IQSTAR 1.5 Release

AMCAD Engineering announce the release of version 1.5 of IQSTAR, the most advanced RF Circuit Characterization Software.

This major release includes **new modules** and **features** to address the industry's additional applications and measurement requirements. It also showcases enhancements of the capabilities of the existing modules to increase user experience satisfaction.

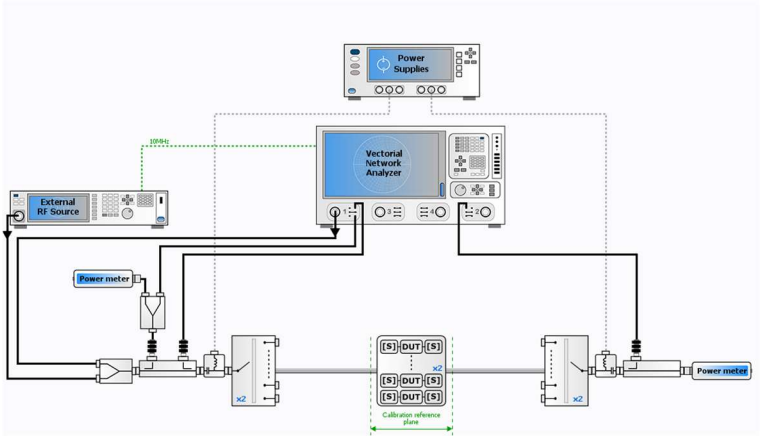
IQSTAR 1.5 New Modules

The growing popularity of IQSTAR brings its share of customer requests to include new software capabilities allowing them to characterize their power amplifiers. The last release of IQSTAR includes two new add-on modules:

New measurement module IQS100B-12: Multi DUT Measurements

This new module is meant to help test engineers characterize multiple 2-port devices sequentially using a Switch Matrix.
The Multi DUT Measurement module is an add-on requiring IQS100B-10 for scalar setups and IQS100B-11 for vector setups.
The switches are controlled through the Visa protocol. The number of paths is customizable but limited to 8 for now. The calibration process considers the switch matrix's paths, so all the measurements are done at the DUT reference plane.
The following measurements are possible with IQS100B-12:

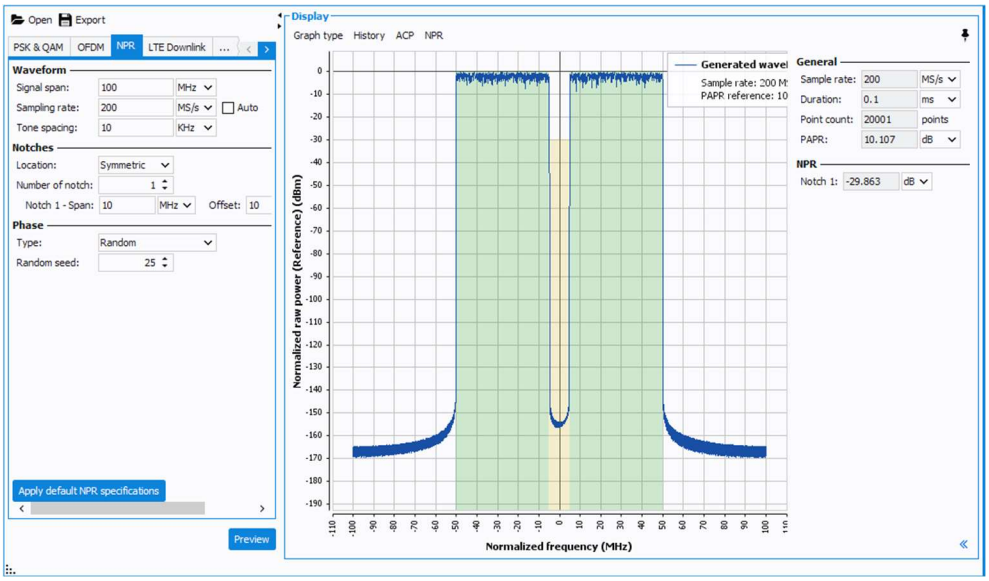
- 1-Tone CW and Pulsed
- 2-Tone,
- Modulated signal
- IQ data measurements.
- Noise Power Ration (NPR)



New measurement module IQS100B-31: Noise Power Ratio (NPR)

NPR is a figure of Merit measured in Aerospace applications to characterize the in-band linearity of active devices using very wideband signals. This signal is used instead of typical communication modulation signals because the modulation type is usually not known in advance. The Spectrum regrowth in the notch due to the intermodulation distortion generated by the power amplifier is measured. The NPR is considered a reliable method to characterize the in-band linearity of active devices with a wideband signal.

The NPR measurement module requires IQS100B-11 as the measurements are done using a VNA (Keysight PNA-X). The a- and b-waves are measured at the input and output of DUT using the spectrum option of the PNA-X (S93090).



New NPR Modulation in the Waveform Generator

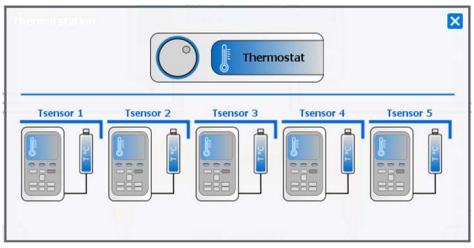
New NPR modulation in the Waveform Generator was developed to help measure the Noise Power Ration on a Power amplifier. Test engineers can customize the characteristics of the signal by choosing the number of notches and their positions (Symmetric or Offset) on top of the bandwidth and sampling rate. The NPR Waveform Generator is included in the IQS100B-12 module.

IQSTAR 1.5 Main New Features

To improve the test engineer's measurement efficiency and to provide an appropriate tool for a thorough analysis of the amplifier performances, multiple features were added to the IQSTAR modules.

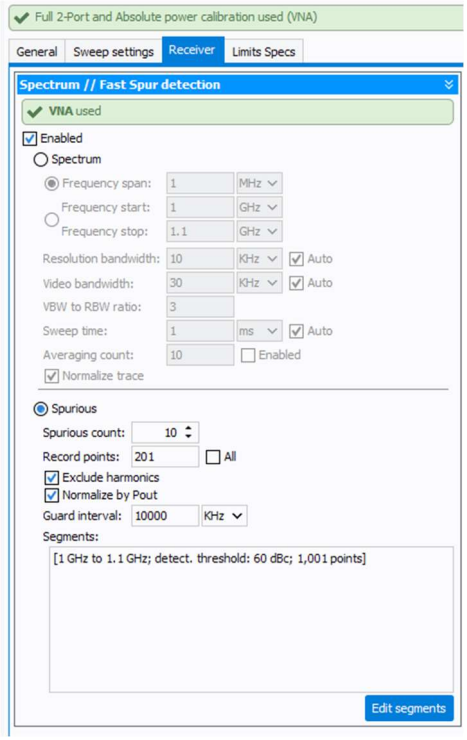
- **Thermal Control and Monitoring**

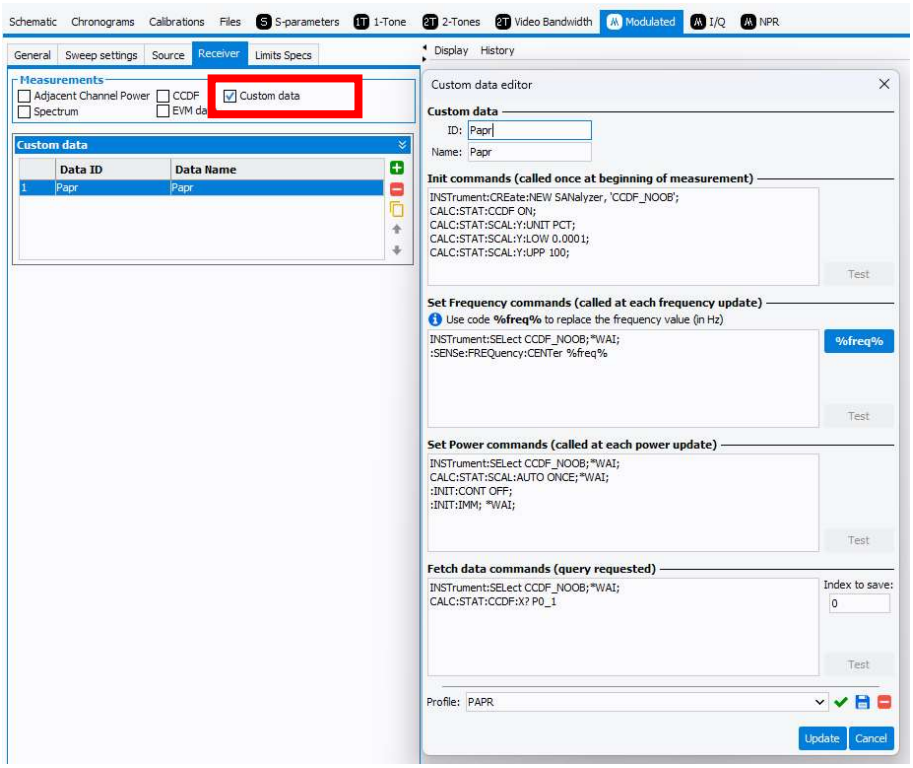
In IQSTAR 1.5, the thermal control becomes independent of the probe station and different temperature control systems were added. The temperature monitoring can be done using one or multiple Thermal Sensors.



- **Spectrum and Spurious Detection using VNA.**

IQSTAR 1.5 supports the spectrum options (S93090) of the PNA-X to measure the spectrum and spurious emissions at the output of the Power Amplifiers. When a Spectrum Analyzer and a VNA are configured in the setup schematic and calibrated, the software chooses the VNA by default.





- **Modulated Signal Measurements using a VNA.**

Taking advantage of the Spectrum Option in the PNA-X (S93090), test engineers can measure ACPR and Spectrum directly from the VNA at the DUT reference plane. The use of the PNA-X can simplify the setup without limiting the measurement requirements.
For other measurement requirements not listed, the test engineer can use the "Custom data."

- **Custom data for Modulated Signal Measurements**

Modulated signal measurements require different personalities on the Vector Signal Generator and Vector Signal analyzer to measure the figure of merits like EVM. Moreover, users measure different EVM values to characterize their Power amplifier (EVM avg, EVM peak, EVM rms, …)
With the number of instruments, modulation and demodulation personalities, the combination of drivers that need to be developed can be overwhelming. Therefore, **IQS100B-30** Module introduces "Custom Data" to measure any desired parameter in any modulation scheme.

New Sweep Plan Features

Measurement automation is an important option of IQSTAR. Increasing the number of measured devices is critical to multiple of our customers. Therefore, the IQSTAR development team adds a number of functionalities to take advantage of the Sweep Plan.

- Basic Actions:
    - Stop: stop the sweep plan
- Setup and Measurement action
    - New calibration: create a calibration in the Sweep Plan
    - Validate calibration: start "validate calibration" wizard.
- Switch Manager Actions
    - Change active Path: update active Path.
    - Active Path Sweep
- Thermal Manager Actions
    - Power OFF: Power off the thermal controller
    - Change temperature: start temperature optimization.
    - Temperature Sweep
- Tuner Control Actions
    - Move to Init: Initialize the tuner.
    - Move to 50Ohms: Set the tuner at 50Ohm impedance.

IQSTAR 1.5 Software Improvements

Multiple enhancements were added to the latest release to enhance the test engineer experience. Below is a list of improvements added to the IQSTAR 1.5 release.

- New Unit added: Pressure.
- New Data added: Gt and Gp at f1 and f2
- New data in the viewer: B2/A1
- New Data in S-parameter: Group Delay
- Increase the number of supported auxiliary supplies to 30 instead of 20.
- New Prober schematic image
- Addition of a button to perform Power Meter Calibration during the power sensor calibration process in all VNA calibration.
- Add a setup option: Power action: RF Stress in Measurement Options
- Different enhancement to the Spurious emissions measurements:
- RBW adapted to Noise Floor
- Possibility to duplicate a segment.
- Custom DANL value
- Threshold optimization
- New Instrument DPD model: AMD-Xilinx
- Add option to force tuner "Init" at the bench initialization.

IQSTAR 1.5 Sweep Plan Improvements

- General
    - Possibility to define a maximum number of loops
- Message Actions
    - Confirm/Cancel
    - Icon customizable
- Change Configuration Actions
    - Calibrations are listed in descending order.
    - Creation date/time displayed with the calibration to select.
    - New calibration selection mode: keep the current selection.
- Prober Manager Actions
    - Change chuck temperature (replaced by Change temperature of Thermal Controller)
    - Chuck temperature sweep (replaced by Temperature sweep of Thermal Controller)

Multiple improvements to the scripting modules help build robust automated test sequences.

The driver development for software like IQSTAR represents a non-negligible coding time for our software engineers. With new instruments come new measurement capabilities and features that need to be supported by our software. Our team is also putting all the necessary efforts into supporting our Instrument vendors' partners by updating any driver when a new instrument firmware is released.

We thank our increasing number of customers worldwide for their feedback allowing us to improve IQSTAR at every release. A more detailed list of all the new modules, features, enhancements, drivers, and bug fixes is available in the product manual of IQSTAR, available with the software installer