Certificate No:
TAE00004R6

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Data transmission cables and systems

with type designation(s)
TKASEA RF 1/2" 50O Feeder Cable SHF1,
TKASEA RF 1/2" 50O Superflex-Feeder,
TKASEA RF 7/8" 50O Feeder Cable SHF1,
TKASEA RF 7/8" 50O Superflex -Feeder

Issued to
Tecnikabel Asia Pte. Ltd.
Singapore, **Singapore**

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

Application :

Coaxial cable 50 Ohm.
Products approved by this certificate are accepted for installation on all vessels classed by DNV.

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Issued at **Høvik** on **2023-07-03**
This Certificate is valid until **2028-07-02**.
DNV local unit:

for **DNV**

Approval Engineer: **Ivar Bull**

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

TKASEA RF 1/2" 50 Ohm Feeder Cable SHF1,
TKASEA RF 1/2" 50 Ohm Superflex-Feeder SHF1,
TKASEA RF 7/8" 50 Ohm Feeder Cable SHF1,
TKASEA RF 7/8" 50 Ohm Superflex -Feeder SHF1,

TKASEA RF 1/2" 50 Ohm Feeder Cable SHF1
TKASEA RF 1/2" 50 Ohm Superflex-Feeder SHF1,

Construction	
Inner Conductor	Copper clad aluminum (CCA)
Insulation	Dielectric Foam PE
Outer conductor	Corrugated Copper Tube
Outer sheath	LSZH, SHF1 (Thermoplastic)

TKASEA RF 7/8" 50 Ohm Feeder Cable SHF1
TKASEA RF 7/8" 50 Ohm Superflex -Feeder

Construction	
Inner Conductor	Smooth Copper Tube (Superflex)
Insulation	Dielectric Foam PE
Outer conductor	Corrugated Copper Tube
Outer sheath	LSZH, SHF1 (Thermoplastic)

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

Manufactured by

DNV 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 60096-0-1:2012+A1:2017	2017-01	Radio frequency cables - Part 1- 0: Guide to the design of detail specifications - Coaxial cables	
IEC 61196-1-108	2011	Coaxial communication cables - Part 1-108: Electrical test methods - Test for characteristic impedance, phase and group delay, electrical length and propagation velocity	
IEC 61196-1-112	2006-03	Coaxial communication cables - Part 1-112: Electrical test methods - Test for return loss (uniformity of impedance)	Capacitance value is only for reference, the impedance value shall prevail
IEC 61196-1-113	2018-01	Coaxial communication cables - Part 1-113: Electrical test methods - Test for attenuation constant	
IEC 60092-350	2020-01	Electrical installations in ships - Part 350: General construction and test methods of power, control and instrumentation cables for shipboard and offshore applications	
IEC 60092-360	2021-01	Electrical installations in ships - Part 360: Insulating and sheathing materials for shipboard and offshore units, power, control, instrumentation and telecommunication cables	

Standard	Release	General description	Limitation
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 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 60754-1	2019-11	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	2019-11	Test on gases evolved during combustion of materials from cables - Part 1: Determination of the halogen acid gas content	Halogen free: pH > 4,3 Conductivity < 10µS/mm
IEC 61034-1/2	2019-11	Measurement of smoke density of cables burning under defined conditions – Part 1: Test apparatus Part 2: Test procedure and requirements	Low smoke Light transmittance >60%
UL 1581-2001 Rev.15 S.1200 UL 2556 S.4.2 ASTM G155-21 Cyc.1	2020 2021	Light ageing test. Xenon-arc exposure with tensile tests.	300 hours exposure with water spray. Change in E@B: -5,9% Change in TS: +6,7%

Marking of product

Tecnikabel APAC – MM/YY – RF 1/2" Feeder -50ohm – LSZH SHF1 – CE – DNV TAE00004R6 – IEC 60322324/22 Lot/m or
Tecnikabel APAC – MM/YY – RF 1/2" Superflex-Feeder -50ohm – LSZH SHF1– CE – DNV TAE00004R6 – IEC 60332-3-24/22 Lot/m
Tecnikabel APAC – MM/YY – RF 7/8" Feeder -50ohm – LSZH SHF1 – CE – DNV TAE00004R6 – IEC 60332-3-24/22 Lot/m or
Tecnikabel APAC – MM/YY – RF 7/8" Superflex-Feeder -50ohm – LSZH SHF1– CE – DNV TAE00004R6 – IEC 60332-3-24/22 Lot/m

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