

High Performance Tunable Laser TSL-570

The all-new TSL-570 capitalizes on Santec's 33 years' experience in tunable laser manufacture. The TSL-570 is a high performance tunable laser with a wide tuning range and an output combining high power and high signal-to-noise ratio. It uses a new optical cavity design with precise speed control up to 200 nm/s and sub-picometer resolution and accuracy.

Tunable lasers are used extensively in photonics; for optical component characterization, photonic integrated circuit testing, quantum photonics, spectroscopy and sensors. Santec's TSL-570 is a high specification, full feature instrument suitable for all applications. It has a simple to use touch panel display as well as Ethernet, GPIB and USB interfaces for remote control. A Wake-on-LAN (WoL) feature provides convenience for remote installations. Models are available to cover from 1250 to 1640 nm with output powers up to 20 mW.

Santec's new sealed laser cavity is mode-hop-free and provides a stable output at every wavelength. It has 0.1 pm resolution, sub-pm accuracy and a market leading, 90 dB/0.1 nm, ultra-low level of spontaneous source emission. The TSL-570 integrates seamlessly with Santec's optical power meters, optical switches and polarization controllers creating benchmark, turn-key solutions for wavelength dependent loss (WDL) and polarization dependent loss (PDL) measurements.



Features

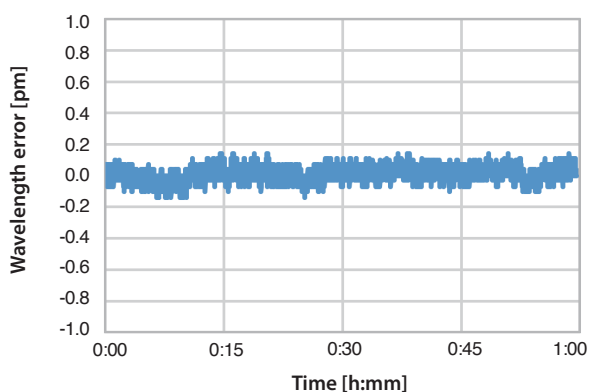
- ▶ Fast, up to 200 nm/s, wavelength sweeps
- ▶ Wide tuning range lineup: 1250 to 1640 nm
- ▶ Wavelength resolution: 0.1 pm
- ▶ High Signal-to-Noise Ratio: 90 dB/0.1 nm

Applications

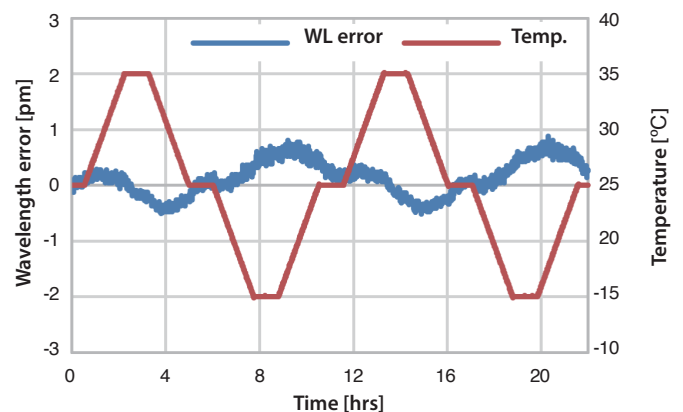
- ▶ Optical component characterization
- ▶ Fiber optic transmission testing
- ▶ Photonic material characterization
- ▶ Interferometry
- ▶ Optical spectroscopy

Measurement Data

Wavelength stability



Temperature Dependency of Wavelength Variation



SANTEC TUNABLE LASERS

Optical Specifications

Model Number: 260360 and 500630

Category	Parameter		Unit	Performance	
				TypeA	TypeC
Wavelength Characteristics	Wavelength Tuning Range		nm	1260 to 1360 / 1500 to 1630	
	Wavelength Setting Resolution		pm	0.1	
	Wavelength Stability (typ.) ^{*1}		pm	≤±5	≤±1
	Absolute Wavelength Accuracy ^{*2}	Step Mode	pm	±15	±3
	Absolute Wavelength Accuracy (Operating temp.)		pm	±20	±5
	Wavelength Repeatability (typ.)		pm	±5	±1
	Absolute Wavelength Accuracy ^{*2}	Continuous Sweep Mode	pm	±15	±5
	Wavelength Repeatability (typ.)		@100 nm/s	pm	±8
Sweep Speed		nm/sec	1 to 200		
Optical power Characteristics	Output Power	Peak	dBm	≥ 13	
		Full Tuning Range	dBm	≥ 10	
	Power Stability ^{*1, *3}		dB	±0.01	
	Power Repeatability ^{*3}	Step Mode	dB	±0.01	
	Power Flatness vs. Wavelength ^{*3}		dB	±0.2	
	Dynamic Power Repeatability (typ.) ^{*3}	Continuous Sweep Mode	dB	±0.01	
	Dynamic Relative Power Flatness (typ.) ^{*3}		@100 nm/s	dB	±0.2
	Relative Intensity Noise (RIN) (typ.) ^{*4}		dB/Hz	-145 (1 MHz to 3 GHz)	
Spectrum	Linewidth (typ.)	Coherence Ctrl. Off	kHz	200	
		Coherence Ctrl. On	MHz	40	
	SMSR (typ.)		dB	≥ 45	
	Signal to Total Source Spontaneous Emission Ratio ^{*5}		dB	≥ 70	
	Signal to Source Spontaneous Emission Ratio ^{*6}		dB/nm	≥ 80 (≥ 90 dB/0.1 nm)	

Model Number: 250390 and 480640

Category	Parameter		Unit	Performance	
				TypeA	TypeC
Wavelength Characteristics	Wavelength Tuning Range		nm	1250 to 1390 / 1480 to 1640	
	Wavelength Setting Resolution		pm	0.1	
	Wavelength Stability (typ.) ^{*1}		pm	≤±5	≤±1
	Absolute Wavelength Accuracy ^{*2}	Step Mode	pm	±15	±3
	Absolute Wavelength Accuracy (Operating temp.)		pm	±20	±5
	Wavelength Repeatability (typ.)		pm	±5	±1
	Absolute Wavelength Accuracy ^{*2}	Continuous Sweep Mode @100 nm/s	pm	±15	±5
	Wavelength Repeatability (typ.)		pm	±8	±1.5
Sweep Speed		nm/sec	1 to 200		
Optical power Characteristics	Output Power	Peak	dBm	≥ 13	
		@1260-1360/1500-1630nm	dBm	≥ 10	
		Full Tuning Range	dBm	≥ 7	
	Power Stability ^{*1, *3}		dB	±0.01	
	Power Repeatability ^{*3}	Step Mode	dB	±0.01	
	Power Flatness vs. Wavelength ^{*3}		dB	±0.2	
	Dynamic Power Repeatability (typ.) ^{*3}	Continuous Sweep Mode @100 nm/s	dB	±0.01	
	Dynamic Relative Power Flatness (typ.) ^{*3}		dB	±0.2	
Relative Intensity Noise (RIN) (typ.) ^{*4}			dB/Hz	-145 (1 MHz to 3 GHz)	
Spectrum	Linewidth (typ.)	Coherence Ctrl. Off	kHz	200	
		Coherence Ctrl. On	MHz	40	
	SMSR (typ.)		dB	≥ 45	
	Signal to Total Source Spontaneous Emission Ratio ^{*5}		dB	≥ 70	
	Signal to Source Spontaneous Emission Ratio ^{*6}		dB/nm	≥ 80 (≥ 90 dB/0.1 nm)	

* All specifications are quoted after 1 hour warm-up period. Specifications apply for wavelengths not equal to any water absorption line.

*1: For period of 1 hour. Within ± 0.5 °C. *2: At 25±1 °C. *3: At "Auto" power mode and > 0 dBm. *4: At maximum output power.

*5: Ratio of signal power to total spontaneous emission power within ±15nm of the signal wavelength (typical value).

*6: Ratio of signal power to maximum spontaneous emission power in a 1nm band within a ±3nm band around the signal wavelength (typical value).

General specifications

Category	Parameter		Unit	Performance	
				TypeA	TypeC
Interface	Optical Output Connector / Polish Type		-	FC or SC / SPC or APC	
	Optical Fiber		-	PMF ^{*7}	
	Communication		-	GP-IB (IEEE 488.2), USB, Ethernet	
	Power Monitor		V	0 to 3	
Modulation	Intensity Modulation		kHz	DC to 400 (Input level -2 to 0V, Modulation depth >50%/V (typ.))	
Environmental Conditions and others	Operating	Temperature	°C	15 to 35	
		Humidity	%	< 80 (non-condensing)	
	Power Supply		-	AC 100 to 120/ 200 to 240 V±10%, 50/60 Hz	
	Power Consumption		VA	100	
	Dimensions (W) x (D) x (H)		mm	220 x 385 x 131	
	Weight		kg	7	

*7: In case of PMF, polarization axis in alignment with connector key. Polarization extinction ratio is 17 dB (typical value).

Model selection

Model Number	Wavelength Range
260360	1260  1360
250390	1250  1390
TBA	
500630	1500  1630
480640	1480  1640

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 (2014).
This product complies with FDA performance standards for laser products
Except for deviations pursuant to Laser Notice No. 56 dated May 8, 2019.

Ordering Code

TSL-570- P 0 0 1

A B C D E F G

Connector Polish : **SP** : SPC / **AP** : APC
Connector Type : **F** : FC / **S** : SC
Fiber Type : **P** : PMF
See "Model selection" above. (e.g. 480640: 1480 to 1640 nm)
Type : **A** : Type A / **C** : Type C

Contact information



www.santec.com

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