

# **ANNEXURE A**

## **TECHNICAL SPECIFICATIONS**

# **RUSTENBURG MUNICIPALITY**

## **STANDARD TECHNICAL SPECIFICATION: G-044/DIGITAL**

### **DIGITAL TWO-WAY RADIO EQUIPMENT**

#### **1. GENERAL**

This specification is for Digital two-way radio equipment.

Service conditions:

Maximum temperature	:	40° C
Minimum temperature	:	-5° C
Altitude	:	1200 m above sea level
Lightning conditions	:	Severe

Compulsory Standards

All equipment offered must comply with the relevant provisions of the following standards or amended.

SABS 1069.

SABS 106 as approved for use in South Africa by ICASA.

EIA Standard RS-204.

ETS Specifications

DMR (Tier 2) ETSI- TS 102 361-,2,3 standard

The equipment offered shall be constructed of materials suitable for robust use and shall be of the use in an open standard communication system.

#### **2. DIGITAL VHF HANDHELD RADIOS**

Radios shall be used to communicate in Rustenburg and for operation in the outlying areas within the Repeater communication radius.

Radios shall be SANS approved with ICASA Certification

All radios shall be of the VHF band multi-channel type.

The channel spacing shall be 12.5 kHz.

All radios shall be completely supplied with antenna, battery, belt clip and desktop charger.

All radios shall consist of a minimum of 4-channel capacity.

The RF output must be at least 5 Watt.

All radios shall be micro processor controlled.

VHF Handheld Radio Frequencies:

DUPLEX:

The VHF radios shall be programmed on the following frequencies:

Channel 1: Rx = 157,950MHz; Tx = 162,950 MHz

Channel 2: Rx = 158,000MHz; Tx = 163,000 MHz

Channel 3: Rx & Tx = 156,825 MHz

2.4 VHF Handheld Radio Frequencies:

SIMPLEX:

The VHF radios shall be programmed on the following frequency:

Channel 1 : Rx & Tx = 156,825 MHz

Channel 2 : Rx & Tx = 156,825 MHz

Channel 3 : Rx & Tx = 156,825 MHz

2.5 UHF Handheld Radios:

The UHF radios shall be programmed on the following frequency:

Rx & Tx = 453.225 MHz

### **3 DIGITAL VHF MOBILE RADIOS**

3.1 Radios shall be used to communicate in Rustenburg and for operation in the outlying areas within the Repeater communication radius.

All digital Radios shall be capable to be used in conjunction with existing analog system and shall be capable to use in an open standard communication system.

Radios shall be SANS approved with ICASA Certification

3.2 All radios shall be of the VHF band multi-channel type.

- 3.3 The channel spacing shall be 12.5 kHz.
- 3.4 All radios shall be for under dash mounting
- 3.5 All radios shall be supplied with microphone, antenna, power cable and mounting bracket.
- 3.6 The mobile radio installation price must include installation in vehicles and all installation material if requested.
- 3.7 The radio shall be equipped for either CTCSS or 5-tone ZVEI or EEA encoding/decoding or both simultaneously without the need to later add PC boards or modules.
- 3.8 Mobile antennas shall be quarter wave with shock springs.
- 3.9 The radio shall be fitted with over voltage and reverse voltage protection. Bidders shall explain the method of protection in detail.
- 3.10 All radios shall be micro processor controlled.
- 3.11 VHF Mobile Radio Frequencies:

The VHF Mobile radios shall be programmed on the following frequencies:

Channel 1: Rx157,950MHz; Tx 162,950 MHz  
Channel 2: Rx158,000MHz; Tx 163,000 MHz

#### **4 DIGITAL REPEATERS - VHF**

- 4.1 The Repeater shall be used for communication in Rustenburg and outlying areas within the Repeater communication radius.
- 4.2 Repeater shall be capable to be used in conjunction with existing analog system and shall be capable to use in an open standard communication system.
- 4.3 The Repeater shall be of the VHF band multi-channel type.
- 4.4 The channel spacing shall be 12.5 kHz.
- 4.5 The Repeater must be fitted in an IP 65, 19-inch rack mount enclosure, including a duplexer, a rack mount 15 Ampere power supply - 220 Volt to

13.8 Volts with battery reverting facility and a low maintenance 12Volt battery.

4.6 The following shall also be completely supplied:

- 4.7     a) 1 x 3 dB gain collinear antenna with mounting bracket.
- b) All antenna connectors (N –Type) and
- c) 30 meters of coax ional cable to minimum specification LMR 400 or equivalent.
- 4.8     The Repeater shall be programmed to select 2-channels.
- 4.9     The RF output must be at least 30 Watt.
- 4.10    The Repeater shall be micro processor controlled.
- 4.11    Digital VHF Repeater:

**NOTE: ANY DEVIATION FROM THE BOVE-MENTIONED SHALL BE ACCOMPANIED BY A SPECIFICATION AND FACTUAL REASON.**

The Digital VHF Repeater shall be programmed on the following frequencies:

Channel 1: Rx 157,950 MHz and Tx 162,950 MHz (Repeater)

Channel 2: Rx 158,000 MHz and Tx 163,000 MHz (Repeater)

## **5. WARRANTY**

The equipment offered shall be warranted free from defects in workmanship and materials for a period of at least twelve (12) months from date of final commissioning. Any failures shall be repaired, or the equipment replaced at the bidder's expense during the warranty period.

## **6. CERTIFICATES**

Bidders **must** submit SANS, BS and IEC certificates of the radio equipment offered. A valid Frequency Spectrum License and/or Radio Station License or Radio Dealer License issued in terms of the Electronic Communications Act, 2005 (Act number 36 of 2005) and the Radio Regulations currently in force, shall be submitted with the Bid. Failure to do so will invalid the bid.

## **7. GENERAL**

Only new manufactured radios will be accepted. Reconditioned or second-hand radios are unacceptable to the Rustenburg Local Municipality.

## **9. MAINTENANCE MANUAL**

A maintenance manual or guideline **must** be submitted to ensure sound maintenance on products.

## **10. SUPPLIERS**

If the bidder is not the manufacturer, it is the responsibility of the bidder to ensure that he has a credit agreement as well as a after sales agreement with his supplier (Company) from which he will be sourcing the product.

## **11 AFTER SALE SERVICE**

The bidder shall supply all details regarding their after-sale service on the equipment offered.

## **12 SAMPLES**

No Samples are required. Delivery of substandard material or equipment will result in no approval of payment and the return of the product offered. The Bid Evaluation committee might require samples from the shortlisted bidders for technical evaluation before recommendation.

## **13 ALTERNATIVE OFFERS**

No Alternative offers on specifications of material will be considered.

## **14 LOCAL CONTENT**

Local Content on material or products will be in accordance with the Department Trade and Industry where applicable.

Local content does not refer the base address in area of jurisdiction of suppliers.

## **15 PRICE ESCALATION CLAUSE**

The tender appointment prices shall be the ordering prices after adjudication and Contract Price Adjustment shall be clearly defined such as SEIFSA indices, CPI, ROE, Foreign Currency Components such as rates on which tender is based, Custom duties percentage, forward cover and the relevant clauses must find expression in the tender submitted.

SEIFSA indices, CPI, ROE, Foreign Currency Components such as rates on which tender is based, Custom duties percentage, forward cover and the relevant clauses shall be included then in the Service level agreement when adjudication is successful.

All quantities will be verified after adjudication, Quantities may differ after adjudication on purchase orders.

## **15 CANCELATION CLAUSE**

The delivery of substandard material or equipment or refrain from supplying it within the required timeframe will result in cancelation of the contract and the second highest scorer will be appointed.

END OF SPECIFICATION

## UNIT: ELECTRICAL ENGINEERING SERVICES

### ANNEXURE A TECHNICAL INFORMATION

Must be completed by bidder

<b>DIGITALHANDHELDS:</b>	
<b>VHF</b>	
<b>GENERAL:</b>	
COMPLY TO DMR (TIER 2) ETSI-TS 102 361-1,2,3 STANDARD	YES /NO
MAKE	
MODEL	
FREQUENCY RANGE	
STABILITY	
CHANNELS	
BANDWIDTH	
OPERATING VOLTAGE	
CHANNEL SPACING	
<b>RECEIVER:</b>	
SQUELCH SENSITIVITY	
SELECTIVITY	
SPURIOUS ATTENUATION	
INTERMODULATION	
HUM & NOISE	
AF POWER	
HARMONIC DISTORTION	
<b>TRANSMITTER:</b>	
RF OUTPUT POWER	
SPURIOUS ATTENUATION	
HUM & NOISE	
AF HARMONIC DISTORTION	
DUTY CYCLE	
<b>ANTENNA:</b>	
TYPE	
GAIN	
CONNECTORS TYPE	
<b>DC SUPPLY:</b>	
BATTERY TYPE	
MAKE	
MODEL	
AMPERE-HOURS	
DC VOLTAGE	



## UNIT: ELECTRICAL ENGINEERING SERVICES

### ANNEXURE B

#### TECHNICAL INFORMATION

Must be completed by bidder

<b>DIGITAL MOBILES: VHF</b>	
<b>GENERAL:</b>	
COMPLY TO DMR (TIER 2) ETSI-TS 102 361-1,2,3 STANDARD	YES /NO
MAKE	
MODEL	
FREQUENCY RANGE	
STABILITY	
CHANNELS	
BANDWIDTH	
OPERATING VOLTAGE	
CHANNEL SPACING	
<b>RECEIVER:</b>	
SQUELCH SENSITIVITY	
SELECTIVITY	
SPURIOUS ATTENUATION	
INTERMODULATION	
HUM & NOISE	
AF POWER	
HARMONIC DISTORTION	
<b>TRANSMITTER:</b>	
RF OUTPUT POWER	
SPURIOUS ATTENUATION	
HUM & NOISE	
AF HARMONIC DISTORTION	
DUTY CYCLE	
<b>ANTENNA:</b>	
TYPE	
GAIN	
CONNECTORS TYPE	
<b>DC SUPPLY:</b>	
BATTERY TYPE	
MAKE	
MODEL	
AMPERE-HOURS	
DC VOLTAGE	

**ANNEXURE C**  
**TECHNICAL INFORMATION**  
Must be completed by bidder

<b>REPEATERS:</b>	<b>VHF</b>
<b>GENERAL:</b>	
MAKE	
MODEL	
FREQUENCY RANGE	
STABILITY	
CHANNELS	
BANDWIDTH	
OPERATING VOLTAGE	
CHANNEL SPACING	
<b>RECEIVER:</b>	
SQUELCH SENSITIVITY	
SELECTIVITY	
SPURIOUS ATTENUATION	
INTERMODULATION	
HUM & NOISE	
AF POWER	
HARMONIC DISTORTION	
<b>TRANSMITTER:</b>	
RF OUTPUT POWER	
SPURIOUS ATTENUATION	
HUM & NOISE	
AF HARMONIC DISTORTION	
DUTY CYCLE	
<b>ANTENNA:</b>	
TYPE	
GAIN	
CONNECTORS TYPE	
<b>DC SUPPLY:</b>	
BATTERY TYPE	
MAKE	
MODEL	
AMPERE-HOURS	
DC VOLTAGE	