MTTplus-410
Fiber Optics Test Module

VeEX

MTTplus
Modular Test Platform

The Fiber Optics test module for the VeEX® MTTplus adds a full range of Optical test features that support OTDR, OPM, Light Source and VFL.

Module Highlights

Optical Time Domain Reflectometer (OTDR)
- Multimode Wavelength options - 850 & 1300 nm
- Singlemode Wavelength options - 1310, 1490, 1550, 1625 & 1650 nm
- Filtered 1625 or 1650 nm port for in-service PON measurements
- Live fiber detection to avoid service disruption of active subscribers
- Dynamic range up to 45 dB for long haul fibers and PON splitters
- Event dead zone < 1m, Attenuation dead zone < 5m
- V-Scout link mapping (multiple wavelengths, multi pulse widths)
- Fixed or Universal optical connectors with UPC or APC interface options

Optical Power Meter (OPM)
- Optional OPM for LAN, Telco, FTTx and CATV networks
- Multiple calibrated wavelengths
- Large 1mm InGaAs detector for standard and high power levels
- Absolute (dBm, Watts) and Relative (dB) power measurements
- Optional PONT Wavelength-selective power meter for GPON testing
- WaveID detection of incoming wavelength from compatible VeEX light source
- Industry standard optical adaptors available

Optical Light Source (OLS)
- Optional OLS function based on OTDR laser fitted
- Stabilized output for insertion loss testing
- WaveID supports testing of three wavelengths in a single operation
- CW or modulation modes for use with fiber identifiers
- Auto Off feature to conserve battery power

Optical Loss test Set (OLTS)
- Automatic, bi-directional loss testing using optional internal OPM
- Wave ID detection eliminates setup errors and reduces test time
- Simplified patchcord referencing via on screen wizard
- Storage of bi-directional measurements including average results
- Upload of test results to Fiberizer Desktop or Fiberizer Cloud
- Optional Optical Return Loss (ORL) test capability

Visual Fault Locator (VFL)
- Visible laser for patch-panel troubleshooting or localized fault finding
- CW and 1 Hz operating modes

Modular Expert
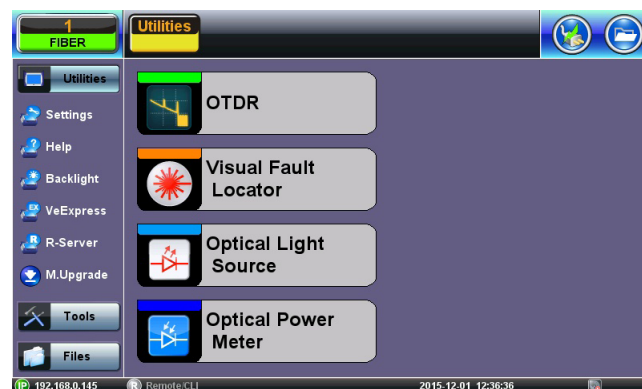
# Optical Time Domain Reflectometer (OTDR)

Intuitive Test Setup

An intuitive menu structure offers simple test setup for Novice and Expert users alike. Test parameters can be configured manually by the user or set automatically by the unit.

Several wavelength combinations covering both multimode and singlemode applications are available, including short haul FTTX, Metro and Long Haul networks.
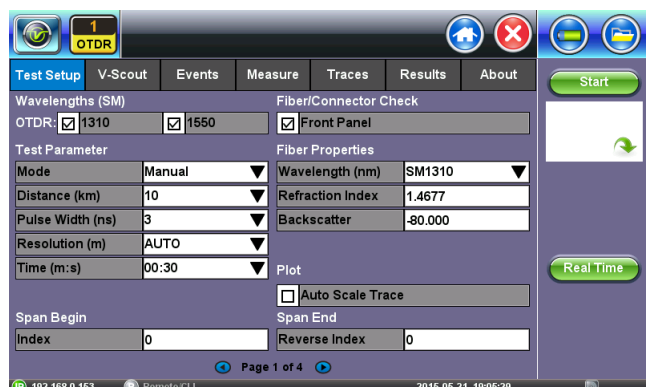

Analysis Thresholds

User defined thresholds for splice loss, connector loss, fiber lengths and reflectance can be preset to assess a fiber's condition. Color coding used in the event table will display events exceeding Pass/Fail thresholds and alert technicians of a potential problem.
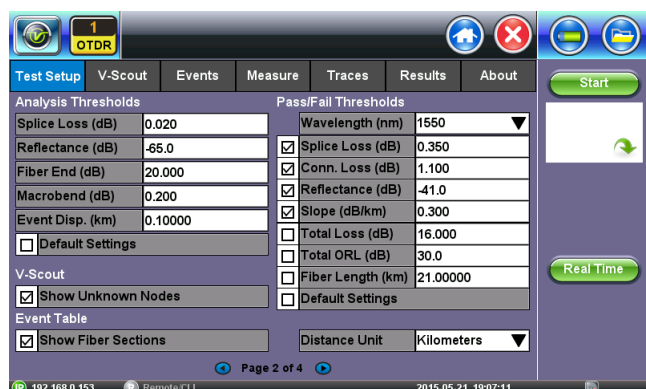

V-Scout Link Mapping

Multiple pulse width acquisitions and advanced algorithms quickly characterize the fiber under test and display the optical events using intuitive symbols. This optional feature eliminates event interpretation and provides greater analysis confidence to the user, regardless of OTDR skill set.
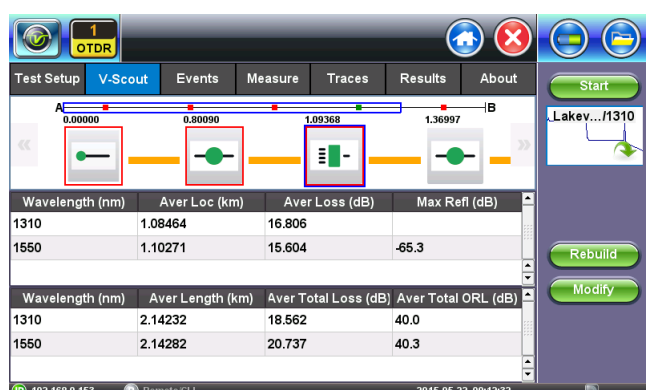
Advanced Trace Analysis

Reliable event detection and accurate analysis are crucial to document fiber links properly at the time of installation. These baseline records are essential to troubleshooting faulty fiber networks and reducing system downtime afterwards.
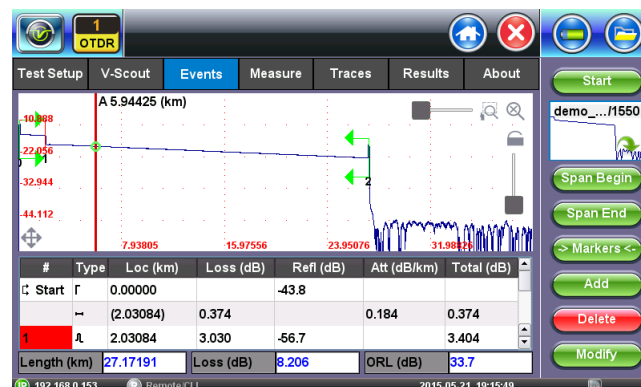
The MTTplus-410 OTDR employs specialized techniques developed from decades of experience to locate and measure connectors, splices, optical splitters and macro-bends.

OTDR Results

Traces in the Telcordia SR-4731 sor format are saved in a logical hierarchy for easy sorting and archiving. Trace files can be pushed directly to Fiberizer Cloud from the tester using an Internet connection so that work supervisors have immediate access to test data being measured on site. Reference trace files can also be "pulled" from Fiberizer Cloud server for troubleshooting and restoration purposes.
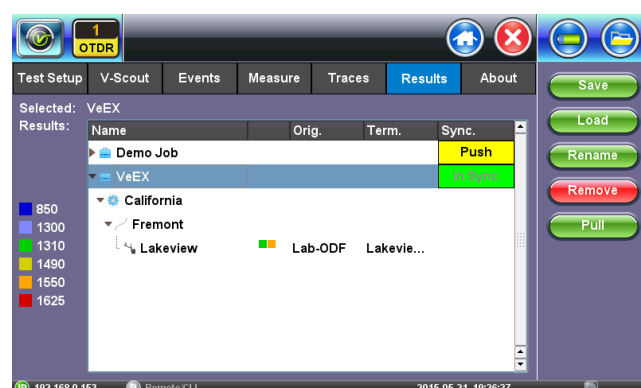
Visual Fault Locator (VFL)

The optional Visual Fault Locator is a useful tool to identify poor connections, bad fusion splices and macrobends in fiber management closures. Operating at 650 nm, this visible source offers up to 5 km (3 miles) of range.

Optical Light Source (OLS)

The OTDR port can operate as a stable light source for loss testing. The output supports WaveID which automatically sets the wavelength when paired with compatible VeEX optical power meters. The source output can also be modulated for use with industry standard fiber identifiers.
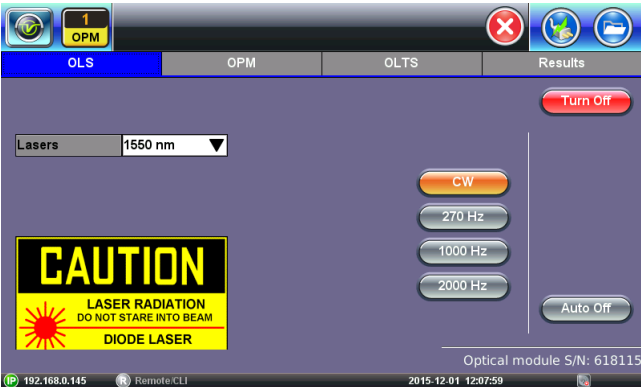
Optical Loss Test Set (OLTS)

Fully automated, bidirectional loss testing for up to three wavelengths are supported. An intuitive patchcord referencing procedure reduces reference errors ensuring accurate and repeatable insertion loss measurements. Predefined pass/fail thresholds, cable identification parameters including technician comments can be saved.

Optical Power Meter (OPM)

An optional Optical Power Meter (OPM) can be fitted to measure absolute or relative optical power levels. The OPM incorporates a highly sensitive and stable InGaAs detector with six calibrated wavelengths providing accurate level measurements from +10 to -65 dBm. A high power version is available for DWDM or CATV applications for levels ranging from + 27 to - 45 dBm.

PON Network Installation

The PONT OPM option is designed for ONT splitter installation testing and rapid ONT troubleshooting. The OPM measures downstream signals simultaneously using PON specific wavelength filters and a specialized photo detector. Both 1490 nm (data) and 1550 nm (video) power levels at the ONT or other FTTx PON test points can easily be verified.

WaveID

The OPM employs WaveID, a unique wavelength detection system common to most VeEX optical test products. The OPM automatically recognizes a single or multi-wavelength signal transmitted by another VeEX optical tester connected to the far end of the link under test. The OPM measures the level at the corresponding wavelength automatically, eliminating setup errors and saving test time.

Test Results

OPM and OLTS test data can be saved to internal memory using the same file-naming convention applied to OTDR traces. Saved results can be printed directly to pdf, exported to a PC for offline report generation or uploaded to Fiberizer Cloud depending on User documentation requirements.

MTTplus OLTS

VeEX compatible OLTS

Wavelength	A - B, dB	B - A, dB	Average, dB
1310	14.4	14.6	14.5
1550	10.2	10.8	10.5
1625	11.6	11.2	11.4

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OTDR Trace Analysis and Documentation

Fiberizer™ Desktop

Fiberizer Desktop is a standalone PC software application to analyze traces acquired by the MTTplus OTDR. Users can edit traces manually, create event tables, generate reports using built-in templates and much more. This viewer displays trace files conforming to Telcordia (Bellcore) GR-196 & SR-4731 *.sor formats, and offers both 2-point and 5-point loss measurement modes. It also supports batch processing, a very useful feature for analyzing multiple fibers in a single cable. The software does not require Internet access to operate, but it can be interfaced with Fiberizer Cloud OTDR trace viewer at any time.

Work from Anywhere, Anytime

Fiberizer™ Cloud

Fiberizer Cloud, powered by Optixsoft, not only empowers the OTDR, but also the Workforce. Going way beyond traditional OTDR reporting methods or concepts, this cloud-based solution provides superior centralized test data management capabilities including powerful web based trace analyses. You can work from almost anywhere, at anytime because Fiberizer Cloud is a full online web service.

Streamlining onsite data reporting

Fiber technicians and contractors tasked to validate new fiber installations or restoring cable routes after an outage are generally obliged to submit measured data (.sor files) and related documentation to the network operator as proof of delivery before being paid. Valuable time however is often wasted after the onsite work is completed, because critical test files are usually first stored to some local storage media before being transferred to a colleague via email for verification and further reporting.

Fiberizer Cloud streamlines this information exchange, eliminating costly paper, e-mail or other time consuming communication methods - instead, time wastage can be avoided by transferring traces of jobs completed directly from the OTDR to Fiberizer Cloud. Professional PDF or MS Excel reporting functionality is also available, and users can create their own templates for reports. Bi-directional analysis of OTDR traces, tested from both ends of the optical fiber, can also be performed.

Fiberizer Cloud Connectivity

Pair the MTTplus OTDR Multiservice tester via Bluetooth to a mobile Smartphone, Laptop or Tablet PC and efficiently upload OTDR test data directly to the Cloud server using any available wireless technology (3G, WiFi).

Total Compatibility

Fiberizer Cloud is compatible with both Windows and MacOS browsers, not limiting users to PC platforms only. OTDR trace files in Telcordia (Bellcore) GR-196 & SR-4731 *.sor formats are securely transferred via HTTPS connection, a fast reliable communication protocol commonly used in today's Internet applications.

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Optical

OTDR	Multimode	Singlemode
Wavelength (± 20 nm)	850/1300	1310/1490/1550//1625//1650
Dynamic Range (db)[2]	Refer to Ordering Guide	Refer to Ordering Guide
Pulse width (ns)	3, 10, 25, 100, 300, 1000, 3000, 10000, 20000	
Event dead zone (m)[3]	Refer to Ordering Guide	Refer to Ordering Guide
Attenuation dead zone (m)[4]	Refer to Ordering Guide	Refer to Ordering Guide
Distance range (km)	0.5 to 80	0.5 to 240
Distance Units	Kilometers, Miles or Feet	
Distance Measurement Accuracy (m)[5]	$± (0.5 + resolution + 2x10^{-5} x L)$	
Sampling resolution (m)	0.08 to 7.6	
Sampling points	Up to 128,000	
Attenuation Linearity (dB/dB)	± 0.05	
Group Index Range (IoR)	1,3000 to 1,7000	
Measurement time	User defined	
Internal memory capacity (SD card)	>5,000 traces, Bellcore GR196 and Telcordia SR-4731 sor format	
Fiber analysis	Automatic, 3 Pulse widths, event table, user defined PASS/FAIL thresholds	
Fiber type	Multimode, 50/125 μm	Single mode, 9/125 μm
OTDR Laser safety	IEC 60825-1, Class 1M	
Optical connectors (OTDR/LS)	Universal 2.5 mm interface, FC/SC/ST/LC adaptors optional	

Optical Test Options	Multimode	Singlemode
Visual Fault Locator (VFL)	Optional	
-Wavelength (nm)	650 ± 10 nm	
-Output (mW)	Max 1 mW	
-Laser Safety	IEC 60825-1, Class II	
Light Source (LS) - (O/P shared with OTDR)	Optional	
-Wavelengths (nm)	850/1300	1310/1490/1550//1625//1650
-Output power (dBm)	N/A	> -4
-Level Instability (dB)	N/A	Better than ± 0.05 (15 min)
Optical Power Meter (OPM)	Optional	
-Calibrated wavelengths (nm)	850/1300	1310/1490/1550/1625/1650
-Power range (dBm) - PM1, PM2	-60 to +3 (PM1) / -40 to +23 (PM2)	-65 to +10 (PM1) / -45 to +27 (PM2)
-Accuracy, %	± 8	± 5
-Linearity, %	± 6	± 2.5
Optical connectors (VFL/OPM)	Universal 2.5 mm interface, FC/SC/ST/LC adaptors optional	

Notes:
1. Unless noted, all specifications are valid at 23°C ± 2°C (73.4°F ± 3.6°F) using FCUPC connectors
2. Typical dynamic range after three-minute averaging and SNR = 1
3. Typical dead zone using 3 ns pulse and reflections below -45 dB
4. Typical dead zone using 10 ns pulse and reflections below -45 dB
5. Excludes uncertainty due to fiber refractive index (IoR) setting

Optical Specifications			
Multimode OTDR			
Wavelength (nm)	Dynamic Range (dB)	Dead Zone	
		Event Dead Zone (m)	Loss Dead Zone (m)
850/1300	28/30	<1	<5
Singlemode OTDR			
Wavelength (nm)	Dynamic Range (dB)	Dead Zone	
		Event Dead Zone (m)	Loss Dead Zone (m)
1310/1550	36/34	<1	<5
1310/1550//1625(F)	36/34//38	<1	<5
1310/1490/1550	36/34/34	<1	<5
Medium Range			
1310/1550	39/36	<1	<5
1310/1550//1625(F)	39/36//39	<1	<5
Long Range			
1310/1550//1625(F)	43/43//39	<1	<5
1310/1550//1650(F)	43/43//39	<1	<5
Ultra Long Range			
1310/1550	45/44	<1	<5

Hardware Options
Standard OPM (+10 dBm)
High Power OPM (+25 dBm)
PONT Wavelength Selective OPM (1550 nm (+23 dBm) and 1490 nm (+7 dBm))
Visual Fault Locator (650 nm)
Light Soure (per OTDR laser fitted)
Built-in Launch Fiber (40m)
Optical Loss Test Set (OLTS) function*
Optical Return Loss (ORL) function*

Check with factory for availability.

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