

CTP10

COMPONENT TEST PLATFORM



Efficiently test passive components in 24/7 operation. Perform single sweep insertion loss and return loss measurements with unprecedented dynamic range, speed and resolution.

SPEC SHEET

KEY FEATURES

Industry's fastest swept wavelength measurement of insertion loss (IL) and return loss (RL)

State-of-the-art electronics achieve full dynamic range characterization in a single sweep, ideal for components with high-contrast spectrum

Hosts ten hot-swappable modules for testing components with up to 50 optical outputs

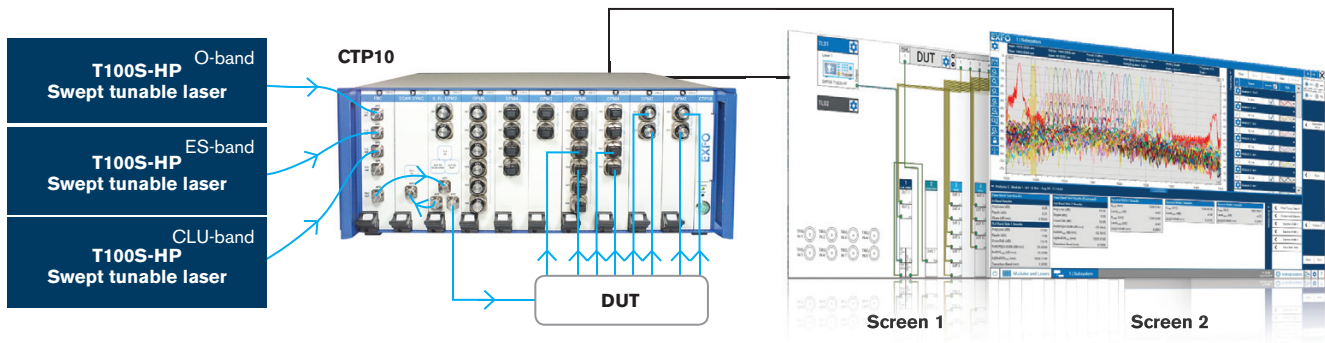
Powerful and intuitive graphical user interface (GUI) for easy test configuration and measurement analysis

Full-band operational range, covering wavelengths from 1240 nm to 1680 nm

CTP10 PLATFORM

The CTP10 is a modular measurement platform for efficient testing of passive components in 24/7 operation. The platform operates together with the T100S-HP tunable laser to achieve high-resolution spectral characterization within seconds. Single-sweep insertion loss measurements with up to 80 dB dynamic range can be performed with unprecedented speed and resolution. With up to 50 detectors connected to the platform, it is an ideal instrument for characterization of large port count components used in DWDM networks and photonic integrated circuit (PIC) applications.

The platform runs a dedicated operating system with powerful data processing electronics so that there is virtually no time lost in measurement data transfer. It also features a large internal hard drive for direct data storage. What's more, the CTP10 can be remotely controlled using a set of SCPI-compatible commands and queries.



NEXT-GEN MODULES

The CTP10 platform hosts up to 10 hot-swappable modules, providing a variety of optical tools to perform high-quality IL and RL measurement. The OPM series detectors are offered with a choice of FC or SC fibre optic adaptors. To operate, the CTP10 requires one IL RL OPM2 module and a SCAN SYNC module. Full-band operation can be obtained by adding an FBC module.

CTP10 OPTICAL MODULES



Optical detectors

With a choice of 2, 4 or 6 high-speed InGaAs detectors per unit, the OPM series modules feature state-of-the-art electronics to enable full dynamic range measurement in a single laser sweep.



Insertion and return loss

Featuring real-time power monitoring, return loss measurement and two optical detectors, the IL RL OPM2 series module is the keystone of the CTP10 platform.



Wavelength detection

Based on high-speed optical triggered wavelength detection, the SCAN SYNC series module offers uncompromising wavelength accuracy and sampling resolution even for high-speed testing.



Full-band combiner

The FBC series module offers automated testing across the full telecom range by combining up to 4 tunable lasers into a single output.

FASTEST SWEPT IL AND RL

Fast and reliable insertion loss and return loss measurements are key to any R&D or manufacturing passive component test bench. Other parameters such as isolation, free spectral range or directivity all rely on a high-quality loss measurement.

Thanks to its state-of-the-art electronics, the CTP10 outperforms all existing instruments. It offers a 70 dB dynamic range for IL in a single sweep for a tunable laser speed at 100 nm/sec with 10 dBm output power and eliminates the need for post-processing steps such as trace stitching and bandwidth correction. The platform can also operate at sweep speeds in excess of 500 nm/s while maintaining a sampling resolution of 1 pm.

The CTP10 can test components with a high-contrast spectrum, such as wavelength-selective switches or DWDM multiplexers, without compromising on the quality of optical power measurement. The module's detectors have no slew rate issues and can readily measure a change in insertion loss of more than 10 dB/pm at 100 nm/sec scanning speed.

EXAMPLES OF MEASUREMENT TIME OBSERVED ON CTP10

Test span	Sweep speed	10 nm/s	40 nm/s	100 nm/s
10 nm		< 3 s	< 2 s	< 2 s
40 nm		< 6 s	< 3 s	< 3 s
100 nm		< 12 s	< 5 s	< 4 s
400 nm		Not measured	Not measured	< 15 s

Note

Scans performed with a single T100S-HP laser, except for 400 nm scan performed with three T100S-HP.

POWERFUL INTUITIVE GUI

The feature-rich software offers a powerful and intuitive graphical user interface displayable on two screens: one for active module overview and control of the tunable lasers and another for display and analysis of the swept measurements

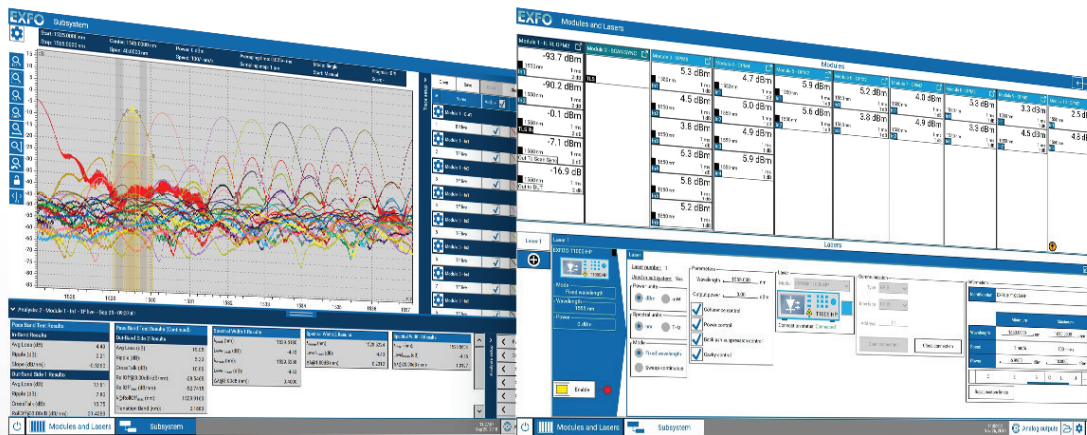


Figure 1. Display and analysis of measurements

Figure 2. Module and laser overview

MULTIPLE OUTPUT DEVICE TESTING

Insertion loss and return loss measurement can be performed on 50 outputs simultaneously by combining an IL RL OPM2 module with a SCAN SYNC module and completing the platform with 8 OPM6 modules. The Test Setup functionality of the GUI simplifies the testing process of multiple-output optical devices.

FULL-BAND READY

The CTP10 can operate seamlessly between 1240 nm and 1680 nm and is fully compatible with EXFO's T100S-HP series of tunable lasers. When combining the T100S-HP-O+, T100S-HP-ES and T100S-HP-CLU with the FBC module, the CTP10 can automatically switch between lasers for fast and reliable full-band testing.

WAVELENGTH REFERENCING TOOLS

The typical wavelength accuracy of the CTP10 is ± 5 pm, with a repeatability better than ± 1 pm. However, for experiments where absolute wavelength referencing is paramount, the CTP10 can be used with the wavelength reference material accessories. The wavelength reference material contains hydrogen fluoride or hydrogen cyanide reference cells exhibiting absorption lines in the O-band and C-band respectively for excellent absolute wavelength accuracy.



SPECIFICATIONS^a—OPTICAL MEASUREMENT

Wavelength	Operating wavelength range	1240 nm–1680 nm
	Absolute wavelength uncertainty (typ.)	±5 pm
	Wavelength repeatability (typ.) ^b	±1 pm
	Wavelength display resolution	1 pm to 2000 pm
Optical detectors	Sensor type	InGaAs
	Compatible fiber type	SMF28
	Compatible optical adaptors	FC or SC connectors
	Maximum safe power	11 dBm
	Averaging time	Manual: 1 μs to 1 s, automatic
	Optical power acquisition resolution	< 0.0001 dB
	Return loss (typical)	> 56 dB
Optical interfaces	Optical connectors	FC type
	Maximum safe power	TLS IN: 17 dBm SCAN SYNC: 14 dBm
Insertion loss ^c	Dynamic Range (typical at 10 nm/s)	> 80 dB
	Dynamic Range (typical at 100 nm/s)	> 70 dB
	Insertion loss uncertainty (typical at 10 nm/s) ^d	±0.005 dB
	Noise 2 σ (at 10 nm/s) (typical)	0 dB to 20 dB: ±0.005 dB 20 dB to 40 dB: ±0.005 dB 40 dB to 50 dB: ±0.010 dB 50 dB to 60 dB: ±0.035 dB
	Noise 2 σ (at 100 nm/s) (typical)	0 dB to 20 dB: ±0.005 dB 20 dB to 40 dB: ±0.01 dB 40 dB to 50 dB: ±0.05 dB 50 dB to 60 dB: ±0.400 dB
Return loss ^e	Dynamic range (typical at 10 nm/s)	> 55 dB
	Return loss uncertainty (typical) ^f	±0.5 dB
Swept measurement	Measurable power variation (typical) ^g	>10,000 dB/nm at 100 nm/s
	Optimum tunable laser sweep speed range ^h	10 nm/s–100 nm/s

SPECIFICATIONS—HARDWARE

Interfaces (rear panel of mainframe)	Display ports	2x (HDMI + display port) Compatible with split screen display and touchscreen with multitouch control
	Remote	Ethernet, USB (Option: GPIB)
	Electrical inputs (hardware ready)	10x BNC
	Electrical outputs (hardware ready)	7x BNC
	Other inputs	5x USB 2.0
Interfaces (front panel of mainframe)	Number of module slots	10
	Other inputs	3x USB-A 2.0
Data storage	Hard drive	HDD, 2 TB
General	Storage temperature	–20 °C to 65 °C (–4 °F to 149 °F)
	Operating temperature	5 °C to 40 °C (41 °F to 104 °F)
	Weight (mainframe)	8.5 kg (18.7 lb)
	Weight (module)	1 kg to 1.2 kg (2.2 lb to 2.6 lb)
	Dimensions (mainframe - H x W x D)	178 mm x 482 mm x 435 mm (7 in x 19 in x 17 in) 4U full rack with rackmount fixtures
	Power supply	100 V to 240 V AC (50/60 Hz)

Notes

- a. For constant temperature of 23 °C ±1 °C, wavelength range: 1250 nm–1650 nm, SMF28 patchcord, FC/APC connector, unless otherwise specified
- b. Over one minute, within optimum tunable laser sweep speed range, laser optical power 10 dBm
- c. Wavelength range: 1250 nm–1630 nm, tunable laser power 10 dBm, after zeroing of optical detector, averaging time set to Automatic
- d. For IL < 20 dB, after power referencing, not including connector uncertainty, degree of polarization < 5%
- e. Wavelength range: 1250 nm–1630 nm, tunable laser power 10 dBm
- f. For RL < 40 dB, degree of polarization < 5%
- g. For IL < 45 dB, tunable laser power +10 dBm
- h. Compatible tunable laser sweep speed range: > 500 nm/s

ORDERING INFORMATION

CTP10-XX

GPIB option ■

0 = Without GPIB
GPIB = With GPIB

Example: CTP10-GPIB

FBC-58

Example: FBC-58

IL-RL-OPM2-58-XX

Connector adaptor ■

FOA-322-EMC = FC ultra-low-reflection: FC (PC/SPC/UPC/APC)
FOA-354-EMC = SC ultra-low-reflection: SC (PC/SPC/UPC/APC)

Example: IL-RL-OPM2-58-322

SCAN-SYNC-58

Example: SCAN-SYNC-58

OPMXX-XX

Number of detectors ■

2 = 2 power meters
4 = 4 power meters
6 = 6 power meters

Connector adaptor ■

FOA-322-EMC = FC ultra-low-reflection: FC (PC/SPC/UPC/APC)
FOA-354-EMC = SC ultra-low-reflection: SC (PC/SPC/UPC/APC)

Example: OPM6-322

WLRM-NS270X

Spectral reference range ■

1 = C-band
2 = O-band

Example: WLRM-NS2701

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