

## 高性能波長可変レーザー光源 TSL-550

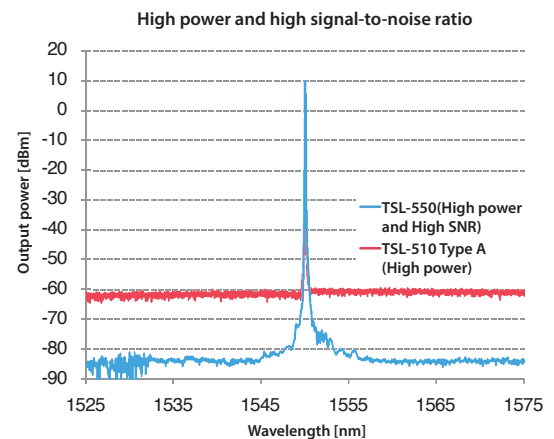
TSL-550は高出力と高い信号対雑音比を両立させた広帯域可変が可能な高性能波長可変レーザー光源です。全域モードホップフリーでの波長可変、ファインチューニング機能、コヒーレントコントロール機能などを標準機能として装備しており、R&Dや生産ラインのマストアイテムとして活用いただけます。TSL-550はASE光雑音を低減し90 dB/0.1 nm以上の非常に高い信号対雑音比を実現しながら、同時に+10 dBm以上の高い光出力を維持する革新的な外部共振器を採用しています。SCPI準拠した外部通信コマンドをサポートしており、リモートコントロールや自動計測に最適です。

波長精度の異なる2種類のモデルからお選びいただけます。Aタイプでは、波長モニタを搭載しており、 $\pm 15$  pmの波長精度を有します。一方、Cタイプでは、高性能波長モニタを搭載しており、 $\pm 3$  pmの高波長精度を実現しています。

TSL-550は複数入力で高い消光比特性の測定が求められる高密度波長分割多重方式(DWDM)部品評価や波長選択スイッチ(WSS)などの次世代部品評価の場で威力を発揮します。また、スイープ繰り返しレートを弊社従来比で2倍に向上、製品検査の場面でスループット改善に大きく貢献します。さらに、Santec製パワーメータMPM-210、偏波コントローラPCU-100および専用ソフトウェアを用いれば、WDL/PDL評価も可能となります。



### Measurement Data



### Features

- ▶ Wide tuning range: from 1260 to 1680 nm
- ▶ High output power: +10 dBm
- ▶ High signal-to-noise ratio: 90 dB/0.1 nm
- ▶ High wavelength accuracy:
  - Type A:  $\pm 15$  pm
  - Type C:  $\pm 3$  pm

### Applications

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

# SANTEC TUNABLE LASERS

## Optical Specifications

Wavelength range: 1260 to 1360nm and 1500 to 1630nm

Category	Parameter	Unit	Performance		
			TypeA	TypeC	
Wavelength Characteristics	Wavelength Tuning Range	nm	1260 to 1360 / 1500 to 1630		
	Wavelength Setting Resolution	pm	0.1		
	Absolute Wavelength Accuracy <sup>*1, *2</sup>	pm	±15	±3	
	Absolute Wavelength Accuracy (operating temperature) <sup>*1</sup>	pm	±20	±5	
	Wavelength Repeatability (typ.) <sup>*1</sup>	pm	±5	±1	
	Wavelength Stability (typ.) <sup>*3</sup>	pm	≤ ±5	≤ ±1	
	Sweep Speed	nm/sec	1 to 100		
Optical power Characteristics	Output Power	Peak (typ.)	≥ 13		
		Full Tuning Range	≥ 10		
	Power Repeatability <sup>*1, *4</sup>	dB		±0.01	
	Power Stability <sup>*3, *4</sup>	dB		±0.01	
	Power Flatness vs. Wavelength <sup>*1, *4</sup>	dB		±0.2	
	Relative Intensity Noise (RIN) (typ.) <sup>*7</sup>	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 <sup>*5</sup>	dB		≥ 70	
	Signal to Source Spontaneous Emission Ratio <sup>*6</sup>	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: At static condition or "Step" sweep mode. \*2: At 25± 1 °C. \*3: For period of 1 hour. Within ± 0.5 °C. \*4: At "Auto" power mode.

\*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 1 nm band within a ±3 nm band around the signal wavelength (typical value).

\*7: At maximum output power.

Wavelength range: 1355 to 1485nm and 1480 to 1630nm

Category	Parameter	Unit	Performance		
			TypeA	TypeC	
Wavelength Characteristics	Wavelength Tuning Range	nm	1355 to 1485 / 1480 to 1630		
	Wavelength Setting Resolution	pm	0.1		
	Absolute Wavelength Accuracy <sup>*1, *2</sup>	pm	±15	±3	
	Absolute Wavelength Accuracy (operating temperature) <sup>*1</sup>	pm	±20	±5	
	Wavelength Repeatability (typ.) <sup>*1</sup>	pm	±5	±1	
	Wavelength Stability (typ.) <sup>*3</sup>	pm	≤ ±5	≤ ±1	
	Sweep Speed	nm/sec	1 to 100		
Optical power Characteristics	Output Power	Peak (typ.)	dBm		≥ 13
		≥ 10dBm Range	dBm		≥ 10 (1380 to 1485 nm) @1355 to 1485 nm model ≥ 10 (1500 to 1630 nm) @1480 to 1630 nm model
		Full Tuning Range	dBm		≥ 7
	Power Repeatability <sup>*1, *4</sup>	dB		±0.01	
	Power Stability <sup>*3, *4</sup>	dB		±0.01	
	Power Flatness vs. Wavelength <sup>*1, *4</sup>	dB		±0.2	
Relative Intensity Noise (RIN) (typ.) <sup>*7</sup>	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 <sup>*5</sup>	dB		≥ 70	
	Signal to Source Spontaneous Emission Ratio <sup>*6</sup>	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: At static condition or "Step" sweep mode. \*2: At 25± 1 °C. \*3: For period of 1 hour. Within ± 0.5 °C. \*4: At "Auto" power mode.

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

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

\*7: At maximum output power.

## Optical Specifications

Wavelength range: 1560 to 1680nm

Category	Parameter		Unit	Performance	
				TypeA	TypeC
Wavelength Characteristics	Wavelength Tuning Range		nm	1560 to 1680	
	Wavelength Setting Resolution		pm	0.1	
	Absolute Wavelength Accuracy *1, *2		pm	±15	±3
	Absolute Wavelength Accuracy (operating temperature) *1		pm	±20	±5
	Wavelength Repeatability *1		pm	±5	±1
	Wavelength Stability (typ.) *3		pm	≤±5	≤±1
	Sweep Speed		nm/sec	1 to 100	
Optical power Characteristics	Output Power *8	Peak (typ.)	dBm	≥ 13	
		Full Tuning Range	dBm	≥ 10	
	Power Repeatability *1, *4		dB	±0.01	
	Power Stability *3, *4		dB	±0.01	
	Power Flatness vs. Wavelength *1, *4		dB	±0.2	
	Relative Intensity Noise (RIN) (typ.) *7		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	≥ 35	
	Signal to Source Spontaneous Emission Ratio *6		dB/nm	≥ 45 (≥ 55 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: At static condition or "Step" sweep mode. \*2: At 25± 1 °C. \*3: For period of 1 hour. Within ± 0.5 °C. \*4: At "Auto" power mode.

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

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

\*7: At maximum output power. \*8: Warrant range is 1560 to 1650 nm






## General specifications

Interface	Optical Output Connector		-	FC or SC, SPC or APC
	Optical Fiber		-	SMF or PMF *1
	Communication		-	GP-IB (IEEE 488.2), USB, RS-232C
	Power Monitor		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	°C	15 to 35
		Humidity	%	< 80 (non-condensing)
	Power Supply		-	AC 100-240 V±10%, 50/60 Hz
	Power Consumption		VA	100
	Dimensions (W) x (D) x (H)		mm	210x440x110
Weight		kg	6.5	

\*1: In case of PMF, polarization axis in alignment with connector key. Polarization extinction ratio is 17 dB (typical value).

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## Model selection

Model Number	Wavelength Range
260360	1260  1360
355485	1355  1485
480630	1480  1630
500630	1500  1630
560680	1560  1680

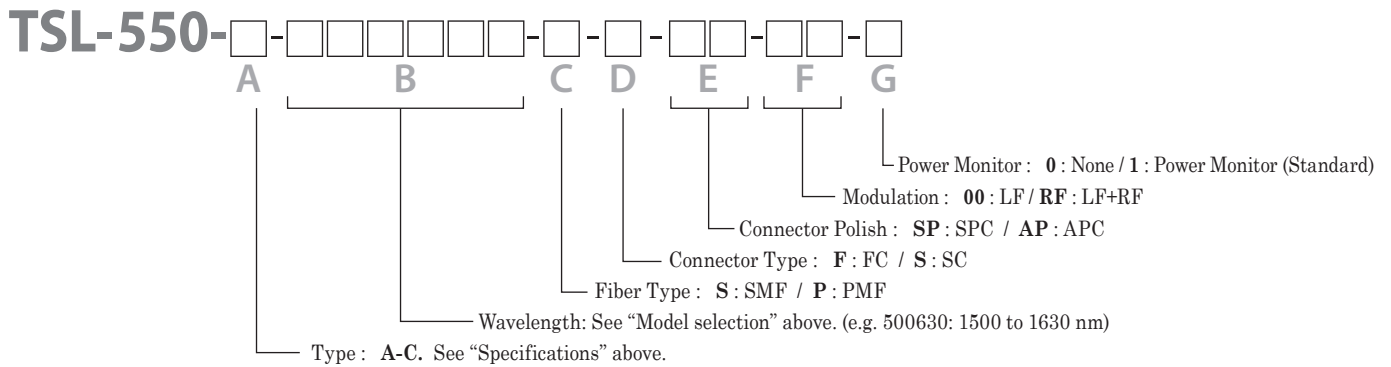
Other wavelength range model is available on request. Please contact Santec Sales.

## 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



[www.santec.com](http://www.santec.com)



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