Centre for Nanoscience and Nanotechnology

(Department of Physics)

Panjab University

Chandigarh-160014, India

Tender Document

- For the Purchase of -

CLASS AAA SOLAR SIMULATOR WITH INTEGRATED IV-MEASUREMENT SETUP

9/21/2016

Last Date of Receipt of Tender: 10 October 2016

Contact: Principal Investigator, Centre for Nanoscience and Nanotechnology (CNSNT)
Panjab University, University South Campus, Science Block-II, Sector-25

Reference: NSNT/2802

Phone: +91-172-2783336
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Date of Opening of Technical Bid: To be notified later (Please visit CNSNT website for the notification. It will be notified within 20 days from the closing date)

Tender Fee: INR 500.00

SECTION-I

PROCEDURE FOR SUBMISSION OF BIDS

1. There will be two bids system for this Tender: (i) *Technical bid* and (ii) *Financial bid*

2. The Techno-Commercial Bid or simply Technical Bid of the Tender should be covered in one sealed envelope superscribing the words “Technical Bid”.

Likewise, the Financial Bid should also be covered in a separate sealed cover superscribing the words “Financial Bid”.

The two documents viz., Technical bid and Financial bid with sealed envelopes prepared as above should be enclosed in a single sealed cover marked as under:

TENDER FOR THE SUPPLY OF CLASS AAA SOLAR SIMULATOR WITH INTEGRATED IV-MEASUREMENT SETUP

Due on: ………………… ………… (last date for submission)

Name & Address of the Tenderer: ……………………… …………………………………...

Note: Price should not be indicated in the Technical Bid otherwise the Tender will be summarily rejected.

3. Tenders received after the due date will not be accepted. If the last date for submission of Tender falls on any declared holiday of the University, the next working day will be considered as the last date for the same.

4. The bids prepared by the Tenderer and all correspondence and documents relating to the bids, shall be written in English language only.

5. The contract for the supply of the item(s) is non-transferable.

6. Tender/Offer documents should not be hand written, otherwise the same will be rejected

7. Each page of the tender document should be signed by the authorized signatory with seal.

8. Each offer should be complete in all respects.

9. Telegraphic/electronic/conditional offers will not be accepted. Lobbying in any form will warrant rejection of the tender.

10. Special discount for the educational institution, University teaching department may be mentioned in the financial bid.

SECTION-II

- MOST IMPORTANT TERMS AND CONDITIONS-

1. Opening of bids: Technical bids will be opened by an empowered committee after the closing date. The date of opening will be notified in the website. The tenderers will be invited for presentations and clarifications before the committee, if needed. Only those financial bids will be considered and opened by the committee whose technical bids are in compliance with the prescribed technical specifications. Tenderers or their authorized agents (after submission of authorization letter) may be present if they so desire during the opening of the tenders.

2. Rejection of bids: The committee reserves the right to reject or cancel any or all offers without assigning any reason.

3. Earnest Money Deposit (EMD): The bidders are requested to attach the EMD as demand draft (should be A/C payee and valid for minimum of six months) in the name of '**The coordinator, Centre for Nanoscience and nanotechnology, Panjab University Chandigarh**', without EMD financial bids will not be entertained. Estimated amounts of EMD are given below:
i. EMD value is INR 20,000/ if the cost of the equipment is up to INR 10.00 Lacs,
ii. EMD value is INR 40,000/ if the cost of the equipment is between INR 10.00 -20.00 Lacs,
iii. EMD value is INR 50000/ if the cost of the equipment is between INR 20.00 -50.00 Lacs,
iv. EMD value is INR 1.00 Lac if the cost of the equipment is higher than INR 50.00 Lacs.
EMD should not be less than the 2 % of the total value.

4. Refund of EMD: The EMD will be returned to unsuccessful tenderer(s) only after the tender process is completed and finalized. For the successful tendering firm, EMD will be returned on submission of the Performance Bank Guarantee, to cover the service contract period. The bank guarantee should be valid for 36 months.

5. Cost, Insurance and Freight of Financial bids: FOR value up to Centre for Nanoscience and Nanotechnology, Panjab University, Chandigarh. Shipment should be insured up to the site of installation and tenderer should clearly quote which will be considered for the comparison of financial bids.

CONVERSION OF CURRENCY

6. To facilitate evaluation and comparison, the purchaser will convert all bid prices expressed as amounts in various currencies in which the bid price is payable to the Indian rupees at the RC selling market rate of exchange established by the State Bank of India, Chandigarh for similar transactions as on the last date of submission of tenders or the date of opening of the financial bids whichever is approved by the committee/authority.

GUARANTEE / WARRANTY & AMC

7. Guarantee/Warranty shall be for 36 months or 24 months of Guarantee/Warranty (with spares) and 12 months of free of cost Annual Maintenance Contract (AMC) after the successful installation/commission of the unit. Tenderers should clearly mention the nature of the guaranty/warranty with the break-up for extended guarantee/warranty/AMC.
a. In addition of quoting for the equipment, tenderers must quote separately the charges for AMC for an additional period of **two** years for maintaining the equipment after the exhaust of warranty/guarantee period. During the service contract period, the firm shall provide four preventive maintenance visits and in addition to this, need to attend to all emergent and break-down calls. During the service contract period all part/components that may be needed for replacement will have to be made available to the

institute by the firm. All charges shall be paid to the firm in quarterly instalments after satisfactory service. The university reserves the right of purchase of AMC at the time of placing the order for the purchase of equipment or at a later stage.
b. Tenders without the mention of service contract charges shall be considered incomplete and shall be out rightly rejected. All charges will also be taken into account while comparing the prices.
c. The tenderers shall provide a list of institutions/universities/research laboratories in India where their equipment had been installed. The minimum of five installations are required during last three years. The university reserves the right to inspect such institutions/laboratories and verify the actual performance of such equipment. The department/centre may also ask for demonstration of the equipment in the department/centre at the time of technical evaluation, which shall be mandatory.

8. Performance Bank Guarantee (PBG) Bond: The successful tenderers shall be required to furnish a Contract Performance Guarantee Bond of 10 % of CIF on any scheduled bank along with the undertaking in the shape of Bank Guarantee in favour of '**The coordinator, Centre for Nanoscience and nanotechnology, Panjab University Chandigarh**. The PBG should be valid until the expiry of the warranty/guarantee period. The PBG should be furnished along with the letter of acceptance of the order by the Principals. In case of import, LC will be opened in favour of the Principals only after obtaining the PBG.

9. Tender fee of Rs 500/- in the form of Bank Draft in favour of '**The Registrar, Panjab University, Chandigarh** must be submitted along with all other documents. Soft copy of the tender form can be downloaded from the website. Hard copies will be available at the office of Centre for Nanoscience and Nanotechnology on submission of the bank draft of Rs. 500/- as mentioned above.

10. Only Manufacturers or Authorized dealers to bid:
a. The offering firm should clearly mention whether they are the manufacturer or authorized agent/dealer of the manufacturer. In case of agent for overseas manufacturer, a letter of authorization from the manufacturer should be submitted along with the offer. The Tenderer can also enclose the rates on the letterhead of the manufacturer if the agent has been authorized to do so by the manufacturer.
b. All tenderers must provide the proof of execution of the contracts for similar and/or identical goods in the past three years prior to the date of tender opening.
c. Bids not accompanied by tender fee and EMD as stated above or less than the amount stipulated above shall be summarily rejected.
d. EMD/security deposit/any other sums of the tenderers lying with the University in connection with and other tender/case will not be considered against this tender.

11. Panjab University, does not take responsibility for any postal delay in delivery of registered/speed post or lost in transit.

12. Panjab University has been exempted from paying central excise duty to vide govt. of India notification no. 10/97-central excise dated March 1, 1997 and is valid up to 31-8-2020.

13. Conditional and unsigned tenders will not be accepted.

14. Terms of Payment: LC will be opened for the 100 % value of the equipment, 90 % of the amount will be released after the shipment and remaining 10 % after the successful commissioning of the equipment.

15. Delivery Period: The supply of consignment be commenced/made within 120 days of the issue of supply order.

16. Delayed Delivery: If the delivery is not made within the due date for any reason, the university will have the right to impose penalty as under:
a. First extension for one month or part thereof @ 2%
b. Second extension for an additional month or part thereof @ 3%

17. Non Delivery of the Equipment: If the tenderer fails to execute the order within the second extension mentioned above (Clause 16) or mutually agreed time frame, the order will be cancelled and EMD forfeited by the university. The tenderer will also be liable for all damages or loss incurred upon by CNSNT due to non-supply of equipment including the liability to pay the additional cost difference between the price accepted by the tenderer and those ultimately paid by CNSNT for the equipment or financial loss due to the possible refund to the funding agency as a result of delay in execution of purchase order. The committee reserves the exclusive right to assess the extent of damage or loss.

18. Increased statutory levies and duties above the rate quoted in the offer will not be an excuse for the tenderer to delay the supply beyond the date specified in the tender or the purchase order.

19. Validity of Rates: Rates quoted should be valid for at least 4 months from the closing date of the tender.

20. Consistent Pricing: The rates quoted for the equipment by the supplier shall under any conditions exceed the lowest price at which the supplier of the equipment and accessories as mentioned in the technical specifications for the supply of identical equipment or accessories made to any other individual/organization/institution during the above mentioned period (4 months) and should attach an undertaking in this regard.

21. All quoted rates should be for Panjab University and the firm should quote the rate of all taxes.

22. The quotations shall not contain corrections, erasers, and overwriting. The university does not pledge itself to accept the lowest tender and reserves to itself the right of acceptance of the whole or a part of the tender, or portion of the quantity offered, and the tenderers shall be required to supply the same at the rate quoted.

DELIVERY OF EQUIPMENT

23. Installation Requirements: All information related to installation requirements at the site of installation should be mentioned clearly in the technical bid.

24. Installation Time: The supplier must do the needful for the commissioning of the equipment within a period of one month of the date of delivery of the equipment at the site of installation.

25. The tenderer is required to undertake to deliver, install, commission and handover the equipment within the stipulated period. The installation of the equipment shall be completed and handed over within the time schedule given in the tender free of cost. This stipulated period should be strictly adhered to for implementation.

26. The whole system will be operated by the company engineer/expert(s) for a period needed for the successful operation to the purchaser’s satisfaction i.e. till satisfactory installation at the supplier’s cost. The shipment must be all inclusive, any additional requirements for the successful operation of the equipment like computers, appropriate power back up, console for device handling or positioning, demo cell etc. must be supplied along with the equipment.

TRAINING PERSONNEL

27. The successful tenderer will be required to undertake to provide technical training to personnel involve in the use of the equipment at site of installation.
a. The company experts shall be required to operate and train the university personnel at site until the personnel are trained to operate the equipment or for a minimum of 30 days, whichever is earlier at the supplier's cost.
b. The tenderer should mention in the Technical Bid the availability and names of *Application Specialist* and *Service Engineer* in the nearest regional office.
c. The tenderer should mention in the Technical Bid the *response time* for attending a complaint pertaining to the operation/issues of the equipment.

SUPPLY, INSTALLATION AND COMMISSIONING OF THE EQUIPMENT

28. The supply, installation and commissioning of the equipment shall be as per term and conditions given above and those mentioned in the agreement document to be signed by the successful tenderer. The scope of the work includes the installation and satisfactory commissioning of the equipment by the firm and training of personnel.

MODE OF DISPATCH/DELIVERY OF EQUIPMENT

29. The equipment with all its accessories should be dispatched by air to Delhi (INDIA) duly insured, freight and insurance charges pre-paid. The tenderer is required to undertake to deliver at the site of installation, install, commission and handover the equipment within the stipulated period. The installation of the equipment shall be completed and handed over within the time schedule given in the tender.

CUSTOM CLEARANCE

30. The equipment requiring import from abroad will be imported by the tenderer, for which tenderer will ensure all necessary clearance before shipment takes place, that the equipment, in question, can be imported.

a. The university will assist and provide all necessary documents for the custom clearance, however custom duty and demurrage, if any will be borne by the tenderer.
b. The Principals/Supplier will do all types of clearance work to deliver the equipment at the site of installation. Principals will themselves have to procure any requisite permission from the Govt. of country of origin of the equipment.

c. It will be the responsibility of the Principals to pursue any claims with the customs authorities/insurance company/cargo operators and transporters, as may arise, at any stage.

INSURANCE

31. The manufacturers will ensure that the equipment is properly insured for the full C.I.F. value to cover the transit up to site of installation and the further period of storage etc. up to end of the period of installation as agreed upon. If the installation is delayed beyond the agreed date of satisfactory installation, commissioning and handing over of the equipment, then in that event any transit and storage damages which come to light after such delays shall be at the risk and cost of the suppliers. The supplier/Indian agent shall provide to the university after due inspection, a detailed list of any loss or damage to the shipment or stores that may have occurred so as to enable the purchaser to file appropriate claims with the insurance company duly assisted by the Indian agent. The manufacturers shall provide all assistance in pursuing such insurance claims expeditiously. The manufacturers shall make free replacement, if required, in lieu of damaged/lost items, etc. regardless of the fact whether the claim is settled with the insurance company or not. The manufacturer's liability includes free

replacements/rectifications and any additional local expenses such as custom duty/clearance, etc. connected with such replacements.

32. It should be noted that in case of delay in shipment beyond the agreed date of delivery, university reserves the right to recover all losses and damages resulting from delayed supplies or cancellation of the contract.

MERGER/ACQUISITION OF FOREIGN PRINCIPAL

33. In case of merger of principal with another firm or acquisition of principals by another firm, it shall be obligatory for the new entity so formed after the merger or the acquiring firm, as the case may be, to take over all the duties and obligations/liabilities of the principal (both foreign and Indian) and the new Entity/Acquiring firm would *ipso facto* become liable for all acts of commission/omission on the part original principals (both foreign and Indian).

34. Licensed Software and its up gradation: The certified/licensed software and programs should be the part of the supplies. There should be free up gradation of software up to 5 years.

35. User and Service Manuals: A set of User's manuals and Service manuals of the main instrument and attachments (related equipment) should be supplied with the equipment.

36. Equipment must be New: The Tenderer must ensure that the equipment being offered is a new one and not refurbished or repaired one.

37. Defective Equipment: If any of the equipment supplied by the Tenderer is found to be substandard, refurbished, unmerchantable or not in accordance with the description /specification or otherwise faulty, the committee will have the right to reject the equipment or its part. The prices of such equipment shall be refunded by the Tenderer with 18% interest if such payment for such equipment has already been made to the supplier.

38. Availability of Spares: The Tenderer must assure the availability of spares for servicing of equipment for at least 5 years. Supplier should give an undertaking that spares parts will be supplied within the specified periods as and when ordered.

39. Technical specifications are intended to be descriptive only and not restrictive. The bidder may substitute alternatives with identical standards or catalogue numbers in its bids, provided that it demonstrates to the purchaser's satisfaction. Committee reserves the right to accept any offer from the listed brands mentioned in section-III meeting all the technical specifications or none of them, depending on the specific requirements and purchaser's satisfaction.

40. Tenderers are advised to study all technical aspects and terms & Conditions, of the Tender documents. Submission of Tender shall be deemed to have been done after careful study and examination of the Tender Document with understanding of its implications.

41. Legal jurisdiction: Any dispute in this regard of any term of the offer and on the supply of equipment is subject to Chandigarh, India jurisdiction only.

DEFINITION OF GUARANTEE/WARRANTY

42. The term satisfactory commissioning and handing over wherever used in terms of tender and agreement will mean satisfactory and faultless functioning of the equipment for 90 days, and of works conducted there with covered under the contract in working order. During the guarantee/warranty

period, the replacement of any part of the equipment or rectification of defects of works will be free of cost.

a. The defective parts/equipment shall be returned by the purchaser to the Indian agent after making replacement at supplier's cost during the guarantee/warranty period. During the guarantee/warranty period, the uptime (fully working condition as demonstrated during the installation) will be required to be maintained. If the downtime exceeds 15 consecutive days at any time the guarantee/warranty period will be extended beyond the stipulated period to a duration equal to the total of such periods of downtime during the period of warranty.

b. The tenderer should submit a written guarantee/warranty from the manufacturers clearly stating that the equipment being offered is the latest model with updated software as per specifications and that spare parts for the equipment will be available for a period of at least 5 years after the guarantee/warranty period. The manufacturer should also guarantee/warranty that it will keep the institute informed of any up-date of the equipment over a period of next 5 years and undertake to provide the same to the institute at no extra cost.

c. Guarantee/warranty that manufacturer will supply regularly items of spare parts requisitioned by the purchaser for satisfactory operation of the equipment till the life span, to be decided mutually, if and when required on agreement basis for an agreed price. The agreement basis could be an agreed discount on the published catalogue price or an agreed percentage of profit on the landed cost.

d. Guarantee/warranty to the effect that before going out of production of spare parts the manufacturers and/or tenderers will give adequate advance notice to the purchaser of the equipment so that the later may undertake to procure the balance of the life time requirements of spare parts.

e. Guarantee/warranty to the effect that the manufacturers will make available to the university, the blue prints and drawings of the spare parts or circuit diagrams if and when required in connection with the smooth operation of the equipment.

f. Supplier should state categorically whether they have fully trained technical staff for installation/commissioning of the equipment and efficient after sales service.

SECTION-III

TECHNICAL SPECIFICATIONS

Sl. No.	GENERIC NAME: CLASS AAA SOLAR SIMULATOR WITH INTEGRATED IV-MEASUREMENT SETUP	Please mention conformation to the specifications Yes/No
1	**Make: Oriel (Newport) Instruments/Opto Solar/Photo Emission Tech./Bunkoukeiki Co.**	
2	i. A Class AAA Solar Simulator system with integrated IV-measurement (should meet IEC/ ASTM/JIS standards). ii. Air mass filter: AM1.5 Global. ii. Minimum actual illumination area: 70 mm x 70 mm. iii. Lamp: Min. of 300 Watt Xenon Lamp or better. iv. The entire system should be user friendly with easy windows based computer interface. v. The system should include the following (may marginally vary according to the product specifications): a. Light Source with light feedback system. c. Shutter control: Automatic if internal. d. Air Mass Filter & Operating Manual. e. Electromechanical based light source controller. f. Beam uniformity, beam divergence, spectral match: As per IEC/ ASTM/JIS standards. g. Controller for shutter on/off to ensure operator and system safety. h. Light intensity/constant power: Option for intensity control/calibration and constant power. Power selection option: up to 100 % or better. i. Light source system: Intensity feedback for stable output j. Lamp: Lamp's status displays with turn 'on' and 'off'. k. Lamp's life: Option for record of lamp's life. l: Alarm system: Over temperature alarm, Door safety alarm. vi. IV-Measurement set-up (complete module).	
3	**Specifications for IV measurement set-up (complete module):** i. IV measurement system should be capable of recording current from 10 pA to 1 amp or better. ii. The module should be all inclusive and complete system with the following: • Chuck designed to accommodate all sizes of Solar Cells. • A 1 Amps capability Voltage & Current Source Meter 1A, 200 V, 20 W or better. • Photodiodes at source and sample. • Latest version of a dedicated IV measurement software with user friendly interface. • Shutter control through software. • Automated Rs calculation in two different intensities. • Provision in the software to convert to standard measurement condition.	

	• A complete and inclusive rack mount console for IV electronics. • Software handles measurement of all type of cells without any cell connection changes (including both P type and N Si Cell). • Preferably should meet the IEC 60891 standard calculation of cell series resistance. • Procedures for fitting of measured I-V Curve to either equivalent diode models and any standard universally accepted model (should provide literature in support). • Procedures for curve correction to standard test conditions (STC) to IEC60891, Anderson's and Blaessar's or user defined conditions. • User should be able to perform automatic correction of measured I-V curve to STC (Standard Test Conditions), i.e. light intensity and temperature or other defined conditions. Should be able to calculate thermal coefficients of V_{oc} & P_m. • Software features include cell sorting in various categories. This cell sorting can be performed in production or in virtual binning modes (as specified by the user). iii. Branded PC with 5th generation intel chip (core i5) or higher model with windows 10 operating system and 1TB of hard disk space.	
4	**Accessories** a. A calibration cell for the calibration purposes of the setup. b. Temperature Control: Computer controlled (preferably Peltier Cooling) heating/cooling (10-50 °C, or better) – with automated temperature coefficients. Should be suitable for the sample stages up to 150 x 150 mm. There should be vacuum suck to Hold the sample at low collimating angle (< 2 degree). c. Should provide appropriate manipulators with standard sizes and materials (Tungsten carbide) with low leakage current and high tensile strength. It should be available with or without the removable extension rod. The body should be mounted onto a strong magnetic metal base. The Joystick micro-positioner should be capable of rapidly establishing contact with probing targets. A large X-Y scanning area should be augmented by the adjustable "Z" movement of the probe. The spring probe clamp should be electrically isolated from the positioned body. d. Spare lamp for future replacement. e. Air mass filters. f. UPS with appropriate power back up for at least 30 min.	