

11AC40MIMO_Ant1_5670



11AC40MIMO_Ant2_5670



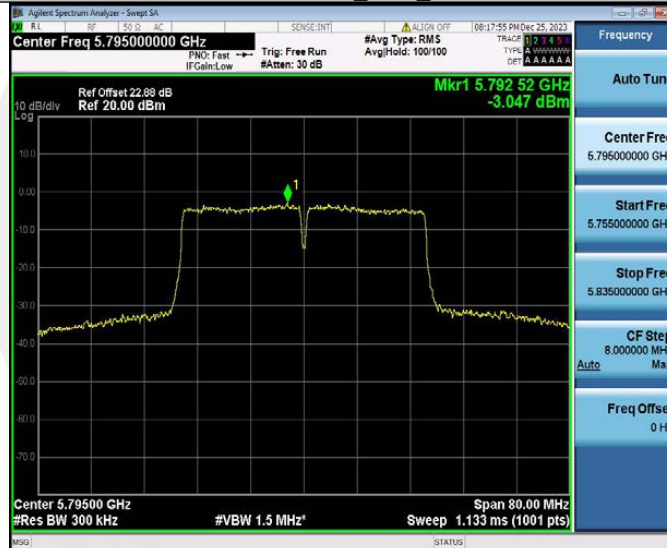
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11AC40MIMO_Ant1_5795



11AC40MIMO_Ant2_5795



11AC80MIMO_Ant1_5210



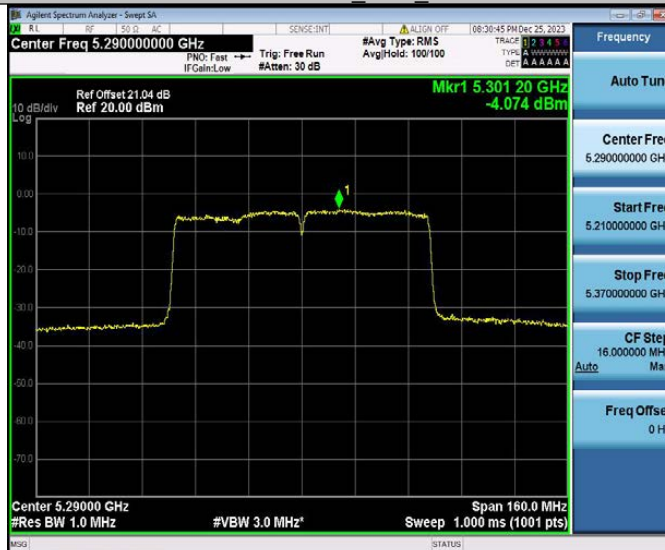
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11AC80MIMO_Ant1_5290



11AC80MIMO_Ant2_5290



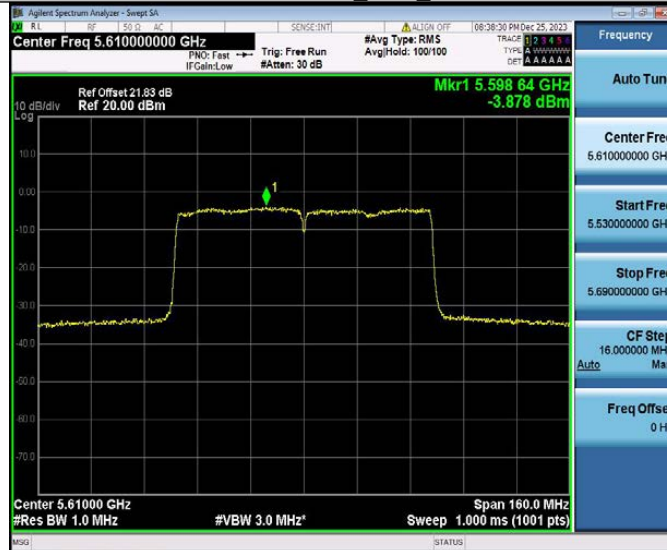
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11AC80MIMO_Ant2_5530



11AC80MIMO_Ant1_5610



11AC80MIMO_Ant2_5610



11AC80MIMO_Ant1_5775



11AC80MIMO_Ant2_5775



11AX20MIMO_Ant1_5180



11AX20MIMO_Ant2_5180



11AX20MIMO_Ant1_5200



11AX20MIMO_Ant2_5200



11AX20MIMO_Ant1_5240



11AX20MIMO_Ant2_5240



11AX20MIMO_Ant1_5260



11AX20MIMO_Ant2_5260



11AX20MIMO_Ant1_5280



11AX20MIMO_Ant2_5280



11AX20MIMO_Ant1_5320



11AX20MIMO_Ant2_5320



11AX20MIMO_Ant1_5500



11AX20MIMO_Ant2_5500



11AX20MIMO_Ant1_5580



11AX20MIMO_Ant2_5580



11AX20MIMO_Ant1_5700



11AX20MIMO_Ant2_5700



11AX20MIMO_Ant1_5745



11AX20MIMO_Ant2_5745



11AX20MIMO_Ant1_5785



11AX20MIMO_Ant2_5785



11AX20MIMO_Ant1_5825



11AX20MIMO_Ant2_5825



11AX40MIMO_Ant1_5190



11AX40MIMO_Ant2_5190



11AX40MIMO_Ant1 5230



11AX40MIMO_Ant2 5230



11AX40MIMO_Ant1 5270



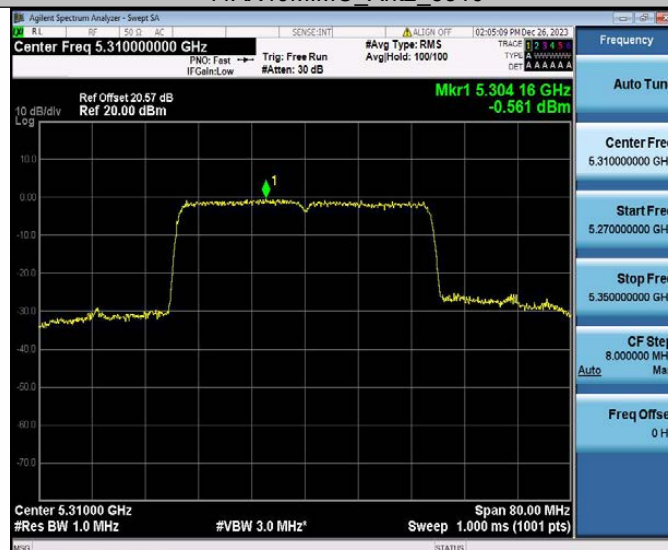
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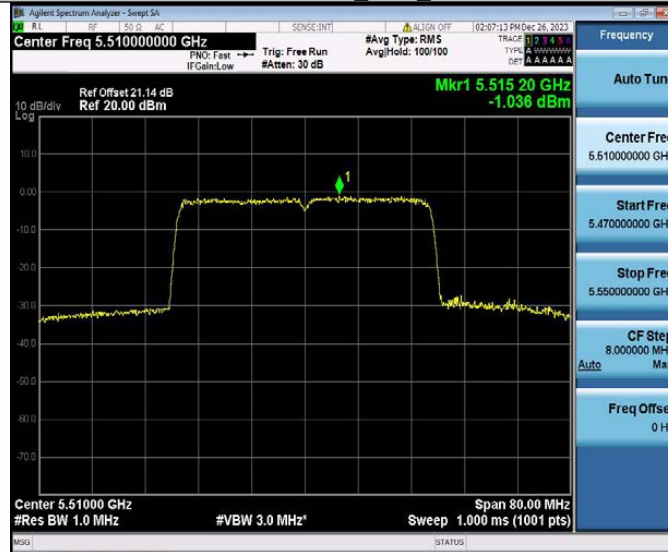
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11AX40MIMO_Ant2_5310



11AX40MIMO_Ant1_5510



11AX40MIMO_Ant2_5510



11AX40MIMO_Ant1_5550



11AX40MIMO_Ant2_5550



11AX40MIMO_Ant1_5670



11AX40MIMO_Ant2_5670



11AX40MIMO_Ant1_5755



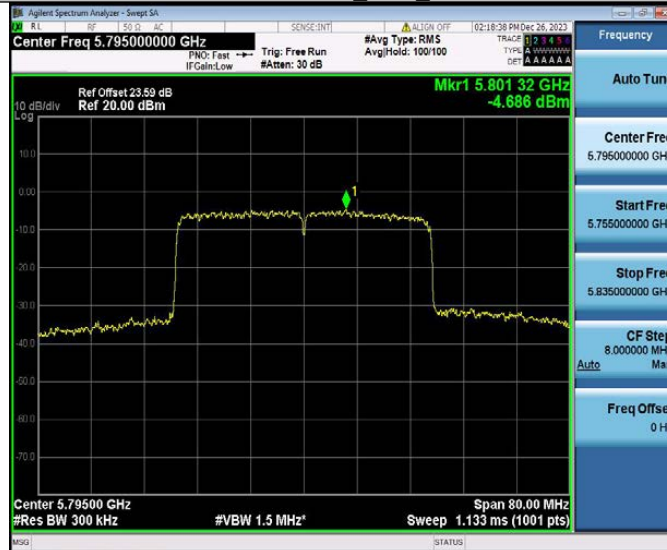
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11AX40MIMO_Ant1_5795



11AX40MIMO_Ant2_5795



11AX80MIMO_Ant1_5210



11AX80MIMO_Ant2_5210



11AX80MIMO_Ant1_5290



11AX80MIMO_Ant2_5290



11AX80MIMO_Ant1_5530



11AX80MIMO_Ant2_5530



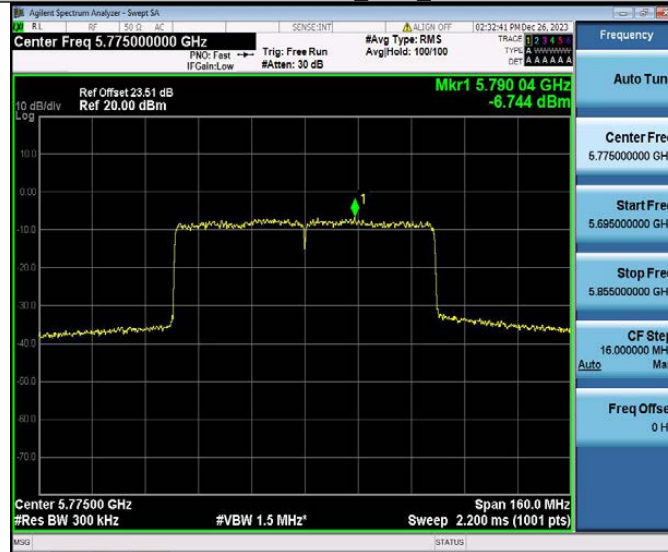
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11AX80MIMO_Ant2_5610



11AX80MIMO_Ant1_5775



11AX80MIMO_Ant2_5775



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

Pass

Temperature :	25°C	ATM Pressure:	1011 mbar
Humidity :	60 %	Test Engineer:	HZB

All of the configurations or modes are tested, the data of the worst case is recorded as below.

☒ For Undesirable radiated Spurious Emission in U-NII – 1

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

All of the configurations or modes are tested, the data of the worst case is recorded in the report.

Highest gain of each antenna and highest output power is ANT1 and MIMO as below:

ANT1:

Test mode: 802.11n(20) Frequency(MHz): 5180

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
10057.0	V	59.80	-35.43	-27	8.43
14717.3	V	62.45	-32.78	-27	5.78
17498.2	V	66.19	-29.04	-27	2.04
11502.7	H	60.33	-34.9	-27	7.9
15457.2	H	62.75	-32.48	-27	5.48
17506.7	H	66.80	-28.43	-27	1.43

Test mode: 802.11n(20) Frequency(MHz): 5200

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
12523.2	V	60.46	-34.77	-27	7.77
15601.8	V	63.00	-32.23	-27	5.23
17498.2	V	66.83	-28.4	-27	1.4
11485.7	H	60.72	-34.51	-27	7.51
15457.2	H	63.29	-31.94	-27	4.94
17489.7	H	65.78	-29.45	-27	2.45

Test mode: 802.11n(20) Frequency(MHz): 5240

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
11536.7	V	60.00	-35.23	-27	8.23
15448.7	V	63.08	-32.15	-27	5.15
17506.7	V	66.14	-29.09	-27	2.09
13764.8	H	61.70	-33.53	-27	6.53
15448.7	H	63.84	-31.39	-27	4.39
17489.7	H	65.84	-29.39	-27	2.39

MIMO:

Test mode: 802.11n(20) Frequency(MHz): 5180					
Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
10054.22	V	59.54	-35.69	-27	8.69
14714.52	V	62.13	-33.10	-27	6.10
17500.76	V	66.13	-29.10	-27	2.10
11526.08	H	60.17	-35.06	-27	8.06
15480.58	H	62.33	-32.90	-27	5.90
17530.08	H	66.48	-28.75	-27	1.75

Test mode: 802.11n(20) Frequency(MHz): 5200					
Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
12521.81	V	60.33	-34.90	-27	7.90
15600.41	V	62.84	-32.39	-27	5.39
17499.48	V	66.8	-28.43	-27	1.43
11497.39	H	60.64	-34.59	-27	7.59
15468.89	H	63.08	-32.15	-27	5.15
17501.39	H	65.62	-29.61	-27	2.61

Test mode: 802.11n(20) Frequency(MHz): 5240					
Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
11535.31	V	59.87	-35.36	-27	8.36
15447.31	V	62.92	-32.31	-27	5.31
17507.98	V	66.11	-29.12	-27	2.12
13776.49	H	61.62	-33.61	-27	6.61
15460.39	H	63.63	-31.60	-27	4.60
17501.39	H	65.68	-29.55	-27	2.55

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

ANT1:

Test mode: 802.11n(20)		Frequency(MHz): 5180			
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
10057.0	V	59.80	74.00	14.20	peak
14717.3	V	62.45	74.00	11.55	peak
17498.2	V	66.19	74.00	7.81	peak
10057.02	V	45.29	54.00	8.71	AVG
14717.35	V	43.54	54.00	10.46	AVG
17498.24	V	44.66	54.00	9.34	AVG
11502.7	H	60.33	74.00	13.67	peak
15457.2	H	62.75	74.00	11.25	peak
17506.7	H	66.80	74.00	7.20	peak
11502.75	H	46.42	54.00	7.58	AVG
15457.22	H	43.20	54.00	10.80	AVG
17506.75	H	44.47	54.00	9.53	AVG

Test mode: 802.11n(20)		Frequency(MHz): 5200			
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
12523.2	V	60.46	74.00	13.54	peak
15601.8	V	63.00	74.00	11.00	peak
17498.2	V	66.83	74.00	7.17	peak
12523.26	V	48.42	54.00	5.58	AVG
15601.80	V	44.91	54.00	9.09	AVG
17498.24	V	44.69	54.00	9.31	AVG
11485.7	H	60.72	74.00	13.28	peak
15457.2	H	63.29	74.00	10.71	peak
17489.7	H	65.78	74.00	8.22	peak
11485.74	H	46.62	54.00	7.38	AVG
15457.22	H	43.20	54.00	10.80	AVG
17489.74	H	44.77	54.00	9.23	AVG

Test mode: 802.11n(20)		Frequency(MHz): 5240			
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
11536.7	V	60.00	74.00	14.00	peak
15448.7	V	63.08	74.00	10.92	peak
17506.7	V	66.14	74.00	7.86	peak
11536.76	V	46.57	54.00	7.43	AVG
15448.72	V	43.16	54.00	10.84	AVG
17506.75	V	44.47	54.00	9.53	AVG
13764.8	H	61.70	74.00	12.30	peak
15448.7	H	63.84	74.00	10.16	peak
17489.7	H	65.84	74.00	8.16	peak
13764.88	H	48.39	54.00	5.61	AVG
15448.72	H	43.14	54.00	10.86	AVG
17489.74	H	44.65	54.00	9.35	AVG

MIMO:

Test mode: 802.11n(20)		Frequency(MHz): 5180			
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
10055.610	V	59.67	74.00	14.33	peak
14715.910	V	62.29	74.00	11.71	peak
17499.480	V	66.16	74.00	7.84	peak
10058.300	V	45.27	54.00	8.73	AVG
14715.100	V	43.28	54.00	10.72	AVG
17495.990	V	44.47	54.00	9.53	AVG
11514.390	H	60.25	74.00	13.75	peak
15468.890	H	62.54	74.00	11.46	peak
17518.390	H	66.64	74.00	7.36	peak
11514.440	H	46.28	54.00	7.72	AVG
15453.910	H	43.02	54.00	10.98	AVG
17503.440	H	44.34	54.00	9.66	AVG

Test mode: 802.11n(20)		Frequency(MHz): 5200			
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
12521.810	V	60.33	74.00	13.67	peak
15600.410	V	62.84	74.00	11.16	peak
17499.480	V	66.8	74.00	7.2	peak
12524.540	V	48.4	54.00	5.6	AVG
15599.550	V	44.65	54.00	9.35	AVG
17495.990	V	44.5	54.00	9.5	AVG
11497.390	H	60.64	74.00	13.36	peak
15468.890	H	63.08	74.00	10.92	peak
17501.390	H	65.62	74.00	8.38	peak
11497.430	H	46.48	54.00	7.52	AVG
15453.910	H	43.02	54.00	10.98	AVG
17486.430	H	44.64	54.00	9.36	AVG

Test mode: 802.11n(20)		Frequency(MHz): 5240			
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
11535.310	V	59.87	74.00	14.13	peak
15447.310	V	62.92	74.00	11.08	peak
17507.980	V	66.11	74.00	7.89	peak
11538.040	V	46.55	54.00	7.45	AVG
15446.470	V	42.9	54.00	11.1	AVG
17504.500	V	44.28	54.00	9.72	AVG
13776.490	H	61.62	74.00	12.38	peak
15460.390	H	63.63	74.00	10.37	peak
17501.390	H	65.68	74.00	8.32	peak
13776.570	H	48.25	54.00	5.75	AVG
15445.410	H	42.96	54.00	11.04	AVG
17486.430	H	44.52	54.00	9.48	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: 802.11n(20) Frequency(MHz): 5180

Freq. (MHz)	Ant.Pol. H/V	Field Strength (RBW=100KHz) (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Verdict
5146.91	H	65.74	-29.49	-27	Pass
5148.86	V	64.30	-30.93	-27	Pass

Test mode: 802.11n(20) Frequency(MHz): 5240

Freq. (MHz)	Ant.Pol. H/V	Field Strength (RBW=100KHz) (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Verdict
5355.69	H	54.84	-40.39	-27	Pass
5352.53	V	55.14	-40.09	-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: 802.11n(20) Frequency(MHz): 5180

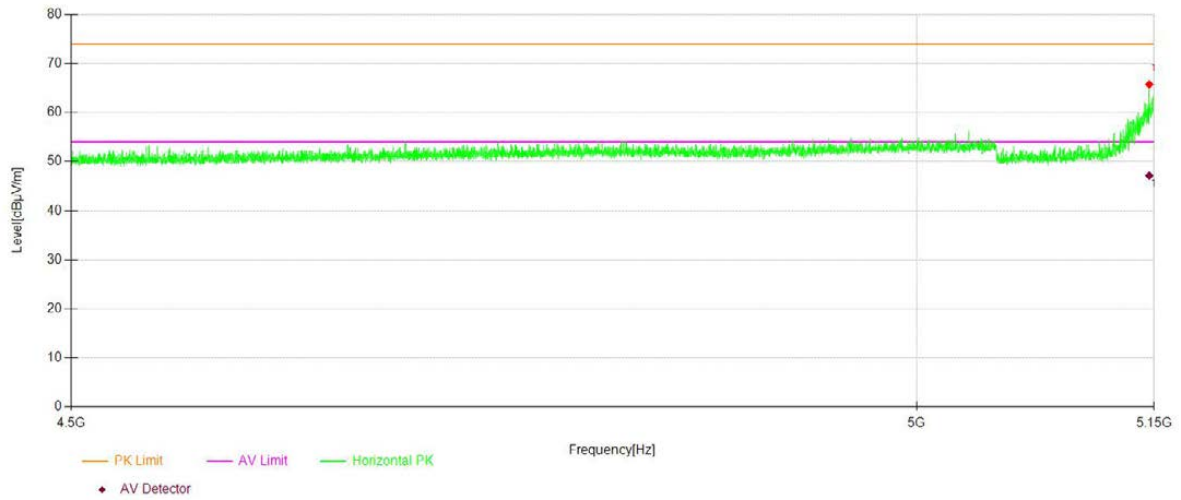
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
5148.86	V	64.30	74.00	9.70	peak
5148.86	V	48.85	54.00	5.15	AVG
5146.91	H	65.74	74.00	8.26	peak
5146.91	H	47.16	54.00	6.84	AVG

Test mode: 802.11n(20) Frequency(MHz): 5240

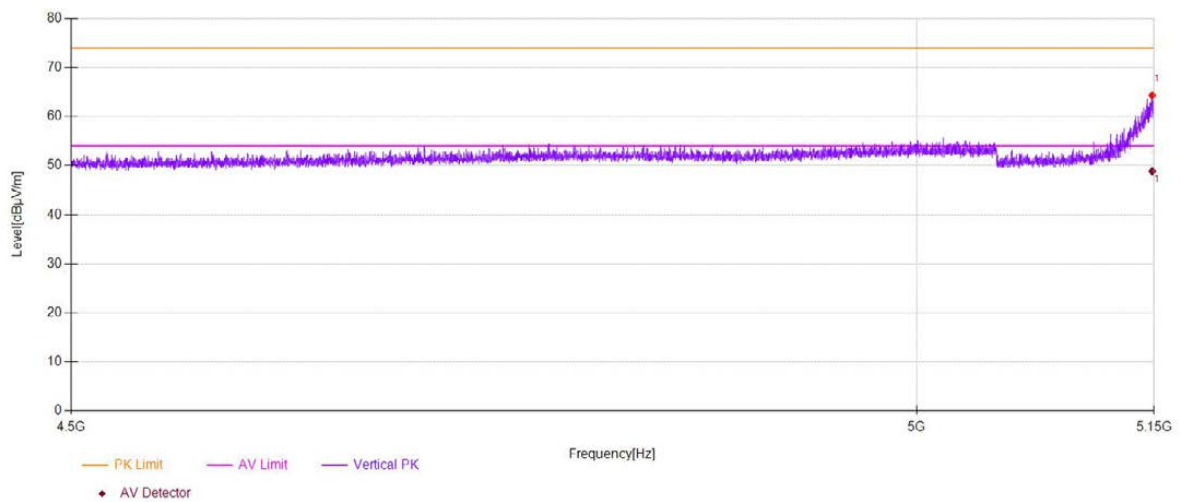
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
5352.53	V	55.14	74.00	18.86	peak
5352.53	V	51.22	54.00	2.78	AVG
5355.69	H	54.84	74.00	19.16	peak
5355.69	H	51.60	54.00	2.40	AVG

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.

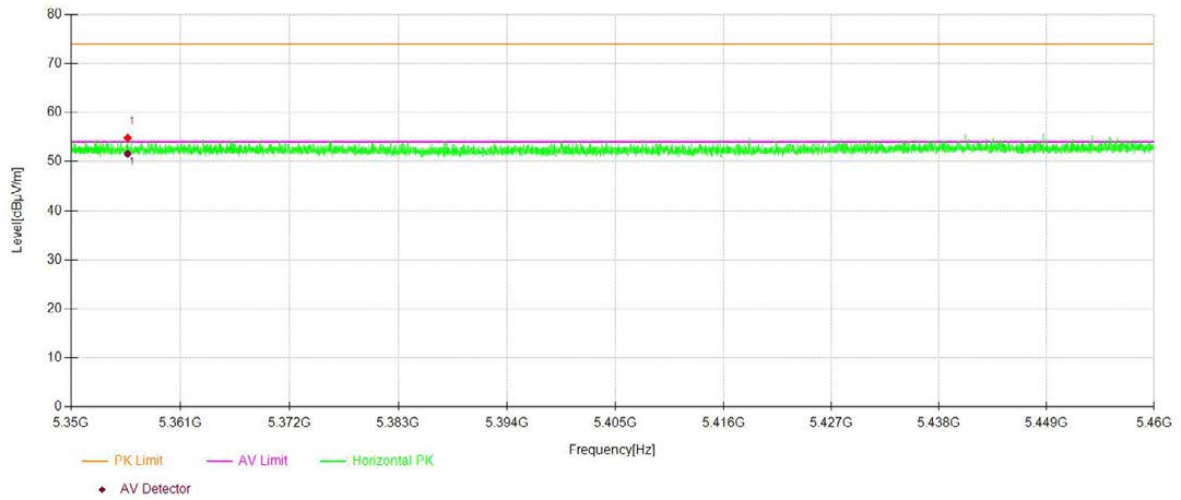
Test Model U-NII - 1
Undesirable radiated Spurious Emission in Restricted Band (5100-5150MHz)
☐ 802.11a ☒ 802.11n(HT20) ☐ 802.11n(HT40)
☒ 5180 ☐ 5200 ☐ 5240 Ant.Pol H



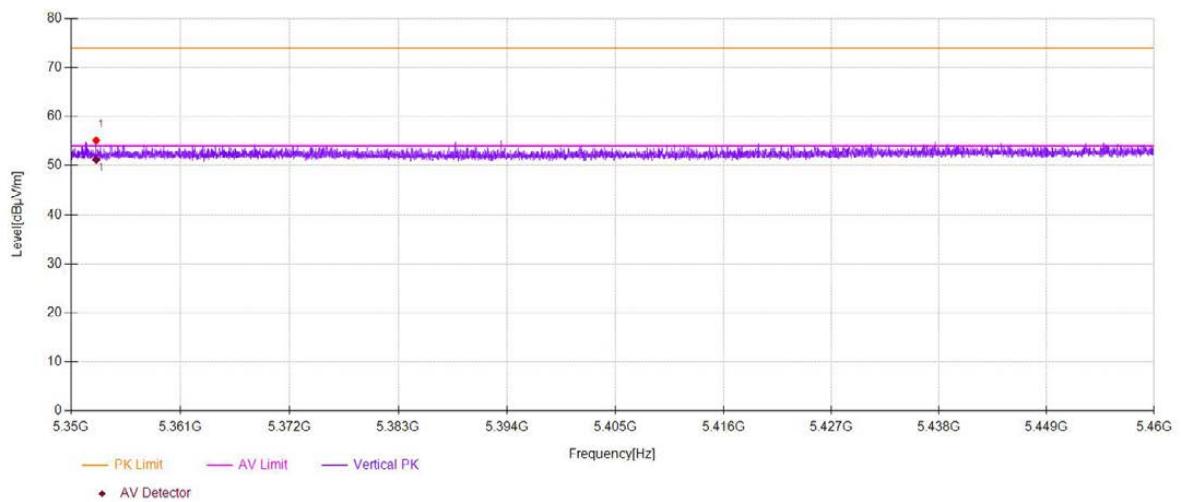
Test Model U-NII - 1
Undesirable radiated Spurious Emission in Restricted Band (5100-5150MHz)
☐ 802.11a ☒ 802.11n(HT20) ☐ 802.11n(HT40)
☒ 5180 ☐ 5200 ☐ 5240 Ant.Pol V



U-NII - 1
 Test Model Undesirable radiated Spurious Emission in Restricted Band (5350-5400MHz)
☐ 802.11a ☒ 802.11 n(HT20) ☐ 802.11n(HT40)
☐ 5180 ☐ 5200 ☒ 5240 Ant.Pol H



U-NII - 1
 Test Model Undesirable radiated Spurious Emission in Restricted Band (5350-5400MHz)
☐ 802.11a ☒ 802.11 n(HT20) ☐ 802.11n(HT40)
☐ 5180 ☐ 5200 ☒ 5240 Ant.Pol V



- ☒ For Undesirable radiated Spurious Emission in U-NII -2A
☒ Undesirable radiated Spurious Emission Above 1GHz (1GHz to 40GHz)

All of the configurations or modes are tested, the data of the worst case is recorded in the report.
 Highest gain of each antenna and highest output power is ANT1 and MIMO as below:

ANT1:

Test mode:		802.11n(20)		Frequency(MHz):		5260	
Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)		
13101.5	V	61.33	-33.9	-27	6.9		
15448.7	V	63.06	-32.17	-27	5.17		
17013.5	V	66.39	-28.84	-27	1.84		
13849.9	H	61.51	-33.72	-27	6.72		
15474.2	H	63.50	-31.73	-27	4.73		
17489.7	H	66.15	-29.08	-27	2.08		

Test mode:		802.11n(20)		Frequency(MHz):		5280	
Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)		
11502.7	V	60.21	-35.02	-27	8.02		
14581.2	V	62.75	-32.48	-27	5.48		
17039.0	V	66.39	-28.84	-27	1.84		
11536.7	H	60.83	-34.4	-27	7.4		
15516.7	H	63.09	-32.14	-27	5.14		
17489.7	H	66.48	-28.75	-27	1.75		

Test mode:		802.11n(20)		Frequency(MHz):		5320	
Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)		
11511.2	V	60.51	-34.72	-27	7.72		
15516.7	V	62.75	-32.48	-27	5.48		
17498.2	V	66.52	-28.71	-27	1.71		
11545.2	H	60.67	-34.56	-27	7.56		
15525.2	H	63.19	-32.04	-27	5.04		
17489.7	H	66.03	-29.2	-27	2.2		

MIMO:

Test mode: 802.11n(20) Frequency(MHz): 5260					
Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
13100.11	V	61.2	-34.03	-27	7.03
15447.31	V	62.9	-32.33	-27	5.33
17014.78	V	66.36	-28.87	-27	1.87
13861.59	H	61.43	-33.80	-27	6.80
15485.89	H	63.29	-31.94	-27	4.94
17501.39	H	65.99	-29.24	-27	2.24

Test mode: 802.11n(20) Frequency(MHz): 5280					
Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
11501.31	V	60.08	-35.15	-27	8.15
14579.81	V	62.59	-32.64	-27	5.64
17040.28	V	66.36	-28.87	-27	1.87
11548.39	H	60.75	-34.48	-27	7.48
15528.39	H	62.88	-32.35	-27	5.35
17501.39	H	66.32	-28.91	-27	1.91

Test mode: 802.11n(20) Frequency(MHz): 5320					
Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
11509.81	V	60.38	-34.85	-27	7.85
15515.31	V	62.59	-32.64	-27	5.64
17499.48	V	66.49	-28.74	-27	1.74
11556.89	H	60.59	-34.64	-27	7.64
15536.89	H	62.98	-32.25	-27	5.25
17501.39	H	65.87	-29.36	-27	2.36

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

ANT1:

Test mode: 802.11n(20)		Frequency(MHz): 5260			
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
13101.5	V	61.33	74.00	12.67	peak
15448.7	V	63.06	74.00	10.94	peak
17013.5	V	66.39	74.00	7.61	peak
13101.55	V	49.14	54.00	4.86	AVG
15448.72	V	44.16	54.00	9.84	AVG
17013.50	V	45.05	54.00	8.95	AVG
13849.9	H	61.51	74.00	12.49	peak
15474.2	H	63.50	74.00	10.50	peak
17489.7	H	66.15	74.00	7.85	peak
13849.92	H	47.50	54.00	6.50	AVG
15474.23	H	43.25	54.00	10.75	AVG
17489.74	H	44.73	54.00	9.27	AVG

Test mode: 802.11n(20)		Frequency(MHz): 5280			
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
11502.7	V	60.21	74.00	13.79	peak
14581.2	V	62.75	74.00	11.25	peak
17039.0	V	66.39	74.00	7.61	peak
11502.75	V	46.78	54.00	7.22	AVG
14581.29	V	45.54	54.00	8.46	AVG
17039.01	V	44.39	54.00	9.61	AVG
11536.7	H	60.83	74.00	13.17	peak
15516.7	H	63.09	74.00	10.91	peak
17489.7	H	66.48	74.00	7.52	peak
11536.76	H	46.52	54.00	7.48	AVG
15516.75	H	43.46	54.00	10.54	AVG
17489.74	H	44.65	54.00	9.35	AVG

Test mode: 802.11n(20)		Frequency(MHz): 5320			
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
11511.2	V	60.51	74.00	13.49	peak
15516.7	V	62.75	74.00	11.25	peak
17498.2	V	66.52	74.00	7.48	peak
11511.25	V	46.70	54.00	7.30	AVG
15516.75	V	43.46	54.00	10.54	AVG
17498.24	V	45.06	54.00	8.94	AVG
11545.2	H	60.67	74.00	13.33	peak
15525.2	H	63.19	74.00	10.81	peak
17489.7	H	66.03	74.00	7.97	peak
11545.27	H	46.31	54.00	7.69	AVG
15525.26	H	43.38	54.00	10.62	AVG
17489.74	H	44.33	54.00	9.67	AVG

MIMO:

Test mode: 802.11n(20)		Frequency(MHz): 5260			
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
13100.110	V	61.2	74.00	12.8	peak
15447.310	V	62.9	74.00	11.1	peak
17014.780	V	66.36	74.00	7.64	peak
13102.830	V	49.12	54.00	4.88	AVG
15446.470	V	43.9	54.00	10.1	AVG
17011.250	V	44.86	54.00	9.14	AVG
13861.590	H	61.43	74.00	12.57	peak
15485.890	H	63.29	74.00	10.71	peak
17501.390	H	65.99	74.00	8.01	peak
13861.610	H	47.36	54.00	6.64	AVG
15470.920	H	43.07	54.00	10.93	AVG
17486.430	H	44.6	54.00	9.4	AVG

Test mode: 802.11n(20)		Frequency(MHz): 5280			
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
11501.310	V	60.08	74.00	13.92	peak
14579.810	V	62.59	74.00	11.41	peak
17040.280	V	66.36	74.00	7.64	peak
11504.030	V	46.76	54.00	7.24	AVG
14579.040	V	45.28	54.00	8.72	AVG
17036.760	V	44.2	54.00	9.8	AVG
11548.390	H	60.75	74.00	13.25	peak
15528.390	H	62.88	74.00	11.12	peak
17501.390	H	66.32	74.00	7.68	peak
11548.450	H	46.38	54.00	7.62	AVG
15513.440	H	43.28	54.00	10.72	AVG
17486.430	H	44.52	54.00	9.48	AVG

Test mode: 802.11n(20)		Frequency(MHz): 5320			
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
11509.810	V	60.38	74.00	13.62	peak
15515.310	V	62.59	74.00	11.41	peak
17499.480	V	66.49	74.00	7.51	peak
11512.530	V	46.68	54.00	7.32	AVG
15514.500	V	43.2	54.00	10.8	AVG
17495.990	V	44.87	54.00	9.13	AVG
11556.890	H	60.59	74.00	13.41	peak
15536.890	H	62.98	74.00	11.02	peak
17501.390	H	65.87	74.00	8.13	peak
11556.960	H	46.17	54.00	7.83	AVG
15521.950	H	43.2	54.00	10.8	AVG
17486.430	H	44.2	54.00	9.8	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: 802.11n(20) Frequency(MHz): 5260

Freq. (MHz)	Ant.Pol. H/V	Field Strength (RBW=100KHz) (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Verdict
5001.23	H	55.38	-39.85	-27	Pass
5044.53	V	55.82	-39.41	-27	Pass

Test mode: 802.11 n(20) Frequency(MHz): 5320

Freq. (MHz)	Ant.Pol. H/V	Field Strength (RBW=100KHz) (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Verdict
5355.01	H	54.69	-40.54	-27	Pass
5373.87	V	54.20	-41.03	-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: 802.11n(20) Frequency(MHz): 5260

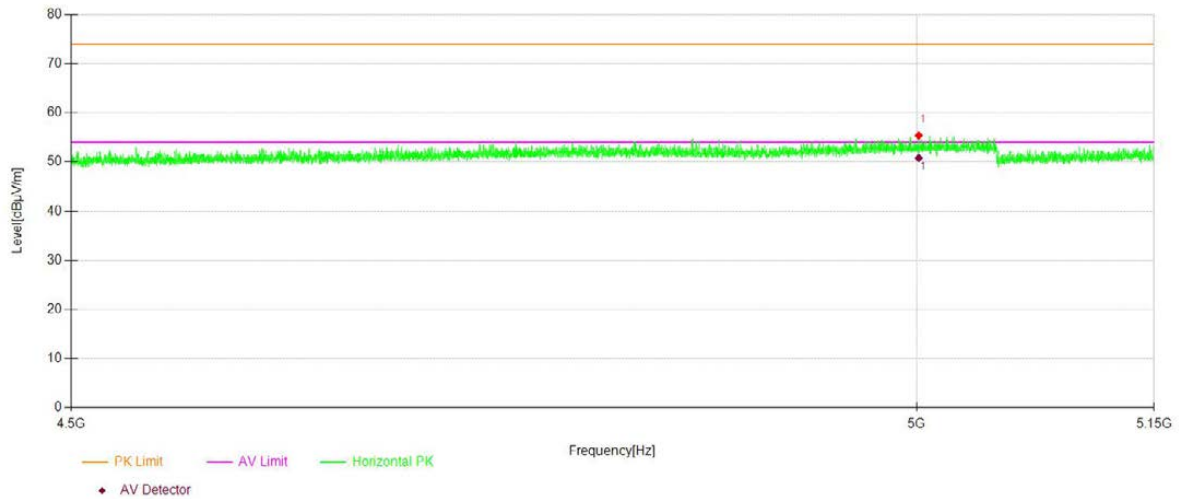
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
5044.53	V	55.82	74.00	18.18	peak
5044.53	V	49.61	54.00	4.39	AVG
5001.23	H	55.38	74.00	18.62	peak
5001.23	H	50.80	54.00	3.20	AVG

Test mode: 802.11n(20) Frequency(MHz): 5320

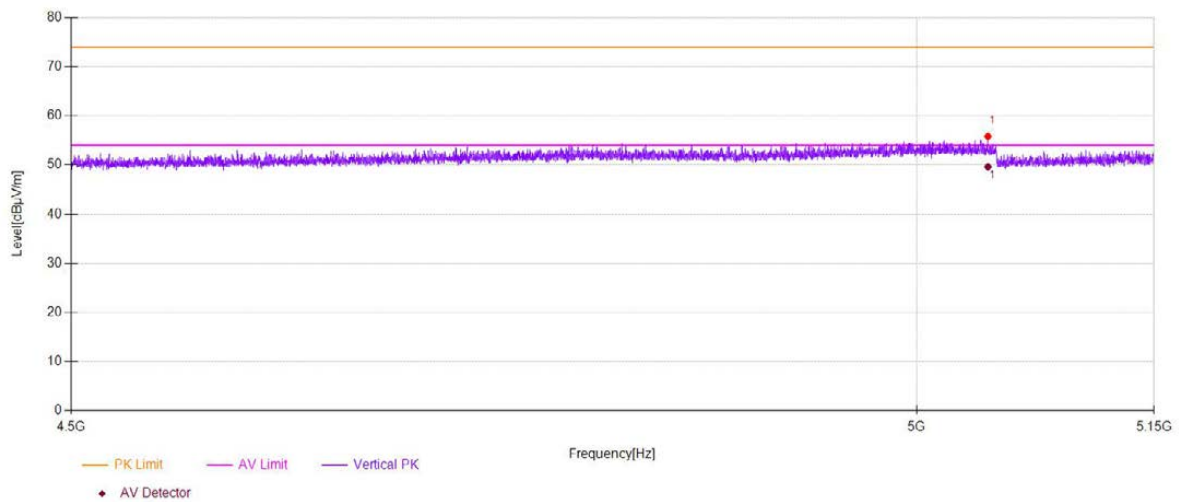
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
5373.87	V	54.20	74.00	19.80	peak
5373.87	V	49.29	54.00	4.71	AVG
5355.01	H	54.69	74.00	19.31	peak
5355.01	H	50.12	54.00	3.88	AVG

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.

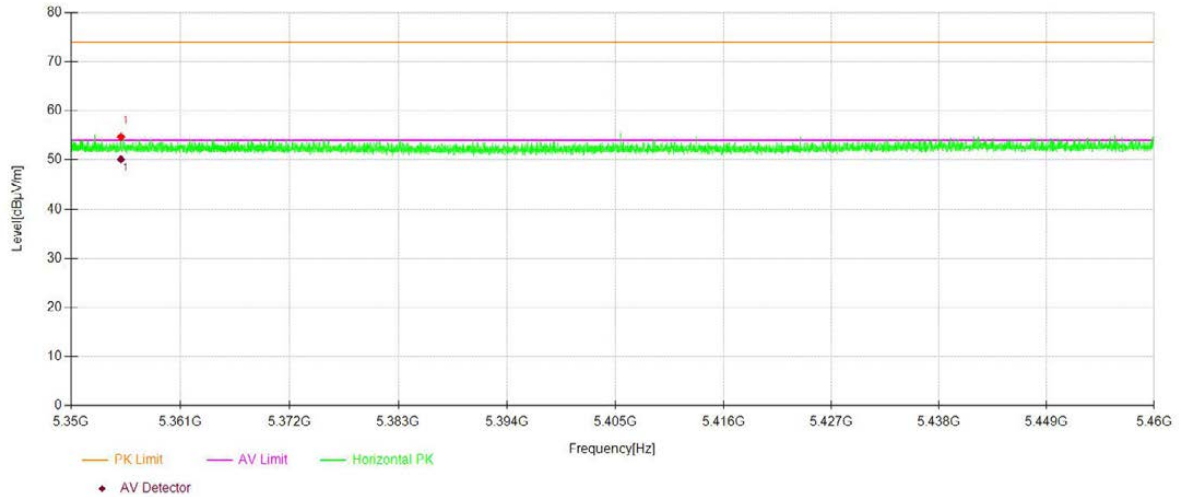
Test Model U-NII -2A
Undesirable radiated Spurious Emission in Restricted Band (5100-5150MHz)
☐ 802.11a ☒ 802.11n(HT20) ☐ 802.11 ac (VHT20)
☒ 5260 ☐ 5300 ☐ 5320 Ant.Pol H



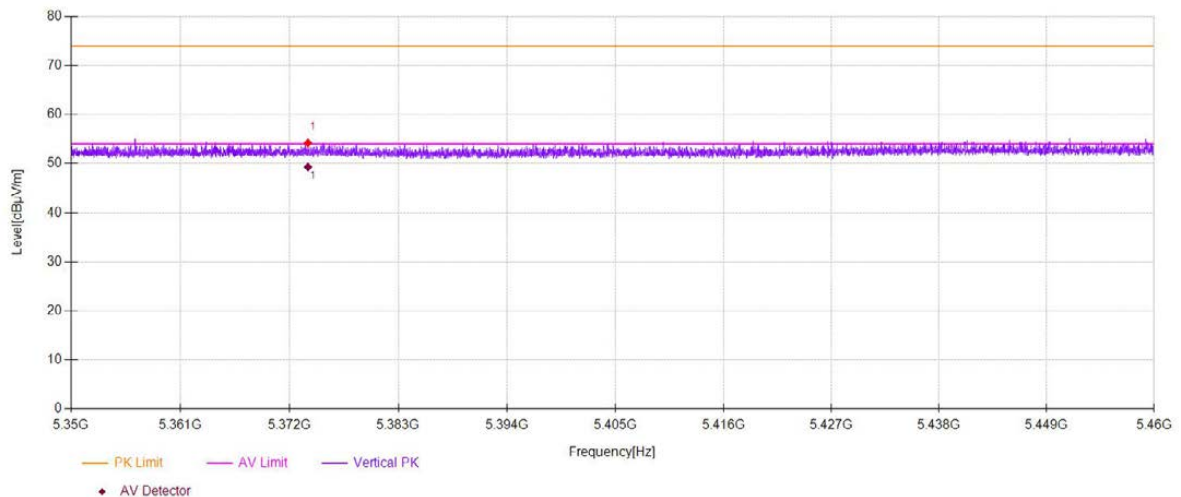
Test Model U-NII -2A
Undesirable radiated Spurious Emission in Restricted Band (5100-5150MHz)
☐ 802.11a ☒ 802.11n(HT20) ☐ 802.11 ac (VHT20)
☒ 5260 ☐ 5300 ☐ 5320 Ant.Pol V



Test Model U-NII -2A
Undesirable radiated Spurious Emission in Restricted Band (5350-5400MHz)
☐ 802.11a ☒ 802.11n(HT20) ☐ 802.11 ac (VHT20)
☐ 5260 ☐ 5300 ☒ 5320 Ant.Pol H



Test Model U-NII -2A
Undesirable radiated Spurious Emission in Restricted Band (5350-5400MHz)
☐ 802.11n(20) ☒ 802.11n(HT20) ☐ 802.11 ac (VHT20)
☐ 5260 ☐ 5300 ☒ 5320 Ant.Pol V



- ☒ For Undesirable radiated Spurious Emission in U-NII -2C
☒ Undesirable radiated Spurious Emission Above 1GHz (1GHz to 40GHz)

All of the configurations or modes are tested, the data of the worst case is recorded in the report.
Highest gain of each antenna and highest output power is ANT1 and MIMO as below:

ANT1:

Test mode: 802.11n(20) Frequency(MHz): 5500

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
13093.0	V	61.63	-33.6	-27	6.6
15525.2	V	63.15	-32.08	-27	5.08
17532.2	V	65.90	-29.33	-27	2.33
11681.3	H	60.78	-34.45	-27	7.45
15525.2	H	63.84	-31.39	-27	4.39
17515.2	H	66.31	-28.92	-27	1.92

Test mode: 802.11n(20) Frequency(MHz): 5580

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
10686.3	V	59.41	-35.82	-27	8.82
13271.6	V	60.67	-34.56	-27	7.56
17489.7	V	66.11	-29.12	-27	2.12
11545.2	H	60.65	-34.58	-27	7.58
15457.2	H	63.81	-31.42	-27	4.42
17498.2	H	65.67	-29.56	-27	2.56

Test mode: 802.11n(20) Frequency(MHz): 5700

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
11417.7	V	60.51	-34.72	-27	7.72
15550.7	V	63.16	-32.07	-27	5.07
17489.7	V	65.87	-29.36	-27	2.36
13458.7	H	61.56	-33.67	-27	6.67
15601.8	H	63.45	-31.78	-27	4.78
17498.2	H	67.01	-28.22	-27	1.22

MIMO:

Test mode: 802.11n(20) Frequency(MHz): 5500					
Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
13091.61	V	61.5	-33.73	-27	6.73
15523.81	V	62.99	-32.24	-27	5.24
17533.48	V	65.87	-29.36	-27	2.36
11692.99	H	60.7	-34.53	-27	7.53
15536.89	H	63.63	-31.60	-27	4.60
17526.89	H	66.15	-29.08	-27	2.08

Test mode: 802.11n(20) Frequency(MHz): 5580					
Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
10684.91	V	59.28	-35.95	-27	8.95
13270.21	V	60.51	-34.72	-27	7.72
17490.98	V	66.08	-29.15	-27	2.15
11556.89	H	60.57	-34.66	-27	7.66
15468.89	H	63.6	-31.63	-27	4.63
17509.89	H	65.51	-29.72	-27	2.72

Test mode: 802.11n(20) Frequency(MHz): 5700					
Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
11416.31	V	60.38	-34.85	-27	7.85
15549.31	V	63	-32.23	-27	5.23
17490.98	V	65.84	-29.39	-27	2.39
13470.39	H	61.48	-33.75	-27	6.75
15613.49	H	63.24	-31.99	-27	4.99
17509.89	H	66.85	-28.38	-27	1.38

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

ANT1:

Test mode: 802.11n(20)		Frequency(MHz): 5500			
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
13093.0	V	61.63	74.00	12.37	peak
15525.2	V	63.15	74.00	10.85	peak
17532.2	V	65.90	74.00	8.10	peak
13093.04	V	47.12	54.00	6.88	AVG
15525.26	V	43.52	54.00	10.48	AVG
17532.26	V	43.95	54.00	10.05	AVG
11681.3	H	60.78	74.00	13.22	peak
15525.2	H	63.84	74.00	10.16	peak
17515.2	H	66.31	74.00	7.69	peak
11681.34	H	46.07	54.00	7.93	AVG
15525.26	H	43.71	54.00	10.29	AVG
17515.25	H	44.70	54.00	9.30	AVG

Test mode: 802.11n(20)		Frequency(MHz): 5580			
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
10686.3	V	59.41	74.00	14.59	peak
13271.6	V	60.67	74.00	13.33	peak
17489.7	V	66.11	74.00	7.89	peak
10686.34	V	47.40	54.00	6.60	AVG
13271.63	V	41.63	54.00	12.37	AVG
17489.74	V	44.33	54.00	9.67	AVG
11545.2	H	60.65	74.00	13.35	peak
15457.2	H	63.81	74.00	10.19	peak
17498.2	H	65.67	74.00	8.33	peak
11545.27	H	46.31	54.00	7.69	AVG
15457.22	H	43.06	54.00	10.94	AVG
17498.24	H	45.20	54.00	8.80	AVG

Test mode: 802.11n(20)		Frequency(MHz): 5700			
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
11417.7	V	60.51	74.00	13.49	peak
15550.7	V	63.16	74.00	10.84	peak
17489.7	V	65.87	74.00	8.13	peak
11417.70	V	46.00	54.00	8.00	AVG
15550.77	V	43.65	54.00	10.35	AVG
17489.74	V	44.32	54.00	9.68	AVG
13458.7	H	61.56	74.00	12.44	peak
15601.8	H	63.45	74.00	10.55	peak
17498.2	H	67.01	74.00	6.99	peak
13458.72	H	47.96	54.00	6.04	AVG
15601.80	H	43.93	54.00	10.07	AVG
17498.24	H	44.66	54.00	9.34	AVG

MIMO:

Test mode: 802.11n(20)		Frequency(MHz): 5500			
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
13091.610	V	61.5	74.00	12.5	peak
15523.810	V	62.99	74.00	11.01	peak
17533.480	V	65.87	74.00	8.13	peak
13094.320	V	47.1	54.00	6.9	AVG
15523.010	V	43.26	54.00	10.74	AVG
17530.010	V	43.76	54.00	10.24	AVG
11692.990	H	60.7	74.00	13.3	peak
15536.890	H	63.63	74.00	10.37	peak
17526.890	H	66.15	74.00	7.85	peak
11693.030	H	45.93	54.00	8.07	AVG
15521.950	H	43.53	54.00	10.47	AVG
17511.940	H	44.57	54.00	9.43	AVG

Test mode: 802.11n(20)		Frequency(MHz): 5580			
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
10684.910	V	59.28	74.00	14.72	peak
13270.210	V	60.51	74.00	13.49	peak
17490.980	V	66.08	74.00	7.92	peak
10687.620	V	47.38	54.00	6.62	AVG
13269.380	V	41.37	54.00	12.63	AVG
17487.490	V	44.14	54.00	9.86	AVG
11556.890	H	60.57	74.00	13.43	peak
15468.890	H	63.6	74.00	10.4	peak
17509.890	H	65.51	74.00	8.49	peak
11556.960	H	46.17	54.00	7.83	AVG
15453.910	H	42.88	54.00	11.12	AVG
17494.930	H	45.07	54.00	8.93	AVG

Test mode: 802.11n(20)		Frequency(MHz): 5700			
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
11416.310	V	60.38	74.00	13.62	peak
15549.310	V	63	74.00	11	peak
17490.980	V	65.84	74.00	8.16	peak
11418.980	V	45.98	54.00	8.02	AVG
15548.520	V	43.39	54.00	10.61	AVG
17487.490	V	44.13	54.00	9.87	AVG
13470.390	H	61.48	74.00	12.52	peak
15613.490	H	63.24	74.00	10.76	peak
17509.890	H	66.85	74.00	7.15	peak
13470.410	H	47.82	54.00	6.18	AVG
15598.490	H	43.75	54.00	10.25	AVG
17494.930	H	44.53	54.00	9.47	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: 802.11n(20) Frequency(MHz): 5500

Freq. (MHz)	Ant.Pol. H/V	Field Strength (RBW=100KHz) (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Verdict
5468.27	V	56.87	-38.36	-27	Pass
5469.47	H	57.55	-37.68	-27	Pass

Test mode: 802.11n(20) Frequency(MHz): 5700

Freq. (MHz)	Ant.Pol. H/V	Field Strength (RBW=100KHz) (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Verdict
5735.73	V	55.72	-39.51	-27	Pass
5731.68	H	55.51	-39.72	-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: 802.11n(20) Frequency(MHz): 5500

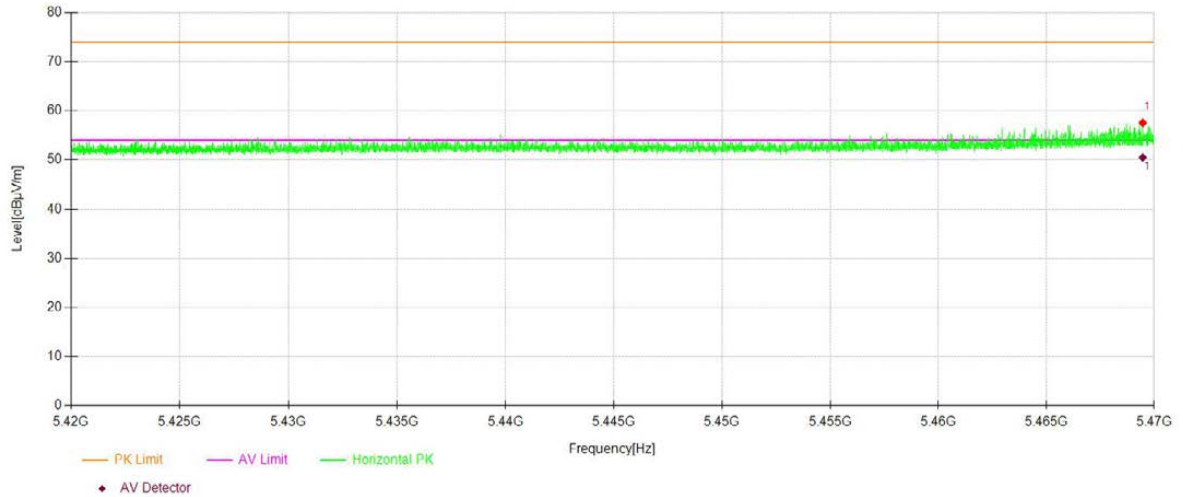
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
5468.27	V	56.87	74.00	17.13	peak
5468.27	V	50.79	54.00	3.21	AVG
5469.47	H	57.55	74.00	16.45	peak
5469.47	H	50.49	54.00	3.51	AVG

Test mode: 802.11n(20) Frequency(MHz): 5700

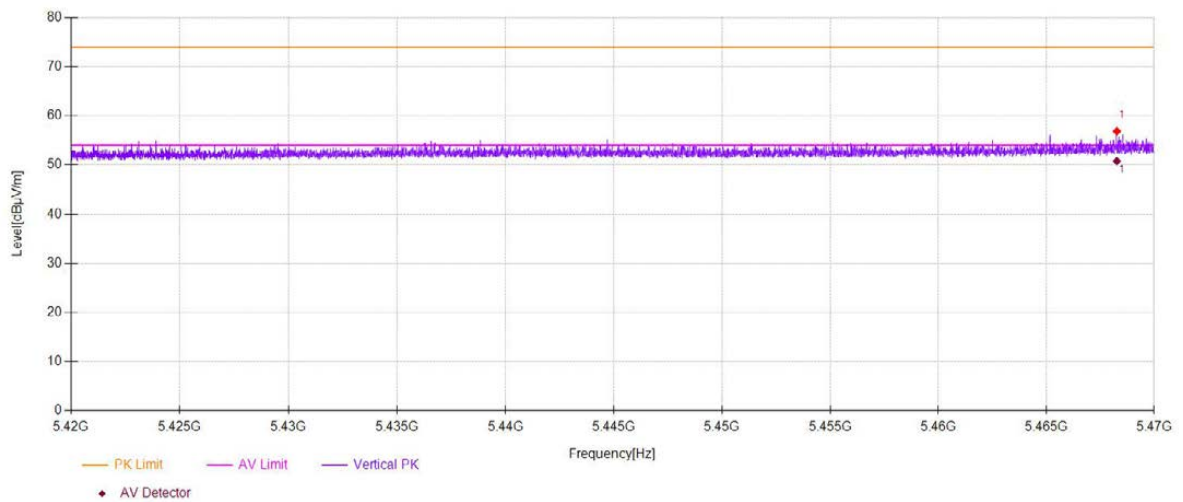
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
5735.73	V	55.72	74.00	18.28	peak
5735.73	V	50.05	54.00	3.95	AVG
5731.68	H	55.51	74.00	18.49	peak
5731.68	H	50.02	54.00	3.98	AVG

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.

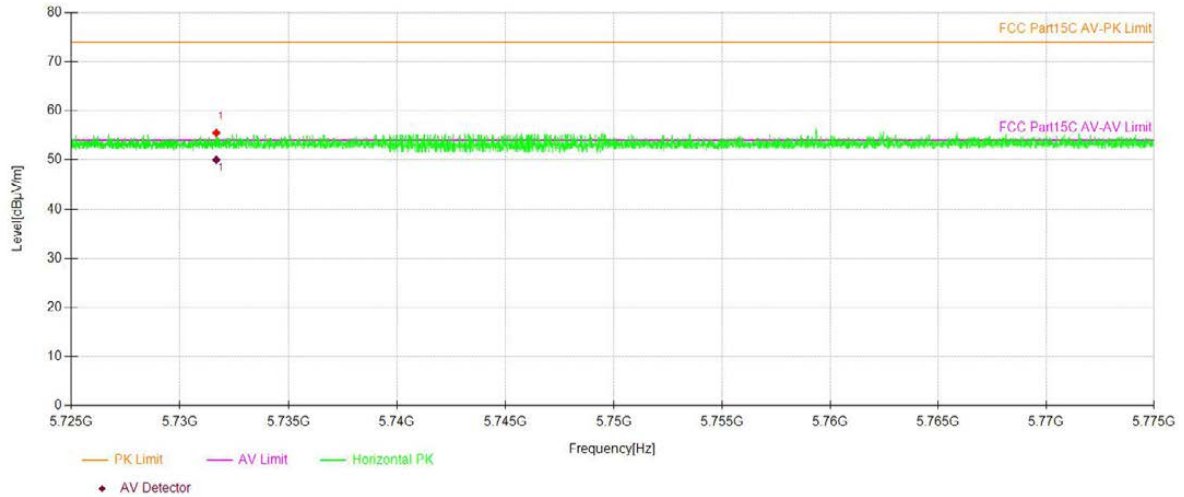
Test Model U-NII -2C
Undesirable radiated Spurious Emission in Restricted Band (5100-5150MHz)
☐ 802.11a ☒ 802.11n(HT20) ☐ 802.11 ac (VHT20)
☒ 5500 ☐ 5580 ☐ 5700 Ant.Pol H



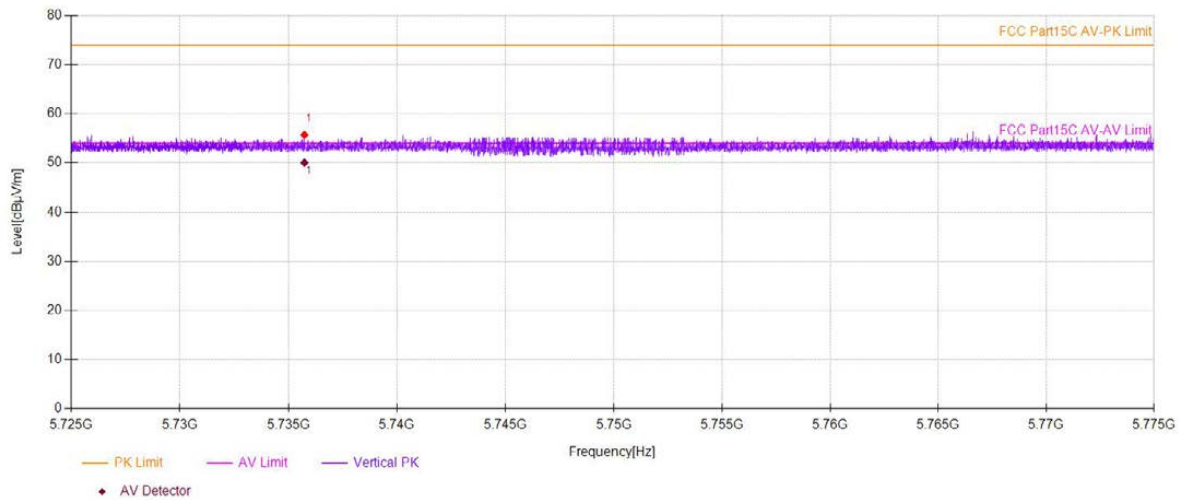
Test Model U-NII -2C
Undesirable radiated Spurious Emission in Restricted Band (5100-5150MHz)
☐ 802.11a ☒ 802.11n(HT20) ☐ 802.11 ac (VHT20)
☒ 5500 ☐ 5580 ☐ 5700 Ant.Pol V



Test Model U-NII -2C
Undesirable radiated Spurious Emission in Restricted Band (5350-5400MHz)
☐ 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 (5350-5400MHz)
☐ 802.11a ☒ 802.11n(HT20) ☐ 802.11 ac (VHT20)
☐ 5500 ☐ 5580 ☒ 5700 Ant.Pol V



☒ For Undesirable radiated Spurious Emission in U-NII -3

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

All of the configurations or modes are tested, the data of the worst case is recorded in the report.
Highest gain of each antenna and highest output power is ANT1 and MIMO as below:

ANT1:

Test mode: 802.11n(20) Frequency(MHz): 5745

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
11562.2	V	61.74	-33.49	-27	6.49
15627.3	V	63.56	-31.67	-27	4.67
17481.2	V	66.10	-29.13	-27	2.13
11494.2	H	60.81	-34.42	-27	7.42
15559.2	H	62.89	-32.34	-27	5.34
17506.7	H	66.03	-29.2	-27	2.2

Test mode: 802.11n(20) Frequency(MHz): 5785

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
11638.8	V	61.22	-34.01	-27	7.01
15508.2	V	62.88	-32.35	-27	5.35
17498.2	V	66.40	-28.83	-27	1.83
11494.2	H	60.25	-34.98	-27	7.98
15321.1	H	63.23	-32	-27	5
17498.2	H	66.69	-28.54	-27	1.54

Test mode: 802.11n(20) Frequency(MHz): 5825

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
11511.2	V	60.80	-34.43	-27	7.43
15601.8	V	62.78	-32.45	-27	5.45
17498.2	V	66.48	-28.75	-27	1.75
11579.2	H	61.33	-33.9	-27	6.9
15440.2	H	62.97	-32.26	-27	5.26
17498.2	H	65.98	-29.25	-27	2.25

MIMO:

Test mode: 802.11n(20)		Frequency(MHz): 5745			
Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
11560.81	V	61.61	-33.62	-27	6.62
15625.91	V	63.4	-31.83	-27	4.83
17482.48	V	66.07	-29.16	-27	2.16
11505.89	H	60.73	-34.50	-27	7.50
15570.89	H	62.68	-32.55	-27	5.55
17518.39	H	65.87	-29.36	-27	2.36

Test mode: 802.11n(20)		Frequency(MHz): 5785			
Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
11637.41	V	61.09	-34.14	-27	7.14
15506.81	V	62.72	-32.51	-27	5.51
17499.48	V	66.37	-28.86	-27	1.86
11505.89	H	60.17	-35.06	-27	8.06
15332.79	H	63.02	-32.21	-27	5.21
17509.89	H	66.53	-28.70	-27	1.70

Test mode: 802.11n(20)		Frequency(MHz): 5825			
Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
11509.81	V	60.67	-34.56	-27	7.56
15600.41	V	62.62	-32.61	-27	5.61
17499.48	V	66.45	-28.78	-27	1.78
11590.89	H	61.25	-33.98	-27	6.98
15451.89	H	62.76	-32.47	-27	5.47
17509.89	H	65.82	-29.41	-27	2.41

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

ANT1:

Test mode: 802.11n(20)		Frequency(MHz): 5745			
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
11562.2	V	61.74	74.00	12.26	peak
15627.3	V	63.56	74.00	10.44	peak
17481.2	V	66.10	74.00	7.90	peak
11562.28	V	46.44	54.00	7.56	AVG
15627.31	V	43.58	54.00	10.42	AVG
17481.24	V	44.00	54.00	10.00	AVG
11494.2	H	60.81	74.00	13.19	peak
15559.2	H	62.89	74.00	11.11	peak
17506.7	H	66.03	74.00	7.97	peak
11494.24	H	46.73	54.00	7.27	AVG
15559.27	H	43.72	54.00	10.28	AVG
17506.75	H	44.76	54.00	9.24	AVG

Test mode: 802.11n(20)		Frequency(MHz): 5785			
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
11638.8	V	61.22	74.00	12.78	peak
15508.2	V	62.88	74.00	11.12	peak
17498.2	V	66.40	74.00	7.60	peak
11638.81	V	46.21	54.00	7.79	AVG
15508.25	V	42.89	54.00	11.11	AVG
17498.24	V	45.06	54.00	8.94	AVG
11494.2	H	60.25	74.00	13.75	peak
15321.1	H	63.23	74.00	10.77	peak
17498.2	H	66.69	74.00	7.31	peak
11494.24	H	46.70	54.00	7.30	AVG
15321.16	H	42.39	54.00	11.61	AVG
17498.24	H	44.65	54.00	9.35	AVG

Test mode: 802.11n(20)		Frequency(MHz): 5825			
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
11511.2	V	60.80	74.00	13.20	peak
15601.8	V	62.78	74.00	11.22	peak
17498.2	V	66.48	74.00	7.52	peak
11511.25	V	46.73	54.00	7.27	AVG
15601.80	V	43.91	54.00	10.09	AVG
17498.24	V	44.66	54.00	9.34	AVG
11579.2	H	61.33	74.00	12.67	peak
15440.2	H	62.97	74.00	11.03	peak
17498.2	H	65.98	74.00	8.02	peak
11579.28	H	45.88	54.00	8.12	AVG
15440.22	H	43.12	54.00	10.88	AVG
17498.24	H	44.66	54.00	9.34	AVG

MIMO:

Test mode: 802.11n(20)		Frequency(MHz): 5745			
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
11560.810	V	61.61	74.00	12.39	peak
15625.910	V	63.4	74.00	10.6	peak
17482.480	V	66.07	74.00	7.93	peak
11563.560	V	46.42	54.00	7.58	AVG
15625.060	V	43.32	54.00	10.68	AVG
17478.990	V	43.81	54.00	10.19	AVG
11505.890	H	60.73	74.00	13.27	peak
15570.890	H	62.68	74.00	11.32	peak
17518.390	H	65.87	74.00	8.13	peak
11505.930	H	46.59	54.00	7.41	AVG
15555.960	H	43.54	54.00	10.46	AVG
17503.440	H	44.63	54.00	9.37	AVG

Test mode: 802.11n(20)		Frequency(MHz): 5785			
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
11637.410	V	61.09	74.00	12.91	peak
15506.810	V	62.72	74.00	11.28	peak
17499.480	V	66.37	74.00	7.63	peak
11640.090	V	46.19	54.00	7.81	AVG
15506.000	V	42.63	54.00	11.37	AVG
17495.990	V	44.87	54.00	9.13	AVG
11505.890	H	60.17	74.00	13.83	peak
15332.790	H	63.02	74.00	10.98	peak
17509.890	H	66.53	74.00	7.47	peak
11505.930	H	46.56	54.00	7.44	AVG
15317.850	H	42.21	54.00	11.79	AVG
17494.930	H	44.52	54.00	9.48	AVG

Test mode: 802.11n(20)		Frequency(MHz): 5825			
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
11509.810	V	60.67	74.00	13.33	peak
15600.410	V	62.62	74.00	11.38	peak
17499.480	V	66.45	74.00	7.55	peak
11512.530	V	46.71	54.00	7.29	AVG
15599.550	V	43.65	54.00	10.35	AVG
17495.990	V	44.47	54.00	9.53	AVG
11590.890	H	61.25	74.00	12.75	peak
15451.890	H	62.76	74.00	11.24	peak
17509.890	H	65.82	74.00	8.18	peak
11590.970	H	45.74	54.00	8.26	AVG
15436.910	H	42.94	54.00	11.06	AVG
17494.930	H	44.53	54.00	9.47	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:		802.11n(20)	Frequency:		5745
Freq. (MHz)	Ant.Pol. H/V	Field Strength (RBW=100KHz) (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Verdict
5724.62	H	64.68	-30.55	-27	PASS
5725	V	63.98	-31.25	-27	PASS

Test mode:		802.11n(20)	Frequency:		5825
Freq. (MHz)	Ant.Pol. H/V	Field Strength (RBW=100KHz) (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Verdict
5851.06	H	66.07	-29.16	-27	PASS
5850.31	V	64.61	-30.62	-27	PASS

Note: (1) All Readings are Peak Value (VBW=3MHz) and Peak Value (VBW=10Hz).

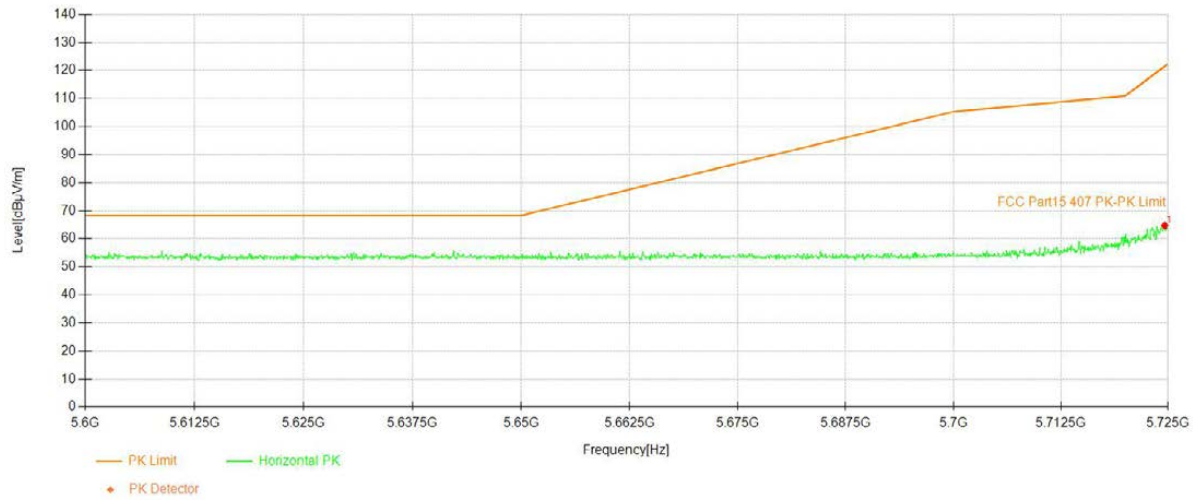
(2) Emission Level= Reading Level+Correct Factor +Cable Loss.

(3) Correct Factor= Ant_F + Cab_L - Preamp

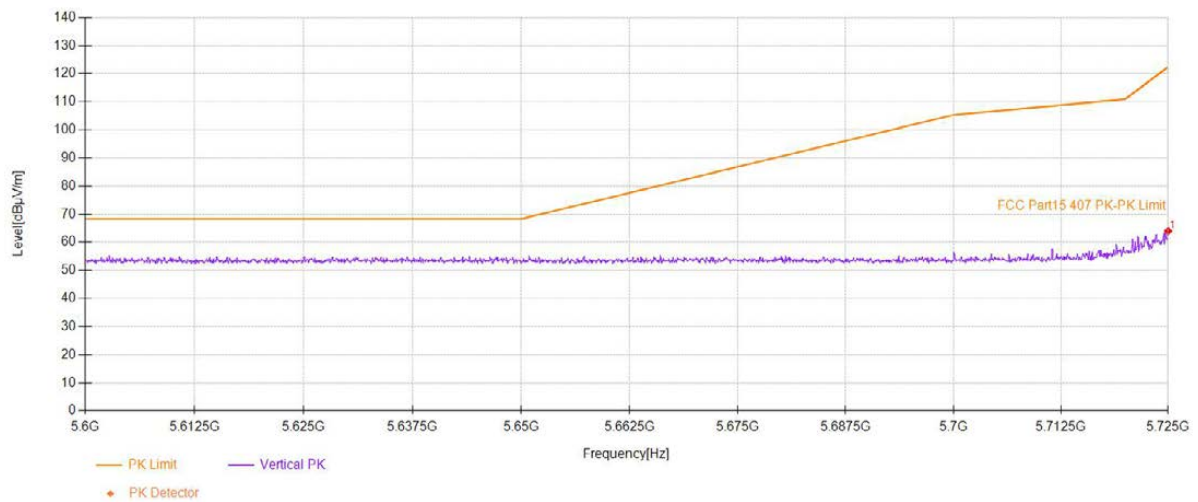
(4) EIRP[dBm] = E[dBuV/m] + 20 log(d[meters]) - 104.77

d is the measurement distance in 3 meters

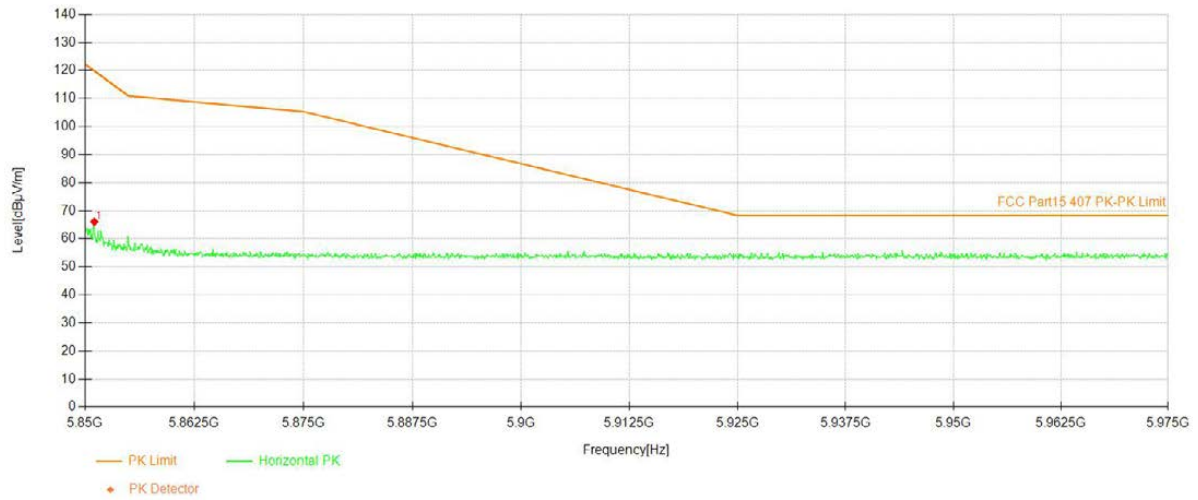
Test Model U-NII -3
 Undesirable radiated Undesirable radiated Spurious Emission in Band Edge
☐ 802.11a ☒ 802.11n(HT20) ☐ 802.11 ac (VHT20)
☒ 5745 Ant.Pol H



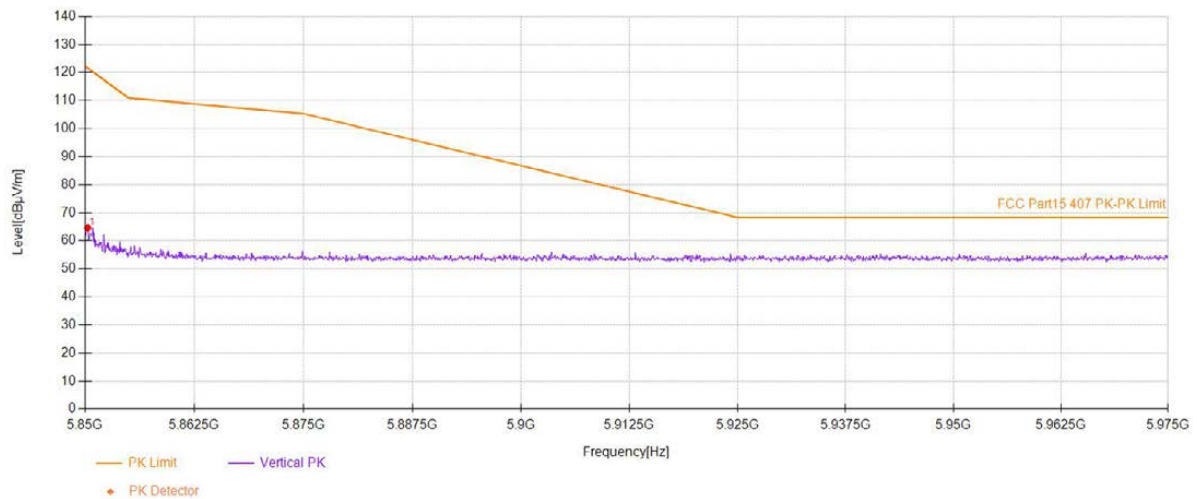
Test Model U-NII -3
 Undesirable radiated Undesirable radiated Spurious Emission in Band Edge
☐ 802.11a ☒ 802.11n(HT20) ☐ 802.11 ac (VHT20)
☒ 5745 Ant.Pol V



Test Model U-NII -3
Undesirable radiated Undesirable radiated Spurious Emission in Band Edge
☐ 802.11a ☒ 802.11n(HT20) ☐ 802.11 ac (VHT20)
☒ 5825 Ant.Pol H



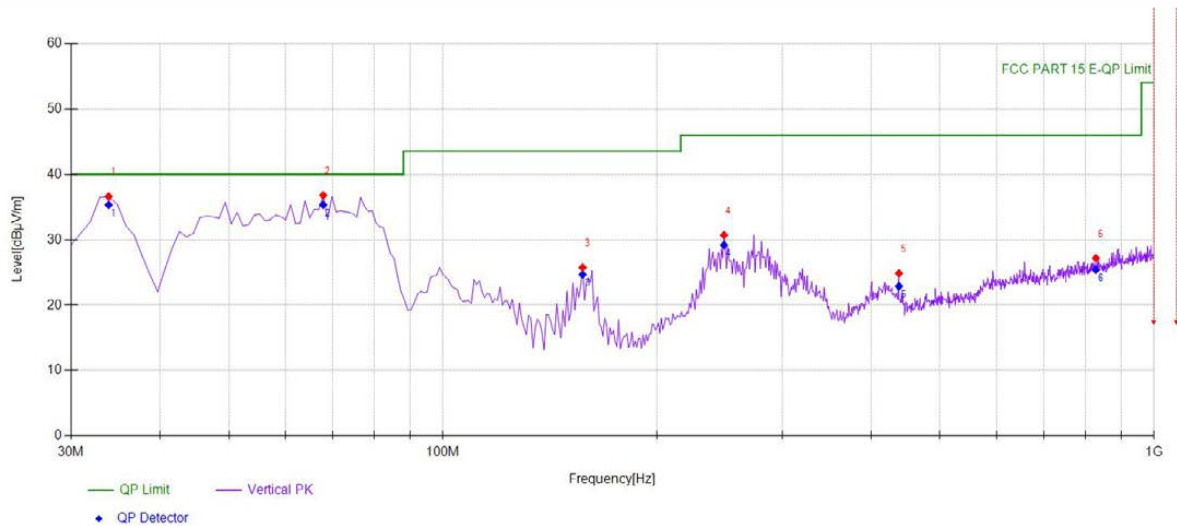
Test Model U-NII -3
Undesirable radiated Undesirable radiated Spurious Emission in Band Edge
☐ 802.11a ☒ 802.11n(HT20) ☐ 802.11 ac (VHT20)
☒ 5825 Ant.Pol V



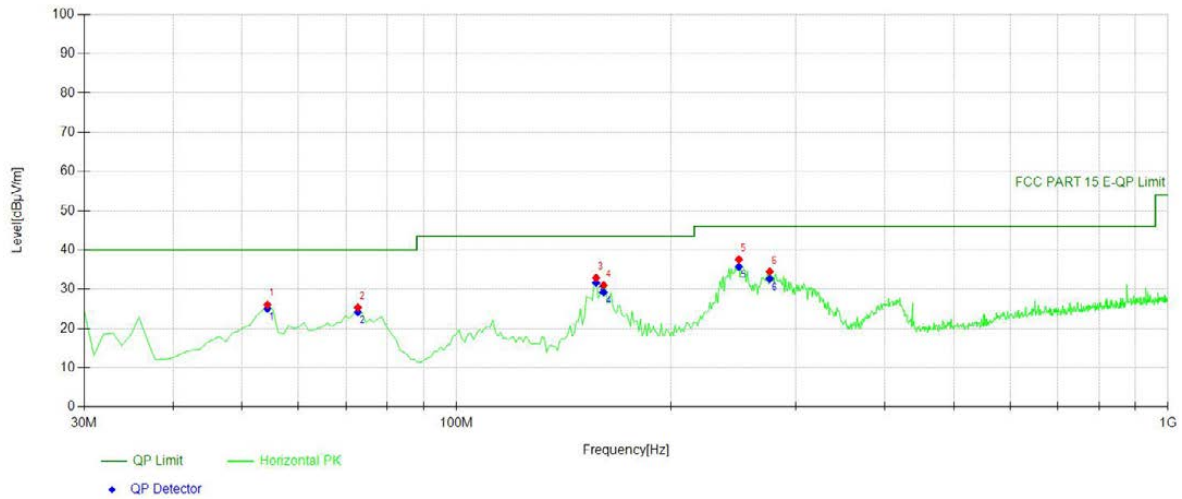
Undesirable radiated Spurious Emission below 1GHz (30MHz to 1GHz)

All of the configurations or modes are tested, the data of the worst case is recorded as below.

Test mode: 802.11a Frequency(MHz): 5180



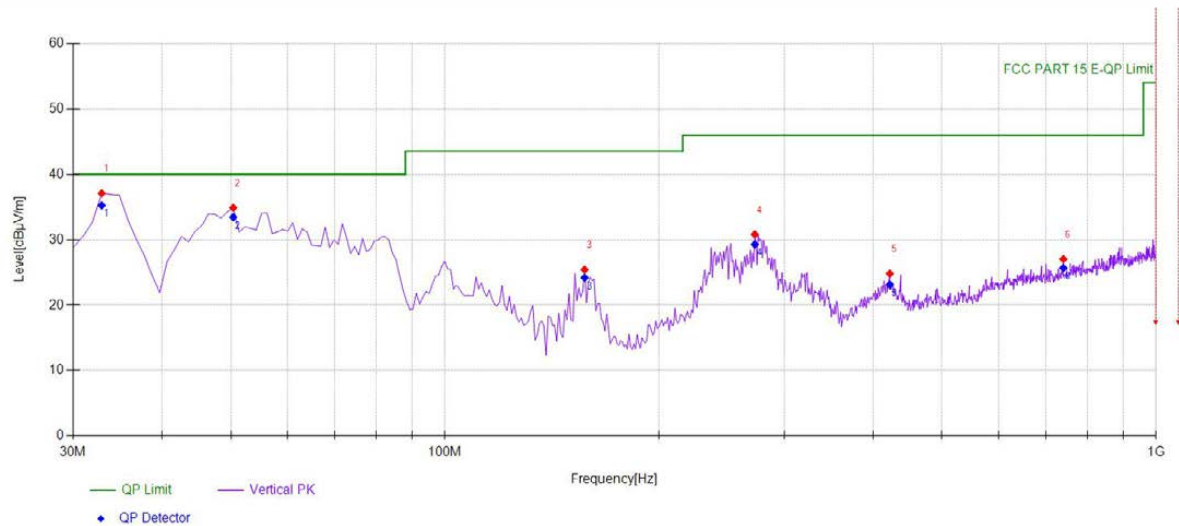
Suspected Data List								
NO.	Freq. [MHz]	Reading [dBμV]	Factor [dB/m]	Level [dBμV/m]	Detector	Limit [dBμV/m]	Margin [dB]	Polarity
1	33.8839	54.89	-18.29	36.60	PK	40.00	3.40	Vertical
2	67.8679	56.43	-19.66	36.77	PK	40.00	3.23	Vertical
3	157.197	45.41	-19.65	25.76	PK	43.50	17.74	Vertical
4	248.468	45.87	-15.17	30.70	PK	46.00	15.30	Vertical
5	437.807	36.09	-11.23	24.86	PK	46.00	21.14	Vertical
6	828.138	31.33	-4.15	27.18	PK	46.00	18.82	Vertical



Suspected Data List

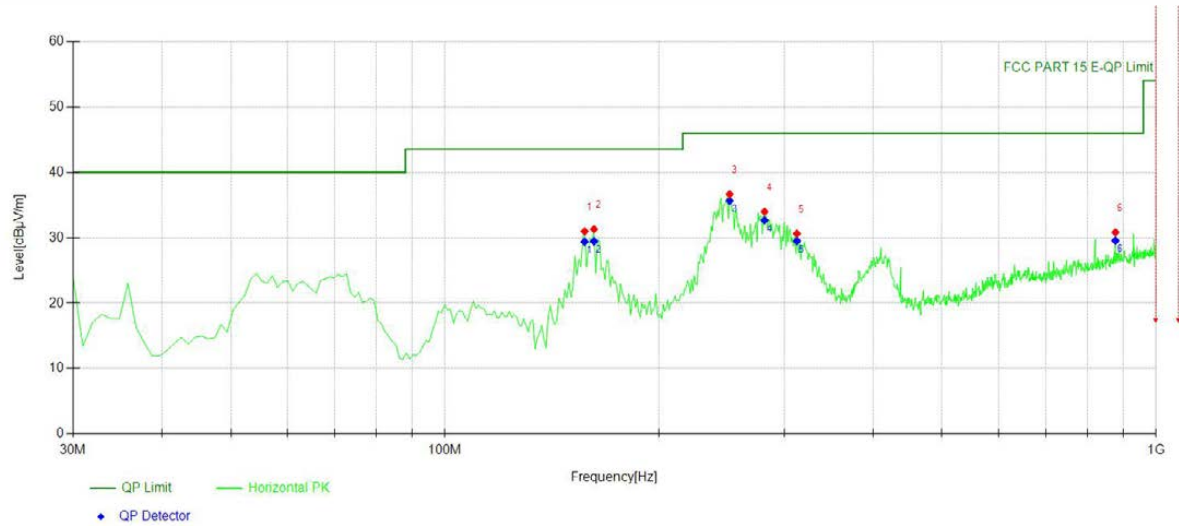
NO.	Freq. [MHz]	Reading [dBμV]	Factor [dB/m]	Level [dBμV/m]	Detector	Limit [dBμV/m]	Margin [dB]	Polarity
1	54.2743	43.85	-17.78	26.07	PK	40.00	13.93	Horizontal
2	72.7227	45.74	-20.38	25.36	PK	40.00	14.64	Horizontal
3	157.197	52.55	-19.65	32.90	PK	43.50	10.60	Horizontal
4	161.081	50.61	-19.54	31.07	PK	43.50	12.43	Horizontal
5	249.439	52.73	-15.17	37.56	PK	46.00	8.44	Horizontal
6	275.655	48.93	-14.43	34.50	PK	46.00	11.50	Horizontal

Test mode: 802.11a Frequency(MHz): 5200



Suspected Data List

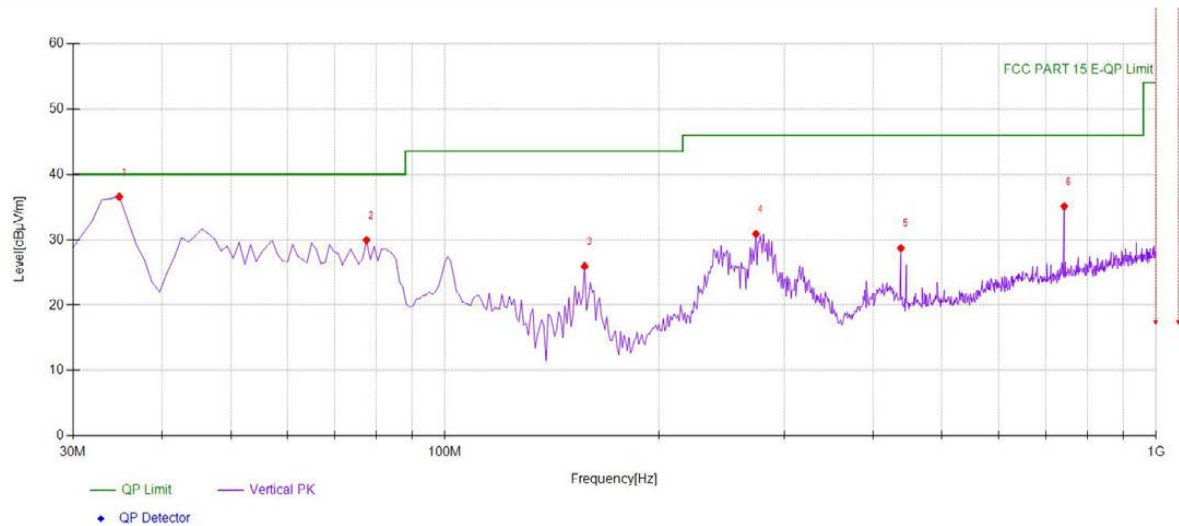
NO.	Freq. [MHz]	Reading [dBμV]	Factor [dB/m]	Level [dBμV/m]	Detector	Limit [dBμV/m]	Margin [dB]	Polarity
1	32.9129	55.43	-18.35	37.08	PK	40.00	2.92	Vertical
2	50.3904	52.15	-17.26	34.89	PK	40.00	5.11	Vertical
3	157.197	45.09	-19.65	25.44	PK	43.50	18.06	Vertical
4	272.742	45.41	-14.60	30.81	PK	46.00	15.19	Vertical
5	422.272	36.49	-11.67	24.82	PK	46.00	21.18	Vertical
6	740.750	32.38	-5.35	27.03	PK	46.00	18.97	Vertical



Suspected Data List

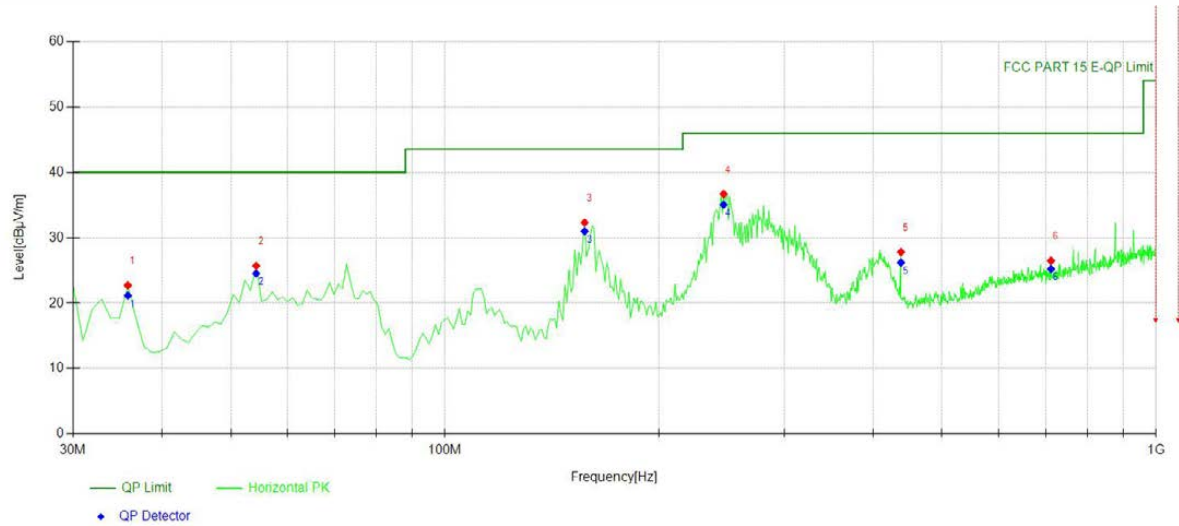
NO.	Freq. [MHz]	Reading [dBμV]	Factor [dB/m]	Level [dBμV/m]	Detector	Limit [dBμV/m]	Margin [dB]	Polarity
1	157.197	50.61	-19.65	30.96	PK	43.50	12.54	Horizontal
2	162.052	50.79	-19.48	31.31	PK	43.50	12.19	Horizontal
3	251.381	51.82	-15.17	36.65	PK	46.00	9.35	Horizontal
4	281.481	48.16	-14.18	33.98	PK	46.00	12.02	Horizontal
5	312.552	44.75	-14.14	30.61	PK	46.00	15.39	Horizontal
6	876.686	33.97	-3.15	30.82	PK	46.00	15.18	Horizontal

Test mode: 802.11a Frequency(MHz): 5240



Suspected Data List

NO.	Freq. [MHz]	Reading [dBμV]	Factor [dB/m]	Level [dBμV/m]	Detector	Limit [dBμV/m]	Margin [dB]	Polarity
1	34.8549	54.79	-18.23	36.56	PK	40.00	3.44	Vertical
2	77.5776	51.05	-21.12	29.93	PK	40.00	10.07	Vertical
3	157.197	45.60	-19.65	25.95	PK	43.50	17.55	Vertical
4	273.713	45.42	-14.54	30.88	PK	46.00	15.12	Vertical
5	437.807	39.95	-11.23	28.72	PK	46.00	17.28	Vertical
6	742.692	40.44	-5.34	35.10	PK	46.00	10.90	Vertical



Suspected Data List

NO.	Freq. [MHz]	Reading [dBμV]	Factor [dB/m]	Level [dBμV/m]	Detector	Limit [dBμV/m]	Margin [dB]	Polarity
1	35.8258	40.88	-18.17	22.71	PK	40.00	17.29	Horizontal
2	54.2743	43.49	-17.78	25.71	PK	40.00	14.29	Horizontal
3	157.197	51.98	-19.65	32.33	PK	43.50	11.17	Horizontal
4	246.526	51.86	-15.18	36.68	PK	46.00	9.32	Horizontal
5	437.807	39.04	-11.23	27.81	PK	46.00	18.19	Horizontal
6	711.621	32.32	-5.84	26.48	PK	46.00	19.52	Horizontal

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.

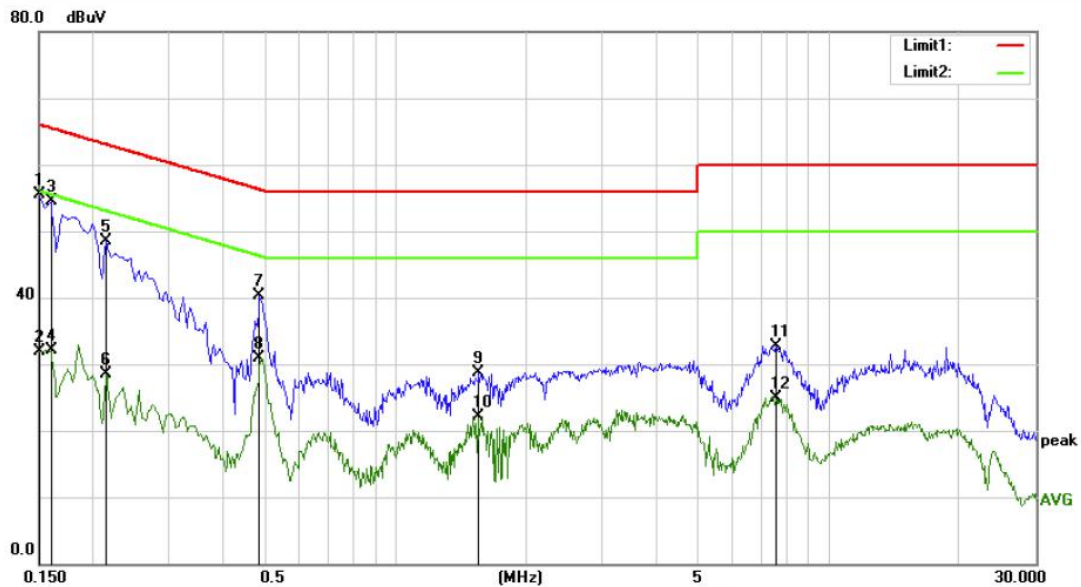
Repeat above procedures until all frequency measured were complete.

8.5.5 Test Results

Pass

Temperature :	21.9°C	ATM Pressure:	1011 mbar
Humidity :	58 %	Test Engineer:	WQG

All of the configurations or modes are tested, the data of the worst case is recorded as below.

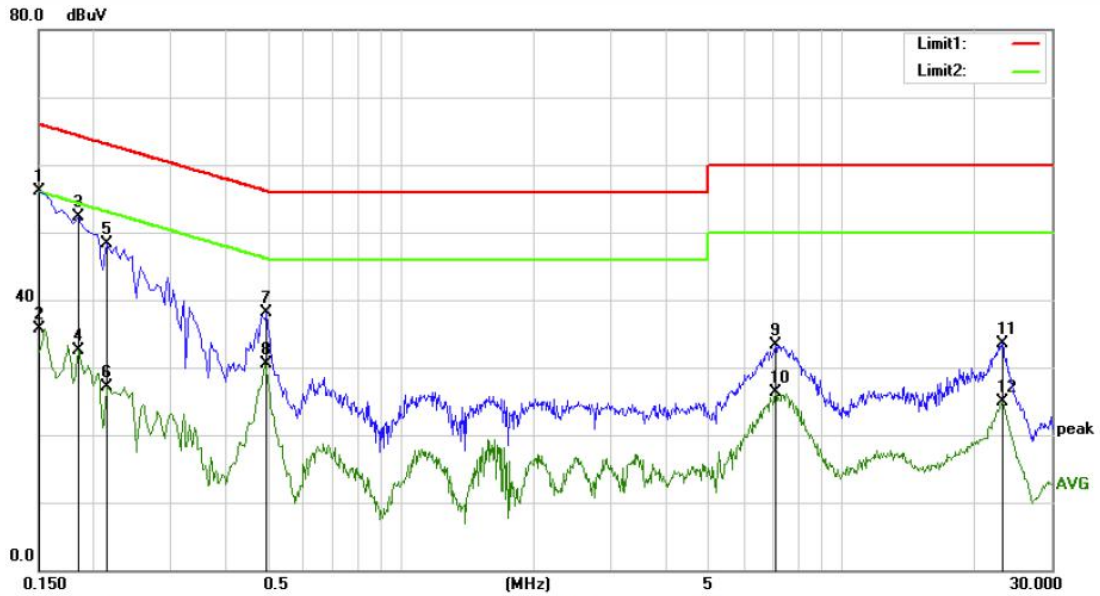


Site Conduction #1

Phase: **L1**

Temperature: 21.9

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1	*	0.1500	46.00	9.51	55.51	66.00	-10.49	QP	
2		0.1500	22.36	9.51	31.87	56.00	-24.13	AVG	
3		0.1600	44.89	9.63	54.52	65.46	-10.94	QP	
4		0.1600	22.39	9.63	32.02	55.46	-23.44	AVG	
5		0.2150	38.49	10.09	48.58	63.01	-14.43	QP	
6		0.2150	18.32	10.09	28.41	53.01	-24.60	AVG	
7		0.4850	30.58	9.69	40.27	56.25	-15.98	QP	
8		0.4850	21.25	9.69	30.94	46.25	-15.31	AVG	
9		1.5550	18.90	9.77	28.67	56.00	-27.33	QP	
10		1.5550	12.36	9.77	22.13	46.00	-23.87	AVG	
11		7.5550	22.71	9.99	32.70	60.00	-27.30	QP	
12		7.5550	14.83	9.99	24.82	50.00	-25.18	AVG	



Site Conduction #1 Phase: **N** Temperature: 21.9

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1	*	0.1500	46.52	9.51	56.03	66.00	-9.97	QP	
2		0.1500	26.26	9.51	35.77	56.00	-20.23	AVG	
3		0.1850	42.40	9.92	52.32	64.26	-11.94	QP	
4		0.1850	22.64	9.92	32.56	54.26	-21.70	AVG	
5		0.2150	38.12	10.09	48.21	63.01	-14.80	QP	
6		0.2150	16.98	10.09	27.07	53.01	-25.94	AVG	
7		0.4950	28.42	9.68	38.10	56.08	-17.98	QP	
8		0.4950	20.82	9.68	30.50	46.08	-15.58	AVG	
9		7.0800	23.26	9.98	33.24	60.00	-26.76	QP	
10		7.0800	16.35	9.98	26.33	50.00	-23.67	AVG	
11		23.2300	23.56	9.95	33.51	60.00	-26.49	QP	
12		23.2300	14.92	9.95	24.87	50.00	-25.13	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

Temperature : 25°C ATM Pressure: 1011 mbar
Humidity : 60 % Test Engineer: XXH

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

Ant1: -0.35 dBi, Ant2: -0.35 dBi

- ☒ 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 ---

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