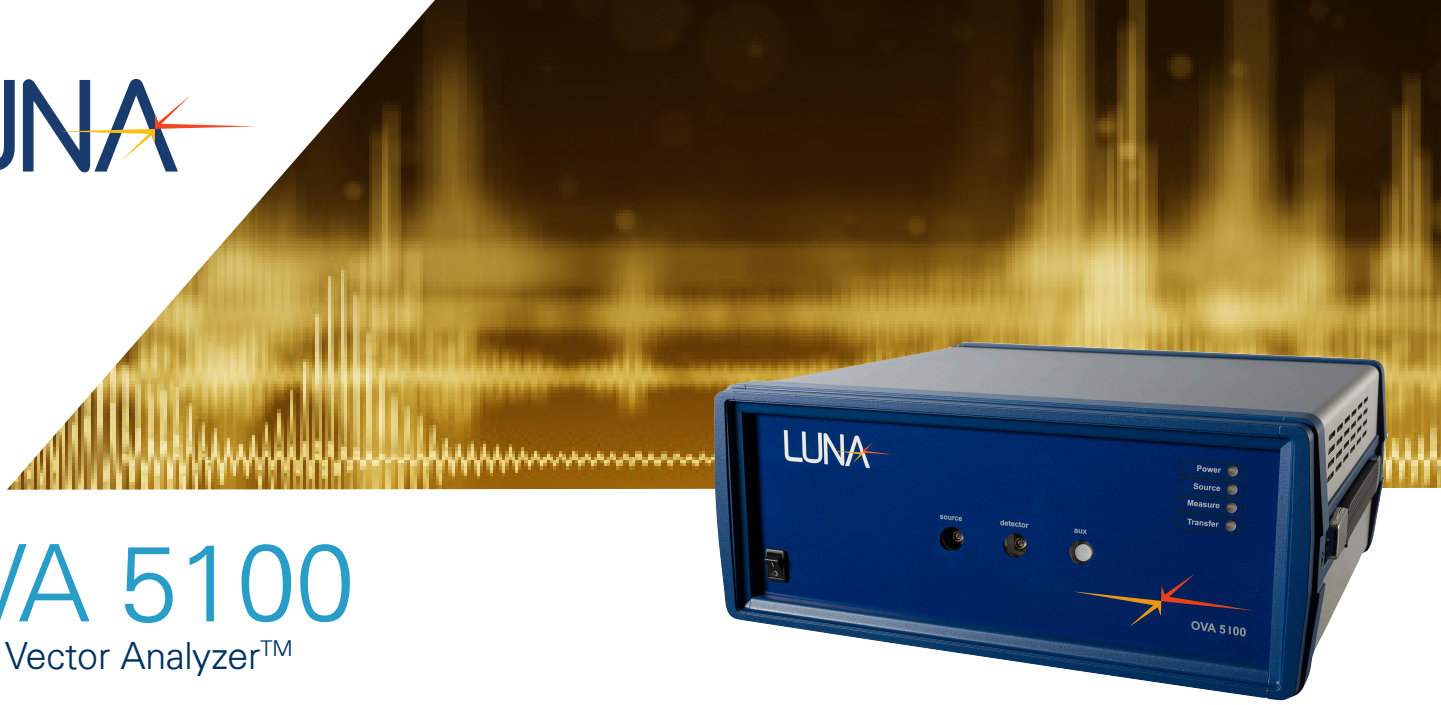


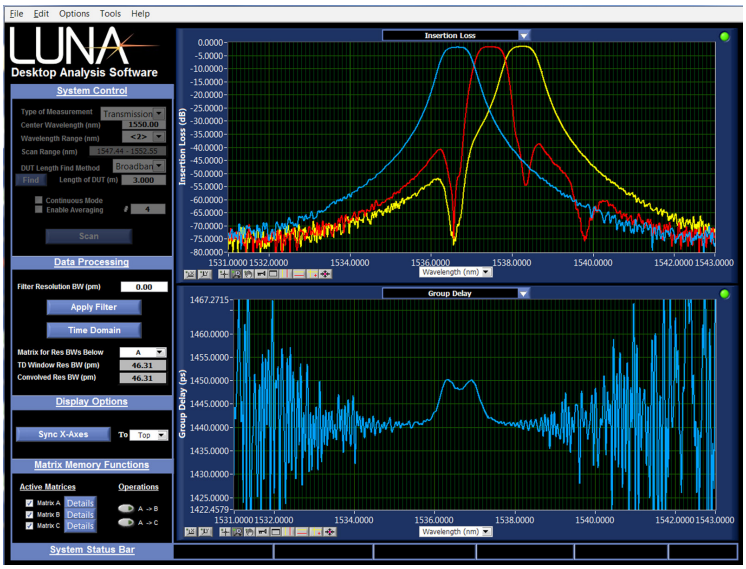
OVA 5100

Optical Vector Analyzer™

The Luna OVA 5100 is the fastest, most accurate and economical tool for loss, dispersion and polarization analysis of modern optical devices and systems, including photonic integrated circuits (PICs).

The OVA 5100 is a direct replacement for the OVA 5000 with equivalent functionality, but packaged in a smaller and lighter form factor.

The OVA 5100 is the ideal device for single-connection, all-parameter characterization of fiber components from couplers to specialty fiber and everything in between (Fiber Bragg Gratings, arrayed waveguide gratings, free-space filters, tunable devices, amplifiers, etc.), all with a single sweep of a tunable laser.



With a single scan, the OVA 5100 simultaneously measures the complete transfer function of photonic components. This screen shows IL and Group Delay versus wavelength.

Perform all-parameter characterization of photonic devices with a single scan

KEY FEATURES

- Single measurement, all-parameter analysis of components
- Full characterization of passive devices in under 3 seconds
- Complete polarization response
- With single scan, simultaneously measure:
  - Insertion Loss (IL)
  - Polarization Dependent Loss (PDL)
  - Polarization Mode Dispersion (PMD) and Second Order PMD
  - Chromatic Dispersion (CD)
  - Group Delay (GD)
  - Optical Time Domain Response
  - Jones Matrix Elements
  - Optical Phase Response
- High resolution C and L band (OVA 5100) or O band (OVA 5113) capability
- Real-time measurements
- User-friendly interface

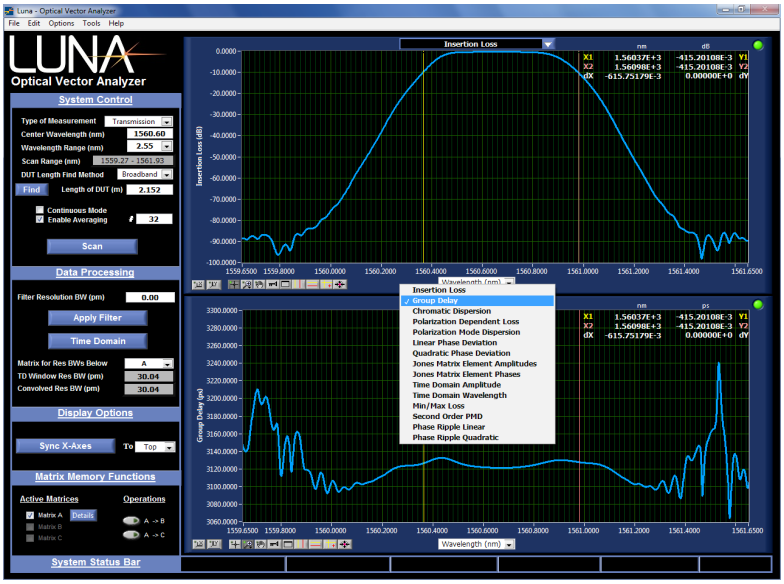
APPLICATIONS

- Analyze planar light circuits and silicon photonic devices
- Characterize optical fiber components
- Measure both spectral response and time delay response
- Improve device simulations and models with complete transfer function

COMPLETE CHARACTERIZATION IN A SINGLE SCAN

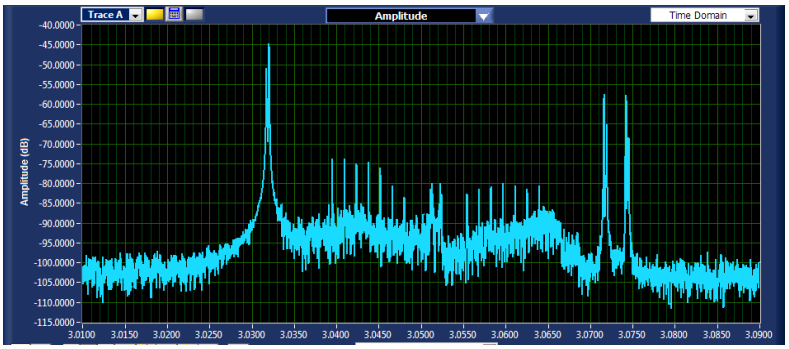
The OVA 5100 fully analyzes the optical properties of integrated photonic devices and subsystems, providing comprehensive characterization with a single scan and a single connection. The OVA 5100 uses an interferometric method to directly measure the linear transfer function (Jones Matrix) and simultaneously measure its four complex elements at every wavelength. From this data, all standard linear parameter measurements, including IL, RL, GD, CD, PMD and PDL, can be extracted with the highest dynamic range and accuracy available.

The result is an extremely fast, high-resolution and accurate device characterization that is ideal for silicon photonics and other integrated photonics devices.



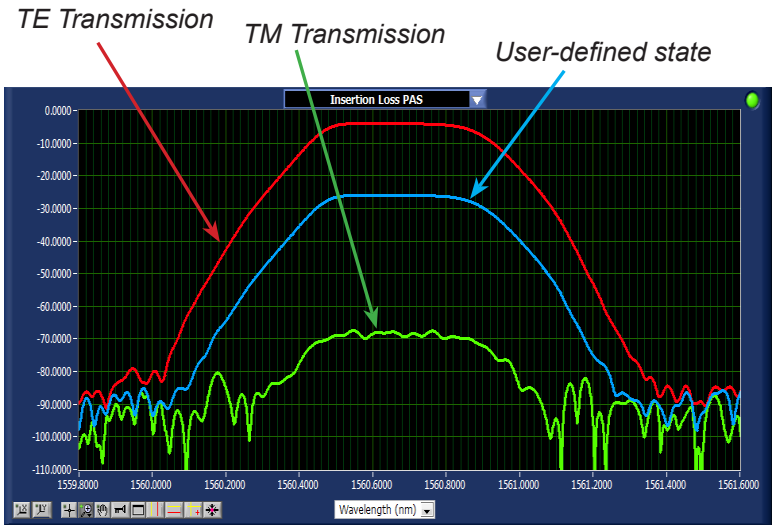
HIGH-RESOLUTION "ZERO DEAD ZONE" REFLECTOMETRY

The OVA 5100 can also operate as a high resolution reflectometer with the Optical Frequency Domain Reflectometer (OFDR) option. An OVA 5100 with the OFDR option delivers reflectometer measurements with 20 µm sampling resolution, "Zero Dead Zone" and high sensitivity (>95 dB). With this option, you can easily "look inside" miniature photonic devices and discriminate reflective events and impurities on the scale that typically occurs within a waveguide.



COMPLETE POLARIZATION ANALYSIS

With the optional Polarization Analysis Software add-on, the OVA 5100 can measure, calculate and display the response of an optical component to simulated input polarization states, eliminating the tedious and difficult task of polarization alignment. The software displays the insertion loss, group delay and impulse response to a user defined input polarization state. Easy-to-use sliders allow the user to adjust the simulated input polarization to any desired state. The anlaysis software also plots minimum and maximum insertion loss, group delay and chromatic dispersion of the principle states of polarization (PSP), as well as the polarization averaged quantities (IL, GD, CD, etc.), PMD, PDL, Jones Matrix elements and time domain information.



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PERFORMANCE

Parameter	Specification		Units
	Fast Mode[1]	Averaging Mode[2]	
Wavelength Range			
OVA 5100	1525 - 1610		nm
OVA 5113	1270 - 1340		nm
Wavelength			
Standard resolution	1.6		pm
Accuracy[3]	±1.5		pm
Repeatability	±0.1		pm
Optical Phase Error			
30 m mode	±0.05	±0.0075	radians
Loss Characteristics			
Dynamic range	60	80	dB
Ripple[4]	±0.05	±0.01	dB
Resolution	±0.05	±0.002	dB
Insertion loss accuracy	±0.1	±0.05	dB
Return loss accuracy	±0.2	±0.1	dB
Chromatic Dispersion			
Accuracy	±10	±5	ps/nm
Group Delay			
Range[5]	6		ns
Accuracy	±0.2	±0.1	ps
Loss range[4]	45	60	dB
PMD			
Range[5]	6		ns
Accuracy - first order	±0.03 (100 pm steps) ±0.15 (30 pm steps)	±0.08	ps
Accuracy - second order	±10	±2	ps^2
Loss range[4]	40	50	dB
PDL			
Extinction ratio (dynamic range)	40	50	dB
Accuracy	±0.05	±0.03	dB
Measurement Timing			
Laser sweep rate	70		nm/s
All-parameter measurement rate[6]	30		ms/nm
Fully specified measurement time[7]	12	55	s
Real-time mode update rate (2.5 nm scan)	1	-	Hz
Maximum Device Length (including leads)			
Transmission	150	150	m
Reflection	75	75	m
Physical			
Class 1 Laser	<10		mW
Operating power	100		W
Weight (controller not included)	25 (11.4)		lb (kg)
Case Size (W X D X H)	14.4 x 13.6 x 6.5 (366 x 345 x 165)		in (mm)

NOTES

1. Fast Mode: No averaged calibration scans, 4 averaged measurement scans, 30 pm resolution bandwidth, 8 m device length (accuracies verified using NIST-certified artifacts except for IL). High dynamic range option enabled.
2. Averaging Mode: 4 averaged calibration scans, 64 averaged measurement scans, 30 pm resolution bandwidth, 8 m device length (accuracies verified using NIST-certified artifacts except for IL). High dynamic range option enabled.
3. Accuracy maintained by an internal NIST-traceable HCN gas cell.
4. 80, 60 and 50 dB dynamic ranges in 'Averaging Mode' for IL, GD and PMD are with the "High Dynamic Range" option installed and enabled.
5. Specifies the total device impulse-response duration that may be captured.
6. Rate calculated from combined laser sweep and analysis time per scan.
7. Measurement with full specification (see note 4) over Fast Mode: 40 nm range, and Averaging Mode: 2.5 nm range. Excludes calibration time.

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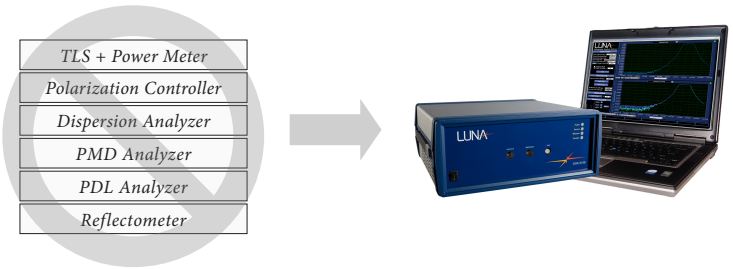
COMPREHENSIVE CHARACTERIZATION WITH A SINGLE INSTRUMENT

The OVA 5100 is the industry's only instrument that measures the complete spectral and time delay response of optical components with a single connection and with a single high-speed measurement scan. The OVA 5100 simplifies your test setup and reduces your test time by integrating the the functionality of several optical instruments and components in a single instrument.



Replace all these instruments with a single OVA 5100.

ORDERING

Catalog #	Description	Includes
OVA 5100	Optical Vector Analyzer, 1525 nm - 1610 nm	OVA 5100 mainframe for C and L band, OVA software, instrument controller (workstation-class laptop or desktop PC) and accessory kit.
OVA 5113	Optical Vector Analyzer, 1270 nm - 1340 nm	OVA 5100 mainframe for O band, OVA software, instrument controller (workstation-class laptop or desktop PC) and accessory kit.
OPT02003	Desktop Analysis Software	Software providing all of the analysis and data visualization of the OVA 5100, using only saved OVA measurement data files.
OPT02004	OFDR Option	Optical Frequency Domain Reflectometer (OFDR) software for performing high-resolution reflectometry measurements.
OPT02005	Polarization Analysis Software	Analyzes response to simulated input polarization states.
OPT02006	Expanded Dynamic Range	Enables enhanced dynamic range (see Performance table).
OPT02007	Custom Software Development Kit	SDK toolkit with DLLs allowing custom GUI development.

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