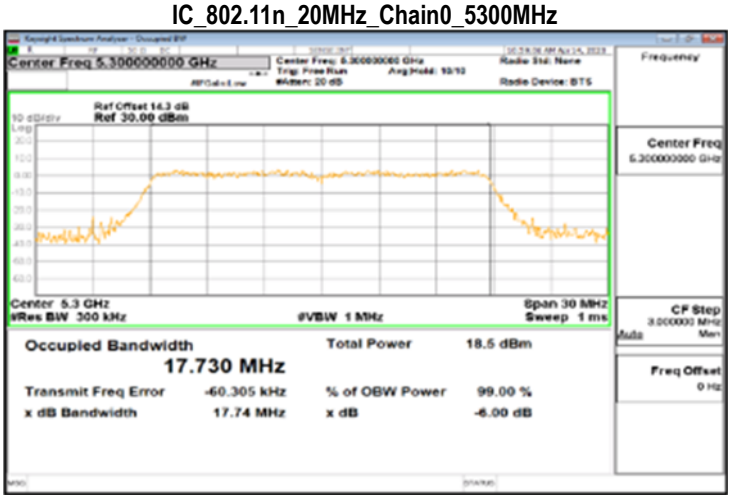
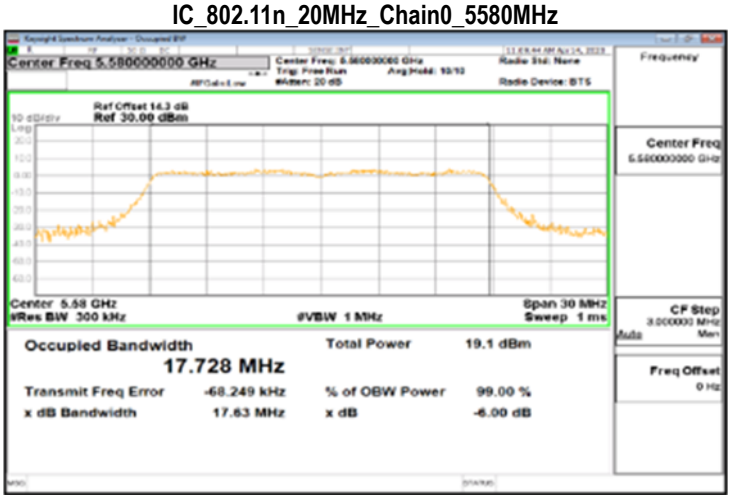
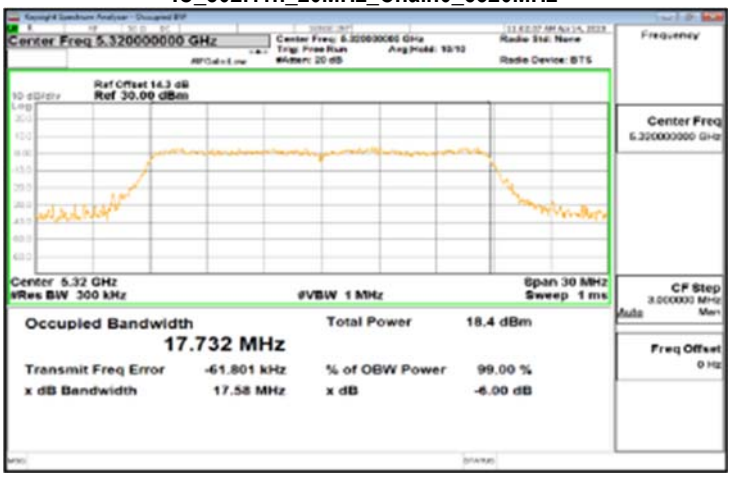
IC_802.11n_20MHz_Chain0_5300MHz



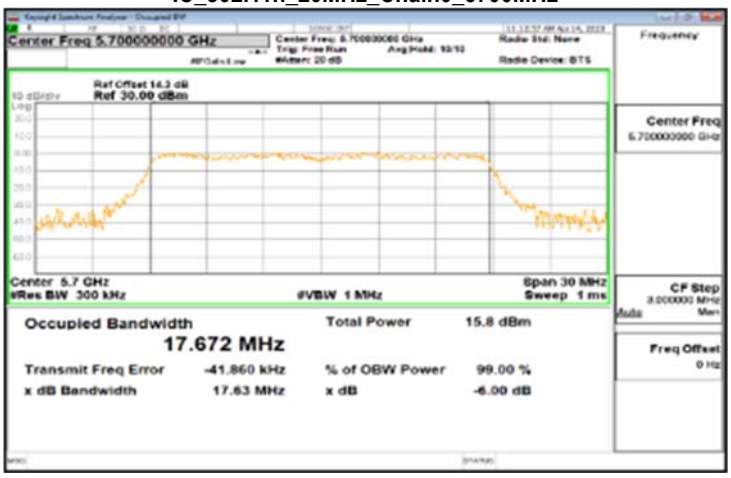
IC_802.11n_20MHz_Chain0_5580MHz



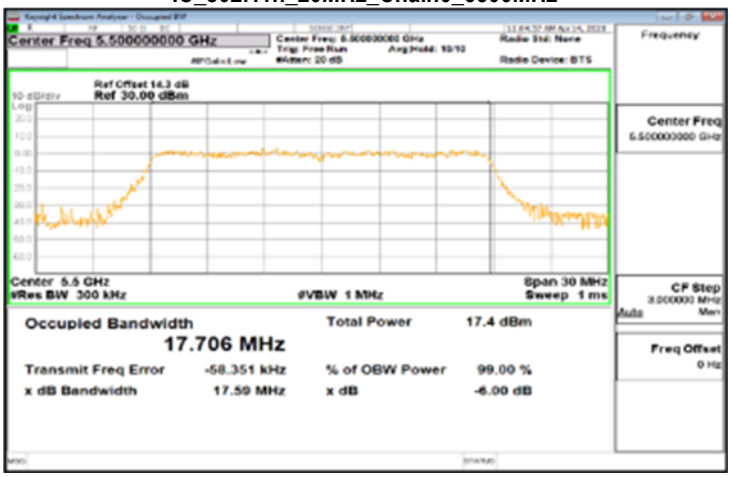
IC_802.11n_20MHz_Chain0_5320MHz



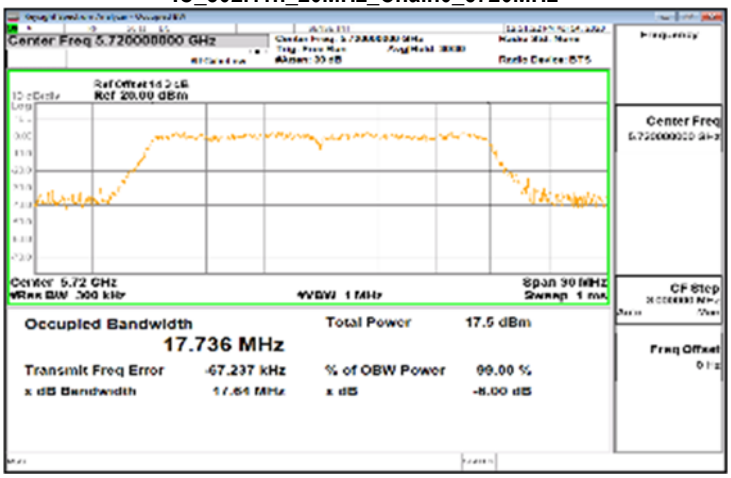
IC_802.11n_20MHz_Chain0_5700MHz



IC_802.11n_20MHz_Chain0_5500MHz



IC_802.11n_20MHz_Chain0_5720MHz



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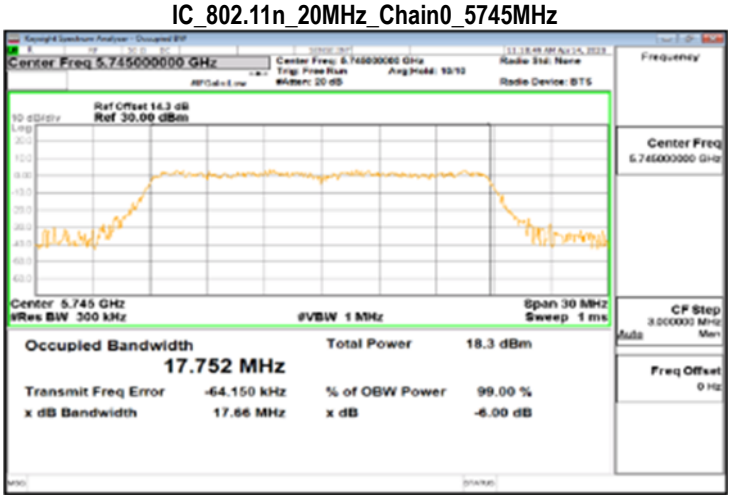
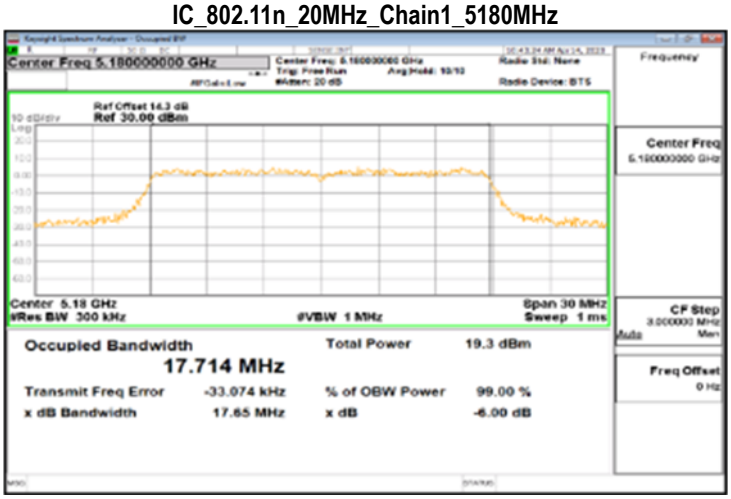
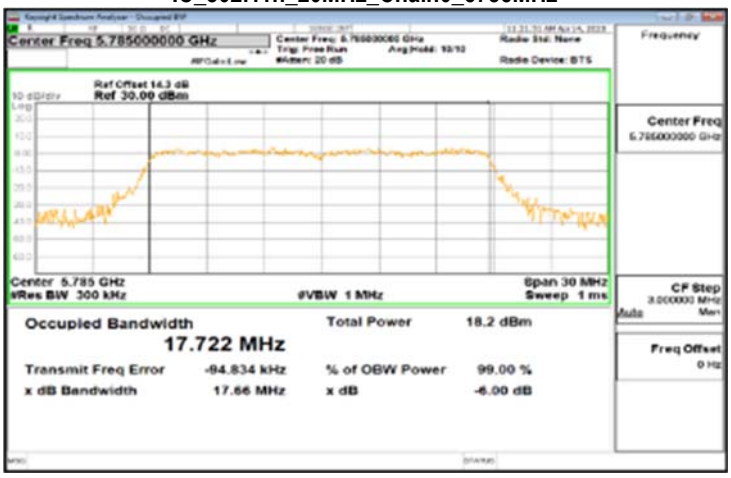
IC_802.11n_20MHz_Chain0_5745MHz



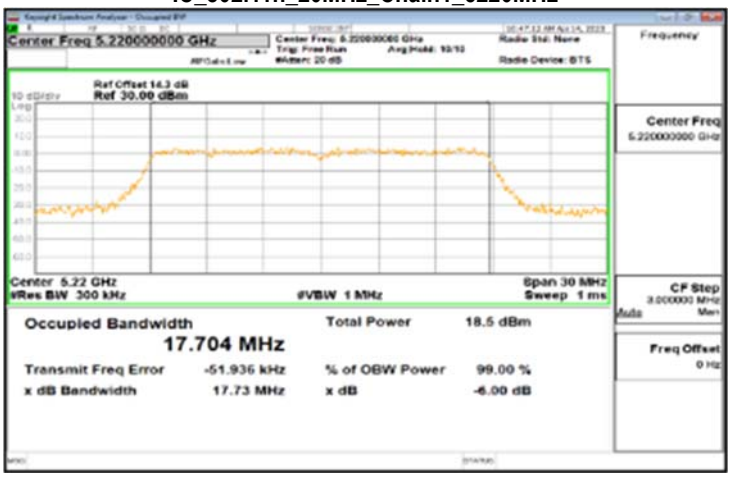
IC_802.11n_20MHz_Chain1_5180MHz



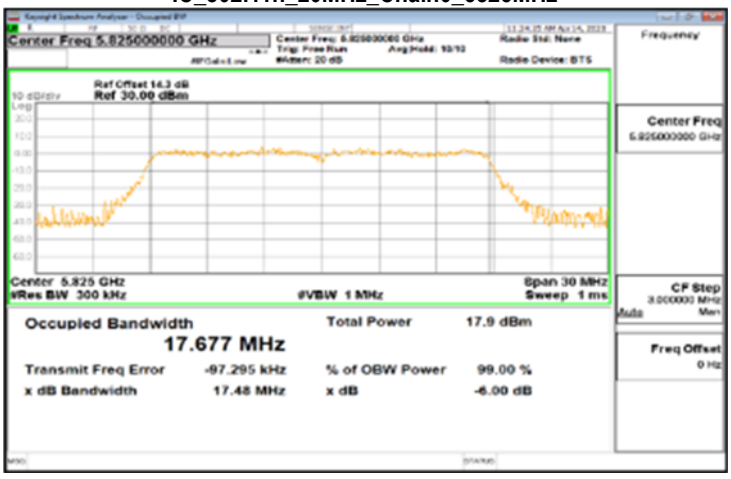
IC_802.11n_20MHz_Chain0_5785MHz



IC_802.11n_20MHz_Chain1_5220MHz



IC_802.11n_20MHz_Chain0_5825MHz



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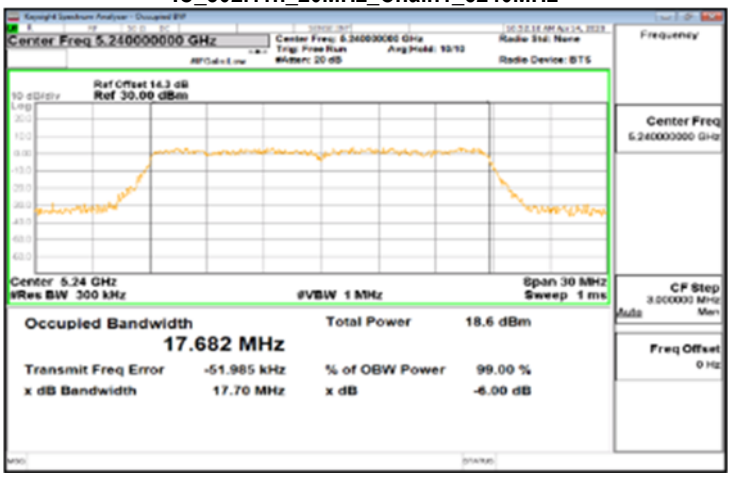

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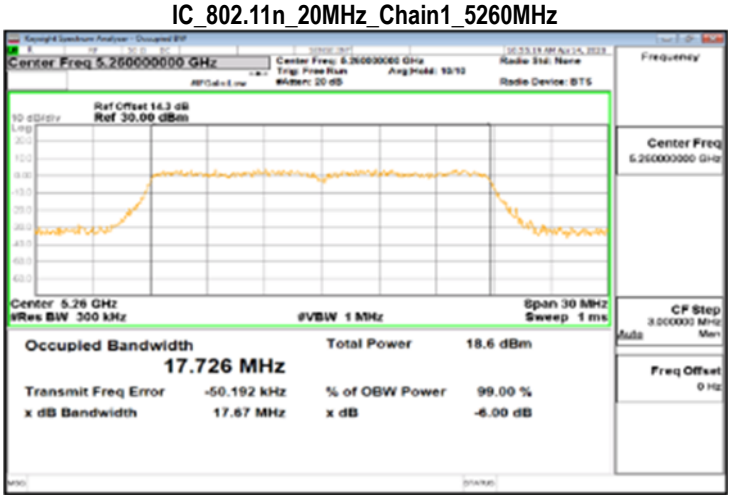
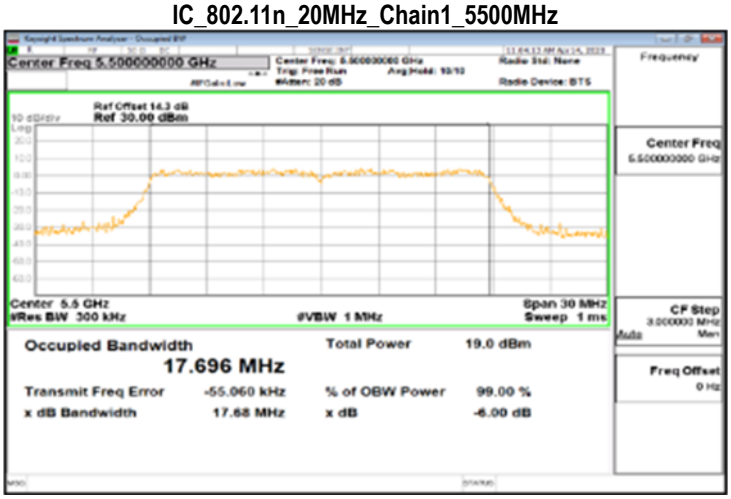
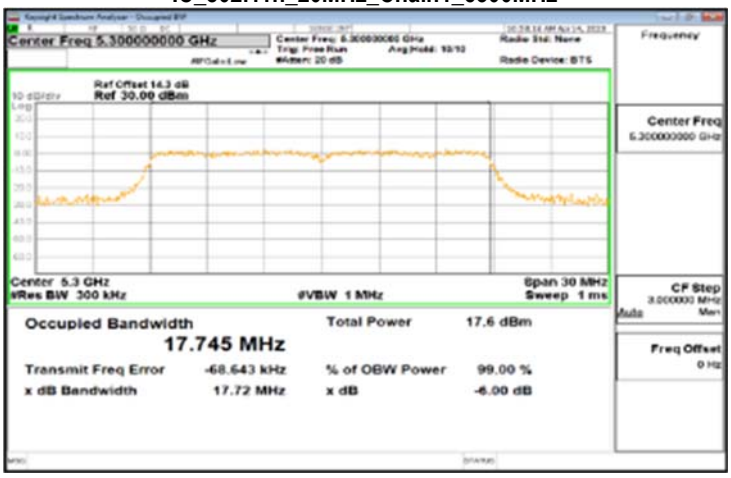
IC_802.11n_20MHz_Chain1_5260MHz



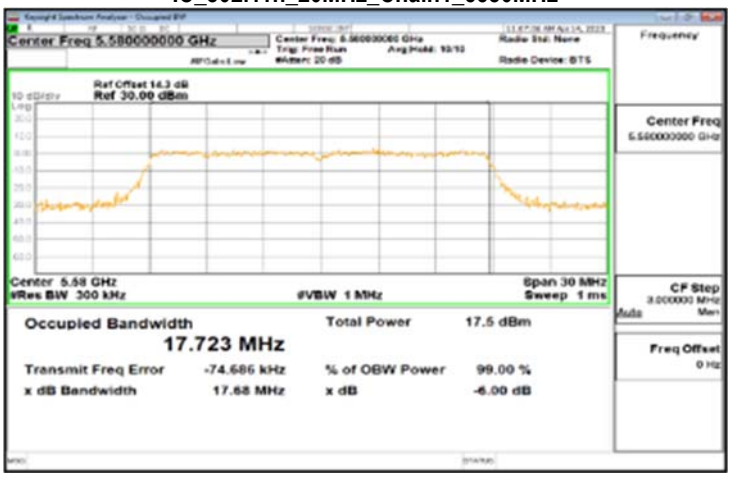
IC_802.11n_20MHz_Chain1_5500MHz



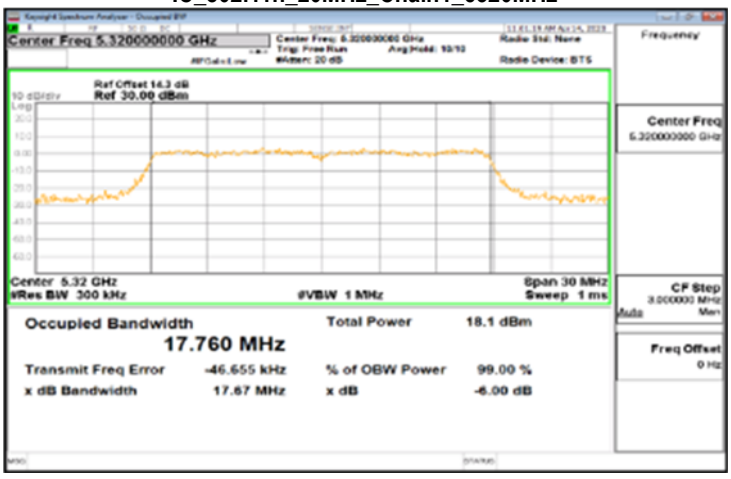
IC_802.11n_20MHz_Chain1_5300MHz



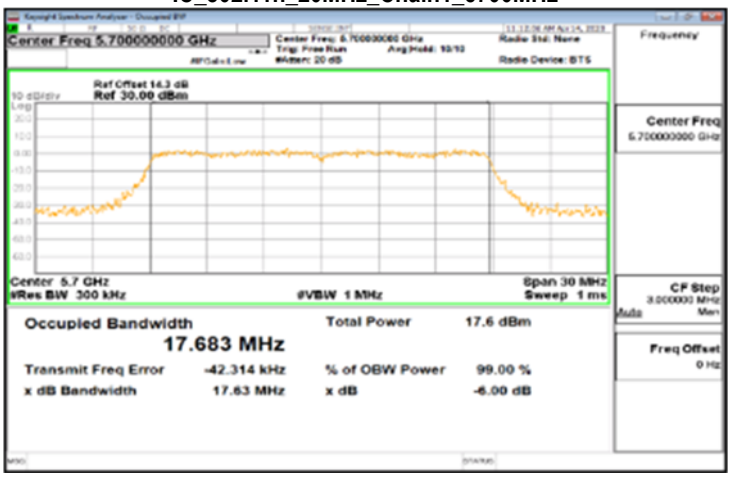
IC_802.11n_20MHz_Chain1_5580MHz



IC_802.11n_20MHz_Chain1_5320MHz



IC_802.11n_20MHz_Chain1_5700MHz



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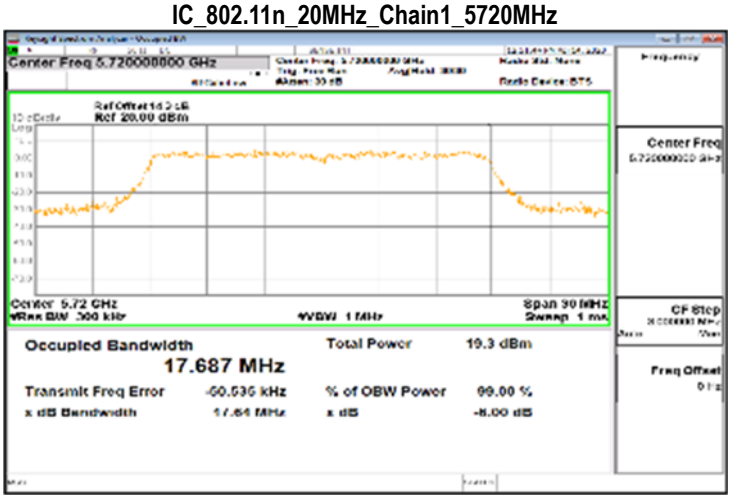
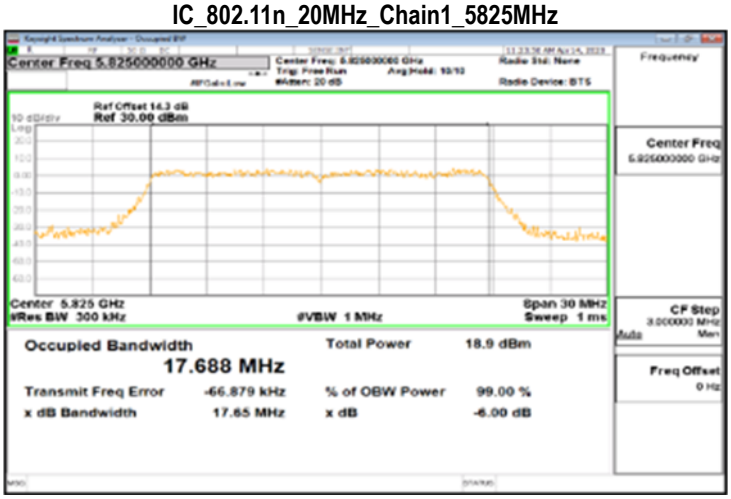
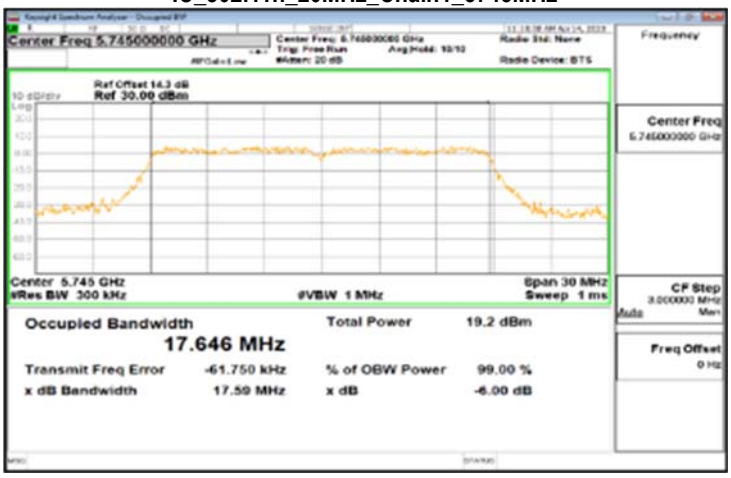
IC_802.11n_20MHz_Chain1_5720MHz



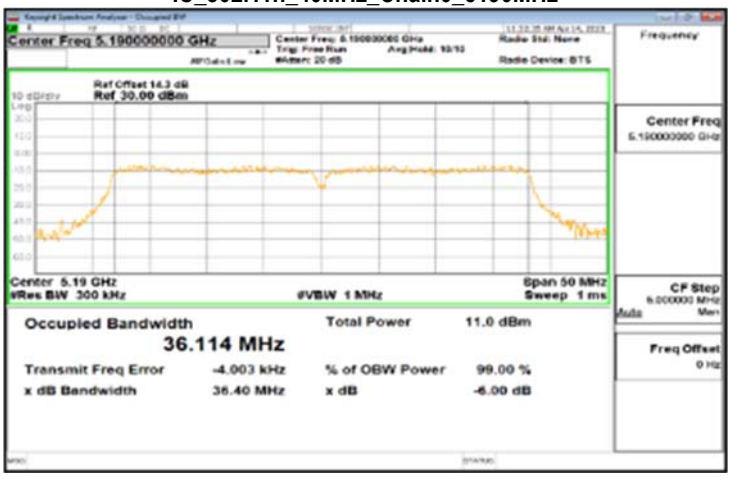
IC_802.11n_20MHz_Chain1_5825MHz



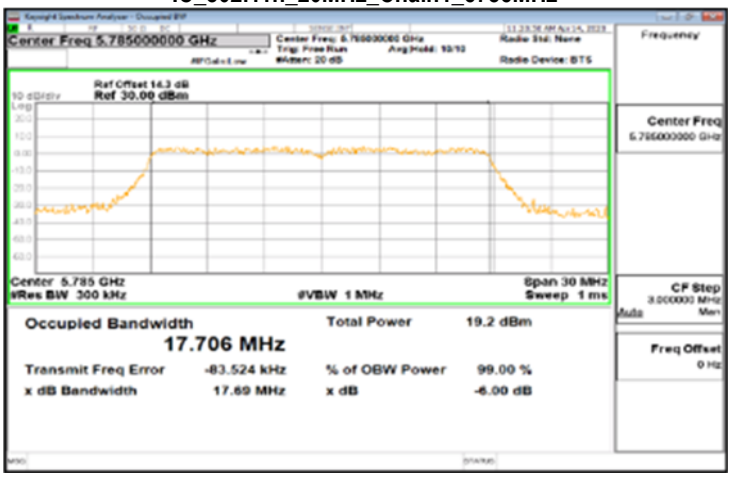
IC_802.11n_20MHz_Chain1_5745MHz



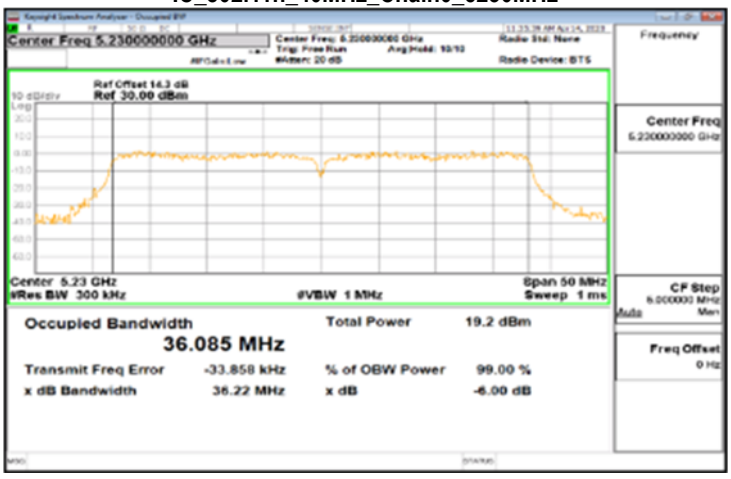
IC_802.11n_40MHz_Chain0_5190MHz



IC_802.11n_20MHz_Chain1_5785MHz



IC_802.11n_40MHz_Chain0_5230MHz



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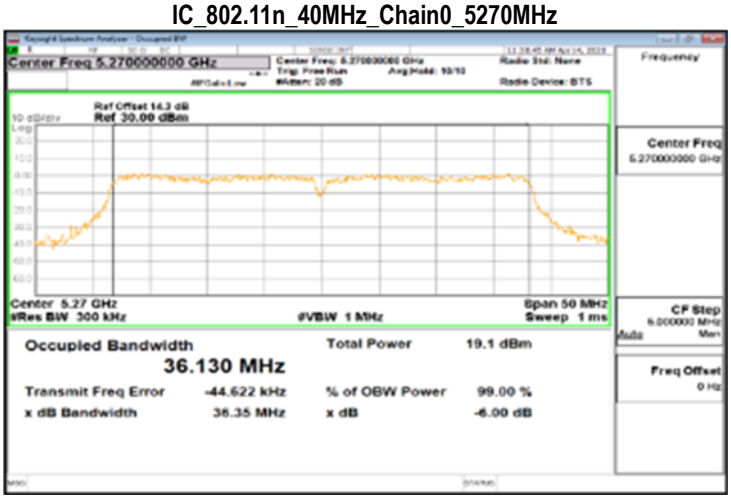
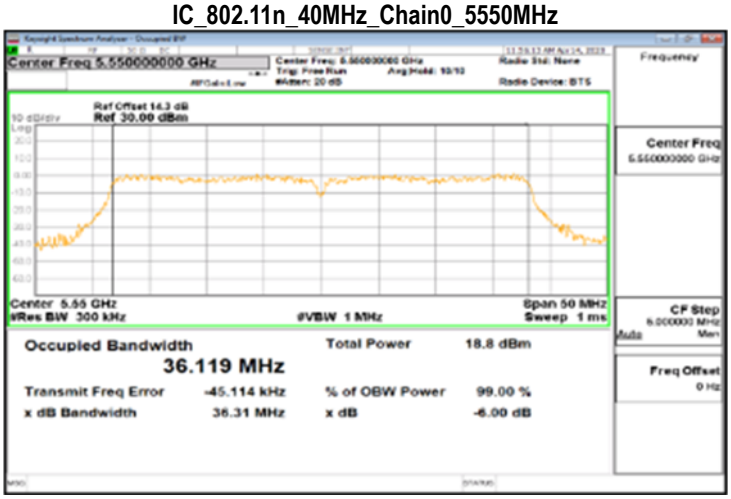
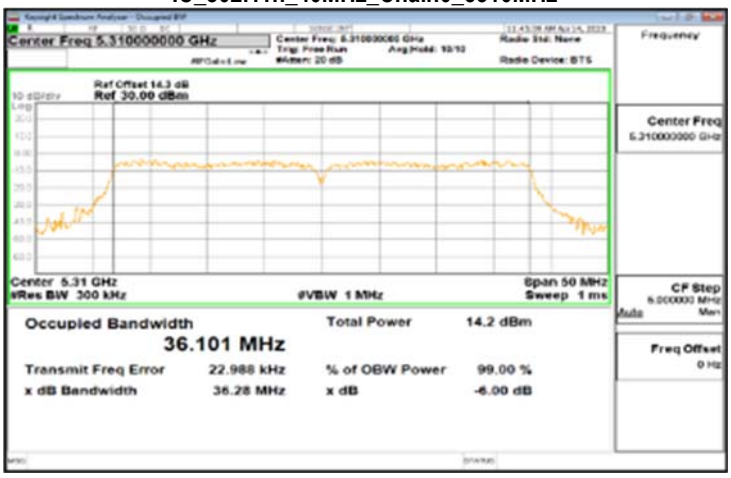
IC_802.11n_40MHz_Chain0_5270MHz



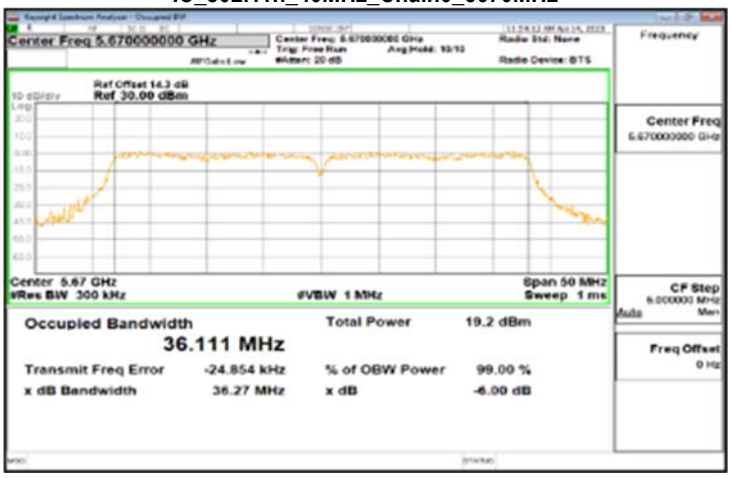
IC_802.11n_40MHz_Chain0_5550MHz



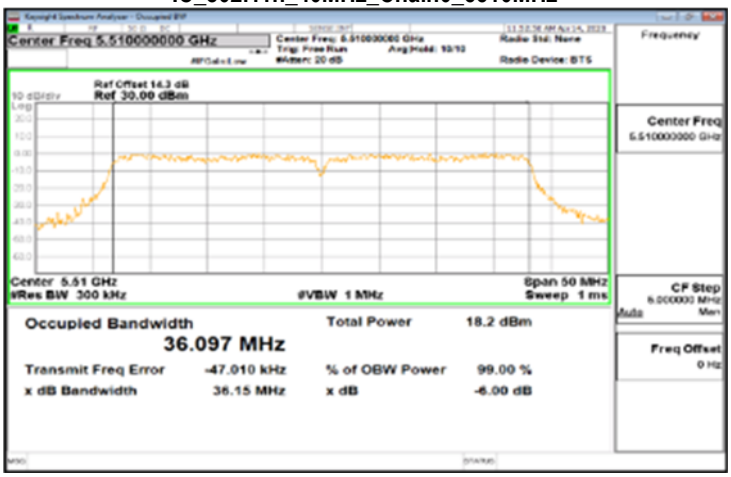
IC_802.11n_40MHz_Chain0_5310MHz



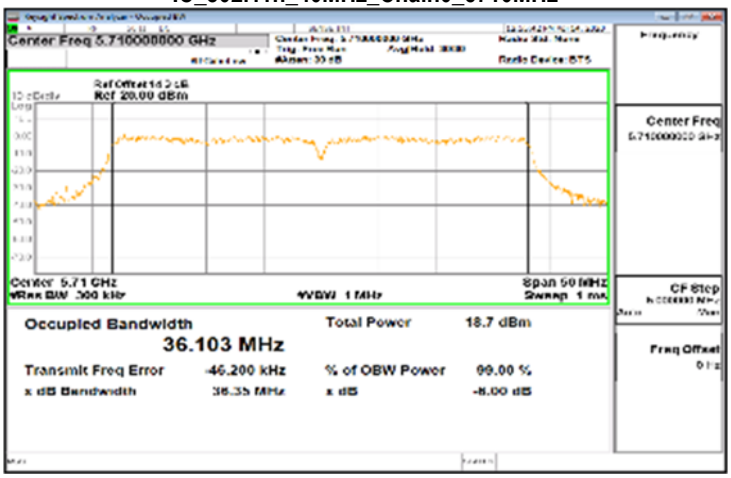
IC_802.11n_40MHz_Chain0_5670MHz



IC_802.11n_40MHz_Chain0_5510MHz



IC_802.11n_40MHz_Chain0_5710MHz



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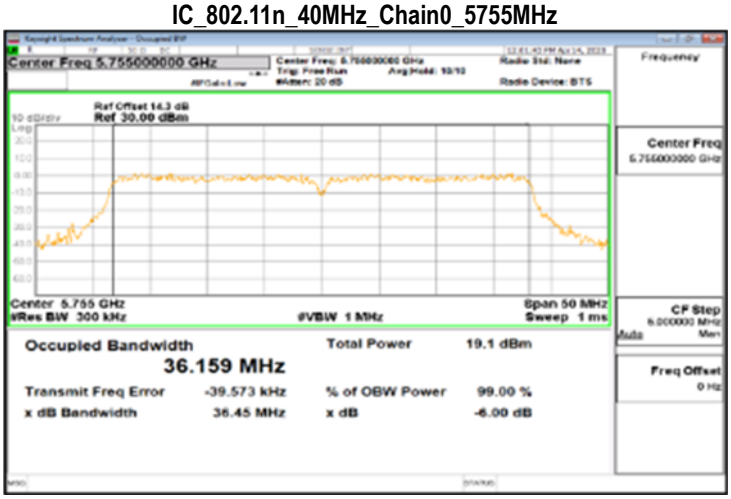
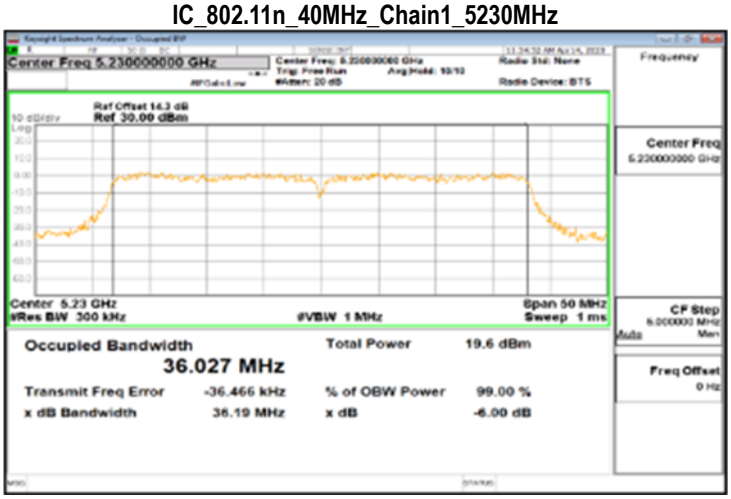
IC_802.11n_40MHz_Chain0_5755MHz



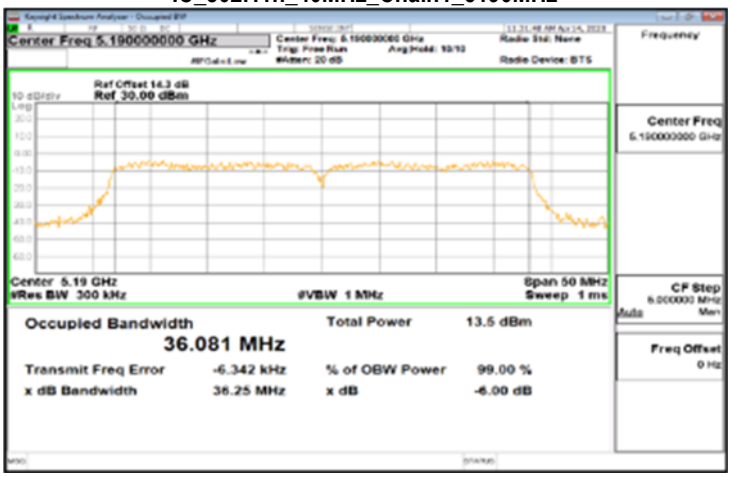
IC_802.11n_40MHz_Chain1_5230MHz



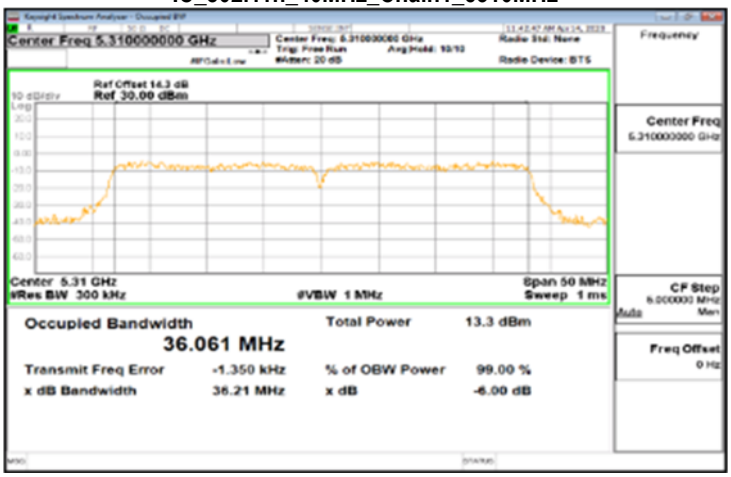
IC_802.11n_40MHz_Chain0_5795MHz

IC_802.11n_40MHz_Chain1_5270MHz

IC_802.11n_40MHz_Chain1_5190MHz



IC_802.11n_40MHz_Chain1_5310MHz



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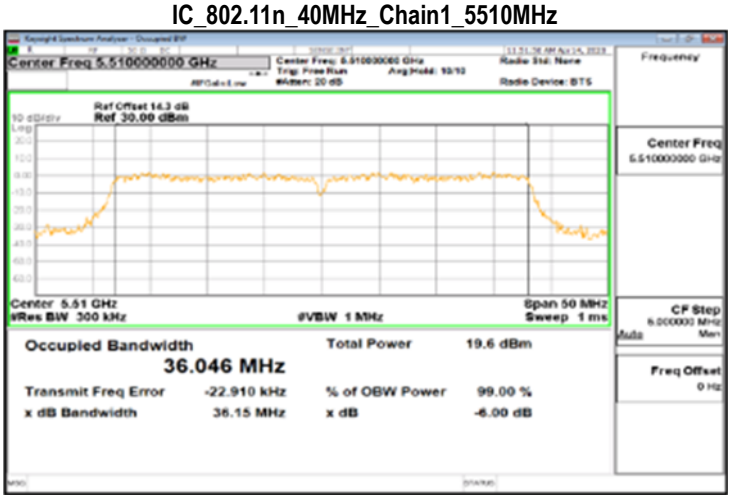
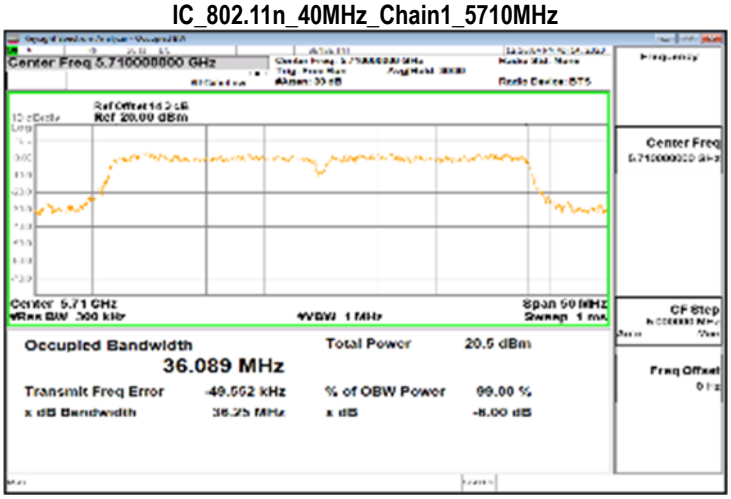
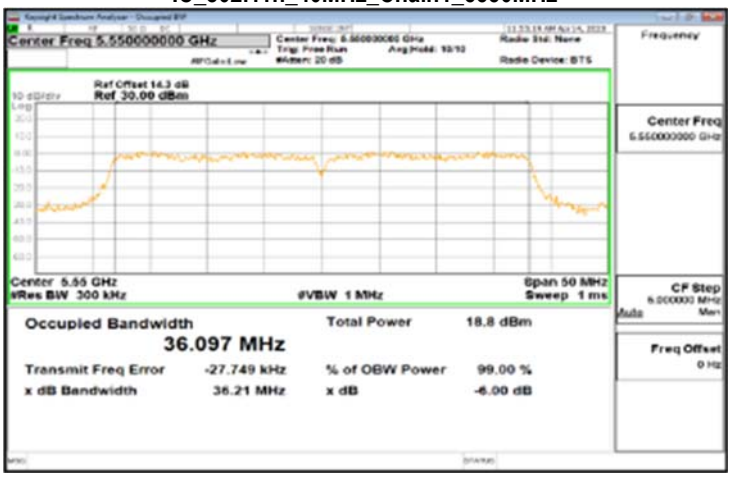
IC_802.11n_40MHz_Chain1_5510MHz



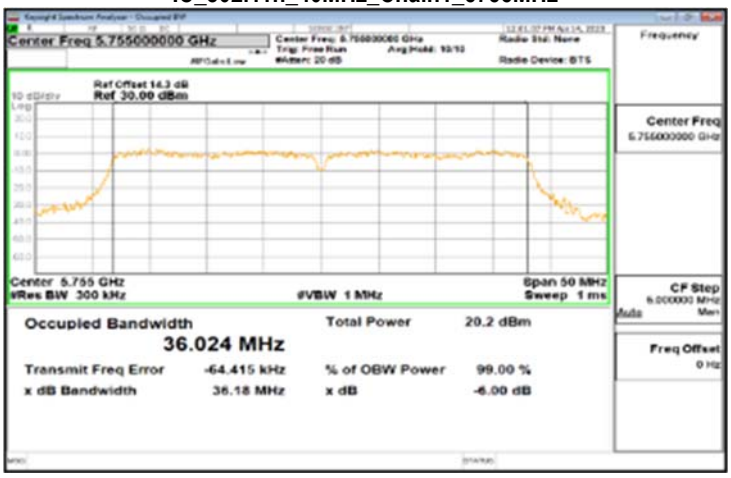
IC_802.11n_40MHz_Chain1_5710MHz



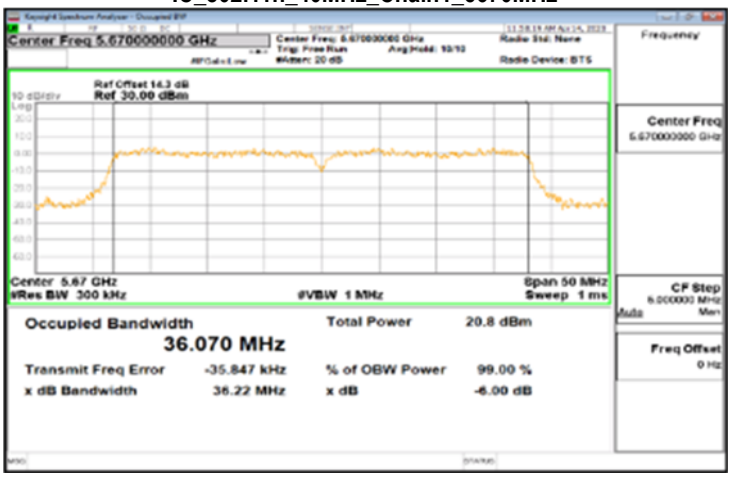
IC_802.11n_40MHz_Chain1_5550MHz



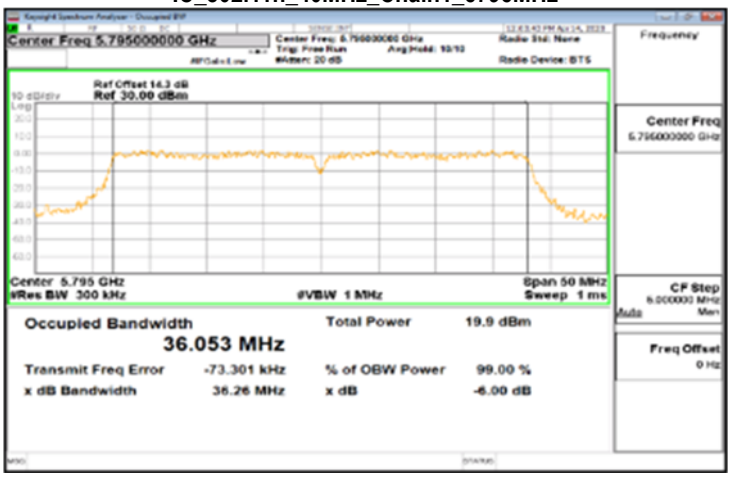
IC_802.11n_40MHz_Chain1_5755MHz



IC_802.11n_40MHz_Chain1_5670MHz



IC_802.11n_40MHz_Chain1_5795MHz



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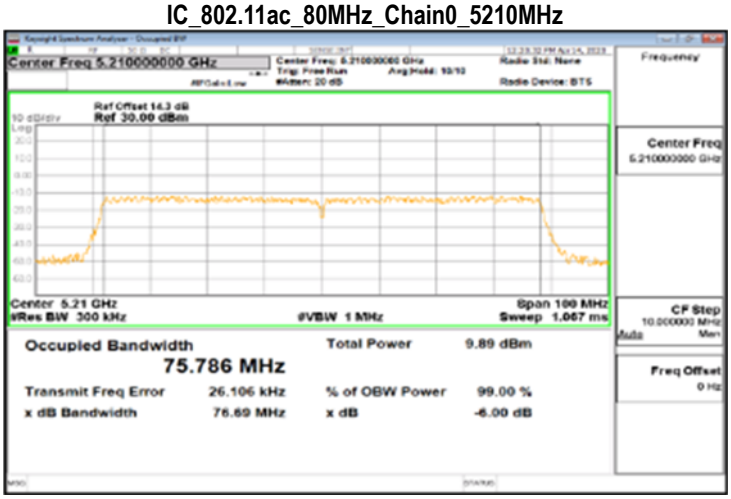
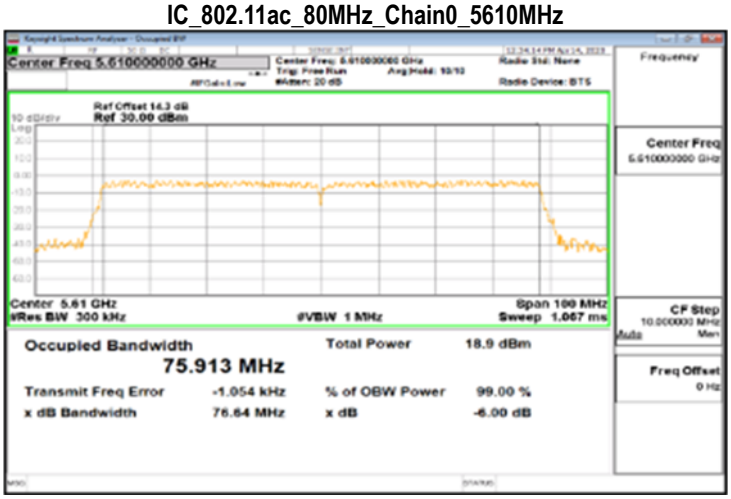
IC_802.11ac_80MHz_Chain0_5210MHz

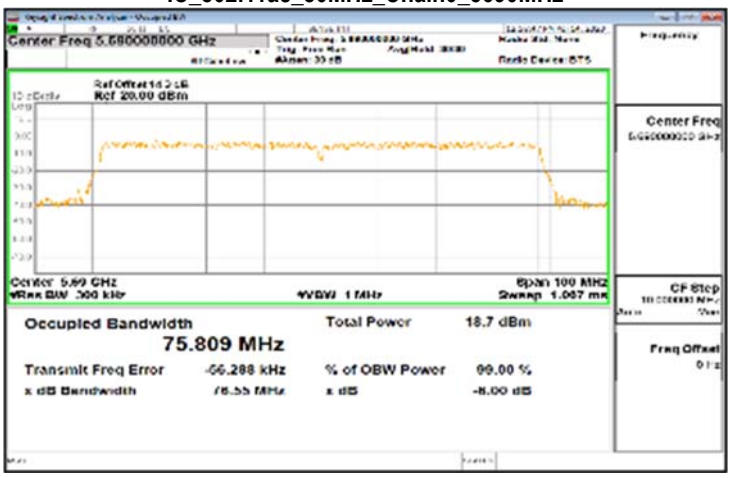


IC_802.11ac_80MHz_Chain0_5610MHz

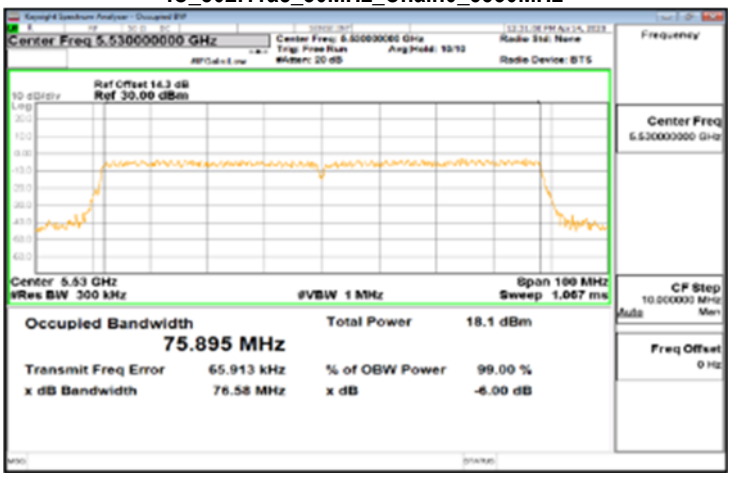


IC_802.11ac_80MHz_Chain0_5290MHz

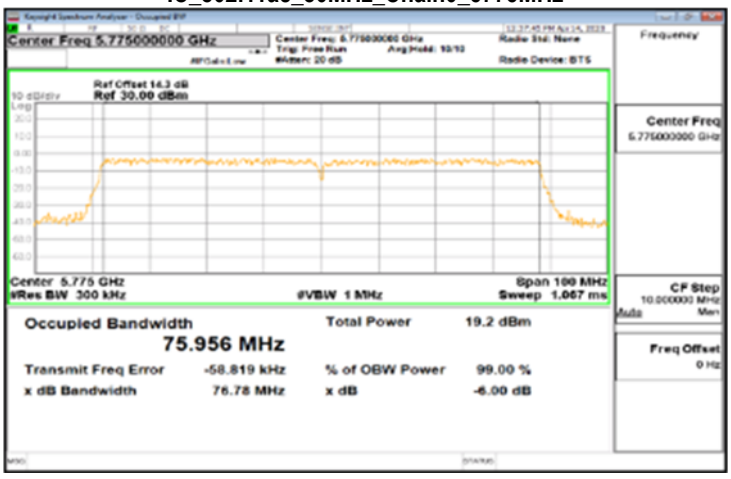
IC_802.11ac_80MHz_Chain0_5690MHz



IC_802.11ac_80MHz_Chain0_5530MHz



IC_802.11ac_80MHz_Chain0_5775MHz



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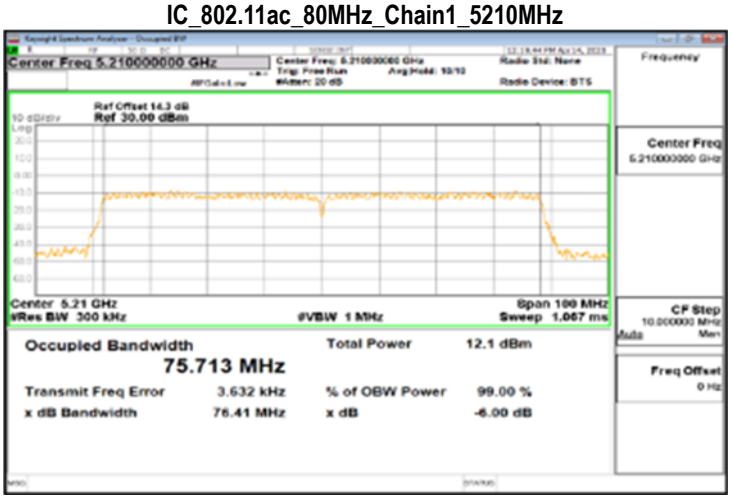
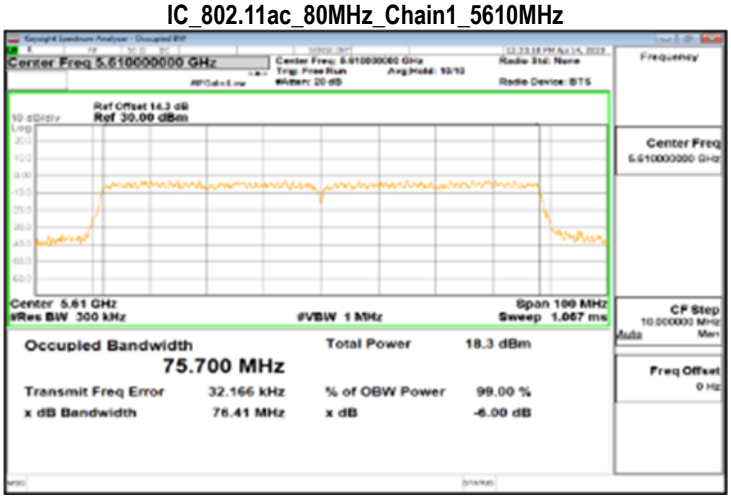
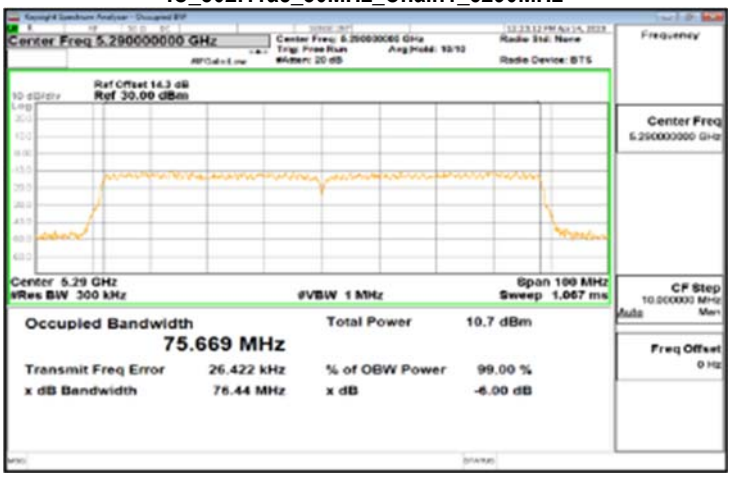
IC_802.11ac_80MHz_Chain1_5210MHz



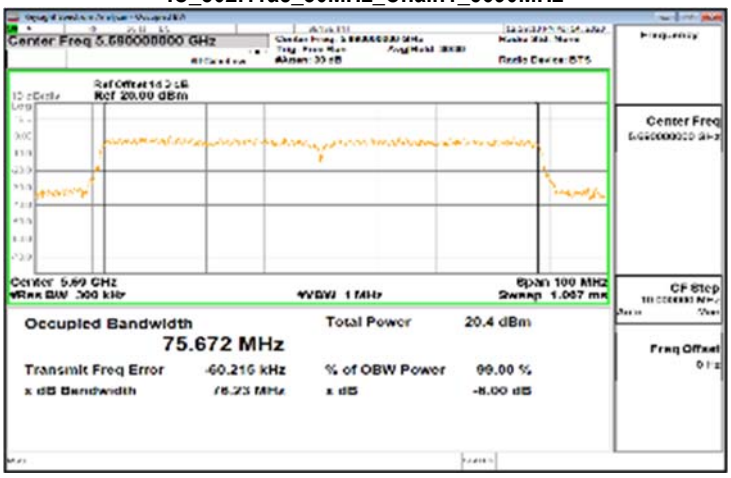
IC_802.11ac_80MHz_Chain1_5610MHz



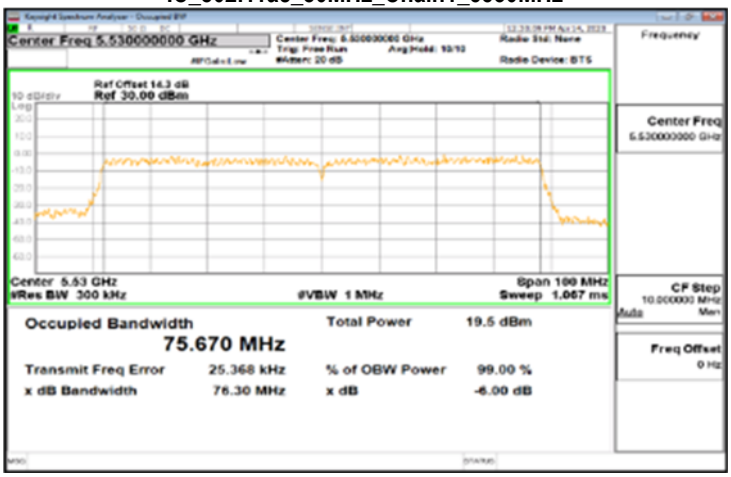
IC_802.11ac_80MHz_Chain1_5290MHz



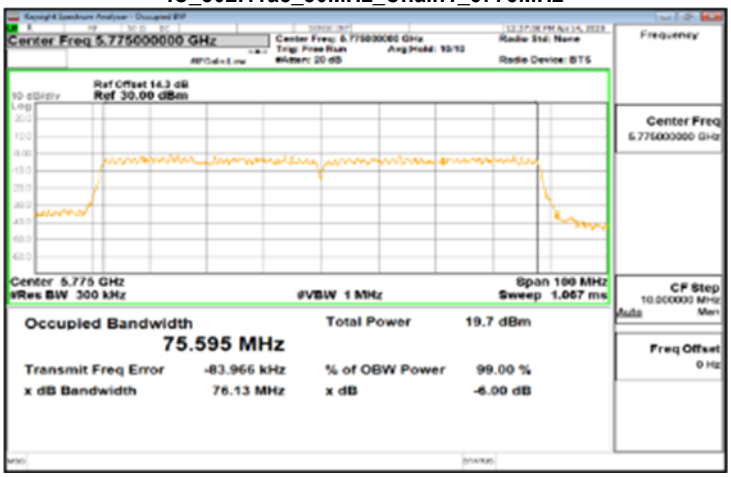
IC_802.11ac_80MHz_Chain1_5690MHz



IC_802.11ac_80MHz_Chain1_5530MHz



IC_802.11ac_80MHz_Chain1_5775MHz



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9 MAXIMUM CONDUCTED OUTPUT POWER MEASUREMENT

9.1 Standard Applicable

FCC

OPERZTION Band	EUT CATEGORY		LIMIT
U-NII-1		Access Point (Master device)	1 Watt(30dBm)
		Fixed point-to-point Access Ponit	1 Watt(30dBm)
	√	Mobile and portable client device	250mW(23.98dBm)
U-NII-2A	√		250mW(23.98dBm) or 11dBm+10 log B
U-NII-2C	√		250mW(23.98dBm) or 11dBm+10 log B
U-NII-3	√		1 Watt(30dBm)
If transmitting antennas of directional gain greater than 6 dBi are used, the Maximum transmit power shall be reduced by the amount in dB that the direction-al gain of the antenna exceeds 6 dBi.			

ISED

OPERZTION FREQUENCY BAND	LIMIT
5150~5250 MHz	EIRP shall not exceed 200 mW or 10 + 10 $\log_{10}$B, dBm
5250~5350 MHz	Conducted output power shall not exceed 250 mW or 11 +10 $\log_{10}$B EIRP shall not exceed 1.0 W or 17 + 10 $\log_{10}$B, dBm
5470-5600 MHz and 5650-5725 MHz	Conducted output power shall not exceed 250 mW or 11 +10 $\log_{10}$ B EIRP shall not exceed 1.0 W or 17 + 10 $\log_{10}$B, dBm
5725~5850 MHz	Conducted output power shall not exceed 1 W
For equipment operating in the band ***5725-5850*** MHz, If transmitting antennas of directional gain greater than 6 dBi are used, the Maximum transmit power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.	

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Note:

As per FCC KDB 662911 D01
Unequal antenna gains, with equal transmit powers. For antenna gains given by G1, G2, …, GN dBi.
(i) If transmit signals are correlated, then Directional gain
$= 10 \log[(10^{G1/20} + 10^{G2/20} + \ldots + 10^{GN/20})^2 / N_{ANT}]$ dBi
[Note the "20"s in the denominator of each exponent and the square of the sum of terms; the object is to combine the signal levels coherently.]

The antenna gain is grater than 6 dBi in MIMO mode, therefore the limit needs to be reduced as below:

	Effective Legacy Gain (dBi)	Conducted Power Limit (dBm)
UNII-1	6.31	29.69
UNII-2A	6.31	23.67
U-NII-2C	6.31	23.67
U-NII-3	6.31	29.69

9.2 Measurement Procedure

1. Place the EUT on the table and set it in transmitting mode.
2. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules .
3. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the power meter
4. Power Meter is used as the auxiliary test equipment to conduct the output power measurement.
5. Record the max. reading and add 10 log(1/duty cycle).
6. Repeat above procedures until all frequency (low, middle, and high channel) measured were complete.

9.3 Measurement Equipment Used

SGS Conducted Room					
EQUIPMENT TYPE	**MFR**	**MODEL NUMBER**	**SERIAL NUMBER**	**LAST CAL.**	**CAL DUE.**
Power Meter	Anritsu	ML2496A	1804001	02/20/2020	02/19/2021
Power Sensor	Anritsu	MA2411B	1726104	02/20/2020	02/19/2021
Power Sensor	Anritsu	MA2411B	1726107	02/20/2020	02/19/2021
Attenuator	Mini-Circuit	BW-S10W2+	2	01/02/2020	01/01/2021

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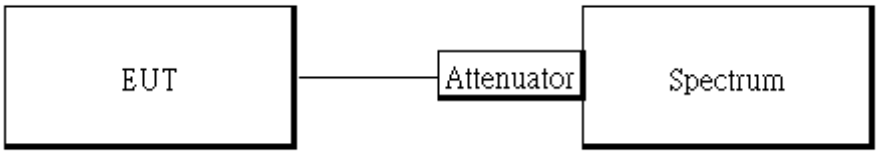
9.4 Test Set-up



Note:

Cable Loss= 14.30 dB

9.5 Measurement Result

9.5.1 Conducted output power (FCC)

802.11a_2Tx

CH	Frequency (MHz)	Data Rate	Avg. POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)			RESULT
			CH 0	CH 1						
36	5180	6	9.16	9.6	12.54	17.967	23.66970004			PASS
44	5220	6	9.27	9.72	12.66	18.450	23.66970004			PASS
48	5240	6	9.32	9.81	**12.73**	18.755	23.66970004			PASS
52	5260	6	11.87	11.78	**14.98**	31.509	23.67	or 11+10log(B) =	23.89	PASS
60	5300	6	11.82	11.79	14.96	31.363	23.67	or 11+10log(B) =	23.92	PASS
64	5320	6	10.65	11.06	14.02	25.229	23.67	or 11+10log(B) =	23.94	PASS
100	5500	6	9.56	10.44	13.18	20.804	23.67	or 11+10log(B) =	23.94	PASS
116	5580	6	11.38	11.99	**14.85**	30.584	23.67	or 11+10log(B) =	23.84	PASS
140	5700	6	7.18	7.74	10.63	11.556	23.67	or 11+10log(B) =	23.91	PASS
144	5720(U-NII 2C)	6	10.14	10.77	13.64	23.141	23.67	or 11+10log(B) =	23.89	PASS
144	5720 (U-NII 3)	6	5.20	5.97	8.70	7.420	29.68970004			PASS
149	5745	6	11.78	11.82	14.96	31.327	29.68970004			PASS
157	5785	6	11.77	11.88	14.98	31.510	29.68970004			PASS
165	5825	6	11.76	11.9	**14.99**	31.548	29.68970004			PASS

802.11n_HT20_MIMO

CH	Frequency (MHz)	Data Rate	Avg. POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)			RESULT
			CH 0	CH 1						
36	5180	MCS8	9.19	9.62	12.70	18.625	23.66970004			PASS
44	5220	MCS8	9.29	9.77	12.83	19.174	23.66970004			PASS
48	5240	MCS8	9.35	9.84	**12.89**	19.465	23.66970004			PASS
52	5260	MCS8	11.48	11.82	14.94	31.217	23.67	or 11+10log(B) =	23.99	PASS
60	5300	MCS8	11.58	11.81	**14.99**	31.529	23.67	or 11+10log(B) =	24.02	PASS
64	5320	MCS8	11.59	11.78	14.98	31.453	23.67	or 11+10log(B) =	23.97	PASS
100	5500	MCS8	11.25	11.76	14.80	30.221	23.67	or 11+10log(B) =	23.99	PASS
116	5580	MCS8	11.37	11.97	**14.97**	31.412	23.67	or 11+10log(B) =	24.03	PASS
140	5700	MCS8	9.18	9.73	12.75	18.855	23.67	or 11+10log(B) =	23.98	PASS
144	5720(U-NII 2C)	MCS8	10.07	10.71	**13.69**	23.389	23.67	or 11+10log(B) =	24.00	PASS
144	5720 (U-NII 3)	MCS8	5.31	5.93	**8.93**	7.817	29.68970004			PASS
149	5745	MCS8	11.56	11.82	**14.98**	31.496	29.68970004			PASS
157	5785	MCS8	11.62	11.76	14.98	31.486	29.68970004			PASS
165	5825	MCS8	11.64	11.72	14.97	31.411	29.68970004			PASS

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802.11ac_VHT20_MIMO

CH	Frequency (MHz)	Data Rate	Avg. POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
			CH 0	CH 1				
36	5180	MCS0	9.18	9.55	12.54	17.948	23.66970004	PASS
44	5220	MCS0	9.23	9.68	12.63	18.332	23.66970004	PASS
48	5240	MCS0	9.28	9.78	**12.71**	18.657	23.66970004	PASS
52	5260	MCS0	11.52	11.84	14.85	30.579	23.67 or 11+10log(B) = 23.99	PASS
60	5300	MCS0	11.62	11.8	**14.88**	30.777	23.67 or 11+10log(B) = 24.02	PASS
64	5320	MCS0	11.57	11.83	14.87	30.713	23.67 or 11+10log(B) = 23.97	PASS
100	5500	MCS0	11.26	11.72	14.67	29.292	23.67 or 11+10log(B) = 23.99	PASS
116	5580	MCS0	11.35	11.99	**14.85**	30.571	23.67 or 11+10log(B) = 24.03	PASS
140	5700	MCS0	11.36	11.96	14.84	30.491	23.67 or 11+10log(B) = 23.98	PASS
144	5720(U-NII 2C)	MCS0	10.09	10.69	**13.57**	22.748	23.67 or 11+10log(B) = 24.00	PASS
144	5720 (U-NII 3)	MCS0	5.33	5.91	**8.81**	7.603	29.68970004	PASS
149	5745	MCS0	11.58	11.84	**14.88**	30.784	29.68970004	PASS
157	5785	MCS0	11.63	11.77	14.87	30.704	29.68970004	PASS
165	5825	MCS0	11.6	11.73	14.84	30.457	29.68970004	PASS

802.11n_HT40_MIMO

CH	Frequency (MHz)	Data Rate	Avg. POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
			CH 0	CH 1				
38	5190	MCS8	3.45	3.96	7.16	5.196	23.66970004	PASS
46	5230	MCS8	11.31	11.68	**14.94**	31.209	23.66970004	PASS
54	5270	MCS8	11.34	11.68	**14.96**	31.312	23.67 or 11+10log(B) = 26.96	PASS
62	5310	MCS8	6.55	7.04	10.25	10.582	23.67 or 11+10log(B) = 27.01	PASS
102	5510	MCS8	11.13	11.64	14.84	30.453	23.67 or 11+10log(B) = 27.01	PASS
110	5550	MCS8	11.19	11.74	14.92	31.028	23.67 or 11+10log(B) = 27.07	PASS
134	5670	MCS8	11.21	11.84	**14.98**	31.479	23.67 or 11+10log(B) = 27.02	PASS
142	5710(U-NII 2C)	MCS8	10.65	11.27	**14.44**	27.787	23.67 or 11+10log(B) = 26.95	PASS
142	5710 (U-NII 3)	MCS8	1.94	2.92	**5.72**	3.736	29.68970004	PASS
151	5755	MCS8	11.51	11.53	14.96	31.360	29.68970004	PASS
159	5795	MCS8	11.48	11.59	**14.98**	31.471	29.68970004	PASS

802.11ac_VHT40_MIMO

CH	Frequency (MHz)	Data Rate	Avg. POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
			CH 0	CH 1				
38	5190	MCS0	3.42	3.82	6.92	4.923	23.66970004	PASS
46	5230	MCS0	11.33	11.67	**14.80**	30.206	23.66970004	PASS
54	5270	MCS0	11.35	11.62	**14.78**	30.093	23.67 or 11+10log(B) = 26.96	PASS
62	5310	MCS0	6.43	7.01	10.03	10.063	23.67 or 11+10log(B) = 27.01	PASS
102	5510	MCS0	11.12	11.68	14.71	29.557	23.67 or 11+10log(B) = 27.01	PASS
110	5550	MCS0	11.18	11.78	14.79	30.115	23.67 or 11+10log(B) = 27.07	PASS
134	5670	MCS0	11.21	11.81	**14.82**	30.324	23.67 or 11+10log(B) = 27.02	PASS
142	5710(U-NII 2C)	MCS0	10.68	11.24	**14.29**	26.854	23.67 or 11+10log(B) = 26.95	PASS
142	5710 (U-NII 3)	MCS0	1.97	2.89	**5.58**	3.610	29.68970004	PASS
151	5755	MCS0	11.47	11.58	14.82	30.359	29.68970004	PASS
159	5795	MCS0	11.45	11.62	**14.83**	30.432	29.68970004	PASS

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802.11ac_VHT80_MIMO

CH	Frequency (MHz)	Data Rate	Avg. POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
			CH 0	CH 1				
42	5210	MCS0	2.09	2.67	**5.89**	3.886	23.66970004	PASS
58	5290	MCS0	2.09	2.89	**6.01**	3.994	23.67 or 11+10log(B) = 30.06	PASS
106	5530	MCS0	10.84	11.36	14.61	28.927	23.67 or 11+10log(B) = 30.07	PASS
122	5610	MCS0	10.82	11.42	**14.64**	29.077	23.67 or 11+10log(B) = 30.05	PASS
138	5690(U-NII 2C)	MCS0	10.54	11.21	**14.39**	27.453	23.67 or 11+10log(B) = 30.06	PASS
138	5690 (U-NII 3)	MCS0	-0.74	-0.31	**3.10**	2.044	29.68970004	PASS
155	5775	MCS0	11.28	11.48	**14.89**	30.806	29.68970004	PASS

9.5.2 ISED EIRP

802.11a_2Tx

CH	Frequency (MHz)	TOTAL POWER (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	REQUIRED LIMIT (dBm)	RESULT
36	5180	12.54	6.310	18.86	76.825	23.01 or 10+10log(B)= 22.23	PASS
44	5220	12.66	6.310	18.97	78.892	23.01 or 10+10log(B)= 22.22	PASS
48	5240	**12.73**	6.310	**19.04**	**80.193**	23.01 or 10+10log(B)= 22.22	PASS
52	5260	**14.98**	6.310	**21.29**	**134.732**	30 or 17+10log(B)= 29.23	PASS
60	5300	14.96	6.310	21.27	134.107	30 or 17+10log(B)= 29.23	PASS
64	5320	14.02	6.310	20.33	107.878	30 or 17+10log(B)= 29.23	PASS
100	5500	13.18	6.310	19.49	88.956	30 or 17+10log(B)= 29.23	PASS
116	5580	**14.85**	6.310	**21.17**	**130.773**	30 or 17+10log(B)= 29.23	PASS
140	5700	**10.63**	6.310	**16.94**	**49.414**	30 or 17+10log(B)= 29.23	PASS

802.11n_HT20_MIMO

CH	Frequency (MHz)	TOTAL POWER (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	REQUIRED LIMIT (dBm)	RESULT
36	5180	12.70	6.310	19.01	79.638	23.01 or 10+10log(B)= 22.48	PASS
44	5220	12.83	6.310	19.14	81.988	23.01 or 10+10log(B)= 22.48	PASS
48	5240	**12.89**	6.310	**19.20**	**83.230**	23.01 or 10+10log(B)= 22.48	PASS
52	5260	14.94	6.310	21.25	133.482	30 or 17+10log(B)= 29.49	PASS
60	5300	**14.99**	6.310	**21.30**	**134.816**	30 or 17+10log(B)= 29.49	PASS
64	5320	14.98	6.310	21.29	134.491	30 or 17+10log(B)= 29.49	PASS
100	5500	14.80	6.310	21.11	129.222	30 or 17+10log(B)= 29.48	PASS
116	5580	**14.97**	6.310	**21.28**	**134.315**	30 or 17+10log(B)= 29.49	PASS
140	5700	**12.75**	6.310	**19.06**	**80.623**	30 or 17+10log(B)= 29.47	PASS

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802.11n_HT40_MIMO

CH	Frequency (MHz)	TOTAL POWER (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	REQUIRED LIMIT (dBm)			RESULT
38	5190	7.16	6.310	13.47	22.216	23.01	or 10+10log(B)=	25.57	PASS
46	5230	**14.94**	6.310	**21.25**	**133.446**	23.01	or 10+10log(B)=	25.57	PASS
54	5270	**14.96**	6.310	**21.27**	**133.889**	30	or 17+10log(B)=	32.58	PASS
62	5310	10.25	6.310	16.56	45.248	30	or 17+10log(B)=	32.57	PASS
102	5510	14.84	6.310	21.15	130.215	30	or 17+10log(B)=	32.57	PASS
110	5550	**14.92**	6.310	**21.23**	**132.673**	30	or 17+10log(B)=	32.57	PASS
134	5670	**14.98**	6.310	**21.29**	**134.602**	30	or 17+10log(B)=	32.57	PASS

802.11ac_VHT80_MIMO

CH	Frequency (MHz)	TOTAL POWER (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	REQUIRED LIMIT (dBm)			RESULT
42	5210	**5.89**	6.310	**12.21**	**16.616**	23.01	or 10+10log(B)=	28.79	PASS
58	5290	**6.01**	6.310	**12.32**	**17.076**	30	or 17+10log(B)=	35.79	PASS
106	5530	**14.61**	6.310	**20.92**	**123.688**	30	or 17+10log(B)=	35.79	PASS

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9.5.3 Conducted output power (ISED)

802.11a_2Tx

CH	Frequency (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)			RESULT
		CH 0	CH 1						
52	5260	11.87	11.78	14.98	31.509	23.67	or 11+10log(B) =	23.23	PASS
60	5300	11.82	11.79	14.96	31.363	23.67	or 11+10log(B) =	23.23	PASS
64	5320	10.65	11.06	14.02	25.229	23.67	or 11+10log(B) =	23.23	PASS
100	5500	9.56	10.44	13.18	20.804	23.67	or 11+10log(B) =	23.23	PASS
116	5580	11.38	11.99	14.85	**30.584**	23.67	or 11+10log(B) =	23.23	PASS
140	5700	7.18	7.74	10.63	11.556	23.67	or 11+10log(B) =	23.23	PASS
144	5720(U-NII 2C)	10.14	10.77	13.64	**23.141**	23.67	or 11+10log(B) =	23.24	PASS
144	5720 (U-NII 3)	5.202	5.974	8.70	7.420	29.68970004			PASS
149	5745	11.78	11.82	14.96	31.327	29.68970004			PASS
157	5785	11.77	11.88	14.98	31.510	29.68970004			PASS
165	5825	11.76	11.9	**14.99**	**31.548**	29.68970004			PASS

802.11n_HT20_MIMO

CH	Frequency (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)			RESULT
		CH 0	CH 1						
52	5260	11.48	11.82	14.94	31.217	23.67	or 11+10log(B) =	23.49	PASS
60	5300	11.58	11.81	**14.99**	**31.529**	23.67	or 11+10log(B) =	23.49	PASS
64	5320	11.59	11.78	14.98	31.453	23.67	or 11+10log(B) =	23.49	PASS
100	5500	11.25	11.76	14.80	30.221	23.67	or 11+10log(B) =	23.48	PASS
116	5580	11.37	11.97	**14.97**	**31.412**	23.67	or 11+10log(B) =	23.49	PASS
140	5700	9.18	9.73	12.75	18.855	23.67	or 11+10log(B) =	23.47	PASS
144	5720(U-NII 2C)	10.07	10.71	**13.69**	**23.389**	23.67	or 11+10log(B) =	23.48	PASS
144	5720 (U-NII 3)	5.308	5.933	8.93	7.817	29.68970004			PASS
149	5745	11.56	11.82	**14.98**	**31.496**	29.68970004			PASS
157	5785	11.62	11.76	14.98	31.486	29.68970004			PASS
165	5825	11.64	11.72	14.97	31.411	29.68970004			PASS

802.11n_HT40_MIMO

CH	Frequency (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)			RESULT
		CH 0	CH 1						
54	5270	11.34	11.68	14.96	31.312	23.67	or 11+10log(B) =	26.58	PASS
62	5310	6.55	7.04	10.25	10.582	23.67	or 11+10log(B) =	26.57	PASS
102	5510	11.13	11.64	14.84	30.453	23.67	or 11+10log(B) =	26.57	PASS
110	5550	11.19	11.74	**14.92**	**31.028**	23.67	or 11+10log(B) =	26.57	PASS
134	5670	11.21	11.84	**14.98**	**31.479**	23.67	or 11+10log(B) =	26.57	PASS
142	5710(U-NII 2C)	10.65	11.27	14.44	27.787	23.67	or 11+10log(B) =	26.57	PASS
142	5710 (U-NII 3)	1.938	2.922	5.72	3.736	29.68970004			PASS
151	5755	11.51	11.53	14.96	31.360	29.68970004			PASS
159	5795	11.48	11.59	**14.98**	**31.471**	29.68970004			PASS

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802.11ac_VHT80_MIMO

CH	Frequency (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)			RESULT
		CH 0	CH 1						
58	5290	2.09	2.89	**6.01**	3.994	23.67	or 11+10log(B) =	29.79	PASS
106	5530	10.84	11.36	14.61	28.927	23.67	or 11+10log(B) =	29.79	PASS
122	5610	10.82	11.42	**14.64**	**29.077**	23.67	or 11+10log(B) =	29.79	PASS
138	5690(U-NII 2C)	10.54	11.21	14.39	27.453	23.67	or 11+10log(B) =	29.79	PASS
138	5690 (U-NII 3)	-0.744	-0.314	3.10	2.044	29.68970004			PASS
155	5775	11.28	11.48	**14.89**	**30.806**	29.68970004			PASS

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10 MAXIMUM POWER SPECTRAL DENSITY

10.1 Standard Applicable

FCC

OPERZTION Band	EUT CATEGORY		LIMIT
U-NII-1		Access Point (Master device)	17dBm/ MHz
		Fixed point-to-point Access Ponit	
	√	Mobile and portable client device	11dBm/ MHz
U-NII-2A	√		11dBm/ MHz
U-NII-2C	√		11dBm/ MHz
U-NII-3	√		30dBm/ 500kHz
If transmitting antennas of directional gain greater than 6 dBi are used, the Maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.			

ISED

OPERZTION FREQUENCY BAND	LIMIT
5150~5250 MHz	EIRP spectral density 10 dBm / MHz
5250~5350 MHz	11dBm / MHz
5470-5600 MHz and 5650-5725 MHz	11dBm / MHz
5725~5850 MHz	30dBm / 500 kHz
For equipment operating in the band ***5725-5850*** MHz, If transmitting antennas of directional gain greater than 6 dBi are used, the Maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.	

Note:

As per FCC KDB 662911 D01

Unequal antenna gains, with equal transmit powers. For antenna gains given by G1, G2, …, GN dBi.

(i) If transmit signals are correlated, then Directional gain

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

[Note the "20"s in the denominator of each exponent and the square of the sum of terms; the object is to combine the signal levels coherently.]

The antenna gain is grater than 6 dBi in MIMO mode, therefore the limit needs to be reduced as below:

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	Effective Legacy Gain (dBi)	PSD Limit	
UNII-1	6.31	10.69	dBm/MHz
UNII-2A	6.31	10.69	dBm/MHz
U-NII-2C	6.31	10.69	dBm/MHz
U-NII-3	6.31	29.69	dBm/500 kHz

10.2 Measurement Procedure

1. Place the EUT on the table and set it in transmitting mode.
2. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules .
3. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to Spectrum.
4. **For U-NII1, U-NII-2A, U-NII-2C Band**:
   Set RBW=1MHz, VBW=3MHz, where span is enough to capture the entire bandwidth, Sweep time = Auto (601 pts), detector = sample, traces 100 sweeps of video averaging. (SA-2 with the omission of procedure x, the integration with 26dB EBW bandwidth)
   For U-NII-3 Band:
   Set RBW=500 kHz, VBW≥ 3RBW, where span is enough to capture the entire bandwidth, Sweep time = Auto (601 pts), detector = sample, traces 100 sweeps of video averaging. (SA-2 with the omission of procedure x, the integration with 26dB EBW bandwidth)
5. User the cursor on spectrum to peak search the highest level of trace
6. Record the max. reading and add 10 log(1/duty cycle).
7. Repeat above procedures until all default test channel (low, middle, and high) was complete.
8. 802.11n/ac MIMO mode: offset is set following “measure and add 10 Log (N)” on spectrum to measure the PSD for MIMO mode. Offset = cable loss + 10 log (N), where N is number of transmitting antenna. N=3 for this given application.

Note: For the test of PSD at MIMO mode, the highest emission of worst case employing Measure and add 10 log (N) technical is reported on this report after the comparison between Main Antenna at single transmitting mode and Aux that yields the higher value. The MIMO transmitting mode produces higher value of outcome

10.3 Measurement Equipment Used

SGS Conducted Room					
EQUIPMENT TYPE	**MFR**	**MODEL NUMBER**	**SERIAL NUMBER**	**LAST CAL.**	**CAL DUE.**
Temperature Chamber	TERCHY	MHG-120LF	911009	05/17/2019	05/16/2020
EXA Spectrum Analyzer	KEYSIGHT	N9010A	MY57120290	02/20/2020	02/19/2021
Attenuator	Mini-Circuit	BW-S10W2+	2	01/02/2020	01/01/2021
DC Block	Mini-Circuits	BLK-18-S+	1	01/02/2020	01/01/2021

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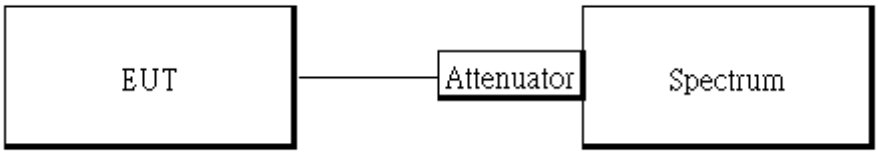
10.4 Test Set-up



Note:
Cable Loss= 14.30 dB

10.5 Measurement Result

10.5.1 Power spectral density

POWER DENSITY 802.11a MODE_2TX					
Frequency (MHz)	**PSD W/O Duty Factor (dBm)**	**Duty Factor**	**PSD With Duty Factor (dBm)**	**Limit (dBm)**	**Margin (dB)**
5180.00	3.21	0.15	3.36	10.69	-7.33
5220.00	2.77	0.15	2.92	10.69	-7.77
5240.00	2.85	0.15	3.00	10.69	-7.69
5260.00	5.78	0.15	5.93	10.69	-4.76
5300.00	5.12	0.15	5.27	10.69	-5.42
5320.00	3.31	0.15	3.46	10.69	-7.23
5500.00	4.62	0.15	4.77	10.69	-5.92
5580.00	5.32	0.15	5.47	10.69	-5.22
5700.00	3.33	0.15	3.48	10.69	-7.21
5720 (U-NII 2C)	6.66	0.15	6.81	10.69	-3.88
5720 (U-NII 3)	4.22	0.15	4.37	29.69	-25.32
5745.00	2.30	0.15	2.45	29.69	-27.24
5785.00	2.38	0.15	2.53	29.69	-27.16
5825.00	1.99	0.15	2.14	29.69	-27.55

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POWER DENSITY 802.11n HT20 MODE_MIMO					
Frequency (MHz)	PSD W/O Duty Factor (dBm)	Duty Factor	PSD With Duty Factor (dBm)	Limit (dBm)	Margin (dB)
5180	2.63	0.28	2.91	10.69	-7.78
5220	2.82	0.28	3.10	10.69	-7.59
5240	2.83	0.28	3.11	10.69	-7.58
5260	5.44	0.28	5.72	10.69	-4.97
5300	4.25	0.28	4.53	10.69	-6.16
5320	4.14	0.28	4.42	10.69	-6.27
5500	5.45	0.28	5.73	10.69	-4.96
5580	4.62	0.28	4.90	10.69	-5.79
5700	4.89	0.28	5.17	10.69	-5.52
5720 (U-NII 2C)	6.42	0.28	6.70	10.69	-3.99
5720 (U-NII 3)	4.02	0.28	4.30	29.69	-25.39
5745	3.37	0.28	3.65	29.69	-26.04
5785	3.18	0.28	3.46	29.69	-26.23
5825	3.03	0.28	3.31	29.69	-26.38

POWER DENSITY 802.11n HT40 MODE_MIMO					
Frequency (MHz)	PSD W/O Duty Factor (dBm)	Duty Factor	PSD With Duty Factor (dBm)	Limit (dBm)	Margin (dB)
5190	-3.54	0.43	-3.11	10.69	-13.80
5230	2.89	0.43	3.32	10.69	-7.37
5270	2.26	0.43	2.69	10.69	-8.00
5310	-3.41	0.43	-2.98	10.69	-13.67
5510	2.65	0.43	3.08	10.69	-7.61
5550	1.71	0.43	2.14	10.69	-8.55
5670	3.88	0.43	4.31	10.69	-6.38
5710 (U-NII 2C)	3.99	0.43	4.42	10.69	-6.27
5710 (U-NII 3)	0.69	0.43	1.13	29.69	-28.56
5755	0.44	0.43	0.87	29.69	-28.82
5795	1.35	0.43	1.78	29.69	-27.91

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POWER DENSITY 802.11ac VHT80 MODE_MIMO					
Frequency (MHz)	PSD W/O Duty Factor (dBm)	Duty Factor	PSD With Duty Factor (dBm)	Limit (dBm)	Margin (dB)
5210	-8.42	0.49	-7.93	10.69	-18.61
5290	-10.07	0.49	-9.58	10.69	-20.26
5530	-1.00	0.49	-0.51	10.69	-11.19
5610	-2.29	0.49	-1.80	10.69	-12.48
5690 (U-NII 2C)	-0.06	0.49	0.43	10.69	-10.26
5690 (U-NII 3)	-3.73	0.49	-3.24	29.69	-32.92
5775	-3.00	0.49	-2.51	29.69	-32.19

10.5.2 EIRP spectral density (ISED)

EIRP spectral density 802.11a MODE					
Freq. (MHz)	PSD (dBm)	Ant. Gain (dBi)	EIRP SD (dBm)	Limit (dBm)	Margin (dB)
5180	3.36	6.31	9.67	10	-0.33
5220	2.92	6.31	9.23	10	-0.77
5240	3.00	6.31	9.31	10	-0.69
EIRP spectral density 802.11n HT20 MODE					
Freq. (MHz)	PSD (dBm)	Ant. Gain (dBi)	EIRP SD (dBm)	Limit (dBm)	Margin (dB)
5180	2.91	6.31	9.22	10	-0.78
5220	3.10	6.31	9.41	10	-0.59
5240	3.11	6.31	9.42	10	-0.58

EIRP spectral density 802.11n HT40 MODE					
Freq. (MHz)	PSD (dBm)	Ant. Gain (dBi)	EIRP SD (dBm)	Limit (dBm)	Margin (dB)
5190	-3.11	6.31	3.20	10	-6.80
5230	3.32	6.31	9.63	10	-0.37

EIRP spectral density 802.11ac VHT80 MODE					
Freq. (MHz)	PSD (dBm)	Ant. Gain (dBi)	EIRP SD (dBm)	Limit (dBm)	Margin (dB)
5210	-7.93	6.31	-1.62	10	-11.62

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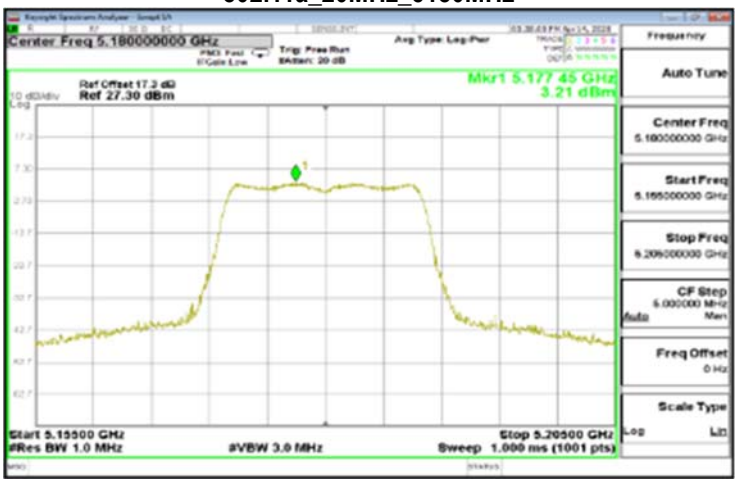
802.11a_20MHz_5180MHz



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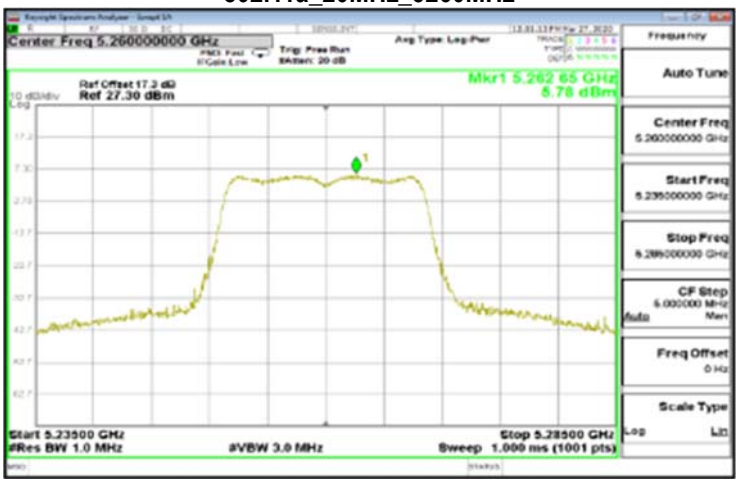

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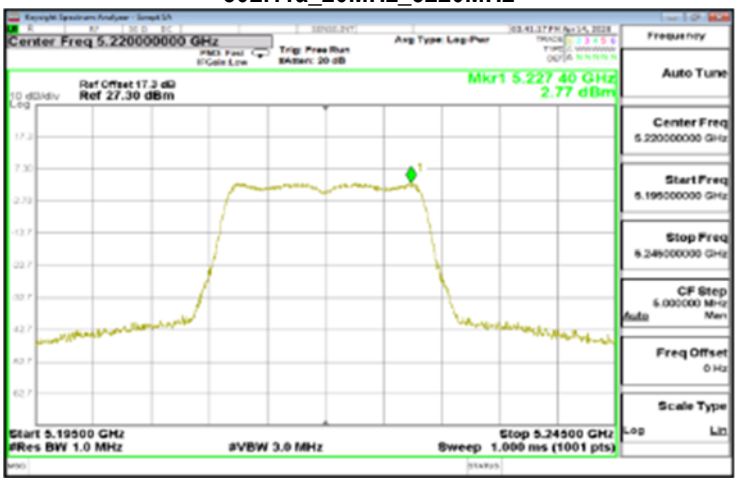
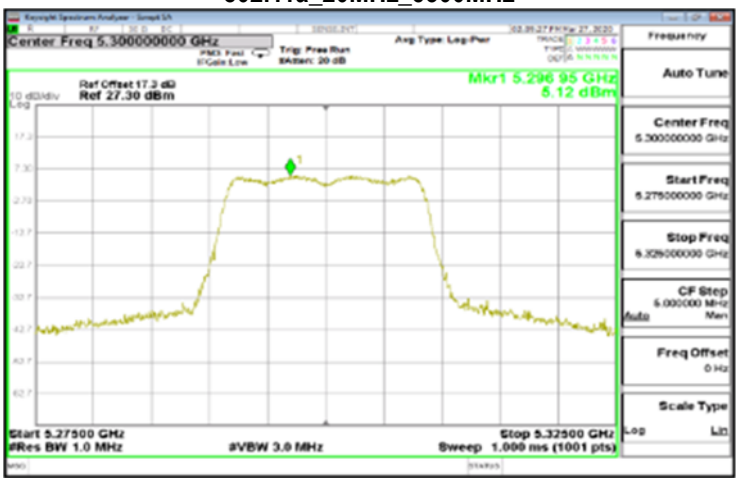
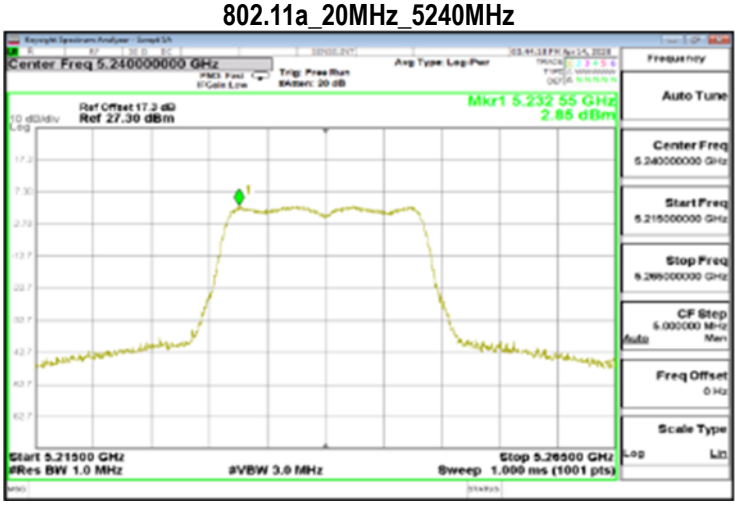


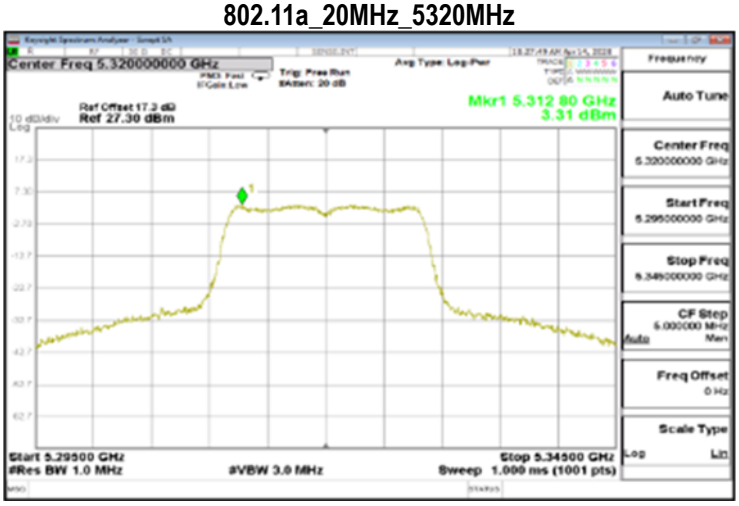
802.11a_20MHz_5300MHz



802.11a_20MHz_5240MHz



802.11a_20MHz_5320MHz



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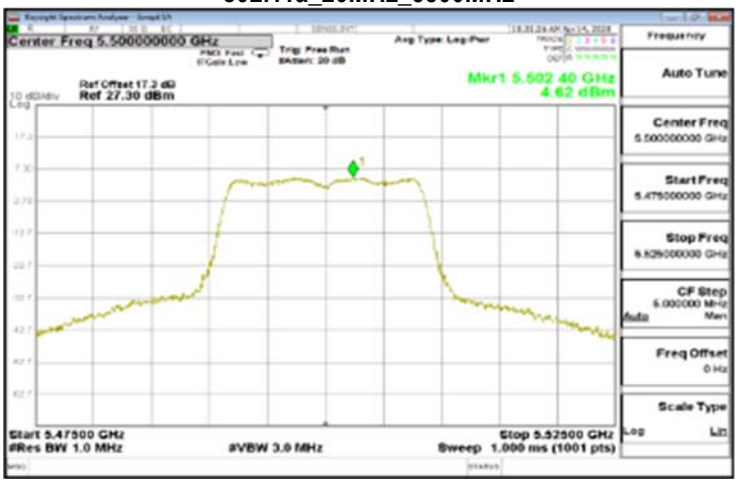
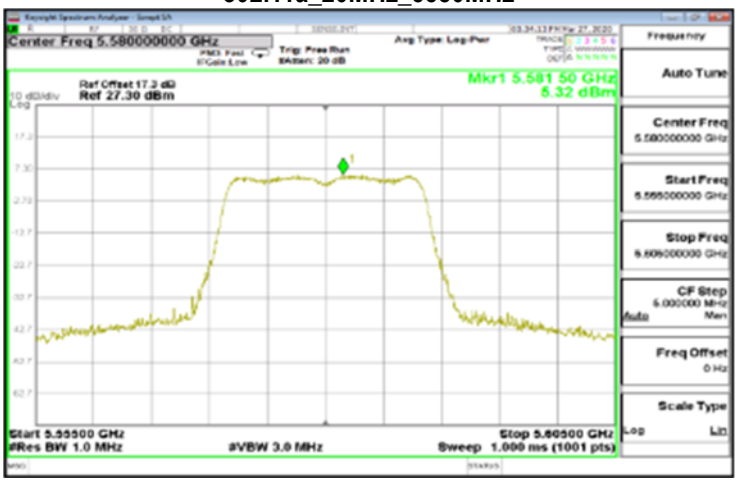
802.11a_20MHz_5500MHz



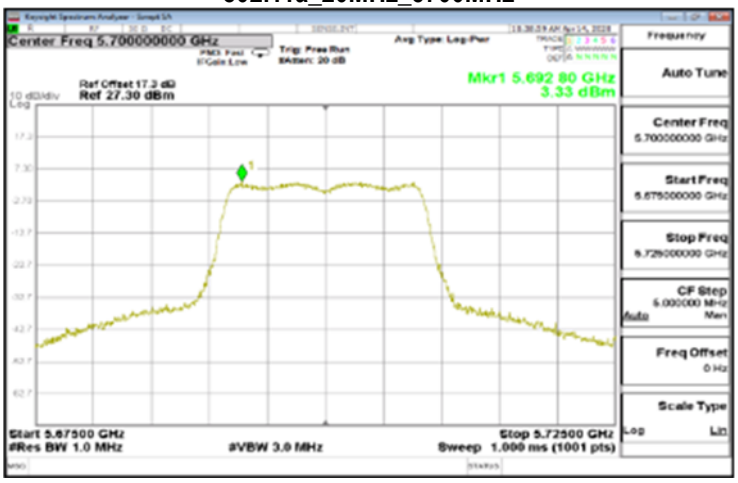
802.11a_20MHz_5720MHz_UNII 2C

802.11a_20MHz_5580MHz



802.11a_20MHz_5720MHz_UNII 3

802.11a_20MHz_5700MHz



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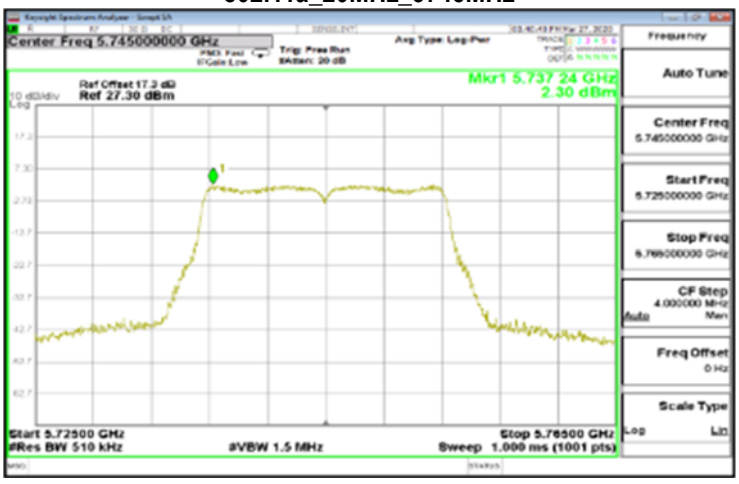

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