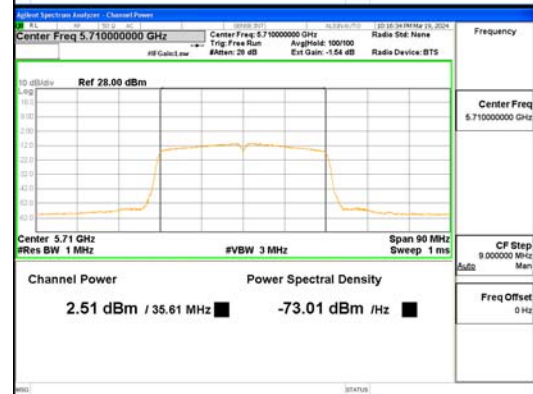
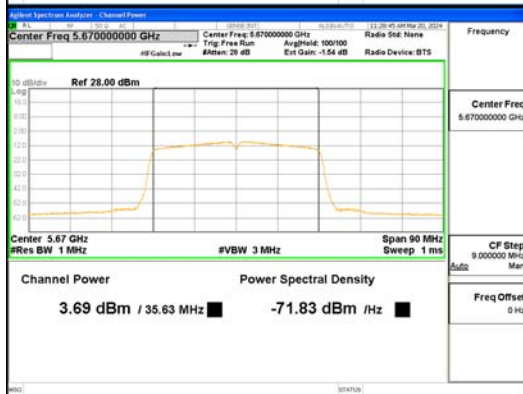
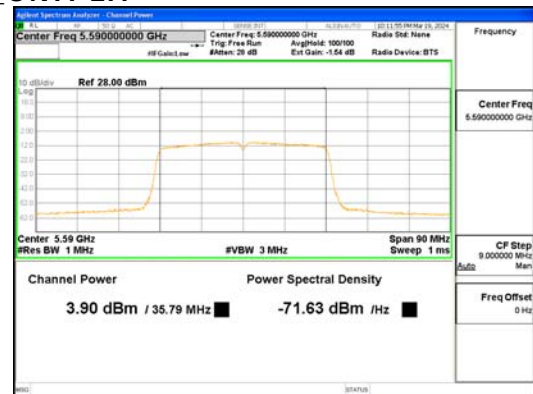
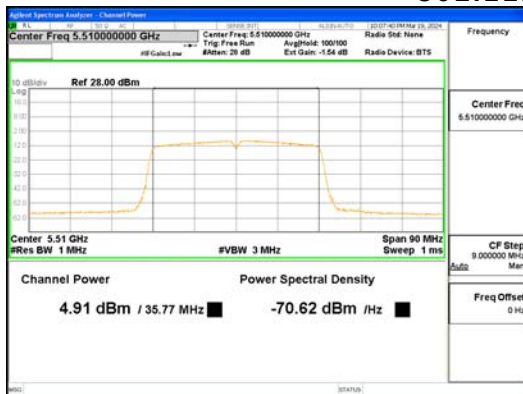




802.11n_HT40_UNII 1



802.11n_HT40_UNII 2A



802.11n_HT40_UNII 2C

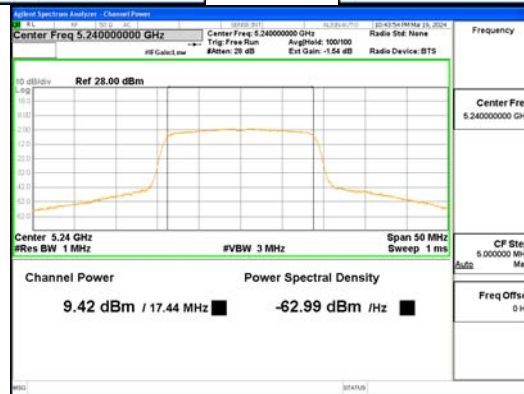
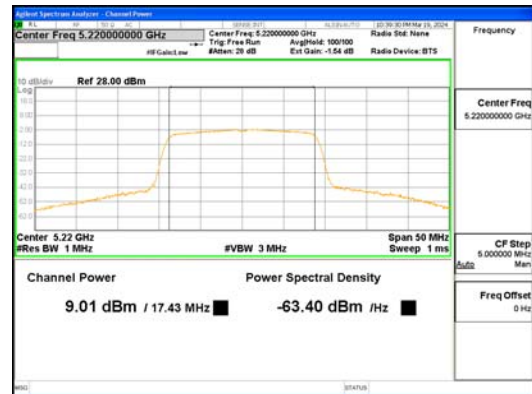


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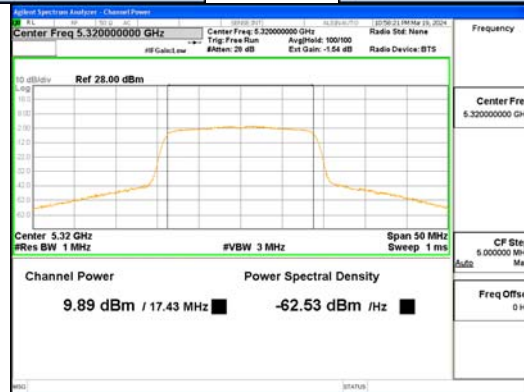
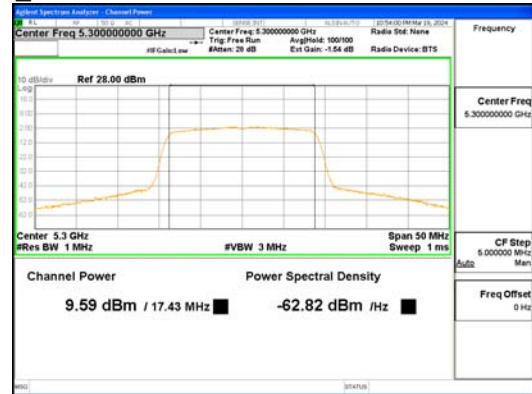
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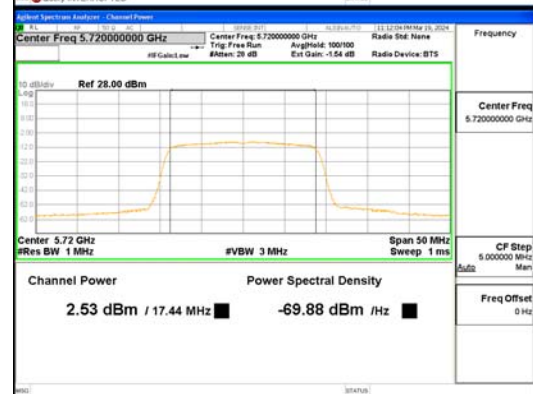
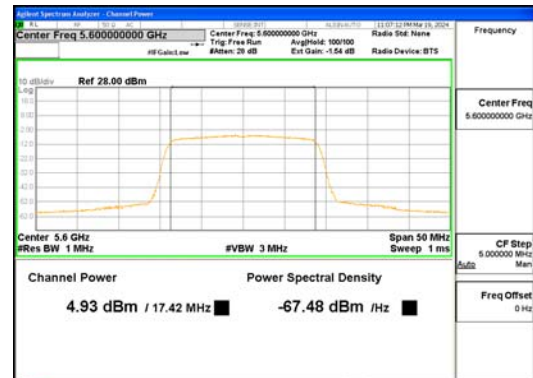
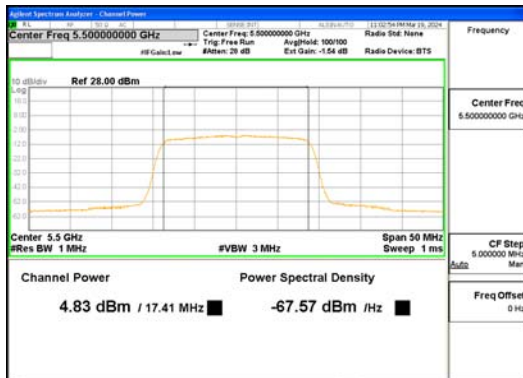
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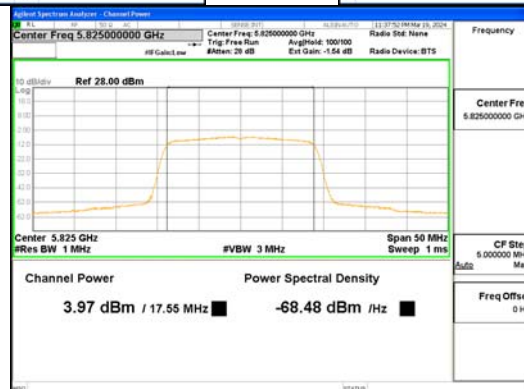
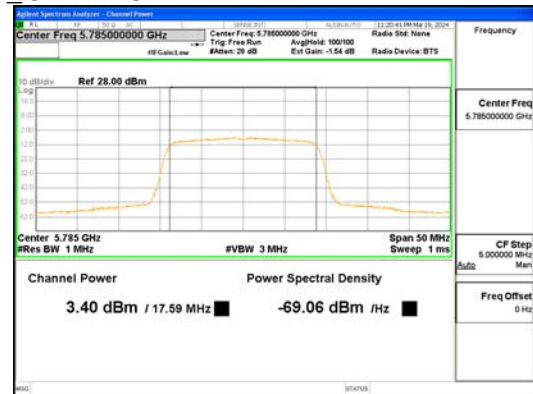
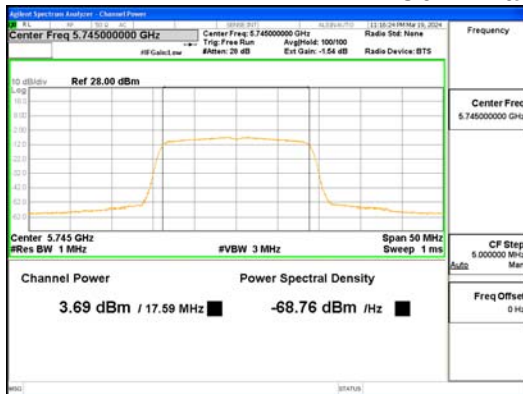
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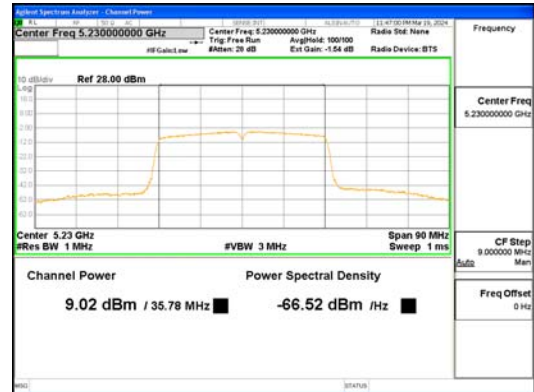
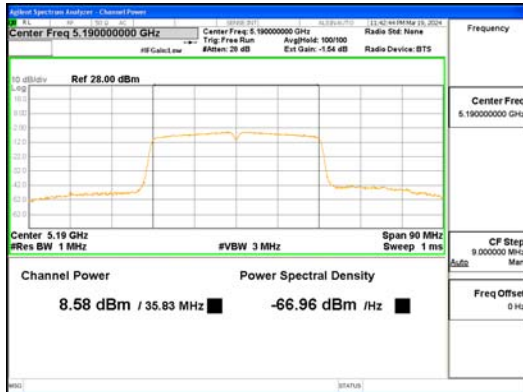
802.11ac_VHT20_UNII 2A



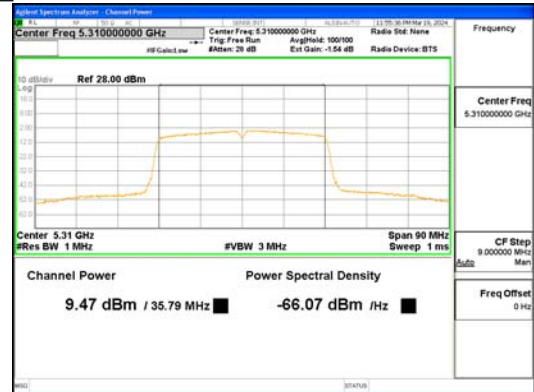
802.11ac_VHT20_UNII 2C



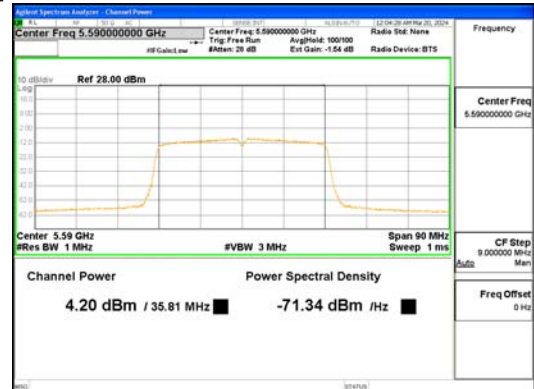
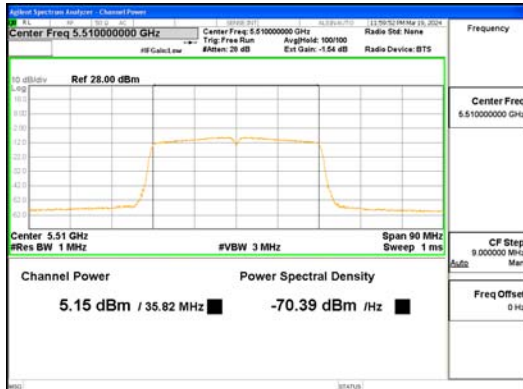
802.11ac_VHT20_UNII 3



802.11n_HT40_UNII 1



802.11n_HT40_UNII 2A

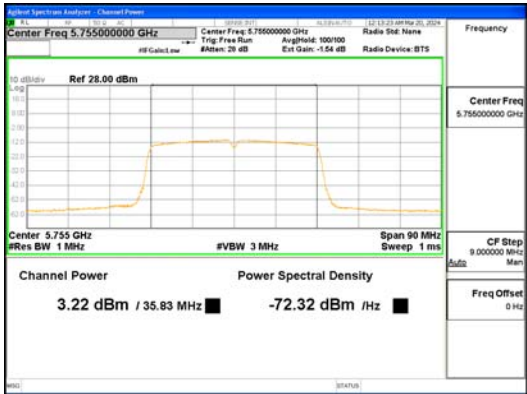


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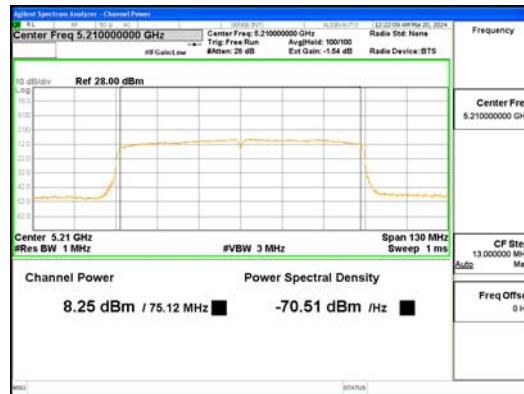


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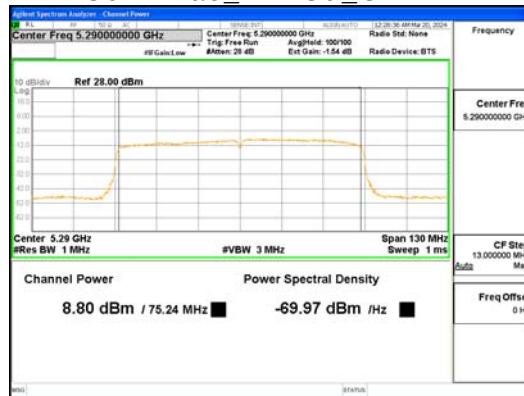
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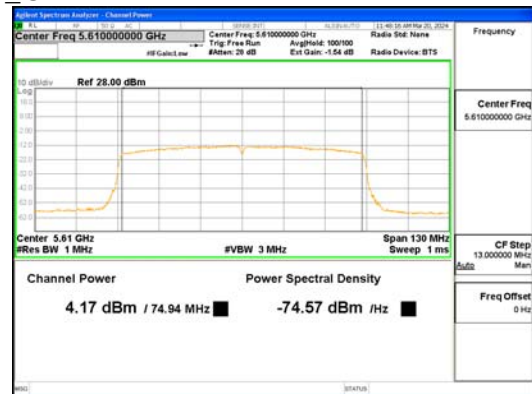
802.11n_HT40_UNII 3



802.11ac VHT80 UNII 1



802.11ac VHT80 UNII 2A



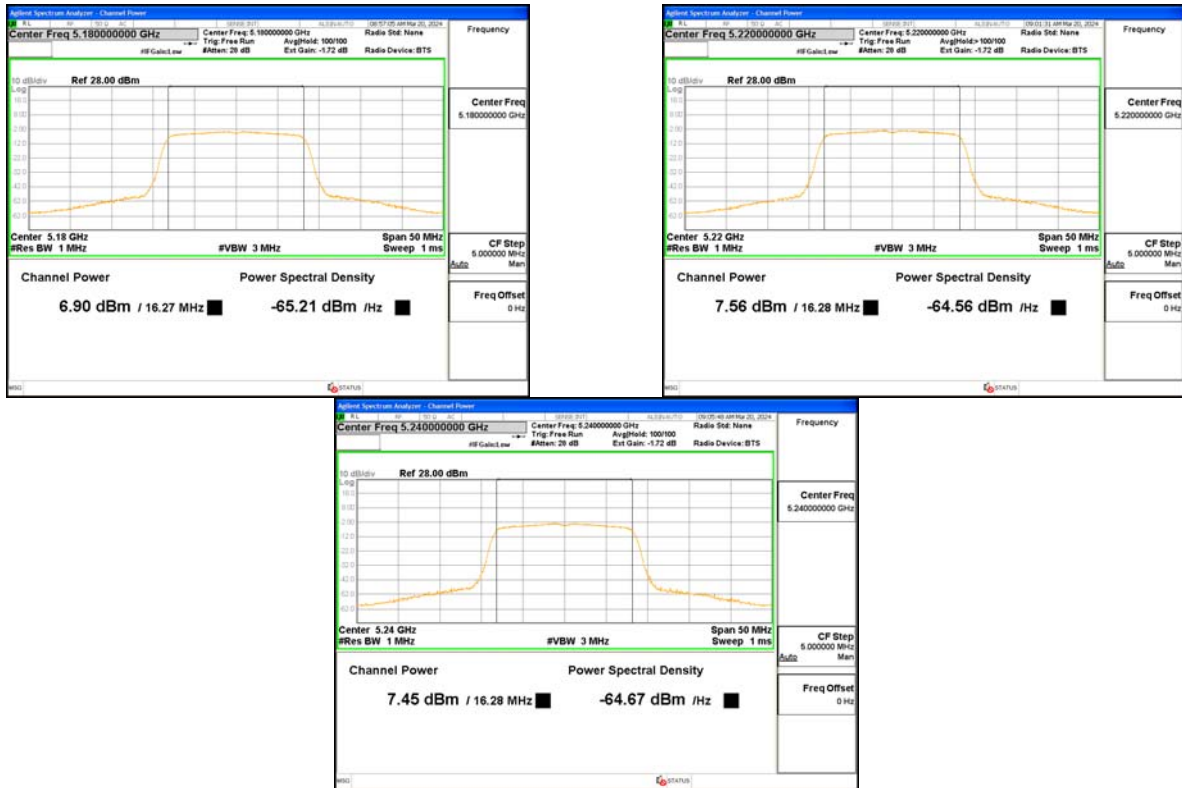
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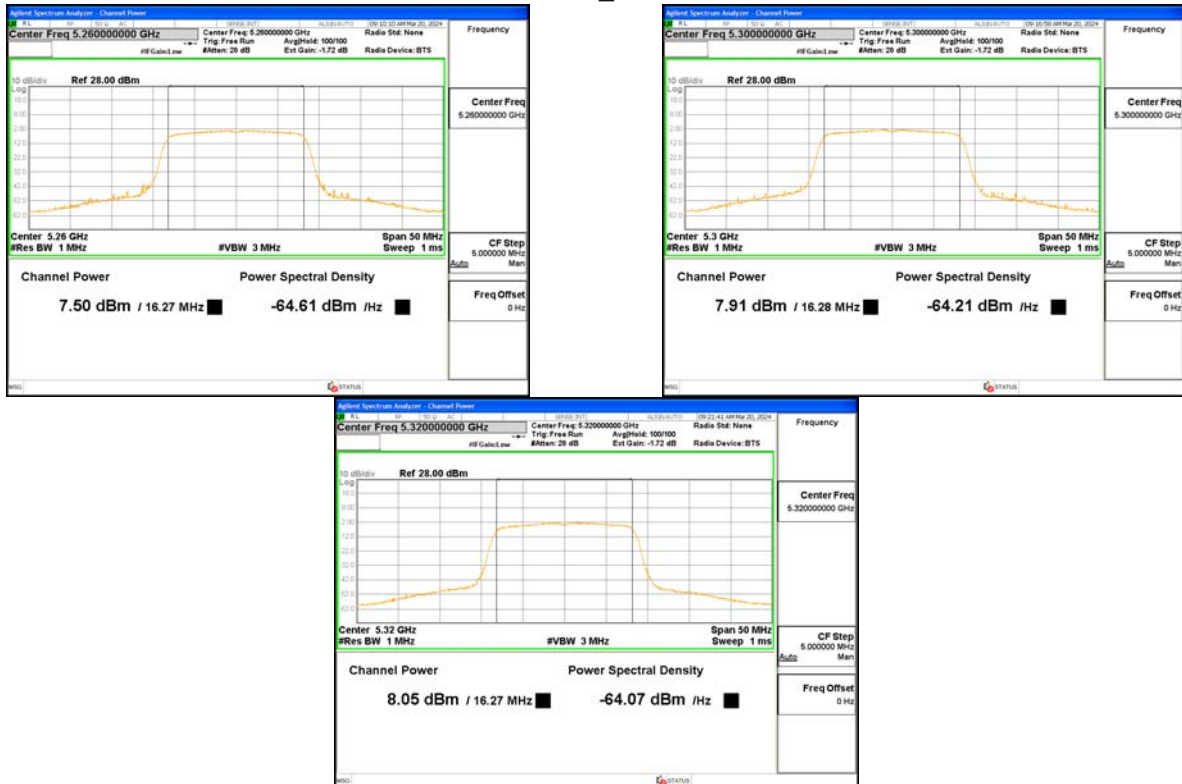
802.11ac VHT80 UNII 2C

802.11ac VHT80 UNII 3

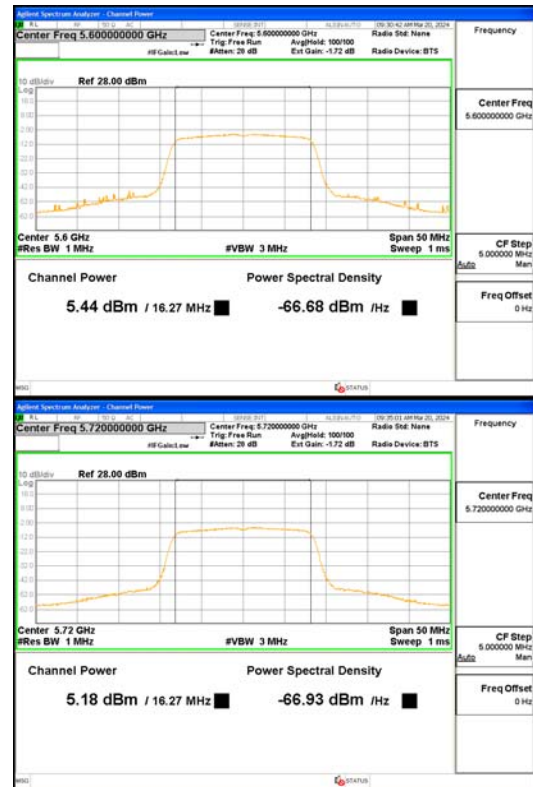
ANT1



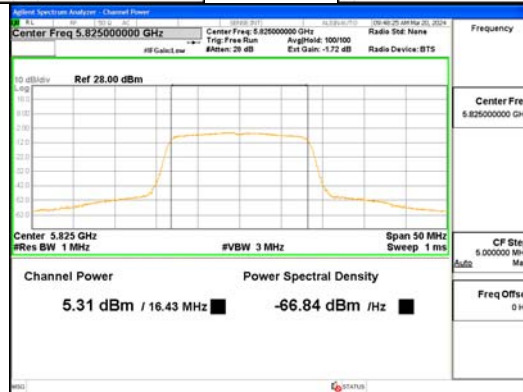
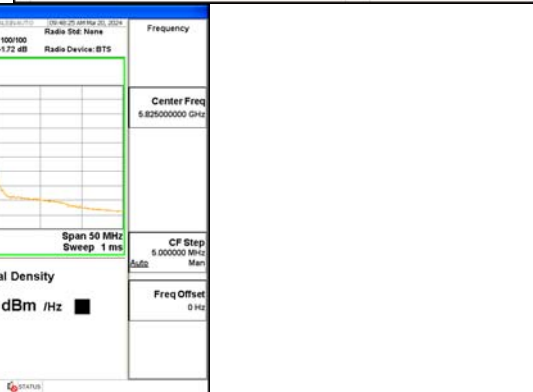
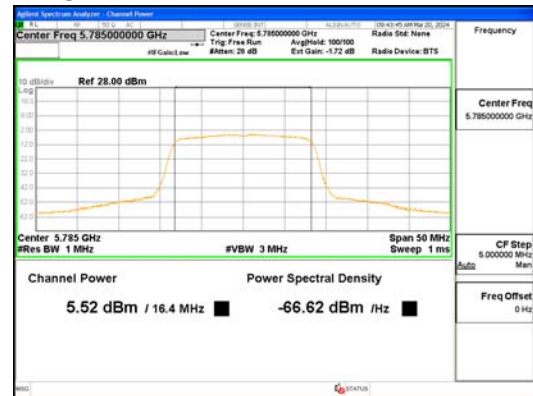
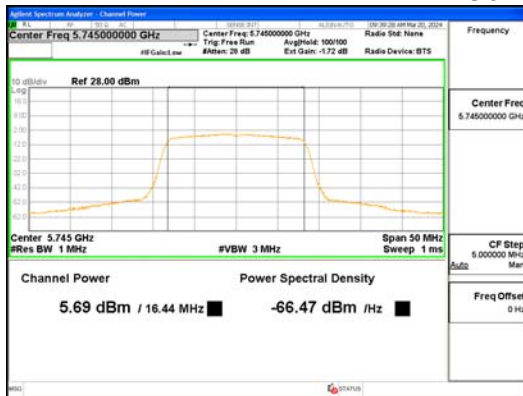
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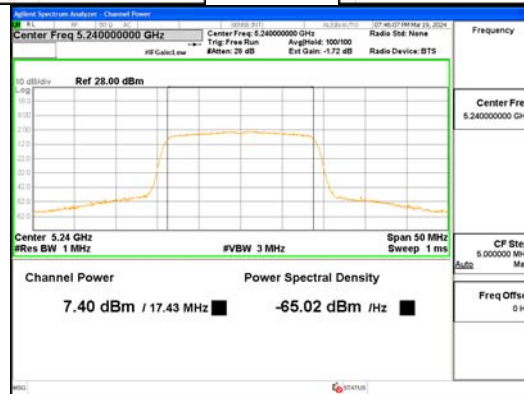
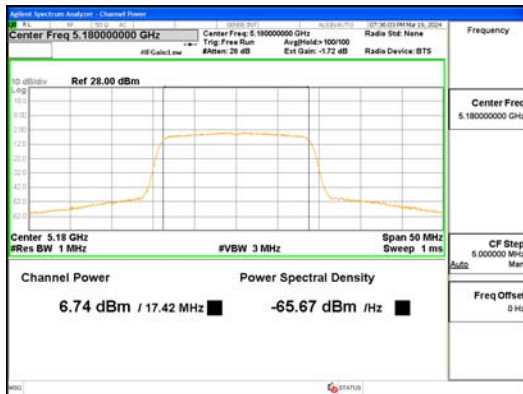
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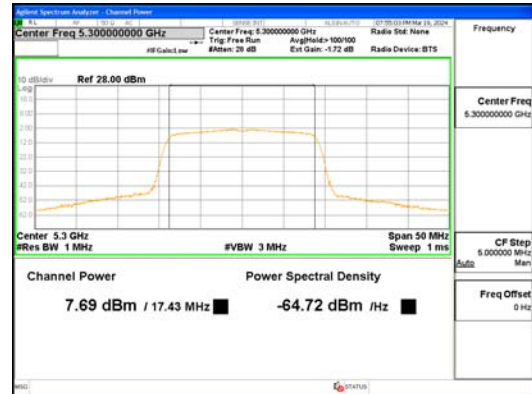
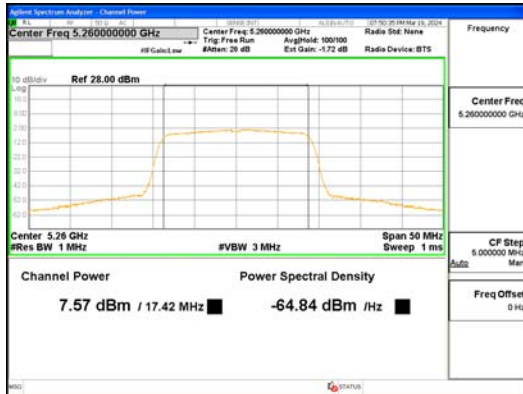
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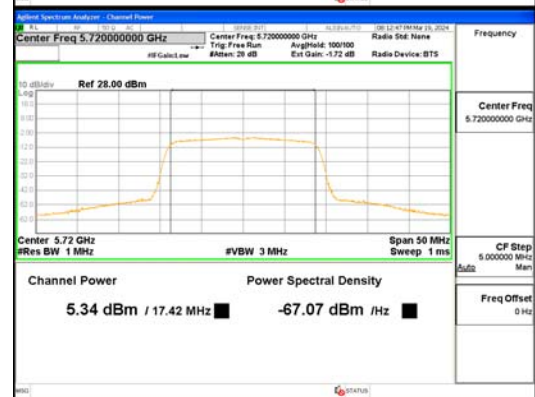
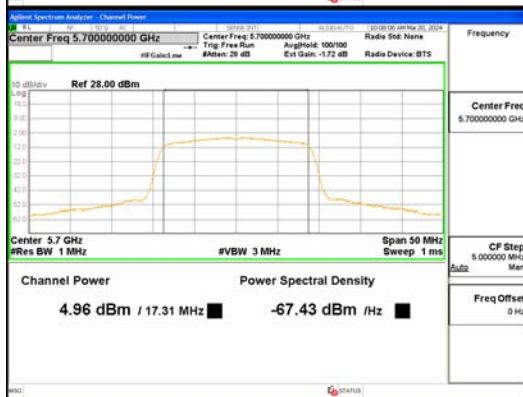
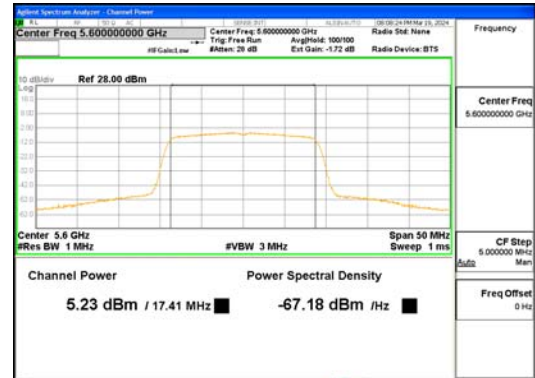
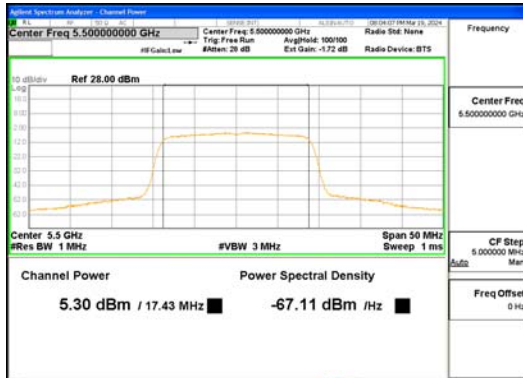
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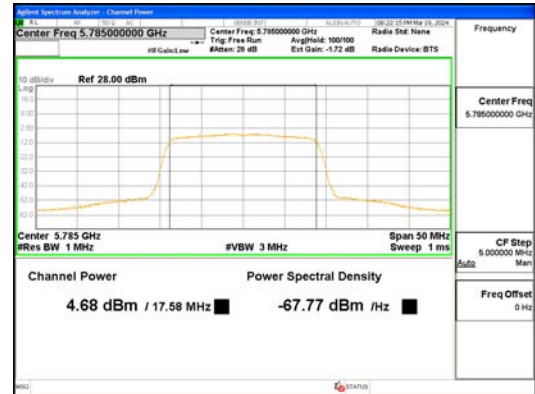
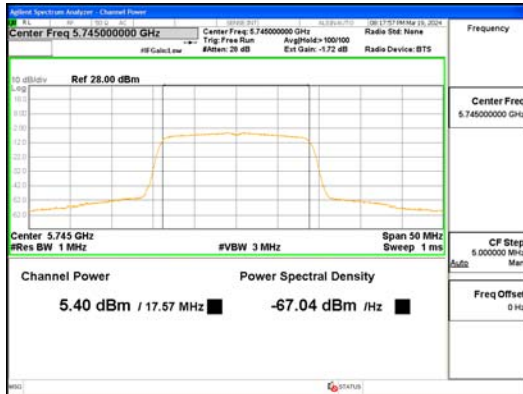
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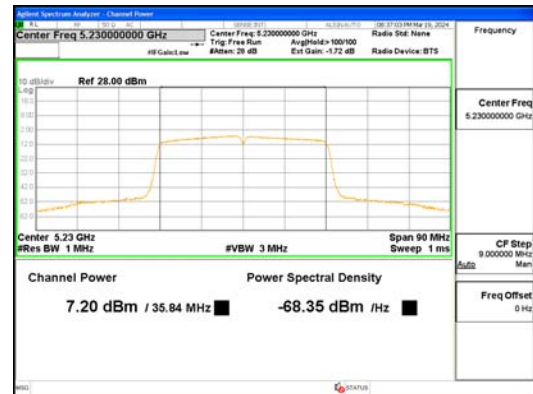
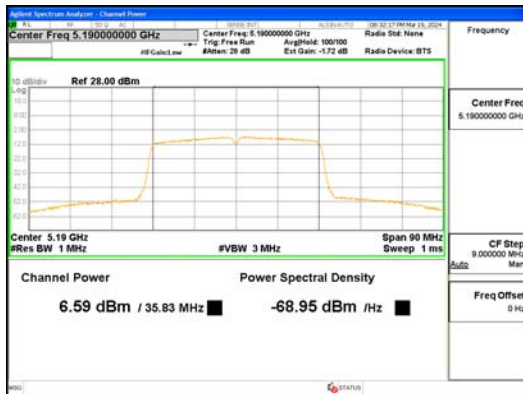
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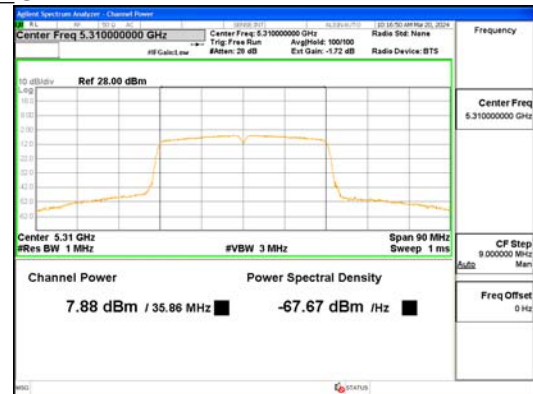
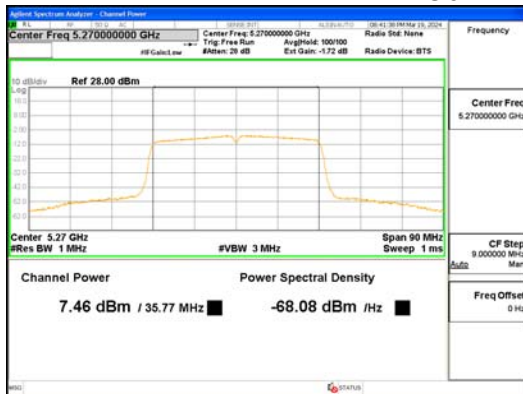
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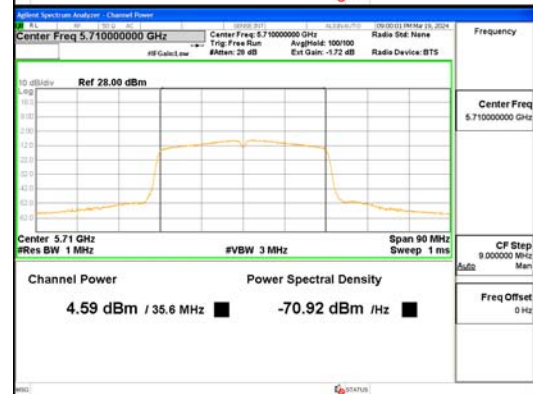
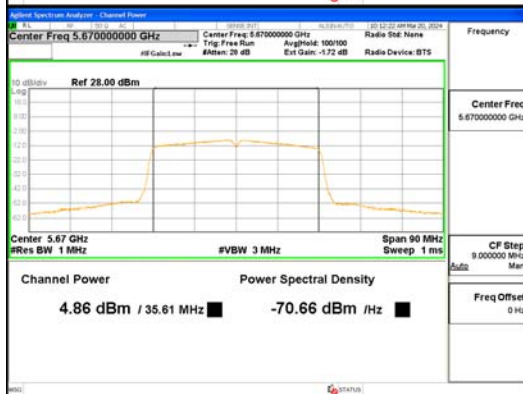
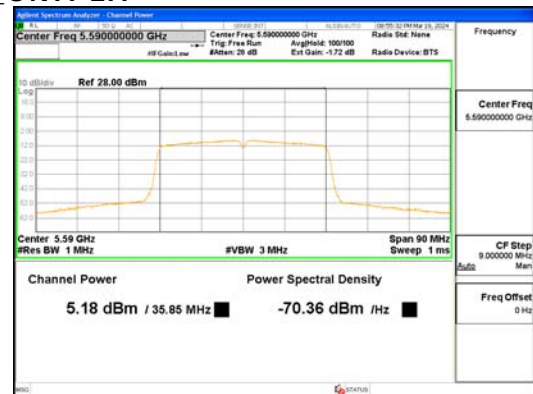
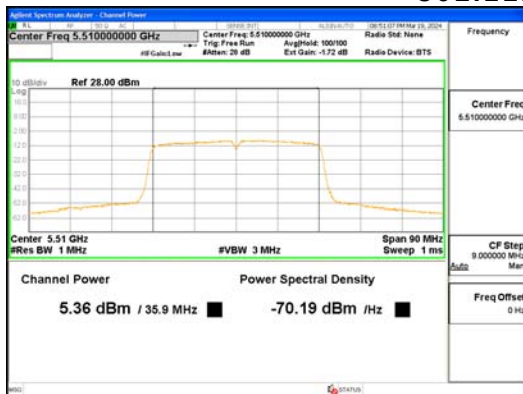
802.11n20_UNII 3



802.11n_HT40_UNII 1



802.11n_HT40_UNII 2A

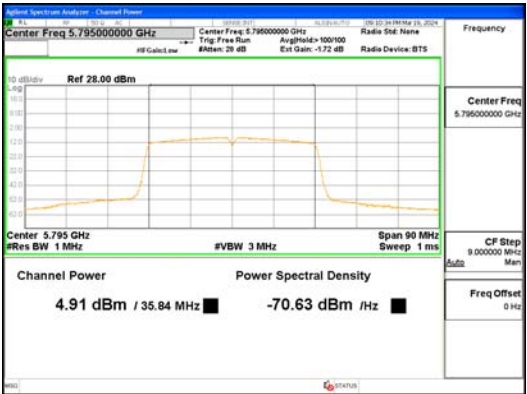
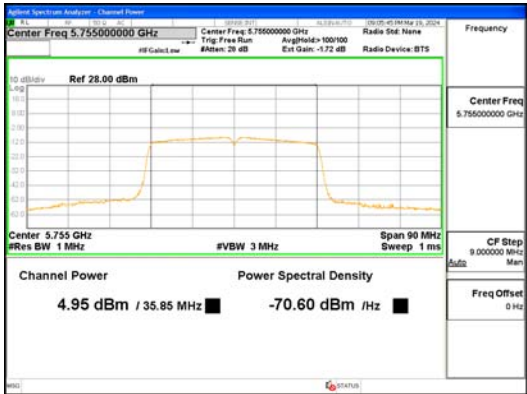


802.11n_HT40_UNII 2C

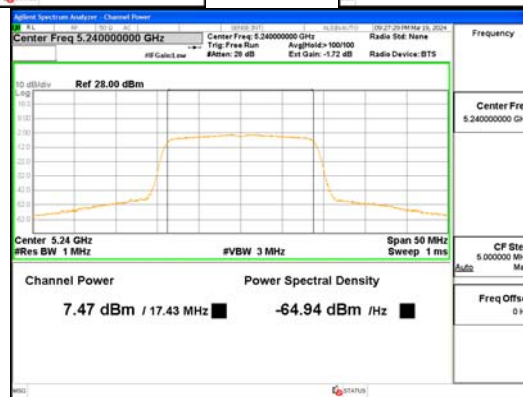
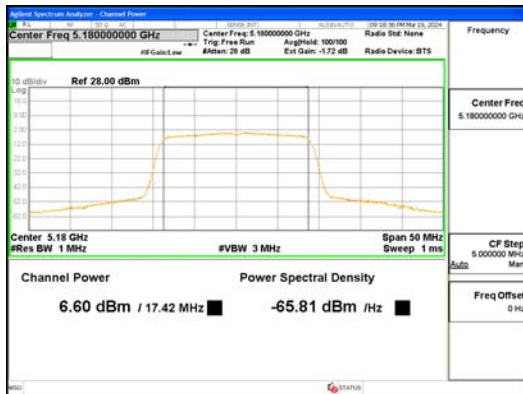


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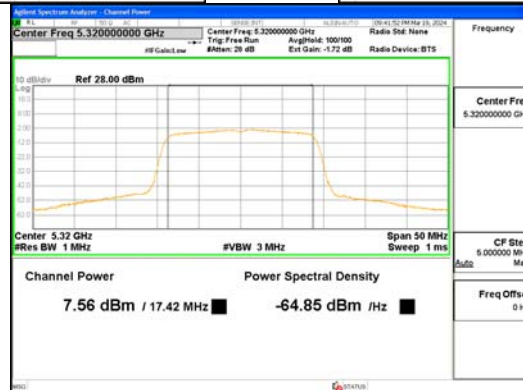
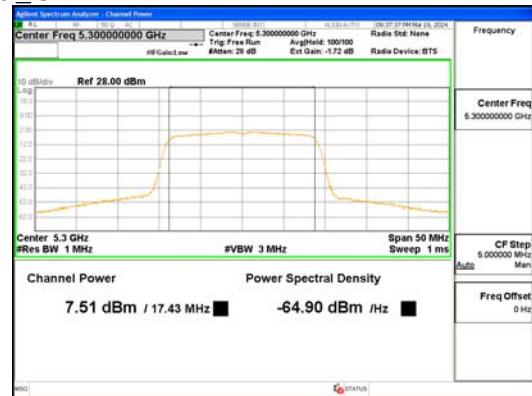
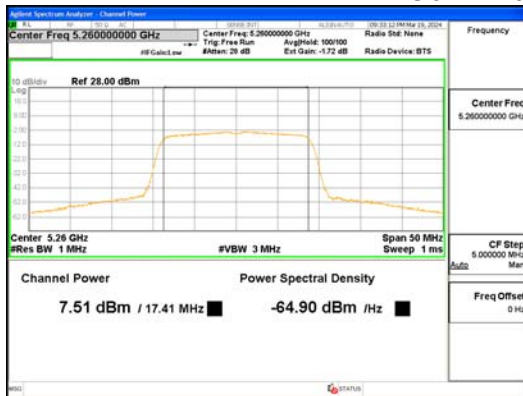
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802.11n_HT40_UNII 3



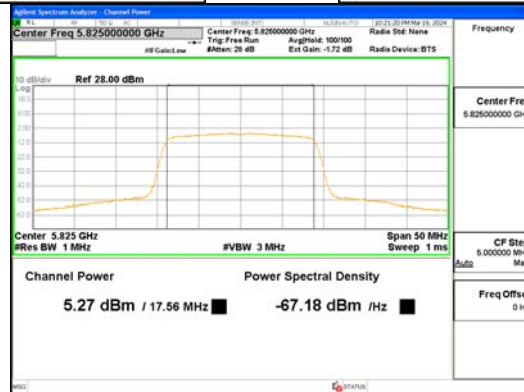
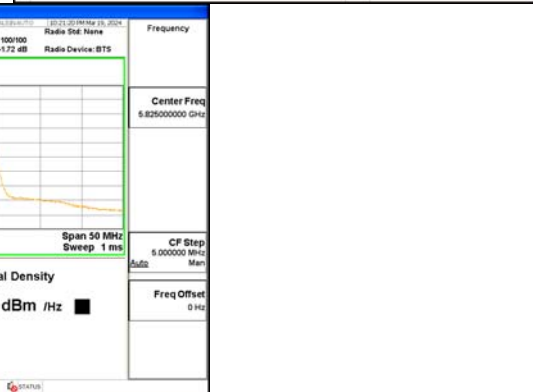
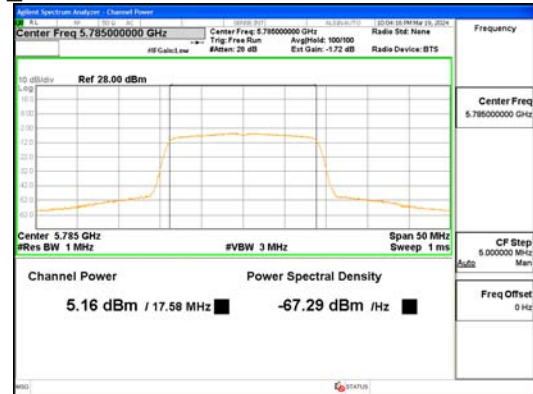
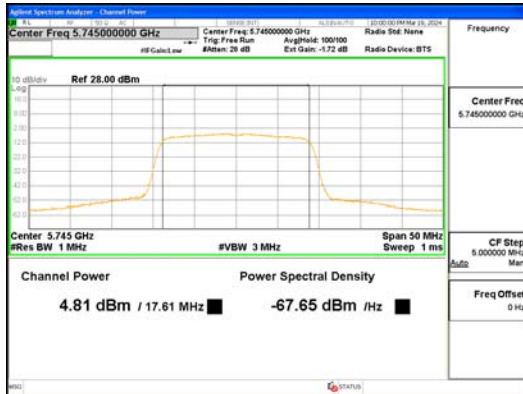
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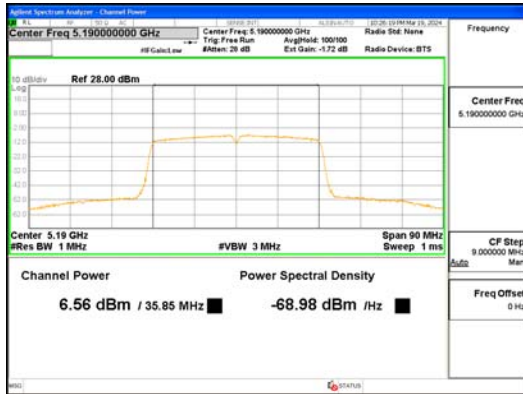
802.11ac_VHT20_UNII 2A



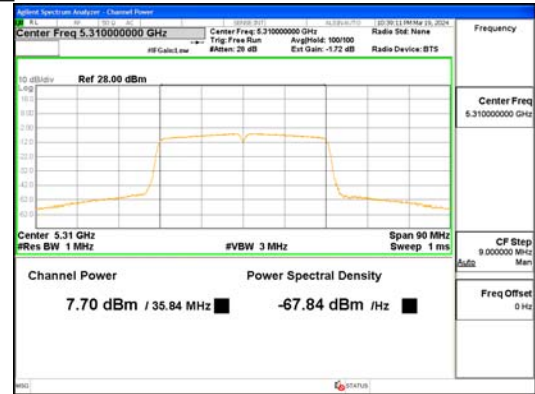
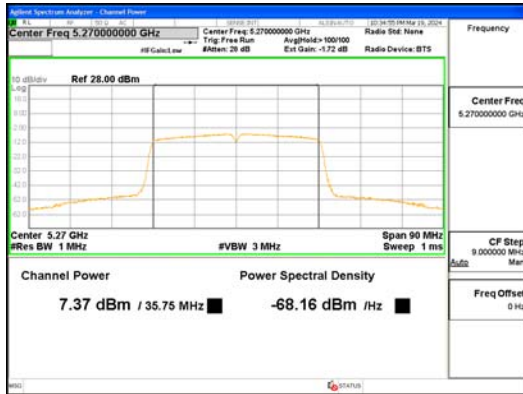
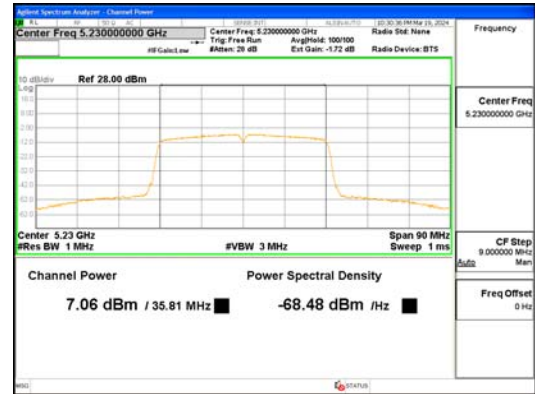
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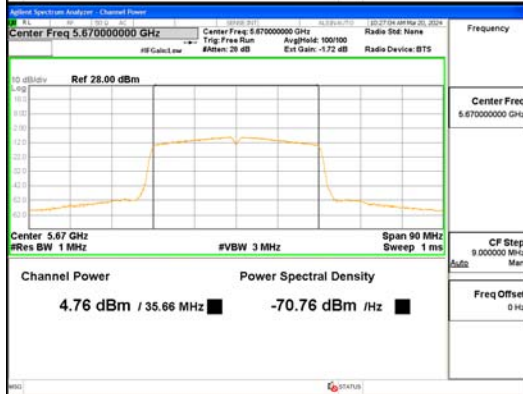
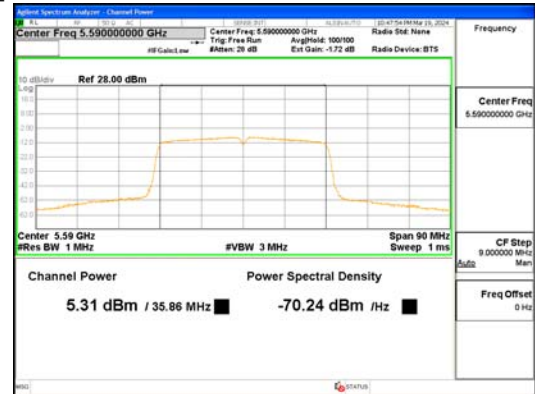
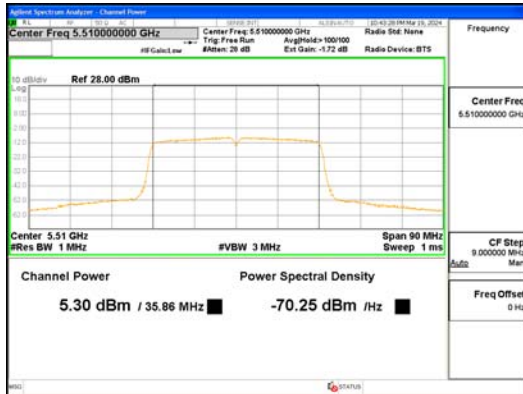
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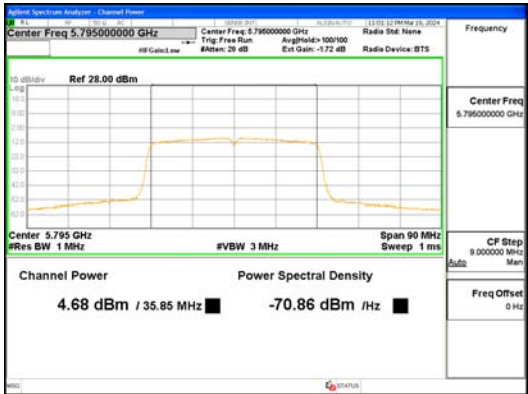
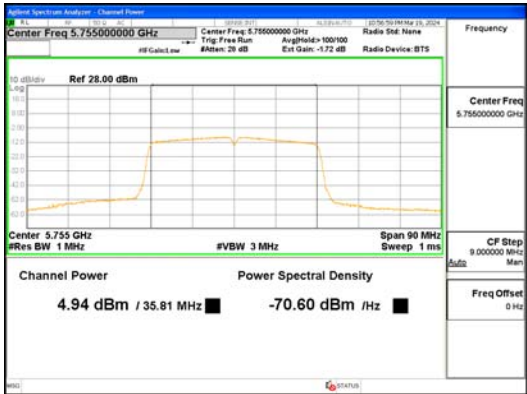
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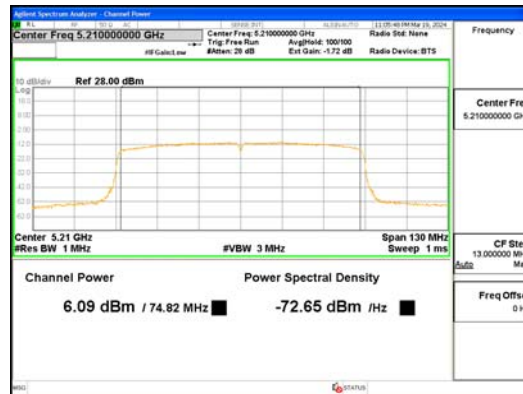
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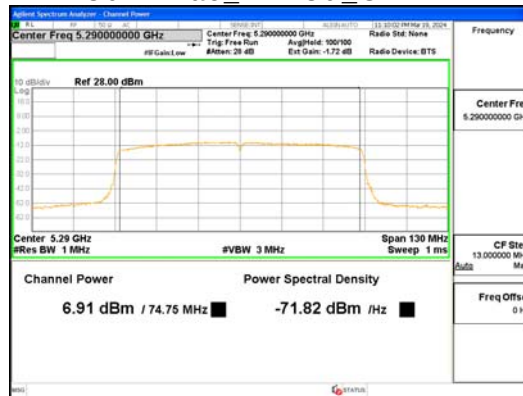
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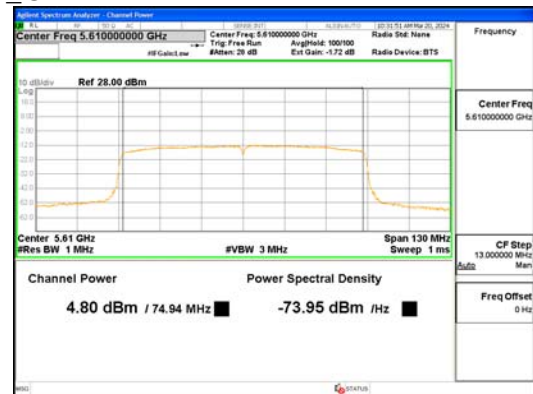
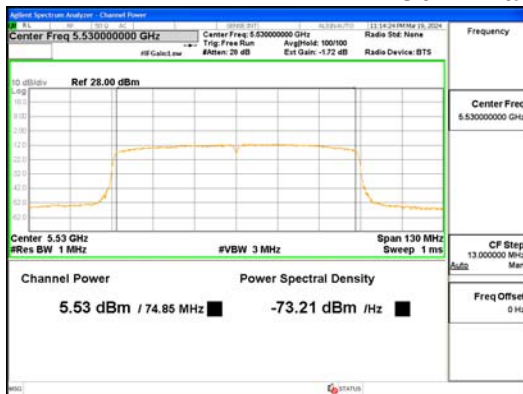
802.11n_HT40_UNII 3



802.11ac VHT80 UNII 1



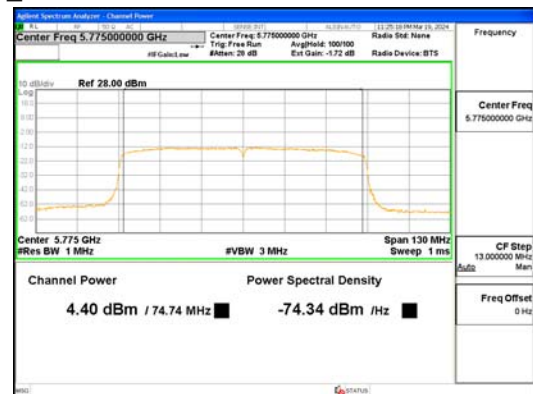
802.11ac VHT80 UNII 2A



802.11ac VHT80 UNII 2C



802.11ac VHT80 UNII 2C



802.11ac VHT80 UNII 3

4.4 Power Spectral Density

Test Procedures

KDB 789033 – Section F (Method SA-2, Maximum Power Spectral Density)
 KDB 662911 D01, D02 (Multiple Transmitter Output)

The peak power density is measured with a spectrum analyzer connected to the antenna terminal while the EUT is operating in transmission mode at the appropriate frequencies.

Test Settings :

Center frequency = the highest, middle and the lowest channels

- a) RBW = 1 MHz, 500 KHz (UNII 3)
- b) VBW = 3 MHz, 1.5 MHz (UNII 3)
- c) Sweep time = auto
- d) Detector = power averaging (rms)
- e) Trace mode = Average at least 100
- f) Duty cycle factor = $10\log(1/x)$

Test mode	Duty Cycle Factor (dB)
802.11a	0.99
802.11n_HT20	0.48
802.11n_HT40	0.70
802.11ac_VHT20	0.34
802.11ac_VHT40	0.76
802.11ac_VHT80	1.70

Limit

Operating Mode	Band	Mode	ANT Configuration	ANT Gain (dBi)	Limit (dBm)
MIMO (2Tx)	UNII 1	802.11a 802.11n 802.11ac	ANT0 + ANT1	2.80, 2.80	11.00
	UNII 2A			2.94, 2.94	11.00
	UNII 2C			3.61, 3.61	10.38
	UNII 3			3.04, 3.04	29.95

Note :

Per KDB 662911, the MIMO directional gain is calculated using the following formula, Where GN is the gain of the nth antenna and N_{ANT}, the total number of antennas used.

Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}]$ dBi

Test Data

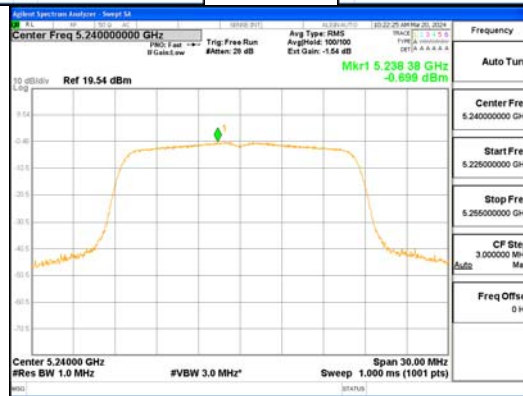
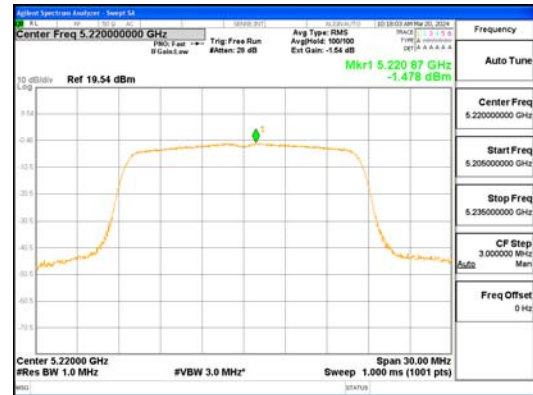
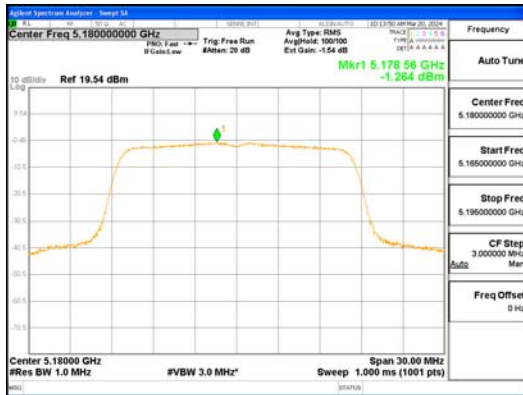
MIMO_ANT 0 + ANT 1

Test Mode	Frequency (MHz)	Measured Power Density (dBm)	Duty cycle Factor (dB)	Result Power Density (dBm)	Limit (dBm)	Margin (dB)
802.11a	5 180	0.88	0.99	1.87	11.00	9.13
	5 220	1.02	0.99	2.01	11.00	8.99
	5 240	1.33	0.99	2.32	11.00	8.68
	5 260	1.58	0.99	2.57	11.00	8.43
	5 300	1.84	0.99	2.83	11.00	8.17
	5 320	1.82	0.99	2.81	11.00	8.19
	5 500	-1.85	0.99	-0.86	10.38	11.24
	5 600	-1.73	0.99	-0.74	10.38	11.12
	5 700	-2.39	0.99	-1.40	10.38	11.78
	5 720	-2.95	0.99	-1.96	10.38	12.34
	5 745	-5.48	0.99	-4.49	29.95	34.44
	5 785	-5.78	0.99	-4.79	29.95	34.74
	5 825	-5.26	0.99	-4.27	29.95	34.22
802.11n_HT20	5 180	0.43	0.48	0.91	11.00	10.09
	5 220	0.68	0.48	1.16	11.00	9.84
	5 240	0.77	0.48	1.25	11.00	9.75
	5 260	0.95	0.48	1.43	11.00	9.57
	5 300	1.17	0.48	1.65	11.00	9.35
	5 320	1.11	0.48	1.59	11.00	9.41
	5 500	-2.20	0.48	-1.72	10.38	12.10
	5 600	-2.70	0.48	-2.22	10.38	12.60
	5 700	-2.61	0.48	-2.13	10.38	12.51
	5 720	-3.37	0.48	-2.89	10.38	13.27
	5 745	-5.77	0.48	-5.29	29.95	35.24
	5 785	-6.24	0.48	-5.76	29.95	35.71
	5 825	-5.56	0.48	-5.08	29.95	35.03
802.11ac_VHT20	5 180	0.46	0.34	0.80	11.00	10.20
	5 220	0.81	0.34	1.15	11.00	9.85
	5 240	1.04	0.34	1.38	11.00	9.62
	5 260	1.31	0.34	1.65	11.00	9.35
	5 300	1.16	0.34	1.50	11.00	9.50
	5 320	1.41	0.34	1.75	11.00	9.25
	5 500	-2.40	0.34	-2.06	10.38	12.44
	5 600	-2.51	0.34	-2.17	10.38	12.55
	5 700	-2.91	0.34	-2.57	10.38	12.95

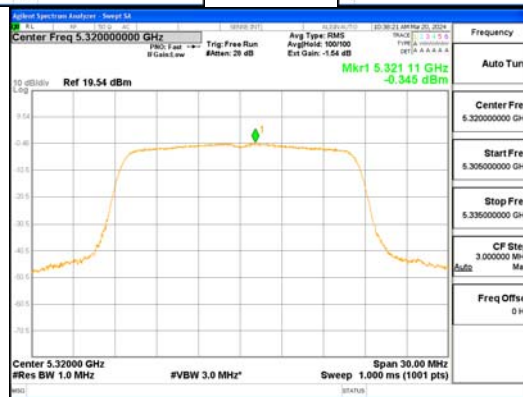
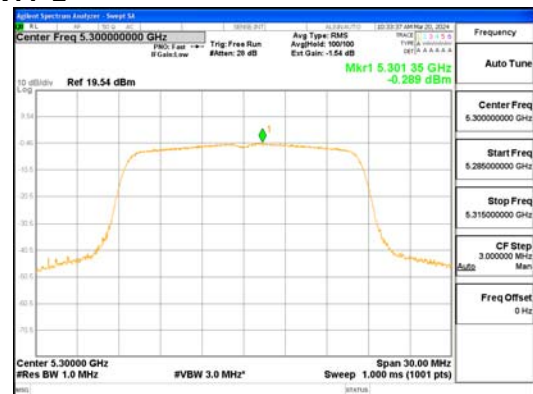
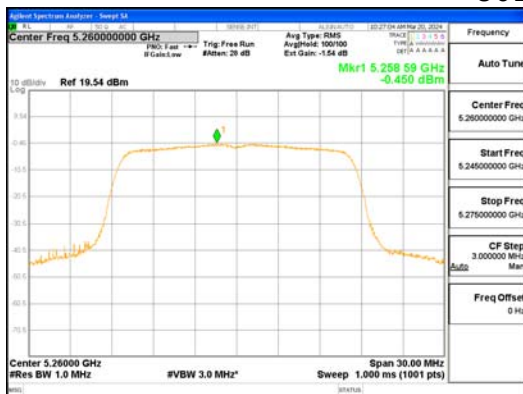
	5 720	-3.45	0.34	-3.11	10.38	13.49
	5 745	-6.07	0.34	-5.73	29.95	35.68
	5 785	-5.85	0.34	-5.51	29.95	35.46
	5 825	-5.54	0.34	-5.20	29.95	35.15
802.11n _HT40	5 190	-2.87	0.70	-2.17	11.00	13.17
	5 230	-2.24	0.70	-1.54	11.00	12.54
	5 270	-2.13	0.70	-1.43	11.00	12.43
	5 310	-1.27	0.70	-0.57	11.00	11.57
	5 510	-5.40	0.70	-4.70	11.00	15.70
	5 590	-5.47	0.70	-4.77	10.38	15.15
	5 670	-5.33	0.70	-4.63	10.38	15.01
	5 710	-6.10	0.70	-5.40	10.38	15.78
	5 755	-8.81	0.70	-8.11	29.95	38.06
	5 795	-8.94	0.70	-8.24	29.95	38.19
802.11ac _VHT40	5 190	-2.62	0.76	-1.86	11.00	12.86
	5 230	-2.00	0.76	-1.24	11.00	12.24
	5 270	-2.29	0.76	-1.53	11.00	12.53
	5 310	-1.91	0.76	-1.15	11.00	12.15
	5 510	-5.12	0.76	-4.36	11.00	15.36
	5 590	-5.40	0.76	-4.64	10.38	15.02
	5 670	-5.47	0.76	-4.71	10.38	15.09
	5 710	-6.03	0.76	-5.27	10.38	15.65
	5 755	-9.00	0.76	-8.24	29.95	38.19
	5 795	-9.31	0.76	-8.55	29.95	38.50
802.11n _VHT80	5 210	-6.43	1.70	-4.73	11.00	15.73
	5 290	-5.79	1.70	-4.09	11.00	15.09
	5 530	-8.63	1.70	-6.93	10.38	17.31
	5 610	-9.38	1.70	-7.68	10.38	18.06
	5 690	-11.52	1.70	-9.82	10.38	20.20
	5 775	-13.26	1.70	-11.56	29.95	41.51

See next pages for actual measured spectrum plots.

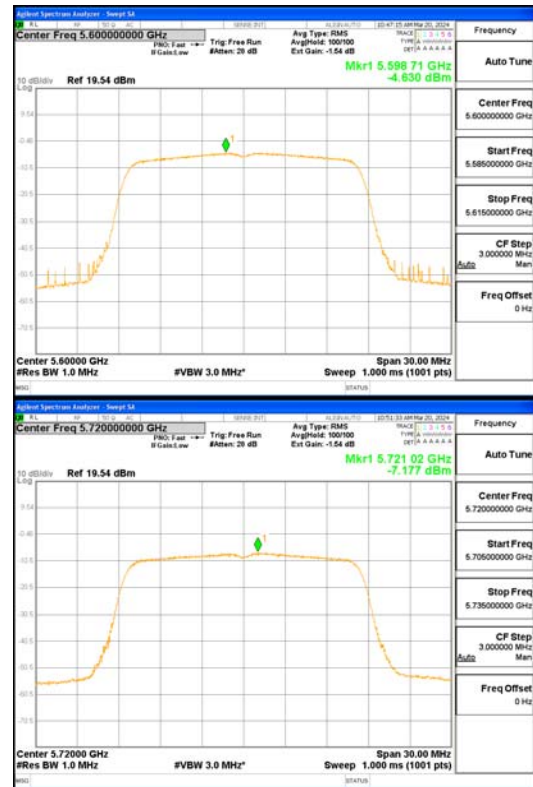
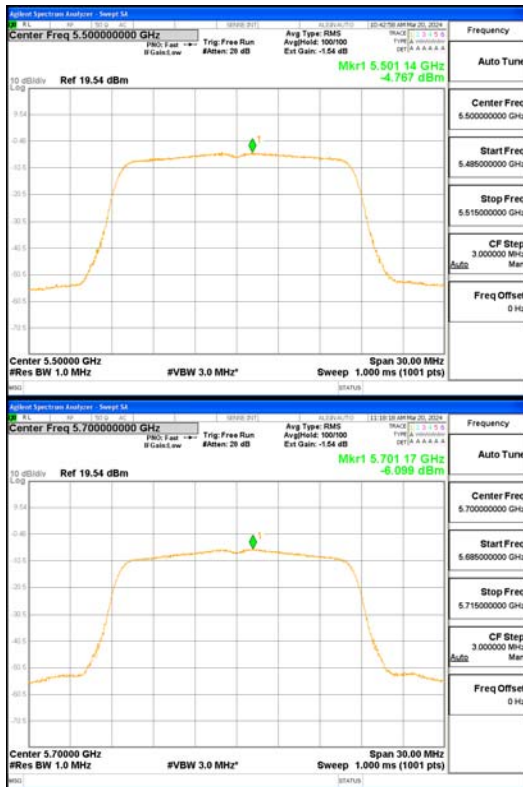
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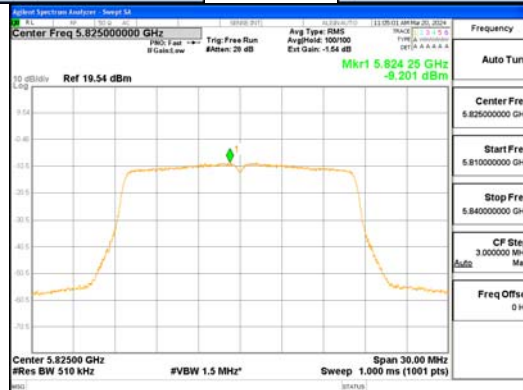
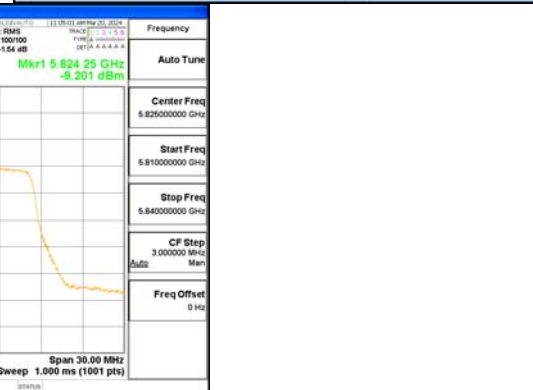
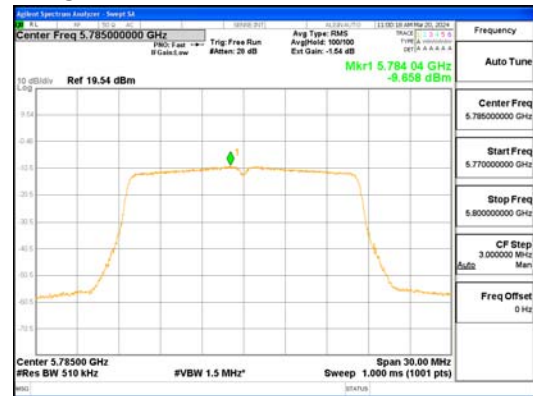
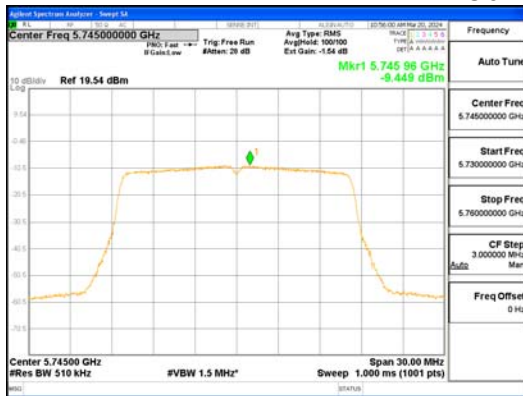
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802.11a_UNII 2A



802.11a_UNII 2C



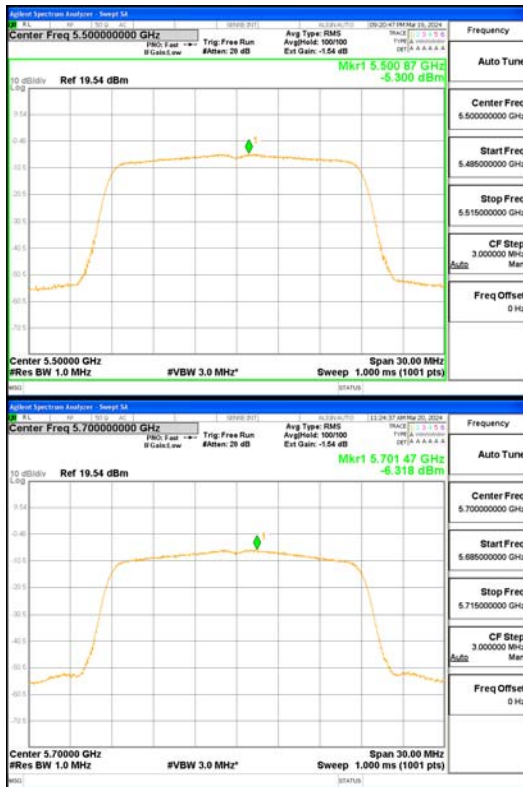
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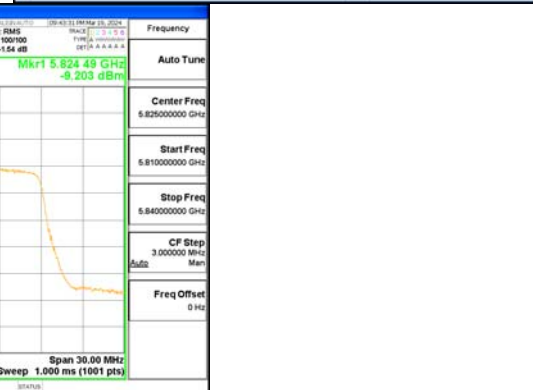
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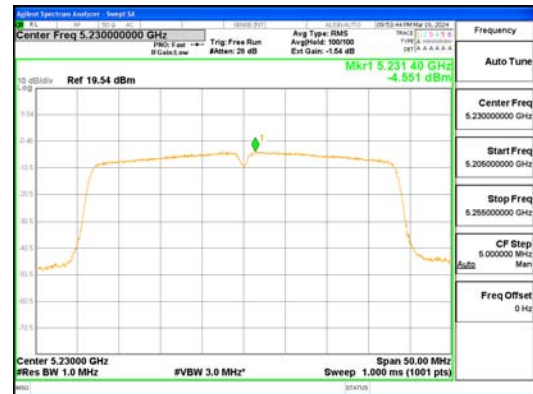
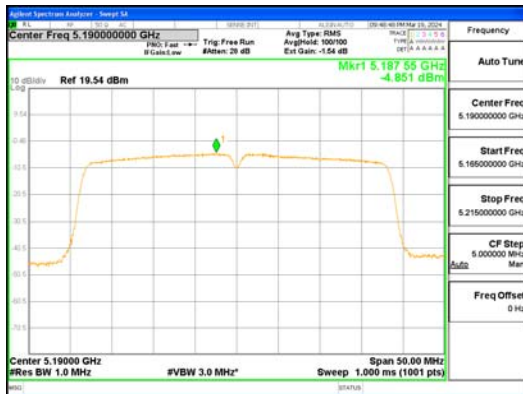
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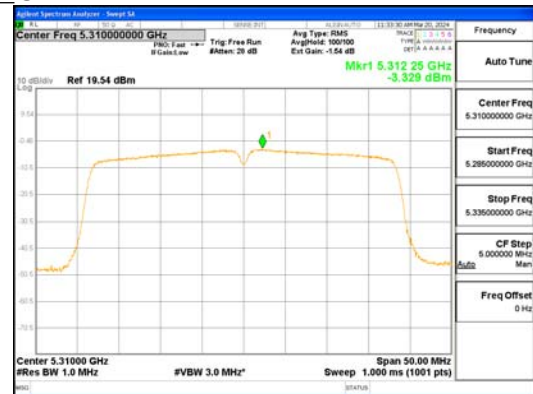
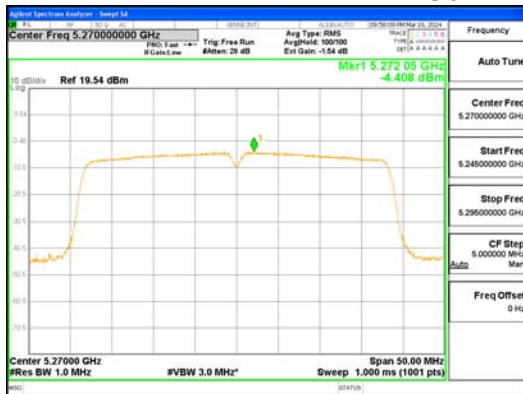
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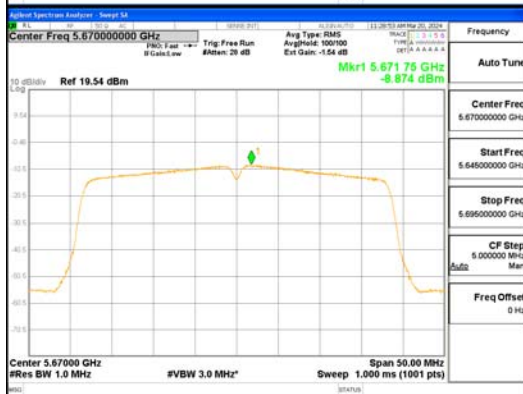
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802.11n_HT40_UNII 1



802.11n_HT40_UNII 2A



802.11n_HT40_UNII 2C

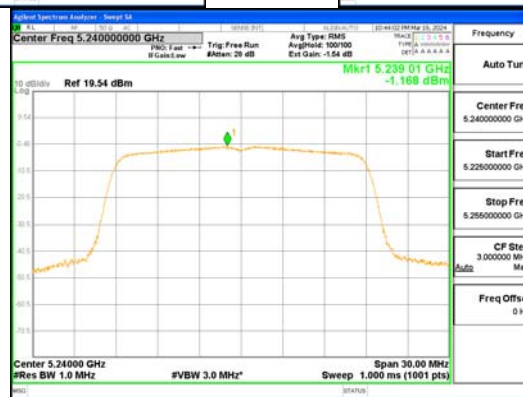
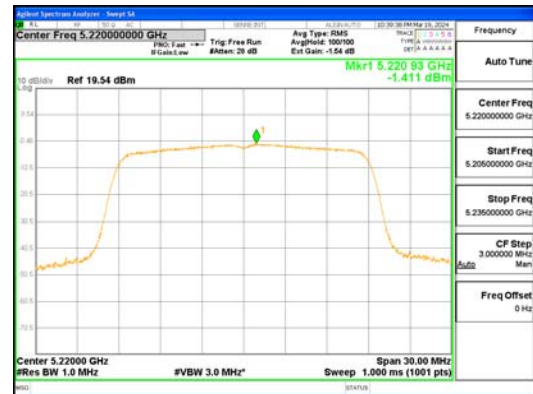
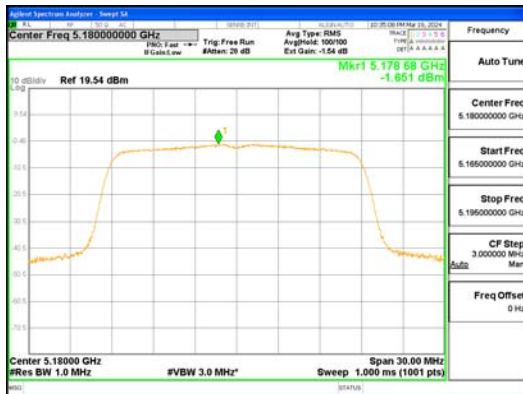


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802.11n_HT40_UNII 3



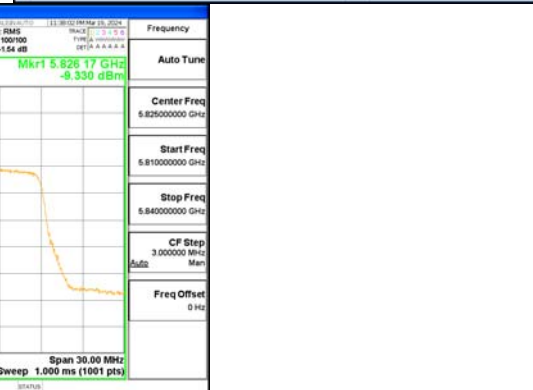
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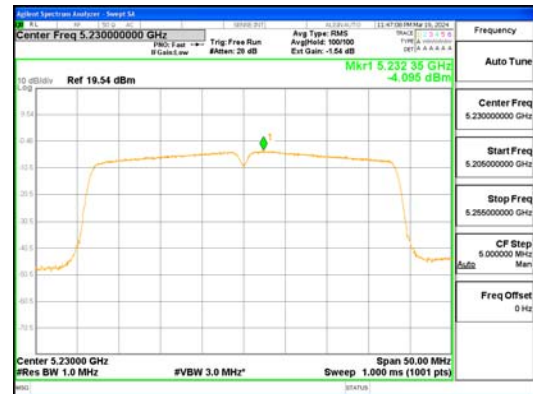
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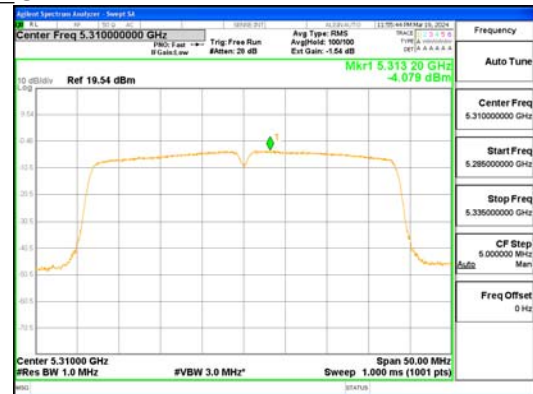
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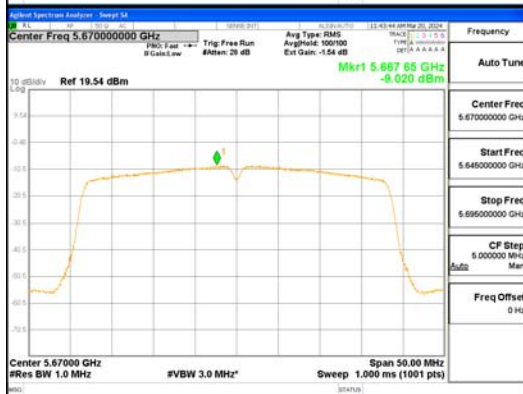
802.11ac_VHT20_UNII 3



802.11n_HT40_UNII 1



802.11n_HT40_UNII 2A



802.11n_HT40_UNII 2C



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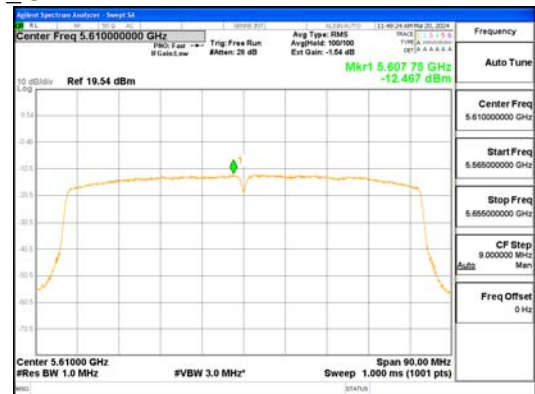
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802.11ac_VHT80_UNII_2A



802.11ac_VHT80_UNII_2C

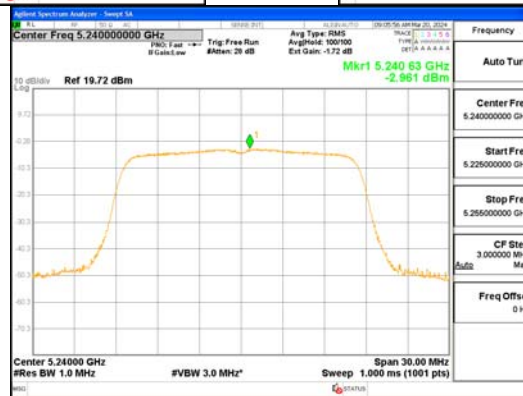
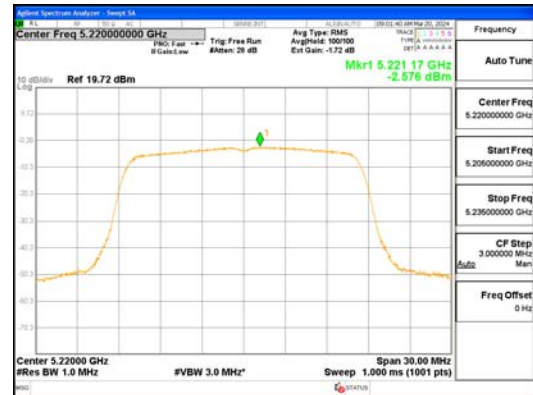
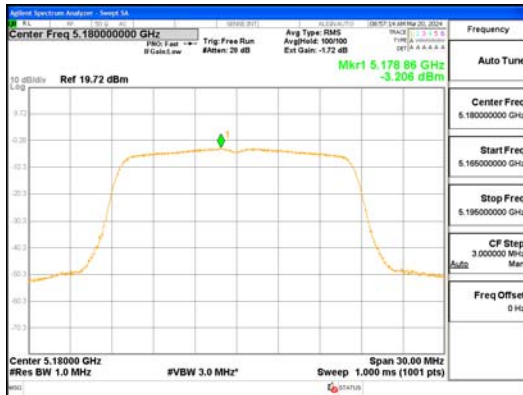


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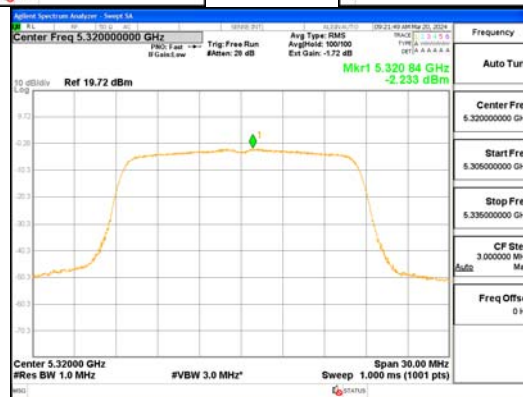
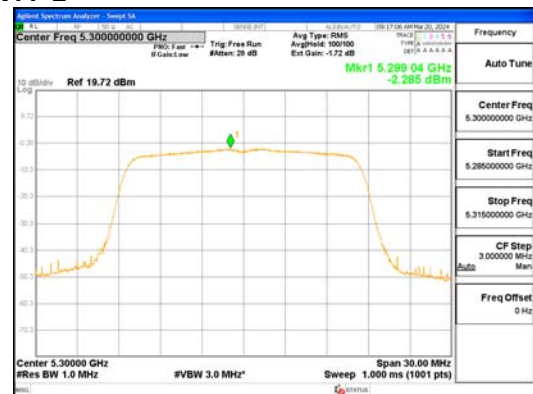
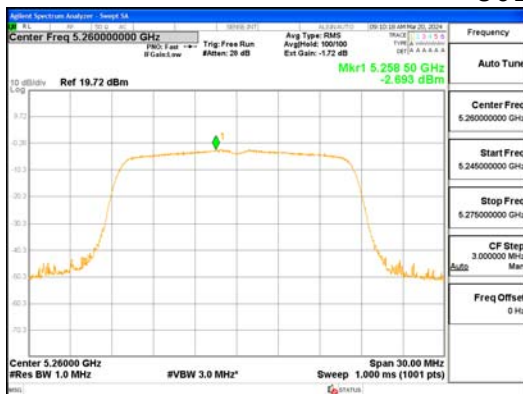


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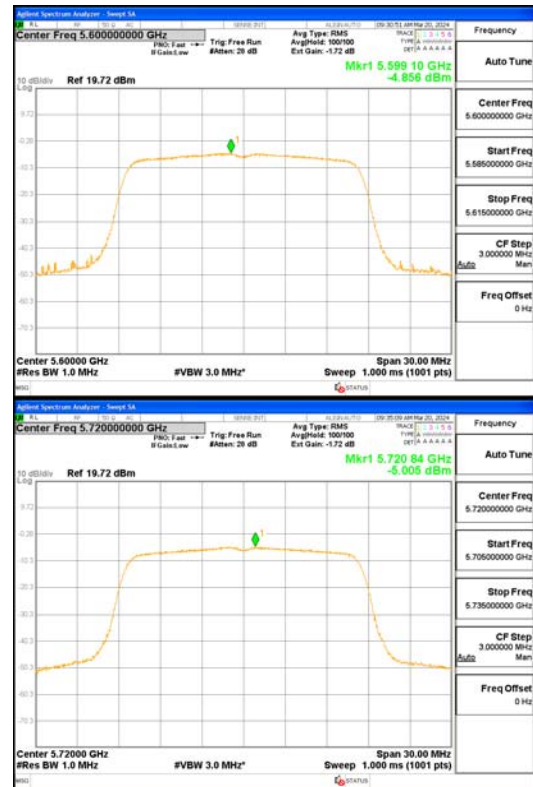
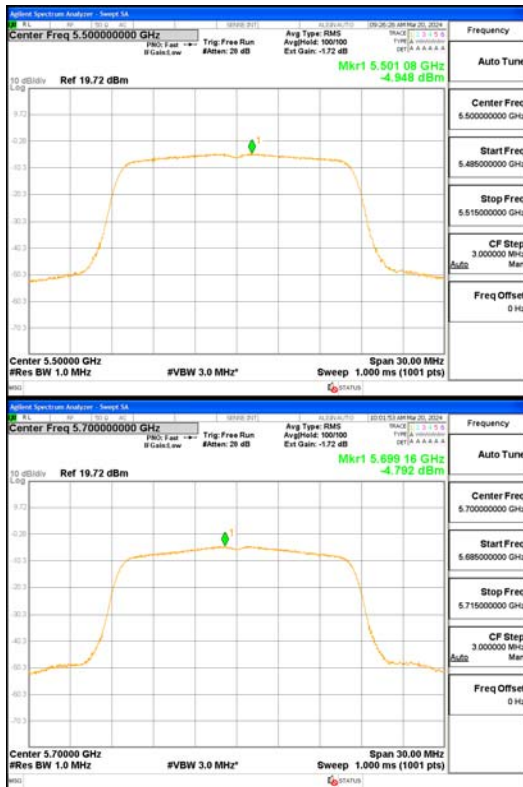
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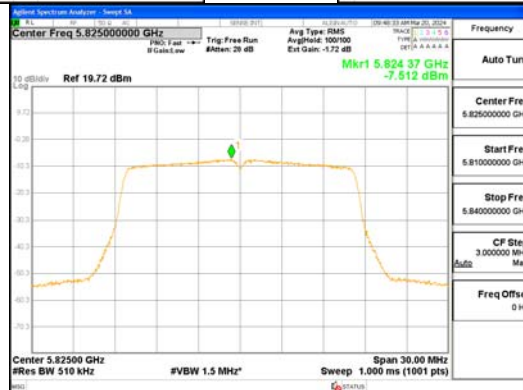
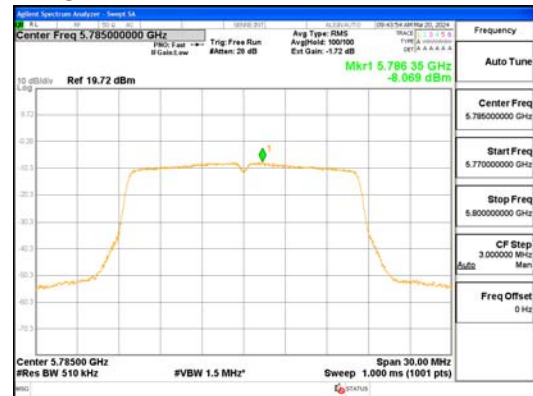
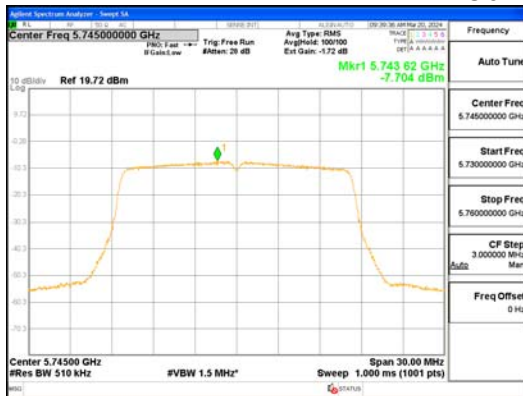
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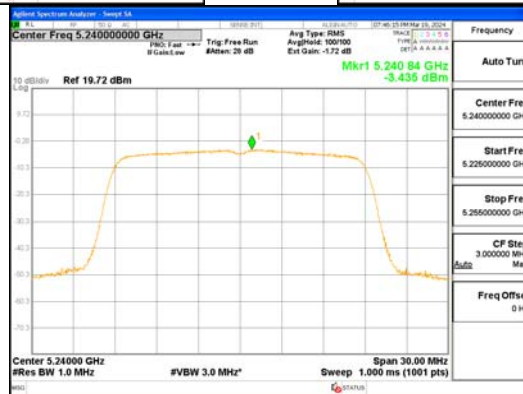
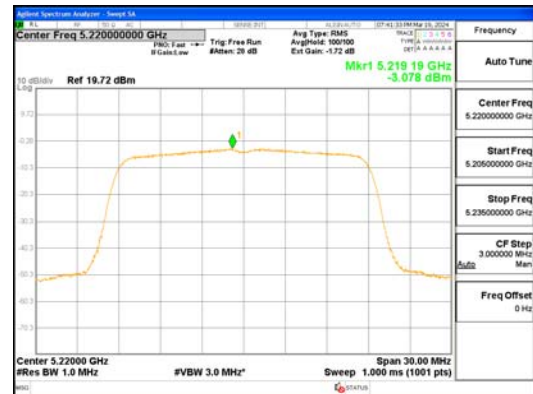
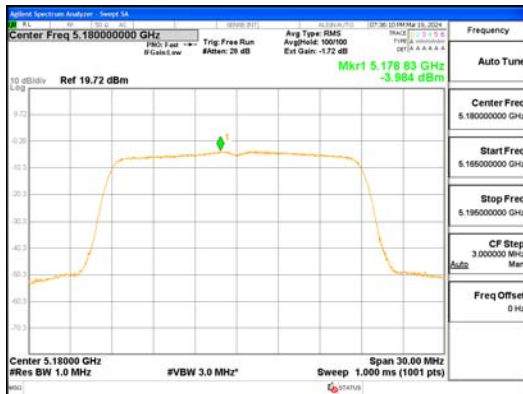
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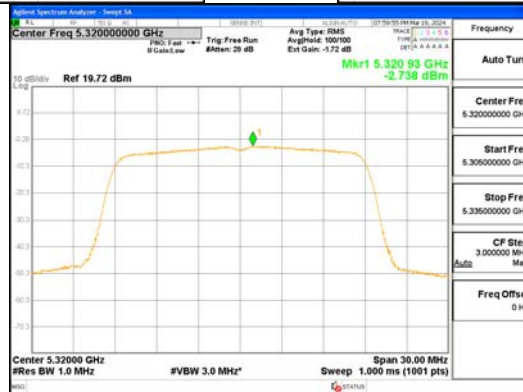
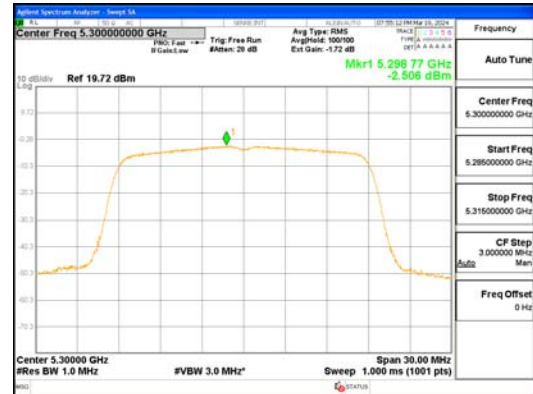
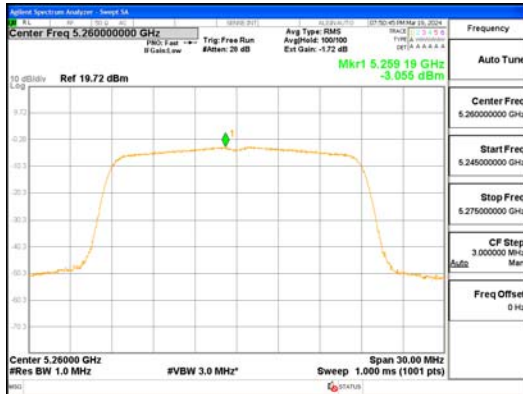
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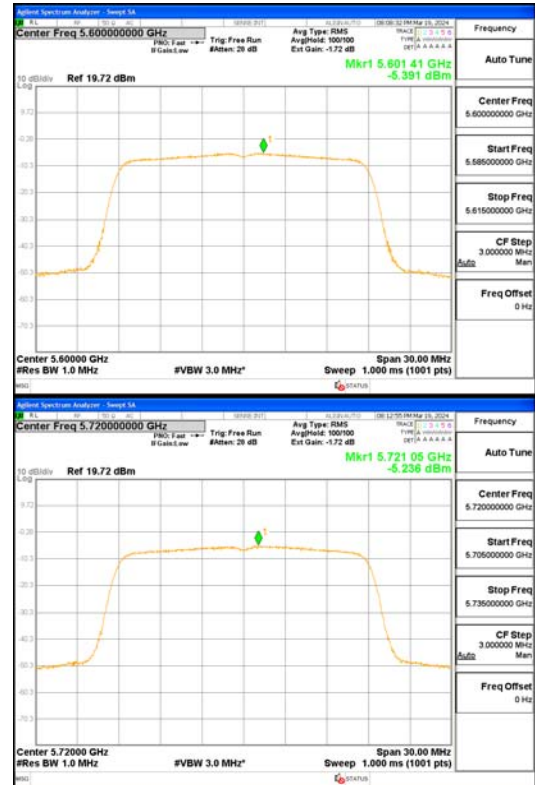
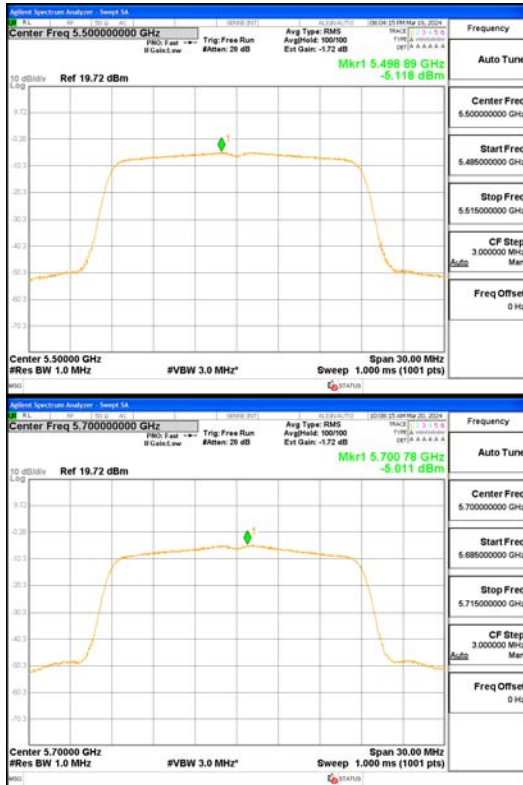
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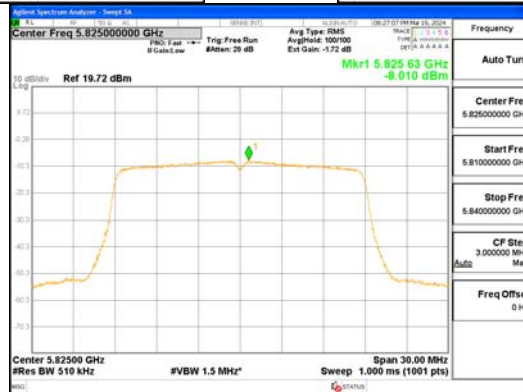
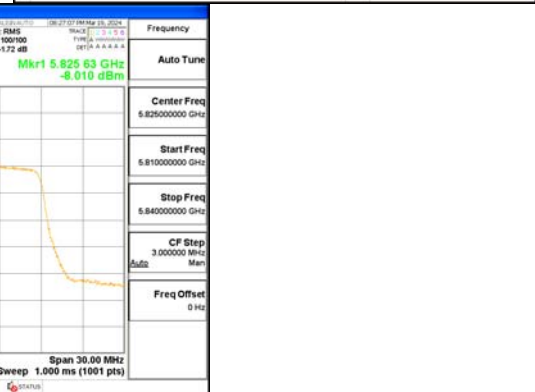
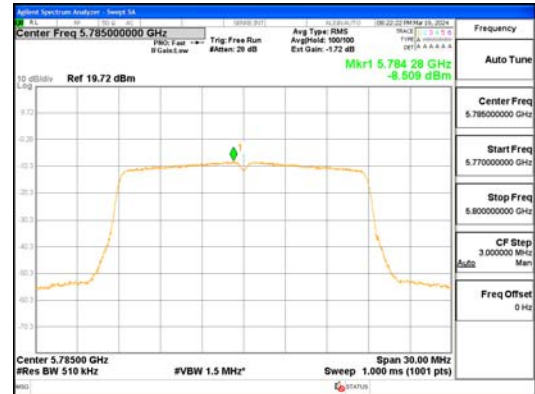
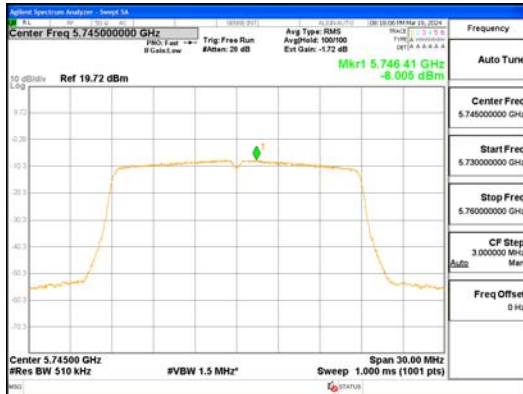
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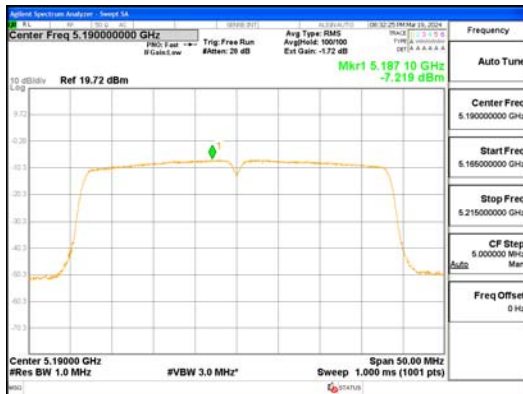
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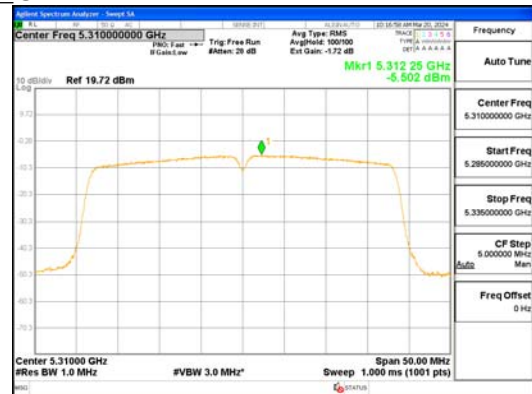
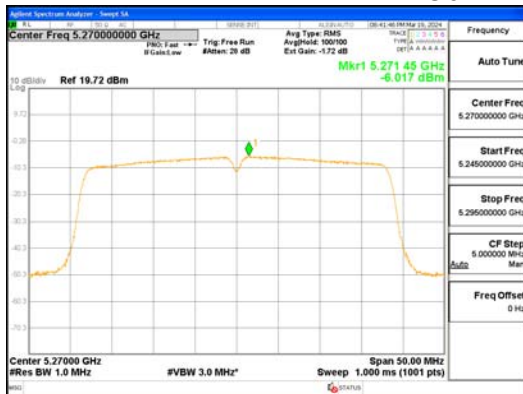
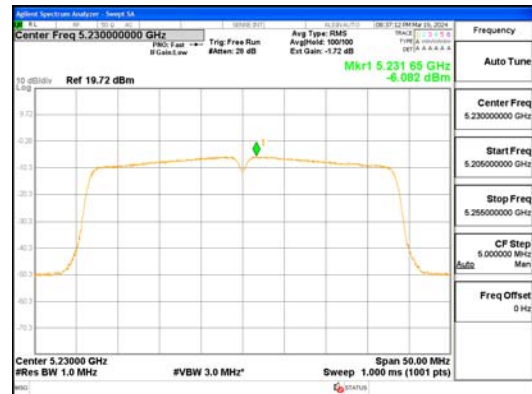
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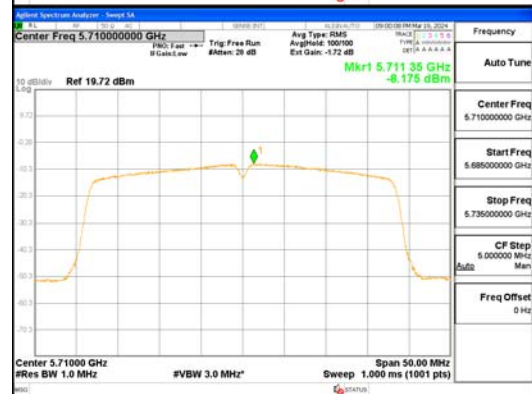
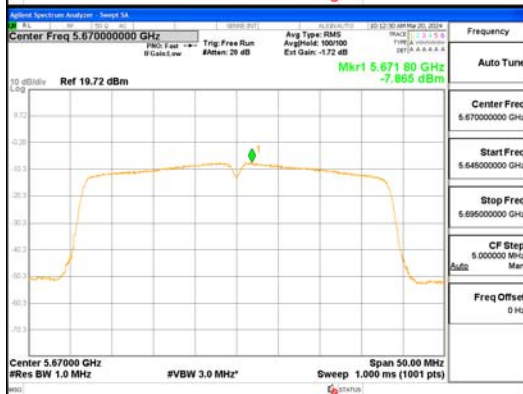
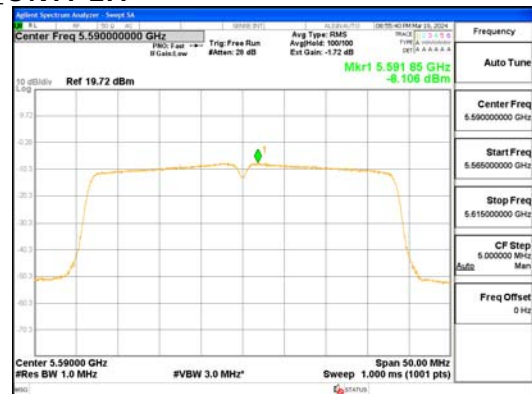
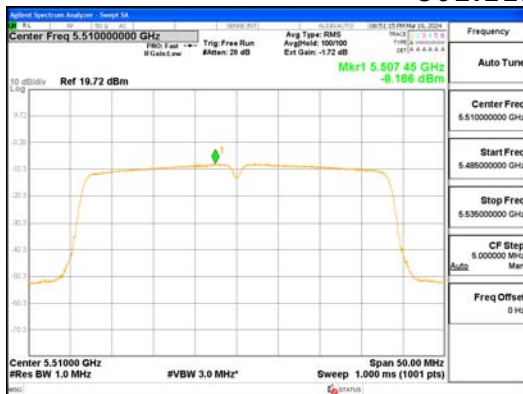
802.11n20_UNII 3



802.11n_HT40_UNII 1



802.11n_HT40_UNII 2A



802.11n_HT40_UNII 2C



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