

QTekLaser™ 795 nm Fiber Laser

Product Description

The **QTekLaser™ 795 nm Fiber Laser** is a high-precision laser system optimized for quantum computing, quantum sensing, atomic interferometry, and laser cooling and trapping in atomic physics research. Built on robust Second-Harmonic Generation (SHG) technology, this all-fiber, high-power (4 W) laser delivers exceptional performance in a compact and industrial-ready form. Featuring a sleek 3U, 19" rack-mount chassis and an IoT-enabled control interface, it's engineered for seamless integration into both lab and industrial environments.



Features

- High output power (4 W)
- High reliability with all-fiber design
- Narrow linewidth (<1 MHz)
- Excellent power stability (<1%)
- User-friendly interface via IoT technology
- 3U 19" Rack mount
- Certified to IEC 60825-1:2014 safety standards

Applications

- Quantum computing
- Quantum sensing
- Atomic interferometry
- Laser cooling and trapping
- Research

Second-Harmonic Generation (SHG) Technology

QTekLaser™ offers laser systems with extended wavelength range by combining nonlinear frequency conversion technologies. Through second-harmonic generation (SHG) we achieve significant laser power at the visible and NIR regime (figure 2; red-shaded cells of table 1). With the development of waveguide technology, nonlinear frequency conversion has become a powerful tool to extend the application scope of fiber lasers.

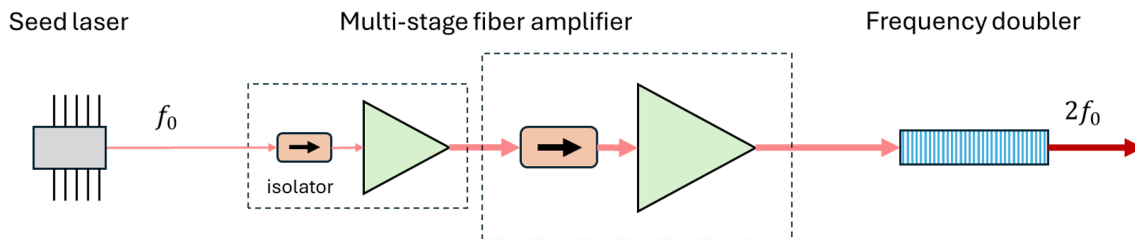


Figure 2 – Laser system with integrated frequency doubler.

Table 1 – Wavelength extension of QTekLaser™ products using nonlinear frequency conversion.

	SF-AMP-Yb (1012 – 1080 nm)	SF-AMP-Er (1530 – 1610 nm)	SF-AMP-Tm (1776 – 2040 nm)
SF-AMP-Yb (1012 – 1080 nm)	506 – 540 nm		
SF-AMP-Er (1530 – 1610 nm)	609 – 646 nm	765 – 805 nm	
SF-AMP-Tm (1776 – 2040 nm)	645 – 706 nm	822 – 900 nm	888 – 1020 nm

Specifications

Parameter	Value
Wavelength	795 nm
Max. Output Power	4 W
Polarization Extinction Ratio (PER)	20 dB
Power Stability	< 1%
Laser Linewidth	< 1 MHz
Operating Temperature	17–25 °C
Cooling Mode	Air or Water cooling
Beam Quality	TEM00; $M^2 \sim 1.0$
Output Mode	PM780-HP with FC/APC connector
Relative Intensity Noise (RIN)	-135 dBc/Hz @ >10 kHz
Side-Mode Suppression Ratio (SMSR)	60 dB
Chassis	3U, 19" rack mount

Safety & Retro-Reflection Advisory

The 795 nm laser system complies with 21 CFR Subchapter J, Part 1040 (as enforced by FDA) and IEC 60825-1:2014 safety standards.

Users must ensure that significant light is not retroreflected into the system—doing so may harm performance or damage the laser. Use of an external optical isolator is strongly recommended. Damage from retroreflected light is not covered under warranty.

Ordering Information

Part Number: QT-LASR-SHG-795-4-A-2-1.5-0

Configuration: Seed laser + Er-doped fiber amplifier + SHG

Performance Figures

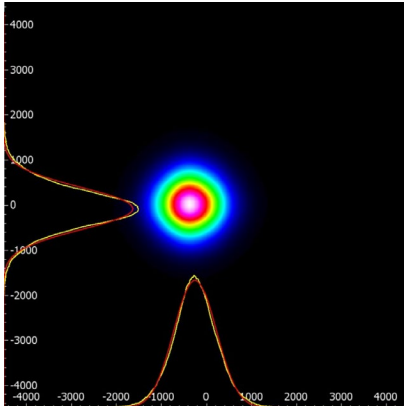


Figure 3 – Beam Profile. Collimated with a Thorlabs F220APC-780 collimator, not included. Excellent round Gaussian profile with a $1/e^2$ beam diameter of 1.9 mm.

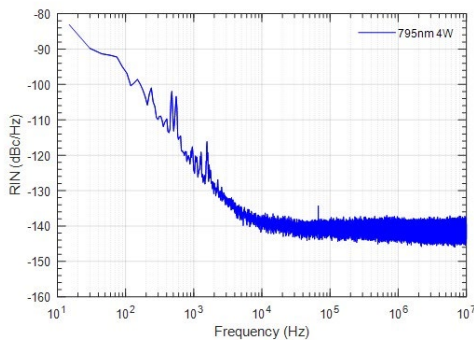


Figure 4 – Relative Intensity Noise (RIN): $<-135 \text{ dBc/Hz } >10\text{kHz}$.

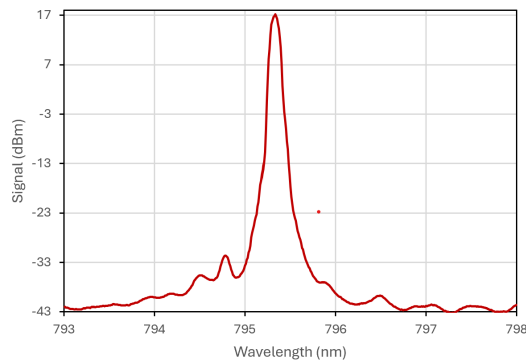


Figure 5 – Optical Spectrum: SMSR ~ 60 dB.

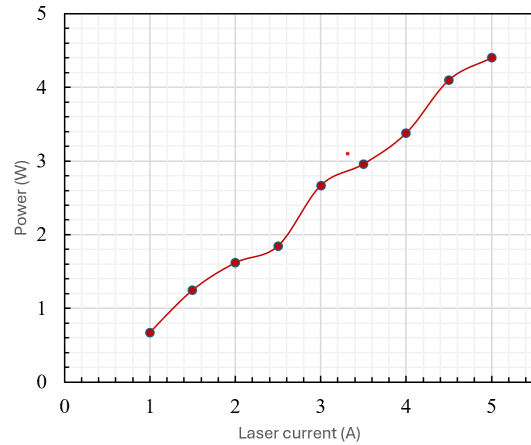


Figure 6 – Laser Power vs Current.

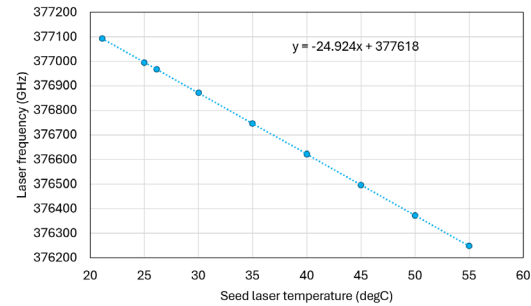


Figure 7. Tunability: Frequency vs. Seed Laser Temp.

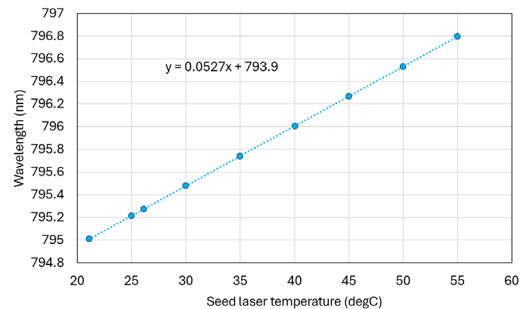


Figure 8. Tunability: Wavelength vs. Seed Laser Temp.

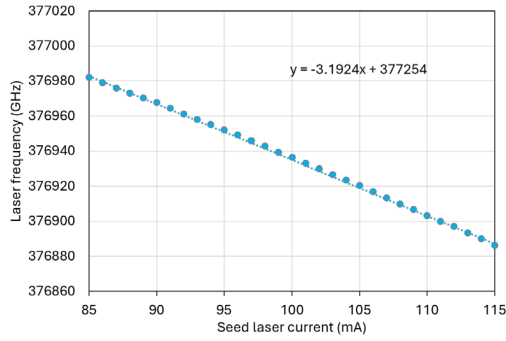


Figure 9. Tunability: Frequency vs. Seed Laser Current.

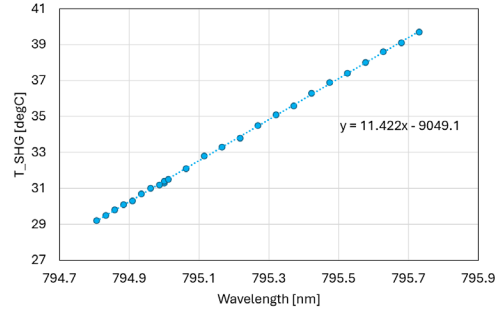


Figure 11. Optimal SFG Temperature vs. Wavelength.

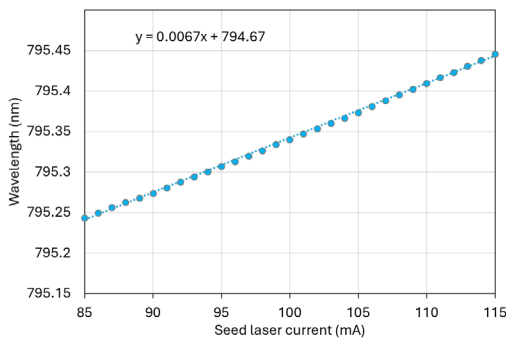


Figure 10. Tunability: Wavelength vs. Seed Laser Current.

Mechanical Details

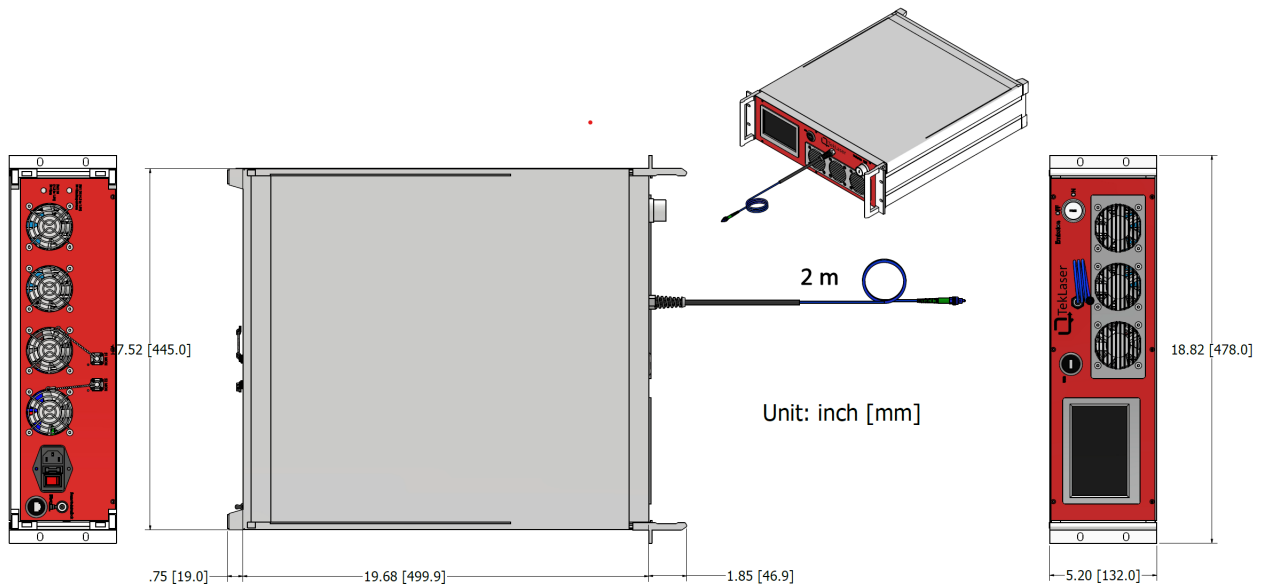


Figure 12 - Mechanical dimensions of the 795 nm fiber laser.

Product Photographs



Figure 13 – 795 nm fiber laser 3U chassis air cooled.



Figure 14. 795 nm fiber laser 3U chassis back panel air cooled.