



RFQ / TENDER

Tender No: JHB-12981

Vendor No: 11001386

BOARD LIST
BOARD LIST
TRANSNET FREIGHT RAIL
PROCUREMENT DEPARTMENT
2000

Purchaser : Nobahle Mjoli
Telephone : 011 584 0606
Fax Number:

Please quote reference:
K62/6000599022

Deliver to:
TFR Head Office
Supply Chain Services
2000 Johannesburg

Closing Date : 30.01.2014
Validity Date : 29.04.2014
RFQ No : 6000599022
End of Validity : 28.02.2014

DIGITAL TRANSMISSION ANALYSER IN VEREENIGING.

THE RFQ DOCUMENTS ARE OBTAINABLE FROM THE OFFICE OF TRANSNET FREIGHT RAIL, TENDER ADVISE CENTRE, GROUND FLOOR, INYANDA HOUSE 1, WELLINGTON ROAD, PARKTOWN, DURING OFFICE HOURS 08:00 TO 15:00 AND RFQ DOCUMENT IS FOR FREE. RFQ CLOSING DATE: 30 JANUARY 2014.

QUOTATIONS MAYBE FAXED TO : (011) 774-9129/(011) 774-9186.

FOR ANY TECHNICAL ENQUIRIES WITH REGARD TO THIS RFQ YOU CAN CONTACT :MR PHINDI SIBIYA 011 570 7254.

1.1 QUOTATION/S MUST BE SUBMITTED PUNCTUALLY AT 10:00 ON OR BEFORE CLOSING DATE AND LATE QUOTATIONS WILL NOT BE CONSIDERED.

1.2 IF POSTED:

21 WELLINGTON ROAD
INYANDA HOUSE 1
PARKTOWN
2193

1.3 ,IF DELIVERED BY HAND:

TRANSNET FREIGHT RAIL-SUPPLY CHAIN SERVICES
21 WELLINGTON ROAD
INYANDA HOUSE 1
PARKTOWN

DATE: SIGNATURE OF TENDERER(S):
CONTACT PERSON: TEL No:

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2. CONDITIONS:

2.2 ANY PURCHASE ORDER PLACED AS A RESULT OF YOUR QUOTATION WILL BE SUBJECT TO THE STANDARD TERMS AND CONDITIONS OF CONTRACT, FORM US7, (LATEST), GENERAL TENDER CONDITIONS, FORM CSS5 (LATEST) AND CONDITIONS MENTIONED HEREIN.

2.3 TENDERERS MAY OFFER AN EARLIER VALIDITY DATE, BUT THEIR QUOTATION MAY IN THAT EVENT, BE DISREGARDED FOR THIS REASON.

2.4 TENDERERS ARE REQUIRED TO OFFER ONLY FIRM PRICES. PRICES SUBJECT TO REVIEW IN TERMS OF CLAUSE 32 OF FORM US7 WILL ONLY BE CONSIDERED SHOULD THE DELIVERY PERIOD REQUIRED EXCEED 6 MONTHS.

2.5 BEST DELIVERY TIME MUST BE OFFERED.

2.6 DISCOUNT (TRADE DISCOUNT) CASH DISCOUNT (CONDITIONAL DISCOUNT) VALUE VALUE ADDED TAX (VAT) MUST BE SHOWN SEPARATELY.

2.7 TRANSNET RESERVES THE RIGHT TO NEGOTIATE PRICES AND COMMERCIAL ASPECTS AFTER THE CLOSING DATE OF THE QUOTATION.

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2.8 DIRECT DELIVERY INTIMATES DELIVERY BEING EFFECTED INTO THE WAREHOUSE OR THE ACTUAL POINT OF SUPPLY AND SHOULD THEREFORE INCLUDE ANY TRANSPORTATION MODE DEEMED NECESSARY IN EXECUTING THIS METHOD OF DELIVERY BASIS IN ORDER TO MEET THE REQUIRED DELIVERY DATE.

3. EVALUATION CRITERIA

3.1 COMPETITIVE PRICING AND BBBEE.

TAX CLEARANCE CERTIFICATES:

The Regulations in terms of the Public Finance Management Act, 1999: Framework for Supply Chain Management as published in Government Gazette No. 25767 dated 5 December 2003, Clause 9 (1) (d), stipulates that the accounting officer or accounting authority of an institution to which these regulations apply must reject any bid from a supplier who fails to provide written proof from the South African Revenue that the supplier either has no outstanding tax obligations or has made arrangements to meet outstanding tax obligations. Tenderers will be disqualified if a valid tax clearance certificate or written proof from the South African Revenue Service that supplier has made arrangements to meet outstanding tax obligations is not submitted with the tender.

COMPANY DETAILS:

NAME OF COMPANY: _____
CONTACT PERSON: _____
TEL. NO. _____ FAX NO: _____
REG. NO. _____

BROAD BASED BLACK ECONOMIC EMPOWERMENT (BBBEE)

Transnet fully endorses and supports the Government's Broad-based Black Economic Empowerment Programme and it is strongly of the opinion that all South African Business Enterprises have an equal obligation to redress the imbalances of the past. Transnet will therefore prefer to do business with local business enterprises who share these same values. Transnet will endeavour to do business with local business enterprises that possess a BBBEE "recognition level" of at least a level 5. Transnet urges Tenderers (large enterprises and QSE's - see below) to have themselves accredited by any one of the various Accreditation Agencies available, who do their BBBEE ratings in accordance with the latest Codes (i.e. those promulgated on 9 February 2007) and whose names appear on the present ABVA (Association of BEE Verification Agencies) - "List of Full Members" as displayed on the ABVA website (www.abva.co.za). Although no agencies have, as yet, been accredited by SANAS (SA National Accreditation System), Transnet will, in the interim, accept rating certificates of tenderers who have been verified by any of the listed agencies.

Enterprises will be rated by such agency based on the following:

1. Large Enterprises (i.e. annual turnover >R35million:
" Rating level based on all seven elements of the BBBEE scorecard.
2. Qualifying Small Enterprises - (QSE) (i.e. annual turnover >R5million but <R35million:
" Rating based on any four elements of the BBBEE scorecard.

NB:

3. Emerging Micro Enterprises - (EME) (i.e. annual turnover <R5m) are exempted from being rated/verified:
" Automatic rating of Level 4 BBBEE irrespective of race of ownership, i.e. 100% BBBEE recognition
" Black ownership >50% or Black Women ownership >30% automatically qualifies as Level 3 BBBEE, i.e. 110% BBBEE recognition
" EME's should provide certified documentary proof of annual turnover (i.e. audited financials) plus proof of Black ownership if Black ownership >50% or Black Women ownership >30% from the EME's Auditor/Accounting Officer.

4. In addition to the above, Tenderers who wish to enter into a Joint Venture or subcontract portions of the contract to BBBEE companies, must state in their tenders the percentage of the total contract value that will be allocated to such BBBEE companies, should they be successful

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in being awarded any business. A rating certificate in respect of such BBBEE JV-partners and / or sub-contractor/s, as well as a breakdown of the distribution of the aforementioned percentage must also be furnished

In view of the high emphasis which Transnet places on Broad-based Black Economic Empowerment, Transnet will allow certain preference points for BBBEE in the evaluation of all responses. Depending upon the value of the ensuing business award (i.e. below or in excess of R2m), the 80/20 or 90/10 point preference systems will be utilized where BBBEE will count out of 20 or 10 respectively in the evaluation process.

EACH RESPONDENT IS REQUIRED TO FURNISH PROOF OF THE ABOVE TO TRANSNET. FAILURE TO DO SO WILL RESULT IN A SCORE OF ZERO BEING ALLOCATED FOR BBBEE.

Turnover: Kindly indicate your company's annual turnover for the past year R_____

- " If annual turnover <R5m, please attach certified confirmation from your Auditor/Accounting Officer
- " If annual turnover >R5m please attach original or certified copy of accreditation certificate and detailed scorecard by an ABVA accreditation agency (registered as a "Full Member")

PAYMENT TERMS

The following payment terms will apply as from 1 October 2008.

- " All suppliers will be paid 30 days from receipt of month end statement, i.e. payment term F055.

CONDITIONS:

This quotation is subject to the provisions of the Standard Terms and Conditions of Contract, Form US7, (Latest) and the General Tender Conditions, Form CSS5 (Latest) and any other standard or special conditions mentioned and/or embodied in the quotation request.

SCHEDULE OF REQUIREMENTS

PRICES TENDERED ARE TO BE "DIRECT" AND EXCLUDE VAT.

IN THIS REGARD THE TENDERER'S ATTENTION IS DIRECTED TO PARAGRAPH 16 OF FORM CSS5 (LATEST).

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TRANSNET INSISTS ON HONESTY AND INTEGRITY BEYOND REPROACH AT ALL TIMES AND WILL NOT TOLERATE ANY FORM OF IMPROPER INFLUENCING, BRIBERY, CORRUPTION, FRAUD, OR ANY OTHER UNETHICAL CONDUCT ON THE PART OF BIDDERS/ TRANSNET EMPLOYEES. IF, IN THE OPINION OF TRANSNET'S CHIEF OPERATING OFFICER, A TENDERER / CONTRACTOR / SUPPLIER HAS OR HAS CAUSED TO BE PROMISED, OFFERED OR GIVEN TO ANY TRANSNET EMPLOYEE, ANY BRIBE, COMMISSION, GIFT, LOAN, ADVANTAGE OR OTHER COSIDERATION, TRANSNET SHALL BE ENTITLED TO REVOKE THE TENDER / CONTRACT BY FOLLOWING ITS INTERNAL POLICIES THAT GOVERN THE ECLUSION PROCESS. IN SUCH AN EVENT TRANSNET WILL BE ENTITLED TO PLACE ANY TENDERER / CONTRACTOR / SUPPLIER WHO HAS CONTRAVENED THE PROVISIONS OF TRANSNET'S BUSINESS ETHICS ON ITS LIST OF EXCLUDED TENDERERS. THIS LIST WILL ALSO BE DISTRIBUTED TO ALL OTHER STATE OWNED ENTERPRISES AND GOVERNMENT DEPARTMENTS.

TRANSNET INVITES ITS VALUED SUPPLIERS TO REPORT ANY ALLEGATIONS OF FRAUD, CORRUPTION OR OTHER UNETHICAL ACTIVITIES TO TRANSNET TIP-OFFS ANONYMOUS, AT ANY OF THE FOLLOWING ADDRESSES / CONTACT NUMBERS:-

TOLL-FREE ANONYMOUS HOTLINE - 0800 003 056
EMAIL - Transnet@tip-offs.com
FAX NUMBER - 0800 007 788
FREEPOST DN 298, UMHLANGA ROCKS, 4320

CONFIDENTIALITY IS QUARANTEED

Item	Qty	Material	Description
00010	1	DIGITAL TRANSMISSION ANALYSER	

R.....
Each

Delivery Date: 28.02.2014

FULL DETAILS OF DESCRIPTION

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3. ADDITIONAL INFORMATION REQUIRED: (WHERE APPLICABLE)

3.1 THE FOLLOWING ADDITIONAL INFORMATION IS REQUIRED:

- (A) DISCOUNT:
- (B) SETTLEMENT DISCOUNT:.....
- (C) PRICE/S FIRM:
- (D) PRICE/S FIRM UNTIL THEREAFTER SUBJECT TO REVIEW.
- (E) PRICE/S NOT FIRM:
- (F) SABS MARK:
- (G) SABS PERMIT NO:
- (H) BRAND/MAKE/TYPER:
- (I) FULL NAME AND ADDRESS OF MANUFACTURER.:
.....
.....
.....
- (J) FULL NAME AND ADDRESS OF INSPECTION POINT:
.....
.....
.....
- (K) COUNTRY OF ORIGIN:

Comply : _____ Does not Comply : _____ Not applicable : _____

Justification :

- (L) SURPLUS MATERIAL:
TENDERERS MUST INDICATE IF THEY WILL BE PREPARED TO PURCHASE BACK FROM TRANSNET ANY SURPLUS MATERIAL WHICH MAY BECOME AVAILABLE FROM ANY RESULTING PURCHASE ORDER/CONTRACT ORIGINATED FROM THE QUOTATION SUBMITTED:
.....

- (M) PAYMENT OVERSEAS:
ONLY IF TRANSNET LIMITED IS REQUESTED BY THE TENDERER TO EFFECT PAYMENT OVERSEAS DIRECT TO THE TENDERER'S PRINCIPAL/SUPPLIER THE FOLLOWING INFORMATION IS REQUIRED:
 - * EXCHANGE RATE ON WHICH THE QUOTATION PRICE IS BASED: R1,00 (S.A. CURRENCY) BEING EQUAL TO (FOREIGN CURRENCY)
 - * PERCENTAGE IN RELATION TO THE QUOTATION PRICE TO BE REMITTED OVERSEAS:
.....
 - * NAME OF COUNTRY TO WHICH PAYMENT IS TO BE MADE:
.....
.....
 - * APPLICABLE DATE OF EXCHANGE RATE:
.....
 - * BENEFICIARY'S NAME AND FULL ADDRESS:
.....
.....

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.....
* BENEFICIARY'S BANKERS AND FULL ADDRESS:
.....
.....
.....

* APPLICABLE ACCOUNT NUMBER:
.....

(N) DELIVERY DATE:

TENDERERS MUST FURNISH THEIR ACTUAL DELIVERY AND MANUFACTURING PERIOD HEREUNDER NOTWITHSTANDING THE DELIVERY DATES SPECIFIED BY TRANSNET.

THE FOLLOWING MUST ALSO BE FURNISHED IN REGARD TO THE ABOVE:

1. PERIOD REQUIRED TO OBTAIN RAW MATERIAL.(DAYS)
2. MANUFACTURING PERIOD.(DAYS)
3. PERIOD TO TRANSPORT MATERIAL TO DESTINATION.(DAYS)

MATERIAL NO.	1.(PERIOD)	2.(PERIOD)	3.(PERIOD)
.....
.....
.....
.....
.....
.....

INDICATE THE PERCENTAGE (%) OF THE PRICE THAT IS SUBJECT TO THE VARIABLE COPPER FEE: -----%.

DATE:

SIGNATURE OF TENDERER(S):



DIGITAL TRANSMISSION ANALYSER

SPECIFICATION FOR HANDHELD, LIGHTWEIGHT, STM-1, ETHERNET AND 2 Mbit/s ANALYSER WITH DATACOMMUNICATION FOR FIELD USE

SPC-00576
OCTOBER 2008

Revision 2.00

NON-DISCLOSURE OF INFORMATION

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DOCUMENT AUTHORISATION

FUNCTION	NAME	TITLE & DIVISION	SIGNATURE	DATE
Compiled by :	Garnet Nel	Technologist	<i>Signed</i> <i>BG Nel</i>	11-Nov-08
Reviewed by :	Errol Pagel	Senior Eng	<i>Signed</i> <i>E Pagel</i>	11-Nov-08
Reviewed by :	Eric van der Merve	Transmission	<i>Signed</i> <i>E van der Merve</i>	11-Nov-08
Authorised by :	Mike Nuttall	Transmission	<i>Signed</i> <i>M Nuttall</i>	11-Nov-08

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.

DOCUMENT CHANGE HISTORY

ISSUE NO.	DATE ISSUED	ISSUED BY	HISTORY DESCRIPTION
1.00	January 2002	BG Nel	New document
2.00	October 2008	BG Nel	Updated specification: a) Spec name change. b) Add clause 6.2.7 G.707 (STM-1) c) Add clause 6.2.8 IEEE 802.3 (10/100BT) Ethernet

CHANGES SINCE LAST REVISION

CLAUSE	DESCRIPTION
All	Converted to ISO format

ABBREVIATIONS, ACRONYMS AND DEFINITIONS

ABBREVIATIONS AND ACRONYMS	DESCRIPTION
AC	Alternating Current
BNC	Bayonet Neill Concelman
DCE	Data Communications Equipment
DTE	Data Terminal Equipment
FAS	Frame Alignment Signal
ITU-T	International Telecommunication Union Telecom. Standard Sector
MFAS	Multi-Frame Alignment Signal
NFAS	Not-Frame Alignment Signal
DEFINITIONS	
None	

RELEVANT DOCUMENTATION**APPLICABLE**

DOCUMENT NO.	DESCRIPTION
None	

RELEVANT

DOCUMENT NO.	DESCRIPTION
SPC-00003	Training of TFR Personnel on New Equipment

1. SCOPE

- 1.1 This specification covers the requirements for a portable digital transmission analyser with datacommunication capabilities for field service use, designed to ITU-T recommendations to perform at speeds from 50 bits/second to **155 Mbits/s**.
- 1.2 The instrument shall feature a built-in keyboard for entry of set-up parameters.

2. COMPLIANCE

Tenderers must have a unit available for evaluation if it is requested.

- 2.1 Tenderers must indicate clause-by-clause how their offer complies or does not comply with this specification.
- 2.1.1 A broad statement to the effect that the equipment is in accordance with this specification is not acceptable.
- 2.2 Tenderers must submit their main offers in terms of this specification.
- 2.3 Offers, which include minor deviations from this specification, will be considered at the discretion of Transnet Freight Rail. The tenderer must provide detail of such minor deviation(s) from this specification.
- 2.4 Tenderers may submit alternative offers for equipment considered by them to be equal to or better than that called for in this specification.
- 2.4.1 Such alternative offers must be accompanied by a comprehensive explanation supporting the tenderer's claim regarding the suitability of the equipment.
- 2.4.2 Such alternative offers will be considered at the discretion of Transnet Freight Rail.
- 2.5 Failure to comply with the above requirements may preclude a tender from consideration.

3. TRAINING

- 3.1 An integrated program of formal classroom training and practical hands-on instructions shall be provided to TFR's personnel on the operation and maintenance of the equipment.
- 3.2 **Training Objectives**
- 3.2.1 The training program is intended to accomplish the following fundamental objectives :

3.2.1.1 To perform all operational functions provided by the offered equipment :

- (a) To enable TFR's personnel to operate the equipment properly, and to perform all measurement and testing tasks required to maintain the equipment in proper operating conditions.
- (b) To enable Transnet Freight Rail's personnel to undertake any reconfiguration or software upgrades in the future.

3.2.1.2 Training program

- (a) To achieve these objectives the Tenderer shall propose a training program, preferably at Transnet Freight Rail's premises.
- (b) All training courses shall be conducted in the English language.
- (c) Training material and manuals shall be provided to the trainees.
- (d) The Tenderer shall submit detail regarding the intended training program, indicating the duration of each training module.

3.2.1.3 The cost of training shall include the travelling and subsistence allowances of the instructor.

3.3 Tenderers must quote separately for Training, which must be conducted at the regional installation depots.

3.3.1 Cost per session.

3.3.2 Number of sessions.

3.3.3 Number of candidates that can be accommodated per session.

3.4 Training must comply with Transnet Freight Rail specification No. SPC-0003.

4. REPAIR, AFTER SALES SERVICES AND SPARES

4.1 The Tenderer shall provide repair services for any faulty equipment at the request of Transnet Freight Rail.

4.2 The Tenderer shall state the expected turn-around time for repairing of faulty equipment.

4.3 The Tenderer shall make available to TFR at no cost, swop-out units in the case of units being faulty during the warranty period. Tenders shall indicate the spares and swop-out units that are kept in South Africa.

- 4.4 The Tender shall provide full maintenance support in case of faults occurring up to the expiry of the guarantee period. The cost of this support shall be included in the price of the equipment and software offered.
- 4.5 After sales support expertise shall be available to assist in the following tasks (details of the support offered shall be given in the offer) :
- 4.5.1 Hardware and software upgrades.
 - 4.5.2 Handling of trouble reports.
 - 4.5.3 Requirements for new functions within the equipment.
 - 4.5.4 Assistance to the operation and maintenance staff in unusual fault situations.
- 4.6 The Tenderer shall indicate whether a remote diagnostics facility from the supplier's premises via a dial-up modem facility is available for the software-based equipment.

5. TECHNICAL INFORMATION

Tenderers must submit detailed descriptive literature, including illustrations and specifications accompanied by sufficient information to demonstrate how the equipment offered will meet the requirements of TFR.

6. TECHNICAL REQUIREMENTS

6.1 Overview

- 6.1.1 The instrument shall generate test data/patterns for transmission according to ITU-T specifications O151, O152 and O153.
- 6.1.2 The offered unit must do error measurements compliant to ITU-T standards specified in G.821, G.826, G.829 and M.2100.
- 6.1.3 The results must be extractable to a printer and Windows based software.
- 6.1.4 Power requirements. The unit must be powered from 220/250 volt AC via a battery charger/eliminator. The charger/eliminator must be supplied as part of the unit. Internal batteries shall be rechargeable batteries.

6.2 Interfaces

- 6.2.1 V24/V28 (RS232) : The unit must be able to :
 - 6.2.1.1 Accommodate synchronous and asynchronous protocols.

- 6.2.1.2 Be configured as a DTE or a DCE.
- 6.2.1.3 Configure the clock to house an external clock.
- 6.2.1.4 Support all control lines and force control lines to wanted conditions.
- 6.2.1.5 Support a minimum test rate of 38,4 kbps for asynchronous and 64 kbps for synchronous protocol.
- 6.2.1.6 Display status of interface on a panel.
- 6.2.2 V.11/X.21 : The unit must be able to :
 - 6.2.2.1 Configure this interface to be a DCE or a DTE.
 - 6.2.2.2 Support all control lines as specified in ITU-T V.11.
 - 6.2.2.3 Support a test rates from 300 bps to $n \times 64$ kbps where $n=1$ to 32.
 - 6.2.2.4 Display status of interface on a panel.
- 6.2.3 G.703 (2 Mbit/s) : The unit shall provide 2,048 Mbits/s 75 ohm BNC coaxial and 120 ohm connectors terminating on 4 mm sockets. The clock must be configurable as internal (variable from 1,5 Mbit/s to 2,5 Mbit/s), recovered received clock or external clock.
 - 6.2.3.1 The unit must house two G.703; 2 Mbit/s interfaces and shall be capable of drop and insert functionalities.
 - 6.2.3.2 The status of the interface must be displayed.
- 6.2.4 G.703 (2 Mbit/s) FRAMED : This interface must comply to the following :
 - 6.2.4.1 Terminate on a 75 ohm BNC coaxial connector and a 120 ohm 4 mm socket.
 - 6.2.4.2 The interface shall support framing of the 2 Mbit/s according to ITU-T G.704.
 - 6.2.4.3 The unit must allow for the customising of the FAS, MFAS and NFAS words of the 2 Mbit/s frame.
 - 6.2.4.4 The signalling content of all the timeslots for both 2 Mbit/s interfaces must be displayed simultaneously on a single display.
 - 6.2.4.5 The 2 Mbit/s interface must be configurable for a terminated, bridge and monitor measurement.

- 6.2.4.6 Cyclic Redundancy Check (CRC-4) must be configurable to be on or off.
- 6.2.4.7 The unit must support the measurement of slips.
- 6.2.4.8 The frequency of the incoming 2 Mbit/s stream must be displayed in real time. The maximum frequency variation must be shown as a maximum upper frequency and a maximum lower frequency.
- 6.2.5 The front panel set-up shall be stored in a non-volatile memory. The instrument shall return to its setting as it were before a mains interruption upon the restoration of the mains power.
- 6.2.6 Measuring periods. It shall be possible to select various measuring periods. The minimum requirements are 1 minute, 15 minutes, 1 hour, 24 hours, and continuous measurements.
- 6.2.7 G.707 (STM-1): The unit shall provide the following features:
- 6.2.7.1 Electrical and optical interfaces (1310nm & 1550nm)
 - 6.2.7.2 Selectable payload mappings, including: VC-4 bulk, VC-3 bulk, 34 Mbit/s and VC-12 bulk
 - 6.2.7.3 Monitor and manipulation of the following SDH overhead bytes: J0, E1, F1, D1-D12, K1, K2, S1, G1, J1, C2, F2, F3, K3, N1, N2
 - 6.2.7.4 Insertion of the following alarms & errors: RS-BIP (B1), MS-BIP (B2), HP-BIP (B3), MS-REI, HP-REI, LP-BIP-2, LP-REI, Bit Error, Code Error, LOF, OOF, MS-AIS, MS-RDI, AU-AIS, AU-LOP, LP-UNEQ.
 - 6.2.7.5 The unit must support measurement and generation of positive and negative high-order (AU) and low-order (TU) path pointer movements.
 - 6.2.7.6 The test equipment must provide the user with a means of measuring service disruption in order to evaluate Automatic Protection Switching
- 6.2.8 IEEE 802.3 (10/100BT) Ethernet:
- 6.2.8.1 Generate from 0.01% to 100% of full line rate traffic on 10/100BT network interfaces.
 - 6.2.8.2 Perform RFC2544 automated measurement

- 6.2.8.3 Accurately measures Ethernet throughput on Layer 1, 2 and 3 networks with VLAN support.
- 6.2.8.4 Selectable frame sizes from 64 to 1518 bytes.
- 6.2.8.5 Results to include: Throughput rate (with minimum 5kbps resolution), Frame Loss counter, Out of Sequence Frame counter, Inter-frame gap variation measurement (frame jitter).
- 6.2.8.6 Upgradeable to 100% full line rate 1000BT and GigE optical network interface.

6.3 **Frequency Counter**

The instrument shall be capable of measuring the transmit and receive clock rates for all PDH & SDH interfaces.

6.4 **Accessories**

- 6.4.1 The instrument shall be supplied as standard with a mains lead and Operator's handbook.
- 6.4.2 An optional soft-case shall be available to carry the main unit with space for interface cables.

7. **CONSTRUCTIONAL FEATURES**

- 7.1 The unit must be designed for easy maintenance with all components easily accessible.
- 7.2 The functions of all controls and switches must be clearly and permanently marked in English.
- 7.3 The unit must be compact and the tenderers must state the principal dimensions and mass of the equipment offered.

8. **GUARANTEE**

- 8.1 The tenderer shall guarantee that the equipment will give satisfactory service for a period of one year from the date of delivery to the various destinations indicated in the tender and to replace or repair with a minimum of delay and free of charge any components that may fail during this period, fair wear and tear excluded.
- 8.2 The tenderer shall guarantee the availability of spares and full repair facilities for a minimum period of four years after date of delivery.

9. PACKING, LABELLING AND DELIVERY

9.1 The successful tenderer must deliver the equipment to the :

Chief Executive
Room _____

9.2 The equipment must be well packed in shock-absorbing material in sturdy containers.

9.3 All packages shall be clearly labelled with the name and address of the consignee and contract numbers.

9.4 Tenderers must state clearly delivery terms, as this may be an important factor in the adjudication of the tender.

10. HANDBOOKS

10.1 One complete copy of the operating manuals shall be supplied with each unit.

10.2 The service, calibration and repair manuals shall be tendered as optional equipment.

END OF DOCUMENT