FTB-5700 Single-Ended Dispersion Analyzer

AUTOMATED CD AND PMD MEASUREMENTS IN ONE EASY-TO-USE MODULE

KEY FEATURES
- Polarization mode dispersion (PMD) and chromatic dispersion (CD) measurements for all types of networks
- Standards-compliant approach delivering first-time-right results
- Fully automated, highly intelligent interface
- One test solution for all dispersion testing—for reduced CAPEX
- Single-ended testing of multiple links from one location—for fewer truck rolls and reduced OPEX
- EXFO Connect-compatible: automated asset management; data goes through the cloud and into a dynamic database

APPLICATIONS
- Accurate, complete 10 Gbit/s, 40 Gbit/s and 100 Gbit/s qualification
- Metro, core and long-haul network testing
- Effective fiber-type identification using lambda zero, CD slope and coefficient in Raman deployments

PLATFORM COMPATIBILITY
- Platform FTB-500
- Compact Platform FTB-200

The ultimate CD/PMD characterization solution.

Standards Compliant
CD: EIA/TIA FOTP-175B
PMD: EIA/TIA FOTP-243

Feature(s) of this product is/are protected by one or more of US patents 6,612,750 and 8,373,852, and US patent 7,957,436 and equivalent patents pending in other countries.
New Market Reality Requires a New CD and PMD Testing Approach

The high-speed networking market has been trying to reconcile two conflicting objectives: deliver the faster data rates—10G, 40G and 100G—demanded by subscribers, and keep OPEX down to maintain profitability. Most network operators are well on their way to achieving the first objective, thanks to new fiber deployments and new technology advances such as coherent detection, DPSK/DQPSK and ROADM-based mesh networks. However, the additional field work—installation, activation as well as the greater dispersion granularity now required—can push operation expenses in the wrong direction. These new requirements force operators to retain the services of more field crews, potentially reducing the average expertise level of technicians and increasing the rate of repeat jobs.

In a nutshell, network operators are having to absorb more CAPEX to equip their additional technicians, and even more importantly, they are also having to absorb more truck rolls and OPEX.

The good news is the aforementioned technology advances are making next-generation high-speed networks increasingly tolerant to dispersion, shifting the focus of the test instrument toward built-in intelligence, simpler setups and automated test sequences that generate results that are immediately accurate. EXFO’s FTB-5700 was designed to deliver exactly that, adding an exclusive, game-changing feature—single-endedness, which in itself dramatically cuts truck rolls.

**CD AND PMD TESTING COMBO—THE BENEFITS**

Single lightweight unit that:

› Enables single-ended testing, a market-exclusive feature
› Allows one technician to test both CD and PMD
› Fully automated, highly intelligent interface—no training required
› Minimizes manual intervention for fail-safe results
› Reduces required connections to just one
› Leads to faster time to revenue
THE ONLY SINGLE-ENDED PMD AND CD ANALYZER ON THE MARKET

The ongoing race to develop high-speed transmission systems and increase available bandwidth is facing certain limitations. Thanks to reconfigurable optical add/drop multiplexers (ROADMs), carriers and service providers are able to upgrade their systems to higher transmission rates and longer routes, but chromatic dispersion measurements are becoming more and more critical. Polarization mode dispersion, which has always been a real threat to both legacy and next-generation networks, is also becoming a more important matter as high-speed services are being massively deployed. And then, there is the lingering concern about OPEX.

Combining PMD and CD into one test solution that enables technicians to characterize multiple links from a single location, the FTB-5700 is built specifically for today’s high-speed network reality. Its highly intelligent interface and functionalities ensure that test parameters are automatically optimized, whatever the link.

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**FTB-5700 KEY FEATURES**

- Groundbreaking single-ended testing technology reduces both the testing time and operational expenses (OPEX)
- Highly robust technology for underground and aerial fiber
- Network recognition: unit automatically adopts the proper parameter setups
- Link-length measurement
- Complies with ITU G.650.3 fiber testing standard and FOTP-243 and FOTP-175B standards

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The FTB-5700 features a highly intuitive user interface presenting straightforward pass/fail results.
CHROMATIC DISPERSION TESTING IN RAMAN DEPLOYMENTS

Raman is now an integral part of most coherent system deployments. To optimize Raman gain and efficiency, the fiber type of the effective area must be known. While it is known in most greenfield deployments, the same cannot be said for brownfield. When in doubt, the fiber type can be determined using the FTB-5700: lambda zero, CD slope and coefficient at 1550 nm. The FTB-5700 is uniquely positioned to take these measurements, and since it is single-ended, you will save on OPEX. Plus, the unit will calculate the fiber length for an accurate slope and coefficient measurement.

SINGLE-ENDED TESTING: DRIVING OPEX DOWN IN A HURRY

As bandwidth demand grows, more and more links are being upgraded to speeds at which dispersion testing becomes essential. Very often, only a pair of fibers at each point of presence (PoP) require testing. In such a scenario, the time-consuming aspect has to do with the engineers’ transit time from one PoP to another.

EXFO’s single-ended solution speeds up the process in two ways. First, engineer A does not have to wait for engineer B to arrive at the other end of the link with the light source. And second, fibers can be tested in multiple directions, turning a job that could take hours into one that takes minutes while reducing truck rolls and OPEX.

Typically, single-ended testing allows full network characterization in 66% less time than any other traditional test method. Here is the impact on truck rolls for the mesh network illustrated above:

<table>
<thead>
<tr>
<th>Test type</th>
<th>Number of technicians</th>
<th>Total number of truck rolls</th>
</tr>
</thead>
<tbody>
<tr>
<td>End-to-end</td>
<td>2</td>
<td>19</td>
</tr>
<tr>
<td>Single-ended</td>
<td>1</td>
<td>6</td>
</tr>
</tbody>
</table>

In this case, 68% less truck rolls

In a typical mesh network, unless several sections can be tested from a single node, technical crews are in for a lot of traveling.

In addition to driving down OPEX, fewer truck rolls also mean faster delivery of new services—for faster time to revenue.
FULLY AUTOMATED, WITH BUILT-IN INTELLIGENCE

Featuring easy-to-read pass/fail results and providing a view of all key parameters and values on one screen, the FTB-5700’s user interface is all about field-testing simplicity and efficiency.

Start with CD or PMD then Upgrade

The FTB-5700 unit can be initially equipped with either the CD or PMD test features (FTB-5700-CD or FTB-5700-PMD). As your testing requirements evolve, you can then upgrade to a combined solution (FTB-5700-CD-PMD) through our service centers. This makes the purchase of this 40/100 Gbit/s-ready single-ended dispersion analyzer a truly safe and valuable investment.
FAST-TRACK DATA POST-PROCESSING WITH FastReporter SOFTWARE

The optional FastReporter software package provides you with the post-processing tools and functionalities you need to optimize your test cycles, whatever the application. Designed for offline analysis of field-acquired data, FastReporter offers a truly intuitive graphical user interface, which contributes to boosting productivity.

Flexible Reporting

Choose from various report templates, including PMD, CD and fiber characterization. Generate comprehensive cable reports in PDF, Excel or HTML format.

ENSURE CONNECTOR SUITABILITY WITH ConnectorMax SOFTWARE

Delivering fast pass/fail assessment of connector endfaces, EXFO’s ConnectorMax Analysis Software is designed to save both time and money in the field. The industry’s first platform-based, automated inspection application, ConnectorMax, eliminates guesswork and provides clear-cut connector endface analysis.

ConnectorMax enables field technicians to analyze defects and scratches, and measure their impact on connector performance. Results are then compared to pre-programmed IEC/IPC standards or user-defined criteria, leading to accurate pass/fail verdicts generated directly on-site.

ConnectorMax therefore helps avoid two time- and money-consuming situations: undetected connector defects that force technicians to later return to the site, and unnecessary replacement of connectors whose slight defects are not enough to get a “fail” verdict.

› Delivers clear-cut pass/fail verdicts, eliminating guesswork in the field and saving time and money
› Lightning-fast: results in 4 seconds through simple one-touch operation
› Full test reports for future referencing
EXFO Connect

AUTOMATED ASSET MANAGEMENT. PUSH TEST DATA IN THE CLOUD. GET CONNECTED.
EXFO Connect pushes and stores test equipment and test data content automatically in the cloud, allowing you to streamline test operation from build-out to maintenance.

EXPERT TEST TOOLS ON THE FTB-200 PLATFORM

EXpert Test Tools is a series of platform-based software testing tools that enhance the value of the FTB-200 platform, providing additional testing capabilities without the need for additional modules or units.

EXpert TEST TOOLS

EXpert VoIP
VoIP TEST TOOLS
EXpert VoIP generates a voice-over-IP call directly from the test platform to validate performance during service turn-up and troubleshooting.
› Supports a wide range of signaling protocols, including SIP, SCCP, H.248/Megaco and H.323
› Supports MOS and R-factor quality metrics
› Simplifies testing with configurable pass/fail thresholds and RTP metrics

EXpert IP
IP TEST TOOLS
EXpert IP integrates six commonly used datacom test tools into one platform-based application to ensure that field technicians are prepared for a wide range of testing needs.
› Rapidly performs debugging sequences with VLAN scan and LAN discovery
› Validates end-to-end ping and traceroute
› Verifies FTP performance and HTTP availability

EXpert IPTV
IPTV TEST TOOLS
This powerful IPTV quality assessment solution enables set-top-box emulation and passive monitoring of IPTV streams, allowing quick and easy pass/fail verification of IPTV installations.
› Real-time video preview
› Analyzes up to 10 video streams
› Comprehensive QoS and QoE metrics including MOS score
EXFO is certified ISO 9001 and attests to the quality of these products. This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. EXFO has made every effort to ensure that the information contained in this specification sheet is accurate. However, we accept no responsibility for any errors or omissions, and we reserve the right to modify design, characteristics and products at any time without obligation. Units of measurement in this document conform to SI standards and practices. In addition, all of EXFO’s manufactured products are compliant with the European Union’s WEEE directive. For more information, please visit www.EXFO.com/recycle. Contact EXFO for prices and availability or to obtain the phone number of your local EXFO distributor.

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Specialized Tests

For ultra-long-haul, submarine and amplified network applications, EXFO also offers the FTB-5800 CD Analyzer and FTB-5500B PMD Analyzer. For these modules, the above connector choice applies, but the FLS-5834A light source is required.

Locating high-PMD fiber spans can save a significant amount of time and OPEX. Conversely, failure to do so can result in substantial costs. Building on EXFO’s proven PMD measurement expertise, the FTB-5600 Distributed PMD Analyzer, which breaks down link assessment to pinpoint high-PMD sections, enables cost-effective, targeted upgrades.

### TECHNICAL SPECIFICATIONS

| Measured wavelength range (nm) | 1475 to 1626 |
| Dynamic range (dB) | 25 (32 with reflector) |
| Distance uncertainty (km) | ±(0.01 + 1 % x distance) |

**Chromatic dispersion**

- Number of test points: 8
- CD uncertainty (ps/nm): ±10
- Test time (s): 40

**PMD**

- PMD display range (ps): up to 50
- PMD range (strong mode coupling) (ps): 0.1 to 20
- PMD uncertainty (strong mode coupling) (ps): ± (0.2 + 5 % x PMD)
- Test time (s): <180

### GENERAL SPECIFICATIONS

| Temperature (operating) | 0 °C to 50 °C (32 °F to 122 °F) |
| Relative humidity | 0 % to 95 % non-condensing |
| Storage | −40 °C to 70 °C (−40 °F to 158 °F) |
| Size (H x W x D) | 96 mm x 50 mm x 281 mm (3 ¾ in x 2 in x 11 in) |
| Weight | 1.3 kg (2.8 lb) |

### LASER SAFETY

21 CFR 1040.10 AND IEC 60825-1:2007
CLASS 1 LASER PRODUCT

#### ORDERING INFORMATION

**FTB-5700-XX-XX**

| Model | FTB-5700-CD-PMD = Single-ended CD and PMD analyzer  
FTB-5700-PMD = Single-ended PMD analyzer  
FTB-5700-CD = Single-ended CD analyzer |
| Connector | EI-EUI-28 = UPC/DIN 47256  
EI-EUI-76 = UPC/HMS-10/AG  
EI-EUI-90 = UPC/ST  
EI-EUI-91 = UPC/SC  
EI-EUI-95 = UPC/E-2000  
EA-EUI-28 = APC/DIN 47256  
EA-EUI-89 = APC/FC narrow key  
EA-EUI-91 = APC/SC  
EA-EUI-95 = APC/E-2000 |

Example: FTB-5700-CD-PMD-EI-EUI-89

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Notes:

a. Typical.
b. At 1550 nm, on 100 km of G.652 singlemode fiber.
c. For a fiber length ≥100 m.
d. For strong mode coupling PMD (telecom fiber) up to 15 ps, with averaging.