### ADVANCED

### OPTICAL FREQUENCY DOMAIN REFLECTOMETER (OFDR)

#### **FINDING FAULTS**

In optical devices, it's like hunting for a needle in a haystack. Which part of the optical path is the culprit? Most test equipment can't help you analyze windowed, time domain portions of your optical device to determine the cause for degraded specifications. By the time you get to final test, your device has a problem and you don't have the time or equipment to find out why.

Let the team at Luna help. With our new OFDR, you can improve yields by seeing where designs and the production processes break down.

Check interfaces introduced by multiple bonds, lenses, and filters, and discover the solutions to processing errors before they become habits. All of this is possible with 20 micron resolution, zero dead zone, and up to 70 meter device length. That's right, now you can characterize devices and subsystems alike no more 3 meter limitations.

Luna's state-of-the-art OFDR provides isolation, of faults and problems well before final test, saving hours in rework and hard dollars in yield loss. Industry-leading 20 micron resolution with zero dead zone will propoint even the smallest contributors to loss: amplifiers, ball lenses, filters, solices, you name it — we find it. Discover what you don't know about your component and what the Luna Technologies' OFDR can do for you.

#### **APPLICATIONS**

- Incoming Inspection: Rapid troubleshooting of individual parts.
- Failure Analysis: Total system analysis isolating individual connectors, fibers, and other components.
- Design Verification: Including group delay measurement.
- Manufacturing Process Troubleshooting: Verify optical systems during development or production.

Improve yields by seeing where designs and the production processes break down with the Luna OFDR.

#### WHY LUNA?

Luna's state-of-the-art OFDR provides isolation of faults and problems well before final test, saving hours in rework and hard dollars in yield loss

- Measure IL, RL, and GD simultaneously
- Isolate effects of each device in the optical path
- Determine sources of ripple and loss
- View with near-zero dead zone
- Minimum resolve to 20 microns
- Examine maximum optical 70 meter device lengths

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(after one hour warm-up at 20 °C)

Parameter  Measurement Performance  Wavelength range:  Wavelength:  Resolution¹  Accuracy²  Spatial resolution (two-point)³:  Maximum device length (including leads)  Reflection  Transmission  Integrated return loss characteristics:  Dynamic range  Sensitivity  Pode  pm  pm  microns  Maximum device length (including leads)  Reflection  Transmission  Accuracy  Dynamic range  Sensitivity  90  dB  Resolution  Accuracy  40  Group delay:  Range  Accuracy  Measurement Timing⁴  41  45  45  45  45  45  45  45  45  45		^<	$\sim$
Wavelength range:  Wavelength:  Resolution¹ Accuracy²  Spatial resolution (two-point)³:  Maximum device length (including leads)  Reflection Transmission  Integrated return loss characteristics:  Dynamic range Sensitivity  Resolution Accuracy  Group delay: Range Accuracy  150  150  150  150  150  150  150  15		Specification	Units
Wavelength: Resolution Accuracy²  Spatial resolution (two-point)³:  Maximum device length (including leads) Reflection Transmission  Integrated return loss characteristics: Dynamic range Sensitivity Pion pm p	Measurement Performance	CTe Sig	$\langle \rangle$
Wavelength: Resolution Accuracy²  Spatial resolution (two-point)³:  Maximum device length (including leads) Reflection Transmission  Integrated return loss characteristics: Dynamic range Sensitivity Pion pm p		(0)	
Resolution 1 Accuracy 2  Spatial resolution (two-point) 3:  Maximum device length (including leads): Reflection Transmission  Integrated return loss characteristics: Dynamic range Sensitivity Pion Maximum device length (including leads): Accuracy  Dynamic range Sensitivity Pion Maximum device length (including leads):  Bynamic range Sensitivity Byo Byo Byo Byo Byo Byo Byo Byo Byo By		1525/1605	(JAD)
Spatial resolution (two-point) 3: microns  Maximum device length (including leads): Reflection Transmission  Integrated return loss characteristics: Dynamic range Sensitivity Ripple Resolution Accuracy  Group delay: Range Accuracy  1.5 pm microns  Maximum device length (including leads): 15 30 70 meters 60 dB 40 dB 4	Wavelength:		
Spatial resolution (two-point) 3:  Maximum device length (including leads) Reflection Transmission  Integrated return loss characteristics: Dynamic range Sensitivity Ripple Resolution Accuracy  Group delay: Range Accuracy  15  20  M0  microns  meters  60  dB  40  dB  40	Resolution <sup>1</sup>	(%6)2 ((	pm
Maximum device length (including leads):  Reflection Transmission  Integrated return loss characteristics:  Dynamic range Sensitivity  Ripple Resolution Accuracy  Group delay: Range Accuracy  Accuracy  Dynamic range Accuracy  Accuracy  Dynamic range Accuracy  Accuracy  Accuracy  Accuracy  Dynamic range Accuracy  But 150 But	Accuracy <sup>2</sup>	1.5	pm
Reflection Transmission  Integrated return loss characteristics:  Dynamic range Sensitivity Ripple Resolution Accuracy  Group delay: Range Accuracy  To meters  ### Modern contents  ### Accuracy ### Modern contents  ### Accuracy ### Modern contents  ### Modern c	Spatial resolution (two-point) 3:	20 (40)	microns
Transmission  Integrated return loss characteristics:  Dynamic range Sensitivity  Ripple Resolution Accuracy  Group delay:  Range Accuracy  Accuracy  Dynamic range  60  dB  90  dB  ± 0.05  dB  ± 0.02  dB  ± 0.15  dB  The second of the secon	Maximum device length (including leads):		
Integrated return loss characteristics:  Dynamic range Sensitivity 90 dB Ripple Expected by the sense of the	Reflection (Q L	15 (30	meters
Dynamic range  Sensitivity  Ripple  Resolution  Accuracy  Bange  Accuracy  150  300  ns  + 0.25  ps	Transmission	30 70	meters
Sensitivity   90   dB	Integrated return loss characteristics:		
Ripple	Dynamic range	60	dB
Resolution	Sensitivity	90	dB
Accuracy ± 0.15 dB  Group delay:  Range	Ripple	± 0.05	dB
Group delay: Range Accuracy 150 300 ns ± 0.25 ps	Resolution	) ± 0.02	dB
Range 150 300 ns Accuracy ± 0.25 ps	Accuracy	± 0.15	dB
Accuracy ± 0.25 ps	Group delay:		
	Range (V)	150 300	ns
Measurement Tirking < 4 s for 20 nm scan		± 0.25	ps
	Measurement Tirking *	< 4 s for 20 nm scan	

- Determined by width of time domain window.
- 2 Acquracy maintained by an Internal NIST traceable HCN gas cell.
- 3 Over 20 microns good 39 meters for CTe option and 40 microns over 70 meters for the STe option
- 4 Combined scan and arralysis time.

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# OPTICAL FREQUENCY DOMAIN REFLECTOMETER (OFDR)

Purchasing Options			
Part Number	Description		
OFDR Analyzer	Contains: Personal computer, 1," flat screen monitor, N*DR mainframe, software, all associated caples to measure device lengths of up to 70 meters in optical length in transmission or 35 meters in optical length in practice, 40 pageon resolution.		
Select either option 001 or 002			
Option 001C	C Band		
Option 001L	L Band		
Option 001O	O Band (1890-1370 nm) (0/)		
Option 002	C+L Band		
Option 003	GPIB remote control card and cable		
Option 004	Desktop Analysis		
Option 30	30 Meter Device Langth (transmission) 15 meters device length (reflection), 20 micron resolution		
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