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

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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 60 fs) and clean pulses, superior beam quality and lower (compared to solid-state siblings) repetition rate enables unparalleled multiphoton imaging while preserving the object.

SPECIFICATIONS

Model	Biolit 2	Biolit 2 SH [1]
Central wavelength	1050 ± 5 nm	525 ± 5 nm
Average power	> 2 W	> 400 mW
Pulse duration	< 70 fs (60 fs typ.)	
Pulse duration stability [2]	< ± 5 fs	
Pulse strehl ratio	> 0.9	
Tunable dispersion pre-compensation [3]	-10 000 fs² ... +500 fs	N/A
Pulse repetition rate [4]	15, 20, 30 or 40 MHz	15 or 20 MHz
Tuneable pulse repetition rate (optional) [5]	1 – 40 MHz	
Analog power control	1 – 100 %	
Analog power control bandwidth	> 10 kHz – standard >300 kHz – optional	
Peak power	> 1 MW @ 20 MHz	>200 kW @ 20 MHz
Beam quality	M^2 < 1.2	
Beam circularity [6]	> 0.9	

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SPECIFICATIONS (continued)

Model	Biolit 2	Biolit 2 SH [1]
Beam diameter (1/e² level)	1.5 ± 0.3 mm	1.2 ± 0.3 mm
Beam pointing (pk-to-pk) [2]	< 50 µrad	
Beam pointing vs temperature	< 25 µrad/°C	
Pulse energy stability (RMS)	< 1 %	< 2%
Power stability (RMS) [2]	< 1 %	< 2 %
Warm up time (cold start)	< 10 min	
Available control interfaces	USB, CAN	
Powering requirements	100 ... 240 V AC, 47 ... 63 Hz	
Operating temperature	15 – 35 °C	
Humidity	non condensing	
Transportation/storage temperature	- 20 – +70 °C	
Dimensions: Laser head (L × W × H) Control unit (L × W × H)	 334 × 217 × 139 mm 449 × 370 × 140 mm	 334 × 211 × 165 mm 449 × 370 × 140 mm
Umbilical length	3 ± 0.3 m	
Colling: Laser head Control unit	 air (passive) forced air (fans)	

[1] Biolit-2 SH model also has infrared (1050 nm) output with the same specifications as standard Biolit laser. Both outputs are available simultaneously.

[2] Measured during 24 h operation after 10 min warm-up.

[3] Equivalent of 100 mm of SF10 glass. Even higher dispersion (up to 30'000 fs^2) of the external optical system can be pre-compensated in the factory on request.

[4] Factory preset. Other repetition rates are available on request. Please inquire for more details.

[5] 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 LITILT.

[6] Defined as the worst case ellipticity along the z-scan (± 5 × $L_{Rayleigh}$) of the beam.

DANGER: VISIBLE AND/OR INVISIBLE LASER RADIATION AVOID EYE OR SKIN EXPOSURE TO DIRECT, REFLECTED OR SCATTERED RADIATION
CLASS 4 LASER PRODUCT

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

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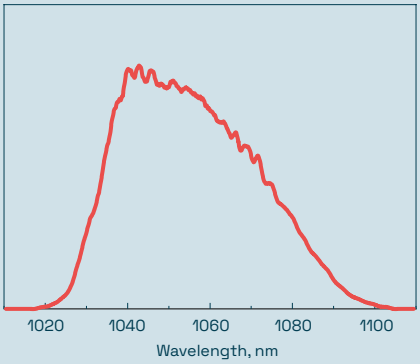
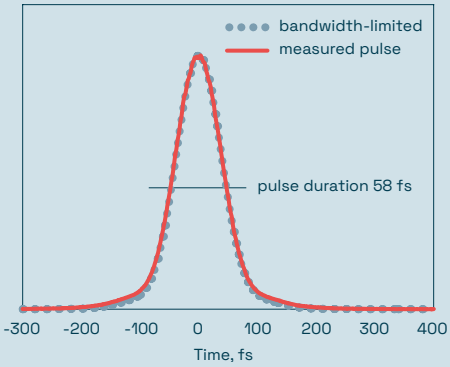
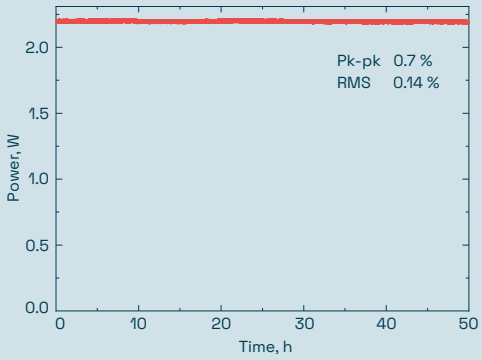


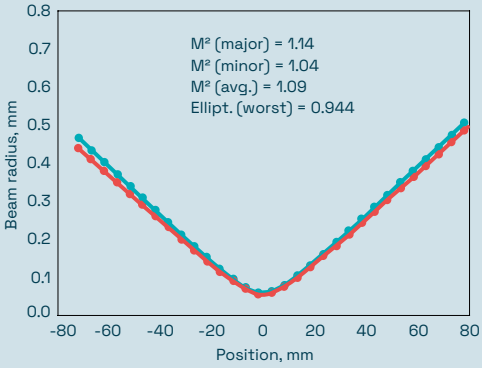
Output spectrum from **Biolit 2** laser



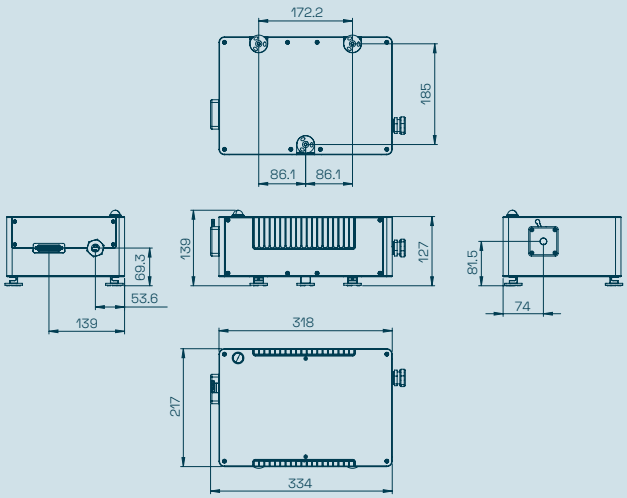
Measured autocorrelation function of the pulses from **Biolit 2** laser



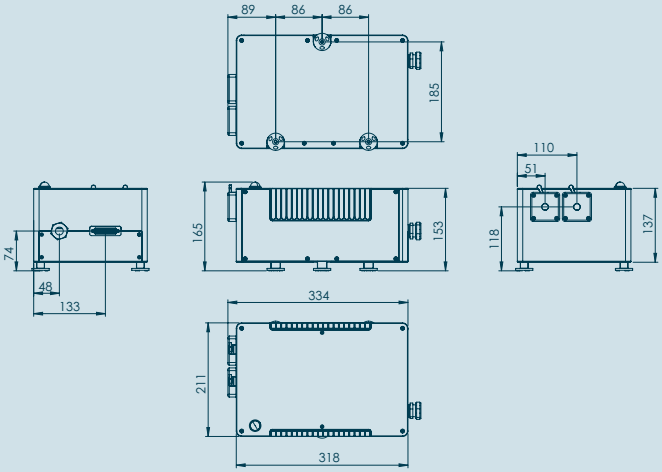
Long term power stability of **Biolit 2** laser (at 1050 nm)



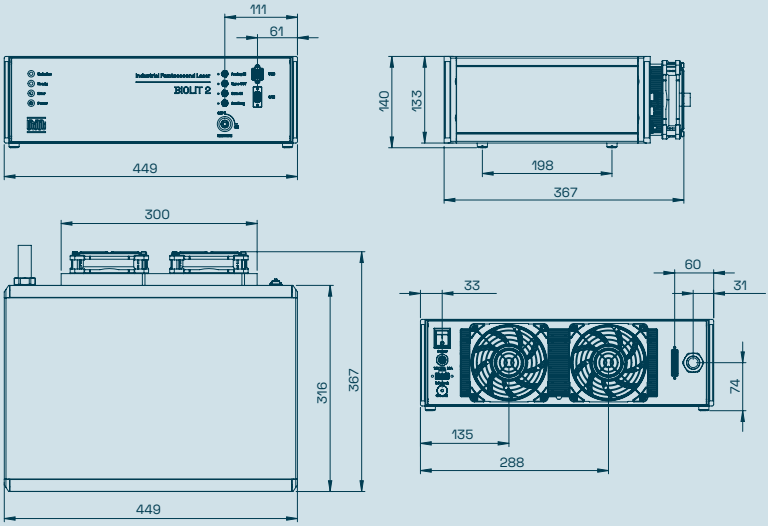
Beam diameter dependance on propagation distance (z-scan) of **Biolit 2** laser and M² fit



Drawing of **Biolit 2** laser head (in mm)



Drawing of **Biolit 2 SH** laser head (in mm)



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

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