

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/448/19-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	NPNT compliant Small category Multirotor.	Set	01
02	NPNT compliant Micro category Multirotor.	Set	01
	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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### **SCHEDULE CUM CRITICAL DATE SHEET**

1	Name of Organization	CSIR-National Aerospace Laboratories, Bengaluru	
2	Tender Reference No	NAL/PUR/ALD/448/19-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	NPNT compliant Small category Multirotor & NPNT compliant Micro category Multirotor.	
11	Work Description	NPNT compliant Small category Multirotor & NPNT compliant Micro category Multirotor.	
12	Delivery Schedule	30 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 -	28-Dec-19	1800 Hrs
	b) Document Download Start Date-	28-Dec-19	1800 Hrs
	c) Bid Submission Start Date-	28-Dec-19	1800Hrs
	d) Bid Submission End Date-	20-Jan-20	1000 Hrs
	e) Bid Opening Date-	21-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	<a href="mailto:purchasек@nal.res.in">purchasек@nal.res.in</a>	
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 ( <a href="http://www.nal.res.in">www.nal.res.in</a> ) under the icon Tender-Purchase before formulating and submitting their bids	

## Technical Specification

Sl.No	Item name	Quantity
1	NPNT complaint Small category Multirotor (as per spec attached)	1 set
2	NPNT complaint Micro category Multirotor (as per spec attached)	1 set



## NPNT complaint Small category Multirotor -Specification

Specification	Value
Physical Size	Less than 900 x 900 x 450 mm
Construction	All Carbon fibre composite
Operational Range	Up to 10 Km
Rotors	8 in x8 Quad Coaxial configuration
Endurance	Min 35 Mins
Cruise Speed	6-8 m/s
Wind Tolerance	Up to 12 m/s
Service Ceiling	Up to 1000m AGL (Restricted to 120 M AGL by DGCA)
Compatible payload	20.1 Mpixel RGB Camera Sony UMCR10C
Weight W/O Payload	< 3 Kg
Max Payload capacity	5 Kg
Batteries	Customised Lipo Battery pack, HD.
Ground Control Station	Tablet based software for autonomous UAV operation Industrial grade 10- inch Android Tablet Redundant 2.4 Ghz licence free modem with 5 KM communication range with WPC approval.
Mode / Safety	Fully Autonomous (GPS waypoint profiles, Autonomous Survey for aerial mapping) One touch auto take off and hover Fail-safe return to home on low battery, communication failure & high wind conditions.
Radar Cross section	Vertical Polarization: Approx. 0.3 M2 Horizontal Polarization: Approx. 0.35 M2
Drop Payload Mechanism	Customized Drop Mechanism for 2kg payload
DGCA Compliance	The integrated system needs to be complaint to all relevant guidelines applicable as per DGCA till 1 year from date of PO and Firmware updates for NPNT devices applicable to Small Category Remotely Piloted Aircraft needs to be delivered as and when applicable.
Bill of Material	1 Drone as per above specification 1 GCS Hardware Tablet as per above specification 1 WPC approved Datalink 1 RGB camera Sony UMCR10C with compatible 1 axis gimbal <i>or equivalent</i> NPNT compliant Device for Digital Sky Compliance. In case digital sky version is not final at the time of delivery, the NPNT device to be made compliant to the Digital Sky as and when ready. 4 Li Ion/Li Po 12000 mAh Batteries

## NPNT complaint Micro category Multicopter - Specification

Specification	Value
• RPA category	Micro category
• RPA Type	Quad copter
• Max all up weight including payload	2kg approx.
• Overall Dimension (mm)(lxbxh)	900*900*300mm
• Compatible payload	20.1 Mpixel RGB Camera Sony UMCR10C
<b>Power Plant Details</b>	
• Engine/Motor	BLDC Motor
• No of Motors	4 Nos
• Battery capacity	5000 mAh
• Propellers details	15-inch Diameter
<b>Equipment Details</b>	
• GNSS	Required
• Autonomous Flight Termination System or RTH	Required
• Flashing anti-collision strobe light	Required
• NPNT Compliant	Required
• Flight controller with flight data logging capability	Required
• Barometric equipment (with capability for remote sub-scale setting)	Required
• Geo fencing capability	Required
<b>Remote Pilot Station</b>	
• Ground control station	Tablet based
<b>Communication Link</b>	
• RC	2.4 GHz (FHSS) transceiver- 14 Channel
<b>Performance details</b>	
• Max Endurance	30 Mins
• Max Range	8 km
• Max Speed 10 m/s	10 m/s
• Max Height / Max ceiling height	400 ft.
• Operating Altitude (ft)	200 ft. (restricted by geofencing from firmware)
• Operating Envelope	VLOS flight only
<b>DGCA Compliance</b>	The integrated system needs to be complaint to all relevant guidelines applicable as per DGCA till 1 year from date of PO and Firmware updates for NPNT devices applicable to Micro Category Remotely Piloted Aircraft needs to be delivered as and when applicable.
<b>Bill of Material</b>	1 Drone as per above specification 1 GCS Hardware Tablet as per above specification 1 WPC approved Datalink 1 RGB camera Sony UMCR10C with compatible 1 axis gimbal <i>or equivalent</i> NPNT compliant Device for Digital Sky




Specification	Value
	Compliance. In case digital sky version is not final at the time of delivery, the NPNT device to be made compliant to the Digital Sky as and when ready. 4 Li Po/Li Ion 5000 mAh Batteries

**Acceptance Test Procedure:**

The system needs to be supplied along with DGCA artefacts required for the flying of the same and the system will be flown at NAL and demonstrated for performance evaluation against the specification.

