TECHNICAL SPECIFICATION

KDPA ENTERPRISES, LLC
Email: yudith.martell@kdpaenterpricesllc.com

1. General

1.1 Cable Description

1.Colored Fiber

2.PBT loose Tube

3.Water Blocking Yarn

4.Two parallel Fiber Reinforced Plastics(FRP)

5.PE outer Sheath .

1.2 Reference

The cable which ZP offered are designed, manufactured and tested according to international

IEC60793-1	Optical fiber Part 1: Generic specifications
IEC60793-2	Optical fiber Part 2: Product specifications
EIA/TIA598 B	Color code of fiber optic cables
ITU-T G.650	Definition and test methods for the relevant parameters of single-mode fibers
ITU-T G.652	Characteristics of a single-mode optical fiber cable

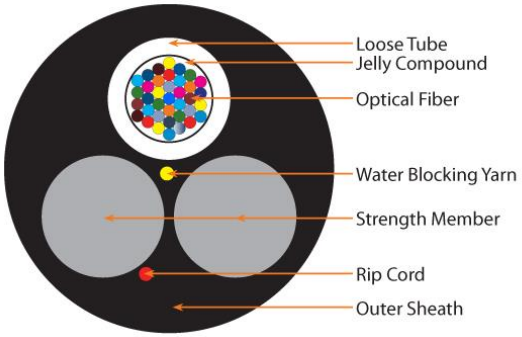
2. Optical Fiber

The optical fiber is made of high pure silica and germanium doped silica. UV curable acrylate material is applied over fiber cladding as optical fiber primary protective coating. The detail data of optical fiber performance are shown in the following table.

Category	Description		Specifications
Type			G.652D
	Attenuation	@1310nm	≤0.35dB/km
		@1383nm	≤0.35dB/km
		@1550nm	≤0.22dB/km
		@1625nm	≤0.25dB/km
	Attenuation Non-uniformity		≤0.03 dB
	Point Discontinuity @1310nm,1550nm		≤0.03 dB

Optical Specifications	Attenuation vs. Wavelength	@1285~1330nm	≤0.05 dB/km
		@1525~1575nm	≤0.05 dB/km
	Zero Dispersion Wavelength		1300~1324
	Zero Dispersion Slope		≤0.092ps/nm.km
	Dispersion	@1310nm	≤3.5 ps/nm.km
		@1550nm	≤18 ps/nm.km
	Polarization Mode Dispersion(PMD)		≤0.2ps/km1/2
	PMD Link value		≤0.2ps/km1/2
	Cable Cutoff Wavelength(λcc)		≤1260nm
	Macro bending Loss (100 turns;Φ60mm) @1625nm		≤0.10 dB
	Mode Field Diameter	@1310nm	9.2±0.6μm
		@1550nm	10.4±0.8μm
	Effective Group Index of Refraction	@1310nm	1.4675
		@1550nm	1.4681
Dimensional Specifications	Fiber Curl Radius		≥4.0m
	Cladding Diameter		125±0.8μm
	Mode field Core/clad concentricity		≤0.5μm
	Cladding Non-Circularity		≤1.0%
	Coating Diameter		245±5μm
	Coating/Cladding Concentricity		≤8μm
	Coating Non-Circularity		≤6.0%
Mechanical Specifications	Proof Test		≥1.0%
	Peak Coating Strip Force		1.0~8.9N
Environmental Specifications	Temperature Cycling Induced Attenuation @1310nm,1550nm,1625nm(-60℃to+85℃)		≤0.05 dB/km

3. Cable structure



Optical Fiber Type	SMF G.652D	
Core Count	2-12	24
Span(m)	80	
Fiber per Tube	2-12	24
Outer Diameter (MM)	6.3	7.0
Cable weight(km/kg)	38	42
FRP Diameter (MM)	1.8	
Loose Tube Material	PBT	
Loose Tube Diameter (MM)	2.0	2.6
Sheath Material	BLACK PE	
Sheath Thickness（MM）	1.3	
Torsion	±180°	
Min.Permissible Bending Radius (mm)	15xostatic &20xo dynamic where o is cable outside diameter in mm	
Temperature Range(℃）	Operation -20to +70 installation -10 to +60	

Fiber Color Code（With color Point）

No	1	2	3	4	5	6
Color	Blue	Orange	Green	Brown	Slate	White
No	7	8	9	10	11	12
Color	Red	Black	Yellow	Violet	Pink	Aqua
No	13	14	15	16	17	18
Color	Blue+R	Orange+R	Green+R	Brown+R	Slate+R	White+R
No	19	20	21	22	23	24
Color	Red+R	Natural+R	Yellow+R	Violet+R	Pink+R	Aqua+R

4. Test Requirements

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.

4.1 Tension Loading Test

Test standard	IEC 60794-1-2-E1
Sample length	No less than 50 meters
Loading	3000
Duration time	10 minutes
Test results	Loss change ≤ 0.15dB @1550nm Fiber strain at max. load: max.0.33% No fiber break and no sheath damage.

4.2 Crush Test

Test standard	IEC 60794-1-2-E3
Loading	1000N
Sample length	100mm
Duration time	5 minutes
Test number	3 points at 3 places
Test results	Loss change ≤ 0.15dB @1550 nm No fiber break and no sheath damage.

4.3 Impact Test

Test standard	IEC 60794-1-2-E4
Loading	1KG,1m,Radius of hammer head: 12.5mm
Points of impact	5
Times of per point	5
Impact rate:	2 sec/cycle
Test results	Loss change ≤ 0.1dB @1550 nm No fiber break and no sheath damage.

4.4 Repeated Bending

Test standard	IEC 60794-1-2-E6
Bending radius	20 x cable diameter
Load	150N
No. of cycle	30
Flexing rate:	3 sec/cycle
Test results	Loss change ≤ 0.1dB @1550 nm No fiber break and no sheath damage.

4.5 Torsion/Twist Test

Test standard	IEC 60794-1-2-E7
Sample length	2m
Load:	150N
Twist rate	1 min/cycle
Twist angle	±180°
No. of cycle	10
Test results	Loss change ≤ 0.1dB @1550 nm No fiber break and no sheath damage.

4.6 Bending Test

Test standard	IEC 60794-1-2-E11B
Bending diameter	20 x cable diameter
Number of cycles	5
Test results	Loss change ≤ 0.1dB @1550 nm No fiber break and no sheath damage.

4.7 Temperature cycling Test

Test standard	IEC 60794-1-2-F1
Temperature step	+20℃→-20℃→+60℃→-20℃→+60℃→+20℃
Time per each step:	12 hrs
Number of cycles	2 cycles
Test results	Attenuation variation for reference value(the attenuation to be measured before test at +20±3℃) ≤0.05dB, reversible

4.8 Water penetration Test

Test standard	IEC 60794-1-2-F5
Water height	1m
Sample length	3m
Duration of test	24 hrs
Test results	No water leakage at the end of the sample

4.9 Drip Test

Test standard	IEC 60794-1-2-E14

Sample length	0.3m
Temperature	+70℃
Duration of test	24 hrs
Test results	No filling compound shall drip from tubes