Technical specifications
Managed Dark Fiber

Fiber type	
Construction until 2010	Single Mode ITU-G.652.D
Construction after 2010	Single Mode ITU-G.657.A1*
Route Amsterdam-Hamburg	Single Mode ITU-G.655.D

* Fully compatible with the ITU-T G.652.D fibers

Fibre attenuation per kilometer	ITU-G.652.D	ITU-G.655.D
Fibre attenuation at 1310 nm Max.	0.35 dB/km	n.a.
Fibre attenuation at 1550 nm Max.	0.25 dB/km	0.24 dB/km
Fibre attenuation at 1625 nm Max.	0.28 dB/km	0.25 dB/km

Route attenuation	
(L x 0,25) + 1,0 + (n x 0,1) in dB	

L = length in km
0.25 Attenuation in dB per kilometer at 1550 nm

1.0 = 2 x 0.5 dB = maximum attenuation connector transition
n x 0.1 = number of fusion welds in the route

OTDR measurement
After completion of the connection, a bi-directional OTDR measurement at a wavelength of 1550 nm is performed as standard.

CD and PMD	ITU-G.652.D	ITU-G.655.D
Chromatic Dispersion (CD) at 1530 nm - 1565 nm (C-Band)	< 18 ps/(nm x km)*	2.6 – 6.0 ps/(nm x km)
Chromatic Dispersion (CD) at 1565 nm - 1625 nm (L-Band)	< 21 ps/(nm x km)**	4.0 – 8.9 ps/(nm x km)
Polarisation Mode Dispersion (PMD) Coefficient	< 0.2 ps/√km	< 0.1 ps/√km

* at 1550 nm ** at 1625 nm

CD and PMD measurements
A CD and PMD measurement will be carried out on connections with a length of > 40 km as a standard part of the delivery.

Type of connector as demarcation point	
Standard	SC/APC 8°
Optional after agreement (location dependent)	SC/UPC
	LC/UPC
	LC/APC 8°
	E2000/APC 8°

Connection options	
Single connection	Single connection building
Dual connection	2 fibre-optic pairs with separate excavation route and building input
Dual flat connection	2 fibre-optic pairs, which partly run through one casing tube

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Configuration	
Point-to-Point	Single route between location A and location B
Ring	Ring structure for connecting multiple locations
Cascade	Connecting multiple locations in a chain

Laser power
Up to and including Class 3R

Device that switches off the laser when the light circuit is interrupted (ALS, APR, IPR)
Mandatory for all classes higher than 1M

Condition higher power
Class 3B (max. 500 mW) after compliance
Higher power not permitted

Continuity	
Availability of Point-to-Point and Cascade configuration	99.9% per calendar year
Availability of Ring configuration	99.99% per calendar year*
Repair time in case of network interruption (line down)	Guaranteed < 8 hours

* The total availability is partly determined by the customer equipment, whereby the customer is responsible for the redundant configuration of the hardware.

Specification 20191

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