AERIAL CABLE ANTI RODENT DIELECTRIC

AR-1FATDPE-ADSS-RP-120M-48F-G657-A2

OPTICAL FIBRE CABLE TECHNICAL SPECIFICATION

1.1 Scope

This Specification covers the design requirements and performance standard for the supply of optical fibre cable in the industry. ARTIC ensures a stable quality control system for our cable products through several programs including ISO 9001, ISO 14001 and ROHS.

Cable type	Application
AR-1FATDPE-ADSS-RP-120M-48F-G657-A2	Self-supporting aerial installation

120 represents the span.

1.2 Reference

The cable offered by ARTIC are designed, manufactured and tested according to the standards as follows:

ITU-T G.657	Characteristics of a single-mode optical fibre ARTIC
IEC 60794-1-1	Optical fibre cables-part 1-1: Generic specification-General.
IEC 60794-1-21	Optical fibre cables-part 1-2: Generic specification-Basic optical cable test procedure - Mechanical test methods.
IEC 60794-1-22	Optical fibre cables-part 1-2: Generic specification-Basic optical cable test procedure - Environmental test methods.
IEC 60794-3	Optical fibre cables-part 3: Sectional specification-Outdoor cables.
IEC 60794-4-20	Aerial optical cables along electrical power lines - Family specification for ADSS (All Dielectric Self Supported) optical cables

1.3 Life Time

Optical fibre cables supplied in compliance with this specifications is capable to withstand the typical service condition for a period of twenty-five (25) years without detriment to the operation characteristics of the cable.

1.4 Application

Item	Value
Max. pole distance	120m
Operation temperature	-40 ºC～+70 ºC
Storage temperature	-40 ºC～+70 ºC
Static bending radius	10 times the cable diameter
Dynamic bending radius	20 times the cable diameter

2. Optical Fibre

Optical Fibres supplied in this specification meet the requirements of ITU-T G.657 A2

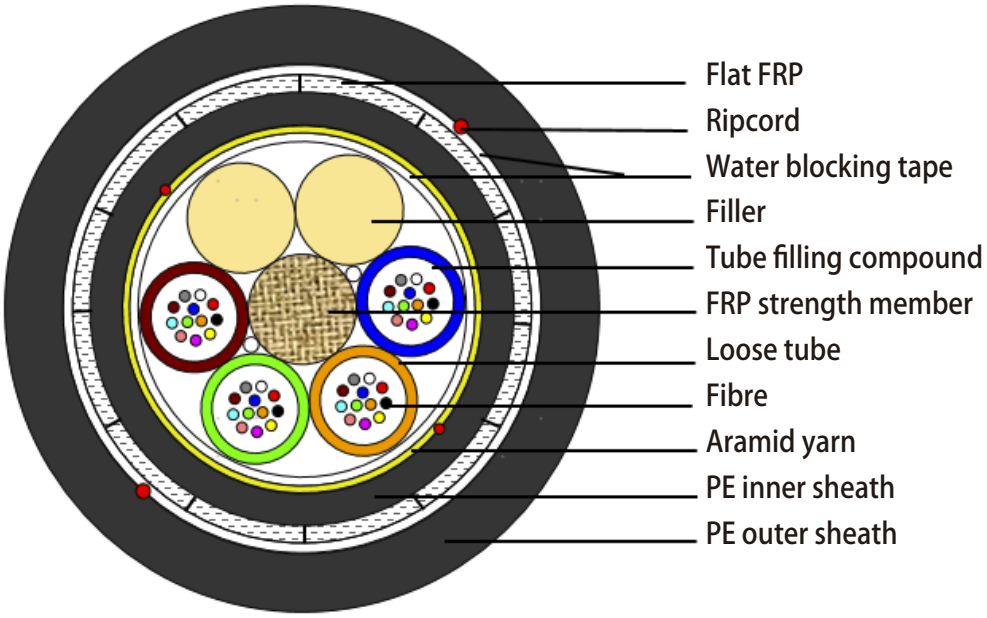
Parameter	Specification
MFD (1310nm)	8.4~9.2um
Cladding diameter	125±0.7um
Fiber diameter	235~255um, with UV coating, and colored to 250±15um
Core/cladding concentricity error	≤ 0.5um
Coating/cladding concentricity error	≤ 12.0um
Cladding non circularity	≤ 0.7 %
Cut off wavelenght	λcc ≤1260nm
Attenuation coefficient	1310nm: 0.36dB/km 1550nm: 0.22dB/km
Bending-loss performance of optical fiber @1310nm&1550nm	≤0.03dB @1550nm ≤0.1dB @1625nm (10 turns around a mandrel of 30mm diameter) ≤0.1dB @1550nm ≤0.2dB @1625nm (1 turn around a mandrel of 20mm diameter) ≤0.5dB @1550nm ≤1.0dB @1625nm (1 turn around a mandrel of 15mm diameter)
Polarization mode dispersion maximun individual fibre	≤0.2ps/√km
Polarization mode dispersion link value	≤0.1ps/√km
Zero-dispersion wavelenght	1300~1324nm
Zero-dispersion slope	≤0.092ps/nm2·km

3. Optical Cable

3.1 Technical Characteristics

- The unique second coating and stranding technology provide the fibres with enough space and bending endurance, which ensure good optical property of the fibres in the cable.
- Accurate process control ensures good mechanical and temperature performance.
- High quality raw material guarantees the long service life of cable.

3.2 Cross Section of Cable



AR-1FATDPE-ADSS-RP-120M-48F-G657-A2

Schematic for reference only

3.3 Fibre and Loose Tube Identification

The color code of fibres and loose tube will be identification in accordance with the following color sequence. The color of the tube will be natural.

	1	2	3	4	5	6
Color code	Blue	Orange	Green	Brown	Grey	White
	7	8	9	10	11	12
	Red	Black	Yellow	Violet	Pink	Aqua

3.4 Dimensions and Descriptions

The standard optical cable structure is shown in the following table, other structure and fibre count are also available according to customer requirements.

Item	Contents	Value
		48
Structure	**Type**	1+6
Loose tube	Max Fiber counts/tube	12
	Outer Diameter (mm)	2.4
Central Strength member	Material	FRP
	Diameter (mm)	2.6
	PE layer diameter (mm)	/
Water Barrier	Material	Water Blocking tape
Additional strength member	Material	Aramid Yarn
Inner sheath	Material	HDPE
	Color	Back
	Thickness (mm)	Minimum: 1.0
Armos (anti rodent)	Material	Flat FRP
	Diameter (mm)	3.0*1.0
Water barrier	Material	Water Blocking tape
Outer sheath	Material	HDPE
	Color	Black
	Thickness (mm)	Minimum:1.5
Ripcord	Number	2+2
Cable diameter(mm) Approx.		15.5
Cable weight(kg/km) Approx.		148

3.5 Mail Mechanical and Environmental Performance

Main mechanical performance

Item	Tension (N)		Crush (N/100mm)	
	Short term	Long term	Short term	Long term
48	8000	3000	4000	2000

Environmental and installation condition

Max. pole distance (M)	Max. wind speed	Max. ice thickness	Initial Installation sag	Temperature
120	27m/s	0	1.0%	-40 ºC～+70 ºC

4. Mechanical, Physical and Environmental Test Characteristics

The mechanical and environmental performance of the cable are in accordance with the following table. Unless otherwise specified, all attenuation measurements required in this section shall be performed at 1550nm.

Items	Test Method	Requirements
Tension	**IEC 60794-1-21-E1** Load: According to 3.5 Sample length: Not less than 50m. Duration time: 1min	Additional attenuation: ≤0.05dB after test. No damage to outer jacket and inner elements.
Crush	**IEC 60794-1-21-E3** Load: According to 3.5 Duration of load: 1min	Additional attenuation: ≤0.05dB after test. No damage to outer jacket and inner elements.
Impact	**IEC 60794-1-21-E4** Radius: 300 mm. Impact energy: 4.5J Impact number: 1. Impact points: 3	Additional attenuation: ≤0.05dB No damage to outer jacket and inner elements.
Bend	**IEC 60794-1-21-E11A** Bending radius: 10*D Turns: 4 Cycles: 3	Additional attenuation: ≤0.05dB No damage to outer jacket and inner elements.
Repeated bending	**IEC 60794-1-21-E6** Bending radius: 20*D Cycles: 25. Load: 150N	Additional attenuation: ≤0.05dB No damage to outer jacket and inner elements.
Torsion	**IEC 60794-1-21-E7** Cycles:10. Length under test: 1m Turns: ±180°. Load: 150N	Additional attenuation: ≤0.05dB No damage to outer jacket and inner elements.
Water Penetration	**IEC 60794-1-22-F5B** Time : 24 hours. Sample length : 3m. Water height : 1m	No water leakage.
Temperature cycling	**IEC 60794-1-22-F1** Sample length: at least 1000m. Temperature range: -40℃～+70℃ Cycles: 2. Temperature cycling test dwell time: 12 hours.	The change in attenuation coefficient shall be less than 0.05 dB/km at 1310 and 1550nm.
Other parameters	According to **IEC 60794 -1**	

5. Packaging and Drum

5.1 Cable Sheath Marking

Unless otherwise specified, the cable sheath marking shall be as follows:

- Color: white.
- Content: ARTIC, the year of manufacture, the type of cable, cable number, lenght marking.
- Interval: 1m.
- Outer sheath marking legend can be changed according to user's requests.

5.2 Reel Length

Standard reel length: 2/4Km/reel, other length is also available.

5.3 Cable Drum

The cables are packed in fumigated wooden drums.

5.4 Cable Packing

Both ends of the cable will be sealed with suitable plastic caps to prevent the entry of moisture during shipping, handling and storage. The inner end is available for testing.