



INDIAN INSTITUTE OF TECHNOLOGY MADRAS
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Prof. Gitakrishnan Ramadurai
Project Coordinator

Ref: CE/STORES/2019/GPS VEHICLE TRACKING DEVICE
Dated: 01.01.2020

Limited Tender No: CE/STORES/2019/GPS VEHICLE TRACKING DEVICE

Due Date: 21.01.2020, 4:00pm

Bid opening meeting on Due Date: 22.01.2020, 3:00pm

Dear Sir/Madam,

On behalf of the Indian Institute of Technology Madras, offers are invited for the supply of “**GPS VEHICLE TRACKING DEVICE**” conforming to the specifications given in (**Annexure-I**).

Terms and Conditions of Limited Tender

- 1. Preparation of Bids:** - The Limited tenders should be submitted under **one bid system** (i.e.) Technical-cum-Financial bid.
- 2. Delivery of the tender:** - The tender shall be sent to the below-mentioned addresses either by post or by courier (duly sealed and super scribed on the envelope with the reference No and due date) so as to reach the following address before the due date and time specified in our Schedule:
Prof. Gitakrishnan Ramadurai,
Department of Civil Engineering
IIT Madras
Chennai - 600 036.
- 3. Price:** - The price should be quoted in net per unit (after breakup) and must include all packing and delivery charges to **Department of Civil Engineering**.
 - a. The offer/bid should be exclusive of taxes and duties. The percentage of tax & duties should be clearly indicated separately. IIT Madras is eligible for concessional GST and relevant certificate will be issued.
 - b. In case of import supply, the price should be quoted without custom duty. IIT Madras is exempted from levy of IGST on Imports and eligible for concessional custom duty (not exceeding 5%) and the price should be quoted on EX-WORKS and CIP (stating the Cost, Insurance, Freight separately) and indicating the mode of shipment.
- 4. Terms of Delivery:** - The item should be supplied to our Departments as per Purchase Order. In case of import supply, the item should be delivered at the cost of the supplier to our Institution. The Installation/Commissioning should be completed as specified in our important conditions.
- 5. Catalogue:** Original catalogue (not any photocopy) of the quoted model duly signed must accompany the quotation in the Technical-cum-financial bid
- 6. Late offer:** - The offers received after the due date and time will not be considered
- 7. Payment:** - No Advance payment will be made for Indigenous purchase. However, 90% Payment against Delivery and 10% after installation are agreed to wherever the installation is involved. In case of import supplies the payment will be made only through 100% Letter of Credit i.e. (90%

payment will be released against shipping documents and 10% after successful installation wherever the installation is being done).

8. **Advance Payment:** - No advance payment is generally admissible. In case of specific percentage of advance payment is required, the Foreign Vendor has to submit a Bank Guarantee equal to the amount of advance payment and it should be routed through the Beneficiary Bank to the end user Bank. Otherwise, the Indian Agent of the foreign vendor has to submit a Bank Guarantee through a Nationalized Bank of India.
9. **On-site Installation:** - The equipment or machinery has to be installed or commissioned by the successful bidder within number of days (as prescribed by PI's) from the date of receipt of the item at site of IIT Madras.
10. **Warranty/Guarantee:** - The offer should clearly specify the warranty or guarantee period for the machinery/equipment.
11. **Validity:** Validity of Quotation not less than 60 days from the due date of tender
12. **Bid Opening:** The bid will be opened on **22.01.2020, 3:00pm** at the **Department of Civil Engineering, IIT Madras.**
13. **Accept /Reject:** IIT Madras reserves the full right to accept / reject any tender at stage without assigning any reason.
14. **Settlement of Disputes:** Any legal disputes arising out of any breach of contract pertaining to this tender shall be settled in the court of competent jurisdiction located within the city of Chennai in Tamil Nadu.
15. **Risk Purchase Clause:** - In the event of failure of supply of the item/equipment within the stipulated delivery schedule, the purchaser has all the right to purchase the item/equipment from other sources on the total risk of the supplier under risk purchase clause.
16. **Unsolicited offers:** "This notice is being published **for information only** and is not an open invitation to quote in this limited tender. Participation in this tender is by invitation only and is limited to the selected registered suppliers. Unsolicited offers are liable to be ignored. However, suppliers who desire to participate in such tenders in future may apply for registration as per procedure." The Website for Registration of vendors is <http://web.iitm.ac.in/supplier/> and the mail address for queries is "workflow@rt.iitm.ac.in".

Yours sincerely,

**Prof. Gitakrishnan Ramadurai,
Department of Civil Engineering
IIT Madras
Chennai - 600 036.**

GPS VEHICLE TRACKING DEVICE

As part of the project on Project No., there is a requirement for **80-100 Nos. on-board GPS** vehicle location and tracking (VLT) units with the following specifications.

General Specifications:

1. The Tracking Unit should have position accuracy of 3 -10 m.
2. Data logging should be done at every 1 sec.
3. Device should be able to **transmit position, velocity, heading angle, and time data to back-end servers**) using GSM/GPRS network.
4. Desirable for device to have capability for Ignition and idling detection based on motion sensing.
5. GPRS module & SIM shall support
 - (a) SMS, Data (GPRS, TCP/IP) and
 - (b) Support multiple network OTA switching (on-demand/automatic) capabilities.
6. Data transfer through GPRS/GSM/3G should be at every 5 sec or less to the server.
7. Data transmission frequency from device to be customized, a minimum of five seconds to a maximum of 10 minutes (while in power saver/sleep mode).
8. IIT Madras must be able to modify the data arrival frequency and server IP any time.
9. **Device to support ‘Over The Air’ (OTA)** firmware and configuration updates. The device should have the ability for Configuration and Firmware Update via Configurator. It should support COTA (Configuration Over the Air through SMS and GPRS)
10. Should have the capacity to store the data if vehicle lost connection with GSM/GPRS/ 3G network and transfer it once the connection is restored.
11. Device shall support store and forward mechanism for all type of data (periodic data and alerts) meant for backend transmission. The system shall store data in internal memory during communication network unavailability and transmit the data when the connection resumes in last in first out (LIFO) manner. The live data shall be given higher priority for transmission than back log (stored data) at any point in time.
12. The Device shall support:
 - Non-volatile memory to store min 40,000 positional log
 - Configurable backup SMS facility in case of GPRS failure
 - Desirable to have the capability to send serving and adjacent cell ID as well as network measurement report (NMR)

13. The device has to have the capability to **transmit data to a minimum of three different IP addresses.**
14. **GPS device shall have an internal antenna**
15. Vendor Should provide the protocol, listener API and associated software and database applications so that the GPS data can be received at servers specified by IITM in a format like NEMA or simple text file with position, time, and instrument ID and/or suitable database form for storage and querying.
16. The Device shall have a unique identifier for identifying the Vehicle Location and Tracking (VLT) device and data. The unique ID shall be stored in a read only memory area so that it cannot be altered or overwritten by any person. The unique identifier may be the IMEI (International Mobile Station Equipment Identity) Number. Device shall be configurable to store/write/update the registration number of the vehicle in the internal nonvolatile memory.
17. Remote Configuration, activation, status alert and deactivation of device by SMS must be available and training to IITM personnel on this should be provided.
18. The unit should be light in weight and should have supporting accessories to fix it to a vehicle.
19. Device shall be dust, temperature, vibration, water splash resistant, IP 65 rated or better, tamper proof
20. Tamper Proof, Vandal Proof and Water Proof enclosure for GPS, power supply and antenna must be provided such as metallic casing for the unit, metallic tube covering the power supply as well as antenna cable without leaving gap for tampering, cutting etc.
21. The GPS unit, power supply, and antenna have to be installed such that it is not within reach of any passenger.
22. The GPS unit must give warning SMS if tampered such as power cord removed, antenna cut etc.
23. The device should be capable of operating with vehicle battery. The unit should also have an internal back-up battery (6 hours) and the battery charge should be indicated in the unit. Battery charging facility also should be provided.
24. Device shall be designed to operate between 8VDC and 32VDC using vehicle battery input voltage range 12 /24Volts. Device shall have a sleep mode current ≤ 20 mA (If the function is implemented in a dedicated system/device).
25. **Two year warranty of the equipment must be included.**
26. Technical support in installation and maintenance for all GPS units during the warranty period should be provided by the vendor. This item is to be included as a line item in the quotation towards maintenance and support on an annual basis. Technical support payment will be made on

a quarterly basis, depending on the satisfactory completion service in the previous quarter. Late charges (in providing necessary technical support) will be deducted at 10% per day of the corresponding pro-rated support amount.

- 27.** The vendor should have supplied, and maintained a minimum of 100 units for minimum six months for similar applications.
- 28.** Annual maintenance charge after the warranty period of two years should be indicated as a separate line item. AMC payment will be quarterly based on satisfactory service in the previous quarter. Late service charge will be deducted at 10% per day per device of the service charge.
- 29.** Maintenance support for all GPS units should be provided by the vendor as per the following terms and conditions:
 - The GPS units must be fixed on specified vehicles and buses on selected routes by the vendor. Due permissions will be obtained from suitable authorities by IIT Madras for this purpose. The vendor should mount the units in the above vehicles and carry out maintenance as necessary.
 - Since continuous collection of data is critical for the project, faulty GPS must be replaced by the vendor with a temporary working GPS within one day. The faulty GPS needs to be repaired and re-fixed; temporary GPS must continue transmitting data till the faulty GPS is replaced.
- 30.** 60% of the payment (except for the support amount) will be made against delivery of GPS, and 40% (except for the support amount) will be paid after installation and acceptance. The support amount will be withheld and paid on a quarterly basis subject to conditions noted above.
- 31.** The items should be delivered to IIT Madras. The delivery of products should be within 4-6 weeks after receipt of purchase order.
- 32.** Quantities mentioned are approximate only. The vendor should quote per unit price. IIT Madras reserves the right to modify the order quantity, depending on project requirement or not to place the order at all.

Your compliance report should be attached to your technical bid

The expected technical specifications for the unit are given below:

Technical Specification

Unit / Item	Specification
1. GSM	
1.Frequency	900/1800 MHz; 850/1900 MHz
2.Power Supply	9V-35V
3.Battery Backup	At least 6 Hrs. without Vehicle Battery
2. GPRS	Multi slot GPRS with In - built Quad-band GPRS module/Modem
1.Class	Class 10 or above
2.Coding Scheme	CS-4
3.Uplink Transfer	40 kbps
4.Downlinklink Transfer	80 kbps
5.Protocol	NMEA0183 3.1.1.21 or any other Supporting IP Like http
3. GPS	
1.Datum	WGS-84
2.Frequency	L1-1575.42MHz
3.C/A code	1.023 MHz chip rate
4.Channels	At least 16-20 including any GNSS systems that are operational. Support for GAGAN is desirable.
5.Sensitivity	(-)158db
6.Position Accuracy	3 - 10 m
7.Time Accuracy	0.1 m/s
8.Reacquisition Time	Average-0.1 m/s
9.Velocity Range	300-500 m/s
10.Operating temperature	0-50*c
11. Warm start	< 30s
12. Cold start	< 40s
13. Hot start	< 5s
14. Support for AGPS	Yes
15. Operational Temperature	o On Main Supply: -20C to +85C o On Backup Battery: -10C to +45C