



## Parameter Testing of MTP Components

- Ribbon Fiber Connectors
- Multifiber Cables
- MTP Cables
- MTP Fanouts

# Multifiber / Ribbon Testing

## Multifiber / Ribbon Fiber IL and RL Test Solutions

Measuring Insertion Loss (IL) and Return Loss (RL) on multiple fibers can be challenging; the connectors may be difficult to clean, high-quality reference cables may be hard to get and the measurement step requires fiber management and organizational skills beyond belief.

With the OP Series Multifiber Test Systems, tailored solutions measure the necessary parameters on Multifiber cables such as MTP/MPO Cables, Fanouts, Multi-termini Connectors, and Duplex or Simplex Cables. Compact instrumentation combined with the efficient OPL-Max application software, the test setup and measurement data stay well-organized.

### Insertion Loss and Return Loss

The multichannel IL/RL systems are based on the proven **OP930** high resolution reflectometer that measures the reflection of the components spatially. For Insertion Loss measurements, the unit is equipped with a precision optical power meter.



### Multichannel Light Source

With a stable light source and appropriate reference cables the IL measurement can be performed efficiently. The multichannel **OP750** Laser or LED sources are configured for wavelength and launch conditions based on customer needs.



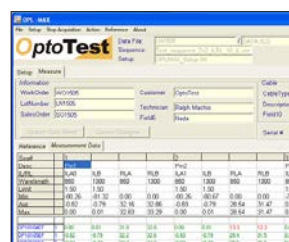
### Optical Power Meter

The multichannel Optical Power Meter **OP710** offers high data acquisition speed with an individual power meter module per channel. Each unit can be configured with a variety of detectors and adapters.



### OPL-Max Application Software

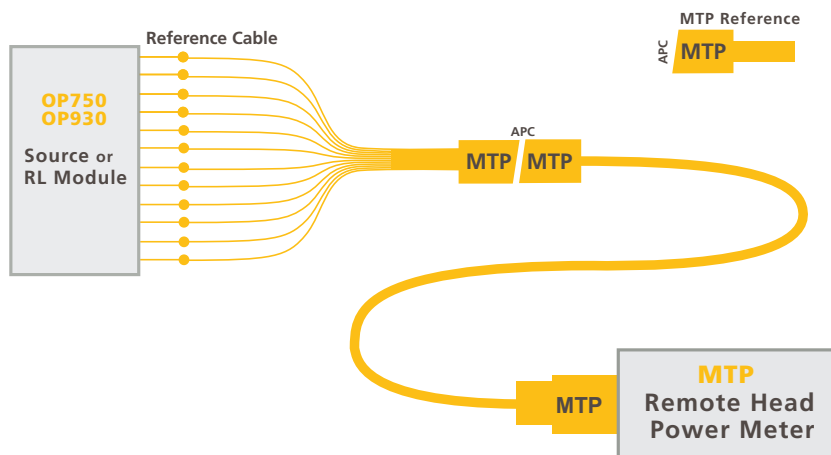
This Windows based application guides the user through the referencing and measurement process and produces a template based datasheet with output to Excel or SQL.





## MTP - MTP Cable Test

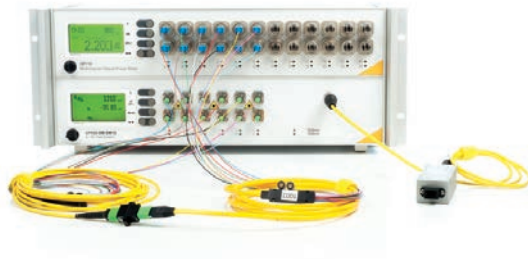
Multichannel Component Test System configured for 12 single mode or multimode channels utilizing the remote head with MTP (MPO, MPx) ribbon fiber interface.



### Detail Specifications

	Multimode	Single Mode
Source Channels	4 to 24 (or custom)	
Insertion Loss Source	850nm, 1300nm <small>Launch Condition TIA compliant</small>	1310nm, 1550nm 1490nm, 1625nm
Return Loss Source	850nm, 1310nm	1310nm, 1550nm 1490nm, 1625nm
Source Stability	+/-0.02dB (0.05dB)	
Optical Power Meter Range	+10dBm ... -80dBm	
Insertion Loss Accuracy	+/- 0.05dB	
Return Loss Range	10dB .. 55dB	10dB .. 80dB
Return Loss Accuracy	+/-0.5dB	
Channel Repeatability	+/-0.05dB	
Measurement Speed	typ. 1 sec per channel & wavelength pair	
System Control	USB 2.0 compatible	

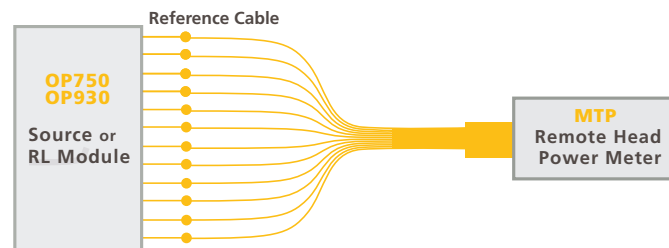
# Multifiber / Ribbon Testing



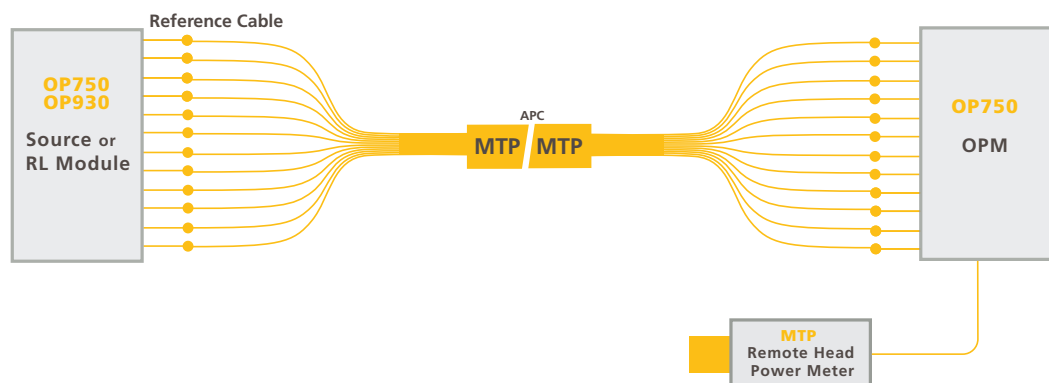
## MTP - Fanout Test

Multifiber Component Test System configured for 12 single mode or multimode channels. Either a second reference fanout cable is used for the comparison method, or an optional remote head measures the absolute reference.

### Reference Process



### Insertion Loss / Return Loss Measurement

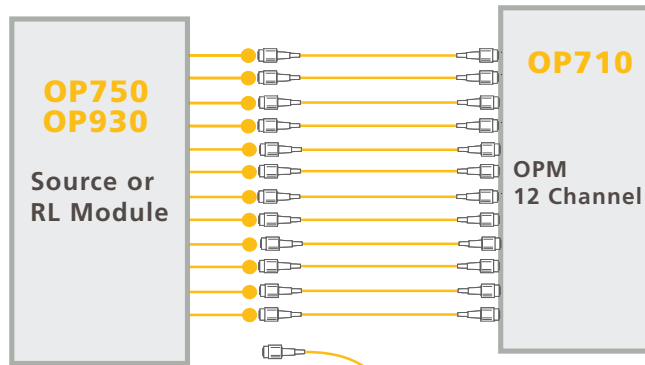




## Fanout - MTP Measurement

Multifiber Component Test System configured for 12 single mode or multimode channels. Either a second reference fanout cable is used for the comparison method, or an optional remote head measures the absolute reference.

### Reference Process



#### Absolute Source Power

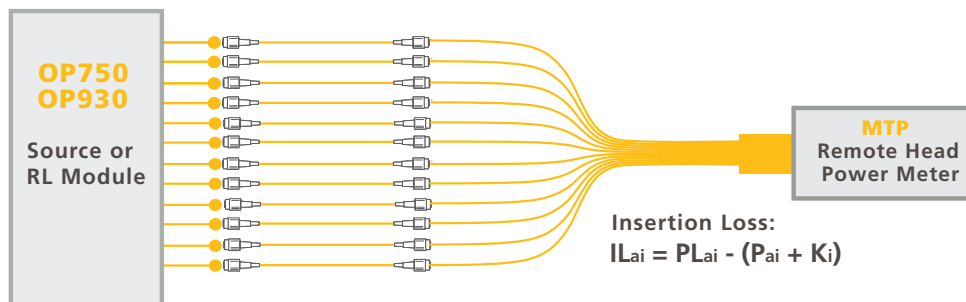
CH	WL <sub>a</sub>	WL <sub>b</sub>
1	Pa1	Pb1
2	Pa2	Pb2
3	Pa3	Pb3
4	Pa4	Pb4
5	Pa5	Pb5
6	Pa6	Pb6
7	Pa7	Pb7
8	Pa8	Pb8
9	Pa9	Pb9
10	Pa10	Pb10
11	Pa11	Pb11
12	Pa12	Pb12



Correcting the difference between Remote Head reading and OPM reading

$$K_i = P_{ai} - P_{RH_i}$$

### Insertion Loss / Return Loss Measurement



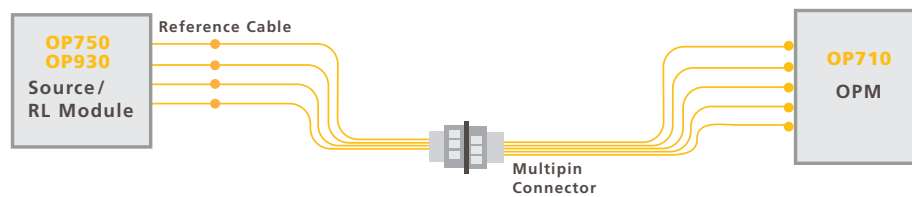
CH	WL <sub>a</sub>	WL <sub>b</sub>
1	Pa1	Pb1
2	Pa2	Pb2
3	Pa3	Pb3
4	Pa4	Pb4
5	Pa5	Pb5
6	Pa6	Pb6
7	Pa7	Pb7
8	Pa8	Pb8
9	Pa9	Pb9
10	Pa10	Pb10
11	Pa11	Pb11
12	Pa12	Pb12

Insertion Loss:  
 $IL_{ai} = PL_{ai} - (P_{ai} + K_i)$

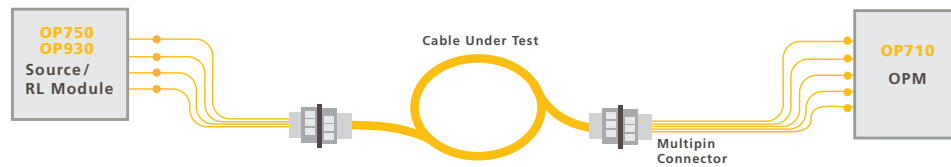
# Multifiber / Ribbon Testing

## Other Multipin - Multipin Cables

### Reference Process



### Insertion Loss / Return Loss Measurement



## Instrument Selection

OptoTest offers a variety of instruments and options that are engineered to match the measurement applications, be it simplex, ribbon, or multifiber cables terminated with any of the industry available connectors.

	SOURCE		OPM		SOURCE & OPM	
	OP750-Laser	OP750-LED	OP710-IN1-IN5	OP710-IN1-IN10	OP930-MM-5W	OP930-SM-5W
<b>Insertion Loss</b>						
MTP-MM						
MTP-SM						
MTP Fanout (SM or MM)						
Multifiber Cable MM	SM	MM	SM	MM	SM	MM
<b>Insertion Loss &amp; Return Loss</b>						
MTP-MM						
MTP-SM						
MTP Fanout					SM	MM



## /// Multifiber Cable Test System

- **Produces Cable Datasheet**

The test report includes time stamp and job information such as work order, lot number, part number and cable identification. The test results of the individual fibers are listed and qualified with configurable pass/fail criteria.

- **Writes Directly into Excel Files**

The EXCEL format is setup with user selectable, individual templates that are copied and saved with unique file names.

- **User Configurable Test Sequences**

Individual sequence steps per fiber, pause and delay features.

- **Connector Specific Pass/Fail Criteria**

A pass fail criteria is setup for user named connectors. Pass/fail criteria are included parameters for insertion loss and return loss.

- **Re-Test Individual Fibers**

Often only one of the fibers might fail a test, instead of having to re-test the entire cable, the particular fiber can be re-tested with using the real-time test mode.

- **Referencing Wizard**

Performing an accurate reference is crucial to accurate measurements. OPL-Max implements various referencing methods including the measurement of consecutive reflections.

- **User Named System Configuration**

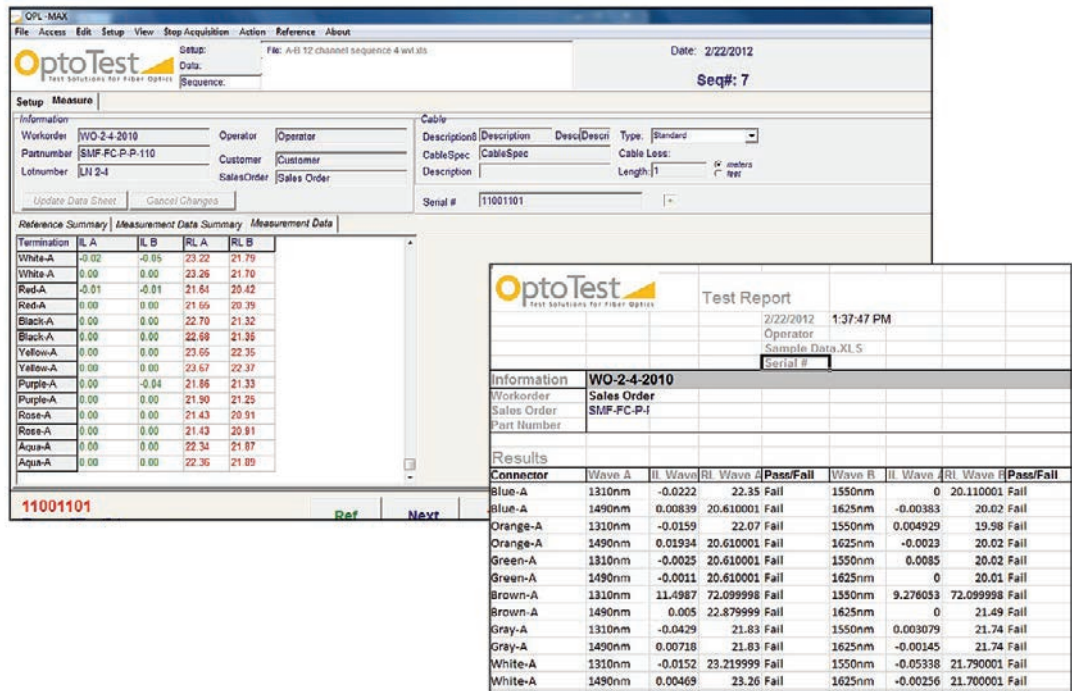
All system parameters, templates and test sequences are stored as user named configurations which allows for instant setup.

- **Fiber Mapping**

To check the wiring of fiber fabrics and other multifiber assemblies the FiberMap feature allows visualizing the fiber routing.



# Test reports at your finger tips ...



**OptoTest** TEST SOLUTIONS FOR FIBER OPTICS

File: A-61 12 channel sequence 4.wt.xls Date: 2/22/2012 Seq#: 7

**Setup Measure**

Information: Workorder: WO-2-4-2010 Operator: Operator  
 Partnumber: SMF-FC-P-110 Customer: Customer  
 Lotnumber: JUI-2-4 SalesOrder: Sales Order

Cable: Description: Description Desci:Desci Type: Standard  
 CableSpec: CableSpec Cable Loss: 0 meters  
 Description: Length: 1 m

Serial #: 11001101

Termination	IL A	IL B	RL A	RL B
White-A	-0.02	-0.05	23.22	21.79
White-A	0.00	0.00	23.26	21.70
Red-A	-0.01	-0.01	21.64	20.42
Red-A	0.00	0.00	21.66	20.39
Black-A	0.00	0.00	22.70	21.32
Black-A	0.00	0.00	22.68	21.36
Yellow-A	0.00	0.00	23.66	22.35
Yellow-A	0.00	0.00	23.67	22.37
Purple-A	0.00	-0.04	21.86	21.33
Purple-A	0.00	0.00	21.90	21.26
Rose-A	0.00	0.00	21.43	20.91
Rose-A	0.00	0.00	21.43	20.91
Aqua-A	0.00	0.00	22.34	21.87
Aqua-A	0.00	0.00	22.36	21.89

**11001101** Ref Next

**OptoTest** Test Report

2/22/2012 1:37:47 PM  
 Operator: Operator  
 Sample Data.XLS  
 Serial #: 11001101

Information: WO-2-4-2010  
 Workorder: Sales Order  
 Sales Order: SMF-FC-P-110  
 Part Number:

Connector	Wave A	IL Wave A	RI Wave A	Pass/Fail	Wave B	IL Wave B	RI Wave B	Pass/Fail
Blue-A	1310nm	-0.0222	22.35	Fail	1550nm	0	20.110001	Fail
Blue-A	1490nm	0.00839	20.610001	Fail	1625nm	-0.00383	20.02	Fail
Orange-A	1310nm	-0.0159	22.07	Fail	1550nm	0.004929	19.98	Fail
Orange-A	1490nm	0.01934	20.610001	Fail	1625nm	-0.0023	20.02	Fail
Green-A	1310nm	-0.0025	20.610001	Fail	1550nm	0.0085	20.02	Fail
Green-A	1490nm	-0.0011	20.610001	Fail	1625nm	0	20.01	Fail
Brown-A	1310nm	11.4987	72.099998	Fail	1550nm	9.276033	72.099998	Fail
Brown-A	1490nm	0.005	22.879999	Fail	1625nm	0	21.49	Fail
Gray-A	1310nm	-0.0429	21.83	Fail	1550nm	0.003079	21.74	Fail
Gray-A	1490nm	0.00718	21.83	Fail	1625nm	-0.00145	21.74	Fail
White-A	1310nm	-0.0152	23.219999	Fail	1550nm	-0.05338	21.790001	Fail
White-A	1490nm	0.00469	23.26	Fail	1625nm	-0.00256	21.700001	Fail

B1 B2 B3 B4 B5 B6 B7 B8 B9 B10 B11 B12

