High Performance Tunable Laser
TSL-510

The TSL-510 provides market-leading performance in a compact, easy to use package. The laser can perform continuous, mode-hop-free sweeps over its full 130nm tuning range with the highest output power of comparable lasers on the market today. Low noise and excellent stability are other notable features.

The model range has four separate versions. Type B has additional optics to lower the optical ASE noise and boasts a very high signal to noise ratio (SNR) of over 65dB. This is particularly important for characterization of high isolation DWDM filters. Type C includes a high accuracy wavelength meter which increases the wavelength accuracy to better than 5pm. Type D combines the high SNR with the high wavelength accuracy. All models have additional features such as fine tuning and coherence control. GPIB and USB interfaces with the industry standard SCPI command set allows full remote control and measurement automation.

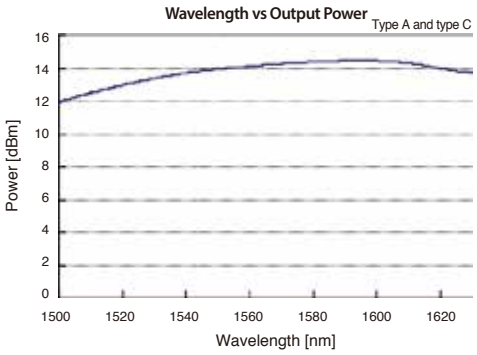
Features

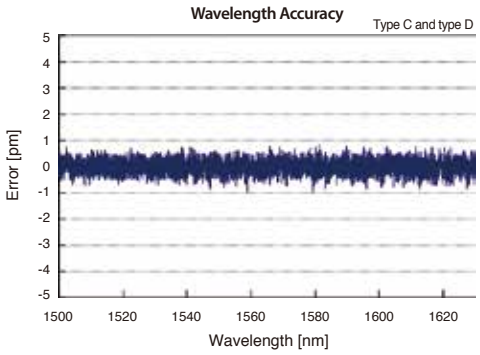
- +13dBm peak output power (types A & C)
- 130nm tuning range within 1260-1680nm
- Mode-hop-free wavelength sweeps
- 100nm/s sweep speed
- >65dB SNR (types B & D)
- <5pm wavelength accuracy (types C & D)

Applications

- Optical component characterization
- Fiber optic transmission testing
- Fiber optic sensors
- Interferometry
- Optical spectroscopy
- Photonic material characterization

Output Characteristics





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Specifications

Category	Parameter		Unit	Performance			
				Type A	Type B	Type C	Type D
Wavelength Characteristics	Tuning Range		nm	1260-1360/ 1340-1440/ 1420-1520/ 1500-1630/ 1560-1680			
	Resolution		pm	5 (<1pm with fine tuning)		1	1
	Absolute Accuracy *1	Operating Temperature	pm	±100	±100	±5	±5
		25±1°C (typ.)		±30	±30	±2.5	±2.5
	Repeatability *1		pm	±10	±10	±2	±2
	Stability *2 (typ.)		pm	≤ ±5	≤ ±5	≤ ±1	≤ ±1
	Sweep Speed		nm/sec	1 to 100	1 to 100	1 to 100	1 to 100
Optical Power Characteristics	Output Power	Peak (typ.)	dBm	≥ +13	≥ +2	≥ +13	≥ +2
		Full Tuning Range *6	dBm	≥ +10	≥ -2	≥ +10	≥ -2
	Repeatability *1, *3		dB	±0.01	±0.01	±0.01	±0.01
	Stability *2		dB	±0.01	±0.01	±0.01	±0.01
	Power Flatness vs. Wavelength *1, *3		dB	±0.2	±0.2	±0.2	±0.2
	Relative Intensity Noise (RIN) (typ.)		dB/Hz	−145 (0.1 to 3 GHz)			
Spectrum	Linewidth (typ.)	Coherence Ctrl. Off	kHz	500	500	200	200
		Coherence Ctrl. On	MHz	40	40	40	40
	SMSR (typ.)		dB	≥ 45	≥ 45	≥ 45	≥ 45
	Signal to Total Source Spontaneous Emission Ratio *4		dB	≥ 35	≥ 65	≥ 35	≥ 65
	Signal to Source Spontaneous Emission Ratio *5		dB/nm	≥ 45 (55dB/0.1nm)	≥ 70 (80dB/0.1nm)	≥ 45 (55dB/0.1nm)	≥ 70 (80dB/0.1nm)
Interface	Optical Output Connector		-	FC or SC, SPC or APC			
	Optical Fiber		-	SMF or PMF (Polarization axis in alignment with connector key)			
	Communication		-	GP-IB (IEEE 488.2), USB, RS-232C			
	Power Monitor (option)		V	0 to 3			
Modulation	LF Modulation		kHz	DC to 400 (Input level -2 to 0V, Modulation depth >50%/V (typ.))			
	RF Modulation (option)		MHz	2 to 100 (Input level 5Vp-p, Modulation depth >10% (typ.))			
Environmental Conditions and others	Operating	Temperature	ºC	15 to 35			
		Humidity	%	< 80 (non-condensing)			
	Power Supply		V, Hz	AC100-240±10%, 50/60			
	Power Consumption		VA	100			
	Dimensions (W) x (D) x (H)		mm	210 x 440 x 110			
	Weight		kg	6		6.5	

*All specifications are quoted after 1 hour warm-up period. Specifications apply for wavelengths not equal to any water absorption line.
*1: At static condition or "Step" sweep mode. *2: For period of 1 hour. Within ± 0.5 ºC. *3: At "Auto" power mode.
*4: Ratio of signal power to total spontaneous emission power (typical value). *5: Ratio of signal power to maximum spontaneous emission power in a 1nm band within a ±3nm band around the signal wavelength (typical value). *6: For 1560-1680nm model, the output power is ≥+8dBm (Type A or C) and ≥-4dBm (Type B or D).

Model Selection

Model Number	Wavelength Range
260360	1260 – 1360
340440	1340 – 1440
420520	1420 – 1520
500630	1500 – 1630
560680	1560 – 1680

Other wavelength range model is available on request. Please contact Santec Sales.

Laser safety information

This product is classified class 1M laser product according to IEC 60825-1 (2007).
This product complies with FDA performance standards for laser products except for deviations pursuant to Laser Notice No. 50 dated June 24, 2007.

Ordering Code

TSL-510- □-□□□□□□□-□-□-□□-□□-□

- A: Type: **A**-**D**. See "Specifications" above.
- B: Wavelength: See "Model Selection" above. (e.g. **500630**: 1500-1630nm)
- C: Fiber Type: **S**: SMF / **P**: PMF
- D: Connector: **F**: FC / **S**: SC
- E: Connector Polish: **SP**: SPC / **AP**: APC
- F: Modulation: **00**: LF / **RF**: LF+RF
- G: Power Monitor: **0**: None / **1**: Power Monitor

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