

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Data transmission cables and systems

with type designation(s)
RG 58-FRNC, RG 213-FRNC, RG 214-FRNC, RG 223-FRNC

Issued to

bda connectivity GmbH
Asslar, Germany

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

Application :

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.

Issued at **Hamburg** on **2019-03-04**

This Certificate is valid until **2021-04-26**.

DNV GL local station: **Essen**

for **DNV GL**

Approval Engineer: **Carsten Hunsalz**

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Arne Schaarmann
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

Radio frequency coaxial cables

Type: RG 58-FRNC, RG 213-FRNC, RG 214-FRNC, RG 223-FRNC

Temperature range: -20 to 70 °C

Inner conductor: Bare copper (RG 213-FRNC)
Tinned copper (RG 58-FRNC)
Silver coated copper (RG 214-FRNC, RG 223-FRNC)

Insulation: Polyethylene (PE)

Braid: Bare copper (RG 213-FRNC)
Tinned copper (RG 58-FRNC)
Silver coated copper (RG 214-FRNC, RG 223-FRNC)

Sheath: SHF 1

Electrical Characteristics	Capacitance pF/m	Impedance Ω	Screen attenuation dB
RG 58-FRNC	101,3 +- 2,5	50 +- 2	>50
RG 213-FRNC	100,5 +- 2,5	50 +- 2	>50
RG 214-FRNC	100,8 +- 2,5	50 +- 2	>80
RG 223-FRNC	101,6 +- 2,5	50 +- 2	>80

Attenuation
max. dB/100m

Frequency MHz	1	10	20	50	100	200	500	1000	2000	3000
RG 58-FRNC	<1,8	<5,6	<7,9	<12,6	<18,1	<26,1	<42,9	<63,3		
RG 213-FRNC	<0,7	<2,3	<3,3	<5,3	<7,7	<11,1	<18,2	<26,8		
RG 214-FRNC	<0,7	<2,1	<3,0	<4,9	<7,1	<11,6	<18,1	<28,0	<44,2	<58,4
RG 223-FRNC	<1,5	<4,9	<6,9	<11,0	<15,7	<22,4	<36,1	<52,2	<76,0	<95,2

Application/Limitation

Radio frequency coaxial cable
Flame retardant

Type Approval documentation

Test report: BEDEA dated 2016-04-06 witnessed by DNV GL
BEDEA dated 1/2014

Specification: FE-No.: 900495, 890063, 950098, 940075

Tests carried out

Standard	Release	General description	Limitation
IEC 60096-0-1	2012-10	Radio frequency cables – Part 0-1: Guidelines to the design of detail specifications – Coaxial cables	
IEC 61196-9-1	2015-11	Coaxial communication cables – Part 9: Sectional specification for RF flexibles cables	

Job Id: **262.1-029969-1**
Certificate No: **TAE00003ED**

Standard	Release	General description	Limitation
IEC 61196-9	2014-1	Coaxial communication cables - Part 9: Sectional specification for RF flexible 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 60332-1-2	2015-07	Tests on electric and optical fibre cables under fire conditions – Part 1-2: Test for vertical flame propagation for a single insulated wire or cable –Procedure for 1 kW pre-mixed flame	

Marking of product

Example:

bda connectivity GmbH - RG 223-FRNC - "sequential length in meter" - "internal order number"

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) checked (if not available tests according to RT to 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