150

NETWORK TESTING

COMPACT OTDR

FTB-150

A fast, powerful, lightweight solution from the industry's OTDR expert

- Houses any of EXFO's renowned OTDR configurations
  - Tests up to four wavelengths
  - Industry's fastest acquisition times
  - Multimode and singlemode testing
  - Shortest dead zones in the industry
- Touchscreen and shortkey functionality
- Future-proof connectivity
- Improved productivity
  - 4 second power-up time
  - Faster acquisition, processing and reporting
- Fiber inspection probe (optional)
- Optical power meter and VFL (optional)

A Complete Solution for Fiber Characterization

The FTB-150 Compact OTDR takes EXFO's world-renowned OTDR technology to the next level of user-friendliness. This small, lightweight OTDR-dedicated platform is factory-configured to house any EXFO OTDR configuration. Choose the model that best suits your test requirements and applications.

So, whether you need to carry out tier-2 certification of premises networks, characterize your links during construction and installation, or perform fast, efficient maintenance and troubleshooting testing, the FTB-150 Compact OTDR delivers the performance you're looking for.

Lightweight

- 2.2 kg/4.8 lb platform

Fast and powerful

- 4-second power-up time with Windows CE/mobile

Faster acquisition, processing and reporting

- Instantaneous AutoSync USB data transfer

Flexible connectivity

- File transfer and software upgrading through USB
- USB A/A-B, RJ-45 and Bluetooth flexibility
- Compact Flash (memory, Wi-Fi and Bluetooth)

Built for the outside plant

- Waterproof outer shell, sealed joints, door panels for extra port protection
- Advanced TFT transflective display, for great visibility under direct sunlight
- Rugged shortkeys and tracking knob
- GR-196-CORE
- Extended battery life of more than 8 hours

Choose your method: ***touchscreen*** *or convenient* ***shortkeys***

Numerous ports mean easy ***connectivity*** *and convenient* ***upgrading*** *options*

Choose from a Wide Range of OTDR Configurations

CONFIGURATIONS

The FTB-150 can house any of EXFO's singlemode/multimode OTDR configurations designed to test at up to four wavelengths–choose from various combinations featuring the 850, 1300, 1310, 1490, 1550 and 1625 nm wavelengths–covering all fiber applications from long-haul and WDM to metro, FTTH and LAN networks. All EXFO OTDR configurations provide a stable light source, as well as the option of adding a visual fault locator.

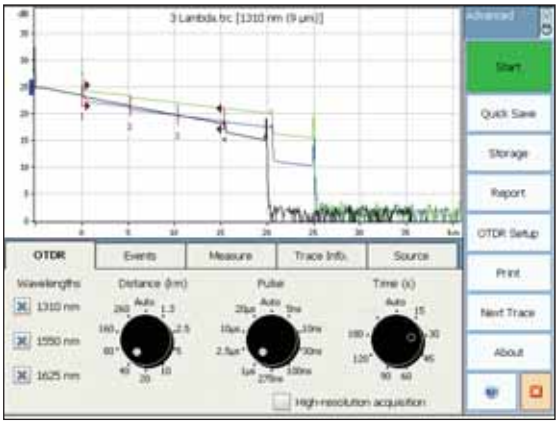
All the OTDR Modes You Need

The FTB-150's OTDR software is both automated and easy to use. You can choose from three operating modes according to your specific requirements:

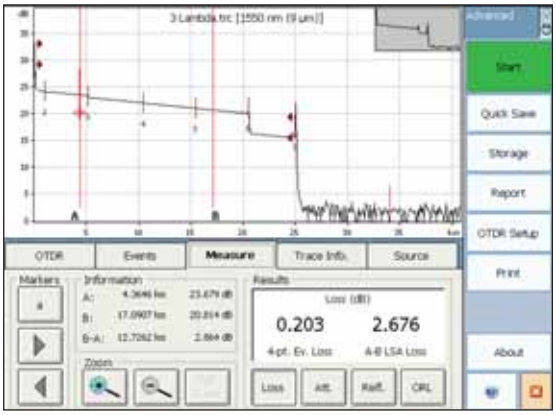
Auto Mode
Lets you select acquisition parameters automatically. Perfect for basic, repetitive OTDR applications or for occasional users.

Advanced Mode
Offers multiple setup and measurement capabilities for increased flexibility. Change index of refraction and helix factor settings for optimal distance measurements.

Template Trace Mode
Compares each acquisition with a designated template for complete cable testing and documentation.



Triple-wavelength trace acquisition.



Loss measurements from the 1550 nm OTDR trace.

Short-range OTDRs

FTB-150-FTTx
FTB-150-ACCESS

Ideal for access and FTTH network testing, the short-range OTDR configurations offer an exceptional 1 m event dead zone, letting you characterize all events between the transmitter and the central office's fiber distribution panel.

These configurations feature a highly efficient, lightning-fast trace acquisition routine, as full averaging is performed in 45 seconds. Thanks to next-generation OTDR software, they enable you to test through high-port-count splitters–even 1x32 splitters–perfect for passive optical network (PON) testing.

Both the FTB-150-FTTx and FTB-150-ACCESS configurations deliver triple-wavelength testing with a choice of wavelengths: 1310/1490/1550 nm, or 1310/1550/1625 nm.

- 1 m event dead zone: shortest in the industry
- Attenuation dead zone starting at 4 m
- Four-times-shorter testing time, for minimized testing costs
- FTTx ready: passive optical network (PON) testing capability
- Market-leading linearity of ±0.03 dB/dB, for highly accurate event characterization
- Dynamic range of up to 38 dB

Perform full averaging in 45 seconds with the short-range OTDR configurations.

FTTx TEST SOLUTIONS

CONFIGURATIONS (CONT'D)

Premises Network OTDRs

FTB-150-QUAD
FTB-150-MM

Designed for enterprise/private network test applications, the premises network OTDR comes in two configurations: four-wavelength (singlemode and multimode) or two-wavelength (multimode).

EXFO's premises network OTDR configurations offer the shortest dead zones in the industry, controlled launch conditions and, ultimately, pinpoint accuracy for loss measurements.

The FTB-150-QUAD Four-Wavelength Configuration

Combining singlemode and multimode test functionalities, the FTB-150-QUAD features four wavelengths–850, 1300, 1310 and 1550 nm, with respective dynamic ranges of 26, 25, 36 and 35 dB–and an optional visual fault locator (VFL), for top flexibility and cost-effectiveness. Designed for real-life applications, it easily characterizes the high reflectance of field-installed connectors.

This module offers the shortest dead zones in the industry: an event dead zone of ≤ 1 m, and an attenuation dead zone of ≤ 4.5 m, for singlemode and multimode fiber. Its controlled launch conditions make for more accurate loss measurements. What's more, it is optimized for testing both 50 µm and 62.5 µm multimode fiber.

Thanks to great all-around specifications, EXFO's FTB-150-QUAD provides pinpoint measurements–what you need for highly efficient multimode/singlemode OTDR performance.

- Built for enterprise/private network OTDR testing
- Four-wavelength model: two multimode wavelengths (850 and 1300 nm), and two singlemode wavelengths (1310 and 1550 nm)
- Two-wavelength model: 850 and 1300 nm (multimode)
- Best-in-class specifications

Long-range OTDRs

FTB-150-METRO
FTB-150-LH

The FTB-150-METRO and FTB-150-LH configurations deliver accurate detection and analysis of fiber splices, connectors, breaks and other events along a fiber link. It lets you choose from dynamic ranges covering the greater distances in long-haul networks.

- Singlemode configurations at 1310, 1410, 1550 and 1625 nm
- Up to 52 000 acquisition points for sampling
- High-speed traces starting at 10 seconds
- Dynamic range of up to 45 dB

Long-range OTDRs display high-speed traces in as little as 10 seconds.

Optional Functions

Power Meter

Offered with two detector types:

- GeX for high power measurement
- InGaAs for high dynamic range

Calibrated at 7 wavelengths

- Data saving capabilities

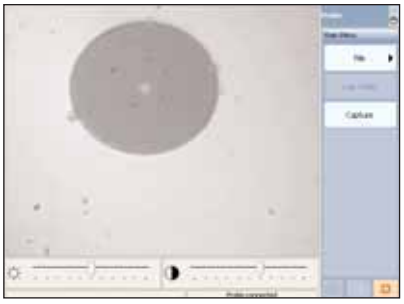
Tone Recognition

Fiber Inspection Probe

- Connector end face verification
- Image capture
- Compact, lightweight
- Compatible with EXFO FIP1-200X and FIP5-400X

Visual Fault Locator (VFL)

- Used for fiber IDs
- Pinpoints breaks and faulty connections
- Bright and powerful red laser



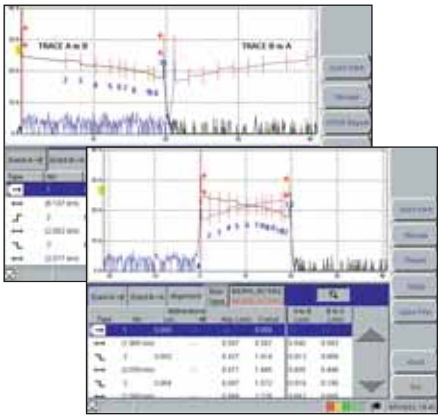
ToolBox Office PC Emulation Software for Post-Processing

Performing data post-processing with optional ToolBox Office software gives you more OTDR processing functions.

Bidirectional Trace Analysis*

Improve the accuracy of your loss measurements with the bidirectional averaging feature, which uses OTDR acquisitions from both ends of a fiber span to average loss results for each event.

** Available on singlemode OTDRs only.*

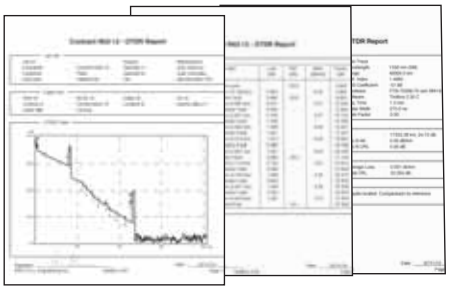


Efficient Multifiber Testing with Template Trace

Reduce testing time when commissioning a large number of fibers by using the Template Trace mode. This mode dynamically compares new OTDR results with a trace you assign as a reference. Reference trace documentation is automatically pasted onto new acquisitions to save you time.

Professional Report Generation

User-configurable test reports and batch printing let you generate complete, professional OTDR reports quickly and efficiently.



Export OTDR Files in Bellcore or ASCII Format

Save and load OTDR test results in the Bellcore-standard OTDR record format. Export results in ASCII or ASCII+ format to spreadsheet or word-processing applications.

- **Cable Report Function**
  Create cable acceptance reports and get down to specifics with:

1. **Fiber Event Report**
   Complete event data in a compact format
2. **Fiber Section Report**
   Get a close-up look at any fiber section
3. **Fault Report**
   Faults feedback based on specified user-thresholds.

Fiber event report *Fiber section report* *Fault report*

- **Batch Print Function**
  Choose from three print modes: Normal (full-size, multi-page OTDR report), Compressed (one-page report), or Multitrace (4, 6 or 8 traces per page). Plus, add report statistics such as event tables.

- **Quick-Print Function**
  Print the on-screen OTDR trace and choose statistics.

Normal *Compressed* *Multitrace*

SPECIFICATIONS[1]

All specifications below apply to the FTB-150-QUAD multimode (MM)/singlemode (SM) model and the FTB-150-MM multimode-only version.

Model	Wavelength (nm)	Dynamic range[2,3] (dB)	Event dead zone[4] (m)	Attenuation dead zone[4] (m)
FTB-150-QUAD/FTB-150-MM	850 ± 20/1300 ± 20	27/26	1/1	3/4
	1310 ± 20/1550 ± 20	37/35	1/1	4.5/5
Distance range (km)	Multimode: 0.1, 0.3, 0.5, 1.3, 2.5, 5, 10, 20, 40 Singlemode: 1.3, 2.5, 5, 10, 20, 40, 80, 160, 260			
Pulse width (ns)	Multimode: 5, 10, 30, 100, 275, 1000 Singlemode: 5, 10, 30, 100, 275, 1000, 2500, 10 000, 20 000			
Launch conditions[5]	Class CPR 1 or 2			
Linearity (dB/dB)	±0.03			
Loss threshold (dB)	0.01			
Loss resolution (dB)	0.001			
Sampling resolution (m)	Multimode: 0.04 to 2.5 Singlemode: 0.04 to 5			
Sampling points	Up to 128 000			
Distance uncertainty[6] (m)	± (0.75 + 0.0025 % x distance)			
Measurement time	User-defined (60 min maximum)			
Real-time refresh (s)	Guaranteed: ≤ 0.4			
Stable source output power[7] (dBm)	–1.5 (1300 nm), –7 (1550 nm)			
Visual fault locator (optional)	Laser, 650 nm ± 10 nm CW, typical P_{out} in 62.5/125 µm: 3 dBm (2 mW)			

Notes

1. All specifications valid at 23 °C ± 2 °C (73.4 °F ± 3.6 °F) with an FC/PC connector, unless otherwise specified.
2. Typical dynamic range with longest pulse and three-minute averaging at SNR = 1.
3. Multimode dynamic range is specified for 62.5 µm fiber; a 3 dB reduction is seen when testing 50 µm fiber.
4. Typical dead zone for multimode reflectance below –35 dB and singlemode reflectance below –45 dB, using a 5 ns pulse.
5. Controlled launch conditions allow 50 µm and 62.5 µm multimode fiber testing.
6. Does not include uncertainty due to fiber index and sampling resolution.
7. Typical output power is given at 1300 nm for multimode output and 1550 nm for singlemode output.

Singlemode OTDR Module Specifications[8]

Model	Wavelength (nm)	Dynamic range at 10 µs[9] (dB)	Dynamic range at 20 µs[9] (dB)	Event dead zone[10] (m)	Attenuation dead zone[10] (m)
FTB-150-ACCESS	1310 ± 20/1550 ± 20	35/34	37/35	1/1	4.5/5
FTB-150-FTTx	1310 ± 20/1490 ± 10/1550 ± 20/1625 ± 10	38/34/37/35	39/35/38/36	1/1/1/1	4.5/5.5/5/5
FTB-150-METRO (E5)	1310 ± 20/1550 ± 20	40/40[12]	41.5/40.5[12]	3/3	10/15
FTB-150-METRO (E10)	1310 ± 20/1550 ± 20/1625 ± 10	41/40/38	42.5/41.5	3/3	8/10
FTB-150-LH[11]	1310 ± 20/1550 ± 20	43.5/43.5[13]	45/45[13]	3/3	10/15

For complete details on all available configurations, refer to the Ordering Information section.

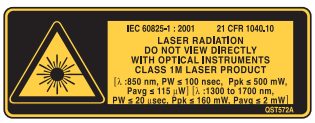
General Specifications

	FTB-150-ACCESS/FTB-150-FTTx	FTB-150-METRO/FTB-150-LH
Distance range (km)	1.25, 2.5, 5, 10, 20, 40, 80, 160, 260	1.25, 2.5, 5, 10, 20, 40, 80, 160, 260
Pulse width (ns)	5, 10, 30, 100, 275, 1000, 2500, 10 000, 20 000	10, 30, 100, 275, 1000, 2500, 10 000, 20 000
Linearity (dB/dB)	±0.03	±0.05
Loss threshold (dB)	0.01	0.01
Loss resolution (dB)	0.001	0.001
Sampling resolution (m)	0.04 to 5	0.08 to 5
Sampling points	Up to 128 000	Up to 52 000
Distance uncertainty[14] (m)	± (0.75 + 0.0025 % x distance)	± (1 + 0.0025 % x distance)
Measurement time	User-defined (60 min maximum)	User-defined (60 min maximum)
Real-time refresh (s)	Guaranteed: ≤ 0.4 Typical: ≤ 0.3	≤ 1
Stable source output power[15] (dBm)	–8 (–ACCESS), –4.5 (–FTTx)	–5
Visual fault locator (optional)	Laser, 650 nm ± 10 nm CW, typical P_{out} in 62.5/125 µm: 3 dBm (2 mW)	Laser, 650 nm ± 10 nm CW, P_{out} maximum: ≤800 µW

Notes

8. All specifications valid at 23 °C ± 2 °C (73.4 °F ± 3.6 °F) with an FC/PC connector, unless otherwise specified.
9. Typical dynamic range with a three-minute averaging at SNR = 1.
10. Typical dead zone of singlemode modules for reflectance below –45 dB, using a 10 ns pulse (5 ns pulse for –ACCESS and –FTTx).
11. Typical dynamic range on NZDS fiber with a three-minute average at SNR = 1.
12. Typical dynamic range at 1550 nm for the –METRO configuration is 2 dB lower at 10 µs and 1 dB lower at 20 µs.
13. Typical dynamic range at 1550 nm for the –LH and –LH configuration is 2 dB lower.
14. Does not include uncertainty due to fiber index and sampling resolution.
15. Typical output power value at 1550 nm.

Safety



LASER SAFETY

21 CFR 1040.10	AND	CLASS 1M WITHOUT VFL OPTION
IEC 60825-1:1993+A2:2001		CLASS 3R WITH VFL OPTION

SPECIFICATIONS[1]

Display	Touchscreen, color, 640 x 480 TFT 163 mm (6.4 in)
Interfaces	USB A main USB B remote RJ-45 LAN 10/100 Mb/s Compact Flash Fiber inspection probe connector port (video)
Storage	Internal (Flash) USB sticks 1 GB and 2 GB (optional) Compact Flash cards (optional)
Batteries[2]	Rechargeable Li-Ion 8 h of operation as per Bellcore TR-NWT-001138
Power Supply	AC/DC adapter, input 100-240 VAC, 50-60 Hz, 2 A max, output: 24 VDC, 90 watts

GENERAL SPECIFICATIONS

Temperature		
Operating	–5 °C to 50 °C	(23 °F to 122 °F)
Storage[3]	–40 °C to 70 °C	(–40 °F to 158 °F)
Relative humidity	0 % to 95 % non-condensing	
Size (H x W x D)	322 mm x 197 mm x 109 mm	(12 11/16 in x 7 3/4 in x 4 5/16 in)
Weight	2.5 kg	(5.4 lb)
Vibration	< 1.5 g at 10 Hz to 500 Hz (on three main axes)	
Mechanical shock	< 760 mm on six sides and eight main edges (according to GR-196-CORE)	

ACCESSORIES

FP1	FP1 200X Fiber Inspection Probe	GP-2016	10 feet RJ-45 LAN cable
FP5	FP5 400X Fiber Inspection Probe	GP-2017	Spare battery
GP-10-069	Semi-rigid carrying case	GP-2019	USB micro drive 1 GB
GP-302	USB mouse	GP-2020	USB micro drive 2 GB
GP-308	DC car adapter/inverter	GP-2021	Spare AC charger
GP-2001	USB keyboard	GP-2023	Spare neck strap
GP-2011	Compact Flash Ethernet WiFi card	GP-2024	Spare belt strap
GP-2012	Compact Flash Bluetooth card	GP-2025	Spare battery door
GP-2014	Compact Flash memory 1 GB card	GP-2027	Portable printer
GP-2015	Compact Flash memory 2 GB card	GP-2028	Computer security cable kit

PM-200 Built-in Power Meter Specifications[4]

Calibrated wavelengths (nm)		850, 1300, 1310, 1490, 1550, 1625, 1650
Power range (dBm)		10 to –86 (InGaAs) 26 to –64 (GeX)
Uncertainty (%)[5]		±5 % ±3 pW (InGaAs) ±5 % ±0.4 nW (GeX)
Display resolution (dB)	InGaAs	0.01 = max to – 76 dBm 0.1 = –76 dBm to –86 dBm 1 = –86 dBm to min
	GeX	0.01 = max to –54 dBm 0.1 = –54 dBm to –64 dBm 1 = –64 dBm to min
Automatic offset nulling range[6]		Max to –63 dBm for InGaAs Max to –40 dBm for GeX
Tone detection (Hz)		270/1000/2000

Notes

1. All specifications valid at 23 °C (73 °F).
2. Standard recharge time is 3 h. Recharge temperature: 0 °C to 35 °C (32 °F to 95 °F).
3. Not including internal batteries. Battery maximum storage temperature 60 °C (140 °F).
4. At 23 ºC ± 1 ºC, 1550 nm and FC connector. With modules in idle mode. Battery operated.
5. Up to 5 dBm
6. For ±0.05 dB, from 18 ºC to 28 ºC

Visual Fault Locator (VFL) (Optional)

Laser, 650 nm ± 10 nm
CW
Typical P_{out} in 62.5/125 µm: 3 dBm (2 mW)

ORDERING INFORMATION

FTB-150-XX-XX-XX-XX-XX-XX

Compact OTDR

Display
S1 = TFT active screen
S2 = Outdoor enhanced screen

Power meter
00 = Without power meter
PM3 = Power meter: InGaAs detector
PM2X = Power meter: high-power Ge detector

Connector adapter (with power meter option only)
FOA-12 = Biconic
FOA-14 = D4, D4/PC
FOA-16 = SMA/906
FOA-22 = FC, FC (PC/SPC/UPC/APC), NEC-D3
FOA-28 = DIN 47256 (LSA): DIN 47256 (PC/APC)
FOA-32 = ST, ST (PC/SPC/UPC)
FOA-40 = Diamond HMS-0, HFS-3 (3.5 mm)
FOA-54 = SC (PC/SPC/UPC/APC)
FOA-76 = FSMA HMS-10/AG, HFS-10/AG
FOA-78 = Radiall EC
FOA-84 = Diamond HMS-10, HFS-13
FOA-96B = E-2000/APC
FOA-98 = LC
FOA-99 = MU

Example: FTB-150-S1-PM2X-FOA-54-E3-EI-EUI-89-VFL

VFL (for the OTDR)
00 = Without visual fault locator
VFL = With visual fault locator

Connector
EA-EUI-28 = APC/DIN 47256
EA-EUI-89 = APC/FC, narrow key
EA-EUI-91 = APC/SC
EA-EUI-95 = APC/E-2000
EI-EUI-28 = UPC/DIN 47256
EI-EUI-76 = UPC/HMS-10/AG
EI-EUI-89 = UPC/FC, narrow key
EI-EUI-90 = UPC/ST
EI-EUI-91 = UPC/SC
EI-EUI-95 = UPC/E-2000

OTDR module
E3 = FTB-150-ACCESS 1310/1550 nm
E4 = FTB-150-FTTx 1310/1550 nm
E5 = FTB-150-METRO 1310/1550 nm
E7 = FTB-150-LH 1310/1550 nm
E10 = FTB-150-METRO 1310/1550/1625 nm
E13 = FTB-150-FTTx 1310/1550/1625 nm
E14 = FTB-150-FTTx 1310/1490/1550 nm
E15 = FTB-150 QUAD 850/1300/1310/1550 nm
E16[1] = FTB-150-MM 850/1310 nm

Notes
1. EI connectors only

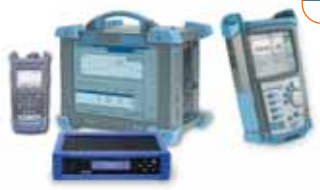
The FTB-150 is only available through accredited distributors.

Find out more about EXFO's extensive line of high-performance portable instruments by visiting our website at www.EXFO.com.

Rugged Handheld Solutions

OPTICAL
- OLTSs
- Power meters
- Light sources
- Talk sets

DSL/COPPER
- ADSL/ADSL2+, SHDSL, VDSL test sets
- VoIP and IPTV test sets
- Ethernet test sets
- POTS Test sets



Platform-Based Solutions

OPTICAL FIBER
- OTDRs
- OLTSs
- ORL meters
- Variable Attenuators

DWDM Test Systems
- OSAs
- PMS analyzers
- Chromatic dispersion analyser

Transport/Datacom
- SONET/DSn (DS0 to OC-192) testers
- SDH/PDH (64 kb/s to STM-64c) testers
- T1/T3 testers
- E1 testers
- 10/100 and Gigabit Ethernet testers
- Fibre Channel testers
- 10 Gigabit Ethernet testers

Corporate Headquarters > 400 Godin Avenue, Vanier (Quebec) G1M 2K2 CANADA | Tel.: 1 418 683-0211 | Fax: 1 418 683-2170 | info@EXFO.com

Toll-free: 1 800 663-3936 (USA and Canada) | www.EXFO.com

EXFO America	3701 Plano Parkway, Suite 160	Plano, TX 75075 USA	Tel.: 1 800 663-3936	Fax: 1 972 836-0164
EXFO Europe	Le Dynasteur, 10/12 rue Andras Beck	92366 Meudon la Forêt Cedex FRANCE	Tel.: +33.1.40.83.85.85	Fax: +33.1.40.83.04.42
EXFO Asia-Pacific	151 Chin Swee Road, #03-29 Manhattan House	SINGAPORE 169876	Tel.: +65 6333 8241	Fax: +65 6333 8242
EXFO China	No.88 Fuhua, First Road Central Tower, Room 801, Futian District	Shenzhen 518048, CHINA	Tel.: +86 (755) 8203 2300	Fax: +86 (755) 8203 2306
	Beijing New Century Hotel Office Tower Room 1754-1755, No.6 Southern Capital Gym Road	Beijing 100044, P.R. CHINA	Tel.: 86.10.6849.2738	Fax.: 86.10.6849.2662

Printed in Canada 06/02

EXFO
EXPERTISE REACHING OUT