


Supply and Delivery of Communication Equipments in Gauteng Region					
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PASSENGER RAIL AGENCY OF SOUTH AFRICA

Project specifications and scope of work for Supply and Delivery of Communication Equipment in Gauteng Region.

SPECIFICATION AND SCOPE OF WORK

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PART A: SPECIFICATION

Project specifications and scope of work for Supply and Delivery of Communication Equipments in Gauteng Region.

1 Introduction


- 1.1 Telecommunications department requires the appointment of a service provider to Supply and Delivery of Communication equipments for Telecoms department in Gauteng Region.

2 Background Information

- 2.1 Telecoms systems is affected by theft and vandalism at the stations.
- 2.2 Shunting Communications at the train Depots is also affected due to faulty handsets.
- 2.3 The existing VoIP Telephones and voice recording system is faulty at GNC, redundant system is required.

3 Objective

- 3.1 Telecoms equipments requires redundant system to revive communication at the Train Depot, stations and CTC for train authorisations and passenger information.


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4 Special Requirements

- 4.1 This requirements document outlines the type of deliverables which will be indicated on the schedule of quantities.
- 4.2 All equipments must meet the technical requirements for the mentioned project in terms of its technology and quality of the products.
- 4.3 The requirements described in this document are aimed at delivering a solution that is reliable and efficient.
- 4.4 Metrorail is not eligible for the delay on supplying such equipments and material.
- 4.5 All equipments are requested to be supplied within the agreed period as per contractual agreement.
- 4.6 The purchasing of these materials must be a **period of one month** which covers any obstacles of unavailability of stock from the suppliers.
- 4.7 The best practice on this project must be applied in all cause such as *proper and constant communications* during the project progress.
- 4.8 Noticed must be given prior to the delivery of such equipments.
- 4.9 Certain systems will require the contractor to familiarize him/herself with the existing features on sites.

5 Scope of work

- 5.1 Supply and delivery of cleavers.
- 5.2 Supply and delivery of Analogue Phones with LCD display.
- 5.3 Supply and delivery of General-purpose GSM Indoor antenna.
- 5.4 Supply and delivery of GSM Modem for 3G/4G with power supply.


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- 5.5** Supply and Delivery of UHF Portable Two-Way Radio Including Antenna, Battery and Charger.
- 5.6** Supply and Delivery of PVC Compression Glands for optic fibre patch panel.
- 5.7** Supply and Delivery of Transport network Interface cards.
- 5.8** Supply and Delivery of Optical Time-Domain Reflectometer.
- 5.9** Supply and Delivery of Optic fibre Splicing Machine.
- 5.10** Supply and Delivery of Safety Harness full body.
- 5.11** The service provider will perform all pre-commissioning tests of the equipment.
- 5.12** Metrorail reserves the right to witness these tests, the service provider shall rectify all defects of work to the satisfaction of Prasa that may have arises during these tests.
- 5.13** PRASA shall perform the final commissioning tests with the service provider, acceptance by project manager of satisfactory completion of onsite test in no way relieves the service provider from his duty to ensure compliance to the specification.
- 5.14** Commissioning of the equipment must be done in such a way, that the end-user requirements are fulfilled, as far as technically possible.

6 TECHNICAL SPECIFICATION

6.1 OPTIC FIBRE CLEAVER

Specifications	
Material	Silica Glass
Cladding	Ø 125 um
Fiber count	Single to 12
Cleave Length	5 ~ 20mm (Ø 0.25) / 10 ~ 20mm (Ø 0.9)
Cleave Angle	0.5 degrees with single fibre
Off Cut Collector	Option
Single Fibre Adapter	Pre-fitted (AP-FC6M)
Dimensions (mm)	63(W) x 77(D) x 63(H)

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Weight	380g
Field replaceable blade	Yes, Use FCP-20BL
Blade life *1	54,000 fibres (2,250 fibres x 24 Positions)

6.2 ANALOGUE PHONES WITH LCD DISPLAY

6.2.1 High quality ergonomic keypad

6.2.2 14 digits, 7-segment display with icons

6.2.3 Hands-free / Open listening

6.2.4 Numeric phonebook with 20 entries; from those, 10 speed-dial

6.2.5 Set, Speed Dial, Mute, Recall, Redial, Hands-free and (+/-) Volume keys

Sound quality:

6.2.6 High Sound Quality

6.2.7 Mute Key with melody

6.2.8 Adjustable volume of handset sound (3 levels)

6.2.9 Adjustable ringtone volume settings (4 levels)

6.2.10 Hands-free/Open listening (high quality) activated by illuminated hands-free key with adjustable volume levels

Convenience – phoning essentials:

6.2.11 Phonebook and dialing

6.2.12 Numeric phonebook with 20 entries; from those, 10 speed-dial

6.2.13 CLIP indication for: incoming calls, missed calls list, redial list


6.2.14 Dial preparation (input of phone numbers before connecting) with correction possibility.

6.2.15 Notebook function can save different target numbers to phonebook

6.2.16 Convenient dial font for improved readability

6.2.17 Redialing of the 5 last different numbers

6.2.18 User-programmable speed-dial shortcuts using keys 0-9

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6.2.19 Dialing: DTMF, Pulse, Flash (via Set codes)

6.2.20 External prefixes programmable

6.2.21 Call blocking (3 prefix number groups)

6.2.22 Telephone lock with direct call (Baby call)

6.3 INDOOR ANTENNA FOR GSM NETWORK MODEM

Features:

6.3.1 Miniature GSM Helical Antenna

6.3.2 850/ 900/ 1800/ 1900/ 2100 MHz

6.3.3 Active gain: +3dBi

6.3.4 VSWR <2.5:1

6.3.5 Cable Length: 2.5m

6.3.6 Connector Type: RG174 Coax to SMA male.

6.3.7 Magnetic Mount.

6.3.8 Total Height 100mm.

6.3.9 50 OHM Impedance.

6.3.10 Operating Temperature -40 to +80 degrees.

6.4 GSM MODEM FOR 3G/ 4G WITH POWER SUPPLY


Features:

6.4.1 Able to connect via Wi-Fi and RJ45 connector

6.4.2 Supports wired and wireless network access

6.4.3 Supports up to 32 devices via Wi-Fi and 4 devices via Ethernet interface

6.4.4 Supports RJ11 connector for voice calls

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6.4.5 One-touch connection and LED indicator display

6.4.6 Hassle free installation, just Plug-N-Play

6.4.7 Friendly user interface

6.4.8 SIM Lock released for usage with any 3G network worldwide

6.4.9 SMA-female External Antenna slot

6.4.10 Unlimited operation time

Product Specs:

6.4.11 Wi-Fi 802.11b/g/n

6.6.12 Built-in UMTS and WLAN high gain antenna

6.4.13 Data, Voice and SMS Service

Transfer rate :

Max Download 28.8Mbps / Max Upload 5.76Mbps

Band :

3G: HSPA+/HSUPA/HSDPA/UMTS 2100/900 MHz

2G: GSM/GPRS/EDGE 1900/1800/900/850 MHz

Dimensions :

180mmx120x15(LxWxH)

Weight :


Approximately 250g excluding power adapter

6.5 UHF PORTABLE TWO-WAY RADIO

Features:

6.5.1 ANALOG & DIGITAL

6.5.2 DMR Digital Air Interface

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6.5.3 AMBE+2 Vocoder for Natural Sounding Digital Voice

6.5.4 Operates in DMR Digital Conventional and FM Analogue modes, even on the same channel. Autosenses Received Mode (Digital or Analogue)

6.5.5 Digital Conventional Mode (does not support Trunking mode)

6.5.6 Signalling modes include CTCSS/DCS, Fleet Sync, MDC-1200, DTMF & 2-Tone

6.5.7 Digital and Analogue Scramblers built in.

6.5.8 True 6.25 kHz channel spacing operation.

6.5.9 Includes Radio-To-Radio Mode (no repeater needed)

6.5.10 IP54/55 and MIL-STD 810C/D/E/F/G Certification

6.6 TRANSPORT NETWORK INTERFACE CARDS

6.6.1 4p Gig Ethernet card – SFP

6.6.2 7p – Serial card

6.6.3 Cable set for connector 1-5 (open ended) for 7-serial port 1-3.


6.6.4 SFP 1310nm – EX 40Km Range.

6.7 OPTICAL TIME-DOMAIN REFLECTOMETER_OTDR

6.7.1 Easy to use and robust for field usage

6.7.2 Modular construction for future module addition/replacement in order to be able to perform other measurements apart from OTDR

6.7.3 Level meter, CW LASER source and Visual Fault Locator (VFL) shall be incorporated

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6.7.4 SINGLE MODE (SM) OTDR

- Wavelength 1310 \pm 20 / 1550 \pm 20 / 1625 \pm 20 nm
- Dynamic range 41/40/40 dB
- Pulse width 5 ns to 20 μ s
- Linearity \pm 0,03 dB/dB
- Sampling resolution from 4cm
- Loss resolution 0,001 dB
- Loss threshold 0,01 dB
- Sampling points up to 256.000
- Distance 1,25 to 320 km
- Distance accuracy (m) \pm (0,75+0,001% \times distance+sampling resolution)
- Event dead zone 0,8 m
- Attenuation dead zone 4 m.

6.7.5 LEVEL METER


- Calibrated wavelengths 1310 / 1490 / 1550 / 1625 nm
- Power level +5 to -55 dBm
- Accuracy \pm 5 %

6.7.6 CW LASER SOURCE

- Calibrated wavelengths 1310 / 1550 / 1625 nm
- Output power -4,5 dBm

6.7.7 VISUAL FAULT LOCATOR (VFL)

- Wavelength \sim 635 nm
- Output power 1 mW

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6.7.8 GENERAL CHARACTERISTICS

- SCREEN
- TFT touchscreen at least 6,5 in
- Resolution 640 x 480
- Visibility under direct sunlight

6.7.9 POWER SUPPLY

- Power supply – charger input 100 – 240 VAC 50 – 60 HZ
- Rechargeable Li-ion battery with at least 8 hours endurance.

6.7.10 INTERCONNECTIONS

- 2 USB ports and RJ-45 ethernet port.

6.7.11 MEMORY


- Able to store at least 1000 measurement results.

6.7.12 ENVIRONMENTAL

- Operation temperature 0 0C to +40 0C
- Humidity up to 95% non-condensing.

6.7.13 WEIGHT

- Up to 3,5 Kg

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6.8 OPTIC FIBRE SPLICING MACHING

6.8.1 Profile types: single mode and multi-mode.

6.8.2 Cladding diameter: 80 - 150um.

6.8.3 Coating diameter: 100 – 1000um.

6.8.4 Slice time: 5 sec.

6.8.5 Heating time: 9 sec.

6.8.6 Proof test: 1.96 - 2.09N

6.8.7 Splice and heating programs.

6.8.8 Automatic arc calibration.

6.8.9 AC input supply: AC 100 – 240V, 50/60Hz.

6.8.10 DC input supply: DC 10 – 15V.

6.8.11 Battery Pack: Li-ion 10.8V, 6,400mAh

6.8.12 DC output: DC – 12V.

6.8.13 Operating Temperature: -10°C - +50°C.

6.8.14 Size: 128(W) x 154(D) x 130 (H)

6.9 PVC COMPRESSION GLANDS FOR OPTIC FIBRE PATCH PANEL.

6.10 SUPPLY AND DELIVERY OF SAFETY HARNESS FULL BODY.

6.10.1 Curvilinear comfort system,


6.10.2 Secure-Fit buckles, and Sorbtek fabric on the shoulder and sub-pelvic pads.

6.10.3 Tower Harness model with integral body belt and removable saddle.

6.10.4 Resists water, oil, grease, and dirt.


6.10.5 Uses Visco-Elastic shoulder padding for comfort.

6.10.6 Designed with downward adjusting torso straps to ease fitting.

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7. Bill of Quantity

Item no:	Description	LOCAL CONTENT THRESHOLD	Qty	Unit	Estimated Unit price	Estimated Total Amount
1.	SUPPLY AND DELIVERY OF CLEAVERS	N/A	8	Each	R	R
2.	SUPPLY AND DELIVERY OF ANALOGUE PHONES WITH LCD DISPLAY	N/A	20	Each	R	R
3.	SUPPLY AND DELIVERY OF INDOOR ANTENNA FOR GSM NETWORK MODEM	100% Antenna - Two way Radio Terminals	20	Each	R	R
4.	SUPPLY AND DELIVERY OF GSM MODEM ROUTER WITH POWER SUPPLY	N/A	20	Each	R	R
5.	SUPPLY AND DELIVERY OF UHF PORTABLE TWO-WAY RADIO INCLUDING ANTENNA, BATTERY AND CHARGER.	60% Portable Radio - Two way Radio Terminals	20	Each	R	R
6.	SUPPLY AND DELIVERY OF 4p GIG ETHERNET CARD – SFP	N/A	2	Each	R	R
7.	SUPPLY AND DELIVERY OF 7p – SERIAL CARD	N/A	2	Each	R	R
8.	SUPPLY AND DELIVERY OF Cable set for connector 1-5 (open ended) for 7-serial port 1-3.	90% Low Voltage Electrical Cable	2	Each	R	R
9.	SUPPLY AND DELIVERY OF SFP 1310nm – EX 40Km Range.	N/A	8	Each	R	R

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10.	SUPPLY AND DELIVERY OF PVC COMPRESSION GLANDS PACK OF 10 (FOR OPTIC FIBRE PATCH PANEL)	100% PVC Pipes	20	Each	R	R
11.	SUPPLY AND DELIVERY OF OPTICAL TIME-DOMAIN REFLECTOMETER OTDR.	N/A	1	Each	R	R
12.	SUPPLY AND DELIVERY OF SPLICING MACHINE.	N/A	1	Each	R	R
13.	SUPPLY AND DELIVERY OF SAFETY HARNESS FULL BODY.	100% Textile, Clothing, Leather and Footwear	20	Each	R	R
				Subtotal	R	R
				Total Amount	VAT 15% inclusive	R

8. Evaluation Criteria

The evaluation should be done in three stages as follows:

Stage 1: Mandatory Compliance Requirements

Completion of SBDs and Declarations


SBD6.2 (Attach Annexure C)

Stage 2:

Valid Tax Clearance certificate, Company registration documents, security screening

Stage 2: Technical / Functionality Requirements

NOTE: The Technical or Functionality criteria must be guided by the project scope of works and area of focus.

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Functionality and Capabilities	Max Points	Points Scored	Minimum Required
Compliance to Technical specification <ul style="list-style-type: none"> 100% Compliance with technical specification = 100 points Non – compliance or non-Submission = 0 Points NB!! Provide Item-by-Item Technical Specification compliance confirmation letter signed by duly authorized persons of the bidding entity.	100		100*
GRAND TOTAL	100		100*

Stage 3: Pricing and BBBEE Pricing

A maximum of 80 points is allocated for price. The evaluation for price will be done based on the following formula:

$$P_s = 80 \left(1 - \frac{P_t - P_{\min}}{P_{\min}} \right)$$


Where

P_s = Points scored for price of tender under consideration

P_t = Rand value of tender under consideration

P_{\min} = Rand value of lowest acceptable tender

BBBEE Evaluation

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The BBBEE component of evaluation is weighted at 20% of the evaluation criteria. Bidders will be awarded the following points based on the level of their BBBEE as per their BBBEE Certificate issued by an agency approved by SANAS:

B-BBEE Contribution Level	80:20 Preference System
1	10
2	9
3	8
4	5
5	4
6	3
7	2
8	1
Non-compliant	0

10 LOCAL CONTENT - NATIONAL TREASURY STIPULATED MINIMUM THRESHOLDS FOR LOCAL PRODUCTION

9.1 LOCAL CONTENT


- Bids will be subject to local content requirements in terms of Regulation 8(1) of the Preferential Procurement Regulations, 2017.
- Only locally produced or manufactured goods with a stipulated minimum threshold as stated in the table below for local production and content will be considered. Bidders who do not meet the stipulated minimum threshold will be automatically disqualified and not be considered further for evaluation.
- Bidders may not sub-contract in such a manner that the local production and content of the overall value of the contract is reduced to below the stipulated minimum threshold.
- The exchange rate to be used for the calculation of local content (local content and local production are used interchangeably) must be the

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exchange rate published by the SARB on the date of the advertisement of the tender.

- The Declaration Certificate for Local Content (SBD 6.2) must be completed and duly signed. **Bidders who do not complete this form will be automatically disqualified.**
- For further guidance with the above requirements, bidders may refer to DTI website, www.theDTI.gov.za and National Treasury Designated Sectors for the following Instruction Notes:
 - a. Number 10 of 2019/2020 (Electrical Cable Products).
 - b. Number 1 of 2016/2017 (Two-Way Radio Terminals and Associated Equipment).
 - c. Number 01 of 2019/2020 (Plastic Pipe).

LOCAL CONTENT BOQ:		
DESCRIPTION		
No	Material	% of local content
3.	SUPPLY AND DELIVERY OF INDOOR ANTENNA FOR GSM NETWORK MODEM	100% Antenna - Two way Radio Terminals
5.	SUPPLY AND DELIVERY OF UHF PORTABLE TWO-WAY RADIO INCLUDING ANTENNA, BATTERY AND CHARGER.	60% Portable Radio - Two way Radio Terminals
8.	SUPPLY AND DELIVERY OF Cable set for connector 1-5 (open ended) for 7-serial port 1-3.	90% Low Voltage Electrical Cable
10.	SUPPLY AND DELIVERY OF PVC COMPRESSION GLANDS PACK OF 10 (FOR OPTIC FIBRE PATCH PANEL)	100% PVC Pipes

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13.	SUPPLY AND DELIVERY OF SAFETY HARNESS FULL BODY.	100% Textile, Clothing, Leather and Footwear