

TECNICAL SPECIFICATION

1. GENERAL

1.1 SCOPE

Cable type	Application
All-Dielectric Self-Supporting Fiber Cable (ADSS)	Self-supporting aerial 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 60794-4-20	Optical fiber cables-Part 4-20: Aerial optical cables along electrical power lines-Family specification for ADSS(All Dielectric Self Supported) optical cables
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

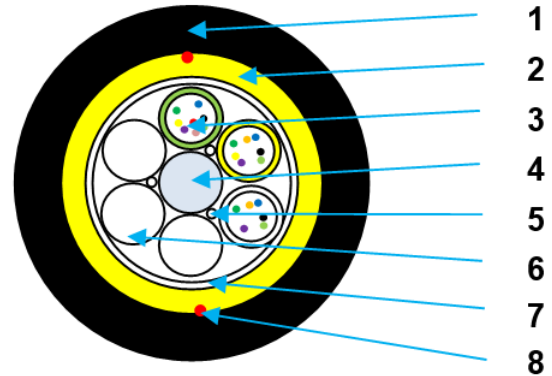
ITU-T G.652.D Fiber		
Category	Description	Specifications
Optical Specifications	Attenuation @1310 nm	≤0.35 dB/km
	Attenuation @1550 nm	≤0.22 dB/km
	Zero Dispersion Wavelength	1300~1324 nm
	Chromatic dispersion @1310nm @1550nm @1625nm	≤3.5 ps/(nm·km) ≤18 ps/(nm·km) ≤22 ps/(nm·km)
	Zero Dispersion Slope	≤0.092 ps/nm ² ·km
	PMD _Q	≤0.2 ps/√km
	PMD individual value	≤0.2 ps/√km
	Cable Cutoff Wavelength (λ_{cc})	≤1260 nm
	Macro bending Loss (100 turns; Φ 60 mm) @1625 nm	≤ 0.10 dB
	Mode Field Diameter @1310 nm	9.2±0.4 μ m
Dimensional Specifications	Cladding Diameter	125 ±1 μ m
	Coating diameter	245 ±5 μ m
	Core/clad concentricity error	≤0.6 μ m
	Cladding Non-Circularity	< 1.0%
Mechanical Specifications	Proof stress	≥0.69Gpa

3. CABLE STRUCTURE

3.1 CABLE TYPE: ADSS



Three-dimensional schematic



Features & Application

- Excellent excess length control technology guarantees superb mechanical and environmental performances
- More environmentally friendly water-blocking materials
- Aramid yarns can provide excellent and stable tension performance

Construction:

1. Outer sheath(HDPE)
2. Strength member (Aramid yarns)
3. Loose tube(PBT), fibers and jelly
4. Central strength member (FRP)
5. Water blocking yarns
6. Filling element
7. Water blocking tap
8. Rip cord

Dimensions and Properties

	Fiber count	2-12 G.652D			18-36 G.652D			48-72 G.652D		
	Physical	Max. no. of fibers per tube	2			6			12	
Stranding no.		6			6			6		
Span(m)		80	120	200	80	120	200	80	120	200
Cable OD(± 0.5mm)		8.5	8.6	8.7	8.5	8.6	8.7	9.2	9.3	9.5
Cable weight (± 15%kg/km)		60	60	60	60	60	60	70	70	70
Properties		Operation temperature range	-40 °C to + 70 °C							
	Installation temperature range	-20 °C to + 60 °C								
	Transport and storage temperature range	-40 °C to + 70 °C								
	Max. tensile load	1.5 W	2W	3W	1.5 W	2W	3W	1.5W	2W	3W
	Crush resistance(N/10cm)	1000			1000			1W		
	Minimal installation bending radius	20*D								
	Minimal operation bending radius	10*D								

*Note: D =cable diameter

W=cable weight per km

The nominal/minimum thickness of the outer jacket is 1.6/1.4mm.

Color code scheme:

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

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	MAT
Duration time	5 minutes
Test results	Fiber strain \leq 0.2%
	Additional attenuation \leq 0.10dB
	No damage to outer jacket and inner elements

4.2 Crush/Compression Test

Test Standard	IEC 60794-1-21 E3
Load	Crush resistance
Duration time	5minute
Test results	Additional attenuation \leq 0.10dB

	No damage to outer jacket and inner elements under short term load
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4.3 Impact Resistance Test

Test Standard	IEC 60794-1-21 E4
Impact energy	3J
Radius	10mm
Impact points	3
Impact number	1
Test result	Additional attenuation $\leq 0.10\text{dB}$
	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	250N
Test result	Additional attenuation: $\leq 0.05\text{dB}$ after test
	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	Additional attenuation: $\leq 0.05\text{dB}$
	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	250N
Cycles	10
Test result	Additional attenuation $\leq 0.10\text{dB}$
	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°C → -40°C → +70°C → +20°C
Time per each step	12 hours
Cycles	2
Test result	Attenuation variation for reference value (the attenuation to be measured before test at +20±3°C) ≤0.10dB/km

4.11 Environmental performance

Test Standard	RoHS
Test result	Pass the test.

Remark:The test wavelength is 1550 nm.