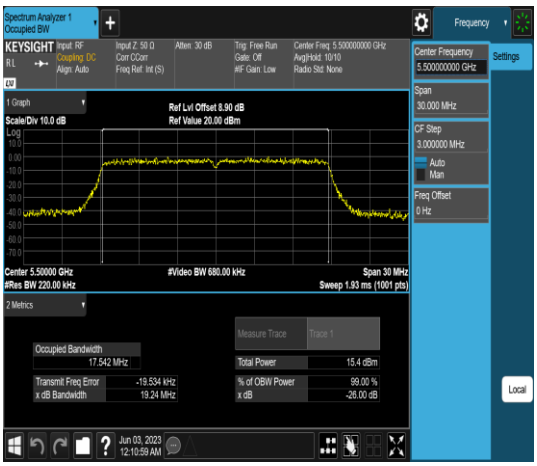
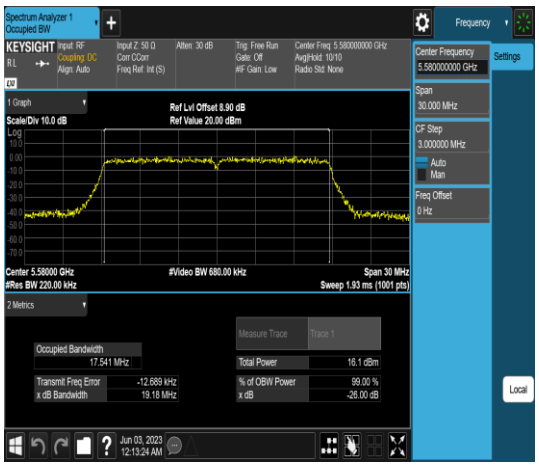
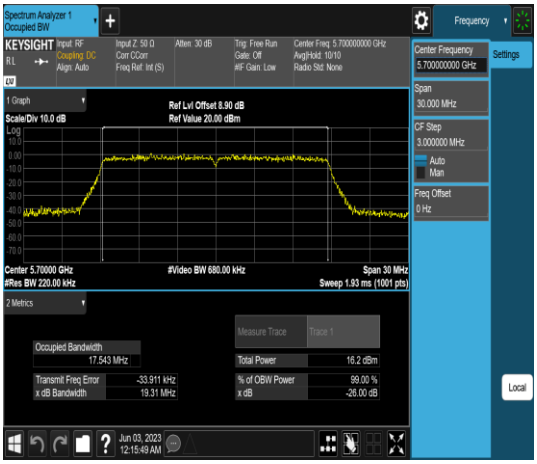
UNII-2c IEEE 802.11n HT20 mode-chain 1	
5500 MHz	**5580 MHz**
	
5700 MHz	
	

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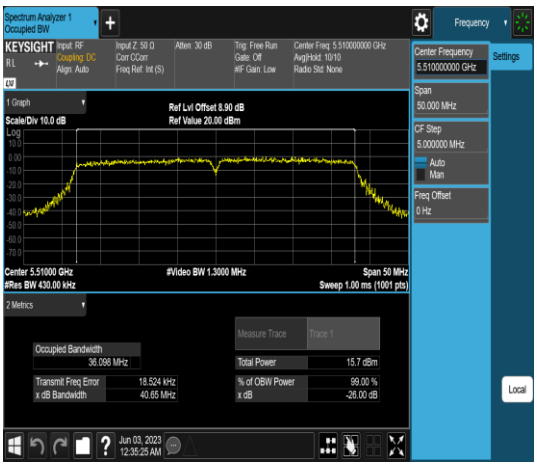
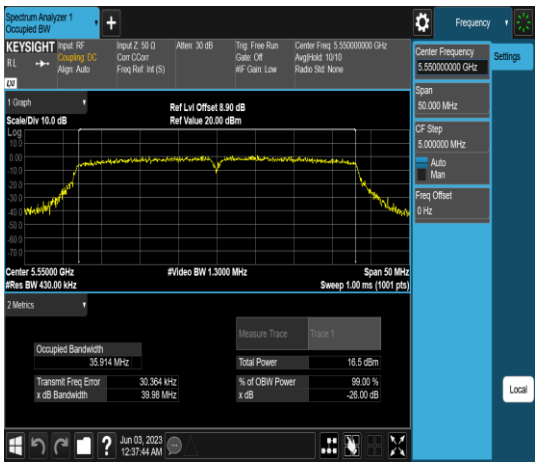
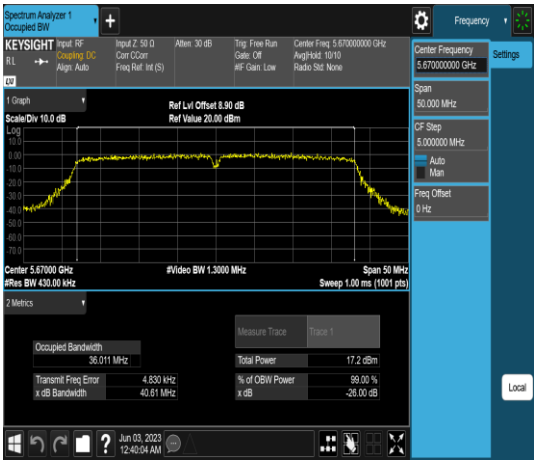
UNII-2c IEEE 802.11n HT40 mode-chain 1	
5510 MHz	**5550 MHz**
	
5670 MHz	
	

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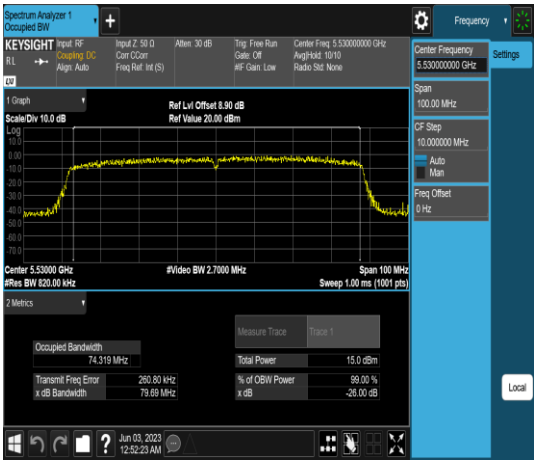
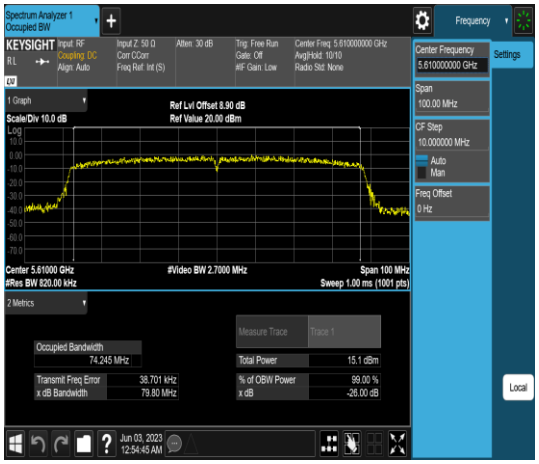
UNII-2c IEEE 802.11ac VHT80 mode-chain 1	
5530 MHz	**5610 MHz**
	

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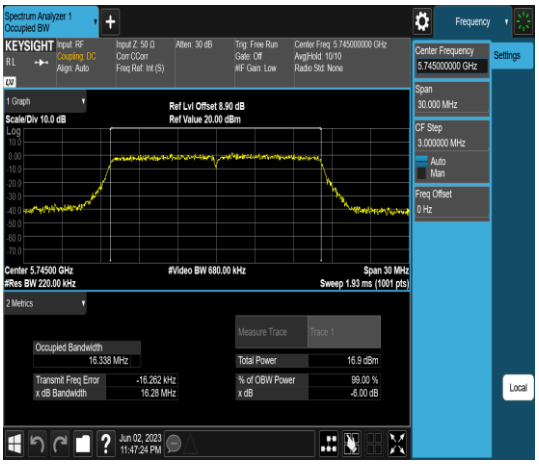
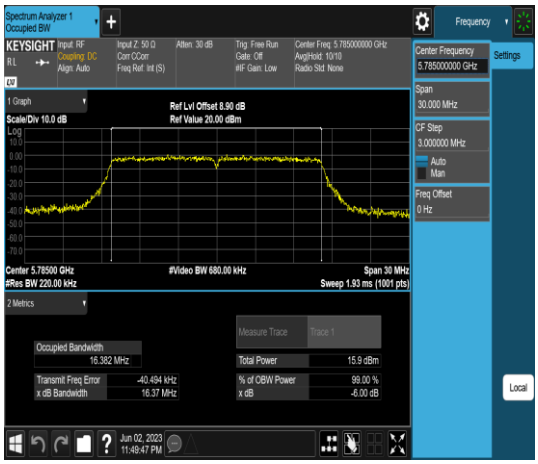
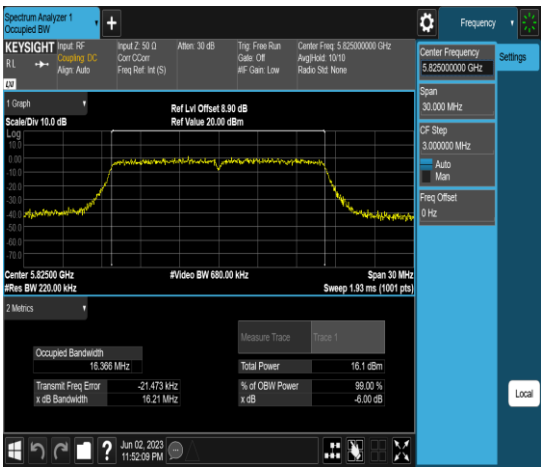
UNII-3 IEEE 802.11 a mode-chain 0	
5745 MHz	**5785 MHz**
	
5825 MHz	
	

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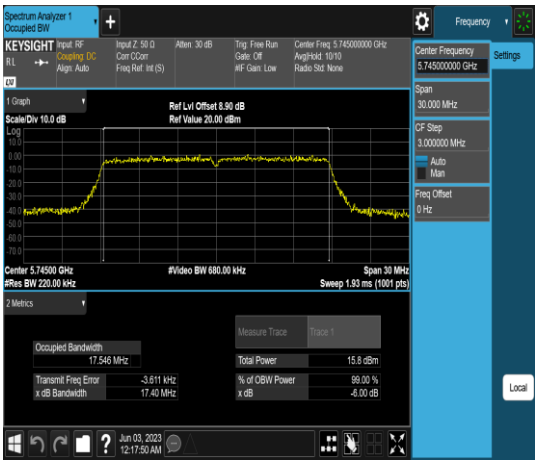
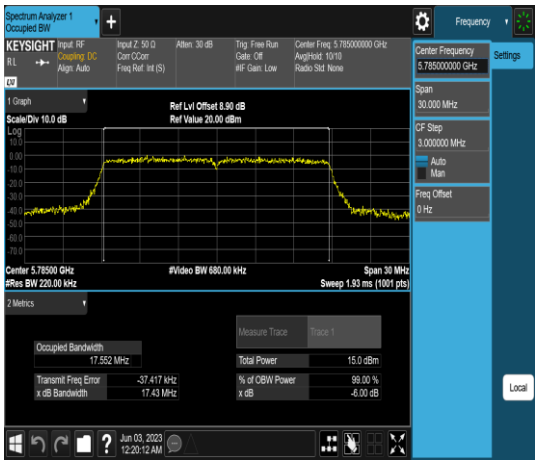
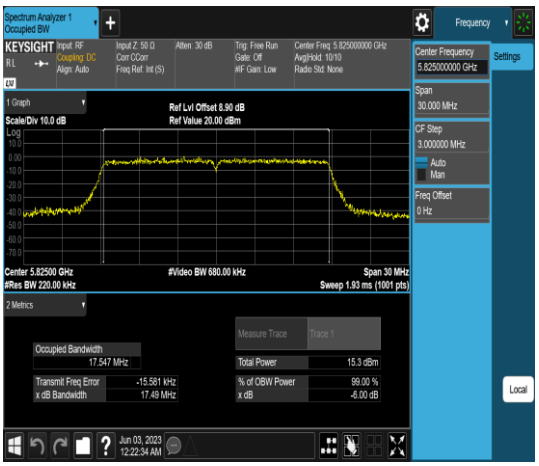
UNII-3 IEEE 802.11n HT20 mode-chain 0	
5745 MHz	**5785 MHz**
	
5825 MHz	
	

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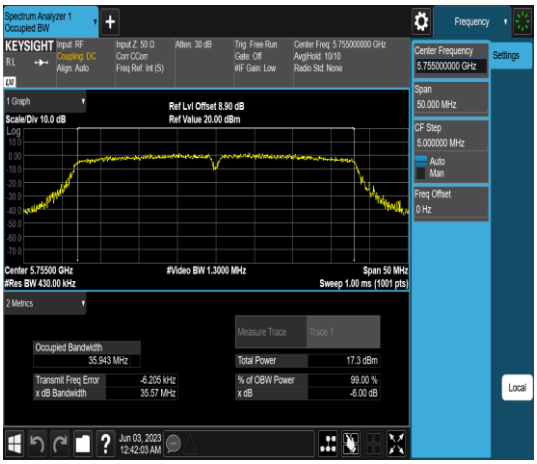
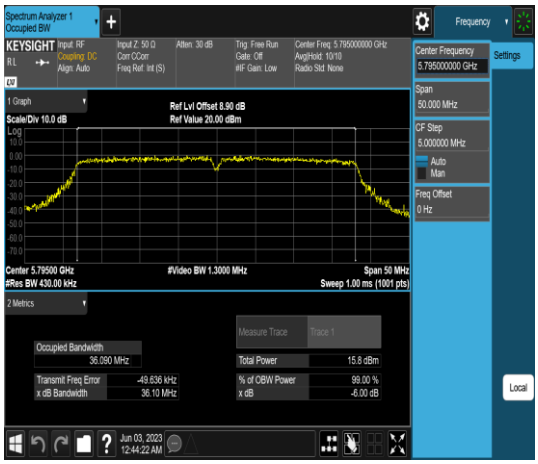
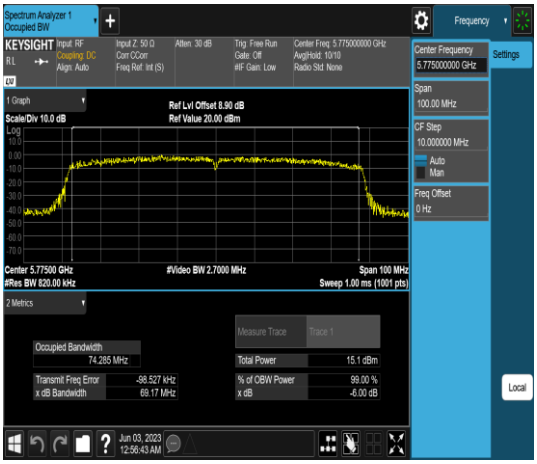
UNII-3 IEEE 802.11n HT40 mode-chain 0	
5755 MHz	**5795 MHz**
	

UNII-3 IEEE 802.11ac VHT80 mode-chain 0	
5775 MHz	
	

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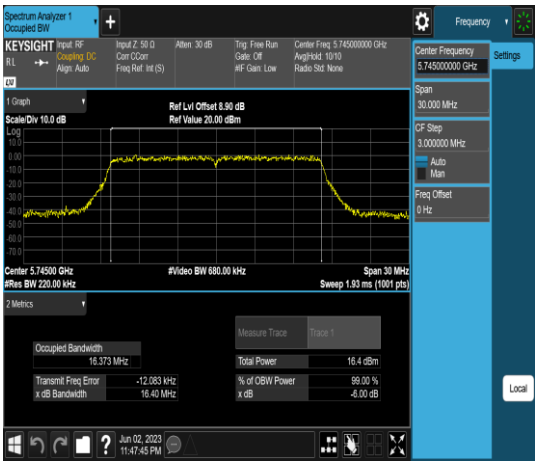
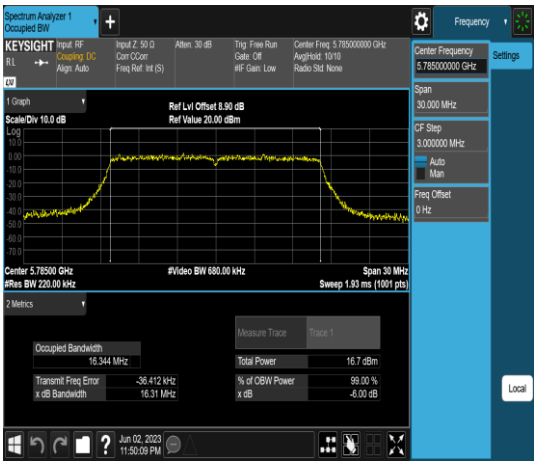
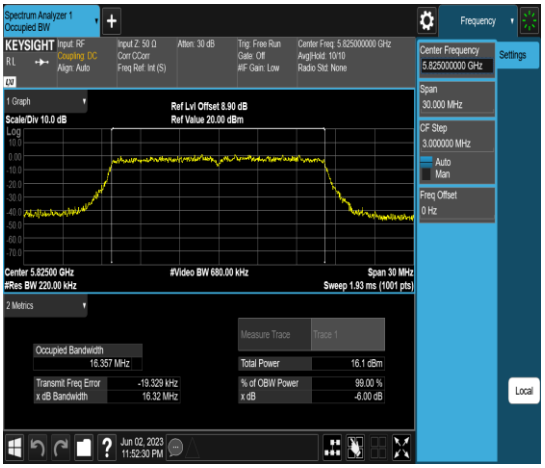
UNII-3 IEEE 802.11 a mode-chain 1	
5745 MHz	**5785 MHz**
	
5825 MHz	
	

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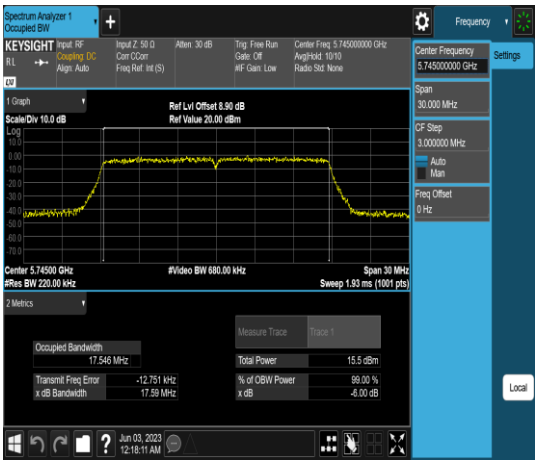
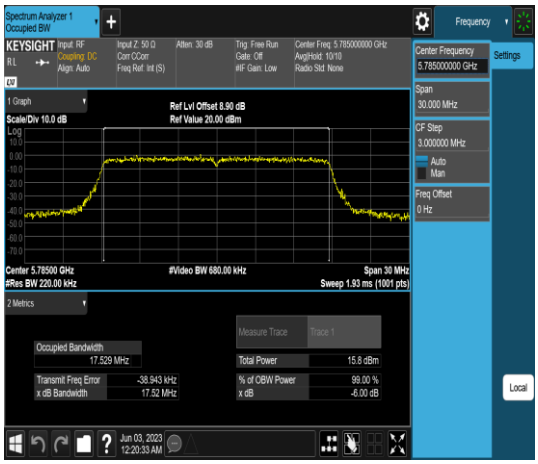
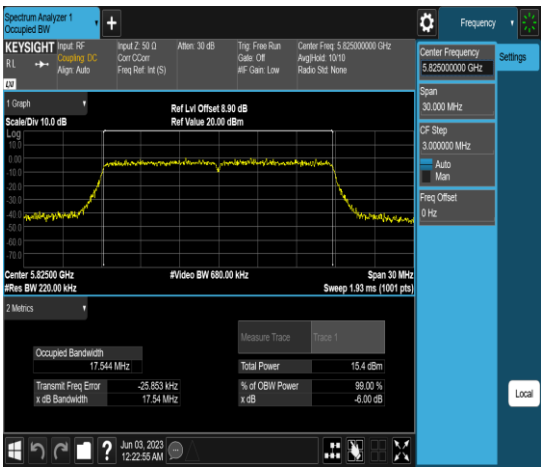
UNII-3 IEEE 802.11n HT20 mode-chain 1	
5745 MHz	**5785 MHz**
	
5825 MHz	
	

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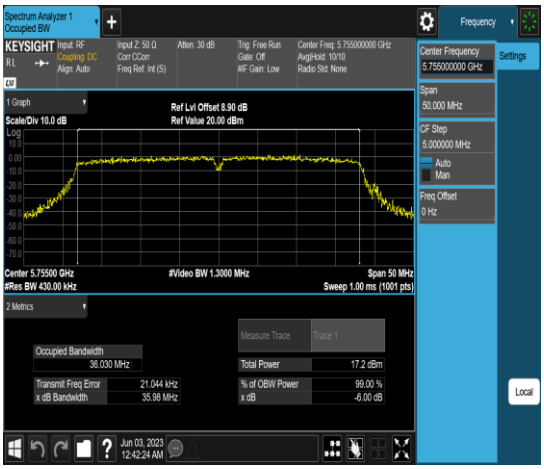
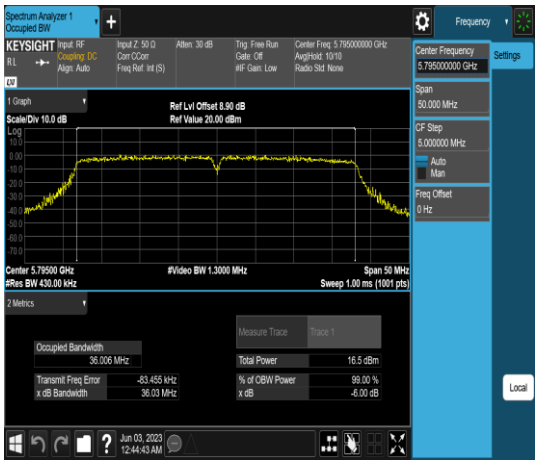
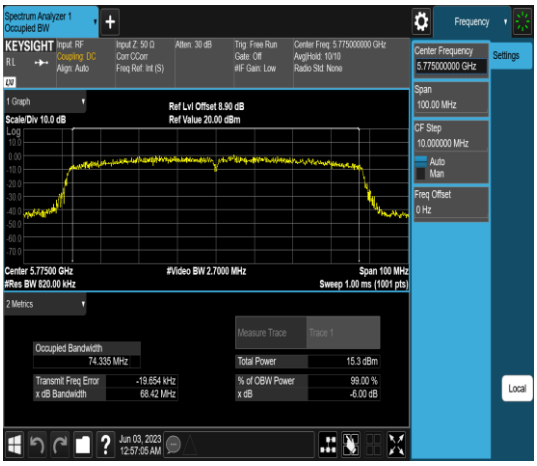
UNII-3 IEEE 802.11n HT40 mode-chain 1	
5755 MHz	**5795 MHz**
	

UNII-3 IEEE 802.11ac VHT80 mode-chain 1	
5775 MHz	
	

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4.3 OUTPUT POWER MEASUREMENT

4.3.1 Test Limit

According to §15.407 (a)(1), 15.407(a)(2) and 15.407(a)(3)

UNII-1 :

The maximum conducted output power over the frequency band of operation shall not For client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW(24 dBm), whichever power is less. B is the 99% emission bandwidth in megahertz, provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

UNII-2a and 2c:

the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

UNII-3:

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

UNII-1 Limit	☐ Antenna not exceed 6 dBi：24dBm ☒ Antenna with DG greater than 6 dBi： [Limit = 24 – (DG – 6)]
UNII-2a/2c Limit	☐ Antenna not exceed 6 dBi：24dBm ☒ Antenna with DG greater than 6 dBi： [Limit = 24 – (DG – 6)]
UNII-3 Limit	☐ Antenna not exceed 6 dBi：30dBm ☒ Antenna with DG greater than 6 dBi： [Limit = 30 – (DG – 6)]

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According to RSS-247 section 6.2.1.1, section 6.2.2.1, section 6.2.3.1 and section 6.2.4.1

UNII-1 :

For OEM devices installed in vehicles, the maximum e.i.r.p. shall not exceed 30 mW or 1.76 + 10 log10B, dBm, whichever is less. Devices shall implement transmitter power control (TPC) in order to have the capability to operate at least 3 dB below the maximum permitted e.i.r.p. of 30 mW.
For other devices, the maximum e.i.r.p. shall not exceed 200 mW or 10 + 10 log10B, dBm, whichever power is less. B is the 99% emission bandwidth in megahertz. The e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz band.

UNII-2a and 2c:

For OEM devices installed in vehicles, the maximum e.i.r.p. shall not exceed 30 mW or 1.76 + 10 log10B, dBm, whichever is less. Devices shall implement TPC in order to have the capability to operate at least 3 dB below the maximum permitted e.i.r.p. of 30 mW.
Devices, other than devices installed in vehicles, shall comply with the following:
The maximum conducted output power shall not exceed 250 mW or 11 + 10 log10B, dBm, whichever is less. The power spectral density shall not exceed 11 dBm in any 1.0 MHz band;
The maximum e.i.r.p. shall not exceed 1.0 W or 17 + 10 log10B, dBm, whichever is less. B is the 99% emission bandwidth in megahertz. Note that devices with a maximum e.i.r.p. greater than 500 mW shall implement TPC in order to have the capability to operate at least 6 dB below the maximum permitted e.i.r.p. of 1 W.

UNII-2c (5470-5600 MHz and 5650-5725 MHz)

The maximum conducted output power shall not exceed 250 mW or 11 + 10 log10B, dBm, whichever is less. The power spectral density shall not exceed 11 dBm in any 1.0 MHz band.
The maximum e.i.r.p. shall not exceed 1.0 W or 17 + 10 log10B, dBm, whichever is less. B is the 99% emission bandwidth in megahertz. Note that devices with a maximum e.i.r.p. greater than 500 mW shall implement TPC in order to have the capability to operate at least 6 dB below the maximum permitted e.i.r.p. of 1 W.

UNII-3:

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

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UNII-1 Limit	☐ 200mW or 10 + 10 log10B for IC ☒ Antenna with DG greater than 6 dBi： [Limit = 30 – (DG – 6)]
UNII-2a/2c Limit	☐ 250 mW or 11 + 10 log10B for IC ☒ Antenna with DG greater than 6 dBi： [Limit = 24 – (DG – 6)]
UNII-3 Limit	☐ Antenna not exceed 6 dBi：30dBm ☒ Antenna with DG greater than 6 dBi： [Limit = 30 – (DG – 6)]

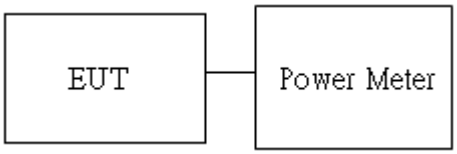
4.3.2 Test Procedure

Test method Refer as KDB 789033 D02, Section E.3.b for BW 20MHz, 40MHz and 80MHz, E.2.b for BW 160MHz.

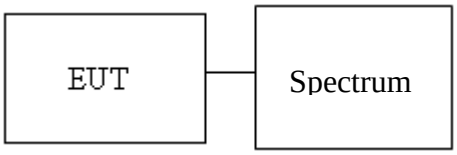
1. The EUT RF output connected to the power meter or spectrum by RF cable.
2. Setting maximum power transmit of EUT.
3. The path loss was compensated to the results for each measurement.
4. Measure and record the result of Average output power. in the test report.

4.3.3 Test Setup

For BW 20MHz ,40MHz and 80MHz



For BW 160MHz



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4.3.4 Test Result

Temperature:	21.1 ~ 27.1℃	**Test date:**	June 2 ~ July 13, 2023
Humidity:	56 ~ 61% RH	**Tested by:**	Marco Chan

Conducted output power：

For FCC:

802.11a_2TX

CH	Frequency (MHz)	Data Rate	Power set	Avg. POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
				Ch0	Ch1				
36	5180	6	63	13.64	11.93	15.88	38.734	20.91	PASS
44	5220	6	62	13.78	11.97	**15.98**	39.637	20.91	PASS
48	5240	6	60	13.63	11.91	15.87	38.610	20.91	PASS
52	5260	6	62	13.40	12.32	**15.91**	38.957	20.91	PASS
60	5300	6	61	13.21	12.52	15.89	38.824	20.91	PASS
64	5320	6	62	13.17	12.55	15.88	38.756	20.91	PASS
100	5500	6	57	12.21	13.59	15.97	39.509	20.91	PASS
116	5580	6	55	11.97	13.78	**15.98**	39.637	20.91	PASS
140	5700	6	59	11.89	13.58	15.83	38.274	20.91	PASS
149	5745	6	56	12.99	12.82	15.92	39.068	26.93	PASS
157	5785	6	56	12.58	13.14	15.88	38.738	26.93	PASS
165	5825	6	58	12.73	13.19	**15.98**	39.614	26.93	PASS

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802.11n_HT20_2TX

CH	Frequency (MHz)	Data Rate	Power set	Avg. POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
				Ch0	Ch1				
36	5180	MCS0	59	12.50	11.03	14.84	30.485	20.91	PASS
44	5220	MCS0	58	12.56	11.00	**14.86**	30.646	20.91	PASS
48	5240	MCS0	56	12.44	11.16	14.86	30.627	20.91	PASS
52	5260	MCS0	58	12.38	11.17	14.83	30.416	20.91	PASS
60	5300	MCS0	57	12.29	11.37	**14.87**	30.679	20.91	PASS
64	5320	MCS0	57	12.18	11.38	14.81	30.286	20.91	PASS
100	5500	MCS0	54	11.05	12.53	14.87	30.667	20.91	PASS
116	5580	MCS0	50	11.00	12.62	14.90	30.897	20.91	PASS
140	5700	MCS0	55	11.07	12.71	**14.98**	31.485	20.91	PASS
149	5745	MCS0	52	11.81	11.91	14.87	30.721	26.93	PASS
157	5785	MCS0	52	11.72	12.20	**14.98**	31.482	26.93	PASS
165	5825	MCS0	54	11.61	12.05	14.85	30.546	26.93	PASS

802.11ac_VHT20_2TX

CH	Frequency (MHz)	Data Rate	Power set	Avg. POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
				Ch0	Ch1				
36	5180	MCS0	59	12.43	10.97	14.77	30.015	20.91	PASS
44	5220	MCS0	58	12.49	10.96	**14.80**	30.230	20.91	PASS
48	5240	MCS0	56	12.35	11.11	14.79	30.106	20.91	PASS
52	5260	MCS0	58	12.31	11.13	14.77	30.008	20.91	PASS
60	5300	MCS0	57	12.23	11.34	**14.82**	30.340	20.91	PASS
64	5320	MCS0	57	12.15	11.31	14.76	29.941	20.91	PASS
100	5500	MCS0	54	11.01	12.47	14.81	30.293	20.91	PASS
116	5580	MCS0	50	10.96	12.56	14.85	30.519	20.91	PASS
140	5700	MCS0	55	11.05	12.65	**14.94**	31.158	20.91	PASS
149	5745	MCS0	52	11.74	11.85	14.81	30.253	26.93	PASS
157	5785	MCS0	52	11.67	12.17	**14.94**	31.186	26.93	PASS
165	5825	MCS0	54	11.54	12.00	14.79	30.119	26.93	PASS

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802.11n_HT40_2TX

CH	Frequency (MHz)	Data Rate	Power set	Avg. POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
				Ch0	Ch1				
38	5190	MCS0	60	12.65	10.81	14.83	30.441	20.91	PASS
46	5230	MCS0	58	12.64	10.90	**14.86**	30.651	20.91	PASS
54	5270	MCS0	59	12.59	11.18	**14.95**	31.260	20.91	PASS
62	5310	MCS0	58	12.23	11.52	14.90	30.884	20.91	PASS
102	5510	MCS0	54	10.91	12.60	14.84	30.511	20.91	PASS
110	5550	MCS0	52	11.25	12.59	**14.98**	31.473	20.91	PASS
134	5670	MCS0	54	10.93	12.58	14.84	30.484	20.91	PASS
151	5755	MCS0	52	11.66	12.11	**14.90**	30.894	26.93	PASS
159	5795	MCS0	52	11.79	11.89	14.85	30.536	26.93	PASS

802.11ac_VHT40_2TX

CH	Frequency (MHz)	Data Rate	Power set	Avg. POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
				Ch0	Ch1				
38	5190	MCS0	60	12.59	10.76	14.78	30.078	20.91	PASS
46	5230	MCS0	58	12.56	10.83	**14.79**	30.147	20.91	PASS
54	5270	MCS0	59	12.50	11.12	**14.88**	30.736	20.91	PASS
62	5310	MCS0	58	12.15	11.45	14.83	30.380	20.91	PASS
102	5510	MCS0	54	10.84	12.55	14.79	30.133	20.91	PASS
110	5550	MCS0	52	11.18	12.53	**14.92**	31.039	20.91	PASS
134	5670	MCS0	54	10.86	12.52	14.78	30.065	20.91	PASS
151	5755	MCS0	52	11.58	12.04	**14.83**	30.394	26.93	PASS
159	5795	MCS0	52	11.75	11.81	14.79	30.144	26.93	PASS

802.11ac_VHT80_2TX

CH	Frequency (MHz)	Data Rate	Power set	Avg. POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
				Ch0	Ch1				
42	5210	MCS0	50	10.10	9.46	**12.81**	19.082	20.91	PASS
58	5290	MCS0	54	10.20	9.49	**12.87**	19.381	20.91	PASS
106	5530	MCS0	45	9.00	10.42	**12.78**	18.976	20.91	PASS
122	5610	MCS0	43	8.97	10.39	12.75	18.846	20.91	PASS
155	5775	MCS0	43	9.80	9.94	**12.88**	19.431	26.93	PASS

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For IC:

802.11a_2TX

CH	Frequency (MHz)	Data Rate	Power set	Avg. POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
				Ch0	Ch1				
36	5180	6	49	10.10	8.18	12.26	16.817	20.91	PASS
44	5220	6	46	9.67	8.07	11.96	15.688	20.91	PASS
48	5240	6	48	10.58	8.72	**12.76**	18.885	20.91	PASS
52	5260	6	52	11.13	10.30	13.75	23.698	20.91	PASS
60	5300	6	50	11.16	9.80	13.55	22.622	20.91	PASS
64	5320	6	50	11.34	10.19	**13.82**	24.073	20.91	PASS
100	5500	6	57	12.21	13.59	15.97	39.509	20.91	PASS
116	5580	6	55	11.97	13.78	**15.98**	39.637	20.91	PASS
140	5700	6	59	11.89	13.58	15.83	38.274	20.91	PASS
149	5745	6	56	12.99	12.82	15.92	39.068	26.93	PASS
157	5785	6	56	12.58	13.14	15.88	38.738	26.93	PASS
165	5825	6	58	12.73	13.19	**15.98**	39.614	26.93	PASS

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802.11n_HT20_2TX

CH	Frequency (MHz)	Data Rate	Power set	Avg. POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
				Ch0	Ch1				
36	5180	MCS0	49	10.07	8.39	**12.32**	17.080	20.91	PASS
44	5220	MCS0	47	10.15	8.26	12.32	17.065	20.91	PASS
48	5240	MCS0	47	9.73	8.72	12.27	16.859	20.91	PASS
52	5260	MCS0	53	11.02	10.04	13.57	22.759	20.91	PASS
60	5300	MCS0	53	11.37	10.12	13.80	24.010	20.91	PASS
64	5320	MCS0	53	11.27	10.31	**13.83**	24.157	20.91	PASS
100	5500	MCS0	54	11.05	12.53	14.87	30.667	20.91	PASS
116	5580	MCS0	50	11.00	12.62	14.90	30.897	20.91	PASS
140	5700	MCS0	55	11.07	12.71	**14.98**	31.485	20.91	PASS
149	5745	MCS0	52	11.81	11.91	14.87	30.721	26.93	PASS
157	5785	MCS0	52	11.72	12.20	**14.98**	31.482	26.93	PASS
165	5825	MCS0	54	11.61	12.05	14.85	30.546	26.93	PASS

802.11ac_VHT20_2TX

CH	Frequency (MHz)	Data Rate	Power set	Avg. POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
				Ch0	Ch1				
36	5180	MCS0	49	10.04	8.35	12.29	16.940	20.91	PASS
44	5220	MCS0	47	10.12	8.24	**12.29**	16.956	20.91	PASS
48	5240	MCS0	47	9.71	8.70	12.25	16.775	20.91	PASS
52	5260	MCS0	53	11.00	10.02	13.55	22.646	20.91	PASS
60	5300	MCS0	53	11.34	10.09	13.77	23.835	20.91	PASS
64	5320	MCS0	53	11.25	10.28	**13.80**	24.013	20.91	PASS
100	5500	MCS0	54	11.01	12.47	14.81	30.293	20.91	PASS
116	5580	MCS0	50	10.96	12.56	14.85	30.519	20.91	PASS
140	5700	MCS0	55	11.05	12.65	**14.94**	31.158	20.91	PASS
149	5745	MCS0	52	11.74	11.85	14.81	30.253	26.93	PASS
157	5785	MCS0	52	11.67	12.17	**14.94**	31.186	26.93	PASS
165	5825	MCS0	54	11.54	12.00	14.79	30.119	26.93	PASS

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802.11n_HT40_2TX

CH	Frequency (MHz)	Data Rate	Power set	Avg. POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
				Ch0	Ch1				
38	5190	MCS0	56	11.53	9.46	13.63	23.041	20.91	PASS
46	5230	MCS0	54	11.24	10.03	**13.68**	23.361	20.91	PASS
54	5270	MCS0	53	11.12	10.05	13.63	23.045	20.91	PASS
62	5310	MCS0	53	11.34	10.26	**13.84**	24.218	20.91	PASS
102	5510	MCS0	54	10.91	12.60	14.84	30.511	20.91	PASS
110	5550	MCS0	52	11.25	12.59	**14.98**	31.473	20.91	PASS
134	5670	MCS0	54	10.93	12.58	14.84	30.484	20.91	PASS
151	5755	MCS0	52	11.66	12.11	**14.90**	30.894	26.93	PASS
159	5795	MCS0	52	11.79	11.89	14.85	30.536	26.93	PASS

802.11ac_VHT40_2TX

CH	Frequency (MHz)	Data Rate	Power set	Avg. POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
				Ch0	Ch1				
38	5190	MCS0	56	11.49	9.42	13.59	22.851	20.91	PASS
46	5230	MCS0	54	11.21	10.01	**13.66**	23.244	20.91	PASS
54	5270	MCS0	53	11.08	10.02	13.59	22.878	20.91	PASS
62	5310	MCS0	53	11.30	10.22	**13.81**	24.018	20.91	PASS
102	5510	MCS0	54	10.84	12.55	14.79	30.133	20.91	PASS
110	5550	MCS0	52	11.18	12.53	**14.92**	31.039	20.91	PASS
134	5670	MCS0	54	10.86	12.52	14.78	30.065	20.91	PASS
151	5755	MCS0	52	11.58	12.04	**14.83**	30.394	26.93	PASS
159	5795	MCS0	52	11.75	11.81	14.79	30.144	26.93	PASS

802.11ac_VHT80_2TX

CH	Frequency (MHz)	Data Rate	Power set	Avg. POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
				Ch0	Ch1				
42	5210	MCS0	50	10.10	9.46	**12.81**	19.082	20.91	PASS
58	5290	MCS0	54	10.20	9.49	**12.87**	19.381	20.91	PASS
106	5530	MCS0	45	9.00	10.42	**12.78**	18.976	20.91	PASS
155	5775	MCS0	43	9.80	9.94	**12.88**	19.431	26.93	PASS

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EIRP Power:

802.11a_2TX

CH	Frequency (MHz)	TOTAL POWER (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	REQUIRED LIMIT (dBm)	RESULT
36	5180	12.26	9.07	21.33	135.831	22.14	PASS
44	5220	11.96	9.07	21.03	126.765	22.13	PASS
48	5240	**12.76**	9.07	**21.83**	**152.405**	22.14	PASS
52	5260	13.75	9.07	22.82	191.426	29.14	PASS
60	5300	13.55	9.07	22.62	182.810	29.14	PASS
64	5320	**13.82**	9.07	**22.89**	**194.536**	29.14	PASS
100	5500	15.97	9.07	25.04	319.154	29.13	PASS
116	5580	**15.98**	9.07	**25.05**	**319.890**	29.14	PASS
140	5700	**15.83**	9.07	**24.90**	**309.030**	29.14	PASS

802.11n_HT20_2TX

CH	Frequency (MHz)	TOTAL POWER (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	REQUIRED LIMIT (dBm)	RESULT
36	5180	**12.32**	9.07	**21.39**	**137.721**	22.44	PASS
44	5220	12.32	9.07	**21.39**	**137.721**	22.44	PASS
48	5240	12.27	9.07	21.34	136.144	22.44	PASS
52	5260	13.57	9.07	22.64	183.654	29.44	PASS
60	5300	13.80	9.07	22.87	193.642	29.44	PASS
64	5320	**13.83**	9.07	**22.90**	**194.984**	29.44	PASS
100	5500	14.87	9.07	23.94	247.742	29.44	PASS
116	5580	**14.90**	9.07	**23.97**	**249.459**	29.44	PASS
140	5700	**14.98**	9.07	**24.05**	**254.097**	29.44	PASS

802.11ac_VHT20_2TX

CH	Frequency (MHz)	TOTAL POWER (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	REQUIRED LIMIT (dBm)	RESULT
36	5180	12.29	9.07	**21.36**	**136.773**	22.44	PASS
44	5220	**12.29**	9.07	**21.36**	**136.773**	22.44	PASS
48	5240	12.25	9.07	21.32	135.519	22.44	PASS
52	5260	13.55	9.07	22.62	182.810	29.44	PASS
60	5300	13.77	9.07	22.84	192.309	29.44	PASS
64	5320	**13.80**	9.07	**22.87**	**193.642**	29.44	PASS
100	5500	14.81	9.07	23.88	244.343	29.44	PASS
116	5580	**14.85**	9.07	**23.92**	**246.604**	29.44	PASS
140	5700	**14.94**	9.07	**24.01**	**251.768**	29.44	PASS

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802.11n_HT40_2TX

CH	Frequency (MHz)	TOTAL POWER (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	REQUIRED LIMIT (dBm)	RESULT
38	5190	13.63	9.07	22.70	186.209	23.01	PASS
46	5230	**13.68**	9.07	**22.75**	**188.365**	23.01	PASS
54	5270	13.63	9.07	22.70	186.209	30	PASS
62	5310	**13.84**	9.07	**22.91**	**195.434**	30	PASS
102	5510	14.84	9.07	23.91	246.037	30	PASS
110	5550	**14.98**	9.07	**24.05**	**254.097**	30	PASS
134	5670	**14.84**	9.07	**23.91**	**246.037**	30	PASS

802.11ac_VHT40_2TX

CH	Frequency (MHz)	TOTAL POWER (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	REQUIRED LIMIT (dBm)	RESULT
38	5190	13.59	9.07	22.66	184.502	23.01	PASS
46	5230	**13.66**	9.07	**22.73**	**187.499**	23.01	PASS
54	5270	13.59	9.07	22.66	184.502	30	PASS
62	5310	**13.81**	9.07	**22.88**	**194.089**	30	PASS
102	5510	14.79	9.07	23.86	243.220	30	PASS
110	5550	**14.92**	9.07	**23.99**	**250.611**	30	PASS
134	5670	**14.78**	9.07	**23.85**	**242.661**	30	PASS

802.11ac_VHT80_2TX

CH	Frequency (MHz)	TOTAL POWER (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	REQUIRED LIMIT (dBm)	RESULT
42	5210	**12.81**	9.07	**21.88**	**154.170**	23.01	PASS
58	5290	**12.87**	9.07	**21.94**	**156.315**	30	PASS
106	5530	**12.78**	9.07	**21.85**	**153.109**	30	PASS

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4.4 POWER SPECTRAL DENSITY

4.4.1 Test Limit

According to §15.407 (a)(1), 15.407(a)(2) and 15.407(a)(3) and RSS-247 section 6.2.1(1), section 6.2.2(1), section 6.2.3(1) and section 6.2.4(1)

UNII-1 :

FCC:

The maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band.

IC:

The e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz band.

UNII-2a and 2c:

The maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

UNII-3:

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

UNII-1 Limit	☐ Antenna not exceed 6 dBi：11 dBm ☒ IC: 10dB/MHz ☒ Antenna with DG greater than 6 dBi： [Limit = 11 – (DG – 6)]
UNII-2a Limit	☐ Antenna not exceed 6 dBi：11 dBm/MHz ☒ Antenna with DG greater than 6 dBi： [Limit = 11 – (DG – 6)]
UNII-2c Limit	☐ Antenna not exceed 6 dBi：11 dBm/MHz ☒ Antenna with DG greater than 6 dBi： [Limit = 11 – (DG – 6)]
UNII-3 Limit	☐ Antenna not exceed 6 dBi：30 dBm/500kHz ☒ Antenna with DG greater than 6 dBi： [Limit = 30 – (DG – 6) dBm/500kHz]

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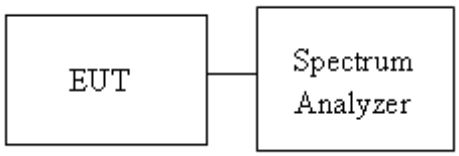
4.4.2 Test Procedure

Test method Refer as KDB 789033 D02

1. The EUT RF output connected to the spectrum analyzer by RF cable.
2. Setting maximum power transmit of EUT
3. UNII-1, UNII-2a and UNII-2c, SA set RBW = 1MHz, VBW = 3MHz and Detector = RMS, to measurement Power Density.
4. UNII-3, SA set RBW = 500kHz, VBW = 2MHz and Detector = RMS, to measurement Power Density
5. The path loss and Duty Factor were compensated to the results for each measurement by SA.
6. Mark the maximum level.
7. Measure and record the result of power spectral density. in the test report.

4.4.3 Test Setup



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4.4.4 Test Result

Temperature: 21.1 ~ 27.1℃ **Test date:** June 2 ~ July 13, 2023

Humidity: 56 ~ 61% RH **Tested by:** Marco Chan

POWER DENSITY 802.11a MODE							
Frequency (MHz)	Ch0 meas PSD (dBm/MHz)	Ch1 meas PSD (dBm/MHz)	Duty Factor (dB)	Total Corr'd PSD(dBm/MHz)		Limit	Margin (dB)
5180	-2.244	-4.924	0.96	0.59		7.93 dBm/MHz	-7.34
5220	-2.575	-4.281	0.96	0.63		7.93 dBm/MHz	-7.30
5240	-2.258	-4.088	0.96	0.89		7.93 dBm/MHz	-7.04
5260	1.560	0.623	0.96	5.09		7.93 dBm/MHz	-2.84
5300	-0.003	-0.863	0.96	3.56		7.93 dBm/MHz	-4.37
5320	-0.331	-0.598	0.96	3.51		7.93 dBm/MHz	-4.42
5500	-1.307	0.081	0.96	3.41		7.93 dBm/MHz	-4.52
5580	-0.388	0.934	0.96	4.29		7.93 dBm/MHz	-3.64
5700	-0.166	1.885	0.96	4.95		7.93 dBm/MHz	-2.98
Frequency (MHz)	Ch0 meas PSD (dBm/300kHz)	Ch1 meas PSD (dBm/300kHz)	Duty Factor (dB)	10log (500kHz/RBW) Factor(dB)	Total Corr'd PSD (dBm/500kHz)	Limit	Margin (dB)
5745	-4.239	-4.057	0.96	2.22	2.04	26.93 dBm/500kHz	-24.89
5785	-4.835	-3.719	0.96	2.22	1.95	26.93 dBm/500kHz	-24.98
5825	-5.050	-4.934	0.96	2.22	1.20	26.93 dBm/500kHz	-25.73

EIRP spectral density 802.11a MODE					
Freq. (MHz)	PSD (dBm)	Ant. Gain (dBi)	EIRP PSD (dBm)	Limit (dBm)	Margin (dB)
5180	0.590	9.07	9.66	10	-0.34
5220	0.626	9.07	9.70	10	-0.30
5240	0.893	9.07	9.96	10	-0.04

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POWER DENSITY 802.11n HT20 MODE							
Frequency (MHz)	Ch0 meas PSD (dBm/MHz)	Ch1 meas PSD (dBm/MHz)	Duty Factor (dB)	Total Corr'd PSD(dBm/MHz)		Limit	Margin (dB)
5180	-2.489	-4.044	1.02	0.83		7.93 dBm/MHz	-7.10
5220	-2.810	-4.521	1.02	0.45		7.93 dBm/MHz	-7.48
5240	-2.929	-4.193	1.02	0.52		7.93 dBm/MHz	-7.41
5260	-0.249	-1.910	1.02	3.03		7.93 dBm/MHz	-4.90
5300	-0.981	-1.550	1.02	2.77		7.93 dBm/MHz	-5.16
5320	-1.953	-2.681	1.02	1.73		7.93 dBm/MHz	-6.20
5500	-2.853	-1.788	1.02	1.74		7.93 dBm/MHz	-6.19
5580	-1.512	-0.504	1.02	3.05		7.93 dBm/MHz	-4.88
5700	-0.602	0.878	1.02	4.23		7.93 dBm/MHz	-3.70
Frequency (MHz)	Ch0 meas PSD (dBm/300kHz)	Ch1 meas PSD (dBm/300kHz)	Duty Factor (dB)	10log (500kHz/RBW) Factor(dB)	Total Corr'd PSD (dBm/500kHz)	Limit	Margin (dB)
5745	-5.415	-5.325	1.02	2.22	0.88	26.93 dBm/500kHz	-26.05
5785	-6.069	-5.045	1.02	2.22	0.72	26.93 dBm/500kHz	-26.21
5825	-5.469	-5.589	1.02	2.22	0.72	26.93 dBm/500kHz	-26.21

EIRP spectral density 802.11n HT20 MODE					
Freq. (MHz)	PSD (dBm)	Ant. Gain (dBi)	EIRP PSD (dBm)	Limit (dBm)	Margin (dB)
5180	0.833	9.07	9.90	10	-0.10
5220	0.449	9.07	9.52	10	-0.48
5240	0.515	9.07	9.59	10	-0.41

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POWER DENSITY 802.11n HT40 MODE							
Frequency (MHz)	Ch0 meas PSD (dBm/MHz)	Ch1 meas PSD (dBm/MHz)	Duty Factor (dB)	Total Corr'd PSD(dBm/MHz)		Limit	Margin (dB)
5190	-3.475	-5.660	1.88	0.46		7.93 dBm/MHz	-7.47
5230	-3.279	-5.156	1.88	0.77		7.93 dBm/MHz	-7.16
5270	-3.175	-4.806	1.88	0.98		7.93 dBm/MHz	-6.95
5310	-4.373	-4.653	1.88	0.38		7.93 dBm/MHz	-7.55
5510	-5.786	-4.742	1.88	-0.34		7.93 dBm/MHz	-8.27
5550	-5.662	-3.691	1.88	0.32		7.93 dBm/MHz	-7.61
5670	-4.672	-2.426	1.88	1.48		7.93 dBm/MHz	-6.45
Frequency (MHz)	Ch0 meas PSD (dBm/300kHz)	Ch1 meas PSD (dBm/300kHz)	Duty Factor (dB)	10log (500kHz/RBW) Factor(dB)	Total Corr'd PSD (dBm/500kHz)	Limit	Margin (dB)
5755	-8.196	-7.985	1.88	2.22	-0.98	26.93 dBm/500kHz	-27.91
5795	-9.953	-8.405	1.88	2.22	-2.00	26.93 dBm/500kHz	-28.93

EIRP spectral density 802.11n HT40 MODE					
Freq. (MHz)	PSD (dBm)	Ant. Gain (dBi)	EIRP PSD (dBm)	Limit (dBm)	Margin (dB)
5190	0.459	9.07	9.53	10	-0.47
5230	0.773	9.07	9.84	10	-0.16

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POWER DENSITY 802.11ac VHT80 MODE							
Frequency (MHz)	Ch0 meas PSD (dBm/MHz)	Ch1 meas PSD (dBm/MHz)	Duty Factor (dB)	Total Corr'd PSD(dBm/MHz)		Limit	Margin (dB)
5210	-9.207	-10.872	3.24	-3.71		7.93 dBm/MHz	-11.64
5290	-8.126	-10.046	3.24	-2.73		7.93 dBm/MHz	-10.66
5530	-10.954	-9.066	3.24	-3.66		7.93 dBm/MHz	-11.59
5610	-10.241	-8.597	3.24	-3.09		7.93 dBm/MHz	-11.02
Frequency (MHz)	Ch0 meas PSD (dBm/300kHz)	Ch1 meas PSD (dBm/300kHz)	Duty Factor (dB)	10log (500kHz/RBW) Factor(dB)	Total Corr'd PSD (dBm/500kHz)	Limit	Margin (dB)
5775	-14.100	-13.701	3.24	2.22	-5.43	26.93 dBm/500kHz	-32.36

EIRP spectral density 802.11ac VHT80 MODE					
Freq. (MHz)	PSD (dBm)	Ant. Gain (dBi)	EIRP PSD (dBm)	Limit (dBm)	Margin (dB)
5210	-3.710	9.07	5.36	10	-4.64

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Test Plots:

UNII-1 IEEE 802.11a mode-chain 0	
5180 MHz	**5220 MHz**
5240 MHz	

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UNII-1 IEEE 802.11n HT20 mode-chain 0	
5180 MHz	**5220 MHz**
5240 MHz	

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UNII-1 IEEE 802.11n HT40 mode-chain 0	
5190 MHz	**5230 MHz**

UNII-1 IEEE 802.11ac VHT80 mode-chain 0	
5210 MHz	

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UNII-1 IEEE 802.11a mode-chain 1

5180 MHz

5220 MHz

5240 MHz

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UNII-1 IEEE 802.11n HT20 mode-chain 1	
5180 MHz	**5220 MHz**
5240 MHz	

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UNII-1 IEEE 802.11n HT40 mode-chain 1	
5190 MHz	**5230 MHz**

UNII-1 IEEE 802.11ac VHT80 mode-chain 1	
5210 MHz	

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UNII-2a IEEE 802.11a mode-chain 0	
5260 MHz	**5300 MHz**
5320 MHz	

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UNII-2a IEEE 802.11n HT20 mode-chain 0	
5260 MHz	**5300 MHz**
5320 MHz	

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UNII-2a IEEE 802.11n HT40 mode-chain 0	
5270 MHz	**5310 MHz**

UNII-2a IEEE 802.11ac VHT80 mode-chain 0	
5290 MHz	

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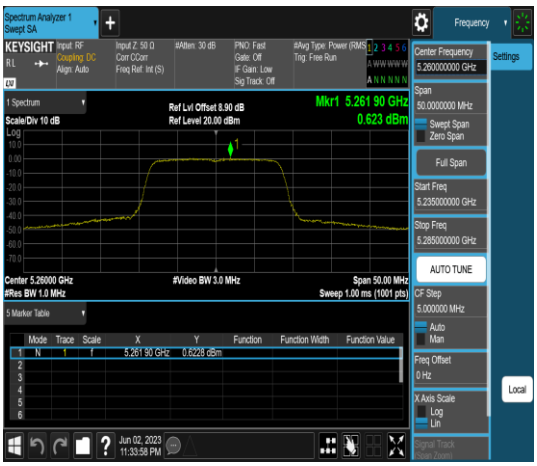
UNII-2a IEEE 802.11a mode-chain 1

5260 MHz



5300 MHz

5320 MHz

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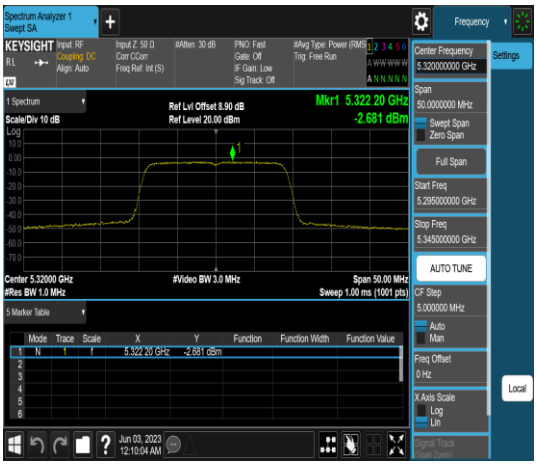
UNII-2a IEEE 802.11n HT20 mode-chain 1	
5260 MHz	**5300 MHz**
5320 MHz	
	

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