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**Centre of Excellence in Urban Transport**

**DEPARTMENT OF CIVIL ENGINEERING**

**IIT Madras, Chennai 600 036**

Ref. No

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| CIE | TRN | 2012 | Enq (Proj) | 02 | SPLX |

 Dated: 14.11.2012

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| **DUE DATE: 07.12.2012** |

Dear Sirs,

1. Quotations are invited **in duplicate** for supply of GPS Vehicle Tracking Units as per specifications **attached.**
2. The Quotations duly sealed and superscribed on the envelope with the reference No. & due date should be addressed to the **undersigned** so as to reach him on **before the due date** stipulated above.
3. The Quotation should be valid for **sixty days** from thedue date and the period of delivery required should also be clearly indicated.
4. If the item is under DGS & D Rate Contract, the Rate Contract No. and price – accompanied by copy of the R.C. must be mentioned. It may also please be indicated whether the supply can be made direct to us at the Rate Contract price (Please note that we are not Direct Demanding Officers).
5. Relevant literature pertaining to the items quoted with full specifications (and drawing, if any) should be sent along with the quotations, wherever applicable. Samples if called for, submitted free of charges, and collected back at the suppliers expenses.
6. **Local Firms:-** Quotations should be for free delivery to this Institute. If Quotations are for Ex-Godown, delivery charges should be indicated.
7. **Firms outside Madras:** Quotations should be F.O.R. Madras. If F.O.R. Consignor station, Freight charges by passenger Train/Lorry transport must be indicated. If Ex-Godown, packing, Forwarding and freight charges must be indicated.
8. The rate of Sales/General Taxes and the percentage of such other taxes legally leviable and intended to be claimed should be distinctly shown along with the price quote. Where this is not done, no claim for Sales/General Taxes will be admitted at any later stage and on any ground whatever. The taxes leviable should take into consideration run with no profit motive, for which necessary concessional Sales Tax Certificate would be issued at the time of passing the bill.
9. Goods should be supplied carriage paid and insured.
10. Goods shall not be supplied without an official supply order.
11. **PAYMENT:-** Every attempt will be made to make payment within thirty days from the date of receipt of bill / acceptance of goods whichever is earlier.

**GPS Vehicle Tracking Units – 100 nos.**  Yours faithfully,

**(complete specifications are attached)**

 Project Coordinator

 Transportation Engineering Division (BSB 238B)

 DEPARTMENT OF CIVIL ENGINEERING, IIT MADRAS, Chennai – 600 036

 **Narayanaya Namah**

**GPS VEHICLE TRACKING DEVICE**

As part of the project on Centre for excellence in Urban Transport (CIE/0919/157/MUDX/RSIV), there is a requirement for **100 on-board GPS** vehicle tracking units with the following specifications.

**General Specifications:**

1. The Tracking Unit should have position accuracy of 5 -10 m.
2. Data logging should be done at every 1 sec.
3. Data transfer through GPRS?GSM/3G should be at every 5 sec to the server.
4. Should have the capacity to store the data if vehicle lost connection with GSM/GPRS/ 3G network (Minimum 128 MB) and transfer it once the connection is restored. Suitable storage device, if needed, also to be supplied along with GPS.
5. Should provide the protocol, listener API and associated software and database applications so that the GPS data can be received at a server at IITM in a format like NEMA or simple text file with position, time, and instrument ID as well as in SQL database form for storage and querying.
6. IIT Madras must be able to modify the data arrival frequency and server IP any time.
7. Remote Configuration, activation, status alert and deactivation of device by SMS must be available and training to IITM personnel on this should be provided.
8. The unit should be light in weight and should have supporting accessories to fix it to a vehicle.
9. 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.
10. The GPS unit, power supply, and antenna have to be installed such that it is not within reach of any passenger.
11. The GPS unit must give warning SMS if tampered such as power cord removed, antenna cut etc.
12. 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.
13. Three year warranty of the equipment must be included.
14. 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.
15. The vendor should have supplied, and maintained a minimum of 100 units for minimum six months for similar applications.
16. Annual maintenance charge after the warranty period 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.
17. 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 buses on specified routes by the vendor. Due permissions will be obtained from suitable MTC authorities by IIT Madras for this purpose. The vendor should mount the units in MTC buses and carry out maintenance as necessary at bus depots in the night time.
* 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.
* In the event, any bus with GPS is moved by MTC to other routes (than the ones specified by IIT Madras) or removed from operation, the GPS should be removed by vendor, and fixed on to the new/replacement bus that will run on the pre-specified route. This transfer must take place within one day from receiving information from IIT Madras regarding a change in buses. The vendor may quote for transfer/relocation charge as a separate line item per device.
1. 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 in item 14 above.
2. The items should be delivered to IIT Madras. The delivery of products should be within 4-6 weeks after receipt of purchase order. The standard L.D (Late Delivery) clause will be applied @ 0.5% of the order value per week or part of the week for delayed period.

The technical specifications for the unit are given below:

**Technical Specification**

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| **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  |  |
|  1.Data Class | Class B |
|  2.Coding Scheme | CS-4 |
|  3.Uplink Transfer | 40 kbps |
|  4.Downlinklink Transfer | 80 kbps |
|  5.Protocol  | NMEA0183 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 |
|  5.Sensitivity | (-)158db  |
|  6.Position Accuracy | 5 -10 m |
|  7.Time Accuracy | 0.1 m/s |
|  8.Reaqusistion Time | Average-0.1 m/s |
|  9.Velocity Range | 300-500 m/s |
|  10.Operating temperature | 0-50\*c |