8.2 MAXIMUM CONDUCTED OUTPUT POWER

8.2.1 Applicable Standard

According to FCC Part 15.407(a)(1) for UNII Band I
According to FCC Part 15.407(a)(2) for UNII Band II-A and UNII Band II-C
According to FCC Part 15.407(a)(3) for UNII Band III
According to 789033 D02 Section II(E)

8.2.2 Conformance Limit

■ For the band 5.15-5.25 GHz,

(a) (1) (i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. 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. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(a) (1) (ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. 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.

(a) (1) (iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(a) (1) (iv) For mobile and portable 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 provided the maximum antenna gain does not exceed 6 dBi. 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.

■ For the 5.25-5.35 GHz and 5.47-5.725 GHz bands

(a) (2) 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.

■ For the band 5.725-5.85 GHz

(a) (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.

8.2.3 Test Configuration

Test according to clause 6.1 radio frequency test setup

8.2.4 Test Procedure

The maximum average conducted output power can be measured using Method PM-G (Measurement using a gated RF average power meter):
Measurements may be performed using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Since the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.

a. The Transmitter output (antenna port) was connected to the power meter.
b. Turn on the EUT and power meter and then record the power value.
c. Repeat above procedures on all channels needed to be tested.

8.2.5 Test Results

☒ 802.11a mode			
Temperature :	28℃	Test Date :	March 27, 2018
Humidity :	65 %	Test By:	King Kong

Band	Channel Number	Channel Freq. (MHz)	Conducted Output Power(dBm)				Limit (dBm)	Verdict
			Ant0	Ant1	Ant2	Ant3		
UNII Band I	CH36	5180	13.74	13.45	13.93	13.42	18.98	Pass
	CH40	5200	13.15	12.84	12.98	12.98	18.98	Pass
	CH48	5240	14.00	13.55	13.66	13.87	18.98	Pass
UNII Band III	CH149	5745	12.47	12.01	12.00	12.10	24.98	Pass
	CH157	5785	12.31	12.05	11.91	11.70	24.98	Pass
	CH165	5825	11.58	11.59	11.59	11.56	24.98	Pass
Note: N/A (Not Applicable)								

☒ 802.11n(HT20) mode			
Temperature :	28℃11.70	Test Date :	March 27, 2018
Humidity :	65 %11.56	Test By:	King Kong

Band	Channel Number	Channel Freq. (MHz)	Conducted Output Power(dBm)					Limit (dBm)	Verdict
			Ant0	Ant1	Ant2	Ant3	Ant 0+1+2+3		
UNII Band I	CH36	5180	12.39	12.74	12.35	12.35	12.26	18.98	Pass
	CH40	5200	12.47	12.56	12.39	12.85	12.45	18.98	Pass
	CH48	5240	12.74	12.75	12.85	12.69	12.78	18.98	Pass
UNII Band III	CH149	5745	13.42	12.82	13.15	13.37	13.38	24.98	Pass
	CH157	5785	13.04	12.89	12.66	12.68	12.69	24.98	Pass
	CH165	5825	12.28	12.23	12.23	13.33	12.26	24.98	Pass

☒ 802.11ac(VHT20) mode			
Temperature :	28℃	Test Date :	March 27, 2018
Humidity :	65 %	Test By:	King Kong

Band	Channel Number	Channel Freq. (MHz)	Conducted Output Power(dBm)					Limit (dBm)	Verdict
			Ant0	Ant1	Ant2	Ant3	Ant 0+1+2+3		
UNII Band I	CH36	5180	12.54	12.53	12.34	13.27	13.24	18.98	Pass
	CH40	5200	12.56	12.45	12.35	12.65	12.38	18.98	Pass
	CH48	5240	12.90	12.79	12.77	12.77	12.94	18.98	Pass
UNII Band III	CH149	5745	13.34	13.28	12.77	13.14	12.71	24.98	Pass
	CH157	5785	12.72	12.68	12.62	12.48	14.36	24.98	Pass
	CH165	5825	12.57	12.24	12.33	12.30	12.12	24.98	Pass

☒ 802.11n(HT40) mode

Temperature :	28℃	Test Date :	March 27, 2018
Humidity :	65 %	Test By:	King Kong

Band	Channel Number	Channel Freq. (MHz)	Conducted Output Power(dBm)					Limit (dBm)	Verdict
			Ant0	Ant1	Ant2	Ant3	Ant 0+1+2+3		
UNII Band I	CH38	5190	12.48	12.72	12.43	13.17	12.24	18.98	Pass
	CH46	5230	14.61	13.77	13.84	15.56	14.06	18.98	Pass
UNII Band III	CH151	5755	12.75	12.66	12.45	12.44	12.17	24.98	Pass
	CH159	5795	13.60	11.96	11.93	11.93	12.04	24.98	Pass

☒ 802.11ac(VHT40) mode

Temperature :	28℃	Test Date :	March 27, 2018
Humidity :	65 %	Test By:	King Kong

Band	Channel Number	Channel Freq. (MHz)	Conducted Output Power(dBm)					Limit (dBm)	Verdict
			Ant0	Ant1	Ant2	Ant3	Ant 0+1+2+3		
UNII Band I	CH38	5190	13.07	12.31	12.21	12.51	11.75	18.98	Pass
	CH46	5230	14.26	13.82	13.77	14.20	13.34	18.98	Pass
UNII Band III	CH151	5755	12.35	12.37	12.89	12.18	12.13	24.98	Pass
	CH159	5795	12.00	12.31	11.82	12.01	11.93	24.98	Pass

☒ 802.11ac(VHT80) mode

Temperature :	28℃	Test Date :	March 27, 2018
Humidity :	65 %	Test By:	King Kong

Band	Channel Number	Channel Freq. (MHz)	Conducted Output Power(dBm)					Limit (dBm)	Verdict
			Ant0	Ant1	Ant2	Ant3	Ant 0+1+2+3		
UNII Band I	CH42	5210	16.00	15.78	15.78	16.00	17.11	18.98	Pass
UNII Band III	CH155	5775	12.80	12.32	12.43	12.62	12.60	24.98	Pass

8.3 MAXIMUM PEAK POWER DENSITY

8.3.1 Applicable Standard

According to FCC Part 15.407(a)(1) for UNII Band I
According to FCC Part 15.407(a)(2) for UNII Band II-A and UNII Band II-C
According to FCC Part 15.407(a)(3) for UNII Band III
According to 789033 D02 Section II(F)

8.3.2 Conformance Limit

■ For the band 5.15-5.25 GHz,
(a) (1) (i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. 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. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).
(a) (1) (ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. 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.
(a) (1) (iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.
(a) (1) (iv) For mobile and portable 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 provided the maximum antenna gain does not exceed 6 dBi. 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.

■ For the 5.25-5.35 GHz and 5.47-5.725 GHz bands
(b) (2) 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.

■ For the band 5.725-5.85 GHz
(a) (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.

8.3.3 Test Configuration

Test according to clause 6.1 radio frequency test setup

8.3.4 Test Procedure

Methods refer to FCC KDB 789033

1) Create an average power spectrum for the EUT operating mode being tested by following the instructions in section E)2) for measuring maximum conducted output power using a spectrum analyzer or EMI receiver: select the appropriate test method (SA-3, or alternatives to each) and apply it up to, but not including, the step labeled, “Compute power…”.

2) Use the peak search function on the instrument to find the peak of the spectrum.

3) The result is the PPSD.
4) The above procedures make use of 500kHz resolution bandwidth to satisfy the 500kHz measurement bandwidth specified in the 15.407(a)(5). That rule section also permits use of resolution bandwidths less than 1 MHz “provided that the measured power is integrated to show the total power over the measurement bandwidth” (i.e., 1 MHz). If measurements are performed using a reduced resolution bandwidth and integrated over 500kHz bandwidth
Note: As a practical matter, it is recommended to use reduced RBW of 500 kHz for the sections 5.c) and 5.d) above, since RBW=500 kHz is available on nearly all spectrum analyzers.

8.3.5 Test Results

☒ 802.11a mode			
Temperature :	28℃	Test By:	King Kong
Humidity :	65 %		

Band	Channel Number	Channel Freq. (MHz)	Power Spectral Density				Limit	Verdict
			Ant0	Ant1	Ant2	Ant3		
UNII Band I	CH36	5180	1.01	0.71	1.10	1.21	≤5.98dBm/1MHz	Pass
	CH40	5200	1.30	1.21	1.10	1.19	≤5.98dBm/1MHz	Pass
	CH48	5240	-1.96	-1.94	-1.77	-1.94	≤5.98dBm/1MHz	Pass
UNII Band III	CH149	5745	-3.72	-4.48	-4.16	-4.42	≤21.98dBm/500KHz	Pass
	CH157	5785	-5.52	-5.04	-5.09	-5.33	≤21.98dBm/500KHz	Pass
	CH165	5825	-4.61	-4.59	-4.83	-5.03	≤21.98dBm/500KHz	Pass
Note: N/A (Not Applicable)								

☒ 802.11n(VHT20) mode			
Temperature :	28℃	Test By:	King Kong
Humidity :	65 %		

Band	Channel Number	Channel Freq. (MHz)	Power Spectral Density					Limit	Verdict
			Ant0	Ant1	Ant2	Ant3	Ant 0+1+2+3		
UNII Band I	CH36	5180	-2.94	-3.43	-3.14	-3.33	2.81	≤5.98dBm/1MHz	Pass
	CH40	5200	-2.95	-2.70	-2.75	-2.86	3.21	≤5.98dBm/1MHz	Pass
	CH48	5240	-5.87	-6.09	-5.91	-6.34	-0.03	≤5.98dBm/1MHz	Pass
UNII Band III	CH149	5745	-5.79	-5.92	-5.70	-5.60	0.27	≤21.98dBm/500KHz	Pass
	CH157	5785	-6.68	-6.87	-6.79	-6.46	-0.68	≤21.98dBm/500KHz	Pass
	CH165	5825	-6.99	-6.86	-6.92	-6.47	-0.78	≤21.98dBm/500KHz	Pass
Note: N/A (Not Applicable)									

☒ 802.11ac(VHT20) mode			
Temperature :	28℃	Test By:	King Kong
Humidity :	65 %		

Band	Channel Number	Channel Freq. (MHz)	Power Spectral Density					Limit	Verdict
			Ant0	Ant1	Ant2	Ant3	Ant 0+1+2+3		
UNII Band I	CH36	5180	-3.01	-3.06	-2.96	-2.65	3.10	≤5.98dBm/1MHz	Pass
	CH40	5200	-2.70	-2.50	-2.47	-2.10	3.58	≤5.98dBm/1MHz	Pass
	CH48	5240	-5.36	-5.98	-5.91	-5.43	0.36	≤5.98dBm/1MHz	Pass
UNII Band III	CH149	5745	-5.88	-5.48	-5.59	-5.59	0.39	≤21.98dBm/500KHz	Pass
	CH157	5785	-6.61	-7.05	-6.79	-6.48	-0.71	≤21.98dBm/500KHz	Pass
	CH165	5825	-6.89	-6.43	-6.23	-6.73	-0.54	≤21.98dBm/500KHz	Pass
Note: N/A (Not Applicable)									

☒ 802.11n(VHT40) mode

Temperature :	28℃	Test By:	King Kong
Humidity :	65 %		

Band	Channel Number	Channel Freq. (MHz)	Power Spectral Density					Limit	Verdict
			Ant0	Ant1	Ant2	Ant3	Ant 0+1+2+3		
UNII Band I	CH38	5190	-6.87	-6.70	-6.60	-6.25	-0.58	≤5.98dBm/1MHz	Pass
	CH46	5230	-9.75	-9.82	-9.91	-9.67	-3.77	≤5.98dBm/1MHz	Pass
UNII Band III	CH151	5755	-9.83	-9.77	-9.95	-9.49	-3.74	≤21.98dBm/500KHz	Pass
	CH159	5795	-10.84	-10.79	-10.67	-10.99	-4.80	≤21.98dBm/500KHz	Pass
Note: N/A (Not Applicable)									

☒ 802.11ac(VHT40) mode

Temperature :	28℃	Test Date :	March 27, 2018
Humidity :	65 %	Test By:	King Kong

Band	Channel Number	Channel Freq. (MHz)	Power Spectral Density					Limit	Verdict
			Ant0	Ant1	Ant2	Ant3	Ant 0+1+2+3		
UNII Band I	CH38	5190	-6.85	-6.19	-6.38	-5.98	-0.32	≤5.98dBm/1MHz	Pass
	CH46	5230	-9.34	-9.79	-9.63	-9.73	-3.60	≤5.98dBm/1MHz	Pass
UNII Band III	CH151	5755	-9.48	-9.90	-9.92	-9.49	-3.67	≤21.98dBm/500KHz	Pass
	CH159	5795	-10.75	-10.17	-10.53	-10.99	-4.58	≤21.98dBm/500KHz	Pass
Note: N/A (Not Applicable)									

☒ 802.11ac(VHT80) mode

Temperature :	28℃	Test Date :	February 07, 2018
Humidity :	65 %	Test By:	King Kong

Band	Channel Number	Channel Freq. (MHz)	Power Spectral Density					Limit	Verdict
			Ant0	Ant1	Ant2	Ant3	Ant 0+1+2+3		
UNII Band I	CH42	5210	-15.17	-15.51	-15.02	-15.11	-9.18	≤5.98dBm/1MHz	Pass
UNII Band III	CH155	5775	-14.93	-14.44	-15.48	-14.58	-8.82	≤21.98dBm/500KHz	Pass
Note: N/A (Not Applicable)									

8.4 FREQUENCY STABILITY

8.4.1 Applicable Standard

According to FCC Part 15.407(g)
ANSI C63.10 Section 6.8

8.4.2 Conformance Limit

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the users manual.

8.4.3 Test Configuration

Test according to clause 6.1 radio frequency test setup

8.4.4 Test Procedure

The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
Set to the maximum power setting and enable the EUT transmit continuously
Set RBW = 10 kHz.
Set the video bandwidth (VBW) =30 kHz.
Set Span= Entire absence of modulation emissions bandwidth
Set Detector = Peak.
Set Trace mode = max hold.
Set Sweep = auto couple.
Allow the trace to stabilize.
The test extreme voltage is to change the primary supply voltage from 85 to 115 percent of the nominal value.
Beginning at each temperature level specified in user manual, the frequency shall be measured within one minute after application of primary power to the transmitter and at intervals of no more than one minute thereafter until ten minutes have elapsed or until sufficient measurements are obtained to indicate clearly that the frequency has stabilized within the applicable tolerance, whichever time period is greater. During each test, the ambient temperature shall not be allowed to rise more than 10° centigrade above the respective beginning ambient temperature level
Measure and record the results in the test report.

8.4.5 Test Results

Two antenna have been tested, and the worst results have been recorded in the report.

Antenna 0		5180	
Temperature :	--	Test Date :	March 27, 2018
Humidity :	65 %	Test By:	King Kong

Voltage(V)	Temp(℃)	Test Frequency (MHz)	Max. Deviation (KHz)	Verdict
Vnom	-20	5179.998456	-1.544	Pass
	-10	5179.998456	-1.544	Pass
	0	5179.998456	-1.544	Pass
	10	5179.996456	-3.544	Pass
	20	5179.997456	-2.544	Pass
	30	5179.996456	-3.544	Pass
	40	5179.995456	-4.544	Pass
	50	5179.995456	-4.544	Pass
85% Vnom	20	5179.998456	-1.544	Pass
115% Vnom	20	5179.997456	-2.544	Pass

Antenna 0		5200	
Temperature :	--	Test Date :	March 27, 2018
Humidity :	65 %	Test By:	King Kong

Voltage(V)	Temp(℃)	Test Frequency (MHz)	Max. Deviation (KHz)	Verdict
Vnom	-20	5199.989456	-10.544	Pass
	-10	5199.989456	-10.544	Pass
	0	5199.990456	-9.544	Pass
	10	5199.990456	-9.544	Pass
	20	5200.003456	3.456	Pass
	30	5199.988456	-11.544	Pass
	40	5199.989456	-10.544	Pass
	50	5199.986456	-13.544	Pass
85% Vnom	20	5199.990456	-9.544	Pass
115% Vnom	20	5199.990456	-9.544	Pass

Antenna 0		5240	
Temperature :	--	Test Date :	March 27, 2018
Humidity :	65 %	Test By:	King Kong

Voltage(V)	Temp(℃)	Test Frequency (MHz)	Max. Deviation (KHz)	Verdict
Vnom	-20	5239.997456	-2.544	Pass
	-10	5239.996456	-3.544	Pass
	0	5239.997456	-2.544	Pass
	10	5239.996456	-3.544	Pass
	20	5239.994456	-5.544	Pass
	30	5239.996456	-3.544	Pass
	40	5239.992456	-7.544	Pass
	50	5239.994456	-5.544	Pass
85% Vnom	20	5239.997456	-2.544	Pass
115% Vnom	20	5239.996456	-3.544	Pass

Antenna 0		5745	
Temperature :	--	Test Date :	May04, 2017
Humidity :	65 %	Test By:	King Kong

Voltage(V)	Temp(℃)	Test Frequency (MHz)	Max. Deviation (KHz)	Verdict
Vnom	-20	5745.000456	0.456	Pass
	-10	5744.999456	-0.544	Pass
	0	5745.002456	2.456	Pass
	10	5745.003456	3.456	Pass
	20	5745.004456	4.456	Pass
	30	5745.001456	1.456	Pass
	40	5745.000456	0.456	Pass
	50	5745.002456	2.456	Pass
85% Vnom	20	5745.002456	2.456	Pass
115% Vnom	20	5745.002456	2.456	Pass

Antenna 0		5785	
Temperature :	--	Test Date :	March 27, 2018
Humidity :	65 %	Test By:	King Kong

Voltage(V)	Temp(℃)	Test Frequency (MHz)	Max. Deviation (KHz)	Verdict
Vnom	-20	5784.999456	-0.544	Pass
	-10	5785.001456	1.456	Pass
	0	5785.003456	3.456	Pass
	10	5785.002456	2.456	Pass
	20	5785.002456	2.456	Pass
	30	5785.004456	4.456	Pass
	40	5785.002456	2.456	Pass
	50	5785.005456	5.456	Pass
85% Vnom	20	5785.005456	5.456	Pass
115% Vnom	20	5785.005456	5.456	Pass

Antenna 0		5825	
Temperature :	--	Test Date :	March 27, 2018
Humidity :	65 %	Test By:	King Kong

Voltage(V)	Temp(℃)	Test Frequency (MHz)	Max. Deviation (KHz)	Verdict
Vnom	-20	5824.997456	-2.544	Pass
	-10	5824.995456	-4.544	Pass
	0	5824.996456	-3.544	Pass
	10	5824.993456	-6.544	Pass
	20	5824.992456	-7.544	Pass
	30	5824.994456	-5.544	Pass
	40	5824.997456	-2.544	Pass
	50	5824.994456	-5.544	Pass
85% Vnom	20	5824.993456	-6.544	Pass
115% Vnom	20	5824.998456	-1.544	Pass

Antenna 0		5190	
Temperature :	--	Test Date :	March 27, 2018
Humidity :	65 %	Test By:	King Kong

Voltage(V)	Temp(℃)	Test Frequency (MHz)	Max. Deviation (KHz)	Verdict
Vnom	-20	5189.989456	-10.544	Pass
	-10	5189.989456	-10.544	Pass
	0	5189.986456	-13.544	Pass
	10	5189.986456	-13.544	Pass
	20	5189.988456	-11.544	Pass
	30	5189.989456	-10.544	Pass
	40	5189.989456	-10.544	Pass
	50	5189.987456	-12.544	Pass
85% Vnom	20	5189.986456	-13.544	Pass
115% Vnom	20	5189.987456	-12.544	Pass

Antenna 0		5230	
Temperature :	--	Test Date :	March 27, 2018
Humidity :	65 %	Test By:	King Kong

Voltage(V)	Temp(℃)	Test Frequency (MHz)	Max. Deviation (KHz)	Verdict
Vnom	-20	5229.984456	-15.544	Pass
	-10	5229.985456	-14.544	Pass
	0	5229.987456	-12.544	Pass
	10	5229.985456	-14.544	Pass
	20	5229.984456	-15.544	Pass
	30	5229.986456	-13.544	Pass
	40	5229.987456	-12.544	Pass
	50	5229.987456	-12.544	Pass
85% Vnom	20	5229.984456	-15.544	Pass
115% Vnom	20	5229.984456	-15.544	Pass

Antenna 0		5755	
Temperature :	--	Test Date :	March 27, 2018
Humidity :	65 %	Test By:	King Kong

Voltage(V)	Temp(℃)	Test Frequency (MHz)	Max. Deviation (KHz)	Verdict
Vnom	-20	5754.998456	-1.544	Pass
	-10	5754.997456	-2.544	Pass
	0	5755.000456	0.456	Pass
	10	5754.999456	-0.544	Pass
	20	5754.998456	-1.544	Pass
	30	5755.001456	1.456	Pass
	40	5754.997456	-2.544	Pass
	50	5754.997456	-2.544	Pass
85% Vnom	20	5755.001456	1.456	Pass
115% Vnom	20	5754.997456	-2.544	Pass

Antenna 0		5795	
Temperature :	--	Test Date :	March 27, 2018
Humidity :	65 %	Test By:	King Kong

Voltage(V)	Temp(℃)	Test Frequency (MHz)	Max. Deviation (KHz)	Verdict
Vnom	-20	5794.991456	-8.544	Pass
	-10	5794.991456	-8.544	Pass
	0	5794.988456	-11.544	Pass
	10	5794.989456	-10.544	Pass
	20	5794.988456	-11.544	Pass
	30	5794.989456	-10.544	Pass
	40	5794.990456	-9.544	Pass
	50	5794.991456	-8.544	Pass
85% Vnom	20	5794.992456	-7.544	Pass
115% Vnom	20	5794.989456	-10.544	Pass

Antenna 0		5210	
Temperature :	--	Test Date :	February 07, 2018
Humidity :	65 %	Test By:	King Kong

Voltage(V)	Temp(℃)	Test Frequency (MHz)	Max. Deviation (KHz)	Verdict
Vnom	-20	5209.988456	-11.544	Pass
	-10	5209.988456	-11.544	Pass
	0	5209.988456	-11.544	Pass
	10	5209.988456	-11.544	Pass
	20	5209.989456	-10.544	Pass
	30	5209.989456	-10.544	Pass
	40	5209.991456	-8.544	Pass
	50	5209.987456	-12.544	Pass
85% Vnom	20	5209.988456	-11.544	Pass
115% Vnom	20	5209.989456	-10.544	Pass

Antenna 0		5775	
Temperature :	--	Test Date :	February 07, 2018
Humidity :	65 %	Test By:	King Kong

Voltage(V)	Temp(℃)	Test Frequency (MHz)	Max. Deviation (KHz)	Verdict
Vnom	-20	5775.010456	10.456	Pass
	-10	5775.012456	12.456	Pass
	0	5775.011456	11.456	Pass
	10	5775.012456	12.456	Pass
	20	5775.008456	8.456	Pass
	30	5775.009456	9.456	Pass
	40	5775.009456	9.456	Pass
	50	5775.008456	8.456	Pass
85% Vnom	20	5775.010456	10.456	Pass
115% Vnom	20	5775.011456	11.456	Pass

8.5 UNDESIRABLE RADIATED SPURIOUS EMISSION

8.5.1 Applicable Standard

According to FCC Part 15.407 (b)
According to 789033 D02 Section II(G)

8.5.2 Conformance Limit

For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.
For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.
For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.
For transmitters operating in the 5.725-5.85 GHz band: All emissions shall be limited to a level of −27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.
The emission measurements shall be performed using a minimum resolution bandwidth of 1 MHz. A lower resolution bandwidth may be employed near the band edge, when necessary, provided the measured energy is integrated to show the total power over 1 MHz.
Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in §15.209
The emissions from an intentional radiator shall not exceed the field strength levels specified in the following table 15.209(a):

Restricted Frequency(MHz)	Field Strength (μV/m)	Field Strength (dBμV/m)	Measurement Distance
0.009-0.490	2400/F(KHz)	20 log (uV/m)	300
0.490-1.705	2400/F(KHz)	20 log (uV/m)	30
1.705-30	30	29.5	30
30-88	100	40	3
88-216	150	43.5	3
216-960	200	46	3
Above 960	500	54	3

The provisions of §15.205 apply to intentional radiators operating under this section,15.205 Restricted bands of operation

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
10.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	(2)
13.36-13.41			

Remark: 1. Emission level in dBuV/m=20 log (uV/m)
2. Measurement was performed at an antenna to the closed point of EUT distance of meters.
3. Only spurious frequency is permitted to locate within the Restricted Bands specified in provision of ξ 15.205, and the emissions located in restricted bands also comply with 15.209 limit.

8.5.3 Test Configuration

Test according to clause 6.2 radio frequency test setup

8.5.4 Test Procedure

■ Unwanted Emissions Measurements below 1000 MHz

Compliance shall be demonstrated using CISPR quasi-peak detection; however, peak detection is permitted as an alternative to quasi-peak detection.
The EUT was placed on a turn table which is 0.8m above ground plane.
And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
Repeat above procedures until all frequency measured was complete.
We use software control the EUT, Let EUT hopping on and transmit with highest power, All the modes have been tested and the worst result was reported.
Use the following spectrum analyzer settings:
Set RBW=120kHz for f < 1 GHz(30MHz to 1GHz), 200Hz for f<150KHz(9KHz to 150KHz), 9KHz for <30MHz (150KHz to 30KHz).
Set the VBW > RBW.
Detector = Peak.
Trace mode = max hold.
Follow the guidelines in ANSI C63.10-2013 with respect to maximizing the emission by rotating the EUT, measuring the emission while the EUT is situated in three orthogonal planes (if appropriate), adjusting the measurement antenna height and polarization, etc. A pre-amp and a high pass filter are required for this test, in order to provide the measuring system with sufficient sensitivity. Allow the trace to stabilize. The peak reading of the emission, after being corrected by the antenna factor, cable loss, pre-amp gain, etc., is the peak field strength, which must comply with the limit specified in Section 15.35(b). Submit this data.
Repeat above procedures until all frequency measured was complete.

■ Unwanted Maximum peak Emissions Measurements above 1000 MHz

Maximum emission levels are measured by setting the analyzer as follows:
RBW = 1 MHz.
VBW ≥ 3 MHz.
Detector = Peak.
Sweep time = auto.
Trace mode = max hold.
Allow sweeps to continue until the trace stabilizes. Note that if the transmission is not continuous, the time required for the trace to stabilize will increase by a factor of approximately 1/x, where x is the duty cycle. For example, at 50 percent duty cycle, the measurement time will increase by a factor of two relative to measurement time for continuous transmission.

■ Unwanted Average Emissions Measurements above 1000 MHz

Method VB (Averaging using reduced video bandwidth): Alternative method.
RBW = 1 MHz.
Video bandwidth. • If the EUT is configured to transmit with duty cycle ≥ 98 percent, set VBW ≤ RBW/100 (i.e., 10 kHz) but not less than 10 Hz.
• If the EUT duty cycle is < 98 percent, set VBW ≥ 1/T, where T is defined in section II.B.1.a).
Video bandwidth mode or display mode • The instrument shall be set to ensure that video filtering is applied in the power domain. Typically, this requires setting the detector mode to RMS and setting the Average-VBW Type to Power (RMS).
• As an alternative, the analyzer may be set to linear detector mode. Ensure that video filtering is applied in linear voltage domain (rather than in a log or dB domain). Some analyzers require linear display mode in order to accomplish this. Others have a setting for Average-VBW Type, which can be set to “Voltage” regardless of the display mode.
Detector = Peak.
Sweep time = auto.
Trace mode = max hold.
Allow max hold to run for at least 50 traces if the transmitted signal is continuous or has at least 98 percent duty cycle. For lower duty cycles, increase the minimum number of traces by a factor of 1/x, where x is the duty cycle. For example, use at least 200 traces if the duty cycle is 25 percent. (If a specific emission is demonstrated to be continuous—i.e., 100 percent duty cycle—rather than turning on and off with the transmit cycle, at least 50 traces shall be averaged.)

■ Band edge measurements.

Unwanted band-edge emissions may be measured using either of the special band-edge measurement techniques (the marker-delta or integration methods) described below. Note that the marker-delta method is primarily a radiated measurement technique that requires the 99% occupied bandwidth edge to be within 2 MHz of the authorized band edge, whereas the integration method can be used in either a radiated or conducted measurement without any special requirement with regards to the displacement of the unwanted emission(s) relative to the authorized bandwidth.

Marker-Delta Method.

The marker-delta method, as described in ANSI C63.10, can be used to perform measurements of the radiated unwanted emissions level of emissions provided that the 99% occupied bandwidth of the fundamental is within 2 MHz of the authorized band-edge.

8.5.5 Test Results

■ ☒For Undesirable radiated Spurious Emission in UNII Band I

The modes 802.11a/n/ac has been tested and the worst result recorded as below:

- ☒Undesirable radiated Spurious Emission Above 1GHz (1GHz to 40GHz)

Temperature :	28℃	Test Date :	March 27, 2018
Humidity :	65 %	Test By:	King Kong
Test mode:	802.11a	Frequency(MHz):	5180

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
3180.9	V	54.15	-41.08	-27.00	-14.08
5776.14	V	55.63	-39.6	-27.00	-12.6
9257.22	V	60.98	-34.25	-27.00	-7.25
3550.54	H	52.46	-42.77	-27.00	-15.77
6235.4	H	59.55	-35.68	-27.00	-8.68
9554.13	H	62.59	-32.64	-27.00	-5.64

Temperature :	28℃	Test Date :	March 27, 2018
Humidity :	65 %	Test By:	King Kong
Test mode:	802.11a	Frequency(MHz):	5220

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
3691.15	V	55.49	-39.74	-27.00	-12.74
6287.34	V	58.46	-36.77	-27.00	-9.77
9256.89	V	64.52	-30.71	-27.00	-3.71
3174.4	H	53.95	-41.28	-27.00	-14.28
7067.24	H	62.71	-32.52	-27.00	-5.52
10216.79	H	65.76	-29.47	-27.00	-2.47

Temperature :	28℃	Test Date :	March 27, 2018
Humidity :	65 %	Test By:	King Kong
Test mode:	802.11a	Frequency(MHz):	5240

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
3992.85	V	57.89	-37.34	-27.00	-10.34
5920.42	V	57.79	-37.44	-27.00	-10.44
9076.47	V	64.31	-30.92	-27.00	-3.92
3190.51	H	53.1	-42.13	-27.00	-15.13
6660.04	H	61.2	-34.03	-27.00	-7.03
9986.19	H	65.3	-29.93	-27.00	-2.93

Note: (1) Emission Level= Reading Level+Probe Factor +Cable Loss.
(2) EIRP[dBm] = E[dBμV/m] + 20 log(d[meters]) - 104.77
d is the measurement distance in 3 meters

- ☒Undesirable radiated Undesirable radiated Spurious Emission in Band Edge

Temperature :	28℃	Test Date :	March 27, 2018
Humidity :	65 %	Test By:	King Kong
Test mode:	802.11a	Frequency(MHz):	5180

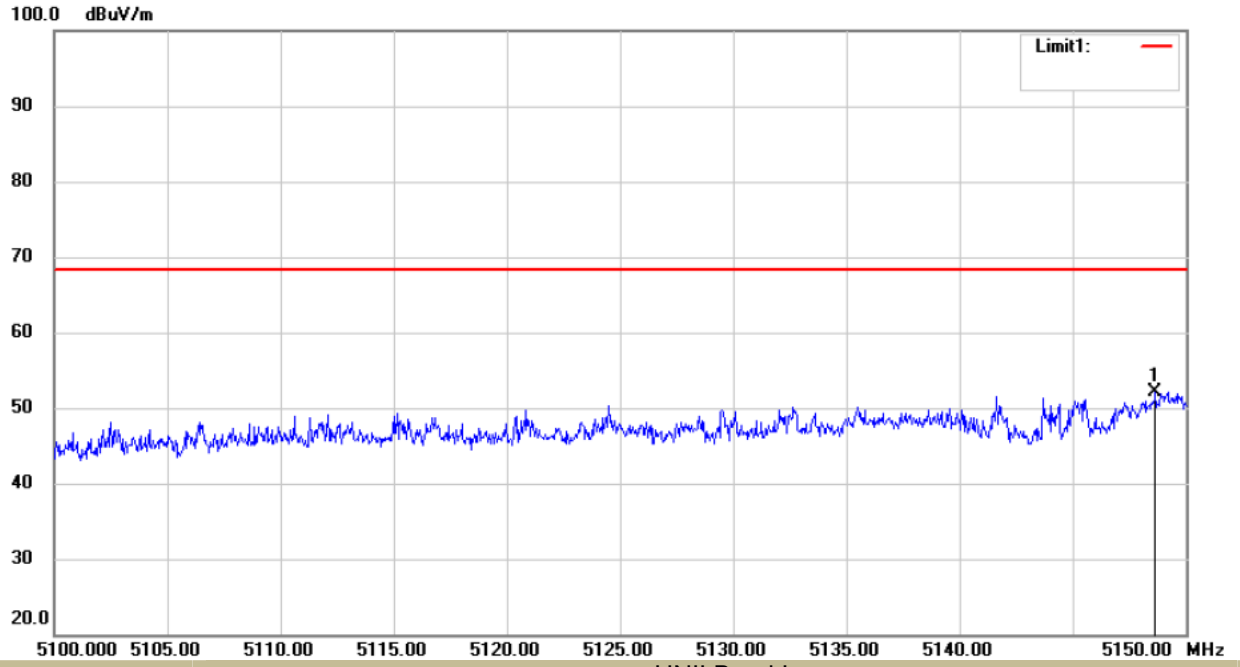
Freq. (MHz)	Ant.Pol. H/V	Field Strength (RBW=100KHz) (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Verdict
5149.65	V	54.93	-40.30	-27.00	Pass
5148.65	H	52.05	-43.18	-27.00	Pass

Temperature :	28℃	Test Date :	March 27, 2018
Humidity :	65 %	Test By:	King Kong
Test mode:	802.11a	Frequency(MHz):	5240

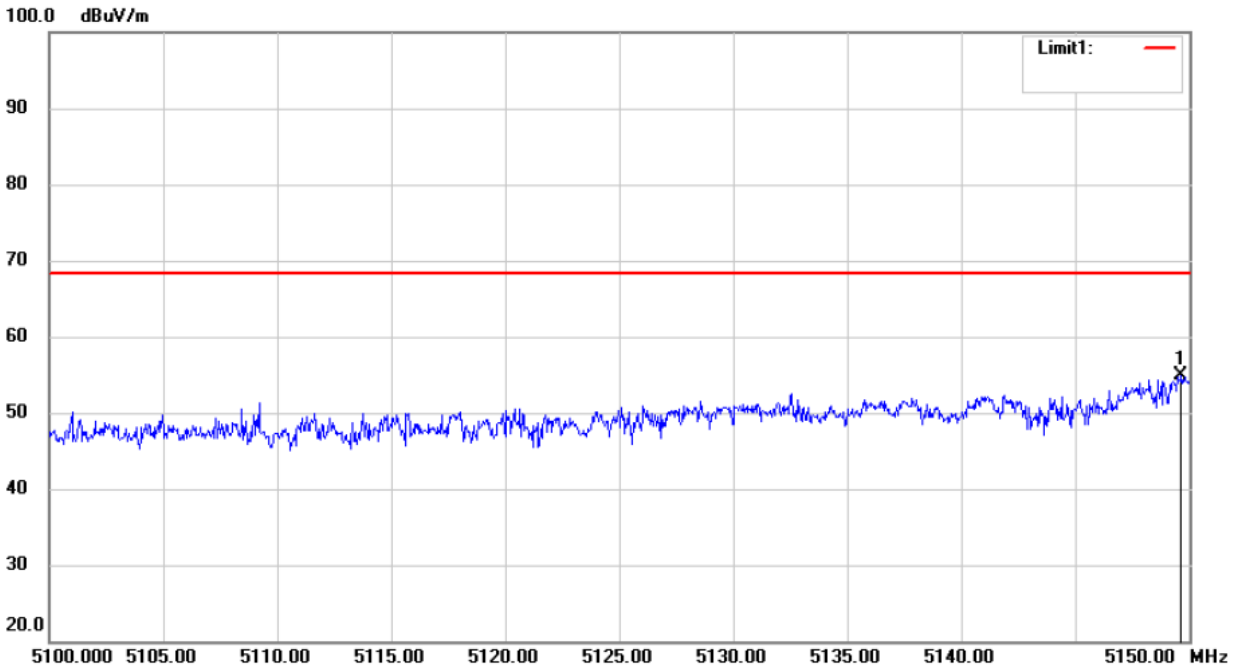
Freq. (MHz)	Ant.Pol. H/V	Field Strength (RBW=100KHz) (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Verdict
5352.45	V	50.42	-44.81	-27.00	Pass
5351.65	H	52.16	-43.07	-27.00	Pass

Note: (1) Emission Level= Reading Level+Probe Factor +Cable Loss.
(2) EIRP[dBm] = E[dBμV/m] + 20 log(d[meters]) - 104.77
d is the measurement distance in 3 meters

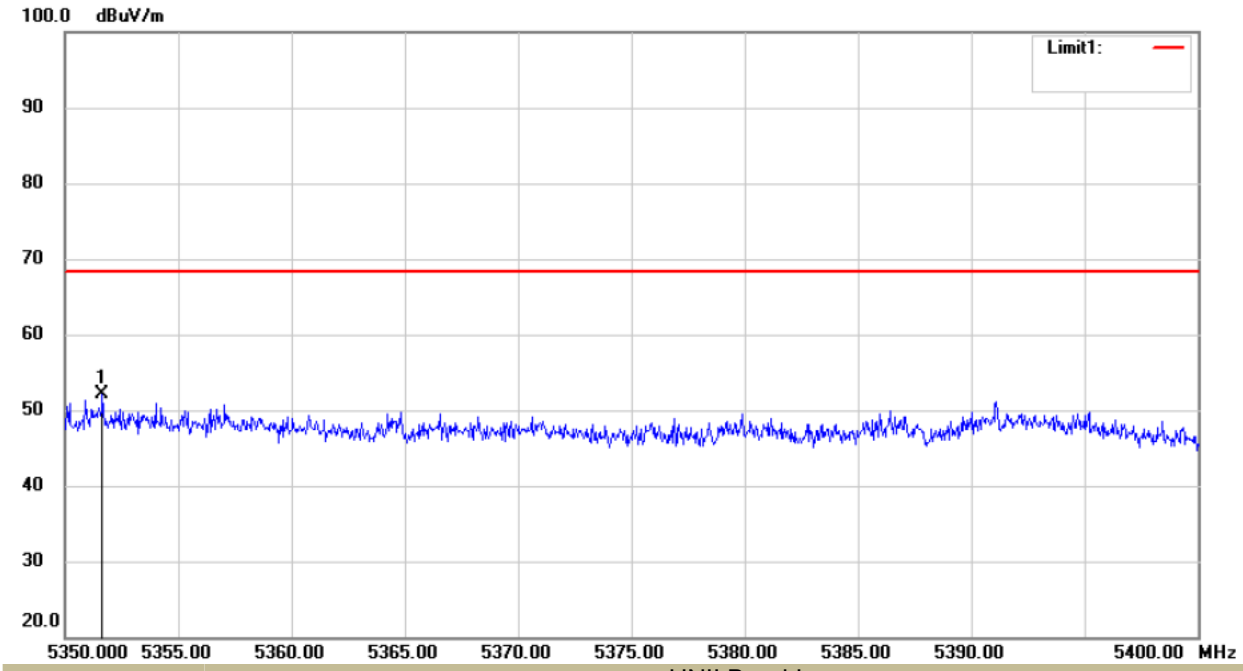
Test Model	UNII Band I Undesirable radiated Spurious Emission in Restricted Band (5100-5150MHz) ☒802.11a ☐802.11n(HT20) ☐802.11n(HT40) ☒5180 ☐5200 ☐5240 Ant.Pol H



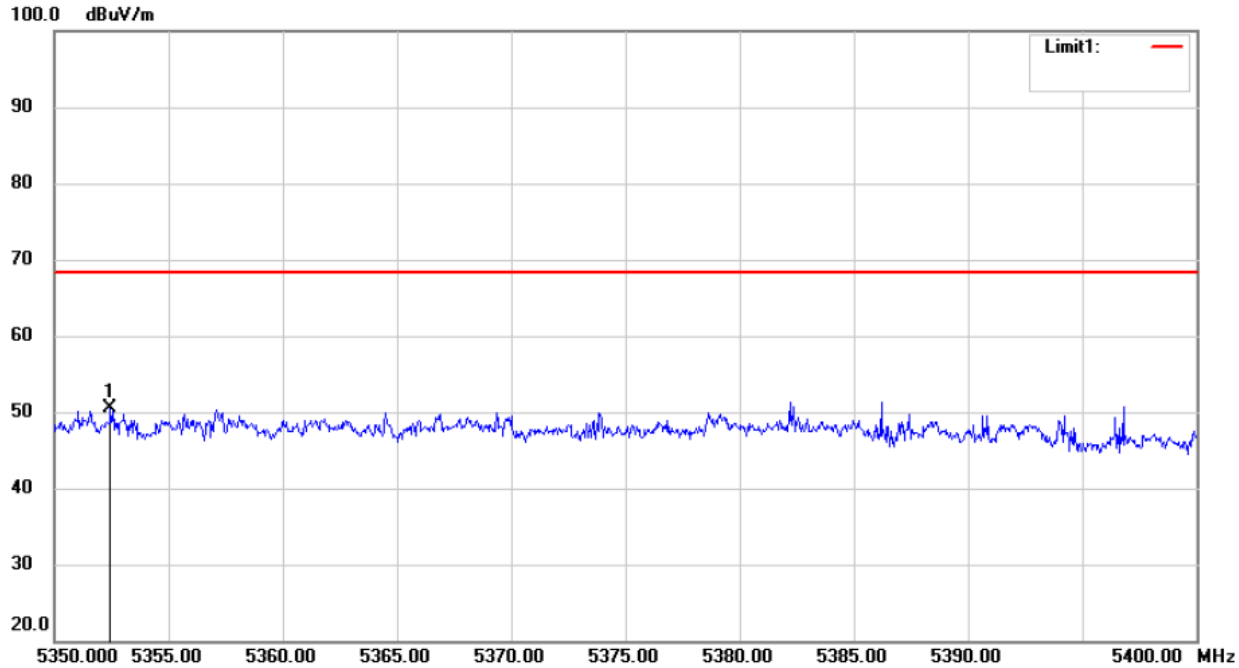
Test Model	UNII Band I Undesirable radiated Spurious Emission in Restricted Band (5100-5150MHz) ☒802.11a ☐802.11n(HT20) ☐802.11n(HT40) ☒5180 ☐5200 ☐5240 Ant.Pol V



Test Model	UNII Band I Undesirable radiated Spurious Emission in Restricted Band (5350-5400MHz) ☒802.11a ☐802.11n(HT20) ☐802.11n(HT40) ☐5180 ☐5200 ☒5240 Ant.Pol H



Test Model	UNII Band I Undesirable radiated Spurious Emission in Restricted Band (5350-5400MHz) ☒802.11a ☐802.11n(HT20) ☐802.11n(HT40) ☐5180 ☐5200 ☒5240 Ant.Pol V



■ ☒For Undesirable radiated Spurious Emission in UNII Band III

All the modes 802.11a/n/ac has been tested and the worst result 802.11a recorded as below:

● ☒Undesirable radiated Spurious Emission Above 1GHz (1GHz to 40GHz)

Temperature :	28℃	Test Date :	April 01, 2018
Humidity :	65 %	Test By:	King Kong
Test mode:	802.11a	Frequency(MHz):	5745

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
3752.74	V	56.06	-39.17	-27.00	-12.17
6545.04	V	59.61	-35.62	-27.00	-8.62
9176.97	V	64.25	-30.98	-27.00	-3.98
3496.82	H	55.28	-39.95	-27.00	-12.95
6733.53	H	64.15	-31.08	-27.00	-4.08
9563.26	H	63.6	-31.63	-27.00	-4.63

Temperature :	28℃	Test Date :	April 01, 2018
Humidity :	65 %	Test By:	King Kong
Test mode:	802.11a	Frequency(MHz):	5785

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
3794.43	V	56.79	-38.44	-27.00	-11.44
6571.83	V	60.27	-34.96	-27.00	-7.96
9702.04	V	63.19	-32.04	-27.00	-5.04
3017.47	H	56.48	-38.75	-27.00	-11.75
6770.68	H	61.96	-33.27	-27.00	-6.27
9294.37	H	63.04	-32.19	-27.00	-5.19

Temperature :	28℃	Test Date :	April 01, 2018
Humidity :	65 %	Test By:	King Kong
Test mode:	802.11a	Frequency(MHz):	5825

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
3982.39	V	58.45	-36.78	-27.00	-9.78
6622.1	V	59.13	-36.10	-27.00	-9.1
9446.89	V	64.99	-30.24	-27.00	-3.24
2974.42	H	54.11	-41.12	-27.00	-14.12
6763.05	H	61.97	-33.26	-27.00	-6.26
10056.18	H	64.04	-31.19	-27.00	-4.19

Note: (1) Emission Level= Reading Level+Probe Factor +Cable Loss.
(2) EIRP[dBm] = E[dBμV/m] + 20 log(d[meters]) - 104.77
d is the measurement distance in 3 meters

- ☒Undesirable radiated Spurious Emission in band edge

Temperature :	28℃	Test Date :	April 01, 2018
Humidity :	65 %	Test By:	King Kong
Test mode:	802.11a	Frequency:	5745

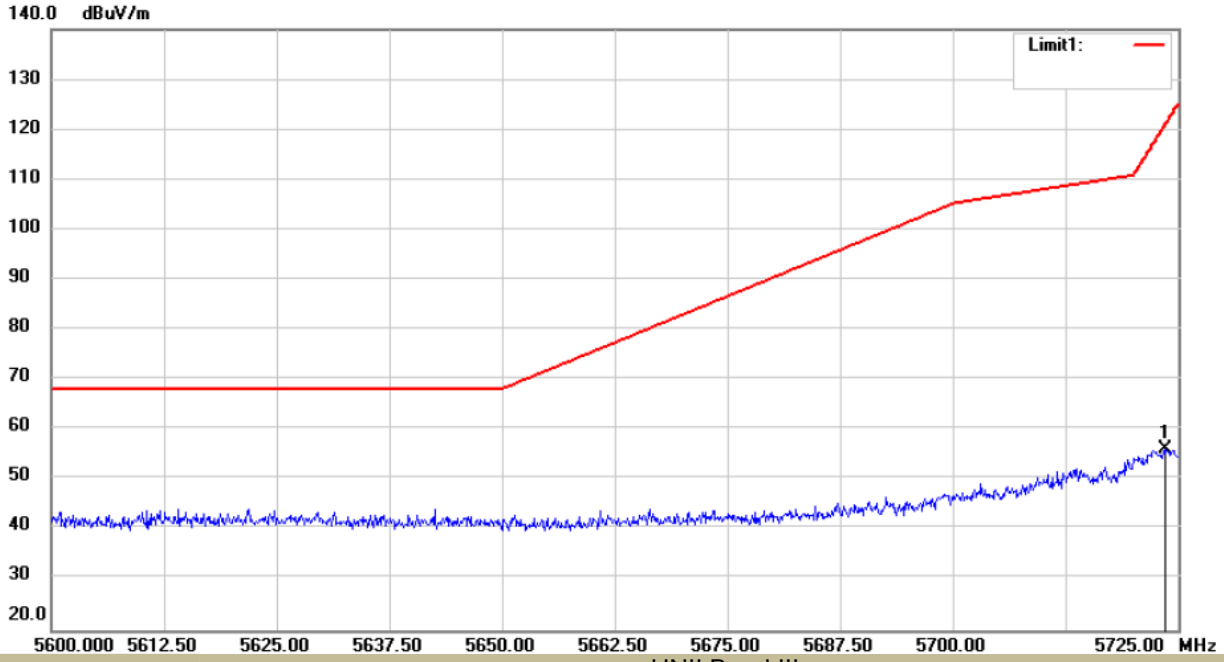
Freq. (MHz)	Ant.Pol. H/V	Field Strength (RBW=100KHz) (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Verdict
5724.75	V	59.37	-35.86	29.28	PASS
5723.50	H	56.01	-39.22	25.68	PASS

Temperature :	28℃	Test Date :	April 01, 2018
Humidity :	65 %	Test By:	King Kong
Test mode:	802.11a	Frequency:	5825

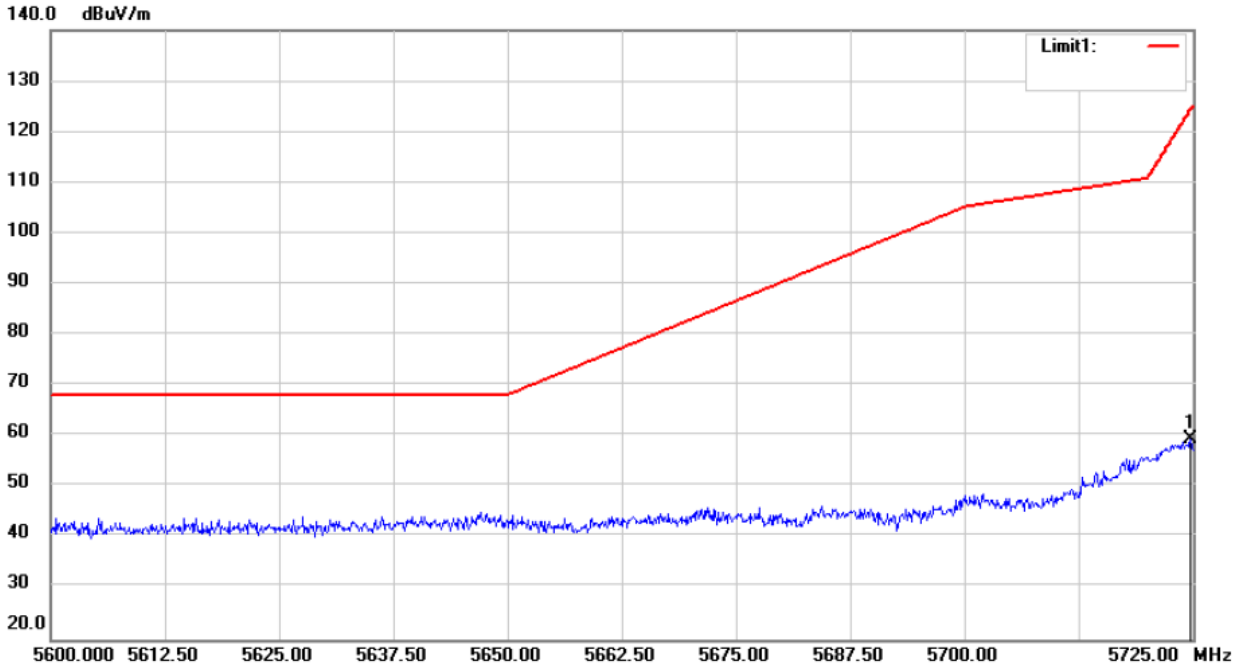
Freq. (MHz)	Ant.Pol. H/V	Field Strength (RBW=100KHz) (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Verdict
5852.125	V	52.09	-43.14	23.88	PASS
5853.125	H	51.31	-43.92	21.00	PASS

Note: (1) Emission Level= Reading Level+Probe Factor +Cable Loss.
(2) EIRP[dBm] = E[dBμV/m] + 20 log(d[meters]) - 104.77
d is the measurement distance in 3 meters

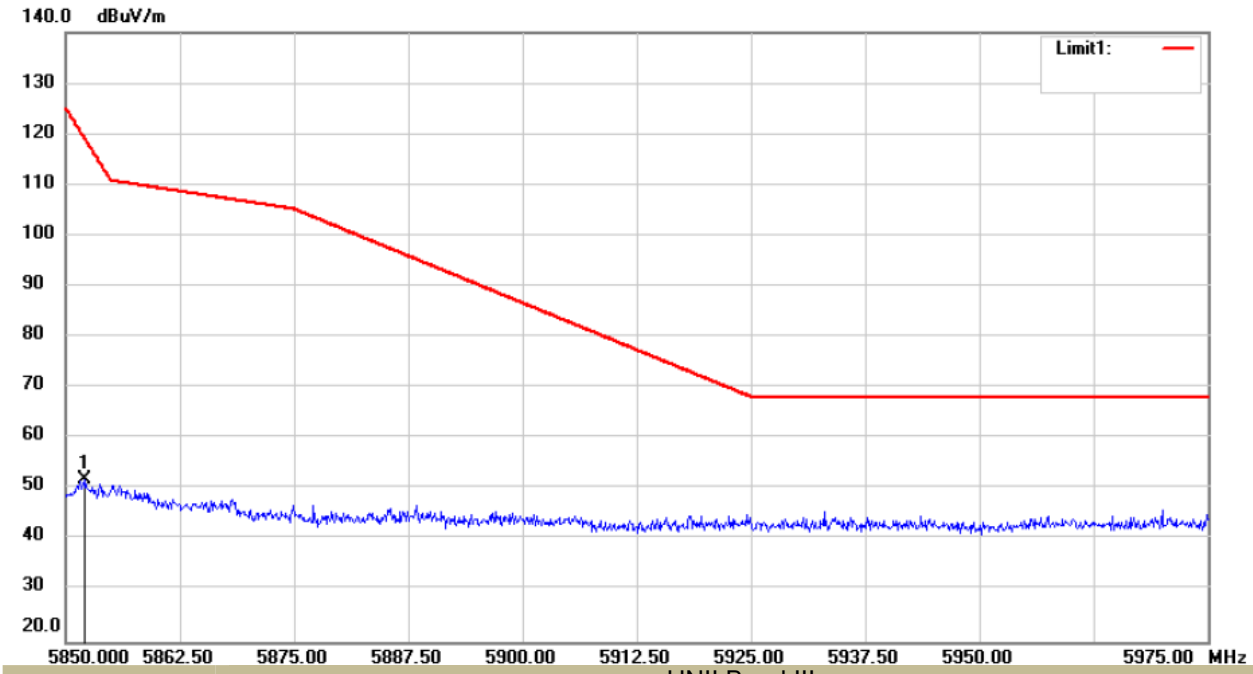
Test Model	UNII Band III Undesirable radiated Undesirable radiated Spurious Emission in Band Edge ☒802.11a ☐802.11n(HT20) ☐802.11n(HT40) ☒5745 Ant.Pol H



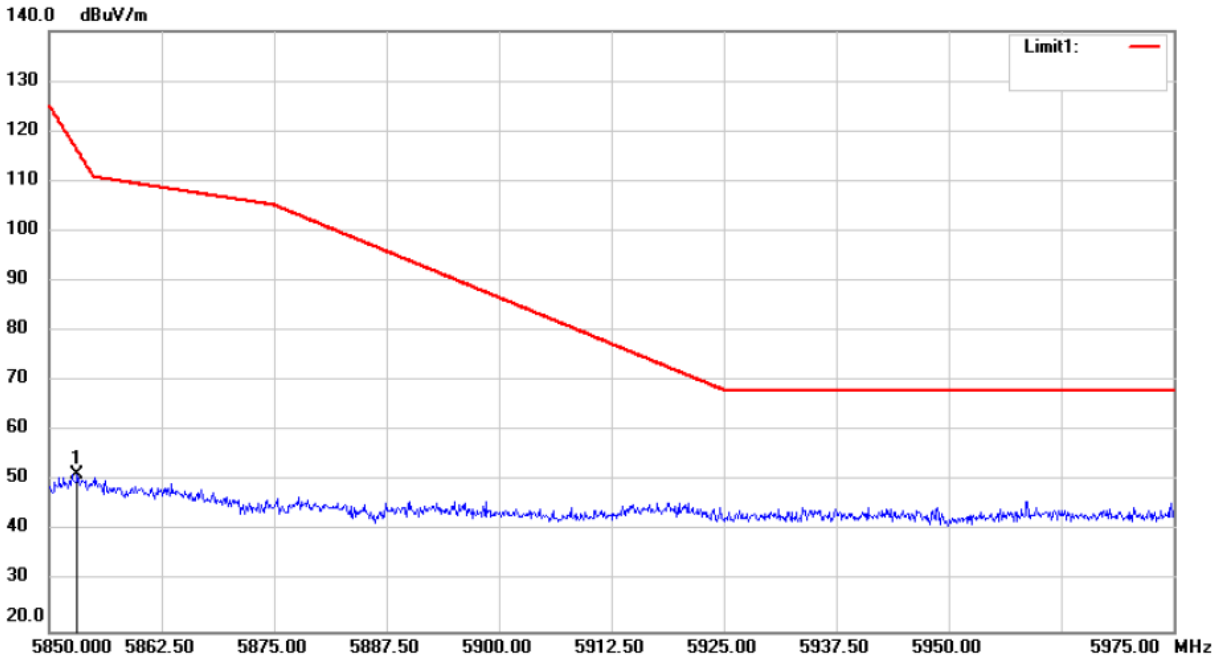
Test Model	UNII Band III Undesirable radiated Undesirable radiated Spurious Emission in Band Edge ☒802.11a ☐802.11n(HT20) ☐802.11n(HT40) ☒5745 Ant.Pol V



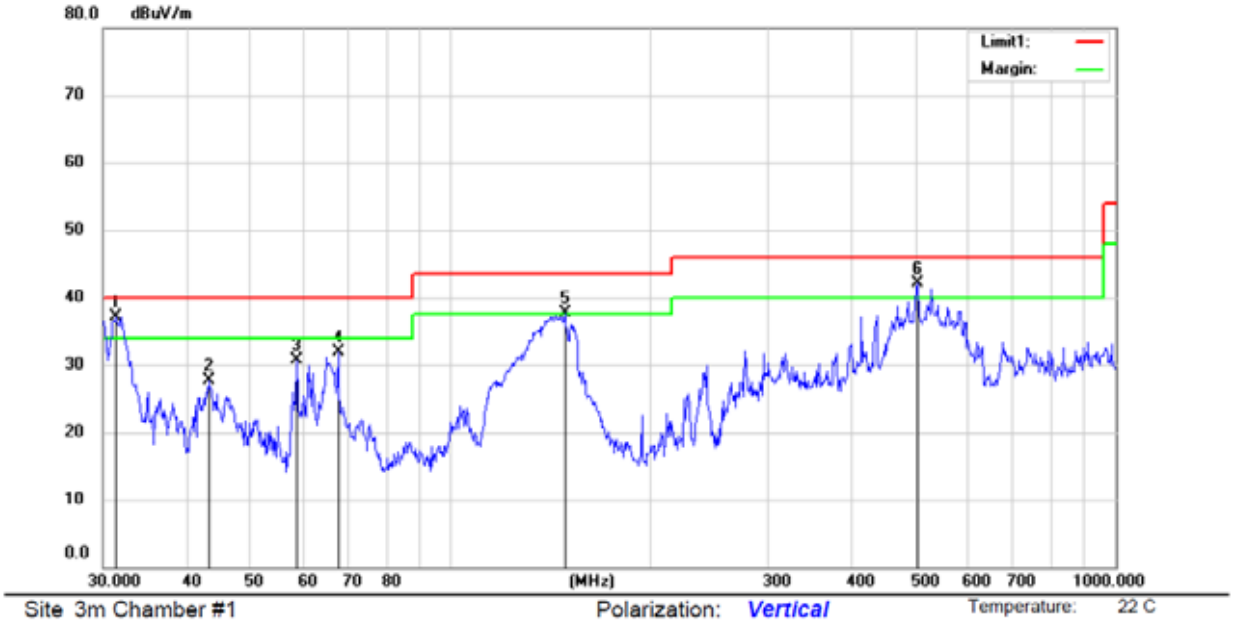
Test Model	UNII Band III Undesirable radiated Undesirable radiated Spurious Emission in Band Edge ☒802.11a ☐802.11n(HT20) ☐802.11n(HT40) ☒5825 Ant.Pol H



Test Model	UNII Band III Undesirable radiated Undesirable radiated Spurious Emission in Band Edge ☒802.11a ☐802.11n(HT20) ☐802.11n(HT40) ☒5825 Ant.Pol V

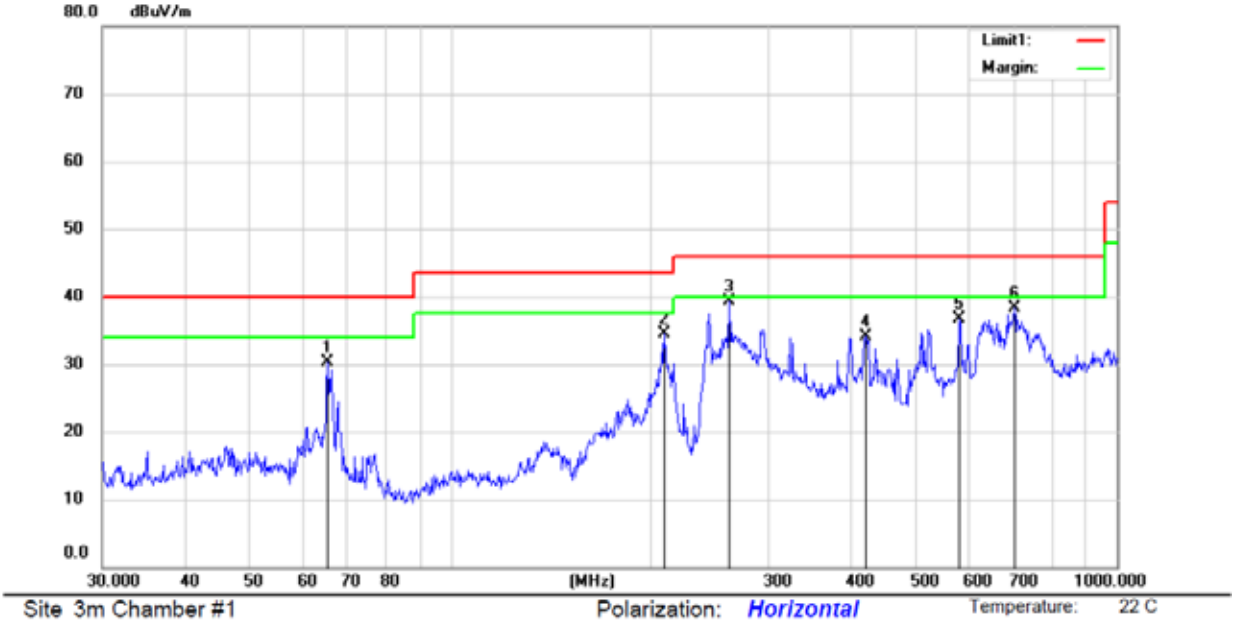


- Undesirable radiated Spurious Emission below 1GHz (30MHz to 1GHz)
  All mode have been tested, and the worst results have been recorded in the report.



Site 3m Chamber #1 Polarization: *Vertical* Temperature: 22 C
Limit: (RE)FCC PART 15C Power: AC 120V/60Hz Humidity: 50 %
Mode:TX 5180
Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	31.2893	51.19	-14.13	37.06	40.00	-2.94	QP			
2		43.2017	39.03	-11.24	27.79	40.00	-12.21	QP			
3		58.6126	43.18	-12.39	30.79	40.00	-9.21	QP			
4		67.6751	46.05	-14.20	31.85	40.00	-8.15	QP			
5	!	148.4410	53.29	-15.56	37.73	43.50	-5.77	QP			
6	!	504.7062	47.04	-4.85	42.19	46.00	-3.81	QP			



Site 3m Chamber #1 Polarization: *Horizontal* Temperature: 22 C

Limit: (RE)FCC PART 15C Power: AC 120V/60Hz Humidity: 50 %

Mode:TX 5180

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		65.3432	43.59	-13.34	30.25	40.00	-9.75	QP			
2		209.3130	46.37	-11.89	34.48	43.50	-9.02	QP			
3	*	261.9753	48.73	-9.46	39.27	46.00	-6.73	QP			
4		419.1081	39.61	-5.55	34.06	46.00	-11.94	QP			
5		580.7026	40.03	-3.27	36.76	46.00	-9.24	QP			
6		701.7610	39.48	-1.24	38.24	46.00	-7.76	QP			

Site 3m Chamber #1 Polarization: *Vertical* Temperature: 22 C

Limit: (RE)FCC PART 15C Power: AC 120V/60Hz Humidity: 50 %

Mode:TX 5200

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		30.0000	47.72	-14.10	33.62	40.00	-6.38	QP			
2		31.1798	46.26	-14.13	32.13	40.00	-7.87	QP			
3	!	64.4331	47.76	-13.14	34.62	40.00	-5.38	QP			
4	!	145.3506	53.45	-15.66	37.79	43.50	-5.71	QP			
5		241.6763	49.69	-10.09	39.60	46.00	-6.40	QP			
6	*	515.4374	47.98	-4.70	43.28	46.00	-2.72	QP			

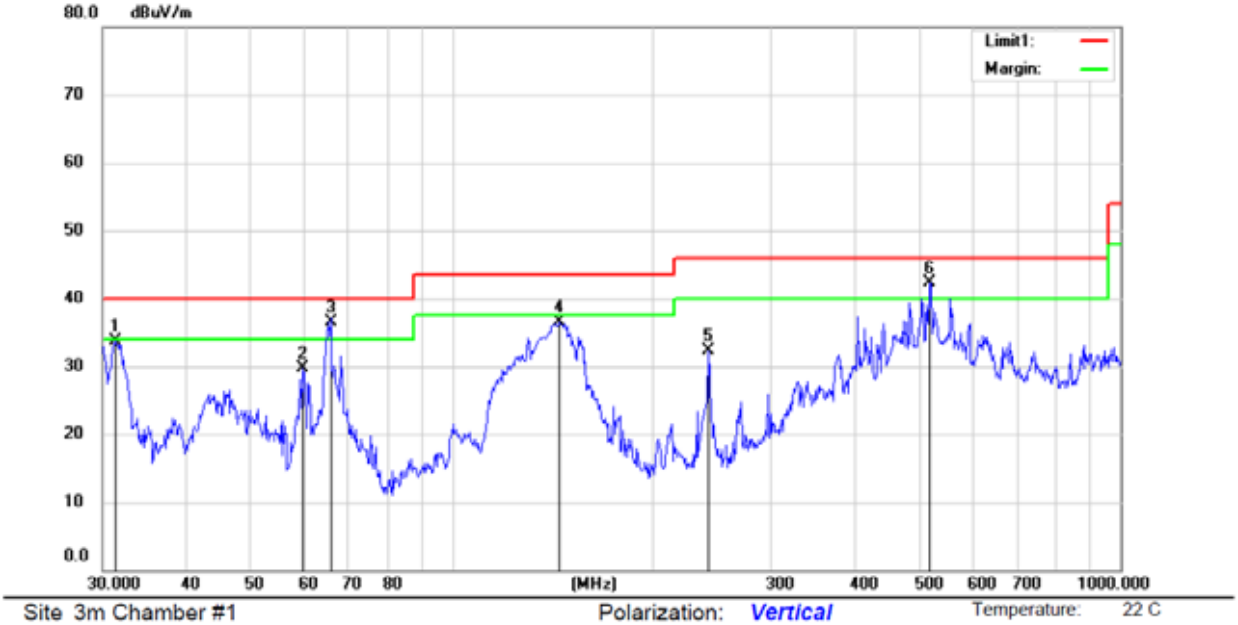
Site 3m Chamber #1 Polarization: *Horizontal* Temperature: 22 C

Limit: (RE)FCC PART 15C Power: AC 120V/60Hz Humidity: 50 %

Mode:TX 5200

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		61.9951	35.64	-12.83	22.81	40.00	-17.19	QP			
2		210.0482	44.75	-11.92	32.83	43.50	-10.67	QP			
3	*	263.8190	46.44	-9.38	37.06	46.00	-8.94	QP			
4		408.9460	40.25	-5.79	34.46	46.00	-11.54	QP			
5		586.8437	38.13	-2.99	35.14	46.00	-10.86	QP			
6		629.4772	37.82	-2.06	35.76	46.00	-10.24	QP			



Site 3m Chamber #1
Limit: (RE)FCC PART 15C
Mode:TX 5240
Note:

Polarization: *Vertical*
Power: AC 120V/60Hz

Temperature: 22 C
Humidity: 50 %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		31.2893	47.82	-14.13	33.69	40.00	-6.31	QP			
2		59.6493	42.18	-12.53	29.65	40.00	-10.35	QP			
3	*	65.8031	50.02	-13.52	36.50	40.00	-3.50	QP			
4		144.8418	52.26	-15.68	36.58	43.50	-6.92	QP			
5		241.6763	42.40	-10.09	32.31	46.00	-13.69	QP			
6	!	519.0650	46.84	-4.52	42.32	46.00	-3.68	QP			

Site 3m Chamber #1 Polarization: *Horizontal* Temperature: 22 C

Limit: (RE)FCC PART 15C Power: AC 120V/60Hz Humidity: 50 %

Mode:TX 5240

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		147.4036	41.03	-15.60	25.43	43.50	-18.07	QP			
2		207.8501	41.92	-11.85	30.07	43.50	-13.43	QP			
3		268.4853	43.51	-9.35	34.16	46.00	-11.84	QP			
4	!	467.2350	45.30	-5.03	40.27	46.00	-5.73	QP			
5	!	552.8832	44.78	-4.07	40.71	46.00	-5.29	QP			
6	*	631.6884	42.85	-2.04	40.81	46.00	-5.19	QP			

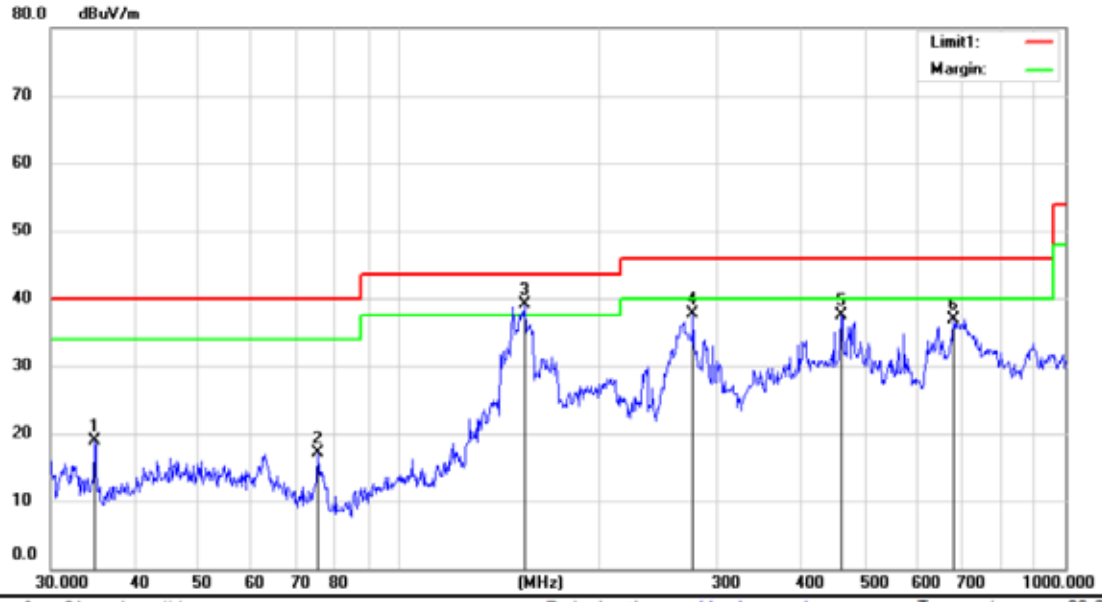
Site 3m Chamber #1
Polarization: *Vertical*
Temperature: 22 C

Limit: (RE)FCC PART 15C
Power: AC 120V/60Hz
Humidity: 50 %

Mode:TX 5745

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	31.8427	50.68	-14.15	36.53	40.00	-3.47	QP			
2		59.2325	43.17	-12.48	30.69	40.00	-9.31	QP			
3		147.4036	50.48	-15.60	34.88	43.50	-8.62	QP			
4		302.4812	45.28	-8.39	36.89	46.00	-9.11	QP			
5		336.0352	45.07	-7.43	37.64	46.00	-8.36	QP			
6		517.2480	43.84	-4.61	39.23	46.00	-6.77	QP			



Site 3m Chamber #1
Polarization: *Horizontal*
Temperature: 22 C
Limit: (RE)FCC PART 15C
Power: AC 120V/60Hz
Humidity: 50 %
Mode:TX 5745
Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		34.8823	32.14	-13.24	18.90	40.00	-21.10	QP			
2		75.4464	33.77	-16.62	17.15	40.00	-22.85	QP			
3	*	154.2786	54.41	-15.29	39.12	43.50	-4.38	QP			
4		276.1235	46.64	-9.02	37.62	46.00	-8.38	QP			
5		460.7271	42.38	-4.96	37.42	46.00	-8.58	QP			
6		679.9600	38.47	-1.52	36.95	46.00	-9.05	QP			

Site 3m Chamber #1 Polarization: *Vertical* Temperature: 22 C

Limit: (RE)FCC PART 15C Power: AC 120V/60Hz Humidity: 50 %

Mode:TX 5785

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		31.3992	47.16	-14.13	33.03	40.00	-6.97	QP			
2		65.3432	42.74	-13.34	29.40	40.00	-10.60	QP			
3		117.7725	51.11	-13.69	37.42	43.50	-6.08	QP			
4		323.3204	45.40	-8.03	37.37	46.00	-8.63	QP			
5	*	520.8882	46.05	-4.45	41.60	46.00	-4.40	QP			
6	!	672.8444	42.40	-1.67	40.73	46.00	-5.27	QP			

Site 3m Chamber #1 Polarization: *Horizontal* Temperature: 22 C

Limit: (RE)FCC PART 15C Power: AC 120V/60Hz Humidity: 50 %

Mode:TX 5785

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		63.3132	38.53	-13.00	25.53	40.00	-14.47	QP			
2		148.4410	43.14	-15.56	27.58	43.50	-15.92	QP			
3		239.1473	46.41	-10.18	36.23	46.00	-9.77	QP			
4		259.2338	46.16	-9.61	36.55	46.00	-9.45	QP			
5		454.3100	41.36	-5.00	36.36	46.00	-9.64	QP			
6	*	684.7454	42.97	-1.46	41.51	46.00	-4.49	QP			

Site 3m Chamber #1
Limit: (RE)FCC PART 15C
Mode:TX 5825
Note:

Polarization: *Vertical*
Power: AC 120V/60Hz

Temperature: 22 C
Humidity: 50 %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		31.2893	47.32	-14.13	33.19	40.00	-6.81	QP			
2	*	66.2662	50.48	-13.68	36.80	40.00	-3.20	QP			
3		143.8295	50.21	-15.65	34.56	43.50	-8.94	QP			
4		327.8873	41.53	-7.82	33.71	46.00	-12.29	QP			
5		502.9395	44.55	-4.82	39.73	46.00	-6.27	QP			
6	!	633.9073	43.35	-2.03	41.32	46.00	-4.68	QP			

Site 3m Chamber #1
Limit: (RE)FCC PART 15C
Mode:TX 5825
Note:

Polarization: *Horizontal*
Power: AC 120V/60Hz

Temperature: 22 C
Humidity: 50 %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		65.3432	41.91	-13.34	28.57	40.00	-11.43	QP			
2		147.4036	44.04	-15.60	28.44	43.50	-15.06	QP			
3		210.7860	44.24	-11.89	32.35	43.50	-11.15	QP			
4		235.8164	45.99	-10.47	35.52	46.00	-10.48	QP			
5		336.0352	43.72	-7.43	36.29	46.00	-9.71	QP			
6	*	684.7454	38.61	-1.46	37.15	46.00	-8.85	QP			

8.6 POWER LINE CONDUCTED EMISSIONS

8.6.1 Applicable Standard

According to FCC Part 15.207(a)

8.6.2 Conformance Limit

Conducted Emission Limit		
Frequency(MHz)	Quasi-peak	Average
0.15-0.5	66-56	56-46
0.5-5.0	56	46
5.0-30.0	60	50

Note: 1. The lower limit shall apply at the transition frequencies
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

8.6.3 Test Configuration

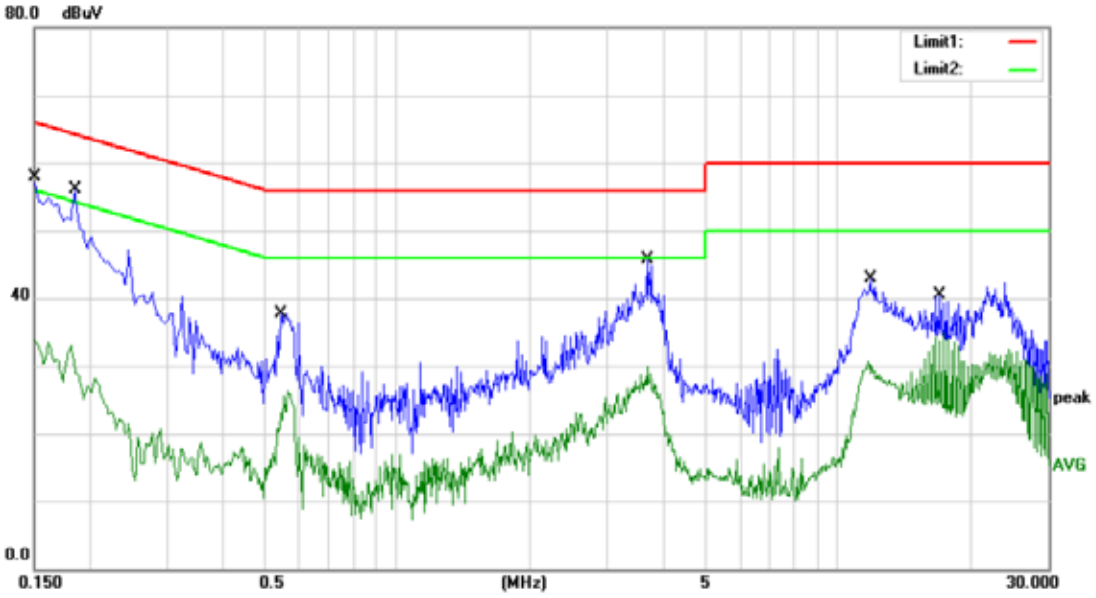
Test according to clause 6.3 conducted emission test setup

8.6.4 Test Procedure

The EUT was placed on a table which is 0.8m above ground plane.
Maximum procedure was performed on the highest emissions to ensure EUT compliance.
Repeat above procedures until all frequency measured were complete.

8.6.5 Test Results

Pass

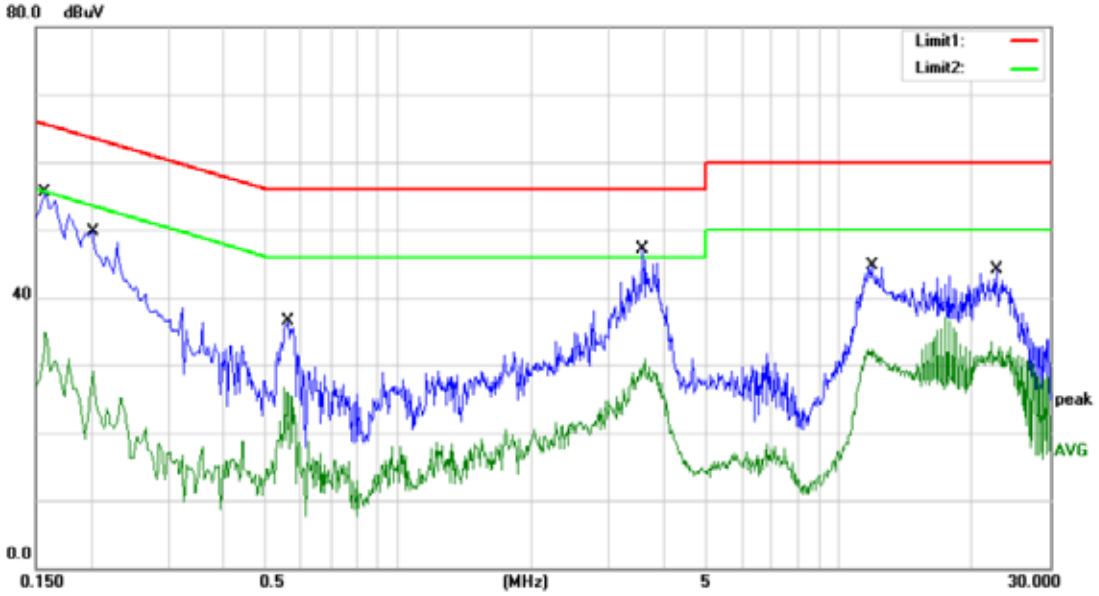


Site Conduction #1
Limit: (CE)FCC PART 15 C
Mode: WIFI ON
Note:

Phase: L1
Power: AC 120V/60Hz

Temperature: 24.9
Humidity: 54 %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1500	48.27	9.60	57.87	66.00	-8.13	QP	
2		0.1500	24.49	9.60	34.09	56.00	-21.91	AVG	
3	*	0.1860	46.54	9.61	56.15	64.21	-8.06	QP	
4		0.1860	22.97	9.61	32.58	54.21	-21.63	AVG	
5		0.5460	28.08	9.70	37.78	56.00	-18.22	QP	
6		0.5460	16.58	9.70	26.28	46.00	-19.72	AVG	
7		3.6940	35.95	9.80	45.75	56.00	-10.25	QP	
8		3.6940	20.20	9.80	30.00	46.00	-16.00	AVG	
9		11.8300	32.90	10.01	42.91	60.00	-17.09	QP	
10		11.8300	20.63	10.01	30.64	50.00	-19.36	AVG	
11		17.0740	30.12	10.32	40.44	60.00	-19.56	QP	
12		17.0740	23.18	10.32	33.50	50.00	-16.50	AVG	



Site Conduction #1 Phase: N Temperature: 24.9

Limit: (CE)FCC PART 15 C Power: AC 120V/60Hz Humidity: 54 %

Mode: WIFI ON

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1580	45.94	9.60	55.54	65.57	-10.03	QP	
2		0.1580	25.36	9.60	34.96	55.57	-20.61	AVG	
3		0.2020	40.18	9.61	49.79	63.53	-13.74	QP	
4		0.2020	20.50	9.61	30.11	53.53	-23.42	AVG	
5		0.5620	26.84	9.70	36.54	56.00	-19.46	QP	
6		0.5620	16.90	9.70	26.60	46.00	-19.40	AVG	
7	*	3.5700	37.20	9.80	47.00	56.00	-9.00	QP	
8		3.5700	21.16	9.80	30.96	46.00	-15.04	AVG	
9		11.8180	34.73	10.01	44.74	60.00	-15.26	QP	
10		11.8180	22.31	10.01	32.32	50.00	-17.68	AVG	
11		22.6860	33.69	10.50	44.19	60.00	-15.81	QP	
12		22.6860	22.93	10.50	33.43	50.00	-16.57	AVG	

8.7 ANTENNA APPLICATION

8.7.1 Antenna Requirement

Standard	Requirement
FCC CRF Part 15.203	An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of §15.211, §15.213, §15.217, §15.219, or §15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with §15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. And according to FCC 47 CFR Section 15.407 (a), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

8.7.2 Result

PASS.

The EUT'S with WIFI function has four integral antennas. The antenna gain is 5dBi, and the four antennas can't be replaced by the user which in accordance to section 15.203, please refer to the photos.