TYPE APPROVAL CERTIFICATE

Certificate No:
TAE000000B
Revision No:
3

This is to certify:

That the Data transmission cables and systems

with type designation(s)
Cat. 6A/EA Copper Link

Issued to
Sohome AS
Søreidgrend, **Norway**

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

Application :

Link tested to category 6A/EA (500 MHz) consisting of:
- Connector, category EA/6A (500MHz)
- Data communication cable, tested for cat. 7 (600MHz)
Products approved by this certificate are accepted for installation on all vessels classed by DNV.

Issued at **Høvik** on **2023-01-24**
This Certificate is valid until **2027-09-27**.
DNV local unit: **Bergen**

Approval Engineer: **Ivar Bull**

for **DNV**

Frederik Tore Elter
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.

Product description

Link values* (cable and connector):
*Electrical data at 20°C

Frequency	Attenuation, Nom	NEXT
MHz	[dB/100m]	[dB]
1	4	65
4	4	64
10	5,5	57,8
16	6,9	54,5
20	7,7	53
31,25	9,6	50
62,5	13,8	45,1
100	17,7	41,8
155	22,2	38,7
200	25,4	36,9
250	28,6	35,3
300	31,5	33,8
500	41,6	29,2

Cables:

Type:	**Maritime LAN 6AS S/FTP, (PN: BC-10-021)**
Standards	Category 6A, Installation cable according to: EN 50173-1; EN 50288-4-1, ISO/IEC 11801; IEC 61156-5
Conductors:	Solid Copper (Class 1) 0,26mm^2 / AWG23
Core insulation:	Polyethylene foamskin
Screen:	Al/polyester tape
Metal covering:	Tinned, Copper wire braid
Outer sheath:	SHF1

Electrical data at 20°C

Frequency	Attenuation,	NEXT
MHz	[dB/100m]	[dB]
1,0	1,8	100
4,0	3,4	100
10,0	5,4	100
16,0	6,8	100
20,0	7,7	100
31,2	9,6	100
62,5	13,7	100
100,0	17,4	100
125,0	19,5	95
155,5	21,9	94
175,0	23,3	93
200,0	25,0	92
250,0	28,1	90
300,0	30,9	89
450,0	38,3	87
500,0	43,0	86

Characteristic impedance: 100 Ohm
DC-loop resistance: ≤ 150 Ω/km

Type(s): **Maritime LAN 7S S/FTP (PN:BC-10-001)**
Conductors: Solid Copper (Class 1) (AWG23)
Core insulation: Polyethylene foam skin
Screen: Al/polyester tape
Metal covering: Tinned, Copper wire braid
Outer sheath: SHF1

Electrical data at 20°C:

Frequency	Attenuation, nom	NEXT
MHz	[dB/100m]	[dB]
1	1,8	100
4	3,4	100
10	5,4	100
16	6,8	100
20	7,7	100
31,25	9,6	100
62,5	13,7	100
100	17,4	100
155	21,9	94
200	25,0	92
250	28,1	90
300	30,9	89
600	44,8	85

Characteristic impedance: 100 Ohm
DC-loop resistance: ≤ 150 Ω/km

Connectors:
RJ45 connector for telecommunications outlet:
Keystone connector BC-11-006/BC-11-004 Cat6A STP Bergen Cabling screened, solid wire – including use with Bergen Cabling wall outlet.

RJ45 connector for patch panel:
Keystone connector BC-11-006/BC-11-004 Cat6A STP Bergen Cabling screened, solid wire – including use with patch panel BC-13-201 / BC-13-203.

Connector type **BC-11-004 or BC-11-006**
RJ45 Screened solid wire
Class; E_A (equal to cat. 6_A)
Frequency 500MHz
Ethernet speed ≤10GB

Characteristic impedance
1-100MHz (100 ± 5) Ω
100-250MHz (100 ± 10) Ω
250-500MHz (100 ± 15) Ω

Cable Manufacturer:
DNV ID no. 10082991

Connector manufacturer:
DNV ID no. 1090506

Application/Limitation

Temperature window
Operation: - 40°C to +85°C
Installation: - 15°C to +50°C

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.

The information related to EN certification from recognised test institution is taken as information only

To be installed according to the manufacturer's installation recommendation.

Type Approval documentation

Tests carried out

Standard	Release	General description	Limitation
DNV-CP-0404	2021-09	Maritime LAN - Horizontal cabling - Copper permanent link	
IEC 60332-3-24	2018-07	Tests on electric and optical fibre cables under fire conditions - Part 3-24: Test for vertical flame spread of vertically mounted bunched wires or cables - Category C	Charred portion of sample does not exceed 2,5m above bottom edge of burner.
IEC 61156-5	2020-04	Symmetrical pair/quad cables for digital communications – Symmetrical pair/quad cables with transmission characteristics up to 1000MHz horizontal floor wiring.	Cat. 7 – 600MHz
IEC 60603-7-51	2010-04	Connectors for electronic equipment - Part 7-51: Detail specification for 8-way, shielded, free and fixed connectors, for data transmissions with frequencies up to 500 MHz	
ISO/IEC 11801	2017-11	Information technology – Generic cabling for customer premises, incl. Amd 1 and 2.	Ref. to requirement for link type: $E_A/6_A$ (500 MHz), for category cable: 7 (600MHz), for connector type: E_A (500 MHz),
EN 50173-1	2020-07	Information technology – Generic cabling systems – Part 1. General requirements.	
EN 50288-4-1	2013-06	Multi-element metallic cables used in analogue and digital communication and control - Part 4-1: Sectional specification for screened cables characterised up to 600MHz – Horizontal and building backbone cables	

Marking of product

Connector: Bergen Cabling <part no > Cat.6A Screened connector

Cable: Bergen Cabling Maritime LAN - Cat.6AS or Cat. 7 - IEC 60332-3-24 – factory code - <part no > - order no - date – 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) and selected type tests (ref. to applicable class programs) checked (if not available these tests shall 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