

DLT-FFT-1550

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

Product datasheet / Ver 1.1

Narrow linewidth laser

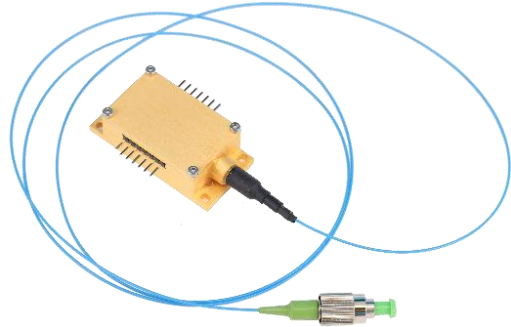
- Narrow linewidth <5 kHz
- Technology based on photonic integrated circuits
- Compact form factor

Ultra-fast frequency-agility

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

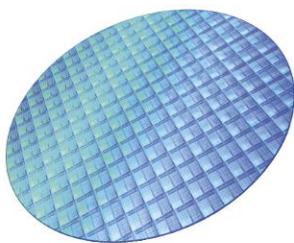
Applications

- FMCW Lidar
- Coherent communication
- Gas sensing

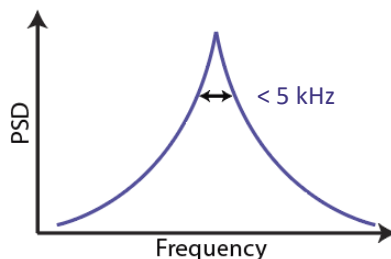


Deelight's is offering early-access to a new class of devices: **Lithium Niobate**-based photonic integrated lasers. This new platform enables ultra-fast frequency actuation with potential bandwidths reaching several GHz. This laser combines unprecedented frequency agility performance with an extremely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

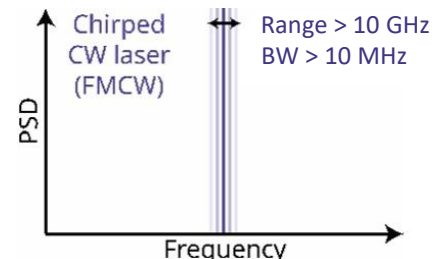
This fully integrated laser utilizes an electro-optic material as the optical medium: thin film Lithium Niobate. Via the Pockels effect, this architecture ensures simple operation with single analog control for efficient and ultra-fast direct modulation of the laser frequency.



Wafer-scale production:
high-volume manufacturing



Excellent spectral purity:
high signal-to-noise ratio



Frequency-agility:
high-speed applications



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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



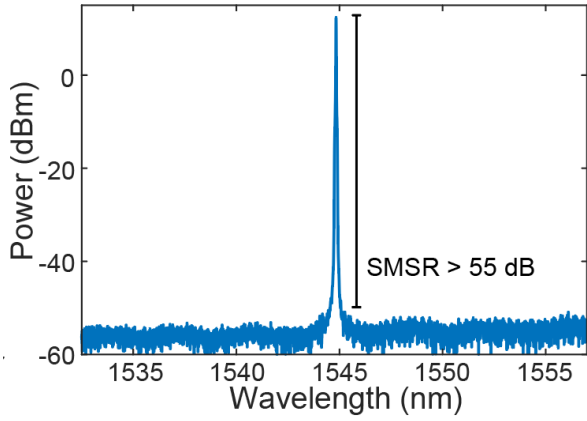


Figure 3. Optical power spectrum of the laser

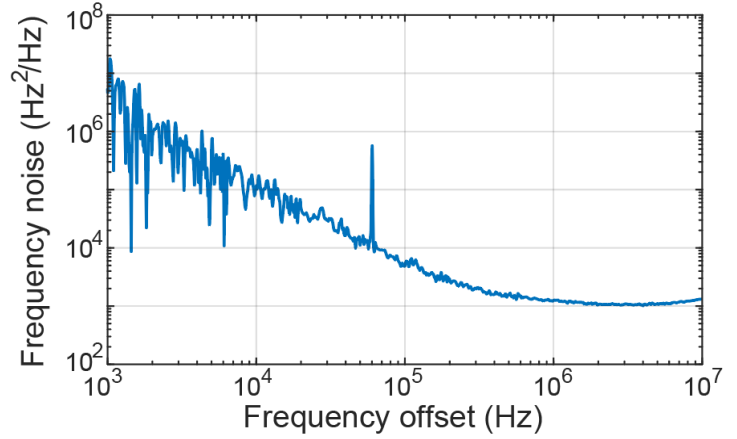


Figure 4. Frequency noise of the laser

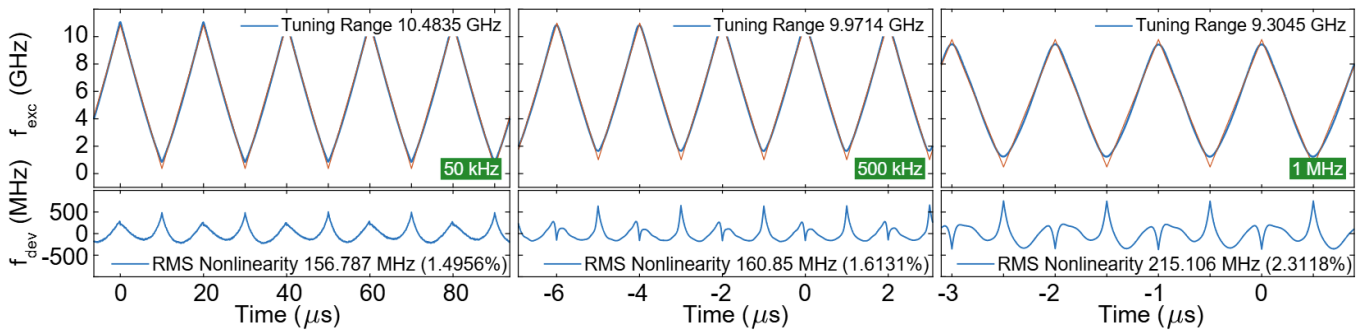


Figure 5. FMCW optical generation at 50 kHz, 500 kHz and 1 MHz sweep rate

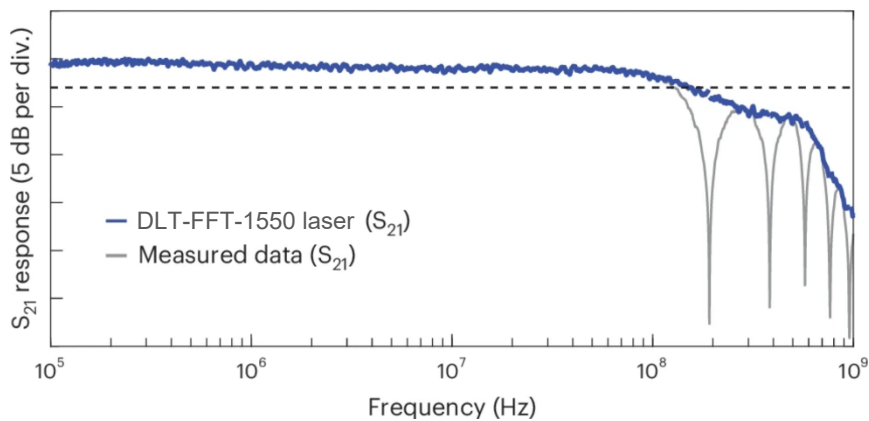


Figure 6. Actuation response of the laser



