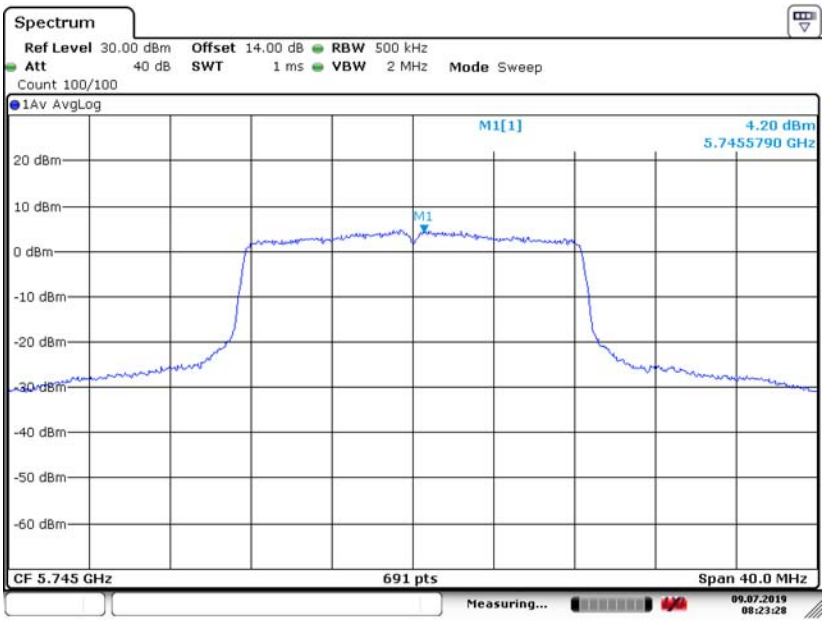
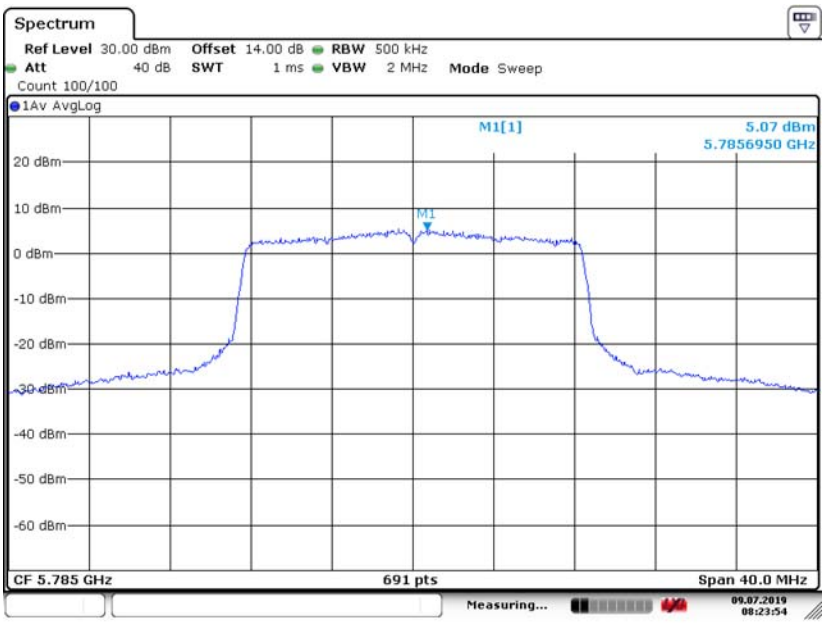
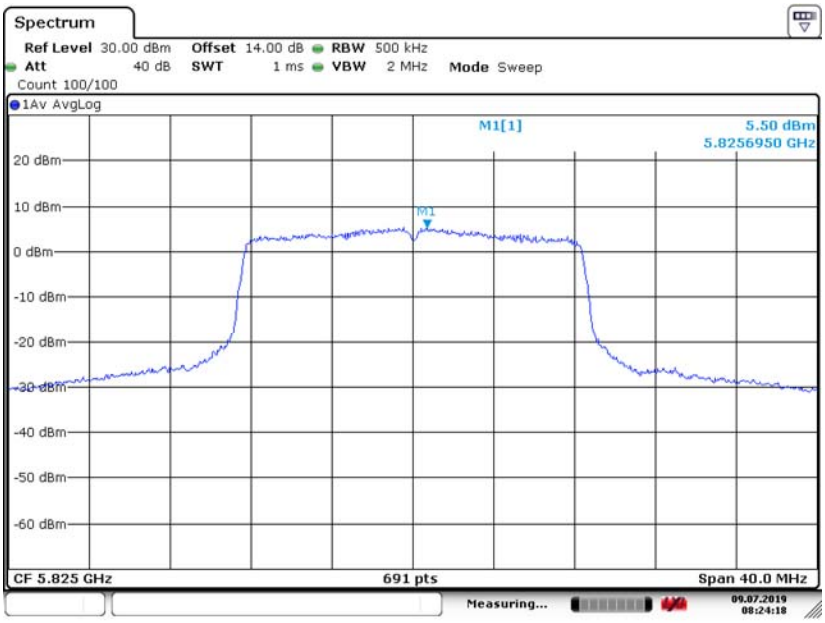
Power Spectral Density		UNII Band III	
Test Model	802.11a	Frequency(MHz)	5745



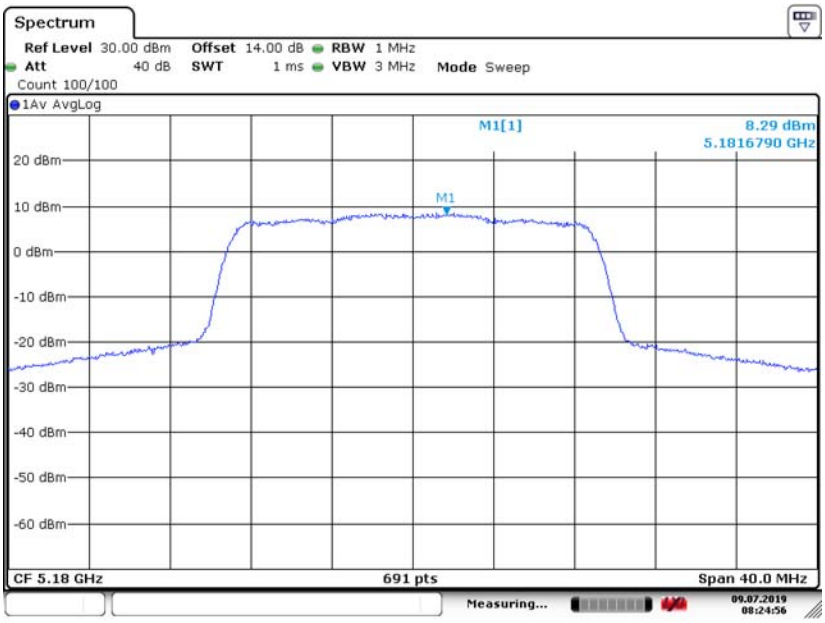
Power Spectral Density		UNII Band III	
Test Model	802.11a	Frequency(MHz)	5785



Power Spectral Density		UNII Band III	
Test Model	802.11a	Frequency(MHz)	5825

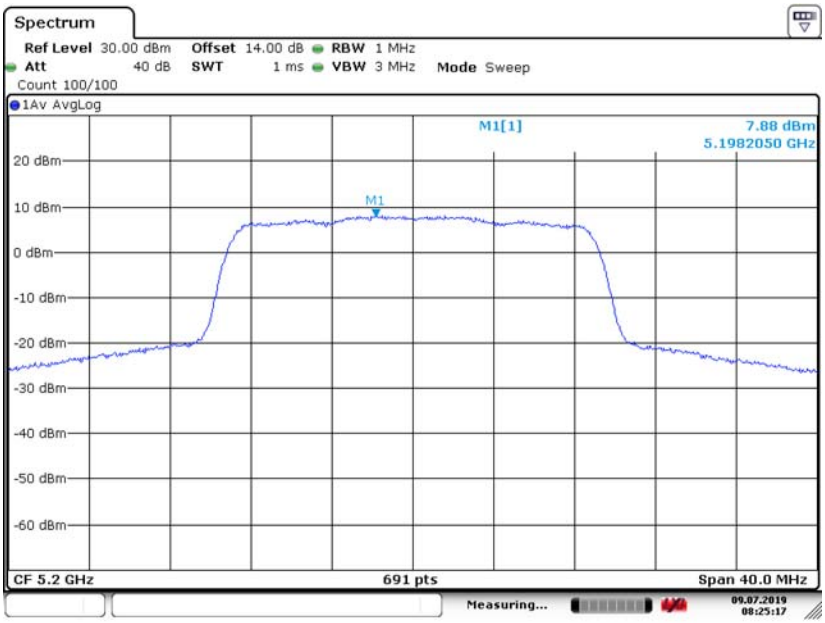


Power Spectral Density		UNII Band I	
Test Model	802.11n(HT20) mode	Frequency(MHz)	5180



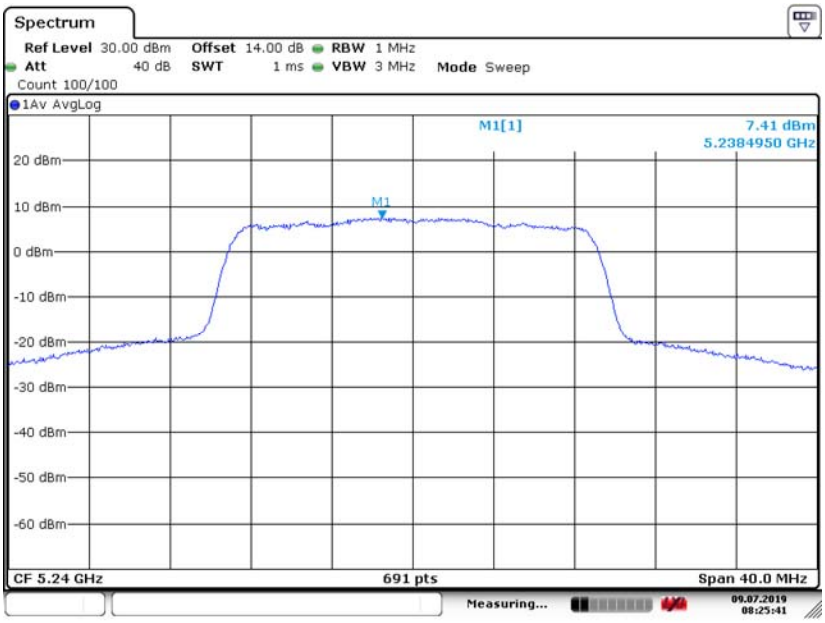
Date: 9.JUL.2019 08:24:56

Power Spectral Density		UNII Band I	
Test Model	802.11n(HT20) mode	Frequency(MHz)	5200

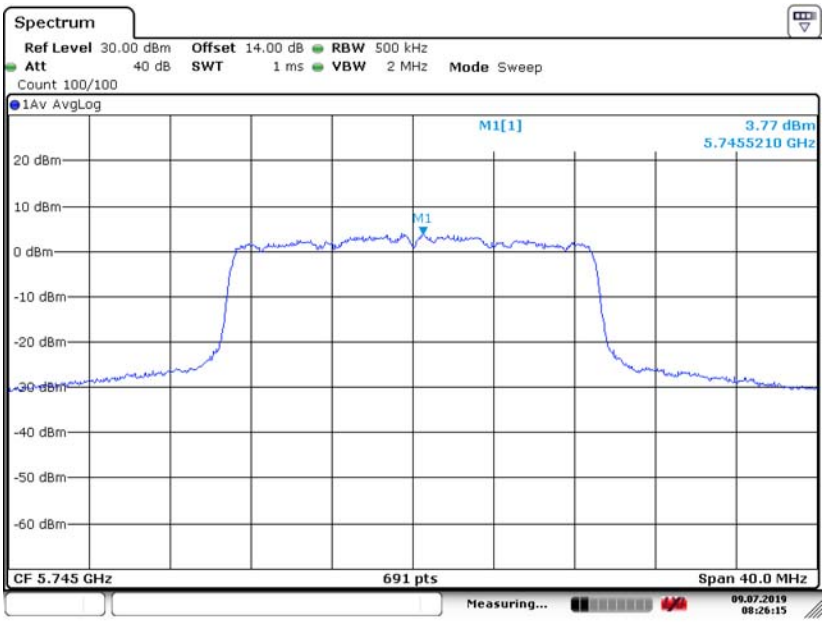


Date: 9.JUL.2019 08:25:18

Power Spectral Density		UNII Band I	
Test Model	802.11n(HT20) mode	Frequency(MHz)	5240

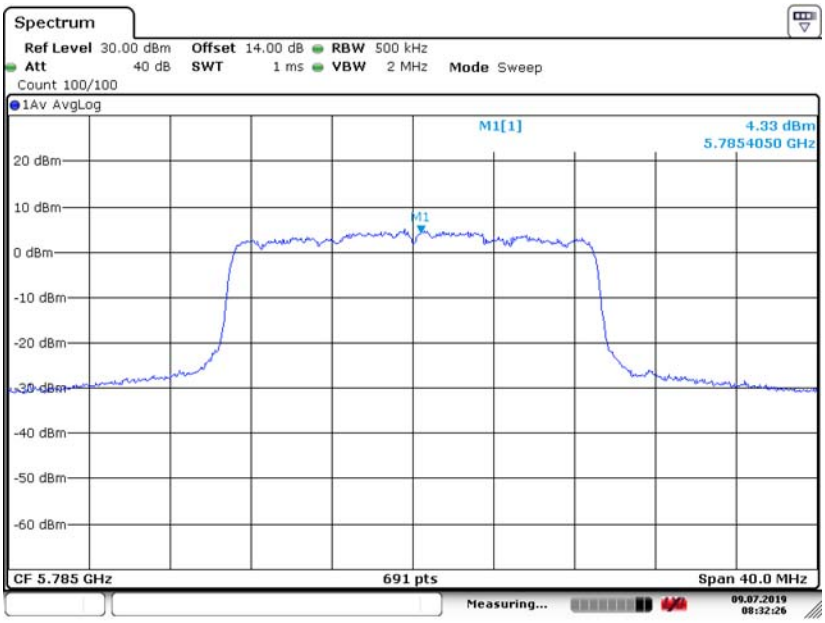


Power Spectral Density		UNII Band III	
Test Model	802.11n(HT20) mode	Frequency(MHz)	5745



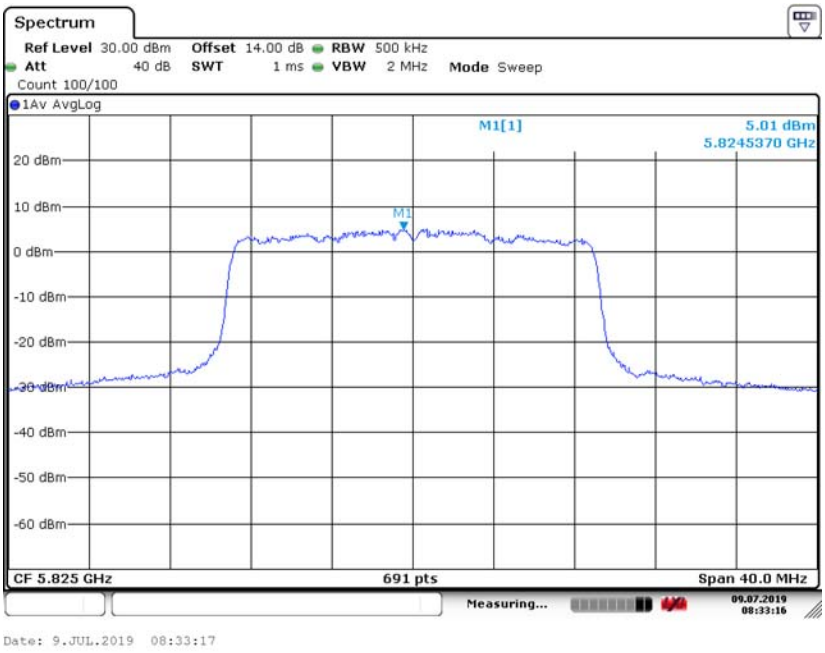
Date: 9.JUL.2019 08:26:16

Power Spectral Density		UNII Band III	
Test Model	802.11n(HT20) mode	Frequency(MHz)	5785

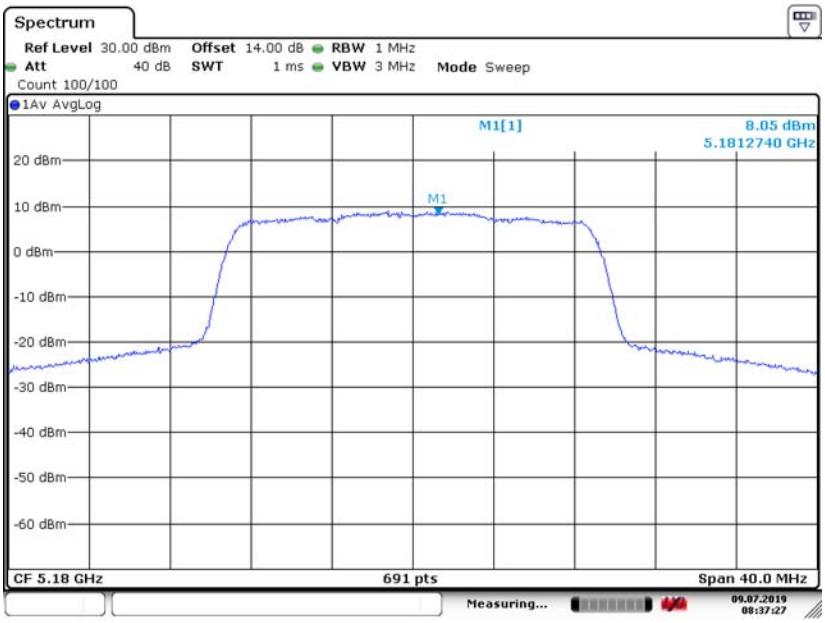


Date: 9.JUL.2019 08:32:26

Power Spectral Density		UNII Band III	
Test Model	802.11n(HT20) mode	Frequency(MHz)	5825

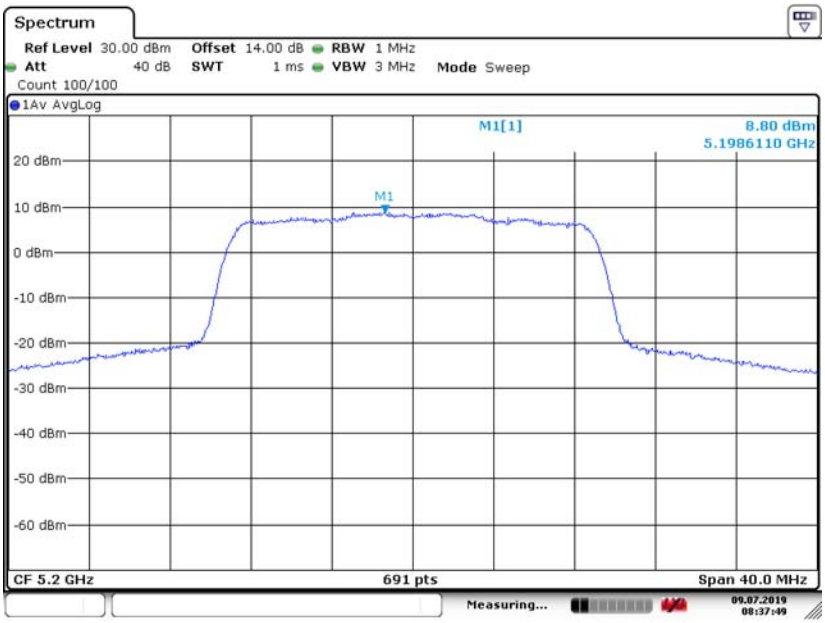


Power Spectral Density		UNII Band I	
Test Model	802.11ac(VHT20) mode	Frequency(MHz)	5180



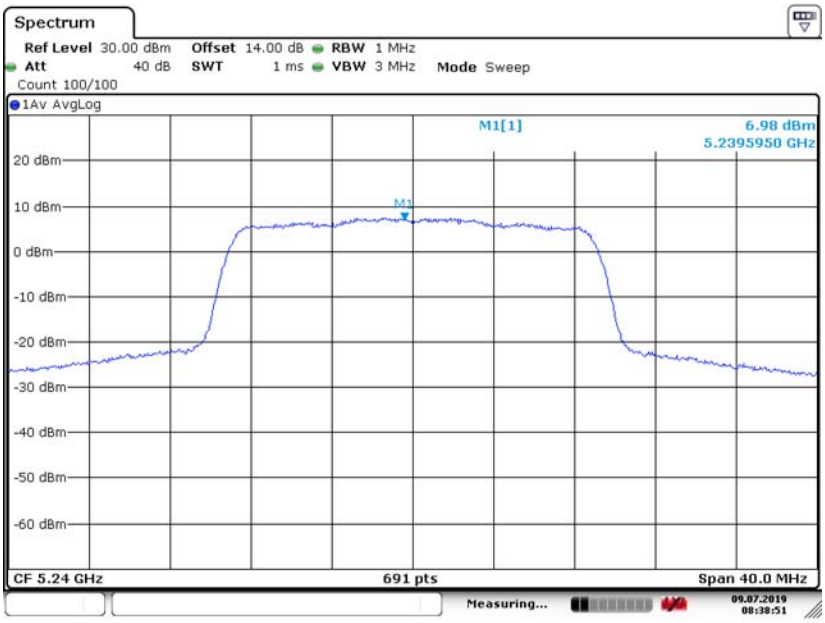
Date: 9.JUL.2019 08:37:27

Power Spectral Density		UNII Band I	
Test Model	802.11ac(VHT20) mode	Frequency(MHz)	5200

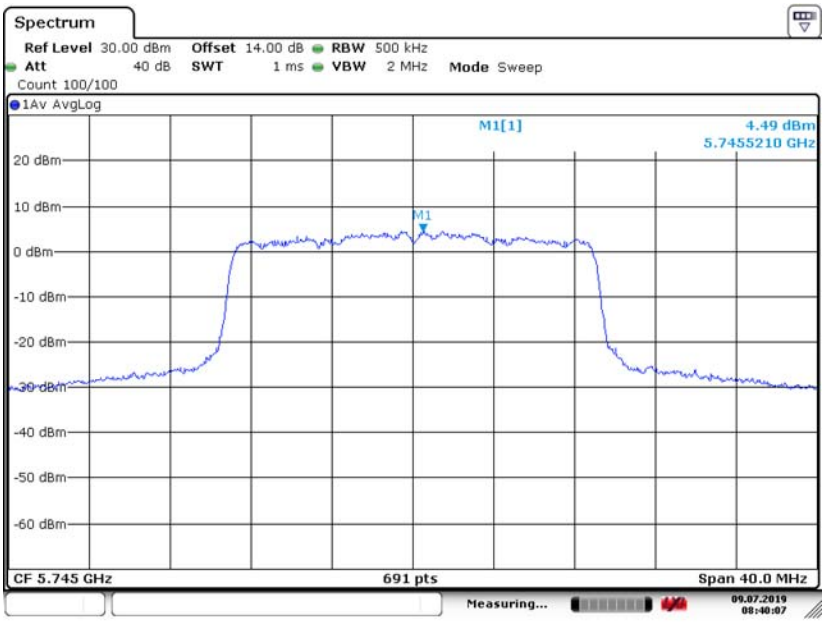


Date: 9.JUL.2019 08:37:49

Power Spectral Density		UNII Band I	
Test Model	802.11ac(VHT20) mode	Frequency(MHz)	5240

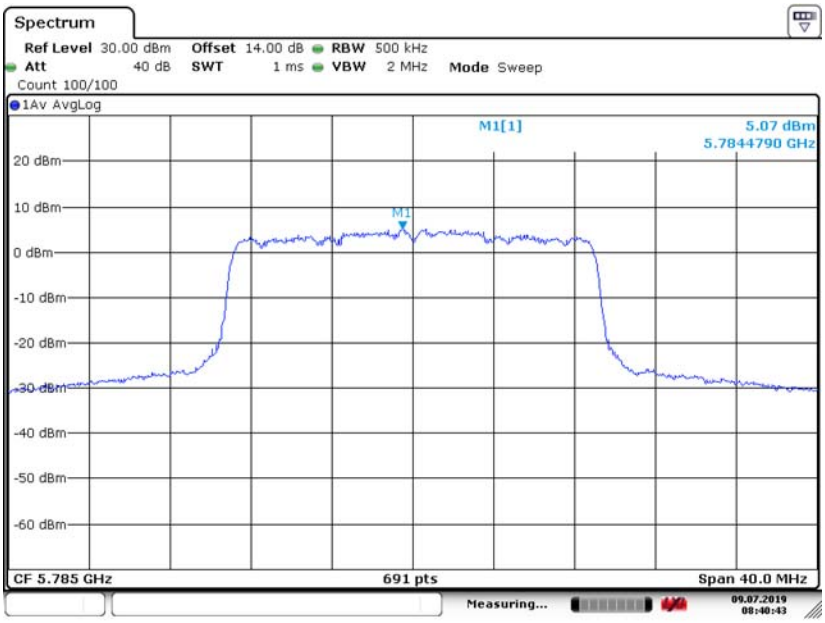


Power Spectral Density		UNII Band III	
Test Model	802.11ac(VHT20) mode	Frequency(MHz)	5745



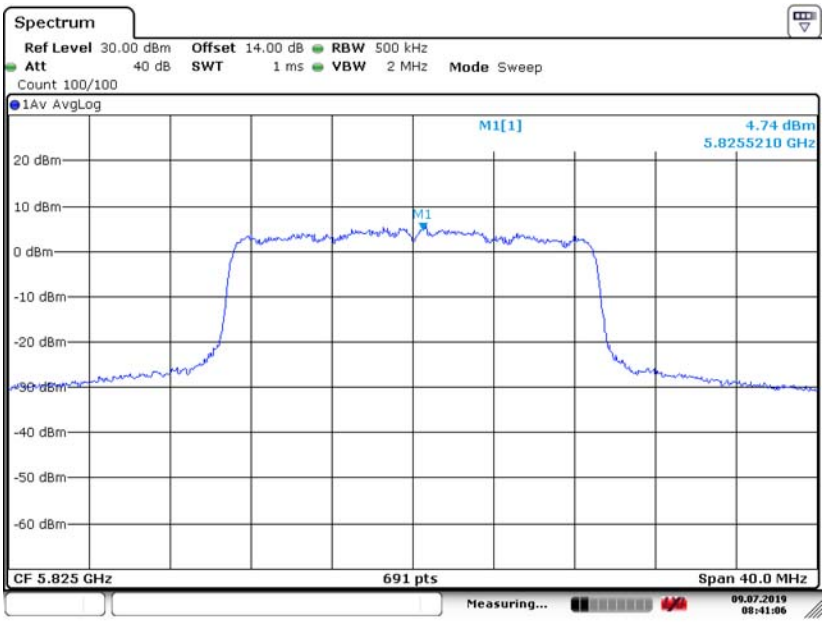
Date: 9.JUL.2019 08:40:08

Power Spectral Density		UNII Band III	
Test Model	802.11ac(VHT20) mode	Frequency(MHz)	5785

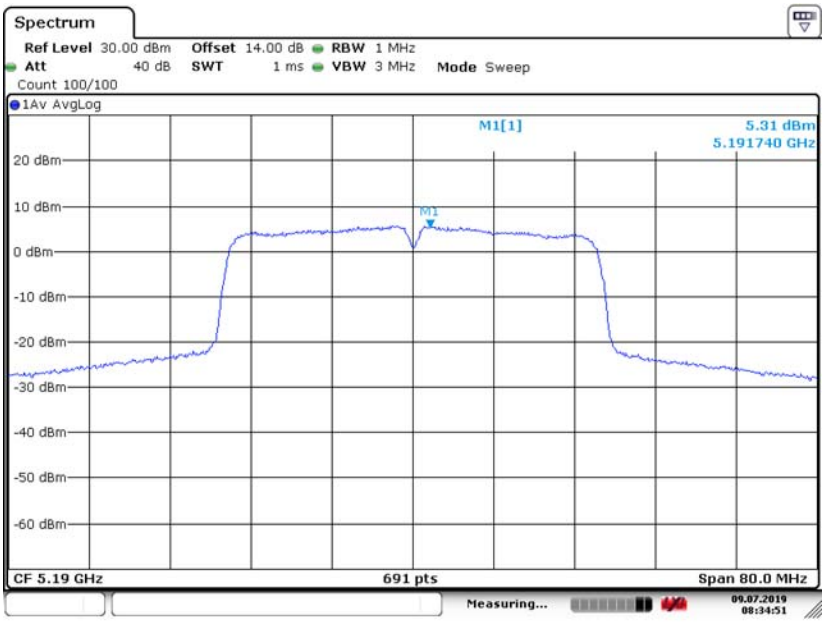


Date: 9.JUL.2019 08:40:44

Power Spectral Density		UNII Band III	
Test Model	802.11ac(VHT20) mode	Frequency(MHz)	5825

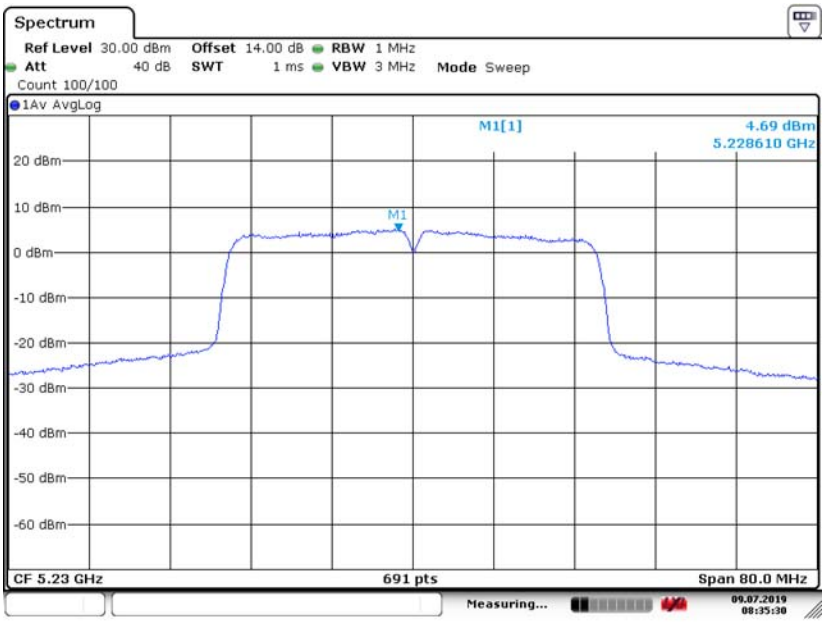


Power Spectral Density		UNII Band I	
Test Model	802.11n(HT40) mode	Frequency(MHz)	5190



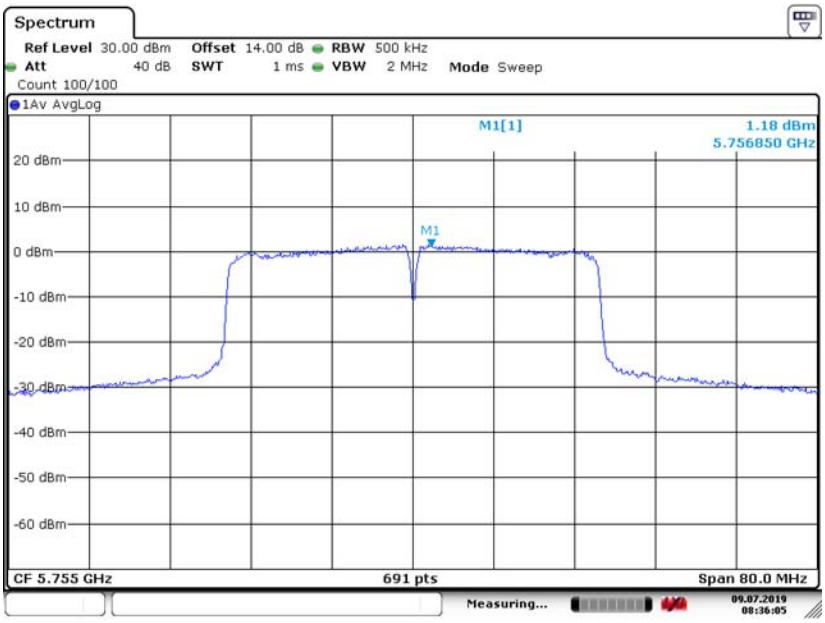
Date: 9.JUL.2019 08:34:52

Power Spectral Density		UNII Band I	
Test Model	802.11n(HT40) mode	Frequency(MHz)	5230



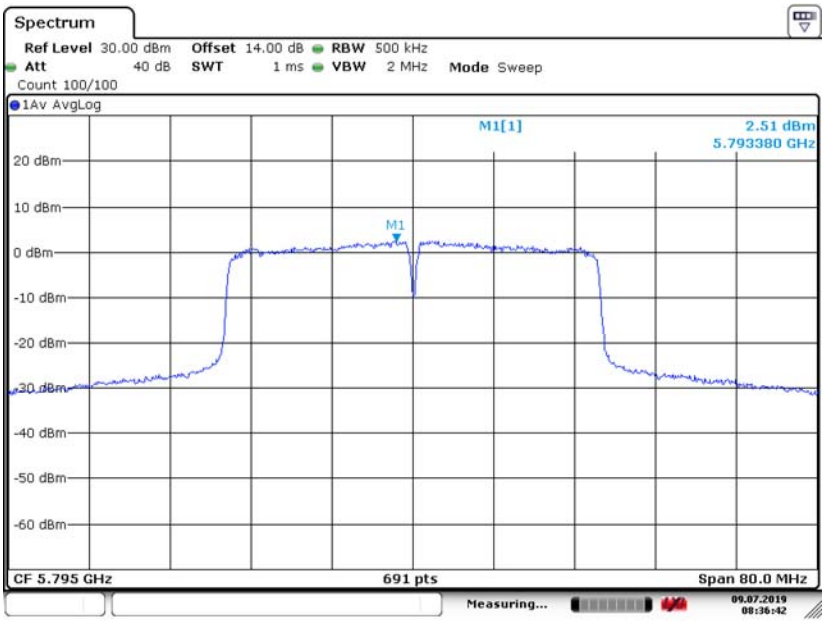
Date: 9.JUL.2019 08:35:31

Power Spectral Density		UNII Band III	
Test Model	802.11n(HT40) mode	Frequency(MHz)	5755



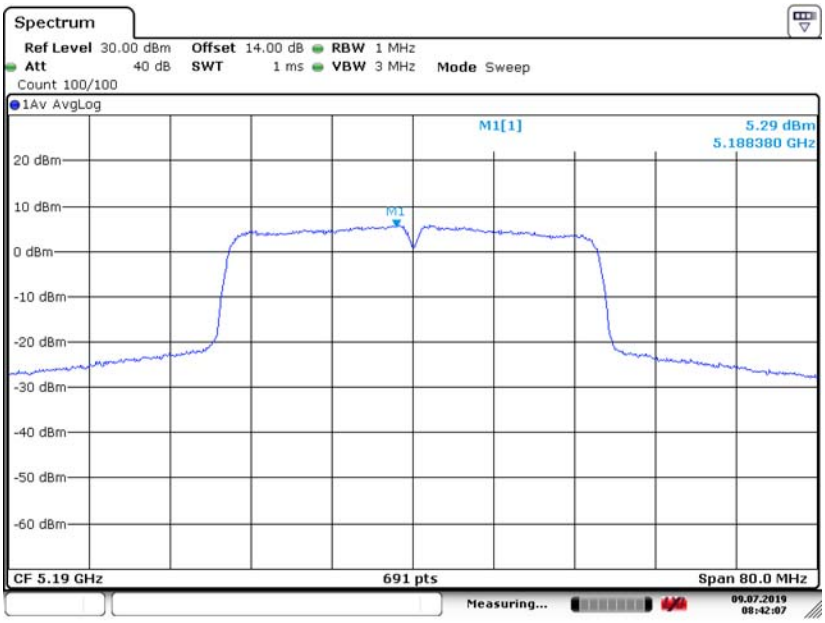
Date: 9.JUL.2019 08:36:05

Power Spectral Density		UNII Band III	
Test Model	802.11n(HT40) mode	Frequency(MHz)	5795



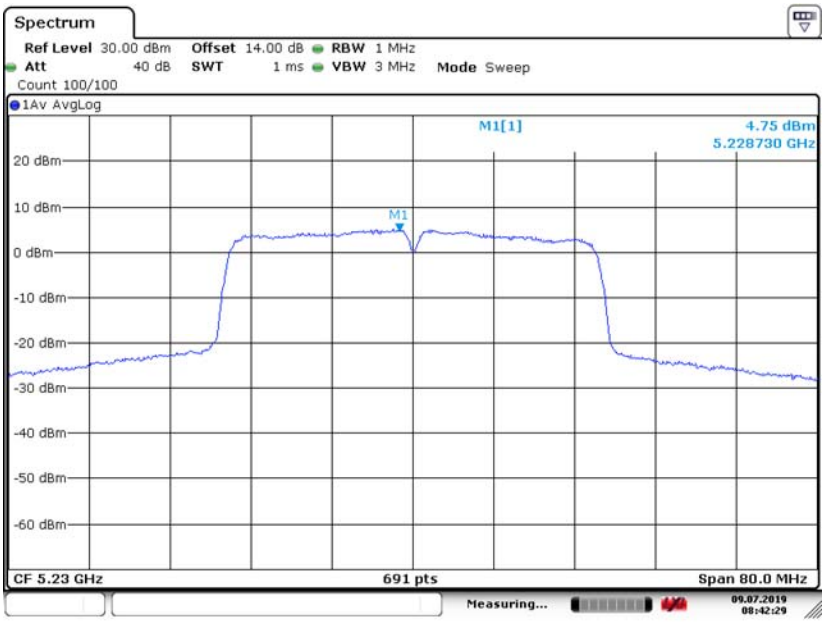
Date: 9.JUL.2019 08:36:43

Power Spectral Density		UNII Band I	
Test Model	802.11ac(VHT40) mode	Frequency(MHz)	5190



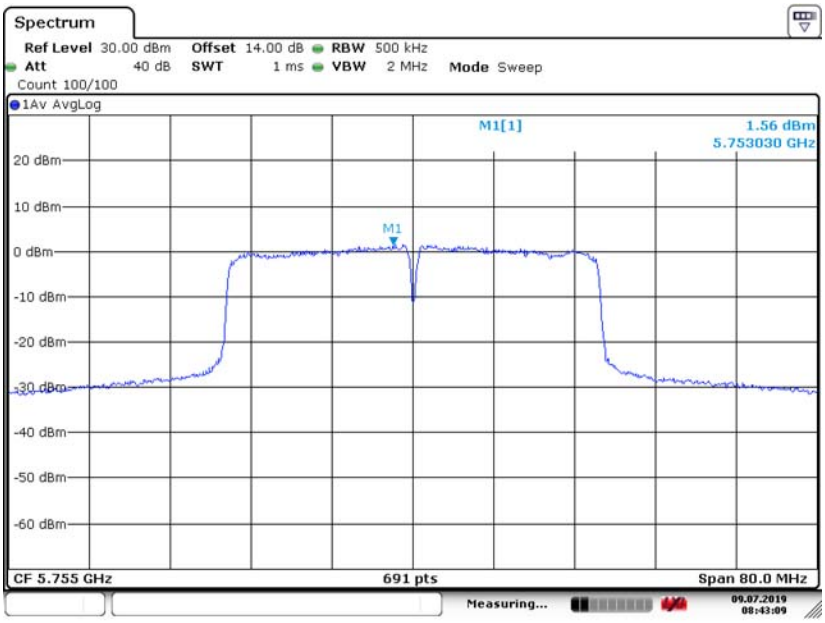
Date: 9.JUL.2019 08:42:08

Power Spectral Density		UNII Band I	
Test Model	802.11ac(VHT40) mode	Frequency(MHz)	5230



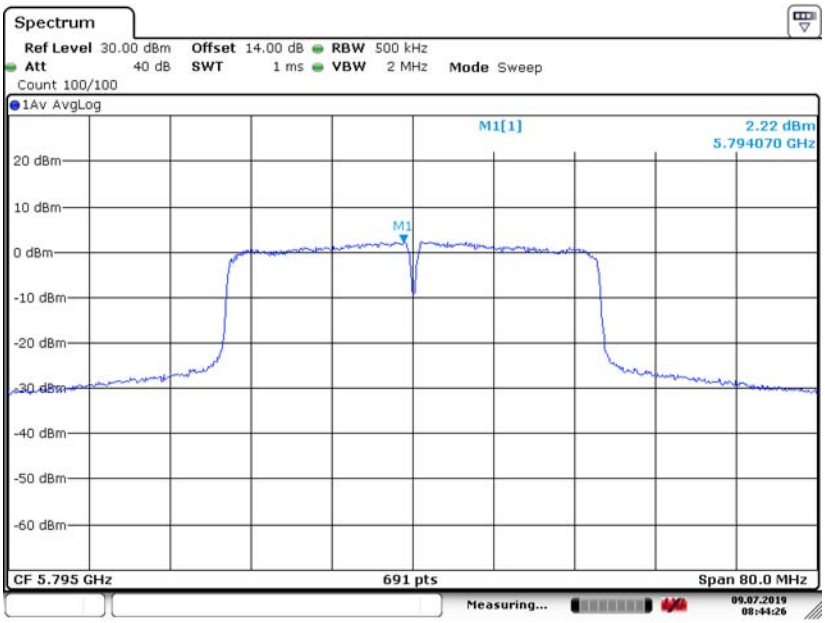
Date: 9.JUL.2019 08:42:29

Power Spectral Density		UNII Band III	
Test Model	802.11ac(VHT40) mode	Frequency(MHz)	5755



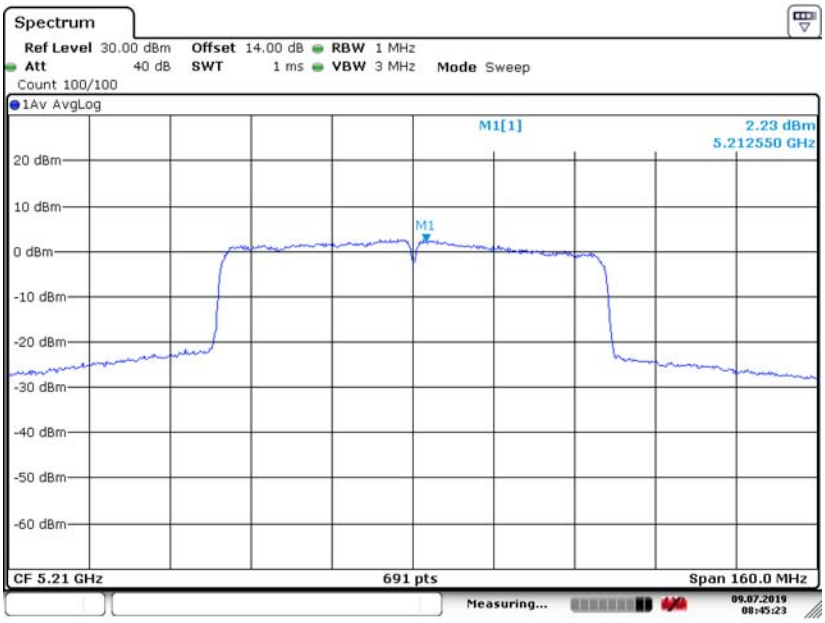
Date: 9.JUL.2019 08:43:09

Power Spectral Density		UNII Band III	
Test Model	802.11ac(VHT40) mode	Frequency(MHz)	5795

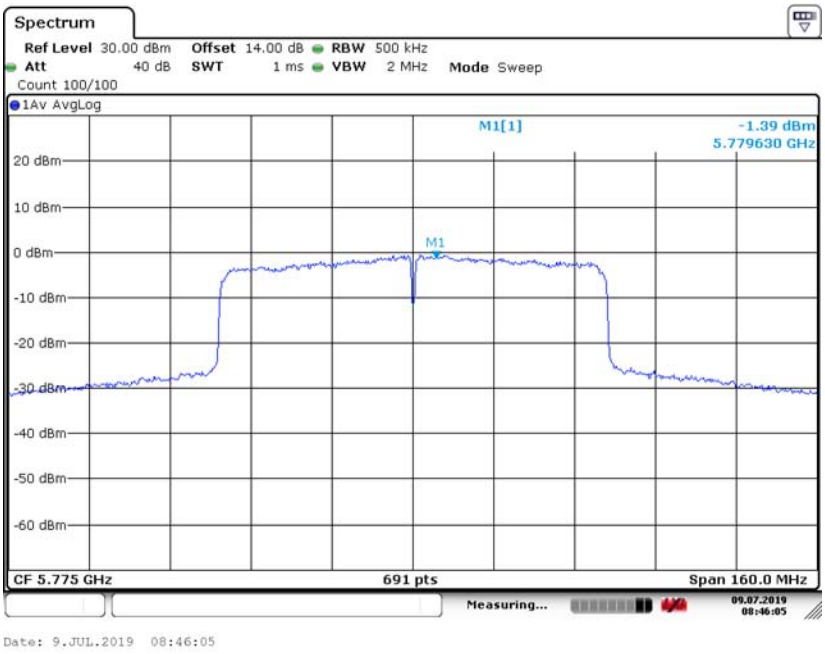


Date: 9.JUL.2019 08:44:26

Power Spectral Density		UNII Band I	
Test Model	802.11ac(VHT80) mode	Frequency(MHz)	5210



Power Spectral Density		UNII Band III	
Test Model	802.11ac(VHT80) mode	Frequency(MHz)	5775



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

Antenna 0		5180	
Temperature :	--	Test By:	King Kong
Humidity :	65 %		

Voltage(V)	Temp(℃)	Test Frequency (MHz)	Max. Deviation (KHz)	Verdict
Vnom	-20	5179.983	-17	Pass
	-10	5179.984	-16	Pass
	0	5179.978	-22	Pass
	10	5179.978	-22	Pass
	20	5179.981	-19	Pass
	30	5179.980	-20	Pass
	40	5179.978	-22	Pass
	50	5179.982	-18	Pass
85% Vnom	20	5179.982	-18	Pass
115% Vnom	20	5179.979	-21	Pass

Antenna 0		5200	
Temperature :	--	Test By:	King Kong
Humidity :	65 %		

Voltage(V)	Temp(℃)	Test Frequency (MHz)	Max. Deviation (KHz)	Verdict
Vnom	-20	5199.960	-40	Pass
	-10	5199.966	-34	Pass
	0	5199.971	-29	Pass
	10	5199.969	-31	Pass
	20	5199.970	-30	Pass
	30	5199.967	-33	Pass
	40	5199.970	-30	Pass
	50	5199.970	-30	Pass
85% Vnom	20	5199.968	-32	Pass
115% Vnom	20	5199.971	-29	Pass

Antenna 0		5240	
Temperature :	--	Test By:	King Kong
Humidity :	65 %		

Voltage(V)	Temp(℃)	Test Frequency (MHz)	Max. Deviation (KHz)	Verdict
Vnom	-20	5239.985	-15	Pass
	-10	5239.987	-13	Pass
	0	5239.987	-13	Pass
	10	5239.986	-14	Pass
	20	5239.983	-17	Pass
	30	5239.983	-17	Pass
	40	5239.986	-14	Pass
	50	5239.984	-16	Pass
85% Vnom	20	5239.984	-16	Pass
115% Vnom	20	5239.984	-16	Pass

Antenna 0		5745	
Temperature :	--	Test By:	King Kong
Humidity :	65 %		

Voltage(V)	Temp(℃)	Test Frequency (MHz)	Max. Deviation (KHz)	Verdict
Vnom	-20	5744.972	-28	Pass
	-10	5744.971	-29	Pass
	0	5744.972	-28	Pass
	10	5744.972	-28	Pass
	20	5744.972	-28	Pass
	30	5744.975	-25	Pass
	40	5744.973	-27	Pass
	50	5744.973	-27	Pass
85% Vnom	20	5744.974	-26	Pass
115% Vnom	20	5744.971	-29	Pass

Antenna 0		5785	
Temperature :	--	Test By:	King Kong
Humidity :	65 %		

Voltage(V)	Temp(℃)	Test Frequency (MHz)	Max. Deviation (KHz)	Verdict
Vnom	-20	5784.975	-25	Pass
	-10	5784.976	-24	Pass
	0	5784.975	-25	Pass
	10	5784.976	-24	Pass
	20	5784.976	-24	Pass
	30	5784.976	-24	Pass
	40	5784.976	-24	Pass
	50	5784.977	-23	Pass
85% Vnom	20	5784.978	-22	Pass
115% Vnom	20	5784.975	-25	Pass

Antenna 0		5825	
Temperature :	--	Test By:	King Kong
Humidity :	65 %		

Voltage(V)	Temp(℃)	Test Frequency (MHz)	Max. Deviation (KHz)	Verdict
Vnom	-20	5824.972	-28	Pass
	-10	5824.971	-29	Pass
	0	5824.970	-30	Pass
	10	5824.970	-30	Pass
	20	5824.971	-29	Pass
	30	5824.971	-29	Pass
	40	5824.971	-29	Pass
	50	5824.972	-28	Pass
85% Vnom	20	5824.972	-28	Pass
115% Vnom	20	5824.968	-32	Pass

Antenna 0		5190	
Temperature :	--	Test By:	King Kong
Humidity :	65 %		

Voltage(V)	Temp(℃)	Test Frequency (MHz)	Max. Deviation (KHz)	Verdict
Vnom	-20	5189.960	-40	Pass
	-10	5189.962	-38	Pass
	0	5189.960	-40	Pass
	10	5189.964	-36	Pass
	20	5189.962	-38	Pass
	30	5189.961	-39	Pass
	40	5189.963	-37	Pass
	50	5189.963	-37	Pass
85% Vnom	20	5189.961	-39	Pass
115% Vnom	20	5189.962	-38	Pass

Antenna 0		5230	
Temperature :	--	Test By:	King Kong
Humidity :	65 %		

Voltage(V)	Temp(℃)	Test Frequency (MHz)	Max. Deviation (KHz)	Verdict
Vnom	-20	5229.958	-42	Pass
	-10	5229.959	-41	Pass
	0	5229.960	-40	Pass
	10	5229.959	-41	Pass
	20	5229.962	-38	Pass
	30	5229.959	-41	Pass
	40	5229.960	-40	Pass
	50	5229.958	-42	Pass
85% Vnom	20	5229.961	-39	Pass
115% Vnom	20	5229.961	-39	Pass

Antenna 0		5755	
Temperature :	--	Test By:	King Kong
Humidity :	65 %		

Voltage(V)	Temp(℃)	Test Frequency (MHz)	Max. Deviation (KHz)	Verdict
Vnom	-20	5754.982	-18	Pass
	-10	5754.984	-16	Pass
	0	5754.984	-16	Pass
	10	5754.983	-17	Pass
	20	5754.983	-17	Pass
	30	5754.982	-18	Pass
	40	5754.984	-16	Pass
	50	5754.982	-18	Pass
85% Vnom	20	5754.984	-16	Pass
115% Vnom	20	5754.982	-18	Pass

Antenna 0		5795	
Temperature :	--	Test By:	King Kong
Humidity :	65 %		

Voltage(V)	Temp(℃)	Test Frequency (MHz)	Max. Deviation (KHz)	Verdict
Vnom	-20	5794.974	-26	Pass
	-10	5794.972	-28	Pass
	0	5794.972	-28	Pass
	10	5794.973	-27	Pass
	20	5794.973	-27	Pass
	30	5794.972	-28	Pass
	40	5794.974	-26	Pass
	50	5794.973	-27	Pass
85% Vnom	20	5794.971	-29	Pass
115% Vnom	20	5794.971	-29	Pass

Antenna 0		5210	
Temperature :	--	Test By:	King Kong
Humidity :	65 %		

Voltage(V)	Temp(℃)	Test Frequency (MHz)	Max. Deviation (KHz)	Verdict
Vnom	-20	5209.970	-30	Pass
	-10	5209.968	-32	Pass
	0	5209.967	-33	Pass
	10	5209.968	-32	Pass
	20	5209.965	-35	Pass
	30	5209.969	-31	Pass
	40	5209.966	-34	Pass
	50	5209.966	-34	Pass
85% Vnom	20	5209.965	-35	Pass
115% Vnom	20	5209.968	-32	Pass

Antenna 0		5775	
Temperature :	--	Test By:	King Kong
Humidity :	65 %		

Voltage(V)	Temp(℃)	Test Frequency (MHz)	Max. Deviation (KHz)	Verdict
Vnom	-20	5774.979	-21	Pass
	-10	5774.979	-21	Pass
	0	5774.979	-21	Pass
	10	5774.979	-21	Pass
	20	5774.977	-23	Pass
	30	5774.978	-22	Pass
	40	5774.980	-20	Pass
	50	5774.976	-24	Pass
85% Vnom	20	5774.977	-23	Pass
115% Vnom	20	5774.980	-20	Pass

Antenna 1		5180	
Temperature :	--	Test By:	King Kong
Humidity :	65 %		

Voltage(V)	Temp(℃)	Test Frequency (MHz)	Max. Deviation (KHz)	Verdict
Vnom	-20	5179.974	-26	Pass
	-10	5179.978	-22	Pass
	0	5179.975	-25	Pass
	10	5179.981	-19	Pass
	20	5179.977	-23	Pass
	30	5179.983	-17	Pass
	40	5179.976	-24	Pass
	50	5179.980	-20	Pass
85% Vnom	20	5179.977	-23	Pass
115% Vnom	20	5179.978	-22	Pass

Antenna 1		5200	
Temperature :	--	Test By:	King Kong
Humidity :	65 %		

Voltage(V)	Temp(℃)	Test Frequency (MHz)	Max. Deviation (KHz)	Verdict
Vnom	-20	5199.975	-25	Pass
	-10	5199.974	-26	Pass
	0	5199.976	-24	Pass
	10	5199.976	-24	Pass
	20	5199.975	-25	Pass
	30	5199.973	-27	Pass
	40	5199.974	-26	Pass
	50	5199.974	-26	Pass
85% Vnom	20	5199.974	-26	Pass
115% Vnom	20	5199.975	-25	Pass

Antenna 1		5240	
Temperature :	--	Test By:	King Kong
Humidity :	65 %		

Voltage(V)	Temp(℃)	Test Frequency (MHz)	Max. Deviation (KHz)	Verdict
Vnom	-20	5239.983	-17	Pass
	-10	5239.986	-14	Pass
	0	5239.983	-17	Pass
	10	5239.985	-15	Pass
	20	5239.986	-14	Pass
	30	5239.987	-13	Pass
	40	5239.985	-15	Pass
	50	5239.985	-15	Pass
85% Vnom	20	5239.987	-13	Pass
115% Vnom	20	5239.984	-16	Pass

Antenna 1		5745	
Temperature :	--	Test By:	King Kong
Humidity :	65 %		

Voltage(V)	Temp(℃)	Test Frequency (MHz)	Max. Deviation (KHz)	Verdict
Vnom	-20	5744.971	-29	Pass
	-10	5744.975	-25	Pass
	0	5744.971	-29	Pass
	10	5744.975	-25	Pass
	20	5744.973	-27	Pass
	30	5744.975	-25	Pass
	40	5744.974	-26	Pass
	50	5744.972	-28	Pass
85% Vnom	20	5744.970	-30	Pass
115% Vnom	20	5744.973	-27	Pass

Antenna 1		5785	
Temperature :	--	Test By:	King Kong
Humidity :	65 %		

Voltage(V)	Temp(℃)	Test Frequency (MHz)	Max. Deviation (KHz)	Verdict
Vnom	-20	5784.975	-25	Pass
	-10	5784.976	-24	Pass
	0	5784.975	-25	Pass
	10	5784.976	-24	Pass
	20	5784.977	-23	Pass
	30	5784.977	-23	Pass
	40	5784.975	-25	Pass
	50	5784.975	-25	Pass
85% Vnom	20	5784.979	-21	Pass
115% Vnom	20	5784.975	-25	Pass

Antenna 1		5825	
Temperature :	--	Test By:	King Kong
Humidity :	65 %		

Voltage(V)	Temp(℃)	Test Frequency (MHz)	Max. Deviation (KHz)	Verdict
Vnom	-20	5824.968	-32	Pass
	-10	5824.972	-28	Pass
	0	5824.970	-30	Pass
	10	5824.970	-30	Pass
	20	5824.971	-29	Pass
	30	5824.967	-33	Pass
	40	5824.969	-31	Pass
	50	5824.969	-31	Pass
85% Vnom	20	5824.968	-32	Pass
115% Vnom	20	5824.969	-31	Pass

Antenna 1		5190	
Temperature :	--	Test By:	King Kong
Humidity :	65 %		

Voltage(V)	Temp(℃)	Test Frequency (MHz)	Max. Deviation (KHz)	Verdict
Vnom	-20	5189.963	-37	Pass
	-10	5189.962	-38	Pass
	0	5189.964	-36	Pass
	10	5189.961	-39	Pass
	20	5189.964	-36	Pass
	30	5189.962	-38	Pass
	40	5189.962	-38	Pass
	50	5189.965	-35	Pass
85% Vnom	20	5189.964	-36	Pass
115% Vnom	20	5189.962	-38	Pass

Antenna 1		5230	
Temperature :	--	Test By:	King Kong
Humidity :	65 %		

Voltage(V)	Temp(℃)	Test Frequency (MHz)	Max. Deviation (KHz)	Verdict
Vnom	-20	5229.961	-39	Pass
	-10	5229.958	-42	Pass
	0	5229.959	-41	Pass
	10	5229.962	-38	Pass
	20	5229.958	-42	Pass
	30	5229.959	-41	Pass
	40	5229.961	-39	Pass
	50	5229.959	-41	Pass
85% Vnom	20	5229.958	-42	Pass
115% Vnom	20	5229.957	-43	Pass

Antenna 1		5755	
Temperature :	--	Test By:	King Kong
Humidity :	65 %		

Voltage(V)	Temp(℃)	Test Frequency (MHz)	Max. Deviation (KHz)	Verdict
Vnom	-20	5754.984	-16	Pass
	-10	5754.984	-16	Pass
	0	5754.984	-16	Pass
	10	5754.982	-18	Pass
	20	5754.984	-16	Pass
	30	5754.981	-19	Pass
	40	5754.981	-19	Pass
	50	5754.981	-19	Pass
85% Vnom	20	5754.981	-19	Pass
115% Vnom	20	5754.984	-16	Pass

Antenna 1		5795	
Temperature :	--	Test By:	King Kong
Humidity :	65 %		

Voltage(V)	Temp(℃)	Test Frequency (MHz)	Max. Deviation (KHz)	Verdict
Vnom	-20	5794.972	-28	Pass
	-10	5794.974	-26	Pass
	0	5794.973	-27	Pass
	10	5794.975	-25	Pass
	20	5794.971	-29	Pass
	30	5794.972	-28	Pass
	40	5794.974	-26	Pass
	50	5794.971	-29	Pass
85% Vnom	20	5794.973	-27	Pass
115% Vnom	20	5794.971	-29	Pass

Antenna 1		5210	
Temperature :	--	Test By:	King Kong
Humidity :	65 %		

Voltage(V)	Temp(℃)	Test Frequency (MHz)	Max. Deviation (KHz)	Verdict
Vnom	-20	5209.965	-35	Pass
	-10	5209.966	-34	Pass
	0	5209.966	-34	Pass
	10	5209.965	-35	Pass
	20	5209.966	-34	Pass
	30	5209.967	-33	Pass
	40	5209.968	-32	Pass
	50	5209.967	-33	Pass
85% Vnom	20	5209.967	-33	Pass
115% Vnom	20	5209.965	-35	Pass

Antenna 1		5775	
Temperature :	--	Test By:	King Kong
Humidity :	65 %		

Voltage(V)	Temp(℃)	Test Frequency (MHz)	Max. Deviation (KHz)	Verdict
Vnom	-20	5774.976	-24	Pass
	-10	5774.980	-20	Pass
	0	5774.976	-24	Pass
	10	5774.977	-23	Pass
	20	5774.980	-20	Pass
	30	5774.977	-23	Pass
	40	5774.978	-22	Pass
	50	5774.980	-20	Pass
85% Vnom	20	5774.978	-22	Pass
115% Vnom	20	5774.978	-22	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

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

The 802.11a/n/ac siso and mimo modes has been tested and the worst case mode recorded as below:

Temperature :	28℃	Test By:	King Kong
Humidity :	65 %	Frequency(MHz):	5180
Test mode:	802.11a	Antenna	0

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
10360	V	53.63	-41.60	-27.00	-14.60
15540	V	60.46	-34.77	-27.00	-7.77
16727	V	62.87	-32.36	-27.00	-5.36
10360	H	54.11	-41.12	-27.00	-14.12
15540	H	60.24	-34.99	-27.00	-7.99
15766	H	62.03	-33.20	-27.00	-6.20

Freq.	Ant.Pol.	Emission Level(dBuV/m)		Limit 3m(dBuV/m)		Over(dB)	
(MHz)	H/V	PK	AV	PK	AV	PK	AV
10360	V	53.63	44.56	74	54	-20.37	-9.44
15540	V	60.46	48.09	74	54	-13.54	-5.91
16727	V	62.87	47.66	74	54	-11.13	-6.34
10360	H	54.11	44.63	74	54	-19.89	-9.37
15540	H	60.24	47.24	74	54	-13.76	-6.76
15766	H	62.03	46.26	74	54	-11.97	-7.74

Temperature :	28℃	Test By:	King Kong
Humidity :	65 %	Frequency(MHz):	5200
Test mode:	802.11a	Antenna	0

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
10400	V	55.41	-39.82	-27.00	-12.82
15600	V	60.98	-34.25	-27.00	-7.25
16404	V	60.64	-34.59	-27.00	-7.59
10400	H	55.18	-40.05	-27.00	-13.05
15600	H	58.88	-36.35	-27.00	-9.35
15846	H	60.21	-35.02	-27.00	-8.02

Freq.	Ant.Pol.	Emission Level(dBuV/m)		Limit 3m(dBuV/m)		Over(dB)	
(MHz)	H/V	PK	AV	PK	AV	PK	AV
10400	V	55.41	45.99	74	54	-18.59	-8.01
15600	V	60.98	48.61	74	54	-13.02	-5.39
16404	V	60.64	45.16	74	54	-13.36	-8.84
10400	H	55.18	45.96	74	54	-18.82	-8.04
15600	H	58.88	46.58	74	54	-15.12	-7.42
15846	H	60.21	44.50	74	54	-13.79	-9.50

Temperature :	28℃	Test By:	King Kong
Humidity :	65 %	Frequency(MHz):	5240
Test mode:	802.11a	Antenna	0

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
10480	V	54.22	-41.01	-27.00	-14.01
15720	V	59.56	-35.67	-27.00	-8.67
15795	V	61.48	-33.75	-27.00	-6.75
10480	H	54.96	-40.27	-27.00	-13.27
15720	H	58.68	-36.55	-27.00	-9.55
15896	H	60.2	-35.03	-27.00	-8.03

Freq.	Ant.Pol.	Emission Level(dBuV/m)		Limit 3m(dBuV/m)		Over(dB)	
(MHz)	H/V	PK	AV	PK	AV	PK	AV
10480	V	54.22	45.05	74	54	-19.78	-8.95
15720	V	59.56	47.33	74	54	-14.44	-6.67
15795	V	61.48	46.37	74	54	-12.52	-7.63
10480	H	54.96	45.19	74	54	-19.04	-8.81
15720	H	58.68	46.59	74	54	-15.32	-7.41
15896	H	60.20	44.92	74	54	-13.80	-9.08

Note: (1) All Readings are Peak Value (VBW=3MHz), Average value(VBW=10Hz)
(2) Emission Level= Reading Level+Probe Factor +Cable Loss.
(3)EIRP[dBm] = E[dBμV/m] + 20 log(d[meters]) - 104.77
d is the measurement distance in 3 meters

Temperature :	28℃	Test By:	King Kong
Humidity :	65 %	Frequency(MHz):	5190
Test mode:	802.11n(HT40)	Mode	MIMO

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
10380	V	54.64	-40.59	-27.00	-13.59
15570	V	58.47	-36.76	-27.00	-9.76
17411	V	60.61	-34.62	-27.00	-7.62
10380	H	55.25	-39.98	-27.00	-12.98
15570	H	58.38	-36.85	-27.00	-9.85
17665	H	61.08	-34.15	-27.00	-7.15

Freq.	Ant.Pol.	Emission Level(dBuV/m)		Limit 3m(dBuV/m)		Over(dB)	
(MHz)	H/V	PK	AV	PK	AV	PK	AV
10380	V	54.64	44.69	74	54	-19.36	-9.31
15570	V	58.47	46.33	74	54	-15.53	-7.67
17411	V	60.61	44.73	74	54	-13.39	-9.27
10380	H	55.25	45.28	74	54	-18.75	-8.72
15570	H	58.38	46.15	74	54	-15.62	-7.85
17665	H	61.08	45.45	74	54	-12.92	-8.55

Temperature :	28℃	Test By:	King Kong
Humidity :	65 %	Frequency(MHz):	5230
Test mode:	802.11n(HT40)	Mode	MIMO

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
10460	V	55.02	-40.21	-27.00	-13.21
15690	V	59.46	-35.77	-27.00	-8.77
17042	V	60.19	-35.04	-27.00	-8.04
10460	H	52.93	-42.30	-27.00	-15.30
15690	H	60.24	-34.99	-27.00	-7.99
17509	H	59.96	-35.27	-27.00	-8.27

Freq.	Ant.Pol.	Emission Level(dBuV/m)		Limit 3m(dBuV/m)		Over(dB)	
(MHz)	H/V	PK	AV	PK	AV	PK	AV
10460	V	55.02	45.15	74	54	-18.98	-8.85
15690	V	59.46	47.45	74	54	-14.54	-6.55
17042	V	60.19	44.51	74	54	-13.81	-9.49
10460	H	52.93	43.05	74	54	-21.07	-10.95
15690	H	60.24	48.17	74	54	-13.76	-5.83
17509	H	59.96	44.61	74	54	-14.04	-9.39

Note: (1) All Readings are Peak Value (VBW=3MHz), Average value(VBW=10Hz)
(2) Emission Level= Reading Level+Probe Factor +Cable Loss.
(3)EIRP[dBm] = E[dBμV/m] + 20 log(d[meters]) - 104.77
d is the measurement distance in 3 meters

Temperature :	28℃	Test By:	King Kong
Humidity :	65 %	Frequency(MHz):	5210
Test mode:	802.11ac(VHT80)	Mode	MIMO

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
10420	V	52.38	-42.85	-27.00	-15.85
15630	V	57.58	-37.65	-27.00	-10.65
16702	V	60.34	-34.89	-27.00	-7.89
10420	H	52.89	-42.34	-27.00	-15.34
15630	H	57.40	-37.83	-27.00	-10.83
15734	H	62.10	-33.13	-27.00	-6.13

Freq.	Ant.Pol.	Emission Level(dBuV/m)		Limit 3m(dBuV/m)		Over(dB)	
(MHz)	H/V	PK	AV	PK	AV	PK	AV
10420	V	52.38	42.83	74	54	-21.62	-11.17
15630	V	57.58	43.36	74	54	-16.42	-10.64
16702	V	60.34	44.72	74	54	-13.66	-9.28
10420	H	52.89	43.31	74	54	-21.11	-10.69
15630	H	57.40	43.26	74	54	-16.60	-10.74
15734	H	62.10	46.98	74	54	-11.90	-7.02

Note: (1) All Readings are Peak Value (VBW=3MHz), Average value(VBW=10Hz)
(2) Emission Level= Reading Level+Probe Factor +Cable Loss.
(3)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

The 802.11a/n/ac siso and mimo modes has been tested and the worst case mode recorded as below:

Temperature :	28℃	Test By:	King Kong
Humidity :	65 %	Frequency(MHz):	5180
Test mode:	802.11a	Mode:	SISO antenna 0

Freq. (MHz)	Ant.Pol. H/V	Field Strength (RBW=100KHz) (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Verdict
5135.15	H	57.94	-37.29	-27.00	Pass
5145.67	V	49.24	-45.99	-27.00	Pass

Freq. (MHz)	Ant.Pol. H/V	Emission Level(dBuV/m)		Limit 3m(dBuV/m)		Over(dB)	
		PK	AV	PK	AV	PK	AV
5135.15	H	57.94	42.99	74.00	54.00	-16.06	-11.01
5145.67	V	49.24	34.87	74.00	54.00	-24.76	-19.13

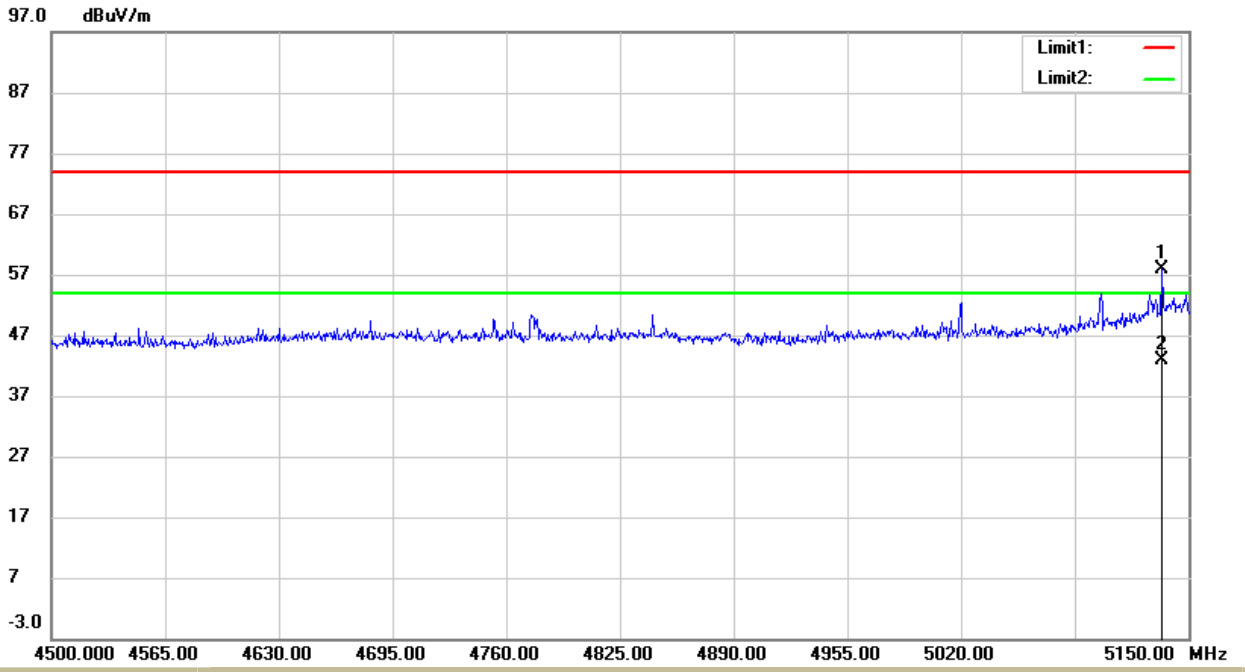
Temperature :	28℃	Test By:	King Kong
Humidity :	65 %	Frequency(MHz):	5240
Test mode:	802.11a	Mode:	SISO antenna 0

Freq. (MHz)	Ant.Pol. H/V	Field Strength (RBW=100KHz) (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Verdict
5354.98	H	50.31	-44.92	-27.00	Pass
5351.95	V	49.07	-46.16	-27.00	Pass

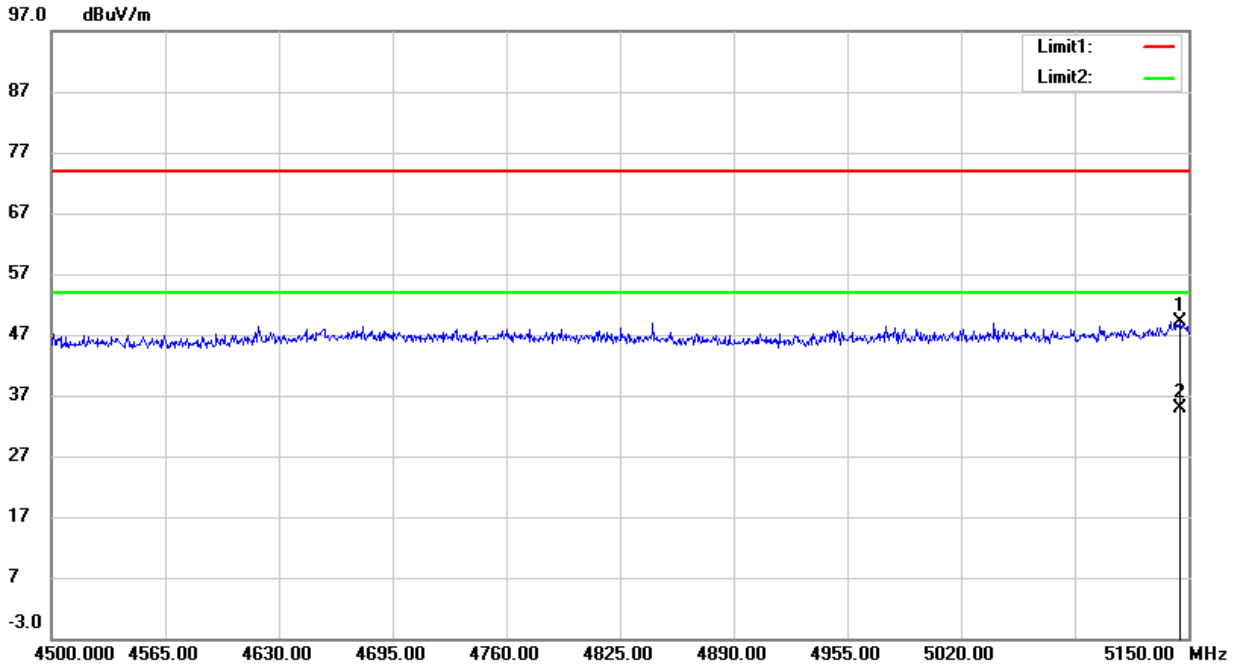
Freq. (MHz)	Ant.Pol. H/V	Emission Level(dBuV/m)		Limit 3m(dBuV/m)		Over(dB)	
		PK	AV	PK	AV	PK	AV
5354.98	H	50.31	35.96	74.00	54.00	-23.69	-18.04
5351.95	V	49.07	35.14	74.00	54.00	-24.93	-18.86

Note: (1) All Readings are Peak Value (VBW=3MHz), Average value(VBW=10Hz)
(2) Emission Level= Reading Level+Probe Factor +Cable Loss.
(3)EIRP[dBm] = E[dBμV/m] + 20 log(d[meters]) - 104.77
d is the measurement distance in 3 meters

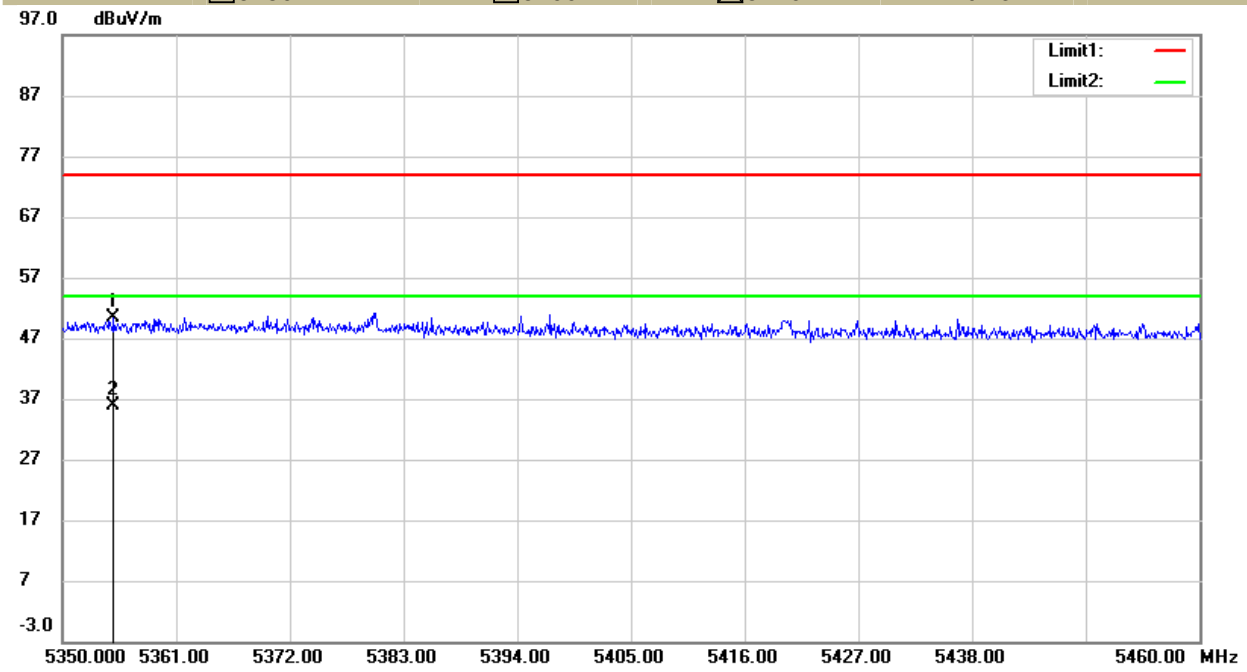
Test Model	UNII Band I Undesirable radiated Spurious Emission in Restricted Band (4500-5150MHz) ☒802.11a ☐802.11n(HT20) ☐802.11ac(HT20) ☒5180 ☐5200 ☐5240 Ant.Pol H



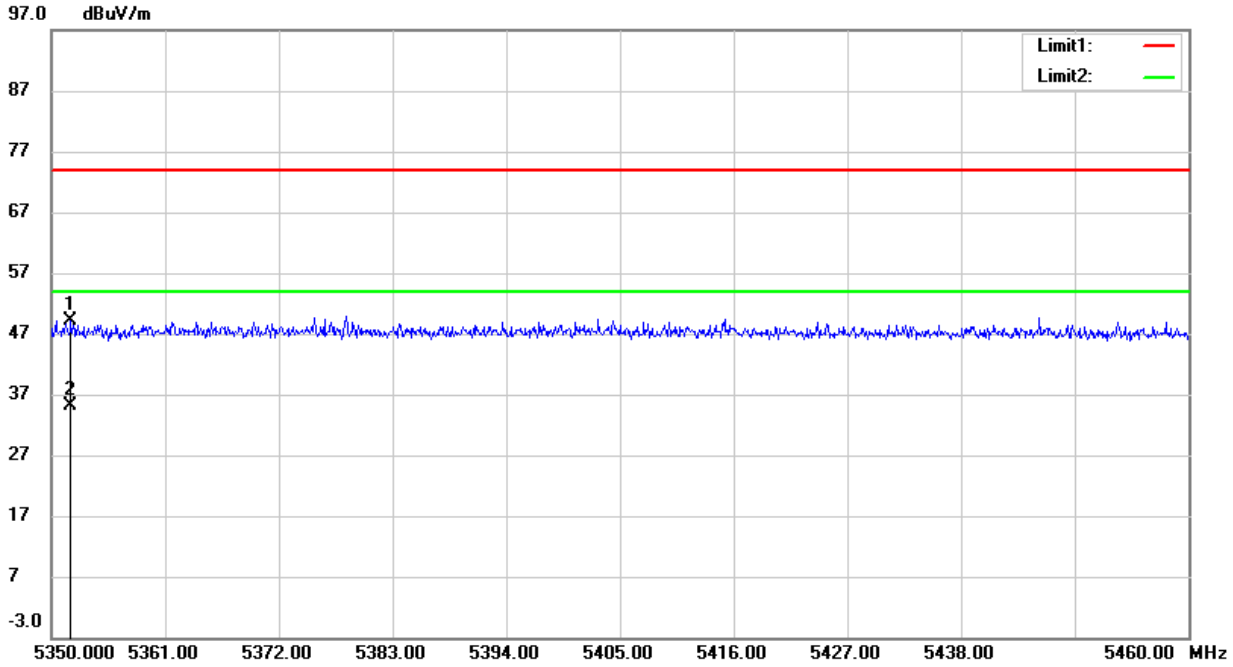
Test Model	UNII Band I Undesirable radiated Spurious Emission in Restricted Band (4500-5150MHz) ☒802.11a ☐802.11n(HT20) ☐802.11ac(HT20) ☒5180 ☐5200 ☐5240 Ant.Pol V



Test Model	UNII Band I Undesirable radiated Spurious Emission in Restricted Band (5350-5460MHz) ☒802.11a ☐802.11n(HT20) ☐802.11ac(HT20) ☐5180 ☐5200 ☒5240 Ant.Pol H



Test Model	UNII Band I Undesirable radiated Spurious Emission in Restricted Band (5350-5460MHz) ☒802.11a ☐802.11n(HT20) ☐802.11n(HT40) ☐5180 ☐5200 ☒5240 Ant.Pol V



Temperature :	28℃	Test By:	King Kong
Humidity :	65 %	Frequency(MHz):	5190
Test mode:	802.11n HT40	Mode:	MIMO

Freq. (MHz)	Ant.Pol. H/V	Field Strength (RBW=100KHz) (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Verdict
5135.21	H	58.12	-37.11	-27.00	Pass
5133.52	V	49.21	-46.02	-27.00	Pass

Freq. (MHz)	Ant.Pol. H/V	Emission Level(dBuV/m)		Limit 3m(dBuV/m)		Over(dB)	
		PK	AV	PK	AV	PK	AV
5135.21	H	58.12	42.69	74.00	54.00	-15.88	-11.31
5133.52	V	49.21	35.01	74.00	54.00	-24.79	-18.99

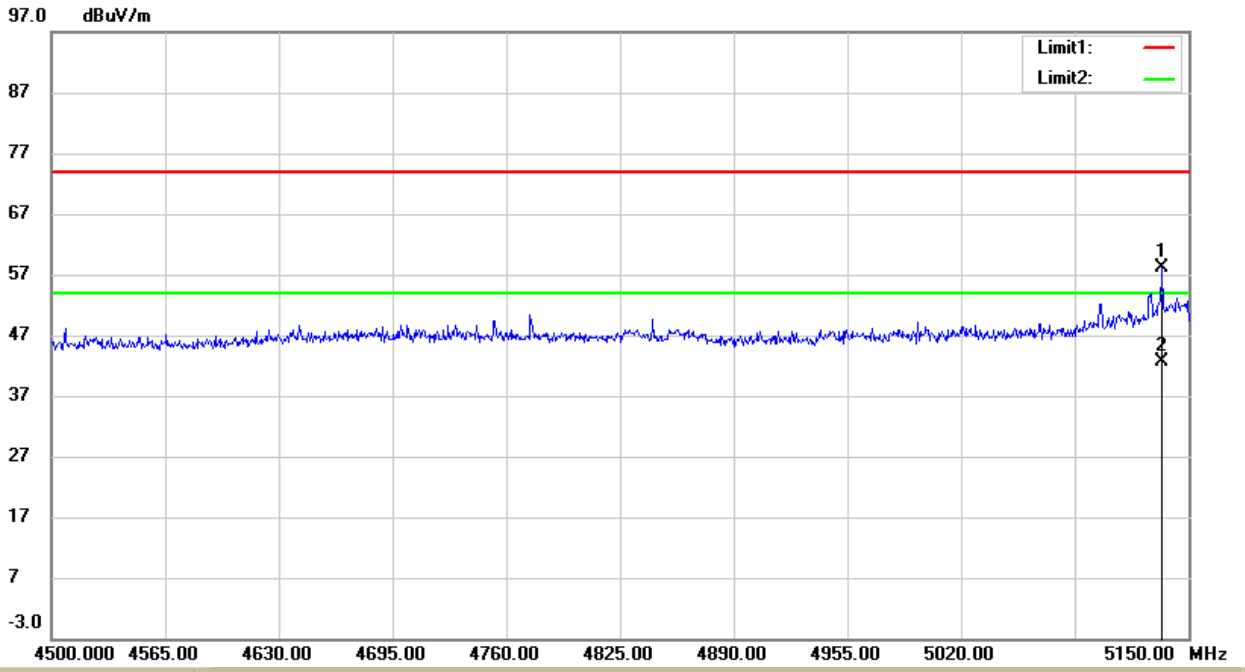
Temperature :	28℃	Test By:	King Kong
Humidity :	65 %	Frequency(MHz):	5230
Test mode:	802.11n HT40	Mode:	MIMO

Freq. (MHz)	Ant.Pol. H/V	Field Strength (RBW=100KHz) (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Verdict
5360.40	H	50.67	-44.56	-27.00	Pass
5364.68	V	49.19	-46.04	-27.00	Pass

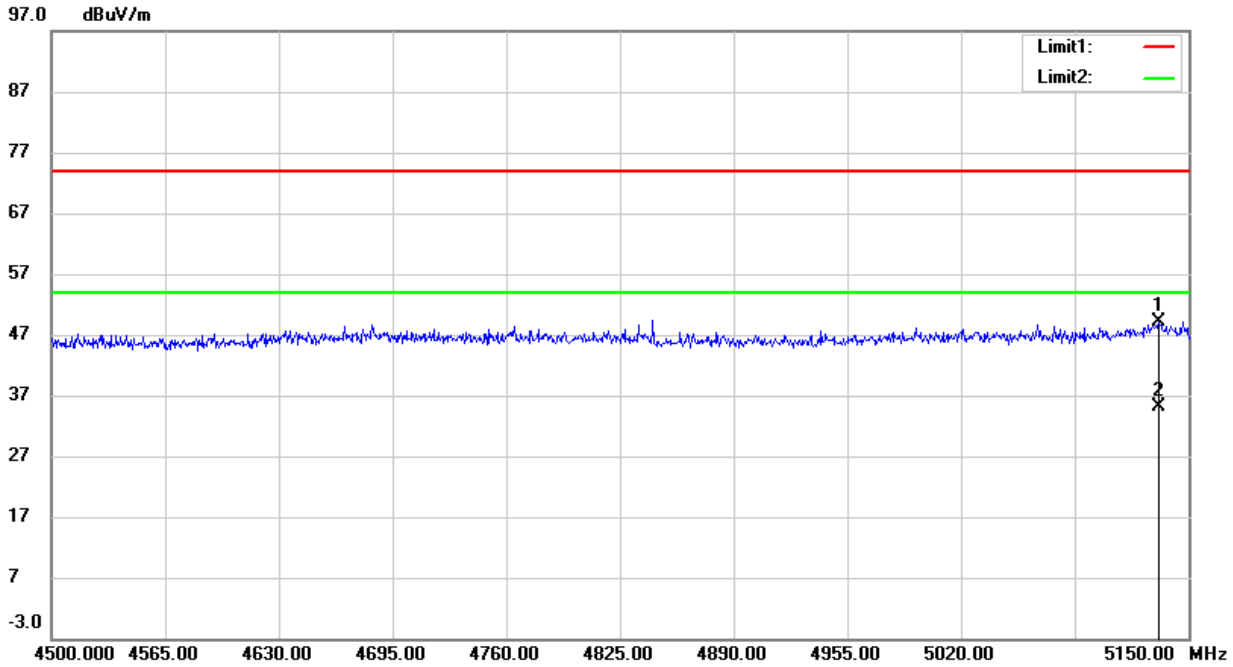
Freq. (MHz)	Ant.Pol. H/V	Emission Level(dBuV/m)		Limit 3m(dBuV/m)		Over(dB)	
		PK	AV	PK	AV	PK	AV
5360.40	H	50.67	35.26	74.00	54.00	-23.33	-18.74
5364.68	V	49.19	35.14	74.00	54.00	-24.81	-18.86

Note: (1) All Readings are Peak Value (VBW=3MHz), Average value(VBW=10Hz)
(2) Emission Level= Reading Level+Probe Factor +Cable Loss.
(3)EIRP[dBm] = E[dBμV/m] + 20 log(d[meters]) - 104.77
d is the measurement distance in 3 meters

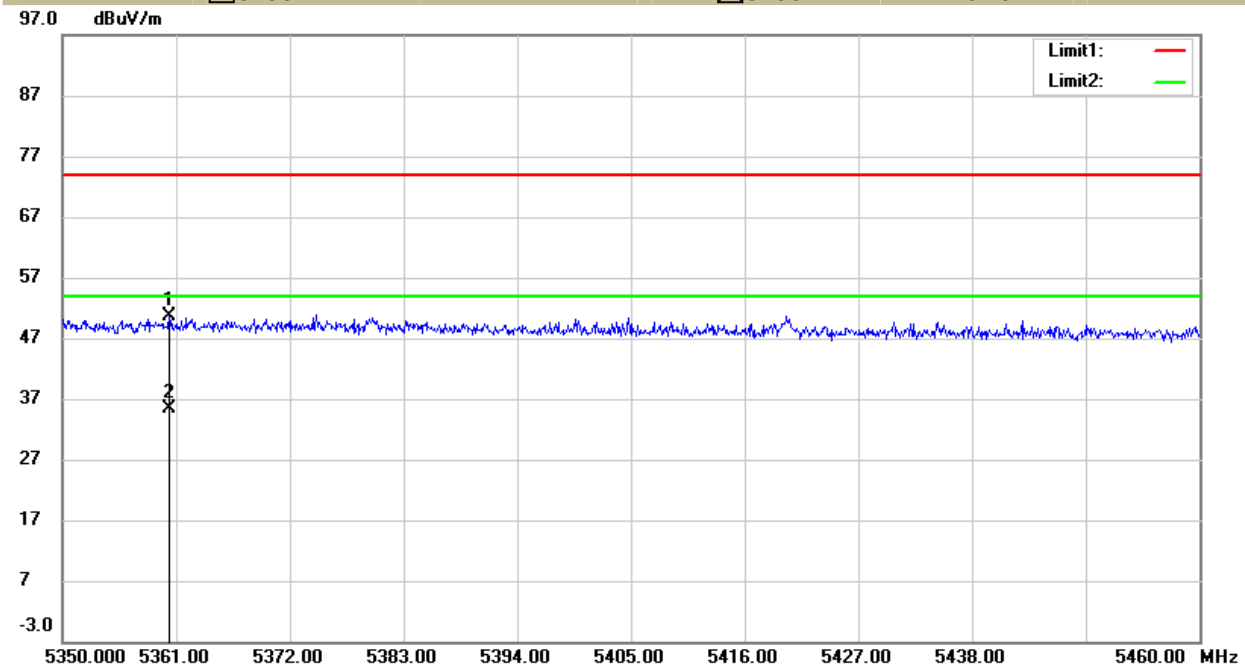
Test Model	UNII Band I Undesirable radiated Spurious Emission in Restricted Band (4500-5150MHz) ☒802.11n(HT40) ☐802.11ac (VHT40) ☒5190 ☐5230 Ant.Pol H



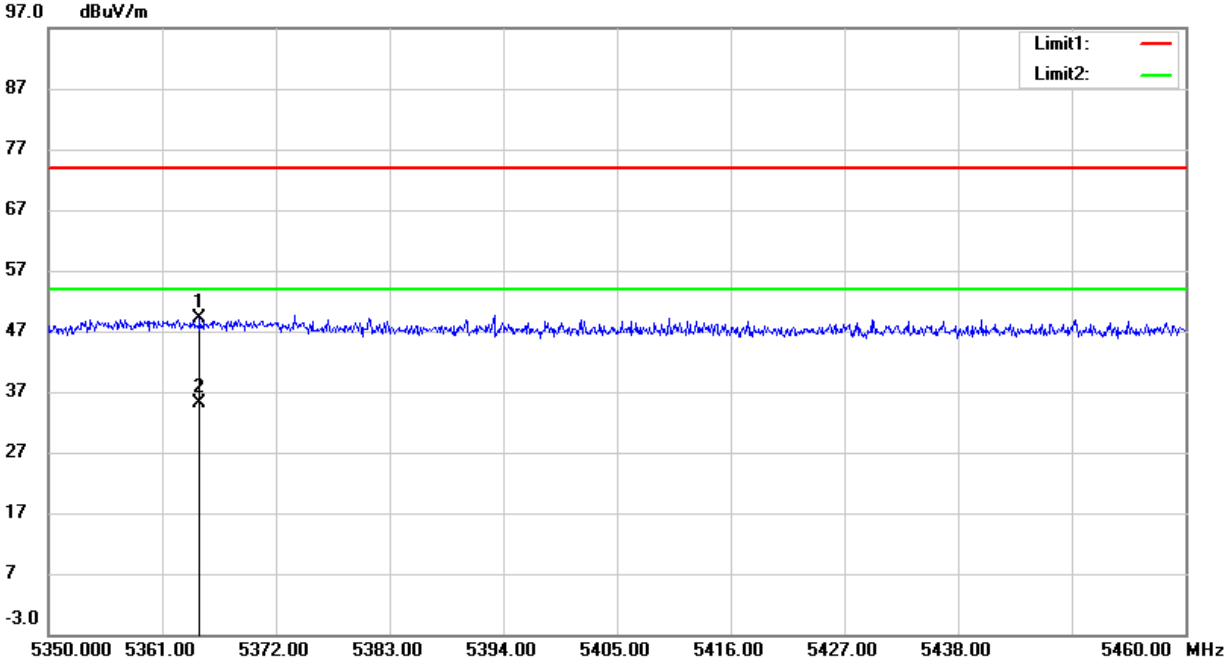
Test Model	UNII Band I Undesirable radiated Spurious Emission in Restricted Band (4500-5150MHz) ☒802.11n(HT40) ☐802.11ac (VHT40) ☒5190 ☐5230 Ant.Pol V



Test Model	UNII Band I Undesirable radiated Spurious Emission in Restricted Band (5350-5460MHz) ☒802.11n(HT40) ☐802.11ac (VHT40) ☐5190 ☒5230 Ant.Pol H



Test Model	UNII Band I Undesirable radiated Spurious Emission in Restricted Band (5350-5460MHz) ☒802.11n(HT40) ☐802.11ac (VHT40) ☐5190 ☒5230 Ant.Pol V



Temperature :	28℃	Test By:	King Kong
Humidity :	65 %	Frequency(MHz):	5210
Test mode:	802.11ac VHT80	Mode:	MIMO

Freq. (MHz)	Ant.Pol. H/V	Field Strength (RBW=100KHz) (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Verdict
5146.39	H	51.95	-43.28	-27.00	Pass
5126.86	V	48.27	-46.96	-27.00	Pass

Freq. (MHz)	Ant.Pol. H/V	Emission Level(dBuV/m)		Limit 3m(dBuV/m)		Over(dB)	
		PK	AV	PK	AV	PK	AV
5146.39	H	51.95	36.65	74.00	54.00	-22.05	-17.35
5126.86	V	48.27	34.36	74.00	54.00	-25.73	-19.64

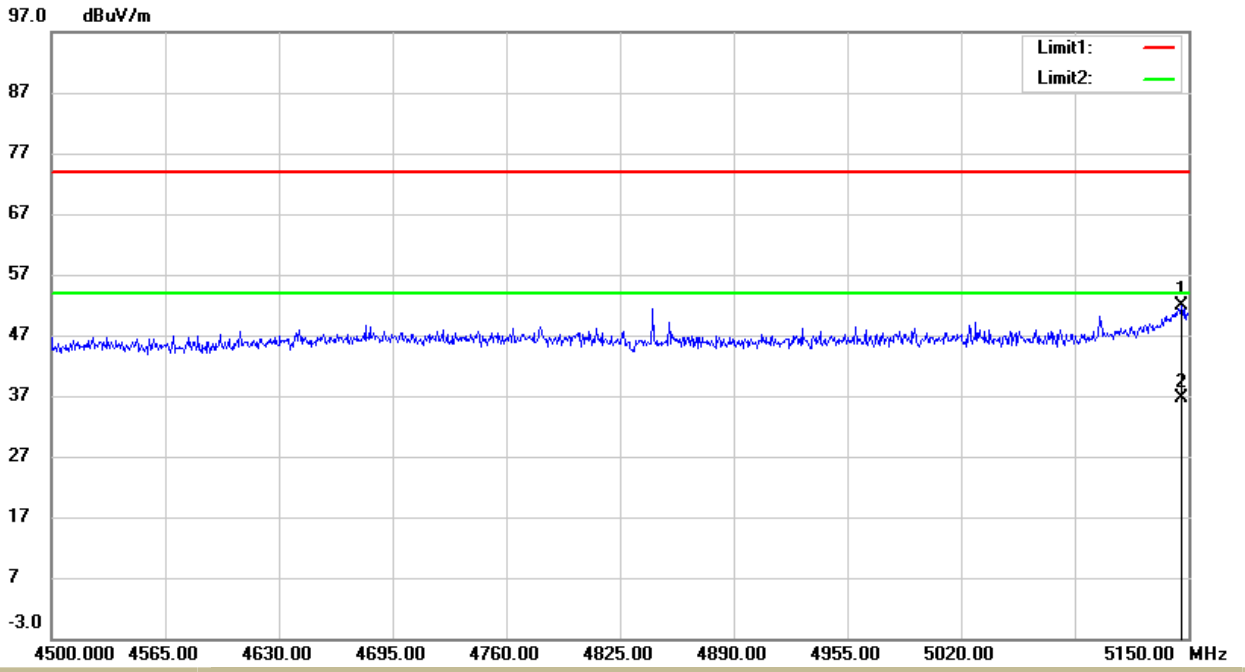
Temperature :	28℃	Test By:	King Kong
Humidity :	65 %	Frequency(MHz):	5210
Test mode:	802.11ac VHT80	Mode:	MIMO

Freq. (MHz)	Ant.Pol. H/V	Field Strength (RBW=100KHz) (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Verdict
5359.94	H	50.44	-44.79	-27.00	Pass
5354.98	V	50.31	-44.26	-27.00	Pass

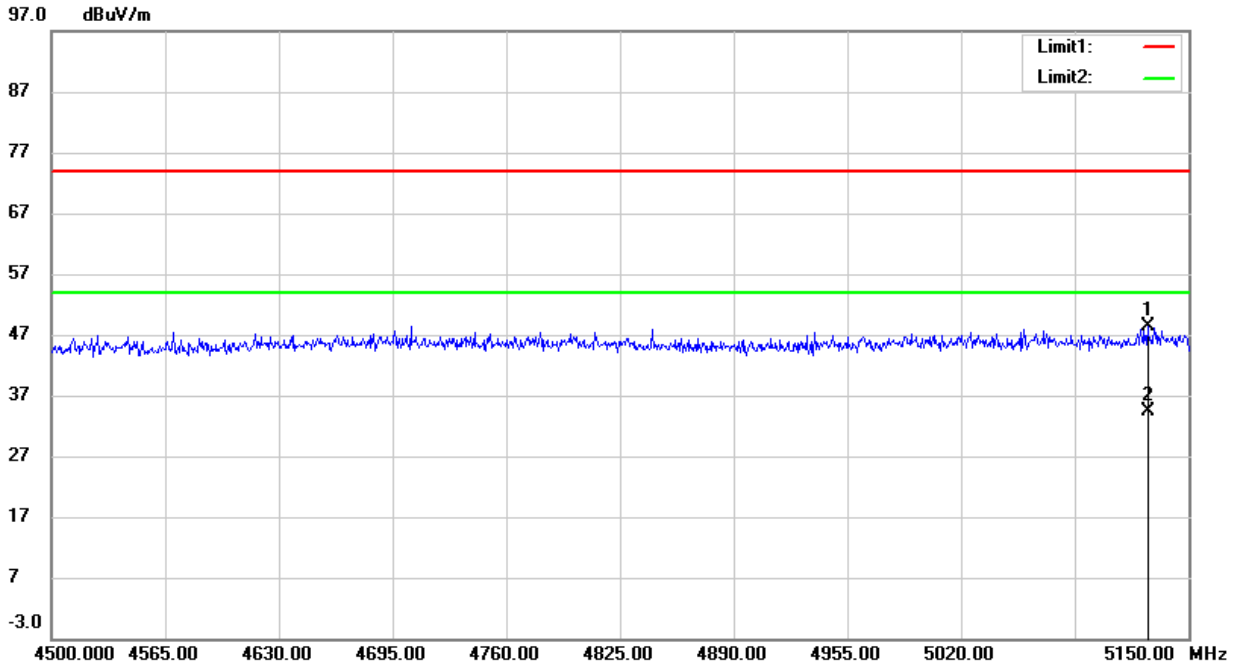
Freq. (MHz)	Ant.Pol. H/V	Emission Level(dBuV/m)		Limit 3m(dBuV/m)		Over(dB)	
		PK	AV	PK	AV	PK	AV
5359.94	H	50.44	35.47	74.00	54.00	-23.56	-18.53
5352.72	V	50.97	35.88	74.00	54.00	-23.03	-18.12

Note: (1) All Readings are Peak Value (VBW=3MHz), Average value(VBW=10Hz)
(2) Emission Level= Reading Level+Probe Factor +Cable Loss.
(3)EIRP[dBm] = E[dBμV/m] + 20 log(d[meters]) - 104.77
d is the measurement distance in 3 meters

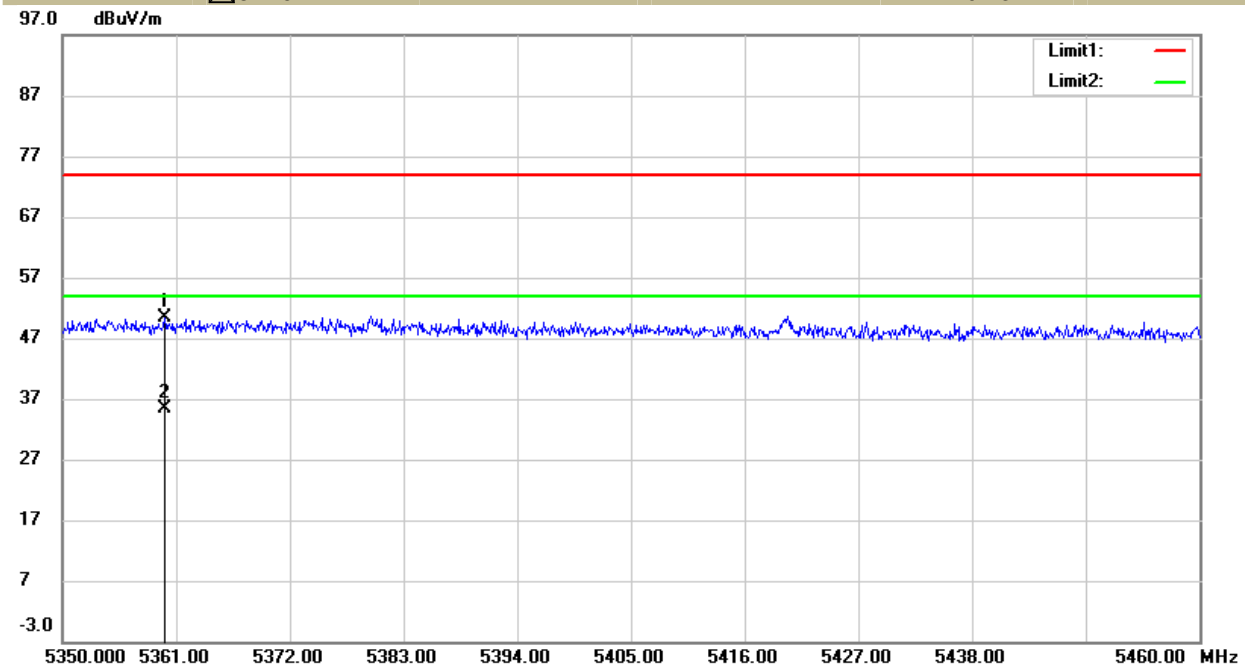
Test Model	UNII Band I Undesirable radiated Spurious Emission in Restricted Band (4500-5150MHz) ☒802.11n(VHT80) ☒5210 Ant.Pol H



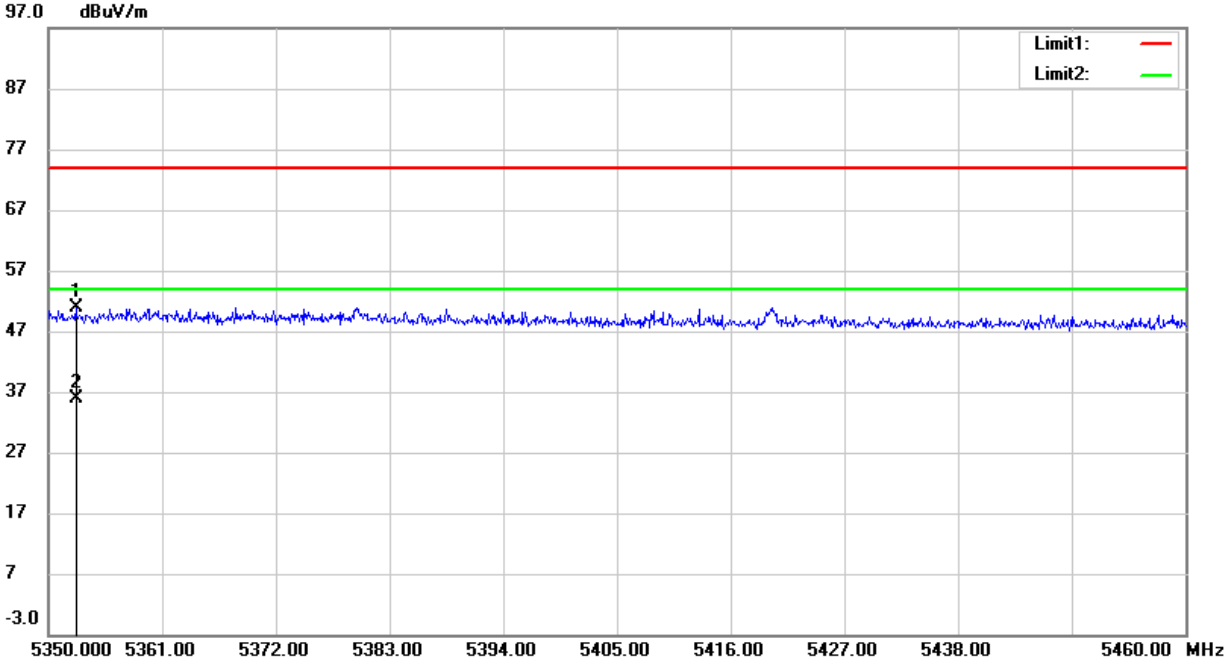
Test Model	UNII Band I Undesirable radiated Spurious Emission in Restricted Band (4500-5150MHz) ☒802.11n(VHT80) ☒5210 Ant.Pol V



Test Model	UNII Band I Undesirable radiated Spurious Emission in Restricted Band (5350-5460MHz) ☒802.11n(VHT80) ☒5210	Ant.Pol	H



Test Model	UNII Band I Undesirable radiated Spurious Emission in Restricted Band (5350-5400MHz) ☒802.11n(VHT80) ☒5210	Ant.Pol	V



☒For Undesirable radiated Spurious Emission in UNII Band III

- ☒Undesirable radiated Spurious Emission Above 1GHz (1GHz to 40GHz)
  The 802.11a/n/ac siso and mimo mode s have been tested and the worst case mode recorded as below:

Temperature :	28℃	Test By:	King Kong
Humidity :	65 %	Frequency(MHz):	5745
Test mode:	802.11a	Antenna	0

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
11490	V	62.00	-33.23	-27.00	-6.23
14122	V	61.88	-33.35	-27.00	-6.35
17235	V	61.34	-33.89	-27.00	-6.89
11490	H	58.69	-36.54	-27.00	-9.54
14263	H	58.88	-36.35	-27.00	-9.35
17235	H	60.19	-35.04	-27.00	-8.04

Freq.	Ant.Pol.	Emission Level(dBuV/m)		Limit 3m(dBuV/m)		Over(dB)	
(MHz)	H/V	PK	AV	PK	AV	PK	AV
11490	V	62.00	50.28	74	54	-12.00	-3.72
14122	V	61.88	47.40	74	54	-12.12	-6.60
17235	V	61.34	46.39	74	54	-12.66	-7.61
11490	H	58.69	45.51	74	54	-15.31	-8.49
14263	H	58.88	46.61	74	54	-15.12	-7.39
17235	H	60.19	44.61	74	54	-13.81	-9.39

Temperature :	28℃	Test By:	King Kong
Humidity :	65 %	Frequency(MHz):	5785
Test mode:	802.11a	Antenna	0

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
11570	V	61.02	-34.21	-27.00	-7.21
14741	V	61.61	-33.62	-27.00	-6.62
17355	V	61.89	-33.34	-27.00	-6.34
11570	H	58.62	-36.61	-27.00	-9.61
15021	H	59.09	-36.14	-27.00	-9.14
17355	H	61.62	-33.61	-27.00	-6.61

Freq.	Ant.Pol.	Emission Level(dBuV/m)		Limit 3m(dBuV/m)		Over(dB)	
(MHz)	H/V	PK	AV	PK	AV	PK	AV
11570	V	61.02	49.72	74	54	-12.98	-4.28
14741	V	61.61	47.14	74	54	-12.39	-6.86
17355	V	61.89	47.72	74	54	-12.11	-6.28
11570	H	58.62	44.87	74	54	-15.38	-9.13
15021	H	59.09	46.53	74	54	-14.91	-7.47
17355	H	61.62	46.37	74	54	-12.38	-7.63

Temperature :	28℃	Test By:	King Kong
Humidity :	65 %	Frequency(MHz):	5825
Test mode:	802.11a	Antenna	0

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
11650	V	61.03	-34.20	-27.00	-7.20
13475	V	61.27	-33.96	-27.00	-6.96
17475	V	61.78	-33.45	-27.00	-6.45
11650	H	58.81	-36.42	-27.00	-9.42
17475	H	60.61	-34.62	-27.00	-7.62
17475	H	62.68	-32.55	-27.00	-5.55

Freq.	Ant.Pol.	Emission Level(dBuV/m)		Limit 3m(dBuV/m)		Over(dB)	
(MHz)	H/V	PK	AV	PK	AV	PK	AV
11650	V	61.03	49.40	74	54	-12.97	-4.60
13475	V	61.27	46.51	74	54	-12.73	-7.49
17475	V	61.78	47.45	74	54	-12.22	-6.55
11650	H	58.81	45.48	74	54	-15.19	-8.52
13475	H	60.61	48.54	74	54	-13.39	-5.46
17475	H	62.68	47.10	74	54	-11.32	-6.90

Note: (1) All Readings are Peak Value (VBW=3MHz), Average value(VBW=10Hz)
(2) Emission Level= Reading Level+Probe Factor +Cable Loss.
(3)EIRP[dBm] = E[dBμV/m] + 20 log(d[meters]) - 104.77
d is the measurement distance in 3 meters

Temperature :	28℃	Test By:	King Kong
Humidity :	65 %	Frequency(MHz):	5755
Test mode:	802.11n(HT40)	Mode:	MIMO

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
11510	V	60.52	-34.71	-27.00	-7.71
12664	V	61.69	-33.54	-27.00	-6.54
17265	V	62.71	-32.52	-27.00	-5.52
11510	H	59.22	-36.01	-27.00	-9.01
12664	H	61.10	-34.13	-27.00	-7.13
17265	H	62.90	-32.33	-27.00	-5.33

Freq.	Ant.Pol.	Emission Level(dBuV/m)		Limit 3m(dBuV/m)		Over(dB)	
(MHz)	H/V	PK	AV	PK	AV	PK	AV
11510	V	60.52	49.31	74	54	-13.48	-4.69
12664	V	61.69	46.52	74	54	-12.31	-7.48
17265	V	62.71	46.75	74	54	-11.29	-7.25
11510	H	59.22	47.79	74	54	-14.78	-6.21
12664	H	61.10	45.16	74	54	-12.90	-8.84
17265	H	62.90	47.59	74	54	-11.10	-6.41

Temperature :	28℃	Test By:	King Kong
Humidity :	65 %	Frequency(MHz):	5795
Test mode:	802.11n(HT40)	Mode:	MIMO

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
11590	V	60.52	-34.71	-27.00	-7.71
13374	V	61.20	-34.03	-27.00	-7.03
17385	V	62.10	-33.13	-27.00	-6.13
11590	H	59.30	-35.93	-27.00	-8.93
13374	H	61.38	-33.85	-27.00	-6.85
17385	H	62.64	-32.59	-27.00	-5.59

Freq.	Ant.Pol.	Emission Level(dBuV/m)		Limit 3m(dBuV/m)		Over(dB)	
(MHz)	H/V	PK	AV	PK	AV	PK	AV
11590	V	60.52	48.54	74	54	-13.48	-5.46
13374	V	61.20	46.01	74	54	-12.80	-7.99
17385	V	62.10	47.07	74	54	-11.90	-6.93
11590	H	59.30	47.68	74	54	-14.70	-6.32
13374	H	61.38	46.18	74	54	-12.62	-7.82
17385	H	62.64	46.92	74	54	-11.36	-7.08

Note: (1) All Readings are Peak Value(VBW=300kHz)
(2) Emission Level= Reading Level+Probe Factor +Cable Loss.
(3)EIRP[dBm] = E[dBμV/m] + 20 log(d[meters]) - 104.77
d is the measurement distance in 3 meters

Temperature :	28℃	Test By:	King Kong
Humidity :	65 %	Frequency(MHz):	5775
Test mode:	802.11ac(VHT80)	Mode:	MIMO

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
11550	V	60.52	-34.71	-27.00	-7.71
13534	V	61.10	-34.13	-27.00	-7.13
17325	V	62.36	-32.87	-27.00	-5.87
11550	H	59.13	-36.10	-27.00	-9.10
13534	H	61.05	-34.18	-27.00	-7.18
17325	H	62.73	-32.50	-27.00	-5.50

Freq.	Ant.Pol.	Emission Level(dBuV/m)		Limit 3m(dBuV/m)		Over(dB)	
(MHz)	H/V	PK	AV	PK	AV	PK	AV
11550	V	60.52	44.54	74	54	-13.48	-9.46
13534	V	61.10	45.93	74	54	-12.90	-8.07
17325	V	62.36	47.24	74	54	-11.64	-6.76
11550	H	59.13	43.25	74	54	-14.87	-10.75
13534	H	61.05	45.51	74	54	-12.95	-8.49
17325	H	62.73	47.17	74	54	-11.27	-6.83

Note: (1) All Readings are Peak Value(VBW=300kHz)
(2) Emission Level= Reading Level+Probe Factor +Cable Loss.
(3)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

The 802.11a/n/ac siso and mimo modes has been tested and the worst case mode recorded as below:

Temperature :	28℃	Test By:	King Kong
Humidity :	65 %	Frequency:	5745
Test mode:	802.11a	Mode:	SISO antenna 0

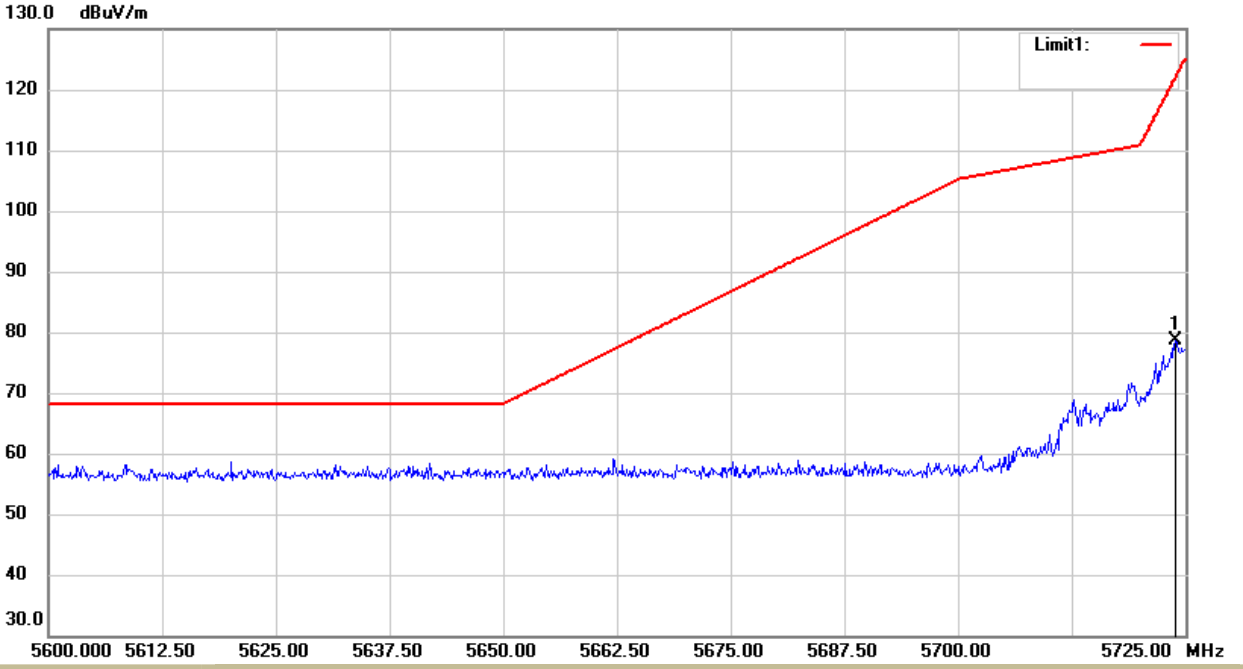
Freq. (MHz)	Ant.Pol. H/V	Field Strength (RBW=100KHz) (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Verdict
5723.87	H	78.56	-16.67	24.23	PASS
5724.13	V	67.20	-28.03	25.02	PASS

Temperature :	28℃	Test By:	King Kong
Humidity :	65 %	Frequency:	5825
Test mode:	802.11a	Mode:	SISO antenna 0

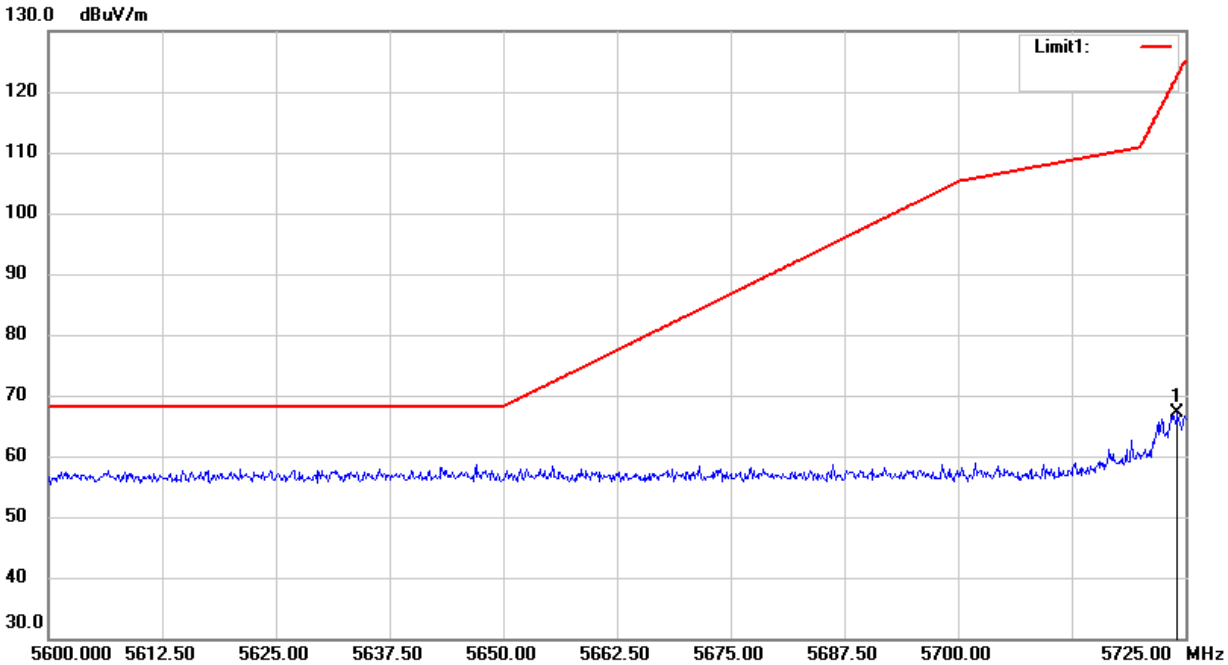
Freq. (MHz)	Ant.Pol. H/V	Field Strength (RBW=100KHz) (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Verdict
5850.86	H	70.68	-24.55	26.64	PASS
5852.75	V	61.45	-33.78	20.73	PASS

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

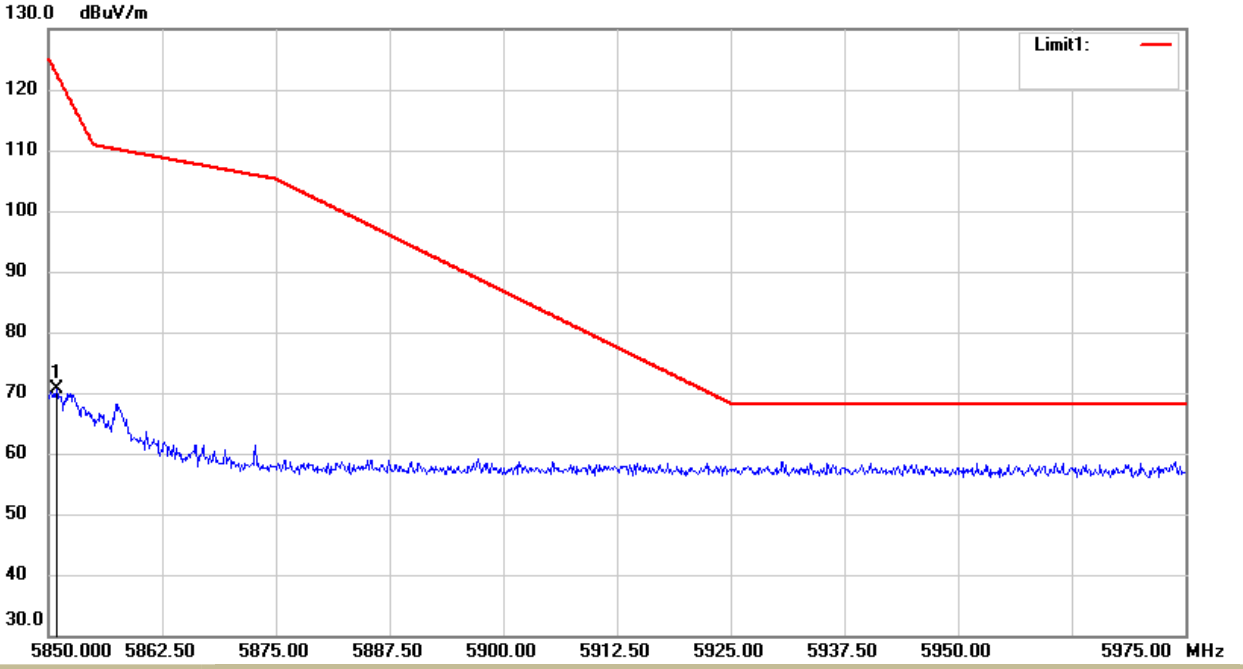
Test Model	UNII Band III Undesirable radiated Undesirable radiated Spurious Emission in Band Edge ☒802.11a ☐802.11n(HT20) ☐802.11ac(HT20) ☒5745 Ant.Pol H



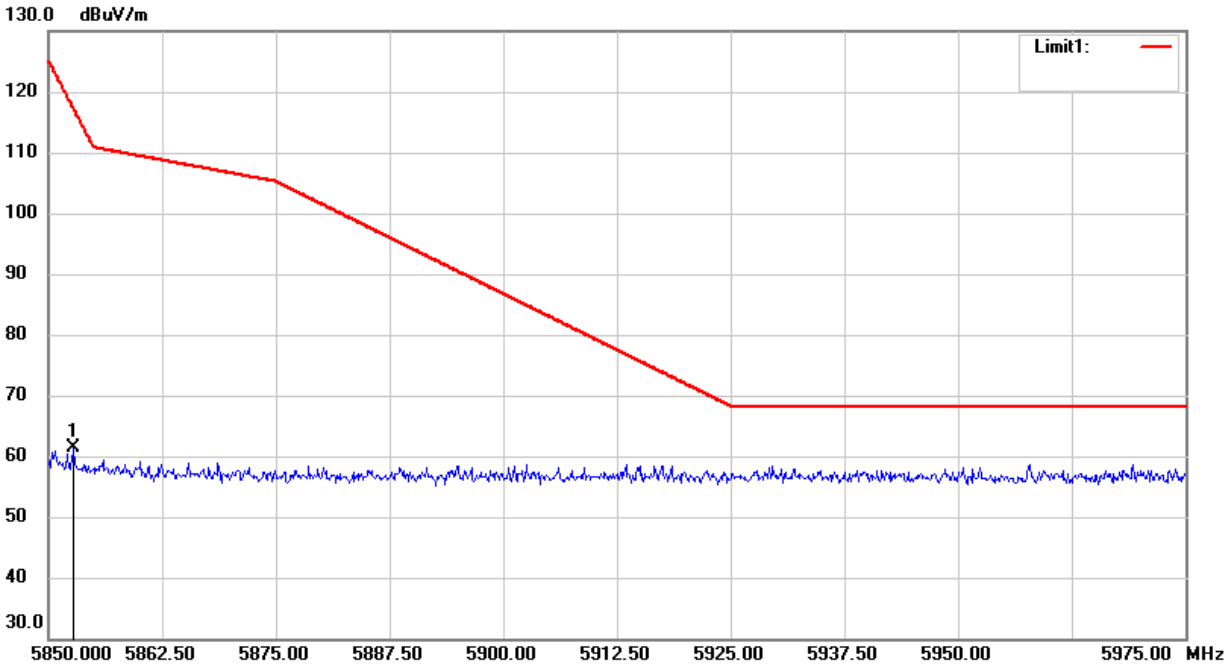
Test Model	UNII Band III Undesirable radiated Undesirable radiated Spurious Emission in Band Edge ☒802.11a ☐802.11n(HT20) ☐802.11ac(HT20) ☒5745 Ant.Pol V



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



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



Temperature :	28℃	Test By:	King Kong
Humidity :	65 %	Frequency:	5755
Test mode:	802.11n(HT40)	Mode:	MIMO

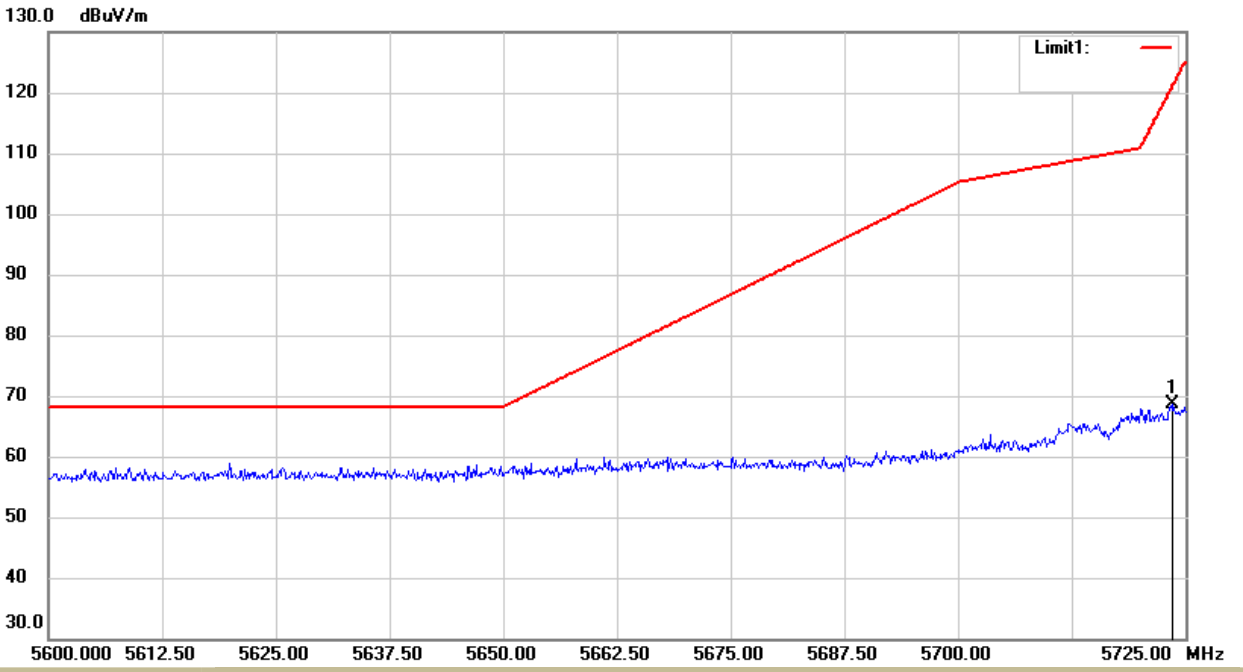
Freq. (MHz)	Ant.Pol. H/V	Field Strength (RBW=100KHz) (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Verdict
5723.63	H	68.51	-26.72	23.88	PASS
5724.75	V	75.46	-19.77	26.43	PASS

Temperature :	28℃	Test By:	King Kong
Humidity :	65 %	Frequency:	5795
Test mode:	802.11n(HT40)	Mode:	MIMO

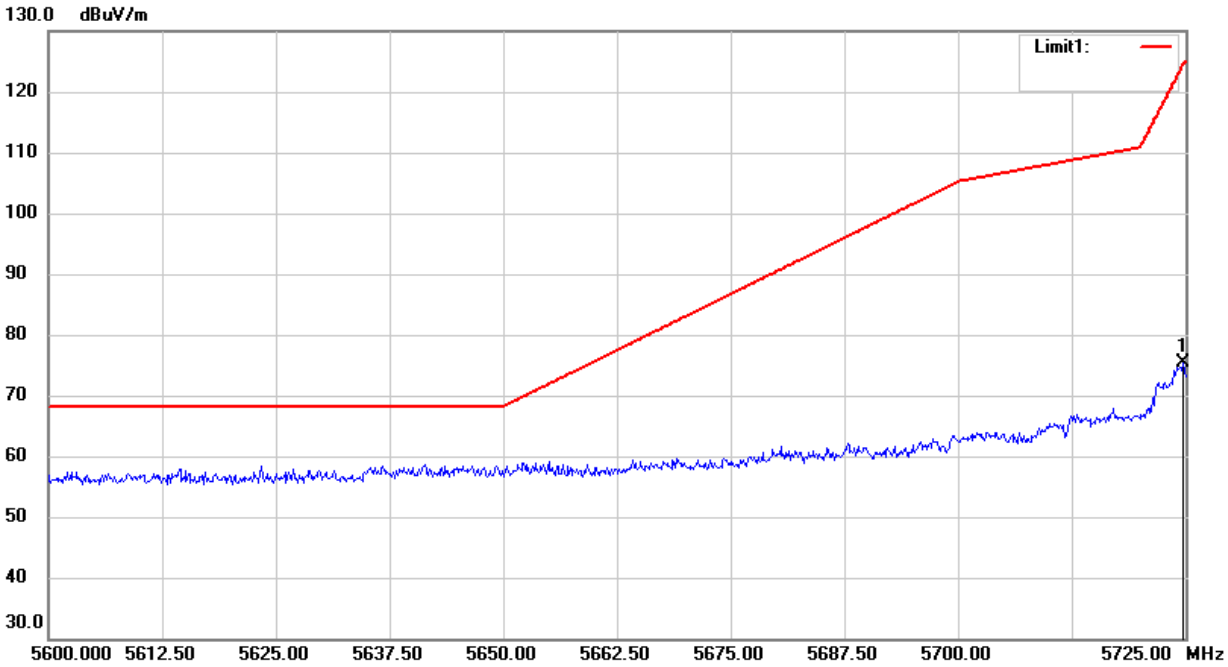
Freq. (MHz)	Ant.Pol. H/V	Field Strength (RBW=100KHz) (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Verdict
5852.63	H	84.83	-10.40	21.00	PASS
5852.37	V	71.03	-24.20	21.60	PASS

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

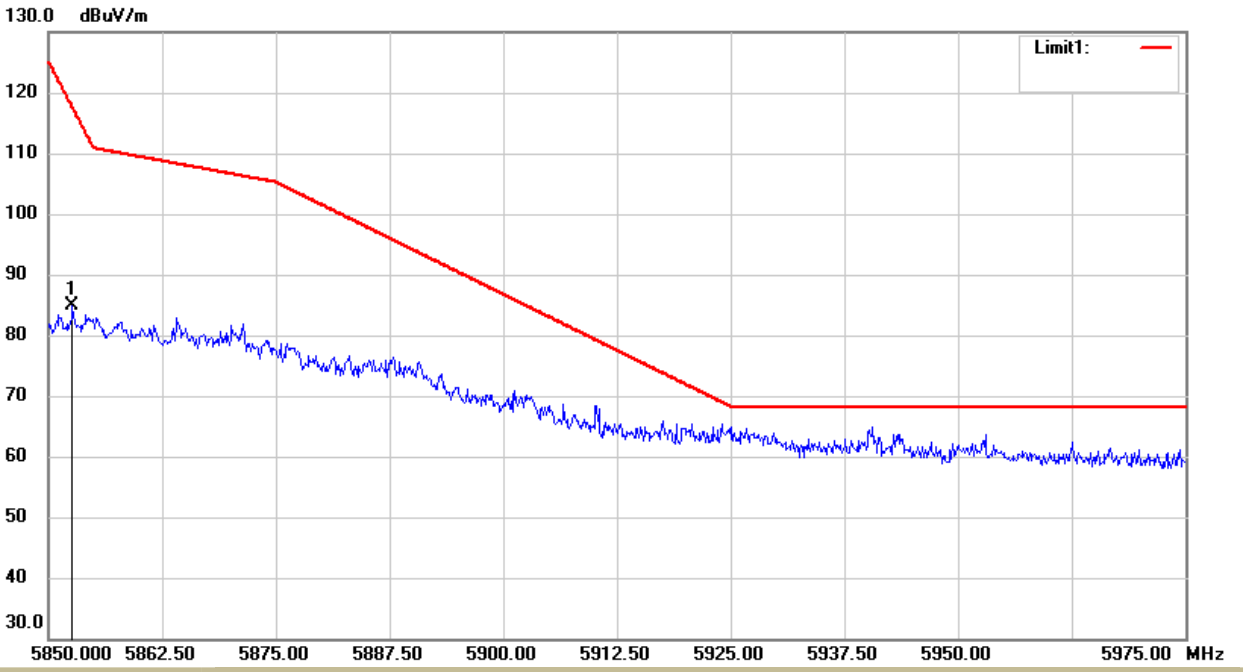
Test Model	UNII Band III Undesirable radiated Undesirable radiated Spurious Emission in Band Edge ☒802.11n(HT40) ☐802.11ac(VHT40) ☒5755 Ant.Pol H



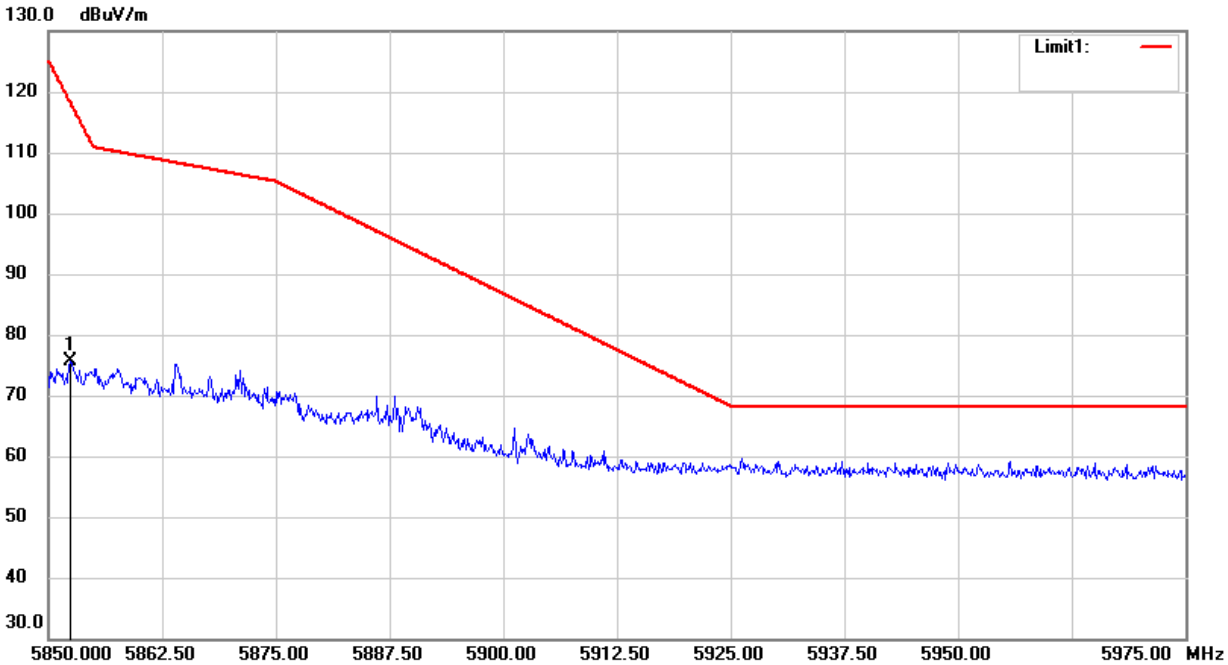
Test Model	UNII Band III Undesirable radiated Undesirable radiated Spurious Emission in Band Edge ☒802.11n(HT40) ☐802.11ac(VHT40) ☒5755 Ant.Pol V



Test Model	UNII Band III Undesirable radiated Undesirable radiated Spurious Emission in Band Edge ☒802.11n(HT40) ☐802.11ac(VHT40) ☒5795 Ant.Pol H



Test Model	UNII Band III Undesirable radiated Undesirable radiated Spurious Emission in Band Edge ☒802.11n(HT40) ☐802.11ac(VHT40) ☒5795 Ant.Pol V



Temperature :	28℃	Test By:	King Kong
Humidity :	65 %	Frequency:	5775
Test mode:	802.11n(VHT80)	Mode:	MIMO

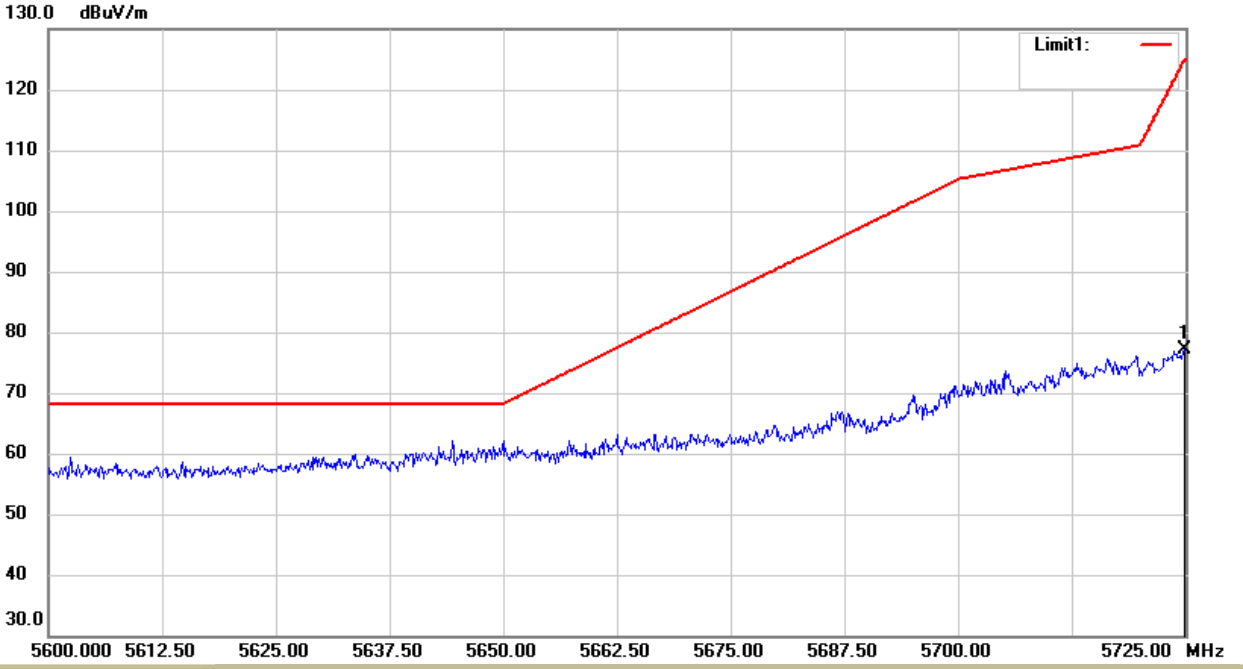
Freq. (MHz)	Ant.Pol. H/V	Field Strength (RBW=100KHz) (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Verdict
5724.88	H	77.09	-18.14	26.73	PASS
5725.00	V	71.03	-24.20	27.00	PASS

Temperature :	28℃	Test By:	King Kong
Humidity :	65 %	Frequency:	5775
Test mode:	802.11n(VHT80)	Mode:	MIMO

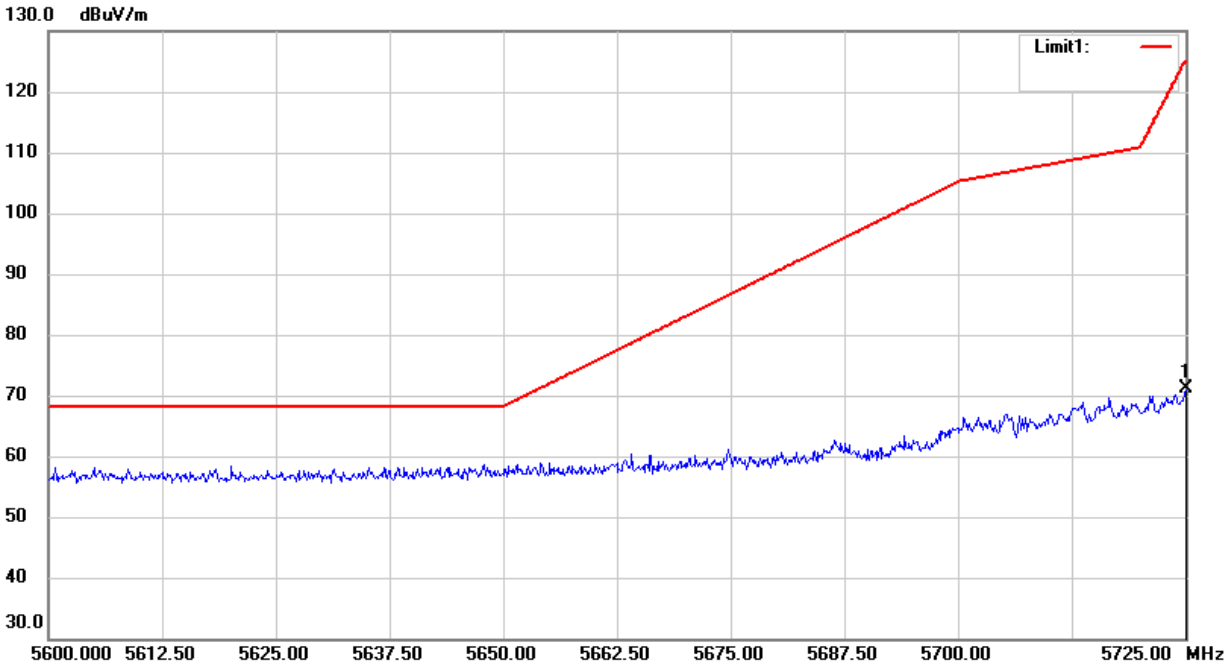
Freq. (MHz)	Ant.Pol. H/V	Field Strength (RBW=100KHz) (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Verdict
5850.25	H	76.41	-18.82	26.43	PASS
5851.13	V	75.46	-19.77	24.42	PASS

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

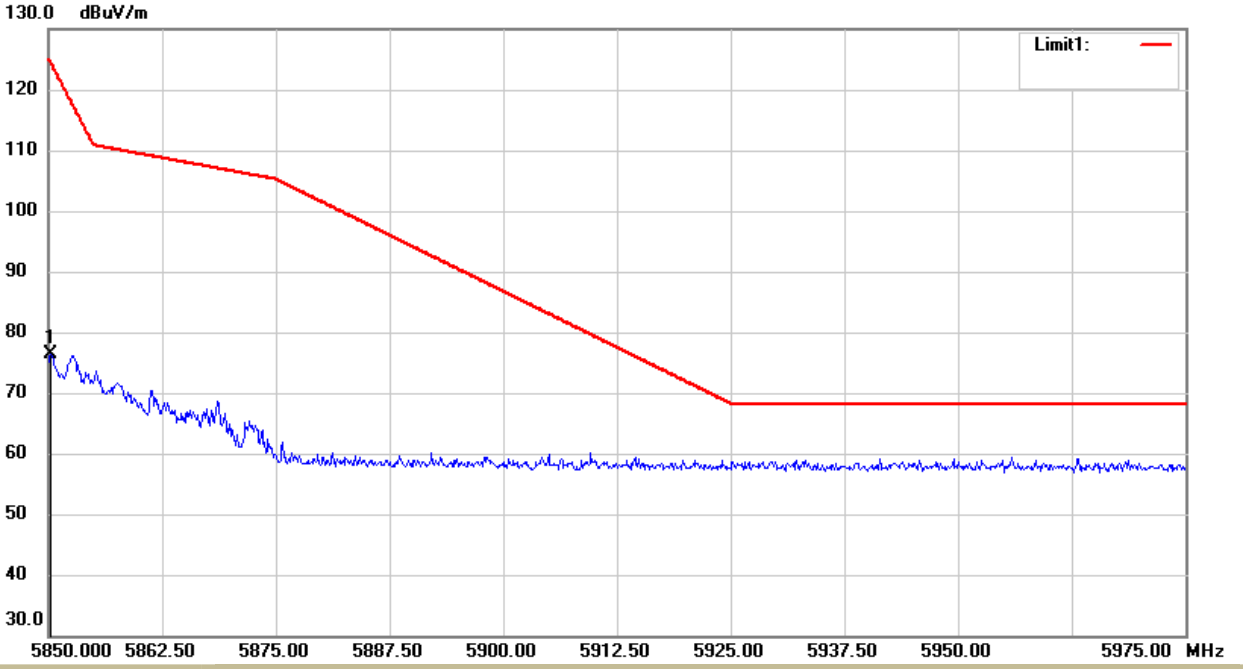
Test Model	UNII Band III Undesirable radiated Undesirable radiated Spurious Emission in Band Edge ☒802.11n(VHT80)		
	☒5775	Ant.Pol	H



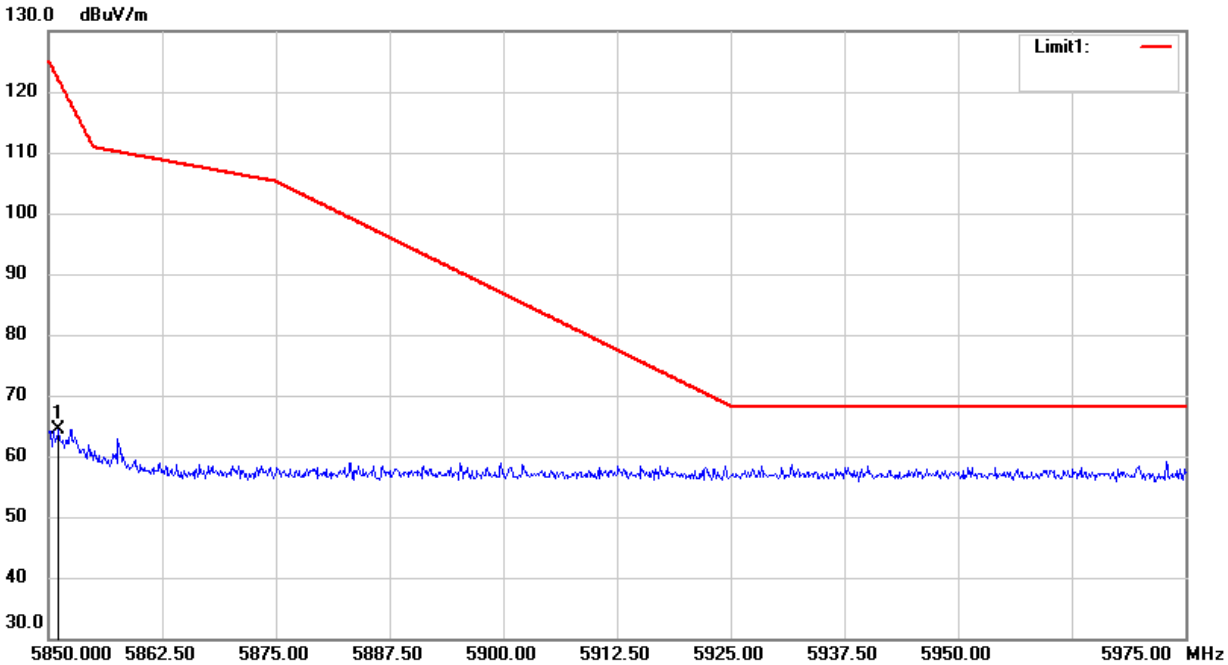
Test Model	UNII Band III Undesirable radiated Undesirable radiated Spurious Emission in Band Edge ☒802.11n(VHT80)		
	☒5775	Ant.Pol	V



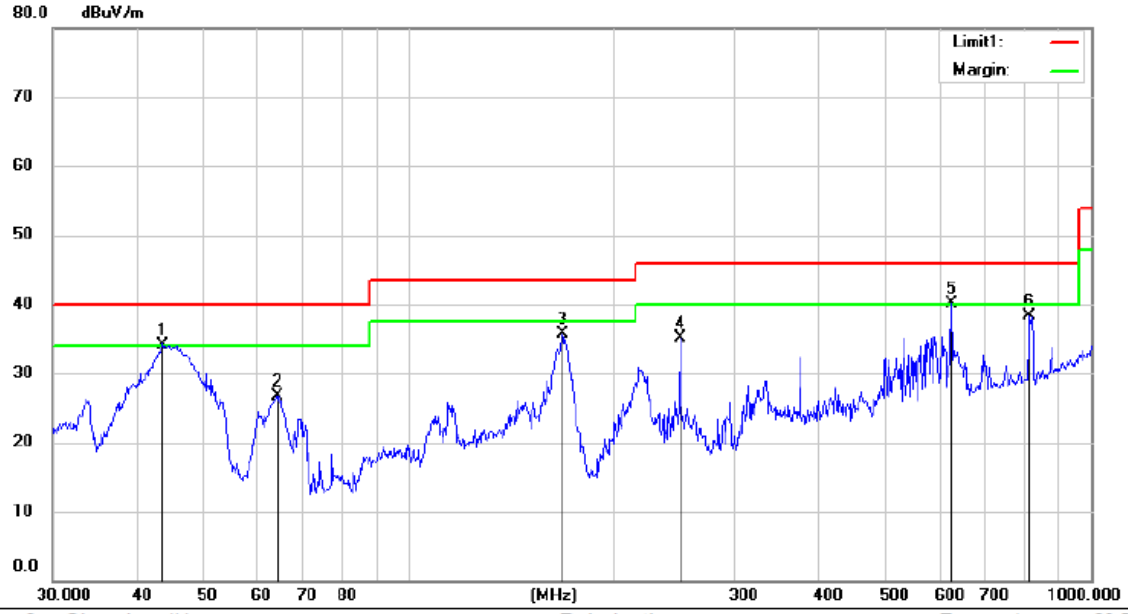
Test Model	UNII Band III Undesirable radiated Undesirable radiated Spurious Emission in Band Edge ☒802.11n(VHT80)		
	☒5775	Ant.Pol	H



Test Model	UNII Band III Undesirable radiated Undesirable radiated Spurious Emission in Band Edge ☒802.11n(VHT80)		
	☒5775	Ant.Pol	V



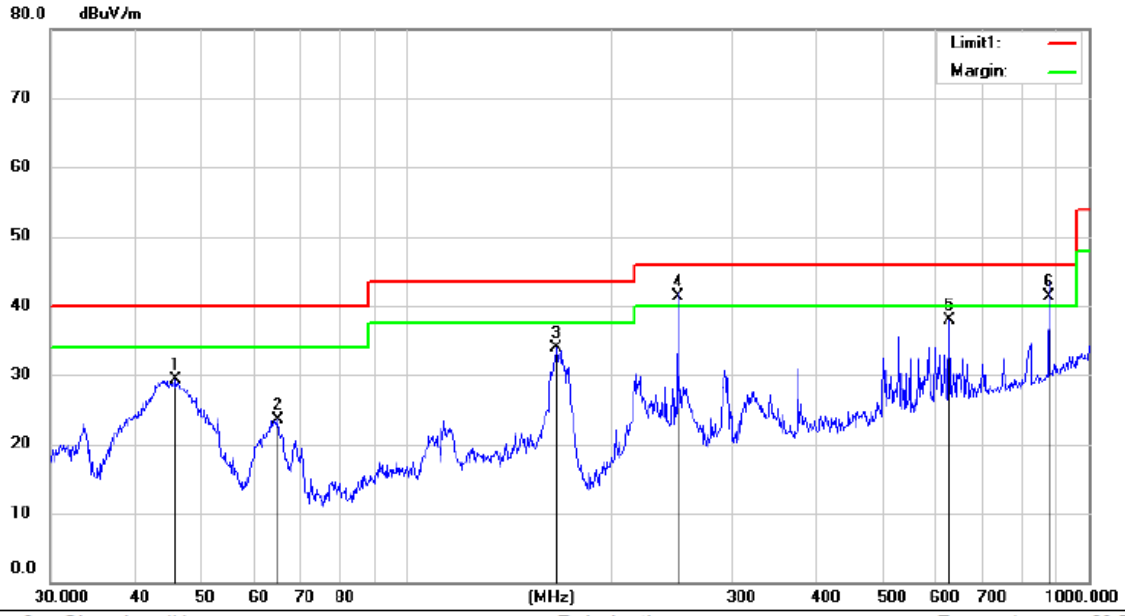
- Undesirable radiated Spurious Emission below 1GHz (30MHz to 1GHz)
  All modes have been tested, and the worst results (802.11a siso mode antenna 0) have been recorded in the report.



Site 3m Chamber #1 Polarization: *Vertical* Temperature: 29.5 C
Limit: (RE)FCC PART 15 CLASS B Power: AC 120V/60Hz Humidity: 48 %
Mode:802.11a 5180MHz
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	*	43.5440	45.65	-11.45	34.20	40.00	-5.80	QP			
2		64.1793	40.19	-13.40	26.79	40.00	-13.21	QP			
3		167.8242	49.97	-14.35	35.62	43.50	-7.88	QP			
4		249.9722	44.94	-9.89	35.05	46.00	-10.95	QP			
5	!	625.0780	42.01	-1.89	40.12	46.00	-5.88	QP			
6		815.6102	37.81	0.43	38.24	46.00	-7.76	QP			

*:Maximum data x:Over limit !:over margin Operator: CSL



Site 3m Chamber #1 Polarization: *Horizontal* Temperature: 29.5 C

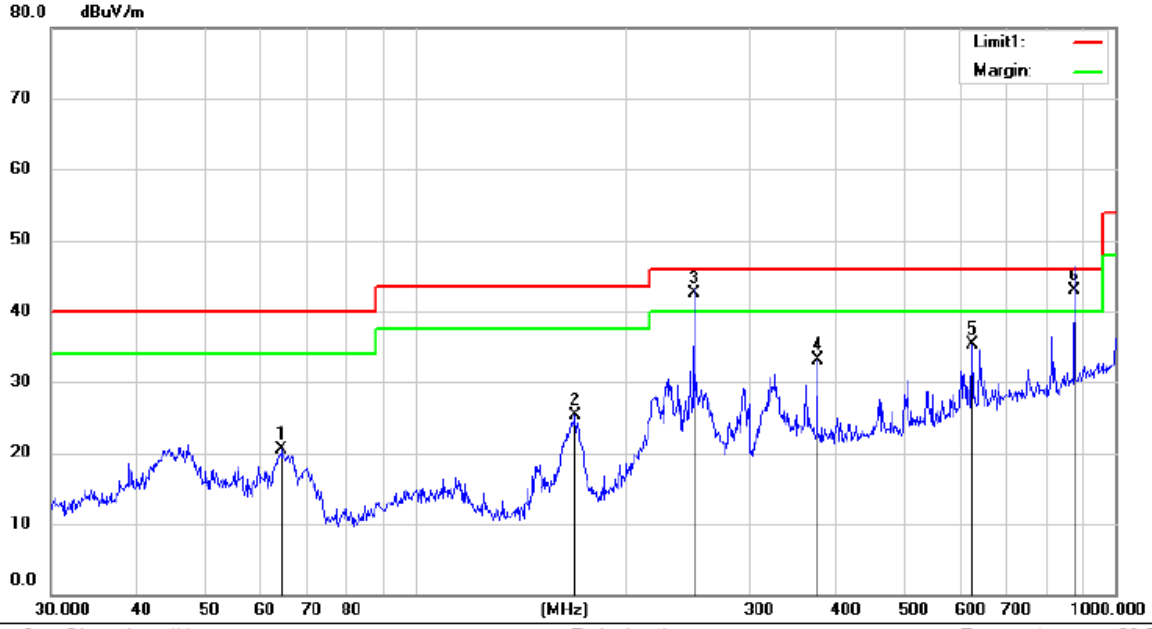
Limit: (RE)FCC PART 15 CLASS B Power: AC 120V/60Hz Humidity: 48 %

Mode:802.11a 5180MHz

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		45.9560	40.50	-11.29	29.21	40.00	-10.79	QP			
2		64.7161	37.03	-13.48	23.55	40.00	-16.45	QP			
3		165.8498	48.19	-14.37	33.82	43.50	-9.68	QP			
4	*	250.0820	51.29	-9.89	41.40	46.00	-4.60	QP			
5		625.0780	39.87	-1.89	37.98	46.00	-8.02	QP			
6	!	875.2470	39.70	1.55	41.25	46.00	-4.75	QP			

*:Maximum data x:Over limit !:over margin Operator: CSL



Site 3m Chamber #1 Polarization: *Horizontal* Temperature: 29.5 C

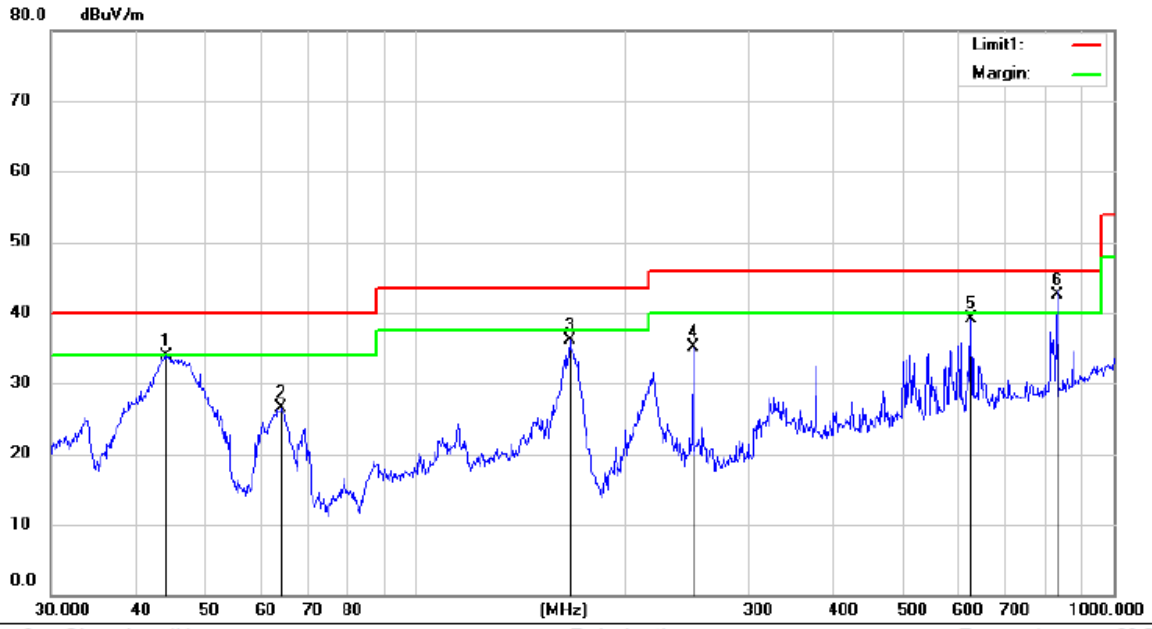
Limit: (RE)FCC PART 15 CLASS B Power: AC 120V/60Hz Humidity: 48 %

Mode:802.11a 5200MHz

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		64.2920	33.98	-13.42	20.56	40.00	-19.44	QP			
2		169.3761	39.55	-14.33	25.22	43.50	-18.28	QP			
3	!	249.9723	52.47	-9.89	42.58	46.00	-3.42	QP			
4		375.1154	39.76	-6.69	33.07	46.00	-12.93	QP			
5		625.0780	37.17	-1.89	35.28	46.00	-10.72	QP			
6	*	875.2470	41.33	1.55	42.88	46.00	-3.12	QP			

*:Maximum data x:Over limit !:over margin Operator: CSL



Site 3m Chamber #1 Polarization: *Vertical* Temperature: 29.5 C

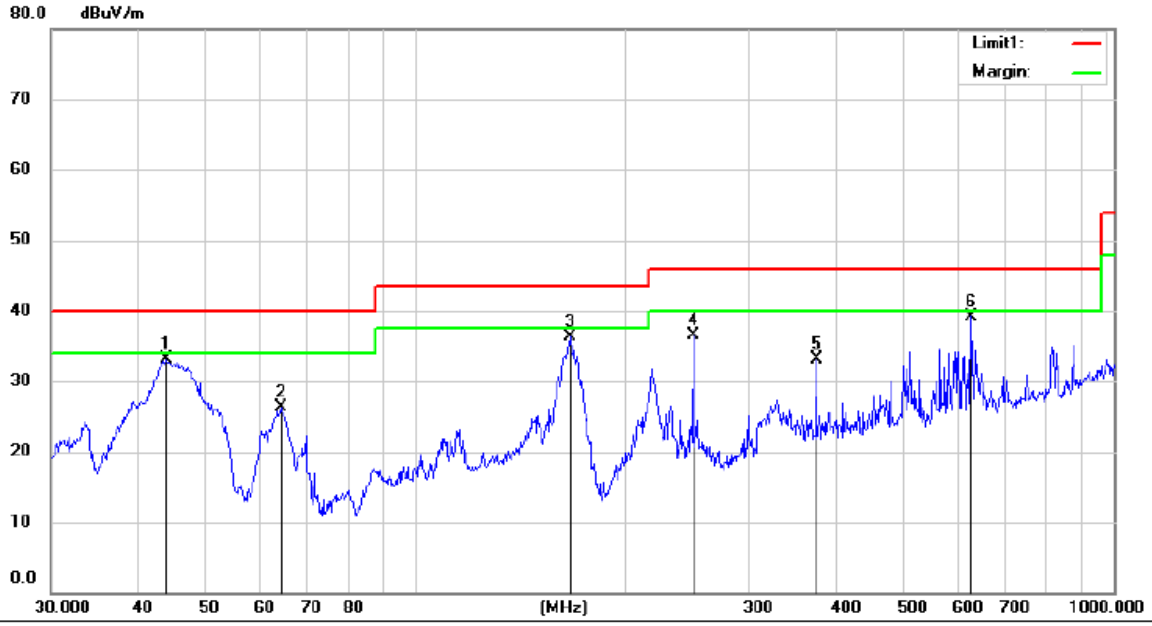
Limit: (RE)FCC PART 15 CLASS B Power: AC 120V/60Hz Humidity: 48 %

Mode: 802.11a 5200MHz

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		43.8695	45.33	-11.41	33.92	40.00	-6.08	QP			
2		64.3766	40.01	-13.43	26.58	40.00	-13.42	QP			
3		166.5053	50.41	-14.36	36.05	43.50	-7.45	QP			
4		249.9722	44.91	-9.89	35.02	46.00	-10.98	QP			
5		625.0780	40.96	-1.89	39.07	46.00	-6.93	QP			
6	*	831.4928	41.98	0.61	42.59	46.00	-3.41	QP			

*:Maximum data x:Over limit !:over margin Operator: CSL



Site 3m Chamber #1 Polarization: *Vertical* Temperature: 29.5 C

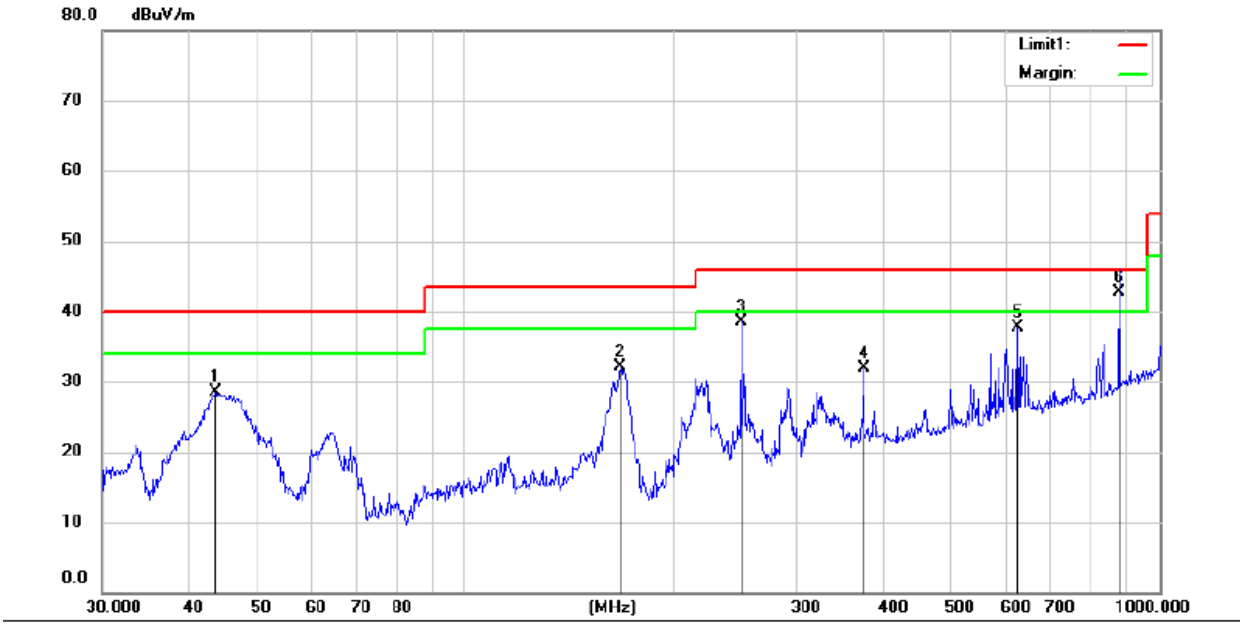
Limit: (RE)FCC PART 15 CLASS B Power: AC 120V/60Hz Humidity: 48 %

Mode:802.11a 5240MHz

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		43.8695	44.52	-11.41	33.11	40.00	-6.89	QP			
2		64.1793	39.79	-13.40	26.39	40.00	-13.61	QP			
3		166.9438	50.72	-14.36	36.36	43.50	-7.14	QP			
4		250.0818	46.41	-9.89	36.52	46.00	-9.48	QP			
5		375.1155	39.70	-6.69	33.01	46.00	-12.99	QP			
6	*	625.0780	41.09	-1.89	39.20	46.00	-6.80	QP			

*:Maximum data x:Over limit !:over margin Operator: CSL



Site 3m Chamber #1 Polarization: *Horizontal* Temperature: 29.5 C

Limit: (RE)FCC PART 15 CLASS B Power: AC 120V/60Hz Humidity: 48 %

Mode: 802.11a 5240MHz

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		43.7542	39.91	-11.42	28.49	40.00	-11.51	QP			
2		167.6770	46.49	-14.35	32.14	43.50	-11.36	QP			
3		249.9722	48.37	-9.89	38.48	46.00	-7.52	QP			
4		375.1155	38.50	-6.69	31.81	46.00	-14.19	QP			
5		625.0780	39.56	-1.89	37.67	46.00	-8.33	QP			
6	*	875.2470	41.22	1.55	42.77	46.00	-3.23	QP			

*:Maximum data x:Over limit !:over margin Operator: CSL

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

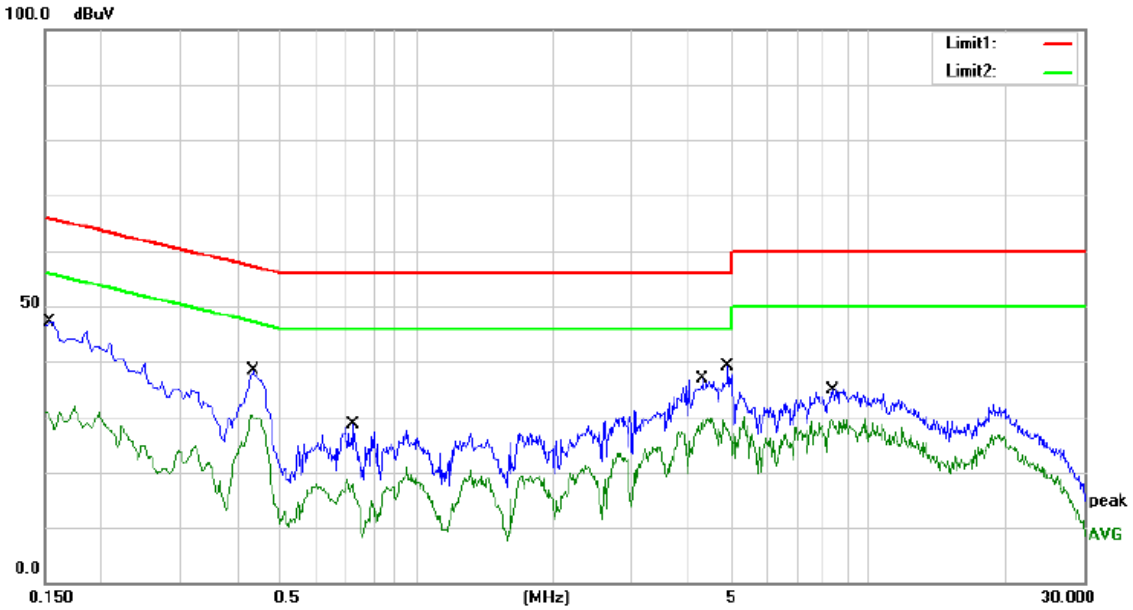
8.6.4 Test Procedure

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

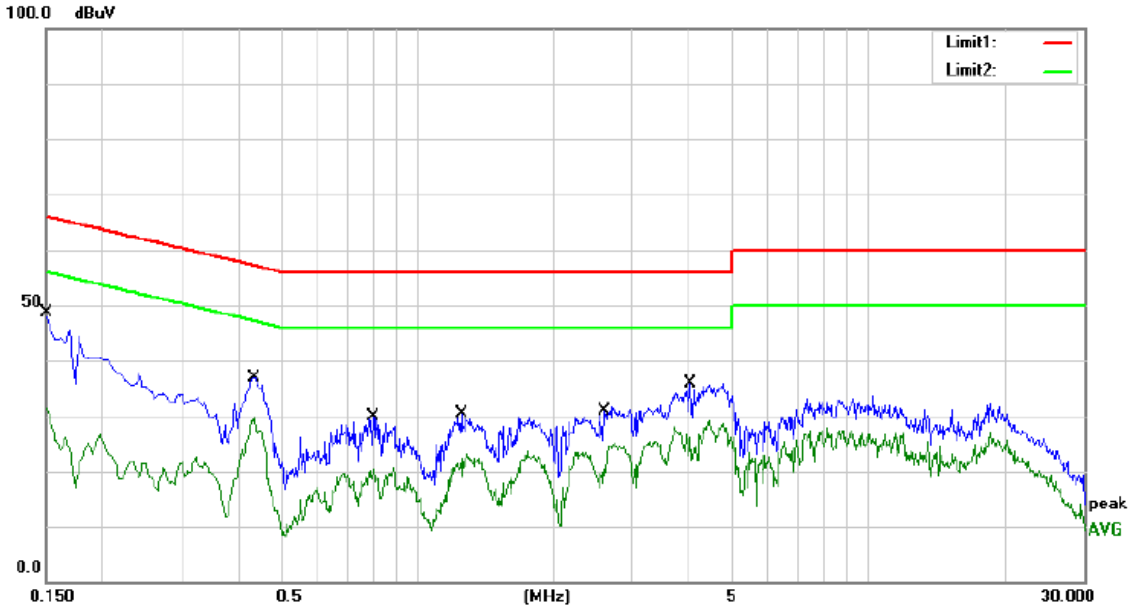
All mode and the voltage 120V and 240V have been tested, and show the worst (802.11a siso mode antenna 0) result as bellow.



Site Conduction #2 Phase: L1 Temperature: 23.7
Limit: (CE)FCC PART 15 class B_QP Power: AC 120V/60Hz Humidity: 41 %
Mode: 802.11a 5180MHz
Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1540	37.23	9.90	47.13	65.78	-18.65	QP	
2		0.1540	21.89	9.90	31.79	55.78	-23.99	AVG	
3		0.4340	28.43	9.92	38.35	57.18	-18.83	QP	
4		0.4340	20.54	9.92	30.46	47.18	-16.72	AVG	
5		0.7260	18.70	9.92	28.62	56.00	-27.38	QP	
6		0.7260	10.94	9.92	20.86	46.00	-25.14	AVG	
7		4.2940	26.89	9.95	36.84	56.00	-19.16	QP	
8		4.2940	19.92	9.95	29.87	46.00	-16.13	AVG	
9		4.8980	29.12	9.95	39.07	56.00	-16.93	QP	
10	*	4.8980	20.13	9.95	30.08	46.00	-15.92	AVG	
11		8.3340	24.94	10.00	34.94	60.00	-25.06	QP	
12		8.3340	19.57	10.00	29.57	50.00	-20.43	AVG	

*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver. Operator: XZC



Site Conduction #2 Phase: N Temperature: 23.7

Limit: (CE)FCC PART 15 class B_QP Power: AC 120V/60Hz Humidity: 41 %

Mode: 802.11a 5180MHz

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1500	38.66	9.89	48.55	66.00	-17.45	QP	
2		0.1500	22.08	9.89	31.97	56.00	-24.03	AVG	
3		0.4340	27.06	9.92	36.98	57.18	-20.20	QP	
4		0.4340	19.65	9.92	29.57	47.18	-17.61	AVG	
5		0.7980	19.88	9.92	29.80	56.00	-26.20	QP	
6		0.7980	10.61	9.92	20.53	46.00	-25.47	AVG	
7		1.2500	20.44	9.93	30.37	56.00	-25.63	QP	
8		1.2500	13.13	9.93	23.06	46.00	-22.94	AVG	
9		2.6060	20.95	9.94	30.89	56.00	-25.11	QP	
10		2.6060	15.18	9.94	25.12	46.00	-20.88	AVG	
11		4.0140	25.94	9.95	35.89	56.00	-20.11	QP	
12	*	4.0140	19.08	9.95	29.03	46.00	-16.97	AVG	

*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver. Operator: XZC

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 has two external antennas for 5G WIFI, the max gain:

Antenna 0: 5dBi

Antenna 1: 5dBi

Note:

☒ Antenna use a permanently attached antenna which is not replaceable.

☐ Not using a standard antenna jack or electrical connector for antenna replacement

☐ The antenna has to be professionally installed (please provide method of installation)

W

which in accordance to section 15.203, please refer to the internal photos.