



तेजपुर विश्वविद्यालय / TEZPUR UNIVERSITY
(संसद के अधिनियम द्वारा स्थापित केंद्रीय विश्वविद्यालय)
(A Central University established by an Act of Parliament)
कुल सचिव का कार्यालय/ OFFICE OF THE REGISTRAR
नपाम :: तेजपुर - 784028 :: असम
NAPAAM :: TEZPUR - 784028 :: ASSAM

SHORT QUOTATION NOTICE

TU/11-24/Pur/Qtn/2017-18/4247-A Dated: 28.12.2017.

Sealed quotations are invited from reputed manufacturers/authorized dealers/vendors for supply, installation & commissioning etc. of following items required for the DeitY sponsored research Project of Dr. Nidhi S. Bhattacharyya, Department of Physics, Tezpur University.

LIST OF EQUIPMENT(S) WITH SPECIFICATIONS:

1. Directive antenna and RF probe

- Directive antennas with the following specifications are to be supplied,
- The antennas should be compatible with Agilent Vector Network Analyzer (**Model No: E8362C**).
- Gain: > 15 dBi.
- Frequency range: 700 MHz – 20 GHz.
- Nominal impedance: 50 Ohms.
- VSWR: <1:2.5.
- RF connection: SMA.
- Weight: < 500 gm.
- Beam width: Around 30°.
- Laser / Compass for pin pointing and for accurate alignment.
- DC blocker if required.
- Mounting tripod.
- RF probe with the following specifications are to be supplied,
- The probe should be compatible with Agilent Vector Network Analyzer (**Model No: E8362C**).
- H & E field probes.
- Frequency range: DC- 9 GHz (Minimum), preferably up to 20 GHz.
- Pre-amplifier gain: Around 3 dB.
- Nominal impedance: 50 Ohms.
- RF Connection: SMA.
- Mounting tripod.

2. Cables and connectors

- Frequency range: DC – 20 GHz
- Length: 10 meter - 16 meter
- RF Connection: SMA
- Shielding effectiveness: > 95 dB
- Minimum bending radius: 1.5 inches
- Nominal impedance: 50 Ohms
- Insertion loss: 0.70 dB/m
- Power handling: 500 Watts

3. Highly efficient microwave absorbers

- The Absorber should provide high performance over the whole frequency range of 500 MHz – 20 GHz.
- The absorbers need to be lightweight Pyramidal or truncated shaped utilizing the latest polyurethane foam impregnated with carbon/thin film technology. They should not droop or change their physical and electrical characteristics with time or as a result of ambient environment.
- The absorbers should not generate any additional dust in the test environment.
- The vendor should supply the absorbers from the manufacturer having minimum 10 years of experience.



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- Guaranteed Reflectivity/Attenuations of absorbers at Normal Wave Incidence should be better than the values given in the following table:

Frequency	Attenuation (dB)
500 MHz-1 GHz	-30 dB
1 GHz-4 GHz	-40 dB
4 GHz- 8 GHz	-40 dB
8 GHz-12 GHz	-45 dB
12 GHz- 20 GHz	-50 dB

- Vendor should provide necessary assurance certificate for guaranteed reflectivity performance for more than 15 years.
- Absorber should be compliant with fire retardant standards DIN 4102 B2.
- Vendor need to submit a fire-retardant test report performed not older than 5 years test period.
- Absorbers should not be absorbing moisture from the ambient environment/no deterioration from water. Test report is to be submitted.
- It should not be readily attacked by acids, alkaline and petroleum based liquids. Absorbers should not shed particles during the operation of the chamber/when it is dipped in water and squeezed.
- Absorbers must be coated (Company name & logo is to be printed).
- The absorbers should be tested as per the test methods and equipment requirement specified in IEEE-STD-1128 and all test reports are to be in the absorbers shipment.
- Total area to be covered by the absorber is 50 sq. ft.

4. Dielectric probe kit for complex permittivity measurement of liquid

- Dielectric probe system with materials measurement suite should be compatible with Agilent Vector Network Analyzer (VNA) (**Model no. E8362C**)
- Type of material under test: liquids and conformable solids.
- Measurable frequency range for complex permittivity should be 500 MHz to 50 GHz.
- Material permittivity should be measured in the temperature range of about -40 to +200 Celsius.
- High temperature resistance and flexible cable for higher temperature measurement.
- Repeatability and resolution should be two to four times better than accuracy.
- Accuracy of the measurement should be near $\sim 0.05 \times$ complex permittivity.
- Accessories to configure the probe kit like storage box, connectors, probe stand, probe stand bracket and adapters etc.

5. PCB engraving machine

- PCB engraving machine with the following specifications is to be supplied,
 - Functions required: Milling single, double-sided PCBs, multilayer and RF boards
 - Design Software: Mandatory (Language: English)
 - Max. material size and layout area (X×Y×Z): >250 mm×250 mm×5 mm
 - Travel speed diagonal (X×Y): > 40 mm/s
 - Milling spindle (rpm): > 40,000 rpm
 - Drilling speed: >50 holes/min
 - Repeatability: <± 5 μm
 - Mechanical resolution (X/Y): < 1 μm
 - Resolution (Z): < 0.5 μm
 - Precision: < ± 20μm
 - Accuracy in the fitting hold system: < ± 20 μm
 - Vacuum Table: Best if included
 - Structure holder Resolution: < 200 μm



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▪ SMT capability:	Optional
▪ Mechanical Milling:	Required
▪ LASER Structuring:	Required

GENERAL TERMS & CONDITIONS:

1. No separate tender paper will be issued from the office; one should only download the specifications/List from the website.
2. **The rates should be preferably quoted in Indian Rupee and FOR Tezpur University, Napaam basis. Charges for clearing and transportation should be incurred by the supplier.**
3. *Quotations should be accompanied by i) An EMD (in the form of Demand Draft/Call Deposit/TDR) of ₹. 5000/- (Rupees Five Thousand) only drawn/pledged in favor of Registrar, Tezpur University, payable at Tezpur. **No request for consideration of earlier deposited EMD will be considered.** ii) A non-refundable application (quotation) fee of ₹.1000.00 (Rupees One Thousand) only must be paid only by Demand Draft drawn in favour of Registrar, Tezpur University payable at Tezpur.*
4. The rates should be exclusive of GST and applicable GST in % should be clearly indicated.
5. Applicable levies, surcharge and discounts should be clearly indicated itemwise.
6. Quoted rates should be valid at least for a period of 01 year.
7. The rates should be quoted along with supporting documents of specifications and technical features and list of users.
8. The system must be installed at the laboratory, and after installation a basic training must also be provided by the supplier or their Indian counterpart without any additional costs.
9. All the quotations must be accompanied with supporting documents and / or literature.
10. Demonstration may be sought from the vendors for authentication of quoted specification.
11. Details of availability of after sales support will have to be furnished. After sales support, directly from manufacturer and from Assam (Guwahati / Tezpur) will be preferred.
12. The University is exempted from paying Custom and Excise duty.
13. Proprietary items should be quoted with sole Manufacturer/Distributorship certificate.
14. Warranty/Guarantee period should be specifically mentioned in the quotation.
15. No Advance payment will be made. However, for foreign supplier, advance payment will be made either by FDD/Wire Transfer/LC. In such cases 10% Performance Bank Guarantee should be submitted before issuing FDD/Wire Transfer/LC, covering the warranty period.
16. Performance Bank Guarantee also must be submitted for Major equipments of Indian origin, covering the warranty period.
17. Items of Foreign origin should have Insurance up to installation on site.
18. The University reserves the right to accept or reject any or all the quotations without assigning any reason.
19. Quoted price should be inclusive of essential accessories and should be CIF Tezpur University, Tezpur
20. Applications for release of EMD should be submitted to the Registrar/ Joint Registrar.
21. Apart from the above terms and conditions the University has the right to include any other terms and conditions as and when felt necessary.
22. **Quotation should be submitted in the DROP BOX placed in the reception of the Administrative Building of the University within 30 days from the date of publication of this notice. If posted/couriered, should reach within 30 days addressed to "The Joint Registrar, Tezpur University". The Quotation Notice No. and date should be clearly superscribed in the envelope/packet containing the quotation.**

Sd/- Registrar
Tezpur University