



தமிழ்நாடு மாகாண கட்டுப்பாடு வாரியம்

சென்னை -32.

ஒப்பந்தப்புள்ளி அறிவிப்பு எண்:01/2020

மூடி முத்திரையிடப்பட்ட ஒப்பந்தப்புள்ளிகள் (இரண்டு உறைகள் முறைப்படி) கீழ்க்கண்ட உபகரணங்களின் உற்பத்தியாளர்கள்/அங்கீகரிக்கப்பட்ட விற்பனையாளர்களிடமிருந்து வரவேற்கப்படுகின்றன.

சேலம் மாநகரில் ஒரு தானியங்கி நடமாடும் தொடர் காற்றுத் தர கண்காணிப்பு நிலையம் நிறுவி, இயக்கி, பராமரித்தல் தோராய மதிப்பு - ரூ.2.5 கோடிகள்.

ஒப்பந்தப்புள்ளி படிவத்தை www.tenders.tn.gov.in இணையதளத்தில் பதிவிறக்கம் செய்துகொள்ளலாம். மேலும் ஒப்பந்தப்புள்ளி படிவங்களை நேரடியாக துணை இயக்குநர், (ஆய்வகங்கள்) தமிழ்நாடு மாகாண கட்டுப்பாடு வாரிய இணைப்பு கட்டிடம், எண் 76, மவுண்ட் சாலை, கிண்டி, சென்னை -32. அவர்களின் அலுவலத்திலிருந்து 06.11.2020 முதல் பெற்றுக்கொள்ளலாம். ஒப்பந்தப்புள்ளி பெறப்படும் கடைசி நாள்- 10.12.2020

தலைவர்
தமிழ்நாடு மாகாண கட்டுப்பாடு வாரியம்
சென்னை-32.



TAMIL NADU POLLUTION CONTROL BOARD

Chennai – 32.

Tender Notice No: 01/2020

Sealed tender under two cover systems are invited from the manufacturers or authorized dealers for:

Supply and Establishment of one number of Mobile Real Time Continuous Ambient Air Quality Monitoring System with Operation and Maintenance in Salem City

Tentative cost of Tender value Rs.2.5 Crores.

The tender schedules can be obtained directly from the O/o. the Deputy Director (Labs), TNPCB, Annexe Building, 76, Mount Salai, Guindy, Chennai – 32 Eligibility criteria and tender documents may be downloaded from www.tenders.tn.gov.in on or after 06.11.2020. The last date for the receipt of the tender is 10.12.2020

CHAIRMAN
Tamil Nadu Pollution Control Board
Chennai – 32.

TENDER SCHEDULE

TENDER NO:01/2020

INVITATION OF BIDS FOR THE ESTABLISHMENT
OF ONE MOBILE CONTINUOUS REAL TIME
AMBIENT AIR QUALITY MONITORING SYSTEM
WITH OPERATION AND MAINTENANCE
CONTRACT IN SALEM CITY

SECTION – I

INVITATION FOR BIDS

1. **Sealed Tenders will be received till 1.00 PM on 10.12.2020** by the **Chairman**, or any other official authorized by the Chairman, Tamil Nadu Pollution Control Board, Chennai for **the establishment of one Mobile Continuous Real Time Ambient Air Quality Monitoring System with Operation and Maintenance contract in Salem city** as per the technical specifications in Annexure-II.
2. Interested eligible bidders may obtain further information from the office of the Deputy Director (Labs)-Air at Advanced Environmental Laboratory, Tamil Nadu Pollution Control Board, (Annex Building), 76, Mount Salai, Guindy, Chennai-32.
3. The bidder should be the manufacturer of the item quoted or his authorized agent who have supplied, tested and commissioned any where in India which should be in satisfactory operation with no adverse report as on date of bid opening and should have adequate experience in O&M of AAQS with adequate personnel. The Terms & Condition of O & M to be satisfied are laid out in Section V.
4. The tender documents have been published in the website www.tenders.tn.gov.in. They can be downloaded. A complete set of bidding documents may also be purchased by any interested eligible bidder on submission of a written application to the above office along with a **Demand Draft drawn in favour of "Tamil Nadu Pollution Control Board, Chennai,"** obtained from any one of the Nationalised Banks towards the cost of the tender document.
5. Each tender schedule should be used for quoting one model of the instrument only. If the tenderer is willing to quote for more than one model, separate tender schedule should be obtained for each model and quoted in separate covers following the tender procedures laid down in the tender schedule.

6. The bidding document may be obtained from the office of the Deputy Director (Labs) - Air, Advanced Environmental Laboratory, Tamil Nadu Pollution Control Board (Annexe Building), 76, Mount Salai, Guindy, Chennai-32 during office hours from **10.00A.M.** to **3.45 P.M.** on all working days either in person or by post.

a)	Cost of bidding document To obtain by post (Non-refundable)	Rs.1,100/-(inclusive of postage charges of Rs.100/-).
b)	Date of Commencement of sale of bidding document publishing in the website:	06.11.2020
c)	Last date for sale of bidding document	10.12.2020 up to 12.00 Noon
d)	Last date and time for receipt of bids	10.12.2020 up to 01.00 P.M.
e)	Date and Time of opening of bids	10.12.2020 up to 04.00 P.M.
	Cover – A (Technical Bid)	10.12.2020 up to 04.00 P.M.
	Cover – B (Price Bid)	Date and time for Price Bid will be intimated separately, if the cover 'A' is found Technically responsive and acceptable by the Technical Committee.
f)	Place of opening of bids	Tamil Nadu Pollution Control Board, 76, Mount Salai, Guindy Chennai-32
g)	Address for communication	All sealed tender should be addressed to the Chairman, TNPCB, Chennai-32 and deposited in the Tender Box in the office of Deputy Director (Labs), Advanced Environmental Laboratory, Tamil Nadu Pollution Control Board (Annexe), 76, Mount Salai, Guindy, Chennai-32 (or) sent by post to the Deputy Director (Labs), TNPCB, (Annexe), 76, Mount Salai, Guindy, Chennai-32.

7. All bids must be accompanied by EMD as specified in the bid documents and must be delivered to the above office at the date and time indicated above.
8. Bid will be opened in the presence of the bidders or their authorized representatives who are willing to attend on the specified date and time mentioned above.

SECTION - II

CONDITIONS OF TENDER FOR THE ESTABLISHMENT OF ONE MOBILE CONTINUOUS REAL TIME AMBIENT AIR QUALITY MONITORING SYSTEM WITH OPERATION AND MAINTENANCE CONTRACT IN SALEM CITY

(To be enclosed in Cover - A)

TAMIL NADU POLLUTION CONTROL BOARD

SECTION – II

**CONDITIONS OF TENDER FOR THE ESTABLISHMENT OF ONE
MOBILE CONTINUOUS REAL TIME AMBIENT AIR QUALITY
MONITORING (MCAAQM) SYSTEM WITH OPERATION AND
MAINTENANCE CONTRACT IN SALEM CITY.**

1. Sealed tenders are invited by the Chairman, Tamil Nadu Pollution Control Board, Chennai for the establishment of one Mobile Continuous Real Time Ambient Air Quality Monitoring System with Operation and Maintenance contract in Salem city.
2. The actual manufacturers or their authorized agent should only quote. Subletting and assigning of contracts to any other firm/person is prohibited except with the prior permission of the **Chairman**, Tamil Nadu Pollution Control Board, Chennai-32 or an officer authorized on behalf of the Chairman.
3. **Tender should be enclosed in a sealed envelope super scribed with tender number, the name of the item for which quoted and the due date of the tender and sent to the Deputy Director(Labs) –Air, Tamil Nadu Pollution Control Board, (Annexe Building), 76, Mount Salai, Guindy, Chennai-32 so as to reach on or before 1.00 P.M. on 10.12.2020. The tender (Covers A & B) received without superscription as above and received late will be rejected.**
4. A). Tender will not be accepted, if GST and PAN NUMBERS of supplier is not indicated in the offer.
b). Telegraphic, Telex or Fax or open letter offers will not be accepted.
c). Each tender has two parts viz., Technical bid and Price bid. Technical bid in Cover-A and Price bid in Cover-B should be separately sealed and sent along with Technical bid.

5. Technical Bid in COVER – A

The following documents and certificates should be enclosed in Cover-A along with the Technical bid.

I- Check List – A :Check List “ A” along with details called for therein .

II - Checklist B - for O & M as per section V.

1. Attachment in support of meeting qualifying requirement for carrying out O & M as per attachment O & M 1 & 2.
2. Confirmation to the capability to furnish the information report format (A,B,C,D & E)

3. Terms & Conditions for O&M duly signed (Section V).

The above documents should be submitted in “ **Cover-A**” , addressed to the Chairman, Tamil Nadu Pollution Control Board, 76, Mount Salai, Guindy, Chennai-600 032 and super scribed as **TENDER NO.01/2020, DUE DATE ON 10.12.2020 AT 1.00 PM.** “TECHNICAL BID FOR the establishment of one Mobile Continuous Real Time Ambient Air Quality Monitoring System with Operation and Maintenance contract in at Salem city”.

6. The tenderer shall demonstrate their product with accessories as quoted for, on the date that will be intimated separately, at their expenses.

Price Bid in COVER – B.

The following documents should be enclosed along with the PRICE BID IN COVER-B.

III - Checklist- C

1. Summary of price bid (Attachment 10)
2. Bid price break up for equipment (Attachment 11)
3. Bid price break up for O & M for 3 years (Attachment 12 & 13)
4. Annual Report and Balance Sheet for the last 2 years

NOTE:

- 1) The price for inland items tendered should be in Rupee and should include all taxes and for free delivery to the places noted in the schedule. If any taxes are chargeable extra, the rate of taxes should be specified. Sales tax declaration form, if any, required should be specifically mentioned with time limit for furnishing such declaration.
- 2) If the items quoted are to be supplied by import, the quotation should be furnished in foreign currency indicating cost, insurance, freight charges along with value in Rupees (the current conversion rate should also be furnished)etc., The Board is eligible for custom duty concession.
- 3) Rates should not be altered. Quotations shall always be both in figures and words.

- 4) The prices should be firm and should not be subject to any variation clauses.
- 5) The Board is not eligible for 'C' (or) 'D' Form.
- 6) To convert tender prices in INR, the exchange rate on the date of opening Price bid in Cover 'B' will be taken as final.

The “**Cover B**” should also be addressed to the Chairman, Tamil Nadu Pollution Control Board, 76, Mount Salai, Guindy, Chennai-600 032 and super scribed as “**PRICE BID FOR the establishment of one Mobile Continuous Real Time Ambient Air Quality Monitoring System with Operation and Maintenance contract in Salem city**”. Tender No.01/2020, Due date on 10.12.2020 at 1.00 P.M. Both Covers A & B should reach this office on or before 1.00 P.M on 10.12.2020.

Technical Bid in Cover-A will be opened at Tamil Nadu Pollution Control Board, 76, Mount Salai, Guindy, Chennai –32 at 4.00 P.M on 10.12.2020 in the presence of the tenderers/ senior responsible officers of the companies who choose to be present. **Price Bid in Cover B** of those companies which satisfy the tender conditions and technical specifications of the Board will alone be opened at a later date. The date of opening of price bid will be intimated separately.

7. Each page of the tender should be signed sealed and authorized by the tenderer.

8. The tenderer shall submit check list-A & check list – B in Cover A and check list-C in Cover-B with page numbers of the document enclosed.

9. The successful tenderer shall provide the service & maintenance manual with schedule of maintenance including the circuit diagram of the instruments offered along with the supply of the MCAAQM instrument.

7. It shall be the responsibility of the tenderer for any shortages/damages at the time of receipt of the supplied items.

8. All columns of the tender form should be duly, properly and exhaustively filled in. The signature on the quotations shall be deemed to be of the authorized signatory. The words ‘**NOT QUOTED**’ should be written against any or all the items in the schedule for which a Tenderer does not wish to quote in

the tender, conditional offers and counter offers are liable to be ignored and/or rejected.

9. Corrections in the Tender shall be authenticated by the Tenderer.

9.1 Clarification of Bidding Documents

- (1) If a prospective Bidder has any doubt as to the meaning of any part of the Bidding Documents he may notify the Tamil Nadu Pollution Control Board for supplementary information and explanation in writing or facsimile in compliance with Form of Questionnaire of Attachment-(1b), to The Deputy Director (Labs)-Air, TNPC Board, Chennai - 32 at the following address at least seven (7) days prior to the date set for pre-bid conference. No 76, Mount salai, Guindy, Chennai-32

(2). Pre-Bid meeting

The bidder or his authorized representative is invited to attend the pre-bid conference. The date and time of pre bid conference will be held on 04.12.2020. During the meeting the following subjects may be discussed.

- a) The purpose of the meeting will be to clarify any issues regarding the Bidding Document.
- b) The bidder is required to submit questions in writing or by cable to reach the Deputy Director(Labs) , not later than seven days prior to the pre-bid conference.
- c) Record notes of meeting including the text of the questions raised and responses given will be transmitted without delay to prospective bidders who have purchased the Bidding Documents. Any modification of the Bidding Document which may become necessary as a result of the pre-bid conference shall be made by the officer authorized by the TNPC Board exclusively through an addendum to the bidding documents and not through the record notes of the pre-bid conference.
- d) Non-attendance of the pre-bid conference will not be a cause for disqualification of a bidder.
- e) The bidder shall depute maximum two authorized persons to take part in pre-bid conference.
- f) The bidder is not expected to raise any additional query after pre-bid conference and the TNPC Board is not obliged to reply any such queries.
- g) The pre-bid conference shall be open to those intending bidders who have purchased / downloaded the Bid Documents only.

Amendment of Bidding Documents

- (1) At any time prior to the deadline for submission of the Bid, the Board, for any reason, whether at its own initiative or in response to a clarification requested by a prospective Bidder, may modify the Bidding Documents

by amendment.

- (2) All prospective Bidders who have received the Bidding Documents will be notified of the amendment in writing at the address contained in their letter of request for issue of bidding documents and will be binding on them. The amendments will also be published in the website www.tenders.tn.gov.in. and in www.tnpcb.gov.in It is the responsibility of the tenderers to notice any subsequent amendment issued in this regard. The TNPC Board will bear no responsibility or liability arising out of non-receipt of the same in time or otherwise.
 - (3) In order to allow prospective Bidders reasonable time in which to take amendment into account in preparing their Bids, the Board at its discretion may extend the deadline for submission of the Bid.
10. **GUARANTEE:** The supplier or the Indian representative should give the **performance warrantee for the complete system for 5 years** from the date of satisfactory installation and service back up including **commitment for the availability of spares of the system for a minimum period of 10 years** from the date of installation. Also in the case of the instrument/ equipment going out of production, at least 2 years advance notice should be given to enable one time procurement of spares under O&M. The contractor must take into account the manufacture's statement.
 11. **DELIVERY:** Supply should be strictly made as per delivery schedule issued with the purchase order. All supplies are to be completed within the time specified in the purchase order, failing which Tamil Nadu Pollution Control Board reserves the right to cancel or modify orders if it is seen that the progress of the supplies are not satisfactory
 12. The Chairman, Tamil Nadu Pollution Control Board, reserves the right of accepting or rejecting all or any of the tenders without assigning any reasons thereof for the same and or to split up the tender as it may deem fit and/or also to finalize the tender after negotiations and also increase or decrease the tendered quantity. Repeat orders will also be placed on them after watching the performance if considered necessary.
 13. The tenderers must state, while sending their tenders, that they understand and accept this tender enquiry conditions and without such acceptance, the tender will not be considered.
 14. The tenderers should mention the brand,model and the manufacturer's details in the tender.

15. The tenderer shall arrange for security for protecting the item from loss or damage during transit. In case of damages, the tenderer should replace the damages during transit by good ones and at destination without any extra cost.
16. The quantity indicated in the schedule is only tentative/approximate and will not be, in any manner, what so ever, binding on Tamil Nadu Pollution Control Board.
17. Goods not conforming to specification and found to be defective or damaged in transit will be returned by the Board. The replacement should be made within a reasonable time on receipt of rejected goods.
18. Any other conditions which might have been quoted by the seller and in contravention to the terms prescribed in the tender instruction will not be accepted.
19. The conditions mentioned herein will form part and parcel of the agreement.
20. The tender schedule should be filled in without any omission or otherwise the offer will be liable for rejection.
21. The tenderer should be prepared to come for a negotiation in this office at a short notice if called for by the Board.
22. The supplying firms should clearly understand that time is the essence of the contract and no extension of time for the delivery will be entertained, under any circumstances. Therefore, the delivery of the goods specified in the purchase order should be made within the time limit prescribed. Where the tenderer supplies or dispatches the items beyond the delivery period, specified in the Purchase Order, the Board will have no obligation to accept the goods. If accepted, Board has the right to recover pre-estimated liquidated damages at the rate of 10% p.a. of the value of goods delayed for each day to the delay thereof, without prejudice to any other relief or compensation due to the purchase order or under any other conditions of the contract. The delivery that can be offered from ready stock should be noted for each item in the schedule.
23. All disputes are subjected to the jurisdiction of court in Chennai City only.
24. Tamil Nadu Pollution Control Board will not accept any responsibility for any

postal delay involved in the transmission and receipt of tender documents.

25. It is also requested to furnish the details of any service center with contact details if available for the above in Salem City and other places in Tamil Nadu and India.
26. **EARNEST MONEY DEPOSIT:** Each tender must be accompanied by a deposit amount of **Rs.2,50,000/- (Rupees Two Lakhs and Fifty Thousand only)** as Earnest Money Deposit. The Earnest Money Deposit must be furnished in the form of Demand Draft/Banker's Cheque drawn in favor of the "Tamil Nadu Pollution Control Board, Chennai" and the same should be sent along with the tender in Cover-A. **EMD in any other form will not be accepted.**(If exemption is requested for the payment of EMD and SD in case of NSIC/SSI units, a performance security deposit of 5% will be retained by the Board and will be returned after one year from the date of completion of installation and satisfactory demonstration.)

Tenders not accompanied by the Earnest Money Deposit will be rejected. Earnest Money Deposit will be returned to unsuccessful tenderers after finalization of the tender. On no account the security deposit of a previous contract with the board can be taken as an authority for the tender or a tender accepted without the Earnest Money Deposit. It is important that all Earnest Money Deposits are made by way of Demand Draft/Banker's Cheque in favour of the "Tamil Nadu Pollution Control Board, Chennai". No exemption will be permitted.

27. **SECURITY DEPOSIT:** Security Deposit equivalent to 5% of the value of the supply order should be furnished in the form of Demand Draft/Banker's Cheque drawn in favour of Tamil Nadu Pollution Control Board, Chennai, within seven days from the date of receipt of the supply order. Security deposit in any other form will not be accepted.
28. In the case of successful tenderer, the Earnest Money Deposit may, at the discretion of Chairman, Tamil Nadu Pollution Control Board, Chennai be adjusted towards the Security Deposit payable by him and the balance to be paid by the tenderer so as to form 5% of the value of supply order as Security Deposit, will be intimated later.

29. **AGREEMENT:** The successful tenderer shall execute an Agreement on a Rs.20/- non-judicial stamp paper with the Chairman, Tamil Nadu Pollution Control Board, Chennai within 15 days from the date of the receipt of the supply order. The specimen form of the agreement will be provided by Tamil Nadu Pollution Control Board.
30. The Security Deposit remitted by the successful tenderer will be returned only after completion of warranty period and upon complete fulfillment of the tender to the entire satisfaction of the Chairman, Tamil Nadu Pollution Control Board.
31. **The Declaration Form in Annexure-I** must be signed by the tenderer and must be enclosed along with the tender. Tenders received without the declaration form shall not be considered.
32. The acceptance / non acceptance of tender shall be communicated to the tenderers in writing.
33. If the items quoted are to be imported, the successful tenderer shall co-ordinate with TNPCB in the clearance of the item from customs authority, whenever necessary.

34. PENALTY CLAUSES

If the successful tenderer fails to execute the said Agreement and/or fails to remit the required security within the time specified or withdraws his tender after the intimation of the acceptance of his tender or owing to any other reasons, he is unable to undertake the contract, his contract will be cancelled and the Earnest Money Deposit made by him along with his tender shall stand forfeited to the Tamil Nadu Pollution Control Board and he will also be liable for all damages sustained by Chairman, Tamil Nadu Pollution Control Board by reasons of such breach including the liability to pay any differences between the prices accepted by him and those ultimately paid for the services concerned. The damages assessed by the Chairman, Tamil Nadu Pollution Control Board will be final in this matter.

35. TRAINING

The suppliers at their expenses should provide free training, for a minimum of two persons annually in the operation and maintenance of the

entire system at vendor cost at the installation site or at a suitable place including data management and quality checks as specified in condition 11 of the Operation and Maintenance contract for the Equipment.

The Contractor shall furnish the schedule and program of the training to the Board within 30 days after the notification of award in such a manner that proper training is imparted to Board Scientific staff members.

SECTION - III

GENERAL CONDITIONS & SPECIAL CONDITIONS OF CONTRACT

A- GENERAL CONDITIONS OF CONTRACT

1. LOCATION

The final designated place where Equipment to be delivered by the Contractor will be specified in supply order. In case any change in location as required should be accommodated in the contract.

2. Language

All documents and correspondence related to the Contract shall be made in English.

3. Site Condition

The Contractor shall study the proposed vehicle chassis conditions, referring to the Bidding Documents carefully in order to familiarize themselves with the Works. The Contractor should ascertain all particulars of the proposed vehicle conditions at their own expense.

4. Specification of Equipment

The performance, materials, duty, workmanship, operating conditions and design conditions for the Equipment shall meet and comply with the Specifications.

The Specifications indicate the principal and minimum technical requirements for each Equipment. The details of the Equipment shall be fully examined and suitably selected through the detailed engineering and design without sacrifice in quality or serviceability of the Equipment.

The figures of dimension and weight shown in the Specifications are indicatively presented as approximate figures. These figures may not necessarily and exactly be applied for the selection of the Equipment, but the Contractors shall meet the principal and minimum requirements shown in the Specifications. Any Bidder offering better specification than the minimum prescribed shall be considered as technically qualified. The bidder should provide the latest model of Instrument/ equipment and mention its model number and revision details. In case of software latest version and updation and revision dates shall be provided.

5. CODE AND STANDARD

All the Equipment and the Works shall conform to the approved and authorized codes and standards of the origin country, the following standards wherever applicable and Indian Standard which are in force at the moment of the installation.

- a. Japanese Industrial Standard (JIS)
- b. Environmental Protection Agency of United States (U.S. EPA) Standard

- c. International Organization for Standard (ISO)
- d. British Standard (BS)
- e. MCERTS, ECOS and EU standards
- f. DIN standards
- g. Australian Standards

Other internationally prevailing standards are accepted for the Equipment, unless otherwise indicated.

Even if some codes and standards are designated in the Specifications, the other codes and standards not shown therein are also applicable instead of the designated ones as far as they are equivalent to such designated Methods, codes and standards and meet the requirement thereof.

6. ELECTRICAL RATINGS

The Equipment shall conform to the following ratings and standards wherever applicable.

- i. All the electrically operated equipment specified herein shall be single phase, AC 220 V \pm 10 % and 50 Hz, unless otherwise specified in the specifications.
- ii. Electrical plugs for the Equipment shall conform to local Electrical regulations and standards.
- iii. Any intermediate alternators to be provided shall be the scope of the supplier.

7. Precaution against Voltage Fluctuation

Adequate automatic voltage regulator with auto phase change over for the Equipment shall be arranged by the Contractor wherever indicated in the Specifications. The Contractor shall pay due attention to that electrical voltage fluctuation and provide safety trips from not exerting a serious influence and damage upon functioning of the Equipment.

8. PROTECTION AND SAFETY

The Contractor shall be totally responsible for all the reasonable precautions against fire in respect of the Works, temporary works, offices, storage yards and other places and things connected therewith.

The Contractor shall comply with all rules and regulations and orders

which have been made by the Government of India, the Board or any other competent authority and the contractor shall provide at his cost sufficient fire-fighting protection in respect of the safety of the property and personnel belongings of the Board.

9. WORKS SCHEDULE

The Contractor shall complete the Works in accordance with the “Work Schedule” in the tender.

10. PROJECT FORMATION

The authorized personnel of the Board for the Project who is responsible for any coordination with the Contractor is

Deputy Director (Labs)
Tamil Nadu Pollution
Control Board, 76, Mount
Salai, Guindy,
Chennai - 600032.

11 . WARRANTY / O&M CONTRACT

The MCAAQMS shall be under O&M Contract from the date of commissioning of the MCAAQMS.

However the Contractor shall warrant to the Board that the Equipment to be supplied under the Contract is new, unused, of the most recent or current models, and that they incorporate all recent improvements in design and materials unless provided otherwise in the Contract. This warranty includes all spare parts and services to keep the instruments and equipment in operating condition.

The Contractor shall further warrant to the Board that the Equipment complies strictly with the Specifications and has no defect, arising from design, materials, or workmanship or from any act or omission of the Contractor that may develop under normal use of the supplied Equipment in the conditions prevailing to the final Sites.

12. Period of O&M Contract

This O&M Contract shall remain operative for the period specified in Special Conditions of Contract (SCC) after the successful installation & commissioning of the stations by the Contractor.

13. Manufacturer's Warranty

The contractor must take into account the manufacture's standard Warranty on the equipment supplied **before quoting for O&M cost for the years** for which such Warranty is applicable.

14. Insurance

The Equipment supplied under the Contract shall be fully insured in currency acceptable as per the existing Law of India against loss or damage incidental to manufacture or acquisition, transportation, storage, shipment, delivery, installation and training involved with the Works naming the Board as the beneficiary, in the manner specified in the SCC, until issuance of taking over certificate.

15. Training

The Contractor shall provide the Board staff training annually as specified for the Equipment & Technical Specification at their cost.

The Contractor shall furnish the schedule and program of the training to the Board within 30 days after the notification of award in such a manner that proper training is imparted to Board staff members.

16. Return of Performance Security

The performance security will be discharged by the Board and returned to the Contractor not later than sixty (60) days after expiry of O&M period following the date of completion of the Contractor's performance obligations under the Contract, including any O&M obligations, unless specified otherwise in SCC.

B - SPECIAL CONDITIONS OF CONTRACT

The following Special Conditions of Contract shall supplement the General Conditions of Contract (GCC). Whenever there is a conflict the provisions herein shall prevail over those in the General Conditions of Contract the corresponding clause number of the GCC is indicated in parentheses, if applicable

1. CLIMATE CONDITION

Precaution and protection against the specific climate conditions in India such as heavy rain, high temperature, high humidity, gales, excessive sunshine, flooding or any other climate conditions which could cause damage upon the Equipment or otherwise interfere with the execution of the works shall be

taken. The Equipment to be supplied shall be tropicalized.

2. CONSUMABLES AND SPARE PARTS

Supply of Consumables and Spare Parts

The Contractor shall provide the consumables and spare parts as per requirement of Operation Maintenance of Mobile CAAQM Station.

3. After Sales Services

The Contractor shall guarantee the availability of all consumables, spare parts, maintenance and repair work for each Equipment at cost basis for at least ten (10) years after the O&M period, unless otherwise specified in the Specifications.

Bidder should submit certificates from the manufacturers in support of available service centres and availability of spares parts and consumable in India as per Attachment no. 5.

4. WORKS SCHEDULE

Equipment to be supplied from Foreign Country:

Delivery Period for all the packages shall be **120 days from the date of the opening of Letter of Credit (L/C)**. It relates to completion of delivery on CIF (designated Sea Port / Air Port) basis for equipment of foreign origin. Further transportation to the site, where the MCAAQM is to be installed and commissioned shall be completed by the contractor **within Sixty (60) days** from the date of arrival of equipment at port of de-embankment.

5. O&M Contract

The contractor shall carry out Operation & Maintenance of Air Monitoring Stations for a period of three (3) years from the date of commissioning of the station, which can be extended up to two (2) years at the mutually agreed rates and terms & conditions.

6. WARRANTY / O&M CONTRACT Period of O&M Contract

The complete MCAAQMS shall be under Operation & Maintenance Contract from the date of commissioning of the station and maintenance of all the equipment including supply of all material shall be the responsibility of the Contractor during the validity of Operation & Maintenance Contract. The Contractor shall, in addition, comply with the performance guarantees if specified under the Contract. If, for reasons attributable to the Contractor, these guarantees are not attained in whole or in part, the Contractor shall make such

changes, modifications, and/or additions to the Equipment or any part thereof as may be necessary in order to attain the contractual guarantees specified in the Contract at its own costs and expenses and to carry out further performance test. Records of Maintenance of Analysers to be produced every six months.

7. INSTALLATION

Bidder shall depute Engineer / supervisor for onsite assembly, installation, commissioning and start up of the supplied equipment.

8. INSPECTION AND TEST PERFORMANCE TEST

The Contractor shall carry out the performance test to inspect and witness the function of each of the equipment supplied under the awarded package at site. In case the Equipment for performance test requires the supplemental and/or supporting Equipment, the Contractor shall carry out the performance test including such Equipment. Performance test will be considered to be complete only after successful completion of performance test of each equipment. The Criteria for acceptance to quality and performance shall be documented and produced in respect of respective packages. In case of results of such performance test found to be unsatisfactory by the Board / Consultant same shall be promptly rectified/replaced by the Contractor.

The Contractor shall prepare the performance test procedures for approval by the Board at least thirty (30) days prior to the testing schedules. The Contractor shall submit the performance test report to the Board.

9. Other Documents

The Contractor shall submit the following documents within sixty (60) days after the notification of award.

Item	Number of Documents to be sent to TNPCB
Catalogues, product data and test reports	1
Installation manuals,SOPs etc	1
List of consumables and spare parts	1
Manufacture’s specifications,Model No: serial No: and version details	1
Training program (ppts,Notes, SOPs etc)	1

Besides the documents here above, the Contractor shall submit the following documents at the designated time for submission as follows:

Item	Number of Document	Time of Submission
Inspection report	1	At the time of completion of factory, pre-shipment unpacking and site inspections (if applicable)
Training manual, SOPs both Soft copy and Hard copies	3	At the time of commencement of installation of equipment.
Training program	1	By the time of completion of installation of Equipment
Report of performance test	1	At the time of completion of performance test
Videos, Pendrives (Optional) demo operational issues and solutions	2	By the time of commencement of training
List of Equipment supplied	1	At the time of completion of the Works.
Record on installation with photographs	1	At the time of completion of the Works.
Local agent list with address and contact details	1	At the time of completion of the Works.

Besides the documents here above, the Contractor shall submit the notices, reports, and other documents when deemed necessary, in accordance with the direction of the Board and/or the Consultant.

- 10.** The successful tenderer should submit the Indemnity bond as per the format provided by TNPCB.

**TO BE EXECUTED BY SUCCESSFUL BIDDER INDEMNITY BOND FOR
HANDING OVER AIR MONITORING STATION INCLUDING ALL EQUIPMENT
TO THE O&M CONTRACTOR**

This Indemnity Bond is made this..... days of.....2020by a Company registered under the Companies Act, 1956/ Partnership firm/Proprietary concern having its registered office at..... (hereinafter called as “Contractor” or “obligator” which expression shall include its successors and permitted assigns) in favor of **Tamil Nadu Pollution Control Board**, with Office at 76, Mount Salai, Guindy, Chennai - 600 032, which term shall include permitted assigns and successors (hereinafter called “TNPCB” which expression shall include its successors and assigns).

Whereas TNPCB has awarded to the Contractor, a contract for O&M of the one number of Mobile Continuous Ambient Air Monitoring Stations (MCAAQMS), located at Salem vide its Letter of Indent/ Award Letter/ Contract No..... dated..... and its Amendment No.----- (applicable when amendments have been issued) (hereinafter called the “Contract”), in the terms of which Contractor shall be responsible for the Equipments to be handed over to it by TNPCB for the purpose of performance of the Contract (hereinafter called the “Equipments”).

Now, therefore this Indemnity Bond witnessed as follows:

1. That in consideration of various Equipments as mentioned in the Contract, valued at Rs. (Rupees) to be handed over to the Contractor for the purpose of performance of the Contract, the Contractor hereby undertakes to indemnify and shall keep TNPCB indemnified, for the full value of the Equipment. The Contractor hereby acknowledges receipt of the Equipments as per details in the Schedule appended hereto.
2. That the Contractor is obliged and shall remain absolutely responsible for the safe custody of the Equipments at Mobile Continuous Ambient Air Monitoring Station (MCAAQMS) belonging to TNPCB against all risks whatsoever till the Equipments are duly used in accordance with all terms of the Contract. The Contractor undertakes to keep TNPCB harmless against any loss or damage that may be caused to the Equipments.

3. The Contractor undertakes that the Equipments shall be used exclusively for the performance/ execution of the Contract strictly in accordance with its terms and conditions and no part of the Equipments shall be utilized for any other work or purpose whatsoever. It is clearly understood by the Contractor that non-observance of the obligations under this Indemnity Bond by the Contractor shall inter-alia constitute a criminal breach of trust on the part of the Contractor for all intents and purposes including legal / penal consequences.
4. That TNPCB is and shall remain the exclusive Owner of the Equipments free from all encumbrances, charges or liens of any kind, whatsoever. The Equipments shall at all times be open to inspection and checking by Engineer-in-Charge/ TNPCB shall always be free at all time to take possession of the Equipments in whatever from the equipments may be, if in its opinion, the equipments are likely to be endangered, misutilised or converted to uses other than those specified in the Contract, by any acts of omission or commission on the part of the Contractor or any other person or on account of any reason whatsoever and the Contractor binds itself and undertakes to comply with the direction or demand of TNPCB to return the Equipments without any demur or reservation.
5. That this Indemnity Bond is irrevocable. If at any time any loss or damage occurs to the equipments or the same or any part thereof is misutilised in any manner.
whatsoever then the Contractor hereby agrees that the decision of the Deputy Director(Labs)-Air of TNPCB as to assessment of loss or damage to the Equipments shall be final and binding on the Contractor. The Contractor binds itself and undertakes to replace the lost and / or damaged Equipments at its own or remedy that may be available to TNPCB against the Contractor under the Contract and under this Indemnity Bond.
6. Now the condition of this Bond is that if the Contractor shall duly and punctually comply with the terms and conditions of this bond to the satisfaction of TNPCB, then the above bond shall be void, but otherwise, it shall remain in full force and virtue.

In witness whereof, the contractor has hereunto set its hand through its authorised representative under the common seal of the company, the day month and year first above mentioned.

SCHEDULE NO. 1

Particulars of the Equipments handed over	Quantity	Value of the Equipment	Signature of Attorney in token of receipt

For and of behalf of
M/s.....

Witness I

1. Signature
2. Name
3. Address

Name
Signature
Designation
Authorised representative

Witness II

1. Signature
2. Name
3. Address

(Common Seal)
(In case of Company).

Note: * Indemnity Bonds are to be executed by the authorised persons and (i) In case of contracting Company under common seal of the Company or (ii) having the power of attorney issued under common seal of the company with authority to execute Indemnity Bonds, (iii) In case, (ii) the original Power of Attorney it is specifically for our contract or a photostat copy of the Power of Attorney if it is a General Power of Attorney and such documents should be attached to Indemnity Bond.

SECTION - IV

TECHNICAL BID TO BE ENCLOSED IN COVER – A

(To be enclosed along with technical bid in Cover - A)

Check List – A (Technical bid)

	Page No.	YES	NO
1.Earnest Money Deposit	<input type="text"/>	<input type="text"/>	<input type="text"/>
2.Declaration Form in Annexure-I	<input type="text"/>	<input type="text"/>	<input type="text"/>
3.List of customers using the instrument quoted including model number with address and phone number	<input type="text"/>	<input type="text"/>	<input type="text"/>
4. Operation and maintenance manual of the instrument quoted	<input type="text"/>	<input type="text"/>	<input type="text"/>
5.Technical specifications of the item quoted in compliance with TNPCB specifications in Annexure – II & III (Page24 to 39 & 77)	<input type="text"/>	<input type="text"/>	<input type="text"/>
6.List of address of service centre in Tamil Nadu / other states.	<input type="text"/>	<input type="text"/>	<input type="text"/>
7.The original tender schedule duly signed by the tenderer at the end of each page. (Page 1 to 19).	<input type="text"/>	<input type="text"/>	<input type="text"/>
8.The Power of Attorney authorizing the signatory of the Bid to commit the Bidder.	<input type="text"/>	<input type="text"/>	<input type="text"/>
9.Attachments in support of meeting Qualifying requirements (Attachments 1, 1A,2,2A,3,4,5,6,7,8 & 9.)	<input type="text"/>	<input type="text"/>	<input type="text"/>

10. Copy of certificate of local branch, sales, residential and representative office (s) of the Bidder in India as per certificate form pursuant to(Attachment5)

11. Certificate from manufacturer stating the country of origin of each Equipment duly authenticated by competent authority of that country (Attachment 6)

12.List of Equipment and consumables offered with manufacturers details (Attachment 7 & 8)

13.Pre-requisites for installation of equipment offered (Attachment 9)

(To be enclosed in Cover - A)

ANNEXURE – I

DECLARATION FORM

I / We

having our office at

.....

.....

.....declare that I / We have carefully read all the conditions of the tender floated for the establishment of "**The establishment of one Mobile Continuous Real Time Ambient Air Quality Monitoring System with Operation and Maintenance contract in Salem city**".

And abide by all the conditions set forth therein.

Place:

Signature with Seal

Date :

Address:

ANNEXURE-II
Tamil Nadu Pollution Control Board
Technical Specifications-Mobile CAAQM station

The equipments are intended for Mobile Continuous Ambient Air Quality Monitoring Station. The systems should be complete in functional. Material which are not specified in the specifications but required to be felt as supporting/essential as per the norms and purpose must be supplied by the vendor.

Sl. No.	Brief Descriptions	Qty. in nos.
1	Mobile Vehicle with furniture	1 unit
2	Split Air Conditioners (1.5 Ton capacity)	2 Units
3	UPS 10 KVA (4 hrs back up) – Single Phase	1 Unit
4	19" Rack	3 No's
5	Continuous Automatic Air Quality Monitor analysers for CO,SO ₂ ,NO _x ,NH ₃ ,O ₃ , PM ₁₀ and PM _{2.5} Monitors. VOC's , TRS analysers (mercaptan & Sulphur)	1 Unit each
6	Multi calibration system for gaseous monitors comprising of diluter, zero air generator , gas cylinders supply/generation and automated calibration for all analyser .	1 Unit
7	Meteorological Instrumentation includes Sensors for Wind Direction, Wind Speed, Vertical Wind Speed, Ambient Temperature, Relative Humidity, Solar Radiation, Rainfall Monitor, Barometric Pressure, mounted on a suitable Meteorological tower.	1 Unit
8	Computer system consisting of one number of PC along with one number of laser Color Printer and DAS at the monitoring station with peripherals and software for data acquisition/display/transfer and suitable to integrate with existing software at TNPCB (CAC).	1 Unit
9	Data card 3G/4G/5G	1 Unit
10	Data Display system (1.5f (H) * 3f (W))	1 Unit
11	UPS 6 KVA 2 hours back up for Analysers compartment	1 Unit
12	Inverter 5KVA	1 Unit

Technical Specifications for the Mobile Continuous Ambient Air Quality Monitoring Station (MCAAQMS)

1. MOBILE VEHICLE:

Heavy Duty Vehicle with chassis (conformed to latest BS norms) register able and useable in Chennai and also anywhere in Tamil Nadu as per existing MV rules from Indian manufacturers suitable to fabricate Continuous Automatic Air Quality Monitoring (CAAQM) container shall be provided . The mobile station shall be equipped with SO₂, NO_x,NH₃, CO, O₃, PM₁₀, PM_{2.5},VOC,TRS (Mercaptan & Sulphur) and Meteorological equipments, data logger, multipoint calibrator, Air conditioners, UPS etc, as required for a complete self contained mobile air pollution monitoring station.

The Mobile chassis shall have necessary accessories for fitting CAAQMS with adequate suspension to minimize the impact on the instruments while driving the vehicle. Lift jacks shall be provided at all four corners of the vehicle to ensure its stability and leveling while parking at monitoring site.

The van shall be equipped with connection from the Grid supply and accordingly 50 meter cable drum shall be provided, so that cable can be drawn and connected to the mains electrical supply based on the actual site conditions.

Mobile van shall have compartments of air conditioning environment for mounting of analyzer equipments, non air conditioning compartments for storing calibration gases and Batteries. The driver cabin shall be vehicle supplier's standard design . Necessary nos. of entrance as per the requirement shall be provided in the mobile van.

The outer shell of the van shall be with outer layer of SS 304 sheets, minimum thickness 1.5 mm and inner layer of Anodized Aluminum / SS 304 sheets, minimum thickness 1.5mm painted material with full rain, sun and environment protection. The PUF insulation shall be provided between inner and outer layer. The thickness of the insulation shall be 40 mm as minimum.

The painting on the interior and exterior wall shall be done as per the TNPCB requirement. TNPCB will provide details on the color and artistic works to be done on the mobile van during the painting.

Monitoring Container is designed for housing the ambient air quality monitoring instruments to protect them from dust and heat. Temperature and Humidity sensors shall be

installed in the housing for checking the humidity and temperature inside the station. Necessary number of 19" racks shall be installed inside the container so that the analysers are easily accessible from front & back for calibration and maintenance. All other infrastructure work for setting up the stations viz., flooring mat, paneling, internal wiring for Air conditioning, Inverter and UPS shall be provided by the operator/O&M contractor.

2. Station Furnishings :

- i) Necessary no. of 19" rack cabinet to accommodate all the analysers.
- ii) Fire extinguishers - 2 Nos.
- iii) Furniture:
 - a) Material -- Furniture made of water resistant laminated board.
 - b) Cupboard -- As per requirement for keeping spairs, Consumables, and others
 - c) Working table -- Powdered coated MS frame size 1400x900x750mm(wxdxh) and top 19 mm thickness board. Based on the space available in the container table size may altered on mutual discussion
 - d) Revolving chair- 2 nos.
- iv) **MISCELLANEOUS**
 - a) The exhaust gases from the analyser should be collected and discharged by a common exhaust pipe and should be vented.
 - b) Folding aluminium ladder for roof access
 - c) Thermostat for measuring the temperature inside the station.
 - d) Hygro Meter for measurement of Humidity inside the station.
 - e) Mounting bracket for the ladder
 - f) Fire and Smoke detectors with alarms
 - g) Notice board.
 - h) First aid box

v). AIR CONTIONERS (O'General make)

- Type : 2 Nos. 1.5 Ton split type operated alternately by an automatic programmable timer.
- Power supply : 230 Volts \pm 10 volts AC and 50 Hz \pm 3%.

3. ON LINE UNINTERRUPTED POWER SUPPLY (UPS)

Single phase 6KVA UPS along with Automatic Delayed Restoration Device (ADRD) with 2 hours backup in full capacity should be provided for the smooth operation of the station with necessary indicators, protections & alarms.

3.1	Capacity		:	6 KVA
3.2	Technology		:	PWM using IGBT / MOSFETS
3.3	Output	Voltage	:	230 V AC
		Voltage regulation	:	$\pm 1\%$
		Frequency	:	50 Hz
		Frequency regulation	:	$\pm 0.01\%$
		Waveform	:	Pure sine wave
3.4	Battery	Battery type	:	Sealed maintenance free
		Backup time	:	2 Hrs. (Full load)
		Battery Capacity	:	Depends upon backup time
		Recharge time	:	4 hrs to 90% after complete discharge

4. GENERAL SPECIFICATIONS FOR ALL ANALYSERS

The ON/OFF switch and display of the entire important status signals viz., Sample flow, failure status, temperature, concentration, range switch, manual / auto mode, zero / span mode should be on front panel.

The analysers should operate at operating voltage 230 volts ± 10 volts AC and 50 Hz $\pm 3\%$. The power supply input to be protected against spikes from power input and to the analyser by an LC filter to protect the analysers. The power connection cable should be CEE type complete with 15 Amperes plug adaptable to Indian mains socket.

The Manufacturer shall provide minimum of 2 weeks of operational & preventive maintenance hands-on training for at least two persons at the installation site at their cost.

The calibration gases provided with the system shall have traceability to NIST /NPL and produce necessary certificates.

All ambient gas analysers shall conform to the USEPA/ MCERTS EU automated reference or equivalent method designation as required by the specification for individual analysers.

Meteorological sensors should be sturdy to coastal weather along with

lightening arrester and should be coated with moisture, acid and alkaline resistant.

The manufacturer shall provide 1 year normal warrantee and four years extended warrantee on maintenance contract for the entire system.

Each set of analysers and other equipments shall be supplied with two copies of Operation manuals soft and hard copies comprising details in three parts:

Parts (I)	should comprise installation, operational and troubleshooting details;
Parts (II)	should have details about preventive, routine and corrective(both as videos and text matters)
Parts (III)	should comprise details of all electrical, electronic and pneumatic circuit diagrams, details of each spare parts, Catalogue No. etc., and details of each electronic card / PCB's.(Lists to be provided)
Parts (IV)	schematic diagram for possible repair maintenance.

Digital Output

Multi drop RS 232 port shared between analyser and computer for data, status and control to access remotely and setup of the system..

5. Quality Control and Standard

Data shall be collected and validated according to USEPA standards, using the methodologies included in 40 Code of Federal Regulations/EU regulations. All analyzers shall have current USEPA / EU reference or equivalent method designation and shall be of the latest design, EU defined QAL-1, 2 and 3 protocols for Automated Monitoring systems shall be adhered and reported.

Seller shall submit a Standard Operating Procedure for the air quality monitoring system to buyer at the time of bid submission. This Standard Operating Procedure shall be mutually agreed and approved by the Buyer prior to award.

The Standard Operating Procedure shall contain for the following activities:

1. Operating procedures for all analyzers and meteorological sensors
2. Calibration procedures
3. Calibration schedule
4. Maintenance procedures
5. Maintenance schedule

6. Statistical data validation procedures(automated with software)
7. Quality Assurance procedures (automated with software)
8. Quality assurance documentation
9. And the sample reports of the above should be clear and understandable both graphical and as reports as requested.

The calibration procedures for analyzers shall conform to USEPA/EU methodologies and shall include daily calibration checks, biweekly precision checks and linearity checks every six weeks. All analyzers shall undergo full calibration check every six weeks. Data obtained from these calibration checks and copies of associated Quality Assurance and calibration documentation, shall be submitted to the Buyer along with the Air Quality Data including AQI.

6. Air Quality Reports

Air Quality Data shall be submitted to TNPCB on a monthly basis in the form of an Air Quality Report. This report shall include, tabular and graphic information on gas and dust concentrations as well as meteorological data for the site. The data to be reported are 15min, 1 hour, daily, weekly and monthly averages, minimums, maximums, standard deviations, Calibrations, QAL checks, total data captured and percent data capture, variance, and statistical validation, etc. In case of any discrimination on the data, the contractor has to provide averages for any duration of the period. The Air Quality Report shall also include wind roses and pollution roses to specify in degree and words.

The Seller shall agree to submit an audit report (model to be provided) on calibrations conducted by a third party following USEPA/EU methodologies. The results of these audits shall be made immediately available to both the Seller and Buyer compliant and auditable at any time at the site.

Suppliers should offer their remarks on the compliance of every point of the Technical Specifications for the Mobile Continuous Ambient Air Quality Monitoring(MCAAQM) System prescribed by TNPCB with documental evidence.

The O&M operator shall ensure at least 92% data capture rate (inclusive of downtime due to calibration and power failure excluding UPS backup).

Three phase power supply distribution board shall be fixed with all required MCBs, phase charge over earth and overload sensors and trip switches along with

necessary status and fault indicators. The load on each phase shall be evenly distributed and there should be one phase for exclusively for the analysers. There shall be a high quality stainless steel nameplate on the mobile, which shall indicate name of the owner. Movement of Mobile CAAQMS shall be as per TNPCB requirement.

7. SPECIFICATIONS OF SAMPLING SYSTEM

A suitable air sampling system consisting of manifold at least with 10 port equipped adequate suction pump and moisture removal device shall be provided as to meet the USEPA / EU criteria.

Gases sampling system

Height of the sampling system :	Approx. 1.0 meter above the roof
Roof entry cut out :	Stainless Steel
Conduct :	Stainless Steel
Inner sampling system :	Borosilicate glass
Sampling head :	Stainless Steel
Manifold :	10 port for tubes 6 x 1 mm, self- tightening.

8. SPECIFICATIONS OF 19" RACK

Suitable 19" Rack cabinets to accommodate all analysers, calibrators, Zero air generators, data logger etc. should have adequate fittings for vibration free and sliding facility for maintenance shall be provided.

9. SPECIFICATIONS OF AMBIENT AIR ANALYSERS

I. Mobile online ambient air quality monitoring shall have the following requirements		
S. No.	Requirements	Quantity
1	Vehicle - TATA Make or Suitable	1 No.
2	PM _{2.5} analyser	1 No.
3	PM ₁₀ analysers	1 No.
4	Carbon monoxide (CO) analyser	1 No.
5	Ozone (O ₃) analyser	1 No.
6	NO-NO ₂ -NO _x analyser	1 No.
7	NH ₃ analyser	1 No.
8	Sulphur dioxide (SO ₂) analyser	1 No.
9	VOC analyser	1 No.
10	Analyser for monitoring TRS (mercaptan & sulphur)	1 No.
11	Calibration systems for all analysers	1 No.

12	Data Collection System (Logger) & Software	1 No.
13	Weather station latest version with software	1 No.
14	GPS latest	1 No.
15	Wireless Data Card – 3G/4G latest	1 No.
16	UPS – 6 KVA with 2 hrs back up	1 No.
17	Air conditioners , 1.5 Ton	2 No.
18	Inverter – 5 KVA	1 No.

II. Technical specifications of each items in Mobile AAQMS

1	Vehicle	1 No.
	Chassis	TATA. Make or Suitable
	Body	Tailor made body built by a reputable motor-body builder according to the approved designs / specification.
	Internal furnishing	Tailor made items like seats, storages racks, anti-vibration pads for mounting analysers and standards items like Fans & lights, carrier on Roof & Ladder.
	Design and fabrication of vehicle for mobile CAAQM station:	
	<p>a) The mobile AAQM vehicle would be fabricated on a LCV chassis of TATA Motors</p> <p>b) The body should be innovatively styled and designed.</p> <p>c) It shall have sufficient seating facility for 3 members including driver. This seating should be a flexible platform of size of 6.5 x 1.5 feet and foldable can be used by the manpower during the night time.</p> <p>d) Roof top of the vehicle shall have the facility of hole of required size sent-out the sampling probe for collection of ambient air sample.</p> <p>e) The vehicle shall be air conditioned with 1.5 Ton capacity AC's x 2 of reputed make O General with 5 KVA inverter with two hours backup.</p> <p>f) 6 KVA UPS with 2 hours backup for analysers. It should have sufficient earthlings. The vehicle shall also have facility to receive external electricity from nearby sources.</p> <p>g) The vehicle shall have adequate anti-vibration systems so that it can be easily moved in rural areas without any damage to the internal facilities.</p> <p>h) Vehicle would conform to latest rules and regulations of RTO. It shall have a cabin for driver with two passengers and a work cabin of approx. 2 meters length and the 2meter height for standing upright.</p> <p>i) The detailed general specifications of structure, paneling, flooring, insulation, interiors, electrical, power supply, welding, painting is annexed will be furnished by TNPCB.</p> <p>The vehicle shall have GPS tracking facility and Wi-Fi facility so that its movement can be monitored from Head Office. Hence a Cloud platform to be provided to hyperlink to TNPCB (CAC). An Integrated GPS & 3G/4G/5G modules for location tracking and wireless communication for data transfer and integrated</p>	

	with existing software of TNPCB (CAC).	
2	PM_{2.5} analyser	
	Beta Gauge Automatic PM _{2.5} Suspended Particulate Matter Monitor (Conforming to US EPA Automated Federal Equivalent Method (FEM) Designation/MCERTS Methods as per EU regulations)	
	The analysis shall be based on the principle of β -ray attenuation measurement of particulate matter collected on fiberglass filter tape while sampled through the instrument. The analyser shall be equipped with an internal microprocessor to handle all sequences and to calculate automatically the concentration of SPM.	
1	Principle	Continuous measurement of PM _{2.5} in ambient air
2	Particle Size Cut Off	0 – 2.5 Microns
3	Measuring Range	0 to 2000 $\mu\text{g}/\text{m}^3$
4	Resolution	1% of the concentration
5	Minimum Detectable Limit	2 $\mu\text{g}/\text{m}^3$
6	Detector	Plastic Scintillator /Silicon Semiconductor Beta Detector / Geiger Muller Detector (subject to US EPA approval)/EU certifications.
7	Air Flow Rate	16.7 LPM.
8	Filter Material	Glass Fiber Filter
9	Display	LED / LCD
10	Sampling Head	Suitable heated sampling heads for measurement of PM _{2.5} with adjustable temp. 20 ^o -70 ^o C.
11	Calibration	Perform with internal span membrane (in built) periodically, record and perform QAL checks.
12	Roll Length	Approximately 30 meters.
13	Measurement Result	1 hr average or shorter.(15mins/30mins/60mins)
3	PM₁₀ analyser	
	Beta Gauge Automatic Pm10 Suspended Particulate Matter Monitor (Conforming to US EPA Automated Federal Equivalent Method (FEM) Designation)/EU Methods and regulations	
	Based on the principle of β -ray attenuation by particulate sampled through the instrument and collected on fiberglass filter tape. The analyser shall be equipped with an internal microprocessor to handle all sequences and to calculate automatically the concentration of SPM.	
1	Principle	Continuous measurement of PM10 in ambient air.
2	Particle Size Cut Off	0 – 10 Microns.
3	Measuring Range	0 to 2000 $\mu\text{g}/\text{m}^3$
4	Resolution	1% of the concentration
5	Minimum Detectable Limit	2 $\mu\text{g}/\text{m}^3$
6	Detector	Plastic scintillator /Silicon Semiconductor Beta Detector /Geiger Muller Detector (subject to US EPA approval) MCERTS Methods,EU regulations.
7	Air Flow Rate	16.7 LPM.
8	Filter Material	Glass Fiber Filter
9	Display	LED / LCD
10	Sampling Head	Suitable heated sampling heads for measurement of PM10 with adjustable temp.

			20°-70°C.
	11	Calibration	Perform with internal span membrane periodically
	12	Roll Length	Approximately 30 meters.
	13	Measurement Result	1 hr average or shorter.(15 mins,30 mins,60 mins)
4	NO - NO2 – NOx- Analyser		
	AMBIENT OXIDES OF NITROGEN (NO - NO2 – NOx-) ANALYSER (Conforming to US EPA Automated Federal Reference Method (FRM) Designation/EU MCERTS)		
	1	Principle	Chemiluminescence
	2	Measurement	NO -NO ₂ - NOx in Ambient Air.
	3	Display	Digital
	4	Ranges	Auto ranging 0-2000 PPB.
	5	Minimum Detectable Limit	1 PPB
	6	Noise Level	0.5 ppb
	7	Zero Drift	< 1 ppb/24 Hrs.
	8	Span Drift	< 2% in 15 days of full scale
	9	Response	Time 30 seconds or earlier
	10	Linearity	+1% of full scale
	11	Calibration	Perform with standard span gas cylinder as per Indian regulations Standards at least 150% of Regulatory Standards.
5	Sulphur dioxide (SO2) analyser		
	1	Principle	Pulsed UV Fluorescence
	2	Measurement	Sulphur Dioxyde in ambient air
	3	Lower Detectable limit	1ppb
	4	Ranges	Auto ranging 500ppb
	5	Display	Digital
	6	Noise Level	0.50ppb or1%of the reading
	7	Zero Drift	< 1ppb/24Hrswithautomatic zero compensation
	8	Span Drift	< 2 ppb full scale in15days
	9	Calibration	Perform with standard span gas cylinder as per Indian regulations Standards at least 150% of Regulatory Standards.
6	Ozone (O3) analyser		
	AMBIENT OZONE(O ₃) ANALYZER Conforming to USEPA Automated Federal Reference Method(FRM) Designation/MCERTS and EU regulations		
	1	Principle	UV Photometric
	2	Measurement	Ozone in Ambient Air
	3	Display	Digital
	4	Ranges	Autoranging0-500ppb
	5	Minimum Detectable limit	2.0 ppb
	6	Noise	+1.0 ppb
	7	Zero Drift	<½%per month
	8	Span Drift	<1% per month
	9	Flow Rate	1-3Liters/Minute
	10	Calibration	Perform with standard span gas cylinder

			as per Indian regulations Standards at least 150% of Regulatory Standards from multi gas calibrator
7	Carbon monoxide (CO) analyser		
	Ambient carbon monoxide (CO) analyser shall confirm to USEPA Automated Federal Reference Method(FRM) Designation/ MCERTS EU directive.		
	1	Principle	NDIR Cross flow modulation /Non dispersive Infra-Red(NDIR) with Gas Filter Correlation
	2	Measurement	Carbon Monoxide in ambient air
	3	Display	Digital
	4	Ranges	At least four ranges Auto ranging 0-100ppm
	5	Minimum Detectable limit	0.1ppm
	6	Zero Noise	0.05ppm with time constant ± 30 sec
	7	Zero Drift	<1%full scale in 24 hrs.
	8	Span Drift	<0.2 ppm/7days
	9	Calibration	Perform with standard span gas cylinder as per Indian regulations Standards at least 150% of Regulatory Standards.
8	Analyser for monitoring individual VOCs as per (TO14 Method)		
	The VOC analyser should be sensitive, mobile and flexible. Un interrupted sampling with pre-concentrator on one absorbent tube. Gas Chromatograph with 0.2mm ID metallic column and programmable temp gradient oven and pressure/ flow control of carrier gas. It should be software integrated for easy setup and operations. Should have automatic validation and calibration with internal CALIB. Internal or external multi point Calibration and zero with CALIB MFC.		
	Requirements:		
	Detectors:	Flame Ionization Detector (FID)	
	VOC compounds	C6 to C12 Compounds	
	Detection Range	0.05 to 45 $\mu\text{g}/\text{m}^3$ for tri-methyl Benzene and Benzene. 0.05 to 400 $\mu\text{g}/\text{m}^3$ for tri- methyl Benzene and Benzene	
	Detection limit	Tri- methyl Benzene: 10 ppt Benzene: 1ppt in Standard	
	Relative Standard Deviation	<0.3 % over 48 hr (RT)	
	Cycle time:	15 min,30min,40min,60min.	
	Gas supply	H ₂ (FID and carrier gas): 30ml/min Air (FID): 180 ml/min Sample Inlet vacuum pump	
	Sample volume	30 to 700 ml programmable	
	Gas generators:	1.Dry and clean air, 3 bar, 250 ml/min. 2.Quality 5 nitrogen, 4 bar, 20 ml/min. 3.Quality 5 hydrogen, 3 bar, 20 ml/min.	
	Calibration:	1 ppm calibration mixture TO-14 or PAMS. MFC dilution module to create to create mixture of 1, 2, 3, 5, 8, 10 ppb in methane free zero air	

	Mounting:	19" rack, 5 standard height unit
9	Ambient Ammonia Analyser	
	Principle	Chemiluminiscence
	Range	0-1000ppb
	Lower Detection limit	1ppb
	Zero drift	< 5ppb/ 24 hrs
	Span Drift	<2% for 15 days of full scale
	Linearity	± 1% of full scale
	Response time	<300 sec
	Communication	Digital and analog output
	Calibration:	Calibration using Multi gas calibration
	Mounting	19" rack, 5 standard height unit
10	Analyser for monitoring Speciation Sulphur Compounds and total TRS (mercaptans & sulphur)	
	<p>Industrial Gas Chromatograph technique for analysis and monitoring of sulphur compounds in air: H₂S, Mercaptans, Sulphide instrument/analyzer required for the identification and quantification of ppb level concentrations of mercaptan & sulphur containing individual compounds in ambient air by Speciation and as TRS Compounds.</p> <p>Automatic sampling using a loop, injection by automatic valve on the column, Isothermal gas Chromatograph, Speciation detection by wet cell sulphur specific detector.</p>	
	Requirements:	
	Detectors:	Wet Cell Sulphur specific detector
	Detection limit	ppb ≤1 ppb
	Range (adjustable)	0/10 or 0/100 or 0-1000 ppb
	CycleTime	H ₂ S,DMS,DMDS,etc-600sec and above
	Repeatability:	RSD <3% on concentration over 48H
	Others	Remote monitoring and injection control, Fully traceable with on board archiving of results and chromatograms. QC setup and control of threshold alarms
	Gas generator:	Carrier gas dry Nitrogen 3 bar with ≤ 4ml/min. Calibration in continuous ~50ml/min Calibration duration validation~ 250 ml/min
	Calibration:	Auto Calibration/validation with embedded permeation tubes /Calibration gas mixture. MFC dilution module to create to create mixture of 1, 2, 3, 5, 8, 10 ppb
	Communication	Ethernet, remote control; Data export by MODBUS/4-20mA/0-10V with Time stamp results
	Software compatibility	Should have calculation module for statistical analysis for odour index/chemical impact with Meteorological data.

	Mounting:	19" rack, 5 standard height unit
11	Calibration Unit With Span Gas Dilution Facility	
	<p>The certified NIST / NPL span or calibration gas mixture (low conc. range) with S.S.container/cylinder, SS regulators & filters. With calibration unit having gas flow(approx):10ml/min(calibration gas); 1.4-2.0lit/min(dilution gas).</p> <p>Auto gas selection option for automatic calibration for ppb level calibration gas (10-30 ppb of individual compound of interest). Dilution device for calibration gases. Manual and software selectable values for sample, calibration span and blank zero air gases.Dilution factor between1:50 to150.In case gases not available permeation tube set up and supply with validity of permeation tube can be used. In any case gases are the most preferred option.</p>	
12	Gas Supply& Control Including Carrier	
	<p>Mass flow controller and pressure regulator switch pressure gauge for carrier gas. Intel pressure regulator with pressure limit switches for all necessary gases. Need level valves with quick shutoff valves for zero air.</p>	
13	Memory And Control Facilities	
	<p>Method auto load and system restart after power failure ,Methods storage capacity with timed events program for control of system parameters and valves in permanent memory. Busy (operational) status; calibration/sample gas selection. Fault status; gas supply(low press).</p> <p>System stability (temperature and sample flow).Detector signal (low)and communication errors. Status indicated on monitor by LED's & controlled from computer.</p> <p>Outputsignals:Analog0-1mV,Serial RS232 for data intermission and CP-BUS for monitor control from remote. Both digital & analog outputs should be available.</p>	
14	Software	
	<p>Window based latest software's(English version)consisting instrumental control features as well as data acquisition, processing and handling in desired format including sorting of data(15min,1/4/8/12/24hourly,dayswise/date wise reporting as microgram/m3 or ppb (selectable) & averaging etc.).Data presentation/graphical & statistical processing & data transfer to Excel or latest software facility. Communication software with protocol compatible to communicate & transferred at a from all analyzers to central computer through modem (preferably including sample chromatogram). System should have remote access to all analyser, monitor & others. Software should be compatible to other software for integration (such as Calibrator software, Statistical and Analytical tool software for desired output). Software should be Modelling software with the Metrological data for live odour/ pollution index and provide Graphical impressive results. The Software should have a QA/QC software in built or integrated for statistical analysis and presenting control charts for data validation by approved regulation of EU or USEPA for Automated monitoring systems.</p> <p>Resident program as well analysers control /monitor user program with monitor start-up/off/status, blank/calibration and sample gas measured, fault status ,carrier gas, and communication errors indications. Updation of response factors automatically after calibration run. Updation of retention times after every sample analysis .Auto tune facility. Raw data storage capacity with outer as minimum for three month or more.</p>	
15	Multi Gas Calibration System (SO₂, NO, CO, O₃ & NH₃)	

	<p>The calibration system for air monitoring equipment (listed above) should incorporate an automatic gas dilution calibration gas standards and a high performance zero air generator to calibrate all of the analyzers in the system. The calibration cycle should be able to be configured through the data Acquisition System at any specific time during the day or night. It should be mounted on standard 19" rack.</p> <p>The dilution calibrator should be able to perform mixing of source gas, from the calibration gas bottles, with zero air generator, in order to generate a wide range of calibration gas concentrations and minimizing the number of calibration gas standards required. All the calibration gases provided along with the system MUST be NIST/NPT traceable with certification validity. It should also have facility for Gas Phase titration(GPT),having Ozone generator. The system should also include calibration of Ozone analyzer. In case non availability of gases, permeation bench should be available for using permeation tubes in calibration and data validation. It is insisted that all permeation tube should have validity to use certifications and comply to be used within due expiry date.</p>														
16	<p>Specifications of Meteorological Sensors</p>														
	<p>The meteorological instrumentation should be interfaced directly with the Data Acquisition System after passing through a lightning protection isolation box. A crank-up telescoping meteorological 10meters Mast to be used to mount the meteorological instrumentation. The relative humidity and solar radiation sensors should be mounted on the tower.</p> <p>a) Wind Direction: The sensor to provide low starting threshold, fast response and accuracy a wide operating range in adverse environmental conditions.</p> <table border="1" data-bbox="310 1079 1385 1339"> <tr> <td>Accuracy</td> <td>+2%</td> </tr> <tr> <td>Wind Direction Operating Range</td> <td>0 to360</td> </tr> <tr> <td>Starting Threshold</td> <td>0.5m/s</td> </tr> <tr> <td>Distance Constant</td> <td>1.1 m of air maximum</td> </tr> <tr> <td>Temperature Operating Range</td> <td>-40^oto60^oC</td> </tr> <tr> <td>Damping Ratio</td> <td>0.4 at 10 initial angle of attack</td> </tr> <tr> <td>Material</td> <td>Anodized Aluminum</td> </tr> </table>	Accuracy	+2%	Wind Direction Operating Range	0 to360	Starting Threshold	0.5m/s	Distance Constant	1.1 m of air maximum	Temperature Operating Range	-40 ^o to60 ^o C	Damping Ratio	0.4 at 10 initial angle of attack	Material	Anodized Aluminum
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	<p>a) Wind speed: The anemometer to provide a low starting threshold wide dynamic response and high accuracy over a wide range of wind speeds and a variety of environmental conditions. Specifications for the wind speed sensor are as follows</p> <table border="1" data-bbox="310 1514 1385 1703"> <tr> <td>Measurement Range</td> <td>0-50m/s</td> </tr> <tr> <td>Temperature Range</td> <td>-40^oto 60^oC</td> </tr> <tr> <td>Starting threshold</td> <td>0.4 m/s</td> </tr> <tr> <td>Accuracy</td> <td>0.2m/s or 1%, whichever is greater</td> </tr> <tr> <td>Material</td> <td>Anodized Aluminium</td> </tr> </table>	Measurement Range	0-50m/s	Temperature Range	-40 ^o to 60 ^o C	Starting threshold	0.4 m/s	Accuracy	0.2m/s or 1%, whichever is greater	Material	Anodized Aluminium				
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	<p>b) Ambient Temperature</p> <table border="1" data-bbox="310 1738 1385 1927"> <tr> <td>Calibrated Temperature range</td> <td>0^oC to55^oC</td> </tr> <tr> <td>Response</td> <td>10 seconds in still air</td> </tr> <tr> <td>Linearity</td> <td>±0.1^oC</td> </tr> <tr> <td>Accuracy</td> <td>+ 1.5^oC</td> </tr> </table>	Calibrated Temperature range	0 ^o C to55 ^o C	Response	10 seconds in still air	Linearity	±0.1 ^o C	Accuracy	+ 1.5 ^o C						
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Response	10 seconds in still air														
Linearity	±0.1 ^o C														
Accuracy	+ 1.5 ^o C														
	<p>c) Relative Humidity Specification are as follows:</p>														

	Measuring Range	0 to100%RH
	Accuracy	$\pm 1.0\%$ (5-95%RH)
	Response Time	< 2minutesfor RH10%to90%
		< 5minutesfor RH 40%to90%
		Typically20seconds
	Linearity	Better than $\pm 2\%$
	Reproducibility	0.5%
	Temperature Range	0 to60 ^o C
	d) Solar Radiation	
	The detector should be able to measure short-waver adiation which comprises the direct component of sunlight and the diffuse component of skylight. Specifications are as follows:	
	Sensitivity	80 micro amps per 1000 W
	Temperature dependence	0.15%per ^o C Max
	Response Time	10 microseconds
	Linearity	1%from0 to3000 watts/m ²
	Orientation	No effect on instrument performance
	Calibration	Calibrated against an Eppley Precision Spectral Pyranometer (PSP) under natural daylight conditions.
	Cosine Response	Corrected up to 80 angle of incidence
	Orientation	No effect on instrument performance
	e) Barometric pressure Specifications	
	Operating range	800to 1100Bar
	Proof pressure	2Bar
	Operating temperature	0 ^o C to85 ^o C
	Non linearity and hysteresis	0.1%FS
	Reputability	0.2%FS
	Temperature shift	0.3%FS /10 ^o C
	Response Time	1m/sec
	Long termstability	0.1%FS
	f) Telescoping Crank-up Meteorological Mast	
	The wind direction, wind speed, vertical anemometer and temperature sensors are to be mounted on the Meteorological Mast. The tower is to be a free standing four section telescoping tower provided with a hand crank or arise and lower instruments mounted on the top section. Specification are as follows:	
	Extended Height	10meters
	Retracted Height	2meters
	Wind load Limit	0.7896sq.m(8.5 sq.ft) at50mph
	Number of sections	4
	Construction material	Galvanized steel or aluminum
	Meteorological, Flow and Electronics Calibration: The supplier should provide calibration devices for all the meteorological and other electrical equipment mentioned above as per the specification of the manufacturers.	
17	Specifications Of Data Logger	

	Data logger with 8 analog and 10 digital inputs. Ability to log channels at different intervals and should have capability of averaging and displaying realtime data and averaged data over a period of 1min,10min, ½hr,4hrs,8hrs,24hrs,1month and year. Communication between data logger and computer using standard RS232 connector. Capable of connecting at least 99stations.PC may also be used	
18	Specifications of Station Computer (Minimum Configuration)	
	Processor	Intel Core i7 3770 (3.4 GHz, 8MB cache, 4 cores)
	RAM	8 GB DDR-III RAM 1066 MHz
	HDD	3.5", 1 TB, 7200 RPM SATA HDD
	Monitor	22" LED
	Ports	2 Serial, 1 HDM Port, 1 parallel and 2 USB with 3.0 front 3 Rear USB2 Port, 1PS-2 Keyboard, 1PS-2 Mouse port, 1VGA 4 bays (2 external & internal) with LAN 1PS
	Key board	104 keys
	Mouse	USB mouse with pad
	Networking facility	10 / 100 /1000 on board integrated network port
	Graphics	1 GB minimum graphic card
	Printer	LaserJet Printer 1200 x 1200 dpi 12 PPM black
	SOFT-WARE	Pre-loaded latest Windows 10 or latest operating system and Microsoft office
19	Data Acquisition System	
	<p>The Data Acquisition System(DAS)should be able to collect and store meteorological data and air quality data from all instruments listed above. The DAS should be data logger designed to acquire, transmit, process and store data. DAS should include following minimum features:</p> <ul style="list-style-type: none"> • "Industry Standard "RS232 Communication enabling digital/analog communication with all supported monitoring and meteorological equipment. • Supports remote communication through radio ,switched telephone, cellular telephone as well as short haul wifi-modems. Capable to send SMS message to Cellular dives for location-specific or in the event of fault or in case of data limitation error. • Data storage space for minimum30 days of 15minute historical data • Captures minimum, maximum, average, percentile and standard deviations. • Lighting & surge protection facilities. • Full control over calibration cycle periods. • Password Protection. • DAS should be designed for unattended use. • DAS should have 6 to 8 line of fully pixilated graphic display 	

	<ul style="list-style-type: none"> • (LCD) for data & set-up parameters to be viewed.
20	<p>Analytical Software</p> <p>The supplier should provide Windows 10 or latest software based for data acquisition from the DAS and for statistical analysis and reporting of the monitored parameters mentioned above. Analysis and reporting software should posses following minimum features:</p> <ul style="list-style-type: none"> •Windows 10 or latest compatible. •File format conversation. (to meet compatibility to integrate data generated with both CPCB server and also TNPCB server existing software.) •Statistical analysis of data for maximum, minimum, average, percentile analysis and standard deviation for various time intervals using the monitored data. Data Validation software to meet similar to EN 14181 should be provided. •Tabular and graphical format for report production integrated with R studio. •Wind rose/Pollution Rose graphs. •File export facility. •Windows based printer support. •AQI report generation and submission from the monitoring location
21	<p>Warranty: Three years of comprehensive warranty for all the instruments from date of installation.</p>
21	<p>O&M: To quote for five years, that starts after successful installation and commissioning.</p>
22	<p>Training</p> <p>The Supplier, at his own cost shall impart the following three phase training to Tamilnadu Pollution Control Board Scientists;</p> <ol style="list-style-type: none"> a) On site operation & maintenance training at the time of installation for two Scientists for a period of one week. b) Two weeks training for two Scientists, one week on operation, method development, maintenance, software, data interpretation (qualitative and quantitative), etc. and one week training on sample preparation for analysis at the respective manufacturer's application laboratories. c) Two weeks onsite training to three Scientists on sample & calibration standards preparation, operation, method development, maintenance, software, data interpretation (qualitative and quantitative), etc.
23	<p>General conditions of the supply</p>

	<ol style="list-style-type: none"> 1. The instrument and all its sub-units should operate on 230 volts 50 Hz power supply. 2. All the operation and maintenance manuals, circuit diagrams, application notes and application software to be supplied should be in English language. 3. The supplier / manufacturer should have Indian agent to provide after sales service. 4. Spares required for three years shall be included in the supply. 5. The Bidder should be a manufacturer/authorized representative of a manufacturer, who must have designed, manufactured and tested . 6. The bidder should be a manufacturer or authorized agency for manufacturing or supplying of goods as listed in the scope of work. They must have manufactured, supplied, tested and the bidder should have good track record in supply, installation and commissioning and operation & maintenance services of MCAAQ Mobile Van. 7. For all the items not manufactured by the Bidder i.e. Analysers, Monitors, Calibrators and Sensors, the bidders should be authorized by the manufacturers for these items as per the format "Form of letter of authorities" provided. 8. Bidder or their associate as O&M partner should have adequate financial capability to execute the contract. O&M Partner should have the experience in providing O&M services to Mobile Continuous Air Quality Monitoring Van or stationery CAAQM stations in pollution control Board. 9. Bids of bidders quoting as authorized representative of a manufacturer, who meets the above requirements in full, can also be considered, provided: 10. The manufacturer furnishes a legally enforceable authorization certificate in the prescribed format.
22	<p>Important</p> <p>The successful bidder shall give an undertaking that the spares must be made available for 10 years from the date of installation.</p> <p>Compliance of specifications shall be authenticated by the manufacturer point by point.</p>

PROFORMA FOR PERFORMANCE STATEMENT FOR MANUFACTURER

Bid No. _____ Name of Equipment _____ Date of Opening _____ Time _____

Name of the Manufacturer _____

Order placed by (full address of Purchaser)	Order No. & Date	Description of ordered equipment (Model no.)	Quantity supplied	Value of order	Date of commissioning and handing over	Has the equipment been satisfactory functioning? (Attach minimum two certificates from the Purchaser/Consignee for each equipment)
1	2	3	4	5	6	7

NOTE : Bidder to furnish above detail for each equipment of the quoted package on separate sheet. Signature of the Authorized Representative

Name of the Person

Position

PROFORMA FOR PERFORMANCE STATEMENT FOR AUTHORIZED REPRESENTATIVE OF THE MANUFACTURER

Bid No. _____ Name of Equipment _____ Date of Opening ____
 _____ Time _____

Name of the Manufacturer _____

Order placed by (full address of Purchaser)	Order No. & Date	Description of ordered equipment (Model no.)	Quantity supplied	Value of order	Date of commissioning and handing over	Has the equipment been satisfactory functioning? (Attach minimum two certificates from the Purchaser/ Consignee for each equipment)
1	2	3	4	5	6	7

NOTE : Bidder to furnish above detail for each equipment of the quoted package on separate sheet. Signature of the Authorized Representative

Name of the Person

Position

<Letterhead of the Bidder>
FORM OF QUESTIONNAIRE

BIDDING DOCUMENTS
FOR SUPPLY, INSTALLATION & COMMISSIONING
OF MOBILE CONTINUOUS AMBIENT AIR QUALITY MONITORING STATION
(MCAAQMS) AND OPERATION & MAINTENANCE SERVICES FOR THESE
MCAAQMS AT SALEM FOR TNPCB

Date :

To :
Tamil Nadu Pollution Control
Board, 76, Mount Salai,
Guindy,
Chennai - 600 032

From :

Name of Bidder Address
Name of Representative Position
Fax No. Email id. Signature

Question

Signature of the Authorized

Representative Name of the Person

Position

<Letterhead of the O&M Partner>

FORM OF CERTIFICATE OF CARRYING OUT O&M OF MCAAQMS BY THE O&M PARTNER IN INDIA

Date ;

To

**Tamil Nadu Pollution Control
Board, 76, Mount Salai,
Guindy,
Chennai - 600 032.**

Sub. : Certificate of carrying out O&M of MCAAQMS by the O&M partner in India.

This is to certify that we <Name of O&M Partner> hereby agree to carry out day to day Operation and maintenance of the MCAAQMS installed and commissioned by <Name of the main bidder> for minimum of five years from the date of installation & commissioning of the MCAAQMS at the rates quoted by <Name of the main bidder> against this tender, strictly in accordance with terms & conditions contained in this bid document.

Signature:

Name of Person:

Position:

Name of O&M Partner:

Office Seal of O&M Partner:

Legal Address of O&M Partner in India:

Counter-signed by main

bidder Name of Person:

Position:

Name of the Bidder:

Office Seal of

Bidder: Legal

Address of Bidder

CAPABILITY & EXPERIENCE OF O&M PARTNER

Name and address of the O&M Partner in India (if applicable):

(Not required in case of Bidder proposing to carry out O&M himself)

Sl. No.	Name of the O&M personnel proposed to be deployed	Educational Qualification	Experience in no. of years in carrying out O&M of MCAAQMS.	Detail curriculum Vitae Attached (YES / NO)
1				
2				
3				
4				
5				
6				
7				
8				
9				

Signature of the Authorized

Representative Name of the Person

Position

**PROFORMA FOR FINANCIAL CAPABILITY OF BIDDER
(for a period of last three years)**

Bid No. _____ Package Code _____ Date of Opening ____Time_
_____ Name of the Bidder _____

Year	Currency	Turnover
Annual Balance sheet for last two years may be furnished		

Note:

1.The annual turn over amount is to be supported by annual report.

Signature of the Authorized

Representative Name of the Person

Position

<Letterhead of the Bidder>

CERTIFICATE OF O&M PARTNER OF THE BIDDER IN INDIA

To :

**Tamil Nadu Pollution Control
Board, 76, Mount Salai,
Guindy,
Chennai - 600 032.**

Subject: Certificate of Existence of Local Branch, Sales Residential and Representative Office(s) in India

1. Name of Office (s) :
2. Address :
Tel. No. :
Fax No. :
Telex No. :
Email id. :
3. Status of Office(s) :
4. Date of Establishment of Office(s) :
5. Name & Address of Residential Representative :
6. Total No. of years of association with OEM (Name of the manufacturer):
7. Total Manpower
8. Total No. of Trained Service Engineer:
9. Present No. of offices in India (Name the locations & address):
10. Total Turnover in last 3 years:
11. Major Job in Hand:
12. Experience in O&M contract:

Sl. No.	Name of Client and Address, Phone No. etc.	Description of Contract (Brief scope of contract)	Year of Placement of Order	Present Status

Signature

Name:

Designation:

Seal:

<Letterhead of the Manufacturer>
FORM OF CERTIFICATE OF COUNTRY OF ORIGIN

To

**Tamil Nadu Pollution Control
Board, 76, Mount Salai,
Guindy,
Chennai - 600 032.**

Name of Manufacturer

Subject: Certificate of Country of Origin

We, (Name of Manufacturer), hereby certify that our equipment for procurement and installation of equipment for TNPCB laboratories in the State of, India is to be manufactured in the country mentioned below:

Item No.	Name of Equipment	Country of Origin

Signature
Name of
Person Title

Name of
Manufacturer Legal
Address

Countersign of competent authority of the country of origin.

FORM OF EQUIPMENT LIST OFFERED

Item No.	Name of Equipment	Proposed Model	Manufacturer	Country of Origin Address Tel. Fax Nos. and Email-Id	Technical Catalogue Attached (Yes / No)

Signature of the Authorized

Representative Name of the Person

Position

<Letterhead of the Manufacturer>
**FORM OF CERTIFICATE OF SUPPLY OF SPARES AND CONSUMABLES BY
MANUFACTURER**

Date :

To

**Tamil Nadu Pollution Control
Board, 76, Mount Salai,
Guindy,
Chennai - 600 032.**

Sub. : Certificate of Supply of Consumables and Spare Parts by Manufacturer

This is to certify that we (Name of Manufacturer) shall supply the consumables and spare parts of the equipment mentioned below during O&M period under the contract (contract detail) to the contractor (Name of the contractor)/Owner.

It is hereby guaranteed that we shall maintain stocks of consumables and spare parts for the following equipment for a period of Ten (10) years after the commissioning of the equipment in India.

Item No.	Name of Equipment	Name of Manufacturer

Signature:

Name of Person:

Position:

Name of Manufacturer:

Office Seal of

Manufacturer:

Legal Address of Manufacturer:

PRE-REQUISITES FOR INSTALLATION OF EQUIPMENT

To,
**Tamil Nadu Pollution Control
Board, 76, Mount Salai,
Guindy,
Chennai - 600 032.**

Dear Sir,

Following are the pre-requisites for installations of the equipment offered by us, which are required to be provided by you prior to installation of the equipment:

Package No. / Item No.	Name of the Equipment	Installation & commissioning pre-requisites*

*** Requirements of Power supply (KW / KVA etc.), power backup, air conditioning, hooding, space, furniture, gas supply etc. to be mentioned by the bidder.**

Signature of the Authorized

Representative Name of the Person

Position

Note:

Continuation sheets, of like size and format, may be used as per Bidder's requirement and shall be annexed to this Schedule.

SECTION - V

TERMS AND CONDITIONS FOR OPERATION AND MAINTENANCE

TERMS & CONDITIONS FOR OPERATION AND MAINTENANCE CONTRACT

The bidder should furnish the information on all past supplies and satisfactory performance, in "Performance Statement" as per Attachment No. one and minimum two (2) no. documentary evidences (client certificates in favour of bidder or manufacturers of equipment) in support of the satisfactory operation of similar air monitoring stations, which is in use

1. The bidders should have the adequate at least 10 years at Air Quality monitoring experience with proven track record. The O & M partner should have enough experience/capability to validate and interpret the Air Quality data obtained from the MCAAQMS.

2. In case the bidder associates with an O&M partner in India, then its O&M partner (any authorized agency in India) should have well trained O&M personnel and proven track record in the field of service maintenance of MCAAQMS with the client's certificate for satisfactory performance.

3. The O&M partner shall furnish an undertaking regarding carrying out satisfactory O&M of MCAAQMS covered in this document as per terms & conditions of the document on behalf of the bidder. This information is to be provided in check list -B as per Attachment 2 & 3 to be enclosed in Cover - A.

4. In case the bidder intends to carry out O&M activity on his own, then it should have well trained O&M personnel on its regular rolls as mention above. To establish this bidder should enclose the curriculum vitae above persons with required experience.

5. Bidder shall co-ordinate with the concerned authorities to obtain the Fitness Certificate for the mobile vehicle whenever required. If the vehicles comes under HMV.

6. DETAILS OF PROJECT STRUCTURE

Successful Bidder would be awarded the project under a Supply and Service Agreement, which would entail Supply, installation and Commissioning of one number of Mobile CAAQMS Equipment in Chennai city.

Operation and Maintenance of the AAQMS Equipment for a period initially for 3 years from the date of its commissioning and likely to be extended for 2 more years.

Daily reporting of data pertaining to Ambient Air Quality to TNPCB.

TNPCB would make a upfront payment for AAQMS equipment, on Supply, Installation and Commissioning of the system. TNPCB would procure the AAQMS equipment on its name. TNPCB would make regular payments for the supply of Data at the end of each Quarter. The bidders therefore need to quote two prices viz. for Supply Installation and Commissioning of the Systems and for reporting of data to TNPCB. The price for the data supply would include the Operation and Maintenance cost.

TNPCB would provide space free from all encumbrances for parking of monitoring station free of cost. Also TNPCB would provide basic amenities like telephone and electricity connections at the proposed location. TNPCB would bear the initial installation cost for these facilities and the monthly/recurring cost pertaining to their usage (monthly telephone and electricity bill) would be borne by the Successful Bidder. The vehicle shall be procured in TNPCB's name with insurance of 1 year and road tax paid.

A multicolor (size 1.5f (H) X 3F(W)) – 1 no of day & night pollution display system are to be supplied, installed at suitable side wall of Mobile van under free of cost.

SCOPE OF SERVICES

The equipments are to be quoted as single package. The Scope of Works under the package shall include:

- A) The supply including packing, transportation, insurance, custom clearance, port clearance and handling, inland transportation, inland transit insurance and delivery to site, installation, testing and commissioning of equipment and provision of training of TNPCB official.
- B) Operation & Maintenance of Air Monitoring Station initially for three years from the date of commissioning of the station and likely to be extended for two more years at the mutually agreed rates and terms & conditions.
- C) Reporting of data pertaining to MCAAQMS to TNPCB.
- D) On line transfer of data to TNPCB head office.

Other services involved with performance of the Works are specified in General and Special Conditions of Contract of bid document

7. DATA MANAGEMENT AND QUALITY CHECKS

Data shall be collected and validated according to USEPA standards, using the methodologies included in 40 Code of Federal Regulations. All

analyzers shall have current USEPA reference or equivalent method designation /MCERTS EU regulations shall be met and the product to be of the latest design, Model and version.

Every Bidder shall submit a Standard Operating Procedure for the air quality monitoring stations to the Board at the time of bid submission. This Standard Operating Procedure shall be approved by the Board prior to award. The Standard Operating Procedure shall contain the following:

- Operating procedures for all analyzers and meteorological sensors
- Calibration procedures
- Calibration Schedule Maintenance procedures
- Maintenance schedule
- Data validation procedures

Data obtained from these calibration checks and copies of associated Quality Assurance and calibration documentation, shall be submitted to the Board along with the Air Quality Data.

Upon 24 hour notice from the Board once per year, Successful Bidder shall agree to submit to an audit of calibrations, conducted, using pre-approved USEPA methodologies, by a third party. The third party fees if any will be borne by TNPCB. The results of these audits shall be made immediately available to both the Seller and Buyer. Operator shall participate in Proficiency Testing Exercise organized by reputed organization.

8. GENERAL GUIDELINES

Working Hours: The Mobile CAAQMS operation should be manned by the employees of the Successful Bidder for 24 hours a day.

Insurance: Successful Bidder would bear the cost of insuring the equipment and facilities against any theft, fire and other applicable provisions during tenure of contract period including O&M.

9. INSPECTION AND TEST Unpacking Inspection

The Contractor shall inspect at MCAAQMS whether all the Equipment are packed in conformity with the Equipment list and packing list without any damage immediately after arrival of the Equipment at the Mobile CAAQM Station.

The Contractor shall prepare the unpacking inspection report and submit it to the TNPCB.

Performance Test

The Contractor shall carry out the performance test for all the Equipment supplied under the scope of work of this document.

In case the Equipment for performance test requires the supplemental and /or supporting Equipment, the Contractor shall carry out the performance test including such Equipment.

10. PROVISION OF TRAINING

The Supplier shall provide the training to the Board staff after the performance test and commissioning. Training should include but not limit to the followings:

- 1) Inspection of the Equipment.
- 2) Precautions in use of the Equipment.
- 3) Basic measurement principle.
- 4) Principles of operation of the Equipment.
- 5) Start-up and shutdown procedure.
- 6) Operation of the Equipment.
- 7) Calibration method.
- 8) QA/QC
- 9) Data management and software application.
- 10) Safety precautions
- 11) Basic maintenance procedure.
- 12) "Do's" and "Don'ts" in operation of the Equipment.
- 13) Handling of hazardous chemicals and gas.
- 14) Others, which are deemed to be necessary by the Supplier.

In case the Equipment for training requires the supplemental and/or supporting Equipment, the Supplier shall carry out the training including such Equipment.

The Supplier shall discuss and finalize the detailed contents and schedule of the training program in consultation with the Board during installation of the Equipment.

The Supplier shall furnish the training manual and/or pendrives as required for training for all the Equipment supplied under the scope of work of this document.

Contents of training manual and/or pendrive/external Hard disk for the Equipment are as follows:

1. Principle of the Equipment.
2. Operation and calibration of the Equipment.
3. Maintenance and basic repair of the Equipment.
4. Safety instruction of the Equipment.

5. Others, which are deemed to be necessary by the Supplier.

11. Operation & maintenance of Air Monitoring Station:

The Contractor's responsibilities shall include without limitations the following works to be carried out on the Air Monitoring Station installed under this Contract during the Operation & Maintenance of the station:

- a) Operation and Maintenance of all the commissioned equipments and amenities as supplied by the Manufacturer under the Contract including services during forced and planned outages and overhauls.
- b) The Contractor shall take over the entire Air Monitoring Station (including all equipment) for O&M after execution of Indemnity Bond as per format.
- c) The Contractor shall provide to the TNPC Board a quarterly summary of all operation and maintenance activities performed by the contractor during such month.
- d) Operation and Maintenance Obligations: In implementing its obligations to operate and maintain the Facility under this Contract, the Contractor shall:
 - i) Undertake comprehensive maintenance including i.e. schedule and breakdown maintenance & repair at site and keep Board Informed regarding status of equipments and forward daily data as per Information format A to E.
 - ii) Obtain permission from the TNPC Board and inform the OEM for any assistance for which equipment is required to be sent to works. Contractor shall arrange substitute equipment to keep MCAAQM station operational.
 - iii) Keep the Air Monitoring Station clean, well maintained and in good working condition.
 - iv) Security: It is the duty of the Contractor to secure the movable, immovable and other properties of the TNPC Board at the Air Monitoring Station. The Contractor shall indemnify the loss caused to the TNPC Board on account of any damage, loss or theft caused to the property of the TNPC Board.
 - v) Scheduled Maintenance: Unless TNPC Board and Contractor mutually agree otherwise, perform all required Scheduled Maintenance for all equipment, auxiliaries etc., in accordance with the OEM's specifications.
 - vi) Unscheduled Maintenance: Perform all Unscheduled Maintenance and repairs for all equipment, auxiliaries etc. within [24] hours of the

occurrence of the event requiring Unscheduled Maintenance, the operator shall provide the TNPC Board with detailed written information on nature of the repair or replacement to be carried out, estimated down time and other necessary details as required.

- vii) The Contractor shall source all the spares required for maintenance & repairs of the installed equipment from OEM's only.
 - viii) All the materials (spares & consumables including fuel) and man power (including driver for mobile van) requirement to operate and maintain the Mobile CAAQMS shall be bidder's scope. However, Mobile Van chassis, body shall not be part of the operation and maintenance contract.
- e) The Operator shall not:
- i) Make any modifications as to the Mobile Air Monitoring Stations, other than in an Emergency, without the prior written approval of the TNPC Board, or
 - ii) Dispose off any assets, settle law-suits or engage in transactions relating thereto on the TNPC Board's behalf without the prior written approval of the TNPC Board.
- f) The Contractor shall purchase spare parts, materials, supplies and other consumable items, and maintain an inventory thereof, for the Air Monitoring Stations. All such material supplied and other items shall be the property of the Contractor, however all the spares shall be sourced from OEM's only.
- g) The Contractor shall review all applicable Laws and initiate and maintain such precaution, procedures and operating plans relating to operation of the Air Monitoring Stations as are necessary to comply therewith or assist the TNPC Board in complying therewith as the case may be.
- h) The Contractor shall operate the equipment as per the laid out standards in the operating manual of the equipment and providing data for ambient air to TNPCB on daily basis in the suggested format
- i) The MCAAQMS has to be in operation for a minimum of 335 days in a year, 24 hours a day, and should not be non functional for more than 7 days at a stretch.
- j) Providing TNPCB with data collected through operation of the equipments on

daily basis in suggested output formats given in formed **A to D** of the bid document.

- i) Establish and maintain a daily and monthly reporting system to provide storage and ready retrieval of operation and maintenance data including such information necessary to verify calculations. The monthly reporting shall contain variances from targets.
 - ii) provide access to the TNPC Board to the Air Monitoring Station and its data at all reasonable times.
 - iii) On line transfer of data to TNPCB head office at Chennai.
- k) The Contractor shall ensure accuracy of the data provided as per standards.
 - l) The contractor shall ensure periodic re-calibration of all the equipment as per manufacturer's instructions and maintain "Protocol Manual Calibration" as per Information Report Format E..
 - m) The Contractor shall be responsible to ensure that the Contract Performance Guarantee amounting to 10% of Total Contract Price is kept valid up to forty five (45) days after the expiry of the O&M period. Any failure of the Contractor to meet the aforesaid obligation shall result in encashment of the Contract Performance Guarantee by the TNPC Board.

TNPC Board shall arrange for the following and Contractor shall guide and assist the TNPC Board:

1. The TNPC Board shall pay O&M charges at the end of each quarter to the Contractor, in accordance with the payment terms detailed in Special Conditions of Contract.
2. TNPC Board shall pay all fees including Service Tax, real property taxes, cess etc., imposed upon TNPC Board by the Applicable law.
3. The TNPC Board shall make the arrangement for electricity & telephone connection at the site. However monthly charges for both electricity and phone bill shall be borne by the Contractor.
4. TNPCB officials may inspect the fabrication works and ask vendor to provide details. Bidder shall provide a schedule of each activity in the fabrication process

12. Handing Over of Mobile CAAQM Station: On expiry/closure/termination of the

Contract Agreement, shall be handed over to Board in working condition to the satisfaction of Board. Few or all the spares procured by the Contractor and unused as on date of handing over may be purchased by the TNPC Board at his discretion provided Contractor is able to provide reasonability of the costs of such spares. In addition the Contractor shall provide consumables equivalent to three months consumption on expiry/closure/termination of the Contract Agreement without any extra financial implication.

13. Penalties:

During O&M period, in case of any system failure, penalty will be charged by TNPCB @ Rs.1,000/- per day per Analyzer after a grace period of seven (7) continuous non-working days. The grace period of seven (7) continuous non-working days shall be given only once per quarter (3 months) For a failure of total display panel, a penalty will be charged by TNPCB @ Rs.2,000/- per day after a grace period of two (2) continuous non-working days. The grace period of two (2) continuous non-working days shall be given only once per quarter (3 months). Failure due to power outage and other Force Majeure conditions shall not be considered for levy of penalty. Total penalty per year during O&M period on account of above conditions shall be limited to 15% of total O&M charges for one year.

In case penalty in the year exceeds 15% as above, the Contractor shall be required to replace the defective analyzer (s) or systems with new ones at his own cost, failing which the TNPCB shall have the right to terminate the O&M contract.

Check List - B

FOR OPERATION & MAINTENANCE

Sl.No.		Page No.	YES	NO
1	Certificate of carrying out O&M of MCAAQMS by the O&M partner in India	<input type="text"/>	<input type="text"/>	<input type="text"/>
2	Capability & experience of O&M partner	<input type="text"/>	<input type="text"/>	<input type="text"/>
3	Information Report Formats (A)	<input type="text"/>	<input type="text"/>	<input type="text"/>
	Format (B)	<input type="text"/>	<input type="text"/>	<input type="text"/>
	Format (C)	<input type="text"/>	<input type="text"/>	<input type="text"/>
	Format (D)	<input type="text"/>	<input type="text"/>	<input type="text"/>
	Format (E)	<input type="text"/>	<input type="text"/>	<input type="text"/>

<Letterhead of the O&M Partner>

FORM OF CERTIFICATE OF CARRYING OUT O&M OF MCAAQMS BY THE O&M PARTNER IN INDIA

Date ;

To

**Tamil Nadu Pollution Control
Board, 76, Mount Salai,
Guindy,
Chennai - 600 032.**

Sub. : Certificate of carrying out O&M of MCAAQMS by the O&M partner in India.

This is to certify that we <Name of O&M Partner> hereby agree to carry out day to day Operation and maintenance of the MCAAQMS installed and commissioned by <Name of the main bidder> for minimum of five years from the date of installation & commissioning of the MCAAQMS at the rates quoted by <Name of the main bidder> against this tender, strictly in accordance with terms & conditions contained in this bid document.

Signature:

Name of Person:

Position:

Name of O&M Partner:

Office Seal of O&M Partner:

Legal Address of O&M Partner in India:

Counter-signed by main
bidder Name of Person:

Position:

Name of the Bidder:

Office Seal of

Bidder: Legal

Address of Bidder

CAPABILITY & EXPERIENCE OF O&M PARTNER

Name and address of the O&M Partner in India (if applicable):

(Not required in case of Bidder proposing to carry out O&M himself)

Sl. No.	Name of the O&M personnel proposed to be deployed	Educational Qualification	Experience in no. of years in carrying out O&M of MCAAQMS.	Detail curriculum Vitae Attached (YES / NO)
1.				
2.				

Signature of the Authorized

Representative Name of the Person

Position

INFORMATION REPORT FORMATS

INFORMATION REPORT FORMAT - A

DAILY REPORTING FORMAT FOR METREOLOGICAL PARAMETERS

(To be submitted daily at 12 Noon for the previous day ending 12 midnight)

TNPCB

Location:

Date:

Hrs.	WIND SPEED	WIND DIRECTION	HUMIDITY	TEMPER-ATURE	SOLAR RADIATION	PRESSURE	REMARKS
00-01							
01-02							
02-03							
03-04							
04-05							
05-06							
06-07							
07-08							
08-09							
09-10							
10-11							
11-12							
12-13							
13-14							
14-15							
15-16							
16-17							
17-18							
18-19							
19-20							
20-21							
21-22							
22-23							
23-24							
Min.		-----					
Max.		-----					
Average		Pre dominant direction					

Signature of the Authorized

Representative Name of the Person

Position

Information Report Format (B)
MONTHLY REPORTING FORMAT FOR METREOLOGICAL
PARAMETERS

(To be submitted monthly next day ending month)

TNPCB

Location:

Month:

DATE	WIND SPEED	WIND DIRECTION	HUMIDITY	TEMPERATURE	SOLAR RADIATION	PRESSURE	REMARKS
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
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21							
22							
23							
24							
25							
26							
27							
28							
29							
30							
31							
Min		----					
Max		----					
Average		Pre dominant direction					

Signature of the Authorized
Representative Name of the
Person
Position

Information Report Format (E)

PROTOCOL Automated/MANUAL CALIBRATION

TNPCB/MCAAQMSPROTOCOL NO.....
 DATE.....

NAME OF THE INSTRUMENT	CALIBRATION PARTICULAR				Acceptance Criteria	REMARKS
	ZERO	SPAN -1	SPAN – 2	SPAN SOURCE VALUE		
SO ₂ ANALYZER						
NO _x ANALYZER						
CO ANALYZER						
O ₃ ANALYZER						
VOC Analyser						
PM ₁₀ MONITOR						
PM _{2.5} MONITOR						
NH ₃ analyser						
TRS Analyser						

Signature of the Authorized

Representative Name of the Person

Position

SECTION - VI

ATTACHMENT FOR PRICE BID

(To be enclosed in Cover - B)

Check List - C

Sl.No.		Page No.	YES	NO
1	Summary of price bid (Attachment 10)	<input type="text"/>	<input type="text"/>	<input type="text"/>
2	Bid price break up for equipment(Attachment 11)	<input type="text"/>	<input type="text"/>	<input type="text"/>
3	Bid price break up for O & M for 5 years (Attachment 12)	<input type="text"/>	<input type="text"/>	<input type="text"/>
4	Annual report and Balance Sheet for the Last 2 years	<input type="text"/>	<input type="text"/>	<input type="text"/>

**SUMMARY OF PRICE
BID**

DESCRIPTION	TOTAL VALUE
I. SUPPLY OF THE EQUIPMENT	
1) For goods supplied from abroad (In Bid-Currency) a. FOB price for Package a. Freight a. Insurance up to port of de-embarkment CIF Price at port of de-embarkment (bid currency) (1a + 1b + 1c)	
2) Local Costs for goods supplied from abroad a. Port handling and clearance charges. a. Transportation cost from Port of de-embarkment to Sites a. Insurance from Port of de-embarkment up to handing over a. Installation and commissioning Sub total (2a + 2b + 2c + 2d)	
3) For the Goods Supplied from India a. The price of the Equipment quoted ex-works, ex-factory, ex-warehouse, ex- showroom, or off-the-shelf including all customs duties and sales and other taxes already paid or payable on the components and raw material used in the manufacture or assembly of the Equipment quoted ex-works or ex-factory. a. Price for handling and inland transportation, insurance up to handing over the equipment at Site and other local costs up to delivery of the Equipment to each Site. a. Installation and commissioning a. Price of other incidental cost, if any. Then the Bidder shall specify the same. Sub total (3a + 3b + 3c + 3d)	
4) Other incidental costs, if any (such as Indian agents Commission) in INR TOTAL FOR SUPPLY (1 + 2 + 3 + 4)	
II Total O&M cost for five years MCAAQMS as indicated in Attachment 11	
GRAND TOTAL CONTRACT PRICE (BID CURRENCY/INR) (I + II)	
:	

- NOTE:** 1. ALL LOCAL TAXES, DUTIES & LEVIES ARE PAYABLE AT ACTUAL (EXTRA) BY THE OWNER.
2. **GST** SHALL BE PAYABLE ONLY ON THE SERVICE PORTION OF O&M COST ONLY (EXCLUDING SUPPLY OF SPARES FOR MAINTENANCE & OVERHAULING) AS **INDICATED IN** Attachment 12

Attachment 11

BID PRICE BREAKUP FOR EQUIPMENT (CIF) PRICE

S. No.	Item / Analyzer Name	Manufacturer	Country of Origin	Latest Model and version	Quantity in Nos. / Sets	Unit Price (BID CURRENCY)	TOTAL Price (BID CURRENCY)
1	Air Conditioner, Split Type along with voltage stabilizer, Timer				2		
2	On line UPS & Inverter each				2		
3	Sampling System having 10 port manifold				1		
4	19" Rack cabinet to accommodate all analyzers				1 set		
5	Ambient Oxides of Nitrogen (NO/NO ₂ / NO _x) Analyzer				1		
6	Ambient Sulphur Dioxide (SO ₂) Analyzer				1		
7	Ambient Ozone (O ₃) Analyzer				1		
8	Ambient Carbon Monoxide (CO) Analyzer				1		
9	VOC Analyzer				1		
10	NH ₃ Analyser						
11	TRS(Mercaptan & Sulfur) Analyser						
12	Multi calibration system For Gas calibration and Meteorological, Flow and Electronic Calibration				1		
13	PM ₁₀ Monitor				1		
14	PM _{2.5} Monitor						
15	Mobile Vehicle for fitting CAAQMS with accessories				1		
16	Meteorological Sensors for Wind Direction, Wind speed, Vertical Wind Speed, Ambient temperature, Relative Humidity, Solar Radiation, Rainfall monitor & Barometric Pressure and Telescoping Crank– up Meteorological Tower				1 set		

17	Computer system consisting of one PC along with one Laser Colour Printer and DAS for monitoring station with peripherals and software for data acquisition/display/transfer and systems integration.				1set		
18	Wireless data card				1		
19	GPS for Vehicle				1		

- * Items other than the above mentioned may be quoted in Indian currencies each Meteorological sensor to be quoted.
- ** The break up for price bid for local components with total imported items with total may be furnished separately. This may involve regrouping of the 1 – 16 items listed above.

BID PRICE BREAKUP FOR O&M OF MCAAQMS'S FOR FIVE YEAR

Sl. No.	Year of O&M	Service charges for O&M in Rs.	Cost of material including spares & consumables for Operation & maintenance and other incidental expenses i.e. electricity, and telephone & Insurance charges in Rs.	Total Charges for the year in Rs.
		Unit rate for one station	Unit rate for one station	Unit rate for one station
1.	1 st year			
2.	2 nd Year			
3.	3 rd Year			
4.	4 th Year			
5.	5 th Year			
TOTAL				

NOTE:

- A. GST TAX SHALL BE PAYABLE ONLY ON THE SERVICE PORTION OF O&M COST ONLY (EXCLUDING SUPPLY OF SPARES FOR MAINTENANCE & OVERHAULING).
- B. COST OF MATERIAL INCLUDING SPARES & CONSUMABLES FOR OPERATION & MAINTENANCE SHALL BE INCLUSIVE OF ALL TAXES & DUTIES.

Signature of the Authorized

Representative Name of the Person

Position

Attachement-13

O&M Costs

Sl.No	Description	Monthly Cost	Annual cost
1	Man Power 1. Diploma/Degree in electronics 2. Graduate in Engineering 3. Driver (HV)	Each one	
2	Annual Maintenance Contract		
	AMC for A/C Machines		
	AMC for UPS & Inverter maintenance		
3	Services & Utilities		
	Mobile phone /Broad band / Internet/Wi-Fi Modem		
	Electricity charges with Rate per unit		
	GST and other taxes if any		
	TOTAL		

Note: Cost should be filled up in the above format.

(To be enclosed in Cover - B)

ANNEXURE – III
SPECIAL CONDITIONS OF TENDER FOR THE Establishment of Mobile
Continuous Real Time Air Quality Monitoring System under O&M
contract in Salem city.

1. INSTALLATION

The rates quoted shall be inclusive of free delivery at the locations indicated by Tamil Nadu Pollution Control Board. The system shall be installed and brought into complete operation, at a chosen location and to the complete satisfaction, without any additional charges whatsoever.

2. PAYMENT

Payment will be made through Letter of Credit for all imports against documents. For local supply payment will be made within 30 days after proper certification of bills by the officer in charge.

3. WARRANTY

(i) Comprehensive warranty for a minimum period of 3 years shall be given from the date of commissioning ; and

(ii) Service back up including commitment for the availability of the spares of the system for a minimum period of 10 years from the date of installation should be ensured. Also in case of equipment going out of production, at least 3 years advance notice should be given to enable, one time procurement of spares.

4. DELIVERY

The instrument should be supplied within 90 days from the date of confirmed order.

5. DELAY

Any delay in the installation and commissioning of the equipment shall be the responsibility of the suppliers.

6. VALIDITY

The rates quoted shall be valid for a minimum period of 120 days from the date of opening of the Tenders.

7. TRAINING

Training should be provided at least for two persons annually free of cost in the operation and maintenance of the entire system at the installation site.

Place :

Date :

Signature with seal/ Address