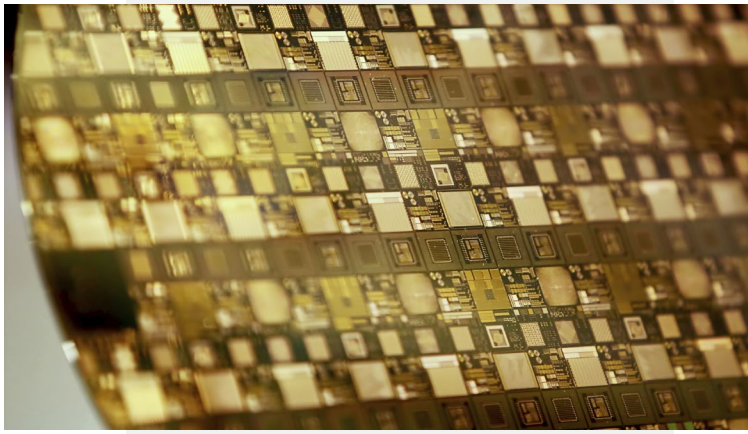
LUNA



Silicon Photonics and PIC Testing

The fastest and most complete characterization of silicon photonics and PICs

Luna's unique test systems, based on optical frequency-domain reflectometry (OFDR), deliver accuracy and speed for testing modern inegrated optical components.

"See Inside" Components with 10 µm Resolution
Luna's ultra-high resolution reflectometers offer backscatter-level sensitivity for unprecedented distributed loss analysis of passive components.

Complete Component Characterization with Single Instrument
Luna's Optical Vector Analyzer (OVA) measures a passive component's linear transfer function (Jones Matrix) with a single scan, yielding insertion loss (IL), group delay (GD), chromatic dispersion (CD), polarization mode dispersion (PMD), polarization dependent loss (PDL), and other critical parameters.

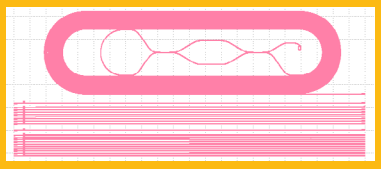
NEW 6415 Lightwave Component Analyzer
Luna's new 6415 combines high-speed and high-resolution reflectometer measurements with the ability to also analyze IL in transmission, making it ideal for manufacturing test and qulaity control applications.

Applications

- Manufacturing test
- Quality control
- Diagnose production issues
- Characterize and analyze designs
- Validate models and improve simulations
- Passive optical components and modules - filters, PLCs, AWGs, MUX/DEMUX, splitters, gratings, WSS, ROADMs, etc.

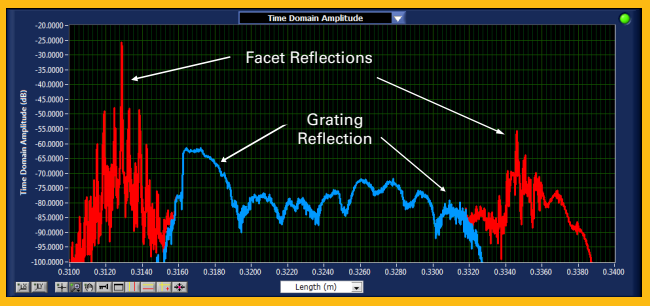
Example: Characterization of Planar Waveguides

Planar optical waveguides, a key building block of silicon photonic platforms, present several unique measurement challenges, including greater losses per unit length and high polarization dependency.

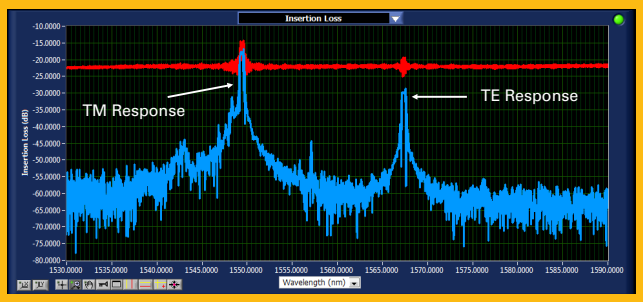


Luna's swept laser interferometric technology is able to scan the device and trace reflectivity along the length of the waveguide with sub-mm detail and fully characterize the optical path. For this example waveguide grating, the time domain trace allows easy identification of the facet and grating reflections.

Using the Luna analysis software, you can select only the grating reflection and easily observe the different TM and TE polarization effects in the spectral response. Otherwise, the overall spectral response (shown in red trace on bottom plot) is dominated by the large facet reflections.



The time domain response clearly shows the large facet reflections and grating reflection of the silicon photonic waveguide.



Spectral analysis of only the grating reflection (blue trace), selected via the time domain response, easily identifies the grating peaks. The overall response of the waveguide is shown by the red trace.

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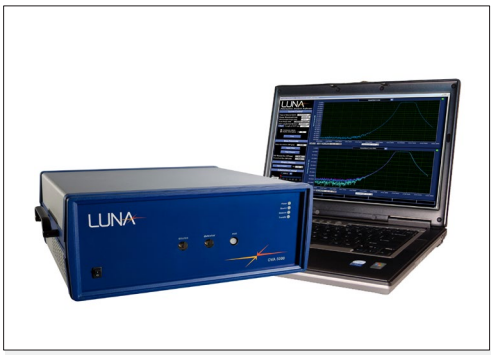
Advanced Test Suite for Silicon Photonics and PICs

Luna's family of advanced optical test and measurement products are based on optical frequency domain reflectometry (OFDR) and deliver industry leading dynamic range, resolution and speed.

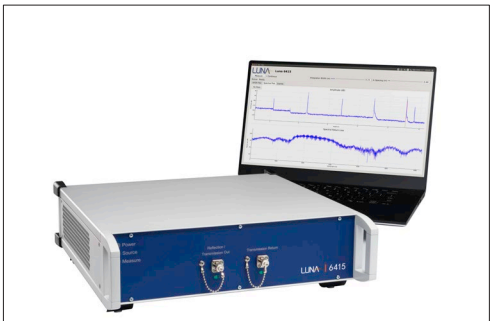


Optical Vector Analyzer
OVA 5000

- **Complete characterization** of waveguide devices
- **Full polarization analysis** without need for polarization controller or aligned PM fiber
- **Instantaneous measurement** of IL, RL, PDL, PMD, TE/TM states, waveguide scatter, and more in a single fast scab

Optical Backscatter Reflectometer
OBR 4600

- **Unprecedented visibility** into the details of silicon photonics, PICs and fiber optic components
- **10 µm resolution; -140 dB sensitivity**
- **Waveguide scattering** and loss easily measured and analyzed
- **Skew measurements** with sub-picosecond resolution



Lightwave Component Analyzer
Luna 6415

- **High speed analyzer** for production test and quality control
- **Reflectometer and transmission** analyzer combined in single instrument
- **Measure distributed loss** versus length with very high resolution
- **Spectral analysis** of transmission and reflection paths

	OVA 5000 Optical Vector Analyzer	OBR4600	Luna 6415
Wavelength band	C & L, O	C & L, O	C
Insertion loss (IL), return loss (RL)	✓	✓	✓
Polarization (PDL, PMD)	✓	Track polarization states	
Phase measurements	✓	Group delay, Phase derivative	
Transmission mode measurements	✓		✓
Reflection mode measurements	✓	✓	✓
Spectral domain analysis	✓	✓	✓
Max spatial sampling resolution	20 µm	10 µm	20 µm
Max measurement length (in reflection)	75 m	70/2000 m	20 m
High-speed scanning			✓

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