MTS/T-BERD Platforms

Optical Time Domain Reflectometer Modules

2007 FROST & SULLIVAN
Global Communications Test & Measurement Company of the Year Award

Key Features

- **Field installable single slot plug-in module for the MTS/T-BERD platforms and the Optical Test Unit (OTU-8000) for ONMS system**
- **Impressive speed and high performance testing (up to 128,000 acquisition points with 0.1 s real time sweep)**
- **Shortest event dead zone of 0.8 m and attenuation dead zone of 4m, highest dynamic range of 50 dB at 1550 nm**
- **Continuous wave (CW) functionality**
- **Powerful report generation facilities using FiberTrace and FiberCable PC software**
- **FTTx, 40 Gb/s and ROADM network ready**

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.

OTDR advanced optical plug-ins for fiber characterization

The OTDR plug-in range is the industry's fastest, offering the highest performance solution of any OTDR field instrument on the market.

The plug-in's automation and rapid testing features offer impressive time savings for companies involved in commissioning and locating faults in optical fiber networks.

JDSU offers over forty different field-interchangeable OTDR plug-ins, covering both multimode and singlemode networks, from very short distance (FTTH) to ultra long haul, at any wavelength between 850/1300/1310/1383/1490/1550/1625 nm.

To enhance the modularity among the platforms, all of the MTS-5100 plug-in modules can be inserted into the MTS/T-BERD platforms. With the MTS/T-BERD platforms's scalable design, companies can match their testing solutions for their unique network environments by purchasing only the features needed. This platform maximizes scalability, manageability, price/performance, and flexibility. As optical network technology changes, companies can easily upgrade the MTS/T-BERD platforms. This eliminates the need to purchase a new test set when testing more than one technology, and it reduces training time and costs. The combination of the OTDR plug-in with the MTS/T-BERD platforms offers a lightweight, handheld, and rugged field instrument suitable for any measurement requirements, including 40 Gb/s and ROADM networks.

The powerful communication capability of the MTS/T-BERD platforms offers users the ability to remotely control the unit, send data directly to the office, or access the data via internet.

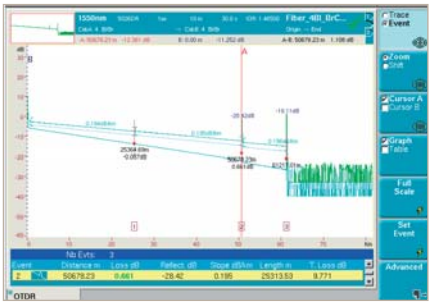

Figure 1 3 wavelength OTDR trace display

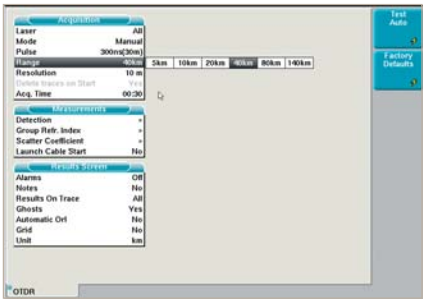

Figure 2 OTDR test setup

Rugged field solution

Housed in the field dedicated MTS/T-BERD platforms, OTDR measurements can be performed in Outside Plant (OSP), Central Office (CO), and harsh environmental conditions. A portable, battery-powered instrument, shockproof and drop tested for complete reliability in the field.

Connection checks with VFL and fiber microscope options

Serving as a complementary tool for physical layer testing during installation and maintenance, the VFL and inspection scope check the quality of the front connector and visually locate faults on the fiber jumpers.

Built-in talk set allowing communication along the fiber with data transfer capability

The MTS/T-BERD platforms offer a built-in talk set option allowing communicating between both ends of the fiber while the tests are running. In addition to this function users can send orders or transfer results to the product at the other end for immediate comparison or remote control. Providing a permanent and cost effective solution to communicate where mobiles or telephone lines are not available. The data transfer function allows immediate far end results, performing bi-directional OTDR analysis saving a huge amount of transport time.

Enhanced testing time

Full dynamic range reached in less than 30 seconds measurement time, allows greater productivity in the field and faster return on investment with the reduction of measurement costs.

Easy to use solution from single to multiple measurement tests

An intuitive user interface, including predefined functions, for direct and easy access to the OTDR setup and results reading.

One button testing means that technicians need no special training to carry out an OTDR test, suitable for novice and expert technicians. This allows the improvement of field productivity with error risk reduction due to repetitive tasks.

Powerful Pass/Fail link manager

Ability to summarize OTDR results for a complete cable commissioning with pass/fail alarm. Saves time with a quick and intuitive overview of the complete set of results with fiber link ad fiber cable management, and provides direct cable report generation.

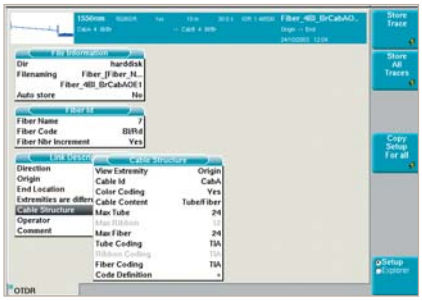

Figure 3 Advanced cable information for metro network

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 OTDR Modules.

- In compliance with ITU-T G.983.3, the OTDR Modules provide a three-wavelength version at 1310/1490/1550 nm, expanding its test capabilities to FTTx/PON
- Provide splice and connector information at the three PON wavelengths
- Combine a high dynamic range and short event resolution in order to characterize short fiber lengths and measure through the splitters
- Integrate splitter management data in the table results
- Enable filtered 1625 nm OTDR modules for in-service testing

Detailed and dedicated cable manager from basic to complex link configurations

According to the link configuration and the cable structure, the user defines and stores information allowing archiving at both ends of the cable with all details including identification, color coding, and fiber numbers. Given the complexity of metro and access networks resulting from rerouting, cable structure can be different at each end, increasing difficulty in documenting both end measurements. With the extended cable management capability, the user saves both end information with each measurement, offering detailed and exact cable documentation. Making it easy to manage the data in order to generate cable reports.

OTDR Bellcore/Telcordia trace format compatible

Complies with GR-196-CORE issue 2 OTDR data standard revision 1.0/1.1/2.0. Also fully compatible with a universal format to exchange files and to export to other tools.

FiberCable software solution

A PC-based software range, within a true Windows environment, offers complete and detailed generation of professional acceptance reports with bi-directional OTDR results.

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Specifications

OTDR modules technical specifications (typical at 25°C)

	Central wavelength[1]	*Pulse width*	*RMS dynamic range[2]*	*Event dead zone[3]*	*Attenuation dead zone[4]*	*Continuous wave output power*	*Application*
High performance multimode (MM)	850/1300 ±20 nm	3 ns to 200 ns	25 dB/23 dB	1.5 m	5 m	N/A	LAN
Very short range singlemode (VSRe)	1310/1550 ±20 nm	10 ns to 10 µs	32 dB/30 dB	2.5 m	8 m	-3.5 dBm	FTTx/Access
Short range singlemode (SRe)	1310/1550 ±20 nm	10 ns to 10 µs	34 dB/32 dB	3 m	25 m	N/A	FTTx/Access
Medium range singlemode (MR)	1310 ±20 nm	3 ns to 20 µs	40 dB	0.8 m	4 m	-3.5 dBm	FTTx through splitters/Access/ Metro
	1490 ±15 nm		40 dB				
	1550 ±20 nm		38 dB				
	1625 ±10 nm		37 dB				
Long range singlemode (LR)	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				
Very long range singlemode (VLR)	1310 ± 20 nm	3 ns to 20 µs	45 dB	0.8 m	4 m	0 dBm	FTTx through splitters/Metro/ Long Haul
	1383 ±2 nm		44 dB				
	1490 ±15 nm		42 dB				
	1550 ±20 nm		43 dB				
	1625 ±10 nm		43 dB				
Ultra long range singlemode (UHD)	1310/1550 ±20 nm	10 ns to 20 µs	45.5 dB/50 dB	4.5 m	15 m	N/A	Metro/Long Haul/ Ultra Long Haul
	1625 ±10 nm		45.5 dB				

[1]Laser at 25°C and measured at 10 µs for singlemode and 50 µs 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.

OTDR characteristics

Laser safety class (21 CFR)	Class1
Distance units	Kilometers, feet and miles
Group index range	1,30000 to 1,70000 nm 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 maximum range (80 km for MM module, 260 km for SRe module, 380 km for others)
Display resolution	1 cm
Cursor resolution	From 1 cm
Sampling resolution	From 4 cm
Distance 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	From 1.25 dB to 55 dB
Display resolution	0.001 dB
Cursor resolution	From 0.001 dB
Attenuation linearity	±0.03 dB/dB[1]
Reflectance accuracy	±2 dB
Threshold	0.01 to 5.99 dB in 0.01 dB step
Reflectance/ORL measurements	Automatic or manual
Display resolution	0.01 dB
Reflectance threshold	-11 to -99 dB in 1 dB step
Storage	Bellcore/Telcordia compatible Version 1.1 and Version 2.0

[1]±0.05 dB/dB for SRe and UHD.

Ordering Information

OTDR Module - Singlemode[1]

E8126SRe	Short range 1310/1550 nm
E8126MR	Medium range/high resolution 1310/1550 nm
E8126LR	Long range 1310/1550 nm
E8117LR	Long range 1625 nm
E8136LR	Long range 1310/1550/1625 nm
E8117RLR	Filtered long range 1625 nm
E8126VLR	Very long range 1310/1550 nm
E8129VLR	Very long range 1550/1625 nm
E8126UHD	Ultra long range 1310/1550 nm
E8136UHD	Ultra long range 1310/1550/1625 nm

OTDR Module - Multimode

E8123MM	High resolution 850/1300 nm

Continuous Source Option

E810TDRLS

[1]Other configurations are available. Please contact JDSU for additional references.

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