



11N20MIMO_Ant2_5240



11N20MIMO_Ant1_5260



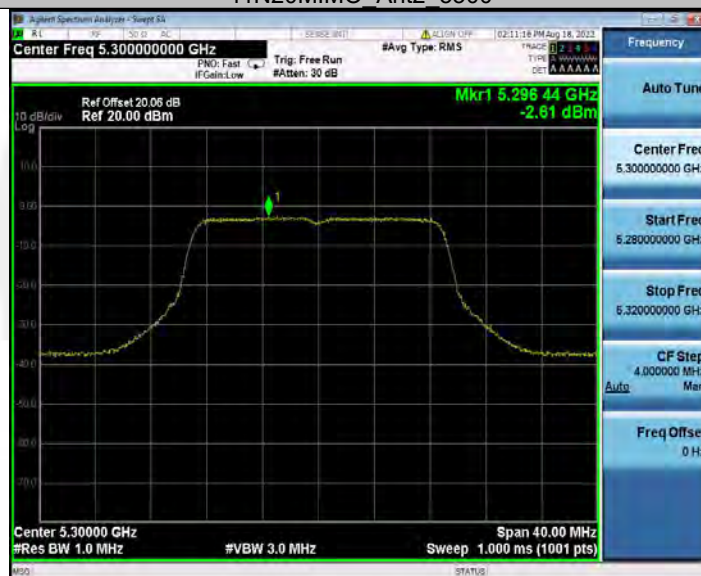
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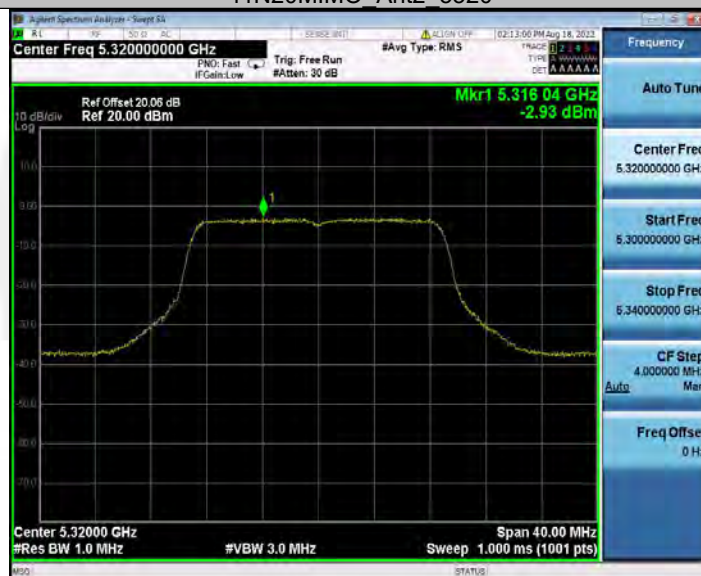
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11N20MIMO_Ant1_5580



11N20MIMO_Ant2_5580



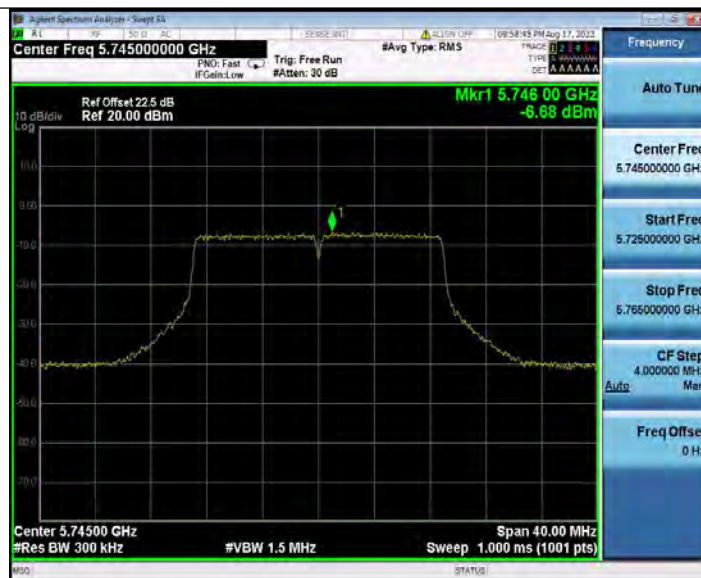
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11N20MIMO_Ant2_5785



11N20MIMO_Ant1_5825



11N20MIMO Ant2 5825



11N40MIMO Ant1 5190



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11N40MIMO_Ant2_5230



11N40MIMO_Ant1_5270



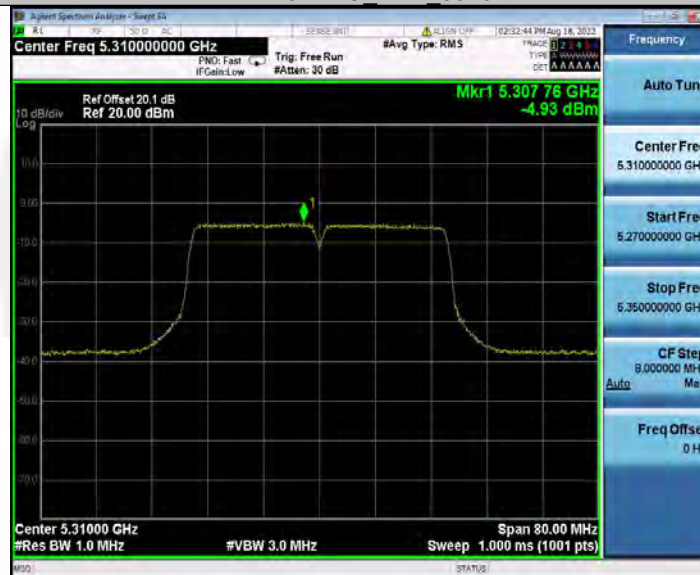
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11N40MIMO_Ant2_5550



11N40MIMO_Ant1_5670



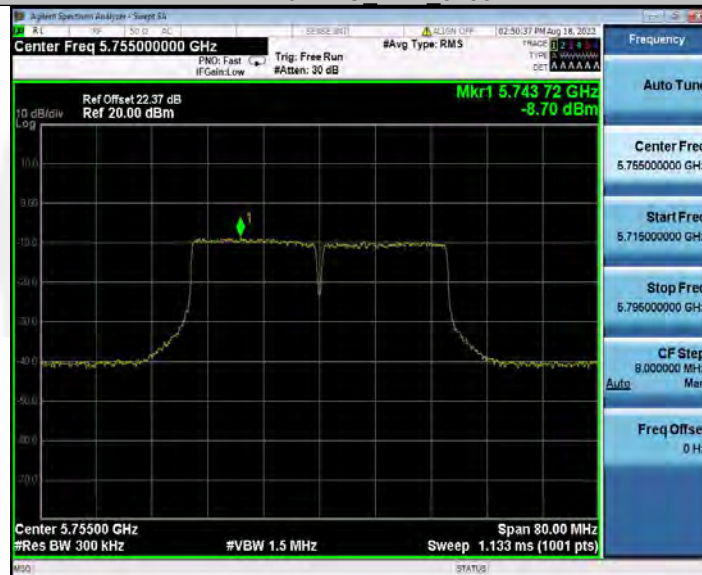
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11N40MIMO_Ant1_5755



11N40MIMO_Ant2_5755



11N40MIMO_Ant1_5795



11N40MIMO_Ant2_5795



11AC20MIMO_Ant1_5180



11AC20MIMO_Ant2_5180



11AC20MIMO_Ant1_5220



11AC20MIMO_Ant2_5220



11AC20MIMO_Ant1_5240



11AC20MIMO_Ant2_5240



11AC20MIMO_Ant1_5260



11AC20MIMO_Ant2_5260



11AC20MIMO_Ant1_5300



11AC20MIMO_Ant2_5300



11AC20MIMO_Ant1_5320



11AC20MIMO_Ant2_5320



11AC20MIMO_Ant1_5500



11AC20MIMO_Ant2_5500



11AC20MIMO_Ant1_5580



11AC20MIMO_Ant2_5580



11AC20MIMO_Ant1_5700



11AC20MIMO_Ant2_5700



11AC20MIMO_Ant1_5745



11AC20MIMO_Ant2_5745



11AC20MIMO_Ant1_5785



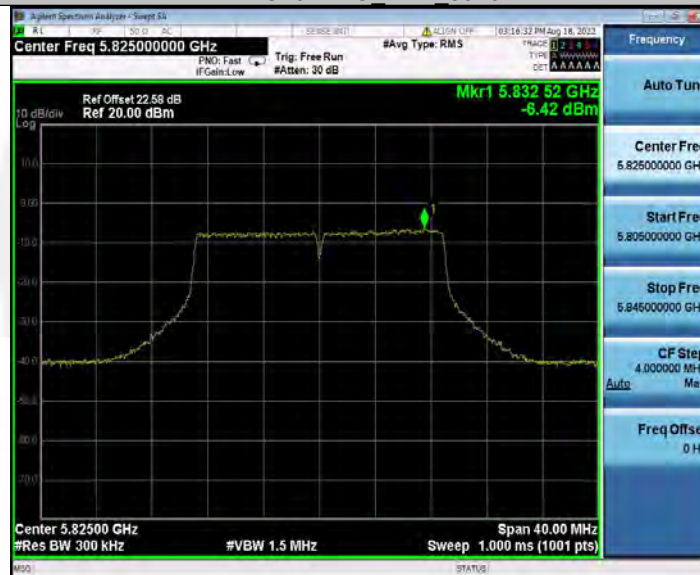
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11AC40MIMO_Ant2_5190



11AC40MIMO_Ant1_5230



11AC40MIMO_Ant2_5230



11AC40MIMO_Ant1_5270



11AC40MIMO_Ant2_5270



11AC40MIMO_Ant1_5310



11AC40MIMO_Ant2_5310



11AC40MIMO_Ant1_5310



11AC40MIMO_Ant2_5510



11AC40MIMO_Ant1_5550



11AC40MIMO_Ant2_5550



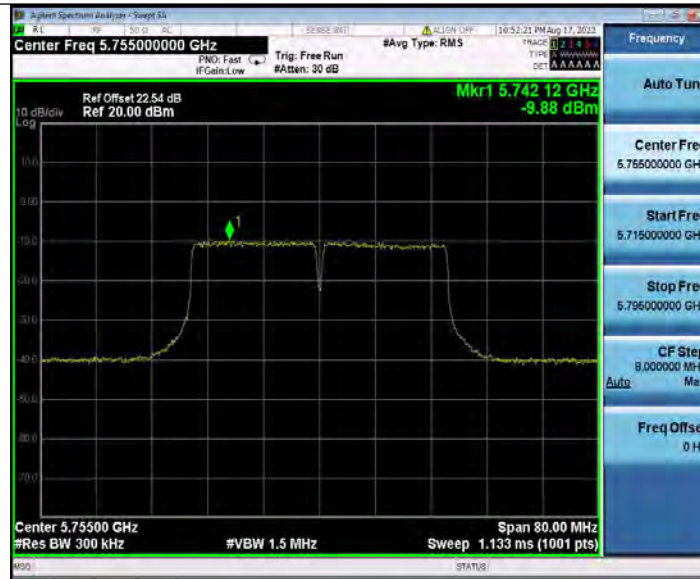
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11AC40MIMO_Ant1_5755



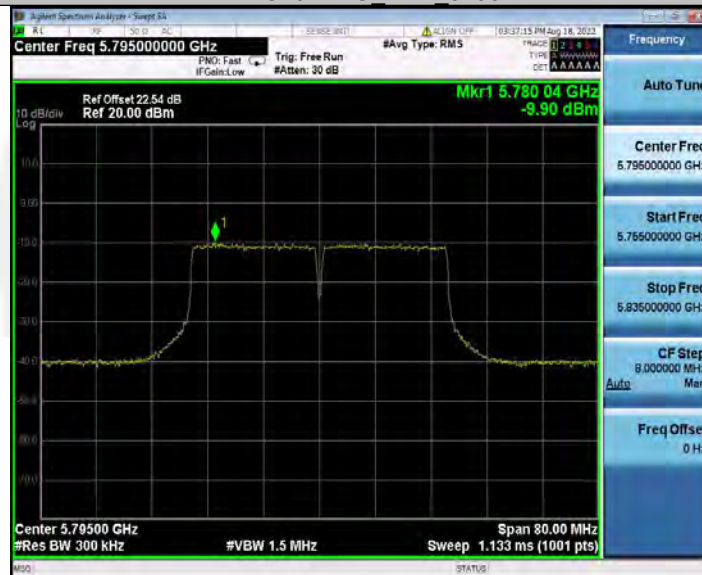
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11AC40MIMO_Ant1_5795



11AC40MIMO_Ant2_5795



11AC80MIMO_Ant1_5210



11AC80MIMO_Ant2_5210



11AC80MIMO_Ant1_5290



11AC80MIMO_Ant2_5290



11AC80MIMO_Ant1_5530



11AC80MIMO_Ant2_5530



11AC80MIMO_Ant1_5610



11AC80MIMO_Ant2_5610



11AC80MIMO_Ant1_5775



11AC80MIMO_Ant2_5775



11AC160MIMO_Ant1_5250



11AC160MIMO_Ant2_5250



11AC160MIMO_Ant1_5570



8.4 UNDESIRABLE RADIATED SPURIOUS EMISSION

8.4.1 Applicable Standard

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

8.4.2 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 ($\mu\text{V/m}$)	Field Strength (dB $\mu\text{V/m}$)	Measurement Distance
0.009-0.490	2400/F(KHz)	20 log ($\mu\text{V/m}$)	300
0.490-1.705	2400/F(KHz)	20 log ($\mu\text{V/m}$)	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.

8.4.3 Test Configuration

Test according to clause 6.2 radio frequency test setup 2.

8.4.4 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 $f < 150$ KHz(9KHz to 150KHz), 9KHz for $f < 30$ MHz (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 $\geq$ 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 $\geq$ 98 percent, set $VBW \leq RBW/100$ (i.e., 10 kHz) but not less than 10 Hz.

• If the EUT duty cycle is < 98 percent, set $VBW \geq 1/T$, 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.

8.4.5 Test Results

The voltage 120V & 240V and the modes 802.11a/n/ac has been tested and the worst result recorded as below:

- ☒ For Undesirable radiated Spurious Emission in U-NII – 1
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)
Highest gain of each antenna and highest output power is ANT2 and MIMO as below:
ANT2:

Test mode: 802.11ac Frequency(MHz): 5180

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
10390.70	V	54.66	-40.57	-27	-13.57
14370.99	V	59.86	-35.37	-27	-8.37
18000.00	V	64.97	-30.26	-27	-3.26
10312.91	H	54.49	-40.74	-27	-13.74
14433.43	H	59.42	-35.81	-27	-8.81
18000.00	H	64.88	-30.35	-27	-3.35

Test mode: 802.11ac Frequency(MHz): 5200

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
11586.94	V	56.90	-38.33	-27	-11.33
13797.08	V	59.72	-35.51	-27	-8.51
18000.00	V	65.55	-29.68	-27	-2.68
11060.10	H	54.84	-40.39	-27	-13.39
14462.66	H	59.85	-35.38	-27	-8.38
18000.00	H	66.35	-28.88	-27	-1.88

Test mode: 802.11ac Frequency(MHz): 5240

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
10493.32	V	54.49	-40.74	-27	-13.74
14458.48	V	60.46	-34.77	-27	-7.77
18000.00	V	65.33	-29.9	-27	-2.9
10456.99	H	54.82	-40.41	-27	-13.41
14429.26	H	59.49	-35.74	-27	-8.74
17922.12	H	64.85	-30.38	-27	-3.38

MIMO:

Test mode: 802.11ac Frequency(MHz): 5180					
Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
10389.31	V	54.53	-40.70	-27	-13.70
14372.27	V	59.83	-35.40	-27	-8.40
17997.11	V	64.71	-30.52	-27	-3.52
10324.6	H	54.41	-40.82	-27	-13.82
14445.12	H	59.26	-35.97	-27	-8.97
17996.49	H	64.70	-30.53	-27	-3.53

Test mode: 802.11ac Frequency(MHz): 5200					
Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
11585.55	V	56.90	-38.33	-27	-11.46
13798.36	V	59.72	-35.51	-27	-8.54
17997.75	V	65.55	-29.68	-27	-2.94
11071.79	H	54.84	-40.39	-27	-13.47
14474.35	H	59.85	-35.38	-27	-8.54
17996.58	H	66.35	-28.88	-27	-2.06

Test mode: 802.11ac Frequency(MHz): 5240					
Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
10491.93	V	54.36	-40.87	-27	-13.87
14459.76	V	60.43	-34.80	-27	-7.80
17997.75	V	65.07	-30.16	-27	-3.16
10468.68	H	54.74	-40.49	-27	-13.49
14440.95	H	59.33	-35.90	-27	-8.90
17918.7	H	64.67	-30.56	-27	-3.56

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

ANT2:

Test mode: 802.11ac			Frequency: 5180		
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
10390.70	V	54.66	74.00	-19.34	peak
10390.70	V	36.69	54.00	-17.31	AVG
14370.99	V	59.86	74.00	-14.14	peak
14370.99	V	41.88	54.00	-12.12	AVG
18000.00	V	64.97	74.00	-9.03	peak
18000	V	46.99	54.00	-7.01	AVG
10312.91	H	54.49	74.00	-19.51	peak
10312.91	H	36.53	54.00	-17.47	AVG
14433.43	H	59.42	74.00	-14.58	peak
14433.43	H	41.44	54.00	-12.56	AVG
18000.00	H	64.88	74.00	-9.12	peak
18000	H	46.94	54.00	-7.06	AVG

Test mode: 802.11ac			Frequency: 5200		
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
11586.94	V	56.90	74.00	-17.10	peak
11586.94	V	38.55	54.00	-15.45	AVG
13797.08	V	59.72	74.00	-14.28	peak
13797.08	V	41.77	54.00	-12.23	AVG
18000.00	V	65.55	74.00	-8.45	peak
18000	V	48.33	54.00	-5.67	AVG
11060.10	H	54.84	74.00	-19.16	peak
11060.10	H	36.81	54.00	-17.19	AVG
14462.66	H	59.85	74.00	-14.15	peak
14462.66	H	41.84	54.00	-12.16	AVG
18000.00	H	66.35	74.00	-7.65	peak
18000	H	48.25	54.00	-5.75	AVG

Test mode: 802.11ac			Frequency: 5240		
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
10493.32	V	54.49	74.00	-19.51	peak
10493.32	V	36.57	54.00	-17.43	AVG
14458.48	V	60.46	74.00	-13.54	peak
14458.48	V	42.41	54.00	-11.59	AVG
18000.00	V	65.33	74.00	-8.67	peak
18000	V	48.36	54.00	-5.64	AVG
10456.99	H	54.82	74.00	-19.18	peak
10456.99	H	36.88	54.00	-17.12	AVG
14429.26	H	59.49	74.00	-14.51	peak
14429.26	H	41.44	54.00	-12.56	AVG
17922.12	H	64.85	74.00	-9.15	peak
17922.12	H	46.86	54.00	-7.14	AVG

MIMO:

Test mode: 802.11ac			Frequency: 5180		
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
10389.310	V	54.53	74.00	-19.47	peak
10389.310	V	36.53	54.00	-17.47	AVG
14372.270	V	59.83	74.00	-14.17	peak
14372.270	V	41.86	54.00	-12.14	AVG
17997.110	V	64.71	74.00	-9.29	peak
17997.110	V	46.80	54.00	-7.2	AVG
10324.600	H	54.41	74.00	-19.59	peak
10324.600	H	36.32	54.00	-17.68	AVG
14445.120	H	59.26	74.00	-14.74	peak
14445.120	H	41.30	54.00	-12.7	AVG
17996.490	H	64.70	74.00	-9.3	peak
17996.490	H	46.81	54.00	-7.19	AVG

Test mode: 802.11ac			Frequency: 5200		
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
11585.550	V	56.77	74.00	-17.23	peak
11585.550	V	38.39	54.00	-15.61	AVG
13798.360	V	59.69	74.00	-14.31	peak
13798.360	V	41.75	54.00	-12.25	AVG
17997.750	V	65.29	74.00	-8.71	peak
17997.750	V	48.14	54.00	-5.86	AVG
11071.790	H	54.76	74.00	-19.24	peak
11071.790	H	36.60	54.00	-17.4	AVG
14474.350	H	59.69	74.00	-14.31	peak
14474.350	H	41.70	54.00	-12.3	AVG
17996.580	H	66.17	74.00	-7.83	peak
17996.580	H	48.12	54.00	-5.88	AVG

Test mode: 802.11ac			Frequency: 5240		
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
10491.930	V	54.36	74.00	-19.64	peak
10491.930	V	36.41	54.00	-17.59	AVG
14459.760	V	60.43	74.00	-13.57	peak
14459.760	V	42.39	54.00	-11.61	AVG
17997.750	V	65.07	74.00	-8.93	peak
17997.750	V	48.17	54.00	-5.83	AVG
10468.680	H	54.74	74.00	-19.26	peak
10468.680	H	36.67	54.00	-17.33	AVG
14440.950	H	59.33	74.00	-14.67	peak
14440.950	H	41.30	54.00	-12.7	AVG
17918.700	H	64.67	74.00	-9.33	peak
17918.700	H	46.73	54.00	-7.27	AVG

- Note:**
- (1) All Readings are Peak Value (VBW=3MHz) and Peak Value (VBW=10Hz).
 - (2) Emission Level= Reading Level+Correct Factor +Cable Loss.
 - (3) Correct Factor= Ant_F + Cab_L - Preamp
 - (4) The reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

● ☒ Undesirable radiated Undesirable radiated Spurious Emission in Band Edge

Test mode: 802.11ac Frequency(MHz): 5180

Freq. (MHz)	Ant.Pol. H/V	Field Strength (RBW=100KHz) (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Verdict
5147.660	H	54.26	-40.97	-27	Pass
5146.360	V	53.97	-41.26	-27	Pass

Test mode: 802.11ac Frequency(MHz): 5240

Freq. (MHz)	Ant.Pol. H/V	Field Strength (RBW=100KHz) (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Verdict
5355.962	H	54.64	-40.59	-27	Pass
5351.375	V	54.73	-40.5	-27	Pass

Note: (1) All Readings are Peak Value (VBW=3MHz) and Peak Value (VBW=10Hz).
 (2) Emission Level= Reading Level+Correct Factor +Cable Loss.
 (3) Correct Factor= Ant_F + Cab_L - Preamp
 (4) EIRP[dBm] = E[dBuV/m] + 20 log(d[meters]) - 104.77
 d is the measurement distance in 3 meters

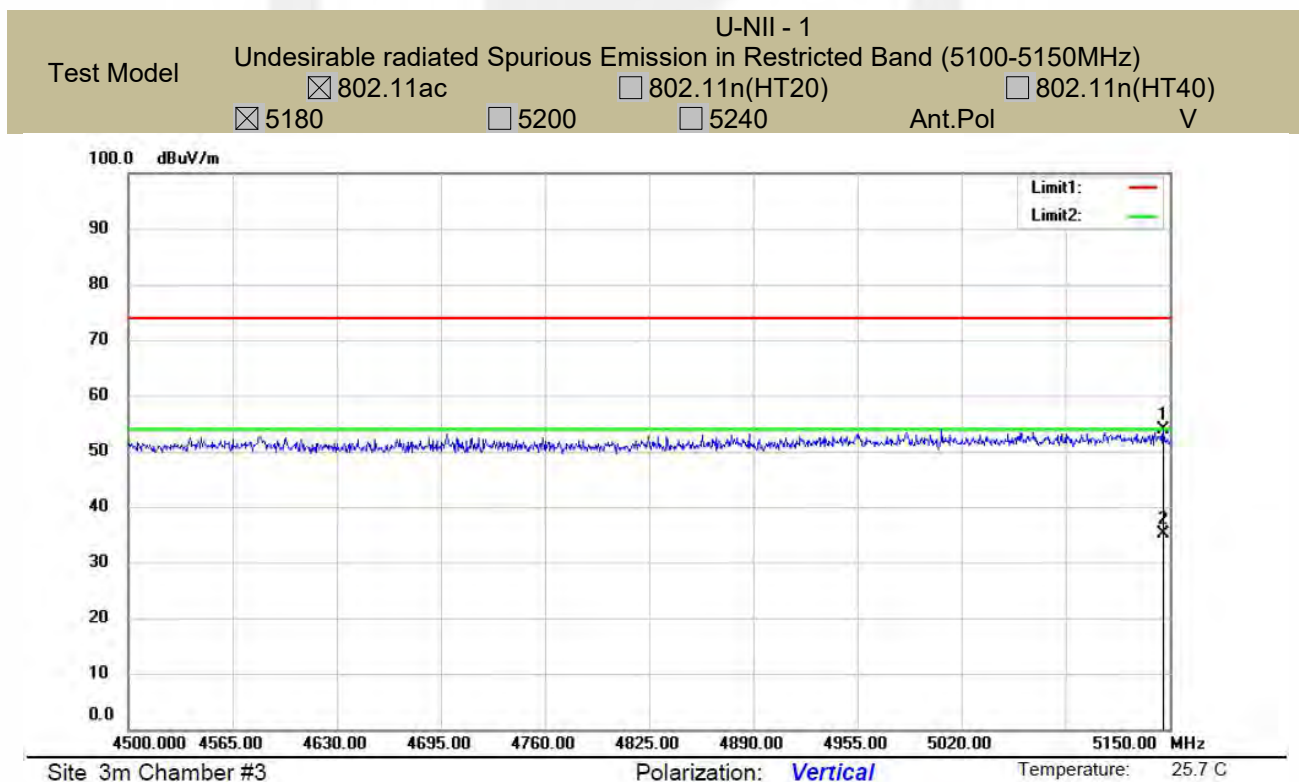
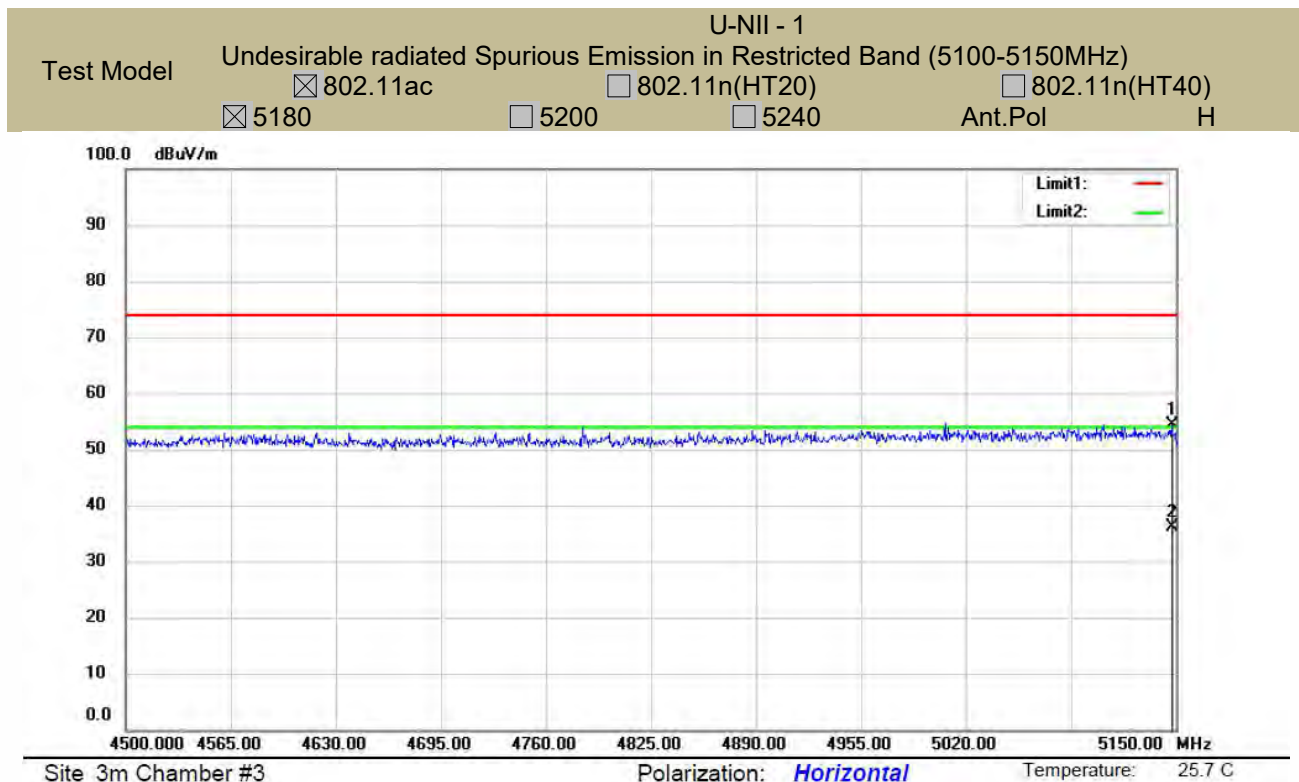
Test mode: 802.11ac Frequency(MHz): 5180

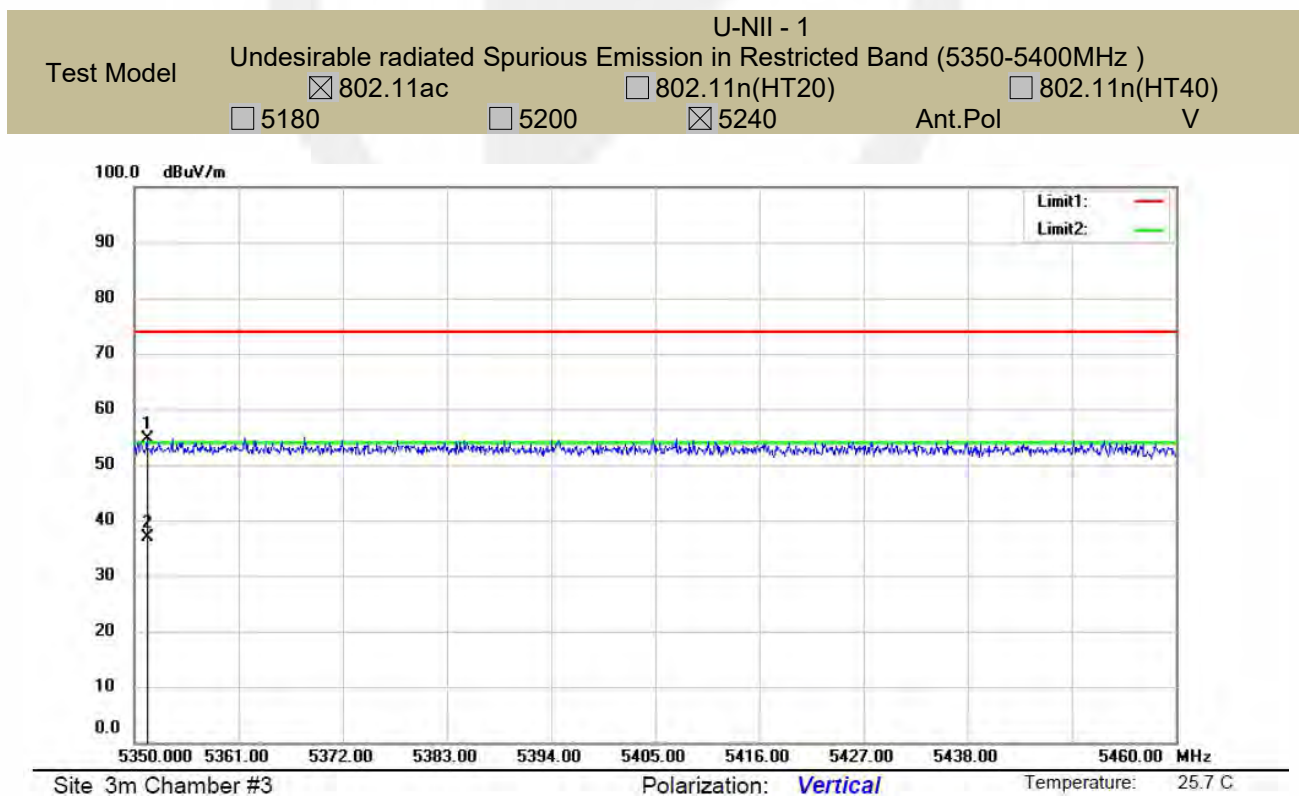
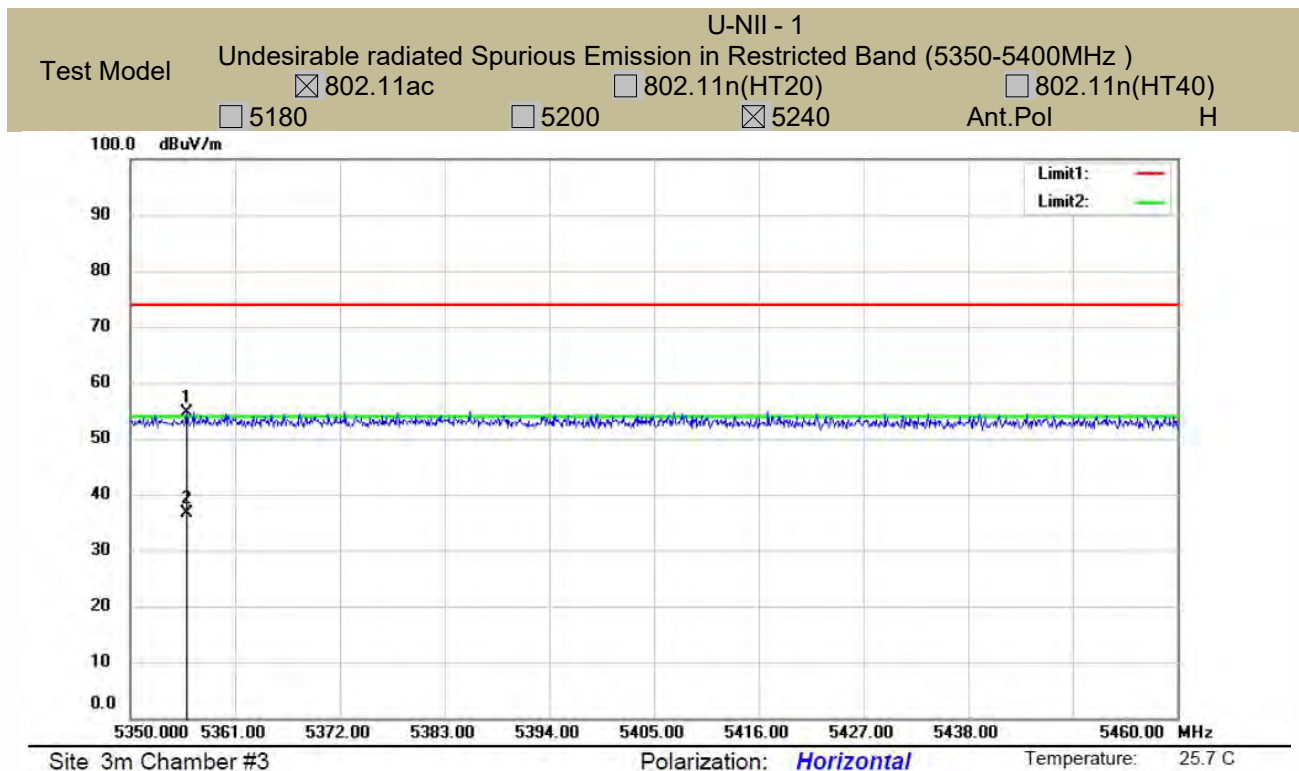
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
5146.360	V	53.97	74.00	-20.03	peak
5146.36	V	35.03	54.00	-18.97	AVG
5147.660	H	54.26	74.00	-19.74	peak
5147.66	H	36.25	54.00	-17.75	AVG

Test mode: 802.11ac Frequency(MHz): 5240

Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
5351.375	V	54.73	74.00	-19.27	peak
5351.375	V	36.77	54.00	-17.23	AVG
5355.962	H	54.64	74.00	-19.36	peak
5355.962	H	36.71	54.00	-17.29	AVG

Note: (1) All Readings are Peak Value (VBW=3MHz) and Peak Value (VBW=10Hz).
 (2) Emission Level= Reading Level+Correct Factor +Cable Loss.
 (3) Correct Factor= Ant_F + Cab_L - Preamp
 (4) The reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.





- ☒ For Undesirable radiated Spurious Emission in U-NII -2A
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)
Highest gain of each antenna and highest output power is ANT2 and MIMO as below:
ANT2:

Test mode: 802.11ac Frequency(MHz): 5260

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
10387.70	V	55.05	-40.18	-27	-13.18
14433.43	V	60.27	-34.96	-27	-7.96
17989.59	V	65.30	-29.93	-27	-2.93
10989.99	H	55.82	-39.41	-27	-12.41
14441.78	H	59.70	-35.53	-27	-8.53
17922.12	H	65.13	-30.1	-27	-3.1

Test mode: 802.11ac Frequency(MHz): 5280

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
10888.81	V	55.47	-39.76	-27	-12.76
14445.95	V	59.83	-35.4	-27	-8.4
18000.00	V	65.07	-30.16	-27	-3.16
11556.84	H	55.23	-40	-27	-13
14938.51	H	59.62	-35.61	-27	-8.61
17989.59	H	64.88	-30.35	-27	-3.35

Test mode: 802.11ac Frequency(MHz): 5320

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
10493.32	V	54.74	-40.49	-27	-13.49
14964.44	V	59.74	-35.49	-27	-8.49
18000.00	V	64.65	-30.58	-27	-3.58
11540.15	H	55.82	-39.41	-27	-12.41
14300.55	H	59.73	-35.5	-27	-8.5
17916.94	H	65.38	-29.85	-27	-2.85

MIMO:

Test mode: 802.11ac Frequency(MHz): 5180

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
10386.31	V	54.92	-40.31	-27	-13.31
14434.71	V	60.24	-34.99	-27	-7.99
17987.34	V	65.04	-30.19	-27	-3.19
11001.68	H	55.74	-39.49	-27	-12.49
14453.47	H	59.54	-35.69	-27	-8.69
17918.7	H	64.95	-30.28	-27	-3.28

Test mode: 802.11ac Frequency(MHz): 5200

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
10887.42	V	56.90	-39.89	-27	-12.89
14447.23	V	59.72	-35.43	-27	-8.43
17997.75	V	65.55	-30.42	-27	-3.42
11568.53	H	54.84	-40.08	-27	-13.08
14950.2	H	59.85	-35.77	-27	-8.77
17986.17	H	66.35	-30.53	-27	-3.53

Test mode: 802.11ac Frequency(MHz): 5240

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
10491.93	V	54.61	-40.62	-27	-13.62
14965.72	V	59.71	-35.52	-27	-8.52
17997.75	V	64.39	-30.84	-27	-3.84
11551.84	H	55.74	-39.49	-27	-12.49
14312.24	H	59.57	-35.66	-27	-8.66
17913.52	H	65.20	-30.03	-27	-3.03

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

ANT2:

Frequency: 802.11ac			Frequency(MHz): 5260		
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
10387.70	V	55.05	74.00	-18.95	peak
10387.70	V	38.12	54.00	-15.88	AVG
14433.43	V	60.27	74.00	-13.73	peak
14433.43	V	42.28	54.00	-11.72	AVG
17989.59	V	65.30	74.00	-8.70	peak
17989.59	V	48.29	54.00	-5.71	AVG
10989.99	H	55.82	74.00	-18.18	peak
10989.99	H	38.83	54.00	-15.17	AVG
14441.78	H	59.70	74.00	-14.30	peak
14441.78	H	41.66	54.00	-12.34	AVG
17922.12	H	65.13	74.00	-8.87	peak
17922.12	H	48.15	54.00	-5.85	AVG

Frequency: 802.11ac			Frequency(MHz): 5280		
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
10888.81	V	55.47	74.00	-18.53	peak
10888.81	V	38.42	54.00	-15.58	AVG
14445.95	V	59.83	74.00	-14.17	peak
14445.95	V	41.33	54.00	-12.67	AVG
18000.00	V	65.07	74.00	-8.93	peak
18000	V	48.11	54.00	-5.89	AVG
11556.84	H	55.23	74.00	-18.77	peak
11556.84	H	38.25	54.00	-15.75	AVG
14938.51	H	59.62	74.00	-14.38	peak
14938.51	H	41.43	54.00	-12.57	AVG
17989.59	H	64.88	74.00	-9.12	peak
17989.59	H	46.75	54.00	-7.25	AVG

Frequency: 802.11ac			Frequency(MHz): 5320		
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
10493.32	V	54.74	74.00	-19.26	peak
10493.32	V	36.23	54.00	-17.77	AVG
14964.44	V	59.74	74.00	-14.26	peak
14964.44	V	41.22	54.00	-12.78	AVG
18000.00	V	64.65	74.00	-9.35	peak
18000	V	46.33	54.00	-7.67	AVG
11540.15	H	55.82	74.00	-18.18	peak
11540.15	H	38.84	54.00	-15.16	AVG
14300.55	H	59.73	74.00	-14.27	peak
14300.55	H	41.77	54.00	-12.23	AVG
17916.94	H	65.38	74.00	-8.62	peak
17916.94	H	48.52	54.00	-5.48	AVG

MIMO:

Frequency: 802.11ac			Frequency(MHz): 5260		
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
10386.310	V	54.92	74.00	-19.08	peak
10386.310	V	37.96	54.00	-16.04	AVG
14434.710	V	60.24	74.00	-13.76	peak
14434.710	V	42.26	54.00	-11.74	AVG
17987.340	V	65.04	74.00	-8.96	peak
17987.340	V	48.10	54.00	-5.9	AVG
11001.680	H	55.74	74.00	-18.26	peak
11001.680	H	38.62	54.00	-15.38	AVG
14453.470	H	59.54	74.00	-14.46	peak
14453.470	H	41.52	54.00	-12.48	AVG
17918.700	H	64.95	74.00	-9.05	peak
17918.700	H	48.02	54.00	-5.98	AVG

Frequency: 802.11ac			Frequency(MHz): 5280		
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
10887.420	V	55.34	74.00	-18.66	peak
10887.420	V	38.26	54.00	-15.74	AVG
14447.230	V	59.80	74.00	-14.2	peak
14447.230	V	41.31	54.00	-12.69	AVG
17997.750	V	64.81	74.00	-9.19	peak
17997.750	V	47.92	54.00	-6.08	AVG
11568.530	H	55.15	74.00	-18.85	peak
11568.530	H	38.04	54.00	-15.96	AVG
14950.200	H	59.46	74.00	-14.54	peak
14950.200	H	41.29	54.00	-12.71	AVG
17986.170	H	64.70	74.00	-9.3	peak
17986.170	H	46.62	54.00	-7.38	AVG

Frequency: 802.11ac			Frequency(MHz): 5320		
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
10491.930	V	54.61	74.00	-19.39	peak
10491.930	V	36.07	54.00	-17.93	AVG
14965.720	V	59.71	74.00	-14.29	peak
14965.720	V	41.20	54.00	-12.8	AVG
17997.750	V	64.39	74.00	-9.61	peak
17997.750	V	46.14	54.00	-7.86	AVG
11551.840	H	55.74	74.00	-18.26	peak
11551.840	H	38.63	54.00	-15.37	AVG
14312.240	H	59.57	74.00	-14.43	peak
14312.240	H	41.63	54.00	-12.37	AVG
17913.520	H	65.20	74.00	-8.8	peak
17913.520	H	48.39	54.00	-5.61	AVG

- Note:** (1) All Readings are Peak Value (VBW=3MHz) and Peak Value (VBW=10Hz).
(2) Emission Level= Reading Level+Correct Factor +Cable Loss.
(3) Correct Factor= Ant_F + Cab_L - Preamp
(4) The reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

● ☒ Undesirable radiated Undesirable radiated Spurious Emission in Band Edge

Test mode: 802.11ac Frequency(MHz): 5260

Freq. (MHz)	Ant.Pol. H/V	Field Strength (RBW=100KHz) (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Verdict
5132.645	H	53.98	-41.25	-27	Pass
5142.525	V	54.14	-41.09	-27	Pass

Test mode: 802.11ac Frequency(MHz): 5320

Freq. (MHz)	Ant.Pol. H/V	Field Strength (RBW=100KHz) (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Verdict
5353.410	H	54.20	-41.03	-27	Pass
5352.717	V	54.64	-40.59	-27	Pass

Note: (1) All Readings are Peak Value (VBW=3MHz) and Peak Value (VBW=10Hz).
 (2) Emission Level= Reading Level+Correct Factor +Cable Loss.
 (3) Correct Factor= Ant_F + Cab_L - Preamp
 (4) EIRP[dBm] = E[dBuV/m] + 20 log(d[meters]) - 104.77
 d is the measurement distance in 3 meters

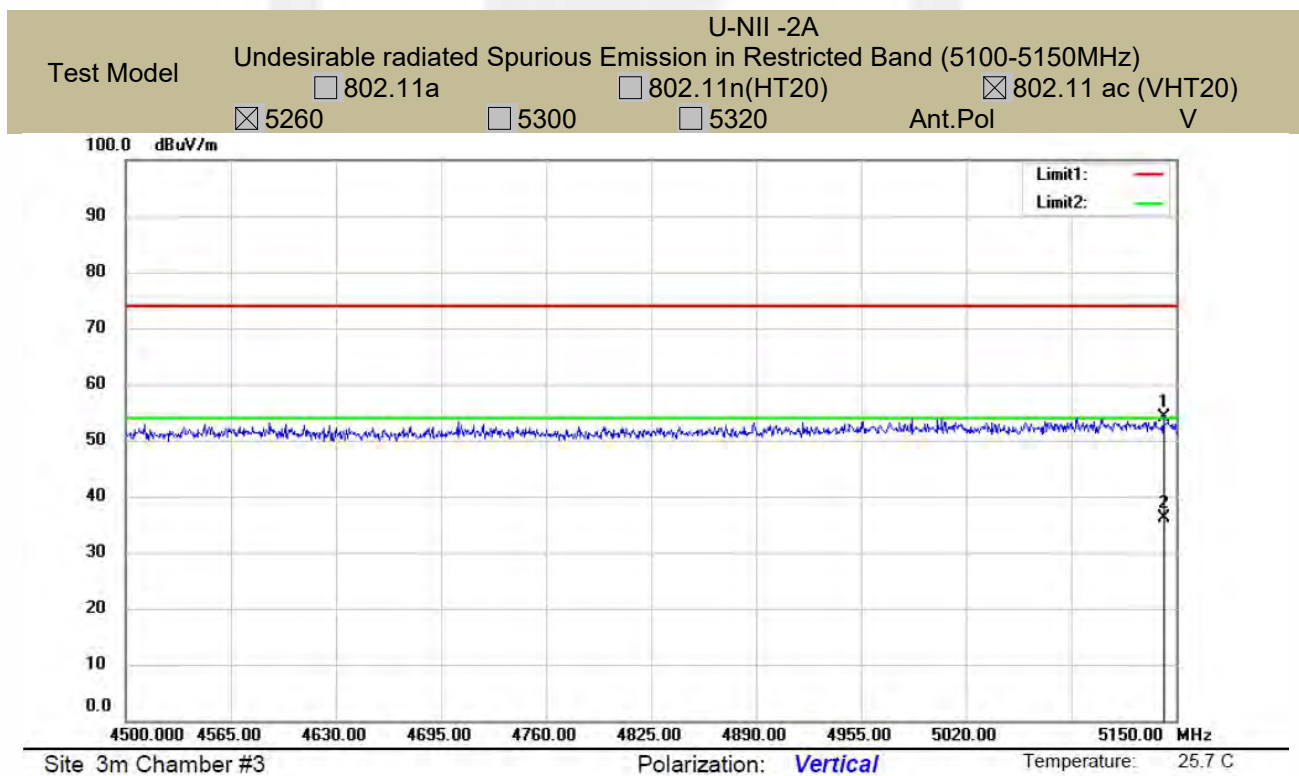
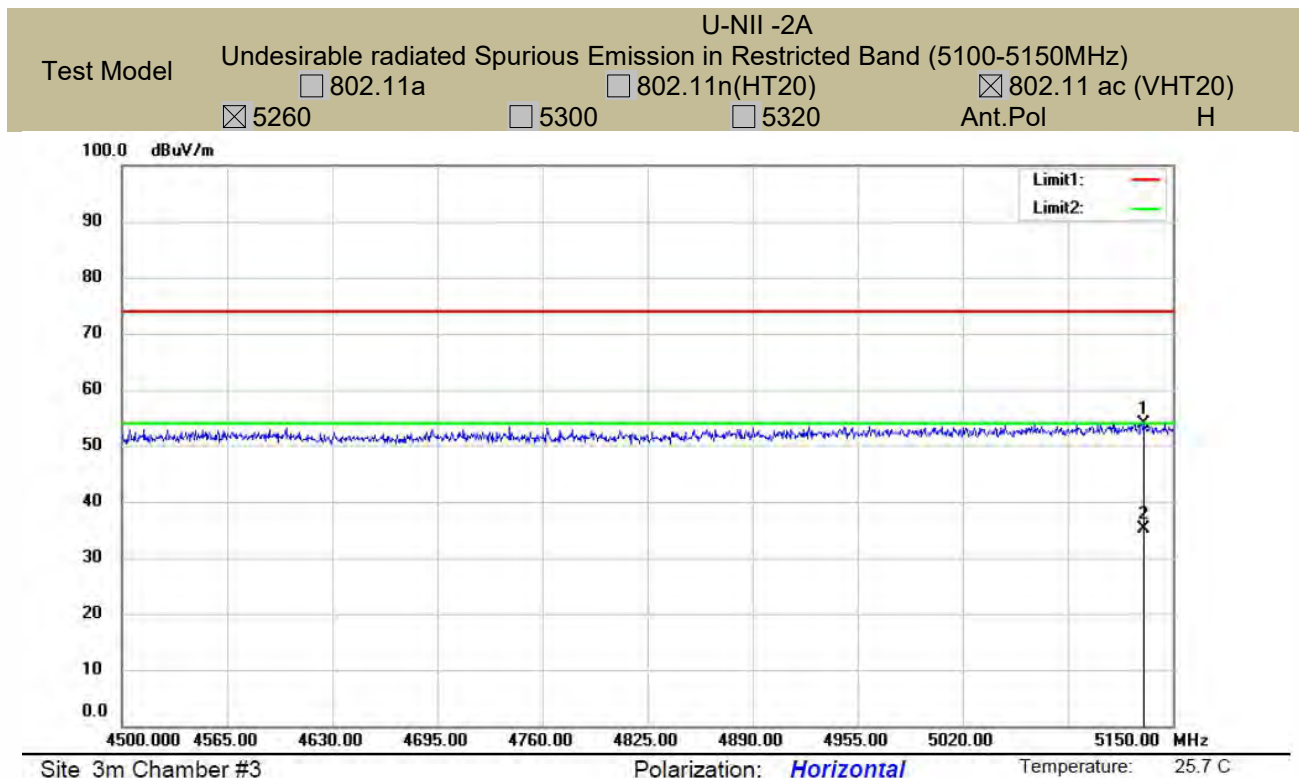
Test mode: 802.11ac Frequency(MHz): 5260

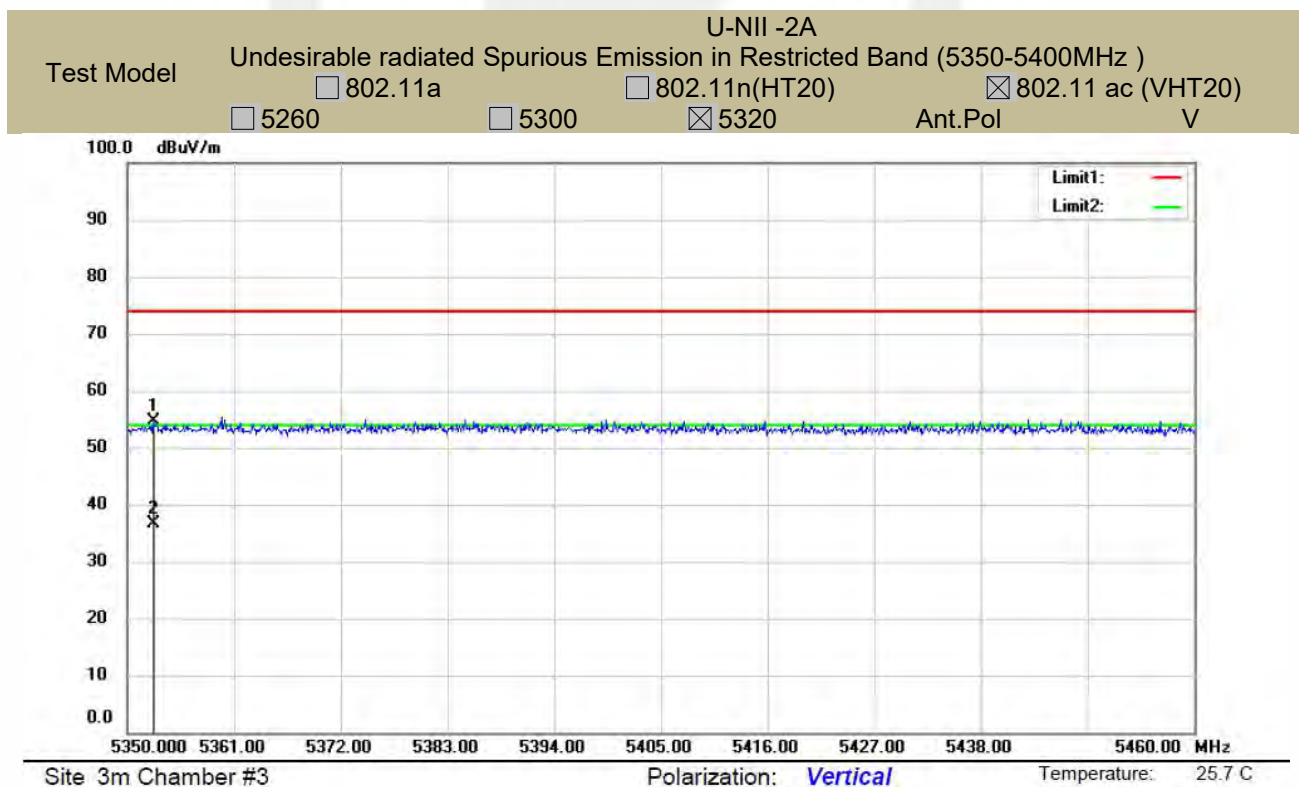
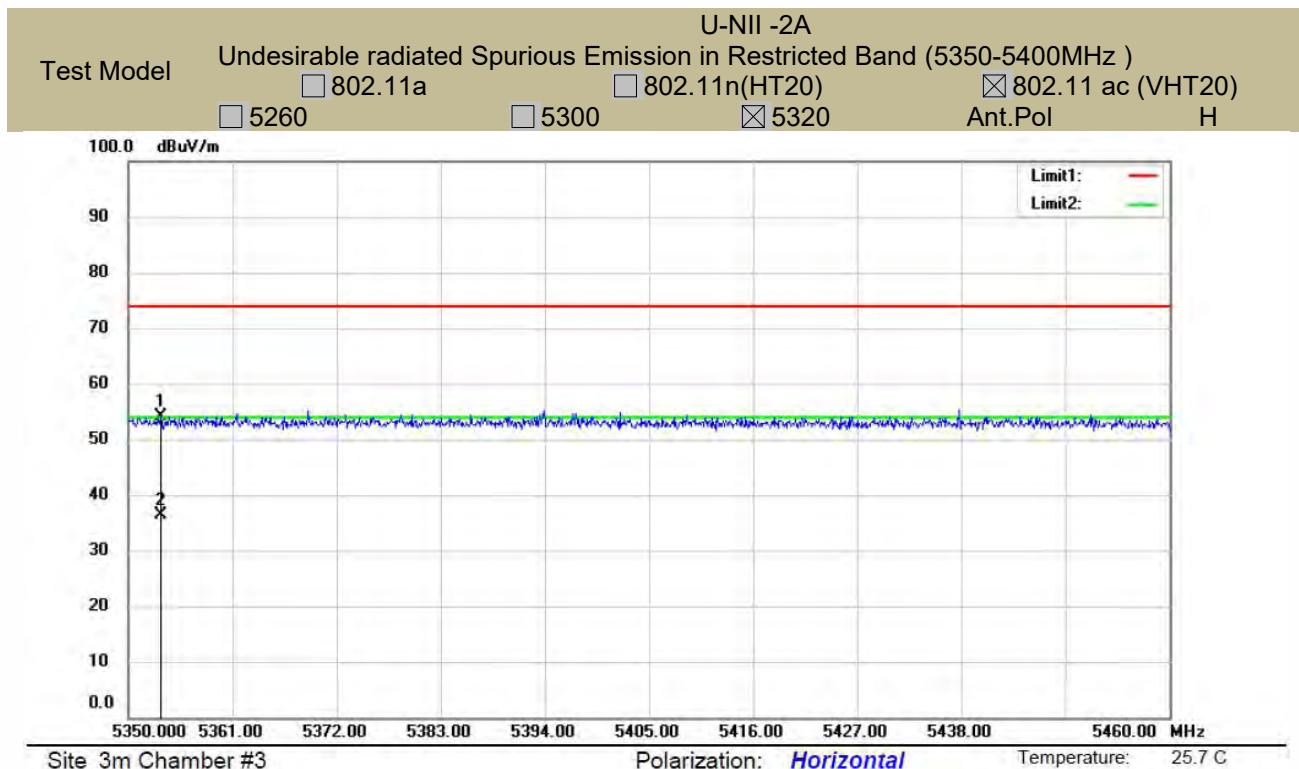
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
5142.525	V	54.14	74.00	-19.86	peak
5142.525	V	36.17	54.00	-17.83	AVG
5132.645	H	53.98	74.00	-20.02	peak
5132.645	H	35.02	54.00	-18.98	AVG

Test mode: 802.11ac Frequency(MHz): 5320

Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
5352.717	V	54.64	74.00	-19.36	peak
5352.717	V	36.61	54.00	-17.39	AVG
5353.410	H	54.20	74.00	-19.80	peak
5353.41	H	36.28	54.00	-17.72	AVG

Note: (1) All Readings are Peak Value (VBW=3MHz) and Peak Value (VBW=10Hz).
 (2) Emission Level= Reading Level+Correct Factor +Cable Loss.
 (3) Correct Factor= Ant_F + Cab_L - Preamp
 (4)The reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.





- ☒ For Undesirable radiated Spurious Emission in U-NII -2C
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)
Highest gain of each antenna and highest output power is ANT2 and MIMO as below:
ANT2:

Test mode:		802.11ac		Frequency(MHz):		5500	
Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)		
10974.12	V	55.45	-39.78	-27	-12.78		
15016.43	V	59.49	-35.74	-27	-8.74		
18000.00	V	64.79	-30.44	-27	-3.44		
12079.38	H	55.72	-39.51	-27	-12.51		
14479.39	H	60.15	-35.08	-27	-8.08		
17927.31	H	64.53	-30.7	-27	-3.7		

Test mode:		802.11ac		Frequency(MHz):		5580	
Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)		
11627.20	V	56.08	-39.15	-27	-12.15		
14437.60	V	60.17	-35.06	-27	-8.06		
18000.00	V	64.78	-30.45	-27	-3.45		
11633.92	H	55.65	-39.58	-27	-12.58		
14450.13	H	59.30	-35.93	-27	-8.93		
18000.00	H	65.35	-29.88	-27	-2.88		

Test mode:		802.11ac		Frequency(MHz):		5700	
Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)		
12086.37	V	55.69	-39.54	-27	-12.54		
14471.03	V	60.40	-34.83	-27	-7.83		
17974.00	V	64.70	-30.53	-27	-3.53		
10958.27	H	55.31	-39.92	-27	-12.92		
14508.72	H	58.80	-36.43	-27	-9.43		
17927.31	H	63.83	-31.4	-27	-4.4		

MIMO:

Test mode: 802.11ac Frequency(MHz): 5180					
Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
10972.73	V	55.32	-39.91	-27	-12.91
15017.71	V	59.46	-35.77	-27	-8.77
17998.78	V	64.53	-30.70	-27	-3.70
12091.07	H	55.64	-39.59	-27	-12.59
14491.08	H	59.99	-35.24	-27	-8.24
17923.89	H	64.35	-30.88	-27	-3.88

Test mode: 802.11ac Frequency(MHz): 5200					
Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
11625.81	V	55.95	-39.28	-27	-12.28
14438.88	V	60.14	-35.09	-27	-8.09
17997.79	V	64.52	-30.71	-27	-3.71
11645.61	H	55.57	-39.66	-27	-12.66
14461.82	H	59.14	-36.09	-27	-9.09
17996.63	H	65.17	-30.06	-27	-3.06

Test mode: 802.11ac Frequency(MHz): 5240					
Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
12084.98	V	55.56	-39.67	-27	-12.67
14472.31	V	60.37	-34.86	-27	-7.86
17971.79	V	64.44	-30.79	-27	-3.79
10969.96	H	55.23	-40.00	-27	-13.00
14520.41	H	58.64	-36.59	-27	-9.59
17923.94	H	63.65	-31.58	-27	-4.58

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

ANT2:

Frequency: 802.11ac			Frequency(MHz): 5500		
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
10974.12	V	55.45	74.00	-18.55	peak
10974.12	V	38.51	54.00	-15.49	AVG
15016.43	V	59.49	74.00	-14.51	peak
15016.43	V	41.55	54.00	-12.45	AVG
18000.00	V	64.79	74.00	-9.21	peak
18000	V	46.82	54.00	-7.18	AVG
12079.38	H	55.72	74.00	-18.28	peak
12079.38	H	38.24	54.00	-15.76	AVG
14479.39	H	60.15	74.00	-13.85	peak
14479.39	H	42.25	54.00	-11.75	AVG
17927.31	H	64.53	74.00	-9.47	peak
17927.31	H	46.55	54.00	-7.45	AVG

Frequency: 802.11ac			Frequency(MHz): 5580		
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
11627.20	V	56.08	74.00	-17.92	peak
11627.20	V	38.11	54.00	-15.89	AVG
14437.60	V	60.17	74.00	-13.83	peak
14437.60	V	42.19	54.00	-11.81	AVG
18000.00	V	64.78	74.00	-9.22	peak
18000	V	46.84	54.00	-7.16	AVG
11633.92	H	55.65	74.00	-18.35	peak
11633.92	H	38.65	54.00	-15.35	AVG
14450.13	H	59.30	74.00	-14.70	peak
14450.13	H	41.33	54.00	-12.67	AVG
18000.00	H	65.35	74.00	-8.65	peak
18000	H	48.39	54.00	-5.61	AVG

Frequency: 802.11ac			Frequency(MHz): 5700		
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
12086.37	V	55.69	74.00	-18.31	peak
12086.37	V	38.62	54.00	-15.38	AVG
14471.03	V	60.40	74.00	-13.60	peak
14471.03	V	42.47	54.00	-11.53	AVG
17974.00	V	64.70	74.00	-9.30	peak
17974	V	46.79	54.00	-7.21	AVG
10958.27	H	55.31	74.00	-18.69	peak
10958.27	H	38.36	54.00	-15.64	AVG
14508.72	H	58.80	74.00	-15.20	peak
14508.72	H	40.88	54.00	-13.12	AVG
17927.31	H	63.83	74.00	-10.17	peak
17927.31	H	45.74	54.00	-8.26	AVG

MIMO:

Frequency: 802.11ac			Frequency(MHz): 5500		
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
10972.730	V	55.32	74.00	-18.68	peak
10972.730	V	38.35	54.00	-15.65	AVG
15017.710	V	59.46	74.00	-14.54	peak
15017.710	V	41.53	54.00	-12.47	AVG
17998.780	V	64.53	74.00	-9.47	peak
17998.780	V	46.63	54.00	-7.37	AVG
12091.070	H	55.64	74.00	-18.36	peak
12091.070	H	38.03	54.00	-15.97	AVG
14491.080	H	59.99	74.00	-14.01	peak
14491.080	H	42.11	54.00	-11.89	AVG
17923.890	H	64.35	74.00	-9.65	peak
17923.890	H	46.42	54.00	-7.58	AVG

Frequency: 802.11ac			Frequency(MHz): 5580		
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
11625.810	V	55.95	74.00	-18.05	peak
11625.810	V	37.95	54.00	-16.05	AVG
14438.880	V	60.14	74.00	-13.86	peak
14438.880	V	42.17	54.00	-11.83	AVG
17997.790	V	64.52	74.00	-9.48	peak
17997.790	V	46.65	54.00	-7.35	AVG
11645.610	H	55.57	74.00	-18.43	peak
11645.610	H	38.44	54.00	-15.56	AVG
14461.820	H	59.14	74.00	-14.86	peak
14461.820	H	41.19	54.00	-12.81	AVG
17996.630	H	65.17	74.00	-8.83	peak
17996.630	H	48.26	54.00	-5.74	AVG

Frequency: 802.11ac			Frequency(MHz): 5700		
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
12084.980	V	55.56	74.00	-18.44	peak
12084.980	V	38.46	54.00	-15.54	AVG
14472.310	V	60.37	74.00	-13.63	peak
14472.310	V	42.45	54.00	-11.55	AVG
17971.790	V	64.44	74.00	-9.56	peak
17971.790	V	46.60	54.00	-7.4	AVG
10969.960	H	55.23	74.00	-18.77	peak
10969.960	H	38.15	54.00	-15.85	AVG
14520.410	H	58.64	74.00	-15.36	peak
14520.410	H	40.74	54.00	-13.26	AVG
17923.940	H	63.65	74.00	-10.35	peak
17923.940	H	45.61	54.00	-8.39	AVG

- Note:**
- (1) All Readings are Peak Value (VBW=3MHz) and Peak Value (VBW=10Hz).
 - (2) Emission Level= Reading Level+Correct Factor +Cable Loss.
 - (3) Correct Factor= Ant_F + Cab_L - Preamp
 - (4) The reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

● ☒ Undesirable radiated Undesirable radiated Spurious Emission in Band Edge

Test mode: 802.11ac Frequency(MHz): 5500

Freq. (MHz)	Ant.Pol. H/V	Field Strength (RBW=100KHz) (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Verdict
5467.830	H	54.51	-40.72	-27	Pass
5467.545	V	54.32	-40.91	-27	Pass

Test mode: 802.11ac Frequency(MHz): 5700

Freq. (MHz)	Ant.Pol. H/V	Field Strength (RBW=100KHz) (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Verdict
5726.380	H	54.89	-40.34	-27	Pass
5725.915	V	55.56	-39.67	-27	Pass

Note: (1) All Readings are Peak Value (VBW=3MHz) and Peak Value (VBW=10Hz).
 (2) Emission Level= Reading Level+Correct Factor +Cable Loss.
 (3) Correct Factor= Ant_F + Cab_L - Preamp
 (4) EIRP[dBm] = E[dBuV/m] + 20 log(d[meters]) - 104.77
 d is the measurement distance in 3 meters

Test mode: 802.11ac Frequency(MHz): 5500

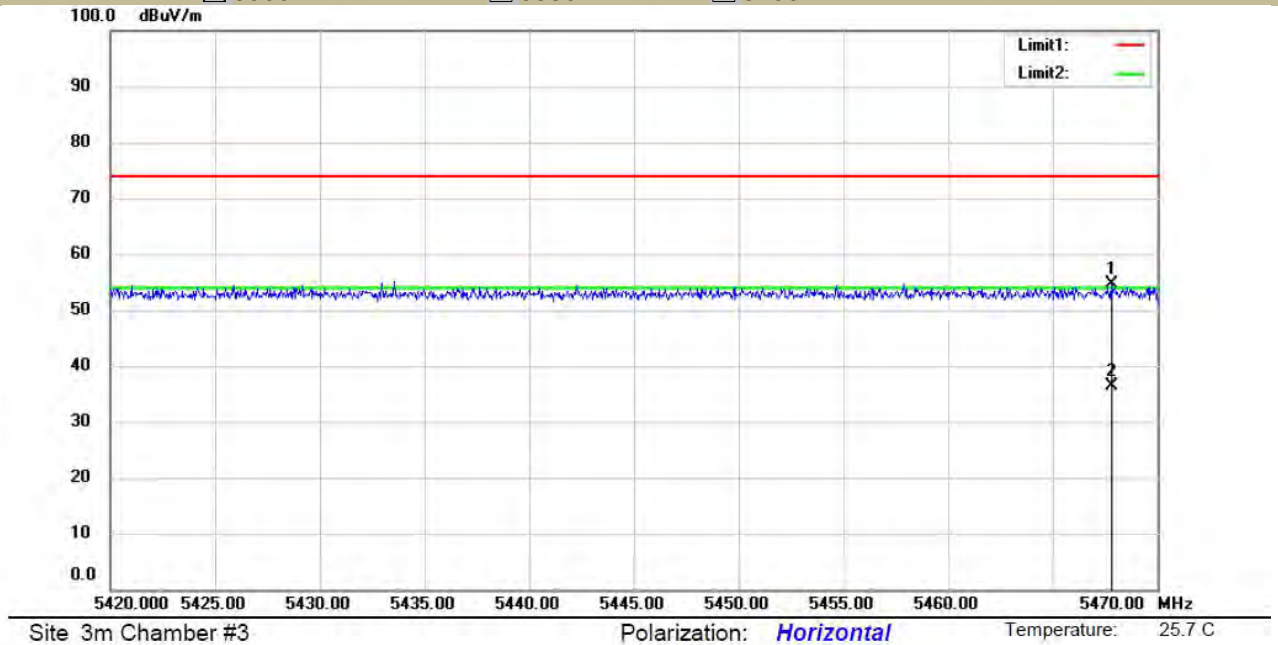
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
5467.545	V	54.32	74.00	-19.68	peak
5467.545	V	36.37	54.00	-17.63	AVG
5467.830	H	54.51	74.00	-19.49	peak
5467.83	H	36.48	54.00	-17.52	AVG

Test mode: 802.11ac Frequency(MHz): 5700

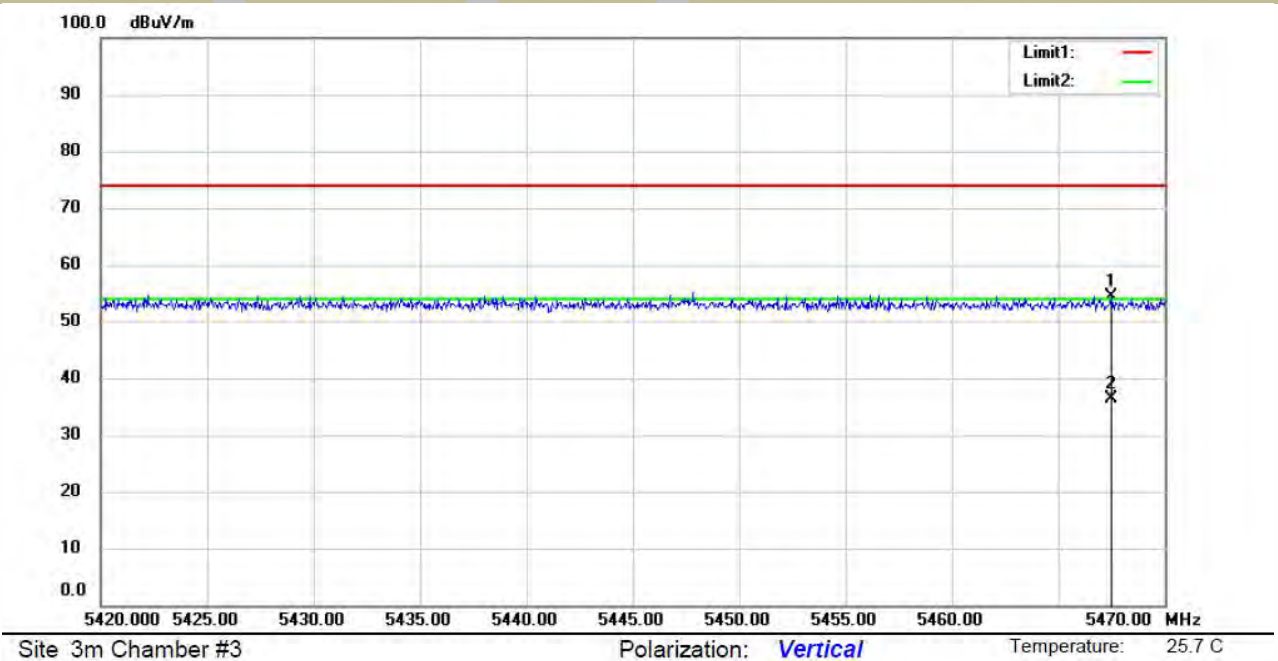
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
5725.915	V	55.56	74.00	-18.44	peak
5725.915	V	37.45	54.00	-16.55	AVG
5726.380	H	54.89	74.00	-19.11	peak
5726.38	H	36.93	54.00	-17.07	AVG

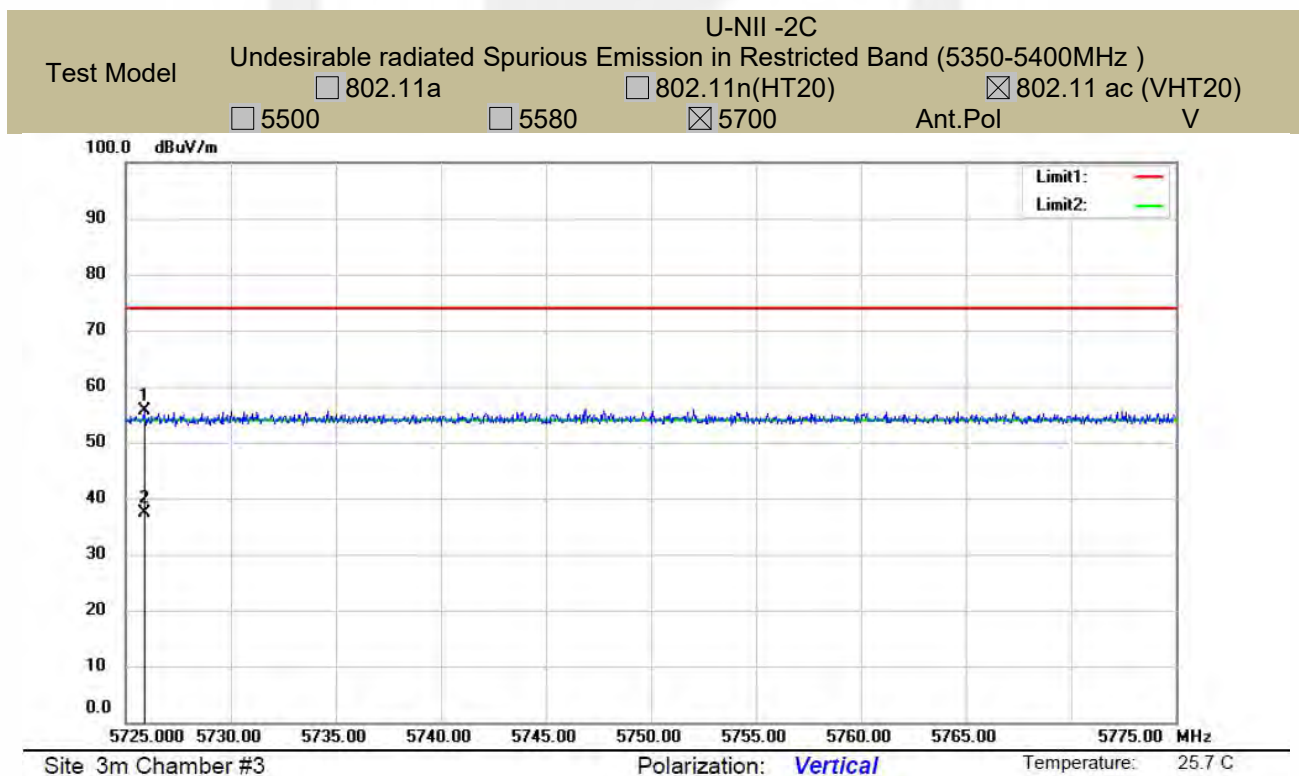
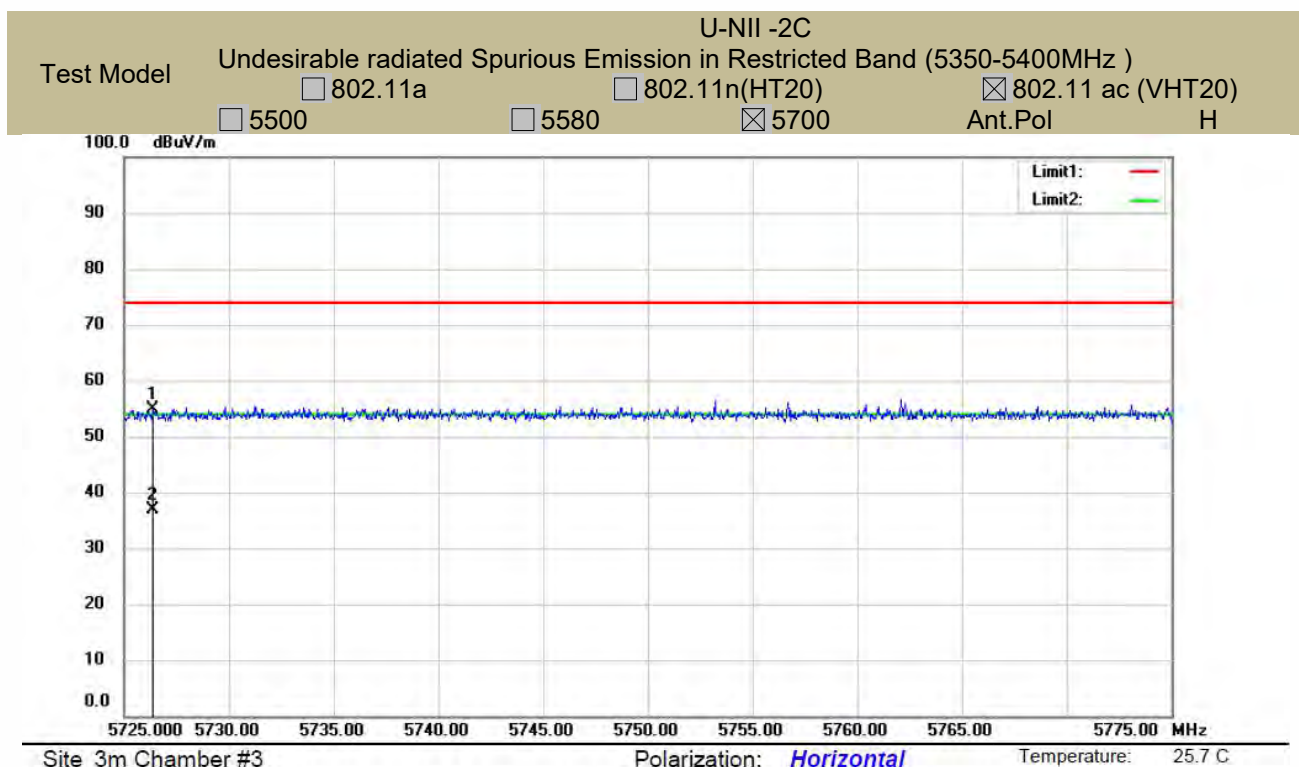
Note: (1) All Readings are Peak Value (VBW=3MHz) and Peak Value (VBW=10Hz).
 (2) Emission Level= Reading Level+Correct Factor +Cable Loss.
 (3) Correct Factor= Ant_F + Cab_L - Preamp
 (4) The reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

Test Model U-NII -2C
Undesirable radiated Spurious Emission in Restricted Band (5100-5150MHz)
802.11a 802.11n(HT20) 802.11 ac (VHT20)
5500 5580 5700 Ant.Pol H



Test Model U-NII -2C
Undesirable radiated Spurious Emission in Restricted Band (5100-5150MHz)
802.11a 802.11n(HT20) 802.11 ac (VHT20)
5500 5580 5700 Ant.Pol V





- ☒ For Undesirable radiated Spurious Emission in U-NII -3
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)
Highest gain of each antenna and highest output power is ANT2 and MIMO as below:
ANT2:

Test mode:		802.11ac		Frequency(MHz):		5745	
Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)		
11384.44	V	54.95	-40.28	-27	-13.28		
14292.28	V	59.37	-35.86	-27	-8.86		
17937.67	V	64.32	-30.91	-27	-3.91		
7909.472	H	51.05	-44.18	-27	-17.18		
14466.84	H	59.75	-35.48	-27	-8.48		
17937.67	H	64.91	-30.32	-27	-3.32		

Test mode:		802.11ac		Frequency(MHz):		5785	
Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)		
12079.38	V	55.57	-39.66	-27	-12.66		
14445.95	V	59.31	-35.92	-27	-8.92		
18000.00	V	64.32	-30.91	-27	-3.91		
11536.81	H	55.03	-40.2	-27	-13.2		
14483.58	H	59.22	-36.01	-27	-9.01		
18000.00	H	64.88	-30.35	-27	-3.35		

Test mode:		802.11ac		Frequency(MHz):		5825	
Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)		
11637.29	V	55.66	-39.57	-27	-12.57		
15007.76	V	59.91	-35.32	-27	-8.32		
17984.39	V	64.94	-30.29	-27	-3.29		
10511.53	H	54.32	-40.91	-27	-13.91		
14458.48	H	59.87	-35.36	-27	-8.36		
17989.59	H	64.45	-30.78	-27	-3.78		

MIMO:

Test mode: 802.11ac Frequency(MHz): 5180					
Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
11383.05	V	54.82	-40.41	-27	-13.41
14293.56	V	59.34	-35.89	-27	-8.89
17935.46	V	64.06	-31.17	-27	-4.17
7921.162	H	50.97	-44.26	-27	-17.26
14478.53	H	59.59	-35.64	-27	-8.64
17934.3	H	64.73	-30.50	-27	-3.50

Test mode: 802.11ac Frequency(MHz): 5200					
Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
12077.99	V	55.44	-39.79	-27	-12.79
14447.23	V	59.28	-35.95	-27	-8.95
17997.75	V	64.06	-31.17	-27	-4.17
11548.5	H	54.95	-40.28	-27	-13.28
14495.27	H	59.06	-36.17	-27	-9.17
17996.69	H	64.7	-30.53	-27	-3.53

Test mode: 802.11ac Frequency(MHz): 5240					
Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
11635.9	V	55.53	-39.70	-27	-12.70
15009.04	V	59.88	-35.35	-27	-8.35
17982.14	V	64.68	-30.55	-27	-3.55
10523.22	H	54.24	-40.99	-27	-13.99
14470.17	H	59.71	-35.52	-27	-8.52
17986.28	H	64.27	-30.96	-27	-3.96

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

ANT2:

Frequency: 802.11ac			Frequency(MHz): 5745		
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
11384.44	V	54.95	74.00	-19.05	peak
11384.44	V	36.99	54.00	-17.01	AVG
14292.28	V	59.37	74.00	-14.63	peak
14292.28	V	41.35	54.00	-12.65	AVG
17937.67	V	64.32	74.00	-9.68	peak
17937.67	V	46.33	54.00	-7.67	AVG
7909.472	H	51.05	74.00	-22.95	peak
7909.472	H	33.14	54.00	-20.86	AVG
14466.84	H	59.75	74.00	-14.25	peak
14466.84	H	41.63	54.00	-12.37	AVG
17937.67	H	64.91	74.00	-9.09	peak
17937.67	H	46.95	54.00	-7.05	AVG

Frequency: 802.11ac			Frequency(MHz): 5785		
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
12079.38	V	55.57	74.00	-18.43	peak
12079.38	V	38.55	54.00	-15.45	AVG
14445.95	V	59.31	74.00	-14.69	peak
14445.95	V	41.34	54.00	-12.66	AVG
18000.00	V	64.32	74.00	-9.68	peak
18000	V	46.27	54.00	-7.73	AVG
11536.81	H	55.03	74.00	-18.97	peak
11536.81	H	38.06	54.00	-15.94	AVG
14483.58	H	59.22	74.00	-14.78	peak
14483.58	H	41.29	54.00	-12.71	AVG
18000.00	H	64.88	74.00	-9.12	peak
18000	H	46.93	54.00	-7.07	AVG

Frequency: 802.11ac			Frequency(MHz): 5825		
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
11637.29	V	55.66	74.00	-18.34	peak
11637.29	V	38.63	54.00	-15.37	AVG
15007.76	V	59.91	74.00	-14.09	peak
15007.76	V	41.99	54.00	-12.01	AVG
17984.39	V	64.94	74.00	-9.06	peak
17984.39	V	46.82	54.00	-7.18	AVG
10511.53	H	54.32	74.00	-19.68	peak
10511.53	H	36.33	54.00	-17.67	AVG
14458.48	H	59.87	74.00	-14.13	peak
14458.48	H	41.89	54.00	-12.11	AVG
17989.59	H	64.45	74.00	-9.55	peak
17989.59	H	46.55	54.00	-7.45	AVG

MIMO:

Frequency: 802.11ac			Frequency(MHz): 5745		
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
11383.050	V	54.82	74.00	-19.18	peak
11383.050	V	36.83	54.00	-17.17	AVG
14293.560	V	59.34	74.00	-14.66	peak
14293.560	V	41.33	54.00	-12.67	AVG
17935.460	V	64.06	74.00	-9.94	peak
17935.460	V	46.14	54.00	-7.86	AVG
7921.162	H	50.97	74.00	-23.03	peak
7921.162	H	32.93	54.00	-21.07	AVG
14478.530	H	59.59	74.00	-14.41	peak
14478.530	H	41.49	54.00	-12.51	AVG
17934.300	H	64.73	74.00	-9.27	peak
17934.300	H	46.82	54.00	-7.18	AVG

Frequency: 802.11ac			Frequency(MHz): 5785		
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
12077.990	V	55.44	74.00	-18.56	peak
12077.990	V	38.39	54.00	-15.61	AVG
14447.230	V	59.28	74.00	-14.72	peak
14447.230	V	41.32	54.00	-12.68	AVG
17997.750	V	64.06	74.00	-9.94	peak
17997.750	V	46.08	54.00	-7.92	AVG
11548.500	H	54.95	74.00	-19.05	peak
11548.500	H	37.85	54.00	-16.15	AVG
14495.270	H	59.06	74.00	-14.94	peak
14495.270	H	41.15	54.00	-12.85	AVG
17996.690	H	64.70	74.00	-9.30	peak
17996.690	H	46.80	54.00	-7.20	AVG

Frequency: 802.11ac			Frequency(MHz): 5825		
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
11635.900	V	55.53	74.00	-18.47	peak
11635.900	V	38.47	54.00	-15.53	AVG
15009.040	V	59.88	74.00	-14.12	peak
15009.040	V	41.97	54.00	-12.03	AVG
17982.140	V	64.68	74.00	-9.32	peak
17982.140	V	46.63	54.00	-7.37	AVG
10523.220	H	54.24	74.00	-19.76	peak
10523.220	H	36.12	54.00	-17.88	AVG
14470.170	H	59.71	74.00	-14.29	peak
14470.170	H	41.75	54.00	-12.25	AVG
17986.280	H	64.27	74.00	-9.73	peak
17986.280	H	46.42	54.00	-7.58	AVG

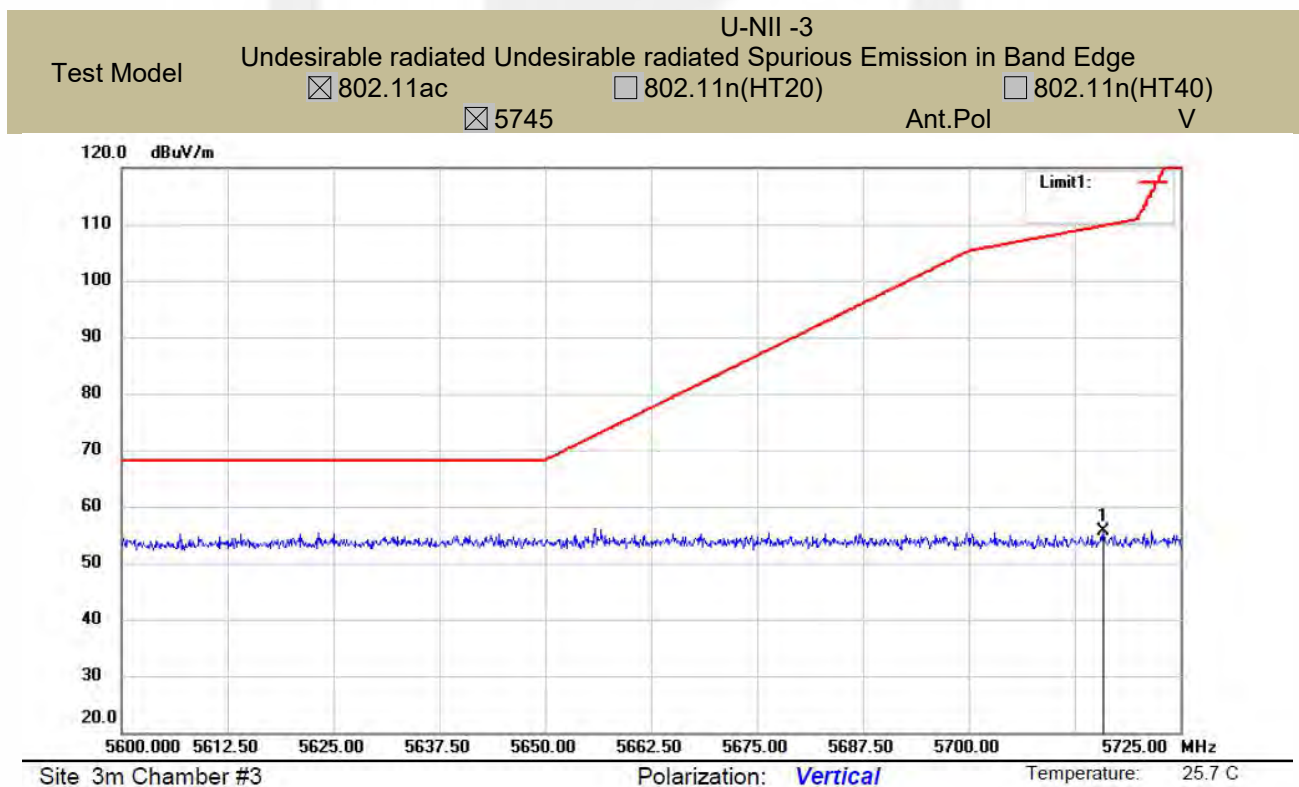
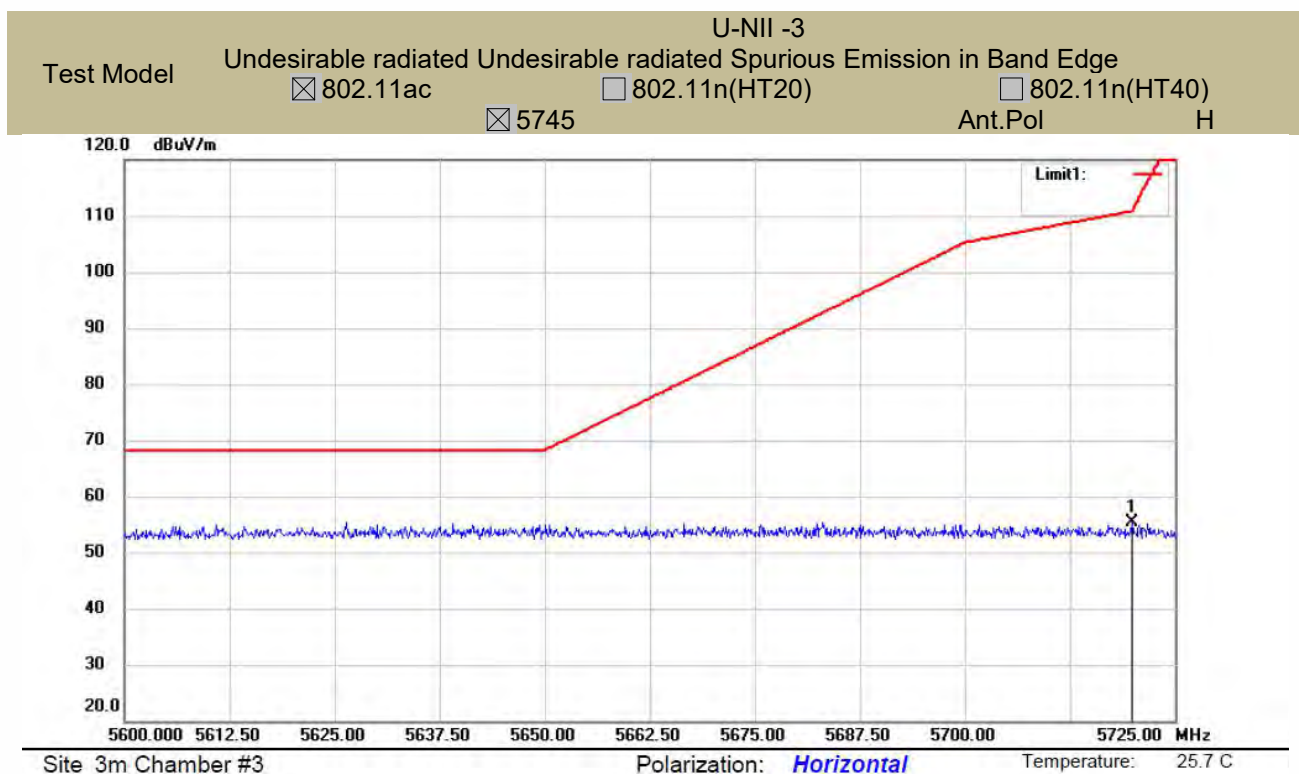
- Note:** (1) All Readings are Peak Value (VBW=3MHz) and Peak Value (VBW=10Hz).
(2) Emission Level= Reading Level+Correct Factor +Cable Loss.
(3) Correct Factor= Ant_F + Cab_L - Preamp
(4) The reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

● ☒ Undesirable radiated Spurious Emission in band edge

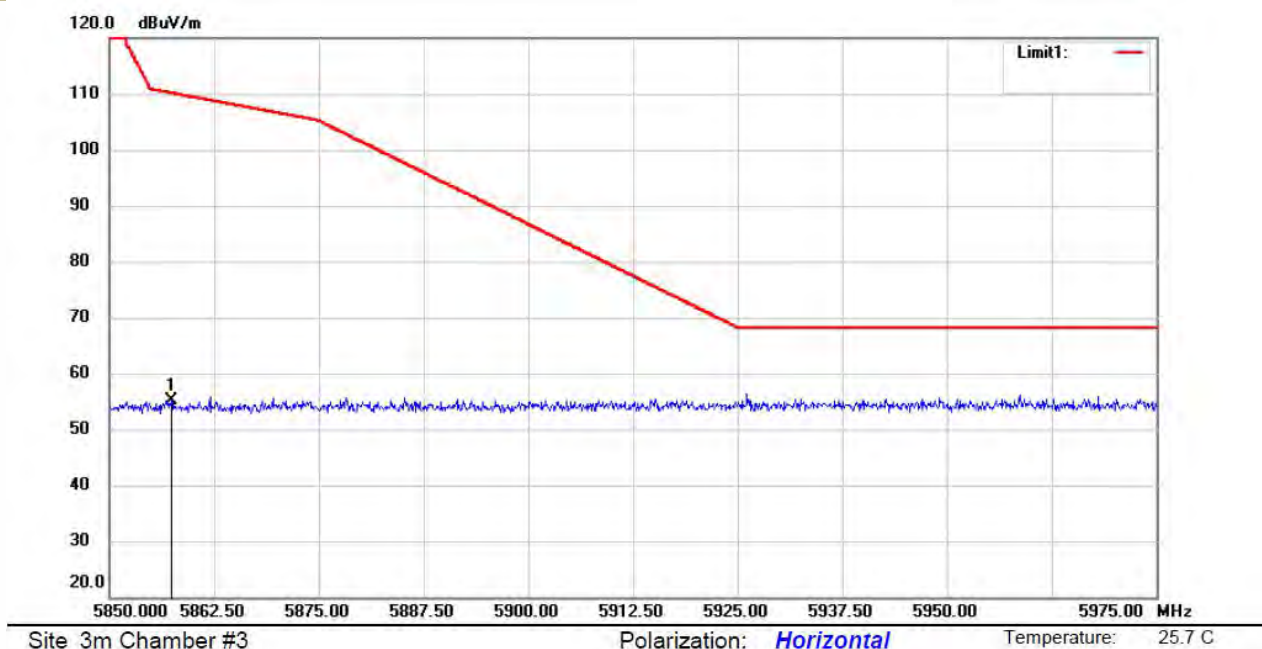
Test mode:		802.11ac		Frequency:		5745	
Freq. (MHz)	Ant.Pol. H/V	Field Strength (RBW=100KHz) (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Verdict		
5719.975	H	55.48	-39.75	-27.00	PASS		
5715.962	V	55.75	-39.48	-27.00	PASS		

Test mode:		802.11ac		Frequency:		5825	
Freq. (MHz)	Ant.Pol. H/V	Field Strength (RBW=100KHz) (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Verdict		
5857.413	H	55.07	-40.16	-27.00	PASS		
5852.650	V	55.17	-40.06	-27.00	PASS		

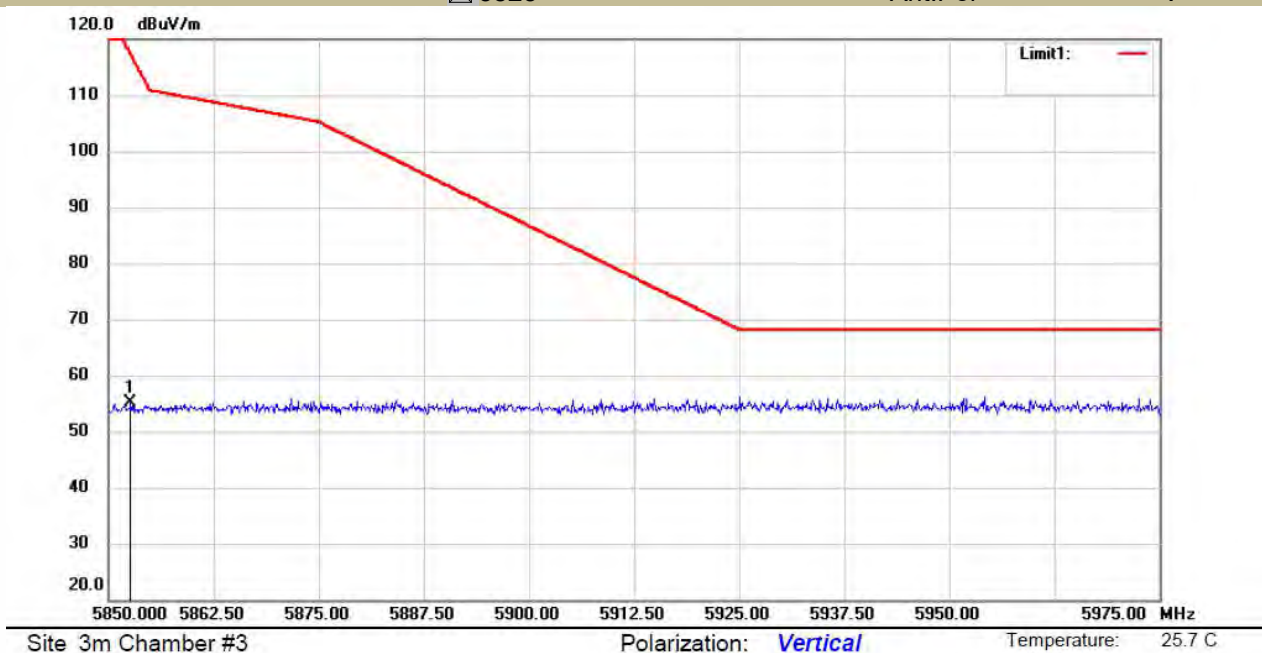
Note: (1) All Readings are Peak Value (VBW=3MHz) and Peak Value (VBW=10Hz).
 (2) Emission Level= Reading Level+Correct Factor +Cable Loss.
 (3) Correct Factor= Ant_F + Cab_L - Preamp
 (4) EIRP[dBm] = E[dBuV/m] + 20 log(d[meters]) - 104.77
 d is the measurement distance in 3 meters



U-NII -3
 Test Model Undesirable radiated Undesirable radiated Spurious Emission in Band Edge
☒ 802.11ac ☐ 802.11n(HT20) ☐ 802.11n(HT40)
☒ 5825 Ant.Pol H

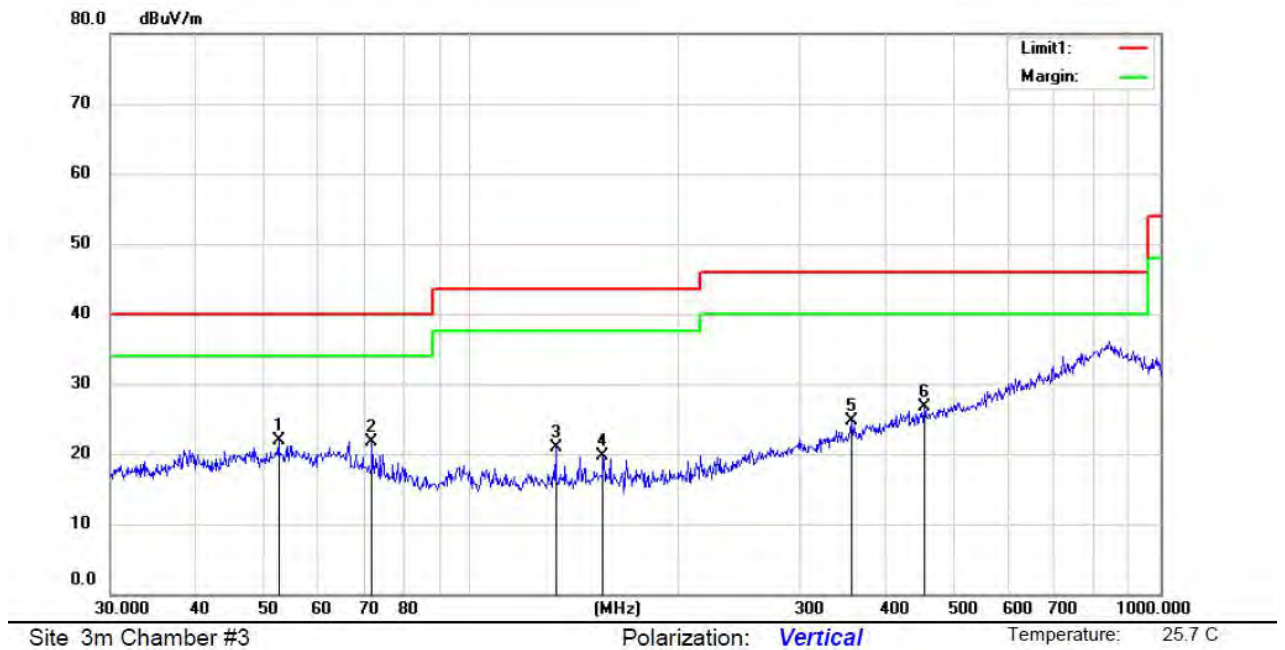


U-NII -3
 Test Model Undesirable radiated Undesirable radiated Spurious Emission in Band Edge
☒ 802.11ac ☐ 802.11n(HT20) ☐ 802.11n(HT40)
☒ 5825 Ant.Pol V

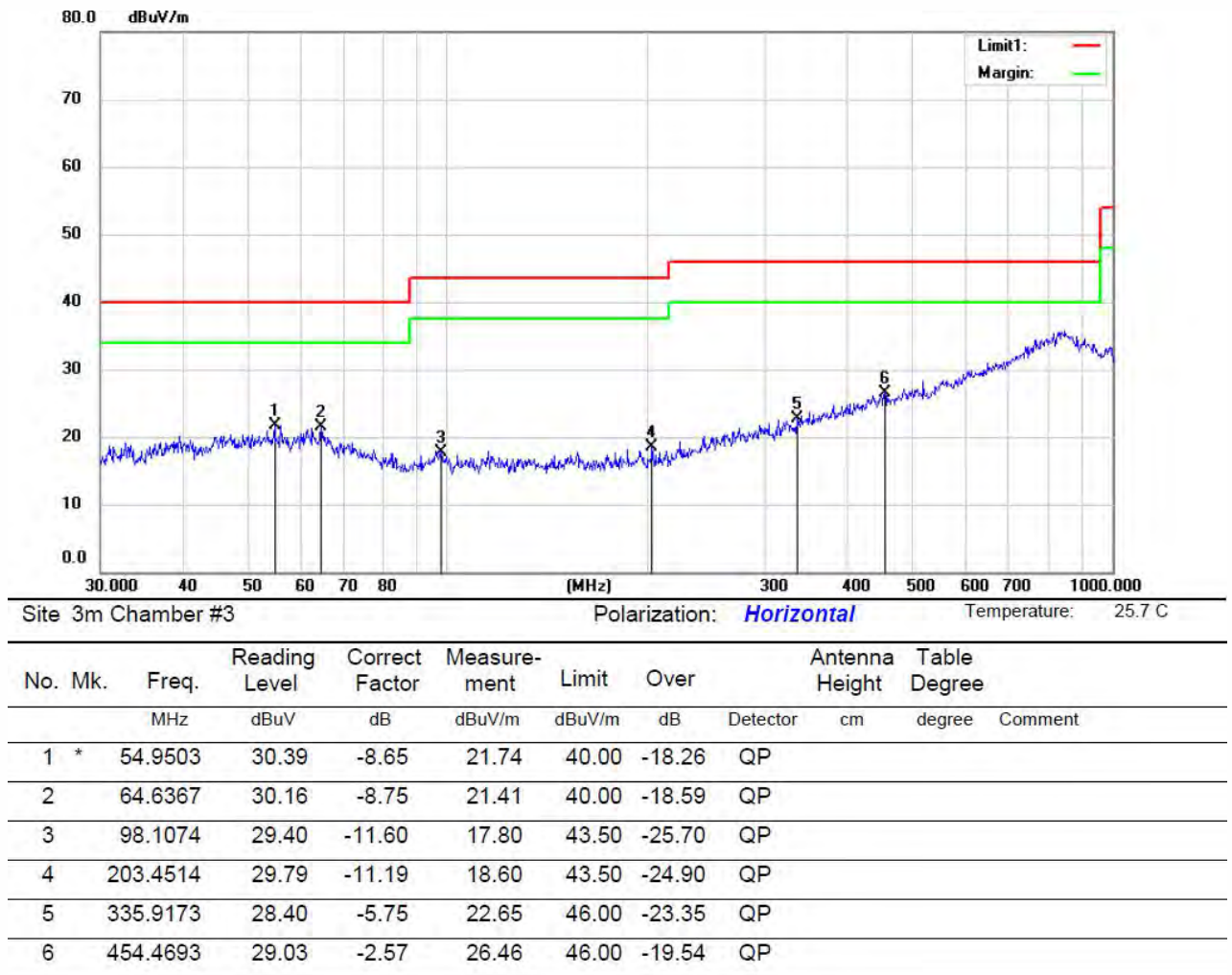


- Undesirable radiated Spurious Emission below 1GHz (30MHz to 1GHz)
All modes have been tested, and the worst result recorded was report as below:

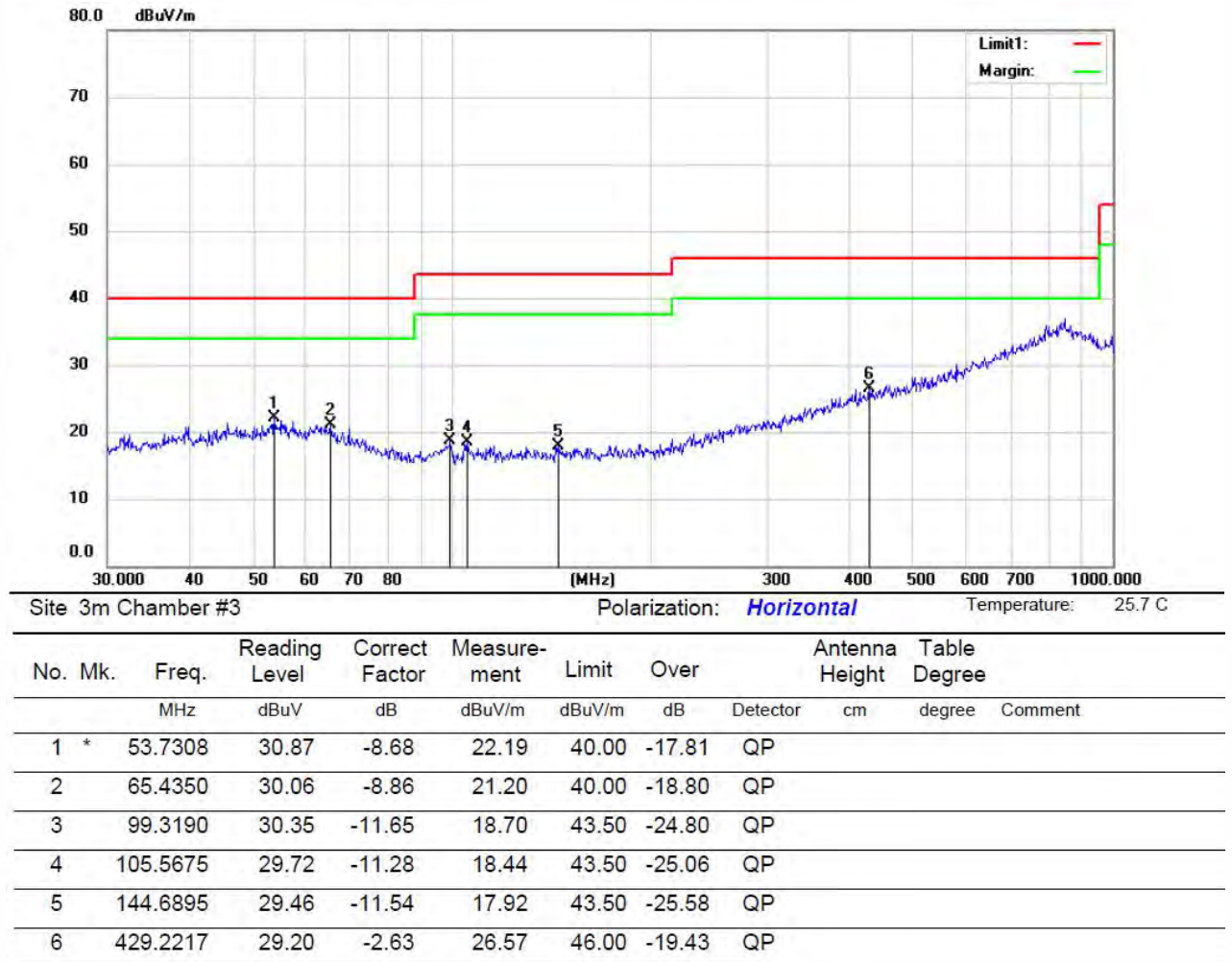
Test mode: 802.11ac Frequency(MHz): 5180

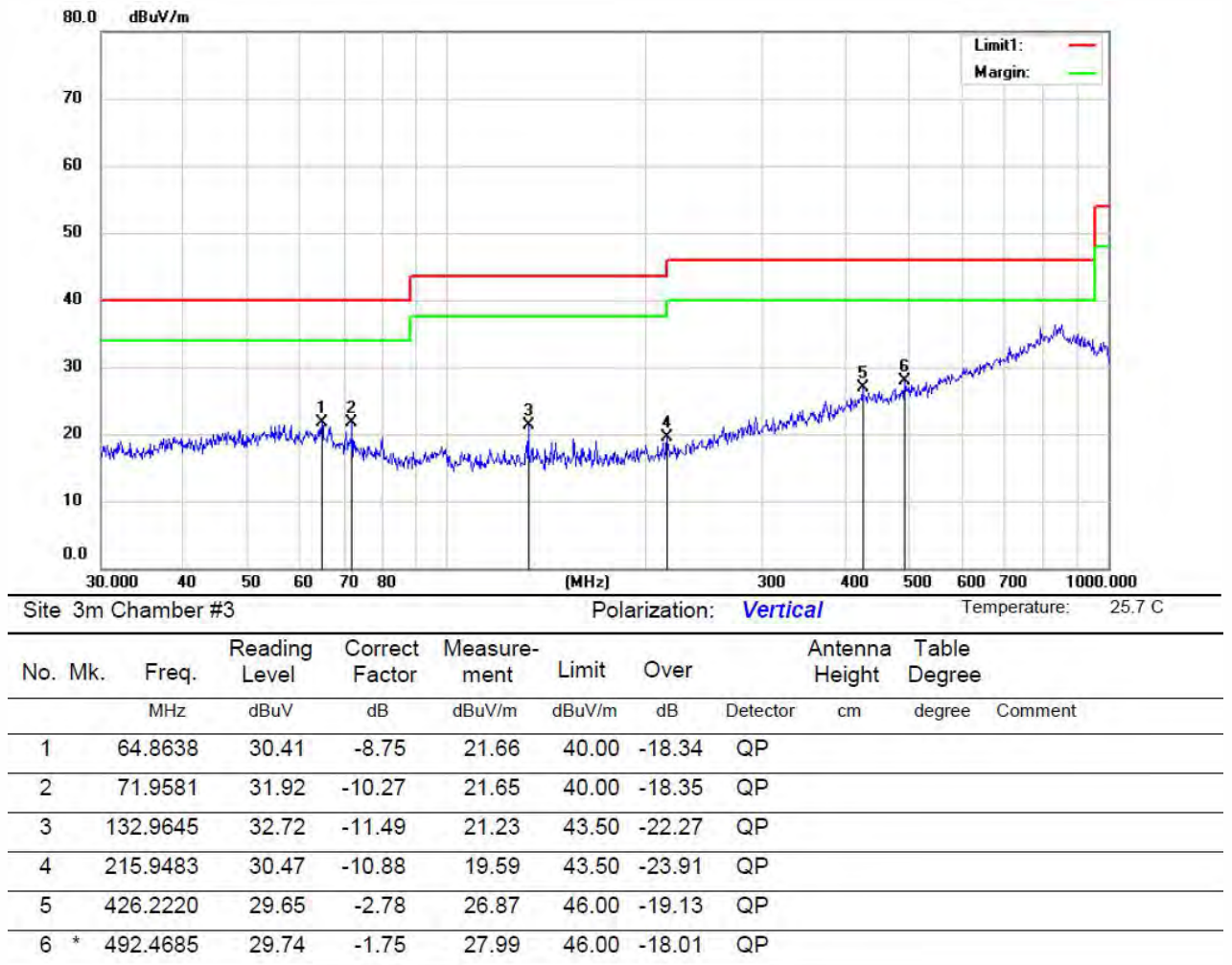


No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	Antenna	Table	
		MHz	Level	Factor	ment			Height	Degree	Comment
			dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	
1	*	52.7600	30.44	-8.59	21.85	40.00	-18.15	QP		
2		71.9328	31.89	-10.27	21.62	40.00	-18.38	QP		
3		133.0111	32.47	-11.49	20.98	43.50	-22.52	QP		
4		155.9101	31.13	-11.36	19.77	43.50	-23.73	QP		
5		356.8010	29.71	-5.01	24.70	46.00	-21.30	QP		
6		454.4693	29.27	-2.57	26.70	46.00	-19.30	QP		

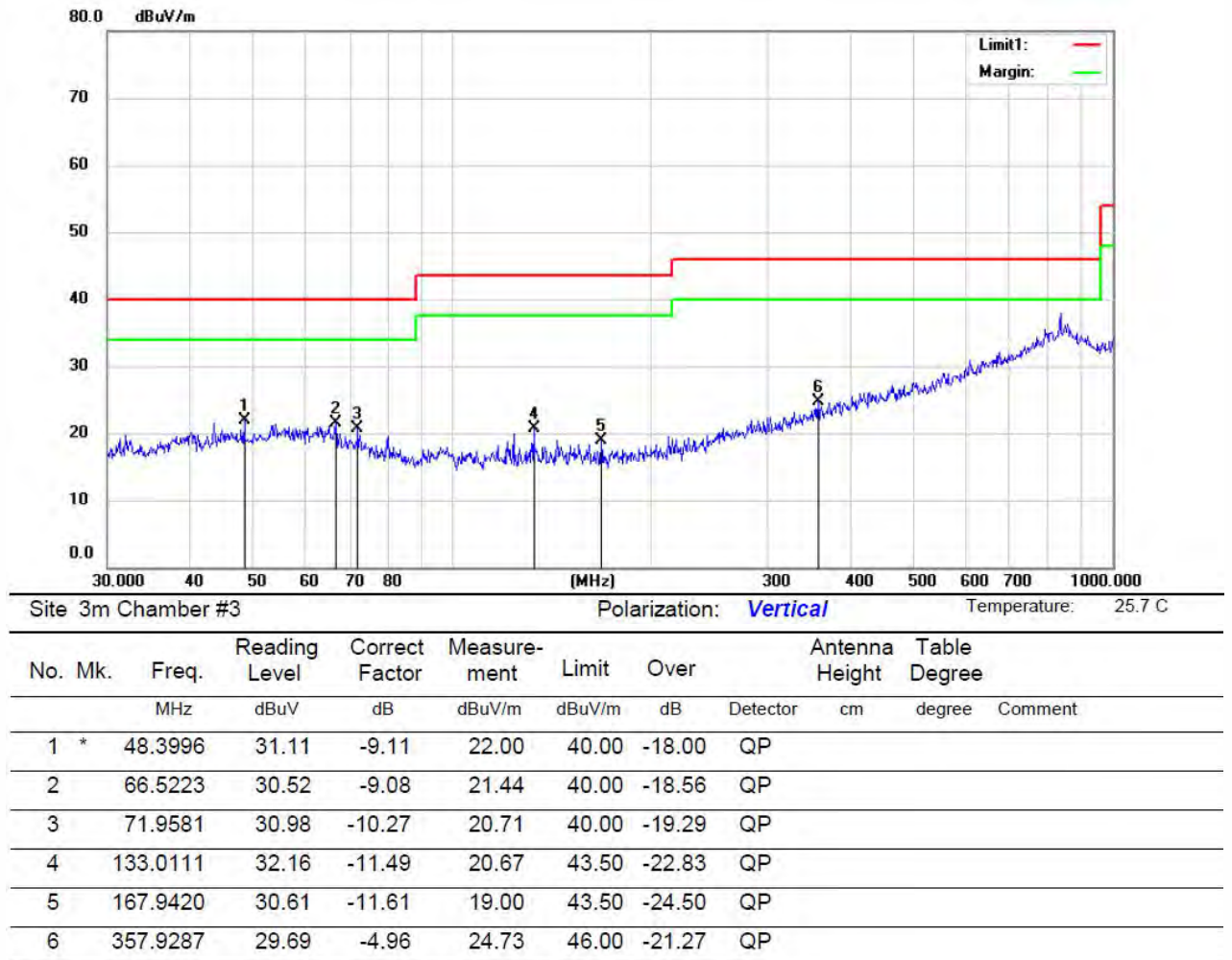


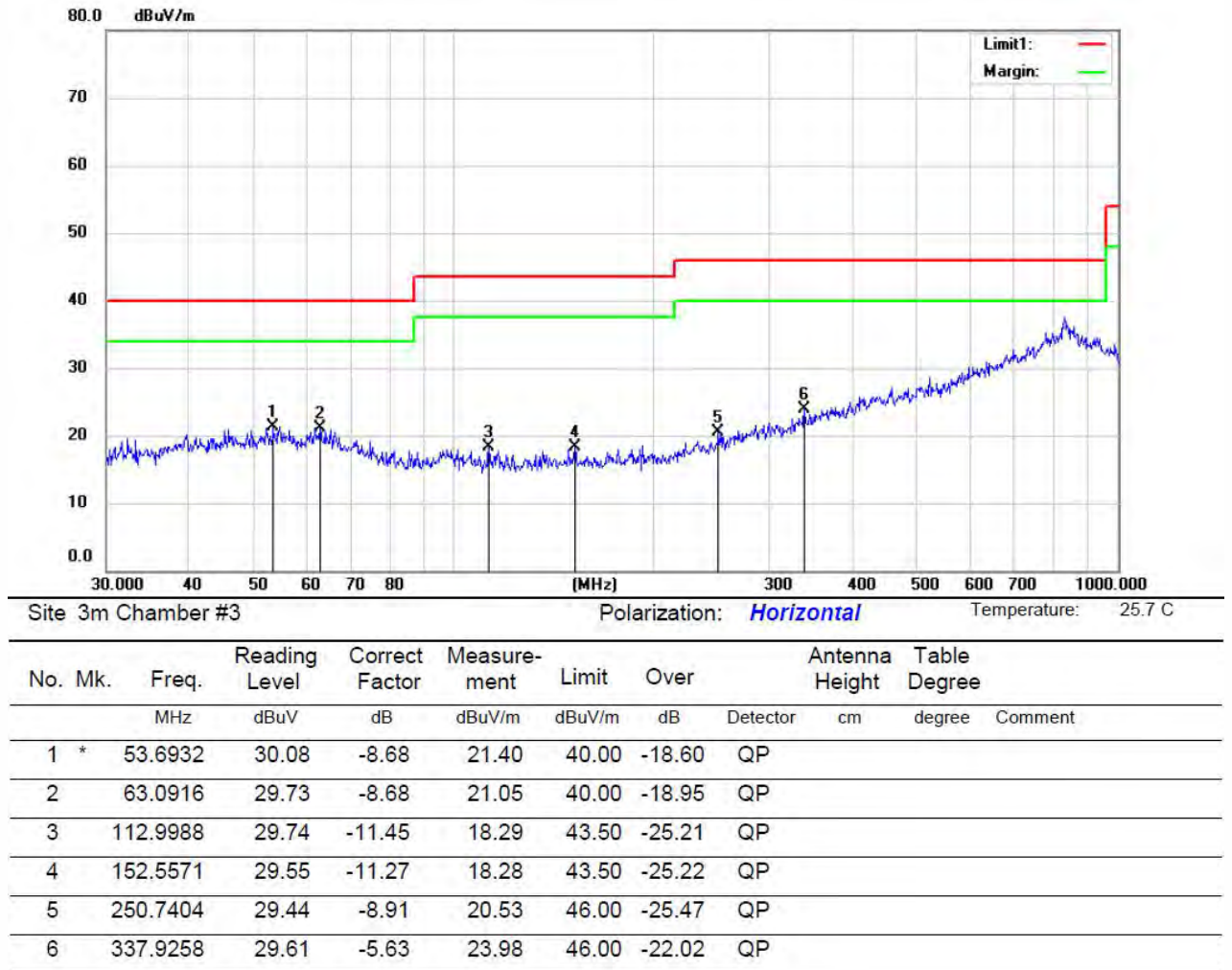
Test mode: 802.11ac Frequency(MHz): 5200





Test mode: 802.11ac Frequency(MHz): 5240





8.5 POWER LINE CONDUCTED EMISSIONS

8.5.1 Applicable Standard

According to FCC Part 15.207(a)

8.5.2 Conformance Limit

Frequency(MHz)	Conducted Emission Limit	
	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.

8.5.3 Test Configuration

Test according to clause 6.3 conducted emission test setup

8.5.4 Test Procedure

The EUT was placed on a table which is 0.8m above ground plane.

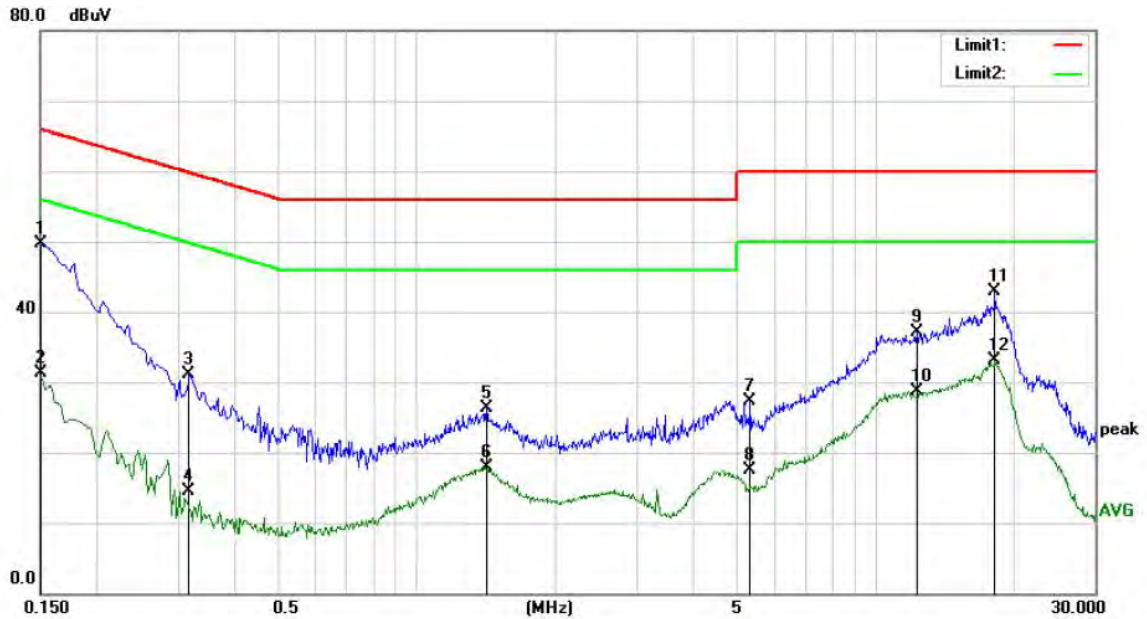
Maximum procedure was performed on the highest emissions to ensure EUT compliance.

Repeat above procedures until all frequency measured were complete.

8.5.5 Test Results

Pass

The 120V & 240V voltage have been tested, and the worst result recorded was report as below:

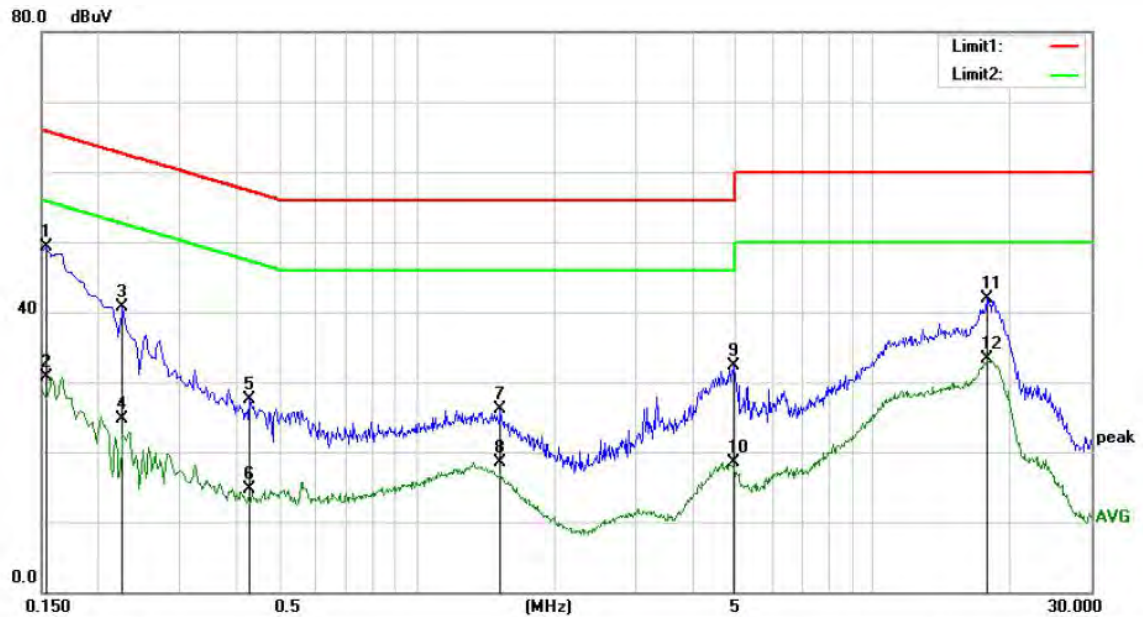


Site Conduction #2

Phase: **L1**

Temperature: 25.0

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1	*	0.1500	39.56	10.09	49.65	66.00	-16.35	QP	
2		0.1500	21.31	10.09	31.40	56.00	-24.60	AVG	
3		0.3180	21.07	10.09	31.16	59.76	-28.60	QP	
4		0.3180	4.48	10.09	14.57	49.76	-35.19	AVG	
5		1.4180	16.18	10.14	26.32	56.00	-29.68	QP	
6		1.4180	7.83	10.14	17.97	46.00	-28.03	AVG	
7		5.3260	17.12	10.26	27.38	60.00	-32.62	QP	
8		5.3260	7.15	10.26	17.41	50.00	-32.59	AVG	
9		12.2860	26.58	10.47	37.05	60.00	-22.95	QP	
10		12.2860	18.25	10.47	28.72	50.00	-21.28	AVG	
11		18.1620	32.56	10.43	42.99	60.00	-17.01	QP	
12		18.1620	22.76	10.43	33.19	50.00	-16.81	AVG	



Site Conduction #2			Phase: N			Temperature: 25.0		
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector Comment
1	*	0.1540	39.16	10.09	49.25	65.78	-16.53	QP
2		0.1540	20.61	10.09	30.70	55.78	-25.08	AVG
3		0.2260	30.70	10.10	40.80	62.60	-21.80	QP
4		0.2260	14.69	10.10	24.79	52.60	-27.81	AVG
5		0.4300	17.33	10.10	27.43	57.25	-29.82	QP
6		0.4300	4.61	10.10	14.71	47.25	-32.54	AVG
7		1.5220	15.89	10.15	26.04	56.00	-29.96	QP
8		1.5220	8.35	10.15	18.50	46.00	-27.50	AVG
9		4.9380	22.00	10.25	32.25	56.00	-23.75	QP
10		4.9380	8.34	10.25	18.59	46.00	-27.41	AVG
11		17.6860	31.54	10.44	41.98	60.00	-18.02	QP
12		17.6860	22.87	10.44	33.31	50.00	-16.69	AVG

8.6 ANTENNA APPLICATION

8.6.1 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.

8.6.2 Result

PASS

The EUT is PIFA antenna, the antenna gain as below:

5150-5250MHz: Ant 1: 0.76dBi Ant 2: 2.85dBi
 5250-5350MHz: Ant 1: 0.76dBi Ant 2: 2.85dBi
 5470-5725MHz: Ant 1: 2.24dBi Ant 2: 3.21dBi
 5725-5850MHz: Ant 1: 1.19dBi Ant 2: 3.13dBi

- ☒ Antennas 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)

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

Detail of factor for radiated emission:

Frequency(MHz)	Ant_F(dB)	Cab_L(dB)	Preamp(dB)	Correct Factor(dB)
0.009	20.6	0.03	\	20.63
0.15	20.7	0.1	\	20.8
1	20.9	0.15	\	21.05
10	20.1	0.28	\	20.38
30	18.8	0.45	\	19.25
30	11.7	0.62	27.9	-15.58
100	12.5	1.02	27.8	-14.28
300	12.9	1.91	27.5	-12.69
600	19.2	2.92	27	-4.88
800	21.1	3.54	26.6	-1.96
1000	22.3	4.17	26.2	0.27
1000	25.6	1.76	41.4	-14.04
3000	28.9	3.27	43.2	-11.03
5000	31.1	4.2	44.6	-9.3
8000	36.2	5.95	44.7	-2.55
10000	38.4	6.3	43.9	0.8
12000	38.5	7.14	42.3	3.34
15000	40.2	8.15	41.4	6.95
18000	45.4	9.02	41.3	13.12
18000	37.9	1.81	47.9	-8.19
21000	37.9	1.95	48.7	-8.85
25000	39.3	2.01	42.8	-1.49
28000	39.6	2.16	46.0	-4.24
31000	41.2	2.24	44.5	-1.06
34000	41.5	2.29	46.6	-2.81
37000	43.8	2.30	46.4	-0.3
40000	43.2	2.50	42.2	3.5

--- End of Report ---