

**Advertised Tender Enquiry Documents**  
**INDIAN INSTITUTE OF TECHNOLOGY (BHU), VARANASI**  
**(NOTICE INVITING TENDER)**

On behalf of the Director, IIT (BHU) Varanasi, online tender from manufactures (or their 'authorized' dealers that they have been authorized to quote in response to this NIT) of the following items are invited:

<b>Sl. No.</b>	<b>Tender No. and Last Date</b>	<b>Specifications &amp; Quantity of the item</b>
1.	<b>Ref. No.:</b> IIT (BHU)/SMST/2018-19/Dielectric/194 <b>Dated:</b> 07-09-2018  <b>Last Date:</b> 03.10.2018, 03:30 PM	<b>Name of the Instrument- Dielectric Measurement System</b> (Technical Specifications as per Annexure-3) <b>Qty.: 01</b>  <b>Approx Cost: 15 Lakhs</b>

The Tender Documents for the given items will be on Single Bid System consisting of Technical Bid and Price Bid. The Tender Documents will be submitted item-wise in online. Any firm may bid for any number of items but each offer must be item-wise in single bid cover enclosing Technical Bid and Price Bid. Manual Bid will not be accepted.

The Tender Document along with detailed specifications, terms and conditions may be downloaded from the institute website ([www.iitbhu.ac.in](http://www.iitbhu.ac.in)) under Tenders ([www.iitbhu.ac.in/iitnotifications/purchase\\_enquiries/](http://www.iitbhu.ac.in/iitnotifications/purchase_enquiries/)) & <https://www.eprocure.gov.in/cppp/> by the interested supplier.

The Tender Fee for this Tender to be paid in the form of **Bank Draft** in favour of **Registrar, IIT (BHU) payable at Varanasi** before the Bid Opening Date and non-refundable Tender price of Rs. 1,000/-. The hard copy of DD for tender fee should be reached on or before the Bid Opening Date and Time at the address: **The Coordinator, School of Material Science & Technology, Indian Institute of Technology (BHU), Varanasi – 221005.**

The Tender should be addressed to **The Coordinator, School of Material Science & Technology, Indian Institute of Technology (BHU), Varanasi – 221005**, and should be submitted on or before the date and time of Bid opening date as mentioned in critical date sheet on e-portal.

The Institute shall not be responsible for any delay in submitting Bids by online. The Institute reserves the right to accept or reject any bid, cancel the Tender without assigning any reason thereof. No correspondence in this regard will be entertained.

**Coordinator**  
**School of Material Science & Technology**  
**Indian Institute of Technology (BHU)**  
**Varanasi- 221005**

# TENDER DOCUMENT FOR: Dielectric Measurement System

## CRITICAL DATE SHEET

Published Date	08.09.2018
Bid Document Download Start Date	08.09.2018 (04:00 PM)
Clarification Start Date	08.09.2018 (04:00 PM)
Clarification End Date	25.09.2018 (05:00 PM)
Pre bid meeting	NA
Bid Submission Start Date	08.09.2018 (04:00 PM)
Bid Document Download End Date	03.10.2018 (03:00 PM)
Bid Submission End Date	03.10.2018 (03:00 PM)
Financial Bid Opening Date	04.10.2018 (03:00PM)
Address for Communication	Coordinator School of Material Science & Technology Indian Institute of Technology (Banaras Hindu University), Varanasi – 221 005, U.P., INDIA E-mail: <b>coordinator.mst@itbhu.ac.in</b>

**FORMAT OF BANK GUARANTEE FORM**

1. This guarantee should be furnished by a Nationalized Bank / scheduled Bank, authorized by RBI to issue a Bank Guarantee.
2. This bank guarantee should be furnished on stamp paper of Rs. 100/-
3. The stamp paper should have been purchased in the Name of the Bank executing the Guarantee.
4. **In the case of foreign bidder the B.G may be furnished by an international reputed bank acceptable to the PURCHASER countersigned by any Nationalized / Scheduled Bank in India authorized by Reserve Bank of India.**

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**DATE:**

**BANK GUARANTEE NO:**

Ref.: \_\_\_\_\_

**To**

**Indian Institute of Technology**

**(Banaras Hindu University)**

**Varanasi-221005**

Dear Sirs,

In accordance with your 'Invitation to Bid' under your Tender No: \_\_\_\_\_

M/s: \_\_\_\_\_ herein after called the Contractor/supplier, with the following Directors on their Board of Directors / partners of the firm.

- |          |          |
|----------|----------|
| 1. _____ | 2. _____ |
| 3. _____ | 4. _____ |

Agrees for the contract/supplies:

As an irrevocable Bank Guarantee for an amount of Rs. \_\_\_\_\_ (in words and figures) valid for \_\_\_\_\_ days from \_\_\_\_\_ is required to be submitted by the Contractor/Supplier which amount is liable to be forfeited by the purchaser in the event of 1) the withdrawal or revision of the offer by the Bidder as a condition within the validity period. (2) non-acceptance of the Letter of Intent / purchase order by the bidder when issued within the validity period. (3) failure to furnish the valid contract performance guarantee by the bidder within one month from the receipt of the purchase order and (4) on the happening of any contingencies mentioned in the bid documents such as \_\_\_\_\_.

**We, the \_\_\_\_\_ Bank at \_\_\_\_\_ having our Head office at \_\_\_\_\_ (Local address) Guarantee and undertake to pay immediately on first demand by IIT (BHU) the amount of \_\_\_\_\_ (in figure and words)**

without any reservation., protest, demur and recourse. Any such demand made by the Purchaser shall be conclusive and binding on the Bank irrespective of any dispute or difference raised by the purchaser.

**The** guarantee shall be irrevocable and shall remain valid up to \_\_\_\_\_ (This date should be 6 months after execution of the order). If any further extension of this guarantee is required the same shall be extended to such required period (not exceeding one year) on receiving instruction from M/s \_\_\_\_\_ on whose behalf this guarantee is issued.

**In** witness whereof the Bank, through its authorized officer has set its hand and stamp on this \_\_\_\_\_ day of \_\_\_\_\_ at \_\_\_\_\_  
witness \_\_\_\_\_.

**WITNESS**

- (Signature).....
- Name in (Block letters)
- Designation .....
- (Staff Code No.) .....
- (Bank's common Seal)
- Official address:
- Attorney as per power of Attorney No.
- Date:

**DECLARATION**

1. I, ----- Son /Daughter of Shri -----  
----- Proprietor/ Partner/ CEO /MD/ Director/ Authorized Signatory  
of M/s. ----- am competent to sign this declaration and execute this  
tender document.
2. I have carefully read and understood all the terms and conditions of the tender and hereby convey my  
acceptance of the same.
3. The information/ documents furnished along with the above application are true and authentic to the best of  
my knowledge and belief.
4. I/ we/ am are well aware of the fact that furnishing of any false information/ fabricated document would  
lead to rejection of my tender at any stage besides liabilities towards prosecution under appropriate law.
5. Each page of the tender document and papers submitted by my Company is authenticated, sealed and  
signed, and I take full responsibility for the entire documents submitted.

-----  
Signature of the Authorized Person

Date: -----

Place: -----

Full Name: -----

Company Seal: -----

## Technical Specification for Dielectric Measurement System

Sl. No. ITEM	Approx. Qty.
1. Dielectric parameter measurement system	01 No.

**Technical Specifications of dielectric parameter measurement system with low and high temperature measurement attachments:**

1.	Frequency Range	10Hz to 30 MHz or better
2.	Frequency Accuracy	0.2% or better
3.	Frequency Resolution	0.05ppm or better
4.	Measurement Parameters	$ Z $ , $\theta_z$ , $ Y $ , $\theta_y$ , Cp, Cs, Lp, Ls, Rp, Rs, D, Q, R, X, G, B, Complex Z, Complex Y or more
5.	Measurement Accuracy	$\pm 0.1\%$ or better
6.	Voltage Range & Resolution	10 mV rms to 1 Vrms with 10mV resolution
7.	Current Range & Resolution	200 $\mu$ A rms to 20 mA rms with 100 $\mu$ A resolution
8.	Sweep Parameters	Frequency, signal voltage, signal current, DC bias voltage, DC bias current
9.	Sweep type and Segment	Linear frequency, log frequency, OSC level (voltage, current), DC bias (voltage, current), log DC bias (voltage, current) having more than 200 segments.
10	Number of measurement points	2 to 1600 points or better
11.	Equivalent circuit model	Equivalent circuit parameters calculation with 3 & 4 components
12.	DC voltage bias Range & Resolution	0 to $\pm 40$ V & 10 mV
13.	Interface	GPIB, LAN, USB, VGA
14.	Interfacing Cables	Compatible Cables should be provided along with the setup which supports the high frequency operation.
15.	Display type	colour LCD (TFT) or equivalent
16.	Sample holder and Connectors	Sample holder for measurement of bulk sample at room temperature along with 4 (four) BNC cable to BNC cable connection, 4-2 terminal fixture of adequate length should be provided.
17.	Software	(i) Software for fully automatic measurement with varying temperature of the sample. (ii) All the primary and secondary parameters should be measured and recorded with respect to frequency, temperature & time. (iii) Software should display primary and secondary parameters in online graph for the property to be measured. (iv) Data transfer in ASCII file for following: <ul style="list-style-type: none"> <li>• Parameter vs frequency at fix temperature.</li> <li>• Parameter vs temperature at fix frequency for several frequencies.</li> <li>• Z plot</li> </ul>
18.	Computer	Suitable PC and necessary software for operation and data acquisition, analysis
19.	Power requirement	220V AC, 50Hz

<b>Option for High Temperature measurements ( to be quoted as optional item)</b>		
20.	High Temperature Furnace with eurotherm/ other equivalent PID temperature Controller and thyristor power supply	Suitable heating Furnace with sample holder and connection cables for temperature range from room temperature to 800 Degree Centigrade or more, along with the software for fully automatic high temperature measurements.
<b>Option for Low Temperature measurements ( to be quoted as optional item)</b>		
21.	Low Temperature Measurement capability uptoLiq N <sub>2</sub> with Lakeshore/ other equivalent PID temperature Controller	Suitable setup with sample holder and connection cables for temperature range from room temperature to ~80K, along with the software for fully automatic low temperature measurements.
22.	Installation and commissioning	The instrument to be installed tested and commissioned by representative of supplier at our premises to the satisfaction of user without any cost.
23.	Training	The supplier should provide the training on site free of cost.
24.	Safety	The system should have inbuilt high safety standard as per international norms.
25.	Warranty	Three years
26.	Notes	<ul style="list-style-type: none"> <li>- List of essential spares supplied free of cost with the instrument should be given.</li> <li>- The complete set of documentations, manuals and software manuals should be provided both in softcopy and hard copy.</li> </ul>
27.	Compliance statement	Point wise according to our document.
<b>Please provide the segmented quotation for interfacing Computer, low temperature and high temperature measurement attachments.</b>		

## **General Terms and Conditions**

### **(1) Data acquisition and analysis**

Licensed windows based operating software and State-of-the-art computer control system compatible with the measurement options must be included in the basic unit. The software should be able to run the various measurement options automatically and in different modes. There must be a scope to control the external instruments by using different programmes for the experiments designed by users.

**(2) Other accessories:** Required sample holders for each type of the measurements should be included in the basic unit.

**(3)** Details of the standard samples/accessories to be provided by the company for testing and calibration of the instruments at the time of installation at site for the demonstration of the performance of equipment.

**(4)** The quotation should also indicate what kind of service/maintenance is required for the system. Whether this service has to be carried out by a company engineer or it can be carried by trained service personnel within India.

- (5) Quotation should include all essential ancillary equipment and spares for its operation on turn-key basis on delivery (please provide list with details).
- (6) Complete computer control of operation and measurement on Windows based platform. Give the details of software for measurement and analysis.
- (7) Power requirement: 220 V, 50 Hz.
- (8) Pre-installation site preparation requirements to be indicated and specified.
- (9) Installation and training should be provided free of cost.
- (10) Warranty period to be clearly mentioned and should begin from the date of installation.
- (11) Guaranteed specifications to be demonstrated at the time of installation. Any necessary standard samples for that purpose should be brought by the Service Engineers.
- (12) Quotation should include both CIF New Delhi and FOR IIT(BHU) prices.
- (13) Shipment may be routed through an agent who may be appointed by the Institute.
- (14) Service manuals with complete circuit diagram and PCB layout for all equipment to be provided with the instrument.
- (15) Give Bankers name and address.
- (16) List of similar systems installed during the last five years in India with contact person name, address, phone, fax and email Ids.
- (17) The vendor to provide compliance statement with respect to each technical specification in the tender document duly supported by the manufacturer's literature. Any other claim will not be accepted and may lead to rejection of the quotation.
- (18) Printed literature in support of compliance to the prescribed specifications is to be submitted.
- (19) **Compliance report** needs to be submitted as a part of the quotation.
- (20) In case during shipment period newer versions of software/hardware is available with vendor in lieu of the existing one, then improved version should be made available without any extra cost, in consultation with the institute.
- (21) Institute reserves the right to visit installations in India of similar capabilities. The details with regard to such installations should be given as a part of quotation.
- (22) Technical evaluation by the Institute may include demonstration to verify functionalities and capabilities of the system quoted.
- (23) **Payment condition: Preferably On Bill basis on installation of Instrument**
- (24) **Validity of the Quotation: Minimum 90 days.**
- (25) **Supply period of the quoted Instrument: Maximum 80 days.**



## **Terms and Conditions:**

- The manufacturer must have supplied similar instruments in leading institutions of India – IIT/BARC /DRDO/CSIR labs etc.
- Latest satisfactory performance letter of the instrument from the end user needs to be submitted along with contact details.
- Proof of Company's installations in India from last 5 Years need to be submitted.

## **OTHER TERMS:**

1. **Spares:** state availability of spares for ten years.
2. **Indian agency commission:** Should be clearly stated in the financial bid in Indian currency.
3. **Consumable & spares:** List of the consumables and spares to be supplied with the system.
4. **Penalty:** A penalty of 1% of the order value will be applied for late delivery of the goods for each week thereof subject to a maximum of 10%.
5. **Bank Guarantee (BG):** Successful bidder have to furnish 5-10% of the order value as a performance security in the shape of Fixed Deposit Receipt / Bank Guarantee in favour of the Registrar, Indian Institute of Technology (BHU) which will be valid for a period of sixty days beyond the date of completion of all contractual obligations of the supplier including warranty obligations. Fixed Deposit Receipt / Bank Guarantee should be issued from a schedule bank in India. Bank guarantee is only applicable for the Supplier who will get the Award of Contract and will submit at the time of installation of the instrument.
6. **Payment:** The payment shall be made by LC. (Where 90% of payment against shipment and balance 10% payment at the time of satisfactory installation and submission of BG).
7. **User List:** Provide users for last 5 years with contact person name, address, phone, and email IDs.
8. **Manuals/Documents:** 1 set of hard copy and 1 set of soft copy in English (preferred as following). i. Operating manual ii. Maintenance manual iii. Servicing manual iv. Programming manual v. Spare parts list with source of supply and prices vi. Description of control interface vii. Circuit diagrams of PLC, drive controls etc viii. Manuals of bought out items incorporated in the system ix. Details of any custom made ICs & components & their sources x. Flow charts of all resident software xi. Test Chart xii. Pre-installation requirements of foundation plan details, electromagnetic interference and vibration.
9. Details of the standard samples to be provided by the company for testing the instruments at the time of installation at site for the demonstration of the performance of equipment.
10. Please provide the segmented quotation for each optional measurement capability.
11. The Tender document should also indicate what kind of service/maintenance is required for the system. Whether this service has to be carried out by a company engineer or it can be carried by trained service personnel within India. The frequency of visit and the charges should be mentioned.
12. The Tender should be enclosed with proper certifications like **Authorization Certificate and Proprietary Certificate in case of Proprietary items.**
13. Complete computer control of operation and measurement on Windows based platform. Give the details of software for measurement and analysis.
14. Pre-installation site preparation/inspection requirements to be indicated and specified along with the bid.
15. Installation and training should be provided free of cost otherwise clearly mentioned with justification.
16. Warranty period to be clearly mentioned and should begin from the date of installation. Annual Maintenance Contract Charges should be clearly mentioned after warranty period.
17. Guaranteed specifications to be demonstrated at the time of installation. Any necessary standard samples for that purpose should be brought by the Service Engineers.
18. Service manuals with complete circuit diagram and PCB layout for all equipment to be provided with the instrument.
19. Submit Electronic copy of the Technical specifications and bids.

20. The vendor to provide compliance statement with respect to each technical specification in the tender document duly supported by the manufacturer's literature. Any other claim will not be accepted and may lead to rejection of the bid.
21. Printed literature in support of compliance to the prescribed specifications is to be submitted.
22. Compliance report needs to be submitted as a part of the technical bid.
23. In case during shipment period newer versions of software/hardware is available with vendor in lieu of the existing one for which Letter of Credit was opened, then improved version should be made available without any extra cost.
24. Institute reserves the right to visit installation in India of similar capabilities the details with to regard to such installation should be given as a part of technical bid.
25. Technical evaluation by the Institute may include demonstration to verify functionalities and capabilities of the system quoted.

**Services:** Vendor must submit Factory Acceptance Test procedure supported with relevant printed literature and certificates.

**Coordinator**  
**School of Material Science & Technology**  
**Indian Institute of Technology (BHU)**  
**Varanasi- 221005**

## TECHNICAL COMPLIANCE STATEMENT

(To be submitted by bidder duly filled)

SI No.	Specifications:	Description	Yes/NO
1.	Frequency Range	10Hz to 30 MHz or better	
2.	Frequency Accuracy	0.2% or better	
3.	Frequency Resolution	0.05ppm or better	
4.	Measurement Parameters	Z , $\theta_z$ ,  Y , $\theta_y$ , Cp, Cs, Lp, Ls, Rp, Rs, D, Q, R, X, G, B, Complex Z, Complex Y or more	
5.	Measurement Accuracy	$\pm 0.1$ % or better	
6.	Voltage Range & Resolution	10 mV rms to 1 Vrms with 10mV resolution	
7.	Current Range & Resolution	200 $\mu$ A rms to 20 mA rms with 100 $\mu$ A resolution	
8.	Sweep Parameters	Frequency, signal voltage, signal current, DC bias voltage, DC bias current	
9.	Sweep type and Segment	Linear frequency, log frequency, OSC level (voltage, current), DC bias (voltage, current), log DC bias (voltage, current) having more than 200 segments.	
10	Number of measurement points	2 to 1600 points or better	
11.	Equivalent circuit model	Equivalent circuit parameters calculation with 3 & 4 components	
12.	DC voltage bias Range & Resolution	0 to $\pm 40$ V & 10 mV	
13.	Interface	GPIB, LAN, USB, VGA	
14.	Interfacing Cables	Compatible Cables should be provided along with the setup which supports the high frequency operation.	
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		• Z plot	
18.	Computer	Suitable PC and necessary software for operation and data acquisition, analysis	
19.	Power requirement	220V AC, 50Hz	
<b>Option for High Temperature measurements ( to be quoted as optional item)</b>			
20.	High Temperature Furnace with eurotherm/ other equivalent PID temperature Controller and thyristor power supply	Suitable heating Furnace with sample holder and connection cables for temperature range from room temperature to 800 Degree Centigrade or more, along with the software for fully automatic high temperature measurements.	
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22.	Installation and commissioning	The instrument to be installed tested and commissioned by representative of supplier at our premises to the satisfaction of user without any cost.	
23.	Training	The supplier should provide the training on site free of cost.	
24.	Safety	The system should have inbuilt high safety standard as per international norms.	
25.	Warranty	Three years	

**Signature of the Authorized Person  
with Official Seal**