

TECHNICAL SPECIFICATION

1. General

1.1 Scope

Cable type	Application
Heavy Loading ADSS	Self-supported 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
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 and cable
EIA/TIA 598	Color code of fiber optic cables
IEEE Std 1222-2019	IEEE Standard for Testing and Performance for All-Dielectric Self-Supporting (ADSS) Fiber Optic Cable for Use on Electric Utility Power Lines

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

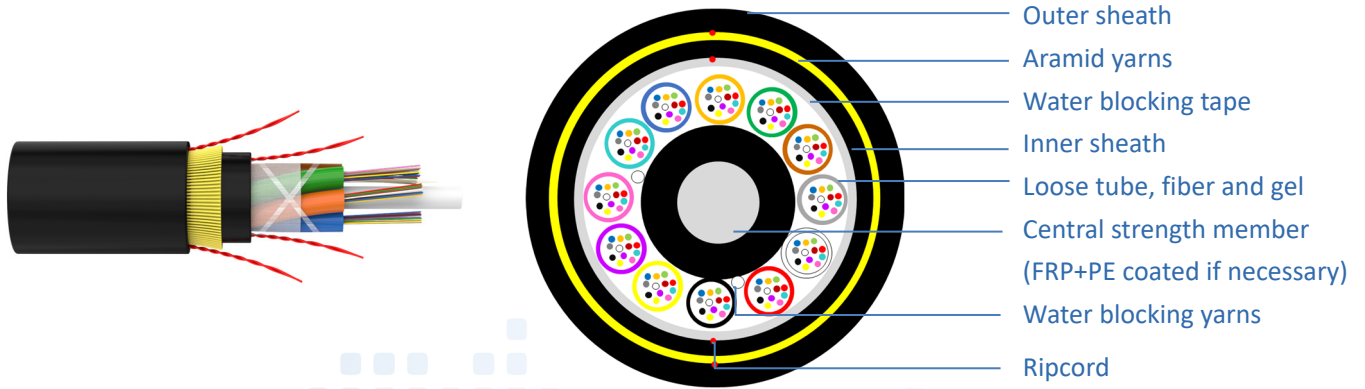
ITU-T G.652.D		
Category	Description	Specifications
Optical Specifications	Attenuation @1310 nm	≤ 0.35 dB/km
	Attenuation @1550 nm	≤ 0.23 dB/km
	Zero Dispersion Wavelength	1300~1324 nm
	Chromatic dispersion @1310nm @1550nm @1625nm	≤ 3.5 ps/(nm·km) ≤ 18 ps/(nm·km) ≤ 22 ps/(nm·km)
	Zero Dispersion Slope	≤ 0.092 ps/nm ² ·km
	PMD _Q	≤ 0.20 ps/√km
	PMD individual value	≤ 0.2 ps/√km
	Cable Cutoff Wavelength (λ_{cc})	≤ 1260 nm
	Macro bending Loss (100 turns; $\Phi 60$ mm) @1625 nm	≤ 0.10 dB
	Mode Field Diameter @1310 nm	(8.6-9.2) $\pm 0.4\mu\text{m}$
Dimensional Specifications	Cladding Diameter	125 $\pm 0.7\mu\text{m}$
	Coating diameter	245 $\pm 10\mu\text{m}$
	Core/clad concentricity error	$\leq 0.6\mu\text{m}$
	Cladding Non-Circularity	$< 1.0\%$
Mechanical Specifications	Proof stress	≥ 0.69 Gpa



3. CABLE STRUCTURE

Cable Type

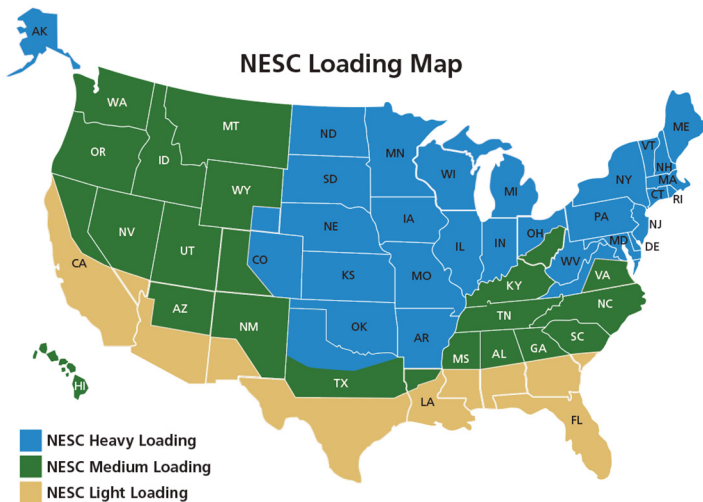
Heavy loading ADSS



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
- Up to 432 fiber count

3.1 General 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)
Minimal installation bending radius	20*D
Minimal operation bending radius	10*D

3.2 Physical Parameters at 1% Installation Sag

Fiber count	Span		Weight		Diameter		MAT	
	feet	M	lb/ft	kg/km	Inch	mm	lb	N
72	500	152	0.089	132	0.512	13.0	1569	6981
	1000	305	0.094	140	0.528	13.4	2963	13182
	1500	457	0.106	158	0.559	14.2	4689	20857



96	500	152	0.132	197	0.610	15.5	1756	7810
	1000	305	0.139	207	0.626	15.9	3593	15983
	1500	457	0.149	222	0.661	16.8	5576	24803
144	500	152	0.209	311	0.764	19.4	2188	9734
	1000	305	0.218	324	0.780	19.8	4494	19991
	1500	457	0.226	337	0.811	20.6	6843	30400
288	500	152	0.259	385	0.890	22.6	2579	11474
	1000	305	0.269	400	0.921	23.4	5196	23112
	1500	457	0.277	412	0.937	23.8	7984	35513
432	500	152	0.298	444	0.953	24.2	2833	12601
	1000	305	0.320	476	0.984	25.0	5829	25930
	1500	457	0.329	490	1.000	25.4	8997	40022

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	Telcordia® GR-20-CORE 6.5.6 OR IEC 60794-1-21 E1
Sample length	No less than 50 meters
Load	MAT
Duration time	10 minutes
Test results	After test, additional attenuation≤0.05dB
	No damage to outer jacket and inner elements



4.2 Compressive strength test

Reference standards	Telcordia® GR-20-CORE 6.5.5 OR IEC 60794-1-21 E3
Load	Crush resistance
Duration time	10 minutes
Test number	3
Test results	Additional attenuation $\leq$ 0.10dB
	No damage to outer jacket and inner elements

4.3 Impact resistance test

Reference standards	Telcordia® GR-20-CORE 6.5.4 OR IEC 60794-1-21 E4
Impact energy	5J
Radius	12.5mm
Impact points	5
Impact number	1
Test result	After test, additional attenuation $\leq$ 0.05dB
	No damage to outer jacket and inner elements

4.4 Cyclic flexing test

Reference standards	Telcordia® GR-20-CORE 6.5.8 OR IEC 60794-1-21 E6
Bending radius	20*D
Cycles	25 cycles
Load	250N
Test result	After test, additional attenuation $\leq$ 0.05dB
	No damage to cable elements

4.5 Bend test

Reference standards	Telcordia® GR-20-CORE 6.5.3 OR IEC 60794-1-21 E11
Mandrel diameter	20*D
Turn number	3
Cycles	4
Test result	After test, additional attenuation $\leq$ 0.05dB
	No damage to outer jacket and inner elements

4.6 Twist test

Reference standards	Telcordia® GR-20-CORE 6.5.7 OR IEC 60794-1-21 E7
Sample length	1m



Angles	±180 degree
Load	150N
Cycles	10
Test result	Additional attenuation≤0.10dB
	No damage to cable elements

4.7 Abrasion test

Reference standards	Telcordia® GR-20-CORE 6.6.6 OR 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 Water penetration test

Reference standards	Telcordia® GR-20-CORE 6.6.7 OR 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	Telcordia® GR-20-CORE 6.6.3 OR 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) ≤0.15dB/km

4.10 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	blue	orange	green	brown	slate	white	red	black	yellow	violet	pink	aqua

Note: Stripes will be used to differentiate the 13th to the 36th buffer tubes

6. SHEATH MARKING

