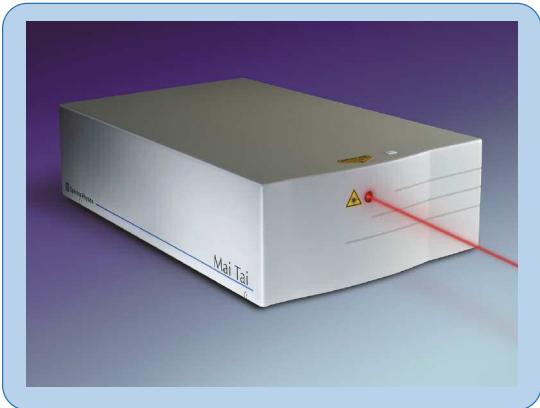


# Mai Tai<sup>®</sup> Series

ULTRAFAST ONE BOX Ti:SAPPHIRE LASERS



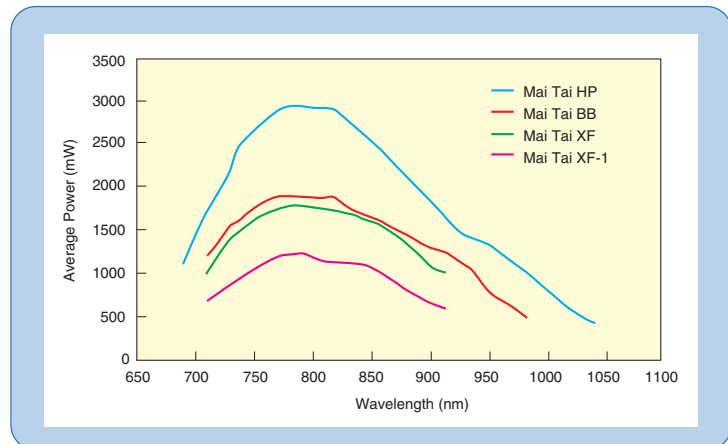
## The Mai Tai Series Advantage

- High output power maximizes penetration depth in multiphoton imaging
- Short output pulse width to provide high peak power
- Wide tuning range for efficient excitation of all commonly used fluorophores
- Smooth tuning with no pulse drop outs
- Outstanding pointing stability eliminates the need to realign experimental set-up
- Regenerative mode locking for unmatched stability
- Rapid scanning capability for two-color experiments
- Most experienced ultrafast service and support team

The Spectra-Physics Mai Tai<sup>®</sup> Ti:Sapphire oscillator is used for a variety of applications ranging from general spectroscopy to multiphoton microscopy. With its leading performance specifications and largest installed base of any laser of its type, the Mai Tai is truly a cutting-edge tool for basic research and biological imaging.

The Mai Tai series includes four models of increasing power and tuning range to allow customers to choose the system to best match their application. Ideal for multiphoton microscopy, the Mai Tai HP with an integrated Spectra-Physics 14 W Millennia<sup>®</sup> pump laser provides more than 300 nm (690–1040 nm) in useable tuning range with over 2.5 W of average power and a pulse width of less than 100 fs. For customers interested in systems with a shorter pulse width, the Mai Tai BB and Mai Tai XF, both with integrated 10 W Millennia pump lasers, provide more than 240 nm in useable tuning range with a pulse width of less than 80 fs. Finally, the Mai Tai XF-1 with an integrated 5 W Millennia pump laser provides more than 200 nm in useable tuning range with an even shorter pulse width of less than 70 fs—an ideal choice for pumping the Spectra-Physics Spitfire<sup>®</sup> Ace<sup>™</sup> ultrafast amplifier system.

The Mai Tai series reliability is maintained using the ultra-stable regenerative mode-locking technique proven with the Spectra-Physics Tsunami<sup>®</sup> oscillator. Using this method, the Mai Tai oscillator is capable of hands free, drop-out free wavelength tuning enabling speedy collection of excitation profiles all at the click of a mouse. StabiLok<sup>®</sup> real-time monitoring technology also enhances system reliability by providing excellent beam pointing stability and minimal average power fluctuations, as well as eliminating wavelength drift. These two features combine to make the Mai Tai oscillator the most reliable and most versatile hands-free laser source available.



 Spectra-Physics<sup>®</sup>  
A Newport Corporation Brand

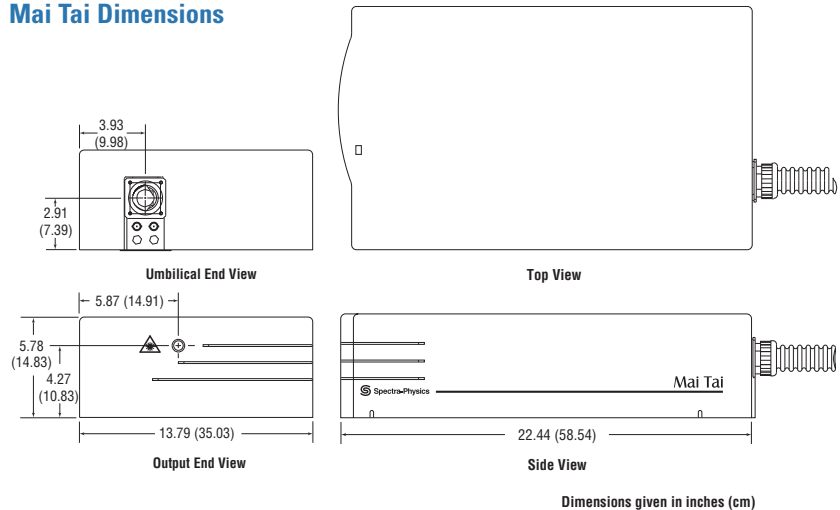
# Mai Tai<sup>®</sup> Series

## Specifications<sup>1,10</sup>

Output Characteristics	Mai Tai HP	Mai Tai BB	Mai Tai XF	Mai Tai XF-1
Pulse Width <sup>2,3</sup>	<100 fs	<80 fs	<80 fs	<70 fs
Tuning Range <sup>4</sup>	690–1040 nm	710–990 nm	710–950 nm	710–920 nm
Average Power <sup>2</sup>	>2.5 W	>1.5 W	>1.5 W	>900 mW
Average Power, Off Peak <sup>5</sup>	>500 mW at 690 nm >1.35 W at 710 nm >1.35 W at 920 nm >300 mW at 1040 nm	>650 mW at 710 nm >650 mW at 920 nm >250 mW at 990 nm	>650 mW at 710 nm >650 mW at 920 nm >500 mW at 950 nm	>400 mW at 710 nm >400 mW at 920 nm
Beam Roundness <sup>2</sup>				0.9–1.1
Astigmatism <sup>2</sup>				<10%
Repetition Rate <sup>2, 6</sup>				80 MHz ±1 MHz
Beam Pointing Stability				<50 μrad/100 nm
Noise <sup>2, 7</sup>				<0.15%
Stability <sup>8</sup>				<±1%
Spatial Mode <sup>2</sup>				TEM <sub>00</sub> , M <sup>2</sup> <1.1
Polarization <sup>2</sup>				>500:1 horizontal
Beam Divergence <sup>2</sup>				<1 mrad
Beam Diameter (1/e <sup>2</sup> ) <sup>2</sup>				<1.2 mm
<b>Environmental Requirements</b>				
Altitude				Up to 2000 m
Temperature, Operating				20–25°C
Relative Humidity, Operating				Maximum 75% non-condensing up to 25°C
Temperature, Storage				15–35°C
Relative Humidity, Storage				<65% for 15–35°C
Cooled Water Temperature in Closed-loop Chiller				21°C typical <sup>9</sup>

- Due to our continuous product improvement program, specifications may change without notice.
- Specification applies to 800 nm only.
- A sech<sup>2</sup> pulse shape is used to determine the pulse width as measured with a Newport PulseScout<sup>®</sup> autocorrelator.
- Mai Tai is also available with a fixed, factory preset wavelength within the wavelength range noted.
- Specifications apply to operation at the wavelength noted.
- Laser operation is specified at a nominal repetition rate of 80 MHz.
- Specification represents rms noise measured in a 10 Hz to 10 MHz bandwidth.
- Percent power drift in any 2-hour period with  $\pm 1^\circ\text{C}$  temperature change after a 1-hour warm up.
- Avoid obstructing the air exhaust grills which will result in the recirculation of hot exhaust air. Cooling air enters through the front panel and exits through the rear fan apertures.
- The Mai Tai 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 Dimensions



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3635 Peterson Way, Santa Clara, CA 95054, USA

PHONE: 1-800-775-5273 1-408-980-4300 FAX: 1-408-980-6923 EMAIL: sales@spectra-physics.com

[www.newport.com/spectra-physics](http://www.newport.com/spectra-physics)

	PHONE	EMAIL	PHONE	EMAIL
Belgium	+32-(0)0800-11 257	belgium@newport.com	+1-800-222-6440	sales@newport.com
China	+86-10-6267-0065	china@newport.com	Netherlands	+31-(0)30 6592111
France	+33-(0)1-60-91-68-68	france@newport.com	United Kingdom	+44-1235-432-710
Japan	+81-3-3794-5511	spectra-physics@splasers.co.jp	Germany / Austria / Switzerland	+49-(0)6151-708-0
Taiwan	+886 -(0)2-2508-4977	sales@newport.com.tw		germany@newport.com

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Newport Corporation, Global Headquarters PHONE: 1-800-222-6440 1-949-863-3144  
1791 Deere Avenue, Irvine, CA 92606, USA EMAIL: sales@newport.com  
Complete listings for all global office locations are available online at [www.newport.com/contact](http://www.newport.com/contact)

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