

# TUNICS T100R

## Tunable Laser Reference Model

TUNICS T100R provides best-in-class specifications combined with a wide array of ports and features. Its design stems from years of experience manufacturing external cavity lasers. TUNICS proven reliability is combined with Yenista's patented T100 cavity for high output power and ultra-low SSE. This high specification instrument will meet all your needs without compromise.



### Key Features

#### ±5 pm Absolute Wavelength Accuracy

The T100R has a built-in Michelson type interferometric wavelength meter coupled to an acetylene gas cell. This ensures the output wavelength is always precisely set, to an absolute wavelength accuracy better than ±5 pm.

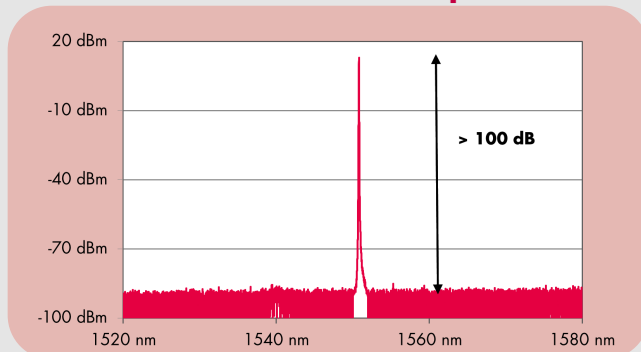
#### Outstanding Wavelength Stability

The wavelength meter is also used to continuously monitor and adjust the wavelength. This gives outstanding stability, better than 1 pm/h.

#### Step-by-Step or Fast Mode-Hop-Free Scans

The laser can be tuned accurately to any wavelength or swept smoothly at any speed from 1 to 100 nm/s. This very fast scan allows materials or components to be characterised within seconds. Every scan is mode-hop-free over the full wavelength and power ranges.

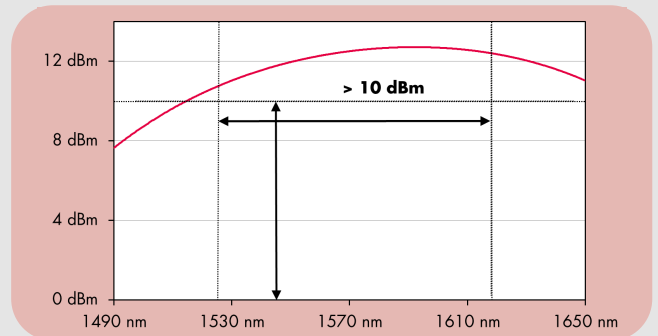
#### 100 dB / 0.1 nm Ultra-low Optical Noise



Yenista's unique T100 cavity eliminates the broadband spontaneous emission (SSE) that is normally present in an external cavity laser's output. The T100R has the lowest figure of merit for SSE of any tunable laser on the market and gives a dramatic improvement in a measurement's dynamic range.

#### High Power & 160 nm Tuning Range

Over 10 mW output power is available from 1520 to 1620 nm. The full wavelength range extends beyond this, covering 1490 to 1650 nm for added flexibility.



#### Active Mode-Hop-Free Scan

Yenista's patented active mode-hop control ensures every scan is completely mode-hop-free. Reliable wavelength sweeps are attained with long-term reliability.

### Applications

#### Telecom System & Component Testing

The ultra-low SSE is a big advantage and enables repeatable high dynamic range measurements. Production environments benefit from the proven reliability and fast mode-hop-free scan.

#### Interferometry & Metrology

For both static and scanning interferometric systems.

#### Sensors & Spectroscopy

0.1 pm fine scanning and wavelength modulation are additional features available for these applications.

#### Scientific Research & Development

Extensive input and output ports provide added flexibility and satisfy a wide range of test requirements.

# Specifications

<b>General</b>	Wavelength range		1490 to 1650 nm
	Output power	1520 - 1620 nm	$\geq +10$ dBm
		Full wavelength range	$\geq 0$ dBm
	Signal to source spontaneous emission ratio <sup>*1</sup>		$\geq 95$ dB (100 dB typical)
	Side mode suppression ratio <sup>*2</sup>		$\geq 45$ dB
	Stability <sup>*3</sup>	Wavelength	$\pm 1$ pm / h ( $\pm 1$ pm / 24h typical)
		Output power	$\pm 0.01$ dB / h ( $\pm 0.025$ dB / 24h typical)
	Relative intensity noise <sup>*2, *4</sup>		-145 dB/Hz typical
Spectral width (FWHM)		>100 MHz (coherence control on) 500 kHz typical (coherence control off)	
<b>Step Mode</b>	Absolute wavelength accuracy <sup>*5</sup>		$\pm 5$ pm (2.5 pm typical)
	Wavelength setting repeatability		$\pm 1$ pm typical
	Wavelength setting resolution		1 pm (0.1 pm in fine tuning mode)
	Fine tuning mode range		$\pm 25$ pm ( $\pm 2$ GHz)
	Tuning speed		Approximately 1s for 100 nm step
<b>Sweep Mode</b>	Mode-hop-free range <sup>*6</sup>		Full wavelength range
	Continuous sweep speed		Adjustable from 1 to 100 nm/s
	Power flatness during sweep		$\pm 0.25$ dB typical
	Power repeatability sweep to sweep <sup>*7</sup>		$\pm 0.05$ dB typical
<b>Modulation</b>	Low frequency modulation		10 kHz to 8 MHz
	High frequency modulation		30 kHz to 100 MHz
<b>Interfaces</b>	Output fiber type		SMF or PMF (option)
	Output connector		FC/APC
	Output isolation		35 dB
	Communication		RS-232C, GPIB (IEEE-488.2 <sup>*8</sup> ) and Ethernet
<b>Operating Conditions</b>	Temperature / humidity range		+18° to +30°C (+64 to +85°F) / <80% (non-condensing)
	Power supply		100 to 240 V a.c. / 50 to 60 Hz / 60 W
	Laser safety classification		Class 1M
<b>Size</b>	Dimensions (W x D x H)		448 x 370 x 133 mm
	Weight		12.5 kg

Unless otherwise noted, all specifications are given after 30 minutes warm-up.

\*1: Measured over a 0.1 nm bandwidth  $\pm 1$  nm from the signal.

\*2: Measured at 0 dBm output power.

\*3: Over 1 hour at constant temperature after 2 hour warm up.

\*4: Measured at 100 MHz.

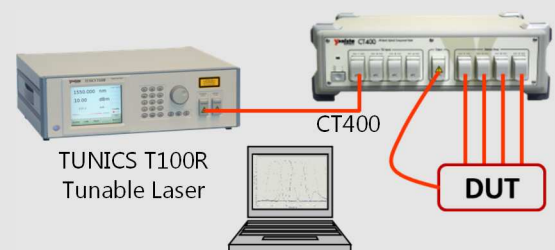
\*5: Within 3°C from self-calibration temperature.

\*6: Validated for specified wavelength ranges at 0 & +10 dBm.

\*7: Over 100 scans at constant temperature.

\*8: Tested & validated with National Instruments GPIB board.

TUNICS lasers are designed to integrate with Yenista's CT400 Component Tester to provide a complete swept-wavelength test solution. The CT400 can combine up to four lasers to cover any wavelength range from 1260 to 1650 nm. 5 pm wavelength accuracy is achieved with 100 nm/s scans and 60 dB dynamic range.



Information and specifications are subject to change without notice.  
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