Tender No.	:	Spec. No.	: LGCE-23-OC0001-00
User / Customer	: Deutsche Glasfaser	Page No.	: 1 of 7
Title	: Enhanced Performance Fiber Unit 2f DIN		

Specification

For

Enhanced Performance Fiber Unit
G.657-A1

00	Nov. 29. 2023	Published	HtB	MvE	Per
Rev. No.	Date	Descriptions	Prepared By	Reviewed By	Approved By

1. SCOPE

1.1 Application

This specification covers the general requirements for air blown fiber used for blowing installation in Deutsche Glasfaser FttH projects. The cable designs described herein are capable of transmitting telephone, data and video signals in micro duct installations utilizing single mode optical fibers. Please take notice of the difference in fiber colours between Reggefiber and DIN colour coding.

2. OPTICAL FIBER

The optical, geometrical, mechanical and environmental performance of the optical fiber shall be in accordance with Table 1 below.

Table 1. Performance of the Single Mode Fiber.(G.657A1)

ITEMS	UNITS	SPECIFICATION
Attenuation	dB/km	≤ 0.40 at 1310nm ≤ 0.30 at 1550nm
Chromatic Dispersion	ps/nm.km	≤ 3.5 at 1285nm ~ 1330nm ≤ 18 at 1550nm
Zero Dispersion Wavelength	nm	1300 ~ 1324
Zero Dispersion Slope	$ps/nm^2.km$	≤ 0.092
Cable PMD (PMD_Q)	$ps/\sqrt{km}$	≤ 0.2 (20 section link)
Cut-off Wavelength (λcc, Cabled fiber)	nm	≤ 1260
Attenuation vs. Bending (15mm radius x 10turns)	dB	≤ 0.25 at 1550nm ≤ 1.0 at 1625nm
Attenuation vs. Bending (10mm radius x 1turn)	dB	≤ 0.75 at 1550nm ≤ 1.5 at 1625nm
Mode Field Diameter	μm	8.9 ± 0.4 at 1310nm
Core/Cladding Concentricity Error	μm	≤ 0.5
Cladding Diameter	μm	125 ± 0.7
Cladding Non-circularity	%	≤ 1.0
Coating Diameter	μm	245 ± 10
Proof Test	Gpa	≥ 0.69

3. ABF CONSTRUCTION

The construction of the Air blown fiber shall be in accordance with Table 2.

Table 2. ABF construction of 2-fiber counts

ITEMS		DESCRIPTION
Number of Fibers		2
Type of Fiber		Single Mode
Coating Material		Inner Matrix coating and Plastic Outer Coating
Outer Diameter (Nominal)	2 fibers	1.2 ± 0.1 mm
Unit Color		Orange

4. FIBER IDENTIFICATION

The color code of the individual fibers within the Air blown fiber shall be in accordance with Table 3.

Table 3. The fiber color order of SMF Air Blown Fiber unit

	2 core
1	Red
2	Green
Dummies	Natural

5. SHEATH MARKING

The fiber unit shall be marked at each meter with the following text:

FttH Deutsche Glasfaser FE G.657A1 2F LGCE "Batch-codenr." "Length marking in Meter"

6. MECHANICAL / ENVIRONMENTAL PERFORMANCE

6.1 Mechanical and Environmental Performance of the Air Blown Fiber

The mechanical and environmental performance of the air blown fiber unit shall be in accordance with Table 4 below.

Table 4. The Mechanical Performance of the Air Blown Fiber

ITEMS	TEST METHOD AND ACCEPTANCE CRITERIA
Crush	# Test method: IEC 60794-1-21 : Method E3 -. Maximum Load: 100N/10cm -. Unit Length : ≥ 30m -. During of Maximum Load : 60 seconds -. Selection of fibers to be monitored : All fibers in the unit # Acceptance Criteria -. Change in Attenuation during test : To be recorded -. Change in Attenuation after test : ≤ 0.05 dB/km -. No significant damage to unit component
Bend	# Test method: IEC 60794-1-21 : Method E11 -. Mandrel Diameter : = 60 mm -. Unit Sample Length : ≥ 30m -. Selection of fibers to be monitors : All fibers in the unit # Acceptance Criteria -. Change in Attenuation during test : To be recorded -. Change in Attenuation after test : ≤ 0.05 dB/km -. No significant damage to unit component

ITEMS	TEST METHOD AND ACCEPTANCE CRITERIA
Temperature Cycle	# Test method: IEC 60794-1-22 Method F1 -. Length of unit to be tested : ≥ 1km -. Temperature T_A : = -40 °C -. Temperature T_B : = +60 °C -. Dwell time: ≥ 24 hours -. Recovery time: ≥ 24 hours -. Temperature Rate : = 0.5 °C ± 0.2 °C/min -. Number of Cycles : = 2 -. Selection of fibers to be monitors : All fibers in the unit -. Wavelength of measurement : for SMF unit : 1310nm, 1550 nm # Acceptance Criteria -. For SMF unit attenuation variation during and after test: ≤ 0.15 dB/km
Impact	# Test method: IEC 60794-1-21 Method E4 -. Height: 0,2 m -. Weight: 100 grams -. Number of cycles := 3 at different places -. Selection of fibres to be monitored : All fibers in the unit -. Test wavelength : for SMF unit : 1310nm, 1550 nm #Acceptance criteria. -. For SMF unit continuation of the transmission after the test.
Kink	# Test method: IEC 60794-1-21 Method E10 -. Diameter: 10 x D (D = SMF unit diameter) -. Temperature during test: +20°C -. Number of samples := 3 #Acceptance criteria No kinking shall occur

7. PACKAGING

7.1 Standard length of fiber unit shall be 6 km + 5 %. Other cable length is also available if required by customer.

7.2 Unit Storage Pan

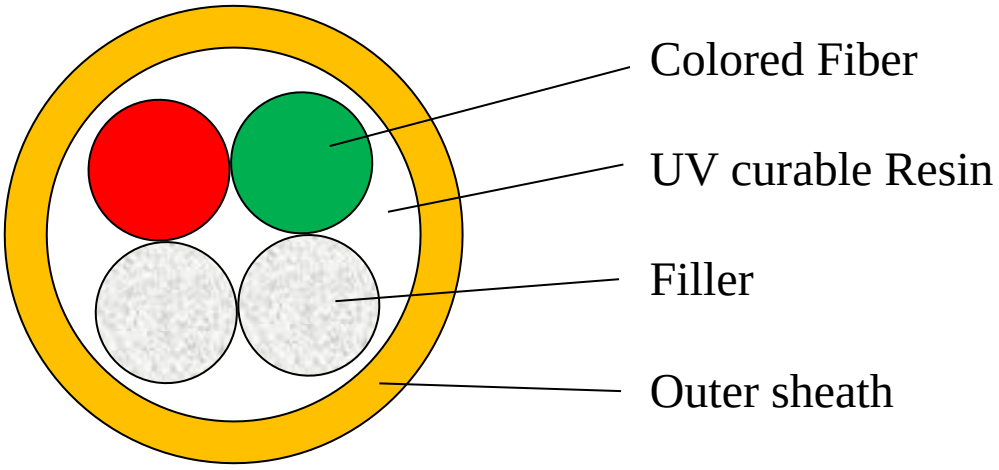
1) The fiber unit shall be supplied in a carton storage boxes. Fiber units shall be laid in the pans in the format of resetted coils

7.2.1 The boxes shall have a sticker with the following information

(1) Cable type and fiber counts
(2) Length of cable in meters
(3) Gross weight in kilograms
(4) Reel number
(5) Year of manufacture

< Cross-sectional Drawing of Cable >

1. Air Blown Fiber



2-Fibers Air Blown Fiber

2. Diameter, Weight and Minimum Bending Radius

No. of Fibers	Nominal Diameter (mm)	Approx. Cable Weight (kg/km)	Minimum Bending Radius (mm) (Handling)
2	1.2 ± 0.1	1.40 ±0.1	40

*) Actual values for cable weight and diameter may deviate from the calculated values given in the table above.

== End of Specification ==