OEwaves
INVENT ▪ DEVELOP ▪ DELIVER

HI-Q® 370 – 4500 nm ULTRA-NARROW LASER

OEwaves offers custom HI-Q® laser solutions with **Ultra-Narrow Lorentzian Linewidth** and **low phase/frequency noise** in a compact form factor.

FEATURES

- Ultra-Narrow Instantaneous Laser Linewidth
- Ultra-Low Phase/Frequency Noise
- Wavelength*: 370 – 4500 nm
- Low Vibration Sensitivity
- Ultra-Low Residual Amplitude Modulation
- Wavelength Stability
- Compact Package
- Integrated Driver/Controller
- USB or RS-232 Control Interface

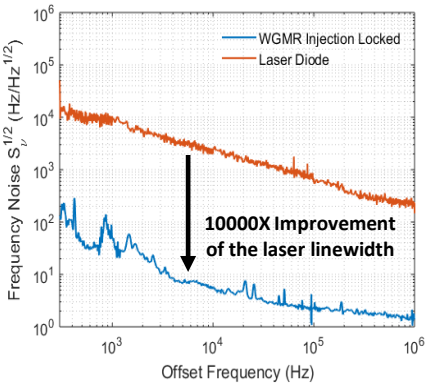
The HI-Q® laser houses a proprietary driver/controller and the OEwaves laser source which is based on a high quality factor (Q) Whispering Gallery Mode (WGM) optical micro-resonator. The laser technology can be applied to wavelengths ranging from the ultraviolet to the mid-infrared (370 – 4500 nm)*.

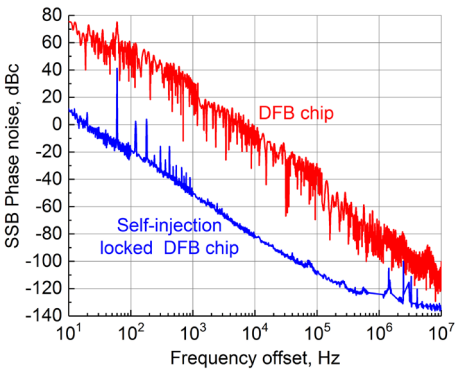
The unique technology of the OEwaves HI-Q® laser leverages the self-injection locking capability of a laser diode via resonant optical feedback from a high-Q WGM micro-resonator. Its monolithically integrated approach along with micro-scale mass and volume make the laser virtually insensitive to environmental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

APPLICATIONS

- Quantum Computing
- Coherent Communication
- Atomic Clocks
- Frequency Control
- Optical Metrology and Spectroscopy
- Acoustic Sensing
- Interferometric Optical Sensing
- B-OTDR Temperature and Strain
- LIDAR

Typical Improvements





*Contact OEwaves sales for wavelength availability

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HI-Q® 370 – 4500 nm ULTRA NARROW LASER
SPECIFICATIONS (Typical)

Wavelength*	370 to 4500 nm	Single Frequency, CW; Vacuum
Spectral Linewidth**	< 10 Hz	Lorentzian; Instantaneous
Output Power**	1 – 20 mW 1 – 100 mW	Fiber-coupled Free space
Frequency Noise**	< 35 Hz/√Hz < 12 Hz/√Hz < 5 Hz/√Hz	1 kHz Offset 10 kHz Offset 1 MHz Offset
Short Term Stability	Minimum 10^{-9} @ 1 s	At Constant Case Temperature
Frequency Stability	~100 MHz/day	At Constant Case Temperature
Tuning Range	≤ 10 GHz mode hop free	
Tuning Rate	100 MHz/s mode hop free	
Side-Mode Suppression Ratio**	≤ 50 dB	
Relative Intensity Noise**	< -140 dBc/Hz	At 10 MHz
Vibration / Acceleration Sensitivity	5 x 10^{-11}/g	
Operating Temperature	+20°C to +40°C	Case Temperature
Storage Temperature	-10°C to +50°C	Case Temperature
Monitor / Control Interface	USB	
Package**	2.3” x 6” x 1” (most lasers)	Including Driver Electronics
Fiber Pigtail	PM-FC/APC	PANDA fiber; Slow-axis
Polarization Extinction Ratio	15 to 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	

***Contact OEwaves Sales for wavelength availability**. Pricing and lead times are dependent on diode beam properties and availability of components.
****Specifications** are subject to change and may be treated as best effort 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; 7248,763, 7991,025; 7869,472. Other patents pending.
ECCN: EAR99

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