FlexScan® FS200 Single-mode OTDR

Pocket-sized, Performance-packed, User-friendly, and Affordable

Features

- FleXpress® mode completes OTDR tests as low as 5 seconds
- Test up to 1:64 PON with as low as 18 m PON dead zone
- Easy to understand LinkMap® results with pass/fail indications
- Single, dual or triple wavelength single-mode
- Single port for in- and out-of-service OTDR tests
- Integrated source, power meter, VFL (visual fault locator)
- Compatible with AFL's single-mode MPO-24 Switch
- Rugged, lightweight, hand-held for field use

Applications

- PON or point-to-point network verification or troubleshooting
- Fiber-to-the-antenna verification or troubleshooting
- OTDR testing plus insertion loss and power measurements

AFL's FlexScan FS200 OTDR is an all-in-one solution for detecting, identifying, locating, and resolving single-mode optical network issues. It is designed for both novice and expert technicians working in a range of environments, from FTTH PON to point-to-point networks. It applies industry-standard or user-set pass/fail criteria and displays results using LinkMap color-coded icons to show the health of the network. FlexScans automate test setup, shorten test time, and simplify results interpretation improving efficiency and reducing costs.

All-in-one test capability: The FlexScan FS200 includes an integrated VFL, power meter, and light source. It can be easily paired to AFL's award-winning FOCIS family of inspection scopes, ensuring technicians have everything they need to locate and quickly resolve optical network issues. FlexScan FS200 is also compatible with AFL's single-mode MPO-24 Switch, significantly reducing test time over MPO-8/12/16/24- or MTP®-terminated fiber cables.

Performance-packed: With SmartAuto multi-pulse acquisition, up to 39 dB dynamic range, and best-in-class as low as 18 m PON dead zone. FlexScan FS200 PON OTDRs test GPON and XGS-PON with up to 1:64 splitter ratio, while still detecting and measuring events only meters apart.

Fast! FleXpress mode completes dual-wavelength tests in as low as 5 seconds – 10 x faster than conventional OTDR tests! For multi-fiber testing, FS200s automatically control AFL's MPO-24 Optical Switch to further reduce multi-fiber test time.

Pocket-sized: At 3.5 x 6 x 1.75 in. (86 x 160 x 43 mm) and less than one pound (0.4 kg), FlexScan FS200 OTDRs truly fit in your pocket, yet still provide a large, bright indoor/outdoor touchscreen display, and all-day operation.

Multiple sharing and reporting options: Results can be stored internally, saved to a USB, and uploaded via USB cable, Bluetooth (via FlexApp) or Wi-Fi for real-time reporting using the included FlexReports Test Results Manager software. Reports can also be viewed on AFL's FlexApp.

Convenient cost-saving kits: FlexScan FS200 bundles are available with options for launch cable, FOCIS Flex connector inspection probe and tips, MPO-24 Optical Switch, and/or AFL's universal optical fiber identifier (OFI-BIPMe) for significant cost-savings!

Optical Port Saver: AFL's field-replaceable Optical Port Saver, helps to avoid expensive service repairs to replace connectors damaged due to poor cleaning practices and/or normal wear-and-tear.

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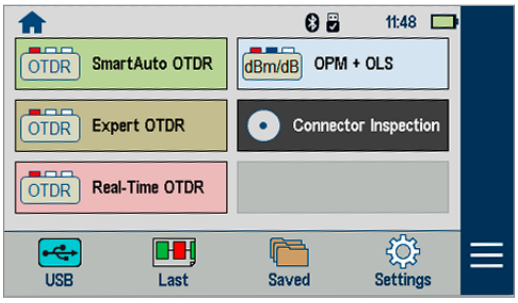
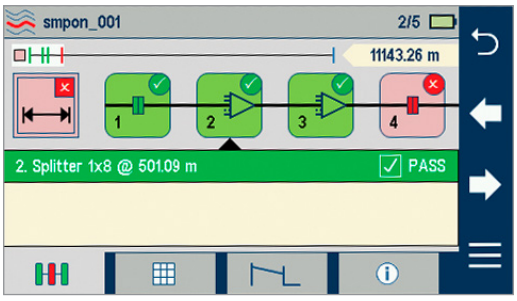


Dramatically Reduces Test Time

In SmartAuto mode, FlexScan OTDRs automatically analyze and test the network using a variety of network-optimized settings to precisely locate, characterize and identify network events with one button push. Loss and reflectance are measured for connectors, splices, splitters and macro-bends. FlexScan even checks for live fiber and verifies OTDR launch quality before initiating a test.

FlexScan's FleXpress mode completes dual-wavelength tests in seconds, reducing test time by 10x compared to conventional OTDRs. For multi-fiber testing, FlexScans automatically control AFL's MPO Switch, testing up to 24 fibers at the touch of a button.



Simplifies Network Troubleshooting

LinkMap with pass/fail indications enable even novice users to easily and accurately troubleshoot optical networks. LinkMap presents an icon-based view of the tested network clearly identifying fiber start, end, connectors, splices, PON splitters, and macro-bends.

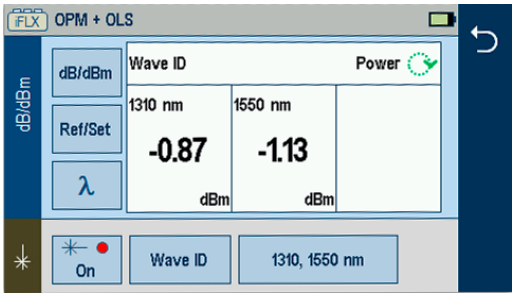
A LinkMap summary provides end-to-end link length, loss and ORL. Loss and reflectance are displayed with clear pass/fail indications as well as recommended corrective actions for failures. Users can instantly toggle between LinkMap and Trace views.

FlexScan FS200 also supports OTDR and Power Meter test setups to be created, saved, transferred to other FlexScans, and recalled in the field, simplifying testing and avoiding user setup errors. Jobs creation capabilities of the FS200s enable users to define OTDR and OPM test sequence and start automated tests with one button push.

Connectivity

FlexScan OTDRs easily pair with AFL's award-winning FOCIS® family of connector inspection probes for fast, easy single-fiber and/or multi-fiber connector end-face inspection.

FlexScan results can then be transferred via USB cable, Wi-Fi, or Bluetooth and the free FlexApp running on a mobile device for real-time reporting using the included FlexReports Test Results Manager PC-based software. This real-time monitoring can help avoid mistakes in the field that will require future truck rolls.



OTDR, OLTS, and VFL Testing with a Single Tool

FlexScan optionally includes a Wave ID optical light source (OLS) and optical power meter (OPM). With Wave ID, the OPM auto-synchronizes to a single or multi-wavelength Wave ID optical signal transmitted by an AFL light source. The OPM reports detected wavelengths and measures power and loss at each wavelength, saving significant test time and eliminating setup errors.

The integrated VFL's eye-safe red laser enables users to visually pinpoint the location of macro-bends and fiber breaks often found in splice closures and fiber cabinets.

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FlexScan® FS200 Single-mode OTDR

FlexScan OTDRs are available with 1310/1550/1625, 1310/1550/1650, 1310/1550, and 1650 nm only wavelengths. Depending on the model, they are available with integrated optical light source (OLS), optical power meter (OPM), visual fault locator (VFL) and Bluetooth/Wi-Fi.

Specifications [a]

Model: FS200-xxx	-60	-100	-300	-303	-304
OTDR					
Emitter Type	Laser				
Safety Class [b]	Class I				
Fiber Type	Single-mode				
Wavelengths (nm)	1650	1310/ 1550	1310/ 1550	1310/ 1550/ 1625	1310/ 1550/ 1650
Center λ Tolerance [c]	1310/1550/1625/1650 ±20 nm				
Dynamic Range [d] (dB)	38	39/37	40/38	39/37/39	39/37/38
Event Dead Zone [e] (m)	0.7	0.7	0.7	0.7	0.7
Atten. Dead Zone [f] (m)	2.3	2.3	2.3	2.3	2.3
PON Dead Zone [g] (m)	30	18/18	18/18	18/18/25	22/22/30
Max Split Ratio	1:64				
Pulse Widths	3, 5, 10, 20, 30, 50, 100, 200, 300, 500 ns; 1, 2, 3, 10 µs; 20 µs				
Range Settings	250 m to 240 km				
Data Points	Up to 300,000 (Expert mode .SOR file)				
Data Spacing	5 cm to 16 m				
Index of Refraction	1.3000 to 1.7000				
Distance Uncertainty	±(1 + 0.003% x distance + data point spacing) m				
Linearity (dB/dB)	±0.05				
Trace File Format	Telcordia SR-4731 Issue 2 compatible .SOR				
Trace Storage	Internal: >5,000 traces typical; External: USB memory stick				
Data Transfer to PC	USB cable or Bluetooth® (option)				
OTDR Modes	SmartAuto, FleXpress® (N/A for FS200-60), Expert, Real-time				
Display Modes	LinkMap Summary, LinkMap Events, Trace				
Refresh Rate	Up to 4 Hz (Real-time mode)				
Live Fiber Protection	No OTDR damage with input power ≤ +20 dBm for wavelength(s) in range 1260 to 1675 nm				
Live Fiber Detection	Reports live fiber when cumulative power of detected live signal @1260 - 1675 nm is ≥ -40 dBm. 1310/1550 nm OTDR test not allowed.				
PON Filter Isolation	>50 dB for 1260 nm ≤ wavelength ≤1600 nm				
Live PON OTDR Test	Can be completed when cumulative power of interfering signals @ 1600 - 1675 nm is ≤ -40 dBm				

Model: FS200-xxx	-60	-100	-300	-303	-304
Visual Fault Locator (VFL)					
Emitter Type	Visible red laser, 650 ±20 nm				
Safety Class [b]	Class II				
Output Power	0.8 mW into single-mode fiber (-1 dBm ±0.5 dB)				
Modes	CW, 2 Hz flashing				
Optical Light Source - OLS (Optional)					
Emitter Type	Laser				
Safety Class [b]	Class I				
Fiber Type	Single-mode				
Wavelengths (nm)	N/A	1310/ 1550	1310/ 1550	1310/ 1550	1310/ 1550
Center λ Tolerance	±20 nm (CW mode)				
Spectral Width (FWHM)	5 nm (maximum)				
Internal Modulation	270 Hz, 330 Hz, 1 kHz, 2 kHz, CW, Wave ID				
Wave ID	Compatible with AFL OPM/OLS				
Output Power Stability	≤ ±0.1 dB (15 minutes); ≤ ±0.15 dB (8 hours)				
Output Power	-3 dBm ±1.5 dB				
Optical Power Meter -OPM (Optional)					
Calibrated Wavelengths	1270, 1310, 1490, 1550, 1577, 1625, 1650 nm				
Detector Type	InGaAs, 1 mm diameter				
Measurement Range	+23 to -50 dBm				
Tone Detect Range	+3 to -35 dBm; 270 Hz, 330 Hz, 1KHz, 2 KHz				
Accuracy	±0.25 dB				
Resolution	0.01 dB				
Measurement Units	dB, dBm or Watts (nW, µW, mW)				
General					
Size (in boot)	86 x 160 x 43 mm				
Weight	0.4 kg				
Operational Temperature [h]	-10 °C to +50 °C, 0 to 95 % RH (non-condensing)				
Storage Temperature	-40 °C to +70 °C, 0 to 95 % RH (non-condensing)				
Power	Rechargeable Li-Pol or AC adapter				
Battery Life	>12 hours, Telcordia test conditions				
Display	4.3 in color touchscreen LCD, 480x272, backlit				
USB Ports	1 host; 1 micro-USB function				
Bluetooth (optional)	Compatible with Windows PC, Android, iOS				
Wi-Fi	Download results & update software via IEEE 802.11 Wi-Fi				

Notes:

a. All specifications valid at 23 °C unless otherwise specified.
b. FDA 21 CFR 1040.10 & 1040.11, IEC 60825-1: 2014.
c. Using 10 ns pulse width.
d. SNR=1, longest range and pulse width, 3-minute averaging. Typical value.
e. Maximum distance between two points 1.5 dB down each side of a reflective peak caused by an event with reflectance ≤ -45 dB using 3 or 5 ns pulse. Typical value.
f. Maximum distance from the start of a trace spike caused by an event with a -55 dB (or smaller) reflectance, to the point where the trace returns to and stays within ±0.5 dB of backscatter. Test pulse width is 3 or 5 ns. Typical value.
g. Recovery to within 0.5 dB of backscatter after 1:16 splitter (≤13 dB loss) using 50 ns pulse width. Typical value.
h. Max temperature while charging is +45 °C.

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FlexScan® FS200 Single-mode OTDR

Ordering Information

Kits include FS200, AC charger, battery, carry strap, SC/2.5 mm connector adapters, FlexReports, USB cable, and carry case.

FS200-XXX-Basic, Plus, PRO, BIPM Kits Order Entry: **FS200-[MOD]-[KIT]-[PW]-[C]-[CC]-[LNG]-[AC]-[FR]-[TIP]**

FS200-300-MPO Kit Order Entry: **FS200-300-MPO24-P1-W1-[C]-[LNG]-[AC]-[FRM]-[MC2]**

FS200-303/304-FTTH PRO Kits Order Entry: **FS200-[MOD]-FTTH-PRO-[CC]-[LNG]-[AC]** where:

[MOD]	FS200 FlexScan OTDR Configuration
60	1650 filtered Live PON Troubleshooting OTDR
100	1310/1550 Pt-to-Pt & PON Verification and Troubleshooting OTDR
300	1310/1550 Pt-to-Pt & PON Verification and Troubleshooting OTDR
303	1310/1550/1625 Pt-to-Pt and PON Verification and Troubleshooting OTDR
304	1310/1550/1650 Pt-to-Pt and PON Verification and Troubleshooting OTDR

[KIT]	FS200 FlexScan Kit Configuration / Kit Contents
BAS[a]	Includes: FS200, FlexReports Basic, USB cable , soft case
PLUS	Includes: BAS Kit plus 150 m SMF Fiber Ring, One-Click Cleaner, upgrade to FlexReports Advanced, soft or hard carry case
PRO	Includes: PLUS Kit plus FOCIS Flex with two user-selected adapter tips
FTTH-PRO	Includes: BAS Kit, 150 m SC/APC & LC/APC Fiber Rings, FOCIS Flex, SC/APC & LC/APC bulkhead and ferrule adapters, SC & LC One-Click Cleaners, FlexReports Advanced, soft or hard carry case (FS200-303/304 only)
BIPM	Includes: PRO Kit plus OFI-BIPMe
MPO24	Includes: FS200, MPO-24 Switch, MPO launch cable, OTDR to-Switch launch cable, OTDR-to-Switch USB cable, FlexReports Advanced

[PW]	Power Meter / Wireless Option
P0-W0	No Source, Power Meter, or Bluetooth/WiFi (FS200-60/100 only)
P0-W1[b]	No Source or Power Meter; Includes Bluetooth/WiFi (FS200-300/304 only)
P1-W0	No Bluetooth/WiFi (-303/304 only); Includes Source, Power Meter
P1-W1[b]	Includes Source (not included in FS200-60), Power Meter, Bluetooth/Wi-Fi

[C]	OTDR / Source Connector Type
A	APC (recommended)
U	UPC (Not available for FS200-60)

[CC][c]	Carry Case Option (PLUS, PRO, FTTH-PRO, BIPM Kits)
S1	Large soft case for FS200, fiber ring, FOCIS Flex, OFI-BIPMe, accessories
S2	Medium soft case for FS200, fiber ring, FOCIS Flex, accessories
H1	Hard carry case for FS200, fiber ring, FOCIS Flex, OFI-BIPMe, accessories

[LNG]	Language
ENG	English
CHS	Chinese Simplified
CHT	Chinese Traditional
CZE	Czech
DEU	German
DNK	Danish
FIN	Finnish
FRA	French
ITA	Italian

[LNG]	Language
JPN	Japanese
KOR	Korean
NOR	Norwegian
POL	Polish
POR	Portuguese
SPA	Spanish
TUR	Turkish
VNM	Vietnamese

[AC]	Destination Country	AC Plugs
US	USA	2-pin, US
EU	European Union	2-pin, EU
UK	United Kingdom	3-pin, UK
CN	China, Australia	2-pin, SAA

[FR]	150 m SMF Fiber Ring
Absent	N/A in Basic Kits
USC/USC	FR-SMF-150-USC-USC
USC/UFC	FR-SMF-150-USC-UFC
USC/ULC	FR-SMF-150-USC-ULC
USC/UST	FR-SMF-150-USC-UST
ASC/USC	FR-SMF-150-ASC-USC

[FR]	150 m SMF Fiber Ring
ASC/UFC	FR-SMF-150-ASC-UFC
ASC/ULC	FR-SMF-150-ASC-ULC
ASC/UST	FR-SMF-150-ASC-UST
ASC/ASC	FR-SMF-150-ASC-ASC
ASC/ALC	FR-SMF-150-ASC-ALC

[TIP]	FOCIS Flex Tips and Cleaning (PRO only)
Blank	Option not available in Basic & PLUS Kits
SC	SC-UPC bulkhead tip, 2.5 mm UPC ferrule tip, 2.5 mm cleaning
FC	FC-UPC bulkhead tip, 2.5 mm UPC ferrule tip, 2.5 mm cleaning
LC	LC-UPC bulkhead tip, 1.25 mm UPC ferrule tip, 1.25 mm cleaning
ASC	SC-APC bulkhead tip, 2.5 mm APC ferrule tip, 2.5 mm cleaning
AFC	FC-APC bulkhead tip, 2.5 mm APC ferrule tip, 2.5 mm cleaning
ALC	LC-APC bulkhead tip, 1.25 mm APC ferrule tip, 1.25 mm cleaning

[FRM]	Single Mode MPO24 Fiber Ring Type
FRM2	MPO-24 to MPO-24 Terminated Fiber Ring
FRM6	MPO-24 to MPO-12 Terminated Fiber Ring

[MC2]	MPO24 Ring Pin Type - Switch to Network
AF	Female (unpinned) to Female (unpinned)
AM	Female (unpinned) to Male (pinned)

Notes:

a. Results can be transferred from FlexScan OTDR to FlexReports using USB cable, or performed wirelessly (W1 option) after downloading free FlexApp. The FlexApp is available as a free download from 'Google play' or 'App Store'.

b. FlexScans equipped with Bluetooth option (W1) support Bluetooth transfer of results via FlexApp for remote reporting using FlexReports.

c. Basic Kit always ships with S2 (Medium Soft Case); MPO Kit always ships with MPO-specific soft case.

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Ordering Information

Accessories

AFL NO.	Description
1400-05-0230PZ	FlexScan wrist strap
1400-05-0231PZ	FlexScan neck strap, 36"
4050-00-0931PR	AC charger 100-240 VAC to 5 VDC
1400-01-0111PZ	Soft carry case for FS200 kits with FOCIS Flex and Fiber Ring
1400-01-0128PZ	Soft carry case for FS200 kits with FOCIS Flex, OFI-BIPMe and Fiber Ring
1400-01-0134PZ	Hard carry case for FS200 kits with FOCIS Flex, OFI-BIPMe and Fiber Ring
400-01-0182PZ	Soft carry case for FS200 MPO Kit
1400-21-0004PZ	Glove case with neck strap and carabiner
4050-00-0033MR	Vehicle charger, 12VDC to 5VDC @2A
6000-00-0031MR	Cable, USB-micro B, 5 pin, 6'
6000-00-0034PR	5V USB charging cable (1.5 m), type A to barrel (0.9 X 3.2 X 9 mm)
Cleaning Supplies	One-Clicks, fluid, wipes, etc. See www.AFLglobal.com

Field-Replaceable FlexScan Optical Port Saver

Protect your OTDR ports from damage due to mating with dirty or damaged launch cables or patch cords or normal wear-and-tear. Equip your FlexScan FS200 with a field-replaceable Optical Port Saver, which installs in seconds and accepts AFL's tool-free interchangeable SC, LC, FC and ST connector adapters.

Replace damaged connectors in the field: When normal wear-and-tear or poor cleaning practices damage the port saver's end-face, replace it in seconds without having to return the OTDR to a service center for an expensive and time-consuming repair.

AFL NO.	Description
2900-58-0001MR	FlexScan-facing APC female to APC male field-replaceable Port Saver connector
2900-58-0002MR	FlexScan-facing APC female to UPC male field-replaceable Port Saver connector
2900-58-0003MR	FlexScan-facing UPC female to APC male field-replaceable Port Saver connector
2900-58-0004MR	FlexScan-facing UPC female to UPC male field-replaceable Port Saver connector

Connector Adapters

AFL NO.			
OTDR/OLS Port	OPM Port	VFL Port	Connector Adapter
2900-50-0002MR	2900-52-0001MR	N/A	FC
2900-50-0003MR	2900-52-0002MR	N/A	SC
2900-50-0004MR	2900-52-0003MR	N/A	ST
2900-50-0006MR	2900-52-0004MR	N/A	LC
2900-50-0011MR	2900-52-0002MR	N/A	SC/APC
N/A	2900-52-0005MR	2900-50-0007MR	2.5 mm Universal
N/A	2900-52-0006MR	2900-50-0010MR	1.25 mm Universal

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Test Management and Reporting Software

AFL NO.	Description
RPTS-AD-USB-1	FlexReports Advanced, one seat license on USB
RPTS-UP-TRM3-1	FLexReports Advanced, one seat, Upgrade from TRM® 3 Advanced on USB. Users must have TRM-3 Advanced license
FlexReports Basic	FlexReports Basic, available for download on AFL Software Resources website
FlexApp	FlexApp data transfer mobile App, available on Google Play and Apple App Store

Recommended Products

FOCIS Flex, FOCIS Lightning2 (multi-fiber) Inspection

- Self-contained, tether-free
- Auto-focus and auto-centering
- IEC, IPC and user-defined pass/fail analysis

MPO Switch

- Fast multi-fiber OTDR test
- 24-fiber single-mode capacity
- Auto- or user-selected fiber to test

OFI-BIPMe Optical Fiber Identifier

- World class signal sensitivity
- Trigger lock, positive stop for optimum detection
- Integrated optical power meter option

Qualifications

Category	Regulation/Standard	Qualification
CE Marking	EU	Compliant to relevant EU Directives on health, safety, and environmental protection, and certified with CE marking
Safety/EMC/EMI	IEC	Compliant to IEC 61010-1 for safety requirements for electrical equipment
	EN	Compliant to EN 61010-1 for safety requirements for electrical equipment
	IEC	Compliant to IEC 61326-1 for EMC requirements for electrical equipment
	EN	Compliant to EN 61326-1 for EMC requirements for electrical equipment
	EN	Compliant to EN 55011 for EMC requirements for industrial, scientific and medical equipment
	Telcordia	Compliant to GR-196-CORE 4.5.1 for requirements on electromagnetic interference
	FCC	Bluetooth/Wi-Fi compliant to FCC 47 CFR Part 15C, Part 15.247 subpart C, and FCC Rule Part 1.1.307 (b)(3)(i)(a) SAR
	FDA	Compliant to code of federal regulations FDA 21 CFR 1040.10 and 1040.11 on laser products
	IEC	Compliant to IEC 60825-1 for safety of laser products
RoHS	EU	Compliant to EU regulations Directive 2011/65/EU (RoHS 2) and Directive 2015/863 (RoHS 3)
Test Method	TIA	Compliant to TIA-568.3-D for test and measurement requirements for premises optical fiber cabling and components
	IEC	Compliant to IEC 11801 for test and measurement requirements for optical fiber cabling for use within premises
	AS/NZS	Compliant to AS/NZS 3080 for test and measurement requirements for optical fiber cabling for use within premises
	TIA	Compliant to TIA-526-7 for test procedures for installed optical fiber cable plant
	TIA	Compliant to TIA-526-14 for test procedures for installed optical fiber cable plant
	IEC	Compliant to IEC 14763-3 for systems and methods for the inspection and testing of installed optical fiber cabling
	AS/NZS	Compliant to AS/NZS 14763.3 for systems and methods for the inspection and testing of installed optical fiber cabling
	IEC	Compliant to IEC 61280-4-1 for test procedures for installed optical fiber cable plant
	IEC	Compliant to IEC 61280-4-2 for test procedures for installed optical fiber cable plant
Generic Requirement	Telcordia	Compliant to GR-196-CORE for generic requirements for OTDR-type equipment
	Telcordia	Compliant to SR-4731 Issue 2 for OTDR data format
	IEC	Compliant to IEC 61746-1 for requirements on calibration of OTDR

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