

MT1000 – Mixed-Signal Active Load Pull System (30.0 MHz to 40.0 GHz) And MT2001 System Software

DATA SHEET / 4T-096



MT2000 – Mixed-Signal Active Load Pull System

(30.0 MHZ TO 40.0 GHZ) AND
MT2001 SYSTEM SOFTWARE

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Key Features (Typical Performance)

- > Broadband system concept (e.g. 0.7-40.0 GHz)
- > Re-configurable hardware; single-ended number of controlled harmonics
- > High speed and dynamic range
- > Embedded measurement of (Pulsed/Isothermal) DC parameters

Single tone

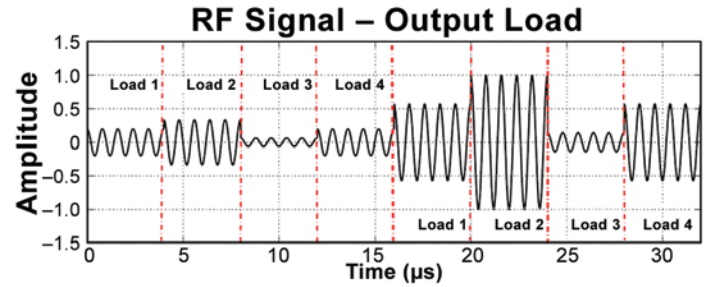
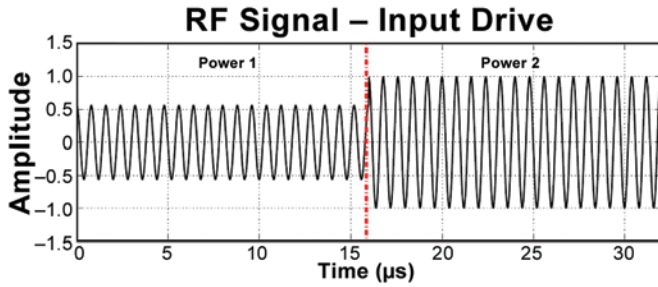
- > "Real-time" measurement speed >1,000 power and load states per minute
- > Multi-dimensional parameter sweeps
- > Pulsed/Isothermal High Power testing
- > Measurement of calibrated Voltage and Current waveforms
- > Device protection included
- > Waveform reconstruction

"Real-Time" Load Pull

Synchronization between signal generation and detection facilitates ultra-fast measurements.

- > Independently fully controlled multidimensional Load Pull parameters sweep
- > 5,760 measurement points in less than 5 minutes: 90 fundamental load states, swept load and source harmonic termination, 16 power levels

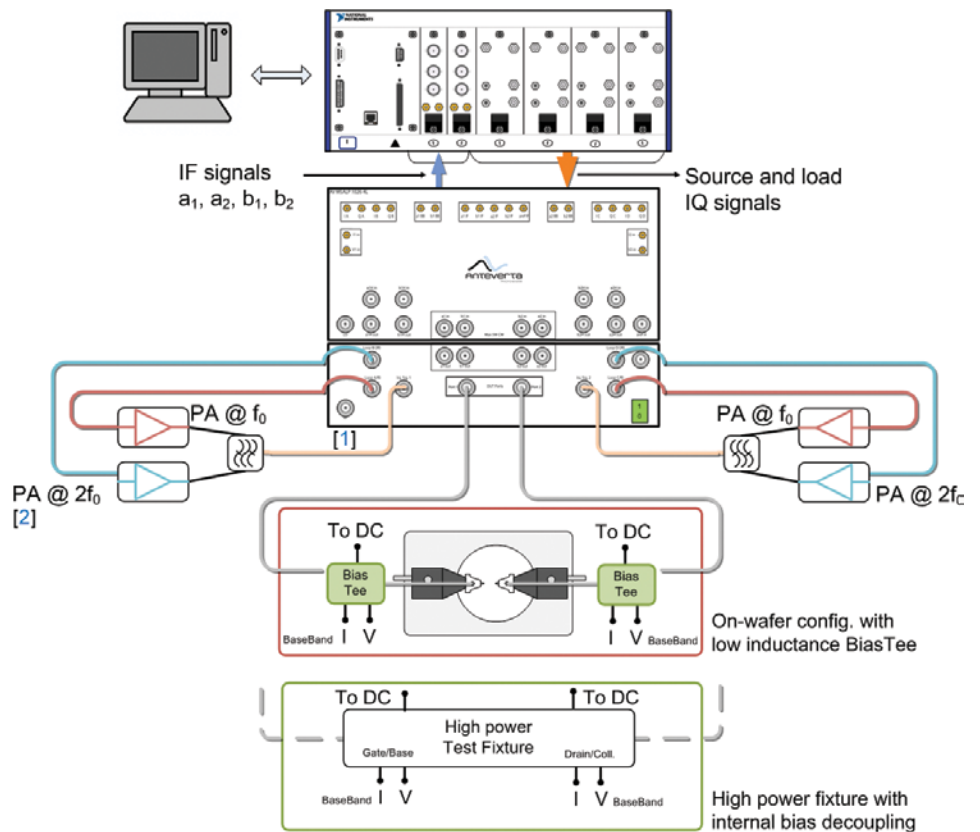
Figure 1. Injection signals as used in the "real-time" multi-dimensional parameter sweeps.



High Power/On-Wafer Configuration

The active loops are fully re-configurable (e.g., the same hardware would also support source pull at f_0 and load pull at f_0 , $2f_0$ and $3f_0$, or true differential source and load pull at f_0). See [1] in the diagram below.

The proprietary algorithm (patent pending) results in low requirements on the loop amplifiers, so linearity is no longer a problem in this regard, while their P_{sat} should be just slightly larger than the power generated by the device under test (DUT). See [2] in the following diagram.



Available Models

| Model | System RF Bandwidth (GHz) | Number of Active Tuning Loops ² | Power ¹ Handling: CW/Pulsed (W) | Typical Detection Dynamic Range (dB) | Typical Active Load Dynamic Range (dB) | Minimum Pulse Width (nS) |
|-----------|---------------------------|--|--|--------------------------------------|--|--------------------------|
| MT1000HF2 | 0.03 – 2.0 | 2 | 50/500 | 80 | 60 | 2000 |
| MT1000HF4 | 0.03 – 2.0 | 4 | | | | |
| MT1000A2 | 0.3 – 6.0 | 2 | 100/1000 | | | |
| MT1000A4 | 0.3 – 6.0 | 4 | | | | |
| MT1000B2 | 0.4 – 18.0 | 2 | | | | |
| MT1000B4 | 0.4 – 18.0 | 4 | | | | |
| MT1000D2 | 0.5 – 26.0 | 2 | 20/200 | | | |
| MT1000D4 | 0.5 – 26.0 | 4 | | | | |
| MT1000E2 | 0.7 – 40.0 | 2 | | | | |
| MT1000E4 | 0.7 – 40.0 | 4 | | | | |

¹ Higher power options are available.

² 5-loop and 6-loop add-ons available.

MT2001 Software Modules

| Module | Description |
|---------|--------------------------------------|
| MT2001A | MT2000 POWER MEASUREMENTS (required) |
| MT2001D | MT2000 NVNA (TIME DOMAIN ANALYSIS) |
| MT2001E | EXTERNAL CONTROL |
| MT2001F | VISUALIZATION |

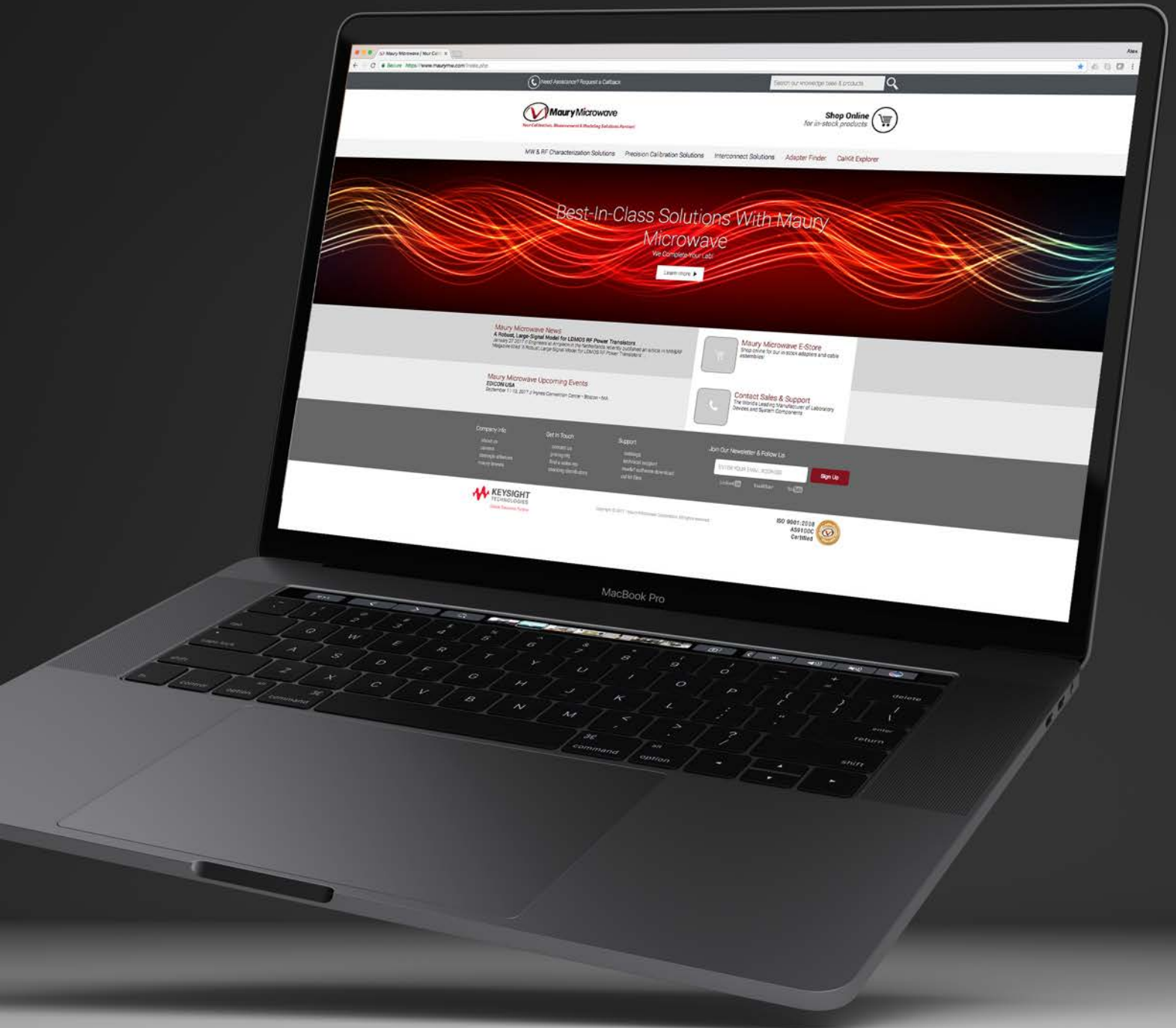


MT1000

Suggested Reading

- > 5A-044 – Active Harmonic Load Pull with Realistic Wideband Communications Signals.
- > 5A-045 – Active Harmonic Load Pull for On-Wafer Out-of-Band Device Linearity Optimization.
- > 5A-046 – A Mixed-Signal Approach for High-Speed Fully Controlled Multidimensional Load Pull Parameters Sweep.
- > 5A-047 – Base-Band Impedance Control and Calibration for On-Wafer Linearity Measurements
- > 5A-048 – A Mixed-Signal Load Pull System for Base-Station Applications
- > 5C-087 – Active Load Pull Surpasses 500 Watts!

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