



# All India Radio



**PRASAR BHARATI  
(BROADCASTING CORPORATION OF INDIA)  
DIRECTORAT GENERAL:ALL INDIA RADIO  
PLANNING & DEVELOPMENT UNIT**

## **TECHNICAL SPECIFICATION OF VECTOR IMPEDANCE METER/ANALYZER**

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The tenderer should go through all the paras of the Specifications carefully and should confirm clause by clause compliance to all paras clearly. Tenders without clause by clause compliance shall be rejected .

(KAILASH CHAND)  
DY. DIRECTOR ENGG. (TD)

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**TECHNICAL SPECIFICATION OF VECTOR IMPEDANCE METER/ANALYZER**

**1. GENERAL**

The Vector Impedance Analyser Meter shall incorporate state of art technology for measuring Impedance magnitude and Phase of any component/components or a system such as feeder line , Antenna Tuning Unit & Antenna system of high quality broadcast transmitter of All India Radio . The other Applications include testing of circuits (Balanced and Unbalanced ), Cables, materials and networks (Active & Passive), both in circuit and out of circuit. The RF test signal source shall form an integral part of the equipment . The equipment should have facility of sweep & spot measurement for operational convenience . Facility of Digital Display of result shall be provided. It shall include "Self-Test" facility The equipment shall have Auto Ranging, Scaling, Tuning, Nulling etc. In other words the Impedance reading will be displayed directly without the need for any adjustments, tuning etc. The equipment offered shall be rugged, portable, light weight for field use and field proven under extreme weather conditions.

**2. TECHNICAL SPECIFICATIONS**

**2.1 Test Signal Output Specifications:**

**2.1.1 Frequency**

a Range 500 KHz - 110 MH in suitable ranges.

b Resolution

500 KHz to 9.999 MHz : 1 kHz

10.00 MHz to 99.99 MHz : 10 kHz

100.0 MHz to 110.0 MHz : 100 kHz

c Accuracy +/- 0.01% of setting after calibration

d. Stability : +/-100 ppm per month

e. Display : 4 Digital display

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**2.1.2. Test Signal:**

Built in Test Signal Source over full frequency range for all signals in suitable ranges.

**2.1.3 Sweep Functions**

Shall have Full (Logarithmic) and Partial (Linear) sweep facility Automatic or manual in selectable steps. It shall be possible to control all sweep parameters from the Front Panel.

#### **2.1.4 Spot Frequency Function :**

It should be possible to set the spot frequency by using coarse Medium and final frequency resolution control through a dial /knob.

#### **2.2. Impedance Measurement :**

##### **2.2.1. Input Level**

Maximum Input Level : 50 V dc and 5 Volt rms ac.

N.B.: Beyond this range, equipment should be protected against internal damage of circuit components & probe.

##### **2.2.2 Impedance:**

- a Range : 0.1 ohm to 120 kohm  
(in suitable ranges)
- b. Resolution : 10 mohm on 10 ohm range
- c Accuracy : +/- 5 %, unweighted
- d Rang selection : Auto ranging & Manual both
- e. Temperature Error : less than 2 mohm/degree C.

##### **2.2.3 Phase:**

- a Range : -90 degree to +90 degree.
- b. Resolution : 0.1 degree
- c Accuracy : Better than 3.5 degree.
- d Rang selection : Auto ranging & Manual both
- e. Temperature Error : less than 0.02 degree/degree C.

**2.4 Digital Display:**

- a. 3 and 1/2 Digit Magnitude display.
- b. 3 and 1/2 Digit Phase display.
- c. Magnitude Z : 0 to 1999 counts.
- d. Phase of Z : -90 degree to +90 degrees.

**3. COMMON FACILITIES :**

**3.1 Display**

- a. Digital LED display separately each for Magnitude, Phase and Frequency .
- b Display should be resistant to high temperature vibration and shocks.
- c. Display should be easily readable against day light when used in field applications.

**3.2 Interface:**

The VIM/VIA should have a suitable Interface software using RS232 for remote operation from a PC and for sweep frequency measurements, data logging etc.

**4.0 ENVIRONMENTAL CHARACTERISTICS**

**4.1. Operation Temperature Range:**

- 0 degree to 50 degree celsius dry.
- 0 degree to 40 degree celsius , RH 95% (no-condensing)

**4.2 Operation Altitude:**

Upto 13000 ft. (4200 m)

**4.3 Protection against RF Interference:**

The equipment shall be provide with adequate shielding against RF/ EMI interference

## **5.0 POWER REQUIREMENTS**

Voltage	240V +/- 10%
Frequency	50 Hz +/- 4%

## **6.0 PHYSICAL DIMENSION (Preferable)**

WXDXH To be given by the tenderer  
Weight To be given by the tenderer

## **7.GUARANTEE**

The equipment shall be guaranteed against manufacturing/ design defects and for satisfactory and trouble free performance for a minimum period of one year from the date of receipt by AIR in satisfactory working conditions.

## **8.0 SPARES**

Essential and recommended spares(discreet and Modules) shall be quoted separately for keeping the instrument in working condition for at least 10 years

## **9.0 SERVICE FACILITY**

The Tenderer shall specify the repair/service facility available for the equipment in India with address, Phone/Fax nos. etc.

## **10 SUPPLY RECORDS:**

The tenderer shall furnish a record for supply of same model of equipment to the various customers alongwith their addresses, contact nos/email addresses etc alongwith the tender.

## **11. INSTRUCTION MANUAL**

Two copies of operating instruction and service manual shall be supplied alongwith each equipment. Four extra copies will be supplied to Director Engg. (Transmitter Design Section), P & D Unit , DG:AIR, N. Delhi.

## **12. ACCESSORIES**

(a) Standard Items : The equipment shall be supplied complete with all standard accessories such as mating connector, power supply chord and Probe Kit consisting of probe, spare pin, spare clips, BNC adapter, component mounting adaptor, probe socket and Accessory case. (Probe length 2m approximately).

(b) Optional Items : The following optional accessories shall also be quoted.

- i. Instruction & Service Manual set
- ii. Transportation Case
- iii. Carrying Case
- iv. BALUN (50 to 300 ohm & 75 to 300 ohm)
- v. Spare Probe