

	INDIAN INSTITUTE OF TECHNOLOGY MADRAS Chennai 600 036 Telephone: (044) 2257 4883 E-mail: manianvs@iitm.ac.in	
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Dr. V. Subramanian
Project Coordinator

Ref: PHY/2019/002/VSUB/STORES
Dated: 23.07.2019

Limited Tender No: PHY/2019/002/VSUB/STORES

Due Date: 13.08.2019, 3:00pm

Pre-Bid meeting: - Not required.

Technical Bid opening meeting on Due Date: 13.08.2019, 3:30pm

Dear Sir/Madam,

On behalf of the Indian Institute of Technology Madras, offers are invited for the supply of “**Anechoic chamber**” conforming to the specifications given in **(Annexure-I)**:

Instructions to the Bidder

- I. **Preparation of Bids:** - The Limited tenders should be submitted under two-bid system (i.e.) Technical bid and Financial bid.
- II. **Delivery of the tender:** - The tender shall be sent to the below-mentioned addresses either by post or by courier so as to reach the following address before the due date and time specified in our Schedule:
Dr. V. Subramanian
Department of Physics,
IIT Madras
Chennai - 600 036.
- III. **Opening of the tender:** - The offer/Bids will be opened by a committee duly constituted for this purpose. The technical bids will be opened first and it will be examined by a technical committee which will decide the suitability of the bid as per our specifications and requirements. The bidders will be invited for opening of Technical bids. In respect of opening of financial bid, those bidders who are technically qualified only will be called for.
- IV. **Price:** - The price should be quoted in net per unit (after breakup) and must include all packing and delivery charges to **Department of Physics.**

The offer/bid should be exclusive of taxes and duties. The percentage of tax & duties should be clearly indicated separately. IIT Madras is eligible for concessional GST and relevant certificate will be issued.

In case of import supply, the price should be quoted without custom duty. IIT Madras is exempted from levy of IGST on Imports and eligible for concessional custom duty (not exceeding 5%) and the price should be quoted on EX-WORKS and CIP basis indicating the mode of shipment.

- V. **Agency Commission:** - Agency commission, if any, will be paid to the Indian agents in Rupees on receipt of the equipment and after satisfactory installation. Agency Commission will not be paid in foreign currency under any circumstances. The details should be explicitly shown in Tender even in the case of 'Nil' commission. The tenderer should indicate the percentage of agency commission to be paid to the Indian agent. The foreign Principal should indicate about the percentage of payment and it should be included in the originally quoted basic price, if any.
- VI. **Terms of Delivery:** - The item should be supplied to our Departments as per Purchase Order. In case of import supply, the item should be delivered at the cost of the supplier to our Institution. The Installation/Commissioning should be completed as specified in our important conditions.
- VII. **Technical Bid Opening:** The technical bid will be opened on **13.08.2019, 3:30pm** at the Department of Physics, IIT Madras and the financial bids of those tenders who are technically qualified will be opened at a later date under intimation to them.
- VIII. IIT Madras reserves the full right to accept / reject any tender at stage without assigning any reason.

Yours sincerely,

Dr. V. Subramanian
Department of Physics,
IIT Madras
Chennai - 600 036.

SCHEDULE

Important Conditions of the tender

1. The due date for the submission of the tender is **13.08.2019, 3:00pm**.
The offers / bids should be submitted in two bids systems (i.e.) Technical bid and financial bid. The Technical bid should consist of all technical details / specifications only. The Financial bid should indicate item-wise price for each item and it should contain all Commercial Terms and Conditions including Taxes, transportation, packing & forwarding, installation, guarantee, payment terms, pricing terms etc. The Technical bid and financial bid should be put in separate covers and sealed. Both the sealed covers should be put in a bigger cover. The Limited Tender for supply of “**Anechoic chamber**” should be written on the left side of the Outer bigger cover and sealed.
2. If an Indian agent is involved, the following documents must be enclosed:
Foreign principal’s proforma invoice indicating the commission payable to the Indian Agent and nature of after-sales service to be rendered by the Indian Agent.
 - ✓ Copy of the agency agreement with the foreign principal and the precise relationship between them and their mutual interest in the business.
3. The offer/bids should be sent only for a machine that is available in the market and supplied to a number of customers. A list of customers in India and abroad with details must accompany the quotations. Quotations for a prototype machine will not be accepted.
4. Original catalogue (not any photocopy) of the quoted model duly signed by the principals must accompany the quotation in the Technical bid
5. Compliance or Confirmation report with reference to the specifications and other terms & conditions should also be obtained from the principal.
6. **Validity:** Validity of Quotation not less than 60 days from the due date of tender.
7. **Delivery Schedule:** - The tenderer should indicate clearly the time required for delivery of the item. In case there is any deviation in the delivery schedule, liquidated damages clause will be enforced or penalty for the delayed supply period will be levied.
8. **Risk Purchase Clause:** - In the event of failure of supply of the item/equipment within the stipulated delivery schedule, the purchaser has all the right to purchase the item/equipment from other sources on the total risk of the supplier under risk purchase clause.

9. **Payment:** -

- i. No Advance payment will be made for Indigenous purchase. However 90% Payment against Delivery and 10% after installation are agreed to wherever the installation is involved. In case of import supplies the payment will be made only through 100% Letter of Credit i.e. (90% payment will be released against shipping documents and 10% after successful installation wherever the installation is being done).
- ii. **Advance Payment:** - No advance payment is generally admissible. In case of specific percentage of advance payment is required, the Foreign Vendor has to submit a Bank Guarantee equal to the amount of advance payment and it should be routed through the Beneficiary Bank to the end user Bank. Otherwise, the Indian Agent of the foreign vendor has to submit a Bank Guarantee through a Nationalized Bank of India.

10. **On-site Installation:** - The equipment or machinery has to be installed or commissioned by the successful bidder within 15 to 20 days from the date of receipt of the item at site of IIT Madras.

11. **Warranty/Guarantee:** - - The offer should clearly specify the warranty or guarantee period for the machinery/equipment. Any extended warranty offered for the same has to be mentioned separately.

12. **Late offer:** - The offers received after the due date and time will not be considered. The Institute shall not be responsible for the late receipt of Tender on account of Postal, Courier or any other delay.

13. **Acceptance and Rejection:** - I.I.T. Madras has the right to accept the whole or any part of the Tender or portion of the quantity offered or reject it in full without assigning any reason.

14. **Do not quote the optional items or additional items unless otherwise mentioned in the Tender documents / Specifications.**

15. **Disputes and Jurisdiction:** -

- a. **Settlement of Disputes:** Any dispute, controversy or claim arising out of or in connection with this PO including any question regarding its existence, validity, breach or termination, shall in the first instance be attempted to be resolved amicably by both the Parties. If attempts for such amicable resolution fails or no decision is reached within 30 days whichever is earlier, then such disputes shall be settled by arbitration in accordance with the Arbitration and Conciliation Act, 1996. Unless the Parties agree on a sole arbitrator, within 30 days from the receipt of a written request by one Party from the other Party to so agree, the arbitral panel shall comprise of three arbitrators. In that event, the supplier will nominate one arbitrator and the Project Coordinator of IITM shall nominate one arbitrator. The Dean IC&SR will nominate the Presiding Arbitrator of the arbitral tribunal. The arbitration proceedings shall be carried out in English language. The cost of arbitration and fees of the arbitrator(s) shall be shared equally by the Parties. The seat of arbitration shall be at IC&SR IIT Madras, Chennai..
- b. **The Applicable Law:** This Purchase Order shall be construed, interpreted and governed by the Laws of India, Court at Chennai shall have exclusive jurisdiction subject to the arbitration clause.

c. Any legal disputes arising out of any breach of contract pertaining to this tender shall be settled in the court of competent jurisdiction located within the city of Chennai in Tamil Nadu.

16. All Amendments, time extension, clarifications etc., will be uploaded on the website only and will not be published in newspapers. Bidders should regularly visit the above website to keep themselves updated. No extension in the bid due date/ time shall be considered on account of delay in receipt of any document by mail.

Acknowledgement: - It is hereby acknowledged that the tenderer has gone through all the conditions mentioned above and agrees to abide by them.

**SIGNATURE OF TENDERER
ALONG WITH SEAL OF THE COMPANY WITH DATE**

Specifications for anechoic chamber upto 40 GHz

A) ANECHOIC CHAMBER:

1. Anechoic Chamber Size (Outer): 12 x 9 x 8 Feet (LWH) Approximately
2. Frequency Range of Interest should cover: between 1 GHz and 40 GHz.
3. Construction: Self Supported GI with a thickness of atleast 2 mm.
4. Outer finish: Outer finish should be paint finished/ Laminated board of 8 mm thick.
5. Door: A shielded door of 0.90 x 2.10 m (WH) size for entry in the room. Proper stocks should be provided to avoid leakages.
6. RF Absorbers for the entire frequency range must be installed. Walk-on absorbers on the floor area also to be provided.
7. (a) Access/ Penetration panel must be provided near to the Instruments side to enable us to connect to the transmitting antenna and receiving antenna. Panel should contain atleast 4 SMA (F to F) and 4 N-type). Provision for attaching extra adapters may be provided.
(b) Access panel should also be able to connect the control cables with suitable RF filters.
8. RF cables must be provided from the antennas (Rx and Tx) to the Instruments through Access/ Penetration panel.
9. Suitable cool air circulating unit to preserve the RF absorbers may be provided.
10. Suitable LED light (EMI free) with wiring to be provided.

B. Tx & Rx Positioner Systems and Sample Holder Positioner System: -

Should provide the following inside the shield room:

1. System Positioner/ Antenna Mast material with toughened PVC/ FRP Material.
2. (a) Both receiver & Transmitter Positioner systems should have manual height adjustment with fixed height of 1100 mm to 1300 mm.
(b) Receiver antenna should have automated 3-Axis position system.
(c) Transmitted antenna should have fixed 2-Axis positioner system.
3. (a) At the centre between Tx and Rx Antenna Positioners, a Sample holder Positioner with facility to vary the height (manually) and facilitate rotation along ϕ direction (horizontal).
(b) The sample holder should hold a sample size of atleast 300 x 300 x 300 mm (LWH).
(c) The rotation along ϕ direction (atleast ± 60 deg) should be done by a stepper motor along with controller.
4. The sample holder in the Positioner system with be manually adjusted in elevation direction (θ) (-45 to +45 deg).
5. The receiver positioner system (Rx) should move on an arc of -45 to +45 degrees using a stepper motor (along with controller). Suitable rail assembly with automated control may be provided for the same.
6. Weight capacity of Tx & Rx Positioner should be around 10 kg & for sample holder Positioner system it would be 5 kg.
7. Partition at the sample location to ward of unwanted radiation to reach Rx antenna. A door to access the Rx antenna should be provided in the partition.

C) Broadband Horn Antenna : Quote the price separately

1. Broadband Horn Antenna – 0.8 to 18 GHz – 01 No
2. Broadband Horn Antenna – 4 GHz to 40 GHz – 01 No (optional)

D) RF Cables:

Complete set of RF cables required for the measurement.

E) Before handing over, the chamber must be tested for Quiet Zone throughout the operating frequency with a level of -25dB up to 2GHz, -40 to -50dB from 2GHz to 40GHz.

F. Quote should have a design layout also.

G. (a) For all rotation movements, controlling software with Labview drivers may be provided.

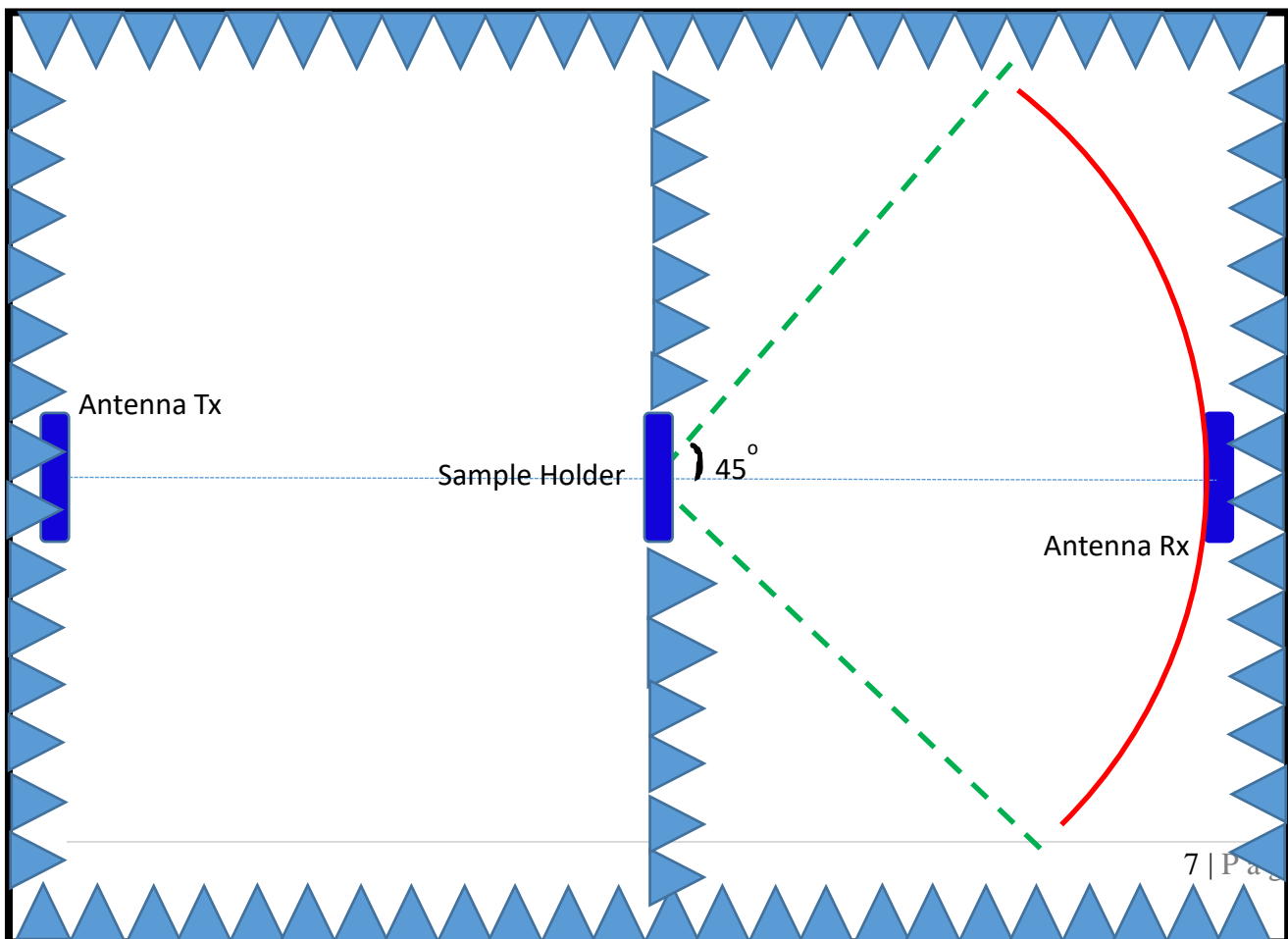
(b) The controlling units should be kept outside. Minimum step angle movement must be 0.1 deg.

(c) Measurement terms include 2D radiation pattern (E/H), 3D Radiation pattern (E/H), Gain measurement & others.

(d) Graph plotting & reading save options should be provided.

H) Bidder Qualification criteria:

1. The bidder should have experience in Installing Automated Antenna Measurement System on a turnkey basis, consisting of Anechoic chamber, Antenna Positioning system, Software for VNA & Antenna positioning system control & Automated Measurement of radiation patterns. The bidder should have completed Installation & commissioning of at least 2 systems in India as indicated above. Bidders with experience of partial supply of the system will not be considered.
2. Bidder should provide details of clients having the complete system as indicated above.
3. Bidder should arrange a demo of completed system at the installed project site, when required by IITM members.



Required Components:

- 1) Anechoic chamber (Chamber with absorbers lining) along with accessories
- 2) Broadband Horn Antennas (a) 800 MHz to 18 GHz and (b) 4 to 40 GHz (Optional)
- 3) RF Cables set
- 4) Automatic 3 Axis positioner system with Azimuth (0 to 360), elevation (-90 to +90) & polarization (-90 to +90) movement
- 5) Fixed 2 Axis Transmitter Positioner system
- 6) Manual Movable type 2 Axis Sample holder positioner system.
- 7) VNA Interfacing software for Automatic control & measurement.
- 8) CCTV monitoring system with Recorder
- 9) Warranty for 2 years.