

# Network Master™ Series

## MT9090A

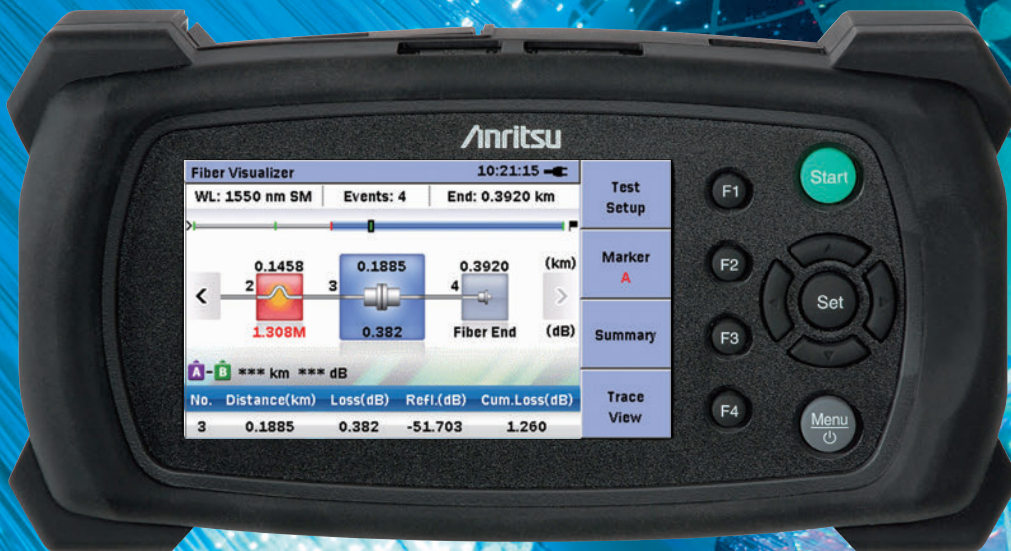
Mainframe

## MU909014A1/B/B1/C/C6

## MU909015A6/B/B1/C/C6

μOTDR Module™

1310 nm/1490 nm/1550 nm for Installation,  
1625 nm & 1650 nm for Maintenance,  
1310 nm/1550 nm plus 1625 nm or 1650 nm





# Field Optical Testing Redefined!

## MT9090A with MU909014/15 Overview

There are many handheld OTDRs on the market that appear to be a good value until they are put into action and the user quickly finds out that they lack the performance needed to install and maintain today's networks.

The new MU909014/15  $\mu$ OTDR Module series for the MT9090A Network Master™ platform from Anritsu finally addresses this need by providing all of the features and performance required for installation and maintenance of optical fibers in a compact, modular test set. The MT9090A represents an unmatched level of value and ease of use, while not compromising performance. Data sampling of 2 centimeters, dead zones of 0.8-meter and dynamic range up to 38 dB ensure accurate and complete fiber evaluation of any network type – premise to access, metro to core...including PON-based FTTx networks featuring up to a 1 × 64 split.

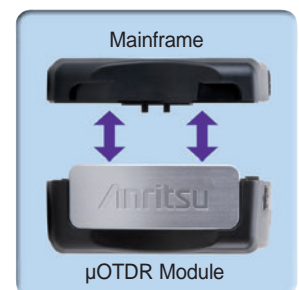
The MT9090A with MU909014/15 module represents a new era in optical fiber testing!

## Key Features

- Tri-wavelength OTDR for both installation and maintenance (1310 nm/1550 nm plus filtered 1650 nm or 1625 nm)
- Built-in PON Power Meter, Loss Test Set and Light Source functions
- High-end OTDR performance in a pocket-size package with unique battery operation
- “Fiber Visualizer” mode simplifies operation, no OTDR knowledge needed
- Complete PON testing through splitters up to 1 × 64
- Bluetooth, Wi-Fi and Ethernet connectivity\*

\*: These features use an USB Ethernet converter, USB Wi-Fi dongle, or USB Bluetooth dongle.

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# MU909014/15

## $\mu$ OTDR Module™

1310 nm/1490 nm/1550 nm for Installation,  
1625 nm & 1650 nm for Maintenance,  
1310 nm/1550 nm plus 1625 nm or 1650 nm



Network Master™ and  $\mu$ OTDR Module™ are a trademark of Anritsu Corporation.

# A Truly Revolutionary OTDR!

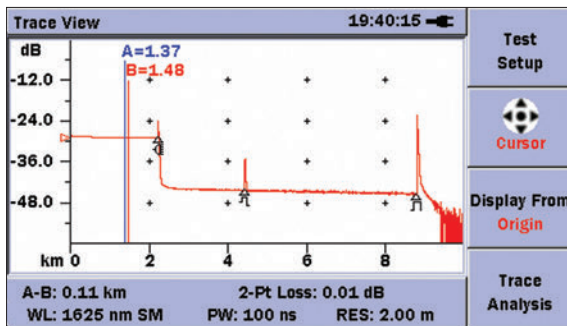
Introducing the first handheld OTDR that does not compromise performance – the new  $\mu$ OTDR from Anritsu. With performance that rivals traditional OTDRs that are four times the size and more than double the price, the Network Master MT9090A  $\mu$ OTDR has created a new class of test instruments. It features 2 cm resolution for accurate mapping of events, dead zones of 0.8-meter (2.6-foot) and a dynamic range of up to 38 dB – enough to test over 150 km (90+ miles). The MT9090A  $\mu$ OTDR also takes portability to a new level by being the first handheld OTDR that truly fits in the palm of your hand.

## Complete Testing Tool - Premise to Core

With a dynamic range of up to 38 dB, the  $\mu$ OTDR evolves far beyond the premise/access applications that other handheld OTDRs service. Metro links can be tested with lower pulsewidths which provides greater detail and better resolution while long haul fibers up to 175 km (108 miles) can also be completely evaluated.

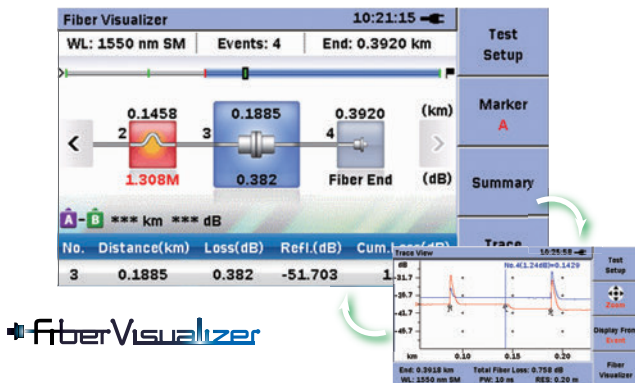
## FTTx and PON Ready

With splitter-based fiber-to-the-x (FTTx) deployments becoming more popular, the need for test equipment to thoroughly test and maintain them has risen. The  $\mu$ OTDR series features the ability to test up to a 1 x 64 split completely from end-to-end and with high resolution.



## Easy Operation and Analysis

“Fiber Visualizer (FV)” is a new fault location function designed to simplify the entire testing process. Fiber Visualizer automatically selects the testing parameters to ensure the correct setup and provides a simple, graphical summary of the fiber under test within seconds. A comprehensive PDF report can then be customized and generated, completing the testing process.



## 0.8-m Dead Zone for Short Fiber Analysis

With 0.8-meter dead zones, the MT9090A is perfect for evaluating central office, FTTx and intra building cables.

## Fast Real Time Sweeping

The MT9090A  $\mu$ OTDR features real-time updates as quickly as 0.25 seconds. This is useful for connector and splice optimizations as well as verifications of parameter selection.

## Portable

The MT9090A  $\mu$ OTDR takes portability to a whole new level. With dimensions of just 19 cm x 9.6 cm x 4.8 cm (7.5" x 3.8" x 1.9") and a weight of only 700 g (1.54 lbs.), the  $\mu$ OTDR is the smallest and lightest OTDR on the market. With its lightweight design and user friendly dimensions, the MT9090A is perfect for the outside plant environment and can easily be managed with one hand. The standard soft case with shoulder strap further increases portability when traveling from the truck to the testing site.

## Bluetooth, Wi-Fi and Ethernet Connectivity

The Bluetooth feature enables you to share files between the  $\mu$ OTDR series and a PC. The Wi-Fi and Ethernet features enable you to share files as well as use the remote GUI feature. You can connect the  $\mu$ OTDR and PC, and control the  $\mu$ OTDR series from a browser.



- Bluetooth:**
- Share file folder
- Wi-Fi and Ethernet:**
- Share file folder
  - Remote GUI

## Modular Design

The MT9090A features a modular design allowing modules to be easily changed in the field. Users can interchange different OTDR modules or perform other optical network testing such as optical channel analysis with the available CWDM channel analyzer module or 10/100/1000 MB Ethernet testing on optical or electrical links. Operation is quite similar between modules so the user is immediately familiar with operation.

## 4.3-inch Wide Screen Display for Easy Viewing

The high resolution, full color, 4.3-inch wide screen display is the perfect format for viewing OTDR results. It also provides excellent readability both indoors and outdoors.

## Integrated Launch Fiber

To further simplify testing, the MU909014/15 series is the only handheld OTDR that features an integrated launch cable. A ten meter (30 feet) fiber is built-in so initial fiber connections can be verified without the need for additional patchcords or launch fibers.

# Reliable. Capable.

When buying products, you tend to choose ones that are innovative and from established companies. When you need to install and maintain optical networks, this should also apply. With over 50 years of combined OTDR design, Anritsu, which now includes NetTest, delivers the features that matter. Having been in the test and measurement business for a long time, we understand the importance of performance, portability, reliability, easy operation and of course price.



## Event Table with User Defined Thresholds

PASS/FAIL thresholds for key acceptance criteria such as splice loss, reflectance and total span loss can be set in the MT9090A allowing technicians to easily assess a fiber's condition. Failing values are clearly highlighted in the event table alerting technicians of potential problems.

## Unique Battery Operation

Since AC power is not always available where you need it, especially at fiber pedestals, the MT9090A typically provides 8 hours of testing on a single charge. This coupled with an optional car cigarette lighter cord guarantees the MT9090A is ready when you are.  $\mu$ OTDR supports widely available NiMH and Alkaline batteries for truly unique battery operation.

## Quick Startup

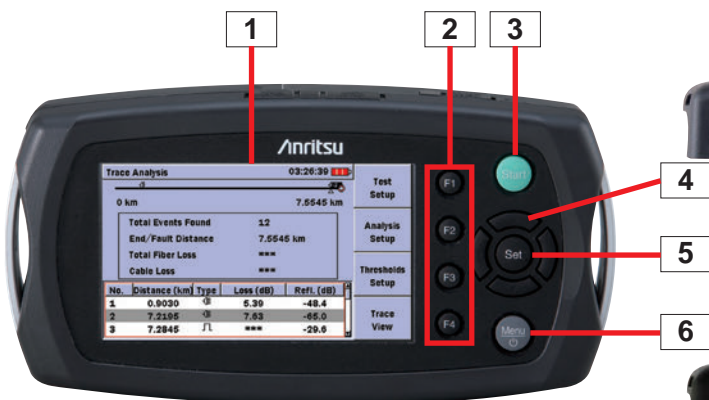
The MT9090A is ready for measurement in under 15 seconds so productive work can start immediately.

## Video Inspection Probe Support

When equipped with the optional connector video inspection probe (G0306B), the  $\mu$ OTDR becomes a powerful tool for evaluating connector cleanliness and quality. The G0306B can reduce issues by verifying the condition and cleanliness of connector end faces during the installation phase.

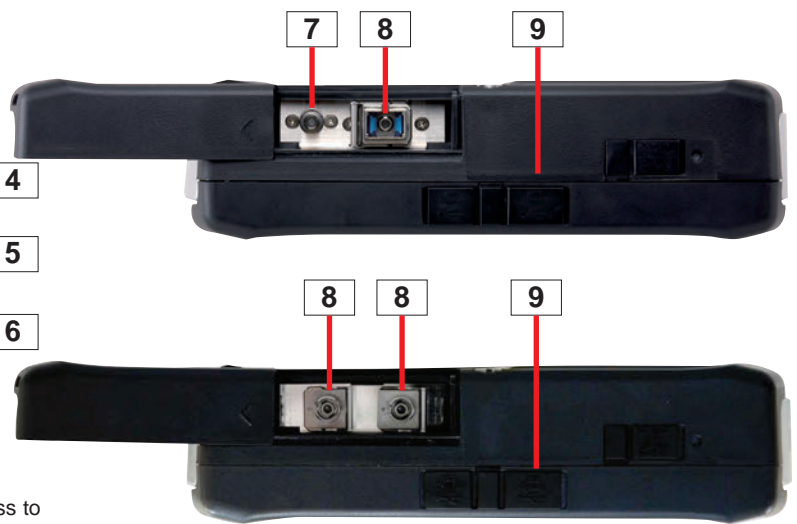
The G0306B has added a Pass/Fail analysis function to the conventional VIP.

## Small on price, Not on features!



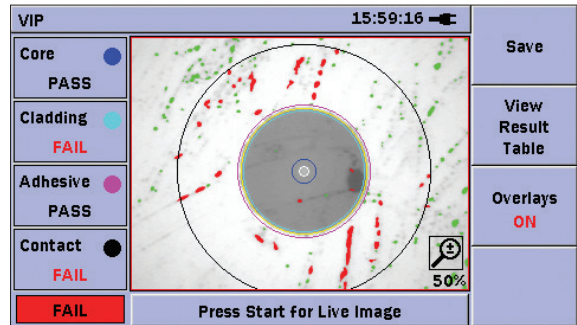
- 1 4.3-inch high resolution, indoor/outdoor color display
- 2 Dedicated function keys for performing tasks
- 3 Start key for true one-button testing
- 4 Arrow keys for zooming, cursor movement and menu navigation

- 5 Set to select/accept
- 6 Menu key for easy access to set-ups and mass storage
- 7 Visible laser diode\*1
- 8 OTDR or power meter port\*2
- 9 Dual USB ports for quick and easy data transfer



Top View

This new function inspects the state of the connector end using video. It can automatically inspect the end of the optical connector for defects and scratches (The automatic pass/fail determination is made in accordance with the IEC61300-3-35 standard.) You can also create a PDF report on the  $\mu$ OTDR series.



## Screen Capture Function

Screen shots are sometimes useful for adding to reports so the MT9090A features the ability to save screen shots as Bitmap images.

## Functions for FTTx

One  $\mu$ OTDR module supports FTTx installation and maintenance (PON Power Meter, Loss Test Set, Light Source) in addition to  $\mu$ OTDR functions. (See page 6 for details.)

\*1: There are installation restrictions, depending on the model. See the Ordering Information for details.  
 \*2: The number of ports is different, depending on the model. See the Ordering Information for details.

# Installation and Maintenance Simplified

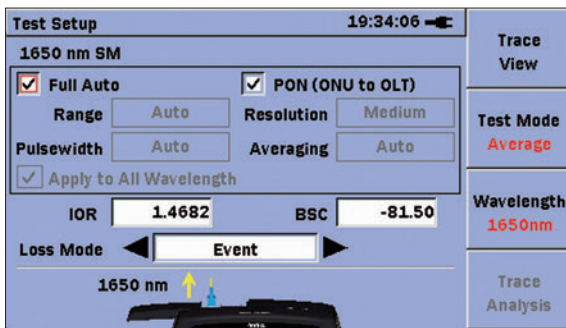
Since the MT9090A is designed for technicians of any level, its hardware and user interface are optimized for simplicity. A customizable testing sequence and “Full Auto” mode automates testing and guides novice users. Specialized maintenance wavelengths are also available to eliminate equipment damage and transmission interruptions.

## Installation Simplified

The MU909014/15  $\mu$ OTDR Module series provides easy and accurate verification of fiber installations at 1310 nm, 1490 nm and 1550 nm to ensure your network is ready for any transmission type. The user simply connects the fiber, selects “Full Auto” and presses “Start” - all settings are automatically selected to ensure accurate and constant results for any skill level. Upon completion, all key fiber characteristics are displayed within seconds. Experienced users can also “fine tune” all testing parameters and make manual measurements.

- Step 1 – Connect fiber and Power on
- Step 2 – Select “Full Auto” and Press “Start”

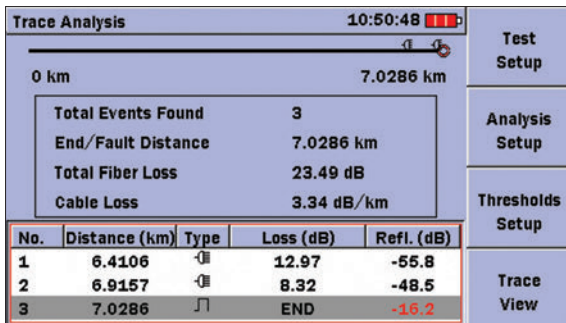
All testing parameters are automatically selected.



\*: The screen items depend on the selected module.

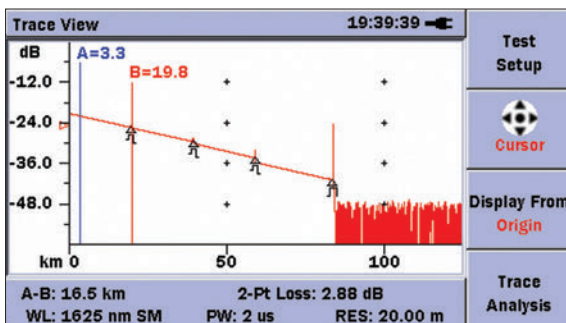
## Step 3 – Read Results

Test results including all splices and connectors, as well as total fiber length and loss are shown in an easy to read table.



## Step 4 – View Trace

View trace if desired to see the complete fiber trace and make any manual measurements.

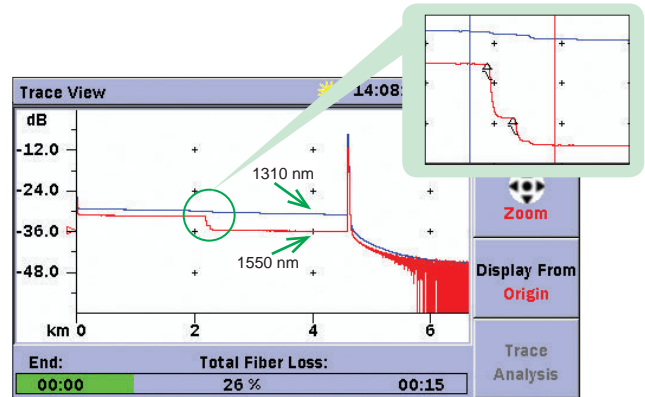


## Maintenance Simplified

Being able to test active fibers is a key requirement for network maintenance since multiple users often share portions of the network and taking them all out of service is not an option. To address this need, special modules are available in the MT9090A  $\mu$ OTDR series. 1650 nm is recommended by the ITU-T L.41 for active maintenance since it features 100 nm of isolation from the nearest 1550 nm transmission wavelength. The 1650 nm OTDR also features an integrated filter to block transmissions from damaging the OTDR. 1625 nm is also available and can be used for in-service testing or as an “extra” test to verify installation for stresses such as macrobends.

### Added Macro Bending analysis function:

The  $\mu$ OTDR series finds macro bending points by comparing data from two traces: one 1310 nm and the other 1550 nm.



## Network Documentation Simplified

### Simple Data Storage

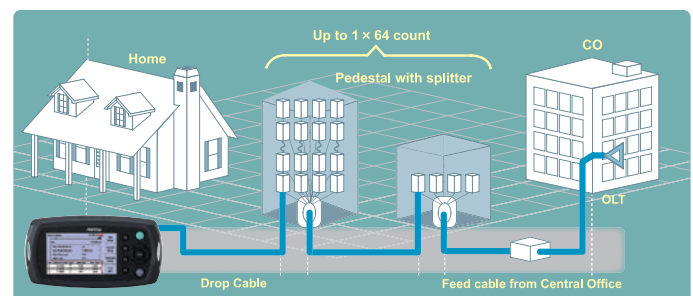
With internal data storage plus support for external USB memory devices, the MT9090A is more than capable. Add to this auto file saving and naming for easy, error-free documenting of your network.

### Common OTDR Data Format

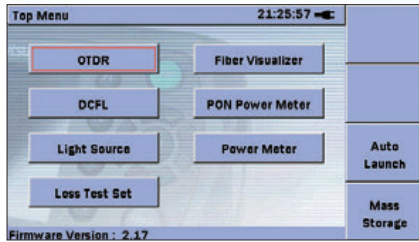
The MT9090A supports the universal Telcordia SR-4731 format making it compatible with not only legacy Anritsu and NetTest products, but with many other vendors data.

### Free and Simple Software Upgrades

Firmware upgrades are easily performed via USB and available from the Anritsu website for registered users or through Anritsu customer support.



# All-in-one FTTx Installation and Maintenance Functions

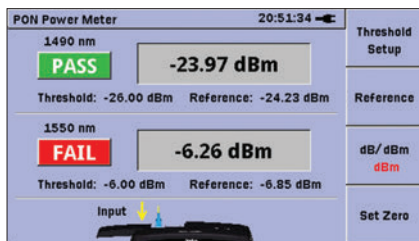


There are three types of  $\mu$ OTDR module: single wavelength (1625 nm or 1650 nm) for the FTTx maintenance market including Metro networks, dual wavelength (1310 nm/1550 nm) for the installation market, and triple wavelength for both these markets.

These all-in-one  $\mu$ OTDR modules support every function required at fiber installation and maintenance, as well as OTDR functions. The PON Power Meter and Power Meter are ideal for loss measurements required for quality measurements and basic fault tests.

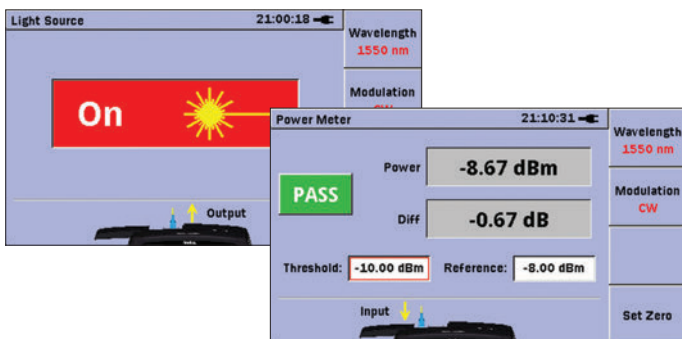
## PON Power Meter (1490 nm/1550 nm)

Generally, PON communications use three wavelengths: 1310 nm, 1490 nm, and 1550 nm. Data (1490 nm) and video (1550 nm) signals are sent to subscribers through one optical fiber but a general-purpose optical power meter cannot separate the two wavelengths, making it difficult to locate faults using optical level measurements. The PON Power Meter can identify and measure the two 1490 nm and 1550 nm signals to support PASS/FAIL evaluations based on a set threshold and reference value. Additionally, power measurements and  $\mu$ OTDR tests are quick and easy without changing the optical fiber because the PON Power Meter port is shared with the  $\mu$ OTDR function.



## Light Source/Power Meter

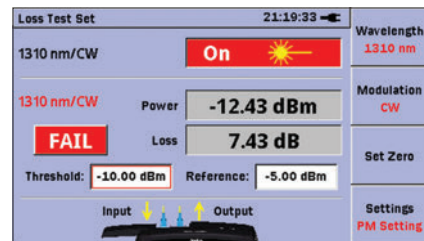
The  $\mu$ OTDR module can be used as a light source to identify an optical fiber and measure the loss by connecting an optical fiber identifier and optical power meter at the other end of the fiber. Since all wavelengths are shared by one  $\mu$ OTDR port, the fiber identification, loss, and  $\mu$ OTDR measurements can all be performed as a single task without changing the fiber connection. Both modulation (270 Hz, 1 kHz, 2 kHz) and CW signals are supported. The simple power meter function is ideal for checking optical levels to confirm a fault occurrence using total received power. Setting a threshold and reference value makes PASS/FAIL evaluation easy too. In addition, power measurements and  $\mu$ OTDR tests are quick and easy without changing the optical fiber, because the Power Meter port is shared with the  $\mu$ OTDR.



## Loss Test Set

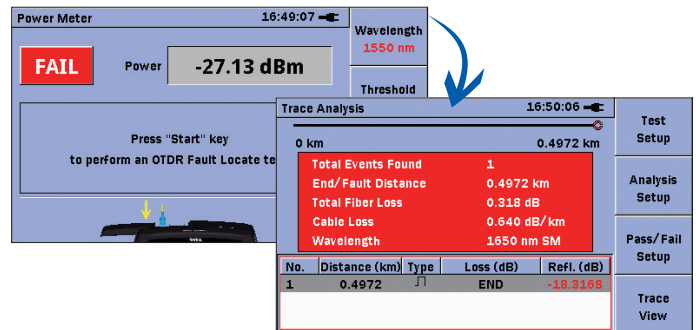
Combining the  $\mu$ OTDR module light source with the Power Meter supports use as a Loss Test Set.

The loss at both 1310 nm and 1550 nm can be measured with one  $\mu$ OTDR by looping-back the optical fiber. And both modulation (270 Hz, 1 kHz, 2 kHz) and CW signals are supported. Just setting the threshold and reference value makes PASS/FAIL evaluation easy.



## DCFL Function

The Drop Cable Fault Locate (DCFL) mode is a useful function to investigate faults occurring in a drop cable. It consists of the Power Meter function and OTDR function, so you are not required to switch measuring instruments or applications.



\*: DCFL mode depend on the selected module

## Visible Laser Diode

The optional visible red LD light source makes it easy to spot faults in splices and connectors and well as to manage fibers.



\*: The PON Power Meter, Light Source, Power Meter, Loss Test Set, and Visible Laser Diode functions have different menus, depending on the selected module. See the Ordering Information for details.

\*: The Visible Laser Diode is operated from the  $\mu$ OTDR and Power Meter menus.

\*: The screen items depend on the selected module.

# Specifications

## MT9090A Mainframe

Dimensions and Mass	190 (W) × 96 (H) × 48 (D) mm (7.5" × 3.8" × 1.9") (including Mainframe and Module) <700 g (1.54 lbs.) (including Mainframe, Module and Standard battery)
Display	4.3-inch TFT Color LCD (480 × 272 pixels, Transmissive)
Interface	USB 1.1, Type A × 1 (memory), Type B × 1 (USB mass storage)

## μOTDR Module Common (MU909014C/C6, MU909015C/C6, MU909014A1/B/B1 and MU909015B/B1, MU909015A6)

Fiber Type	10 μm/125 μm SMF (ITU-T G.652)	
Optical Connector	FC/SC/DIN adapter are changeable	
Distance Range	0.5, 1, 2.5, 5, 10, 25, 50, 75, 125, 250 km (IOR = 1.500000)	
Pulse Width	5, 10, 20, 50, 100, 200, 500 ns, 1, 2, 5, 10, 20 μs	
Linearity	Which ever is greater ±0.05 dB/dB or ±0.1 dB	
Return Loss Measurement Accuracy*1	±2 dB	
Distance Measurement Accuracy	±1 m ±3 × Measurement distance × 10 <sup>-5</sup> ±Marker resolution (excluding IOR uncertainty)	
Data Storage	Internal memory: 40 MB (<1,000 traces) External (USB Memory): 1 GB (<30,000 traces)	
IOR Setting	1.3000 to 1.7000 (0.0001 steps)	
Units	km, m, kft, ft, mi	
Other Functions	Integrated launch fiber: 10 m (30 ft) Connection check: Automatic check of OTDR to FUT connection quality Live fiber detect: Verifies presence of communication light in fiber Real time sweep: <1 sec (typ.) Macro bend analysis (without single-wavelength model) Bluetooth, Wi-Fi and Ethernet connectivity "Fiber Visualizer (FV)" function "DCFL" function (differs with selected module) Password protect function Video inspection probe (option)	
Language	User selectable (English, Simplified Chinese, Traditional Chinese, Korean, Japanese, French, German, Italian, Spanish, Polish, Portuguese, Finnish, Danish, Swedish, Spanish (Latin America), Russian and Dutch)	
Power Supply	9 V(dc), 100 V(ac) to 240 V(ac), Allowable Input voltage range: 90 V(ac) to 264 V(ac), 50 Hz/60 Hz	
Fiber Event Analysis	Automatic, Displayed in table format based on user defined PASS/FAIL thresholds	
Loss Measurement Modes	2-point loss, Splice loss, dB/km Loss LSA, ORL, Event	
OTDR Trace Format	Telcordia universal (.SOR) issue 2 (SR-4731)	
Battery	NiMH (Standard battery), NiMH (AA Type), Alkaline Dry Battery (AA Type)*2 Operating time (Standard battery): 8 hours (typ.)*3, Telcordia GR-196-CORE Issue2, September 2010 Recharging time: <4 hours (typ.)*4	
CE	EMC	EN61326-1, EN61000-3-2
	LVD	EN61010-1
	RoHS	EN50581

## MU909014C/C6 and MU909015C/C6 μOTDR Module

Model Name	MU909015C/C6-057 MU909015C/C6-067	MU909015C/C6-058 MU909015C/C6-068	MU909015C/C6-059 MU909015C/C6-069	MU909014C/C6-057 MU909014C/C6-067	MU909014C/C6-058 MU909014C/C6-068
Center Wavelength*5	1310/1550 ±20 nm*6 1625 ±15 nm	1310/1550 ±20 nm*6 1650 ±15 nm	1310/1490/1550 ±20 nm*6	1310/1550 ±20 nm*6 1625 ±15 nm	1310/1550 ±20 nm*6 1650 ±15 nm
Dynamic Range*7, *8	PW = 20 μs	38 dB/37 dB/35 dB*9, *10	38 dB/37 dB/35 dB*9, *10	36 dB/35 dB/35 dB	32.5 dB/31 dB/32.5 dB*9, *11
	PW = 500 ns	27 dB/26 dB/25 dB*9, *10	27 dB/26 dB/24 dB*9, *10	25 dB/24 dB/24 dB	24.5 dB/23 dB/24 dB*9, *11
Dead Zone*12 (IOR = 1.500000)	Fresnel: ≤0.8 m (Typical) Backscatter: ≤4.0 m (1310 nm, Typical), ≤4.5 m (1490/1550/1625/1650 nm, Typical)				
Number of Sampling Points*13	<250,001 pts (Course: <7,501 pts, Medium: <20,001 pts, Fine: <250,001 pts)				
Sampling Resolution	2 cm (min.)				
Testing Modes	OTDR (Full automatic, Manual, Real time), Power Meter, [Video Inspection Probe (Option)] [PON Power Meter, Loss Test Set, Light Source (MU909015C6, MU909014C6)]				
Power Meter	Please refer to the spec "Power Meter"				
PON Power Meter (only for MU909015C6/14C6)	Please refer to the spec "PON Power Meter"				
Light Source (only for MU909015C6/14C6)	Please refer to the spec "Light Source"				
Loss Test Set (only for MU909015C6/14C6)	Please refer to the spec "Loss Test Set"				
Environment	Operating temperature and humidity: -10° to +50°C, <95% (no condensation) Storage temperature and humidity: -30° to +70°C, <95% (no condensation) Vibration: MIL-T-28800E Class 3, Dust and Drip proof: IP51				
Laser Safety*14	IEC Pub 60825-1: 2007 Class 1M, 21CFR1040.10				

## MU909014A1/B/B1 and MU909015B/B1 $\mu$ OTDR Module

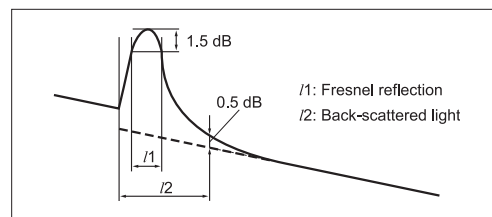
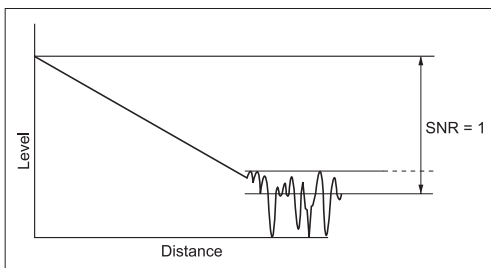
Model name	MU909015B/B1-056 MU909015B/B1-066	MU909014B/B1-056 MU909014B/B1-066	MU909014A1-053 MU909014A1-063	MU909014A1-054 MU909014A1-064
Center Wavelength*5	1310/1550 $\pm$ 20 nm*6		1625 $\pm$ 15 nm	1650 $\pm$ 15 nm
Dynamic Range*7, *8	PW = 20 $\mu$ s	37 dB/36 dB	32.5 dB*9, *11	
	PW = 500 ns	28 dB/26 dB	24.5 dB*9, *11	24 dB*9, *11
Dead Zone*12 (IOR = 1.500000)	Fresnel: $\leq$ 1 m Backscatter: $\leq$ 5 m			
Number of Sampling Points*13	<125,001 pts (Course: <6,251 pts, Medium: <25,001 pts, Fine: <125,001 pts)			
Sampling Resolution	5 cm (min.)			
Testing Modes	OTDR (Full automatic, Manual, Real time), Power Meter, [Visible Fault Locator (Option)], [Video Inspection Probe (Option)]			
Power Meter (only for MU909014B/B1/15B/15B1)	Please refer to the spec "Power Meter"		Not applicable	
Visible Fault Locator (only for MU909014A1/B1/15B1)	Connector: 2.5 mm universal Wavelength: 650 $\pm$ 15 nm (CW, +25°C) Output power: 0 $\pm$ 3 dBm (CW, +25°C) Modulation: CW, 1 Hz			
Environment	Operating temperature and humidity: -5° to +40°C, <80% (no condensation) Storage temperature and humidity: -20° to +60°C, <80% (no condensation) Vibration: MIL-T-28800E Class 3, Dust and Drip proof: IP51			
Laser Safety*14	IEC Pub 60825-1: 2007 Class 1, IEC Pub 60825-1: 2007 Class 1M, IEC Pub 60825-1: 2007 Class 3R (VLD Option), 21CFR1040.10			

## MU909015A6 $\mu$ OTDR Module

Model Name	MU909015A6-053 MU909015A6-063	MU909015A6-054 MU909015A6-064
Center Wavelength*5	1625 $\pm$ 15 nm	1650 $\pm$ 15 nm
Dynamic Range*7, *8	PW = 20 $\mu$ s	35 dB*9, *10
	PW = 500 ns	25 dB*9, *10
Dead Zone*12 (IOR = 1.500000)	Fresnel: $\leq$ 0.8 m (Typical) Backscatter: $\leq$ 4.5 m (Typical)	
Number of Sampling Points*13	<250,001 pts (Course: <7,501 pts, Medium: <20,001 pts, Fine: <250,001 pts)	
Sampling Resolution	2 cm (min.)	
Testing Modes	OTDR (Full automatic, Manual, Real time), Power Meter, [Video Inspection Probe (Option)] [PON Power Meter, Light Source]	
Power Meter	Please refer to the spec "Power Meter"	
PON Power Meter	Please refer to the spec "PON Power Meter"	
Light Source	Please refer to the spec "Light Source"	
Environment	Operating temperature and humidity: -10° to +50°C, <95% (no condensation) Storage temperature and humidity: -30° to +70°C, <95% (no condensation) Vibration: MIL-T-28800E Class 3, Dust and Drip proof: IP51	
Laser Safety*14	IEC Pub 60825-1: 2007 Class 1, 21CFR1040.10	

- \*1: Design assurance. Distance range: 25 km, Pulse width: 2  $\mu$ s, 20 km open the fiber-end. BSC: -78.5 (1310 nm), -80.1(1490 nm), -81.5 (1550 nm), -82.5 (1625 nm/1650 nm)
- \*2: All specifications are guaranteed by standard battery.
- \*3: Back light low, Sweeping halted, +25°C
- \*4: +10 to +30°C, Power off
- \*5: At +25°C, 1  $\mu$ s, except charging battery
- \*6: Typical value,  $\pm$ 25 nm is Guaranteed
- \*7: Typical value, Distance range: 125 km, Averaging: 180 sec, SNR = 1, +25°C, Except while charging battery, Subtract 1 dB for guarantee
- \*8: Dynamic range (one-way back-scattered light)  
SNR = 1: The level difference between the RMS noise level and the level where near end back-scattering occurs.

- \*9: 1490 nm/1550 nm cut filter included (1625 nm or 1650 nm port)
- \*10: Specified without background light (1625 nm, 1650 nm)
- \*11: In service Signal is -20 dBm (CW) at 1310 nm/1550 nm
- \*12: Return Loss 45 dB, +25°C  
Fresnel: PW = 5 ns, 1.5 dB down from the peak of Fresnel  
Backscatter: PW = 5 ns, Deviation  $\pm$ 0.5 dB



- \*13: Either medium and fine density value is selected depends on distance range
- \*14: Safety measures for laser products  
This option complies with optical safety standards, in Class1, 1M, 3R of IEC 60825-1; the following descriptive labels are affixed to the product.

IEC 60825-1:2007  
CLASS 1 LASER PRODUCT

IEC 60825-1:2007  
INVISIBLE LASER RADIATION DO NOT VIEW  
DIRECTLY WITH OPTICAL INSTRUMENTS  
MAXIMUM PERMISSIBLE EXPOSURE (MPE)  
150mW  $\leq$  20  $\mu$ s 1010nm  
CLASS 1M LASER PRODUCT

If VLD option is available  
IEC 60825-1:2007  
VISIBLE LASER RADIATION  
AVOID DIRECT EYE EXPOSURE  
MAXIMUM PERMISSIBLE EXPOSURE (MPE)  
5mW CW 650-1064nm  
CLASS 3R LASER PRODUCT

THIS PRODUCT COMPLIES WITH 21 CFR  
1040.10 AND 1040.11 EXCEPT FOR  
DEVIATIONS PURSUANT TO LASER  
NOTICE NO. 50 DATED JUNE 24, 2007





## Other Functions

### Light Source

Models	MU909015C6/14C6, MU909015A6
Wavelength*15	1310/1550 ±25 nm (MU909015C6/14C6) 1490 ±25 nm (MU909015C6-059, MU909015C6-069) 1625 ±25 nm (MU909015C6/14C6-057, MU909015A6-053, MU909015C6/14C6-067, MU909015A6-063) 1650 ±25 nm (MU909015C6/14C6-058, MU909015A6-054, MU909015C6/14C6-068, MU909015A6-064)
Fiber Type	10 μm/125 μm SMF (ITU-T G.652)
Output port	Shared with OTDR port
Output power*15, *16	-5 ±1.5 dBm
Output stability*17	≤0.2 dB
Modes of Operation	CW, 270 Hz, 1 kHz, 2 kHz
Laser Safety	Same as OTDR

### Power Meter

Models	MU909015C6/14C6, MU909015A6	MU909015C/14C	MU909015B/B1, MU909014B/B1
Setting Wavelength	1310/1490/1550/1625/1650 nm	1310/1490/1550 nm	1310/1490/1550/1625/1650 nm
Fiber Type	10 μm/125 μm SMF (ITU-T G.652)		
Measurement range*18	-50 to +26 dBm (CW) -40 to +13 dBm (270 Hz, 1 kHz, 2 kHz)	-50 to -5 dBm (CW)	
Measurement port	Shared with OTDR port 1625 nm or 1650 nm OTDR port Dedicated port (Options 059 and 069)	Shared with OTDR port 1310 nm/1550 nm OTDR port (Except options 059 and 069) 1310 nm/1490 nm/1550 nm OTDR port (Options 059 and 069)	
Measurement Accuracy*19	±0.5 dB		
Modes of Operation	CW, 270 Hz, 1 kHz, 2 kHz	CW	

### PON Power Meter (1490 nm/1550 nm)

Models	MU909015C6/14C6, MU909015A6
Wavelength	1490 nm/1550 nm
Fiber Type	10 μm/125 μm SMF (ITU-T G.652)
Measurement range	-50 to +13 dBm (1490 nm, CW) -50 to +26 dBm (1550 nm, CW)
Measurement port	Shared with OTDR port (1625 nm or 1650 nm) Dedicated port (Options 059 and 069)
Measurement Accuracy*20	±0.5 dB
Isolation*21	1490 nm: >35 dB, 1550 nm: >50 dB

### Loss Test Set

Models	MU909015C6/14C6
Fiber Type	10 μm/125 μm SMF (ITU-T G.652)
Measurement port	Light Source: Shared with OTDR port 1310 nm/1550 nm OTDR port (Except options 059 and 069) 1310 nm/1490 nm/1550 nm OTDR port (Options 059 and 069) Power Meter: Shared with OTDR port 1625 nm or 1650 nm OTDR port (Except options 059 and 069) Dedicated port (Options 059 and 069)
Light Source	
Wavelength	1310 ±25 nm, 1550 ±25 nm (Except options 059 and 069) 1310 ±25 nm, 1490 ±25 nm, 1550 ±25 nm (Options 059 and 069)
Output Power*15, *16	-5 ±1.5 dBm (CW, 25°C)
Output stability*17	≤0.2 dB
Modes of Operation	CW, 270 Hz, 1 kHz, 2 kHz
Laser Safety	Same as OTDR
Power Meter	
Setting Wavelength	1310/1490/1550/1625/1650 nm
Measurement range*18	-50 to +26 dBm (CW) -40 to +13 dBm (270 Hz, 1 kHz, 2 kHz)
Measurement Accuracy*19	±0.5 dB
Modes of Operation	CW, 270 Hz, 1 kHz, 2 kHz

\*15: At +25°C, CW

\*16: Fiber length 2 m, after the warm-up.

\*17: Wavelength 1310 nm/1550 nm, CW, ±1°C at one point within -10° to +50°C, deference between the largest value and shortest value for one minute, single mode fiber 2 m, when the optical power meter with return loss of 40 dB or more is used. After the warm-up time (10 minutes) passed.

\*18: At 1550 nm

\*19: 1310 nm/1490 nm/1550 nm, CW, -20 dBm, 25°C, on master connector fiber (FC) use, after zero offset execution.

\*20: 1490 nm/1550 nm, CW, -20 dBm, +25°C, on master connector fiber (FC) use, after zero offset execution.

\*21: Design assurance.

# Ordering Information

Please specify the model/order number, name and quantity when ordering.  
The names listed in the chart below are Order Names. The actual name of the item may differ from the Order Name.

## 1) Select Mainframe

Includes battery pack, AC charger/adaptor, standard soft case, strap and protector.

Model/Order No.	Description
MT9090A	Mainframe
<b>Standard Accessories</b>	
G0202A	Replacement NiMH Battery Pack
G0203A	Replacement AC Charger/Adapter
B0601B	For MT9090A with/without Protector. This soft case is standard accessory for MT9090A main frame.
Z1023A	Replacement Strap
B0663A	Protector

## 2) Select Base Module

Model/Order No.	Description
MU909014A1*1	μOTDR (Single wavelength, 30 dB class OTDR with VLD)
MU909015A6*2	μOTDR (Single wavelength, 35 dB class OTDR with PM, PON-PM and LS)
MU909014B*1	μOTDR (2-wavelength, 30 dB class OTDR)
MU909014B1*1	μOTDR (2-wavelength, 30 dB class OTDR with VLD)
MU909015B*1	μOTDR (2-wavelength, 35 dB class OTDR)
MU909015B1*1	μOTDR (2-wavelength, 35 dB class OTDR with VLD)
MU909014C*4	μOTDR (3-wavelength, 30 dB class OTDR)
MU909014C6*4	μOTDR (3-wavelength, 30 dB class OTDR with PM, PON-PM, LTS and LS)
MU909015C*3,*4	μOTDR (3-wavelength, 35 dB class OTDR)
MU909015C6*4,*5	μOTDR (3-wavelength, 35 dB class OTDR with PM, PON-PM, LTS and LS)

- \*1: One OTDR port (any of 1310 nm/1550 nm, 1625 nm, 1650 nm) and visible light source (option) (Fig. 1)
- \*2: One OTDR port (1625 nm or 1650 nm) (Fig. 2)
- \*3: One OTDR port (1310 nm/1490 nm/1550 nm; Options 059 and 069) (Fig. 2)
- \*4: Two OTDR ports (1310 nm/1550 nm, and 1625 nm or 1650 nm; Except options 059 and 069) (Fig. 3)
- \*5: One OTDR port and dedicated power meter port (1310 nm/1490 nm/1550 nm, and power meter; Options 059 and 069) (Fig. 3)



Fig. 1



Fig. 2



Fig. 3

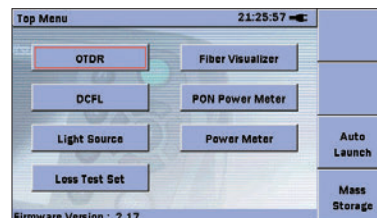
## 3) Select Module, Connector Interface and Testing Options

Includes operation manual and quick reference guide.

Model/Order No.	Description	PM	PON-PM	LTS	LS*7	VLD*8	FV	DCFL
<b>Installation and Maintenance Models</b>								
MU909014C-057	MU909014C-067	μOTDR (1310/1550/1625 nm, 32.5/31/32.5 dB)	✓*1					✓
MU909014C-058	MU909014C-068	μOTDR (1310/1550/1650 nm, 32.5/31/32.5 dB)	✓*1					✓
MU909015C-057	MU909015C-067	μOTDR (1310/1550/1625 nm, 38/37/35 dB)	✓*1					✓
MU909015C-058	MU909015C-068	μOTDR (1310/1550/1650 nm, 38/37/35 dB)	✓*1					✓
MU909015C-059	MU909015C-069	μOTDR (1310/1490/1550 nm, 36/35/35 dB)	✓*1					✓
MU909014C6-057	MU909014C6-067	μOTDR (1310/1550/1625 nm, 32.5/31/32.5 dB)	✓*1	✓*3	✓*5	✓	✓	✓
MU909014C6-058	MU909014C6-068	μOTDR (1310/1550/1650 nm, 32.5/31/32.5 dB)	✓*1	✓*3	✓*5	✓	✓	✓
MU909015C6-057	MU909015C6-067	μOTDR (1310/1550/1625 nm, 38/37/35 dB)	✓*1	✓*3	✓*5	✓	✓	✓
MU909015C6-058	MU909015C6-068	μOTDR (1310/1550/1650 nm, 38/37/35 dB)	✓*1	✓*3	✓*5	✓	✓	✓
MU909015C6-059	MU909015C6-069	μOTDR (1310/1490/1550 nm, 36/35/35 dB)	✓*2	✓*4	✓*6	✓	✓	✓
<b>General Purpose Models</b>								
MU909014B-056	MU909014B-066	μOTDR (1310/1550 nm, 32.5/31 dB)	✓*1					✓
MU909014B1-056	MU909014B1-066	μOTDR (1310/1550 nm, 32.5/31 dB)	✓*1				✓	✓
MU909015B-056	MU909015B-066	μOTDR (1310/1550 nm, 37/36 dB)	✓*1					✓
MU909015B1-056	MU909015B1-066	μOTDR (1310/1550 nm, 37/36 dB)	✓*1				✓	✓
<b>Maintenance Models</b>								
MU909014A1-053	MU909014A1-063	μOTDR (1625 nm, 32.5 dB)					✓	✓
MU909014A1-054	MU909014A1-064	μOTDR (1650 nm, 32.5 dB)					✓	✓
MU909015A6-053	MU909015A6-063	μOTDR (1625 nm, 35 dB)	✓*1	✓*3		✓		✓
MU909015A6-054	MU909015A6-064	μOTDR (1650 nm, 35 dB)	✓*1	✓*3		✓		✓

- \*1: PM (Power Meter) function shared with OTDR port.
- \*2: Dedicated PM port.
- \*3: PON-PM (PON Power Meter) shared with 1625 nm or 1650 nm OTDR port. Identifies and measures 1490 nm and 1550 nm wavelengths.
- \*4: Dedicated PON-PM port. Identifies and measures 1490 nm and 1550 nm wavelengths.
- \*5: LTS (Loss Test Set) function for measuring 1310/1550 nm wavelengths. Light source shared with 1310/1550 nm OTDR port. Power meter shared with 1625 nm or 1650 nm OTDR port.
- \*6: LTS function for measuring 1310/1490/1550 nm wavelengths. Light source shared with 1310/1490/1550 nm OTDR port. Power meter is dedicated port.
- \*7: LS (Stabilized Light Source) shared with OTDR port for each wavelength.

- \*8: VLD (Visible Laser Diode) function with visible light source port operated from OTDR or Power Meter.



Top Menu differs with selected module

#### 4) Select Connector Adapter

Adapter included at no charge – must be added as a separate line item.

Model/Order No.	Description
MU909014A/B/C-025	FC-APC Connector key width 2.0 mm
MU909015A/B/C-025	(APC: Models -063, 064, 066, 067, 068, and 069)
MU909014A/B/C-026	SC-APC Connector
MU909015A/B/C-026	(APC: Models -063, 064, 066, 067, 068, and 069)
MU909014A/B/C-037	FC Connector
MU909015A/B/C-037	(UPC: Models -053, 054, 056, 057, 058, and 059)
MU909014A/B/C-039	DIN 47256 Connector
MU909015A/B/C-039	(UPC: Models -053, 054, 056, 057, 058, and 059)
MU909014A/B/C-040	SC Connector
MU909015A/B/C-040	(UPC: Models -053, 054, 056, 057, 058, and 059)

#### 5) Select Accessories

Must be added as separate line items.

Model/Order No.	Description
Z1580A*1	Protector & Soft Case
B0663A*2	Protector
G0203A	AC Adapter (for Replacement)
G0202A	NiMH battery pack (for Replacement)
B0602B	Deluxe Soft Case (for MT9090A)
B0601B	Standard Soft Case
B0600B	Hard Case (for MT9090A)
Z1023A	Strap
J1402A	Car Plug Cord
J1530A	SC Plug-in Converter (UPC(P)-APC(J))
J1531A	SC Plug-in Converter (APC(P)-UPC(J))
J1532A	FC Plug-in Converter (UPC(P)-APC(J))
J1533A	FC Plug-in Converter (APC(P)-UPC(J))
J1534A	LC-SC Plug-in Converter (for SM, SC(P)-LC(J))
J1535A	LC-SC Plug-in Converter (for MM, SC(P)-LC(J))
W3585AE	Quick Reference Guide (English, Printed)
W3586AE	Operation Manual (English, Printed)
Z1579A	Operation Manual (English and Japanese, Electronic (CD-R))
G0306B	Video Inspection Probe (x 400)
NETWORKS	PC Emulation Software for Data Analysis and Reporting

\*1: The protector (B0663A) and standard soft case (B0601B) from a set. The protector includes a shoulder strap.

\*2: The shoulder strap can be used to hang the instrument around the neck while working.

#### 6) Replacement Adaptors

Must be added as separate line items.

Model/Order No.	Description
J0617B	FC (UPC: Models -053, -054, -056, -057, -058)
J0618E	DIN (UPC: Models -053, -054, -056, -057, -058)
J0619B	Replaceable Optical Connector SC (UPC: Models -053, -054, -056, -057, -058) (APC: Models -063, -064, -066, -067, -068)
J0739A	FC (APC: Models -063, -064, -066, -067, -068)
J1602A	Replaceable optical connector (SC) Phosphor bronze
J1603A	Replaceable optical connector (FC) Phosphor bronze



**B0601B Standard Soft Case**

This standard accessory accommodates the mainframe with fitted protector.



**B0602B Deluxe Soft Case**

Full Network Master operation without removal from the case. Provides excellent protection for use in harsh conditions. This does not accommodate the mainframe if the protector is fitted.



**B0600B Hard Case**

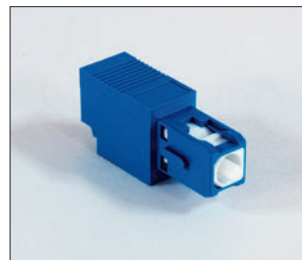
This accommodates two mainframes (with or without fitted protector), accessories (light source or power meter, backup battery, fiber cleaner, etc.).



Mainframe with Protector

**B0663A Protector**

The mainframe with fitted protector.



**J1530A to J1535A Plug-in Converter**

(The photo shows the J1534A)



**G0306B**

**Video Inspection Probe (x 400)**

## MT9090 Series Network Master

### MU909020A OCA Module

Compact CWDM channel analyzer to verify power levels, drift and channel presence of CWDM networks.

### MU909060A GigE Module

Dedicated field test solution for installation and troubleshooting Ethernet links in the access network.



## CMA5 Series

For Optical Fiber Installation and Maintenance.



## MT9083 Series

### ACCESS Master Mini-OTDR

All-in-one test tool for fiber construction and maintenance.



## MT1000A Network Master Pro Network Master Pro

### MU100020A OTDR Module 1310/1550 nm SMF

### MU100021A OTDR Module 1310/1550/850/1300 nm SMF/MMF

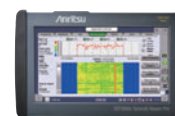
### MU100022A OTDR Module 1310/1550/1625 nm SMF

### MU100010A 10G Multirate Module

Installing an OTDR Module MU100020A/MU100021A provides the OTDR functions required for optical fiber I&M. Work efficiency is increased by all-in-one support for optical fiber tests and data communications network commissioning. I&M tests of 1.5-Mbps to 10-Gbps communications networks can be executed by simultaneously installing the MU100010A. In addition to supporting Ethernet, OTN, etc., networks, Mobile base station CPRI and OBSAI, as well as SyncE protocols are also supported.

### MU100040B CPRI RF Module

Installing the CPRI RF Module MU100040B in the MT1000A supports analysis of IQ signal frequency characteristics included in CPRI signals between the LTE base station RRH and BBU. This can be used to check operation of the RRH after installation. MU100040B supported BBU emulation for RRH.



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Specifications are subject to change without notice.

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