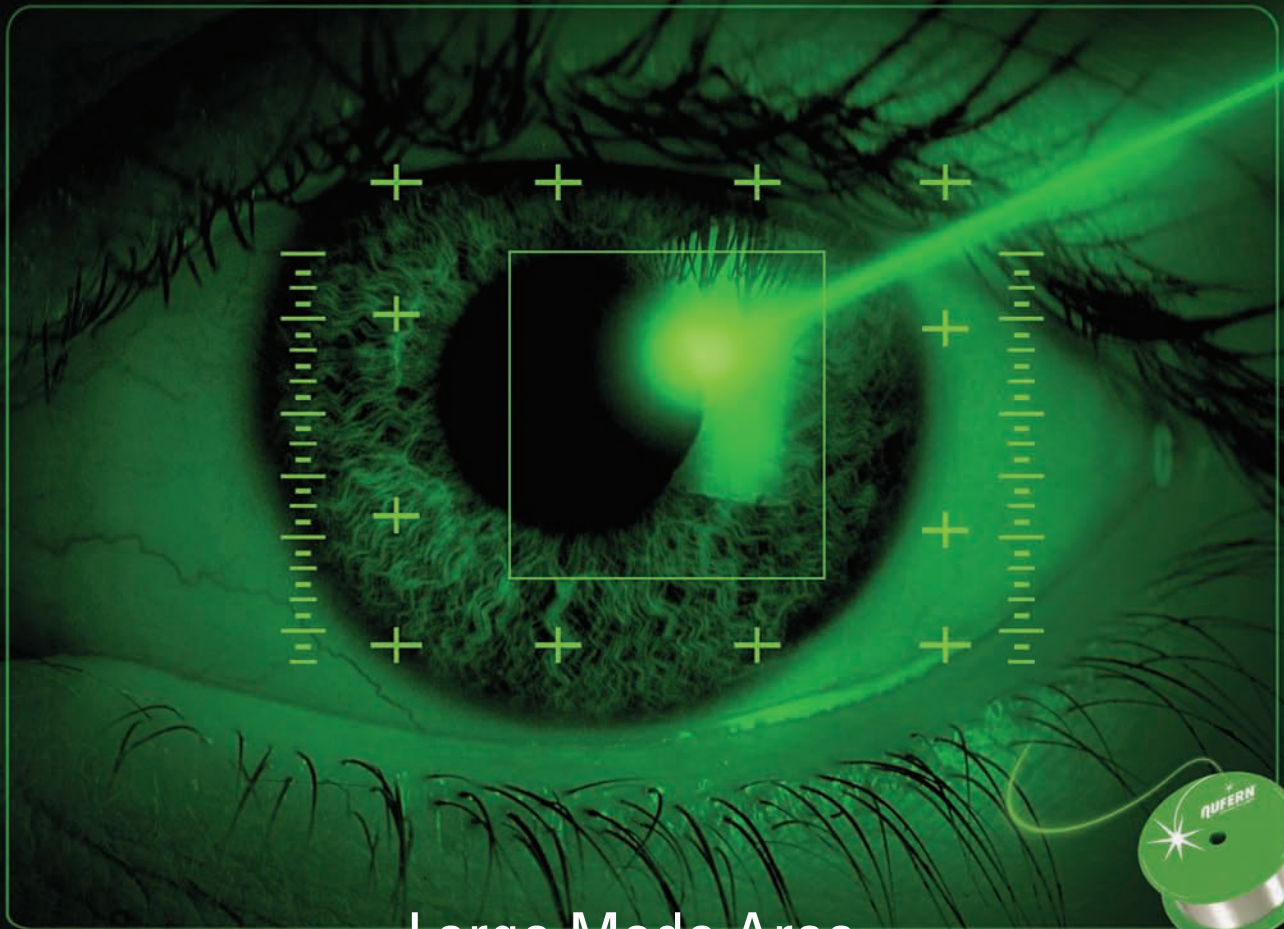


EyeSafe™



Large Mode Area Laser and Amplifier Fibers

Eye Safe Wavelength Large Mode Area Laser & Amplifier Fibers

With the advent of doping technologies allowing the 2-Photon pumping effect for high efficiency energy conversion the intrinsic safety of longer wavelength lasers has become a reality. Optical efficiencies of over 60% for Tm (λ 2 μ m) now approach that of Yb (λ 1 μ m) opening safer, more user friendly industrial and aerospace markets. Operator protection changes from expensive hard enclosures and remote video monitoring, to eyeglasses and Plexiglas shields. The result of this freedom favorably impacts the cost of quality. Long the domain of surgery due to the high water absorbability at these wavelengths, these lasers now offer high efficiency and compact size such that medical practitioners can move from dedicated operating room infrastructure to outpatient treatment in office environments.

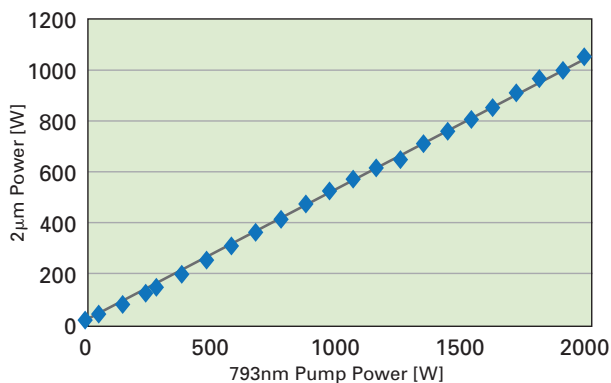


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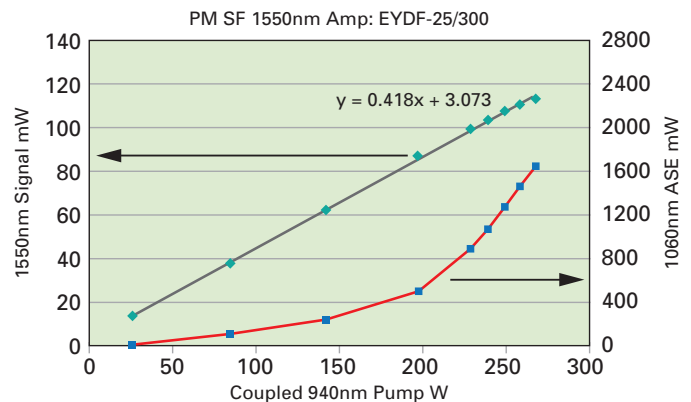
Optical Benefits

- Large Mode Area (LMA) Laser and Amplifier fibers designed for high peak powers with reduced susceptibility to Stimulated Brillouin Scattering (SBS) & other non-linear effects
- λ 1550nm \rightarrow λ 2150nm operating wavelengths
- All products in this family are noted for high optical efficiency:
- Tm doped fibers using the 2-Photon effect achieve quantum efficiencies of $> 60\%$ when pumped at λ 793nm
- Er-Yb doped fibers achieve quantum efficiencies of $> 35\%$ when pumped at λ 976nm

High output power at 2 μ m (1kW) & high efficiency from LMA-TDF-20/400 fiber



High efficiency & low 1 μ m ASE at 100W output power (1.5 μ m) from PLMA-EYDF-25/300 fiber



Mechanical Benefits

- All Nufern EyeSafe laser and amplifier fibers are made with silica doped cores and synthetic quartz cladding yielding maximum strength and fatigue failure resistance.
- All EyeSafe fibers offer telecom life expectancies and use GR-20 rated materials and processes for long life in application.

Operating Wavelengths

- Er doped fibers operate from λ 1530nm \rightarrow λ 1600nm
- Er-Yb doped fibers operate from λ 1530nm \rightarrow λ 1600nm
- Tm doped fibers operate from λ 1908nm \rightarrow λ 2100nm
- Ho doped fibers operate from λ 2000nm \rightarrow λ 2150nm

Applications

- Ideal for LIDAR & LADAR sources, point to point free space telecommunications transceivers, surgical lasers, organic material processing, plastic cutting, welding, sintering and marking and eye safe industrial metal cutting and welding.