



# Luna 6415

Lightwave Component Analyzer



The Luna 6415 is a fast and simple-to-use analyzer for passive optical components and modules. The Luna 6415 measures and analyzes the Insertion Loss (IL) and Return Loss (RL) distribution, as well as length, working in either reflection or transmission.

The Luna 6415 utilizes optical frequency domain reflectometry (OFDR) technology to measure backscattered or transmitted light as a function of distance. Extremely high sensitivity and sampling resolution (20  $\mu\text{m}$ ) make the Luna 6415 an ideal testing tool for photonic integrated circuits (PICs) and silicon photonics. The Luna 6415 reduces the cost and complexity of test while increasing throughput by measuring RL, IL and length in reflection or transmission with a single instrument.

## KEY FEATURES

- Return loss (RL) and insertion loss (IL) analysis
- Trace distributed RL over length of optical path
- Spectral analysis of RL and IL
- Detect and precisely locate reflective events and measure path length
- Speed, resolution and accuracy for optimizing production test
  - 20  $\mu\text{m}$  sampling resolution
  - 20 m measurement range
  - 6 Hz scan/acquisition rate

## APPLICATIONS

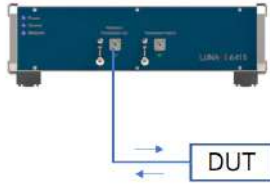
- Spatial RL testing
- Automated IL test and analysis
- Skew measurement with sub-picosecond resolution
- PLCs, waveguide devices, AWGs, ROADMs, etc.
- Couplers, switches, beam splitters



Measuring in reflection mode, the Luna 6415 measures return loss versus length. The bottom plot shows the spectral content of the identified reflection event (grating).

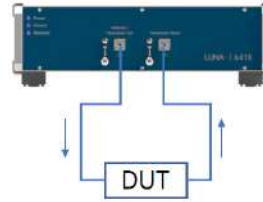
**High-Speed and High-Resolution  
OFDR Measurements for  
Manufacturing Test**

## Reflection Measurements



- Reflectivity, RL versus length
- Event loss measurement (RL, IL)
- RL spectral amplitude analysis
- Event length measurement

## Transmission Measurements



- Total Insertion Loss (IL)
- Spectral amplitude response
- Total path length

## PERFORMANCE

PARAMETER	SPECIFICATION	UNITS
<b>Measurement</b>		
Sampling resolution (two-point) <sup>1</sup>	20	μm
Time-of-flight delay accuracy <sup>2</sup>	± 0.0034	%
Maximum device length	Reflection	20
	Transmission	40
Wavelength range	40	nm
Wavelength accuracy <sup>2</sup>	1.5	pm
Center wavelength	1546.69	nm
Measurement rate	6	Hz
Maximum optical power	5	mW
<b>Return Loss Characteristics (Reflection Mode)</b>		
RL dynamic range <sup>3</sup>	70	dB
Total range <sup>4</sup>	0 to -130	dB
Sensitivity <sup>4</sup>	-135	dB
Resolution <sup>5</sup>	± 0.1	dB
Accuracy <sup>5</sup>	± 0.5	dB
<b>Insertion Loss Characteristics (Reflection/Transmission)</b>		
IL dynamic range, in transmission mode	70	dB
IL dynamic range, in reflection mode <sup>6</sup>	15	dB
Resolution <sup>7</sup>	± 0.1	dB
Accuracy <sup>7</sup>	± 0.2	dB
<b>Physical</b>		
Optical connector type	FC/APC	–
Operating power (max)	50	W
Weight (controller not included)	13 (6)	lb (kg)

## ORDERING

Product #	Description	Includes
Luna 6415	Lightwave Component Analyzer	Luna 6415 mainframe for C band, application software, instrument controller (workstation-class laptop) and accessory kit.

## NOTES

1. Distance between two sample points along the length axis in SMF-28.
2. Accuracy guaranteed via internal NIST-traceable HCN gas cell.
3. Range between strongest reflection greater than -60 dB and noise floor.
4. Noise floor return loss at half of maximum length.
5. Measured with 1 cm integration width.
6. Two way loss before backscatter reaches noise floor and IL measurements are no longer possible.
7. Measured with 10 cm integration width.