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Reference No. 2022-23/35 PR No. 1000027886 (Rfx No. 6100001256)

Detailed Technical Specifications for Global Navigation Satellite System (GNSS) Receiver, Antenna and Accessories for High Precision Geodetic (Crustal deformation) Studies:

Sr No.	GNSS Receiver:
1.	Multi frequency GNSS (GPS, GLONASS, GALIEO & BeiDou etc or substantially equivalent) receiver with PPP and RTK modes, having internal/embedded/removable memory of minimum 24 GB preferably high. Should also have user selectable sampling rate in the range of 0.05 second to 30 seconds. The receiver should be capable of recording data at two sampling intervals simultaneously, so that the higher frequency data can also be retained within the receiver for a specified number of days (say, 3–7 days). Simultaneous Data logging and streaming to external device via pen-drive/communication cables/Bluetooth.
2.	The GNSS receiver should be able to accommodate met-package so that met data are automatically stored in binary file, and produces separate met file upon rinexing. The MET Interface should be directly configurable either over a Web Interface or Reference Station Software.
3.	Should have total minimum 500 channels and should be capable of tracking signals all available frequencies of existing GNSS satellites and available regional constellation and SBAS signals.
4.	Receiver should be equipped with display and control unit/panel. The receiver should be configurable for reference station monitoring with this unit without any external powered device.
5.	Power Consumption: not exceeding 5 Watt (Receiver, Antenna, controller: nominal) with external Battery voltage in the range of 11-28 volts D.C.
6.	Power Ports: Minimum two external power ports (one A.C and Battery) with automatic switching facility, A.C. mains supply adaptability, physical over-voltage protection and polarity protection (for DC). The power ports should not be connected internally. The receiver should support Power On Ethernet (POE).
7.	Remote monitoring and online data down-loading capability directly through radio modem/ telephone line/RS232 & Ethernet.
8.	Mini USB Port / USB port / Mini USB to USB converter.
9.	Operating temperature range: - 40 deg. C to + 65 deg. C.
10.	Should be waterproof (IP67), shockproof, dustproof, humidity-proof (100%) and condensation-proof.
11.	All type of necessary OEM power cables (AC & DC), data cables, internal battery with charger, storage card, Y Cable for simultaneous supply from AC and DC , as required.
12.	Automatic power-on and data-logging after power failure, with same configuration (should not restore to factory defaults).
13.	Should be capable of tracking all available satellites to 0 degree elevation.
14.	Vendors will be required to satisfy the following tests (for GPS data) for verification purpose. (a) Quality Control Statistics (10 – 90°degree) (i) Receiver must have (observations recorded/

	<p>Observations expected) > 99 %.</p> <p>(ii) MP1 (Multi-path on L1) and MP2 values < 0.8 m</p> <p>(iii) Not more than 1 cycle slip per 20,000</p> <p>observations on an average; (Total observations/Total slips) > 20,000.</p> <p>(b) Functionality in short baseline processing:</p> <p>(iv) L1, L2, L3 precision < 0.5 mm in N, E, 10 mm in vertical</p>
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Sr. No.	GNSS Antenna: Multi frequencies Choke Ring Antenna (GNSS) provide geodetic-quality measurements for different purposes like, surveying, mapping, atmospheric, seismic and research applications. Typical multi-frequency choke ring antennas maintain a stable phase centre that has less than 1 mm of drift. The choke ring antenna is based on the geodetic research standard and it features a Dorne Margolin (DM) antenna element. The specification of GNSS Antenna as detailed below and its future up gradation are acceptable.
1.	Antenna should be separate from the receiver, and should be supplied with radome.
2.	Repeatability of Antenna phase centre variation with elevation angle (0 – 90°) should not be greater than 2 mm horizontal and 5 mm vertical.
3.	Multi-path reduction capability mechanism such that MP1 and MP2 values are less than 0.8 m for 0 – 90° elevation angle (ref: TEQC software).
4.	Geodetic grade, high gain (more than 20 dB) on all bands.
5.	Operating temp range: - 40 deg. C to + 65 deg. C.
6.	Antenna should be waterproof, shock proof, dust proof, 100% humidity proof and condensation proof with IP67 ratings.
7.	Antenna shall operate in humidity, high winds, sand storm and blowing rain
8.	Geodetic Antenna (permanent) / UNAVCO standard: The antenna must be a “GNSS choke ring antenna with Dorne Margolin element (DM) or Equivalent” with Radom protection” and should be capable of tracking L1 & L2 frequencies of GPS, GLONASS & GALILEO or substantially equivalent.
9.	Geodetic Antenna (campaign) / UNAVCO standard: Compact geodetic antenna and should be capable of tracking L1 & L2 frequencies of GPS, GLONASS & GALILEO or substantially equivalent.

Sr. No.	ACCESSORIES
1.	Antenna Cable operational without amplifier (length: 15 (campaign setup) and 30m (Permanent setup))
2.	Tribrach: Forced-centering device for accurate centering over the station mark.
3.	Calibrated Height measurement stick/device
4.	Surge and lightning protectors: i) DC-lightning arrestor. ii) EMP Protector/surge arrestor & capsule kit (GNSS antenna)

5.	Inbuilt/replaceable internal batteries rechargeable using both DC and AC power sources. Battery back-up 3-4 hrs minimum or better
6.	Internal battery chargers per set 10Amp or more with overcharging protection
7.	Rugged carry case of durable fibre material for receiver, Antenna and cables.
8.	Software compatible with latest Windows and Linux for performing the following tasks: -Data download, RINEX Conversion
9.	Collapsible Antenna Tripod
10.	Transportation case (Fiber /Plastic)

Remark:

- 1) Installation and product training for 3 working days with minimum one year warranty (without any additional cost.)
- 2) The bidder shall submit atleast 2 nos. of previous supply order of State / Central Government / Public organization, Central Research institute or similar during the last 3 years (2019-2020 , 2020-2021 & 2021-2022) .
- 3) The bidder shall produce notarized copy of satisfactory performance certificate issued by the organization, where the instrument had been supplied.
- 4) Instrument Warranty: 1 Year.