1F FE tap to SC/APC Pigtail Assembly

1. Introduction

Frog Engineering Dielectric Cables with connector are two- in-one cables uniquely designed for rugged outdoor and challenging indoor environments. The design features a gel- free, fully water blocked, UV-resistant, 2.9 mm FRNC/LSZH drop cable centered inside a rugged outside plant drop cable that is pre-connectorized with connectors, a factory-terminated, environmentally sealed and hardened connector.

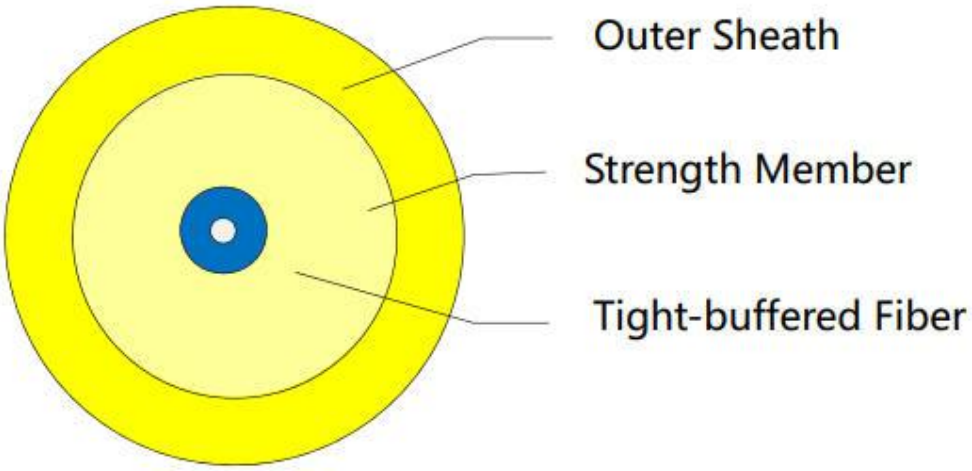
Application

- Access network. Local area network (LAN)
- Used end users directly cabling
- Fiber optic communication system
- FTTH (fiber to the home) indoor cabling and distribution

2. Optical Characteristic

Optical Characteristics for G657A single mode fiber			
Attenuation		@ 1310nm	≤ 0.35dB / km
		@ 1383nm	≤ 0.35dB / km
		@ 1460nm	≤ 0.25dB / km
		@ 1490nm	
		@ 1550nm	≤ 0.21dB / km
		@ 1625nm	≤ 0.23dB / km
Attenuation vs. wavelength	@1310nm	1285 ~ 1330nm	≤ 0.03dB / km
	@1550nm	1525 ~ 1575nm	≤ 0.02dB / km
Dispersion coefficient		1285 ~ 1340nm @ 1550nm	-3.0~3.0ps / (nm.km)
		@1625nm	22 ps/(nm.km)
Zero dispersion wavelength			1302~1322 nm.km
Zero dispersion slope			2
Zero dispersion slope (Typical)			2
Polarization Mode	Maximum Individual Fiber		≤0.2 ps / √km
	Design Link Value (M=20, Q=0.01%)		≤0.1 ps / √km
Cable cut-off wavelength		≤1260nm	
Mode field diameter (MFD)		@1310nm	9.0 ± 0.4 μm
		@1550nm	10.1 ± 0.5 μm
Group Index of Refraction	21310nm	1.466	
	21550nm	1.467	√km
Backscatter Characteristics (@1310nm / @1550nm)			
Step (Mean of bidirectional measurement)			≤0.05dB
Irregularities over fiber length and point discontinuity			≤0.05dB
Difference backscatter coefficient (Bidirectional measurement)			≤0.03dB / km
Geometrical Characteristics			
Cladding diameter			124.8 ± 0.7 μm
Cladding non-circularity			≤1.0%
Coating diameter			245 ± 7 μm
Coating /cladding concentricity error			≤12.0μm
Environmental Characteristics (@1310nm/@1550nm)			
Attenuation at temperature cycling Δa (-60 °C~+85°C)			≤0.05dB / km
Attenuation at temperature-humidity cycling (-10°C~+85°C,98%R.H.)			≤0.05dB / km
Mechanical Characteristics			
Proof Test (Off line)			≥9.0 N (≥100 kpsi)
Attention at bending dependence		1 turn, 15mm diameter	-
		1 turn, 20mm diameter	≤ 0.1dB
		10 turns, 30mm diameter	≤ 0.1dB
		100 turns, 50mm diameter	≤0.05dB

3. Cable Structure



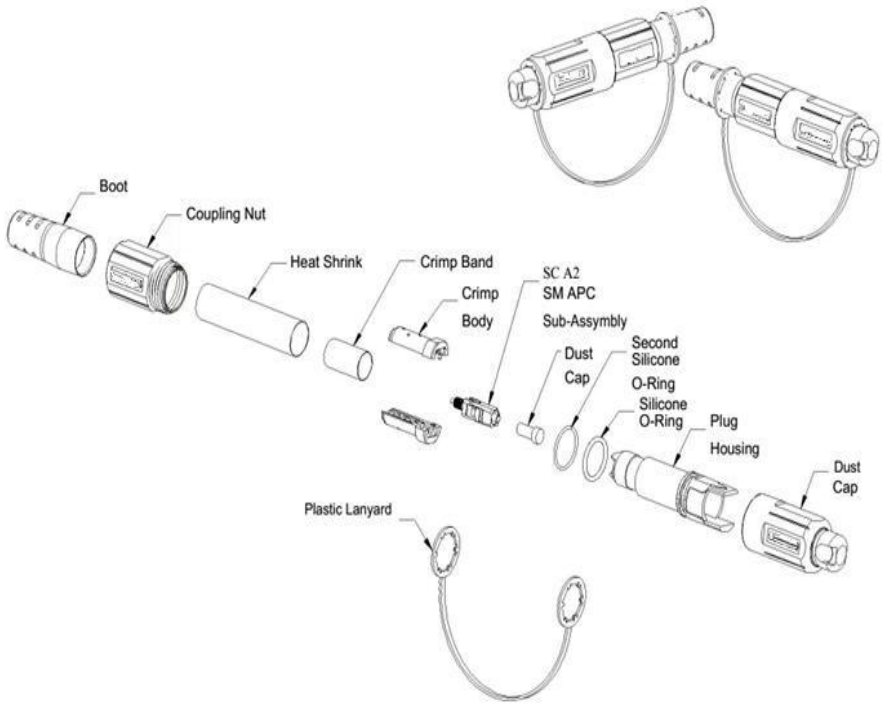
Cable Parameter			
Cable Type	Drop Cable	Fiber Count	1 Fibers
Construction	Round Type	Fiber Type	Single mode G.657A
Jacket Color	LSZH (Black)	Jacket UV Resistance	UV Stabilized
Buffer tube / Subunit Diameter	3.0 mm	Weight	34 kg/km
Tensile Load, long term, maximum	100N	Tensile Load, short term, maximum	300N
Twist	10 cycles	Operating/Storage Temperature	-40 to +60°C

COLOR IDENTIFICATION OF FIBER

The fibers shall be marked by a colored coating with 12color according to EIA/TIA 598:

Color												
NO of fiber	1	2	3	4	5	6	7	8	9	10	11	12
Color names	Blue	Orange	Green	Brown	Grey	White	Red	Black	Yellow	Violet	Pink	Aqua

4. Assembly Structure



5. Test Requirement

Approved by various professional optical and communication product institution, GL also conduct various in-house testing in its own Laboratory and Test Center. We also conduct test with special arrangement with the Chinese Government Ministry of Quality Supervision & Inspection Center of Optical Communication Products (QSICO).

The cable is in accordance with applicable standard of cable and requirement of customer. The following test items are carried out according to corresponding reference. Routine tests of optical fiber

Mode field diameter	IEC 60793-1-45
Mode field Core/clad concentricity	IEC 60793-1-20
Cladding diameter	IEC 60793-1-20
Cladding non-circularity	IEC 60793-1-20
Attenuation coefficient	IEC 60793-1-40
Chromatic dispersion	IEC 60793-1-42
Cable cut-off wavelength	IEC 60793-1-44

Test for outdoor cable

5.1 Tension Loading Test

Test Standard	IEC 60794-1-2 E1
Sample length	No less than 50 meters
Load	Max. installation load
Duration time	1 hour
Test results	Additional attenuation: ≤0.05dB No damage to outer jacket and inner elements

5.2 Crush/Compression Test

Test Standard	IEC 60794-1-2 E3
Load	Crush load
Plate size	100mm length
Duration time	1 minute
Test number	1
Test results	Additional attenuation: ≤0.05dB. No damage to outer jacket and inner elements

4.3 Impact Resistance Test

Test Standard	IEC 60794-1-2 E4
Impact energy	6.5J
Radius	13.6mm
Impact points	3
Impact number	2
Test result	Additional attenuation: ≤0.05dB

4.4 Repeated Bending Test

Test Standard	IEC 60794-1-2 E6
Bending radius	20 X diameter of cable
Cycles	25 cycles
Test result	Additional attenuation: ≤0.05dB. No damage to outer jacket and inner elements

4.5 Torsion/Twist Test

Test Standard	IEC 60794-1-2 E7
Sample length	2m
Angles	±180 degree
cycles	10
Test result	Additional attenuation: ≤0.05dB No damage to outer jacket and inner elements

4.6 Bend Test

Test Standard	IEC 60794-1-2 E11B
Mandrel diameter	20 X diameter of cable
Turn number	4
Number of cycles	3
Temperature	20℃
Test result	No damage to outer jacket and inner elements

4.7 Temperature cycling Test

Test Standard	IEC 60794-1-2 F1
Temperature step	+20℃ →-40℃ →+85℃→+20℃
Time per each step	Transition from 0℃ to -40℃:2hours Duration at -40 ℃: 8 hours Transition from -40 ℃ to + 85 ℃ :4hours Duration at +85 ℃ :8 hours Transition from +85℃ to 0℃:2hours
Cycles	5
Test result	Attenuation variation for reference value (the attenuation to be measured before test at +20±3℃) ≤ 0.05 dB/km

4.8 Water penetration Test

Test Standard	IEC 60794-1-2 F5
Height of water column	1m
Sample length	1m
Test time	1 hour
Test result	No water leakage from the opposite of the sample

4.9 Drip Test

Test Standard	IEC 60794-1-2 E14
Sample length	0.3m
Temperature	70 ℃
Duration	24 hrs.
Test result	No filling compound shall drip from tubes