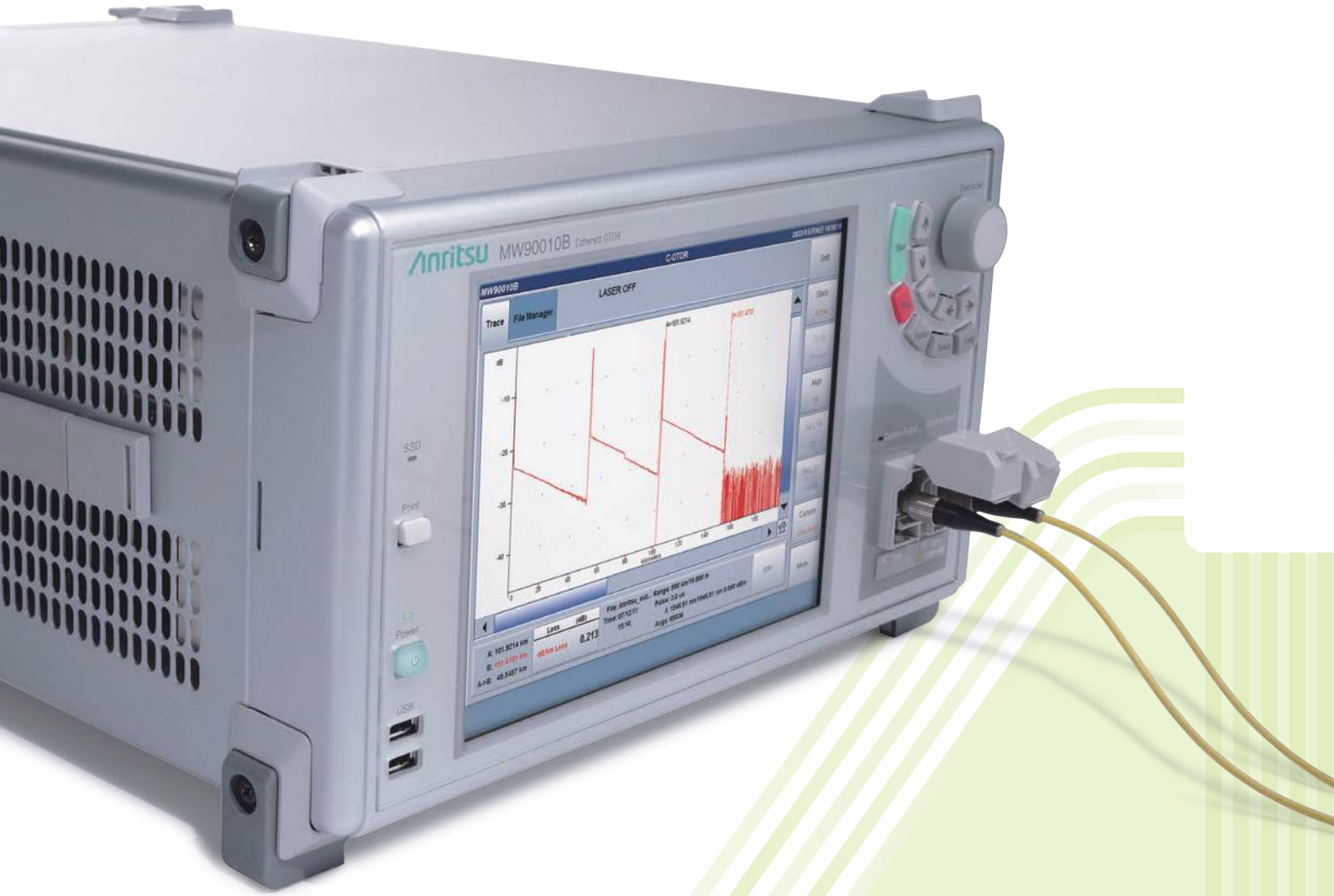
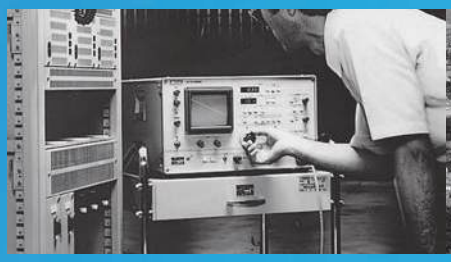
Anritsu Advancing beyond

Coherent OTDR

MW90010B



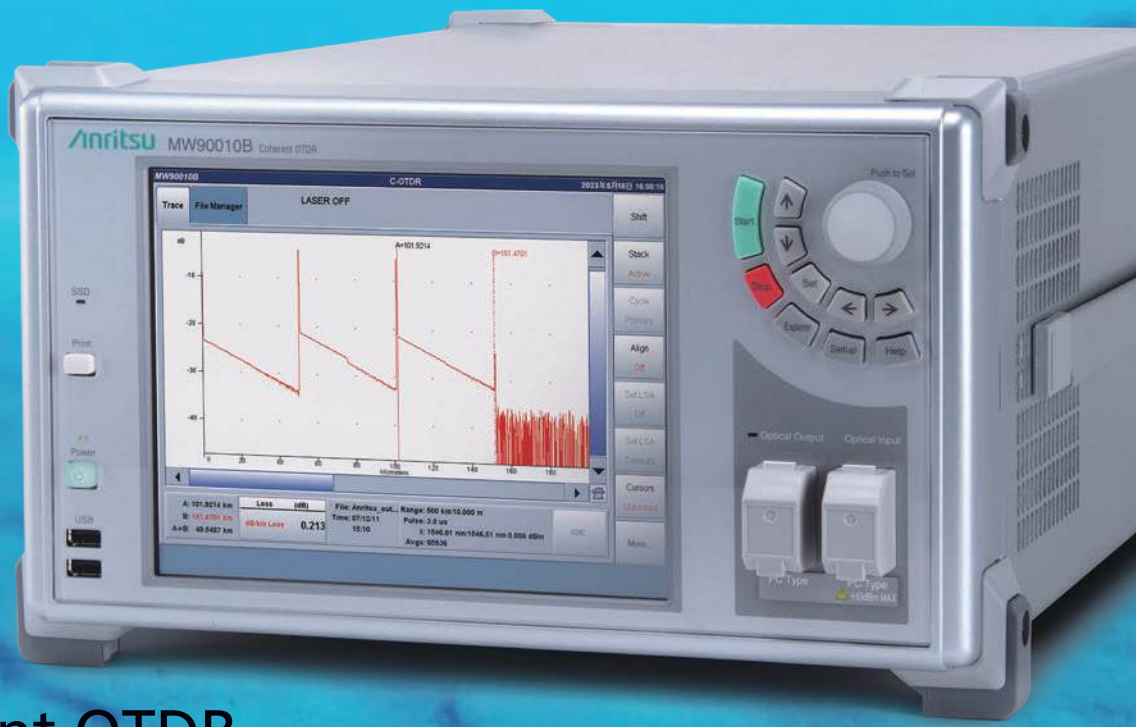


Detecting over Decades

Anritsu developed its world-first Optical Time Domain Reflectometer (OTDR) in 1977 and released a Coherent OTDR for evaluating optical submarine cables in 2008.

Following this release, Anritsu's Coherent OTDR has been a popular tester for evaluating and troubleshooting faults in optical submarine cables due to its ease-of-use, long distance range and wide dynamic range.

This model revision supports a wider wavelength range with added maintenance bands and is the perfect solution for the next decade of testing and maintenance.



Coherent OTDR

MW90010B

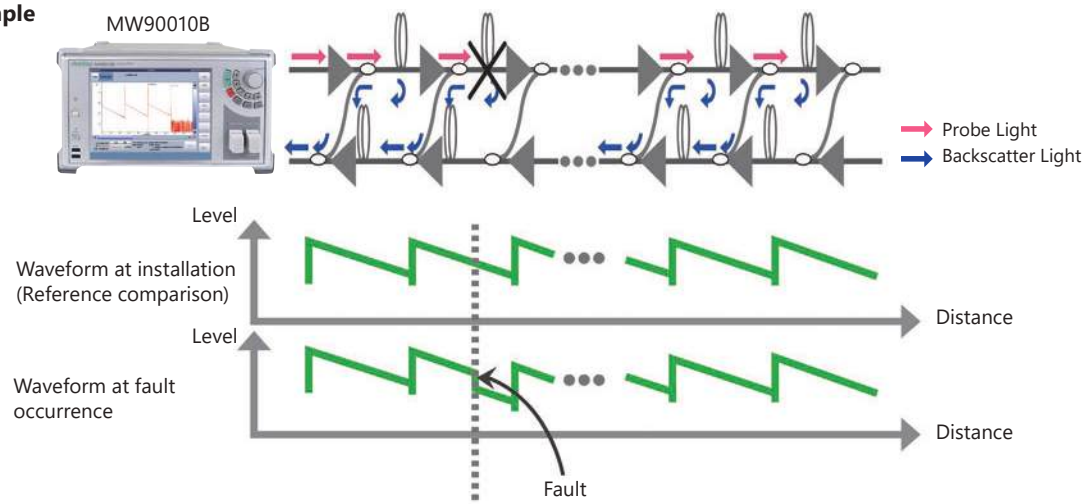
Distance Range	Wavelength Range	Portability (Weight)
Max. 20,000 km	1527.60 to 1567.13 nm	≤10 kg

C-band Support for Distance Measurements up to 20,000 km

Easier Measurement with Extended Hardware and Simple GUI

The Coherent OTDR (C-OTDR) MW90010B is a measuring instrument for detecting faults in ultra-long optical submarine cables of up to 20,000 km including EDFA (erbiuIlldoped fiber amplifier). It is the ideal solution for evaluating new cables at service deployment as well as for troubleshooting in-service faults.

C-OTDR Measurement Example



Full C-band Coverage

Wavelengths can be set in the range from 1527.60 nm to 1567.13 nm for quick testing and maintenance of multi-wavelength submarine cable by using unused wavelengths.

Measure Submarine Cables up to MAX 20,000 km Long with 10 m Resolution

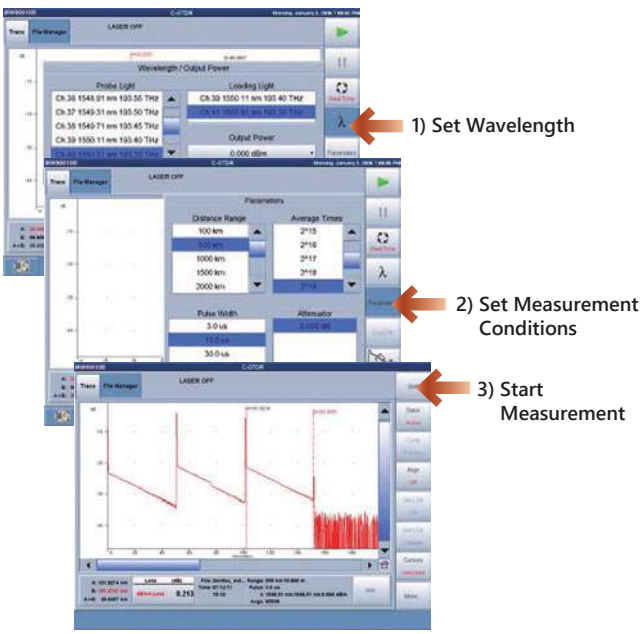
The MW90010B can measure optical submarine cables of up to 12,000 km with a constant measurement resolution of 10 m. As a result, faults can be detected correctly irrespective of the distance. Moreover, adding the Extended Measurement Distance MW90010B-003 option supports measurement of optical submarine cables up to 20,000-km long.

Wide Dynamic Range

Typical optical submarine cables are designed with repeaters every 50 km to 60 km but the high resolution of the MW90010B easily supports fiber loss measurement of these systems as well as fault location of cables with repeaters spaced at more than 80 km.

Excellent GUI

A simple three-step operation using the intuitive GUI starts measurement. In addition, the displayed estimated time until measurement will finish, helps planning after starting.



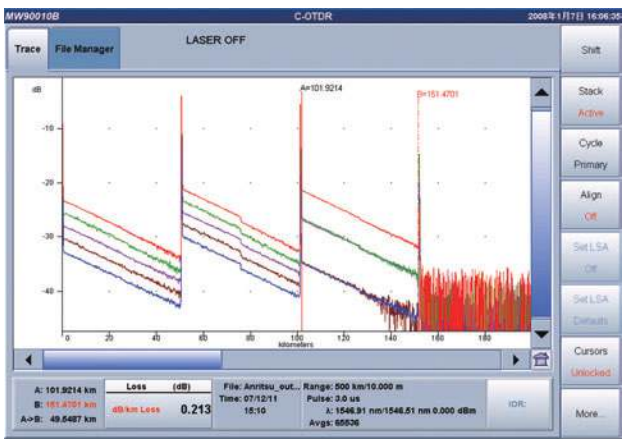
Lightweight and Compact

The 40% weight reduction compared to previous Anritsu testers improves portability.

The all-in-one design incorporates a tunable light source for easy on-site troubleshooting.

Simultaneous Display of 8 Waveforms (max.)

Installation and maintenance of optical submarine cables requires comparison of current waveform data with data at cable installation to monitor aging changes. The MW90010B makes this comparison easy because it can display up to 8 waveforms simultaneously, allowing faults to be seen at glance by comparing the install waveform with the fault waveform on one screen.



Built-in Standard OTDR Functions

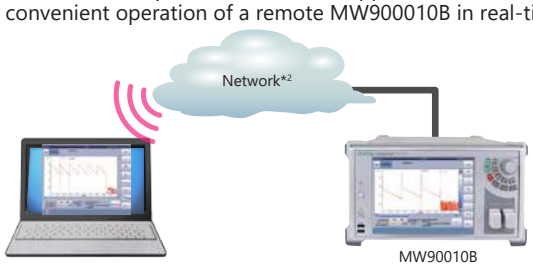
The MW90010B has the full range of versatile built-in applications, including real-time measurement, zoom/shift function, 2-point loss analysis, etc., facilitating smooth analysis of measurement results.

Proposed Operation Method and Analysis Procedure Matching Usage Environment

All-in-one Submarine Cable Fault Location to Data Management

Remote Operation Function

The MW90010B supports control by remote commands from an external controller. It is installed in a customer's system. In addition, use of the Windows Remote Desktop function*1 is also supported. This function supports convenient operation of a remote MW900010B in real-time.



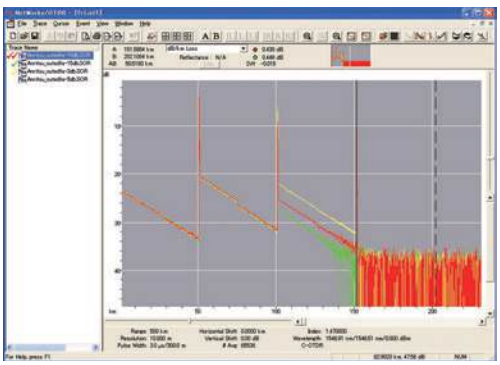
*1: Settable by the customer.
*2: To connect to a network, contact your network administrator.

Additional Averaging Processing

Evaluation of optical submarine communications cables using a C-OTDR can take many hours. However, measurement productivity is greatly increased using the MW90010B Additional Averaging function. For example, after waveform data has been measured for 2^{16} averagings, the additional averaging function can be used to increase the measured data to 2^{17} averagings.

Waveform Analysis using Emulation Software

Waveform data measured and saved by the MW90010B can be analyzed on a PC running a Windows OS using the optional NETWORKS (version 4.1 or newer) emulation software (sold separately).



Support for Telcordia format (SR-4731)

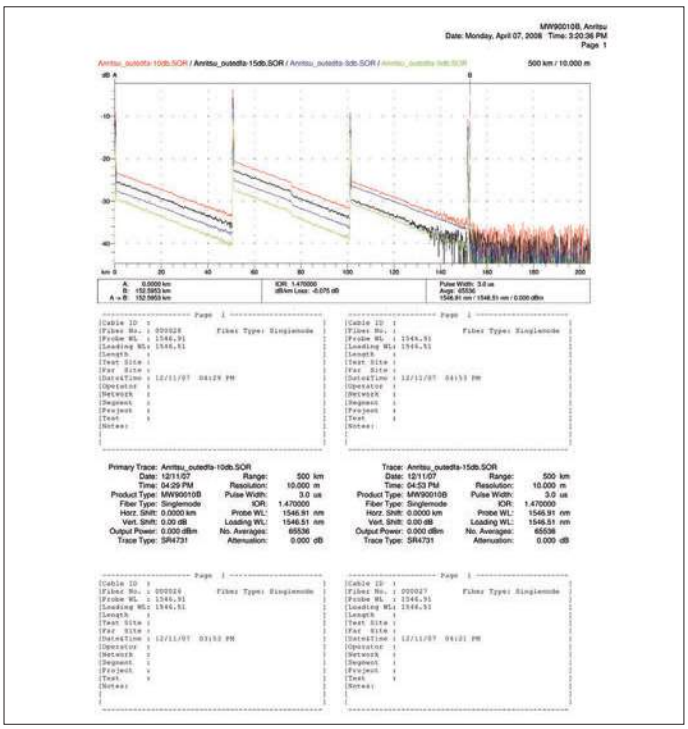
The OTDR Telcordia format is supported, enabling customers to read measurement data using their own waveform analysis tools.

350-GB Internal Memory

Up to 3.5 million measured data files can be saved in the 350-GB internal memory. Saved files can be copied either to a USB memory stick or over a network connection for external use.

PDF-format Reports

Measured data can be saved in PDF format for confirming measurement date, conditions, and waveform data on a single report.



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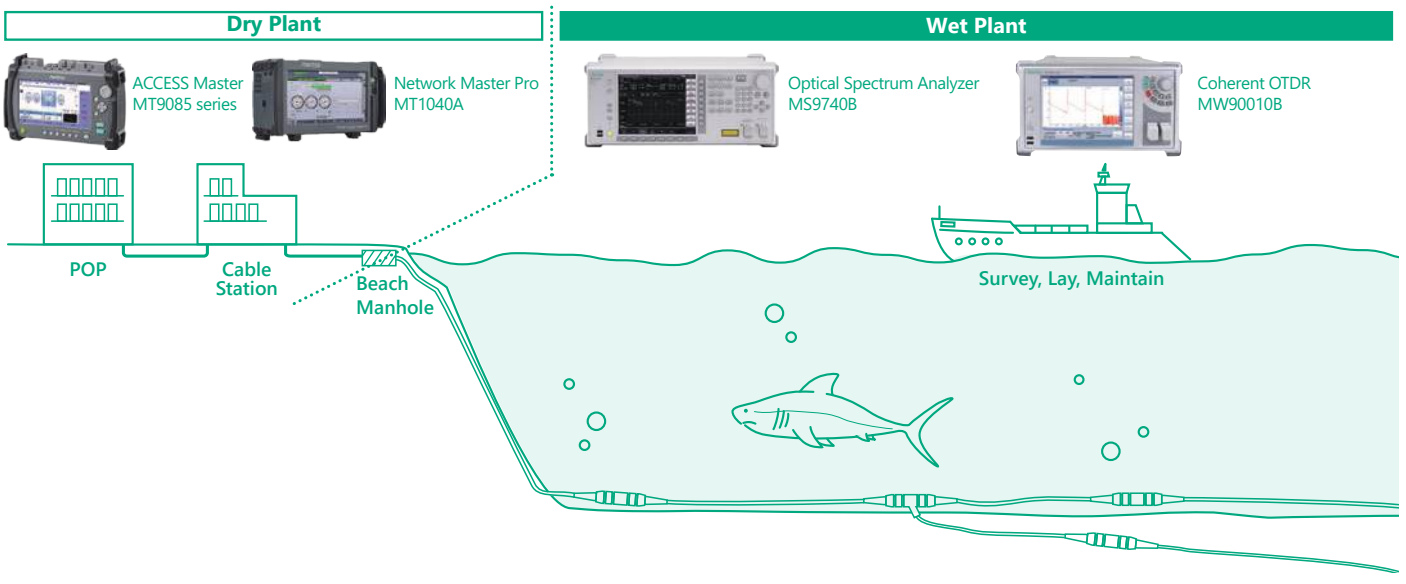
Submarine Cable I&M Solution

Anritsu extends its line of I&M products for submarine cables.

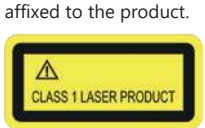


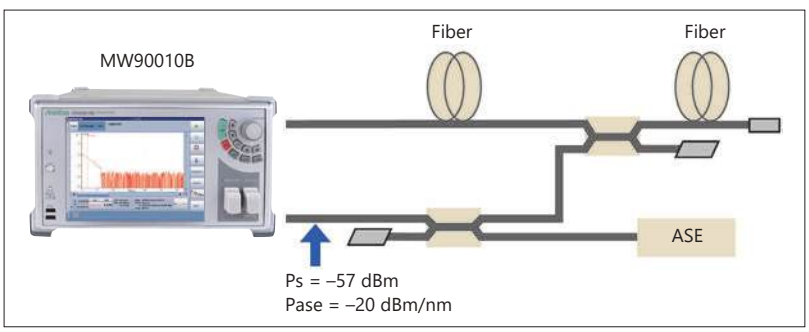
Specifications

Fiber Under Test		ITU-T G.653 (DSF)
Optical Connector		FC, SC (Replaceable, PC type)
Wavelength (Probe Light)		1,527.60 nm to 1,567.13 nm (ITU-T Grid, Wavelength in vacuum setting with 50 GHz steps)
Wavelength Accuracy		±0.05 nm (+20°C to +30°C)
Warm-up Time		2 minutes (+20°C to +30°C)
Loading Light Source (Dummy)		" wavelength of probe light " +50 GHz or –50 GHz The loading wavelength can be selectable at +50 GHz or –50 GHz of the probe (OTDR) wavelength.
Pulse Width		3, 10, 30, 60, 100 µs
Optical Output Power		0 to +13 dBm, 0.5 dB steps
Dynamic Range (one way, S/N = 1) (See the block diagram on next page)		>18 dB typ. (25°C). Measurement Conditions: Pulse width: 10 µs, Average times: 2^{16}, Distance range: 1000 km, Smoothing: On, Ps: –57 dBm @ Pin*1 Pase: –20 dBm/nm @ Pin*1
Dead Zone		0.5 km (Pulse width: 3 µs)
Distance Measurement Accuracy		±10 m ±0.5 × 10^{-6} × measurement value (m) This does not include optical fiber refraction index (IOR) based uncertainty.
Vertical Scale		0.02, 0.05, 0.1, 0.2, 0.5, 1.0, 2.0, 5.0, 10.0 dB/div
Distance Range		With MW90010B-003: 100 km, 500 km to 20,000 km (in 500 km steps) 100 km, 500 km to 12,000 km (in 500 km steps)
Sampling Resolution (IOR = 1.500000)		10 m
Measurement Time		15 minutes (Distance range: 1000 km, Average times: 2^{16})
Average Times		2^{8} to 2^{24}
Ior Settings		1.300000 to 1.700000 (0.000001 steps)
Monitor Output		–25 to –15 dBm (for OTDR Wavelength Monitor)
Other Functions		Real Time Measurement Multiple Trace Display (8 Waveforms max.) Zoom & Shift Loss Calculation: Splice Loss, 2Pt Loss, 2Pt LSA, dB/ km Loss, dB/km LSA, 2Pt & dB/km, 2Pt & dB/km LSA File Save formats: GR-196, SR4731 Internal Memory (350 GB) Print: External printer, Hard copy (file: PDF) Distance Unit: miles, feet, kilofeet, meters, kilometers File Utility: File: Copy, Paste, Delete, Folder: Create new Help function Remote Control Function
Display		8.4 inch, XGA (1024 × 768) color LCD with touch panel
OS		Windows 10 IoT Enterprise 2019 LTSC Entry EPKEA
Interface		USB (3 ports, REV2.0, Front 2, Back 1), 10/100/1000M Ethernet, HDMI
Power Supply		100 VAC to 120 VAC/200 VAC to 240 VAC, 50 Hz to 60 Hz, ≤300 VA
Dimensions and Mass		320 (W) × 177 (H) × 451 (D) mm, ≤10 kg
Environmental Conditions		Temperature: +10°C to +35°C (operating), –10°C to +50°C (storage) Humidity: <85% RH Vibration: Conforms to MIL-STD-810D
CE	EMC	2014/30/EU, EN61326-1, EN61000-3-2
	LVD	2014/35/EU, EN61010-1
	RoHS	2011/65/EU, (EU) 2015/863, EN IEC 63000: 2018
UKCA	EMC	S.I. 2016 No.1091, EN 61326-1, EN61000-3-2
	LVD	S.I. 2016 No.1101, EN 61010-1
	RoHS	S.I. 2012 No.3032, EN IEC 63000: 2018
Laser Safety Level*2		IEC 60825-1: 2014 CLASS 1: Optical Output Port, Monitor Port 21CFR1040.10 Excludes deviations caused by conformance to Laser Notice No.56 dated May 8, 2019

*1: Ps: Maximum backscatter level at the input [dBm]
Pase: ASE level at the input [dBm]

*2: Safety measures for laser products
This product complies with optical safety standards in 21CFR1040.10 and IEC 60825-1; the following descriptive labels are affixed to the product.





Measurement Setup for Dynamic Range

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.

Model/Order No.	Name	
	Main Frame	
MW90010B	Coherent OTDR	
	Standard Accessory	
	Power Cord*1:	1 pc
B0329G	Front Cover:	1 pc
Z2167A	MW90010B Operation Manual (CD-R):	1 pc
	Standard Connector*2	
MW90010B-037	FC Connector	
MW90010B-040	SC Connector	
	Software Options	
MW90010B-003	Extended Measurement Distance	
	Warranty Service	
MW90010B-ES210	2 Years Extended Warranty Service	
MW90010B-ES310	3 Years Extended Warranty Service	
MW90010B-ES510	5 Years Extended Warranty Service	
	Application Parts	
NETWORKS	Emulation Software (Version 4.1 or newer)	
B0335C	Carrying Case	
J0617B	Replaceable Optical Connector (FC-PC)	
J1411A	Replaceable Optical Connector (SC)	
J0057	Optical Adapter FC type	
J0635*3	Optical Fiber Cord with FC-PC at both ends (SM, with FC-PC at both ends)	
J0952A	FC · PC-FC · APC(SG)-1M-SM	
Z0914A	Ferrule Cleaner	
Z0915A	Replacement Reel for Ferrule Cleaner (6 pcs/set)	
Z0284	Adapter Cleaner (Stick type, 200 pcs/set)	
Z0397A*4	FC Adapter Cap	
Z0413A*4	SC Adapter Cap	

*1: One line cord is attached to the area to shipment.
*2: Required option
Specify the optical connector type. The same type of connector will be supplied for the optical output port, optical input port, and optical monitor port.
*3: Specify the optical fiber length as A, B or C (A: 1 m, B: 2 m, C: 3 m)
*4: Monitor Output Port optical connector cap. Specify exchangeable optical connectors (J1411A and J0617B) as a pair.

Carrying Case B0335C

Network Master Pro MT1040A

100G Multirate Module	**MU104011A**
400G Multirate Module	**MU104014A**

The Network Master Pro MT1040A supporting 400G is a portable tester for evaluating the quality of various communication networks ranging in speeds from 10 Mbps to 400 Gbps. Installing two 400G measurement modules supports simultaneous dual-port 400G Ethernet measurement..

OTDR Module 1310/1550 nm SMF	**MU100020A**
OTDR Module 1310/1550/850/1300 nm SMF/MMF	**MU100021A**
OTDR Module 1310/1550/1625 nm SMF	**MU100022A**
OTDR Module 1310/1550/1650 nm SMF	**MU100023A**

Installing one of the MU100020A/MU100021A/MU100022A/MU100023A OTDR modules in the MT1040A facilitates all-in-one OTDR, light-source, optical-power and visible-light-source measurement and testing required for optical fiber I&M. Furthermore, simultaneous installation of either the MU104011A or MU104014A supports both OTDR and Ethernet measurement using one MT1040A.

Optical Spectrum Analyzer MS9740B

The MS9740B optical spectrum analyzer is for signal evaluations requiring wide dynamic range and high resolution, such as OSNR analysis of WDM signals.

It has two bundled EDFA analysis applications: an Opt. Amp application, and an Opt. Amp (Multi-channel) application supporting WDM signals and the latest IEC standard.

Light Source/Optical Power Meter CMA5 Series

For optical fiber installation and maintenance.

ACCESS Master MT9085 Series

For WAN/MFH/DCI/FTTH Optical Fiber I&M

- Improved operability with powerful synergy of 8-inch touchscreen and hardware keys
- At-a-glance Pass/Fail evaluation using Fiber Visualizer
- All OTDR, OLTS, and Visible Light Source operations on one screen
- Short event dead zone of ≤0.8 m and high dynamic range of 46 dB max.
- Power meter option for measuring optical power up to +30 dBm

Anritsu Advancing beyond

Specifications are subject to change without notice.

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