

FullBand[®] Low Water Peak Single-mode Fibre

Description

YOFC FullBand low water peak dispersion unshifted single-mode fibre is designed specially for optical transmission systems operating over the entire wavelength window from 1260 nm to 1625 nm. By suppressing the water peak that occurs near 1385 nm in conventional single-mode fibre due to hydroxyl (OH⁻) ions absorption, FullBand fibre is able to open E-band(1360 ~ 1460nm) for operation, and consequently provides 100 nm more usable wavelengths. FullBand fibre is comprehensively optimized for attenuation and dispersion performance across the entire wavelength window from 1260 nm up to 1625 nm and upgraded for macro-bending performance in L-band(1565 ~ 1625nm). Hence, the fibre is fully satisfying the demand for transmitting multi-channel high-speed services over one single fibre.

Application

Thanks to its broad usable optical spectrum and outstanding optical performance, FullBand fibre is the optimum choice that support various applications such as Ethernet, Internet Protocol (IP), Asynchronous Transfer Mode (ATM), Synchronous Optical Network (SONET) and Wavelength Division Multiplexing (WDM). FullBand fibre provides more bandwidth for Backbone, metropolitan area and access networks. FullBand fibre enables bandwidth demanding of multi services like voice, digital and image transmission.

FullBand fibre 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

YOFC fibres are manufactured using the advanced Plasma Activated Chemical Vapor Deposition (PCVD) process. Because of the inherent advantages of the process, YOFC fibres show extremely refined refractive index (RI) profile control, excellent geometrical performance, low attenuation, etc.

The optical fibre is coated with a double layer UV curable acrylate, type DLPC9, which gives the fibre a good protection. Designed for more stringent tight-buffer cable application, the fibre 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 fibre. Ribbon tests show excellent performance in 60°C watersoak tests, exceeding 100 days. The DLPC9 coated optical fibres show high and stable values for dynamic stress corrosion susceptibility parameter (n_s), which offers a greatly improved applicability to the fibre when used in harsh environments.

Norms

YOFC FullBand fibre complies with or exceeds the ITU Recommendation G.652(C/D) and the IEC 60793-2-50 type B1.3 Optical Fibre Specification. YOFC has tightened many parameters of fibre products.

Characteristics

Due to the process innovation and technical breakthrough made on the basis of the conventional single-mode fibre, YOFC FullBand low water peak single-mode fibre has the following characteristics:

- Designed for operation over the full optical spectrum from 1280-1625 nm, which provides 50% more usable wavelengths and hence the transmission capacity is increased
- 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

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Characteristics	Conditions	Specified Values	Units
Optical characteristics			
Attenuation	@ 1310 nm	≤0.35	[dB / km]
	@ 1383 nm (After H ₂ aging)	≤0.35	[dB / km]
	@ 1550 nm	≤0.21	[dB / km]
	@ 1625 nm	≤0.22	[dB / km]
Dispersion coefficient	1285 ~ 1340 nm	≥ -3.0 ≤ 3.0	[ps / (nm · km)]
	1550 nm	≤ 18	[ps / (nm · km)]
	1625 nm	≤ 22	[ps / (nm · km)]
Zero dispersion wavelength		≥ 1302 ≤ 1322	[nm]
Zero dispersion slope		≤ 0.089	[ps / (nm ² · km)]
PMD			
Maximum Individual Fibre		≤ 0.2	[ps / √km]
PMD Design Link Value		≤ 0.08	[ps / √km]
Fibre cutoff wavelength λ _c		≥ 1180 ≤ 1330	[nm]
Cable cutoff wavelength λ _{cc}		≤ 1260	[nm]
Mode field diameter (MFD)	@ 1310 nm	9.2 ± 0.4	[μm]
	@ 1550 nm	10.4 ± 0.8	[μm]
Effective group index of refraction(N _{eff})	@ 1310 nm	1.466	
	@ 1550 nm	1.467	
Back scatter characteristics (@1310 nm and 1550 nm)			
Step (mean of bidirectional measurement)		≤ 0.05	[dB]
Irregularities over fibre length and point discontinuity		≤ 0.05	[dB]
Difference in back scatter coefficient (bidirectional measurement)		≤ 0.03	[dB]
Attenuation uniformity		≤ 0.01	[dB]
Geometrical characteristics			
Cladding diameter		124.8 ± 0.7	[μm]
Cladding non-circularity		≤ 1.0	[%]
Coating diameter		245 ± 5	[μm]
Coating-cladding concentricity error		≤ 12.0	[μm]
Coating non-circularity		≤ 6.0	[%]
Core-cladding concentricity error		≤ 0.5	[μm]
Curl (radius)		≥ 4	[m]
Delivery length		2.1km to 50.4km	[km/reel]
Environmental characteristics (@ 1310 nm and 1550 nm)			
Temperature dependence		≤ 0.05	[dB / km]
Induced attenuation at -60°C to +85°C		≤ 0.05	[dB / km]
Temperature-humidity cycling		≤ 0.05	[dB / km]
Induced attenuation at -10°C to +85°C, 90%RH		≤ 0.05	[dB / km]
Watersoak dependence		≤ 0.05	[dB / km]
Induced attenuation at 23°C, for 30 days		≤ 0.05	[dB / km]
Damp heat dependence		≤ 0.05	[dB / km]
Induced attenuation at 85°C and 85% RH, for 30 days		≤ 0.05	[dB / km]
Mechanical Specification			
Proof test off line		≥ 9.0	[N]
		≥ 1.0	[%]
		≥ 100	[KPSi]
Macro-bend induced attenuation @1550&1625nm			
1 turn around a mandrel of 32 mm diameter		≤ 0.5	[dB]
100 turns around a mandrel of 60 mm diameter		≤ 0.05	[dB]
Coating strip force		1.7	[N]
		≥ 1.3 ≤ 8.9	[N]
Dynamic stress corrosion susceptibility parameter nd (typical)		≥ 27	