



## **Independent Communications Authority of South Africa**

Pinmill Farm, 164 Katherine Street, Sandton  
Private Bag X10002, Sandton, 2146

### **Specifications** **CONFIGURATION REQUIREMENT**

#### **1. Purpose of the Bid**

- 1.1. The Independent Communications Authority of South Africa (hereinafter referred to as "the Authority") intends to procure 9 (Nine) USB based Portable Real-time Spectrum Analysers which supports the Authority's Regional offices with enforcement and spectrum management functions.

#### **2. Description of the requirement**

- 2.1. The Authority currently has to perform investigation functions at remotely located sites and inaccessible areas. The Authority requires specialised USB based portable devices capable analysing radio frequency emissions up to 6 GHz.
- 2.2. This equipment is check compliance to radio frequency spectrum licenses and resolve harmful interference.
- 2.3. Real-time spectrum analyser means an analyser capable of sampling the incoming RF spectrum in the time domain and converting it into the frequency domain, using FFT processes so that no gaps exist in the calculated spectrum display and no information is missed.

#### **2. Technical specifications**

These technical specifications define the minimum acceptable performance characteristics in order to fulfil ICASA's bid requirements as set out in this document:

#### **4. Objectives of the Bid**

- 4.1. The scope of this specification is limited to the supply, and delivery of 9 (nine) USB based Portable Real-time Spectrum Analysers. This should include all accessories, measurement personalities, associated options and or firmware to provide a complete solution with or without the use of external



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equipment. Section 5 below details the hardware requirements of the equipment.

- 4.2. The Authority needs to check compliance to radio frequency spectrum licenses and resolve harmful interference in inaccessible areas as well as analyse, identify and detect hidden signals overlaid on each other.

### **4. Configuration requirements**

This section defines the configuration and functionality requirements which are imperative in order to fulfil the Spectrum Analyser requirements as set out in this document. Bidders are thus required to demonstrate how the under-mentioned will be achieved. Please provide a comprehensive analysis to these requirements, by indicating whether you comply or not.



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	Comply	Not Comply
<p><b>1. General Specifications</b></p> <ul style="list-style-type: none"> <li>• Ruggedized portable device</li> <li>• Less than 1Kg</li> <li>• Dimensions are not to exceed 5 cm (H) x 20 cm (w) x 15cm. – Bidder to state the size and weight in the offer.</li> <li>• Operating Temperature Range: 0°C to + 45°C.</li> <li>• Operating Humidity 10% - 90% @ 30°C non condensing</li> <li>• EMC Standards <ul style="list-style-type: none"> <li>○ Emission <ul style="list-style-type: none"> <li>▪ CISPR Pub 11 Group 1, class B, Group 1 limit of CISPR 11:203/EN 55011:2007</li> </ul> </li> <li>○ Immunity <ul style="list-style-type: none"> <li>▪ IEC 61000-4-2,3,4,5,6,11 or equivalent</li> </ul> </li> <li>○ Safety <ul style="list-style-type: none"> <li>▪ IEC 610101: 2001 or equivalent</li> </ul> </li> <li>○ Environmental <ul style="list-style-type: none"> <li>▪ MIL-PRF-28800F Class 2</li> </ul> </li> </ul> </li> </ul> <p><b>Substantiate</b>----- -----</p>		
<p><b>2. Hardware Specifications</b></p> <ul style="list-style-type: none"> <li>• Input impedance: 50Ω.</li> <li>• VSWR: ≤ 2.5 (f ≤ 1GHz) and &lt;2.0 (f &gt; 1GHz).</li> <li>• Maximum Input Power: +20dBm.</li> <li>• DC on RF input without damage 24 VDC minimum</li> <li>• SMA type connector</li> <li>• Audio output Via PC or device</li> </ul> <p><b>Substantiate</b>----- -----</p>		



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<b>3. Power Requirements</b> <ul style="list-style-type: none"> <li>• USB 3.0 interface power : Standard</li> </ul>		
<b>4. Frequency Requirements</b> <ul style="list-style-type: none"> <li>• Frequency Range : 9 kHz to 6 GHz (no gaps)</li> <li>• Reference frequency : Aging <math>\leq 5</math> ppm aging/ Yr</li> <li>• Temperature drift <math>\leq 30</math> ppm (<math>-5^{\circ}\text{C}</math> to <math>+40^{\circ}\text{C}</math>)</li> <li>• Frequency Span 10 kHz to 6 GHz</li> <li>• Real-time bandwidth 100Hz to 40 MHz</li> <li>• Centre Frequency resolution setting 1Hz</li> <li>• Phase noise : better than -70 dBc/Hz at 10 kHz from carrier @1GHz</li> </ul>		
<b>5. Amplitude requirements</b> <ul style="list-style-type: none"> <li>• DANL better than -130 dBm/Hz @ 1GHz</li> <li>• Spurious response better than -70 dBm</li> <li>• 3<sup>rd</sup> Order IMD &lt; 60dBc at optimal mixer setting</li> <li>• Second Order harmonic &lt; 60dBc @ 1GHz</li> <li>• TOI &gt;+5dBm</li> </ul>		
<b>6. Software requirements</b> <ul style="list-style-type: none"> <li>• PC Based Software to be included to provide the following through USB 3.0 interface</li> <li>• Functional settings <ul style="list-style-type: none"> <li>○ Max hold</li> <li>○ Min hold</li> <li>○ Average</li> <li>○ Spectrogram / waterfall</li> <li>○ Adjustable persistence display</li> <li>○ Ability to display of Power / Freq vs. Time</li> <li>○ Ability to display of GPS data</li> <li>○ Ability to display Maps</li> <li>○ Ability to record and display Date and Time on recordings</li> <li>○ User selectable markers in both in amplitude , frequency and time domains</li> </ul> </li> </ul>		



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<p><b>7. Additional requirements</b></p> <ul style="list-style-type: none"> <li>• Ability to measure Occupied Bandwidth</li> <li>• Ability to measure Adjacent Channel power</li> <li>• Ability to measure Channel Power ( Peak and Average)</li> <li>• AM demodulation</li> <li>• FM demodulation</li> <li>• Signal measurement software to be included are WLAN, GSM,W-CDMA modulation methods</li> <li>• Storage and playback of traces on device and export of files</li> <li>• Ability to capture signals that are less than 150µs duration</li> <li>• Internal and external measurement triggers standard</li> <li>• Calibration certificate to be provided</li> <li>• 1 year warranty</li> <li>• Carry case to be included</li> <li>• USB Cable to be included</li> <li>• At least one UHF Flexible antenna with SMA connector to be included</li> </ul>		
<p><b>8. Installation, Training and Support</b></p> <ul style="list-style-type: none"> <li>• The supplier will be responsible for the satisfactory testing and commissioning of all equipment and software provided under the contract.</li> <li>• The Supplier shall guarantee the operability of the equipment (i.e. both hardware and software – through necessary upgrades), for a period not less than 10 (Ten) years.</li> </ul> <p><b>Substantiate</b>-----</p> <p>-----</p>		



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### 9. Service and Calibration

Bidders shall indicate:

- The extent and location of service facilities for the equipment offered.
- The extent and location of calibration facilities for the equipment offered
- The calibration interval required on the instrument and associated accessories

**Substantiate**-----

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#### • Testing of the equipment

This is only applicable to the successful service provider, i.e. final acceptance: testing must be done after supply of 9 (nine) USB based Portable Real-Time Spectrum analysers capable of analysing signals up to from 100 kHz to 6 GHz . Final acceptance will include testing of all 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

#### **Sandton Head Office:**

Address: Block B, Pin Mill Farm  
164 Katherine Street  
Sandton