

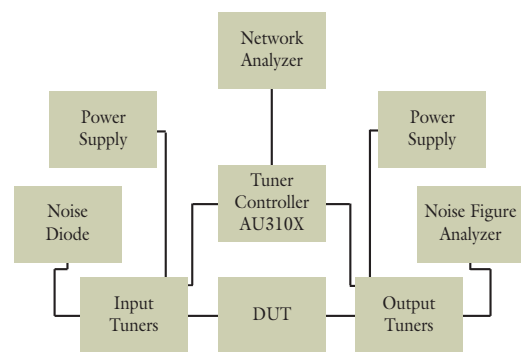
# AU3000 Series

## Precision Noise Measurement System 100MHz to 110GHz

Digitally controlled, precision electronic and mechanical tuner-based small signal characterization of semiconductor devices for the RF, Microwave and Millimeter Wave industry



- **Fast electronic tuners to 18GHz, greater than 1,000 programmable tuner states**
  - **Precision mechanical tuners to 110GHz, millions of programmable tuner states**
- Combination electronic and mechanical hybrid tuner-based systems**
- **Customizable on-wafer and fixture-based systems**



**Block Diagram of the Precision Noise System**



Channel Partner



# AU3000 Series

## Precision Noise Measurement System

### 100MHz to 110GHz



#### I. Features:

- System integration expertise in providing automated, turn-key and customizable on-wafer and fixture systems from 100MHz to 110MHz
- Electronic, mechanical and hybrid tuner-based systems
- Optional Auriga Synthetic Instruments
- Total system hardware control
- Customer-furnished tuners and test equipment integration welcomed
- Wafer probe station control
- Report generation, graphical, tabular
- Data export into Electronic Design Automation (EDA) programs (Agilent IC-CAP)

#### II. Description:

Auriga's Precision Noise Measurement System (PNMS) provides digitally-controlled, Electronic and Mechanical tuner-based test systems for small-signal characterization of semiconductor devices for the RF, Microwave and Millimeter Wave Industry. The fast, precision electronic tuner has over 1,000 tuning states up to 18GHz and the mechanical tuners have over one million states (up to 110GHz). The PNMS is unparalleled when measuring high-gain, <1dB noise figure devices. Auriga Measurement Systems staff scientists and application engineers provide across-the-board support, from designing a custom system for today's needs with future upgrade paths, to the design and support of in-fixture testing of packaged devices, circuits and on-wafer testing. Auriga's PNMS are designed for transistor characterization in conjunction with device-parasitic de-embedding. The intrinsic noise parameters ascertained by these measurements and de-embedding are vital to the development of accurate noise models and can include device scaling and yield characterization. The PNMS software integrates with most wafer probe stations, enabling automated characterization and reduced time and labor.

Auriga Measurement Systems' hardware and software work together to optimize measurement results. The software allows the user to select mis-match points or let the system select optimal points at each frequency. Auriga's unique low-loss tuner design and system design enhancements minimize the loss between the tuner and the Device-Under-Test (DUT) by eliminating unnecessary switches. This, in conjunction with the highly stable and repeatable tuner design, significantly improves the repeatability of the impedance states.

Auriga's System Integration Team works with strategic partners including Focus Microwave for Precision Mechanical, Fundamental, Harmonic and Bi-harmonic programmable tuners; Cascade Microtech for manual and programmable wafer probe stations; and Agilent Technologies for Test and Measurement instrumentation. As a true system integrator, Auriga Measurement Systems provides Noise Parameter solutions up to 110GHz. Custom, turn-key systems are also available—all with upgradeable hardware, software, service and support.

#### III. System Specifications:

##### Frequency Range:

Electronic Tuners: 0.3GHz to 18GHz

Mechanical Tuners: 100MHz to 110GHz

##### Accuracy:

Achieving maximum accuracy relies on:

- Accuracy of the S-Parameter measurements
- Impedance spread of the mis-matches presented to the DUT
- The Number and Repeatability of the Impedance states

Resolution: 0.01dB

Tuner Ranges: 1.1:1 to 25:1

States: Electronic: >1,000

Mechanical: Millions of states

Tuner Repeatability: <50dB residual error vector

Bias-Tee Current: Port1 & Port2; 500mA fused

LNA Impedance: 50 ohm nominal

Sys. Noise Figure: <4dB low noise second stage

Software: System Software runs under

Microsoft Windows 2000 and XP operating

systems on a PC workstation

Measurement Speed: Typically limited by the Network Analyzer speed specifications.

(S-Parameters etc.)

Operating Temperatures: 0-55 degrees C

Storage: -55 to 75 degrees C

Power Supply Line Voltage: 100 to 240 VAC

Line Frequency: 48 to 66Hz

Power Consumption: 150VA maximum

#### IV. System Ordering Information

##### 0.3GHz to 18GHz Electronic Tuner System:

Digital Control module unit

Electronic Tuner Modules: 0.3GHz to 9GHz

Low Noise Switch Module

System Software:

Recommended Test Equipment: Auriga will provide integration of the latest programmable network analyzers, power supplies etc., as well as customer-furnished qualified test equipment.

Recommended Agilent test equipment: Agilent E8362B

Calibration Kit: 85033E 3.5mm cal kit

Agilent DC Power Supply: 6625A dual-output programmable

##### 100MHz to 110GHz Mechanical/Electronic Tuner-based Systems:

Auriga provides fully customized turn-key automatic system integration of our electronic tuners, Focus Microwave Mechanical tuners, and Cascade Microtech on-wafer probing systems.

Recommended Agilent Vector Network Analyzers: Agilent E836XB

Calibration Kits: Based on connectors

Power Supplies: Based on DC parameters



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