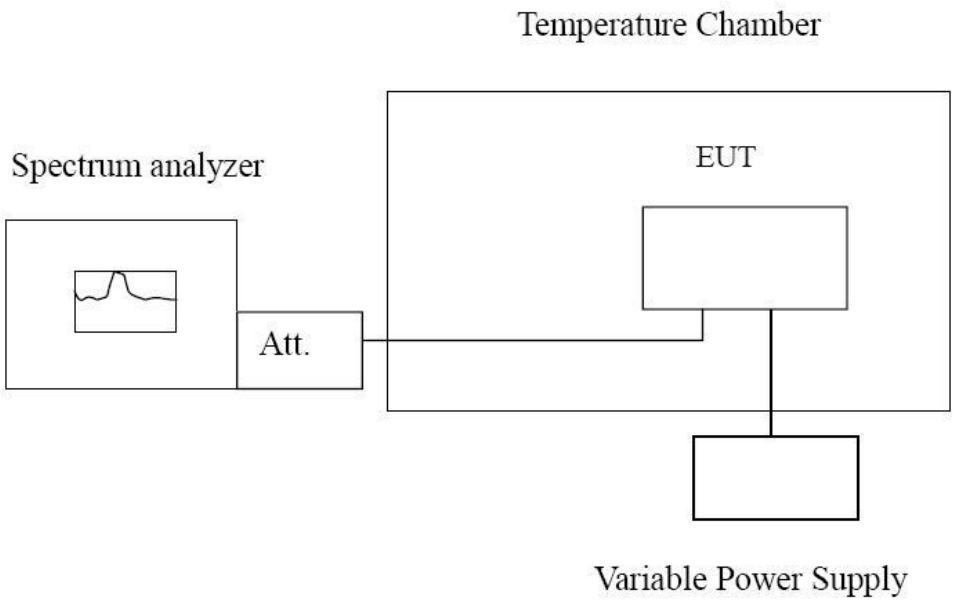
4.7 Frequency Stability

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℃ operating frequency as reference frequency. Turn EUT off and set the chamber temperature to -30℃. After the temperature stabilized for approximately 30 minutes recorded the frequency. Repeat step measure with 10℃ increased per stage until the highest temperature of +50℃ reached.

Frequency Stability under Voltage Variations:
Set chamber temperature to 20℃. 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 (±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 (℃)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
19.0	-30	127.51	0.02462	Within the band of operation	Pass
	-20	133.84	0.02584		
	-10	129.03	0.02491		
	0	136.47	0.02635		
	10	132.93	0.02566		
	20	125.47	0.02422		
	30	138.62	0.02676		
	40	131.94	0.02547		
	50	128.57	0.02482		
20.9	20	134.48	0.02596		
17.1	20	136.19	0.02629		

Reference Frequency: 802.11ac channel=149 frequency=5745MHz					
Voltage (V)	Temperature (℃)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
19.0	-30	137.58	0.02395	Within the band of operation	Pass
	-20	136.42	0.02375		
	-10	130.57	0.02273		
	0	138.95	0.02419		
	10	128.43	0.02236		
	20	131.64	0.02291		
	30	125.73	0.02189		
	40	127.85	0.02225		
	50	134.56	0.02342		
20.9	20	136.28	0.02372		
17.1	20	133.12	0.02317		

Ant 2

Reference Frequency: 802.11ac channel=36 frequency=5180MHz					
Voltage (V)	Temperature (℃)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
19.0	-30	133.82	0.02583	Within the band of operation	Pass
	-20	127.45	0.02460		
	-10	135.27	0.02611		
	0	124.81	0.02409		
	10	129.53	0.02501		
	20	138.62	0.02676		
	30	131.74	0.02543		
	40	135.28	0.02612		
	50	125.78	0.02428		
20.9	20	130.61	0.02521		
17.1	20	133.59	0.02579		

Reference Frequency: 802.11ac channel=149 frequency=5745MHz					
Voltage (V)	Temperature (℃)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
19.0	-30	136.42	0.02375	Within the band of operation	Pass
	-20	131.64	0.02291		
	-10	135.87	0.02365		
	0	129.15	0.02248		
	10	130.58	0.02273		
	20	134.67	0.02344		
	30	133.24	0.02319		
	40	136.55	0.02377		
	50	126.37	0.02200		
20.9	20	129.08	0.02247		
17.1	20	134.21	0.02336		

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

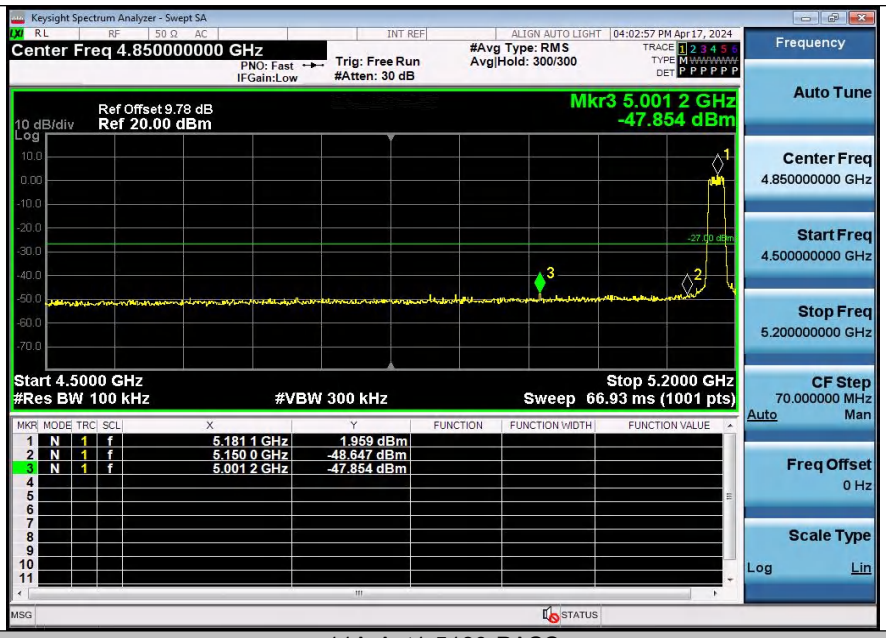
Connect the transmitter output to spectrum analyzer using a low loss RF cable, and set the spectrum analyzer to RBW=100 kHz, VBW= 300 kHz, peak detector , and max hold.

Test Configuration

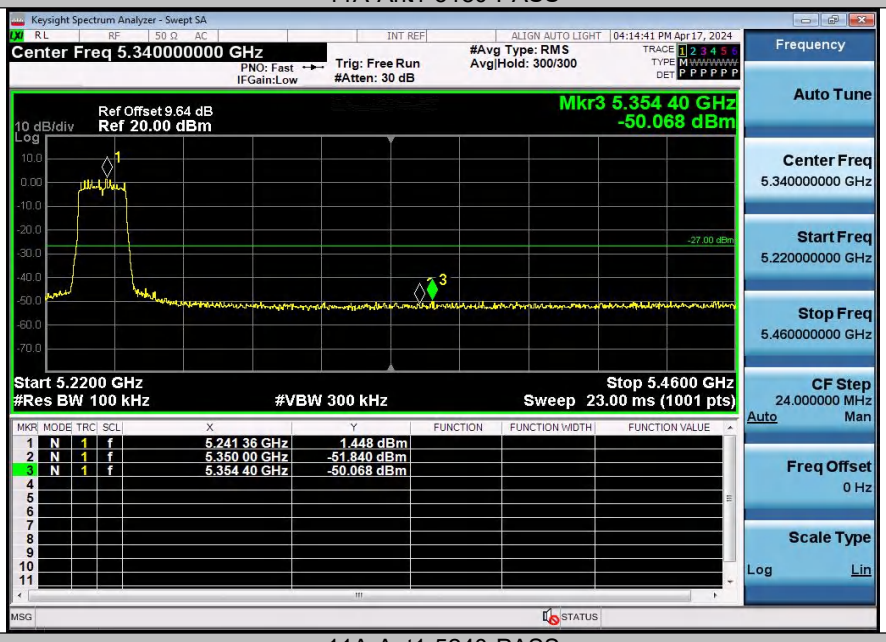
Test Results

Test plot as follows:

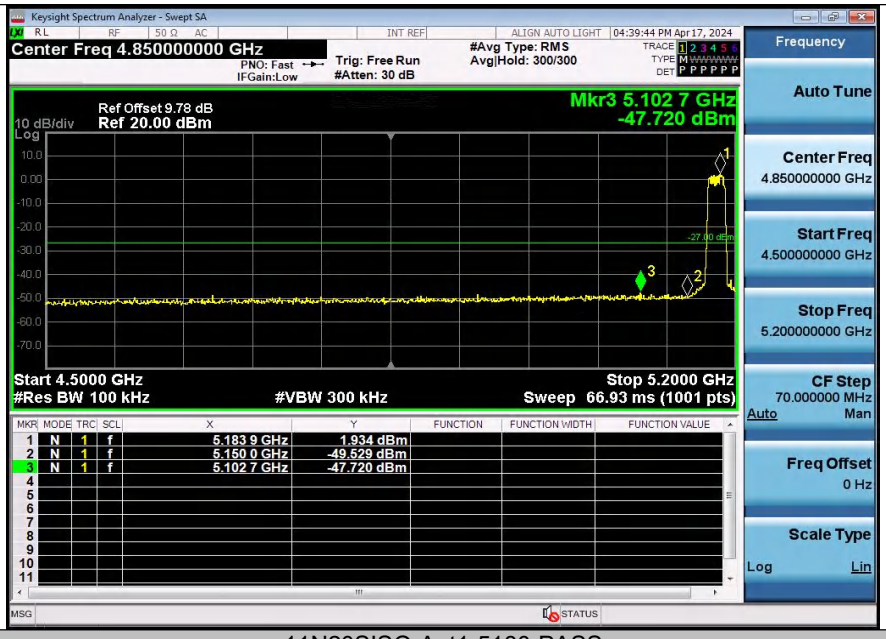
Ant 1



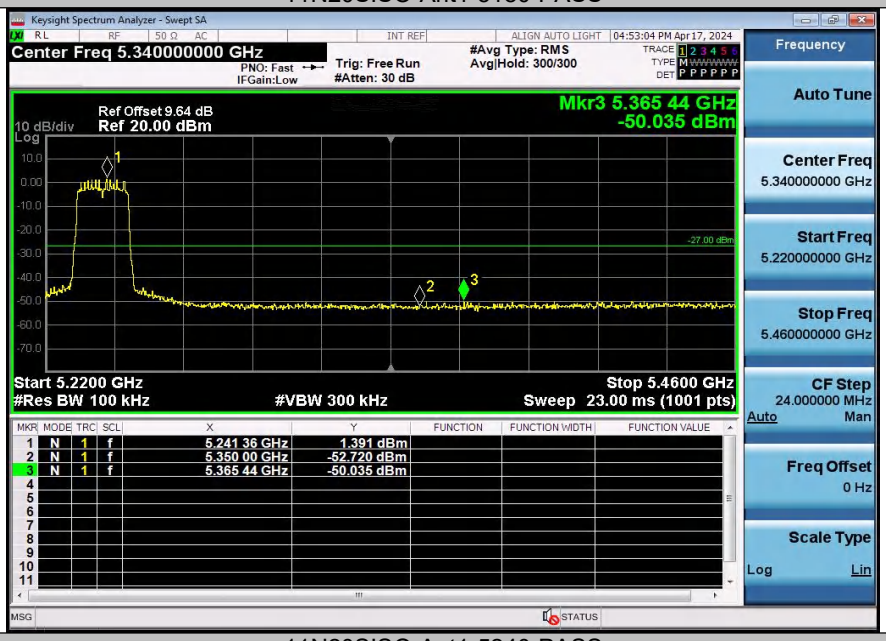
11A-Ant1-5180-PASS



11A-Ant1-5240-PASS



11N20SISO-Ant1-5180-PASS



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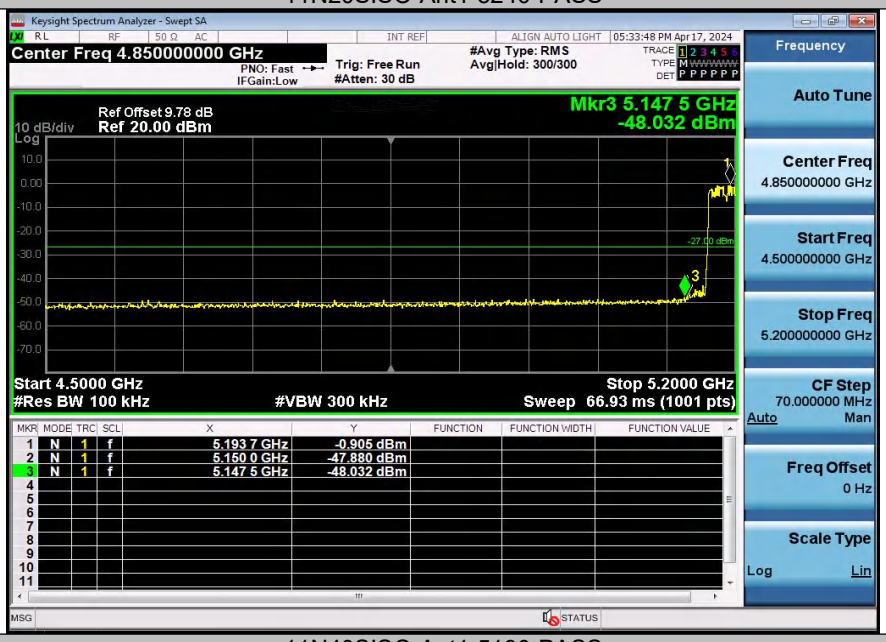
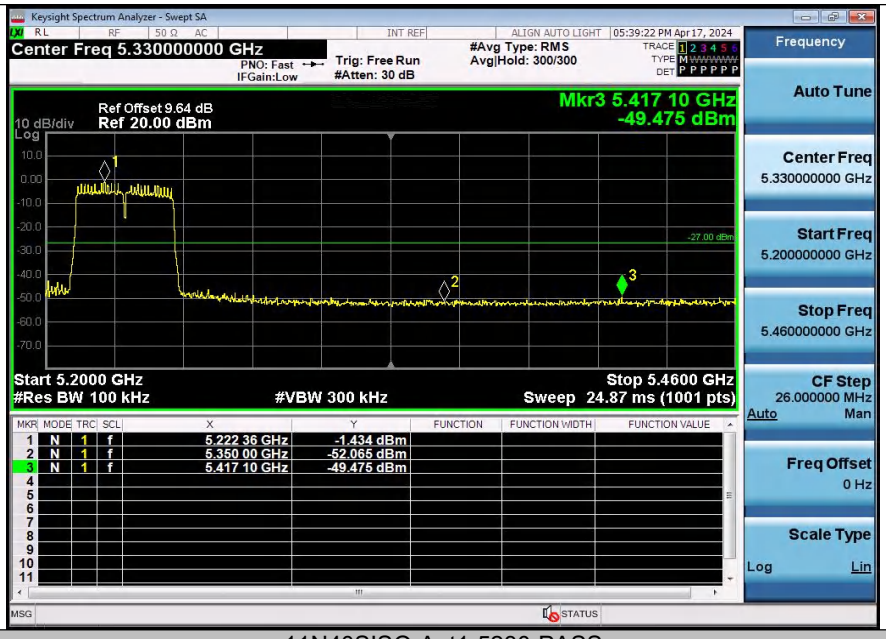
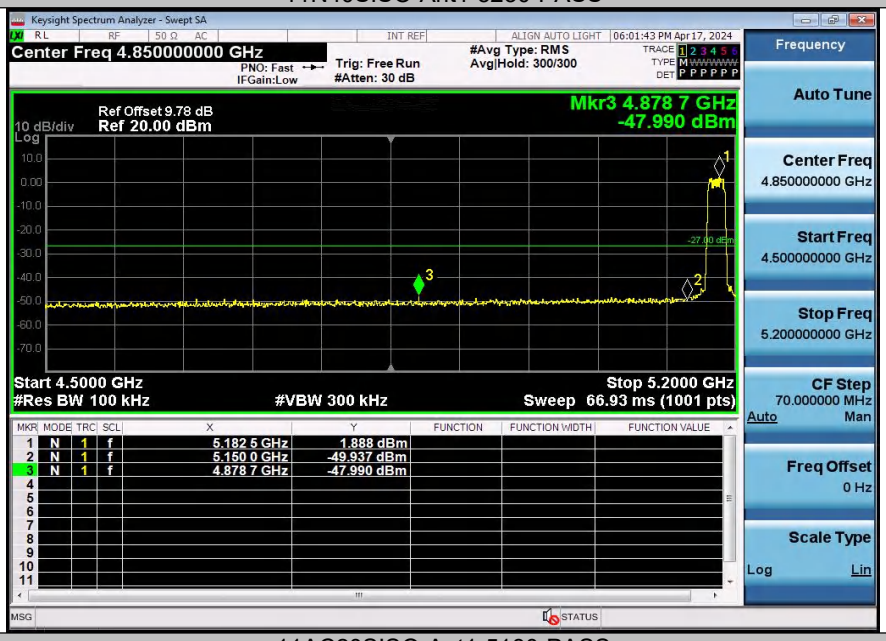


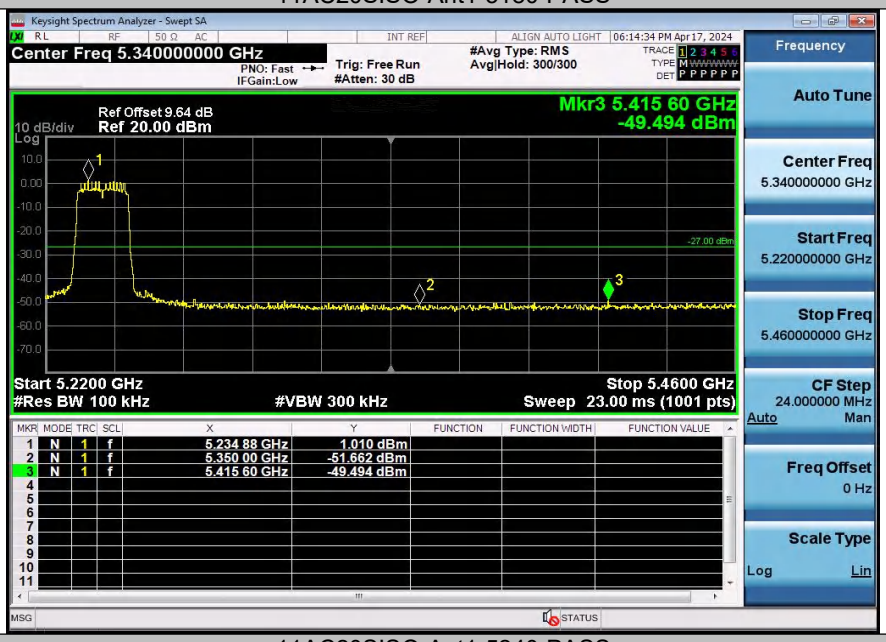
11N40SISO-Ant1-5190-PASS



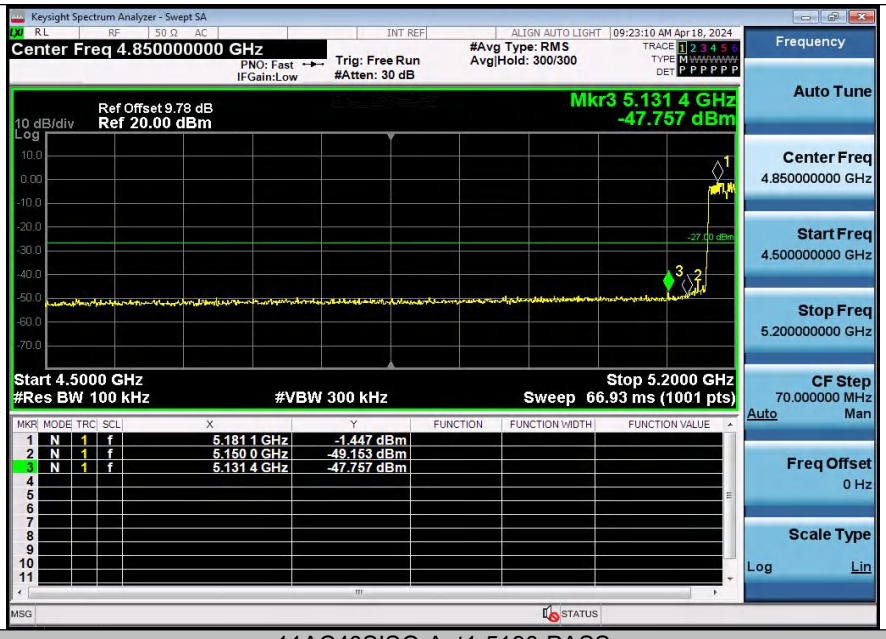
11N40SISO-Ant1-5230-PASS



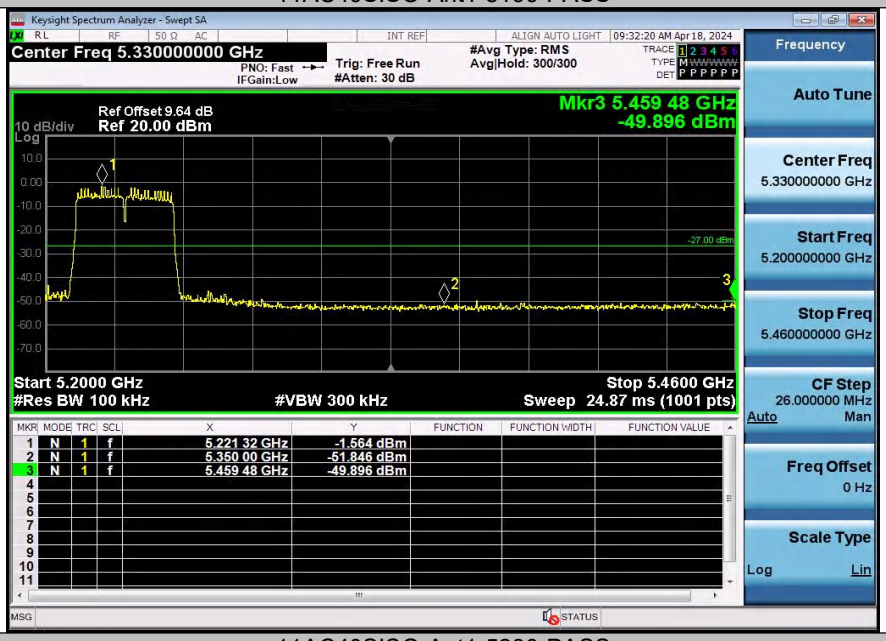
11AC20SISO-Ant1-5180-PASS



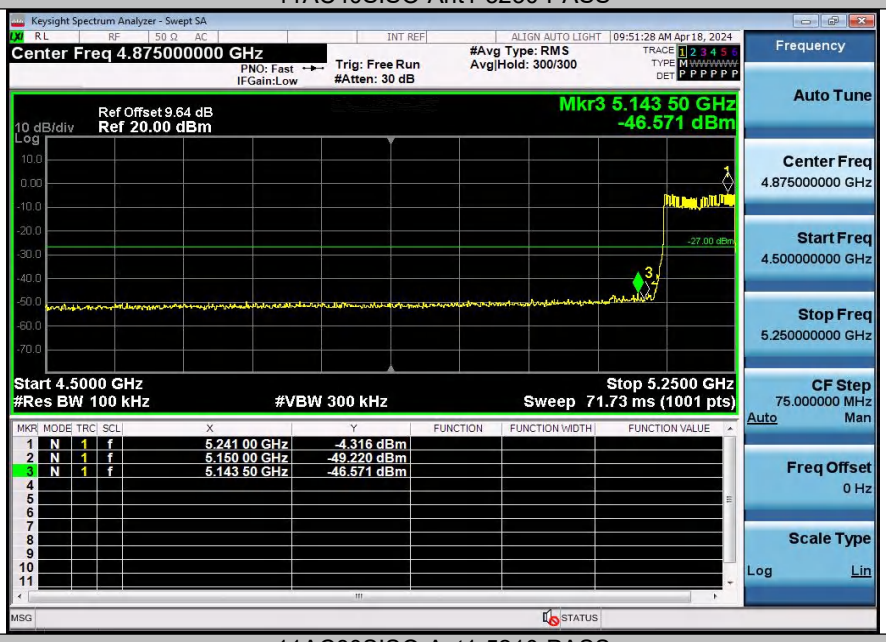
11AC20SISO-Ant1-5240-PASS



11AC40SISO-Ant1-5190-PASS



11AC40SISO-Ant1-5230-PASS



11AC80SISO-Ant1-5210-PASS