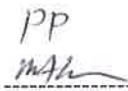






# RAIL NETWORK TELECOMMUNICATION

## SPECIFICATION BBF 2516 VERSION 4.00

### SPECIFICATION FOR UHF HANDHELD TRUNKED AND CONVENTIONAL RADIO

Author:	Manager Radio Rail Network Telecommunication Radio	G. A Daly	 -----
Reviewed:	Senior Engineer Rail Network Telecommunication Radio	M. Mmbengwa	 -----
Authorised:	Chief Engineer Rail Network Telecommunication	A. Matseke	 -----
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## Contents

I.	Document Authorisation .....	I
II.	Distribution .....	I
III.	Document Change History .....	I
IV.	Changes since Last Revision .....	I
V.	List of Abbreviations and Acronyms .....	II
VI.	Relevant Documentation Applicable.....	III
1.	INTRODUCTION .....	1
2.	SCOPE .....	1
3.	COMPLIANCE.....	1
4.	TENDER REQUIREMENTS .....	2
5.	TECHNICAL REQUIREMENT.....	3
6.	TRAINING .....	5

## I. Document Authorisation

<b>FUNCTION</b>	<b>NAME</b>	<b>TITLE &amp; DIVISION</b>		<b>DATE</b>
Reviewed By:	Freddie Visser	Frequency Spectrum Management Rail Network		
Reviewed By:	Chris Muller	Quality Assurance Rail Network		

## II. Distribution

Once updated, a copy of the latest revision will be published on the document management system, "Project Wise".

## III. Document Change History

<b>ISSUE NO.</b>	<b>DATE ISSUED</b>	<b>ISSUED BY</b>	<b>HISTORY DESCRIPTION</b>
1.00	October 2011	Robert Yates	New Document
2.00	November 2012	Graeme Daly	New Document
2.01	December 2012	Graeme Daly	Revised 5.17 & 5.18
2.02	May 2013	Graeme Daly	Signatory & Revision 4.1
3.00	June 2014	Graeme Daly	Revised Document
4.00	May 2015	Graeme Daly	Clause 3.4 & 3.5 - Changed wording Clause 5.12 – Removed

## IV. Changes since Last Revision

<b>CLAUSES</b>	<b>DESCRIPTION</b>
3.4	Changed clause
3.5	Changed and added clause
5.17 & 5.18	Channel Availability
5.2, & 5.3	Revised clauses
5.12	Removed

## V. List of Abbreviations and Acronyms

ABBREVIATIONS AND ACRONYMS	DESCRIPTION
AC	Alternating Current
Ah	Ampere hour
EC Amendment Act	Electronic Communications Amendment Act No.1 2014
BS	British Department of Trade and Industry Specification
dBm	Decibel relative to 1 milli watt
LED	Light Emitting Diode
M	Metre
Mm	Millimetre
MPT	Minister of Post and Telecommunication
PTT	Press – To - Talk
RBU	Radio Base Unit
RCU	Remote Control Unit
RF	Radio Frequency
RTO	Radio Train Order
Rx	Receive
TFR	Transnet Freight Rail
THD	Total Harmonic Distortion
Tx	Transmit
UHF	Ultra High Frequency
V	Volt
W	Watt
Char	Character
CTC	Central Train Control
CTCSS	Continuous Tone Code Squelch System
dB(A)	Sound pressure A-weighted
DC	Direct Current
GPS	Global Positioning System
ICASA	Independent Communication Authority of South Africa
ID	Identification
IP	International Protection
mW	Milli watt
RF	Radio Frequency
TCO	Train Controlling Officer
UHF	Ultra High Frequency
VCO	Voltage Control Oscillator
VSWR	Voltage Standing Wave Ratio
NTC	National Test Centre
RFQ	Request for quotation

## VI. Relevant Documentation Applicable

Where there is a conflict between the SPECIFICATION and SCHEDULE OF REQUIREMENT DOCUMENT, the SCHEDULE OF REQUIREMENT DOCUMENT takes precedence.

The equipment must comply with the latest issue of the following applicable specifications:

DOCUMENT NO.	DESCRIPTION	LOCATION
ISO 9000	Quality Management Systems.	External
ETSI EN 300 086	European Telecommunication Standards for Radios.	External
GG 3736	Electronic Communications Amendment Act No.1 2014	External
BS 3939	British Department of Trade and Industry Specification:	External
MPT 1317	Code of Practice for Transmission of Digital Information over Land Mobile Radio Systems.	External
MPT 1327	A signalling Standard for Trunked Private Mobile Radio Systems	External
MPT 1343	System Interface Specification for Radio Units to be used with Commercial Trunked Networks.	External
BBD 8635 Version 8 27 June 2014	Technical specifications and methods of measurement for angle modulated equipment.	Internal
IP 54	Dust protected. Protected against splashing of water.	External
IP 55	Dust protected. Protected against water jets.	External
IP 57	Dust protected. Protected against the effect of immersion between 15 cm and 1 m.	External
IP 67	Totally protected against dust. Protected against the effect of immersion between 15 cm and 1 m.	External

## 1. INTRODUCTION

Transnet utilise UHF Handheld - Trunked and Conventional radio equipment, to control train shunting movements, communicate with train control officers, flagmen, shipping and harbours operations, etc.

## 2. SCOPE

- 2.1. This specification is for the supply of the above radio equipment and accessories as per attached Schedule of Requirements. **(Appendix A)**.
- 2.2. This specification will provide Bill of Quantities and Cost Schedule, as per attached. **(Appendix B & C)**
- 2.3. It is envisaged that equipment for this enquiry will be ordered and supplied to Transnet Freight Rail's nominated address. **(Appendix D & E)**.
- 2.4. This specification BBF2516 must be read in conjunction with technical specification and method of measurement for angle modulated radio equipment BBD8635 version 8, dated 27 June 2014.

## 3. COMPLIANCE

Item	Description	Comply Y/N	Remarks
3.1.	Tenderers must comply with the clause-by-clause statement of the tender requirements provided below.  *Failure to comply will exclude Tenderers from consideration.		
3.2.	Alternative offers, will be considered at Transnet Freight Rail's discretion, provided that such offers provide equivalent functionality to what has been specified in this document. Separate compliance documents must be completed for each alternative offer. <b>(Appendix A- B &amp; C – D &amp; E)</b>  *Failure to comply will exclude Tenderers from consideration.		
3.3.	The successful bidder is obligated as per the Act to ensure Transnet is in possession of a valid frequency spectrum licence, for the Radio's to be supplied. A reference must be obtained from Transnet Frequency Spectrum Manager Mr Freddie Visser, at <a href="mailto:Freddie.Visser@Transnet.net">Freddie.Visser@Transnet.net</a> or at 011 583 0125 prior to the delivery.  *Failing to adhere to the above will result in the cancelation of this transaction and the matter will be reported to ICASA.		
3.4.	Only radio on the current approved list BBD 8208 version 5.3.2 dated the January 2015 will be considered for purchase. (Transnet internal Document)  The Software / Firmware submitted when the radio was first evaluated and approved will be the only acceptable version for use in Transnet for a period of one year. Any Software/Firmware changes should be submitted to SCS during tender submissions.  *Failure to comply will exclude Tenderers from consideration.		

Item	Description	Comply Y/N	Remarks
3.5.	The equipment offered must be ICASA equipment type approved and a certificate per model offered must be submitted.  *Failure to comply will exclude Tenderers from consideration.		
3.6.	Tenderers must provide a copy of their current ICASA Radio Dealer's certificate.  *Failure to comply will exclude Tenderers from consideration.		
3.7.	Radios will be required to be batch tested by Transnet NTC prior to delivery or shipment.  *Failure to comply will result in the termination of the order when radio equipment is delivered.		

#### 4. TENDER REQUIREMENTS

Item	Description	Comply Y/N	Remarks
4.1.	Tenderers shall submit a clause-by-clause statement of compliance for equipment / items offered on the attached Schedule of Requirements ( <b>Appendix A</b> ) in the columns provided.  *Failure to comply will exclude Tenderers from consideration.		
4.2.	Tenderers shall complete the attached Cost Schedule ( <b>Appendix B &amp; C</b> ) for equipment.  *Tenderers will be excluded from supplying any items not priced.		
4.3.	Tenderers shall complete the attached Delivery Schedule ( <b>Appendix D &amp; E</b> ) for equipment.  *Tenderers will be excluded from supplying if delivery dates are not included, as this will be a deciding factor.		

#### 5. TECHNICAL REQUIREMENT

Item	Description	Comply Y/N	Remarks
5.1.	Technical specifications for items offered must be submitted.  *Failure to comply will exclude Tenderers from consideration.		
5.2.	The <b>Receiver</b> loudspeaker must comply with a sound pressure level $\geq 84$ dB (A) at 300 mm. Refer to document BBD 8635 version, 8 dated 27 June 2014 for test method.		

Item	Description	Comply Y/N	Remarks
5.3.	The <b>Transmitter</b> deviation must be between 300 and 500 Hz from sound pressure level of 80 dB (A) at the microphone. Refer to document BBD 8635 version 8, dated 27 June 2014 for test method.		
5.4.	Radios must be capable of handling a frequency switching bandwidth of 15 MHz on both transmit and receive between channels with no degradation.		
5.5.	Radios must be programmable in the 400 – 470 MHz band without signal degradation or component or board changes - to be specified.		
5.6.	Radios must operate with 12, 5 kHz channel spacing.		
5.7.	The handheld radio RF output power must be software selectable between 1 and 4 watts, or to be specified.		
5.8.	In conventional mode, the handheld radio must have a minimum of 16 channels. (Can specify alternative number of channels)		
5.9.	The display on the radio must have a minimum of <b>twelve</b> alpha numeric characters.		
5.10.	It must be possible to assign an alpha – numeric label to each conventional channel.		
5.11.	Radios must be IP54 compliant or better.		
5.12.	Battery capacity to be declared in mAh.		
5.13.	Battery chemical composition to be provided.		
5.14.	Battery Model number must be provided.		
5.15.	Radio key pad must have a lock - out facility after a channel has been selected.		
5.16.	Rotary channel selector switch must be able to be disabled with software.		

Item	Description	Comply Y/N	Remarks
5.17.	Birth date of radio. (when was it released into the market)		
5.18.	Date expected to be withdrawn, superseded or replaced from the market. (Manufacture official letter to be provided)		
5.19.	Warranty period, exceptions, terms and conditions to be indicated.		
5.20.	Warranty period of radio to be indicated.		
5.21.	Warranty turn – around time for repairs to be specified in working days.		
5.22.	Supplier must prove that warranty repairs and technical support can be carried out on its own premises.		
5.23.	Spares and technical support must be readily available locally for a period of at least seven years from date of purchase.		
5.24.	All equipment returned from repairs must be fully aligned to meet the specification of compliance. Certification must be issued and random batch testing will be performed.		
5.25.	Service manuals must be in English and available on CD-ROM.		
5.26.	Programming software must be on CD-ROM.		
5.27.	Programming software must be Microsoft Windows 7 compatible.		
5.28.	The selection between Trunked and Conventional modes must be easily selectable.		
5.29.	Trunked handheld radio must operate in accordance with MPT 1327 and MPT 1343 standards.		
5.30.	Trunked radio handheld must have a User Selectable inclusive and exclusive Group call facility catering for 100 Groups.		

**6. TRAINING**

Item	Description	Comply Y/N	Remarks
6.1.	Tenderers must be in a position to provide training on all products offered, country wide.		
6.2.	Training required on products will be indicated in the schedule of requirements.		

**END OF DOCUMENT**