DNV·GL

Certificate No:
TAE000036K

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Data transmission cables and systems

with type designation(s)
Coaxial cable RF LLF 1/2" 50 Ohm unarmoured,
Coaxial cable RF LLF 1/2" 50 Ohm Hiflex unarmoured,
Coaxial cable RF LLF 7/8" 50 Ohm unarmoured,
Coaxial cable RF LLF 7/8" 50 Ohm Hiflex unarmoured

Issued to
ZHANGJIAGANG TWENTSCHE CABLE CO.,LTD
Zhangjiagang, Jiangsu, China

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

Application :

Coaxial cables 50 Ohm. Unarmoured.

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

Issued at **Høvik** on **2018-10-29**
This Certificate is valid until **2023-10-28**.
DNV GL local station: **Shanghai**

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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Job Id: **262.1-029680-1**
Certificate No: **TAE000036K**

Product description
Coaxial cable RF LLF 1/2" 50 Ohm unarmoured,
Coaxial cable RF LLF 1/2" 50 Ohm Hiflex unarmoured,
Coaxial cable RF LLF 7/8" 50 Ohm unarmoured,
Coaxial cable RF LLF 7/8" 50 Ohm Hiflex unarmoured

Coaxial cable RF LLF 1/2" 50 Ohm unarmoured,

Construction	
Inner Conductor	Copper coated Al wire
Insulation	Cellular PE
Shield	Corrugated Cu tube
Outer sheath	SHF1 or SHF2 or SHF2 MUD

Coaxial cable RF LLF 1/2" 50 Ohm Hiflex unarmoured

Construction	
Inner Conductor	Corrugated copper tube
Insulation	Cellular PE
Shield	Helical corrugated Cu-tape
Outer sheath	SHF1 or SHF2 or SHF2 MUD

Coaxial cable RF LLF 7/8" 50 Ohm unarmoured,

Construction	
Inner Conductor	Cu-tube
Insulation	Cellular PE
Shield	Corrugated Cu tube
Outer sheath	SHF1 or SHF2 or SHF2 MUD

Coaxial cable RF LLF 7/8" 50 Ohm Hiflex unarmoured

Construction	
Inner Conductor	Copper coated Al wire
Insulation	Cellular PE
Shield	Corrugated Cu tube
Outer sheath	SHF1 or SHF2 or SHF2 MUD

For electrical data and transmission properties, please refer to relevant datasheets.

Manufactured by
DNV GL Id. 10516962.

Application/Limitation
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.

Type Approval documentation

Tests carried out

Standard	Release	General description	Limitation
IEC 60096-0-1 Ed 3.1	2017-01	Radio frequency cables – Part 0-1: Guidelines to the design of detail specifications – Coaxial cables	
IEC 61196-1 Ed 1	2007-04	Coaxial communication cables – Part 1-1: Capability approval for coaxial cables	

Standard	Release	General description	Limitation
IEC 61196-1-100 Ed 2.0	2015-03	Coaxial communication cables – Part 1-100: Electrical test methods – General requirements	
IEC 60092-360	2014-04	Electrical installations in ships - Part 360: Insulating and sheathing materials for shipboard and offshore units, power, control, instrumentation and telecommunication cables.	
IEC 60332-3-24	2009-02	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	Bunch test Category C
IEC 60754-1/2	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	2005-04	Measurement of smoke density of cables burning under defined conditions – Test apparatus, procedure and requirements	Low smoke Light transmittance >60%
ASTM G 154	2016-03	Standard Practice for Operating Fluorescent Ultraviolet (UV) Lamp Apparatus for Exposure of Non-metallic Materials	

Marking of product
ZTC TEXEL - RF LLF 1/2" 50 Ohm – SHF1 or SHF2 or SHF2 MUD – IEC 60332-3-24 – <batch no.> - <meter> or
ZTC TEXEL - RF LLF 1/2" 50 Ohm Hiflex SHF1 or SHF2 or SHF2 MUD – IEC 60332-3-24 – <batch no.> - <meter> or
ZTC TEXEL - RF LLF 7/8" 50 Ohm SHF1 or SHF2 or SHF2 MUD – IEC 60332-3-24 – <batch no.> - <meter> or
ZTC TEXEL - RF LLF 7/8" 50 Ohm Hiflex SHF1 or SHF2 or SHF2 MUD – IEC 60332-3-24 – <batch no.> - <meter>

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