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BIOLIT 2

Femtosecond Fiber Laser for Biophotonics
1050 nm, 70 fs, 2 W, 15 – 40 MHz



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CLEAN PULSES LEAD TO SHARP IMAGES

FEATURES

- Ultra-short and clean pulses
- Robust and stable
- Flexible repetition rate
- Maintenance-free & turn-key
- Integrated dispersion pre-compensation

APPLICATIONS

- Multiphoton microscopy
- Neuroscience
- Photopolymerization
- Ophthalmology
- OPO pumping

BIOLIT 2

The **Biolit 2** is a compact, air-cooled femtosecond laser designed for multiphoton microscopy, biophotonics and other non-linear optics applications.

The industrial-grade device is exceptionally robust, maintenance-free and affordable. A combination of ultra short (typ 55 fs) and clean pulses with integrated dispersion compensation, excellent beam quality and optimized repetition rate enables unparalleled quality multiphoton imaging while preserving the object.

SPECIFICATIONS

Model	Biolit 2
Central wavelength	1050 ± 5 nm
Average power	> 2 W
Pulse duration	< 70 fs (typ. 55 fs)
Pulse duration stability ¹⁾	< +/- 3 fs
Pulse strehl ratio	> 0.9
Tunable dispersion pre-compensation ²⁾	-8 000 fs ² ... +500 fs ²
Pulse repetition rate ³⁾	15, 20, 30 or 40 MHz
Analog power control ⁴⁾	1 – 100%
Beam quality	M ² < 1.2 (typ. 1.05)
Beam circularity ⁵⁾	> 0.9 (typ. 0.94)
Beam diameter (1/e ² level)	1.5 ± 0.3 mm
Beam divergence (full angle)	< 1.5 mrad
Beam pointing (RMS) ¹⁾	< 20 µrad
Beam pointing vs temperature	< 15 µrad/°C

Model	Biolit 2
Pulse Energy Stability (RMS) ⁶⁾	< 1%
Power Stability (RMS) ¹⁾	< 1%
Warm up time (cold start)	< 10 min
Available control interfaces	USB, CAN
Tuneable pulse repetition rate option ⁷⁾	1 - 20 MHz
Second harmonic option ⁸⁾	0.4 W @ 525 nm
Powering requirements	100 ... 240 V AC, 47 ... 63 Hz
Operating temperature	15 – 35 °C
Humidity	non condensing
Transportation/storage temperature	- 20 – +70 °C
Colling: Laser head Control unit	air (passive) forced air (fans)
Dimensions: Laser head (L × W × H) Control unit (L × W × H)	313 × 152 × 107 mm 449 × 370 × 140 mm
Umbilical length	3 ± 0.1 m

¹⁾ Measured during 8 h operation starting 30 minutes after warm-up. Environmental temperature stability within ± 1 °C.

²⁾ Equivalent of 80 mm of SF10 glass. Even higher dispersion (up to 30'000 fs²) of the external optical system can be pre-compensated in the factory on request.

³⁾ Factory preset. Other repetition rates are available on request. Please inquire for more details.

⁴⁾ Attenuation can be controlled in a few different regimes: a) by PC user interface, b) by CAN register, c) by analog input signal (> 5 kHz bandwidth). Beam quality specifications are maintained down to 10% power level.

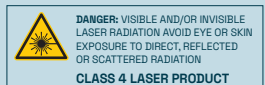
⁵⁾ Defined as the worst case beam ellipticity along the z-scan ($\pm 5 \times L_{Rayleigh}$) of the beam.

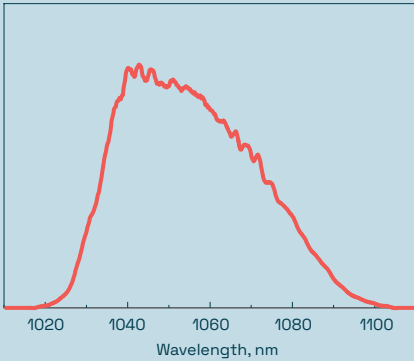
⁶⁾ Measured within 10 s time interval.

⁷⁾ Output repetition rate can be described by formula $RR = RR_0 / N$, where RR_0 is fundamental repetition rate and N is integer number. Output power is dependent on both RR and RR_0 . For power dependence on the repetition rate please contact LITILIT.

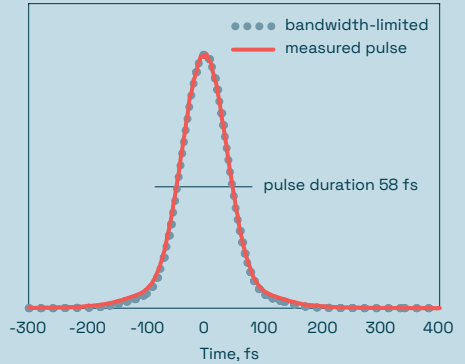
⁸⁾ Biolit-2 SH model also has infrared (1050 nm) output with the same specifications as standard Biolit laser. Both outputs are available simultaneously. Please inquire directly LITILIT for more information.

World patented technology: US10038297, JP6276471, EP3178137, CN106575849.

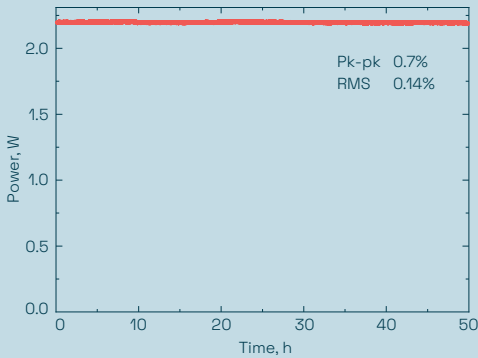




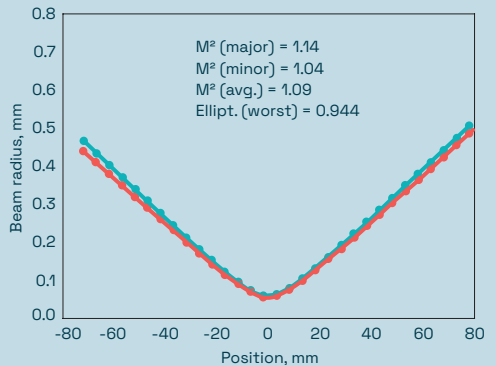
Output spectrum from **Biolit 2** laser



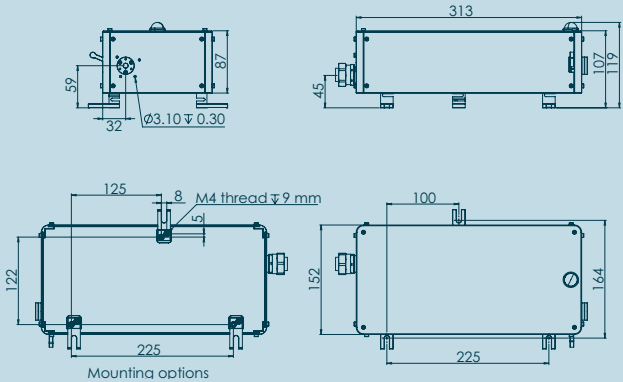
Measured autocorrelation function of the pulses from **Biolit 2** laser



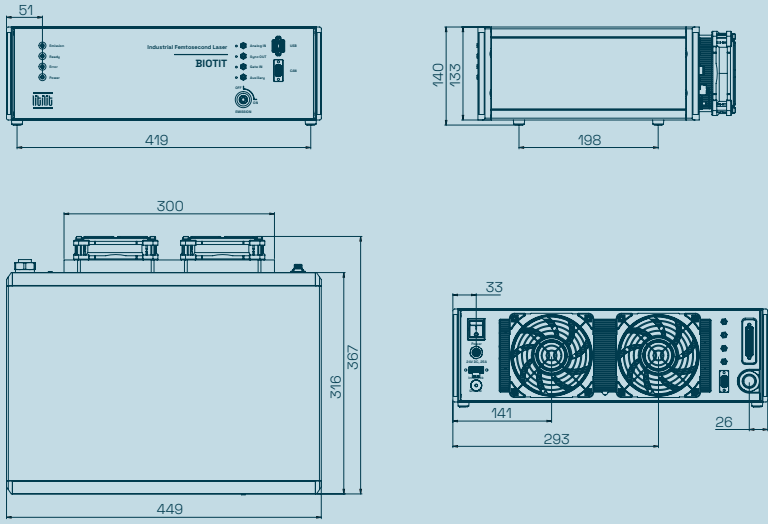
Long term power stability of **Biolit 2** laser (at 1050 nm)



Beam diameter dependence on propagation distance (z-scan) of **Biolit 2** laser and M² fit



Drawing of Biolit 2 laser head (in mm)



Drawing of Biolit 2 power/control supply (in mm)



