Thorlabs, in partnership with Praevium Research, is developing a High-Speed Swept Laser Source for Optical Coherence Tomography (OCT). This source is based on a patented MEMS-tunable Vertical Cavity Surface Emitting Laser (VCSEL) that is specially designed for optimal performance in OCT applications. With a record-breaking coherence length, this source provides single-mode, mode-hop-free operation over a tuning range in excess of 100 nm. The MEMS-VCSEL is highly adaptable; the specifications we have provided here are representative of the current performance. Please contact us to discuss your specific swept-source laser requirements.

**Features**

- High Sweep Speed: Up to 200 kHz
- Long Coherence Length: >50 mm
- Single Mode, Mode-Hop-Free Operation
- Linearized Sweep Trajectory

**Specifications**

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Center Wavelength</td>
<td>1310 nm ± 15 nm</td>
</tr>
<tr>
<td>Average Output Power*</td>
<td>25 mW</td>
</tr>
<tr>
<td>Line Rate</td>
<td>100 kHz/200 kHz</td>
</tr>
<tr>
<td>Coherence Length</td>
<td>&gt;50 mm</td>
</tr>
<tr>
<td>Spectral Bandwidth (-10 dB)</td>
<td>&gt;100 nm</td>
</tr>
</tbody>
</table>

*From output of Swept Laser Source.

**OCT System**

- Includes MEMS-VCSEL Swept Laser Source, OCT Imaging Engine, Two-Dimensional Scanning Probe, Data Acquisition, and Software
- 15 mm Imaging Depth Range
- 12 um Axial Resolution (Air)
- 100 kHz Sweep Speed*

**Swept Source Engine**

- 200 kHz Sweep Speed
- Benchtop Laser Source
- Integrated Drive Electronics and Temperature Controllers
- Turn-Key Operation for Easy Integration with Custom OCT Imaging Systems

*OCT systems operating at sweep speeds from 50 kHz to 200 kHz is feasible

Note: This product is considered experimental. Specifications are subject to change and supplies may be limited.

For more information, contact us at oct@thorlabs.com
Versatile, High-Quality Imaging

Integrated lasing and tuning elements on a single VCSEL device enable artifact-free imaging at exceptionally long imaging ranges. The images to the right demonstrate the high-quality imaging capability that can be obtained in a single B-scan measurement; an imaging depth as great as 30 mm is obtainable using a MEMS-tunable VCSEL. (Sample: roll of semi-transparent tape)

Coming Soon
Thorlabs is actively developing a 1060 nm MEMS-VCSEL swept laser source, as described below.

1060 nm MEMS-VCSEL
Thorlabs is developing a MEMS-tunable VCSEL operating with a central wavelength of 1060 nm to target applications in ophthalmology. The long coherence length of the MEMS-tunable VCSEL may improve visualization of deep retinal structures (e.g., choroid and optic nerve head) by essentially eliminating a well known issue of sensitivity roll-off with depth that compromises existing state-of-the-art commercial instruments. The long imaging range and high axial resolution will also benefit imaging of the anterior eye. Additionally, the high sweep speeds of the MEMS-tunable VCSEL enable rapid acquisition of densely sampled 3D data sets in short acquisition times. Contact us for updates on this new technology and information on OEM integration and other research applications.