TECNICAL SPECIFICATION

1. GENERAL

1.1 SCOPE

Cable type	Application
Self-Supporting Aerial Cable (ASU)	Outdoor installation cable

1.2 REFERENCE

The cable provided by SUMEC need to pass the following international specifications:

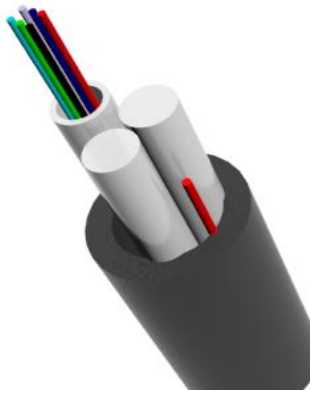
IEC 60793-1	Optical fiber Part 1: Generic specifications
IEC 60793-2	Optical fiber Part 2: Product specifications
IEC 60794-1	Optical fiber cable Part 1-2: Generic specification-basic optical cable test procedures
IEC 60794-3	Optical fibre cables –Part 3: Outdoor cables – Sectional specification
ITU-T G.650	Definition and test methods for the relevant parameters of single-mode fibers
ITU-T G.657	Characteristics of a bending-loss insensitive single-mode optical fiber
EIA/TIA 598	Color code of fiber optic cables

2. OPTICAL FIBER

ITU-T G.652.D Fiber		
Category	Description	Specifications
Optical Specifications	Attenuation @1310 nm	≤0.35 dB/km
	Attenuation @1550 nm	≤0.23 dB/km
	Zero Dispersion Wavelength	1300~1322 nm
	Chromatic dispersion @1310nm @1550nm @1625nm	≤3.5 ps/(nm·km) ≤18 ps/(nm·km) ≤22 ps/(nm·km)
	Zero Dispersion Slope	≤0.092 ps/nm^2·km
	PMD_Q	≤0.20 ps/√km
	PMD individual value	≤0.2 ps/√km
	Cable Cutoff Wavelength (λ_{cc})	≤1260 nm
	Macro bending Loss (100 turns; Φ60 mm) @1625 nm	≤ 0.10 dB
	Mode Field Diameter @1310 nm	9.2±0.4μm
Dimensional Specifications	Cladding Diameter	125 ±1μm
	Coating diameter	245 ±5μm
	Core/clad concentricity error	≤0.6μm
	Cladding Non-Circularity	＜1.0%
Mechanical Specifications	Proof stress	≥0.69Gpa

3. CABLE STRUCTURE

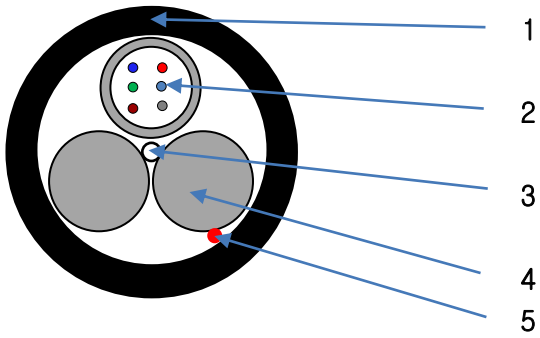
3.1 CABLE TYPE: ASU



Three-dimensional schematic

Features & Application

- Compact structure
- Able to be terminated onsite
- All dielectric structure, resistant to electromagnetic interference
- Easy for stripping, splicing, simplified
- installation and maintenance
- Easy & simple installation
- Outdoor cabling
- Suitable for aerial dropping
- Small diameter & Light weight



Construction:

1. Outer sheath **(HDPE)**
2. Loose tube(**PBT**), fibers and jelly
3. Water blocking yarns
4. Strength member (**FRP**)
5. Rip cord

Dimensions and Properties

Physical	Fiber count	1-12 G.652D	
	Span	80m	120m
	Loose tube	2.1±0.2mm	2.5±0.2mm
	Strength member	2.0±0.1mm*2	2.5±0.1mm*2
	Cable OD	6.8±0.3 mm	8.0±0.3 mm
	Cable weight	44kg/km±15%	63kg/km±15%
Properties	Operation temperature range	-20 ℃ to + 65 ℃	
	Installation temperature range	-10 ℃ to + 55 ℃	
	Transport and storage temperature range	-20 ℃ to + 65 ℃	
	Max. tensile load	Long-term:300N Short--term:850N	Long-term:480N Short--term:1500N
	Crush resistance	Long-term:500 N/10cm Short--term:1000N/10cm	Long-term:500N/10cm Short--term:1000N/10cm
	Minimal installation bending radius	20*D	
	Minimal operation bending radius	10*D	

D =cable diameter

Color code scheme:

Fiber color	blue	orange	green	brown	slate	white	red	black	yellow	violet	pink	aqua
Tube color	nature											

4. TEST REQUIREMENTS

Fiber test standard

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

Performance Testing List

4.1 Tension Loading Test

Test Standard	IEC 60794-1-21 E1
Sample length	No less than 50 meters
Load	Short-term tension load Long-term tension load
Duration time	1 minutes
Test results	Fiber strain≤0.1%under short term load No obvious optical fiber strain under long term load
	Additional attenuation ≤0.1dB under short term load No change in additional attenuation after test under short term load No change in additional attenuation under long term load
	No damage to outer jacket and inner elements

4.2 Crush/Compression Test

Test Standard	IEC 60794-1-21 E3
Load	Short-term load Long-term load
Duration time	1minute
Test results	Additional attenuation ≤0.1dB under short term load No change in additional attenuation after test under short term load No change in additional attenuation under long term load
	No damage to outer jacket and inner elements under short term load

4.3 Impact Resistance Test

Test Standard	IEC 60794-1-21 E4
Impact energy	4.5J
Radius	12.5mm
Impact points	5

Impact number	1
Test result	No change in additional attenuation
	No damage to outer jacket and inner elements

4.4 Repeated Bending Test

Test Standard	IEC 60794-1-21 E6
Bending radius	20*D
Cycles	25 cycles
Load	150N
Test result	No change in additional attenuation
	No damage to cable elements

4.5 Bend Test

Test Standard	IEC 60794-1-21 E11
Mandrel diameter	20*D
Turn number	3
Cycles	4
Test result	After test, no change in additional attenuation
	No damage to outer jacket and inner elements

4.6 Torsion/Twist Test

Test Standard	IEC 60794-1-21 E7
Sample length	1m
Angles	±180 degree
Load	150N
Cycles	10
Test result	No change in additional attenuation
	No damage to cable elements

4.7 Abrasion

Test Standard	IEC 60794-1-21 E2B
Experiment method	The wool felt should be thoroughly impregnated with water
Frequency	6-12cycles/min
Load	20N
Cycles	10
Test result	The marking should be legible after test

4.8 Cable kink

Test Standard	IEC 60794-1-21 E10
Min. Loop diameter	Operating: 10*D, Installation:20*D
Test result	No kink occur

4.9 Water penetration Test

Test Standard	IEC 60794-1-22 F5
Height of water column	1m
Sample length	3m
Test time	24 hour
Test result	No water seepage prom the opposite end of the sample

4.10 Temperature cycling Test

Test Standard	IEC 60794-1-22 F1
Temperature step	+20℃→ -20℃ →+65℃→+20℃
Time per each step	At least 8 hours
Cycles	2
Test result	Attenuation variation for reference value (the attenuation to be measured before test at +20±3℃) ≤0.10dB/km

4.11 Environmental performance

Test Standard	RoHS
Test result	Pass the test.

Remark: “No change in additional attenuation” is considered as the addition attenuation≤0.03dB,

“No obvious optical fiber strain” is considered as the fiber strain≤0.01%,

The test wavelength is 1550 nm.