

Product Information

# Coherent OTDR MW90010B

Anritsu Corporation

Service Infrastructure Solutions  
Test & Measurement Company

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**CONFIDENTIAL**

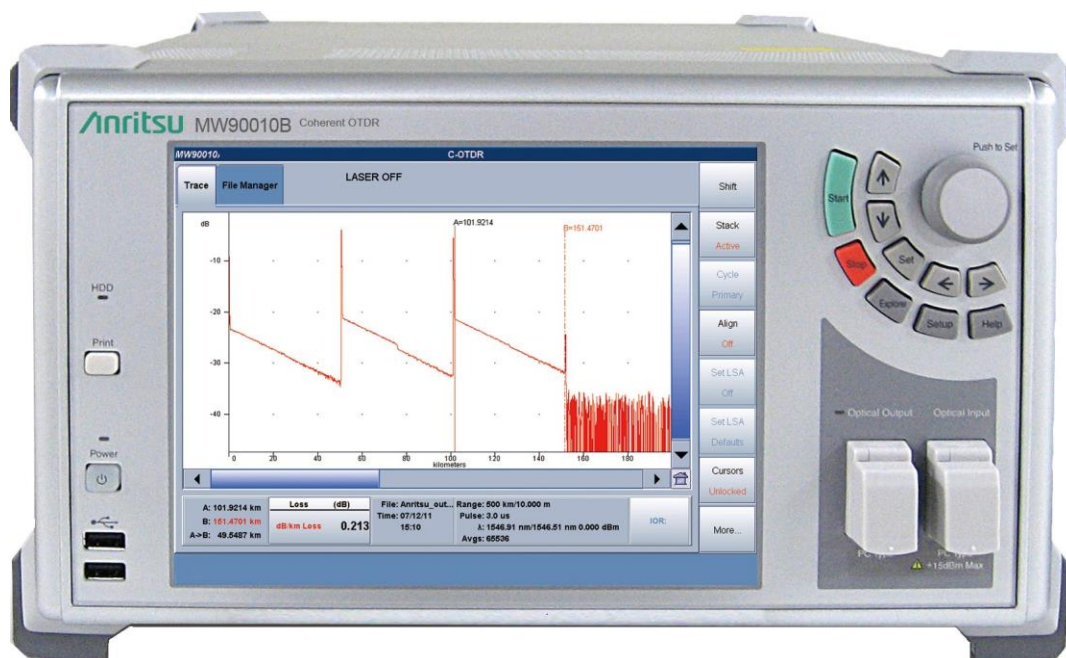
Doc No. M3A-1SG230008



# Product Introduction

# MW90010B Introduction

Anritsu has been providing coherent OTDRs for over 15 years. Anritsu offers new coherent OTDRs to meet the needs of longer distance optical submarine cables and expansion of the wavelength bands used.



## 1) GUI and usability follow the MW90010A, but wavelength and distance ranges are extended.

- Extended wavelength range of 1527.60 -1567.13 nm, covering the full C-band.  
(MW90010A: 1535.03 nm - 1565.08 nm)
- Extended distance range from 12,000 km to 20,000 km (Option).
- Include a dummy optical output. Supports out-of-service measurements.
- Remote commands are implemented as standard, following the current models.

## 2) Lighter weight for easier portability

- The weight has been cut by 40% from 17 kg to 10 kg for easier portability.

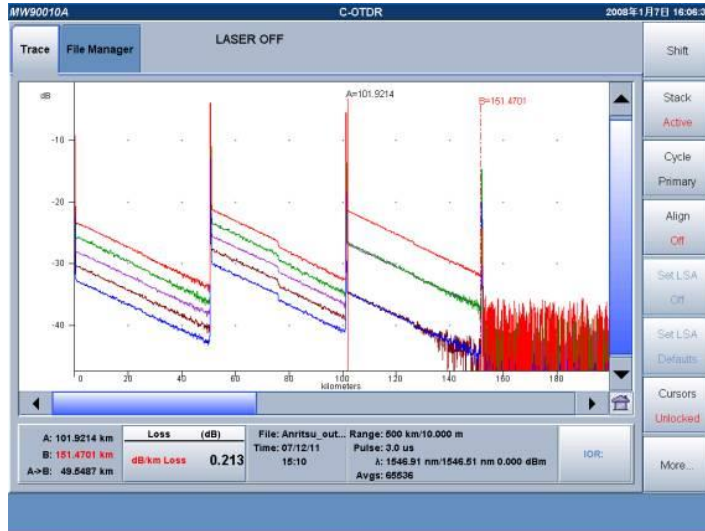
## 3) Windows 10 IoT OS support

- Security is supported by anti-virus software.
- Allow remote operation using Windows Remote Desktop.

| Model        | Name                          |
|--------------|-------------------------------|
| MW90010B     | Coherent OTDR                 |
| MW90010B-003 | Extended Measurement Distance |

# MW90010B Key Features

## Excellent GUI

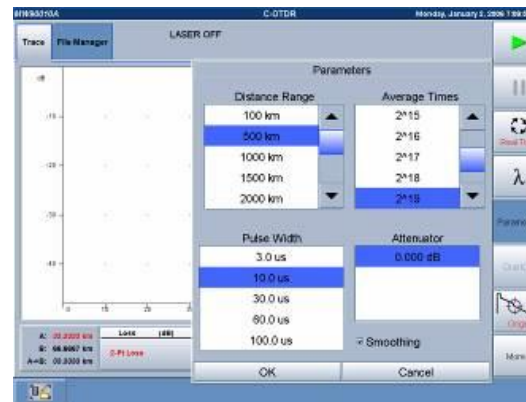


- Simple touch-panel operation
- Multi-waveform display

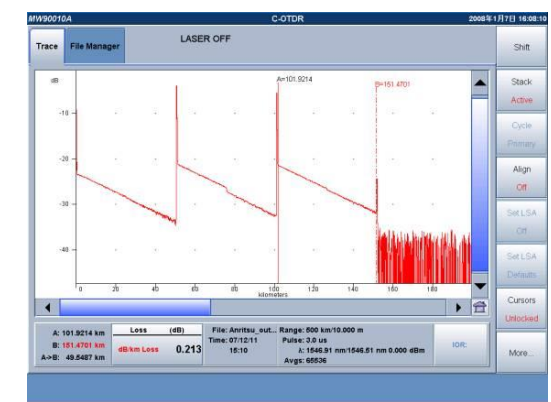
### Simple 3-Step Operation



1) Set wavelength.



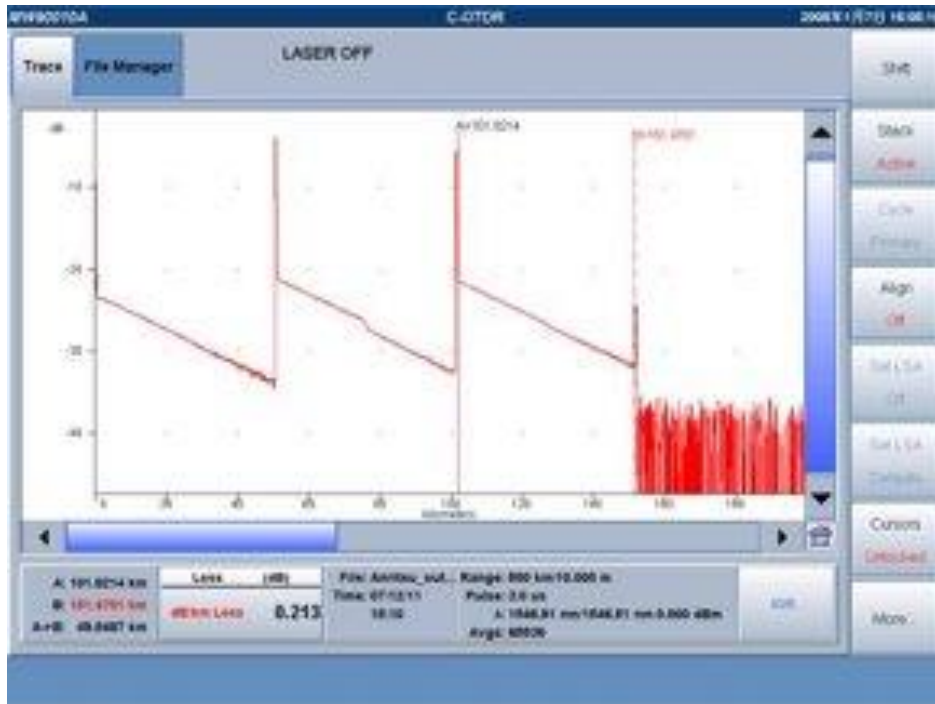
2) Set measurement conditions.



3) Start measurement.

## Wide Dynamic Range

Standard optical submarine cables have repeaters every 50 to 60 km. Like its forerunner, the MW90010B can measure distance ranges of 12,000 km. Adding the Extended Measurement Distance MW90010B-003 option extends measurement of undersea cables up to 20,000 km long.



- ❑ High-resolution troubleshooting measurements with repeaters at intervals of more than 80 km (10  $\mu$ s pulse width, theoretical value)
- ❑ Adding this option supporting maintenance of future ultra-long fiber cables extends measurement distance without incurring new test-equipment costs.

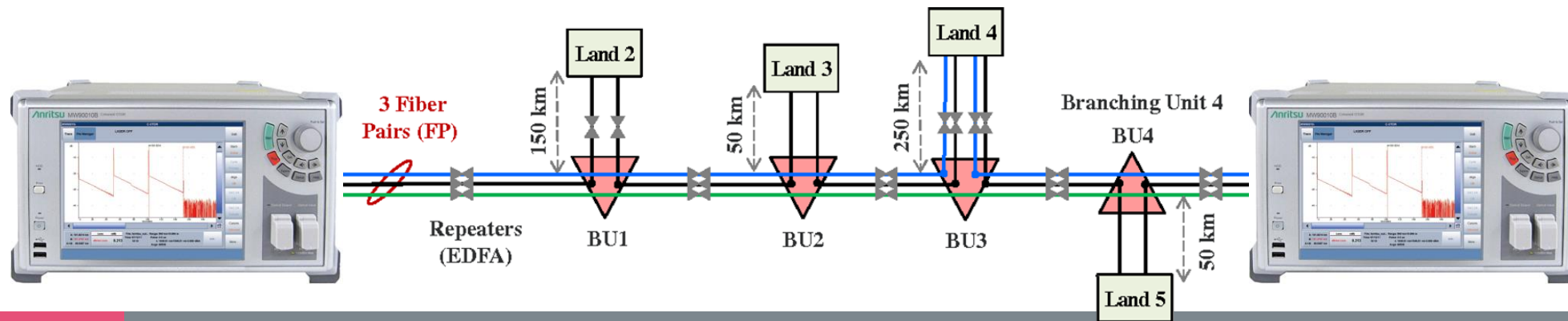
# MW90010B Key Features

## Built-in Tunable Light Source with wavelength accuracy of $\pm 0.2$ nm



- 1527.60 to 1567.13 nm wavelength range
- 0.4 nm interval setting
- Stable measurement with Probe and Dummy optical outputs
- Optical power setting range of 0 to +13 dBm

The tunable light source facilitates uninterrupted measurement of multiple fibers.



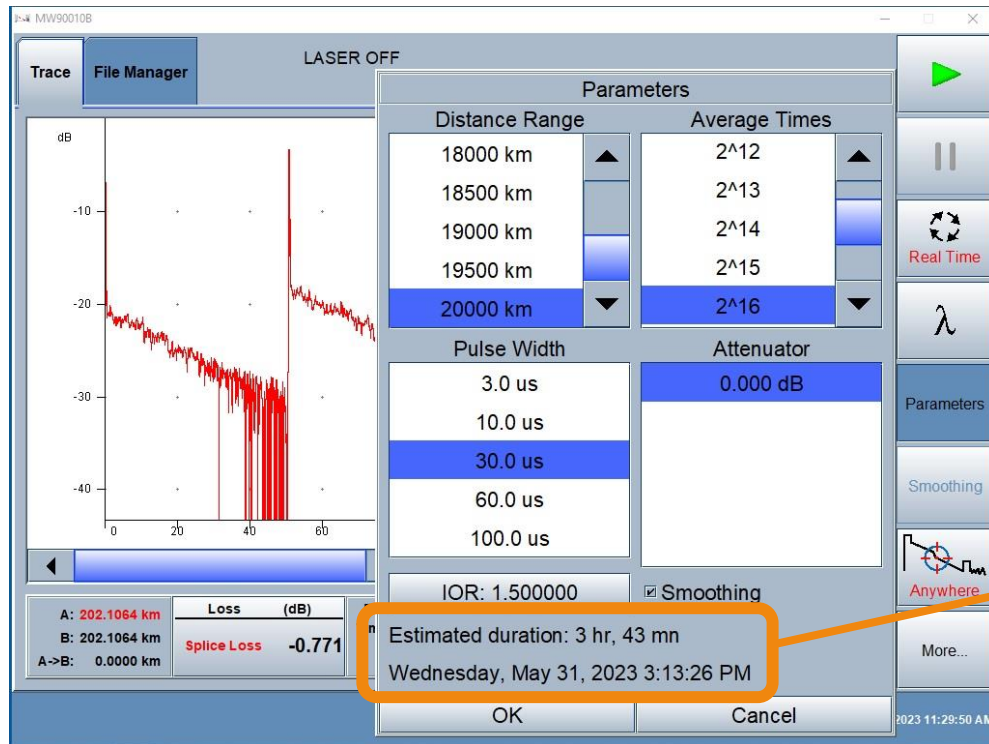
# MW90010B Key Features

## Short measurement times with wide dynamic range and high S/N

The MW90010B has a wide dynamic range and high S/N to support quick troubleshooting of optical submarine cables.?

Measurement in 15 minutes ( $2^{16}$  averagings, 1000-km distance range)

## The time until measurement is completed is displayed



The estimated time until measurement is completed under the selected conditions is displayed.

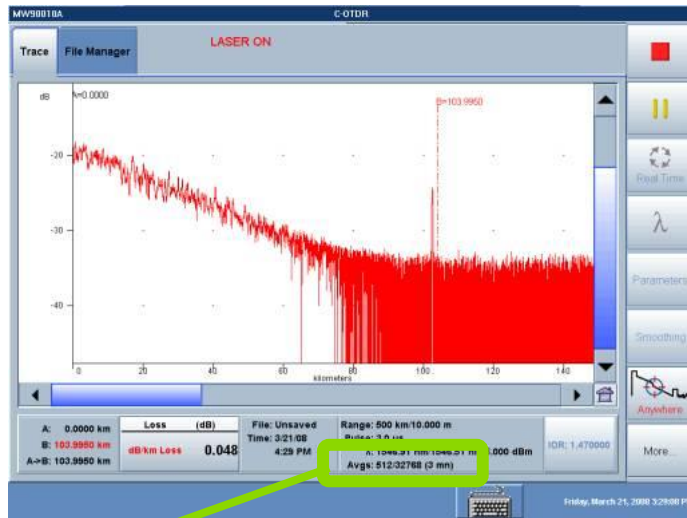
Estimated duration: 3 hr, 43 mn  
Wednesday, May 31, 2023 3:13:26 PM

The total estimated time and progress are displayed.

# MW90010B Key Features

## The measurement progress is displayed

During measurement, the number of elapsed averagings and the time remaining until measurement is completed are displayed.



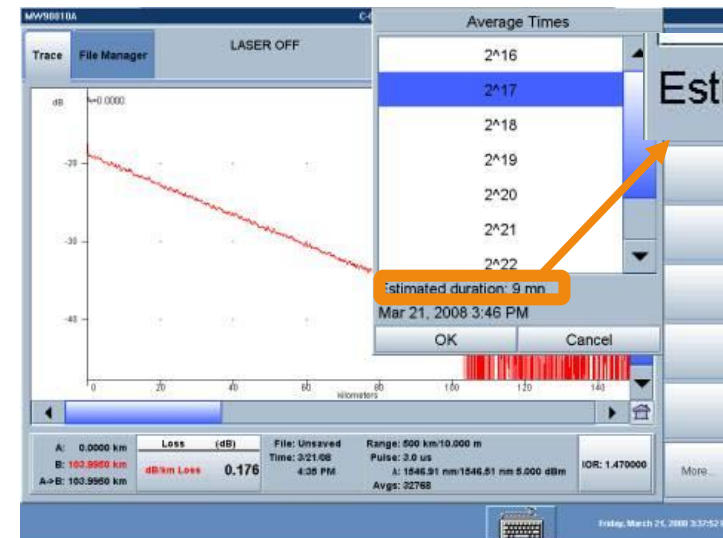
**Avg: 512/32768 (3 mn)**

If measurement is interrupted, the waveform is displayed based on the averagings completed until the interruption.

## Additional averaging measurement is supported

Sometimes, the anticipated result is not obtained because the specified number of averagings was insufficient, or it is necessary to perform measurements under several averaging conditions.

Using the MW90010B, extra averagings can be added even after measurement is completed to continue measurement.

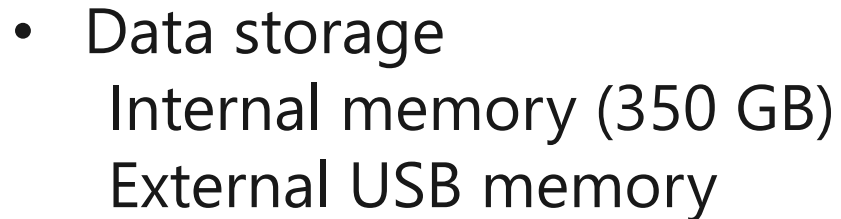


**Estimated duration: 9 mn**

Estimated duration: 9 mn

When more averagings are added, the estimated extra time is displayed.

- Multi-waveform display (8 max.)



# MW90010B Specifications

| Items               | Specifications                                                                   |
|---------------------|----------------------------------------------------------------------------------|
| Wavelength Range    | 1527.60 - 1567.13nm, 50GHz Step                                                  |
| Wavelength Accuracy | ± 0.05nm                                                                         |
| Loading light       | Available (probe light±1ch)                                                      |
| Output power        | 0 ~ +13dBm                                                                       |
| PW                  | 3, 10, 30, 60, 100us                                                             |
| Dynamic Range       | >18dB typ. (standard value>17dB)<br>( PW=10us, Ps= -57dBm, ASE -20dBm/nm、 25°C ) |
| Dead zone           | 0.5km                                                                            |
| Distance Range      | 100km, 500~12,000km (500km step)<br>100km, 12,000~20,000km (Option)              |
| Distance accuracy   | ±10 m ±0.5 x 10 <sup>-6</sup> x measurement value (m)                            |
| Average             | 2 <sup>8</sup> ~24                                                               |
| Display             | 8.4 inch touch screen (XGA (1024x768) )                                          |
| Size, Weight        | 320x177x451 mm, ≤10kg                                                            |
| Warming up time     | 5 min                                                                            |
| Operation System    | Windows 10 IoT Enterprise LTSC 2019                                              |
| User Interface      | USB 2.0 x3, HDMI x1, 10/100/1000M Ethernet x1                                    |
| Internal Memory     | 350G byte                                                                        |

# MW90010B vs MW90010A

## Specification Comparison

|                     | MW90010B                                                                                   | MW90010A                                              |
|---------------------|--------------------------------------------------------------------------------------------|-------------------------------------------------------|
| Wavelength Range    | <b>1527.60 - 1567.13nm</b> , 50GHz Step                                                    | 1535.03–1565.08nm, 50GHz Step                         |
| Wavelength Accuracy | <b>± 0.05nm</b>                                                                            | ± 0.2nm                                               |
| Loading light       | Available (probe light±1ch)                                                                | Available (probe light±1ch)                           |
| Output power        | 0 ~ +13dBm                                                                                 | 0 ~ +13dBm                                            |
| PW                  | 3, 10, 30, 60, 100us                                                                       | 3, 10, 30, 60, 100us                                  |
| Dynamic Range       | <b>&gt;18dB typ.</b> (standard value>17dB)<br>( PW=10us, Ps= -57dBm, ASE -20dBm/nm、 25°C ) | >17dB<br>( PW=10us, Ps= -57dBm, ASE -20dBm/nm )       |
| Dead zone           | 0.5km                                                                                      | 0.5km                                                 |
| Distance Range      | 100km, 500~12,000km (500km step)<br><b>100km, 12,000~20,000km (Option)</b>                 | 100km, 500~12,000km (500km step)                      |
| Distance accuracy   | ±10 m ±0.5 x 10 <sup>-6</sup> x measurement value (m)                                      | ±10 m ±0.5 x 10 <sup>-6</sup> x measurement value (m) |
| Average             | 2 <sup>8</sup> ~24                                                                         | 2 <sup>8</sup> ~24                                    |
| Display             | 8.4 inch touch screen (XGA (1024x768) )                                                    | 8.4 inch touch screen ( XGA (1024x768) )              |
| Size, Weight        | 320x177x451 mm, <b>&lt;10kg</b>                                                            | 320x177x451 mm, <17kg                                 |
| Warming up time     | <b>5 min</b>                                                                               | 30 min                                                |
| Operation System    | Windows 10 IoT Enterprise LTSC 2019                                                        | Windows Embedded Standard 2009                        |
| User Interface      | <b>USB 2.0 x3, HDMI x1,<br/>10/100/1000M Ethernet x1</b>                                   | USB 1.1 x2, PS/2 x1, VGA x1,<br>10/100M Ethernet x1   |
| Internal Memory     | <b>350G</b> byte                                                                           | 2.8G byte                                             |

# Ordering Information

| Model/Order No. | Name                                                         |
|-----------------|--------------------------------------------------------------|
| MW90010B        | - <b>Main Frame</b> -<br>Coherent OTDR                       |
| B0329G          | - <b>Standard accessories</b> -<br>Power Cord                |
| Z2167A          | Front Cover                                                  |
|                 | MW90010B Manual (CD-ROM)                                     |
| MW90010B-037    | - <b>Standard Connector</b> *1 -<br>FC Connector             |
| MW90010B-040    | SC Connector                                                 |
| MW90010B-003    | - <b>Software Options</b> -<br>Extended measurement distance |

| Model/Order No. | Name                                                                      |
|-----------------|---------------------------------------------------------------------------|
| NETWORKS        | - <b>Application Parts</b> -<br>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           | 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                                      |
| Z0284           | Adapter cleaner                                                           |
| Z0397A          | FC adapter cap                                                            |
| Z0413A          | SC adapter cap                                                            |

\*1: Please specify either connector at the time of purchase.

# Value Proposition

# Common Causes of Cable Faults

FIGURE 51: CABLE FAULT STORIES PER REGION 2014-2022

Cable failures are more likely to occur in EMEA and ASEAN, where routes are narrower.

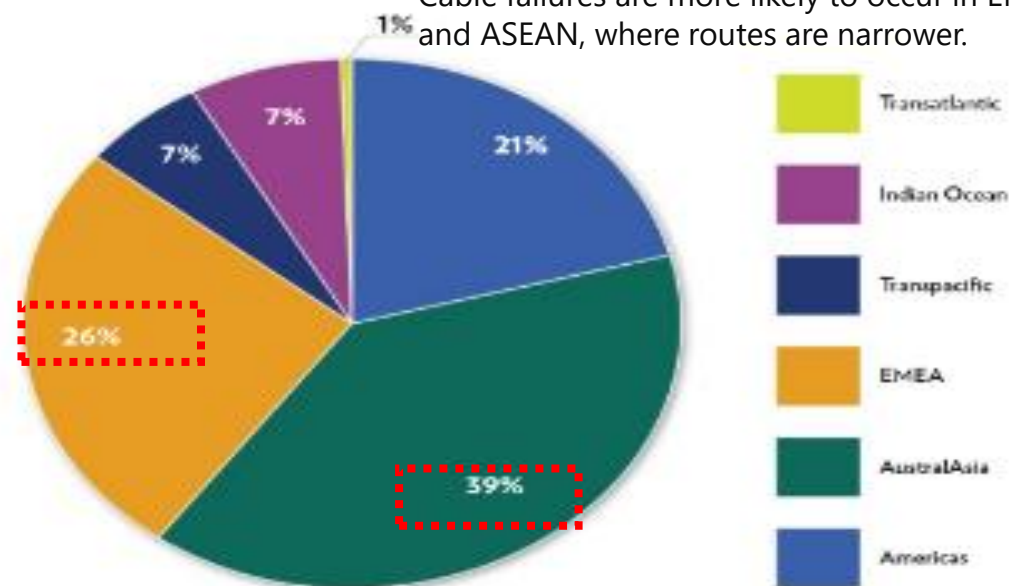
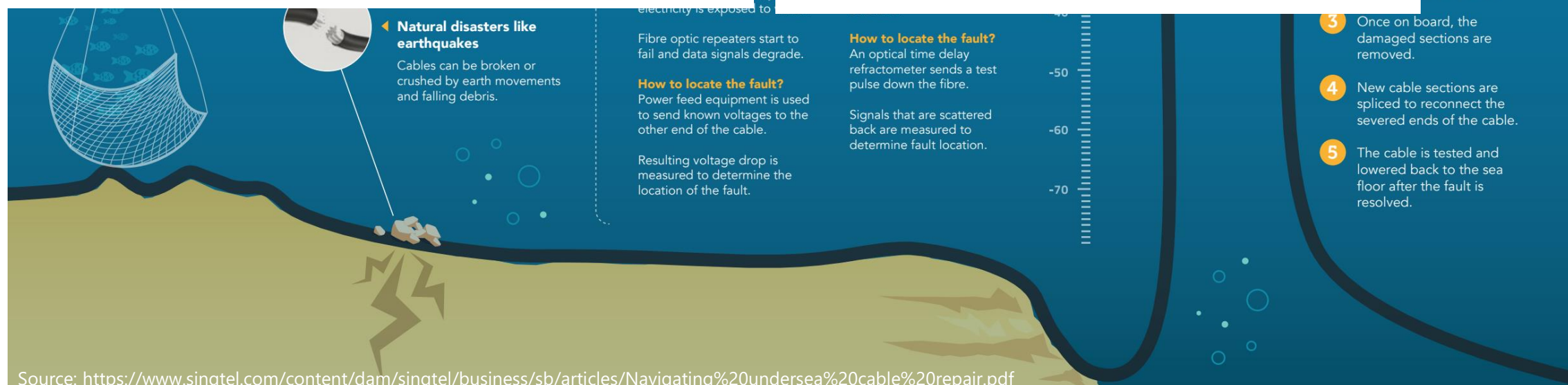


FIGURE 53: AVERAGE REPORTED REPAIR TIME IN DAY 2014-2022

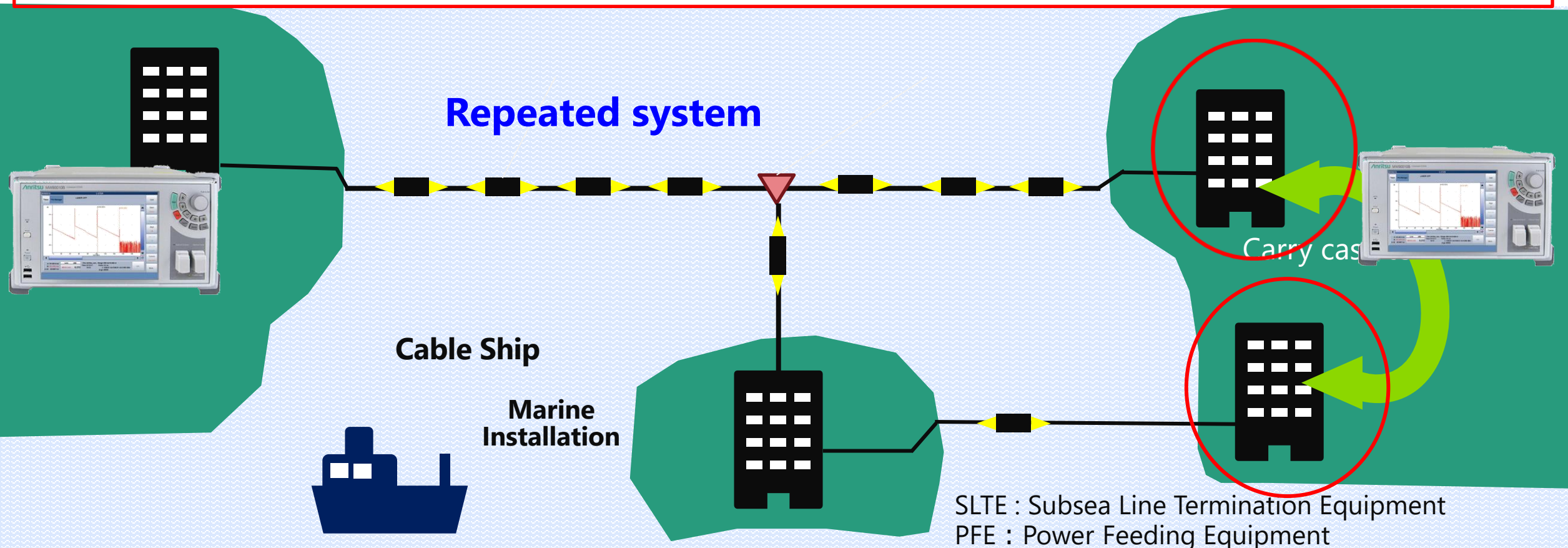
In 2021/2022, the average maintenance time was 80 days due to multiple line breaks caused by undersea volcanoes and earthquakes.



Source: <https://www.singtel.com/content/dam/singtel/business/sb/articles/Navigating%20undersea%20cable%20repair.pdf>

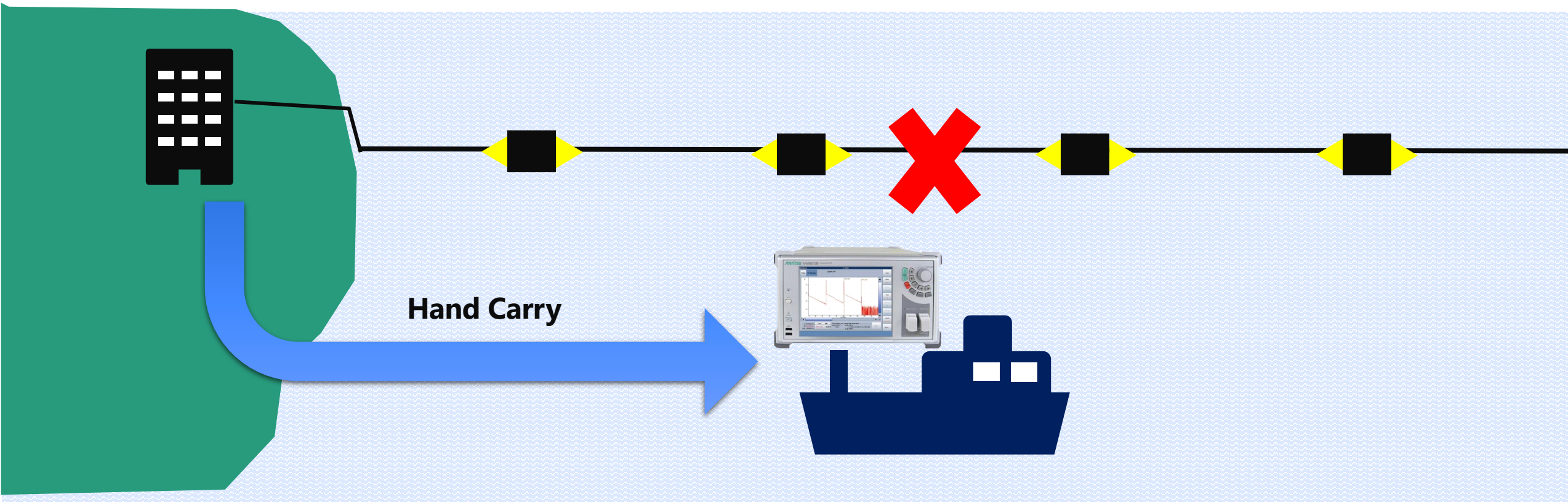
## Used for submarine cable monitoring and fault detection.

Older submarine cables and shorter cables may not have a monitoring system implemented; the MW90010B can utilise remote control to create a simplified monitoring system. In the event of a fault, the system can also be used for cables other than the newly installed cable, as it can quickly check the location of the cable break.



## Utilised for rapid cable repair

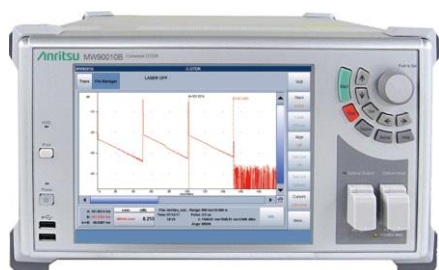
When a break occurs, information from the landing station is used to go to the site and repair the cable, and by bringing the MW90010B to the maintenance workshop, the break can be accurately captured and the work time reduced.



## Use as a backup machine for RFTE

MW90010B can be used temporarily when the RFTE is out of service.

The MW90010B is easily portable and can be taken to any landing station.



- MW90010B  
Size, Weight  
320 x 177 x 451 mm, ≤10kg



## 1. Agility

- ① It can be shared inside Cable Landing Station for back up. No need to prepare PC for testing.
- ② Repair down time is faster than monitoring system – module swap method at Service centre (More choices for the nearest repair centres - Japan/China/Singapore)
- ③ ITU-T G.976 "Test methods applicable to optical fiber submarine cable systems" - Coherent OTDR method for testing the submarine cable. MW90010B is capable to test even though changing EMS server.

## 2. Performance

- ① Capable to measure up to 20,000 Km, which is equal to longest distance in Pacific ocean (End to End base)
- ② C-OTDR is a Windows platform it can be achieved using a third party screen sharing tool. automate testing with GPIB remote control commands.
- ③ Future Proof Product – New Model – Covers 10 Years operational requirement and even longer

# Our total solution

We are only supplier to provide all test equipment for the installation and maintenance.

## Dry Plant

OTDR



- ✓ Up to 46dB DR
- ✓ Short dead zone

Ethernet Tester



- ✓ 100/200/400gbE testing
- ✓ FEC margin analysis



POP



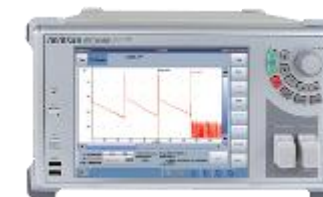
Cable Station

Beach Manhole



Optical Spectrum Analyzer

- ✓ High accurate OSNR measurement
- ✓ Fast sweep
- ✓ High resolution



Coherent-OTDR

- ✓ Fully compatible with ITU-T G.976
- ✓ Remote Control
- ✓ Tunable light source



Survey, Lay, Maintain

# Anritsu's Subsea Cable Products

Anritsu offer the following products for Subsea cable evaluation.

## Optical Power Meter



### CMA5 Series

#### Optical Loss Tester

The CMA5 series is compact, lightweight, and ideal for I&M in the field.

## Video Inspection Probe



### G0382A/G0306C

#### Check of connector end

This product visually inspects the end face of optical connectors connected via USB.

## Field OTDR

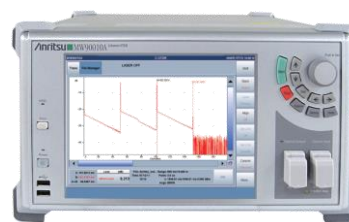


### MT9085 Series

#### Optical Fiber I&M

The ACCESS Master MT9085 series is a compact handheld all-in-one tester for performing OTDR tests, optical loss/power measurements, and optical fiber end-face inspections. It has a wide variety of applications, ranging from installation and maintenance (I&M) of trunk fibers (Core, Metro, Access, Mobile Fronthaul, Mobile Backhaul) to troubleshooting Access networks, such as breaks in drop cables.

## Coherent OTDR



### MW90010B

#### ITU-T G.976 Standard

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

## OSA (Optical Spectrum Analyzer)



### MS9740B

#### High-Speed Spectrum Analyzer

With its excellent performance, high speed, and support for many different types of optical device, Anritsu's Optical Spectrum Analyzer MS9740B is the ideal measurement solution for customers requiring secure, stable, and efficient optical spectrum tests of optical devices.

## Transport Tester



### MT1040A

#### Entire Network I&M

The modular design of the Network Master Pro MT1040A platform makes it easy to support I&M for different network configurations. Furthermore, options for each test function can be selected and added as necessary to match the work schedule, helping cut initial capital costs.

