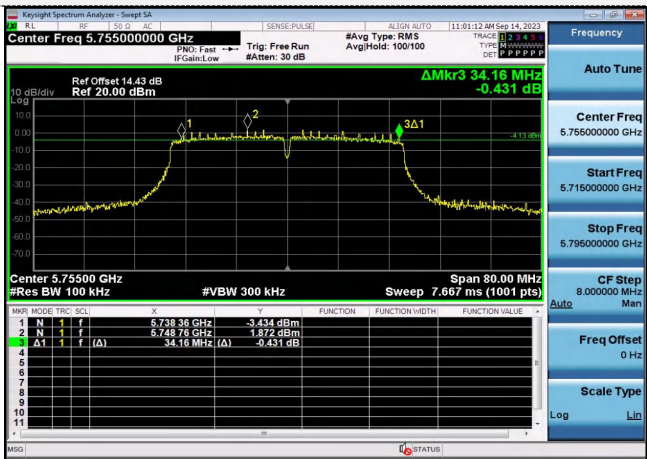
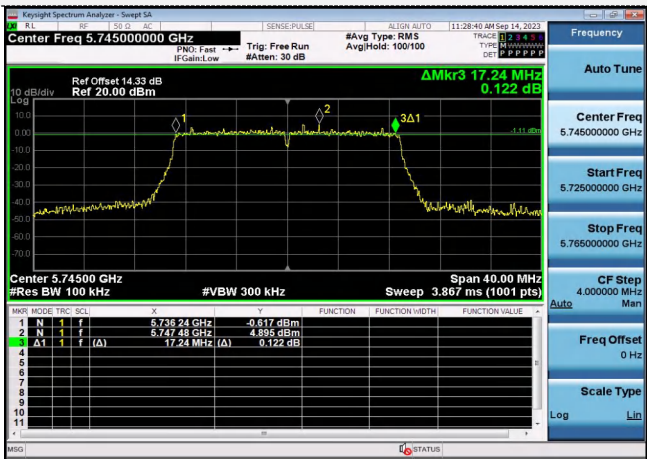


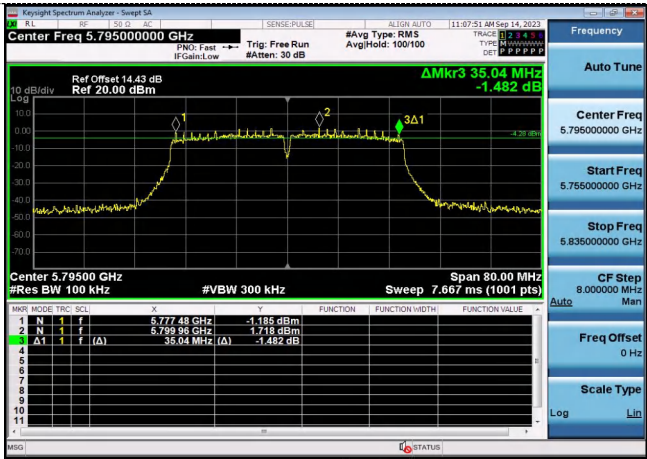
802.11n(HT40)



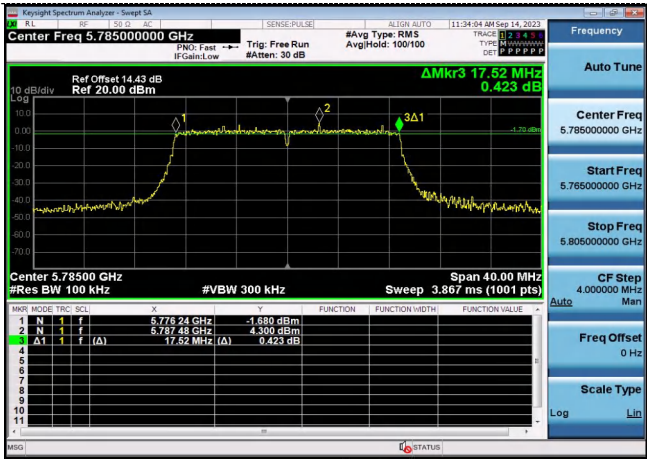
802.11ac(HT20)



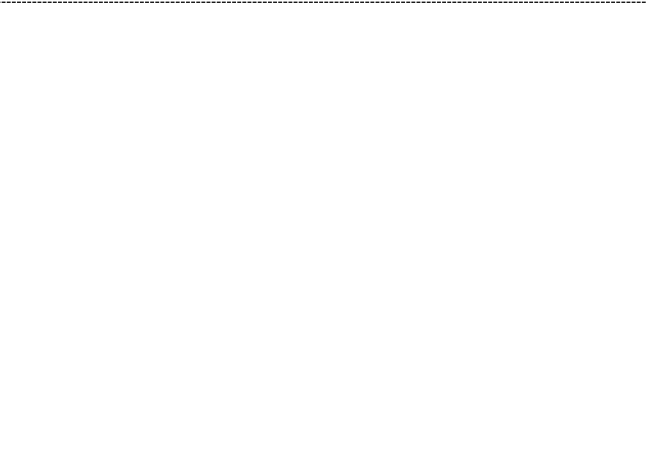
CH151



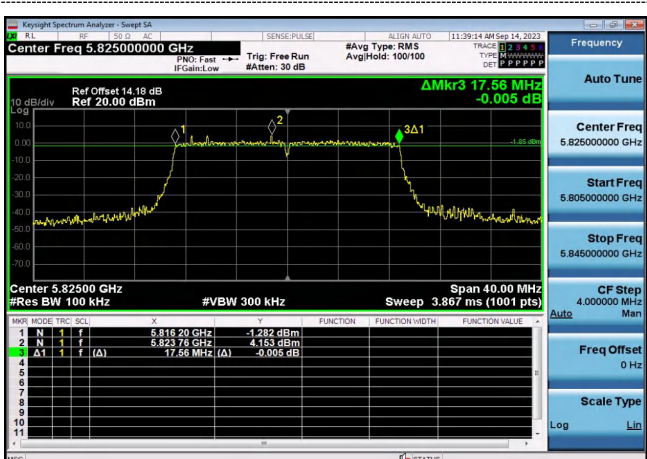
CH149



CH159

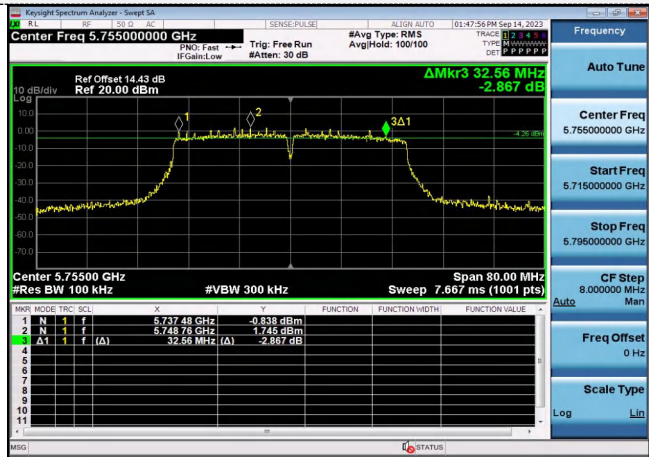


CH157

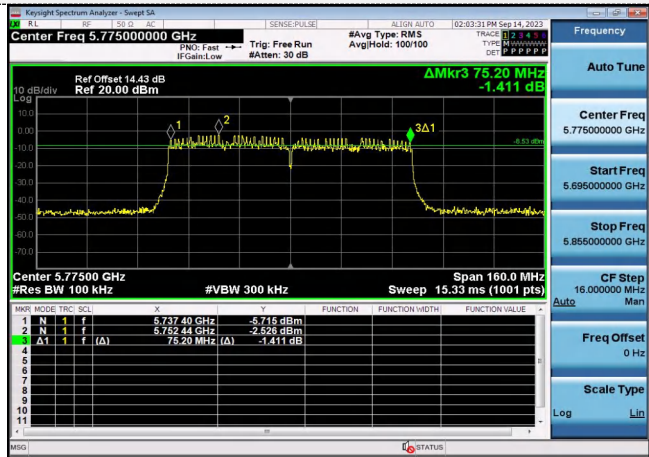


CH165

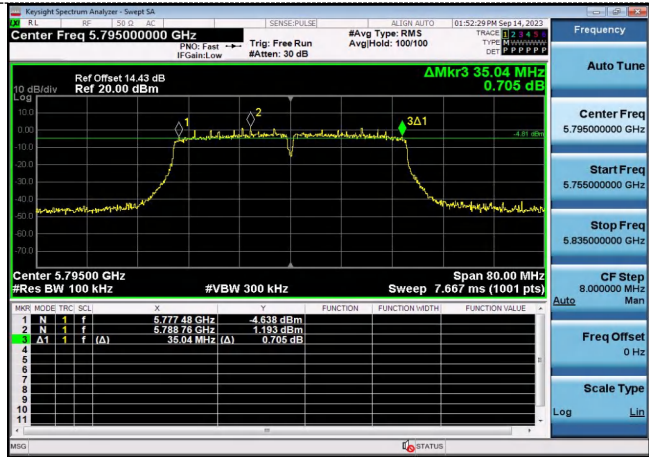
802.11ac(HT40)



802.11ac(HT80)



CH151



CH155

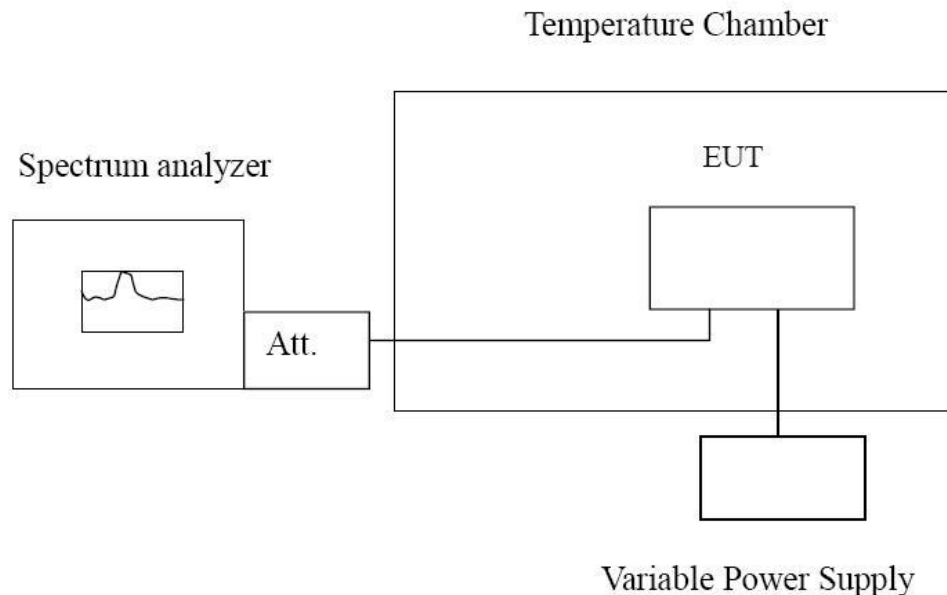
CH159

## 4.7 Frequency Stability

### LIMIT

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the users manual.

### TEST CONFIGURATION



### TEST PROCEDURE

#### **Frequency Stability under Temperature Variations:**

The equipment under test was connected to an external AC or DC power supply and input rated voltage. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. The EUT was placed inside the temperature chamber. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 20°C operating frequency as reference frequency. Turn EUT off and set the chamber temperature to -30°C. After the temperature stabilized for approximately 30 minutes recorded the frequency. Repeat step measure with 10°C increased per stage until the highest temperature of +50°C reached.

#### **Frequency Stability under Voltage Variations:**

Set chamber temperature to 20°C. Use a variable AC power supply / DC power source to power the EUT and set the voltage to rated voltage. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency.

Reduce the input voltage to specify extreme voltage variation ( $\pm 15\%$ ) and endpoint, record the maximum frequency change.

### TEST RESULTS

Record worst case as below:

**Ant 1**

Reference Frequency: 802.11ac channel=36 frequency=5180MHz					
Voltage ( V )	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
24.00	-30	141.58	0.02733	Within the band of operation	Pass
	-20	133.76	0.02582		
	-10	135.94	0.02624		
	0	127.62	0.02464		
	10	138.46	0.02673		
	20	122.69	0.02369		
	30	131.47	0.02538		
	40	145.58	0.02810		
	50	141.23	0.02726		
26.4	25	138.25	0.02669	Within the band of operation	Pass
21.6	25	131.62	0.02541		

Reference Frequency: 802.11ac channel=149 frequency=5745MHz					
Voltage ( V )	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
24.00	-30	138.54	0.02411	Within the band of operation	Pass
	-20	135.72	0.02362		
	-10	146.83	0.02556		
	0	140.56	0.02447		
	10	129.34	0.02251		
	20	133.81	0.02329		
	30	136.43	0.02375		
	40	125.84	0.02190		
	50	127.72	0.02223		
26.4	25	134.25	0.02337	Within the band of operation	Pass
21.6	25	138.96	0.02419		

**Ant 2**

Reference Frequency: 802.11ac channel=36 frequency=5180MHz					
Voltage ( V )	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
24.00	-30	135.16	0.02609	Within the band of operation	Pass
	-20	128.43	0.02479		
	-10	124.65	0.02406		
	0	121.49	0.02345		
	10	139.68	0.02697		
	20	134.52	0.02597		
	30	133.87	0.02584		
	40	126.58	0.02444		
	50	124.83	0.02410		
26.4	25	136.49	0.02635	Within the band of operation	Pass
21.6	25	135.76	0.02621		

Reference Frequency: 802.11ac channel=149 frequency=5745MHz					
Voltage ( V )	Temperature ( °C )	Frequency error		Limit (ppm)	Result
		Hz	ppm		
24.00	-30	144.31	0.02512	Within the band of operation	Pass
	-20	146.59	0.02552		
	-10	137.84	0.02399		
	0	126.43	0.02201		
	10	120.57	0.02099		
	20	134.26	0.02337		
	30	133.65	0.02326		
	40	140.51	0.02446		
	50	129.78	0.02259		
26.4	25	138.46	0.02410	Within the band of operation	Pass
21.6	25	134.52	0.02342		

## 4.8 Automatically Discontinue Transmission

### Standard Applicable

#### **FCC CFR Title 47 Part 15 Subpart C Section 15.407(c):**

The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signalling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals. Applicants shall include in their application for equipment authorization a description of how this requirement is met.

### Test Result:

Declared by applicants that the device will automatically discontinue transmission in case of either absence of information to transmit or operational failure.

## 4.9 Band edge for RF Conducted Emissions

### Limit

1) 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.

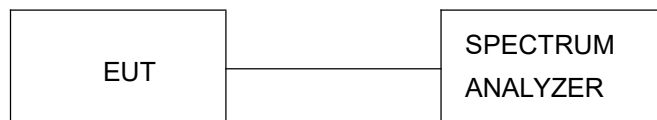
2) For transmitters operating solely in the 5.725 – 5.850 GHz band.

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.

### Test Procedure

Connect the transmitter output to spectrum analyzer using a low loss RF cable, and set the spectrum analyzer to RBW=100 kHz, VBW= 300 kHz, peak detector , and max hold.

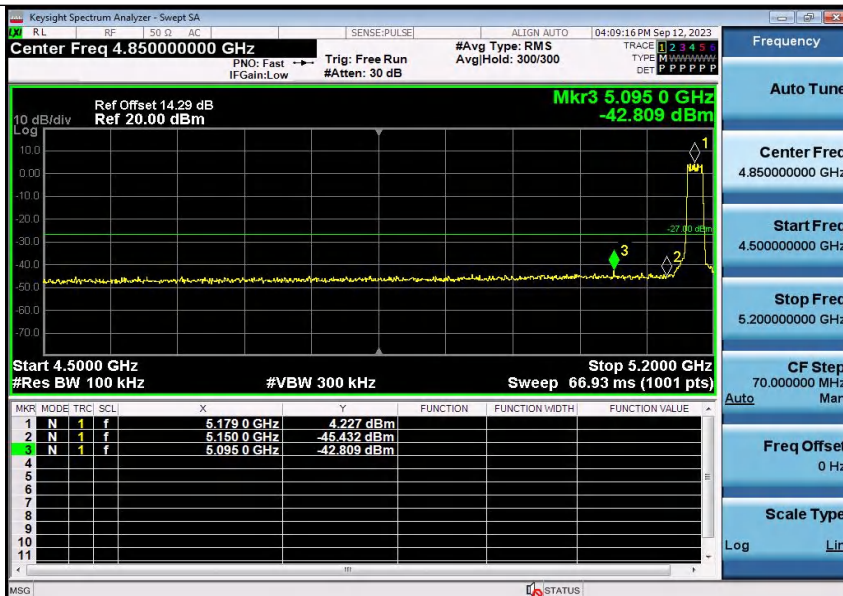
### Test Configuration



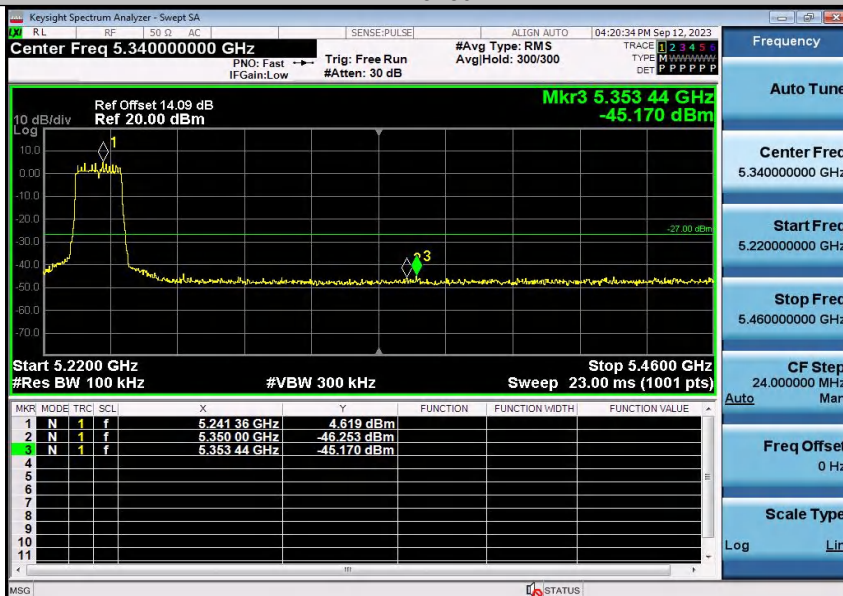
### Test Results

Test plot as follows:

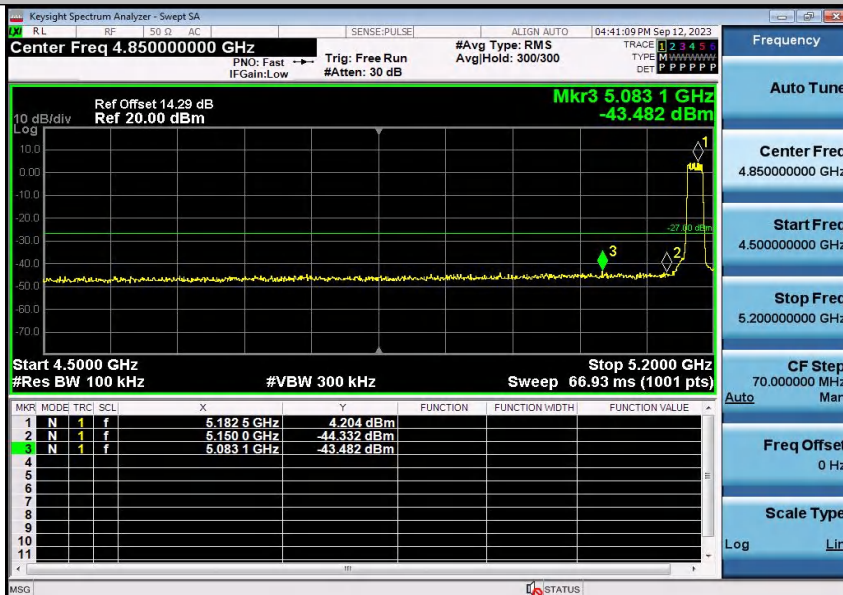
Ant 1



11A-Ant1-5180-PASS

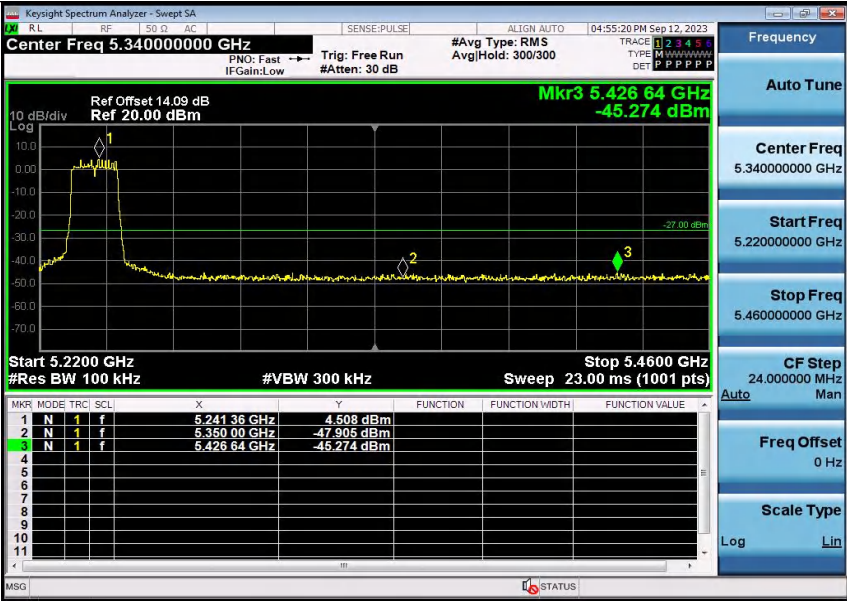


11A-Ant1-5240-PASS

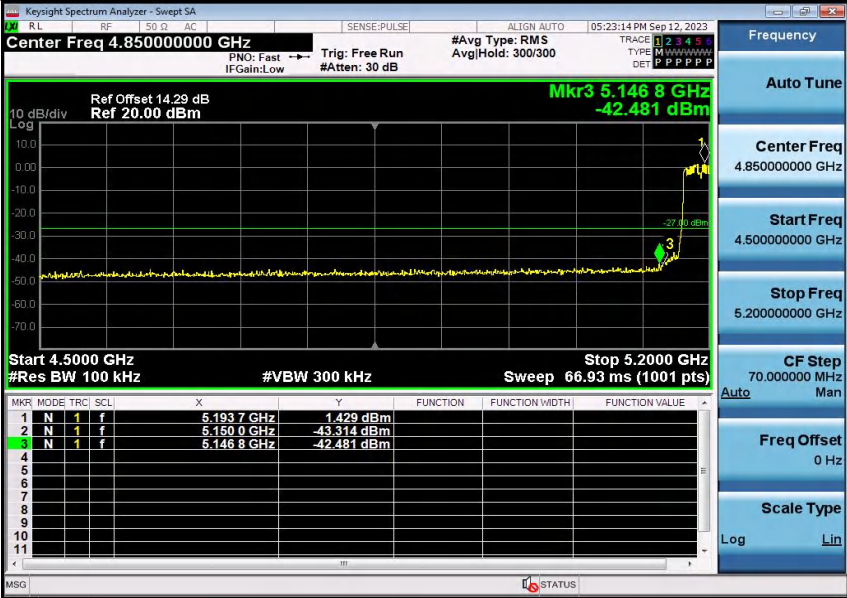


11N20SISO-Ant1-5180-PASS

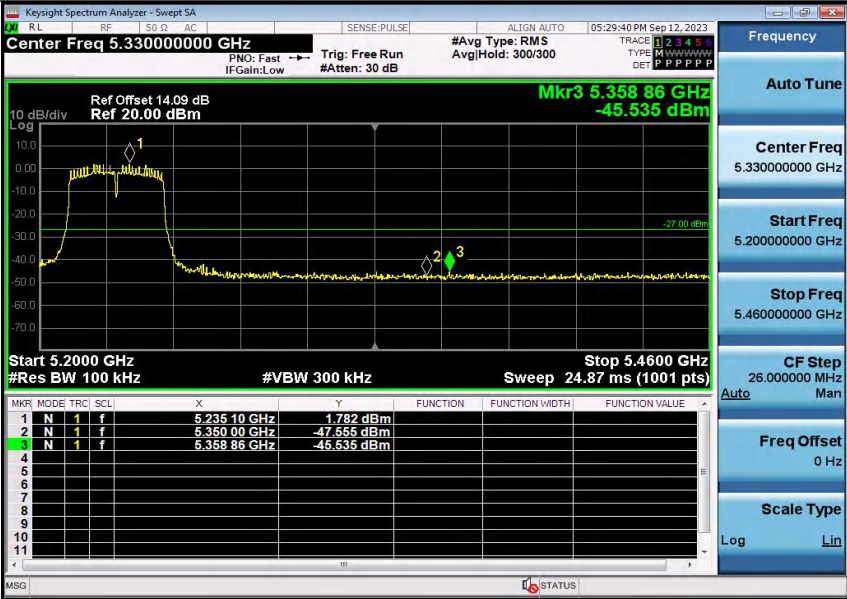




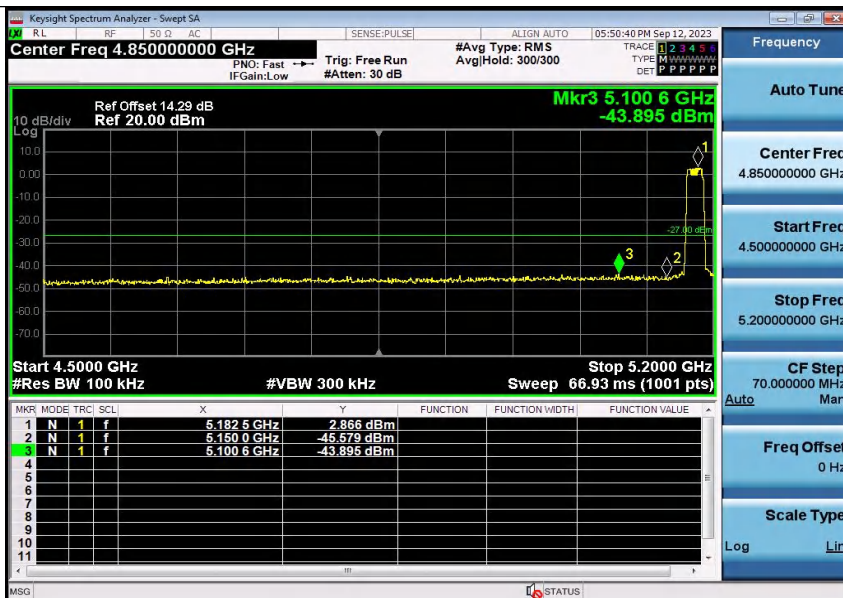
11N20SISO-Ant1-5240-PASS



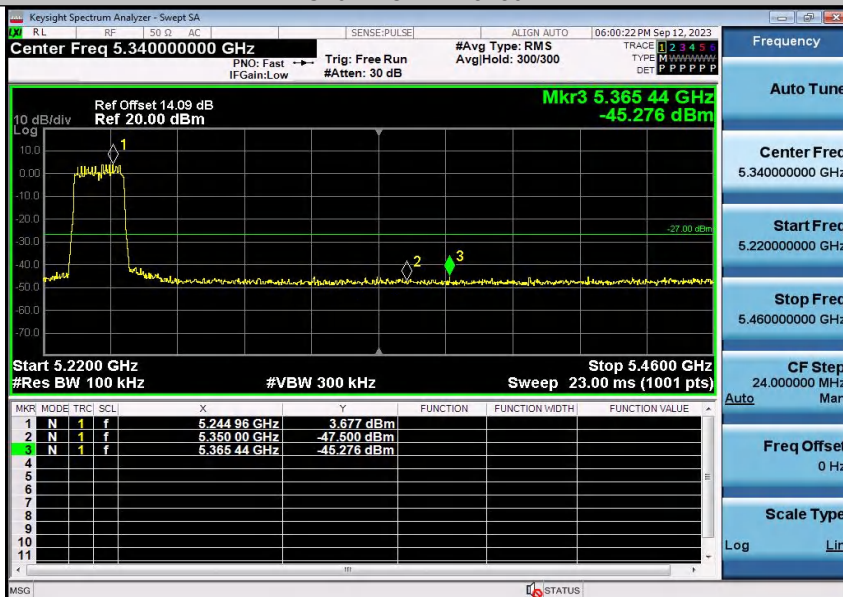
11N40SISO-Ant1-5190-PASS



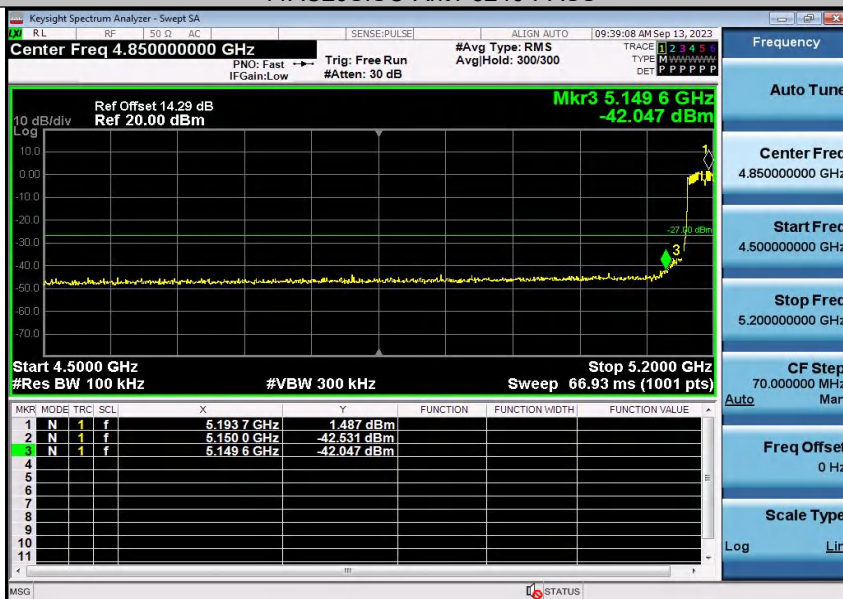
11N40SISO-Ant1-5230-PASS



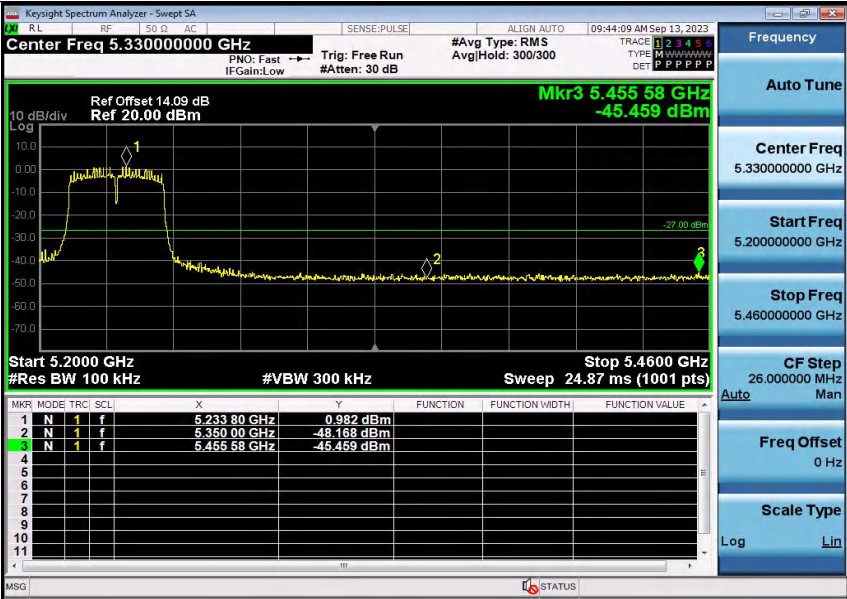
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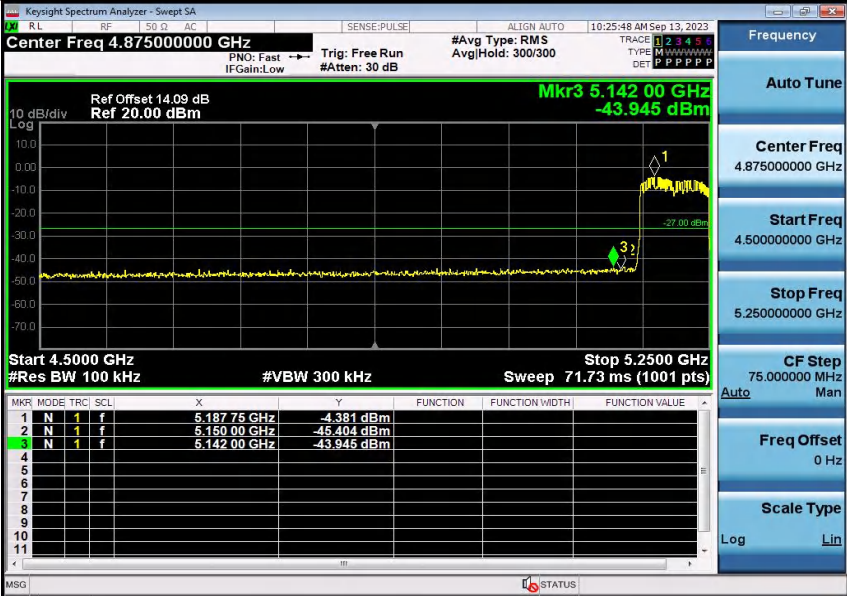
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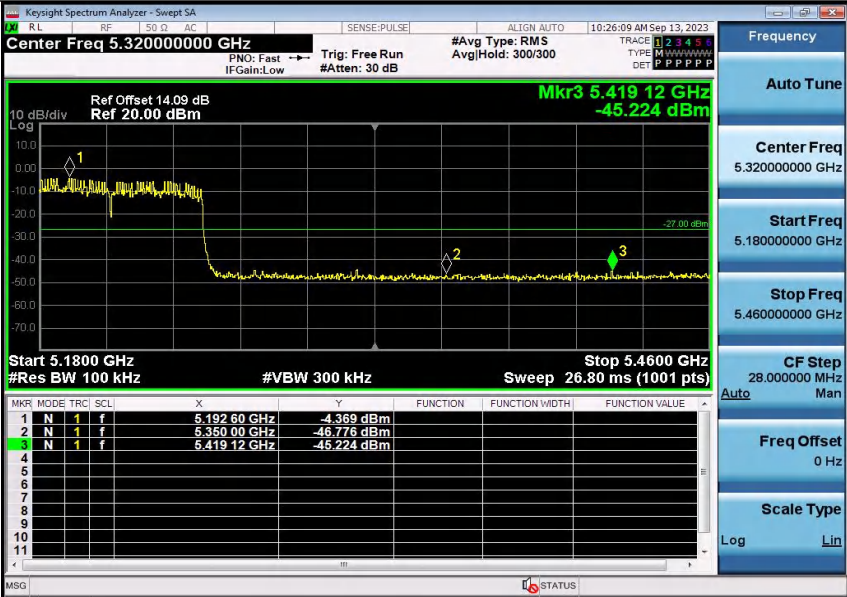
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11AC40SISO-Ant1-5230-PASS

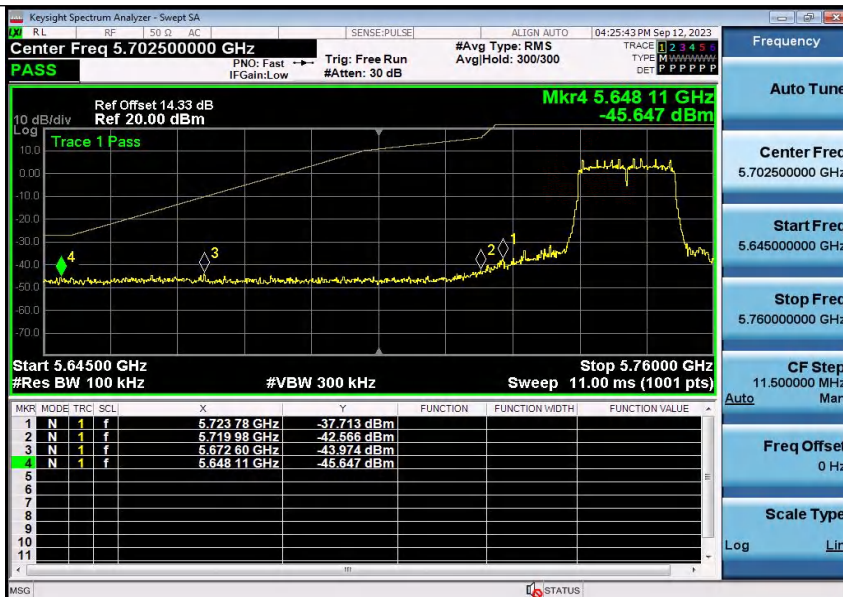


11AC80SISO-Ant1-5210-PASS



11AC80SISO-Ant1-5210-PASS

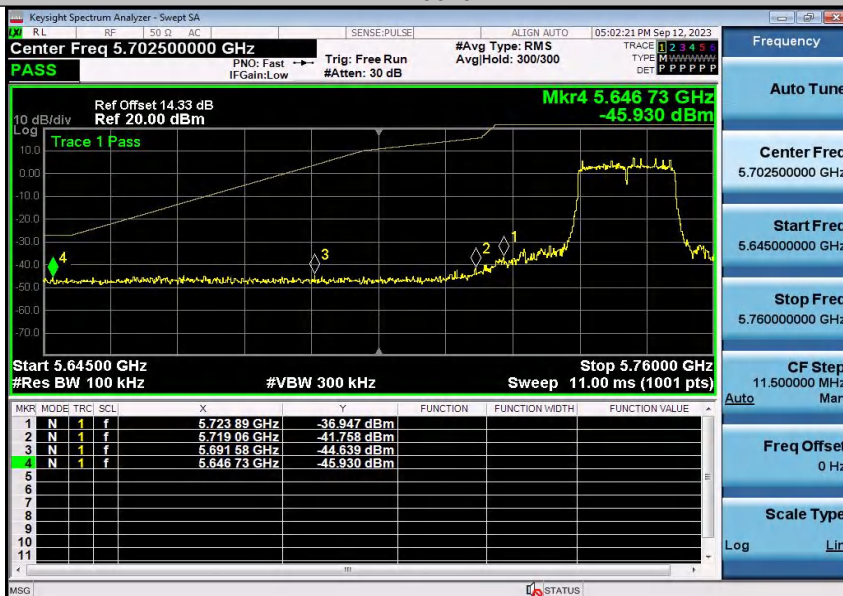




11A-Ant1-5745-PASS



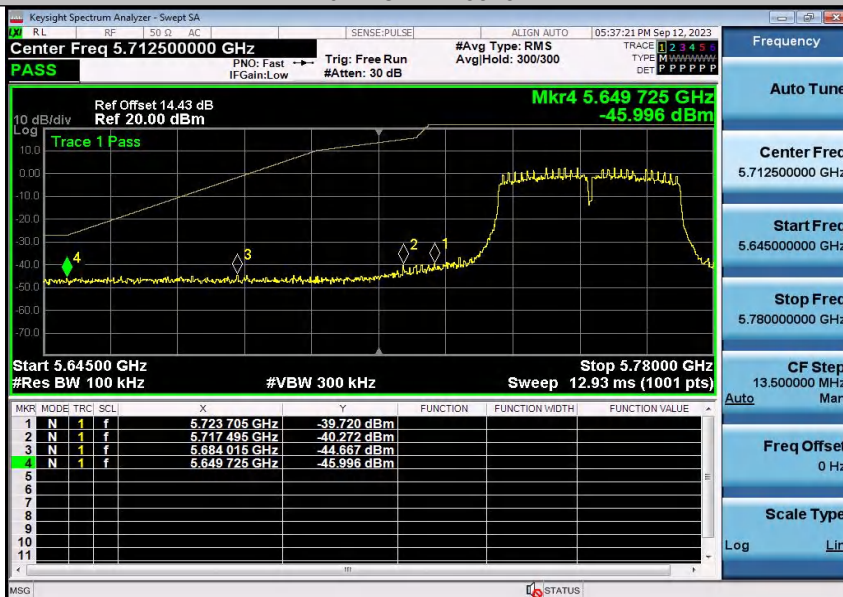
11A-Ant1-5825-PASS



11N20SISO-Ant1-5745-PASS



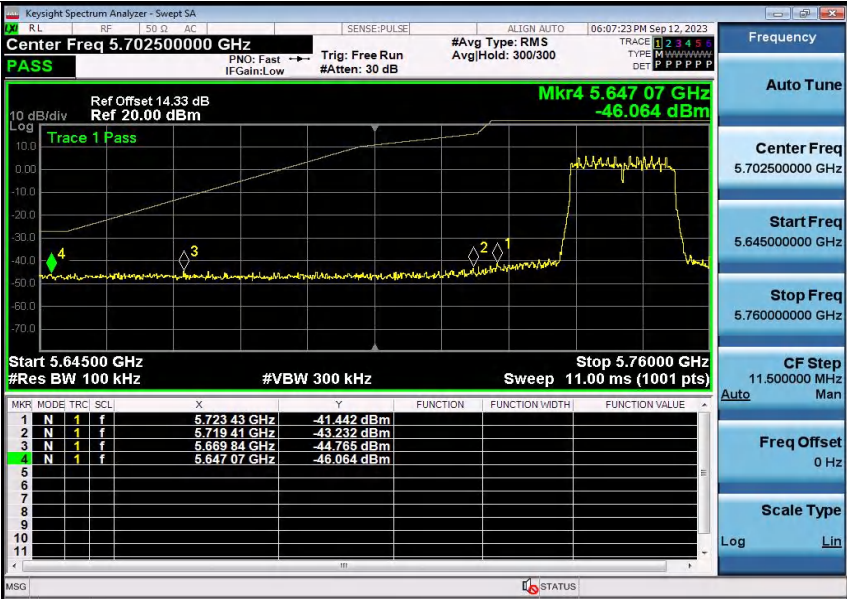
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11N40SISO-Ant1-5755-PASS



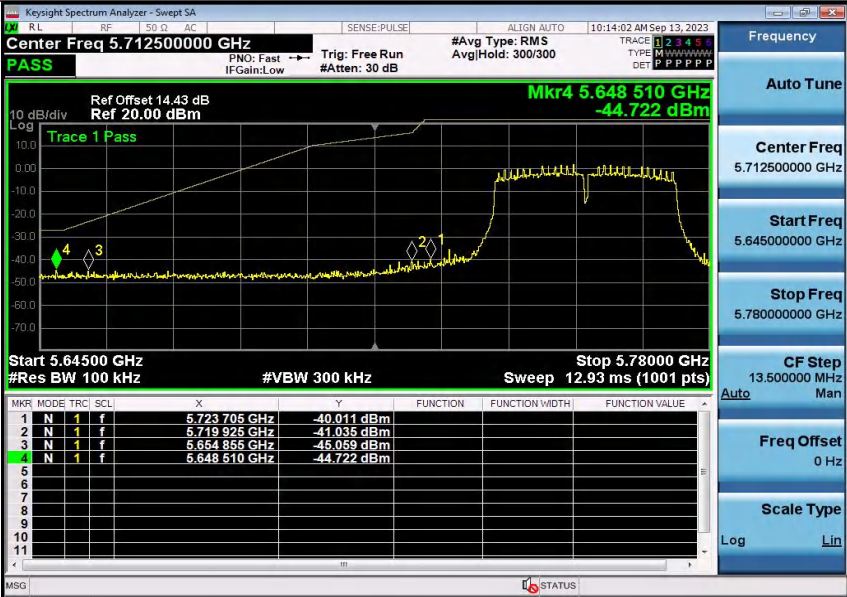
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11AC20SISO-Ant1-5745-PASS



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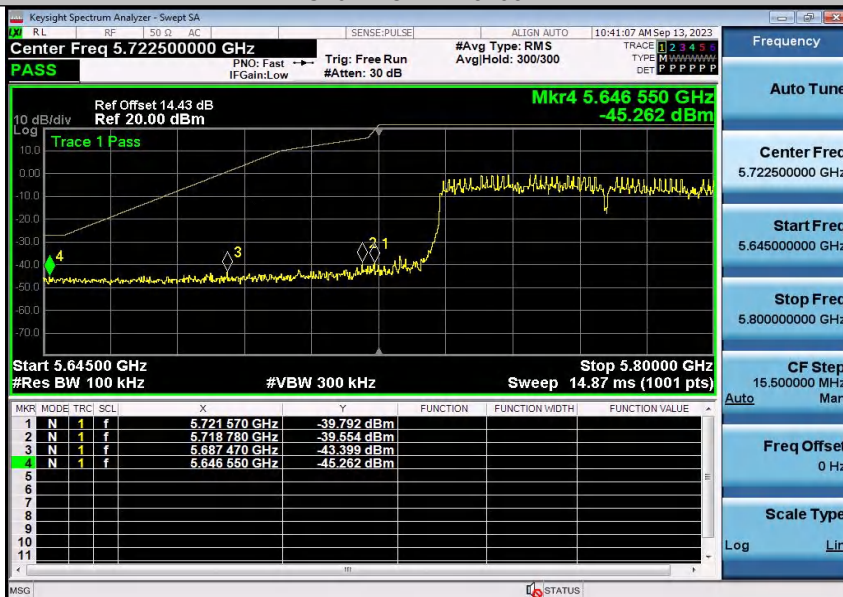


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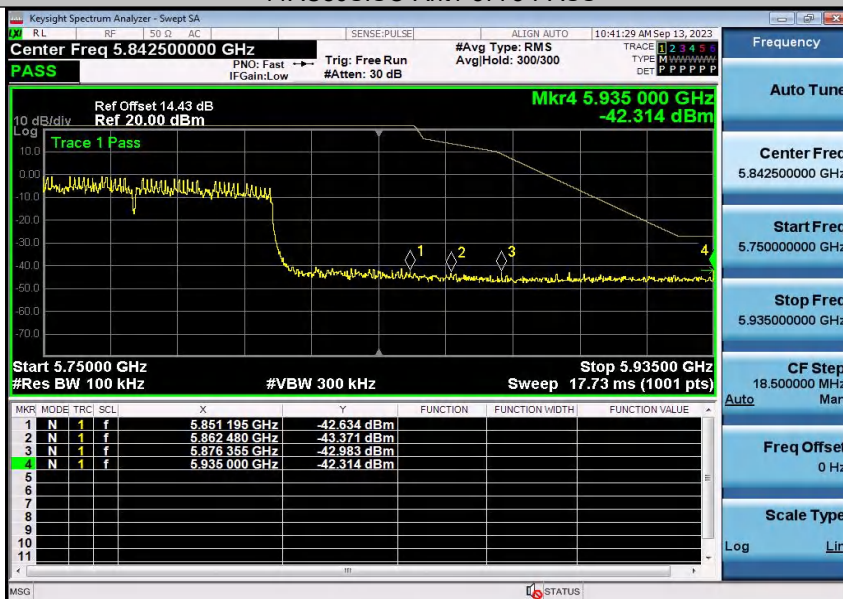




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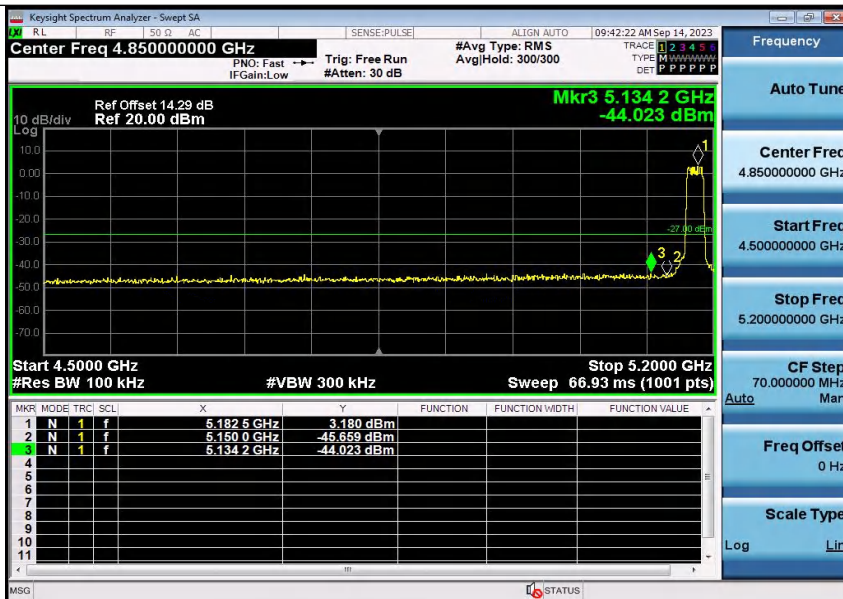


11AC80SISO-Ant1-5775-PASS

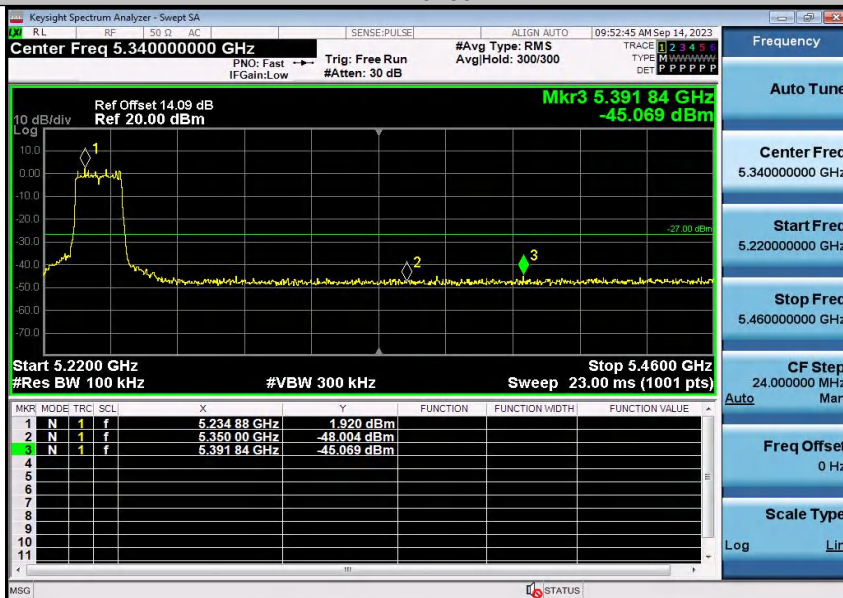


11AC80SISO-Ant1-5775-PASS

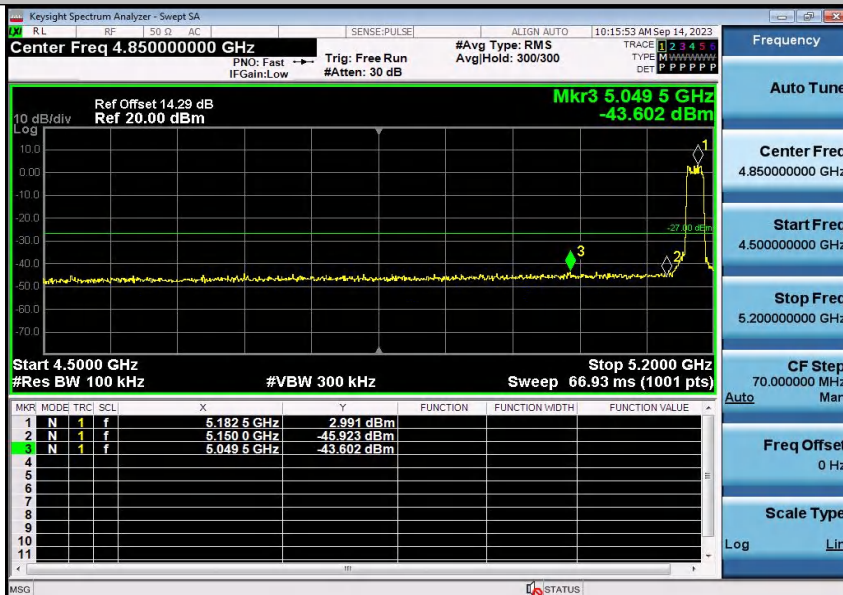
Ant 2



11A-Ant2-5180-PASS

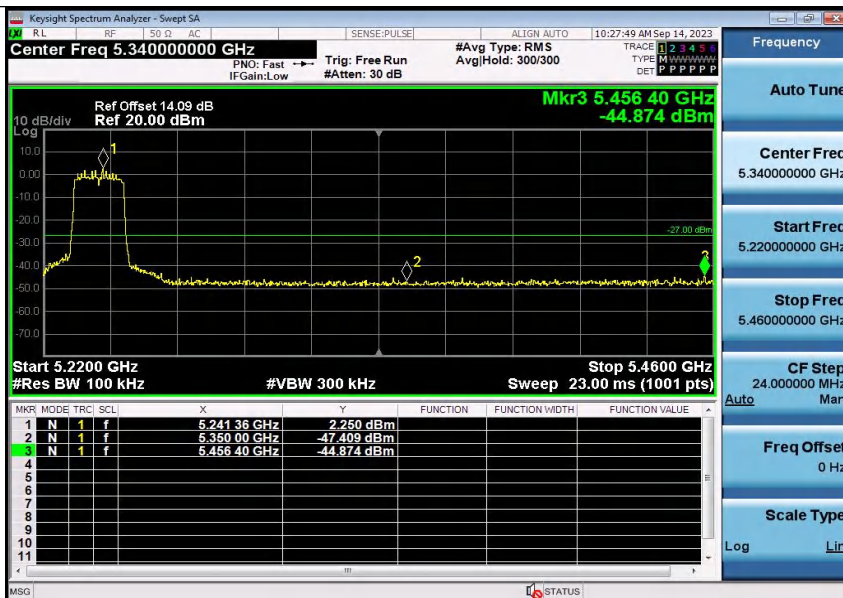


11A-Ant2-5240-PASS

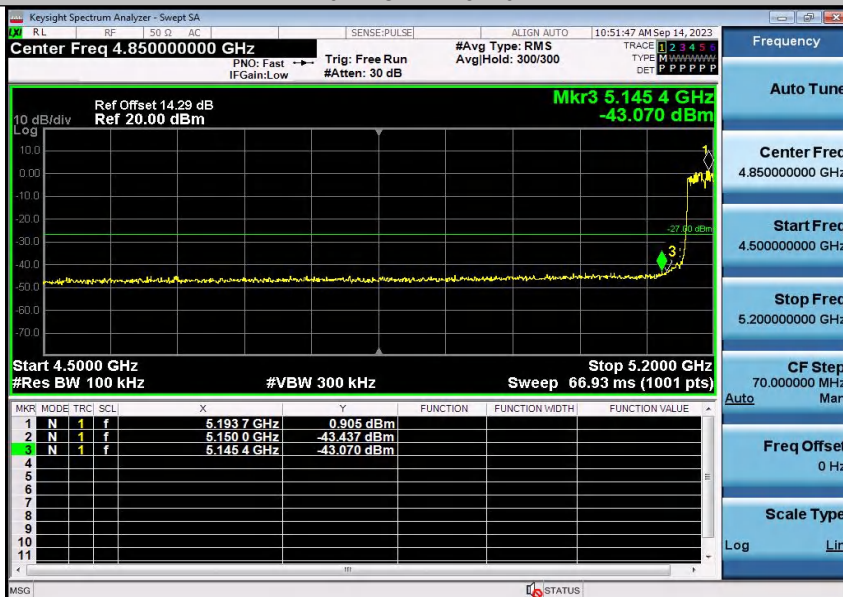


11N20SISO-Ant2-5180-PASS

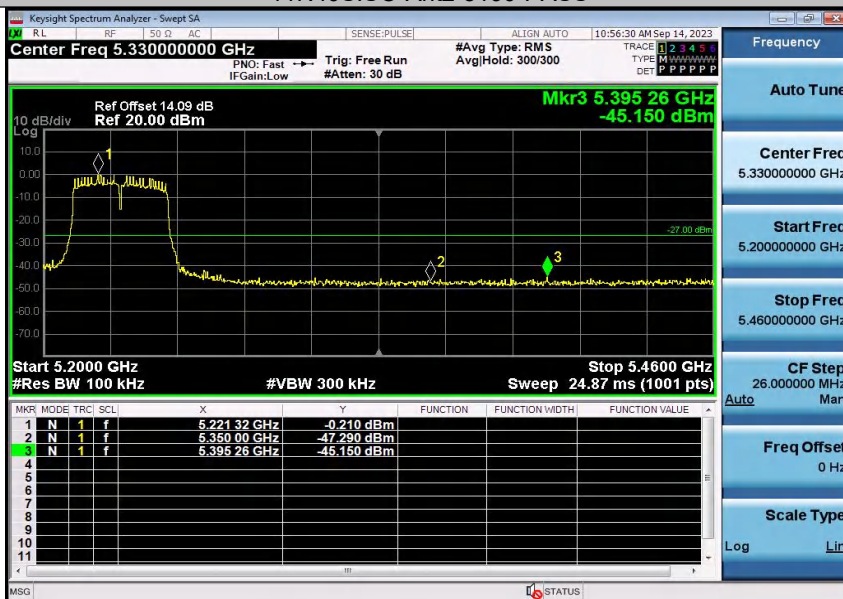




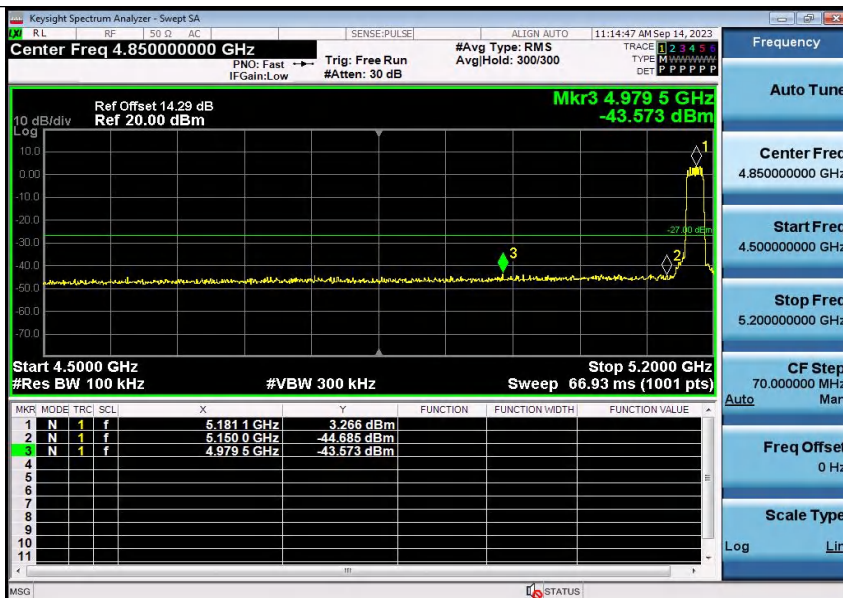
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11N40SISO-Ant2-5190-PASS



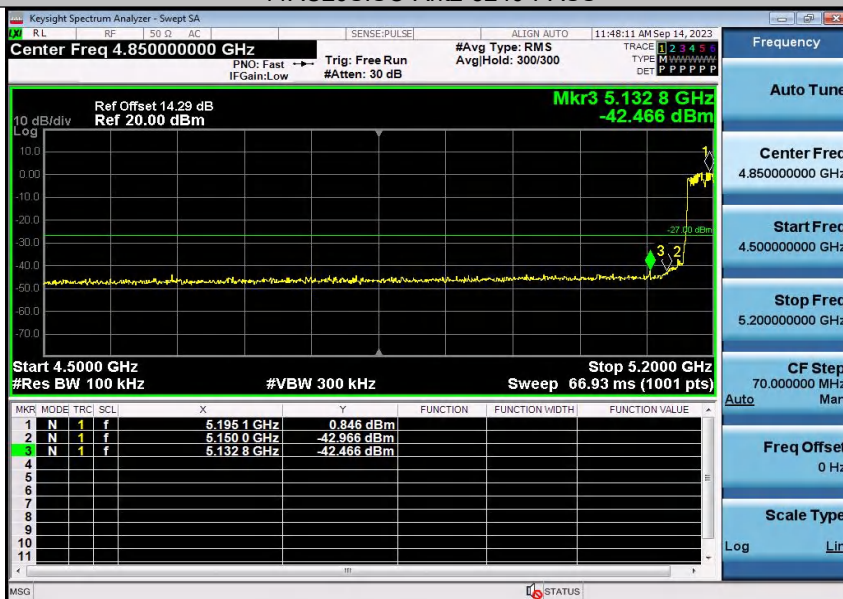
11N40SISO-Ant2-5230-PASS



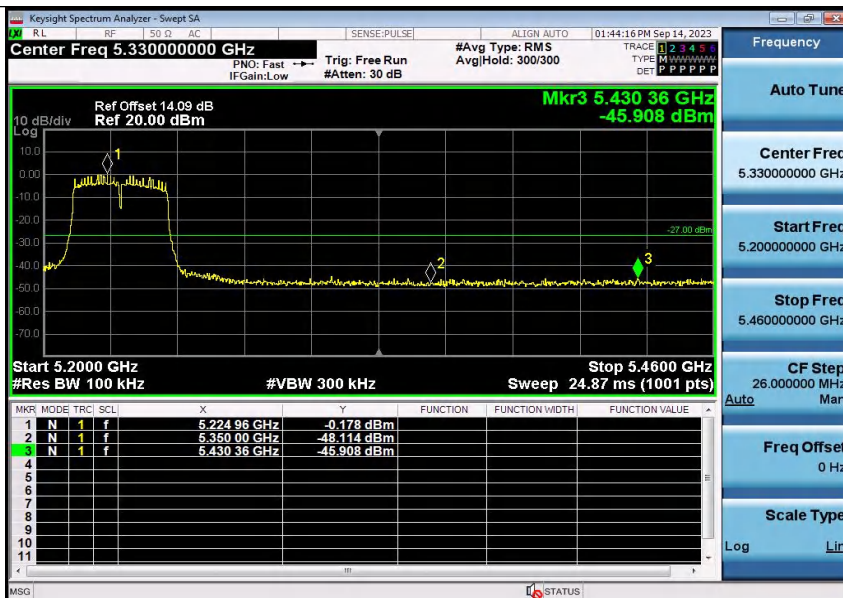
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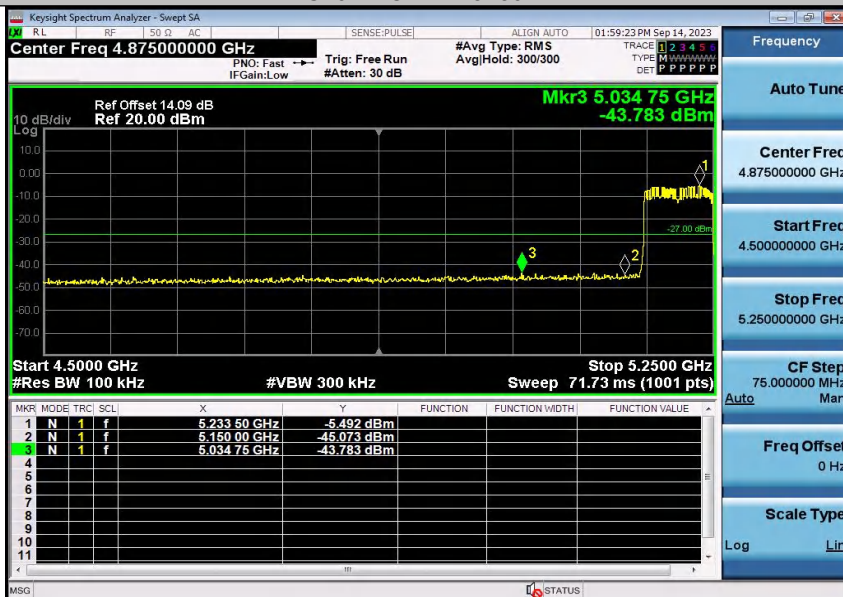
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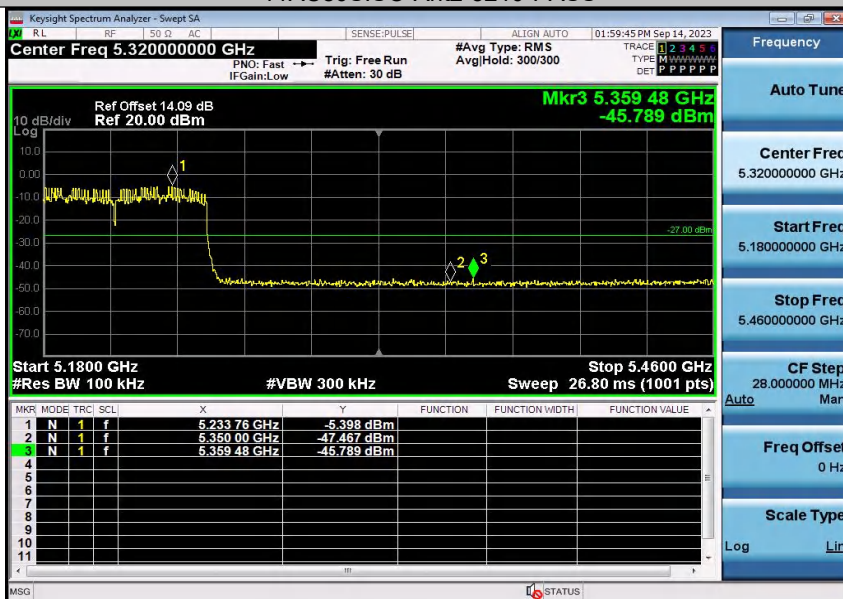
11AC40SISO-Ant2-5190-PASS



11AC40SISO-Ant2-5230-PASS

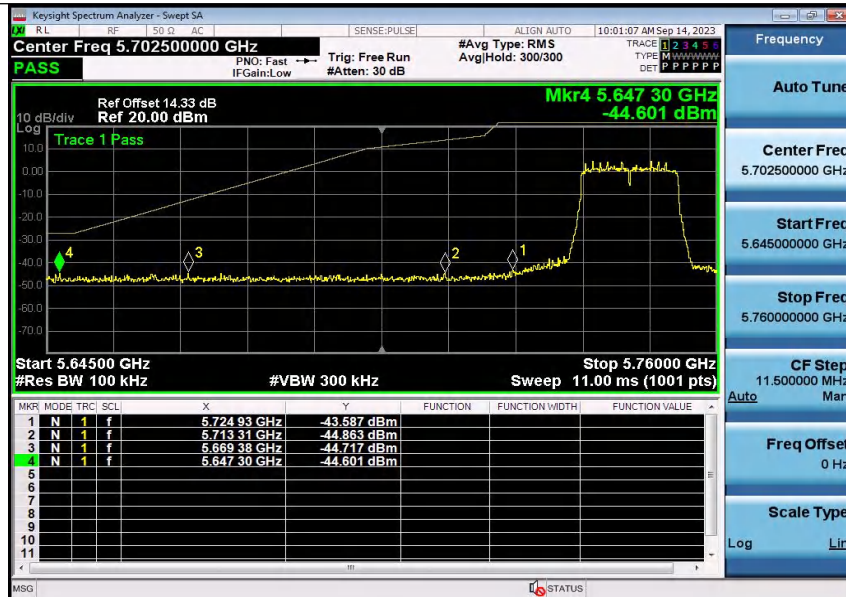


11AC80SISO-Ant2-5210-PASS



11AC80SISO-Ant2-5210-PASS

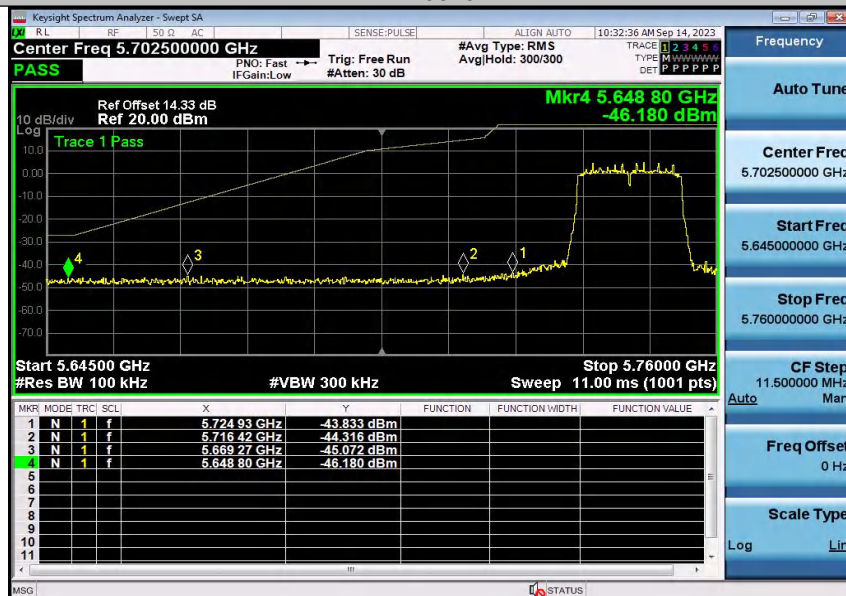




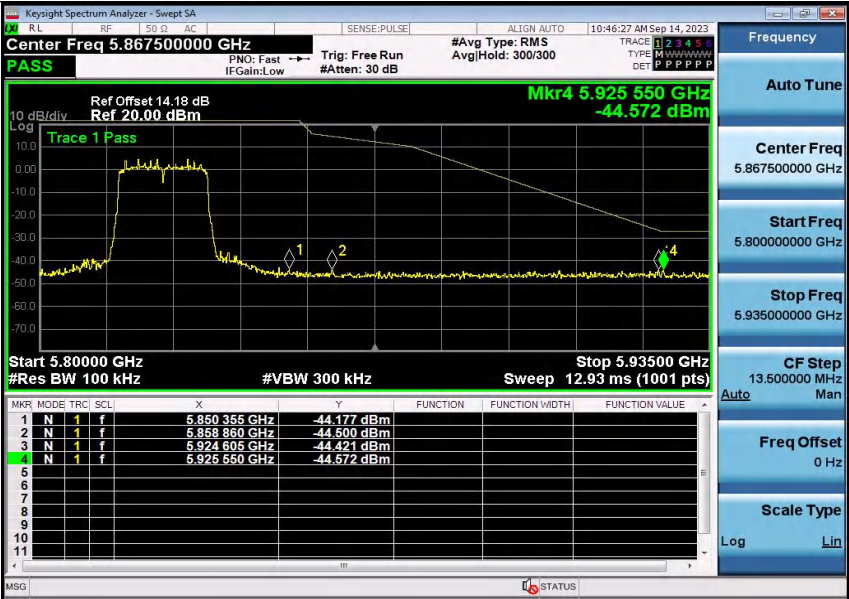
11A-Ant2-5745-PASS



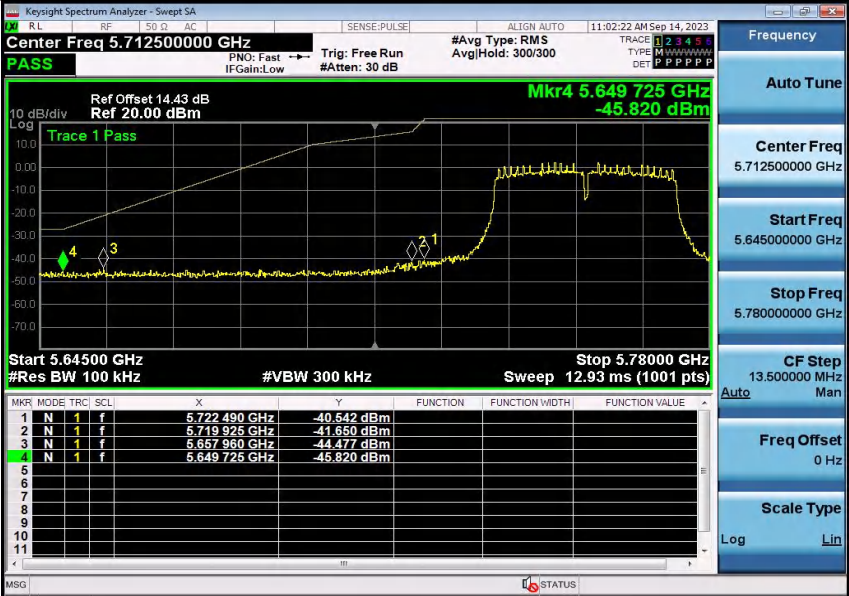
11A-Ant2-5825-PASS



11N20SISO-Ant2-5745-PASS



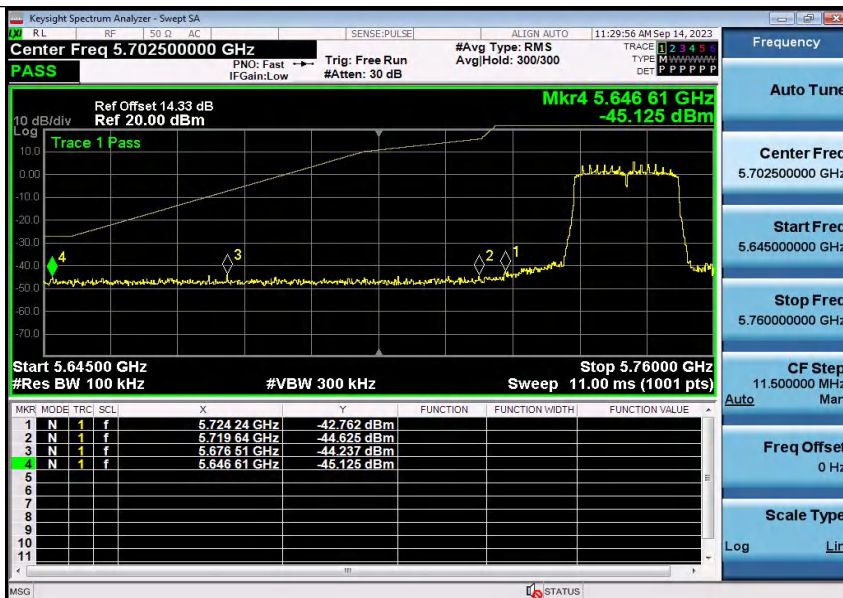
11N20SISO-Ant2-5825-PASS



11N40SISO-Ant2-5755-PASS



11N40SISO-Ant2-5795-PASS



11AC20SISO-Ant2-5745-PASS

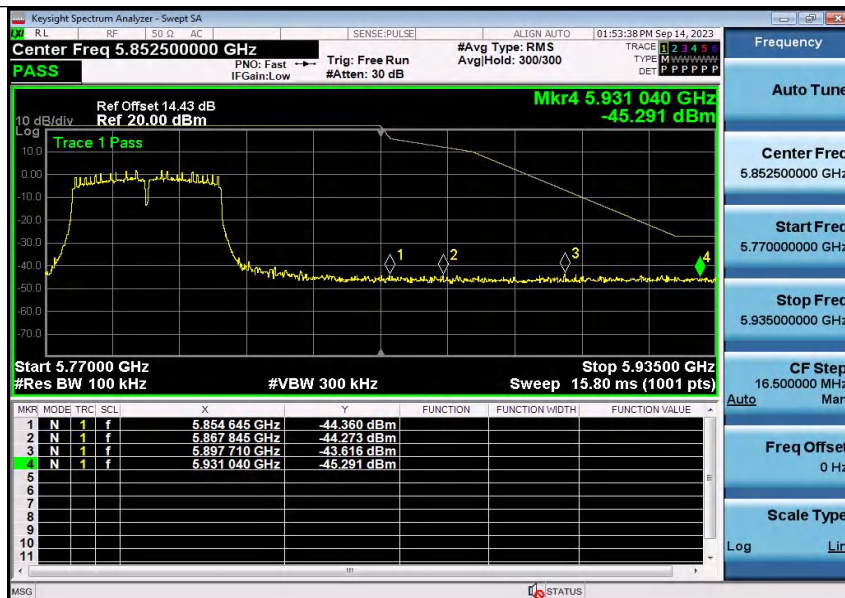


11AC20SISO-Ant2-5825-PASS

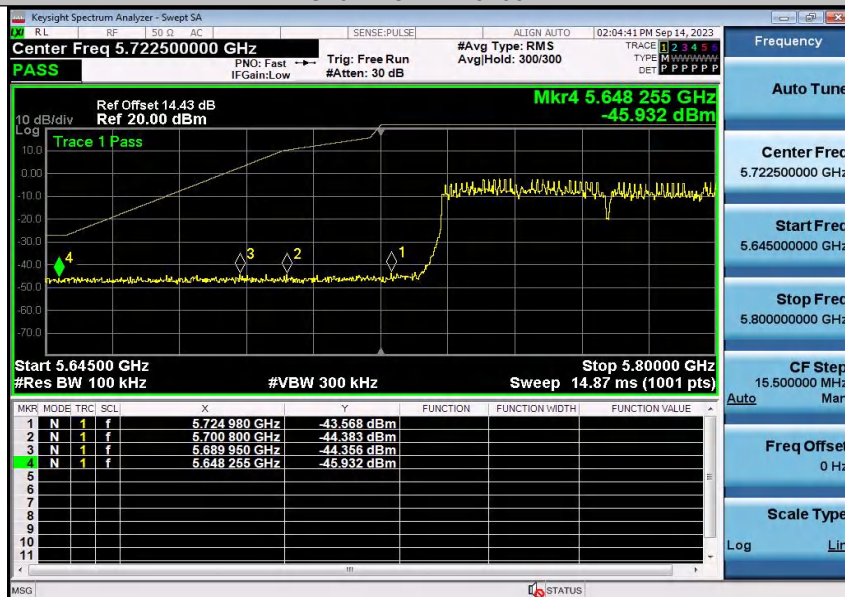


11AC40SISO-Ant2-5755-PASS





11AC40SISO-Ant2-5795-PASS

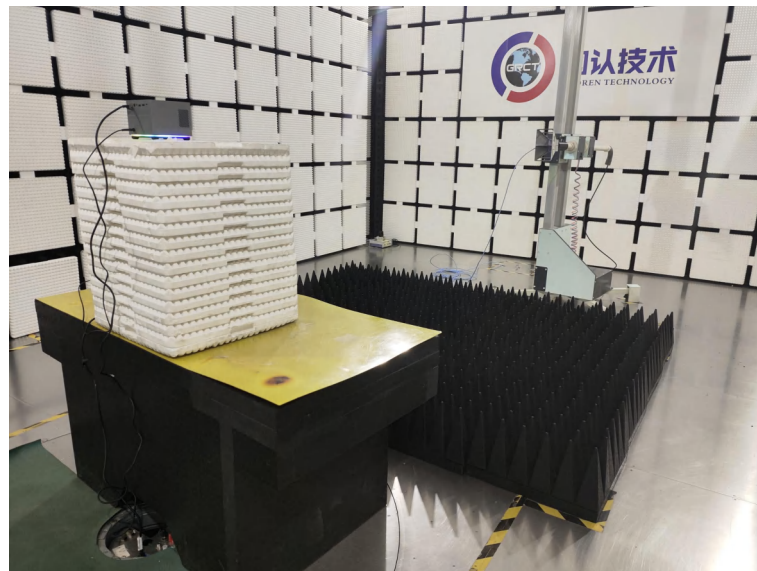
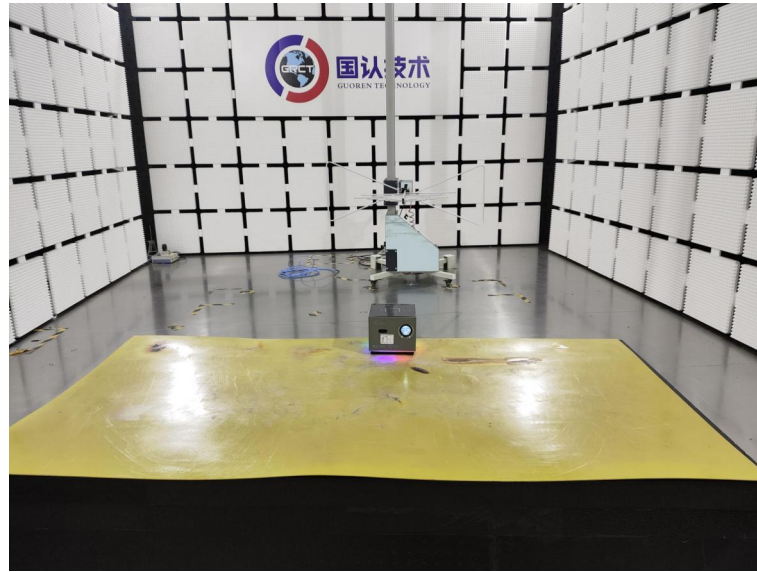


11AC80SISO-Ant2-5775-PASS



11AC80SISO-Ant2-5775-PASS

## 5 Test Setup Photos of the EUT





## **6 Photos of the EUT**

Reference to the test report No. GRCTR230902007-01.

\*\*\*\*\* End of Report \*\*\*\*\*