

HI-Q[®] laser offers **Ultra-Narrow Lorentzian Linewidth of less than 80 Hz** and low phase/frequency noise in a compact form factor.



This HI-Q[®] laser 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 available at a variety of wavelengths in the 780nm region.

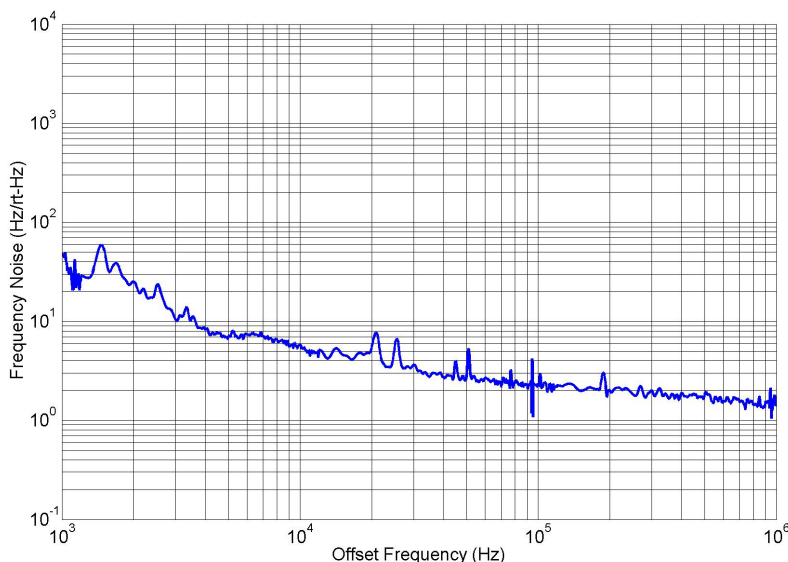
The unique technology of the OEwaves HI-Q[®] laser leverages the self-injection locking capability of a suitable commercially available laser diode via resonant optical feedback from a high-Q WGM micro-resonator. Its monolithically integrated approach along with micro-scale mass and volume make the laser insensitive to environmental vibrations.

FEATURES

- Ultra-Narrow Instantaneous Laser Linewidth
- Ultra-Low Phase/Frequency Noise
- Key wavelengths within 770-790 nm
- Low Vibration Sensitivity
- Low Residual Amplitude Modulation
- Wavelength Stability
- Compact Package
- Integrated Driver/Controller
- USB or RS-232 Control Interface

APPLICATIONS

- Rubidium atomic transitions
- Optical Metrology & Spectroscopy
- Quantum Technology



HI-Q[®] NEAR IR LASER SPECIFICATIONS

HERTZ
OE4078

	-3mW	-6mW	-50mW	-100mW
Key wavelengths within range (Single frequency, cw, vacuum)	770 – 790 nm			
Output Power	3 – 5 mW	6 – 10 mW	50 mW	100 mW
Output Coupling	Fiber ¹	Fiber ¹	Free-space	Free-space
Laser Package (2.3"x 6" x 1")	2.3" x 6" x 1"	2.3" x 6" x 1"	2.3" x 6" x 1"	2.3" x 7.7" x 1.8" ²
Spectral Linewidth*	< 80 Hz (Lorentzian, Instantaneous)			
Frequency Noise				
▪ 1 kHz Offset	100 Hz/√Hz			
▪ 10 kHz Offset	20 Hz/√Hz			
▪ 1 MHz Offset	8 Hz/√Hz			
Thermal Tuning Range	10 GHz / ~0.02 nm (Mode Hop Free)			
Thermal Tuning Rate	100 MHz/s (Mode Hop Free)			
Vibration / Acceleration Sensitivity	5 x 10 ⁻¹¹ /g			
Relative Intensity Noise (at 10 MHz)	- 140 dBc/Hz			
Short Term Stability (Typical)	2 x 10 ⁻⁹ @ 1 s (At Constant Case Temperature)			
Frequency Stability (Typical)	100 MHz/day (At Constant Case Temperature)			
Side-Mode Suppression Ratio	50 dB			
Operating Temperature	+20°C to +40°C			
Storage Temperature	-10°C to +50°C			
Monitor / Control Interface	USB			
Polarization Extinction Ratio	20 dB			

OPTIONS

Frequency Modulation	DC-100 kHz	5 - 15 MHz/V; > ±100 MHz Range
Monitor / Control Interface	RS-232	

¹PANDA fiber PM-FC/APC, linearly polarized, aligned along slow axis

²Dimensions may vary slightly depending on wavelength. Consult with OEwaves Sales.

Tech Notes: Instantaneous Linewidth* is computed from the noise floor of the power spectral density of frequency noise (PSDFN).

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. This product line is covered by one or more of the following U.S. patents: 6,871,025; 6,879,752; 7,248,763, 7,991,025; 7,869,472. Other patents pending.
ECCN: EAR99



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