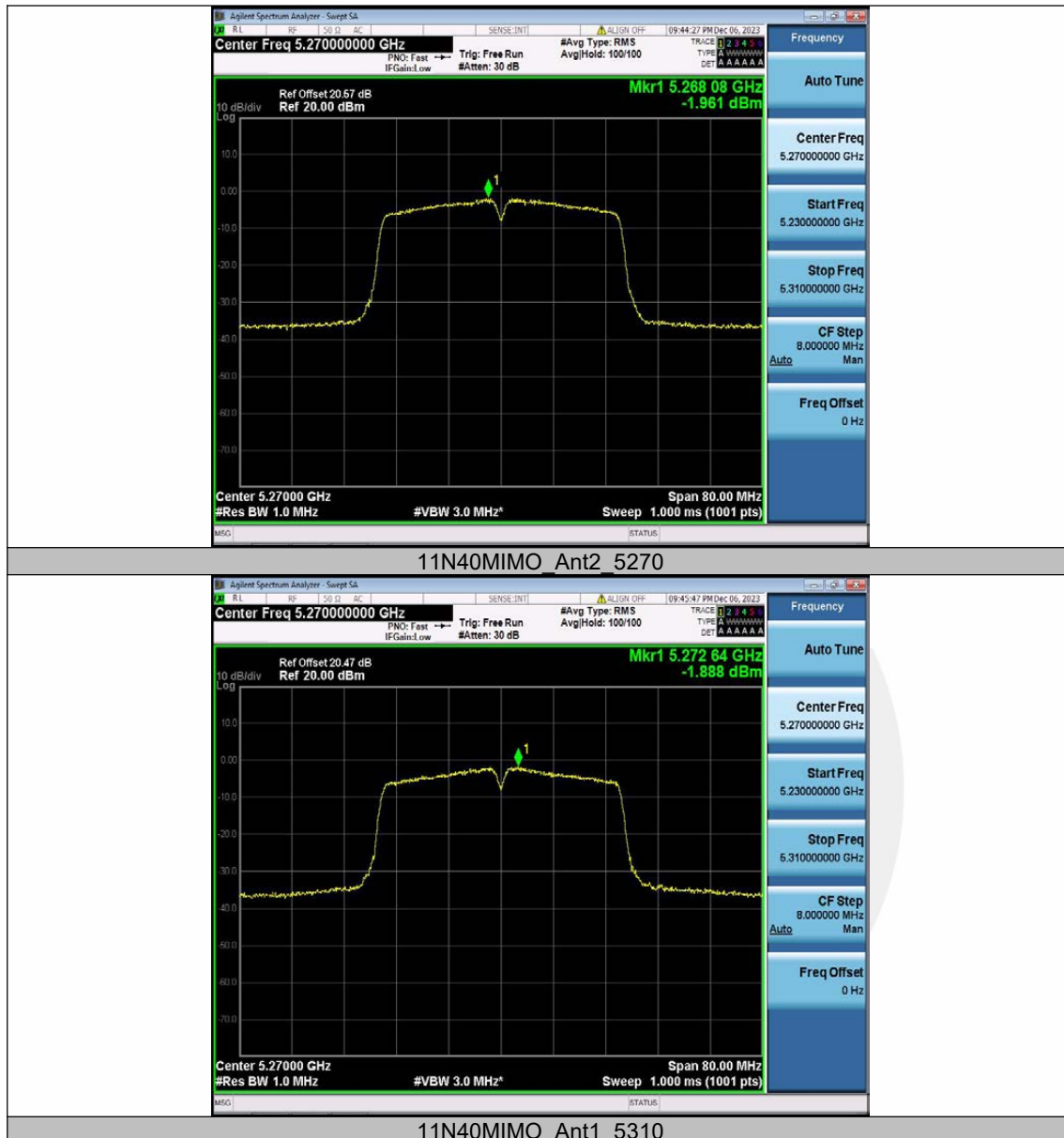
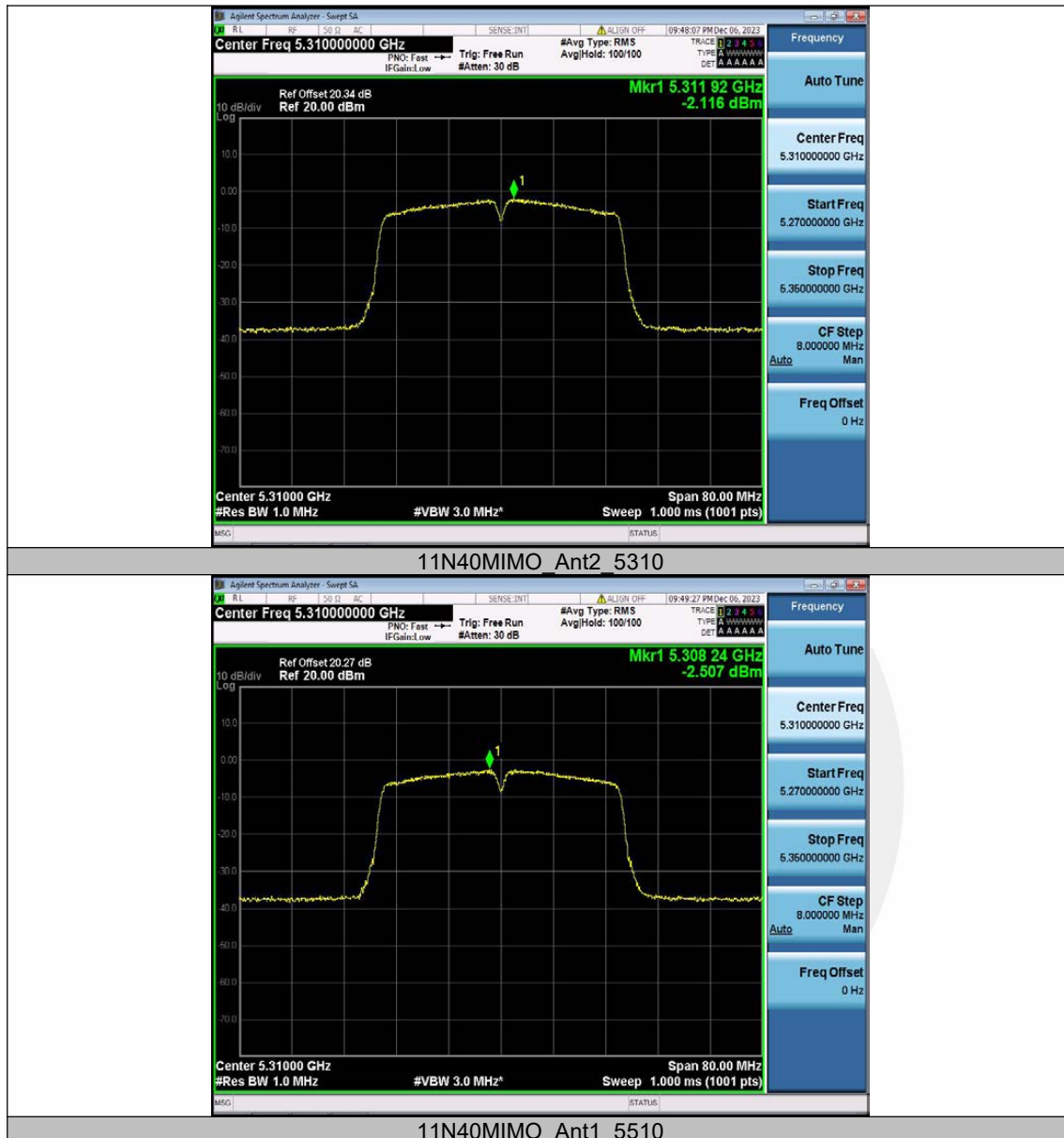
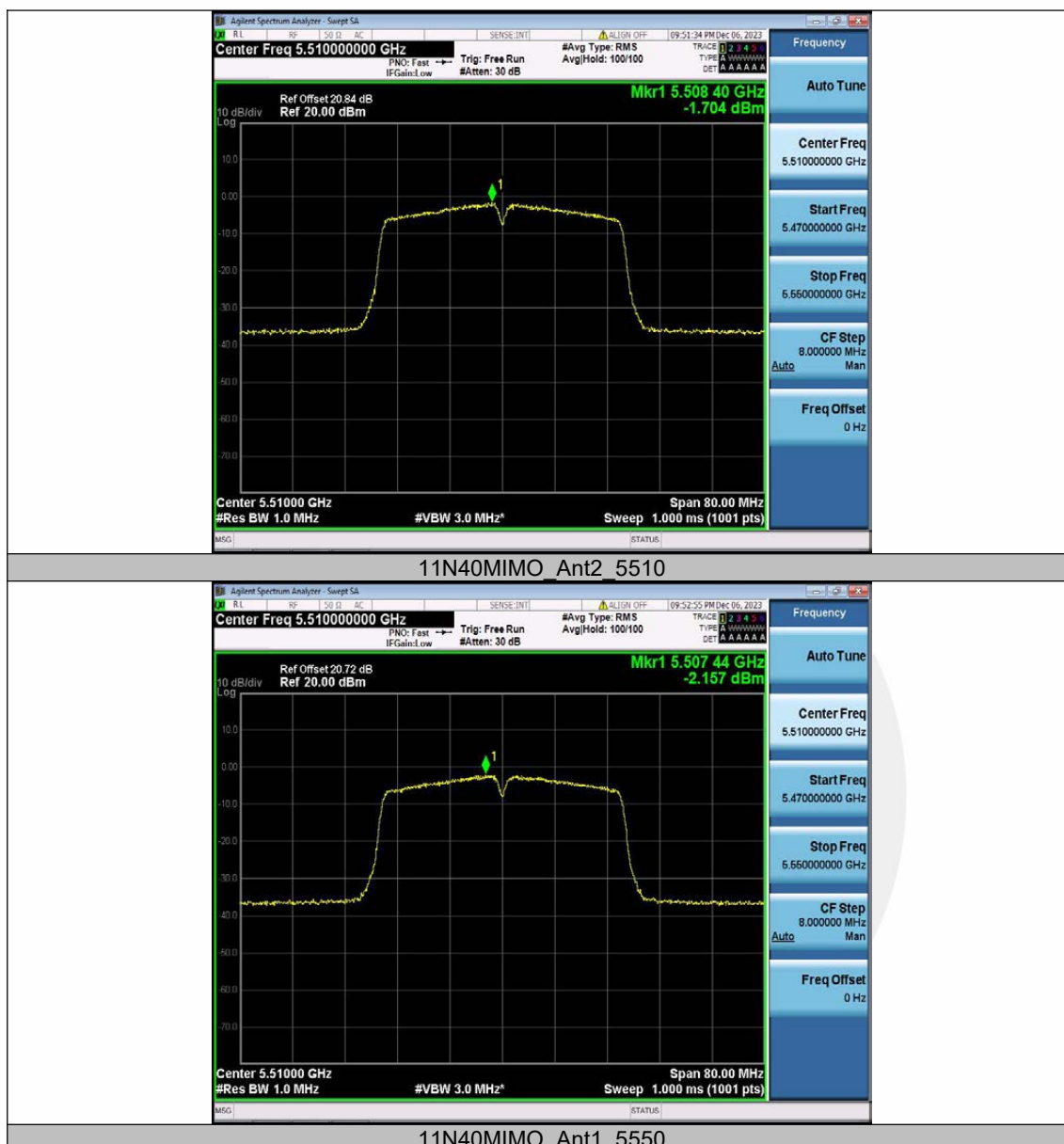
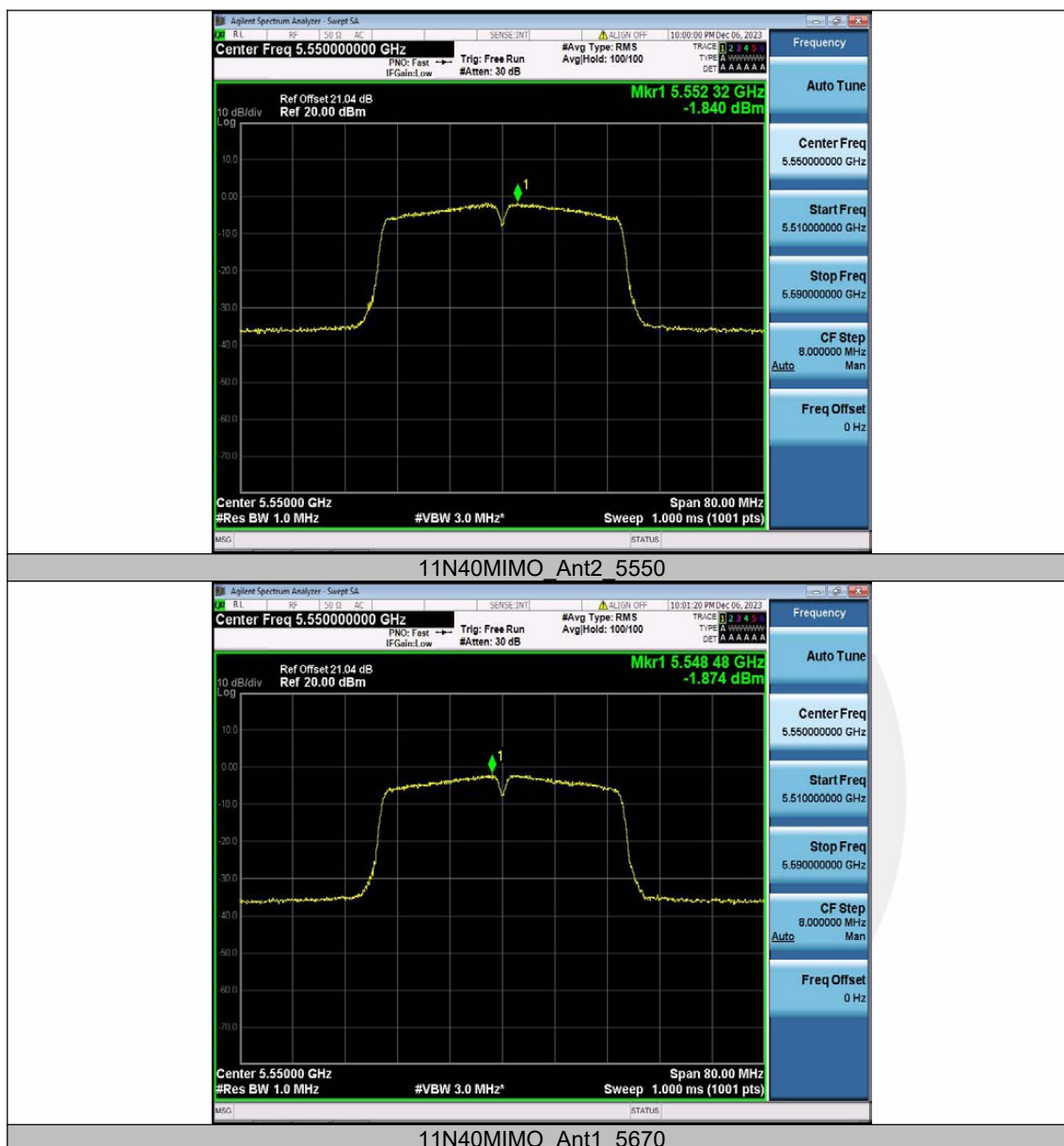


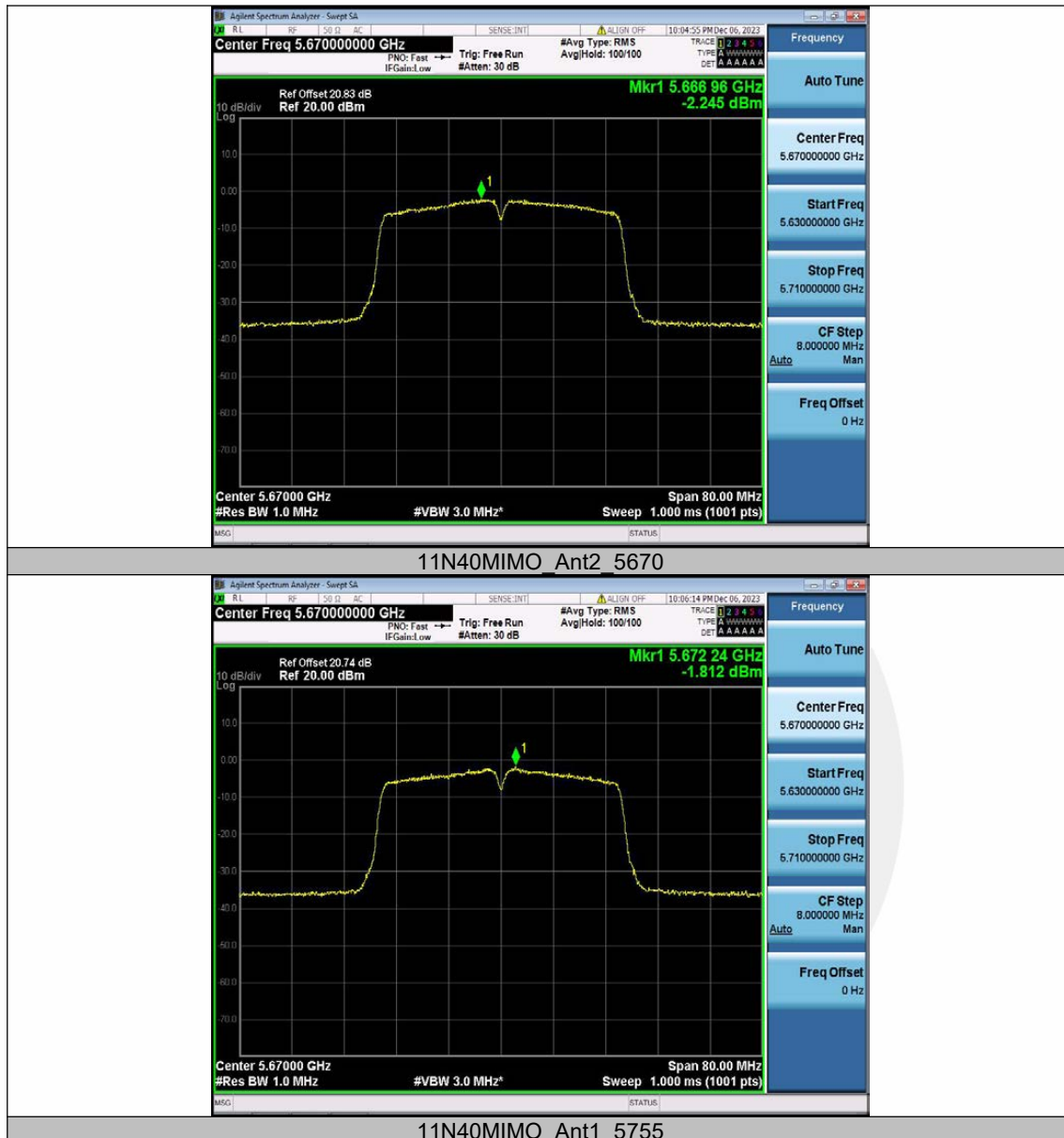


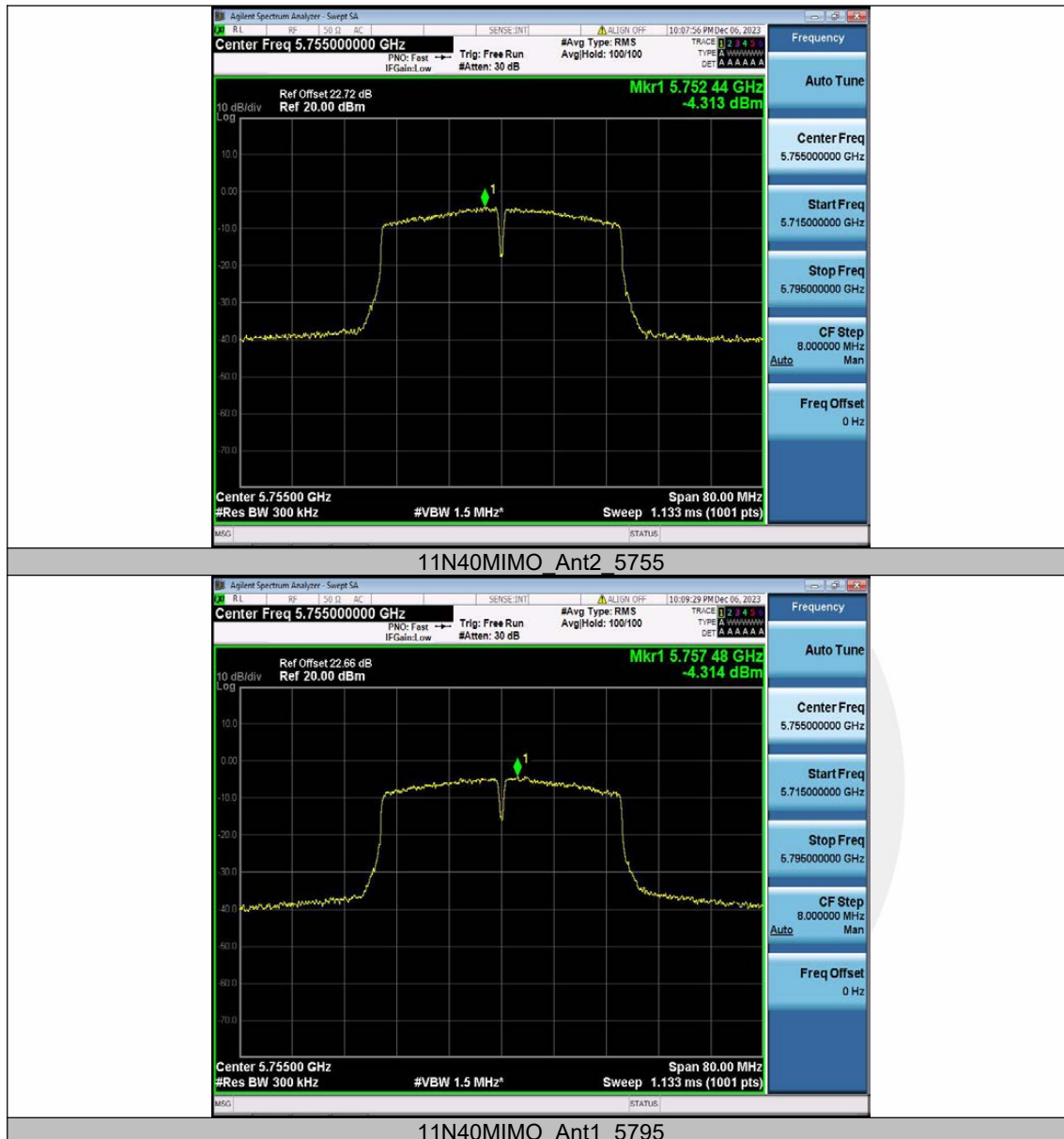


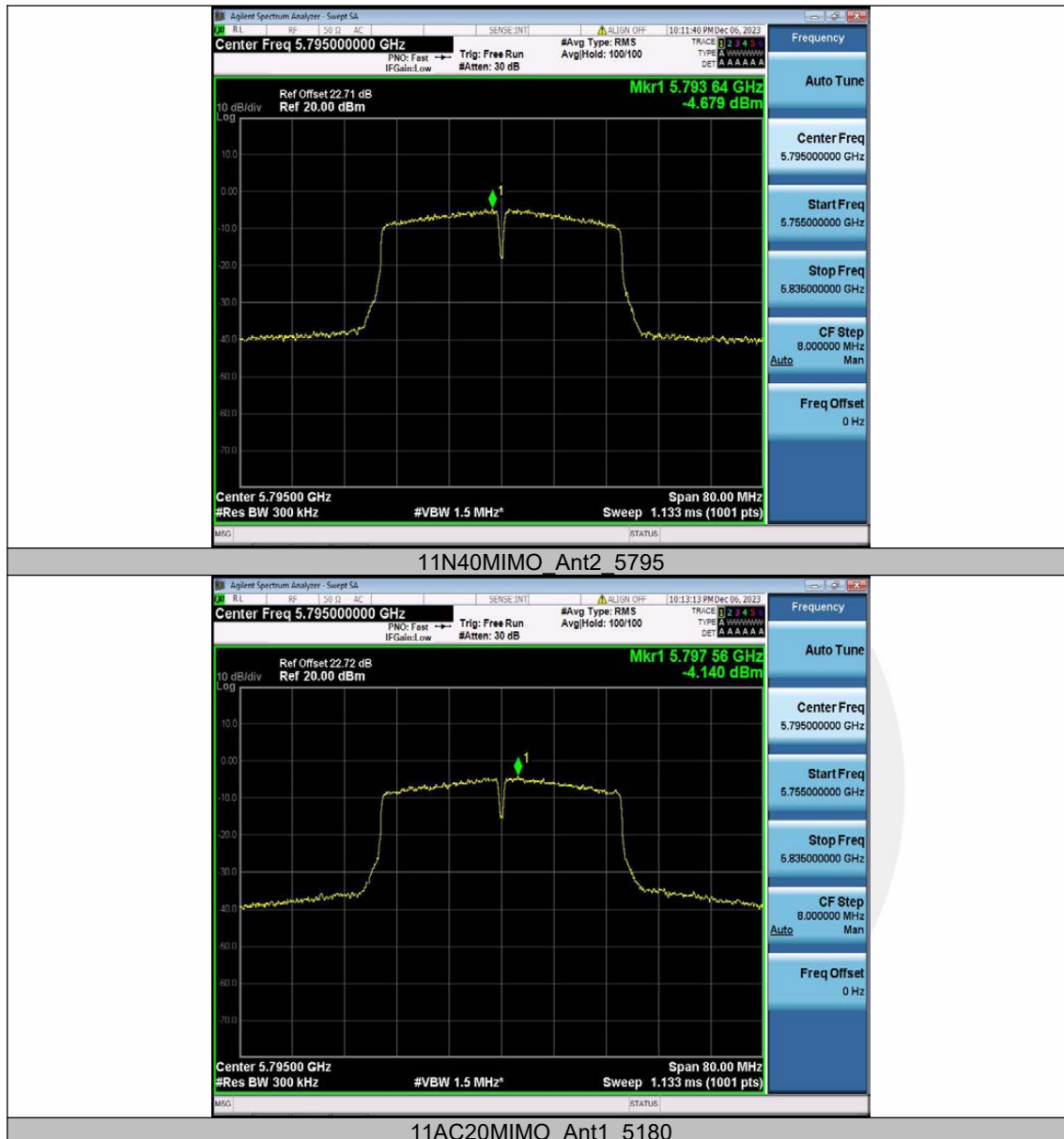


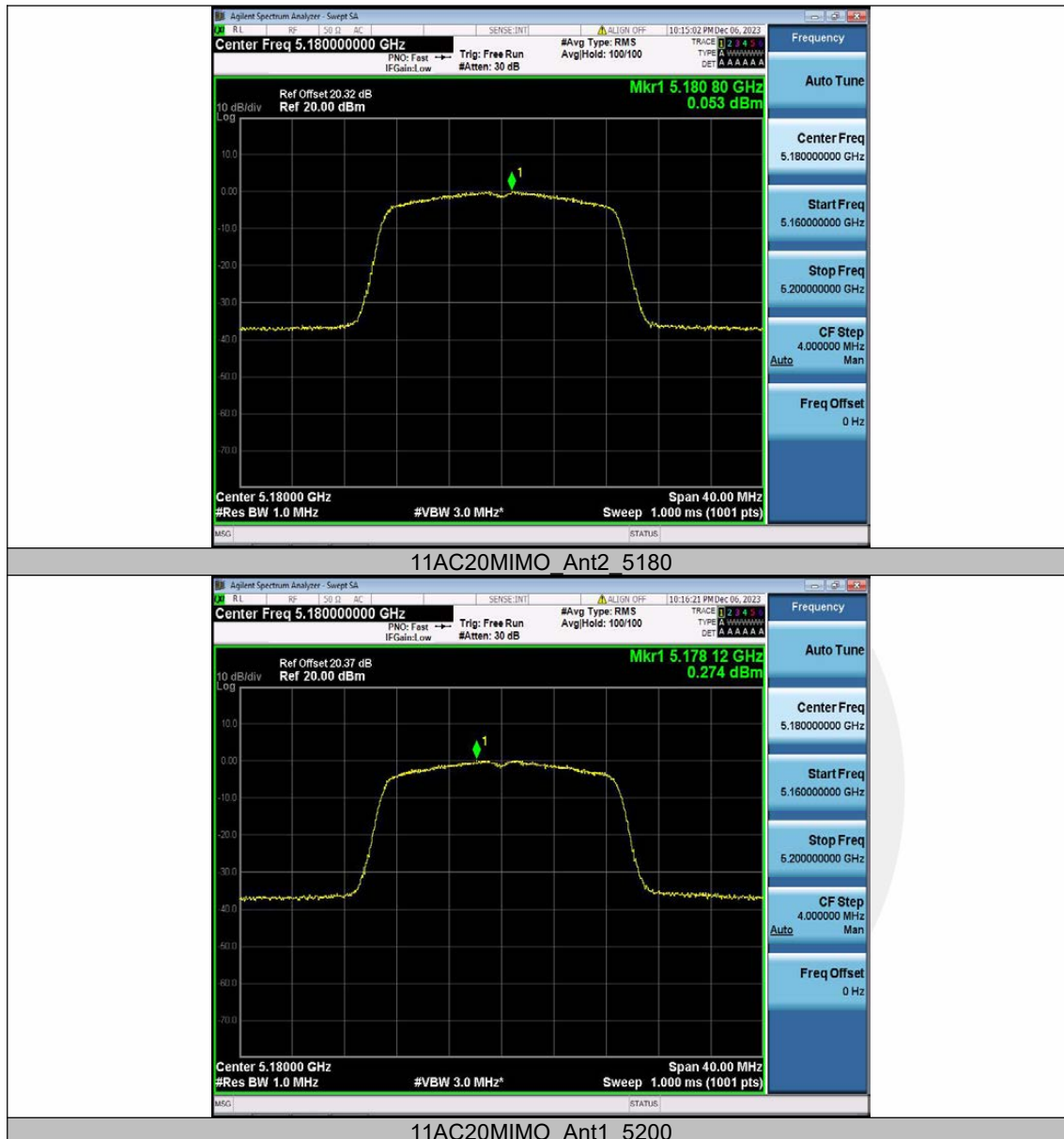








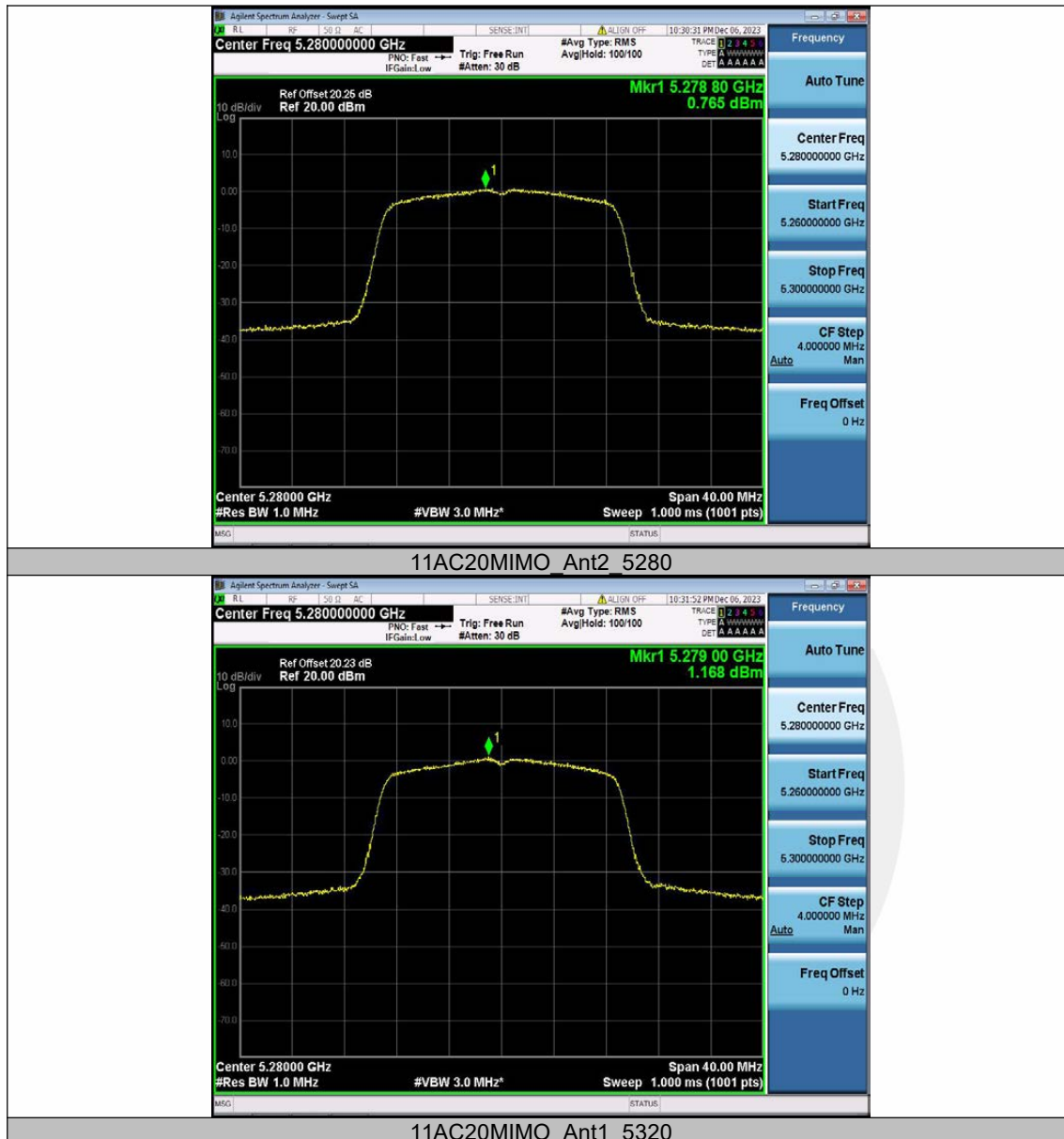


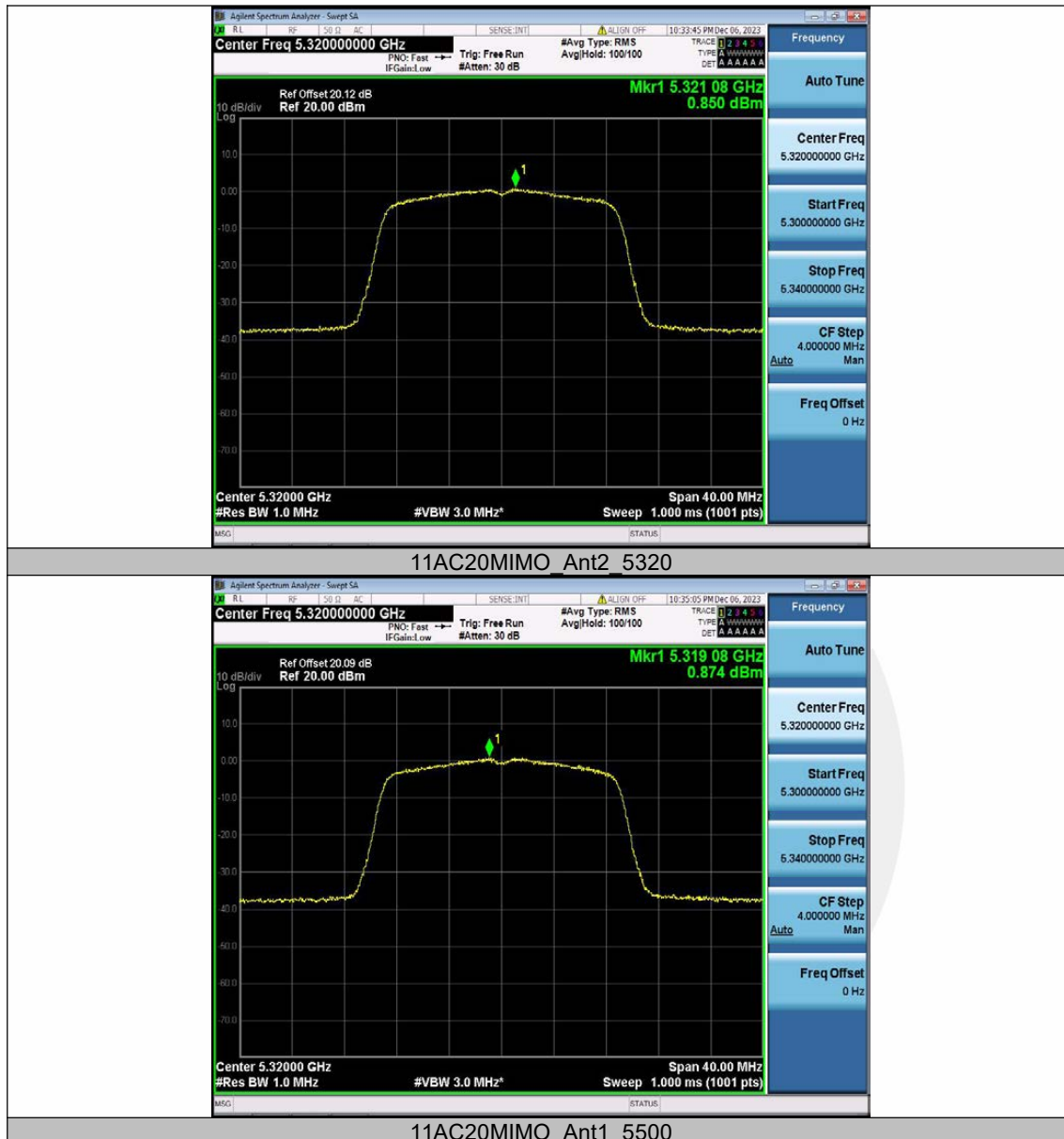


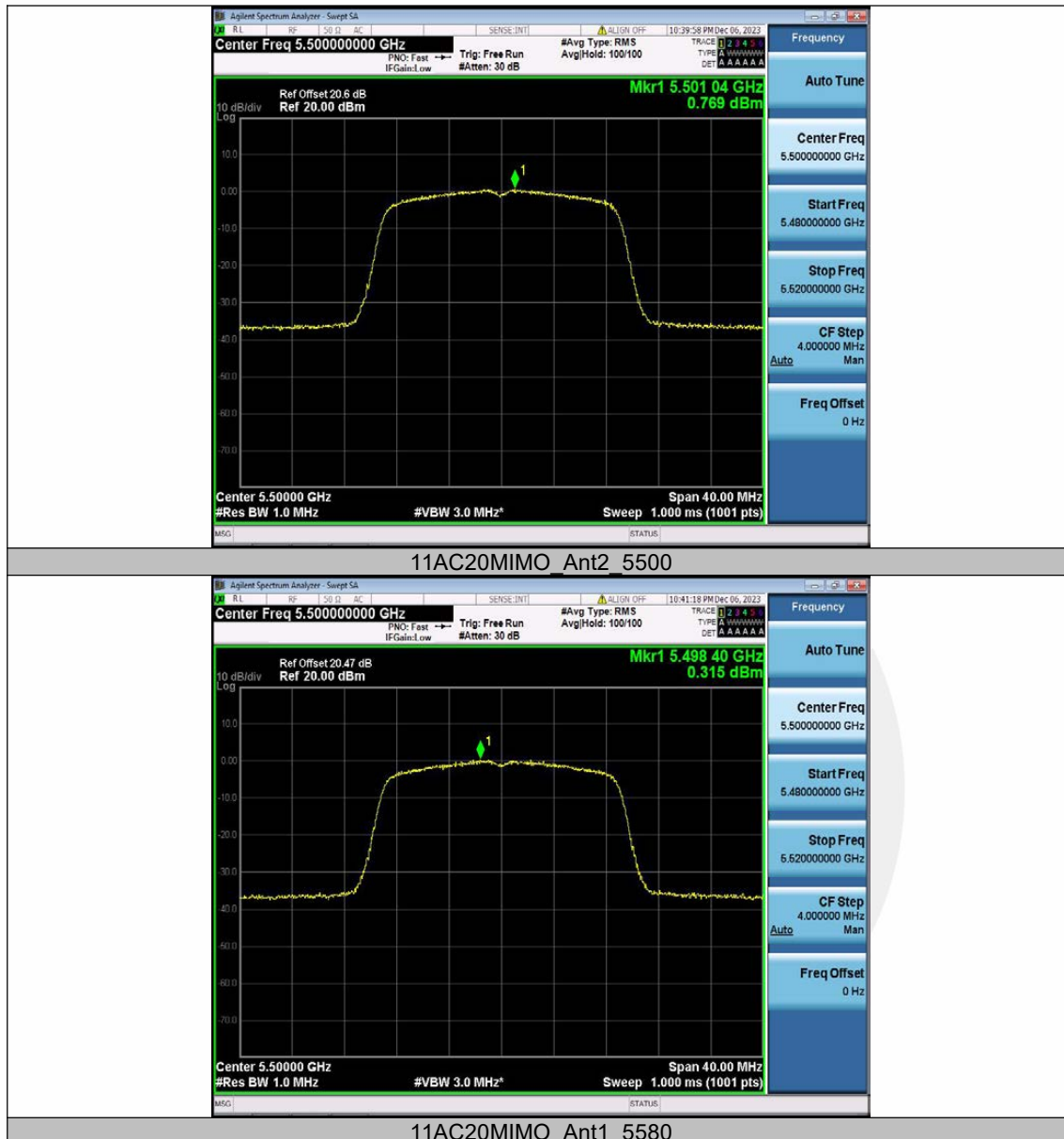




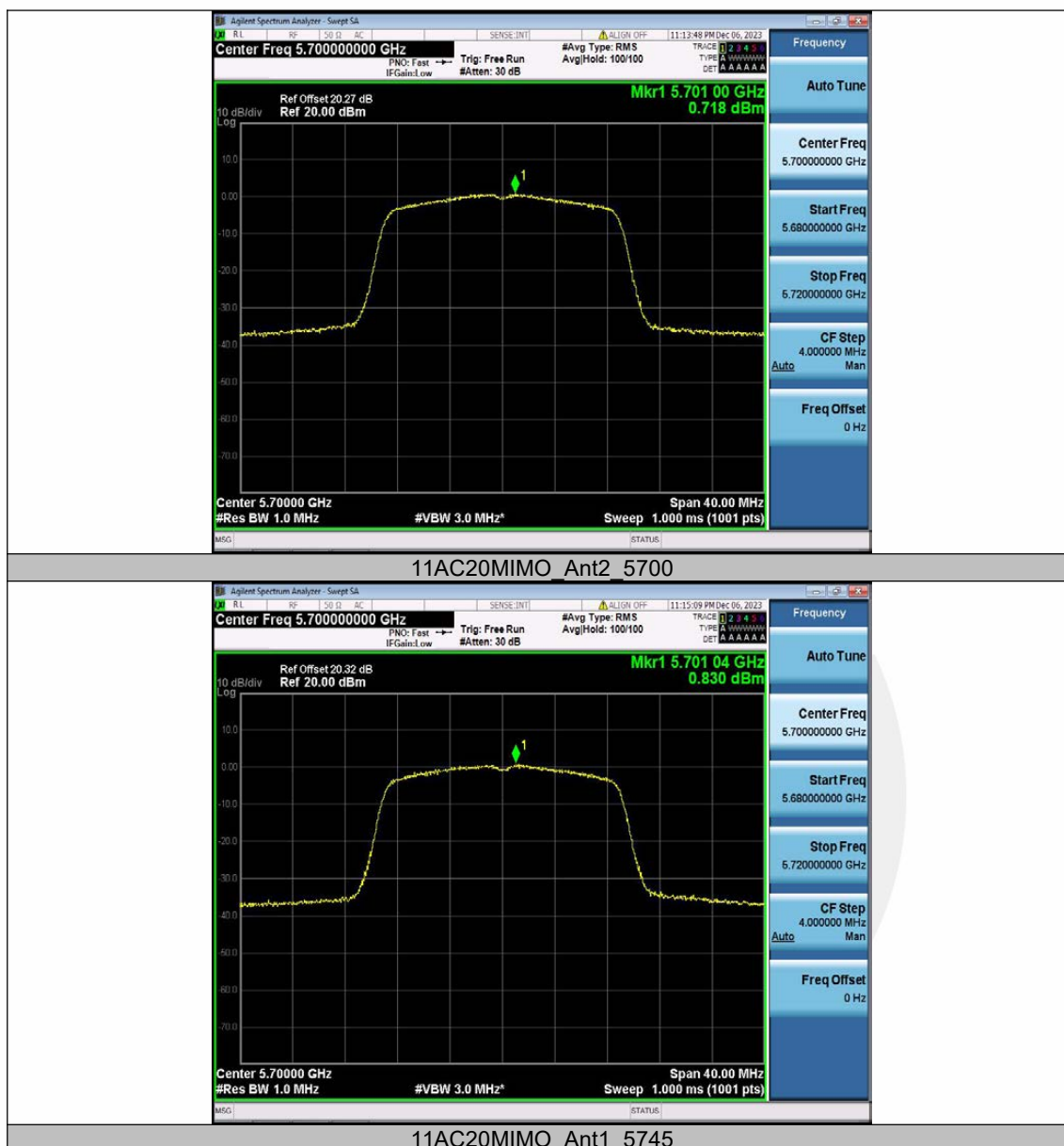




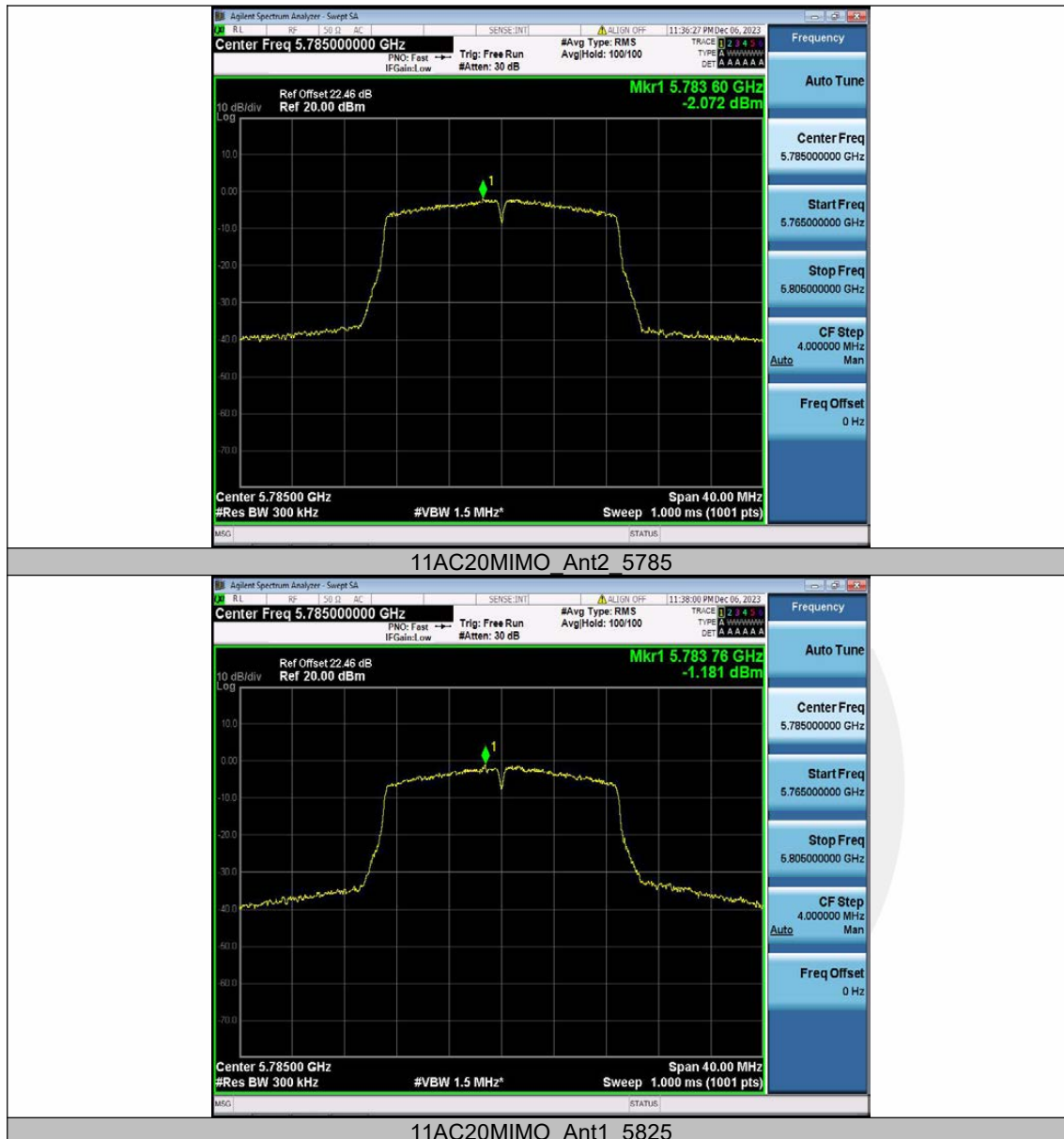


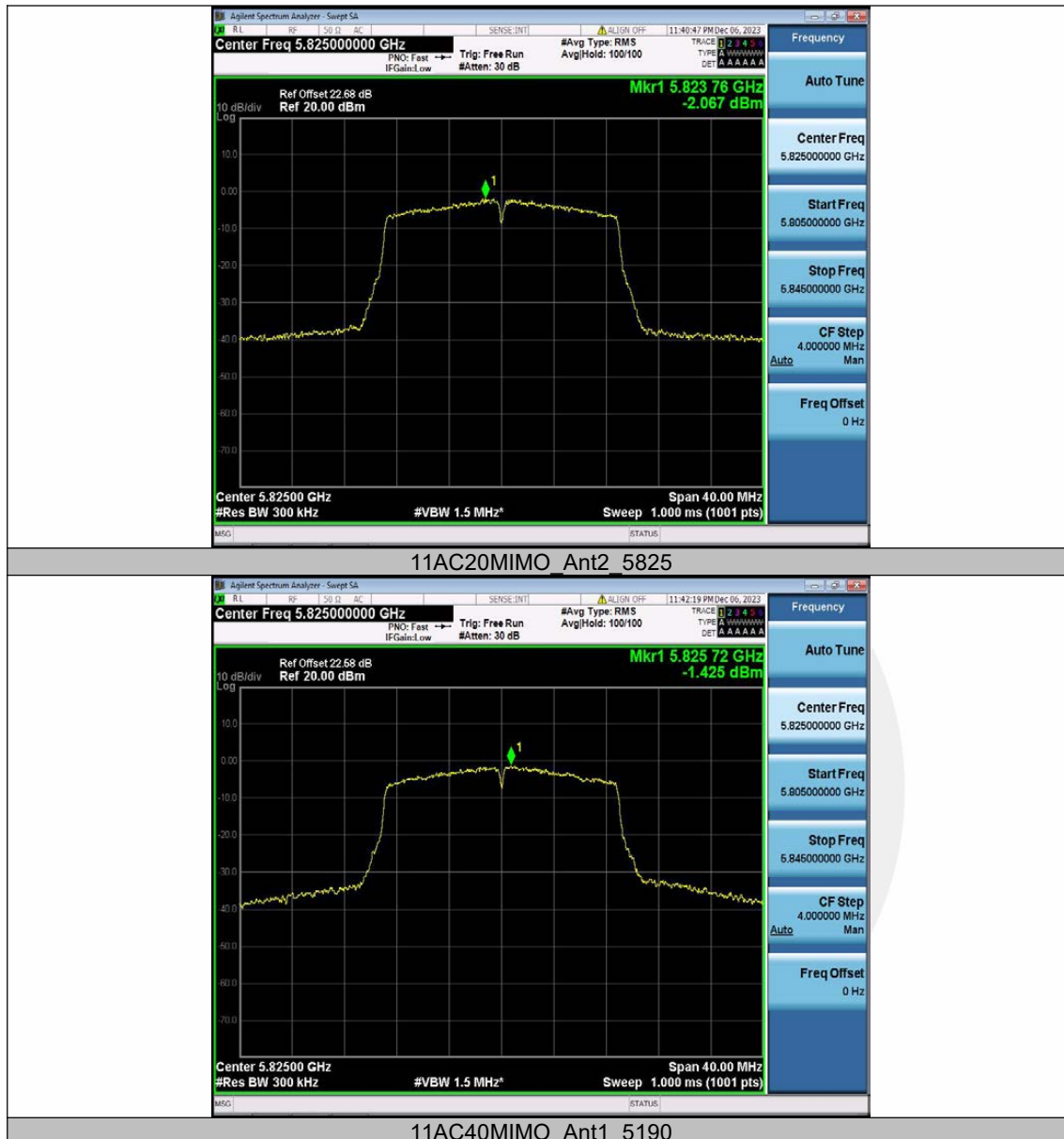


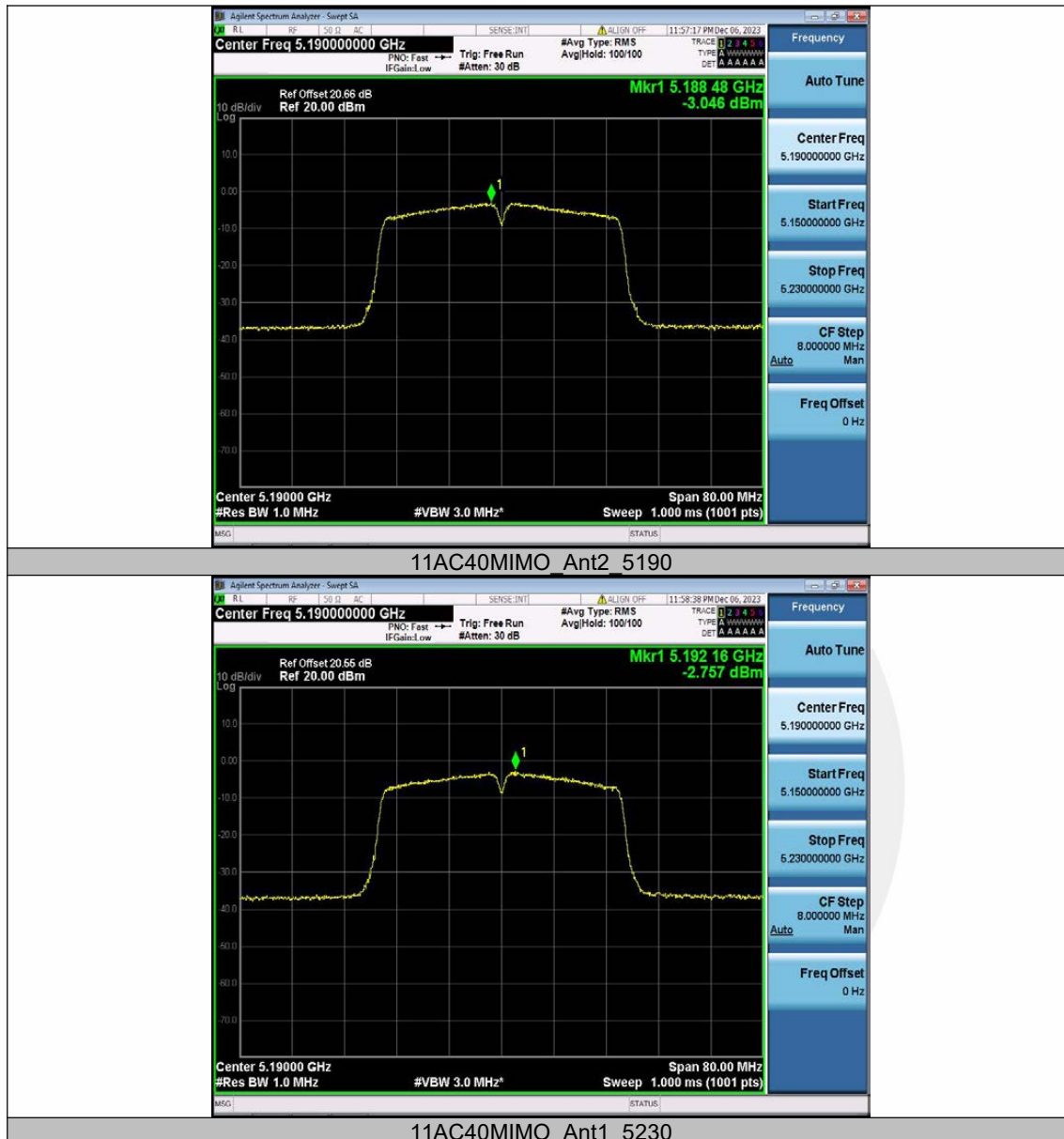


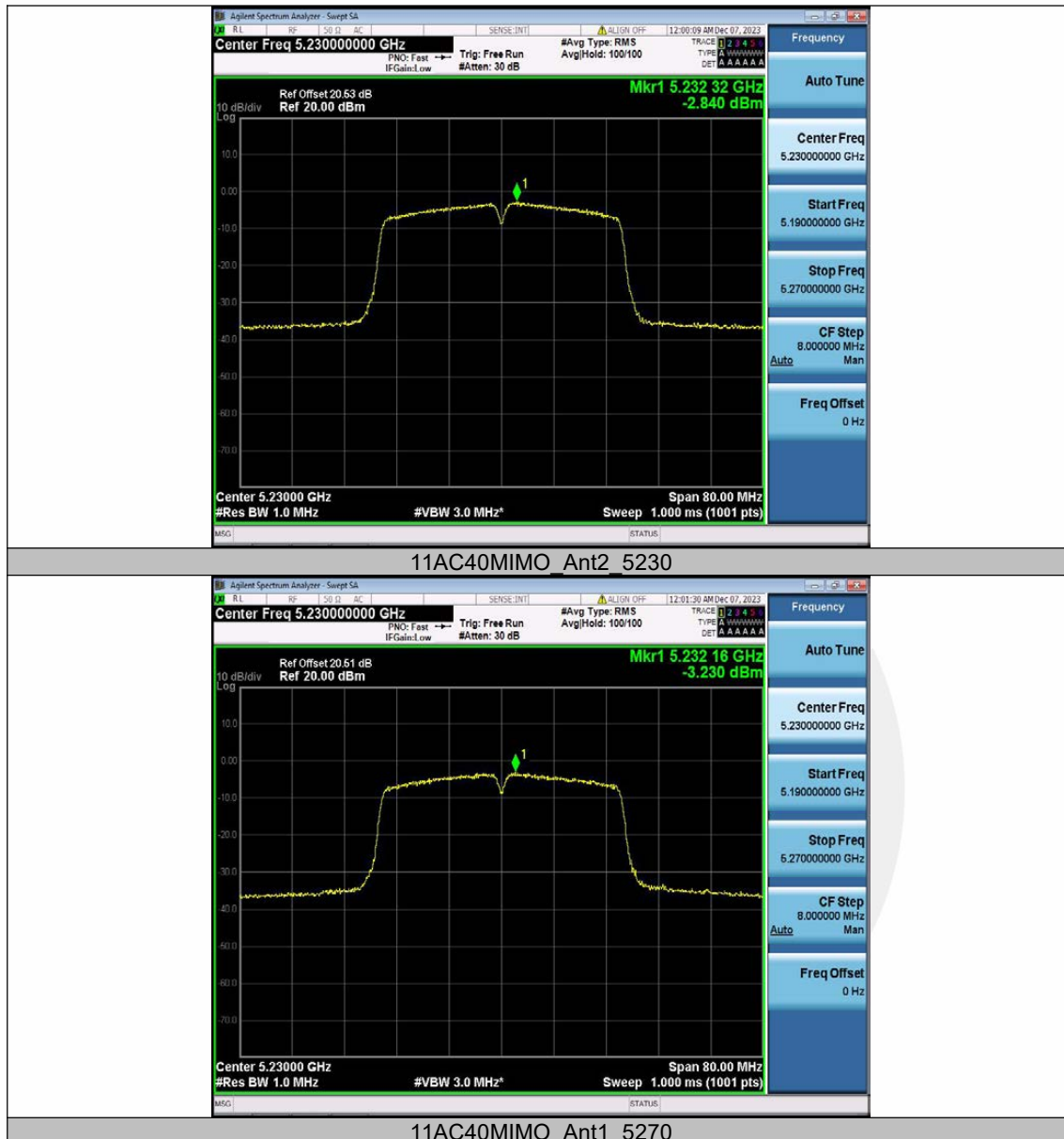


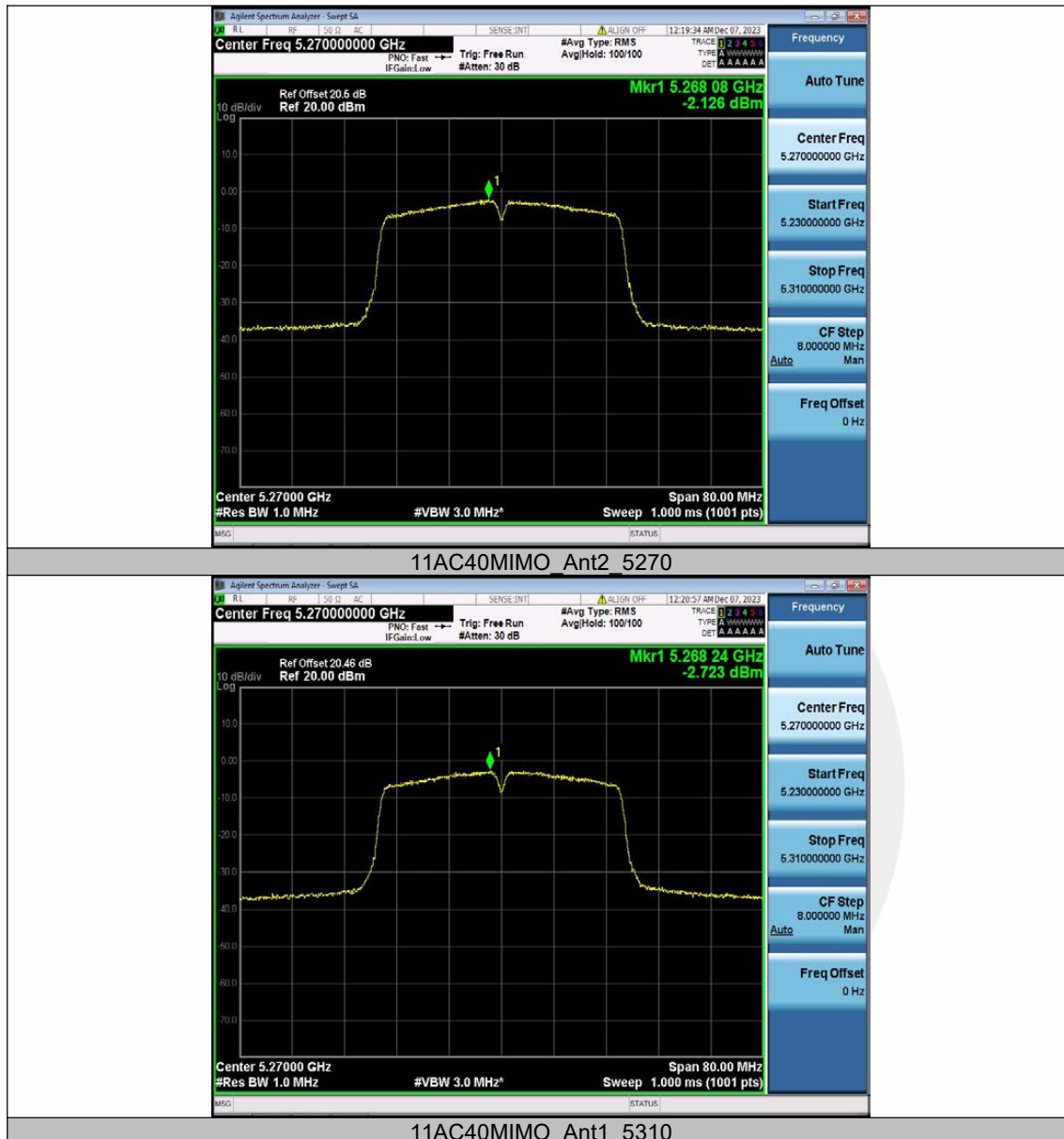


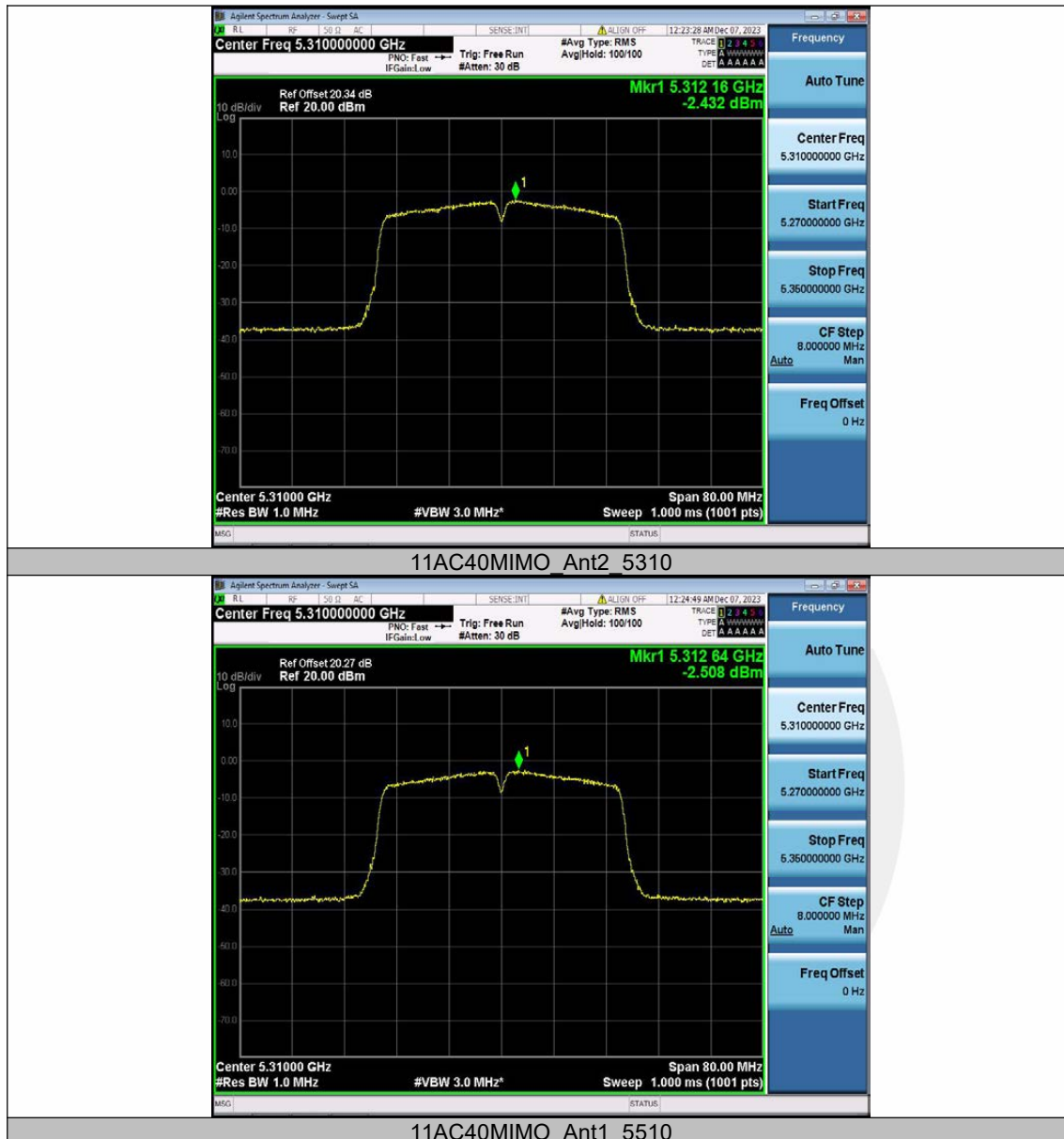


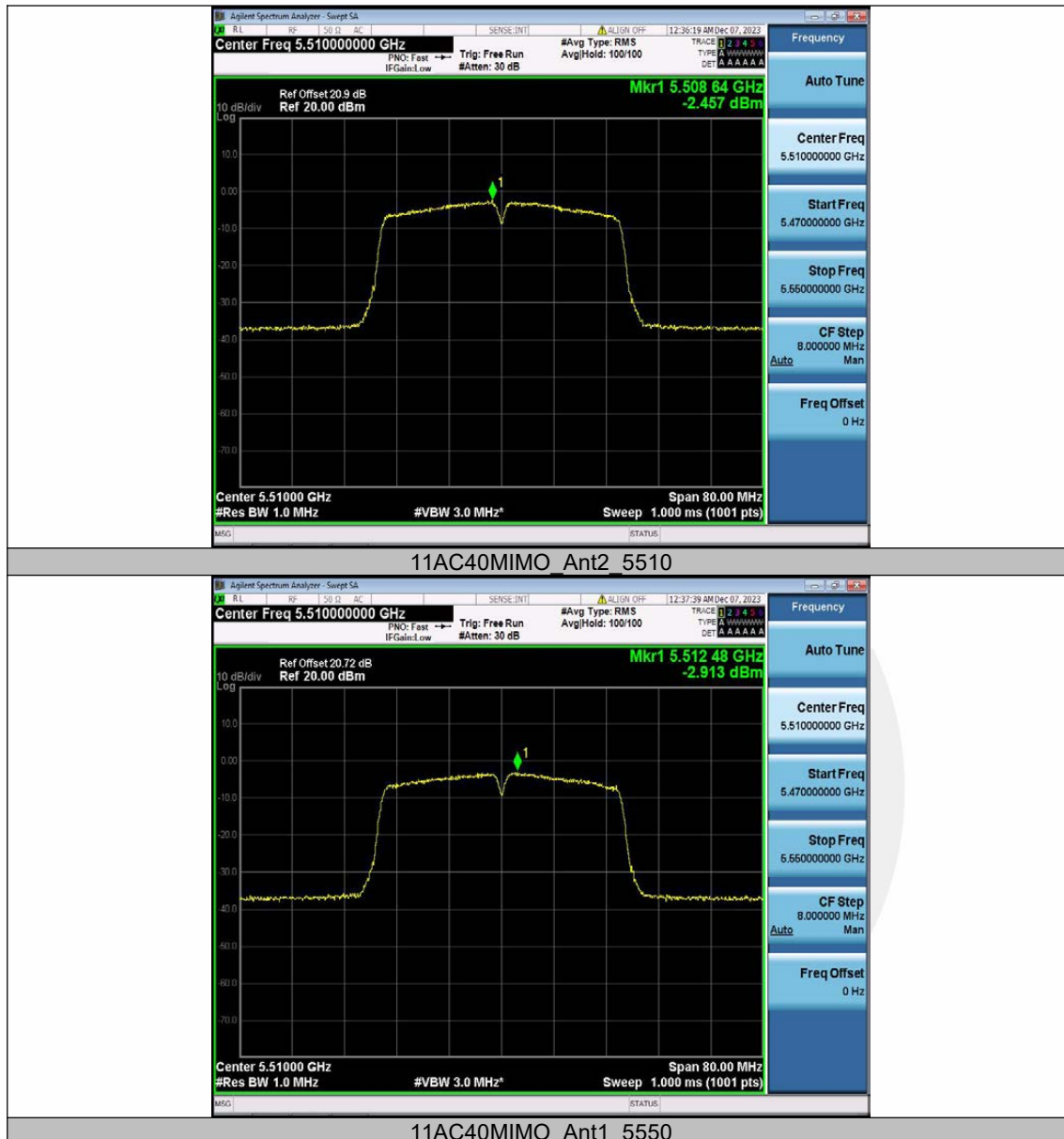




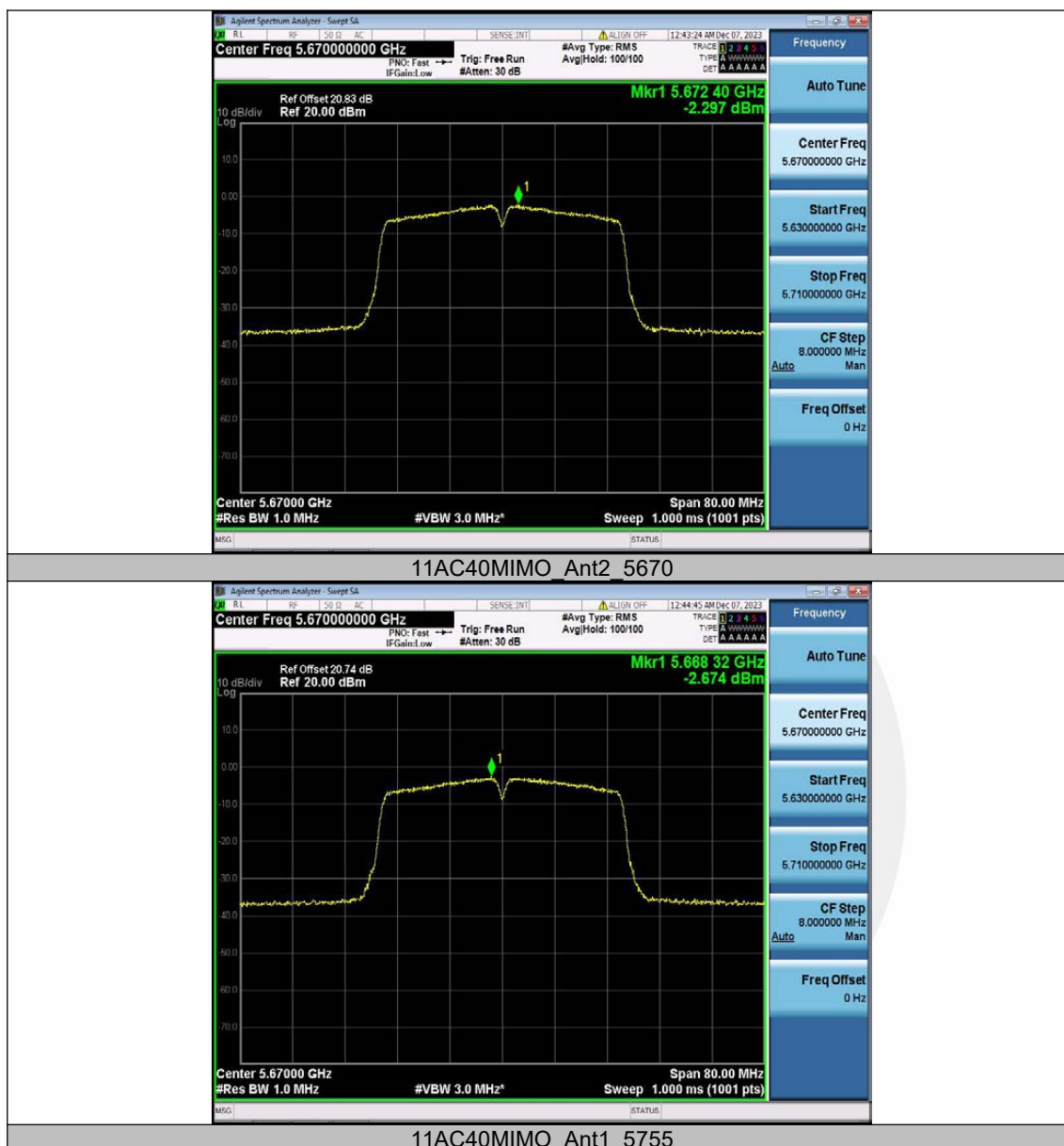


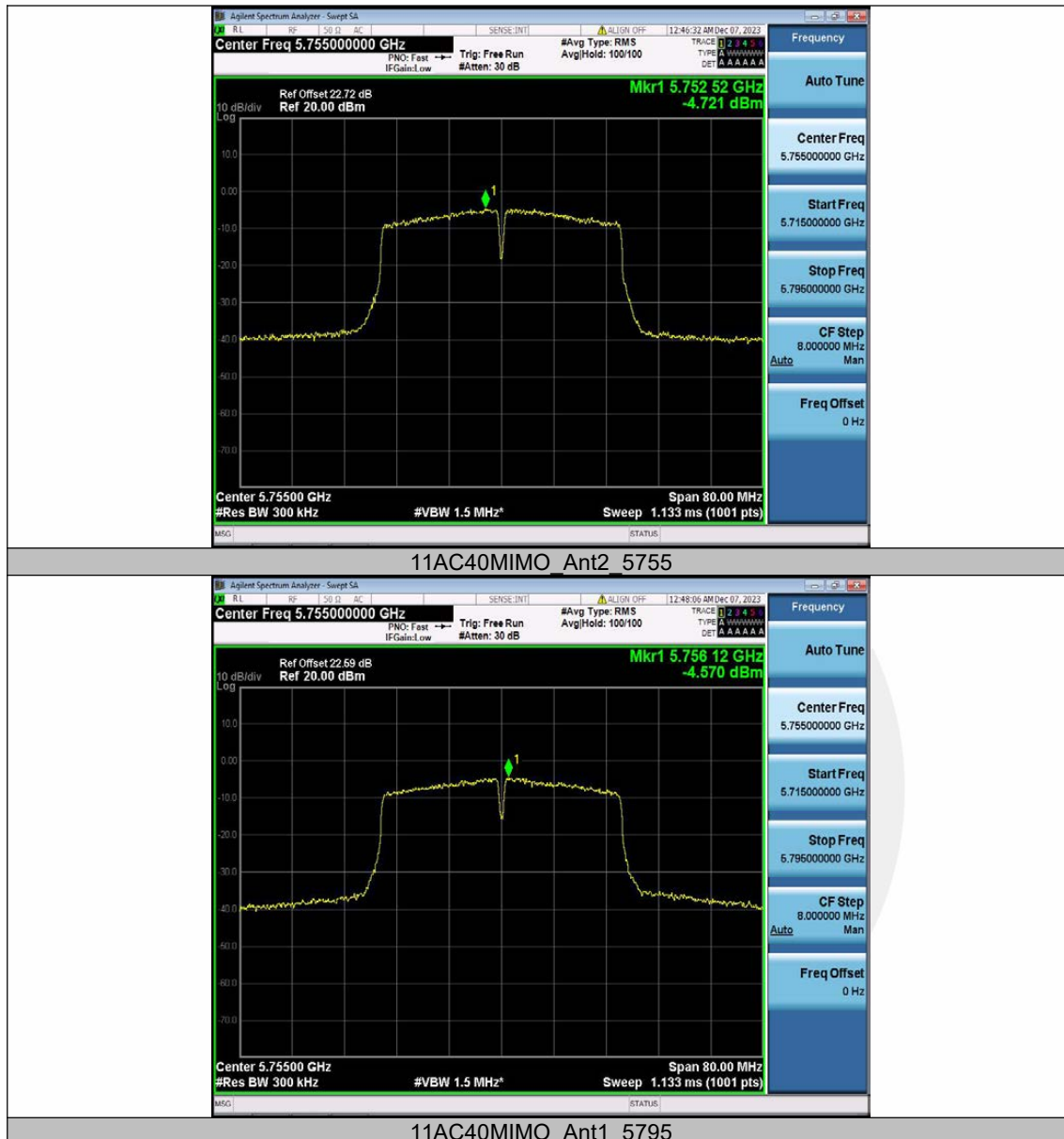


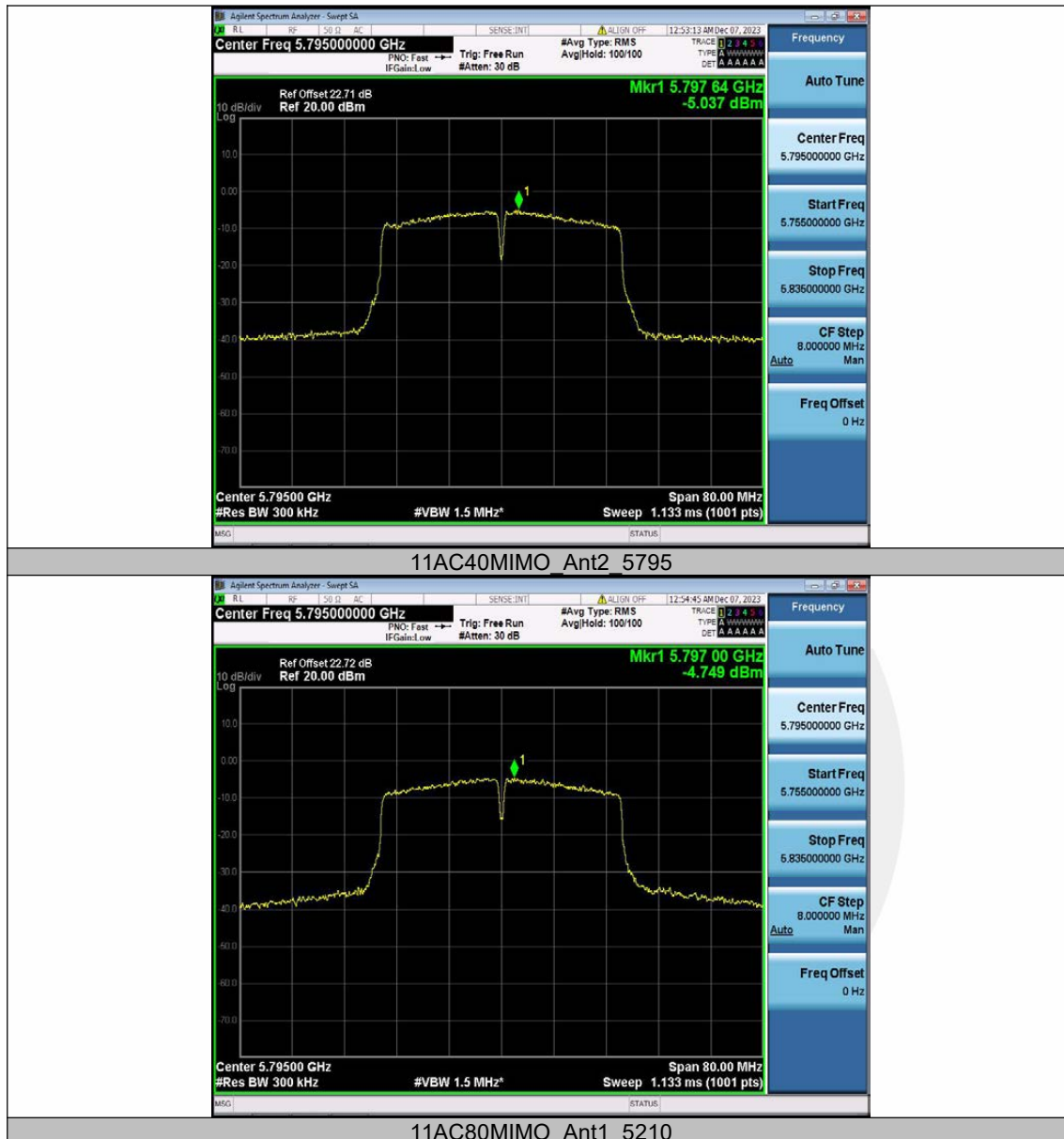






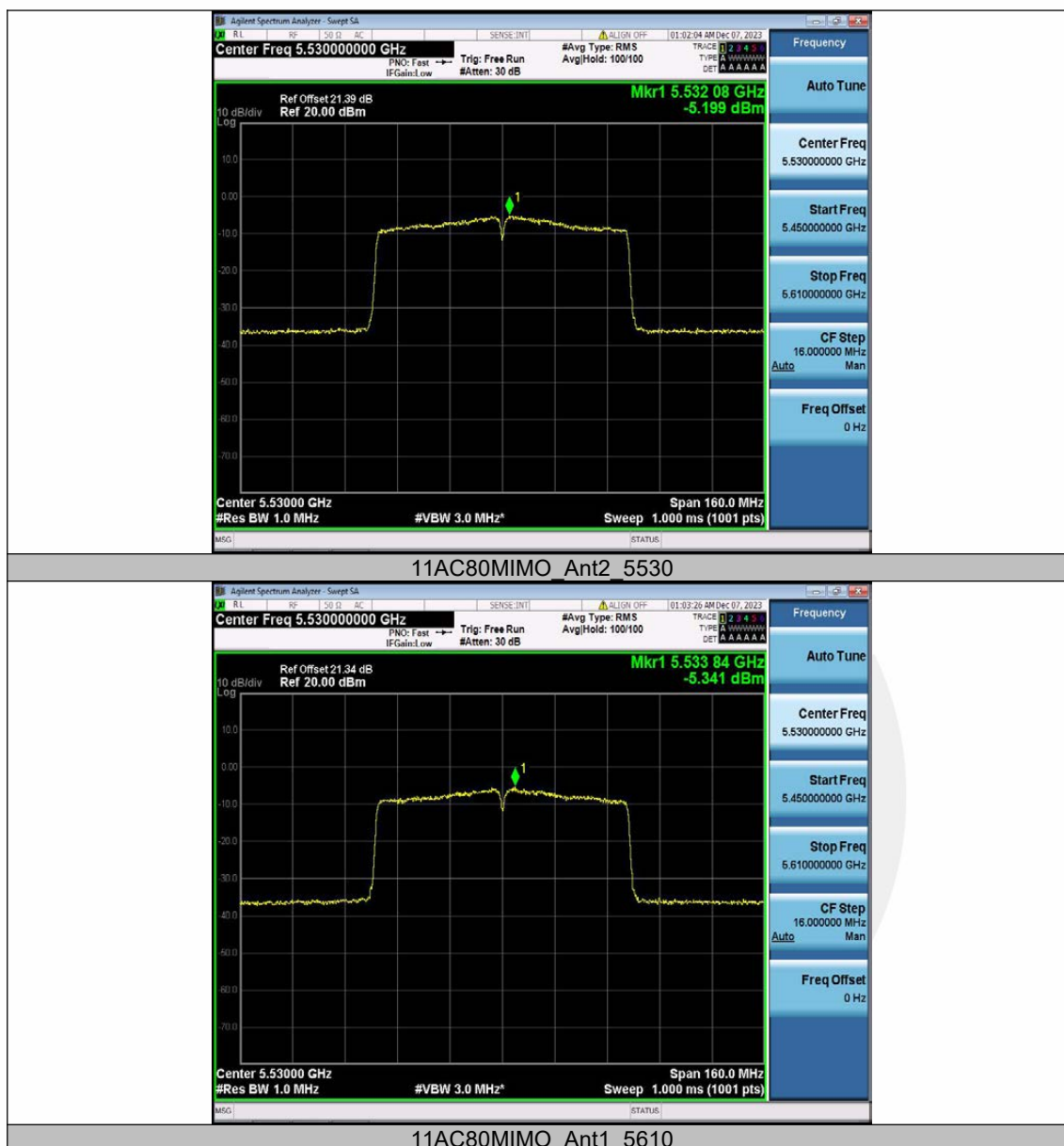
















8.4 UNDESIRABLE RADIATED SPURIOUS EMISSION

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℃	ATM Pressure:	1011 mbar
Humidity :	60 %	Test Engineer:	HZB

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

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

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

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

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

ANT1:

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

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
11570.79	V	60.22	-35.01	-27	8.01
17498.25	V	65.92	-29.31	-27	2.31
15457.23	V	42.98	-52.25	-27	25.25
9912.46	H	62.11	-33.12	-27	6.12
17498.25	H	66.81	-28.42	-27	1.42
15474.24	H	42.73	-52.50	-27	25.50

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)
11511.26	V	60.63	-34.60	-27	7.60
17498.25	V	66.24	-28.99	-27	1.99
15550.78	V	43.21	-52.02	-27	25.02
9844.42	H	62.11	-33.12	-27	6.12
17489.74	H	66.34	-28.89	-27	1.89
16817.91	H	45.65	-49.58	-27	22.58

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)
11528.26	V	61.03	-34.20	-27	7.20
17498.25	V	66.1	-29.13	-27	2.13
14623.81	V	45.24	-49.99	-27	22.99
9903.95	H	62.69	-32.54	-27	5.54
17498.25	H	66.28	-28.95	-27	1.95
14547.27	H	46.06	-49.17	-27	22.17

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)
11569.40	V	60.09	-35.14	-27	8.14
17499.53	V	65.89	-29.34	-27	2.34
15454.98	V	42.72	-52.51	-27	25.51
9924.15	H	62.03	-33.20	-27	6.20
17509.94	H	66.65	-28.58	-27	1.58
15470.93	H	42.55	-52.68	-27	25.68

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)
11526.87	V	60.5	-34.73	-27	7.73
17499.53	V	66.21	-29.02	-27	2.02
14621.56	V	42.95	-52.28	-27	25.28
9915.64	H	62.03	-33.20	-27	6.20
17509.94	H	66.18	-29.05	-27	2.05
14543.96	H	45.47	-49.76	-27	22.76

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)
11526.87	V	60.9	-34.33	-27	7.33
17499.53	V	66.07	-29.16	-27	2.16
14621.56	V	44.98	-50.25	-27	23.25
9915.64	H	62.61	-32.62	-27	5.62
17509.94	H	66.12	-29.11	-27	2.11
14543.96	H	45.88	-49.35	-27	22.35

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

ANT1:

Test mode: 802.11n(20)		Frequency(MHz): 5180			
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
11570.7854	V	60.22	74.00	13.78	peak
15457.2286	V	62.30	74.00	11.70	peak
17498.2491	V	65.92	74.00	8.08	peak
11570.7854	V	46.19	54.00	7.81	AVG
15457.2286	V	42.98	54.00	11.02	AVG
17498.2491	V	45.06	54.00	8.94	AVG
9912.4562	H	62.11	74.00	11.89	peak
15474.2371	H	61.90	74.00	12.10	peak
17498.2491	H	66.81	74.00	7.19	peak
9912.4562	H	44.21	54.00	9.79	AVG
15474.2371	H	42.73	54.00	11.27	AVG
17498.2491	H	44.76	54.00	9.24	AVG

Test mode: 802.11n(20)		Frequency(MHz): 5200			
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
11511.2556	V	60.63	74.00	13.37	peak
15550.7754	V	62.52	74.00	11.48	peak
17498.2491	V	66.24	74.00	7.76	peak
11511.2556	V	46.47	54.00	7.53	AVG
15550.7754	V	43.21	54.00	10.79	AVG
17498.2491	V	44.76	54.00	9.24	AVG
9844.4222	H	62.11	74.00	11.89	peak
16817.909	H	64.43	74.00	9.57	peak
17489.7449	H	66.34	74.00	7.66	peak
9844.4222	H	43.07	54.00	10.93	AVG
16817.909	H	45.65	54.00	8.35	AVG
17489.7449	H	44.33	54.00	9.67	AVG

Test mode: 802.11n(20)		Frequency(MHz): 5240			
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
11528.2641	V	61.03	74.00	12.97	peak
14623.8119	V	62.57	74.00	11.43	peak
17498.2491	V	66.10	74.00	7.90	peak
11528.2641	V	46.27	54.00	7.73	AVG
14623.8119	V	45.24	54.00	8.76	AVG
17498.2491	V	45.76	54.00	8.24	AVG
9903.952	H	62.69	74.00	11.31	peak
14547.2736	H	62.13	74.00	11.87	peak
17498.2491	H	66.28	74.00	7.72	peak
9903.952	H	44.34	54.00	9.66	AVG
14547.2736	H	46.06	54.00	7.94	AVG
17498.2491	H	45.10	54.00	8.90	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
11569.395	V	60.09	74.00	13.91	peak
15455.839	V	62.14	74.00	11.86	peak
17499.529	V	65.89	74.00	8.11	peak
11572.065	V	46.17	54.00	7.83	AVG
15454.979	V	42.72	54.00	11.28	AVG
17495.999	V	44.87	54.00	9.13	AVG
9924.146	H	62.03	74.00	11.97	peak
15485.927	H	61.69	74.00	12.31	peak
17509.939	H	66.65	74.00	7.35	peak
9924.146	H	44.07	54.00	9.93	AVG
15470.927	H	42.55	54.00	11.45	AVG
17494.939	H	44.63	54.00	9.37	AVG

Test mode: 802.11n(20)		Frequency(MHz): 5200			
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
11509.866	V	60.5	74.00	13.5	peak
15549.385	V	62.36	74.00	11.64	peak
17499.529	V	66.21	74.00	7.79	peak
11512.536	V	46.45	54.00	7.55	AVG
15548.525	V	42.95	54.00	11.05	AVG
17495.999	V	44.57	54.00	9.43	AVG
9856.112	H	62.03	74.00	11.97	peak
16829.599	H	64.22	74.00	9.78	peak
17501.435	H	66.18	74.00	7.82	peak
9856.112	H	42.93	54.00	11.07	AVG
16814.599	H	45.47	54.00	8.53	AVG
17486.435	H	44.2	54.00	9.8	AVG

Test mode: 802.11n(20)		Frequency(MHz): 5240			
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
11526.874	V	60.9	74.00	13.1	peak
14622.422	V	62.41	74.00	11.59	peak
17499.529	V	66.07	74.00	7.93	peak
11529.544	V	46.25	54.00	7.75	AVG
14621.562	V	44.98	54.00	9.02	AVG
17495.999	V	45.57	54.00	8.43	AVG
9915.642	H	62.61	74.00	11.39	peak
14558.964	H	61.92	74.00	12.08	peak
17509.939	H	66.12	74.00	7.88	peak
9915.642	H	44.2	54.00	9.8	AVG
14543.964	H	45.88	54.00	8.12	AVG
17494.939	H	44.97	54.00	9.03	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
5043.96	H	54.84	-40.39	-27	Pass
5001.88	V	55.93	-39.30	-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
5378.33	H	54.27	-40.96	-27	Pass
5382.18	V	54.31	-40.92	-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

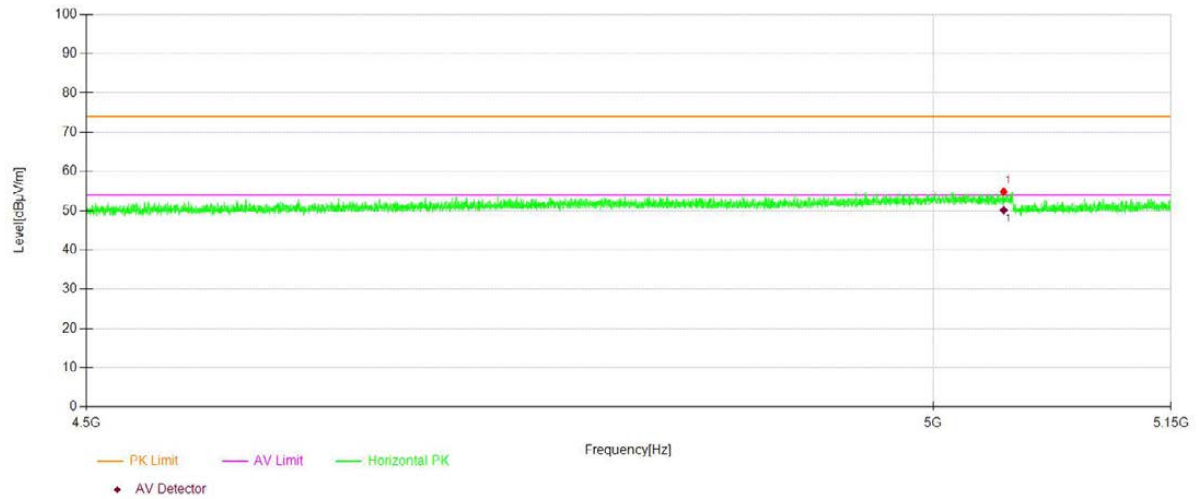
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
5001.88	V	55.93	74.00	18.07	peak
5001.88	V	50.84	54.00	3.16	AVG
5043.96	H	54.84	74.00	19.16	peak
5043.96	H	50.11	54.00	3.89	AVG

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

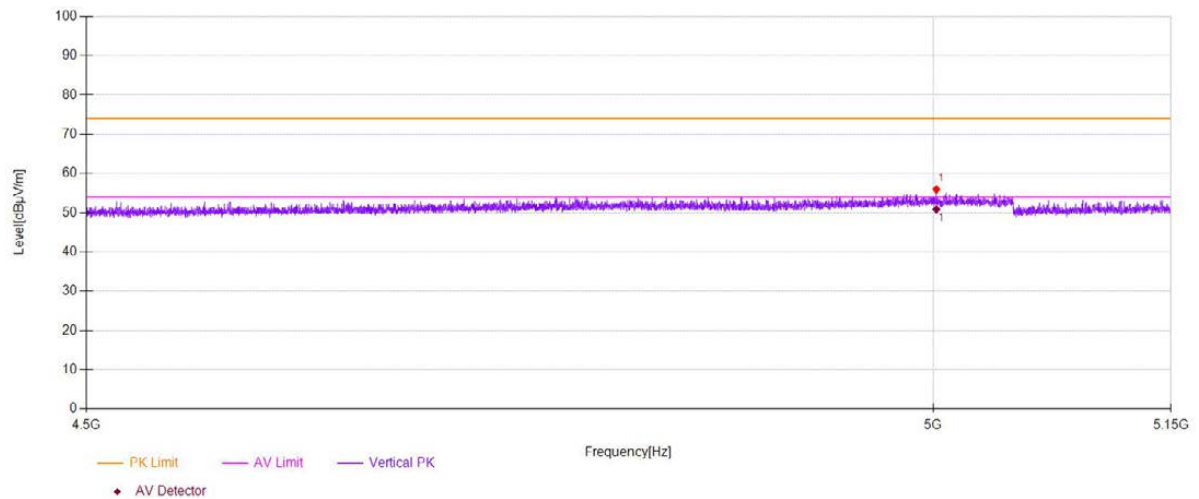
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
5382.18	V	54.31	74.00	19.69	peak
5382.18	V	50.23	54.00	3.77	AVG
5378.33	H	54.27	74.00	19.73	peak
5378.33	H	51.25	54.00	2.75	AVG

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.

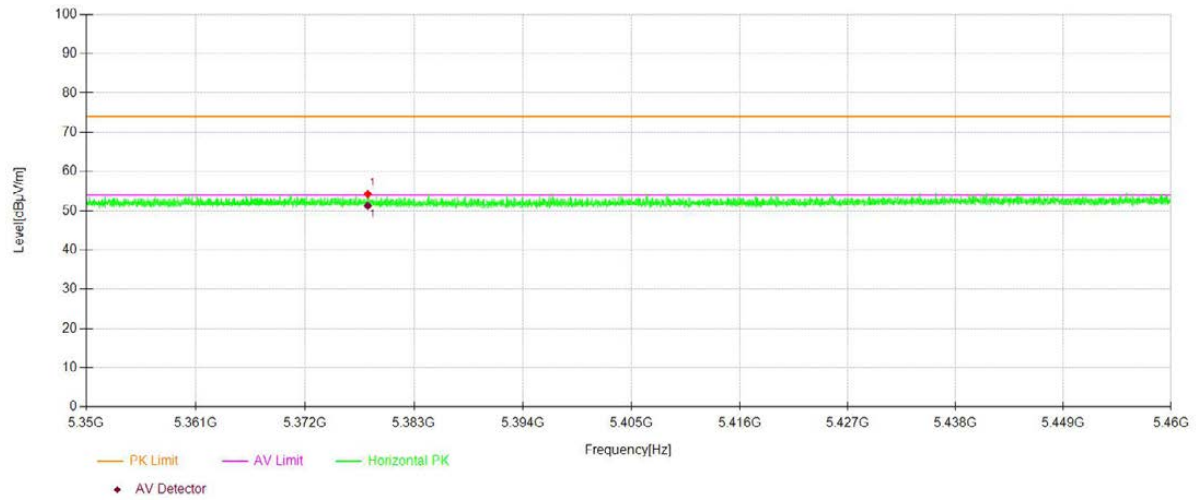
Test Model U-NII - 1
Undesirable radiated Spurious Emission in Restricted Band (5100-5150MHz)
☐ 802.11a ☒ 802.11n(HT20) ☐ 802.11n(HT40)
☒ 5180 ☐ 5200 ☐ 5240 Ant.Pol H



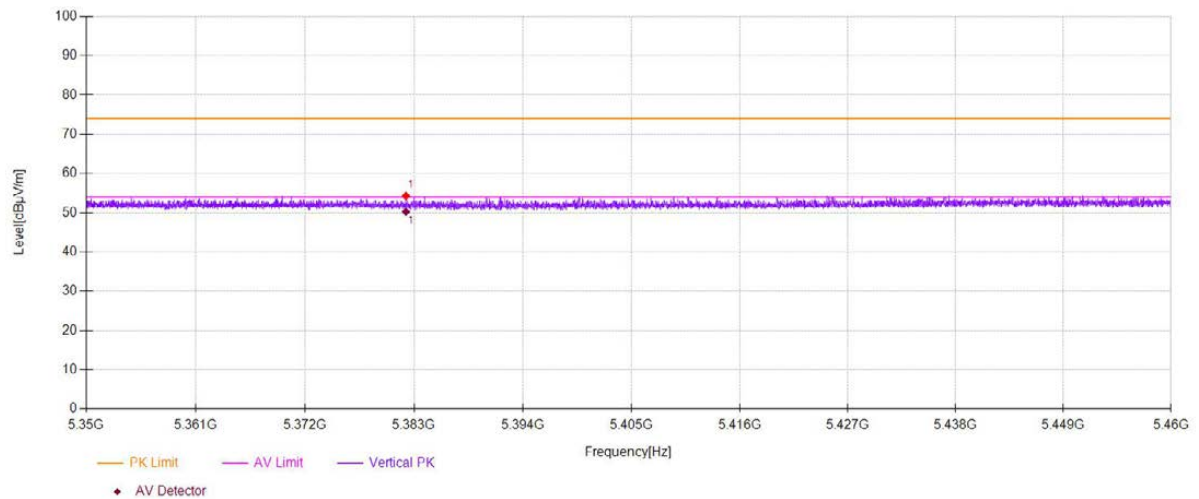
Test Model U-NII - 1
Undesirable radiated Spurious Emission in Restricted Band (5100-5150MHz)
☐ 802.11a ☒ 802.11n(HT20) ☐ 802.11n(HT40)
☒ 5180 ☐ 5200 ☐ 5240 Ant.Pol V



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



☒ For Undesirable radiated Spurious Emission in U-NII -2A

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

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

ANT1:

Test mode:		802.11n(20)		Frequency(MHz):		5260	
Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)		
11366.68	V	60.02	-35.21	-27	8.21		
17489.74	V	66.34	-28.89	-27	1.89		
16401.20	V	46.1	-49.13	-27	22.13		
9742.37	H	63.65	-31.58	-27	4.58		
17498.25	H	65.87	-29.36	-27	2.36		
15525.26	H	43.42	-51.81	-27	24.81		

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)		
11664.33	V	60.18	-35.05	-27	8.05		
17498.25	V	65.53	-29.70	-27	2.70		
15482.74	V	42.75	-52.48	-27	25.48		
9852.93	H	61.74	-33.49	-27	6.49		
17481.24	H	66.08	-29.15	-27	2.15		
15474.24	H	43.13	-52.10	-27	25.10		

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)		
10669.33	V	60.14	-35.09	-27	8.09		
17498.25	V	65.66	-29.57	-27	2.57		
15423.21	V	43.5	-51.73	-27	24.73		
9614.81	H	60.57	-34.66	-27	7.66		
17498.25	H	65.41	-29.82	-27	2.82		
15151.08	H	43.11	-52.12	-27	25.12		

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)
11365.29	V	59.89	-35.34	-27	8.34
17491.02	V	66.31	-28.92	-27	1.92
16398.95	V	45.84	-49.39	-27	22.39
9754.06	H	63.57	-31.66	-27	4.66
17509.94	H	65.71	-29.52	-27	2.52
15521.95	H	43.24	-51.99	-27	24.99

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)
11662.94	V	60.05	-35.18	-27	8.18
17499.53	V	65.5	-29.73	-27	2.73
15480.49	V	42.49	-52.74	-27	25.74
9864.62	H	61.66	-33.57	-27	6.57
17492.93	H	65.92	-29.31	-27	2.31
15470.93	H	42.95	-52.28	-27	25.28

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)
10667.94	V	60.01	-35.22	-27	8.22
17499.53	V	65.63	-29.60	-27	2.60
15420.96	V	43.24	-51.99	-27	24.99
9626.50	H	60.49	-34.74	-27	7.74
17509.94	H	65.25	-29.98	-27	2.98
15147.77	H	42.93	-52.30	-27	25.30

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

ANT1:

Test mode: 802.11n(20)		Frequency(MHz): 5260			
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
11366.6833	V	60.02	74.00	13.98	peak
16401.2006	V	62.16	74.00	11.84	peak
17489.7449	V	66.34	74.00	7.66	peak
11366.6833	V	45.39	54.00	8.61	AVG
16401.2006	V	46.10	54.00	7.90	AVG
17489.7449	V	45.85	54.00	8.15	AVG
9742.3712	H	63.65	74.00	10.35	peak
15525.2626	H	62.02	74.00	11.98	peak
17498.2491	H	65.87	74.00	8.13	peak
9742.3712	H	42.43	54.00	11.57	AVG
15525.2626	H	43.42	54.00	10.58	AVG
17498.2491	H	49.20	54.00	4.80	AVG

Test mode: 802.11n(20)		Frequency(MHz): 5280			
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
11664.3322	V	60.18	74.00	13.82	peak
15482.7414	V	63.38	74.00	10.62	peak
17498.2491	V	65.53	74.00	8.47	peak
11664.3322	V	46.19	54.00	7.81	AVG
15482.7414	V	42.75	54.00	11.25	AVG
17498.2491	V	45.06	54.00	8.94	AVG
9852.9265	H	61.74	74.00	12.26	peak
15474.2371	H	62.19	74.00	11.81	peak
17481.2406	H	66.08	74.00	7.92	peak
9852.9265	H	43.10	54.00	10.90	AVG
15474.2371	H	43.13	54.00	10.87	AVG
17481.2406	H	43.99	54.00	10.01	AVG

Test mode: 802.11n(20)		Frequency(MHz): 5320			
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
10669.3347	V	60.14	74.00	13.86	peak
15423.2116	V	62.53	74.00	11.47	peak
17498.2491	V	65.66	74.00	8.34	peak
10669.3347	V	46.71	54.00	7.29	AVG
15423.2116	V	43.50	54.00	10.50	AVG
17498.2491	V	45.06	54.00	8.94	AVG
9614.8074	H	60.57	74.00	13.43	peak
15151.0755	H	62.07	74.00	11.93	peak
17498.2491	H	65.41	74.00	8.59	peak
9614.8074	H	42.79	54.00	11.21	AVG
15151.0755	H	43.11	54.00	10.89	AVG
17498.2491	H	46.19	54.00	7.81	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
11365.293	V	59.89	74.00	14.11	peak
16399.811	V	62	74.00	12	peak
17491.025	V	66.31	74.00	7.69	peak
11367.963	V	45.37	54.00	8.63	AVG
16398.951	V	45.84	54.00	8.16	AVG
17487.495	V	45.66	54.00	8.34	AVG
9754.061	H	63.57	74.00	10.43	peak
15536.953	H	61.81	74.00	12.19	peak
17509.939	H	65.71	74.00	8.29	peak
9754.061	H	42.29	54.00	11.71	AVG
15521.953	H	43.24	54.00	10.76	AVG
17494.939	H	49.07	54.00	4.93	AVG

Test mode: 802.11n(20)		Frequency(MHz): 5280			
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
11662.942	V	60.05	74.00	13.95	peak
15481.351	V	63.22	74.00	10.78	peak
17499.529	V	65.5	74.00	8.5	peak
11665.612	V	46.17	54.00	7.83	AVG
15480.491	V	42.49	54.00	11.51	AVG
17495.999	V	44.87	54.00	9.13	AVG
9864.617	H	61.66	74.00	12.34	peak
15485.927	H	61.98	74.00	12.02	peak
17492.931	H	65.92	74.00	8.08	peak
9864.617	H	42.96	54.00	11.04	AVG
15470.927	H	42.95	54.00	11.05	AVG
17477.931	H	43.86	54.00	10.14	AVG

Test mode: 802.11n(20)		Frequency(MHz): 5320			
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
10667.945	V	60.01	74.00	13.99	peak
15421.822	V	62.37	74.00	11.63	peak
17499.529	V	65.63	74.00	8.37	peak
10670.615	V	46.69	54.00	7.31	AVG
15420.962	V	43.24	54.00	10.76	AVG
17495.999	V	44.87	54.00	9.13	AVG
9626.497	H	60.49	74.00	13.51	peak
15162.766	H	61.86	74.00	12.14	peak
17509.939	H	65.25	74.00	8.75	peak
9626.497	H	42.65	54.00	11.35	AVG
15147.766	H	42.93	54.00	11.07	AVG
17494.939	H	46.06	54.00	7.94	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
4969.70	H	54.95	-40.28	-27	Pass
5017.88	V	55.02	-40.21	-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
5377.11	H	54.56	-40.67	-27	Pass
5384.00	V	54.26	-40.97	-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

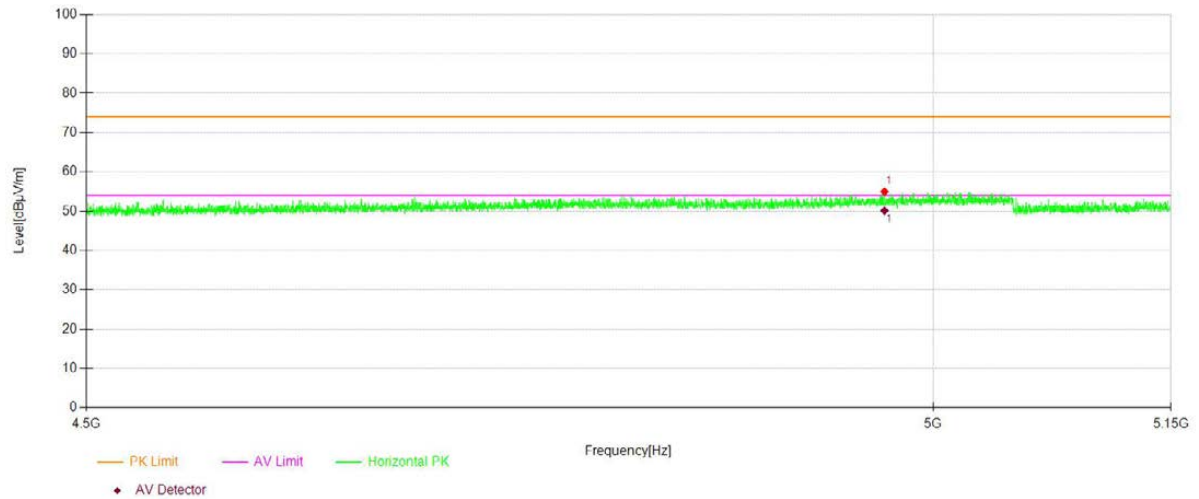
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
5017.88	V	55.02	74.00	18.98	peak
5017.88	V	49.14	54.00	4.86	AVG
4969.70	H	54.95	74.00	19.05	peak
4969.70	H	50.10	54.00	3.90	AVG

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

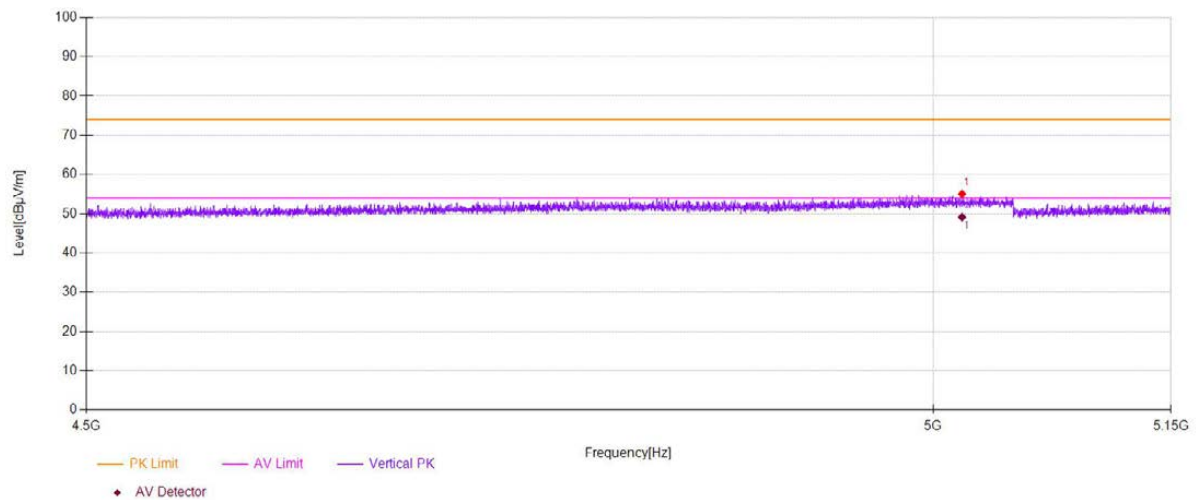
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
5384.00	V	54.26	74.00	19.74	peak
5384.00	V	50.21	54.00	3.79	AVG
5377.11	H	54.56	74.00	19.44	peak
5377.11	H	49.82	54.00	4.18	AVG

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.

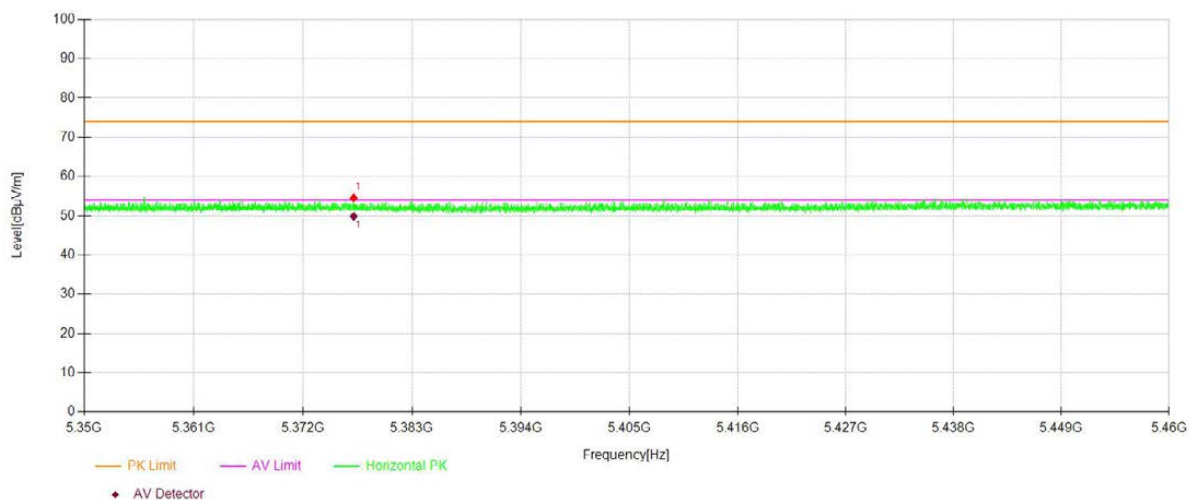
Test Model U-NII -2A
Undesirable radiated Spurious Emission in Restricted Band (5100-5150MHz)
☐ 802.11a ☒ 802.11n(HT20) ☐ 802.11 ac (VHT20)
☒ 5260 ☐ 5300 ☐ 5320 Ant.Pol H



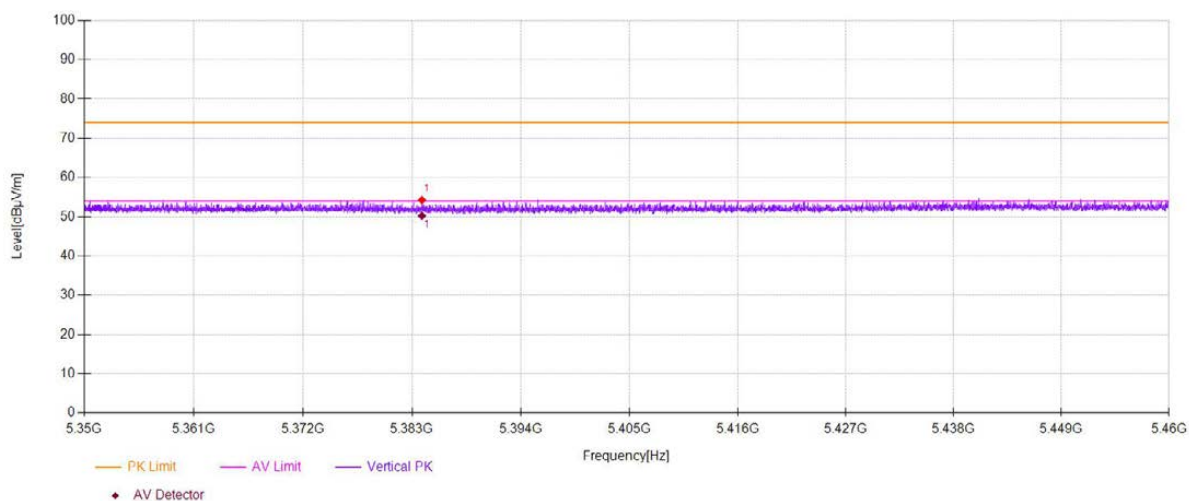
Test Model U-NII -2A
Undesirable radiated Spurious Emission in Restricted Band (5100-5150MHz)
☐ 802.11a ☒ 802.11n(HT20) ☐ 802.11 ac (VHT20)
☒ 5260 ☐ 5300 ☐ 5320 Ant.Pol V



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)
☐ 802.11a ☒ 802.11n(HT20) ☐ 802.11 ac (VHT20)
☐ 5260 ☐ 5300 ☒ 5320 Ant.Pol V



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

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

ANT1:

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

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
11553.78	V	59.52	-35.71	-27	8.71
17506.75	V	66.1	-29.13	-27	2.13
15499.75	V	43.24	-51.99	-27	24.99
10669.33	H	58.72	-36.51	-27	9.51
17506.75	H	66.96	-28.27	-27	1.27
14555.78	H	46.12	-49.11	-27	22.11

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)
11502.75	V	60.5	-34.73	-27	7.73
17506.75	V	66.11	-29.12	-27	2.12
15465.73	V	43.09	-52.14	-27	25.14
9895.45	H	61.69	-33.54	-27	6.54
17498.25	H	65.78	-29.45	-27	2.45
15423.21	H	42.54	-52.69	-27	25.69

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)
9920.96	V	60.35	-34.88	-27	7.88
17515.26	V	65.71	-29.52	-27	2.52
17047.52	V	48.02	-47.21	-27	20.21
9878.44	H	62.41	-32.82	-27	5.82
17498.25	H	66.47	-28.76	-27	1.76
15312.66	H	42.69	-52.54	-27	25.54

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)
11552.39	V	59.39	-35.84	-27	8.84
17508.03	V	66.07	-29.16	-27	2.16
15497.50	V	42.98	-52.25	-27	25.25
10681.02	H	58.64	-36.59	-27	9.59
17518.44	H	66.8	-28.43	-27	1.43
14552.47	H	45.94	-49.29	-27	22.29

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)
11501.36	V	60.37	-34.86	-27	7.86
17508.03	V	66.08	-29.15	-27	2.15
15463.48	V	42.83	-52.40	-27	25.40
9907.14	H	61.61	-33.62	-27	6.62
17509.94	H	65.62	-29.61	-27	2.61
15419.90	H	42.36	-52.87	-27	25.87

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)
9919.57	V	60.22	-35.01	-27	8.01
17516.54	V	65.68	-29.55	-27	2.55
17045.27	V	47.76	-47.47	-27	20.47
9890.13	H	62.33	-32.90	-27	5.90
17509.94	H	66.31	-28.92	-27	1.92
15309.35	H	42.51	-52.72	-27	25.72

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

ANT1:

Test mode: 802.11n(20)		Frequency(MHz): 5500			
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
11553.7769	V	59.52	74.00	14.48	peak
15499.7499	V	62.02	74.00	11.98	peak
17506.7534	V	66.10	74.00	7.90	peak
11553.7769	V	45.88	54.00	8.12	AVG
15499.7499	V	43.24	54.00	10.76	AVG
17506.7534	V	44.46	54.00	9.54	AVG
10669.3347	H	58.72	74.00	15.28	peak
14555.7779	H	62.14	74.00	11.86	peak
17506.7534	H	66.96	74.00	7.04	peak
10669.3347	H	46.44	54.00	7.56	AVG
14555.7779	H	46.12	54.00	7.88	AVG
17506.7534	H	44.57	54.00	9.43	AVG

Test mode: 802.11n(20)		Frequency(MHz): 5580			
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
11502.7514	V	60.50	74.00	13.50	peak
15465.7329	V	62.11	74.00	11.89	peak
17506.7534	V	66.11	74.00	7.89	peak
11502.7514	V	46.11	54.00	7.89	AVG
15465.7329	V	43.09	54.00	10.91	AVG
17506.7534	V	44.90	54.00	9.10	AVG
9895.4477	H	61.69	74.00	12.31	peak
15423.2116	H	61.97	74.00	12.03	peak
17498.2491	H	65.78	74.00	8.22	peak
9895.4477	H	43.85	54.00	10.15	AVG
15423.2116	H	42.54	54.00	11.46	AVG
17498.2491	H	45.06	54.00	8.94	AVG

Test mode: 802.11n(20)		Frequency(MHz): 5700			
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
9920.9605	V	60.35	74.00	13.65	peak
17047.5238	V	64.91	74.00	9.09	peak
17515.2576	V	65.71	74.00	8.29	peak
9920.9605	V	44.20	54.00	9.80	AVG
17047.5238	V	48.02	54.00	5.98	AVG
17515.2576	V	44.17	54.00	9.83	AVG
9878.4392	H	62.41	74.00	11.59	peak
15312.6563	H	62.33	74.00	11.67	peak
17498.2491	H	66.47	74.00	7.53	peak
9878.4392	H	43.89	54.00	10.11	AVG
15312.6563	H	42.69	54.00	11.31	AVG
17498.2491	H	44.65	54.00	9.35	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
11552.387	V	59.39	74.00	14.61	peak
15498.360	V	61.86	74.00	12.14	peak
17508.033	V	66.07	74.00	7.93	peak
11555.057	V	45.86	54.00	8.14	AVG
15497.500	V	42.98	54.00	11.02	AVG
17504.503	V	44.27	54.00	9.73	AVG
10681.025	H	58.64	74.00	15.36	peak
14567.468	H	61.93	74.00	12.07	peak
17518.443	H	66.8	74.00	7.2	peak
10681.025	H	46.3	54.00	7.7	AVG
14552.468	H	45.94	54.00	8.06	AVG
17503.443	H	44.44	54.00	9.56	AVG

Test mode: 802.11n(20)		Frequency(MHz): 5580			
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
11501.361	V	60.37	74.00	13.63	peak
15464.343	V	61.95	74.00	12.05	peak
17508.033	V	66.08	74.00	7.92	peak
11504.031	V	46.09	54.00	7.91	AVG
15463.483	V	42.83	54.00	11.17	AVG
17504.503	V	44.71	54.00	9.29	AVG
9907.138	H	61.61	74.00	12.39	peak
15434.902	H	61.76	74.00	12.24	peak
17509.939	H	65.62	74.00	8.38	peak
9907.138	H	43.71	54.00	10.29	AVG
15419.902	H	42.36	54.00	11.64	AVG
17494.939	H	44.93	54.00	9.07	AVG

Test mode: 802.11n(20)		Frequency(MHz): 5700			
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
9919.571	V	60.22	74.00	13.78	peak
17046.134	V	64.75	74.00	9.25	peak
17516.538	V	65.68	74.00	8.32	peak
9922.241	V	44.18	54.00	9.82	AVG
17045.274	V	47.76	54.00	6.24	AVG
17513.008	V	43.98	54.00	10.02	AVG
9890.129	H	62.33	74.00	11.67	peak
15324.346	H	62.12	74.00	11.88	peak
17509.939	H	66.31	74.00	7.69	peak
9890.129	H	43.75	54.00	10.25	AVG
15309.346	H	42.51	54.00	11.49	AVG
17494.939	H	44.52	54.00	9.48	AVG

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

☒ Undesirable radiated Undesirable radiated Spurious Emission in Band Edge

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

Freq. (MHz)	Ant.Pol. H/V	Field Strength (RBW=100KHz) (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Verdict
5434.23	H	54.52	-40.71	-27	Pass
5435.91	V	54.34	-40.89	-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
5749.14	H	55.84	-39.39	-27	Pass
5743.75	V	55.82	-39.41	-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

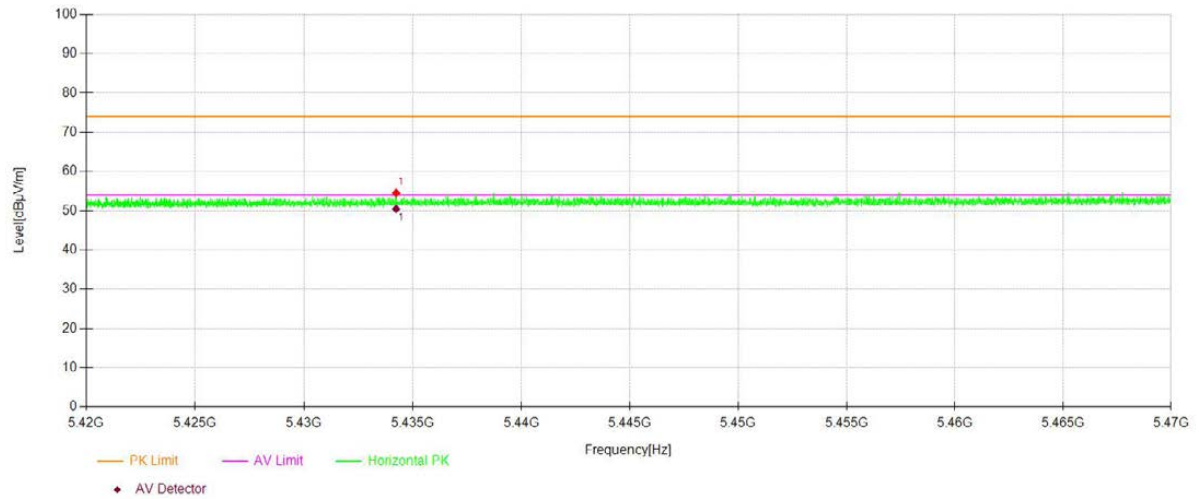
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
5435.91	V	54.34	74.00	19.66	peak
5435.91	V	49.55	54.00	4.45	AVG
5434.23	H	54.52	74.00	19.48	peak
5434.23	H	50.44	54.00	3.56	AVG

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

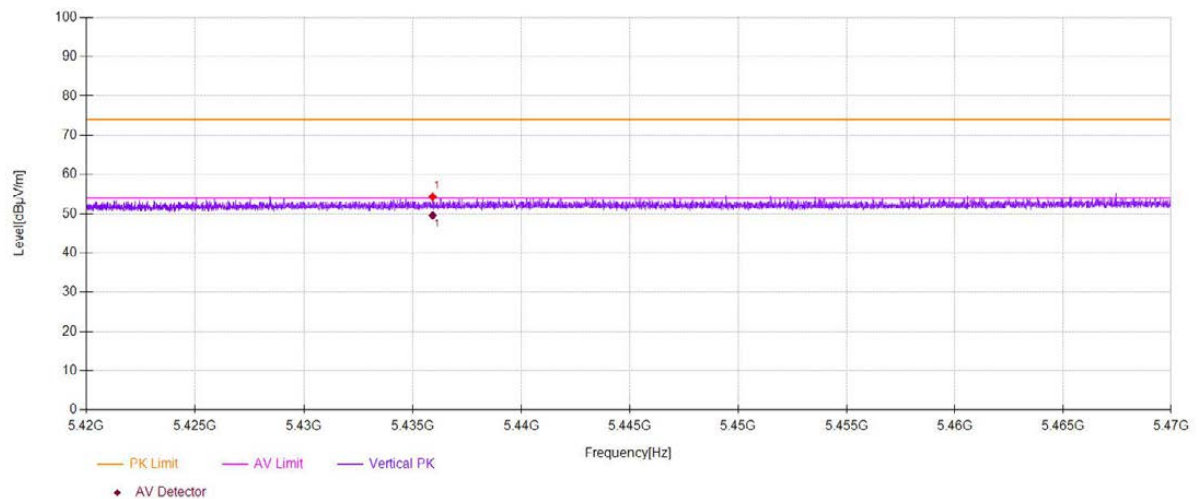
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
5743.75	V	55.82	74.00	18.18	peak
5743.75	V	50.51	54.00	3.49	AVG
5749.14	H	55.84	74.00	18.16	peak
5749.14	H	49.91	54.00	4.09	AVG

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

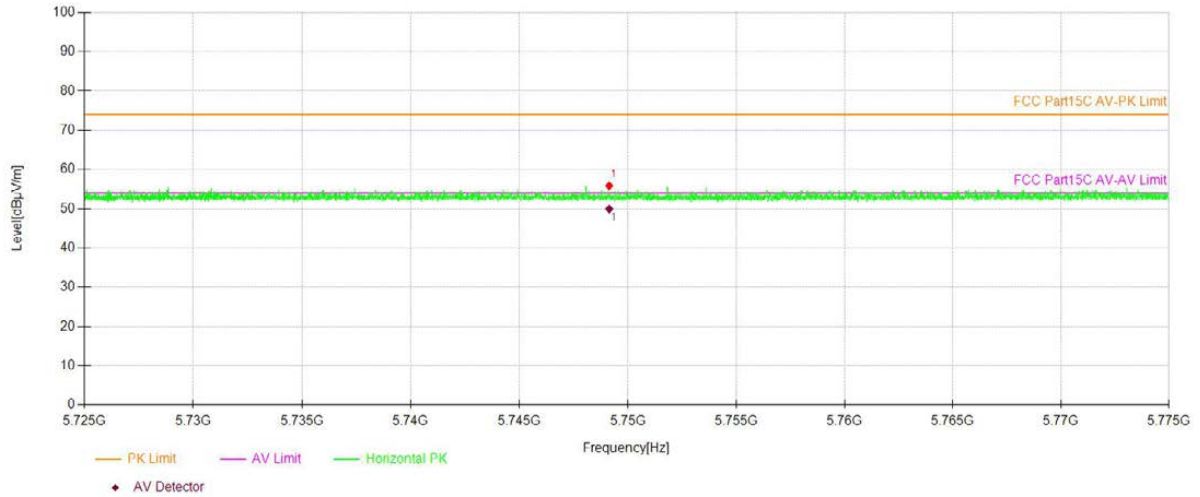
Test Model U-NII -2C
Undesirable radiated Spurious Emission in Restricted Band (5100-5150MHz)
☐ 802.11a ☒ 802.11n(HT20) ☐ 802.11 ac (VHT20)
☒ 5500 ☐ 5580 ☐ 5700 Ant.Pol H



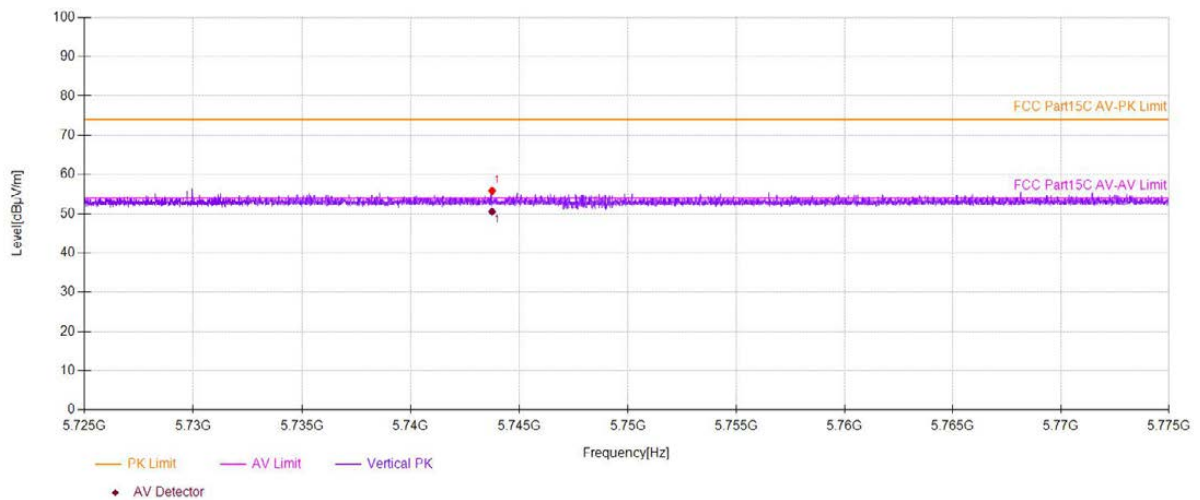
Test Model U-NII -2C
Undesirable radiated Spurious Emission in Restricted Band (5100-5150MHz)
☐ 802.11a ☒ 802.11n(HT20) ☐ 802.11 ac (VHT20)
☒ 5500 ☐ 5580 ☐ 5700 Ant.Pol V



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



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



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

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

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

ANT1:

Test mode:		802.11n(20)		Frequency(MHz):		5745	
Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)		
10108.05	V	59.39	-35.84	-27	8.84		
17498.25	V	66.55	-28.68	-27	1.68		
15431.72	V	42.84	-52.39	-27	25.39		
9733.87	H	61.79	-33.44	-27	6.44		
17498.25	H	65.73	-29.50	-27	2.50		
15508.25	H	44.41	-50.82	-27	23.82		

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)		
10108.05	V	59.89	-35.34	-27	8.34		
17498.25	V	67.05	-28.18	-27	1.18		
15431.72	V	42.89	-52.34	-27	25.34		
9878.44	H	62.91	-32.32	-27	5.32		
17498.25	H	66.97	-28.26	-27	1.26		
15312.66	H	42.87	-52.36	-27	25.36		

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)		
11596.30	V	60.24	-34.99	-27	7.99		
17991.50	V	64.09	-31.14	-27	4.14		
14326.16	V	44.62	-50.61	-27	23.61		
11723.86	H	59.54	-35.69	-27	8.69		
17379.19	H	62.47	-32.76	-27	5.76		
13985.99	H	42.72	-52.51	-27	25.51		

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)
10106.66	V	59.26	-35.97	-27	8.97
17499.53	V	66.52	-28.71	-27	1.71
15429.47	V	42.58	-52.65	-27	25.65
9745.56	H	61.71	-33.52	-27	6.52
17509.94	H	65.57	-29.66	-27	2.66
15504.94	H	44.23	-51.00	-27	24.00

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)
10106.66	V	59.76	-35.47	-27	8.47
17499.53	V	67.02	-28.21	-27	1.21
15429.47	V	42.63	-52.60	-27	25.60
9890.13	H	62.83	-32.40	-27	5.40
17509.94	H	66.81	-28.42	-27	1.42
15309.35	H	42.69	-52.54	-27	25.54

Test mode: 802.11n(20)		Frequency(MHz): 5825			
Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
11594.91	V	60.11	-35.12	-27	8.12
17992.78	V	64.06	-31.17	-27	4.17
14323.91	V	44.36	-50.87	-27	23.87
11735.55	H	59.46	-35.77	-27	8.77
17390.88	H	62.31	-32.92	-27	5.92
13982.68	H	42.54	-52.69	-27	25.69

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

ANT1:

Test mode: 802.11n(20)		Frequency(MHz): 5745			
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
10108.054	V	59.39	74.00	14.61	peak
15431.7159	V	62.85	74.00	11.15	peak
17498.2491	V	66.55	74.00	7.45	peak
10108.054	V	45.53	54.00	8.47	AVG
15431.7159	V	42.84	54.00	11.16	AVG
17498.2491	V	44.89	54.00	9.11	AVG
9733.8669	H	61.79	74.00	12.21	peak
15508.2541	H	61.66	74.00	12.34	peak
17498.2491	H	65.73	74.00	8.27	peak
9733.8669	H	43.71	54.00	10.29	AVG
15508.2541	H	44.41	54.00	9.59	AVG
17498.2491	H	45.75	54.00	8.25	AVG

Test mode: 802.11n(20)		Frequency(MHz): 5785			
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
10108.054	V	59.89	74.00	14.61	peak
15431.7159	V	63.35	74.00	11.15	peak
17498.2491	V	67.05	74.00	7.45	peak
10108.054	V	45.47	54.00	8.53	AVG
15431.7159	V	42.89	54.00	11.11	AVG
17498.2491	V	45.42	54.00	8.58	AVG
9878.4392	H	62.91	74.00	11.59	peak
15312.6563	H	62.83	74.00	11.67	peak
17498.2491	H	66.97	74.00	7.53	peak
9878.4392	H	43.88	54.00	10.12	AVG
15312.6563	H	42.87	54.00	11.13	AVG
17498.2491	H	45.75	54.00	8.25	AVG

Test mode: 802.11n(20)		Frequency(MHz): 5825			
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
11596.2981	V	60.24	74.00	13.76	peak
14326.1631	V	62.06	74.00	11.94	peak
17991.4957	V	64.09	74.00	9.91	peak
11596.2981	V	45.98	54.00	8.02	AVG
14326.1631	V	44.62	54.00	9.38	AVG
17991.4957	V	42.09	54.00	11.91	AVG
11723.8619	H	59.54	74.00	14.46	peak
13985.993	H	61.29	74.00	12.71	peak
17379.1896	H	62.47	74.00	11.53	peak
11723.8619	H	46.16	54.00	7.84	AVG
13985.993	H	42.72	54.00	11.28	AVG
17379.1896	H	41.40	54.00	12.60	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
10106.664	V	59.26	74.00	14.74	peak
15430.326	V	62.69	74.00	11.31	peak
17499.529	V	66.52	74.00	7.48	peak
10109.334	V	45.51	54.00	8.49	AVG
15429.466	V	42.58	54.00	11.42	AVG
17495.999	V	44.7	54.00	9.3	AVG
9745.557	H	61.71	74.00	12.29	peak
15519.944	H	61.45	74.00	12.55	peak
17509.939	H	65.57	74.00	8.43	peak
9745.557	H	43.57	54.00	10.43	AVG
15504.944	H	44.23	54.00	9.77	AVG
17494.939	H	45.62	54.00	8.38	AVG

Test mode: 802.11n(20)		Frequency(MHz): 5785			
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
10106.664	V	59.76	74.00	14.24	peak
15430.326	V	63.19	74.00	10.81	peak
17499.529	V	67.02	74.00	6.98	peak
10109.334	V	45.45	54.00	8.55	AVG
15429.466	V	42.63	54.00	11.37	AVG
17495.999	V	45.23	54.00	8.77	AVG
9890.129	H	62.83	74.00	11.17	peak
15324.346	H	62.62	74.00	11.38	peak
17509.939	H	66.81	74.00	7.19	peak
9890.129	H	43.74	54.00	10.26	AVG
15309.346	H	42.69	54.00	11.31	AVG
17494.939	H	45.62	54.00	8.38	AVG

Test mode: 802.11n(20)		Frequency(MHz): 5825			
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
11594.908	V	60.11	74.00	13.89	peak
14324.773	V	61.9	74.00	12.1	peak
17992.776	V	64.06	74.00	9.94	peak
11597.578	V	45.96	54.00	8.04	AVG
14323.913	V	44.36	54.00	9.64	AVG
17989.246	V	41.9	54.00	12.1	AVG
11735.552	H	59.46	74.00	14.54	peak
13997.683	H	61.08	74.00	12.92	peak
17390.880	H	62.31	74.00	11.69	peak
11735.552	H	46.02	54.00	7.98	AVG
13982.683	H	42.54	54.00	11.46	AVG
17375.880	H	41.27	54.00	12.73	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
5704.48	H	55.22	-40.01	-27	Pass
5703.48	V	55.21	-40.02	-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
5864.75	H	55.05	-40.18	-27	Pass
5855.44	V	54.99	-40.24	-27	Pass

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

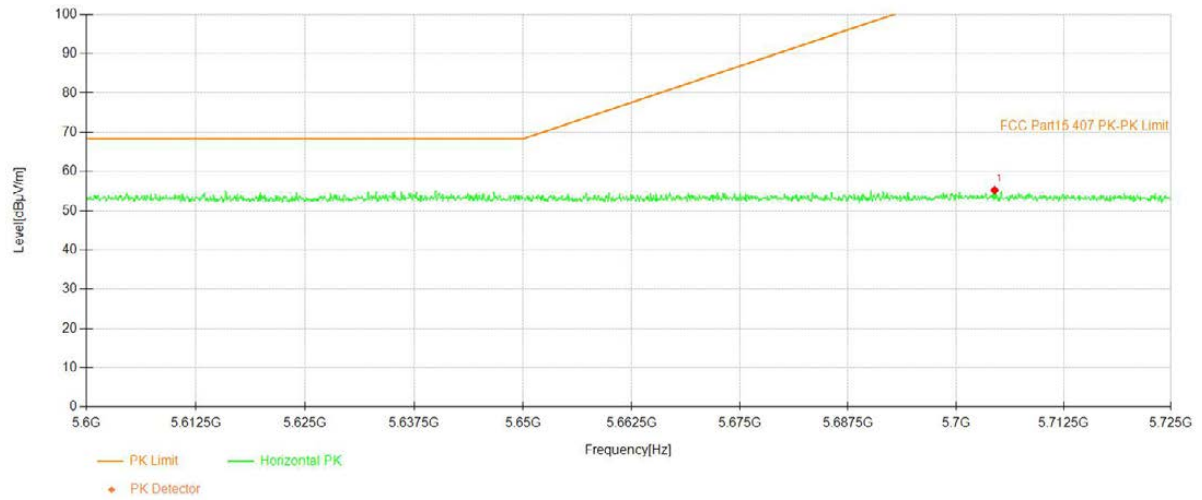
(2) Emission Level= Reading Level+Correct Factor +Cable Loss.

(3) Correct Factor= Ant_F + Cab_L - Preamp

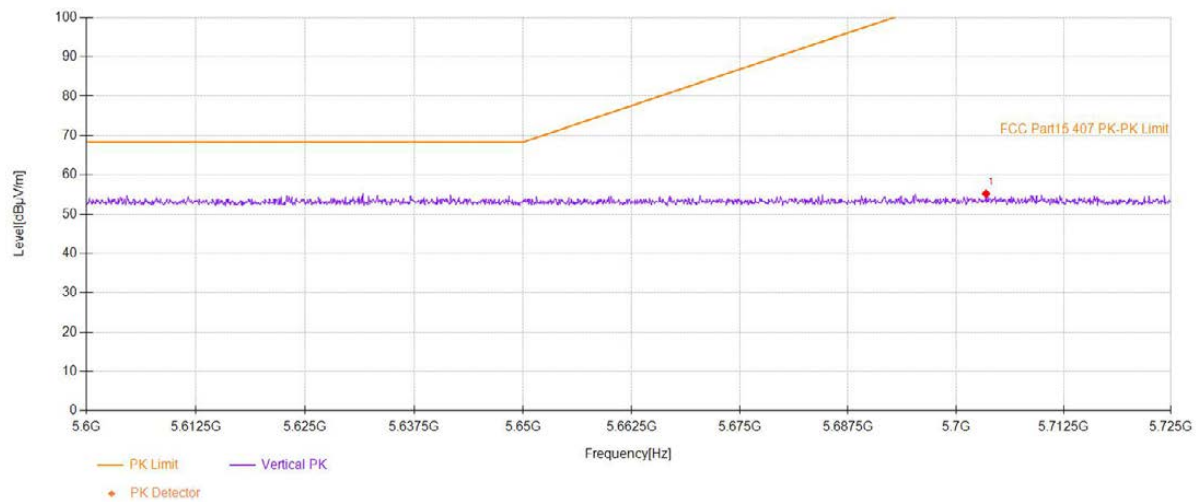
(4) EIRP[dBm] = E[dBuV/m] + 20 log(d[meters]) - 104.77

d is the measurement distance in 3 meters

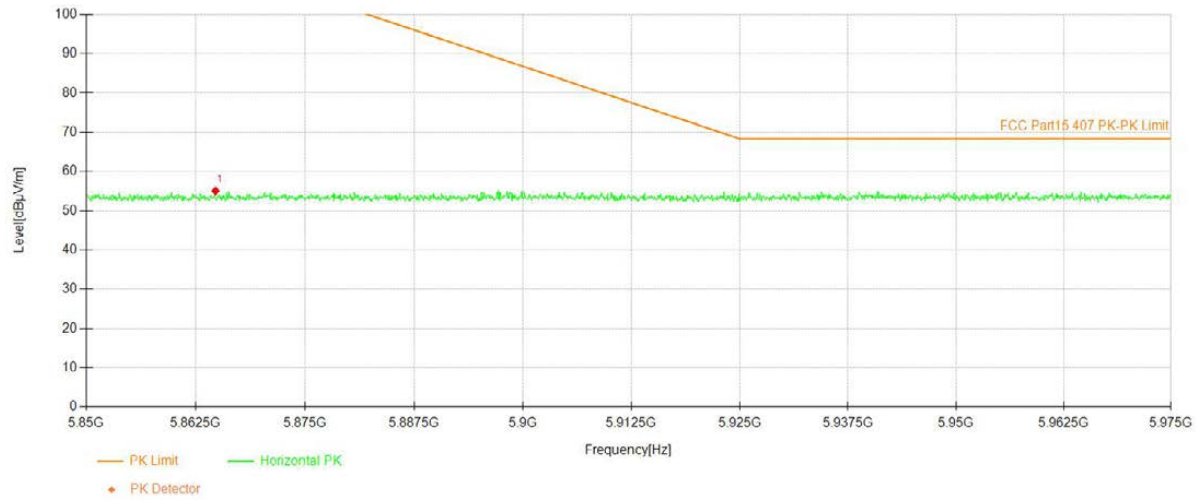
Test Model U-NII -3
 Undesirable radiated ☐ 802.11a Undesirable radiated ☒ 5745 Spurious Emission in Band Edge ☐ 802.11 ac (VHT20)
 Ant.Pol H



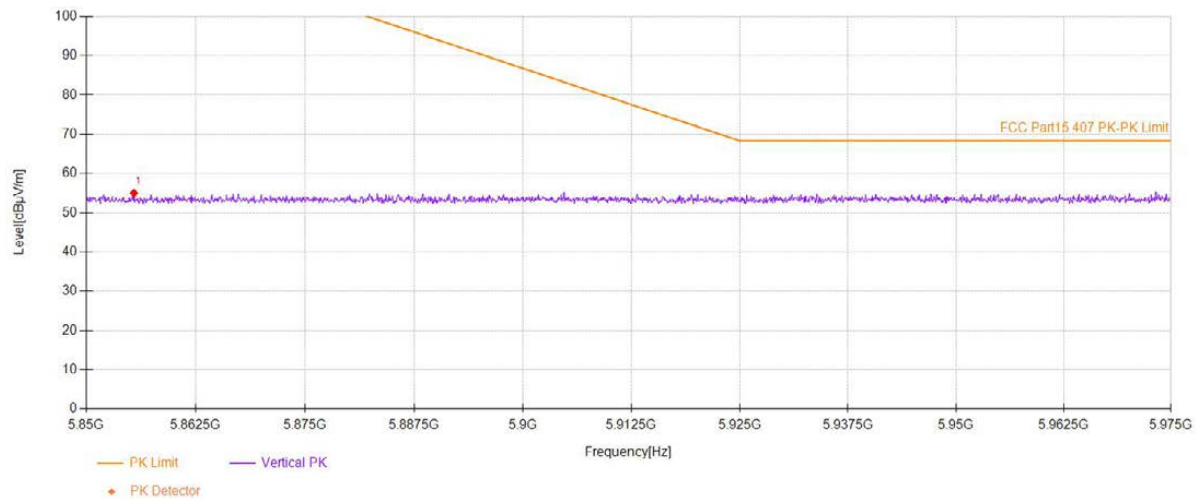
Test Model U-NII -3
 Undesirable radiated ☐ 802.11a Undesirable radiated ☒ 5745 Spurious Emission in Band Edge ☐ 802.11 ac (VHT20)
 Ant.Pol V



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



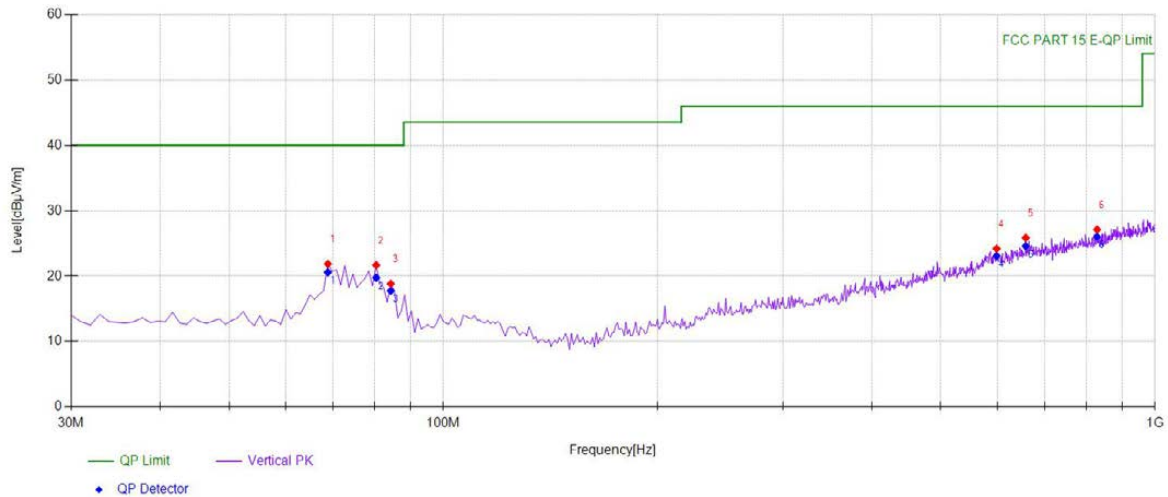
Test Model U-NII -3
Undesirable radiated Undesirable radiated Spurious Emission in Band Edge
☐ 802.11a ☒ 802.11n(HT20) ☐ 802.11 ac (VHT20)
☒ 5825 Ant.Pol V



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

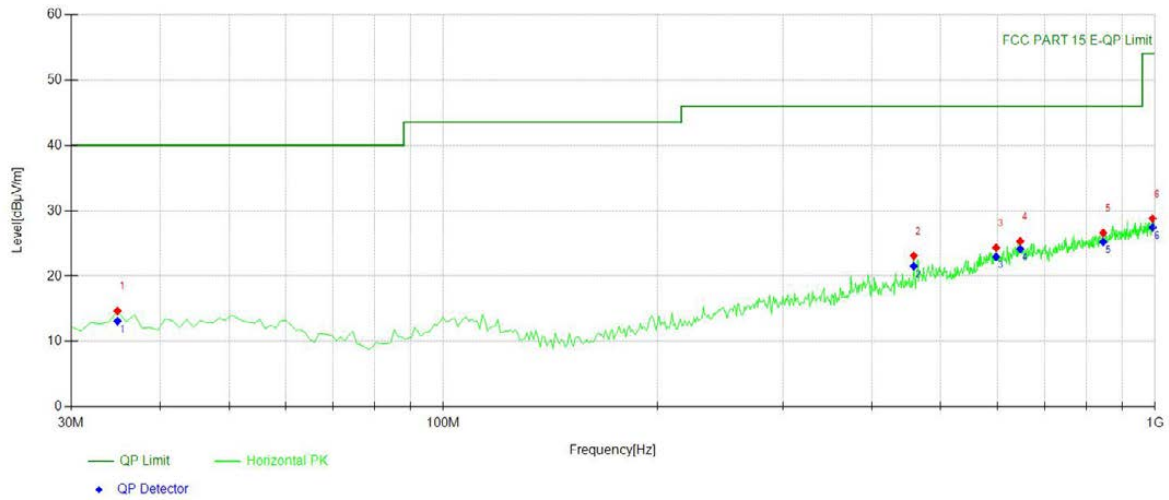
All of the configurations or modes are tested, the data of the worst case is recorded as below.

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



Suspected Data List

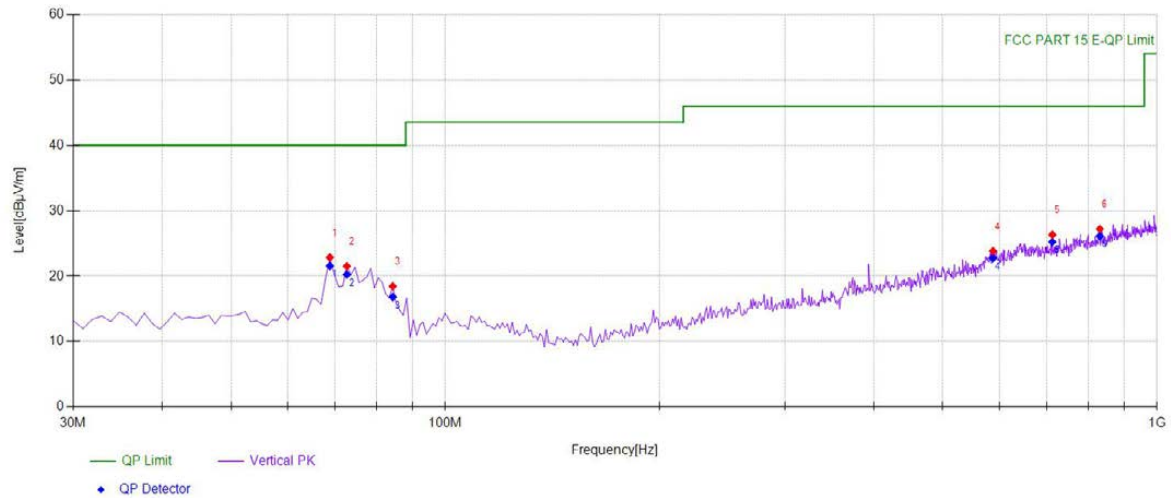
NO.	Freq. [MHz]	Reading [dBμV]	Factor [dB/m]	Level [dBμV/m]	Detector	Limit [dBμV/m]	Margin [dB]	Polarity
1	68.8388	41.68	-19.80	21.88	PK	40.00	18.12	Vertical
2	80.4905	43.07	-21.37	21.70	PK	40.00	18.30	Vertical
3	84.3744	39.32	-20.47	18.85	PK	40.00	21.15	Vertical
4	598.989	31.33	-7.14	24.19	PK	46.00	21.81	Vertical
5	658.218	32.02	-6.15	25.87	PK	46.00	20.13	Vertical
6	829.109	31.26	-4.14	27.12	PK	46.00	18.88	Vertical



Suspected Data List

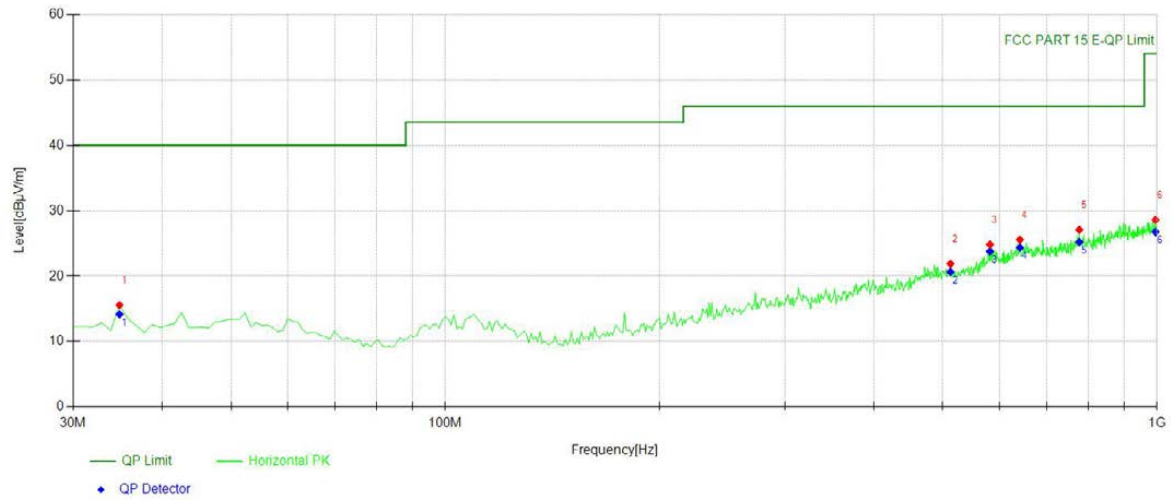
NO.	Freq. [MHz]	Reading [dBμV]	Factor [dB/m]	Level [dBμV/m]	Detector	Limit [dBμV/m]	Margin [dB]	Polarity
1	34.8549	32.92	-18.23	14.69	PK	40.00	25.31	Horizontal
2	458.198	34.16	-11.06	23.10	PK	46.00	22.90	Horizontal
3	598.018	31.49	-7.14	24.35	PK	46.00	21.65	Horizontal
4	646.566	31.57	-6.23	25.34	PK	46.00	20.66	Horizontal
5	845.615	30.44	-3.83	26.61	PK	46.00	19.39	Horizontal
6	992.232	30.51	-1.70	28.81	PK	54.00	25.19	Horizontal

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



Suspected Data List

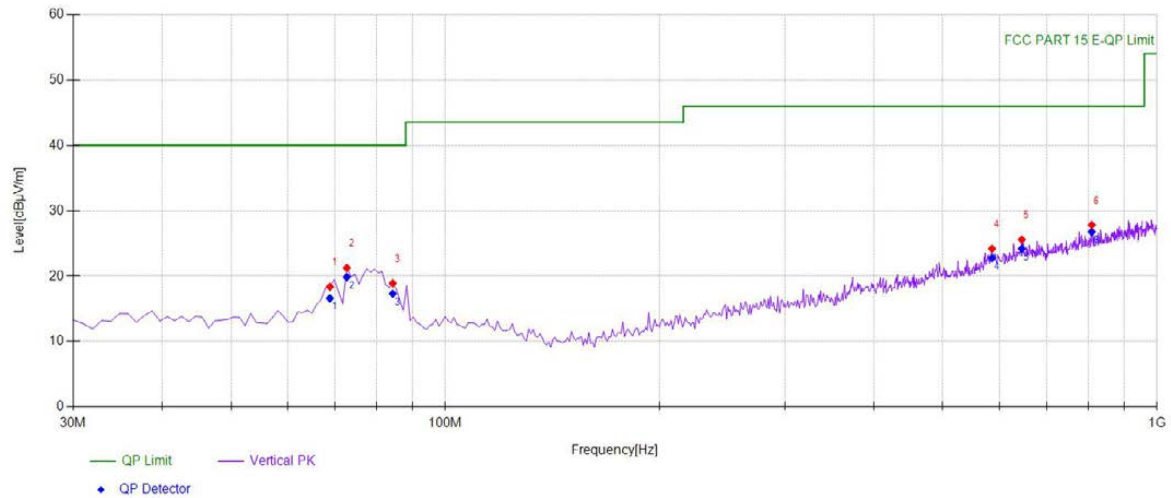
NO.	Freq. [MHz]	Reading [dBμV]	Factor [dB/m]	Level [dBμV/m]	Detector	Limit [dBμV/m]	Margin [dB]	Polarity
1	68.8388	42.66	-19.80	22.86	PK	40.00	17.14	Vertical
2	72.7227	41.91	-20.38	21.53	PK	40.00	18.47	Vertical
3	84.3744	38.94	-20.47	18.47	PK	40.00	21.53	Vertical
4	588.308	30.98	-7.14	23.84	PK	46.00	22.16	Vertical
5	712.592	32.16	-5.83	26.33	PK	46.00	19.67	Vertical
6	831.051	31.30	-4.09	27.21	PK	46.00	18.79	Vertical



Suspected Data List

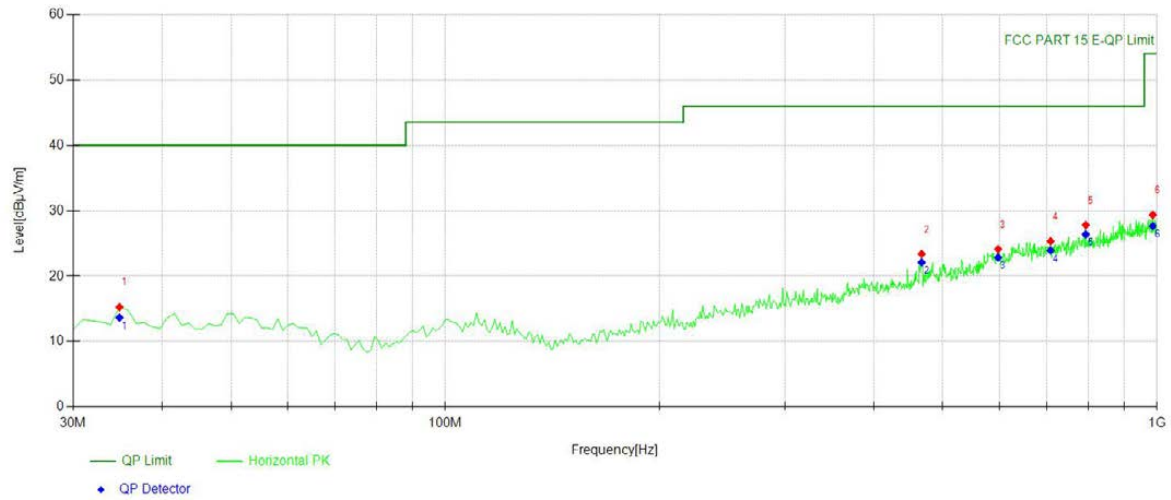
NO.	Freq. [MHz]	Reading [dBμV]	Factor [dB/m]	Level [dBμV/m]	Detector	Limit [dBμV/m]	Margin [dB]	Polarity
1	34.8549	33.82	-18.23	15.59	PK	40.00	24.41	Horizontal
2	512.572	31.67	-9.77	21.90	PK	46.00	24.10	Horizontal
3	582.482	31.98	-7.14	24.84	PK	46.00	21.16	Horizontal
4	641.711	31.82	-6.24	25.58	PK	46.00	20.42	Horizontal
5	777.647	31.80	-4.71	27.09	PK	46.00	18.91	Horizontal
6	995.145	30.33	-1.71	28.62	PK	54.00	25.38	Horizontal

Test mode: 802.11n(20) 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	68.8388	38.18	-19.80	18.38	PK	40.00	21.62	Vertical
2	72.7227	41.65	-20.38	21.27	PK	40.00	18.73	Vertical
3	84.3744	39.39	-20.47	18.92	PK	40.00	21.08	Vertical
4	586.366	31.32	-7.14	24.18	PK	46.00	21.82	Vertical
5	645.595	31.82	-6.23	25.59	PK	46.00	20.41	Vertical
6	809.689	32.15	-4.34	27.81	PK	46.00	18.19	Vertical



Suspected Data List

NO.	Freq. [MHz]	Reading [dBμV]	Factor [dB/m]	Level [dBμV/m]	Detector	Limit [dBμV/m]	Margin [dB]	Polarity
1	34.8549	33.52	-18.23	15.29	PK	40.00	24.71	Horizontal
2	466.936	33.99	-10.61	23.38	PK	46.00	22.62	Horizontal
3	598.018	31.26	-7.14	24.12	PK	46.00	21.88	Horizontal
4	708.708	31.20	-5.85	25.35	PK	46.00	20.65	Horizontal
5	794.154	32.29	-4.48	27.81	PK	46.00	18.19	Horizontal
6	986.406	31.09	-1.73	29.36	PK	54.00	24.64	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

N/A

N/A means not applicable, since the sample is DC 5V power supply.

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 PCB Antenna, the antenna gain as below:
Ant1: 6.11dBi, Ant2: 4.76dBi

- ☒ 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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