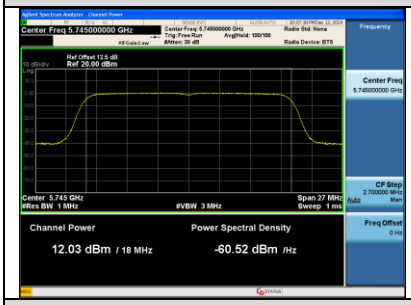
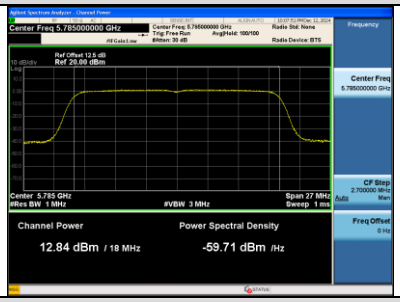
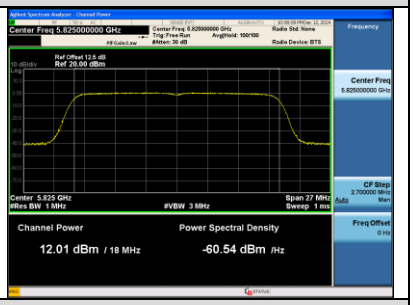
MIMO		
U-NII-3 Band: ANT 0		
IEEE 802.11n HT20		
		
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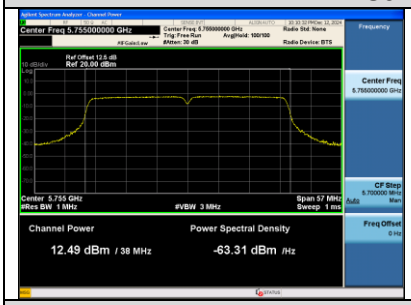	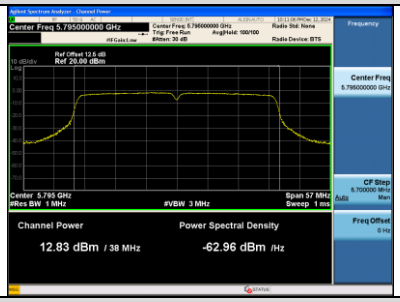	---
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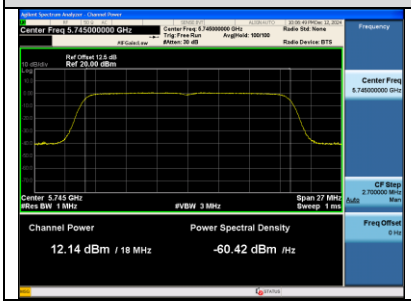	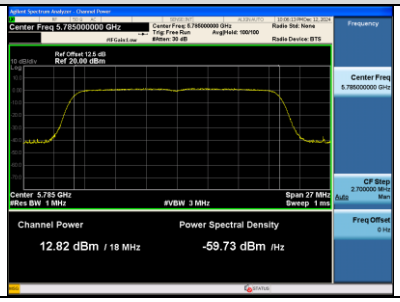	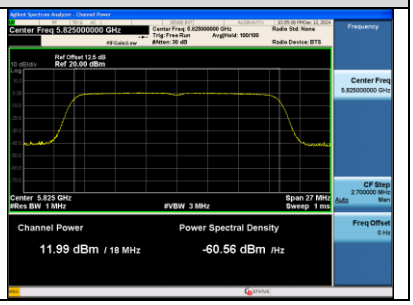

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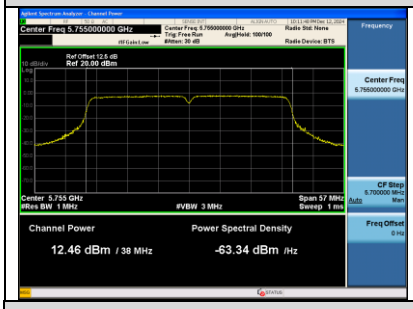	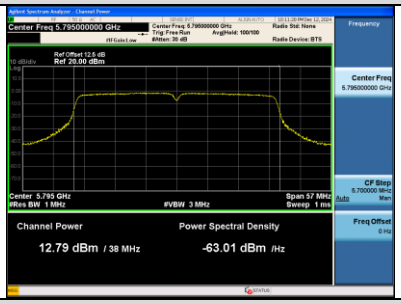	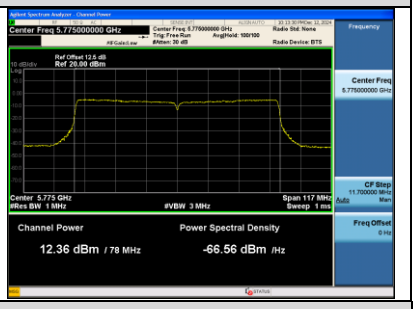
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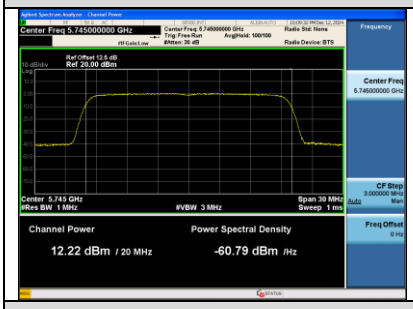	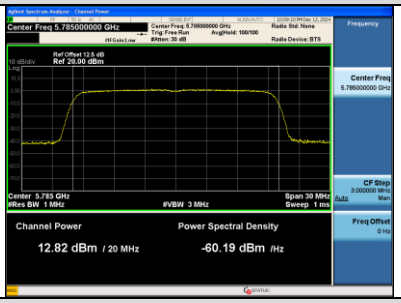	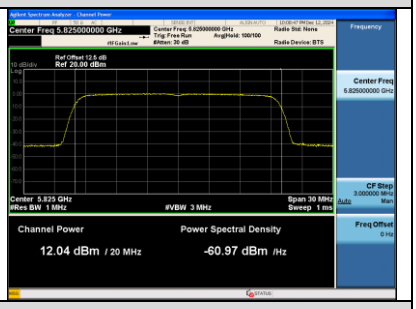
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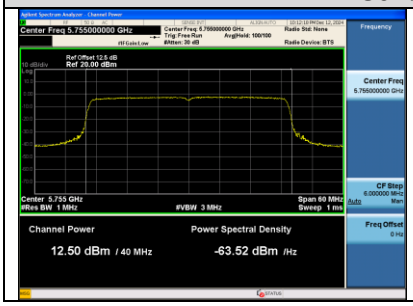
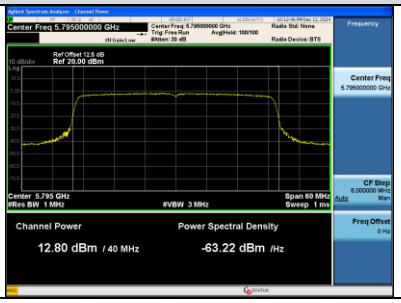
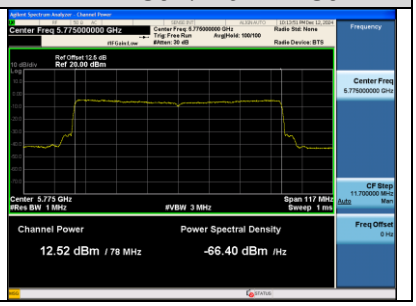
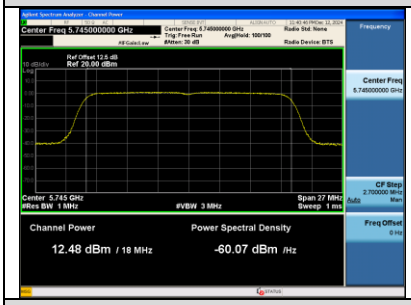
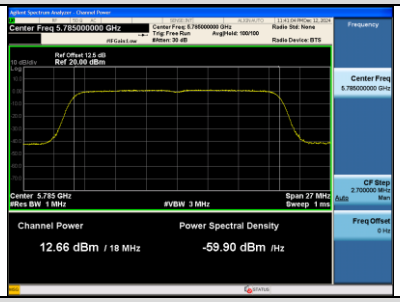
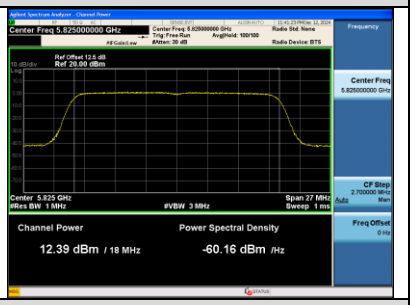
		

MIMO		
U-NII-3 Band: ANT 1		
IEEE 802.11n HT20		
		
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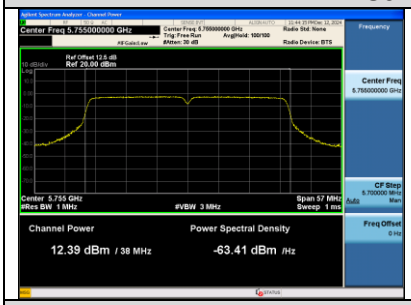	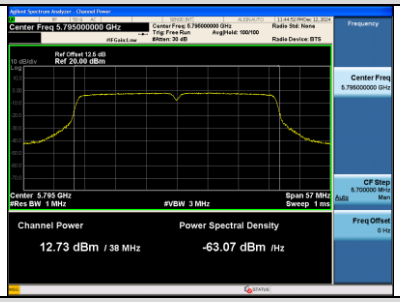	---
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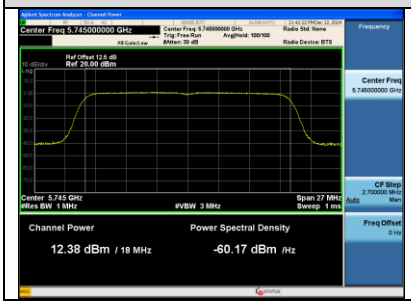	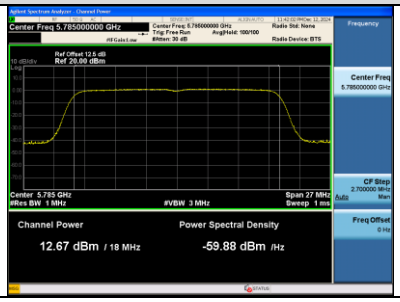	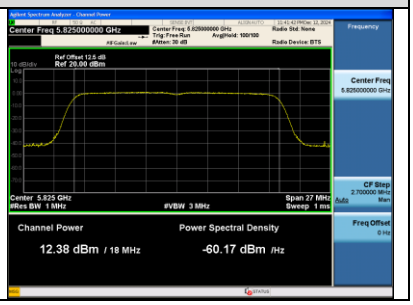

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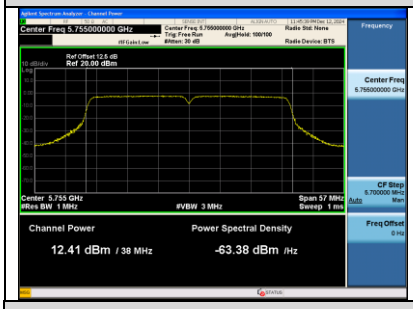	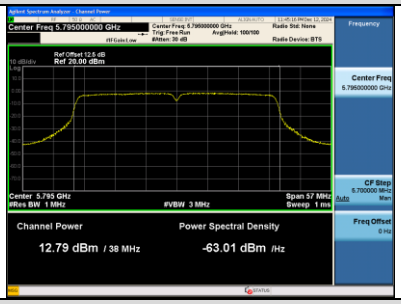	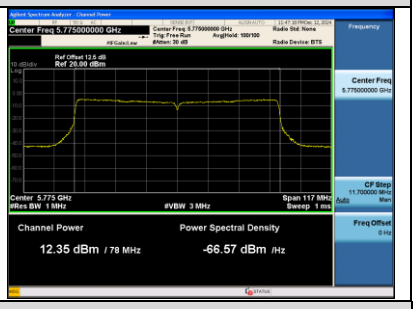
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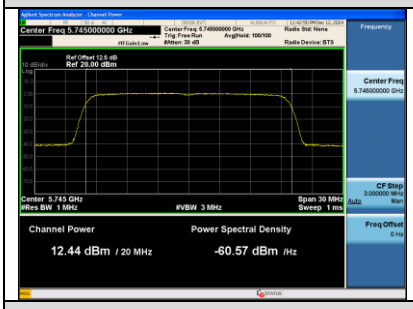	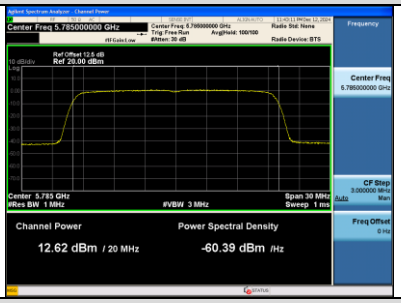	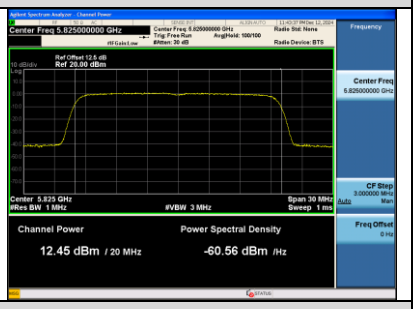
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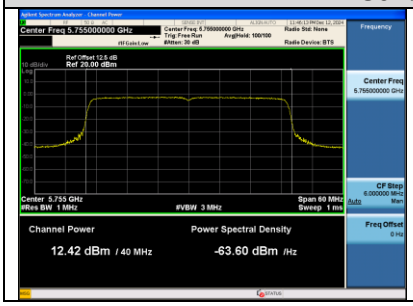
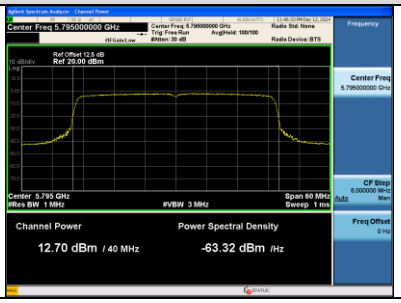
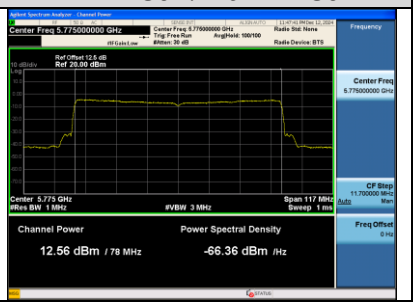
		

8. SPECTRAL DENSITY TEST

8.1.Limit

Band 5150-5250 MHz:
The power spectral density shall not exceed 11 dBm in any 1.0 MHz band.
Band 5250-5350 MHz:
The power spectral density shall not exceed 11 dBm in any 1.0 MHz band.
Band 5470-5725 MHz:
The power spectral density shall not exceed 11 dBm in any 1.0 MHz band.
Band 5725-5850 MHz:
The power spectral density shall not exceed 30 dBm in any 500 KHz band.

8.2.Test Procedure

Use the test method described in ANSI C63.10 clause 12.5:
For the Band 5.15-5.35GHz; 5.47-5.725 GHz:
The transmitter output was connected to a spectrum analyzer. Power density was measured by spectrum analyzer with 1MHz RBW and 3MHz VBW; Detector: RMS mode.

For the band 5.725-5.85 GHz:
The transmitter output was connected to a spectrum analyzer. Power density was measured by spectrum analyzer with 1MHz RBW and 3MHz VBW,RMS Detector.
So use the test method described in KDB789033 clause E

1) Set the RBW=100kHz and VBW =300kHz
2) Number of points in sweep ≥ 2 Span / RBW.(This ensures that bin-to-bin spacing is ≤ RBW/2, so that narrowband signals are not lost between frequency bins.)
3) Sweep time = auto
4) Detector = RMS (i.e., power averaging), if available. Otherwise, use sample detector mode.
5) Use the “peak search” function of spectrum analyzer find the max value, then add 10log (500kHz/RBW) to the measured result.

Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.

8.3.Test Results

EUT: Notebook Computer		
M/N: N24B4		
Test date: 2024-12-30~2025-01-02	Pressure: 103.1±1.0 kpa	Humidity: 51.5±3.0%
Tested by: Evan	Test site: RF site	Temperature: 22.5±0.6℃

U-NII-1 Band(SISO):

Test Mode	Frequency (MHz)	Power Spectral Density (dBm/3KHz)	Limit (dBm/3KHz)
11a ANT0	5180	1.517	11
	5200	1.883	
	5240	1.625	
11a ANT1	5180	1.884	11
	5200	2.067	
	5240	1.885	
Conclusion：PASS			

U-NII-1 Band(MIMO):

Test Mode	Frequency (MHz)	Power Spectral Density (dBm/3KHz)			Limit (dBm/3KHz)
		ANT0	ANT1	Total	
11n20	5180	1.105	0.849	3.99	11
	5200	1.062	0.814	3.95	
	5240	0.692	0.414	3.57	
11n40	5190	-2.168	-2.220	0.82	
	5230	-2.678	-2.710	0.32	
11ac20	5180	1.264	0.789	4.04	
	5200	0.996	0.769	3.89	
	5240	0.710	0.525	3.63	
11ac40	5190	-1.997	-1.994	1.02	
	5230	-2.402	-2.517	0.55	
11ac80	5210	-5.227	-5.263	-2.24	
11ax20	5180	0.613	0.452	3.54	
	5200	0.673	0.307	3.50	
	5240	0.405	0.245	3.34	
11ax40	5190	-2.288	-2.302	0.72	
	5230	-2.712	-2.445	0.43	
11ax80	5210	-4.855	-4.734	-1.78	
Conclusion：PASS					

Notes: 1. Directional Gain= 10 log[($10^{3.25/10}$)+ ($10^{3.77/10}$)/2]dBi =3.52dBi＜6dBi.

2. The transmit signals are completely uncorrelated.

U-NII-2A Band(SISO):

Test Mode	Frequency (MHz)	Power Spectral Density (dBm/3KHz)	Limit (dBm/3KHz)
11a (ANT0)	5260	1.757	11
	5300	1.155	
	5320	0.802	
11a (ANT1)	5260	1.497	
	5300	0.868	
	5320	0.621	
Conclusion：PASS			

U-NII-2A Band(MIMO):

Test Mode	Frequency (MHz)	Power Spectral Density (dBm/3KHz)			Limit (dBm/3KHz)
		ANT0	ANT1	Total	
11n20	5260	1.100	0.562	3.85	11
	5300	0.066	-1.027	2.56	
	5320	0.009	-0.614	2.72	
11n40	5270	-2.570	-2.816	0.32	
	5310	-3.083	-3.650	-0.35	
11ac20	5260	0.915	0.567	3.76	
	5300	0.319	-0.335	3.02	
	5320	-0.103	-0.738	2.60	
11ac40	5270	-2.354	-2.511	0.58	
	5310	-3.264	-3.718	-0.48	
11ac80	5290	-5.992	-5.957	-2.96	
11ax20	5260	0.368	1.367	3.91	
	5300	-0.302	-0.254	2.73	
	5320	-0.214	-0.721	2.55	
11ax40	5270	-3.244	-2.600	0.10	
	5310	-2.565	-3.724	-0.10	
11ax80	5290	-5.492	-5.269	-2.37	
Conclusion：PASS					

Notes: 1. Directional Gain= 10 log[($10^{3.25/10}$)+ ($10^{3.77/10}$)/2]dBi =3.52dBi＜6dBi.

2. The transmit signals are completely uncorrelated.

U-NII-2C Band(SISO):

Test Mode	Frequency (MHz)	Power Spectral Density (dBm/3KHz)	Limit (dBm/3KHz)
11a ANT0	5500	0.001	11
	5600	-0.183	
	5700	0.126	
11a ANT1	5500	-0.823	
	5600	-1.023	
	5700	0.725	
Conclusion：PASS			

U-NII-2C Band(MIMO):

Test Mode	Frequency (MHz)	Power Spectral Density (dBm/3KHz)			Limit (dBm/3KHz)
		ANT0	ANT1	Total	
11n20 MIMO	5500	-0.954	-2.070	1.53	11
	5600	-1.004	-2.241	1.43	
	5700	-0.847	-0.489	2.35	
11n40 MIMO	5510	-4.031	-4.594	-1.29	
	5590	-4.076	-5.335	-1.65	
	5670	-3.707	-4.062	-0.87	
11ac20 MIMO	5500	-1.077	-1.894	1.54	
	5600	-0.890	-2.191	1.52	
	5700	-0.896	-0.738	2.19	
11ac40 MIMO	5510	-3.753	-4.876	-1.27	
	5590	-3.936	-5.220	-1.52	
	5670	-4.394	-4.161	-1.27	
11ac80 MIMO	5530	-6.474	-7.595	-3.99	
	5610	-3.671	-8.070	-2.33	
11ax20 MIMO	5500	-1.344	-2.165	1.28	
	5600	-1.259	-2.557	1.15	
	5700	-1.113	-0.799	2.06	
11ax40 MIMO	5510	-3.998	-4.875	-1.40	
	5590	-4.337	-5.365	-1.81	
	5670	-4.190	-4.038	-1.10	
11ax80 MIMO	5530	-6.733	-7.177	-3.94	
	5610	-6.814	-7.697	-4.22	
Conclusion：PASS					

Notes: 1. Directional Gain= 10 log[($10^{3.25/10}$)+ ($10^{3.77/10}$)/2]dBi =3.52dBi＜6dBi.

2. The transmit signals are completely uncorrelated.

U-NII-3 Band(SISO):

Test Mode	Frequency (MHz)	Power Spectral Density (dBm/500KHz)	Limit (dBm/500KHz)
11a ANT0	5745	-8.813	30
	5785	-8.878	
	5825	-9.058	
11a ANT1	5745	-7.751	
	5785	-7.122	
	5825	-7.779	
Conclusion：PASS			

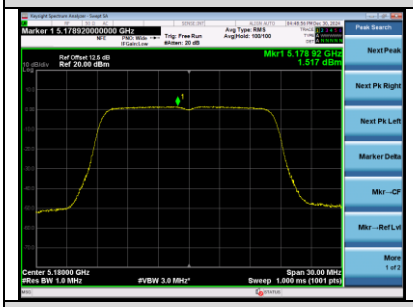
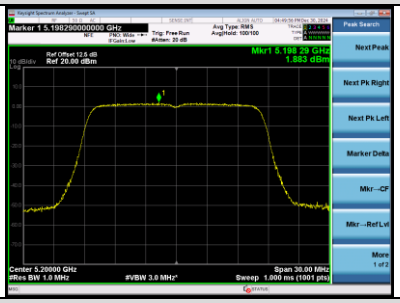
U-NII-3 Band(MIMO):

Test Mode	Frequency (MHz)	Power Spectral Density (dBm/500KHz)			Limit (dBm/500KHz)
		ANT0	ANT1	Total	
11n20	5745	-9.770	-8.436	0.95	30
	5785	-9.005	-8.293	1.37	
	5825	-10.194	-8.580	0.69	
11n40	5755	-12.637	-11.755	-2.17	
	5795	-11.926	-11.871	-1.90	
11ac20	5745	-9.972	-8.875	0.61	
	5785	-9.373	-8.492	1.09	
	5825	-9.707	-9.268	0.52	
11ac40	5755	-12.415	-12.127	-2.27	
	5795	-12.190	-11.465	-1.81	
11ac80	5775	-15.540	-14.544	-5.01	
11ax20	5745	-10.005	-9.872	0.06	
	5785	-10.422	-9.360	0.14	
	5825	-10.831	-9.914	-0.35	
11ax40	5755	-12.919	-12.677	-2.80	
	5795	-12.947	-12.446	-2.69	
11ax80	5775	-15.550	-15.027	-5.28	
Conclusion：PASS					

Notes: 1. Directional Gain= 10 log[($10^{3.25/10}$)+ ($10^{3.77/10}$)/2]dBi =3.52dBi＜6dBi.

2. The transmit signals are completely uncorrelated.

3. The result = Reading + 10log(500kHz/100kHz).

U-NII-1 Band: ANT 0		
IEEE 802.11a		
		
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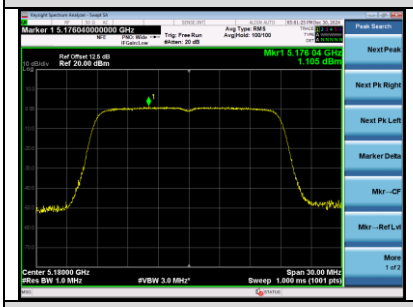		
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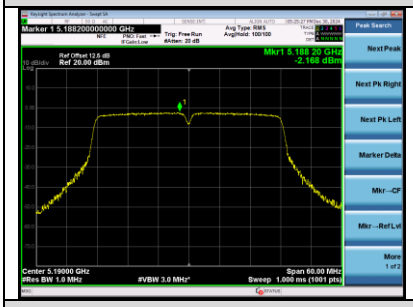		---
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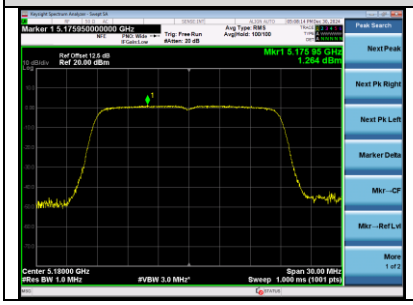	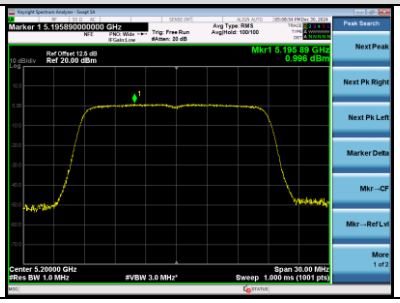	

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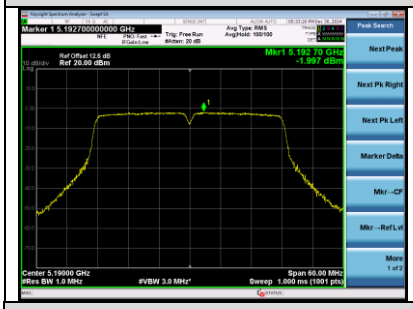	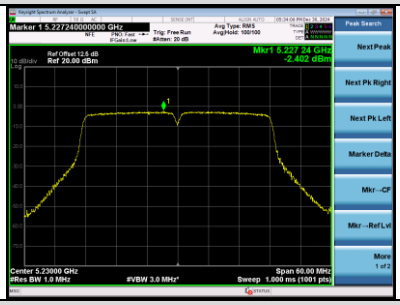	
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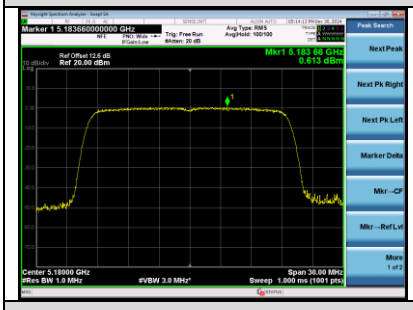		
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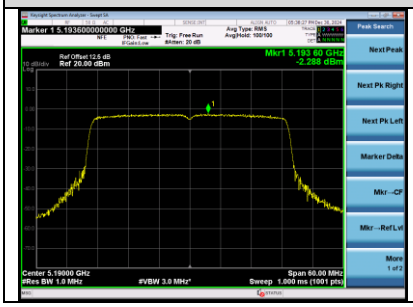	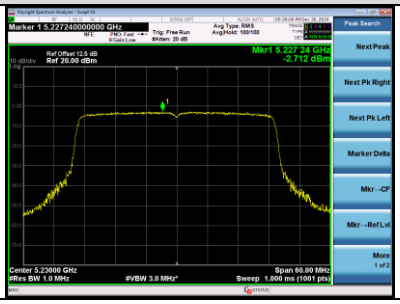	

U-NII-1 Band: ANT 1		
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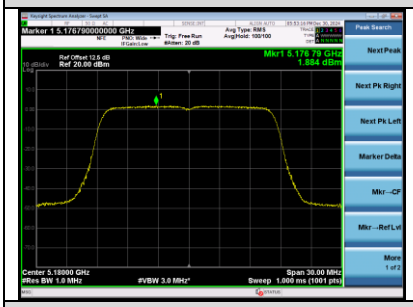		
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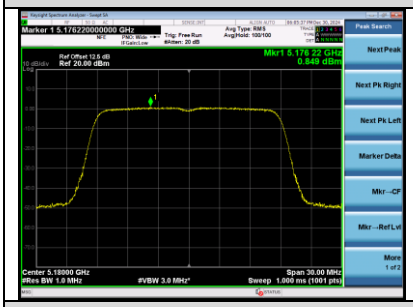	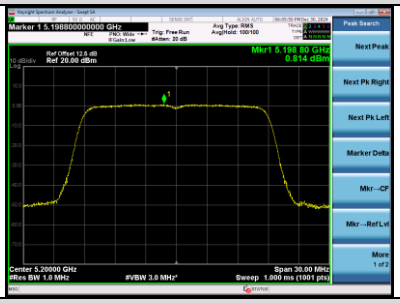	
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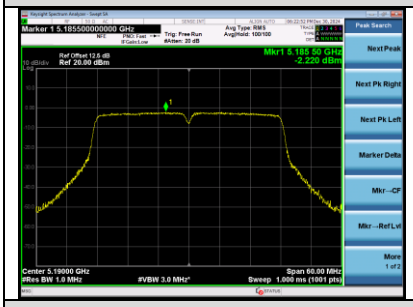		---
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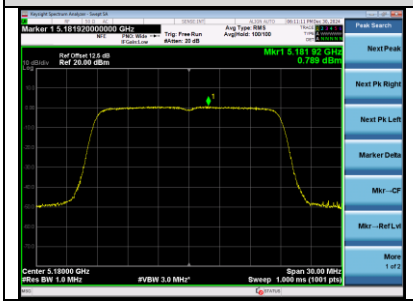	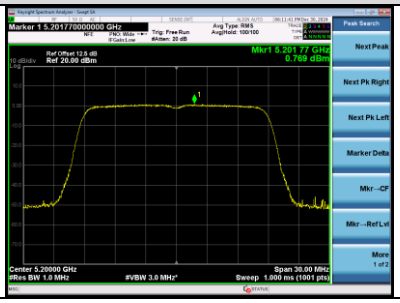	

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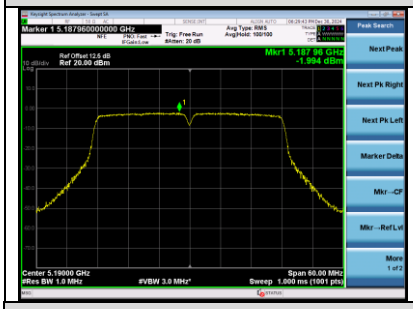		
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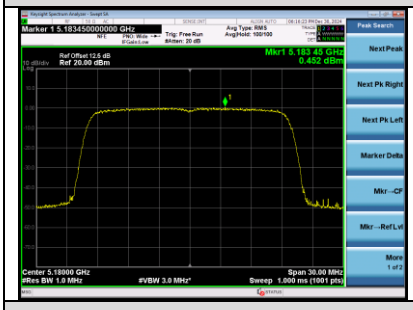		
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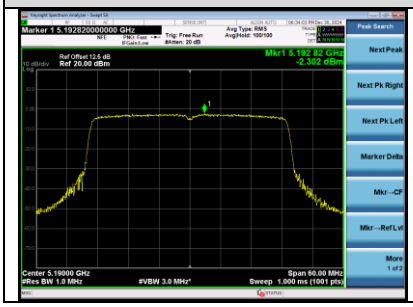		

U-NII-2A Band: ANT 0		
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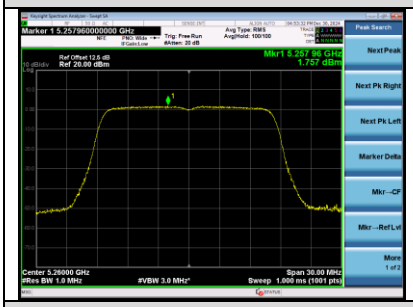	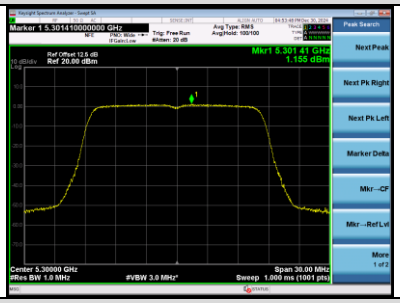	
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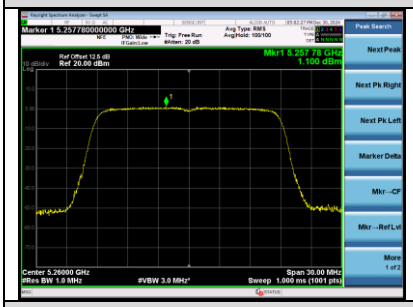	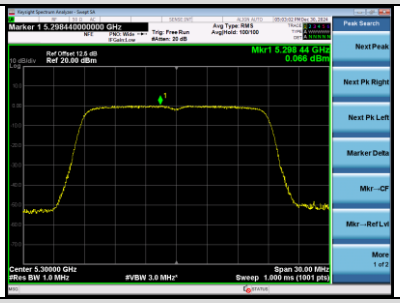	
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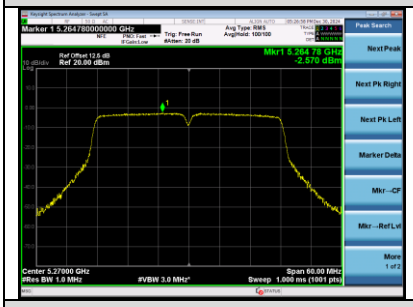		---
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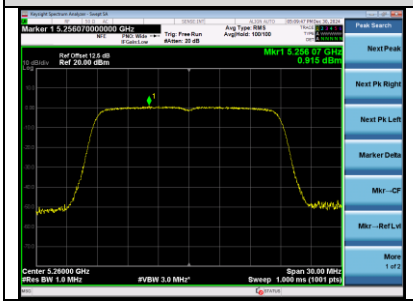		

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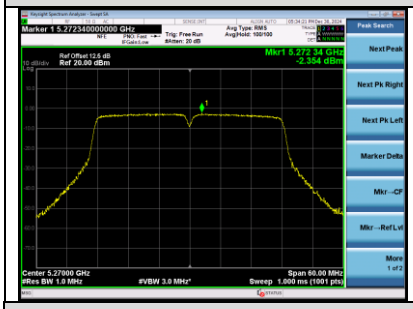		
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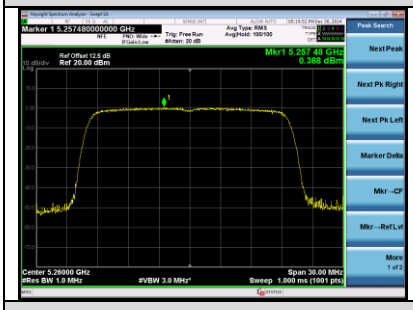	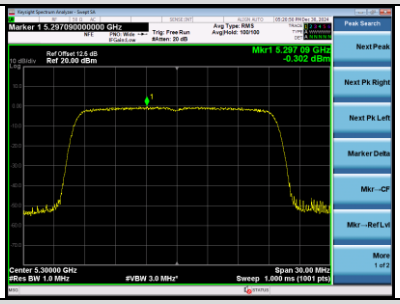	
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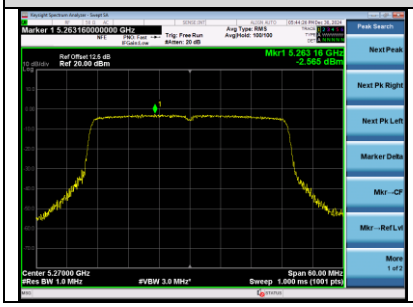	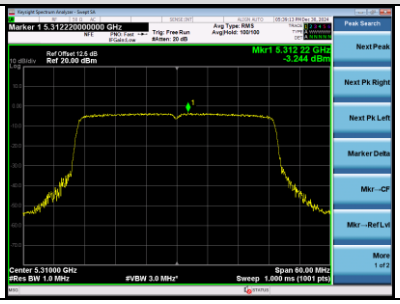	

U-NII-2A Band: ANT 1		
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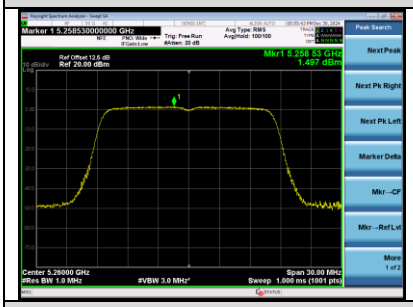	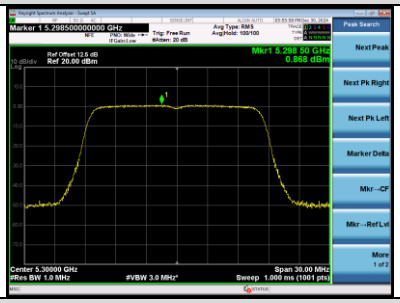	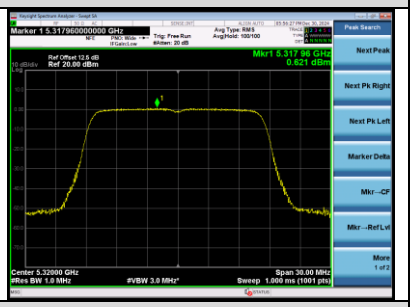
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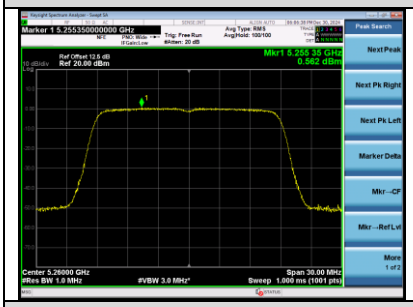	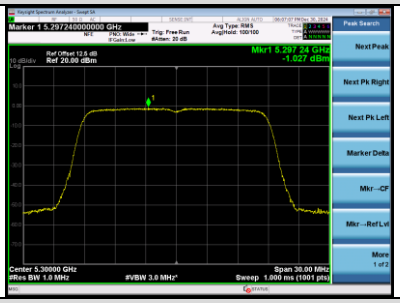	
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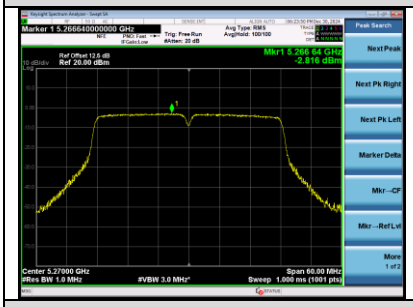		---
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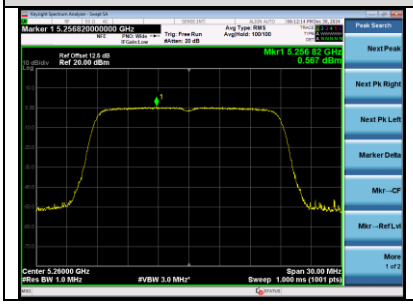	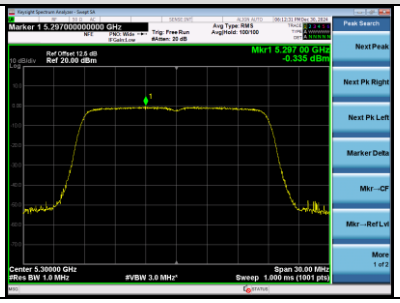	

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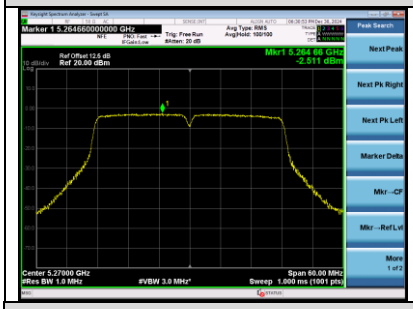		
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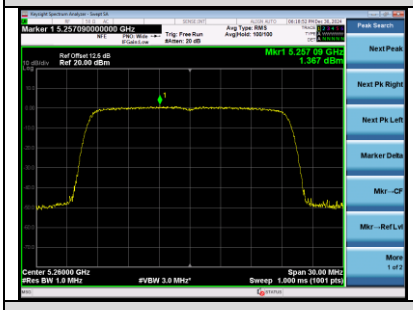		
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