GN NetTest CMA4000 CMA4436 Specs

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CMA4000 Specifications

Display VGA LCD Display (8.4" color or 8.2" monochrome)

Mass Storage Up to 125 traces internal storage. Over 65,000 traces with optional hard drive.

Up to 180 traces for a standard 3.5 inch, 1.44 MB floppy disk.

Floppy disk drive comes standard

Stored Data Points up to 16,000

Group Refractive Index Setting 1.400000 - 1.699999

Loss Modes ORL, 2-point, 2-point LSA, dB/KM, dB/KM LSA, splice, reflectance

Trace Compare Modes Overlay, Delta Trace Compare, Align

Data Acquisition Real Time, Fast Scan, Medium Scan, Slow Scan, Timed Average (user selectable)

Information Output Trace display, FAS event table, integrated trace display with event information window, header page,

measurement parameters, ASCII report

Analysis High speed integrated fiber analysis

Vertical Scale Settings 0.125/0.25/0.5/1/2/4/8 dB (module dependent)

Horizontal Scale Settings 0.001 km/div. to 0.448 km/div @ 2 km; 0.001 km/div. to 57.304 km/div. @ 256 km (IOR = 1.5)

I/O Ports Standard: Integral alpha-numeric keyboard, (2) RS-232 Serial, (1) Parallel, VGA, Mouse,

External Keyboard Port

Language Capability English standard (others per request and may require hard drive option)

Physical Dimensions & Weight 9.5" H x 13.5" W x 3.75" D (24.1 x 34.3 x 9.5 cm) / 11.0 lbs. (4.9 kg)

Includes mainframe, battery and one module

Power

Power Supply Autoswitching 92-132 VAC, 47-63 Hz [weight 1.7 lbs. (.77 kg)]

184-264 VAC, 47-63 Hz

Battery Sealed Lead Acid Battery Pack [weight 1.4 lbs (0.63 kg)]

Battery Life up to 9 hours maximum per battery,

depending on operating mode

Recharge Time 1.5 - 2 hours

Environmental

Operation: AC Power Battery

Temperature 0°C to 45°C (32°F to 122°F) 0°C to 40°C (32°F to 104°F)

Humidity 95% RH max., non-condensing 95% RH max., non-condensing

Maximum Altitude 50,000 feet 50,000 feet

Storage:

Temperature -25°C to 60°C (-13°F to 140°F) Humidity 95% RH max., non-condensing

Maximum Altitude 50,000 feet

Optical Module Specifications [All measurements made using FC/SPC connectors at 25°C (77°F)]

Models	4415	4414	4413
enter Wavelength	1310 nm ± 20 nm	1550 nm ± 30 nm	1310 nm ± 20 nm
	1550 nm ± 30 nm		
iber Type	Singlemode 9/125µ	Singlemode 9/125µ	Singlemode 9/125µ
pectral Width (RMS)	1310 nm: ≤ 10 nm	1550 nm: ≤ 10 nm	1310 nm: ≤ 10 nm
	1550 nm: ≤ 10 nm		
ynamic Range ¹	1310 nm: 30 dB	1550 nm: 28 dB	1310 nm: 30 dB
(SNR = 1)	1550 nm: 28 dB		
nitial Reflective Deadzone ²	1310 nm: 3 meters (typical)	1550 nm: 3 meters (typical)	1310 nm: 3 meters (typical)
	1550 nm: 3 meters (typical)		
nitial Non-Reflective Deadzone ²	1310 nm: 10 meters (typical)	1550 nm: 12 meters (typical)	1310 nm: 10 meters (typical)
	1550 nm: 12 meters (typical)		
Pulsewidth	10 ns to 10µs		
Distance Resolution	0.0001 km; 0.1 meters; 0.001 kft, 1	ft, 0.0001 mi	
Distance Sampling	0.25, 0.5, 1, 2, 4, 8, 16 meters (rang	ge dependent)	
Distance Accuracy	0.0025% of distance measurement	± distance resolution ± index uncertainty	
Distance Range Setting	2/4/8/16/32/64/128/256 km	·	
oss Resolution	0.001 dB		
aser Safety	Meets CDRH Class 1 Requirements	(Eye Safe) 21 CFR	
/lodels	4425	4424	4423
enter Wavelength	1310 nm ± 20 nm	1550 nm ± 20 nm	1310 nm ± 20 nm
	1550 nm ± 20 nm		
iber Type	Singlemode 9/125µ	Singlemode 9/125µ	Singlemode 9/125µ
pectral Width (RMS)	1310 nm: ≤ 10 nm	1550 nm: ≤ 10 nm	1310 nm: ≤ 10 nm
	1550 nm: ≤ 10 nm		
ynamic Range ¹	1310 nm: 36 dB	1550 nm: 34 dB	1310 nm: 36 dB
(SNR = 1)	1550 nm: 34 dB		
nitial Reflective Deadzone ²	1310 nm: 3 meters (typical)	1550 nm: 3 meters (typical)	1310 nm: 3 meters (typical)
	1550 nm: 3 meters (typical)	.,,	
nitial Non-Reflective Deadzone ²	1310 nm: 10 meters (typical)	1550 nm: 12 meters (typical)	1310 nm: 10 meters (typical)
	1550 nm: 12 meters (typical)	,	,
ulsewidth	10 ns to 10µs		
vistance Resolution	0.0001 km; 0.1 meters; 0.001 kft, 1	ft 0 0001 mi	
vistance Sampling	0.25, 0.5, 1, 2, 4, 8, 16 meters (rang		
Distance Accuracy		± distance resolution ± index uncertainty	
Distance Range Setting	2/4/8/16/32/64/128/256 km	i distance resolution i mack uncertainty	
oss Resolution	0.001 dB		
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acer Safety			
aser Safety	Meets CDRH Class 1 Requirements	(Lyc Jaic) 21 Cit	
•			4534
/lodels	4438	4436	4534 1550 nm ± 20 nm
/lodels		4436 1310 nm ± 20 nm	4534 1550 nm ± 20 nm
Models Tenter Wavelength	4438 1550 nm ± 20 nm	4436 1310 nm ± 20 nm 1550 nm ± 20 nm	1550 nm ± 20 nm
Todels enter Wavelength ber Type	4438 1550 nm ± 20 nm Singlemode	4436 1310 nm ± 20 nm 1550 nm ± 20 nm Singlemode 9/125μ	1550 nm ± 20 nm Singlemode 9/125µ
Models Tenter Wavelength	4438 1550 nm ± 20 nm	4436 1310 nm ± 20 nm 1550 nm ± 20 nm Singlemode 9/125µ 1310 nm: ≤ 10 nm	1550 nm ± 20 nm
enter Wavelength iber Type pectral Width (RMS)	4438 1550 nm ± 20 nm Singlemode ≤15 nm	4436 1310 nm ± 20 nm 1550 nm ± 20 nm Singlemode 9/125µ 1310 nm: ≤ 10 nm 1550 nm: ≤ 10 nm	1550 nm ± 20 nm Singlemode 9/125µ 1550 nm: ≤ 10 nm
renter Wavelength iber Type pectral Width (RMS)	4438 1550 nm ± 20 nm Singlemode	4436 1310 nm ± 20 nm 1550 nm ± 20 nm Singlemode 9/125μ 1310 nm: ≤ 10 nm 1550 nm: ≤ 10 nm 1310 nm: 40 dB	1550 nm ± 20 nm Singlemode 9/125µ
Models Jenter Wavelength Jenter Type pectral Width (RMS) Dynamic Range 1 (SNR = 1)	4438 1550 nm ± 20 nm Singlemode ≤15 nm 46.0 dB	4436 1310 nm ± 20 nm 1550 nm ± 20 nm Singlemode 9/125μ 1310 nm: ≤ 10 nm 1550 nm: ≤ 10 nm 1310 nm: 40 dB 1550 nm: 40 dB	1550 nm ± 20 nm Singlemode 9/125µ 1550 nm: ≤ 10 nm 1550 nm: 40 dB
enter Wavelength iber Type pectral Width (RMS) lynamic Range 1 (SNR = 1)	4438 1550 nm ± 20 nm Singlemode ≤15 nm	4436 1310 nm ± 20 nm 1550 nm ± 20 nm Singlemode 9/125μ 1310 nm: ≤ 10 nm 1550 nm: ≤ 10 nm 1310 nm: 40 dB 1550 nm: 40 dB 1310 nm: 3.5 meters (typical)	1550 nm ± 20 nm Singlemode 9/125µ 1550 nm: ≤ 10 nm
renter Wavelength siber Type spectral Width (RMS) synamic Range ¹ (SNR = 1) shitial Reflective Deadzone ²	4438 1550 nm ± 20 nm Singlemode ≤15 nm 46.0 dB 3 meters	4436 1310 nm ± 20 nm 1550 nm ± 20 nm Singlemode 9/125μ 1310 nm: ≤ 10 nm 1550 nm: ≤ 10 nm 1310 nm: 40 dB 1550 nm: 40 dB 1310 nm: 3.5 meters (typical) 1550 nm: 3.5 meters (typical)	1550 nm ± 20 nm Singlemode 9/125µ 1550 nm: ≤ 10 nm 1550 nm: 40 dB 1550 nm: 3.5 meters (typical
renter Wavelength siber Type spectral Width (RMS) synamic Range ¹ (SNR = 1) shitial Reflective Deadzone ²	4438 1550 nm ± 20 nm Singlemode ≤15 nm 46.0 dB	4436 1310 nm ± 20 nm 1550 nm ± 20 nm Singlemode 9/125μ 1310 nm: ≤ 10 nm 1550 nm: ≤ 10 nm 1310 nm: 40 dB 1550 nm: 40 dB 1310 nm: 3.5 meters (typical) 1550 nm: 3.5 meters (typical) 1310 nm: 6 meters (typical)	1550 nm ± 20 nm Singlemode 9/125µ 1550 nm: ≤ 10 nm 1550 nm: 40 dB
Models enter Wavelength liber Type pectral Width (RMS) rynamic Range ¹ (SNR = 1) hitial Reflective Deadzone ²	4438 1550 nm ± 20 nm Singlemode ≤15 nm 46.0 dB 3 meters	4436 1310 nm ± 20 nm 1550 nm ± 20 nm Singlemode 9/125μ 1310 nm: ≤ 10 nm 1550 nm: ≤ 10 nm 1310 nm: 40 dB 1550 nm: 40 dB 1310 nm: 3.5 meters (typical) 1550 nm: 3.5 meters (typical) 1310 nm: 6 meters (typical)	1550 nm ± 20 nm Singlemode 9/125µ 1550 nm: ≤ 10 nm 1550 nm: 40 dB 1550 nm: 3.5 meters (typical)
Models enter Wavelength iber Type pectral Width (RMS) Pynamic Range ¹ (SNR = 1) nitial Reflective Deadzone ² ulsewidth	4438 1550 nm ± 20 nm Singlemode ≤15 nm 46.0 dB 3 meters 5 meters	4436 1310 nm ± 20 nm 1550 nm ± 20 nm Singlemode 9/125μ 1310 nm: ≤ 10 nm 1550 nm: ≤ 10 nm 1310 nm: 40 dB 1550 nm: 40 dB 1310 nm: 3.5 meters (typical) 1550 nm: 3.5 meters (typical) 1310 nm: 6 meters (typical) 1550 nm: 6 meters (typical) 10 ns to 20μs (wavelength dependent)	1550 nm ± 20 nm Singlemode 9/125µ 1550 nm: ≤ 10 nm 1550 nm: 40 dB 1550 nm: 3.5 meters (typical)
Models enter Wavelength liber Type pectral Width (RMS) rynamic Range ¹ (SNR = 1) nitial Reflective Deadzone ² ulsewidth listance Resolution	4438 1550 nm ± 20 nm Singlemode ≤15 nm 46.0 dB 3 meters 5 meters 0.0001 km; 0.1 meters; 0.001 kft, 1	4436 1310 nm ± 20 nm 1550 nm ± 20 nm Singlemode 9/125μ 1310 nm: ≤ 10 nm 1550 nm: ≤ 10 nm 1310 nm: 40 dB 1550 nm: 40 dB 1310 nm: 3.5 meters (typical) 1550 nm: 3.5 meters (typical) 1310 nm: 6 meters (typical) 1550 nm: 6 meters (typical) 10 ns to 20μs (wavelength dependent) ft, 0.001 mi	1550 nm ± 20 nm Singlemode 9/125µ 1550 nm: ≤ 10 nm 1550 nm: 40 dB 1550 nm: 3.5 meters (typical)
Models enter Wavelength iber Type pectral Width (RMS) Pynamic Range ¹ (SNR = 1) nitial Reflective Deadzone ² mitial Non-Reflective Deadzone ² ulsewidth pistance Resolution pistance Sampling	4438 1550 nm ± 20 nm Singlemode ≤15 nm 46.0 dB 3 meters 5 meters 0.0001 km; 0.1 meters; 0.001 kft, 1 0.25, 0.5, 1, 2, 4, 8, 16 meters (rang	4436 1310 nm ± 20 nm 1550 nm ± 20 nm Singlemode 9/125μ 1310 nm: ≤ 10 nm 1550 nm: ≤ 10 nm 1310 nm: 40 dB 1550 nm: 40 dB 1310 nm: 3.5 meters (typical) 1550 nm: 3.5 meters (typical) 1550 nm: 6 meters (typical) 1550 nm: 6 meters (typical) 10 ns to 20μs (wavelength dependent) ft, 0.001 mi ge dependent)	1550 nm ± 20 nm Singlemode 9/125µ 1550 nm: ≤ 10 nm 1550 nm: 40 dB 1550 nm: 3.5 meters (typical)
Models Genter Wavelength iber Type pectral Width (RMS) Dynamic Range ¹ (SNR = 1) nitial Reflective Deadzone ² nitial Non-Reflective Deadzone ² ulsewidth Distance Resolution Distance Sampling Distance Accuracy	4438 1550 nm ± 20 nm Singlemode ≤15 nm 46.0 dB 3 meters 5 meters 0.0001 km; 0.1 meters; 0.001 kft, 1 0.25, 0.5, 1, 2, 4, 8, 16 meters (rang 0.0025% of distance measurement ± 10.0000000000000000000000000000000000	4436 1310 nm ± 20 nm 1550 nm ± 20 nm Singlemode 9/125μ 1310 nm: ≤ 10 nm 1550 nm: ≤ 10 nm 1310 nm: 40 dB 1550 nm: 40 dB 1310 nm: 3.5 meters (typical) 1550 nm: 3.5 meters (typical) 1310 nm: 6 meters (typical) 1550 nm: 6 meters (typical) 10 ns to 20μs (wavelength dependent) ft, 0.001 mi	1550 nm ± 20 nm Singlemode 9/125µ 1550 nm: ≤ 10 nm 1550 nm: 40 dB 1550 nm: 3.5 meters (typical)
Models Genter Wavelength iber Type pectral Width (RMS) Dynamic Range 1	4438 1550 nm ± 20 nm Singlemode ≤15 nm 46.0 dB 3 meters 5 meters 0.0001 km; 0.1 meters; 0.001 kft, 1 0.25, 0.5, 1, 2, 4, 8, 16 meters (rang 0.0025% of distance measurement ± 2/4/8/16/32/64/128/256 km	4436 1310 nm ± 20 nm 1550 nm ± 20 nm Singlemode 9/125μ 1310 nm: ≤ 10 nm 1550 nm: ≤ 10 nm 1310 nm: 40 dB 1550 nm: 40 dB 1310 nm: 3.5 meters (typical) 1550 nm: 3.5 meters (typical) 1550 nm: 6 meters (typical) 1550 nm: 6 meters (typical) 10 ns to 20μs (wavelength dependent) ft, 0.001 mi ge dependent)	1550 nm ± 20 nm Singlemode 9/125µ 1550 nm: ≤ 10 nm 1550 nm: 40 dB 1550 nm: 3.5 meters (typical)
Models Genter Wavelength iber Type pectral Width (RMS) Dynamic Range ¹ (SNR = 1) nitial Reflective Deadzone ² nitial Non-Reflective Deadzone ² ulsewidth Distance Resolution Distance Sampling Distance Accuracy	4438 1550 nm ± 20 nm Singlemode ≤15 nm 46.0 dB 3 meters 5 meters 0.0001 km; 0.1 meters; 0.001 kft, 1 0.25, 0.5, 1, 2, 4, 8, 16 meters (rang 0.0025% of distance measurement ± 10.0000000000000000000000000000000000	4436 1310 nm ± 20 nm 1550 nm ± 20 nm Singlemode 9/125μ 1310 nm: ≤ 10 nm 1550 nm: ≤ 10 nm 1310 nm: 40 dB 1550 nm: 40 dB 1310 nm: 3.5 meters (typical) 1550 nm: 3.5 meters (typical) 1550 nm: 6 meters (typical) 1550 nm: 6 weters (typical) 10 ns to 20μs (wavelength dependent) ft, 0.001 mi ge dependent) ± distance resolution ± index uncertainty	1550 nm ± 20 nm Singlemode 9/125µ 1550 nm: ≤ 10 nm 1550 nm: 40 dB 1550 nm: 3.5 meters (typical)

Notes:

^{1.} Subtract approximately 2 dB of range to 98% peak noise. Bellcore TR-TSY-000196 Issue 2 $\,$

^{2.} Using Bellcore TR-TSY-000196 Issue 2. Deadzones measured on -45 dB reflections.

Models	4442	4441	4440
Center Wavelength	850 nm ± 20 nm	1300 nm ± 20 nm	850 nm ± 20 nm
	1300 nm ± 20 nm		
Fiber Type	Multimode	Multimode	Multimode
Spectral Width (RMS)	850 nm: ≤ 10 nm	1300 nm: ≤ 10 nm	850 nm: ≤ 10 nm
_	1300 nm: ≤ 10 nm		
Dynamic Range ¹	850 nm: 23 dB	1300 nm: 26 dB	850 nm: 23 dB
(SNR = 1)	1300 nm: 26 dB		
Initial Reflective Deadzone ²	850 nm: 3.5 meters (typical)	1300 nm: 3 meters (typical)	850 nm: 3.5 meters (typical)
	1300 nm: 3 meters (typical)		
Initial Non-Reflective Deadzone ²	850 nm: 6.5 meters (typical)	1300 nm: 7 meters (typical)	850 nm: 6.5 meters (typical)
	1300 nm: 7 meters (typical)		
Pulsewidth	4 ns to 1µs (wavelength dependent)		
Distance Resolution	0.0001 km; 0.1 meters; 0.001 kft, 1 ft,	0.0001 mi	
Distance Sampling	0.25, 0.5, 1, 2, 4, 8 meters (range dependent)		
Distance Accuracy	0.0025% of distance measurement ± distance resolution ± index uncertainty		
Distance Range Setting	2/4/8/16/32/64 km		
Loss Resolution	0.001 dB		
Laser Safety	Meets CDRH Class 1 Requirements (Eye	e Safe) 21 CFR	

Models	4456	4457
Center Wavelength	850 nm ± 20 nm	850 nm ± 20 nm
	1300 nm ± 20 nm	1300 nm ± 20 nm
	1310 nm ± 20 nm	1310 nm ± 20 nm
	1550 nm ± 20 nm	1550 nm ± 30 nm
Fiber Type	Multimode and Singlemode	Multimode and Singlemode
Spectral Width (RMS)	850 nm: ≤ 10 nm	850 nm: ≤ 10 nm
	1300 nm: ≤ 10 nm	1300 nm: ≤ 10 nm
	1310 nm: ≤ 10 nm	1310 nm: ≤ 10 nm
	1550 nm: ≤ 10 nm	1550 nm: ≤ 10 nm
Dynamic Range ¹	850 nm: 23 dB	850 nm: 21 dB
(SNR = 1)	1300 nm: 26 dB	1300 nm: 24 dB
	1310 nm: 21.5 dB	1310 nm: 32 dB
	1550 nm: 21 dB	1550 nm: 30 dB
Initial Reflective Deadzone ²	850 nm: 3.5 meters (typical)	850 nm: 3.5 meters (typical)
	1300 nm: 2.5 meters (typical)	1300 nm: 2.5 meters (typical)
	1310 nm: 3 meters (typical)	1310 nm: 3 meters (typical)
_	1550 nm: 3 meters (typical)	1550 nm: 3 meters (typical)
Initial Non-Reflective Deadzone ²	850 nm: 6.5 meters (typical)	850 nm: 6.5 meters (typical)
	1300 nm: 7 meters (typical)	1300 nm: 7 meters (typical)
	1310 nm: 10 meters (typical)	1310 nm: 15 meters (typical)
	1550 nm: 12 meters (typical)	1550 nm: 20 meters (typical)
Pulsewidth	4 ns to 10 μs (wavelength dependent)	4 ns to 10 μs (wavelength dependent)
Distance Resolution	0.0001 km; 0.1 meters; 0.001 kft, 1 ft, 0.0001 mi	0.0001 km; 0.1 meters; 0.001 kft, 1 ft, 0.0001 mi
Distance Sampling	0.25, 0.5, 1, 2, 4, 8, 16 meters (range dependent)	0.25, 0.5, 1, 2, 4, 8, 16 meters (range dependent)
Distance Accuracy	0.0025% of distance measurement ± distance	0.0025% of distance measurement ± distance
	resolution ± index uncertainty	resolution ± index uncertainty
Distance Range Setting	2/4/8/16/32/64/128/256 km (wavelength dependent)	2/4/8/16/32/64/128/256 km (wavelength dependent)
Loss Resolution	0.001 dB	0.001 dB
Laser Safety	Meets CDRH Class 1 Requirements (Eye Safe) 21 CFR	Meets CDRH Class 1 Requirements (Eye Safe) 21 CFR

Notes:

- 1. Subtract approximately 2 dB of range to 98% peak noise. Bellcore TR-TSY-000196 Issue 2 2. Using Bellcore TR-TSY-000196 Issue 2. Deadzones measured on -45 dB reflections.

1310 mm ± 20 nm 1310 mm ± 15 nm 1310 nm ± 3 d B 1240 nm ± 3 d B 1240 nm ± 3 d B 1240 nm ± 3 meters (typical) 1310 nm ± 10 meters (typical) 10.0001 km; 0.1 meters	Models	4461	4462
Singlemode Sin	Center Wavelength	1240 nm ± 6 nm	1240 nm ± 6 nm
1240 nm: 2 15 nm 1240 nm: 2 15 nm 1240 nm: 3 15 nm 1310 nm: 3 16 dB 1310 nm: 3 4 dB 1310 nm: 3 meters (typical) 1310 nm: 10 nm			1310 nm ± 20 nm
1240 nm: 36 dB	Fiber Type	Singlemode	Singlemode
200 mm; 3 d B 1240 mm; 3 meters (typical) 1240 mm; 3 meters (typical) 1240 mm; 3 meters (typical) 1240 mm; 10 meters (typical) 1240 mm; 1	Spectral Width (RMS)	1240 nm: ≤ 15 nm	1240 nm: ≤ 15 nm
1310 mm: 34 dB 1320 mm: 3 meters (typical) 1310 mm: 3 meters (typical) 1310 mm: 3 meters (typical) 1310 mm: 10 meters (typical) 1320 mm: 10 mm: 13 m	4		1310 nm: ≤ 15 nm
nitial Reflective Deadzone ² 1240 nm: 3 meters (typical) 1340 nm: 3 meters (typical) 1310 nm: 10 meters (typical) 1325, 0.5, 1, 2, 4, 8, 16 meters (range dependent) 10,0025 % of distance measurement ± distance resolution ± index uncertainty 24/81/63/24/4128/256 km 10,001 dB 10,001 dB 1240 nm: 2 maters (typical) 1240 mm ± 6 nm 1550 nm ± 20 nm 1550 nm ± 1240 nm 1550 nm ± 10 nm 1625 nm: 15 nm 1625 nm: 2 meters (typical) 1550 nm: 1 meters (typical) 1550 nm: 2 meters (typical) 1550 nm: 1 meters (typical) 1550 nm: 2 meters (typical) 1550 nm: 1 meter		1240 nm: 36 dB	1240 nm: 34 dB
1310 mm: 3 meters (typical) 1240 nm: 10 meters (typical) 1310 nm: 3 meters (typical) 1310 nm: 10 meters (typical) 1320 nm: 10 meters (typical) 1320 nm: 10 nm ters (typical) 1320 nm: 15 nm ters (typical) 1320 nm: 10 nm ters			
nitial Non-Reflective Deadzone ² 1240 nm: 10 meters (typical) 1310 nm: 10 meters (typical) 0.0001 km; 0.1 meters; 0.001 kft, 1 ft, 0.0001 mi 0.00025% of distance measurement ± distance resolution ± index uncertainty resolution ± index uncertainty resolution ± index uncertainty 2/4/8/16/2/64/12/82/56 km 0.001 d8	nitial Reflective Deadzone ²	1240 nm: 3 meters (typical)	
Distance Resolution			
ulsewidth 0.0001 km; 0.1 meters; 0.001 kft, 1 ft, 0.0001 mi 0.0001 km; 0.1 meters; 0.001 kft, 1 ft, 0.0001 mi ulstance Resolution 0.025% of distance measurement ± distance 0.025% of distance measurement ± distance ulstance Accuracy 0.0025% of distance measurement ± distance 0.0025% of distance measurement ± distance ulstance Range Setting 2/4/8/16/32/64/128/256 km 0.0025% of distance measurement ± distance users Fafety 2/4/8/16/32/64/128/256 km 0.001 dl 0.00 1 dl 0.001 dl 0.001 dl asers Fafety 4463 4464 Acnter Wavelength 1240 nm ± 6 nm 1625 nm ± 10 nm iber Type 1550 nm ± 20 nm 1625 nm ± 10 nm iber Type 5inglemode 5inglemode pertari Width (RMS) 1240 nm ± 5 nm 1240 nm ± 6 nm 1550 nm; 2 15 nm 1625 nm; 2 10 nm 1625 nm; 2 10 nm yoynamic Range ¹ 1240 nm; 36 dl 1240 nm; 36 dl 10x10 nm; 3 meters (typical) 1625 nm; 36 dl 1625 nm; 36 dl 10x10 nm; 3 meters (typical) 1625 nm; 36 dl 1625 nm; 36 dl 10x10 nm; 3 meters (typical) 1625 nm; 36 dl	nitial Non-Reflective Deadzone ²	1240 nm: 10 meters (typical)	. 31
Distance Sampling 0.25, 0.5, 1.2, 4, 8, 16 meters (range dependent) 0.25, 0.5, 1.2, 4, 8, 16 meters (range dependent) 0.0025% of distance measurement ± distance resolution = index uncertainty 24/8716/32/64/128/256 km 0.001 dB 0.0001 km; 0.1 meters (typical) 0.25, 0.5, 1.2, 4, 8, 16 meters (typical) 0.001 km; 0.1 meters (typical) 0.250 km ± 10 nm 0.0001 km; 0.1 meters (typical) 0.0025% of distance measurement ± distance resolution = index uncertainty 0.0025% of distance measurement ± distance resolution = index uncertainty 0.0025% of distance measurement ± distance resolution = index uncertainty 0.0001 km; 0.1 meters (typical) 0.0001 km; 0.1 meters	Pulsewidth		1310 IIII. 10 IIIcters (typical)
Distance Sampling 0.25, 0.5, 1.2, 4, 8, 16 meters (range dependent) 0.25, 0.5, 1.2, 4, 8, 16 meters (range dependent) 0.0025% of distance measurement ± distance resolution ± index uncertainty 2/48/16/22/62/64/128/256 km 0.001 dB	Distance Resolution	0.0001 km; 0.1 meters; 0.001 kft, 1 ft, 0.0001 mi	0.0001 km; 0.1 meters; 0.001 kft, 1 ft, 0.0001 mi
Distance Accuracy 0.0025% of distance measurement ± distance resolution ± index uncertainty resolution ± index uncertain	Distance Sampling		
resolution ± index uncertainty 2/48/16/32/64/128/256 km 0.001 dB 0.001 km; 0.1 meters (typical) 0.002 dB 0.002 dB 0.002 dB 0.002 dB 0.002 dB 0.002 dB 0.003 km; 0.1 meters; (1001 mi) 0.003 km; 0.1 meters; 0.001 kft, 1 ft, 0.0001 mi 0.003 km; 0.1 meters; 0.001 k	Distance Accuracy		
Models	•	resolution ± index uncertainty	resolution ± index uncertainty
Models	Distance Range Setting	2/4/8/16/32/64/128/256 km	2/4/8/16/32/64/128/256 km
### ### ### ### ### ### ### ### ### ##		0.001 dB	0.001 dB
Senter Wavelength 1240 nm ± 6 nm 1550 nm ± 20 nm 1625 nm ± 10 nm 1625 nm ± 150 nm ± 20 nm 1625 nm ± 10	aser Safety	Meets CDRH Class 1 Requirements (Eye Safe) 21 CFR	Meets CDRH Class 1 Requirements (Eye Safe) 21 CF
Senter Wavelength 1240 nm ± 6 nm 1550 nm ± 20 nm 1625 nm ± 10 nm 1625 nm ± 150 nm ± 20 nm 1625 nm ± 10 nm			
1550 nm ± 20 nm 1625 nm ± 10 nm 1625 nm ± 10 nm 1625 nm ± 10 nm 1625 nm ± 15 nm 1625 nm ± 16 nm 1625 nm ± 10 nm 1625 nm ±			
Singlemode Singlemode Singlemode Singlemode 1240 nm: ≤ 15 nm 1625 nm: 36 dB 1240 nm: 3 meters (typical) 1625 nm: 3.5 meters (typical) 1625 nm: 15 meters (typical) 1625 nm: 10 nm 1310 nm: 10 nm 1625 nm: 10 nm	enter Wavelength		
1240 nm: ≤15 nm	**************************************		
1550 nm: ≤ 15 nm 1625 nm: ≤ 15 nm 1626 nm: ≤ 16 db 1626 nm: ≤ 16 db 1625 nm: 36 db 1625 nm: 36 db 1625 nm: 36 db 1625 nm: 36 db 1625 nm: 35 meters (typical) 1550 nm: 13 meters (typical) 1625 nm: 3.5 meters (typical) 1625 nm: 3.5 meters (typical) 1625 nm: 15 meters (typical) 1625 nm:	· ·	_	=
2ynamic Range 1 240 nm: 36 dB 1240 nm: 36 dB 1550 nm: 34 dB 1625 nm: 36 dB 1625 nm: 35 meters (typical) 1625 nm: 35 meters (typical) 1625 nm: 35 meters (typical) 1625 nm: 10 meters (typical) 1625 nm: 15 meters (typical) 1625 nm: 16	pectral Width (RIVIS)		
(SNR = 1) 1550 nm: 3 d dB 1625 nm: 35 d B 1625 nm: 35 d B 1625 nm: 35 meters (typical) 1550 nm: 3 meters (typical) 1625 nm: 3.5 meters (typical) 1625 nm: 15			
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Models	4473
Center Wavelength	1550 nm ± 20 nm
	1625 nm ± 10 nm
Fiber Type	Singlemode
Spectral Width (RMS)	1550 nm: ≤ 10 nm
	1625 nm: ≤ 10 nm
Dynamic Range ¹	1550 nm: 34 dB
(SNR = 1)	1625 nm: 36 dB
Initial Reflective Deadzone ²	1550 nm: 4 meters (typical)
	1625 nm: 4 meters (typical)
Initial Non-Reflective Deadzone ²	1550 nm: 12 meters (typical)
	1625 nm: 12 meters (typical)
Pulsewidth	
Distance Resolution	0.0001 km; 0.1 meters; 0.001 kft, 1 ft, 0.0001 mi
Distance Sampling	0.25, 0.5, 1, 2, 4, 8, 16 meters (range dependent)
Distance Accuracy	0.0025% of distance measurement \pm distance resolution \pm index uncertainty
Distance Range Setting	2/4/8/16/32/64/128/256 km
Loss Resolution	0.001 dB
Laser Safety	Meets CDRH Class 1 Requirements (Eye Safe) 21 CFR

Notes:

- 1. Subtract approximately 2 dB of range to 98% peak noise. Bellcore TR-TSY-000196 Issue 2
- 2. Using Bellcore TR-TSY-000196 Issue 2. Deadzones measured on -45 dB reflections.

Multi-Test Functions

Dual Source (441X and 442X optics only, factory installed)

Wavelength $1310/1550 \pm 20 \text{ nm (except } 4457 \text{ module } 1550 \pm 30 \text{ nm)}$

-10 dBm (typical) Output Transmission Mode CW, 1 KHz and 2 KHz **Output Fiber** 9/125µm SM fiber **Optical Connector** Same as OTDR **Modes of Operation** CW, 1 KHz and 2 KHz Stability ± 0.2 dB (8 hours) Spectral Width Same as OTDR Safety Same as OTDR

Optical Meter (factory installed) +20 dBm meter option available

Detector Type 2 mm Ge PIN photodiode

Wavelength 800 - 1800 nm

Range +10 to -55 dBm or +20 to -45 dBm with AM460 filter

Calibrated Wavelengths 3 total: 850, 1310, 1550
Universal Connector Yes (use AM-430-xx adapter caps)
Resolution 0.01 dB, dBm, 0.01% Watts

Store Reference Mode Yes

Accuracy \pm 4% (\pm 0.18 dB) @ +5 dBm to -50 dBm \pm 8% (\pm 0.36 dB) @ + 10 dBm to +5 dBm and

@ -50 dBm to -55 dBm + 0.04 dB. +5 dBm to -50

Linearity \pm 0.04 dB, +5 dBm to -50 dBm

Visual Fault Locator (field installed)

 $\begin{array}{lll} Wavelength & 635 \pm 10 \text{ nm} \\ \text{Output} & 0 \text{ dBm} \\ \text{Transmission Mode} & CW \text{ or 2 Hz} \\ \text{Output Fiber} & 9/125 \mu\text{m, SM fiber} \end{array}$

Optical Connector FC, SC, ST - fixed connector

Safety IEC 825 Class 2, FDA (21 CFR 1040. 10 class 2)

Note:

1. Specification applies to ± 10 dBm meter not to ± 20 dBm meter.

CMA4000 Optional Accessories (must be added as separate line item):

TD-400	Hard transit case	TD-459US	US style keyboard
TD-410	Deluxe soft case	TD-459GE	German CE style keyboard
TD-415	Soft carry bag	TD-459FR	French CE style keyboard
TD-405	Printer w/cable	TD-459SP	Spanish CE style keyboard
TD-309	Printer paper (5 rolls/pack)	TD-459IT	Italian CE style keyboard
TD-409	Case of paper (5 packs/case)	TD-30163	Additional User's Manual
TD-453	12 v lead acid battery	TD-30162	Additional Training Manual
TD-29621	12 v DC power adapter	TD-30711	Parallel cable - DB25M to DB25M
TD-30710	Serial cable DB9F to DB9F (null)	TD-30712	Serial cable DB9F to DB9M (straight)

CMA4000 Mainframe:

Control Unit:

P/N TD-14XXX PC-based modular platform

Standard Accessories:

- 8-inch VGA LCD display
- Multi-tasking operating system
- User's & Training Manuals
- 1 VGA port
- Internal memory (up to 140 traces)
- 1 carry strap
- AC adapter/charger
- AC line cord (choose style see below)
- 2 serial ports
- 1 parallel port
- 1 mouse port
- 1 PS/2 keyboard port
- 12 v rechargeable battery (qty 2)
- Floppy drive
- Built-in keyboard

AC Power Cord Options:

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TD-11685	US power cord	TD-30362	Australian power cord
TD-30358	Euro power cord	TD-30359	UK power cord
TD-30361	Italian power cord	TD-30360	Swiss power cord

OTDR/Source Connector Adapter:

Adapters for PC and Ultra Polish:

UC-130-10	Biconic	UC-130-35	SMA 905/906
UC-130-15	DIN 47256	UC-130-40	Diamond HP HMS-10
UC-130-20	D4	UC-130-45	Diamond HP HMS-0
UC-130-25	FC	UC-130-50	Diamond HP-HMS-10/A
UC-130-30	ST	UC-130-55	SC

Adapters for Angle Polish:

UC-130-60	FC NTT	UC-130-70	DIN/HRL-10
UC-130-60A	FC Seiko Giken	UC-130-75	ST
UC-130-65	SC	UC-130-80	Diamond E-2000

Meter Connector Adapter (select one when ordering power meter):

AM-430-10	Biconic	AM-430-50	ST
AM-430-15	D4	AM-430-75	VFO/PFO
AM-430-20	SMA 906	AM-430-85	DIN
AM-430-25	Diamond GFS-3	AM-430-90	SC
AM-430-45	FC	AM-430-100	FDDI

Total care for networks

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