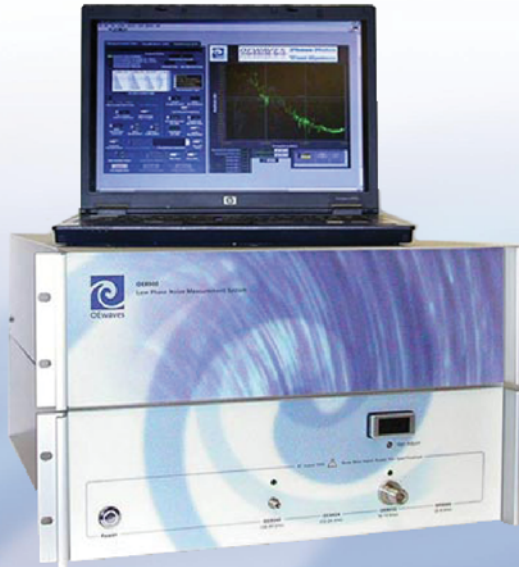


PHENOM™ Phase Noise Measurement System

Ultra-High Performance Automated Phase Noise Measurement System

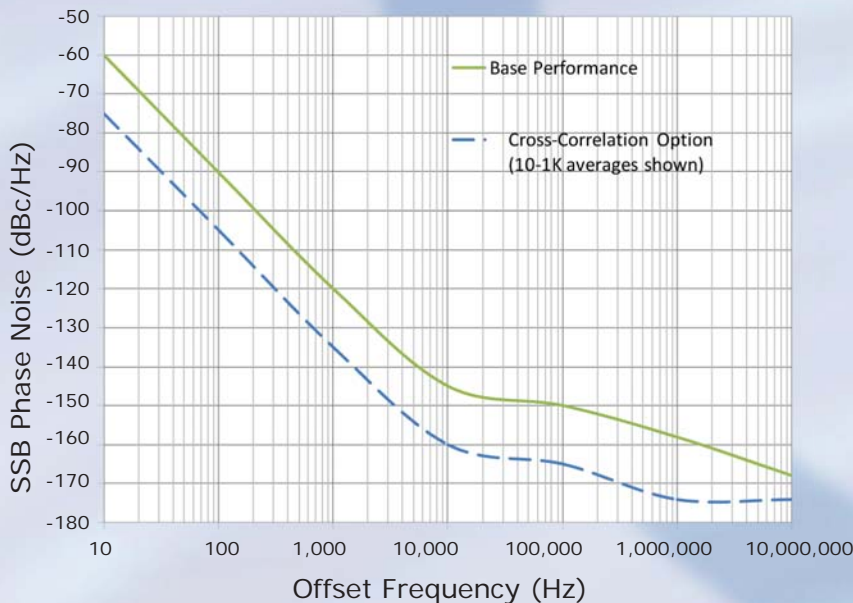
Utilizes microwave photonics techniques for automated measurement capable of testing ultra-low phase noise oscillators.



The PHENOM is fast and fully automated, and yields the spectral density of the phase noise of an RF or microwave signal source at any operating frequency in the specified bands.

This homodyne-based system is unique in wide frequency band measurement without requiring another low noise reference source or down-converter, as required in conventional heterodyne approaches. The system operates with ease, speed, and precision using a simple graphic user interface via a notebook PC. The cross-correlation performance of the system shown in the figure below has been calibrated through a comparison with the measurement system at NIST.

Absolute Phase Noise Floor at 6 - 12 GHz Frequencies



Features

- Ultra-low Absolute Phase Noise/Jitter Measurement Capability
- Fast Real-time Measurement
- Fully Automated
- Cross-correlation Homodyne Capability
- No Low Noise Reference Source Required
- User Friendly Interface
- Simple PC-based Operation
- 19" Rack System
- Customizable Configurations, Upgrades, and Options

Optional Configurations

- Dual Channel Cross-Correlation Measurements
- Extended Input and Offset Frequency Range Measurements
- Two Port Residual Phase Noise Measurements
- AM Noise Measurements
- Extended Input Power Range
- Optical Input
- Performance Level and Frequency Range Options and Upgrades

PHENOM Phase Noise Test Measurement System is a homodyne based system; no additional test equipment required to operate.

Absolute Phase Noise Measurement Floor for 6 - 12 GHz

Specifications

Parameter	Absolute Phase Noise Floor (dBc/Hz) -Single Channel (Absolute phase noise further improves by $\sim 5\log[\# \text{ Avg}]$ for cross-correlation option)						
	10 Hz	100 Hz	1 kHz	10kHz	100 kHz	1 MHz	10 MHz
Frequency Range (GHz)							
1.5 - 3	-72	-102	-132	-157	-162	-166	-174
3 - 6	-66	-96	-126	-151	-156	-162	-172
6 - 12	-60	-90	-120	-145	-150	-158	-168
Consult Factory For Other Frequency Ranges							
	TBD						
RMS Timing Jitter Sensitivity (fs) - Single Channel	5 (100 Hz - 10 MHz)						
Input Power Range (dBm)	+5 to +15						
Spurious (Max; dBc)	-50 < 1 kHz offset -80 > 1 kHz offset						
Measurement Types	Raw Data Homodyne Spurious RMS Jitter Cross-correlation Option 2-Port Residual Phase Noise Option (External Signal Source is Required) AM Noise Option						
Averaging (Max)	99,999 (Cross-Correlation Option)						
Resolution Bandwidth	0.1 Hz - 200 kHz						
Display Functions	Spectrum Sprectral Density Markers Spurious Content						
Data Storage and I/O	HDD CD R/W 10/100 Ethernet Port USB Ports						
Operating Temperature Range	15° - 35° C						
Power	110/120 Vac, 50/60 Hz						
Size	19" Rack Mount System (Height depends on performance and feature options)						

Graphic User Interface



Optional Features and Configurations

Option	Phase Noise Test System	Notes
Extended Frequency Offset Measurement	>0.1 Hz <320 MHz	Customer to specify range.
Extended Input Power	-10 to +15 dBm +10 to 20 dBm	Consult factory for other input ranges.
Extended Temperature Range	10 ⁰ - 40 ⁰ C	Consult factory for other input ranges.
Power Supplies	DC 220/240 Vac	
Custom Input Frequency Range	RF - MMW	Customer to specify range.
AM Noise Measurement	Example: -150 dBc/Hz @10 kHz -160 dBc/Hz @100 kHz	Customer to specify requirements.
Custom Phase Noise Performance Level	Example: -135 dBc/Hz @10 kHz -145 dBc/Hz @100 kHz	
2-Port Residual Phase Noise Measurement	Example: -150 dBc/Hz @1 kHz -160 dBc/Hz @10 kHz	Customer to specify requirements. External signal source is required.

NOTE: These specifications are subject to change without notice due to OEwaves ongoing development cycle. Unless otherwise noted, all specifications in this documents are to be treated as "typical;" actual performance may vary contingent on operating environment. This product line is covered by one or more of the following U.S. patents: 8,155,913; 8,155,914. Other patents pending. **ITAR RESTRICTED:** This product is designated as a defense article under Category XI(c) of the USML and is subject to ITAR licensing requirements.

For ordering or other inquires contact:



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