

# 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

**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 :****Coaxial cables 50 Ohm. Unarmoured.****Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.**Issued at **Høvik** on **2018-01-31**This Certificate is valid until **2023-01-30**.for **DNV GL**DNV GL local station: **Station Oslo Maritime and CAP**Approval Engineer: **Ivar Bull**

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**Andreas Kristoffersen  
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.



Job Id: **262.1-022220-1**  
Certificate No: **TAE00002G3**

### 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 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 –<br>Part 0-1: Guidelines to the design of detail specifications – Coaxial cables |            |
| IEC 61196-1 Ed 1     | 2007-04 | Coaxial communication cables –<br>Part 1-1:<br>Capability approval for coaxial cables                    |            |

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| Standard                  | Release | General description                                                                                                                                                                          | Limitation                                             |
|---------------------------|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|
| IEC 61196-1-100<br>Ed 2.0 | 2015-03 | Coaxial communication cables –<br>Part 1-100: Electrical test methods –<br>General requirements                                                                                              |                                                        |
| IEC 60092-360             | 2014-04 | Electrical installations in ships - Part 360:<br>Insulating and sheathing materials for<br>shipboard and offshore units, power,<br>control, instrumentation and<br>telecommunication cables. |                                                        |
| IEC 60332-3-24            | 2009-02 | Tests on electric and optical fibre cables<br>under fire conditions – Part 3-24: Test for<br>vertical flame spread of vertically-mounted<br>bunched wires or cables – Category C             | Bunch test<br>Category C                               |
| IEC 60754-1/2             | 2011-11 | Test on gases evolved during combustion of<br>materials from cables - Part 2:<br>Determination of acidity (by pH<br>measurement) and conductivity                                            | Halogen free:<br>pH > 4,3<br>Conductivity <<br>10µS/mm |
| IEC 61034-1/2             | 2005-04 | Measurement of smoke density of cables<br>burning under defined conditions –<br>Test apparatus, procedure and<br>requirements                                                                | Low smoke<br>Light<br>transmittance >60%               |
| ASTM G 154                | 2016-03 | Standard Practice for Operating Fluorescent<br>Ultraviolet (UV) Lamp Apparatus for<br>Exposure of Non-metallic Materials                                                                     |                                                        |

#### Marking of product

NEK kabel - RF LLF 1/2" 50 Ohm – SHF1 or SHF2 or SHF2 MUD – IEC 60332-3-24 – <batch no.> -  
<meter> or  
NEK kabel - RF LLF 1/2" 50 Ohm Hiflex SHF1 or SHF2 or SHF2 MUD – IEC 60332-3-24 – <batch no.> -  
<meter> or  
NEK kabel - RF LLF 7/8" 50 Ohm SHF1 or SHF2 or SHF2 MUD – IEC 60332-3-24 – <batch no.> -  
<meter> or  
NEK kabel - 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