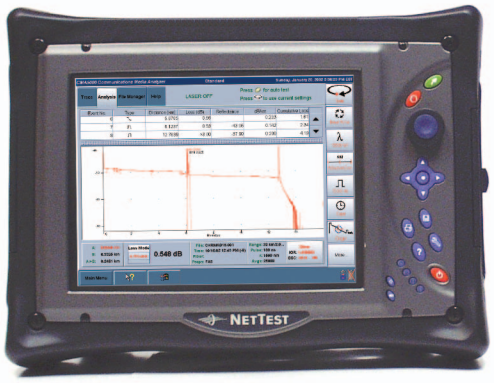
NETTEST

CMA 5000

Optical Time Domain Reflectometer Application



The compact size of the OTDR Application module allows another module (OTDR or test fiber box) to be inserted into a small bay adapter and up to three more into a medium or large bay adapter.

Ideal Solution For Any Test Scenario

As a part of the CMA 5000 platform, the OTDR application is one other way to accelerate the deployment of services while reducing the cost of measurement. With test and measurement options ranging from OTDR, connector inspection and dispersion to optical spectral analysis, bit error rate, SONET/SDH analysis and Gigabit Ethernet, the CMA 5000 is the ideal single-solution for all your testing needs.

Today's competitive environment demands that networks offer exceptional performance and reliability with minimal downtime. When characterizing and documenting such stringent performance levels, the CMA 5000 Optical Time Domain Reflectometer (OTDR) application is the ideal solution for virtually all applications including long-haul, metropolitan and passive optical networks. The OTDR application reduces the time to install, commission and maintain fiber spans via high performance hardware and easy-to-use software.

The CMA 5000 can be easily equipped with a light source and power meter for complete end-to-end loss testing. In addition, the Visual Fault Locator (VFL) option enables you to visually locate breaks at patch panels and identify specific optical fibers within a cable.

Increased revenue through accurate fiber characterization:

- **Extremely high resolution (0.5 meter resolution at 125 km, 1 meter resolution at 250 km)**
- **Superior event analysis software provides accuracy and detection consistency**
- **Unequaled reflectance and ORL accuracy - 1-2 dB accuracy, fully automated**
- **Up to 256,000 data points provides unparalleled trace resolution**

Added value through performance:

- **Dedicated test modes simplify and automate tests for several applications from fiber reel validation measurements to Long-haul, Metro or PON applications**
- **Tri-wavelength OTDR modules simplify multiple band fiber characterization including O-, S-, C- and L-band**
- **OTDR, Loss Test Set and VFL in a single module to reduce inventory and increase portability**
- **Exclusive, multi-wavelength ORL application (optional) provides an advanced troubleshooting mode to quickly locate areas of concern**

Reduced cost of measurement:

- **Ultra-fast data acquisition, up to 80% of dynamic range in under 30 seconds**
- **Real time updates of 1/10 second facilitates easier connector and splice optimization**

Attendees' Choice Awards Winner
LIGHTWAVE
NFOEC 2003

2003 FROST & SULLIVAN
Product Innovation Award

CMA 5200 Series OTDR Module Specifications			
Module	**CMA 5225**	**CMA 5235**	**CMA 5239**
Fiber Type	Single-mode	Single-mode	Single-mode
Center Wavelength	1310 nm ±20 nm 1550 nm ±20 nm	1310 nm ±20 nm 1550 nm ±20 nm	1550 nm ±20 nm 1625 nm ±15 nm
Spectral Width (RMS)	1310 nm: <15 nm 1550 nm: <15 nm	1310 nm: <15 nm 1550 nm: <15 nm	1550 nm: <15 nm 1625 nm: <15 nm
Dynamic Range[1]	1310 nm: 37 dB 1550 nm: 36 dB	1310 nm: 40 dB 1550 nm: 40 dB	1550 nm: 40 dB 1625 nm: 40 dB
Initial Reflective Deadzone[2]	1310 nm: 4 m 1550 nm: 3.5 m	1310 nm: 4 m 1550 nm: 3 m	1550 nm: 3 m 1625 nm: 3 m
Initial Non-Reflective Deadzone[3]	1310 nm: 9 m 1550 nm: 9 m	1310 nm: 8 m 1550 nm: 6 m	1550 nm: 6 m 1625 nm: 6 m
Linearity	0.04 dB/dB	0.04 dB/dB	0.04 dB/dB
Pulsewidth	5 ns to 20 µs	5 ns to 20 µs	5 ns to 20 µs
Module	**CMA 5245**	**CMA 5249**	**CMA 5254**
Fiber Type	Single-mode	Single-mode	Single-mode
Center Wavelength	1310 nm ±20 nm 1550 nm ±20 nm	1550 nm ±20 nm 1625 nm ±15 nm	1550 nm ±20 nm
Spectral Width (RMS)	1310 nm: <15 nm 1550 nm: <15 nm	1550 nm: <15 nm 1625 nm: <15 nm	1550 nm: <15 nm
Dynamic Range[1]	1310 nm: 43 dB 1550 nm: 45 dB	1550 nm: 45 dB 1625 nm: 43 dB	1550 nm: 50 dB
Initial Reflective Deadzone[2]	1310 nm: 5 m 1550 nm: 5 m	1550 nm: 5 m 1625 nm: 5 m	1550 nm: 5 m
Initial Non-Reflective Deadzone[3]	1310 nm: 10 m 1550 nm: 10 m	1550 nm: 10 m 1625 nm: 10 m	1550 nm: 10 m
Linearity	0.04 dB/dB	0.04 dB/dB	0.04 dB/dB
Pulsewidth	5 ns to 30 µs	5 ns to 30 µs	5 ns to 30 µs
Distance Resolution	0.0001 km, 0.1 m, 1 ft, 0.0001 mi		
Distance Range Setting	5, 20, 50, 125, 250, 300 km		
Loss Resolution	0.001 dB		
Distance Sampling[4] **(Range Dependent)**	0.125, 0.25, 0.5, 1, 2, 4, 8, 16 m		
Data Points	Up to 256,000		
Distance Accuracy	0.0025% of distance measurement ± distance resolution ± index uncertainty		
Laser Safety	Meets IEC60825-1 Class I and CDRH Class 1 Requirements (Eye Safe) 21 CFR 1040		
Optical Connector	Universal (Uses UC-130-XX adapters)		

Notes:

Specifications are subject to change without notice

[1] SNR=1 with up to 256k averages (typical, subtract approximately 2 dB of range to 98% peak noise. Bellcore TR-TSY-000196 Issue 2)

[2] Using Bellcore TR-TSY-000196 Issue 2 (typical)

[3] Deadzones measured on -45 dB reflections (typical)

[4] Wavelength dependent

Please refer to the CMA 5000 Order Guide for valid NetTest module configurations and ordering information at **www.nettest.com/products/cma5000/literature.php**.

CMA 5200 Series OTDR Module Specifications

Module	CMA 5236	CMA 5246	CMA 5266	CMA 5269
Fiber Type	Single-mode	Single-mode	Multimode (62.5 µm)	Multimode (50 µm)
Center Wavelength	1310 nm ±20 nm 1550 nm ±20 nm 1625 nm ±15 nm	1310 nm ±20 nm 1550 nm ±20 nm 1625 nm ±15 nm	850 nm ±30 nm 1300 nm ±30 nm	850 nm ±30 nm 1300 nm ±30 nm
Spectral Width (RMS)	1310 nm: <15 nm 1550 nm: <15 nm 1625 nm: <15 nm	1310 nm: <15 nm 1550 nm: <15 nm 1625 nm: <15 nm	850 nm: <15 nm 1300 nm: <15 nm	850 nm: <15 nm 1300 nm: <15 nm
Dynamic Range [1]	1310 nm: 40 dB 1550 nm: 40 dB 1625 nm: 40 dB	1310 nm: 43 dB 1550 nm: 45 dB 1625 nm: 43 dB	850 nm: 24 dB 1300 nm: 26 dB	850 nm: 24 dB 1300 nm: 26 dB
Initial Reflective Deadzone [2]	1310 nm: 4 meters 1550 nm: 3 meters 1625 nm: 3 meters	1310 nm: 6 meters 1550 nm: 5 meters 1625 nm: 5 meters	850 nm: 2.5 meters 1300 nm: 2.5 meters	850 nm: 3 meters 1300 nm: 3 meters
Initial Non-Reflective Deadzone [3]	1310 nm: 8 meters 1550 nm: 6 meters 1625 nm: 6 meters	1310 nm: 10 meters 1550 nm: 10 meters 1625 nm: 10 meters	850 nm: 5 meters 1300 nm: 7 meters	850 nm: 5 meters 1300 nm: 7 meters
Linearity	0.04 dB/dB	0.04 dB/dB	0.04 dB/dB	0.04 dB/dB
Pulsewidth[4]	5 ns to 20 µs	5 ns to 30 µs	5 ns to 1 µs	5 ns to 1 µs
Distance Resolution	0.0001 km, 0.1 m, 1 ft, 0.0001 mi	0.0001 km, 0.1 m, 1 ft, 0.0001 mi	0.0001 km, 0.1 m, 1 ft, 0.0001 mi	0.0001 km, 0.1 m, 1 ft, 0.0001 mi
Distance Range Setting	5, 20, 50, 125, 250, 300 km	5, 20, 50, 125, 250, 300 km	5, 20, 50, 125 km	5, 20, 50, 125 km
Loss Resolution	0.001 dB	0.001 dB	0.001 dB	0.001 dB
Distance Sampling[4] **(Range Dependent)**	0.125, 0.25, 0.5, 1, 2, 4, 8, 16 m	0.125, 0.25, 0.5, 1, 2, 4, 8, 16 m	0.125, 0.25, 0.5, 1, 2, 4, 8 m	0.125, 0.25, 0.5, 1, 2, 4, 8 m
Data Points	Up to 256,000	Up to 256,000	Up to 256,000	Up to 256,000
Distance Accuracy	0.0025% of distance measurement ± distance resolution ± index uncertainty			
Laser Safety	Meets IEC60825-1 Class I and CDRH Class 1 Requirements (Eye Safe) 21 CFR 1040			
Optical Connector	Universal (Uses UC-130-XX adapters)			

Additional CMA 5200 Series OTDR Module Specifications

Module	Wavelength	Dynamic Range	Fiber Type
CMA 5223	1310 nm	35 dB	Single-mode
CMA 5224	1550 nm	35 dB	Single-mode
CMA 5233	1310 nm	40 dB	Single-mode
CMA 5234	1550 nm	40 dB	Single-mode
CMA 5238	1625 nm	40 dB	Single-mode
CMA 5243	1310 nm	43 dB	Single-mode
CMA 5244	1550 nm	45 dB	Single-mode
CMA 5248	1625 nm	43 dB	Single-mode
CMA 5264	850 nm	24 dB	62.5 µm Multimode
CMA 5265	1300 nm	26 dB	62.5 µm Multimode
CMA 5267	850 nm	24 dB	50 µm Multimode
CMA 5268	1300 nm	26 dB	50 µm Multimode

Light Source (optional - factory installed)		
	Single-mode	**Multimode**
Type	Laser	LED
Wavelengths	Same as corresponding OTDR module	850/1300 nm ± 20 nm
Output	-8 dBm (min.)	-25 dBm (min.)
Output Fiber	9/125 µm single-mode fiber	62.5 or 50 µm multimode
Optical Connector	Universal (uses UC-130-XX adapters)	Universal (uses UC-130-XX adapters)
Modes of Operation	CW, 1 KHz and 2 KHz	CW, 1 KHz and 2 KHz
Stability [1]	±0.2 dB (8 hours)	±0.1 dB (8 hours)
Spectral Width (RMS)	<15 nm	<50/<125 FWHM
Safety	Meets IEC60825-1 Class I and CDRH Class 1 Requirements (Eye Safe) 21 CFR 1040	

Notes:

[1] At 23° C

[2] Specification applies to +10 dBm meter, not to +20 dBm meter

Specifications are subject to change without notice

Power Meter (optional - factory installed)	
Detector Type	InGaAs
Wavelength Range	780 - 1800 nm
Range	+10 to -55 dBm or +20 to -45 dBm
Calibrated Wavelengths	850, 1300, 1310, 1550, 1625 nm
Optical Connector	Universal (uses LP-XX adapter caps)
Resolution	0.01 dB, 0.01% Watts
Store Reference Mode	Yes
Accuracy [2]	±4% @ +5 dBm to -50 dBm ±8% @ +10 dBm to -5 dBm, -50 dBm to -55 dBm
Linearity	±0.10 dB, +5 dBm to -55 dBm

Visual Fault Locator (optional - factory installed)	
Wavelength	650 nm ±20 nm
Output (max)	0 dBm into 9/125 µm
Transmission Mode	CW or 2 Hz
Output Fiber	9/125 µm, SM fiber
Optical Connector	2.5 mm Universal
Safety	IEC 60825-1 Class II, FDA (21 CFR 1040. 10 Class 2)

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