



The Luna OBR 4600 offers unbeatable testing and troubleshooting capabilities now at unprecedented measurement speeds.

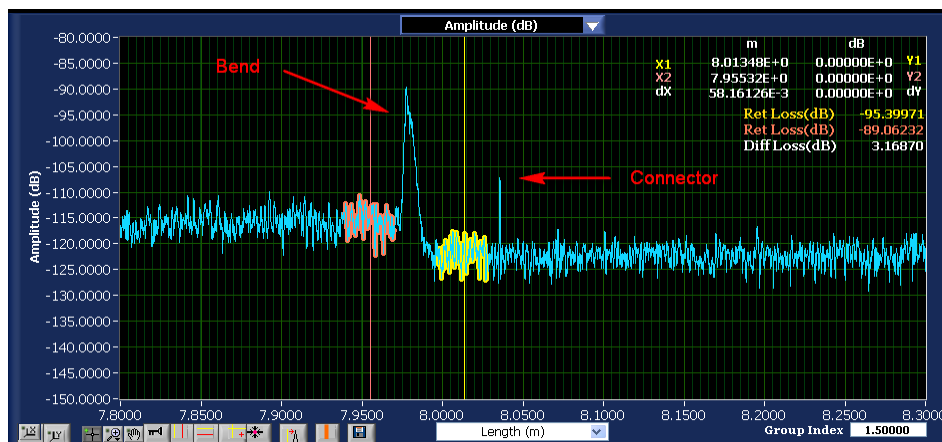
KEY FEATURES AND PRODUCT HIGHLIGHTS

- Easily locate, identify and troubleshoot macro-bends, splices, connectors and breaks
- Locate Insertion Loss points at every point in the network or assembly – eliminate cut-back
- Look inside components to evaluate each interface for RL and IL
- Measure 30 m with 10 μm resolution in less than 7 seconds
- Continuously measure a 1 m segment at up to 3 Hz
- Test and troubleshoot short-run networks (< 2 km)
- Automate pass/fail verification of fiber assemblies
- Monitor distributed temperature and strain profiles along network or inside a component or module

The Luna **OBR 4600** is part of Luna's award winning Optical Backscatter Reflectometer™ product line. Designed for component and short-run network testing and troubleshooting, the OBR 4600 enables ultra-high resolution reflectometry with backscatter-level sensitivity. With spatial resolution as fine as 10 microns, zero dead-zone, options for integrated temperature and strain sensing and extended device mode, the OBR 4600 offers the ultimate in fiber diagnostics.

MEASUREMENT PERFORMANCE HIGHLIGHTS

- -130 dB sensitivity
- 70 dB dynamic range
- 2 kilometer length range with no dead-zone
- < 0.05 dB insertion loss resolution



PARAMETER		SPECIFICATION		UNITS
Maximum Device Length:				
Standard Mode		30 or 70		meters
Long Range Mode ¹²		2000		meters
Spatial Resolution (two-point)¹:				
		10 μm over 30 meters		
		20 μm over 70 meters		
		1 mm over 2 km		
Dead Zone:				
		Equals 2-pt spatial resolution		
Wavelength Range²:				
		1270-1340 or 1525-1610		nm
Wavelength:				
Resolution (max)		0.02		pm
Accuracy ³		±1.5		pm
Integrated Return Loss Characteristics:				
Dynamic range ⁴		70		dB
Total range		0 to -125		dB
Sensitivity		-130		dB
Resolution ⁵		±0.05		dB
Accuracy ⁵		±0.10		dB
Integrated Insertion Loss Characteristics:				
Dynamic range ⁶		18		dB
Resolution ⁵		±0.05		dB
Accuracy ⁵		±0.10		dB
Group Delay:				
Accuracy		1.0		ps
Distributed Sensing^{7,12,13}:				
Spatial Resolution ⁸		±1.0		cm
Temperature Resolution ⁹		±0.1		C
Strain Resolution ⁹		±1.0		μstrain
Measurement Timing¹⁰	Standard	Fast¹¹	Spot Scan¹¹	
5 nm scan time	3	1.6	0.3	s
Time vs. wavelength range	2.1 s+0.14 s/nm	1.3 s+0.06 s/nm	0.15 s+0.02 s /nm	-
Long Range (2 km) Scan Time	20			s
Environmental Conditions	Operating Temperature	Storage Temperature	Operating Humidity	
	10-35 C	0-40 C	<80% RH Condensing	

Specifications are for single-mode operation.

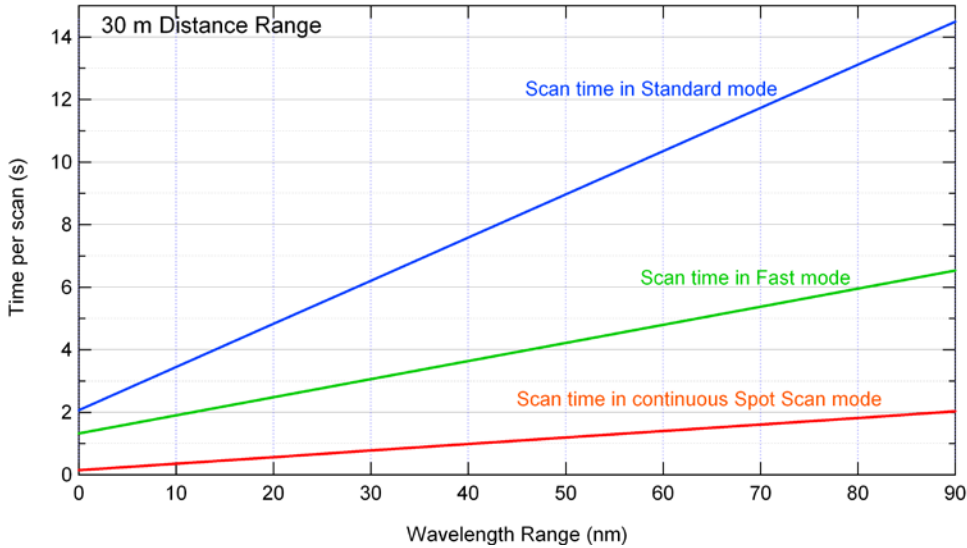
For multimode operation, specifications are nominal.

- 1 Over entire length range.
- 2 Ranges are nominal.
- 3 Accuracy maintained by an internal NIST-traceable HCN gas cell.
- 4 For the 2000 m option, return loss dynamic range is 60 dB.
- 5 With integration width of 0.5 m
- 6 The insertion loss dynamic range is the one-way loss that can be suffered before the scatter level of standard SMF (~ -100 dB/mm) is lower than the noise floor (~ -118 dB/mm).
- 7 Distributed sensing uses Rayleigh spectral shift method and is relative to reference scan.

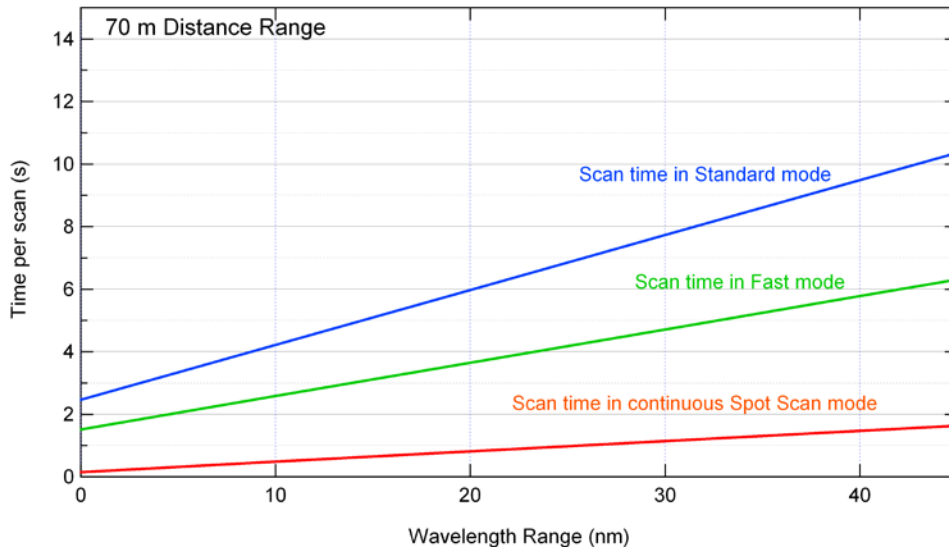
CLASS 1 LASER PRODUCT

- 8 Spatial resolutions listed are ideal to get the temperature and strain resolutions listed; they are not minimums or maximums.
- 9 Temperature and strain resolutions are calculated from spectral shift of Rayleigh scatter using $1 \text{ GHz} = 0.8 \text{ C} = 6.58 \text{ μStrain}$. [Othonos and K. Kalli, Fiber Bragg Gratings (Artech House, Boston, 1999)].
- 10 Combined scan and analysis time in high-resolution mode. Times are for 30 m scan mode.
- 11 Times are with laser tuning speed set at 100 nm/s.
- 12 Extended range mode and distributed sensing are upgrade options
- 13 Maximum standard sensing length is 70m. Limited sensing is available in extended range mode. Contact your Luna representative for more information.

MEASUREMENT TIMING INFORMATION



Time per scan vs. scan wavelength range for 30 m scans in standard operating, fast scanning and continuous spot scanning modes.



Time per scan vs. scan wavelength range for 70 m scans in standard operating, fast scanning and continuous spot scanning modes.

Wavelength Range (nm)	Spot Scan Rate (Hz) 30 m mode	Spot Scan Rate (Hz) 70 m mode
5	3.7	2.9
10	2.7	2.0
20	1.8	1.2
40	0.9	0.6
80	0.5	-

Scan repetition rates at various scan wavelength ranges for continuous spot scanning in 30 m and 70 m modes of operation. Rates are for laser tuning speed set to 100 nm/s.