DNV·GL

Certificate No:
TAE00003VU

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Category cables

with type designation(s)
LanMarin Fire CAT6A & CAT7 S/FTP

Issued to
NEK Kabel AS
LØRENSKOG, Norway

is found to comply with
DNV GL rules for classification – Ships, offshore units, and high speed and light craft

Application :

Products approved by this certificate are accepted for installation on all vessels classed by DNV GL.

Issued at **Høvik** on **2020-04-14**
This Certificate is valid until **2024-05-27**.
DNV GL local station: **Oslo Maritime and CAP**

Approval Engineer: **Ivar Bull**

for **DNV GL**

Marta Alonso Pontes
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.
The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

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Product description

LanMarin Fire CAT6A & CAT7 S/FTP

Conductor	Class 1 Solid Bare Copper，AWG 23
Insulation	Polyolefin
Fire resistant wrapping tape	Each insulation cord is wrapped with fire resistant mica tape
Cabling / Individual screen	Twisted pairs with Al-/polyester tape 100% coverage
Overall screen	Tinned copper wire braid (≥ 55 % coverage)
Inner-sheath (optional)	SHF1 or SHF2 or SHF2 MUD
Metallic covering (optional)	Tinned copper wire or galvanized steel wire, braiding density ≥ 90%
Outer Sheath	SHF1 or SHF2 or SHF2 MUD

Cat 6A

Freq-MHz	Attenuation dB/100m	NEXT dB/100	RL dB/100	PS NEXT dB/100m	PS ELFEXT dB/100m	ELFEXT dB/100m	Delay ns/100m	Skew ns/100m
4	3.8	66.3	23.0	63.3	53.0	56.0	552	≤45
8	5.3	61.8	24.5	58.8	46.9	49.9	547	
10	5.9	60.3	25.0	57.3	45.0	48.0	545	
16	7.5	57.2	25.0	54.2	40.9	43.9	543	
20	8.4	55.8	25.0	52.8	39.0	42.0	542	
25	9.4	54.3	24.3	51.3	37.0	40.0	541	
31.25	10.5	52.9	23.6	49.9	35.1	38.1	540	
62.5	15.0	48.4	21.5	45.4	29.1	32.1	539	
100	19.1	45.3	20.1	42.3	25.0	28.0	538	
150	23.7	42.7	18.9	39.7	21.5	24.5	537	
200	27.6	40.8	18.0	37.8	19.0	22.0	537	
250	31.1	39.3	17.3	36.3	17.0	20.0	536	
300	34.3	38.1	17.3	35.1	15.5	18.5	536	
400	40.1	36.3	17.3	33.3	13.0	16.0	536	
500	45.3	34.8	17.3	31.8	11.0	14.0	536	

Cat 7

Freq-MHz	Attenuation dB/100m	NEXT dB/100m	RL dB/100 m	PS NEXT dB/100m	PS ELFEXT dB/100m	ELFEXT dB/100m	Delay ns/100m	Skew ns/100 m
4	3.7	78.0	23.0	75.0	75.0	78.0	55	
10	5.9	78.0	25.0	75.0	72.3	75.3	54	
16	7.4	78.0	25.0	75.0	68.2	71.2	54	
31.25	10.	78.0	23.6	75.0	62.4	65.4	54	
62.5	14.	75.5	21.5	72.5	56.4	59.4	53	
100	19.	72.4	20.1	69.4	52.3	55.3	53	
200	27.	67.9	18.0	64.9	46.3	49.3	53	≤25
250	31.	66.4	17.3	63.4	44.3	47.3	53	
300	34.	65.2	17.3	62.2	42.8	45.8	53	
400	40.	63.4	17.3	60.4	40.3	43.3	53	
500	45.	61.9	17.3	58.9	38.3	41.3	53	
600	50.	60.7	17.3	57.7	36.7	39.7	53	

Name and place of manufacturer

DNVGL Id: 10129143

Application/Limitation

This cable is fire resistant according to IEC 60331-23 & EN 50289-4-16

The requirements of SOLAS Amendments Chapter II-1, Part D, Reg. 45, 5.2 (provision to be taken to limit Fire Propagation along Bunches of Cables or Wires) are fulfilled without any additional measures.

Due to the low cross section of these cables, extra precautions shall be made during installation. In order to achieve a transmission link compliant with Category 6 and 7, cables shall be installed with suitable termination equipment according to manufacturer's recommendations.

Horizontal cables Cat. 6A and 7
Fire resistant. Flame retardant in bunch; cat A. Low smoke
Outer sheath SHF1 or SHF2 or SHF2 MUD according to NEK TS 606

Temperature window:
Operation : -40°C to +90°C
Installation : -15°C to +50°C

Type Approval documentation

Tests carried out

Standard	Release	General description	Limitation
DNVGL-CP-0403	2015-12	DNV GL Type approval program for Data communication cables – category cables	Ref. IEC 61156-5 standard Category 6A and 7.
IEC 61156-5	2009-05	Multicore and symmetrical pair/quad cables for digital communications – Part 5: Symmetrical pair/quad cables with transmission characteristics up to 1 000 MHz – Horizontal wiring – Sectional specification	Reference to requirement for category cable: 6A (500MHz), 7 (600MHz),
IEC 60332-1-2	2015-07	Tests on electric and optical fibre cables under fire conditions – Part 1-2: Test for vertical flame propagation for a single insulated wire or cable –Procedure for 1 kW pre-mixed flame	
IEC 60331-23	1999-04	Tests for electric cables under fire conditions – Circuit integrity – Part 23: Procedures and requirements –Electric data cables	180 minutes flame application
EN 50200	2016-01	Method of test for resistance to fire of unprotected small cables for use in emergency circuits	180 minutes flame application
EN 50289-4-16	2016-10	Communication cables - Specifications for test methods - Part 4-16: Environmental test methods - Circuit integrity under fire conditions	180 minutes flame application
IEC 60332-3-22	2018-07	Tests on electric and optical fibre cables under fire conditions – Part 3-22: Test for vertical flame spread of vertically-mounted bunched wires or cables – Category A	Charred portion of sample does not exceed 2,5m above bottom edge of burner.
IEC 60754-1	2011-11	Test on gases evolved during combustion of materials from cables - Part 1: Determination of the halogen acid gas content	Low Halogen: <0,5% Halogen
IEC 60754-2	2011-11	Test on gases evolved during combustion of materials from cables - Part 2: Determination of acidity (by pH measurement) and conductivity	Halogen free: pH > 4,3 Conductivity < 10µS/mm
IEC 61034-1/2	2013-06	Measurement of smoke density of cables burning under defined conditions – Test apparatus, procedure and requirements	Low smoke Light transmittance >60%
NEK TS 606	2016	Cables for offshore installations.	Mud resistance test for cable types with SHF2 MUD sheath: IRM 902 + 903 100°C 7d. Calcium Bromide 70°C 56d. EDC 95-11 70°C 56d.

Marking of product

NEK Kabel - LanMarin Fire CAT6A & CAT7 S/FTP 4×2×23/1 AWG Solid - IEC60332-3-22 –

IEC 60331-23[180min] SHF1 or SHF2 or SHF2 MUD DNV GL \<BATCH NO.> \<Meter Marking>

Periodical assessment

The scope of the periodical assessment is to verify that the conditions stipulated for the Type Approval are complied with and that no alterations are made to the product design or choice of materials.

The main elements of the assessment are:

- Inspection on factory samples, selected at random from the production line (where practicable)
- Results from Routine Tests (RT) checked (if not available tests according to RT to be carried out)
- Review of type approval documentation
- Review of possible change in design, materials and performance
- Ensuring traceability between manufacturer's product type marking and Type Approval Certificate.

Periodical assessment is to be performed after 2 years and after 3.5 years. A renewal assessment will be performed at renewal of the certificate.

END OF CERTIFICATE