ABOUT OEWAVES

OEwaves, a leader in microwave photonics, invents, develops and delivers transformative products using disruptive technologies and capabilities for communications, radar, and ISR for small platforms.

The OEwaves difference lies within the proprietary and core technologies including the Opto-Electronic Oscillator (OEO), and crystalline whispering gallery mode (WGM) optical resonators. The phase noise performance of the OEO surpasses that of conventional microwave oscillators by at least three orders of magnitude.

The company maintains exclusive rights to over 30 patents and pending patents in these and related areas. Additionally, an internationally recognized team of innovators and a leadership team with successfully proven business and industry experience establish OEwaves as the expert in microwave photonics.

OEwaves

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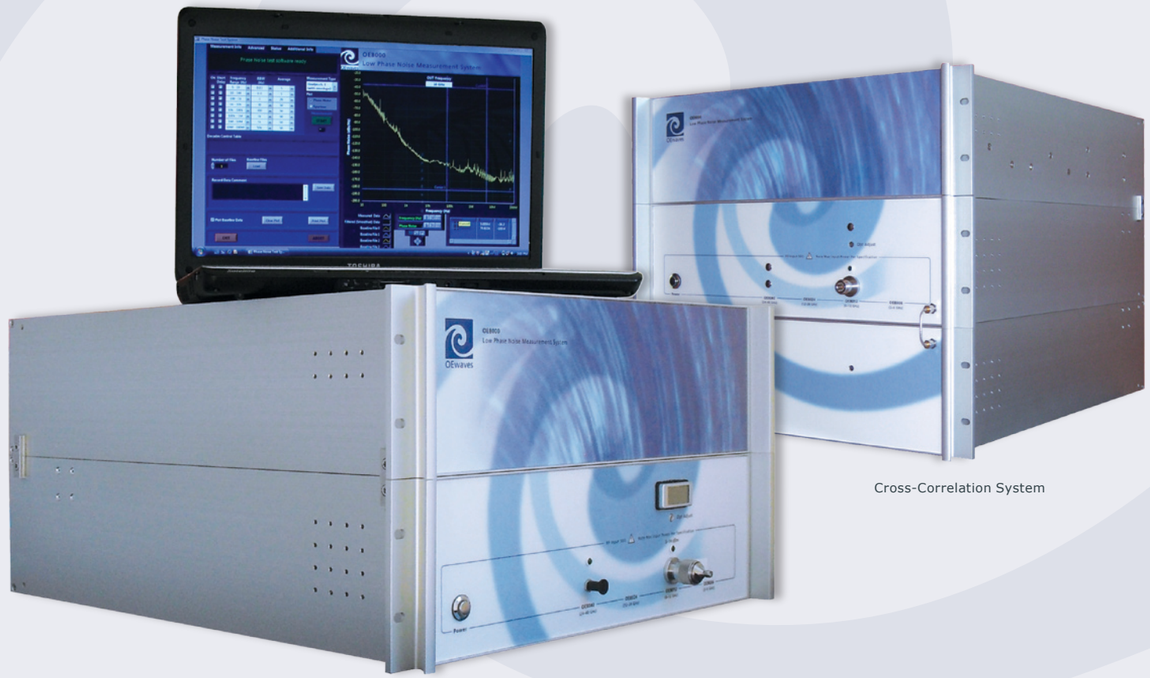
OEwaves

Phenom™ Phase Noise Measurement System

When Unrivaled Performance Matters



Cross-Correlation System

Single Channel System

This product is designated as a defense article under Category XI(c) of the USML and is subject to ITAR licensing requirements. Cleared by U.S. DoD/OSR for public release under OSR Case Number 11-S-1513, dated March 11, 2011.

PHENOM™ PHASE NOISE MEASURING SYSTEM AT A GLANCE

The **PHENOM™** is an ultra-low phase noise measurement system with an unrivaled level of performance and, without requiring a low phase noise reference source or a down converter, is easy to operate and extremely cost competitive.

The PHENOM™ is a unique homodyne system that employs microwave photonic techniques resulting in fast, fully automated phase noise measurement. Unlike conventional commercial phase noise measurement systems, the PHENOM™ is a simple one-button operation, allowing the user to easily operate the system.

With the cross-correlation option, the PHENOM™ offers the best absolute phase noise performance in the industry and can measure the extremely low phase noise of the highest performing microwave oscillators on the market, including OEwaves' proprietary microwave opto-electronic oscillator (OEO).

UNRIVALED PERFORMANCE

System performance has been verified through a comparison with the ultra-high performance heterodyne phase noise measurement system at NIST.

- Ultra-low single sideband phase noise/jitter measurement floor.
- Extended offset frequency measurements up to 320 MHz.
- Single channel, single sideband phase noise of < -145 dBc/Hz at 10 kHz offset for a 10 GHz carrier.
- Dual channel cross-correlation single sideband phase noise of <-160 dBc/Hz at 10 kHz offset for a 10 GHz carrier.

EASY TO OPERATE

The simple and intuitive design results in quick, precise measurements with a one-button operation.

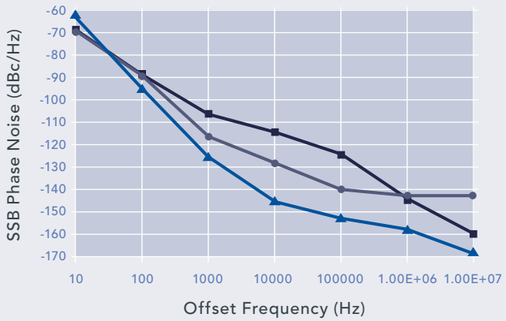
- No setup is required, just plug and play.
- Friendly graphic user interface.
- Fully automated.
- Increased productivity.
- Fast real-time measurements.

COST COMPETITIVE FEATURES

The need for a high performance reference is eliminated with microwave photonics techniques that utilize automated homodyne architecture.

- PC based data processing.
- No low phase noise down-converter or reference source required.
- Economical options.
- Wide operating frequency range 60+ GHz.
- Dual channel cross-correlation option.
- Two-port residual/added phase noise option.
- Extended offset frequencies option.
- AM noise option.
- Future upgradable.

OEWAVES VS. AGILENT AND ROHDE & SCHWARZ



Absolute Phase Noise Floor (10 GHz)

- **OEWAVES PHENOM™**
- Agilent E5505 Aw/LowPN Downconverter or MW Reference Source
- Rhode & Schwarz FSUP

	OEwaves PHENOM™	Agilent E5505A	Rhode & Schwarz FSUP
Highest SSB phase Noise measurement sensitivity in the microwave region and above	✓	✗	✗
No reference source or down-converter required for ultra-low phase noise measurement	✓	✗	✗
Simplest to set up and operate	✓	✗	✗
Highest offset frequency measurement capability	✓	✗	✗
Lowest price among comparable systems	✓	✗	✗

PHENOM™ PHASE NOISE MEASUREMENT SYSTEM