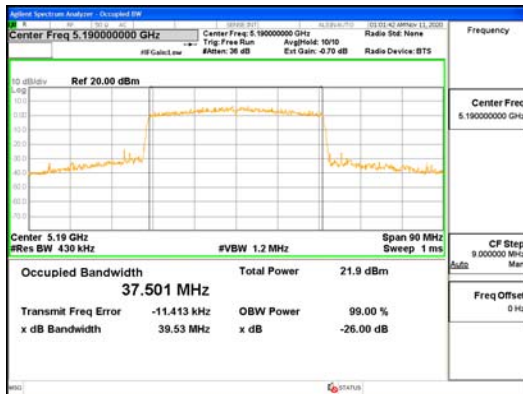
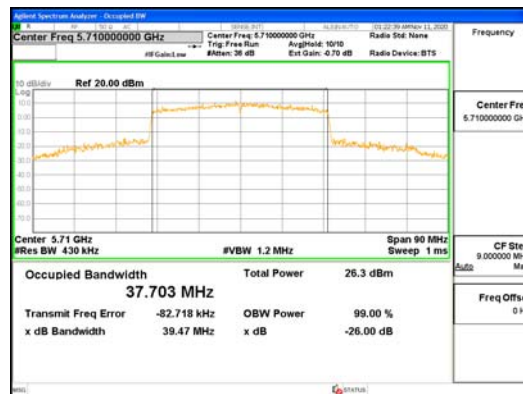
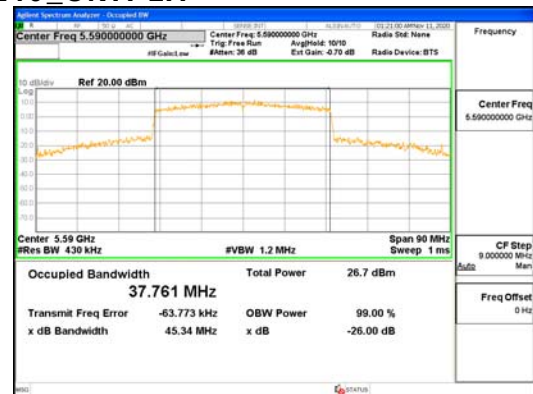
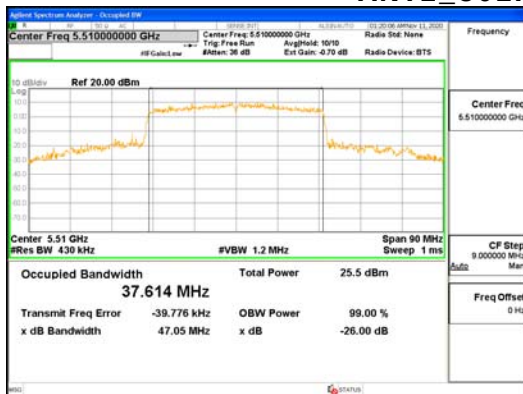




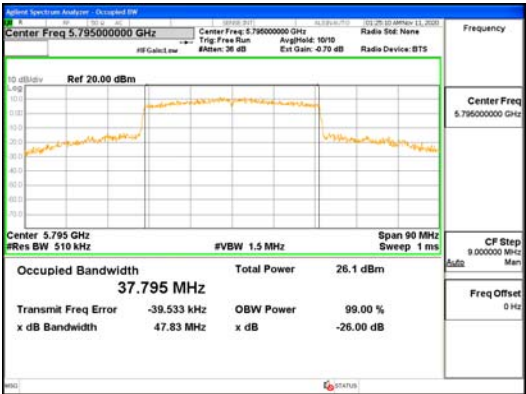
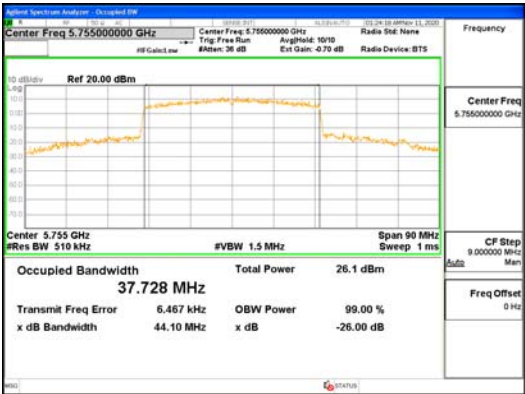
ANT2_802.11ax_HE40_UNII 1



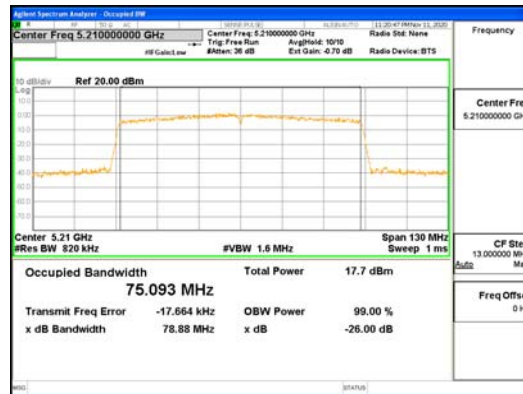
ANT2_802.11ax_HE40_UNII 2A



ANT2_802.11ax_HE40_UNII 2C



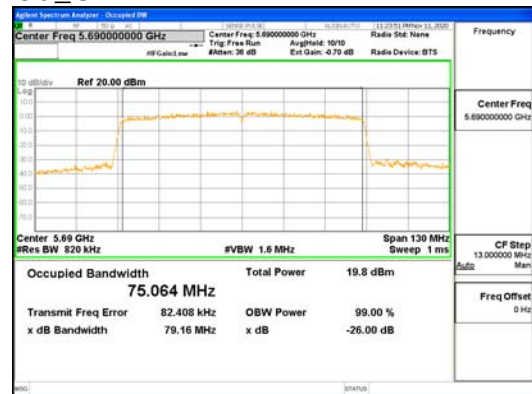
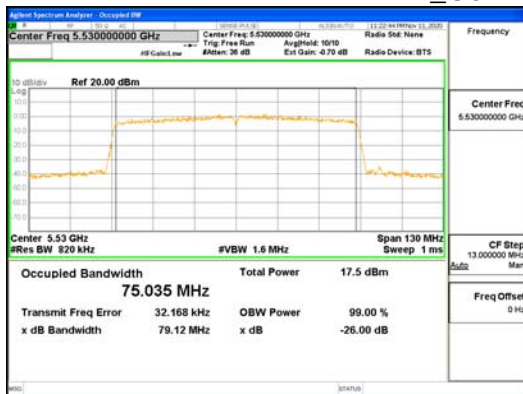
ANT2_802.11ax_HE40_UNI1 3



ANT1_802.11ac_VHT80_UNII 1



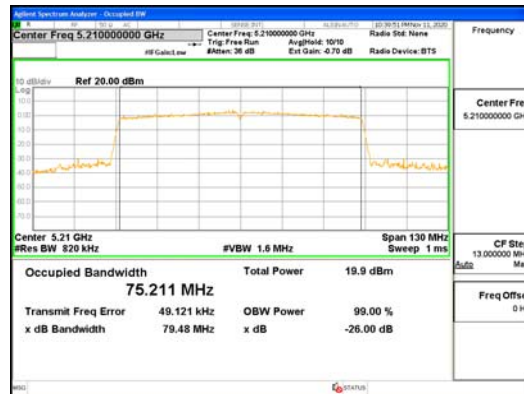
ANT1_802.11ac_VHT80_UNII 2A



ANT1_802.11ac_VHT80_UNII 2C



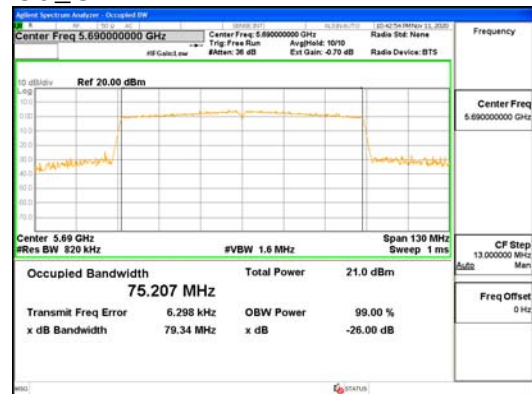
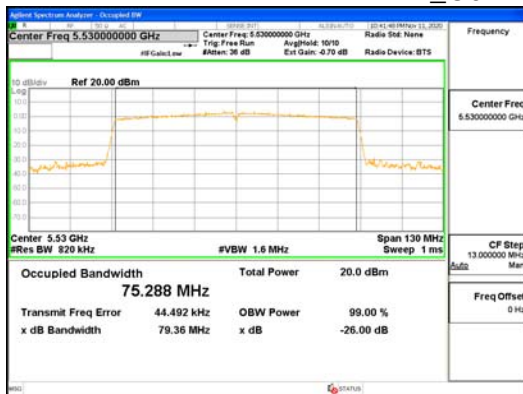
ANT1_802.11ac_VHT80_UNII 3



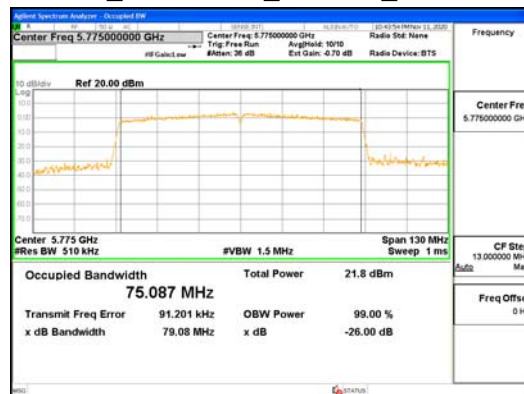
ANT2_802.11ac_VHT80_UNII 1



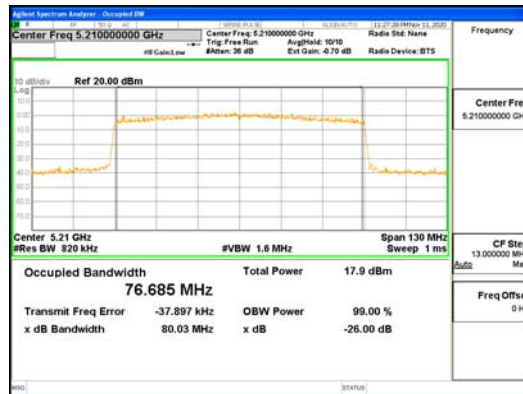
ANT2_802.11ac_VHT80_UNII 2A



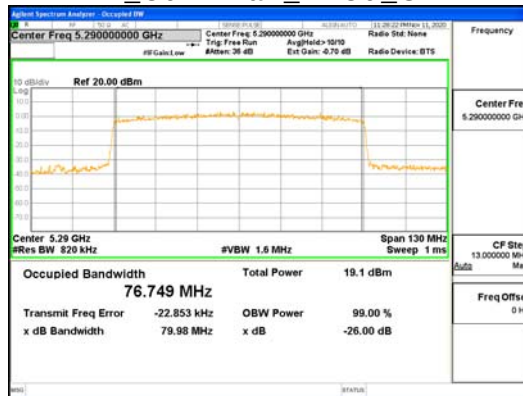
ANT2_802.11ac_VHT80_UNII 2C



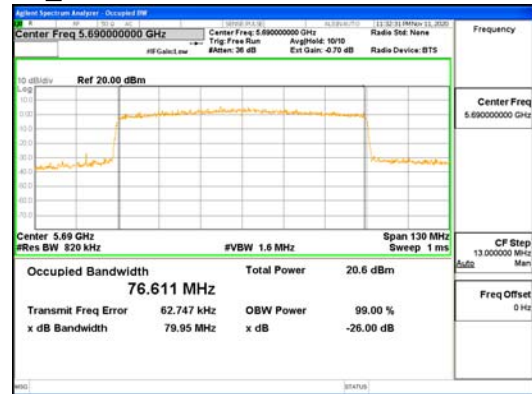
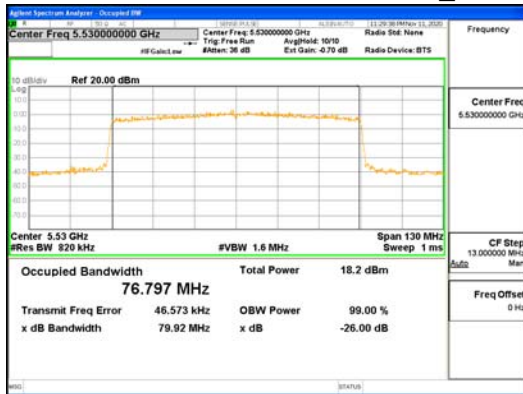
ANT2_802.11ac_VHT80_UNII 3



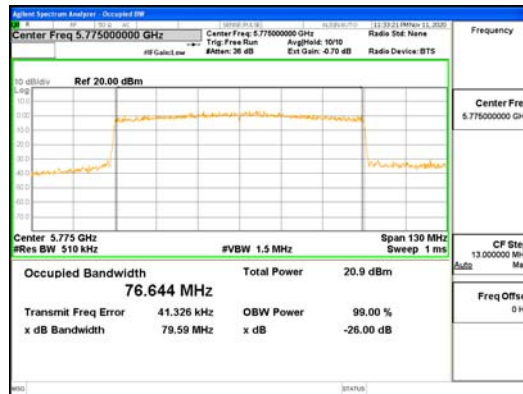
ANT1_802.11ax_HE80_UNII 1



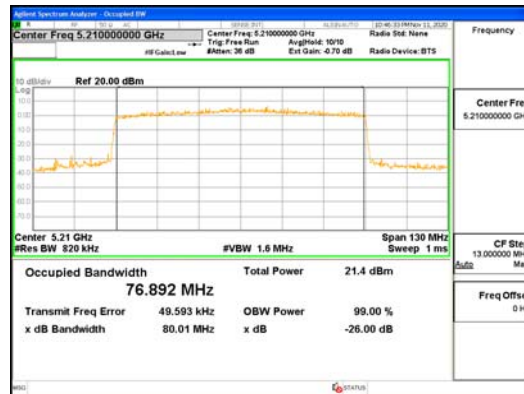
ANT1_802.11ax_HE80_UNII 2A



ANT1_802.11ax_HE80_UNII 2C



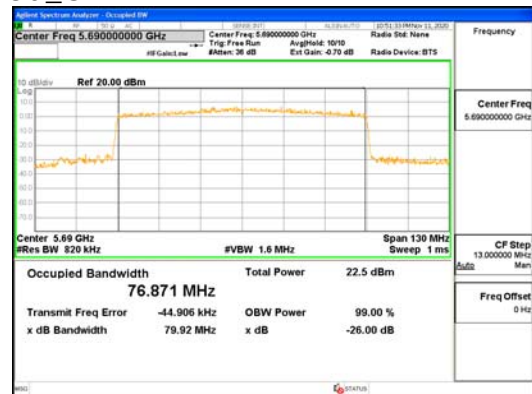
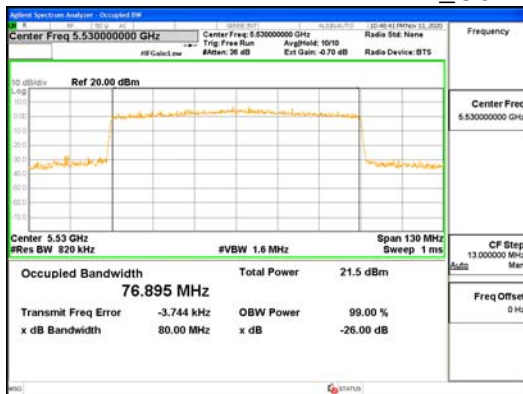
ANT1_802.11ax_HE80_UNII 3



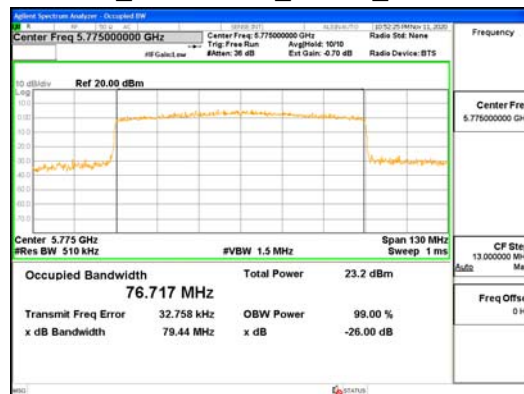
ANT2_802.11ax_HE80_UNII 1



ANT2_802.11ax_HE80_UNII 2A



ANT2_802.11ax_HE80_UNII 2C



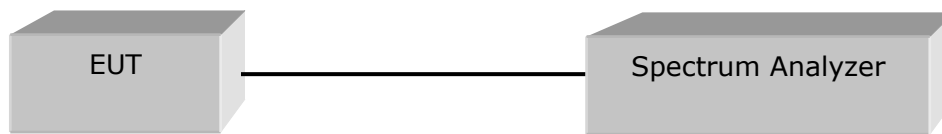
ANT2_802.11ax_HE80_UNII 3

4.3 OUTPUT POWER

Test Procedures

KDB 789033 – Section E.2.d (Method SA-2, Maximum Conducted Output Power)
KDB 662911 D01, D02 (Multiple Transmitter Output)

The transmitter output is connected to a spectrum analyzer and the analyzer's internal channel power integration function is used to integrate the power over a bandwidth greater than or equal to the 99% bandwidth.



Test Settings :

Center frequency = the highest, middle and the lowest channels

- a) RBW = 1 MHz
- b) VBW $\geq 3 \times$ RBW
- 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	0.13
802.11n_HT20	0.14
802.11n_HT40	0.27
802.11ac_VHT20	0.26
802.11ac_VHT40	0.49
802.11ac_VHT80	0.89
802.11ax_HE20	0.31
802.11ax_HE40	0.53
802.11ax_HE80	0.85

Limit

Operating Mode	ANT Configuration	ANT Gain (dBi)	Mode	Band	Limit (dBm)
SISO	ANT1, ANT2	-0.07, 1.65	802.11a/n/ac/ax	UNII 1	24.00
				UNII 2A	24.00
				UNII 2C	24.00
				UNII 3	30.00
MIMO (2Tx)	ANT1 + ANT2	3.88	802.11a/n/ac/ax	UNII 1	24.00
				UNII 2A	24.00
				UNII 2C	24.00
				UNII 3	30.00

Test Data

ANT1

Test Mode	Frequency (MHz)	Measured Output Power (dBm)	Duty cycle Factor (dB)	Result Output Power (dBm)	Limit (dBm)	Margin (dB)
802.11a	5 180	9.11	0.13	9.24	24.00	14.76
	5 200	9.41	0.13	9.54	24.00	14.46
	5 240	9.93	0.13	10.06	24.00	13.94
	5 260	13.24	0.13	13.37	24.00	10.63
	5 300	11.54	0.13	11.67	24.00	12.33
	5 320	11.39	0.13	11.52	24.00	12.48
	5 500	11.95	0.13	12.08	24.00	11.92
	5 600	14.04	0.13	14.17	24.00	9.83
	5 720	14.03	0.13	14.16	24.00	9.84
	5 745	14.78	0.13	14.91	30.00	15.09
	5 785	14.24	0.13	14.37	30.00	15.63
	5 825	11.74	0.13	11.87	30.00	18.13
802.11n _HT20	5 180	10.05	0.14	10.19	24.00	13.81
	5 200	10.88	0.14	11.02	24.00	12.98
	5 240	11.03	0.14	11.17	24.00	12.83
	5 260	13.37	0.14	13.51	24.00	10.49
	5 300	12.36	0.14	12.50	24.00	11.50
	5 320	12.51	0.14	12.65	24.00	11.35
	5 500	12.92	0.14	13.06	24.00	10.94
	5 600	14.49	0.14	14.63	24.00	9.37
	5 720	14.54	0.14	14.68	24.00	9.32
	5 745	14.61	0.14	14.75	30.00	15.25
	5 785	14.64	0.14	14.78	30.00	15.22
	5 825	11.86	0.14	12.00	30.00	18.00
802.11ac _VHT20	5 180	9.35	0.26	9.61	24.00	14.39
	5 200	9.53	0.26	9.79	24.00	14.21
	5 240	9.36	0.26	9.62	24.00	14.38
	5 260	12.75	0.26	13.01	24.00	10.99
	5 300	11.04	0.26	11.30	24.00	12.70
	5 320	11.23	0.26	11.49	24.00	12.51
	5 500	12.04	0.26	12.30	24.00	11.70
	5 600	13.99	0.26	14.25	24.00	9.75
	5 720	14.02	0.26	14.28	24.00	9.72

	5 745	14.30	0.26	14.56	30.00	15.44
	5 785	13.91	0.26	14.17	30.00	15.83
	5 825	11.40	0.26	11.66	30.00	18.34
802.11ax _HE20	5 180	9.51	0.31	9.82	24.00	14.18
	5 200	9.68	0.31	9.99	24.00	14.01
	5 240	9.45	0.31	9.76	24.00	14.24
	5 260	12.85	0.31	13.16	24.00	10.84
	5 300	11.28	0.31	11.59	24.00	12.41
	5 320	11.49	0.31	11.80	24.00	12.20
	5 500	12.18	0.31	12.49	24.00	11.51
	5 600	14.25	0.31	14.56	24.00	9.44
	5 720	14.27	0.31	14.58	24.00	9.42
	5 745	14.52	0.31	14.83	30.00	15.17
	5 785	14.19	0.31	14.50	30.00	15.50
	5 825	11.63	0.31	11.94	30.00	18.06
802.11n _HT40	5 190	11.04	0.27	11.31	24.00	12.69
	5 230	11.04	0.27	11.31	24.00	12.69
	5 270	12.09	0.27	12.36	24.00	11.64
	5 310	10.35	0.27	10.62	24.00	13.38
	5 510	14.75	0.27	15.02	24.00	8.98
	5 590	16.66	0.27	16.93	24.00	7.07
	5 710	16.49	0.27	16.76	24.00	7.24
	5 755	16.71	0.27	16.98	30.00	13.02
	5 795	16.41	0.27	16.68	30.00	13.32
802.11ac _VHT40	5 190	10.86	0.49	11.35	24.00	12.65
	5 230	10.62	0.49	11.11	24.00	12.89
	5 270	11.80	0.49	12.29	24.00	11.71
	5 310	10.10	0.49	10.59	24.00	13.41
	5 510	14.54	0.49	15.03	24.00	8.97
	5 590	16.48	0.49	16.97	24.00	7.03
	5 710	16.29	0.49	16.78	24.00	7.22
	5 755	16.39	0.49	16.88	30.00	13.12
	5 795	16.09	0.49	16.58	30.00	13.42
802.11ax _HE40	5 190	11.05	0.53	11.58	24.00	12.42
	5 230	10.86	0.53	11.39	24.00	12.61
	5 270	11.96	0.53	12.49	24.00	11.51
	5 310	10.25	0.53	10.78	24.00	13.22
	5 510	14.68	0.53	15.21	24.00	8.79
	5 590	16.67	0.53	17.20	24.00	6.80

	5 710	16.46	0.53	16.99	24.00	7.01
	5 755	16.62	0.53	17.15	30.00	12.85
	5 795	16.38	0.53	16.91	30.00	13.09
802.11ac _VHT80	5 210	10.60	0.89	11.49	24.00	12.51
	5 290	11.86	0.89	12.75	24.00	11.25
	5 530	10.43	0.89	11.32	24.00	12.68
	5 690	12.74	0.89	13.63	24.00	10.37
	5 775	12.60	0.89	13.49	30.00	16.51
802.11ax _HE80	5 210	10.38	0.85	11.23	24.00	12.77
	5 290	11.69	0.85	12.54	24.00	11.46
	5 530	10.75	0.85	11.60	24.00	12.40
	5 690	13.22	0.85	14.07	24.00	9.93
	5 775	13.04	0.85	13.89	30.00	16.11
Measurement uncertainty		± 1.5 dB				

ANT2

Test Mode	Frequency (MHz)	Measured Output Power (dBm)	Duty cycle Factor (dB)	Result Output Power (dBm)	Limit (dBm)	Margin (dB)
802.11a	5 180	12.96	0.13	13.09	24.00	10.91
	5 200	12.91	0.13	13.04	24.00	10.96
	5 240	12.53	0.13	12.66	24.00	11.34
	5 260	15.23	0.13	15.36	24.00	8.64
	5 300	14.61	0.13	14.74	24.00	9.26
	5 320	14.69	0.13	14.82	24.00	9.18
	5 500	15.15	0.13	15.28	24.00	8.72
	5 600	16.69	0.13	16.82	24.00	7.18
	5 720	16.45	0.13	16.58	24.00	7.42
	5 745	16.42	0.13	16.55	30.00	13.45
	5 785	16.29	0.13	16.42	30.00	13.58
	5 825	16.19	0.13	16.32	30.00	13.68
802.11n _HT20	5 180	12.78	0.14	12.92	24.00	11.08
	5 200	12.75	0.14	12.89	24.00	11.11
	5 240	12.29	0.14	12.43	24.00	11.57
	5 260	15.03	0.14	15.17	24.00	8.83
	5 300	14.48	0.14	14.62	24.00	9.38
	5 320	14.57	0.14	14.71	24.00	9.29
	5 500	15.06	0.14	15.20	24.00	8.80
	5 600	16.54	0.14	16.68	24.00	7.32
	5 720	16.35	0.14	16.49	24.00	7.51
	5 745	16.22	0.14	16.36	30.00	13.64
	5 785	16.21	0.14	16.35	30.00	13.65
	5 825	16.03	0.14	16.17	30.00	13.83
802.11ac _VHT20	5 180	12.65	0.26	12.91	24.00	11.09
	5 200	12.62	0.26	12.88	24.00	11.12
	5 240	12.13	0.26	12.39	24.00	11.61
	5 260	14.99	0.26	15.25	24.00	8.75
	5 300	14.37	0.26	14.63	24.00	9.37
	5 320	14.59	0.26	14.85	24.00	9.15
	5 500	15.03	0.26	15.29	24.00	8.71
	5 600	16.35	0.26	16.61	24.00	7.39
	5 720	16.26	0.26	16.52	24.00	7.48
	5 745	16.13	0.26	16.39	30.00	13.61

	5 785	16.15	0.26	16.41	30.00	13.59
	5 825	16.07	0.26	16.33	30.00	13.67
802.11ax _HE20	5 180	12.74	0.31	13.05	24.00	10.95
	5 200	12.72	0.31	13.03	24.00	10.97
	5 240	12.20	0.31	12.51	24.00	11.49
	5 260	15.05	0.31	15.36	24.00	8.64
	5 300	14.48	0.31	14.79	24.00	9.21
	5 320	14.57	0.31	14.88	24.00	9.12
	5 500	15.08	0.31	15.39	24.00	8.61
	5 600	16.45	0.31	16.76	24.00	7.24
	5 720	16.15	0.31	16.46	24.00	7.54
	5 745	16.06	0.31	16.37	30.00	13.63
	5 785	15.98	0.31	16.29	30.00	13.71
	5 825	15.93	0.31	16.24	30.00	13.76
802.11n _HT40	5 190	14.31	0.27	14.58	24.00	9.42
	5 230	13.44	0.27	13.71	24.00	10.29
	5 270	14.55	0.27	14.82	24.00	9.18
	5 310	14.19	0.27	14.46	24.00	9.54
	5 510	17.67	0.27	17.94	24.00	6.06
	5 590	19.01	0.27	19.28	24.00	4.72
	5 710	18.66	0.27	18.93	24.00	5.07
	5 755	18.46	0.27	18.73	30.00	11.27
	5 795	18.39	0.27	18.66	30.00	11.34
802.11ac _VHT40	5 190	14.10	0.49	14.59	24.00	9.41
	5 230	13.09	0.49	13.58	24.00	10.42
	5 270	14.30	0.49	14.79	24.00	9.21
	5 310	13.91	0.49	14.40	24.00	9.60
	5 510	17.51	0.49	18.00	24.00	6.00
	5 590	18.66	0.49	19.15	24.00	4.85
	5 710	18.32	0.49	18.81	24.00	5.19
	5 755	18.21	0.49	18.70	30.00	11.30
	5 795	18.20	0.49	18.69	30.00	11.31
802.11ax _HE40	5 190	14.30	0.53	14.83	24.00	9.17
	5 230	13.39	0.53	13.92	24.00	10.08
	5 270	14.48	0.53	15.01	24.00	8.99
	5 310	14.10	0.53	14.63	24.00	9.37
	5 510	17.77	0.53	18.30	24.00	5.70
	5 590	18.97	0.53	19.50	24.00	4.50
	5 710	18.63	0.53	19.16	24.00	4.84

	5 755	18.51	0.53	19.04	30.00	10.96
	5 795	18.46	0.53	18.99	30.00	11.01
802.11ac _VHT80	5 210	13.70	0.89	14.59	24.00	9.41
	5 290	14.11	0.89	15.00	24.00	9.00
	5 530	13.83	0.89	14.72	24.00	9.28
	5 690	14.80	0.89	15.69	24.00	8.31
	5 775	15.11	0.89	16.00	30.00	14.00
802.11ax _HE80	5 210	14.03	0.85	14.88	24.00	9.12
	5 290	14.40	0.85	15.25	24.00	8.75
	5 530	14.14	0.85	14.99	24.00	9.01
	5 690	15.08	0.85	15.93	24.00	8.07
	5 775	15.45	0.85	16.30	30.00	13.70
Measurement uncertainty		± 1.5 dB				

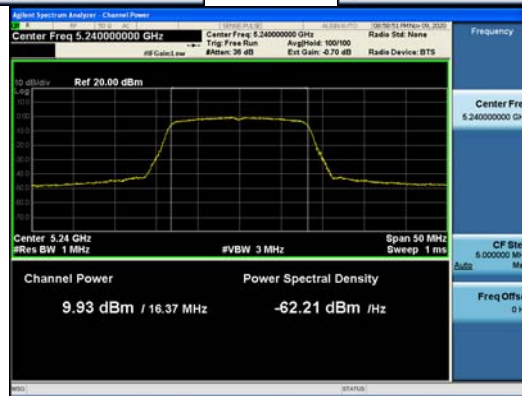
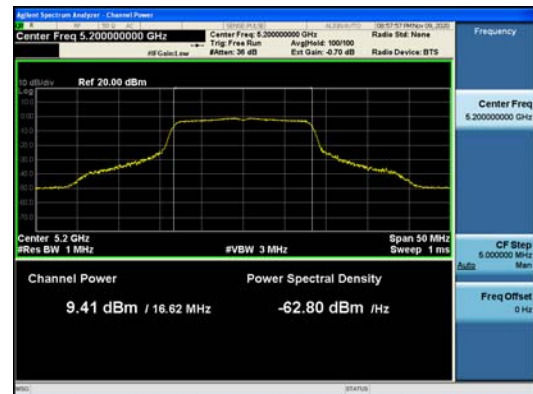
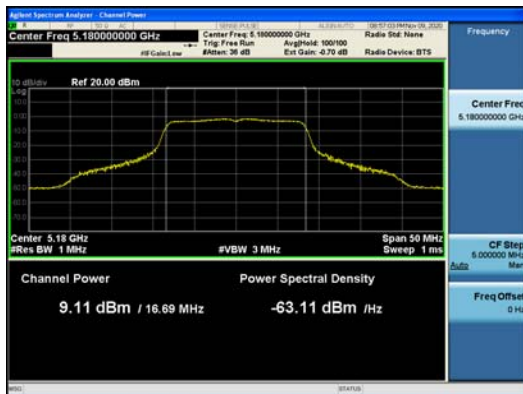
ANT1 + ANT2

Test Mode	Frequency (MHz)	Measured Output Power (dBm)	Duty cycle Factor (dB)	Result Output Power (dBm)	Limit (dBm)	Margin (dB)
802.11a	5 180	14.46	0.13	14.59	24.00	9.41
	5 200	14.51	0.13	14.64	24.00	9.36
	5 240	14.43	0.13	14.56	24.00	9.44
	5 260	17.36	0.13	17.49	24.00	6.51
	5 300	16.35	0.13	16.48	24.00	7.52
	5 320	16.36	0.13	16.49	24.00	7.51
	5 500	16.85	0.13	16.98	24.00	7.02
	5 600	18.57	0.13	18.70	24.00	5.30
	5 720	18.42	0.13	18.55	24.00	5.45
	5 745	18.69	0.13	18.82	30.00	11.18
	5 785	18.40	0.13	18.53	30.00	11.47
	5 825	17.52	0.13	17.65	30.00	12.35
802.11n _HT20	5 180	14.64	0.14	14.78	24.00	9.22
	5 200	14.93	0.14	15.07	24.00	8.93
	5 240	14.72	0.14	14.86	24.00	9.14
	5 260	17.29	0.14	17.43	24.00	6.57
	5 300	16.56	0.14	16.70	24.00	7.30
	5 320	16.67	0.14	16.81	24.00	7.19
	5 500	17.13	0.14	17.27	24.00	6.73
	5 600	18.65	0.14	18.79	24.00	5.21
	5 720	18.55	0.14	18.69	24.00	5.31
	5 745	18.50	0.14	18.64	30.00	11.36
	5 785	18.51	0.14	18.65	30.00	11.35
	5 825	17.44	0.14	17.58	30.00	12.42
802.11ac _VHT20	5 180	14.32	0.26	14.58	24.00	9.42
	5 200	14.35	0.26	14.61	24.00	9.39
	5 240	13.97	0.26	14.23	24.00	9.77
	5 260	17.02	0.26	17.28	24.00	6.72
	5 300	16.03	0.26	16.29	24.00	7.71
	5 320	16.24	0.26	16.50	24.00	7.50
	5 500	16.80	0.26	17.06	24.00	6.94
	5 600	18.34	0.26	18.60	24.00	5.40
	5 720	18.29	0.26	18.55	24.00	5.45
	5 745	18.32	0.26	18.58	30.00	11.42

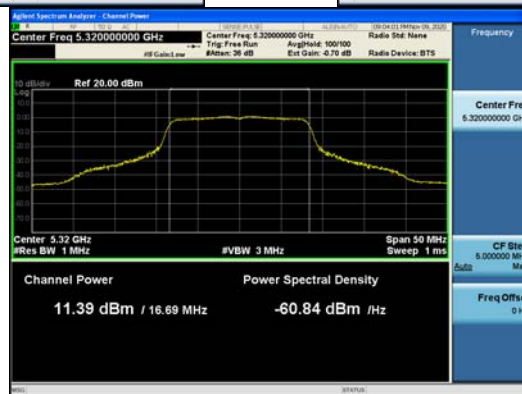
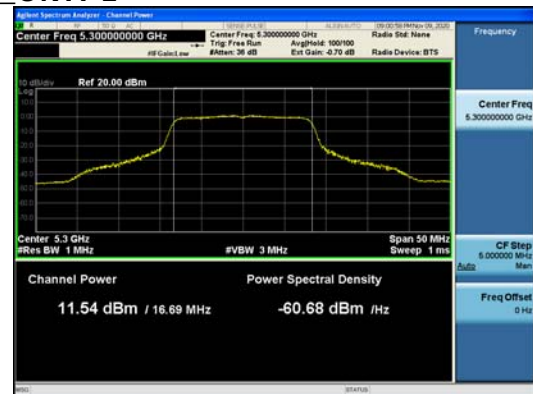
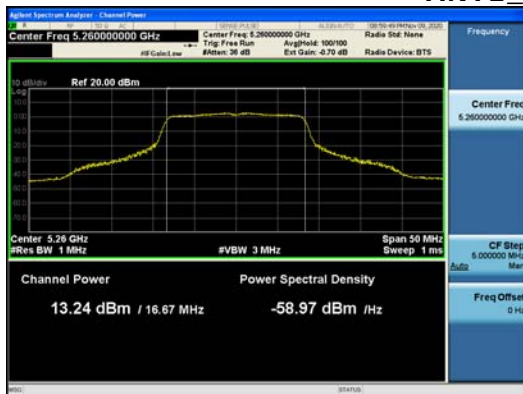
	5 785	18.18	0.26	18.44	30.00	11.56
	5 825	17.34	0.26	17.60	30.00	12.40
802.11ax _HE20	5 180	14.43	0.31	14.74	24.00	9.26
	5 200	14.47	0.31	14.78	24.00	9.22
	5 240	14.05	0.31	14.36	24.00	9.64
	5 260	17.10	0.31	17.41	24.00	6.59
	5 300	16.18	0.31	16.49	24.00	7.51
	5 320	16.31	0.31	16.62	24.00	7.38
	5 500	16.88	0.31	17.19	24.00	6.81
	5 600	18.50	0.31	18.81	24.00	5.19
	5 720	18.32	0.31	18.63	24.00	5.37
	5 745	18.37	0.31	18.68	30.00	11.32
	5 785	18.19	0.31	18.50	30.00	11.50
	5 825	17.30	0.31	17.61	30.00	12.39
802.11n _HT40	5 190	15.99	0.27	16.26	24.00	7.74
	5 230	15.41	0.27	15.68	24.00	8.32
	5 270	16.50	0.27	16.77	24.00	7.23
	5 310	15.69	0.27	15.96	24.00	8.04
	5 510	19.46	0.27	19.73	24.00	4.27
	5 590	21.00	0.27	21.27	24.00	2.73
	5 710	20.72	0.27	20.99	24.00	3.01
	5 755	20.68	0.27	20.95	30.00	9.05
	5 795	20.52	0.27	20.79	30.00	9.21
802.11ac _VHT40	5 190	15.79	0.49	16.28	24.00	7.72
	5 230	15.04	0.49	15.53	24.00	8.47
	5 270	16.24	0.49	16.73	24.00	7.27
	5 310	15.42	0.49	15.91	24.00	8.09
	5 510	19.28	0.49	19.77	24.00	4.23
	5 590	20.72	0.49	21.21	24.00	2.79
	5 710	20.43	0.49	20.92	24.00	3.08
	5 755	20.40	0.49	20.89	30.00	9.11
	5 795	20.28	0.49	20.77	30.00	9.23
802.11ax _HE40	5 190	15.98	0.53	16.51	24.00	7.49
	5 230	15.32	0.53	15.85	24.00	8.15
	5 270	16.41	0.53	16.94	24.00	7.06
	5 310	15.60	0.53	16.13	24.00	7.87
	5 510	19.50	0.53	20.03	24.00	3.97
	5 590	20.98	0.53	21.51	24.00	2.49
	5 710	20.69	0.53	21.22	24.00	2.78

	5 755	20.68	0.53	21.21	30.00	8.79
	5 795	20.55	0.53	21.08	30.00	8.92
802.11ac _VHT80	5 210	15.43	0.89	16.32	24.00	7.68
	5 290	16.14	0.89	17.03	24.00	6.97
	5 530	15.46	0.89	16.35	24.00	7.65
	5 690	16.90	0.89	17.79	24.00	6.21
	5 775	17.04	0.89	17.93	30.00	12.07
802.11ax _HE80	5 210	15.59	0.85	16.44	24.00	7.56
	5 290	16.26	0.85	17.11	24.00	6.89
	5 530	15.78	0.85	16.63	24.00	7.37
	5 690	17.26	0.85	18.11	24.00	5.89
	5 775	17.42	0.85	18.27	30.00	11.73
Measurement uncertainty		± 1.5 dB				

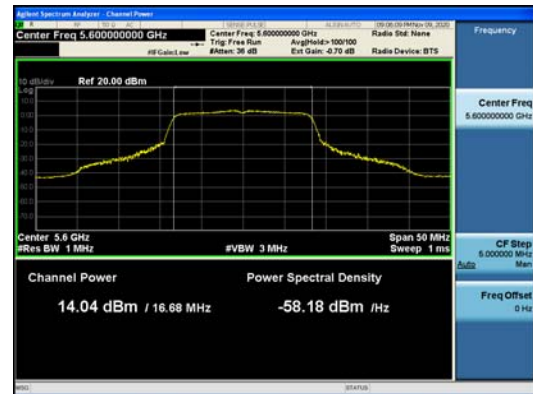
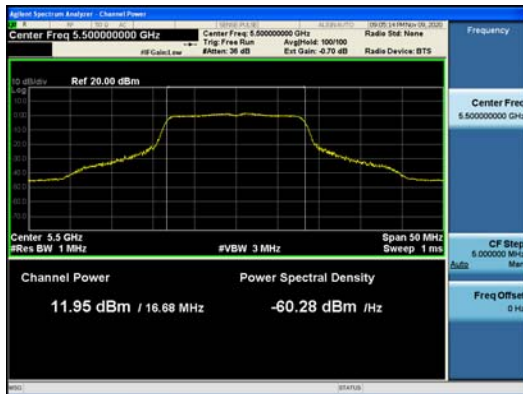
See next pages for actual measured spectrum plots.



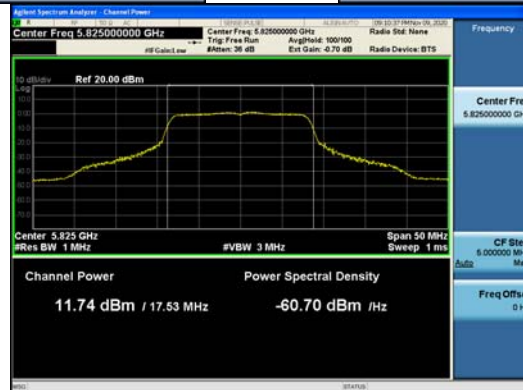
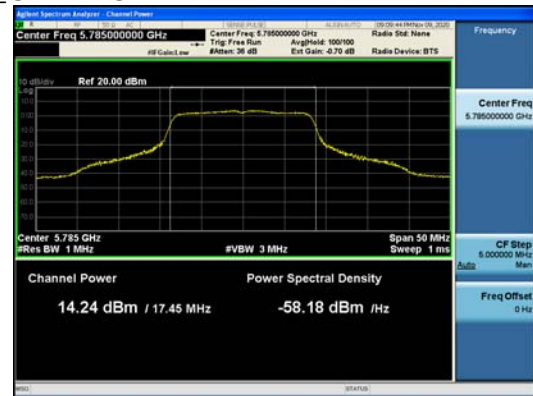
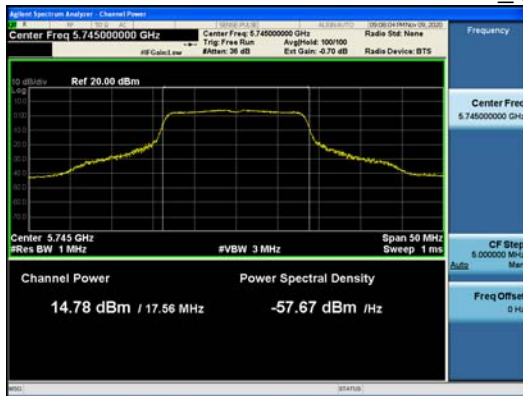
ANT1_802.11a_UNII 1



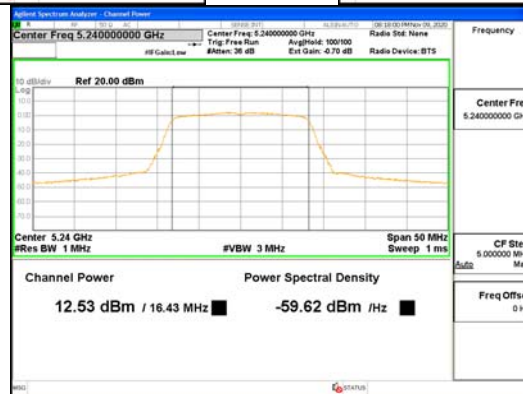
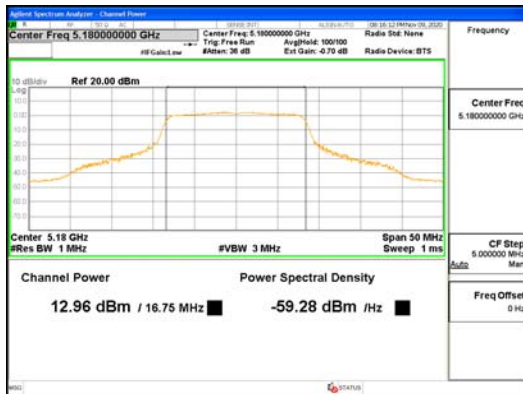
ANT1_802.11a_UNII 2A



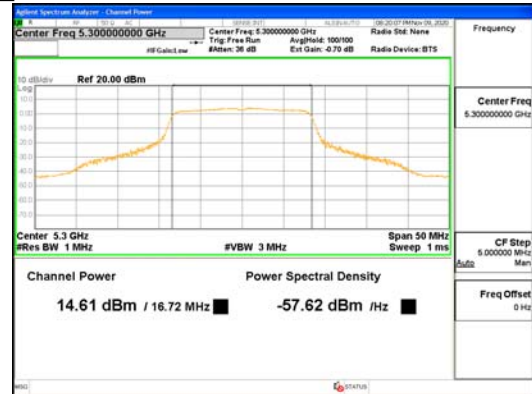
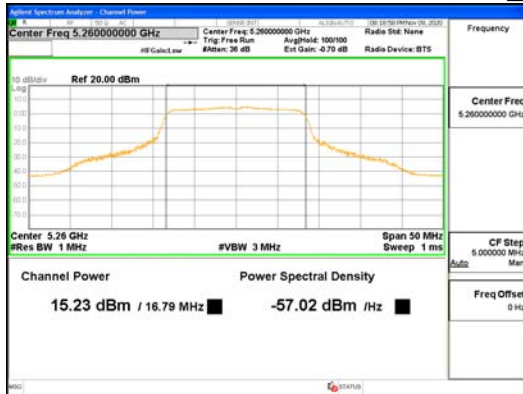
ANT1_802.11a_UNII 2C



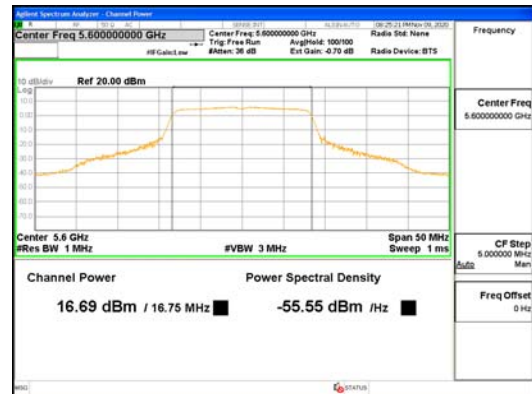
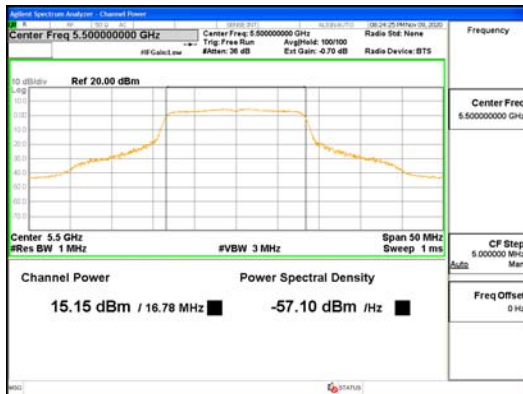
ANT1_802.11a_UNII 3



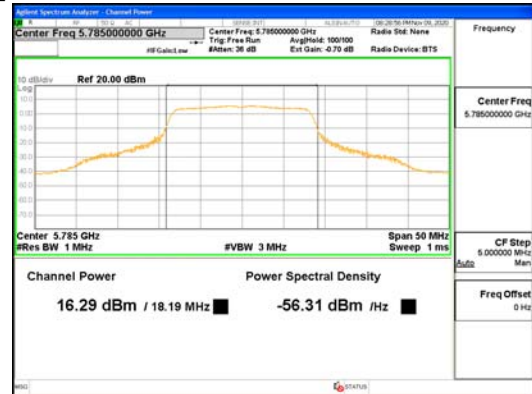
ANT2_802.11a_UNII 1



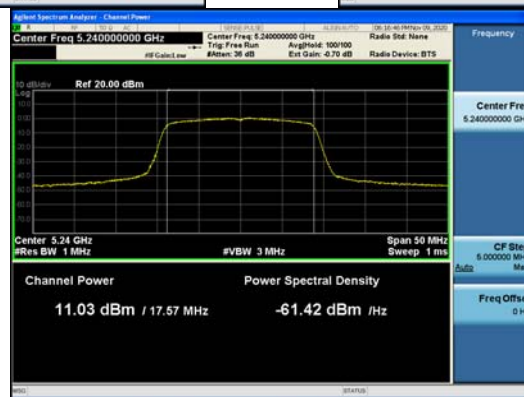
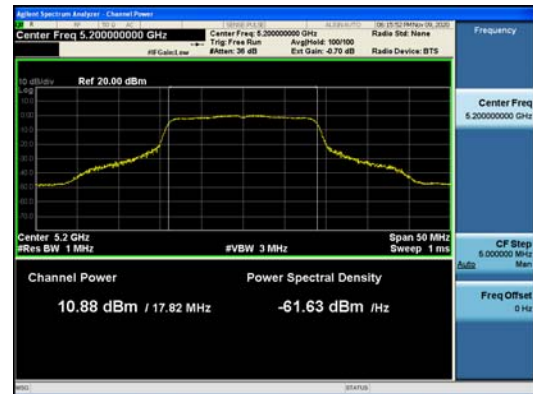
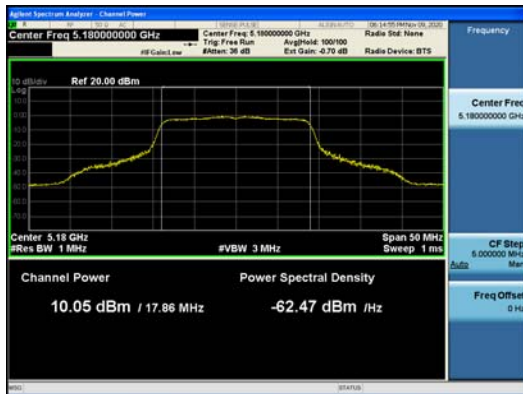
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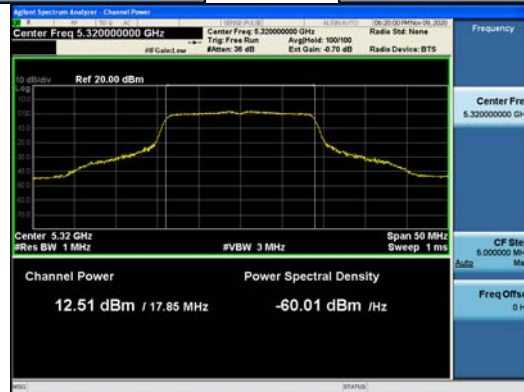
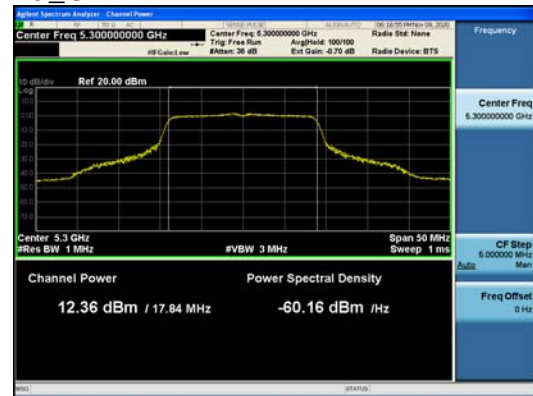
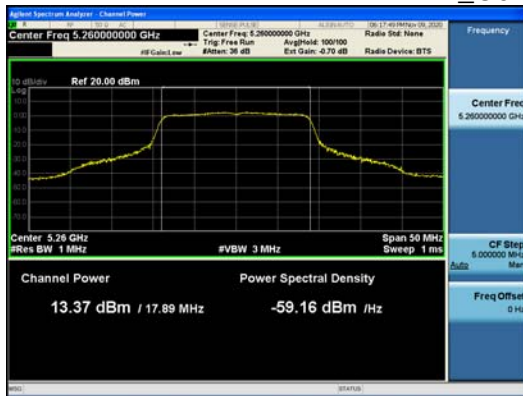
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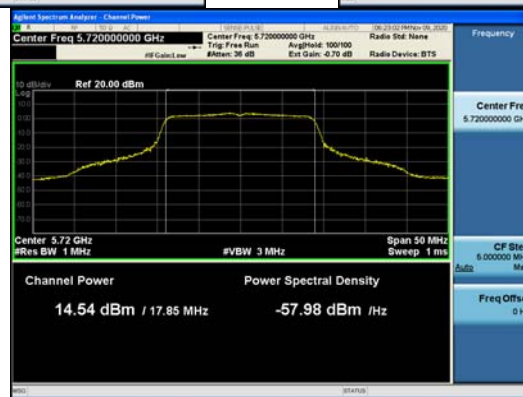
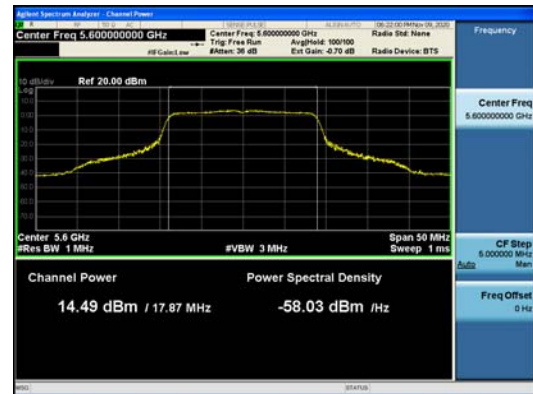
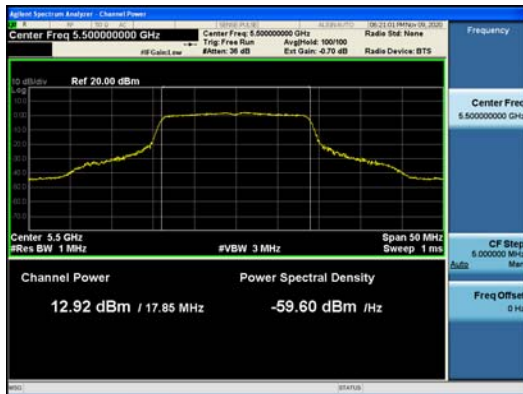
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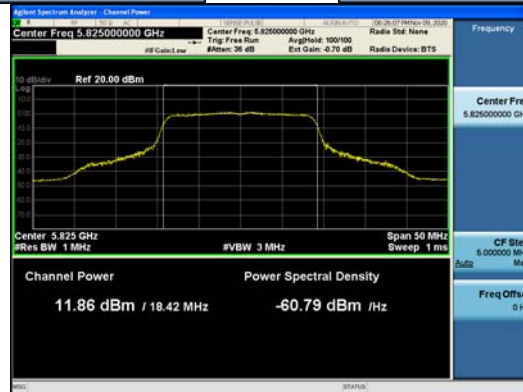
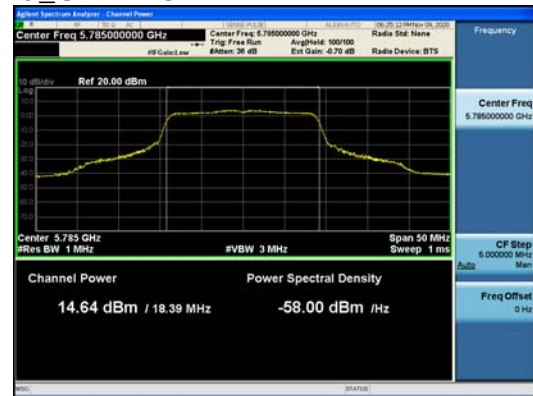
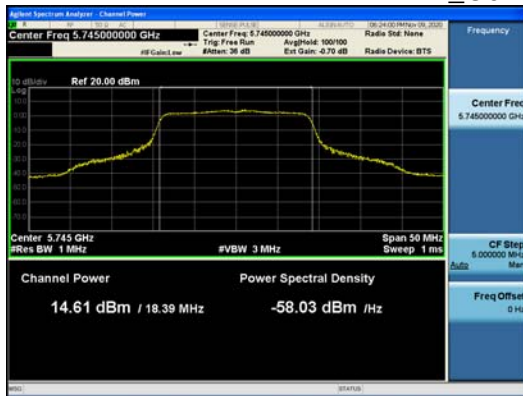
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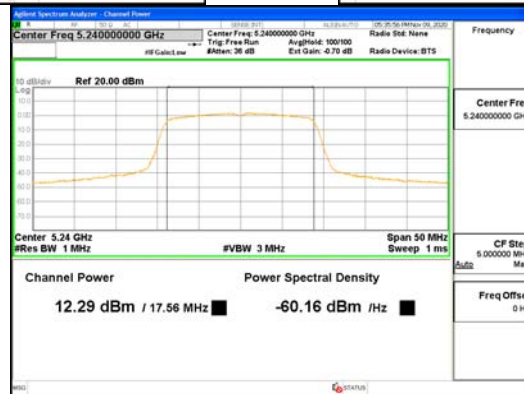
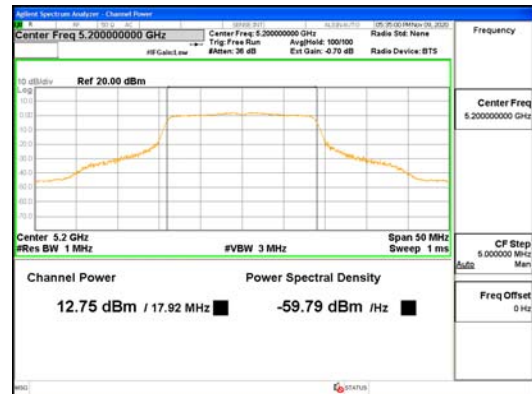
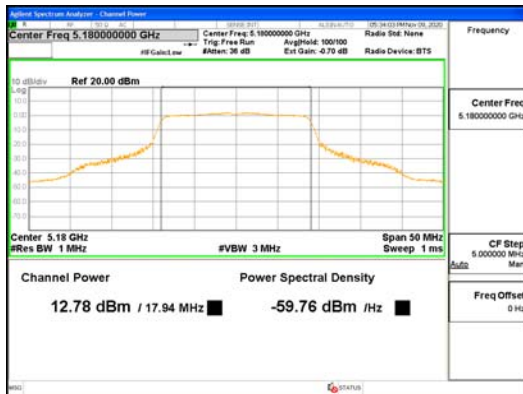
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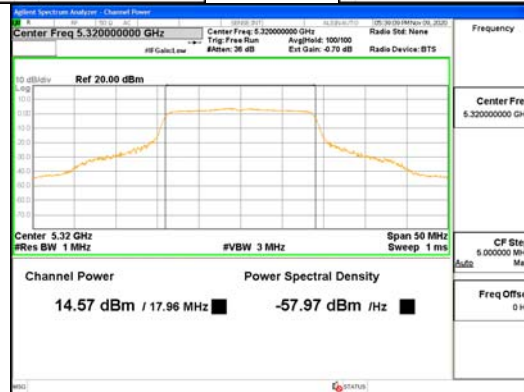
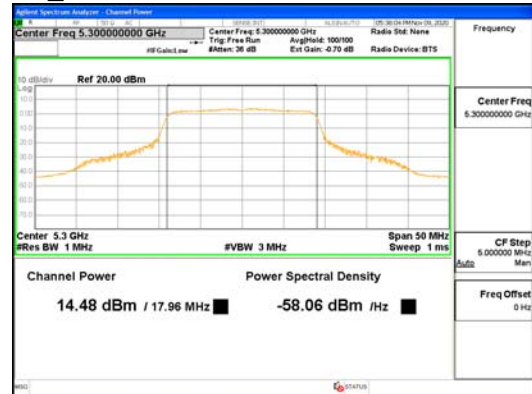
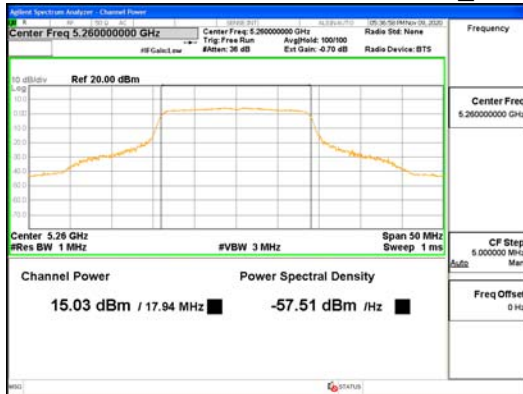
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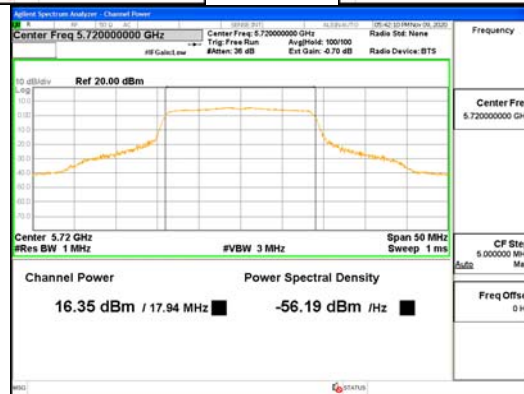
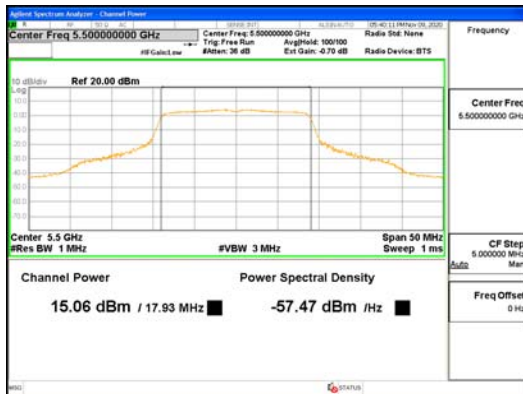
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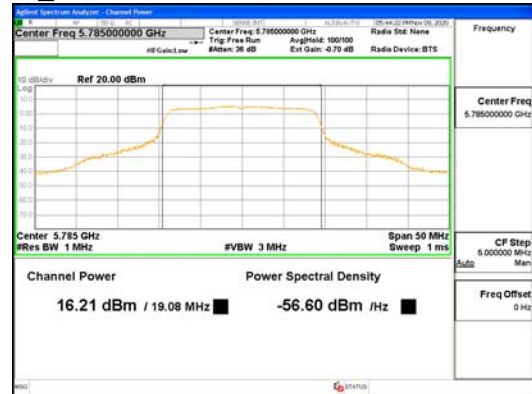
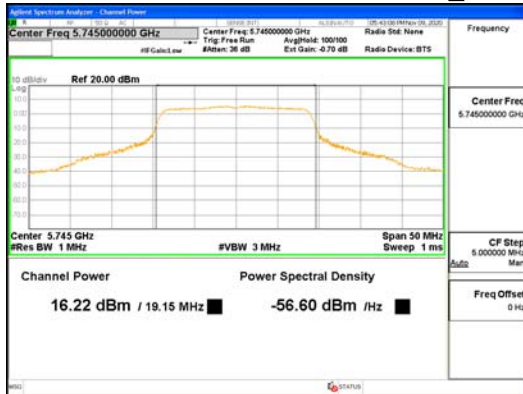
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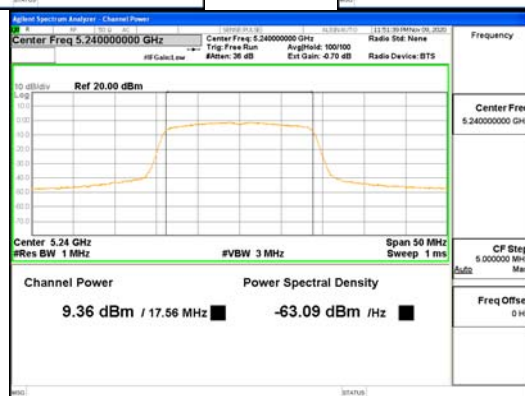
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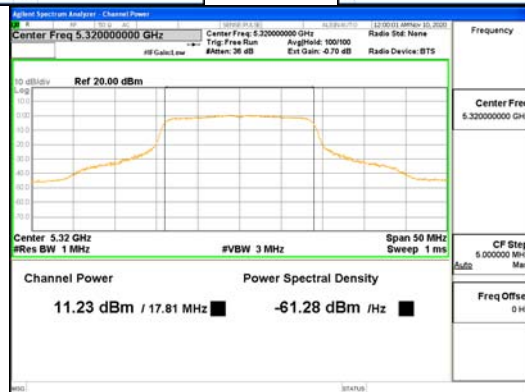
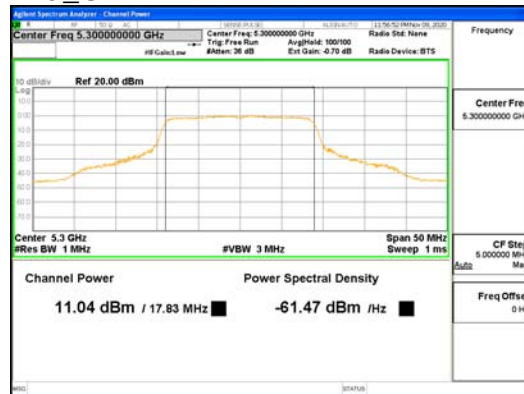
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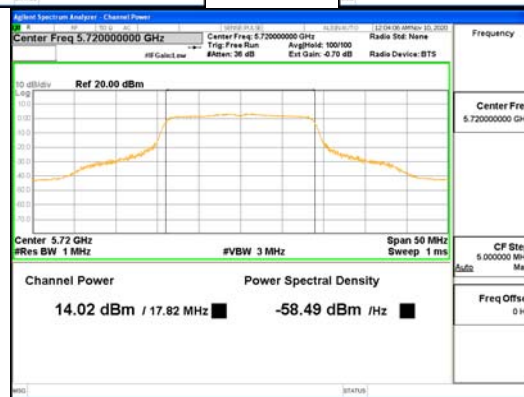
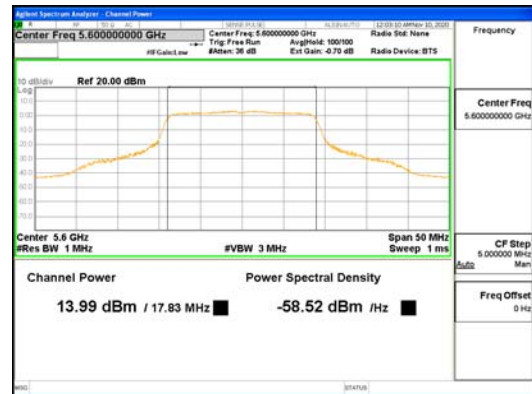
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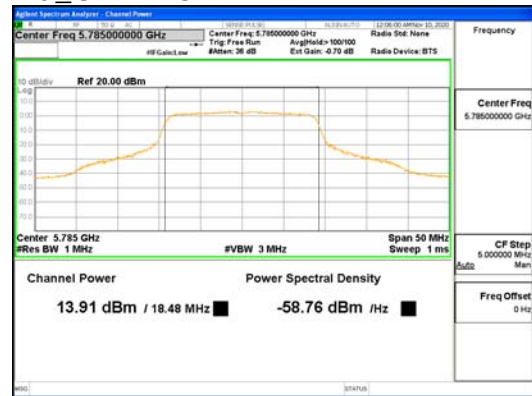
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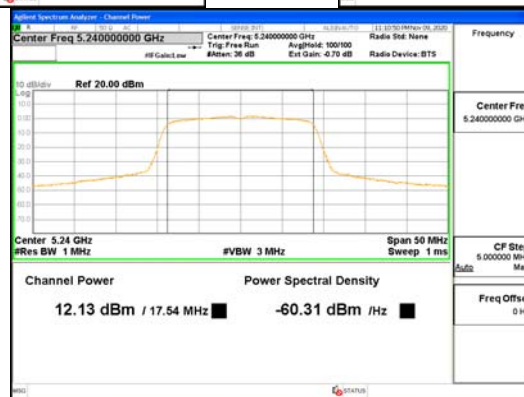
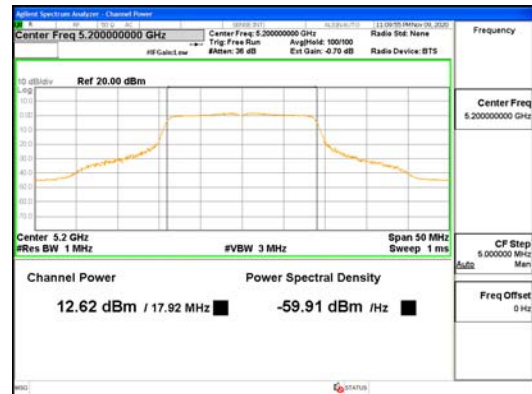
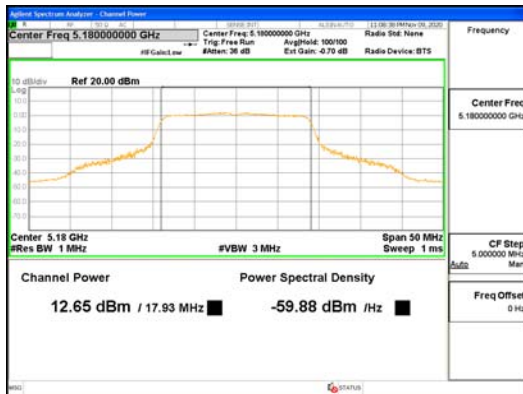
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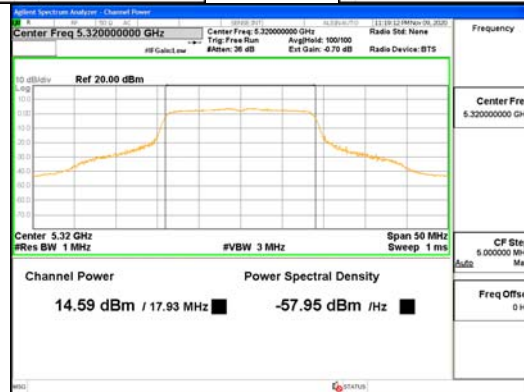
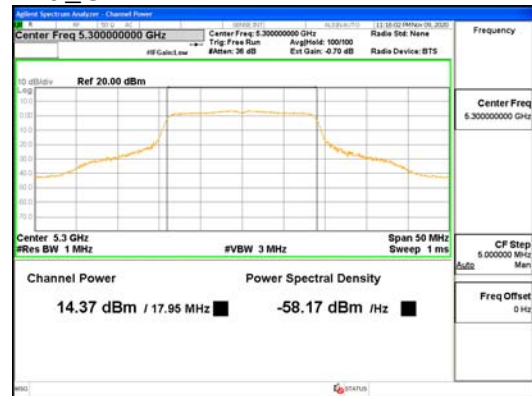
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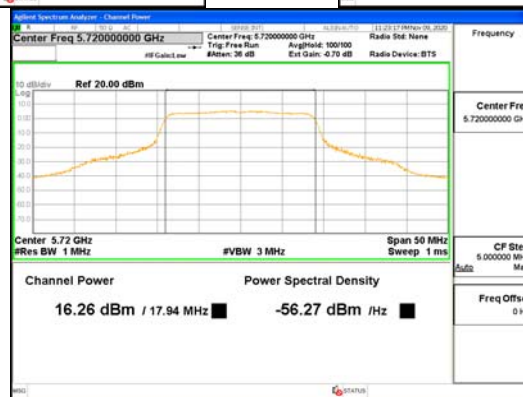
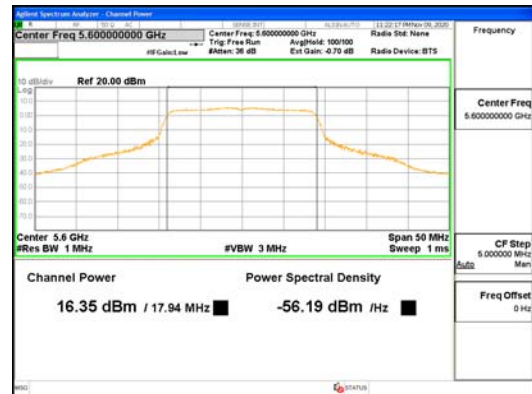
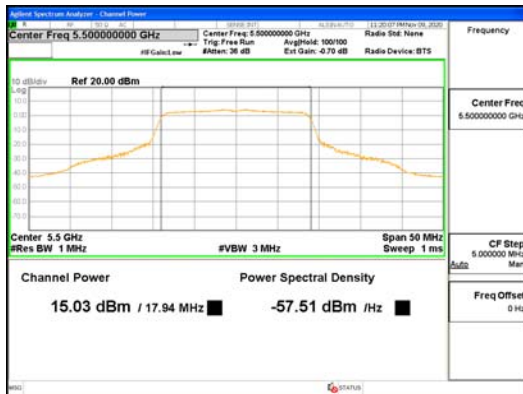
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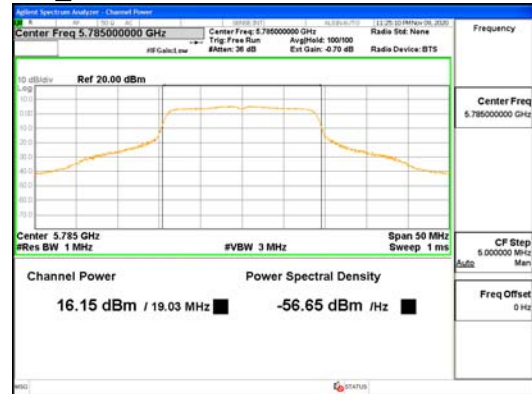
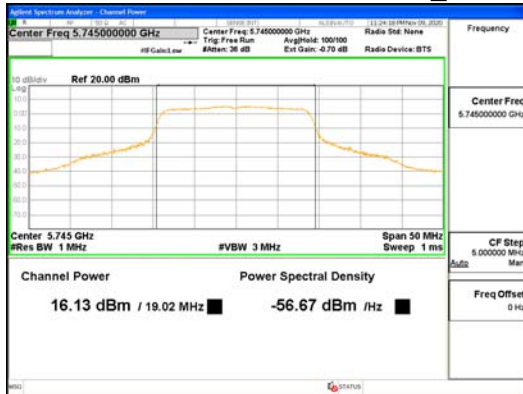
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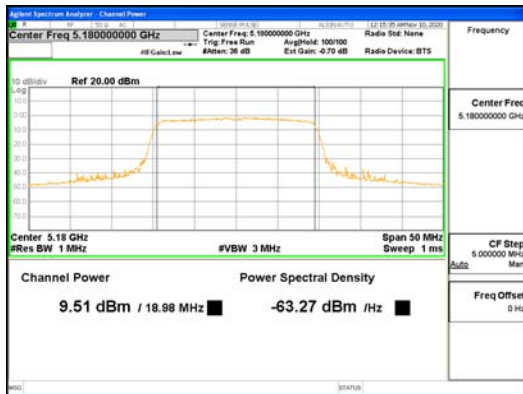
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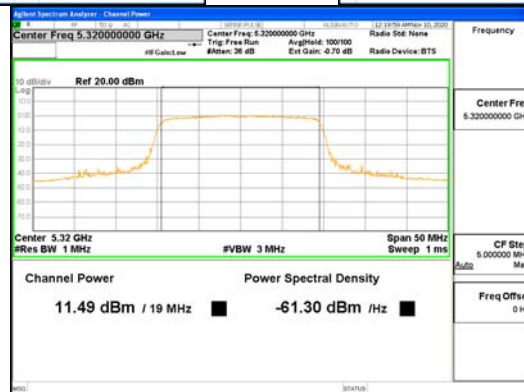
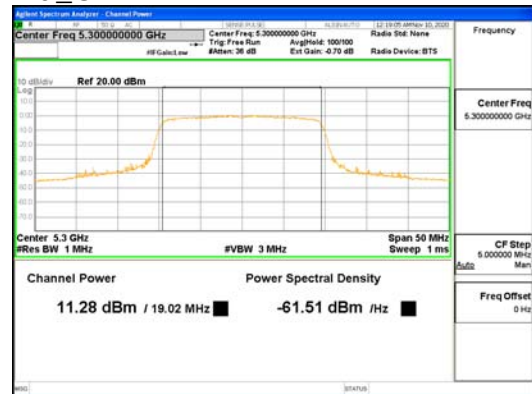
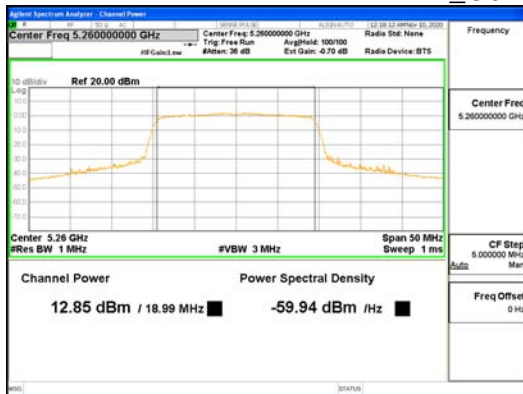
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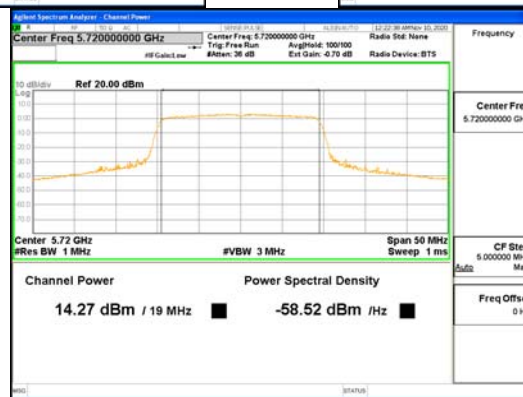
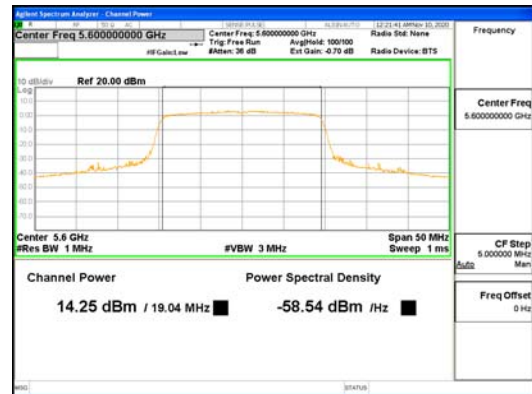
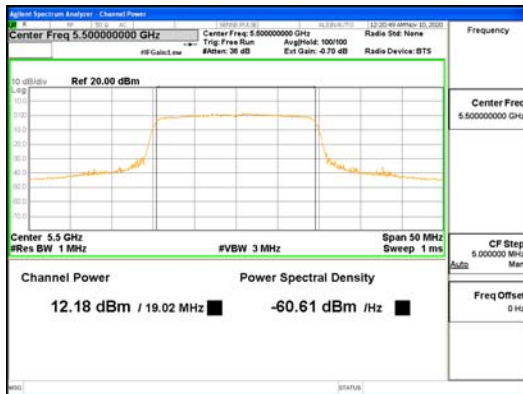
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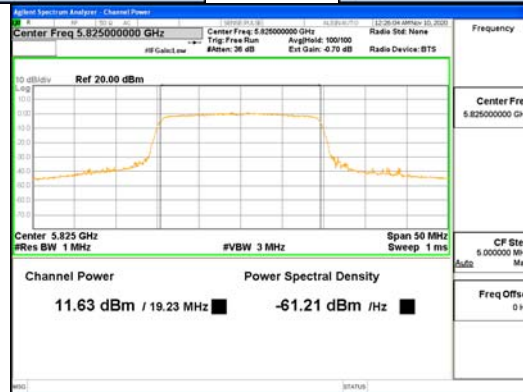
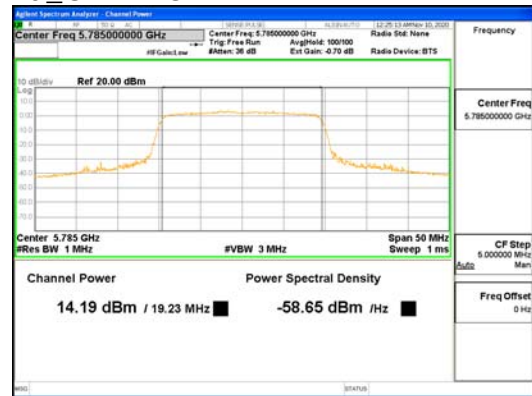
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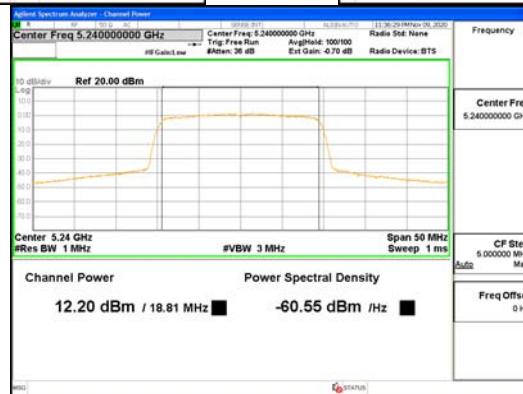
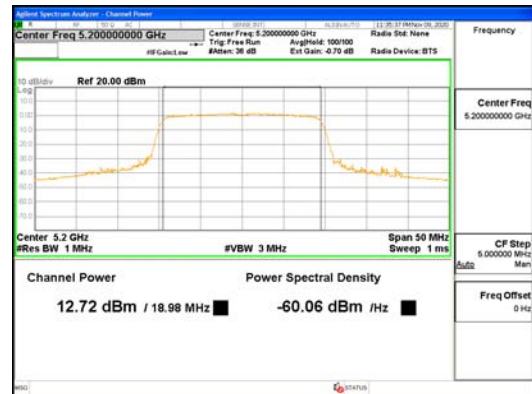
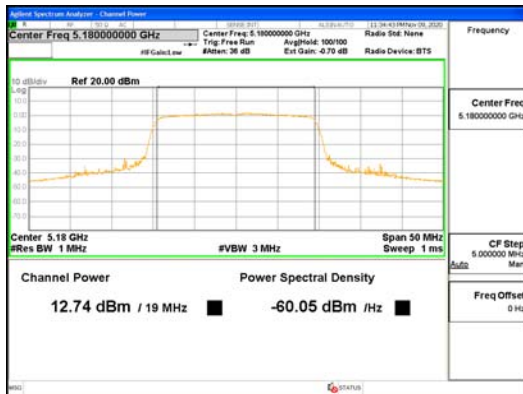
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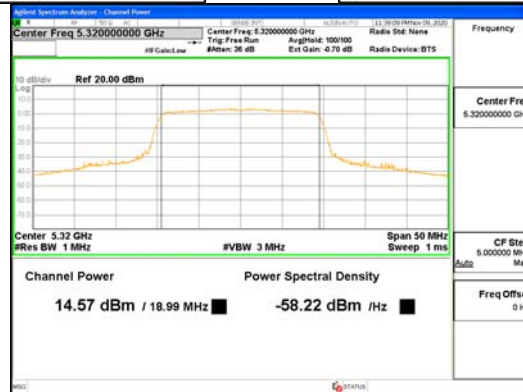
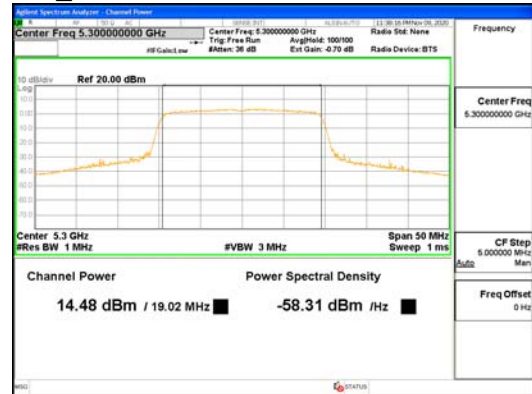
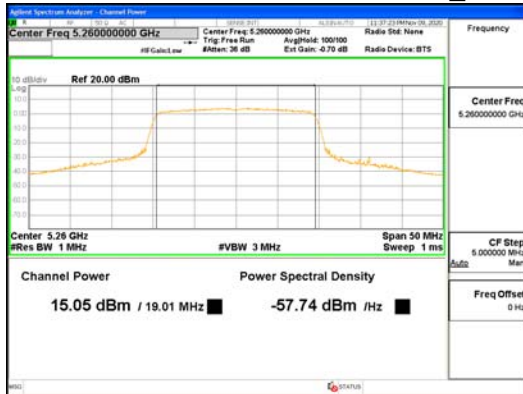
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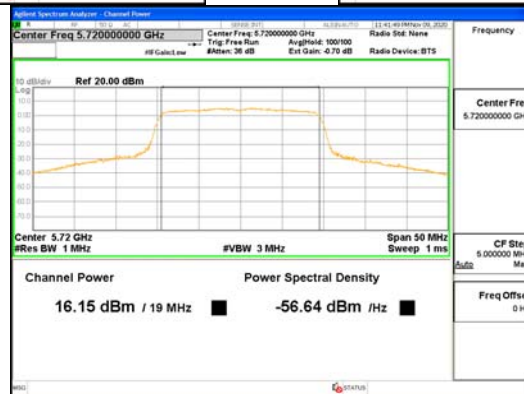
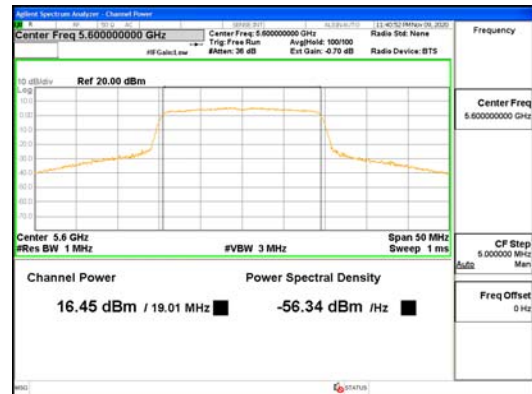
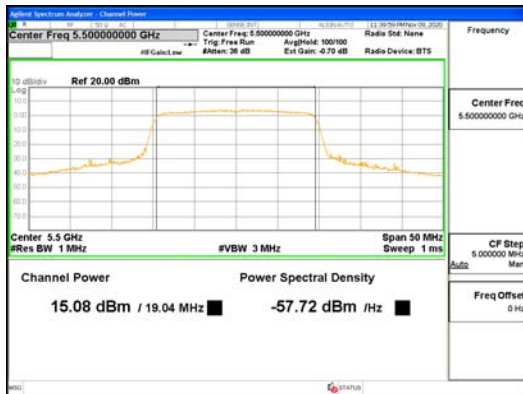
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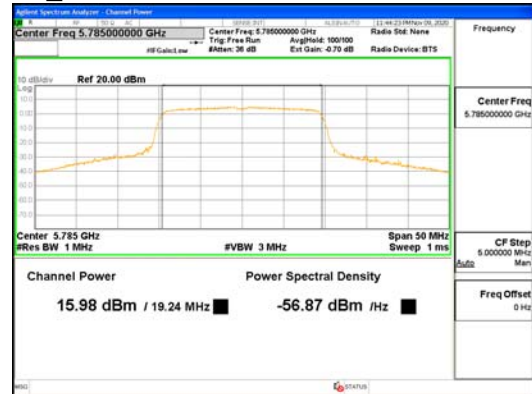
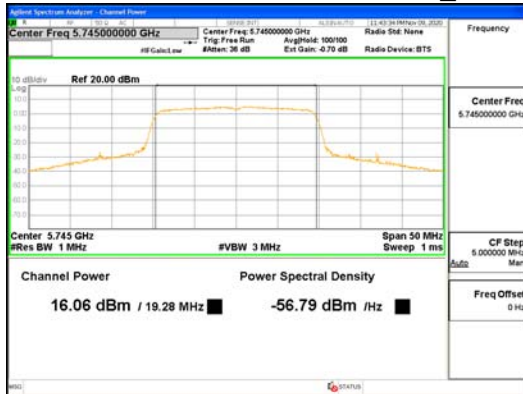
ANT2_802.11ax_HE20_UNI1 1



ANT2_802.11ax_HE20_UNI1 2A



ANT2_802.11ax_HE20_UNI1 2C



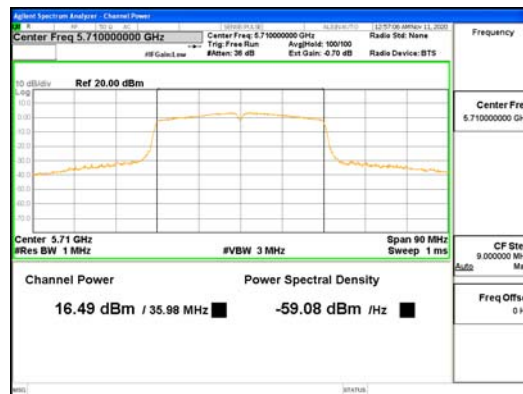
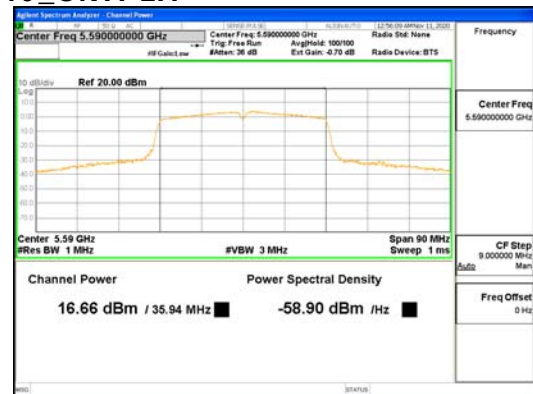
ANT2_802.11ax_HE20_UNI1 3



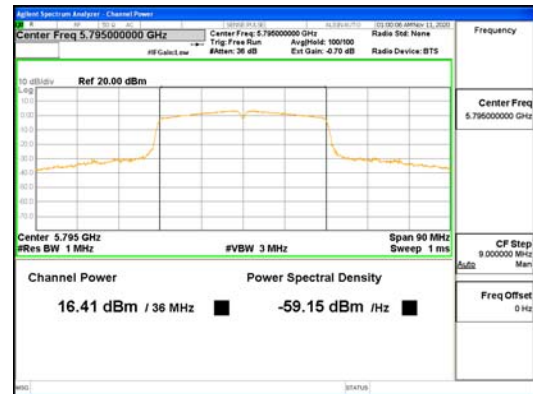
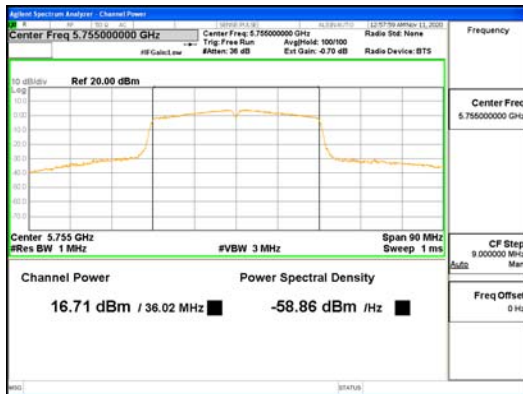
ANT1_802.11n_HT40_UNII 1



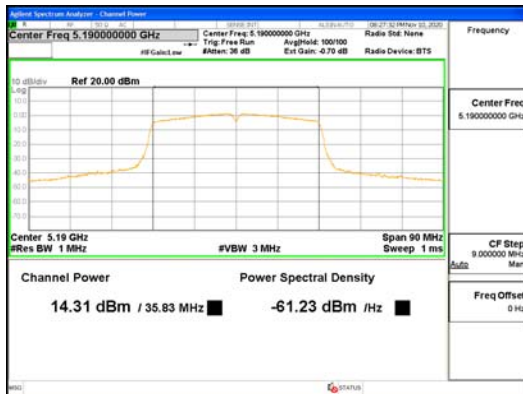
ANT1_802.11n_HT40_UNII 2A



ANT1_802.11n_HT40_UNII 2C



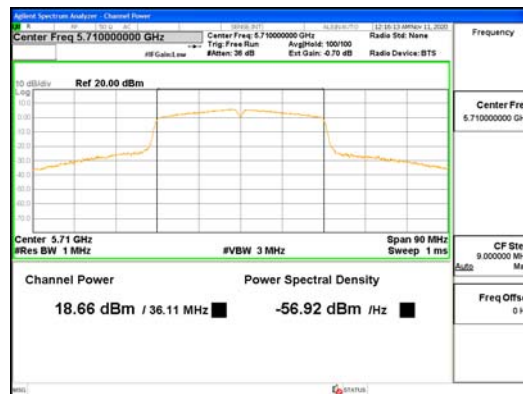
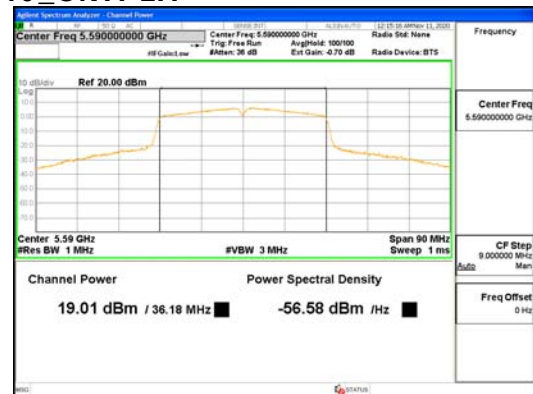
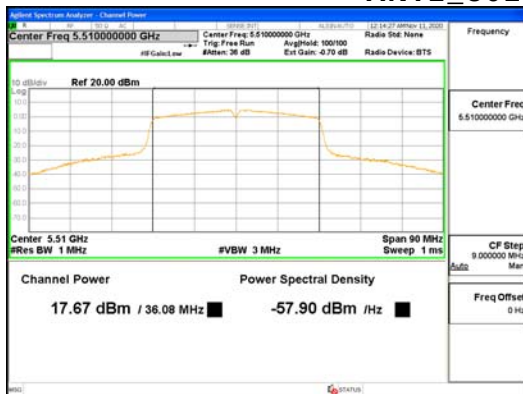
ANT1_802.11n_HT40_UNII 3



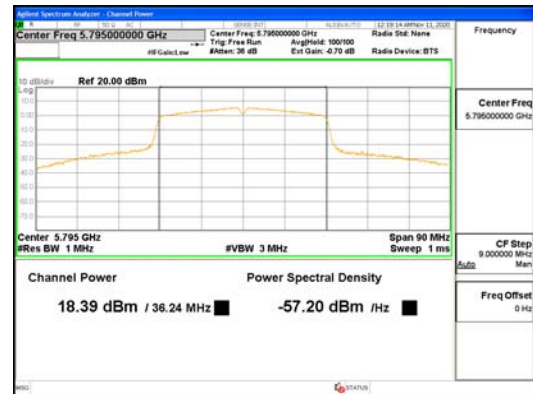
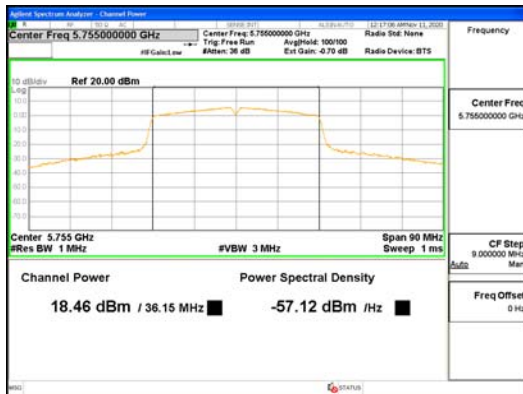
ANT2_802.11n_HT40_UNII 1



ANT2_802.11n_HT40_UNII 2A



ANT2_802.11n_HT40_UNII 2C



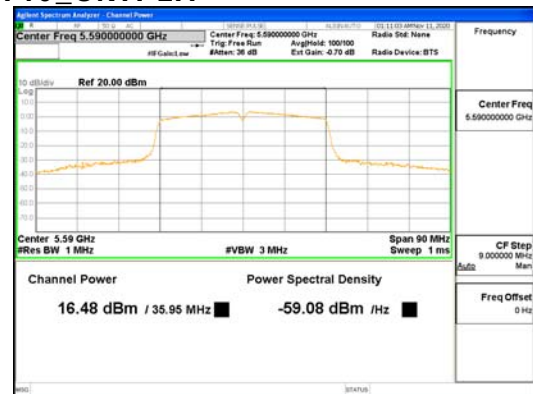
ANT2_802.11n_HT40_UNI1 3



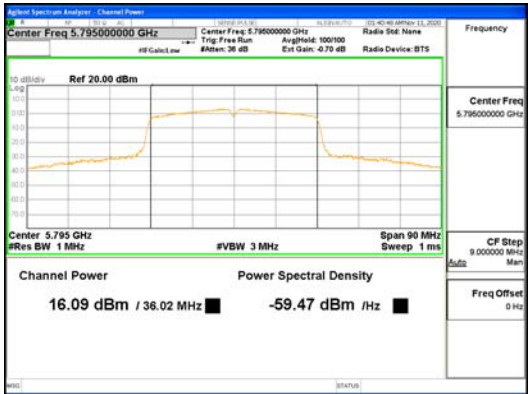
ANT1_802.11ac_VHT40_UNII 1



ANT1_802.11ac_VHT40_UNII 2A



ANT1_802.11ac_VHT40_UNII 2C



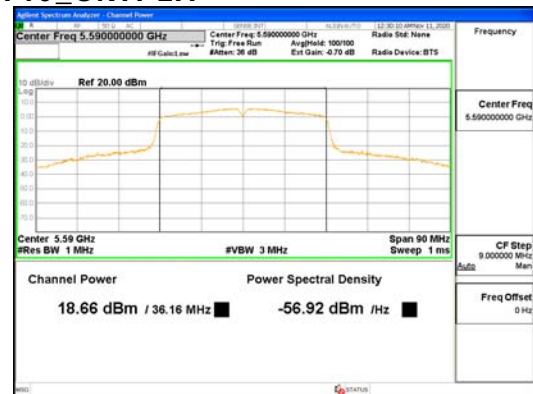
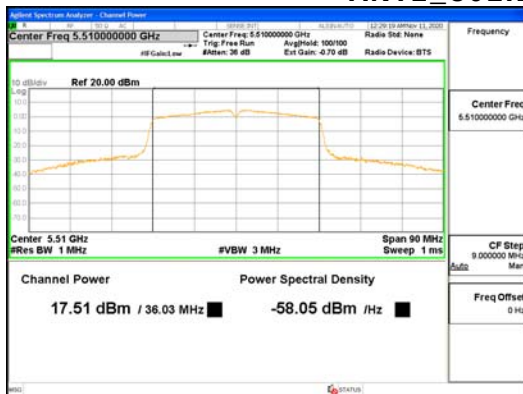
ANT1_802.11ac_VHT40_UNI1 3



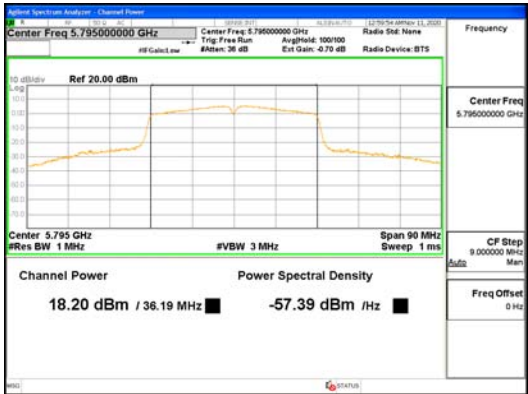
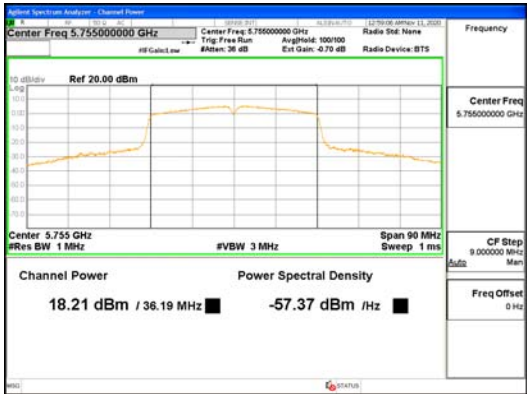
ANT2_802.11ac_VHT40_UNII 1



ANT2_802.11ac_VHT40_UNII 2A



ANT2_802.11ac_VHT40_UNII 2C



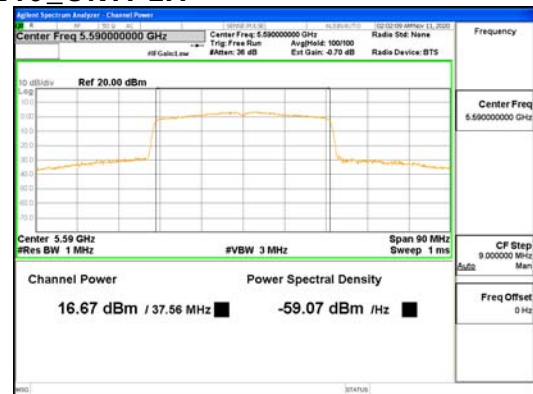
ANT2_802.11ac_VHT40_UNI1 3



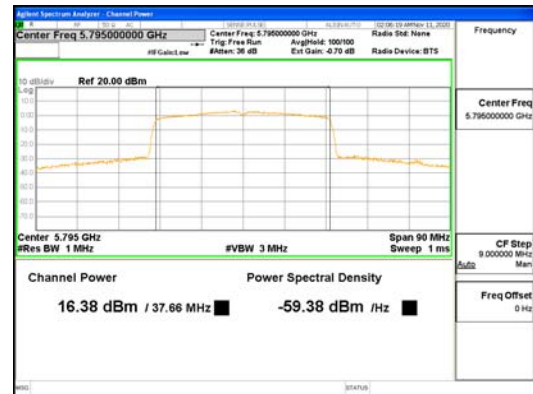
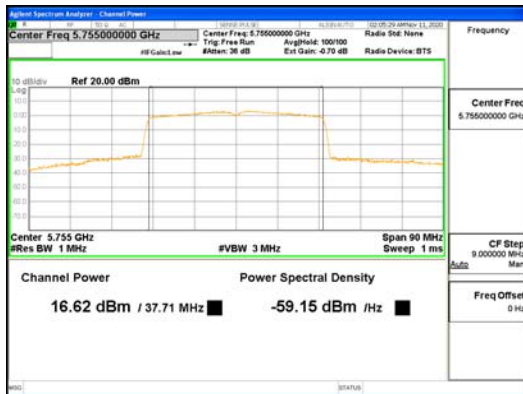
ANT1_802.11ax_HE40_UNII 1



ANT1_802.11ax_HE40_UNII 2A



ANT1_802.11ax_HE40_UNII 2C



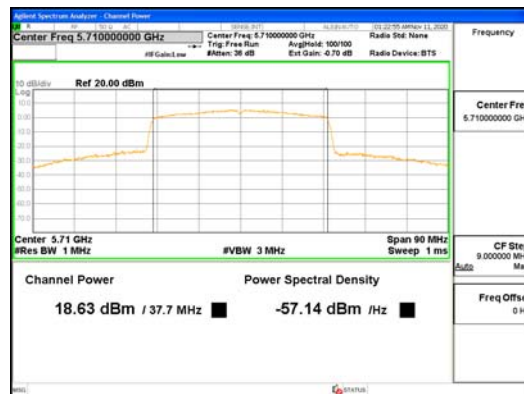
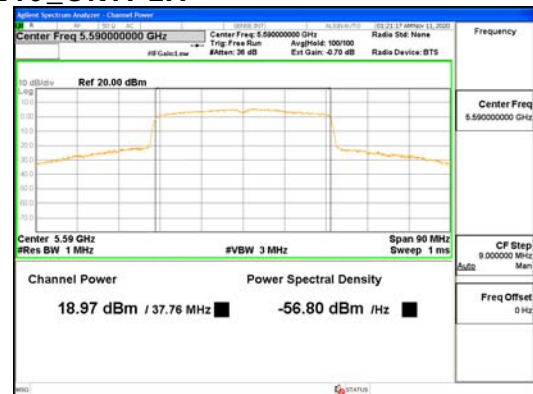
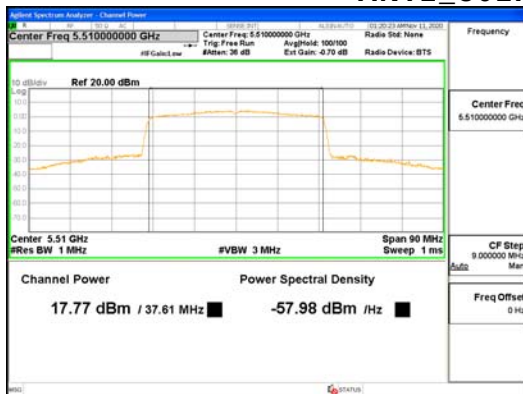
ANT1_802.11ax_HE40_UNI1 3



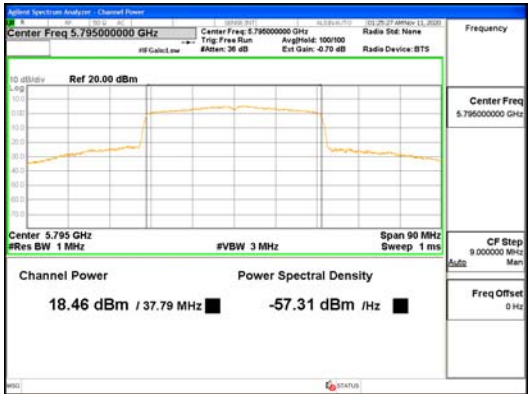
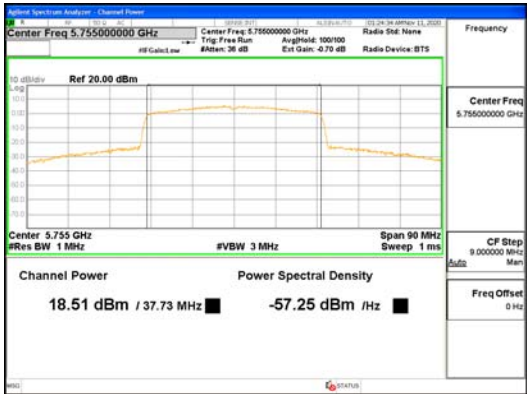
ANT2_802.11ax_HE40_UNII 1



ANT2_802.11ax_HE40_UNII 2A



ANT2_802.11ax_HE40_UNII 2C



ANT2_802.11ax_HE40_UNI1 3



ANT1_802.11ac_VHT80_UNII 1



ANT1_802.11ac_VHT80_UNII 2A



ANT1_802.11ac_VHT80_UNII 2C



ANT1_802.11ac_VHT80_UNII 3



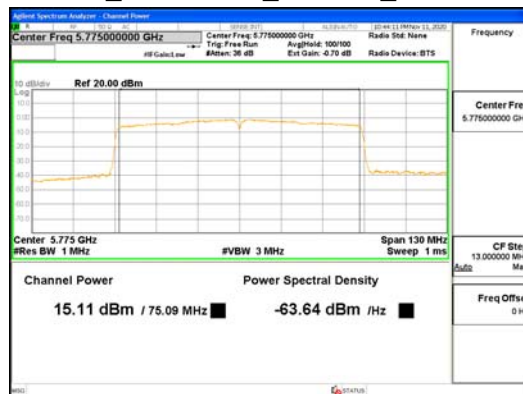
ANT2_802.11ac_VHT80_UNII 1



ANT2_802.11ac_VHT80_UNII 2A



ANT2_802.11ac_VHT80_UNII 2C



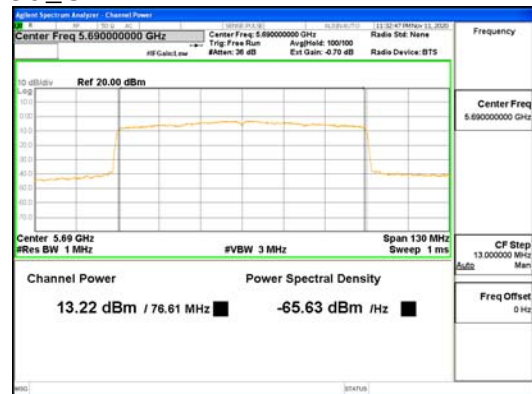
ANT2_802.11ac_VHT80_UNII 3



ANT1_802.11ax_HE80_UNII 1



ANT1_802.11ax_HE80_UNII 2A



ANT1_802.11ax_HE80_UNII 2C



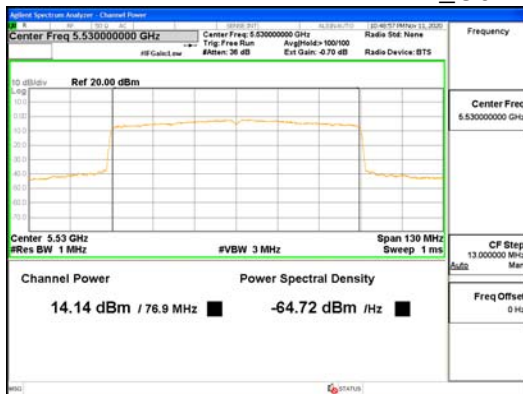
ANT1_802.11ax_HE80_UNII 3



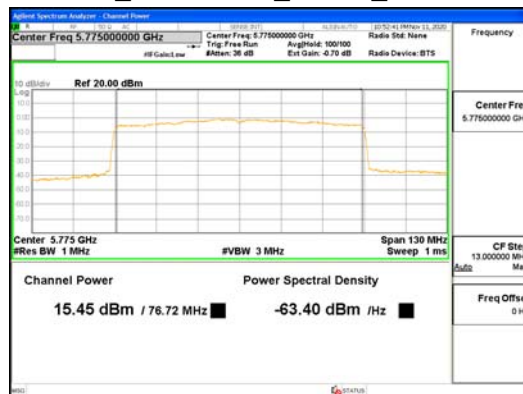
ANT2_802.11ax_HE80_UNII 1



ANT2_802.11ax_HE80_UNII 2A



ANT2_802.11ax_HE80_UNII 2C



ANT2_802.11ax_HE80_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	0.13
802.11n_HT20	0.14
802.11n_HT40	0.27
802.11ac_VHT20	0.26
802.11ac_VHT40	0.49
802.11ac_VHT80	0.89
802.11ax_HE20	0.31
802.11ax_HE40	0.53
802.11ax_HE80	0.85

Limit

Operating Mode	ANT Configuration	ANT Gain (dBi)	Mode	Band	Limit (dBm)
SISO	ANT1, ANT2	-0.07, 1.65	802.11a/n/ac/ax	UNII 1	11.00
				UNII 2A	11.00
				UNII 2C	11.00
				UNII 3	30.00
MIMO (2Tx)	ANT1 + ANT2	3.88	802.11a/n/ac/ax	UNII 1	11.00
				UNII 2A	11.00
				UNII 2C	11.00
				UNII 3	30.00

Test Data

ANT1

Test Mode	Frequency (MHz)	Measured Power Density (dBm)	Duty cycle Factor (dB)	Result Power Density (dBm)	Limit (dBm)	Margin (dB)
802.11a	5 180	-1.41	0.13	-1.28	11.00	12.28
	5 200	-1.21	0.13	-1.08	11.00	12.08
	5 240	-0.38	0.13	-0.25	11.00	11.25
	5 260	2.74	0.13	2.87	11.00	8.13
	5 300	1.04	0.13	1.17	11.00	9.83
	5 320	0.96	0.13	1.09	11.00	9.91
	5 500	1.44	0.13	1.57	11.00	9.43
	5 600	3.53	0.13	3.66	11.00	7.34
	5 720	3.64	0.13	3.77	11.00	7.23
	5 745	1.36	0.13	1.49	30.00	28.51
	5 785	1.01	0.13	1.14	30.00	28.86
	5 825	-1.50	0.13	-1.37	30.00	31.37
802.11n _HT20	5 180	-0.03	0.14	0.11	11.00	10.89
	5 200	0.14	0.14	0.28	11.00	10.72
	5 240	0.59	0.14	0.73	11.00	10.27
	5 260	2.66	0.14	2.80	11.00	8.20
	5 300	2.21	0.14	2.35	11.00	8.65
	5 320	1.98	0.14	2.12	11.00	8.88
	5 500	2.21	0.14	2.35	11.00	8.65
	5 600	3.73	0.14	3.87	11.00	7.13
	5 720	3.84	0.14	3.98	11.00	7.02
	5 745	1.16	0.14	1.30	30.00	28.70
	5 785	1.04	0.14	1.18	30.00	28.82
	5 825	-1.52	0.14	-1.38	30.00	31.38
802.11ac _VHT20	5 180	-1.31	0.26	-1.05	11.00	12.05
	5 200	-1.31	0.26	-1.05	11.00	12.05
	5 240	-1.13	0.26	-0.87	11.00	11.87
	5 260	1.97	0.26	2.23	11.00	8.77
	5 300	0.37	0.26	0.63	11.00	10.37
	5 320	0.55	0.26	0.81	11.00	10.19
	5 500	1.22	0.26	1.48	11.00	9.52
	5 600	3.62	0.26	3.88	11.00	7.12
	5 720	3.46	0.26	3.72	11.00	7.28

	5 745	0.86	0.26	1.12	30.00	28.88
	5 785	0.44	0.26	0.70	30.00	29.30
	5 825	-2.38	0.26	-2.12	30.00	32.12
802.11ax _HE20	5 180	-1.58	0.31	-1.27	11.00	12.27
	5 200	-1.32	0.31	-1.01	11.00	12.01
	5 240	-1.46	0.31	-1.15	11.00	12.15
	5 260	2.07	0.31	2.38	11.00	8.62
	5 300	0.09	0.31	0.40	11.00	10.60
	5 320	0.89	0.31	1.20	11.00	9.80
	5 500	1.25	0.31	1.56	11.00	9.44
	5 600	3.45	0.31	3.76	11.00	7.24
	5 720	3.28	0.31	3.59	11.00	7.41
	5 745	0.97	0.31	1.28	30.00	28.72
	5 785	0.29	0.31	0.60	30.00	29.40
	5 825	-2.32	0.31	-2.01	30.00	32.01
802.11n _HT40	5 190	-1.77	0.27	-1.50	11.00	12.50
	5 230	-1.79	0.27	-1.52	11.00	12.52
	5 270	-0.85	0.27	-0.58	11.00	11.58
	5 310	-2.55	0.27	-2.28	11.00	13.28
	5 510	1.97	0.27	2.24	11.00	8.76
	5 590	3.99	0.27	4.26	11.00	6.74
	5 710	3.85	0.27	4.12	11.00	6.88
	5 755	1.12	0.27	1.39	30.00	28.61
	5 795	0.63	0.27	0.90	30.00	29.10
802.11ac _VHT40	5 190	-2.13	0.49	-1.64	11.00	12.64
	5 230	-2.36	0.49	-1.87	11.00	12.87
	5 270	-1.18	0.49	-0.69	11.00	11.69
	5 310	-2.90	0.49	-2.41	11.00	13.41
	5 510	1.74	0.49	2.23	11.00	8.77
	5 590	3.57	0.49	4.06	11.00	6.94
	5 710	3.41	0.49	3.90	11.00	7.10
	5 755	1.04	0.49	1.53	30.00	28.47
	5 795	0.43	0.49	0.92	30.00	29.08
802.11ax _HE40	5 190	-1.91	0.53	-1.38	11.00	12.38
	5 230	-2.47	0.53	-1.94	11.00	12.94
	5 270	-1.28	0.53	-0.75	11.00	11.75
	5 310	-3.08	0.53	-2.55	11.00	13.55
	5 510	1.47	0.53	2.00	11.00	9.00
	5 590	3.57	0.53	4.10	11.00	6.90

	5 710	3.37	0.53	3.90	11.00	7.10
	5 755	0.66	0.53	1.19	30.00	28.81
	5 795	0.28	0.53	0.81	30.00	29.19
802.11ac _VHT80	5 210	-5.03	0.89	-4.14	11.00	15.14
	5 290	-4.48	0.89	-3.59	11.00	14.59
	5 530	-5.79	0.89	-4.90	11.00	15.90
	5 690	-3.29	0.89	-2.40	11.00	13.40
	5 775	-6.40	0.89	-5.51	30.00	35.51
802.11ax _HE80	5 210	-5.44	0.85	-4.59	11.00	15.59
	5 290	-4.89	0.85	-4.04	11.00	15.04
	5 530	-5.58	0.85	-4.73	11.00	15.73
	5 690	-2.96	0.85	-2.11	11.00	13.11
	5 775	-5.63	0.85	-4.78	30.00	34.78
Measurement uncertainty		± 1.5 dB				

ANT2

Test Mode	Frequency (MHz)	Measured Power Density (dBm)	Duty cycle Factor (dB)	Result Power Density (dBm)	Limit (dBm)	Margin (dB)
802.11a	5 180	2.45	0.13	2.58	11.00	8.42
	5 200	2.31	0.13	2.44	11.00	8.56
	5 240	2.06	0.13	2.19	11.00	8.81
	5 260	4.59	0.13	4.72	11.00	6.28
	5 300	3.90	0.13	4.03	11.00	6.97
	5 320	4.35	0.13	4.48	11.00	6.52
	5 500	4.60	0.13	4.73	11.00	6.27
	5 600	6.15	0.13	6.28	11.00	4.72
	5 720	5.98	0.13	6.11	11.00	4.89
	5 745	3.06	0.13	3.19	30.00	26.81
	5 785	2.97	0.13	3.10	30.00	26.90
	5 825	2.93	0.13	3.06	30.00	26.94
802.11n _HT20	5 180	1.94	0.14	2.08	11.00	8.92
	5 200	1.92	0.14	2.06	11.00	8.94
	5 240	1.70	0.14	1.84	11.00	9.16
	5 260	4.05	0.14	4.19	11.00	6.81
	5 300	3.65	0.14	3.79	11.00	7.21
	5 320	3.80	0.14	3.94	11.00	7.06
	5 500	4.30	0.14	4.44	11.00	6.56
	5 600	5.74	0.14	5.88	11.00	5.12
	5 720	5.64	0.14	5.78	11.00	5.22
	5 745	2.40	0.14	2.54	30.00	27.46
	5 785	2.74	0.14	2.88	30.00	27.12
	5 825	2.39	0.14	2.53	30.00	27.47
802.11ac _VHT20	5 180	1.87	0.26	2.13	11.00	8.87
	5 200	2.05	0.26	2.31	11.00	8.69
	5 240	1.50	0.26	1.76	11.00	9.24
	5 260	4.06	0.26	4.32	11.00	6.68
	5 300	3.69	0.26	3.95	11.00	7.05
	5 320	3.84	0.26	4.10	11.00	6.90
	5 500	4.41	0.26	4.67	11.00	6.33
	5 600	5.54	0.26	5.80	11.00	5.20
	5 720	5.61	0.26	5.87	11.00	5.13
	5 745	2.70	0.26	2.96	30.00	27.04

	5 785	2.37	0.26	2.63	30.00	27.37
	5 825	2.43	0.26	2.69	30.00	27.31
802.11ax _HE20	5 180	1.66	0.31	1.97	11.00	9.03
	5 200	1.67	0.31	1.98	11.00	9.02
	5 240	1.35	0.31	1.66	11.00	9.34
	5 260	4.04	0.31	4.35	11.00	6.65
	5 300	3.47	0.31	3.78	11.00	7.22
	5 320	3.31	0.31	3.62	11.00	7.38
	5 500	3.88	0.31	4.19	11.00	6.81
	5 600	5.56	0.31	5.87	11.00	5.13
	5 720	5.37	0.31	5.68	11.00	5.32
	5 745	1.95	0.31	2.26	30.00	27.74
	5 785	1.93	0.31	2.24	30.00	27.76
	5 825	2.03	0.31	2.34	30.00	27.66
802.11n _HT40	5 190	1.32	0.27	1.59	11.00	9.41
	5 230	0.31	0.27	0.58	11.00	10.42
	5 270	1.42	0.27	1.69	11.00	9.31
	5 310	1.06	0.27	1.33	11.00	9.67
	5 510	4.68	0.27	4.95	11.00	6.05
	5 590	5.97	0.27	6.24	11.00	4.76
	5 710	5.48	0.27	5.75	11.00	5.25
	5 755	2.50	0.27	2.77	30.00	27.23
	5 795	2.45	0.27	2.72	30.00	27.28
802.11ac _VHT40	5 190	1.03	0.49	1.52	11.00	9.48
	5 230	0.01	0.49	0.50	11.00	10.50
	5 270	1.12	0.49	1.61	11.00	9.39
	5 310	0.77	0.49	1.26	11.00	9.74
	5 510	4.48	0.49	4.97	11.00	6.03
	5 590	5.44	0.49	5.93	11.00	5.07
	5 710	5.42	0.49	5.91	11.00	5.09
	5 755	2.41	0.49	2.90	30.00	27.10
	5 795	2.07	0.49	2.56	30.00	27.44
802.11ax _HE40	5 190	1.03	0.53	1.56	11.00	9.44
	5 230	-0.09	0.53	0.44	11.00	10.56
	5 270	0.90	0.53	1.43	11.00	9.57
	5 310	0.53	0.53	1.06	11.00	9.94
	5 510	4.24	0.53	4.77	11.00	6.23
	5 590	5.61	0.53	6.14	11.00	4.86
	5 710	5.20	0.53	5.73	11.00	5.27

	5 755	2.30	0.53	2.83	30.00	27.17
	5 795	2.13	0.53	2.66	30.00	27.34
802.11ac _VHT80	5 210	-2.78	0.89	-1.89	11.00	12.89
	5 290	-2.44	0.89	-1.55	11.00	12.55
	5 530	-2.43	0.89	-1.54	11.00	12.54
	5 690	-1.73	0.89	-0.84	11.00	11.84
	5 775	-3.84	0.89	-2.95	30.00	32.95
802.11ax _HE80	5 210	-2.38	0.85	-1.53	11.00	12.53
	5 290	-1.69	0.85	-0.84	11.00	11.84
	5 530	-2.08	0.85	-1.23	11.00	12.23
	5 690	-1.32	0.85	-0.47	11.00	11.47
	5 775	-3.54	0.85	-2.69	30.00	32.69
Measurement uncertainty		± 1.5 dB				

ANT1 + ANT2

Test Mode	Frequency (MHz)	Measured Power Density (dBm)	Duty cycle Factor (dB)	Result Power Density (dBm)	Limit (dBm)	Margin (dB)
802.11a	5 180	3.95	0.13	4.08	11.00	6.92
	5 200	3.91	0.13	4.04	11.00	6.96
	5 240	4.02	0.13	4.15	11.00	6.85
	5 260	6.77	0.13	6.90	11.00	4.10
	5 300	5.71	0.13	5.84	11.00	5.16
	5 320	5.99	0.13	6.12	11.00	4.88
	5 500	6.31	0.13	6.44	11.00	4.56
	5 600	8.04	0.13	8.17	11.00	2.83
	5 720	7.98	0.13	8.11	11.00	2.89
	5 745	5.30	0.13	5.43	30.00	24.57
	5 785	5.11	0.13	5.24	30.00	24.76
	5 825	4.27	0.13	4.40	30.00	25.60
802.11n _HT20	5 180	4.08	0.14	4.22	11.00	6.78
	5 200	4.13	0.14	4.27	11.00	6.73
	5 240	4.19	0.14	4.33	11.00	6.67
	5 260	6.42	0.14	6.56	11.00	4.44
	5 300	6.00	0.14	6.14	11.00	4.86
	5 320	5.99	0.14	6.13	11.00	4.87
	5 500	6.39	0.14	6.53	11.00	4.47
	5 600	7.86	0.14	8.00	11.00	3.00
	5 720	7.84	0.14	7.98	11.00	3.02
	5 745	4.83	0.14	4.97	30.00	25.03
	5 785	4.98	0.14	5.12	30.00	24.88
	5 825	3.87	0.14	4.01	30.00	25.99
802.11ac _VHT20	5 180	3.58	0.26	3.84	11.00	7.16
	5 200	3.70	0.26	3.96	11.00	7.04
	5 240	3.39	0.26	3.65	11.00	7.35
	5 260	6.15	0.26	6.41	11.00	4.59
	5 300	5.35	0.26	5.61	11.00	5.39
	5 320	5.51	0.26	5.77	11.00	5.23
	5 500	6.11	0.26	6.37	11.00	4.63
	5 600	7.70	0.26	7.96	11.00	3.04
	5 720	7.68	0.26	7.94	11.00	3.06
	5 745	4.89	0.26	5.15	30.00	24.85

	5 785	4.52	0.26	4.78	30.00	25.22
	5 825	3.67	0.26	3.93	30.00	26.07
802.11ax _HE20	5 180	3.35	0.31	3.66	11.00	7.34
	5 200	3.44	0.31	3.75	11.00	7.25
	5 240	3.18	0.31	3.49	11.00	7.51
	5 260	6.18	0.31	6.49	11.00	4.51
	5 300	5.11	0.31	5.42	11.00	5.58
	5 320	5.28	0.31	5.59	11.00	5.41
	5 500	5.77	0.31	6.08	11.00	4.92
	5 600	7.64	0.31	7.95	11.00	3.05
	5 720	7.46	0.31	7.77	11.00	3.23
	5 745	4.50	0.31	4.81	30.00	25.19
	5 785	4.20	0.31	4.51	30.00	25.49
	5 825	3.39	0.31	3.70	30.00	26.30
802.11n _HT40	5 190	3.05	0.27	3.32	11.00	7.68
	5 230	2.40	0.27	2.67	11.00	8.33
	5 270	3.44	0.27	3.71	11.00	7.29
	5 310	2.63	0.27	2.90	11.00	8.10
	5 510	6.54	0.27	6.81	11.00	4.19
	5 590	8.10	0.27	8.37	11.00	2.63
	5 710	7.75	0.27	8.02	11.00	2.98
	5 755	4.87	0.27	5.14	30.00	24.86
	5 795	4.64	0.27	4.91	30.00	25.09
802.11ac _VHT40	5 190	2.74	0.49	3.23	11.00	7.77
	5 230	2.00	0.49	2.49	11.00	8.51
	5 270	3.13	0.49	3.62	11.00	7.38
	5 310	2.32	0.49	2.81	11.00	8.19
	5 510	6.33	0.49	6.82	11.00	4.18
	5 590	7.62	0.49	8.11	11.00	2.89
	5 710	7.54	0.49	8.03	11.00	2.97
	5 755	4.79	0.49	5.28	30.00	24.72
	5 795	4.34	0.49	4.83	30.00	25.17
802.11ax _HE40	5 190	2.81	0.53	3.34	11.00	7.66
	5 230	1.89	0.53	2.42	11.00	8.58
	5 270	2.96	0.53	3.49	11.00	7.51
	5 310	2.10	0.53	2.63	11.00	8.37
	5 510	6.08	0.53	6.61	11.00	4.39
	5 590	7.72	0.53	8.25	11.00	2.75
	5 710	7.39	0.53	7.92	11.00	3.08

	5 755	4.57	0.53	5.10	30.00	24.90
	5 795	4.31	0.53	4.84	30.00	25.16
802.11ac _VHT80	5 210	-0.75	0.89	0.14	11.00	10.86
	5 290	-0.33	0.89	0.56	11.00	10.44
	5 530	-0.78	0.89	0.11	11.00	10.89
	5 690	0.57	0.89	1.46	11.00	9.54
	5 775	-1.92	0.89	-1.03	30.00	31.03
802.11ax _HE80	5 210	-0.64	0.85	0.21	11.00	10.79
	5 290	0.01	0.85	0.86	11.00	10.14
	5 530	-0.48	0.85	0.37	11.00	10.63
	5 690	0.95	0.85	1.80	11.00	9.20
	5 775	-1.45	0.85	-0.60	30.00	30.60
Measurement uncertainty		± 1.5 dB				

See next pages for actual measured spectrum plots.