

Microwave Peak Power Meter

- Single or Repetitive Pulse and CW Measurements from 30 MHz to 40 GHz
- Accurately Reads Pulses to 15 Nanoseconds
- Graphics Mode for Plot of Pulse and Reading Point
- Automatic Detector Calibration

Series 8500 RF Peak Power Meter brings you an unexcelled combination of speed, accuracy, reliability and operator convenience. The versatile Series 8500 sets a new standard for the industry with its ability to accurately read pulses as narrow as 15ns, its exceptionally accurate CW performance and menu driven control, and a newly designed, completely automatic detector calibration system (patent pending).

Series 8500 provides detailed information on both single and

repetitive pulses as narrow as 15 ns, regardless of the shape of the pulse and anywhere within the 30 MHz to 40 GHz frequency range.

By adjusting the delay, either automatically or manually, peak amplitude can be sampled and measured. If the delay is stepped through a series of small increments, data can be recorded over the entire pulse interval. A plot of this data provides a clear representation of the RF power over the entire pulse. The delay has sufficient range to also permit sampling of individual pulses in a train of pulses.

Series 8500 combines pulse measurement capability with the ability to make accurate CW readings over a 60 dB dynamic range (-40 to $+20$ dBm), with calibration readily traceable to National Calibration Standards Laboratories. Due to the large signal capacity and superior detection sensitivity, a single balanced detector reads both pulse and CW power over the full dynamic range of the instrument. It is no longer necessary to use two different instruments to accurately measure pulse and CW power.



SERIES 8500

MICROWAVE POWER METERS

Through interactive prompts and soft key operated menus, the user can quickly and easily make a measurement. Most manual measurements can be made automatically, and functions controlled through the front panel can also be controlled remotely through the GPIB. The LCD display provides the operator with peak power, trigger delay, pulse width, and rise and fall times. A special graphics mode plots the outline of the detected pulse onto the display along with a cursor at the point at which the reading is being taken, thus allowing the operator to monitor system performance and guarantee the accuracy of power readings and delay adjustments.

A major advancement in instrument accuracy and NBS traceability has been accomplished with the automatic calibration of the detector linearizing circuitry in the unit. This system consists of a computer-controlled calibrator circuit which permits the diodes of the detector to be linearized against an internal thermal reference.

Two types of detectors with a variety of connectors are available for the Series 8500. One detector type has a minimum pulse width capability of 15ns, and the other type will measure to 750ns at frequencies to 30MHz when the measurement of narrower pulses is not required (such as in TACAN, various RADAR, and TDMA applications).

A ROM containing factory-measured frequency response data is built into each detector. This data automatically corrects the power reading at any measurement frequency. The measurement frequency can be entered manually or automatically via the GPIB bus, or by applying an external analog voltage corresponding to the frequency ($V \propto F$).

The detector connects to the instrument using a rugged, double shielded cable terminated in high-quality, locking connectors. Double shielding provides good EMI protection, and the rugged design of the cable assures reliable operation.

The crystal-controlled digital delay generator used in Series 8500 gives very high accuracy and reliability over a wide delay range. A delay line allows the leading edge of the pulse to be sampled, and very short RF pulses, when pre-triggering is not available, can be accurately measured. Pulse peak and shape information is provided automatically.

A programmable offset can be used to compensate for losses inherent in directional couplers and attenuators and parasitic losses in the RF components used to sample the RF power. This allows the display of true power being delivered to the point of interest.

Hardcopy pulse profiles are easily made by using a point plotter connected to the GPIB interface of the instrument. No other controller is required. The plot is fully annotated including time, date, and part identification.

Series 8500 is compatible with its predecessor, the Model 1018B. The Series 8500 not only fits in the same rack as the 1018B, but can respond to the same bus commands, thus assuring software compatibility with any existing systems now using the 1018B.

Series 8500 can be used in conjunction with Wavetek Models 1038-NS20 and N10 Network Analyzers to make swept peak power measurements.

Series 8500 is available in two different versions: Model 8501 has a single detector input, and the Model 8502 dual detector input, two channels for increased measurement capability.

Series 8500 can automatically enter specific frequency information as long as the RF source being used is equipped with a voltage proportional to frequency output.

Frequency Range

30 MHz to 40 GHz.

Power Range

Pulse Mode: -20 to +20 dBm.

CW Mode: -40 to +20 dBm.

Accuracy

Calibrator Power Uncertainty (at 1 mW): $\pm 1\%$ (0.044 dB).

Linearity: $\pm 2\%$ (0.066 dB).

Calibration Factor Uncertainty:

30 MHz to 10 GHz: $\pm 1\frac{1}{2}\%$ (0.065 dB).

10 GHz to 18 GHz: $\pm 2\frac{1}{2}\%$ (0.110 dB).

18 GHz to 26.5 GHz: $\pm 4\%$ (0.170 dB).

Reading Rate

>1000/s (counts down above this).

Maximum PRF

>1 MHz.

Sample Delay

Resolution: 0.1 ns or 5 digits.

Range: 0 to 200 ms.

Accuracy: 0.01% of delay ± 1 ns.

Calibrator

Frequency: 1 GHz $\pm 5\%$.

Power Uncertainty at 1 mW: $\pm 1\%$.

Automatic Calibration Cycle: -33 to +20 dBm.

Return Loss @ 1 mW: >25 dB.

Self Calibration Time: <1 minute.

Connector: Type N.

Power Requirements

100, 120, 220, or 240 Vac rms $\pm 10\%$

50, 60, or 400 Hz $\pm 5\%$.

Environment

Operating: 0° to 50°C (+32° to +122°F).

Storage: -40° to +65°C.

OPTIONS

01: Rack Mount

02: APC7 Connector on Calibrator

03: Rear Panel Connection — Detector and Calibrator

04: Internal MATE Interface

FACTORY/FOB

Sunnyvale, CA