ANNEXURE A

SPECIFICATION DIRECTION FINDING

Briefing Session

There will be non-compulsory briefing session.

Evaluation of the Bids

The bid will be advertised for a period of 21 calendar days in the ICASA website and e-Tender portal, on an 80/20 procurement principle.

Bidders will be evaluated on; a) Mandatory requirements, b) specific goals. Only bidders who meet all the mandatory requirements will be considered further for price evaluation. All bid proposals submitted will be evaluated in accordance with the 80/20 procurement principle.

Mandatory Requirements per Category	**Yes**	**No**
1. The bidder shall provide proof for online support portal, real time user support on 24-hour basis in the form of Uniform Resource Locator (URL) or website, for the duration of the SLA.		
2. The bidder shall provide proof of a traceable track record with calibration laboratories and OEM`s, where the bidder has a history with supplying and ensuring due compliance with the applicable repair standards for similar instruments and/or devices. Letters of validation and verification within the last five (5) years.		
3. Written warranties and/ or guarantees will apply to the OEM specifications and terms and conditions. Equipment to be procured should be covered for a minimum of 1 year of any manufacturing defects/ failure. The service provider must guarantee the availability of spares for 5 years after the procurement of the equipment. After sale service support for the period of 5 years is required.		

Evaluation Criteria	Weight	Rate	Score
1. The bidder shall provide proof of conformity with all the technical specifications as stipulated in Annexure A. • 5 = met all requirements as per Annexure A • 1= all requirements not met	**50**		
2. Provide at least one (1) reference in an official company letterhead, not older than five years where such products were successfully deployed by you. • 5 = provided more than one reference. • 3 = provided one reference. • 1= No references provided.	**20**		
3. Training plan for 18 persons which shall cover the functionality of the units with practical hands-on sessions. The training shall be done on the actual units being supplied under this procurement process. Training plan must contain the following: a. Training sessions must be conducted in Gauteng Province. b. Training plan must be presented for a duration of a week. c. Training schedule must clearly provide topics that will be covered during the training. d. Practical hands-on session to be provided. • 5 = training plan meets all conditions above.	**30**		

• 4 = training plan meets three conditions above. • 3 = training plan meets two conditions above. • 2 = training plan meets one condition above • 1= No training plan provided.			
Total **(Minimum Cut-Off Points 70)**	**100**		

DETAILED SPECIFICATIONS

Annexure A: Technical Specification

Background

The Authority is mandated to locate sources of interference. The Authority requires specialised vehicle mounted re-deployable Direction-Finding devices capable finding radio frequency emissions from 100MHz up to 8 GHz. The Authority requires re-deployable, vehicle mounted devices so that ICASA teams are not required to leave the vehicle to trace a signal. This due to Covid-19 risks and security of staff in the field. Due to budgetary constraints the units need to be easily re-deployable to other vehicles when the need arises. Most interference cases reported to the Authority are in the 100 MHz to 8 GHz ranges.

1. General Specification

1.1. The equipment must come with ruggedized transportable casing.
1.2. Ruggedized portable receiver device
1.3. Dimensions of Receiver are not to exceed 40 cmx 40cm x 25cm. Bidder to state the size and weight in the offer.
1.4. Operating Temperature Range: 0°C to + 45°C.
1.5. Operating Humidity 10% - 90% @ 30°C non-condensing

1.6. EMC Standards
1.6.1.1. IEC 61000-4-2,3,4,5,6,11 or equivalent
1.6.2. Safety
1.6.2.1. IEC 610101: 2001 or equivalent

2. DF Receiver / Analyser that is compatible with DF unit and Antenna

2.1. Receiver Frequency range:100 MHz – 8GHz No gaps
2.2. RF input 50 Ω N-Type or SMA connector or suitable connector adaptor supplied to connect to SMA or N-Type
2.3. Full Spectrum and Spectrogram and Real time analysis display on integral colour screen.
2.3.1. Real time analysis specifications
2.3.2. At least 40MHz Real- Time Bandwidth
2.3.3. Integrated Screen requirements
2.3.3.1. TFT/LCD/OLED or similar Integrated Colour display
2.3.3.2. Intensity and contrast adjustment required
2.3.3.3. Display size must be at least 120mm measure diagonally across

2.4. Panorama Scan. High speed FFT scan across user selectable scan range
2.5. Field strength measurement to be on display and in dBuV/m.
2.6. Average, min hold and max hold analysis.
2.7. IF spectrum display ranges from 1kHz to 40 MHz
2.8. Demodulation modes to include AM, FM, PULSE, I/Q, LSB, ISB and CW.
2.9. Demodulation Bandwidths of 150/300/600Hz and 1/2/5/10/20/50/100/200/500 kHz is required
2.10. User selectable input attenuation up to 30 dB, in steps of 1 dB

2.11.	The demodulation of audio to be selectable from internal speaker and supplied headphones. (selectable)
2.12.	Weight of each receiver unit must not exceed 4kg
2.13.	Internal storage for recording of measurement data is required
2.14.	Battery life better that 2 Hours on full charge
2.15.	12V Vehicle charger /Adapter must be provided for each receiver unit supplied
2.16.	Integrated GPS with External antenna connection
2.17.	Soft carry case for each receiver to be provided.
3.	**Vehicle mounted Direction Finder Unit and Antenna:**
3.1.	Re-deployable, Roof-Mounted, Direction Finding Antenna system without the need for re-calibration.
3.2.	**Roof Mounted DF Antenna range 100 MHz – 8 GHz**
3.3.	Bidder to state if antenna array is provided in a single or multiple units
3.4.	Correlative Interferometer or Watson-Watt method of Direction Finding
3.5.	Better than 2º accuracy over entire frequency range
3.6.	DF sensitivity, better than 10uV/m over entire frequency range
3.7.	Pulse detection – better than 20 ms pulse duration detection.
3.8.	Digital compass is required
4.	**Software requirements**
4.1.	Direction Finding software must be compatible with the latest Windows Operating System.
4.2.	Radio Direction Finder (RDF) system must be usable with Open Source Maps
4.3.	PC/ Laptop must be able to control the receiver and DF unit via LAN TCP/ IP 10BaseT Interface.
4.4.	2 (off) x 2m LAN cables to be provided
4.5.	**Software must perform at least the following functions**;
4.5.1.	Line of bearing (LOB)
4.5.2.	LOB on Map overlay
4.5.3.	Geographic North or vehicle direction indication
4.5.4.	Recording of audio signals
4.5.5.	Prediction of signal source based on multiple LOBs using a heat map or similar display
4.5.6.	Recording of measured data and report generator
4.5.7.	Field strength directly in dBuV/m (antenna factor data must be

provided)

4.5.8. Recording and displaying GPS data

4.5.9. Recording and displaying Electronic compass data

5. Setting up, Training and Support

5.1. The supplier will be required to provide a complete solution in a single bid.

5.2. The supplier will be responsible for the satisfactory testing and commissioning of all equipment and software provided under the contract.

5.3. Training at a centralised location for 18 persons on the use of and application of the complete DF unit and associated software.

5.4. After-sales support should be provided for and be clearly indicated in the bid document.

5.5. The Supplier shall guarantee the operability of the equipment (i.e. both hardware and software – through necessary upgrades), for a period not less than 5 (five) years.

6. Service and Calibration

6.1. Bidders shall indicate:

6.1.1. The extent and location of service facilities for the equipment offered.

6.1.2. The extent and location of calibration facilities for the equipment offered

6.1.3. The calibration interval required on the instrument and associated accessories

6.1.4. The extent, limitations, conditions and projected cost of extended warrantees available on the equipment

7. Testing of the equipment

This is only applicable to the successful service provider, i.e. final acceptance: Testing must be done after the supply of (9) re-deployable vehicle-mounted Radio Direction Finding (RDF) units. Final acceptance will include testing functionality of the devices and will be done in accordance with the standard test procedures and representatives of ICASA and the bidder will sign all acceptance forms**.**

- **Delivery Details**

To be Delivered to ICASA REGIONS DIVISION

Attention: Sphesihle Zungu, Divisional Assistant Regions +27 12 568 3803

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