

**A principle prototype of Space-Based Lidar Transmitter with
12.3W at 532nm ,1ns pulse duration and 25pm line width on the
repetition of 10kHz**

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Abstract: In this paper, a principle prototype of Space-Based Lidar Transmitter with narrow pulse time, narrow line width, high peak power and high beam quality was demonstrated. The laser system was based on a master oscillator power amplifier (MOPA) configuration, which contained a LD end-pumped, active Q-switched seeder which volume bragg grating technologies are used, and three single-pass LD end-pumped amplifiers with YVO₄:Nd:YVO₄ growth crystal as laser gain medium pumped by 880 nm. On the repetition of 10kHz, pulse width of 1ns, 25pm line width, average output power of 12.3W at 532nm, optical quality $M^2=1.4$ are obtained. In addition, this laser works without liquid cooling and can be used as Lidar Transmitter for a number of successful space-based active remote sensing missions..

Key words: solid state laser technology, Volume bragg grating, narrow line width, narrow pulse duration, 880nm pumped