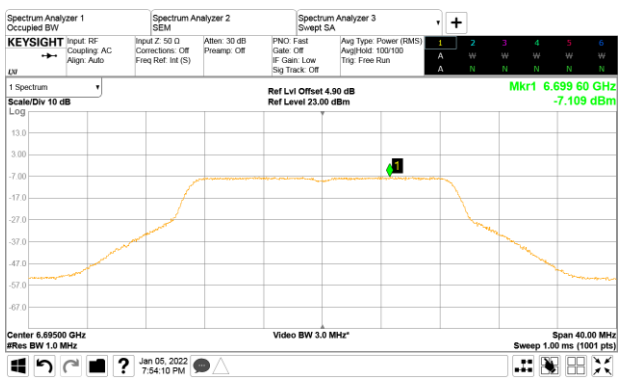
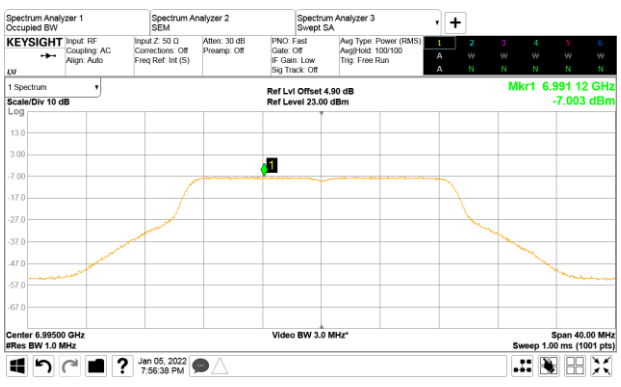
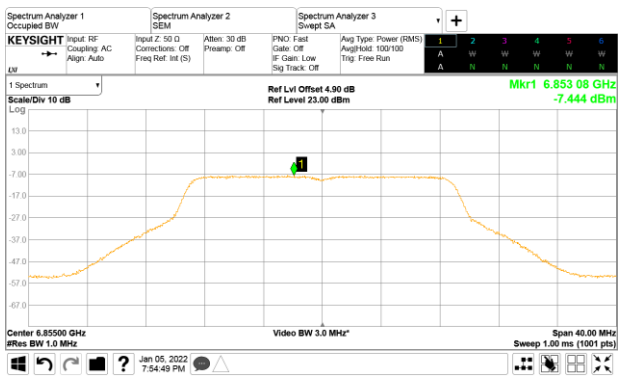
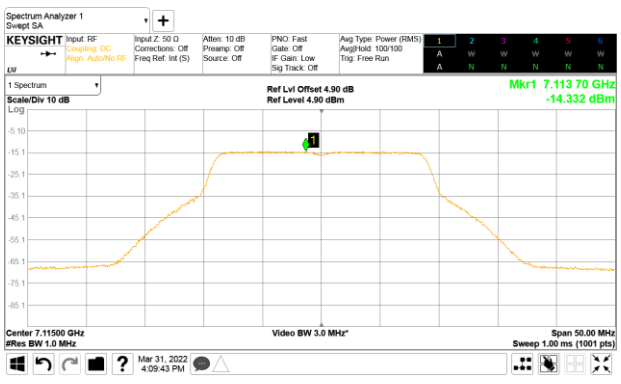
Mode: 802.11n-HT20	
ANT A (AUX) Port	
U-NII Band 7	U-NII Band 8
	
	
	

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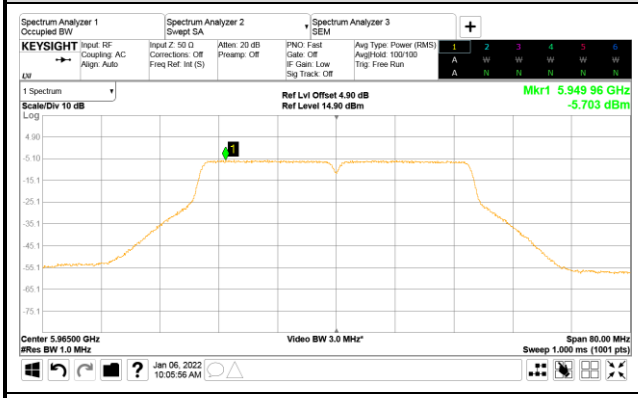
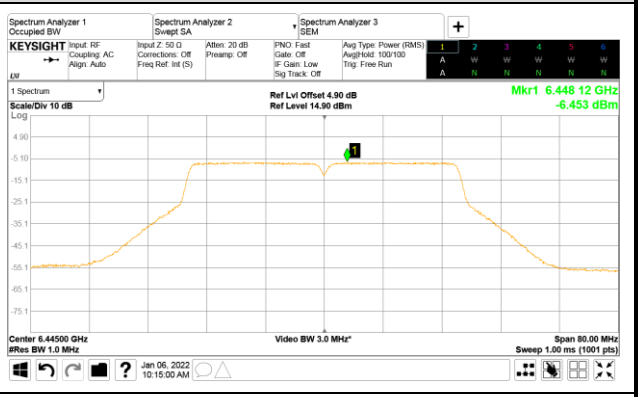
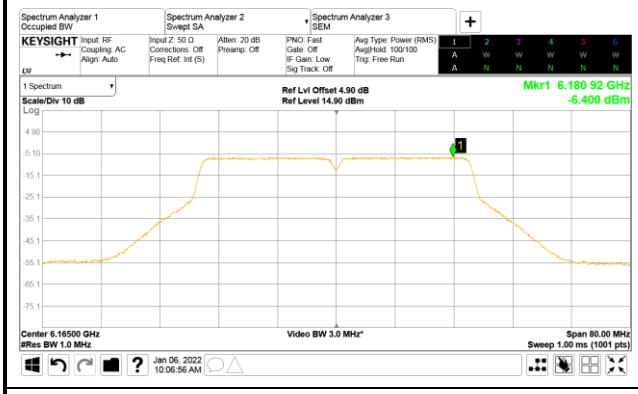
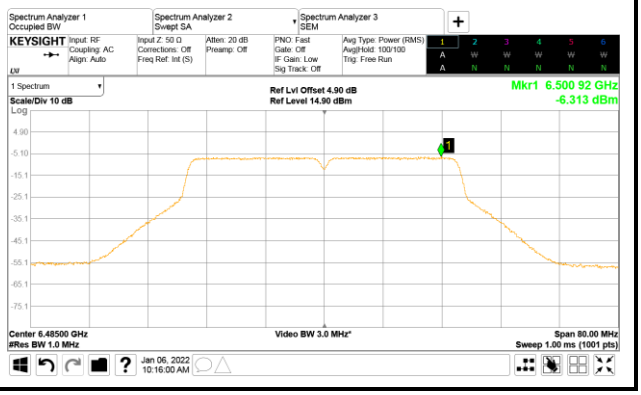
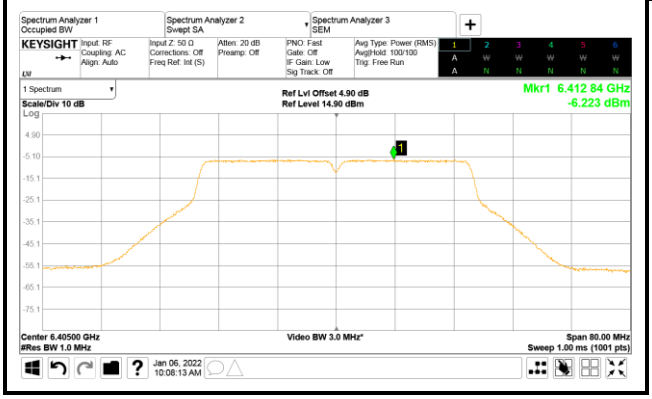
Mode: 802.11n-HT40	
ANT A (AUX) Port	
U-NII Band 5	U-NII Band 6











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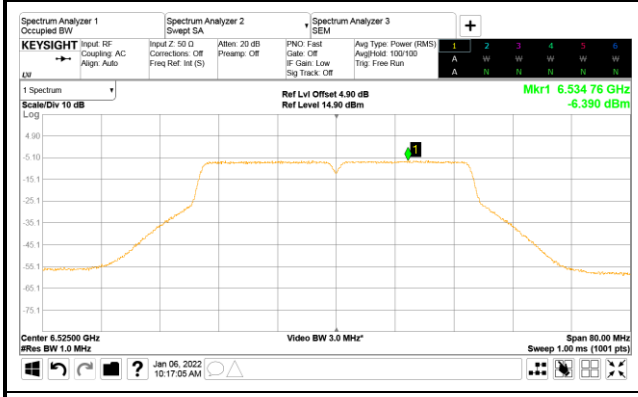
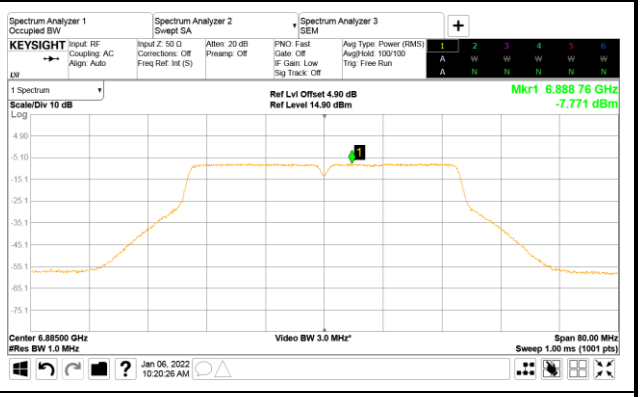
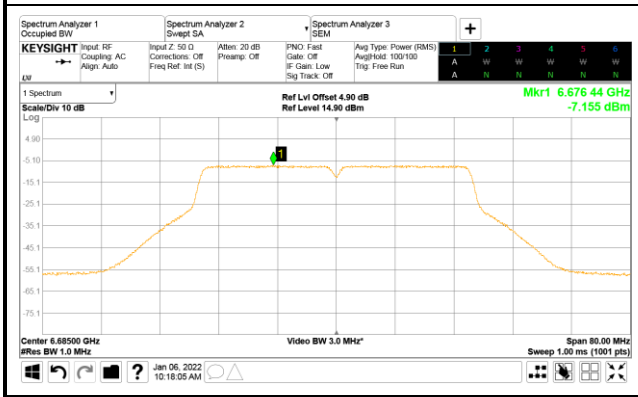
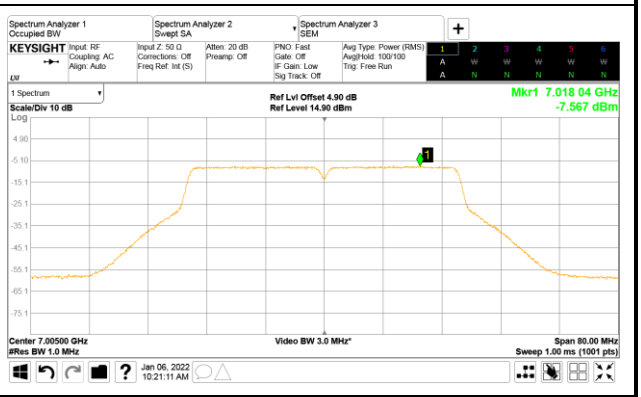
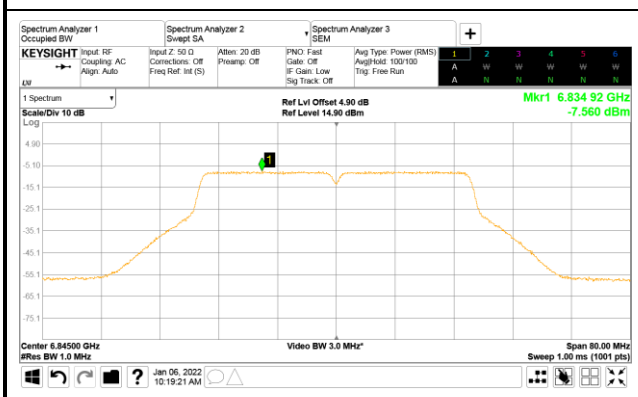
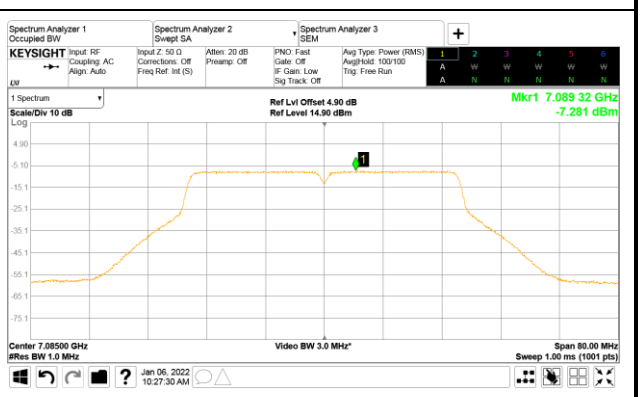
Mode: 802.11n-HT40	
ANT A (AUX) Port	
U-NII Band 7	U-NII Band 8
	
	
	

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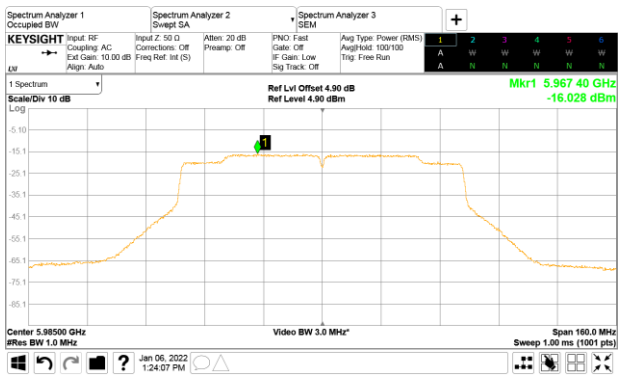
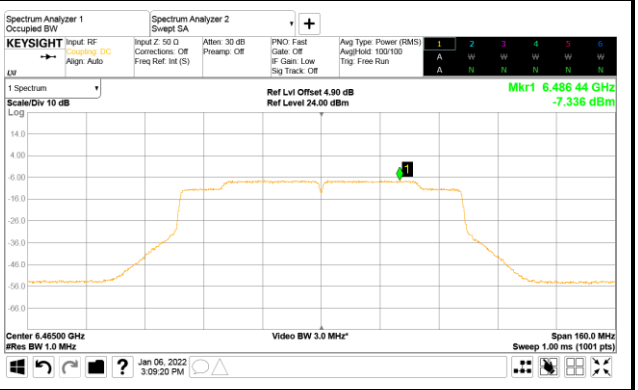
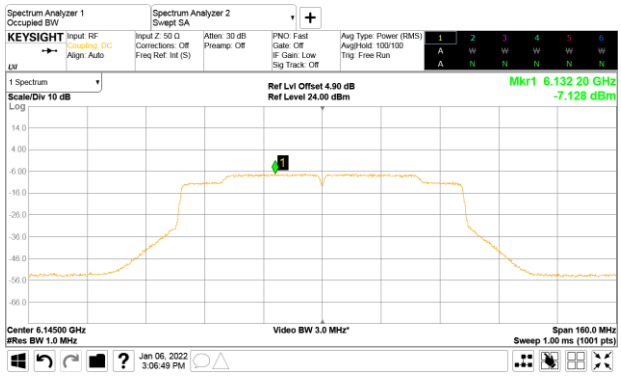
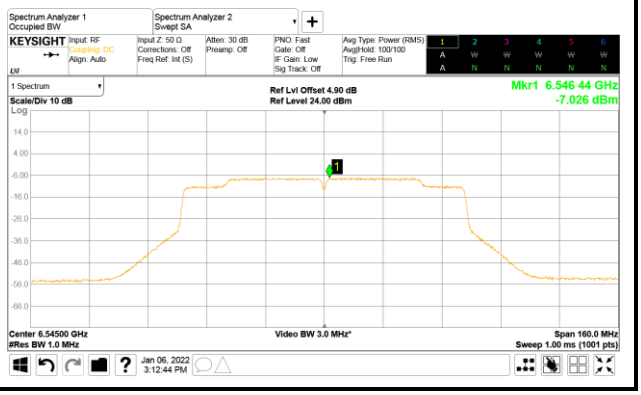
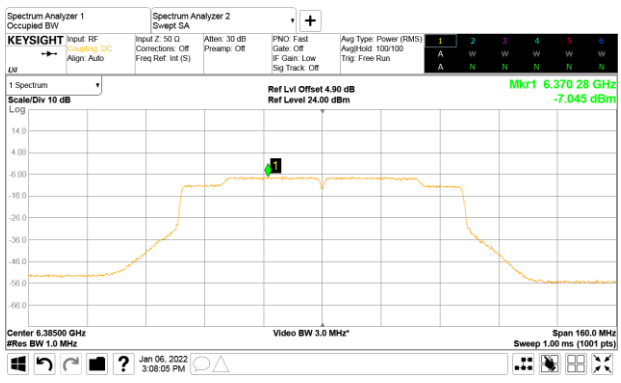
Mode: 802.11ac-VHT80	
ANT A (AUX) Port	
U-NII Band 5	U-NII Band 6











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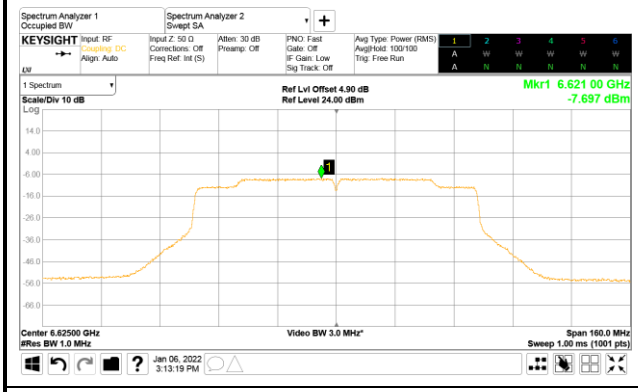
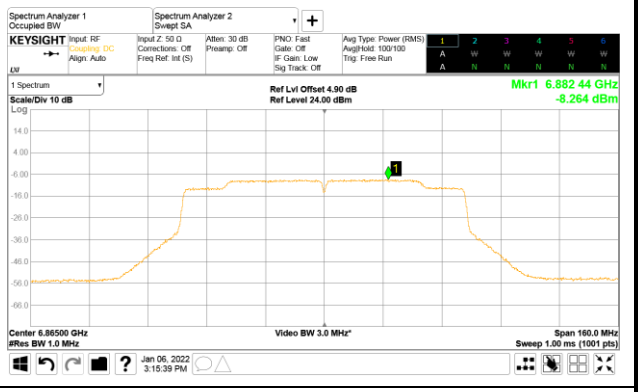
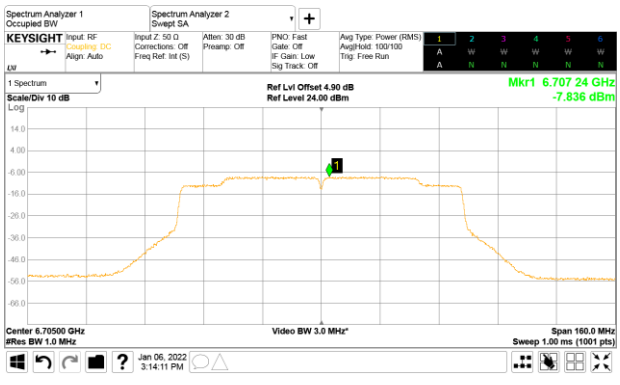
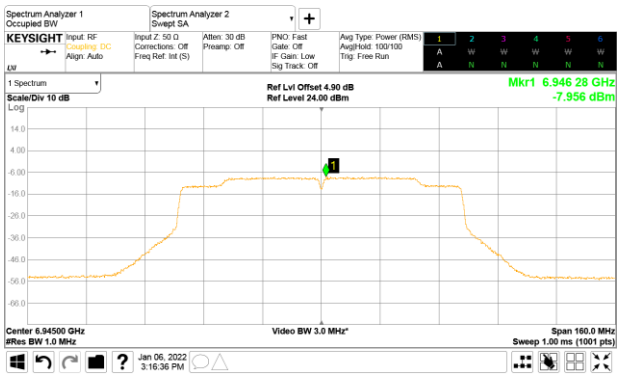
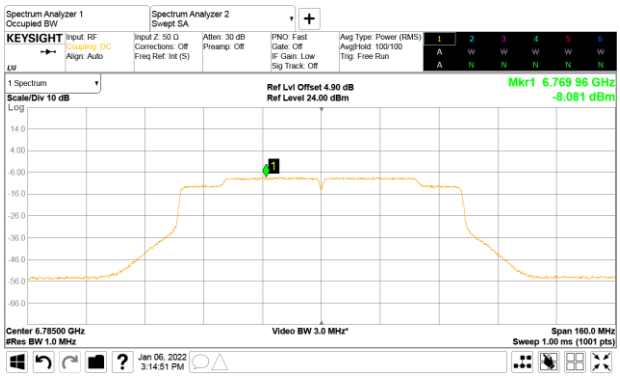
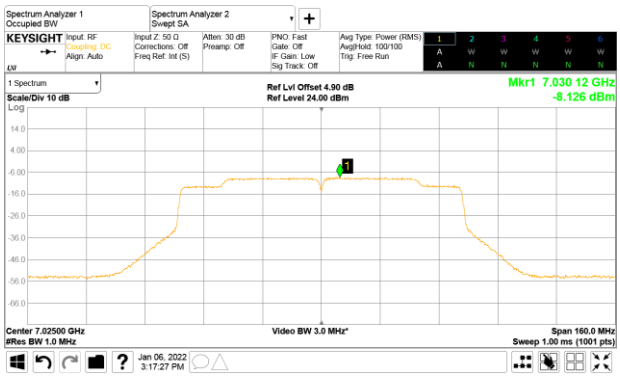
Mode: 802.11ac-VHT80	
ANT A (AUX) Port	
U-NII Band 7	U-NII Band 8
	
	
	

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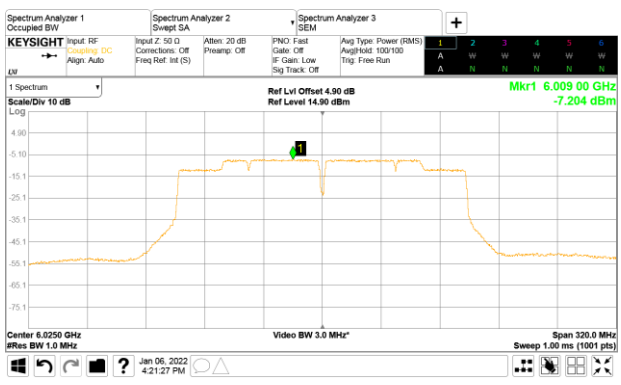
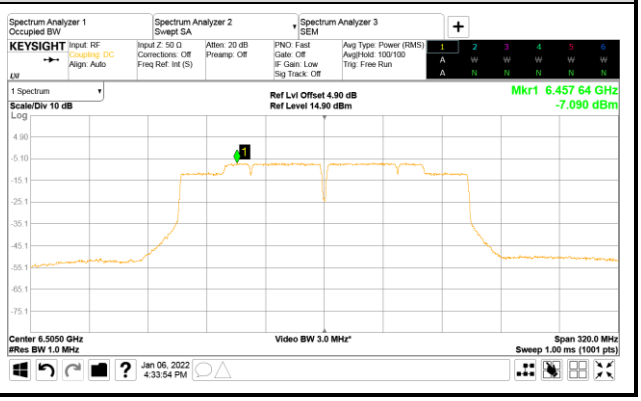
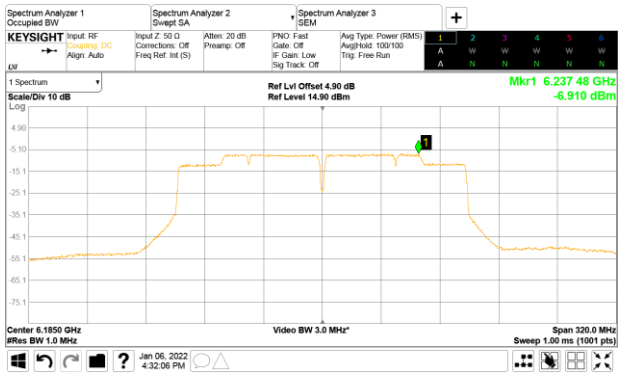
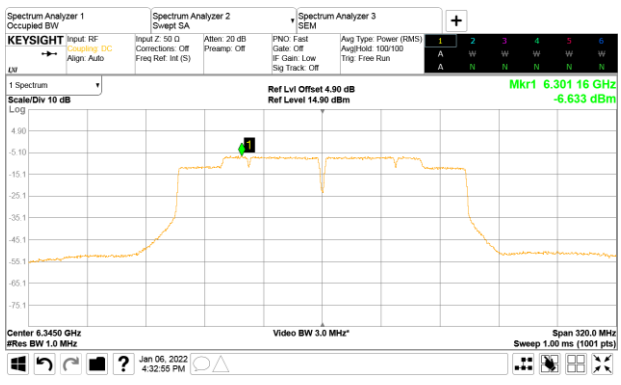
Mode: 802.11ac-VHT160	
ANT A (AUX) Port	
U-NII Band 5	U-NII Band 6









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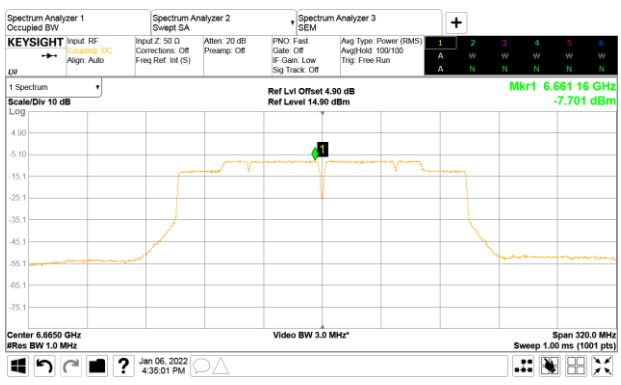
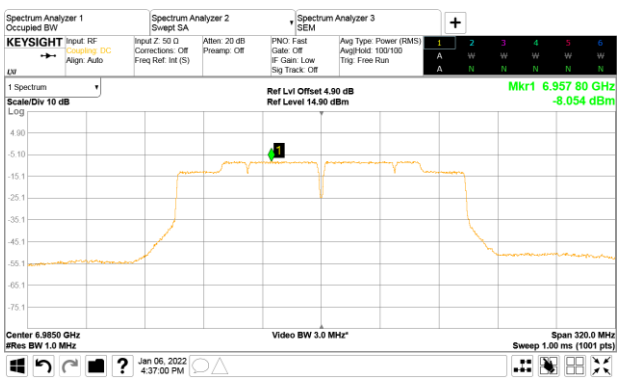
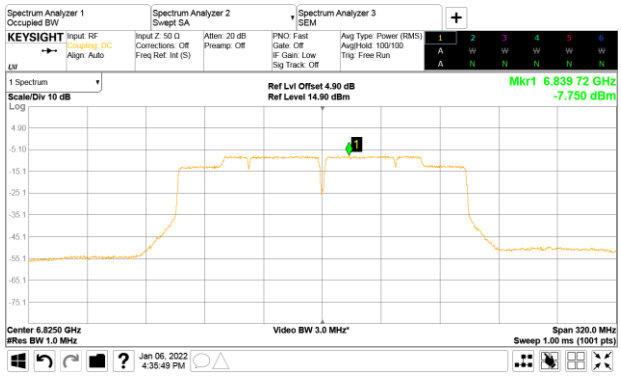
Mode: 802.11ac-VHT160	
ANT A (AUX) Port	
U-NII Band 7	U-NII Band 8
	
	

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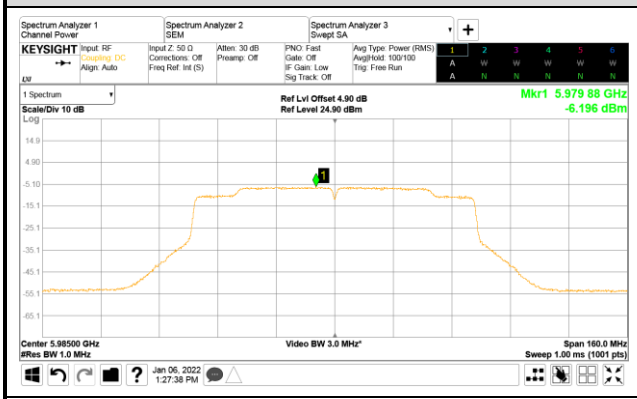
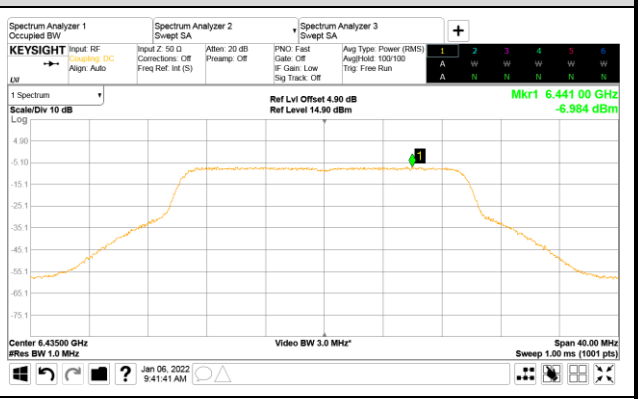
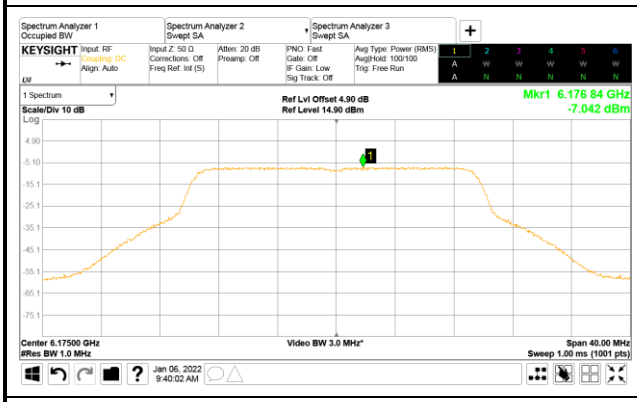
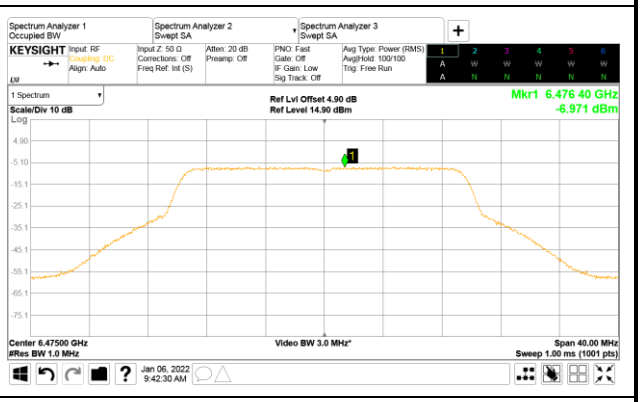
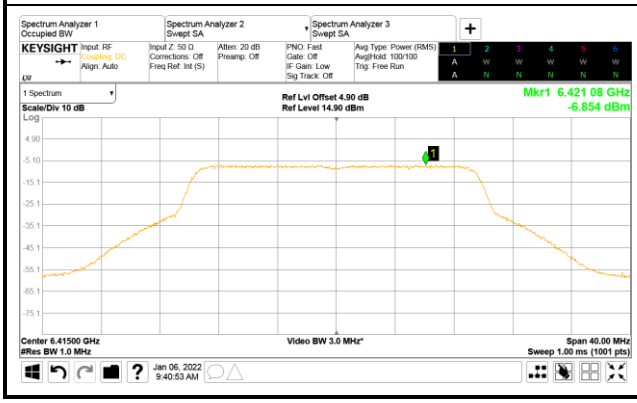
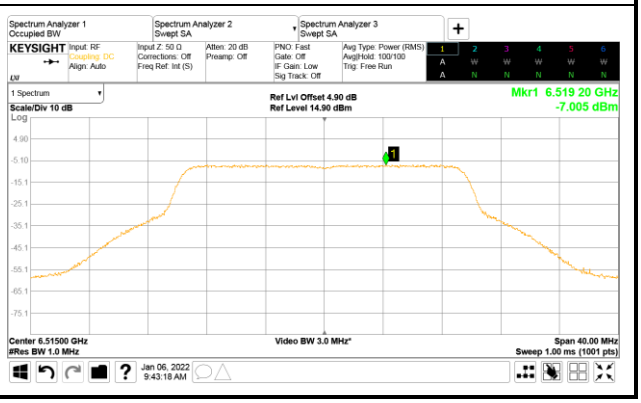
Mode: 802.11ax-HE20	
ANT A (AUX) Port	
U-NII Band 5	U-NII Band 6
	
	
	

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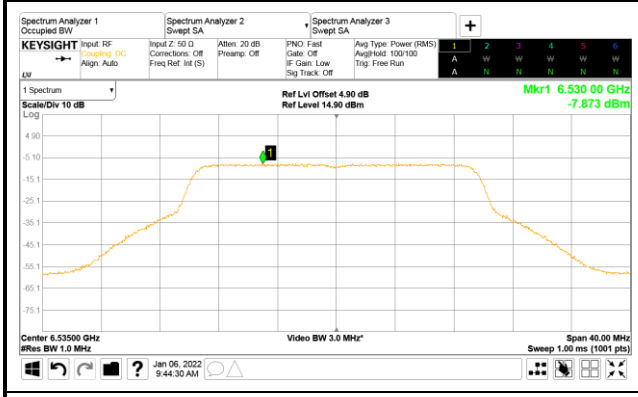
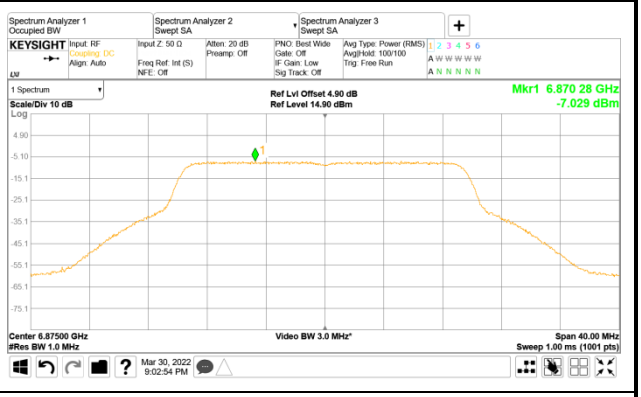
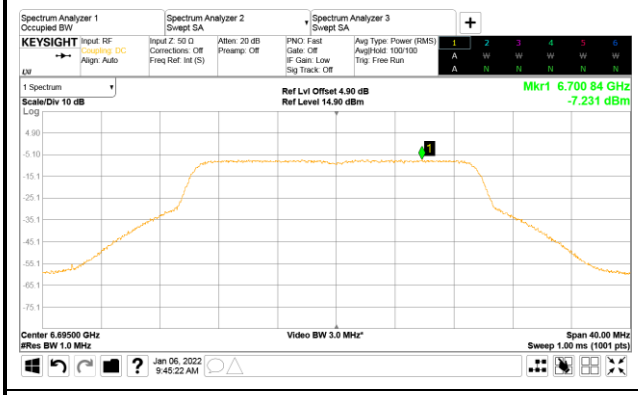
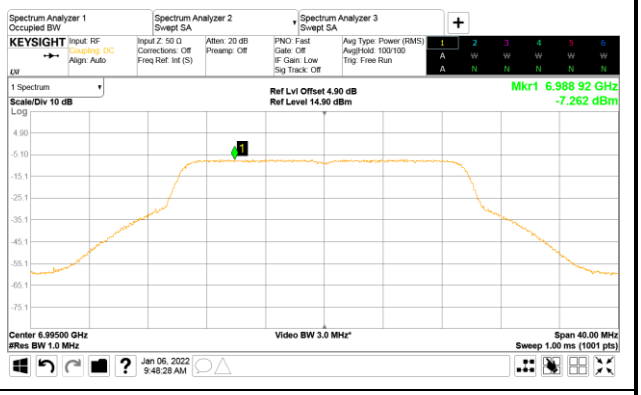
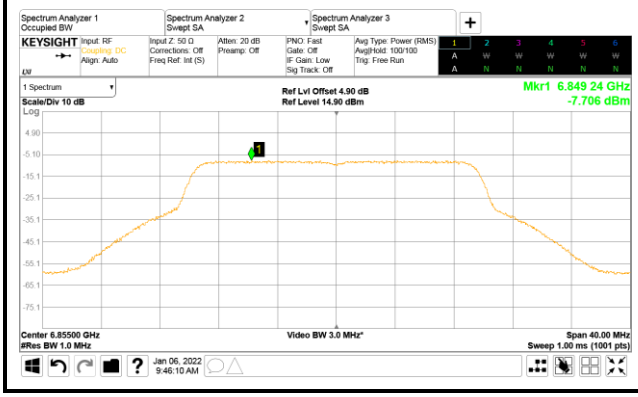
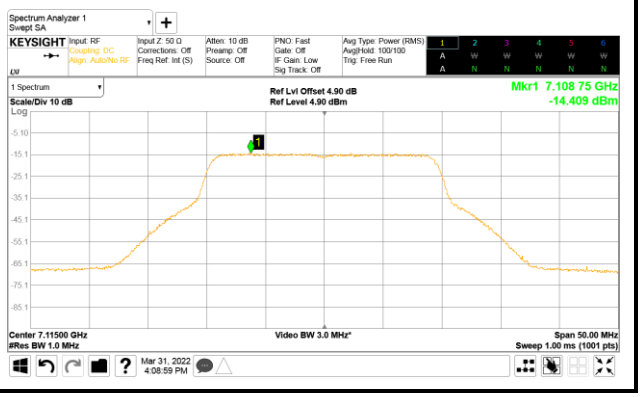
Mode: 802.11ax-HE20	
ANT A (AUX) Port	
U-NII Band 7	U-NII Band 8
	
	
	

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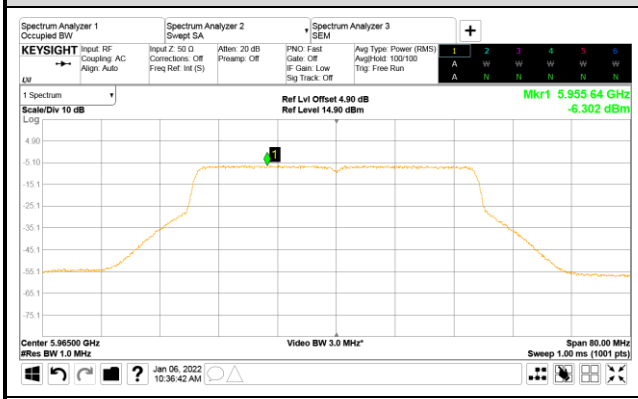
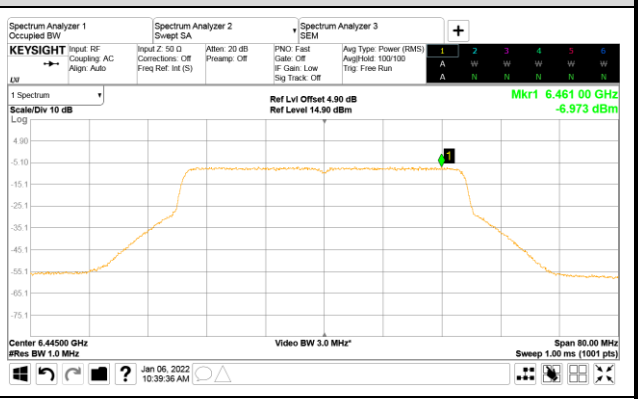
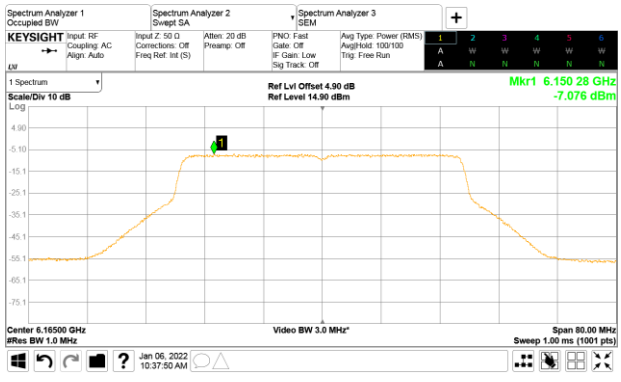
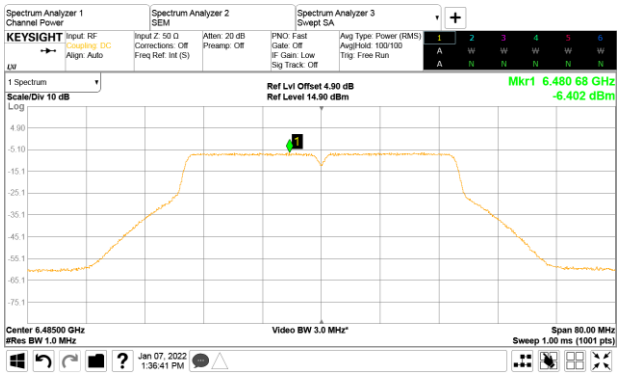
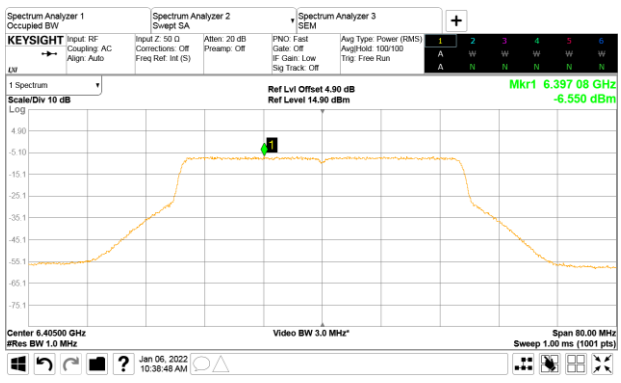
Mode: 802.11ax-HE40	
ANT A (AUX) Port	
U-NII Band 5	U-NII Band 6
	
	
	

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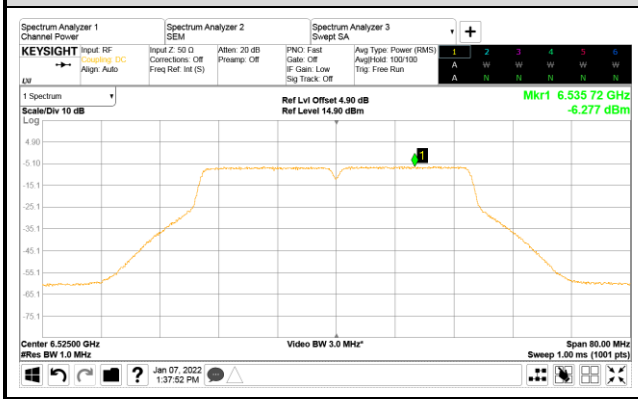
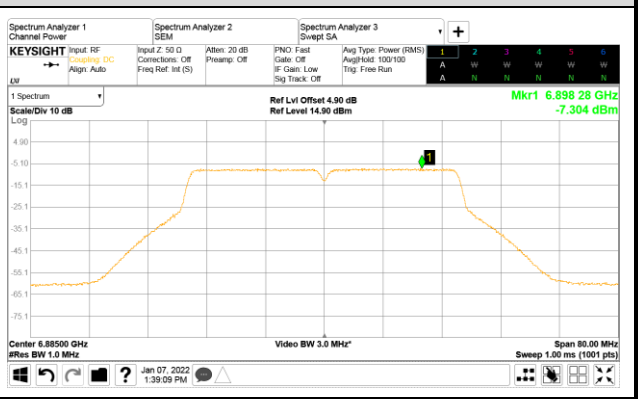
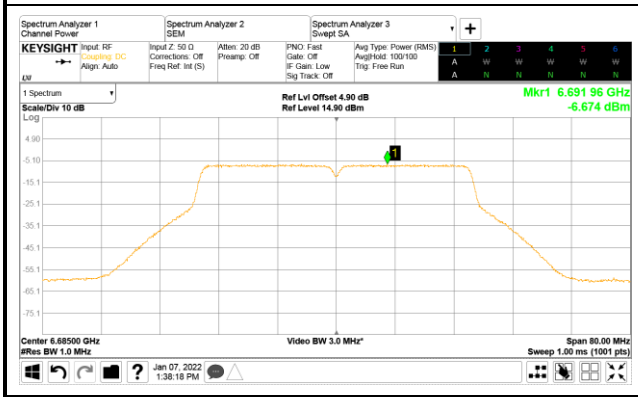
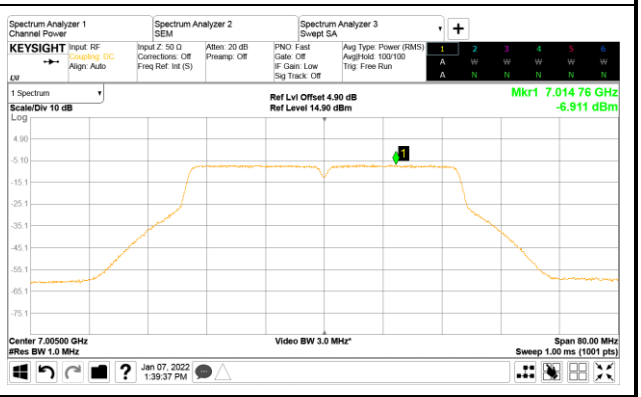
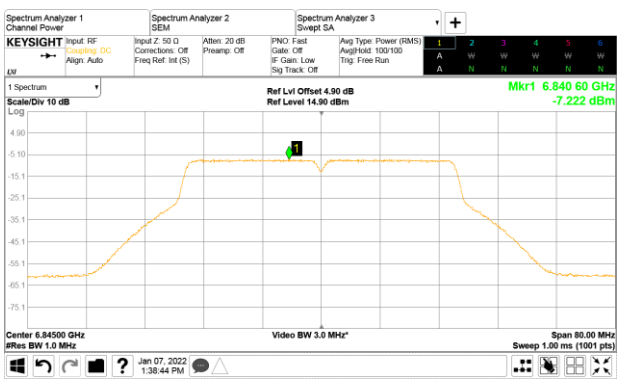
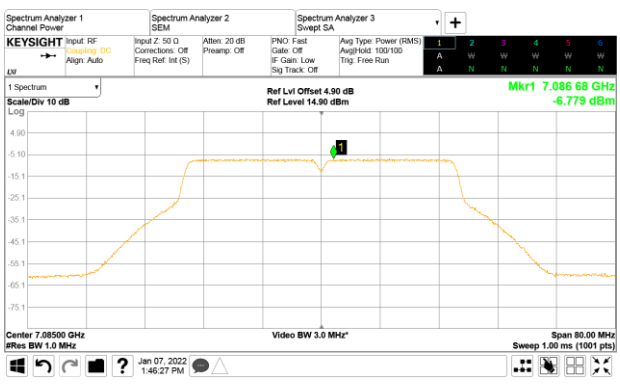
Mode: 802.11ax-HE40	
ANT A (AUX) Port	
U-NII Band 7	U-NII Band 8
	
	
	

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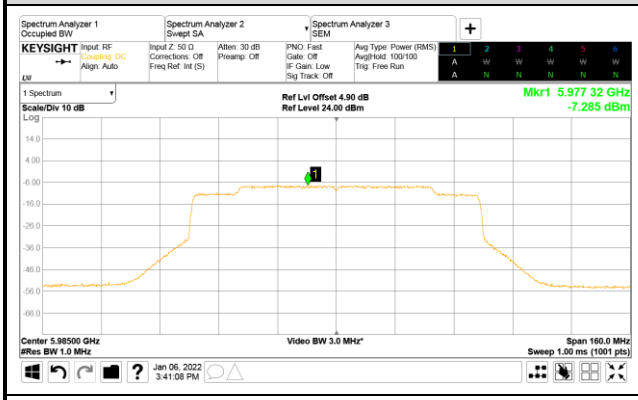
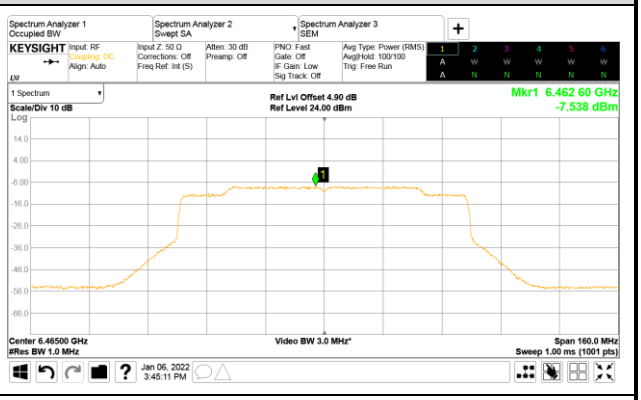
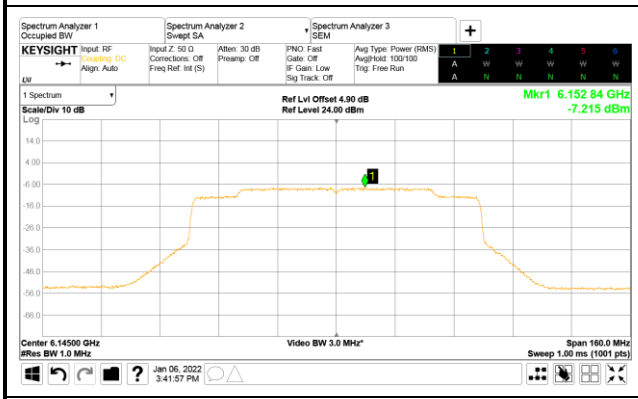
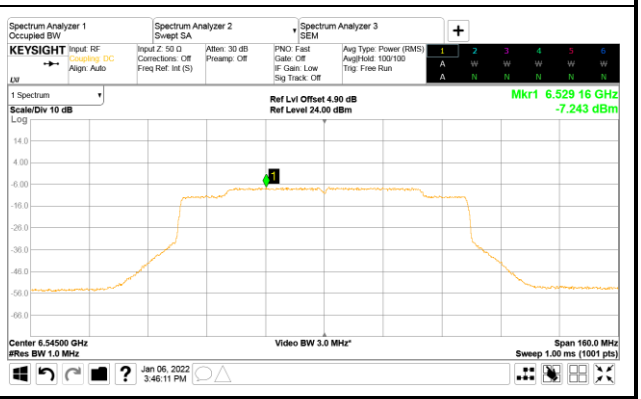
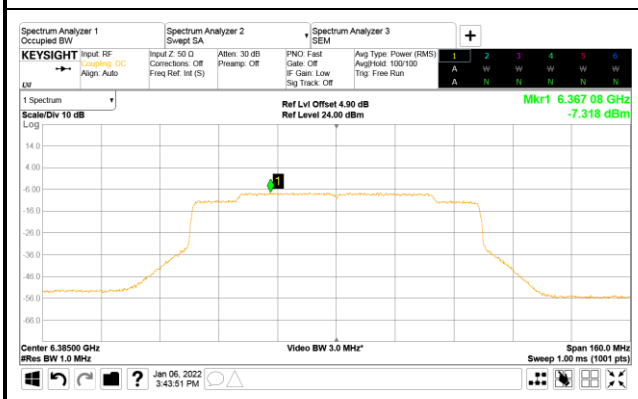
Mode: 802.11ax-HE80	
ANT A (AUX) Port	
U-NII Band 5	U-NII Band 6
	
	
	

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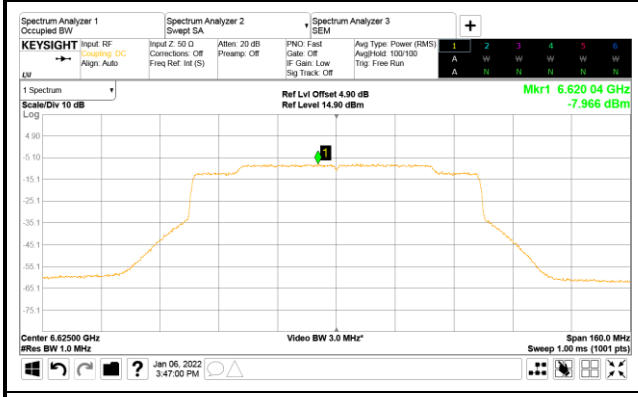
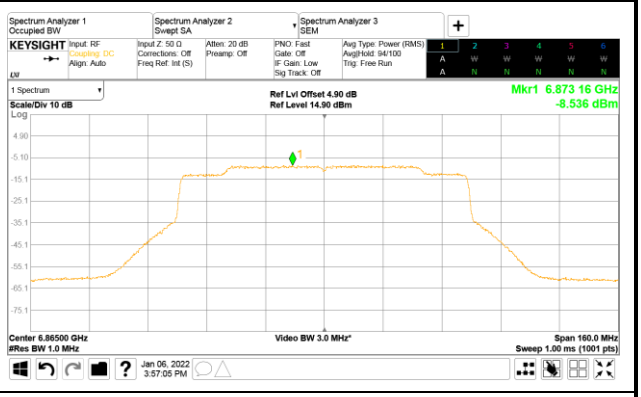
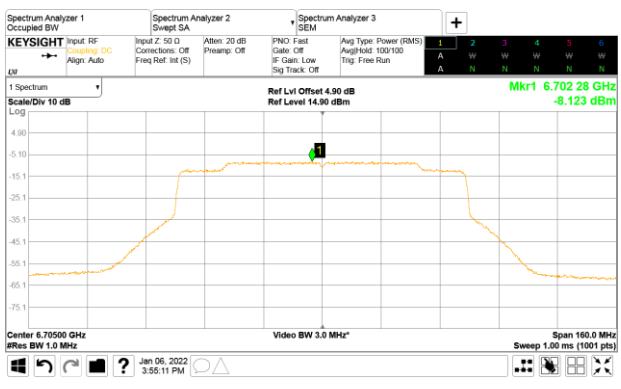
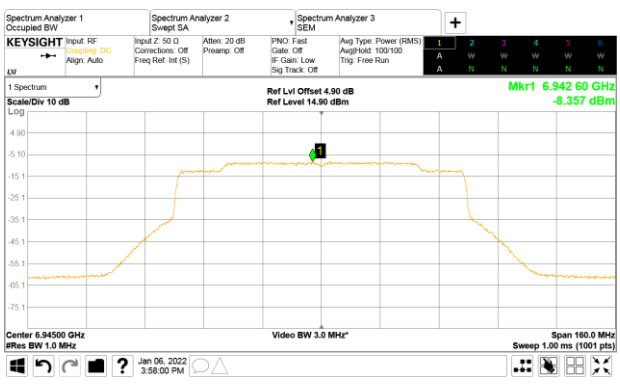
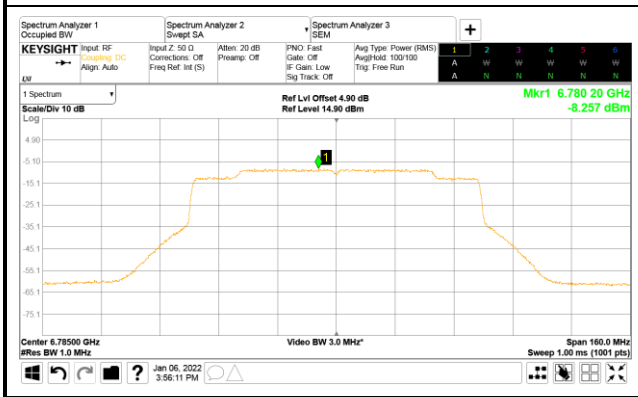
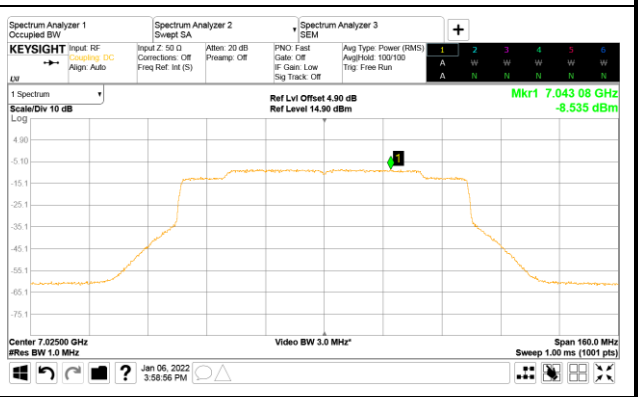
Mode: 802.11ax-HE80	
ANT A (AUX) Port	
U-NII Band 7	U-NII Band 8
	
	
	

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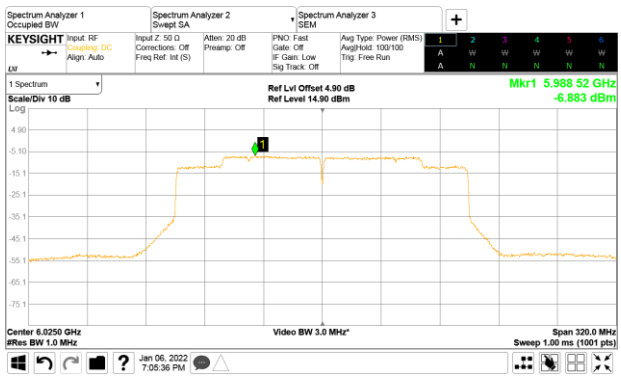
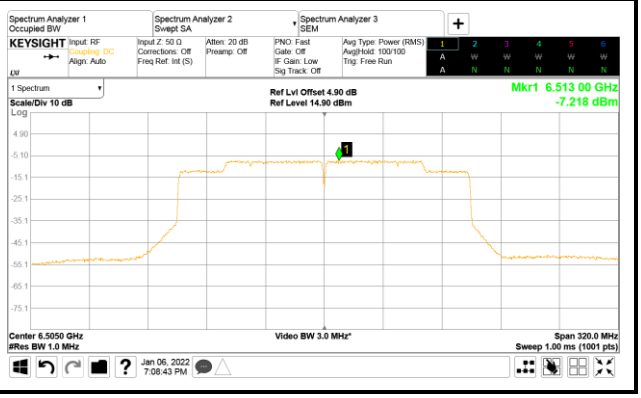
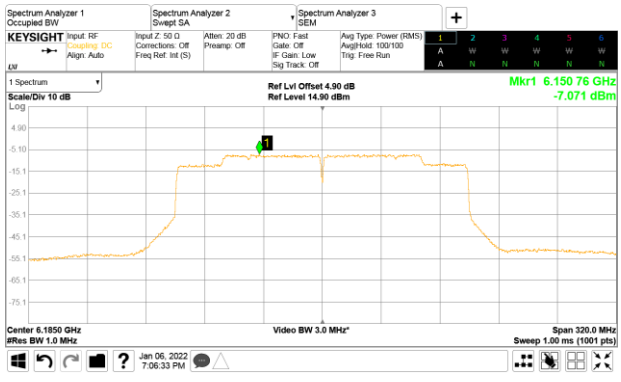
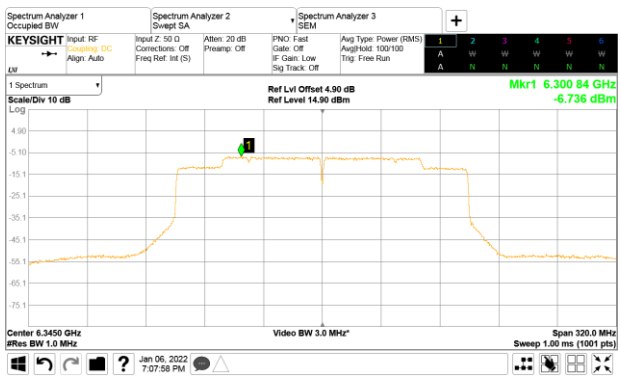
Mode: 802.11ax-HE160	
ANT A (AUX) Port	
U-NII Band 5	U-NII Band 6









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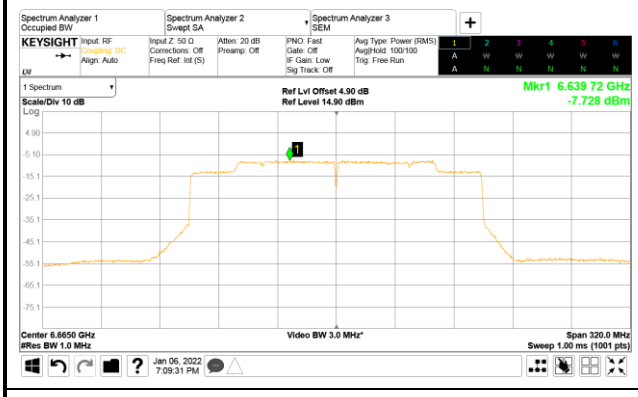
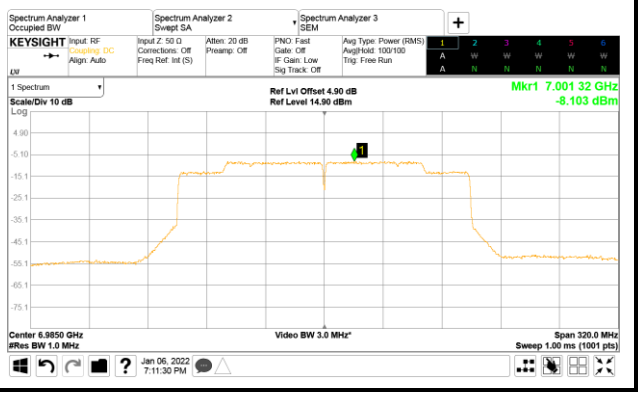
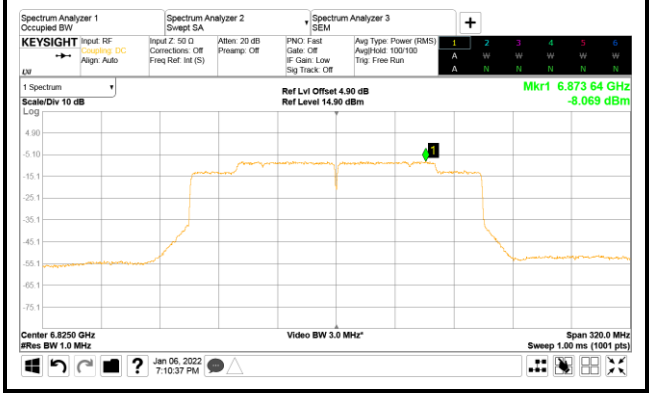
Mode: 802.11ax-HE160	
U-NII Band 7	U-NII Band 8
	
	

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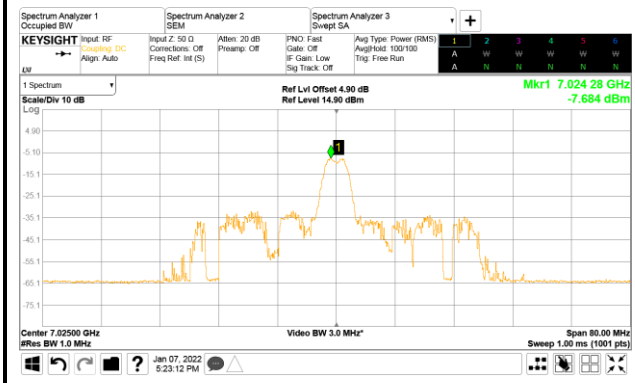
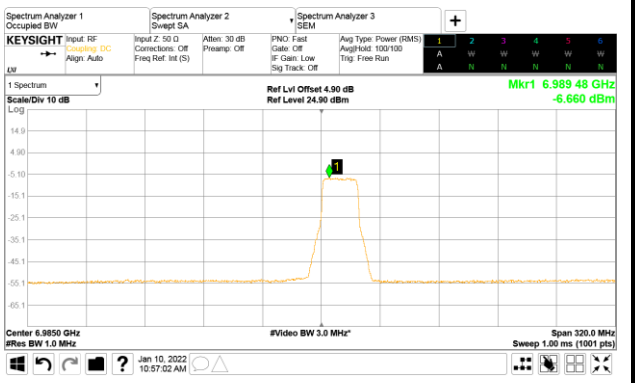
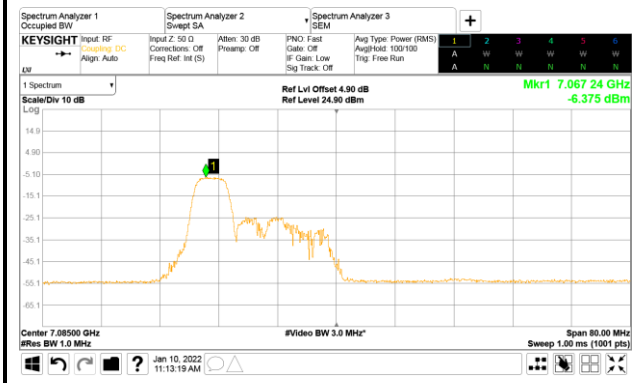
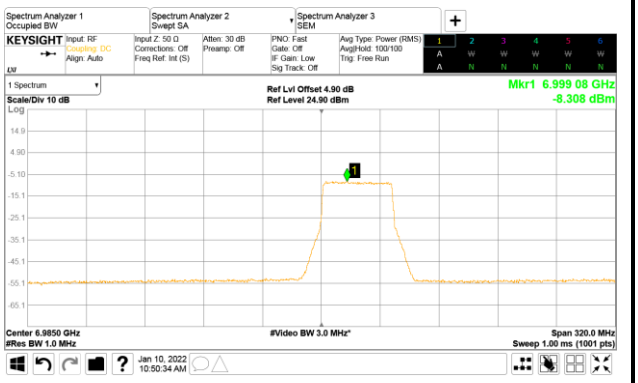
- OFDMA Modulation

ANT A (AUX) Port	
Tones: 26T	Tones: 242T
RU Index: 18	RU Index: S61
Mode: 802.11ax-HE80	Mode: 802.11ax-HE160
Centre Frequency: 7025MHz	Centre Frequency: 6985MHz
	
Tones: 52T	Tones: 484T
RU Index: 37	RU Index: S65
Mode: 802.11ax-HE40	Mode: 802.11ax-HE160
Centre Frequency: 7085MHz	Centre Frequency: 6985MHz
	
Tones: 106T	Tones: 996T
RU Index: 53	RU Index: 67
Mode: 802.11ax-HE40	Mode: 802.11ax-HE160
Centre Frequency: 7085MHz	Centre Frequency: 6985MHz