

3.2-mJ, 1.5- μ m laser power amplifier using an Er,Yb:glass planar waveguide for coherent Doppler LIDAR. Takeshi Sakimura, Yojiro Watanabe, Toshiyuki Ando, Shumpei Kameyama, Kimio Asaka, Hisamichi Tanaka, Takayuki Yanagisawa, Yoshihito Hirano, Mitsubishi Electric Corporation (Japan); and Hamaki Inokuchi, Japan Aerospace Exploration Agency (Japan).

ABSTRACT

We developed a 1.5 μ m eye-safe wavelength high-gain and high-average power laser amplifier using an Er,Yb:glass planar waveguide for coherent Doppler LIDAR. Applying the planar waveguide structure, high-average output power with near single transverse mode was realized. Consequently, high-gain and high-efficient operation were achieved by multi-bounce optical path configuration. Amplifying the pulsed signal light at 1550 nm, the maximum pulse energy of 3.2 mJ was achieved at the repetition rate of 4 kHz. High energy output from this amplifier is expected to extend the measurable range of coherent Doppler LIDAR.