

S. No.	IITM Chennai requirement	Bidder's Confirmation
1.	<p><b><u>SCOPE</u></b>  Supply and commissioning of <b>Spectrum Analyzer (SA)</b> consisting of broadband light source, compact spectrometer, and multi-instrument measurement system of reputed make suitable for laboratory/factory and on-site measurement &amp; diagnosis of MV/HV power apparatuses such as Generators, transformers, reactors, GIS, circuit breakers, power Cables, etc.</p>	
2.	<p><b><u>General Specifications</u></b></p>	
2.1	<p>SA system should be designed to be used for both in laboratory/factory and on-site testing of MV&amp; HV assets.</p>	
2.2	<p>The test system shall be portable and of rugged construction and suitable for laboratory/on-site testing.</p>	
2.3	<p>SA measurement and data acquisition principle should be fully automatic &amp; microprocessor or PC based.</p>	
2.4	<p>Necessary and compatible software (Full Licensed Version) and accessories required for the measurement is to be inbuilt/supplied along with the test set. It should be user-friendly and Windows-based, compatible with the latest version of Microsoft Windows OS.</p>	
2.5	<p>The test system shall be able to capture signals on-line without outages of the 50/60 Hz HV power supply. The system should also be able to filter out noise while preserving the PD pulses.</p>	
2.6	<p>The system should be suitable for the operating temperature of 0 to +50 °C and &lt; 90% (non-condensing) RH.</p>	
2.7	<p>The instrument must be able to be calibrated in the field/laboratory and the same verifiable in the field/laboratory itself.</p>	

## **Technical Parameters**

### **i. Power Specification**

Supply Voltage: 90-240 V<sub>AC</sub>, 50/60 Hz

### **ii. Hardware Details**

#### **Broadband light source**

Wavelength Range: 200 – 1100 nm

Connector: SMA-905

Lamp Lifetime: ≥1000 / ≥2000 hrs

2.8 Output Power: 3W Deuterium, 3W Tungsten, 6W Both

#### **Compact spectrometer**

Wavelength range: 200-900 nm

Optical resolution: 0.14-7.7 nm FWHM

Integration time: 8 ms-60 minutes

System SNR: 1000:1 (single acquisition)

Dynamic range: 85,000 (typical)

Stray light: <0.08% at 600 nm; 0.4% at 435 nm

Buffering:	15,000 spectra
TEC:	Cooling from -40 °C to +50 °C
Interchangeable slits:	Multiple widths from 5 μm-200 μm; SMA bulkhead with no slit also an option
Internal shutter (optional):	Actuation time: 11 ms

**Multi-Instrument Measurement Device**

Instruments Included: Oscilloscope, Spectrum Analyzer, Waveform Generator, Data Logger, Arbitrary Waveform Generator, FIR Filter Builder, PID Controller, Laser Lock Box, Lock-in Amplifier, Frequency Response Analyzer, Phasemeter, Digital Filter Box

Lock-in Amplifier specs

Input coupling	AC / DC
Input impedance	50 Ω / 1 MΩ
Frequency range	DC to 200 MHz
Input range	10 Vpp with -20 dB input gain 1 Vpp with 0 dB input gain 60 mVpp with +24 dB input gain 3 mVpp with + 48 dB input gain
Input noise	< 200 nV/√Hz above 1 kHz at 1 Vpp input range

	<p style="text-align: center;"> <math>&lt; 30 \text{ nV/VHz}</math> above 100 kHz at 1 Vpp input range  <math>&lt; 10 \text{ nV/VHz}</math> above 1 MHz at 1 Vpp input range </p> <p><b>iii. Software</b></p> <p>The test system software shall have:</p> <ul style="list-style-type: none"> <li>The analysis software shall be compatible with Windows 8 or later, compatible with Microsoft Office® for report generation.</li> </ul> <p><b>iv. Communication System</b></p> <p>The test system shall be able to communicate via Ethernet/RJ45 with laptop-PC.</p> <p><b>v. Operating Environment</b></p> <p>Temperature Range: 0 to +50°C  Relative Humidity: &lt; 90% (non- condensing)</p>	
2.11	<p><b><u>Accessories</u></b></p> <p>The complete package should include all accessories required for the satisfactory operation of the system and shall include:</p> <ol style="list-style-type: none"> <li>Double screened BNC Signal Cables &amp; BNC connectors -Qty. as <i>adequate</i></li> <li>Media transfer and backup (USB storage)</li> </ol> <p><b>Transport Cases</b></p> <p>The equipment should be supplied with a heavy-duty transport case.</p> <p><b>External Laptop:</b></p> <ul style="list-style-type: none"> <li>Reputed Make Laptop</li> <li>Intel Core i7 or superior</li> <li>16 GB Ram or higher</li> <li>1TB HDD or higher</li> <li>Licensed Windows OS</li> <li>Other essential accessories including a carry bag</li> </ul>	

2.12	<p><b><u>Factory Acceptance &amp; Test Requirements</u></b></p> <p>Equipment shall be supplied with full calibration and test certificates. Calibration certificates traceable to National or International standards or by OEM shall be supplied along with the system without any additional charges to the purchaser.</p>	
2.13	<p><b><u>Guarantee &amp; Warranty requirements</u></b></p> <p>The instrument should have a warranty of at least twelve (12) months from the date of installation &amp; commissioning or fifteen months from the receipt at our store, whichever is earlier. In case of any trouble/defects within the warranty period, free of cost servicing to be done with replacement of defective parts, covering all the associated transportation costs.</p>	
3.	<p><b><u>Training and Demonstration</u></b></p> <p>The supplier has to provide complimentary training to our personnel after the installation and commissioning of the equipment at our laboratory. During the training, demonstration of the system has to be given by- performing the necessary measurements. The duration and training course details for the same to be given by the bidder in their technical bid.</p>	
4	<p><b><u>Documentation</u></b></p> <p>Complete sets of equipment's OEM users' manuals to be supplied in Printed &amp; soft format, along with the equipment.</p>	
5	<p><b><u>After Sales Services</u></b></p> <p>Bidder should be an OEM having their office set-up in India for after-sales service and support.</p>	
6	<p><b><u>Quality Assurance and Inspection</u></b></p> <p>Pre-dispatch inspection, if required, shall be carried out by the buyer's representative. However, the final inspection &amp; verification shall be done during the commissioning of the equipment in our laboratory.</p>	