



# Luna 6400 Series

## Lightwave Component Analyzer

The Luna 6400 Lightwave Component Analyzer is a fast and simple-to-use tool for testing passive optical components and fiber optic networks. The 6400 measures and analyzes the Insertion Loss (IL) and Return Loss (RL) distribution, as well as length, scanning the optical component in either reflection or transmission mode.

The 6400 Series instruments utilize optical frequency domain reflectometry (OFDR) technology to measure and analyze backscattered or transmitted light as a function of distance. Extremely high sensitivity and sampling resolution (20  $\mu\text{m}$ ) make the 6415 an ideal analyzer for photonic integrated circuits (PICs) and silicon photonics. The Luna 6435 extends the measurement range to 500 m for testing networks, amplifiers and other fiber systems.

The Luna 6400 reduces the cost and complexity of test while increasing throughput by analyzing RL, IL and length in reflection or transmission with a single instrument.

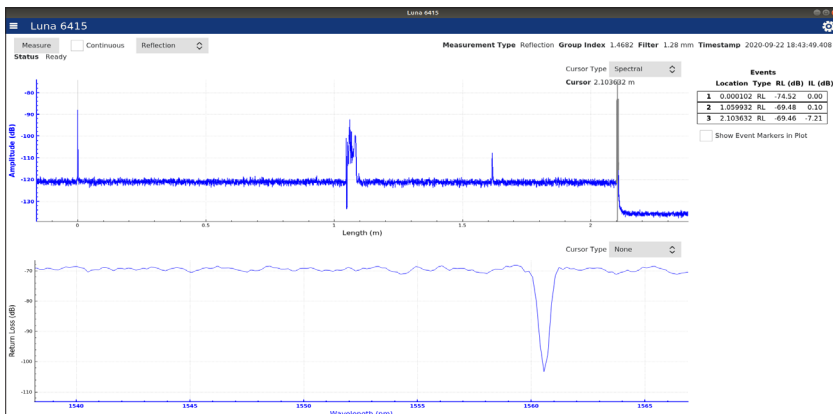
Model	Length Measurement Modes (in Reflection)
Luna 6415	20 m, 50 m Optional: 100 m, 200 m
Luna 6435	100 m, 200 m, 500 m

### KEY FEATURES

- Insertion loss (IL) and return loss (RL) analysis
- Analyze components in reflection and transmission
- Trace distributed loss over length of optical path, with sampling resolution down to 20  $\mu\text{m}$
- Spectral analysis of RL and IL
- Detect and precisely locate reflective events and measure path length
- Speed, resolution and accuracy for optimizing production test

### APPLICATIONS

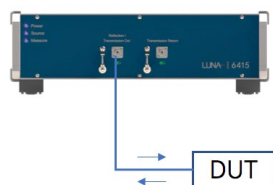
- Spatial RL testing
- Automated IL test and analysis
- Skew measurement with sub-picosecond resolution
- PLCs, waveguide devices, AWGs, ROADMs, etc.
- Filters, couplers, switches, beam splitters, etc.



Measuring in reflection mode, the Luna 6415 and 6435 measure return loss versus length. The bottom plot shows the spectral content of the identified reflection event (filter).

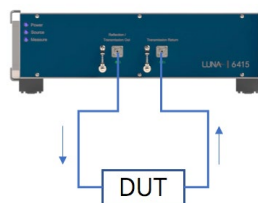
**High-Speed and High-Resolution  
OFDR Measurements for  
Manufacturing Test**

## Reflection Measurements



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

## Transmission Measurements



- Total insertion loss (IL)
- Spectral analysis
- Total path length

## PERFORMANCE

PARAMETER		SPECIFICATION		
Measurement		Luna 6415	Luna 6435	
Measurement length modes	Reflection mode	20 m, 50 m Optional: 100 m, 200 m	100 m, 200 m	500 m
	Transmission mode	40 m, 100 m Optional: 200 m, 400 m	200 m, 400 m	1000 m
Sampling resolution (two-point) <sup>1</sup>		20 $\mu$ m	20 $\mu$ m	80 $\mu$ m
Wavelength accuracy <sup>3</sup>		$\pm 8$ nm		
Time-of-flight delay accuracy <sup>3</sup>		$\pm 0.1$ %		
Center wavelength		1546.69 nm		
Wavelength scan range		$\pm 20$ nm	$\pm 20$ nm	$\pm 5$ nm
Measurement time (in continuous mode)		0.08 s (20 m) 0.8 s (200 m)	0.4 s (100 m) 0.8 s (200 m)	0.5 s
Maximum optical power		5 mW		
<b>Return Loss Measurements (Reflection Mode)</b>				
RL dynamic range <sup>4</sup>		70 dB		
Total range <sup>5</sup>		0 to -130 dB		
Sensitivity <sup>5</sup>		-135 dB		
Resolution <sup>6</sup>		$\pm 0.1$ dB		
Accuracy <sup>6</sup>		$\pm 0.2$ dB		
<b>Insertion Loss Measurements (Reflection/Transmission)</b>				
IL dynamic range, in transmission mode		70 dB		
IL dynamic range, in reflection mode <sup>7</sup>		15 dB		
Resolution <sup>8</sup>		$\pm 0.1$ dB		
Accuracy <sup>8</sup>		$\pm 0.2$ dB		
<b>Physical and Interfaces</b>				
Remote interface		SCPI API over TCP/IP		
Optical connector type		FC/APC		

## ORDERING

Product #	Description	Includes
Luna 6415	Lightwave Component Analyzer	Instrument mainframe with measurement length modes of up to 50 m in reflection (100 m in transmission), instrument controller (workstation laptop), application software and accessory kit
Luna 6435	Lightwave Component Analyzer	Instrument mainframe with measurement length modes up to 500 m in reflection (1000 m in transmission), instrument controller (workstation laptop), application software and accessory kit
OPT06450	Extended range option	Extends measurement length of the Luna 6415 to 200 m in reflection (400 m in transmission)

## NOTES

1. Distance between two sample points along the length axis in SMF-28.
2. With extended range option OPT06450.
3. Accuracy guaranteed via internal NIST-traceable HCN gas cell.
4. Range between strongest reflection greater than -60 dB and noise floor.
5. Noise floor return loss at half of maximum length.
6. Measured with 1 cm integration width.
7. Two way loss before backscatter reaches noise floor and IL measurements are no longer possible.
8. With 10 cm integration width for 20 m, and 40 cm for 500 m mode.



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