

Maury Microwave Solutions for High-Power Microwaves

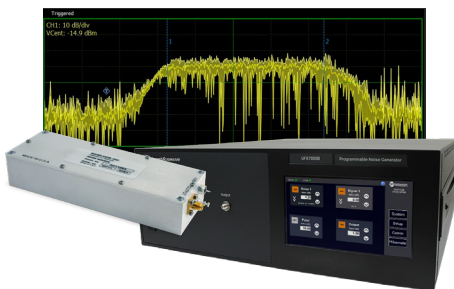
Maury Microwave delivers best-in-class, commercial off-the-shelf (COTS) RF and microwave solutions supporting high-power microwave (HPM) RF signal chain research and development. Spanning signal generation, additive white Gaussian noise (AWGN) modulation, amplification, power measurement, and device characterization, these solutions enable engineers to push technological limits and strengthen mission-critical performance.



Signal Generation: HSM Modules

High-performance RF synthesizers start the RF signal chain by establishing the base frequency for all subsequent HPM pulse shaping and manipulation.

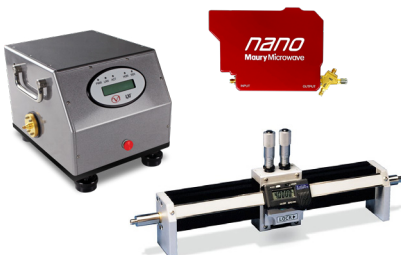
- > Spectral purity
- > Phase control for multi-channel configurations, ensuring pulses arrive constructively at the target
- > High amplitude accuracy for repeatable, reliable testing
- > Low phase noise
- > CW as well as pulsed operation for short-duration, high-peak power pulses
- > Fast frequency switching for frequency-agile system development across mission-relevant bands



AWGN Modulation: Noise Sources

AWGN sources add controlled noise to HPM pulses, creating high crest factor waveforms that can push sensitive components beyond operational limits.

- > Precise control of noise power and bandwidth for waveform optimization
- > AWGN solutions ranging from compact amplified modules to programmable benchtop generators
- > High crest factor waveform generation for advanced circuit stressing
- > Dynamic AWGN waveforms emulate complex modulation schemes to increase jamming effectiveness



Device Characterization: Impedance Tuners

Impedance tuners and load pull measurement solutions uncover how power, gain, efficiency, linearity, and other critical metrics change under realistic, non-50 Ω operating conditions, identifying maximum deliverable power and optimal operating regions prior to HPM system integration.

- > Accurate and repeatable impedance control
- > Wide Smith chart coverage

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Amplification: MPA Series

RF and microwave power amplifiers deliver reliable, high-fidelity signal amplification for driver-level HPM testing to safely and effectively generate equivalent electric-field strengths at controlled distances, while also providing properly shaped waveforms for higher-power, multi-stage amplification stages.

- > Wide frequency coverage up to 98 GHz ensures
- > Faithfully replicates fast rise times and short pulse widths
- > Based on state-of-the-art GaN PA modules
- > Variable gain adjustment
- > High linearity prevents clipping of the highest power peaks, especially in AWGN-modulated waveforms
- > High continuous power across the band
- > Integrated protection circuitry



Power Measurements: RTP5000 Series

Real-time peak power sensors are used throughout the HPM transmit and receive chains to characterize HPM pulses and analyze system performance. The RTP5000 series sensors assess amplifier performance by monitoring delivered peak power, pulse shape fidelity, gain, propagation delay, and return loss. During over-the-air testing, the RTP5000 series quantifies antenna radiating power, measures received power to evaluate field effectiveness, and monitors device resilience to high-power pulse exposure. Synchronized measurements capture the arrival-time offset between transmitters, enabling simultaneous pulse arrival in multi-antenna HPM configurations.

- > 100,000 measurements per second
- > 100 picosecond time resolution to resolve nanosecond-scale pulse misalignment
- > Synchronized multi-channel measurements
- > 16 automated pulse measurements
- > < 3 nanosecond rise time to capture clean HPM pulse leading edges
- > 195 MHz video bandwidth
- > Precise forward/reflected power measurements
- > Crest factor and statistical measurements (e.g., CCDF)
- > Advanced measurement and analysis Power Analyzer software

