

GOVERNMENT OF INDIA
(Ministry of Home Affairs)
COMMUNICATION & IT DIRECTORATE
CENTRAL RESERVE POLICE FORCE
EAST BLOCK-7, SEC-1, R.K. PURAM, NEW DELHI-110066
(Email:- comncell@crpf.gov.in)

No. B.V-7/2024-25-C-(M/UAV)-Q

Dated, the 13 June'2025

To

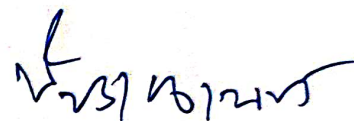
1. The DsG: AR, BSF, CISF, ITBP, NSG, SSB and BPR&D
2. Director, DCPW

Subject: QRs/TDs OF "MICRO UAV" REGARDING.

I am directed to refer on the subject mentioned above and to say that the QRs/TDs of "Micro UAV" have been approved by the DG CRPF after due deliberations and recommended by CAPFs sub-group and experts from DCPW.

This is for favour of information and needful action please.

Encl:-As above



(Megh Raj)
DIG (Equipment)
Communication & IT Branch
Directorate General C R P F

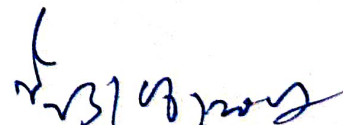
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Dated, the 13 June'2025

Copy to:-

1. Mrs. Sugandhi, Technical Director, North block, MHA with request to upload the QRs/TDs of "Micro UAV" on MHA website (e-mail ID: mpsugandhi@nic.in). *please.*

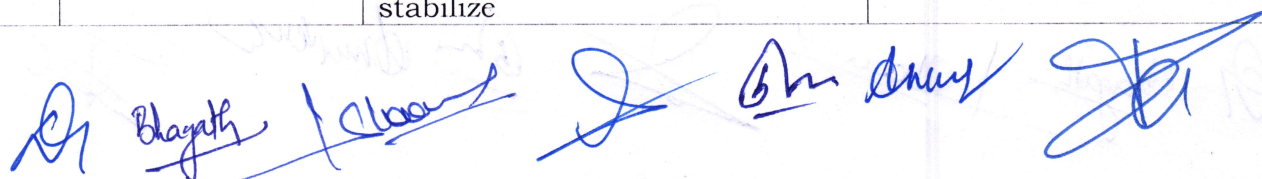
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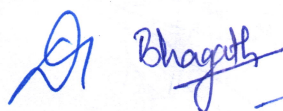
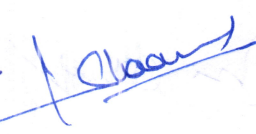

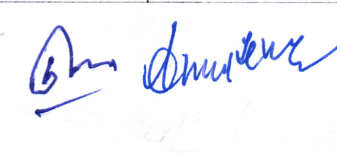

(Megh Raj)
DIG (Equipment)
Communication & IT Branch
Directorate General C R P F

QRs/TDs OF MICRO UAV

SN	Parameter	Specifications	Trial Directives
1.	Micro UAV system should consist of the following sub-systems: -		
1.1	UAV Bird with battery pack		Board will check practically
1.2	Ground Control station with data link equipment		Board will check practically
1.3	One Payload assemble consist of a) Day Camera only b) Night Camera only. c) Day & Night camera payload (both) d) Integrated day and night camera (as per user requirement) Optional for Training UAV		Board will check practically
1.4	Universal Battery Charger with Power Supply System		Board will check practically
2.	Micro UAV characteristics: -		
2.1	Role	Surveillance, reconnaissance and detection during day and night.	Board will check practically
2.2	Launch and Recovery mode (In meter)	i) Vertical Take Off and Landing (VTOL) from within an area of 5m x 5m clearing or less.	Board will check practically
2.3	Aural Signature (In dB)	≤40dBs at 200 meters Above Ground Level	The firm will submit certificate of Govt Lab or DRDO or NABL or ILAC accredited laboratory.
2.4	Payloads carrying capability	Should have capability to carry electro Optic (EO) for day and Thermal Imager (TI) for night one at a time. or Integrated day & Night payload. (As per user requirement)	Board will check practically
2.5	Flight Modes	a) Fully Autonomous Vertical Take Off	Board will check practically
		b) Fully Autonomous Vertical Landing	Board will check practically
		c) Hover at defined waypoint	
		d) Autonomous waypoint navigation (pre-defined as well as dynamically adjustable waypoints during flight)	
		e) Remote Piloted mode for video-based user navigation.	
		f) Vision based Autonomous Target Tracking of fixed and moving targets.	
		g) Should be controllable in real time from the GCS up to recovery.	
		h) Fully autonomous and stabilize	



SN	Parameter	Specifications	Trial directives
2.6	Endurance (In Minutes)	a) 40 minutes or more with all payloads at MSL. Reduction in endurance of 10% for every 1000 M. b) Minimum 30 Minutes with payload at MSL for training UAV (As per user requirement)	Board will check practically with maximum payload up to launch altitude of 1000 meter above mean sea level
2.7	Max. Operating Altitude (In meter)	500 M AGL (Above Ground Level) or more.	Board will check practically
2.8	Launch Altitude (In meter)	3000m AMSL (Above Mean Sea Level) or more	Board will check practically
2.9	Range of Operation (In KM)	a) Minimum 5 km line of sight b) Minimum 02 KM line of sight for training UAV (As per User Requirement)	Board will check practically
2.10	Cruise Speed (In km/h)	40 km/h or more	Board will check practically and firm will submit OEM certificate.
2.11	Operating Wind Conditions (In km/h)	a) Take off: 30 km/h or more b) Landing: 30 km/h or more c) Operate: 30 km/h or more	Firm will submit OEM Certificate.
2.12	Failsafe features	a) Automatic Return to Home on communication failure	Board will check practically
		b) Automatic Return to Home on low battery	
		c) (i) Multiple GNSS on-board for GPS failure redundancy. (ii) (Including NAVIC) As per user requirement.	Firm will submit OEM Certificate
2.13	Propulsion system	Electrical with rechargeable batteries	Board will check practically
3.	<u>Payload characteristics:-</u>		
3.1	Payloads required	One Payload assembly consist of a) Day Camera only b) Night Camera only. c) Day & Night camera payload (both) d) Integrated day and night camera (as per user requirement)	Board will check practically

SN	Parameter	Specifications	Trial directives																	
3.2	Payload and Video Stabilization	a) All payloads should be gimbal stabilized on-board. b) Video output should be digitally/gimbal stabilized at all zoom levels. c) Quality of video should not be affected by UAV vibrations.	Board will check practically																	
3.3	Electro optic (EO) Daylight Payload	a) Camera with 360° pan and 90° tilt control during flight. b) Resolution: 1920x1080 or better c) Continuous Optical Zoom (COZ) 4X or more Optical zoom with minimum- FOV 10°(4X), maximum- FOV ≥ 45° (wide Field). Digital zoom: 4X or more (As per User Requirement)	Board will check practically and firm will also submit OEM Certificate																	
3.4	Thermal Imager (TI) Night Payload	a) Thermal Camera with 360° pan and 90° tilt control during flight. b) Resolution: 640 X 480 pixels or better c) White/Black Hot modes d) Digital Zoom: 4X or more	Board will check practically and firm will also submit OEM Certificate																	
3.5	Target Detection, Recognition, Identification	Day payload <table><tr><td>Vehicle Size (4.5 x 1.5M)</td><td>Group of 3-4 people</td></tr><tr><td>Detection</td><td>1500M</td><td>1200M</td></tr><tr><td>Recognition</td><td>1000M</td><td>600M</td></tr><tr><td>Identification</td><td>500M</td><td>300M</td></tr><tr><td>Night Payload</td><td></td><td></td></tr><tr><td>Detection</td><td>500M</td><td>250M</td></tr></table>	Vehicle Size (4.5 x 1.5M)	Group of 3-4 people	Detection	1500M	1200M	Recognition	1000M	600M	Identification	500M	300M	Night Payload			Detection	500M	250M	Board will check practically, the picture quality for detection recognition identification. Detection - ability to distinguish an object from back ground. Recognition - ability to classify the object class (Animal, Human, Vehicle, Boat etc). Identification - ability to described the object in details (Man with weapon, hat, uniform/colour of cloths, types /colour of vehicle)
Vehicle Size (4.5 x 1.5M)	Group of 3-4 people																			
Detection	1500M	1200M																		
Recognition	1000M	600M																		
Identification	500M	300M																		
Night Payload																				
Detection	500M	250M																		
3.6	Night Recovery Beacon	Switchable (from GCS) LED light when operating with Night Payload	Board will check practically																	
4.	Ground Control Station characteristics:-																			
4.1	(a) Semi ruggedized Minimum 7-inch tablet. Or (b) (As per user requirement)		Firm will submit certificate of govt lab or NABL accredited or ILAC accredited laboratory.																	







SN	Parameter	Specifications	Trial directives
4.2	Computing Hardware for option (a)		
	CPU	Processor minimum frequency 2.3 GHz or equivalent /better	Board will check practically and Firm will also submit OEM certificate.
	Storage	Minimum 256 GB	
	Memory	4GB or more	
	Display	Minimum 7 inch, Resolution 1920x1080 or better, sunlight readable screen, anti-glare.	
4.3	Battery Operation	Maximum battery charging time 2 hours for up to 90% of battery charge.	Board will check practically
4.4	Battery Charging time of GCS	Should be less than 1 hours	Board will check practically
4.5	Data portability	Ports for data transfer to external secondary storage devices	Board will check practically
4.6	Interface	Type C with support for other interfaces via docking station or adaptors for HDMI, USB, Micro USB, 10/100/1000 Ethernet	Board will check practically
4.7	Capability	a) Transmit control commands to UAV. b) Receive UAV flight and propulsion parameters. c) Receive, display and record real time day and night video from UAV. Data from UAV d) Capability to control UAV while on the move.	Board will check practically.
4.8	GCS Application Software	a) Geographic Map along with UAV location, UAV trajectory, camera view polygon, waypoints and flight plan. b) Real-time video from the UAV with on-screen display of important parameters like: - <ol style="list-style-type: none"> Coordinate of target Ground altitude of target UAV Position Height of UAV above ground level Distance of UAV from GCS Bearing (Azimuth) of UAV from GCS Ground speed of UAV UAV Heading/ True North indication Mission time Battery status of UAV 	Board will check it practically







SN	Parameter	Specifications	Trial directives
		c) Geographic map and real-time video should be displayed at all times during the flight. d) Geographic map and real-time video views should be resizable and/or switchable to allow user to switch between big map/small video and small map/big video views through a single click/button input.	Board will check it practically
4.9	Map Formats	a) Should have the capability to integrate geo-referenced raster maps provided commonly used digital map formats or As per user requirement. b) Should be able to work with Google Maps, application should have the capability to download maps automatically after specifying location GPS co-ordinates.	Board will check practically.
4.10	Payload Controls	a) Toggle for Selection and switch payload. b) Pan/Tilt/Zoom Controls c) Point payload to ground co-ordinate function d) Recording on/off	Board will check practically.
4.11	Button based /USB Joystick Controls	i. Full Camera Control Pan/Tilt Zoom In/Out Black/White Hot ii. RPV Mode iii. Altitude Control	Board will check practically.
4.12	Video	a) Video should be recorded in any commonly portable video formats (AVI/MPEG/ MP4 etc) b) Video of the full flight should be recorded c) Should have capability to take image snapshots at any time during flight d) Software should be provided that will facilitate extraction of imagery from the recorded video post flight	Board will check practically.
4.13	Pre-flight checks	Self-test of UAV system, Output: go/no go	Board will check practically.








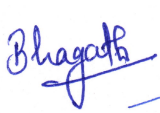



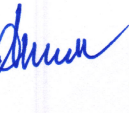

SN	Parameter	Specifications	Trial directives
5.	Communication Link:-		
5.1	Communication link equipment capability	i) Transmit control commands from GCS to UAV ii) Transmit parameter of UAV and payload to GCS iii) Transmit day and night video from UAV to GCS	Board will check practically.
5.2	Data link	S/C band (2 GHz to 6 GHz) with Minimum 128-bit AEC Encryption	Firm will submit OEM certificate.
6. General System requirements: -			
6.1	Weight (In kgs) MTOW	As per drone rule 2021. The weight of complete Micro UAV bird including battery pack & one payload should \leq 2kg.	Board will check practically.
6.2	Assembly/ Disassembly time (In minutes)	Less than 10 minutes each.	Board will check practically.
6.3	Life of Micro UAV (In landings)	The total technical life of micro UAV should not be less than 1000 landings.	Firm will submit OEM Certificate.
6.4	Ingress protection of UAV	IP 53 or better or as per user requirement.	Firm will submit certificate of Govt. LAB or NABL or ILAC accredited laboratory.
6.5	Environmental Conditions for Operation and Storage	The UAV and associated systems should be certified for operation and storage for following environment conditions. i) Damp Heat: 40 °C \pm 2 at RH not less than 90% ii) Operating temperature & Storage temp: -10°C to +50 °C \pm 10% Tolerance or As per user requirement. iii) Ability to withstand dust, drizzle and humid conditions	Firm will submit certificate of Govt. Lab or NABL or ILAC accredited laboratory.



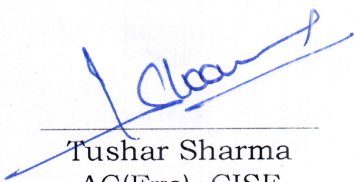


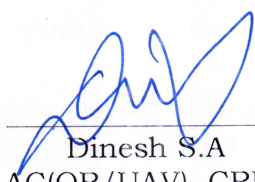


SN	Parameter	Specifications	Trial directives
6.6	Portability and Operation	The Micro UAV should be battery operated portable, light in weight, compact, for day and night surveillance, capable of being carried and operated by two men. The complete mission-ready kit including UAV, GCS, and battery should weigh less than 4 kg."	Board will check practically.
6.7	Battery of AV	The intelligent standard lithium-based battery pack should have the backup of minimum 40 minutes.	Board will check practically and firm will produce OEM certificate for chemistry of battery.
6.8	Battery Charger of AV battery	Suitable universal battery charger to charge the batteries up to 98 % within two hours.	Board will check practically
6.9	Accessories	a) Water proof Back Packs IP66: 1 set b) Field Repair kit: 1 No's c) Lithium based Battery packs; 2No's d) Spare propeller Sets: 2 No's e) Spare Landing Gear sets: 2 No's f) Associated Cables & Mountings: 1set g) Hard transportation boxes: 1set h) User, Technical & Maintenance Manual: 1set i) Log book : 1 set	Board will check physically and firm will submit certificate of Govt. Lab or NABL accredited or ILAC accredited laboratory for IP66
7	Miscellaneous requirement		
7.1	Total product support	05 years or as per user requirement.	Firm will submit OEM certificate
7.2	Manufacturer Recommended list of Spare (MRLS)	Should be provided	BOO will check practically and Firm will also submit OEM certificate
7.3	Life of UAV battery	200 charging cycles or 2 years, whichever is earlier.	Firm will submit OEM certificate

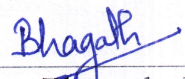








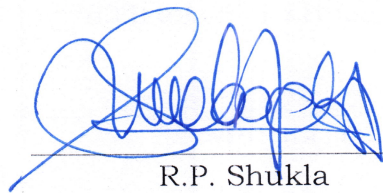
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7.4	Warranty	Minimum 02 years or as per user requirement	Firm will submit OEM certificate.
7.5	Space Ground Control System (2 Remote Controllers – Master and Slave Configuration, Telemetry and Display Device) for training UAV (As per user requirement)		BOO will check practically
7.6	Training Simulator with RC option (As per user requirement)		BOO will check practically

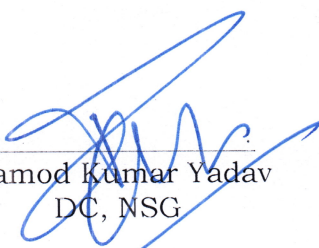

Tushar Sharma
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Dinesh S.A
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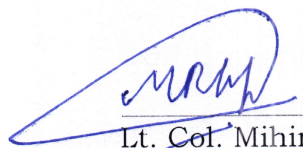

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JAD, DCPW

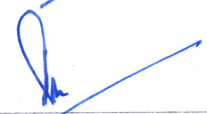

Bhagath. R
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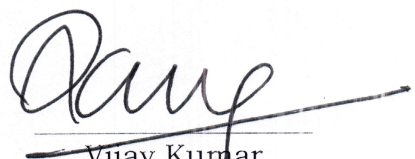

R.P. Shukla
DC, BSF



Pramod Kumar Yadav
DC, NSG


Amit Tiwari
2IC (Telecom), ITBP



Lt. Col. Mihir Ghooi
Assam Rifles


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Vijay Kumar
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(Vitul Kumar, IPS)
SDG (OPS), CRPF

✓
Approved/ Not Approved


(Gyanendra Pratap Singh, IPS)
DG, CRPF