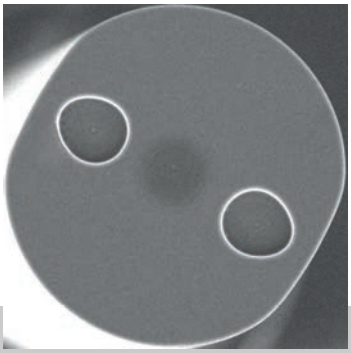
PHOTONICS BRETAGNE
Photonics Innovation Hub

SPECSHEET
10/2024

ACTIVE FIBRES

YTTERBIUM DOPED FIBRES | VLMA



The Polarisation Maintaining (PM) Ytterbium doped Very Large Mode Area (VLMA) fibre is an easy to integrate double-clad fibre in the growing ultrafast fibre laser market. The combination of robust single mode behaviour in an all-solid glass form factor with 750 µm² fundamental mode area makes this fibre an ideal tool for high-end industrial fibre laser manufacturers. Proprietary manufacturing[1] process enables preferential fibre coiling and automatic amplifier output polarization orientation. Complementary matching GRINs are available for all-fibre monolithic integration with standard LMA 10-125 PM pump combiners. Module assembly also available on request.

PATENTED

[1] Photonics Bretagne patent (WO/2022/112152).

Product line PERFIS

MAIN CHARACTERISTICS

- Truly single mode polarization maintaining behavior
- All-solid step index fibre design based on our all-vapor phase delivery process
- Industry standard low index polymer coating providing long term reliability & performance
- Excellent fibre lot uniformity and consistency

APPLICATIONS

- High power ultrafast pulsed fibre lasers/amplifiers for material processing, life science, spectroscopy or defense applications.

FIBRE SPECIFICATIONS	VLMA-40-220-PM-YB	VLMA-40-220-PM-GE
Optical Parameters		
Background Loss @ 1150 nm (dB/km)	< 10	
Cladding Numerical Aperture	≥ 0.46	
Measured Cladding Absorption @ 915 nm (dB/m) [2]	2.7 +/- 0.2	NA (passive version)
Measured Cladding Absorption @ 976 nm (dB/m) [2]	8.0 +/- 0.5	NA (passive version)
Core Numerical Aperture (NA)	0.045 +/- 0.005	
LP01MFD @ 1060 nm (µm) [3]	32 +/- 1	
Effective Area Aeff @ 1060 nm (µm²)	750 +/- 40	
Birefringence @ 1060 nm	$\geq 1 \times 10^{-4}$	
Beam Quality - M² Parameter [4]	< 1.5	
Typical Fibre Efficiency [4]	75 % typical (see curve)	NA (passive version)
Recommended Coiling Diameters (cm)	14	
Physical/Material parameters		
Core Diameter (µm)	40 +/- 3	
Core Concentricity error (µm)	< 0.5	
Cladding Fibre Outside Large Diameter (µm)	230 +/- 8	
Coating Outside Diameter (µm)	335 +/- 10	
Coating Type	Low Index	
Fibre Geometry	Circular with opposite flats	
Proof Test Level (kpsi)	> 20	

[2] Cut-back, small-signal with a broadband light source - Other absorption level on request
[3] Straight fibre
[4] Evaluated with 1040nm signal in 976 nm forward pumping configuration

Multiple options and configurations are available. Please contact Photonics Bretagne to find the best fit.
fibre@photonics-bretagne.com | +33 (0)2 96 48 58 89 | www.photonics-bretagne.com

afaq ISO 9001 Qualité AFNOR CERTIFICATION

All our optical fibres and components are manufactured according to our ISO certified quality management system, which places the needs and values of customers and partners at the heart of our organization. Throughout the manufacturing process, our components and systems are subjected to rigorous tests and inspections, which guarantees their robustness and reliability in the most demanding environments.

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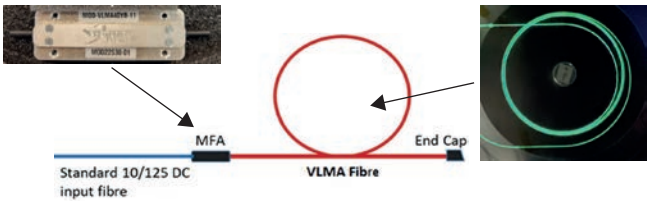
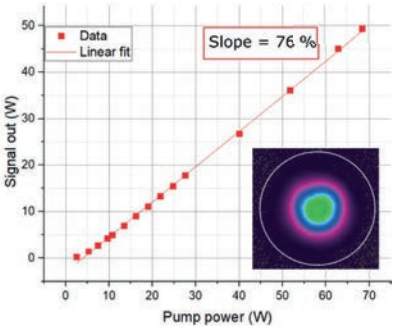
Schematic view of one VLMA module unit including Mode Field Adaptor (MFA) and end-cap



VLMA fibre efficiency and output beam mode quality



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