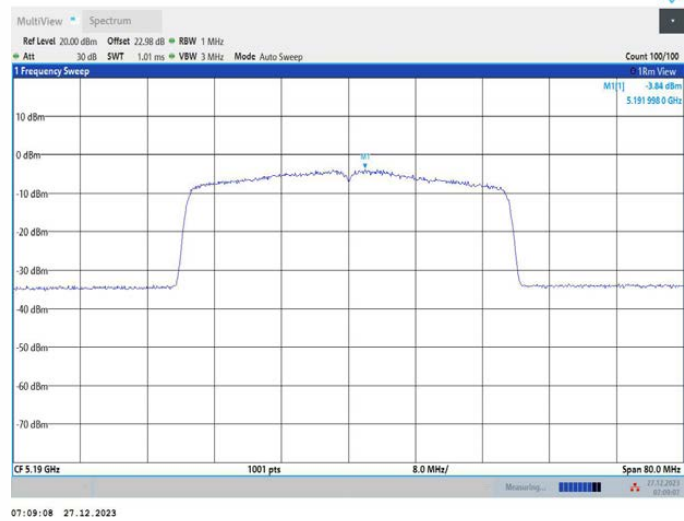
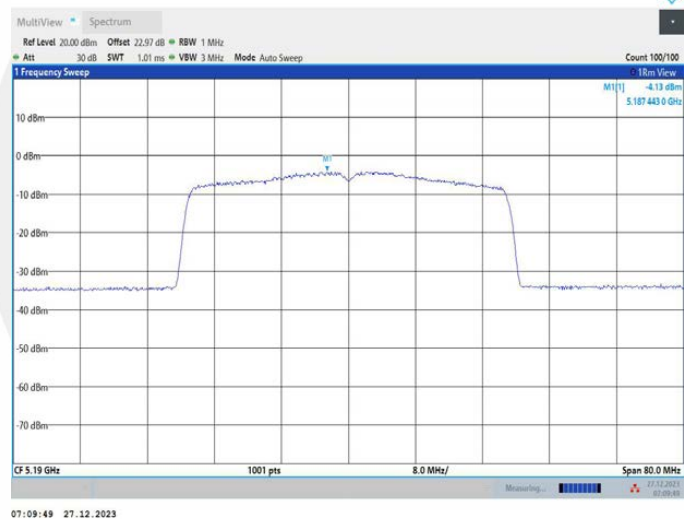


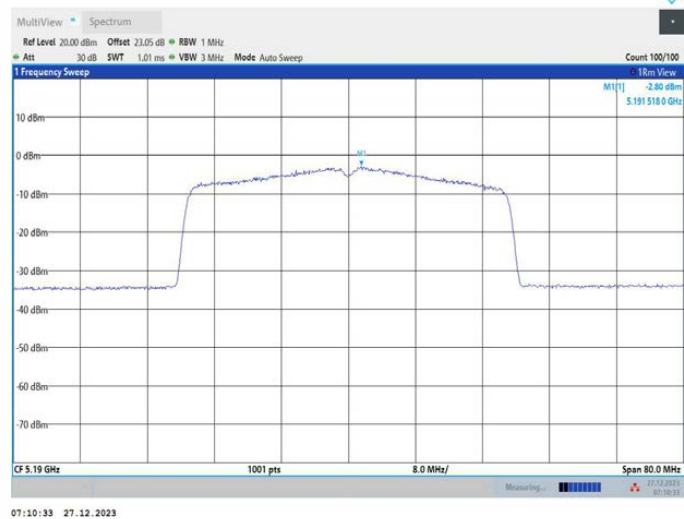
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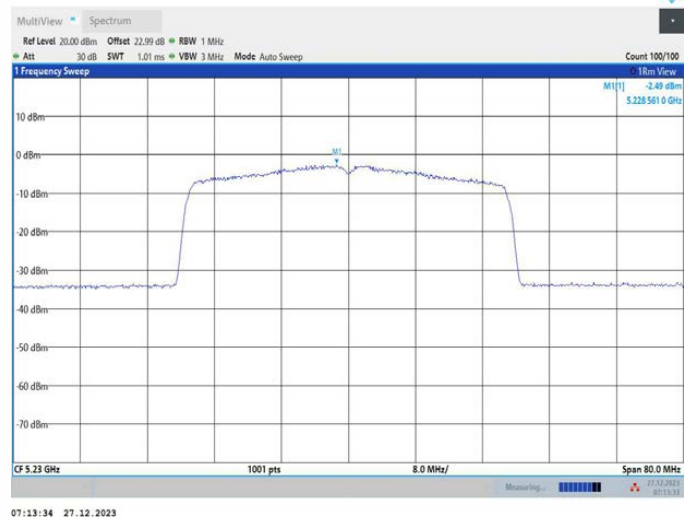
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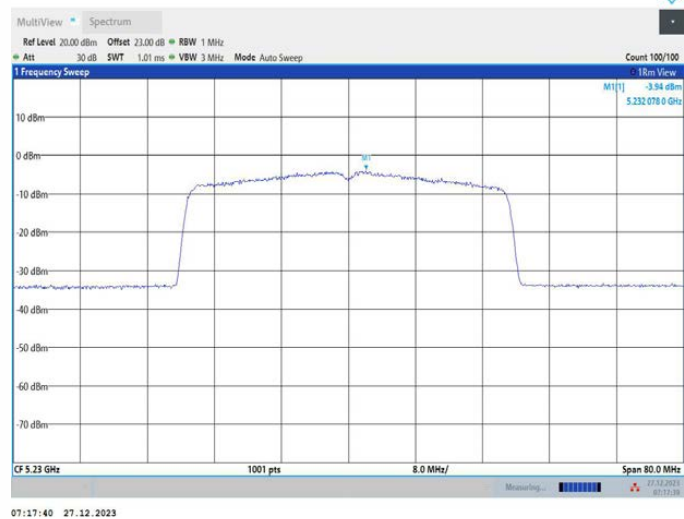
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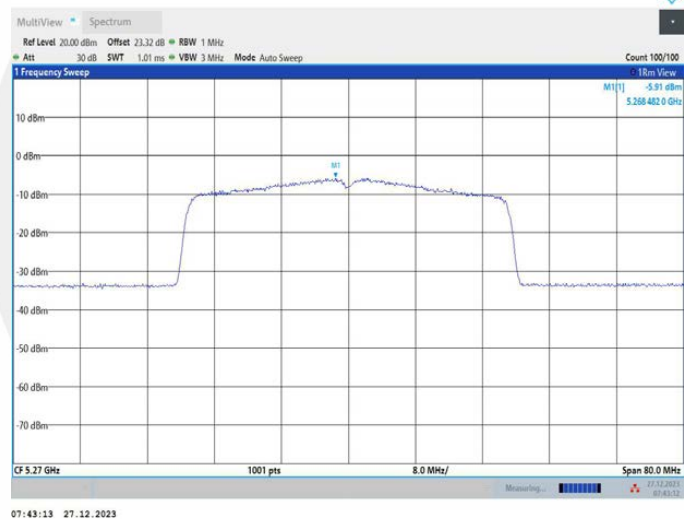
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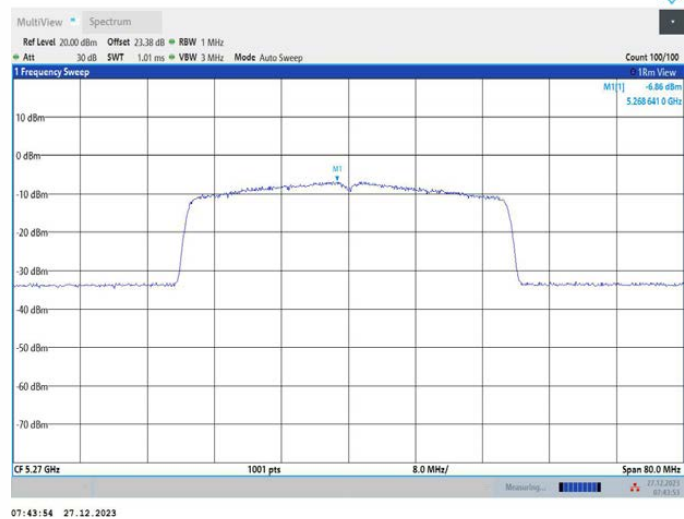
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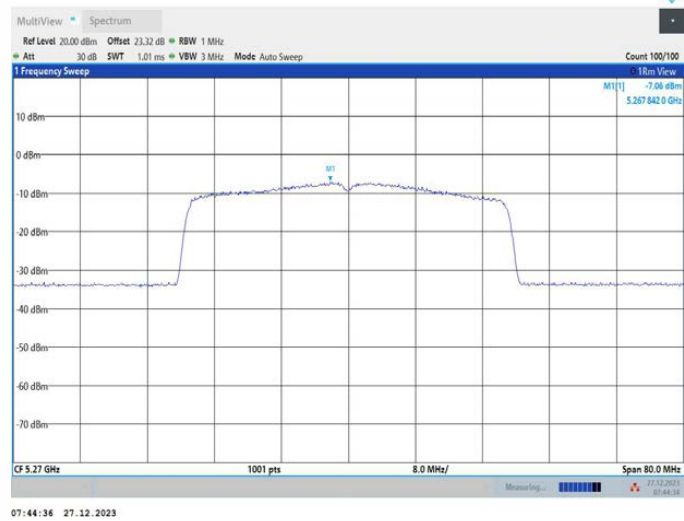
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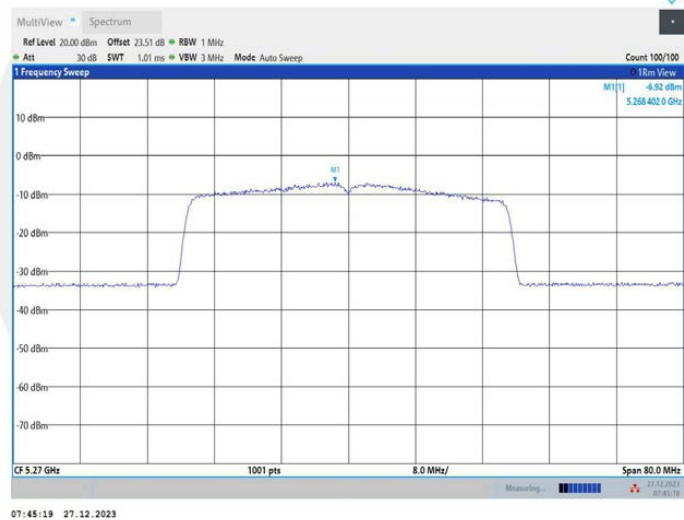
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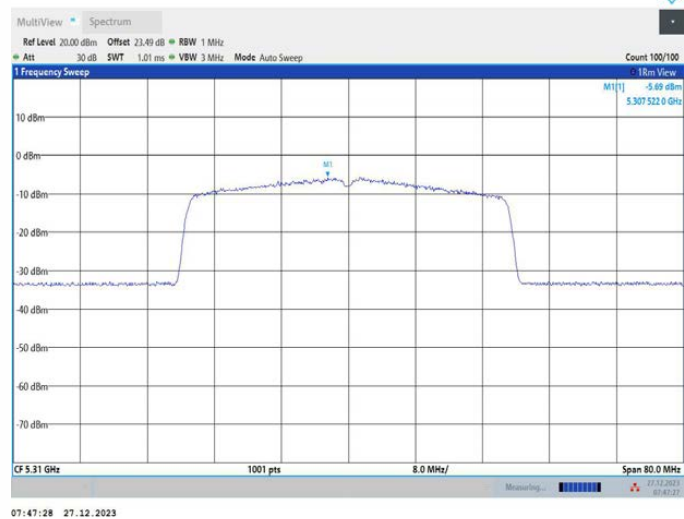
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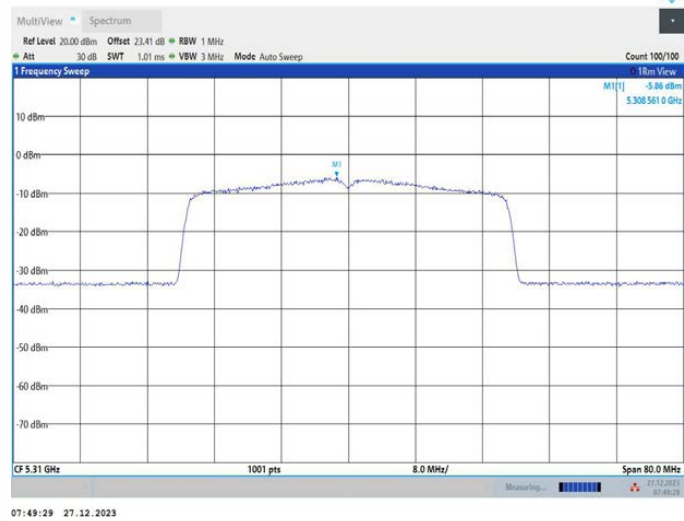
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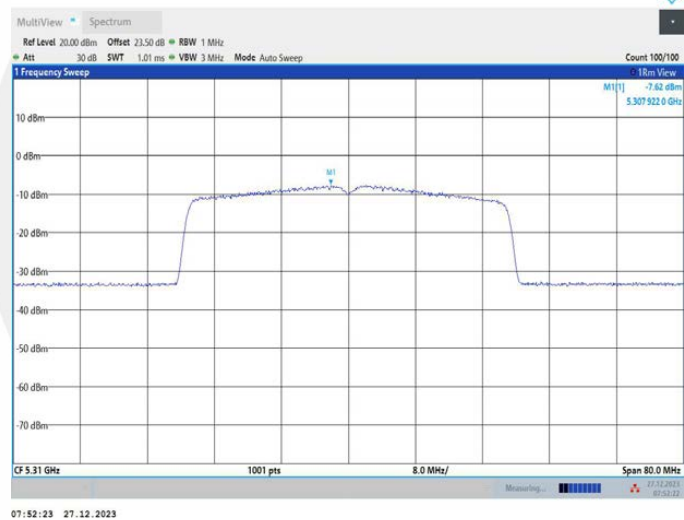
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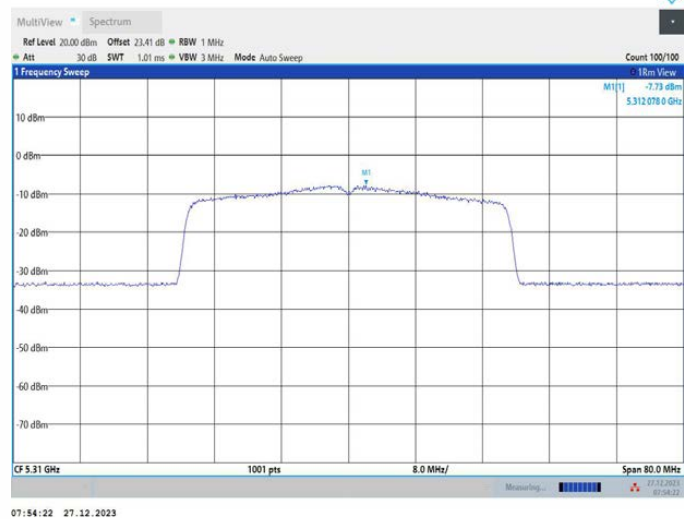
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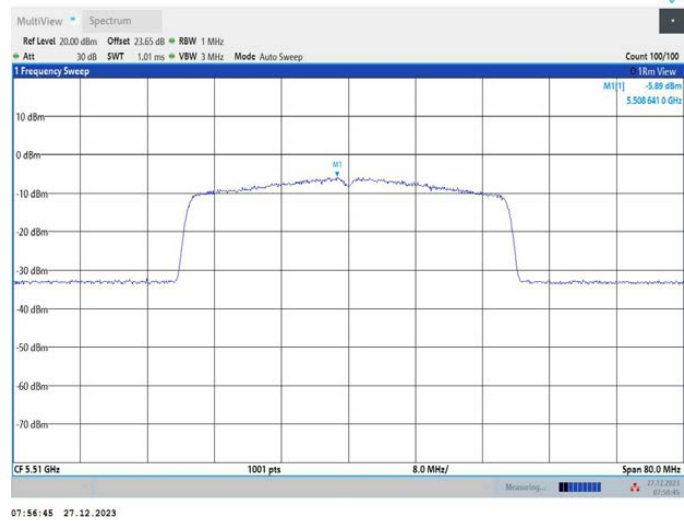
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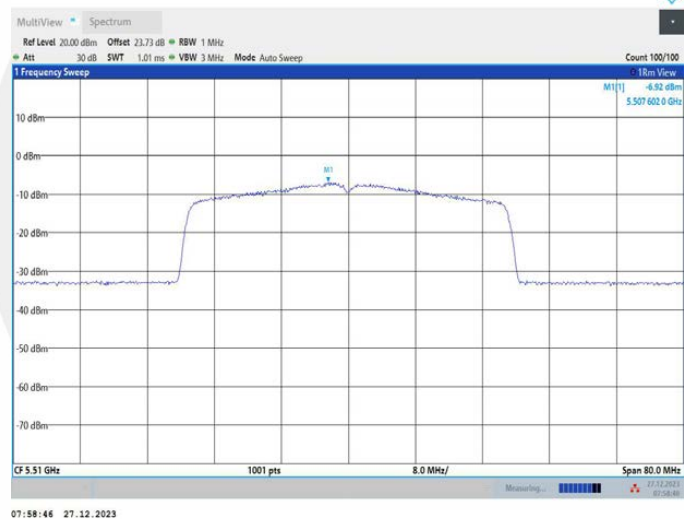
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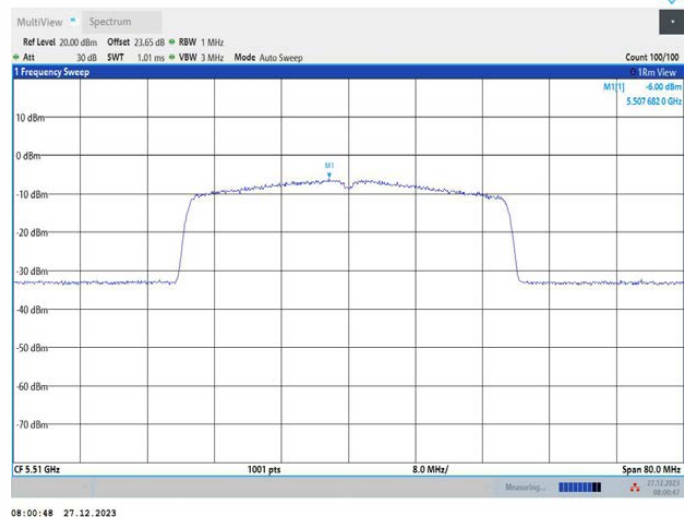
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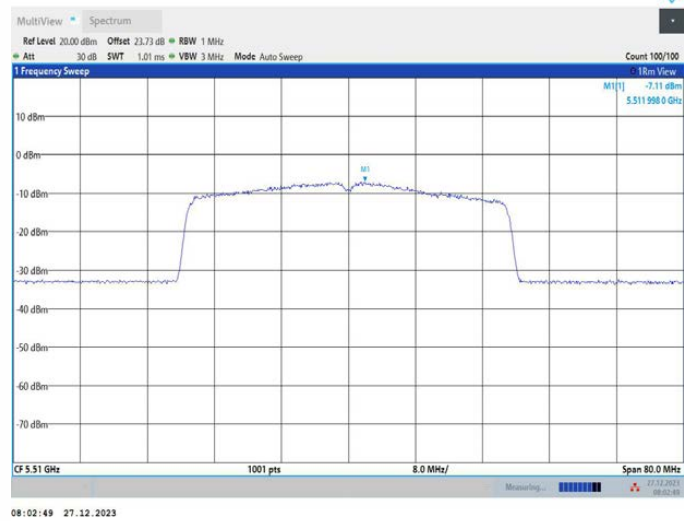
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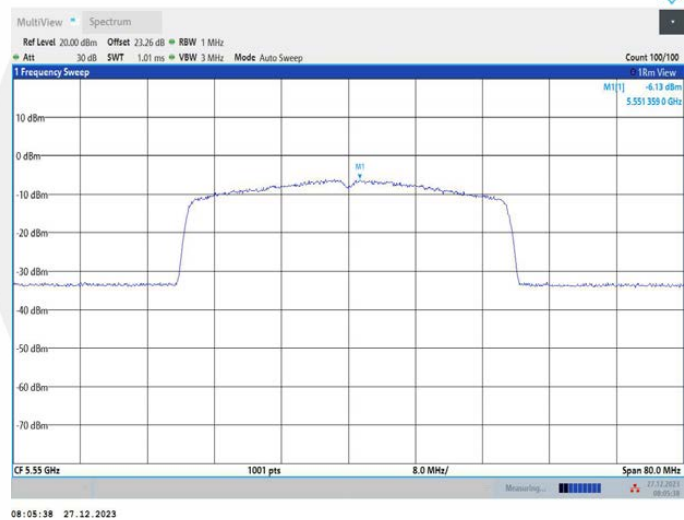
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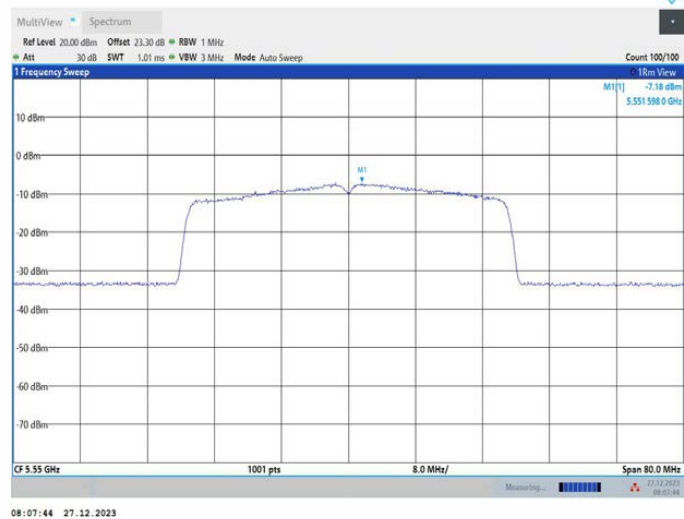
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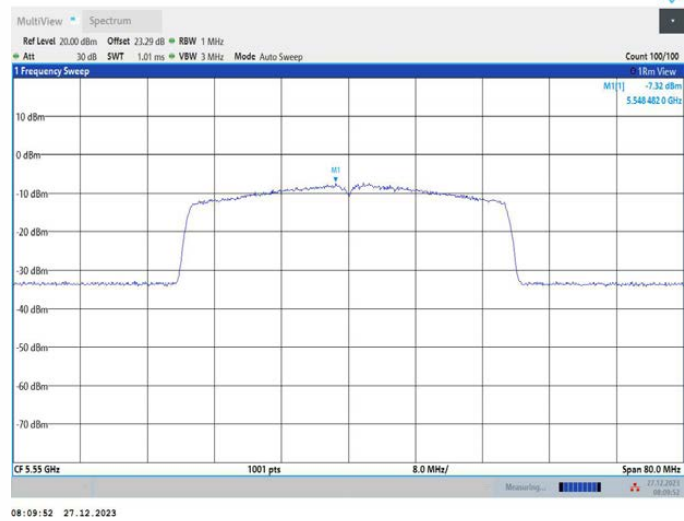
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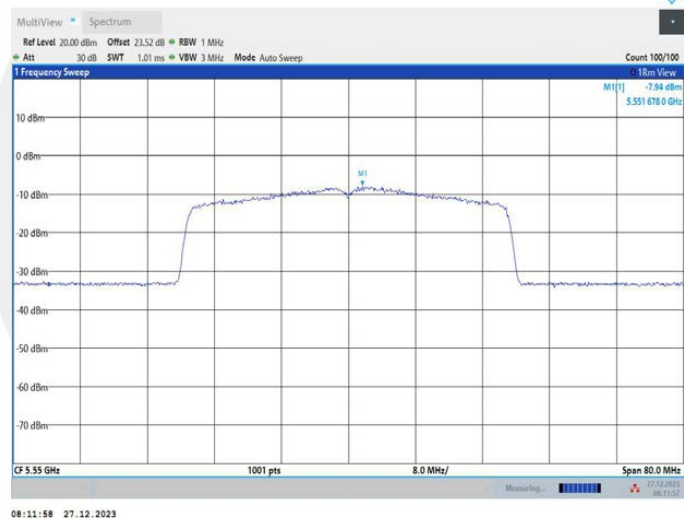
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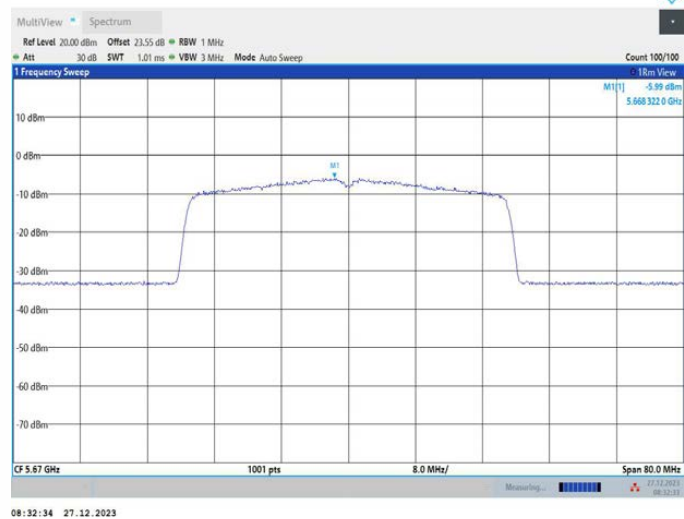
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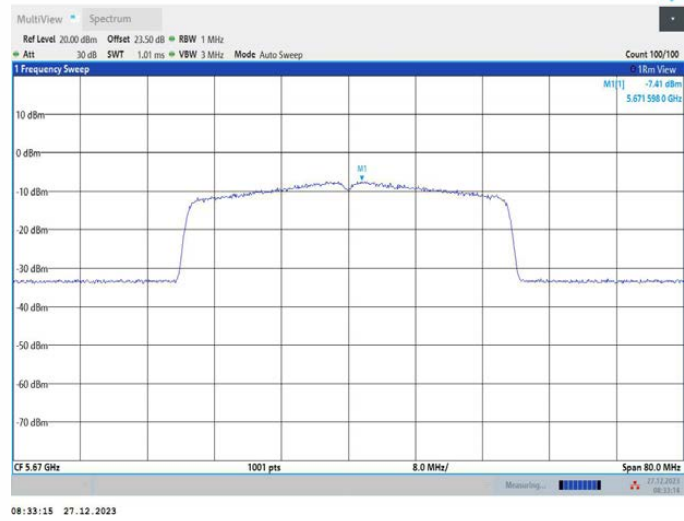
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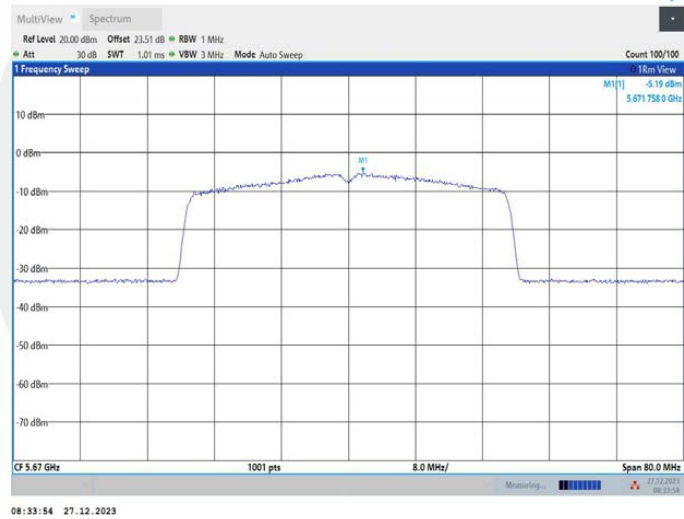
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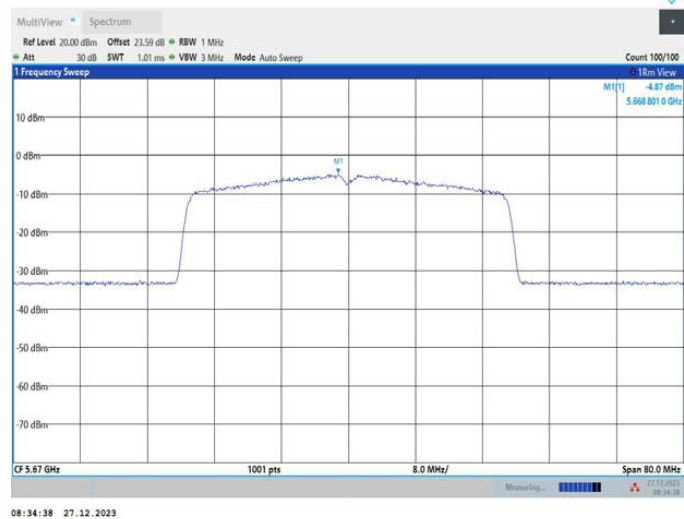
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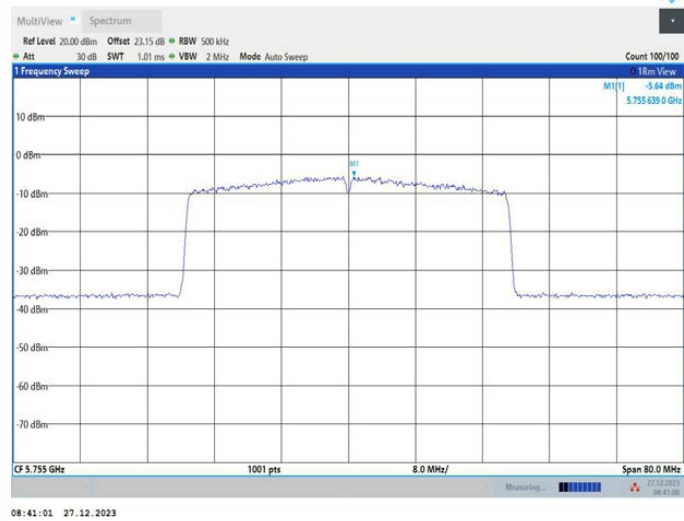
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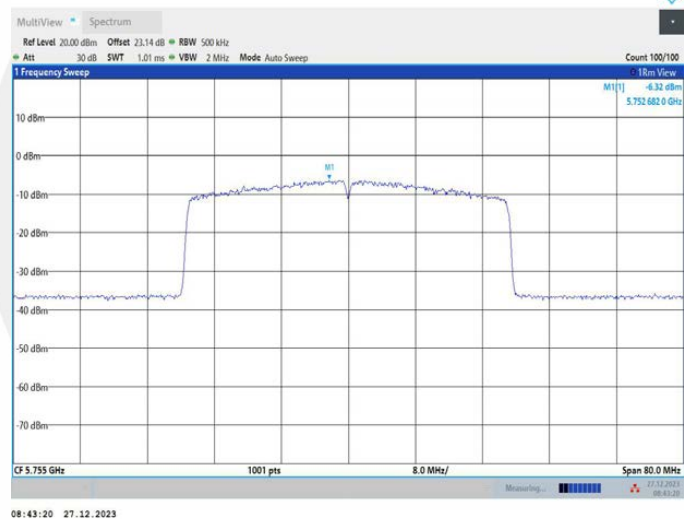
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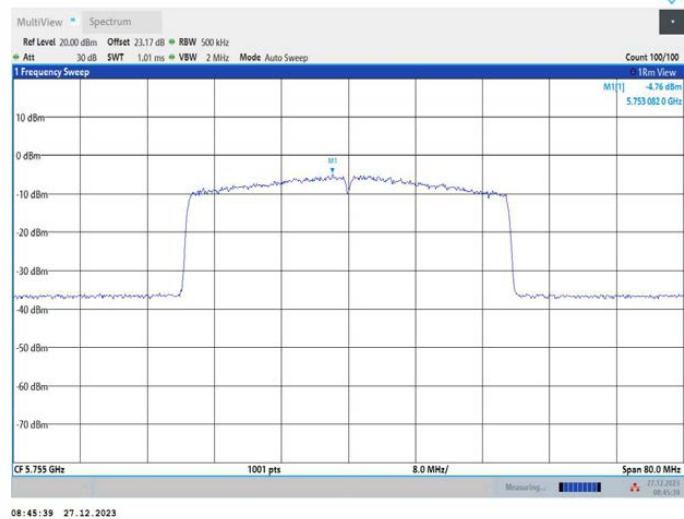
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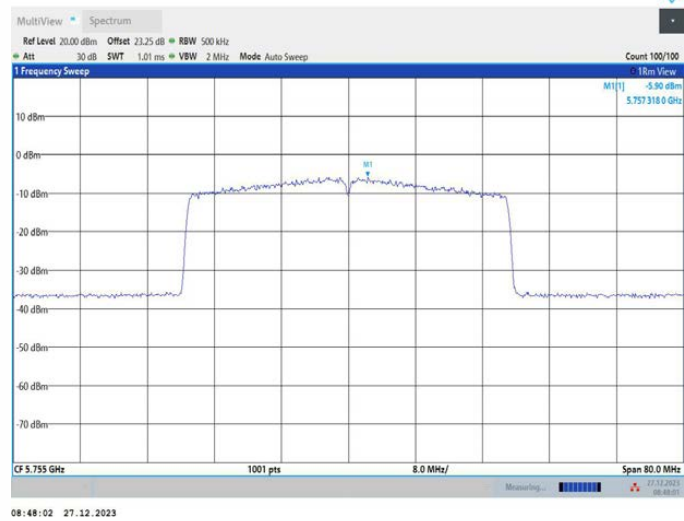
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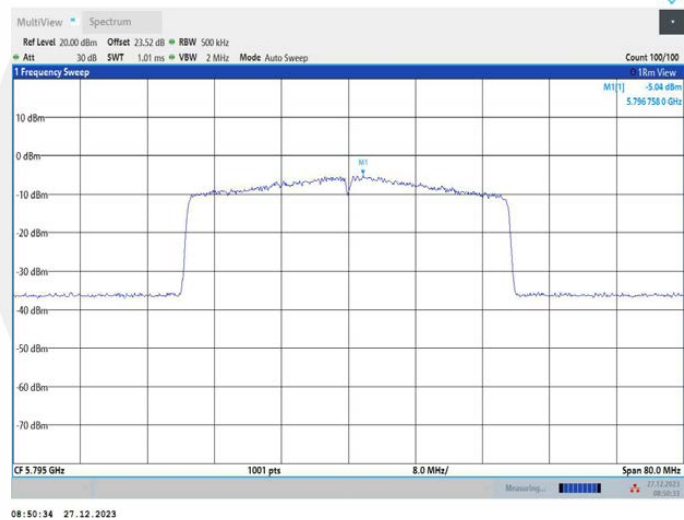
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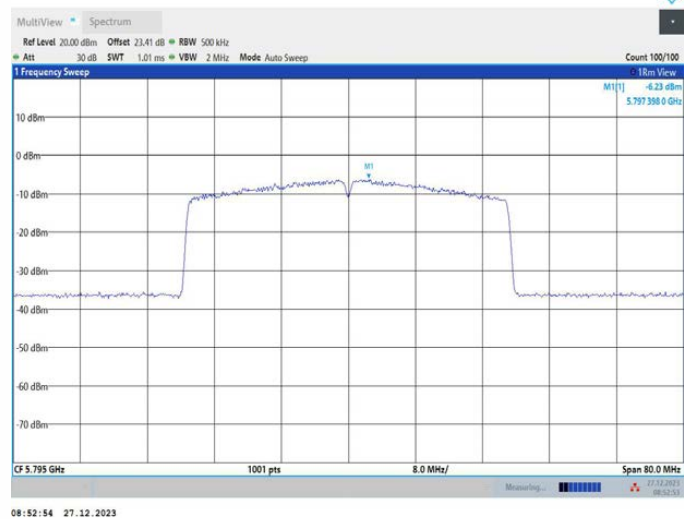
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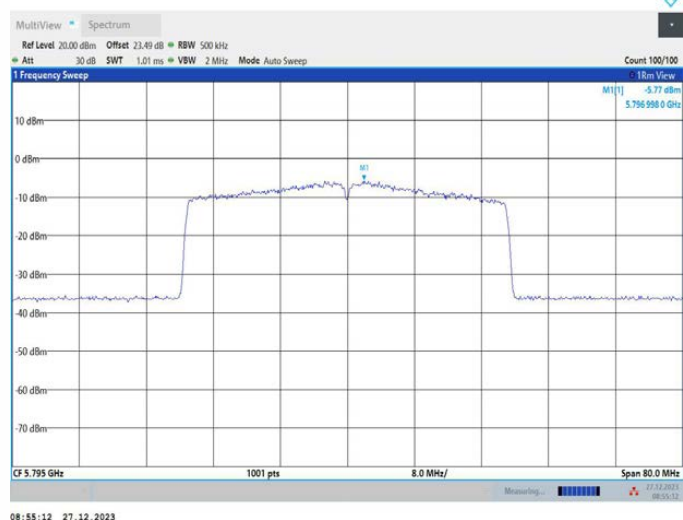
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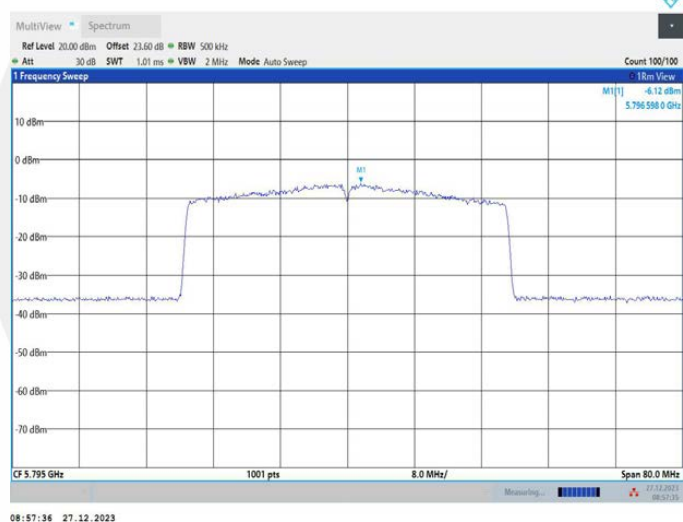
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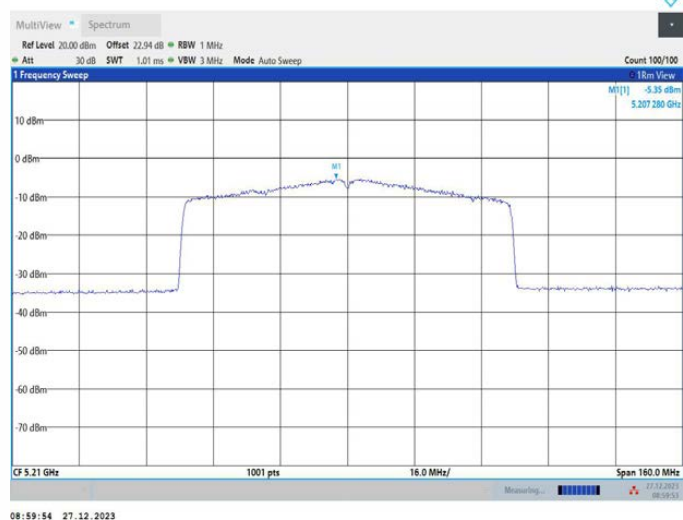
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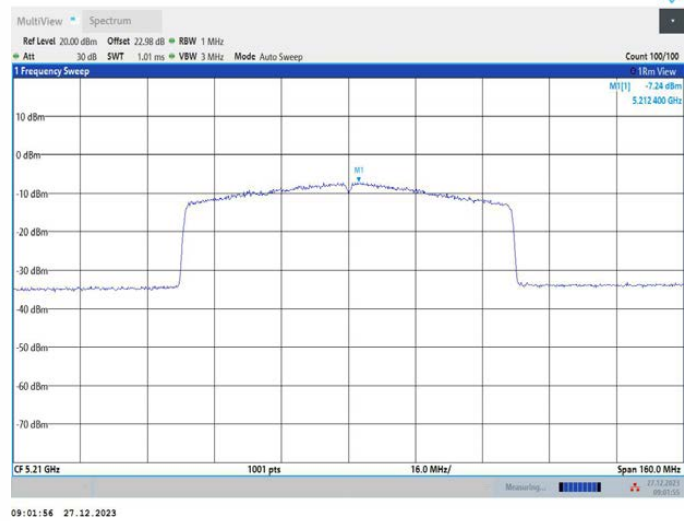
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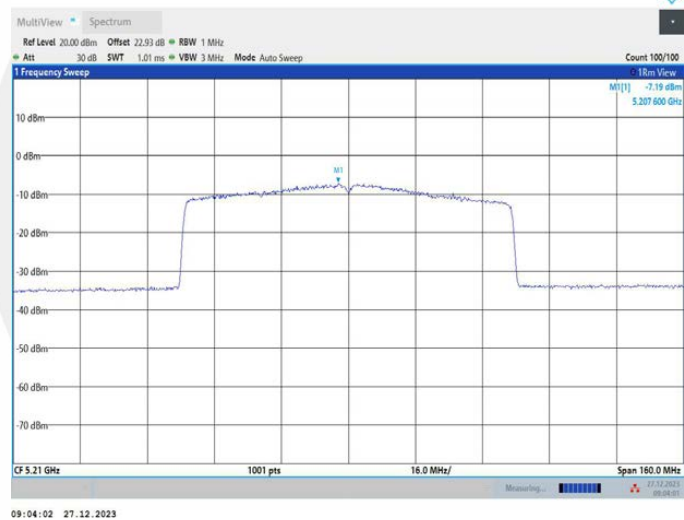
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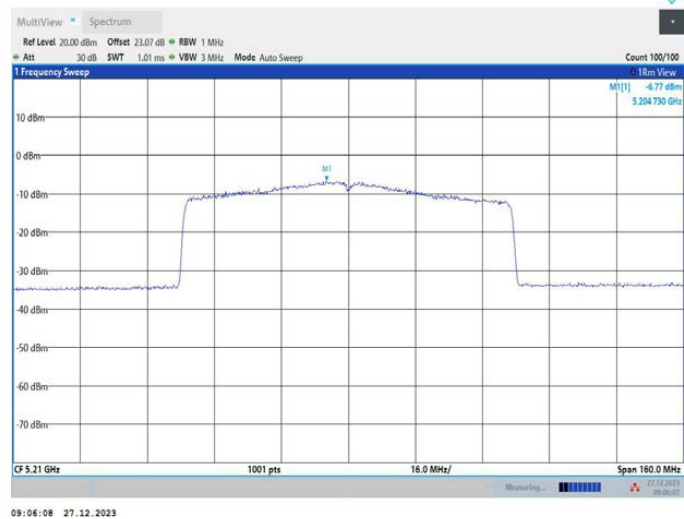
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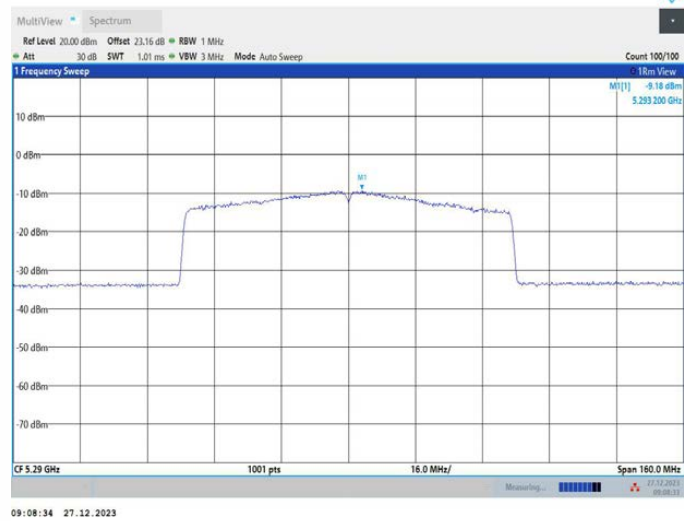
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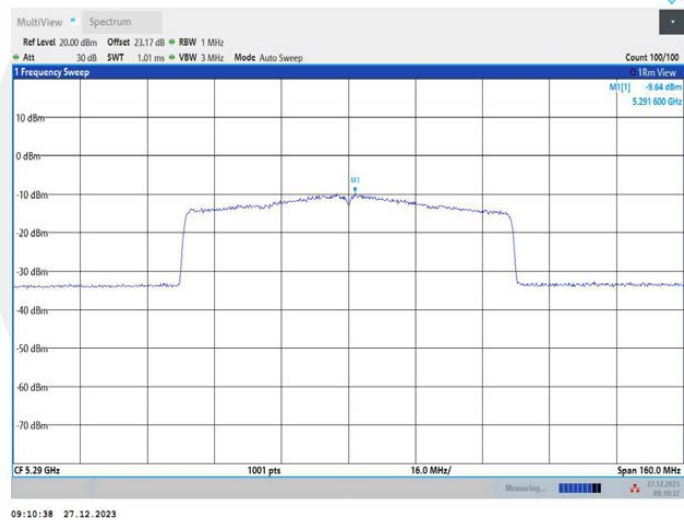
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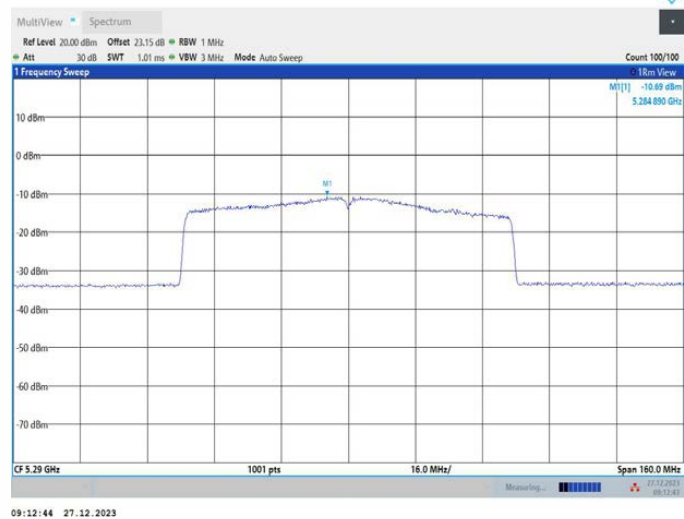
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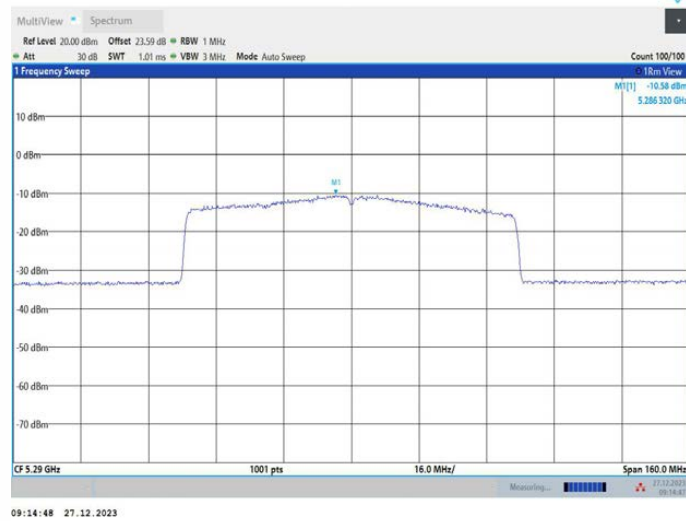
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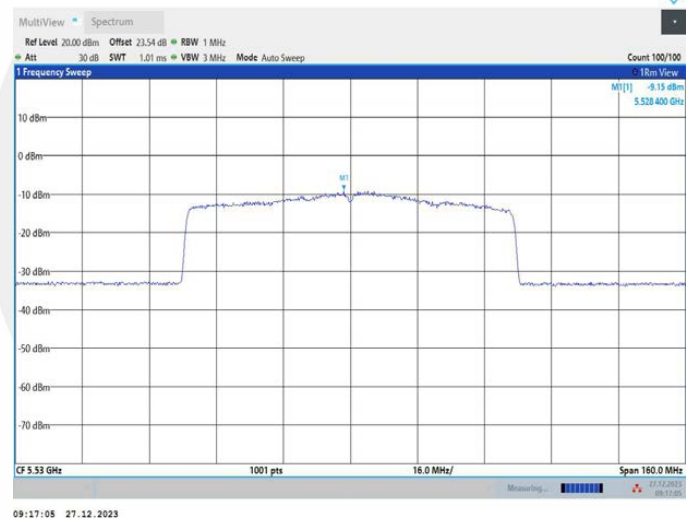
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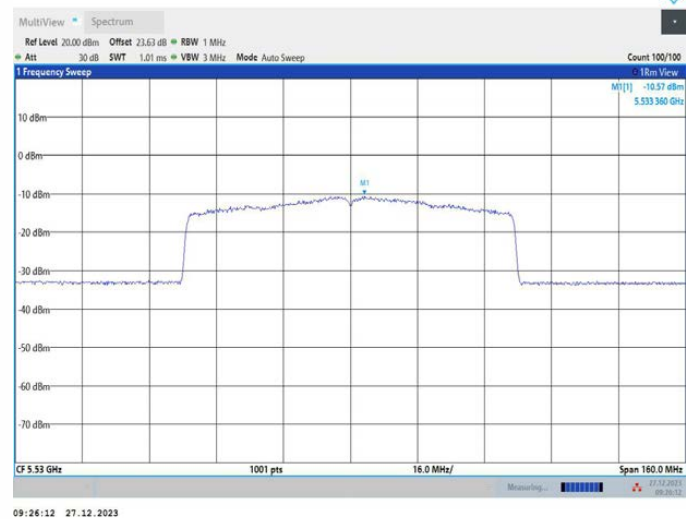
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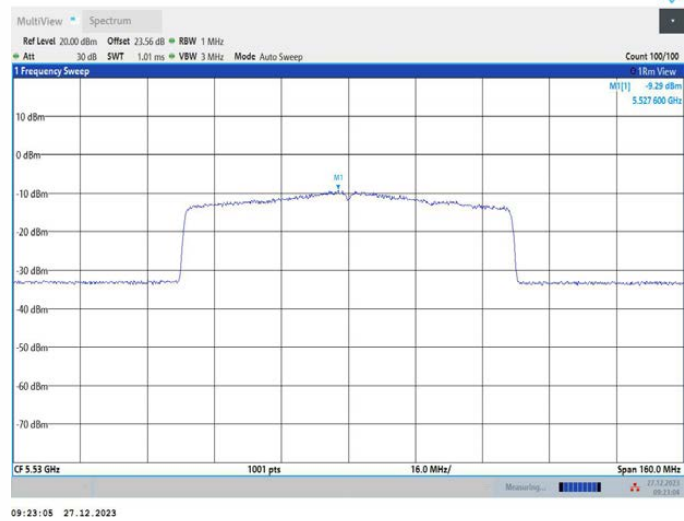
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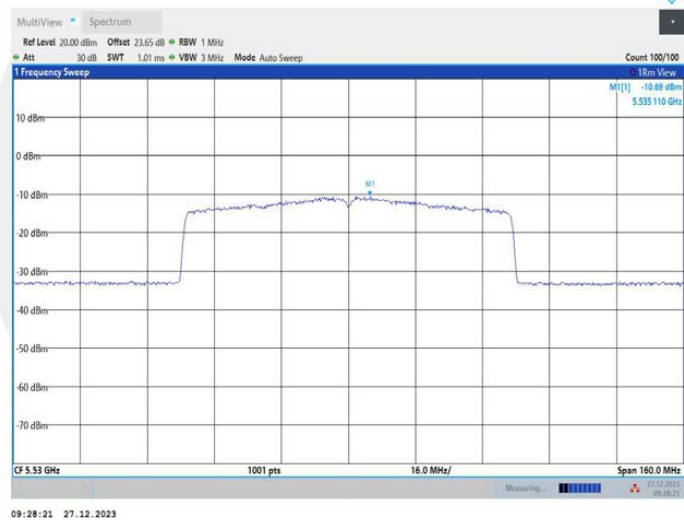
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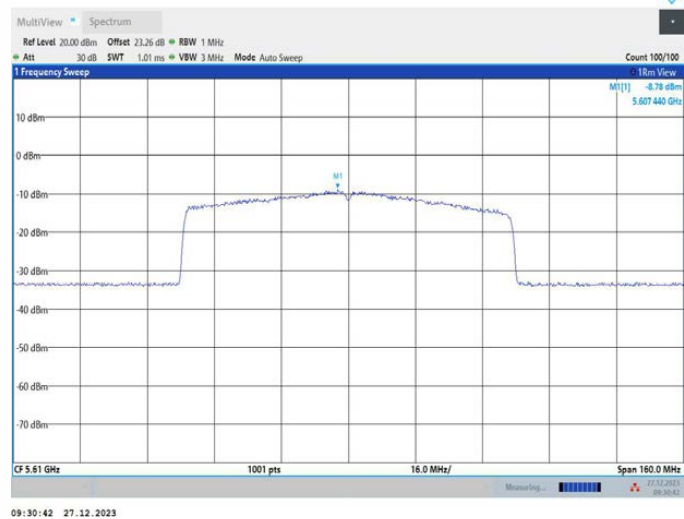
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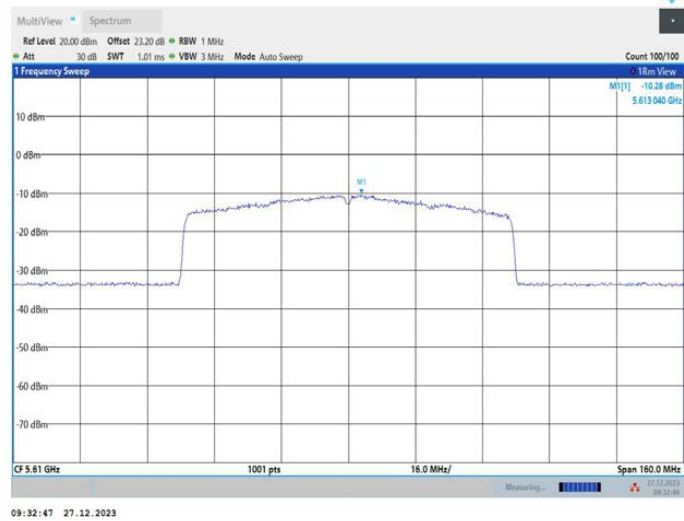
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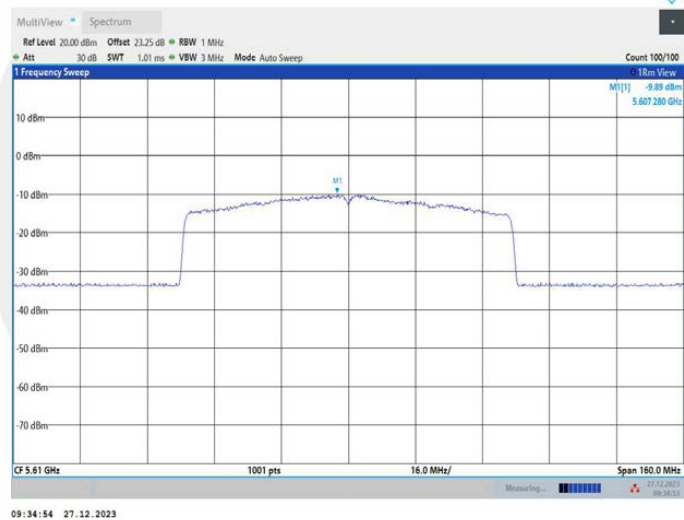
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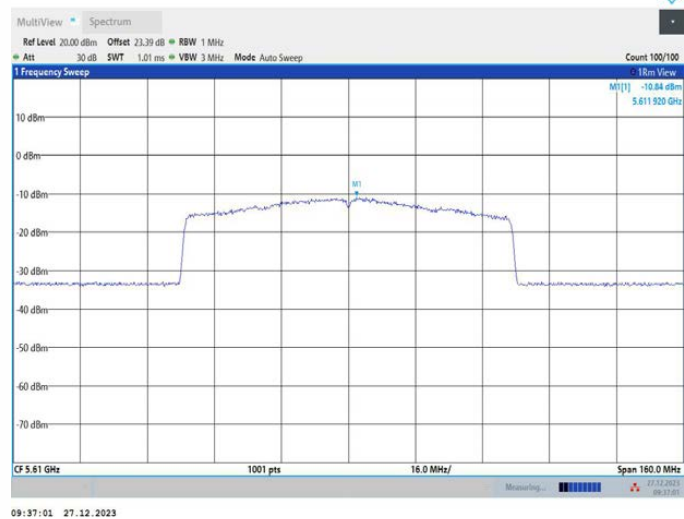
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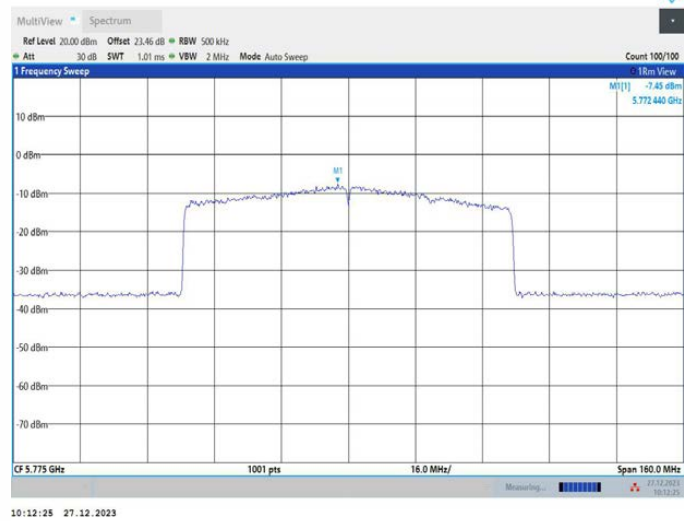
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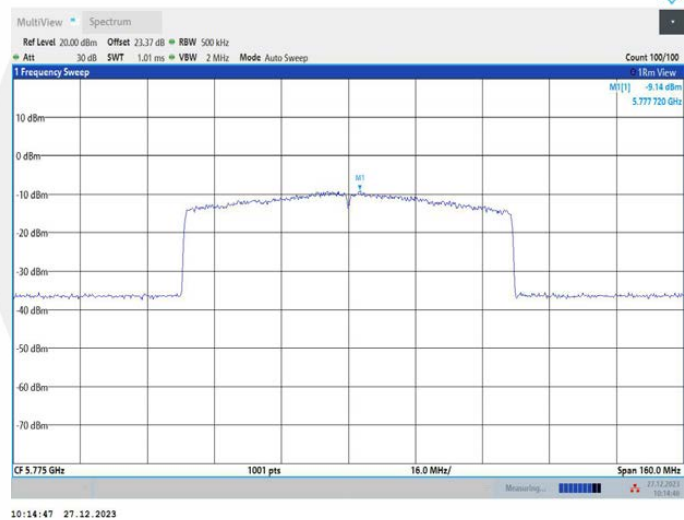
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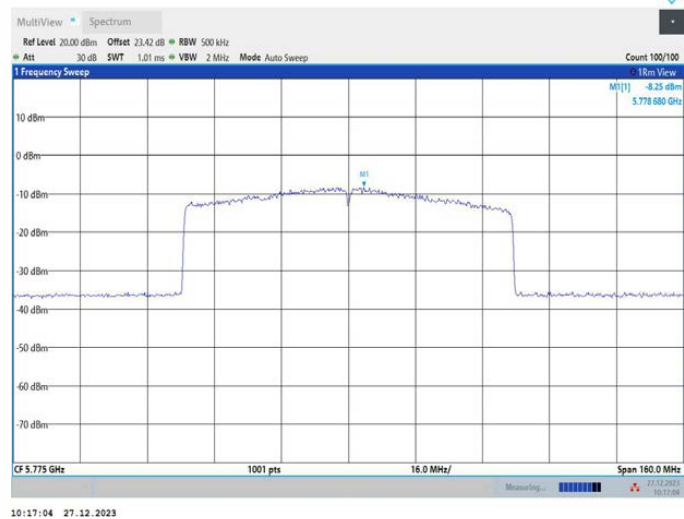
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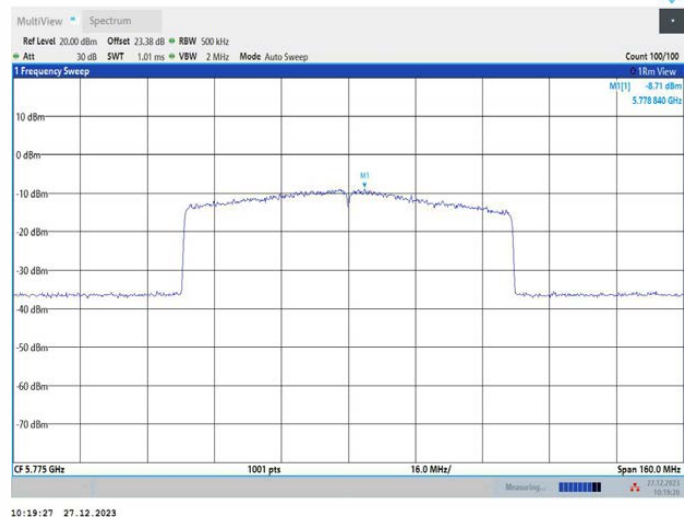
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11AX80MIMO_Ant3_5775



11AX80MIMO_Ant4_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 ANT3 and MIMO as below:

ANT3:

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)
10065.5	V	59.31	-35.92	-27	8.92
13127.0	V	60.66	-34.57	-27	7.57
17498.2	V	66.12	-29.11	-27	2.11
10669.3	H	59.82	-35.41	-27	8.41
15525.2	H	62.69	-32.54	-27	5.54
17498.2	H	66.97	-28.26	-27	1.26

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)
11528.2	V	60.60	-34.63	-27	7.63
15516.7	V	62.62	-32.61	-27	5.61
17498.2	V	66.23	-29	-27	2
10949.9	H	59.24	-35.99	-27	8.99
15312.6	H	62.42	-32.81	-27	5.81
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)
11519.7	V	60.35	-34.88	-27	7.88
15516.7	V	62.33	-32.9	-27	5.9
17506.7	V	66.13	-29.1	-27	2.1
11460.2	H	59.78	-35.45	-27	8.45
15457.2	H	62.58	-32.65	-27	5.65
17498.2	H	65.98	-29.25	-27	2.25

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)
10064.11	V	59.18	-36.05	-27	9.05
13125.61	V	60.5	-34.73	-27	7.73
17499.48	V	66.09	-29.14	-27	2.14
10680.99	H	59.74	-35.49	-27	8.49
15536.89	H	62.48	-32.75	-27	5.75
17509.89	H	66.81	-28.42	-27	1.42

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)
11526.81	V	60.47	-34.76	-27	7.76
15515.31	V	62.46	-32.77	-27	5.77
17499.48	V	66.2	-29.03	-27	2.03
10961.59	H	59.16	-36.07	-27	9.07
15324.29	H	62.21	-33.02	-27	6.02
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)
11518.31	V	60.22	-35.01	-27	8.01
15515.31	V	62.17	-33.06	-27	6.06
17507.98	V	66.1	-29.13	-27	2.13
11471.89	H	59.7	-35.53	-27	8.53
15468.89	H	62.37	-32.86	-27	5.86
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

ANT3:

Test mode: 802.11n(20)		Frequency(MHz): 5180			
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
10065.5	V	59.31	74.00	14.69	peak
13127.0	V	60.66	74.00	13.34	peak
17498.2	V	66.12	74.00	7.88	peak
10065.53	V	44.89	54.00	9.11	AVG
13127.06	V	42.66	54.00	11.34	AVG
17498.24	V	44.66	54.00	9.34	AVG
10669.3	H	59.82	74.00	14.18	peak
15525.2	H	62.69	74.00	11.31	peak
17498.2	H	66.97	74.00	7.03	peak
10669.33	H	46.93	54.00	7.07	AVG
15525.26	H	43.51	54.00	10.49	AVG
17498.24	H	44.66	54.00	9.34	AVG

Test mode: 802.11n(20)		Frequency(MHz): 5200			
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
11528.2	V	60.60	74.00	13.40	peak
15516.7	V	62.62	74.00	11.38	peak
17498.2	V	66.23	74.00	7.77	peak
11528.26	V	46.17	54.00	7.83	AVG
15516.75	V	43.70	54.00	10.30	AVG
17498.24	V	45.06	54.00	8.94	AVG
10949.9	H	59.24	74.00	14.76	peak
15312.6	H	62.42	74.00	11.58	peak
17489.7	H	65.78	74.00	8.22	peak
10949.97	H	45.88	54.00	8.12	AVG
15312.65	H	42.66	54.00	11.34	AVG
17489.74	H	44.43	54.00	9.57	AVG

Test mode: 802.11n(20)		Frequency(MHz): 5240			
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
11519.7	V	60.35	74.00	13.65	peak
15516.7	V	62.33	74.00	11.67	peak
17506.7	V	66.13	74.00	7.87	peak
11519.75	V	46.69	54.00	7.31	AVG
15516.75	V	43.46	54.00	10.54	AVG
17506.7	V	44.47	54.00	9.53	AVG
11460.2	H	59.78	74.00	14.22	peak
15457.2	H	62.58	74.00	11.42	peak
17498.2	H	65.98	74.00	8.02	peak
11460.23	H	46.27	54.00	7.73	AVG
15457.22	H	43.20	54.00	10.80	AVG
17498.24	H	44.76	54.00	9.24	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
10064.110	V	59.18	74.00	14.82	peak
13125.610	V	60.5	74.00	13.5	peak
17499.480	V	66.09	74.00	7.91	peak
10066.810	V	44.87	54.00	9.13	AVG
13124.810	V	42.4	54.00	11.6	AVG
17495.990	V	44.47	54.00	9.53	AVG
10680.990	H	59.74	74.00	14.26	peak
15536.890	H	62.48	74.00	11.52	peak
17509.890	H	66.81	74.00	7.19	peak
10681.020	H	46.79	54.00	7.21	AVG
15521.950	H	43.33	54.00	10.67	AVG
17494.930	H	44.53	54.00	9.47	AVG

Test mode: 802.11n(20)		Frequency(MHz): 5200			
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
11526.810	V	60.47	74.00	13.53	peak
15515.310	V	62.46	74.00	11.54	peak
17499.480	V	66.2	74.00	7.8	peak
11529.540	V	46.15	54.00	7.85	AVG
15514.500	V	43.44	54.00	10.56	AVG
17495.990	V	44.87	54.00	9.13	AVG
10961.590	H	59.16	74.00	14.84	peak
15324.290	H	62.21	74.00	11.79	peak
17501.390	H	65.62	74.00	8.38	peak
10961.660	H	45.74	54.00	8.26	AVG
15309.340	H	42.48	54.00	11.52	AVG
17486.430	H	44.3	54.00	9.7	AVG

Test mode: 802.11n(20)		Frequency(MHz): 5240			
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
11518.310	V	60.22	74.00	13.78	peak
15515.310	V	62.17	74.00	11.83	peak
17507.980	V	66.1	74.00	7.9	peak
11521.030	V	46.67	54.00	7.33	AVG
15514.500	V	43.2	54.00	10.8	AVG
17504.450	V	44.28	54.00	9.72	AVG
11471.890	H	59.7	74.00	14.3	peak
15468.890	H	62.37	74.00	11.63	peak
17509.890	H	65.82	74.00	8.18	peak
11471.920	H	46.13	54.00	7.87	AVG
15453.910	H	43.02	54.00	10.98	AVG
17494.930	H	44.63	54.00	9.37	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
4981.08	H	55.41	-39.82	-27	Pass
5017.96	V	55.04	-40.19	-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
5378.76	H	54.32	-40.91	-27	Pass
5381.44	V	54.24	-40.99	-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

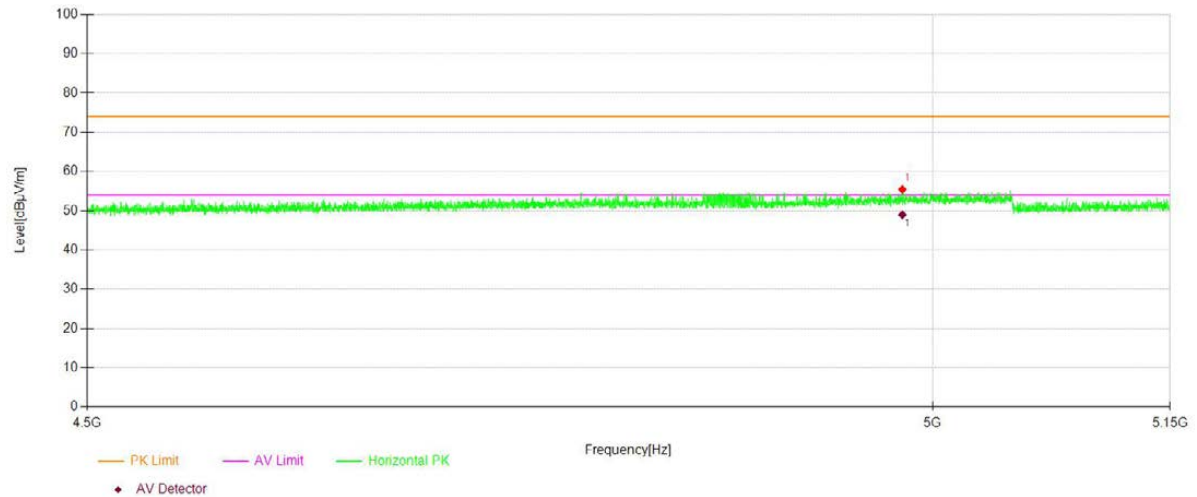
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
5017.96	V	55.04	74.00	18.96	peak
5017.96	V	50.15	54.00	3.85	AVG
4981.08	H	55.41	74.00	18.59	peak
4981.08	H	48.96	54.00	5.04	AVG

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

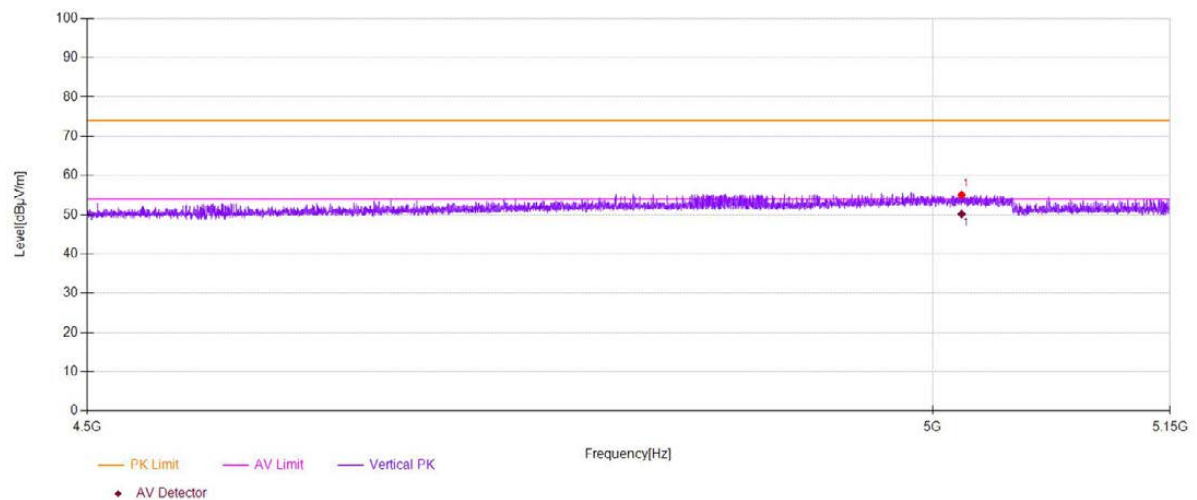
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
5381.44	V	54.24	74.00	19.76	peak
5381.44	V	50.56	54.00	3.44	AVG
5378.76	H	54.32	74.00	19.68	peak
5378.76	H	51.57	54.00	2.43	AVG

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.

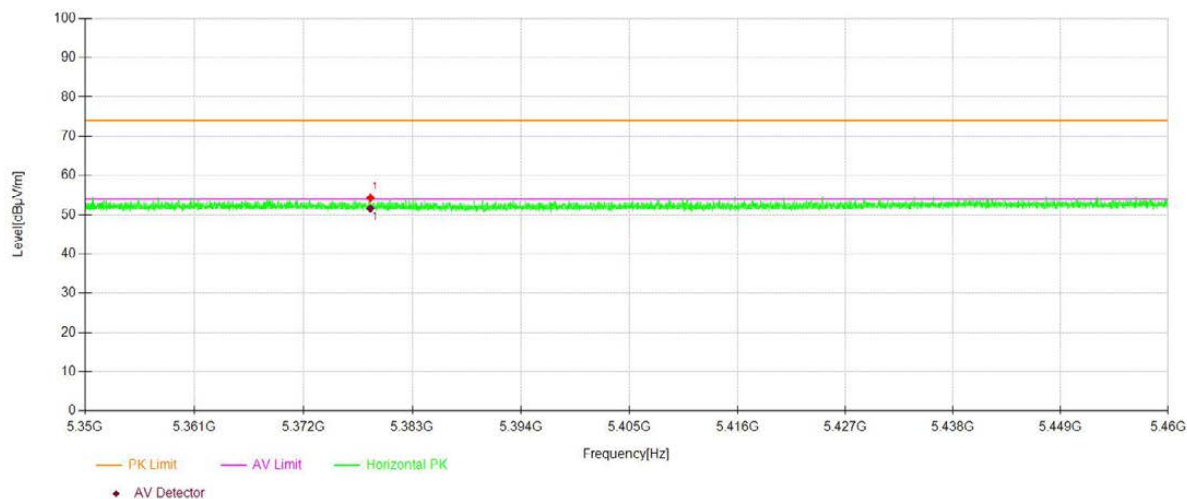
U-NII - 1				
Test Model	Undesirable radiated Spurious Emission in Restricted Band (5100-5150MHz)			
	☐ 802.11a	☒ 802.11n(HT20)	☐ 802.11n(HT40)	
	☒ 5180	☐ 5200	☐ 5240	Ant.Pol H



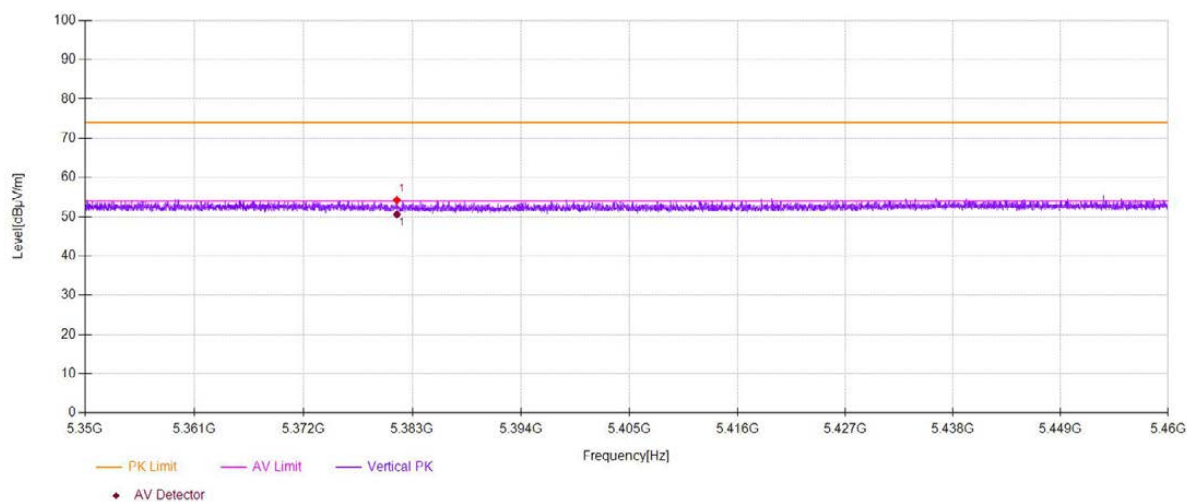
U-NII - 1				
Test Model	Undesirable radiated Spurious Emission in Restricted Band (5100-5150MHz)			
	☐ 802.11a	☒ 802.11n(HT20)	☐ 802.11n(HT40)	
	☒ 5180	☐ 5200	☐ 5240	Ant.Pol V



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 ANT3 and MIMO as below:

ANT3:

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)		
11468.7	V	59.65	-35.58	-27	8.58		
15321.1	V	62.68	-32.55	-27	5.55		
17481.2	V	65.94	-29.29	-27	2.29		
11494.2	H	60.70	-34.53	-27	7.53		
15159.5	H	62.16	-33.07	-27	6.07		
17498.2	H	66.79	-28.44	-27	1.44		

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)		
11528.2	V	60.08	-35.15	-27	8.15		
15210.6	V	62.11	-33.12	-27	6.12		
17515.2	V	66.48	-28.75	-27	1.75		
10082.5	H	59.08	-36.15	-27	9.15		
15525.2	H	62.03	-33.2	-27	6.2		
17489.7	H	66.91	-28.32	-27	1.32		

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)		
11375.1	V	59.73	-35.5	-27	8.5		
15542.2	V	62.20	-33.03	-27	6.03		
17498.2	V	66.68	-28.55	-27	1.55		
11511.2	H	59.88	-35.35	-27	8.35		
15457.2	H	62.36	-32.87	-27	5.87		
17489.7	H	66.43	-28.8	-27	1.8		

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)
11467.31	V	59.52	-35.71	-27	8.71
15319.71	V	62.52	-32.71	-27	5.71
17482.48	V	65.91	-29.32	-27	2.32
11505.89	H	60.62	-34.61	-27	7.61
15171.19	H	61.95	-33.28	-27	6.28
17509.89	H	66.63	-28.60	-27	1.60

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)
11526.81	V	59.95	-35.28	-27	8.28
15209.21	V	61.95	-33.28	-27	6.28
17516.48	V	66.45	-28.78	-27	1.78
10094.19	H	59	-36.23	-27	9.23
15536.89	H	61.82	-33.41	-27	6.41
17501.39	H	66.75	-28.48	-27	1.48

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)
11373.71	V	59.6	-35.63	-27	8.63
15540.81	V	62.04	-33.19	-27	6.19
17499.48	V	66.65	-28.58	-27	1.58
11522.89	H	59.8	-35.43	-27	8.43
15468.89	H	62.15	-33.08	-27	6.08
17501.39	H	66.27	-28.96	-27	1.96

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

ANT3:

Test mode: 802.11n(20)		Frequency(MHz): 5260			
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
11468.7	V	59.65	74.00	14.35	peak
15321.1	V	62.68	74.00	11.32	peak
17481.2	V	65.94	74.00	8.06	peak
11468.73	V	46.38	54.00	7.62	AVG
15321.16	V	42.50	54.00	11.50	AVG
17481.24	V	44.53	54.00	9.47	AVG
11494.2	H	60.70	74.00	13.30	peak
15159.5	H	62.16	74.00	11.84	peak
17498.2	H	66.79	74.00	7.21	peak
11494.24	H	46.26	54.00	7.74	AVG
15159.57	H	43.91	54.00	10.09	AVG
17498.24	H	45.18	54.00	8.82	AVG

Test mode: 802.11n(20)		Frequency(MHz): 5280			
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
11528.2	V	60.08	74.00	13.92	peak
15210.6	V	62.11	74.00	11.89	peak
17515.2	V	66.48	74.00	7.52	peak
11528.26	V	46.40	54.00	7.60	AVG
15210.60	V	43.62	54.00	10.38	AVG
17515.25	V	44.38	54.00	9.62	AVG
10082.5	H	59.08	74.00	14.92	peak
15525.2	H	62.03	74.00	11.97	peak
17489.7	H	66.91	74.00	7.09	peak
10082.54	H	45.79	54.00	8.21	AVG
15525.26	H	43.50	54.00	10.50	AVG
17489.74	H	44.77	54.00	9.23	AVG

Test mode: 802.11n(20)		Frequency(MHz): 5320			
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
11375.1	V	59.73	74.00	14.27	peak
15542.2	V	62.20	74.00	11.80	peak
17498.2	V	66.68	74.00	7.32	peak
11375.18	V	45.85	54.00	8.15	AVG
15542.27	V	43.61	54.00	10.39	AVG
17498.24	V	45.36	54.00	8.64	AVG
11511.2	H	59.88	74.00	14.12	peak
15457.2	H	62.36	74.00	11.64	peak
17489.7	H	66.43	74.00	7.57	peak
11511.25	H	46.62	54.00	7.38	AVG
15457.22	H	43.19	54.00	10.81	AVG
17489.74	H	44.53	54.00	9.47	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
11467.310	V	59.52	74.00	14.48	peak
15319.710	V	62.52	74.00	11.48	peak
17482.480	V	65.91	74.00	8.09	peak
11470.010	V	46.36	54.00	7.64	AVG
15318.910	V	42.24	54.00	11.76	AVG
17478.990	V	44.34	54.00	9.66	AVG
11505.890	H	60.62	74.00	13.38	peak
15171.190	H	61.95	74.00	12.05	peak
17509.890	H	66.63	74.00	7.37	peak
11505.930	H	46.12	54.00	7.88	AVG
15156.260	H	43.73	54.00	10.27	AVG
17494.930	H	45.05	54.00	8.95	AVG

Test mode: 802.11n(20)		Frequency(MHz): 5280			
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
11526.810	V	59.95	74.00	14.05	peak
15209.210	V	61.95	74.00	12.05	peak
17516.480	V	66.45	74.00	7.55	peak
11529.540	V	46.38	54.00	7.62	AVG
15208.350	V	43.36	54.00	10.64	AVG
17513.000	V	44.19	54.00	9.81	AVG
10094.190	H	59	74.00	15	peak
15536.890	H	61.82	74.00	12.18	peak
17501.390	H	66.75	74.00	7.25	peak
10094.230	H	45.65	54.00	8.35	AVG
15521.950	H	43.32	54.00	10.68	AVG
17486.430	H	44.64	54.00	9.36	AVG

Test mode: 802.11n(20)		Frequency(MHz): 5320			
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
11373.710	V	59.6	74.00	14.4	peak
15540.810	V	62.04	74.00	11.96	peak
17499.480	V	66.65	74.00	7.35	peak
11376.460	V	45.83	54.00	8.17	AVG
15540.020	V	43.35	54.00	10.65	AVG
17495.990	V	45.17	54.00	8.83	AVG
11522.890	H	59.8	74.00	14.2	peak
15468.890	H	62.15	74.00	11.85	peak
17501.390	H	66.27	74.00	7.73	peak
11522.940	H	46.48	54.00	7.52	AVG
15453.910	H	43.01	54.00	10.99	AVG
17486.430	H	44.4	54.00	9.6	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
5010.33	H	55.38	-39.85	-27	Pass
5045.59	V	55.98	-39.25	-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
5378.6	H	54.07	-41.16	-27	Pass
5381.72	V	54.38	-40.85	-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

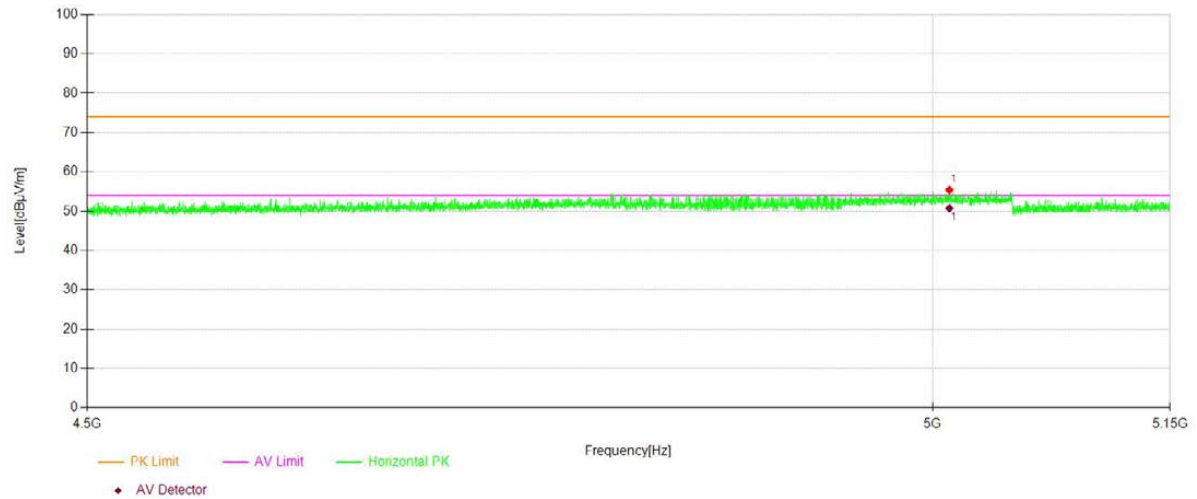
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
5045.59	V	55.98	74.00	18.02	peak
5045.59	V	49.91	54.00	4.09	AVG
5010.33	H	55.38	74.00	18.62	peak
5010.33	H	50.69	54.00	3.31	AVG

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

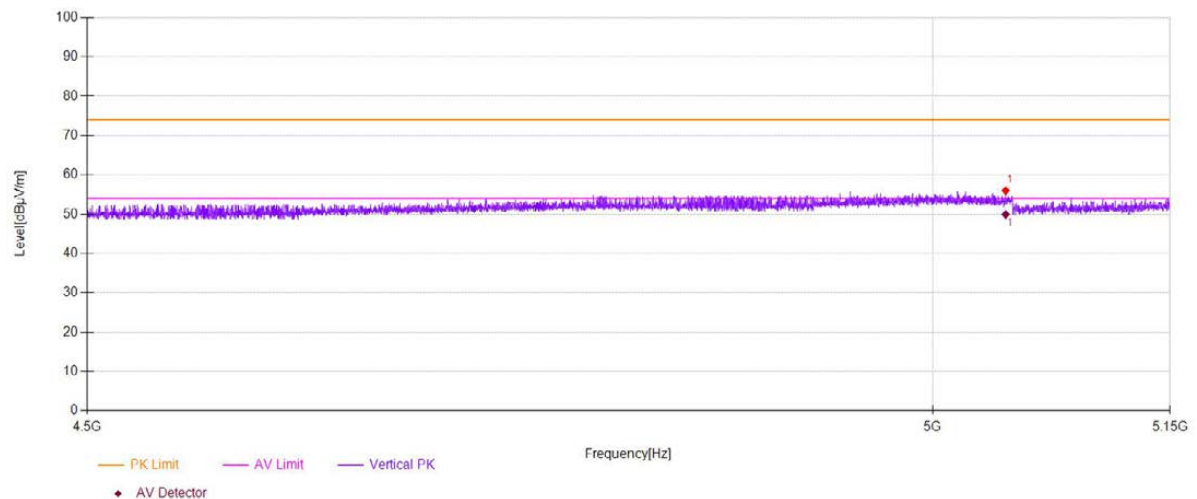
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
5381.72	V	54.38	74.00	19.62	peak
5381.72	V	50.35	54.00	3.65	AVG
5378.6	H	54.07	74.00	19.93	peak
5378.6	H	50.46	54.00	3.54	AVG

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.

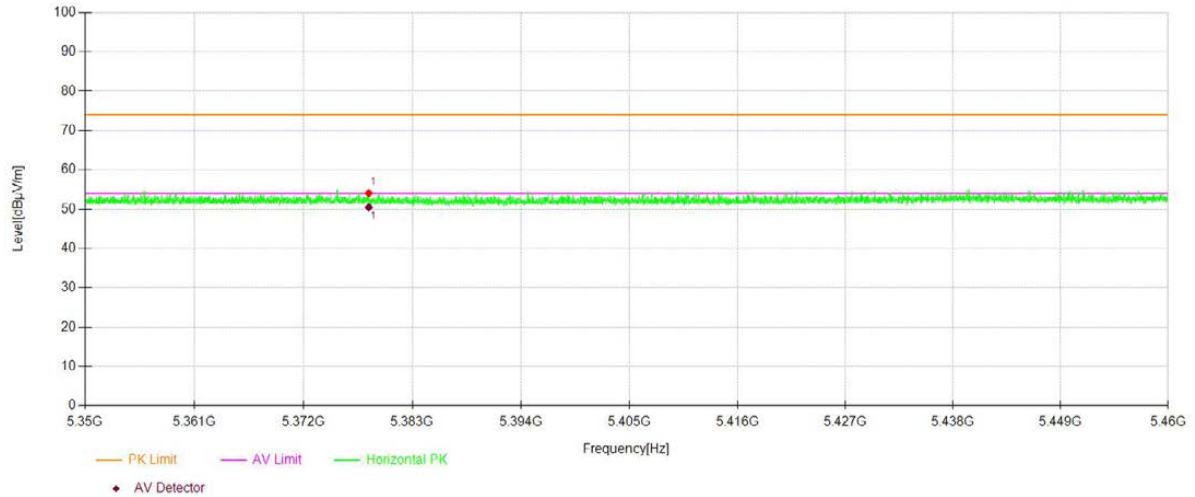
Test Model U-NII -2A
Undesirable radiated Spurious Emission in Restricted Band (5100-5150MHz)
☐ 802.11a ☒ 802.11n(HT20) ☐ 802.11 ac (VHT20)
☒ 5260 ☐ 5300 ☐ 5320 Ant.Pol H



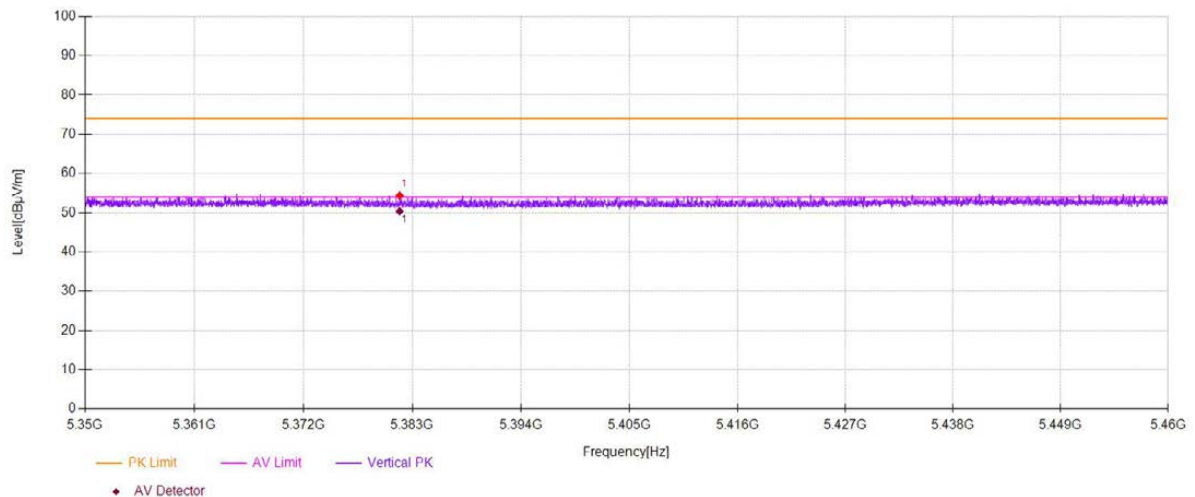
Test Model U-NII -2A
Undesirable radiated Spurious Emission in Restricted Band (5100-5150MHz)
☐ 802.11a ☒ 802.11n(HT20) ☐ 802.11 ac (VHT20)
☒ 5260 ☐ 5300 ☐ 5320 Ant.Pol V



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 ANT3 and MIMO as below:

ANT3:

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)
11621.8	V	59.51	-35.72	-27	8.72
15533.7	V	62.90	-32.33	-27	5.33
17506.7	V	66.22	-29.01	-27	2.01
11553.7	H	60.33	-34.9	-27	7.9
15457.2	H	63.15	-32.08	-27	5.08
17523.7	H	65.96	-29.27	-27	2.27

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)
10660.8	V	59.68	-35.55	-27	8.55
15457.2	V	62.41	-32.82	-27	5.82
17498.2	V	66.07	-29.16	-27	2.16
11630.3	H	59.89	-35.34	-27	8.34
15338.1	H	62.23	-33	-27	6
17047.5	H	64.97	-30.26	-27	3.26

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)
11613.3	V	60.32	-34.91	-27	7.91
14666.3	V	62.66	-32.57	-27	5.57
17498.2	V	66.16	-29.07	-27	2.07
11536.7	H	60.10	-35.13	-27	8.13
15482.7	H	62.30	-32.93	-27	5.93
17489.7	H	66.98	-28.25	-27	1.25

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)
11620.41	V	59.38	-35.85	-27	8.85
15532.31	V	62.74	-32.49	-27	5.49
17507.98	V	66.19	-29.04	-27	2.04
11565.39	H	60.25	-34.98	-27	7.98
15468.89	H	62.94	-32.29	-27	5.29
17535.39	H	65.8	-29.43	-27	2.43

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)
10659.41	V	59.55	-35.68	-27	8.68
15455.81	V	62.25	-32.98	-27	5.98
17499.48	V	66.04	-29.19	-27	2.19
11641.99	H	59.81	-35.42	-27	8.42
15349.79	H	62.02	-33.21	-27	6.21
17059.19	H	64.81	-30.42	-27	3.42

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)
11611.91	V	60.19	-35.04	-27	8.04
14664.91	V	62.5	-32.73	-27	5.73
17499.48	V	66.13	-29.10	-27	2.10
11548.39	H	60.02	-35.21	-27	8.21
15494.39	H	62.09	-33.14	-27	6.14
17501.39	H	66.82	-28.41	-27	1.41

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

ANT3:

Test mode: 802.11n(20)		Frequency(MHz): 5500			
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
11621.8	V	59.51	74.00	14.49	peak
15533.7	V	62.90	74.00	11.10	peak
17506.7	V	66.22	74.00	7.78	peak
11621.81	V	46.11	54.00	7.89	AVG
15533.76	V	43.55	54.00	10.45	AVG
17506.75	V	45.01	54.00	8.99	AVG
11553.7	H	60.33	74.00	13.67	peak
15457.2	H	63.15	74.00	10.85	peak
17523.7	H	65.96	74.00	8.04	peak
11553.77	H	46.27	54.00	7.73	AVG
15457.22	H	43.40	54.00	10.60	AVG
17523.76	H	43.86	54.00	10.14	AVG

Test mode: 802.11n(20)		Frequency(MHz): 5580			
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
10660.8	V	59.68	74.00	14.32	peak
15457.2	V	62.41	74.00	11.59	peak
17498.2	V	66.07	74.00	7.93	peak
10660.83	V	46.98	54.00	7.02	AVG
15457.22	V	43.10	54.00	10.90	AVG
17498.24	V	44.80	54.00	9.20	AVG
11630.3	H	59.89	74.00	14.11	peak
15338.1	H	62.23	74.00	11.77	peak
17047.5	H	64.97	74.00	9.03	peak
11630.31	H	46.36	54.00	7.64	AVG
15338.16	H	42.82	54.00	11.18	AVG
17047.52	H	44.39	54.00	9.61	AVG

Test mode: 802.11n(20)		Frequency(MHz): 5700			
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
11613.3	V	60.32	74.00	13.68	peak
14666.3	V	62.66	74.00	11.34	peak
17498.2	V	66.16	74.00	7.84	peak
11613.30	V	46.12	54.00	7.88	AVG
14666.33	V	44.67	54.00	9.33	AVG
17498.24	V	45.04	54.00	8.96	AVG
11536.7	H	60.10	74.00	13.90	peak
15482.7	H	62.30	74.00	11.70	peak
17489.7	H	66.98	74.00	7.02	peak
11536.76	H	46.46	54.00	7.54	AVG
15482.74	H	43.16	54.00	10.84	AVG
17489.74	H	44.87	54.00	9.13	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
11620.410	V	59.38	74.00	14.62	peak
15532.310	V	62.74	74.00	11.26	peak
17507.980	V	66.19	74.00	7.81	peak
11623.090	V	46.09	54.00	7.91	AVG
15531.510	V	43.29	54.00	10.71	AVG
17504.500	V	44.82	54.00	9.18	AVG
11565.390	H	60.25	74.00	13.75	peak
15468.890	H	62.94	74.00	11.06	peak
17535.390	H	65.8	74.00	8.2	peak
11565.460	H	46.13	54.00	7.87	AVG
15453.910	H	43.22	54.00	10.78	AVG
17520.450	H	43.73	54.00	10.27	AVG

Test mode: 802.11n(20)		Frequency(MHz): 5580			
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
10659.410	V	59.55	74.00	14.45	peak
15455.810	V	62.25	74.00	11.75	peak
17499.480	V	66.04	74.00	7.96	peak
10662.110	V	46.96	54.00	7.04	AVG
15454.970	V	42.84	54.00	11.16	AVG
17495.990	V	44.61	54.00	9.39	AVG
11641.990	H	59.81	74.00	14.19	peak
15349.790	H	62.02	74.00	11.98	peak
17059.190	H	64.81	74.00	9.19	peak
11642.000	H	46.22	54.00	7.78	AVG
15334.850	H	42.64	54.00	11.36	AVG
17044.210	H	44.26	54.00	9.74	AVG

Test mode: 802.11n(20)		Frequency(MHz): 5700			
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
11611.910	V	60.19	74.00	13.81	peak
14664.910	V	62.5	74.00	11.5	peak
17499.480	V	66.13	74.00	7.87	peak
11614.580	V	46.1	54.00	7.9	AVG
14664.080	V	44.41	54.00	9.59	AVG
17495.990	V	44.85	54.00	9.15	AVG
11548.390	H	60.02	74.00	13.98	peak
15494.390	H	62.09	74.00	11.91	peak
17501.390	H	66.82	74.00	7.18	peak
11548.450	H	46.32	54.00	7.68	AVG
15479.430	H	42.98	54.00	11.02	AVG
17486.430	H	44.74	54.00	9.26	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
5440	V	54.43	-40.8	-27	Pass
5453.25	H	54.33	-40.9	-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
5737.38	V	56.09	-39.14	-27	Pass
5736.82	H	55.92	-39.31	-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

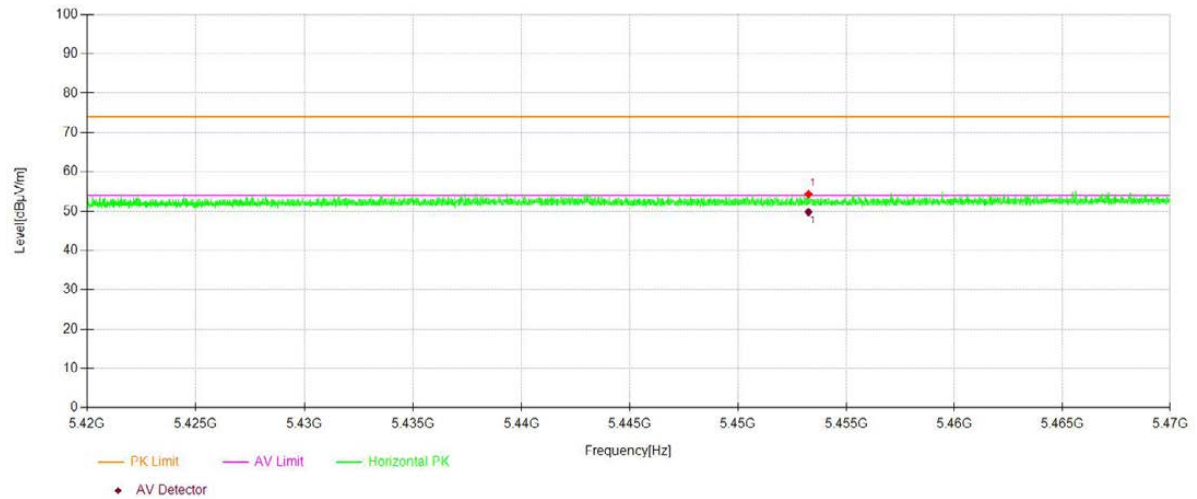
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
5440	V	54.43	74.00	19.57	peak
5440	V	50.66	54.00	3.34	AVG
5453.25	H	54.33	74.00	19.67	peak
5453.25	H	49.77	54.00	4.23	AVG

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

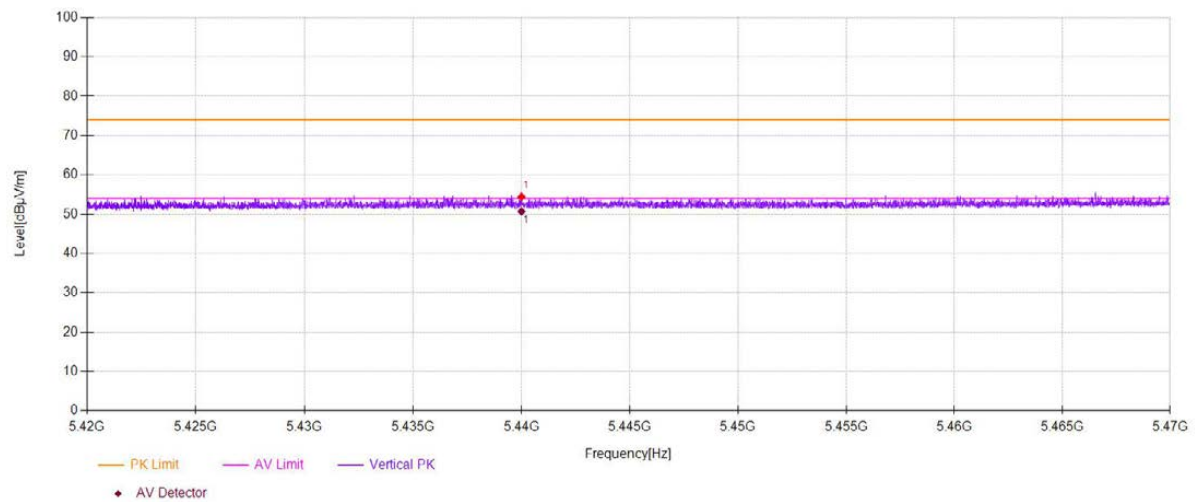
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
5737.38	V	56.09	74.00	17.91	peak
5737.38	V	49.85	54.00	4.15	AVG
5736.82	H	55.92	74.00	18.08	peak
5736.82	H	50.85	54.00	3.15	AVG

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.

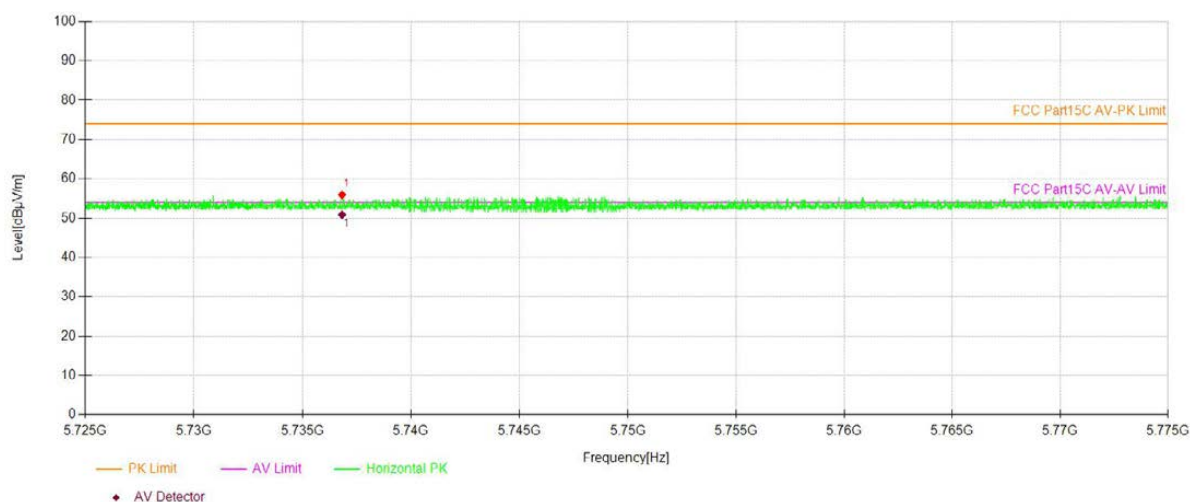
Test Model U-NII -2C
Undesirable radiated Spurious Emission in Restricted Band (5100-5150MHz)
☐ 802.11a ☒ 802.11n(HT20) ☐ 802.11 ac (VHT20)
☒ 5500 ☐ 5580 ☐ 5700 Ant.Pol H



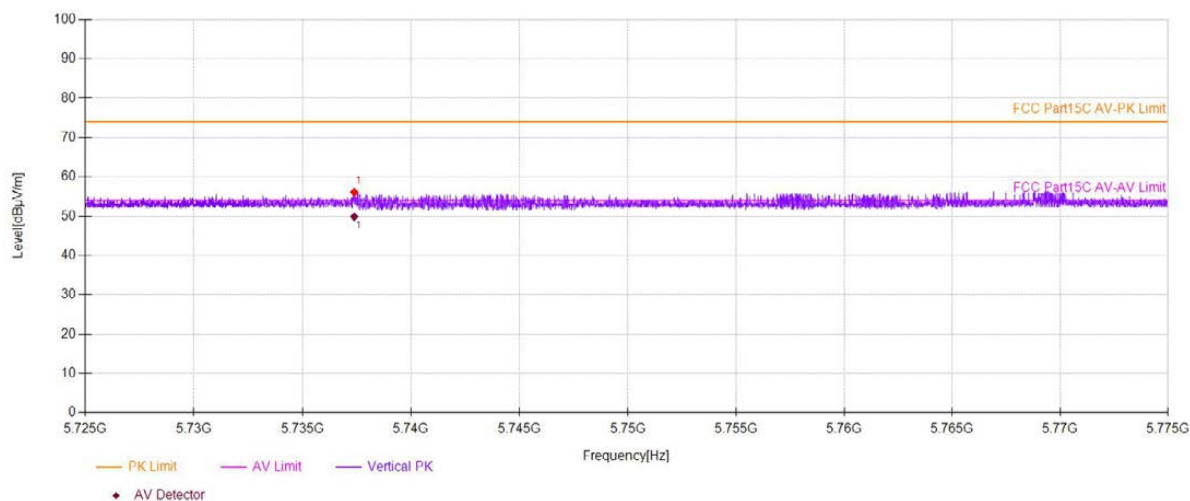
Test Model U-NII -2C
Undesirable radiated Spurious Emission in Restricted Band (5100-5150MHz)
☐ 802.11a ☒ 802.11n(HT20) ☐ 802.11 ac (VHT20)
☒ 5500 ☐ 5580 ☐ 5700 Ant.Pol V



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



U-NII -2C			
Test Model	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 ANT3 and MIMO as below:

ANT3:

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	59.96	-35.27	-27	8.27		
15448.7	V	62.20	-33.03	-27	6.03		
17515.2	V	65.85	-29.38	-27	2.38		
11545.2	H	60.03	-35.2	-27	8.2		
15525.2	H	62.12	-33.11	-27	6.11		
17515.2	H	66.36	-28.87	-27	1.87		

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)		
10686.3	V	59.43	-35.8	-27	8.8		
15542.2	V	62.97	-32.26	-27	5.26		
17515.2	V	65.95	-29.28	-27	2.28		
10099.5	H	58.69	-36.54	-27	9.54		
15516.7	H	62.81	-32.42	-27	5.42		
17506.7	H	66.19	-29.04	-27	2.04		

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)		
11553.7	V	60.20	-35.03	-27	8.03		
15465.7	V	62.86	-32.37	-27	5.37		
17498.2	V	67.59	-27.64	-27	0.64		
11613.3	H	59.85	-35.38	-27	8.38		
14623.8	H	62.08	-33.15	-27	6.15		
17515.2	H	66.12	-29.11	-27	2.11		

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	59.83	-35.40	-27	8.40
15447.31	V	62.04	-33.19	-27	6.19
17516.48	V	65.82	-29.41	-27	2.41
11556.89	H	59.95	-35.28	-27	8.28
15536.89	H	61.91	-33.32	-27	6.32
17526.89	H	66.2	-29.03	-27	2.03

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)
10684.91	V	59.3	-35.93	-27	8.93
15540.81	V	62.81	-32.42	-27	5.42
17516.48	V	65.92	-29.31	-27	2.31
10111.19	H	58.61	-36.62	-27	9.62
15528.39	H	62.6	-32.63	-27	5.63
17518.39	H	66.03	-29.20	-27	2.20

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)
11552.31	V	60.07	-35.16	-27	8.16
15464.31	V	62.7	-32.53	-27	5.53
17499.48	V	67.56	-27.67	-27	0.67
11624.99	H	59.77	-35.46	-27	8.46
14635.49	H	61.87	-33.36	-27	6.36
17526.94	H	65.96	-29.27	-27	2.27

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

ANT3:

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	59.96	74.00	14.04	peak
15448.7	V	62.20	74.00	11.80	peak
17515.2	V	65.85	74.00	8.15	peak
11562.28	V	46.33	54.00	7.67	AVG
15448.72	V	43.06	54.00	10.94	AVG
17515.25	V	44.27	54.00	9.73	AVG
11545.2	H	60.03	74.00	13.97	peak
15525.2	H	62.12	74.00	11.88	peak
17515.2	H	66.36	74.00	7.64	peak
11545.27	H	46.52	54.00	7.48	AVG
15525.26	H	43.50	54.00	10.50	AVG
17515.25	H	44.17	54.00	9.83	AVG

Test mode: 802.11n(20)		Frequency(MHz): 5785			
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
10686.3	V	59.43	74.00	14.57	peak
15542.2	V	62.97	74.00	11.03	peak
17515.2	V	65.95	74.00	8.05	peak
10686.34	V	47.52	54.00	6.48	AVG
15542.27	V	40.48	54.00	13.52	AVG
17515.25	V	44.69	54.00	9.31	AVG
10099.5	H	58.69	74.00	15.31	peak
15516.7	H	62.81	74.00	11.19	peak
17506.7	H	66.19	74.00	7.81	peak
10099.54	H	45.82	54.00	8.18	AVG
15516.75	H	43.47	54.00	10.53	AVG
17506.75	H	44.87	54.00	9.13	AVG

Test mode: 802.11n(20)		Frequency(MHz): 5825			
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
11553.7	V	60.20	74.00	13.80	peak
15465.7	V	62.86	74.00	11.14	peak
17498.2	V	67.59	74.00	6.41	peak
11553.77	V	46.37	54.00	7.63	AVG
15465.73	V	43.42	54.00	10.58	AVG
17498.24	V	45.19	54.00	8.81	AVG
11613.3	H	59.85	74.00	14.15	peak
14623.8	H	62.08	74.00	11.92	peak
17515.25	H	66.12	74.00	7.88	peak
11613.30	H	46.02	54.00	7.98	AVG
14623.81	H	45.54	54.00	8.46	AVG
17515.25	H	44.46	54.00	9.54	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	59.83	74.00	14.17	peak
15447.310	V	62.04	74.00	11.96	peak
17516.480	V	65.82	74.00	8.18	peak
11563.560	V	46.31	54.00	7.69	AVG
15446.470	V	42.8	54.00	11.2	AVG
17513.000	V	44.08	54.00	9.92	AVG
11556.890	H	59.95	74.00	14.05	peak
15536.890	H	61.91	74.00	12.09	peak
17526.890	H	66.2	74.00	7.8	peak
11556.960	H	46.38	54.00	7.62	AVG
15521.950	H	43.32	54.00	10.68	AVG
17511.940	H	44.04	54.00	9.96	AVG

Test mode: 802.11n(20)		Frequency(MHz): 5785			
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
10684.910	V	59.3	74.00	14.7	peak
15540.810	V	62.81	74.00	11.19	peak
17516.480	V	65.92	74.00	8.08	peak
10687.620	V	47.5	54.00	6.5	AVG
15540.020	V	40.22	54.00	13.78	AVG
17513.000	V	44.5	54.00	9.5	AVG
10111.190	H	58.61	74.00	15.39	peak
15528.390	H	62.6	74.00	11.4	peak
17518.390	H	66.03	74.00	7.97	peak
10111.230	H	45.68	54.00	8.32	AVG
15513.440	H	43.29	54.00	10.71	AVG
17503.440	H	44.74	54.00	9.26	AVG

Test mode: 802.11n(20)		Frequency(MHz): 5825			
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
11552.310	V	60.07	74.00	13.93	peak
15464.310	V	62.7	74.00	11.3	peak
17499.480	V	67.56	74.00	6.44	peak
11555.050	V	46.35	54.00	7.65	AVG
15463.480	V	43.16	54.00	10.84	AVG
17495.990	V	45	54.00	9	AVG
11624.990	H	59.77	74.00	14.23	peak
14635.490	H	61.87	74.00	12.13	peak
17526.940	H	65.96	74.00	8.04	peak
11624.990	H	45.88	54.00	8.12	AVG
14620.500	H	45.36	54.00	8.64	AVG
17511.940	H	44.33	54.00	9.67	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
5724.81	H	66.97	-28.26	-27	PASS
5725	V	74.14	-21.09	-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
5858.69	H	55.45	-39.78	-27	PASS
5862.81	V	55.58	-39.65	-27	PASS

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

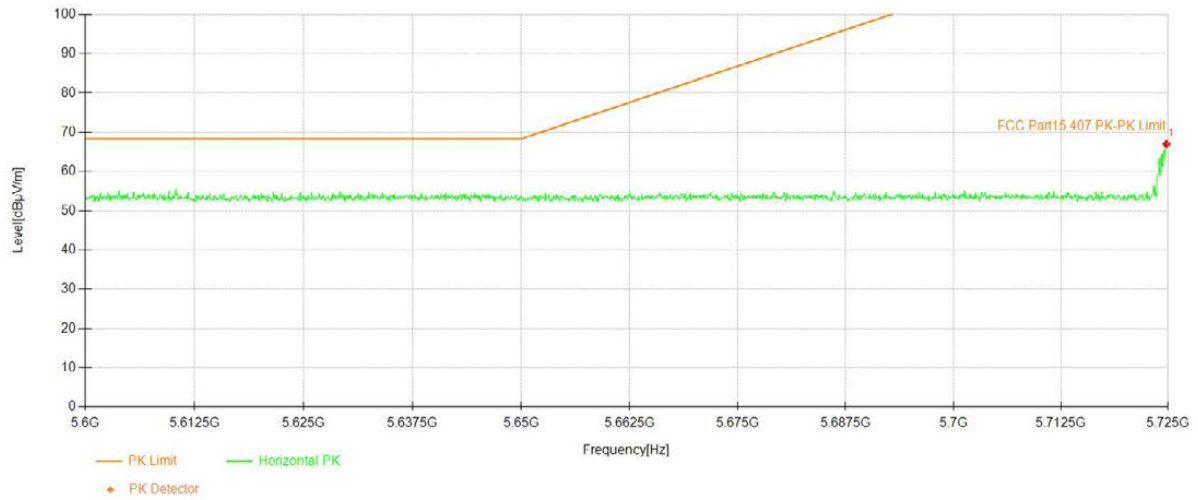
(2) Emission Level= Reading Level+Correct Factor +Cable Loss.

(3) Correct Factor= Ant_F + Cab_L - Preamp

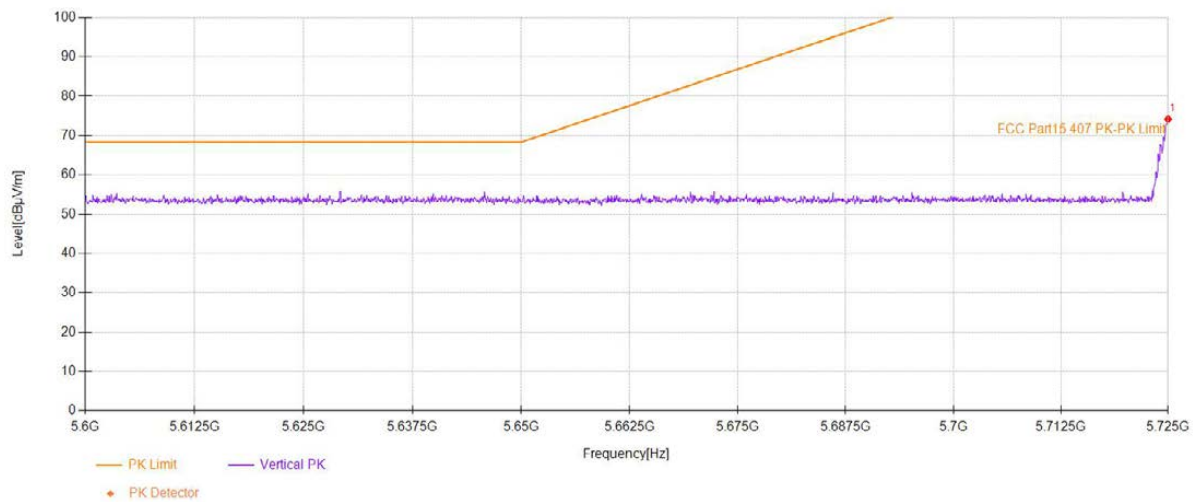
(4) EIRP[dBm] = E[dBuV/m] + 20 log(d[meters]) - 104.77

d is the measurement distance in 3 meters

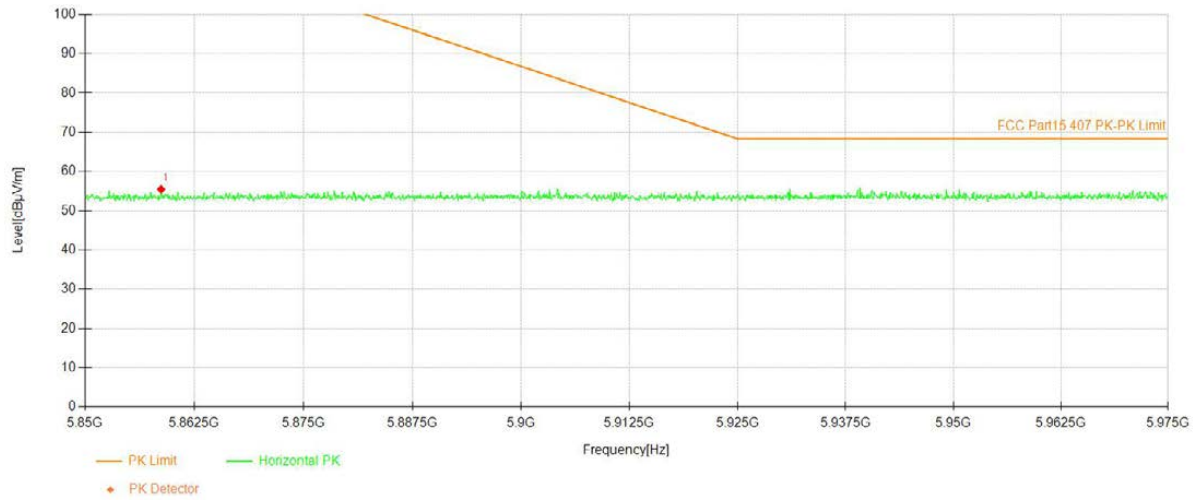
Test Model U-NII -3
 Undesirable radiated ☐ 802.11a Undesirable radiated ☒ 802.11n(HT20) Spurious Emission in Band Edge ☐ 802.11 ac (VHT20)
☒ 5745 Ant.Pol H



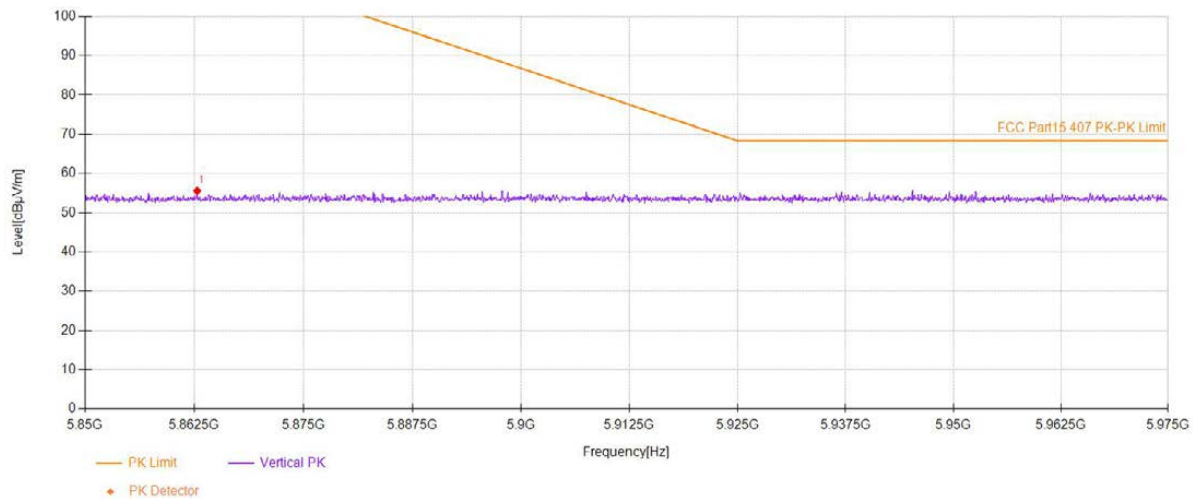
Test Model U-NII -3
 Undesirable radiated ☐ 802.11a Undesirable radiated ☒ 802.11n(HT20) Spurious Emission in Band Edge ☐ 802.11 ac (VHT20)
☒ 5745 Ant.Pol V



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



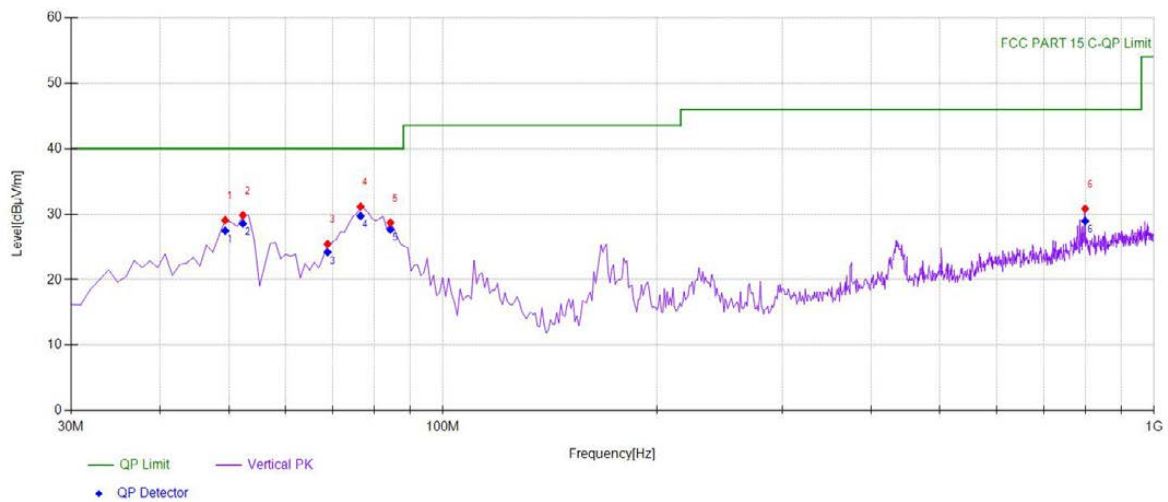
Test Model U-NII -3
Undesirable radiated Undesirable radiated Spurious Emission in Band Edge
☐ 802.11a ☒ 802.11n(HT20) ☐ 802.11 ac (VHT20)
☒ 5825 Ant.Pol V



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

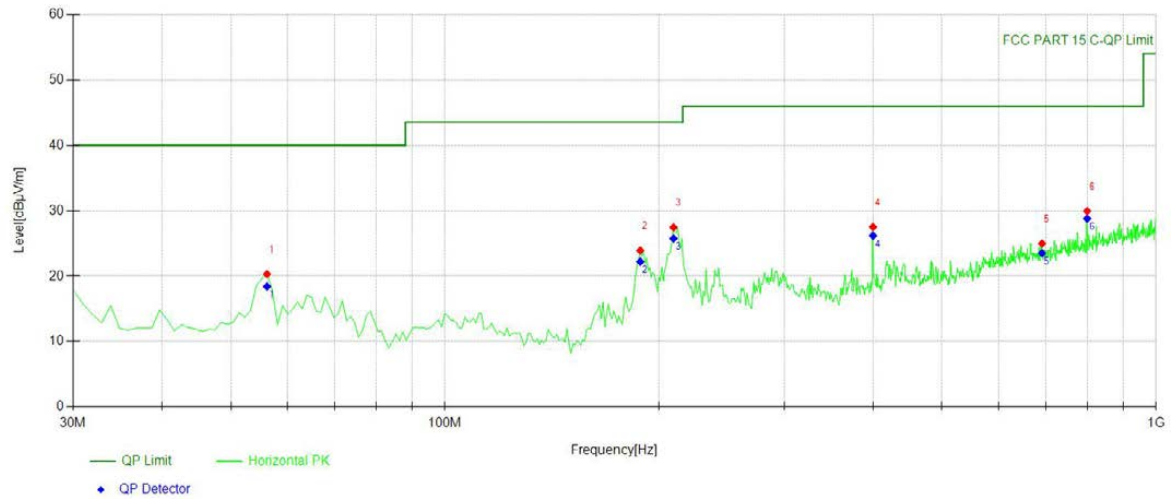
All of the configurations or modes are tested, the data of the worst case is recorded as below.

Test mode: 802.11a Frequency(MHz): 5180



Suspected Data List

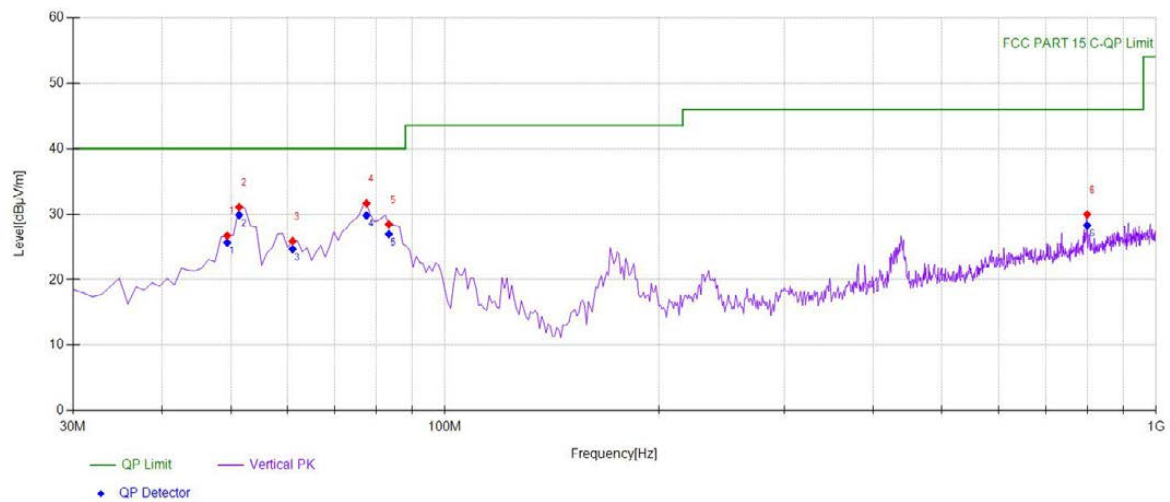
NO.	Freq. [MHz]	Reading [dBμV]	Factor [dB/m]	Level [dBμV/m]	Detector	Limit [dBμV/m]	Margin [dB]	Polarity
1	49.4194	46.33	-17.25	29.08	PK	40.00	10.92	Vertical
2	52.3323	47.35	-17.52	29.83	PK	40.00	10.17	Vertical
3	68.8388	45.25	-19.80	25.45	PK	40.00	14.55	Vertical
4	76.6066	52.11	-20.98	31.13	PK	40.00	8.87	Vertical
5	84.3744	49.18	-20.47	28.71	PK	40.00	11.29	Vertical
6	799.98	35.25	-4.42	30.83	PK	46.00	15.17	Vertical



Suspected Data List

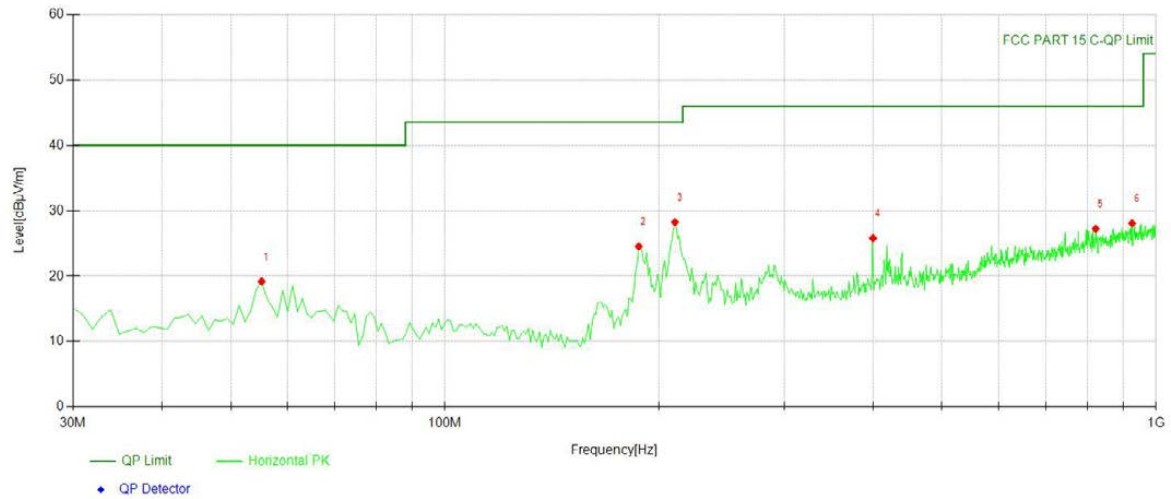
NO.	Freq. [MHz]	Reading [dBμV]	Factor [dB/m]	Level [dBμV/m]	Detector	Limit [dBμV/m]	Margin [dB]	Polarity
1	56.2162	38.35	-18.04	20.31	PK	40.00	19.69	Horizontal
2	188.268	41.78	-17.87	23.91	PK	43.50	19.59	Horizontal
3	209.629	44.58	-17.13	27.45	PK	43.50	16.05	Horizontal
4	399.939	39.30	-11.79	27.51	PK	46.00	18.49	Horizontal
5	691.231	31.01	-6.02	24.99	PK	46.00	21.01	Horizontal
6	799.98	34.34	-4.42	29.92	PK	46.00	16.08	Horizontal

Test mode: 802.11a Frequency(MHz): 5200



Suspected Data List

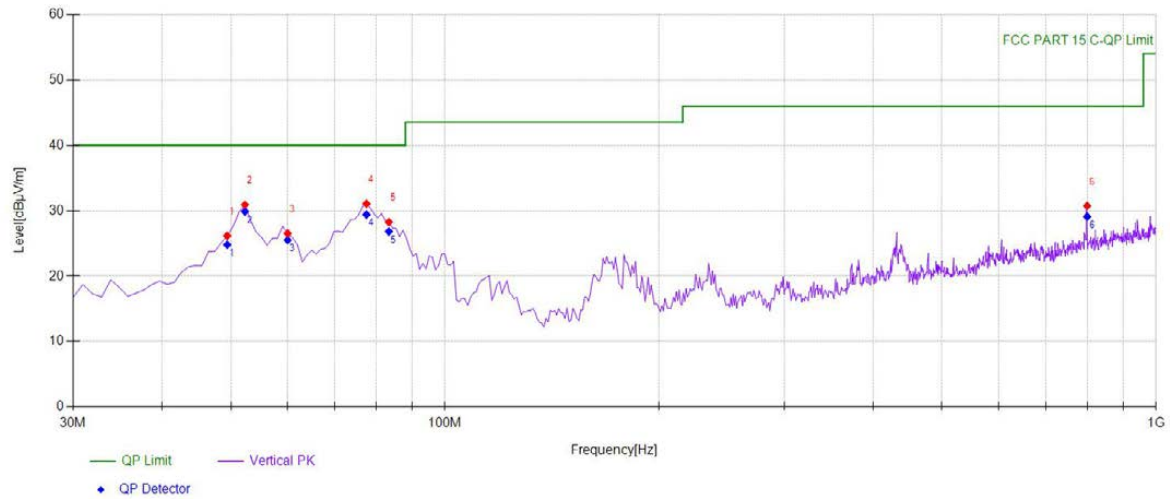
NO.	Freq. [MHz]	Reading [dBμV]	Factor [dB/m]	Level [dBμV/m]	Detector	Limit [dBμV/m]	Margin [dB]	Polarity
1	49.4194	43.96	-17.25	26.71	PK	40.00	13.29	Vertical
2	51.3614	48.46	-17.39	31.07	PK	40.00	8.93	Vertical
3	61.0711	44.59	-18.70	25.89	PK	40.00	14.11	Vertical
4	77.5776	52.77	-21.12	31.65	PK	40.00	8.35	Vertical
5	83.4034	49.15	-20.70	28.45	PK	40.00	11.55	Vertical
6	799.98	34.36	-4.42	29.94	PK	46.00	16.06	Vertical



Suspected Data List

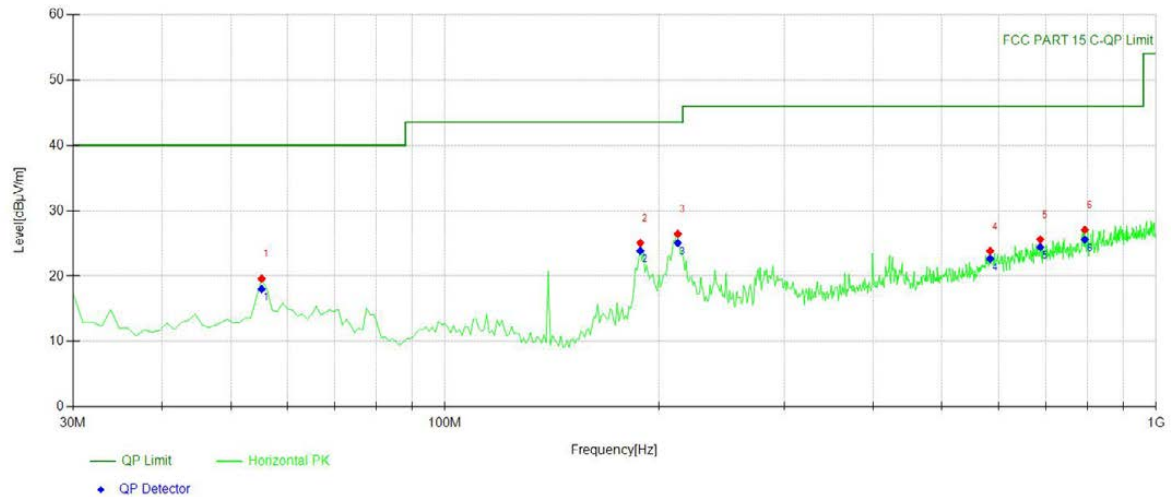
NO.	Freq. [MHz]	Reading [dBμV]	Factor [dB/m]	Level [dBμV/m]	Detector	Limit [dBμV/m]	Margin [dB]	Polarity
1	55.2452	37.09	-17.91	19.18	PK	40.00	20.82	Horizontal
2	187.297	42.46	-17.92	24.54	PK	43.50	18.96	Horizontal
3	210.600	45.38	-17.13	28.25	PK	43.50	15.25	Horizontal
4	399.939	37.59	-11.79	25.80	PK	46.00	20.20	Horizontal
5	822.312	31.48	-4.25	27.23	PK	46.00	18.77	Horizontal
6	925.235	30.81	-2.73	28.08	PK	46.00	17.92	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	49.4194	43.42	-17.25	26.17	PK	40.00	13.83	Vertical
2	52.3323	48.41	-17.52	30.89	PK	40.00	9.11	Vertical
3	60.1001	45.09	-18.56	26.53	PK	40.00	13.47	Vertical
4	77.5776	52.18	-21.12	31.06	PK	40.00	8.94	Vertical
5	83.4034	48.97	-20.70	28.27	PK	40.00	11.73	Vertical
6	799.98	35.15	-4.42	30.73	PK	46.00	15.27	Vertical



Suspected Data List

NO.	Freq. [MHz]	Reading [dBμV]	Factor [dB/m]	Level [dBμV/m]	Detector	Limit [dBμV/m]	Margin [dB]	Polarity
1	55.2452	37.52	-17.91	19.61	PK	40.00	20.39	Horizontal
2	188.268	42.95	-17.87	25.08	PK	43.50	18.42	Horizontal
3	212.542	43.57	-17.12	26.45	PK	43.50	17.05	Horizontal
4	584.424	30.98	-7.14	23.84	PK	46.00	22.16	Horizontal
5	687.347	31.67	-6.05	25.62	PK	46.00	20.38	Horizontal
6	794.154	31.55	-4.48	27.07	PK	46.00	18.93	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.

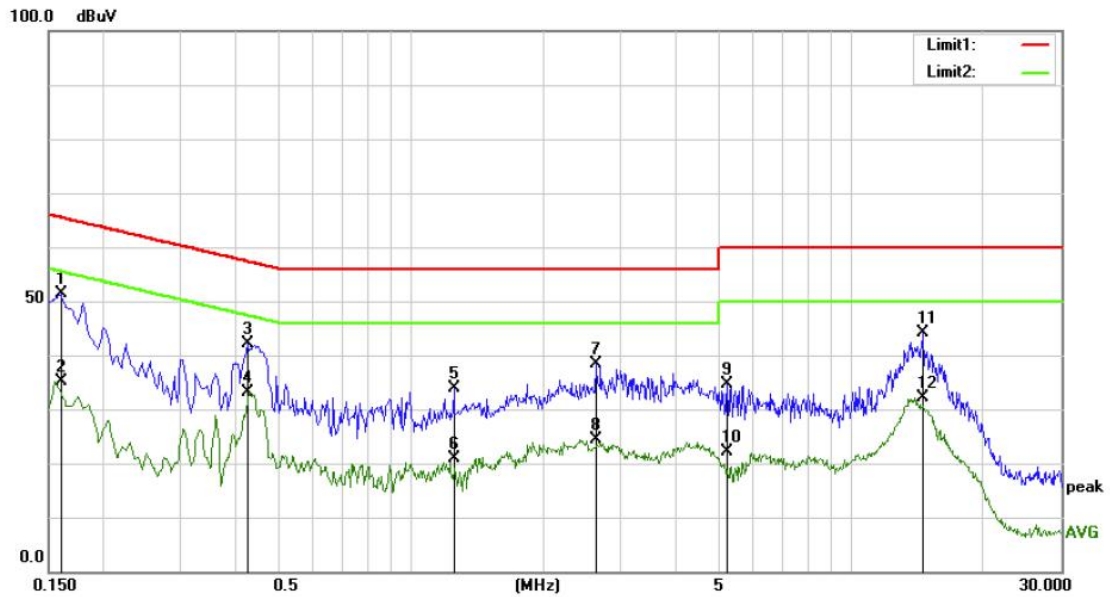
Repeat above procedures until all frequency measured were complete.

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.

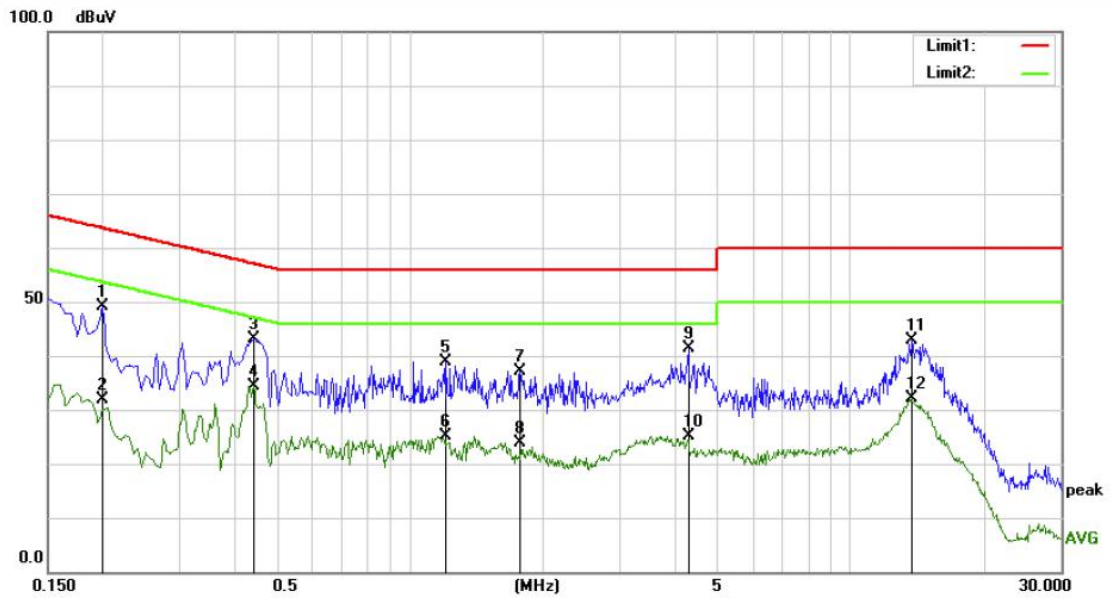


Site Conduction #1

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	*	0.1600	41.46	9.82	51.28	65.46	-14.18	QP	
2		0.1600	25.23	9.82	35.05	55.46	-20.41	AVG	
3		0.4250	32.22	9.86	42.08	57.35	-15.27	QP	
4		0.4250	23.27	9.86	33.13	47.35	-14.22	AVG	
5		1.2550	23.97	9.89	33.86	56.00	-22.14	QP	
6		1.2550	11.05	9.89	20.94	46.00	-25.06	AVG	
7		2.6250	28.62	9.78	38.40	56.00	-17.60	QP	
8		2.6250	14.65	9.78	24.43	46.00	-21.57	AVG	
9		5.2300	24.83	9.92	34.75	60.00	-25.25	QP	
10		5.2300	12.13	9.92	22.05	50.00	-27.95	AVG	
11		14.5550	34.27	9.92	44.19	60.00	-15.81	QP	
12		14.5550	22.09	9.92	32.01	50.00	-17.99	AVG	



Site Conduction #1

Phase: N

Temperature: 21.9

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBuV	dB	dBuV	dBuV	dB		
1		0.2000	39.04	10.00	49.04	63.61	-14.57	QP	
2		0.2000	21.93	10.00	31.93	53.61	-21.68	AVG	
3		0.4400	33.25	9.85	43.10	57.06	-13.96	QP	
4	*	0.4400	24.50	9.85	34.35	47.06	-12.71	AVG	
5		1.2050	29.01	9.90	38.91	56.00	-17.09	QP	
6		1.2050	15.17	9.90	25.07	46.00	-20.93	AVG	
7		1.7800	27.41	9.83	37.24	56.00	-18.76	QP	
8		1.7800	14.16	9.83	23.99	46.00	-22.01	AVG	
9		4.2750	31.41	9.86	41.27	56.00	-14.73	QP	
10		4.2750	15.32	9.86	25.18	46.00	-20.82	AVG	
11		13.8300	32.82	9.94	42.76	60.00	-17.24	QP	
12		13.8300	22.25	9.94	32.19	50.00	-17.81	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: 5.13dBi, Ant2: 5.19dBi, Ant3:5.37dBi , Ant4: 5.35dBi

- ☒ 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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The test results or observations are provided in accordance with measured value, without taking risks caused by uncertainty into account. Without explicit stipulation in special agreements, standards or regulations, EMTEK shall not assume any responsibility.

6. 对本检验报告若有异议，请于收到报告之日起 20 日内提出。

Objections shall be raised within 20 days from the date receiving the report.