



SSOPO

Selectable λ IR Source
Auto-tuning OPO system



SSOPO1

The Thorlabs-Stratophase partnership is proud to introduce a new family of selectable wavelength mid-infrared lasers, specifically designed for lab based alignment and test applications. The heart of the SSOPO StratoLase sources relies on Stratophase's Periodically Poled Lithium Niobate (PPLN) Technology. The relatively simple implementation of a PPLN based monolithic Optical Parametric Oscillator (OPO) allows a wide range of wavelengths to be easily achieved. Using an OPO allows access to two wavelengths simultaneously, the Signal and Idler.

Key Features:

- Automatically tuning OPO system gives access to a wide range of wavelengths
- Turn-key operation with easy to use wavelength selection interface
- Signal wavelength selection in 1nm increments
- Output accuracy typically ± 1 nm
- User selectable output filter to switch between signal and idler wavelengths
- Typically 2-3 minutes tuning time between wavelengths

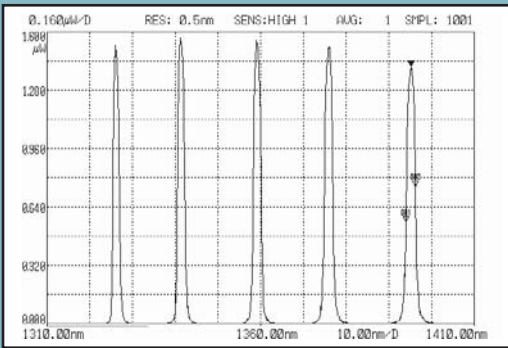
Possible Applications:

- General IR laboratory use; "IR-HeNe" for alignment and testing of optical components
- Low-cost Test and Measurement
 - IR optical element characterization
 - Waveguide characterization
 - CCD array testing
- StratoLase offers easy, low-cost access to 7692.31cm^{-1} to 2173.91cm^{-1}
 - Hydrocarbons
 - Carbon Dioxide
 - Water

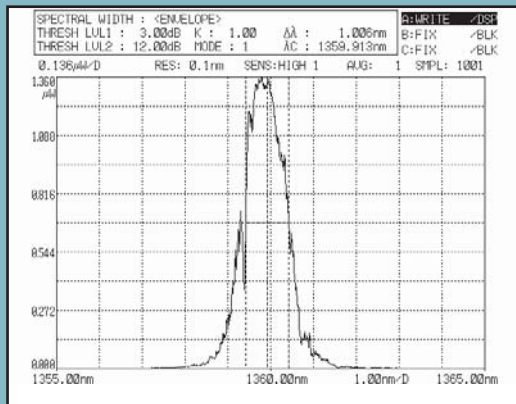
Specifications:

- **Tuning Range:** Signal Idler
 - SSOPO1:**
 - ~1330nm - 1395nm ($\Delta\lambda$ -65nm)
 - ~4200nm - 4600nm ($\Delta\lambda$ -400nm)
 - SSOPO2:**
 - ~1395nm - 1550nm ($\Delta\lambda$ -155nm)
 - ~3230nm - 4200nm ($\Delta\lambda$ -970nm)
 - SSOPO3:**
 - ~1550nm - 1800nm ($\Delta\lambda$ -250nm)
 - ~2500nm - 3230nm ($\Delta\lambda$ -730nm)
- **Average Signal Output Power:**
 - SSOPO1:** 20mW (except 10mW for $\lambda < 1350\text{nm}$)
 - SSOPO2:** 5mW
 - SSOPO3:** 5mW
- **Average Idler Output Power:**
 - SSOPO1:** 1-3mW (TBC)
 - SSOPO2:** 5mW (except 3mW for $\lambda > 3.9\mu\text{m}$)
 - SSOPO3:** 5mW
- **Typical Pulse Width:** ~10ns
- **Repetition Rate:** 2kHz
- **Signal Spectral Width (FWHM):**
 - SSOPO1:** ~1nm (@1330nm) to ~2nm (@1395nm)
 - SSOPO2:** ~2nm (@1400nm) to ~3nm (@1550nm)
 - SSOPO3:** ~3nm (@1550nm) to ~8nm (@1730nm)
- **Signal Beam Quality:** $M^2 \leq 2$
- **Signal Beam Diameter @ Output ($1/e^2$):** ~1.5mm (TBC)
- **Signal Beam Divergence (full angle):** ~2.3mrad (TBC)

SSOPO1

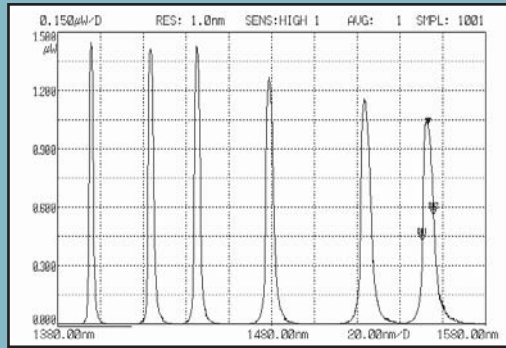


Output spectra at signal wavelengths, illustrating tuning range of SSOPO1. (Note: measured high resolution FWHM line width is approximately a factor of 2 narrower, see below).

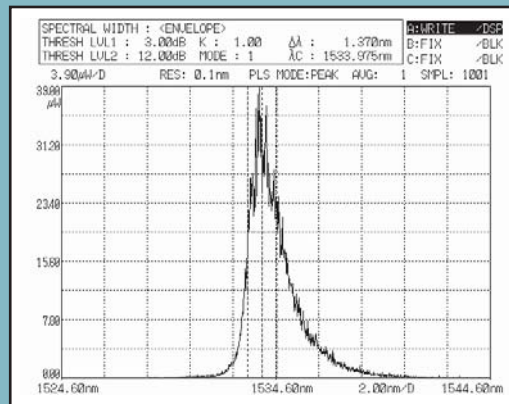


Output spectrum at ~1360nm with 0.1nm resolution on OSA and greater than 20mW signal output power. Measured FWHM is ~1nm.

SSOPO2

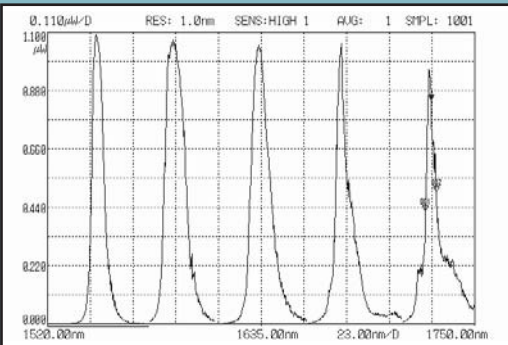


Output spectra at signal wavelengths, illustrating tuning range of SSOPO2. (Note: measured high resolution FWHM line width is approximately a factor of 2 narrower, see below).

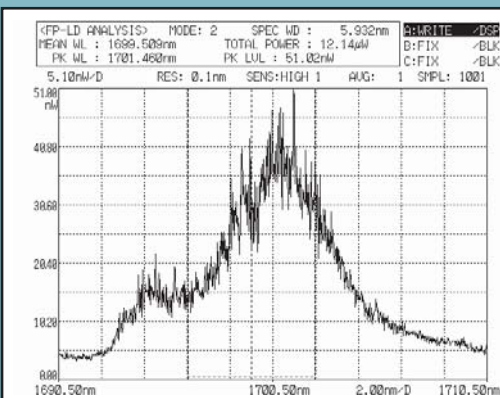
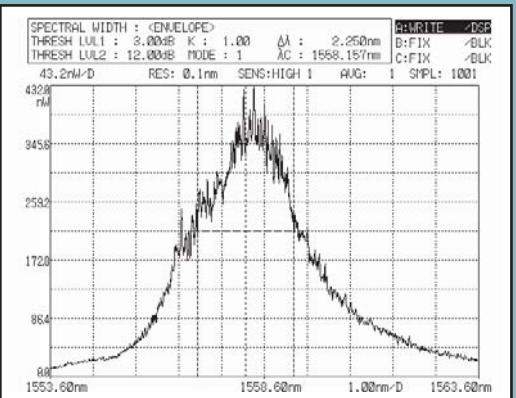


Output spectrum at ~1534nm with 0.1nm resolution on OSA. Measured FWHM is ~1.5nm.

SSOPO3



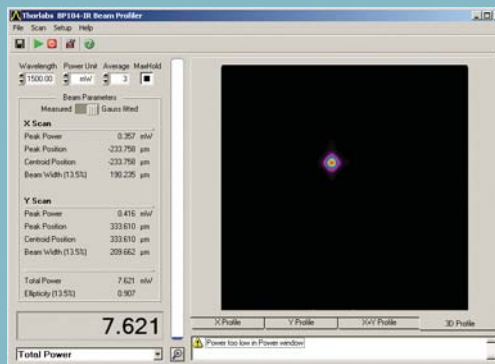
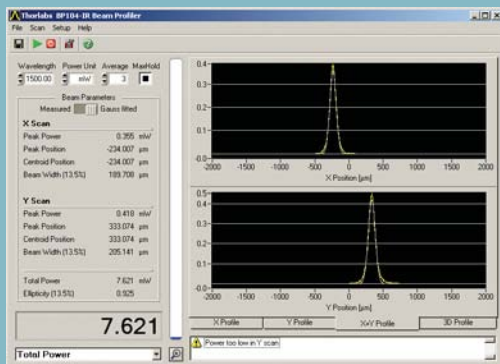
Output spectra at signal wavelengths, illustrating tuning range of SSOPO3. (Note: measured high resolution FWHM line width is approximately a factor of 2 narrower, see below).



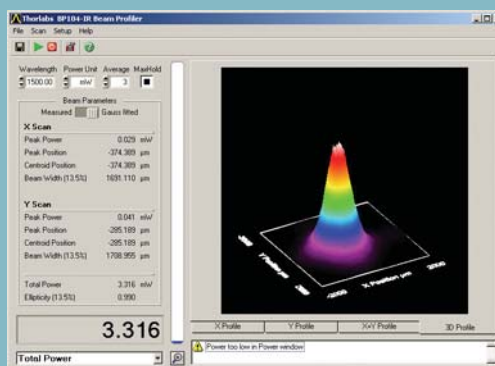
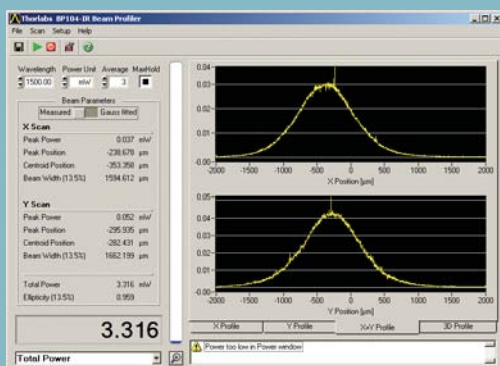
Output spectra at ~1558nm and ~1700nm (approaching degeneracy) with 0.1nm resolution on OSA and greater than 20mW signal output power. Measured FWHM is ~2.5nm and ~6nm respectively.

Specifications Continued:

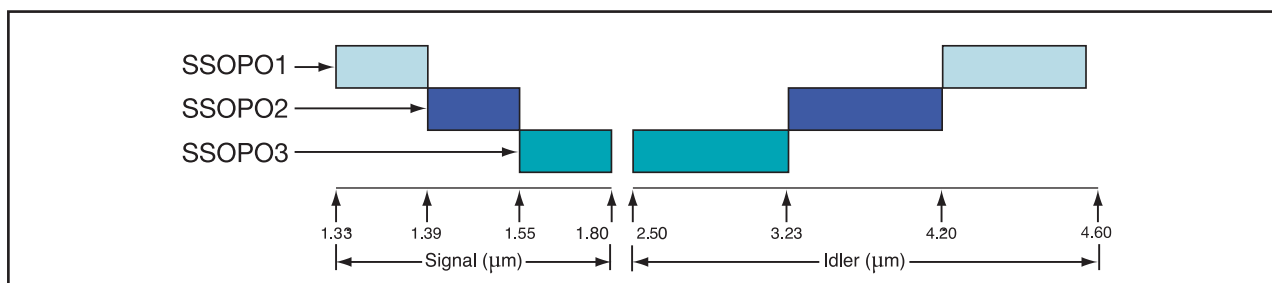
- Beam profiles measured at 1565nm with a scanning slit Ge-Photodiode profiler (Typical M2 ~1.5)



Profiles of generated ~180μm diameter beam; x-y and resultant contour plot of beam waist (ellipticity 0.9)



Subsequent divergence measurements; x-y and 3-D plot of resultant beam profile



| ITEM# | \$ | £ | € | ¥ | DESCRIPTION |
|--------|--------------|------------|-------------|-------------|---|
| SSOPO1 | \$ 16,500.00 | £ 9,000.00 | € 12,600.00 | ¥ 2,520,000 | Selectable Wavelength, IR Source 4.2-4.6μm |
| SSOPO2 | \$ 16,500.00 | £ 9,000.00 | € 12,600.00 | ¥ 2,520,000 | Selectable Wavelength, IR Source 3.23-4.2μm |
| SSOPO3 | \$ 16,500.00 | £ 9,000.00 | € 12,600.00 | ¥ 2,520,000 | Selectable Wavelength, IR Source 2.5-3.23μm |