Single Fiber Insertion Loss and Return Loss Test System

mOLM-C1 with PCT-rm Application Framework for MAP Series

PCT-rm is a MAP-220 based Insertion Loss (IL) and Return Loss (RL) solution targeting single fiber connector applications in the lab and in manufacturing. It is part of the broader MAP-Series Passive Connector Test (PCT) solution family which provides test solutions across the entire connectivity eco-system.

Building on the heritage of the classic JDSU RM and RX meters, the PCT-rm leverages the industry standard optical continuous wave reflection (OCWR) test method. A patented real-time measurement engine enables measurement performance and speed that is independent of the number of measured wavelengths. Production throughput is maximized independent of measurement need. A full range of power meter connector adapters ensures the unit can be configured for all connectivity applications.

The PCT-rm is part of the extended MAP LightTest family of solutions for passive components and optical connectors. The Light Test series provides application specific, integrated test solutions that leverage the power of the VIAVI MAP System. Built with specialized modules and assemblies of Light Direct Modules.

Light Test

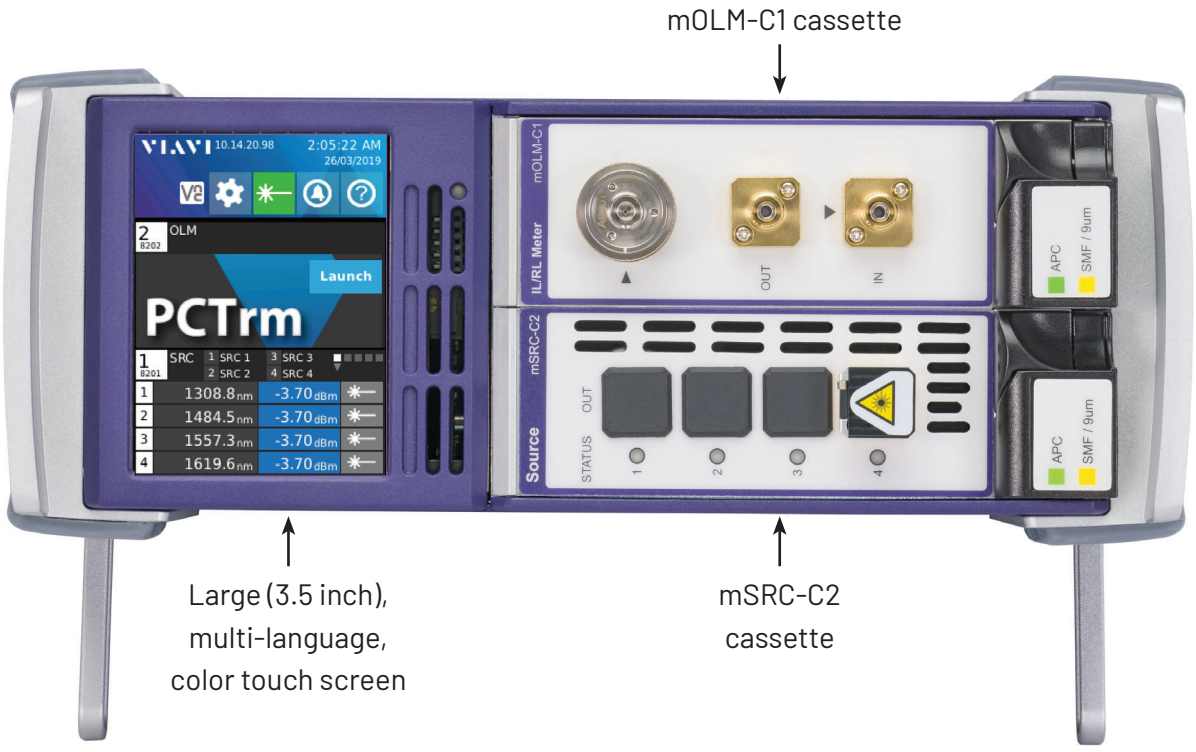
Key Benefits

- Real-time high repeatability system for IL and RL
- Multi-language, simple user interface enables direct deployment on production lines
- PCT Control Centre, a PC application simplifying data management and report printing
- Modular design supporting Multimode (EF compliant), Single-mode, and tunable sources
- Applications
- Single fiber connector manufacturing
- Qualification testing of connectors and simple broad band passive components

Safety Information

- Complies to CE, CSA/UL/IEC61010-1, LXI Class C requirements, meets the requirements of IEC 60825-1 (2014) Class 1M and complies with 21 CFR 1040.1 except deviations per Laser Notice No. 50, July 2001

The PCT-rm is delivered by combining the mOLM-C1 measurement module with an mSRC-C2 source module in a MAP-220C chassis, giving users all the capabilities they need for IL & RL testing in a compact system.



- Two slot, benchtop chassis gives customers full access to the broader MAP series system capabilities.
- LXI compliant LAN connectivity
- SCPI based remote commands over ethernet or an optional GPIB interface
- The PC based asset management tool enhances the ability to collect and centrally store data on remote network drives.
- Multiple USB ports enable the integration of a USB foot pedal device to creates a simple yet ergonomic solution for manufactures.

Measurement Modes

Instrument Mode

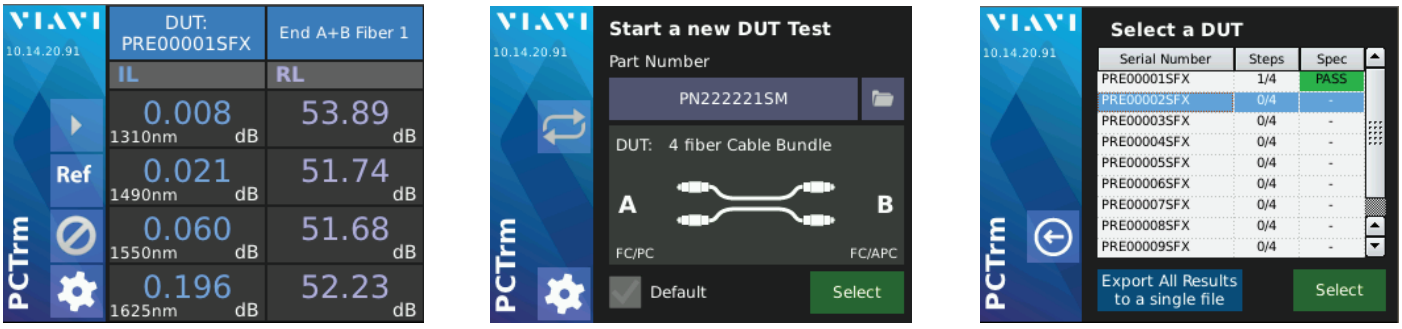
This measurement mode is designed to be always on and immediately available using the 3.5-inch LCD touch screen on the controller or though remote VNC. One touch referencing for IL and RL is simple and intuitive. Measurement resolution and averaging time are user controllable. The display can be configured to measure absolute power, insertion loss or insertion loss AND return loss.

Measurements are done in parallel with all 4 wavelength results reported in less than 0.5 s. IL and RL are measured concurrently. A full range of on-board measurement management tolls are available to manage source integration and calibration. In this mode, an external light source (like a tunable laser) can configured and used.

Simple large display shown in single and multi-wavelength mode. The capacitive touchscreen enables quick and efficient navigation.

Device Aware Mode

Unlike other instruments in this performance class, the PCT-rm is delivered with a fully integrated workflow automation mode. DUT definition files and serial numbers can be pre-loaded to deliver a full production automation environment. Connecting the PCT-rm to your corporate or instrument LAN enables test results to be automatically uploaded to a shared directory. The DUT definition files can be centralized and shared amongst multiple units. If rework is required, results can be reloaded on any unit matching the hardware profile required to execute the test.



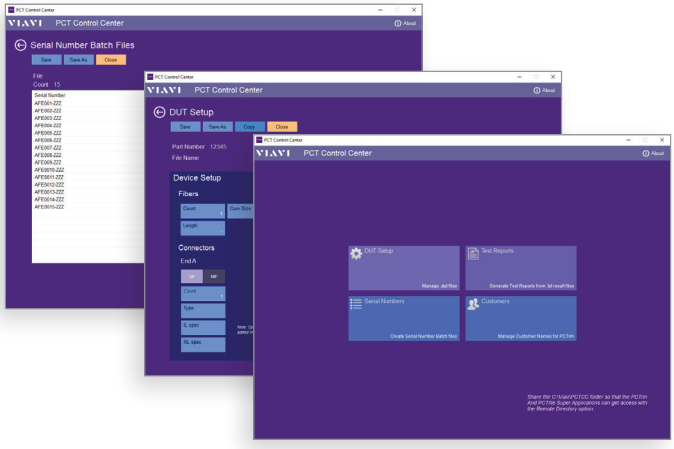
Example screens from DUT aware mode. Batch loads of serial numbers can be loaded. When testing the results can be frozen with a simple touch prior to uploading. Results may only be uploaded if the pass the DUT test criteria.

PCT Control Center

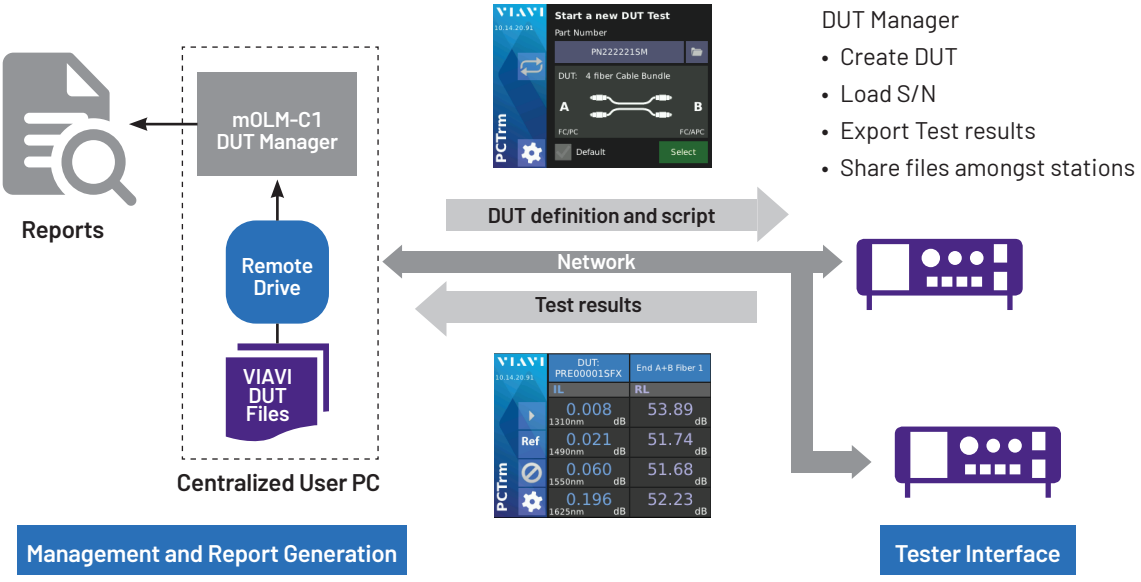
PCT Control Center is a free companion PC application, designed to maximize the value of the DUT Aware measurement mode. It is delivered standard with the PCT-rm.

A simple, easy to use PC interface enables creating, editing and managing DUT definition files, report templates and serial number batches. Files are saved to a shared directory and allows all PCT-rm units to use these files. If network connectivity is not available, USB storage media can be used to transfer the information. Test results can be uploaded, viewed, filtered and printed using both standard and editable HTML templates.

PCT Control Center is also compatible with the PCT-lite application which leverages the mORL-A1 measurement engine. Users who wish to migrate to mandrel-free testing, can continue to use the Control Center application and DUT files.



PCT Control Center is a simple PC application designed to simplify management of the PCT-rm and PCT-lite based IL and RL systems.



Multiple PCT-rm systems can share centrally managed and stored DUT definition files. Data is automatically uploaded to a shared directory and can be printed using the Control Center report engine.

Specifications

mOLM-C1 Cassette Optical Performance[1]

Parameters	SMF	MMF (50 µm)
Wavelength		
Wavelength Combinations[2]	1310/1550 nm 1310/1490/1550/1625 nm	850/1300 nm
Wavelength accuracy	± 10 nm	
Multimode Launch conditions		As per IEC 61280-4-1
Power Meter		
Wavelength Range	800-1650 nm	
Fiber Type	SMF and MMF with NA < 0.27	
Dynamic Range	+6 dBm to -70 dBm	
Display Resolutions	0.001 dB	
Linearity	± 0.015 dB ± 5 pW	
Uncertainty at Reference Condition[3]	± 3.0%	
Additional Uncertainty Due to Polarization	± 0.015 dB	
Noise	± 3 pW	
Detector Return Loss (APC connector)	> 65 dB	
Insertion Loss[4]		
Max Measurement Speed (4 lambda)	All wavelengths measured in 0.5 s Measured concurrently with Return Loss	
Display Resolution	0.001 dB	
Display Range	0 to -60 dB	
Accuracy (> -8 dBm Reference Power)		
0 to - 40 dB	± 0.04 dB	± 0.04 dB
-40 to - 50 dB	± 0.05 dB	NA
Repeatability (> -10 dBm Reference Power)		
0 to - 40 dB	± 0.002	± 0.005
-40 to - 50 dB	± 0.005	NA
Return Loss[4]		
Max Measurement Speed (4 lambda)	All wavelengths measured in 0.5 s Measured concurrently with Insertion Loss	
Display Dynamic Range	10 to 80 dB	10 to 50 dB
Display Resolution	0.01 dB	
Accuracy (> -8 dBm Reference Power)		
10 dB to 50 dB	± 0.3 dB	± 0.3 dB
50 dB to 65 dB	± 0.4 dB	NA
65 dB to -70 dB	± 1.0 dB	NA
70 dB to 75 dB	± 2.0 dB	NA
Repeatability (> -10 dBm Reference Power)		
10 dB to 50 dB	± 0.02 dB	± 0.3 dB
50 dB to 65 dB	± 0.4 dB	NA
65 dB to 70 dB	± 1.0 dB	NA
70 dB to 75 dB	± 2.0 dB	NA

1. All optical measurements performed 60 minutes after power on in a controlled environment of 23±2°C. All uncertainties are 2σ values unless otherwise stated. Specifications not guaranteed outside operating wavelength limit of the optical power meter. The mSRC-C2 and mOLM-c1 shall be connected with the rigid jumper supplied with the system.
2. Peak wavelength defined per IEC 61280-1-3 2010 clause 3.1.3.
3. Power meter reference condition: Input fiber SMF-28, T= 23 ±5°C, spectral width of source < 6nm, -20 dBm input power
4. Tested in wavelength cycling mode using specified mSRC-C2, performed within 5 min of an IL reference and observed over 15min, ignores any PDL contribution from DUT

Specifications continued

Dimensions (W x H x D)	220 x 88.2 x 387 mm (8.66 x 3.47 x 15.24 in)
Weight	8 kg (17.6 lbs)
Controller	CPU ARM AM335x Linux OS 4GB user flash memory Field replaceable (co-packaged with Power supply)
Display	3.5-inch color screen 320 x 240 resolution
Remote interface	Ethernet 10/100/1000Base-T GPIB (optional)
USB device support	Mouse, keyboard, memory stick, foot pedal
Power and Safety	
Power Supply	100 to 240 V AC, 50/60 Hz Auto-switching Field replaceable (co-packaged with controller)
Power consumption	160 VA
Local Laser interlock	Software password controlled
Environmental	
Operating temperature	10 to 40°C
Storage temperature	–30 to 60°C
Relative humidity	5 to 85% noncondensing

Configurations and Ordering Information

The PCT-rm ships in a preconfigured package with all the required elements including the MAP-220C mainframe, mOLM-C1 measurement module and applicable mSRC-C2. Other configurations are possible. 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.

Order Code[1]	MAP-220 IL/RL Meter Variants
Single Mode Fiber, Dual Wavelength	
MAP-RM-C13500FB-M100-MFA	1310/1550 nm Basic FP laser, FC/APC
MAP-RM-C13500FP-M100-MFA	1310/1550 nm FP laser with Temperature Control, FC/APC
MAP-RM-C13456FP-M100-MFA	1310/1490/1550/1625 nm FP laser with Temperature Control, FC/APC
50um Multimode Fiber Solution	
MAP-RM-C11308LP-M101-MFA	850/1300 nm LED 50um MMF EF compliant, FC/APC

1. All systems include the interconnection jumper to connect mSRC and mOLM modules and one FC style power meter adaptor

The table below highlights commonly ordered options and spare parts. In addition, a complete range of single ferrule, duplex, bare fiber power meter adaptors and matting sleeves are available. VIAVI also offers a range of connector inspection tools. For additional options please contact your VIAVI Solutions sales consultant.

Accessories (Optional)	Description
MAP-200CGPIB-A	GPIB Interface Option
MAP-200C01	Rack-mount conversion kit
MAP-200C02	Benchtop conversion kit
MAP-200CLD-A	Replacement LightDirect Controller
MAP-200A020	Hardened inter-connection jumper, SMF, FC/APC
MAP-200A021	Hardened inter-connection jumper, OM3, FC/PC
AC500	Replacement bulkhead adapter FC/PC
AC502	Replacement bulkhead adapter FC/APC

MAP-200A20 hardened interconnect jumper

Power meter adaptors

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