T-BERD®/MTS-6000, 6000A and -8000 Platforms

High-Resolution Dispersion Test Solution

T-BERD/MTS-8000

T-BERD/MTS-6000

Key Features

- Femtosecond PMD analyzer with high measurement repeatability
- Only fully portable, battery-operated solution available that performs standard and ultra low PMD measurements (0 fs to 18 ps)
- Patented design for PMD measurement
- Link and network characterization combine PMD, CD, and AP testing capability
- Suitable for terrestrial, aerial, amplified, and submarine network topologies
- Now offers high-speed 40 Gbps transmission testing and already equipped for testing 100 Gbps

Applications

- Perform high resolution PMD, CD, and AP measurements
- Qualify DWDM/CDWM high-speed networks (to 40G/100G)
- Characterize modern and ultra-low PMD optical fibers before or after installation
- Qualify amplified links, including submarine networks

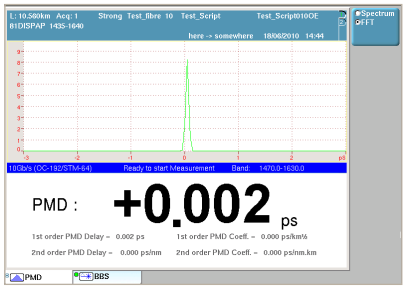
High-speed DWDM transmission networks, 40 Gbps networks, and fast approaching 100 Gbps networks associated with manufacturing modern low polarization mode dispersion (PMD) fiber continue to push requirements toward very low (femtosecond) and high repeatability PMD measurements.

PMD is one of the most critical parameters to consider when characterizing the fiber's suitability for carrying high-data-rate transmission. While PMD limitations for 10 Gbps (Ethernet or [SONET/SDH]) do not present major obstacles for transmission deployments, potential issues with the further reduced thresholds associated with 40G and 100G require clear and correct consideration. This is where reliable, precise PMD measurement, combined with high-performance testing for chromatic dispersion (CD) and attenuation profile (AP) plays a key role.

The JDSU High-Resolution Dispersion Test Solution offers an optimized tool for qualifying standard and low PMD values for any optical fiber link with very high repeatability, while at the same time qualifying CD and spectral attenuation (SA).

Advanced Optical Module for JDSU T-BERD/MTS Platforms

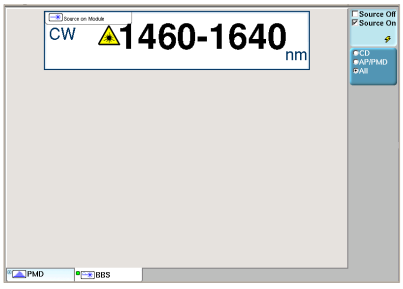
Combining the High-Resolution Dispersion Analyzer with the T BERD/MTS-6000, -6000A and -8000 platforms offers a unique field-portable test instrument without compromising performance and reliability.



Measuring PMD Delay in Femtoseconds

DWDM networks use modern fibers and increased transmission speeds and require the ability to measure very low PMD values with confidence without compromising the distance reach.

- Provides a measurement range of 0 fs to 18 ps
- Provides a dynamic range of 48 dB, suitable for any Metro-Access, Metro-Core, and ultra-long-haul networks
- Calculates second-order PMD delay and coefficient



Measuring Multiple States of Polarization

The High-Resolution Dispersion Test Solution integrates a polarization scrambling capability that enables performing measurements over multiple polarization launch conditions.

- Offers automatic coverage of various polarization launch conditions
- Offers high repeatability even for the lowest PMD delay

Broadband Light Source

The new High-Resolution BBS1A Broadband Source Module, available for any of the T-BERD/MTS-6000, -6000A, or -8000 platforms, is optimized for high-resolution dispersion measurement applications. This source module not only integrates the latest developments for high-resolution PMD testing but also combines CD and AP measurements.

- Provides ITU-T SCL band coverage
- Single source activation enables successive PMD, CD, and AP measurements
- Requires no warm-up time

Combines the Three Key Fiber Testing Parameters for High-Speed Transmission Deployment: PMD, CD, and AP

The future-proof design of the High-Resolution Dispersion Test Solution makes it suitable for today's 10 and 40 Gbps testing and ready for future deployment of 100 Gbps transmission speed.

- All-in-one solution reduces the number of fiber connections and test time
- Offers complete fiber characterization for DWDM transmission
- Enables fast PMD measurements
- Provides accurate CD measurements using the Phase Shift
- Offers loss/km (dB) fiber qualification

Integrated into the T-BERD/MTS platform, the High-Resolution Dispersion Solution can accommodate many fiber optic field measurement conditions.

Its size, weight, and battery operation make it ideal for outside plant testing. Its suite of personal computer interfaces and remote control capability are perfect for central office or headend use.

- Provides the most compact dispersion test solution on the market
- Shock- and vibration-proof instrument with no moving parts (drop tested at 70 cm)
- Offers internal/online wavelength referencing

From Fast Measurement to Fast Pass/Fail Indication

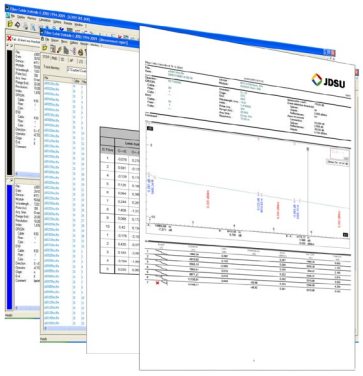
Compares dispersion results directly to defined thresholds and Pass/Fail alarms provide immediate information, saving time with quick and intuitive checks of the complete suite of tests.

Bit rate per channel (Gbps)	Transmission	CD Tolerance at 1550 nm (ps/nm)	PMD Tolerance (ps)
10	SDH/SONET—NRZ	1176	10 to 13
10	Ethernet	738	5
40	SDH/SONET	73.5	2.5

Two Integrated Test Kits for Any Application

The JDSU High-Resolution Dispersion Test Solution is available in two configurations:

- Kit 1 includes a T-BERD/MTS-8000 platform with the High-Resolution PMD Analyzer function and a T-BERD/MTS-6000 platform with the High-Resolution Broadband Source Module.
- Kit 2 includes a T-BERD/MTS-8000 platform with the High-Resolution Dispersion (PMD/CD/AP) Analyzer function and a T BERD/MTS-8000 platform with the High-Resolution Broadband Source Module.



Straight-Forward Report Generation

The solution comes equipped with a complete PC-based software application within a Microsoft Windows® environment that generates detailed, professional dispersion reports.

This application provides:

- highly customizable proof-of-performance reports
- out-of-range value summaries
- complete fiber characterization reports, including OTDR, CD, PMD, and SA

Enhanced Testing Solution

With the scalable design of the T-BERD/MTS-6000 and -8000 platforms, field technicians can quickly and easily plug in the appropriate test module to perform precise measurements from the OSP to the CO.

Combining the High-Resolution Dispersion Test Solution with additional measurement capabilities of other JDSU optical test functions lets technicians fully characterize the fiber network with an all-in-one solution that offers:

- optical insertion loss and return loss
- OTDR
- chromatic dispersion
- polarization mode dispersion
- spectral attenuation profile
- conventional optical spectrum analyzer for CWDM and DWDM
- ROADM and high-performance optical spectrum analyzer

Specifications

High-Resolution Dispersion Test Solution–Typical specifications[1] at 25°C

Optical interfaces		
Applicable fiber		SMF 9/125 µm
Interchangeable optical connectors		FC, SC, ST, DIN, LC
Polarization Mode Dispersion		
Dynamic range[1, 2]		48 dB
PMD measurement range [3]		0 fs to 18 ps
PMD uncertainty[4, 5]		±20 fs ±2%
Measurement time[6]		from 30 s
Attenuation Profile (only with Kit 2)		
Dynamic range[1, 7]		45 dB
Wavelength uncertainty		±0.1 nm
Measurement time[6]		3 s
Measurement uncertainty[8]		
at 1550nm		0.003 dB/km
at 1625nm		0.004 dB/km
Chromatic Dispersion (only with Kit 2)		
Wavelength range		
Acquisition		1460–1640 nm
Display		1260–1650 nm
Wavelength uncertainty		±0.1 nm
Minimum length		1 km
Dynamic range[1, 8]		33 dB
Measurement time		10 to 30 s
	80 km G.652	***10 km G.655***
Zero dispersion wavelength uncertainty (nm)	n/a	±4.5
Zero dispersion wavelength repeatability (nm)[9]	n/a	0.4
Dispersion uncertainty (ps/nm.km)[10, 11]	±0.06	±0.3
Dispersion repeatability (ps/nm.km)[9, 10]	0.02	0.02
Optical Broadband Source (E81BBS1A)		
Typical Output power		+11 dBm
Spectral range		1460–1640 nm
Minimum spectral density[12]		>–40 dBm/0.1 nm

1. With broadband source module E81BBS1A in Corresponding mode
2. With Kit 1. Subtract 6 dB for Kit 2
3. With strong mode coupling
4. Strong mode coupling. 1500–1600 nm measurement span. PMD < 10ps
5. Up to 35 dB attenuation
6. Without averaging
7. With averaging
8. Measured with 80 km G.652 fiber
8 Dynamic range obtained without PSM module. A typical extra budget loss of 1.25dB applies when passing through PSM.
9. Repeatability refers to the typical one sigma standard deviation value, obtained for systems cycling of 20 measurements
10. 1530–1570 nm band
11. Excluding reference fiber uncertainties
12. Over 1470–1630 nm range

Ordering Information

Part Number	Test Solution Description
EMTSHRESPMDKIT1	High-Resolution PMD Kit 1 with MTS-8000 and MTS-6000 platforms
EMTSHRESDISPKIT2	High-Resolution Dispersion (PMD/CD/AP) Kit 2 with MTS-8000 platform
ETBHRESPMDKIT1	High-Resolution PMD Kit 1 with T-BERD 8000 and T-BERD 6000 platforms
ETBHRESDISPKIT2	High-Resolution Dispersion (PMD/CD/AP) Kit 2 with T-BERD 8000 platform

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

WEBSITE: www.jdsu.com/test

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