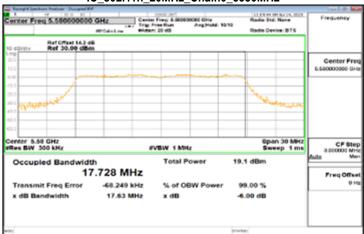


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IC_802.11n_20MHz_Chain0_5300MHz



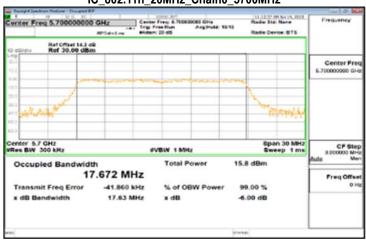
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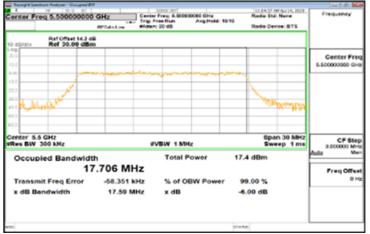
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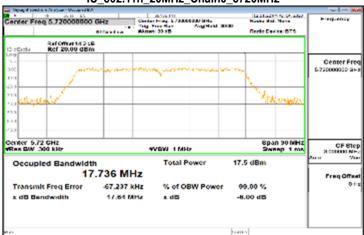
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IC_802.11n_20MHz_Chain0_5500MHz



IC_802.11n_20MHz_Chain0_5720MHz



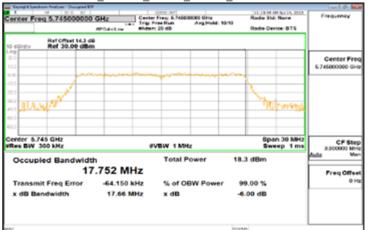
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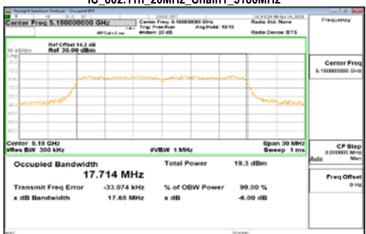


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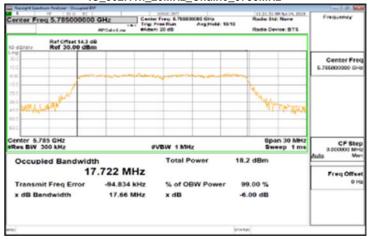
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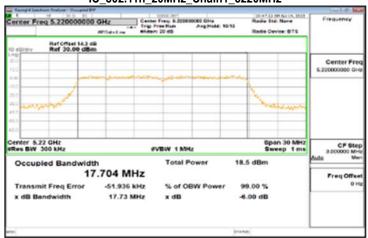
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IC_802.11n_20MHz_Chain0_5785MHz



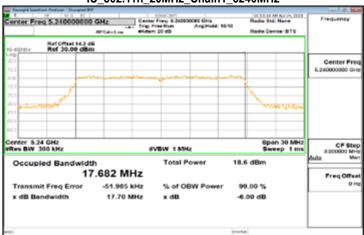
IC_802.11n_20MHz_Chain1_5220MHz



IC_802.11n_20MHz_Chain0_5825MHz



IC_802.11n_20MHz_Chain1_5240MHz



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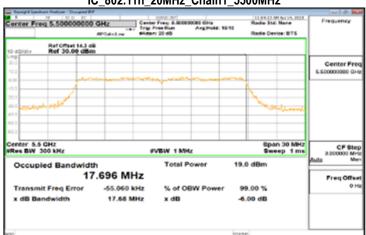


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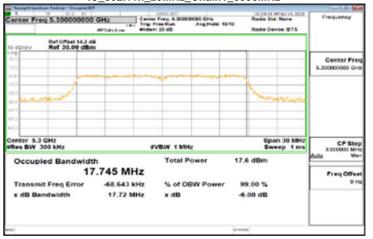
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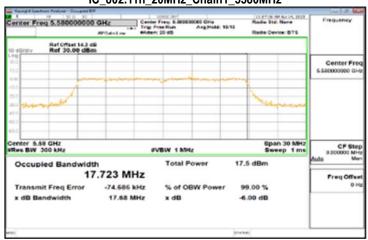
IC 802.11n 20MHz Chain1 5500MHz



IC_802.11n_20MHz_Chain1_5300MHz



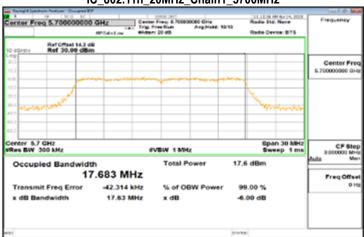
IC_802.11n_20MHz_Chain1_5580MHz



IC_802.11n_20MHz_Chain1_5320MHz



IC_802.11n_20MHz_Chain1_5700MHz



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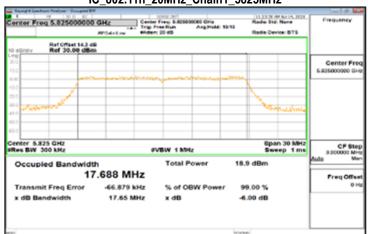


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IC_802.11n_20MHz_Chain1_5720MHz



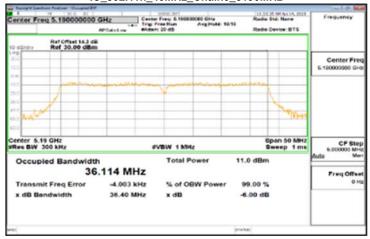
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IC_802.11n_20MHz_Chain1_5745MHz



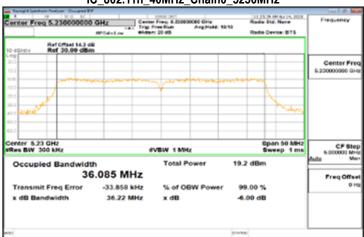
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IC_802.11n_20MHz_Chain1_5785MHz



IC_802.11n_40MHz_Chain0_5230MHz



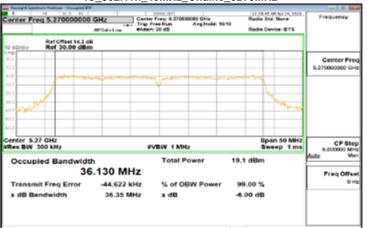
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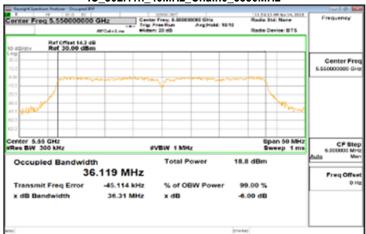


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IC_802.11n_40MHz_Chain0_5270MHz



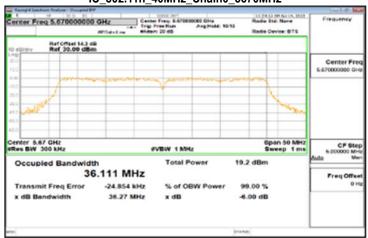
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IC_802.11n_40MHz_Chain0_5310MHz



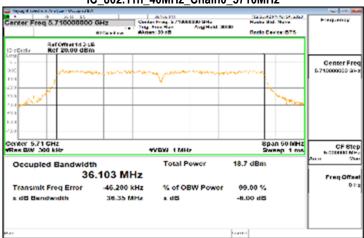
IC_802.11n_40MHz_Chain0_5670MHz



IC_802.11n_40MHz_Chain0_5510MHz



IC_802.11n_40MHz_Chain0_5710MHz



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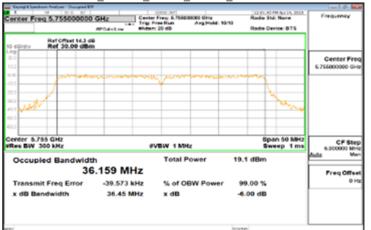
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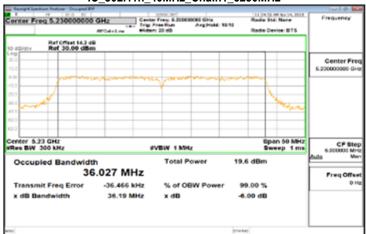


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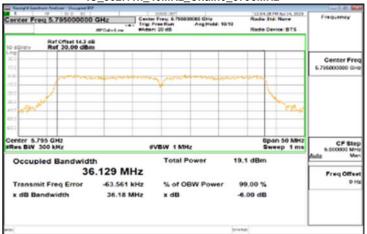
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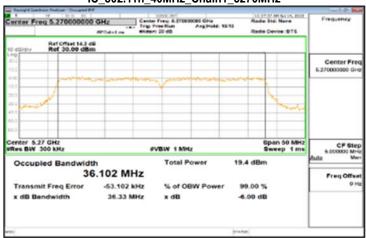
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IC_802.11n_40MHz_Chain0_5795MHz



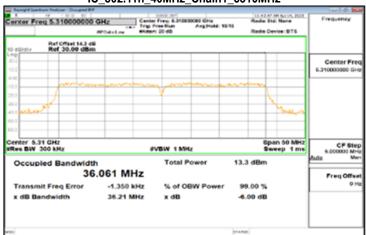
IC_802.11n_40MHz_Chain1_5270MHz



IC_802.11n_40MHz_Chain1_5190MHz



IC_802.11n_40MHz_Chain1_5310MHz



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IC_802.11n_40MHz_Chain1_5510MHz



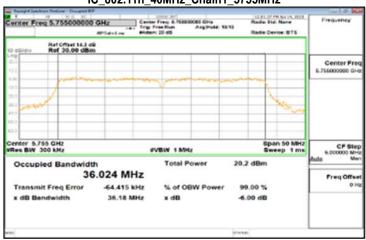
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IC_802.11n_40MHz_Chain1_5550MHz



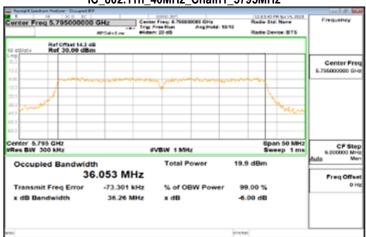
IC_802.11n_40MHz_Chain1_5755MHz



IC_802.11n_40MHz_Chain1_5670MHz



IC_802.11n_40MHz_Chain1_5795MHz



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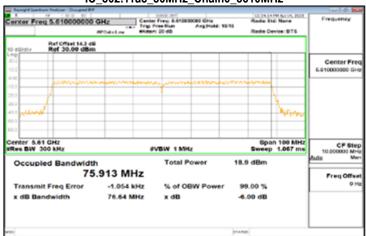


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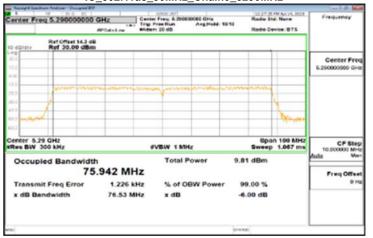
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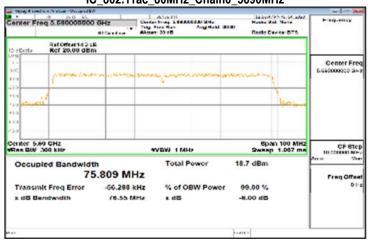
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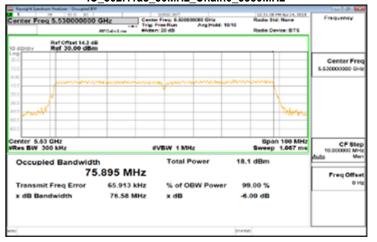
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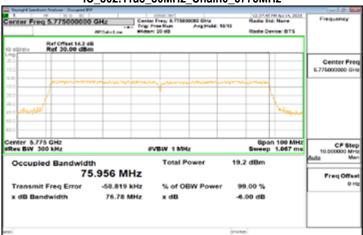
IC_802.11ac_80MHz_Chain0_5690MHz



IC_802.11ac_80MHz_Chain0_5530MHz



IC_802.11ac_80MHz_Chain0_5775MHz



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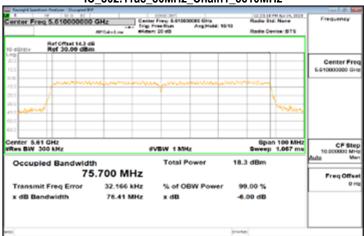


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IC_802.11ac_80MHz_Chain1_5210MHz



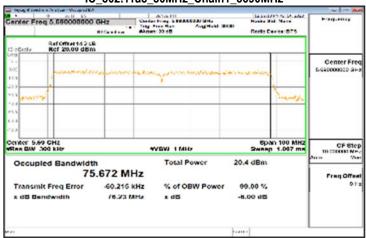
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IC_802.11ac_80MHz_Chain1_5290MHz



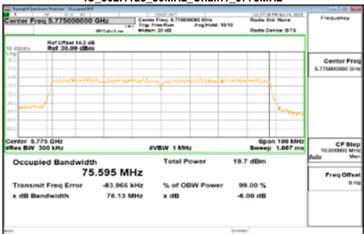
IC_802.11ac_80MHz_Chain1_5690MHz



IC_802.11ac_80MHz_Chain1_5530MHz



IC_802.11ac_80MHz_Chain1_5775MHz



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MAXIMUM CONDUCTED OUTPUT POWER MEASUREMENT

9.1 Standard Applicable

FCC

OPERZTION Band		EUT CATEGORY	LIMIT
		Access Point (Master device)	1 Watt(30dBm)
U-NII-1		Fixed point-to-point Access Ponit	1 Watt(30dBm)
	V	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	Conducted output power shall not exceed 250 mW or 11 +10 log ₁₀ B
5650-5725 MHz	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

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

[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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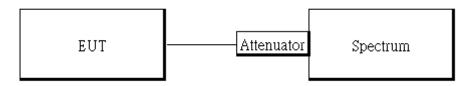
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9.4 **Test Set-up**



Note:

Cable Loss= 14.30 dB

9.5 **Measurement Result**

Conducted output power (FCC)

802.11a 2Tx

011	Frequency	Data	Avg. POV	VER (dBm)	TOTAL	TOTAL		REQUIRED		DE0111 T
СН	(MHz)	Rate	CH 0	CH 1	POWER (dBm)	POWER (mW)		LIMIT (dBm)		RESULT
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

011	Frequency	Data	Avg. PO	VER (dBm)	TOTAL	TOTAL		REQUIRED		DE0111 T
СН	(MHz)	Rate	CH 0	CH 1	POWER (dBm)	POWER (mW)		LIMIT (dBm)		RESULT
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

<u> </u>	Frequency	Data	Avg. POV	VER (dBm)		TOTAL		REQUIRED		DE0111 T
СН	(MHz)	Rate	CH 0	CH 1	POWER (dBm)	POWER (mW)		LIMIT (dBm)		RESULT
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

802.11n_HT40_I	MINO									
СН	Frequency	Data	Avg. POV	VER (dBm)	TOTAL POWER	TOTAL		REQUIRED LIMIT		RESULT
Сп	(MHz)	Rate	CH 0	CH 1	(dBm)	POWER (mW)		(dBm)		RESULT
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

011	Frequency	Data	Avg. POV	VER (dBm)	TOTAL	TOTAL		REQUIRED		DEOU! T
СН	(MHz)	Rate	CH 0	CH 1	POWER (dBm)	POWER (mW)		LIMIT (dBm)		RESULT
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

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СН	Frequency	Data	Avg. POV	VER (dBm)	TOTAL POWER	TOTAL POWER		REQUIRED LIMIT		RESULT
СП	(MHz)	Rate	CH 0	CH 1	(dBm)	(mW)		(dBm)		RESULT
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

002.11a_									
СН	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

СН	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

СН	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

СН	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_	<u> </u>								
СН	Frequency	AVERAGE POWER (dBm)		TOTAL POWER	TOTAL POWER		REQUIRED LIMIT		RESULT
	(MHz)	CH 0	CH 1	(dBm)	(mW)		(dBm)		
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

СН	Frequency	AVERAGE POWER (dBm)		TOTAL POWER	TOTAL POWER				RESULT
OI.	(MHz)		CH 1	(dBm)	(mW)		(dBm)		1120021
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

СН	Frequency	AVERAGE POWER (dBm)		TOTAL POWER	TOTAL POWER		REQUIRED LIMIT		RESULT
	(MHz)	CH 0	CH 1	(dBm)	(mW)		(dBm)		112021
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

СН	Frequency	AVERAGE POWER (dBm)		TOTAL POWER	TOTAL POWER		REQUIRED LIMIT		RESULT
	(MHz)	CH 0	CH 1	(dBm)	(mW)	(dBm)			
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
		Access Point (Master device)	17dBm/ MHz
U-NII-1		Fixed point-to-point Access Ponit	T/UBITI/ WITIZ
	√	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
- = $10 \log[(10^{G1/20} + 10^{G2/20} + ... + 10^{GN/20})^2/N_{ANT}] dBi$

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[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 NUM- BER	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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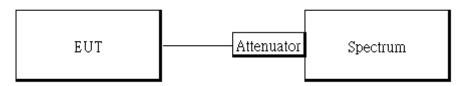
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10.4 **Test Set-up**



Note:

Cable Loss= 14.30 dB

10.5 **Measurement Result**

10.5.1 Power spectral density

	POWER DENS	SITY 802.11	a MODE_2T	Χ	
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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F	OWER DENSITY	802.11n H	T20 MODE_I	OMIN	
Frequency (MHz)	PSD W/O Duty Factor (dBm)	Duty Factor	Factor Factor (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 Limit Factor (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)		
-	_	Gain	SD		•		
(MHz)	(dBm)	Gain (dBi)	SD (dBm)	(dBm)	(dB)		

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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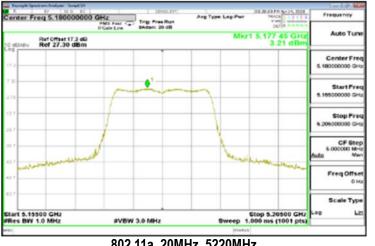
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802.11a 20MHz 5180MHz

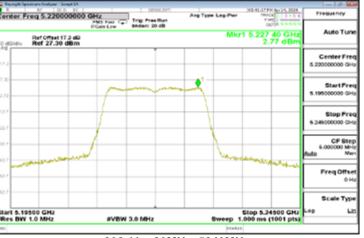
802.11a 20MHz 5260MHz





802.11a 20MHz 5220MHz

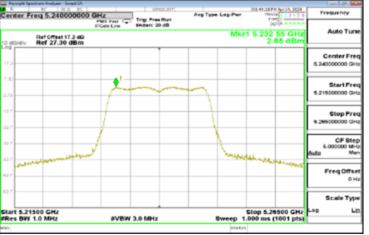
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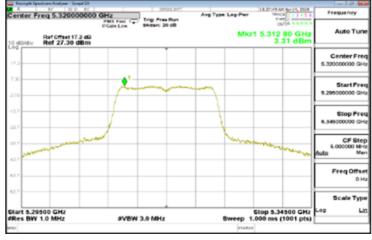




802.11a_20MHz_5240MHz

802.11a 20MHz 5320MHz





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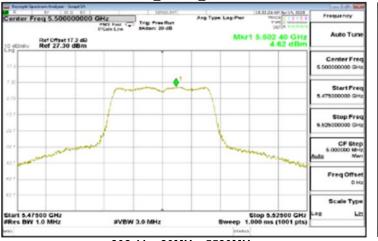
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802.11a 20MHz 5500MHz

802.11a 20MHz 5720MHz UNII 2C





802.11a 20MHz 5580MHz

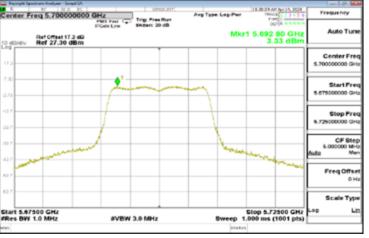
802.11a 20MHz 5720MHz UNII 3

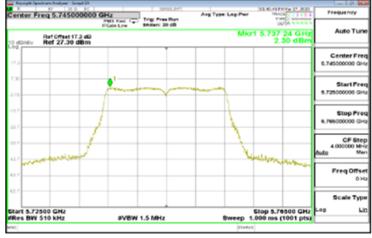




802.11a 20MHz 5700MHz

802.11a 20MHz 5745MHz





Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only

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