

 Eskom	Standard	Technology
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CABLES AND CONNECTORS**

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1. Introduction

This standard forms part of the Eskom Telecommunications Enquiry process for the provision of cables and connectors to be used for Radio Frequency applications.

2. Supporting Clauses

2.1 Scope

2.1.1 Purpose

The purpose of this standard is to stipulate the technical requirements of Eskom Telecommunications for RF cables and connectors. The standard will form part of the Enquiry documentation for the establishment of an Eskom Telecommunications enabling contract.

2.1.2 Applicability

This standard shall apply throughout Eskom Holding Limited, its divisions, subsidiaries and entities wherein Eskom has a controlling interest.

2.2 Normative/Informative References

Parties using this document shall apply the most recent edition of the documents listed in the following paragraphs.

2.2.1 Normative

- [1] ISO 9001 Quality Management Systems.
- [2] IEC 60529 Degrees of protection provided by enclosures (IP code)
- [3] IEC 61000-6-5 Generic standards - Emission for power station and substation environments
- [4] All relevant ETSI standards, specifications and regulations
- [5] Military Specification M-17

2.2.2 Informative

- [6] 32-9 Definition of Eskom Documents
- [7] 32-644 Eskom Documentation Management Standard

2.3 Definitions

2.3.1 General

None

2.3.2 Disclosure Classification

Controlled disclosure: **controlled disclosure to external parties (either enforced by law, or discretionary).**

2.4 Abbreviations

Abbreviation	Description
AC	Alternating Current
DC	Direct Current
MOV	Metal Oxide Varistor
N/A	not applicable
PoE	Power over Ethernet
RoHS	Restriction of Hazardous Substances

2.5 Roles and Responsibilities

The responsibility to implement this document will lie with the relevant planning and maintenance departments.

2.6 Process for monitoring

Not applicable.

2.7 Related/Supporting Documents

Not applicable.

3. Requirements

3.1 Material

3.1.1 All metals brackets shall be of corrosion-resistant materials. (Stainless steel or hot-dipped galvanized.)

3.1.2 Mounting hardware shall be stainless steel.

3.2 Cable

3.2.1 Cable: RG58 5 mm 50 Ω

3.2.1.1 Military specification M-17.

3.2.1.2 Solid Polyethylene Dielectric.

3.2.1.3 Impedance: 50 $\Omega \pm 2 \Omega$.

3.2.1.4 Attenuation: tenderer to state attenuation of frequency per metre.

3.2.2 Cable: RG223 5.5 mm 50 Ω

3.2.2.1 Solid Polyethylene Dielectric.

3.2.2.2 Impedance: 50 $\Omega \pm 2 \Omega$.

3.2.2.3 Attenuation: tenderer to state attenuation of frequency per metre.

3.2.3 Cable: RG213 10 mm 50 Ω braided

3.2.3.1 Military specification M-17.

3.2.3.2 Solid Polyethylene Dielectric.

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3.2.3.3 Impedance: $50 \Omega \pm 2 \Omega$.

3.2.3.4 Attenuation: tenderer to state attenuation of frequency per metre.

3.2.4 Cable: RG214 10.8 mm 50 Ω

3.2.4.1 Military specification M-17.

3.2.4.2 Solid Polyethylene Dielectric.

3.2.4.3 Impedance: $50 \Omega \pm 2 \Omega$.

3.2.4.4 Attenuation: tenderer to state attenuation of frequency per metre.

3.2.5 Cable: RG400 5 mm 50 Ω Teflon

3.2.5.1 Double braided.

3.2.5.2 Solid polyethylene dielectric.

3.2.5.3 Impedance: $50 \Omega \pm 2 \Omega$.

3.2.5.4 Attenuation: tenderer to state attenuation of frequency per metre.

3.2.6 Cable: LMR195 5 mm 50 Ω DB PE

3.2.6.1 Times Microwave.

3.2.7 Cable: LMR195 5 mm 50 Ω ultra

3.2.7.1 Times Microwave.

3.2.8 Cable: LMR240 6.1 mm 50 Ω

3.2.8.1 Times Microwave.

3.2.9 Cable: LMR240 ultra 6.1 mm 50 Ω

3.2.9.1 Times Microwave.

3.2.10 Cable: LMR400 10.2 mm 50 Ω

3.2.10.1 Times Microwave.

3.2.11 Cable: LMR400 10.2 ultra mm 50 Ω

3.2.11.1 Times Microwave.

3.2.12 Cable: 1/2" (EC4-50) Eupen 5128

3.2.12.1 Eupen.

3.2.13 Cable: CXEC5-50, 7/8" (EC5-50) Eupen 5228A

3.2.13.1 Eupen.

3.2.14 Cable: Coaxial 7/8"

3.2.14.1 Shield/Outer conductor: Aluminium

3.2.14.2 Centre conductor: Copper

3.2.14.3 Dielectric: Foamed Polyethylene Impedance: 50 Ω

3.2.14.4 Impedance: 50 Ω

3.3 Boot

3.3.1 Boot: strain relief LMR240

3.3.1.1 Clamping dimensions: 6 mm (for LMR 240 cable).

3.3.1.2 Colour: black.

3.3.2 Boot: strain relief LMR240

3.3.2.1 Clamping dimensions: 6 mm (for LMR 240 cable).

3.3.2.2 Colour: red.

3.3.3 Boot: strain relief for RG58/LMR 195

3.3.3.1 Clamping dimensions: 5 mm (for RG58/LMR195 cable).

3.3.3.2 Colour: Black.

3.3.4 Boot: strain relief for RG214/LMR 400

3.3.4.1 Clamping dimensions: 11 mm (for RG214/LMR400 cable).

3.3.4.2 Colour: black.

3.4 Tool

3.4.1 Tool: cable prep 1/2"

3.4.1.1 For SIMFix 1/2" connector and corrugated coax.

3.4.2 Tool: cable prep 7/8"

3.4.2.1 For SIMFix 1/2" connector and corrugated coax.

3.4.3 Tool: cable stripping 10 mm

3.4.3.1 LMR 10 mm stripping tool.

3.4.4 Tool kit: cable crimp metal

3.4.4.1 HT 300K stripping tool in case with dies.

3.4.5 Tool: Tensioner tool

3.4.5.1 Tensioner tool for stainless steel cable ties.

3.5 Connector

3.5.1 Connector: BNC STR male crimp RG58/LMR195

3.5.1.1 Telegartner/Suhner.

3.5.2 Connector: BNC STR male solder RG223

3.5.2.1 Telegartner/Suhner.

3.5.3 Connector: BNC STR male crimp LMR240

3.5.3.1 Telegartner/Suhner.

3.5.4 Connector: BNC STR male crimp LMR400

3.5.4.1 Telegartner/Suhner.

3.5.5 Connector: N-male STR crimp RG58/LMR195

3.5.5.1 Telegartner/Suhner.

3.5.6 Connector: N-male STR crimp RG223/RG400

3.5.6.1 Telegartner/Suhner.

3.5.7 Connector: N-male STR crimp RG213

3.5.7.1 Telegartner/Suhner.

3.5.8 Connector: N-male STR solder RG213/RG214

3.5.8.1 Telegartner/Suhner.

3.5.9 Connector: N-male STR crimp RG214

3.5.9.1 Telegartner/Suhner.

3.5.10 Connector: N-male STR crimp LMR240

3.5.10.1 Telegartner/Suhner.

3.5.11 Connector: N-male R/A crimp LMR240

3.5.11.1 Telegartner/Suhner.

3.5.12 Connector: N-male STR crimp LMR400

3.5.12.1 Telegartner/Suhner.

3.5.13 Connector: N-male R/A crimp LMR400

3.5.13.1 Telegartner/Suhner.

3.5.14 Connector: N-male STR 7/8" (EC5-50) IP68

3.5.14.1 Telegartner/Suhner.

3.5.15 Connector: N-female STR crimp RG213

3.5.15.1 Telegartner/Suhner.

3.5.16 Connector: N-female STR crimp RG214

3.5.16.1 Telegartner/Suhner.

3.5.17 Connector: N-female STR crimp LMR400

3.5.17.1 Telegartner/Suhner.

3.5.18 Connector: N-female STR 1/2" HF (EC450HF)

3.5.18.1 Telegartner/Suhner.

3.5.19 Connector: N-female STR 7/8" (E5-50) IP68

3.5.19.1 Telegartner/Suhner.

3.5.20 Connector: SMA-male STR crimp RG58/LMR195

3.5.20.1 Telegartner/Suhner.

3.5.21 Connector: SMA-female STR crimp RG58/LMR195

3.5.21.1 Telegartner/Suhner.

3.5.22 Connector: TNC-male STR crimp RG58/LMR195

3.5.22.1 Telegartner/Suhner.

3.5.23 Connector: TNC-male STR solder RG58/LMR195

3.5.23.1 Telegartner/Suhner.

3.5.24 Connector: UHF-male STR crimp RG58/LMR195

3.5.24.1 Telegartner/Suhner.

3.5.25 Connector: TNC-male STR crimp LMR400

3.5.25.1 Telegartner/Suhner.

3.5.26 Connector: bulkhead N type

3.5.26.1 Telegartner/Suhner N type bulkhead.

3.6 Adaptor

3.6.1 Adaptor: BNC-female to SMA-female

3.6.1.1 Telegartner/Suhner.

3.6.2 Adaptor: BNC-male to UHF-female

3.6.2.1 Telegartner/Suhner.

3.6.3 Adaptor: BNC-male to N-female

3.6.3.1 Telegartner/Suhner.

3.6.4 Adaptor: BNC-female to N-male

3.6.4.1 Telegartner/Suhner.

3.6.5 Adaptor: N-female to N-female

3.6.5.1 Telegartner/Suhner.

3.6.6 Adaptor: R/A N-male to N-female

3.6.6.1 Telegartner/Suhner.

3.6.7 Adaptor: R/A TNC-male to TNC-female

3.6.7.1 Telegartner/Suhner.

3.6.8 Adaptor: TNC-male to BNC-female

3.6.8.1 Telegartner/Suhner.

3.6.9 Adaptor: TNC-male to N-female

3.6.9.1 Telegartner/Suhner.

3.7 Flylead

3.7.1 Flylead: BNC male to N male

3.7.1.1 RG58 cable 1 m in length.

3.7.2 Flylead: BNC male - N male

3.7.2.1 LMR195 cable 1 m in length.

3.7.3 Flylead: N female bulkhead – N male

3.7.3.1 LMR195 cable 1 m in length.

3.7.4 Flylead: N female bulkhead – SMA male

3.7.4.1 LMR195 cable 1 m in length.

3.7.5 Flylead: N male – TNC male

3.7.5.1 LMR195DB ultra cable 1 m in length.

3.7.6 Flylead: N male – N male

3.7.6.1 LMR195DB ultra cable 5 m in length.

3.7.7 Flylead: N female– N male

3.7.7.1 LMR400 ultra cable 5 m in length.

3.7.7.2 LMR400 ultra cable 2.5 m in length.

3.7.8 Flylead: N male – N male

3.7.8.1 LMR400 ultra cable 5 m in length.

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3.8 Clamp

3.8.1 Clamp: Cumfy dual cable and clip

3.8.1.1 Dimensions: 2 × 7 mm diameter.

3.8.2 Clamp: Cumfy single cable and clip

3.8.2.1 Dimensions: 1 × 13 mm diameter.

3.8.3 Clamp: Cumfy dual RG8 and clip

3.8.3.1 Dimensions: 2 × 10 mm diameter.

3.8.4 Clamp: Cumfy G-clamp dual assy

3.8.4.1 Complete G Clamp with 2 × 6 mm diameter.

3.8.5 Clamp: Cumfy 3 way + clip

3.8.5.1 Complete clamp with 3 × 7/8" and locking clip.

3.8.6 Clamp: Cumfy G-clamp single assy

3.8.6.1 Complete G-clamp with 1 × 10 mm diameter.

3.8.7 Clamp: Cumfy G-clamp dual assy

3.8.7.1 Complete G-clamp with 2 × 10 mm diameter.

3.8.8 Clamp: Cumfy G-clamp triple assy

3.8.8.1 Complete G-clamp with 3 × 10 mm diameter.

3.8.9 Clamp: Cumfy G-clamp quad assy

3.8.9.1 Complete G-clamp with 4 × 10 mm diameter.

3.8.10 Clamp: Cumfy G-clamp single assy

3.8.10.1 Complete G-clamp with 1 × 16 mm diameter.

3.8.11 Clamp: Cumfy G-clamp dual assy

3.8.11.1 Complete G-clamp with 2 × 16 mm diameter.

3.8.12 Clamp: Cumfy G-clamp triple assy

3.8.12.1 Complete G-clamp with 3 × 16 mm diameter.

3.8.13 Clamp: Cumfy G-clamp quad assy

3.8.13.1 Complete G-clamp with 4 × 16 mm diameter.

3.8.14 Clamp: Cumfy G-clamp single assy

3.8.14.1 Complete G-clamp with 1 × 7/8" diameter.

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3.8.15 Clamp: Cumfy G-clamp dual assy

3.8.15.1 Complete G-clamp with 2 × 7/8" diameter.

3.8.16 Clamp: Cumfy G-clamp triple assy

3.8.16.1 Complete G-clamp with 3 × 7/8" diameter.

3.8.17 Clamp: Cumfy G-clamp quad assy

3.8.17.1 Complete G-clamp with 4 × 7/8" diameter.

3.8.18 Clamp: Polyprop

3.8.18.1 1 × 1/2".

3.8.19 Clamp: Polyprop

3.8.19.1 1 × 7/8".

3.8.20 Clamp: Polyprop

3.8.20.1 1 × 10 mm.

3.8.21 Clamp: grounding kit 10 mm coax cable

3.8.21.1 16 mm black GP cable.

3.8.21.2 Fixing clamps and necessary hardware (lugs, etc.).

3.8.22 Clamp: grounding kit 1/2" coax cable

3.8.22.1 16 mm black GP cable.

3.8.22.2 Fixing clamps and necessary hardware (lugs, etc.).

3.8.23 Clamp: grounding 1/2"

3.8.23.1 Grounding kit with parallel outlet.

3.8.23.2 Fixing clamps and necessary hardware (lugs, etc.).

3.8.23.3 Weatherproofing kit.

3.8.24 Clamp: grounding 7/8"

3.8.24.1 Grounding kit with parallel outlet.

3.8.24.2 Fixing clamps and necessary hardware (lugs, etc.).

3.8.24.3 Weatherproofing kit

3.8.25 Clamp: BAND-IT strap 12 mm 30 m

3.8.25.1 Stainless steel band (30 m × 12 mm).

3.8.26 Clamp: BAND-IT buckle 12 mm

3.8.26.1 12 mm Stainless steel.

3.8.27 Clamp: Stainless steel cable ties 7.9 mm

3.8.27.1 Stainless steel cable ties 259mm X 7.9mm packet.

3.8.28 Clamp: 7/8" 1 way tandem with G-clamp

3.8.28.1 Tandem (two 7/8" cables) clamp complete with mounting hardware.

3.8.29 Clamp: 7/8" 2 way tandem with G-clamp

3.8.29.1 Dual tandem (four 7/8" cables) clamp complete with mounting hardware.

3.8.30 Clamp: 7/8" 3 way tandem with G-clamp

3.8.30.1 Triple tandem (six 7/8" cables) clamp complete with mounting hardware.

3.8.31 Clamp: cable two-way 32 mm

3.8.31.1 Two-way clamp for BC400-9 cable 32 mm.

3.8.32 Clamp: cable one-way 32 mm

3.8.32.1 One-way clamp for BC400-9 cable 32 mm.

3.9 Protector

3.9.1 Protector: surge filter 1.7 GHz to 2.3 GHz bulkhead N-female\N-female

3.9.1.1 PolyPhaser.

3.9.2 Protector: surge suppressor DC-2 GHz N-female bulkhead mount 90 V

3.9.2.1 Telegartner/Suhner.

3.9.3 Protector: 125 MHz to 1 000 MHz N-female

3.9.3.1 PolyPhaser C2.

3.9.4 Protector: data line surge bulkhead RJ45

3.9.4.1 IP 67.

3.9.4.2 10/100 Mbps PoE. Gigabit Ethernet and Gigabit PoE.

3.9.5 Protector: surge AC3 phase kit

3.9.5.1 UAC 240 V/ UAC 415 V three-phase.

3.9.5.2 IP 67 enclosure.

3.9.5.3 Class I and II IEC surge suppressor with remote monitoring.

3.9.6 Protector: surge AC single phase

3.9.6.1 UAC 240 V single phase.

3.9.6.2 IP 67 enclosure.

3.9.6.3 Class I and II IEC surge suppressor with remote monitoring.

3.9.7 Protector: solar panel 120 V

3.9.7.1 U_{AC} 120 V single -phase.

3.9.7.2 DIN rail mounting.

3.9.7.3 Max. discharge current: 20 kA at 8/20 μ s.

3.9.8 Protector: component AC surge protector

3.9.8.1 Hybrid Silicon diode with combined Metal Oxide Varistor (MOV).

3.9.8.2 Class I and II IEC surge suppressor with remote monitoring.

3.9.9 Protector: outdoor 60 V PoE surge protector

3.9.9.1 Impedance: 85 Ω to 115 Ω .

3.9.9.2 Standards: GR1089, NEC800.100, NEC830.100, Restriction of Hazardous Substances (RoHS).

3.9.10 Protector: 48 VDC DIN rail SADS

3.9.10.1 Hybrid Silicon diode with combined MOV.

3.9.10.2 Class I and II IEC surge suppressor with remote monitoring.

3.9.11 Protector: AC common mode

3.9.11.1 DIN rail mounting.

3.9.11.2 UAC 230 V.

3.9.11.3 RoHS compliant.

3.10 Other

3.10.1 Tape: self-vulcanizing Scotch 23

3.10.1.1 0.76 mm thickness black.

3.10.1.2 3M Scotch™23.

3.10.2 Tape: insulation black 3M

3.10.2.1 Vinyl electrical tape.

3.10.2.2 10 m × 14 mm.

3.10.3 Tape: insulation black 3M

3.10.3.1 Vinyl electrical tape.

3.10.3.2 10 m × 48 mm.

3.10.4 Tape: Butyl

3.10.4.1 Highly adhesive, double-sided, self-bonding sealing tape.

3.10.4.2 0.5 m × 48 mm.

3.10.5 Saddle: 5 mm BH500

3.10.5.1 BH500 Polypropylene.

3.10.5.2 Complete with high tensile pin.

3.10.6 Crimper: crimp for L910

3.10.6.1 Ratchet type.

3.10.6.2 Replicable jaws for L910 cable.

3.10.7 Bundle: 9 × coax LMR 400

3.10.7.1 LMR400 × 9 with outside sheath.

3.10.8 Seal: boot weather

3.10.8.1 Breakout kit with weather seal for bundled coaxial for LMR400-9.

3.10.9 Kit: grounding kit BC400-9

3.10.9.1 Grounding kit for BC400-9 bundled coaxial.

3.10.9.2 Fixing clamps and necessary hardware (lugs, etc.).

3.10.10 Bundle: 4 × LMR400

3.10.10.1 LMR400 × 4 with outside sheath.

3.10.11 Shroud: BC400-4, cold shrink

3.10.11.1 Breakout kit with weather seal for BC400-4 bundled coaxial.

3.10.12 Kit: grounding kit BC400-4

3.10.12.1 Grounding kit for BC400-4 bundled coaxial.

3.10.12.2 Fixing clamps and necessary hardware (lugs, etc.).

4. Authorisation

This document has been seen and accepted by:

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5. Revisions

Date	Rev	Compiler	Remarks
Aug 2023	3	J Schutte	Review
Aug 2018	2	J Schutte	Review
June 2013	1	J Schutte	New document replacing ETSP0363

6. Development team

The following people were involved in the development of this document:

- J. Schutte

7. Acknowledgements

Not applicable.

Annex A – Schedule A: Schedule of technical compliance

This must be completed by providing technical details of tendered equipment and Tenderer's statement of compliance or non-compliance. The Tenderers statement of compliance (Schedule B) must be supported by additional information of a concise reference to the relevant submitted documents (e.g., file number, section number, page number, paragraph number). A failure to support the clause with the relevant reference will result in non-compliance.

Table A.1: Schedule of technical compliance

Spec. clause number	Description	Schedule A: Eskom's minimum technical requirements	Schedule B: Supplier's statements of compliance	Supplier's Reference/Comment (Supporting evidence)
3	Requirements			
3.1	Material			
3.1.1	All metals brackets shall be of corrosion-resistant materials. (Stainless steel or hot-dipped galvanized.)	State Compliance & Provide Evidence		
3.1.2	Mounting hardware shall be stainless steel.	State Compliance & Provide Evidence		
3.2	Cable			
3.2.1	Cable: RG58 5 mm 50 Ω			
3.2.1.1	Military specification M-17.	State Compliance & Provide Evidence		
3.2.1.2	Solid Polyethylene Dielectric.	State Compliance & Provide Evidence		
3.2.1.3	Impedance: 50 Ω ± 2 Ω.	State Compliance & Provide Evidence		
3.2.1.4	Attenuation: tenderer to state attenuation of frequency per metre.	State Compliance & Provide Evidence		
3.2.2	Cable: RG223 5.5 mm 50 Ω			

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Spec. clause number	Description	Schedule A: Eskom's minimum technical requirements	Schedule B: Supplier's statements of compliance	Supplier's Reference/Comment (Supporting evidence)
3.2.2.1	Solid Polyethylene Dielectric.	State Compliance & Provide Evidence		
3.2.2.2	Impedance: $50 \Omega \pm 2 \Omega$.	State Compliance & Provide Evidence		
3.2.2.3	Attenuation: tenderer to state attenuation of frequency per metre.	State Compliance & Provide Evidence		
3.2.3	Cable: RG213 10 mm 50 Ω braided			
3.2.3.1	Military specification M-17.	State Compliance & Provide Evidence		
3.2.3.2	Solid Polyethylene Dielectric.	State Compliance & Provide Evidence		
3.2.3.3	Impedance: $50 \Omega \pm 2 \Omega$.	State Compliance & Provide Evidence		
3.2.3.4	Attenuation: tenderer to state attenuation of frequency per metre.	State Compliance & Provide Evidence		
3.2.4	Cable: RG214 10.8 mm 50 Ω			
3.2.4.1	Military specification M-17.	State Compliance & Provide Evidence		
3.2.4.2	Solid Polyethylene Dielectric.	State Compliance & Provide Evidence		
3.2.4.3	Impedance: $50 \Omega \pm 2 \Omega$.	State Compliance & Provide Evidence		
3.2.4.4	Attenuation: tenderer to state attenuation of frequency per metre.	State Compliance & Provide Evidence		

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Spec. clause number	Description	Schedule A: Eskom's minimum technical requirements	Schedule B: Supplier's statements of compliance	Supplier's Reference/Comment (Supporting evidence)
3.2.5	Cable: RG400 5 mm 50 Ω Teflon			
3.2.5.1	Double braided.	State Compliance & Provide Evidence		
3.2.5.2	Solid polyethylene dielectric.	State Compliance & Provide Evidence		
3.2.5.3	Impedance: 50 $\Omega \pm 2 \Omega$.	State Compliance & Provide Evidence		
3.2.5.4	Attenuation: tenderer to state attenuation of frequency per metre.	State Compliance & Provide Evidence		
3.2.6	Cable: LMR195 5 mm 50 Ω DB PE			
3.2.6.1	Times Microwave.	State Compliance & Provide Evidence		
3.2.7	Cable: LMR195 5 mm 50 Ω ultra			
3.2.7.1	Times Microwave.	State Compliance & Provide Evidence		
3.2.8	Cable: LMR240 6.1 mm 50 Ω			
3.2.8.1	Times Microwave.	State Compliance & Provide Evidence		
3.2.9	Cable: LMR240 ultra 6.1 mm 50 Ω			
3.2.9.1	Times Microwave.	State Compliance & Provide Evidence		
3.2.10	Cable: LMR400 10.2 mm 50 Ω			
3.2.10.1	Times Microwave.	State Compliance & Provide Evidence		

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Spec. clause number	Description	Schedule A: Eskom's minimum technical requirements	Schedule B: Supplier's statements of compliance	Supplier's Reference/Comment (Supporting evidence)
3.2.11	Cable: LMR400 10.2 ultra mm 50 Ω			
3.2.11.1	Times Microwave.	State Compliance & Provide Evidence		
3.2.12	Cable: 1/2" (EC4-50) Eupen 5128			
3.2.12.1	Eupen.	State Compliance & Provide Evidence		
3.2.13	Cable: CXEC5-50, 7/8" (EC5-50) Eupen 5228A			
3.2.13.1	Eupen.	State Compliance & Provide Evidence		
3.2.14	Cable: Coaxial 7/8"			
3.2.14.1	Shield/Outer conductor: Aluminium	State Compliance & Provide Evidence		
3.2.14.2	Centre conductor: Copper	State Compliance & Provide Evidence		
3.2.14.3	Dielectric: Foamed Polyethylene Impedance: 50 Ω	State Compliance & Provide Evidence		
3.2.14.4	Impedance: 50 Ω	State Compliance & Provide Evidence		
3.3	Boot			
3.3.1	Boot: strain relief LMR240			
3.3.1.1	Clamping dimensions: 6 mm (for LMR 240 cable).	State Compliance & Provide Evidence		
3.3.1.2	Colour: black.	State Compliance & Provide Evidence		

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Spec. clause number	Description	Schedule A: Eskom's minimum technical requirements	Schedule B: Supplier's statements of compliance	Supplier's Reference/Comment (Supporting evidence)
3.3.2	Boot: strain relief LMR240			
3.3.2.1	Clamping dimensions: 6 mm (for LMR 240 cable).	State Compliance & Provide Evidence		
3.3.2.2	Colour: red.	State Compliance & Provide Evidence		
3.3.3	Boot: strain relief for RG58/LMR 195			
3.3.3.1	Clamping dimensions: 5 mm (for RG58/LMR195 cable).	State Compliance & Provide Evidence		
3.3.3.2	Colour: Black.	State Compliance & Provide Evidence		
3.3.4	Boot: strain relief for RG214/LMR 400			
3.3.4.1	Clamping dimensions: 11 mm (for RG214/LMR400 cable).	State Compliance & Provide Evidence		
3.3.4.2	Colour: black.	State Compliance & Provide Evidence		
3.4	Tool			
3.4.1	Tool: cable prep 1/2"			
3.4.1.1	For SIMFix 1/2" connector and corrugated coax.	State Compliance & Provide Evidence		
3.4.2	Tool: cable prep 7/8"			
3.4.2.1	For SIMFix 1/2" connector and corrugated coax.	State Compliance & Provide Evidence		
3.4.3	Tool: cable stripping 10 mm			

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3.4.3.1	LMR 10 mm stripping tool.	State Compliance & Provide Evidence		
3.4.4	Tool kit: cable crimp metal			
3.4.4.1	HT 300K stripping tool in case with dies.	State Compliance & Provide Evidence		
3.4.5	Tool: Tensioner tool			
3.4.5.1	Tensioner tool for stainless steel cable ties.	State Compliance & Provide Evidence		
3.5	Connector			
3.5.1	Connector: BNC STR male crimp RG58/LMR195			
3.5.1.1	Telegartner/Suhner.	State Compliance & Provide Evidence		
3.5.2	Connector: BNC STR male solder RG223			
3.5.2.1	Telegartner/Suhner.	State Compliance & Provide Evidence		
3.5.3	Connector: BNC STR male crimp LMR240			
3.5.3.1	Telegartner/Suhner.	State Compliance & Provide Evidence		
3.5.4	Connector: BNC STR male crimp LMR400			
3.5.4.1	Telegartner/Suhner.	State Compliance & Provide Evidence		
3.5.5	Connector: N-male STR crimp RG58/LMR195			

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3.5.5.1	Telegartner/Suhner.	State Compliance & Provide Evidence		
3.5.6	Connector: N-male STR crimp RG223/RG400			
3.5.6.1	Telegartner/Suhner.	State Compliance & Provide Evidence		
3.5.7	Connector: N-male STR crimp RG213			
3.5.7.1	Telegartner/Suhner.	State Compliance & Provide Evidence		
3.5.8	Connector: N-male STR solder RG213/RG214			
3.5.8.1	Telegartner/Suhner.	State Compliance & Provide Evidence		
3.5.9	Connector: N-male STR crimp RG214			
3.5.9.1	Telegartner/Suhner.	State Compliance & Provide Evidence		
3.5.10	Connector: N-male STR crimp LMR240			
3.5.10.1	Telegartner/Suhner.	State Compliance & Provide Evidence		
3.5.11	Connector: N-male R/A crimp LMR240			
3.5.11.1	Telegartner/Suhner.	State Compliance & Provide Evidence		
3.5.12	Connector: N-male STR crimp LMR400			
3.5.12.1	Telegartner/Suhner.	State Compliance & Provide Evidence		

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Spec. clause number	Description	Schedule A: Eskom's minimum technical requirements	Schedule B: Supplier's statements of compliance	Supplier's Reference/Comment (Supporting evidence)
3.5.13	Connector: N-male R/A crimp LMR400			
3.5.13.1	Telegartner/Suhner.	State Compliance & Provide Evidence		
3.5.14	Connector: N-male STR 7/8" (EC5-50) IP68			
3.5.14.1	Telegartner/Suhner.	State Compliance & Provide Evidence		
3.5.15	Connector: N-female STR crimp RG213			
3.5.15.1	Telegartner/Suhner.	State Compliance & Provide Evidence		
3.5.16	Connector: N-female STR crimp RG214			
3.5.16.1	Telegartner/Suhner.	State Compliance & Provide Evidence		
3.5.17	Connector: N-female STR crimp LMR400			
3.5.17.1	Telegartner/Suhner.	State Compliance & Provide Evidence		
3.5.18	Connector: N-female STR 1/2" HF (EC450HF)			
3.5.18.1	Telegartner/Suhner.	State Compliance & Provide Evidence		
3.5.19	Connector: N-female STR 7/8" (E5-50) IP68			
3.5.19.1	Telegartner/Suhner.	State Compliance & Provide Evidence		
3.5.20	Connector: SMA-male STR crimp RG58/LMR195			

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3.5.20.1	Telegartner/Suhner.	State Compliance & Provide Evidence		
3.5.21	Connector: SMA-female STR crimp RG58/LMR195			
3.5.21.1	Telegartner/Suhner.	State Compliance & Provide Evidence		
3.5.22	Connector: TNC-male STR crimp RG58/LMR195			
3.5.22.1	Telegartner/Suhner.	State Compliance & Provide Evidence		
3.5.23	Connector: TNC-male STR solder RG58/LMR195			
3.5.23.1	Telegartner/Suhner.	State Compliance & Provide Evidence		
3.5.24	Connector: UHF-male STR crimp RG58/LMR195			
3.5.24.1	Telegartner/Suhner.	State Compliance & Provide Evidence		
3.5.25	Connector: TNC-male STR crimp LMR400			
3.5.25.1	Telegartner/Suhner.	State Compliance & Provide Evidence		
3.5.26	Connector: bulkhead N type			
3.5.26.1	Telegartner/Suhner N type bulkhead.	State Compliance & Provide Evidence		
3.6	Adaptor			
3.6.1	Adaptor: BNC-female to SMA-female			

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3.6.1.1	Telegartner/Suhner.	State Compliance & Provide Evidence		
3.6.2	Adaptor: BNC-male to UHF-female			
3.6.2.1	Telegartner/Suhner.	State Compliance & Provide Evidence		
3.6.3	Adaptor: BNC-male to N-female			
3.6.3.1	Telegartner/Suhner.	State Compliance & Provide Evidence		
3.6.4	Adaptor: BNC-female to N-male			
3.6.4.1	Telegartner/Suhner.	State Compliance & Provide Evidence		
3.6.5	Adaptor: N-female to N-female			
3.6.5.1	Telegartner/Suhner.	State Compliance & Provide Evidence		
3.6.6	Adaptor: R/A N-male to N-female			
3.6.6.1	Telegartner/Suhner.	State Compliance & Provide Evidence		
3.6.7	Adaptor: R/A TNC-male to TNC-female			
3.6.7.1	Telegartner/Suhner.	State Compliance & Provide Evidence		
3.6.8	Adaptor: TNC-male to BNC-female			
3.6.8.1	Telegartner/Suhner.	State Compliance & Provide Evidence		

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3.6.9	Adaptor: TNC-male to N-female			
3.6.9.1	Telegartner/Suhner.	State Compliance & Provide Evidence		
3.7	Flylead			
3.7.1	Flylead: BNC male to N male			
3.7.1.1	RG58 cable 1 m in length.	State Compliance & Provide Evidence		
3.7.2	Flylead: BNC male - N male			
3.7.2.1	LMR195 cable 1 m in length.	State Compliance & Provide Evidence		
3.7.3	Flylead: N female bulkhead – N male			
3.7.3.1	LMR195 cable 1 m in length.	State Compliance & Provide Evidence		
3.7.4	Flylead: N female bulkhead – SMA male			
3.7.4.1	LMR195 cable 1 m in length.	State Compliance & Provide Evidence		
3.7.5	Flylead: N male – TNC male			
3.7.5.1	LMR195DB ultra cable 1 m in length.	State Compliance & Provide Evidence		
3.7.6	Flylead: N male – N male			
3.7.6.1	LMR195DB ultra cable 5 m in length.	State Compliance & Provide Evidence		
3.7.7	Flylead: N female– N male			

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3.7.7.1	LMR400 ultra cable 5 m in length.	State Compliance & Provide Evidence		
3.7.7.2	LMR400 ultra cable 2.5 m in length.	State Compliance & Provide Evidence		
3.7.8	Flylead: N male – N male			
3.7.8.1	LMR400 ultra cable 5 m in length.	State Compliance & Provide Evidence		
3.8	Clamp			
3.8.1	Clamp: Cumfy dual cable and clip			
3.8.1.1	Dimensions: 2 × 7 mm diameter.	State Compliance & Provide Evidence		
3.8.2	Clamp: Cumfy single cable and clip			
3.8.2.1	Dimensions: 1 × 13 mm diameter.	State Compliance & Provide Evidence		
3.8.3	Clamp: Cumfy dual RG8 and clip			
3.8.3.1	Dimensions: 2 × 10 mm diameter.	State Compliance & Provide Evidence		
3.8.4	Clamp: Cumfy G-clamp dual assy			
3.8.4.1	Complete G Clamp with 2 × 6 mm diameter.	State Compliance & Provide Evidence		
3.8.5	Clamp: Cumfy 3 way + clip			
3.8.5.1	Complete clamp with 3 × 7/8" and locking clip.	State Compliance & Provide Evidence		

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Spec. clause number	Description	Schedule A: Eskom's minimum technical requirements	Schedule B: Supplier's statements of compliance	Supplier's Reference/Comment (Supporting evidence)
3.8.6	Clamp: Cumfy G-clamp single assy			
3.8.6.1	Complete G-clamp with 1 × 10 mm diameter.	State Compliance & Provide Evidence		
3.8.7	Clamp: Cumfy G-clamp dual assy			
3.8.7.1	Complete G-clamp with 2 × 10 mm diameter.	State Compliance & Provide Evidence		
3.8.8	Clamp: Cumfy G-clamp triple assy			
3.8.8.1	Complete G-clamp with 3 × 10 mm diameter.	State Compliance & Provide Evidence		
3.8.9	Clamp: Cumfy G-clamp quad assy			
3.8.9.1	Complete G-clamp with 4 × 10 mm diameter.	State Compliance & Provide Evidence		
3.8.10	Clamp: Cumfy G-clamp single assy			
3.8.10.1	Complete G-clamp with 1 × 16 mm diameter.	State Compliance & Provide Evidence		
3.8.11	Clamp: Cumfy G-clamp dual assy			
3.8.11.1	Complete G-clamp with 2 × 16 mm diameter.	State Compliance & Provide Evidence		
3.8.12	Clamp: Cumfy G-clamp triple assy			
3.8.12.1	Complete G-clamp with 3 × 16 mm diameter.	State Compliance & Provide Evidence		
3.8.13	Clamp: Cumfy G-clamp quad assy			

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Spec. clause number	Description	Schedule A: Eskom's minimum technical requirements	Schedule B: Supplier's statements of compliance	Supplier's Reference/Comment (Supporting evidence)
3.8.13.1	Complete G-clamp with 4 × 16 mm diameter.	State Compliance & Provide Evidence		
3.8.14	Clamp: Cumfy G-clamp single assy			
3.8.14.1	Complete G-clamp with 1 × 7/8" diameter.	State Compliance & Provide Evidence		
3.8.15	Clamp: Cumfy G-clamp dual assy			
3.8.15.1	Complete G-clamp with 2 × 7/8" diameter.	State Compliance & Provide Evidence		
3.8.16	Clamp: Cumfy G-clamp triple assy			
3.8.16.1	Complete G-clamp with 3 × 7/8" diameter.	State Compliance & Provide Evidence		
3.8.17	Clamp: Cumfy G-clamp quad assy			
3.8.17.1	Complete G-clamp with 4 × 7/8" diameter.	State Compliance & Provide Evidence		
3.8.18	Clamp: Polyprop			
3.8.18.1	1 × 1/2".	State Compliance & Provide Evidence		
3.8.19	Clamp: Polyprop			
3.8.19.1	1 × 7/8".	State Compliance & Provide Evidence		
3.8.20	Clamp: Polyprop			
3.8.20.1	1 × 10 mm.	State Compliance & Provide Evidence		

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Spec. clause number	Description	Schedule A: Eskom's minimum technical requirements	Schedule B: Supplier's statements of compliance	Supplier's Reference/Comment (Supporting evidence)
3.8.21	Clamp: grounding kit 10 mm coax cable			
3.8.21.1	16 mm black GP cable.	State Compliance & Provide Evidence		
3.8.21.2	Fixing clamps and necessary hardware (lugs, etc.).	State Compliance & Provide Evidence		
3.8.22	Clamp: grounding kit 1/2" coax cable			
3.8.22.1	16 mm black GP cable.	State Compliance & Provide Evidence		
3.8.22.2	Fixing clamps and necessary hardware (lugs, etc.).	State Compliance & Provide Evidence		
3.8.23	Clamp: grounding 1/2"			
3.8.23.1	Grounding kit with parallel outlet.	State Compliance & Provide Evidence		
3.8.23.2	Fixing clamps and necessary hardware (lugs, etc.).	State Compliance & Provide Evidence		
3.8.23.3	Weatherproofing kit.	State Compliance & Provide Evidence		
3.8.24	Clamp: grounding 7/8"			
3.8.24.1	Grounding kit with parallel outlet.	State Compliance & Provide Evidence		
3.8.24.2	Fixing clamps and necessary hardware (lugs, etc.).	State Compliance & Provide Evidence		
3.8.24.3	Weatherproofing kit	State Compliance & Provide Evidence		

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3.8.25	Clamp: BAND-IT strap 12 mm 30 m			
3.8.25.1	Stainless steel band (30 m × 12 mm).	State Compliance & Provide Evidence		
3.8.26	Clamp: BAND-IT buckle 12 mm			
3.8.26.1	12 mm Stainless steel.	State Compliance & Provide Evidence		
3.8.27	Clamp: Stainless steel cable ties 7.9 mm			
3.8.27.1	Stainless steel cable ties 259mm X 7.9mm packet.	State Compliance & Provide Evidence		
3.8.28	Clamp: 7/8" 1 way tandem with G-clamp			
3.8.28.1	Tandem (two 7/8" cables) clamp complete with mounting hardware.	State Compliance & Provide Evidence		
3.8.29	Clamp: 7/8" 2 way tandem with G-clamp			
3.8.29.1	Dual tandem (four 7/8" cables) clamp complete with mounting hardware.	State Compliance & Provide Evidence		
3.8.30	Clamp: 7/8" 3 way tandem with G-clamp			
3.8.30.1	Triple tandem (six 7/8" cables) clamp complete with mounting hardware.	State Compliance & Provide Evidence		
3.8.31	Clamp: cable two-way 32 mm			
3.8.31.1	Two-way clamp for BC400-9 cable 32 mm.	State Compliance & Provide Evidence		
3.8.32	Clamp: cable one-way 32 mm			

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3.8.32.1	One-way clamp for BC400-9 cable 32 mm.	State Compliance & Provide Evidence		
3.9	Protector			
3.9.1	Protector: surge filter 1.7 GHz to 2.3 GHz bulkhead N-female\N-female			
3.9.1.1	PolyPhaser.	State Compliance & Provide Evidence		
3.9.2	Protector: surge suppressor DC-2 GHz N-female bulkhead mount 90 V			
3.9.2.1	Telegartner/Suhner.	State Compliance & Provide Evidence		
3.9.3	Protector: 125 MHz to 1 000 MHz N-female			
3.9.3.1	PolyPhaser C2.	State Compliance & Provide Evidence		
3.9.4	Protector: data line surge bulkhead RJ45			
3.9.4.1	IP 67.	State Compliance & Provide Evidence		
3.9.4.2	10/100 Mbps PoE. Gigabit Ethernet and Gigabit PoE.	State Compliance & Provide Evidence		
3.9.5	Protector: surge AC3 phase kit			
3.9.5.1	UAC 240 V/ UAC 415 V three-phase.	State Compliance & Provide Evidence		
3.9.5.2	IP 67 enclosure.	State Compliance & Provide Evidence		

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3.9.5.3	Class I and II IEC surge suppressor with remote monitoring.	State Compliance & Provide Evidence		
3.9.6	Protector: surge AC single phase			
3.9.6.1	UAC 240 V single phase.	State Compliance & Provide Evidence		
3.9.6.2	IP 67 enclosure.	State Compliance & Provide Evidence		
3.9.6.3	Class I and II IEC surge suppressor with remote monitoring.	State Compliance & Provide Evidence		
3.9.7	Protector: solar panel 120 V			
3.9.7.1	UAC 120 V single -phase.	State Compliance & Provide Evidence		
3.9.7.2	DIN rail mounting.	State Compliance & Provide Evidence		
3.9.7.3	Max. discharge current: 20 kA at 8/20 μ s.	State Compliance & Provide Evidence		
3.9.8	Protector: component AC surge protector			
3.9.8.1	Hybrid Silicon diode with combined Metal Oxide Varistor (MOV).	State Compliance & Provide Evidence		
3.9.8.2	Class I and II IEC surge suppressor with remote monitoring.	State Compliance & Provide Evidence		
3.9.9	Protector: outdoor 60 V PoE surge protector			
3.9.9.1	Impedance: 85 Ω to 115 Ω.	State Compliance & Provide Evidence		

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3.9.9.2	Standards: GR1089, NEC800.100, NEC830.100, Restriction of Hazardous Substances (RoHS).	State Compliance & Provide Evidence		
3.9.10	Protector: 48 VDC DIN rail SADS			
3.9.10.1	Hybrid Silicon diode with combined MOV.	State Compliance & Provide Evidence		
3.9.10.2	Class I and II IEC surge suppressor with remote monitoring.	State Compliance & Provide Evidence		
3.9.11	Protector: AC common mode			
3.9.11.1	DIN rail mounting.	State Compliance & Provide Evidence		
3.9.11.2	UAC 230 V.	State Compliance & Provide Evidence		
3.9.11.3	RoHS compliant.	State Compliance & Provide Evidence		
3.10	Other			
3.10.1	Tape: self-vulcanizing Scotch 23			
3.10.1.1	0.76 mm thickness black.	State Compliance & Provide Evidence		
3.10.1.2	3M Scotch™23.	State Compliance & Provide Evidence		
3.10.2	Tape: insulation black 3M			
3.10.2.1	Vinyl electrical tape.	State Compliance & Provide Evidence		

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3.10.2.2	10 m × 14 mm.	State Compliance & Provide Evidence		
3.10.3	Tape: insulation black 3M			
3.10.3.1	Vinyl electrical tape.	State Compliance & Provide Evidence		
3.10.3.2	10 m × 48 mm.	State Compliance & Provide Evidence		
3.10.4	Tape: Butyl			
3.10.4.1	Highly adhesive, double-sided, self-bonding sealing tape.	State Compliance & Provide Evidence		
3.10.4.2	0.5 m × 48 mm.	State Compliance & Provide Evidence		
3.10.5	Saddle: 5 mm BH500			
3.10.5.1	BH500 Polypropylene.	State Compliance & Provide Evidence		
3.10.5.2	Complete with high tensile pin.	State Compliance & Provide Evidence		
3.10.6	Crimper: crimp for L910			
3.10.6.1	Ratchet type.	State Compliance & Provide Evidence		
3.10.6.2	Replicable jaws for L910 cable.	State Compliance & Provide Evidence		
3.10.7	Bundle: 9 × coax LMR 400			

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3.10.7.1	LMR400 × 9 with outside sheath.	State Compliance & Provide Evidence		
3.10.8	Seal: boot weather			
3.10.8.1	Breakout kit with weather seal for bundled coaxial for LMR400-9.	State Compliance & Provide Evidence		
3.10.9	Kit: grounding kit BC400-9			
3.10.9.1	Grounding kit for BC400-9 bundled coaxial.	State Compliance & Provide Evidence		
3.10.9.2	Fixing clamps and necessary hardware (lugs, etc.).	State Compliance & Provide Evidence		
3.10.10	Bundle: 4 × LMR400			
3.10.10.1	LMR400 × 4 with outside sheath.	State Compliance & Provide Evidence		
3.10.11	Shroud: BC400-4, cold shrink			
3.10.11.1	Breakout kit with weather seal for BC400-4 bundled coaxial.	State Compliance & Provide Evidence		
3.10.12	Kit: grounding kit BC400-4			
3.10.12.1	Grounding kit for BC400-4 bundled coaxial.	State Compliance & Provide Evidence		
3.10.12.2	Fixing clamps and necessary hardware (lugs, etc.).	State Compliance & Provide Evidence		

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