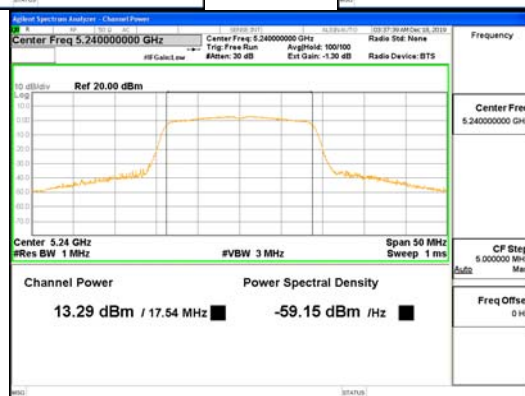
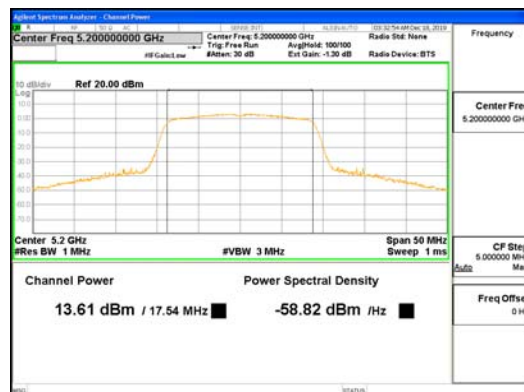
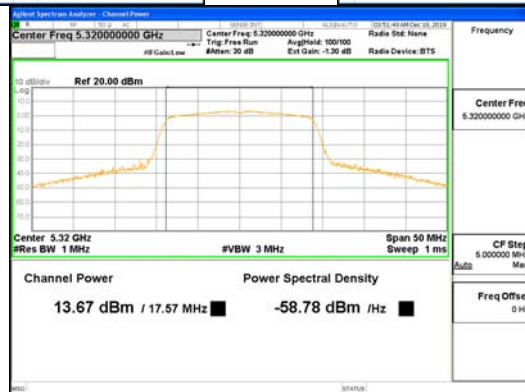
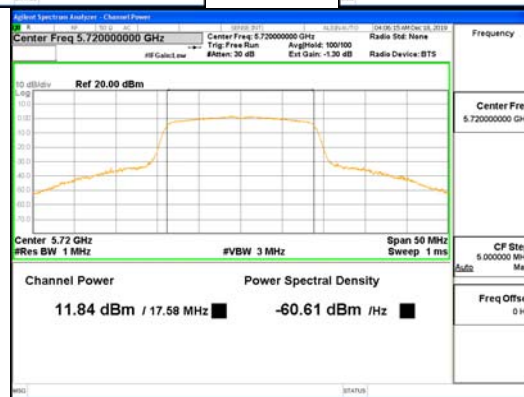
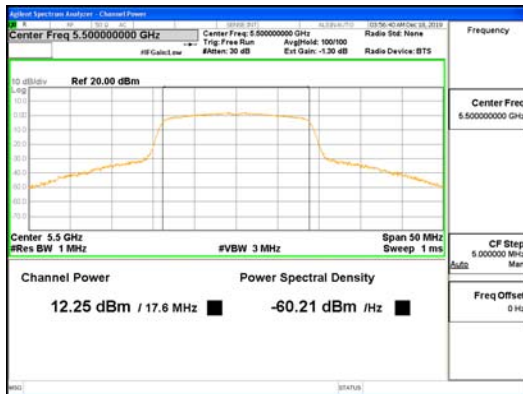




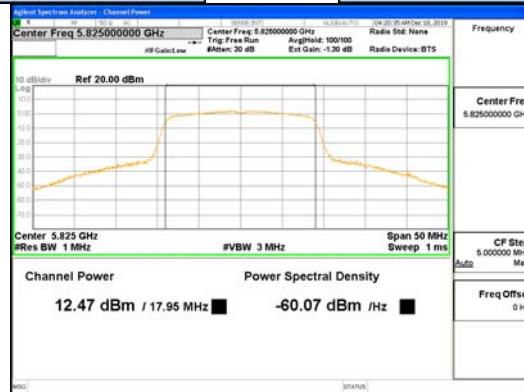
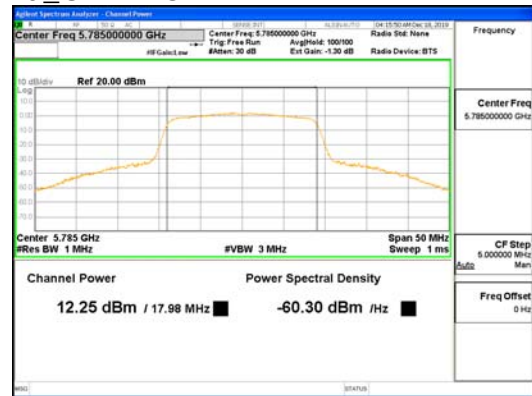
ANT-L_802.11n_HT20_UNII 1



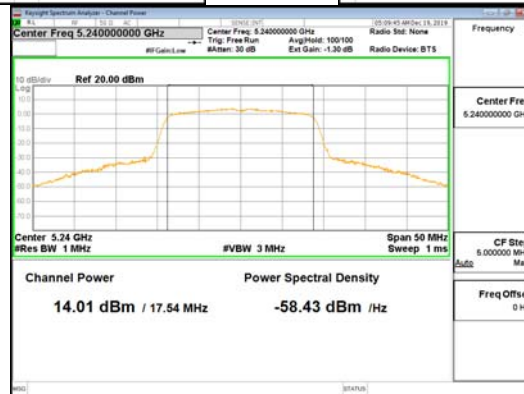
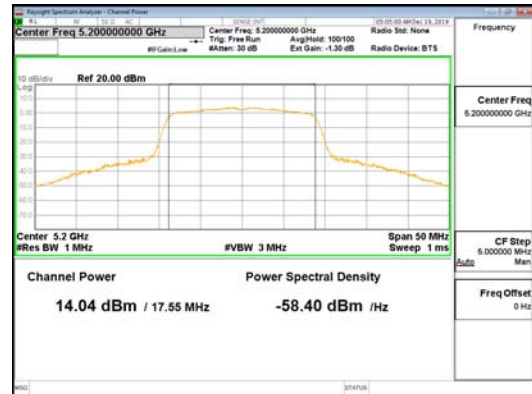
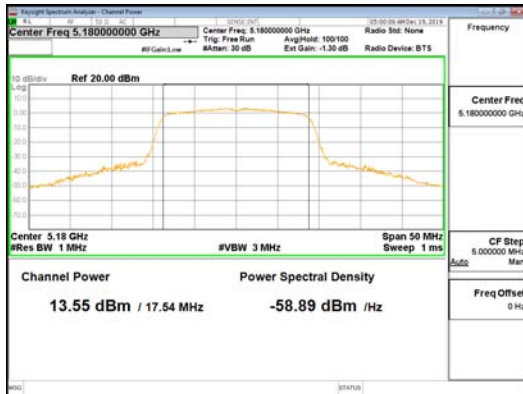
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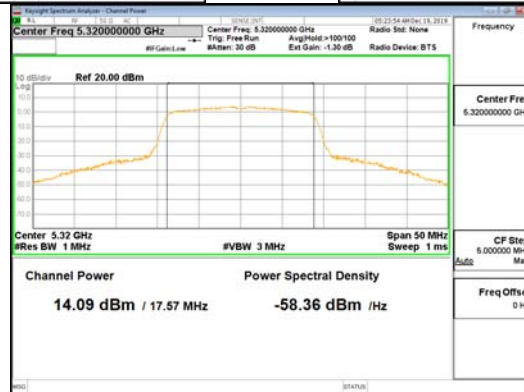
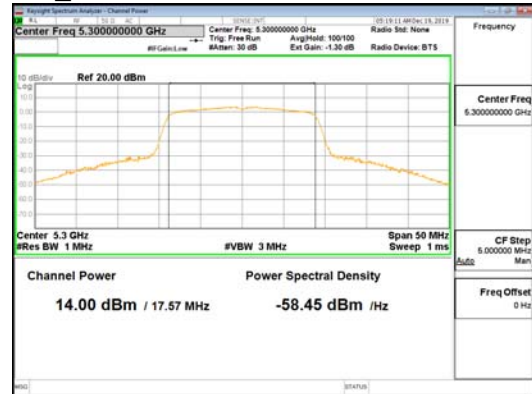
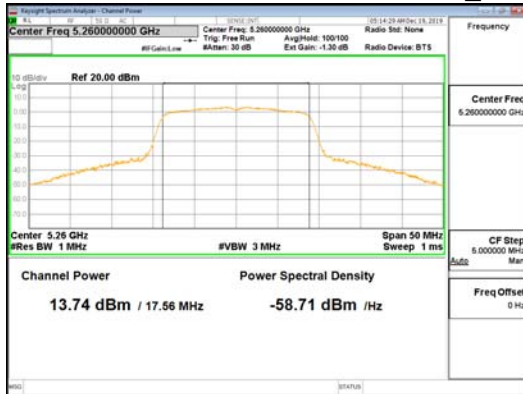
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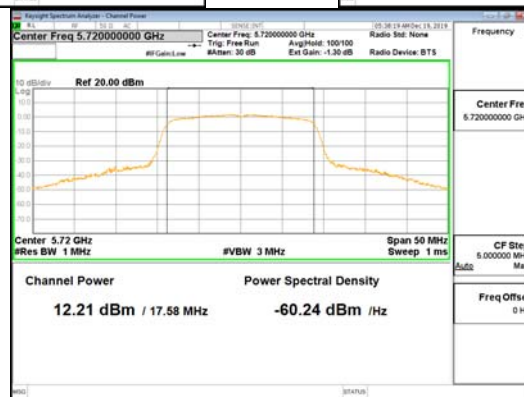
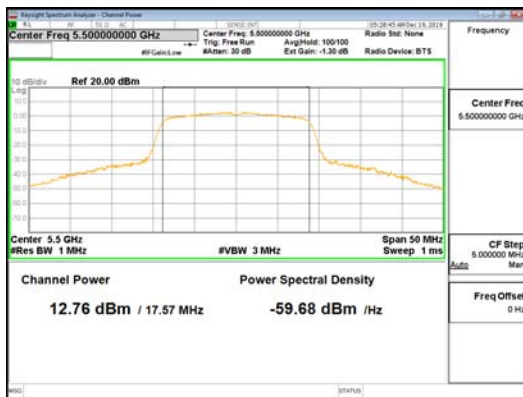
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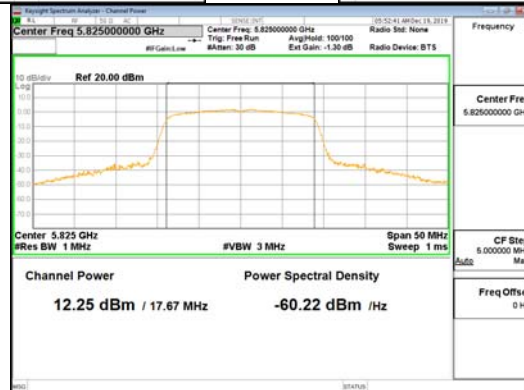
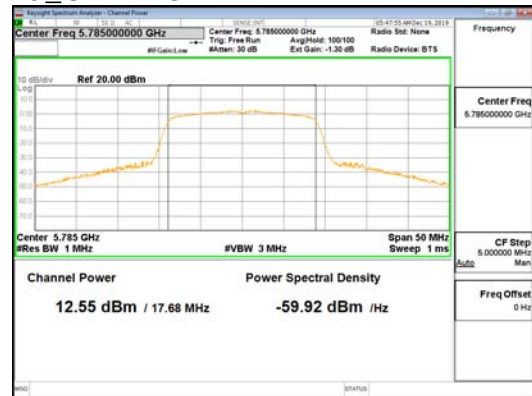
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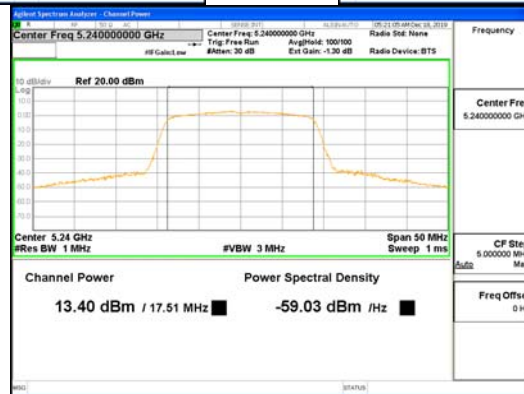
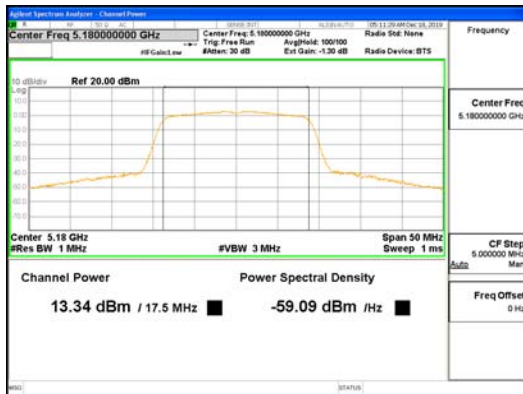
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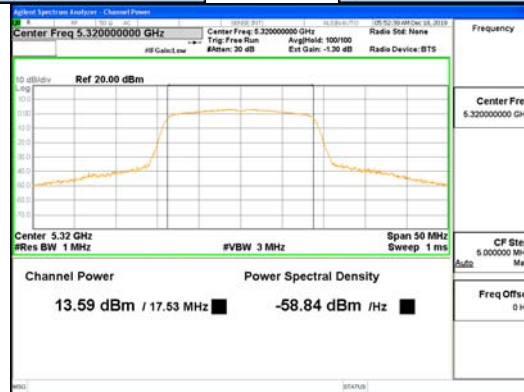
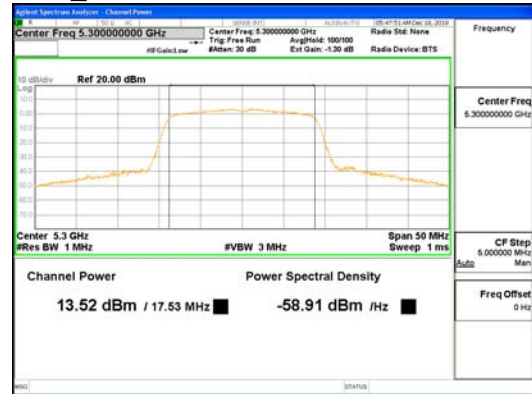
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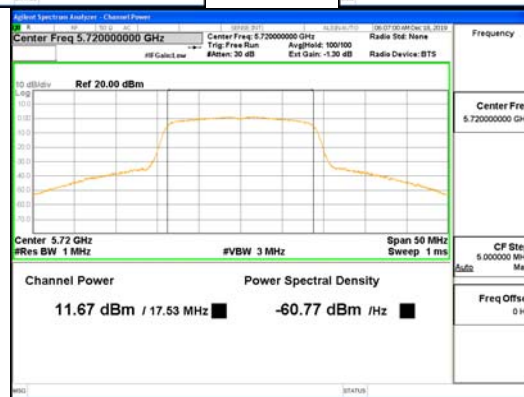
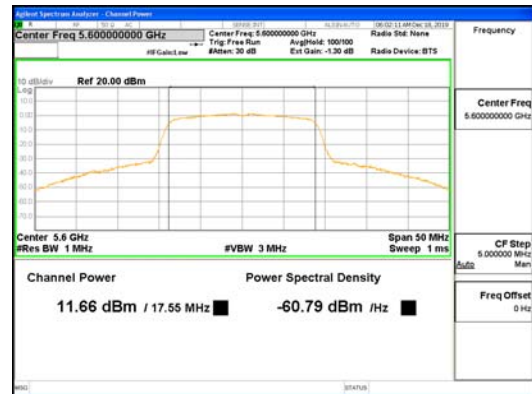
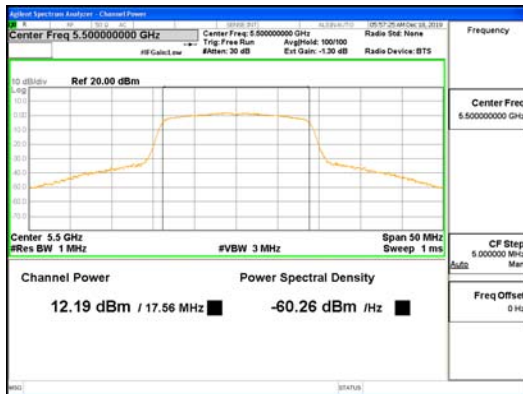
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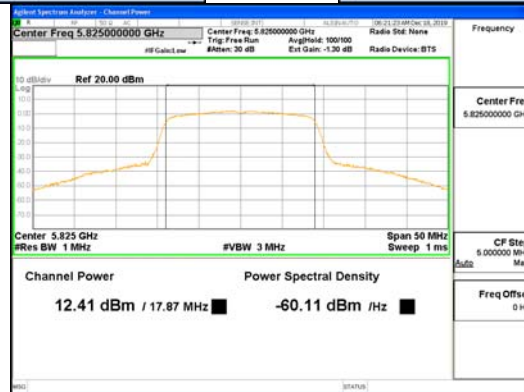
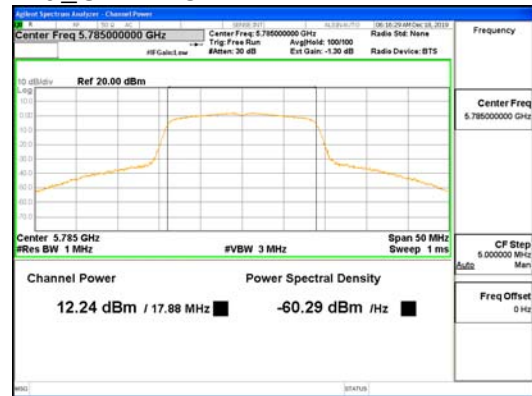
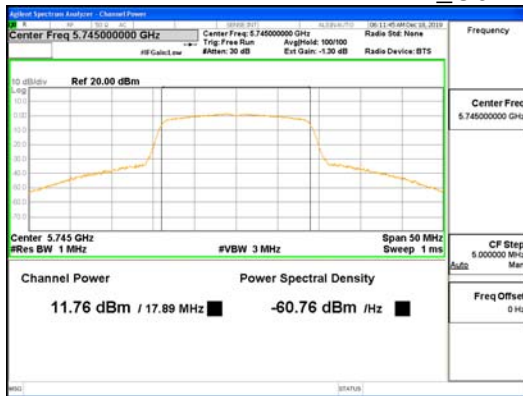
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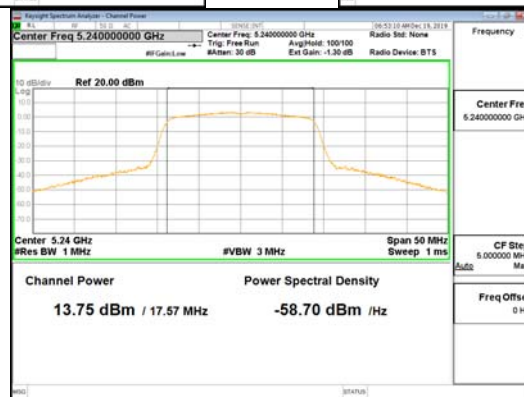
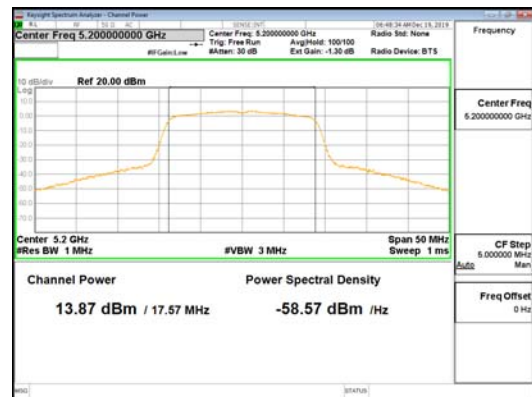
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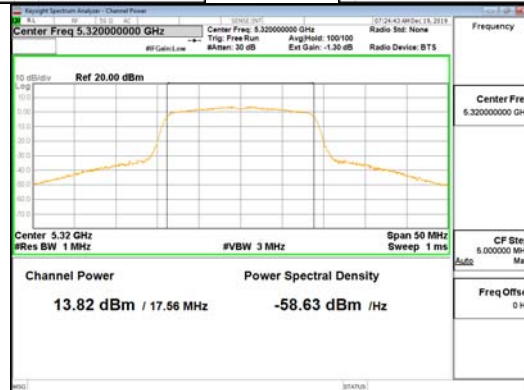
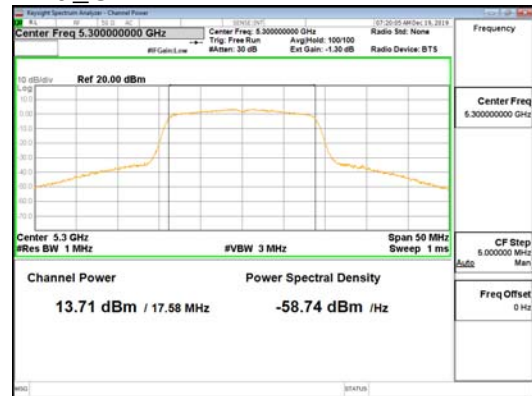
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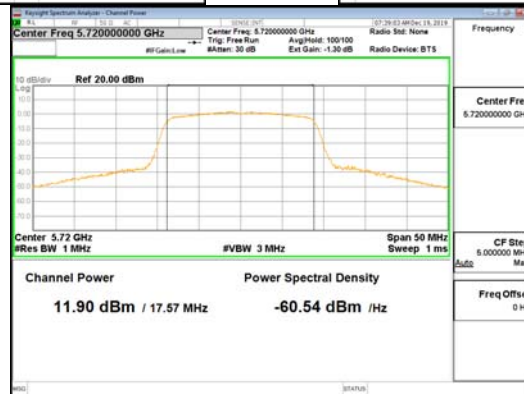
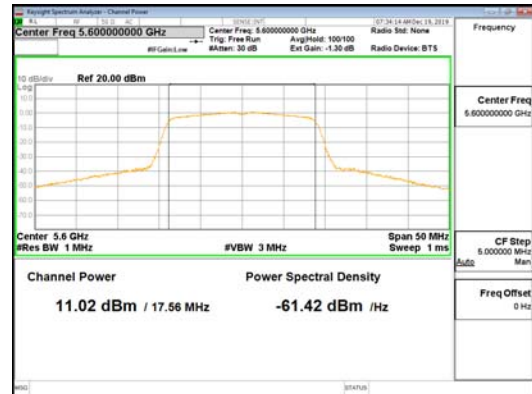
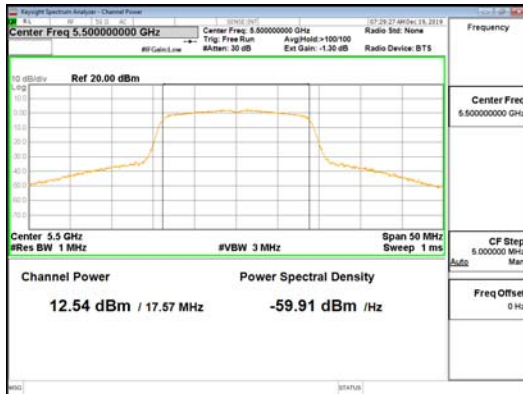
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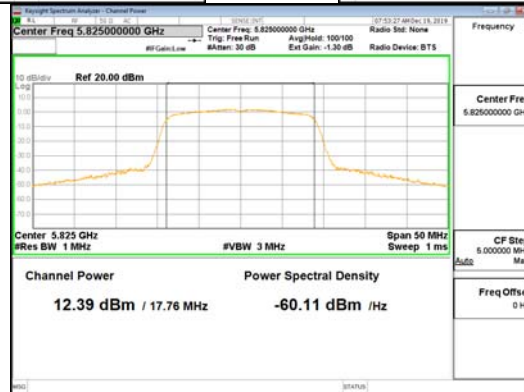
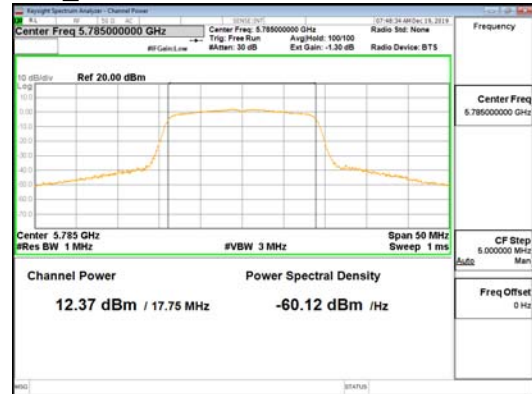
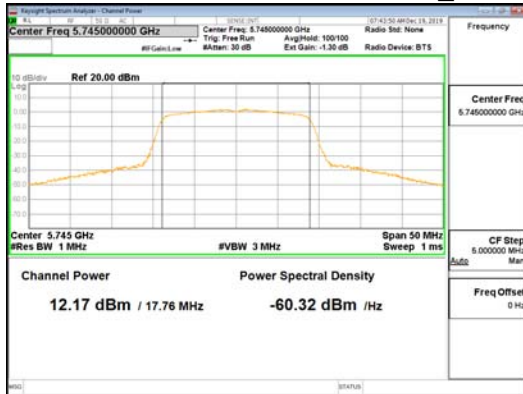
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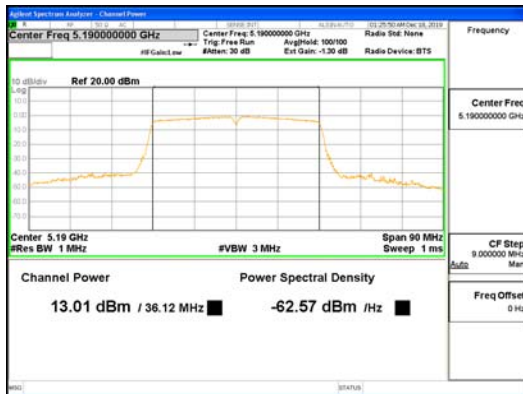
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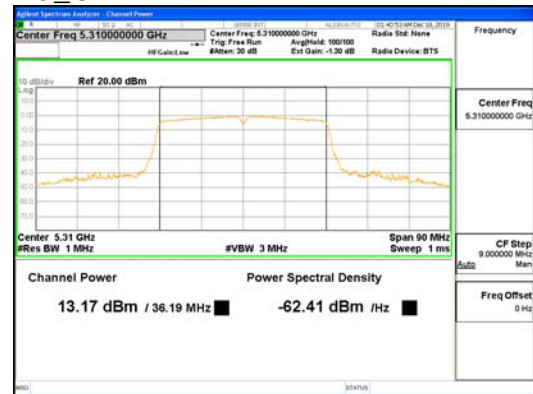
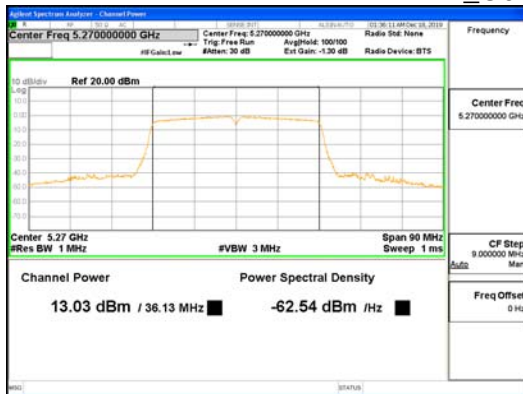
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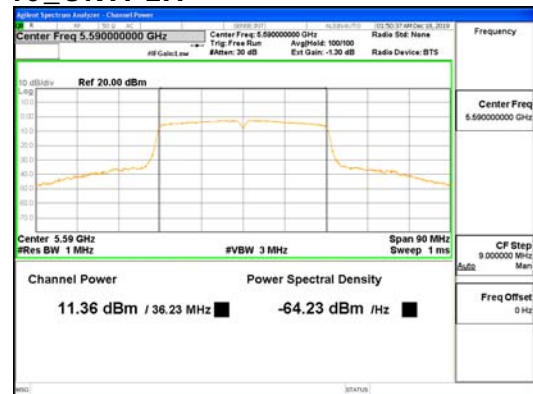
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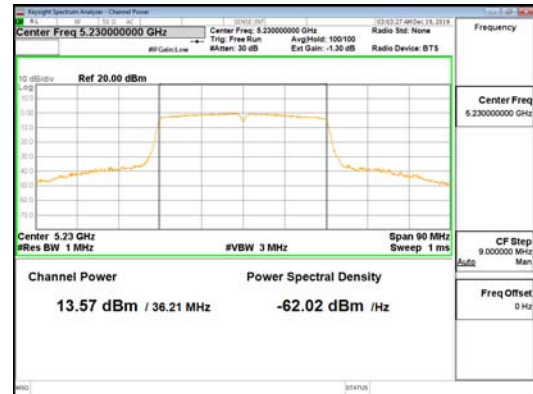
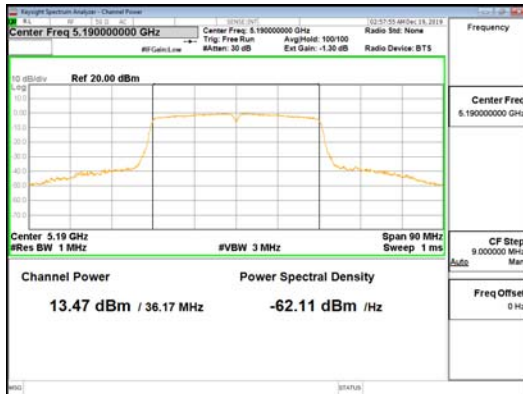
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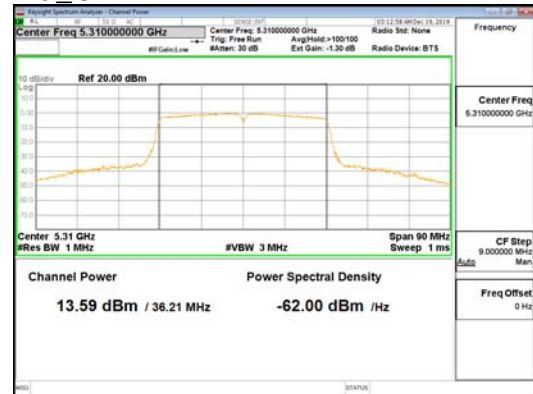
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ANT-L_802.11n_HT40_UNII 3



ANT-R_802.11n_HT40_UNII 1



ANT-R_802.11n_HT40_UNII 2A



ANT-R_802.11n_HT40_UNII 2C



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ANT-L_802.11ac_VHT40_UNII 3



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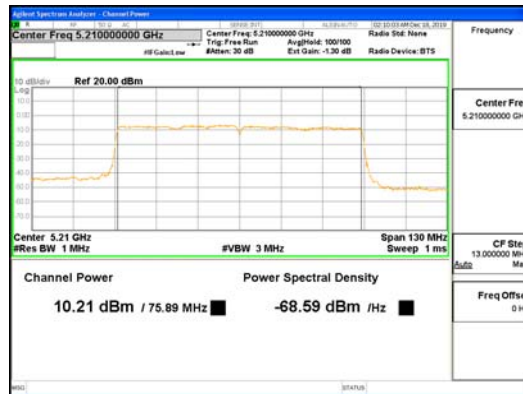


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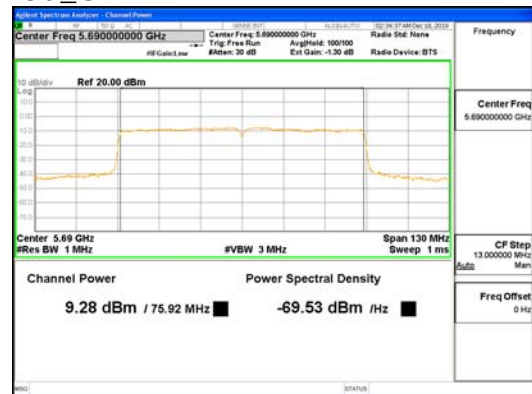
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ANT-L_802.11ac_VHT80_UNII 1



ANT-L_802.11ac_VHT80_UNII 2A



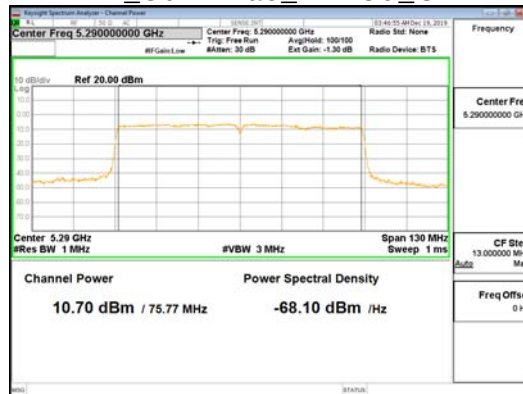
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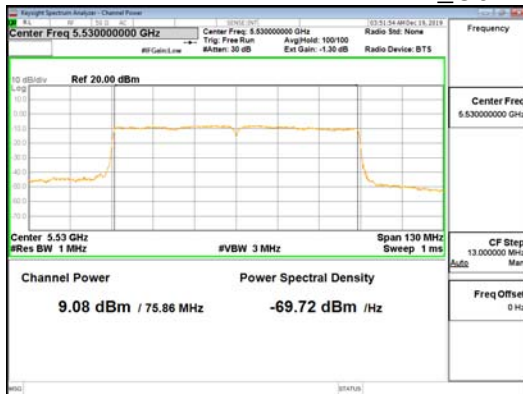
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ANT-R_802.11ac_VHT80_UNII 2A



ANT-R_802.11ac_VHT80_UNII 2C



ANT-R_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	0.12
802.11n_HT20	0.13
802.11n_HT40	0.28
802.11ac_VHT20	0.27
802.11ac_VHT40	0.50
802.11ac_VHT80	0.73

Limit

Operating Mode	ANT Configuration	ANT Gain (dBi)	Mode	Band	Limit (dBm)
SISO	ANT-L, ANT-R	3.69, 1.21	802.11a/n/ac	UNII 1	11.00
				UNII 2A	11.00
				UNII 2C	11.00
				UNII 3	30.00
MIMO (2Tx)	ANT-L + ANT-R	5.63	802.11a/n/ac	UNII 1	11.00
				UNII 2A	11.00
				UNII 2C	11.00
				UNII 3	30.00

Test Data

ANT-L

Test Mode	Frequency (MHz)	Measured Power Density (dBm)	Duty cycle Factor (dB)	Result Output Power (dBm)	Limit (dBm)	Margin (dB)
802.11a	5 180	4.09	0.12	4.21	11.00	6.79
	5 200	4.08	0.12	4.20	11.00	6.80
	5 240	4.12	0.12	4.24	11.00	6.76
	5 260	4.48	0.12	4.60	11.00	6.40
	5 300	4.51	0.12	4.63	11.00	6.37
	5 320	4.54	0.12	4.66	11.00	6.34
	5 500	3.32	0.12	3.44	11.00	7.56
	5 600	2.87	0.12	2.99	11.00	8.01
	5 720	2.80	0.12	2.92	11.00	8.08
	5 745	0.02	0.12	0.14	30.00	29.86
	5 785	0.62	0.12	0.74	30.00	29.26
	5 825	0.82	0.12	0.94	30.00	29.06
802.11n _HT20	5 180	3.02	0.13	3.15	11.00	7.85
	5 200	3.49	0.13	3.62	11.00	7.38
	5 240	2.87	0.13	3.00	11.00	8.00
	5 260	3.17	0.13	3.30	11.00	7.70
	5 300	3.15	0.13	3.28	11.00	7.72
	5 320	3.36	0.13	3.49	11.00	7.51
	5 500	1.96	0.13	2.09	11.00	8.91
	5 600	1.37	0.13	1.50	11.00	9.50
	5 720	1.43	0.13	1.56	11.00	9.44
	5 745	-0.87	0.13	-0.74	30.00	30.74
	5 785	-0.82	0.13	-0.69	30.00	30.69
	5 825	-0.50	0.13	-0.37	30.00	30.37
802.11ac _VHT20	5 180	3.44	0.27	3.71	11.00	7.29
	5 200	3.14	0.27	3.41	11.00	7.59
	5 240	3.23	0.27	3.50	11.00	7.50
	5 260	3.06	0.27	3.33	11.00	7.67
	5 300	3.36	0.27	3.63	11.00	7.37
	5 320	3.39	0.27	3.66	11.00	7.34
	5 500	1.99	0.27	2.26	11.00	8.74
	5 600	1.42	0.27	1.69	11.00	9.31
	5 720	1.44	0.27	1.71	11.00	9.29

	5 745	-1.35	0.27	-1.08	30.00	31.08
	5 785	-0.53	0.27	-0.26	30.00	30.26
	5 825	-0.87	0.27	-0.60	30.00	30.60
802.11n _HT40	5 190	-0.69	0.28	-0.41	11.00	11.41
	5 230	-0.80	0.28	-0.52	11.00	11.52
	5 270	-0.64	0.28	-0.36	11.00	11.36
	5 310	-0.41	0.28	-0.13	11.00	11.13
	5 510	-1.80	0.28	-1.52	11.00	12.52
	5 590	-2.37	0.28	-2.09	11.00	13.09
	5 710	-2.31	0.28	-2.03	11.00	13.03
	5 755	-4.88	0.28	-4.60	30.00	34.60
	5 795	-4.47	0.28	-4.19	30.00	34.19
802.11ac _VHT40	5 190	-0.82	0.50	-0.32	11.00	11.32
	5 230	-0.93	0.50	-0.43	11.00	11.43
	5 270	-0.70	0.50	-0.20	11.00	11.20
	5 310	-0.69	0.50	-0.19	11.00	11.19
	5 510	-1.94	0.50	-1.44	11.00	12.44
	5 590	-2.47	0.50	-1.97	11.00	12.97
	5 710	-2.19	0.50	-1.69	11.00	12.69
	5 755	-5.25	0.50	-4.75	30.00	34.75
	5 795	-4.73	0.50	-4.23	30.00	34.23
802.11ac _VHT80	5 210	-6.51	0.73	-5.78	11.00	16.78
	5 290	-6.56	0.73	-5.83	11.00	16.83
	5 530	-7.57	0.73	-6.84	11.00	17.84
	5 690	-7.11	0.73	-6.38	11.00	17.38
	5 775	-10.42	0.73	-9.69	30.00	39.69
Measurement uncertainty		± 1.5 dB				

ANT-R

Test Mode	Frequency (MHz)	Measured Power Density (dBm)	Duty cycle Factor (dB)	Result Output Power (dBm)	Limit (dBm)	Margin (dB)
802.11a	5 180	4.11	0.12	4.23	11.00	6.77
	5 200	4.22	0.12	4.34	11.00	6.66
	5 240	4.24	0.12	4.36	11.00	6.64
	5 260	4.73	0.12	4.85	11.00	6.15
	5 300	5.07	0.12	5.19	11.00	5.81
	5 320	4.87	0.12	4.99	11.00	6.01
	5 500	3.54	0.12	3.66	11.00	7.34
	5 600	2.09	0.12	2.21	11.00	8.79
	5 720	2.94	0.12	3.06	11.00	7.94
	5 745	0.34	0.12	0.46	30.00	29.54
	5 785	0.41	0.12	0.53	30.00	29.47
	5 825	0.45	0.12	0.57	30.00	29.43
802.11n _HT20	5 180	3.34	0.13	3.47	11.00	7.53
	5 200	3.80	0.13	3.93	11.00	7.07
	5 240	3.82	0.13	3.95	11.00	7.05
	5 260	3.48	0.13	3.61	11.00	7.39
	5 300	3.87	0.13	4.00	11.00	7.00
	5 320	3.83	0.13	3.96	11.00	7.04
	5 500	2.69	0.13	2.82	11.00	8.18
	5 600	1.03	0.13	1.16	11.00	9.84
	5 720	2.22	0.13	2.35	11.00	8.65
	5 745	-0.61	0.13	-0.48	30.00	30.48
	5 785	-0.35	0.13	-0.22	30.00	30.22
	5 825	-0.66	0.13	-0.53	30.00	30.53
802.11ac _VHT20	5 180	3.59	0.27	3.86	11.00	7.14
	5 200	3.57	0.27	3.84	11.00	7.16
	5 240	3.48	0.27	3.75	11.00	7.25
	5 260	3.33	0.27	3.60	11.00	7.40
	5 300	3.49	0.27	3.76	11.00	7.24
	5 320	3.59	0.27	3.86	11.00	7.14
	5 500	2.23	0.27	2.50	11.00	8.50
	5 600	0.90	0.27	1.17	11.00	9.83
	5 720	1.80	0.27	2.07	11.00	8.93

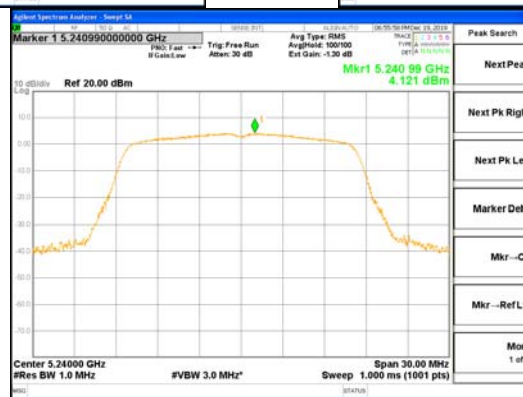
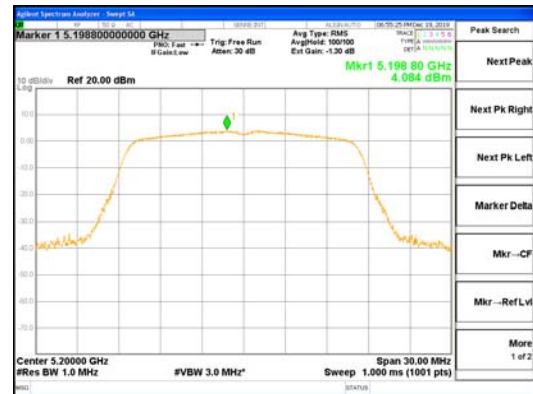
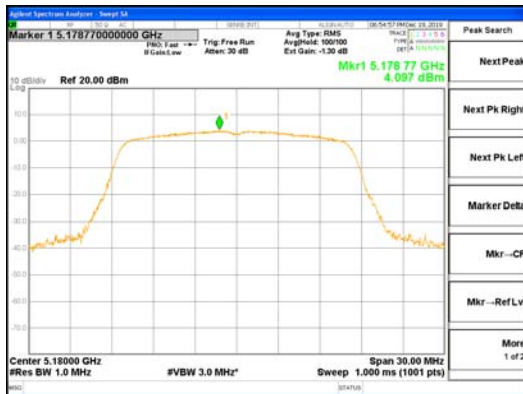
	5 745	-0.73	0.27	-0.46	30.00	30.46
	5 785	-0.66	0.27	-0.39	30.00	30.39
	5 825	-0.81	0.27	-0.54	30.00	30.54
802.11n _HT40	5 190	-0.38	0.28	-0.10	11.00	11.10
	5 230	-0.21	0.28	0.07	11.00	10.93
	5 270	-0.39	0.28	-0.11	11.00	11.11
	5 310	-0.20	0.28	0.08	11.00	10.92
	5 510	-1.67	0.28	-1.39	11.00	12.39
	5 590	-2.86	0.28	-2.58	11.00	13.58
	5 710	-1.81	0.28	-1.53	11.00	12.53
	5 755	-4.63	0.28	-4.35	30.00	34.35
	5 795	-4.42	0.28	-4.14	30.00	34.14
802.11ac _VHT40	5 190	-0.30	0.50	0.20	11.00	10.80
	5 230	-0.38	0.50	0.12	11.00	10.88
	5 270	-0.52	0.50	-0.02	11.00	11.02
	5 310	-0.26	0.50	0.24	11.00	10.76
	5 510	-1.96	0.50	-1.46	11.00	12.46
	5 590	-3.16	0.50	-2.66	11.00	13.66
	5 710	-1.87	0.50	-1.37	11.00	12.37
	5 755	-4.80	0.50	-4.30	30.00	34.30
	5 795	-4.68	0.50	-4.18	30.00	34.18
802.11ac _VHT80	5 210	-5.45	0.73	-4.72	11.00	15.72
	5 290	-6.04	0.73	-5.31	11.00	16.31
	5 530	-7.99	0.73	-7.26	11.00	18.26
	5 690	-8.46	0.73	-7.73	11.00	18.73
	5 775	-9.73	0.73	-9.00	30.00	39.00
Measurement uncertainty		± 1.5 dB				

ANT-L + ANT-R

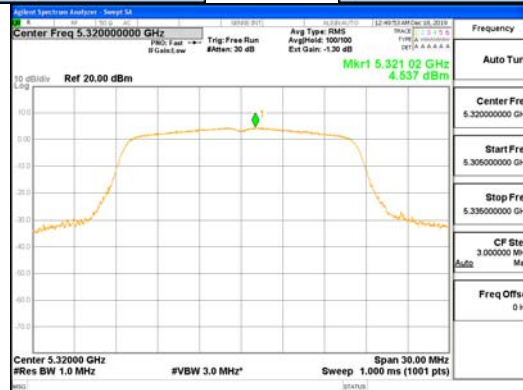
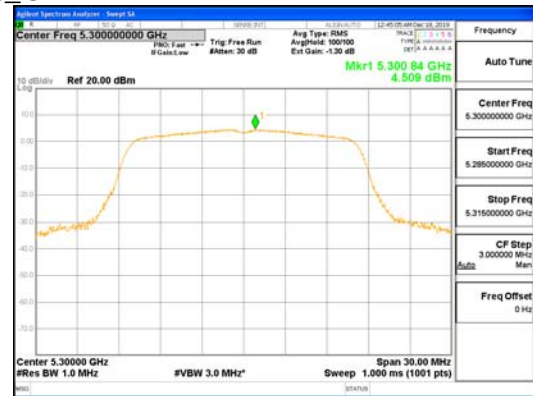
Test Mode	Frequency (MHz)	Measured Power Density (dBm)	Duty cycle Factor (dB)	Result Output Power (dBm)	Limit (dBm)	Margin (dB)
802.11a	5 180	7.11	0.12	7.23	11.00	3.77
	5 200	7.16	0.12	7.28	11.00	3.72
	5 240	7.19	0.12	7.31	11.00	3.69
	5 260	7.62	0.12	7.74	11.00	3.26
	5 300	7.81	0.12	7.93	11.00	3.07
	5 320	7.72	0.12	7.84	11.00	3.16
	5 500	6.44	0.12	6.56	11.00	4.44
	5 600	5.51	0.12	5.63	11.00	5.37
	5 720	5.88	0.12	6.00	11.00	5.00
	5 745	3.19	0.12	3.31	30.00	26.69
	5 785	3.53	0.12	3.65	30.00	26.35
	5 825	3.65	0.12	3.77	30.00	26.23
802.11n _HT20	5 180	6.19	0.13	6.32	11.00	4.68
	5 200	6.66	0.13	6.79	11.00	4.21
	5 240	6.38	0.13	6.51	11.00	4.49
	5 260	6.34	0.13	6.47	11.00	4.53
	5 300	6.54	0.13	6.67	11.00	4.33
	5 320	6.61	0.13	6.74	11.00	4.26
	5 500	5.35	0.13	5.48	11.00	5.52
	5 600	4.21	0.13	4.34	11.00	6.66
	5 720	4.85	0.13	4.98	11.00	6.02
	5 745	2.27	0.13	2.40	30.00	27.60
	5 785	2.43	0.13	2.56	30.00	27.44
	5 825	2.43	0.13	2.56	30.00	27.44
802.11ac _VHT20	5 180	6.53	0.27	6.80	11.00	4.20
	5 200	6.37	0.27	6.64	11.00	4.36
	5 240	6.37	0.27	6.64	11.00	4.36
	5 260	6.21	0.27	6.48	11.00	4.52
	5 300	6.44	0.27	6.71	11.00	4.29
	5 320	6.50	0.27	6.77	11.00	4.23
	5 500	5.12	0.27	5.39	11.00	5.61
	5 600	4.18	0.27	4.45	11.00	6.55
	5 720	4.63	0.27	4.90	11.00	6.10

	5 745	1.98	0.27	2.25	30.00	27.75
	5 785	2.42	0.27	2.69	30.00	27.31
	5 825	2.17	0.27	2.44	30.00	27.56
802.11n _HT40	5 190	2.48	0.28	2.76	11.00	8.24
	5 230	2.52	0.28	2.80	11.00	8.20
	5 270	2.50	0.28	2.78	11.00	8.22
	5 310	2.71	0.28	2.99	11.00	8.01
	5 510	1.28	0.28	1.56	11.00	9.44
	5 590	0.40	0.28	0.68	11.00	10.32
	5 710	0.96	0.28	1.24	11.00	9.76
	5 755	-1.74	0.28	-1.46	30.00	31.46
	5 795	-1.43	0.28	-1.15	30.00	31.15
802.11ac _VHT40	5 190	2.46	0.50	2.96	11.00	8.04
	5 230	2.36	0.50	2.86	11.00	8.14
	5 270	2.40	0.50	2.90	11.00	8.10
	5 310	2.54	0.50	3.04	11.00	7.96
	5 510	1.06	0.50	1.56	11.00	9.44
	5 590	0.21	0.50	0.71	11.00	10.29
	5 710	0.98	0.50	1.48	11.00	9.52
	5 755	-2.01	0.50	-1.51	30.00	31.51
	5 795	-1.69	0.50	-1.19	30.00	31.19
802.11ac _VHT80	5 210	-2.94	0.73	-2.21	11.00	13.21
	5 290	-3.28	0.73	-2.55	11.00	13.55
	5 530	-4.76	0.73	-4.03	11.00	15.03
	5 690	-4.72	0.73	-3.99	11.00	14.99
	5 775	-7.05	0.73	-6.32	30.00	36.32
Measurement uncertainty		± 1.5 dB				

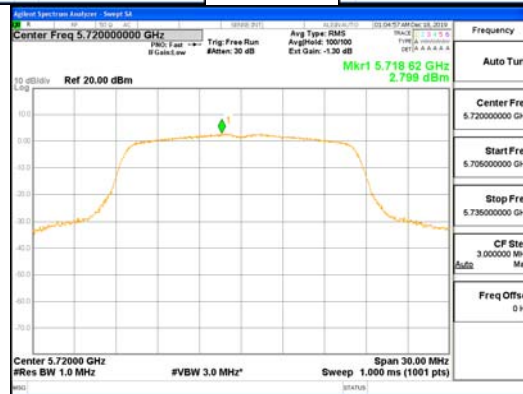
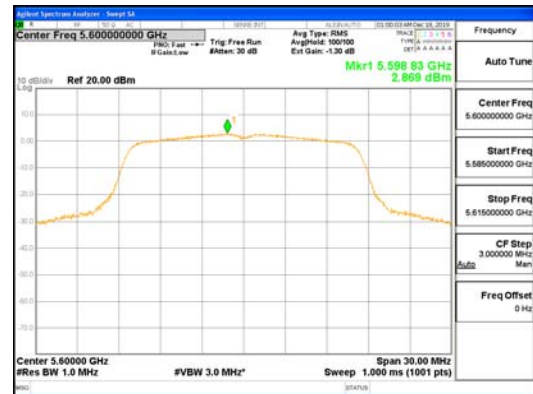
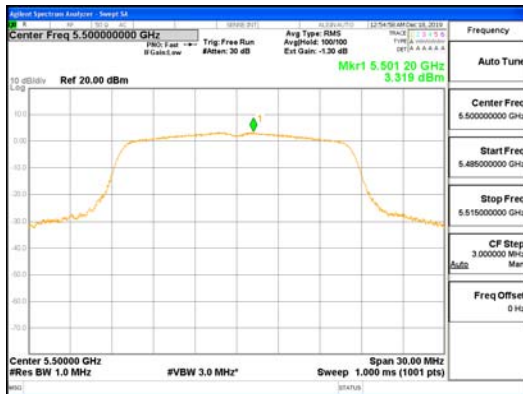
See next pages for actual measured spectrum plots.



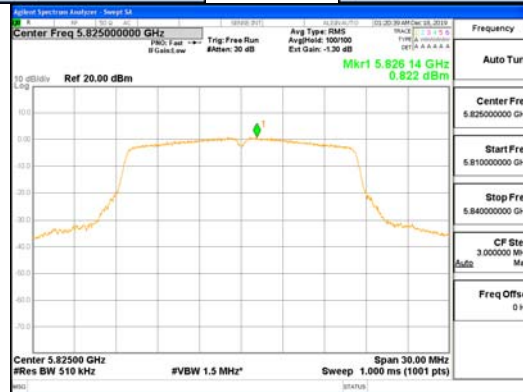
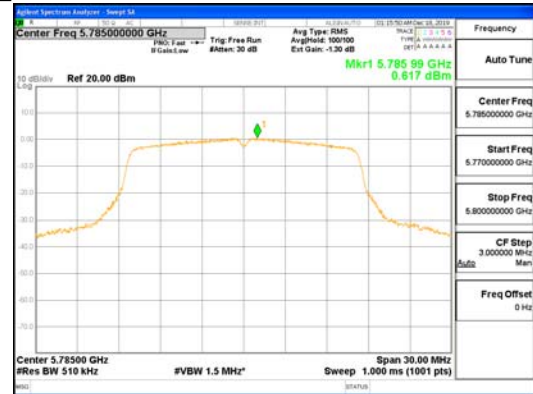
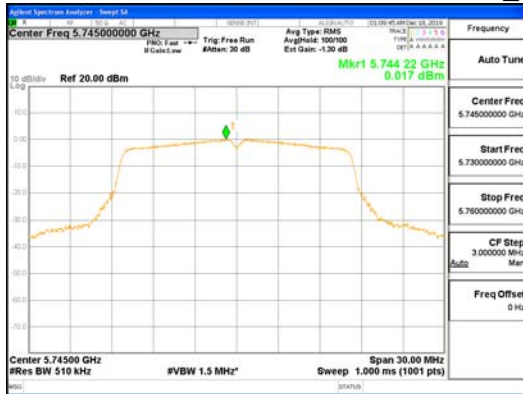
ANT-L_802.11a_UNII 1



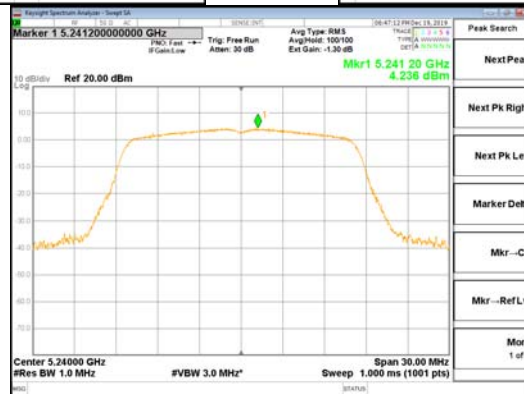
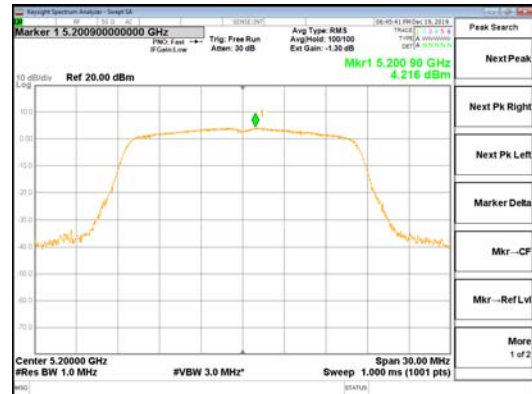
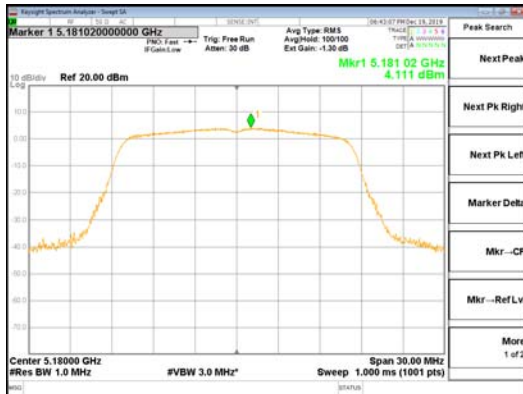
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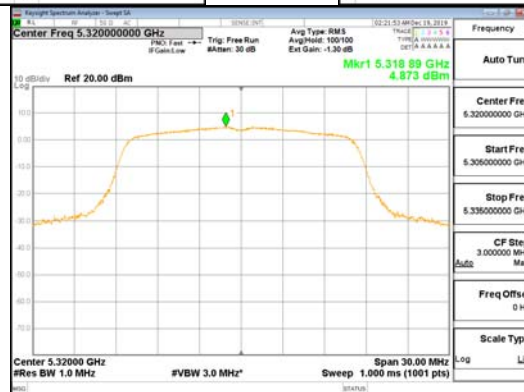
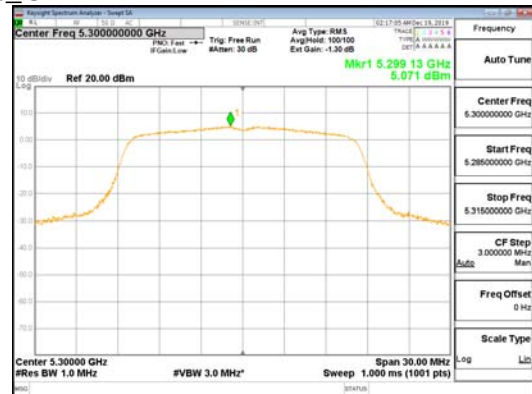
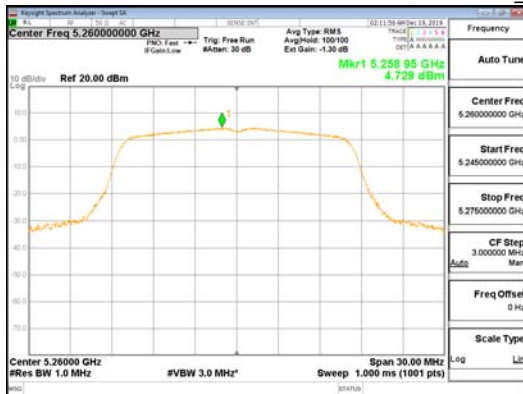
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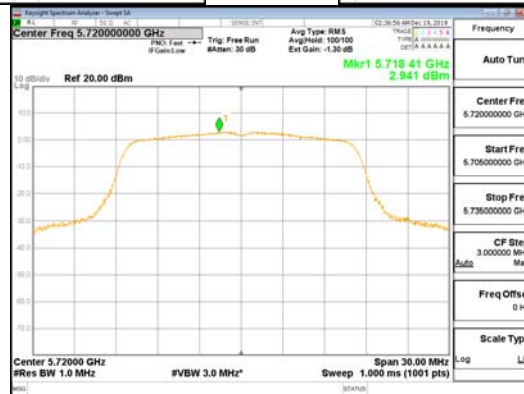
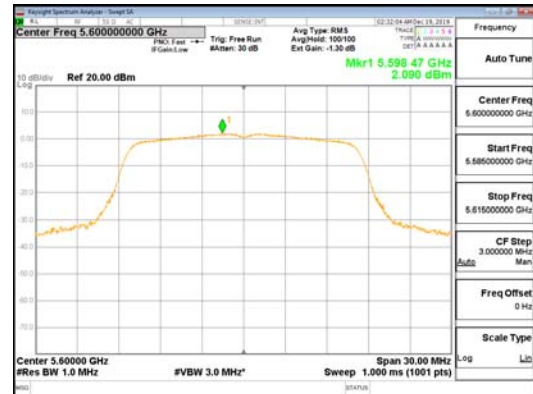
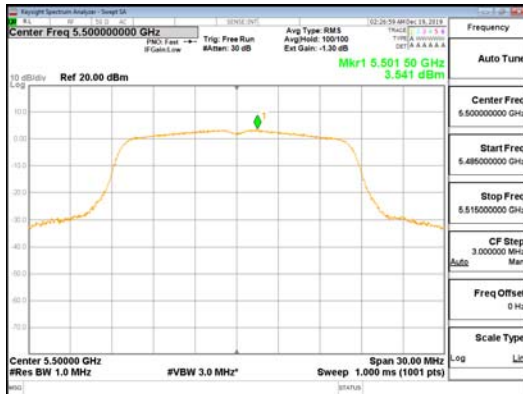
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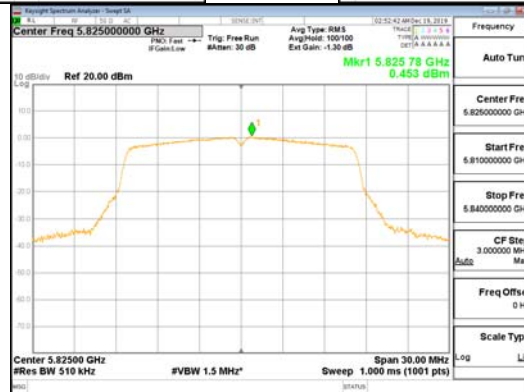
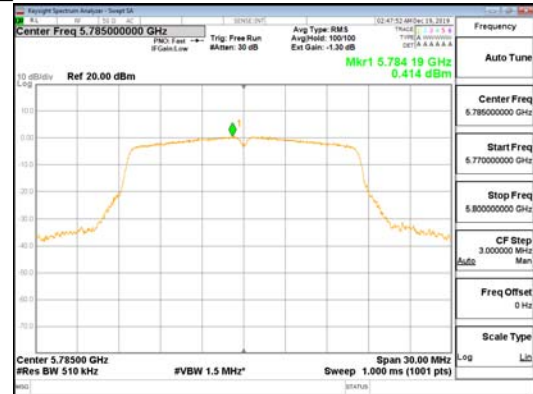
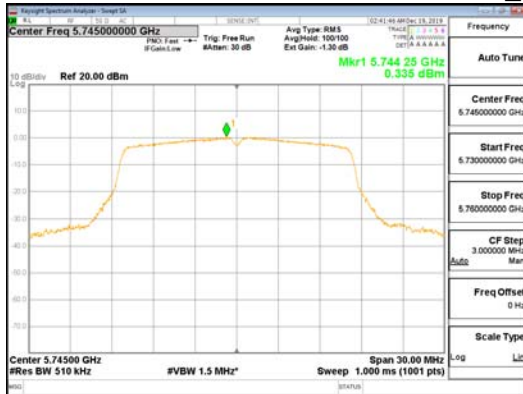
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ANT-R_802.11a_UNII 2A



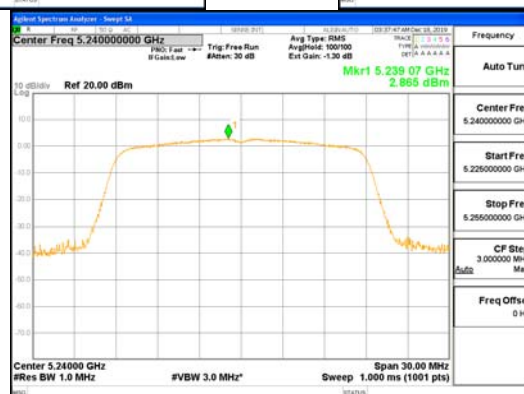
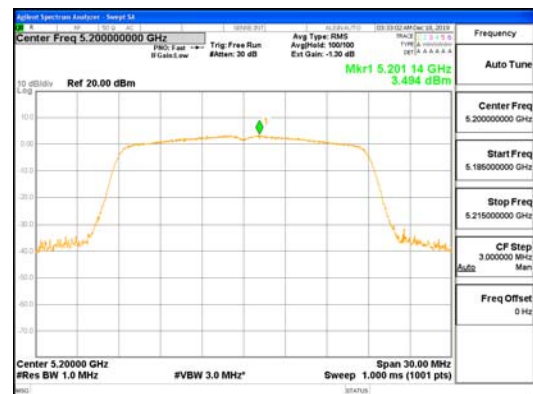
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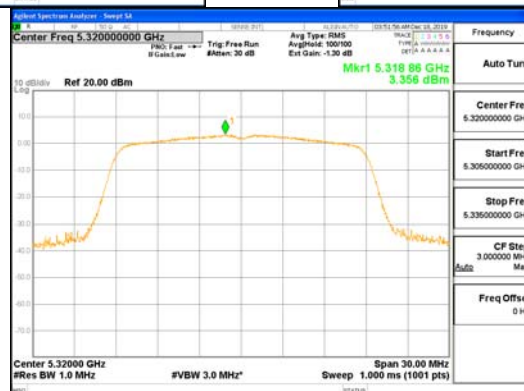
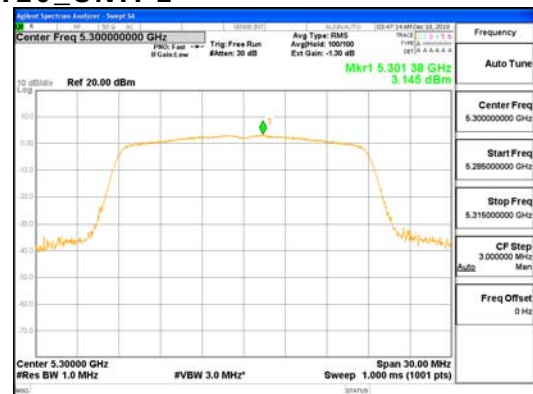
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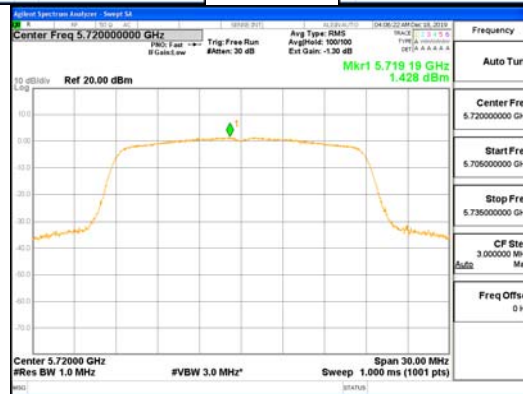
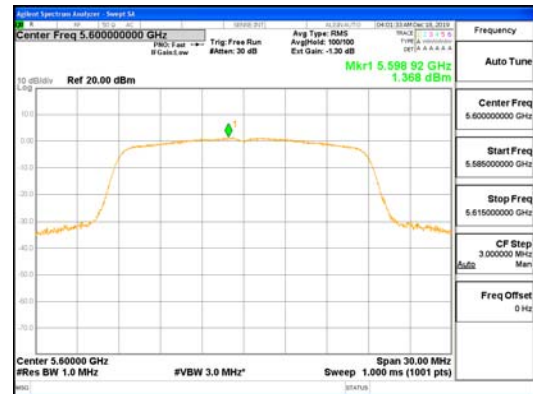
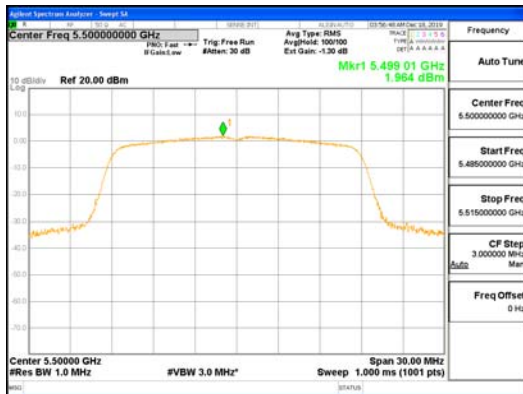
Report No.:
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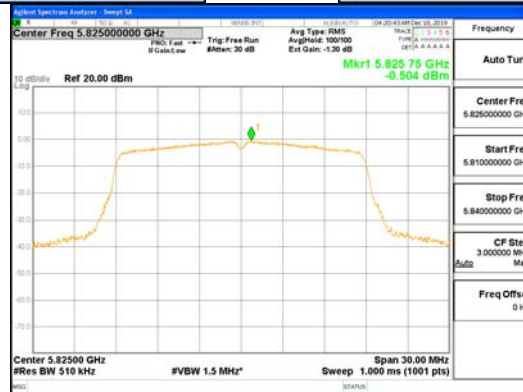
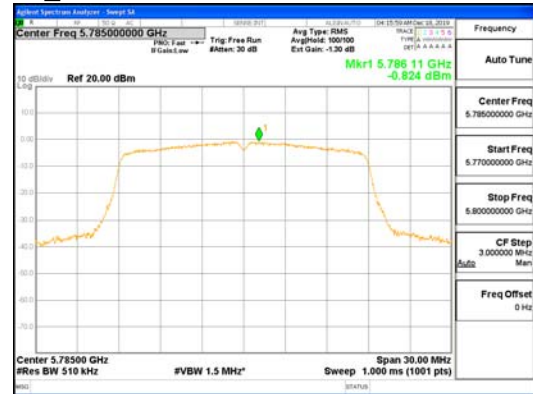
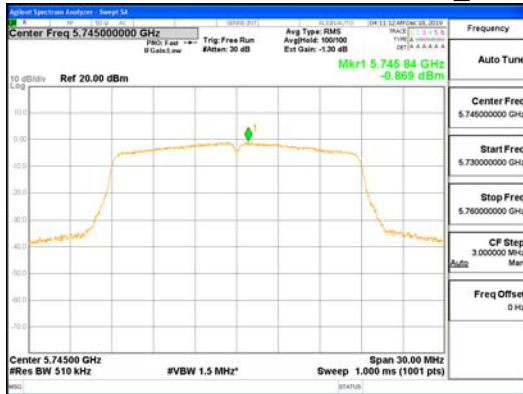
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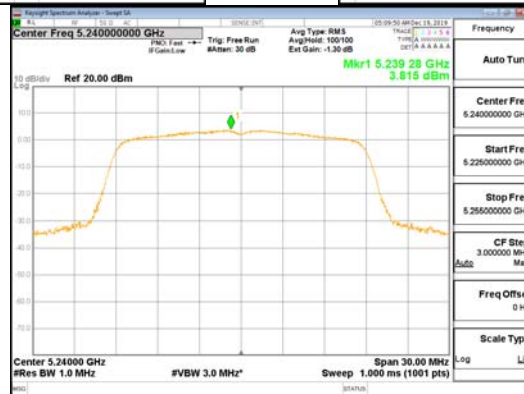
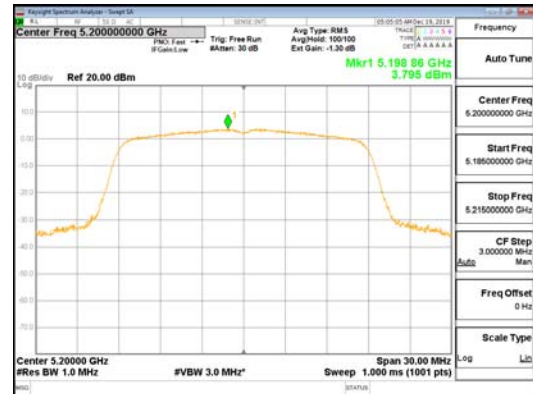
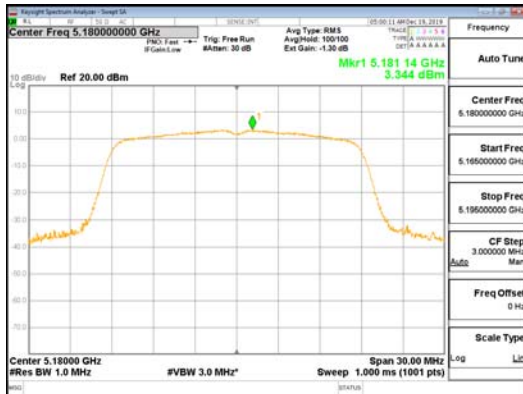
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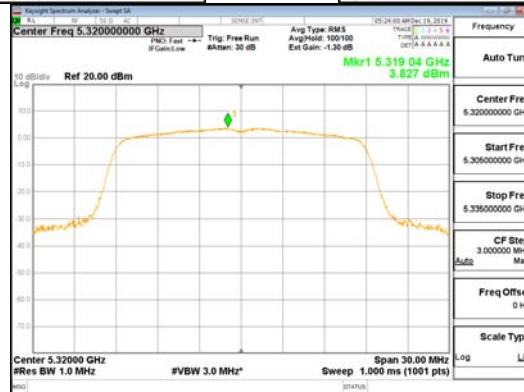
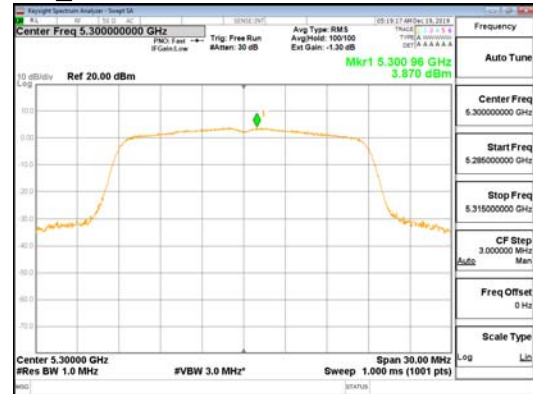
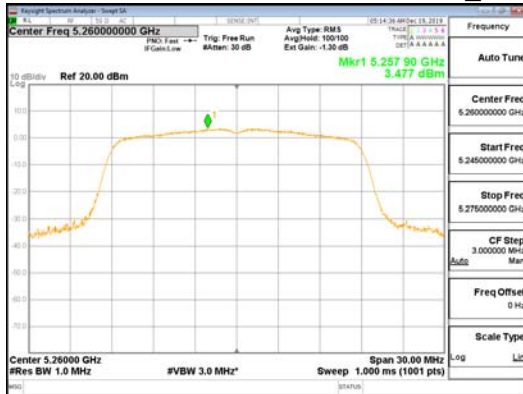
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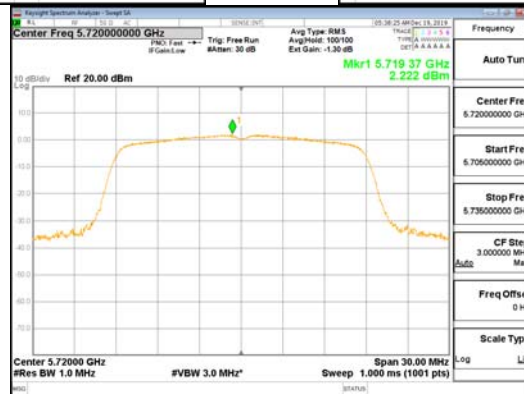
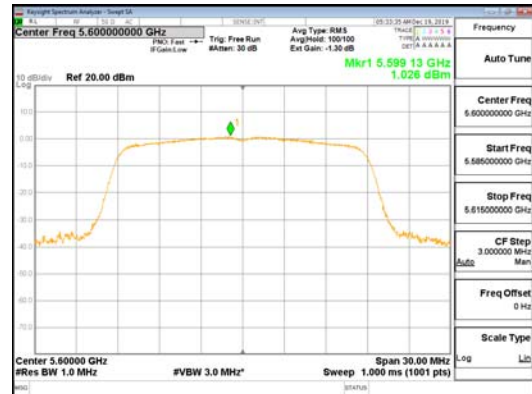
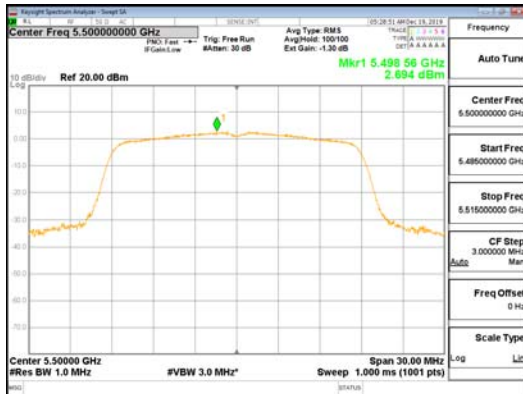
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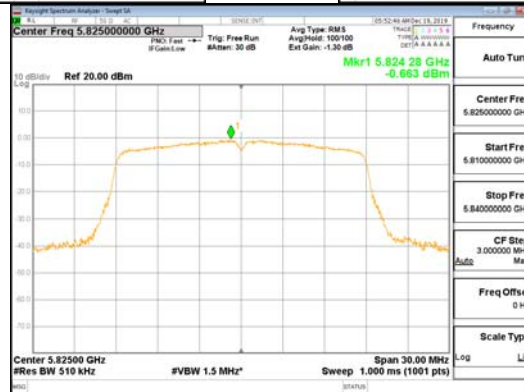
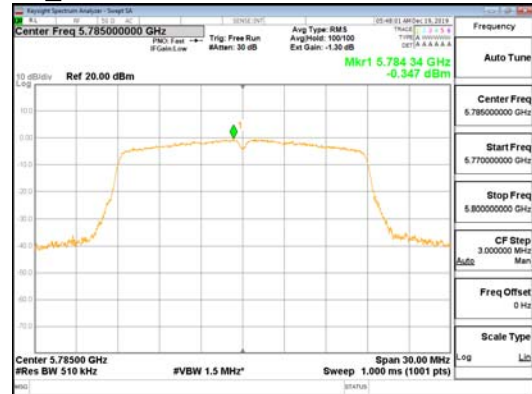
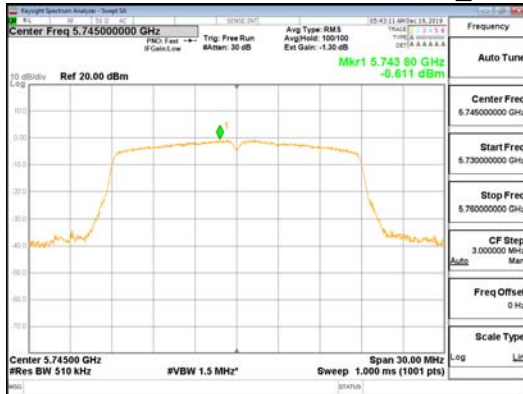
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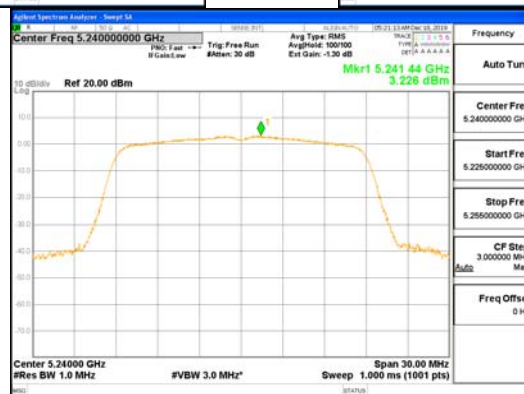
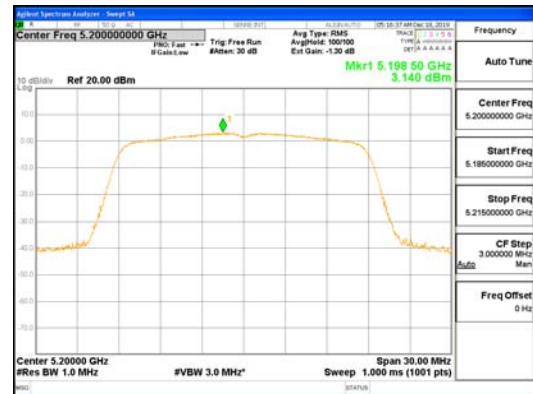
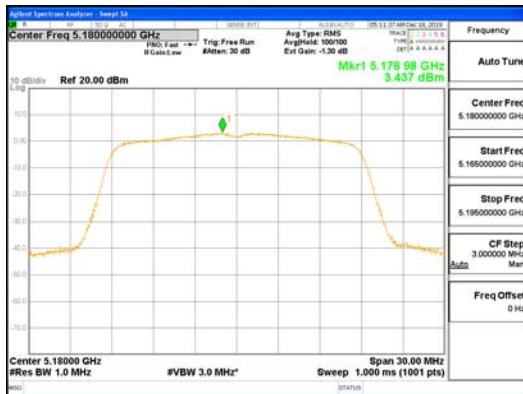
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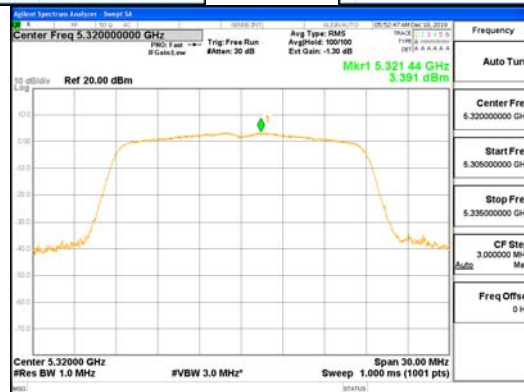
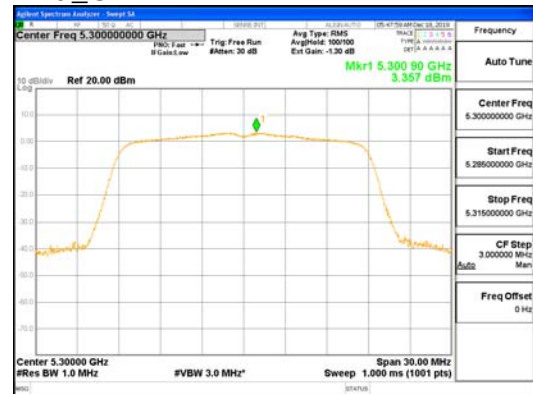
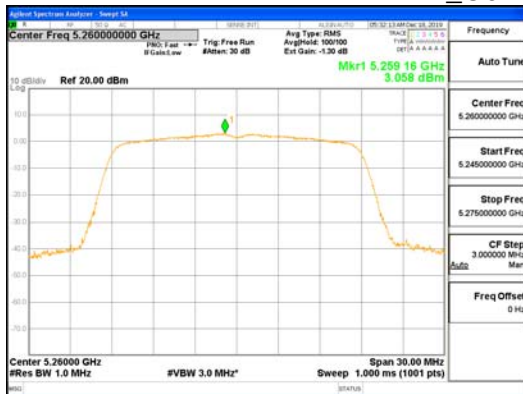
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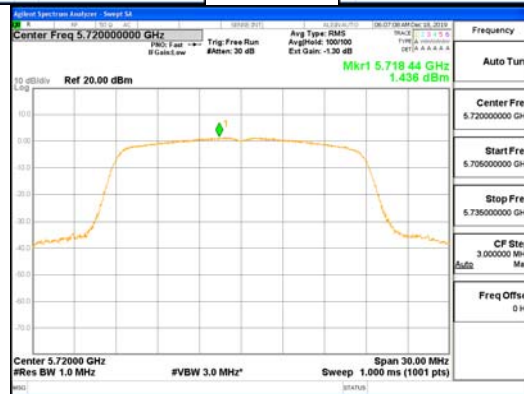
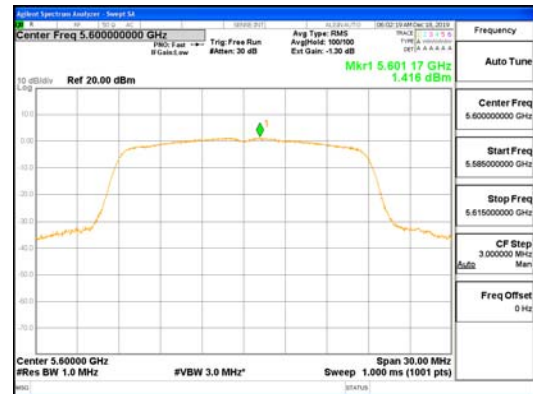
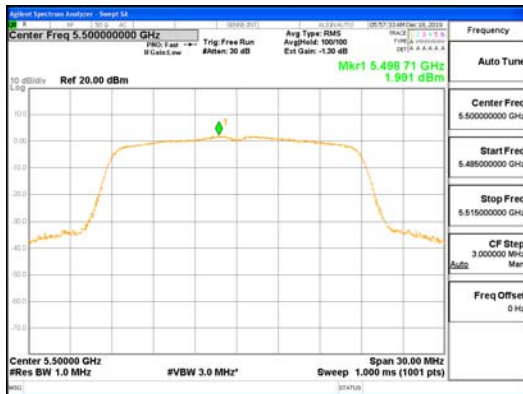
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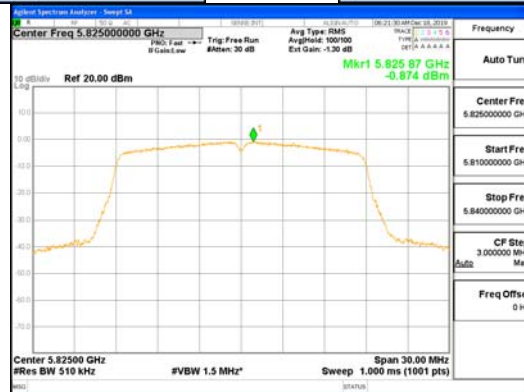
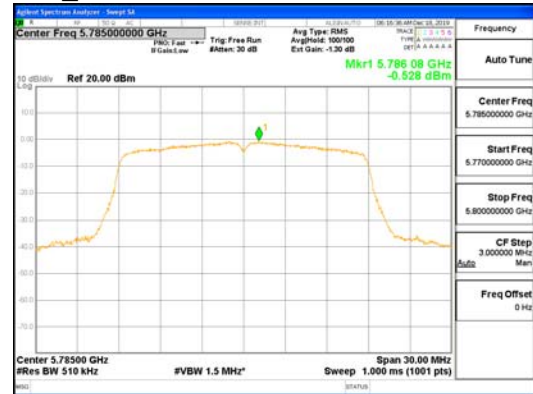
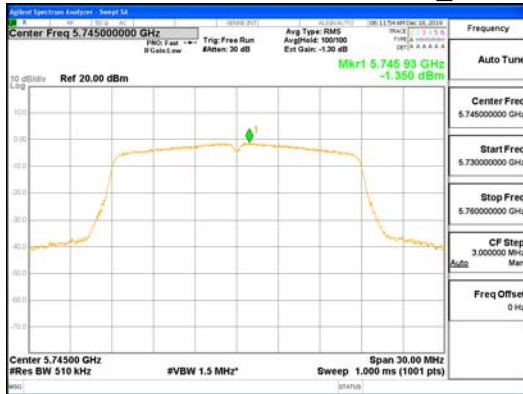
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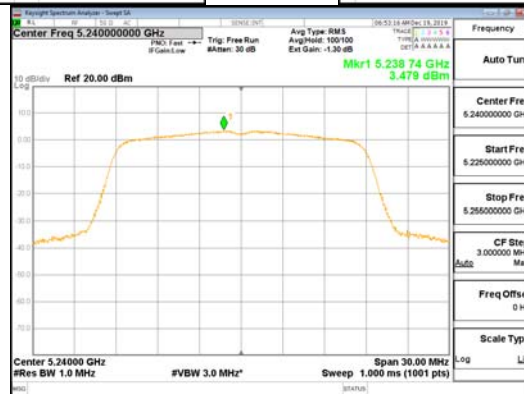
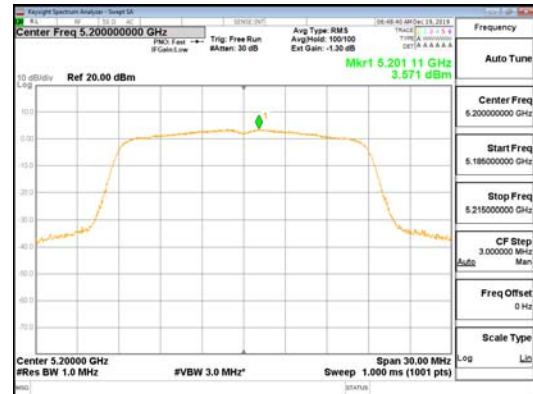
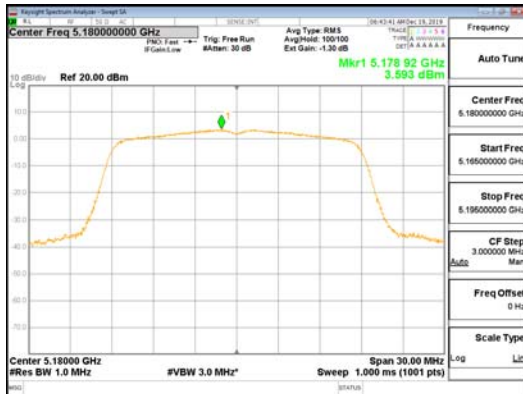
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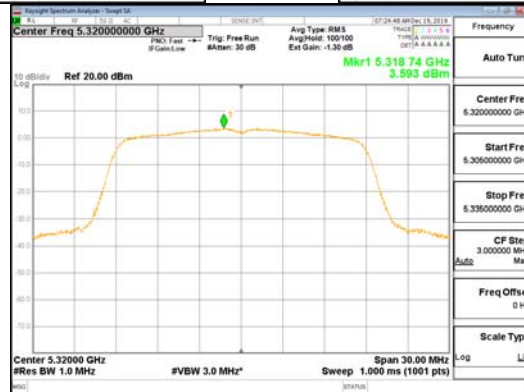
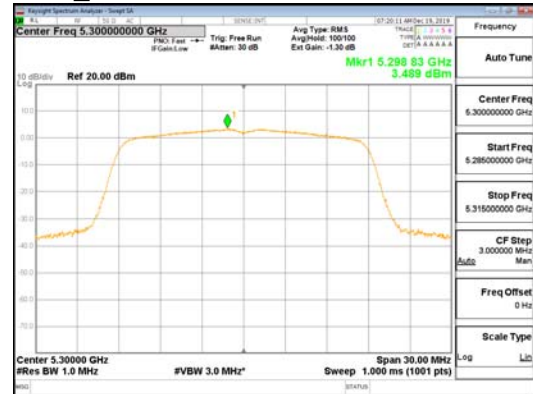
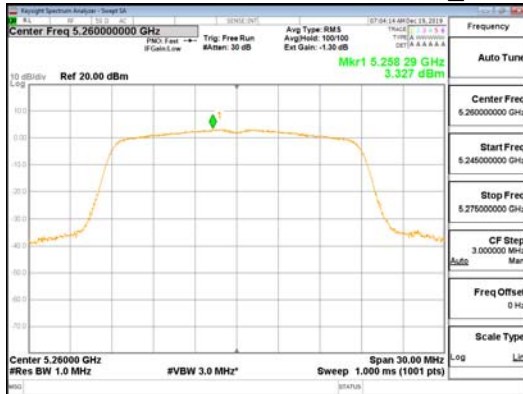
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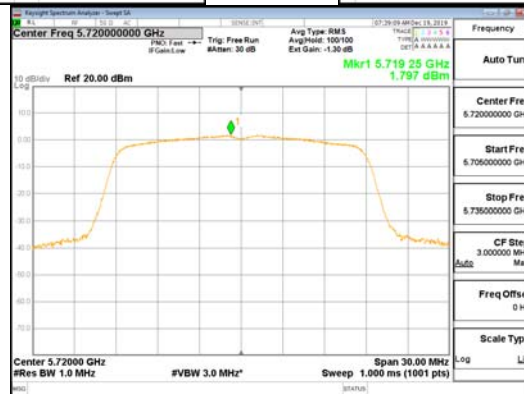
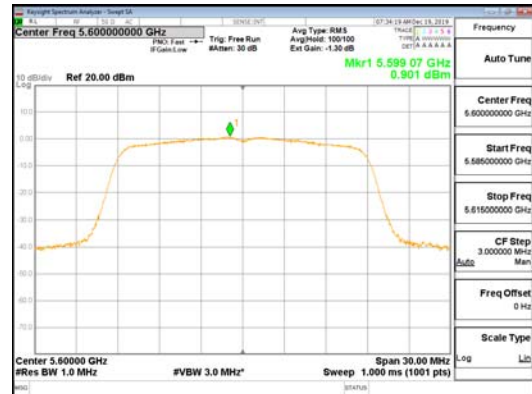
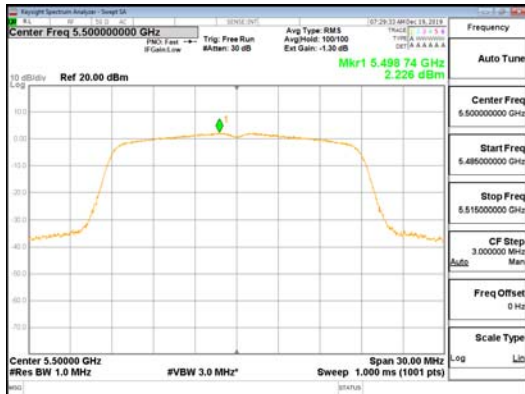
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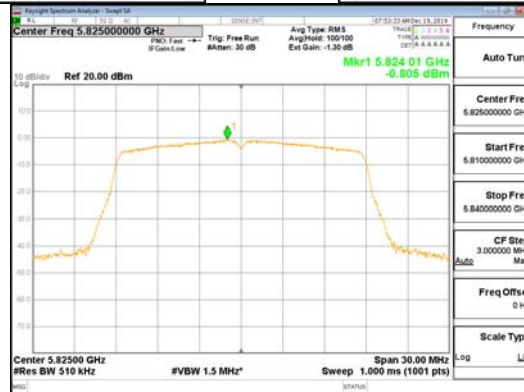
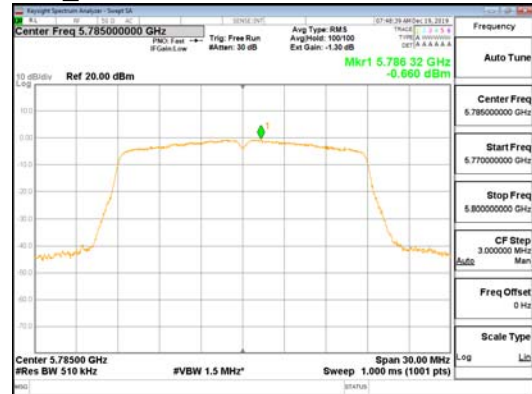
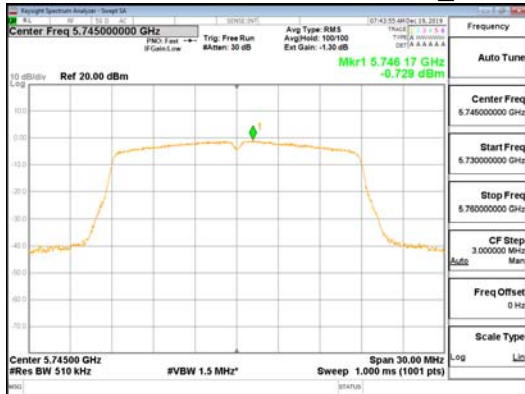
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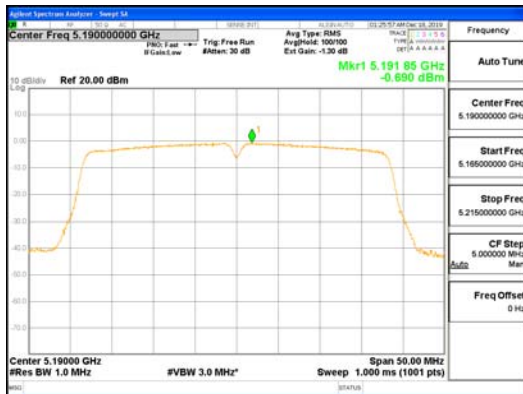
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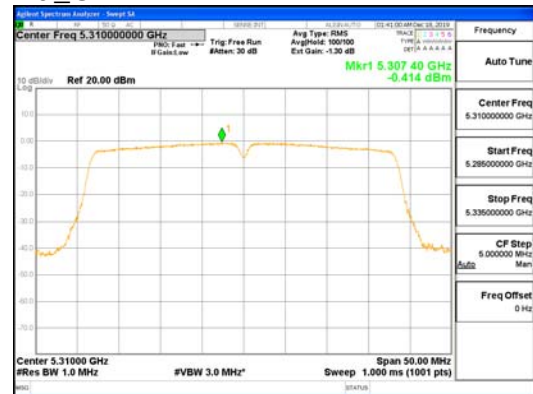
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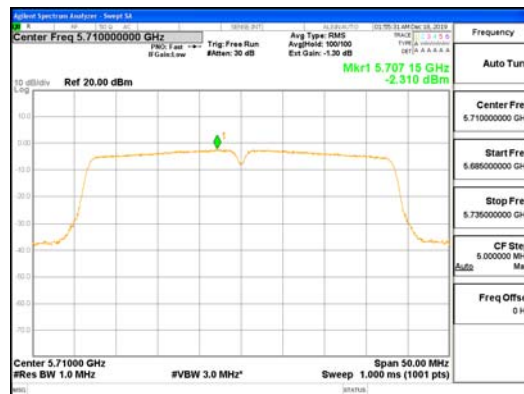
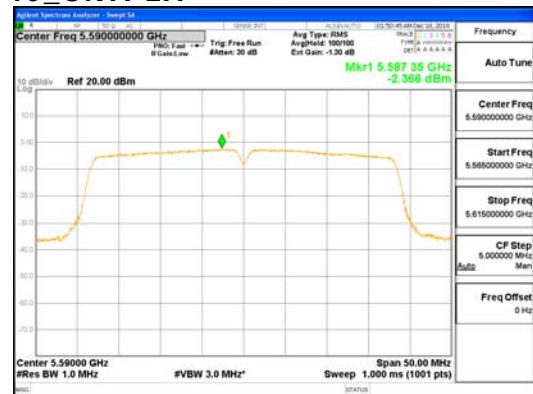
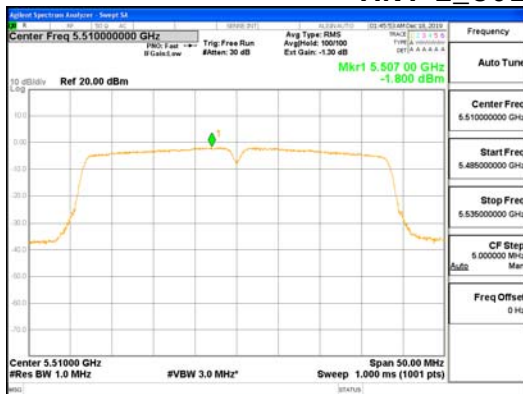
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ANT-L_802.11n_HT40_UNII 1



ANT-L_802.11n_HT40_UNII 2A

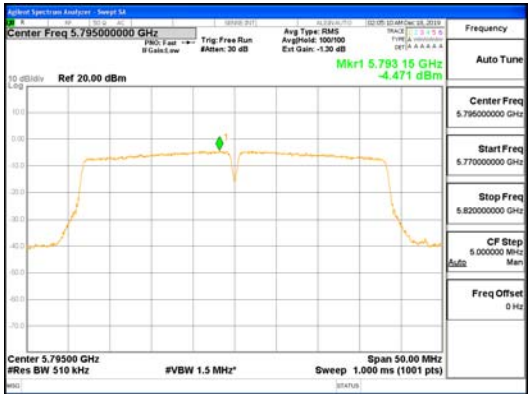
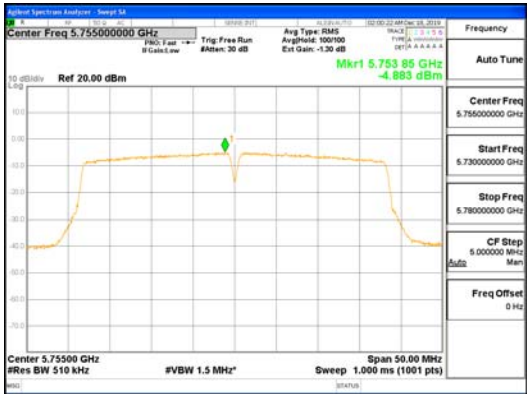


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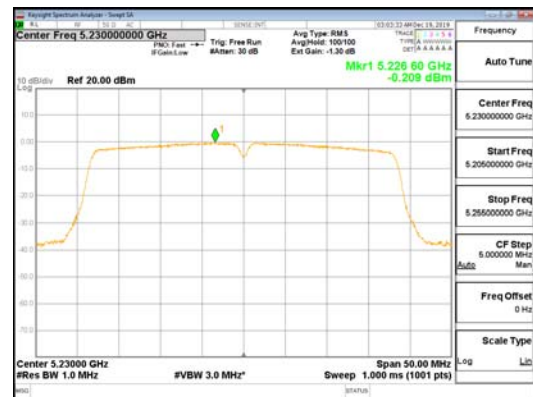
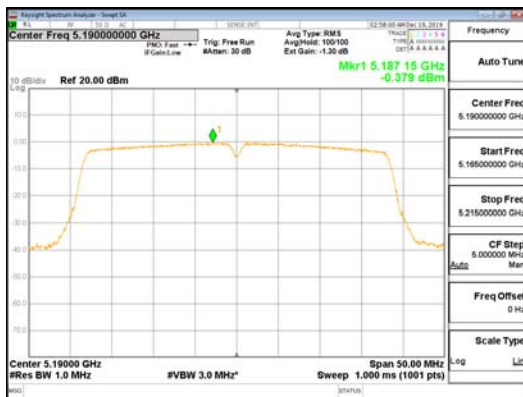


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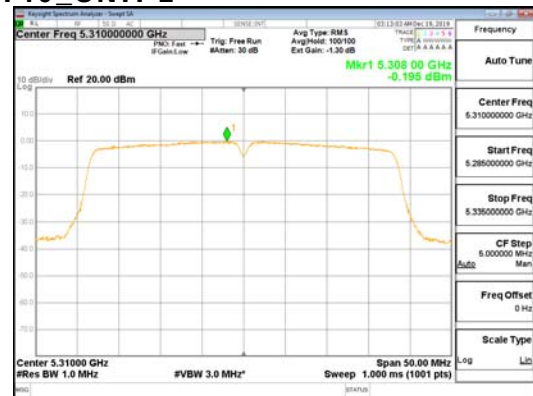
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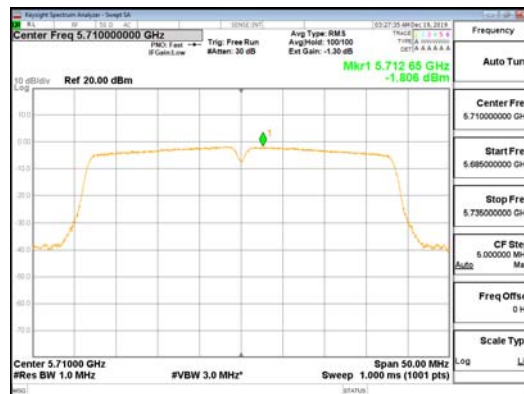
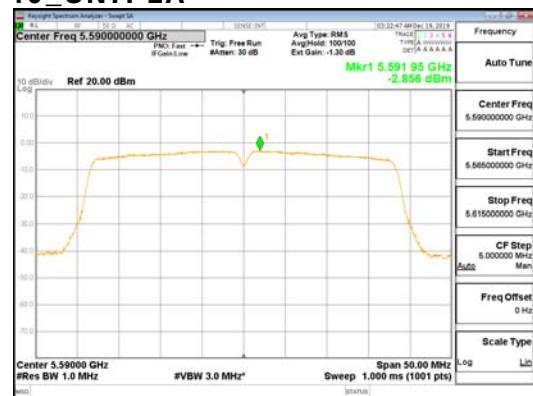
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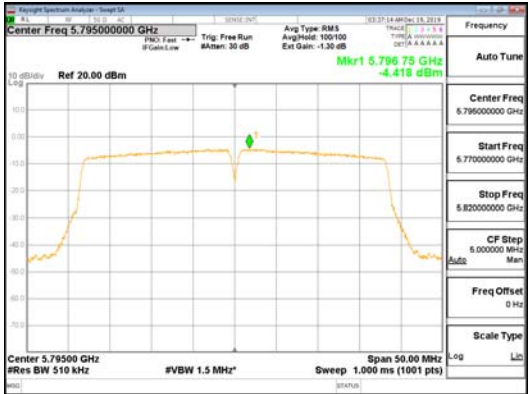
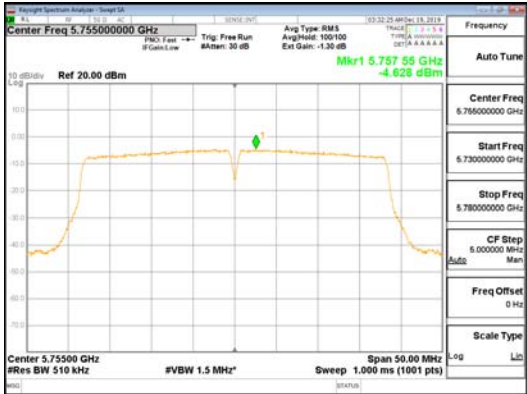


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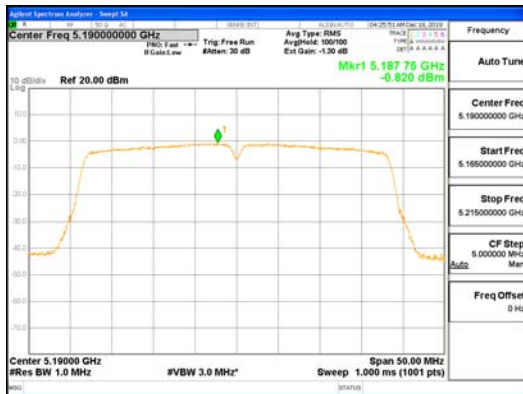


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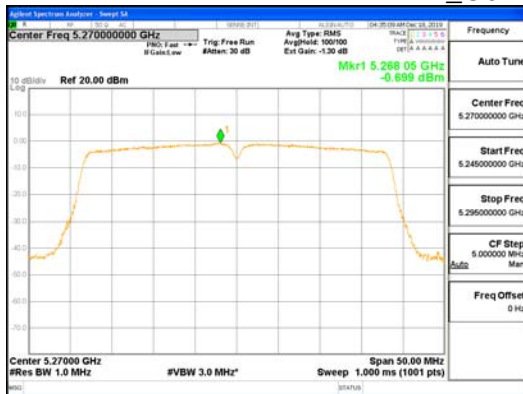
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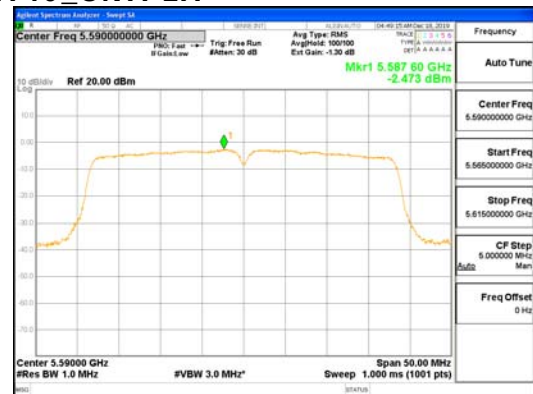
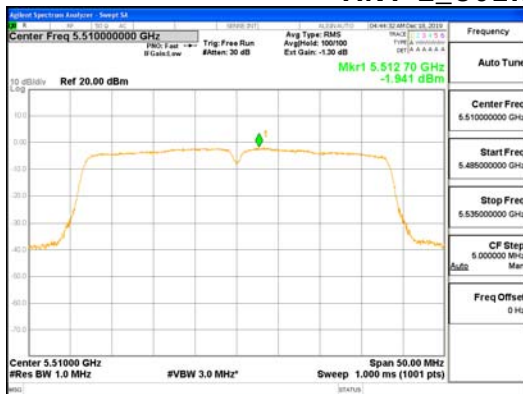
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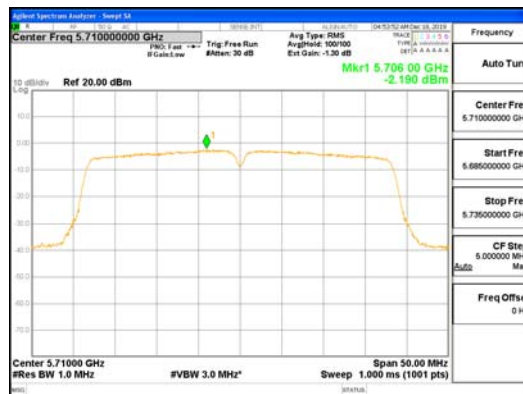
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ANT-L_802.11ac_VHT40_UNII 2A



ANT-L_802.11ac_VHT40_UNII 2C



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