Alcatel 6911
TeraLight™ Metro Fiber

TeraLight™ fiber has set the standard for high bit-rate, multi-wavelength, long-haul transmission since its introduction in 1999. Its uniqueness lies in the balance of three key factors affecting fiber performance: effective area, chromatic dispersion and dispersion slope. Optimization of all three provides the best distortion management for capacity and performance. It ensures operation at 10 Gb/s and 40 Gb/s, tight channel spacing in C & L bands, and compatibility with the future S-band.

Now, this innovative fiber has been further optimized for the metropolitan backbone environment. As cities generate ever-increasing data traffic, metropolitan networks need to rapidly increase capacity to avoid bottlenecks. Flexibility and dynamic bandwidth provisioning will demand transparent wavelength routing in the future. All this at the lowest cost per bit, best achieved by using cheap transmitters and avoiding costly dispersion compensating devices. TeraLight™ Metro supports 10 Gb/s transmission without dispersion compensation, for distances of around 200 km, resulting in cost savings compared to standard singlemode fiber. Should the need arise to extend ring distances or upgrade to 40 Gb/s operation, its dispersion characteristics ensure optimal compensation using commercially-available dispersion compensating devices. With a cabled cutoff wavelength below 1260 nm and low dispersion in the 1310 nm operating window, short-length metro systems can be supported on the same fiber, resulting in significant cost savings.

With the explosive but unpredictable growth of metropolitan data traffic and the challenges of deploying cable in dense urban areas, it is more important than ever to choose a fiber that will support the future evolution of metropolitan optical transmission. Whether it be narrower channel spacings, 40 Gb/s or higher data rates, L and S band operation or transparent wavelength routing, with TeraLight Metro, the future of the metropolitan backbone network is assured.

TeraLight™ Metro

Based on the design breakthrough of Alcatel's TeraLight™ Non-Zero Dispersion Shifted Fiber (NZ-DSF), this new G.655 compliant fiber is specially optimized for metropolitan backbone applications. It is perfectly suited for uncompensated, narrow-channel, 10 Gb/s DWDM operation over typical metropolitan ring distances of 80 to 200 km. With guaranteed 1310 nm operation, it also supports widely-deployed short-length metro systems. And looking ahead to the future evolution of optical transmission systems, it is fully and easily upgradeable to channel spacings as low as 25 GHz in the C & L Band, and 40 Gb/s and higher bit-rates. In addition, it is compatible with S-band operation.

FEATURES	BENEFITS
Optimized for 10 Gb/s operation over 80-200 km without dispersion compensation	Cost savings compared to standard singlemode fiber Minimizes network design and management complexity Can use cheaper transmitters
40 Gb/s operation with commercially-available dispersion compensating devices	Future-safe Close to 100% end-to-end dispersion slope compensation
Positive dispersion ensures compatibility with long-haul NZ-DSF	Easy extension of route distances Consistent fiber type in long-haul and metropolitan networks minimizes management complexity
Guaranteed 1310 nm operation with low dispersion	Compatible with shorter-length, lower-cost metro systems Cost savings from supporting 1310 nm and 1550 nm transmission over same fiber Can also be used for signaling channels or coarse WDM
320 channels in C, L and S bands at 10 Gb/s	Increased capacity More efficient bandwidth deployment
Easily upgradeable to 25 GHz channel spacing in C and L bands	Future capacity increase
S Band compatibility	Future capacity increase
Special cable sheathing and shielding for urban conditions: water, rodents, corrosion	Increased reliability in harsh conditions
Alternative right-of-way solutions for subways, sewers, gas and water lines	Cost-efficient cable deployment with minimal disruption

KEY INDUSTRY LEADING MILESTONES

- September 2000- World record for 5.12 Tb/s transmission using unidirectional transmission of 128 channels each at 40 Gb/s.
- March 2001- World record for 10.2 Tb/s transmission using 256 unidirectional channels at 40 Gb/s over a 100 km link.

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Optical Specifications

Attenuation (cabled)

Attenuation @1550nm	≤0.25 dB/km
Attenuation @1625nm	≤0.28 dB/km
Attenuation @1310nm	≤0.40 dB/km
Attenuation @1383nm	≤1.0 dB/km

Attenuation Uniformity

No point discontinuity greater than 0.10 dB at 1550nm

Wavelength vs. Attenuation

Maximum attenuation *change* over the window.

Wavelength (nm)	Attenuation (dB/km)
1525-1550	≤0.03
1550-1575	≤0.03
1550-1625	≤0.05
1285-1310	≤0.05
1310-1330	≤0.05

Wavelength vs. Dispersion

Wavelength (nm)	Dispersion (ps/nm•km)
1440	>0.1
1530-1565	5.5 - 10.0
1565-1625	7.5 - 13.8
1285-1330	-10.0 - -3.0

Attenuation with Bending

100 turns, 60mm diameter @1550 &1625nm:	≤0.05 dB
1 turn, 32mm diameter @ 1550 &1625nm:	≤0.5 dB

Wavelength

Cabled Cutoff Wavelength:	≤1260nm
Zero Dispersion Wavelength:	≤1440nm

PMD (cabled)

Link Design Value:	≤ 0.08ps/√km*

Dimensional Specifications

Mode Field Diameter @1550nm	9.2±0.5µm
Fiber Outside Diameter:	125.0±1.0µm
Core/Cladding Offset:	≤ 0.6µm
Fiber Non-Circularity:	<1.0%
Colored Coating Outside Diameter:	242±7µm
Colored Coating/Clad Concentricity Error:	≤12µm
Fiber Curl (radius):	>4 meters

TeraLight™ Metro is fully compliant with ITU G.655 and IEC 60793 - 2

*Complies with IEC SC86A/WG1, method 1, 1997 (Q=0.1%, N=20). PMD link design value provides a statistical upper limit for PMD over concatenated fibers.

Cable specifications apply to Alcatel manufactured cables and are tested or characterized in compliance to international standards.

Only Cabled TeraLight Fiber is available in the USA. Alcatel reserves the right to change specifications without prior notice.

Mechanical Specifications

Proof Test of AFC™ ColorLock™ Coated

The entire length is subjected to a tensile proof stress >100 Kpsi (0.7 GN/m²); 1% strain equivalent

Tensile Strength

Dynamic Tensile Strength (0.5 meter gauge length):
Aged* & Unaged: median ≥ 550 Kpsi (3.8GN/m²)

Dynamic and Static Fatigue

Dynamic Fatigue, Tensile:	N_d=20 unaged and aged*
Dynamic Fatigue, 2 Point Bend:	N_d=20 unaged and aged*
Static Fatigue:	N_s ≥20 aged *

Coating Strip Force

Coating Strip Force: 2.0lbf (8.9N) max, 0.3 lbf (1.3N) min.
23°C, 0°C and 45°C
Aged: 30 days at 85°C and 85% relative humidity
14 days water immersion at 23°C
Wasp spray exposure (Telcordia Spec)

Environmental Specifications

Induced Attenuation Change @1550nm	(dB/km)
Temperature Cycling Performance, -60°C to 85°C:	≤0.05
Temperature Humidity Cycling, -10°C to 85°C, 4-98%RH):	≤0.05
Water Immersion, 23°C:	≤0.05
Heat Aging, 85°C:	≤0.05

Typical Fiber Characterization Values

Attenuation @ 1550nm:	0.205 dB/km
Attenuation @ 1625nm:	0.23 dB/km
Attenuation @ 1310nm:	0.35 dB/km
Effective Area:	63µm²
Nominal Dispersion Slope @ 1550nm:	0.052 ps/nm²• km
Dispersion @1550nm:	8 ps/nm• km
Dispersion @1625nm:	12 ps/nm• km
Dispersion @1310nm:	-6 ps/nm• km
Dispersion @1440nm:	2 ps/nm• km
Effective Group Index @ 1310nm:	1.4690
@ 1550nm:	1.4692
Dynamic Tensile Strength (*Aged): (0.5m gauge length)	median 750 Kpsi (5.26GN/m²)
Dynamic Fatigue (Aged*):	N_d=22
Static Fatigue:	N_s ≥ 25 aged *

*Aged for 30 days at 85°C. 85% relative humidity

For additional information visit Alcatel online or call your nearest Optical Fiber Sales Representative

www.alcatel.com/opticalfiber

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