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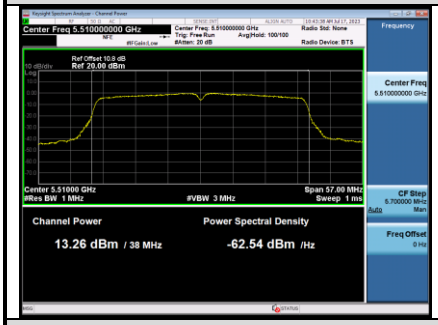	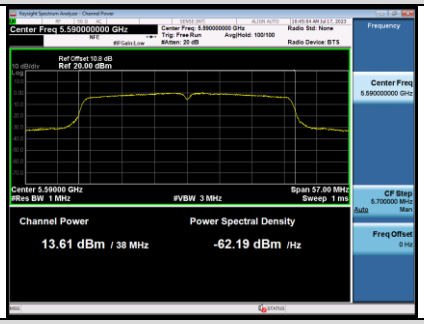	
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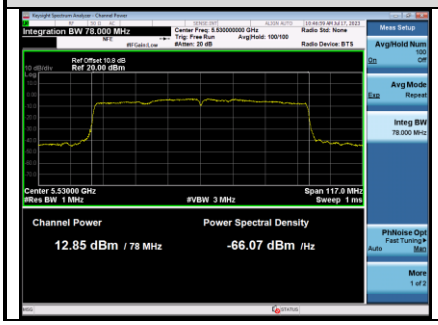
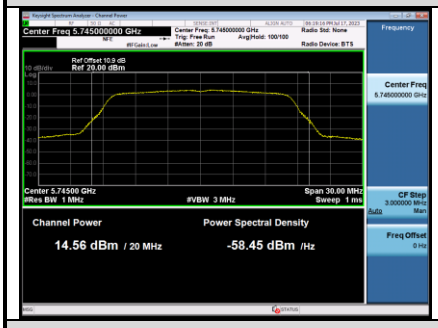
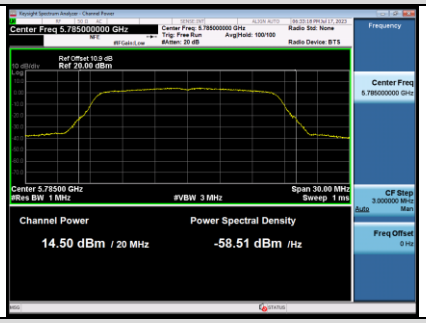
		---

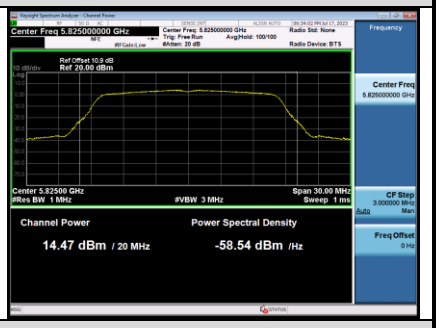
U-NII-3 Band: ANTA

SISO

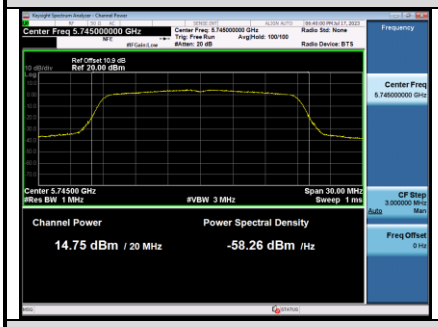
IEEE 802.11a

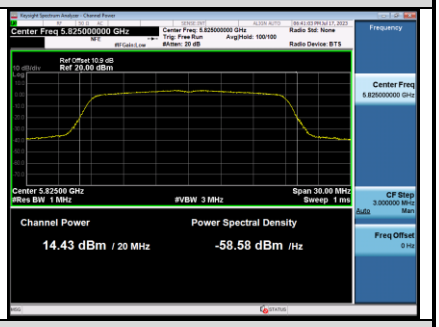




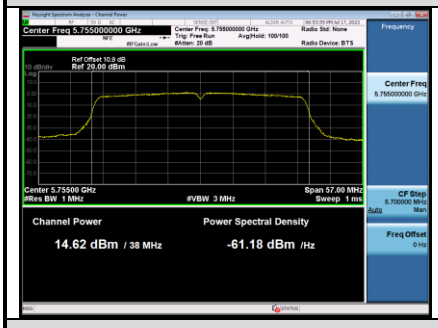


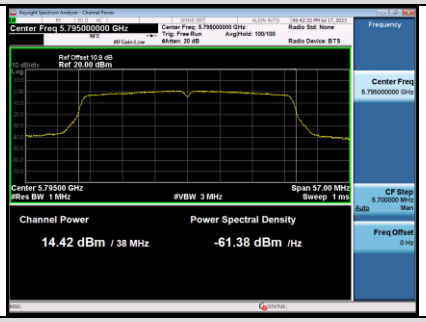
IEEE 802.11n HT20



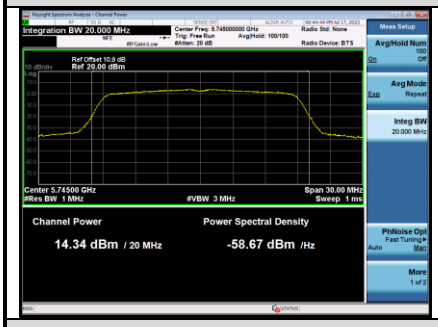


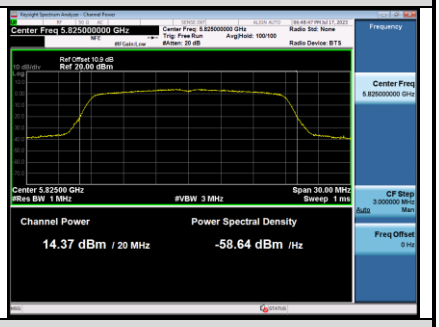
IEEE 802.11n HT40





IEEE 802.11ac VHT20





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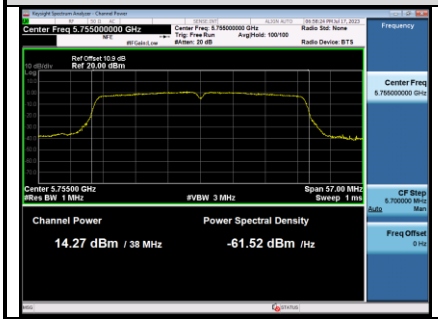
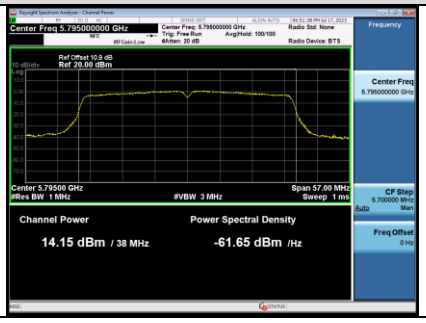
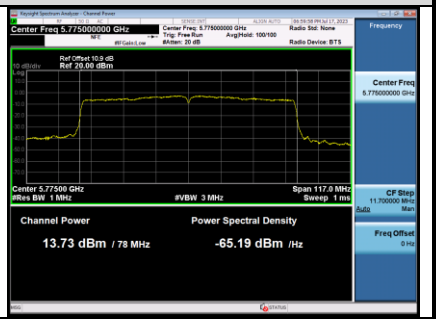


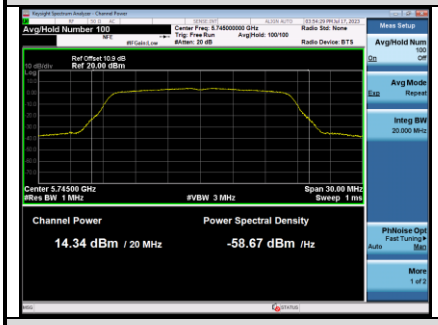


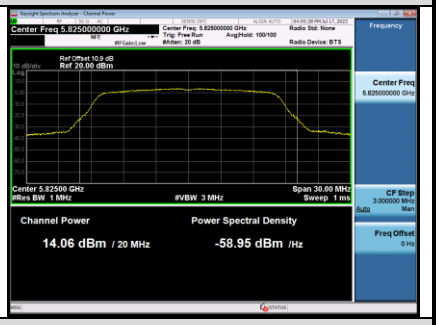
IEEE 802.11ac VHT80



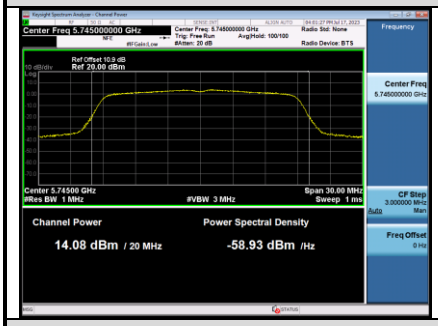
MIMO

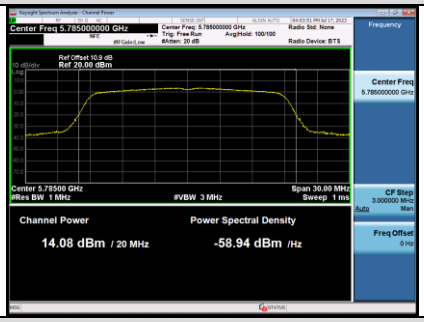
IEEE 802.11a

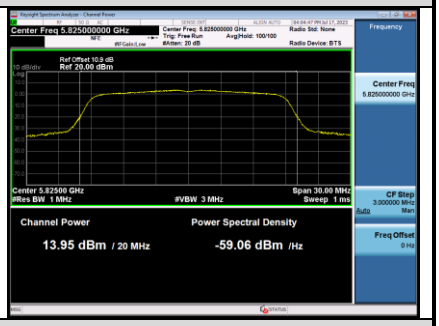




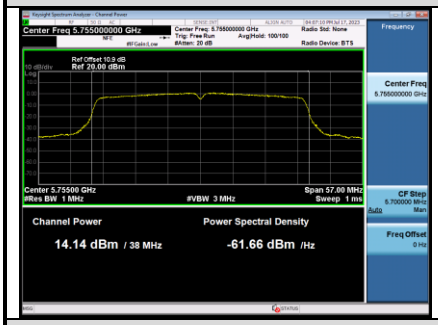
IEEE 802.11n HT20

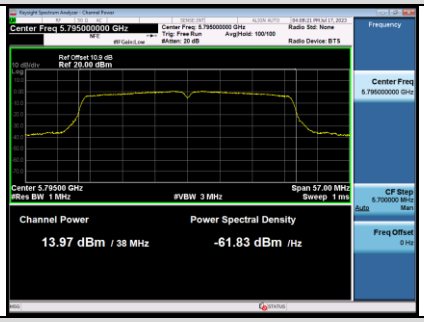




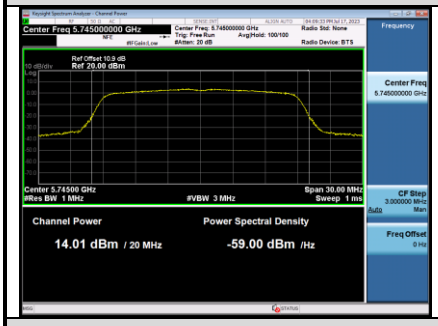


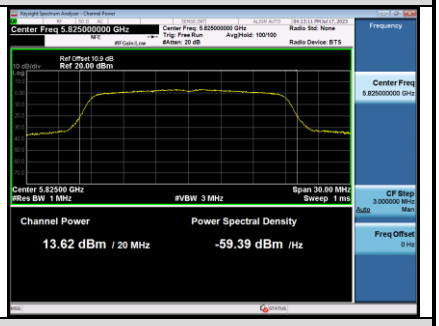
IEEE 802.11n HT40





IEEE 802.11ac VHT20





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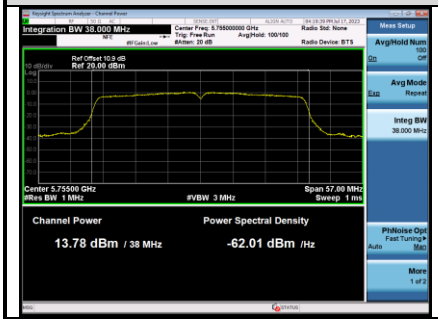

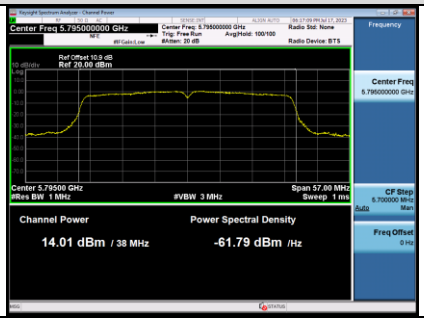

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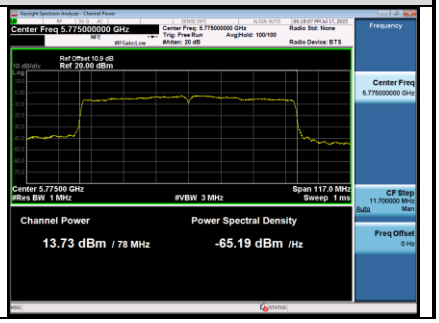
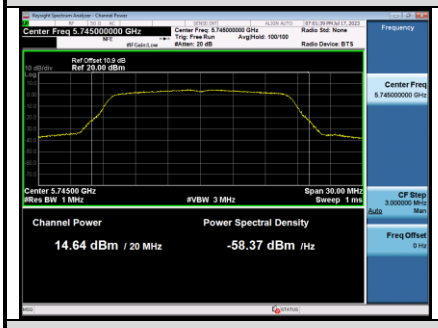
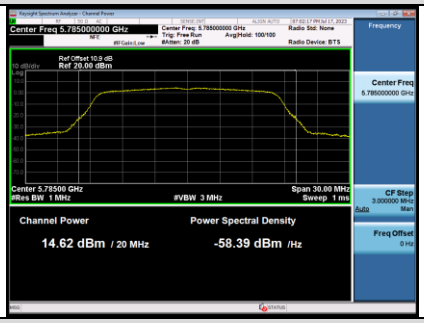
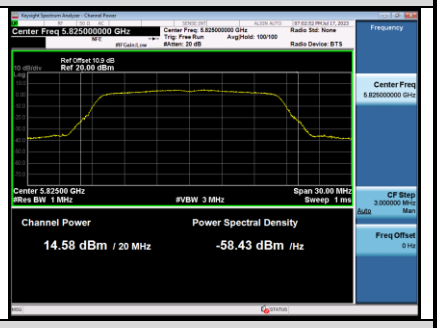


U-NII-3 Band: ANTB		
SISO		
IEEE 802.11a		
		
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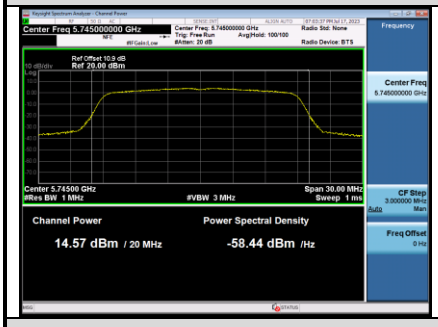	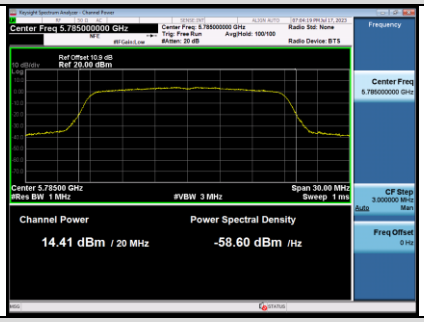	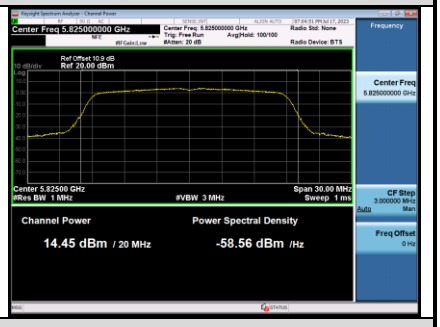
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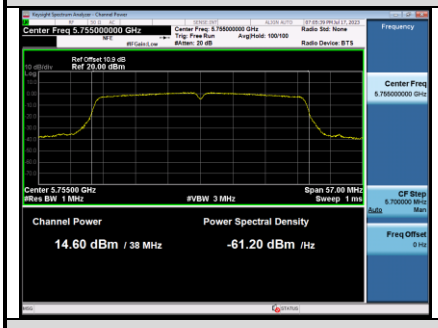	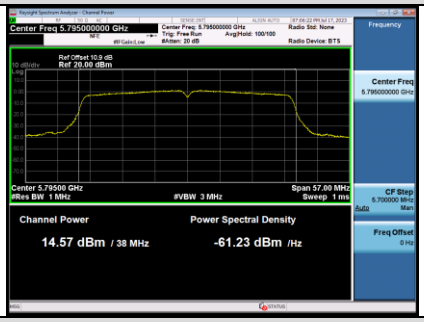	---
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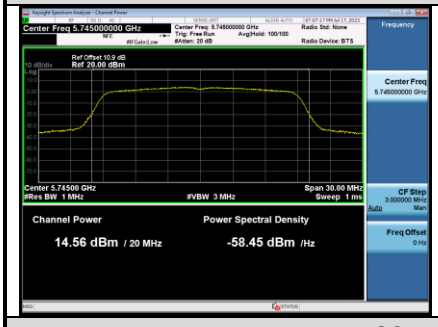
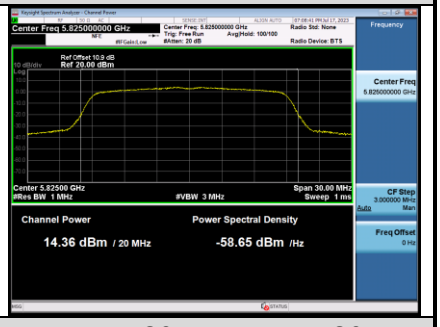
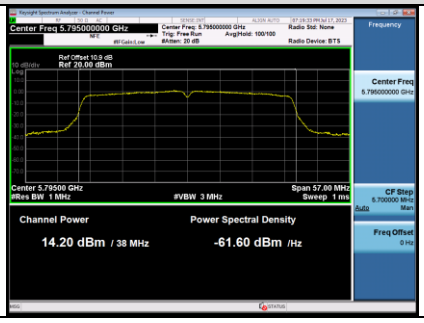
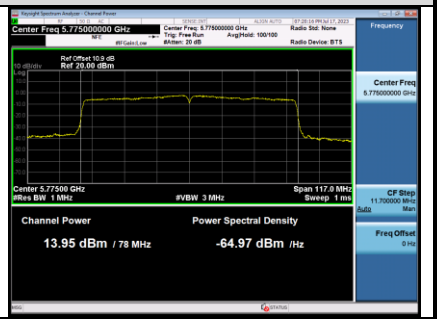
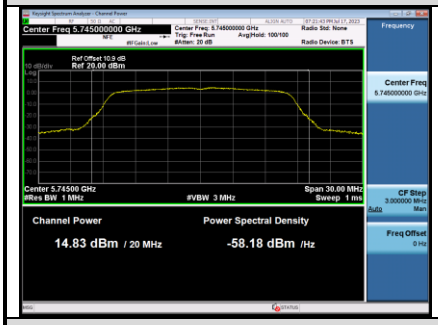
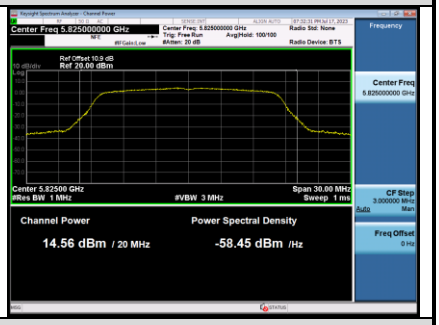
		
IEEE 802.11ac VHT40		IEEE 802.11ac VHT80
		

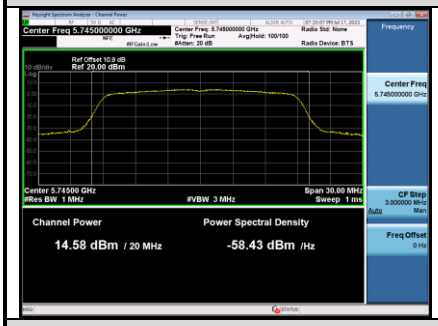
MIMO

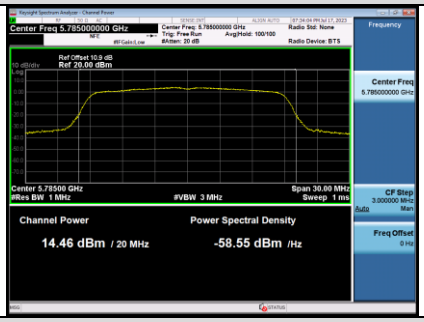
IEEE 802.11a

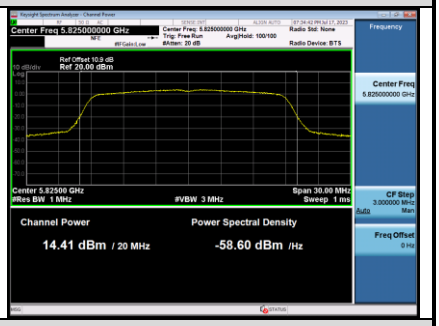




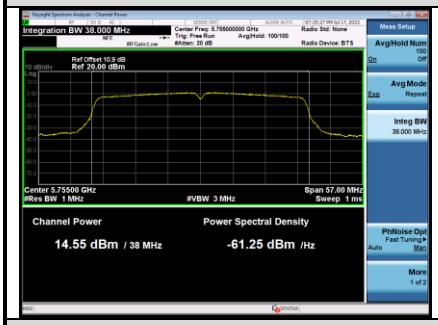
IEEE 802.11n HT20

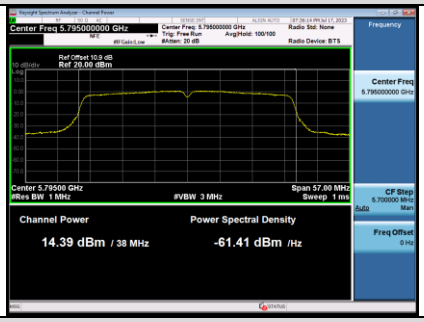




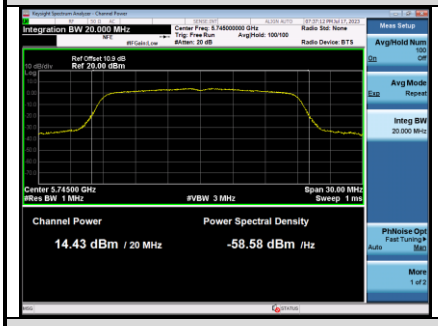


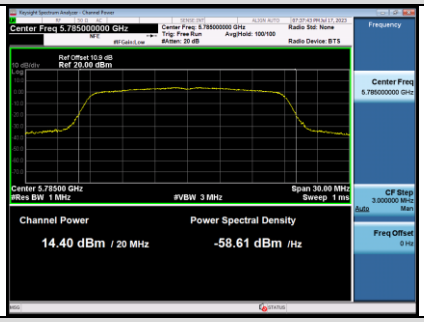
IEEE 802.11n HT40

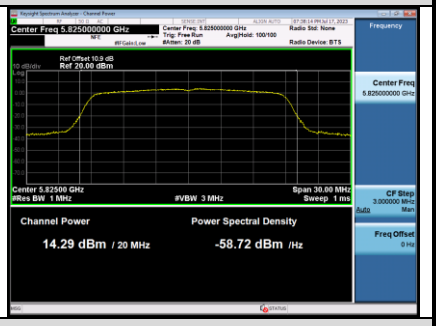




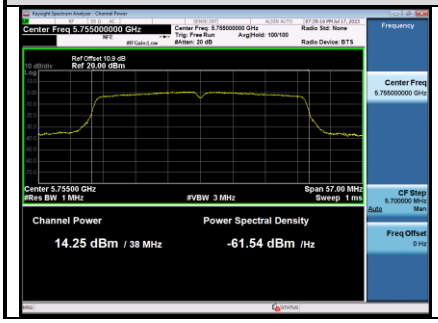
IEEE 802.11ac VHT20

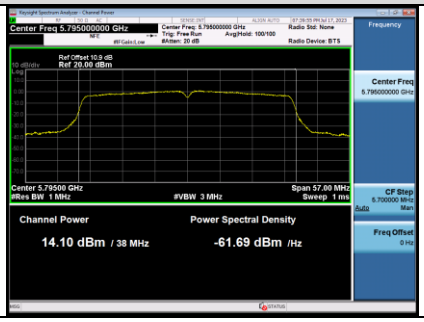






IEEE 802.11ac VHT40





IEEE 802.11ac VHT80

8. SPECTRAL DENSITY TEST

8.1.Test Equipments

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	PXA Signal Analyzer	Agilent	N9030A	MY51380221	Apr.01,23	1 Year
2.	Attenuator	Agilent	8491B	MY39269201	Oct.09,22	1 Year
3.	RF Cable	HUBER+SUHNER	SUCOFLEX-106	505238/6	Apr.02,23	1 Year

8.2.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.

8.3.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.
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.

8.4.Test Results

U-NII-1 Band:

EUT: Wi-Fi Module		
M/N: U9W37		
Test date: 2023-07-20	Pressure: 103.1±1.0 kpa	Humidity: 51.5±3.0%
Tested by: Winter	Test site: RF site	Temperature: 22.5±0.6 ℃

Test Mode	Frequency (MHz)	Power Spectral Density (dBm/MHz)		Total (dBm/MHz)	Limit (dBm/MHz)
		ANTA	ANTB		
11a	5180	5.427	5.160	8.306	11
	5200	5.375	4.751	8.084	
	5240	5.455	4.545	8.034	
11n HT20	5180	5.217	4.638	7.947	11
	5200	5.023	4.384	7.726	
	5240	5.164	4.379	7.800	
11n HT40	5190	2.070	1.324	4.723	11
	5230	2.126	1.211	4.703	
11ac VHT20	5180	4.934	4.580	7.771	11
	5200	4.746	4.414	7.593	
	5240	5.347	4.404	7.911	
11ac VHT40	5190	1.923	1.231	4.601	11
	5230	2.124	1.032	4.623	
11ac VHT80	5210	-1.277	-1.922	1.423	11
Conclusion: PASS					

Note: 1. Directional Gain= $10\log[(10^{2.56/20}+10^{-4.67/20})^2/2]$dBi= 2.6868 dB＜6dBi.

2. Directional Gain= $10\log[(10^{2.56/10}+10^{-4.67/10})/2]$dBi= 0.3024dB＜6dBi.

3. U9W37 supports and operates in both correlated MIMO signals and uncorrelated MIMO signals.

U-NII-2A Band:

EUT: Wi-Fi Module		
M/N: U9W37		
Test date: 2023-07-20	Pressure: 103.1±1.0 kpa	Humidity: 51.5±3.0%
Tested by: Winter	Test site: RF site	Temperature: 22.5±0.6 ℃

Test Mode	Frequency (MHz)	Power Spectral Density (dBm/MHz)		Total (dBm/MHz)	Limit (dBm/MHz)
		ANTA	ANTB		
11a	5260	5.593	4.700	8.180	11
	5300	5.925	4.576	8.313	
	5320	5.546	4.344	7.997	
11n HT20	5260	5.455	4.220	7.892	11
	5300	5.460	4.221	7.895	
	5320	5.288	4.271	7.820	
11n HT40	5270	2.219	1.126	4.717	11
	5310	2.032	0.874	4.502	
11ac VHT20	5260	5.114	4.236	7.707	11
	5300	5.166	4.140	7.694	
	5320	5.374	4.386	7.918	
11ac VHT40	5270	2.076	0.851	4.517	11
	5310	2.149	0.696	4.493	
11ac VHT80	5290	-1.353	-2.214	1.248	11
Conclusion: PASS					

Note: 1. Directional Gain= $10\log[(10^{1.82/20}+10^{-0.16/20})^2/2]$dBi= 3.8966dB＜6dBi.

2. Directional Gain= $10\log[(10^{1.82/10}+10^{-0.16/10})/2]$dBi= 0.9419dB＜6dBi.

3. U9W37 supports and operates in both correlated MIMO signals and uncorrelated MIMO signals.

U-NII-2C Band:

EUT: Wi-Fi Module		
M/N: U9W37		
Test date: 2023-07-21	Pressure: 103.1±1.0 kpa	Humidity: 51.5±3.0%
Tested by: Winter	Test site: RF site	Temperature: 22.5±0.6 ℃

Test Mode	Frequency (MHz)	Power Spectral Density (dBm/MHz)		Total (dBm/MHz)	Limit (dBm/MHz)
		ANTA	ANTB		
11a	5500	5.676	5.180	8.445	11
	5600	5.828	5.262	8.565	
	5700	5.338	5.728	8.548	
11n HT20	5500	5.446	4.645	8.074	11
	5600	5.631	5.043	8.357	
	5700	5.334	5.575	8.466	
11n HT40	5510	2.889	1.930	5.446	11
	5590	2.749	2.083	5.439	
	5670	2.898	2.704	5.812	
11ac VHT20	5500	5.687	4.791	8.272	11
	5600	5.747	5.191	8.488	
	5700	5.408	5.447	8.438	
11ac VHT40	5510	1.708	1.539	4.635	11
	5590	2.508	1.867	5.210	
	5670	2.541	2.107	5.340	
11ac VHT80	5530	-0.816	-1.625	1.809	11
	5610	-0.983	-1.639	1.712	
Conclusion: PASS					

Note: 1. Directional Gain= 10 log[$(10^{3.14/20}+10^{0.09/20})^2$ /2]dBi= 4.7585dB＜6dBi.

2. Directional Gain= 10 log[$(10^{3.14/10}+10^{0.09/10})$ /2]dBi= 1.8774dB＜6dBi.

3. U9W37 supports and operates in both correlated MIMO signals and uncorrelated MIMO signals.

U-NII-3 Band:

EUT: Wi-Fi Module		
M/N: U9W37		
Test date: 2023-08-02	Pressure: 103.1±1.0 kpa	Humidity: 51.5±3.0%
Tested by: Winter	Test site: RF site	Temperature: 22.5±0.6 ℃

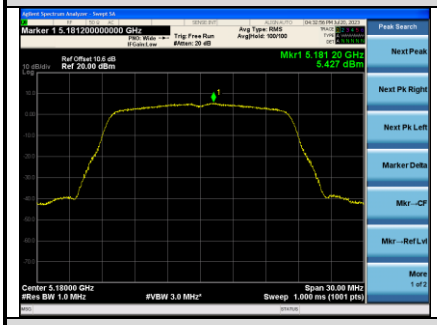
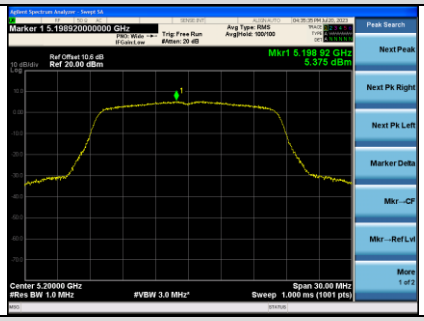
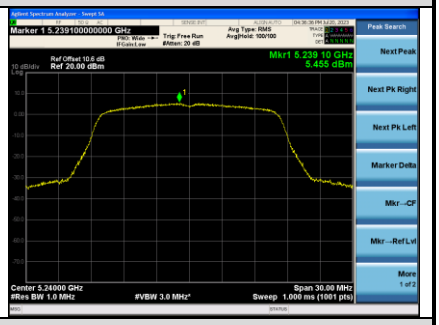
Test Mode	Frequency (MHz)	Power Spectral Density (dBm/500KHz)		Total (dBm/500KHz)	Limit (dBm/500KHz)
		ANTA	ANTB		
11a	5745	2.242	2.385	5.324	30
	5785	1.672	2.619	5.182	
	5825	1.195	2.562	4.942	
11n HT20	5745	1.650	2.263	4.978	30
	5785	1.807	1.809	4.818	
	5825	1.805	1.815	4.820	
11n HT40	5755	-0.885	-1.143	1.998	30
	5795	-1.215	-1.215	1.795	
11ac VHT20	5745	2.142	1.831	5.000	30
	5785	1.780	1.621	4.712	
	5825	1.757	1.918	4.849	
11ac VHT40	5755	-0.970	-1.070	1.991	30
	5795	-0.749	-1.126	2.077	
11ac VHT80	5775	-3.799	-4.122	-0.947	30
Conclusion: PASS					

Note: 1. Directional Gain= 10 log[$(10^{0.39/20}+10^{-4.36/20})^2$ /2]dBi= 1.3460 dB＜6dBi.

2. Directional Gain= 10 log[$(10^{0.39/10}+10^{-4.36/10})$ /2]dBi= -1.3656 dB＜6dBi.

3. U9W37 supports and operates in both correlated MIMO signals and uncorrelated MIMO signals.

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

U-NII-1 Band: ANTA		
IEEE 802.11a		
		
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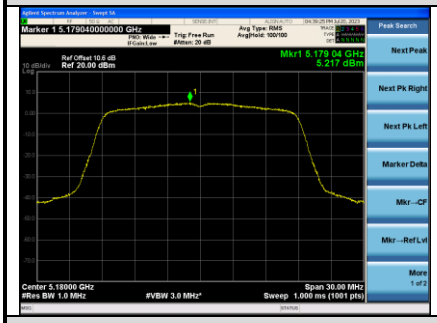	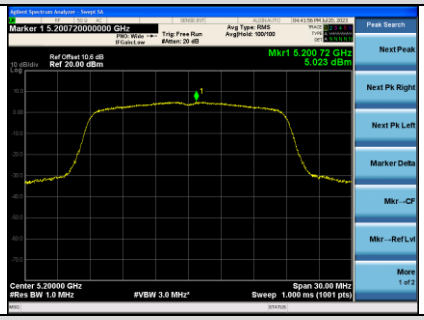	
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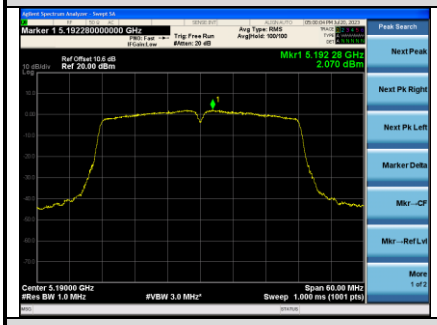	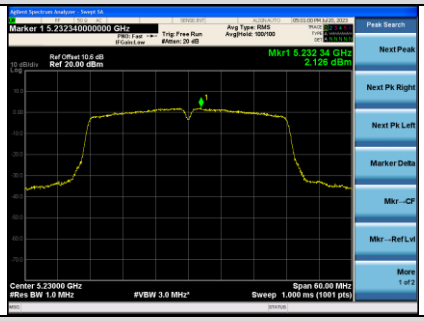	---
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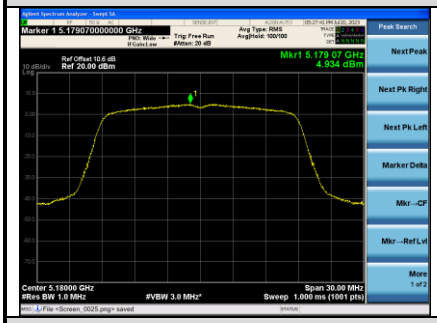	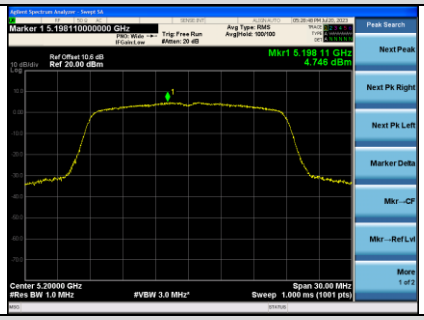	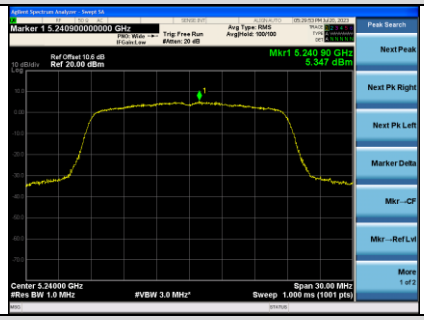
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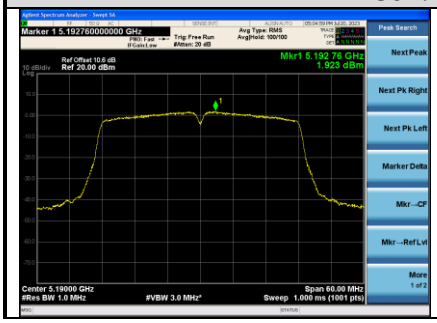	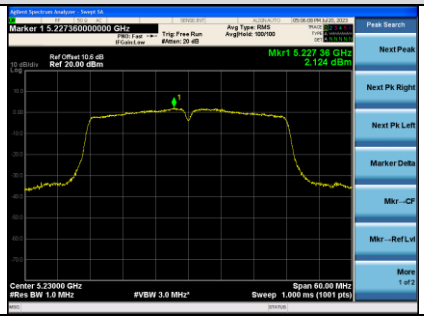	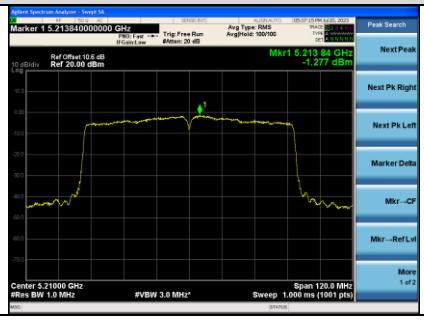

U-NII-1 Band: ANTB		
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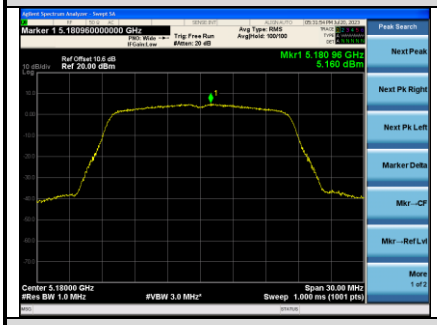	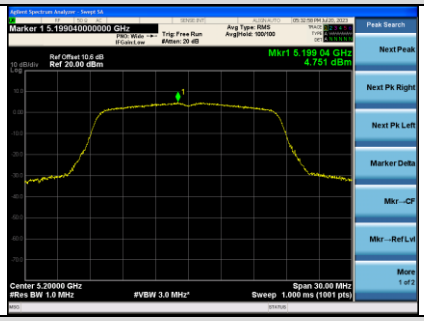	
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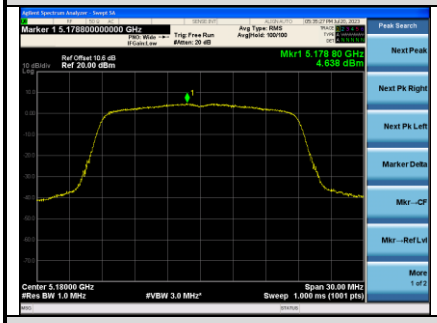	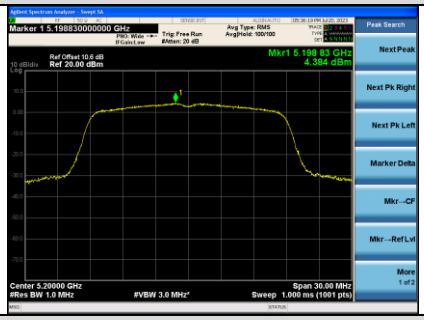	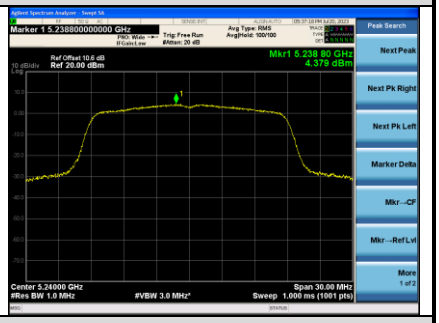
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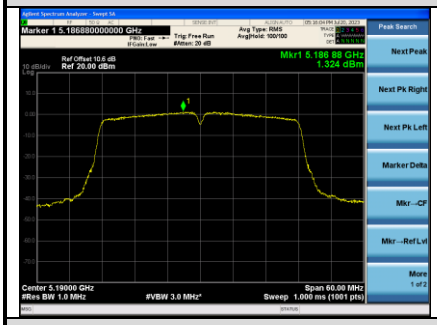	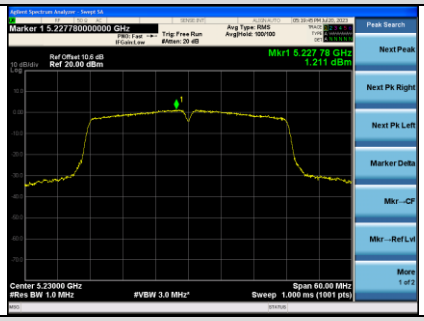	---
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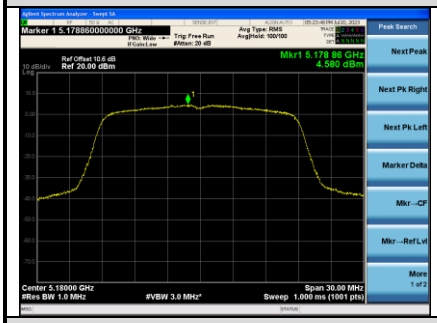
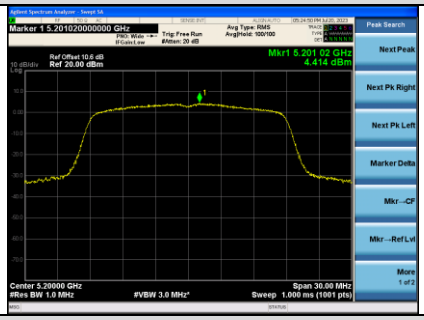
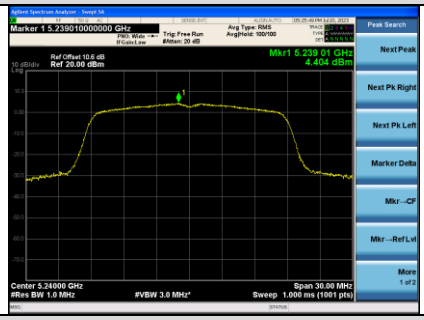
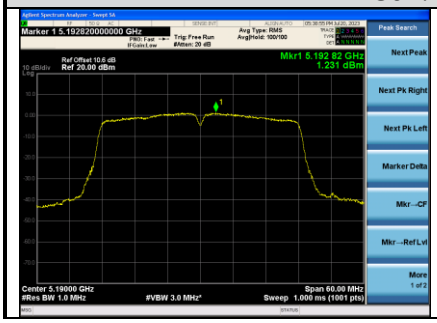
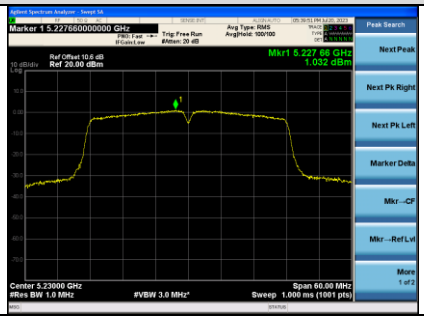
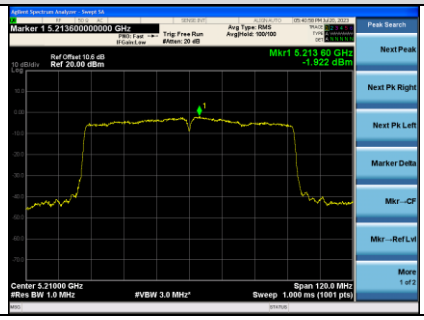
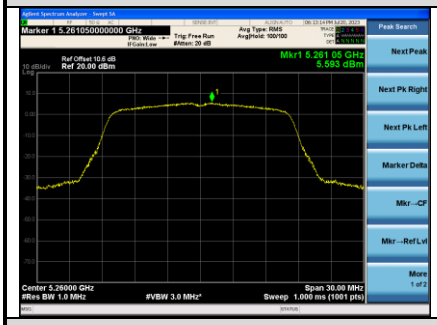
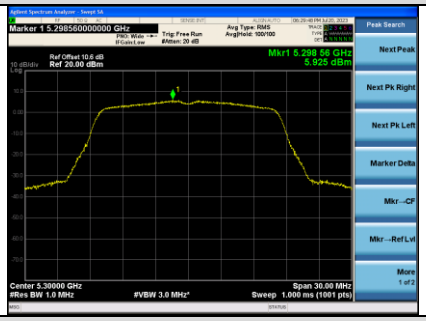
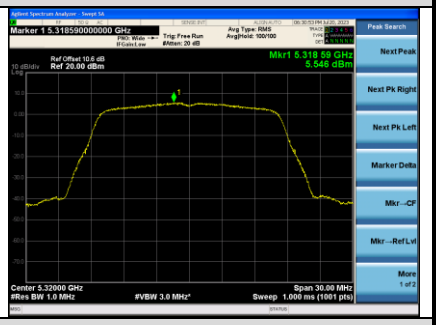
		
IEEE 802.11ac VHT40		IEEE 802.11ac VHT80
		

U-NII-2A Band: ANTA

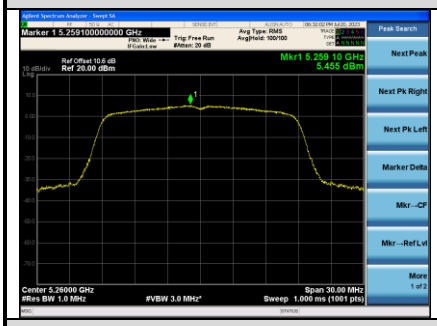
IEEE 802.11a

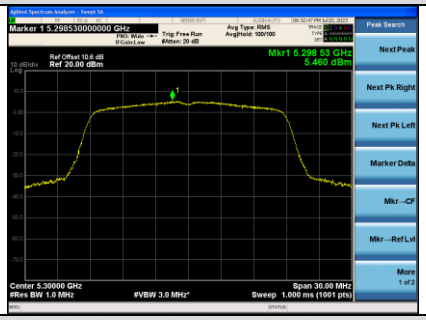


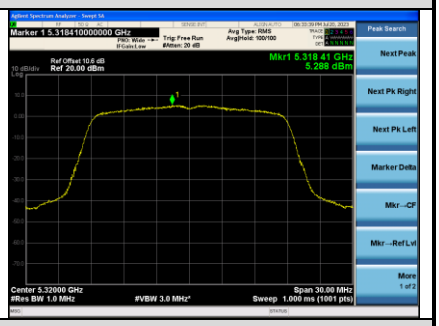




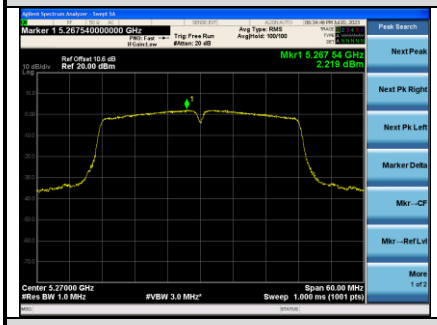
IEEE 802.11n HT20

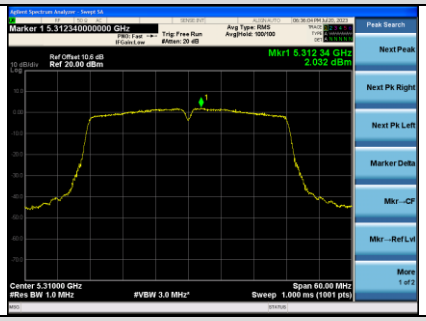




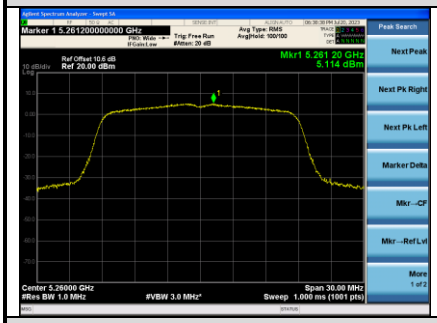


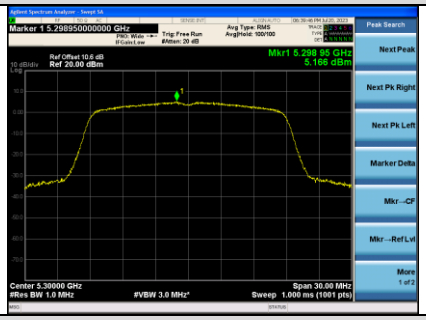
IEEE 802.11n HT40



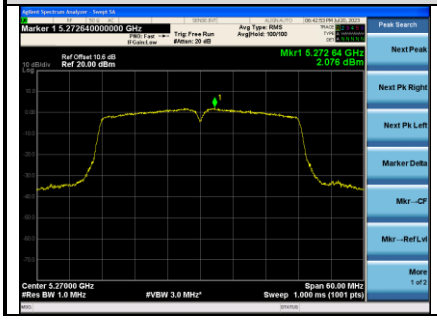


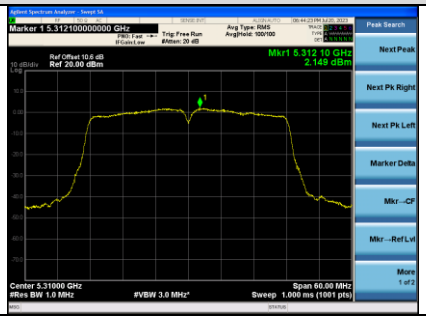
IEEE 802.11ac VHT20





IEEE 802.11ac VHT40





IEEE 802.11ac VHT80