



Mode 5: IEEE 802.11ac 80MHz Continuous TX mode_ANT-0

5290



5530



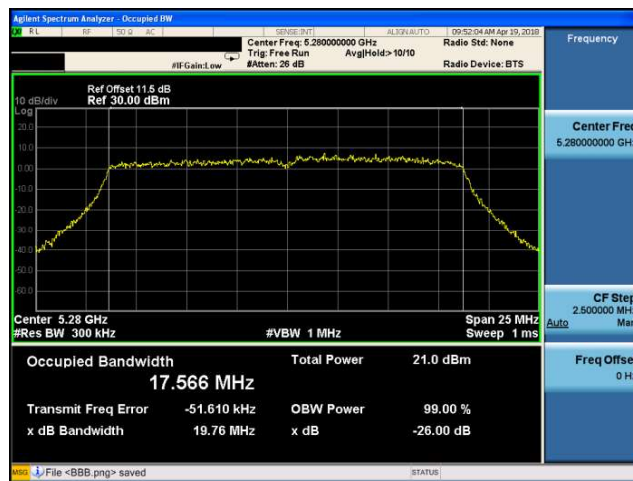


Mode 3: IEEE 802.11ac 20MHz Continuous TX mode_ANT-1

5260



5280



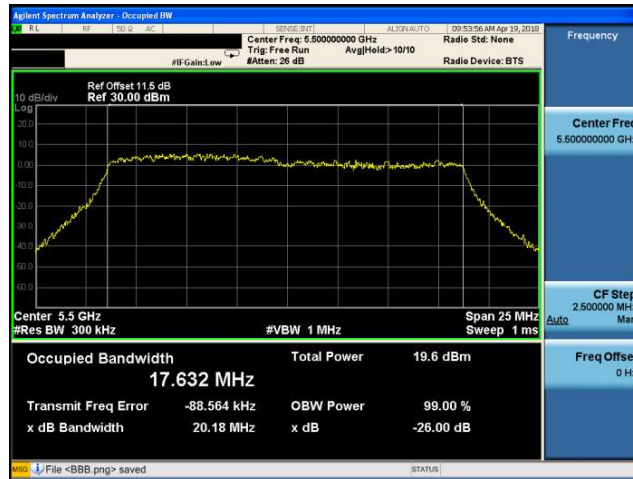
5320



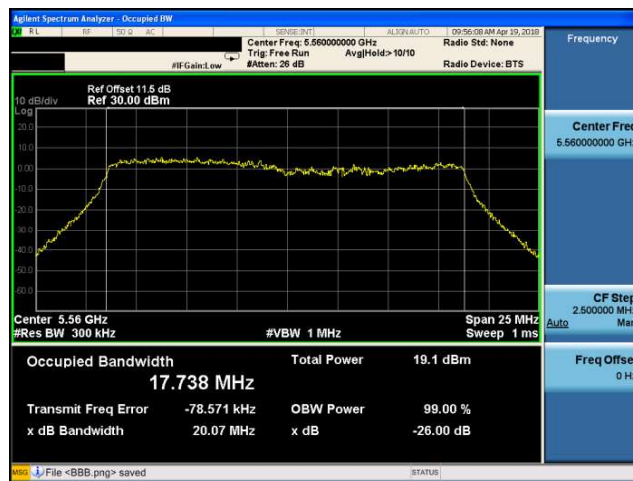


Mode 3: IEEE 802.11ac 20MHz Continuous TX mode_ANT-1

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5700





Mode 4: IEEE 802.11ac 40MHz Continuous TX mode_ANT-1	
5270	Agilent Spectrum Analyzer - Occupied BW Center Freq: 5.270000000 GHz Radio Std: None Trig: Free Run AvgHld: >10/10 #Att: 26 dB Radio Device: BTS Ref Offset: 11.5 dB Ref: 30.00 dBm 10 dB/div Log Center: 5.27 GHz #Res BW: 1 MHz #VBW: 3 MHz Span: 50 MHz Sweep: 1 ms Occupied Bandwidth 36.138 MHz Total Power 25.1 dBm Transmit Freq Error -125.42 kHz OBW Power 99.00 % x dB Bandwidth 39.80 MHz x dB -26.00 dB File <BBB.png> saved STATUS Frequency Center Freq 5.270000000 GHz CF Step 5.000000 MHz Auto Man Freq Offset 0 Hz
5310	Agilent Spectrum Analyzer - Occupied BW Center Freq: 5.310000000 GHz Radio Std: None Trig: Free Run AvgHld: >10/10 #Att: 26 dB Radio Device: BTS Ref Offset: 11.5 dB Ref: 30.00 dBm 10 dB/div Log Center: 5.31 GHz #Res BW: 1 MHz #VBW: 3 MHz Span: 50 MHz Sweep: 1 ms Occupied Bandwidth 36.292 MHz Total Power 22.5 dBm Transmit Freq Error -75.168 kHz OBW Power 99.00 % x dB Bandwidth 40.06 MHz x dB -26.00 dB File <BBB.png> saved STATUS Frequency Center Freq 5.310000000 GHz CF Step 5.000000 MHz Auto Man Freq Offset 0 Hz

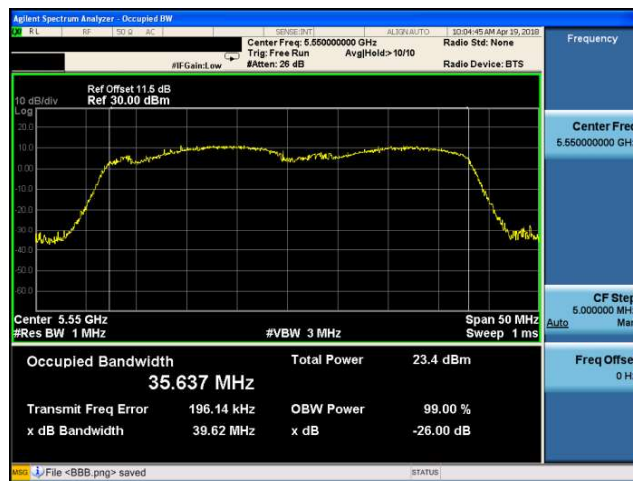


Mode 4: IEEE 802.11ac 40MHz Continuous TX mode_ANT-1

5510



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5670

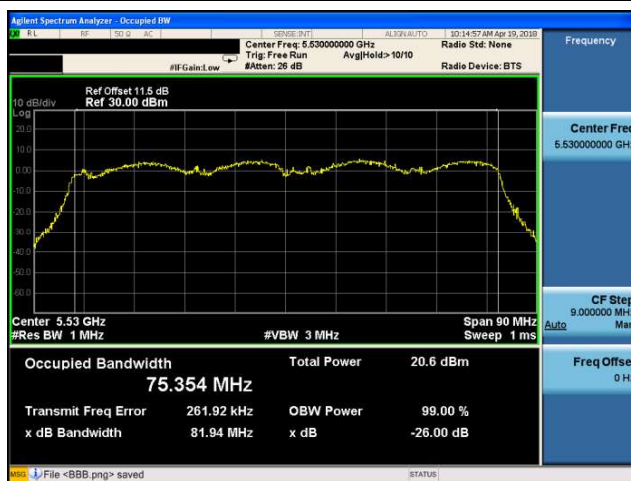


Mode 5: IEEE 802.11ac 80MHz Continuous TX mode_ANT-1

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5.5. Maximum Power Spectral Density Measurement

Test Item	Conducted power spectral density			
Test Mode	Mode 2: IEEE 802.11a Continuous TX mode			
Frequency (MHz)	ANT-0			
	Measurement (dBm/MHz)	Duty Factor (dB)	Calculated (dBm/MHz)	Limit (dBm/MHz)
5260.0	6.395	0.104	6.499	≤ 10.16
5280.0	6.539	0.104	6.643	
5320.0	6.943	0.104	7.047	
5500.0	5.360	0.104	5.464	≤ 9.29
5560.0	4.901	0.104	5.005	
5700.0	4.848	0.104	4.952	
Frequency (MHz)	ANT-1			
	Measurement (dBm/MHz)	Duty Factor (dB)	Calculated (dBm/MHz)	Limit (dBm/MHz)
5260.0	7.038	0.104	7.142	≤ 10.16
5280.0	6.713	0.104	6.817	
5320.0	6.945	0.104	7.049	
5500.0	6.802	0.104	6.906	≤ 9.29
5560.0	6.717	0.104	6.821	
5700.0	6.619	0.104	6.723	
Frequency (MHz)	ANT-0+1			Limit (dBm/MHz)
	Calculated (dBm/MHz)			
5260.0	9.843			≤ 10.16
5280.0	9.741			
5320.0	10.058			
5500.0	9.255			≤ 9.29
5560.0	9.018			
5700.0	8.938			

Note: Method SA-2, Power density = measured result + $10\log(1/\text{duty cycle})$ + Conversion ratio = measured result + duty factor.

Test Item	Conducted power spectral density			
Test Mode	Mode 3: IEEE 802.11ac 20MHz Continuous TX mode			
Frequency (MHz)	ANT-0			
	Measurement (dBm/MHz)	Duty Factor (dB)	Calculated (dBm/MHz)	Limit (dBm/MHz)
5260.0	6.582	0.039	6.621	≤ 10.16
5280.0	6.726	0.039	6.765	
5320.0	6.809	0.039	6.848	
5500.0	4.922	0.039	4.961	≤ 9.29
5560.0	5.723	0.039	5.762	
5700.0	5.561	0.039	5.600	
Frequency (MHz)	ANT-1			
	Measurement (dBm/MHz)	Duty Factor (dB)	Calculated (dBm/MHz)	Limit (dBm/MHz)
5260.0	7.417	0.039	7.456	≤ 10.16
5280.0	7.351	0.039	7.390	
5320.0	7.387	0.039	7.426	
5500.0	6.614	0.039	6.653	≤ 9.29
5560.0	5.919	0.039	5.958	
5700.0	6.216	0.039	6.255	
Frequency (MHz)	ANT-0+1			Limit (dBm/MHz)
	Calculated (dBm/MHz)			
5260.0	10.069			≤ 10.16
5280.0	10.099			
5320.0	10.157			
5500.0	8.899			≤ 9.29
5560.0	8.871			
5700.0	8.950			

Note: Method SA-2, Power density = measured result + $10\log(1/\text{duty cycle})$ + Conversion ratio = measured result + duty factor.

Test Item	Conducted power spectral density			
Test Mode	Mode 4: IEEE 802.11ac 40MHz Continuous TX mode			
Frequency (MHz)	ANT-0			
	Measurement (dBm/MHz)	Duty Factor (dB)	Calculated (dBm/MHz)	Limit (dBm/MHz)
5270.0	6.660	0.079	6.739	≤ 10.16
5310.0	3.881	0.079	3.960	
5510.0	4.261	0.079	4.340	≤ 9.29
5550.0	4.856	0.079	4.935	
5670.0	6.355	0.079	6.434	
Frequency (MHz)	ANT-1			
	Measurement (dBm/MHz)	Duty Factor (dB)	Calculated (dBm/MHz)	Limit (dBm/MHz)
5270.0	7.283	0.079	7.362	≤ 10.16
5310.0	4.805	0.079	4.884	
5510.0	5.359	0.079	5.438	≤ 9.29
5550.0	6.543	0.079	6.622	
5670.0	5.777	0.079	5.856	
Frequency (MHz)	ANT-0+1			Limit (dBm/MHz)
	Calculated (dBm/MHz)			
5270.0	10.072			≤ 10.16
5310.0	7.457			
5510.0	7.934			≤ 9.29
5550.0	8.870			
5670.0	9.165			

Note: Method SA-2, Power density = measured result + $10\log(1/\text{duty cycle})$ + Conversion ratio = measured result + duty factor.

Test Item	Conducted power spectral density			
Test Mode	Mode 5: IEEE 802.11ac 80MHz Continuous TX mode			
Frequency (MHz)	ANT-0			
	Measurement (dBm/MHz)	Duty Factor (dB)	Calculated (dBm/MHz)	Limit (dBm/MHz)
5290.0	-0.048	0.164	0.116	≤ 10.16
5530.0	-0.621	0.164	-0.457	≤ 9.29
Frequency (MHz)	ANT-1			
	Measurement (dBm/MHz)	Duty Factor (dB)	Calculated (dBm/MHz)	Limit (dBm/MHz)
5290.0	0.444	0.164	0.608	≤ 10.16
5530.0	1.447	0.164	1.611	≤ 9.29
Frequency (MHz)	ANT-0+1			Limit (dBm/MHz)
	Calculated (dBm/MHz)			
5290.0	3.379			≤ 10.16
5530.0	3.709			≤ 9.29

Note: Method SA-2, Power density = measured result + $10\log(1/\text{duty cycle})$ + Conversion ratio = measured result + duty factor.

Beamforming on

Test Item	Conducted power spectral density			
Test Mode	Mode 3: IEEE 802.11ac 20MHz Continuous TX mode			
Frequency (MHz)	ANT-0			
	Measurement (dBm/MHz)	Duty Factor (dB)	Calculated (dBm/MHz)	Limit (dBm/MHz)
5260.0	4.177	0.039	4.216	≤ 10.16
5280.0	4.591	0.039	4.630	
5320.0	4.723	0.039	4.762	
5500.0	2.266	0.039	2.305	≤ 9.29
5560.0	1.706	0.039	1.745	
5700.0	2.727	0.039	2.766	
Frequency (MHz)	ANT-1			
	Measurement (dBm/MHz)	Duty Factor (dB)	Calculated (dBm/MHz)	Limit (dBm/MHz)
5260.0	4.636	0.039	4.675	≤ 10.16
5280.0	4.270	0.039	4.309	
5320.0	4.441	0.039	4.480	
5500.0	3.807	0.039	3.846	≤ 9.29
5560.0	3.208	0.039	3.247	
5700.0	3.940	0.039	3.979	
Frequency (MHz)	ANT-0+1			Limit (dBm/MHz)
	Calculated (dBm/MHz)			
5260.0	7.462			≤ 10.16
5280.0	7.483			
5320.0	7.633			
5500.0	6.154			≤ 9.29
5560.0	5.571			
5700.0	6.425			

Note: Method SA-2, Power density = measured result + $10\log(1/\text{duty cycle})$ + Conversion ratio = measured result + duty factor.

Test Item	Conducted power spectral density			
Test Mode	Mode 4: IEEE 802.11ac 40MHz Continuous TX mode			
Frequency (MHz)	ANT-0			
	Measurement (dBm/MHz)	Duty Factor (dB)	Calculated (dBm/MHz)	Limit (dBm/MHz)
5270.0	3.594	0.079	3.673	≤ 10.16
5310.0	1.051	0.079	1.130	
5510.0	1.170	0.079	1.249	≤ 9.29
5550.0	2.066	0.079	2.145	
5670.0	2.795	0.079	2.874	
Frequency (MHz)	ANT-1			
	Measurement (dBm/MHz)	Duty Factor (dB)	Calculated (dBm/MHz)	Limit (dBm/MHz)
5270.0	4.264	0.079	4.343	≤ 10.16
5310.0	2.383	0.079	2.462	
5510.0	2.740	0.079	2.819	≤ 9.29
5550.0	3.720	0.079	3.799	
5670.0	3.330	0.079	3.409	
Frequency (MHz)	ANT-0+1			Limit (dBm/MHz)
	Calculated (dBm/MHz)			
5270.0	7.031			≤ 10.16
5310.0	4.857			
5510.0	5.115			≤ 9.29
5550.0	6.061			
5670.0	6.160			

Note: Method SA-2, Power density = measured result + $10\log(1/\text{duty cycle})$ + Conversion ratio = measured result + duty factor.

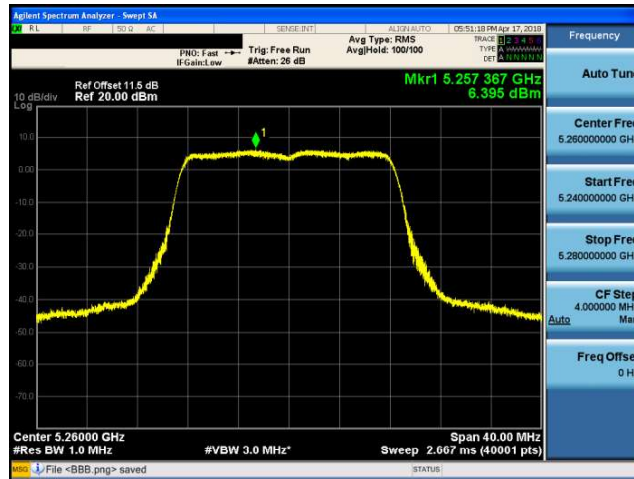
Test Item	Conducted power spectral density			
Test Mode	Mode 5: IEEE 802.11ac 80MHz Continuous TX mode			
Frequency (MHz)	ANT-0			
	Measurement (dBm/MHz)	Duty Factor (dB)	Calculated (dBm/MHz)	Limit (dBm/MHz)
5290.0	-3.063	0.164	-2.899	≤ 10.16
5530.0	-3.655	0.164	-3.491	≤ 9.29
Frequency (MHz)	ANT-1			
	Measurement (dBm/MHz)	Duty Factor (dB)	Calculated (dBm/MHz)	Limit (dBm/MHz)
5290.0	-2.101	0.164	-1.937	≤ 10.16
5530.0	-1.718	0.164	-1.554	≤ 9.29
Frequency (MHz)	ANT-0+1			Limit (dBm/MHz)
	Calculated (dBm/MHz)			
5290.0	0.619			≤ 10.16
5530.0	0.595			≤ 9.29

Note: Method SA-2, Power density = measured result + $10\log(1/\text{duty cycle})$ + Conversion ratio = measured result + duty factor.

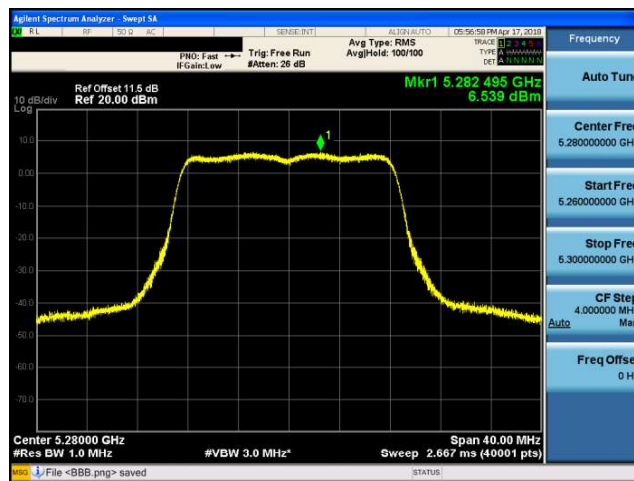
■ Test Graphs

Mode 2: IEEE 802.11a Continuous TX mode_ANT-0

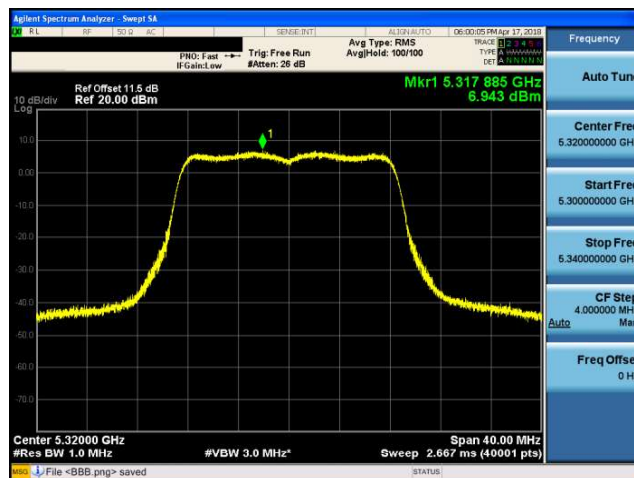
5260



5280

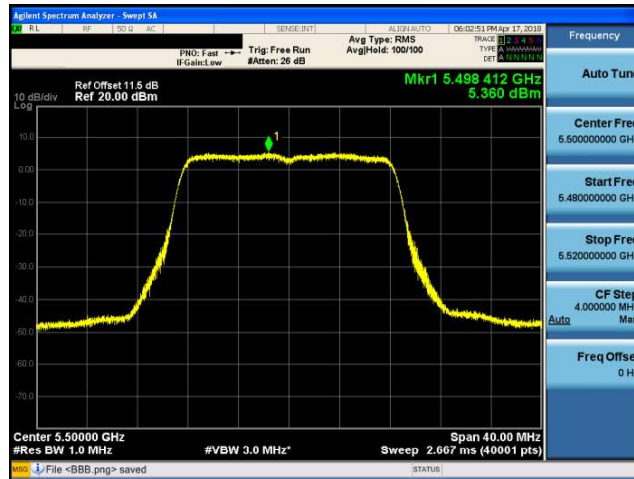


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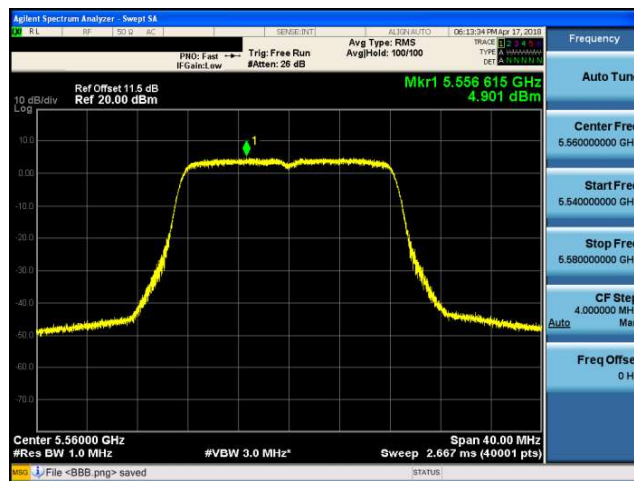


Mode 2: IEEE 802.11a Continuous TX mode_ANT-0

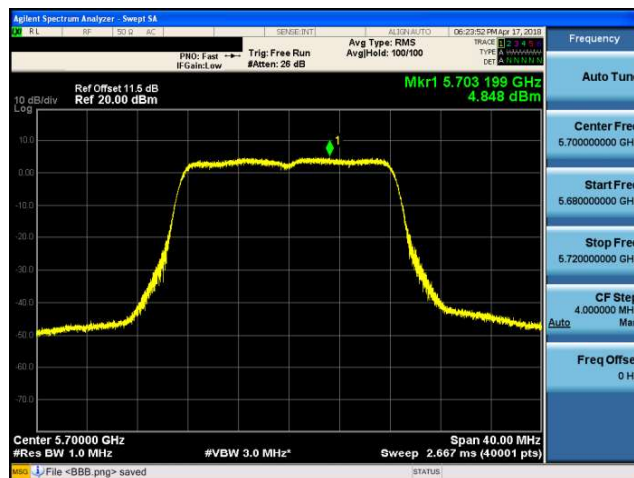
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5560

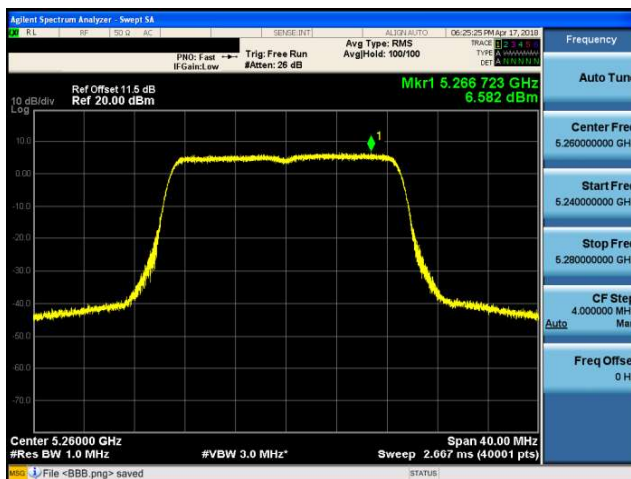


5700

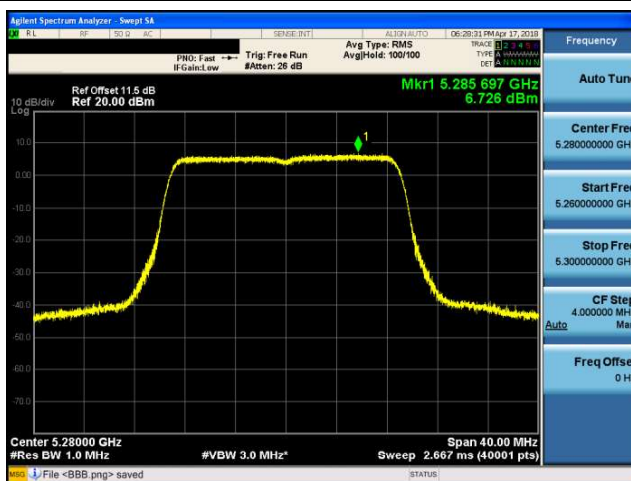


Mode 3: IEEE 802.11ac 20MHz Continuous TX mode_ANT-0

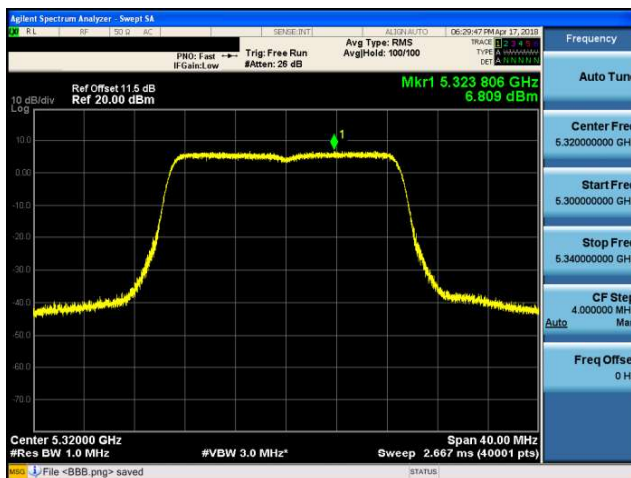
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5280

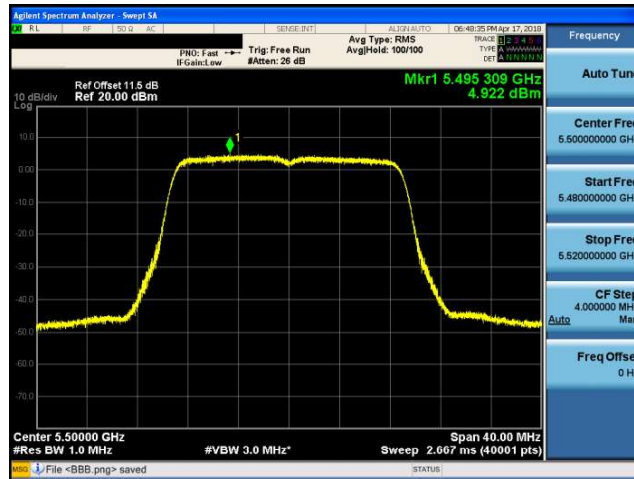


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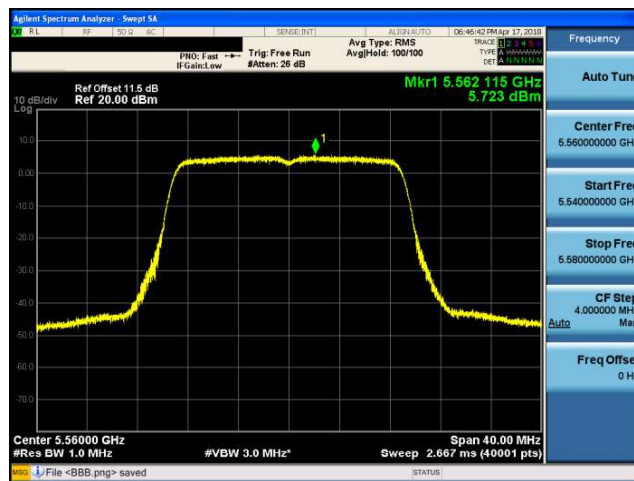


Mode 3: IEEE 802.11ac 20MHz Continuous TX mode_ANT-0

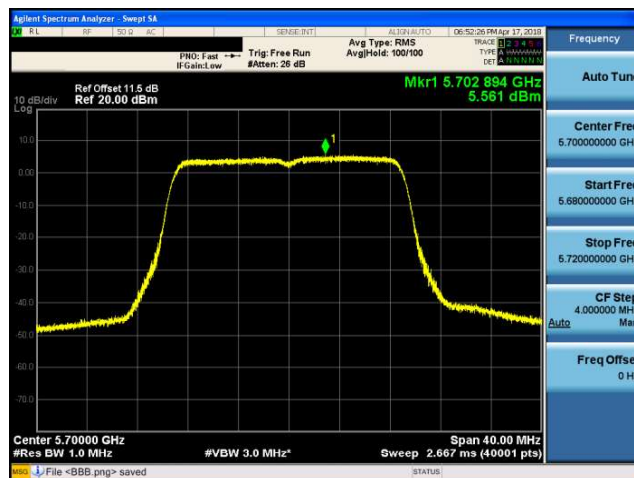
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5560

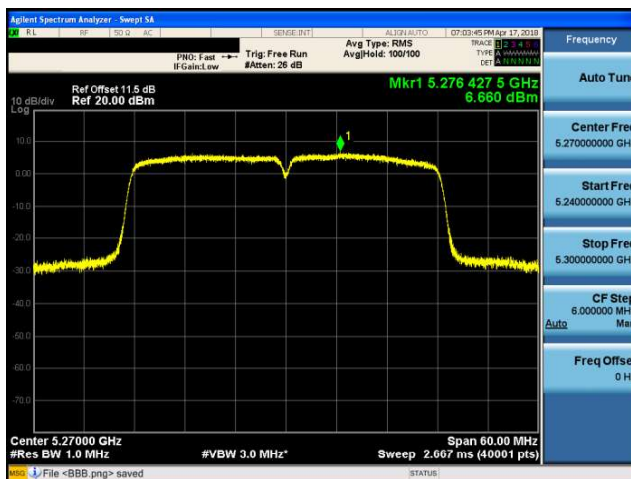


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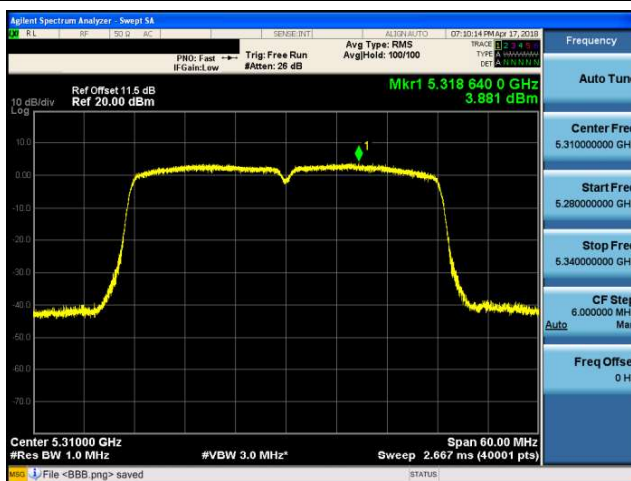


Mode 4: IEEE 802.11ac 40MHz Continuous TX mode_ANT-0

5270



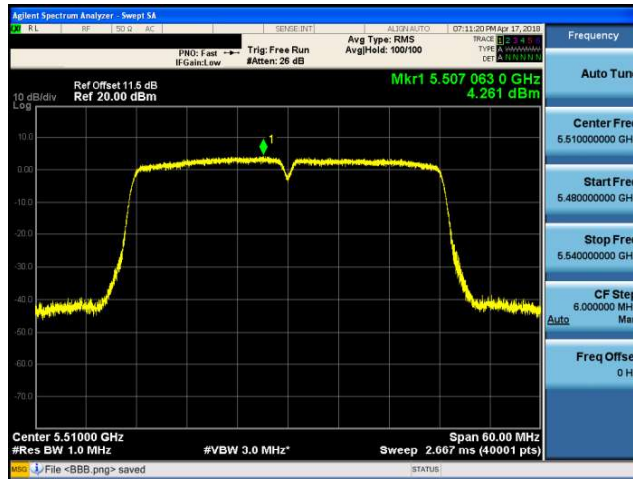
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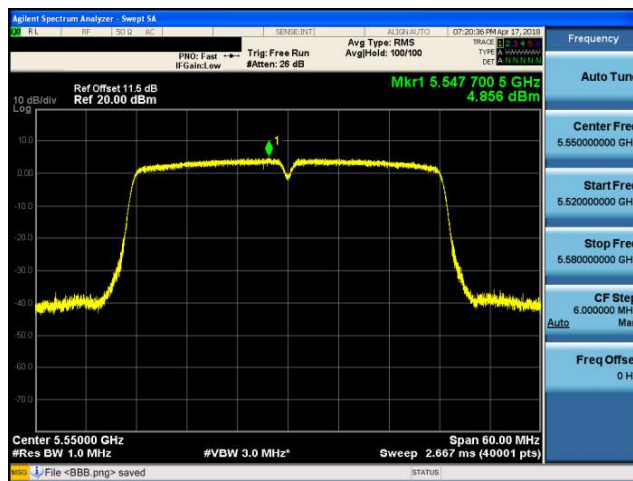


Mode 4: IEEE 802.11ac 40MHz Continuous TX mode_ANT-0

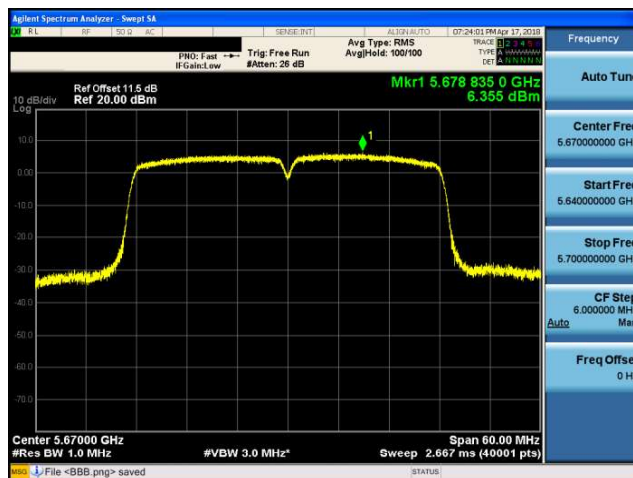
5510



5550



5670

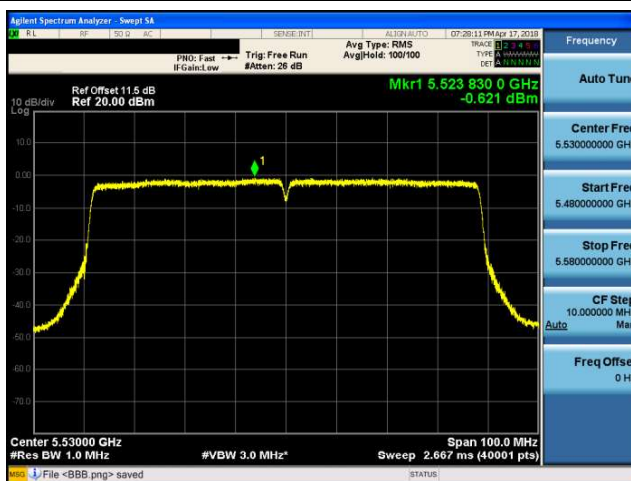


Mode 5: IEEE 802.11ac 80MHz Continuous TX mode_ANT-0

5290



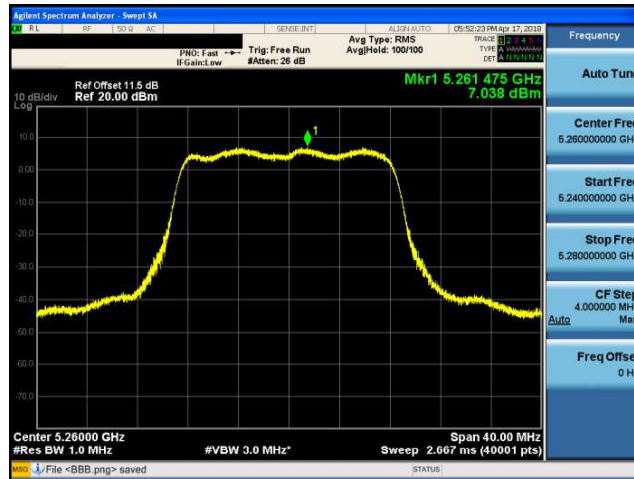
5530



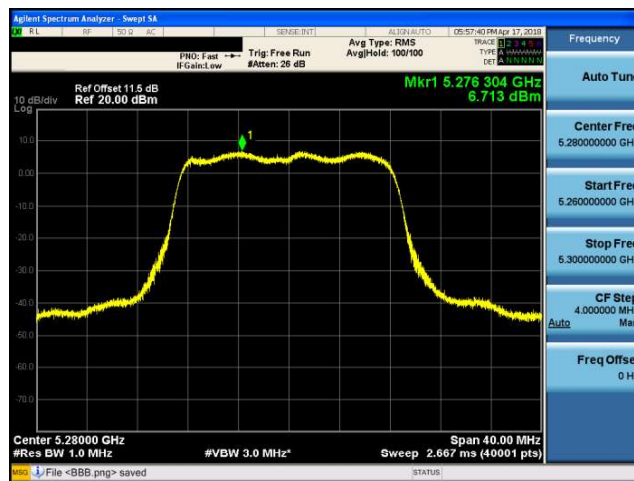


Mode 2: IEEE 802.11a Continuous TX mode_ANT-1

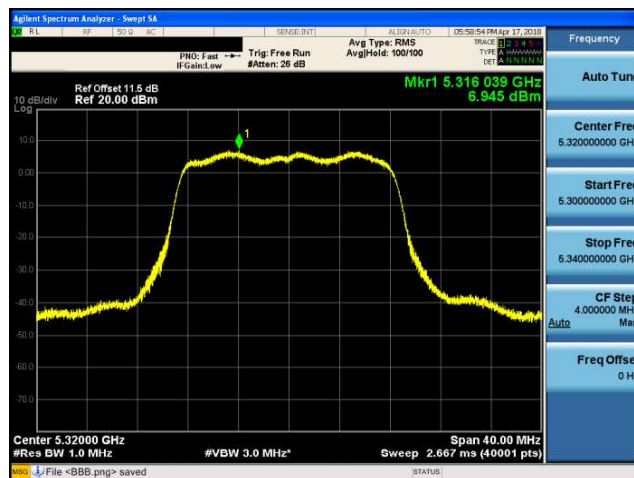
5260



5280

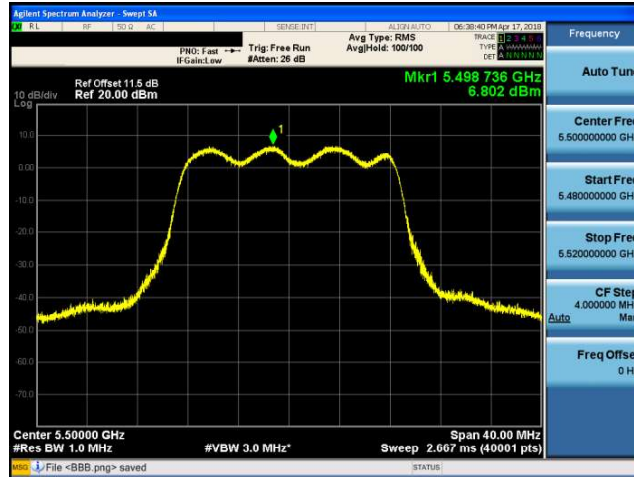


5320

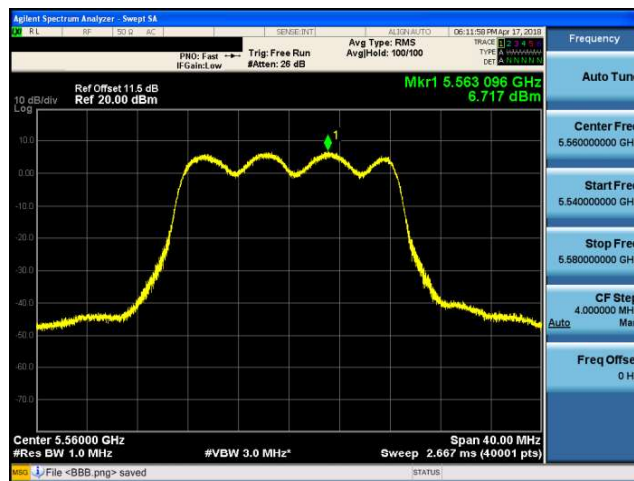


Mode 2: IEEE 802.11a Continuous TX mode_ANT-1

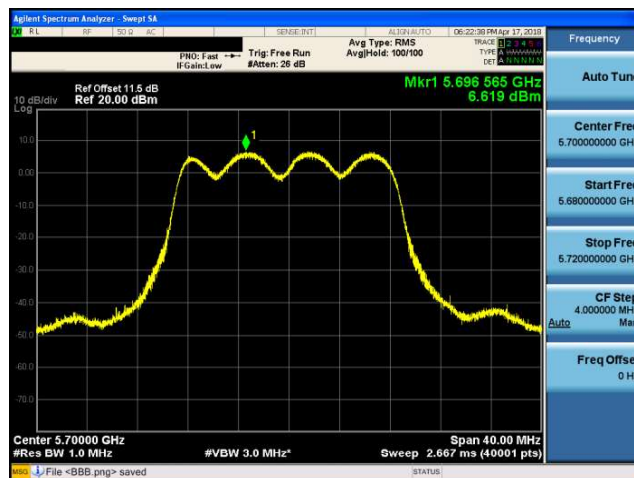
5500



5560



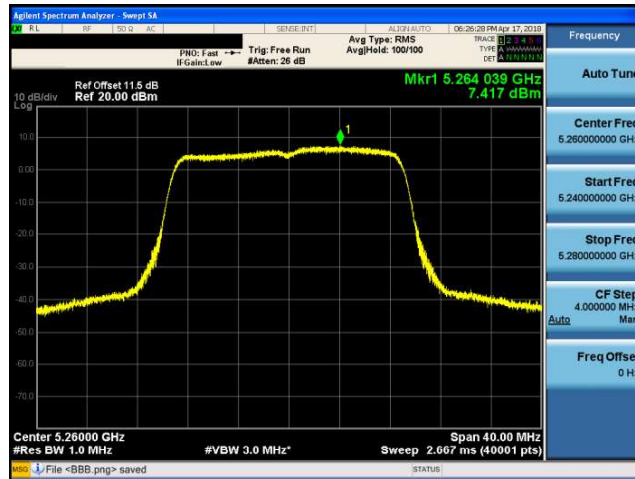
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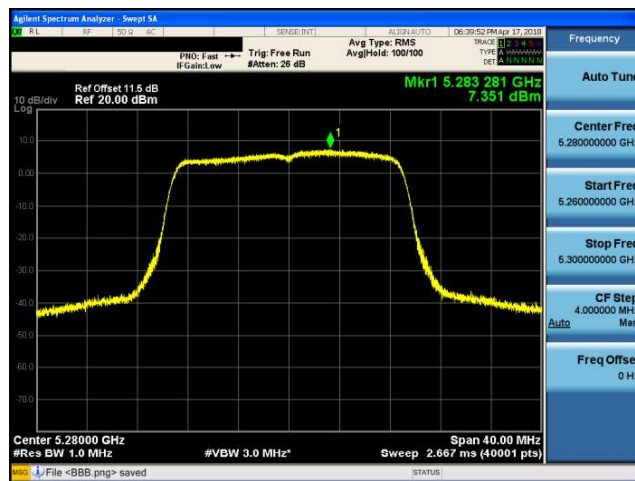


Mode 3: IEEE 802.11ac 20MHz Continuous TX mode_ANT-1

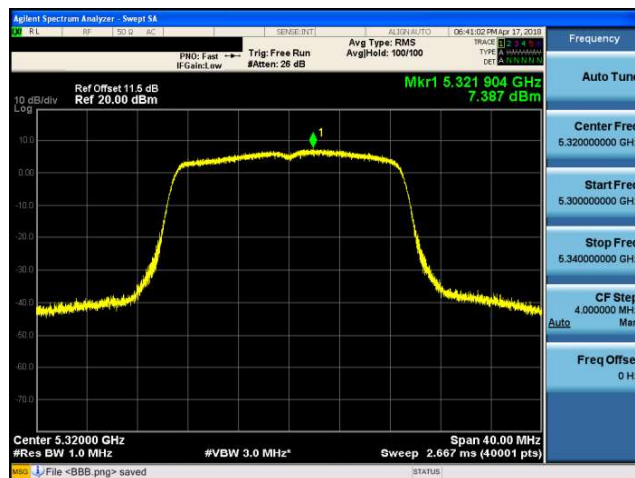
5260



5280



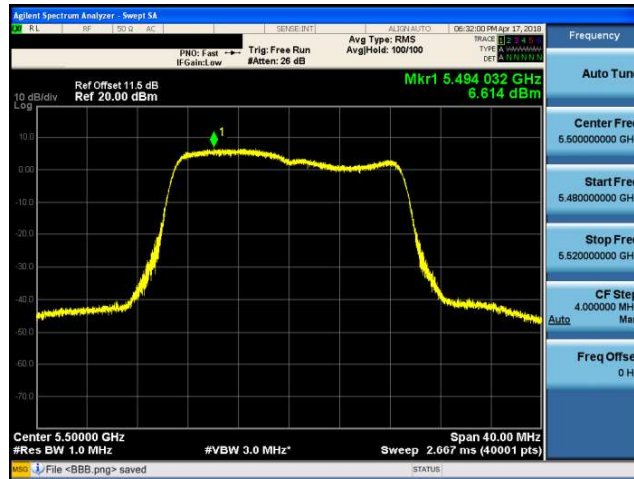
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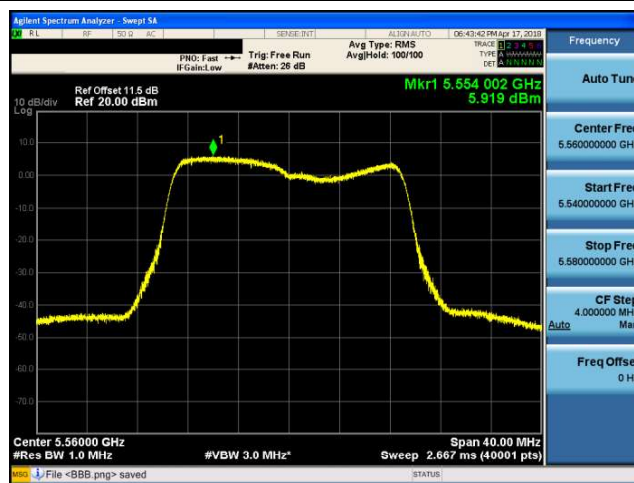


Mode 3: IEEE 802.11ac 20MHz Continuous TX mode_ANT-1

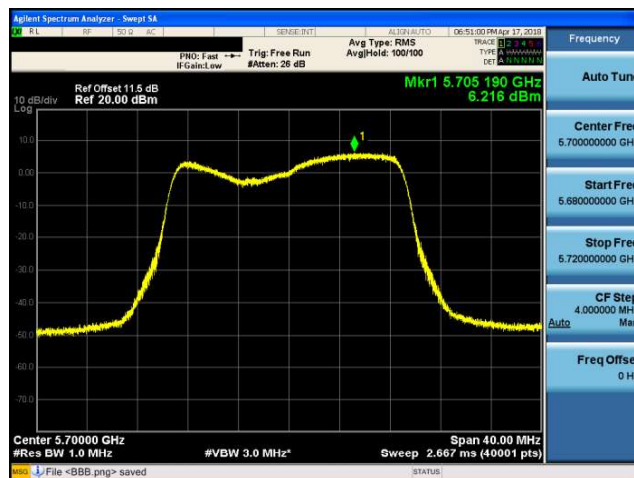
5500



5560



5700

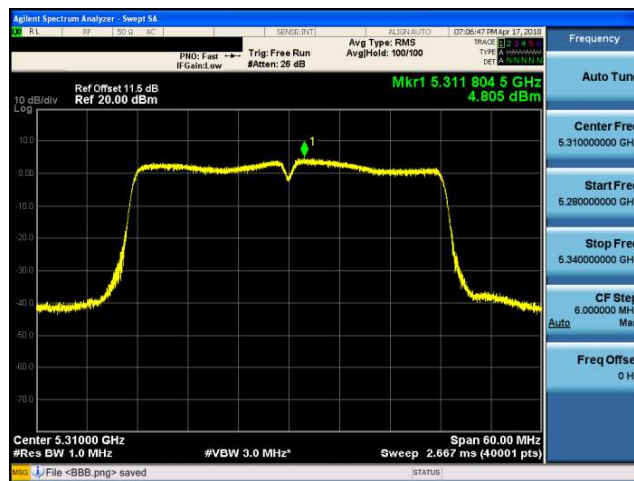


Mode 4: IEEE 802.11ac 40MHz Continuous TX mode_ANT-1

5270

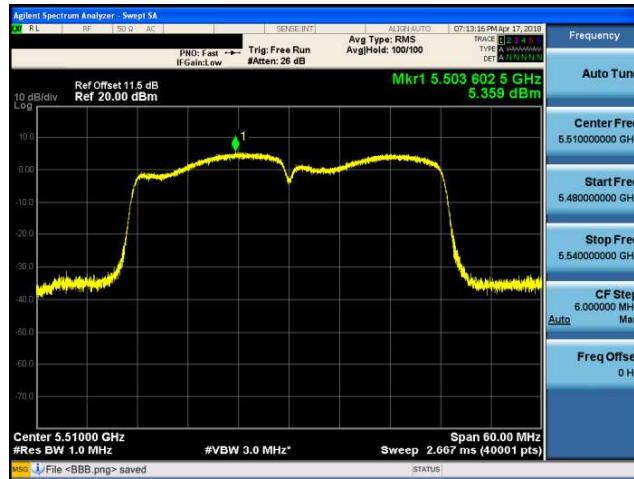


5310

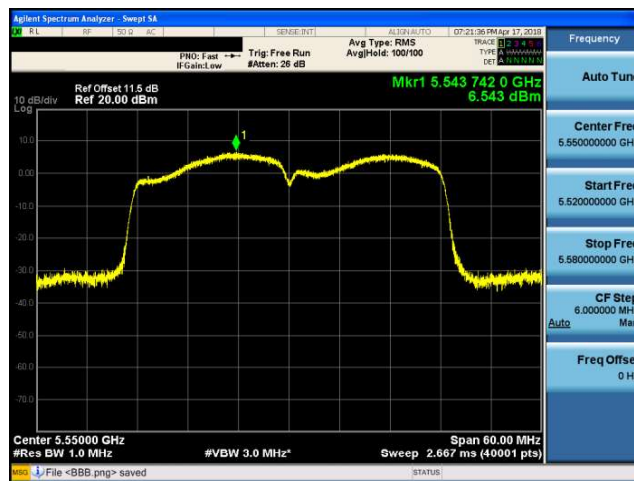


Mode 4: IEEE 802.11ac 40MHz Continuous TX mode_ANT-1

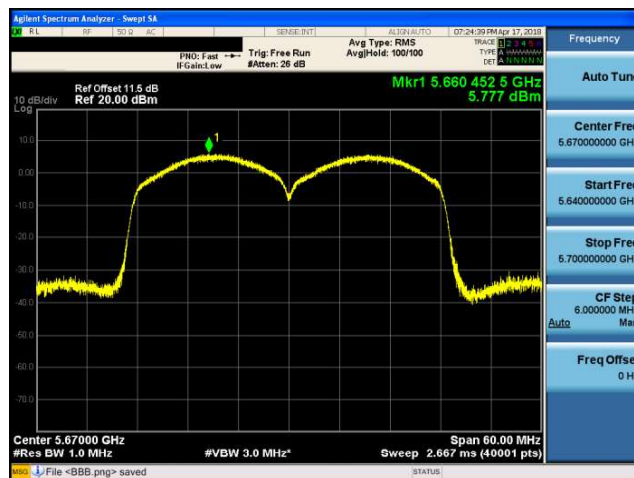
5510



5550



5670





Mode 5: IEEE 802.11ac 80MHz Continuous TX mode_ANT-1

5290



5530

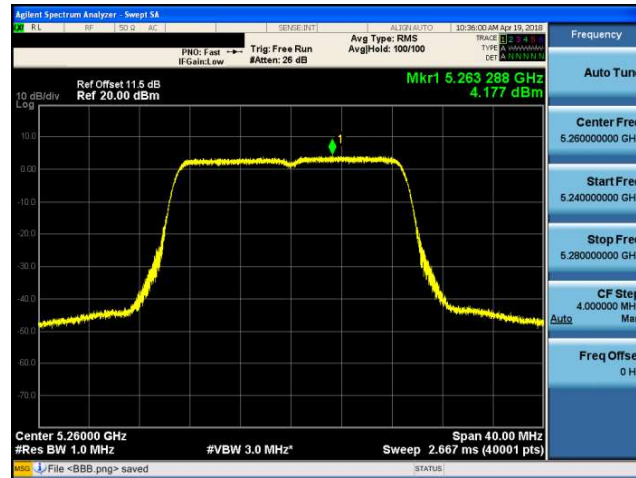




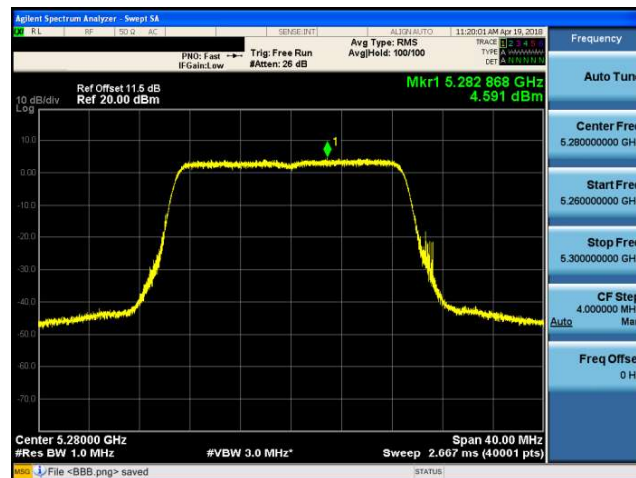
Beamforming on

Mode 3: IEEE 802.11ac 20MHz Continuous TX mode_ANT-0

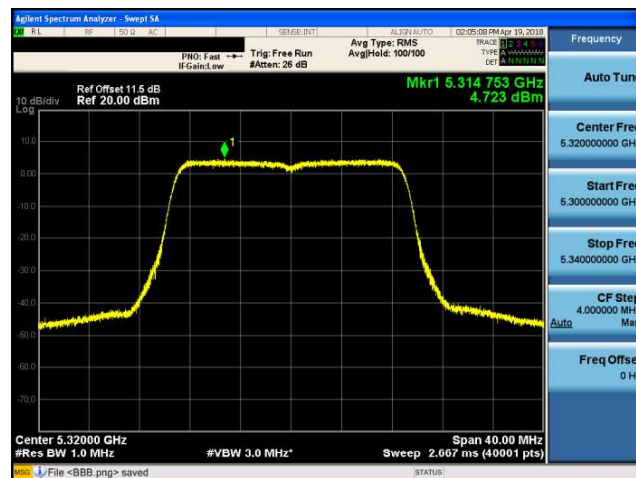
5260



5280

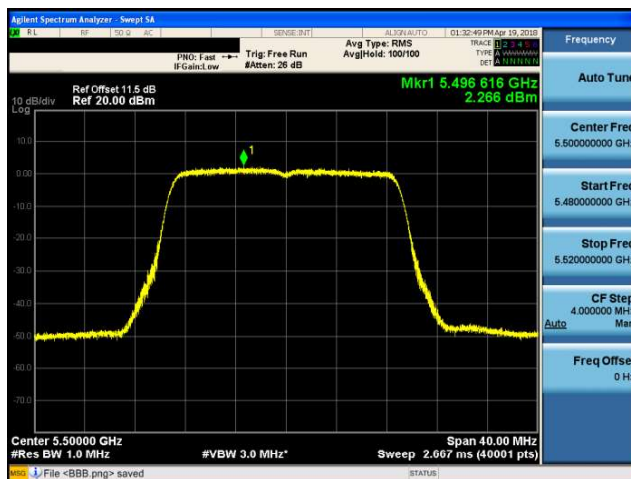


5320

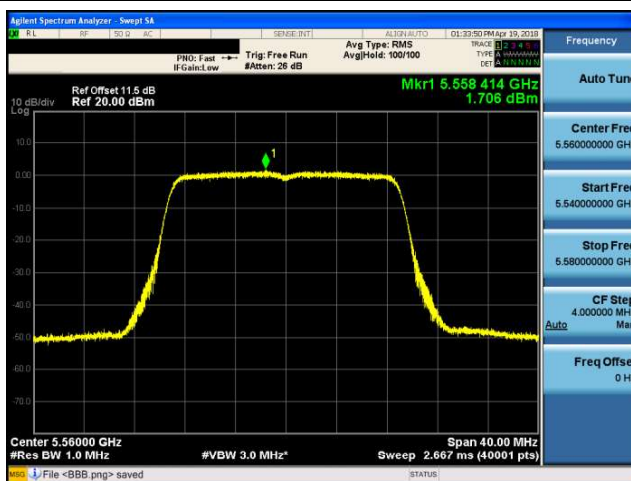


Mode 3: IEEE 802.11ac 20MHz Continuous TX mode_ANT-0

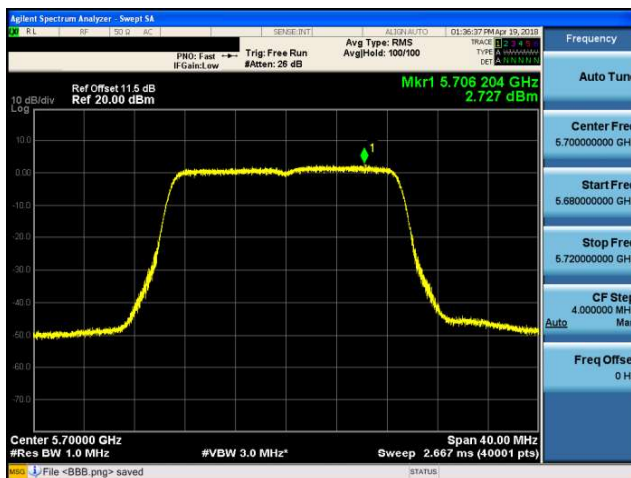
5500



5560



5700

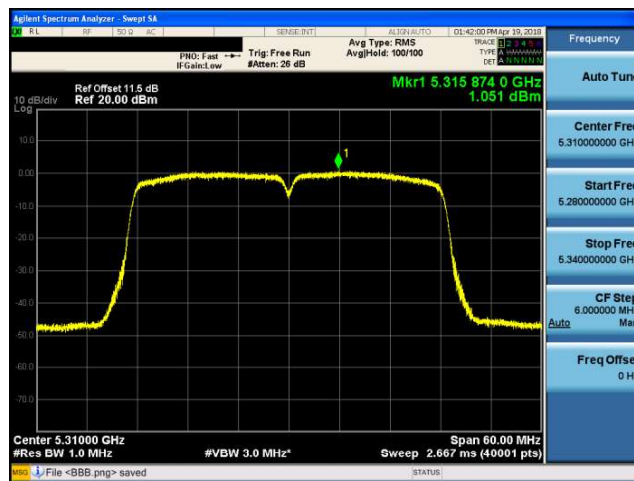


Mode 4: IEEE 802.11ac 40MHz Continuous TX mode_ANT-0

5270

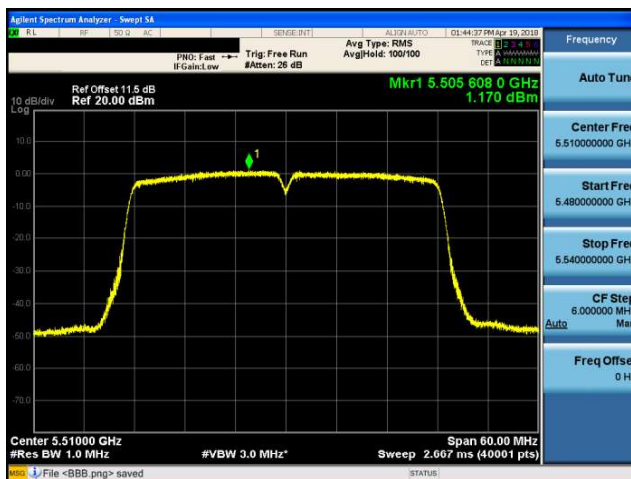


5310

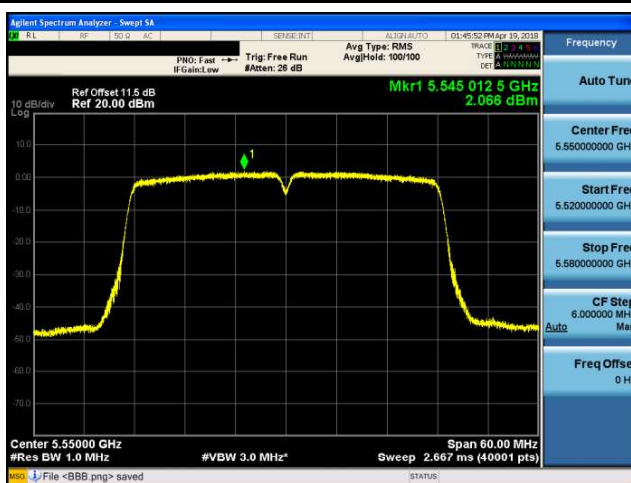


Mode 4: IEEE 802.11ac 40MHz Continuous TX mode_ANT-0

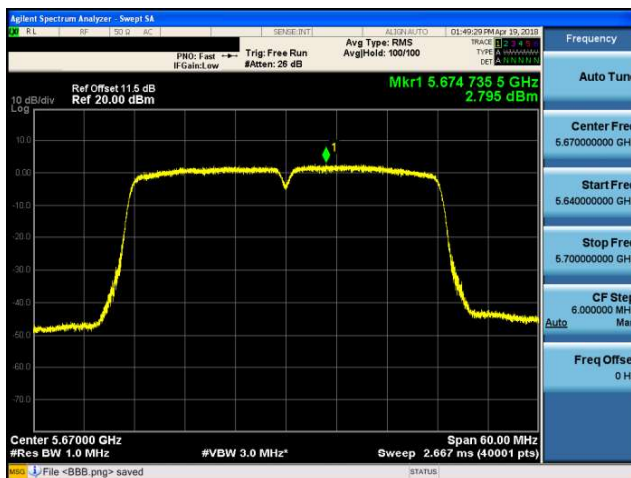
5510



5550



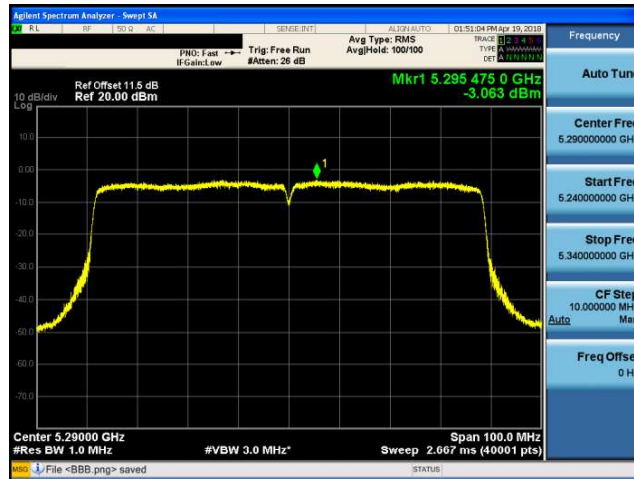
5670





Mode 5: IEEE 802.11ac 80MHz Continuous TX mode_ANT-0

5290



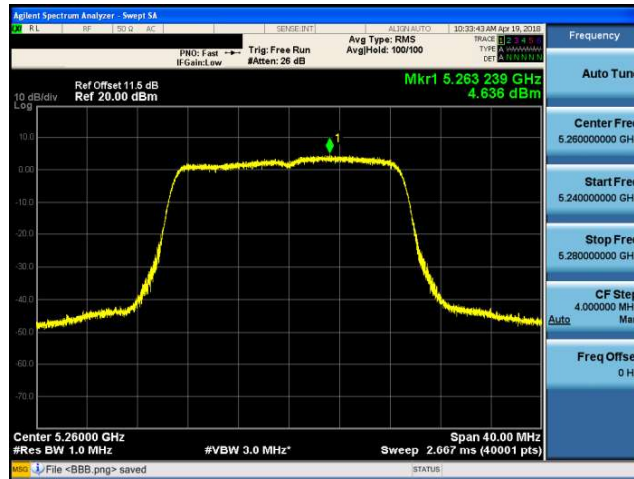
5530



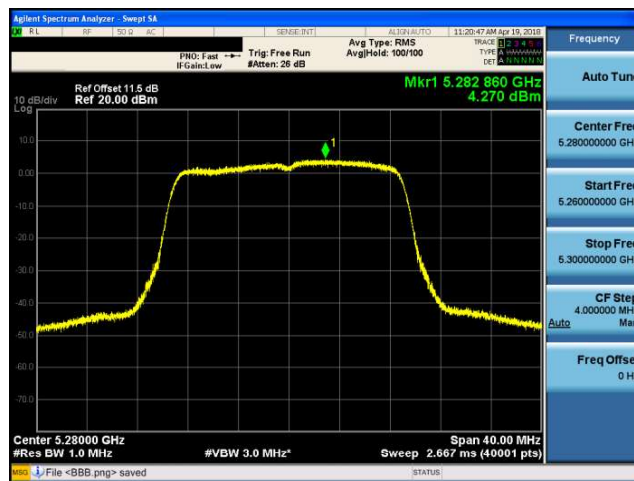


Mode 3: IEEE 802.11ac 20MHz Continuous TX mode_ANT-1

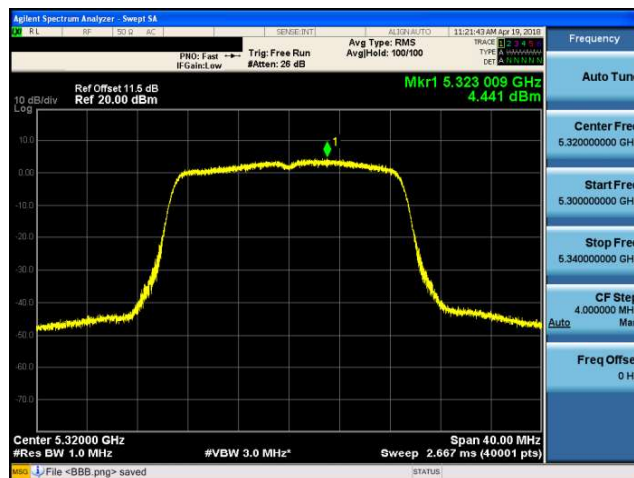
5260



5280

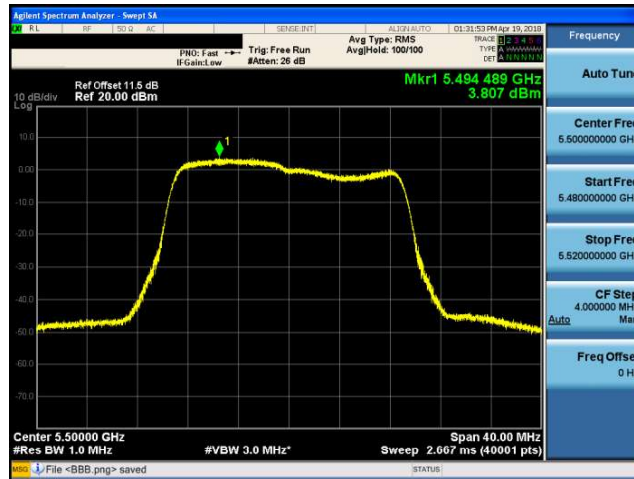


5320

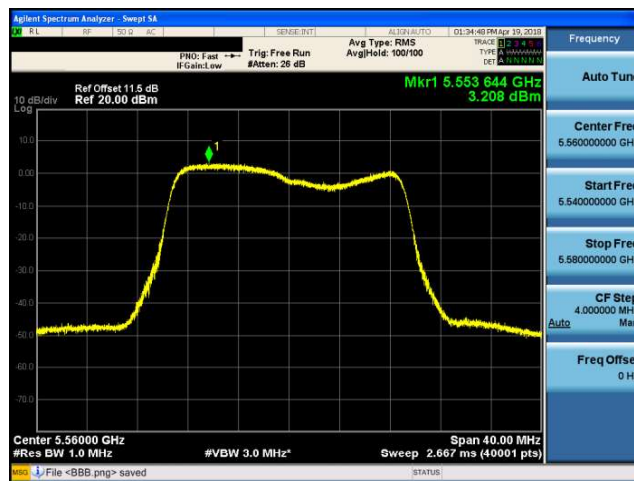


Mode 3: IEEE 802.11ac 20MHz Continuous TX mode_ANT-1

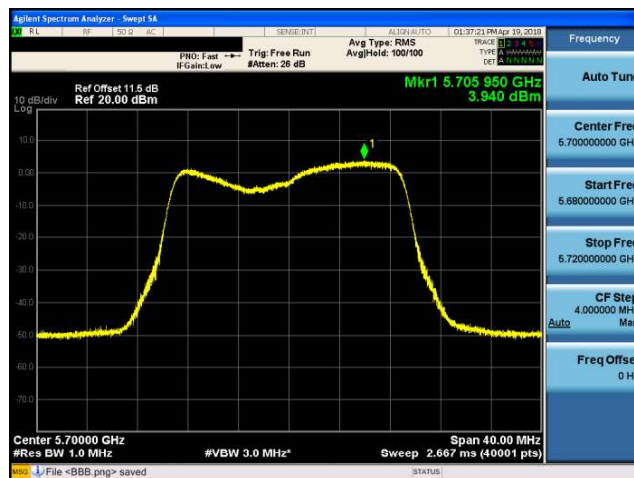
5500



5560



5700

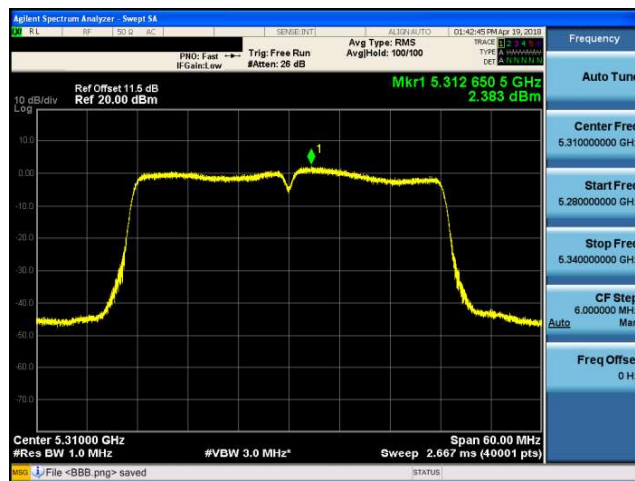


Mode 4: IEEE 802.11ac 40MHz Continuous TX mode_ANT-1

5270



5310



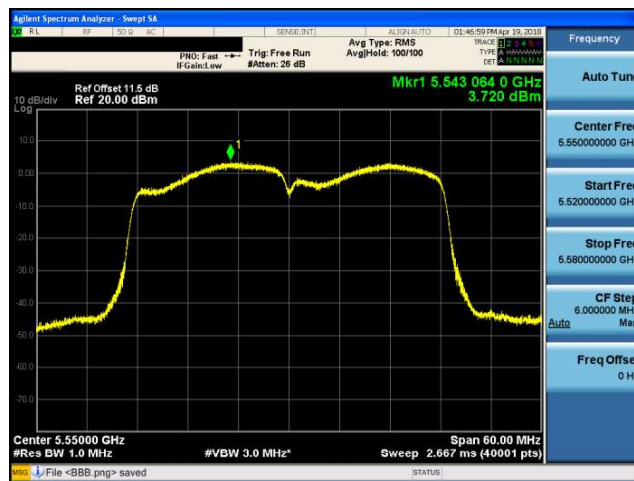


Mode 4: IEEE 802.11ac 40MHz Continuous TX mode_ANT-1

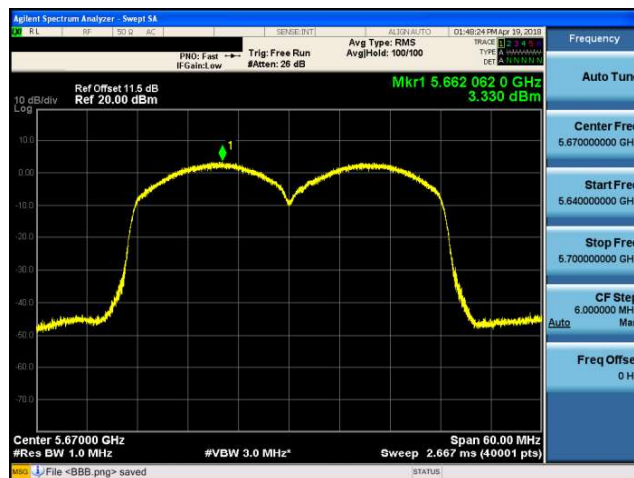
5510



5550



5670





Mode 5: IEEE 802.11ac 80MHz Continuous TX mode_ANT-1

5290



5530





5.6. Frequency Stability Measurement

Temperature Variations

Test Item	Frequency Stability					
Frequency	Temp. (°C)	Voltage (Vac)	Measured Freq. (MHz)	Delta Freq. (Hz)	Tolerance (ppm)	Result (Pass/Fail)
5280 MHz	0	120	5279.9724	-27600	-5.227	Pass
	10		5279.9736	-26400	-5.000	Pass
	20		5279.9742	-25800	-4.886	Pass
	30		5279.9783	-21700	-4.110	Pass
	40		5279.995	-5000	-0.947	Pass
5560 MHz	0	120	5559.9559	-44100	-7.932	Pass
	10		5559.9575	-42500	-7.644	Pass
	20		5559.9589	-41100	-7.392	Pass
	30		5559.9597	-40300	-7.248	Pass
	40		5559.9613	-38700	-6.960	Pass

Voltage Variations

Test Item	Frequency Stability					
Frequency	Temp. (°C)	Voltage (Vac)	Measured Freq. (MHz)	Delta Freq. (Hz)	Tolerance (ppm)	Result (Pass/Fail)
5280 MHz	20	138.00	5279.973	-27000	-5.114	Pass
		120.00	5279.9742	-25800	-4.886	Pass
		102.00	5279.9755	-24500	-4.640	Pass
5560 MHz	20	138.00	5559.9565	-43500	-7.824	Pass
		120.00	5559.9589	-41100	-7.392	Pass
		102.00	5559.961	-39000	-7.014	Pass

Note: The manufacturer's frequency stability specification is better than 20ppm.