MTS/T-BERD Platforms

Long Range (LR) OTDR Module

Key Features

- **CWDM/DWDM ready with 1310,1490, 1550, and 1625 nm wavelengths**
- **FTTx ready with 1310/1490/1550 nm wavelengths**
- **0.8 m event dead zone for highest network precision**
- **Point-to-multipoint (P2MP) testing with a combined high dynamic range and high resolution solution**
- **Continuous wave (CW) functionality**

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Global Communications Test & Measurement Company of the Year Award

The optical time domain reflectometer (OTDR) is at the core of fiber optic characterization. Allowing measurements of fiber link attenuation, attenuation coefficient, reflection, splice/connector loss, and point of error, all as part of the fiber distance function.

Multi-application optical test module

In today's telecommunications market, test solutions must be cost effective, in-crease productivity, and reduce the complexity of field testing. JDSU's Long Range (LR) OTDR Module offers a high-performance OTDR test module, which has been specifically developed in response to these industry demands.

Configurable at the time of order, the LR OTDR Module offers multiple wave-length test capabilities (1310, 1490, 1550, and 1626 nm), providing field technicians with an all-in-one test instrument.

The LR OTDR Module's performance enables effective testing on short haul (access, FTTx, P2MP), long haul, and very long haul networks.

Test the fiber…with the right solution… at the right wavelength

As fiber installers and technicians continue to look for ways to reduce time and costs during field operation, it is essential for them to use the right tool for the job at hand. The combination of an unprecedented 0.1 s refreshing time, the shortest event resolution (0.8 m event dead zone and 4 m attenuation dead zone), and a 43 dB dynamic range, makes the LR OTDR Module an ideal tool for the qualification of any type of fiber network.

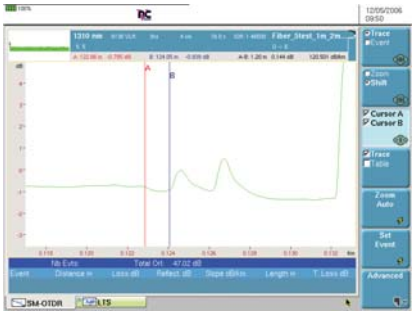
A large range of wavelengths is available to best match any application:

- For metro networks, a three-wavelength (1310/1550/1625 nm) LR OTDR Module is used for fiber qualification (according to ITU standards G.652, G.655, and G.656).
- For access networks, a three-wavelength (1310/1490/1550 nm) LR OTDR Module is used for fiber qualification at FTTx transmission wavelengths.

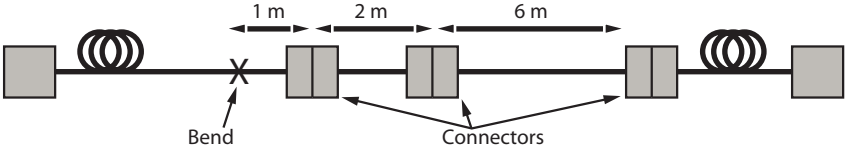
A new standard in OTDR performance

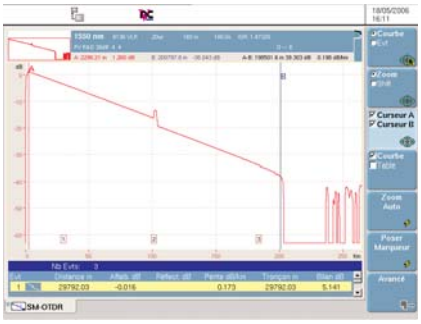
The LR OTDR Module is a high performance OTDR and is capable of characterizing sections of singlemode fiber links that have been illusive in the past. With a 0.8 m event dead zone, it is now possible to qualify and troubleshoot problems in never before investigated sections of the fiber link.

- Pinpoint any fault in the network.
- Discriminate a failure or break within the patch panel or distribution frame.
- Reduce testing time for medium and long haul fiber network commissioning.
- Obtain a superior and cleaner trace form for high link loss for best fault detection.



High resolution for detection of bends and close events





Improve productivity and efficiency in the field with JDSU's innovative software

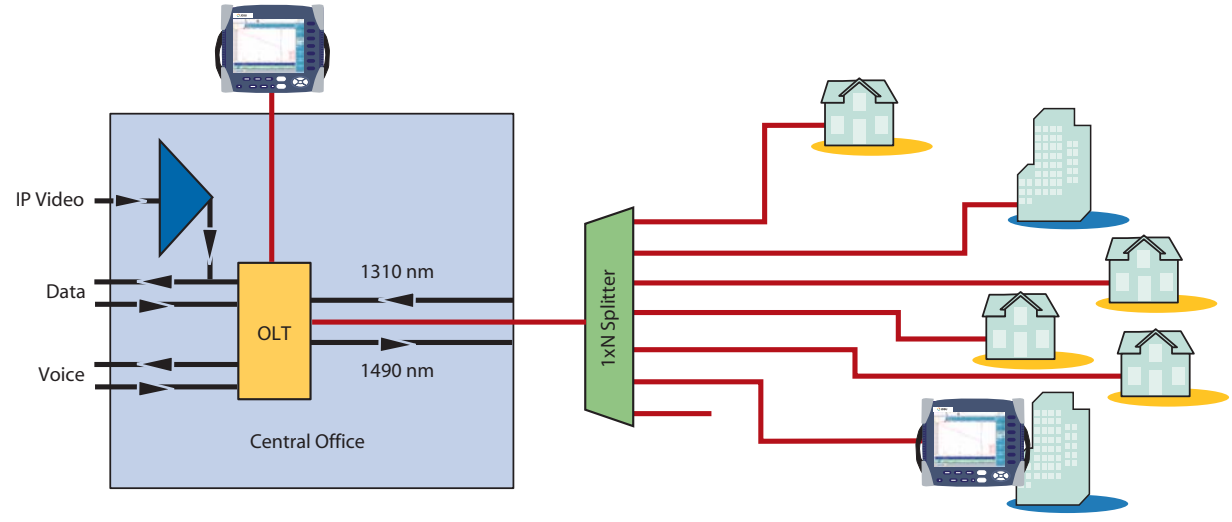
With the LR OTDR Module's impressive performance, testing, and trouble-shooting capabilities, the amount of time required to characterize a fiber network is drastically reduced. Test any fiber link or network configuration in record time.

- The LR OTDR Module configures itself with its automated functionality and sets the best-suited acquisition parameters, including optimized acquisition times, as defined by the instrument.
- Obtain the trace form with the correct auto zoom, evaluate the fiber link, and save the results in record time!
- Minimize handling errors with the pass/fail indicator. By viewing a quick snapshot, technicians can easily identify incorrect results.

Test through a PON splitter with the best available performance

With the combination of an impressive acquisition time, event dead zone, and dynamic range, FTTx technicians are able to test through a splitter with unprecedented accuracy using the LR OTDR Module.

- In compliance with ITU-T G.983.3, the LR OTDR Module provides a three-wavelength version at 1310/1490nm/1550 nm, expanding its test capabilities to FTTx/PON.
- Provides splice and connector information at the three PON wavelengths.
- Combines a high dynamic range and short event resolution in order to characterize short fiber lengths and measure through the splitters.
- Integrates splitter management data in the table results.

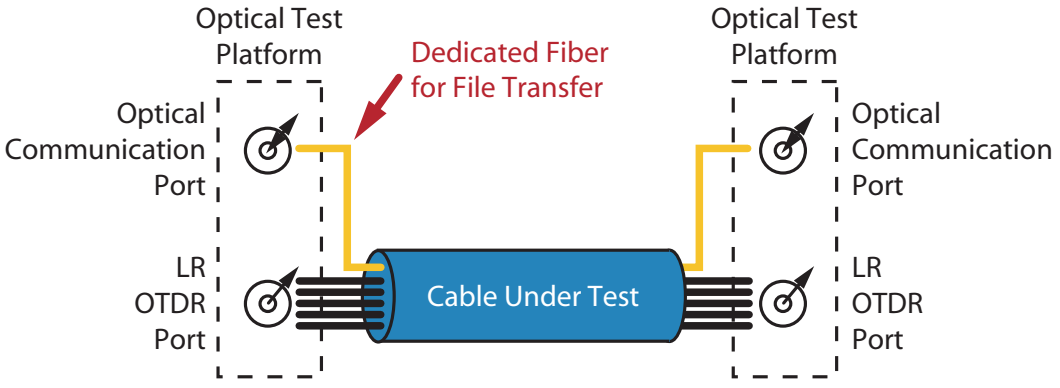


FTTx/PON Network Tests

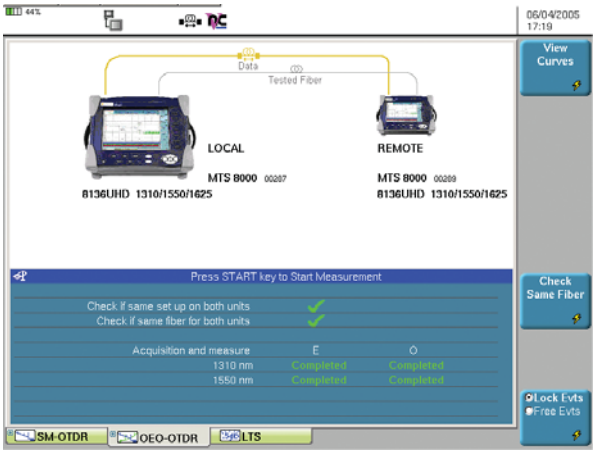
One button bi-directional OTDR acquisition and analysis

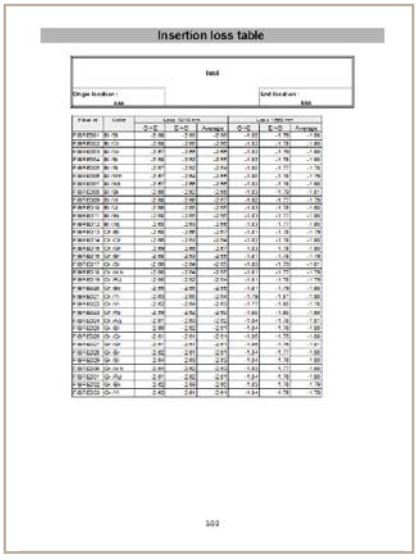
Added to the MTS/T-BERD platforms' automated bi-directional OTDR acquisition process, the LR OTDR Module offers an essential tool for the acceptance testing of new cable deployments.

- Configuration synchronization at both ends for error-free test setup.
- Fiber continuity check capability.
- Automatic measurement procedure with the master-master operation.
- Exchange results from both ends through the fiber.
- Pass/fail indication minimizes handling errors.



Bi-directional OTDR analysis





Example of test report

MTS/T-BERD 8000 platform with
OTDR and OFI modules

Error-free professional report generation

A complete PC-based software application within a Microsoft Windows environment offers detailed generation of professional OTDR trace reports.

- Proof-of-performance reports with a high degree of customization capabilities.
- Dedicated tables are provided for each test result (splice loss, connector, and length).
- Out-of-range value summaries are provided with analysis of macro-bends.
- Compare results between the different wavelengths to identify bends and constraints.
- Complete fiber characterization reports, including OTDR, CD, PMD, and spectral attenuation.

Enhanced testing solution

With the scalable design of the MTS/T-BERD platforms, field technicians can quickly and easily plug-in the appropriate test module to perform precise measurement from the outside plant to the central office. The optical test platforms offer a full range of fiber characterization test modules with OTDR, CD, and spectral attenuation measurement, as well as DWDM testing capabilities.

With this new LR OTDR Module and the current range of available OTDR modules, JDSU's test solution is the broadest offering on the market, making JDSU the provider of choice for all telecommunications operators and fiber optic installers.

The LR OTDR Module can be combined with additional measurement capabilities in JDSU's optical test platforms so that technicians can fully characterize the fiber network with an all-in-one solution:

- Optical insertion loss
- Optical return loss
- OTDR
- Chromatic dispersion
- Polarization mode dispersion
- Spectral attenuation profile

Specifications

General (typical at 25°C)

Weight	0.6 kg (1.1 lb)
Dimensions (w x h x d)	213 x 124 x 32 mm (8.38 x 4.88 x 1.26 in)

Optical Interfaces

Applicable fiber	SMF 9/125 µm
Interchangeable optical connectors	FC, SC, DIN, ST, LC

Technical Characteristics

Laser safety class (21CFR)	Class 1
Distance units	Kilometers, feet, and miles
Group index range	1.30000 to 1.70000 in 0.00001 steps
Number of data points	Up to 128,000 data points
Distance measurement	Automatic or dual cursor
Display range	From 2.6 m up to 380 km
Cursor resolution	1 cm
Sampling resolution	4 cm
Accuracy	±1 m ±sampling resolution ±1.10-5 x distance (Excluding group index uncertainties)

Attenuation Measurement

Automatic, manual, 2-point, 5-point, and LSA	
Display range	1.25 dB to 55 dB
Display resolution	0.001 dB
Cursor resolution	0.001 dB
Linearity	±0.03 dB/dB
Threshold	0.01 to 5.99 dB in 0.01 dB step

Reflectance/ORL Measurements

Display resolution	0.01 dB
Threshold	-11 dB to -99 dB in 1 dB step
Reflectance accuracy	±2 dB

Ordering Information

Long Range 1625 nm OTDR Module	E8117RLR
Long Range 1310/1550 nm OTDR Module	E8126LR
Long Range 1550/1625 nm OTDR Module	E8129LR
Long Range 1310/1550/1625 nm OTDR Module	E8136LR
Long Range 1310/1490/1550 nm OTDR Module	E8138LR49
Continous Source option	E810TDRLS
Universal Optical Connectors	
Straight connectors	EUNIPCFC, EUNIPCSC, EUNIPCST, EUNIPCDIN, EUNIPCLC
8° angled connectors	EUNIAPCFC, EUNIAPCSC, EUNIAPCST, EUNIAPCDIN, EUNIAPCLC

For more information on the MTS/T-BERD platforms, test modules, adapters, cables, and fiber optic couplers, refer to the separate datasheets and brochures.

OTDR Module Technical Specifications (typical at 25°C)

These are standard specifications, representing only a selection of JDSU's offerings. For specific requirements, please contact your local JDSU representative.

Central Wavelength[1]	Pulse Width	RMS Dynamic Range[2]	Event Dead Zone[3]	Attenuation Dead Zone[4]	Continuous Wave Output Power	Application
1310 ±20 nm	3 ns to 20 µs	43 dB	0.8 m	4 m	0 dBm	FTTx through splitters/Metro/ Long Haul
1490 ±15 nm		40 dB				
1550 ±20 nm		41 dB				
1625 ±10 nm		41 dB				

[1]Laser at 25°C and measured at 10 µs for singlemode and 50 ns for multimode
[2]The one way difference between the extrapolated backscattering level at the start of the fiber and the RMS noise level, after 3 minutes averaging and using the largest pulsewidth
[3]Measured at ±1.5 dB down from the peak of an unsaturated reflective event using the shortest pulsewidth
[4]Measured at ±0.5 dB from the linear regression using a FC/UPC reflectance and using the shortest pulsewidth

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