

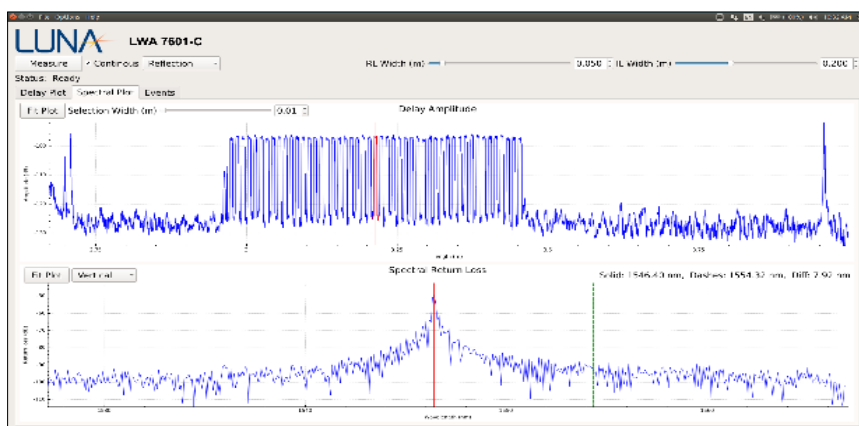


# LWA 7000 Series

## Lightwave Analyzer C Band

The LWA 7601-C Lightwave Analyzer is a fast and simple-to-use tool for testing passive optical components and modules. The LWA 7601-C measures and analyzes the Insertion Loss (IL) and Return Loss (RL) distribution, as well as length, scanning optical components in either reflection or transmission mode.

The LWA 7601-C instrument utilizes optical frequency domain reflectometry (OFDR) technology to measure backscattered or transmitted light as a function of distance/time (or wavelength). The extremely high sensitivity and sampling resolution (20  $\mu\text{m}$ ) make an ideal analyzer for photonic integrated circuits (PICs) and silicon photonics. When combined with the extended measurement range, up to 500 m measurement range is achieved, making the testing of fiber networks an easy task. The LWA 7601-C reduces the cost and complexity of test while increasing throughput by measuring RL, IL and length in reflection or transmission with a single instrument.



Measuring in reflection mode, the Luna 7601-C measures 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**

| Model      | Length measurement Modes<br>(in Reflection) |
|------------|---------------------------------------------|
| LWA 7601-C | 20 m, 50 m, 100 m<br>Optional: 200 m, 500 m |

### KEY FEATURES

- Return loss (RL) and insertion loss (IL) analysis
- Analyze components in reflection and transmission
- Trace distributed RL over length of optical path
- Spectral analysis of RL and IL
- Detect and precisely locate reflective events and measure path length (up to 500 m)
- Speed, resolution and accuracy for optimizing production test
- 20  $\mu\text{m}$  sampling resolution
- 12 Hz scan/acquisition rate
- Optional 19-inch rack-mount version for lab and production environments

### APPLICATIONS

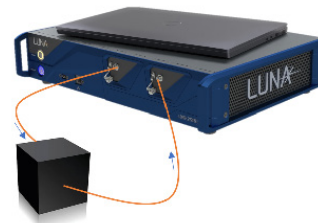
- Spatial RL testing
- Automated IL test and analysis
- Skew measurement with sub-picosecond resolution
- PIC waveguide devices, PLCs, AWGs, ROADMs, etc.
- Optical fiber networks, cable and subassemblies

## 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   |
|----------------------------------------------------------|--------------|---------------------------|-------------------------|---------|
| Measurement                                              |              |                           |                         |         |
|                                                          |              | LWA 7601-C                | LWA 7601-C <sup>2</sup> |         |
| Maximum Measurement length                               | Reflection   | 100                       | 500                     | m       |
|                                                          | Transmission | 200                       | 1000                    | m       |
| Sampling resolution (two-point) <sup>1</sup>             |              | 20                        | 80                      | μm      |
| Wavelength accuracy <sup>3</sup>                         |              | ± 6                       |                         | pm      |
| Time-of-flight delay accuracy <sup>3</sup>               |              | ± 0.001                   |                         | %       |
| Center wavelength                                        |              | 1546.69                   |                         | nm      |
| Wavelength scan range                                    |              | ± 20                      | ± 5                     |         |
| Measurement time (in continous mode)                     |              | 0.08 (20m)<br>0.4 (100 m) | 0.5                     | s       |
| Maximum optical power                                    |              | 5                         |                         | mW      |
| Return Loss Characteristics (Reflection Mode)            |              |                           |                         |         |
| 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>                                  |              | ± 0.1                     |                         | dB      |
| Accuracy <sup>6</sup>                                    |              | ± 0.5                     |                         | dB      |
| Insertion Loss Characteristics (Reflection/Transmission) |              |                           |                         |         |
| IL dynamic range, in transmission mode                   |              | 70                        |                         | dB      |
| IL dynamic range, in reflection mode <sup>7</sup>        |              | 15                        |                         | dB      |
| Resolution <sup>8</sup>                                  |              | ± 0.1                     |                         | dB      |
| Accuracy <sup>8</sup>                                    |              | ± 0.2                     |                         | dB      |
| Physical                                                 |              |                           |                         |         |
| Remote Interface                                         |              | SCPI API over TCP/IP      |                         | –       |
| Optical connector type                                   |              | FC/APC                    |                         | –       |
| Dimensions                                               |              | 35 (L) x 47 (W) x 10 (H)  |                         | cm      |
| Weight (controller not included)                         |              | 15 (7)                    |                         | lb (kg) |

## ORDERING

| Product #     | Description                                  | Includes                                                                                                                                                                                                           |
|---------------|----------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| LWA 7601-C    | Lightwave Analyzer                           | Instrument mainframe for C band with measurement length modes of up to 100 m in reflection mode (200 m in transmission), instrument controller (workstation-class laptop), application software and accessory kit. |
| LWA 7601-C-RM | Lightwave Analyzer Rack-mountable Main-frame | Instrument mainframe for C band with measurement length modes of up to 100 m in reflection mode (200 m in transmission), instrument controller (rack-mountable), application software and accessory kit.           |
| OPT07650      | Extended range option                        | Extends measurement length of the LWA 7601-C to 500 m (in reflection).                                                                                                                                             |

## NOTES

1. Distance between two sample points along the length axis in SMF-28.
2. With extended range option OPT07650.
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 mode, and 40 cm for 500 m mode.