

SKYLARK 780 NX

SINGLE FREQUENCY CW DPSS NIR LASER

The Skylark 780 NX CW DPSS laser delivers single frequency operation, powering rubidium applications with up to 400 mW of ultra-stable output.

Low ASE noise and narrow linewidth provide exceptional spectral purity, ensuring precision and performance.



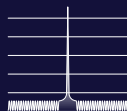
Key features



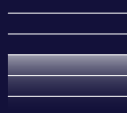
Ultra-narrow linewidth
 ≤ 300 kHz



Ultra-low power noise
 ≤ 0.3 % RMS (10 Hz - 10 MHz)



Ultra-low ASE noise
 < -80 dB



Ultra-stable power output
 ≤ 2.0 % over 8 hours



External frequency locking available

Applications

Raman spectroscopy, optical manipulation, rubidium D2 transitions, cold atom trapping, atomic spectroscopy, magnetometry, atom interferometry, Bose-Einstein Condensates (BEC formation), magneto-optical traps, frequency comb generation, atomic clocks, free-space optical communication.

Dimensions

Laser head (L x W x H)	257 x 150 x 87 mm
Beam height	54.2 mm

Reveal the unseen,
detect the imperceptible,
measure the unknown.



Specifications

Output beam parameters

Output power	up to 400 mW
Wavelength	780 nm
Spectral bandwidth	≤ 300 kHz
Spatial mode	TEM ₀₀
Spectral stability	± 0.2 pm (over 8 hour operation)
Coherence length	> 100 m
Output power stability	≤ 2.0 % (over 8 hour operation)
Output power noise	≤ 0.3 % RMS (10 Hz - 10 MHz)
ASE noise	< -80 dB
Beam divergence	1.0 mrad, diffraction limited
Beam diameter at output aperture	0.8 - 1.2 mm
Beam pointing stability	≤ 5 μ rad/°C

Absolute referencing and fine tuning

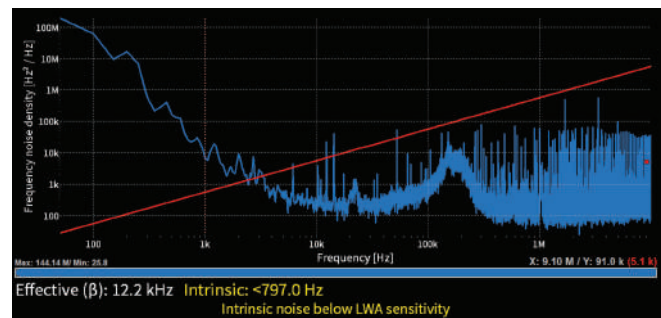
Wavelength is fixed between $\sim 775 - 815$ nm and locked using a temperature-controlled reference etalon.

The laser can be locked to an external atomic reference using feedback from an error signal. Fine tuning is achieved via a piezo element with a tuning range of 1 GHz.

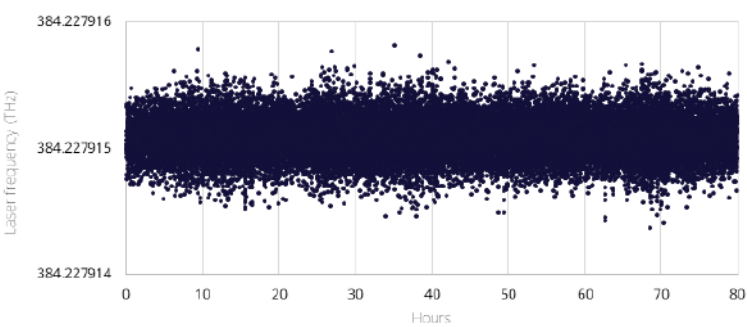
For greater adjustment (e.g. to reach different hyperfine transitions), the reference etalon can be adjusted, offering an extended range of ~ 40 GHz.

Environmental conditions

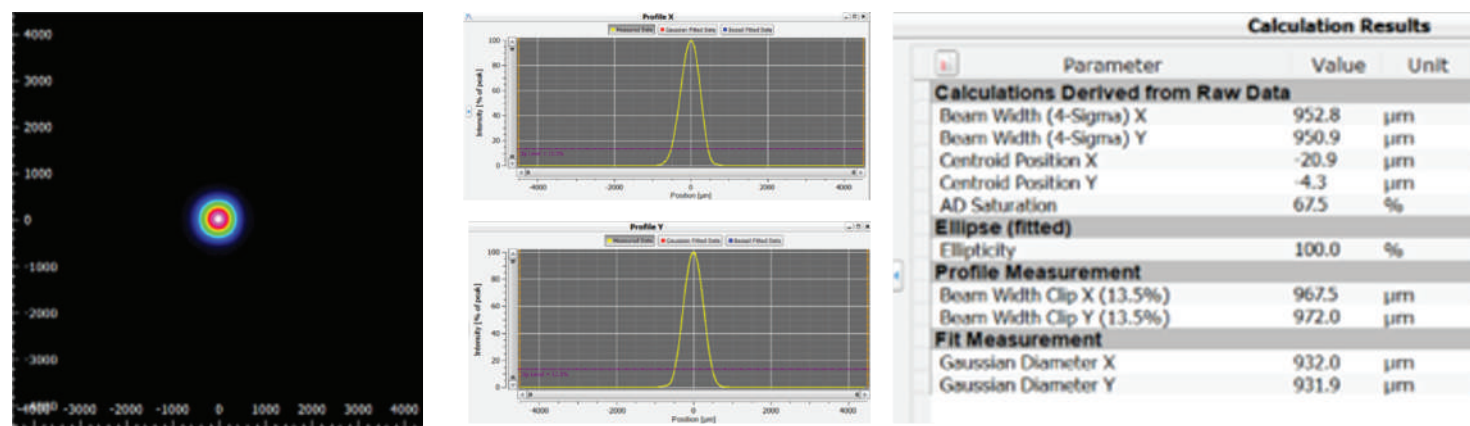
Ambient temperature range	18 - 30 °C
Laser head interface stability	± 1.5 °C
Storage	0 - 50 °C
Humidity	0 - 50 %, non-condensing



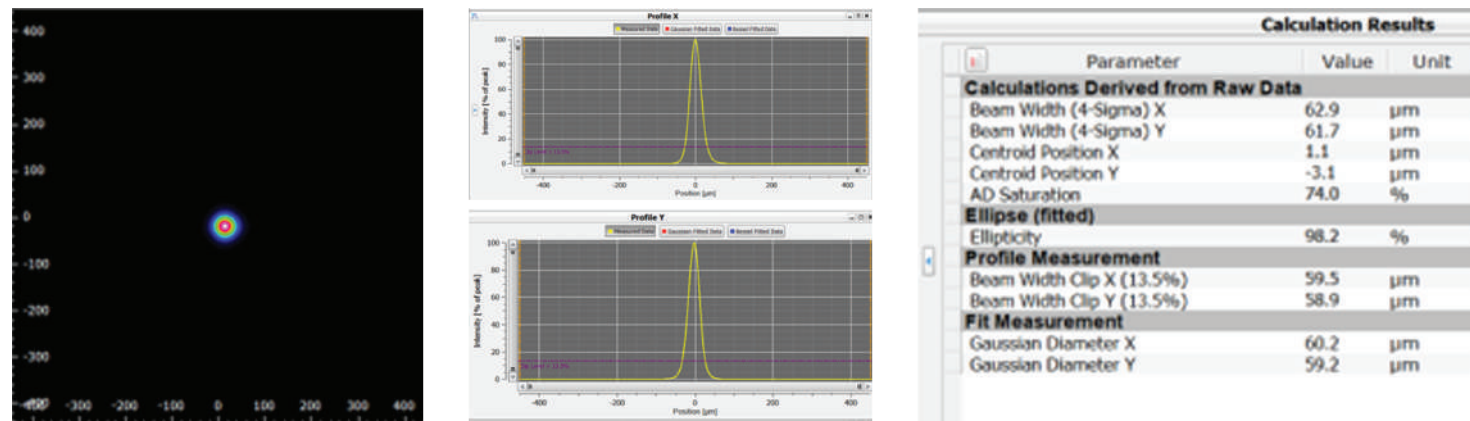
Unlocked / passive linewidth measured as 12.2 kHz over 1 ms



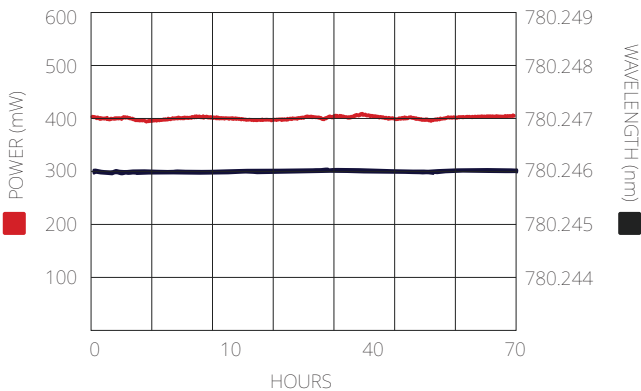
Laser lock to relevant cooling and repump absorption lines over 80 hours. The lock is robust to mechanical and thermal fluctuations.



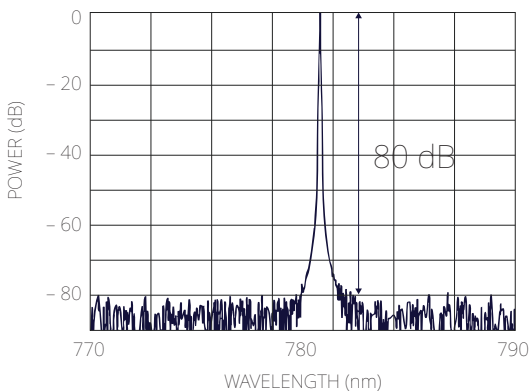
Near-field beam profile | Ellipticity 100%



Far-field beam profile | Ellipticity > 98%



780 NX power and wavelength stability over 70 hours



ASE noise < - 80 dB