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

(Tele/Fax No-011-26107493, Email-Id: comncell@crpf.gov.in)

No. B.V-7-C/2024-25-C(M/UAV)-Q Dated, the May'2025

Subject: - REQUEST FOR COMMENTS OF STAKEHOLDERS /OEM/FIRMS on Draft QRs & TDs of "Micro UAV".

1. The Draft QRs/TDs of "Micro UAV" is attached as **Appendix 'A'**. The OEMs/Vendors are requested to forward information of the product, which they can offer and also forward correct specifications of their system against each parameter. Only complied or not complied remarks will not be accepted. The firms are also requested to furnish the following details:-
    - Whether you are OEM/Vendor?
    - If vendor details of OEM.
    - Authorization certificate from OEM.

2. The required information/details may please be forwarded at the following addresses by 15 **May'2025**.

    Communication Directorate, CRPF
    East Block-7, Sec-1, R.K. Puram, New Delhi-110066
    Email: comncell@crpf.gov.in

3. An early response is requested.

(Amit Taneja)
DIG (Equipment)
Communication & IT Branch
Directorate General, C R P F

Draft 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 assembly consist of (a) Day & Night camera payload (01 no for each) or (b) Integrated day and night camera in one payload -01 (as per user requirement)- both may be evaluated based on QR).		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)	40 minutes or more with all payloads at MSL. Reduction in endurance of 10% for every 1000 M.	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)	1000M 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)	Minimum 5 km line of sight	Board will check practically
2.10	Cruise Speed (In km/h)	30 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: 25 km/h or more b) Landing: 25 km/h or more c) Operate: 25 km/h or more	Board will check practically or firm will also submit OEM Certificate.
2.12	Failsafe features	a) Automatic Return to Home on communication failure	Board will check practically
		b) Automatic Return to Home/ Land 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.	**Payload characteristics:-**		
3.1	Payloads required	a) Electro Optic (EO) payload b) Thermal Imager (TI) for night or c) Integrated day & night payload. (As per user requirement)	Board will check practically after fitting the reqd payloads and ensure that UAV working satisfactorily.
3.2	Payload and Video Stabilization	a) All payloads should be gimbal stabilized on-board.	Board will check practically all parameters.
		b) Video output should be digitally stabilized at all zoom levels.	
		c) Quality of video should not be affected by UAV vibrations.	
3.3	Electro optic (EO) Daylight Payload	a) Camera with 360° pan and 90° tilt control during flight.	Board will check practically and ensure day payload working as per their parameters and firm will also submit OEM Certificate for resolution and FOV
		b) Resolution: 1980 X 1280 pixel or better	
		c) Optical Zoom: 10X with minimum-FOV≤5°, maximum-FOV ≥ 45° (wide field). Digital zoom: 4X	

SN	Parameter	Specifications		Trial directives
3.4	Thermal Imager (TI) Night Payload	a) Thermal Camera with 360° pan and 90° tilt control during flight.		Board will check practically and ensure night payload working as per their parameters and firm will also submit OEM Certificate for resolution and FOV
		b) Resolution: 640 X 480 pixels or better		
		c)White/Black Hot modes		
		d) Digital Zoom: 4X or more		
3.5	Target Detection, Recognition, Identification	Day payload		Board will check practically, 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	800M	
	Identification	700M	300M	
	Night Payload			
	Detection & recognition	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 tables Or (b) (As per user requirement)			Firm will submit certificate of govt lab or NABL accredited or ILAC accredited laboratory.
4.2	Computing Hardware for option (a)			
	CPU	Processor minimum frequency 2.9 GHz or equivalent /better		Board will check practically one by one all parameter and supplier will also provide OEM certificate in this regard.
	Storage	Minimum 256 GB		
	Memory	4GB or more		
	Display	Minimum 10 inch – 1024 x 768 XGA sunlight readable screen, anti-glare.		
4.3	Battery Operation	Minimum two hours at peak utilisation.		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	HDMI, USB, Micro USB, Type C, 10/100/1000 Ethernet.		Board will check practically

SN	Parameter	Specifications	Trial directives
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 of the system practically according the mentioned parameters.
4.8	GCS Application Software	a) Geographic Map along with UAV location, UAV trajectory, camera view polygon, waypoints and flight plan.	Board will check it practically and ensure that all application is working properly.
		b) Real-time video from the UAV with on-screen display of important parameters like: - i. Coordinate of target ii. Ground altitude of target iii. UAV Position iv. Height of UAV above ground level v. Distance of UAV from GCS vi. Bearing (Azimuth) of UAV from GCS vii. Ground speed of UAV viii. UAV Heading/ True North indication ix. Mission time	
		c) Geographic map and real-time video should be displayed at all times during the flight.	Board will check it practically and ensure that all application is working properly.
		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.	

SN	Parameter	Specifications	Trial directives
4.9	Map Formats	a) Should have the capability to integrate geo-referenced raster maps provided in at least one of the commonly used digital map formats (GIF, TIFF, DTED and SRTM etc.) **or** **As per user requirement**.	Board will check capability of the system practically according the mentioned parameters.
		b) Should be able to work with Google Maps, application should have the capability to download maps automatically after specifying location GPS co-ordinates.	
4.10	Payload Controls	a) Selection and switch on/off of payload	Board will check capability of the system practically according the mentioned parameters
		b) Pan/Tilt/Zoom Controls	
		c) Point payload to ground co-ordinate function	
		d) Recording on/off	
		e) Switch on/off Night Recovery Beacon	
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)	Board will check capability of the system practically according the mentioned parameters
		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	

SN	Parameter	Specifications	Trial directives
4.13	Pre-flight checks	Self-test of UAV system, Output: go/no go	Board will check capability of the system practically according the mentioned parameters
5.	**<u>Communication Link:-</u>**		
5.1	Communication link equipment capability	i) Transmit control commands from GCS to UAV	Board will check capability of the system practically according the mentioned parameters
		ii) Transmit parameter of UAV and payload to GCS	
		iii) Transmit day and night video from UAV to GCS	
5.2	Data link	S/C band (2 GHz to 6 GHz) with Minimum 128-bit AEC Encryption	
6. <u>General System requirements: -</u>			
6.1	Weight (In kgs)	As per drone rule 2021.The weight of complete Micro UAV bird including battery pack & one payload should ≤ 2kg.	Board will check practically.
6.2	Assembly/ Disassembly time (In minutes)	Less than10 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 produce 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.
6.4	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±2 at RH not less than 90%	Firm will submit certificate of Govt. Lab or NABL or ILAC accredited laboratory.
		ii) Operating temperature & Storage temp: -10°C to +50 °C ± 10% Tolerance	
		iii) Ability to withstand dust, drizzle and humid conditions	

SN	Parameter	Specifications	Trial directives
6.5	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.	Board will check practically.
6.6	Battery of AV	The intelligent standard lithium-based battery pack should have the backup of minimum 45 minutes.	Board will check practically and firm will produce OEM certificate for chemistry of battery.
6.7	Battery Charger of AV battery	Suitable universal battery charger to charge the batteries up to 98 % within two hours.	Board will check practically
6.8	Built-in additional power source for the GPS Tracker	The system should include a built-in GPS Tracker equipped with an independent power source, capable of transmitting co-ordinates to the ground control station (GCS) or control station for minimum 72 hours to track/Monitor the lost/crashed UAV	Board will check practically
6.9	Accessories	a) Water proof Back Packs IP66: 1 set	Board will check physically ad firm will submit certificate of Govt. Lab or NABL accredited or ILAC accredited laboratory for IP66
		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	
7	Miscellaneous requirement		
7.1	Total product support	05 years or as per user requirement.	firm will submit OEM certificate
7.2	Updated list of Mandatory	Should be provided as per user requirement.	BOO will check practically

	spares/acce ssories.		
7.3	Warranty	Minimum 02 years or as per user requirement	firm will submit OEM certificate.
7.4	Swarm capability for coordinated flight		BOO will check practically
7.5	AI assist flight stabilization		BOO will check practically

* **All firms are Requested to give your response against each parameter in required in Figure/Unit where ever mentioned. In those column vague replies like complied, yes, okay should not be endorsed.**

* **Any other special feature or capability that the firm can provide within above specifications and category may be given at the end of the above proposal.**