वैज्ञानिक तथा औद्योगिक अनुसंधान परिषद्
Council of Scientific & Industrial Research
राष्ट्रीय वांतरिक्ष प्रयोगशालाएं
National Aerospace Laboratories

CSIR - NAL Estd. 1959
ISO 9001 : 2015
Certified Organization

INVITATION FOR BIDS/NIT

Tender No. NAL/PUR/ALD/451/19-Y   **Dated: 23-Dec-19**

CSIR- National Aerospace Laboratories (NAL), Bengaluru, India is one of the premier laboratories under Council of Scientific and Industrial Research (CSIR), an autonomous body under Department of Scientific and Industrial Research, Government of India, New Delhi. CSIR-NAL is a Science and Knowledge based Research, Development and Consulting Organization. It is internationally known for its excellence in Scientific Research in Aerospace Engineering.

The Director, CSIR-NAL invites online quotation for procurement of the following item(s) for day to day research work.

Sl.No.	Description of Items	Unit	Quantity
01	Z Blade GNSS Receiver.	Nos	2
02	GNSS Network Adjustment Software.	Set	1
	Please refer Annexure for detailed specification.		

Single / Double Bid	Two Bid
Bid Security (EMD) (in INR)	Rs. 50000/-
Performance Security	10% of the purchase order value

01. Tender Documents may be downloaded from Central Public Procurement Portal https://www.etenders.gov.in. Aspiring Bidders who have not enrolled/ registered in e- procurement should enroll/ register before participating through the website https://www.etenders.gov.in. The portal enrolment is free of cost. Bidders are advised to go through instructions provided at 'Instructions for online Bid Submission'.

02. Tenderers can access tender documents on the website (For searching in the NIC site https://www.etenders.gov.in, kindly go to Tender Search option, select tender type and select ' Council of Scientific and Industrial Research' in organization tab and select NAL-Bengaluru-CSIR in department type Thereafter, Click on "Search" button to view all CSIR-NAL, Bengaluru tenders). Select the appropriate tender and fill them with all relevant information and submit the completed tender document online on the website https://www/etenders.gov.in as per the schedule given in the next page.

03. Either the Indian Agent on behalf of the Foreign principal or the Foreign principal can bid directly in a tender but not both. However, the offer of the Indian Agent should also accompany the authorization letter from their principal. To maintain sanctity of tendering system, one Indian Agent cannot represent two different Foreign principals in one tender.

04. Unsolicited / conditional / unsigned tenders (Quotations) **shall not** be considered. Quotations received after the due date and time **shall be summarily rejected.**

05. The Bidder shall comply the terms and conditions of the tender, failing which, the offer shall be liable for rejection.

06. The Director, CSIR- National Aerospace Laboratories., Bengaluru reserves the right to accept any or all the tenders either in part or in full or to split the order without assigning any reasons there for.

Raman Kumar
(Section Officer S&P)

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http//www.nal.res.in   purchasek@nal.res.in

CSIR-National Aerospace Laboratories, Bengaluru-560 017, INDIA

SCHEDULE CUM CRITICIAL DATE SHEET

1	Name of Organization	CSIR-National Aerospace Laboratories, Bengaluru	
2	Tender Reference No	NAL/PUR/ALD/451/19-Y dated: 23-Dec-19	
3	Tender Type (Open/Limited/EOI/Auction/Single)	Open Tender	
4	Type/Form of Contract (Work / Supply / Auction / Service / Buy / Empanelment / Sell)	Supply	
5	No of Covers (One/Two/Three/Four)	Two	
6	Tender Category (Services/Good/Works)	Goods	
7	Allow Resubmission (Only in online mode within scheduled period)	Yes	
8	Allow Withdrawal (Only in online mode within scheduled period)	Yes	
9	Allow Offline Submission	No	
10	Work Item Title	Z Blade GNSS Receiver & GNSS Network Adjustment Software	
11	Work Description	Z Blade GNSS Receiver & GNSS Network Adjustment Software	
12	Delivery Schedule	60 days from the date of purchase order	
13	Product Category (Civil Works / Electrical Works / Fleet Management / Computer Systems)	R & D Equipment	
14	Is Multi Currency Allowed	Yes	
15	a) Tender Publishing Date -	23-Dec-19	1800 Hrs
	b) Document Download Start Date-	23-Dec-19	1800 Hrs
	c) Bid Submission Start Date-	23-Dec-19	1800Hrs
	d) Bid Submission End Date-	16-Jan-20	1000 Hrs
	e) Bid Opening Date-	17-Jan-20	1100 Hrs
16	Bid Validity Days	90 days	
17	Address for communication	Stores and Purchase Officer CSIR-National Aerospace Laboratories, HAL Airport Road, Kodihalli, Bengaluru - 560017	
18	Inviting Officer	Director, CSIR-NAL	
19	Contact No	25086040, 25086041	
20	E-mail Address	purchasek@nal.res.in	
21	Detailed specification of item	Refer Invitation for bids / NIT	
22	Tender Terms & Conditions & Instruction for online bid submission	The prospective bidders are requested to refer to the Standard Tender Document available on NAL Internet (www.nal.res.in) under the icon Tender-Purchase before formulating and submitting their bids	

Sl.No.	Parameters	Description
1.	GNSS	Channels 225 or more GPS L1, L2 & L2C, GLONASS L1, L2 & L3, SBAS, Galileo, Beidou, QZSS constellation L Band
2.	Post-Processing accuracy (RMS)	Static: Horizontal: 3 mm + 0.1 ppm Vertical: 3.5 mm + 0.4 ppm
	RTK	Horizontal: 8 mm + 1 ppm Vertical: 15 mm + 1 ppm
	L-Band accuracy	2 cm
3.	Internal Radio	2W UHF internal detachable radio
4.	Power	The System should be able to operate on a rechargeable battery pack which can run for atleast 8 hours or more on a single charging.
5.	Communication Ports	RS232, Bluetooth and USB ports for connecting external devices such as display or laptop integrated Bluetooth
6.	Housing	The system shall be all Weatherproof
7.	Receiver Memory	Minimum 256MB Internal memory in receiver and expandable through controller
8.	Operating temp	- 40°C to + 65°C
9.	Humidity + dust	100% non-condensing as per IP67
10.	Dimension	Portable, weight of the receiver should be less than 1Kg
11.	LEDs	Power, Tracking, Bluetooth, Recording, Radio
12.	Receiver Features	Long range Bluetooth, Anti-Theft
12.	Controller	• Rugged design with 4.3" display protected by Gorilla Glass • Windows Embedded Handheld Professional 6.5 Operating System • Display WVGA TFT, 480 x 800 pixel • Operating temperature: -30° to +60°C or better • Memory: 512MB RAM, 16GB Flash Storage • Processor: Clock frequency: 1.0 GHz or better • Humidity: 90% non condensing • Bluetooth, WiFi and Integrated 3.75G cellular connectivity • Free drop: 1.2 m on concrete or better • Interface: USB 2.0 or better • 8 megapixel camera with dual LED flash
13.	Field Software	• General Survey Topological point survey, multi-epoch control point survey, offset distance point survey, and fast survey with controller internal GNSS. • Static Survey Static survey and data logging. • Stop&Go survey To log number of points in the same job. • Stakeout Point and line stakeout. Offset Survey • Roading Road elements supported including importing road design files, defining road elements, defining intersections and stakeout of rad stations. • Site Calibration Grid to local transformation. • Receiver Configuration RTK Radio (Internal, External), RTK Network (VRS), RTK Bluetooth (Long Range SP60 only) & RTX • Import & Export Import: Point (txt,csv), AutoCad (dxf), Coordinate System (scs), Job (jxl), Roads (rxl). Export:Point (txt,csv), South CASS (dat), AutoCad (dxf), Job (jxl), Roads (rxl), Coordinate System (scs), Static Survey Report (txt) • Define Topological point, control point with grid coordinates or WGS84 geodetic coordinates.

		• COGO Calculate points based on distances and angles.

14.	Processing software	Software should be ideal for processing and analyzing GPS and GNSS, and optical survey data recorded in the field, and exporting it to a design package. With software on PC should have the ability to work with RTK and Static/PPK data to generate reports as well as identify and correct field errors. Import data from existing surveys or directly from the Internet and export data as points, or in CAD or XML format. Software should also perform data reduction, computation, QA/QC and network adjustment. Control data should be exportable to the field software for use in the field. The software should be offered with a UAS photgrammetry module for processing data collected using a fixed wing / multi-copter based UAVs and should have the capabilities mentioned in the 14.b
14.b	**UAS Photogrammetry Software module with the following features**	
1		Facility to process data from fixed wing and multi-copter based camera
2		Support for high-quality GNSS/IMU data for stable processing
3		Full automatic high-quality photogrammetry-grade deliverables (geo-referencing, sensor calibration, dense point clouds, orthomosaics and GIS vectors) • Minimized user interaction for project set-up and data post processing • Workflows for classical and close range geometry • Sub-area selection for editing and re-processing for georeference, point clouds and orthomosaics • Task-tracking monitor • Store camera calibration results for later reference • Optional black-box one stop or multi-step processing • Weighted high-quality GNSS/IMU and GCP support – georeferencing and sensor calibration with minimum ground control, only – processing without any ground control points for rapid response projects • Multi-flight and multi-camera capable
4		Automatic blunder removal to ensure best quality • Powerful datum transformations with predefined projections, thorough graphical analysis tools and detailed reports • Automatic relative and absolute adjustment • Effective tie point matching also in poorly textured, as well as mountainous areas • Project-wide photo display with correct topology and auto image-selection for interactive, guided control point measurement • Powerful intuitive aerial-mapping block analyzer: – Easy visual checking of large data sets – point and photo connections – statistics (error vectors, ellipses etc.) linked to data tables – geometric sector analysis for points and images – binning cell analysis for point density/connectivity – useful display filters, for example multi-strip connections and more
5		Colored point clouds and surface grids as well as bare earth DTM output • Effective noise filtering for point clouds • Sophisticated point cloud filtering and classification to e.g. separate ground from

		off ground
6		Stereoscopic and monoscopic editing and visualization • Context driven editing tools with heads-up-display • Rigid consideration and measurement of morphological data such as breaklines • CAD-like multi-layer editing, visualization and basic mapping • Automatic correlation-based and interpolation based terrain following for 3D digitizing • High-performance 3D point-cloud viewer for millions of points • On-the-fly contours and height coding • Automatic best-fit stereo model selection for stereoscopic visualization and editing • Batch pointcloud processing (tiling, contouring, gridding)
7		Automatic feature based seam-finding and color-balancing for orthomosaic based on Trimble-exclusive OrthoVista technology result in perfect seamless mosaics • Adaptive blending of orthos into mosaics according to image texture analysis • Rigid True-Ortho (surface-model-based) as well as classic ortho (bare earth DTM-based) strategy ready for use in GIS • UAS-specific local-area ortho editing tools • Support for pre-existing height models for quick processing
8		Supported image formats: – Georeferenced orthos: GeoTIFF, TiffWorld (tfw) – Tiff, JPG, BigTiff (optional EXIF) • Supported point-cloud / morphology formats: – LAS(1.2-1.4), LasZIP, XYZ, BXYZ, WNP, SHP, DXF

Bill of material

Description	Qty
GNSS Receiver	2
Li-Ion Battery	2
Kit Power Supply	2
HI Tape	2
USB Host to device cable	1
Controller with field software	2
Hard Case	1
Tripod	2
Tribrach Adapter with Optical Plummet	1
Range Pole with bipod	1
Post Processing Software including the UAS Photogrammetry Module	1