Insertion Loss/Return Loss Testing Solution (mORL)

mORL with Passive Component Testing (PCT) Application for MAP-Series

VIAVI Solutions' Passive Component/Connector Test solution (PCT) offers a high-speed, small footprint, modular system for testing optical connectivity products, characterizing insertion loss (IL), return loss (RL), length, and polarity across various fiber types with best-in-class measurement precision.

Optical connectivity is critical to central office, data center, and military applications, driven by the demand for increased bandwidth and reliable connector variants. It helps optimize cost reduction and production speed, enabling manufacturers to prioritize high-quality optical performance, increase production throughput, and consistently fulfill orders.

Optical connectivity solutions (optical connectors, structured cabling, splitters, and the enclosures that house them) are central to connection-intensive central office, data center, and optical-distribution networks. Outside of telecom, datacom, wireless backhaul, and FTTx, new supercomputing applications are emerging, and naval, avionic, and military applications continue to multiply. All of these markets are driven by the demand for more bandwidth. Out of necessity, new connector formats are coming to market, driven by the need to lower installation costs and speed deployments.

The VIAVI MAP-300 automation environment allows easy scaling of solutions with intuitive, easy to use SCPI commands. The PCT System also includes easy-to-use instrument mode, and a no-code scripting environment for creating effective and efficient workflows.

Key Features

- Scalable modular platform
- Small footprint
- Integrated automation
- Database interface and report generation
- MPO and MTP capable
- Growth enabling

Applications

- IL, RL and length testing optical connectors and cable assemblies, structured-cabling solutions, and optical splitters
- Single-mode and multimode applications
- Multifiber assemblies automated testing
- Verifying continuity and polarity of large multifiber assemblies
- Measuring RL of line cards and receptacle-based transponders

Compliance

- MAP mORL-A1 modules installed in a MAP Series chassis comply with CE, CSA/UL/IEC61010-1, and LXI Class C requirements

Specifications

For more information on this or other products and their availability, please contact your local VIAVI account manager or VIAVI directly at 1-844-GO-VIAVI (1-844-468-4284) or to reach the VIAVI office nearest you, visit viavisolutions.com/contacts.

Parameter	Single-Mode mORL-A1		Multimode mORL-A1	
Source				
2-Wavelength Version	1310, 1550 nm		850, 1300 nm	
4-Wavelength Version	1310, 1490, 1550, 1625 nm		—	
Fiber Types				
Single Fiber	Single-Mode 9 µm core		50 µm core (OM3)	
Dual Fiber	—		50 µm core (OM3) and 62.5 µm core (OM1). Software selectable	
Measurement Time				
Initializing Time	< 4s			
Averaging Options Per Wavelength	1, 2, 5, 10s			
Insertion Loss				
Modes	—		LED or laser (software selectable)	
Display Resolution	0.001 dB			
Total IL Uncertainty[1,5,6]	± 0.02 dB		± 0.05 dB	
Additional Uncertainties Due to 1xN Switching (if mOSW-C1 added)	± 0.01 dB			
Additional Uncertainties Due to Fiber Position in the Integrating Sphere[2]	± 0.03 dB			
DUT Length for Valid Length Measurement[7]				
DUT Reflections (both ends) < 40 dB	> 170 cm			
DUT Reflections (both ends) > 40 dB	> 70 cm			
Return Loss				
Display Resolution	0.01 dB			
Return Loss Repeatability[3,4]	30 to 65 dB	± 0.1 dB	15 to 60 dB	± 0.2 dB
	65 to 70 dB	± 0.2 dB		
	70 to 75 dB	± 0.4 dB	60 to 70 dB	± 0.5 dB
	75 to 80 dB	± 1.5 dB		
Return Loss Accuracy[3]	30 to 70 dB	± 1.0 dB	15 to 20 dB	± 1.8 dB
	70 to 75 dB	± 1.7 dB	20 to 60 dB	± 1.3 dB
	75 to 80 dB	± 3.0 dB		

Specifications continued

Parameter	Single-Mode mORL-A1	Multimode mORL-A1
Recalibration Period	1 year	
Environmental Specifications		
Warm-up Time	20 min	
Operating Temperature, Humidity	25 ± 5°C non-condensing humidity	
Storage Temperature	- 30 to + 60°C	
Physical Specifications		
Size (W x H x D)	4.06 x 13.26 x 37.03 cm (1.6 x 5.22 x 14.58 in)	
Weight (Approximately)	1.2 kg (2.65 lb)	

[1] After valid zero loss, total expanded uncertainty (2σ), and reconnecting the same connector and OPM adaptor, temperature ±1°C, using internal source

[2] 24-channel ribbon fiber

[3] All measurement specifications provided at 5 s averaging time and 200 m range, unless otherwise stated

[4] 10 measurements with a stable connection of a 3 m patch cord

[5] For LED mode, after valid zero loss, total expanded uncertainty (2σ), and reconnecting the same connector and OPM adaptor, temperature ±1°C, using internal source

[6] IL uncertainty from launching condition is not included

[7] Return Loss and Insertion Loss can still be performed on shorter DUTs

Ordering Information

Insertion Loss and Return Loss Modules

All PCT systems will require and IL/RL meter in a MAP-Series platform. Please consult the MAP-300 and the MAP-200 data sheets for more information on the platforms.

Type	Part Number	Description
Single Mode IL/RL Meter	MORL-A13500-STD-M100-MFA	IL/RL Meter 1310 /1550nm SMF FC/APC
	MORL-A13500-BID-M100-MFA	IL/RL Meter 1310/1550nm SMF Bidirectional FC/APC
	MORL-A13456-STD-M100-MFA	IL/RL Meter 1310/1490/1550/1625nm SMF FC/APC
	MORL-A13456-BID-M100-MFA	IL/RL Meter 1310/1490/1550/1625nm SMF Bidirectional FC/APC
Multimode IL/RL Meter	MORL-A11308-STD-M101-MFA	IL/RL meter 850/1300 nm 50um OM3 MMF FC/APC
	MORL-A11308-BID-M101-MFA	IL/RL meter 850/1300nm 50um OM3 MMF Bidirectional FC/APC
	MORL-A11308-BID-M112-MFA	IL/RL meter 850/1300 nm Dual Output OM3/OM1 MMF Bidirectional FC/APC
	MORL-A11308-STD-M112-MFA	IL/RL meter 850/1300 nm Dual Output OM3/OM1 MMF FC/APC

MAP-Series Switch Configurations

All mOSW-C1 switches are configured by a single part number that defines the function and options of the module. The **XXX** code defines the fiber type, as seen in Table 1, and the **YY** code defines the connector type, as seen in Table 2. For more switch options and specification details consult the mOSW-C1 data sheet.

Part Number	Description
MOSW-C111C004B0-MXXX-MYY	Single 1 x 4 switch, bulkheads
MOSW-C111C008B0-MXXX-MYY	Single 1 x 8 switch, bulkheads
MOSW-C111C012B0-MXXX-MYY	Single 1 x 12 switch, bulkheads (Dual width module)
MOSW-C111C024B0-MXXX-MYY	Single 1 x 24 switch, bulkheads (Dual width module)

Table 1

XXX code	Fiber Type
M100	9 µm Single Mode
M101	50 µm (OM3)
M102	62.5 µm (OM1)
M105	100 µm

Table 2

YY Code	Connector Type
MFP	FC/PC
MFA	FC/APC
MSC	SC/PC
MSU	SC/APC
MLC	LC/PC
MLU	LC/APC

MAP-Series Remote Power Head Configurations

Optional mOPM remote head can be added to the PCT system. The available configurations are in the table below. For more power meter options and specification details consult the mOPM-C1 data sheet.

Type	Part Number	Description
Remote Head Base Cassette	MOPM-C1RH1	Single channel remote interface cassette
	MOPM-C1RH2	Dual channel remote interface cassette
	MOPM-C1RH4	Quad channel remote interface cassette
Remote Head Options	MOPM-C1RHPCT	2mm InGaAs PCT system remote head
Integrated Remote Head Options	MOPM-C1RHIP	Integrated PCT system remote head

Software Options

VIAVI offers software licenses that can accompany your PCT system

Type	Part Number	Description
MAP-300 Family	MSUP-300A-FIT	MAP-300 fiber connector inspection app - requires probe
	MSUP-300A-PCTMAPPING	MAP-300 PCT polarity and port mapping application add-on
	MSUP-300A-PCTREMDB	MAP-300 PCT remote centralized database connection key
	MSUP-300A-SBSC	MAP-300 PCT driver for legacy SB/SC series switches
	MSUP-BIDIUPG	MAP-300 mORL Bi-di upgrade license - requires high directivity mOSW 2x2
	MSUP-300A-PCT-TDR	MAP-300 Enhanced PCT TDR License
	MSUP-300A-PCTCASCADE	MAP-300 PCT Switch Cascade
	MSUP-300A-PCTLOGGING	MAP-300 PCT Continuous Mode Logging License
MAP-200 Family	MSUP-FIT	MAP-200 super application fiber inspection (FIT)
	MSUP-PCTMAPPING	MAP-200 super application PCT mapping
	MSUP-PCTREMDB	MAP-200 CT remote database connection key
	MSUP-SBSC	MAP-200 driver for legacy SB/SC series switches
	MSUP-PCTCASCADE	MAP-200 PCT Switch Cascade

Accessories

Accessories (Optional)	Product and Description	
Inspection and Cleaning Tools	CleanBlastPRO	The patented VIAVI Solutions® CleanBlastPRO fiber end-face cleaning system provides a fast, effective, and cost-efficient solution for removing dirt and debris from connectors in most common applications.
	FiberChek probe microscope	One-button FiberChek Probe delivers a reliable, fully autonomous, handheld inspection solution for every fiber technician.
	P5000i fiber microscope	Automated Fiber Inspection and Analysis Probe provides PASS/FAIL capability to PC, laptops, mobile devices and VIAVI test solutions. The PCT application offers an inspection pass/fail.
	FVAi/FVDi Benchtop Microscopes	Digital benchtop microscopes are the ideal inspection solution for fiber connector production by giving users a single system that is scalable to optimize throughput at any stage of the production process.
Replacement Parts	Mating sleeves	AC500;FC/PC-FC/PC Universal Connector Adapter
		AC501;FC/PC-SC/PC Universal Connector Adapter
		AC502;FC/APC-FC/APC Universal Connector Adapter
		AC503;FC/APC-SC/APC Universal Connector Adapter
Detector Adaptors	A complete range of single ferrule, duplex, and bare fiber power meter adaptor are available at VIAVI including MPO, FC, LC and Integrating spheres. Refer to the AC adaptor selection guide for more information.	

A wider range of inspection tools are available at VIAVI. More information about the products and accessories can be accessed through our website at www.viavisolutions.com. For further assistant please contact your local VIAVI account manager or VIAVI directly at 1-844-GO-VIAVI (1-844-468-4284) or to reach the VIAVI office nearest you, visit viavisolutions.com/contacts.

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