

T-BERD®/MTS Platforms

Optical Dispersion Measurement Module



Key Features

- Combined CD, PMD, and AP in one plug-in module
- The most integrated dispersion solution dedicated to field testing
- Patented phase shift solution for CD measurement
- Complete and accurate fiber characterization over the entire wavelength range (1260-1640 nm) with measurement points

Applications

- Test very high speed networks (40 Gb/s and higher)
- Test DWDM/CWDM systems
- Test amplified links
- Test Metro, long haul, and very long haul fiber optic links

The JDSU T-BERD/MTS-6000, -6000A, and -8000 Optical Dispersion Measurement (ODM) module offers chromatic dispersion (CD), polarization mode dispersion (PMD), and attenuation profile (AP) test functions in one plug-in module. It is the industry's most compact and integrated dispersion solution dedicated to field testing fiber optic networks. The module includes a patented solution for CD measurement.

Today's fiber networks must meet exacting performance requirements to withstand the demands of widespread broadband access technology deployment. In addition to deploying fiber infrastructures that perform perfectly, network operators must reduce operating expenses while adding new revenue-generating services, all within an ever increasingly complex environment.

Both T-BERD/MTS test platforms provide an ideal, all-in-one solution that meets these challenges. The T-BERD/MTS platforms leverage small, rugged, and highly integrated plug-in modules that are battery operated, completely within drop-tested housing. The weather-resistant design and long battery life make them ideally suited for field use. Their modularity allows for easy field upgrades to technologies and advanced options that support the new and ever changing needs of field technicians.



T-BERD/MTS-8000



T-BERD/MTS-6000

The right testing combination

The ability to measure CD, PMD, and AP is essential during fiber characterization, which is a series of tests performed to identify fiber viability for very high-speed transmission systems. These tests include 10 Gigabit Ethernet (GigE) and 40 G in both the installation and maintenance phases. If not properly managed, CD, PMD, and AP severely degrade transmission quality that must operate optimally to deliver reliable broadband services. The combination of CD, PMD, and AP test functions lets technicians validate the compatibility of the fiber link with high-speed coarse wavelength division multiplexing (CWDM)/dense wavelength division multiplexing (DWDM) system implementation including reconfigurable optical add/drop multiplexer (ROADM) networks. The performance of each function makes the ODM module the right tool for characterizing fiber at transmission speeds of 40 Gb/s and higher.



Chromatic Dispersion

- Two-ended test using one fiber based on phase shift method
- Full wavelength range characterization
- Suitable for any fiber type
- High dynamic range up to 55 dB

Polarization Mode Dispersion

- Based on the fixed analyzer method using fast Fourier transform (FFT)
- Established in the market
- High dynamic range up to 65 dB

Attenuation Profile

- dB loss/km over the full wavelength range: 1260-1640 nm
- Allows CWDM and DWDM transmission band characterization
- Water peak (1383 nm area) characterization

High-performance solution

In addition to its high level of integration and industry-leading field test performance features, all test methods used in the ODM module are approved and/or referenced by all international standardization bodies.

Its high dynamic range (up to 65 dB), wide wavelength acquisition range, repeatability, and high level of accuracy make it the product of choice for reliable fiber characterization. High-performance features include:

- Test through non-bidirectional components, including erbium doped fiber amplifiers (EDFAs) and filters
- Very fast acquisition time (from 40 to 80 seconds) with minimum 500 acquisition points
- Accurate zero-wavelength characterization on G.652 fiber
- One input port for any test configuration

Field-dedicated solution

Housed in the T-BERD/MTS platforms, the ODM module offers the highest level of integration and ruggedness.

When used in tandem with another T-BERD/MTS or a JDSU handheld source, the ODM module accommodates many fiber optic field measurement conditions. Its size and weight makes it the best solution for outside plant testing. Its suite of personal computer interfaces and remote control capability are the perfect fit for indoor use.

- Most compact dispersion test solution in the market
- A shock- and vibration-proof instrument with no moving parts (drop tested at 70 cm)
- Internal/online wavelength referencing
- Rugged, handheld, battery-operated light source

Intuitive, easy-to-use user interface

The T-BERD/MTS user interface enables any technician to quickly learn to use the three primary ODM test functions.

- No specific setup required
- No acquisition points and test time selection
- Customized wavelength range with pre-defined CWDM and DWDM ITU grid
- Pass/fail indication with predefined values according to bit rate

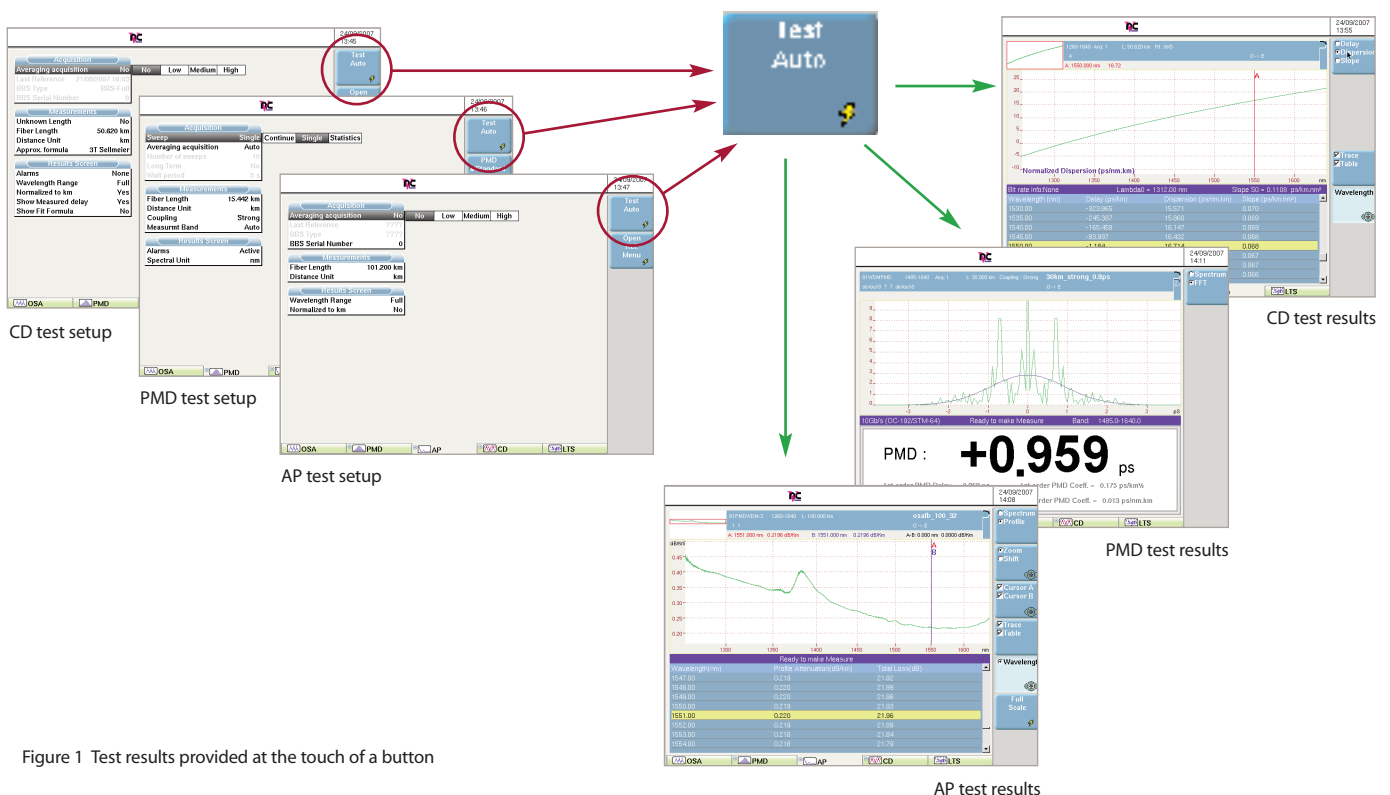


Figure 1 Test results provided at the touch of a button

Specifications

ODM Module–Typical Specifications¹ at 25°C

Weight	600 g (1.32 lbs)
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, LC

Attenuation Profile

Dynamic range ⁵	55 dB 60 dB ²
Wavelength uncertainty	±0.1 nm
Measurement time ¹⁰	6 s
Measurement uncertainties ¹¹	
at 1310 nm	0.006 dB/km
at 1550 nm	0.003 dB/km
at 1625 nm	0.004 dB/km

Polarization Mode Dispersion

Dynamic range ⁶	58 dB 65 dB ²
PMD measurement range ⁷	0.08 to 130 ps
PMD absolute uncertainty ^{8,9}	±0.02 ps ±2% PMD
PMD repeatability ^{8,9}	0.025 ps
Measurement time ¹⁰	16 s, independent of PMD value

Chromatic Dispersion Measurement

Wavelength range	1260-1640 nm	
Wavelength uncertainty	±0.1 nm	
Minimum length	1 km	
Dynamic range (dB)	45 dB	
	55 dB ²	
	80 km G.652	10 km G.655
Zero dispersion wavelength uncertainty (nm)	±1.5	±1.5
Zero dispersion wavelength repeatability ³ (nm)	0.1	0.1
Dispersion uncertainty ^{4,5} (ps/nm.km)	±0.05	±0.1
Dispersion repeatability ^{3,4} (ps/nm.km)	0.005	0.005
Slope at zero wavelength repeatability ³	0.5%	0.1%
Measurement time	40 to 80 s	

1. With broadband source (BBS) module E81BBS2A unless specified
2. With handheld broadband source OBS550 in high dynamic mode
3. Repeatability refers to the typical one-sigma standard deviation value, obtained for systems cycling over 20 measurements
4. 1530–1570 nm band
5. Excluding reference fiber uncertainties
6. With averaging
7. Up to 60 ps in strong mode coupling
8. Weak mode coupling, between 0.1 ps and 60 ps DGD range
9. Up to 35 dB attenuation and NPL standard traceable
10. Minimum value without averaging
11. Measured with 80 km G.652 fiber

Ordering Information

ODM Module

Chromatic dispersion test module (1260–1640 nm)	E81CD
Chromatic dispersion + PMD + Attenuation profile test module (1260–1640 nm)	E81DISPAP

Broadband Source

Handheld Broadband source for CD/PMD/AP (1460–1640 nm)	E0BS550
High dynamic range (1525–1570 nm)	
Broadband Source module for CD/PMD/AP (1260–1640 nm)	E81BBS2A

Test & Measurement Regional Sales

NORTH AMERICA TEL: 1 866 228 3762 FAX: +1 301 353 9216	LATIN AMERICA TEL: +1 954 688 5660 FAX: +1 954 345 4668	ASIA PACIFIC TEL: +852 2892 0990 FAX: +852 2892 0770	EMEA TEL: +49 7121 86 2222 FAX: +49 7121 86 1222	www.jdsu.com/test
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