



SPECIFICATION

VIFM Cable RG71B/U

1. Scope

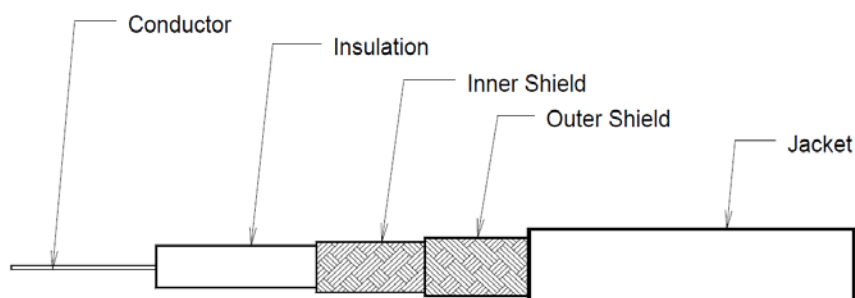
This specification describes the requirements for the VIFM cable which is used in the VXi Irradiated Fuel Monitor (VIFM) type system. This cable is a specially selected component of the VIFM system, which has been approved for use with the deployed detectors. The IAEA currently maintains about 40 systems that are installed worldwide in CANDU type nuclear facilities for core discharge monitors, bundle counters and other VIFM type systems. These cables will be used to collect data and to carry low voltage to devices. This type of cables is labelled by the IAEA with p/n - RL-VIFM-INTCAB1-RGN62-1.1GR.

2. Technical Requirements

The cable shall be RG71B/U coaxial cable and shall be 100 ohm, shall be nuclear grade, shall be fire retardant, with low acid gas release and shall be radiation hardened and is hereinafter specified as "VIFM Cable".

The VIFM Cable shall be constructed as specified in the drawing below.

Cable construction:



2.1. Material

The VIFM Cable shall be manufactured with the following material:

- 2.1.1. Conductor shall be #22 AWG copper covered steel diameter of 0.64 mm;
- 2.1.2. Insulation shall be 0.064 cross-linked polyethylene compound wall diameter of 3.71 mm;
- 2.1.3. Inner Shield shall be #34 AWG tinned copper braid coverage of not less than 95%;
- 2.1.4. Outer Shield shall be #34 AWG tinned copper braid with coverage of not less than 95%; and
- 2.1.5. Jacket shall be 0.026 flame retardant Hypalon, chlorosulfonated polyethylene (CSPE) synthetic rubber (CSM) or cross-linked polyethylene diameter of 6.35 mm plus or minus 0.127 mm.



2.2. Physical data

- 2.2.1. The VIFM Cable shall have a weight of not more than 8 kg per 100m;
- 2.2.2. The VIFM Cable braid strength shall be at least 63 kg;
- 2.2.3. The VIFM Cable bend radius shall be 25.4 mm; and
- 2.2.4. The VIFM Cable area shall not be more than 32 square mm.

2.3. Electrical Characteristics

The VIFM Cable shall have the following electrical characteristics:

- 2.3.1. Impedance shall be 100 Ω plus or minus 5%;
- 2.3.2. Capacitance shall be 44 pF/m;
- 2.3.3. Velocity of propagation shall be 0.68 plus or minus 5%
- 2.3.4. DC loop resistance shall be 55.33 Ω per 100 m;
- 2.3.5. Insulation resistance shall be 17.11G Ω per 100 m;
- 2.3.6. Maximum operating voltage shall be 2100 V
- 2.3.7. Dielectric strength shall be 7500 V RMS-(Root-Mean-Square)

3. Marking

The cables shall be marked "RG71B/U CD95146" every meter.

4. Packing

The VIFM Cable for the shipment by air to the IAEA shall be packed in accordance with applicable international standards.

5. Quality Requirements

The VIFM Cable shall meet the following quality requirements:

- 5.1. Nuclear grade fire retardant;
- 5.2. Compliance with CSA FT-1 vertical flame spread;
- 5.3. Flame test per mil-C-17F section 4.8.24;
- 5.4. STI smoke release requirement (FT-ST1 rating of CSA C22.2 No. 3);
- 5.5. Acid gas evolution of less than 14% by weight of original specimens;
- 5.6. Usable frequency range shall be 100 MHz;
- 5.7. Static application radiation tolerance shall be 900 Mega RADS; and
- 5.8. 100% shield coverage via double layer braid.

6. Testing and Acceptance

The VIFM Cable shall have been tested as follows by certified authorities:

- 6.1. Tested and cleared with nuclear safety regulations for fire resistance and gas emission;



6.2. Radiation resistance test reports to show tolerance to 10E10 RADS Co-60.