# TECHNICAL SPECIFICATION

## 1. GENERAL

### 1.1 Scope

| Cable type | Application |
|---|---|
| AntCore™ Micro Cable (250μm fiber) | 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 |
| ANSI/ICEA S-87-640 and Telcordia® GR-20-CORE | |

### 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 our more.



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## 2. OPTICAL FIBER

| ITU-T G.652.D | | |
|---|---|---|
| Category | Description | Specifications |
| Optical Specifications | Attenuation @1310 nm (Max.) | 0.34 dB/km |
| | Attenuation @1550 nm (Typical/Max.) | 0.20/0.22 dB/km |
| | Zero Dispersion Wavelength | 1300~1324 nm |
| | Chromatic dispersion @1310nm<br>@1550nm<br>@1625nm | ≤3.5 ps/(nm·km)<br>≤18 ps/(nm·km)<br>≤22 ps/(nm·km) |
| | Zero Dispersion Slope | ≤0.092 ps/nm$^2$·km |
| | $PMD_Q$ | ≤0.20 ps/√km |
| | PMD individual value | ≤0.2ps/√km |
| | Cable Cutoff Wavelength ($\lambda_{cc}$) | ≤1260 nm |
| | Macro bending Loss<br>(100 turns; Φ60 mm) @1625 nm | ≤ 0.10 dB |
| | Mode Field Diameter @1310 nm | (8.6-9.2) ±0.4μm |
| Dimensional Specifications | Cladding Diameter | 125 ±0.7μm |
| | Coating diameter | 245 ±10μm |
| | Core/clad concentricity error | ≤0.6μm |
| | Cladding Non-Circularity | ＜1.0% |
| Mechanical Specifications | Proof stress | ≥0.69Gpa |



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| ITU-T G.657.A1 | | |
|---|---|---|
| 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 ≤3.5ps/nm·km<br>@1271~1360nm ≤5.3ps/nm·km<br>@1550nm ≤18ps/nm·km<br>@1625nm ≤22ps/nm·km |
| | Zero Dispersion Wavelength | 1300~1324 nm |
| | Zero Dispersion Slope | ≤ 0.092 ps/nm2·km |
| | PMD Link value (M=20cables Q=0.01%)<br>maximum PMDQ | 0.20 ps/√km |
| | Cable Cutoff Wavelength (λcc) | ≤1260 nm |
| | Macro bending Loss<br>(10 turns; Φ30 mm) @1550 nm<br>(10 turns; Φ30 mm) @1625 nm<br>(1 turns; Φ20 mm) @1550 nm<br>(1 turns; Φ20 mm) @1625 nm | <br>≤ 0.25 dB<br>≤ 1.0 dB<br>≤ 0.75 dB<br>≤ 1.5 dB |
| | Mode Field Diameter @1310 nm | (8.6-9.2) ±0.4μm |
| Dimensional Specifications | Cladding Diameter | 125±0.7μm |
| | Cladding non circularity | ≤1.0% |
| | Coating diameter | 245 ±10μm |
| | Coating non circularity | ≤6% |
| | Cladding / coating concentricity error | ≤6μm |
| | Core/clad concentricity error | ≤0.5μm |
| | Cladding Non-Circularity | ≤1.0% |
| Mechanical Specifications | Proof stress | ≥0.69Gpa |



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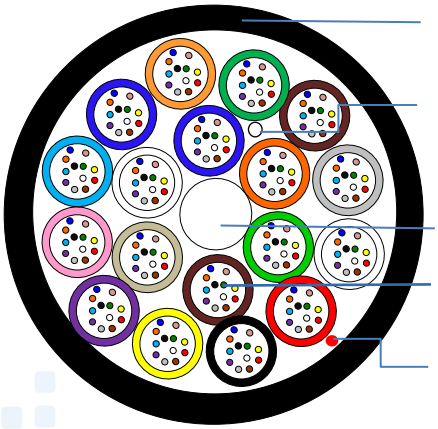
## 3. CABLE STRUCTURE

### 3.1 Cable type

AntCore™ Micro Cable




### Features & Application

- Small diameter
- Semi-dry water blocking
- Perfect cable structure
- Easy for blowing
- Saving the source of duct

### Technical Specifications

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Dimensional properties | Fiber type | 250um G652D or G657A1 | | | | | | | |
| | Fiber count | 12-72 | 96 | 144 | 192 | 288 | 432 | 576 | 864 |
| | No. of fibers per tube | 12 | 12 | 24 | 24 | 24 | 24 | 24 | 36 |
| | Stranding no.-tube No./filler No. | 1-6/5-0 | 8/0 | 6/0 | 8/0 | 12/0 | 18/0 | 24/0 | 24/0 |
| | Cable OD-mm(in） | 5.1(0.20) | 5.9(0.23) | 6.2(0.24) | 7.4(0.29) | 9.6(0.38) | 9.8(0.39) | 11.5(0.45) | 13.3(0.52) |
| | Cable weight-kg/km(lb/1000ft) | 22(14.8) | 32(21.5) | 33(22.2) | 50(33.6) | 79(53.1) | 75(50.4) | 103(69.2) | 136(91.4) |
| 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) | 1*W | | | | | | | |
| | Crush resistance-N/10cm(lb/in) | 1000(57.1) | | | | | | | |
| | Minimal installation bending radius | 20*D | | | | | | | |
| | Minimal operation bending radius | 10*D | | | | | | | |

*Note: D =cable diameter; W=cable weight/km;



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## 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

| | |
|---|---|
| Reference standards | **IEC 60794-1-21 E1** |
| Sample length | No less than 50 meters |
| Load | MAT |
| Duration time | 1 minute |
| Test results | Additional attenuation≤0.10dB |
| | No damage to outer jacket and inner elements |

#### 4.2 Compressive strength test

| | |
|---|---|
| Reference standards | **IEC 60794-1-21 E3** |
| Load | Crush resistance |
| Duration time | 1minute |
| Test number | 3 |
| Test results | Additional attenuation ≤0.10dB |
| | No damage to outer jacket and inner elements |

#### 4.3 Impact resistance test

| | |
|---|---|
| Reference standards | **IEC 60794-1-21 E4** |
| Impact energy | 1J |



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| | |
|---|---|
| Radius | 12.5mm |
| Impact points | 5 |
| Impact number | 1 |
| Test result | Additional attenuation ≤0.10dB |
| | No damage to outer jacket and inner elements |

### 4.4 Cyclic flexing test

| | |
|---|---|
| Reference standards | **IEC 60794-1-21 E6** |
| Bending radius | 20*D |
| Cycles | 25 cycles |
| Load | 150N |
| Test result | Additional attenuation ≤0.10 |
| | No damage to cable elements |

### 4.5 Bend test

| | |
|---|---|
| Reference standards | **IEC 60794-1-21 E11** |
| Mandrel diameter | 20*D |
| Turn number | 3 |
| Cycles | 4 |
| Test result | Additional attenuation ≤0.10dB |
| | No damage to outer jacket and inner elements |

### 4.6 Twist test

| | |
|---|---|
| Reference standards | **IEC 60794-1-21 E7** |
| Sample length | 2m |
| Angles | ±180 degree |
| Load | 150N |
| Cycles | 10 |
| Test result | Additional attenuation ≤0.10dB |
| | No damage to cable elements |

### 4.7 Abrasion test

| | |
|---|---|
| Reference standards | **IEC 60794-1-21 E2B** |
| Experiment method | The wool felt should be thoroughly impregnated with water |
| Frequency | 6-12cycles/min |
| Load | 20N |
| Cycles | 10 |



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| | |
|---|---|
| Test result | The marking should be legible after test |

### 4.8 Water penetration test

| | |
|---|---|
| Reference standards | **IEC 60794-1-22 F5** |
| Height of water column | 1m |
| Sample length | 3m |
| Test time | 24 hours |
| Test result | No water seepage from the opposite end of the sample |

### 4.9 Temperature cycling test

| | |
|---|---|
| Reference standards | **IEC 60794-1-22 F1** |
| Temperature step | +20 $^{O}$C→-40 $^{O}$C →+70 $^{O}$C→+20 $^{O}$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 $^{O}$C) ≤0.15dB/km |

### 4.10Environmental performance

| | |
|---|---|
| Test Standard | **RoHS** |
| Test result | Pass the test. |

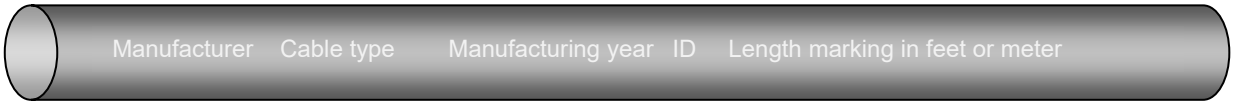
**Remark:** The test wavelength is 1550 nm.

## 5. COLOR CODE SCHEME

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Fiber color** | blue | orange | green | brown | slate | white | red | black | yellow | violet | pink | aqua |
| **Tube color** | blue | orange | green | brown | slate | white | red | black | yellow | violet | pink | aqua |

Note： black ring will be used on 13th-24th fibers (the 20th fiber is natural without ring);
black stripe will be used on 13th-24th loose tubes (white stripe for black loose tube).

## 6. SHEATH MARKING



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