DLT-FFT-1550

Narrow linewidth Pockels-based frequency-agile laser @ 1550 nm

Product datasheet / Ver 1.1

Narrow linewidth laser

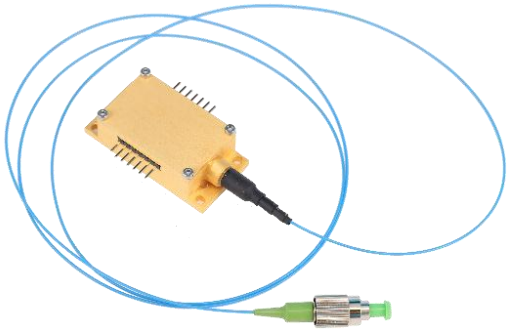
- Narrow linewidth <5 kHz
- Technology based on photonic integrated circuits
- Compact form factor

Ultra-fast frequency-agility

- Frequency modulation BW >10 MHz
- Modulation range > 10 GHz
- 500 MHz/V modulation efficiency

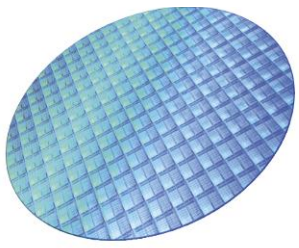
Applications

- FMCW Lidar
- Coherent communication
- Gas sensing

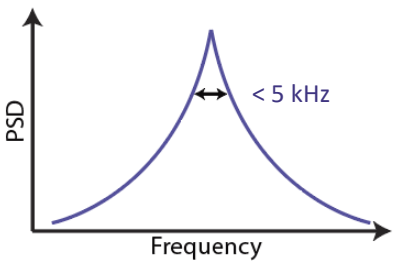


Deeplight's is offering early-access to a new class of devices: **Lithium Niobate**-based photonic integrated lasers. This new platform enables ultra-fast frequency actuation with potential bandwidths reaching several GHz. This laser combines unprecedented frequency agility performance with an extremely compact form factor.

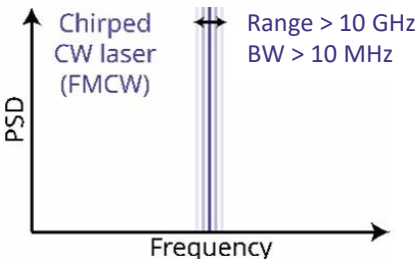
This fully integrated laser utilizes an electro-optic material as the optical medium: thin film Lithium Niobate. Via the Pockels effect, this architecture ensures simple operation with single analog control for efficient and ultra-fast direct modulation of the laser frequency.



Wafer-scale production:
high-volume manufacturing



Excellent spectral purity:
high signal-to-noise ratio



Frequency-agility:
high-speed applications

Explore the future of photonics with Deeplight. Contact us!
Website: deeplight.ai
Email: Info@deeplight.ai

The following performance parameters are given for a typical DLT-FFT-1550 device and may vary from device to device.

Parameters	Min.	Typ.	Max.	Units	Comments
Output Interface		FC/APC			PM Panda fiber
Wavelength	1510	1550	1560	nm	CW Wavelength is pre-chosen and not tunable
Output Power	5	10	15	mW	
Operation Current	100	200	300	mA	
Optical Side Mode Suppression Ratio	50	55	65	dB	
Intrinsic Linewidth	<3	< 5	<10	kHz	Lorentzian; instantaneous
Integrated Linewidth		<200		kHz	1 ms integration time
Laser frequency modulation range	3	5	10	GHz	
Laser Frequency Actuation Bandwidth	-	>5	>10	MHz	Flat actuation response from 50 kHz
Actuation efficiency	400	500	550	MHz/V	
Chirp nonlinearity	<1.5	<3	<5	%	@100-1000 kHz sweep rates;

The laser is available in a custom 14-pin butterfly unit. This unit can be shipped inside a laser head for easy connection to temperature and current controllers.

Figure 1. *Laser head with external connection to temperature and current controllers. PM FC/APC output connector*

Figure 2. *Custom 14-pin butterfly package with PM fiber output*

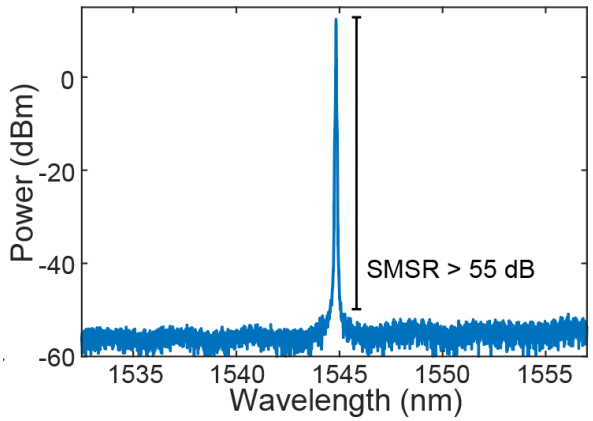


Figure 3. *Optical power spectrum of the laser*

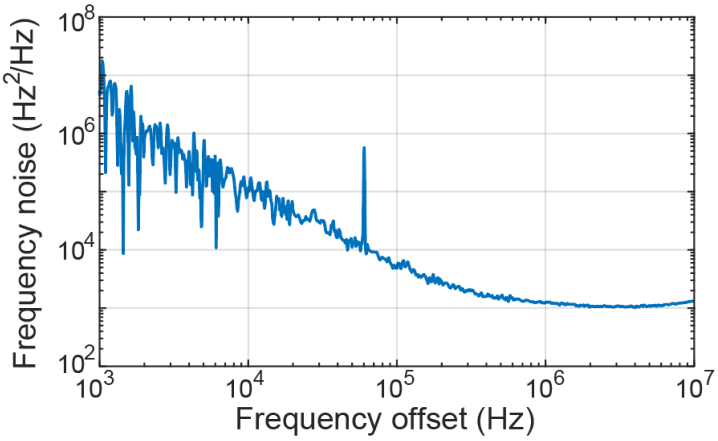


Figure 4. *Frequency noise of the laser*

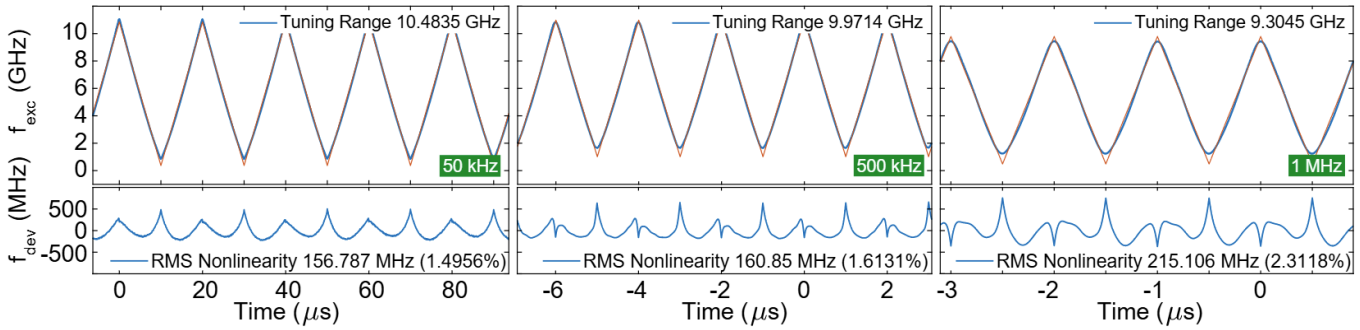


Figure 5. *FMCW optical generation at 50 kHz, 500 kHz and 1 MHz sweep rate*

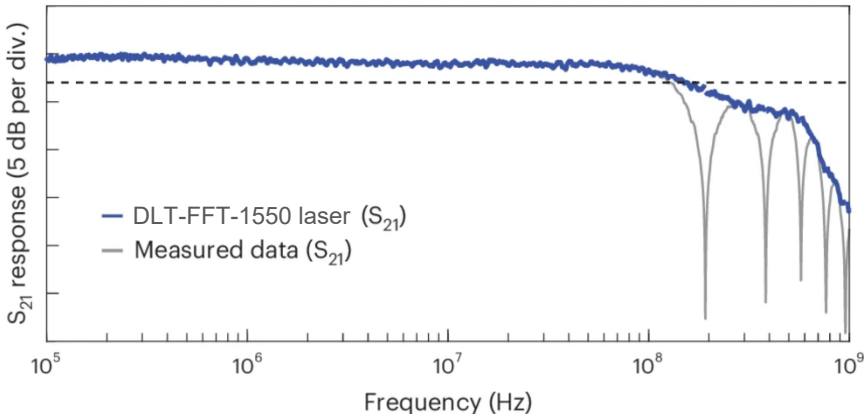


Figure 6*. Actuation response of the laser*