

SFL-FA-SF-1389-30-CW



1340-1530nm Raman fiber amplifier

Core Parameters

Operating wavelength 1340-1530nm, Output optical power 30W, Beam Quality $M^2 < 1.1$; Bandwidth $> \pm 5\text{nm}$

Overview

LD-PD PTE.LTD. has launched a single-frequency Raman fiber amplifier with an ultra-wide wavelength range of 1120-1700 nm, filling the gap in emission wavelengths of rare-earth ion-doped fiber lasers. This series of single-frequency Raman amplifiers, based on Raman amplification technology, boasts a maximum output power of up to 30 W. Its all-polarization-maintaining, all-fiber structure ensures the laser features a compact design, excellent long-term stability, and maintenance-free operation. Meanwhile, it guarantees extremely low intensity noise and phase noise of the output laser. With characteristics such as high power, low-noise amplification, and ultra-fast seed cut-off protection, this amplifier meets the demand for lasers with special wavelengths in applications like laser atomic cooling and laser spectroscopy.

Features

- High Power
- Narrow Linewidth
- Excellent Beam Quality
- Wide wavelength coverage range
- Low Noise
- Seed Power-off Protection System
- Optical Communication
- Light Detection and Ranging
- Frequency-Doubled Fundamental Frequency Light Source
- Interferometry
- Mid-Infrared Parametric Oscillation Pumping

Technical Specifications

Specification			
Partnumber	SFL-FA-SF-X-Y-CW(1)		
Range	1120nm-1340nm	1340nm-1530nm	1600nm-1750nm
Output Power	>1W/8W/30W	>1W/5W/15W	>1W/5W
Typical wavelength	1315nm, 1389nm, 1651nm		
Bandwidth(2)	>±5nm		
Relative Intensity Noise	<1% (RMS, 10Hz-10MHz Integration)		
Power Stability	<0.75% @3hours, RMS		
Power Tuning Range	10-100%		
Output Mode	Single Mode PM Fiber with FC/APCconnector (Output Power≤5W) OR Collimated Output		
Beam Diameter	0.6±0.2mm		
Beam Quality	TEM00, M ² <1.1		
Polarization	Linear, >23dB		
Seed Laser Input Power	>10mW(3)		
Seed Laser Input Isolation	>25dB		
Output Laser Isolation	>25dB		
Cooling	Air Cooling/ Water Cooling		

Operating Environment & Power Supply	
Temperature	15-30 °C (Air Cooling) OR 15-35 °C (Water Cooling)
Power Supply	100V-240V, AC, 50/60Hz
Communication	RS422

Note:

(1)X is the center wavelength, Y is the output power, if 15W 1340nm amplifier, the partnumber is SFL-FA-SF-1340-15-CW

(2) Bandwidth can be customized

(3) Default input power should be 10-50mW, for higher or lower input power, please email us for customization

Higher power, more wavelengths, customizable solutions

Power Spectral Testing

pumping current (A)	Output power (W) @ 32 mW seed	PD2 feedback value	PD3 feedback value
8	0.01	0	0
9	0.03	0	0
10	0.15	0	0
11	0.7	0	0
12	3.68	22-30	233
13	9.95	50-102	656
14	17.44	170-330	1230
15	25.4	350-540	1668
15.5	29.9	600-680	2040
15.6	30.8	700-960	2058

Table 1. Output power versus current curve

Spectral Testing

The amplified output delivers 30 W at a central wavelength of 1180.108 nm, with a signal-to-noise ratio of 53 dB.

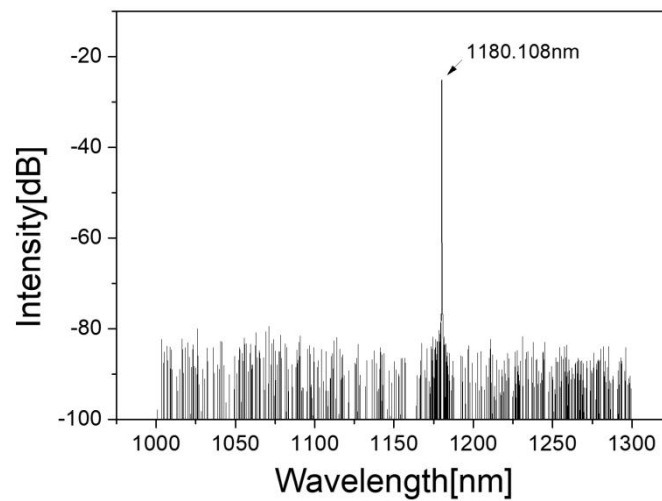


Figure 1. Output spectrum at 30 W power

Power Stability Testing

The laser has an output power of 30 W, with an RMS power stability of 0.31% over a 2-hour period.

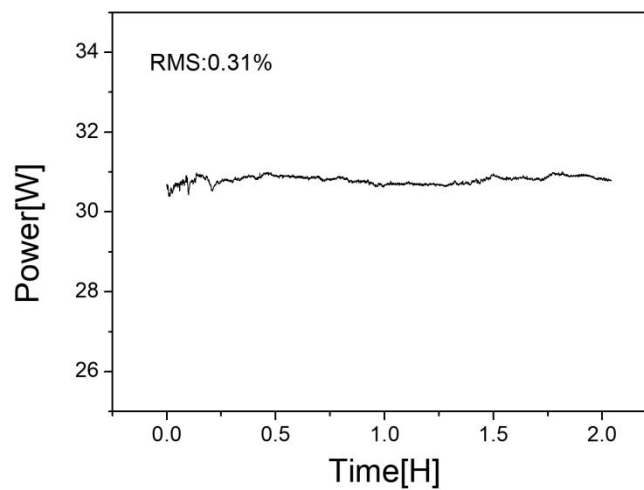


Figure 2. 2-hour output power stability test

Polarization degree testing

The output laser is linearly polarized light with a polarization degree exceeding 19 dB.

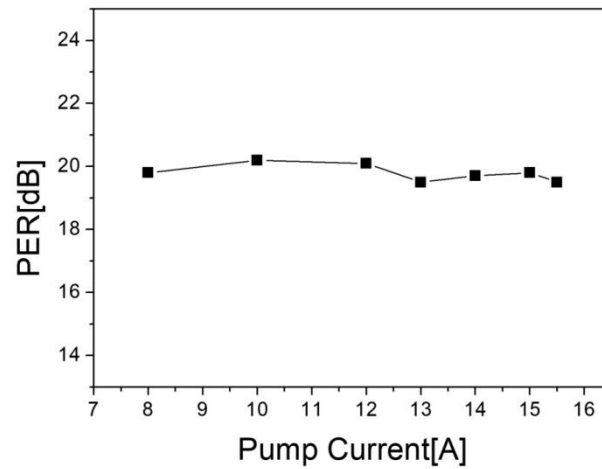


Figure 3. Polarization degree measurement under different pump currents

Beam quality

The output beam quality measurement yields an M2 value of 1.04. The collimated output spot diameter is approximately 1.5 mm.

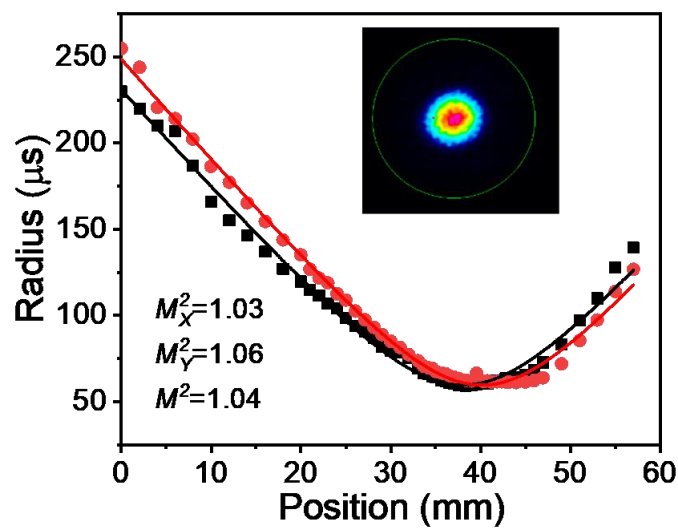


Figure 4. M² Test

Line width testing

The seed line width is 111.6 kHz, and the amplified output line width measurement is 116.5 kHz.

