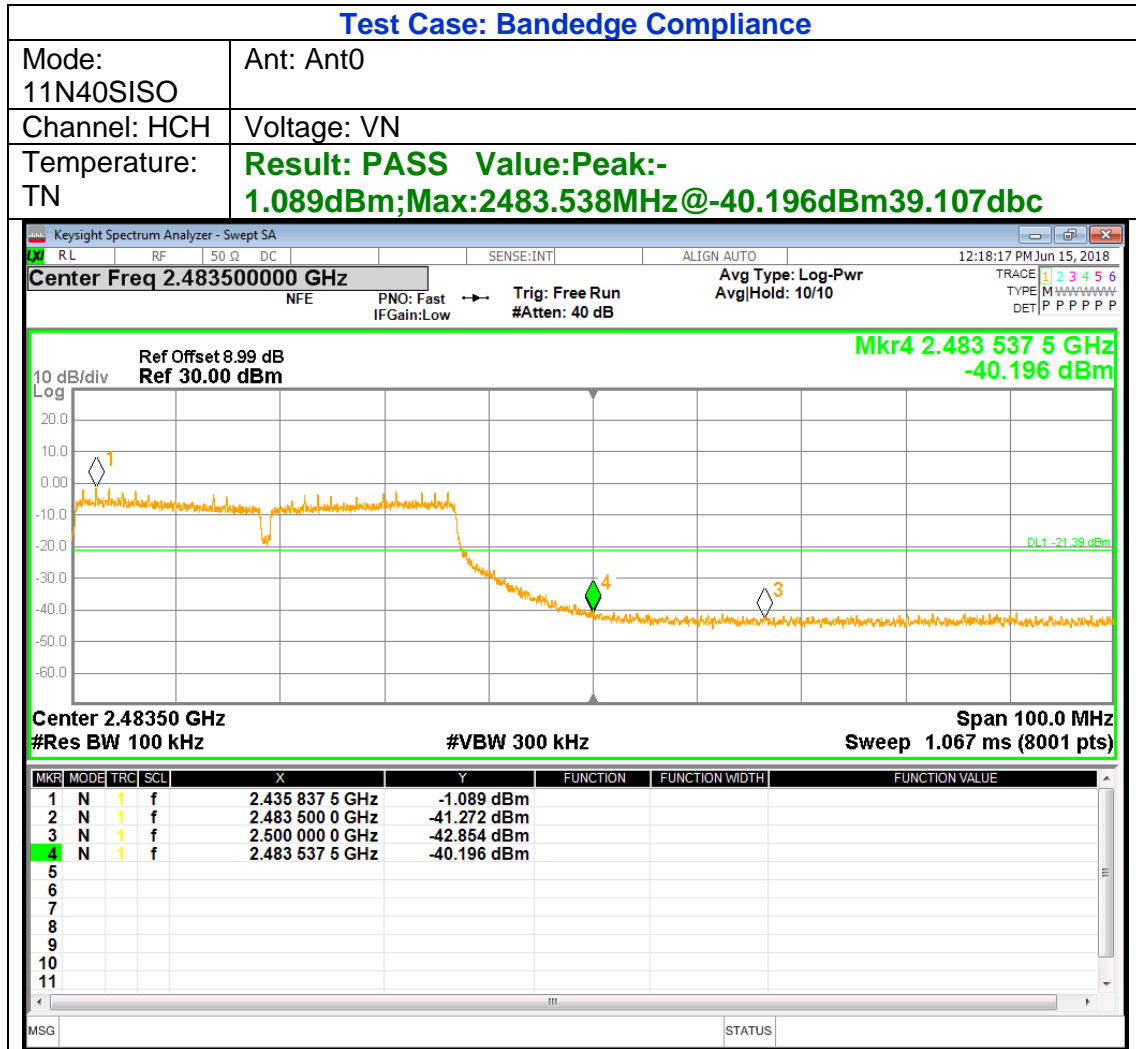
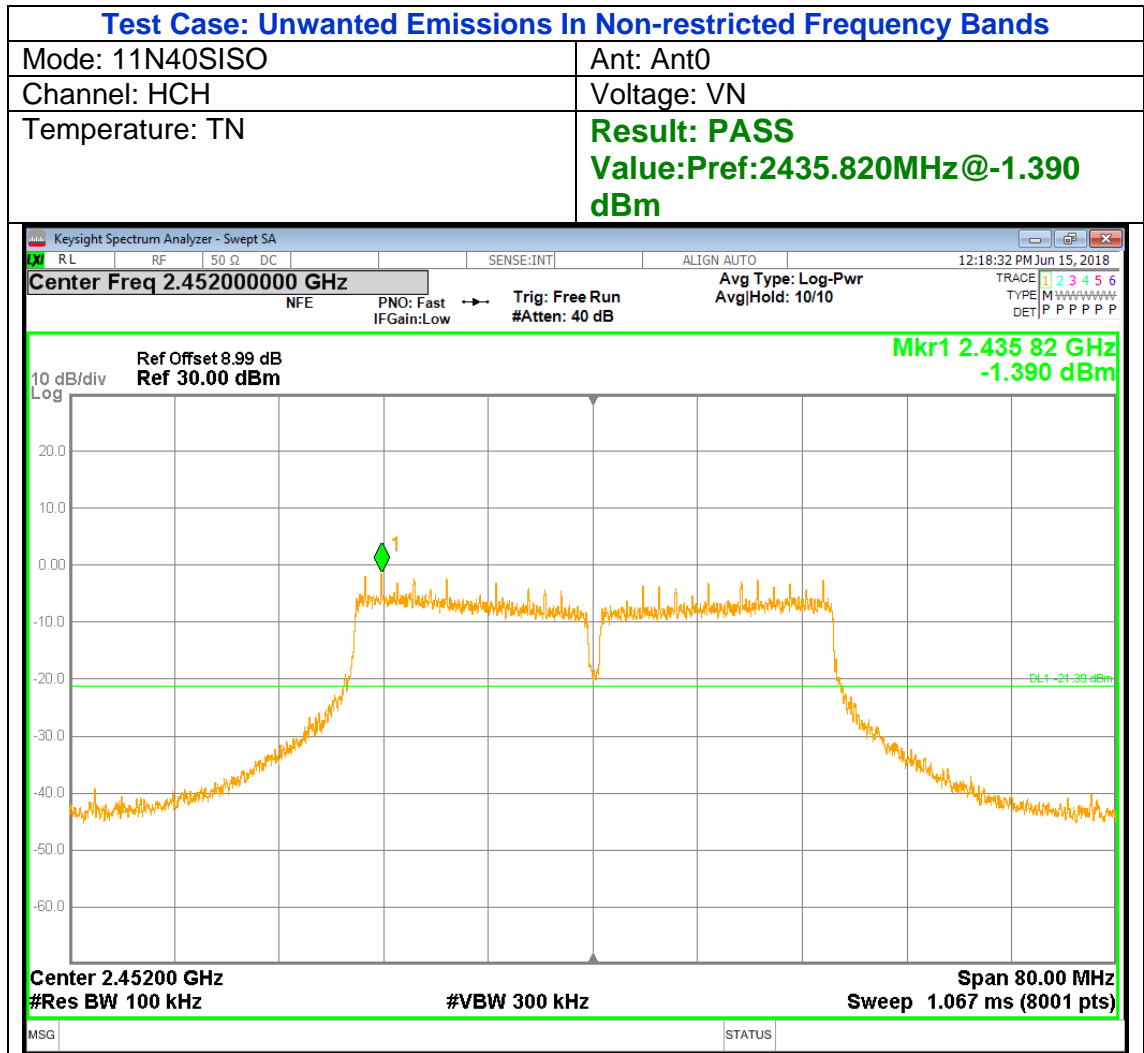
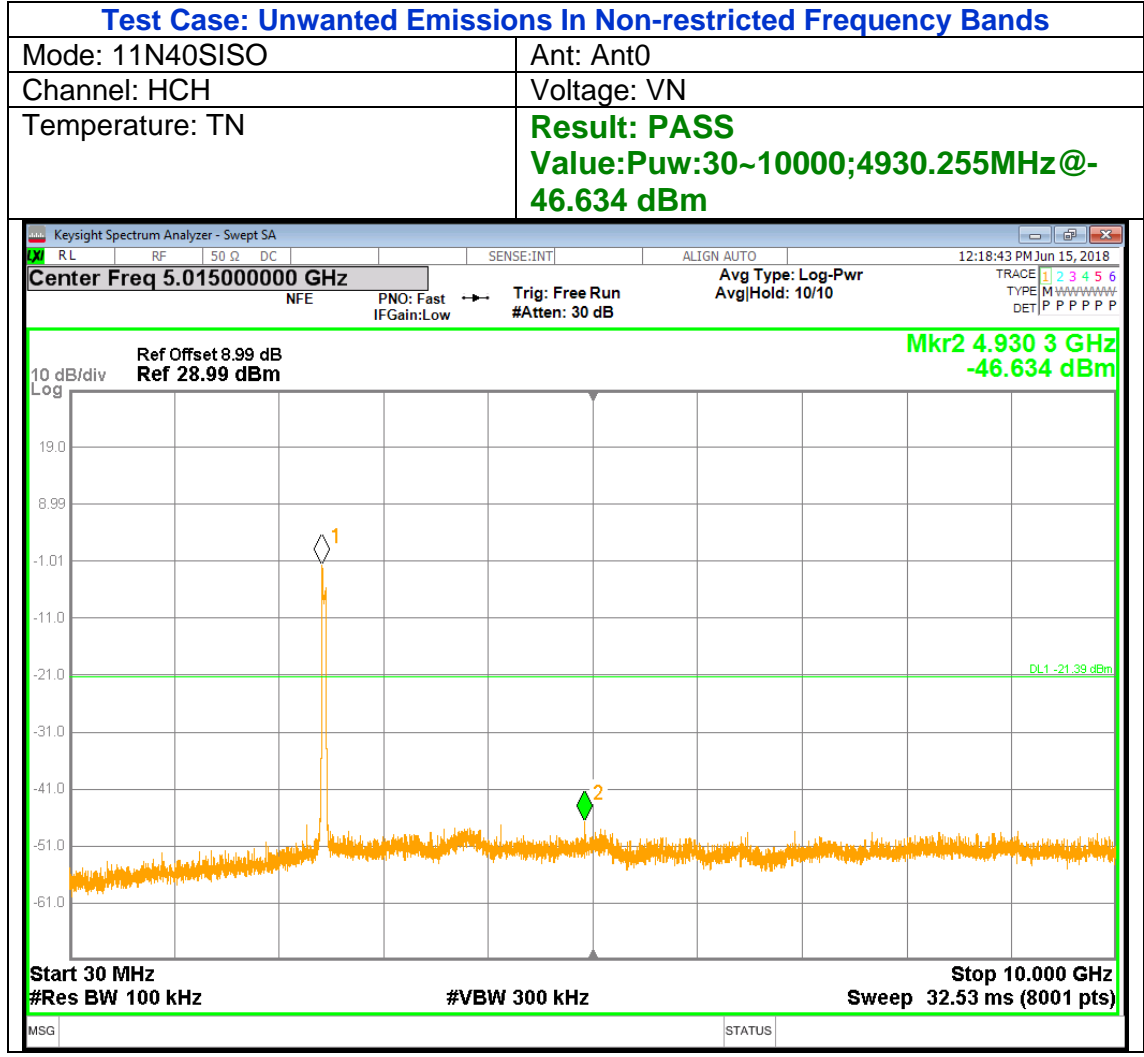


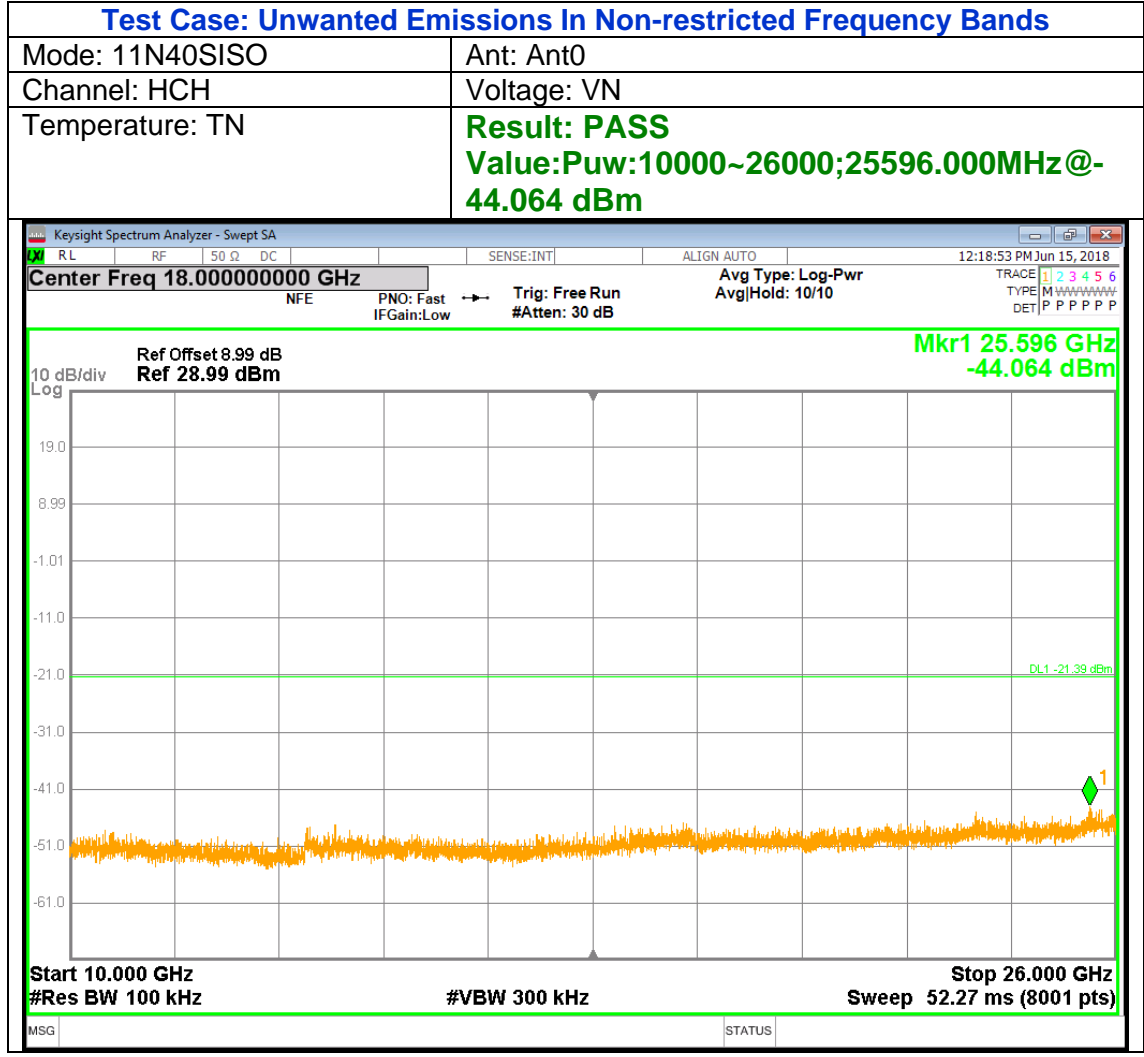


**High Channel**







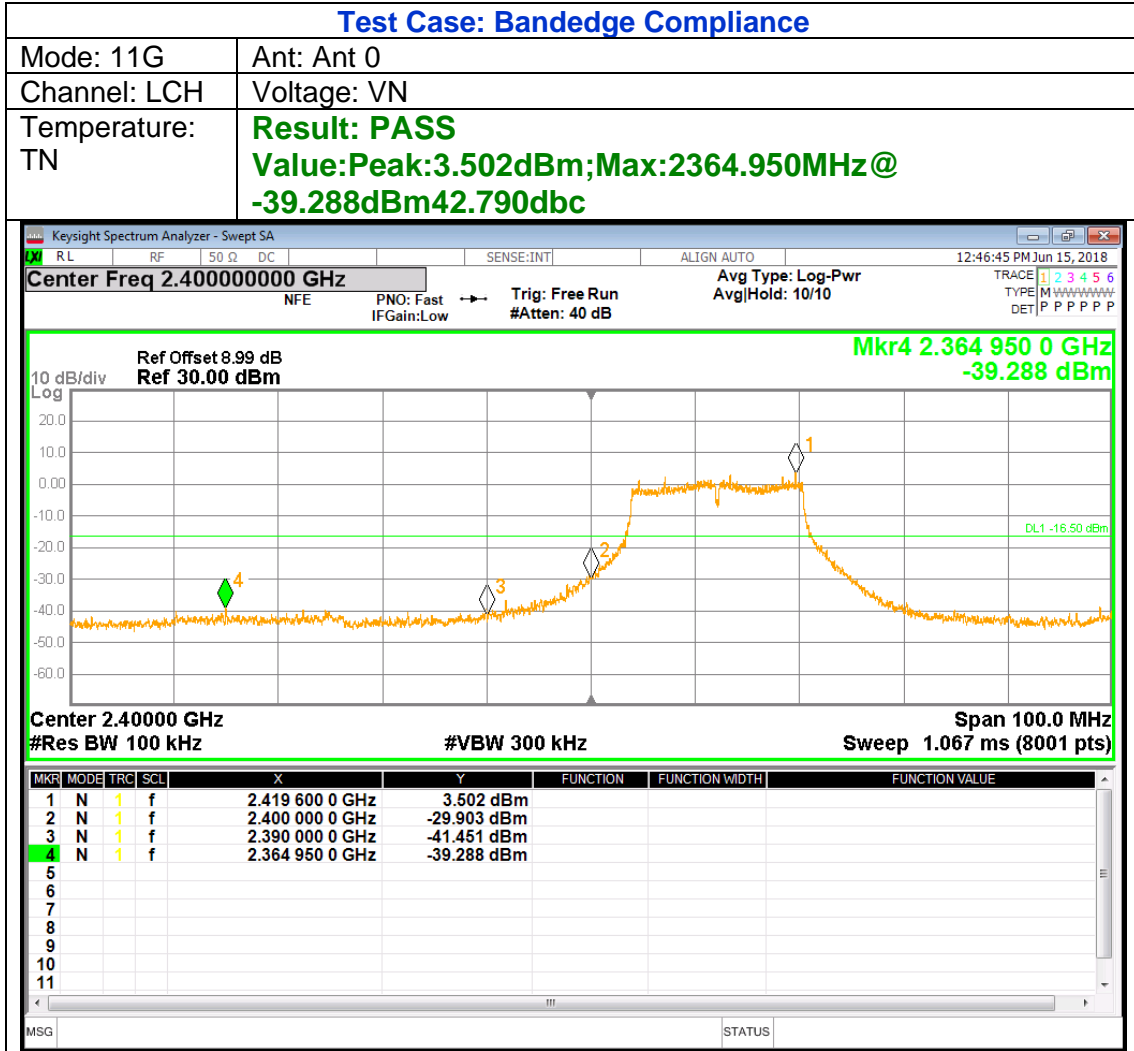


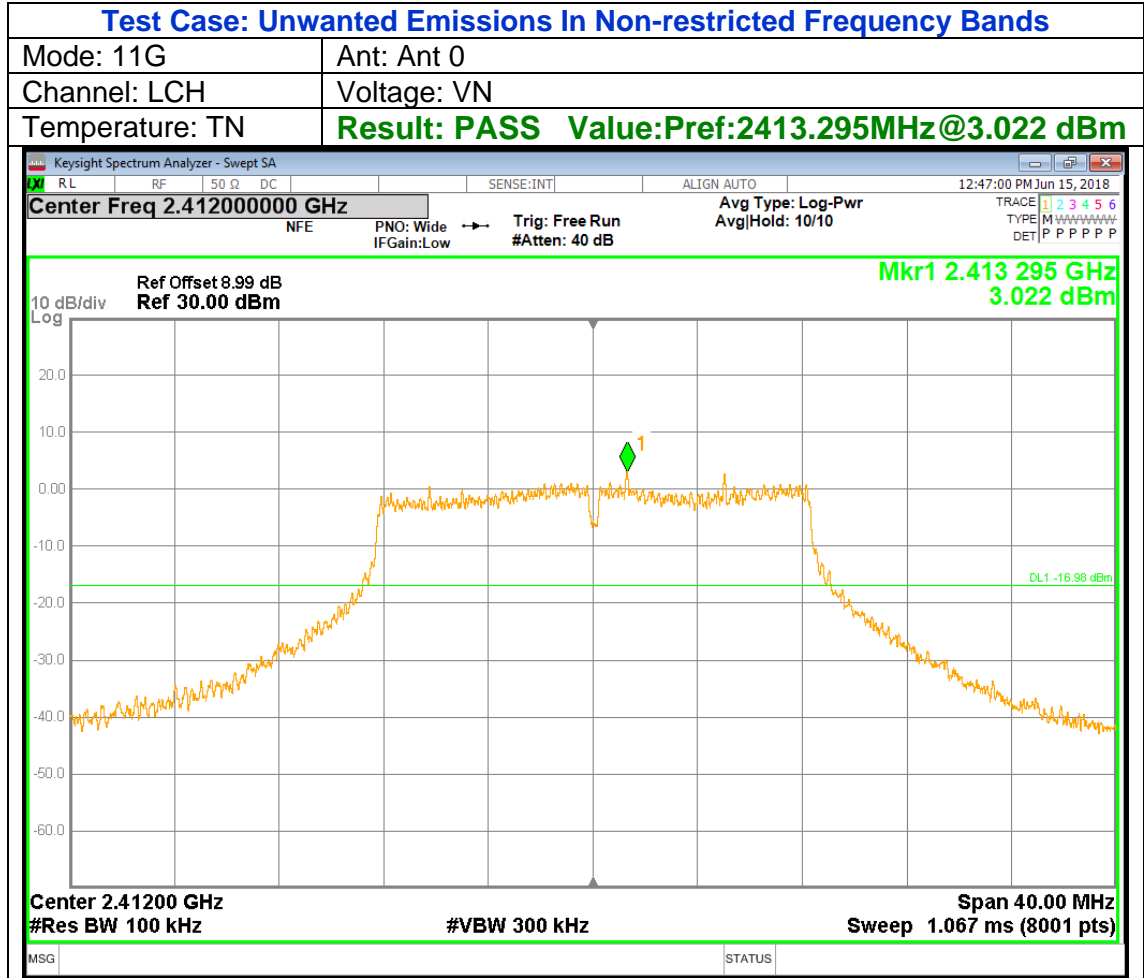


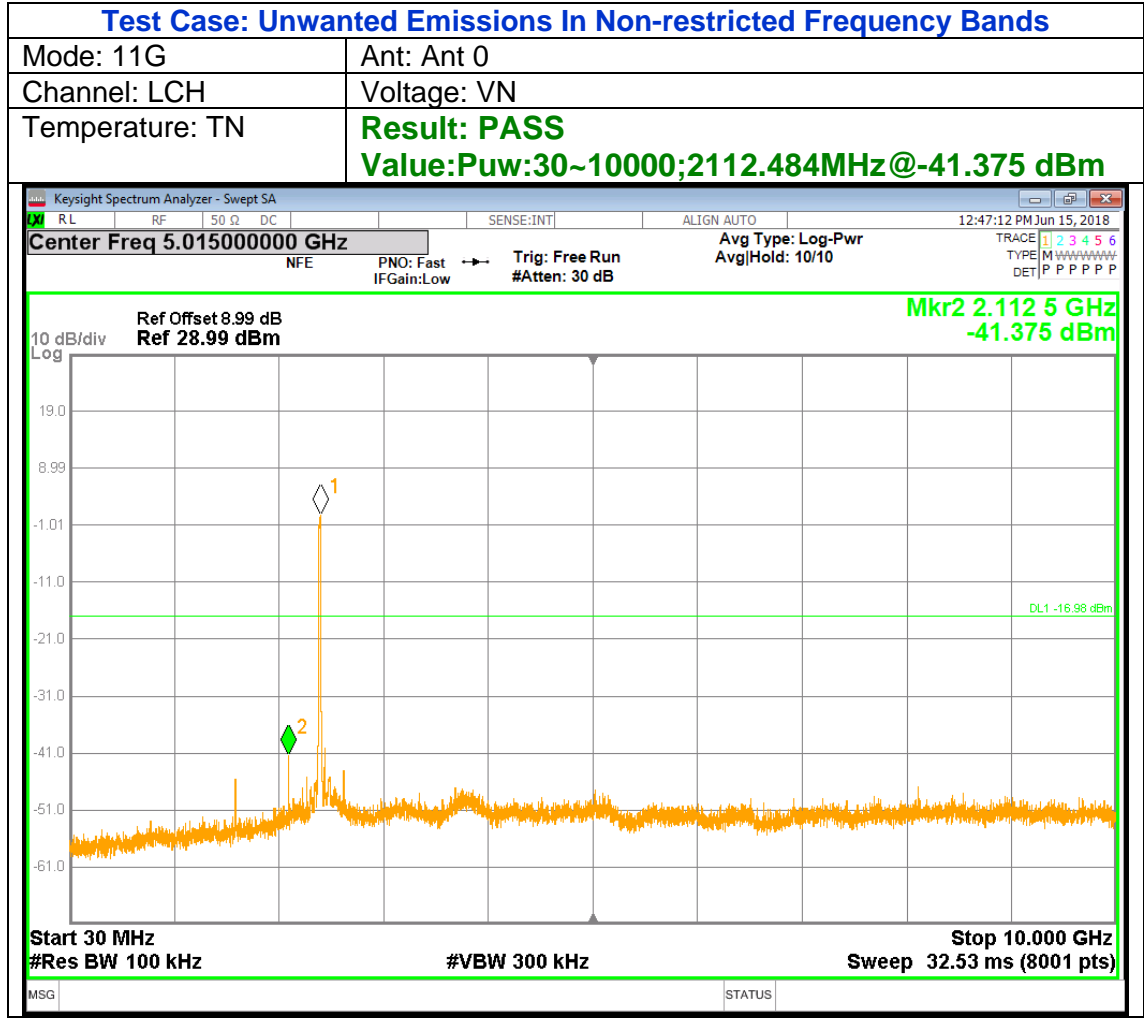


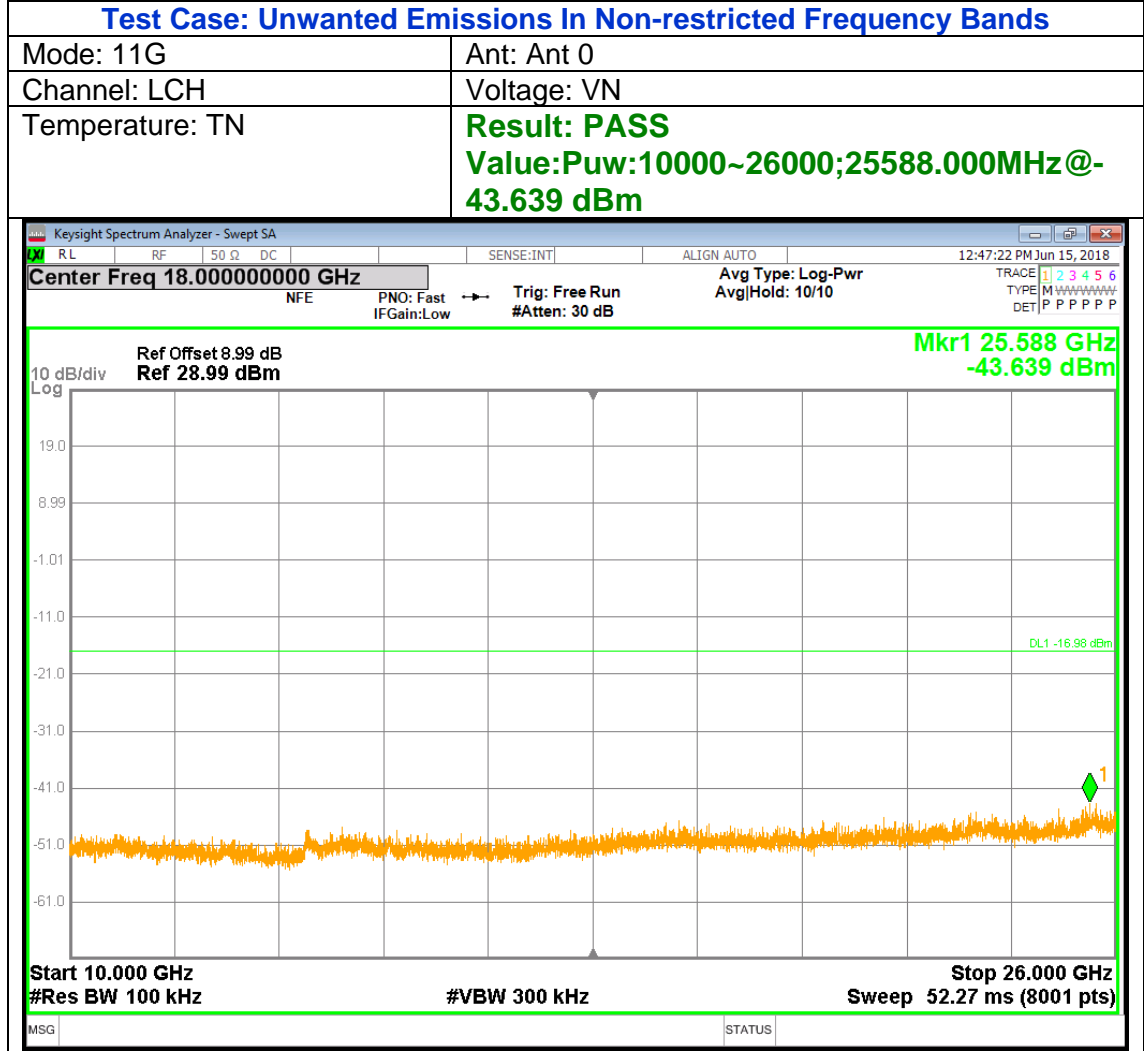
### 7.5.5. 802.11g MIMO MODE

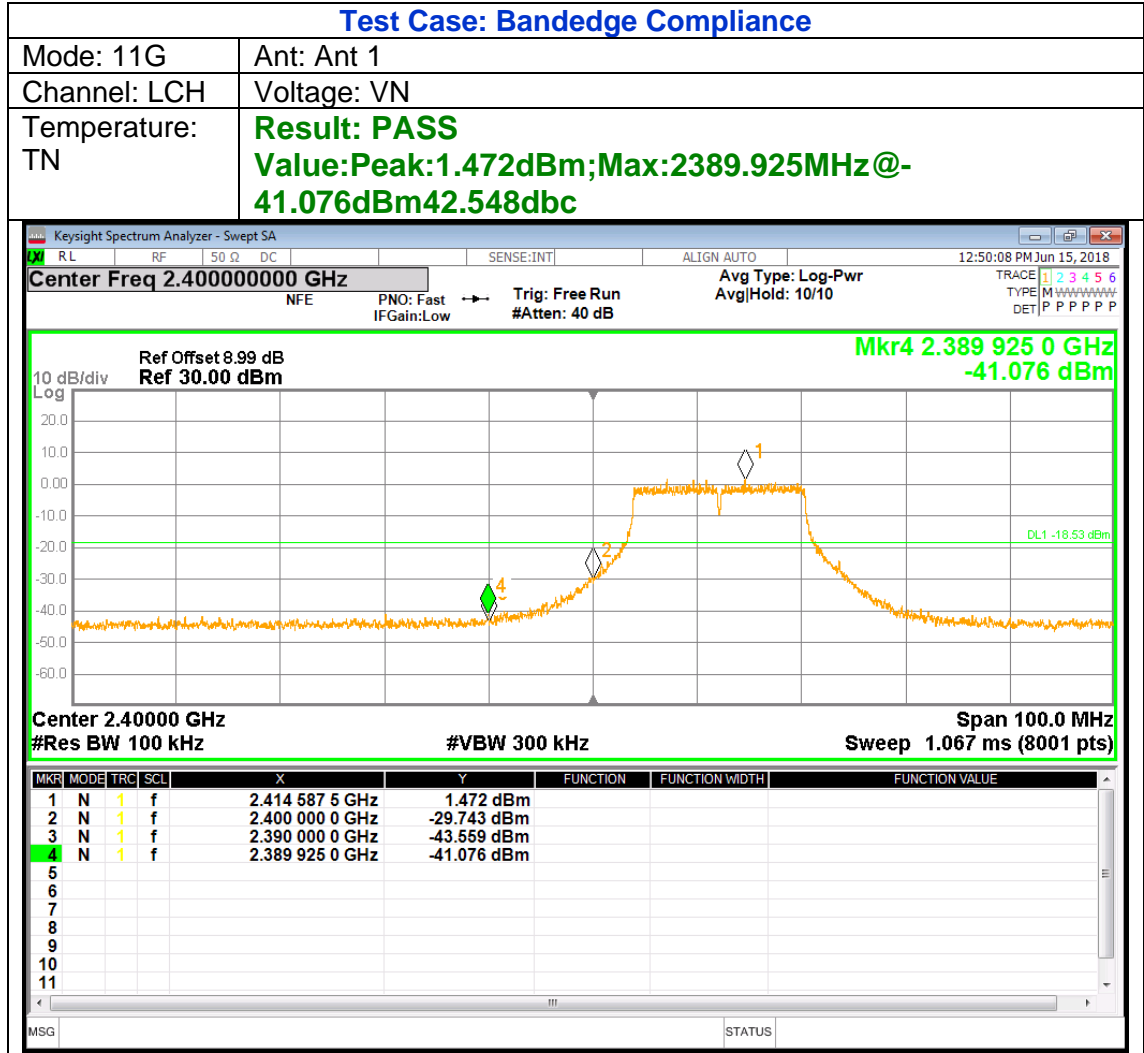
#### Low Channel

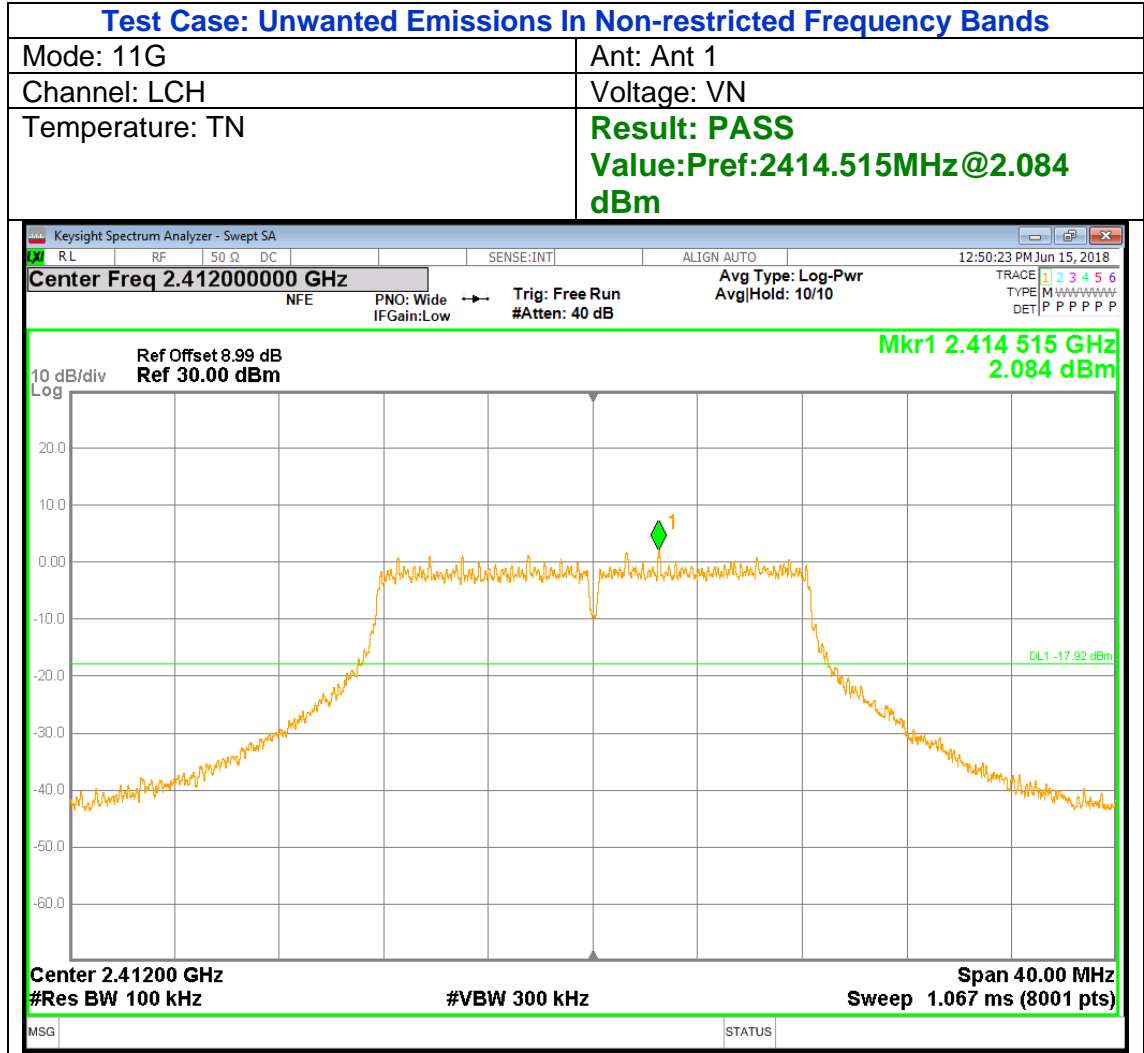


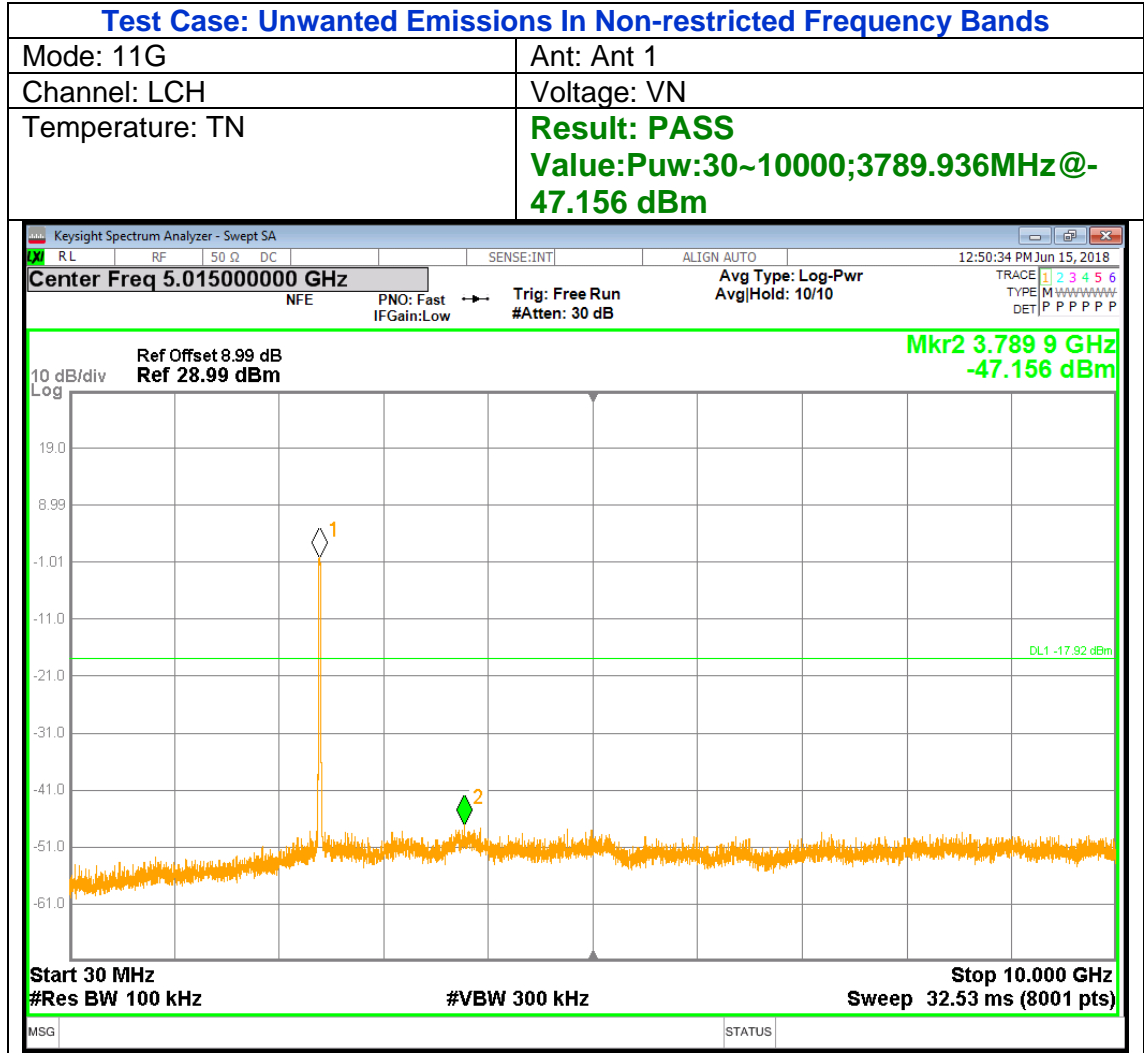


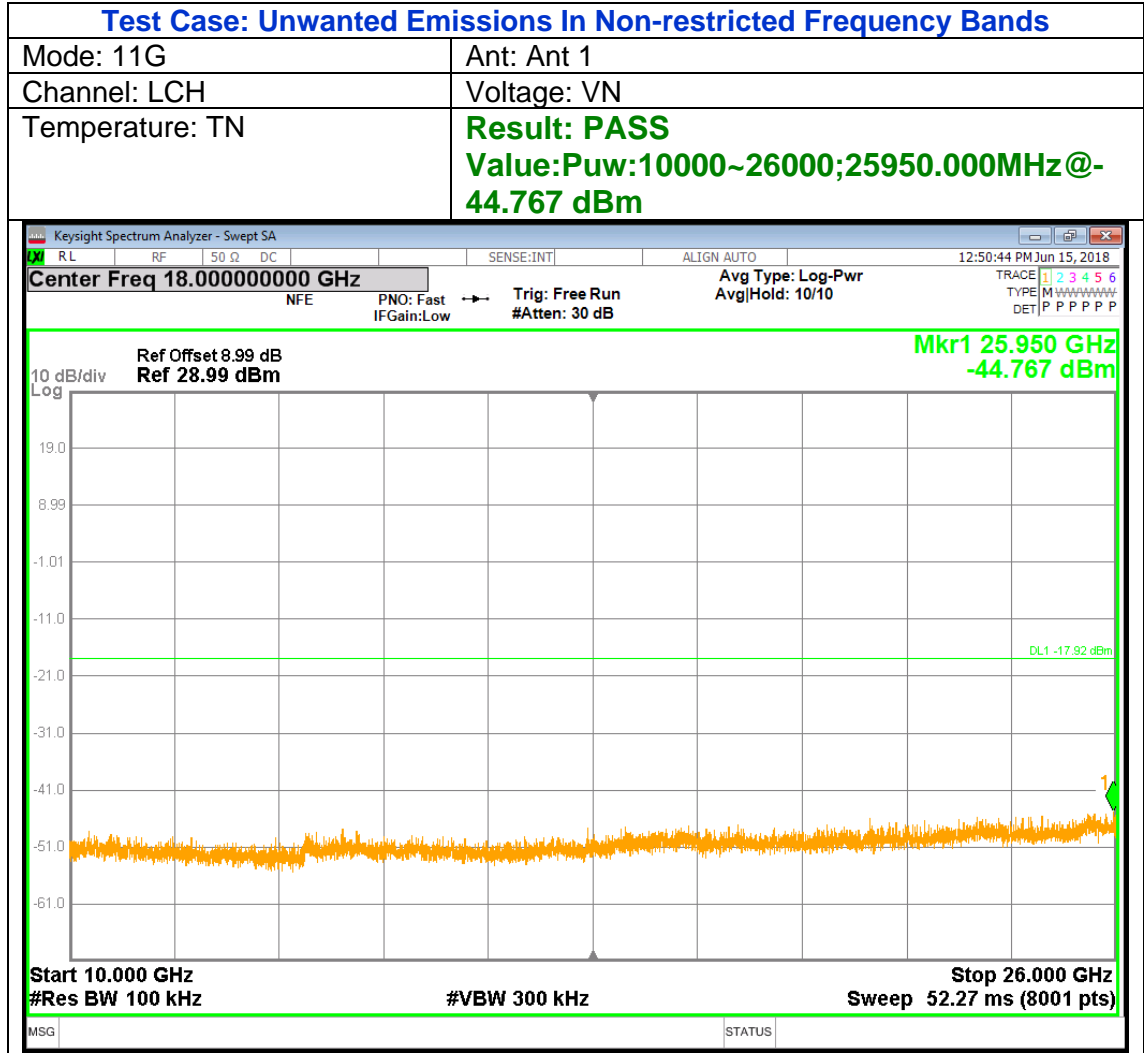




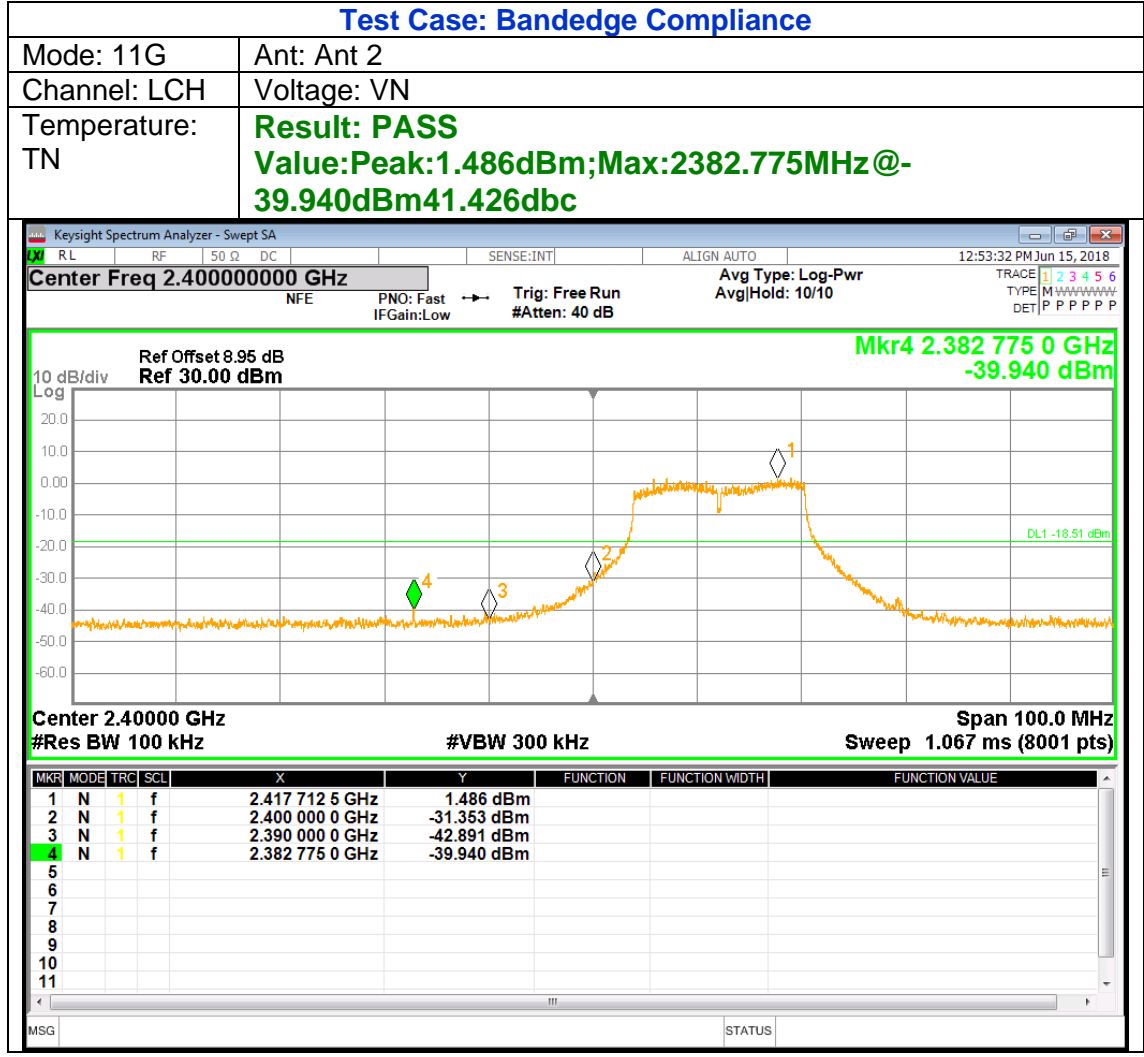


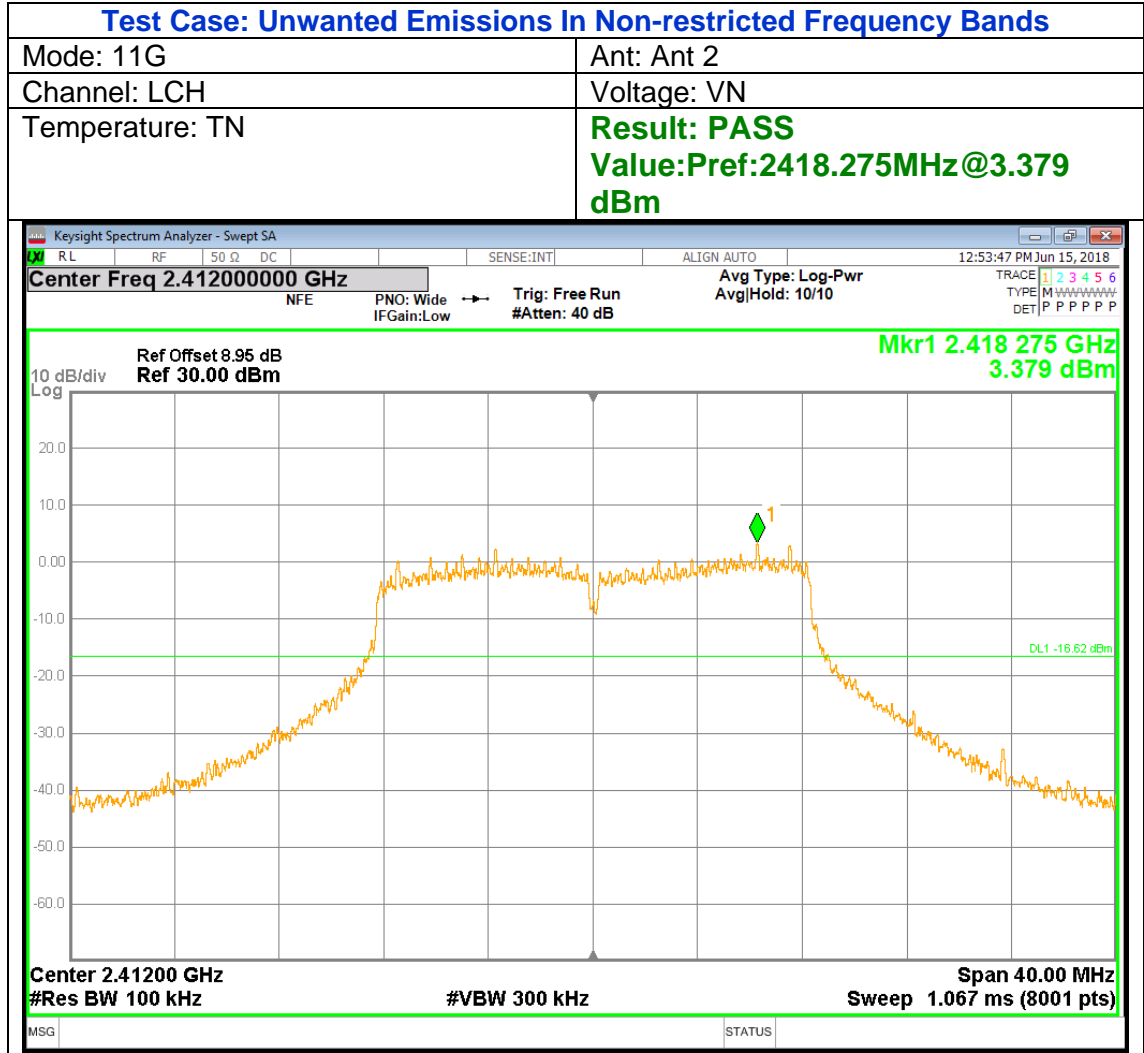


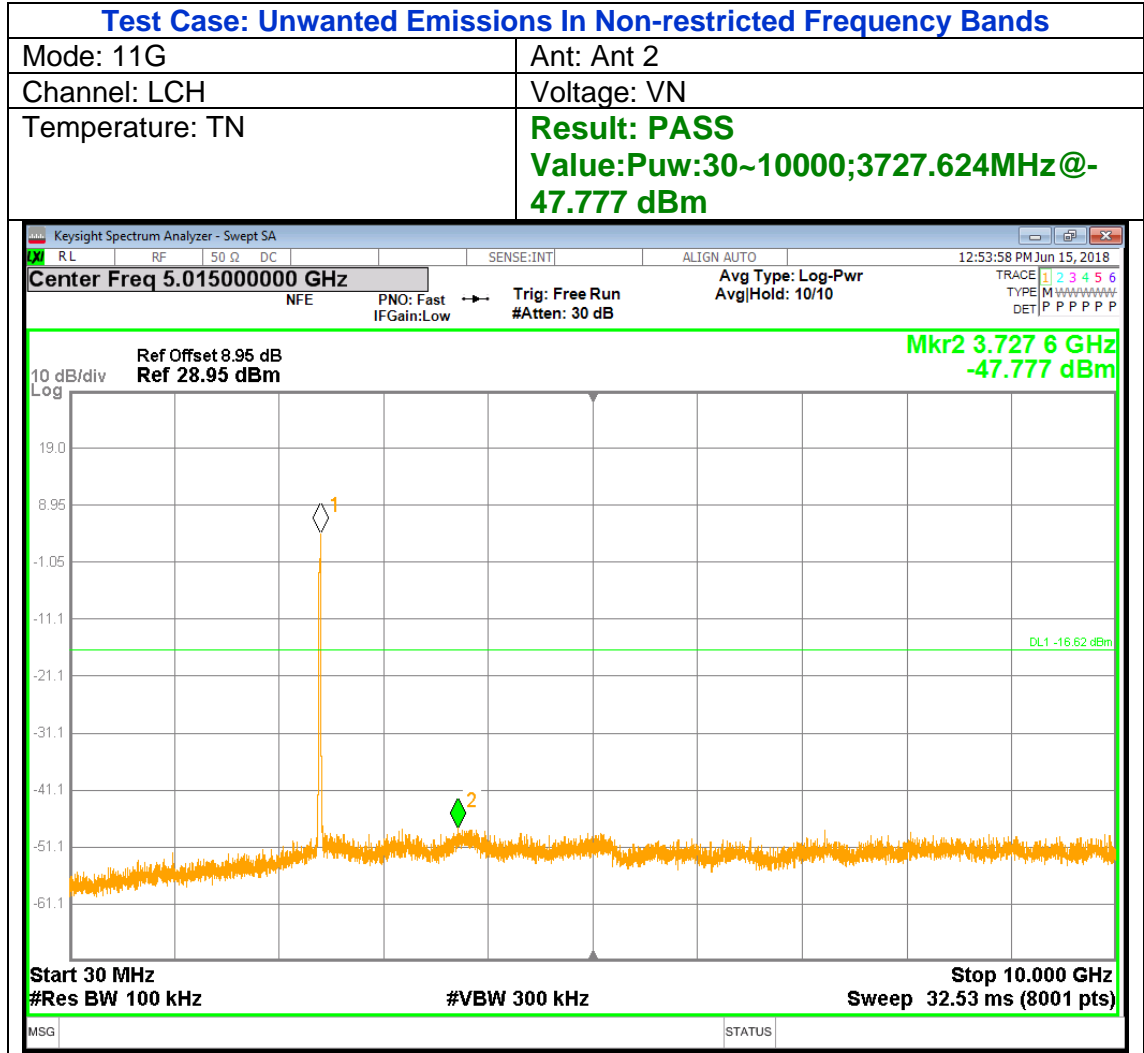


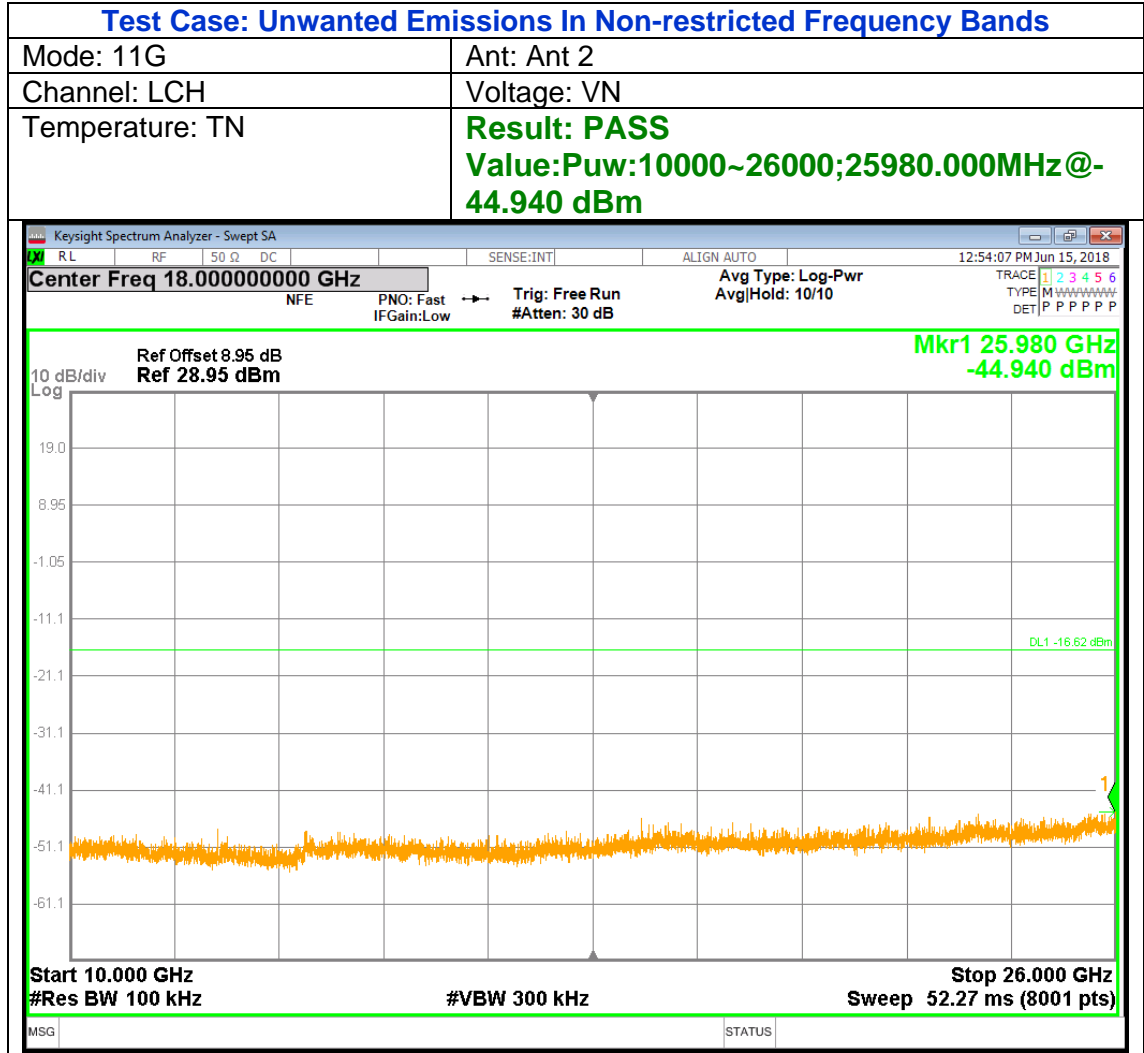








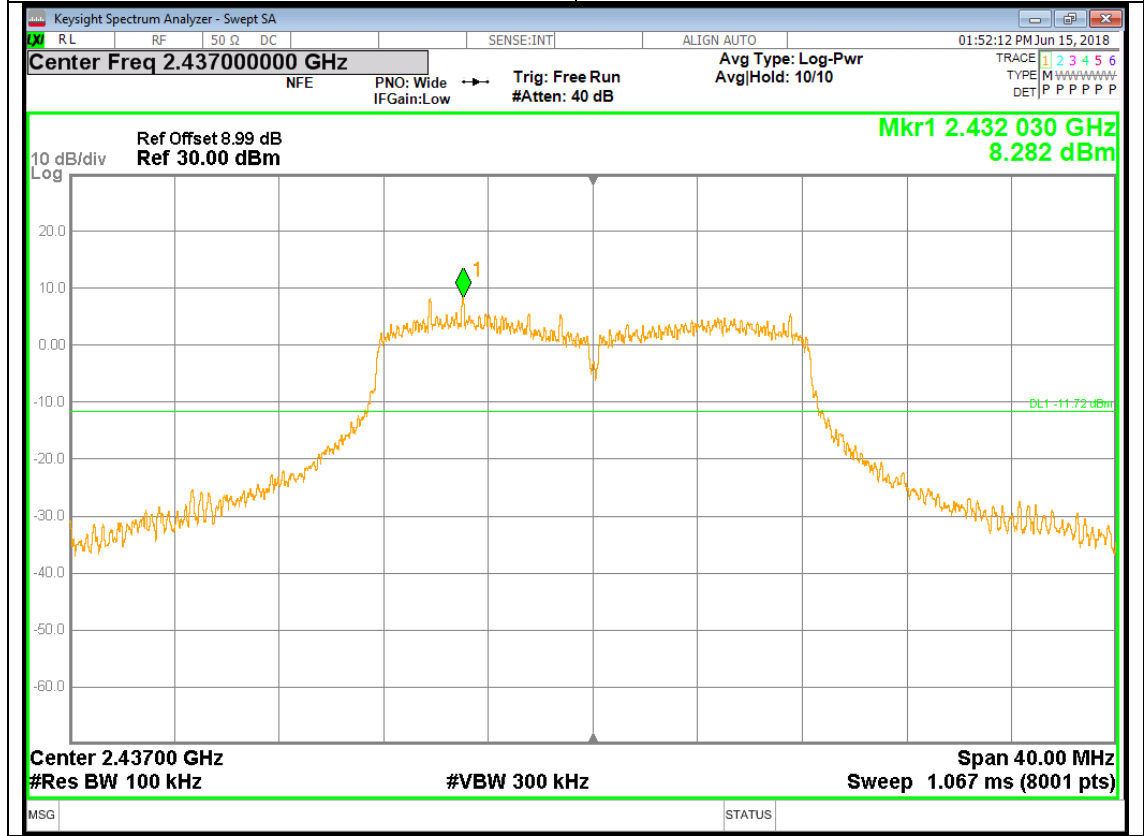


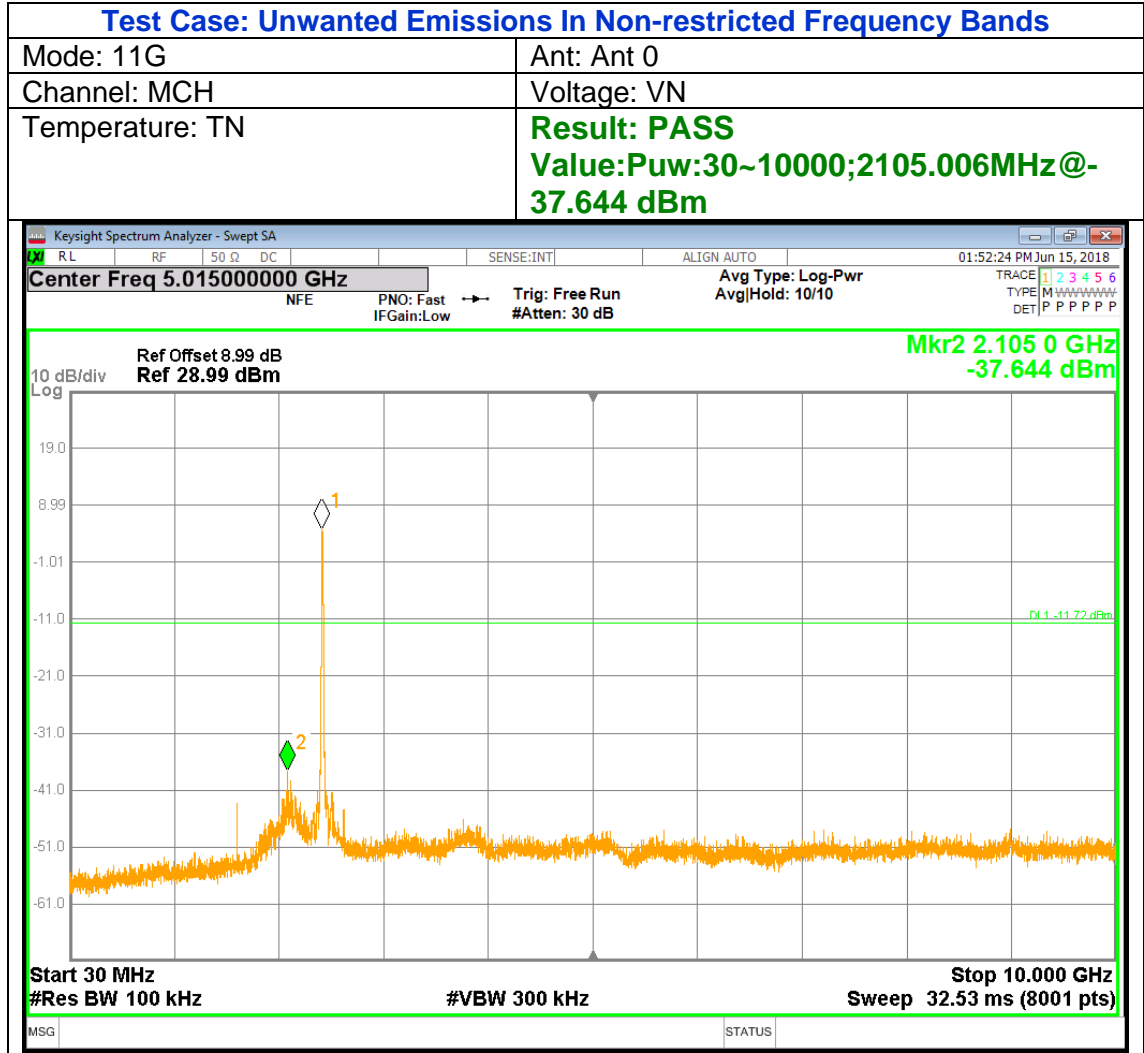


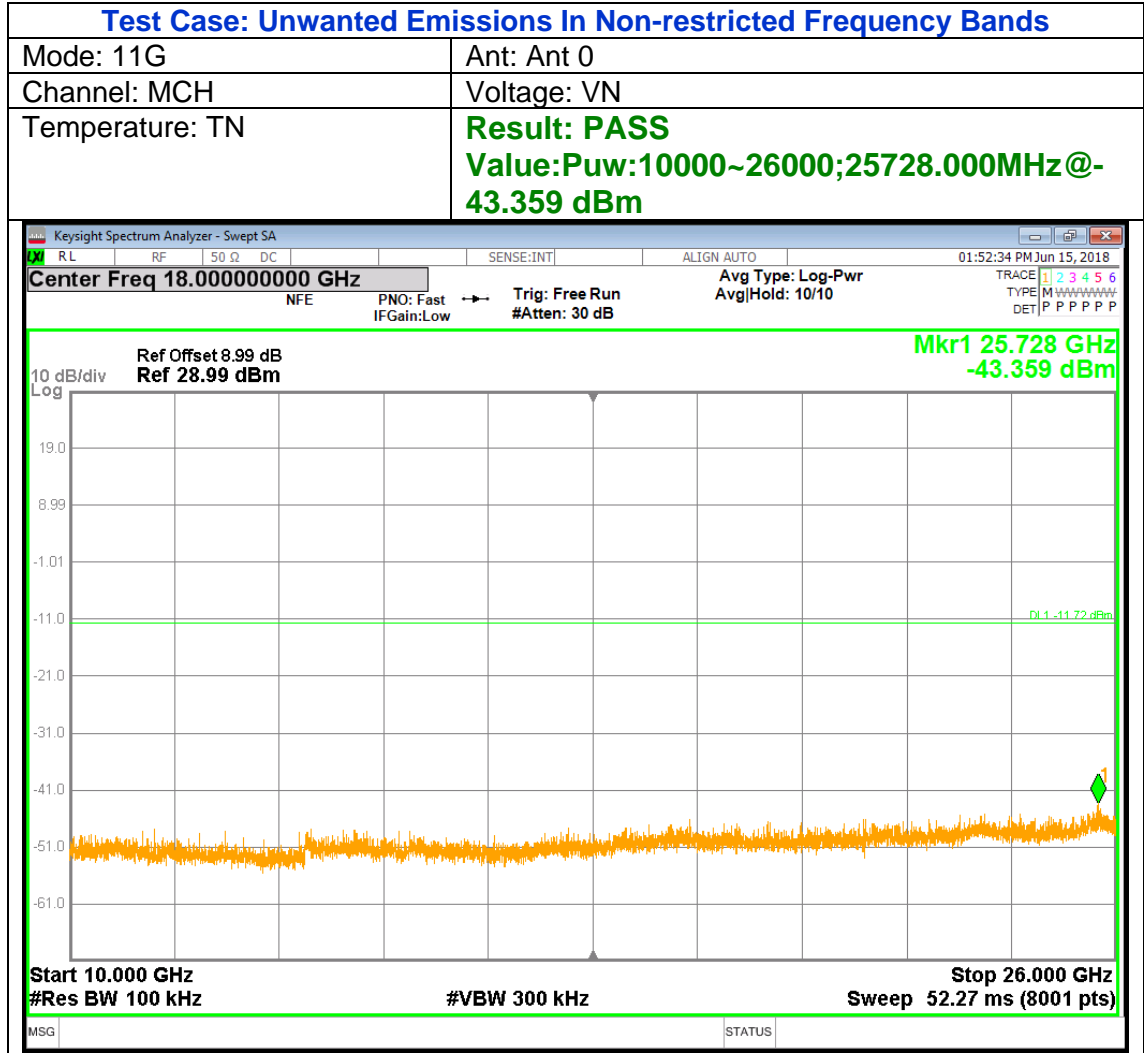


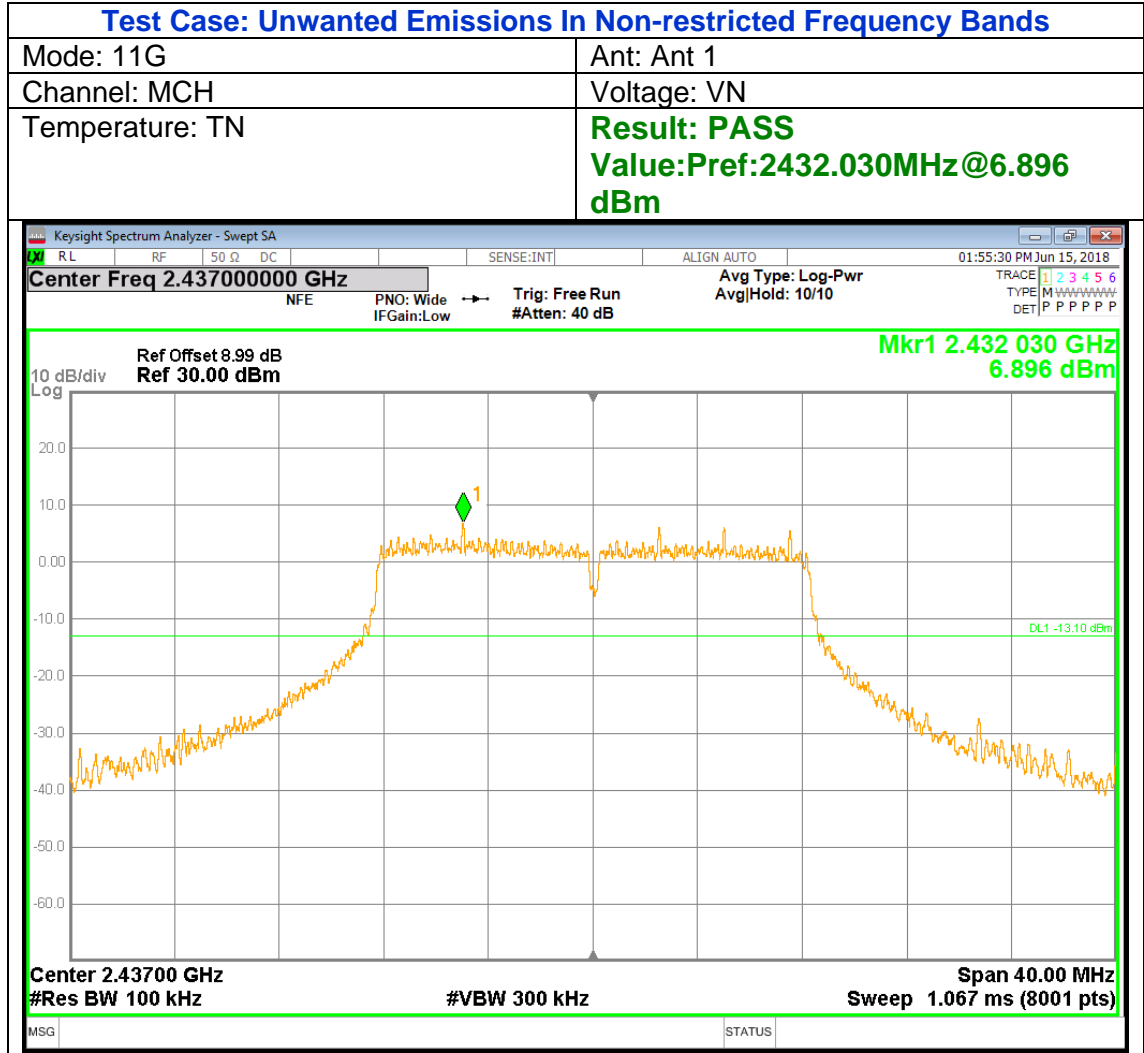
**Middle Channel**

<b>Test Case: Unwanted Emissions In Non-restricted Frequency Bands</b>	
Mode: 11G	Ant: Ant 0
Channel: MCH	Voltage: VN
Temperature: TN	<b>Result: PASS</b> <b>Value: Pref: 2432.030 MHz @ 8.282 dBm</b>

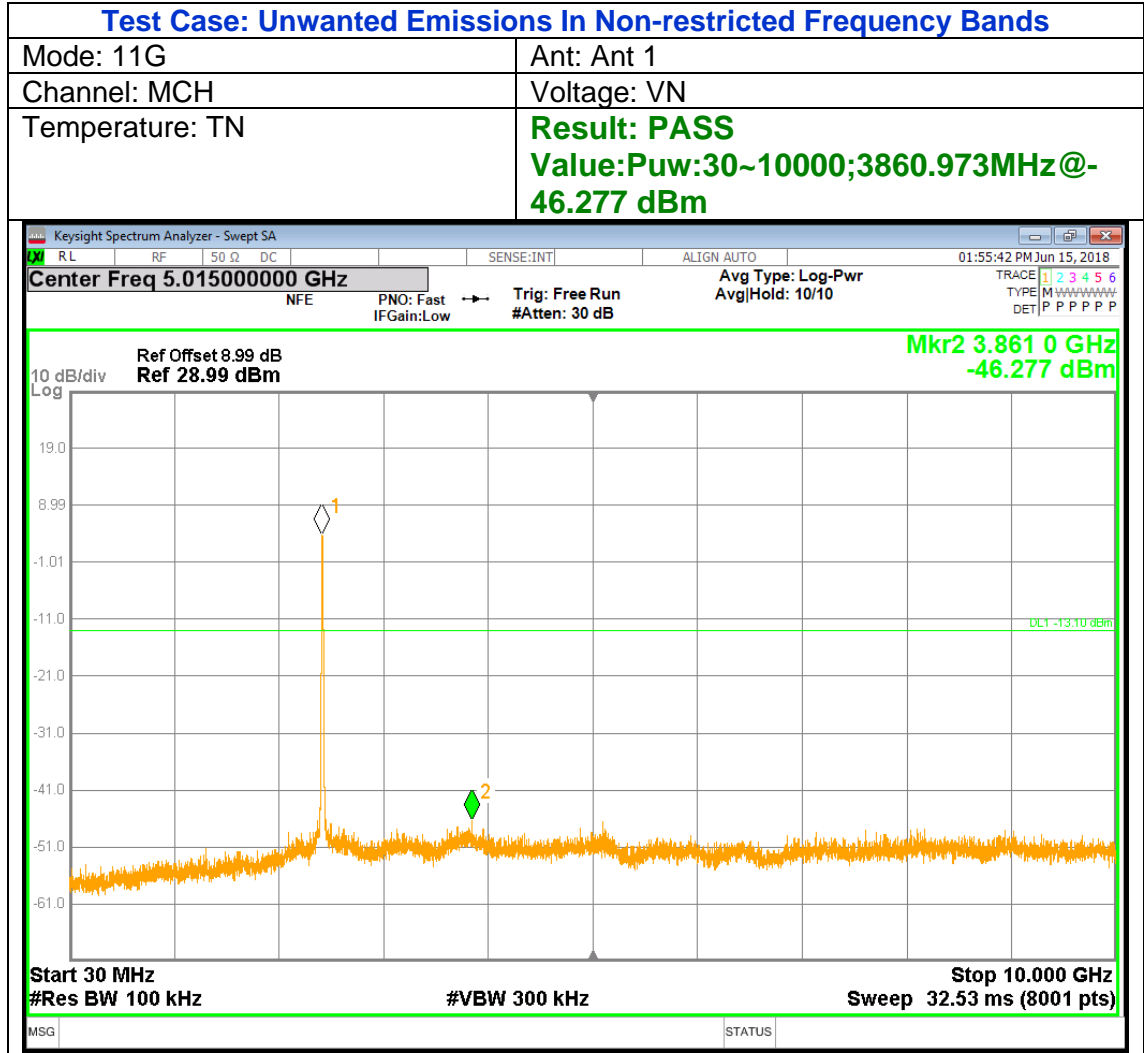


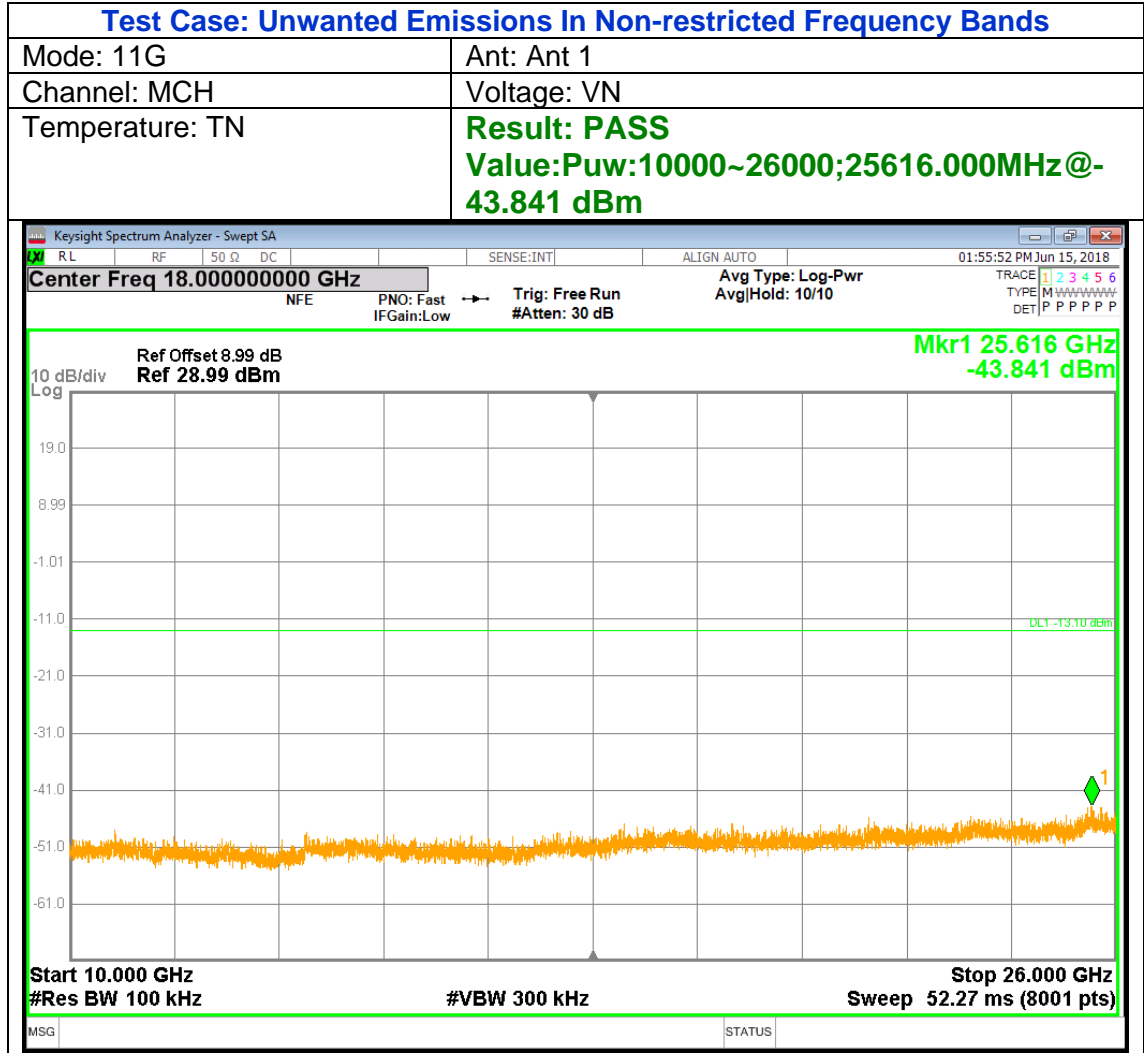


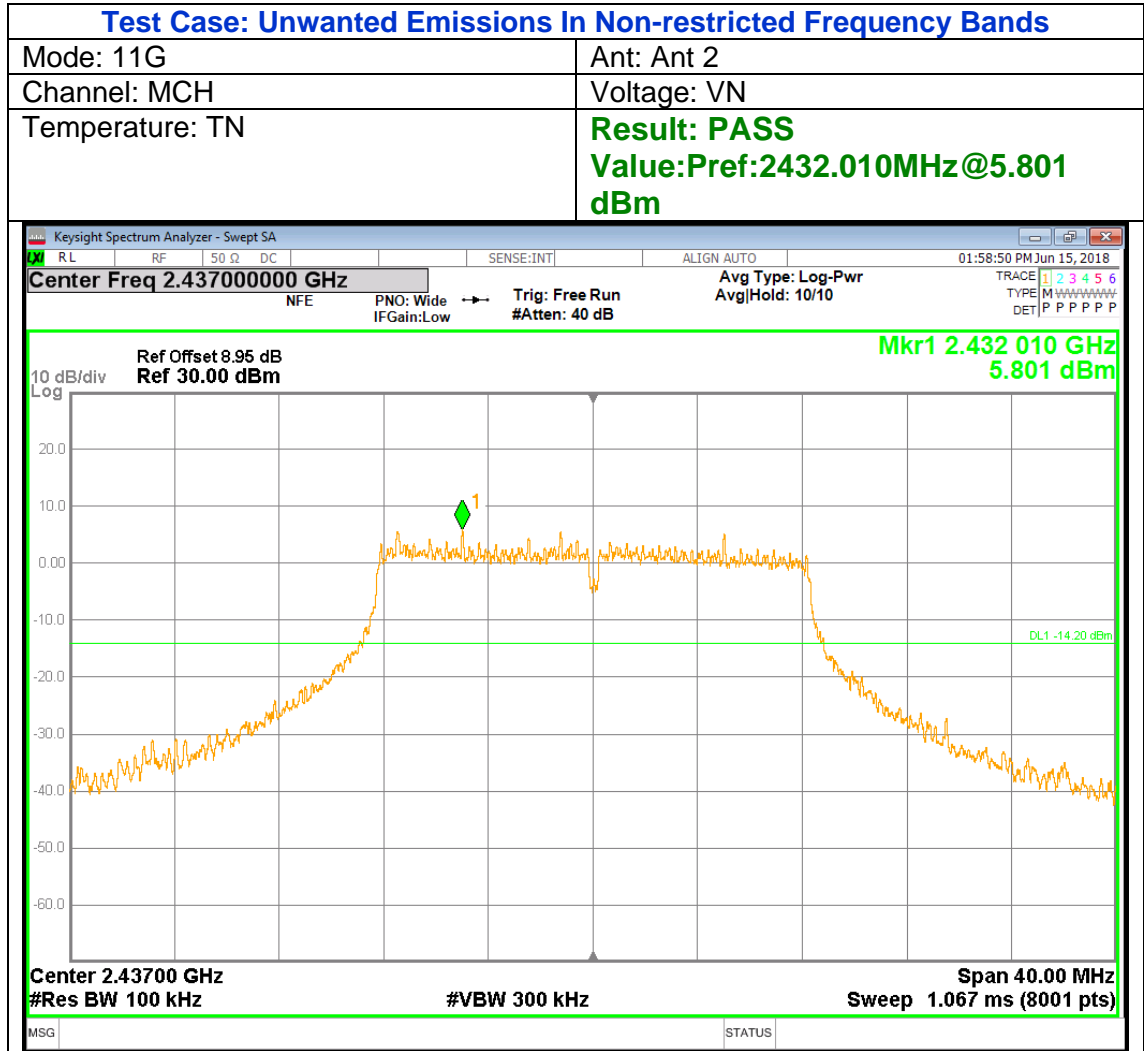


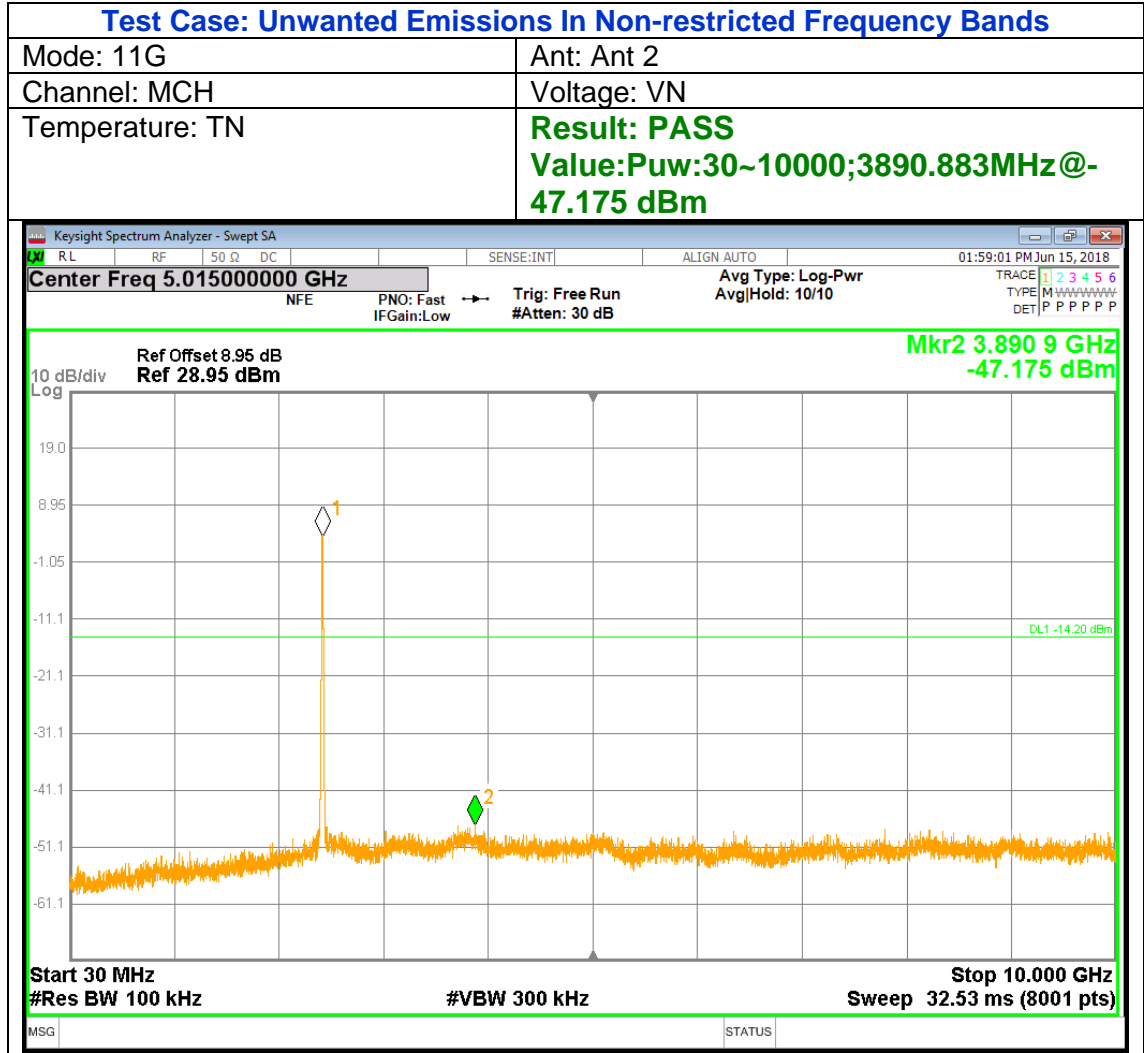


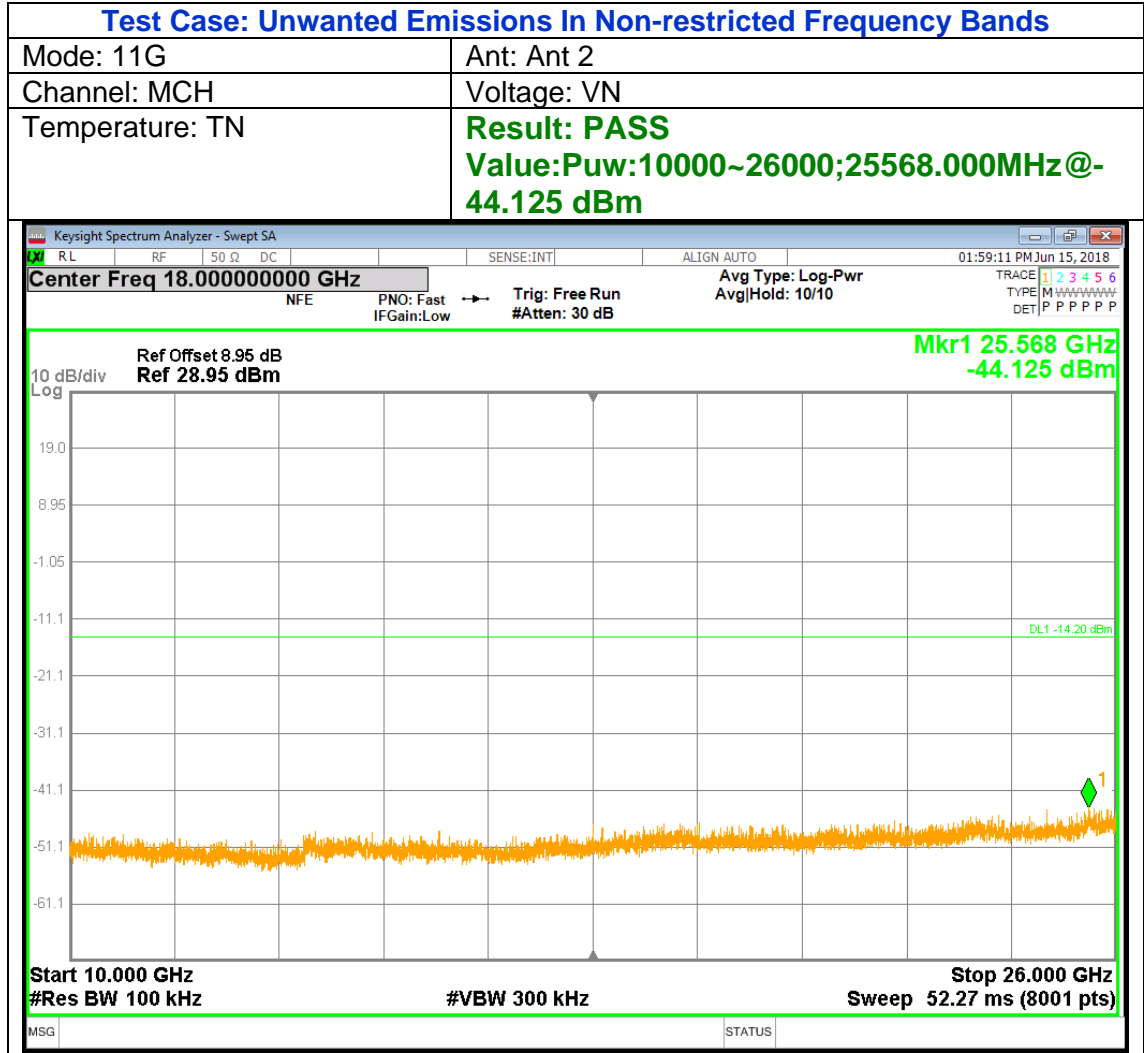








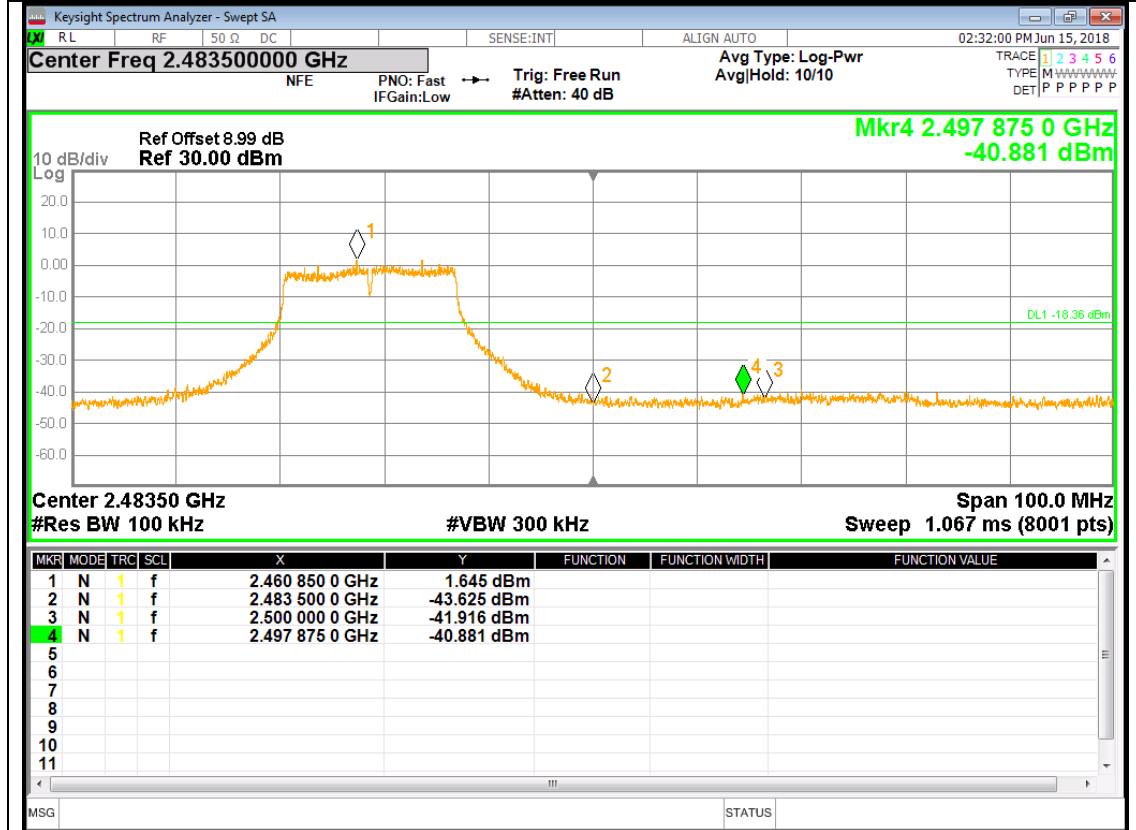


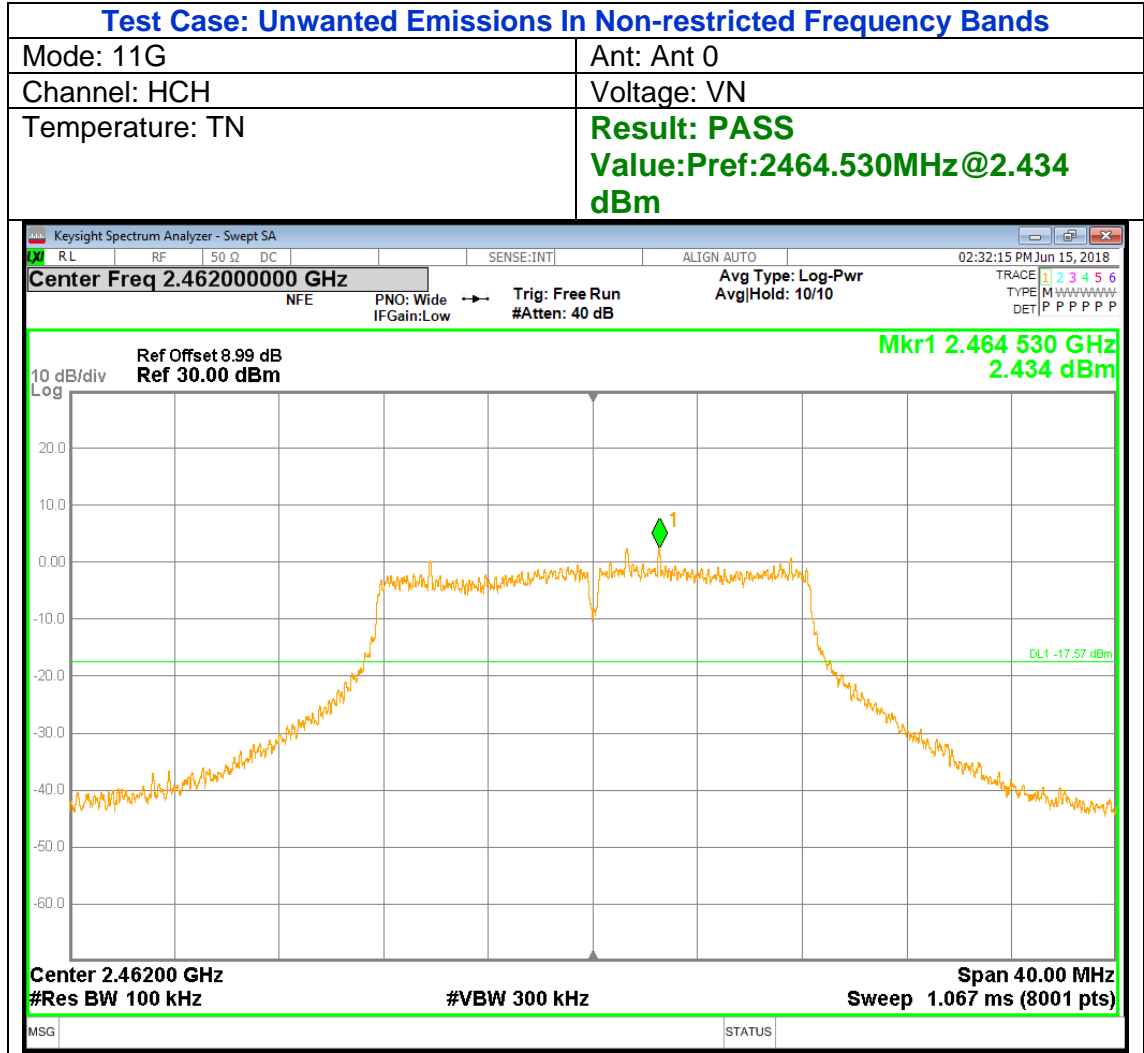


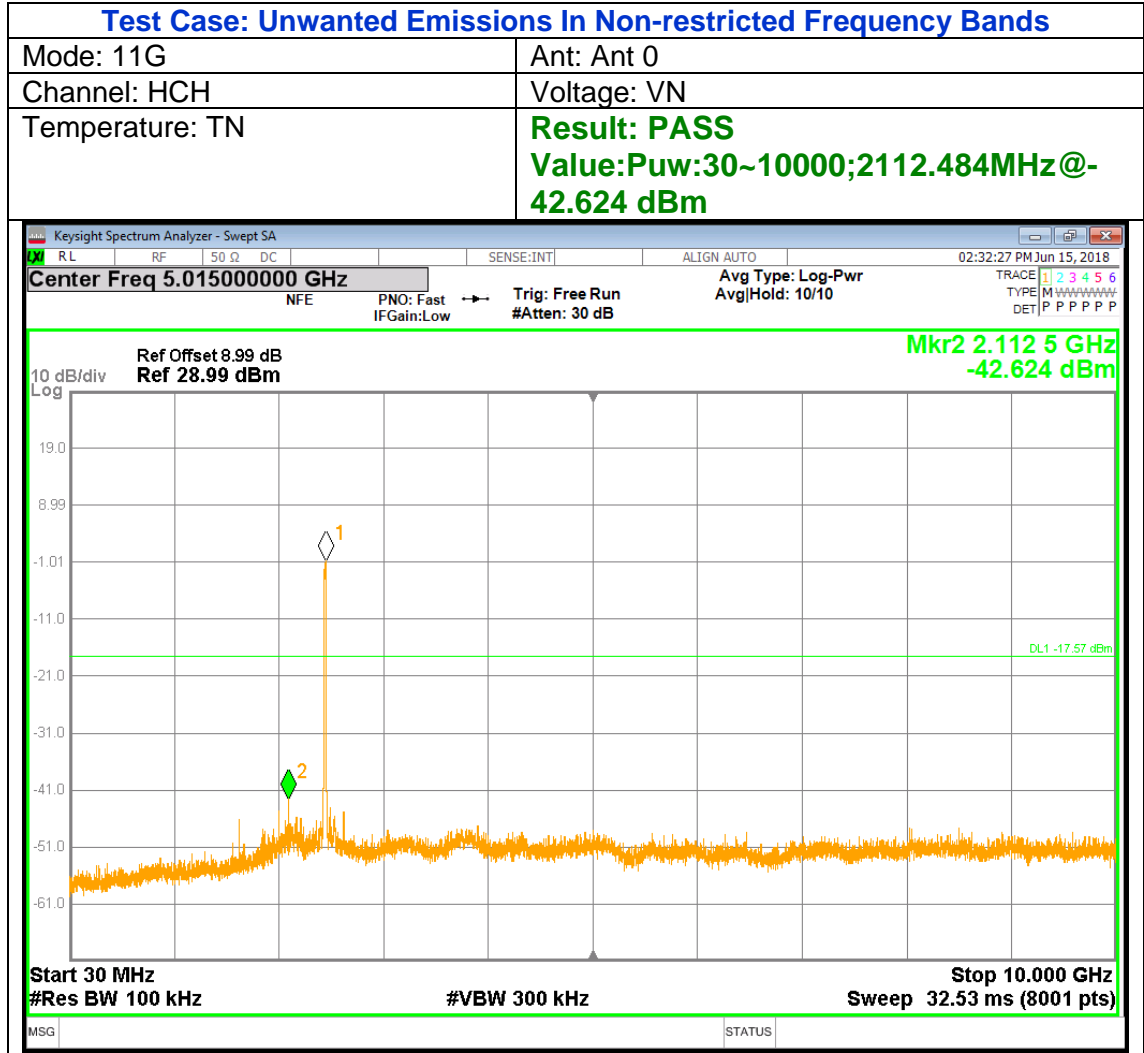


**High Channel**

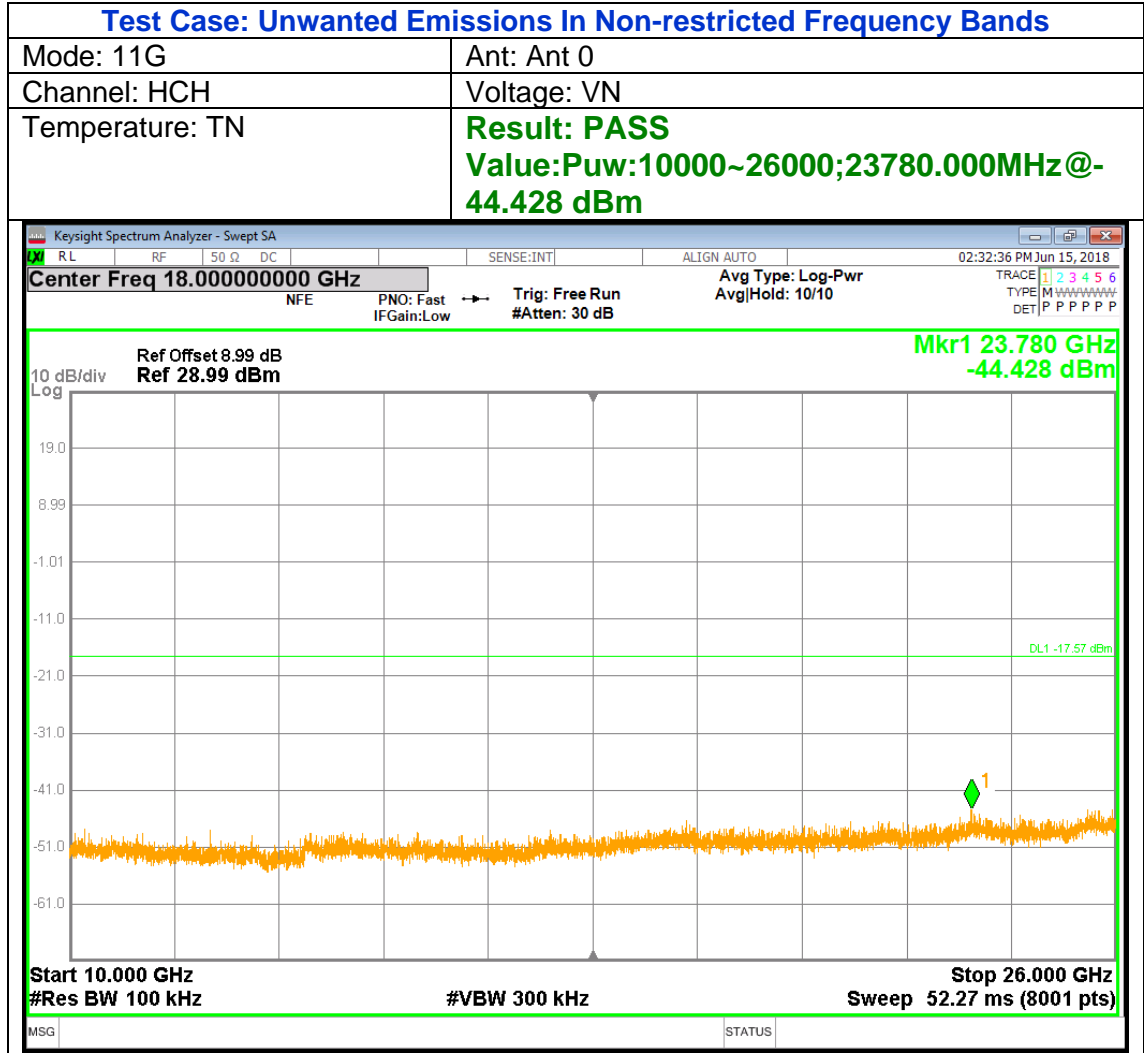
<b>Test Case: Bandedge Compliance</b>	
Mode: 11G	Ant: Ant 0
Channel: HCH	Voltage: VN
Temperature: TN	<b>Result: PASS</b> <b>Value: Peak: 1.645dBm; Max: 2497.875MHz @ -40.881dBm 42.526dbc</b>

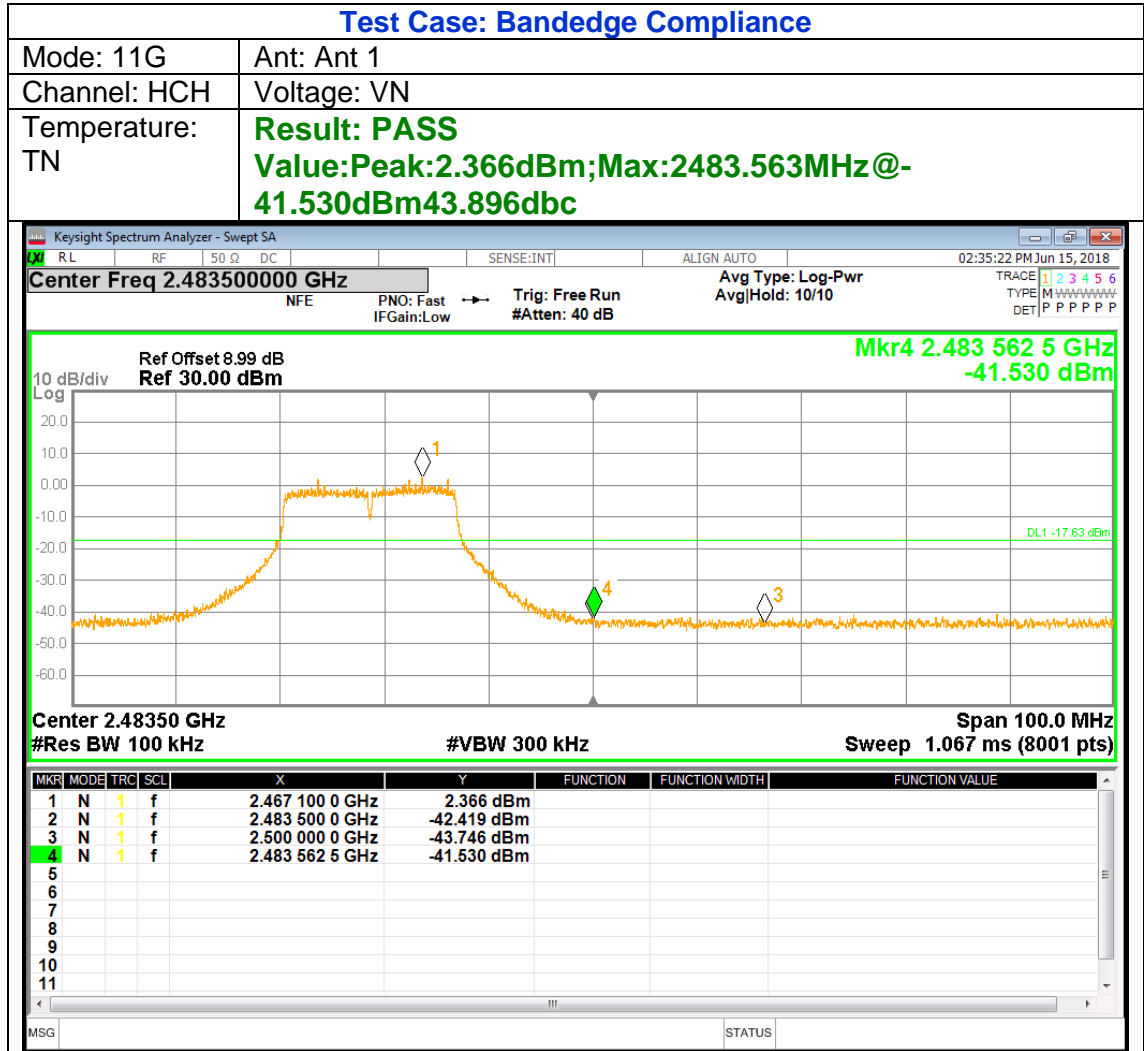


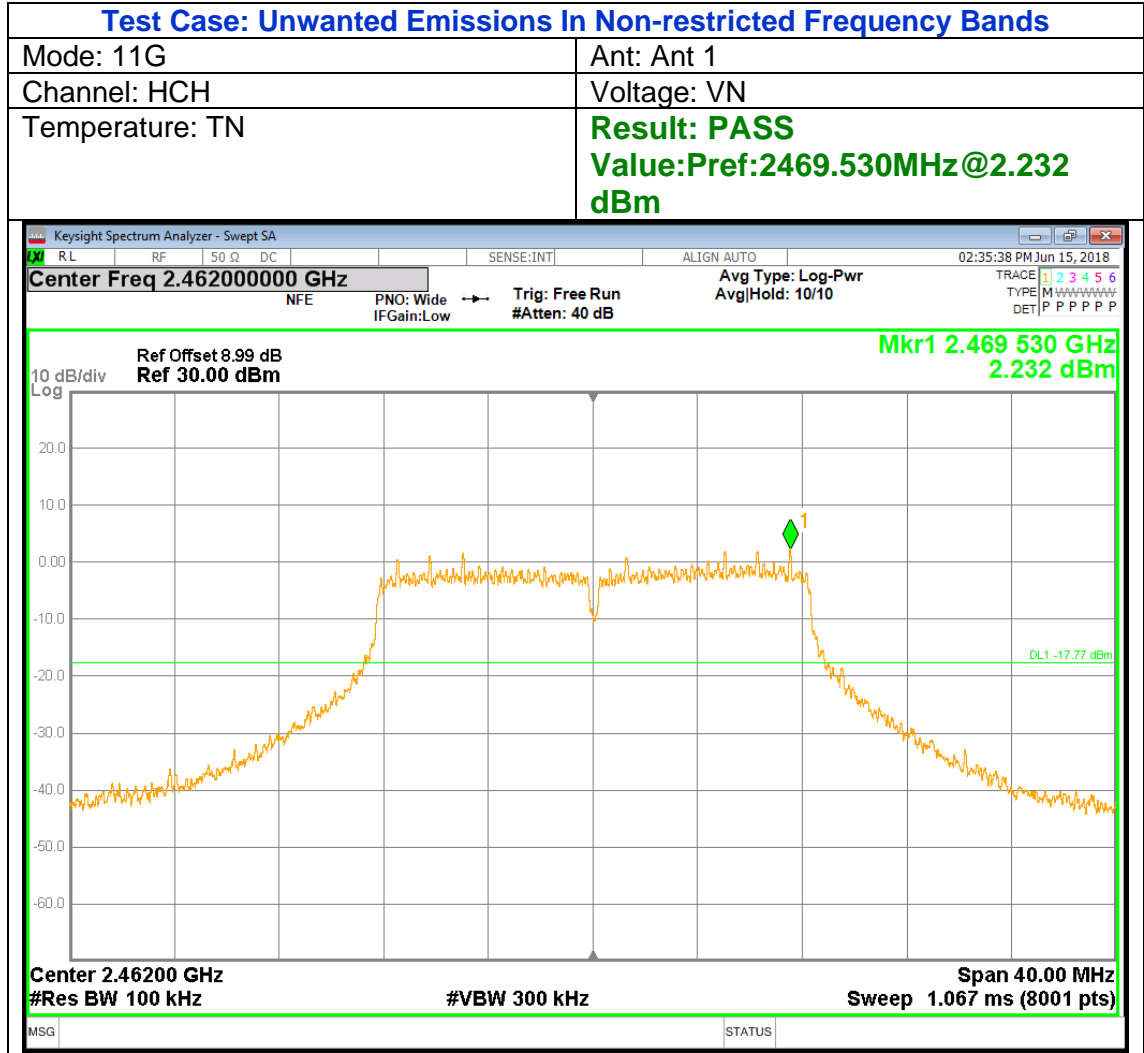


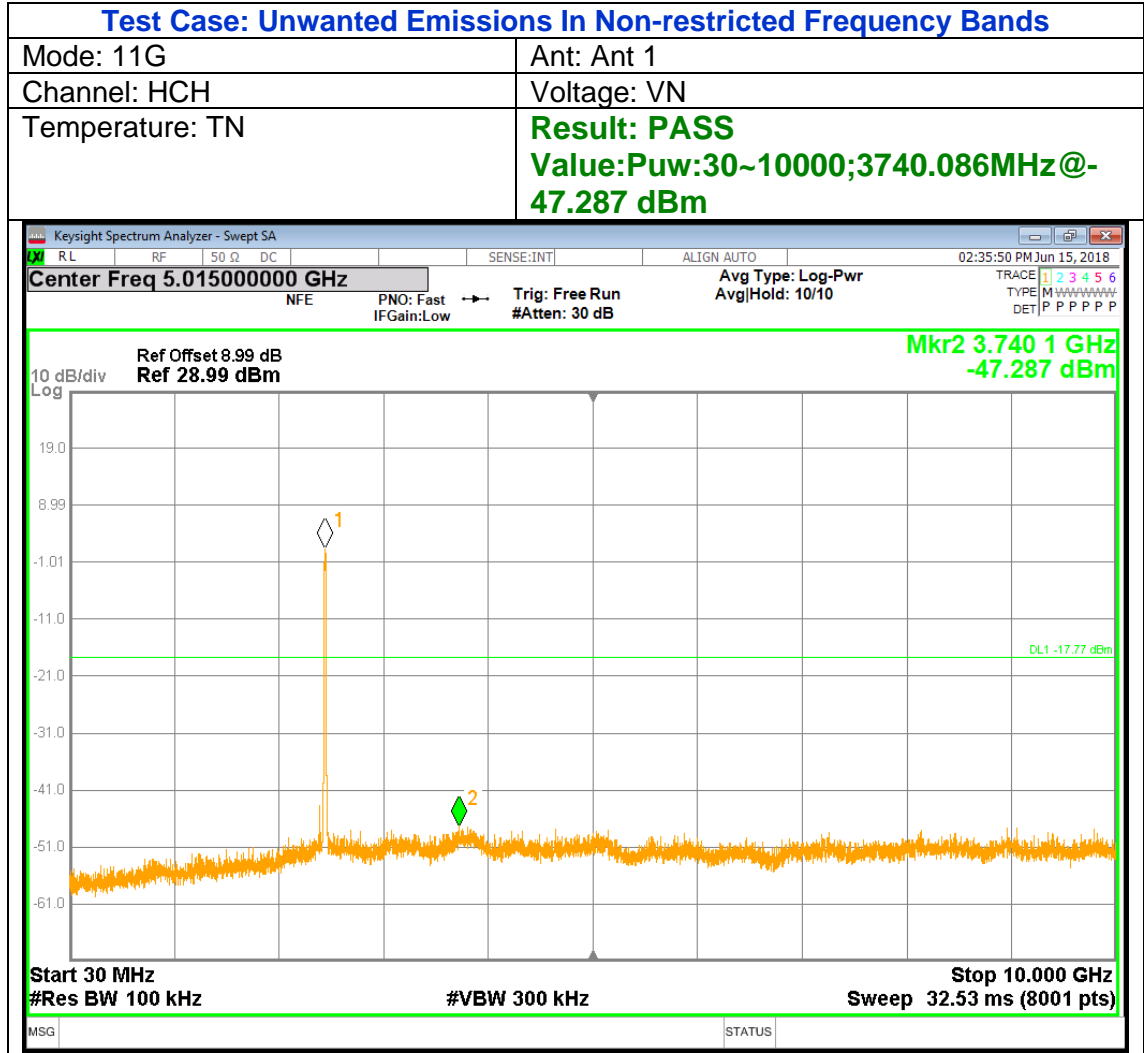


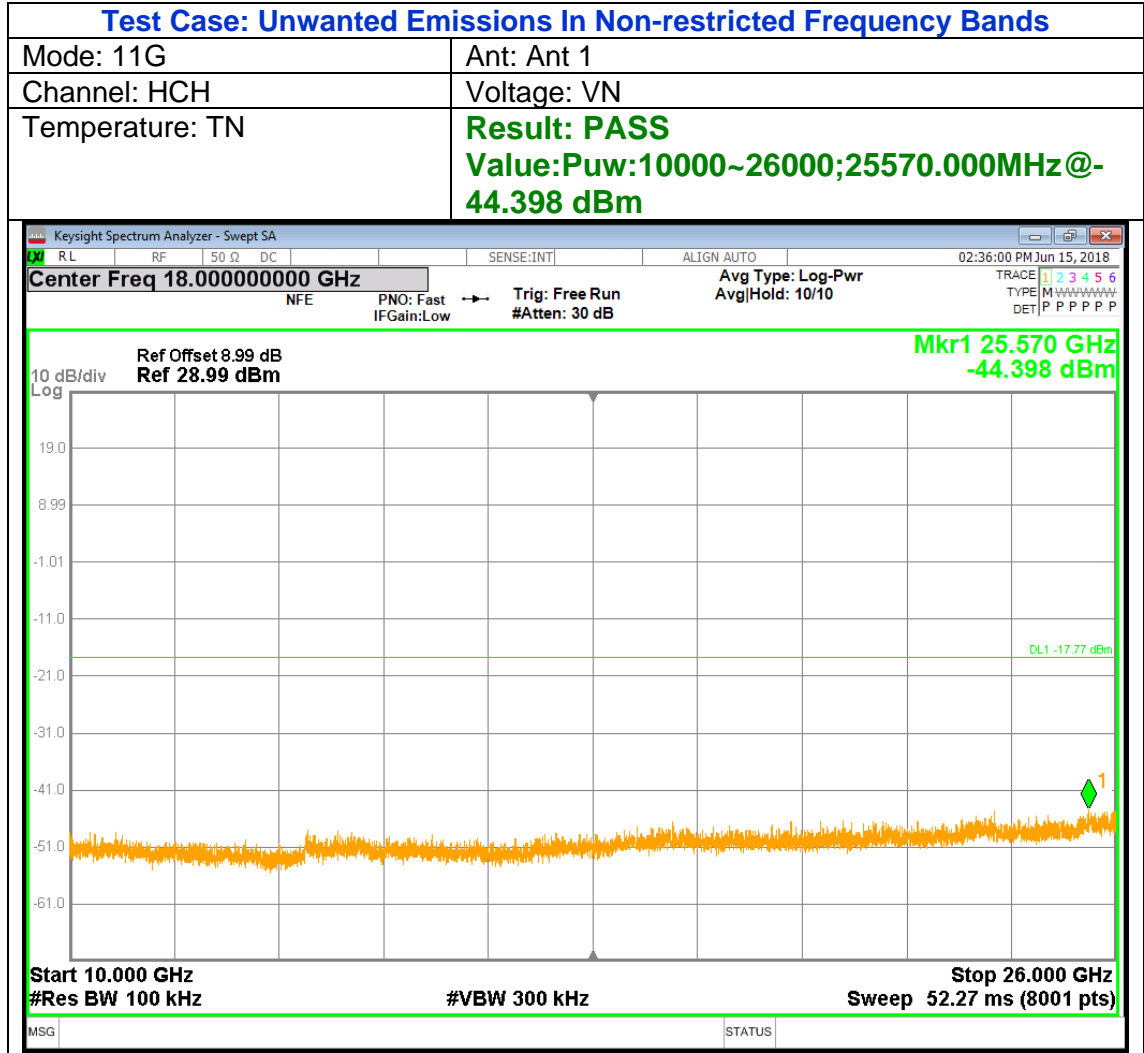


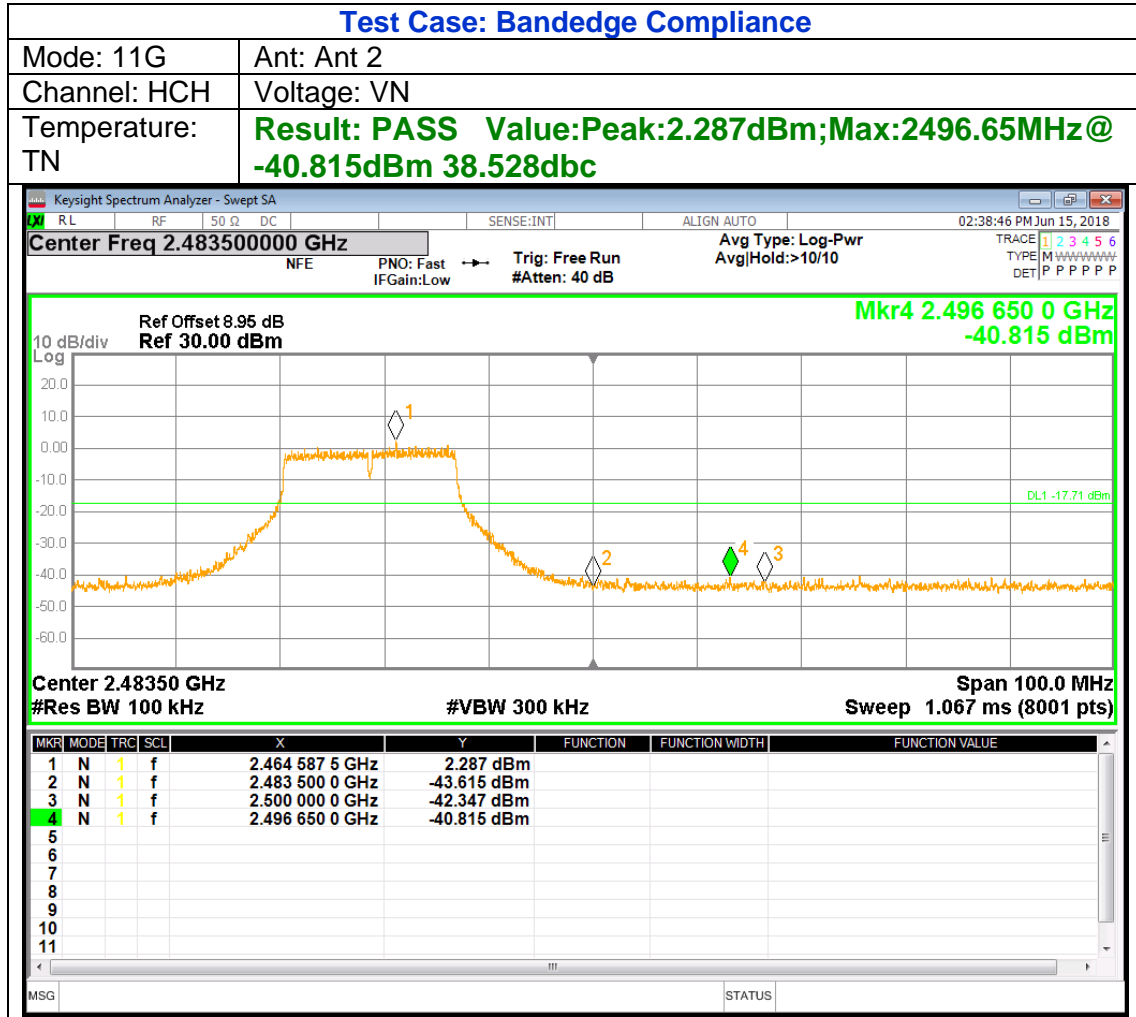


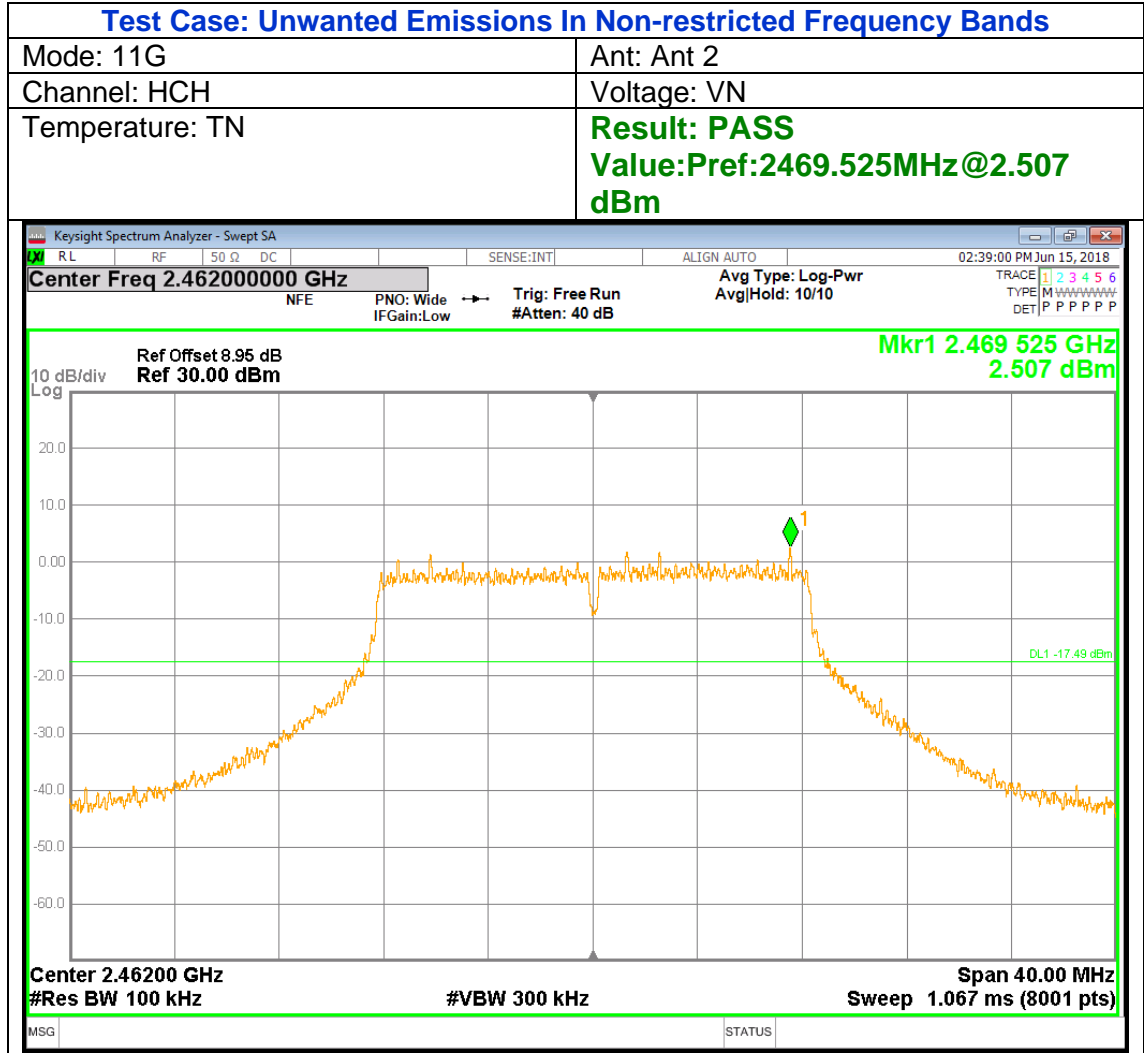


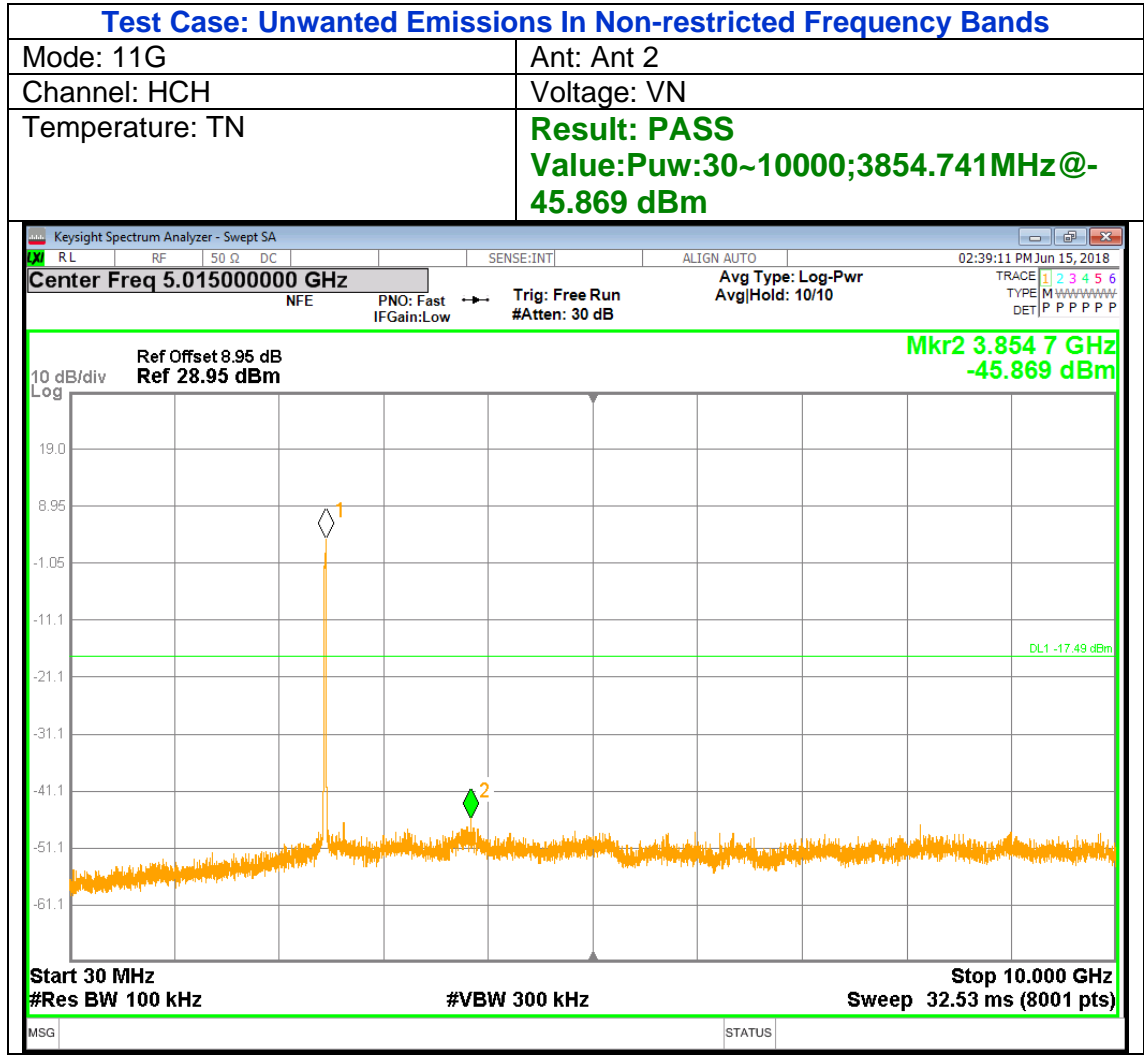




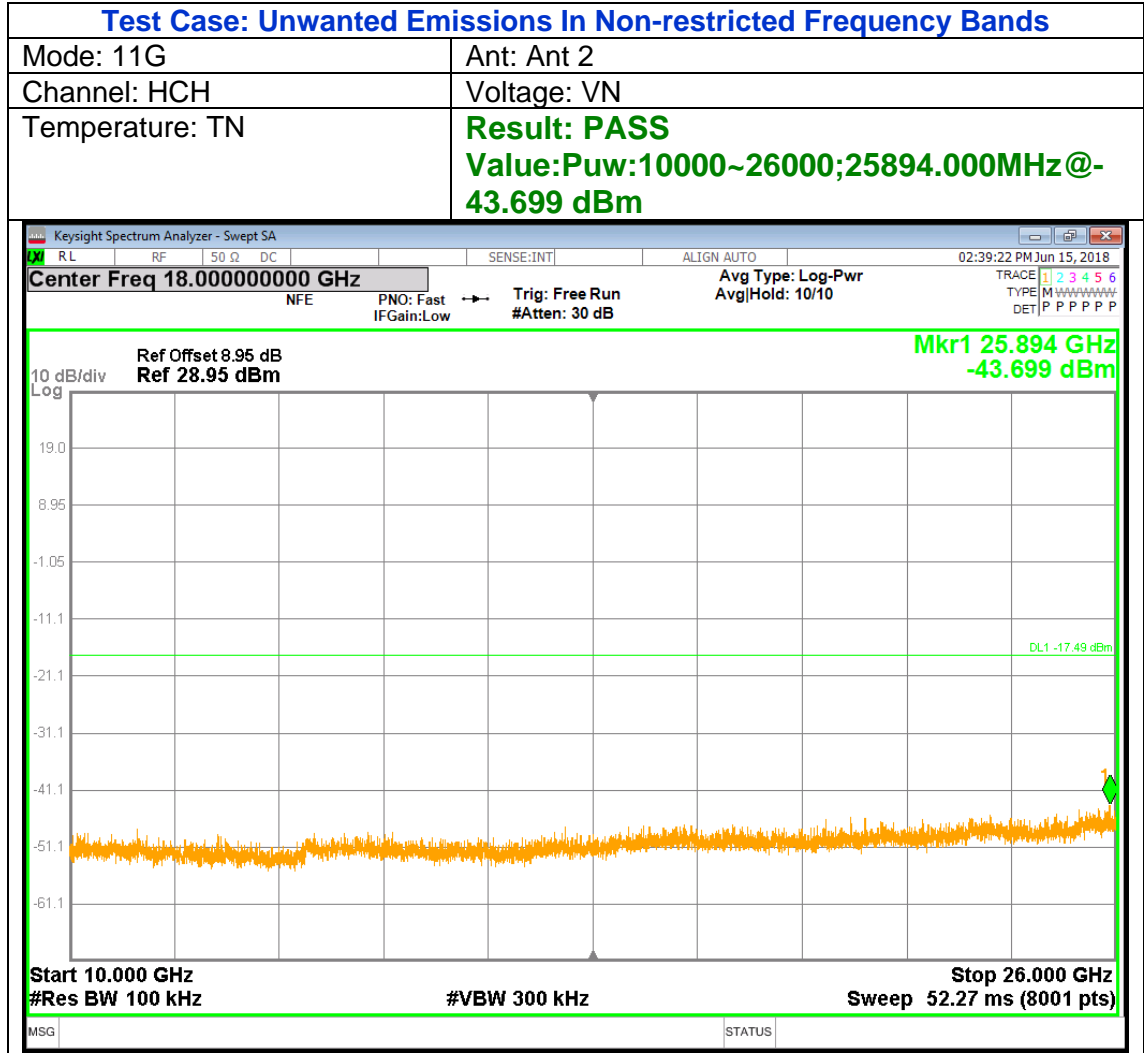








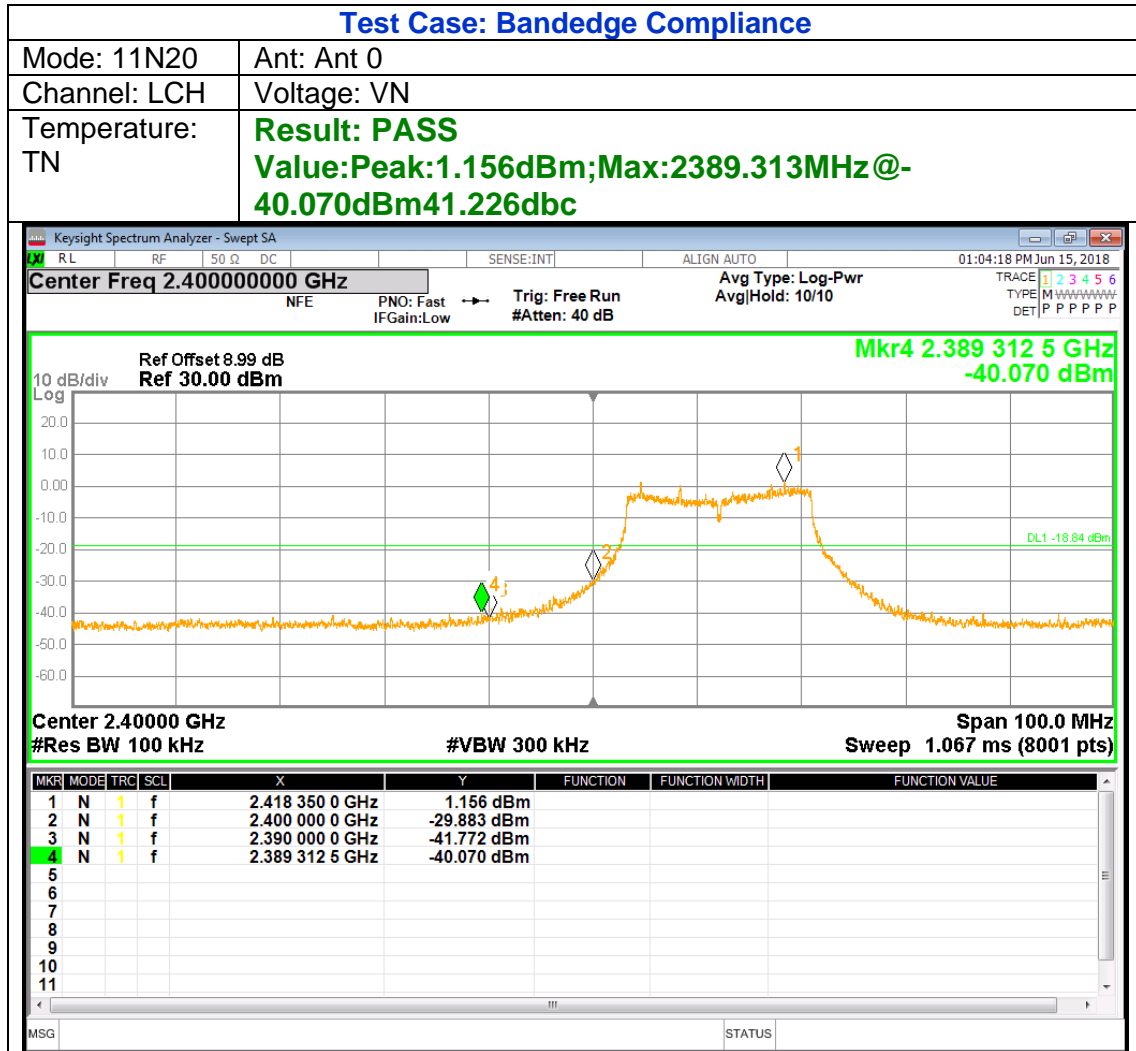


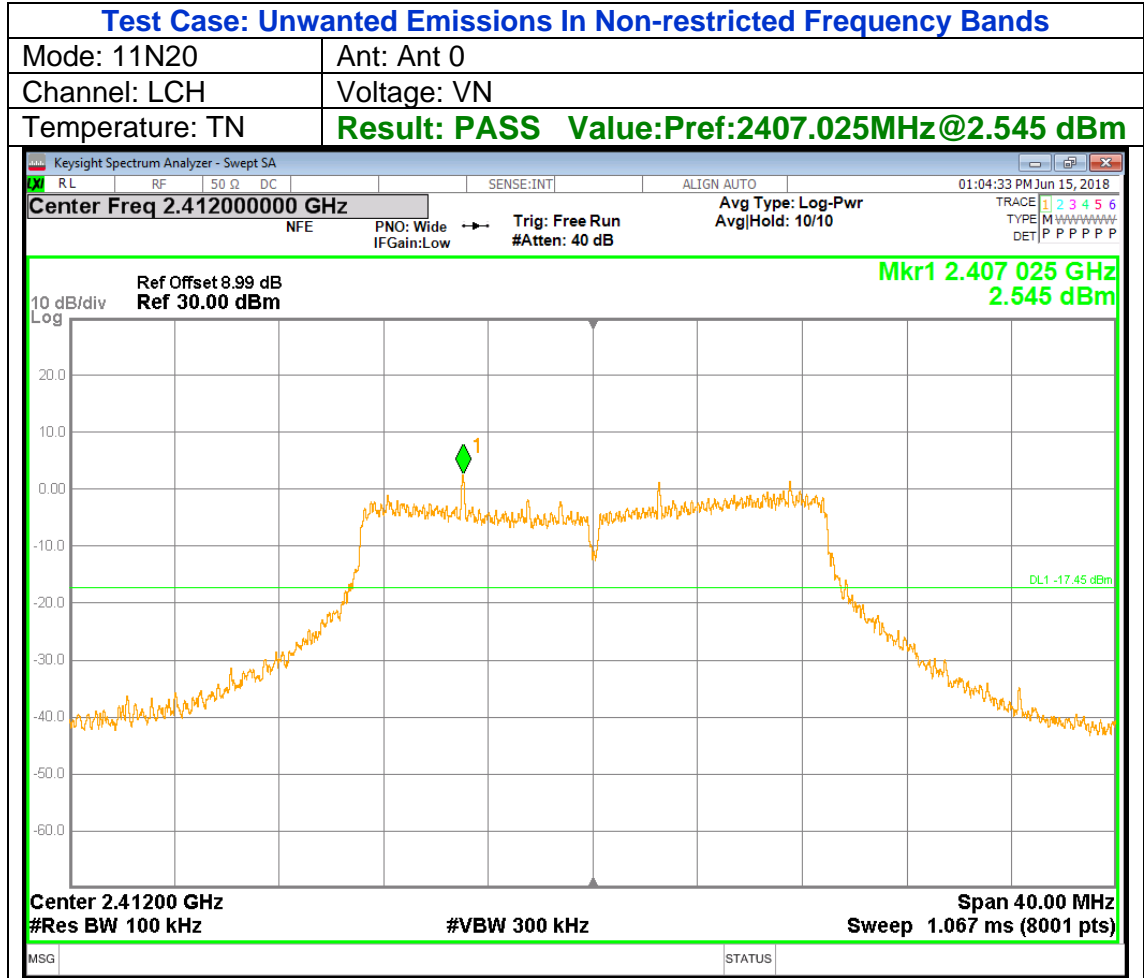


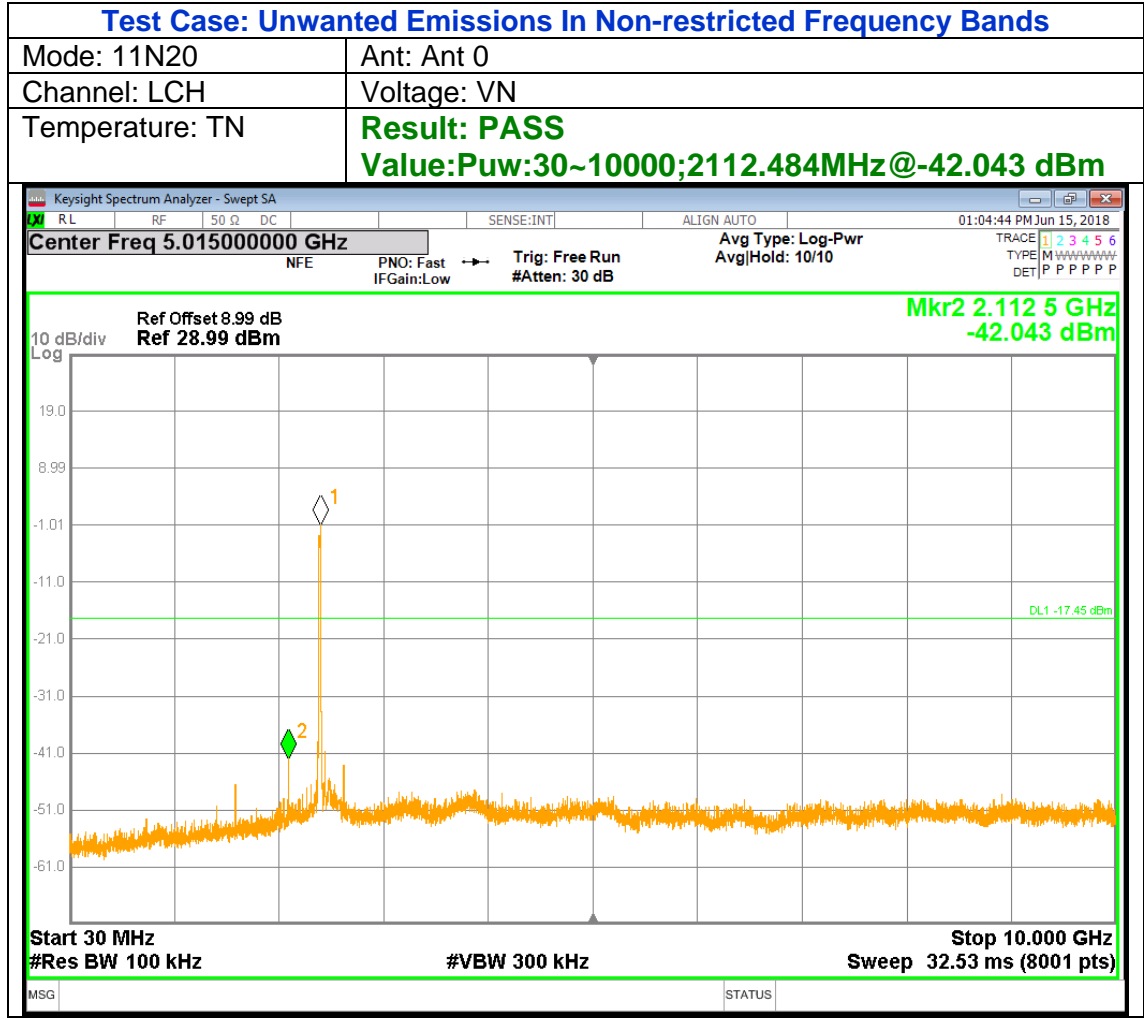


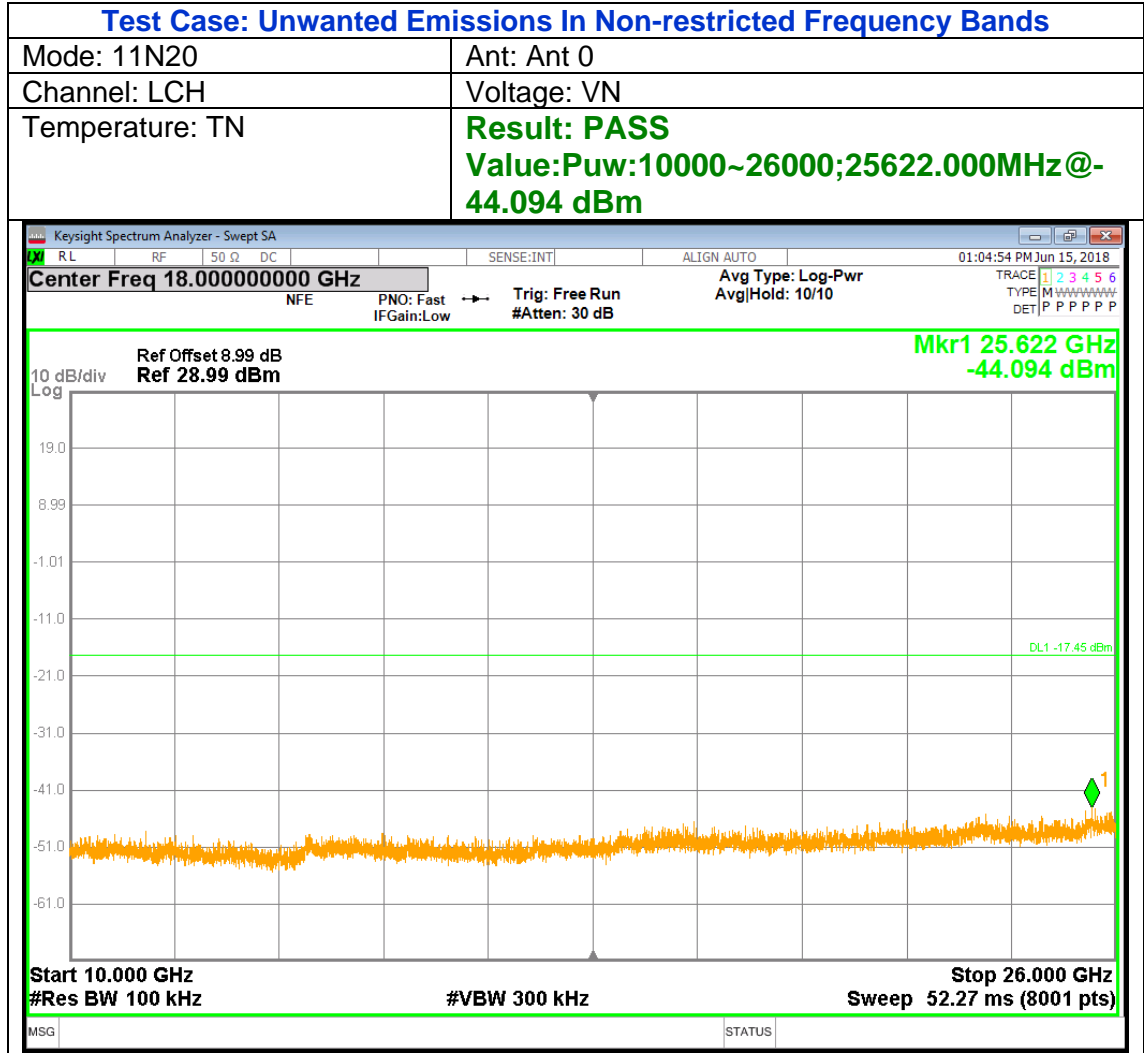
### 7.5.6. 802.11n20 MIMO MODE

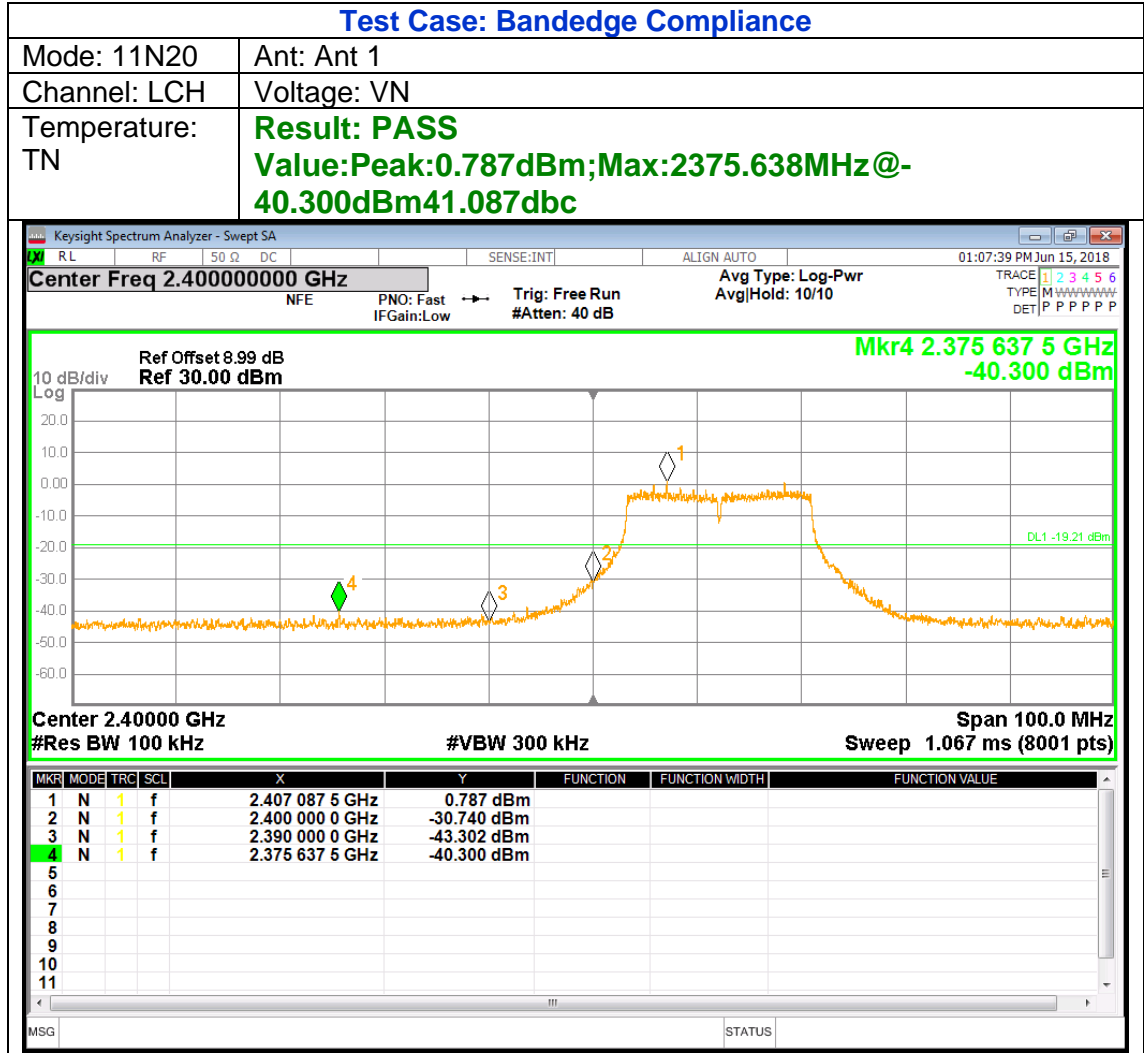
#### Low Channel

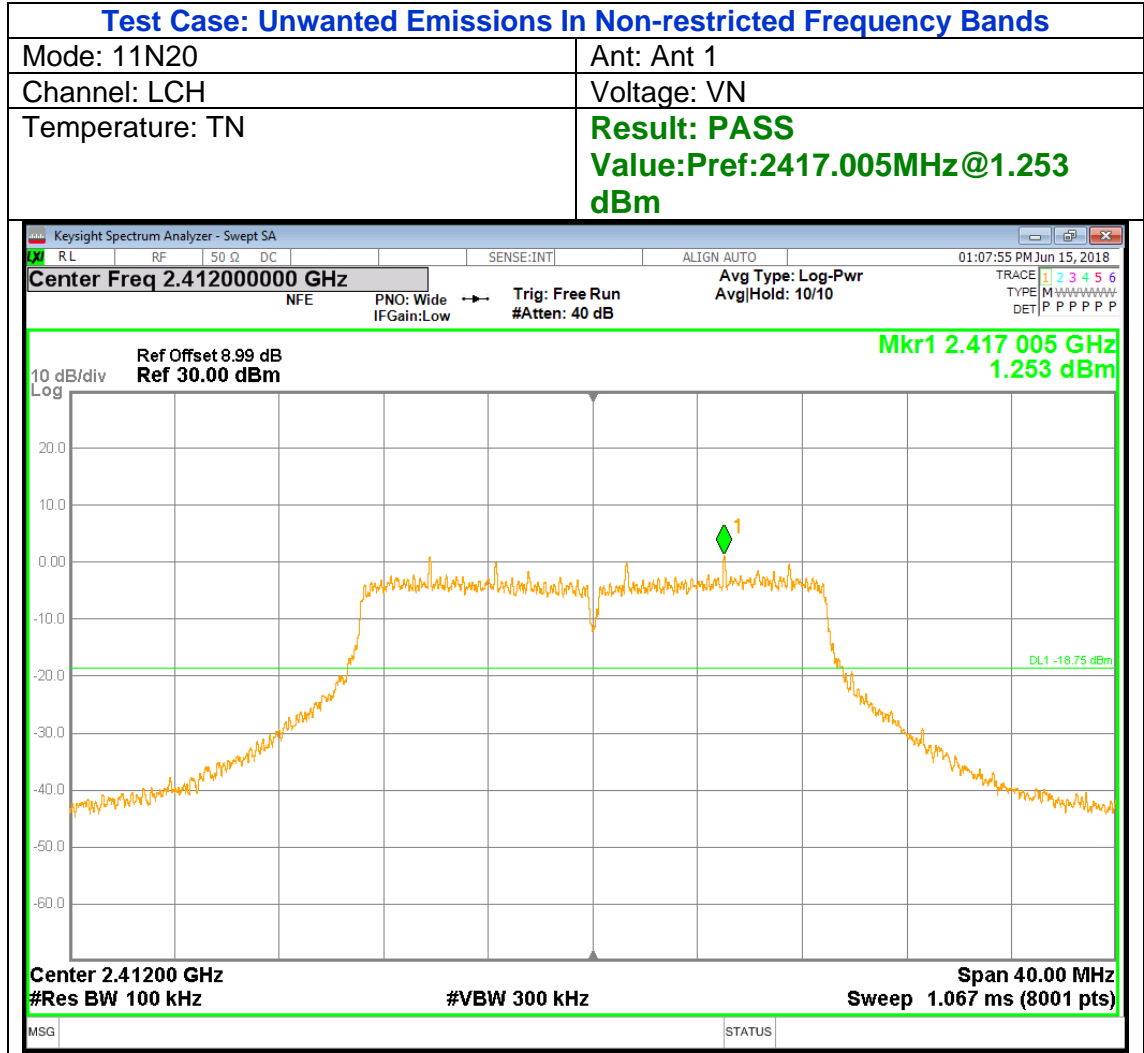


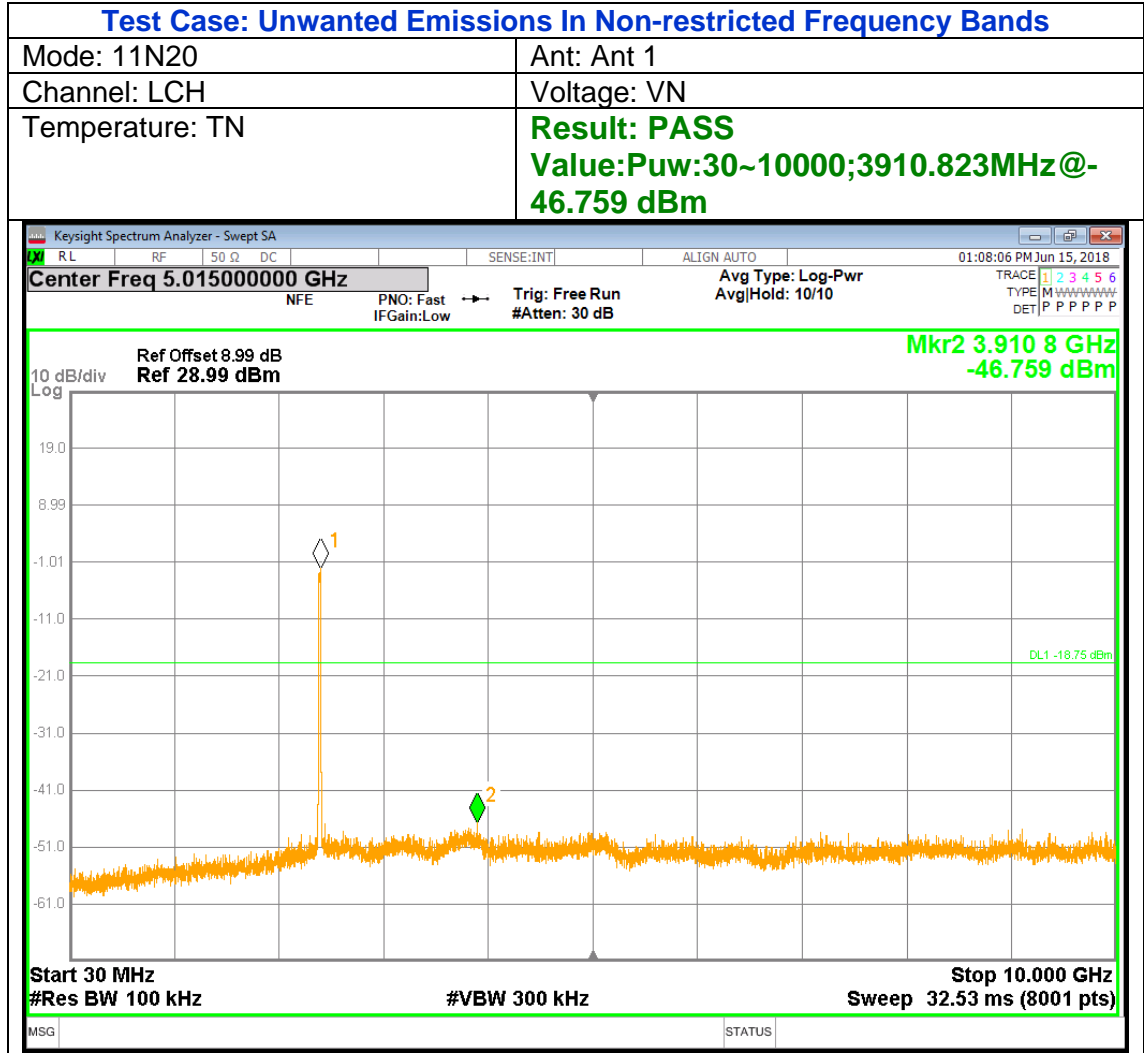




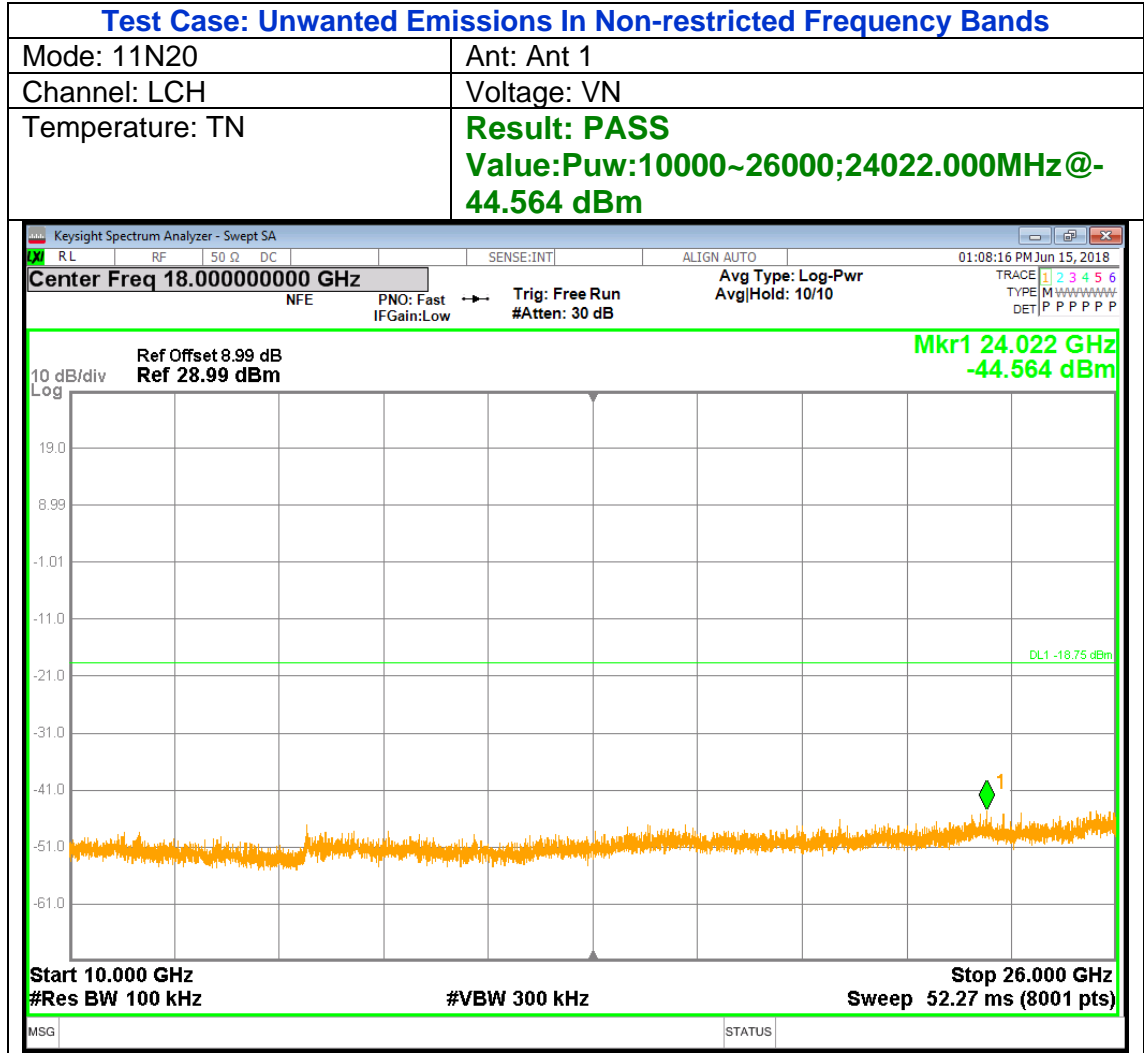


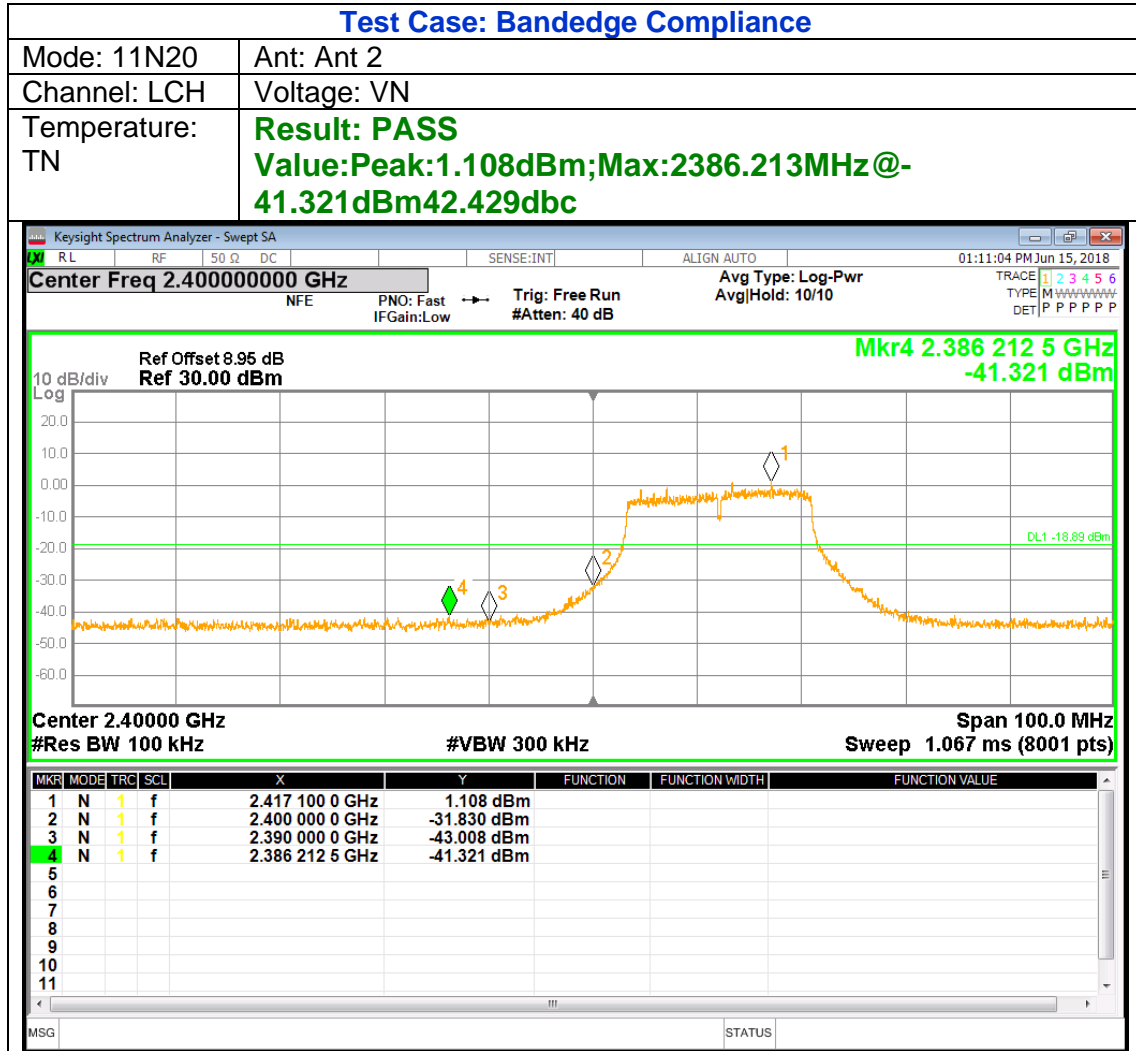


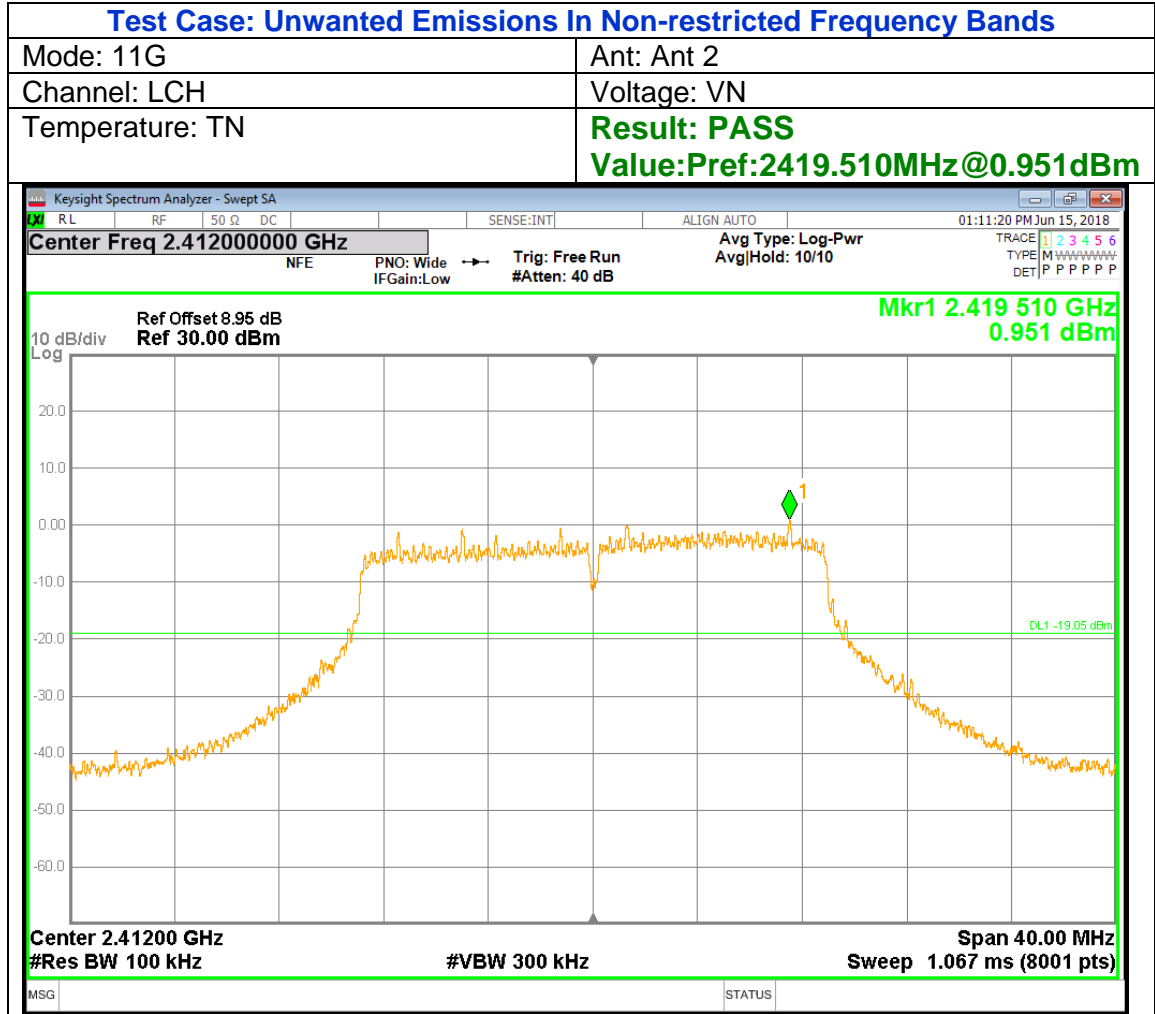


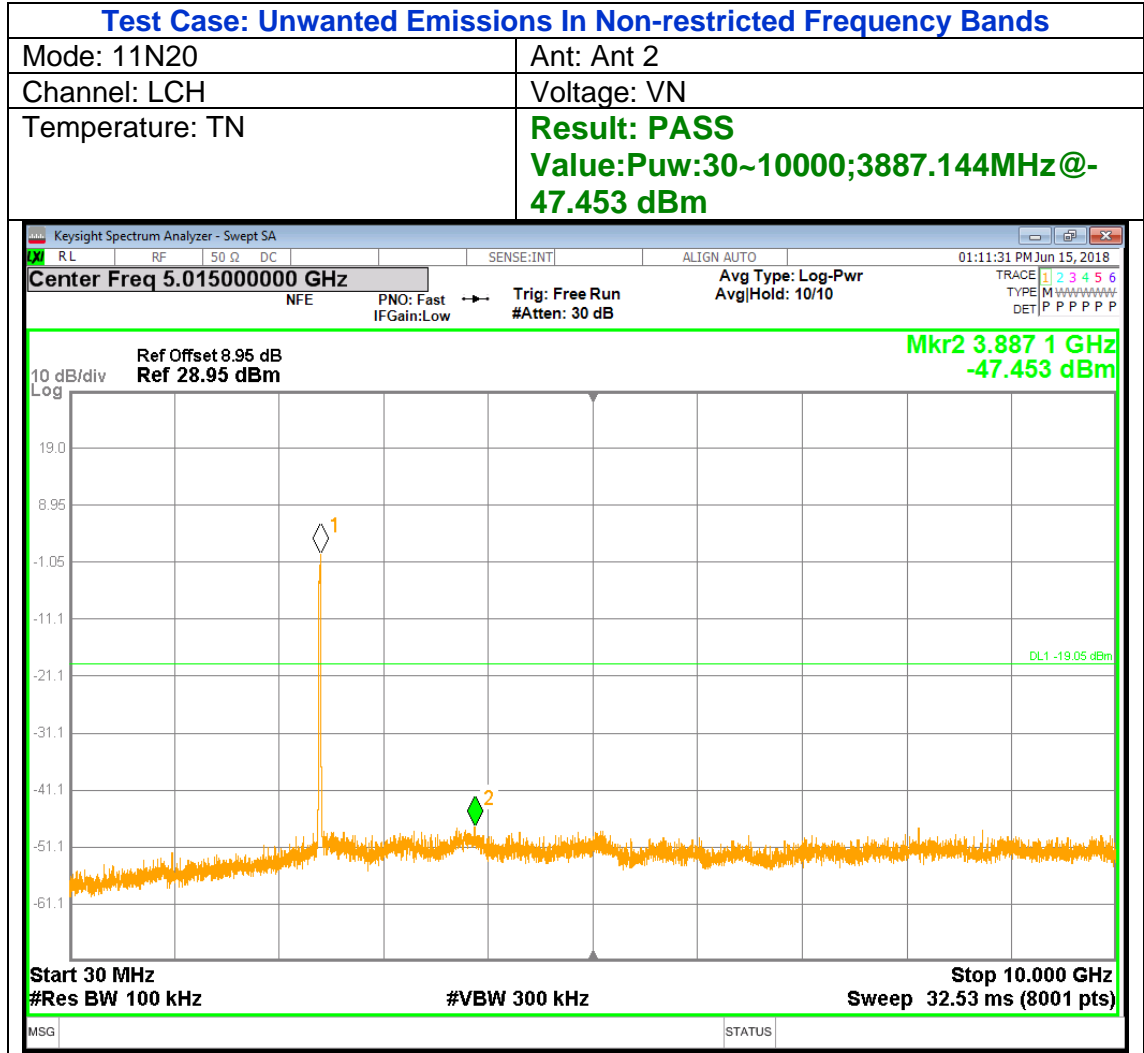


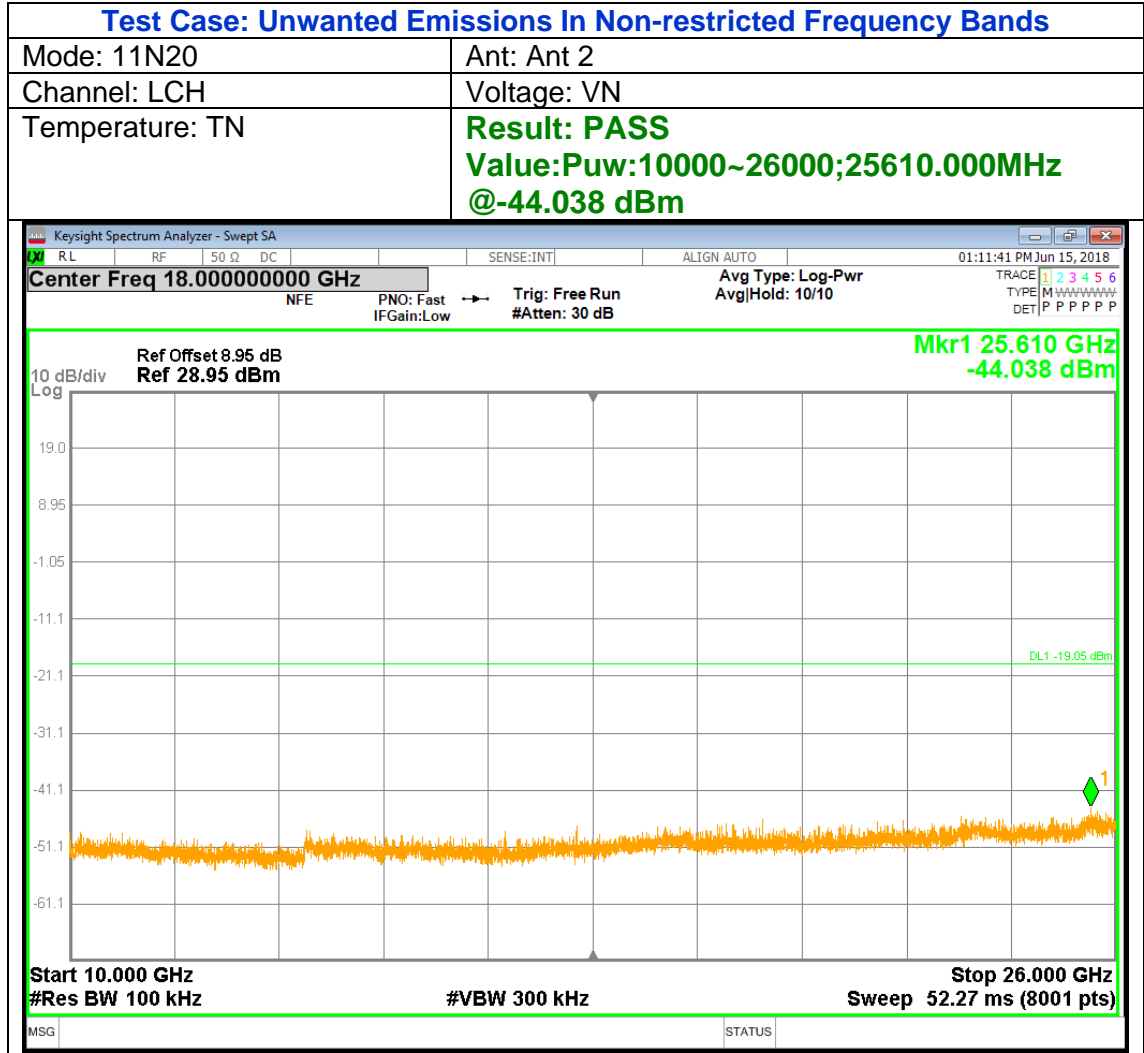








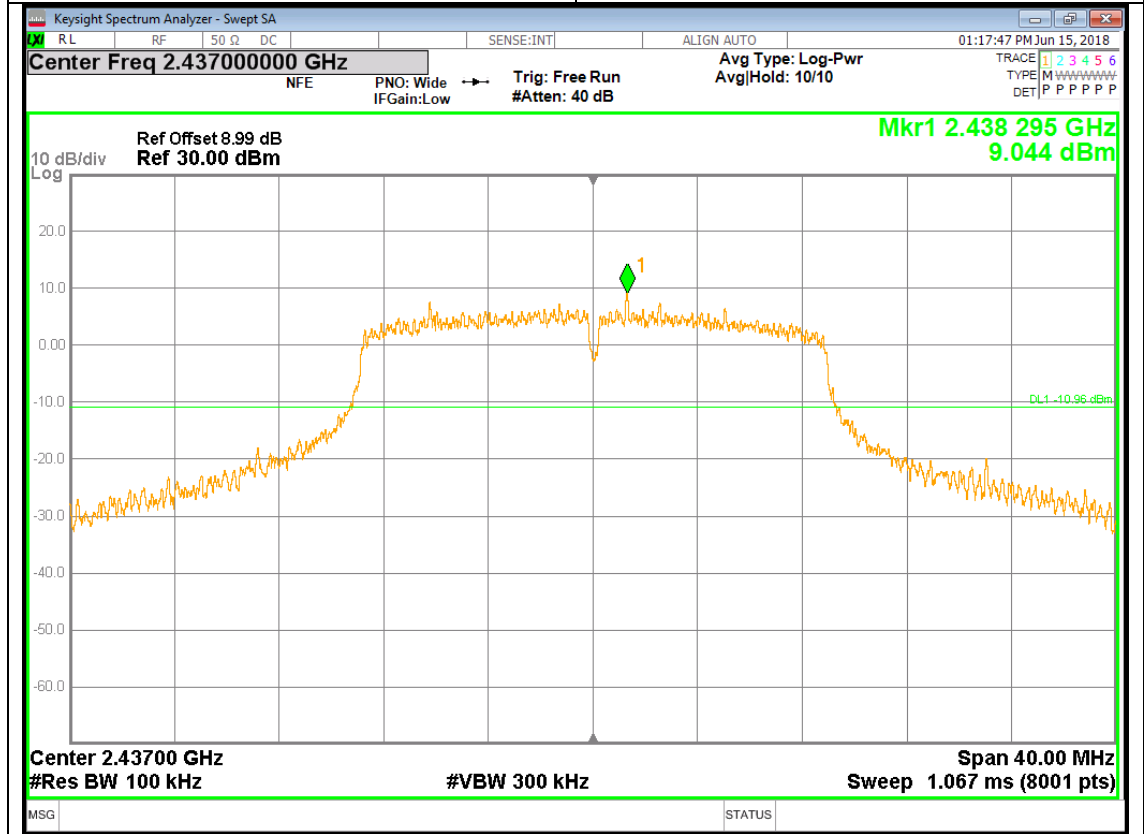


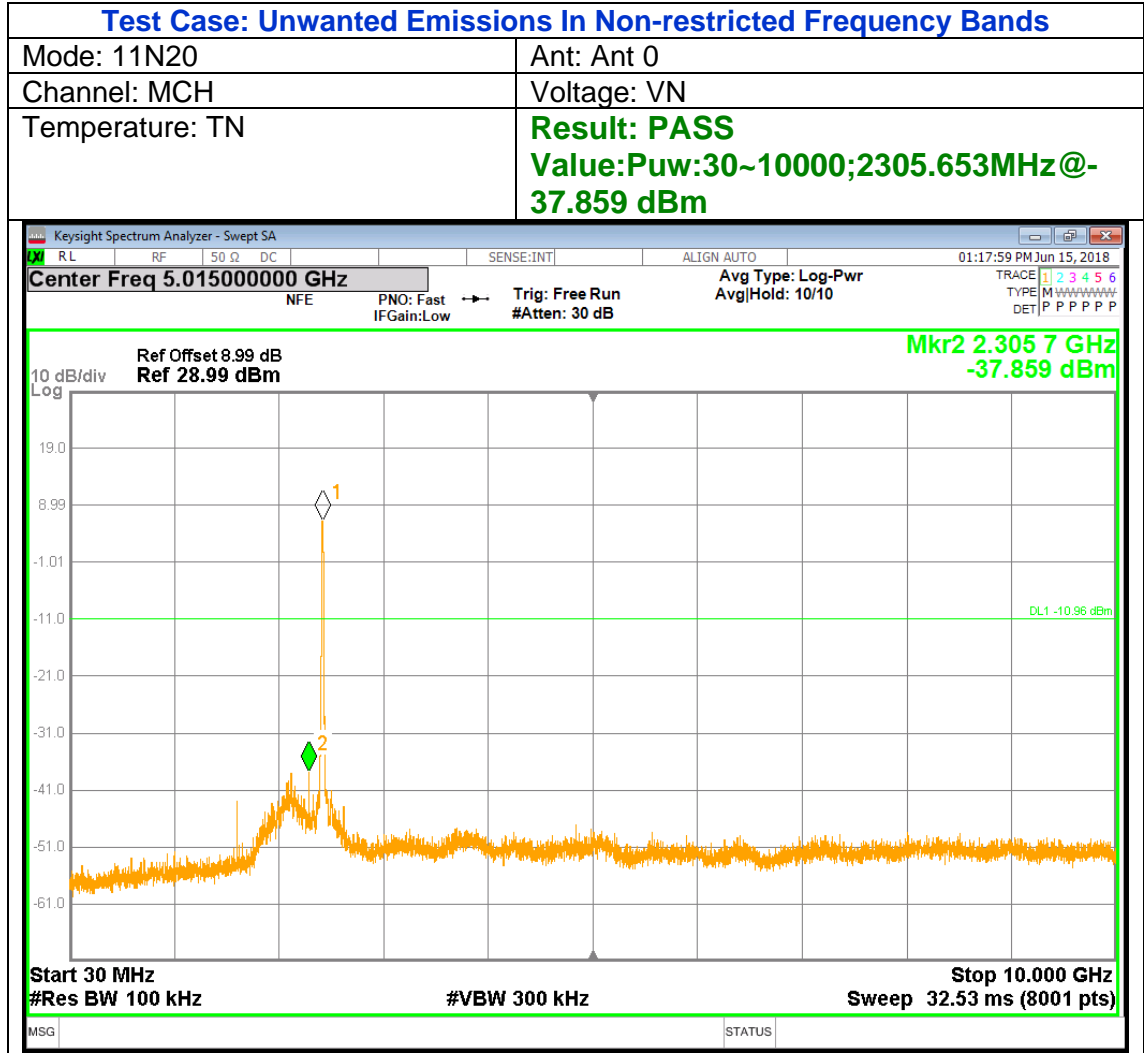


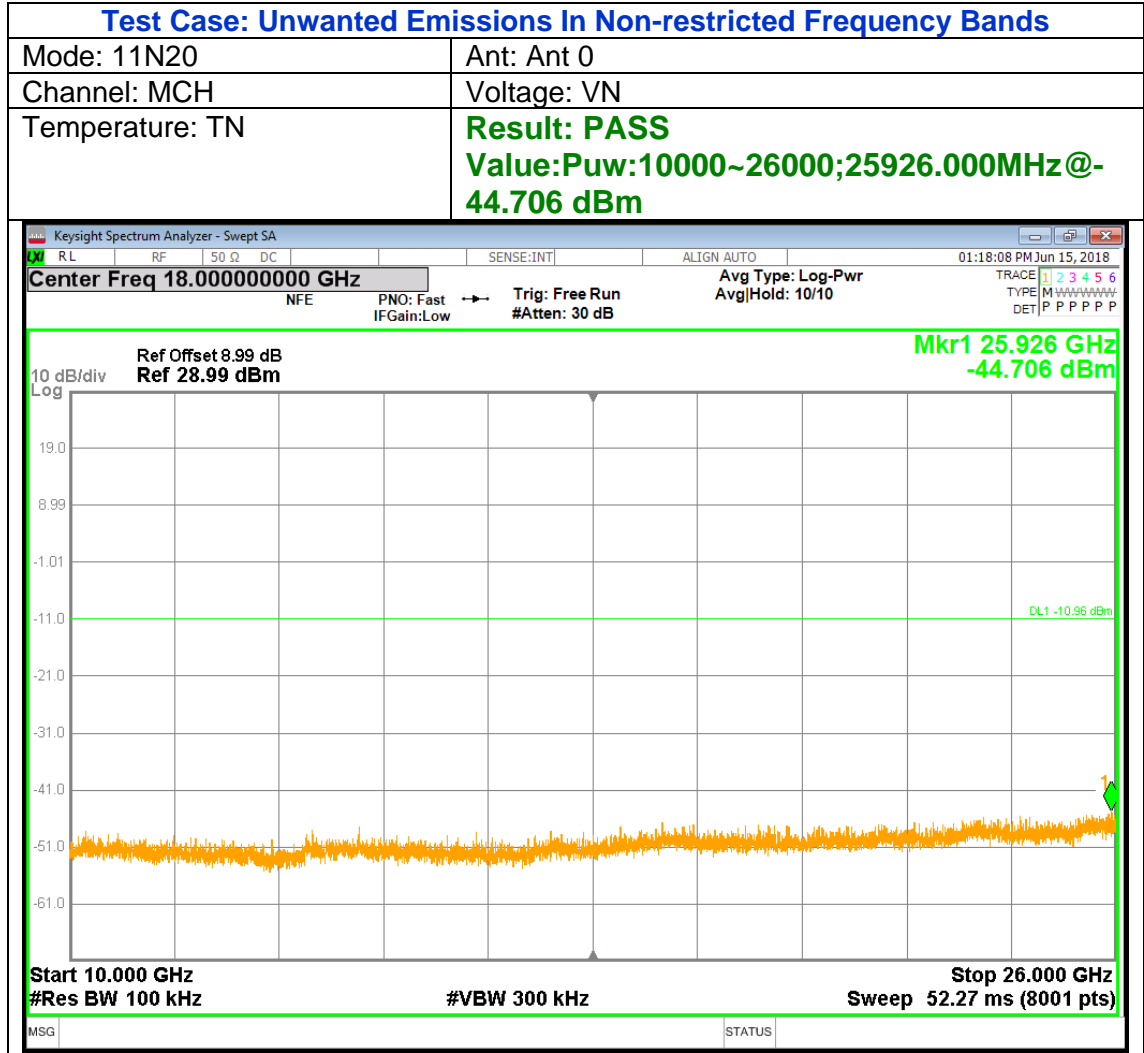


**Middle Channel**

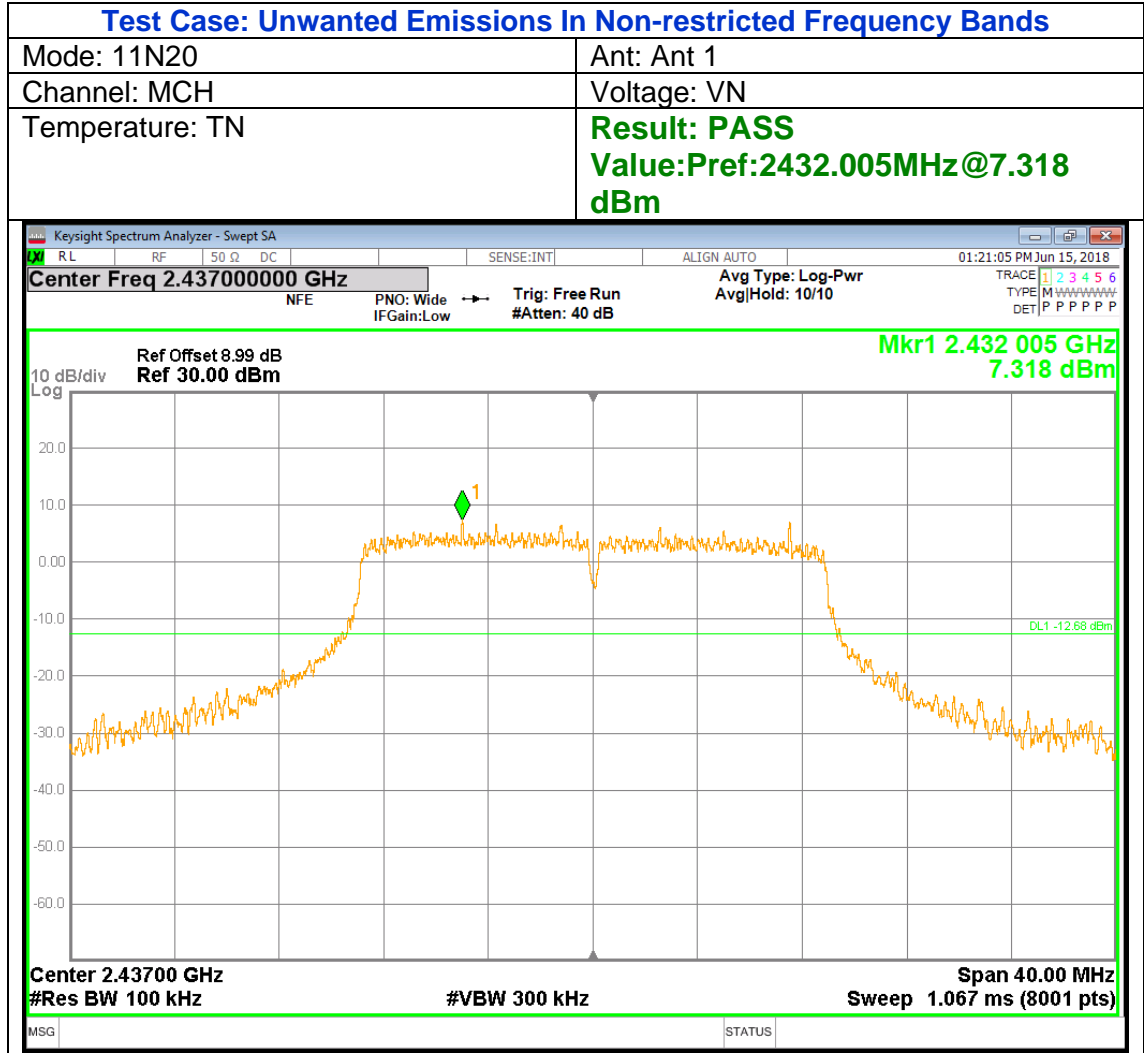
<b>Test Case: Unwanted Emissions In Non-restricted Frequency Bands</b>	
Mode: 11N20	Ant: Ant 0
Channel: MCH	Voltage: VN
Temperature: TN	<b>Result: PASS</b> <b>Value: Pref: 2438.295MHz @ 9.044 dBm</b>

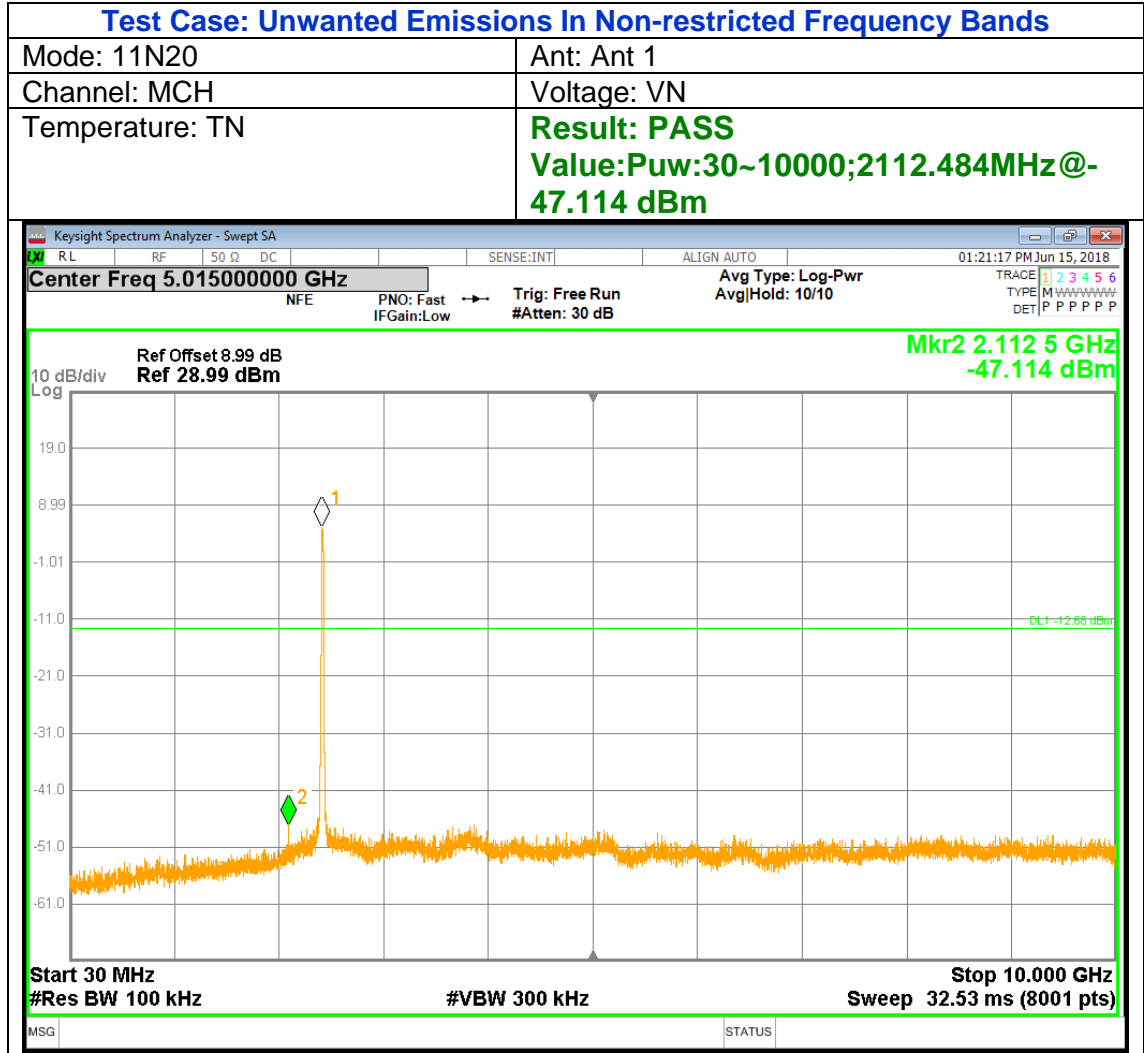


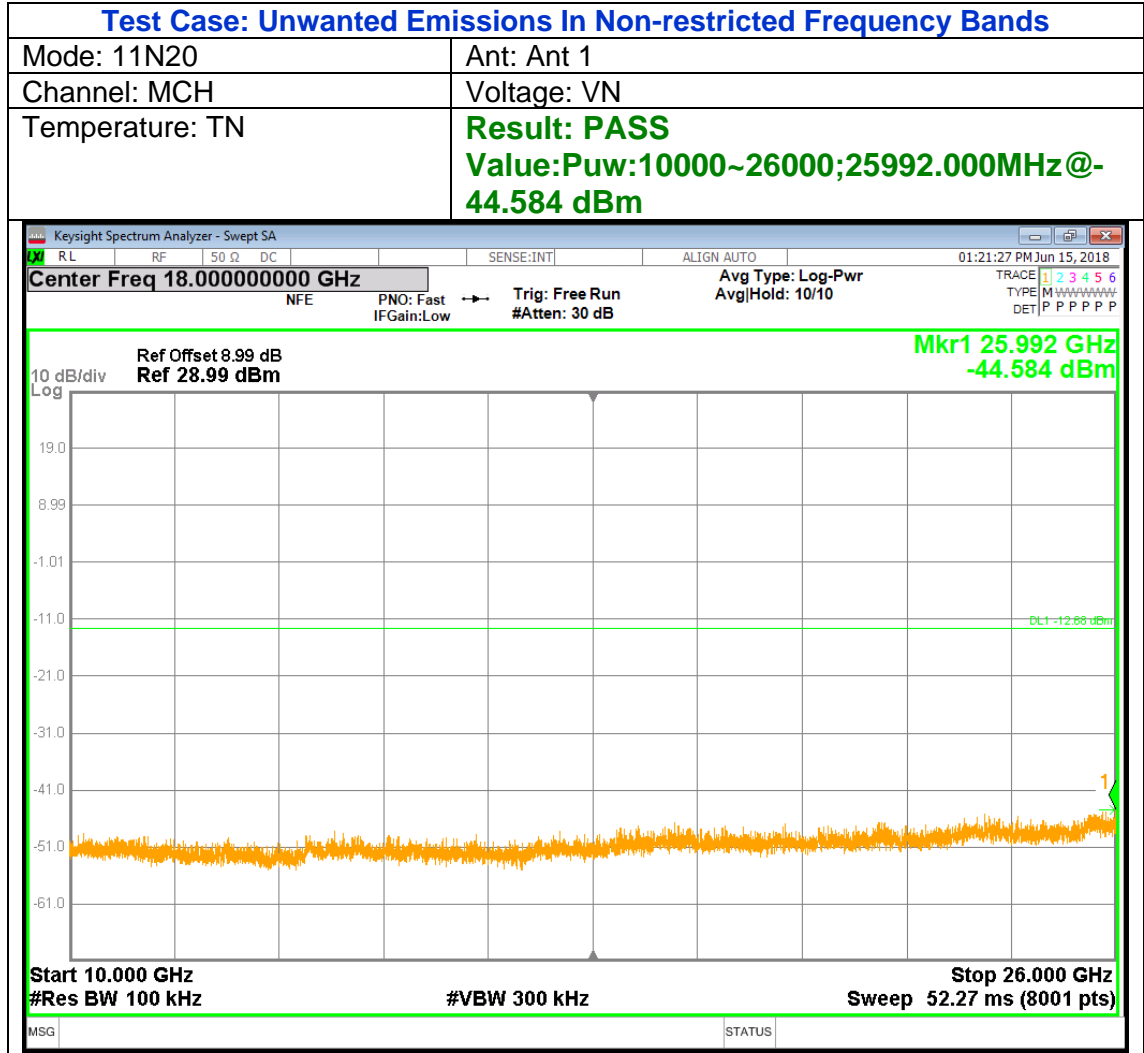


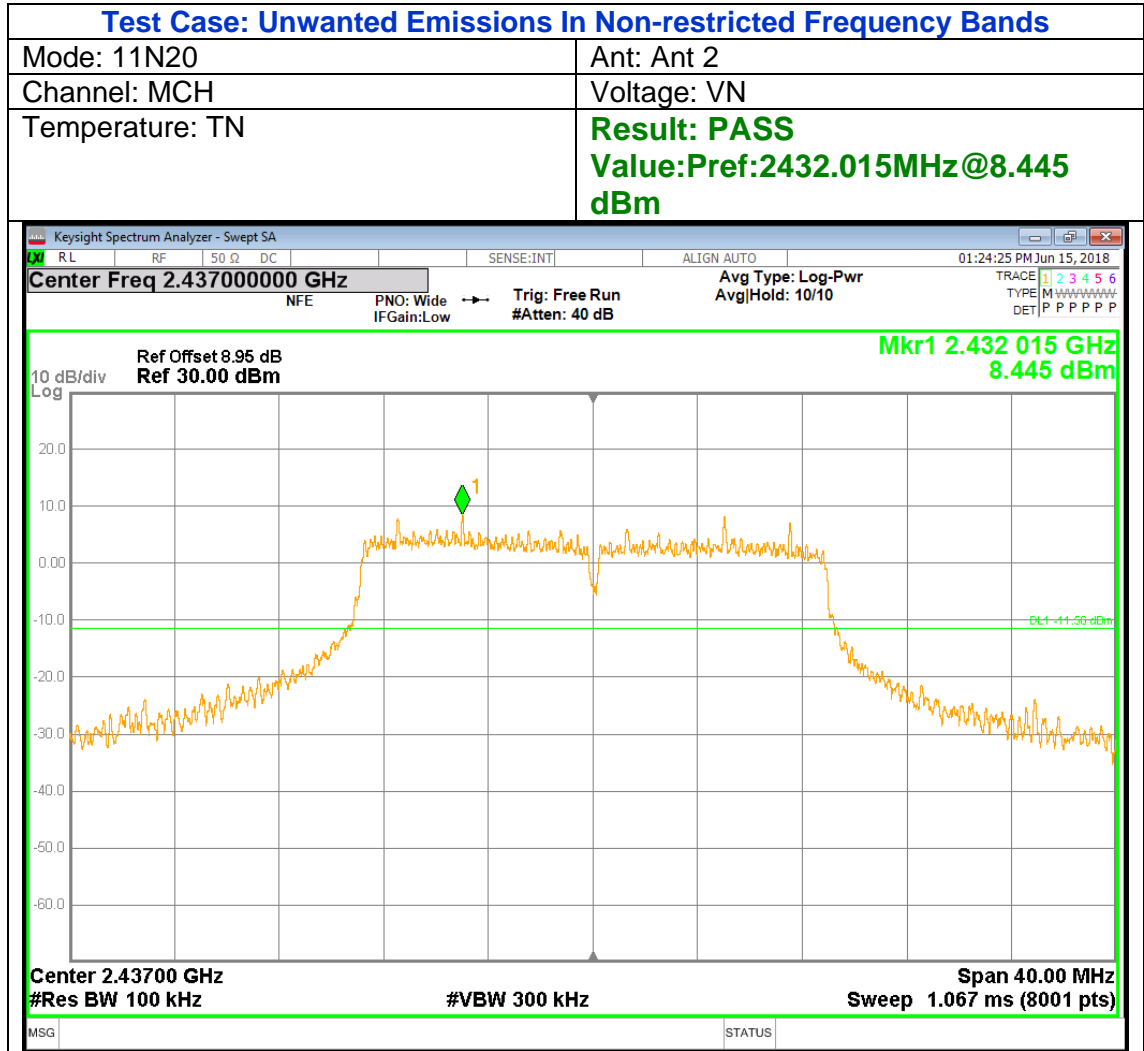


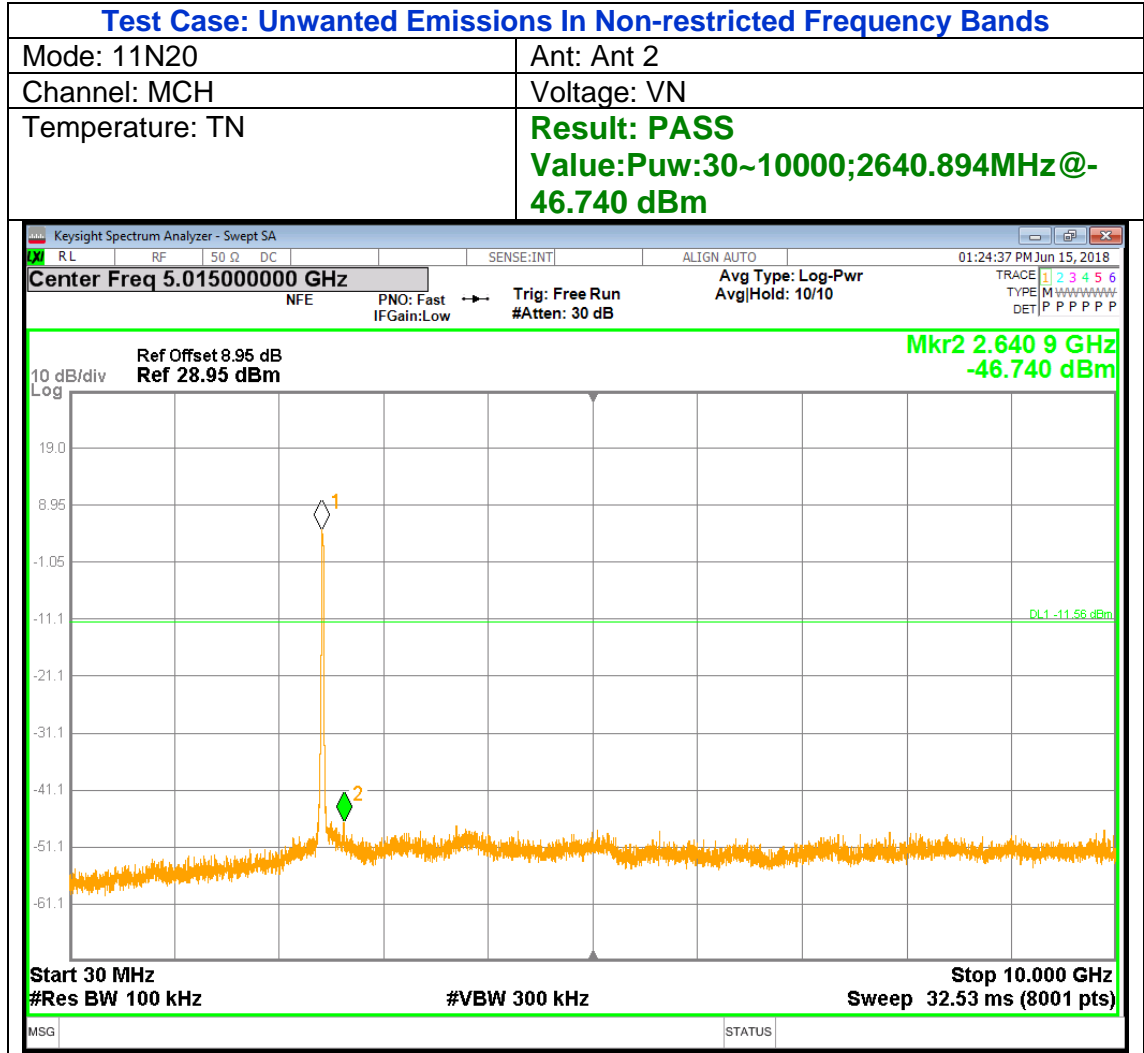


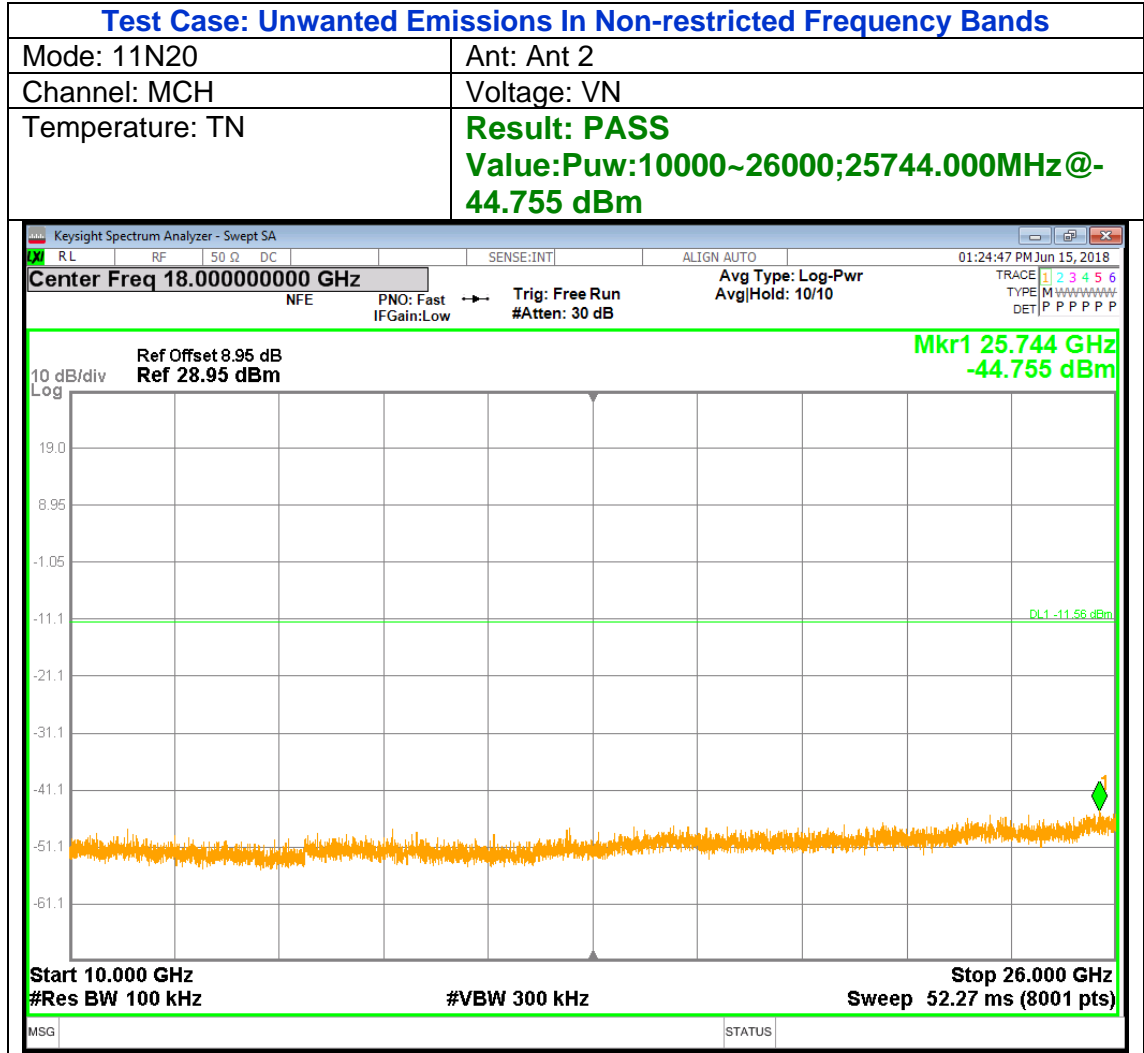








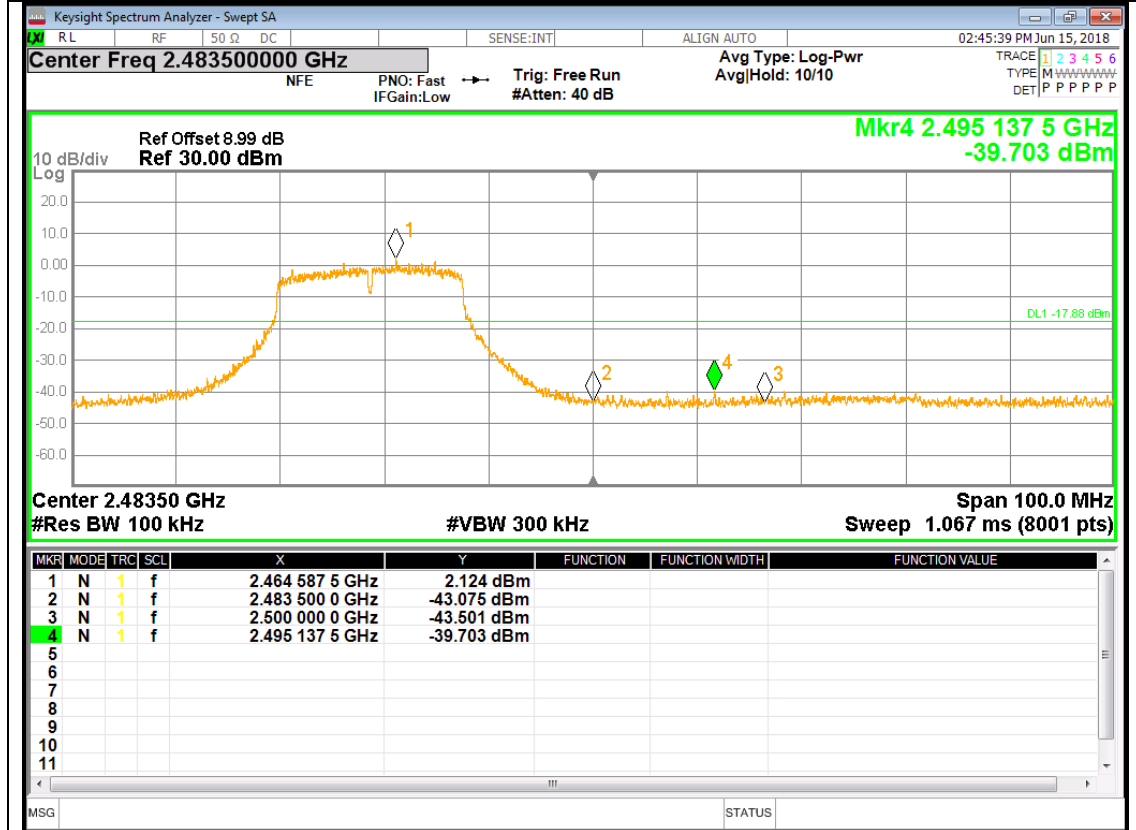






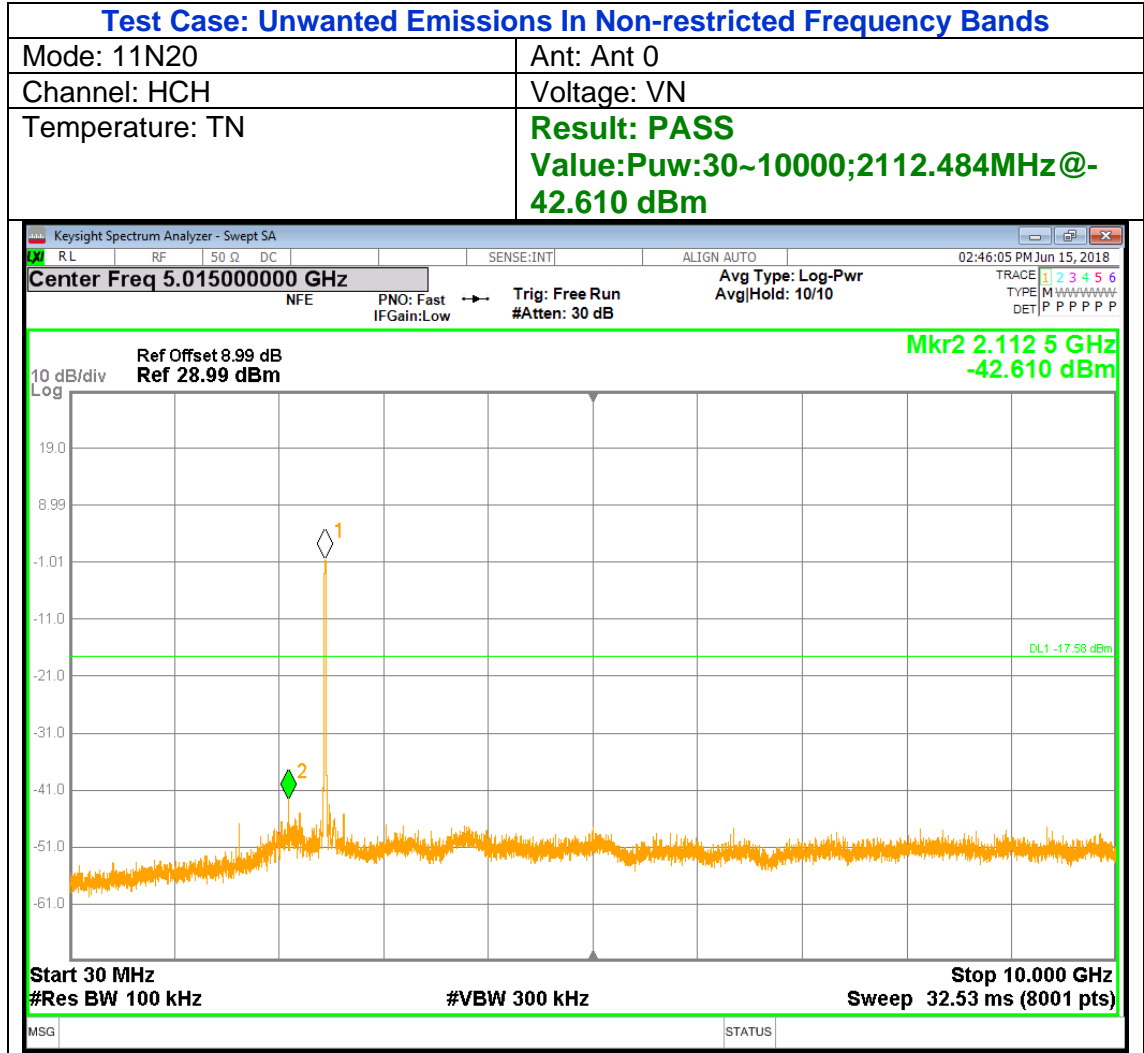
**High Channel**

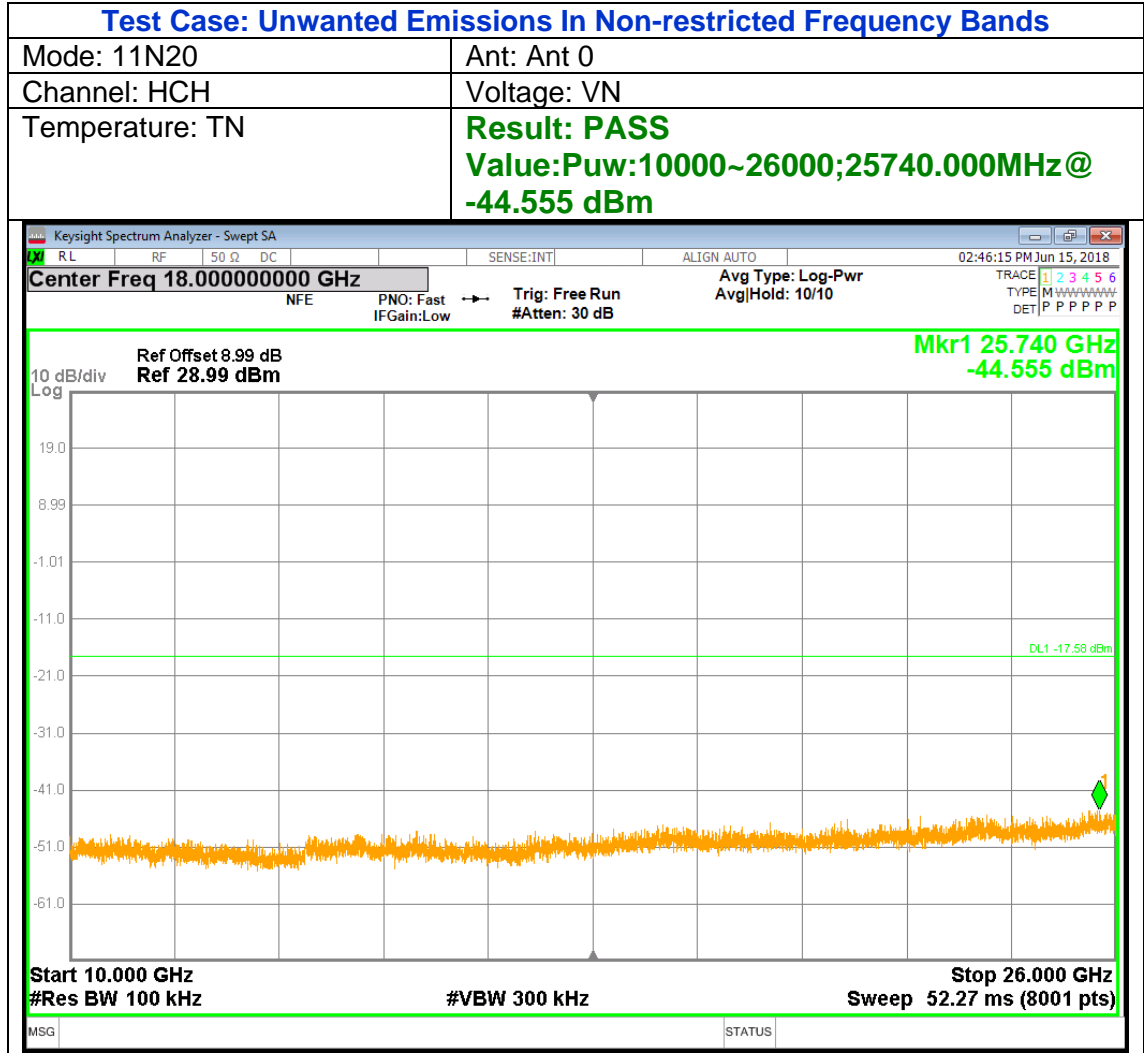
<b>Test Case: Bandedge Compliance</b>	
Mode: 11N20	Ant: Ant 0
Channel: HCH	Voltage: VN
Temperature: TN	<b>Result: PASS</b> <b>Value: Peak: 2.124dBm; Max: 2495.138MHz @ -39.703dBm 41.827dbc</b>

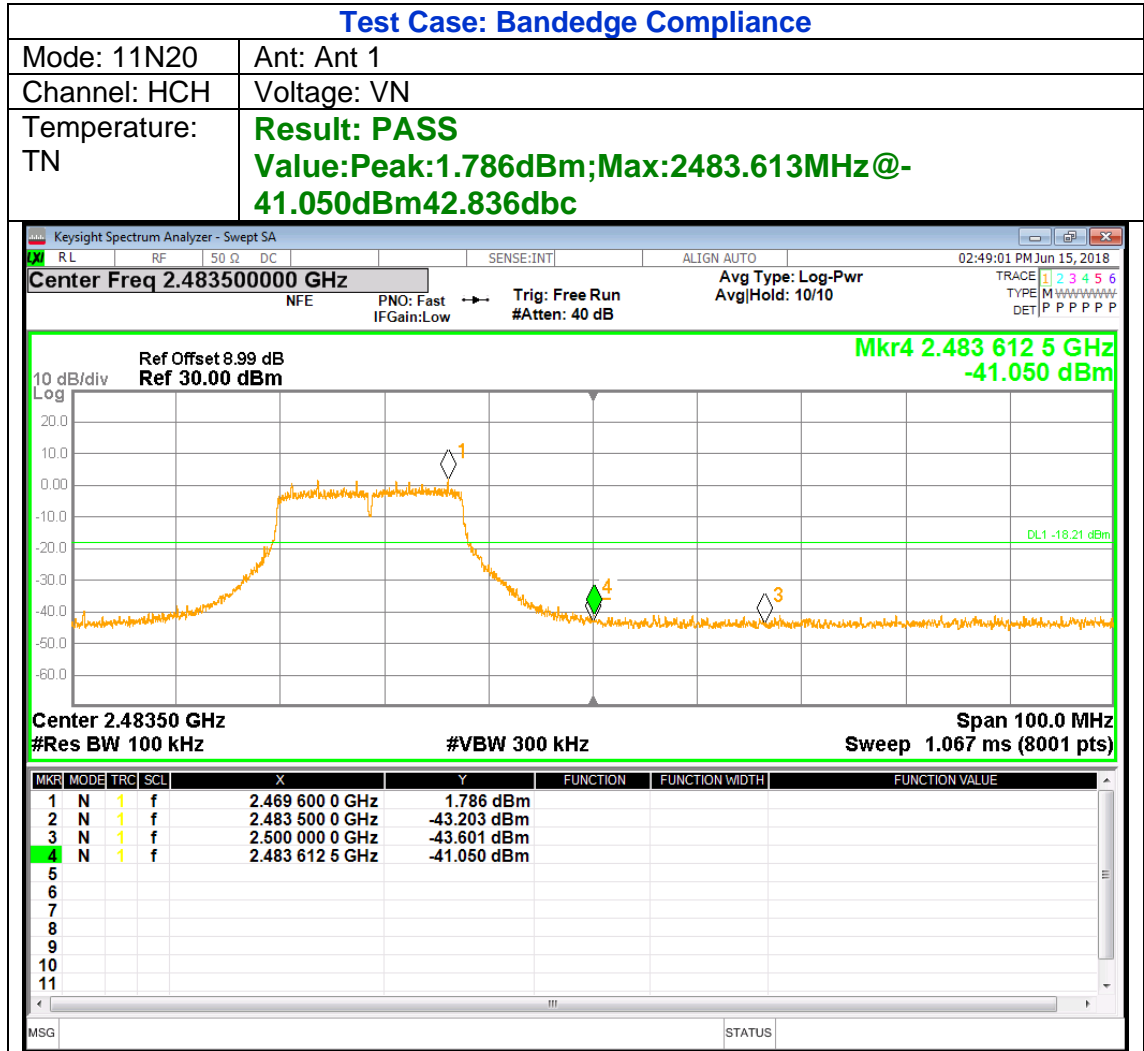


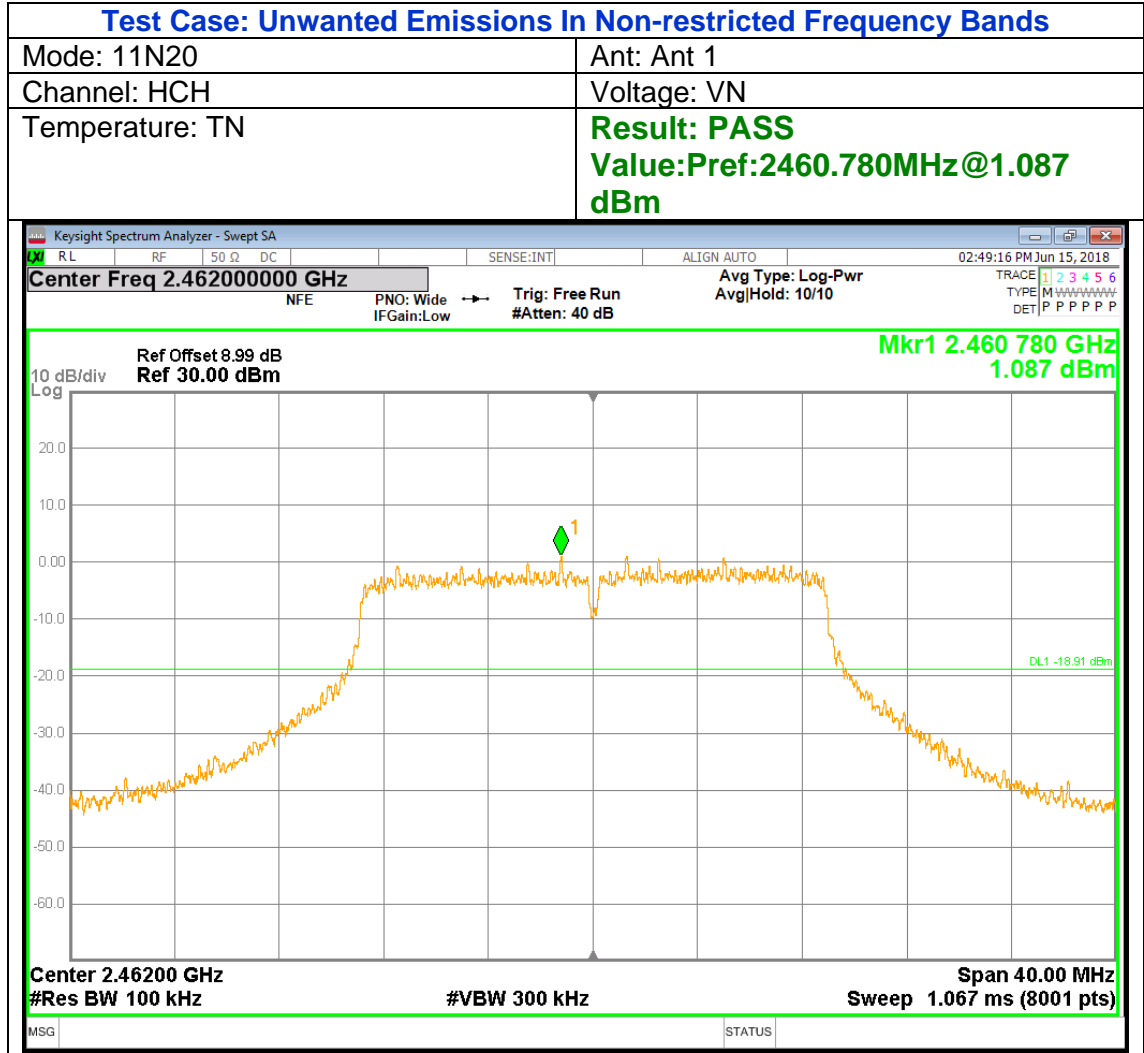


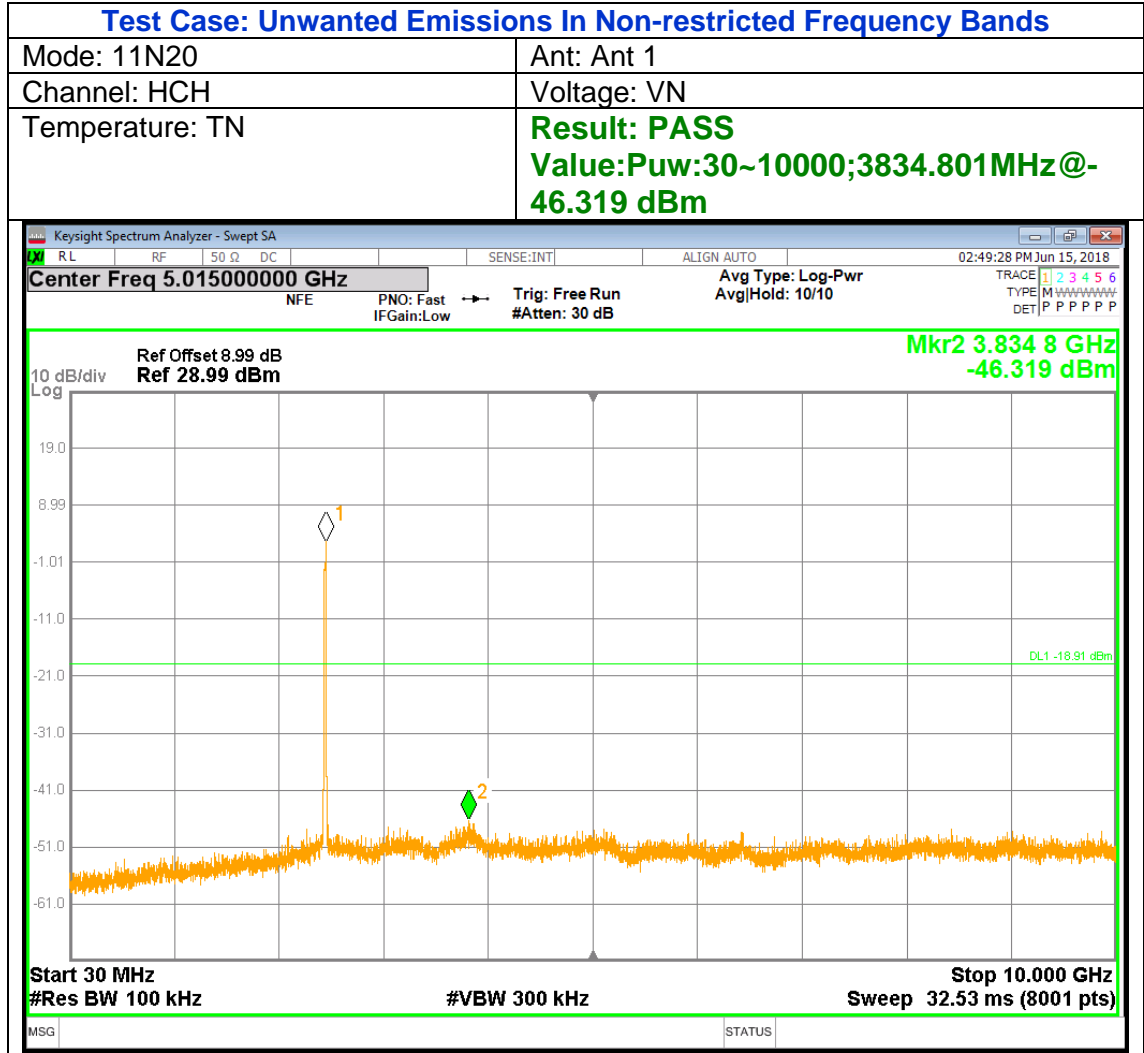


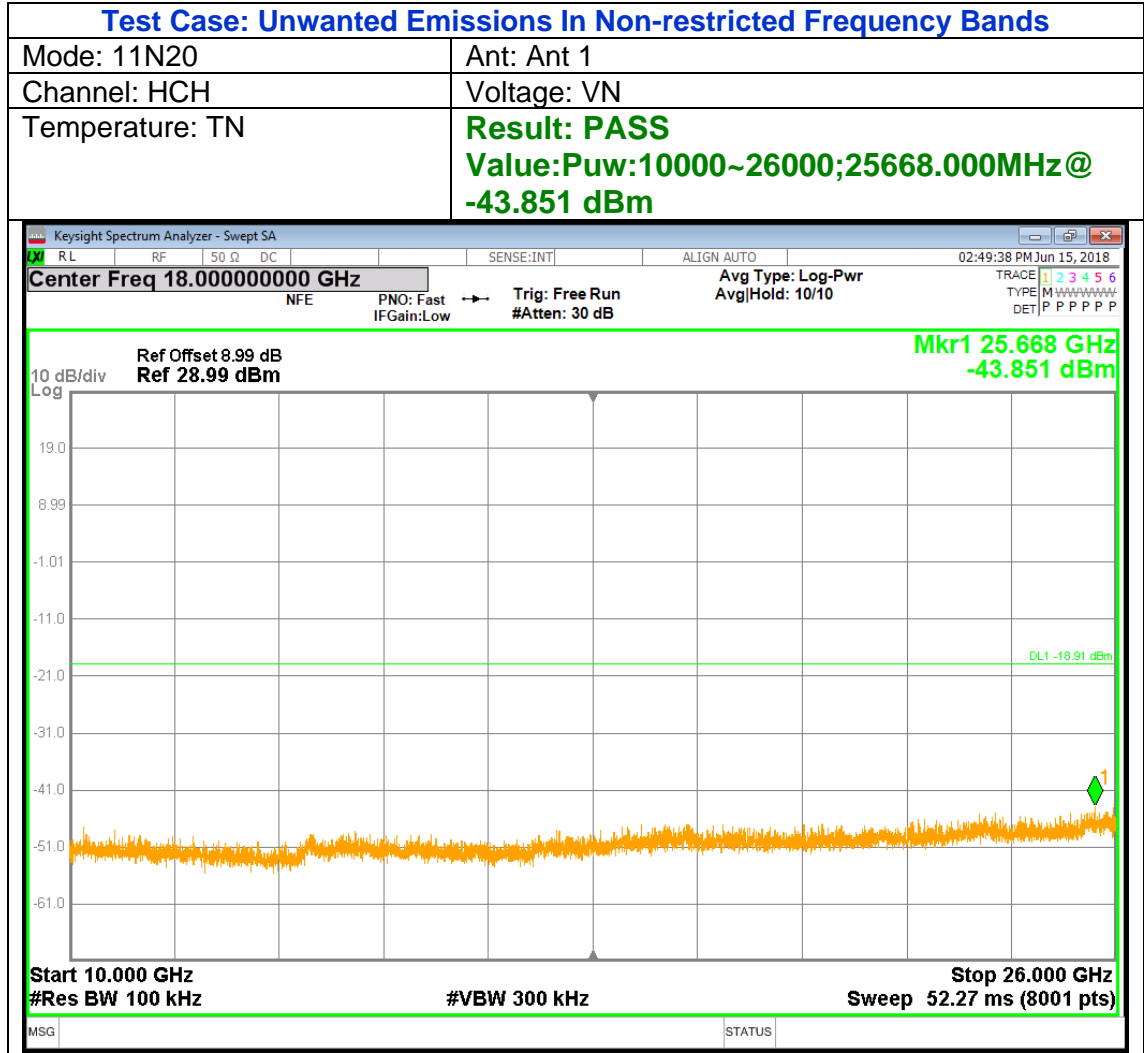


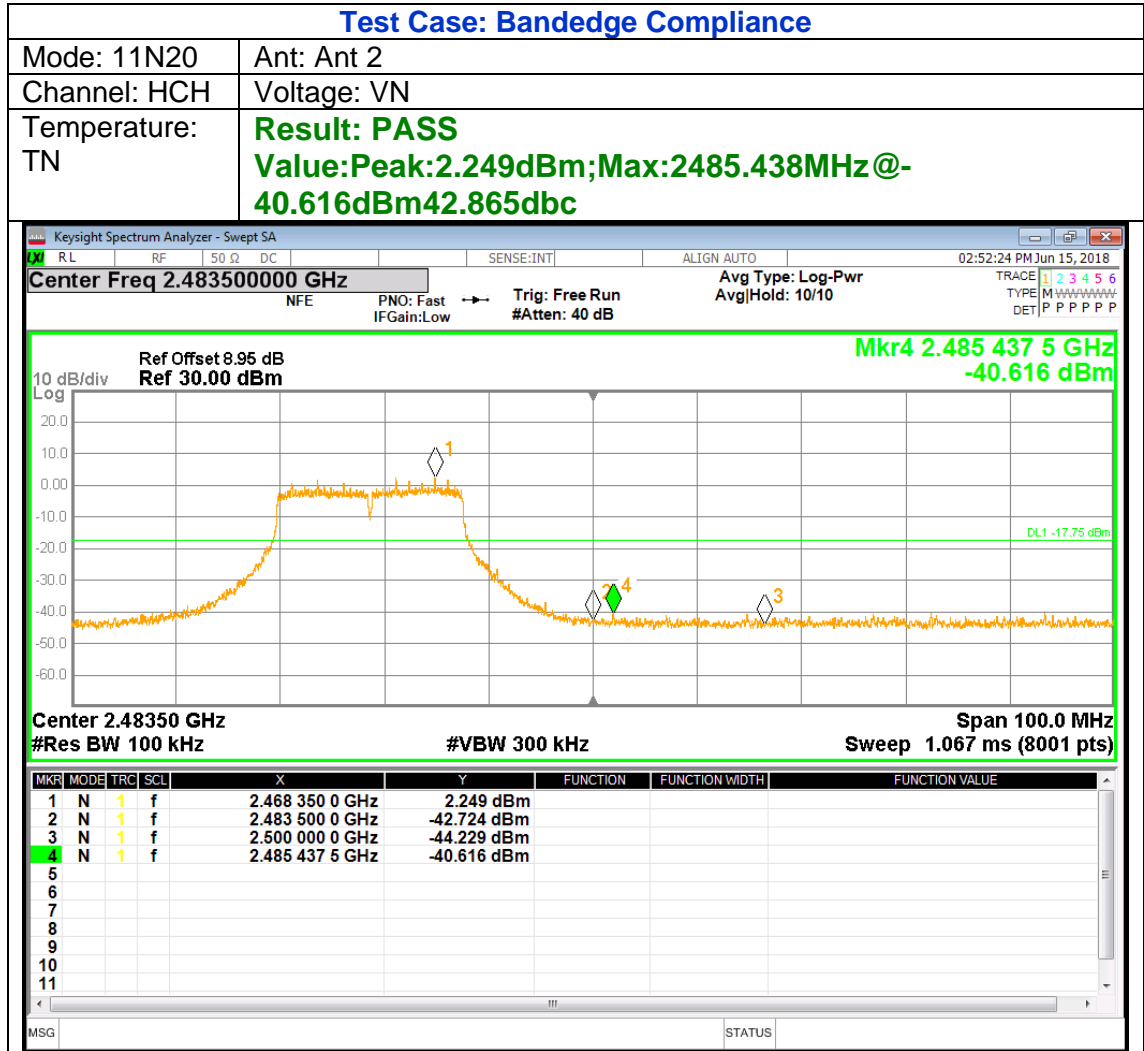


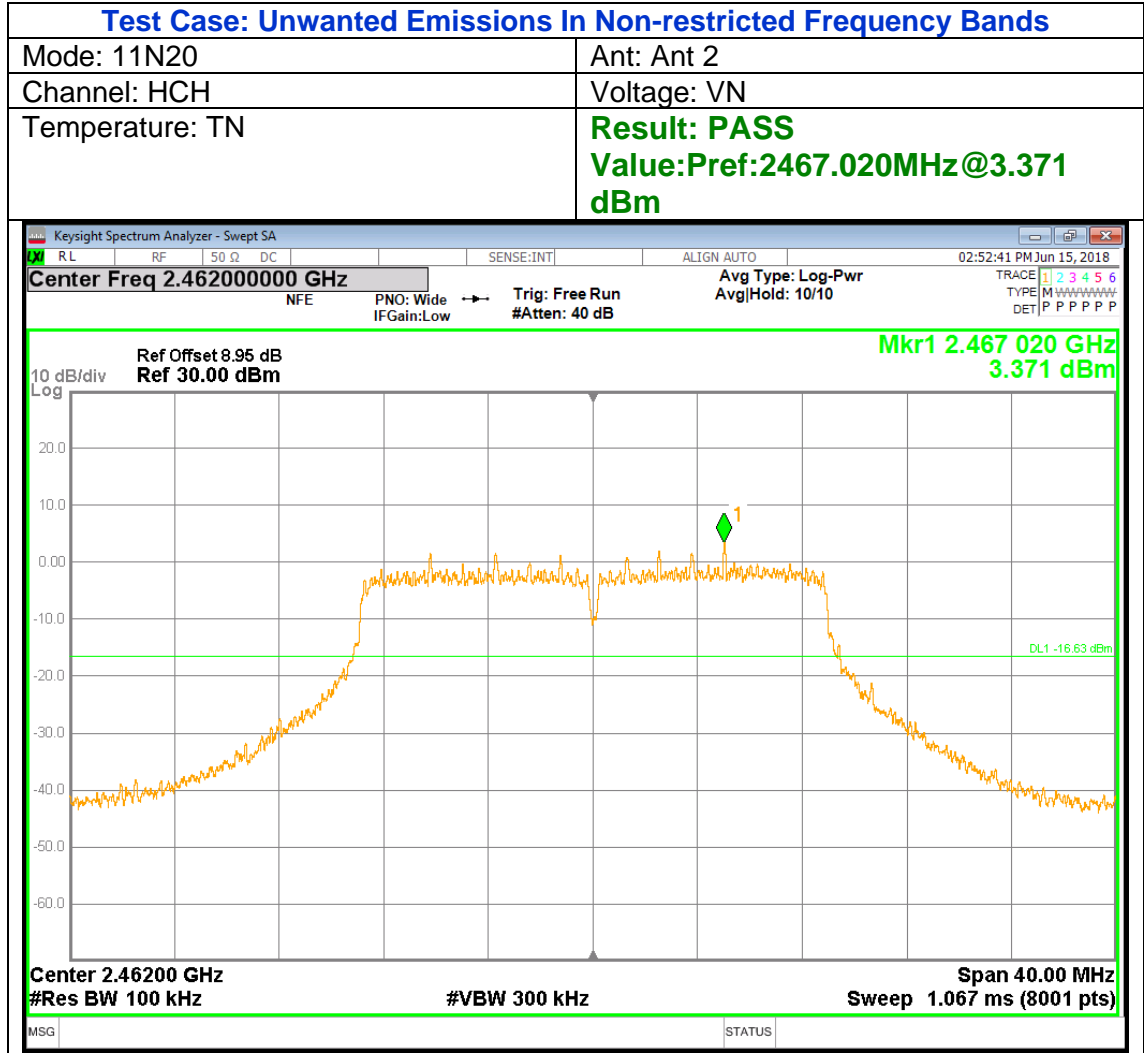




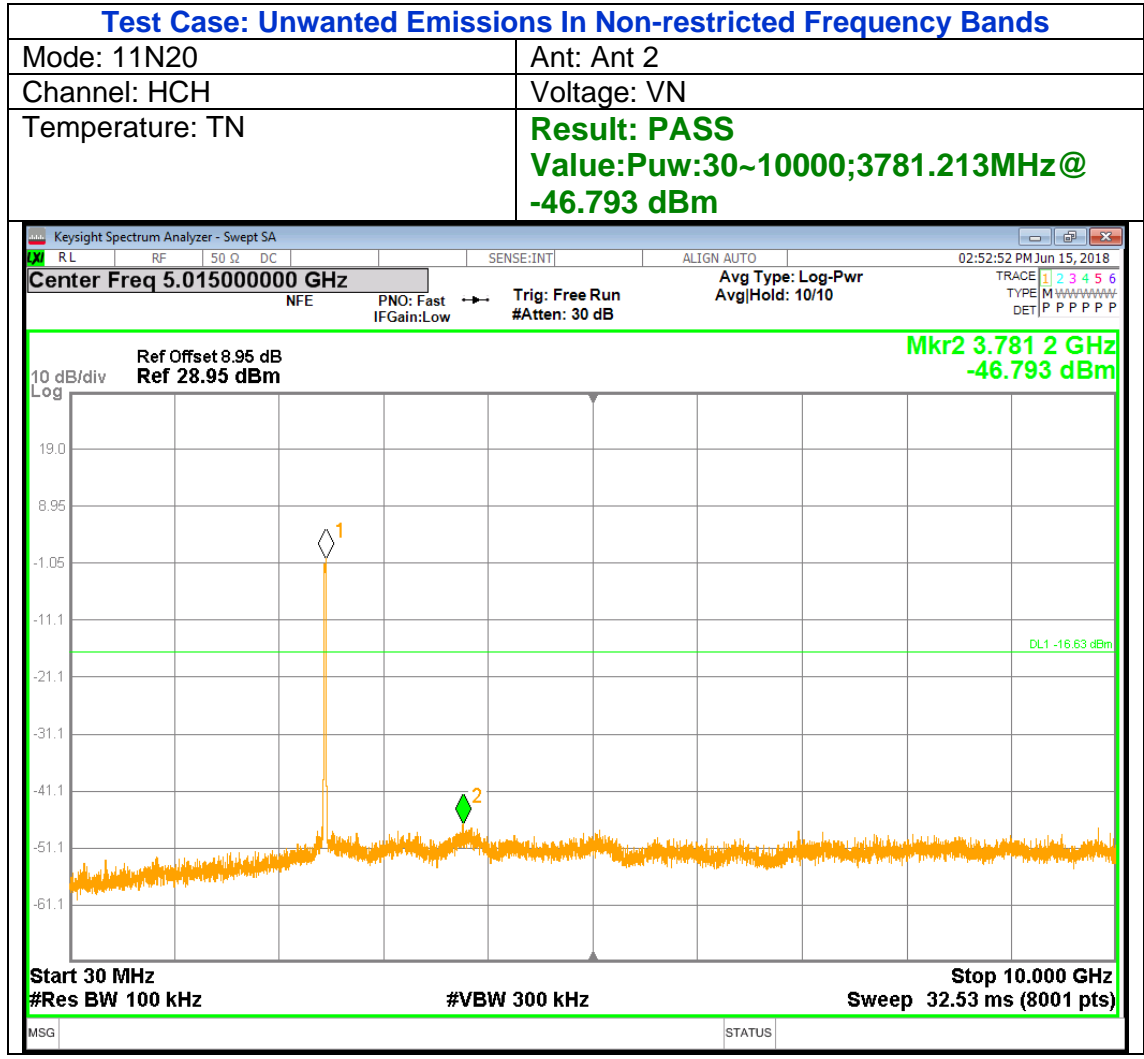


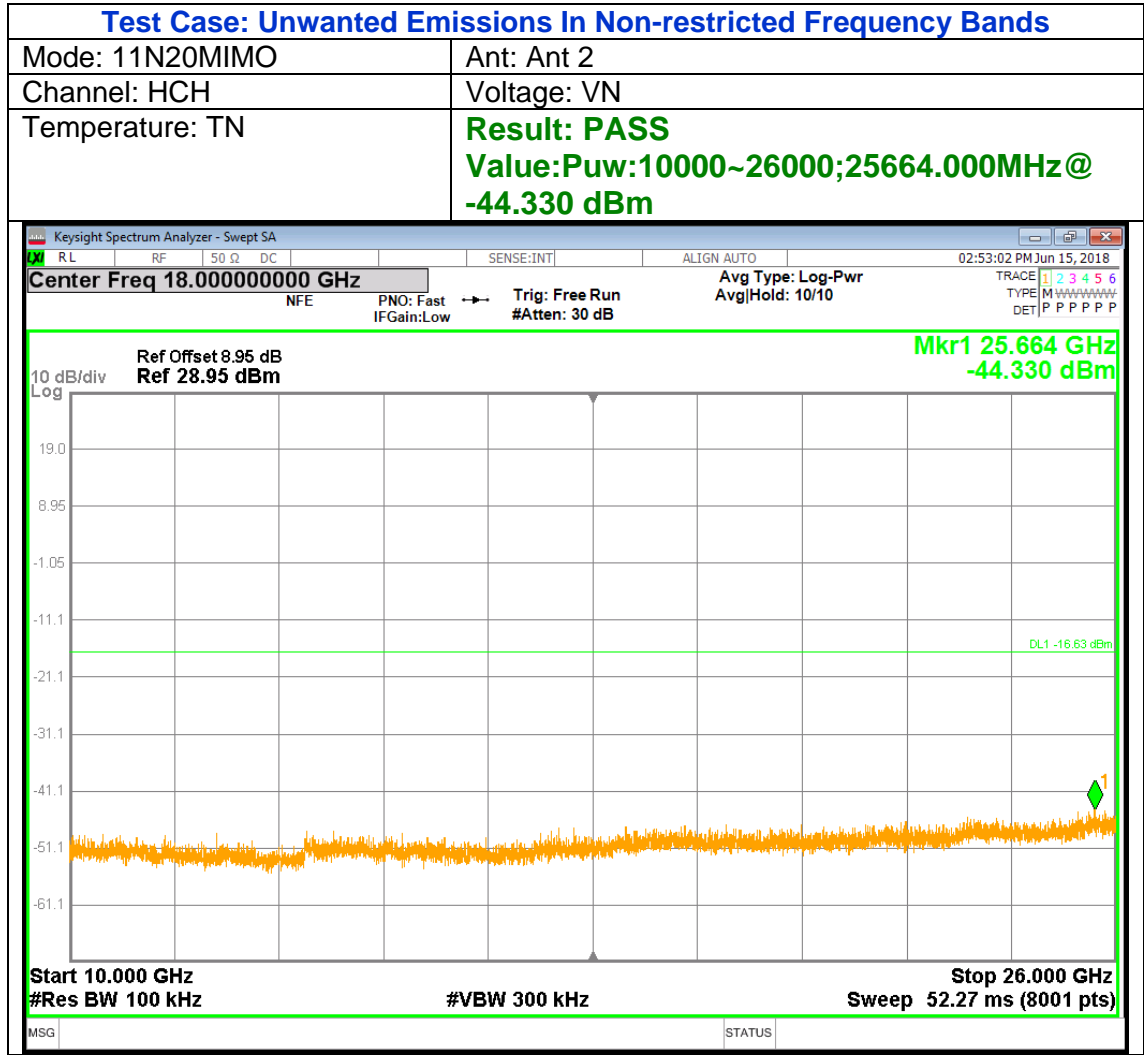








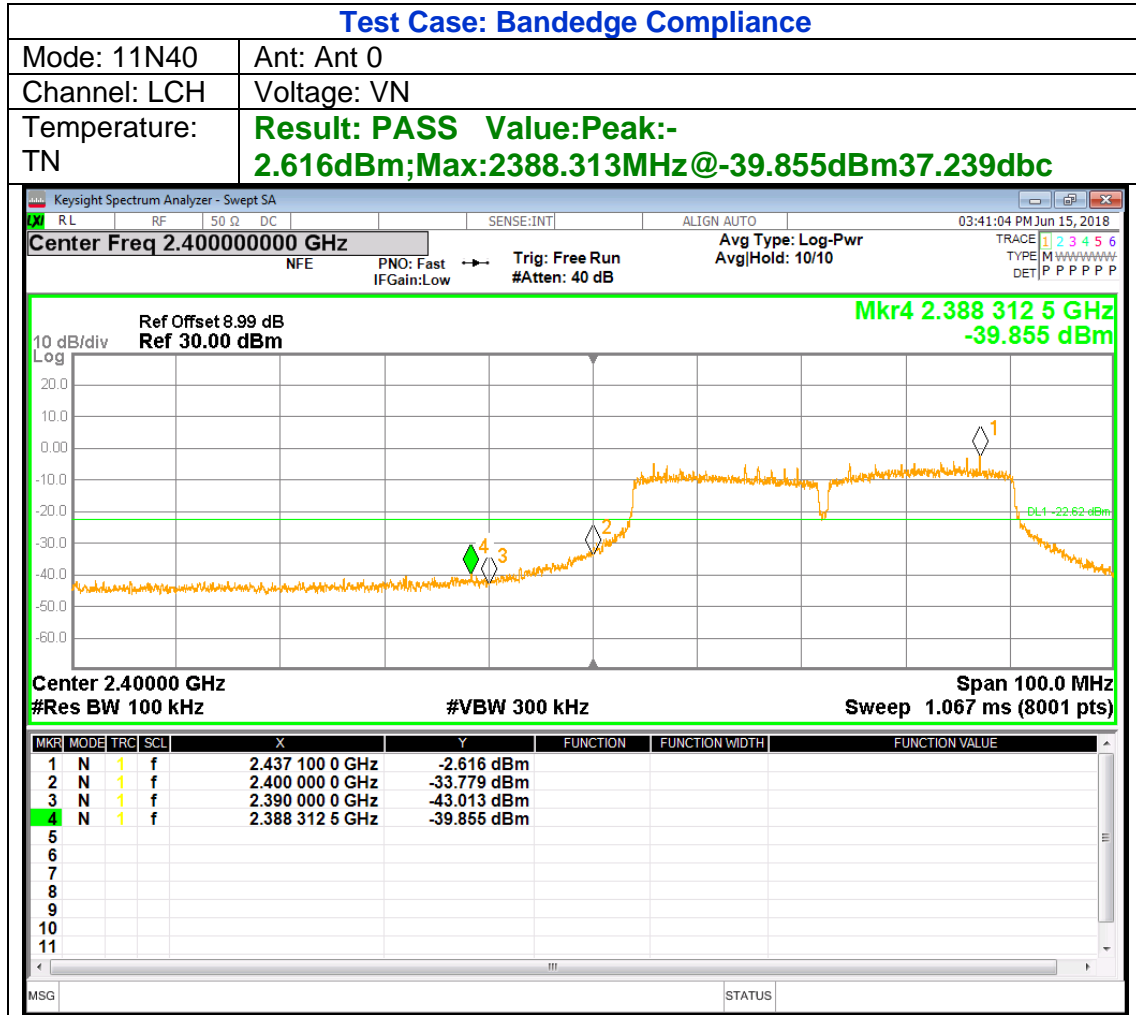


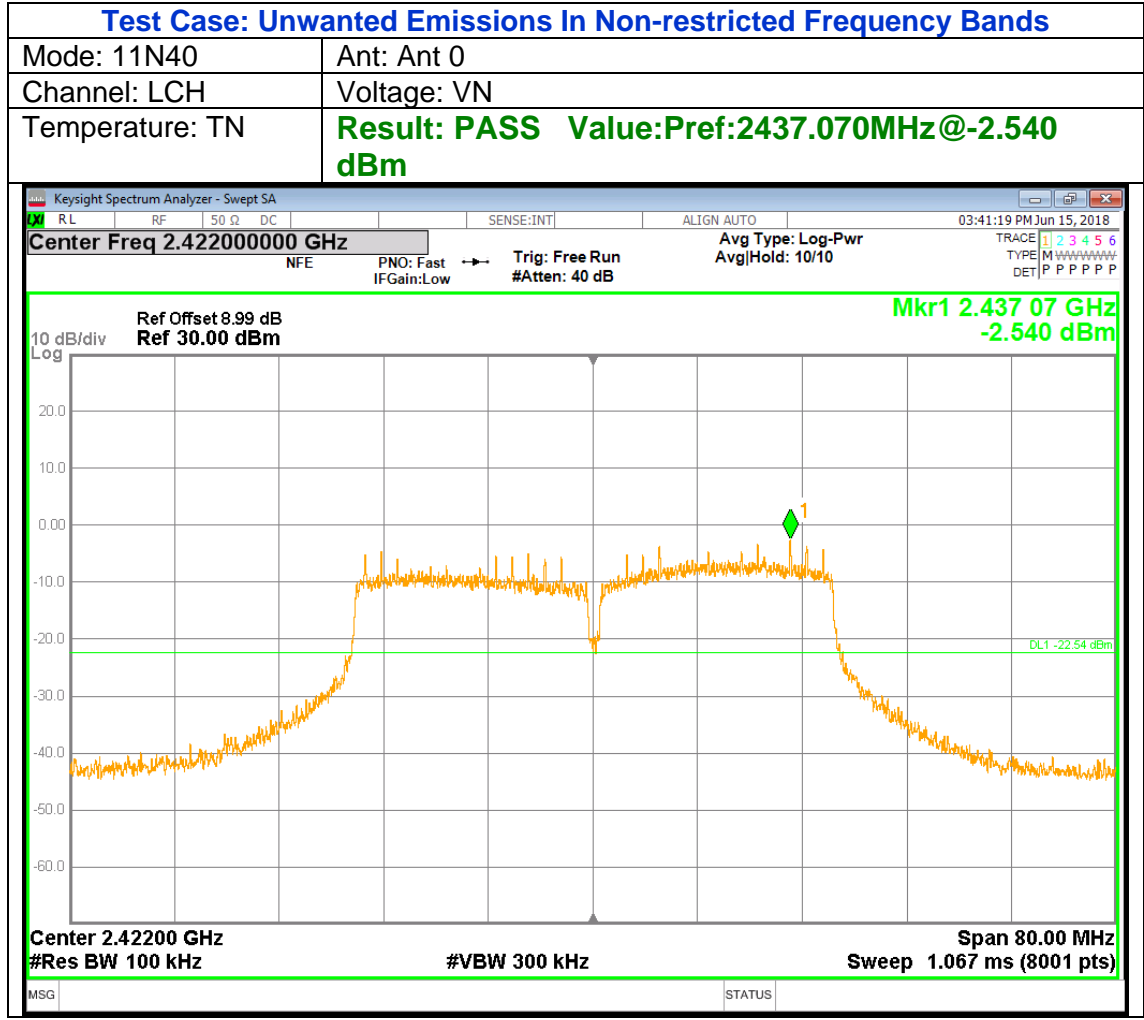




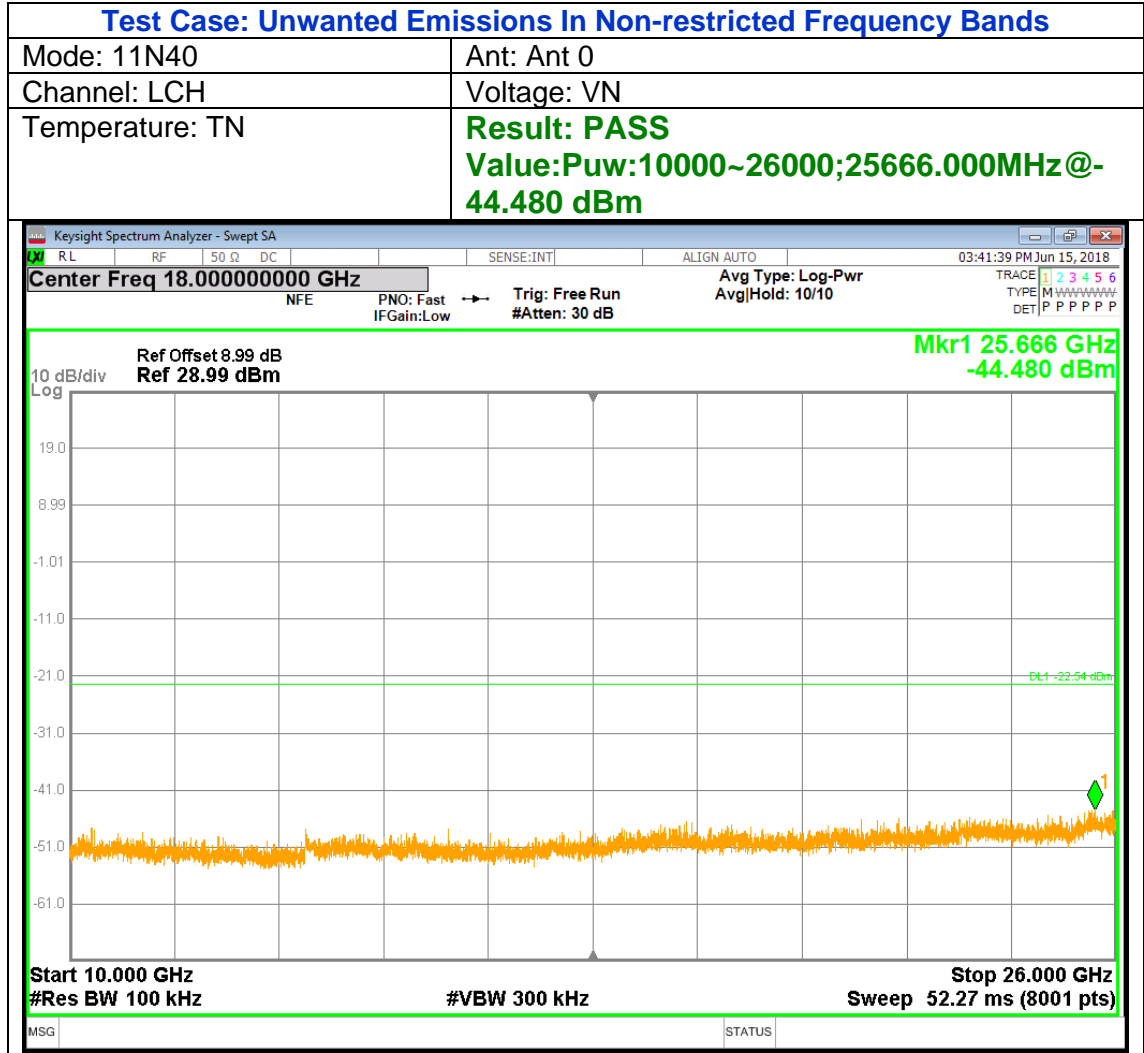
7.5.7. 802.11n40 MIMO MODE

Low Channel

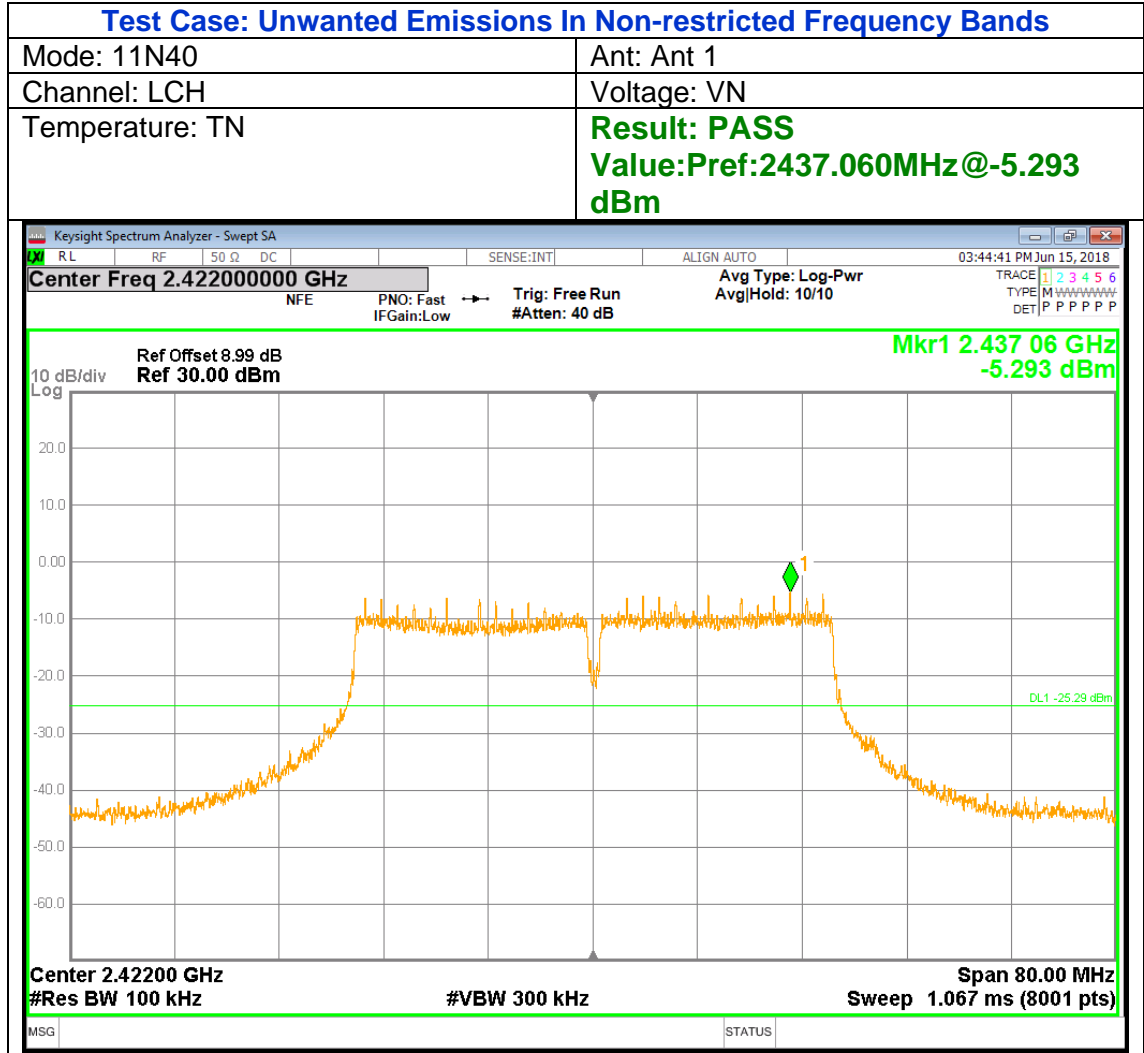




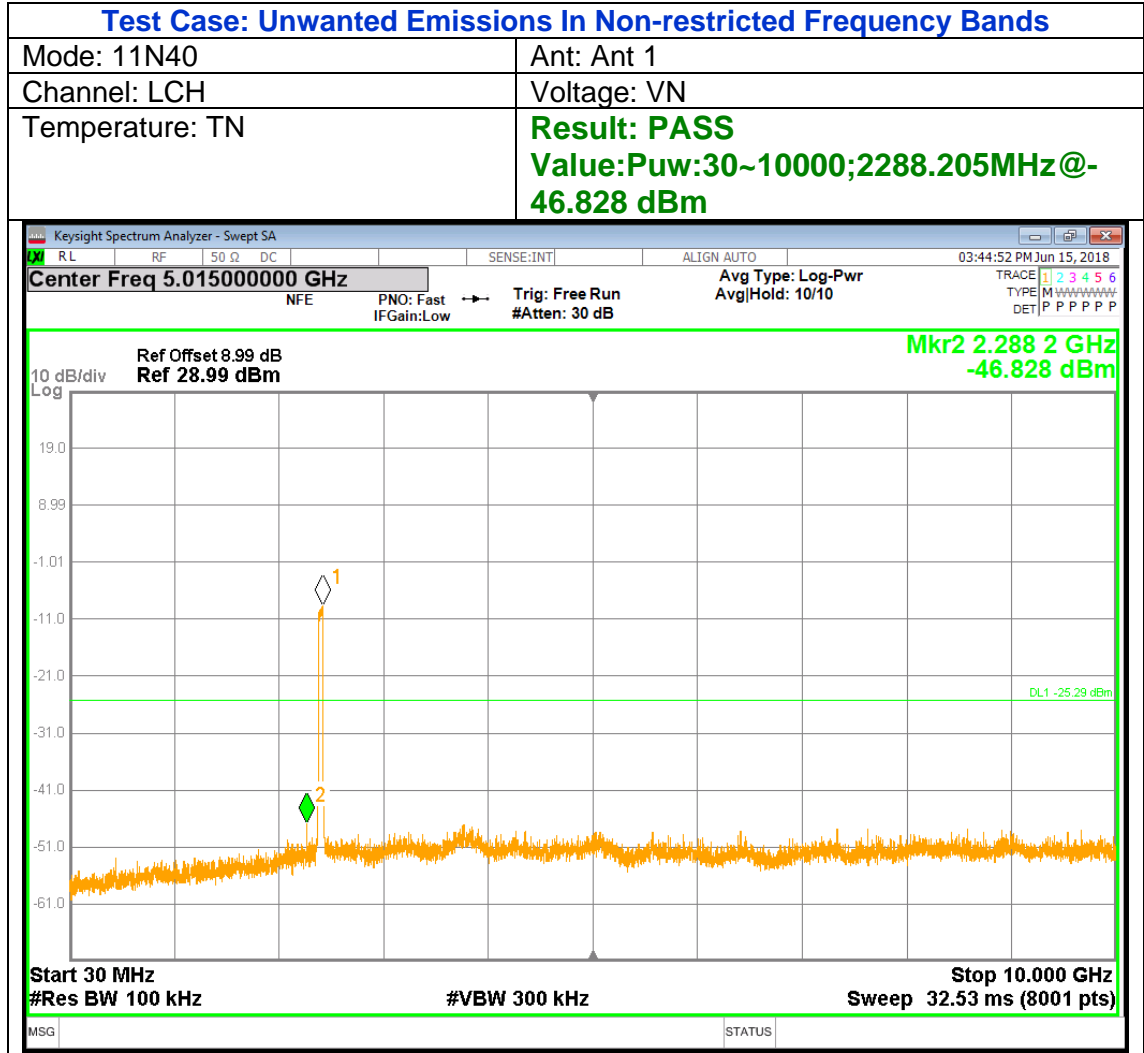


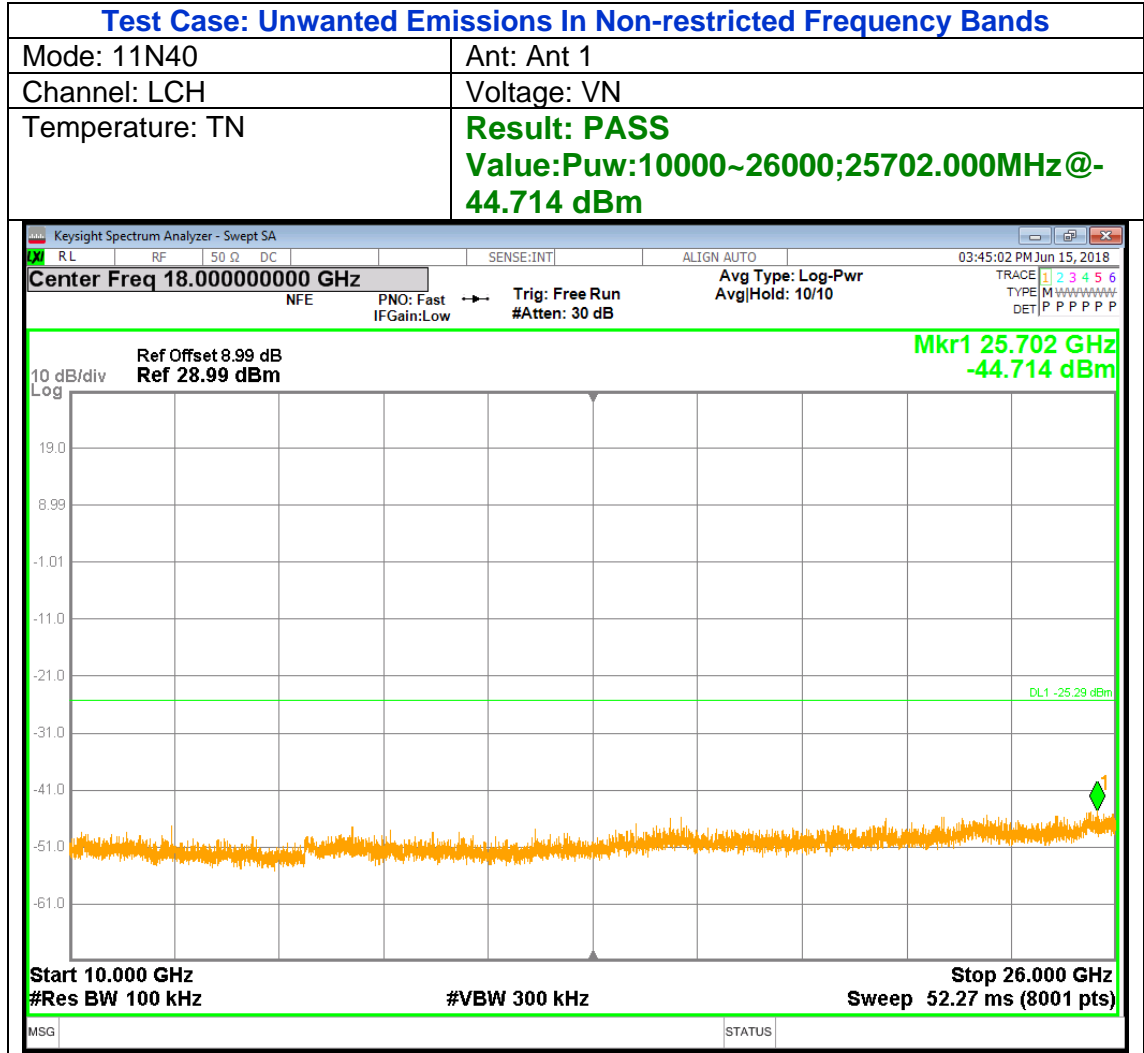


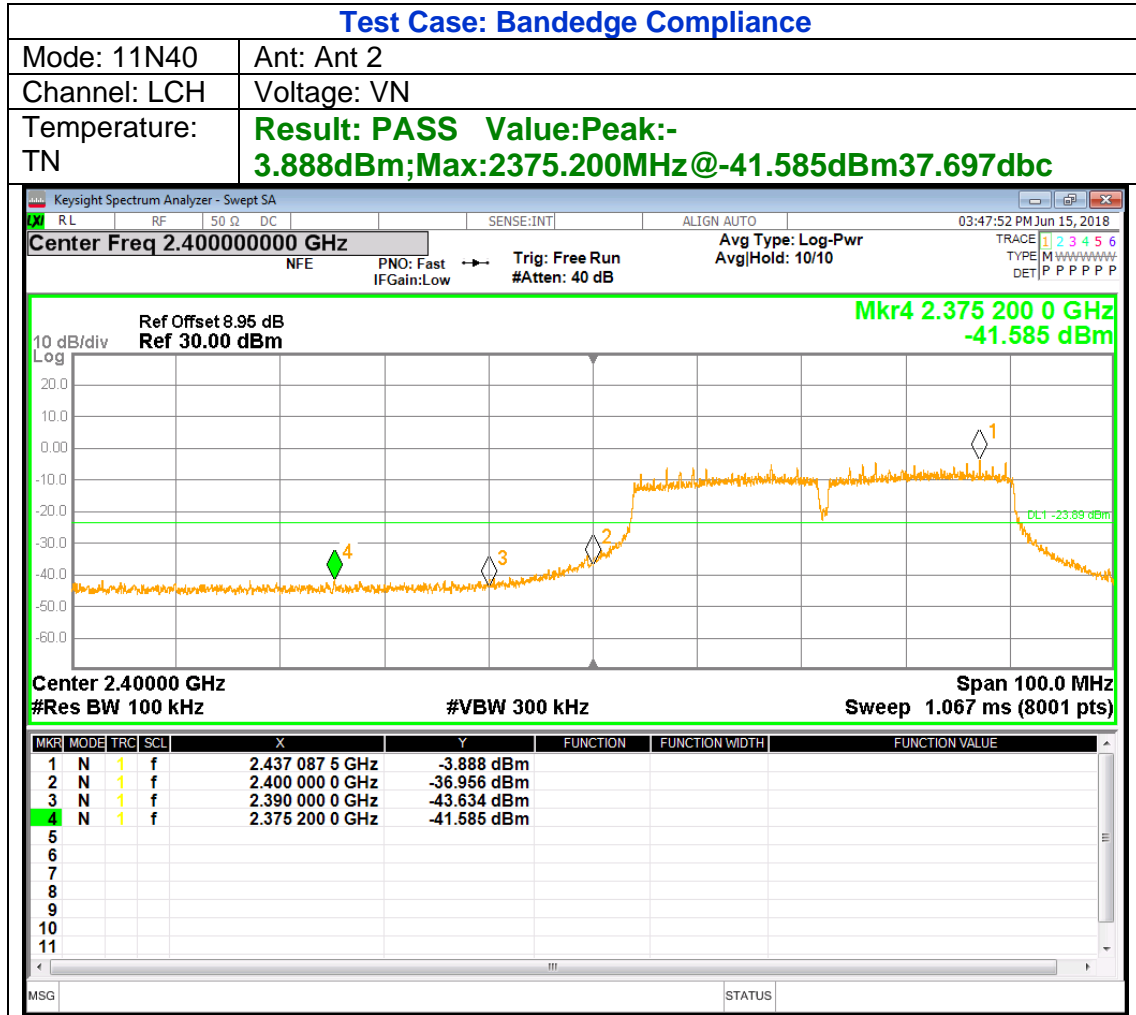


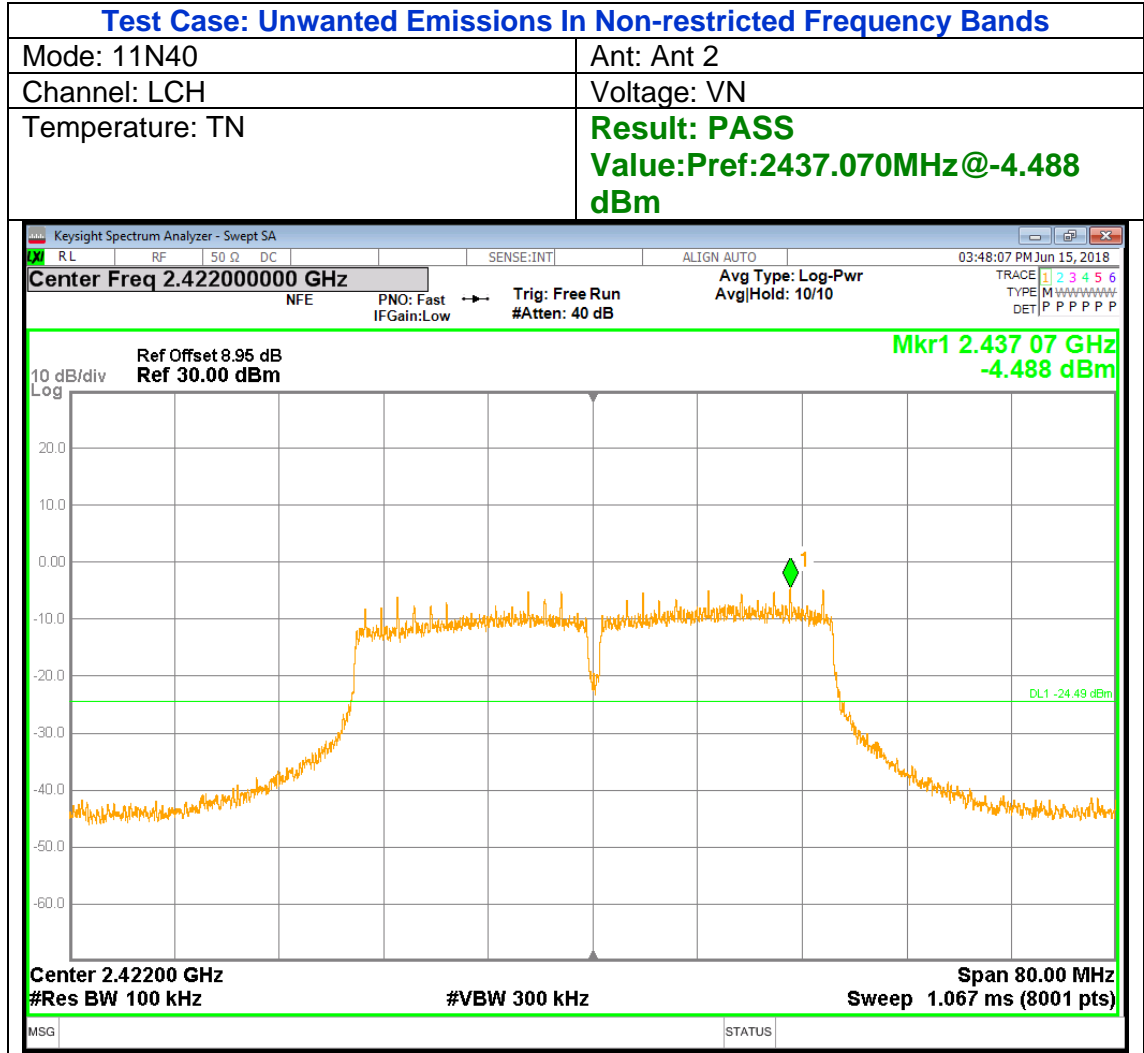


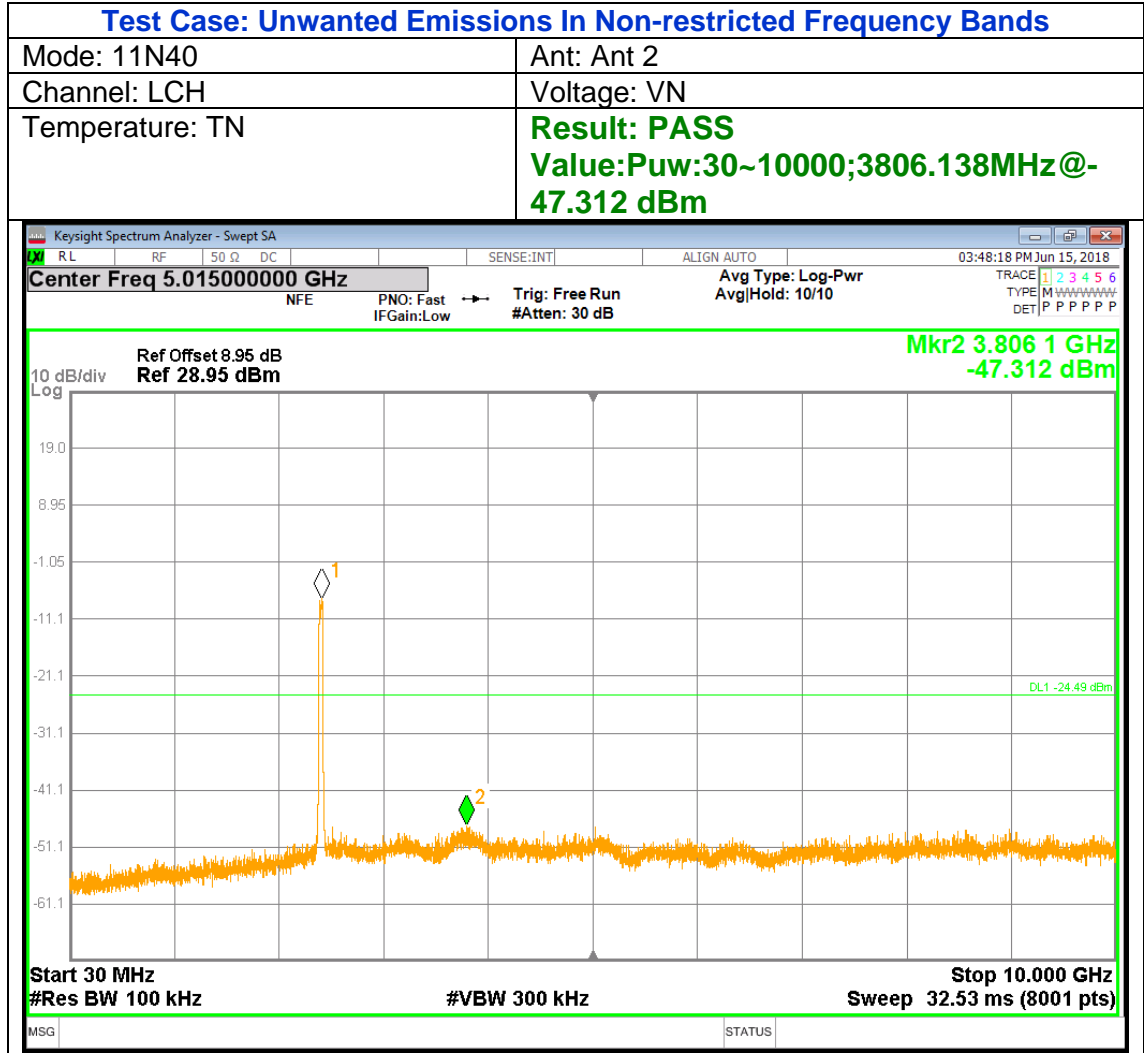


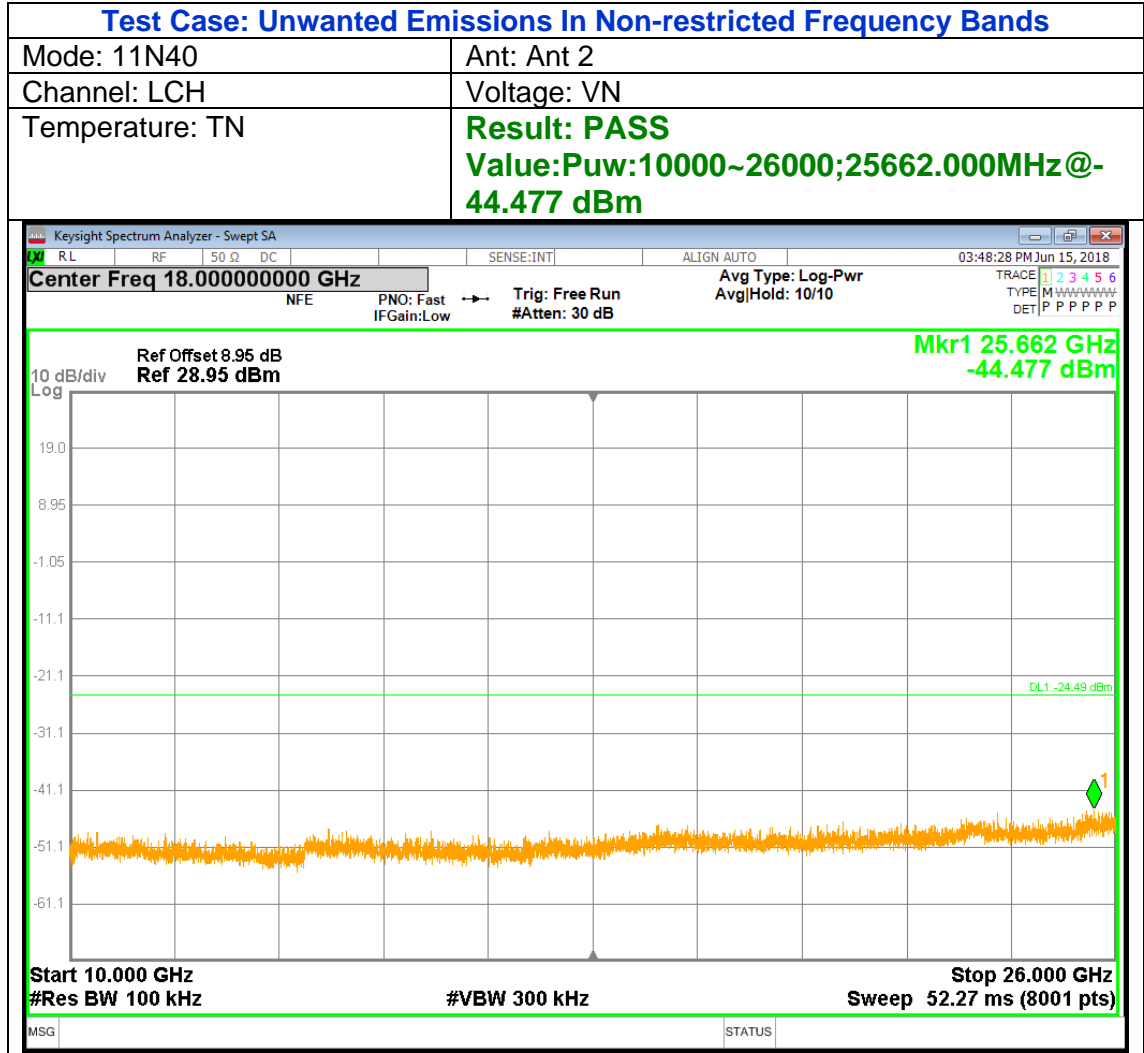








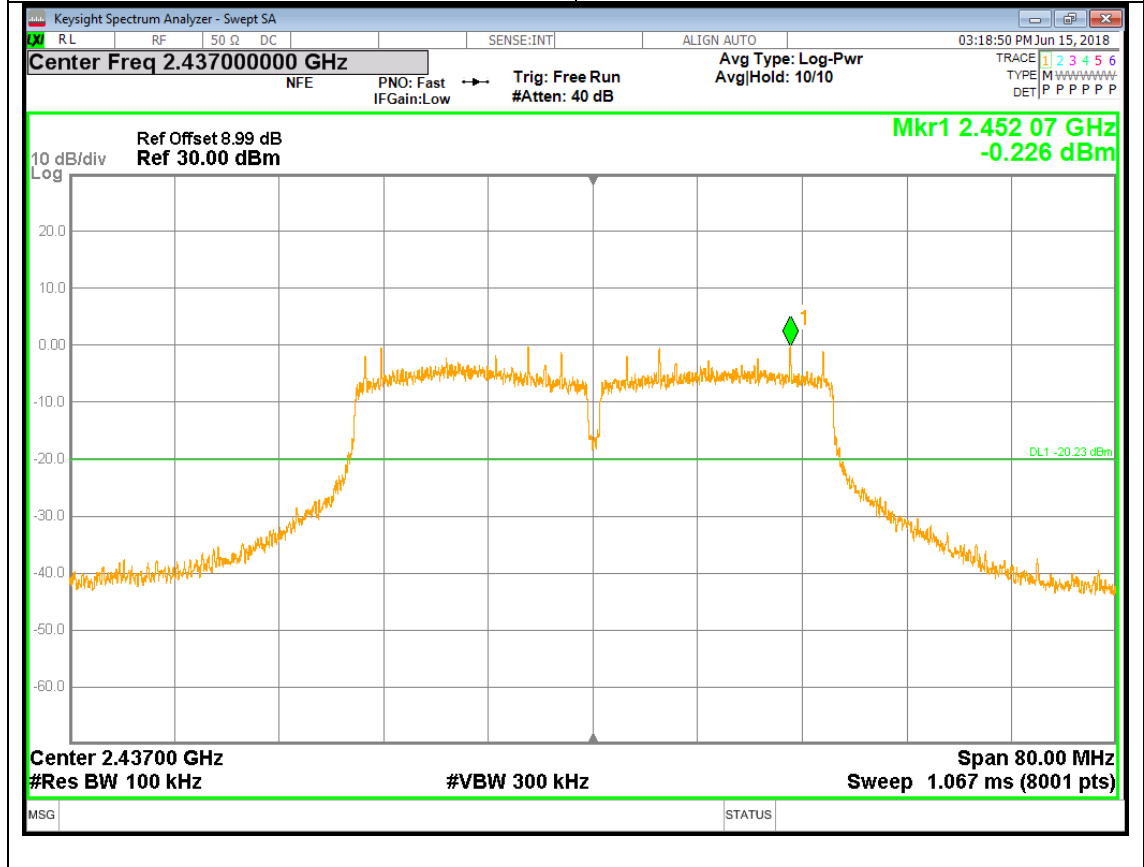


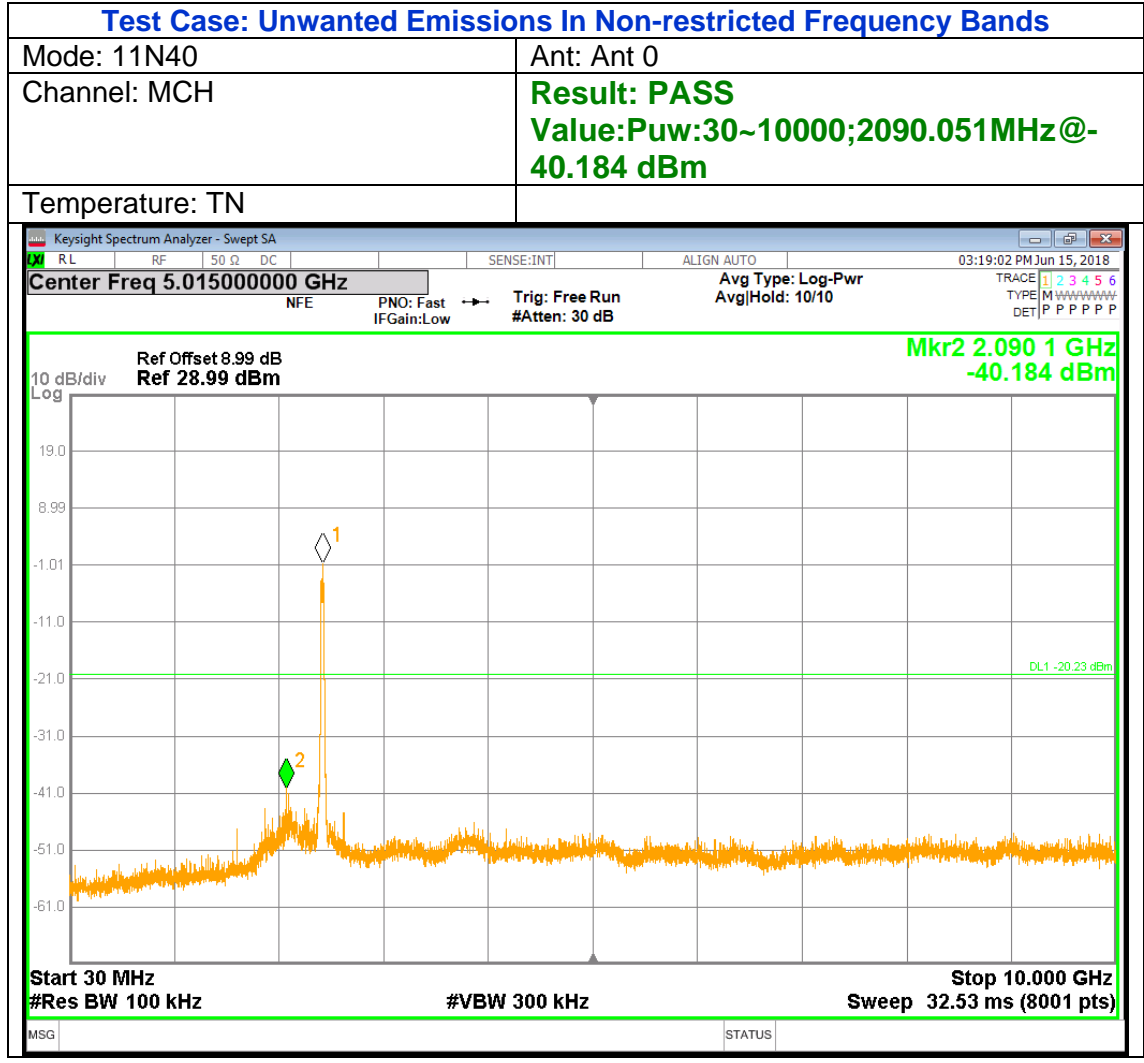




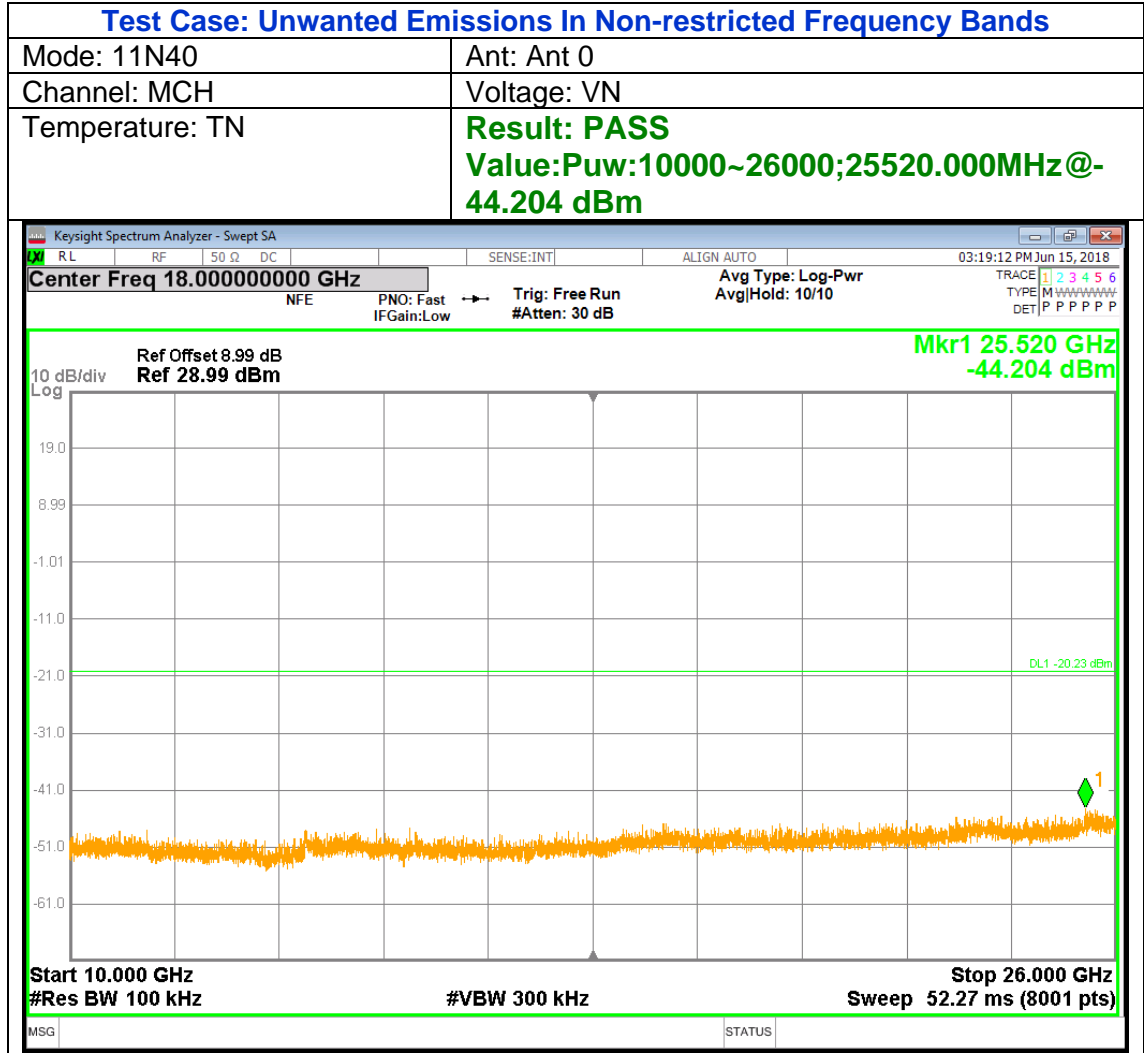
**Middle Channel**

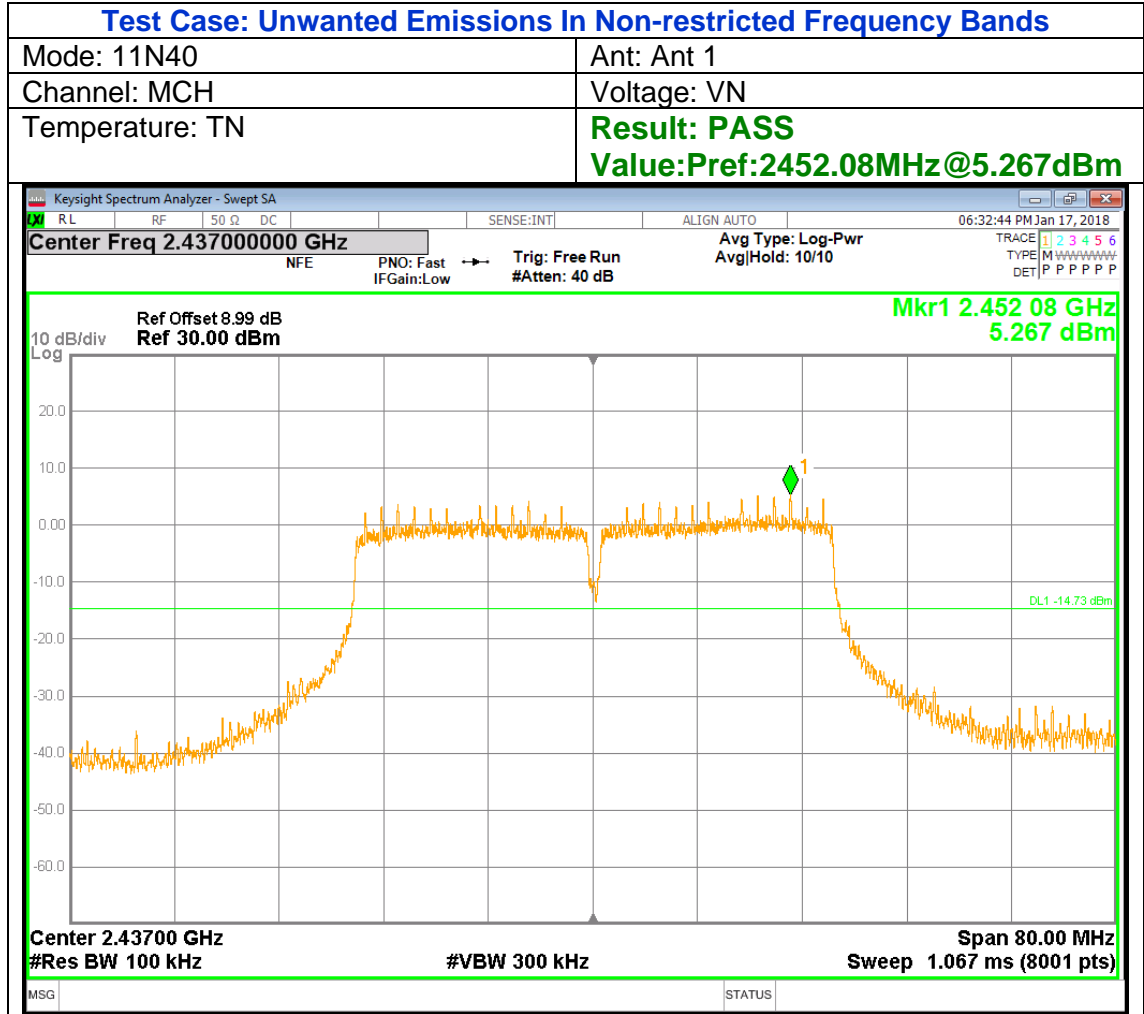
<b>Test Case: Unwanted Emissions In Non-restricted Frequency Bands</b>	
Mode: 11N40	Ant: Ant 0
Channel: MCH	Voltage: VN
Temperature: TN	<b>Result: PASS</b> <b>Value: Pref: 2452.070 MHz @ -0.226 dBm</b>

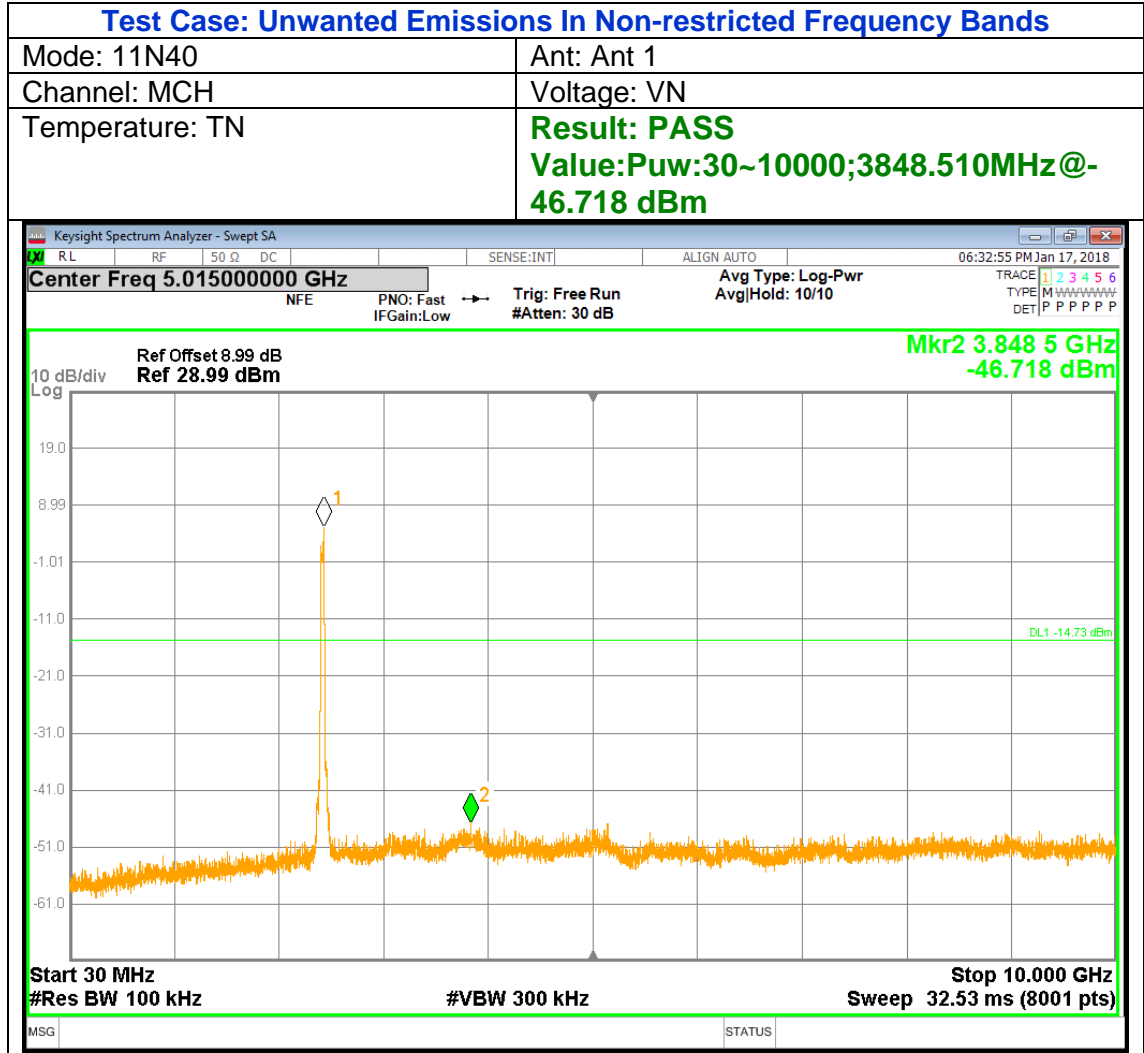


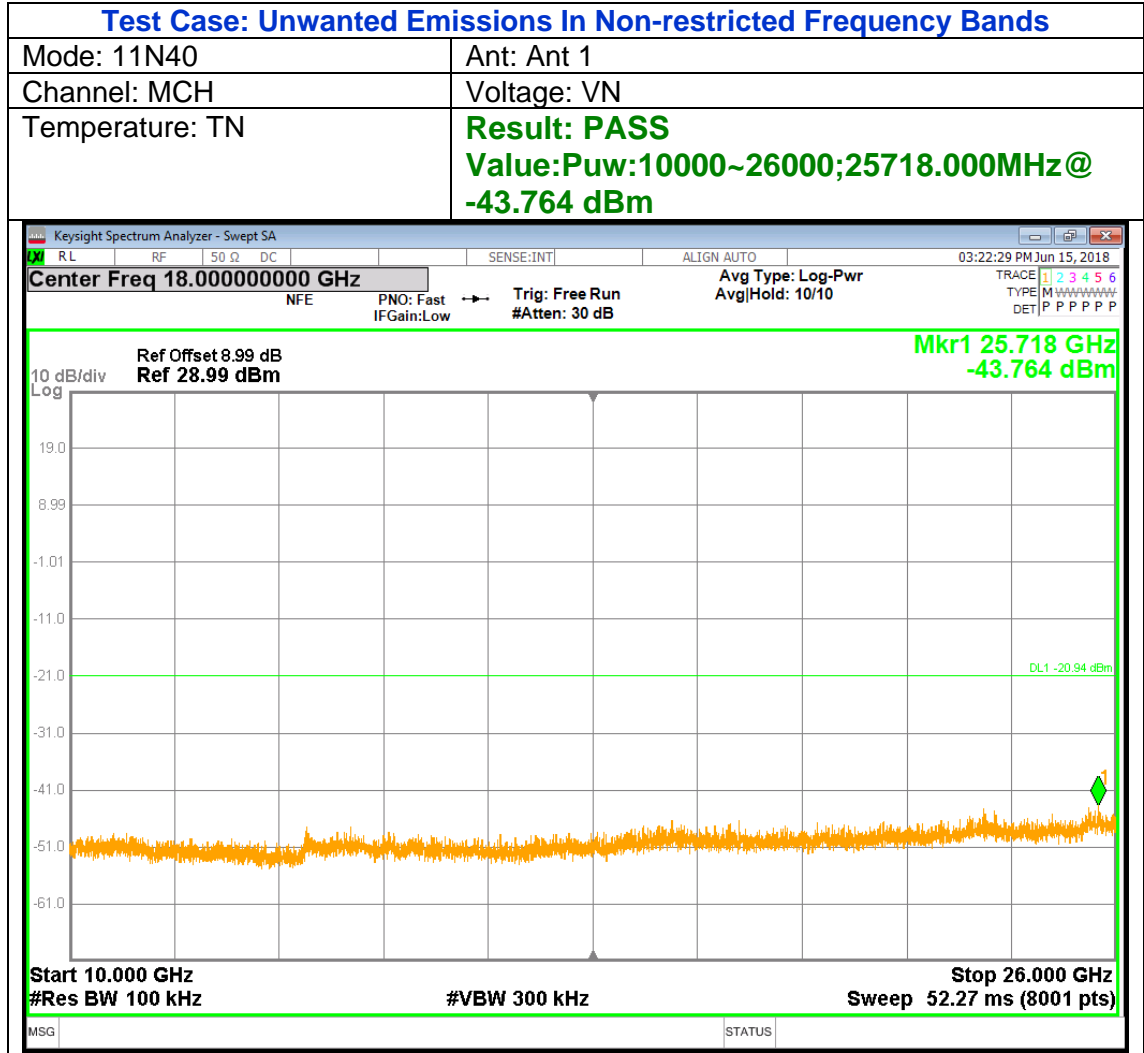


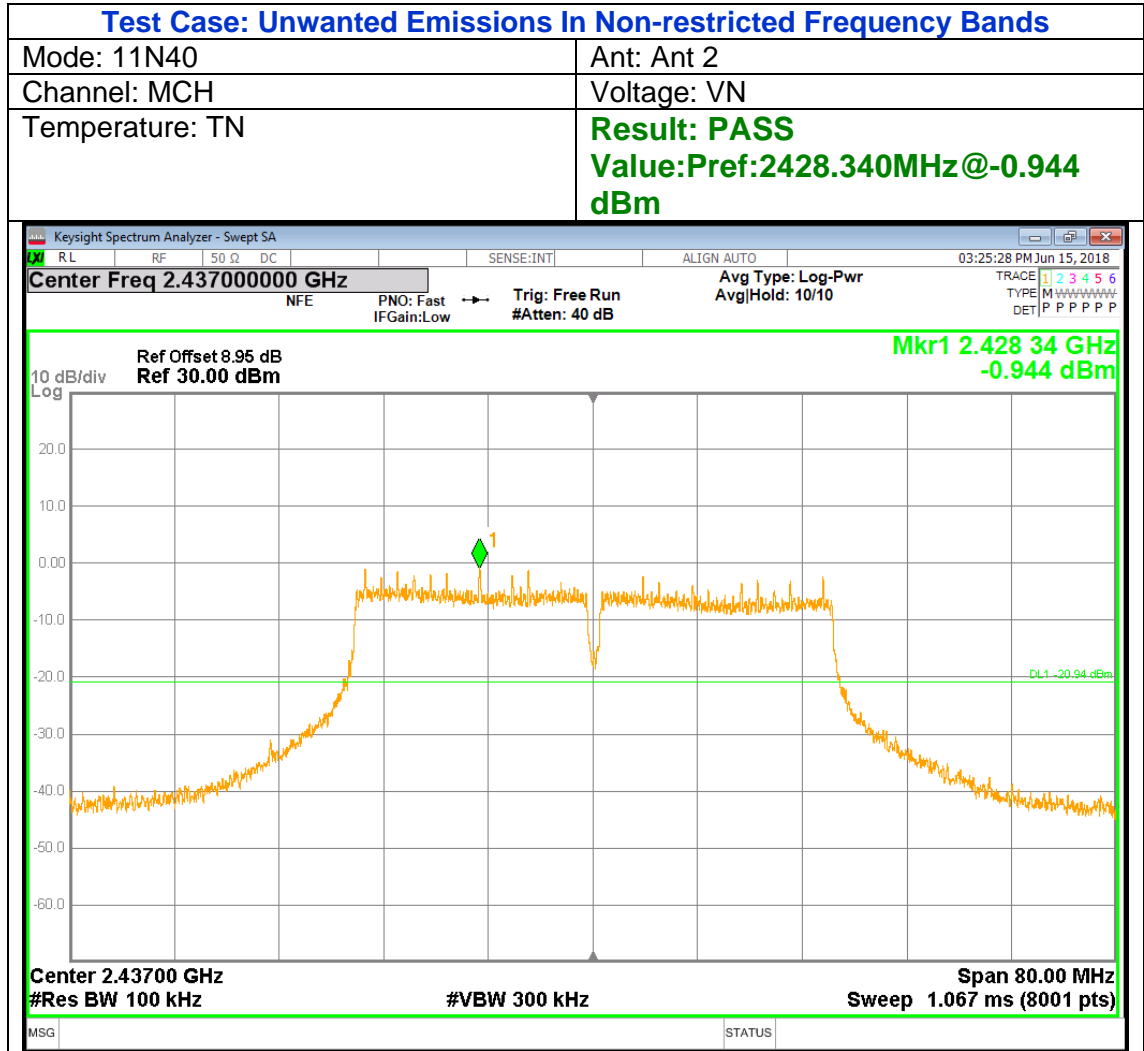


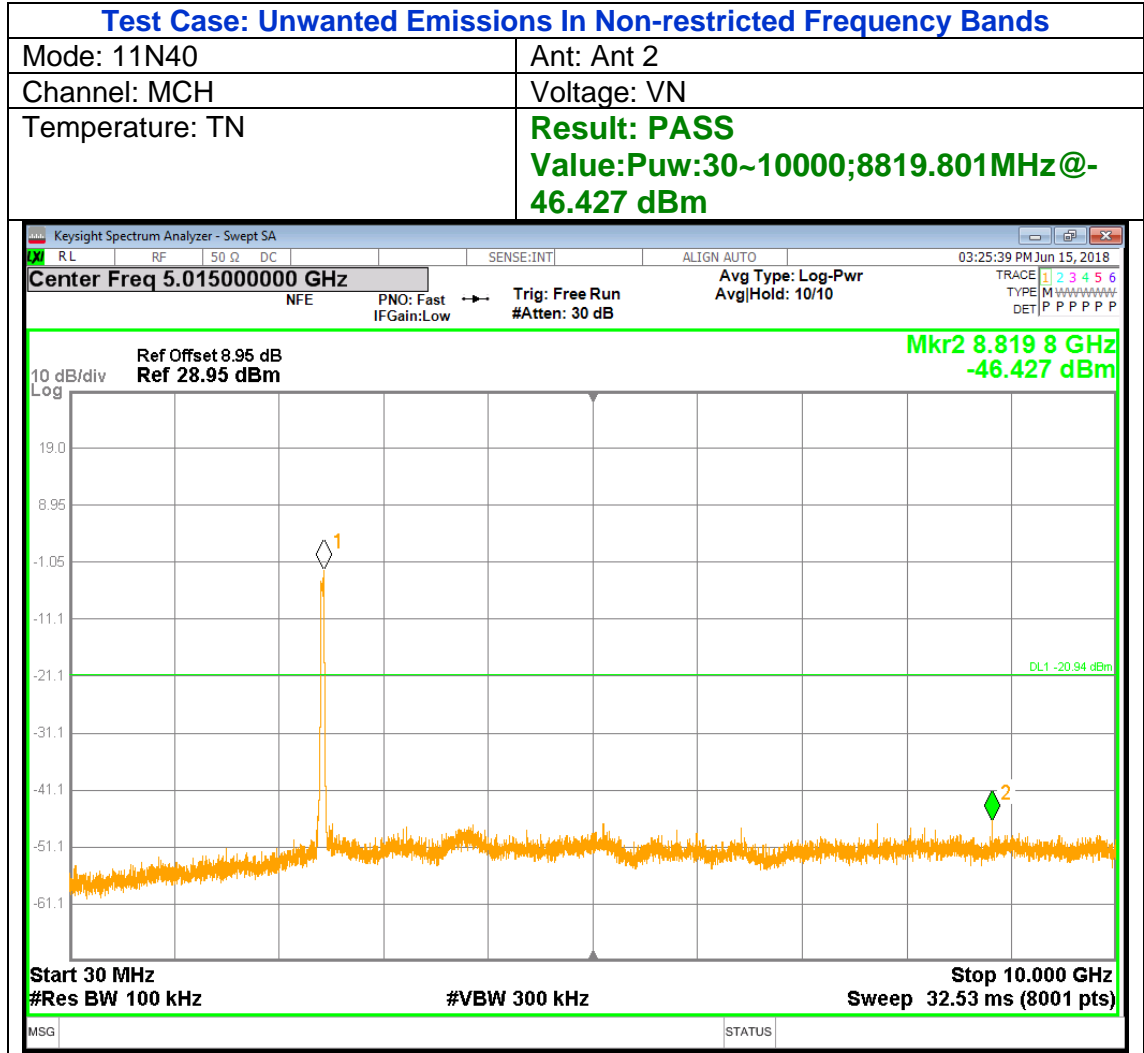


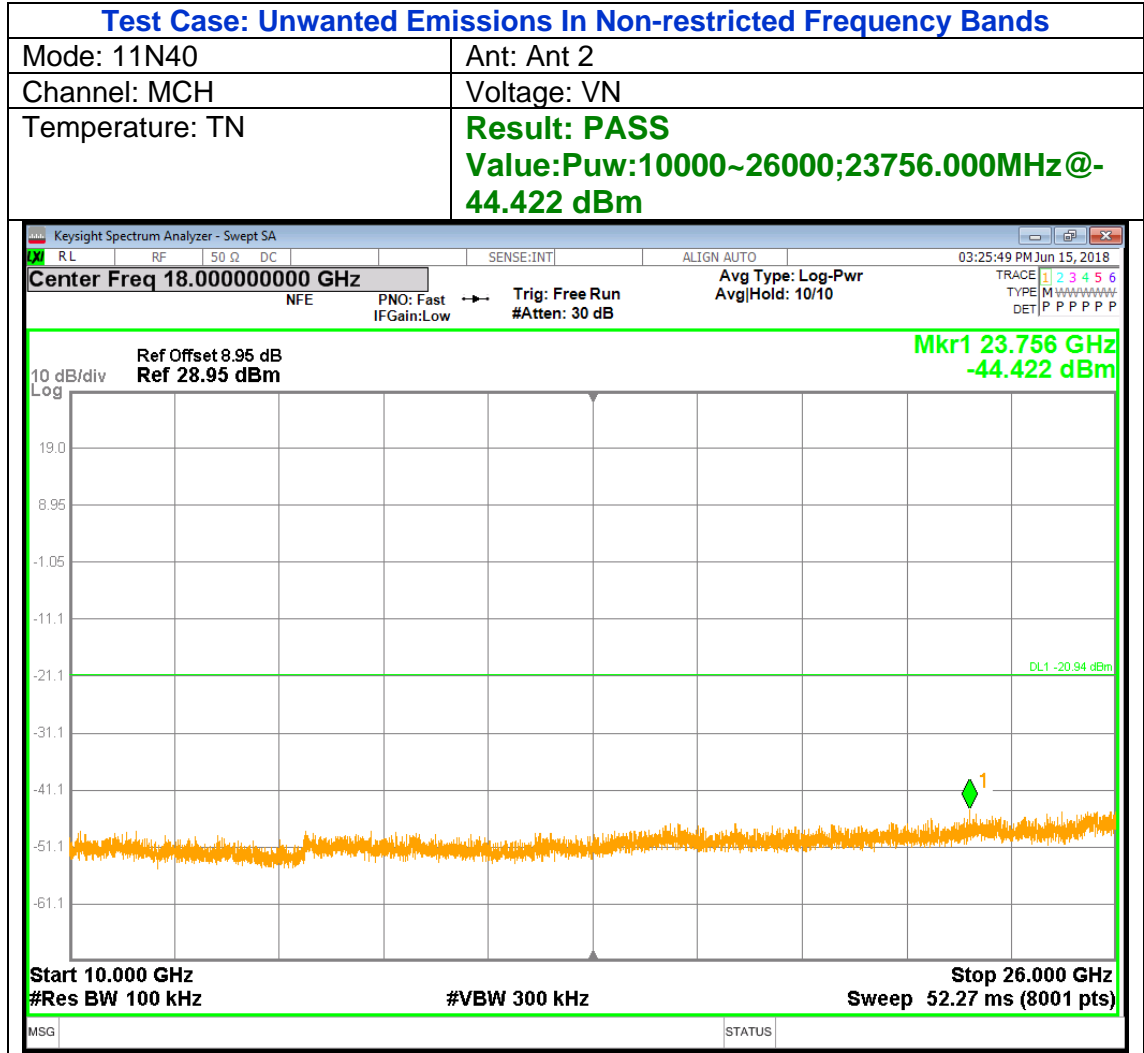






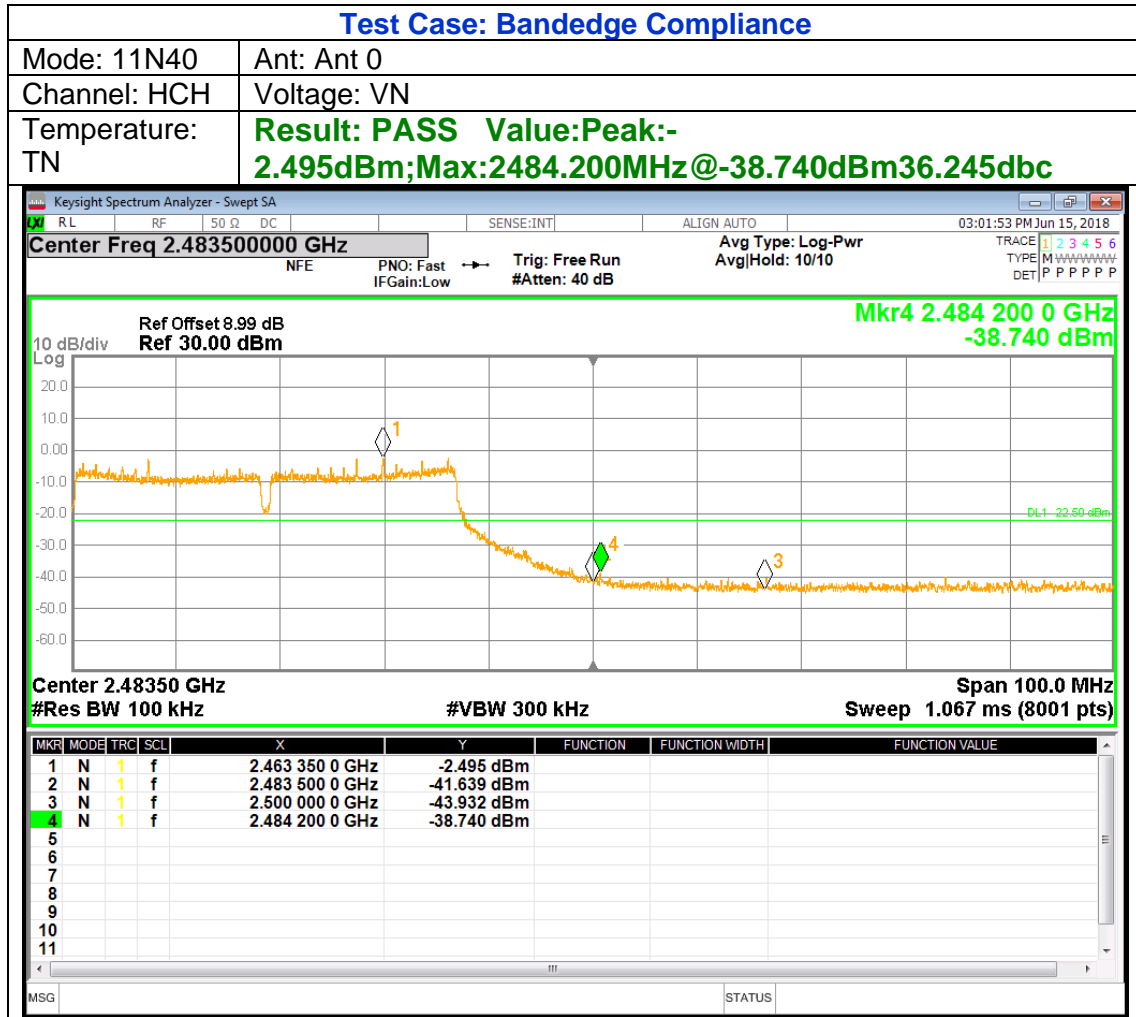




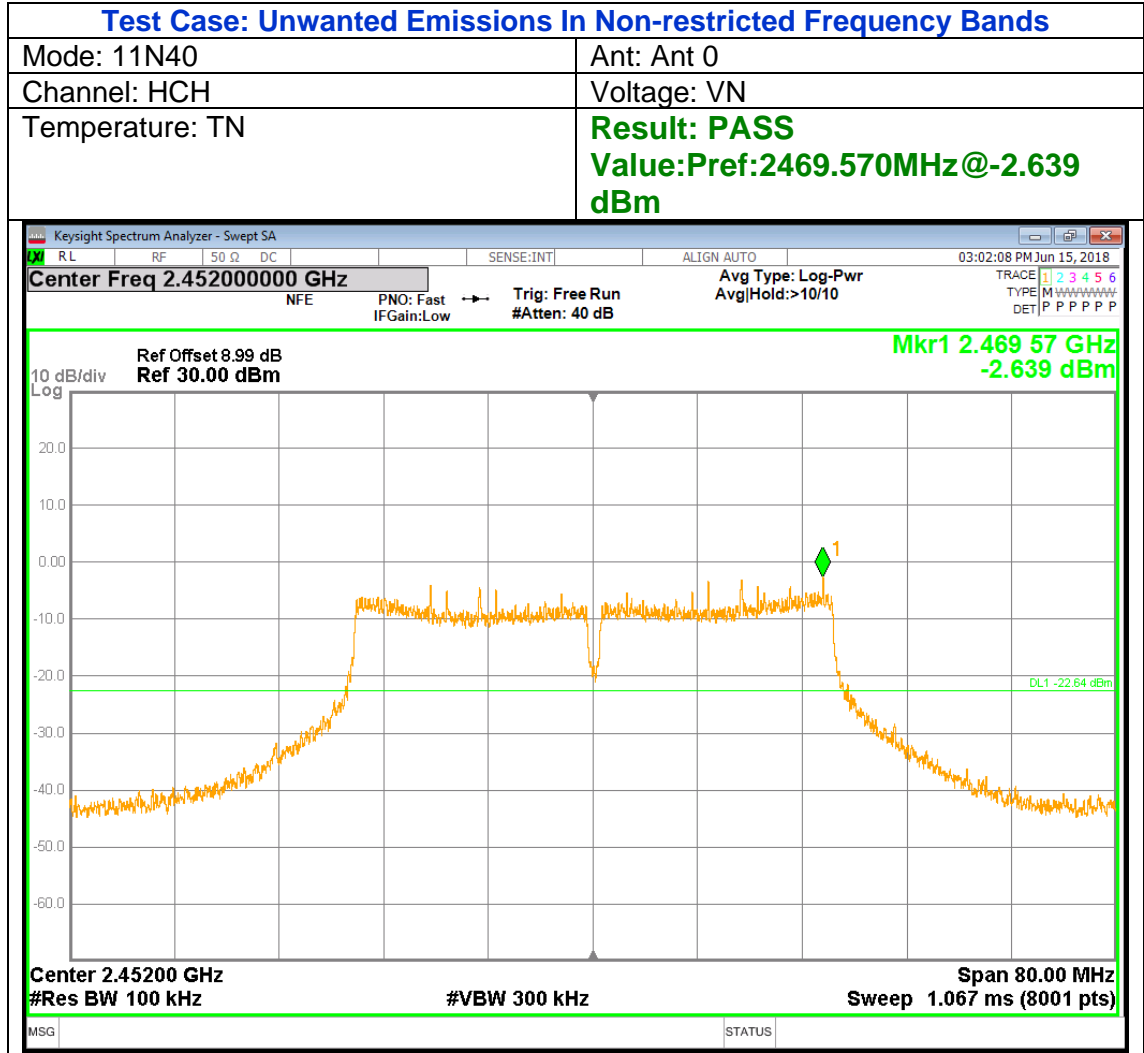


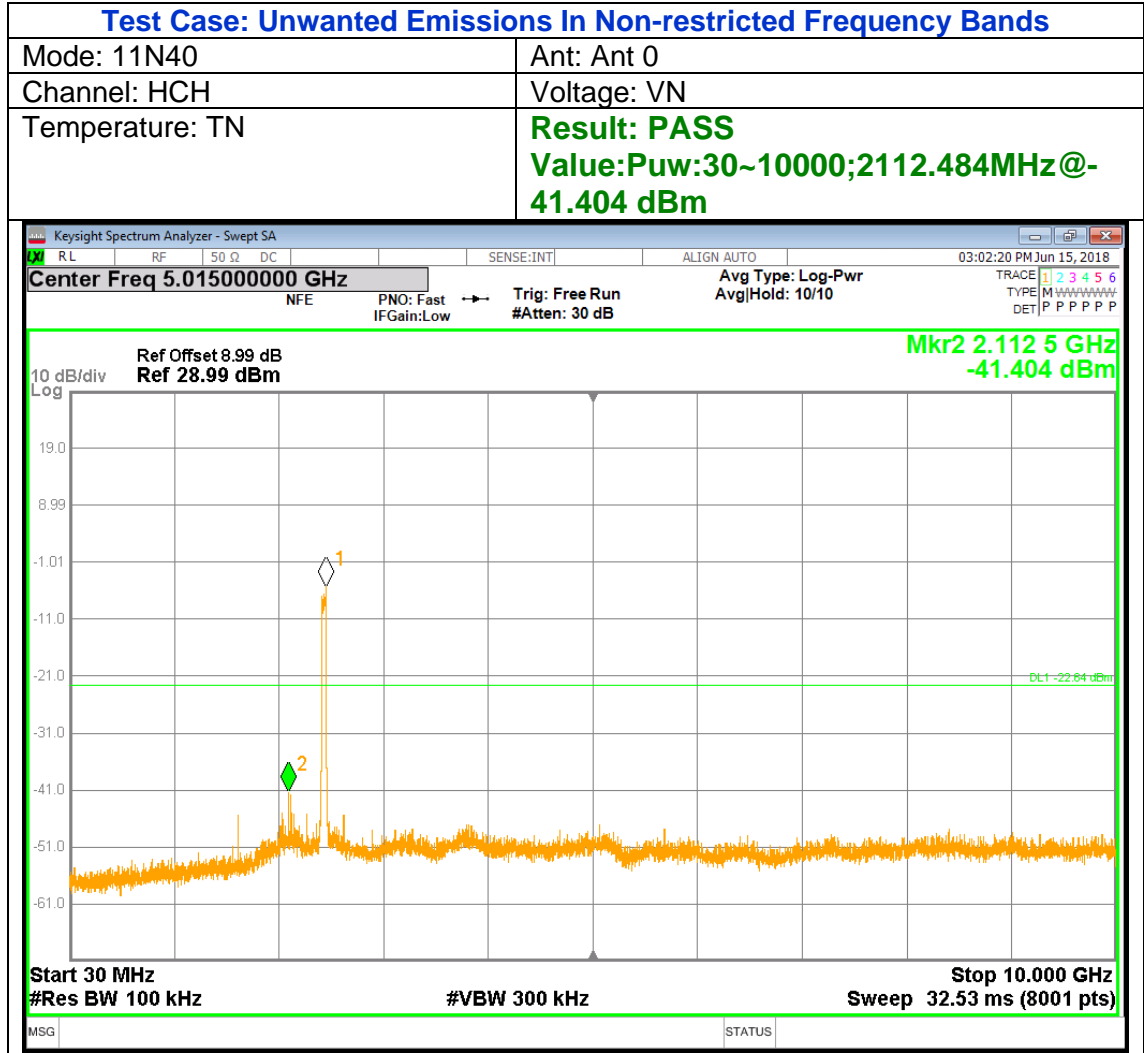


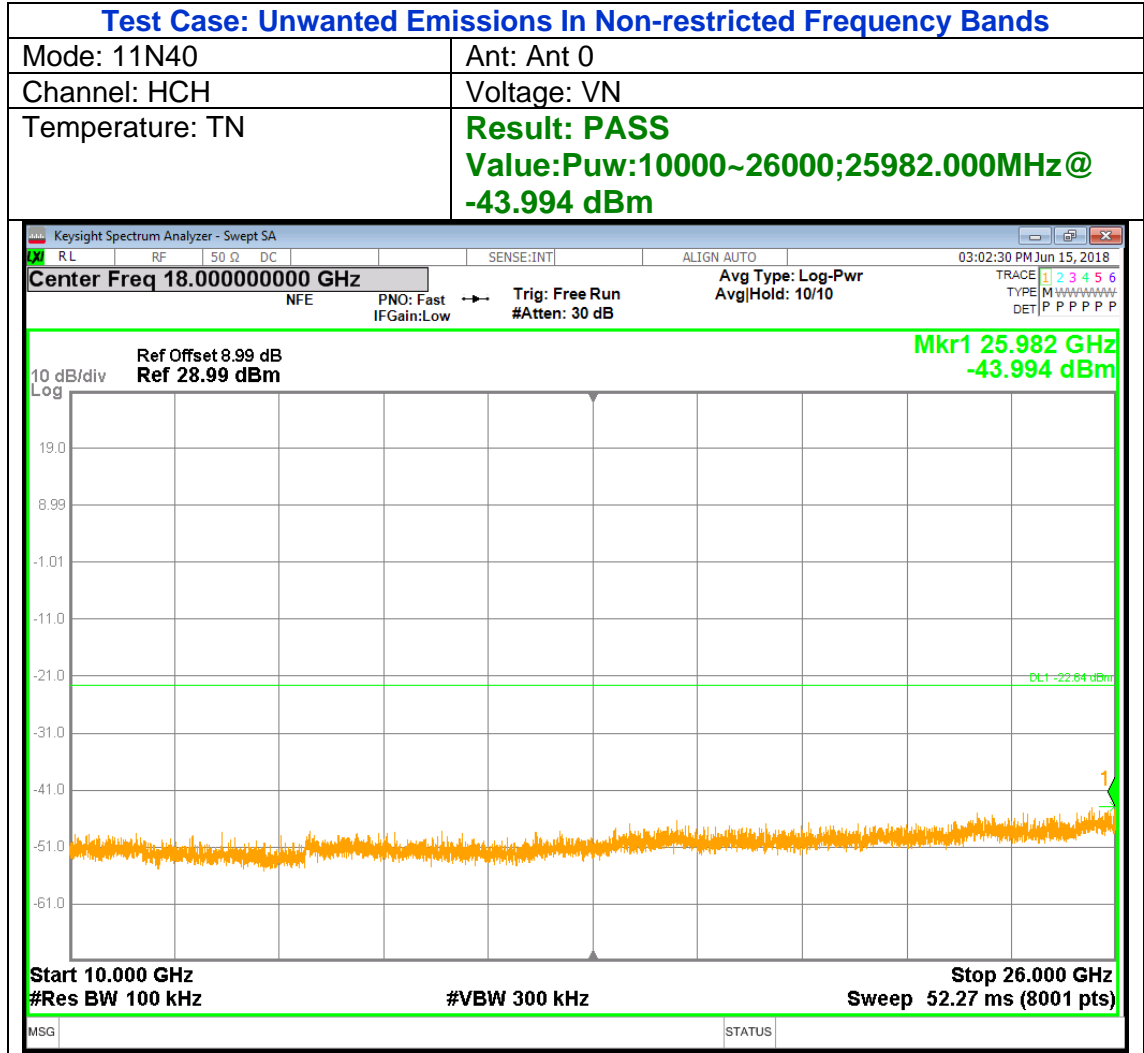
**High Channel**

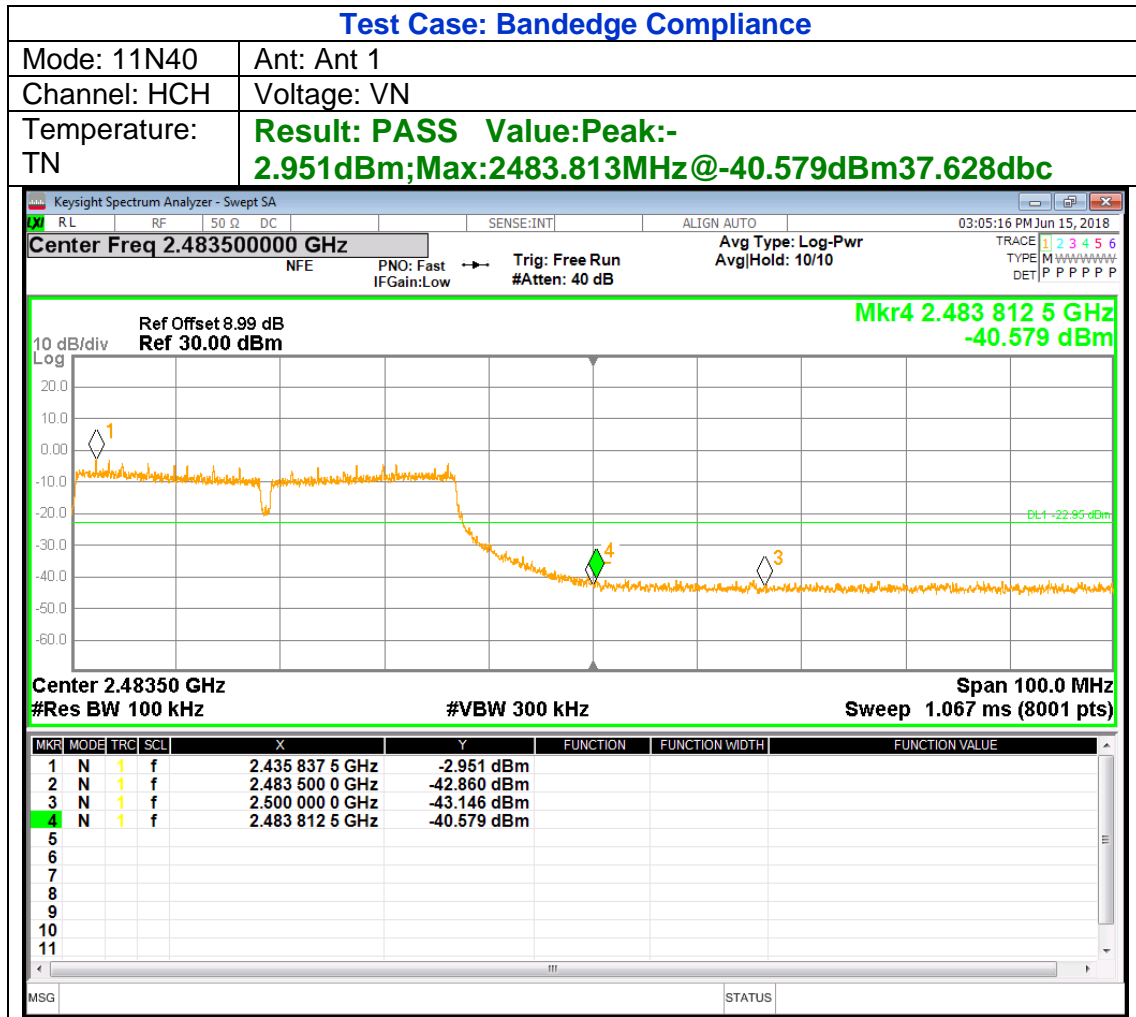


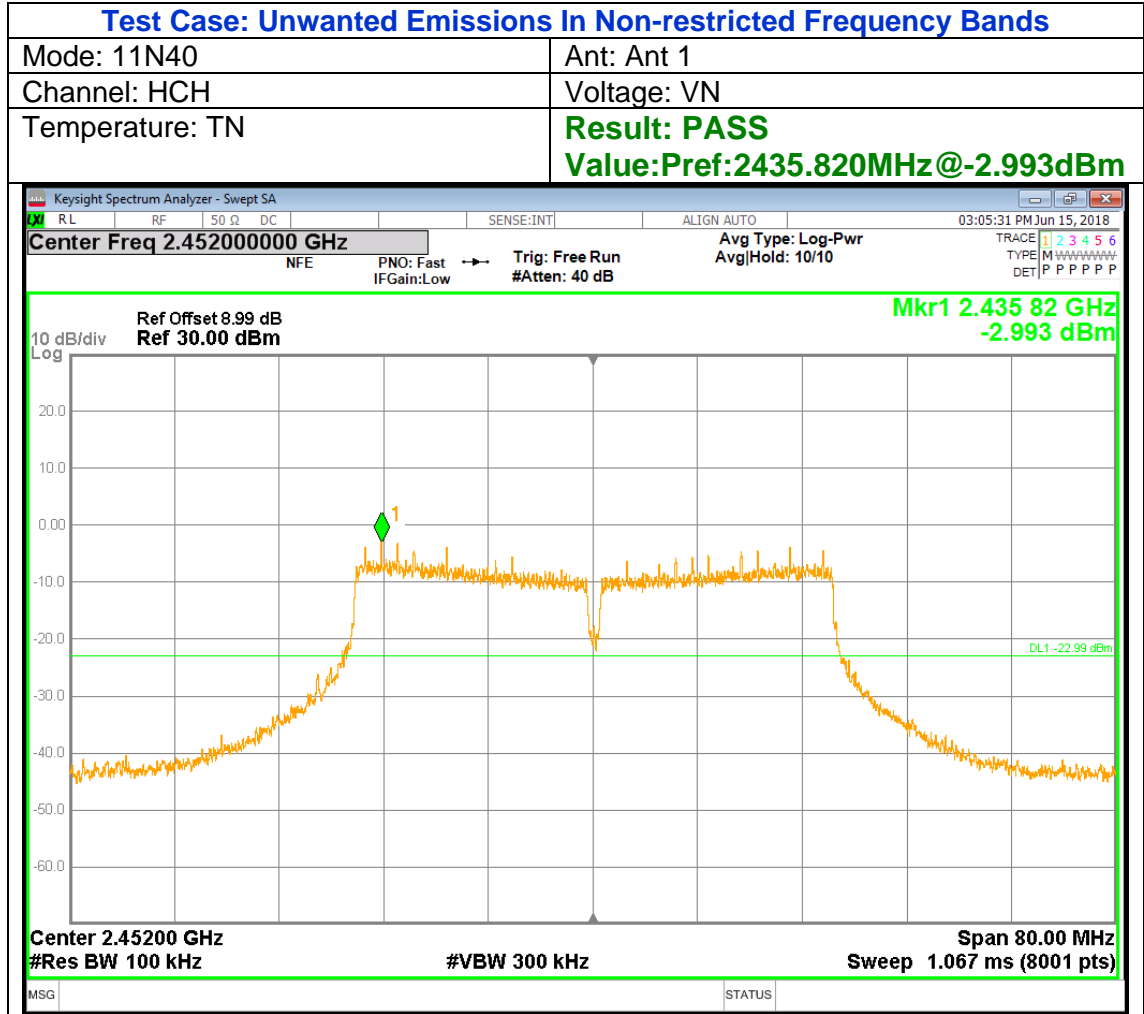




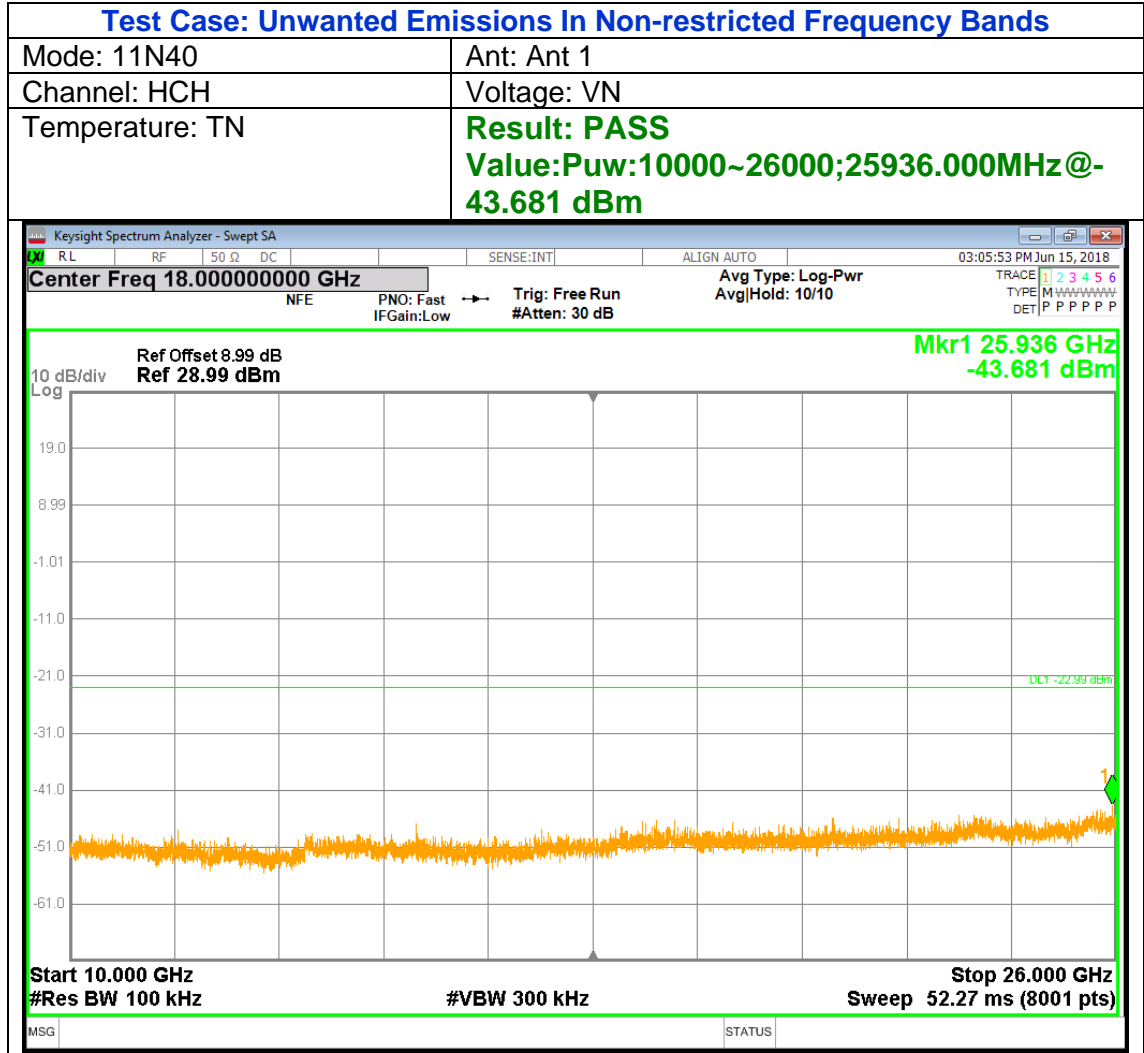


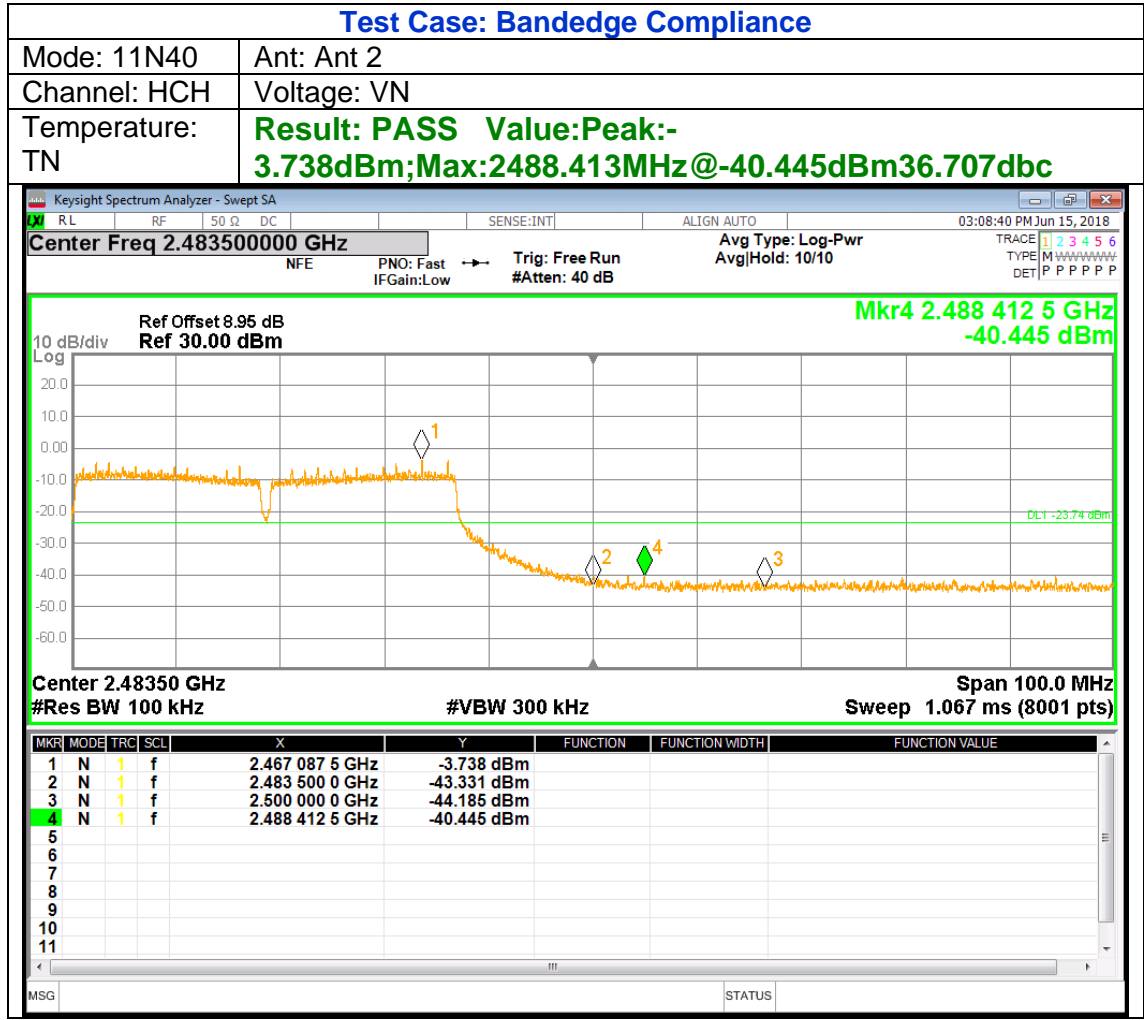




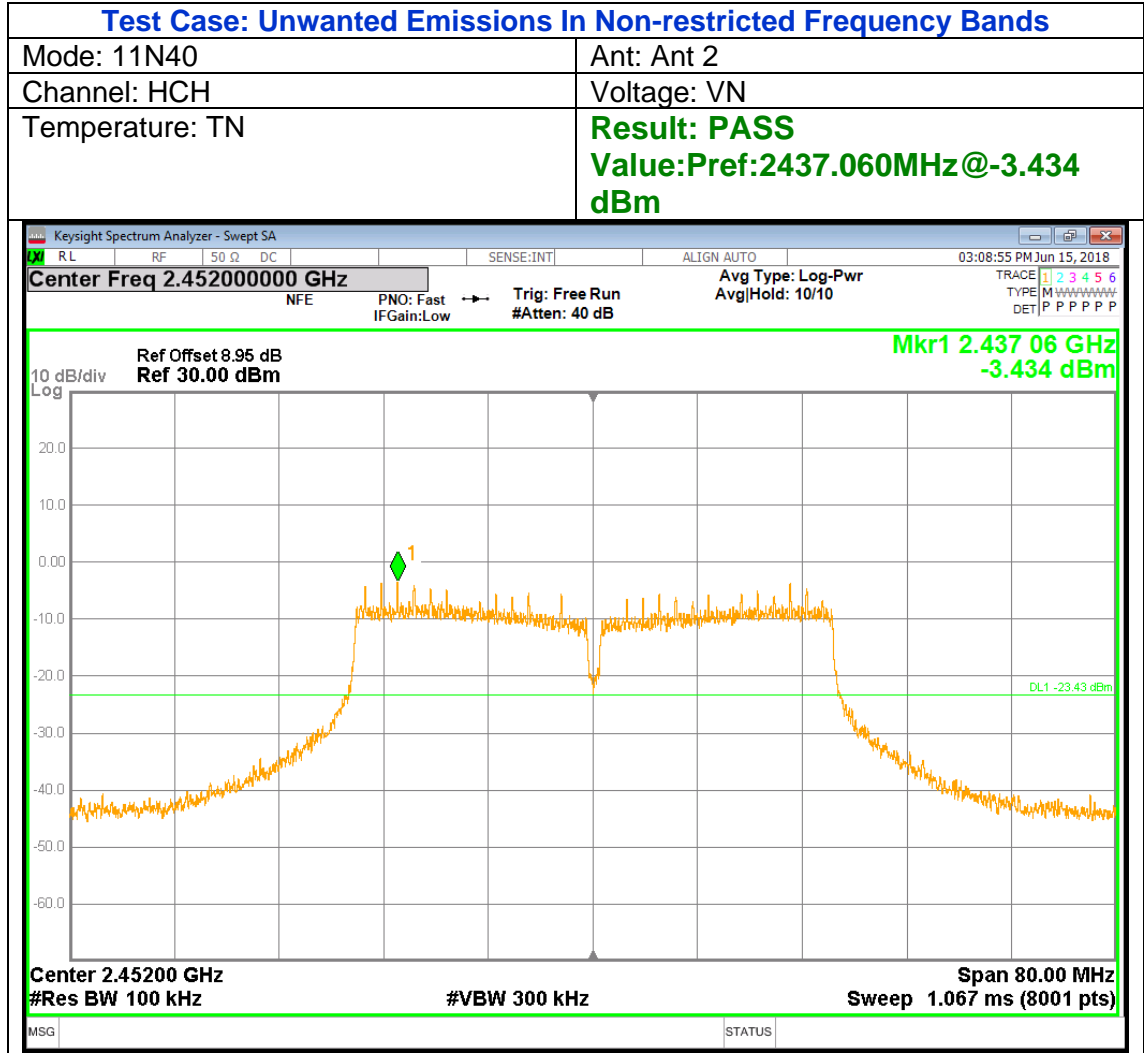


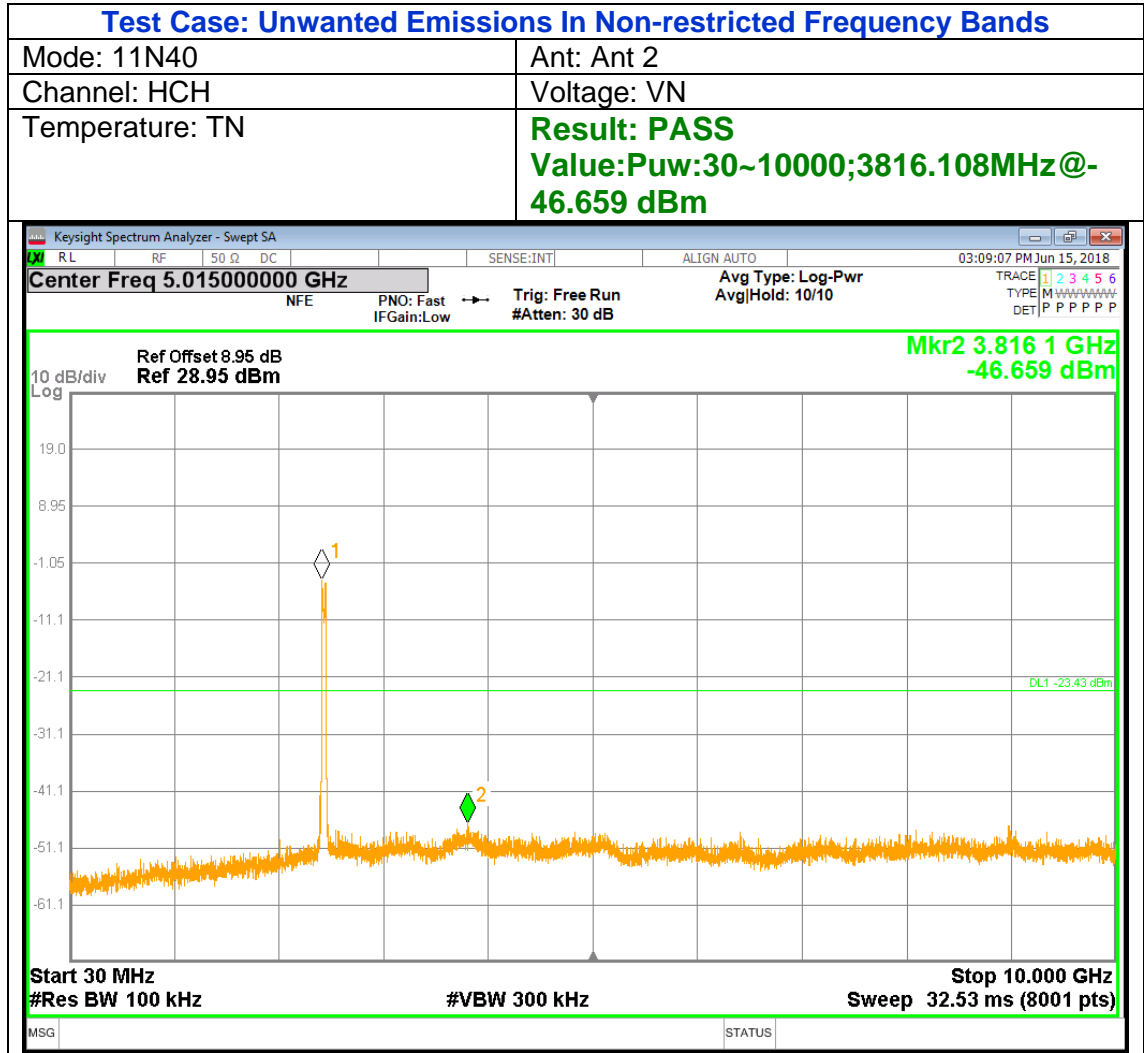


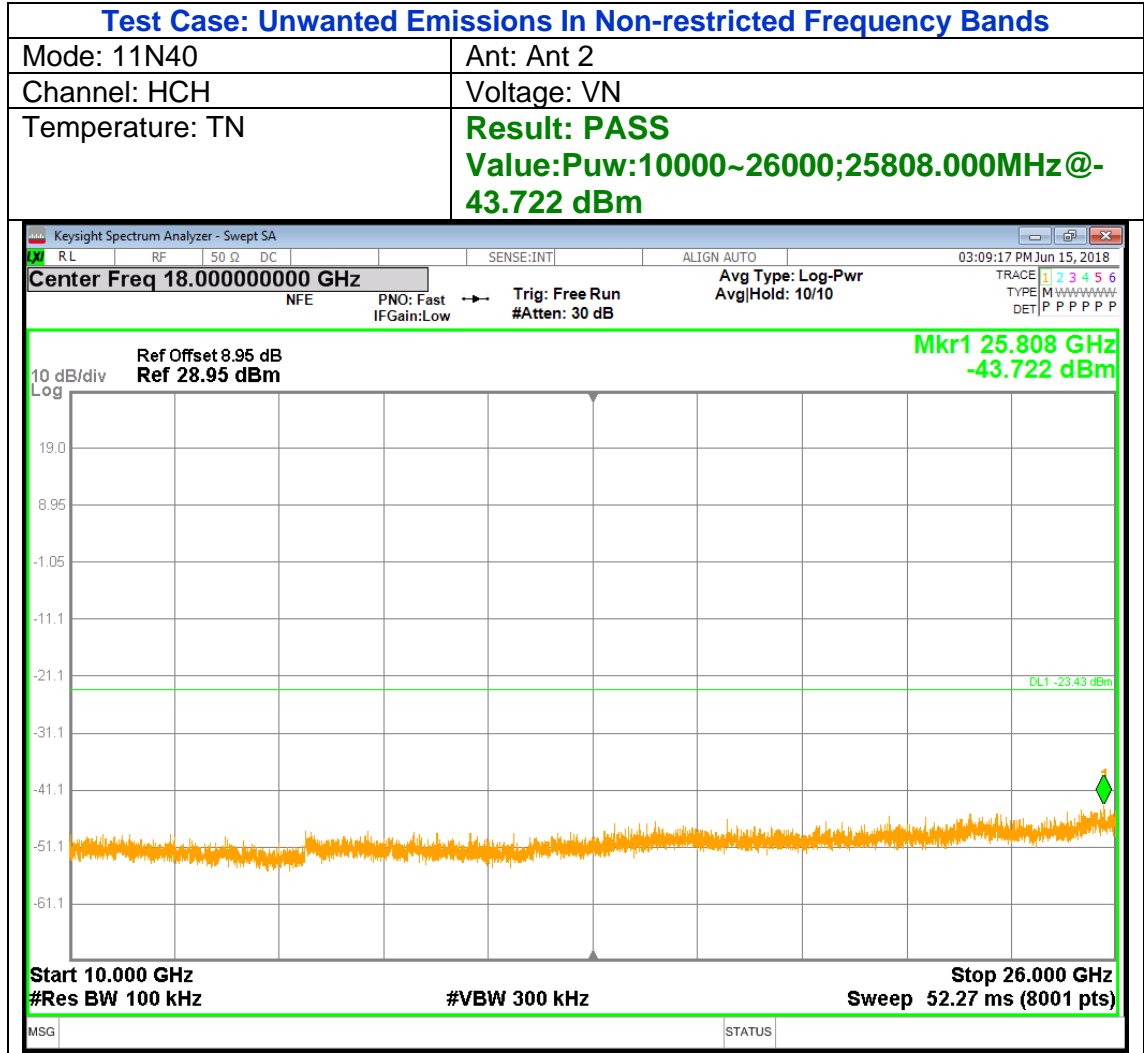












Note: All transmission modes and antennas were tested, but only the worst data was recorded in the report.



## 8. RADIATED TEST RESULTS

### LIMITS

Please refer to FCC §15.205 and §15.209

Please refer to RSS-GEN Clause 8.9

Radiation Disturbance Test Limit for FCC (Class B)(9KHz-1GHz)

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
960~1000	500	3

Note: 1) At frequencies at or above 30 MHz, measurements may be performed at a distance other than what is specified provided: measurements are not made in the near field except where it can be shown that near field measurements are appropriate due to the characteristics of the device; and it can be demonstrated that the signal levels needed to be measured at the distance employed can be detected by the measurement equipment. Measurements shall not be performed at a distance greater than 30 meters unless it can be further demonstrated that measurements at a distance of 30 meters or less are impractical. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse linear-distance for field strength measurements; inverse-linear-distance-squared for power density measurements).

(2) At frequencies below 30 MHz, measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field. Pending the development of an appropriate measurement procedure for measurements performed below 30 MHz, when performing measurements at a closer distance than specified, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade). This paragraph (f) shall not apply to Access BPL devices operating below 30 MHz.



Radiation Disturbance Test Limit for FCC (Above 1G)

Frequency (MHz)	dB(uV/m) (at 3 meters)	
	Peak	Average
Above 1000	74	54

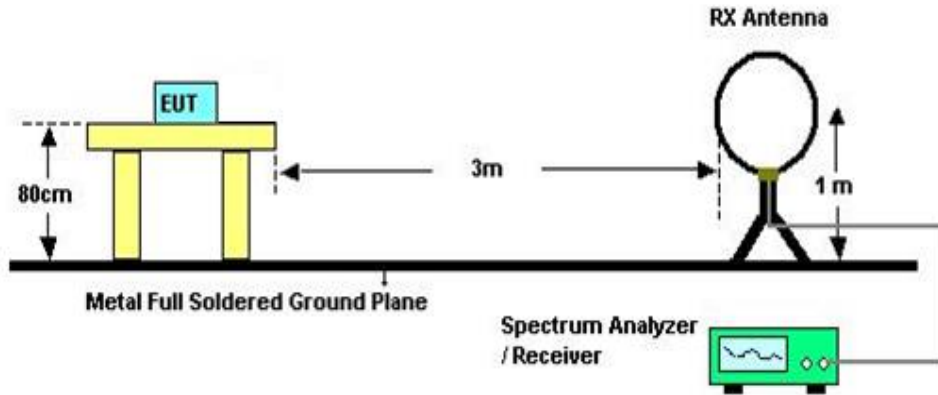
Restricted bands of operation

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
<sup>1</sup> 0.495-0.505	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	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	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	( <sup>2</sup> )
13.36-13.41			

Note: <sup>1</sup>Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.  
<sup>2</sup>Above 38.6c

**TEST SETUP AND PROCEDURE**

Below 30MHz

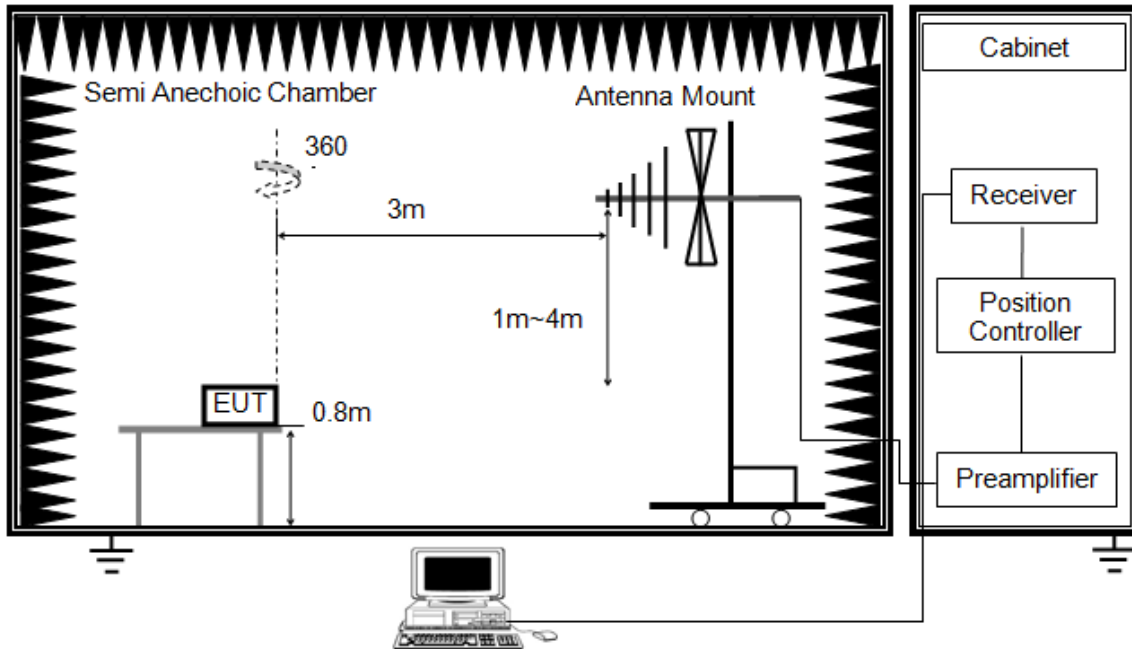


The setting of the spectrum analyser

RBW	200Hz (From 9kHz to 0.15MHz)/ 9KHz (From 0.15MHz to 30MHz)
VBW	200Hz (From 9kHz to 0.15MHz)/ 9KHz (From 0.15MHz to 30MHz)
Sweep	Auto
Detector	Peak/QP/ Average
Trace	Max hold

1. The testing follows the guidelines in ANSI C63.10-2013
2. The EUT was arranged to its worst case and then turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
3. The EUT was placed on a turntable with 0.8 meter above ground.
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
5. For measurement below 1GHz, the initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured. If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.
6. For the actual test configuration, please refer to the related item in this test report (Photographs of the Test Configuration)

Below 1G

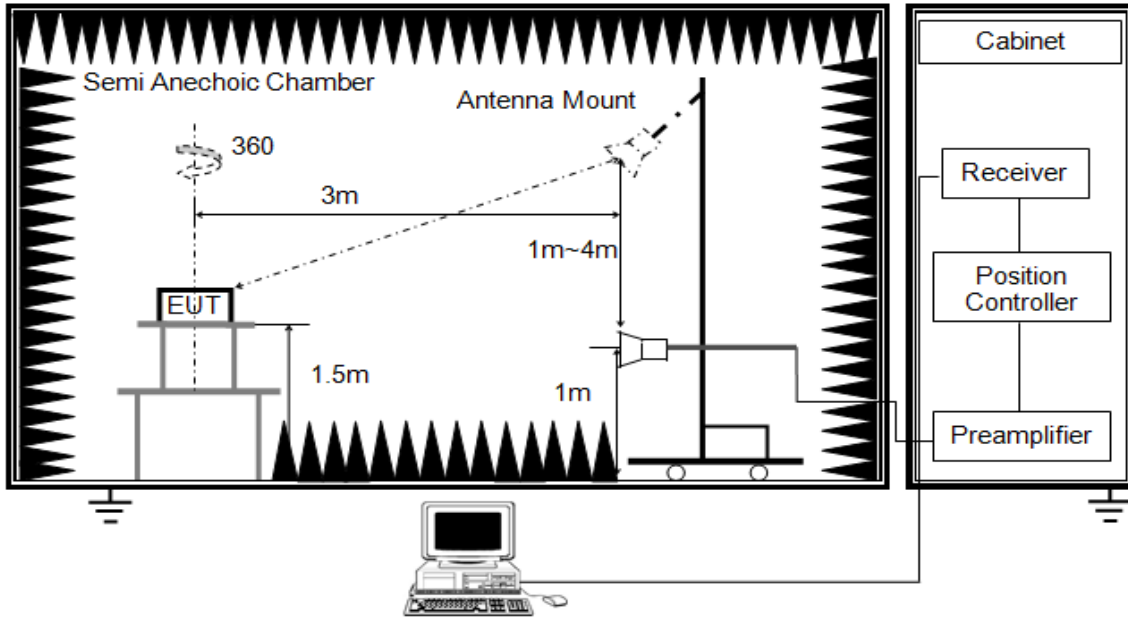


The setting of the spectrum analyser

RBW	120K
VBW	300K
Sweep	Auto
Detector	Peak/QP
Trace	Max hold

1. The testing follows the guidelines in ANSI C63.10-2013.
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
3. The EUT was placed on a turntable with 0.8 meter above ground.
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
5. For measurement below 1GHz, the initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured. If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.
6. For the actual test configuration, please refer to the related Item in this test report (Photographs of the Test Configuration)

ABOVE 1G



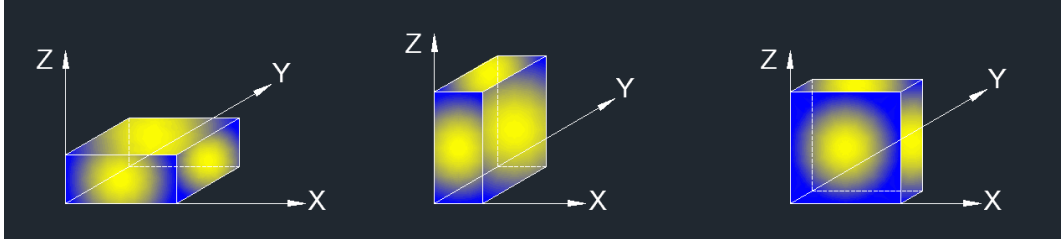
The setting of the spectrum analyser

RBW	1M
VBW	PEAK: 3M AVG: see note 6
Sweep	Auto
Detector	Peak
Trace	Max hold

1. The testing follows the guidelines in ANSI C63.10-2013.
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
3. The EUT was placed on a turntable with 1.5m above ground.
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
5. For measurement above 1GHz, the emission measurement will be measured by the peak detector. This peak level, once corrected, must comply with the limit specified in Section 15.209.
6. For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 3 MHz for peak measurements and 1 MHz resolution bandwidth with 1/T video bandwidth with peak detector. For the Duty Cycle and Correction Factor please refer to clause 7.1.ON TIME AND DUTY CYCLE. If the EUT is configured to transmit with  $D \geq 98\%$ , then set  $VBW \leq RBW / 100$ , but not less than 10 Hz. If the EUT D is  $< 98\%$ , then set  $VBW \geq 1 / T$ .
7. For the actual test configuration, please refer to the related item in this test report (Photographs of the Test Configuration)



X axis, Y axis, Z axis positions:



Note1: For all radiated test, EUT in each of three orthogonal axis emissions had been tested, but only the worst case (x axis) data recorded in the report.

Note2: For the radiation test results, SISO & MIMO mode has been tested, the report only shows the worst case data, SISO mode is worst case for 11b, MIMO mode is worst case for 11g & 11n20 & 11n40.

Note3: The 2.4GHz and 5GHz simultaneous transmission modes have been evaluated, the test results have not changed even worse for the independent transmission mode, and no spurious emissions are caused by the simultaneous operation of two devices.

Note4: The peak output power measured in any 100 kHz bandwidth outside of the authorized frequency band meets the requirement attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz (i.e., 20 dBc), for the test results, please refer to the 7.5 chapter of the report.



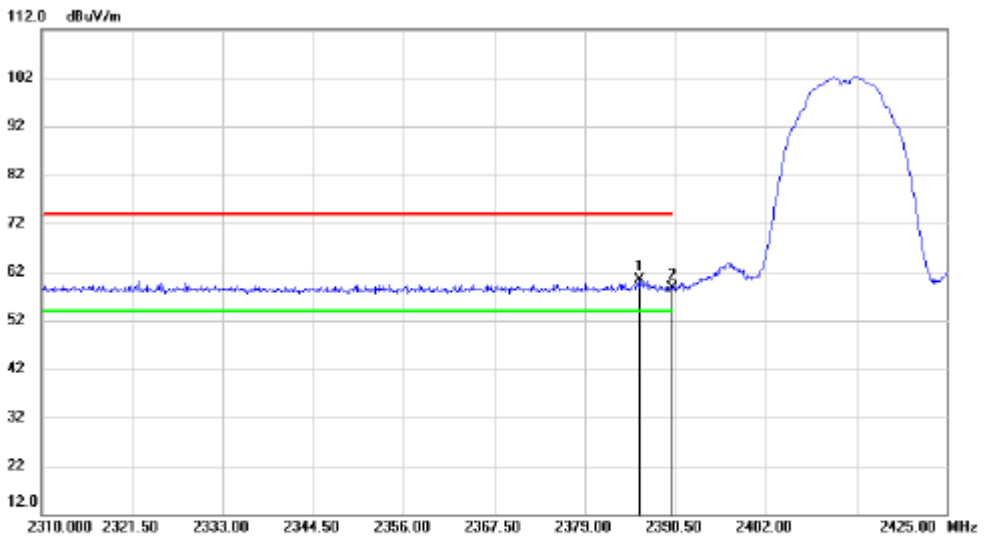
## 8.1. RESTRICTED BANDEDGE

### 8.1.1. 802.11b MODE

#### SISO Ant 0 (WORST-CASE CONFIGURATION)

#### RESTRICTED BANDEDGE (CHANNEL1, HORIZONTAL)

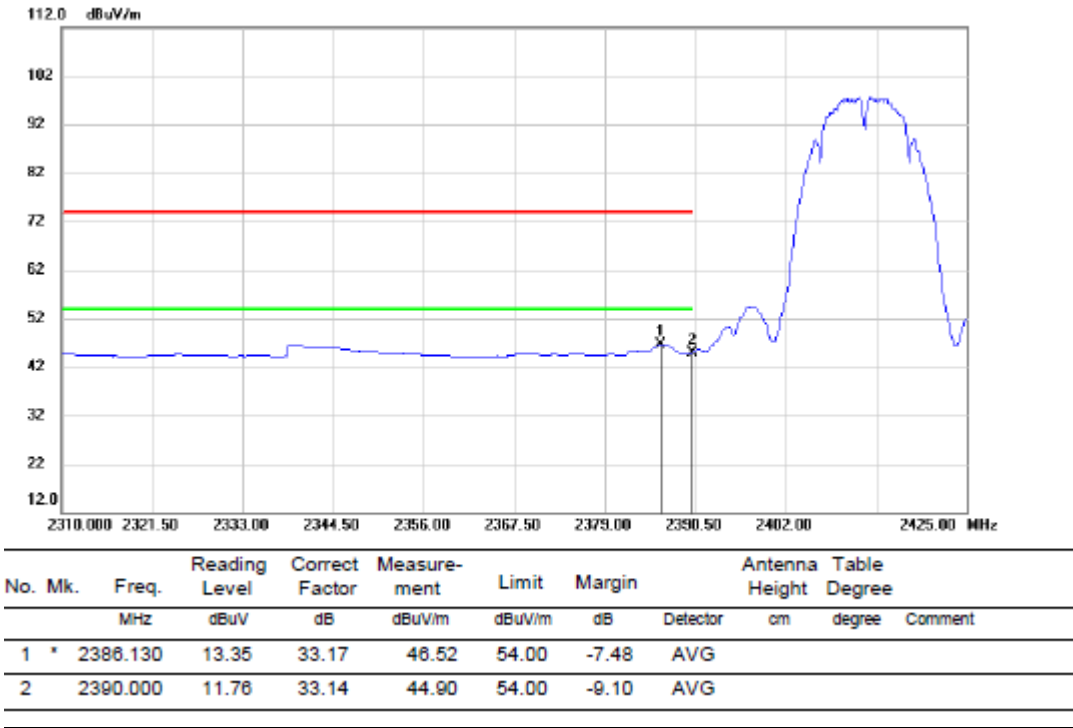
Peak



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1	*	2388.015	27.12	33.17	60.29	74.00	-13.71			peak
2		2390.000	25.55	33.14	58.69	74.00	-15.31			peak



**AVG**

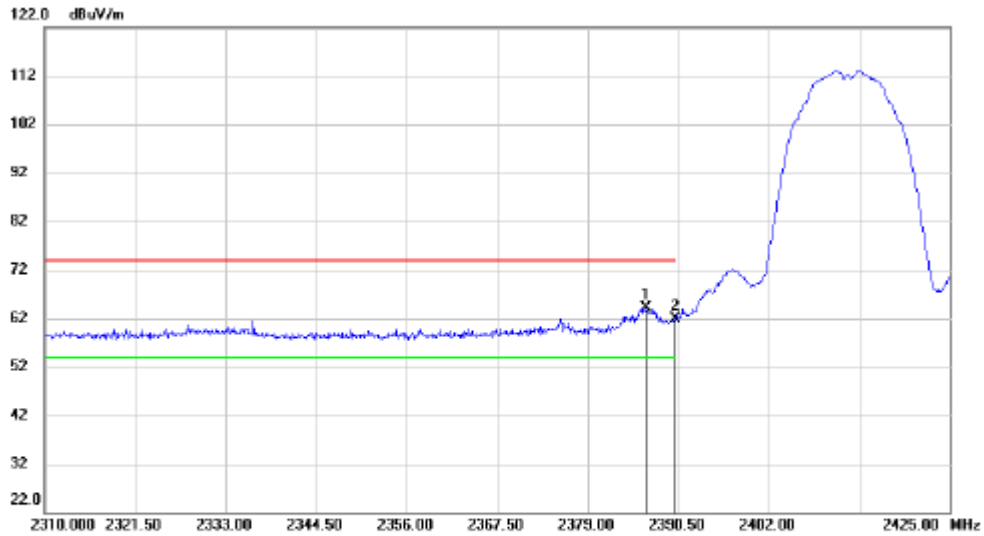


- Note:
1. Measurement = Reading Level + Correct Factor.
  2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
  3. Peak: Peak detector.
  4. AVG: VBW=10Hz.
  5. For transmit duration, please refer to clause 7.1.



**RESTRICTED BANDEDGE (CHANNEL1, VERTICAL)**

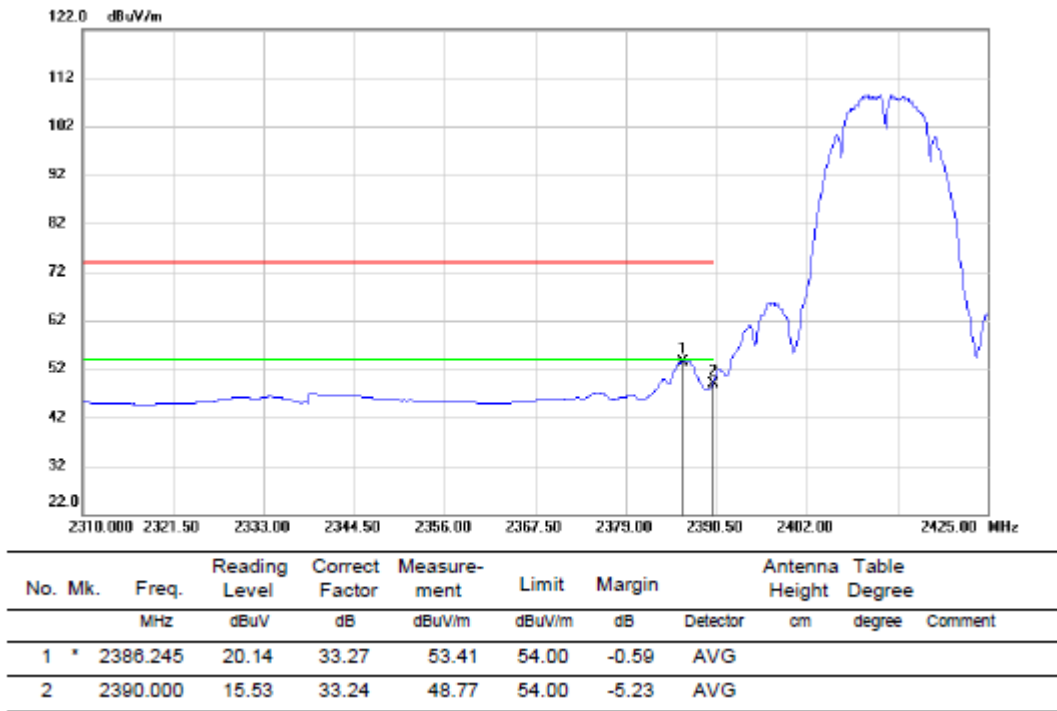
**Peak**



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1	*	2388.360	30.76	33.27	64.03	74.00	-9.97			peak
2		2390.000	28.63	33.24	61.87	74.00	-12.13			peak



AVG

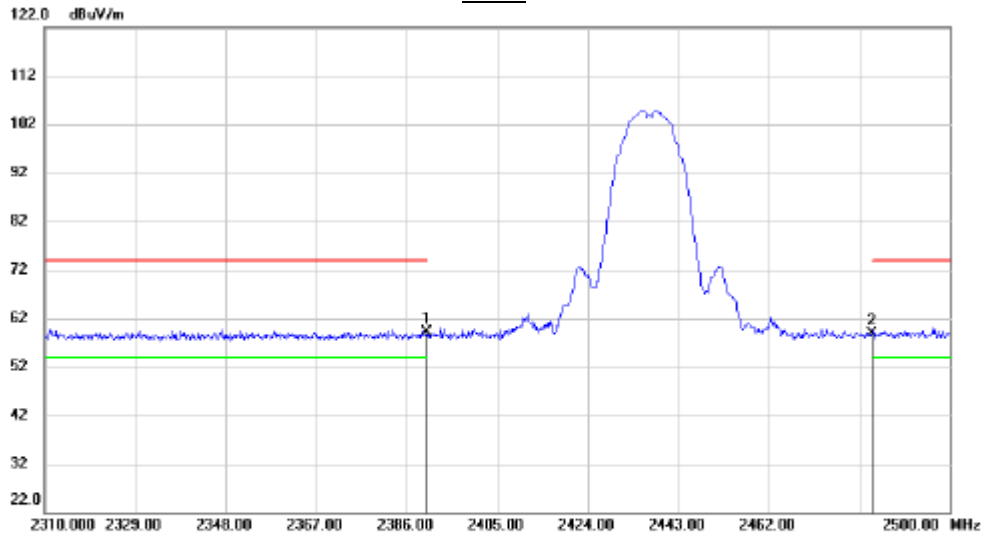


- Note:
1. Measurement = Reading Level + Correct Factor.
  2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
  3. Peak: Peak detector.
  4. AVG: VBW=10Hz.
  5. For transmit duration, please refer to clause 7.1.

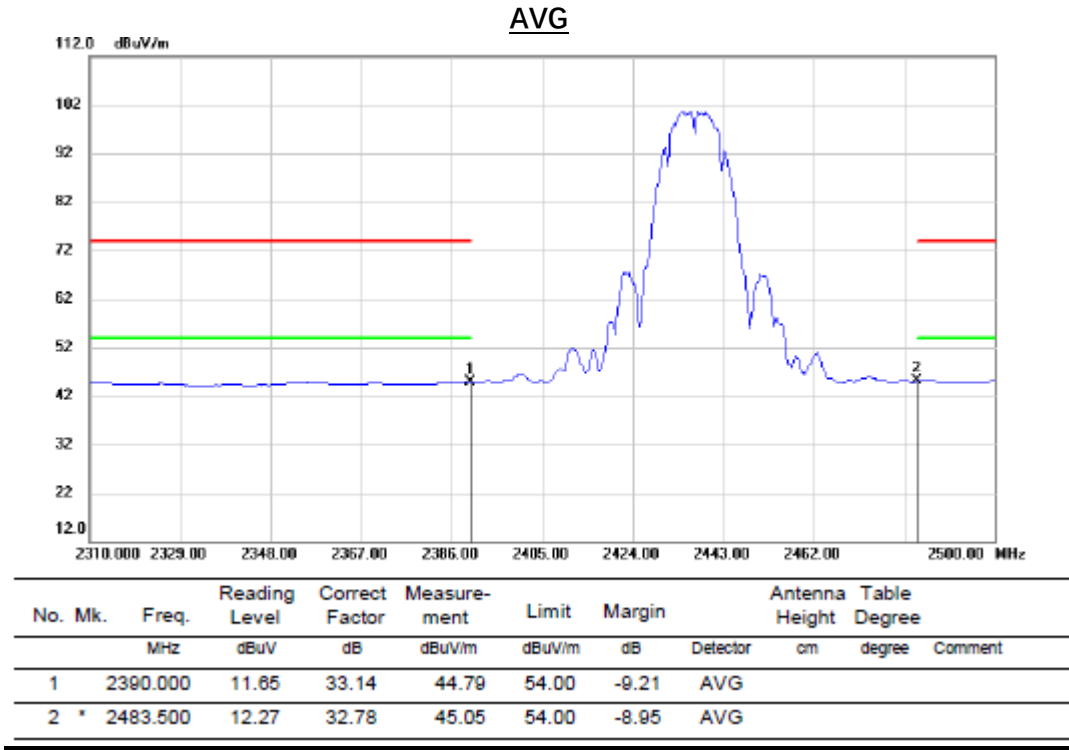


**RESTRICTED BANDEDGE (CHANNEL6, HORIZONTAL)**

**Peak**



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Antenna Height	Table Degree
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree
1	*	2390.000	26.00	33.14	59.14	74.00	-14.86	peak	
2		2483.500	26.20	32.78	58.98	74.00	-15.02	peak	

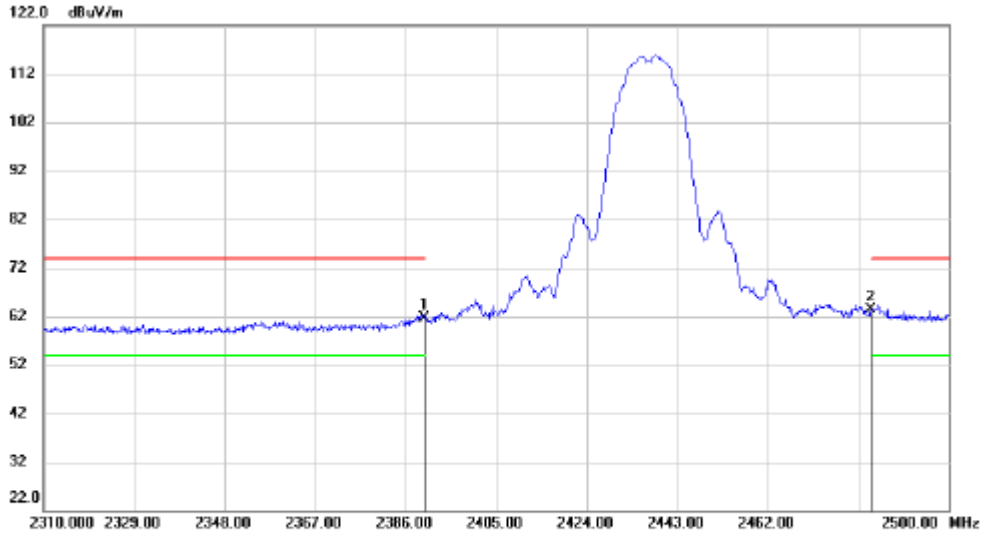


- Note:
1. Measurement = Reading Level + Correct Factor.
  2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
  3. Peak: Peak detector.
  4. AVG: VBW=10Hz.
  5. For transmit duration, please refer to clause 7.1.



**RESTRICTED BANDEDGE (CHANNEL6, VERTICAL)**

**Peak**

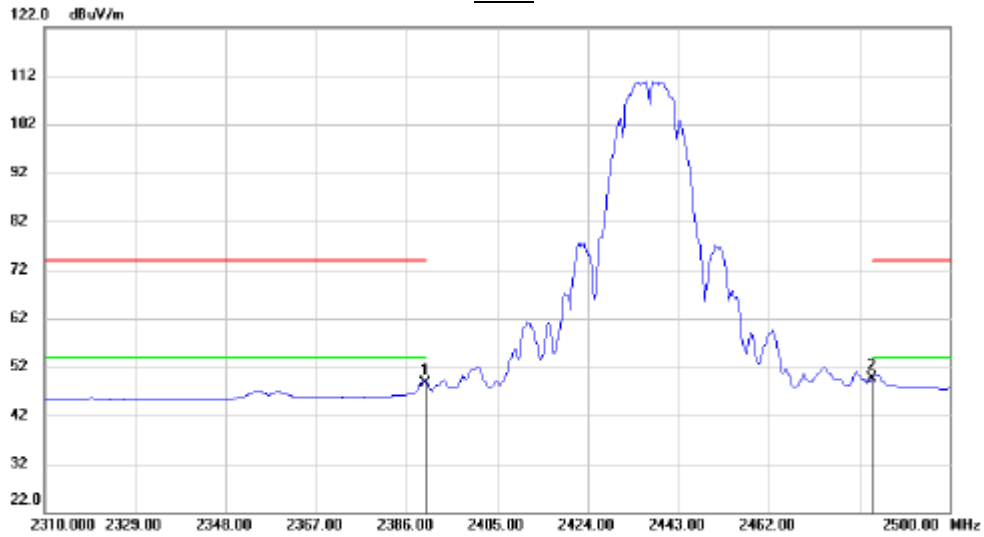


No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	
1		2390.000	28.51	33.24	61.75	74.00	-12.25			peak
2	*	2483.500	30.48	32.88	63.36	74.00	-10.64			peak





AVG



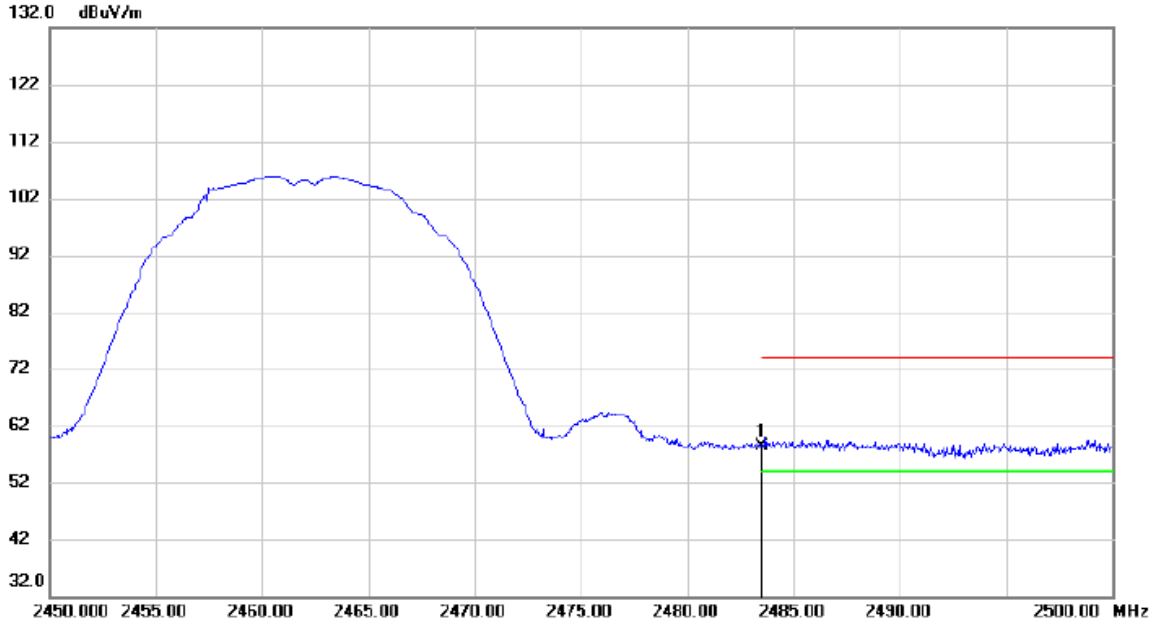
No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Antenna Table	Table
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Height	Degree
1		2390.000	15.35	33.24	48.59	54.00	-5.41	AVG	
2	*	2483.500	16.84	32.88	49.72	54.00	-4.28	AVG	

- Note:
1. Measurement = Reading Level + Correct Factor.
  2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
  3. Peak: Peak detector.
  4. AVG: VBW=10Hz.
  5. For transmit duration, please refer to clause 7.1.



**RESTRICTED BANDEDGE (CHANNEL11, HORIZONTAL)**

**Peak**



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1	*	2483.500	25.54	32.88	58.42	74.00	-15.58			peak