OEwaves Invent·Develop·Deliver

Ultra-Narrow Linewidth Laser Module GEN 3

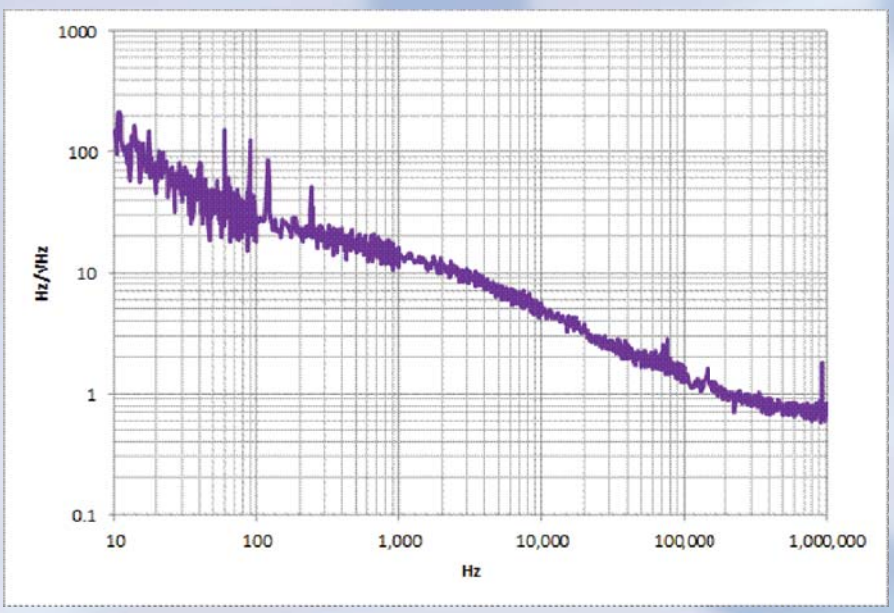
Whispering Gallery Mode Micro-Resonator Enabled Laser

The module offers super-fine instantaneous and dynamic spectral linewidth of under 30Hz and ultra-low phase/frequency noise in a compact form factor.

PRISM AWARDS WINNER

OEwaves Ultra-Narrow Linewidth Laser Module houses a proprietary driver/controller and the OEwaves laser source which is based on a high quality factor (Q) Whispering Gallery Mode (WGM) micro-resonator. The laser is scalable to a variety of wavelengths in C band.

The unique technology of the OEwaves Ultra-Narrow Linewidth Laser Module leverages the self-injection locking of a suitable commercially available laser diode via a resonant optical feedback from a high-Q WGM micro-resonator. Its monolithically integrated approach along with micro-scale mass and volume make the laser virtually insensitive to environmental vibrations.



Features

- Ultra-Narrow Instantaneous and Dynamic Laser Linewidth
- Ultra-Low Phase/Frequency Noise
- 1530-1565nm Support
- Wide Thermal Tuning Range
- Low Vibration Sensitivity
- Low Residual Amplitude Modulation
- Wavelength Stability
- Compact Package
- Integrated Driver/Controller
- USB or RS232 Control Interface

Applications

- Interferometric Optical Sensing
- LIDAR
- B-OTDR Temperature and Strain
- Gas Sensing
- Optical Metrology and Spectroscopy
- Acoustic Sensing
- Oil and Gas Exploration
- Coherent Communication
- Test and Measurement

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Specifications

Parameters	OE4023	Notes
Wavelength	1530-1565nm	Single Frequency CW; Vacuum
Spectral Linewidth	30 Hz	Lorentzian; 10 μs
Dynamic Linewidth	30 Hz	
Output Power	10 mW	
Frequency Noise	50 Hz/√Hz	100 Hz Offset
	20 Hz/√Hz	1 kHz Offset
	1 Hz/√Hz	1 MHz Offset
Short Term Stability	10^{-10} @ 1 s	At constant case temperature
Frequency Stability	+/- 15 MHz/day	At constant case temperature
Signal to Noise Ratio	60 dB	
Thermal Tuning Range	30-50 GHz	Mode hop free
Thermal Tuning Rate	200 MHz/s	Mode hop free
Side-Mode Suppression Ratio	50 dB	
Relative Intensity Noise	-150 dBc/Hz	10 MHz
Operating Temperature	$+20^0$ to $+40^0$C	Case temperature
Storage Temperature	-10^0 to $+50^0$C	Case temperature
Monitor/Control Interface	USB	
Package	2.3 ” x 6 ” x 1 ”	Including driver electronics
Fiber Pigtail	PM	PANDA
	18 dB PER	
Optical Connector	FC/APC	
Options		
Extended Tuning Range	TBD	Consult Factory
Frequency Modulation	DC-100kHz	10 MHz/V; > +/- 200MHz Range
Extended Output Power	TBD	Consult Factory
Connector	FC/PC, SC/APC	
Monitor/Control Interface	RS232	

Laser Safety: This product meets the appropriate standard in Title 21 of the Code of Federal Regulations (CFR) 1040 and is classified as a FDA/CDRH Class 3b laser product.

Note: These specifications are subject to change without notice. Unless otherwise noted, all specifications in this document are to be treated as “typical.” This product line is covered by one or more of the following U.S. patents: 6,871,025; 6,879,752; 7248,763, 7991,025; 7869,472. Other patents pending. ECCN: 6A995.b1

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