# Part NO. FLWPSM

## Cable Description

Full Band Low Water Peak Single-mode Fiber
Full Band low water peak dispersion unishifted single-mode fiber is designed specially for optical transmission system operation over the entire wavelength window from 1260 nm up to 1625 nm. By suppressing the water peak that occurs near 1383 nm in conventional single-mode fiber due to hydroxyl (H) ions absorption, Full Band fiber is able to open E-band (1360~1460) for operation, and consequently provides 100 nm more usable wavelengths. Full Band fiber is comprehensively optimized for attenuation and dispersion performance across the entire wavelength window from 1260 nm and upgraded for macro-bending performance in L-band (1565~1625), Hence, the fiber is fully satisfying the demand for transmitting multi-channel high-speed services over one single fiber.

## Application

Thanks to its broad useable optical spectrum and outstanding optical performance, Full Band fiber is the optimum choice for metropolitan area and access networks that support various applications uch as 10 Gb/s Ethernet, Internet Protocol (IP). Asynchronous Transfer Mode (ATM) and Synchronous Optical Network (SONET), using single channel, Dense Wavelength Division Multiplexing (DWDM) and Coarse Wavelength Division Multiplexing (CWDM). Full Band fiber enables the use of existing laser, multiplexer, demultiplexer, and other1310 nm equipment. Full Band fiber is applicable in all cable types including ribbon cable, loose tube stranded cable, slotted core cable, unitube cable and tight-buffer cable.

## Process and Coating

Uninet fibers are manufactured using the advanced Plasma Activated Chemical Vapor Deposition (PCVD) process. Because of the inherent advantages of the process, Uninet fibers show extremely refined refractive index (RI) profile control, excellent geometrical performance, low attenuation, etc. The optical fiber is coated with a double layer UV curable acryl ate, type DLPC9, which gives the fiber a good protection. Designed for more stringent tight-buffer cable application, the fiber also performs perfectly in loose buffer constructions and demonstrates a high resistance to micro-bending. The coating offers an excellent stable coating strip force over a wide range of environmental conditions and the coating stripping leaves no residues on the bare glass fiber. Ribbon tests show excellent performance in 60°c water soak tests, exceeding 100 days. The DLPC9 coated optical fibers show high and stable values for dynamic stress corrosion susceptibility parameter (nd), Which offers a greatly improved applicability to the fiber when used in harsh environments.

## Cable Norms

Full Band fiber complies with or exceeds the ITU Recommendation G.652 (C and D) and the IEC 60793-2-50 type B 1.3 Optical Fiber Specification. Uninet tightens many parameters of fiber products.

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## Cable Characteristic

Due to the process innovation and technical break-through made on the basis of the conventional single-mode fiber. Full Band low water peak single-mode fiber has the following characteristics:

- Designed for operation across the entire optical spectrum from 1260 nm up to 1625 nm, which provides 50% more useable wavelengths and hence reduce the cost of system
- Outstanding optical performance supporting high-speed transmission technologies such as DWDM and CWDM
- Being compatible with existing 1310 nm equipment.
- DLPC9 coating offering good protection and excellent strip force stability
- Accurate geometrical parameters that insure low splicing loss and high splicing efficiency. Splicing is fully

## Fiber Core Performance

| Characteristics | Conditions | | Specified Values | Units |
|---|---|---|---|---|
| **Optical characteristics** | | | | |
| Attenuation | 1310 nm<br>1383 nm [After $H_2$ aging] | | ≤0.36<br>≤0.35 | [dB/km] [dB/km]<br>[dB/km] |
| Dispersion coefficient | 1285~1340 nm<br>1550 nm | ≥-3.0 | ≤3.0<br>≤18 | [ps/(nm·km)]<br>[ps/(nm·km)] |
| Zero dispersion wavelength | | ≥1302 | ≤1322 | [nm] |
| Zero dispersion slope | | | ≤0.091 | [ps/(nm·km)] |
| Polarization Mode Dispersion<br>PMD Maximum Individual Fiber | | | ≤0.2 | [ps/√km] |
| Fiber cutoff wavelength $\lambda_c$ | | ≥1180 | ≤1330 | [nm] |
| Cable cutoff wavelength $\lambda_c$ | | | ≥1260 | [nm] |
| Mode field diameter (MFD) | 1310 nm<br>1550 nm | | 9.2±0.4<br>10.4±0.8 | [μm]<br>[μm] |
| Group index of refraction (Typical) | 1310 nm<br>1550 nm | | 1.466<br>1.467 | |
| **Backscatter characteristics** | 1310 nm, 1550 nm | | | |
| Step (mean of bidirectional measurement) | | | ≤0.05 | [dB] |
| Irregularities over fiber length and point discontinuity | | | ≤0.05 | [dB] |
| Difference in backscatter coefficient (bidirectional measurement) | | | ≤0.03 | [dB/km] |
| Attenuation uniformity | | | ≤0.01 | [dB/km] |
| **Geometrical characteristics** | | | | |
| Cladding diameter | | | 125.0±1.0 | [μm] |
| Cladding non-circularity | | | ≤1.0 | [%] |
| Coating diameter | | | 242±7 | [μm] |
| Coating/cladding concentricity error | | | ≤12.0 | [μm] |
| Coating non-circularity | | | ≤6.0 | [%] |
| Core/cladding concentricity error | | | ≤0.6 | [μm] |
| Curl (radius) | | | ≥4 | [m] |
| Delivery length | | ≥2.1 | ≤50.4 | [km/reel] |

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Table Content Continued:

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|---|---|---|---|
| **Environmental characteristics** | 1310 nm, 1550 nm | | |
| Temperature dependence<br>Induced attenuation | -60°C to +85°C | ≤0.05 | [dB/km] |
| Temperature-humidity cycling<br>Induced attenuation | -10°C to +85°C, 90% R.H. | ≤0.05 | [dB/km] |
| Damp heat dependence<br>Induced attenuation | 85°C, 85% R.H., 30 days | ≤0.05 | [dB/km] |
| Water soak dependence<br>Induced attenuation | 20°C for 30 days | ≤0.05 | [dB/km] |
| **Mechanical characteristics** | | | |
| Proof test | off line | ≥9.0<br>≥1.0<br>≥100 | [N]<br>[%]<br>[KPSI] |
| Bending Dependence<br>Induced Attenuation | 1550 nm<br>1 turn, 32 mm diameter<br>100 turns, 60 mm diameter | <br>≤0.50<br>≤0.05 | <br>[dB]<br>[dB] |
| Coating strip force | typical average force<br>peak force ≥1.3 | 1.7<br>≤8.9 | [N]<br>[N] |
| Dynamic stress corrosion susceptibility parameter ($n_d$, Typical) | | ≥27 | |