



RAIL NETWORK TELECOMMUNICATION

SPECIFICATION BBG 1946 VERSION 4.00

SPECIFICATION FOR UHF HANDHELD CONVENTIONAL RADIO

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Telecommunication Radio

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Date

25 June 2018

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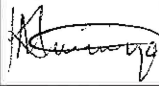
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I. Document Authorisation

FUNCTION	NAME	TITLE & DIVISION		DATE
Reviewed By:	Freddie Visser	Frequency Spectrum Management Rail Network		25 June 2018
Reviewed By:	Khunjulwa Mniniyo	Quality Assurance Rail Network		25 June 2018

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	21 May 2014	Graeme Daly	New Document
2.00	6 June 2014	Graeme Daly	Clause 3.5, 3.9 & 5.9
3.00	5 May 2015	Graeme Daly	Clause 3.4 & 3.5 - Changed wording Clause 5.12 – Removed
4.00	25 June 2018	Prem Naicker	Clause 2.2, 2.3 3.1,3.2, 3.4 ,4.1-4.3, 6.2 removed Clause 3.6, 5.8, 4.11, 5.22 – Revised Clause 2.3 - Added

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, 4.11, 5.22	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
dBm	Decibel relative to 1 milli Watt
ICASA	Independent Communication Authority of South Africa
LED	Light Emitting Diode
m	Metre
cm	Centimetres
mm	Millimetre
PTT	Press – to - Talk
RBU	Radio Base Unit
RCU	Remote Control Unit
RF	Radio Frequency
RTO	Radio Train Order
Rx	Receive
TCO	Train Control Officer
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
mW	Milliwatt
RF	Radio Frequency
TCO	Train controlling officer
UHF	Ultra High Frequency
VCO	Voltage Control Oscillator
VSWR	Voltage Standing Wave Ratio
NTC	National Test Centre (Radio)
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
BBD 8635 Version 8 22 May 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 conventional radio equipment to control trains, 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 BBG1946 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.	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 Freddie.Visser@Transnet.net or on 011 774 8213 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.		
3.2.	The equipment offered must be ICASA equipment type approved, certificates per model offered must be submitted. *Failure to comply will exclude Tenderers from consideration.		
3.3.	Tenderers must provide a valid copy of their current ICASA Radio dealer's certificate. *Failure to comply will exclude Tenderers from consideration.		
3.4.	Radio 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. TECHNICAL REQUIREMENTS

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.	Radio 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.		
4.8.	Conventional handheld radio must have a minimum of 100 channels.		
4.9.	The radio must have a 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 keypad. Radio key pad must have a lock - out facility after a channel has been selected.		
4.16.	Rotary channel selector switch (if equipped) 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. (official letter to be provided by Manufacturer)		
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.		

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