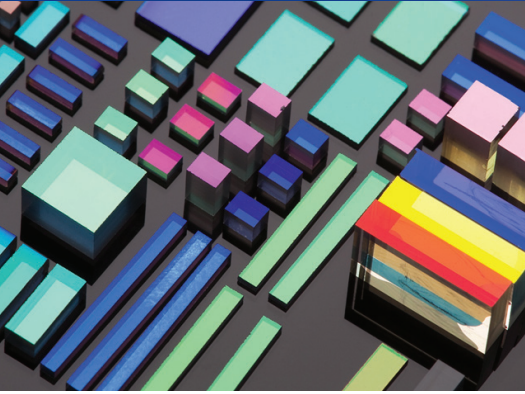


# Wavelength Stabilization Gratings



## Features:

- Increases spectral brightness of lasers
- Reduces thermal dependence of lasers
- Reduces unwanted spectral components
- Narrow bandwidth
- Low loss
- Highly stable and reliable with over 12,000 hours of testing at 150°C
- No degradation under high power illumination conditions:
  - > several kW/cm<sup>2</sup> average power
  - > 170MW/cm<sup>2</sup> peak power (fluence of 3.8 J/cm<sup>2</sup>) at 1064nm

## Applications:

- Diode Pumped Solid State Lasers (DPSSL)
- Raman Spectroscopy
- RGB Sources
- Frequency Doubling
- Gas Sensing
- Bio-instrumentation
- Rb Lasers
- Lung Imaging
- LIDAR
- Beam Combining
- Metrology
- Graphic Arts (Printing & Digital Imaging)
- Photodynamic Therapy
- Visible Lasers

Ondax's PowerLocker® wavelength stabilization gratings are volume holographic gratings (VHG) that “lock” a laser diode’s emission wavelength into a narrowed optical spectrum. This increases the spectral brightness and delivers highly stabilized optical performance over extended temperature ranges. PowerLockers® typically reduce the spectral output of a laser by an order of magnitude. The short external cavity configurations enabled by the PowerLocker® design deliver better mode selection than systems based on Littrow or Littman cavities, at a fraction of the size and cost.

All Ondax VHG are bulk “solid-state” diffractive holographic filters, which unlike thin films or gels, can deliver ultra-stable, degradation-free performance for the lifetime of the filter. Capable of very tight wavelength, efficiency, bandwidth, and diffraction angle control, Ondax VHG can be precisely and reproducibly engineered to meet even the most demanding spectral and temporal specifications.

Proprietary materials, manufacturing and test processes ensure consistent, repeatable performance from every single filter, every time, guaranteed.

## Specifications:

Parameter	Unit	Min	Typical	Max
Center Wavelength	nm	375	405, 658, 780, 785, 794.7, 808, 885, 920, 938, 976, 981, 1064, 1532, C-band	2700+
Wavelength Tolerance <sup>1</sup>	nm	-0.5		+0.5
Wavelength Variation (within filter)	nm			0.2
Bandwidth <sup>2</sup> (FWHM)	nm	0.03		1
Temperature Dependence	nm/°C		0.01	
Bragg mirror Reflectivity	%	5	10-98	>99.9
Reflectivity Tolerance <sup>1</sup>	%	-5		+5
Grating Slant Angle	Degrees		<1 custom available	
Standard Dimensions (X,Y)	mm	0.5		25
Thickness	mm	0.3	0.6-3	30

<sup>1</sup>Standard tolerances. Tighter tolerances available upon request

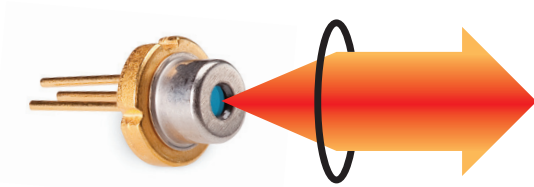
<sup>2</sup>Grating bandwidth is a function of wavelength and thickness

## Wavelength Stabilization Gratings

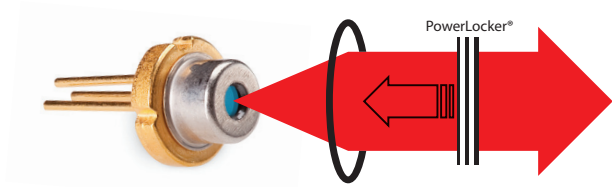
### Laser Wavelength Stabilization with PowerLocker®

Adding a PowerLocker® to an external cavity laser system enables wavelength stabilization of the output, increasing the power in the desired mode and reducing unwanted spectral components.

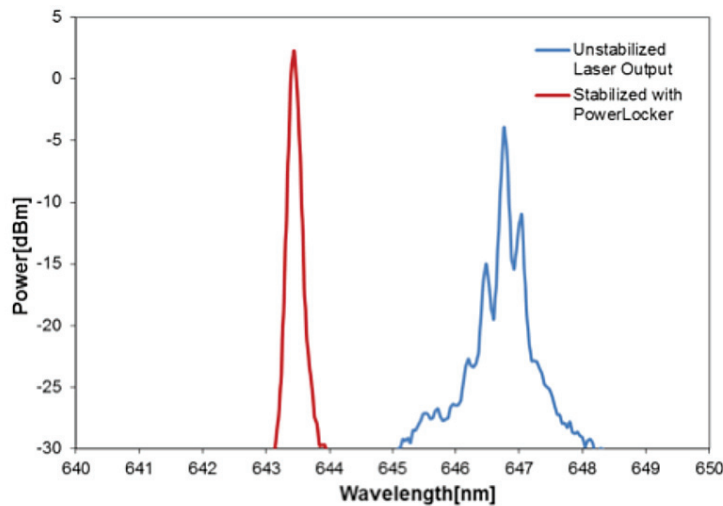
#### Unstabilized without PowerLocker®



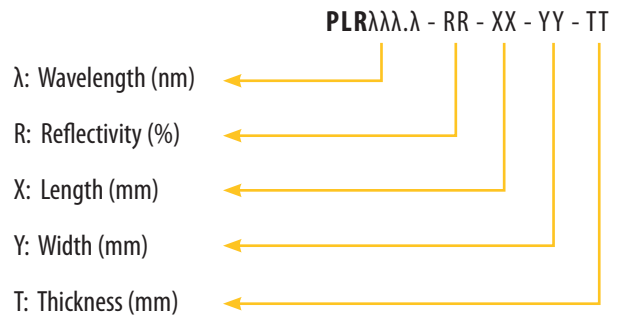
#### Wavelength Stabilized with PowerLocker®



#### Measured Performance with and without PowerLocker®



#### Model Number System:



Ondax PowerLocker® wavelength stabilization gratings are produced in a proprietary glass designed for long lifetime, high efficiency and low loss. Ondax's fabrication process is highly stabilized to ensure excellent part-to-part repeatability.

