DNV·GL

Certificate No:
TAE0000375

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Data transmission cables and systems

with type designation(s)
Coaxial cable Type RG 58 Marin SHF1 or SHF MUD Armoured,
Coaxial cable Type RG213 Marin SHF1 or SHF MUD Armoured,
Coaxial cable Type RG214 Marin SHF1 or SHF MUD Armoured

Issued to
APS Cables & Connectors Oy
Rovaniemi, Finland

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

Application :

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

Issued at **Høvik** on **2018-10-12**

This Certificate is valid until **2023-10-11**.
DNV GL local station: **Helsinki**

Approval Engineer: **Ivar Bull**

for **DNV GL**
Digitally Signed By: Trond Sjåvåg
Location: DNV GL Høvik, Norway
on behalf of

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.

Job Id: **262.1-029785-1**
Certificate No: **TAE0000375**

Product description

Coaxial cable Type RG 58 Marin SHF1 or SHF MUD Armoured,
Coaxial cable Type RG213 Marin Marin SHF1 or SHF MUD Armoured,
Coaxial cable Type RG214 Marin Marin SHF1 or SHF MUD Armoured

Type RG 58 MIL-C17F Armoured

Construction	
Inner Conductor	Tinned Copper 19x 0,18mm
Insulation	Low density polyethylene
Shield	Aluminium+Polyester+Aluminium tape
Outer conductor	Tinned copper braid
Inner Sheath	SHF1
Armour	Braid made of Galvanized Steel Wire, Tinned Copper Wire or Bronze Wire
2nd sheath	SHF1 or crosslinked thermoplastic (MUD RESITANT)

Type RG213 M17/074 Armoured

Construction	
Inner Conductor	Plain copper 7x0,75mm
Insulation	Low density polyethylene
Shield	Aluminium+Polyester+Aluminium tape
Outer conductor	Plain copper braid
Inner Sheath	SHF1
Armour	Braid made of Galvanized Steel Wire, Tinned Copper Wire or Bronze Wire
2nd sheath	SHF1 or crosslinked thermoplastic (MUD RESITANT)

RG214 M17/75 Armoured

Construction	
Inner Conductor	Silvered copper 7x 0,75 mm
Insulation	Low density polyethylene
Shield	Aluminium+Polyester+Aluminium tape
1st outer conductor	Silver coated copper
2nd braid	Silver coated copper
Inner sheath	SHF1
Armour	Braid made of Galvanized Steel Wire, Tinned Copper Wire or Bronze Wire
2nd sheath	SHF1 or crosslinked thermoplastic (MUD RESITANT)

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

Manufactured by

DNV GL Id. 10310952
SHF MUD sheath applied by DNV GL Id. 10024443.

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.

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Type Approval documentation

Datasheets : APS dateasheets dated 1/10/2018 and 2/10/2018.
Test reports: 2014.2301/06 dated 23.01.2014
2014.2301/10 dated 23.01.2014
2014.2301/12 dated 23.01.2014

Tests carried out

Standard	Release	General description	Limitation
IEC 60096-0-1 Ed 3	2012	Radio frequency cables Part 0-1: Guide to the design of detail specifications Coaxial cables	
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 60754-2	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	2013-07 2013-09	Measurement of smoke density of cables burning under defined conditions – Test apparatus, procedure and requirements	Low smoke Light transmittance >60%

Marking of product

APS FINLAND – RG 58 CU Marine SHF1 or SHF MUD Armoured – DNV GL – IEC 60332-3-24 – <batch no.> – <meter marking>
APS FINLAND – RG 213 U Marine SHF1 or SHF MUD Armoured - DNV GL – IEC 60332-3-24– <batch no.> – <meter marking>
APS FINLAND – RG214 U Marine SHF1 or SHF MUD Armoured - DNV GL– IEC 60332-3-24– <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) 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