

# Product Test Sheet

Product Name: Erbium-Doped Fiber Amplifier

Product Code: STEDFA-C-LA-GF-23-SM-B (LL-EDFA-LA-C-GF-23-SMF-B)

Serial Number: 25102207

| Parameter                           | Unit | Min                                 | Test Value                | Max                           | Remarks                           |
|-------------------------------------|------|-------------------------------------|---------------------------|-------------------------------|-----------------------------------|
| Operating Wavelength                | nm   | 1530                                |                           | 1565                          | C-Band                            |
| Optical Input Power (Per Channel)   | dBm  | -25                                 |                           | +3                            |                                   |
| Optical Input Power (Total Channel) | dBm  | -6                                  |                           | +10                           |                                   |
| Optical Output Power                | dBm  |                                     | 23.2                      | 23                            | @ -6dBm input                     |
| Output Power Stability              | -    |                                     | P-P: ±0.11%<br>RMS: 0.07% |                               | @ -6dBm input,<br>APC mode, 60min |
| Noise Figure                        | dB   |                                     |                           | 5                             |                                   |
| Polarization dependent Gain Ratio   | dB   |                                     |                           | 0.3                           |                                   |
| Gain Coefficient                    | dB   | 10                                  |                           | 25                            |                                   |
| Gain Flatness                       | dB   |                                     |                           | 2                             |                                   |
| In /Output Isolation                | dB   |                                     | 35                        |                               |                                   |
| Operation Temperature Range         | °C   | -5                                  |                           | +45                           |                                   |
| Operation Humidity Range            | %    |                                     |                           | 70                            |                                   |
| Fiber Connector                     |      | FC/APC                              |                           |                               |                                   |
| Input / Output Fiber Type           |      | SMF-28, Φ3mm×1m                     |                           |                               |                                   |
| Power Supply                        | -    | AC 100~240V                         |                           |                               | EU Standard                       |
| Electrical Power Consumption        | W    | 12                                  |                           |                               |                                   |
| Dimensions                          | mm   | 255(W)×285(D)×115(H)                |                           |                               | Bench-Top                         |
| Remote Control Port                 | -    | DB9-RS232                           |                           |                               |                                   |
| Software Version                    |      | Amplifier Controller - V20240219    |                           |                               |                                   |
| Control Mode                        | -    | ACC: Automatic Pump Current Control |                           | Current Tuning Range: 0~980mA |                                   |
|                                     |      | APC: Automatic Power Control        |                           | Power Tuning Range: 3~23dBm   |                                   |
|                                     |      | AGC: Automatic Gain Control         |                           | Gain Tuning Range: 10~25dB    |                                   |

\*Note:

1. If the input signal is a pulsed laser with a repetition frequency <300kHz, do not use the APC mode, only the ACC mode.
2. The AGC mode only takes effect with in the power range defined by the APC mode.
3. Note: ISO 11554-2017

## 8 Evaluation

### 8.1 General

The standard deviation,  $s$ , from  $n$  readings  $m_i$  is calculated according to

$$s = \sqrt{\frac{\sum_{i=1}^n (m_i - \bar{m})^2}{n-1}} \quad (3)$$

Where the mean value is

$$\bar{m} = \frac{\sum_{i=1}^n m_i}{n} \quad (4)$$

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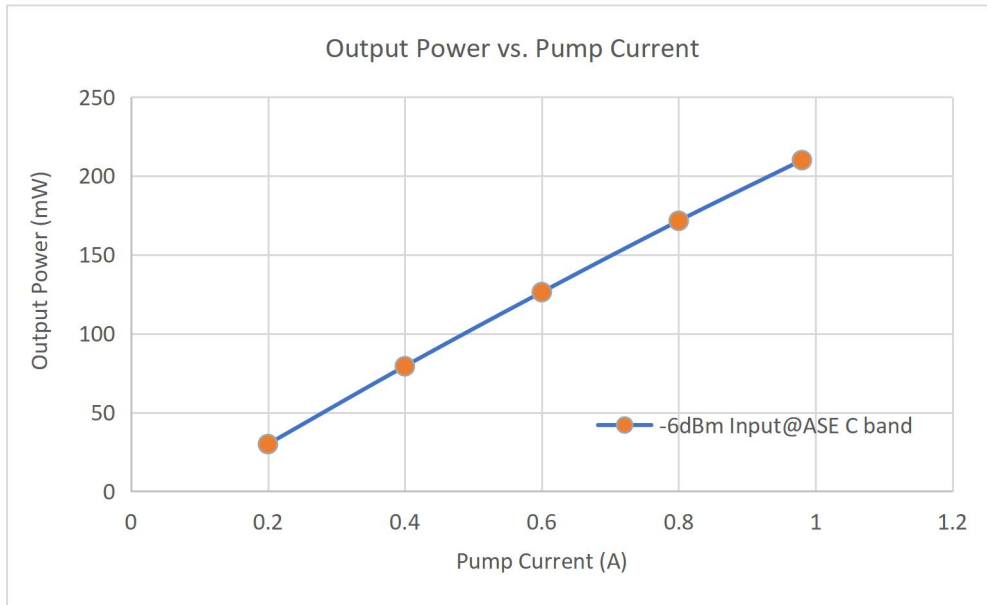


### 8.3 Power stability of cw lasers

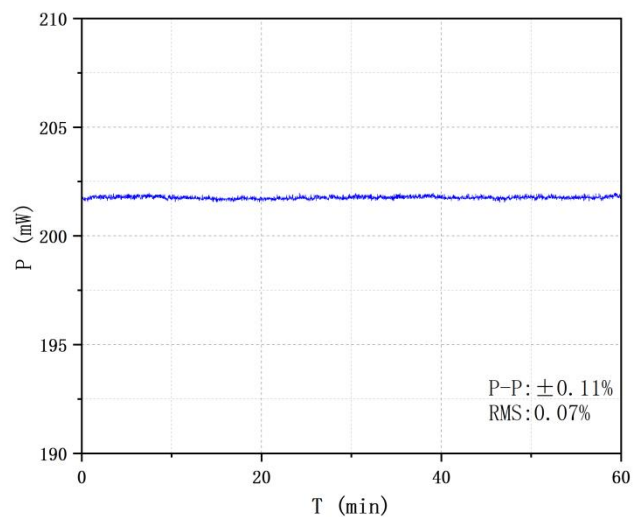
Calculate the mean value of the power,  $\bar{P}$ , and the respective standard deviation,  $s$ , for the appropriate stability time domain (short-term, medium-short-term, medium-term and long-term) according to the specifications given in 7.3.

Power stability is given as the relative power fluctuation,  $\Delta P$ , in the corresponding stability time domain calculated from Formula (9):

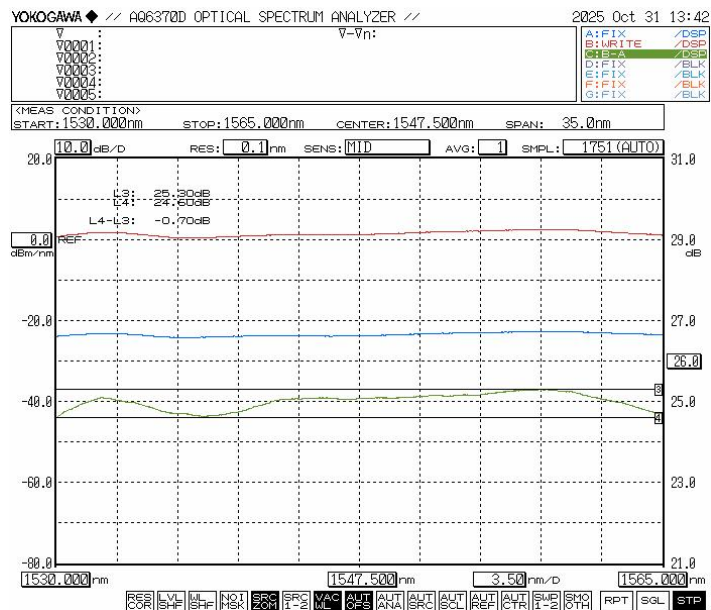
$$\Delta P = \frac{2s}{\bar{P}} \quad (9)$$



Output Power vs. Pump Current Curve



Power stability @23dBm, -6dBm input, APC mode (Thorlabs S146C)



### Optical Spectrum of Input/Output Signal and Gain Spectrum

Trace A: Blue Line, -6dBm input@ASE-C Source;

Trace B: Red Line, output@25dB, AGC mode;

Trace C: Green Line, Gain, C=B-A(LOG), Gain Flatness=0.70dB.



### Optical Spectrum of Input/Output Signal and Gain Spectrum

Trace A: Blue Line, -6dBm input@ASE-C Source;

Trace B: Red Line, output@10dB, AGC mode;

Trace C: Green Line, Gain, C=B-A(LOG), Gain Flatness=1.70dB.

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