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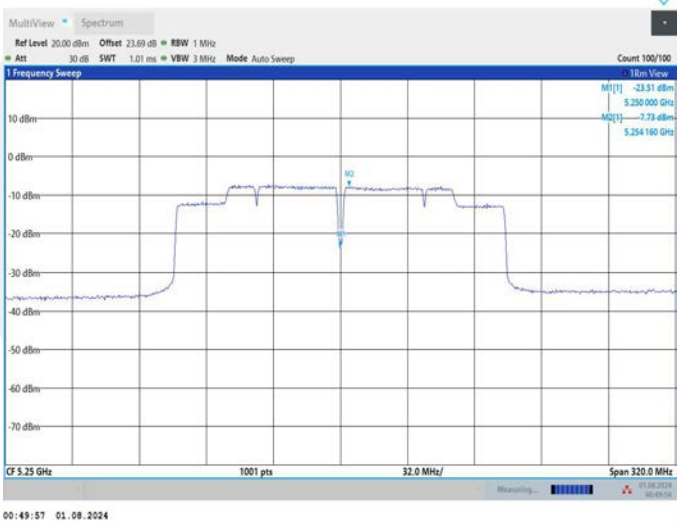

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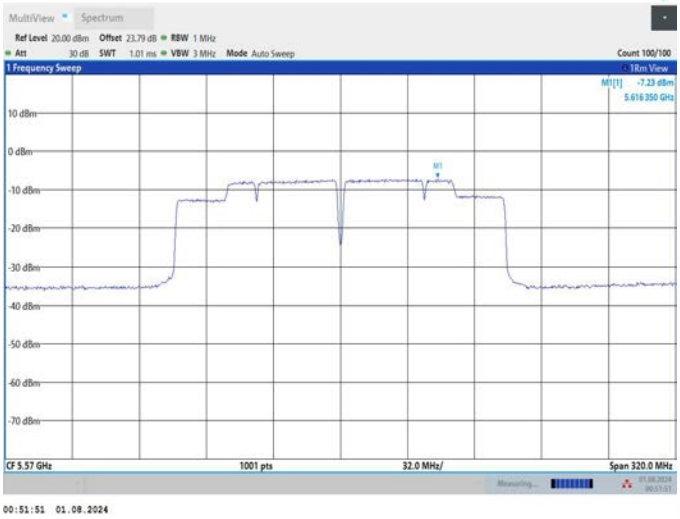

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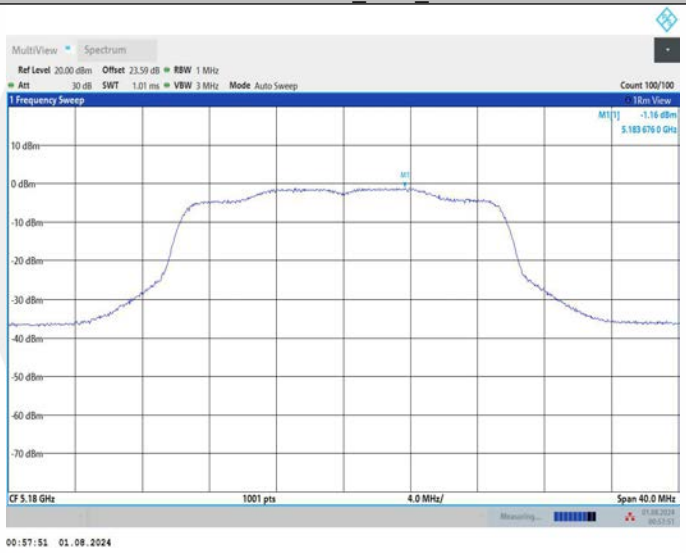

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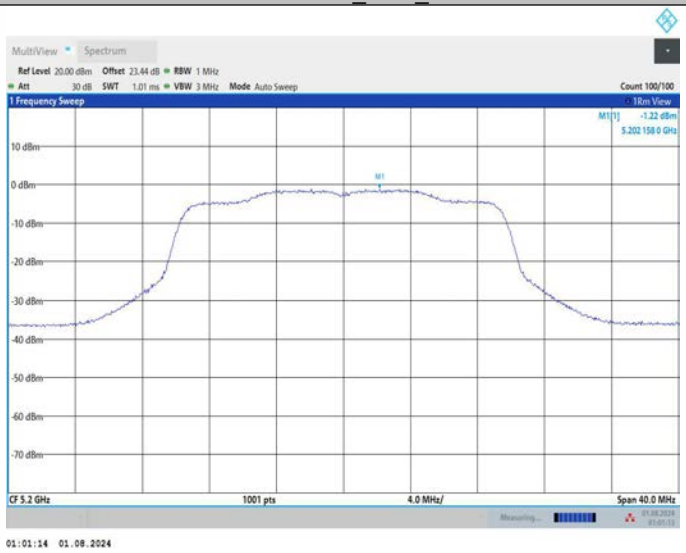

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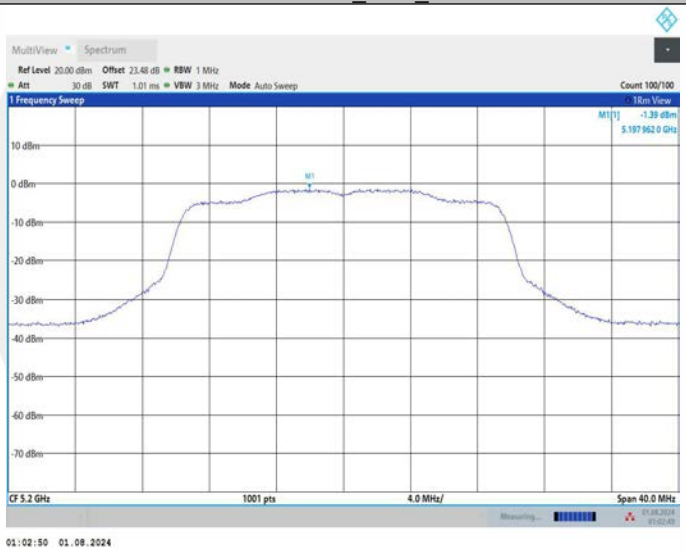

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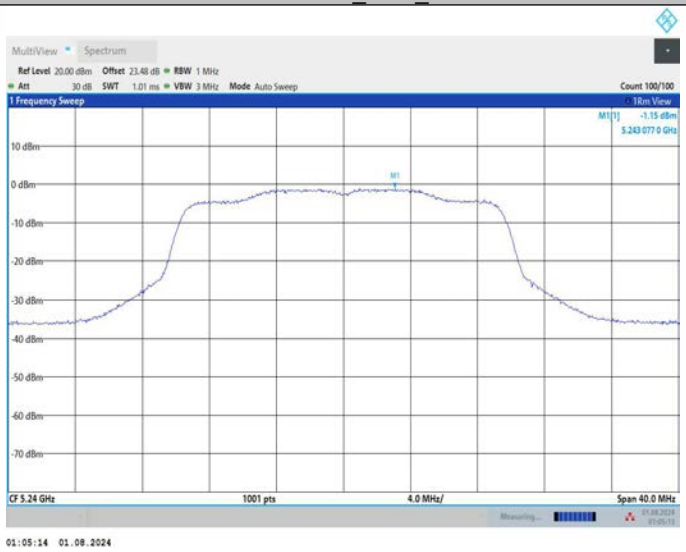

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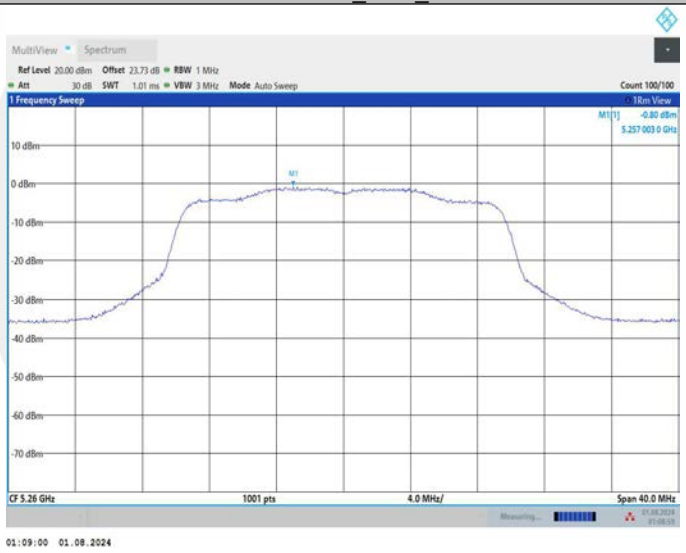

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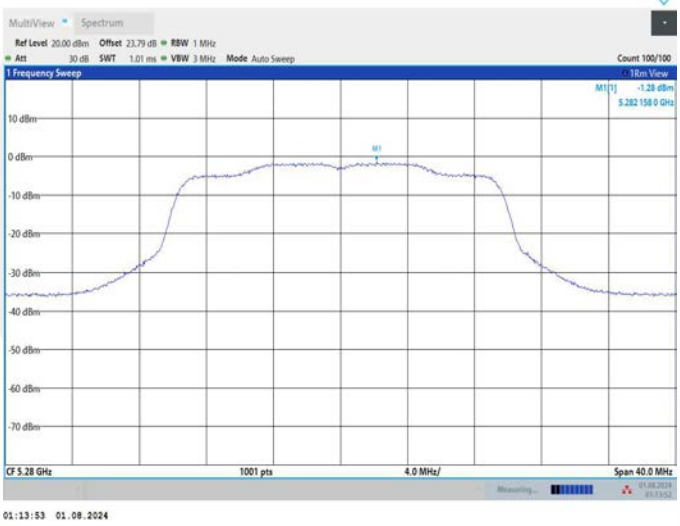

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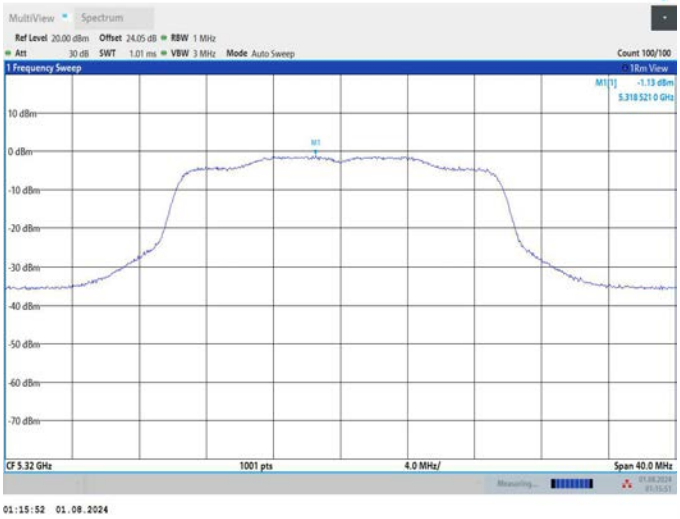

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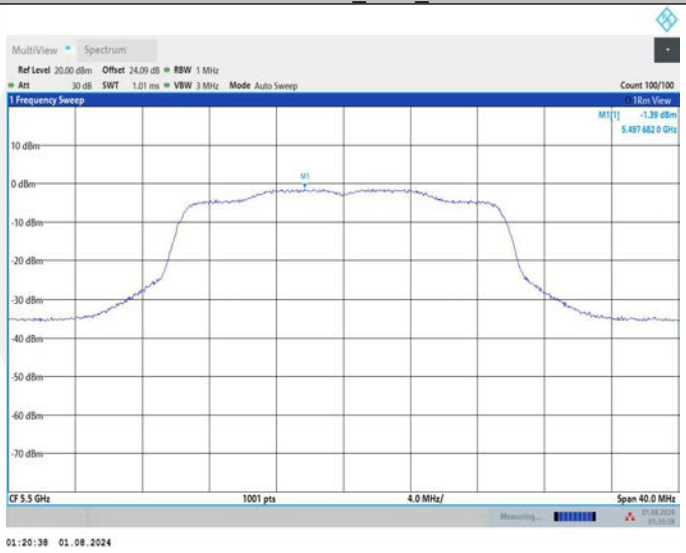

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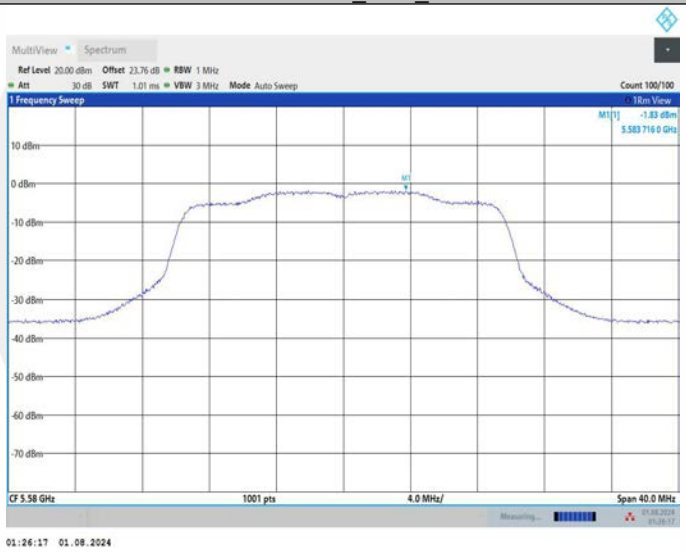

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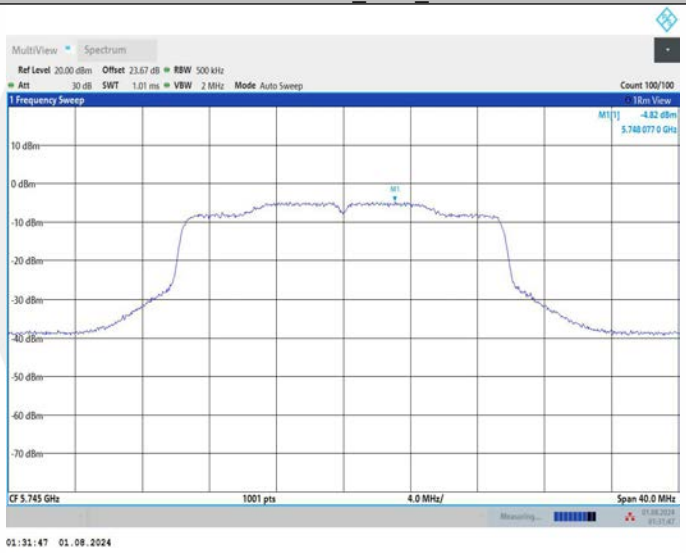

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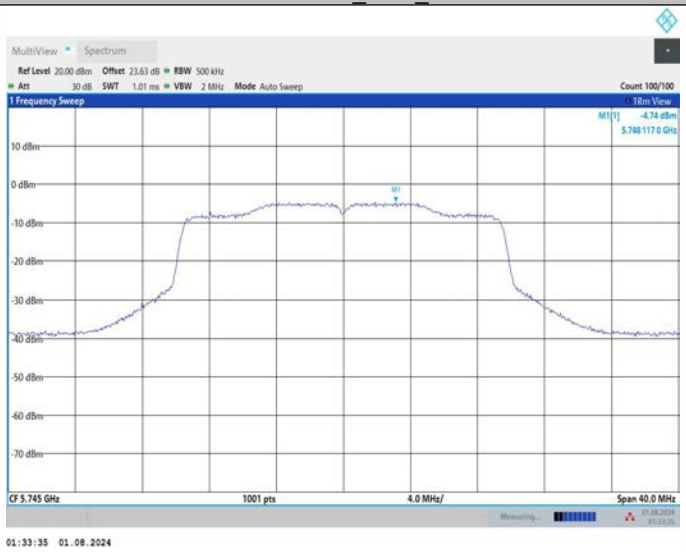

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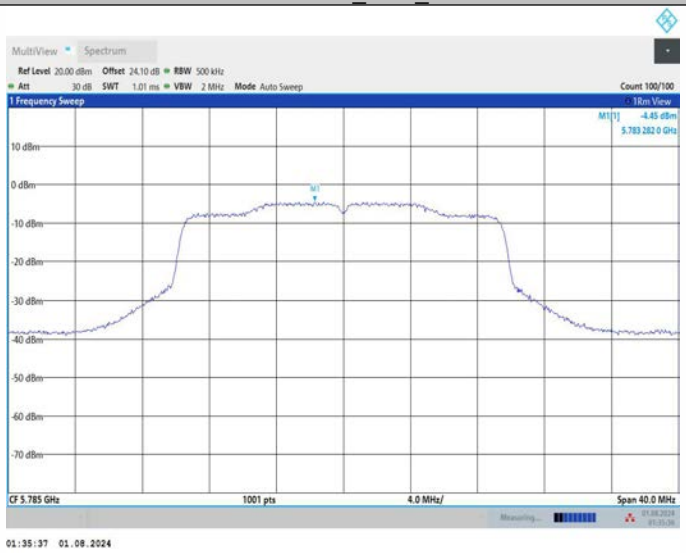

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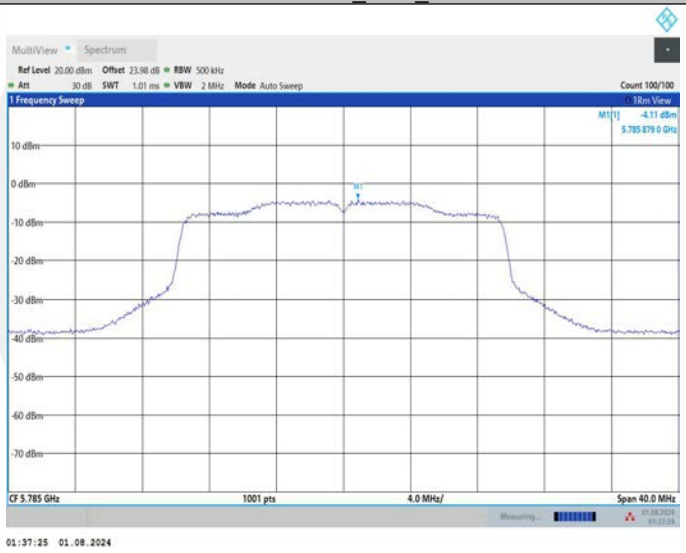

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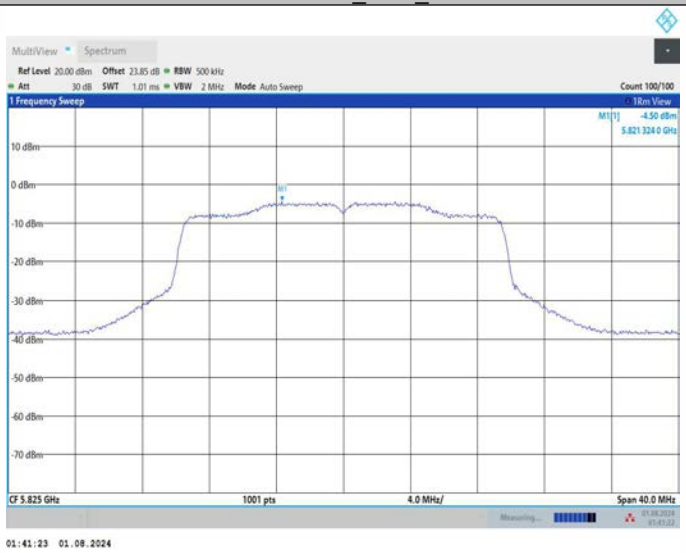

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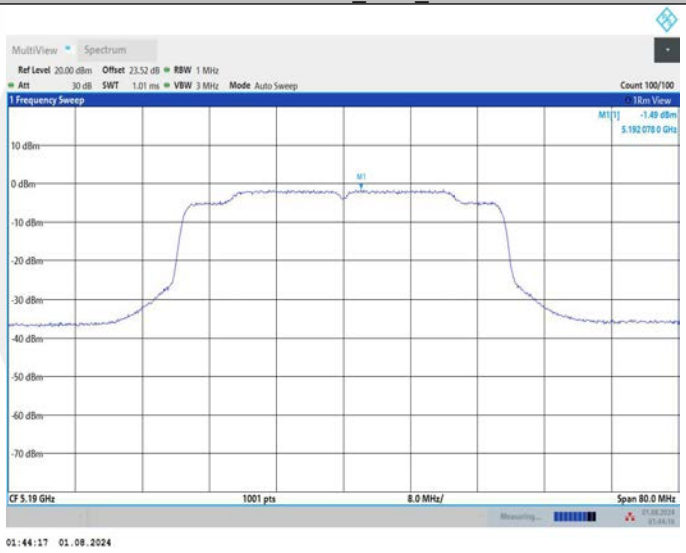

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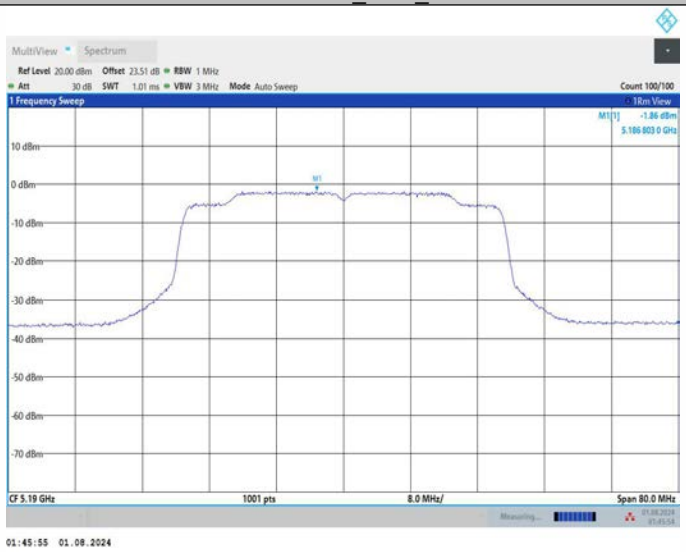

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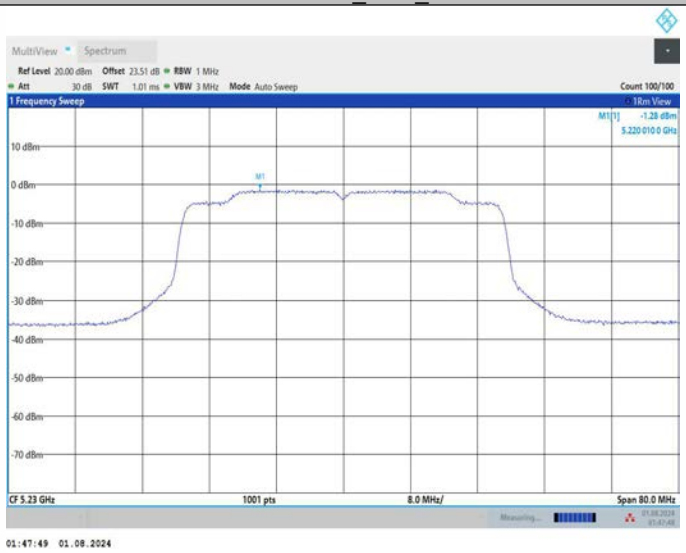

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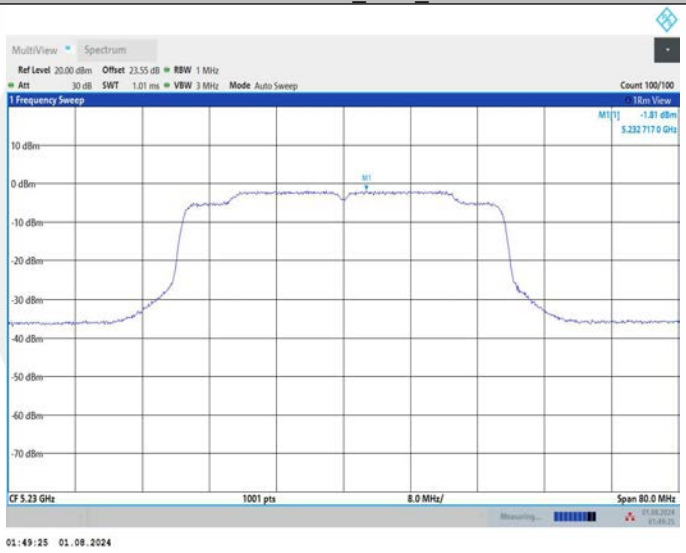

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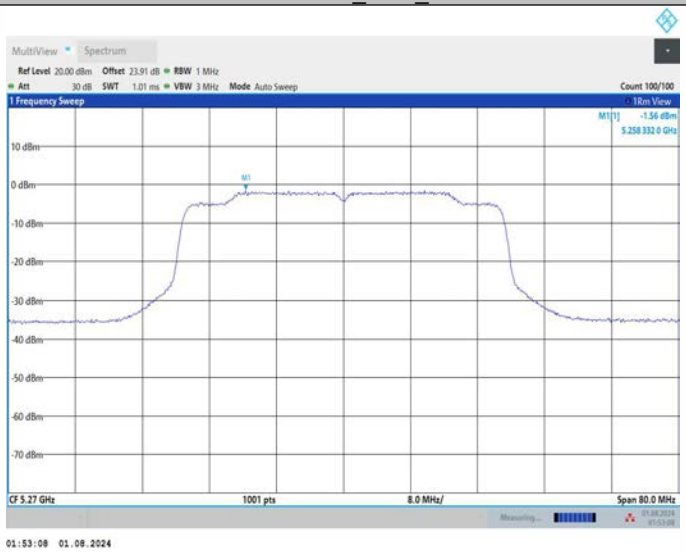

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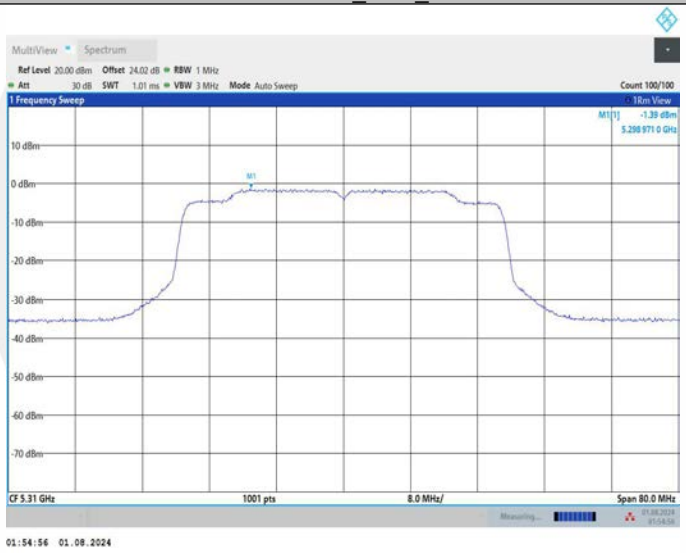

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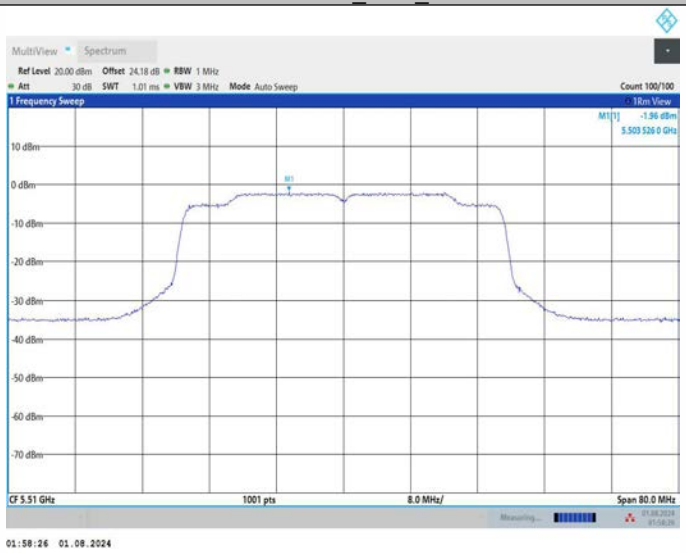

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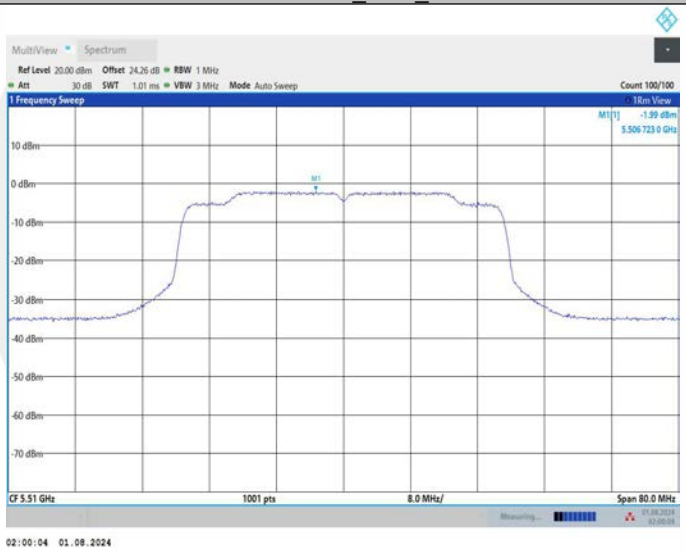

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11AX40MIMO_Ant2_5550

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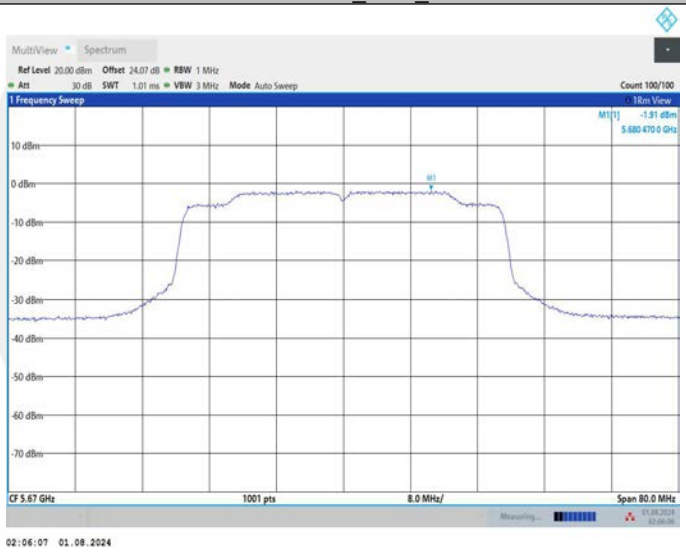

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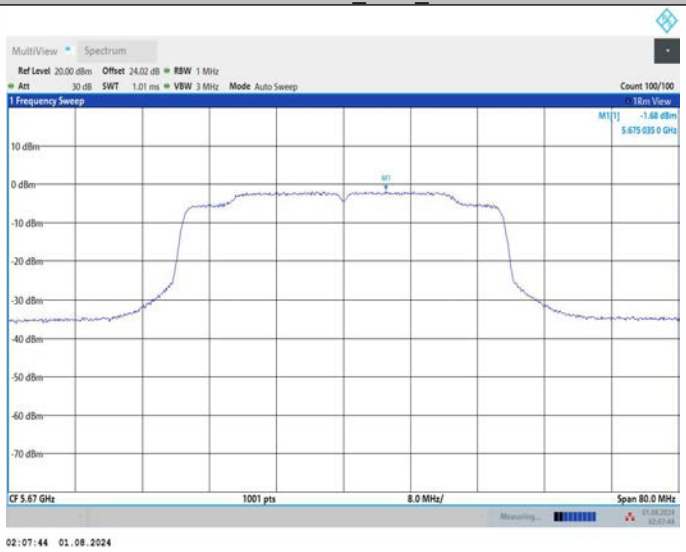

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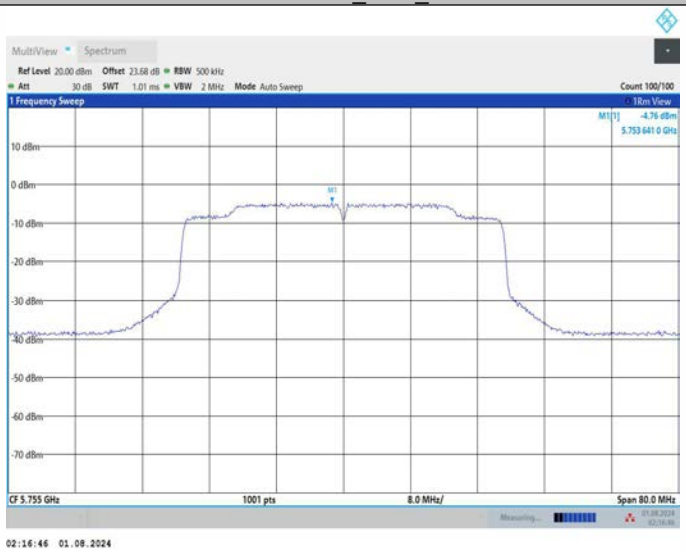

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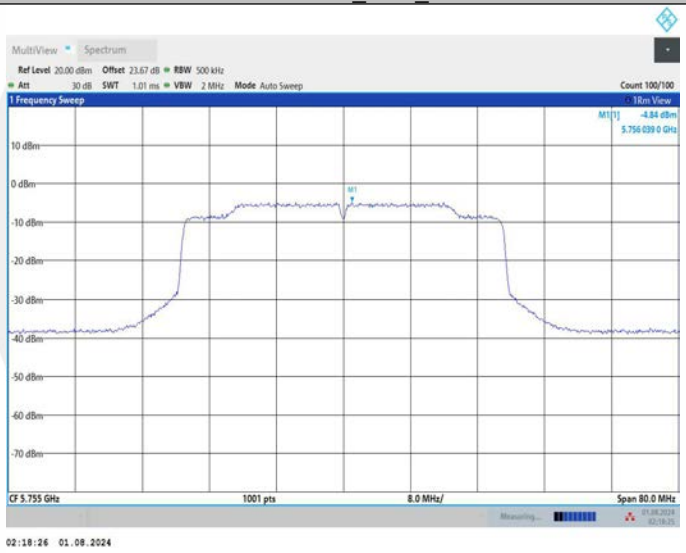

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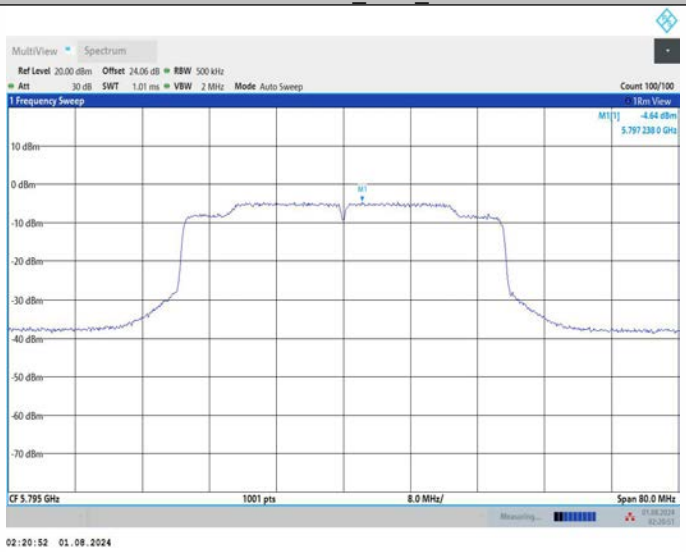

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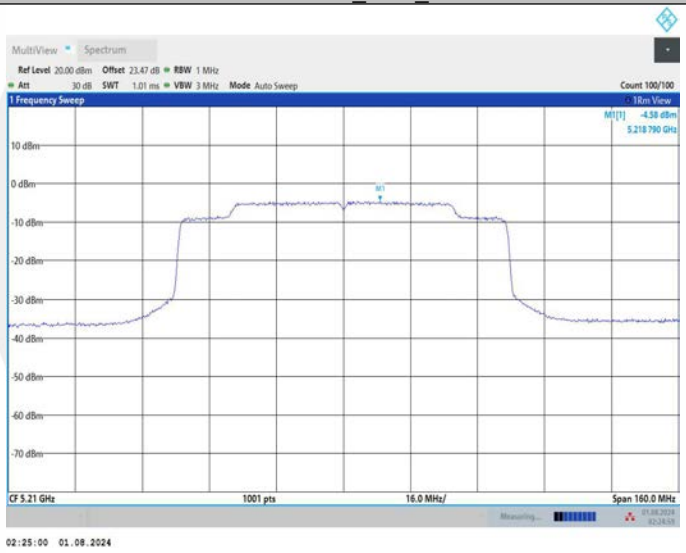

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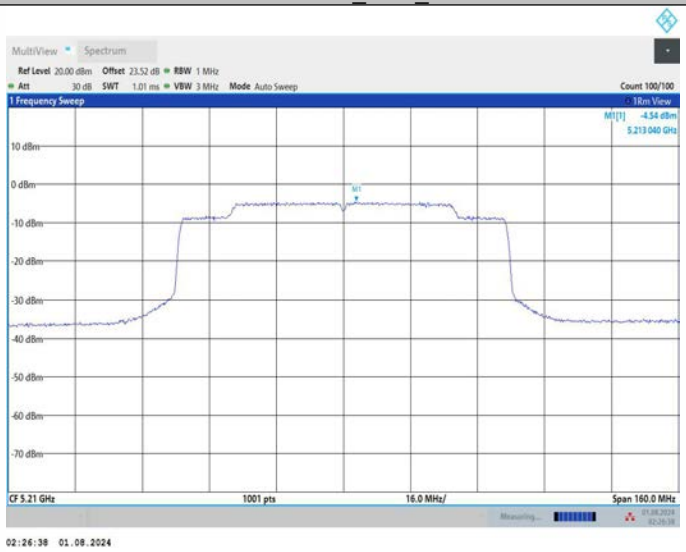

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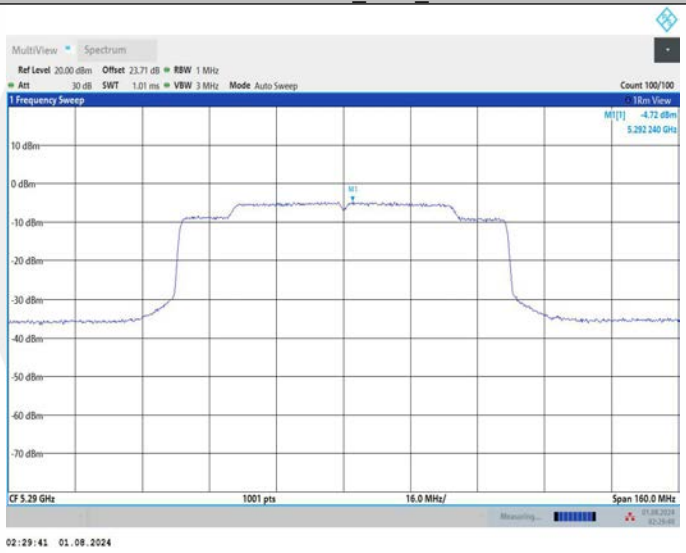

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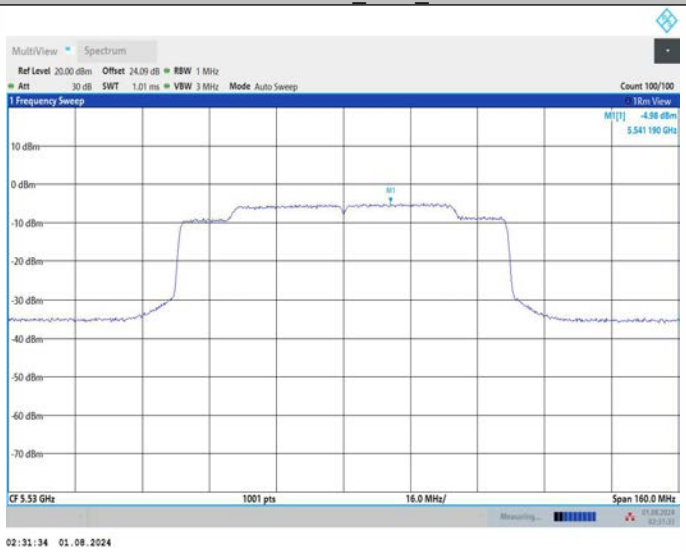

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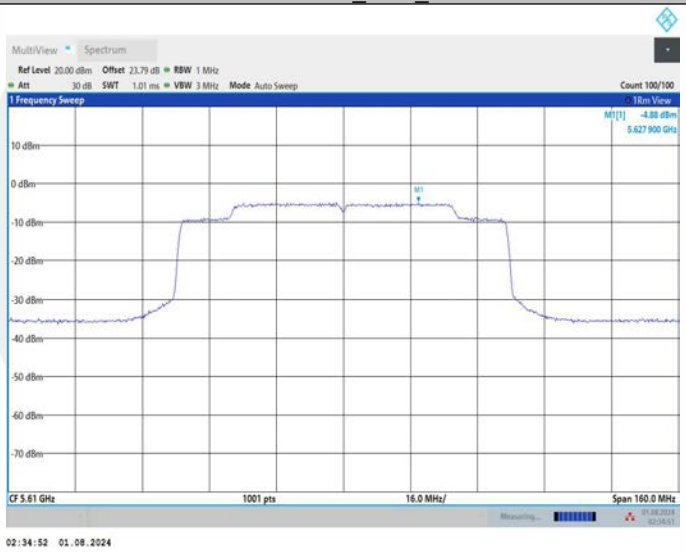

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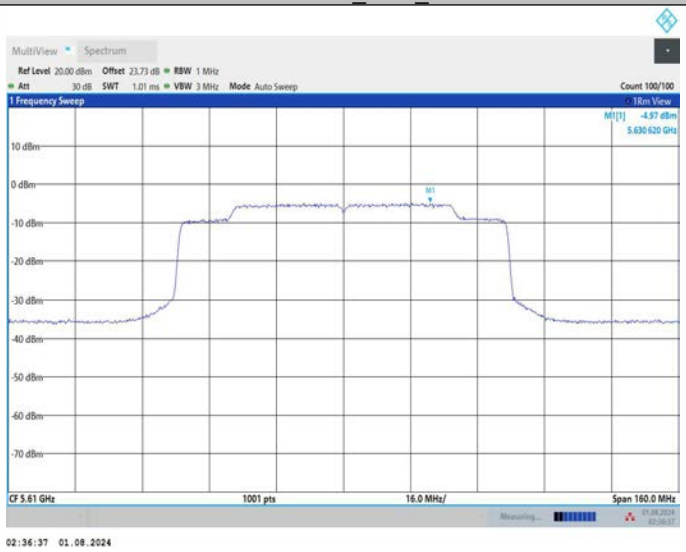

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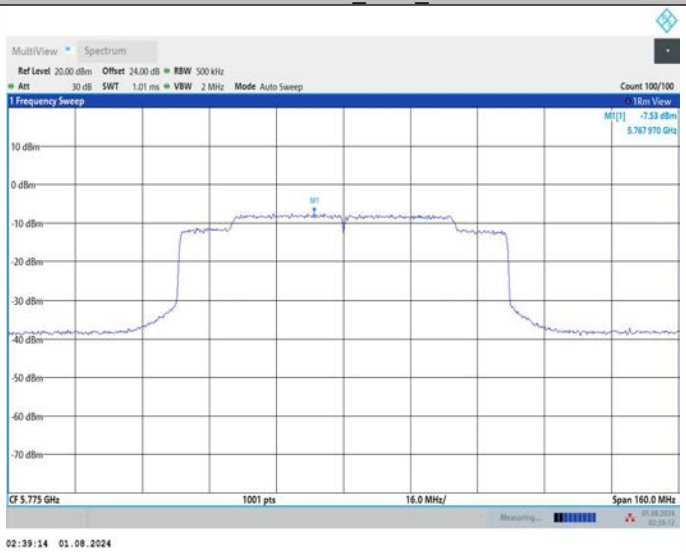

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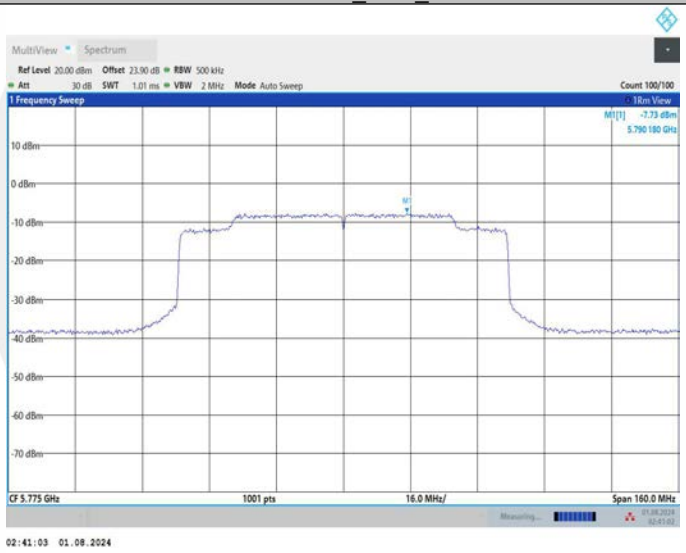

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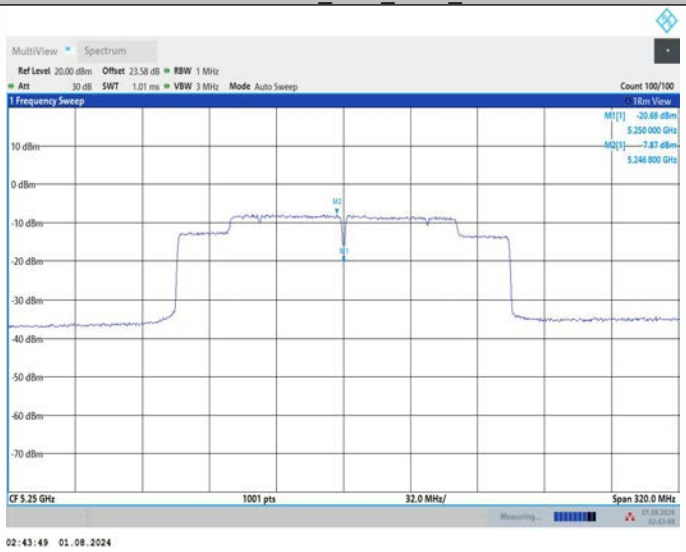

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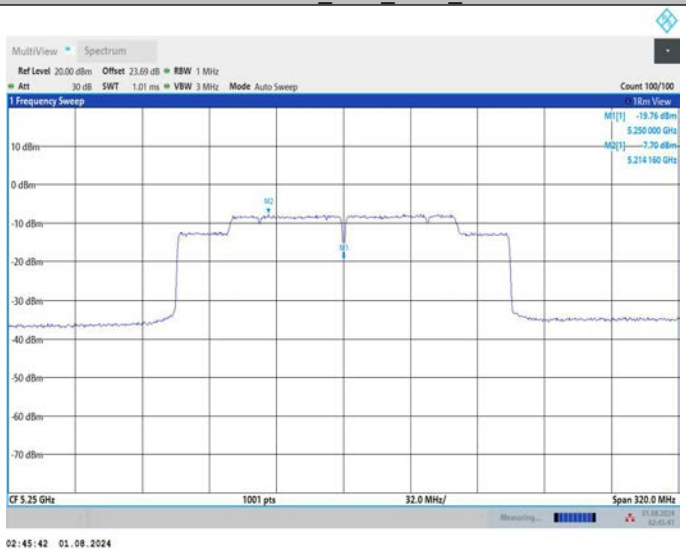

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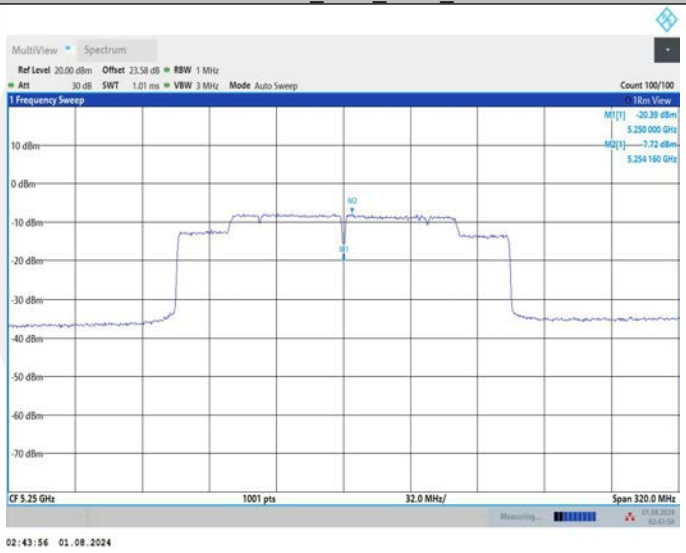

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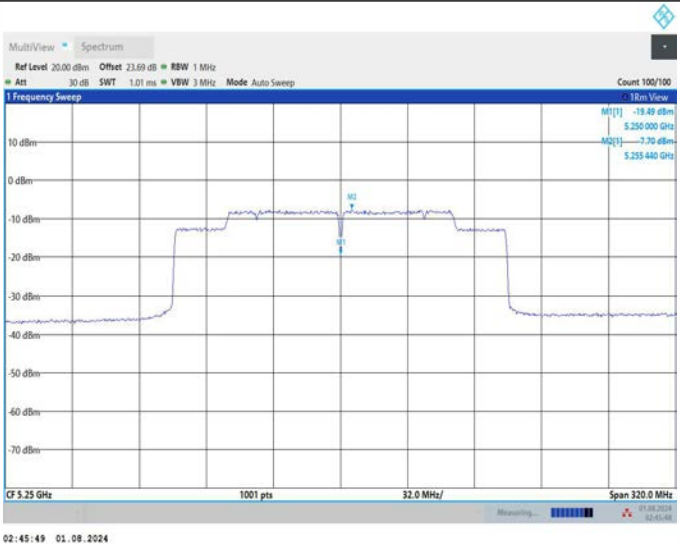

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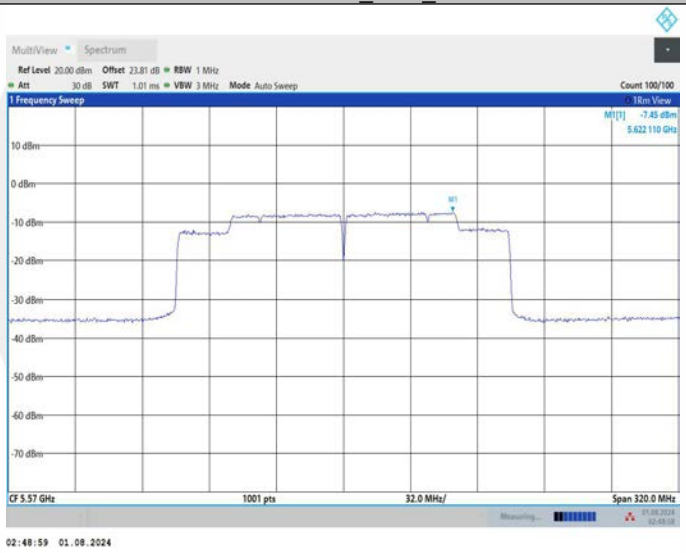


8.4 UNDESIRABLE RADIATED SPURIOUS EMISSION

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

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

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

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

8.4.3 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<150KHz(9KHz to 150KHz), 9KHz for <30MHz (150KHz to 30KHz).
Set the VBW > RBW.
Detector = Peak.
Trace mode = max hold.
Follow the guidelines in ANSI C63.10-2013 with respect to maximizing the emission by rotating the EUT, measuring the emission while the EUT is situated in three orthogonal planes (if appropriate), adjusting the measurement antenna height and polarization, etc. A pre-amp and a high pass filter are required for this test, in order to provide the measuring system with sufficient sensitivity. Allow the trace to stabilize. The peak reading of the emission, after being corrected by the antenna factor, cable loss, pre-amp gain, etc., is the peak field strength, which must comply with the limit specified in Section 15.35(b). Submit this data.
Repeat above procedures until all frequency measured was complete.

■ Unwanted Maximum peak Emissions Measurements above 1000 MHz

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

■ Unwanted Average Emissions Measurements above 1000 MHz

Method VB (Averaging using reduced video bandwidth): Alternative method.
RBW = 1 MHz.
Video bandwidth. • If the EUT is configured to transmit with duty cycle ≥ 98 percent, set VBW ≤ RBW/100 (i.e., 10 kHz) but not less than 10 Hz.
• If the EUT duty cycle is < 98 percent, set VBW ≥ 1/T, where T is defined in section II.B.1.a).
Video bandwidth mode or display mode • The instrument shall be set to ensure that video filtering is applied in the power domain. Typically, this requires setting the detector mode to RMS and setting the Average-VBW Type to Power (RMS).
• As an alternative, the analyzer may be set to linear detector mode. Ensure that video filtering is applied in linear voltage domain (rather than in a log or dB domain). Some analyzers require linear display mode in order to accomplish this. Others have a setting for Average-VBW Type, which can be set to “Voltage” regardless of the display mode.
Detector = Peak.

Sweep time = auto.
Trace mode = max hold.
Allow max hold to run for at least 50 traces if the transmitted signal is continuous or has at least 98 percent duty cycle. For lower duty cycles, increase the minimum number of traces by a factor of 1/x, where x is the duty cycle. For example, use at least 200 traces if the duty cycle is 25 percent. (If a specific emission is demonstrated to be continuous—i.e., 100 percent duty cycle—rather than turning on and off with the transmit cycle, at least 50 traces shall be averaged).

■ Band edge measurements.
Unwanted band-edge emissions may be measured using either of the special band-edge measurement techniques (the marker-delta or integration methods) described below. Note that the marker-delta method is primarily a radiated measurement technique that requires the 99% occupied bandwidth edge to be within 2 MHz of the authorized band edge, whereas the integration method can be used in either a radiated or conducted measurement without any special requirement with regards to the displacement of the unwanted emission(s) relative to the authorized bandwidth.
Marker-Delta Method.
The marker-delta method, as described in ANSI C63.10, can be used to perform measurements of the radiated unwanted emissions level of emissions provided that the 99% occupied bandwidth of the fundamental is within 2 MHz of the authorized band-edge.

8.4.5 Test Results

Pass

Temperature :	25℃	ATM Pressure:	1011 mbar
Humidity :	45 %	Test Engineer:	CZF

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 ANT2 and MIMO as below:

ANT2:

Test mode: 802.11a Frequency(MHz): 5180

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
7293.14	V	59.59	-35.64	-27	8.64
9929.46	V	66.01	-29.22	-27	2.22
16265.1	V	66.93	-28.3	-27	1.3
7871.43	H	63.16	-32.07	-27	5.07
10048.5	H	67.26	-27.97	-27	0.97
17294.1	H	67.74	-27.49	-27	0.49

Test mode: 802.11a Frequency(MHz): 5200

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
9929.46	V	66.86	-28.37	-27	1.37
11290.1	V	67.38	-27.85	-27	0.85
16418.2	V	66.45	-28.78	-27	1.78
8704.85	H	64.93	-30.3	-27	3.3
11358.1	H	67.75	-27.48	-27	0.48
17056.0	H	67.77	-27.46	-27	0.46

Test mode: 802.11a Frequency(MHz): 5240

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
8679.33	V	64.83	-30.4	-27	3.4
11196.5	V	67.26	-27.97	-27	0.97
17379.1	V	67.25	-27.98	-27	0.98
8993.99	H	64.29	-30.94	-27	3.94
11205.1	H	67.55	-27.68	-27	0.68
17710.8	H	66.93	-28.3	-27	1.3

MIMO:

Test mode: 802.11a Frequency(MHz): 5180

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
7291.7500	V	59.46	-35.77	-27	8.77
9928.0700	V	65.85	-29.38	-27	2.38
16266.3800	V	66.9	-28.33	-27	1.33
7883.1200	H	63.08	-32.15	-27	5.15
10060.1900	H	67.05	-28.18	-27	1.18
17305.7900	H	67.58	-27.65	-27	0.65

Test mode: 802.11a Frequency(MHz): 5200

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
9928.0700	V	66.73	-28.50	-27	1.50
11288.7100	V	67.22	-28.01	-27	1.01
16419.4800	V	66.42	-28.81	-27	1.81
8716.5400	H	64.85	-30.38	-27	3.38
11369.7900	H	67.54	-27.69	-27	0.69
17067.6900	H	67.61	-27.62	-27	0.62

Test mode: 802.11a Frequency(MHz): 5240

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
8677.9400	V	64.7	-30.53	-27	3.53
11195.1100	V	67.1	-28.13	-27	1.13
17380.3800	V	67.22	-28.01	-27	1.01
9005.6800	H	64.21	-31.02	-27	4.02
11216.7900	H	67.34	-27.89	-27	0.89
17722.4900	H	66.77	-28.46	-27	1.46

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[dBμV/m] + 20 log(d[meters]) - 104.77
d is the measurement distance in 3 meters

ANT2:

Test mode:	802.11a	Frequency(MHz):	5180		
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
7293.14	V	59.59	74.00	14.41	peak
9929.46	V	66.01	74.00	7.99	peak
16265.1	V	66.93	74.00	7.07	peak
7293.146	V	41.72	54.00	12.28	AVG
9929.464	V	44.68	54.00	9.32	AVG
16265.13	V	46.35	54.00	7.65	AVG
7871.43	H	63.16	74.00	10.84	peak
10048.5	H	67.26	74.00	6.74	peak
17294.1	H	67.74	74.00	6.26	peak
7871.435	H	42.28	54.00	11.72	AVG
10048.52	H	44.97	54.00	9.03	AVG
17294.14	H	47.89	54.00	6.11	AVG

Test mode:	802.11a	Frequency(MHz):	5200		
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
9929.46	V	66.86	74.00	7.14	peak
11290.1	V	67.38	74.00	6.62	peak
16418.2	V	66.45	74.00	7.55	peak
9929.464	V	44.17	54.00	9.83	AVG
11290.14	V	46.61	54.00	7.39	AVG
16418.20	V	46.93	54.00	7.07	AVG
8704.85	H	64.93	74.00	9.07	peak
11358.1	H	67.75	74.00	6.25	peak
17056.0	H	67.77	74.00	6.23	peak
8704.852	H	47.35	54.00	6.65	AVG
11358.17	H	46.03	54.00	7.97	AVG
17056.02	H	45.59	54.00	8.41	AVG

Test mode:	802.11a	Frequency(MHz):	5240		
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
8679.33	V	64.83	74.00	9.17	peak
11196.5	V	67.26	74.00	6.74	peak
17379.1	V	67.25	74.00	6.75	peak
8679.339	V	46.38	54.00	7.62	AVG
11196.59	V	47.38	54.00	6.62	AVG
17379.18	V	46.14	54.00	7.86	AVG
8993.99	H	64.29	74.00	9.71	peak
11205.1	H	67.55	74.00	6.45	peak
17710.8	H	66.93	74.00	7.07	peak
8993.997	H	47.87	54.00	6.13	AVG
11205.10	H	46.78	54.00	7.22	AVG
17710.85	H	47.38	54.00	6.62	AVG

MIMO:

Test mode:	802.11a	Frequency(MHz):	5180		
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
7291.7500	V	59.46	74.00	14.54	Peak
9928.0700	V	65.85	74.00	8.15	Peak
16266.3800	V	66.90	74.00	7.10	Peak
7294.4260	V	41.70	54.00	12.30	Avg
9927.2140	V	44.42	54.00	9.58	Avg
16262.8800	V	46.16	54.00	7.84	Avg
7883.1200	H	63.08	74.00	10.92	Peak
10060.1900	H	67.05	74.00	6.95	Peak
17305.7900	H	67.58	74.00	6.42	Peak
7883.1250	H	42.14	54.00	11.86	Avg
10045.2100	H	44.79	54.00	9.21	Avg
17290.8300	H	47.76	54.00	6.24	Avg

Test mode:	802.11a	Frequency(MHz):	5200		
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
9928.0700	V	66.73	74.00	7.27	Peak
11288.7100	V	67.22	74.00	6.78	Peak
16419.4800	V	66.42	74.00	7.58	Peak
9930.7440	V	44.15	54.00	9.85	Avg
11287.8900	V	46.35	54.00	7.65	Avg
16415.9500	V	46.74	54.00	7.26	Avg
8716.5400	H	64.85	74.00	9.15	Peak
11369.7900	H	67.54	74.00	6.46	Peak
17067.6900	H	67.61	74.00	6.39	Peak
8716.5420	H	47.21	54.00	6.79	Avg
11354.8600	H	45.85	54.00	8.15	Avg
17052.7100	H	45.46	54.00	8.54	Avg

Test mode:	802.11a	Frequency(MHz):	5240		
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
8677.9400	V	64.70	74.00	9.30	Peak
11195.1100	V	67.10	74.00	6.90	Peak
17380.3800	V	67.22	74.00	6.78	Peak
8680.6190	V	46.36	54.00	7.64	Avg
11194.3400	V	47.12	54.00	6.88	Avg
17376.9300	V	45.95	54.00	8.05	Avg
9005.6800	H	64.21	74.00	9.79	Peak
11216.7900	H	67.34	74.00	6.66	Peak
17722.4900	H	66.77	74.00	7.23	Peak
9005.6870	H	47.73	54.00	6.27	Avg
11201.7900	H	46.60	54.00	7.40	Avg
17707.5400	H	47.25	54.00	6.75	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: 802.11ax(20) Frequency(MHz): 5180

Freq. (MHz)	Ant.Pol. H/V	Field Strength (RBW=100KHz) (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Verdict
5131.71	H	55.66	-39.57	-27	Pass
5092.47	V	56.41	-38.82	-27	Pass

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

Freq. (MHz)	Ant.Pol. H/V	Field Strength (RBW=100KHz) (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Verdict
5351.37	H	56.17	-39.06	-27	Pass
5354.77	V	56.96	-38.27	-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[dBμV/m] + 20 log(d[meters]) - 104.77
d is the measurement distance in 3 meters

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

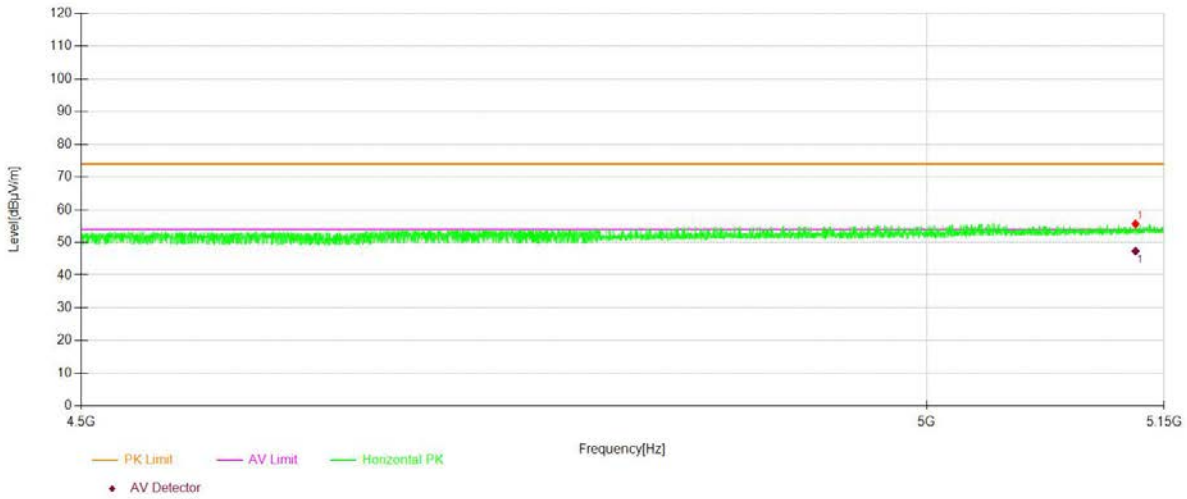
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
5092.47	V	56.41	74.00	17.59	peak
5092.47	V	47.52	54.00	6.48	AVG
5131.71	H	55.66	74.00	18.34	peak
5131.71	H	47.34	54.00	6.66	AVG

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

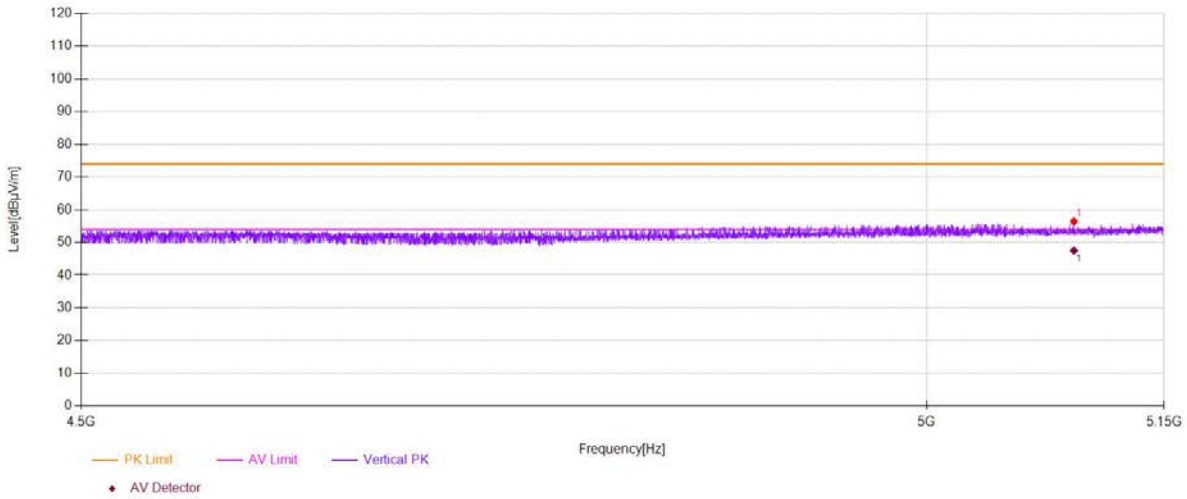
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
5354.77	V	56.96	74.00	17.04	peak
5354.77	V	46.81	54.00	7.19	AVG
5351.37	H	56.17	74.00	17.83	peak
5351.37	H	47.61	54.00	6.39	AVG

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.

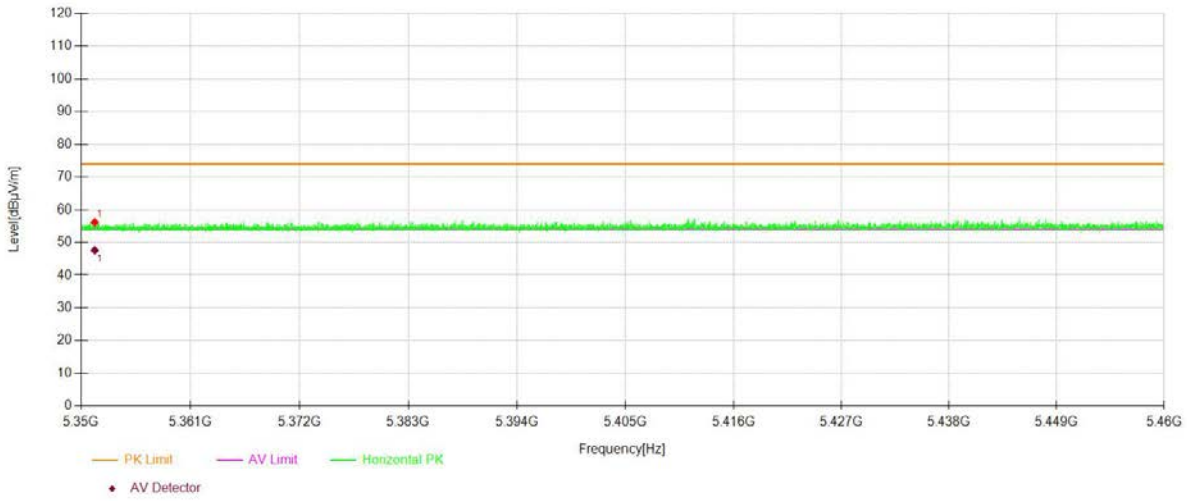
Test Model	U-NII - 1 Undesirable radiated Spurious Emission in Restricted Band (5100-5150MHz) ☐ 802.11a ☒ 802.11ax(HT20) ☐ 802.11n(HT40) ☒ 5180 ☐ 5200 ☐ 5240 Ant.Pol H



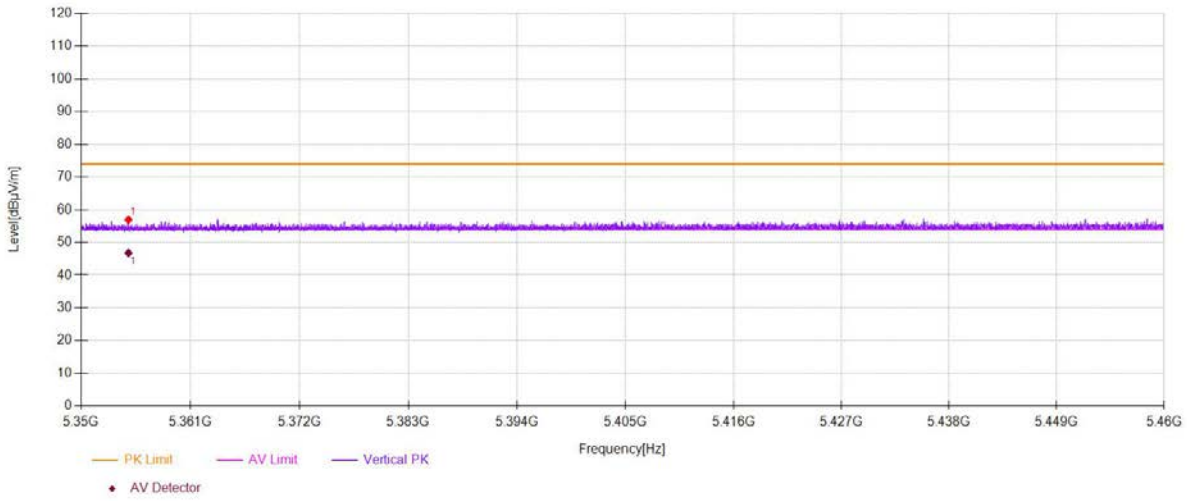
Test Model	U-NII - 1 Undesirable radiated Spurious Emission in Restricted Band (5100-5150MHz) ☐ 802.11a ☒ 802.11ax(HT20) ☐ 802.11n(HT40) ☒ 5180 ☐ 5200 ☐ 5240 Ant.Pol V



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



Test Model	U-NII - 1 Undesirable radiated Spurious Emission in Restricted Band (5350-5400MHz) ☐ 802.11a ☒ 802.11 ax(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 ANT2 and MIMO as below:

ANT2:

Test mode: 802.11a Frequency(MHz): 5260

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
8679.33	V	64.72	-30.51	-27	3.51
11256.1	V	67.55	-27.68	-27	0.68
16868.9	V	67.88	-27.35	-27	0.35
9002.50	H	64.93	-30.3	-27	3.3
11162.5	H	66.85	-28.38	-27	1.38
17778.8	H	67.18	-28.05	-27	1.05

Test mode: 802.11a Frequency(MHz): 5280

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
8687.84	V	64.71	-30.52	-27	3.52
11196.5	V	67.08	-28.15	-27	1.15
17957.4	V	67.91	-27.32	-27	0.32
7964.98	H	63.48	-31.75	-27	4.75
9997.49	H	67.38	-27.85	-27	0.85
17268.6	H	66.95	-28.28	-27	1.28

Test mode: 802.11a Frequency(MHz): 5320

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
8679.33	V	64.87	-30.36	-27	3.36
11256.1	V	67.17	-28.06	-27	1.06
16477.7	V	67.16	-28.07	-27	1.07
8696.34	H	65.27	-29.96	-27	2.96
11213.6	H	67.19	-28.04	-27	1.04
16902.9	H	67.26	-27.97	-27	0.97

MIMO:

Test mode: 802.11a Frequency(MHz): 5260

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
8677.9400	V	64.59	-30.64	-27	3.64
11254.7100	V	67.39	-27.84	-27	0.84
16870.1800	V	67.85	-27.38	-27	0.38
9014.1900	H	64.85	-30.38	-27	3.38
11174.1900	H	66.64	-28.59	-27	1.59
17790.4900	H	67.02	-28.21	-27	1.21

Test mode: 802.11a Frequency(MHz): 5280

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
8686.4500	V	64.58	-30.65	-27	3.65
11195.1100	V	66.92	-28.31	-27	1.31
17958.6800	V	67.88	-27.35	-27	0.35
7976.6700	H	63.4	-31.83	-27	4.83
10009.1800	H	67.17	-28.06	-27	1.06
17280.2900	H	66.79	-28.44	-27	1.44

Test mode: 802.11a Frequency(MHz): 5320

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
8677.9400	V	64.74	-30.49	-27	3.49
11254.7100	V	67.01	-28.22	-27	1.22
16478.9800	V	67.13	-28.10	-27	1.10
8708.0300	H	65.19	-30.04	-27	3.04
11225.2900	H	66.98	-28.25	-27	1.25
16914.5900	H	67.1	-28.13	-27	1.13

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[dBμV/m] + 20 log(d[meters]) - 104.77
d is the measurement distance in 3 meters

ANT2:

Test mode:	802.11a	Frequency(MHz):	5260		
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
8679.33	V	64.72	74.00	9.28	peak
11256.1	V	67.55	74.00	6.45	peak
16868.9	V	67.88	74.00	6.12	peak
8679.33	V	46.56	54.00	7.44	AVG
11256.12	V	46.66	54.00	7.34	AVG
16868.93	V	44.82	54.00	9.18	AVG
9002.50	H	64.93	74.00	9.07	peak
11162.5	H	66.85	74.00	7.15	peak
17778.8	H	67.18	74.00	6.82	peak
9002.501	H	48.07	54.00	5.93	AVG
11162.58	H	46.61	54.00	7.39	AVG
17778.88	H	47.39	54.00	6.61	AVG

Test mode:	802.11a	Frequency(MHz):	5280		
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
8687.84	V	64.71	74.00	9.29	peak
11196.5	V	67.08	74.00	6.92	peak
17957.4	V	67.91	74.00	6.09	peak
8687.843	V	46.69	54.00	7.31	AVG
11196.59	V	46.88	54.00	7.12	AVG
17957.47	V	46.77	54.00	7.23	AVG
7964.98	H	63.48	74.00	10.52	peak
9997.49	H	67.38	74.00	6.62	peak
17268.6	H	66.95	74.00	7.05	peak
7964.982	H	43.50	54.00	10.50	AVG
9997.498	H	45.09	54.00	8.91	AVG
17268.63	H	46.13	54.00	7.87	AVG

Test mode:	802.11a	Frequency(MHz):	5320		
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
8679.33	V	64.87	74.00	9.13	peak
11256.1	V	67.17	74.00	6.83	peak
16477.7	V	67.16	74.00	6.84	peak
8679.339	V	46.82	54.00	7.18	AVG
11256.12	V	46.95	54.00	7.05	AVG
16477.73	V	46.43	54.00	7.57	AVG
8696.34	H	65.27	74.00	8.73	peak
11213.6	H	67.19	74.00	6.81	peak
16902.9	H	67.26	74.00	6.74	peak
8696.348	H	47.52	54.00	6.48	AVG
11213.60	H	46.79	54.00	7.21	AVG
16902.95	H	47.12	54.00	6.88	AVG

MIMO:

Test mode:	802.11a	Frequency(MHz):	5260		
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
8677.9400	V	64.59	74.00	9.41	Peak
11254.7100	V	67.39	74.00	6.61	Peak
16870.1800	V	67.85	74.00	6.15	Peak
8680.6100	V	46.54	54.00	7.46	Avg
11253.8700	V	46.40	54.00	7.60	Avg
16866.6800	V	44.63	54.00	9.37	Avg
9014.1900	H	64.85	74.00	9.15	Peak
11174.1900	H	66.64	74.00	7.36	Peak
17790.4900	H	67.02	74.00	6.98	Peak
9014.1910	H	47.93	54.00	6.07	Avg
11159.2700	H	46.43	54.00	7.57	Avg
17775.5700	H	47.26	54.00	6.74	Avg

Test mode:	802.11a	Frequency(MHz):	5280		
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
8686.4500	V	64.58	74.00	9.42	Peak
11195.1100	V	66.92	74.00	7.08	Peak
17958.6800	V	67.88	74.00	6.12	Peak
8689.1230	V	46.67	54.00	7.33	Avg
11194.3400	V	46.62	54.00	7.38	Avg
17955.2200	V	46.58	54.00	7.42	Avg
7976.6700	H	63.40	74.00	10.60	Peak
10009.1800	H	67.17	74.00	6.83	Peak
17280.2900	H	66.79	74.00	7.21	Peak
7976.6720	H	43.36	54.00	10.64	Avg
9994.1880	H	44.91	54.00	9.09	Avg
17265.3200	H	46.00	54.00	8.00	Avg

Test mode:	802.11a	Frequency(MHz):	5320		
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
8677.9400	V	64.74	74.00	9.26	Peak
11254.7100	V	67.01	74.00	6.99	Peak
16478.9800	V	67.13	74.00	6.87	Peak
8680.6190	V	46.80	54.00	7.20	Avg
11253.8700	V	46.69	54.00	7.31	Avg
16475.4800	V	46.24	54.00	7.76	Avg
8708.0300	H	65.19	74.00	8.81	Peak
11225.2900	H	66.98	74.00	7.02	Peak
16914.5900	H	67.10	74.00	6.90	Peak
8708.0380	H	47.38	54.00	6.62	Avg
11210.2900	H	46.61	54.00	7.39	Avg
16899.6400	H	46.99	54.00	7.01	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: 802.11ax(20) Frequency(MHz): 5260

Freq. (MHz)	Ant.Pol. H/V	Field Strength (RBW=100KHz) (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Verdict
5101.57	H	66.04	-29.19	-27	Pass
5105.15	V	66.26	-28.97	-27	Pass

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

Freq. (MHz)	Ant.Pol. H/V	Field Strength (RBW=100KHz) (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Verdict
5360.54	H	66.33	-28.9	-27	Pass
5358.22	V	66.63	-28.6	-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[dBμV/m] + 20 log(d[meters]) - 104.77
d is the measurement distance in 3 meters

Test mode: 802.11ax(20) Frequency(MHz): 5260

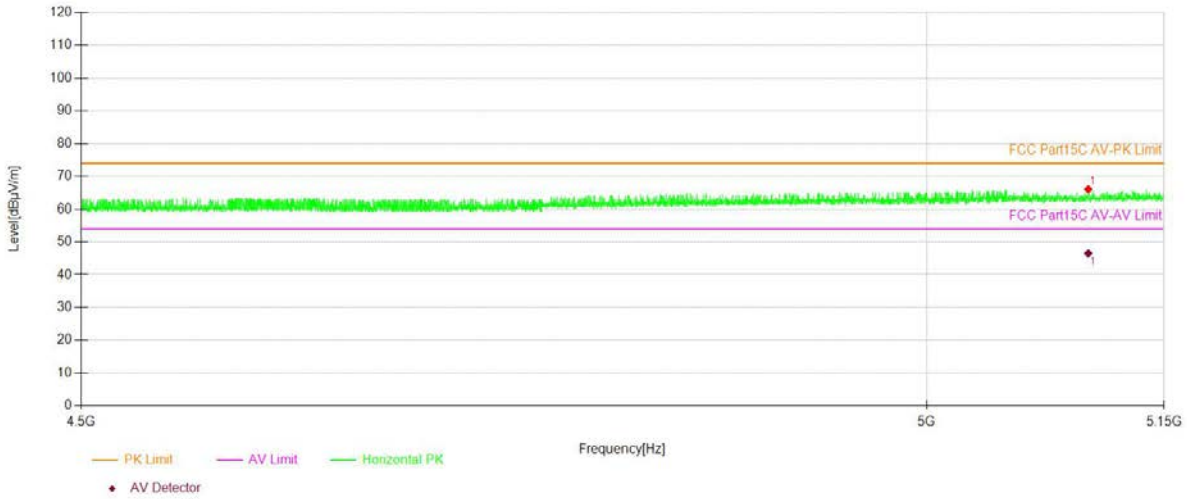
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
5105.15	V	66.26	74.00	7.74	peak
5105.15	V	47.04	54.00	6.96	AVG
5101.57	H	66.04	74.00	7.96	peak
5101.57	H	46.52	54.00	7.48	AVG

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

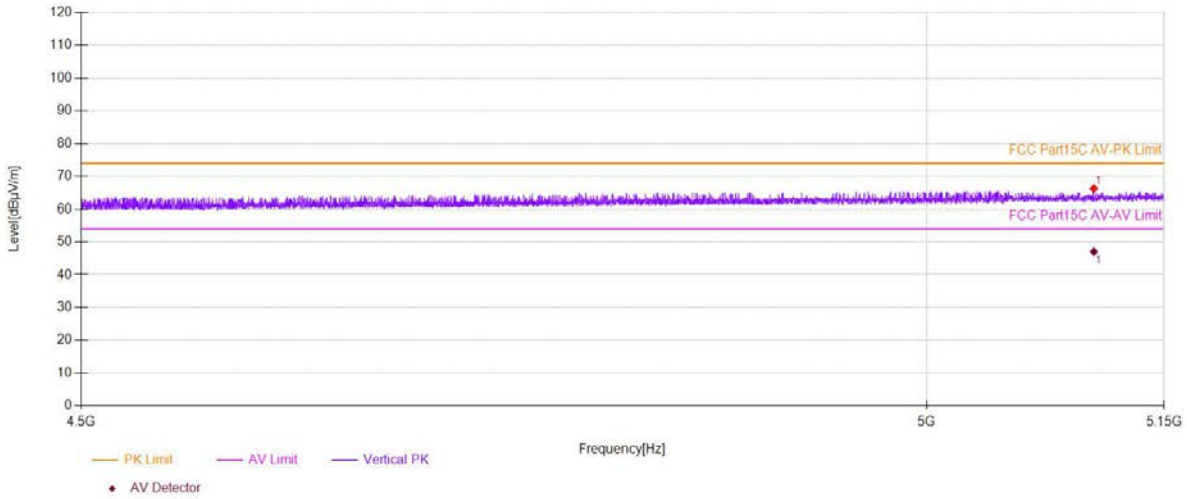
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
5358.22	V	66.63	74.00	7.37	peak
5358.22	V	47.65	54.00	6.35	AVG
5360.54	H	66.33	74.00	7.67	peak
5360.54	H	47.42	54.00	6.58	AVG

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.

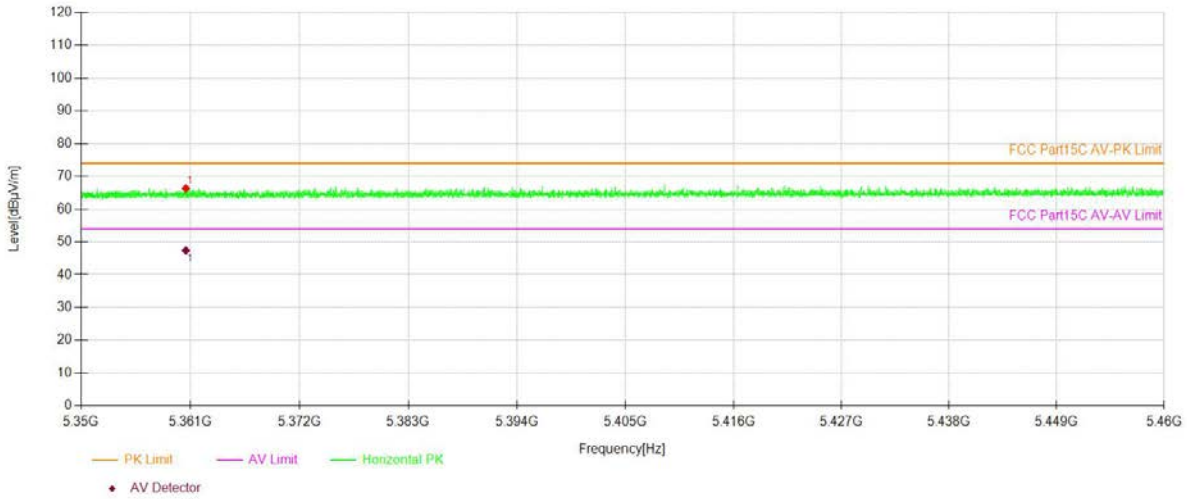
Test Model	U-NII -2A Undesirable radiated Spurious Emission in Restricted Band (5100-5150MHz) ☐ 802.11a ☐ 802.11n(HT20) ☒ 802.11 ax (VHT20) ☒ 5260 ☐ 5300 ☐ 5320 Ant.Pol H



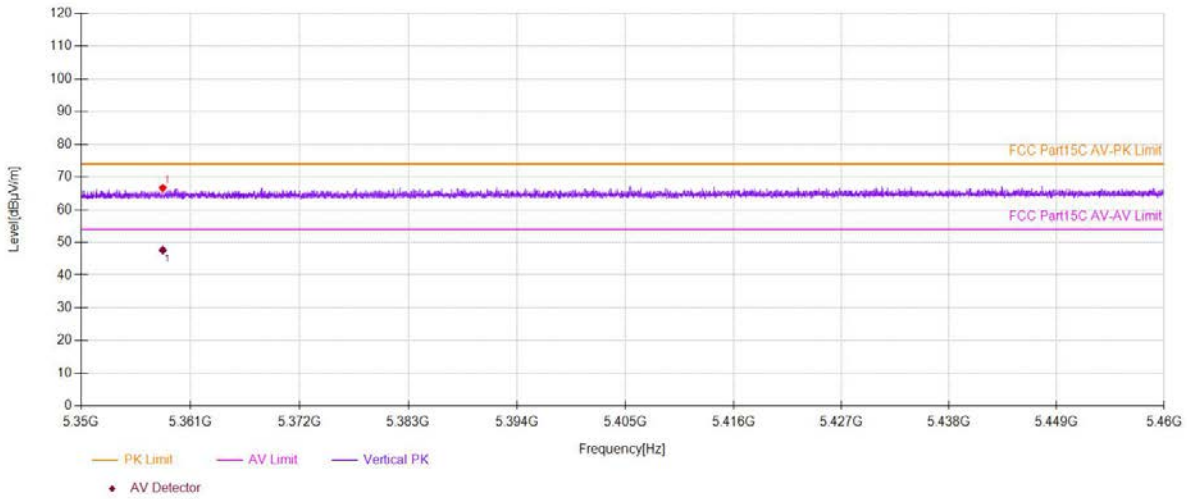
Test Model	U-NII -2A Undesirable radiated Spurious Emission in Restricted Band (5100-5150MHz) ☐ 802.11a ☐ 802.11n(HT20) ☒ 802.11 ax(VHT20) ☒ 5260 ☐ 5300 ☐ 5320 Ant.Pol V



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



Test Model	U-NII -2A Undesirable radiated Spurious Emission in Restricted Band (5350-5400MHz) ☐802.11a ☐802.11n(HT20) ☒802.11 ax (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 ANT2 and MIMO as below:

ANT2:

Test mode: 802.11a Frequency(MHz): 5500

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
8993.99	V	64.62	-30.61	-27	3.61
11213.6	V	67.62	-27.61	-27	0.61
16945.4	V	67.91	-27.32	-27	0.32
8764.38	H	64.08	-31.15	-27	4.15
11264.6	H	67.36	-27.87	-27	0.87
16834.9	H	67.37	-27.86	-27	0.86

Test mode: 802.11a Frequency(MHz): 5580

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
8653.82	V	64.70	-30.53	-27	3.53
9937.96	V	67.23	-28	-27	1
17115.5	V	67.78	-27.45	-27	0.45
8687.84	H	65.05	-30.18	-27	3.18
11196.5	H	67.35	-27.88	-27	0.88
17515.2	H	67.49	-27.74	-27	0.74

Test mode: 802.11a Frequency(MHz): 5700

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
8007.50	V	62.71	-32.52	-27	5.52
9903.95	V	66.67	-28.56	-27	1.56
16936.9	V	67.81	-27.42	-27	0.42
8704.85	H	65.10	-30.13	-27	3.13
11213.6	H	66.90	-28.33	-27	1.33
16885.9	H	67.33	-27.9	-27	0.9

MIMO:

Test mode: 802.11a Frequency(MHz): 5500

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
8992.6000	V	64.49	-30.74	-27	3.74
11212.2100	V	67.46	-27.77	-27	0.77
16946.6800	V	67.88	-27.35	-27	0.35
8776.0720	H	64	-31.23	-27	4.23
11276.2900	H	67.15	-28.08	-27	1.08
16846.5900	H	67.21	-28.02	-27	1.02

Test mode: 802.11a Frequency(MHz): 5580

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
8652.4300	V	64.57	-30.66	-27	3.66
9936.5700	V	67.07	-28.16	-27	1.16
17116.7800	V	67.75	-27.48	-27	0.48
8699.5300	H	64.97	-30.26	-27	3.26
11208.1900	H	67.14	-28.09	-27	1.09
17526.8900	H	67.33	-27.90	-27	0.90

Test mode: 802.11a Frequency(MHz): 5700

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
8006.1100	V	62.58	-32.65	-27	5.65
9902.5600	V	66.51	-28.72	-27	1.72
16938.1800	V	67.78	-27.45	-27	0.45
8716.5400	H	65.02	-30.21	-27	3.21
11225.2900	H	66.69	-28.54	-27	1.54
16897.5900	H	67.17	-28.06	-27	1.06

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[dBμV/m] + 20 log(d[meters]) - 104.77
d is the measurement distance in 3 meters

ANT2:

Test mode:	802.11a	Frequency(MHz):	5500		
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
8993.99	V	64.62	74.00	9.38	peak
11213.6	V	67.62	74.00	6.38	peak
16945.4	V	67.91	74.00	6.09	peak
8993.997	V	48.53	54.00	5.47	AVG
11213.60	V	46.73	54.00	7.27	AVG
16945.47	V	47.88	54.00	6.12	AVG
8764.382	H	64.08	74.00	9.92	peak
11264.6	H	67.36	74.00	6.64	peak
16834.9	H	67.37	74.00	6.63	peak
8764.382	H	45.91	54.00	8.09	AVG
11264.63	H	46.73	54.00	7.27	AVG
16834.91	H	47.35	54.00	6.65	AVG

Test mode:	802.11a	Frequency(MHz):	5580		
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
8653.82	V	64.70	74.00	9.30	peak
9937.96	V	67.23	74.00	6.77	peak
17115.5	V	67.78	74.00	6.22	peak
8653.826	V	45.55	54.00	8.45	AVG
9937.969	V	45.39	54.00	8.61	AVG
17115.55	V	45.47	54.00	8.53	AVG
8687.84	H	65.05	74.00	8.95	peak
11196.5	H	67.35	74.00	6.65	peak
17515.2	H	67.49	74.00	6.51	peak
8687.843	H	47.25	54.00	6.75	AVG
11196.59	H	46.94	54.00	7.06	AVG
17515.25	H	45.51	54.00	8.49	AVG

Test mode:	802.11a	Frequency(MHz):	5700		
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
8007.50	V	62.71	74.00	11.29	peak
9903.95	V	66.67	74.00	7.33	peak
16936.9	V	67.81	74.00	6.19	peak
8007.503	V	43.72	54.00	10.28	AVG
9903.952	V	44.80	54.00	9.20	AVG
16936.96	V	47.62	54.00	6.38	AVG
8704.85	H	65.10	74.00	8.90	peak
11213.6	H	66.90	74.00	7.10	peak
16885.9	H	67.33	74.00	6.67	peak
8704.852	H	47.38	54.00	6.62	AVG
11213.60	H	47.49	54.00	6.51	AVG
16885.94	H	47.17	54.00	6.83	AVG

MIMO:

Test mode:	802.11a	Frequency(MHz):	5500		
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
8992.6000	V	64.49	74.00	9.51	Peak
11212.2100	V	67.46	74.00	6.54	Peak
16946.6800	V	67.88	74.00	6.12	Peak
8995.2770	V	48.51	54.00	5.49	Avg
11211.3500	V	46.47	54.00	7.53	Avg
16943.2200	V	47.69	54.00	6.31	Avg
8776.0720	H	64.00	74.00	10.00	Peak
11276.2900	H	67.15	74.00	6.85	Peak
16846.5900	H	67.21	74.00	6.79	Peak
8776.0720	H	45.77	54.00	8.23	Avg
11261.3200	H	46.55	54.00	7.45	Avg
16831.6000	H	47.22	54.00	6.78	Avg

Test mode:	802.11a	Frequency(MHz):	5580		
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
8652.4300	V	64.57	74.00	9.43	Peak
9936.5700	V	67.07	74.00	6.93	Peak
17116.7800	V	67.75	74.00	6.25	Peak
8655.1060	V	45.53	54.00	8.47	Avg
9935.7190	V	45.13	54.00	8.87	Avg
17113.3000	V	45.28	54.00	8.72	Avg
8699.5300	H	64.97	74.00	9.03	Peak
11208.1900	H	67.14	74.00	6.86	Peak
17526.8900	H	67.33	74.00	6.67	Peak
8699.5330	H	47.11	54.00	6.89	Avg
11193.2800	H	46.76	54.00	7.24	Avg
17511.9400	H	45.38	54.00	8.62	Avg

Test mode:	802.11a	Frequency(MHz):	5700		
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
8006.1100	V	62.58	74.00	11.42	Peak
9902.5600	V	66.51	74.00	7.49	Peak
16938.1800	V	67.78	74.00	6.22	Peak
8008.7830	V	43.70	54.00	10.30	Avg
9901.7020	V	44.54	54.00	9.46	Avg
16934.7100	V	47.43	54.00	6.57	Avg
8716.5400	H	65.02	74.00	8.98	Peak
11225.2900	H	66.69	74.00	7.31	Peak
16897.5900	H	67.17	74.00	6.83	Peak
8716.5420	H	47.24	54.00	6.76	Avg
11210.2900	H	47.31	54.00	6.69	Avg
16882.6300	H	47.04	54.00	6.96	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: 802.11ax(20) Frequency(MHz): 5500

Freq. (MHz)	Ant.Pol. H/V	Field Strength (RBW=100KHz) (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Verdict
5466.59	H	57.47	-37.76	-27	Pass
5466.71	V	57.08	-38.15	-27	Pass

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

Freq. (MHz)	Ant.Pol. H/V	Field Strength (RBW=100KHz) (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Verdict
5729.28	H	57.55	-37.68	-27	Pass
5725.78	V	57.46	-37.77	-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[dBμV/m] + 20 log(d[meters]) - 104.77
d is the measurement distance in 3 meters

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

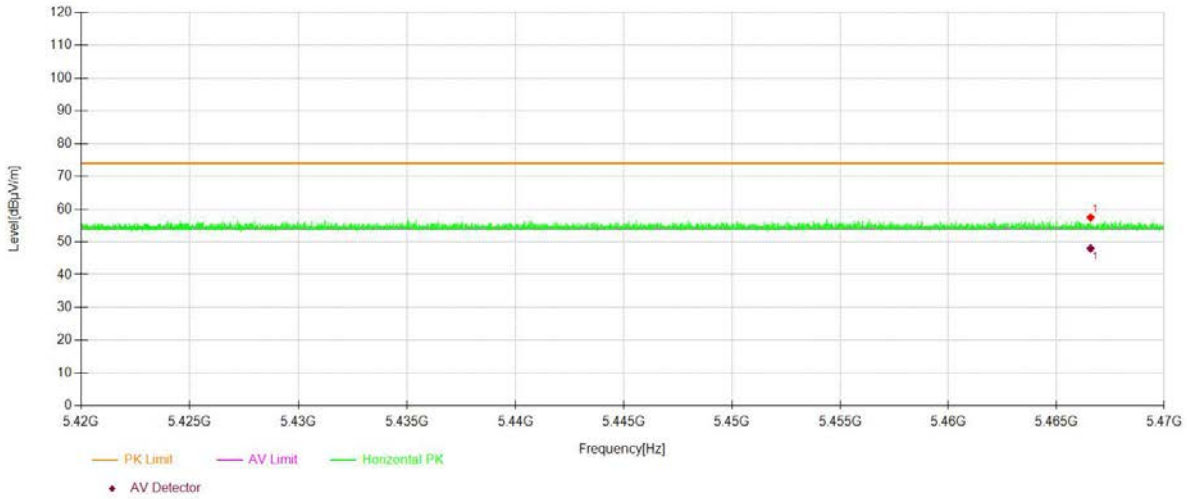
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
5466.71	V	57.08	74.00	16.92	peak
5466.71	V	47.82	54.00	6.18	AVG
5466.59	H	57.47	74.00	16.53	peak
5466.59	H	47.97	54.00	6.03	AVG

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

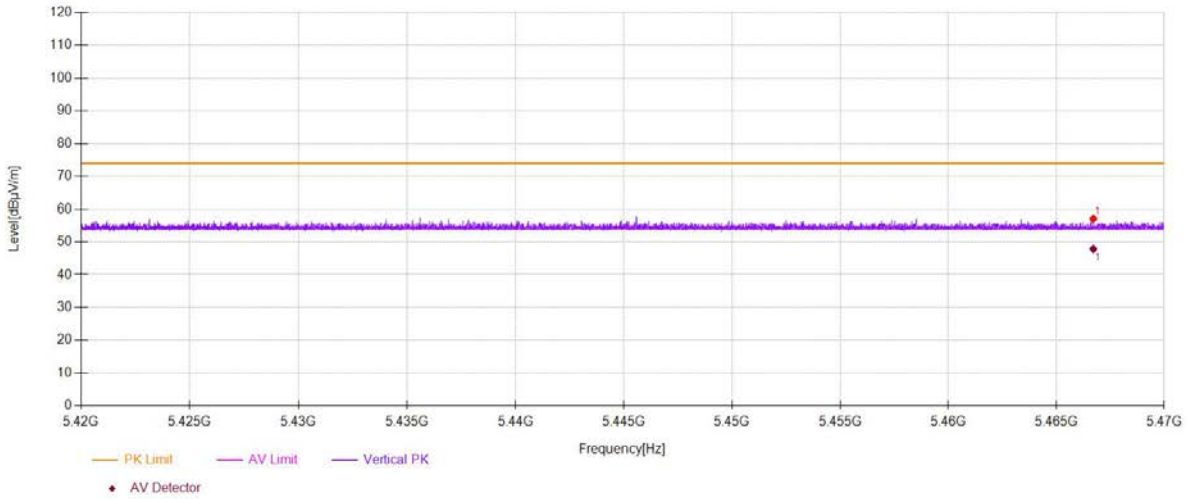
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
5725.78	V	57.46	74.00	16.54	peak
5725.78	V	47.46	54.00	6.54	AVG
5729.28	H	57.55	74.00	16.45	peak
5729.28	H	47.48	54.00	6.52	AVG

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.

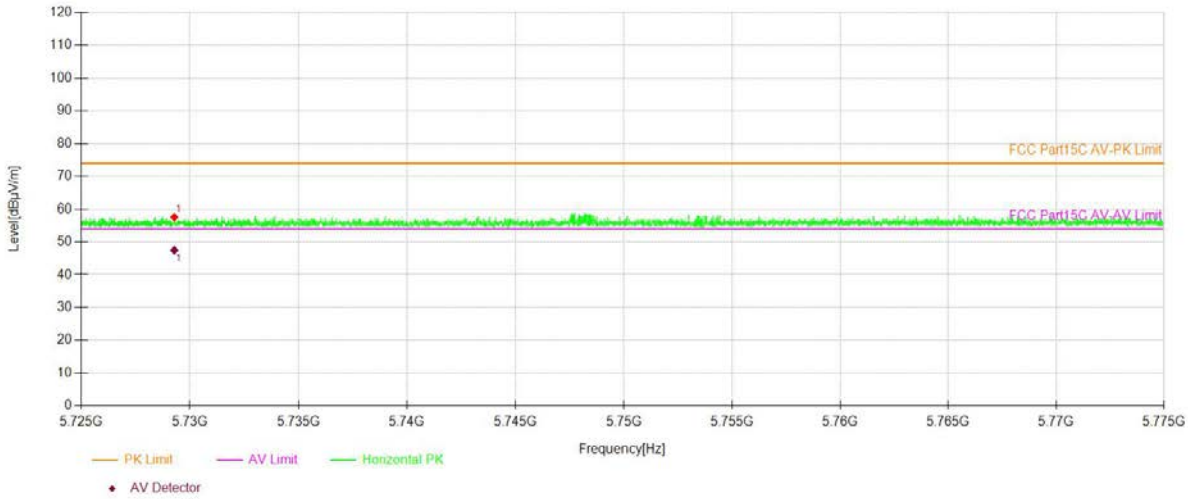
Test Model	U-NII -2C Undesirable radiated Spurious Emission in Restricted Band (5100-5150MHz) ☐ 802.11a ☐ 802.11n(HT20) ☒ 802.11 ax(VHT20) ☒ 5500 ☐ 5580 ☐ 5700 Ant.Pol H



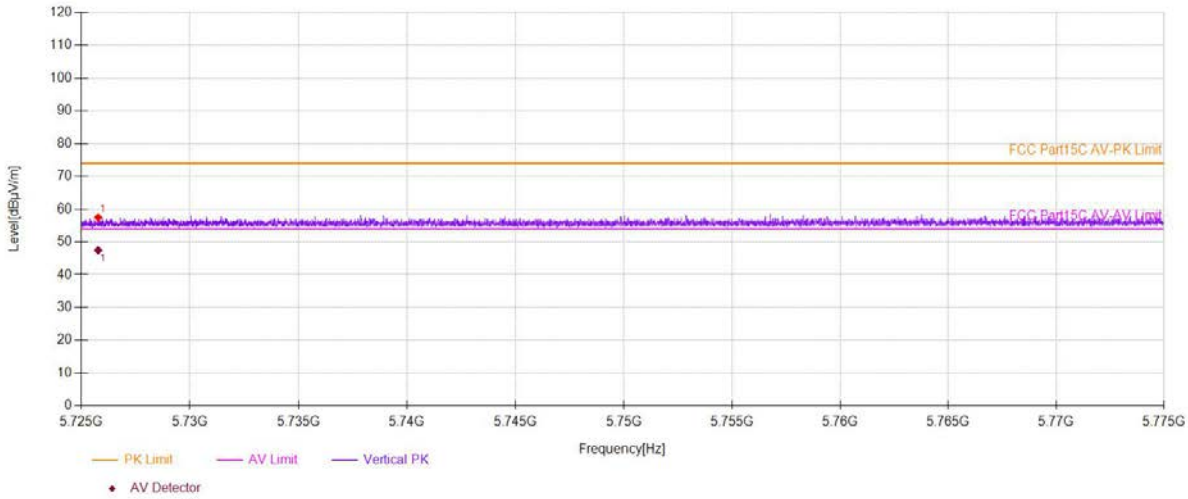
Test Model	U-NII -2C Undesirable radiated Spurious Emission in Restricted Band (5100-5150MHz) ☐ 802.11a ☐ 802.11n(HT20) ☒ 802.11 ax(VHT20) ☒ 5500 ☐ 5580 ☐ 5700 Ant.Pol V



Test Model	U-NII -2C Undesirable radiated Spurious Emission in Restricted Band (5350-5400MHz) ☐ 802.11a ☐ 802.11n(HT20) ☒ 802.11 ax(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 ax (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 ANT2 and MIMO as below:

ANT2:

Test mode: 802.11a Frequency(MHz): 5745

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
8016.00	V	62.30	-32.93	-27	5.93
9963.48	V	66.80	-28.43	-27	1.43
17625.8	V	67.40	-27.83	-27	0.83
8687.84	H	64.52	-30.71	-27	3.71
11103.0	H	67.17	-28.06	-27	1.06
17829.9	H	67.32	-27.91	-27	0.91

Test mode: 802.11a Frequency(MHz): 5785

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
8696.34	V	65.26	-29.97	-27	2.97
11859.9	V	67.30	-27.93	-27	0.93
17829.9	V	66.85	-28.38	-27	1.38
8713.35	H	65.01	-30.22	-27	3.22
11247.6	H	67.05	-28.18	-27	1.18
17447.2	H	67.44	-27.79	-27	0.79

Test mode: 802.11a Frequency(MHz): 5825

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
8670.83	V	63.61	-31.62	-27	4.62
9997.49	V	67.75	-27.48	-27	0.48
15618.8	V	67.94	-27.29	-27	0.29
7956.47	H	64.75	-30.48	-27	3.48
11205.1	H	66.94	-28.29	-27	1.29
17863.9	H	66.80	-28.43	-27	1.43

MIMO:

Test mode: 802.11a Frequency(MHz): 5745

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
8014.6100	V	62.17	-33.06	-27	6.06
9962.0900	V	66.64	-28.59	-27	1.59
17627.0800	V	67.37	-27.86	-27	0.86
8699.5300	H	64.44	-30.79	-27	3.79
11114.6900	H	66.96	-28.27	-27	1.27
17841.5900	H	67.16	-28.07	-27	1.07

Test mode: 802.11a Frequency(MHz): 5785

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
8694.9500	V	65.13	-30.10	-27	3.10
11858.5100	V	67.14	-28.09	-27	1.09
17831.1800	V	66.82	-28.41	-27	1.41
8725.0400	H	64.93	-30.30	-27	3.30
11259.2900	H	66.84	-28.39	-27	1.39
17458.8900	H	67.28	-27.95	-27	0.95

Test mode: 802.11a Frequency(MHz): 5825

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
8669.4400	V	63.48	-31.75	-27	4.75
9996.1000	V	67.59	-27.64	-27	0.64
15620.0800	V	67.91	-27.32	-27	0.32
7968.1600	H	64.67	-30.56	-27	3.56
11216.7900	H	66.73	-28.50	-27	1.50
17875.5900	H	66.64	-28.59	-27	1.59

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[dBμV/m] + 20 log(d[meters]) - 104.77
d is the measurement distance in 3 meters

ANT2:

Test mode:	802.11a	Frequency(MHz):	5745		
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
8016.00	V	62.30	74.00	11.70	peak
9963.48	V	66.80	74.00	7.20	peak
17625.8	V	67.40	74.00	6.60	peak
8016.008	V	44.04	54.00	9.96	AVG
9963.481	V	44.65	54.00	9.35	AVG
17625.81	V	47.26	54.00	6.74	AVG
8687.84	H	64.52	74.00	9.48	peak
11103.0	H	67.17	74.00	6.83	peak
17829.9	H	67.32	74.00	6.68	peak
8687.843	H	47.10	54.00	6.90	AVG
11103.05	H	46.43	54.00	7.57	AVG
17829.91	H	47.73	54.00	6.27	AVG

Test mode:	802.11a	Frequency(MHz):	5785		
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
8696.34	V	65.26	74.00	8.74	peak
11859.9	V	67.30	74.00	6.70	peak
17829.9	V	66.85	74.00	7.15	peak
8696.348	V	47.52	54.00	6.48	AVG
11859.93	V	45.70	54.00	8.30	AVG
17829.91	V	47.15	54.00	6.85	AVG
8713.35	H	65.01	74.00	8.99	peak
11247.6	H	67.05	74.00	6.95	peak
17447.2	H	67.44	74.00	6.56	peak
8713.356	H	46.99	54.00	7.01	AVG
11247.62	H	46.80	54.00	7.20	AVG
17447.22	H	46.09	54.00	7.91	AVG

Test mode:	802.11a	Frequency(MHz):	5825		
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
8670.83	V	63.61	74.00	10.39	peak
9997.49	V	67.75	74.00	6.25	peak
15618.8	V	67.94	74.00	6.06	peak
8670.835	V	46.44	54.00	7.56	AVG
9997.498	V	44.80	54.00	9.20	AVG
15618.80	V	45.26	54.00	8.74	AVG
7956.47	H	64.75	74.00	9.25	peak
11205.1	H	66.94	74.00	7.06	peak
17863.9	H	66.80	74.00	7.20	peak
7956.478	H	43.59	54.00	10.41	AVG
11205.10	H	46.86	54.00	7.14	AVG
17863.93	H	47.12	54.00	6.88	AVG

MIMO:

Test mode:	802.11a	Frequency(MHz):	5745		
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
8014.6100	V	62.17	74.00	11.83	Peak
9962.0900	V	66.64	74.00	7.36	Peak
17627.0800	V	67.37	74.00	6.63	Peak
8017.2880	V	44.02	54.00	9.98	Avg
9961.2310	V	44.39	54.00	9.61	Avg
17623.5600	V	47.07	54.00	6.93	Avg
8699.5300	H	64.44	74.00	9.56	Peak
11114.6900	H	66.96	74.00	7.04	Peak
17841.5900	H	67.16	74.00	6.84	Peak
8699.5330	H	46.96	54.00	7.04	Avg
11099.7400	H	46.25	54.00	7.75	Avg
17826.6000	H	47.60	54.00	6.40	Avg

Test mode:	802.11a	Frequency(MHz):	5785		
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
8694.9500	V	65.13	74.00	8.87	Peak
11858.5100	V	67.14	74.00	6.86	Peak
17831.1800	V	66.82	74.00	7.18	Peak
8697.6280	V	47.50	54.00	6.50	Avg
11857.6800	V	45.44	54.00	8.56	Avg
17827.6600	V	46.96	54.00	7.04	Avg
8725.0400	H	64.93	74.00	9.07	Peak
11259.2900	H	66.84	74.00	7.16	Peak
17458.8900	H	67.28	74.00	6.72	Peak
8725.0460	H	46.85	54.00	7.15	Avg
11244.3100	H	46.62	54.00	7.38	Avg
17443.9100	H	45.96	54.00	8.04	Avg

Test mode:	802.11a	Frequency(MHz):	5825		
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
8669.4400	V	63.48	74.00	10.52	Peak
9996.1000	V	67.59	74.00	6.41	Peak
15620.0800	V	67.91	74.00	6.09	Peak
8672.1150	V	46.42	54.00	7.58	Avg
9995.2480	V	44.54	54.00	9.46	Avg
15616.5500	V	45.07	54.00	8.93	Avg
7968.1600	H	64.67	74.00	9.33	Peak
11216.7900	H	66.73	74.00	7.27	Peak
17875.5900	H	66.64	74.00	7.36	Peak
7968.1680	H	43.45	54.00	10.55	Avg
11201.7900	H	46.68	54.00	7.32	Avg
17860.6200	H	46.99	54.00	7.01	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.

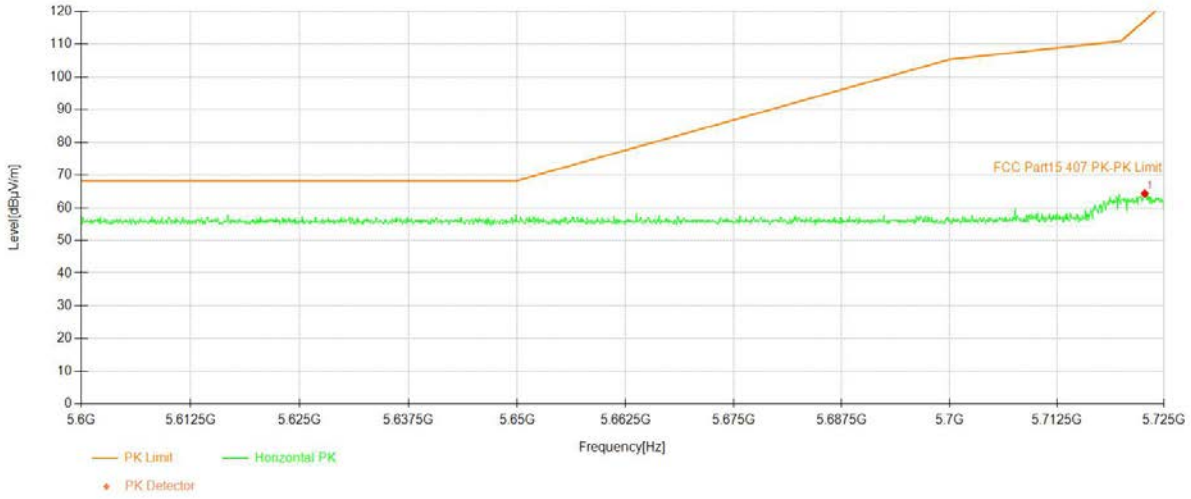
☒ Undesirable radiated Spurious Emission in band edge

Test mode:	802.11ax(20)	Frequency:	5745		
Freq. (MHz)	Ant.Pol. H/V	Field Strength (RBW=100KHz) (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Verdict
5722.74	H	64.31	-30.92	-27	PASS
5720.49	V	59.08	-36.15	-27	PASS

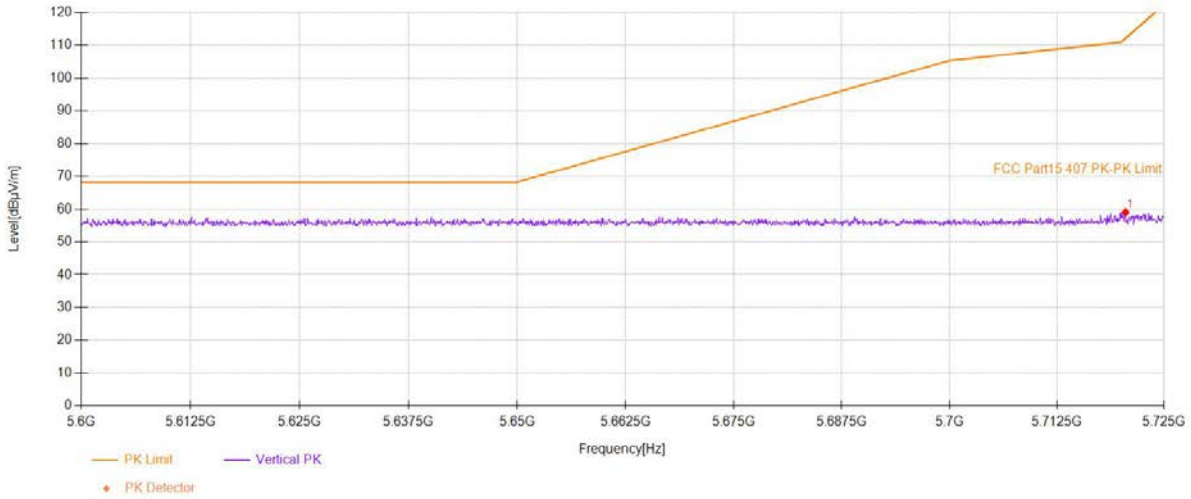
Test mode:	802.11ax(20)	Frequency:	5825		
Freq. (MHz)	Ant.Pol. H/V	Field Strength (RBW=100KHz) (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Verdict
5856.94	H	65.28	-29.95	-27	PASS
5856.44	V	60.25	-34.98	-27	PASS

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[dBμV/m] + 20 log(d[meters]) - 104.77
d is the measurement distance in 3 meters

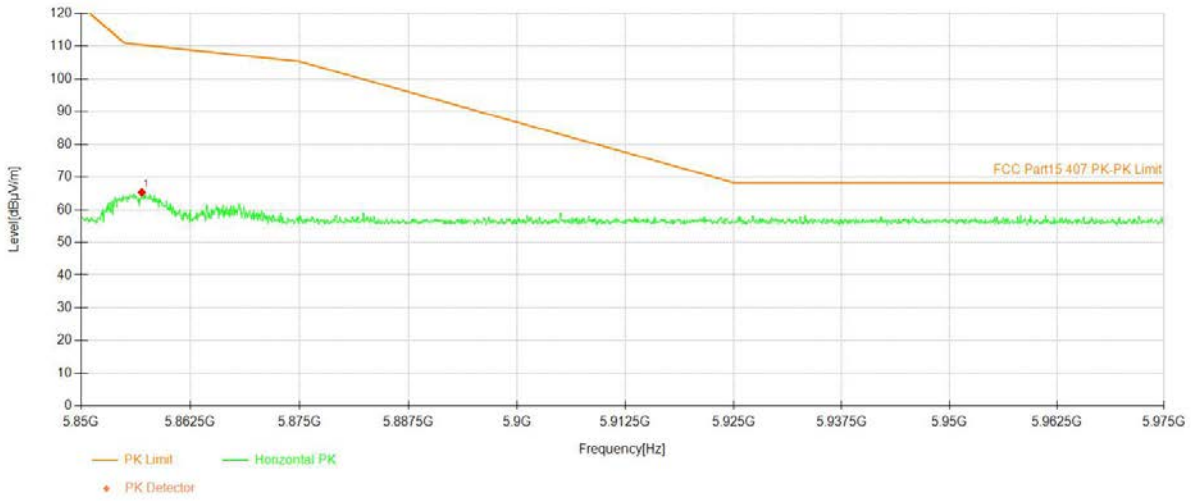
Test Model	U-NII -3 Undesirable radiated Undesirable radiated Spurious Emission in Band Edge ☐ 802.11a ☐ 802.11n(HT20) ☒ 802.11 ax (VHT20) ☒ 5745 Ant.Pol H



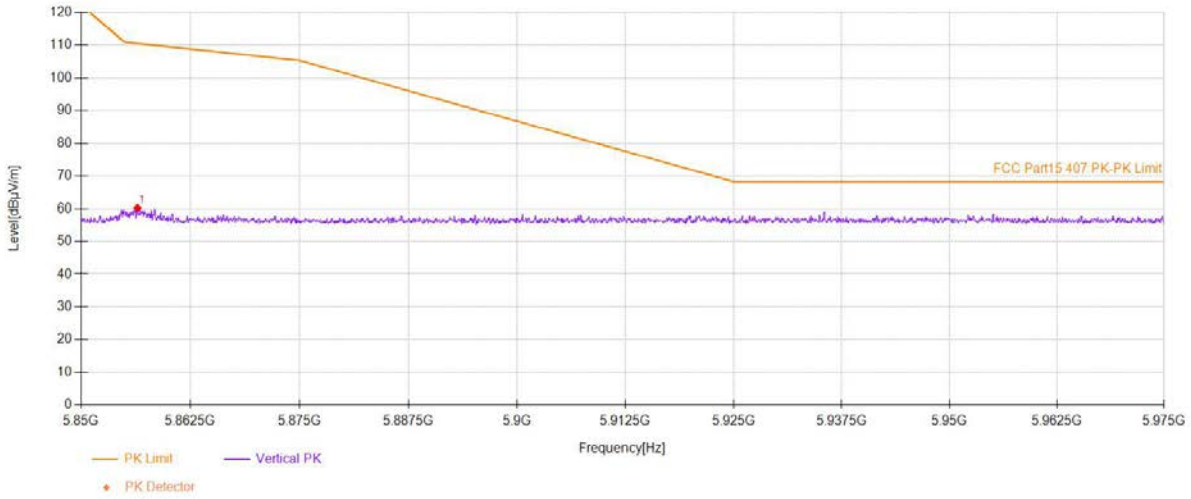
Test Model	U-NII -3 Undesirable radiated Undesirable radiated Spurious Emission in Band Edge ☐ 802.11a ☐ 802.11n(HT20) ☒ 802.11 ax (VHT20) ☒ 5745 Ant.Pol V



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



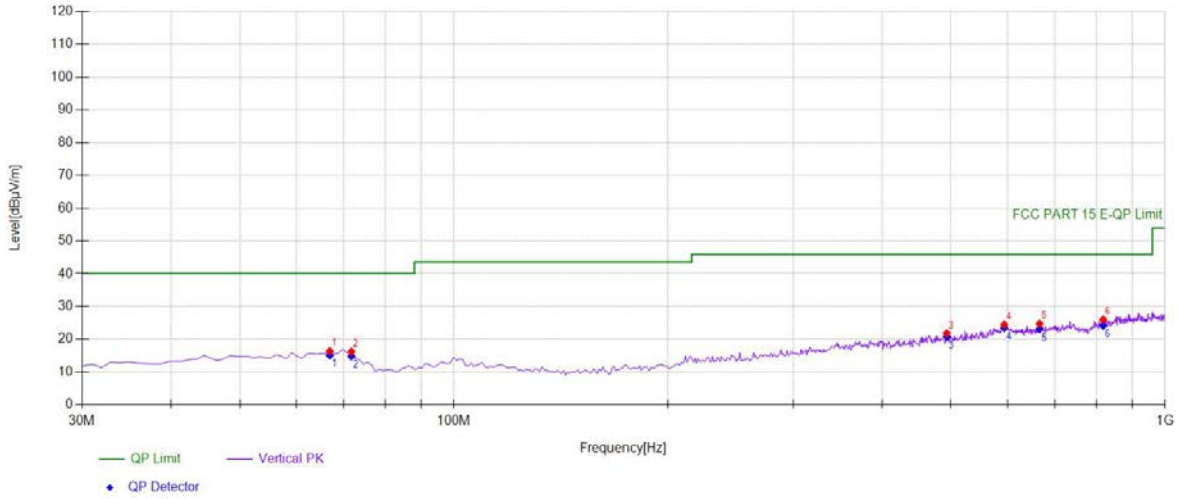
Test Model	U-NII -3 Undesirable radiated Undesirable radiated Spurious Emission in Band Edge ☐ 802.11a ☐ 802.11n(HT20) ☒ 802.11 ax (VHT20) ☒ 5825 Ant.Pol V



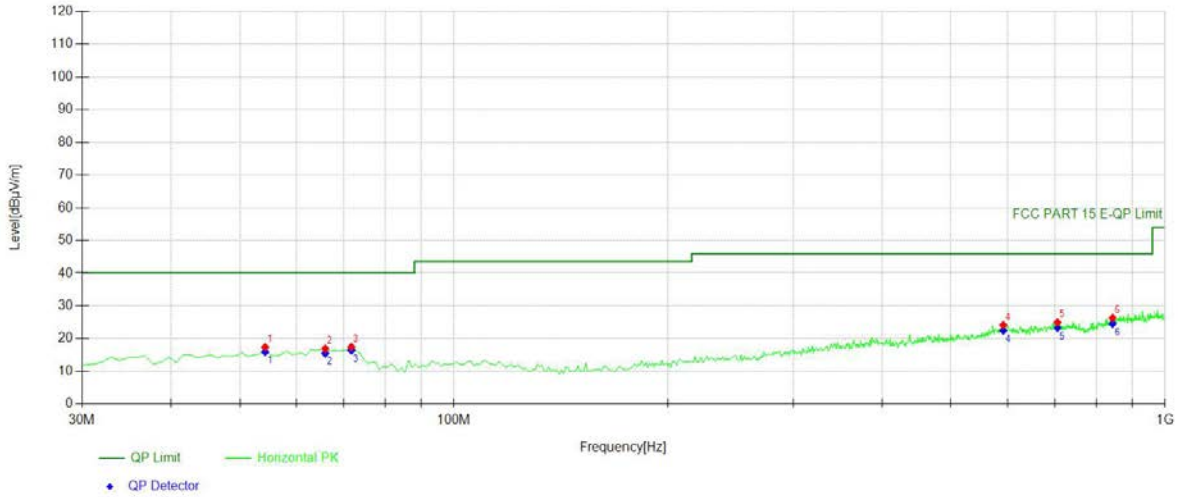
Undesirable radiated Spurious Emission below 1GHz (30MHz to 1GHz)

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

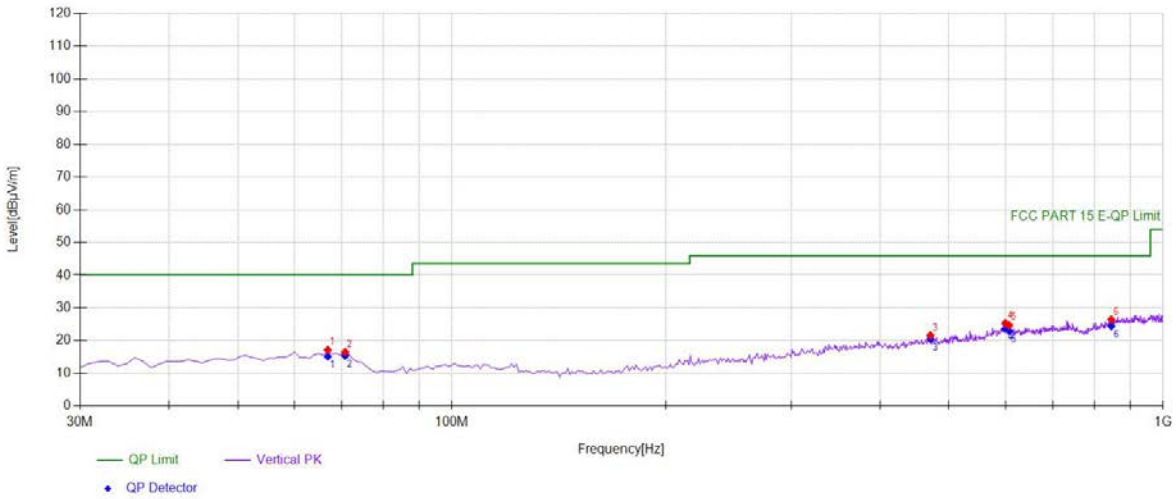


Suspected Data List								
NO.	Freq. [MHz]	Reading [dBµV]	Factor [dB/m]	Level [dBµV/m]	Detector	Limit [dBµV/m]	Margin [dB]	Polarity
1	66.8969	34.62	-18.27	16.35	PK	40.00	23.65	Vertical
2	71.7518	35.15	-18.96	16.19	PK	40.00	23.81	Vertical
3	493.153	31.92	-10.09	21.83	PK	46.00	24.17	Vertical
4	594.134	31.24	-6.73	24.51	PK	46.00	21.49	Vertical
5	665.986	31.76	-7.01	24.75	PK	46.00	21.25	Vertical
6	818.428	31.12	-5.12	26.00	PK	46.00	20.00	Vertical

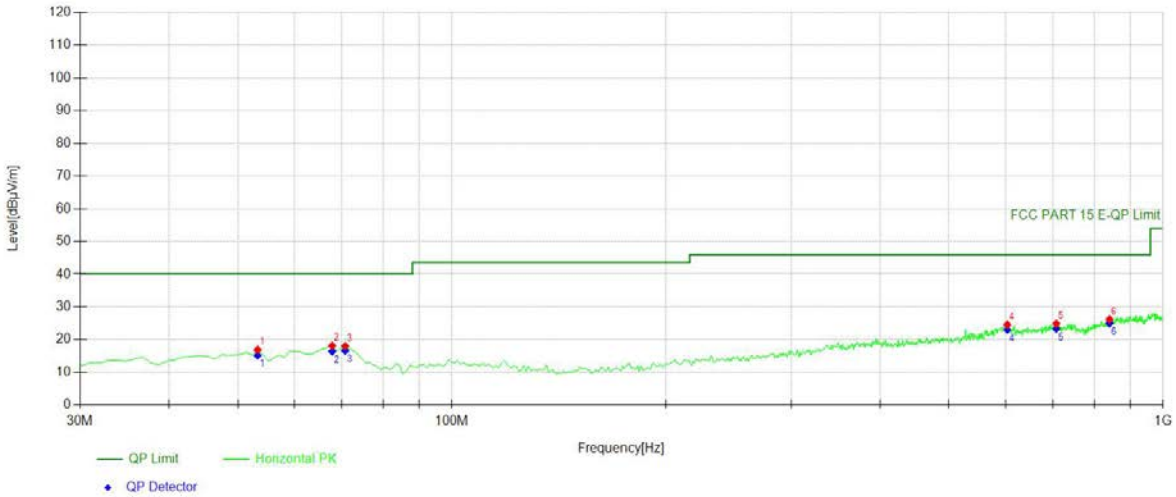


Suspected Data List								
NO.	Freq. [MHz]	Reading [dBμV]	Factor [dB/m]	Level [dBμV/m]	Detector	Limit [dBμV/m]	Margin [dB]	Polarity
1	54.2743	33.94	-16.56	17.38	PK	40.00	22.62	Horizontal
2	65.9259	35.03	-18.14	16.89	PK	40.00	23.11	Horizontal
3	71.7518	36.40	-18.96	17.44	PK	40.00	22.56	Horizontal
4	592.192	30.96	-6.83	24.13	PK	46.00	21.87	Horizontal
5	705.795	31.05	-6.11	24.94	PK	46.00	21.06	Horizontal
6	843.673	30.75	-4.47	26.28	PK	46.00	19.72	Horizontal

Test mode:	802.11a	Frequency(MHz):	5200

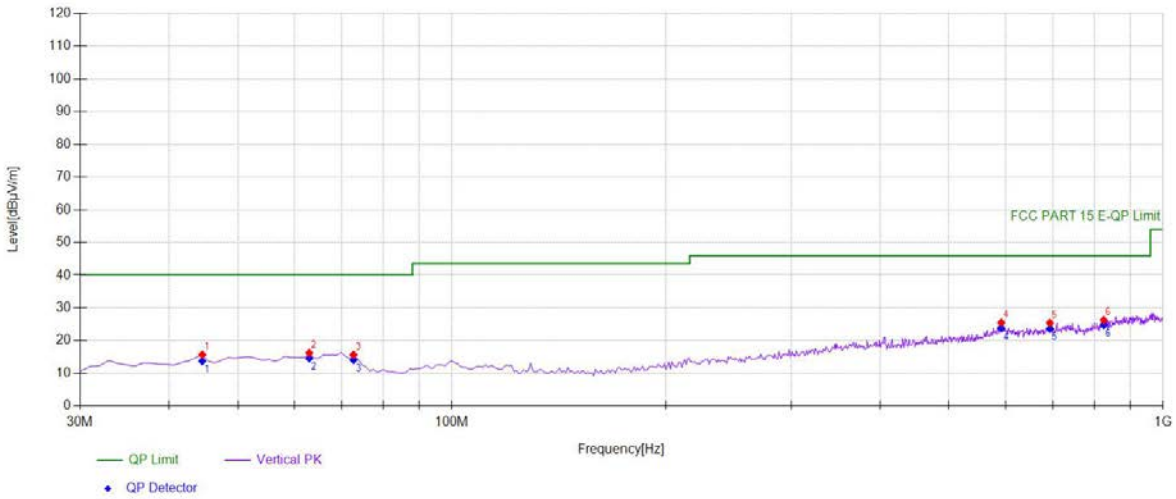


Suspected Data List								
NO.	Freq. [MHz]	Reading [dBµV]	Factor [dB/m]	Level [dBµV/m]	Detector	Limit [dBµV/m]	Margin [dB]	Polarity
1	66.8969	35.38	-18.27	17.11	PK	40.00	22.89	Vertical
2	70.7808	35.30	-18.81	16.49	PK	40.00	23.51	Vertical
3	470.820	31.81	-10.21	21.60	PK	46.00	24.40	Vertical
4	599.96	31.80	-6.44	25.36	PK	46.00	20.64	Vertical
5	607.727	31.54	-6.85	24.69	PK	46.00	21.31	Vertical
6	845.615	30.77	-4.38	26.39	PK	46.00	19.61	Vertical

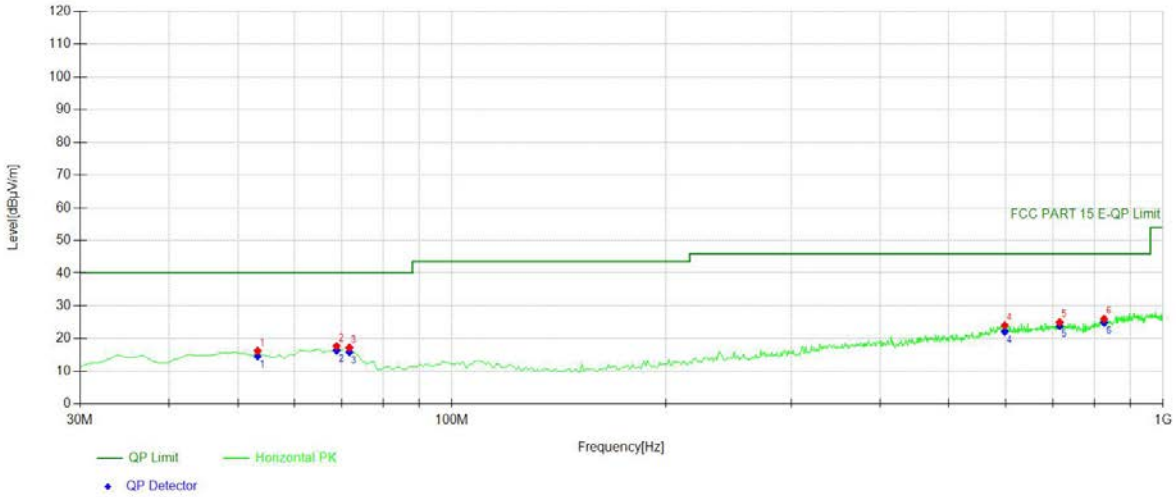


Suspected Data List								
NO.	Freq. [MHz]	Reading [dBµV]	Factor [dB/m]	Level [dBµV/m]	Detector	Limit [dBµV/m]	Margin [dB]	Polarity
1	53.3033	33.32	-16.44	16.88	PK	40.00	23.12	Horizontal
2	67.8679	36.54	-18.40	18.14	PK	40.00	21.86	Horizontal
3	70.7808	36.83	-18.81	18.02	PK	40.00	21.98	Horizontal
4	603.843	31.23	-6.65	24.58	PK	46.00	21.42	Horizontal
5	707.737	30.94	-6.10	24.84	PK	46.00	21.16	Horizontal
6	840.760	30.80	-4.63	26.17	PK	46.00	19.83	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	44.5646	32.49	-16.77	15.72	PK	40.00	24.28	Vertical
2	63.013	33.94	-17.73	16.21	PK	40.00	23.79	Vertical
3	72.7227	34.82	-19.11	15.71	PK	40.00	24.29	Vertical
4	592.192	32.30	-6.83	25.47	PK	46.00	20.53	Vertical
5	693.173	31.81	-6.40	25.41	PK	46.00	20.59	Vertical
6	825.225	31.25	-5.01	26.24	PK	46.00	19.76	Vertical



Suspected Data List								
NO.	Freq. [MHz]	Reading [dBµV]	Factor [dB/m]	Level [dBµV/m]	Detector	Limit [dBµV/m]	Margin [dB]	Polarity
1	53.3033	32.70	-16.44	16.26	PK	40.00	23.74	Horizontal
2	68.8388	36.20	-18.53	17.67	PK	40.00	22.33	Horizontal
3	71.7518	36.20	-18.96	17.24	PK	40.00	22.76	Horizontal
4	598.989	30.53	-6.49	24.04	PK	46.00	21.96	Horizontal
5	715.505	31.09	-6.11	24.98	PK	46.00	21.02	Horizontal
6	826.196	30.99	-4.99	26.00	PK	46.00	20.00	Horizontal

8.5 POWER LINE CONDUCTED EMISSIONS

8.5.1 Applicable Standard

According to FCC Part 15.207(a)

8.5.2 Conformance Limit

Conducted Emission Limit

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

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

8.5.3 Test Configuration

Test according to clause 6.3 conducted emission test setup

8.5.4 Test Procedure

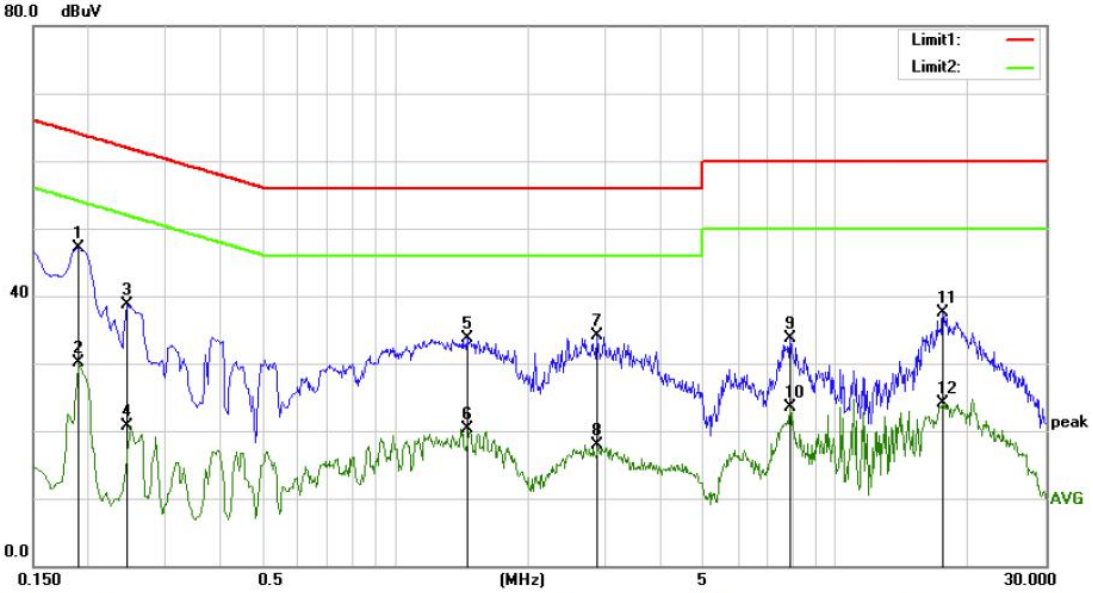
The EUT was placed on a table which is 0.8m above ground plane.
Maximum procedure was performed on the highest emissions to ensure EUT compliance.
Repeat above procedures until all frequency measured were complete.

8.5.5 Test Results

Pass

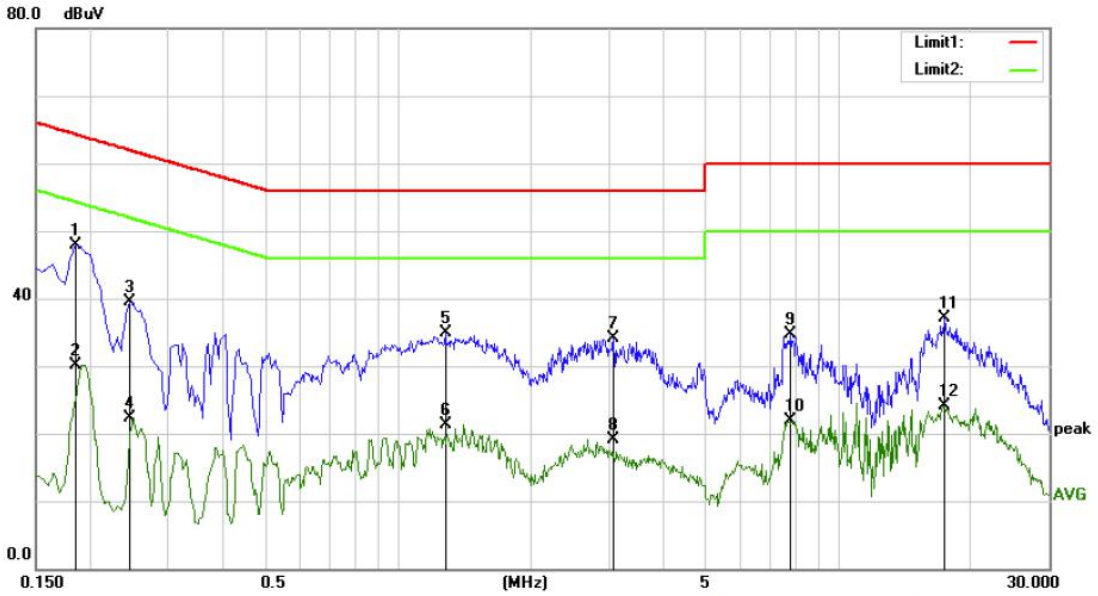
Temperature :	25.1℃	ATM Pressure:	1011 mbar
Humidity :	45%	Test Engineer:	CSL

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



Site Conduction 2# Phase: *L1* Temperature: 25.1

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	*	0.1900	36.51	10.64	47.15	64.04	-16.89	QP	
2		0.1900	19.46	10.64	30.10	54.04	-23.94	AVG	
3		0.2450	28.14	10.65	38.79	61.92	-23.13	QP	
4		0.2450	10.11	10.65	20.76	51.92	-31.16	AVG	
5		1.4550	23.13	10.66	33.79	56.00	-22.21	QP	
6		1.4550	9.57	10.66	20.23	46.00	-25.77	AVG	
7		2.8600	23.54	10.55	34.09	56.00	-21.91	QP	
8		2.8600	7.44	10.55	17.99	46.00	-28.01	AVG	
9		7.8800	23.16	10.52	33.68	60.00	-26.32	QP	
10		7.8800	12.90	10.52	23.42	50.00	-26.58	AVG	
11		17.5050	26.48	10.93	37.41	60.00	-22.59	QP	
12		17.5050	13.18	10.93	24.11	50.00	-25.89	AVG	



Site Conduction 2# Phase: *N* Temperature: 25.1

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	*	0.1850	37.26	10.65	47.91	64.26	-16.35	QP	
2		0.1850	19.46	10.65	30.11	54.26	-24.15	AVG	
3		0.2450	28.92	10.65	39.57	61.92	-22.35	QP	
4		0.2450	11.68	10.65	22.33	51.92	-29.59	AVG	
5		1.2800	24.16	10.67	34.83	56.00	-21.17	QP	
6		1.2800	10.62	10.67	21.29	46.00	-24.71	AVG	
7		3.0800	23.48	10.53	34.01	56.00	-21.99	QP	
8		3.0800	8.66	10.53	19.19	46.00	-26.81	AVG	
9		7.7800	24.13	10.51	34.64	60.00	-25.36	QP	
10		7.7800	11.42	10.51	21.93	50.00	-28.07	AVG	
11		17.4550	26.27	10.91	37.18	60.00	-22.82	QP	
12		17.4550	13.16	10.91	24.07	50.00	-25.93	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℃	ATM Pressure:	1011 mbar
Humidity :	45 %	Test Engineer:	XXH

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

Ant1: 3.8dBi, Ant2: 4.9dBi

- ☒ 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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