

**GOVERNMENT OF INDIA
DEPARTMENT OF SPACE
INDIAN INSTITUTE OF REMOTE SENSING
IIRS
DEHRADUN
PURCHASE & STORES
INVITATION TO TENDER**

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Date :25/09/2014

M/s

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Our Ref No : GIER 2014-000281-01

Tender Due: 15:00 Hrs ISTon 21/10/2014

Dear Sirs,

Please submit your sealed quotation , in the Tender Form enclosed here along with the descriptive catalogues / pamphlets /literature ,superscribed with Our Ref.No. and Due Date for the supply of the following items as per the terms & conditions mentioned in Annexure(Form No:)

S.No.	Description of Items with Specifications	Unit	Quantity
1	Supply, Onsite Installation & Operationalisation of Multi-frequency GNSS reference station receiver on turn-key basis as per following details & Specification (Annexure1)	SET.	+
2	Multi-frequency GNSS reference station receiver	NOS.	1/
3	GNSS Choke Ring Antenna with DM Element	NOS.	1/
4	Met Sensor Package	NOS.	1/
5	Construction of Monuments for DGPS survey and deformation rate measurement	JOB.	1/
6	Solar Power System with battery	SET.	1/
7	CORS/GNSS data downloading and complete processing software, Warranty: Cost of above should include comprehensive onsite warranty for 3 years (details in Annexure-1) (Other Technical details as per the enclosure-Annexure1) <i>Quote Separately for each item</i>	SET.	1/

DELIVERY AT: IIRS

MODE OF DESPATCH DOOR DLVRY

DUTY EXEMPTIONS

SPECIAL INSTRUCTIONS NIL

SPECIFIC TERMS


25/9/14

V.V. NARAYANAN KUTTY
PURS. & STORES OFFICER
For and on behalf of the President of India
The Purchaser

SIC

Annexe-1: Detailed Technical specification for Geodetic GNSS receiver/Antenna with campaign equipments and other accessories.

Technical Specifications for supply, onsite installation and operationalisation on **turn- key basis** of Multi-frequency GNSS reference station receiver, accessories and post processing analysis software with prime objective of **crustal deformation and TEC anomaly study**.

1. Multi-frequency GNSS (reference + campaign) station receivers - 1 unit each

One will be used for permanent station for continuous observation (CORS) and other will be used for campaign mode survey and both units should be of similar make and compatible to each other, should be interchangeable and should have separate set of chargers, battery back-up units and data downloading software for independent operation.

2. GNSS Choke ring antenna with DM element (for reference station) - 1 unit
3. Met sensor package (for reference station) - 1 unit

Note: 1) All above units should be quoted as per the following specifications and required accessories as mentioned and otherwise necessary.

2) All optional items are to be quoted separately. In case of software basic and advance modules (with all features) are to be quoted separately.

3) Quote the items in such a way that the whole order or in parts can be procured through repeat order. For example stand alone Geodetic GNSS receiver for permanent station or stand alone campaign mode instrument can be procured through repeat order.

4) Total supply and installation will have to be carried out on **turn-key basis** and therefore, all the installation work (including civil and electrical connections for both GNSS and met-sensor package), site selection as per IGS recommendations, testing, **calibration**, training, maintenance, warranty would be the responsibility of the vendor.

I. GNSS system and accessories

S.No	Item / Equipment	Specifications
1	Geodetic GNSS Receiver	<ul style="list-style-type: none"> • The receiver shall have a minimum of 120 parallel channels capable of tracking NAVSTAR GPS, GLONASS, Bideou and Galileo constellations and Indian SBAS GAGAN signals. • Shall be capable of tracking code and phase measurements of all the frequencies of <ul style="list-style-type: none"> ➤ GPS: L1, L2, L2C, L5 ➤ GLONASS: L1, L2 ➤ GALILEO: E1, E5a, E5b, E5a+b(Alt-BOC) ➤ IRNSS: L5*

		<ul style="list-style-type: none"> ➤ SBAS: GAGAN • Shall be capable of fully independent code and Phase measurements. <p><i>* Update for IRNSS L5 signal shall be provided once the signal is commercially made available</i></p>
2	GNSS Geodetic choke ring antenna with DM element and Multipath reduction	<p>Important: Two separate antennas are required for two GNSS systems as given below:</p> <ul style="list-style-type: none"> a) GNSS Choke ring antenna with following sections (reference station): <ul style="list-style-type: none"> • Should equip with Dorne Margolin element. The antenna should be with radome and should be separate from the GNSS receiver and could be mount over 9 feet concrete pillar on a high grade stainless steel mounting pin. • The antenna shall be capable of tracking Code and Phase measurements of all the frequencies of <ul style="list-style-type: none"> ➤ GPS: L1, L2, L2C, L5 ➤ GLONASS: L1, L2 ➤ GALILEO: E1, E5a, E5b, E5a+b(Alt-BOC) ➤ IRNSS: L5, S band* (as and when available) ➤ SBAS: GAGAN • The antenna phase center variation with elevation angle (10-90 degree) shall not be greater than 0.2 mm horizontal and 0.5 mm vertical. • The antenna shall possess multipath reduction capability mechanism.
3	Position performance	<p>Static (long)</p> <ul style="list-style-type: none"> • 3mm +/- 1ppm Horizontal or better • 5mm +/- 1ppm vertical or better <p>Fast (Rapid) static</p> <ul style="list-style-type: none"> • 5mm +/- 1ppm Horizontal or better • 10mm +/- 1ppm vertical or better <p>RTK</p> <ul style="list-style-type: none"> • 10mm +/- 1ppm Horizontal or better 20mm +/- 1ppm vertical or better Better precision levels can be demonstrated and preferable. Should capable to communicate with rovers in a Real Time Kinematic Survey through Radio/GPRS. Should be capable of serving as base station for post processed kinematics and RTK rovers.
4	Data Collection Interval and sessions	<ul style="list-style-type: none"> • Shall be capable of logging data at 50 Hz. should have user selectable sampling rates in the range of 0.02 sec. to 30 sec • Shall be capable of 5 parallel logging sessions
5	System interface	<ul style="list-style-type: none"> • Configurable over a web browser by

		<ul style="list-style-type: none"> ❖ TCP/IP with RJ45 Ethernet connectivity and ❖ GSM/GPRS connectivity thru built-in/ external router • Shall equip with display and/or control unit • Shall be configurable to remote monitoring and online data downloading capability • Receiver should have key display in the front panel. That should clearly explain power on conditions, battery status, satellite tracking status, data logging status, and should be able to configure/ set up the receiver using the press buttons provided in the front panel. • VSAT connectivity capability
6	Real time data transfer	<ul style="list-style-type: none"> • System should be capable of real time data transfer through <ul style="list-style-type: none"> ❖ TCP/IP with RJ45 Ethernet connectivity and • GSM/GPRS connectivity • Necessary hardware and software should be supplied including appropriate battery back-up for real time data transfer. • Vendor shall examine and implement best possible data transfer protocol from the proposed sites of reference stations. All data transfer cost during warranty period should be included in the offer.
7	Memory Capacity	<ul style="list-style-type: none"> • Embedded/internal/removable memory of minimum 8 GB capacity (industrial grade) and • Detachable memory device with minimum 32 GB capacity of industrial grade
8	Temperature and humidity range for receiver and Antenna	<p>Receiver and antenna should comply with IP67 standards for water, dust and humidity proof.</p> <ul style="list-style-type: none"> • Operating temperature Range: -40° C to + 60° C • Humidity: 100
9	Power and Data ports/slots	<p>Power Ports:</p> <ul style="list-style-type: none"> • Minimum two external physical power ports with automatic switching facility between A/C and D/C. • A.C. mains supply adaptability • Physical over-voltage protection and polarity protection (for DC). • Receiver should be capable to send appropriate power to external peripheral devices like Met Unit. • Should be capable of Power Over Ethernet (POE) • Receiver should have internal batteries and could be charged from both AC and DC sources. <p>Data Ports:</p> <ul style="list-style-type: none"> • Minimum 4 ports onboard <ul style="list-style-type: none"> ○ USB port (Device/Client & Host x 1) ○ Dedicated Ethernet port ○ RS232 port

		<ul style="list-style-type: none"> ○ Lemo ○ Bluetooth ● Capability for data I/O using VSAT ● Receiver should be capable to stream data to its memory from external peripheral device like Met Unit.
10	Power requirements and Management	<ul style="list-style-type: none"> ● Nominal 12V DC or better ● Automatic swapping between power sources without affecting data recording ● Must have a nominal power consumption of no more than 5 Watt with 230 V AC and also with external battery voltage ranging from 10 – 16 volts DC. ● When power source is removed the receiver must automatically switch to the next best power source available without effect on being stored. ● Automatic power on and data logging after power failure with same configuration (shall not restore to factory defaults). ● External battery bank (industrial grade) shall be provided with a capacity to run the system (receiver, met sensor and communication device) for minimum period of 7 days continuously in case of AC power failure. ● External battery shall be provided with an AC charger (industrial grade) ● The whole system (including communication system) should be capable to work standalone under zero A/C power condition ● Vendors are required to provide power calculation sheet to assess power requirement.
11	Surge and lightning protector	<p>The system shall equip with</p> <ul style="list-style-type: none"> ● DC-lightning arrestor ● EMP Protector/surge arrestor & capsule Kit (GNSS antenna)
12	Met Package interface	<ul style="list-style-type: none"> ● Capability for remote monitoring, configuring through receiver via web interface ● Receiver should support met package from multiple vendors ● Receiver automatically stores met data in a file and produces separately as required and the data should be in the IGS compatible Rinex format ● Preferably it should have single cable connectivity from GNSS receiver to sensor
Accessories		
1	Centering device to mount antenna	<ul style="list-style-type: none"> ● Forced centering device for accurate centering of antenna over the station point
2	Antenna Cables	<ul style="list-style-type: none"> ● Shall be professionally made, all joints sealed and caps provided for connectors ● Antenna cable with 30 meters length without

		amplifier for Geodetic base station (CORS).
3	Housing for the Receiver and accessories	<ul style="list-style-type: none"> • Shall be antistatic, weather proof, steel housing for keeping the receiver and accessories. Should provide easy carrying suitcase for the campaign equipments
4	Operating and User Manuals	<ul style="list-style-type: none"> • One set of softcopy and hard copy manuals shall be supplied for the GNSS CORS and for post processing software
5	Met Package	<ul style="list-style-type: none"> • Meteorological package for measuring temp. pressure and humidity and to be integrated with receiver data and transmitted with raw data. All sensors should be housed in a single unit. • Temp: -40 degree C to + 60 deg • Pressure: 550-1100hPa • Humidity: up to 100% • Resolution: Temp 0.01 degree, Pressure 0.01 hPa • Accuracy: Temp +/- 0.25 degree or better, Pressure +/- 0.15 hPa or better, Humidity +/- 2% or better • Sampling 3msec to 30sec • Data format-NEMA 0183, should be convertible to ascii format during Rinexing the data • PC Based software and should display pressure, temp., and humid parameters as time series. • RS 232/USB connectivity • Power 10V to 16V DC with minimum consumption and sleep mode option • All required accessories including cables and manuals. • Requires configuration of Met equipment from the GPS receiver and retrieval and storing of data through a 30 m communication cable (cat 5e) along with the GPS binary data. • Met must be powered from the same source as GPS receiver and should work in stand alone with GPS under field (non-AC) solar power conditions.

II. Post processing software

1	GNSS real time, Post processing and analysis software	<ul style="list-style-type: none"> • Shall run on Microsoft Windows XP/ latest Operating System • The software should be able to remotely monitor the GNSS reference stations over a TCP/IP and GSM/GPRS link. • The software should be capable of handling and configuring GNSS reference stations for GPS, GLONASS and GALILEO and SBAS GAGAN. (<i>*Update for IRNSS L5 signal shall be provided once the signal is commercially made available.</i>) • The software should be able to remotely view and
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		<p>download the data. In the event of real time communication/real time data transfer failure, the software should be able to download the missing data automatically, once the communication is restored.</p> <ul style="list-style-type: none"> • Software should be able to configure receiver through computer without Hardware lock. • The software should graphically plot the SNR charts and depict the same as numerical values. The software should automatically generate the Quality Check Reports for the stations. • Software should support connection to receivers of different vendors. • The software should support automatic RINEX conversion based upon the user defined sampling interval and file length. At the same time the software should be able to store the data in proprietary format. • The software should graphically depict the raw data being received from the Receiver and also depict the data gap in the receiving status. • The software should create the RINEX Products out of the raw data automatically which can be of variable length from a single raw data. • Should have decimation and concatenation of RINEX observation files. • Should include key quality and quantity information, which should include data completeness, satellite tracking, cycle slip, multipath and receiver clock. • Display time line or scatter plots of coordinate displacements from real time data streams and pre-logged files, should support NMEA and CSV files for analysis. Should be capable of handling the post processed data of reference station. • Processing and graphical display of longitudinal, transverse, height, easting, northing, 2D and 3D displacement time series and 2D scatter plots • Provision of display of displacement from real time NMEA data. • Stations status display on Bhuvan and Google portals • Real time station alerts through e-mail and SMS (in case of GSM/GPRS network)
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III. Warranty, Comprehensive annual maintenance, Training and system demonstration

1	Warranty Agreement	<ul style="list-style-type: none"> • Comprehensive onsite warranty for 3 years time frame shall be provided from the date of successful onsite system installation. • Warranty shall cover 24 x 7 technical support, all spare parts and labour charges
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		<ul style="list-style-type: none"> • Warranty shall include both firmware and software upgrades • Onsite maintenance and servicing shall be provided • In case lab tests are required to be done, transport, insurance and handling charges shall be borne by the supplier • The turnaround time (TAT) for repairs shall not be more than 72 hrs from the time of reporting • A replacement unit shall be made available, at free of cost for the period, if break downs occur. • Defective components must be replaced by similar make and model or higher quality components. • Detailed warranty agreement shall be enclosed with their technical quote fulfilling the above requirements. • Calibration of met package should be part of the warranty.
2	Extended maintenance agreements	<ul style="list-style-type: none"> • The vendors shall provide the extended annual maintenance agreement for 4th and 5th years separately to cover GNSS equipment, hardware and software upgrades after completion of the initial three year comprehensive warranty. • The extended maintenance agreement shall comply with the terms and conditions of the warranty and Maintenance agreement specified above. • Cost of the extended warranty may be considered for deciding L1.
3	Spare Parts	<ul style="list-style-type: none"> • All the spares shall be available for a minimum of five (5) years of operation from purchase • A list of recommended spares for met sensor, receiver, antenna, flash card, rechargeable battery (for receiver) etc. should be given with price. Technical bid should contain list without price.
4	Training and data processing	<ul style="list-style-type: none"> • Comprehensive training shall be conducted for on Geodetic GNSS Receiver usage and post processing software functions at IIRS, Dehradun • A detailed training plan shall be provided before training commences. • Data processing shall be carried out to compute the precise coordinates of the above stations in ITRF frame by post processing the data using scientific processing software (Bernese/GAMIT). • Special emphasis to be given on GNSS system monitoring (through system/server at IIRS), real time and post processing of data for deformation measurement and TEC analysis.
5	System demonstration	<ul style="list-style-type: none"> • The bidder should demonstrate the quoted system at IIRS, Dehradun to confirm the above specifications. • System demonstration is mandatory. In case the bidder fails to demonstrate the quoted system, the offer will be treated as disqualified.

6	General conditions	<ul style="list-style-type: none"> • The offer should provide all critical specifications of the equipments, which would have a bearing on the performance of all overall system. • It should clearly mention whether all system level specifications will be met with or without including optional items in the list of deliverables. Full or partial compliance of different specifications must be mentioned. • The offer should clearly mention about time-line for delivery, installation and operationalisation. • All other items, if any, which are essential for end to end working of the system, but not included in the offer, should be clearly brought out. • The offer should give details of agencies to which such equipments have been supplied with their past and current performance duly certified by the user.
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IV) Other supportive services, equipment and software

a.	<p>Construction of survey monument</p> <ul style="list-style-type: none"> • A circular concrete pillar of 2 feet Dia and 9 feet height above the ground on a firm ground and a concrete roofed hut to keep the sensor housing box shall be constructed as per the standard GNSS reference station with steel doors, lock and key system. • Mounting system for Met equipment should be in steel. • The monument should be of ultra-stable design, should be on stable ground, should have clear horizon with minimum obstruction above 5 degree elevation, should avoid nearby high voltage power line and heavy human induced vibration/vehicular traffic and it should have general protection by appropriate fencing and burying of cable. • In the warranty period if the monument is found unsuitable, then it must be relocated at vendors cost. • Cabling should be preferably through under-ground pipes and entire area should be appropriately fenced with gate.
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IV. Optional Item

1	<p>Solar Power System</p> <ul style="list-style-type: none"> • Solar Panel – 2 nos., 40 W each capacity with mounting system in steel • Solar Battery – 2 nos., 12 volt, 100 Ah each • Equipment enclosure with ventilators, brackets and cables • Solar controller/ Battery charger • Surge arrestor • Installation and configuration of the solar power system with the above GNSS system • Additional solar power system and battery requirement with back up may be suggested exclusively for data transmission purpose. In case it can be integrated with Solar power system of GNSS receiver, then it must be quoted with suitable similar or higher (than as given above) capacity system.
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V. Places of supply & installation

The following are the tentative locations, where the above specified Geodetic GNSS Receiver need to be installed. However, the locations may be changed in the same region based on the project requirements. After finalization of order, during initial visit to site, the vendor will collect data for at least 24 hrs to assess the quality of the site.

1. Gopeswar / Joshimath / Srinagar / Tehri / Yamunotri, Uttarakhand state

GOVERNMENT OF INDIA
DEPT. OF SPACE, GOVT. OF INDIA
INDIAN SPACE RESEARCH ORGANISATION
INDIAN INSTITUTE OF REMOTE SENSING
No.4, KAIDAS ROAD, P.B.NO.135, DEHRADUN-248001

PURCHASE DEPARTMENT

NO.IIRS/P&S/GIER-2014-000281-01/14-15

Date : 25.09.2014

SPECIAL TERMS AND CONDITIONS FOR SUBMITTING TWO PART BID

1. This is a two part tender viz., Techno-Commercial Bid (consisting of Technical Specifications, Commercial terms & condition etc.) and Price Bid. Hence, quotation should be submitted in separate sealed covers super-scribing "Tender No. **GIER-2014-000281-01/14-15, Due on 21.10.2014 at 1500 hrs** (Techno-Commercial Bid) and Tender No. **GIER-2014-000281-01/14-15, Due on 21.10.2014 at 1500 hrs** (Price Bid).
2. Both the sealed tenders (Techno-commercial & Price bid) should be kept in one big cover super scribing TENDER for Supply, Onsite Installation & Operationalisation of Multi-frequency GNSS reference station Receiver etc against Enquiry No. **GIER-2014-000281-01/14-15, Due on 21.10.2014 at 1500 hrs.** and put in the Tender Box available in Purchase Division, IIRS or send by post or Courier within the due date and time prescribed.
3. Only Techno-commercial bid will be opened on the date of tender opening. The price Bids of those tenderers whose Techno-Commercial Bids are found to be meeting our specifications / requirements will be opened.
4. The Techno-commercial Bid should have technical & commercial details only. No price should be quoted in the Techno-Commercial Bid.
5. EMD of Rs. 20,000/- to be submitted along with the quotation in the form of Crossed Demand Draft drawn on any Nationalized / scheduled bank in favour of Pay & Accounts Officer, IIRS, payable at Dehradun. Quotation received without EMD will not be considered. The EMD of unsuccessful bidder will be returned after finalization of order.
6. **PART I- TECHNO-COMMERCIAL BID – In one cover**
Techno-commercial part should clearly indicate the technical details, scope of supply, payment terms, delivery terms (FOR/EX-Work/) delivery period, taxes and duties. Warranty, Guarantee, Security Deposit, Performance Bank Guarantee, etc. under separate head. Please note that the price should not be indicated in the Techno-commercial Offer.

Complete literature/leaflets/catalogues or brochures relevant to the offered models are to be enclosed with the Techno-commercial Part of the Tender.
7. **PART-II- PRICE BID – In one Cover**

The price alone should be indicated. Wherever installation/Commissioning is involved such charges may be indicated separately in the Price Bid.

8. a) In a tender, either the Indian agent on behalf of the Principal/OEM or Principal/OEM itself can bid, but both can not bid simultaneously for the same item/product in the same tender.

b) If an agent submits bid on behalf of the Principal/OEM, the same agent shall not submit a bid on behalf of another Principal/OEM in the same tender for the same item/product.
9. The offer should be valid for a minimum period of 120 days from the due date.
10. **TENDER OPENING:** The Techno-commercial Bid will be opened on the specified date and time. In case any further clarifications/discussion are required, such clarification/discussions shall be called for before opening of Price Bid.
11. Late and Delayed Tenders will not be considered. Therefore, please ensure that your tender is posted well in time to reach us before the due date and time.
12. Technical compliance statement should be enclosed with your quotation.
13. Fax/Email offers shall not be considered for TWO PART BID
14. All the pages of your offer should be signed/initialed by competent authority and affixed with your company's Seal
15. Tenders which are not prepared in terms of these instructions are liable to be rejected.

GENERAL TERMS & CONDITIONS

1. **Delivery:** Clearly mention the exact delivery period in your quotation.
2. **Sales Tax:** : We can not furnish Form C/D. Please indicate the applicable percentage of trade tax/vat in your quotation, if applicable.
3. **Specification:** Material should be offered strictly conforming to our specification, if any changes, should be clearly indicated by the supplier in the quotation. The supplier should also indicate make/type No. of the materials offered. Vague terms such as best India, Best Indigenous, Imported Make should not be used.
4. **Installation :** Installation should be done free of cost at IIRS, Dehradun
5. **Payment :** 90% Will be made within 30 days from date of supply, receipt, inspection & installation of the item by the indenting officer against pre-receipted bills in triplicate and balance 10% on production of Performance Bank Guarantee established through a nationalized bank valid for a period of 37 months from date of installation.
6. **CST -** With effect from 01.04.2007, Form-D has been withdrawn for Inter-State purchases by Government Departments. Now the percentage of CST on the Inter-State sales to Government Departments shall be the percentage of VAT/State Sales Tax as applicable in the State of the Seller/Dealer. Accordingly, the suppliers have to indicate clearly the % of CST applicable against each case in their offers.
7. **Customs Duty -** IIRS is eligible for **Customs Duty exemption** as per Notification No. 51/96 dated 23/6/1996 as amended by Notification No. 24/2007 dated 01.03.2007 . This may be taken into account while quoting for import items, if any.
8. In case tenderers offering items considering customs duty exemption, they should also indicate the price, separately, with Customs Duty component and terms and conditions thereto
9. **Force Majeure:** In case of strike, accident or any other unforeseen contingencies causing stoppage of work, we reserve the right to cancel and to modify the Order without liability for any compensation and/or claim of any description.
10. **Liquidated Damages :** If the items are not supplied and installed on or before the due date mentioned in the purchase order , Liquidated Damages are generally charged @ 0.5% of the value per week or part of a week subject to a max. of 10% of the total value of goods or 10% value of goods that could not be put to use due to late supply whichever is lower.
11. **Warranty:** Should be minimum Three Years from date of supply, installation and acceptance against any manufacturing defects.
12. Tenderers are required to quote Basic Price, Installation charges and statutory levies separately.
13. In case of any dispute(s) the decision of Director, IIRS will be final.
14. Director, IIRS reserve the right to accept or reject any quotation in full or part thereof without assigning any reason.


Purchase & Stores officer