

TECHNICAL SPECIFICATION

1. General

1.1 Scope

Cable type	Application
Air blown cable	Air blowing installation cable

1.2 Reference

The following international specifications were used as reference documents for the cables provided by Navigator:

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 60794-5	Optical fiber cables- Part 5: sectional specification -Micro duct cabling for installation by blowing
ITU-T G.650	Definition and test methods for the relevant parameters of single-mode fibers
ITU-T G.657	Characteristics of a single-mode optical fiber and cable
EIA/TIA 598	Color code of fiber optic cables

1.3 QR Guard™

QR Guard™ is a multifunctional online platform that revolutionizes how distributors and network operators keep tabs on the status of Navigator fiber cables, ensuring efficient operations, accurate record-keeping, and valuable insights for future product development. Providing unique features including:

- Distributor exclusive management interface
- Installation record archiving
- Written guidelines and visual demonstrations

QR Guard™ plays a vital role in mitigating the costly consequences of mishandling while enabling efficient network expansion in response to evolving market demands. Scan the QR code in the bottom left corner to find out more.

2. OPTICAL FIBER



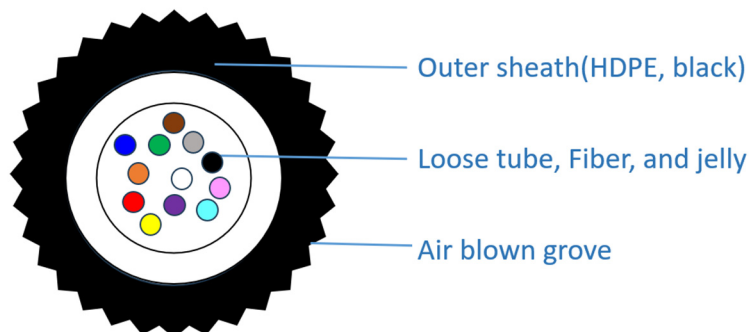
ITU-T G.657A1		
Category	Description	Specifications
Optical Specifications	Attenuation @1310 nm (Max.)	0.34dB/km
	Attenuation @1550 nm (Typical/Max.)	0.20/0.22 dB/km
	Dispersion coefficient	@1288~1339nm $\leq 3.5\text{ps/nm}\cdot\text{km}$ @1271~1360nm $\leq 5.3\text{ps/nm}\cdot\text{km}$ @1550nm $\leq 18\text{ps/nm}\cdot\text{km}$ @1625nm $\leq 22\text{ps/nm}\cdot\text{km}$
	Zero Dispersion Wavelength	1300~1324 nm
	Zero Dispersion Slope	$\leq 0.092\text{ ps/nm}^2\cdot\text{km}$
	Cable Cutoff Wavelength (λ_{cc})	$\leq 1260\text{ nm}$
	Macro Bending Loss (10 turns; $\Phi 30\text{ mm}$) @1550 nm	$\leq 0.25\text{ dB}$
	(10 turns; $\Phi 30\text{ mm}$) @1625 nm	$\leq 1.0\text{ dB}$
	(1 turns; $\Phi 20\text{ mm}$) @1550 nm	$\leq 0.75\text{ dB}$
	(1 turns; $\Phi 20\text{ mm}$) @1625 nm	$\leq 1.5\text{ dB}$
Dimensional Specifications	PMD individual value	$\leq 0.20\text{ps/Vkm}$
	Mode Field Diameter @1310 nm	$(8.6-9.2)\pm 0.4\mu\text{m}$
	Cladding Diameter	$125 \pm 0.7\mu\text{m}$
	Coating diameter	$245 \pm 10\mu\text{m}$
	Core/clad concentricity error	$\leq 0.5\mu\text{m}$
Mechanical Specifications	Cladding Non-Circularity	$< 1\%$
	Proof stress	$\geq 0.69\text{Gpa}$



3. CABLE STRUCTURE

3.1 Cable type

Air blown cable



Features & Application

- Compact structure
- Easy for stripping, splicing, simplified installation and maintenance
- Easy for air blowing installation
- Small diameter & Light weight

Technical Specifications

	Fiber type	ITU-T G.657.A1
Dimensional properties	Fiber count	1-12
	No. of fibers per tube	1-12
	Cable OD-mm(in)	2.5 (0.10)
	Cable weight-kg/km(lb/1000ft)	6(4.0)
Environmental Specifications	Operation temperature range	-40°C to + 70 °C (-40 ° F to 158 ° F)
	Installation temperature range	-30 °C to + 60 °C (-22 ° F to 140 ° F)
	Transport and storage temperature range	-40 °C to + 70 °C (-40 ° F to 158 ° F)
Mechanical Specifications	Max. tensile load (MAT) - N(lb)	25N
	Crush resistance - N/10cm(lb/in)	100(5.7)
	Minimal installation bending radius	20*D
	Minimal operation bending radius	10*D

***Note:** D=cable diameter;

W=cable weight – kg/km(lb/1000ft)



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 Tensile strength test

Test Standard	IEC 60794-1-21 E1
Sample length	No less than 50 meters
Load	MAT
Duration time	1 minute
Test results	After test, additional attenuation $\leq 0.10\text{dB}$ No damage to outer jacket and inner elements

4.2 Compressive strength test

Test Standard	IEC 60794-1-21 E3
Load	Crush resistance
Duration time	1minute
Test results	Additional attenuation $\leq 0.10\text{dB}$ 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	1J
Radius	12.5mm
Impact points	5
Impact number	1



Test result	Additional attenuation $\leq 0.10\text{dB}$
	No damage to outer jacket and inner elements

4.4 Twist test

Test Standard	IEC 60794-1-21 E7
Sample length	1m
Angles	± 180 degree
Load	20N
Cycles	10
Test result	Additional attenuation $\leq 0.10\text{dB}$
	No damage to cable elements

4.5 Abrasion test

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

4.6 Temperature cycling test

Test Standard	IEC 60794-1-22 F1
Temperature step	$+20^{\circ}\text{C} \rightarrow -40^{\circ}\text{C} \rightarrow +70^{\circ}\text{C} \rightarrow +20^{\circ}\text{C}$
Time per each step	12 hours
Cycles	2
Test result	Attenuation variation for reference value (the attenuation to be measured before test at $+20 \pm 3^{\circ}\text{C}$) $\leq 0.15\text{dB/km}$

4.7 Environmental performance

Test Standard	RoHS
Test result	Pass the test.

Remark: The test wavelength is 1550 nm.

5. COLOR CODE SCHEME



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

6. SHEATH MARKING

