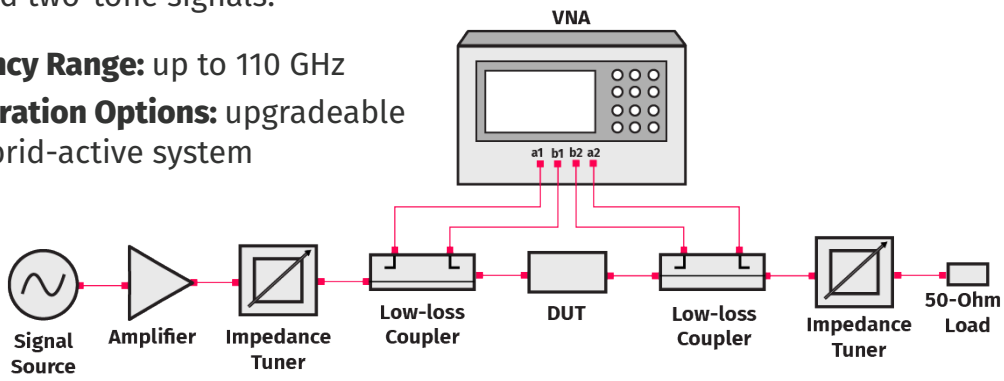
Maury Microwave Device Characterization Solutions

Maury Microwave device characterization solutions support on-wafer and connectorized passive, active, and hybrid-active load pull to 1.1 THz, as well as noise parameter extraction to evaluate DUT noise performance. Using automated impedance tuners, optimized accessories, and powerful software platforms, these solutions enable transistor characterization, behavior model extraction, and the design and validation of PAs and LNAs.

Vector-Receiver Load Pull

Vector-receiver load pull is an advanced load pull methodology that uses a vector receiver, typically a VNA, to directly measure both the magnitude and phase of RF signals at the DUT reference plane. Automated impedance tuners vary impedance conditions at the source and/or load, while low-loss directional couplers sample the incident and reflected waves for measurement. By providing full complex wave information, vector-receiver load pull accurately calculates input and output power, gain, efficiency, and true PAE for CW or pulsed-CW, single-tone, and two-tone signals.

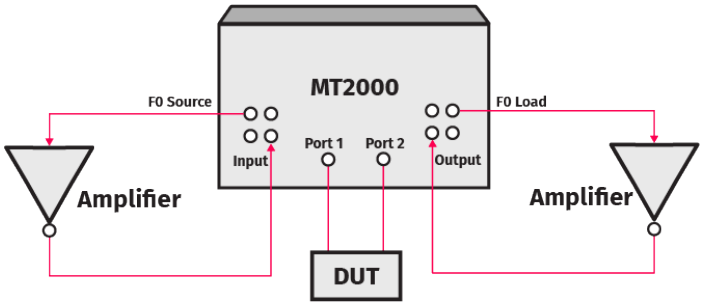
- **Frequency Range:** up to 110 GHz
- **Configuration Options:** upgradeable to a hybrid-active system



Mixed-Signal Active Load Pull with the MT2000

Active load pull using the MT2000 overcomes the loss and electrical delay limitations of passive tuners by actively synthesizing source and load impedance at the DUT reference plane. The MT2000 enables precise device characterization of CW, pulsed, and wideband modulated signals, optimizing the evaluation of output power, efficiency, linearity, noise, and dynamic behavior under realistic operating conditions. The system supports up to 1000 impedance/power states per minute with no limitation on Smith chart coverage.

- **Frequency Range:** up to 67 GHz
- **Modulation Bandwidth:** up to 1000 MHz
- **Active Tuning Loops:** 2, 3, 4, 5, and 6 (model dependent)



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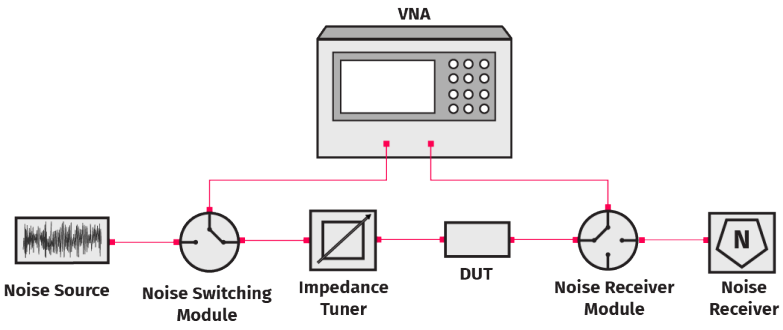
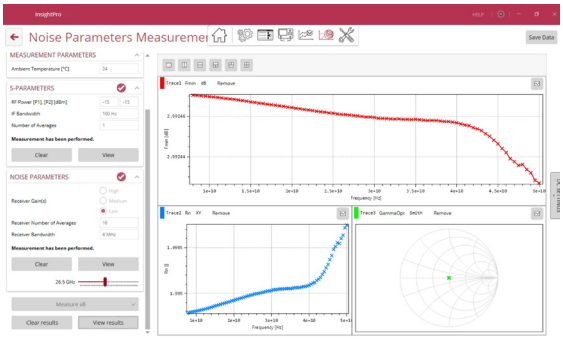
Noise Parameter Extraction

Noise parameter extraction characterizes how a device's noise performance varies with source impedance, which is critical for LNA design, especially at high frequencies and low power levels. The setup includes a calibrated noise source and an automated impedance tuner that varies the source impedance presented to the DUT, while a broadband noise receiver module connected to the DUT output minimizes system noise contributions. The InsightPro™ software automates instrument bench setup, calibration, calibration verification, and noise parameter extraction across wide frequency bandwidths with unparalleled accuracy.

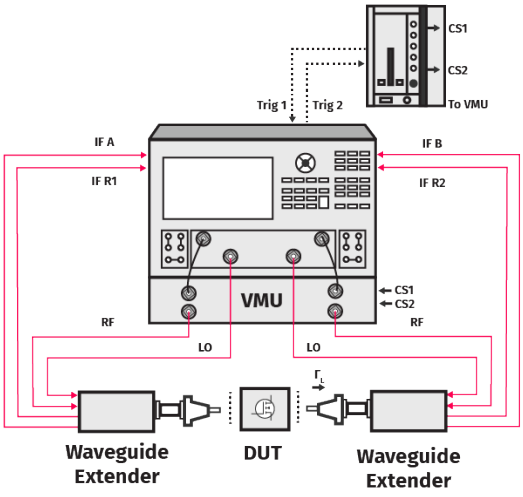




THz Device Characterization

Terahertz device characterization provides accurate small- and large-signal measurements at frequencies beyond the limits of conventional VNA-based test benches. The system combines a VNA with waveguide frequency extenders and active impedance control for precise power and phase control at the DUT reference plane. This enables power-controlled S-parameter measurements and vector-corrected large-signal characterization, allowing accurate insight into gain compression and output power under controlled operating conditions.

- **Frequency Range:** up to 330 GHz in Hybrid mode; THz in Active mode
- **Configuration Options:** upgradeable to a hybrid-active system
- **Software:** MMW-STUIDO enables accurate and repeatable high-resolution power control



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