T-BERD 8000 Tester
All your optical network testing needs covered in a single platform

The power of one, performing the work of many

A powerful unit
- Flexible scalable platform
- Industry-leading size and weight
- Interchangeable modules
- Generates test results in seconds
- Fully automatic testing
- Combination of several tests
- Remotely controlled (via Ethernet, Fiber)

A single platform for
- Attenuation testing
- Dispersion testing
- DWDM systems testing
- New fiber testing (attenuation profile)
- PDH/T-Carrier & SDH/SONET testing up to 10G
- Ethernet testing up to 10GigE

Variety of modules to meet all applications
- More than 20 OTDR modules
- Multifunction loss test module
- PMD modules
- CD module
- DWDM analyzers
- High-performance OSAs
- Transport module
## Comprehensive optical network platform

### Conventional fiber testing
- Ideal for field measurements
- Large variety of OTDR modules
- Length measurement
- Fiber link attenuation
- Reflection
- Splices/connector loss
- Insertion loss
- Optical return loss
- Fast and efficient testing

### Fiber characterization testing
- Complete solution
- OTDR
- Chromatic dispersion (CD)
- Polarization mode dispersion (PMD)
- Attenuation profile

### CWDM/DWDM testing
- Advanced testing
- Greater functionality
- Higher performance
- 1250 to 1650 nm DWDM measurements
- EDFA & DFB testing
- Channel isolation for BER analysis
- One button testing
- One single port analyzer with channel isolator
- Dual port analyzer with channel isolation
- Transport module

### FTTx testing
- During plant installation and maintenance
- Insertion loss
- Event loss
- Event reflectance
- Distance to events
- Power level
- Total ORL or by section

## Main Specifications

### T-BERD 8000 BASE
(typical at 25 °C)

**Display**
- TFT color, 10.4 inches, LCD 800 × 600
- TFT color, 10.4 inches, LCD 800 × 600, High visibility
- Touchscreen TFT color, 10.4 inches, LCD 800 × 600, High visibility

**Storage**
- Internal memory 16 MB
- Hard disk (optional) min 20 GB
- Floppy disk drive (optional) 3.5 inches, MSDOS compatible
- CD read/write (optional)

**Input/output interfaces**
- RS232C, 2 × USB, VGA, RJ45 Ethernet, RJ11 modem (optional)

**Power supply, battery**
- Battery type standard removable Li-Ion batteries
- Operation time up to 16 OTDR hours with two batteries and standard display, Telcordia GR-196-CORE
- Internal charger yes
- Charging time <3 hours per battery
- Trickle charge yes
- DC input 19 to 25 V
- Power supply, AC/DC adapter Input 100 to 240 V, 50 to 60 Hz, 1.8 A, output 19 V DC/3.1 A

**Size (w × h × d)**
- Mainframe only 320 × 265 × 55 mm/
  (with back plate) 12.6 × 10.4 × 2.1 inches
- Mainframe + receptacle + 320 × 265 × 116 mm/
- Battery pack 12.6 × 10.4 × 4.5 inches

**Weight**
- Mainframe only 2.9 kg/6.39 lbs
  (with back plate)
- Mainframe + receptacle + Battery pack (with one battery) 5.4 kg/11.9 lbs

### Environmental specifications

**Temperature range**
- Operating on mains (no options) −20 °C to +50 °C (−4 °F to 122 °F)
- Operating, all options 0 °C to +40 °C (32 °F to 104 °F)
- Storage −20 °C to +60 °C (−4 °F to 140 °F)

**Humidity**
- 95% without condensing

**EMI/ESD**
- CE compliant
T-BERD 8000 Tester

High performance OTDR modules

**Wide range of modules**
- Short haul to ultra long haul
- First to market 50 dB dynamic module (at 1550 nm)
- 1, 2, 3, 4 wavelengths per module (1310/1383/1490/1550/1625 nm)
- Multimode, singlemode modules
- Very short dead zones (up to 0.8 m event dead zone)
- Modules compatible with the T-BERD 6000 platform

**Physical Fiber Testing**
- OTDR measurements
- Optical return loss (ORL) measurement
- Insertion loss (IL) measurement
- Visual fault locator
- Alarm management with PASS/FAIL analysis

**Large number of options**
- Connection check with visual fault locator and videoscope
- Built in talk set with data transfer over fiber capability
- PC software solution for report generation
- Includes cable manager function

**Automatic bi-directional measurement function**
- Automate the acquisition process
- Check fiber continuity
- File transfer through the fiber
- True splice loss with both end analysis

**Main specifications**

<table>
<thead>
<tr>
<th></th>
<th>High performance multimode MM</th>
<th>Short range singlemode SR</th>
<th>Medium range singlemode DR</th>
<th>Long range singlemode HD</th>
<th>Very long range singlemode VLR</th>
<th>Ultra long haul singlemode UHD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central wavelength</td>
<td>850/1300 nm ± 20 nm</td>
<td>1310/1550 nm ± 20 nm</td>
<td>1310/1550 nm ± 20 nm</td>
<td>1310/1550/1625 nm ± 20 nm</td>
<td>1310/1550/1625 nm ± 10 nm for 1625 nm</td>
<td>1310/1550/1625 nm ± 10 nm for 1625 nm</td>
</tr>
<tr>
<td>Laser safety class</td>
<td>Class 1</td>
<td>Class 1</td>
<td>Class 1</td>
<td>Class 1</td>
<td>Class 1</td>
<td>Class 1</td>
</tr>
<tr>
<td>Pulse width</td>
<td>3 ns to 200 ns</td>
<td>10 ns to 10 µs</td>
<td>5 ns to 10 µs</td>
<td>10 ns to 20 µs</td>
<td>3 ns to 20 µs</td>
<td>10 ns to 20 µs</td>
</tr>
<tr>
<td>Distance range</td>
<td>Up to 80 km</td>
<td>Up to 260 km</td>
<td>Up to 260 km</td>
<td>Up to 380 km</td>
<td>Up to 380 km</td>
<td>Up to 380 km</td>
</tr>
<tr>
<td>RMS dynamic range</td>
<td>25 dB/23 dB</td>
<td>35 dB/33 dB</td>
<td>37 dB/35 dB</td>
<td>42 dB/40 dB/40 dB</td>
<td>45 dB/43 dB/43 dB</td>
<td>46 dB/50 dB/46 dB</td>
</tr>
<tr>
<td>Event dead zone</td>
<td>1.5 m</td>
<td>3 m</td>
<td>1 m</td>
<td>4 m</td>
<td>0.8 m</td>
<td>4 m</td>
</tr>
<tr>
<td>Attenuation dead zone</td>
<td>5 m</td>
<td>25 m</td>
<td>8 m</td>
<td>15 m</td>
<td>4 m</td>
<td>15 m</td>
</tr>
</tbody>
</table>

(1) Central wavelength: Laser at 25°C and measured at 10 µs for singlemode and 50 ns for multimode

(2) RMS dynamic range: The one way difference between the extrapolated back scattering level at the start of the fiber and the RMS noise level, after 3 minutes averaging.

(3) Event dead zone: Measured at ±1.5 dB down from the peak of an unsaturated reflective event.

(4) Attenuation dead zone: Measured at ±0.5 dB from the linear regression using a PC/PC type reflectance.
Multi-function Loss Test module

All in one module
- Single slot plug-in module for loss, back reflection, and fiber length measurements
- Testing at telecom wavelengths: 1310, 1550, and 1625 nm
- One button automated testing
  1. Continuity check
  2. Automated bi-directional insertion loss (IL)
  3. Automated bi-directional optical return loss (ORL)
  4. Length testing
  5. Pass/Fail analysis
  6. Complete test results storage in both test units
- Additional standalone power meter
- Laser source to measure manually IL (TwinTest compatible)
- Manual ORL measurement possible with only one instrument

Best in class for FTTx Testing
- ITU-T G.983.3 compliant
- Three-wavelength version: 1310, 1490, 1550 nm
- Supports FTTx/PON testing

Multi-platform compatible module
- High performance for all types of networks: transport, metro, access, and FTTx/PON.
- Module compatible with the T-BERD 6000 Platform
- Can make measurement and communicate with another OFI module or a standalone
  OFI-2000 Multi-function Loss Test Set.

Specifications

<table>
<thead>
<tr>
<th>Multi-function Loss Test Module (typical at 25° C)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Weight</strong></td>
</tr>
<tr>
<td><strong>Dimensions (w × h × d)</strong></td>
</tr>
</tbody>
</table>

**Optical interfaces**
- Applicable fiber: SMF 9/125 μm
- Interchangeable optical connectors: FC, SC, DIN, etc…

**Bi-directional test set specifications (typical at 25° C)**
- **Source function (also valid for source mode)**
  - **Laser type**: Class 1 laser
  - **Wavelength at 25° C**: 1310 ± 30 nm, 1490 ± 30 nm, 1550 ± 30 nm, 1625 ± 10 nm
  - **Spectral bandwidth**: 5 nm maximum
  - **Output level into 9/125 μm fiber (CW mode)**: -3.5 dBm
  - **Modulated output average level**: 3 dB less

- **Level stability**
  - **Short term 15 min (T = ± 0.3 K)**: ± 0.02 dB
  - **Long term 8 hours (T = ± 0.3 K)**: ± 0.2 dB

- **Modulation frequencies**
  - Continuous wave, 270 Hz, 330 Hz, 1 kHz, 2 kHz

- **TWINtest and auto-λ**
  - All wavelengths activated one after the other

- **Loss test set function**
  - **Dynamic range**: 60 dB
  - **Accuracy Loop back**: ± 0.25 dB /side-by-side ± 0.15 dB
  - **Result resolution**: 0.01 dB

- **Optical return Loss (also valid for manual ORL)**
  - **ORL measurement display range**: Up to 65 dB
  - **Accuracy**: ± 0.5 dB

- **Length function**
  - **Distance accuracy**: L<3 km: ± 50 m, 3 km<L<200 km: ± 1.5%

<table>
<thead>
<tr>
<th>Standalone power meter</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Wavelength range</strong> (adjustable per 1 nm)</td>
</tr>
<tr>
<td><strong>Selectable wavelength</strong></td>
</tr>
<tr>
<td><strong>Auto-λ detection (incl.TWINtest)</strong></td>
</tr>
<tr>
<td><strong>Modulation detection</strong></td>
</tr>
<tr>
<td><strong>Display resolution</strong></td>
</tr>
</tbody>
</table>

**Power level**
- **Standard**
  - **Dynamic range**: +10 to −60 dBm
  - **Accuracy** (1310 nm, -20 dBm): ± 0.2 dB

- **High Power**
  - **Dynamic range**: +26 to −55 dBm
  - **Accuracy** (1310 nm, -20 dBm): ± 0.25 dB

- **Detector type**
  - Ge filtered InGaAs, 2 mm
Chromatic dispersion module for metropolitan networks

Approved and standardized method
- ITU-T G.650.1
- EIA/TIA FOTP-175-B
- IEC 60793-1-42
- Fast and reliable method
- Single end measurement
- Sectional analysis capability providing CD per fiber section
- 3 functions in 1: sources, CD, OTDR
- Suitable for all single-mode fibers
- Cost effective method
- Not sensitive to shocks and vibrations (no moving parts)
- Module compatible with the T-BERD 6000 platform

High performance suitable for any metropolitan network
- Full fiber test performed in only 45 seconds
- Large band coverage (1250 nm to 1650 nm)
- Wide measurement range
- Dynamic range (up to 120 km) dedicated for any metropolitan network configuration

Specifications

<table>
<thead>
<tr>
<th>Chromatic dispersion module</th>
<th>Optical source mode</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Chromatic dispersion mode</strong></td>
<td><strong>Optical source mode</strong></td>
</tr>
<tr>
<td>Wavelength range</td>
<td>1255 to 1650 nm</td>
</tr>
<tr>
<td>Dynamic range</td>
<td>Up to 120 km</td>
</tr>
<tr>
<td>Wavelength absolute accuracy</td>
<td>± 0.1 nm</td>
</tr>
<tr>
<td>Dispersion range</td>
<td>0.1 ps/nm/km to 100 ps/nm/km</td>
</tr>
<tr>
<td>Zero dispersion wavelength repeatability</td>
<td>± 0.5 nm*</td>
</tr>
<tr>
<td>Dispersion coefficient repeatability**</td>
<td>± 0.2 ps/nm/km</td>
</tr>
<tr>
<td>Dispersion slope repeatability</td>
<td>± 1%</td>
</tr>
<tr>
<td>Measurement time</td>
<td>From 40 s</td>
</tr>
<tr>
<td>OTDR mode</td>
<td></td>
</tr>
<tr>
<td>Central wavelength</td>
<td>1310/1480/1550/1625 nm</td>
</tr>
<tr>
<td>Wavelength accuracy(1)</td>
<td>± 5 nm</td>
</tr>
<tr>
<td>RMS dynamic range(2)</td>
<td>39/38/37/37 dB</td>
</tr>
<tr>
<td>Event dead zone(3)</td>
<td>6 m max.</td>
</tr>
<tr>
<td>Attenuation dead zone(4)</td>
<td>30 m</td>
</tr>
</tbody>
</table>
Polarization mode dispersion module

A proven field-dedicated test method
- ITU-T G.650.2
- EIA/TIA FOTP 113
- IEC 60793-1-48
- Fast and reliable method
- Very accurate with the Fourier Transform
- Two ended test method (broadband source and receiver), no additional tools required
- Not sensitive to shocks and vibration (no moving parts)
- Best price/performance ratio on the market
- Module compatible with the T-BERD 6000 platform

High performance suitable for any fiber optic network
- High dynamic range with field handheld source: 45 dB
- Wide measurement range with minimum measurable DGD value of 0.08 ps
- Fast measurement time from 6 seconds to improve field efficiency
- Measurement through multiple EDFAs
- Field convenient instrument: light, small, long battery life...
- Statistics and long term monitoring

Maximum PMD values allowed for digital signal transmission:

<table>
<thead>
<tr>
<th>Bit rate per channel</th>
<th>SDH</th>
<th>SONET</th>
<th>Equivalent timeslot</th>
<th>Max. PMD delay</th>
<th>Max. PMD coefficient for a 100 km fiber length</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.2 Gb/s</td>
<td>OC-24</td>
<td>803 ps</td>
<td>80 ps</td>
<td>8 ps/√km</td>
<td></td>
</tr>
<tr>
<td>2.5 Gb/s</td>
<td>STM-16</td>
<td>OC-48</td>
<td>401 ps</td>
<td>40 ps</td>
<td>4 ps/√km</td>
</tr>
<tr>
<td>10 Gb/s</td>
<td>STM-64</td>
<td>OC-192</td>
<td>100 ps</td>
<td>10 ps</td>
<td>1 ps/√km</td>
</tr>
<tr>
<td>40 Gb/s</td>
<td>STM-256</td>
<td>OC-768</td>
<td>25.12 ps</td>
<td>2.5 ps</td>
<td>0.25 ps/√km</td>
</tr>
</tbody>
</table>

Specifications

General specifications (typical at 25°C)
- Weight: 0.6 kg/1.3 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, etc.

Polarization mode dispersion module (typical at 25°C)
- Dynamic range: 45 dB
- DGD measurement range: 0.08 to 60 ps
- DGD absolute uncertainty: ± 0.02 ps ± 2% PMD
- DGD repeatability: ± 0.025 ps
- Measurement time: 6 seconds, independent of the PMD value

Notes:
1. Up to 150 ps in weak mode coupling
2. Weak mode coupling, between the DGD range of 0.1 ps and 60 ps
3. NPL standard traceable
4. Without averaging
High-performance DWDM analyzers

- Rugged reliable field solution
- High wavelength accuracy without external calibration
- Fastest testing time: 1.5 seconds full band scanning
- Built-in constant wavelength reference for online calibration
- Channel isolation for BER analysis
- Easy to use one button operation with auto-mode
- Patented dual port version
- Alarm management with pass/fail information
- Statistics and long term monitoring

CWDM/DWDM testing modules

- CWDM/DWDM testing modules
- DWDM spectrum display with table of results
- Test set-up display with Pass/Fail settings

Specifications

Full-band DWDM analyzers

Spectral measurement ranges

- Wavelength range: 1250 to 1650 nm
- No. of optical channels: 512
- Wavelength calibration: internal, on-line
- Readout resolution: 0.001 nm
- Resolution bandwidth (FWHM): typ. 75 pm
- Wavelength linearity (over 10 nm): ≤±10 pm

Power measurement ranges

- Dynamic range: -75 to +23 dBm
- Noise floor RMS (with averaging): -75 dBm
- Absolute accuracy: ±0.4 dB
- Linearity: ±0.05 dB
- Readout resolution: 0.01 dB
- Scanning time: (1250 to 1650 nm): <1.5 s
- Optical rejection ratio: typ. 220 pm

Channel isolation option (OSA-161/201)

- Using the channel isolation function, you can drop channels for further signal analysis with a BERT or a Q-factor meter.
- Wavelength range: 1250 to 1650 nm
- Data rates: up to 10.7 Gb/s
- Spectral filter bandwidth: typ. 175 pm
- Tracking mode: auto wavelength control

Dual-port option (OSA-201)

- Simultaneous measurement of two fibers for monitoring or component test applications.
- Optical ports (physical contact interfaces)
  - Input ports:
    - OSA-160/161: 1 × SM
    - OSA-201: 2 × SM
  - Output port (drop port): OSA-161/201: 1 × SM
  - Interface: Universal
  - Optical return loss: >35 dB
  - Total safe power: +23 dBm

High-performance DWDM analyzers

Spectral measurement ranges

- Wavelength range: 1250 to 1650 nm
- No. of optical channels: 512
- Wavelength calibration: internal, online.
- Readout resolution: 0.001 dB
- Resolution bandwidth (FWHM): typ. 60 pm
- Wavelength linearity (over 10 nm): ±10 pm

Channel drop option (OSA-301/303)

- Using the channel isolation function, you can drop channels for further signal analysis with a BERT or a Q-factor meter.
- Wavelength range: 1250 to 1650 nm
- Data rates: up to 10.7 Gb/s
- Spectral filter bandwidth: typ. 175 pm
- Tracking mode: auto wavelength control

Dual-port option (OSA-303)

- Simultaneous measurement of two fibers for monitoring or component test applications.
- Optical ports (physical contact interfaces)
  - Input ports:
    - OSA-300/301: 1 × SM
    - OSA-303: 2 × SM
  - Output port (drop port): OSA-301/303: 1 × SM
  - Interface: Universal
  - Optical return loss: >35 dB
  - Total safe power: +23 dBm

General specifications

- Temperature:
  - Operating: +5 to +50 °C/41 to 122 °F
  - Storage: -20 to +60 °C/−4 to 140 °F
- Dimensions (w × h × d): 350 × 280 × 150 mm
  - 13.8 × 11.0 × 5.9 in
- Weight (module only): 2.5 kg/5.6 lbs

(1) Built-in, physical constant wavelength calibrator, needs no re-calibration
(2) At 1520 to 1565 nm at 23 °C
(3) 1520 to 1565 nm at 18 to 28 °C
(4) Max. power per channel +15 dBm, total power +23 dBm
(5) At −10 dBm
(6) −45 dBm to +10 dBm, at 23 °C
(7) Full span 400 nm, 4000 measurement samples, incl. WDM table analysis
(8) 1 min, stable signal, const. temperature
Combined WDM, PMD, AP testing module

A unique solution combining WDM, PMD, and AP (Attenuation Profile) test functions in one plug-in module

- Full-band most compact solution for WDM testing (from 1260 to 1640 nm)
- High-performance PMD module with differential group delay (DGD) measurement in the range of 0.08 ps to 60 ps and high dynamic range of 45 dB
- Attenuation profile provides total loss and dB/km values over a 1260 nm to 1640 nm wavelength range, with a dynamic range of 45 dB
- Shock-proof and vibration-proof instrument with no moving parts (drop tested at 70 cm)
- High-performance module with maximum portability (0.6 kg)
- Module compatible with the T-BERD 6000 platform

Specifications

81WDMPMD module (typical at 25°C)

**General specifications**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
<td>0.6 kg (1.1 lb)</td>
</tr>
<tr>
<td>Dimensions (w × h × d)</td>
<td>213 × 124 × 32 mm (8.38 × 4.88 × 1.26 in)</td>
</tr>
</tbody>
</table>

**Optical interfaces**

- Applicable fiber: SMF 9/125 μm
- Interchangeable optical connectors: FC, SC, DIN, etc.

**WDM technical specifications (typical at 25°C)**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wavelength range</td>
<td>1260 nm to 1640 nm</td>
</tr>
<tr>
<td>Sweep time (real time)</td>
<td>3 s</td>
</tr>
<tr>
<td>Accuracy(1)</td>
<td>±10 pm</td>
</tr>
<tr>
<td>Display resolution</td>
<td>1 pm</td>
</tr>
<tr>
<td>Minimum spacing between channels</td>
<td>10 GHz</td>
</tr>
<tr>
<td>Optical bandwidth (FWHM)(2)</td>
<td>30 pm</td>
</tr>
</tbody>
</table>

**Power level**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display range</td>
<td>-90 dBm at +30 dBm</td>
</tr>
<tr>
<td>Display resolution</td>
<td>0.01 dB</td>
</tr>
<tr>
<td>Measurement range on a channel</td>
<td>-79 dBm at +10 dBm</td>
</tr>
<tr>
<td>Noise floor(3)</td>
<td>-86 dBm</td>
</tr>
<tr>
<td>Maximum admissible power</td>
<td></td>
</tr>
<tr>
<td>- Total</td>
<td>+20 dBm</td>
</tr>
<tr>
<td>- For one channel</td>
<td>+10 dBm</td>
</tr>
<tr>
<td>Accuracy(1)</td>
<td>±0.5 dB max</td>
</tr>
<tr>
<td>Linearity(3)</td>
<td>±0.2 dB</td>
</tr>
<tr>
<td>Flatness(3)</td>
<td>±0.2 dB</td>
</tr>
<tr>
<td>Polarization Dependence Loss (PDL)</td>
<td>±0.15 dB</td>
</tr>
<tr>
<td>Optical return loss (ORL)</td>
<td>35 dB</td>
</tr>
<tr>
<td>Optical rejection ratio (ORR)(7)</td>
<td></td>
</tr>
</tbody>
</table>

- 40 dB at 100 GHz from the carrier
- 35 dB at 50 GHz from the carrier

(1) Between 1525 nm and 1620 nm from -40 dBm to +5 dBm
(2) Between 1525 nm and 1570 nm
(3) With averaging at 1550 nm
(4) At -30 dBm and 1550 nm (excluding the uncertainty due to the input connector)
(5) At 1590 nm from 0 to -40 dBm
(6) Between 1525 nm and 1620 nm (reference = 1550 nm)
(7) From the top of a carrier, between 1530 nm and 1605 nm at 0 dBm

**PMD technical specifications (typical at 25°C)**

- Dynamic range: 45 dB
- DGD measurement range(1) 0.08 ps to 60 ps
- DGD absolute uncertainty(2), (3) ± 0.02 ps ± 2% PMD
- DGD repeatability(2), (3) ± 0.025 ps
- Measurement time(4) 6 seconds, independent of the PMD value

(1) Up to 150 ps in weak mode coupling
(2) Weak mode coupling, between the DGD range of 0.1 ps and 60 ps
(3) NPL standard traceable
(4) Without averaging

**AP technical specifications (typical at 25°C)**

- Dynamic range: 45 dB
- Measurement time(1) 6 seconds

(1) Without averaging

**Handheld broadband source (OBS-15)**

**Optical interfaces**

- Applicable fiber: SMF 9/125 μm
- Interchangeable optical connectors: FC, SC, DIN, etc.

**Power supply**

- Battery operation: NiMH, type AA (rechargeable, exchangeable, 2 pieces)
- Operating time: approx. 2.5 h
- AC operation by means of SNT-92 AC/DC adapter/charger
- Nominal range of use: 100 to 240 V, 50/60 Hz
- Operating temperature range: 0 °C to +45 °C
- Weight (including batteries): 0.55 kg (1.2 lb)
- Dimensions (w × h × d): 95 x 49 x 185 mm (0.37 × 0.19 × 0.73 in)

**Broadband source module**

**Wavelength range**

- BBS1: 1485 nm to 1640 nm
- BBS2: 1260 nm to 1640 nm

**Optical interfaces**

- Applicable fiber: SMF 9/125 μm
- Interchangeable optical connectors: FC, SC, DIN, etc.

**Dimensions (w × h × d): 213 × 124 × 32 mm (8.38 × 4.88 × 1.26 in)**
**SDH/SONET, Ethernet and 10Gig Ethernet transport testing module**

**Transport module**
- Contained in one 5 cm module
  - PDH / T-carrier Interfaces include DS1, E1, E3, DS3, E4, STS-1 and STM-1e
  - SDH/SONET Interfaces include 155M/622M/2.5G/10G (1310 nm, 1550 nm)
  - Ethernet Interfaces include 10/100/1000 Mb/s electrical and 1 GigE Optical (850 nm, 1310 nm and 1550 nm)
  - 10GigE LAN + WAN (850 nm, 1310 nm and 1550 nm)
- Only 2.5 kg fully populated
- Fully scalable to meet your current and future needs
- Optical and electrical signal level measurements
- Up to 2.5 hours at 10 Gb/s rates with one Battery (2 batteries possible)
- SDH/SONET testing
  - Muxed payload generation and analysis
  - Concatenated Signals
  - Automatic Protection Switching (APS)
  - Overhead Byte Manipulation and Analysis
  - Round Trip delay (RTD)
- Ethernet testing
  - Single and Dual Port Ethernet configuration
  - Testing on Layer 1, 2 and 3 (IP)
  - Automated RFC2544 testing
  - Loop-up /loop-down of far-end device

**Specifications**

**Transport module**

**Optical interfaces**
- Optical connector types: FC, SC, ST or LC
- Wavelength: 850, 1310 or 1550 nm
- Fiber mode compatibility: 1310 and 1550 nm – singlemode fiber, 850 nm – multimode fiber

**Electrical interfaces**
- Electrical connector types: Bantam, BNC, RJ-45

**Ethernet testing**
- Layer 2 (Ethernet) Traffic Generation
  - Configurable Source and Destination Address, Frame Format, Type Field (for DIX), Frame Length (including Jumbo and Undersized), VLAN Tag, Pause Frames, payload, Utilization %
- Layer 3 (IP) Traffic Generation
  - Configurable Source and Destination IP Address, DNS Type, DNS Server, Tx Payload, TOS/DSCP, TTL, Packet Size Length (34 – 1500 bytes), Ping, Trace route

**SDH/SONET**
- Anomaly/Errors generation and analysis: B1, B2, B3, HP-REI, MS-REI, LP-BIP, LP-REI
- Defects/Alarms generation and analysis: LOS, LOF, RS-TIM, MS-AIS, MS-RDI, AU-LOP, AU-AIS, HP-UNEQ, HP-RDI, HP-TIM, HP-PLM, TU-LOP, TU-AIS, TU-LOM, LP-UNEQ, LP-RDI, LP-TIM, LP-PLM, LP-RFI

**Performance standards**
Multiple test access module

**Multi Test Access Unit Module**
- Fiber Characterization made easier, fiber commissioning (OTDR & IL)
- 25% time saving for fiber characterization
- Up to 6 interconnected test functions (OTDR, CD, PMD, IL, SA, ORL)
- Reduces fiber connect/disconnect
- Up to 3 modules connected
- Automatically switches from one module to another

**Specifications**

<table>
<thead>
<tr>
<th>Multi-test access unit</th>
<th>E81MTAU2 (2 ports)</th>
<th>E81MTAU3 (3 ports)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wavelength range</td>
<td>1260 to 1640 nm</td>
<td>1260 to 1640 nm</td>
</tr>
<tr>
<td>Insertion loss (max)</td>
<td>1 dB</td>
<td>1.5 dB</td>
</tr>
<tr>
<td>Return loss (max)</td>
<td>50 dB</td>
<td>50 dB</td>
</tr>
<tr>
<td>PDL (1) (max)</td>
<td>0.1 dB</td>
<td>0.1 dB</td>
</tr>
<tr>
<td>Repeatability (2) (max)</td>
<td>0.01 dB</td>
<td>0.01 dB</td>
</tr>
</tbody>
</table>

(1) Polarization dependent loss
(2) At constant temperature and polarization
Utility modules

**Internal Thermal Printer**
- On-site documentation
- Shock proof
- High quality printing
- Optimized for trace and table of events printing
- Improves user productivity by instant delivery of trace record

**Launch fiber Module for OTDR Applications - allows full characterization of first and last connectors**
- Improves testing at 1310 nm/1550 nm and 1625 nm
- Single mode fibers
- 2 or 4 km long
- Includes 2 patchcords (3 m)
- Rugged design for field application
- Can be used either inserted in the T-BERD 8000 platform (permanent availability) or as a standalone launch fiber
- Can be used in 2 positions; opened or closed
- Compatible with launch fiber management within OTDR firmware

**Specifications**

<table>
<thead>
<tr>
<th>Thermal printer module</th>
<th>Launch fiber module</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Printer type</strong></td>
<td>Standard singlemode fiber (G.652)</td>
</tr>
<tr>
<td><strong>Quality</strong></td>
<td>832 dots/line</td>
</tr>
<tr>
<td><strong>Paper width</strong></td>
<td>112 mm paper width</td>
</tr>
<tr>
<td><strong>Fiber type</strong></td>
<td>Standard singlemode fiber (G.652)</td>
</tr>
<tr>
<td><strong>Fiber length</strong></td>
<td>2 km or 4 km ± 5%</td>
</tr>
<tr>
<td><strong>Linear attenuation at 1550 nm</strong></td>
<td>0.20 dB/km</td>
</tr>
<tr>
<td><strong>Insertion loss</strong></td>
<td>&lt;0.5 dB</td>
</tr>
<tr>
<td><strong>Return loss</strong></td>
<td>&gt;35 dB</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>2.3 kg/5.1 lbs</td>
</tr>
<tr>
<td><strong>Size (l × w × d)</strong></td>
<td>310 × 255 × 60 mm</td>
</tr>
<tr>
<td></td>
<td>12.2 × 10 × 2.4 in</td>
</tr>
</tbody>
</table>
Fiber Scope, Loss Test Set, Talkset and VFL functions

**Connector Inspection Scope**
- Video inspection probe for fiber optic terminations
- For inspection of patchcords and patch panels
- 250 or 400 magnification
- Uses T-BERD 8000 large screen (10.4”)
- Possibility to freeze the image
- Image storage and reload
- Comparison with 3 other images on the same screen
- Compatible with standard connectors including SC, ST, FC and LC

**Built-in Optical Talkset**
- Suitable for any application
- Cost-effective solution
- Suitable for use in central offices (unlike cell phones)
- Data transfer capability: file exchange or remote control
- Used also for full automatic bi-directional measurements

**Insertion Loss Measurements**
- Power meter integrated in T-BERD 8000 mainframe
- Multi-wavelength laser source with CW or modulated signals
- Easy loss measurements of a jumper or patchcord

**635 nm Visual Fault Locator**
- Universal push/pull for all 2.5 mm connector types

**Specifications**

**Optical video inspection probes**

<table>
<thead>
<tr>
<th>Physical characteristics</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating temperature</td>
<td>0 °C to 50 °C</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>-20 °C to 50 °C</td>
</tr>
<tr>
<td>Humidity</td>
<td>95% non condensing</td>
</tr>
<tr>
<td>Interface</td>
<td>USB</td>
</tr>
<tr>
<td>Weight</td>
<td>115.6 g (4.08 oz.)</td>
</tr>
<tr>
<td>Dimensions (w × h × l)</td>
<td>45.7 × 43.2 × 140 mm (1.8 × 1.7 × 5.5 in)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Optical characteristics</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Magnification</td>
<td>200× or 400×</td>
</tr>
<tr>
<td>Light source</td>
<td>blue LED, internal to probe</td>
</tr>
<tr>
<td>Lighting technique</td>
<td>coaxial</td>
</tr>
<tr>
<td>Focus control</td>
<td>adjustable, in probe</td>
</tr>
<tr>
<td>Max. input power</td>
<td>+30 dBm</td>
</tr>
</tbody>
</table>

**Adapter tips**
- Termination-specific probe tips available:
  - FC, SC, ST, LC and other types for 1.25 mm & 2.5 mm ferrules.

**Storage**
- File format: JPEG, BMP

**Optical interfaces (optional)**

<table>
<thead>
<tr>
<th>Power meter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power level</td>
</tr>
<tr>
<td>Calibrated wavelengths</td>
</tr>
<tr>
<td>Connector type</td>
</tr>
</tbody>
</table>

**Talkset**
- Wavelength: 1550 nm ± 30 nm
- Dynamic range: >45 dB
- Function: With data/file transfer, Laser safety: Class 1 laser, Connector type: Field interchangeable

**VFL**
- Wavelength: 635 nm ± 15 nm
- Output power level: <1 mW, Laser safety: Class 1 laser, Connector type: Universal push/pull

**CW Light source**
- Wavelengths (selection) 1310/1550/1625 nm
- Output power level: -3.5 dBm
- Spectral width: <5 nm
- Stability in 15 min: ± 0.02 dB
- Stability in 8 hours: ± 0.2 dB
- Laser Safety: Class 1 laser, Connector type: Field interchangeable
OFS-100 Fiber Trace Results Analysis
- OTDR, CD, PMD, AP, IL/ORL and OSA results analysis
- Batch processing capability via an automation process
- Pass/Fail function
- Customized printouts
- Ideal for report generation on single fiber

OFS-200 FiberCable Acceptance Report Generation
- Direct access keys for easy process and efficiency
- Complete fiber characterization reporting capability including bi-directional OTDR, CD, PMD, AP, IL and ORL results
- Advanced OTDR functions for loop back and mid-point management
- Powerful report preview to avoid errors during processing
- Ideal for report generation on multiple fibers

Specifications

OFS-100 FiberTrace
- Compatibility with all files generated by the MTS-5000, T-BERD 8000 and T-BERD 6000 platforms, OFI-2000 and ONT platform OSA data.

OFS-200 FiberCable
- FiberCable includes all FiberTrace functions.

PC requirements
- An IBM Pentium 133 MHz PC or 100% compatible computer (Pentium II 233 MHz or above recommended)
- A hard drive and a CD-ROM drive
- 16 MB or more of memory (64 MB recommended)
- A mouse pointing device
- Microsoft Windows™ version 95, 98, 2000, NT, or XP
- Microsoft Excel™
- Memory requirements for Microsoft Excel™ Report macro: 48 MB or more of memory (128 MB recommended)
- A 800 × 600 pixels monitor (1152 × 864 or above recommended)
| T-BERD 8000 Tester |

## Ordering information

### T-BERD 8000

**Base instrument options**
- ETB8000bt: T-BERD 8000 platform with battery pack
- E8100: Receptacle for two plug-in modules
- E80HVCol: High visibility TFT color display
- E80HVTCol: High visibility touchscreen TFT color display
- E80Hdisk: Hard disk drive
- E80FD: Extractable floppy disk drive
- E80CDRW: Extractable R/W CD-ROM drive
- E80MDM: Built-in PSTN modem
- E80VFL: VFL with UPP connector
- E80TS: Optical talk set
- E8003LTSTS: Optical loss test set with talk set 1310/1550/1625 nm

### Main accessories
- E80keyB: External keyboard
- E80LiIon: Additional Li-Ion rechargeable battery
- E80Scase1: Wrap around soft carrying case for T-BERD 8000 and 2 plug-ins receptacle configuration
- E80Scase2: Soft carrying case for long configuration
- E80Scase3: Soft carrying case for T-BERD 8000 and 2-slot receptacle, or transport or OSA-160/200 module
- E80Hcase: Hard transit case for long configuration
- C80Hcase: Soft carrying case for T-BERD 8000 and 2-slot receptacle, or transport or OSA-160/200 module

### Application software
- EOFS100: Optical FiberTrace software (for post-analysis)
- EOFS200: Optical FiberCable software (for cable acceptance report generation)

### T-BERD 8000 modules

#### Multimode OTDR plug-in module
- E8123MM: High resolution 850/1300 nm

#### Singlemode OTDR plug-in modules
- E8126SR: Short range 1310/1550 nm
- E8126DR: Medium range high res. 1310/1550 nm
- E8126HD: Long range 1310/1550 nm
- E8127HD: Long range 1625 nm
- E8136HD: Long range 1310/1550/1625 nm
- E8126VHD: Very long range 1310/1550 nm
- E8127VHD: Very long range 1625 nm
- E8129VHD: Very long range 1550/1625 nm
- E8126UHD: Ultra long range 1310/1550 nm
- E8136UHD: Ultra long range 1310/1550/1625 nm

### Chromatic dispersion plug-in module
- E5083CD: Medium range 1310/1480/1550/1625 nm OTDR/CD module
- E508XLS: 1310/1480/1550/1625 nm DFB source option

### Polarization mode dispersion plug-in modules
- E81PMD: PMD module (1480 to 1640 nm)
- E81WDMPMD: PMD module (1260 to 1640 nm) combined with WDM and AP
- E80BS15: Stand-alone broadband source
- E81BBS1: 1480-1640 nm broadband source module
- E81BBS2: 1260-1640 nm broadband source module

### OFI plug-in module
- E8126OFI1: 1310/1550 nm OFI plug-in module - standard power
- E8126OFI2: 1310/1550 nm OFI plug-in module - high power
- E8136OFI1: 1310/1550/1625 nm OFI plug-in module - standard power
- E8136OFI2: 1310/1550/1625 nm OFI plug-in module - high power
- E8132OFI1: 1310/1490/1550 nm OFI plug-in module - standard power
- E8132OFI2: 1310/1490/1550 nm OFI plug-in module - high power

### High-performance OSA modules
- 2281/91.01: OSA-160 Single port analyzer
- 2281/91.12: OSA-161 Single port analyzer with channel isolator option
- 2281/91.14: OSA-201 Dual port analyzer with channel isolator option
- 2281/91.31: OSA-300 High-performance analyzer
- 2281/91.32: OSA-301 High-performance analyzer with channel isolator option
- 2281/91.34: OSA-302 High-performance dual port analyzer with channel isolator option
- E81WDM: 1485-1640 nm WDM plug-in module

### Transport module configurations
- C83XX: SDH/SONET configuration
- C84XX: Ethernet configurations
- C85XX: SDH/SONET & Ethernet configurations

### Utility modules

#### Multi-test access unit plug-in module
- E81MTAU2: Up to 2 test ports
- E81MTAU3: Up to 3 test ports

#### Launch fiber module
- E82LFM2: 2 km singlemode G.652
- E82LFM4: 4 km singlemode G.652
## Ordering information

<table>
<thead>
<tr>
<th>Thermal printer module</th>
</tr>
</thead>
<tbody>
<tr>
<td>E82Printer</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Accessories</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Optical video inspection probes</th>
</tr>
</thead>
<tbody>
<tr>
<td>EFSCOPE250</td>
</tr>
<tr>
<td>EFSCOPE400</td>
</tr>
</tbody>
</table>

## Connectors and adapters

<table>
<thead>
<tr>
<th>Connectors and adapters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optical inspection</td>
</tr>
<tr>
<td>ETIPSCAPC</td>
</tr>
<tr>
<td>ETIPE2000</td>
</tr>
<tr>
<td>ETIPSCPC</td>
</tr>
<tr>
<td>ETIPU125MM</td>
</tr>
<tr>
<td>ETIPU25MM</td>
</tr>
<tr>
<td>ETIPFCAPC</td>
</tr>
<tr>
<td>ETIPSTPC</td>
</tr>
<tr>
<td>ETIPLC</td>
</tr>
<tr>
<td>ETIPFCPC</td>
</tr>
<tr>
<td>ETIPMPOAPC</td>
</tr>
<tr>
<td>ETIPMPO</td>
</tr>
</tbody>
</table>

## Optical connectors

<table>
<thead>
<tr>
<th>Universal singlemode connectors</th>
</tr>
</thead>
<tbody>
<tr>
<td>EUNIPCFC, EUNIPCSC, EUNIPCST, EUNIPCDIN, EUNIPCLC, EUNIAPCFC, EUNIAPCSC, EUNIAPCST, EUNIAPCDIN, EUNIAPCLC</td>
</tr>
</tbody>
</table>

For more information on test adapters, cables, and fiber optic couplers, please refer to the separate datasheet entitled “JDSU Fiber Optic Test Adapters and Cables”.

Useful accessories

- E80PWE, E80PWUK, E80PWUS: Standard AC adapter/charger
- E80HPWE, E80HPWUK, E80HPWUS: Adapter/charger for transport module
- E80Lion: Additional Li-Ion rechargeable battery
- E80lighter: Cigarette lighter power adapter
- E80HCase: Hard Transit Case for long configuration (multiple modules)
- E80HCase5: Hard carrying case – single module configuration
- E80Case2: Soft carrying case for multiple module platform
- E80Case3: Soft carrying case for single module platform
- E80SCase1: Wrap around case for 8000 platform and receptacle
- E80SCase2: Soft carrying case for multiple module platform
- E80SCase3: Soft carrying case for single module platform
- EFSCOPE250, EFSCOPE400: Optical video inspection probe
- E80CFAPP: Transport module application card
- E80keyB: USB keyboard
- E80FD: Extractable floppy disk drive
- E80USBMEM: USB stick 128 MB
- E80CDRW: Extractable R/W CD ROM drive
- E80FD: Extractable floppy disk drive
- E80CDRW: Extractable R/W CD ROM drive

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