

HI-Q® laser offers **Ultra-Narrow Lorentzian Linewidth of less than 10 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.

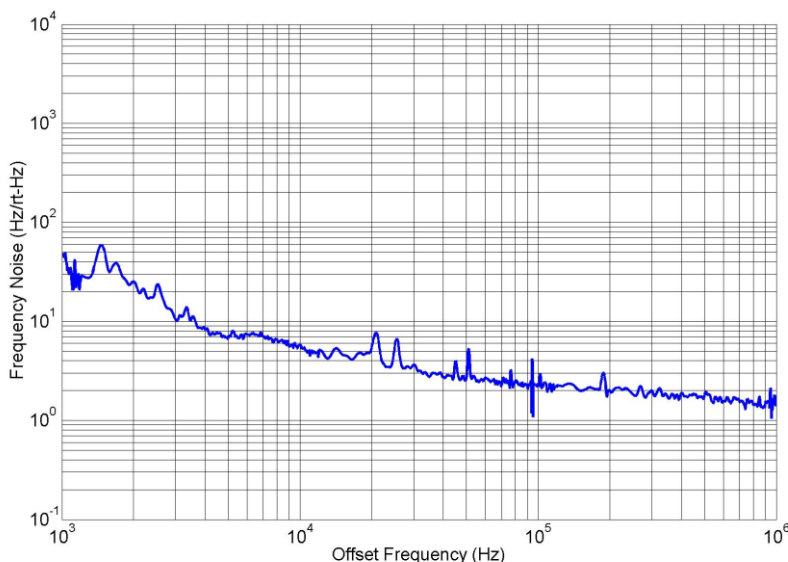
The unique technology of the OEwaves HI-Q® laser leverages the self-injection locking capability of a suitable commercially available laser diode via resonant optical feedback from a high-Q WGM micro-resonator. Its monolithically integrated approach along with micro-scale mass and volume make the laser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



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HI-Q® NEAR IR LASER HI-Q® NEAR IR LASER

SPECIFICATIONS

OE4078

Key wavelengths within range (Single frequency, cw, vacuum)	765 – 795 nm	
Output Power*	3 – 20 mW	50 – 100 mW
Output Coupling	PM-FC / APC (PANDA fiber, slow axis)	Free-space
Laser Package (cm)	6 x 15 x 2.5 cm	6 x 20 x 4.6 cm
Spectral Linewidth**	< 10 Hz (Lorentzian, Instantaneous)	
Frequency Noise		
▪ 1 kHz Offset	35 Hz / $\sqrt{\text{Hz}}$	
▪ 10 kHz Offset	12 Hz / $\sqrt{\text{Hz}}$	
▪ 1 MHz Offset	5 Hz / $\sqrt{\text{Hz}}$	
Thermal Tuning Range	10 GHz / ~0.02 nm (Mode Hop Free)	
Thermal Tuning Rate	100 MHz / s (Mode Hop Free)	
Vibration / Acceleration Sensitivity	5×10^{-11} / g	
Relative Intensity Noise (at 10 MHz)	- 140 dBc / Hz	
Short Term Stability (Typical)	2×10^{-9} @ 1 s (At Constant Case Temperature)	
Frequency Stability (Typical)	100 MHz / day (At Constant Case Temperature)	
Signal to Noise Ratio	55 – 60 dB	
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

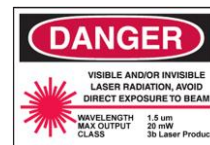
Frequency Modulation	DC – 100 kHz 10 – 25 MHz/V ± 200 – 500 MHz	Bandwidth Tuning Sensitivity (typical) Tuning Range (typical)
Monitor / Control Interface	RS-232	

*Typical values given; subject to change based on requested wavelength

****Technical Note:** 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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