

Key features

- ✓ C-band tunability
- ✓ Continuously sweeping
- ✓ Ultra-narrow linewidth
- ✓ Low RIN
- ✓ Excellent SMSR
- ✓ Fully integrated with no moving parts, enabling switching between wavelengths instantly
- ✓ Exceptional repeatability
- ✓ Software based wavelength calibration
- ✓ Easy to set-up and use
- ✓ Compact size



Applications

- ✓ Sensing such as biomedical, infrastructure and vibration
- ✓ Quantum Key Distribution
- ✓ Optical device testing
- ✓ Spectroscopy
- ✓ Coherent Communications
- ✓ Telecommunications

Description

Chilas has developed a narrow linewidth tunable laser with a hybrid integrated external cavity. The COMET uses state-of-the-art Photonic Integrated Circuit (PIC) technology and has distinctive advantages of which the most important are: Ultra narrow linewidth, broadband tuning, and a small footprint/size.

The COMET consists of a butterfly packaged laser mounted inside a tuneable laser controller, and is provided with a calibration file and corresponding software. The controller incorporates a current driver, heater driver and temperature controller to set the laser. The controller takes care of an interface to a piece of software that allows the user to tune all the different parameters of the laser by an easy slider on the screen through a GUI. Additionally, an API serial command list will be provided.



NOTE: This laser is designated for use solely as a component and therefore does not comply with all the appropriate requirements of 21 CFR 1040.10 and 21 CFR 1040.11 for complete laser products.

COMET-1550 datasheet



1. Performance and specifications

Optical	Parameter	Unit	Specified values	Notes
	Center wavelength	nm	1550 ± 5	
	Wavelength range	nm	Up to 50	
	Wavelength resolution	pm	≤ 5	
	Wavelength absolute accuracy	pm	± 10	Upgradeable on request
	Wavelength repeatability*	pm	≤ 1	After 1 hour warm-up
	Scan speed	nm/s	1 to 100	Fixed
	Fiber output power	mW	≥ 20	
	Intrinsic linewidth	kHz	≤ 1	
	Side-mode suppression ratio	dB	≥ 50	
	RIN	dBc/Hz	≤ -150	@ 1 MHz

*Determined at 50nm/s, with 5 pm resolution

Package	Parameter	Specified values
	Dimensions (LxWxH)	100*60*20 mm
	Weight	167 g
	Operating temperature	15 – 50 °C
	Power supply voltage	5 V _{DC}
	Power supply current	3.8 A
	Interface	DE-9 and USB
	Modulation/RF connector	SMB
	Fiber connector and type	PM FC/APC



Figure 1 COMET with interface board for USB and power connection attached and a COMET in hand



2. Typical measurement results

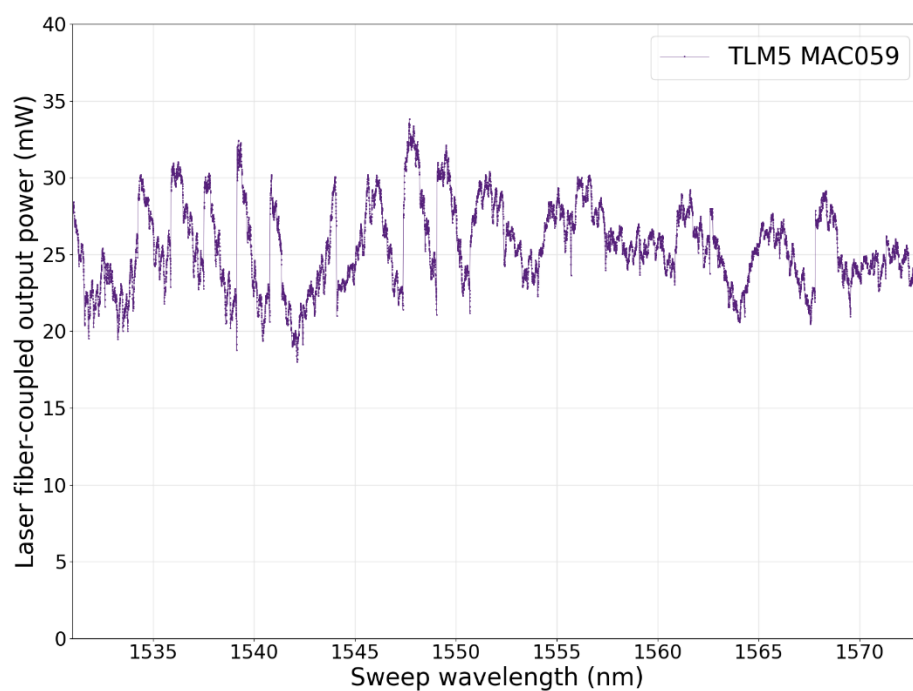


Figure 2 Power as a function of wavelength when sweeping the full wavelength range using the COMET

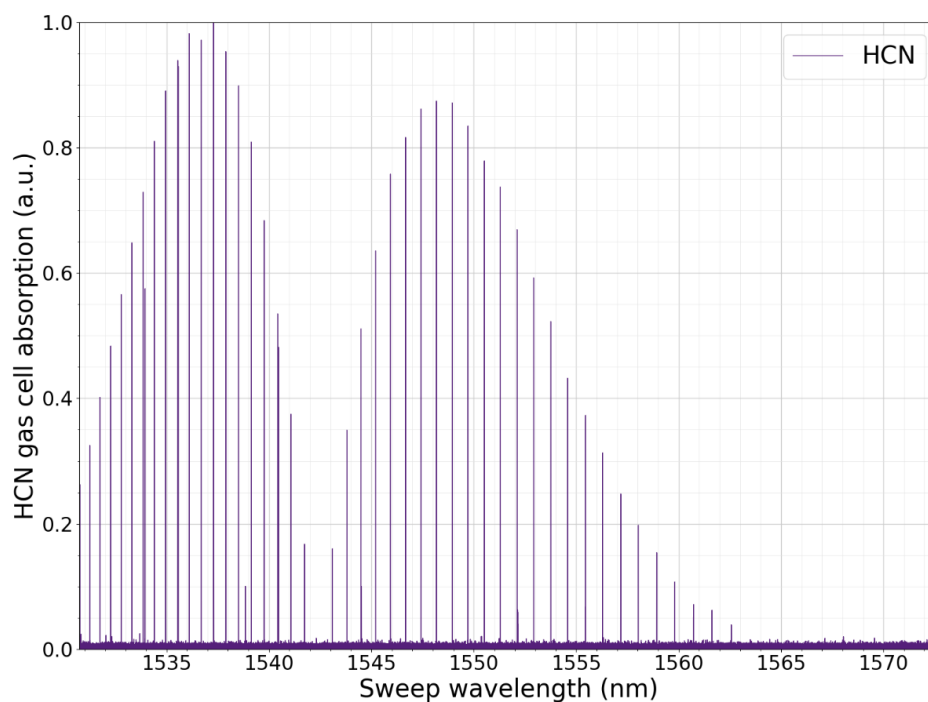


Figure 3 Measured absorption spectrum of an HCN gas cell using the COMET

COMET-1550 datasheet

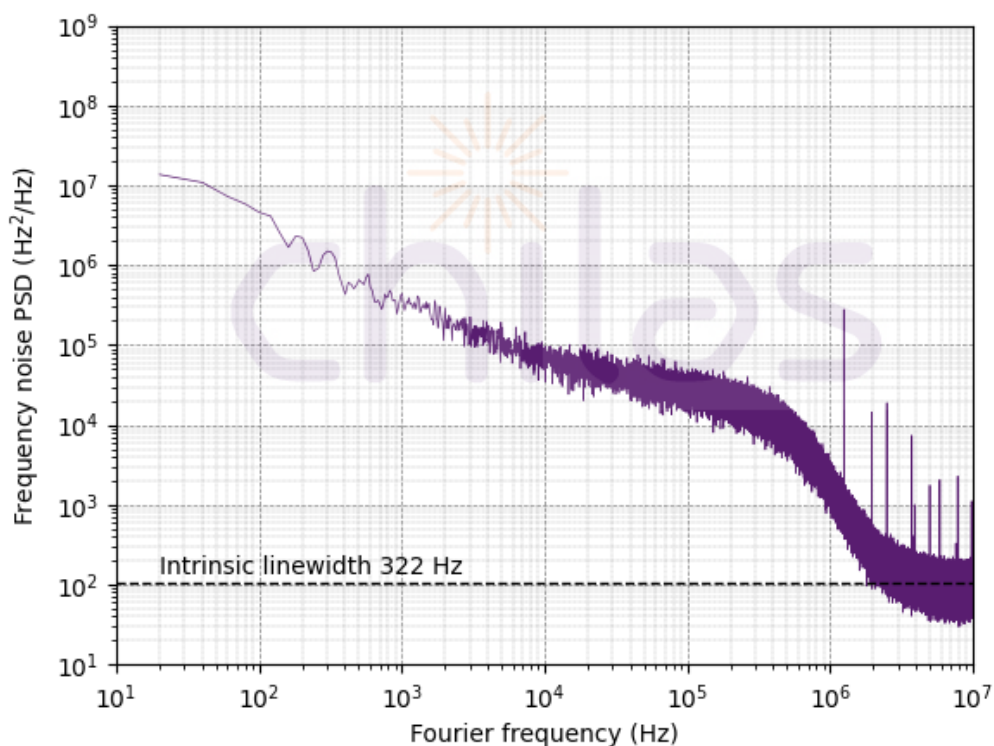


Figure 4 Phase noise measurement showing an intrinsic linewidth of 322 Hz

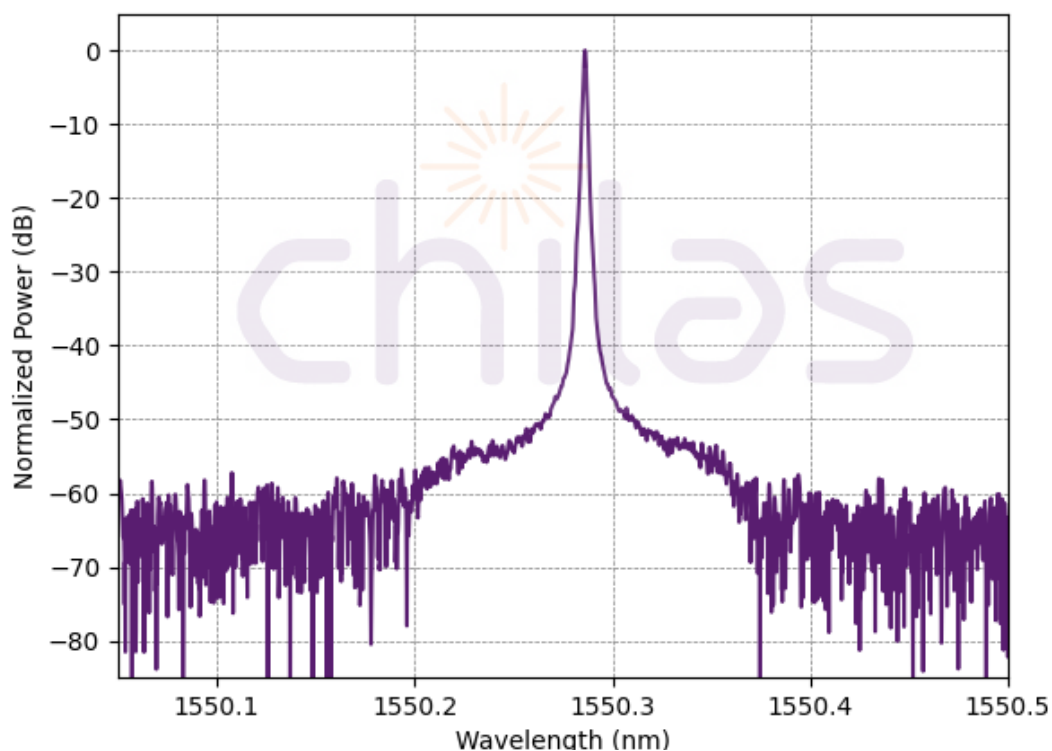
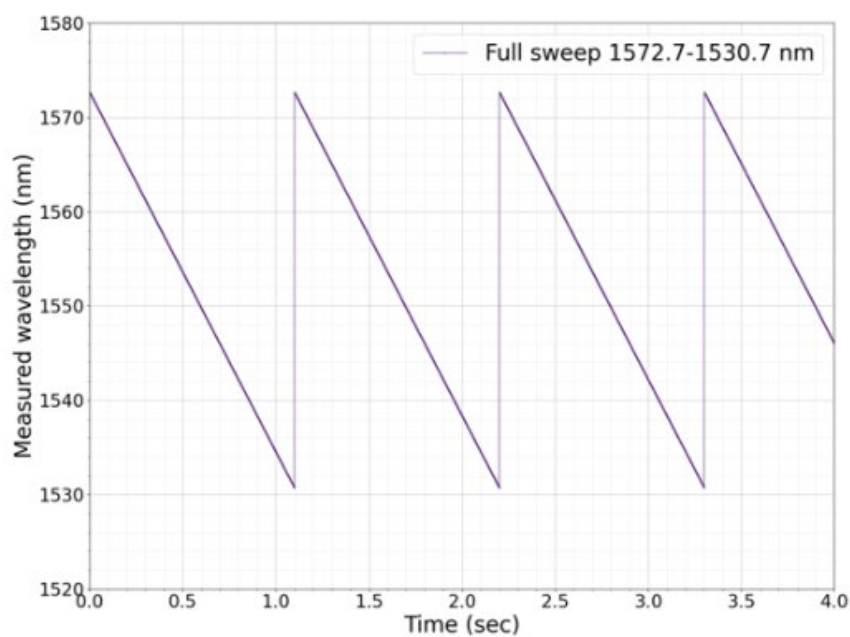


Figure 5 Side- mode suppression ratio, representative for the whole wavelength range

COMET-1550 datasheet



Measured swept source wavelength for a few sweep cycles. A high-resolution wavelength meter (HighFinesse WS6-200) was used to record the laser wavelength with nearly 2 kHz acquisition rate. One full sweep over 42 nm takes 1.1 sec, which gives a sweep rate of 38 nm/sec. The wavelength sweep is perfectly linear and the wavelength resets instantly at the end of each sweep.

Figure 6 Linearity of the sweep cycle