CA Optronics Group INC.

Product Specification

Part Number: CX9812-O
Description: 1250 ~ 1350 nm O-Band Tunable Lasers Source
Version: V6.01

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1. Product Description

CA OPTRONICS CX9812-O tunable light sources are new-generation high performance continuous wave (CW) tunable laser sources for the use in various single band or combined band windows, ranging from 1250 nm to 1350 nm. It can be used either as a wavelength switching laser or as a high-speed sweeping laser. The innovative design employs the state- of-the-art high-speed tunable technology and gain continuation in wide wavelength range. With no moving parts, the voltage-controlled wavelength tuning enables rapid wavelength switching over the whole operating wavelength window.

This specification describes and defines CA OPTRONICS's CW tunable light sources with applications to test and measurement. They provide fast wavelength tuning, high power output, and high power stability. A full-band tunable laser is also available, covering 1250~1350 nm wavelength range, with seamless wavelength tuning.

System control and communication is provided though the RS232 interface, which allows users to dynamically set operating wavelength with ease.

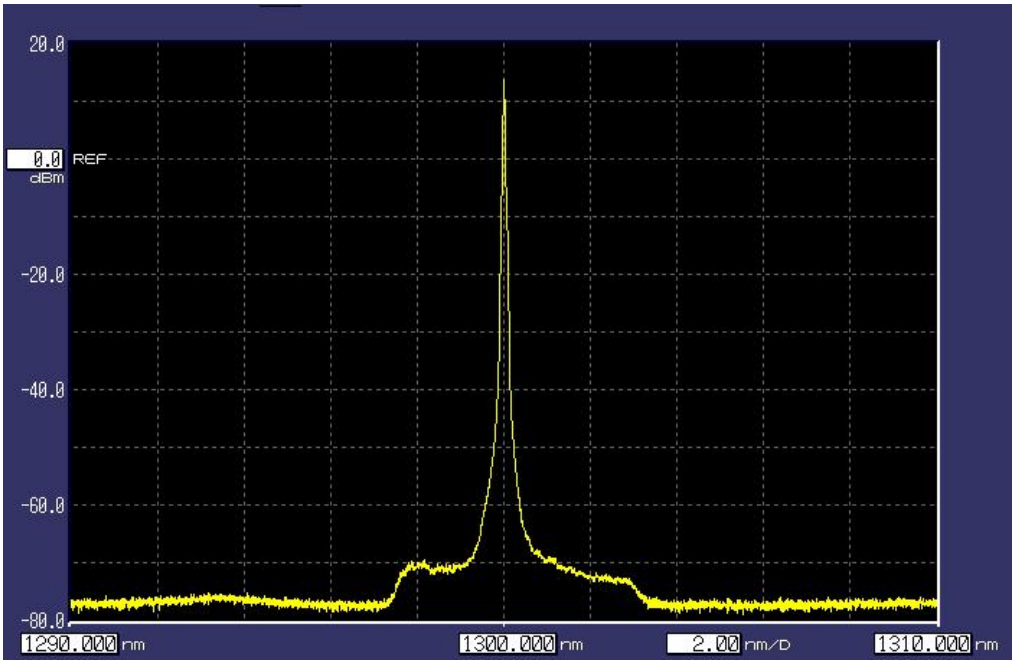


Figure 1-1: Laser spectrum of O-band tunable laser at 1300 nm

2. Specifications

The following specifications define customized small-size O-band tunable lasers.

2.1 Specifications

Table 2-1: Specifications for small-size O-band tunable lasers

Parameters		Unit	Specification
Operating Wavelength Range [1)]		nm	1250 ~ 1350
Minimum Output Power (Total) [2)]	1250~1280 nm	dBm	≥ 8
	1280~1330 nm	dBm	≥ 10
	1330~1350 nm	dBm	≥ 8
Power Stability (Over 1 hour) [3)]		dB	±0.01
Power Repeatability (Over 100 times) [3)]	Manual Mode	dB	≤ ±0.05
	Sweeping Mode	dB	≤ ±0.05
Wavelength Accuracy [3)]	Manual Mode	pm	≤ ±35
	Sweeping Mode	pm	≤ ±8
Wavelength Repeatability (Over 100 times) [3)]	Manual Mode	pm	≤ ±20
	Sweeping Mode	pm	≤ ±4
Wavelength Stability [3)]		pm	≤ ±5
Wavelength Tuning Resolution		nm	≤ 0.01
Linewidth (FWHM)		nm	< 0.002
Signal to Source ASE Ratio [4)]		dB	≥ 65
Wavelength Tuning Time [5)]		ms	50
Dwell Time in Stepped Sweeping Mode		ms	1 ~ 65535
Maximum Sweep Speed [6)]		nm/s	400
Optical Fiber		-	PMF
Optical Connector		-	FC/APC
Warm-up Time		Min.	30
Communication Interface		-	RS232/UART

Notes:

1) Wavelength is calibrated as “Peak wavelength”.
2) TLS is operated at constant current mode and spectrum is not flattened.
3) When measured after warm-up time, measurements over 1 hour at 25±1℃.
4) ASE is measured at 0.1 nm bandwidth and ±1 nm away from center wavelength.
5) For manual tuning mode only.
6) For continuous sweeping mode only.

2.2 Operation Modes

Tunable lasers have three operation modes:

1) **Manual wavelength tuning mode**

   User can set the target operation wavelength of CX9812-O manually by **"Set TLS Wavelength"** command.

   For convenient use, two additional commands **"Step TLS Wavelength-UP"** and **"Step TLS Wavelength-Down"** are provided to quickly increase or decrease wavelength by a small wavelength step.

   In this mode, user can check the operation wavelength and output power by the commands **"Read TLS Wavelength" and "Read TLS Power"** at any time.

   Manual tuning mode also provided a "**Set Reference Power**" command, which will let TLS scan laser power spectrum as a function of wavelength and save it in the memory. This power data will be used for "reference power". Whenever TLS is tuned back to a given wavelength, the TLS will output the same power value.

2) **Continuous wavelength sweep mode**

   Operation wavelength can be swept continuously. In this mode, the wavelength is tuned linearly with time at a given Sweep Speed. The commands are "**TLS Start Sweep**" to start the wavelength sweeping and "**TLS Stop Sweep**" to terminate the continuous sweeping. A trigger signal is sent out at the time of sweeping the start wavelength in each cycle. During the continuous sweeping, the wavelength is divided into multiple minor steps and a Sync Clock signal is sent out at each sweeping step.

   User needs to specify Start wavelength, Stop wavelength, Sweep Speed and Sweep Cycles.

   Sweep Speed can be 50, 60, 80, 100, 120, 150, 160, 200, 300, 400 nm/s.

3) **Stepped wavelength sweep mode**

   Operation wavelength can also be swept in a stepped way. In this mode, the wavelength is tune step by step. TLS will stay at each wavelength for a given time interval (Dwell time), showing time stairs. The commands are "**TLS Start Sweep**" to start the wavelength sweeping and "**TLS Stop Sweep**" to terminate the stepped sweeping. A trigger signal is sent out at each step.

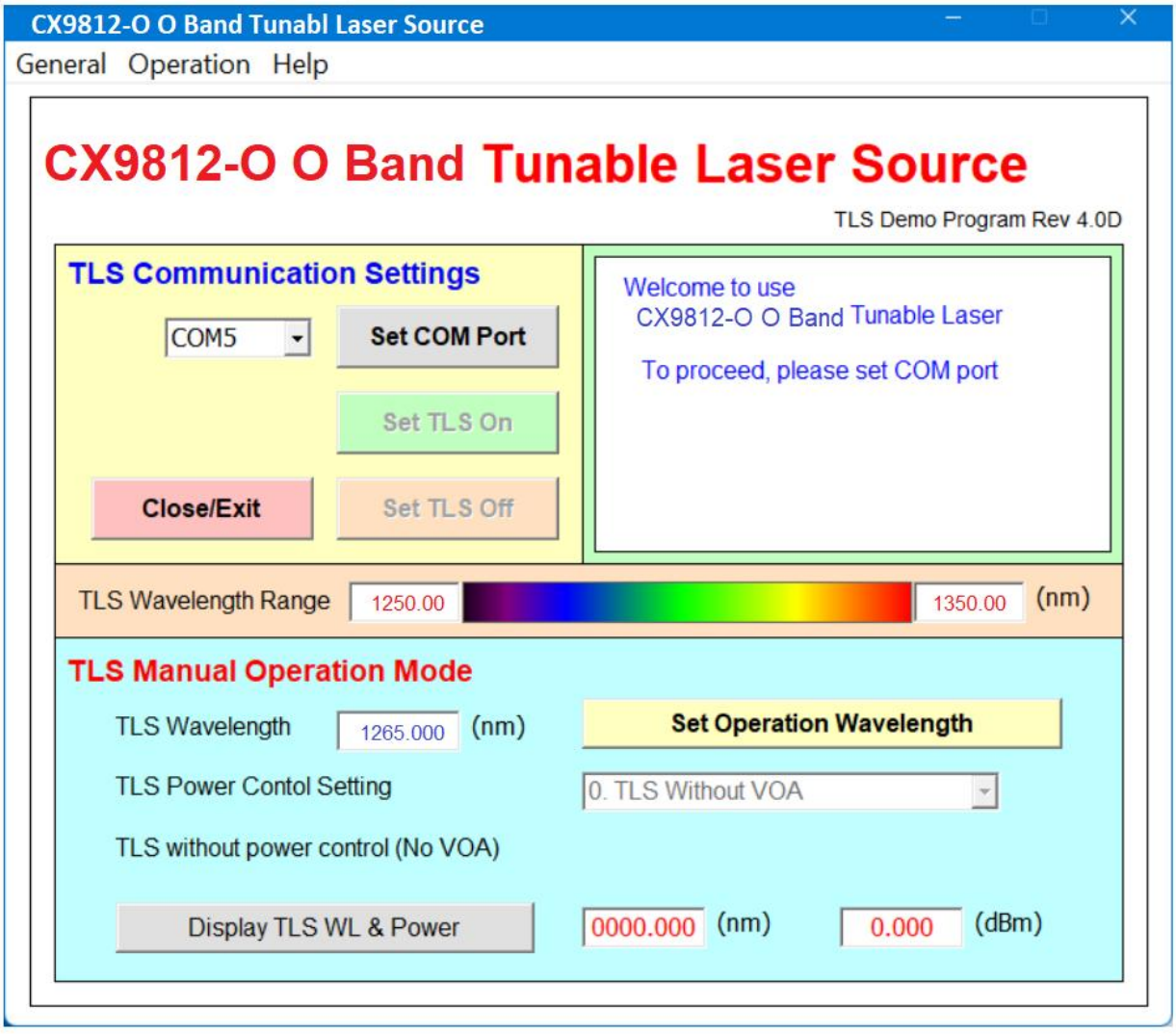
   User needs to specify Start wavelength, Stop wavelength, WL step, Step time and Sweep Cycles.

2.3 Environmental Conditions

Table 2-2: Environmental specifications

Parameters	Units	Specifications
Operating Temperature	°C	+10 ~ +35
Storage Temperature	°C	-40 ~ +70
Operating Relative Humidity	%	< 80 (Non-condensing)
Storage Relative Humidity	%	< 90

2.4 Operation GUI



3. Mechanics

CX9812-O tunable laser is packaged in a customized chassis with dimension *44 mm H, 224 mm W, 300 mm D* . Laser output s from FC/APC optical connector on front panel.

Contact Information

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