

# OP1021

## Launch Condition Analyzer System

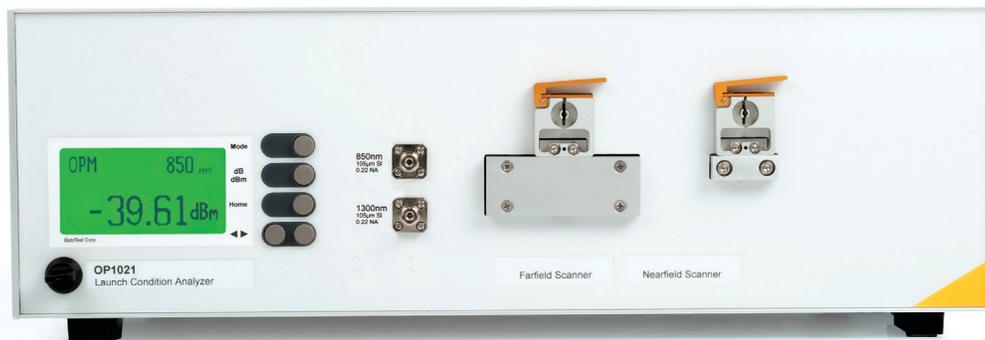
### Overview

#### Launch Condition Analyzer System

The **OP1021** Launch Condition Analyzer is a convenient and compact benchtop Nearfield and Farfield scanner for optical fibers. Coupled with windows application **OPL-LCA**, the user can scan and easily plot both the Nearfield and Farfield patterns of any compatible fiber. In addition to comparing the Nearfield and Farfield patterns to standard launch templates, the Encircled Flux is calculated and compared to various IEC templates.

The optical interface of the instrument accepts all standard 2.5mm ferrules. Other connector sizes available upon request.

The **OP1021** can be equipped with two internal LEDs with 850nm and 1300nm wavelengths. The internal 105/125 $\mu$ m, 0.22NA fiber allows for overfill testing in most applications.



Model OP1021 Launch Condition Analyzer System

### Nearfield

The Nearfield (NF) describes the optical power density on the surface of a radiating source or the end of a fiber.

The **OP1021** complies with IEC 61280-1-4 specifications for a pinhole scanning mechanism to gather the nearfield distribution. Using a microscope objective, the fiber endface is imaged onto a plane. A pinhole, 100 $\mu$ m in diameter, is situated in front of a detector on this plane and is mechanically scanned across the projected image to gather the nearfield distribution data.

The **OP1021** has 3 software controlled positioners to allow for movement in all 3 spatial dimensions. One allows for bringing the image into focus (z-axis), while two allow the system to scan the projected plane (x, y-axis) for centering purposes. With a  $\pm$ 250 $\mu$ m effective scan range and a 0.1 $\mu$ m resolution, this nearfield scanner is capable of analyzing the majority of fiber endfaces and launches.

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### Farfield

The **OP1021** conforms to the standards specified in TIA-455-177-B Technique 1 for measuring numerical aperture from the farfield plot. The farfield scan in the **OP1021** is performed by moving a 100 $\mu$ m core fiber along the semicircular arc formed by rotating the normal ray to the input fiber endface in a radial motion. The receiver is a 100/250 $\mu$ m fiber that is placed approximately 5cm from the endface of the input fiber and can be rotated from -0.5 radians to +0.5 radians about the radial center.

The farfield scan illustrates the farfield profile of a fiber. For multimode fibers, a farfield scan will yield the numerical aperture given the fiber being measured is overfilled.

For single mode fibers, the mode field diameter can be measured from the farfield profile. The mode field diameter measurement is performed in accordance with **TIA/EIA-455-191A** and **IEC 60793-1-45**. The **OP1021** uses the direct farfield method to obtain the farfield profile, which is the reference test method for mode field diameter. An MFD measurement is instrumental in the development and qualification of single mode fiber.

### Key Features

- **OPL-LCA** is the companion software to the **OP1021** Launch Condition Analyzer. It controls all aspects for the farfield and nearfield scan and offers templates for nearfield/farfield launch as well as encircled flux.
- Displays the nearfield or farfield plot in a user friendly graph.
- User defined step size for both Nearfield and Farfield actuators allowing the user further control of the scan resolution and scan duration.
- Data exportation into an Excel spreadsheet for further data analysis.
- Quick chart printing directly from **OPL-LCA**.
- Encircled flux calculations with the ability to load encircled flux templates for various launch condition specifications.
- Mode field diameter is measured via the direct farfield measurement technique.

# SPECIFICATIONS

## Nearfield Analyzer

Measurement Scanning Range	- 250 $\mu$ m to + 250 $\mu$ m
Scanning Resolution	0.1 $\mu$ m
Scanning Aperture	100 $\mu$ m
Receiver Sensitivity (at Optical Interface)	+3dBm to -60dBm
Receiver Wavelength	850nm to 1700nm (or 450nm to 1100nm upon request)
Resolution, Optical Power	0.01dBm or 0.1%
Measurement Linearity, Relative Accuracy	0.05dB
Scanning Speed (Typical)	30 sec. depending on scanning resolution
Connector Interface	Universal 2.5mm

## Farfield Analyzer

Measurement Scanning Range	-0.5 NA to +0.5 NA (-0.5rad to +0.5rad)
Scanning Resolution	2.2 mrad
Scanning Aperture	0.22 NA
Receiver Sensitivity (at Optical Interface)	+3dBm to -60dBm
Receiver Wavelength	850nm to 1700nm (or 450nm to 1100nm upon request)
Resolution, Optical Power	0.01dBm or 0.1%
Measurement Linearity, Relative Accuracy	0.05dB
Scanning Speed (Typical)	10 sec. depending on scanning resolution
Connector Interface	Universal 2.5mm

## Internal LED (optional)

Wavelength	850nm and 1300nm
Optical Output Power	typ. -13dBm into 105 $\mu$ m Fiber
Connector Interface	fixed FC/PC

## General Specifications

Data Interface	USB 1.1 (or later) compatible data rate and interconnect
Operating Temperature Range	0°C to 50°C (32°F to 122°F)
Mechanical Dimension	19" Rack Standard (16.8 x 3.8 x 10 inch)
Power Supply	Universal AC input: 90VAC to 264VAC, 43Hz.. 63Hz

## Laser Classifications

All **OP940 Insertion Loss and Return Loss Test Sets** utilize a **Class I Laser Source**. Unless otherwise noted, all **OP250**, **OP715**, and **OP750** source units with internal laser sources utilize a **Class I Laser Source**. Unless otherwise noted, all **OP815** and **OP850 Insertion Loss Test Sets** with internal laser sources utilize a **Class I Laser source**. All **OP280 Visual Fault Finder** units utilize a **Class III Laser Source**.

*OptoTest strongly suggests that all necessary precautions be taken whenever any Class I or Class III laser source is used.*

Specifications are subject to change, please confirm specific performance characteristics of the product at the time of ordering. All specifications are valid within temperature range of 18°C to 24°C unless otherwise noted. For additional specifications please contact OptoTest.