

Tips on Lab 3 measurement and simulation:

1. Stability verification using the spectrum analyzer.

wideband: sweep full span.

Look at output with the generator RF off. If there are any significant outputs this may be a sign of instability. There is also possibility of radio frequency signals being amplified - cell phones for example. Wait and see if it goes away.

Turn RF on. You should see output at f_0 and maybe some harmonics but no non-integer related signals.

Narrowband: zoom in around f_0 . Narrow the resolution BW to about 10 kHz. Look for sidebands on either side of f_0 . If there are sidebands, your DC bias circuit is probably oscillating.

2. P1dB measurement using the spectrum analyzer.

While you are at it, use the SA and generator to get some idea what your P1dB is. If you overdrive the amplifier you will not see the full gain possible from the amp. P1dB may be quite low for these amps - could even be less than -20 dBm.

3. Noise figure on ADS. The simulated NF of your entire amplifier will be given by $\text{nf}(2)$. $(S/N)_{\text{in}}/(S/N)_{\text{out}}$ is calculated in the S param noise simulation.