



TRANSNET FREIGHT RAIL-RNC

an Operating Division of **TRANSNET SOC LTD**

[hereinafter referred to as **Transnet**]

Registration Number 1990/000900/30

REQUEST FOR QUOTATION [RFQ] No CRAC-KGG-43323

**FOR THE ONCE OFF SUPPLY AND DELIVERY OF RADIO COMMUNICATION TEST SET
(COMMS MONITOR) TO BE DELIVERED AT 2 FOLEY STREET, FACTORIA,
KRUGERSDORP, 1739.**

ISSUE DATE: 03 NOVEMBER 2023

CLOSING DATE: 20 NOVEMBER 2023

CLOSING TIME: 10:00 AM

VALIDITY PERIOD: 180 BUSINESS WORKING DAYS (26 AUGUST 2024)

Note to the bidders:

Bidders are required to ensure that electronic bid submissions are done at least a day before the closing date to prevent issues which they may encounter due to their internet speed, bandwidth or the size of the number of uploads they are submitting. Transnet will not be held liable for any challenges experienced by bidders as a result of the technical challenges. Please do not wait for the last hour to submit. A Bidder can upload 30mb per upload and multiple uploads are permitted.

SECTION 1: SBD1 FORM**PART A****INVITATION TO BID**

YOU ARE HEREBY INVITED TO BID FOR REQUIREMENTS OF ONCE OFF SUPPLY AND DELIVERY OF RADIO TEST SET (COMMS MONITOR) TO BE DELIVERED AT 2 FOLEY STREET, FACTORIA, KRUGERSDORP, 1739 , A DIVISION TRANSNET SOC LTD

BID NUMBER:	CRAC-KGG-43323	ISSUE DATE:	03.11.2023	CLOSING DATE:	20.11.2023	CLOSING TIME:	10:00AM
-------------	-----------------------	-------------	-------------------	---------------	-------------------	---------------	----------------

DESCRIPTION **ONCE OFF SUPPLY AND DELIVERY OF RADIO COMMUNICATION TEST SET (COMMS MONITOR).**

BID RESPONSE DOCUMENTS SUBMISSION

Transnet has implemented a new electronic tender submission system, the e-Tender Submission Portal, in line with the overall Transnet digitalization strategy where suppliers can view advertised tenders, register their information, log their intent to respond to bids and upload their bid proposals/responses on to the system.

RESPONDENTS ARE TO UPLOAD THEIR BID RESPONSE PROPOSALS ONTO THE TRANSNET SYSTEM AGAINST EACH TENDER/RFQ SELECTED.

The Transnet e-Tender Submission Portal can be accessed as follows:

- Log on to the Transnet eTenders management platform website/Portal (transnetetenders.azurewebsites.net) (please use **Google Chrome** to access Transnet link/site free of charge);
- Click on "ADVERTISED TENDERS" to view advertised tenders;
- Click on "SIGN IN/REGISTER – for bidder to register their information (must fill in all mandatory information);
- Click on "SIGN IN/REGISTER" - to sign in if already registered;
- Toggle (click to switch) the "Log an Intent" button to submit a bid;
- Submit bid documents by uploading them into the system against each tender selected.
- No late submissions will be accepted. The bidder guide can be found on the Transnet Portal transnetetenders.azurewebsites.net

BIDDING PROCEDURE ENQUIRIES MAY BE DIRECTED TO		TECHNICAL ENQUIRIES MAY BE DIRECTED TO:	
CONTACT PERSON	Motsatsi Sekgoela	CONTACT PERSON	Motsatsi Sekgoela
TELEPHONE NUMBER	011 878 7031	TELEPHONE NUMBER	011 878 7031
FACSIMILE NUMBER	N/A	FACSIMILE NUMBER	N/A
E-MAIL ADDRESS	Motsatsi.Sekgoela@transnet.net	E-MAIL ADDRESS	Motsatsi.Sekgoela@transnet.net

SUPPLIER INFORMATION

NAME OF BIDDER			
POSTAL ADDRESS			
STREET ADDRESS			
TELEPHONE NUMBER	CODE		NUMBER
CELLPHONE NUMBER			
FACSIMILE NUMBER	CODE		NUMBER
E-MAIL ADDRESS			
VAT REGISTRATION NUMBER			

SUPPLIER COMPLIANCE STATUS	TAX COMPLIANCE SYSTEM PIN:		OR	CENTRAL SUPPLIER DATABASE	UNIQUE NUMBER: MAAA	REGISTRATION	REFERENCE
B-BBEE STATUS LEVEL VERIFICATION CERTIFICATE	TICK APPLICABLE BOX] <input type="checkbox"/> Yes <input type="checkbox"/> No		B-BBEE STATUS LEVEL SWORN AFFIDAVIT		[TICK APPLICABLE BOX] <input type="checkbox"/> Yes <input type="checkbox"/> No		
[A B-BBEE STATUS LEVEL VERIFICATION CERTIFICATE/ SWORN AFFIDAVIT MUST BE SUBMITTED FOR PURPOSES OF COMPLIANCE WITH THE B-BBEE ACT]							
1 ARE YOU THE ACCREDITED REPRESENTATIVE IN SOUTH AFRICA FOR THE GOODS /SERVICES /WORKS OFFERED?	<input type="checkbox"/> Yes <input type="checkbox"/> No [IF YES ENCLOSE PROOF]		2 ARE YOU A FOREIGN BASED SUPPLIER FOR THE GOODS /SERVICES /WORKS OFFERED?		<input type="checkbox"/> Yes <input type="checkbox"/> No [IF YES, ANSWER QUESTIONNAIRE BELOW]		
QUESTIONNAIRE TO BIDDING FOREIGN SUPPLIERS							
IS THE ENTITY A RESIDENT OF THE REPUBLIC OF SOUTH AFRICA (RSA)?					<input type="checkbox"/> YES <input type="checkbox"/> NO		
DOES THE ENTITY HAVE A BRANCH IN THE RSA?					<input type="checkbox"/> YES <input type="checkbox"/> NO		
DOES THE ENTITY HAVE A PERMANENT ESTABLISHMENT IN THE RSA?					<input type="checkbox"/> YES <input type="checkbox"/> NO		
DOES THE ENTITY HAVE ANY SOURCE OF INCOME IN THE RSA?					<input type="checkbox"/> YES <input type="checkbox"/> NO		
IS THE ENTITY LIABLE IN THE RSA FOR ANY FORM OF TAXATION?					<input type="checkbox"/> YES <input type="checkbox"/> NO		
IF THE ANSWER IS "NO" TO ALL OF THE ABOVE, THEN IT IS NOT A REQUIREMENT TO REGISTER FOR A TAX COMPLIANCE STATUS SYSTEM PIN CODE FROM THE SOUTH AFRICAN REVENUE SERVICE (SARS) AND IF NOT REGISTER AS PER 1.3 BELOW.							

PART B TERMS AND CONDITIONS FOR BIDDING

1. TAX COMPLIANCE REQUIREMENTS
1.1 BIDDERS MUST ENSURE COMPLIANCE WITH THEIR TAX OBLIGATIONS.
1.2 BIDDERS ARE REQUIRED TO SUBMIT THEIR UNIQUE PERSONAL IDENTIFICATION NUMBER (PIN) ISSUED BY SARS TO ENABLE THE ORGAN OF STATE TO VERIFY THE TAXPAYER'S PROFILE AND TAX STATUS.
1.3 APPLICATION FOR TAX COMPLIANCE STATUS (TCS) PIN MAY BE MADE VIA E-FILING THROUGH THE SARS WEBSITE WWW.SARS.GOV.ZA.
1.4 BIDDERS MAY ALSO SUBMIT A PRINTED TCS CERTIFICATE TOGETHER WITH THE BID.
1.5 IN BIDS WHERE UNINCORPORATED CONSORTIA / JOINT VENTURES / SUB-CONTRACTORS ARE INVOLVED, EACH PARTY MUST SUBMIT A SEPARATE TCS CERTIFICATE / PIN / CSD NUMBER.
1.6 WHERE NO TCS IS AVAILABLE BUT THE BIDDER IS REGISTERED ON THE CENTRAL SUPPLIER DATABASE (CSD), A CSD NUMBER MUST BE PROVIDED.

NB: FAILURE TO PROVIDE / OR COMPLY WITH ANY OF THE ABOVE PARTICULARS MAY RENDER THE BID INVALID.

SIGNATURE OF BIDDER:

.....

CAPACITY UNDER WHICH THIS BID IS SIGNED:

(Proof of authority must be submitted e.g. company resolution)

DATE:_____

SECTION 2: NOTICE TO BIDDERS

1 Responses to RFQ

Responses to this RFQ [**Quotations**] must not include documents or reference relating to any other quotation or proposal. Any additional conditions must be embodied in an accompanying letter.

2 Communication

2.1 Specific queries relating to this RFQ before the closing date of the RFQ should be submitted onto the system and to [**Motsatsi Sekgoela**] before **12:00 pm on 15 November 2023**. In the interest of fairness and transparency Transnet's response to such a query will then be made available to other bidders.

2.2 It is prohibited for Respondents to attempt, either directly or indirectly, to canvass any officer or employee of Transnet in respect of this RFQ between the closing date and the date of the award of the business.

2.3 Respondents found to be in collusion with one another will be automatically disqualified and restricted from doing business with organs of state for a specified period.

2.4 Respondents may also, at any time after the closing date of the RFQ, communicate with the **Motsatsi Sekgoela** on any matter relating to its RFQ response:

Telephone 011 878 7031

Email: Motsatsi.Sekgoela@transnet.net

2.5 All unsuccessful bidders have a right to request Transnet to furnish individual reasons for their bid not being successful. This requested must be directed to the contact person stated in the SBD 1 form

3 Legal Compliance

The successful Respondent shall be in full and complete compliance with any and all applicable national and local laws and regulations.

4 Employment Equity Act

Respondents must comply with the requirements of the Employment Equity Act 55 of 1998 applicable to it including (but not limited to) Section 53 of the Employment Equity Act.

5 Changes to Quotations

Changes by the Respondent to its submission will not be considered after the closing date and time.

6 Binding Offer

Any Quotation furnished pursuant to this Request shall be deemed to be an offer. Any exceptions to this statement must be clearly and specifically indicated.

7 Disclaimers

7.1 Respondents are hereby advised that Transnet is not committed to any course of action as a result of its issuance of this RFQ and/or its receipt of a Quotation in response to it. Please note that Transnet reserves the right to:

- modify the RFQ's goods / service(s) and request Respondents to re-bid on any changes;
- reject any Quotation which does not conform to instructions and specifications which are detailed herein;
- disqualify Quotations submitted after the stated submission deadline;
- not necessarily accept the lowest priced Quotation or an alternative bid;

- place an order in connection with this Quotation at any time after the RFQ's closing date;
- award only a portion of the proposed goods / services which are reflected in the scope of this RFQ;
- split the award of the order/s between more than one Supplier/Service Provider should it at Transnet's discretion be more advantageous in terms of, amongst others, cost or developmental considerations;
- cancel the quotation process;
- validate any information submitted by Respondents in response to this bid. This would include, but is not limited to, requesting the Respondents to provide supporting evidence. By submitting a bid, Respondents hereby irrevocably grant the necessary consent to Transnet to do so;
- request audited financial statements or other documentation for the purposes of a due diligence exercise;
- not accept any changes or purported changes by the Respondent to the bid rates after the closing date and/or after the award of the business, unless the contract specifically provides for it;
- to cancel the contract and/request that National Treasury place the Respondent on its Database of Restricted Suppliers for a period not exceeding 10 years, on the basis that a contract was awarded on the strength of incorrect information furnished by the Respondent or on any other basis recognised in law;
- award the business to the next ranked bidder, provided that he/she is still prepared to provide the required Goods/Services at the quoted price, should the preferred bidder fail to sign or commence with the contract within a reasonable period after being requested to do so. Under such circumstances, the validity of the bids of the next ranked bidder(s) will be deemed to remain valid, irrespective of whether the next ranked bidder(s) were notified of their bid being unsuccessful. Bidders may therefore be requested to advise whether they would still be prepared to provide the required Goods/Services at their quoted price.
- Should a bidder fail to respond to a request for extension of the validity period before it expires, that bidder will be excluded from tender process.

8 Specification/Scope of Work

Supply and delivery of 1 x Radio Communication Test Set (Comms Monitor) with rugged transport casing as per BBG4667 specification clause Refer to **Annexure A for detailed specification**

9 LEGAL REVIEW

A Proposal submitted by a Respondent will be subjected to review and acceptance or rejection of its proposed contractual terms and conditions by Transnet's Legal Counsel, prior to consideration for an award of business.

10 Security clearance

Acceptance of this bid could be subject to the condition that the Successful Respondent, its personnel providing the goods and its subcontractor(s) must obtain security clearance from the appropriate authorities to the level of CONFIDENTIAL/ SECRET/TOP SECRET. Obtaining the required clearance is the responsibility of the Successful Respondent. Acceptance of the bid is also subject to the condition that the Successful Respondent will implement all such security measures as the safe performance of the contract may require.

11 National Treasury's Central Supplier Database

Respondents are required to self-register on National Treasury's Central Supplier Database (CSD) which has been established to centrally administer supplier information for all organs of state and facilitate the verification of

certain key supplier information. Transnet is required to ensure that price quotations are invited and accepted from prospective bidders listed on the CSD. Business may not be awarded to a respondent who has failed to register on the CSD. Only foreign suppliers with no local registered entity need not register on the CSD. The CSD can be accessed at <https://secure.csd.gov.za/>.

12 Tax Compliance

Respondents must be compliant when submitting a proposal to Transnet and remain compliant for the entire contract term with all applicable tax legislation, including but not limited to the Income Tax Act, 1962 (Act No. 58 of 1962) and Value Added Tax Act, 1991 (Act No. 89 of 1991).

It is a condition of this bid that the tax matters of the successful Respondents be in order, or that satisfactory arrangements have been made with South African Revenue Service (SARS) to meet the Respondents tax obligations.

The Tax Compliance status requirements are also applicable to foreign Respondents/ individuals who wish to submit bids.

Where Consortia / Joint Ventures / Sub-contractors are involved, each party must be registered on the Central Supplier Database and their tax compliance status will be verified through the Central Supplier Database.

Transnet urges its clients, suppliers and the general public to report any fraud or corruption to

TIP-OFFS ANONYMOUS:



Ethics Helpdesk (Pty) Ltd.
Ethics Management Systems™

You can choose to be Anonymous or Non-Anonymous on ANY of the platforms
PLEASE RETAIN YOUR REFERENCE NUMBER



AI Voice Bot "Jack"
Speak to our AI Voice Chat Bot "JACK", you converse with him like chatting to a human, with the option to record a message and speak to an agent at anytime.



What's App
Speak to an Agent via What's App.



Speak to an Agent
Speak to an Agent via the platform with no call or data charge



Telegram
Speak to an Agent via Telegram



0800 003 056



086 551 4153



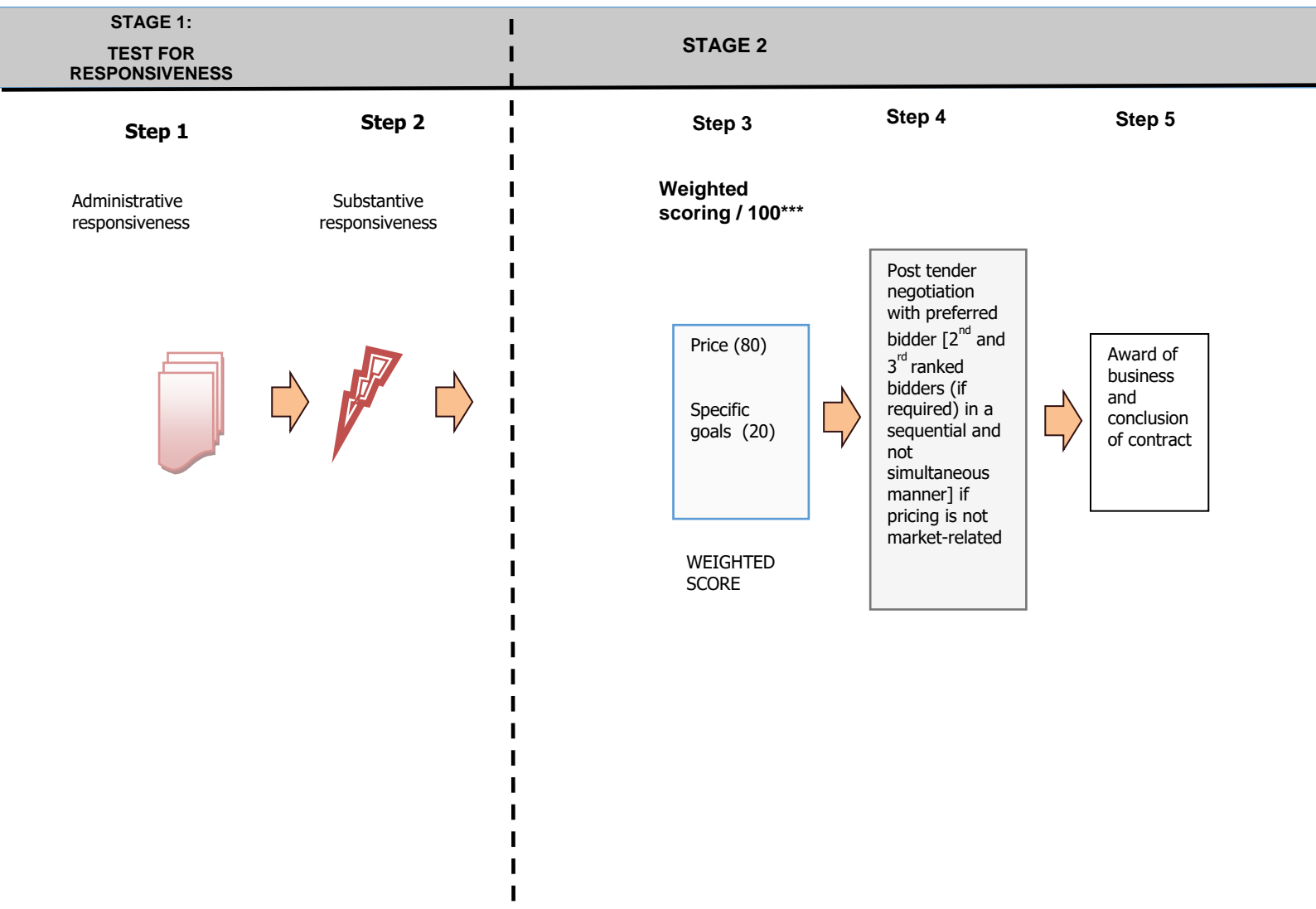
reportit@ethicshelpdesk.com



***120*0785980808#**

SECTION 3**EVALUATION METHODOLOGY, CRITERIA AND RETURNABLE DOCUMENTS****1 Evaluation Criteria**

Transnet will utilise the following methodology and criteria in selecting a preferred Supplier/Service provider:



Respondent's Signature

Date & Company Stamp

1.1 STEP ONE: Test for Administrative Responsiveness

The test for administrative responsiveness will include the following:

Administrative responsiveness check	RFQ Reference
• Whether the Bid has been lodged on time	
• Whether all Returnable Documents and/or schedules [where applicable] were completed and returned by the closing date and time	<i>Section 3</i>
• Verify the validity of all returnable documents	<i>Section 3</i>
• Verify if the Bid document has been duly signed by the authorised respondent	<i>All sections</i>

The test for administrative responsiveness [Step One] must be passed for a Respondent's Proposal to progress to Step Two for further pre-qualification

1.2 STEP TWO: Test for Substantive Responsiveness to RFQ

The test for substantive responsiveness to this RFQ will include the following:

Check for substantive responsiveness	RFQ Reference
• Whether any general and legislation qualification criteria set by Transnet, have been met	<i>All sections</i>
• Whether the Bid contains a priced offer	<i>Section 4 - Quotation Form</i>
• Whether the Bid materially complies with the scope and/or specification given	<i>All Sections</i>

The test for substantive responsiveness [Step Two] must be passed for a Respondent's proposal to progress to Step Three for further evaluation

1.3 STEP THREE: Evaluation and Final Weighted Scoring

a) **Price** [Weighted score 80 points]:

Evaluation Criteria	RFP Reference
• Commercial offer	<i>Section 4</i>

Transnet will utilise the following formula in its evaluation of Price:

$$PS = 80 \left(1 - \frac{Pt - Pmin}{Pmin} \right)$$

Where:

Ps = Score for the Bid under consideration
 Pt = Price of Bid under consideration
 $Pmin$ = Price of lowest acceptable Bid

b) **Specific Goals** [Weighted score 20 point]

- Specific goals claim form
- Preference points will be awarded to a bidder for attaining the specific goals requirements in accordance with the table indicated in Section 7, paragraph 3.2 of the specific goals Claim Form.

1.4 STEP FOUR: Post Tender Negotiations

- Respondents are to note that Transnet may not award a contract if the price offered is not market-related. In this regard, Transnet reserves the right to engage in PTN with the view to achieving a market-related price or to cancel the tender. Negotiations will be done in a sequential manner i.e.:
 - first negotiate with the highest ranked bidder or cancel the bid, should such negotiations fail,
 - negotiate with the 2nd and 3rd ranked bidders (if required) in a sequential manner.
- In the event of any Respondent being notified of such short-listed/preferred bidder status, his/her bid, as well as any subsequent negotiated best and final offers (BAFO), will automatically be deemed to remain valid during the negotiation period and until the ultimate award of business.
- Should Transnet conduct post tender negotiations, Respondents will be requested to provide their best and final offers to Transnet based on such negotiations. Where a market related price has been achieved through negotiation, the contract will be awarded to the successful Respondent(s).

1.5 STEP FIVE: Award of business and conclusion of contract

- Immediately after approval to award the contract has been received, the successful or preferred bidder(s) will be informed of the acceptance of his/their Quotation by way of a Letter of Award. Thereafter the final contract will be concluded with the successful Respondent(s).
- Otherwise, a final contract will be concluded and entered into with the successful Bidder at the acceptance of a letter of award by the Respondent.

2 Validity Period

Transnet requires a validity period of 180 [One Hundred and eighty] **26 August 2024** Business Days from the closing date of this RFQ, excluding the first day and including the last day.

Bidders are to note that they may be requested to extend the validity period of their bid, on the same terms and conditions, if the internal evaluation process has not been finalised within the validity period. However, once the adjudication body has approved the process and award of the business to the successful bidder(s), the validity of the successful bidder(s)' bid will be deemed to remain valid until a final contract has been concluded.

3 Disclosure of contract information**Prices Quoted**

Respondents are to note that, on award of business, Transnet is required to publish the tendered prices of the successful and unsuccessful Respondents *inter alia* on the National Treasury e-Tender Publication Portal, (www.etenders.gov.za), as required per National Treasury Instruction Note 01 of 2015/2016

Johannesburg Stock Exchange Debt Listing Requirements

Transnet may also be required to disclose information relating to the subsequent contract i.e. the name of the company, goods/services provided by the company, the value and duration of the contract, etc. in compliance with the Johannesburg Stock Exchange (JSE) Debt Listing Requirements.

Domestic Prominent Influential Persons (DPIP) OR Foreign Prominent Public Officials (FPPO)

Transnet is free to procure the services of any person within or outside the Republic of South Africa in accordance with applicable legislation. Transnet shall not conduct or conclude business transactions, with any Respondents without having:

- Considered relevant governance protocols;
- Determined the DPIP or FPPO status of that counterparty; and
- Conducted a risk assessment and due diligence to assess the potential risks that may be posed by the business relationship.

As per the Transnet Domestic Prominent Influential Persons (DPIP) and Foreign Prominent Public Officials (FPPO) and Related Individuals Policy available on Transnet website <https://www.transnet.net/search/pages/results.aspx?k=FPIDP#k=DPIP>, Respondents are required to disclose any commercial relationship with a DPIP or FPPO (as defined in the Policy) by completing the following section:

The below form contains personal information as defined in the Protection of Personal Information Act, 2013 (the "Act"). By completing the form, the signatory consents to the processing of her/his personal information in accordance with the requirements of the Act. Consent cannot unreasonably be withheld.						
Is the Respondent (Complete with a "Yes" or "No")						
A DPIP/FPPO		Closely Related to a DPIP/FPPO		Closely Associated to a DPIP/FPPO		
List all known business interests, in which a DPIP/FPPO may have a direct/indirect interest or significant participation or involvement.						
No	Name of Entity / Business	Role in the Entity / Business (Nature of interest/ Participation)	Shareholding %	Registration Number	Status (Mark the applicable option with an X)	
					Active	Non-Active
1						
2						
3						

Respondents declaring a commercial relationship with a DPIP or FPPO are to note that Transnet is required to annually publish on its website a list of all business contracts entered into with DPIP or FPPO. This list will include successful Respondents, if applicable.

4 Returnable Documents

Returnable Documents means all the documents, Sections and Annexures, as listed in the tables below. There are three types of returnable documents as indicated below and Respondents are urged to ensure that

these documents are returned with their bids based on the consequences of non-submission as indicated below:

Mandatory Returnable Documents	<i>Failure to provide all these Mandatory Returnable Documents at the Closing Date and time of this RFQ <u>will</u> result in a Respondent's disqualification.</i>
Returnable Documents Used for Scoring	<i>Failure to provide all Returnable Documents used for purposes of scoring a bid, by the closing date and time of this bid will not result in a Respondent's disqualification. However, Bidders will receive an automatic score of zero for the applicable evaluation criterion.</i>
Essential Returnable Documents	<i>Failure to provide essential Returnable Documents <u>will</u> result in Transnet affording Respondents a further opportunity to submit by a set deadline. Should a Respondent thereafter fail to submit the requested documents, this may result in a Respondent's disqualification.</i>

All Returnable Sections, as indicated in the header and footer of the relevant pages, must be signed, stamped and dated by the Respondent.

a) Mandatory Returnable Documents

Respondents are required to submit with their bid submissions the following **Mandatory Returnable Documents**, and also to confirm submission of these documents by so indicating [Yes or No] in the tables below:

Mandatory Returnable Documents	Submitted [Yes or No]
SECTION 4 : Quotation Form priced in full	

b) Returnable Documents Used for Scoring

In addition to the requirements of section (a) above, Respondents are further required to submit with their Proposals the following **Returnable Documents Used for Scoring** and also to confirm submission of these documents by so indicating [Yes or No] in the table below:

RETURNABLE DOCUMENTS USED FOR SCORING	SUBMITTED [Yes or No]
Respondent's valid proof of evidence to claim points for compliance with Specific Goals' requirements as stipulated in Section 7 of this RFQ	
B-BBEE Certificate / Sworn- Affidavit / B-BBEE CIPC Certificate (in case of JV, a consolidated scorecard will be accepted) as per DTIC guideline	
Certified copy of ID Documents of the Owners and B-BBEE Certificate / Sworn- Affidavit / B-BBEE CIPC Certificate (in case of JV, a consolidated scorecard will be accepted) as per DTIC guideline	

c) Essential Returnable Documents:

Over and the above the requirements of section (a) and (b) mentioned above, Respondents are further required to submit with their Proposals the following **Essential Returnable Documents** and also to confirm submission of these documents by so indicating [Yes or No] in the table below:

ESSENTIAL RETURNABLE DOCUMENTS & SCHEDULES	SUBMITTED [Yes or No]
SECTION 1: SBD1 Form	
SECTION 5: Certificate of Acquaintance with RFQ Documents	
SECTION 6: RFQ Declaration and Breach of Law Form	
SECTION 7: Specific Goals Claim Form	
SECTION 8: Protection of Personal Information	
CSD Registration report	

5 CONTINUED VALIDITY OF RETURNABLE DOCUMENTS

The successful Respondent will be required to ensure the validity of all returnable documents, including but not limited to its valid proof of B-BBEE status, for the duration of any contract emanating from this RFQ. Should the Respondent be awarded the contract [**the Agreement**] and fail to present Transnet with such renewals as and when they become due, Transnet shall be entitled, in addition to any other rights and remedies that it may have in terms of the eventual Agreement, to terminate such Agreement immediately without any liability and without prejudice to any claims which Transnet may have for damages against the Respondent.

SECTION 4

QUOTATION FORM

I/We _____

hereby offer to supply the goods/services at the prices quoted in the Price Schedule below, in accordance with the conditions related thereto.

I/We agree to be bound by those terms and conditions in:

- the Standard RFQ Terms and Conditions for the Supply of Goods or Services to Transnet; and
- any other standard or special conditions embodied in this Request for Quotation.

I/We accept that unless Transnet should otherwise decide and so inform me/us, this Quotation [and, if any, its covering letter and any subsequent exchange of correspondence], together with Transnet's acceptance thereof shall constitute a binding contract between Transnet and me/us. I/We further agree that if, after I/we have been notified of the acceptance of my/our Quotation, I/we fail to deliver the said goods/service/s within the delivery lead-time quoted, Transnet may, without prejudice to any other legal remedy which it may have, cancel the order and recover from me/us any expenses incurred by Transnet in calling for Quotations afresh and/or having to accept any less favourable offer.

Price Schedule

I/We quote as follows for the goods required, on a "delivered nominated destination" **to be delivered at 2 Foley Street, Factoria, Krugersdorp, 1739**, including VAT:

Item No	Description of Item	Unit	Quantity	Rate	TOTAL PRICE OF ITEM [ZAR]
1	Supply and delivery of 1 x Radio Communication Test Set (Comms Monitor) with rugged transport casing as per BBG4667 specification clause (Kindly refer to Annexure A for specification)	Each	1		
TOTAL PRICE, exclusive of VAT:					
VAT 15% (if applicable)					
Unconditional Discount(s)					
Total Inclusive of VAT (where applicable)					

Delivery Lead-Time from date of purchase order: _____ **[days/weeks]**

Respondents are to note that Transnet will round off final pricing scores to the nearest 2 (two) decimal places.

Notes to Pricing:

- a) Respondents are to note that if the price offered by the highest scoring bidder is not market-related, Transnet may not award the contract to that Respondent. Transnet may-
- (i) negotiate a market-related price with the Respondent scoring the highest points or cancel the RFQ;
 - (ii) if that Respondent does not agree to a market-related price, negotiate a market-related price with the Respondent scoring the second highest points or cancel the RFQ;
 - (iii) if the Respondent scoring the second highest points does not agree to a market-related price, negotiate a market-related price with the Respondent scoring the third highest points or cancel the RFQ.

If a market-related price is not agreed with the Respondent scoring the third highest points, Transnet must cancel the RFQ.

- b) All Prices must be quoted in South African Rand, inclusive of VAT
- c) Any disbursement not specifically priced for will not be considered/accepted by Transnet.
- d) To facilitate like-for-like comparison bidders must submit pricing strictly in accordance with this price schedule and not utilise a different format. Deviation from this pricing schedule will result in a bid being disqualified.
- e) Please note that should you have offered a discounted price(s), Transnet will only consider such price discount(s) in the final evaluation stage if offered on an unconditional basis.

SECTION 5

CERTIFICATE OF ACQUAINTANCE WITH RFQ DOCUMENTS

By signing this certificate the Respondent is deemed to acknowledge that he/she has made himself/herself thoroughly familiar with, and agrees with all the conditions governing this RFQ. This includes those terms and conditions contained in any printed form stated to form part hereof, including but not limited to the documents stated below. As such, Transnet will recognise no claim for relief based on an allegation that the Respondent overlooked any such term or condition or failed properly to take it into account in calculating tendered prices or any other purpose:

1. Transnet's General Bid Conditions
2. Standard RFQ Terms and Conditions for the supply of Goods or Services to Transnet
3. Transnet's Supplier Integrity Pact
4. Non-disclosure Agreement

Note: Should a Respondent be successful and awarded the bid, they will be required to complete a Supplier Declaration Form for registration as a vendor onto the Transnet vendor master database.

Should the Bidder find any terms or conditions stipulated in any of the relevant documents quoted in the RFQ unacceptable, it should indicate which conditions are unacceptable and offer alternatives by written submission on its company letterhead, attached to its submitted Bid. Any such submission shall be subject to review by Transnet's Legal Counsel who shall determine whether the proposed alternative(s) are acceptable or otherwise, as the case may be. A material deviation from the Standard terms or conditions could result in disqualification.

Bidders accept that an obligation rests on them to clarify any uncertainties regarding any bid to which they intend to respond, before submitting the bid. The Bidder agrees that he/she will have no claim or cause of action based on an allegation that any aspect of this RFQ was unclear but in respect of which he/she failed to obtain clarity.

The bidder understands that his/her Bid will be disqualified if this Certificate of Acquaintance with RFQ documents included in the RFQ as a returnable document, is found not to be true and/ or complete in every respect.

SIGNED at _____ on this ____ day of _____ 20__

SIGNATURE OF WITNESSES

ADDRESS OF WITNESSES

1 _____

Name _____

2 _____

Name _____

SIGNATURE OF RESPONDENT'S AUTHORISED REPRESENTATIVE: _____

NAME: _____

DESIGNATION: _____

Respondent's Signature

Date & Company Stamp

SECTION 6**RFQ DECLARATION AND BREACH OF LAW FORM**

NAME OF ENTITY: _____

We _____ do hereby certify that:

1. Transnet has supplied and we have received appropriate responses to any/all questions [as applicable] which were submitted by ourselves for RFQ Clarification purposes;
2. We have received all information we deemed necessary for the completion of this Request for Quotation [**RFQ**];
3. We have been provided with sufficient access to the existing Transnet facilities/sites and all relevant information relevant to the Supply of the Goods as well as Transnet information and Employees, and have had sufficient time in which to conduct and perform a thorough due diligence of Transnet's operations and business requirements and assets used by Transnet. Transnet will therefore not consider or permit any pre- or post-contract verification or any related adjustment to pricing, service levels or any other provisions/conditions based on any incorrect assumptions made by the Respondent in arriving at his Bid Price.
4. At no stage have we received additional information relating to the subject matter of this RFQ from Transnet sources, other than information formally received from the designated Transnet contact(s) as nominated in the RFQ documents;
5. We have complied with all obligations of the Bidder/Supplier as indicated in the Transnet Supplier Integrity Pact which includes but are not limited to ensuring that we take all measures necessary to prevent corrupt practices, unfairness and illegal activities in order to secure or in furtherance to secure a contract with Transnet;
6. We are satisfied, insofar as our entity is concerned, that the processes and procedures adopted by Transnet in issuing this RFQ and the requirements requested from Bidders in responding to this RFQ have been conducted in a fair and transparent manner;
7. We declare that a family, business and/or social relationship **exists / does not exist** [delete as applicable] between an owner / member / director / partner / shareholder of our entity and an employee or board member of Transnet including any person who may be involved in the evaluation and/or adjudication of this Bid;
8. We declare that an owner / member / director / partner / shareholder of our entity **is / is not** [delete as applicable] an employee or board member of the Transnet;
9. In addition, we declare that an owner / member / director / partner / shareholder/employee of our entity **has / has not been** [delete as applicable] a former employee or board member of Transnet in the past 10 years. I further declare that if they were a former employee or board member of Transnet in the past 10 years that they **were/were not** involved in the bid preparation or had access to the information related to this RFQ; and
10. If such a relationship as indicated in paragraph 7, 8 and/or 9 exists, the Respondent is to complete the following section:

FULL NAME OF OWNER/MEMBER/DIRECTOR/
PARTNER/SHAREHOLDER/EMPLOYEE:

ADDRESS:

Indicate nature of relationship with Transnet:

[Failure to furnish complete and accurate information in this regard will lead to the disqualification of a response and may preclude a Respondent from doing future business with Transnet]. Information provided in the declarations may be used by Transnet and/or its affiliates to verify the correctness of the information provided.

11. We declare, to the extent that we are aware or become aware of any relationship between ourselves and Transnet [other than any existing and appropriate business relationship with Transnet] which could unfairly advantage our entity in the forthcoming adjudication process, we shall notify Transnet immediately in writing of such circumstances.

BIDDER'S DISCLOSURE (SBD4)

12 PURPOSE OF THE FORM

12.1 Any person (natural or juristic) may make an offer or offers in terms of this invitation to bid. In line with the principles of transparency, accountability, impartiality, and ethics as enshrined in the Constitution of the Republic of South Africa and further expressed in various pieces of legislation, it is required for the bidder to make this declaration in respect of the details required hereunder.

12.2 Where a person/s are listed in the Register for Tender Defaulters and / or the List of Restricted Suppliers, that person will automatically be disqualified from the bid process.

13 Bidder's declaration

13.1 Is the bidder, or any of its directors / trustees / shareholders / members / partners or any person having a controlling interest¹ in the enterprise, employed by the state?

YES/NO

13.1.1. If so, furnish particulars of the names, individual identity numbers, and, if applicable, state employee numbers of sole proprietor/ directors / trustees / shareholders / members/ partners or any person having a controlling interest in the enterprise, in table below.

Full Name	Identity Number	Name of State institution

¹ the power, by one person or a group of persons holding the majority of the equity of an enterprise, alternatively, the person/s having the deciding vote or power to influence or to direct the course and decisions of the enterprise.

13.2 Do you, or any person connected with the bidder, have a relationship with any person who is employed by the procuring institution?

YES/NO

13.2.1. If so, furnish particulars:

.....

13.3 Does the bidder or any of its directors / trustees / shareholders / members / partners or any person having a controlling interest in the enterprise have any interest in any other related enterprise whether or not they are bidding for this contract?

YES/NO

13.3.1. If so, furnish particulars:

.....

14 DECLARATION

I, the undersigned, (name)..... in submitting the accompanying bid, do hereby make the following statements that I certify to be true and complete in every respect:

14.1 I have read and I understand the contents of this disclosure;

14.2 I understand that the accompanying bid will be disqualified if this disclosure is found not to be true and complete in every respect;

14.3 The bidder has arrived at the accompanying bid independently from, and without consultation, communication, agreement or arrangement with any competitor. However, communication between partners in a joint venture or consortium² will not be construed as collusive bidding.

14.4 In addition, there have been no consultations, communications, agreements or arrangements with any competitor regarding the quality, quantity, specifications, prices, including methods, factors or formulas used to calculate prices, market allocation, the intention or decision to submit or not to

² Joint venture or Consortium means an association of persons for the purpose of combining their expertise, property, capital, efforts, skill and knowledge in an activity for the execution of a contract.

submit the bid, bidding with the intention not to win the bid and conditions or delivery particulars of the products or services to which this bid invitation relates.

14.5 The terms of the accompanying bid have not been, and will not be, disclosed by the bidder, directly or indirectly, to any competitor, prior to the date and time of the official bid opening or of the awarding of the contract.

14.6 There have been no consultations, communications, agreements or arrangements made by the bidder with any official of the procuring institution in relation to this procurement process prior to and during the bidding process except to provide clarification on the bid submitted where so required by the institution; and the bidder was not involved in the drafting of the specifications or terms of reference for this bid.

14.7 I am aware that, in addition and without prejudice to any other remedy provided to combat any restrictive practices related to bids and contracts, bids that are suspicious will be reported to the Competition Commission for investigation and possible imposition of administrative penalties in terms of section 59 of the Competition Act No 89 of 1998 and or may be reported to the National Prosecuting Authority (NPA) for criminal investigation and or may be restricted from conducting business with the public sector for a period not exceeding ten (10) years in terms of the Prevention and Combating of Corrupt Activities Act No 12 of 2004 or any other applicable legislation.

I CERTIFY THAT THE INFORMATION FURNISHED IN PARAGRAPHS 12, 13 and 14 ABOVE IS CORRECT.

I ACCEPT THAT THE STATE MAY REJECT THE BID OR ACT AGAINST ME IN TERMS OF PARAGRAPH 6 OF PFMA SCM INSTRUCTION 03 OF 2021/22 ON PREVENTING AND COMBATING ABUSE IN THE SUPPLY CHAIN MANAGEMENT SYSTEM SHOULD THIS DECLARATION PROVE TO BE FALSE.

BREACH OF LAW

12. We further hereby certify that *I/we **have/have not been*** [delete as applicable] found guilty during the preceding 5 [five] years of a serious breach of law, including but not limited to a breach of the Competition Act, 89 of 1998, by a court of law, tribunal or other administrative body. The type of breach that the Respondent is required to disclose excludes relatively minor offences or misdemeanours, e.g. traffic offences. This includes the imposition of an administrative fine or penalty.

Where found guilty of such a serious breach, please disclose:

NATURE OF BREACH:

DATE OF BREACH: _____

Furthermore, I/we acknowledge that Transnet SOC Ltd reserves the right to exclude any Respondent from the bidding process, should that person or entity have been found guilty of a serious breach of law, tribunal or regulatory obligation.

SIGNED at _____ on this _____ day of _____ 20____

For and on behalf of _____	AS WITNESS:
duly authorised hereto	
Name:	Name:
Position:	Position:
Signature:	Signature:
Date:	Registration No of Company/CC _____
Place:	Registration Name of Company/CC _____

SECTION 7: SPECIFIC GOALS POINTS CLAIM FORM

This preference form must form part of all bids invited. It contains general information and serves as a claim for preference points for specific goals Contribution. Transnet will award preference points to companies who provide valid proof of evidence of as per the table below.

NB: BEFORE COMPLETING THIS FORM, BIDDERS MUST STUDY THE GENERAL CONDITIONS, DEFINITIONS AND DIRECTIVES APPLICABLE IN RESPECT OF SPECIFIC GOALS, AS PRESCRIBED IN THE PREFERENTIAL PROCUREMENT POLICY FRAMEWORK ACT, 2000.

1. GENERAL CONDITIONS

- 1.1 The following preference point systems are applicable to all bids:
- the 80/20 system for requirements with a Rand value of up to R50 000 000 (all applicable taxes included); and
 - the 90/10 system for requirements with a Rand value above R50 000 000 (all applicable taxes included).
- 1.2 The value of this bid is estimated to not exceed R50 000 000 (all applicable taxes included) and therefore the 80/20 preference point system shall be applicable. Despite the stipulated preference point system, Transnet shall use the lowest acceptable bid to determine the applicable preference point system in a situation where all received acceptable bids are received outside the stated preference point system.
- 1.3 The 80/20 preference point system will be applicable to this tender.
- 1.4 Preference points for this bid shall be awarded for:
- (a) Price;
 - (b) B-BBEE Status Level of Contribution.
 - (c) Any other specific goal determined in Transnet preferential procurement policy.
- 1.5 The maximum points for this bid are allocated as follows:

	POINTS
PRICE	80
SPECIFIC GOALS B-BBEE and, >50% Black Youth Owned Entities	20
Total points for Price and Specific Goals must not exceed	100

- 1.6 Failure on the part of a bidder to submit proof of specific goals together with the bid will be interpreted to mean that preference points for B-BBEE status level of contribution are not claimed.
- 1.7 The purchaser reserves the right to require of a bidder, either before a bid is adjudicated or at any time subsequently, to substantiate any claim in regard to preferences, in any manner required by the purchaser.

2. DEFINITIONS

- (a) **"all applicable taxes"** includes value-added tax, pay as you earn, income tax, unemployment insurance fund contributions and skills development levies;
- (b) **"B-BBEE"** means broad-based black economic empowerment as defined in section 1 of the Broad-

Based Black Economic Empowerment Act;

- (c) **"B-BBEE status level of contributor"** means the B-BBEE status received by a measured entity based on its overall performance using the relevant scorecard contained in the Codes of Good Practice on Black Economic Empowerment, issued in terms of section 9(1) of the Broad-Based Black Economic Empowerment Act;
- (d) **"bid"** means a written offer in a prescribed or stipulated form in response to an invitation by an organ of state for the supply/provision of services, works or goods, through price quotations, advertised competitive bidding processes or proposals;
- (e) **"Broad-Based Black Economic Empowerment Act"** means the Broad-Based Black Economic Empowerment Act, 2003 (Act No. 53 of 2003);
- (f) **"EME"** means an Exempted Micro Enterprise as defines by Codes of Good Practice under section 9 (1) of the Broad-Based Black Economic Empowerment Act, 2003 (Act No. 53 of 2003);
- (g) **"functionality"** means the ability of a bidder to provide goods or services in accordance with specification as set out in the bid documents;
- (h) **"Price"** includes all applicable taxes less all unconditional discounts.
- (i) **"Proof of B-BBEE Status Level of Contributor"** means:
 - 1) B-BBEE status level certificate issued by an unauthorised body or person;
 - 2) A sworn affidavit as prescribed by the B-BBEE Codes of Good Practice;
 - 3) Any other requirement prescribed in terms of the B-BBEE Act.
- (j) **"QSE"** means a Qualifying Small EEnterprise in terms of a Codes of Good Practice under section 9 (1) of the Broad-Based Black Economic Empowerment Act, 2003 (Act No. 53 of 2003);
- (k) **"rand value"** means the total estimated value of a contract in South African currency, calculated at the time of bid invitations, and includes all applicable taxes and excise duties.
- (l) **"Specific goals"** means targeted advancement areas or categories of persons or groups either previously disadvantaged or falling within the scope of the Reconstruction and Development Programme identified by Transnet to be given preference in allocation of procurement contracts in line with section 2(1) of the PPPFA.

3. POINTS AWARDED FOR PRICE

3.1 THE 80/20 PREFERENCE POINT SYSTEMS

A maximum of 80 points is allocated for price on the following basis:

80/20

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

Where

P_s	=	Points scored for comparative price of bid under consideration
P_t	=	Comparative price of bid under consideration
P_{\min}	=	Comparative price of lowest acceptable bid

In terms of Transnet Preferential Procurement Policy (TPPP) and Procurement Manuals, the following preference points must be awarded to a bidder who provides the relevant required evidence for claiming points

3.2

Selected Specific Goal	Number of points allocated (20)
B-BBEE Level of contributor – Level 1 or 2	10
>50% Black Youth Owned Entities	10
Non-Compliant and/or B-BBEE Level 3-8 contributors	0

4. EVIDENCE REQUIRED FOR CLAIMING SPECIFIC GOALS

- 4.1 In terms of Transnet Preferential Procurement Policy (TPPP) and Procurement Manuals, preference points must be awarded to a bidder for providing evidence in accordance with the table below:

Specific Goals	Acceptable Evidence
B-BBEE	B-BBEE Certificate / Sworn- Affidavit / B-BBEE CIPC Certificate (in case of JV, a consolidated scorecard will be accepted) as per DTIC guideline
>50% Black Youth Owned Entities	Certified copy of ID Documents of the Owners and B-BBEE Certificate / Sworn-Affidavit / B-BBEE CIPC Certificate (in case of JV, a consolidated scorecard will be accepted) as per DTIC guideline

- 4.2 The table below indicates the required proof of B-BBEE status depending on the category of enterprises:

Enterprise	B-BBEE Certificate & Sworn Affidavit
Large	Certificate issued by SANAS accredited verification agency
QSE	Certificate issued by SANAS accredited verification agency Sworn-Affidavit signed by the authorised QSE representative and attested by a Commissioner of Oaths confirming annual turnover and black ownership (only black-owned QSEs - 51% to 100% Black owned) [Sworn- affidavits must substantially comply with the format that can be obtained on the DTI's website at www.dti.gov.za/economic_empowerment/bee_codes.jsp .]
EME³	Sworn-Affidavit signed by the authorised EME representative and attested by a Commissioner of Oaths confirming annual turnover and black ownership Certificate issued by CIPC (formerly CIPRO) confirming annual turnover and black ownership Certificate issued by SANAS accredited verification agency only if the EME is being measured on the QSE scorecard

- 4.3 A trust, consortium or joint venture (including unincorporated consortia and joint ventures) must submit a consolidated B-BBEE Status Level verification certificate for every separate bid.
- 4.4 Tertiary Institutions and Public Entities will be required to submit their B-BBEE status level certificates in terms of the specialized scorecard contained in the B-BBEE Codes of Good Practice.
- 4.5 A person will not be awarded points for B-BBEE status level if it is indicated in the bid documents that such a bidder intends sub-contracting more than 25% of the value of the contract to any other enterprise that does not qualify for at least the points that such a bidder qualifies for, unless the intended sub-contractor is an EME that has the capability and ability to execute the sub-contract.
- 4.6 A person awarded a contract may not sub-contract more than 25% of the value of the contract to any other enterprise that does not have an equal or higher B-BBEE status level than the person concerned,

unless the contract is sub-contracted to an EME that has the capability and ability to execute the sub-contract.

- 4.7 Bidders are to note that the rules pertaining to B-BBEE verification and other B-BBEE requirements may be changed from time to time by regulatory bodies such as National Treasury or the DTI. It is the Bidder's responsibility to ensure that his/her bid complies fully with all B-BBEE requirements at the time of the submission of the bid.

5. BID DECLARATION

- 5.1 Bidders who claim points in respect of B-BBEE Status Level of Contribution must complete the following:

6. B-BBEE STATUS LEVEL OF CONTRIBUTION CLAIMED IN TERMS OF PARAGRAPHS 6.1

- 6.1 B-BBEE Status Level of Contribution: . =

6.2

(Points claimed in respect of paragraph 6.1 must be in accordance with the table reflected in table 3.2 and must be substantiated by relevant proof of B-BBEE status level of contributor.

7. SUB-CONTRACTING

- 7.1 Will any portion of the contract be sub-contracted?

(Tick applicable box)

YES		NO	
-----	--	----	--

- 7.1.1 If yes, indicate:

- i) What percentage of the contract will be subcontracted.....%
- ii) The name of the sub-contractor.....
- iii) The B-BBEE status level of the sub-contractor.....
- iv) Whether the sub-contractor is an EME or QSE

(Tick applicable box)

YES		NO	
-----	--	----	--

- v) Specify, by ticking the appropriate box, if subcontracting with any of the enterprises below:

Designated Group: An EME or QSE which is at last 51% owned by:	EME ✓	QSE ✓
Black people		
Black people who are youth		
Black people who are women		
Black people with disabilities		
Black people living in rural or underdeveloped areas or townships		
Cooperative owned by black people		
Black people who are military veterans		
OR		
Any EME		
Any QSE		

8. DECLARATION WITH REGARD TO COMPANY/FIRM

- 8.1 Name of company/firm:.....

- 8.2 VAT registration number:.....

- 8.3 Company registration number:.....

8.4 TYPE OF COMPANY/ FIRM

- ☐ Partnership/Joint Venture / Consortium

- ☐ One person business/sole propriety
- ☐ Close corporation
- ☐ Company
- ☐ (Pty) Limited

[TICK APPLICABLE BOX]

8.5 DESCRIBE PRINCIPAL BUSINESS ACTIVITIES

.....

.....

8.6 COMPANY CLASSIFICATION

- ☐ Manufacturer
- ☐ Supplier
- ☐ Professional service provider
- ☐ Other service providers, e.g. transporter, etc.

[TICK APPLICABLE BOX]

8.7 Total number of years the company/firm has been in business:.....

8.8 I/we, the undersigned, who is / are duly authorised to do so on behalf of the company/firm, certify that the points claimed, based on the B-BBEE status level of contribution indicated in paragraph 6.1 of the foregoing certificate, qualifies the company/ firm for the preference(s) shown and I / we acknowledge that:

- i) The information furnished is true and correct;
- ii) The preference points claimed are in accordance with the General Conditions as indicated in paragraph 1 of this form;
- iii) In the event of a contract being awarded as a result of points claimed as shown in paragraph 6.1, the contractor may be required to furnish documentary proof to the satisfaction of the purchaser that the claims are correct;
- iv) If specific goals have been claimed or obtained on a fraudulent basis or any of the conditions of contract have not been fulfilled, the purchaser may, in addition to any other remedy it may have-
 - (a) disqualify the person from the bidding process;
 - (b) recover costs, losses or damages it has incurred or suffered as a result of that person's conduct;
 - (c) cancel the contract and claim any damages which it has suffered as a result of having to make less favourable arrangements due to such cancellation;
 - (d) if the successful bidder subcontracted a portion of the bid to another person without disclosing it, Transnet reserves the right to penalise the bidder up to 10 percent of the value of the contract;
 - (e) recommend that the bidder or contractor, its shareholders and directors, or only the shareholders and directors who acted on a fraudulent basis, be restricted by the National Treasury from obtaining business from any organ of state for a period not exceeding 10 years, after the *audi alteram partem* (hear the other side) rule has been applied; and
 - (f) forward the matter for criminal prosecution.

WITNESSES

1.
2.

SIGNATURE(S) OF BIDDERS(S)

DATE:

ADDRESS

.....

SECTION 8

PROTECTION OF PERSONAL INFORMATION

1. The following terms shall bear the same meaning as contemplated in Section 1 of the Protection of Person information act, No.4 of 2013.(“POPIA”):

consent; data subject; electronic communication; information officer; operator; person; personal information; processing; record; Regulator; responsible party; special information; as well as any terms derived from these terms.
2. Transnet will process all information by the Respondent in terms of the requirements contemplated in Section 4(1) of the POPIA:

Accountability; Processing limitation; Purpose specification; Further processing limitation; Information quality; Openness; Security safeguards and Data subject participation.
3. The Parties acknowledge and agree that, in relation to personal information that will be processed pursuant to this RFQ, the Responsible party is “Transnet” and the Data subject is the “Respondent”. Transnet will process personal information only with the knowledge and authorisation of the Respondent and will treat personal information which comes to its knowledge as confidential and will not disclose it, unless so required by law or subject to the exceptions contained in the POPIA.
4. Transnet reserves all the rights afforded to it by the POPIA in the processing of any of its information as contained in this RFQ and the Respondent is required to comply with all prescripts as detailed in the POPIA relating to all information concerning Transnet.
5. In responding to this bid, Transnet acknowledges that it will obtain and have access to personal information of the Respondent. Transnet agrees that it shall only process the information disclosed by Respondent in their response to this bid for the purpose of evaluating and subsequent award of business and in accordance with any applicable law.
6. Transnet further agrees that in submitting any information or documentation requested in this RFQ, the Respondent is consenting to the further processing of their personal information for the purpose of, but not limited to, risk assessment, assurances, contract award, contract management, auditing, legal opinions/litigations, investigations (if applicable), document storage for the legislatively required period, destruction, de-identification and publishing of personal information by Transnet and/or its authorised appointed third parties.
7. Furthermore, Transnet will not otherwise modify, amend or alter any personal data submitted by the Respondent or disclose or permit the disclosure of any personal data to any third party without the prior written consent from the Respondent. Similarly, Transnet requires the Respondent to process any personal information disclosed by Transnet in the bidding process in the same manner.
8. Transnet shall, at all times, ensure compliance with any applicable laws put in place and maintain sufficient measures, policies and systems to manage and secure against all forms of risks to any information that may be shared or accessed pursuant to this RFQ (physically, through a computer or any other form of electronic communication).

9. Transnet shall notify the Respondent in writing of any unauthorised access to information, cybercrimes or suspected cybercrimes, in its knowledge and report such crimes or suspected crimes to the relevant authorities in accordance with applicable laws, after becoming aware of such crimes or suspected crime. The Respondent must take all necessary remedial steps to mitigate the extent of the loss or compromise of personal information and to restore the integrity of the affected personal information as quickly as is possible.
10. The Respondent may, in writing, request Transnet to confirm and/or make available any personal information in its possession in relation to the Respondent and if such personal information has been accessed by third parties and the identity thereof in terms of the POPIA. The Respondent may further request that Transnet correct (excluding critical/mandatory or evaluation information), delete, destroy, withdraw consent or object to the processing of any personal information relating to the Respondent in Transnet's possession in terms of the provision of the POPIA and utilizing Form 2 of the POPIA Regulations.
11. In submitting any information or documentation requested in this RFQ, the Respondent is hereby consenting to the processing of their personal information for the purpose of this RFQ and further confirming that they are aware of their rights in terms of Section 5 of POPIA

Respondents are required to provide consent below:

YES		NO	
-----	--	----	--

12. Further, the Respondent declares that they have obtained all consents pertaining to other data subject's personal information included in its submission and thereby indemnifying Transnet against any civil or criminal action, administrative fines or other penalty or loss that may arise as a result of the processing of any personal information that the Respondent submitted.
13. The Respondent declares that the personal information submitted for the purpose of this RFQ is complete, accurate, not misleading, is up to date and may be updated where applicable.

Signature of Respondent's authorised representative: _____

Should a Respondent have any complaints or objections to processing of its personal information, by Transnet, the Respondent can submit a complaint to the Information Regulator on <https://www.justice.gov.za/infoereg/>, click on contact us, click on complaints.IR@justice.gov.za

ANNEXURE A



ICTM RAIL NETWORK TELECOMMUNICATIONS

LTE & DMR RADIO TEST INSTRUMENTS REPORT

Document Number	TFR-RNT-QA-NTC003/23
Version Number	1.0
Classification	Confidential
Effective date	28 April 2023
Review Date	n/a

Circulation Restricted To:

Rail Network Telecoms
Transnet Freight Rail & relevant Transnet departments

© This document as a whole is protected by copyright. The information herein is the sole property of Transnet Ltd. It may not be used, disclosed or reproduced in part or in whole in any manner whatsoever, except with the written permission of and in a manner permitted by the proprietors

TFR-RNT-QA-NTC003/23

LTE and DMR Radio Test Instruments Report

© Transnet SOC Ltd

Summary of Version Control

Version NO.	Nature of amendment	Issued By	Changes	Date Issued
1.0	First Document	Lebohang L Mphirime	N/A	25/04/2023

DOCUMENTATION SIGN OFF

I, the undersigned hereby approve this document


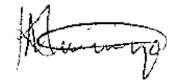


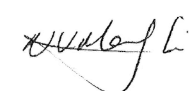

ROLE	NAME AND CAPACITY	SIGNATURE	DATE
Compiler:	Lebohang Mphirime Engineering Technician Quality Assurance		25/04/2023
Reviewer:	Khunjulwa Mniniyo Engineering Technician Quality Assurance		25/04/2023
Reviewer:	Bulelani Kovane Engineering Technician Radio Operations & Maintenance		26/04/2023
Reviewer:	Nkosinathi Nyawose Chief Engineering Technician Radio Operations & Maintenance		26/04/2023
Reviewer:	Nomaxabiso Mayoli Senior Engineer Radio Operations & Maintenance		26/04/2023
Approver:	Muhumbulo Mmbengwa Principal Engineer Radio Access Network		04.05.2023

TABLE OF CONTENTS

I.	DISTRIBUTION	5
II.	ABBREVIATIONS, ACRONYMS AND DEFINITIONS.....	5
III.	RELEVANT STANDARD AND DOCUMENTATION APPLICABLE	6
1	INTRODUCTION	7
1.1	BACKGROUND	7
2	SCOPE.....	7
3	TEST INSTRUMENTS	8
3.1	RADIO COMMUNICATION TEST SET.....	8
3.2	VECTOR SIGNAL GENERATOR	9
3.3	VECTOR NETWORK ANALYZER	10
3.4	PORTABLE ANTENNA SITE ANALYZER.....	11
4	CONCLUSION	11

I. DISTRIBUTION

Once updated, a copy of the latest revision will be published in the document management system in use. An e-mail to this effect will be sent to the relevant personnel or heads of Transnet departments.

II. ABBREVIATIONS, ACRONYMS AND DEFINITIONS

ABBREVIATIONS AND ACRONYMS	DESCRIPTION
AC	Alternating Current
AM	Amplitude Modulation
ALC	Automatic Level Control
dB	Decibel
DC	Direct Current
DMR	Digital Mobile Radio
°C	Degree Celsius
FM	Frequency Modulation
4FSK	Four Frequency Shift Keying
GHz	Gigahertz
GUI	Graphic User Interface
Hz	Hertz
kHz	Kilohertz
LAN	Local Area Network
LTE	Long-term Evolution
MHz	Megahertz
mW	Milliwatts
OEM	Original Equipment Manufacturer
W	Watts
QA	Quality Assurance
QPSK	Quadrature phase shift keying
RF	Radio Frequency
SCPI	Standard Commands for Programmable Instruments
16QAM, 64QAM	Sixteen or Sixty-Four Quadrature Modulation
VSWR	Voltage Standing Wave Ratio
W	Watt
DEFINITIONS	DESCRIPTION
Version	A particular form of something, which varies slightly from other forms of the same thing.
dB	The decibel is 1/10 of a Bel. dB is the logarithmic of the ratio between a measured quantity and an agreed reference level.
dBm	The absolute power in decibel with reference to 1 mW, impedance 50 Ω (power)

III. RELEVANT STANDARD AND DOCUMENTATION APPLICABLE

DOCUMENT NO.	DESCRIPTION	LOCATION
BBG4667	Specification for Radio Communication Service Monitor	Internal - ProjectWise
BBH3838	Specification for RF Signal Generator	Internal - ProjectWise
BBG64666	Specification for a Portable Handheld and Antenna Site Analyzer	Internal – Radio Ops & Maintenance

1 INTRODUCTION

1.1 BACKGROUND

- 1.1.1 A request from ICTM Telecoms received from Principal Engineer to form a task team, to research and compile a list of radio test instruments for the upcoming Digital Migration project. Digital migration project focuses on upgrading Transnet Radio Communication infrastructure, from the current RTO and Trunked radio systems to DMR and LTE technology.
- 1.1.2 The research findings are based to the current network and therefore changes when the DMR and LTE network has been fully designed and operational might be added.
- 1.1.3 The contents of this document are purely based on research of instruments that are currently in the market. It is an internet based research, as there was no formal demonstration or training acquired. Therefore, it would be advisable to acquire training and demonstration of the technologies and the testing instruments, before proceeding to the procurement of these instruments, to gain a more detailed insight on the operation, features of the instruments and those technologies.
- 1.1.4 The task team consisted of the following members:

Table 1: Task team members

<i>No</i>	<i>Employee Name</i>	<i>Position</i>	<i>Department</i>
1	Khunjulwa Mniniyo	Chief Engineering Technician	Quality Assurance
2	Nomaxabiso Mayoli	Senior Engineer	Operations & Maintenance
3	Nkosinathi Nyawose	Chief Engineering Technician	Operations & Maintenance
4	Bulelani Kovane	Engineering Technician	Operations & Maintenance
5	Lebohang Mphirime	Engineering Technician	Quality Assurance

2 SCOPE

- 2.1 This document covers the minimum requirements of radio test instruments required for DMR and LTE technologies that will be deployed for maintenance of Transnet radio infrastructure. Detailed requirements and information of these test instruments will be outlined in their respective specification documents.
- 2.2 The test and measurement instrument must be simple to operate and be ideally suited for South African climatic conditions.
- 2.3 The test instruments that will be listed in this document are as follows:
 - 2.3.1 Radio Communication Test Set
 - 2.3.2 Vector Signal Generator
 - 2.3.3 Vector Network Analyzer
 - 2.3.4 Portable Antenna Site Analyzer

3 TEST INSTRUMENTS

3.1 RADIO COMMUNICATION TEST SET

Table 2: RADIO COMMUNICATION TEST SET

Number	Feature	Analog	DMR	LTE
1.	Frequency Range 100 kHz – 3 GHz	✓	✓	✓
2.	Modulation	FM and AM	4FSK,	QPSK, 16QAM, 64 QAM
3.	Max input power 150 W	✓	✓	✓
4.	Distortion $\leq 5\%$	✓	✓	✓
5.	Selectable channel spacing between 25, 12.5, 6.25 kHz	✓	✓	✓
6.	Signal level for receiver measurements -140 dBm	✓	✓	✓
7.	RF Ports connector N Female	✓	✓	✓
8.	Dual Power Supply (DC & AC)	✓	✓	✓
9	Operating Temperature Range 0 °C to +45 °C	✓	✓	✓
10.	Convenient Operation – touchscreen, rotary knob and Keypad entry	✓	✓	✓

Detailed information of an existing Radio Communication Test Set instrument is available in ProjectWise: Specification for Radio Communication Service Monitor BBG4667 version 1.

<http://jhbtfrwppws02/default.aspx?default=pwgui%7c!%7cDMSSearch%7c%3dBBG4667>

3.2 VECTOR SIGNAL GENERATOR

Table 3: VECTOR SIGNAL GENERATOR

Number	Feature	Analog	DMR	LTE
1.	Frequency Range 10 kHz – 3 GHz	✓	✓	✓
2.	Modulation	FM and AM	4FSK	QPSK, 16QAM, 64 QAM
3.	Signal Level range -145 dBm to + 16 dBm	✓	✓	✓
4.	Distortion $\leq 5\%$	✓	✓	✓
5.	Selectable channel spacing between 25 kHz, 12.5 kHz, 6.25 kHz	✓	✓	✓
6.	RF port connector N Female	✓	✓	✓
7.	RF Port Impedance 50 Ω	✓	✓	✓
8.	Dual Power Supply (AC & DC)	✓	✓	✓
9.	Operating Temperature Range 0 °C to +55 °C	✓	✓	✓
10	Convenient Operation – touchscreen, rotary knob and keypad entry	✓	✓	✓

Detailed information of an existing Signal Generator instrument suitable for analog tests is available in ProjectWise: Specification for RF Signal Generator BBH3838 revision 1.

<http://jhbtfwppws02/default.aspx?default=pwgui%7c!%7cDMSSearch%7c%3dBBH3838>

3.3 VECTOR NETWORK ANALYZER

Table 4: VECTOR NETWORK ANALYZER

Number	Feature	Analog	DMR	LTE
1.	Frequency range 9 kHz -3GHz	✓	✓	✓
2.	RF ports x 2	✓	✓	✓
3.	RF input power $\leq 27\text{dBm}$	✓	✓	✓
4.	RF output power -10dbm to 0 dBm	✓	✓	✓
5.	RF Port Impedance 50 Ω	✓	✓	✓
6.	RF port connector N Female	✓	✓	✓
7.	2 x USB ports	✓	✓	✓
8.	Dual Power Supply (AC & DC)	✓	✓	✓
9.	Operating Temperature Range +5 °C to +40 °C	✓	✓	✓
10.	Convenient Operation – touchscreen, rotary knob and Keypad entry	✓	✓	✓

Detailed information of the Vector Network Analyzer instrument will be compiled and stored in ProjectWise.

3.4 PORTABLE ANTENNA SITE ANALYZER

Table 5: PORTABLE ANTENNA SITE ANALYZER

Number	Feature	Analog	DMR	LTE
1.	Frequency Range 2 MHz to 3 GHz	✓	✓	✓
2.	RF ports x 2	✓	✓	✓
3.	RF Input power 30 dBm	✓	✓	✓
4.	RF Output power -10 dBm	✓	✓	✓
5.	RF ports connector N female	✓	✓	✓
6.	RF port impedance 50 Ω	✓	✓	✓
7.	2 x USB port	✓	✓	✓
8.	Dual Power Supply (AC & DC)	✓	✓	✓
9.	Operating Temperature –20 °C to +50 °C	✓	✓	✓
10.	Convenient Operation – touchscreen, rotary knob and Keypad entry	✓	✓	✓

Detailed information of an existing Portable Antenna Site Analyzer instrument specification is available upon request from Radio Operations & Maintenance staff, and it will be loaded onto ProjectWise as Specification for Portable Handheld and Antenna Site Analyser BBG 64666 once amendment has been completed.

4 CONCLUSION

Currently there's a number of OEMs for the test instruments listed in clause 2.3 of this document therefore the specifications of a particular instrument may slightly differ with each manufacturer. Thus, some instruments may not have the exact information in the tables 1 to 4 mentioned above specification but should however be compliant with Transnet's proposed digital radio systems.

END OF DOCUMENT

SPECIFICATION FOR RADIO COMMUNICATION SERVICE MONITOR

BBG4667

28 April 2015

Revision 0.00

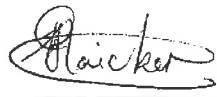
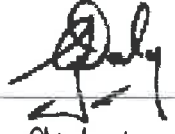

NON-DISCLOSURE OF INFORMATION

Information contained in this document is proprietary in nature and/or protected by copyright.
Please obtain written permission from the Author prior to reproducing this document, in whole or in part.

TABLE OF CONTENTS

I	DOCUMENT AUTHORISATION	3
II	DISTRIBUTION	4
III	DOCUMENT CHANGE HISTORY	4
IV	CHANGES SINCE LAST REVISION.....	4
IV	ABBREVIATIONS, ACRONYMS AND DEFINITIONS	5
VI	RELEVANT DOCUMENTATION	6
1.	GENERAL	7
1.1	Scope.....	7
1.2	Compliance.....	7
1.3	Software	7
1.4	Physical and Electrical Requirement.....	8
1.5	Environmental Conditions	9
1.6	Electromagnetic Compatibility (EMC)	9
1.7	Transport Case	10
1.8	Documentation	10
2.	TECHNICAL SPECIFICATIONS.....	10
2.1	Functional Requirements	10
2.2	Specifications	11
3.	REPAIR, AFTER SALES SERVICES	18

I DOCUMENT AUTHORISATION

FUNCTION	NAME	TITLE & DIVISION	SIGNATURE	DATE
Revised by :	Prem Naicker	Chief Engineering Technician Rail Networks - Radio		22/05/2015
Approved by:	Graeme Daly	Divisional Manager Rail Networks - Radio		22 May 2015
Authorised by :	Andrew Matseke	Chief Engineer Rail Networks Telecommunications		2015-08-31

II DISTRIBUTION

Once updated, a copy of the latest revision will be published in the document management system in use. E-mail to this effect will be sent to the relevant personnel or heads of department.

III DOCUMENT CHANGE HISTORY

ISSUE NO.	DATE ISSUED	ISSUED BY	HISTORY DESCRIPTION
1	28/04/2015	P.Naicker	New Document

IV CHANGES SINCE LAST REVISION

CLAUSE	DESCRIPTION

V ABBREVIATIONS, ACRONYMS AND DEFINITIONS

ABBREVIATIONS AND ACRONYMS	DESCRIPTION
AM	Amplitude Modulation
BER	Bit Error Rate
CCIR	International Radio Consultative Committee (translation). Radio paging code.
CCITT	International Telegraph and Telephone Consultative Committee (translation)
CDMA	Code division multiple access
CTCSS	Continuous Tone Coded Squelch System
EMC	Electromagnetic Compatibility
DCS	Digitally Coded Squelch
div	Division
DMR	Digital Mobile Radio
dPMR	Digital private mobile radio
DTMF	Dual Tone Multi Frequency
DVM	Digital Volt Meter
EIA	Electronic Industries Association (now E I Alliance)
ETSI	European Telecommunications Standards Institute
FM	Frequency Modulation
FSK	Frequency Shift Keying
GSM	Global System for Mobile communications
IF	Intermediate Frequency
LMR	Land mobile radio
LTE	Long-Term Evolution
ppm	Parts per million
PSTN	Private Switching Telephone Network
RF	Radio Frequency
RMS	Root-mean-square
RSSI	Receive Signal Strength Indicator
SINAD	Signal, Noise & Distortion to Noise & Distortion ratio
SSB	Single-sideband
TETRA	Terrestrial Trunked Radio
THD	Total Harmonic Distortion
VSWR	Voltage Standing Wave Ratio
WiMax	Worldwide Interoperability for Microwave Access
ZVEI	Electrical and Electronic Manufacturers' Association (translation). Euro paging code
DZVEI	Depressed ZVEI code.

DEFINITIONS	DESCRIPTION
None	

VI RELEVANT DOCUMENTATION**APPLICABLE**

DOCUMENT NO.	DESCRIPTION	LOCATION

1. GENERAL

1.1 Scope

- 1.1.1 This specification covers the minimum requirements for the Radio Communication Service Monitor.
- 1.1.2 The instrument must be portable, robust and simple to operate and be ideally suited for South African climatic conditions.

1.2 Compliance

- 1.2.1 Tenderers must indicate clause by clause how their offer complies or differs from this specification with reference to substantiating documented proof.
- 1.2.2 Failure to complete a clause-by-clause compliance in the mentioned manner will result in disqualification.
- 1.2.3 Tenderer must submit detailed descriptive literature, illustrations and specifications together with sufficient information to demonstrate how the equipment offered will meet the requirements of Transnet Freight Rail.
- 1.2.4 Failure to supply detail substantive proof / information on compliance, non-compliance / partial compliance points will cause disqualification from this tender.
- 1.2.5 Tenderers must submit their main offer that is fully compliant in terms of this technical specification.
- 1.2.6 Alternative Offers
 - 1.2.6.1 Offers, which include minor deviations from this specification can be offered as alternative offer and must be marked / indicated as alternative offer.
 - 1.2.6.2 Alternatives and none technical complaints might be considered at the sole discretion of Transnet Freight Rail only if it is marked as alternative / non-compliant offer.
- 1.2.7 Documentary proof must be submitted with the tender submission authorising the bidder to tender on the manufacturer's behalf.

1.3 Software

- 1.3.1 All functions shall be menu driven with help functions available.
- 1.3.2 The equipment shall be software upgradable ensuring cost effectiveness and possible expansion

- 1.3.3 All upgrades or revisions of the software, to overcome shortcomings and limitations, identified by the supplier, or by Transnet Freight Rail, in accordance with this specification shall be provided to Transnet Freight Rail when they become available. The cost of these upgrades shall be considered part of the original product price.
- 1.3.4 New versions of software that offer additional functionality and enhanced capabilities shall be offered to Transnet Freight Rail when available.
- 1.3.5 New software shall be installed by the local representative of the equipment manufacturer.
- 1.3.6 All software menus shall be available in English.
- 1.3.7 The tenderer shall indicate how data would be transferred from the Service Monitor to an computer

1.4 **Physical and Electrical Requirement**

1.4.1 Mechanical Design

- 1.4.1.1 The Service Monitor shall be of a robust design suitable for field operations.
- 1.4.1.2 The equipment shall be compact and light-weight not exceeding 9 kg. For handheld devices the weight should not exceed 4kg.
(Tenderers to specify dimensions and weight (including batteries))
- 1.4.1.3 All external metal surfaces shall be suitable protected from corrosion.

1.4.2 Display

The Service Monitor shall have a colour display. For handheld devices touch screen colour displays are required.

1.4.3 Components

Adequate margins shall be observed in the ratings of all electronic components to be used, in order to ensure good reliability in operation.

1.4.4 Power Supply

- 1.4.4.1 It shall be possible to operate the equipment from the following power source:
 - 1) A nominal 230 volt AC power source.
 - 2) Internal rechargeable batteries, at least 5 hours of operation. For handheld devices batteries must provide a minimum of 3 hours operation.
 - 3) An external 11 to 15 volt DC supply (optional).

- 1.4.4.2 The Tenderer must provide full details of the power consumption and voltage tolerances of the equipment offered, as well as the operating time available during battery operation. Full details of the battery type and expected lifetime or number of charge / discharge cycles shall be given in the Tender.
- 1.4.4.3 The unit shall display the battery condition.
- 1.4.4.4 Suitable power cords must be supplied with the equipment. The mains power cord shall be not less than 1.5 m in length and shall be fitted with the standard 15 ampere three-pin plug used in South Africa. If the external DC supply option is offered, a 3 m DC cable fitted with crocodile clips suitable for connection to a car battery shall be supplied.
- 1.4.4.5 All DC inputs shall be reverse voltage protected.

1.4.5 Surge Protection

All equipment which is mains operated shall be fitted with the necessary surge protection as required for lightning protection, suppression of mains-borne surges or interference, safety of personnel and suppression of radio frequency interference.

1.5 **Environmental Conditions**

- 1.5.1 The Service Monitor must operate without loss of performance within a temperature range of -5 °C and +50 °C and relative humidity levels between 10 % and 80 %.
- 1.5.2 The equipment must be capable of operating on a 24 hour basis under the above environmental conditions.
- 1.5.3 The equipment must be capable of operating in conditions of severe dust and shall therefore be suitably sealed.
- 1.5.4 The equipment shall be sealed against moisture and water splashes.
- 1.5.5 The Tenderer must provide full details of the environmental operating limits of the Service Monitor.

1.6 **Electromagnetic Compatibility (EMC)**

- 1.6.1 The Tenderer shall provide full details of the EMC standards applicable to this equipment and shall provide proof of compliance to the EMC standards.
- 1.6.2 Safe operation of the equipment under all conditions is critical to Transnet Freight Rail. Failing to provide proof of EMC certification for the unit offered will lead to tender disqualification.

1.7 Transport Case

- 1.7.1 The equipment shall be supplied complete with a rugged transport case to protect the equipment against transport hazards such as shock, dust and moisture.
- 1.7.2 Details and prices of alternative case options shall be supplied in the offer.
- 1.7.3 The case shall accommodate all accessories and test cables required to perform measurements in the field.

1.8 Documentation**1.8.1 Operation and maintenance manuals**

The operation and maintenance manual shall give a description of the equipment and the functions with sufficient information for the following:

- 1.8.1.1 Operation of each function of the instrument.
 - 1.8.1.2 Managing of data where applicable.
 - 1.8.1.3 Description of periodic routine maintenance, where applicable.
- 1.8.2 A card/folder shall preferably be provided containing abbreviating operating instructions.
 - 1.8.3 The operation and maintenance manuals on CD shall be acceptable.

2. TECHNICAL SPECIFICATIONS: RADIO COMMUNICATION SERVICE MONITOR**2.1 Functional Requirements****2.1.1 Receiver**

- 2.1.1.1 RF signal generator
- 2.1.1.2 FM & AM modulation
- 2.1.1.3 Two of modulation audio signal generators
- 2.1.1.4 Audio frequency generator
- 2.1.1.5 Audio frequency meter
- 2.1.1.6 Audio frequency level meter
- 2.1.1.7 Audio monitor
- 2.1.1.8 Audio SINAD meter
- 2.1.1.9 Audio frequency distortion meter
- 2.1.1.10 Audio frequency signal-to-noise meter
- 2.1.1.11 Audio frequency oscilloscope

2.1.2 Transmitter

- 2.1.2.1 Deviation/modulation meter
- 2.1.2.2 Filters

- 2.1.2.3 RF power meter
- 2.1.2.4 RF frequency & error meter
- 2.1.2.5 RF spectrum analyzer

2.1.3 Optional functions

- 2.1.4.1 Trunking capability
- 2.1.4.2 Antenna system measurements
- 2.1.4.3 RSSI meter
- 2.1.4.4 Off-air measurement
- 2.1.4.5 Audio filter
- 2.1.4.6 Signalling encoding & decoding
- 2.1.4.7 Digital technology
- 2.1.4.8 Coverage measurements

2.2 Specifications

This specification covers the minimum requirements for Transnet Freight Rail.

2.2.1 General

The Radio Communication Service Monitor must be full duplex working.
 All settings: Keypad entry &/or rotary control
 Frequency standard: Stability ± 0.5 ppm over temperature range
 Aging 1 ppm/year
 Warm-up time ≤ 3 minutes

2.2.2 Receiver

2.2.2.1 RF signal generator

RF range:	500 kHz to 1 GHz
Resolution:	10 Hz
Accuracy:	≤ 0.0001 %
Output level:	-130 dBm to 0 dBm
Accuracy:	$\leq \pm 2$ dB
Settings:	Delta increment/decrement
Resolution:	0.1 dB
Port impedance:	50 Ω
VSWR:	$\leq 1.2:1$
Residual FM:	≤ 20 Hz
Residual AM:	≤ 5 %
Harmonics:	≤ -30 dBc
Spurious signals:	≤ -30 dBc
SSB Phase Noise:	≤ -95 dBc/Hz
RF carrier leakage:	≤ -113 dBm
Reverse power protection:	50 W for 1 minute

2.2.2.2 FM & AM Modulation

RF range:	500 Hz to 1 GHz
-----------	-----------------

Modulating frequency
range: 0 Hz to 20 kHz
Modulation range: FM: 0 Hz to 75 kHz
AM: 0 % to 100 %
Resolution: FM: 10 Hz
AM: 1 %
Accuracy: $\leq \pm 5$ %
Total Harmonic Distortion: ≤ 3 %
FM pre-emphasis
(selectable): 750 μ s

2.2.2.3 Modulation audio signal generators (gen 1 & gen 2)

FM and AM:

Audio frequency range: 0 Hz to 20 kHz
Resolution: 10 Hz
Accuracy: ≤ 5 %
Total Harmonic Distortion: ≤ 1 %
It must be possible to generate CTCSS signals.

External modulation terminal

Terminal impedance: 600 Ω balanced; ≥ 10 k Ω
Modulating frequency
range: 0 Hz to 20 kHz
Modulation range: FM: 0 Hz to 75 kHz
AM: 0 % to 100 %
Sensitivity: FM: 1 V RMS up to 75 kHz
AM: 1 V RMS up to 100 %

2.2.2.4 Audio frequency generator

Frequency range: 10 Hz to 30 kHz sinewave
Resolution: 1 Hz
Accuracy: $\leq \pm 1$ Hz
Total Harmonic Distortion: ≤ 1 %

Output level range: 1 mV to 4 V RMS
Resolution: 1 mV
Accuracy: 5 %
Terminal impedance: 600 Ω balanced; ≥ 10 k Ω

2.2.2.5 Audio frequency meter

Frequency range: 10 Hz to 30 kHz
Resolution: 1 Hz
Accuracy: ≤ 2 Hz
Sensitivity: 50 mV
Terminal impedance: 600 Ω balanced; ≥ 10 k Ω
It must be possible to measure the frequency of demodulated signals.

2.2.2.6 Audio frequency level meter

Frequency range: 10 Hz to 30 kHz
Input level: 10 mV to 30 V RMS

Display:	V; mV; dBm
Resolution:	0.1 V; 1 mV & 0.1 dBm
Accuracy:	$\leq 3 \%$
Terminal impedance:	600 Ω balanced; $\geq 10 \text{ k}\Omega$

2.2.2.7 Audio monitor

An audio monitor with volume control and internal loudspeaker is required to monitor audio signals and demodulated signals

2.2.2.8 Audio SINAD meter

Frequency:	1 kHz
Range:	0 dB to 50 dB
Resolution:	0.1 dB
Accuracy:	$\leq \pm 1 \text{ dB}$
Sensitivity:	50 mV
Terminal impedance:	$\geq 10 \text{ k}\Omega$

2.2.2.9 Audio frequency distortion meter

Frequency:	500 Hz & 1 kHz
Range:	0 % to 100 %
Resolution:	0.1 %
Accuracy:	$\leq \pm 5 \%$
Sensitivity:	50 mV
Terminal impedance:	600 Ω balanced; $\geq 10 \text{ k}\Omega$

It must be possible to measure the THD of demodulated signals.

2.2.2.10 Audio frequency signal-to-noise meter

Range:	0 dB to 100 dB
Resolution:	0.1 dB
Accuracy:	$\leq \pm 1 \text{ dB}$
Sensitivity:	50 mV
Terminal impedance:	600 Ω balanced; $\geq 10 \text{ k}\Omega$

It must be possible to measure the signal-to-noise ratio of demodulated signals.

2.2.2.11 Audio frequency oscilloscope

Frequency range:	DC to 50 kHz
Source:	Digital volt meter Audio input Demodulated signal
Trace:	One
Trigger type:	Automatic & Normal
Edge trigger:	Rising & Falling
Coupling:	AC & DC
Timebase:	5 ms/div to 5 s/div
Input ranges:	
Digital volt meter	
& Audio input:	10 mV/div to 10 V/div
Demodulation: FM:	50 Hz/div to 30 kHz/div

Accuracy:	AM:	5 %/div to 50 %/div $\leq \pm 5$ % of full scale
Terminal impedance:		
	Audio:	600 Ω balanced; ≥ 10 k Ω
	DVM:	≥ 1 M Ω
Functions:	Minimum two markers	
Graticule:	10 Horizontal by 6 Vertical	

2.2.3 Transmitter

Port impedance:	50 Ω
VSWR:	$\leq 1.2:1$

2.2.3.1 Deviation/modulation meter

RF range:	500 Hz to 1 GHz
Modulation frequency:	0 Hz to 20 kHz
Deviation range/depth:	
	FM: 0 Hz to 75 k Hz
	AM: 0 % to 100 %
Resolution:	
	FM 0.1 kHz
	AM: 0.1 %
Accuracy:	$\leq \pm 5$ % at 1 kHz modulating frequency
Total Harmonic Distortion:	
	FM: 1 %
	AM: 3 %
Residual FM:	≤ 30 Hz (300 Hz to 3.4 kHz)
Modes FM & AM:	Peak + Peak - $((\text{Peak} +) - (\text{Peak} -))/2$
FM de-emphasis (selectable):	750 μ s

2.2.3.2 Filters

The filters must be selectable.

IF:	300 Hz; 3 kHz; 30 kHz; 300 kHz
Audio: Lowpass:	300 Hz; 3.4 kHz; 15 kHz; 50 kHz
Highpass:	50 Hz, 300 Hz
Bandpass:	50 Hz to 3.4 kHz; 300 Hz to 3.4 kHz; 50 Hz to 15 kHz; 300 Hz to 15 kHz

2.2.3.3 RF power meter

RF range:	500 Hz to 1 GHz
Dynamic range:	100 mW to 100 W (50 W continuous)
Indications units:	Watt, dBm or dBW
Resolution:	10 mW or 0.1 dB
Accuracy:	$\leq \pm 5$ %

2.2.3.4 RF frequency and error meter

RF range:	500 Hz to 1 GHz (manual tune) 10 MHz to 1 GHz (auto tune)
Error range:	±200 kHz
Resolution:	1 Hz
Accuracy:	As frequency standard ± resolution
Sensitivity	5 mW
VSWR:	≤ 1.2:1

2.2.3.5 RF spectrum analyzer

RF range:	100 kHz to 1 GHz
Span:	1 kHz/div to 100 MHz/div
Resolution bandwidth:	300 Hz to 3 MHz
Reference level:	-50 dBm to +52 dBm
Dynamic range:	80 dB
Noise floor:	≤ -120 dBm
Linearity:	±2 dB
Vertical resolution:	0.1 dB on 2 dB/div 0.5 dB on 10 dB/div
Level flatness:	±1 dB over 50 MHz span
Intermodulation distortion:	≥ 70 dB for two signals at -30 dBm
Sweep speed:	10 ms/div to 200 ms/div
Sensitivity:	2 µV
Indication:	Level & frequency
Functions:	Peak hold Averaging Minimum 3 markers

2.2.4 Optional functions

It will be specified in the Schedule of Requirement which options are required.

2.2.4.1 Trunking capability

The Trunk system must comply with the standards:

MPT1327 Signalling Standard for Trunked Private Land Mobile Radio systems

MPT1343 System Interface Specification for Radio Units.

The following functions must be available:

- The radio under test must be able to register on the instrument
- The radio under test must be able to establish local calls to the instrument
- The radio under test must be able to establish PSTN calls to the instrument
- A call must be able to be made to the radio under test from the instrument.
- The instrument must be able to institute and verify a HANDOFF.

2.2.4.2 Antenna system measurements

Tracking generator

RF range:	1 MHz to 1 GHz
Resolution:	0.1 MHz
Span:	10 kHz to full span
Markers:	3

2.2.4.2.1 Impedance measurement

- VSWR

Range:	1:1 to 20:1
Resolution:	0.02
Accuracy:	$\leq \pm 5 \%$
Immunity to interfering signals:	-30 dBm

- Return Loss

Range:	0 dB to -50 dB
Resolution:	0.01 dB
Accuracy:	$\leq \pm 5 \%$

Calibration loads: Short – Open – Load

The directional coupler shall be provided when it is not included in the Service Monitor.

2.2.4.2.2 Coaxial Cable Loss and Distance-To-Fault measurement

A comprehensive selectable list of 50 Ω coaxial cable types must be available to choose from.

It must be possible to add user requirement parameters for none listed cables.

- Cable Loss measurement

RF range:	1 MHz to 1 GHz
Range:	0 dB to 50 dB
Resolution:	0.01 dB
Accuracy:	$\leq \pm 5 \%$

- Distance to fault measurement

RF range:	1 MHz to 1 GHz
Range:	1 m to 100 m
Accuracy:	$\leq \pm 5 \%$

The directional coupler shall be provided when it is not included in the Service Monitor.

2.2.4.3 RSSI meter

RF range:	500 Hz to 1 GHz
Range:	-110 dBm to -10 dBm
Resolution:	0.1 dB
Accuracy:	$\leq \pm 3 \text{ dB}$

2.2.4.4 Off-air measurement

RF range: 500 kHz to 1 GHz
Sensitivity: -80 dBm
-110 dBm with pre-amp
The antenna must be provided.

2.2.4.5 Audio filter

CCITT (low pass filter for noise measurements)

2.2.4.6 Signalling Encoder & Decoder

DTMF; DCS; CCIR; ZVEI; DZVEI; EIA.

2.2.4.7 Digital technology - DMR, dPMR, Tetra, GSM, CDMA, WiMax, LTE

2.2.4.7.1 The tenderer shall state which digital technology the Service Monitor supports.

2.2.4.7.2 Full details of the tests/measurements that can be performed with the Service Monitor must be provided.

2.2.4.7.3 Detailed technical parameters of the available functions must be provided.

2.2.4.7.4 The tenderer shall indicate if a licence (key) would be required to activate the digital functions, after the Service Monitor has been placed into service.

2.2.4.8 Coverage measurements.

2.2.4.8.1 Ability to measure signal quality parameters of LMR radio systems.

2.2.4.8.2 Data must be logged and tagged with date, time and GPS location.

2.2.4.8.3 Full details of the mapping type that can be performed for each analogue and digital technology must be provided.

2.2.4.8.4 The tenderer shall clearly indicate if any additional equipment or software is required to perform the coverage measurements.

- 2.2.4.9
- 1) The Tenderer may offer additional features, equipment or accessories, in which case a complete list of all items offered, and the price of each item must be provided.
 - 2) The function of each additional item shall be fully described in the offer.

3. REPAIR AND AFTER SALES SERVICES

- 3.1 The Tenderer shall provide repair services for faulty Service Monitors.
- 3.2 The Tenderer shall state the expected turn-around time for repairing all faulty equipment.
- 3.3 After sales, support expertise shall be available to assist in the following tasks (details of the support offered shall be given in the offer):
 - 3.3.1 Hardware and software upgrades.
 - 3.3.2 Requirements for new functions within the equipment.
 - 3.3.3 Assistance to the operation and maintenance of the Service Monitor.

END OF DOCUMENT