



RAIL NETWORK TELECOMMUNICATION

SPECIFICATION BBF 2516 VERSION 5.00

SPECIFICATION FOR UHF HANDHELD TRUNKED AND CONVENTIONAL RADIO

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I. Document Authorisation

FUNCTION	NAME	TITLE & DIVISION		DATE
Reviewed By:	Freddie Visser	Frequency Spectrum Management Rail Network		25 June 2018
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II. Distribution

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

III. Document Change History

ISSUE NO.	DATE ISSUED	ISSUED BY	HISTORY DESCRIPTION
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
5.00	June 2018	Prem Naicker	Clause 3.6, 5.8, 5.11, 5.22 - Revised Clause 2.2-2.3, 3.1-3.2, 3.4, 4.1-4.3, 6.2 – Removed

IV. Changes since Last Revision

CLAUSES	DESCRIPTION
2.2, 2.3 3.1,3.2, 3.4, 4.1-4.3, 6.2	Clause removed
3.6, 5.8, 5.11, 5.22	Clause revised
2.3	Added clause

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.
- 2.2. This specification BBF2516 must be read in conjunction with technical specification and method of measurement for angle modulated radio equipment BBD8635 version 8.1, dated 27 June 2014.
- 2.3. Note this is the minimum specification required for radios in TFR. Depending on the radio application specifications may vary. Please refer to tender/RFQ documents which will take precedence over the minimum specifications required.

3. COMPLIANCE

Item	Description	Comply Y/N	Remarks
3.1.	<p>The successful bidder is obligated as per the Act to ensure Transnet is in possession of a valid frequency spectrum licence, for the Radios to be supplied. A reference must be obtained from Transnet Frequency Spectrum Manager Mr Freddie Visser, at Freddie.Visser@Transnet.net or at 011-774 8213 prior to the delivery.</p> <p>*Failing to adhere to the above will result in the cancelation of this transaction and the matter will be reported to ICASA.</p>		
3.2.	<p>The equipment offered must be ICASA equipment type approved and a certificate per model offered must be submitted.</p> <p>*Failure to comply will exclude Tenderers from consideration.</p>		
3.3.	<p>Tenderers must provide a valid copy of their current ICASA Radio Dealer's certificate.</p> <p>*Failure to comply will exclude Tenderers from consideration.</p>		
3.4.	<p>Radios will be required to be batch tested by Transnet NTC prior to delivery or shipment.</p> <p>*Failure to comply will result in the termination of the order when radio equipment is delivered.</p>		

4. TECHNICAL REQUIREMENT

Item	Description	Comply Y/N	Remarks
4.1.	Technical specifications (datasheets) for items offered must be submitted. *Failure to comply will exclude Tenderers from consideration.		
4.2.	The Receiver loudspeaker must comply with a sound pressure level ≥ 84 dB (A) at 300 mm. Refer to document BBD 8635 version, 8 dated 27 June 2014 for test method.		
4.3.	The Transmitter 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.		
4.4.	Radios must be capable of handling a frequency switching bandwidth of 15 MHz on both transmit and receive between channels with no degradation.		
4.5.	Radios must be programmable in the 400 – 470 MHz band without signal degradation or component or board changes - to be specified.		
4.6.	Radios must operate with 12, 5 kHz channel spacing.		
4.7.	The handheld radio RF output power must be software selectable between 1 and 4 Watts, or to be specified by manufacturer.		
4.8.	In conventional mode, the handheld radio must have a minimum of 100 channels.		
4.9.	The radio must be equipped with a digital display. The display on the radio must have a minimum of twelve alpha numeric characters.		
4.10.	It must be possible to assign an alpha – numeric label to each conventional channel.		
4.11.	Radios must be IP67 compliant or better.		
4.12.	Battery capacity to be declared in mAh.		
Item	Description	Comply Y/N	Remarks
4.13.	Battery chemical composition to be provided.		
4.14.	Battery Model number must be provided.		
4.15.	Radio must have a full keypad. Radio key pad must have a lock - out facility after a channel has been selected.		
4.16.	Rotary channel selector (if available) switch must be able to be disabled with software.		
4.17.	Birth date of radio. (when was it released into the market)		
4.18.	Date expected to be withdrawn, superseded or replaced from the market. (Manufacturer official letter to be provided)		
4.19.	Warranty period, exceptions, terms and conditions to be indicated.		
4.20.	Warranty period of radio to be indicated.		
4.21.	Warranty turn – around time for repairs to be specified in working days.		

4.22.	Supplier must prove that warranty repairs and technical support can be carried out on its own premises. (official letter to be provided by manufacturer of radio)		
4.23.	Spares and technical support must be readily available locally for a period of at least seven years from date of purchase.		
4.24.	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.		
4.25.	Service manuals must be in English and available on CD-ROM.		
4.26.	Programming software must be on CD-ROM.		
4.27.	Programming software must be Microsoft Windows 7 compatible.		
Item	Description	Comply Y/N	Remarks
4.28.	The selection between Trunked and Conventional modes must be easily selectable.		
4.29.	Trunked handheld radio must operate in accordance with MPT 1327 and MPT 1343 standards.		
4.30.	Trunked radio handheld must have a User Selectable inclusive and exclusive Group call facility catering for 100 Groups.		

5. TRAINING

Item	Description	Comply Y/N	Remarks
5.1.	Tenderers must be in a position to provide training on all products offered, country wide if required.		

END OF DOCUMENT