# OPTICAL VECTOR ANALYZER (CTe/STe)

**Luna Technologies' Optical Vector Analyzer (OVA)** is the fastest, most accurate and economical tool for loss, dispersion and polarization measurements of modern optical networking equipment. The OVA is the ideal tool 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, …)

With the OVA, development cost, production cost, and time to market for DWDM components can be reduced by up to sixty percent. Luna's OVA characterizes passive optical components with industry-leading speed and accuracy, all with a single sweep of a tunable laser. Our patented technique allows direct measurement of a passive device's linear transfer function. Using the linear transfer function the OVA provides **instant access** to:

- Insertion Loss (IL)
- Polarization Dependent Loss (PDL)
- Polarization Mode Dispersion (PMD) and 2nd order PMD
- Chromatic Dispersion (CD)
- Group Delay (GD)
- Optical Time Domain response
- Jones Matrix elements
- Optical Phase Response

The OVA's future-proof design also allows access to new standards like second order PMD. Luna's unique time domain windowing feature enables the operator to examine a device's impulse response, revealing the causes of degraded specifications.



The industry's first completely integrated, single-scan, self-calibrating solution for all-parameter characterization of passive optical components.

## KEY FEATURES AND PRODUCT HIGHLIGHTS

*All-parameter analysis*

*Total system integration*

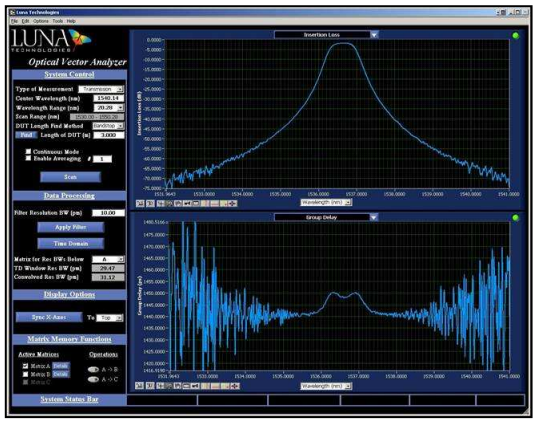
*High resolution C-L band capability*

*Real-time measurements*

*Integrated, easy to use interface*

*Time domain viewing*

*Complete polarization response*



# OPTICAL VECTOR ANALYZER

| Parameter | Fast mode* | | Averaging Mode | | Units |
|---|---|---|---|---|---|
| Option | CTe | STe | CTe | STe | |
| **Wavelength range:** | 1290 -1370 or 1525-1605 | | | | nm |
| **Wavelength:** | | | | | |
| Standard Resolution | 3.2 | | 3.2 | | pm |
| High Resolution | 1.6 | | 1.6 | | pm |
| Accuracy[1] | ± 1.5 | | ± 1.5 | | pm |
| Repeatability | ± 0.1 | | ± 0.1 | | pm |
| **Optical phase error** | ± 0.05 | | ± 0.0075 | | radians |
| **Loss characteristics:** | | | | | |
| Dynamic range[2] | 60 | | 90 | | dB |
| Ripple | ± 0.05 | | ± 0.01 | | dB |
| Resolution | ± 0.05 | | ± 0.002 | | dB |
| Insertion Loss Accuracy[3] | ± 0.1 | | ± 0.05 | | dB |
| Return Loss Accuracy[3] | ± 0.2 | | ± 0.1 | | dB |
| **Chromatic dispersion:** | | | | | |
| Accuracy[3] | ± 15 | | ± 3 | ± 5 | ps/nm |
| **Group delay:** | | | | | |
| Range[4] | 3 or 6 | | 3 or 6 | | ns |
| Accuracy[3] | ± 0.2 | ± 0.5 | ± 0.05 | ± 0.1 | ps |
| Loss range[2] | 40 | | 60 | | dB |
| **PMD:** | | | | | |
| Range[4] | 3 or 6 | | 3 or 6 | | ns |
| Accuracy[3] – 1st Order | ± 0.2 | | ± 0.05 | | ps |
| Accuracy[3] – 2nd Order | ± 10 | | ± 2 | | $ps^2$ |
| Loss range[2] | 35 | | 50 | | dB |
| **PDL:** | | | | | |
| Extinction ratio | 40 | | 50 | | dB |
| Accuracy[3] | ± 0.05 | | ± 0.03 | | dB |
| **Measurement Timing:** | | | | | |
| Laser sweep rate | 70 | 35 | 70 | 35 | nm/s |
| All-parameter measurement rate[5] | 55 | 100 | 55 | 100 | ms/nm |
| Fully specified measurement time[6] | 12 | 20 | 12 | 20 | s |
| Real-time mode update rate[7] | 4 | 3 | NA | NA | Hz |
| **Maximum device length (including leads)** | 30 | 70 | 30 | 70 | meters |

1- Accuracy maintained by an internal NIST-traceable HCN gas cell.
2- 90, 60 and 50 dB dynamic ranges in 'Averaging Mode' for IL, GD and PMD are with the "High Dynamic Range Averaging" option installed and enabled.
3- **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).
**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)
4- Specifies the total device impulse-response duration that may be captured.
5- Combined laser sweep and analysis time per scan.
6- Measurement with full specification (see note 2) over Fast Mode: 40 nm range, and Averaging Mode: 2.5 nm range. Excludes calibration time.
7- For 2 nm scan range.
*results are typical