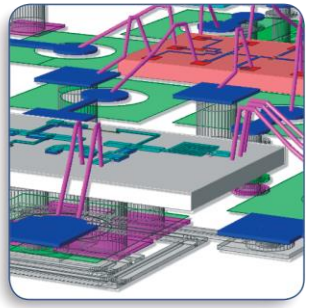
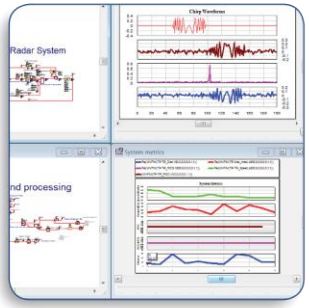
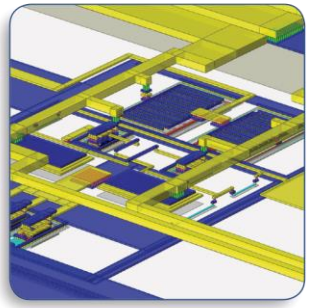
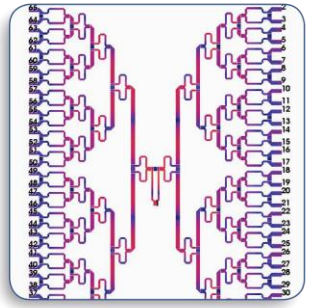
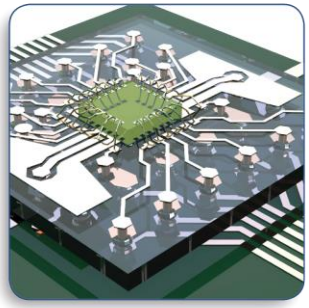



AWR | A National Instruments Company™ Microwave Office® | Visual System Simulator™ | Analog Office® | AXIEM® | Analyst™

STAN and the STAN Wizard Installation and Use

Malcolm Edwards

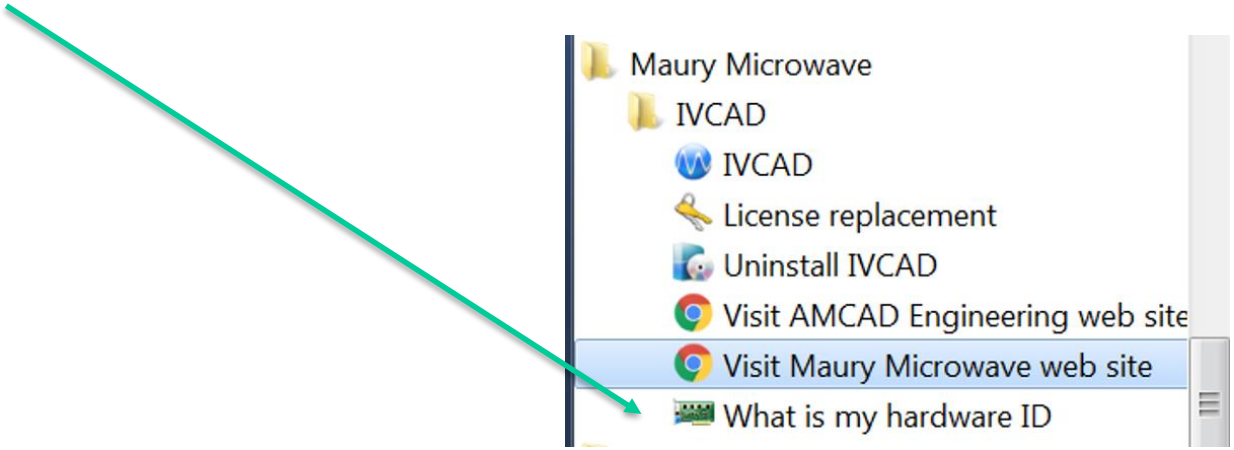
April 20th 2017

STAN and the STAN Wizard

- Installation
- Example Project

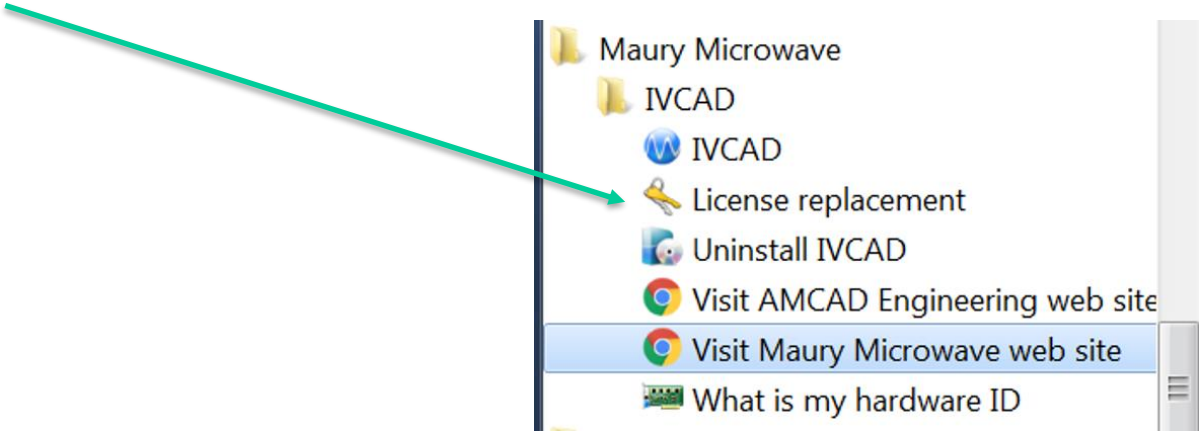
Installation 1

- 1: Contact AMCAD Engineering for access to their download site and the IVCAD + STAN installer
- 2: Install IVCAD and STAN
- 3: Establish Hardware ID of your PC (see below) and send code to AMCAD for license file



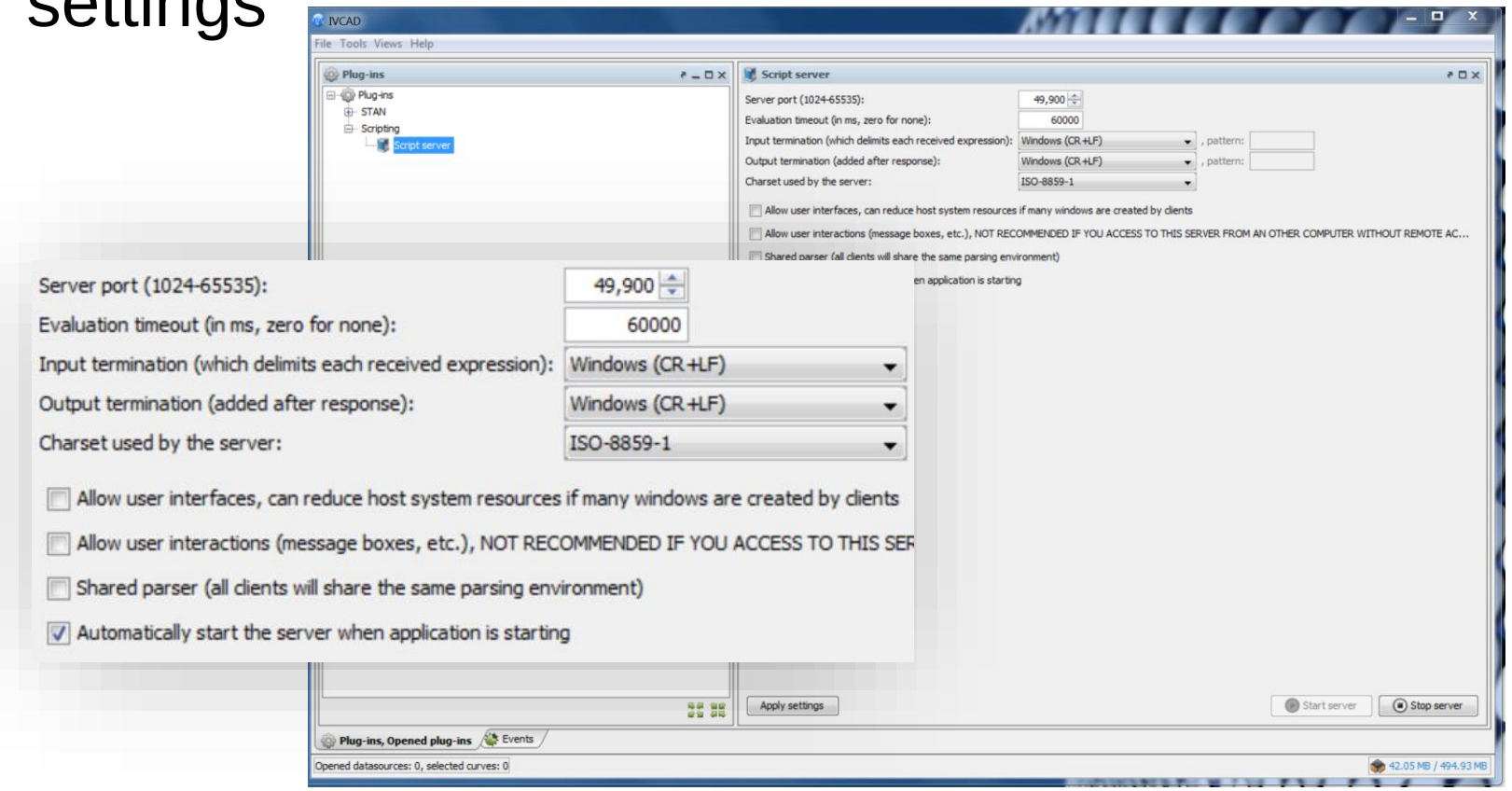
Installation 2

- 4: When you have received the email from AMCAD save the license file in some convenient location.
- 5: Apply the license file using the License replacement process



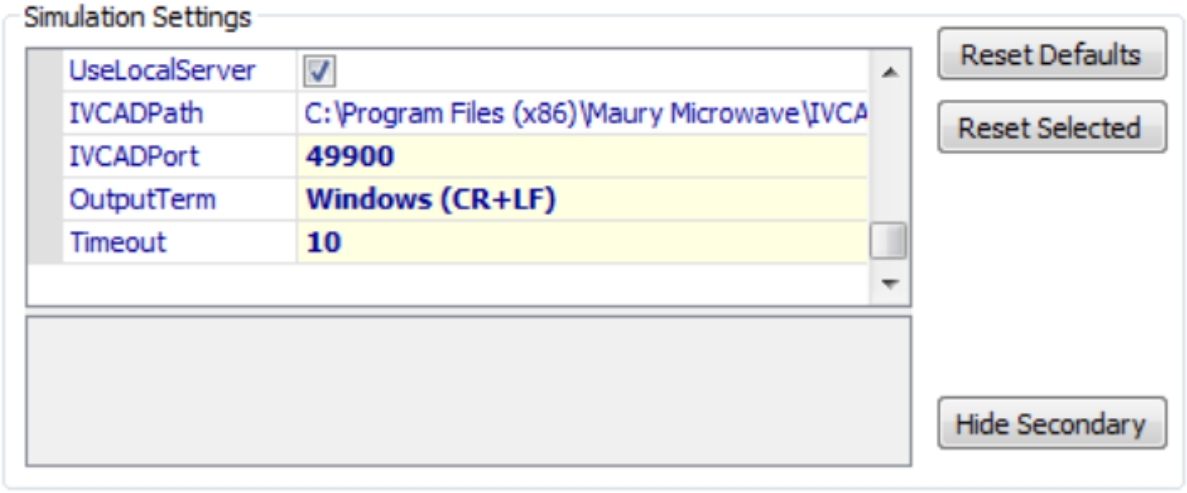
Installation 3

- Run IVCAD and check out the Script Server settings



Installation 4

- Load the example project “STAN_GaAs_MMIC Start.emp”
- Use this project to simply test the interface between the STAN Wizard and STAN
- Run the STAN Wizard and check that the settings defined in the Wizard window are the same as seen in the STAN information window shown on the previous slide
- To see the STAN Wizard settings please click on the Show Secondary button

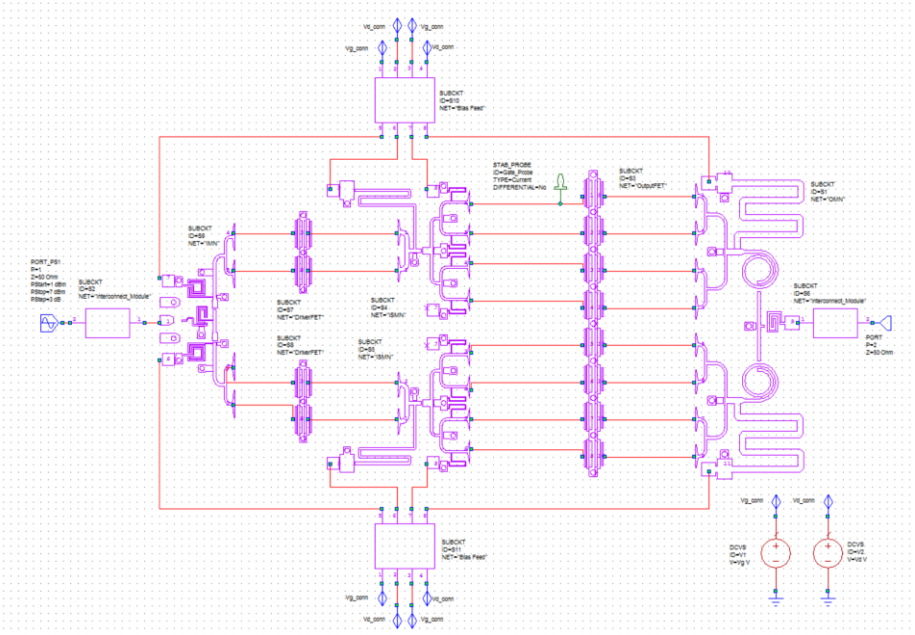


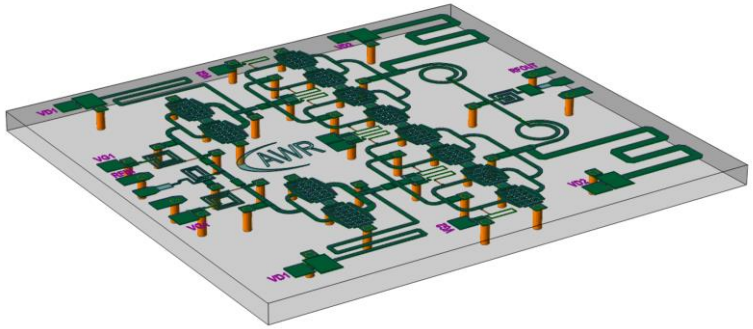
Installation 5

- The process of ensuring that the STAN Wizard and STAN are communicating correctly only needs to be completed once during the installation process
- If there are problems running the STAN Wizard and STAN, please send screen shots of the settings windows to AWR and/or AMCAD Engineering support.

Example Project Instructions - 0

- Run MWO and load the example project “STAN_GaAs_MMIC Start.emp”
- This project uses two PDKs. AWR_MESFET and AWR_Module
- These are loaded from “C:\Program Files (x86)\AWR\AWRDE\13\Library\example_pdks”
- If these PDKs have not been loaded, you will be prompted to load them
- When a project has loaded a PDK, this process does not need to be repeated



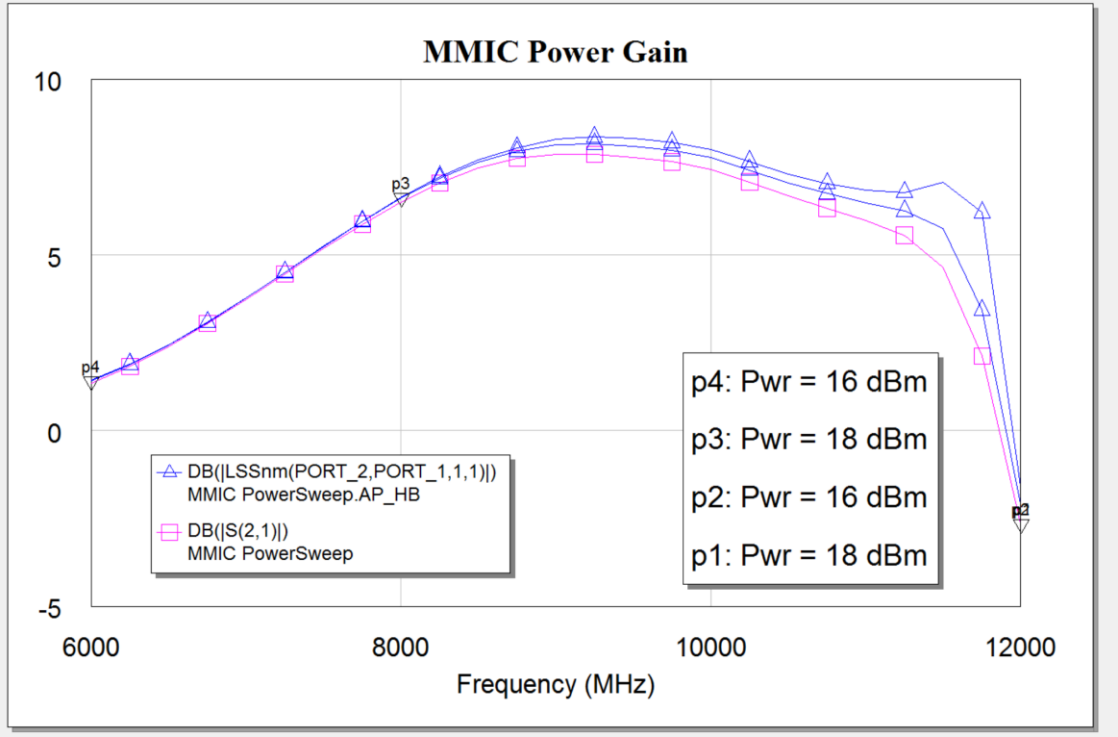


Example Project Instructions - 1

- In the project there are two main schematics
  - MMIC PowerSweep
    - This is used for a frequency / power sweep to understand the compression process that this amplifier exhibits
  - NL Stability
    - This schematic is used for the STAN analysis and has been set up ready to be used with STAN

Example Project Instructions - 2

- Simulate the project
- Notice the gain hump around 11GHz



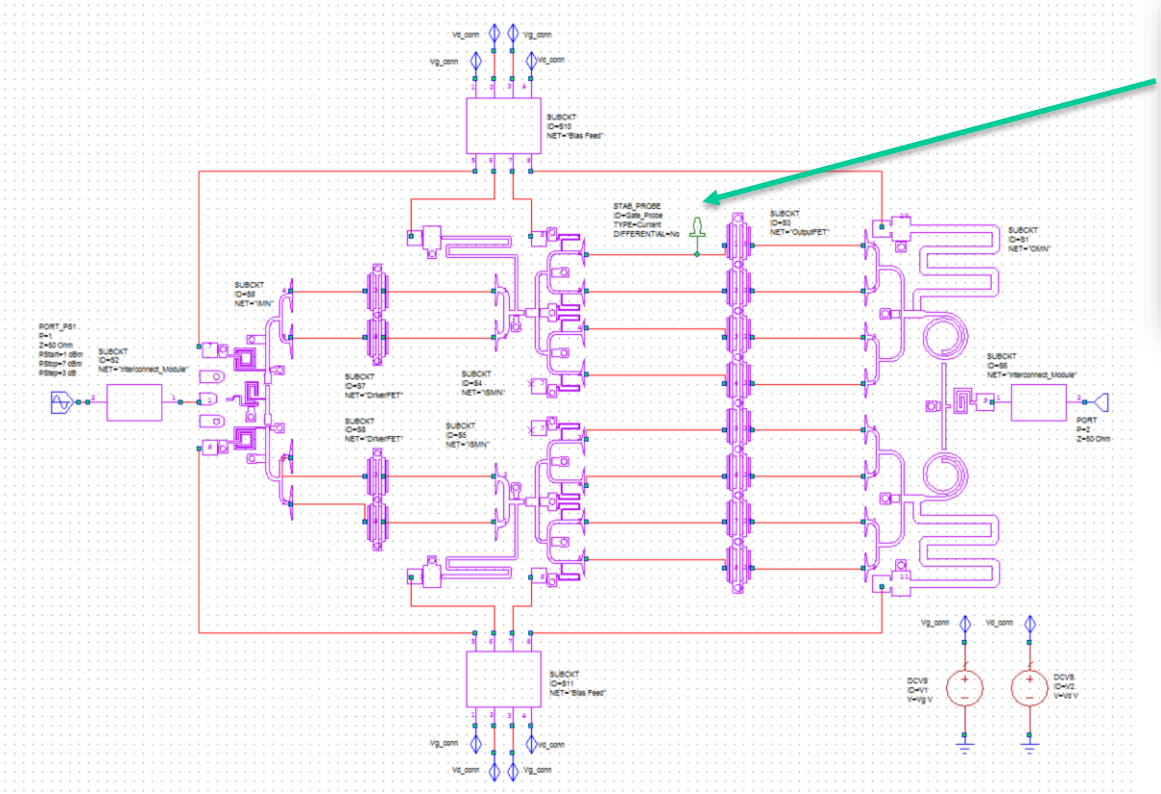
Example Project Instructions - 3

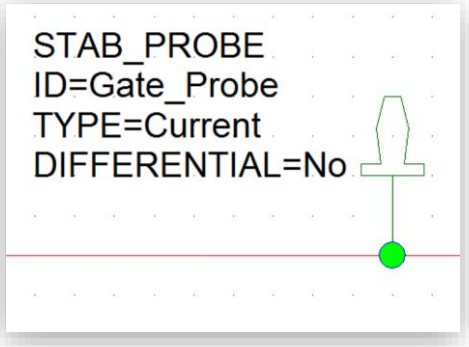
- We will run the STAN analysis with the amplifier driven into compression at 11GHz
- A small signal test will be conducted between 1GHz and 10 GHz, this is defined in the STAN Wizard settings …

Small Signal Test Conditions	
Fstart	1000 MHz
Fstop	10000 MHz
Fsteps	10
SweepType	Linear

Example Project Instructions - 4

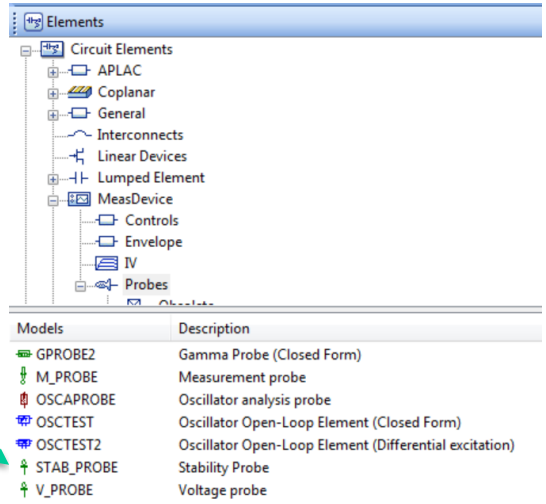
- There are two stability probes that have been added to the example project, here is the first probe visible at the top level of the design.
- Note: The probe has been given the ID Gate_probe. It is advised that the probes should have a name that reflects their location in the circuit hierarchy



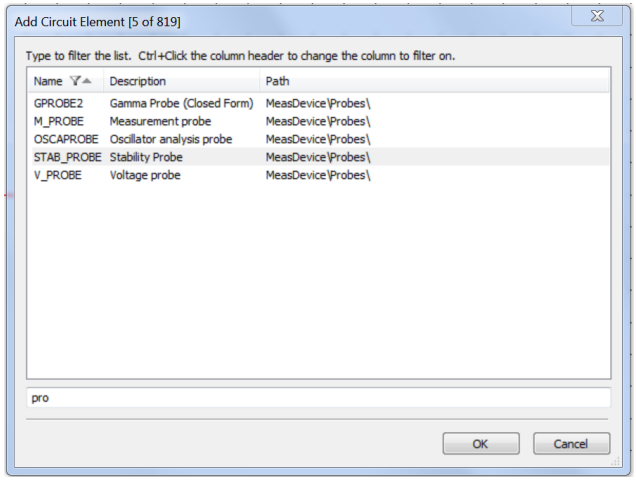


Example Project Instructions - 5

- Stability Probes can be added to the design by either using the elements tab and looking in “MeasDevice”

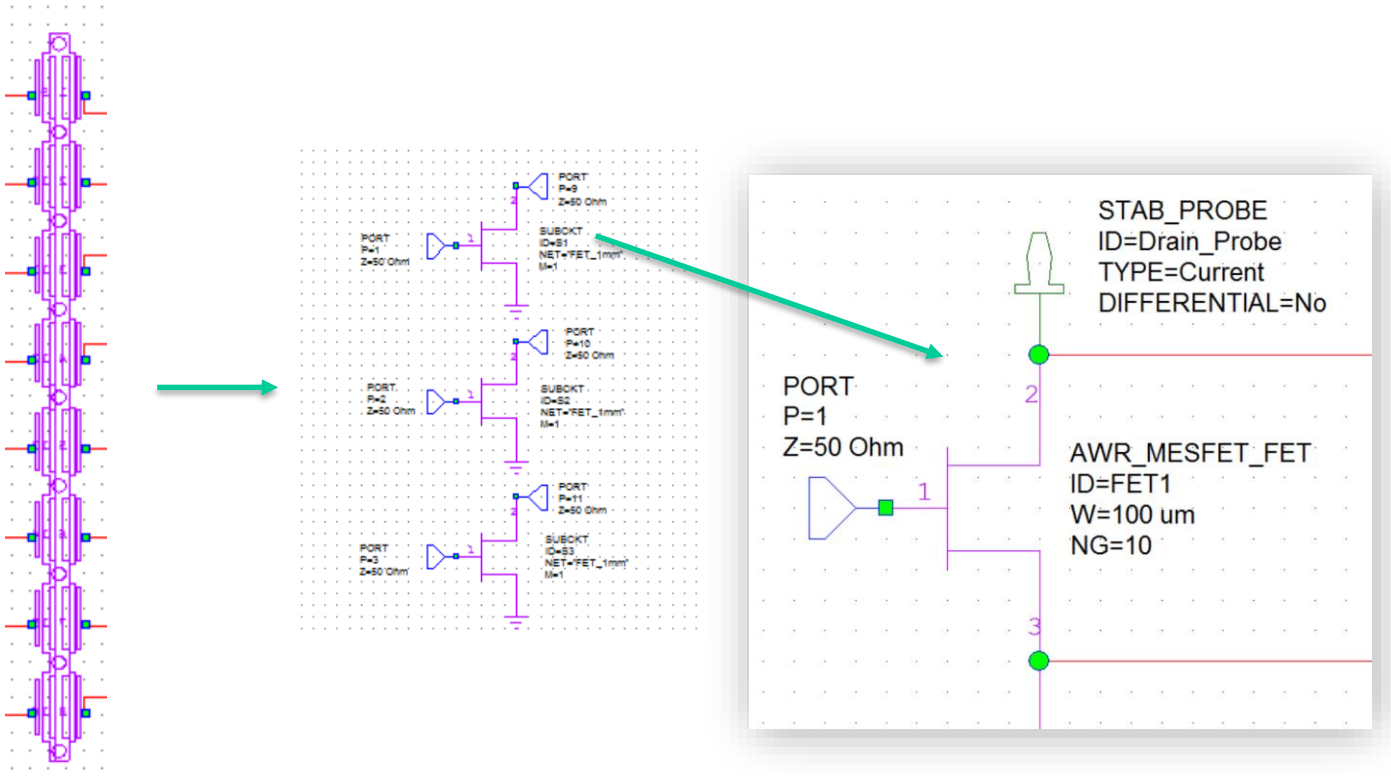


- Or by using the Add Circuit Elements dialogue. Type <CTRL> + <L> and the ‘Add Circuit Elements’ window opens
- In the search text box type ‘pro’ etc. and all the probes will be listed. Click on the STAB_PROBE and it will be added to the selected schematic



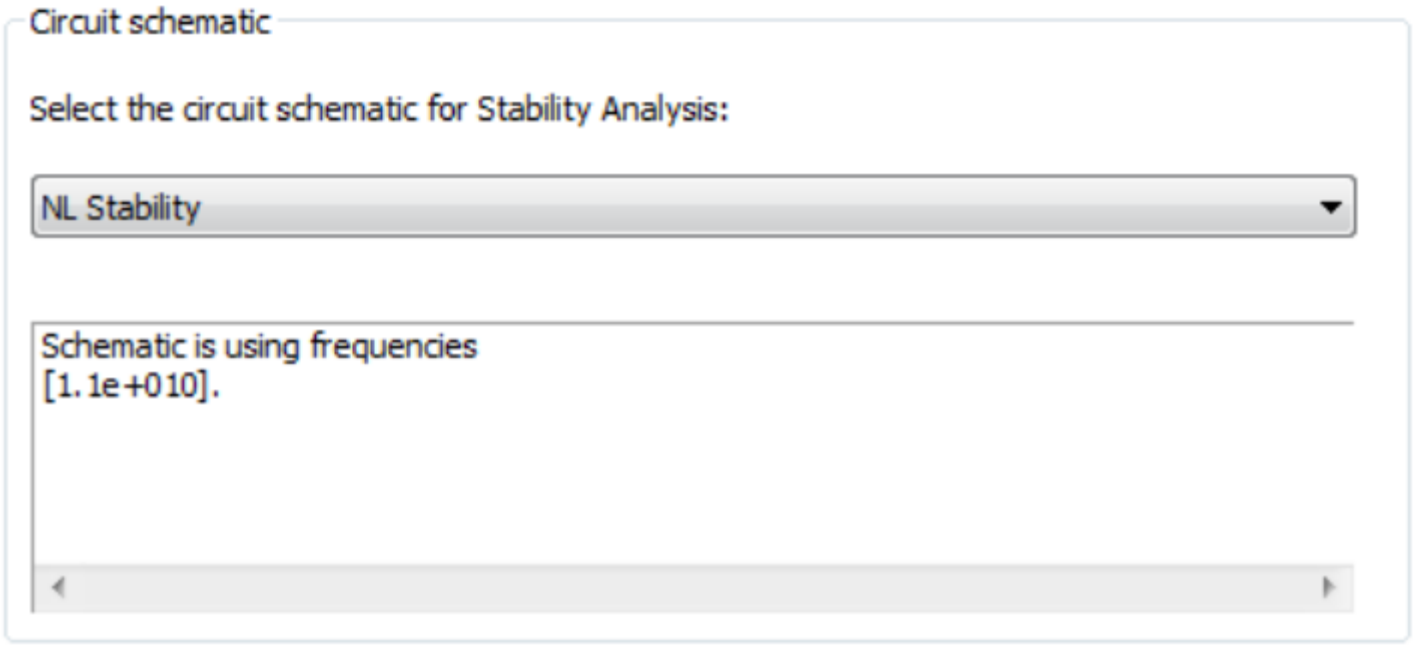
Example Project Instructions - 6

- The location of the second probe can be found at the drain of each output stage transistor



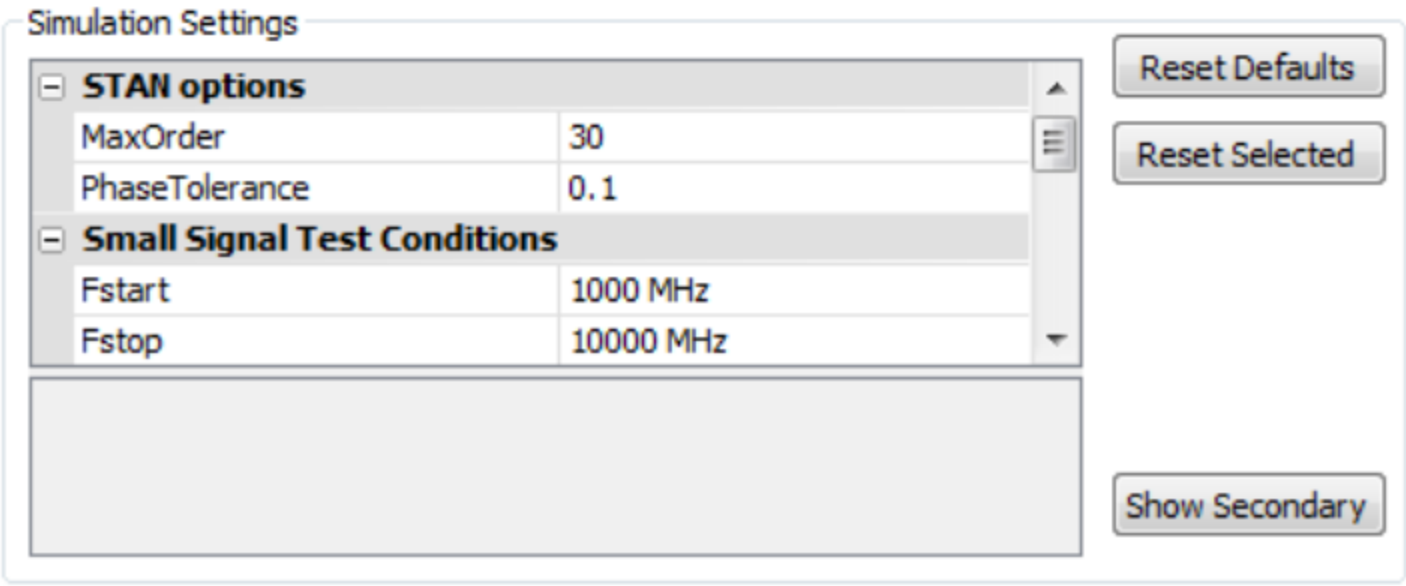
Example Project Instructions - 7

- Run the Wizard and select the schematic to be used for NL stability analysis



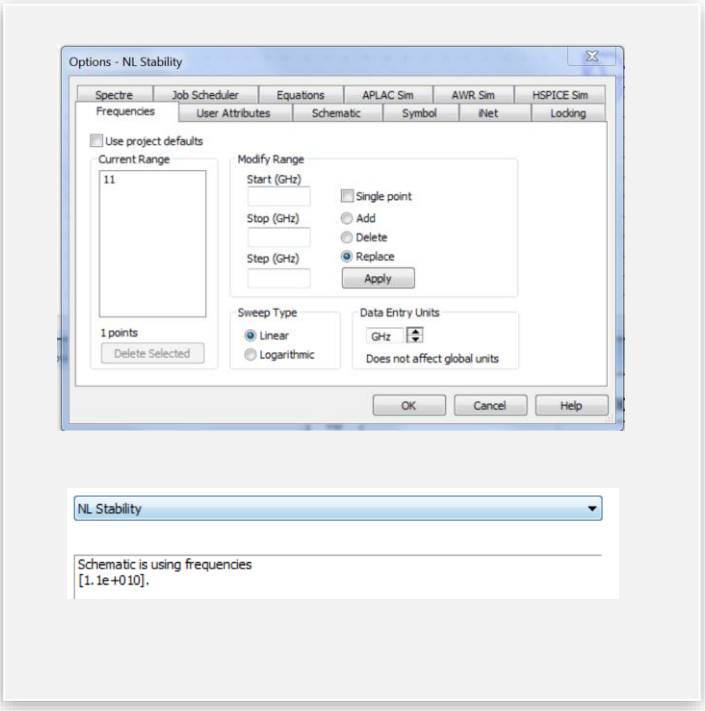
Example Project Instructions - 8

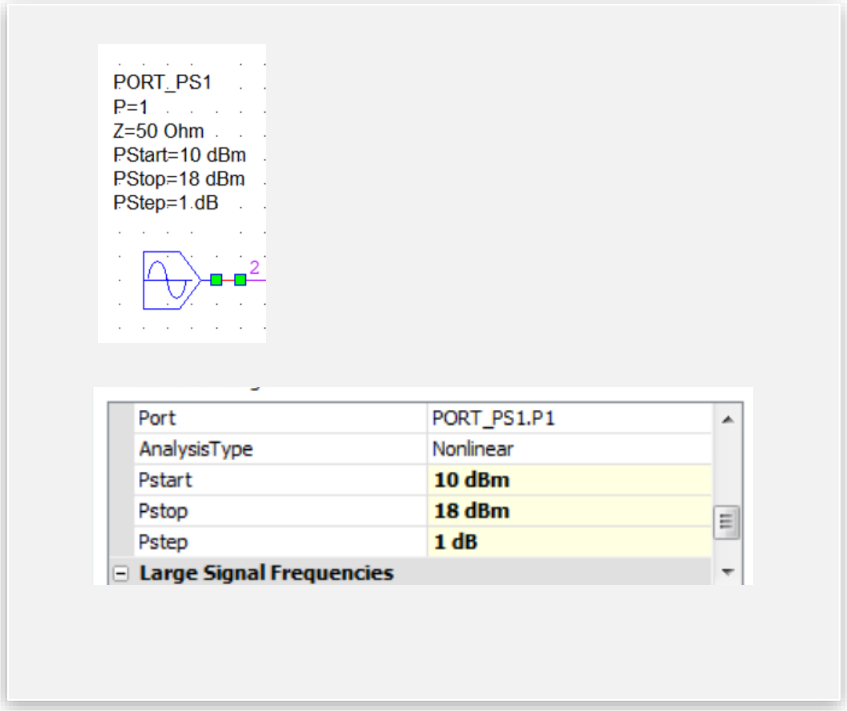
- Scroll through the settings …



Example Project Instructions - 9

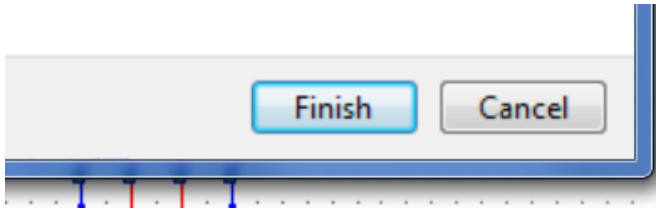
- The amplifier will be driven at several input power levels at a single frequency, already defined in the schematic
- Notice that the STAN Wizard automatically reads the PORT_PS1 settings for power and frequency





Example Project Instructions - 10

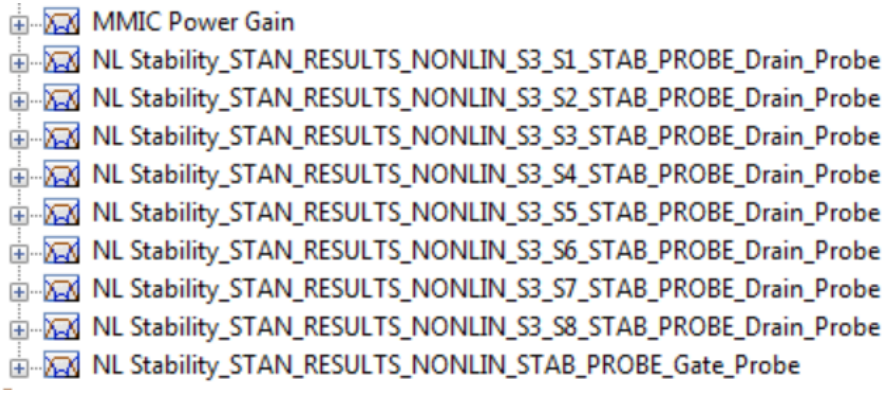
- When the STAN Wizard (and the associated schematics) have been set up correctly, then click the finish button.



- The Wizard will now simulate the circuit and pass the results to STAN.
- When STAN has conducted a Pole Zero analysis of the circuit under test the results will be sent back to MWO and pole zero graphs will be created

Example Project Instructions - 11

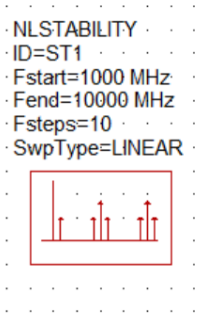
- There will 9 Pole Zero plots.
- One for the gate of the top transistor and one for each of the 8 output devices.

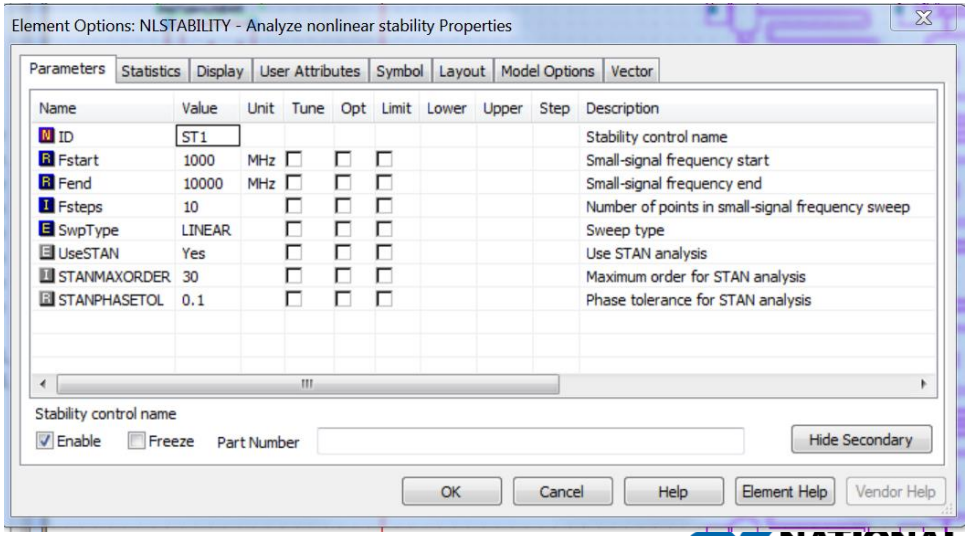


- Also, there will be a new STAN schematic (NL Stability_STAN) that has been created by the Stability Wizard

Example Project Instructions - 12

- In the new schematic the NLSTABILITY element will have been added
- This schematic can be used to refine the stability analysis and the STAN WIZARD will not need to be used
- Simply edit this schematic and the NLSTABILITY element and then simulate as one would with any project document





Example Project Instructions - 13

- Set up the gate Pole Zero results to be swept rather than display all the results and then tune on the drive power