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No. B.V-7-C/2026-27-C (C/Quad)-QR CELL

Dated, the **10** Sept'2026

Subject: - REQUEST FOR COMMENTS OF STAKEHOLDERS / OEM/FIRMS ON DRAFT QRs & TDs OF "CARRIER QUAD CABLE (CQC)" REGARDING.

The Draft QRs/TDs of "**Carrier Quad Cable (CQC)**" are attached as **Appendix 'A'**. The OEMs/Vendors are requested to forward information of the product, which they can offer and also forward correct specifications of their product against each parameter. Only complied or not complied remarks will not be accepted. The firms are also requested to furnish the following details: -

- Whether you are OEM/Vendor?
- If vendor, details of OEM required.
- Authorization certificate from OEM.

2. The required information/details may please be forwarded at the following addresses by **25** Sept'2026.

Communication Directorate, CRPF

East Block-7, Sec-1, R.K. Puram, New Delhi-110066

Email: comncell@crpf.gov.in

3. An early response is requested.

(Ajay Kumar Singh)
DIG (Equipment)
Communication & IT Branch
Directorate General, CRPF

DRAFT QRs/ TDs OF CARRIER QUAD CABLE (CQC)

S.N.	Parameters	Specifications	Trial Directives
1	General	i) This specification covers requirements of CARRIER QUAD CABLE which has been designed for use in the communication 4 channel carrier system.	Board will check practically.
		ii) The cable must be mechanically strong, tough and flexible. It must have good ageing properties and be capable of giving satisfactory service throughout a wide range of temperature (- 40-degree C to +60-degree C or better) and climatic conditions.	Board will check practically and firm will submit certificate of any Govt lab or NABL or ILAC accredited laboratory.
2	PERFORMANCE		
	i)Temp Range	-40-degree C to +60 degree C or better	Firm will submit certificate of any Govt lab or NABL or ILAC accredited laboratory.
	ii)Conductor Resistance	47.06 ohms $\pm$ 3% /loop km at 20-degree C	
	iii)Pair capacitance	0.0550 micro farad $\pm$ 10% per KM	
	iv)Impedance	144 ohms $\pm$ 5% at 10 KHz, 125 ohm $\pm$ 5% at 60 KHz, 120 ohms $\pm$ 5% at 100 KHz and above	
	v)Attenuation	0.9 dB/Km +5% at 1.6 KHz, 1.81 dB/Km +5% at 16 KHz, 3.2 dB/Km +5% at 100 KHz	
3	CHARACTERISTICS		
	i) Conductor	a) The conductor shall consist of 7/0.367 mm diameter plain annealed copper wires standard, with a left hand lay of 13 mm to 16 mm (Diameter over the conductor being 1.10 mm).	Board will check practically and firm will submit certificate of any Govt lab or NABL or ILAC accredited laboratory.
		b) Conductor Joints: - Joints in the individual strand shall be hard soldered or welded. In the stranding stage, joints in the complete conductor shall be similarly made, provided each strand joint is spaced at least 300 mm apart. Joints in the complete conductor shall be at least 100 meters apart.	Firm will submit certificate of any Govt lab or NABL or ILAC accredited laboratory.

	ii) Insulation	a) The insulation shall be of polythene natural for one pair and compound polythene black for other pair. b) The conductor shall be uniformly insulated with polythene (Black /Natural) to a minimum wall thickness of 0.356 mm. A high degree of concentricity of conductors must be obtained to achieve the capacity unbalance requirements. The polythene compound shall be a heat stabilized, non-oxidizing and shall confirm to relevant specification as above. c) All insulation repairs shall be made with polythene as specified in clause-a and shall be preferably molded. The finished repair shall be cylindrical and smooth, minimum wall thickness shall comply with clause-b. The max overall length of repair shall be 100 mm. d) Insulation should have following properties: 1. before ageing i. The tensile strength $\geq 10.34 \text{ MN/m}^2$ ii. Elongation $\geq 300\%$ 2. After ageing i. the tensile strength $\geq 8.27 \text{ MN/m}^2$ ii. Elongation $\geq 274\%$ in air oven at $80 \pm 1^\circ \text{C}$ for 7 days followed by a cooling period of 24 hours at room temperature.	Board will check practically and Firm will submit certificate of any Govt lab or NABL or ILAC accredited laboratory.
	iii) Cabling	Four cores shall be laid up in Star Quad formation around a centre of polythene with a right hand lay of $50.08 \text{ mm} \pm 3.18 \text{ mm}$. Two opposite cores (which form a pair) shall be colored black and the other two naturals	Board will check practically and firm will submit certificate of any Govt lab or NABL or ILAC accredited laboratory.
	iv) Filler	Polythene filler is used and have material properties as specified in para 3 (ii) Insulation	Firm will submit certificate of any Govt lab or NABL or ILAC accredited laboratory.

	v) Belt	Material for belting over laid up cores shall be of polythene. The laid-up cores shall be covered and filled with polythene to an overall diameter of 5.92 mm ± 0.127mm. The belt shall securely locate the cores in quad formation and shall as far as possible leave no air gap in the interstices. It must be possible to prepare the cores from the belt and each other without damage to the core insulation. It should have material properties same as para 3 (ii) Insulation	Board will check practically and firm will submit certificate of any Govt lab or NABL or ILAC accredited laboratory.
	vi) Tape	The carbon tape of 0.127mm ± 0.013 mm thickness and 19.00 ± 0.50 mm width shall be applied helically over the polythene belt with an overlap of 1.59 mm ± 0.795 mm or 25.4 mm in width applied longitudinally over the polythene belt with minimum overlap of 4.763mm. The surface resistivity of the tape taken from the finished cable shall range between 1000 ohms/mm and 10,000 ohms/mm.	Board will check practically and firm will submit certificate of any Govt lab or NABL or ILAC accredited laboratory.
	vii) Metal Braid	An open braid of 16 stainless steel wires (each of 0.381 mm ± 0.013 mm in diameter) shall be applied over the carbon tape with a lay of approximately 38 to 50 mm. The braid shall be electrically continuous throughout the cable length. Joints in individual wires shall be permitted, if necessary, provided that they are spaced at least 0.609 meters apart. All joints shall be brazed, hard soldered or other approved methods.	Board will check practically and firm will submit certificate of any Govt lab or NABL or ILAC accredited laboratory.
	viii) Sheath	A tough tight-fitting low temperature grade PVC sheath shall be extruded over the stainless-steel braid. The sheath shall in grey colour conforming to BS6746. The Sheath have following properties: 1. before ageing i. The tensile strength ≥ 13.72 MN/m² ii. Elongation $\geq 236\%$ 2. After ageing i. the tensile strength ≥ 13.72 MN/m² ii. Elongation $\geq 213\%$ in air oven at 80± 1degree C for 14 days followed by a cooling period of 24 hours at room temperature.	Board will check practically and firm will submit certificate of any Govt lab or NABL or ILAC accredited laboratory.
4	Tensioning of Cable	At the completion of manufacture the cable shall be subjected to a tensioning load of 136 kgs	Firm will submit certificate of any Govt lab or NABL or ILAC accredited laboratory.
5	Manufacturer's Identification	A coloured cotton yarn or tape bearing the manufacturers name shall be laid between the carbon tape and the steel wire braid.	Board will check practically.

		The colour of the cotton yarn shall be in accordance with the approved identification colour's allotted to the manufacturers by BIS.	
6	Dimensions and Tolerance	1) Conductor shall be made up of copper wires of 7/0.367 mm. Conductor diameter shall be 1.10 mm (Nom). 2) Diameter over polythene insulated cores shall be 1.93mm $\pm$ 0.076mm. 3) Diameter over polythene belt shall be 5.92 mm $\pm$ 0.127 mm 4) Carbon tapes shall be of 0.127 mm $\pm$ 0.013 mm thickness and 19.00 mm $\pm$ 0.50 mm width applied helically. Alternatively, 25.4 mm in width shall be applied longitudinally over the polythene belt. 5) Stainless steel wires used for braiding shall be of 0.381 mm $\pm$ 0.013 mm diameter. 6) Overall diameter over the PVC sheath shall be 9.144 mm $\pm$ 0.254 mm	Board will check practically and firm will submit certificate of any Govt lab or NABL or ILAC accredited laboratory.
7	The cable shall be packed in unit length of 400 meters $\pm$ 6 meters on cable drum. ii) The top layer of the cable shall be protected from damage and transit by wrapping with layers of water proof paper of class approved quantity and covered with two layers of hessian cloth. iii) Each drum shall carry a label upon which the following information shall be written: -(a) Cat/Part no. of the cable (b) Designation of the cable (c) Cat/Part No. of the reel/ Drum (d) Designation of the reel/ Drum (e) Length of the cable (f) Date of manufacture (g) Name of the manufacture (h) Contract number (i) Government property mark (Broad arrow)		Board will check practically.