

Mai Tai® SP

Short Pulse Ultrafast Oscillator



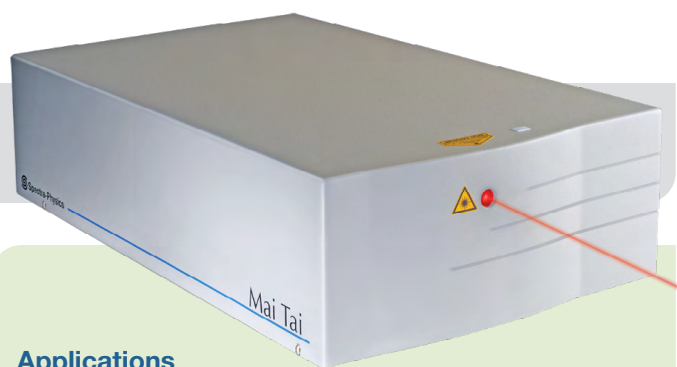
The Spectra-Physics® Mai Tai SP Ti:Sapphire oscillator provides industry leading stability and cutting edge capability to the scientific research community. It is specifically designed as an amplifier seed for Spectra-Physics ultrafast amplifiers. The Mai Tai SP laser incorporates fully automated controls for bandwidth and center wavelength adjustment without the need for manual user intervention.

This unprecedented level of performance provides a stable, easily adjustable seed source for Spectra-Physics ultrafast amplifier systems. The Mai Tai SP delivers user adjustable, transform-limited pulses and can be used to seed amplifiers in a variety of pulse width configurations (<35 fs - 120 fs).

The Mai Tai SP is equipped with StabiLok® active beam alignment technology and EternAlign™ adjustment-free mounts to ensure outstanding stability and reliability. When operating under widely varying environmental conditions, the Mai Tai SP maintains the average power, center wavelength, bandwidth, and beam pointing with best-in-class accuracy and precision. In addition, the laser is sealed so there is never a need to clean or realign the internal optics. The Mai Tai SP provides truly hands-free performance.

The Mai Tai SP Advantage

- Maximum stability over a wide $\pm 10^{\circ}\text{C}$ range
- Fully automated for hands-free operation
- <10 μrad peak-to-peak beam pointing
- Computer adjustable bandwidth (10–60 nm)
- <25 fs pulse width capability
- Field-proven reliability



Applications

- Ultrafast amplifier seeding
- Multiphoton microscopy
- Time-resolved spectroscopy
- Non-linear spectroscopy
- Surface second harmonic generation
- Terahertz imaging
- Semiconductor metrology
- Materials processing

Mai Tai SP Specifications^{1,6}

	Mai Tai SP
Output Characteristics	
Average Power At Minimum Specified Bandwidth	>750 mW
Average Power At 60 nm Bandwidth	>450 mW
Bandwidth ²	10–60 nm
Tuning Range	780–820 nm ³
Repetition Rate (Nominal)	84 MHz
Noise ⁴	<0.05%
Stability ⁵	<0.5%
Spatial Mode	TEM ₀₀
Beam Diameter (1/e ²)	1.5 mm
Beam Divergence, full angle	<1 mrad
Polarization	Horizontal

1. Due to our continuous product improvement program, specifications may change without notice.

2. Bandwidth range accessible by computer control at 800 nm. User specified bandwidth configurations are available.

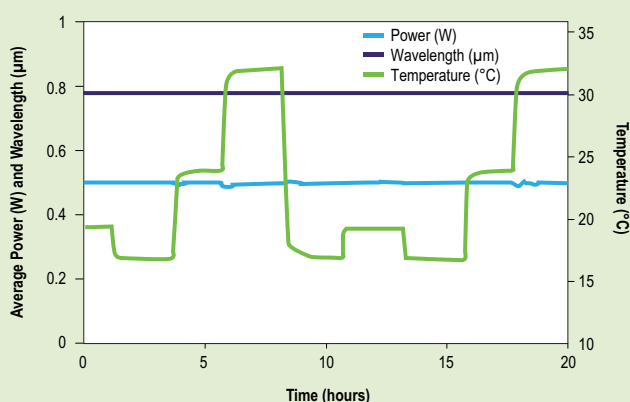
3. Center wavelength can be tuned at bandwidths <30 nm; otherwise center wavelength is fixed at 800 nm.

4. Specification represents RMS noise measured in a 10 Hz to 10 MHz bandwidth.

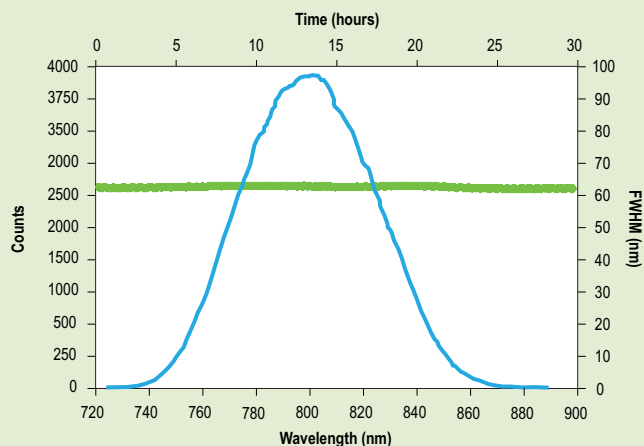
5. Percent power drift in any 2-hour period after a 1-hour warm-up.

6. The Mai Tai SP is a Class IV -- High Power Laser, whose beam is, by definition, a safety and fire hazard. Take precautions to prevent exposure to direct and reflected beams. Diffuse as well as specular reflections can cause severe skin or eye damage.

Mai Tai SP Performance¹



Mai Tai SP performance under $\pm 8^\circ\text{C}$ temperature swing. Performance values for average power (~ 0.5 W) and center wavelength stability (< 0.3 nm) are shown.



Bandwidth stability of Mai Tai SP over 30 hours (green curve, top and right axes). Typical wavelength spectrum for the Mai Tai SP configured for 60 nm operation (blue curve, bottom and left axes).

1. Typically measured performance; not a guaranteed or warranted specification.

Mai Tai SP Dimensions

