

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-011-26109038, Email:- comncell@crpf.gov.in)

No. B.V-7/2024-25-C(UAV)-QR CELL

Dated, the *25* June'2025

To

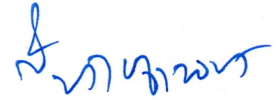
1. The DsG: AR, BSF, CISF, ITBP, NSG, SSB and BPR&D
2. Director, DCPW

Subject: QRs/TDs OF "SMALL UAV FOR ISR PURPOSE (80 MIN ENDURANCE)" REGARDING.

I am directed to refer to the subject mentioned above and to say that the QRs/TDs of "Small UAV for ISR Purpose (80 Min Endurance)" have been approved by the DG CRPF after due deliberations as per recommendations of CAPF's sub-group and experts from DCPW.

This is for favour of information and further needful action please.

Encl:-As above



(Megh Raj)

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

No. B.V-7/2024-25-C(UAV)-QR CELL

Dated, the *25* June'2025

Copy to:-

1. Mrs. Sugandhi, Technical Director, North block, MHA with request to upload the QRs/TDs of "Small UAV for ISR Purpose (80 Min Endurance)" on MHA website (e-mail ID: mpsugandhi@nic.in) please.

Encl:-As above



(Megh Raj)

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

QRs/TDs of Small UAV for ISR Purpose (80 Min Endurance)

S N	Parameter	Specifications	Trial Directives
1	UAV (As a system)		
1.1	Aerial Vehicle-01 No		BOO will check practically.
1.2	Ground Control Station- 01 No		
1.3	Remote Video Terminal -01 No (As per user requirement)		
1.4	One Payload assembly consists 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)		
1.5	Data link Equipment/ Antenna -01 No		
1.6	Battery/Battery set for each Aerial Vehicle-01 No		
2	Drone Characteristics		
2.1	Nomenclature	Small UAV for ISR (80 Min) (Tolerance 5 Min), 2 to 10 KG (MTOW)	BOO will check practically.
2.2	Design	Rotorcraft/Fixed Wings VTOL (As per User Requirement)	BOO will check practically.
2.3	Role	Intelligence, Surveillance, Reconnaissance	BOO will check practically.
2.4	Launch and recovery (In meter)	Automatic vertical takeoff and landing (VTOL) within an area of 10X10 m	BOO will check practically.
2.5	Aural Signature (in dB)	≤40 dbs at 300 m above AGL	The firm will submit certificate of Govt Lab. Or NABL/ILAC accredited laboratory.
2.6	Propulsion system	Electrical with rechargeable batteries	BOO will check practically
2.7	Payloads carrying capability	Capable to carry EO for day, Thermal imager for night one at a time (As per user requirement) Or Integrated day & night. (As per user requirement.)	BOO will check practically.
2.8	Flight modes	a) Fully autonomous and stabilized mode b) Hover at defined waypoint	BOO will check practically.

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		c) Remote pilot mode (RPV Mode) and target tracking mode. d) Waypoint Navigation (Pre-defined as well as dynamically adjustable waypoints during flight) e) Should be controllable in real time from the GCS up to recovery f) Real time target tracking of designated static and moving targets.	
2.9	Endurance (In meter)	Min. 80 Minutes (Tolerance 5 Minute) with payload at 1000-meter AMSL (Reduction in 10 % of endurance of every 1000 meter)	BOO will check practically
2.10	Minimum Operating altitude above ground level (AGL) (In meter)	1000m AGL (Above Ground Level) or more.	BOO will check practically once during flight.
2.11	Maximum Launch altitude above mean sea level (AMSL) (in meter)	4000m AMSL (Above Mean Sea Level) or more (As per User Requirement)	Firm will submit OEM certificate
2.12	Operating wind conditions (in km/h)	a) Take off: 40 km/h or more b) Landing: 40 km/h or more c) Operate: 40 km/h or more	Firm will submit OEM certificate.
2.13	Cruise Speed (in km/h)	Minimum 45 Km/h or more MSL	BOO will check practically and firm will submit OEM certificate
2.14	Collision Avoidance sensor	Should be available during take-off and landing (As per user requirement).	BOO will check practically and firm will submit OEM certificate
2.15	Range of live transmission (LOS) (un-obstructed & interference free)	Minimum 10 Km line of sight	BOO will check practically and firm will submit OEM certificate
3.0	Failsafe features	a) Automatic change to recovery mode after 10 seconds on communication loss, again on mission if communication restore.	BOO will check practically and firm will submit OEM certificate
		Automatic Return to Home/Land on battery low/imbalance	
		(i) Multiple GNSS on-board for failure redundancy (ii) NAVIC as per user requirement.	Firm will submit OEM certificate.
		Warning on exceeding Wind limit or gust.	BOO will check practically and firm will submit OEM certificate.
		Warning on exceeding the UAV health parameters (Temperature, vibration and throttle limit of the system)	

S N	Parameter	Specifications	Trial Directives																								
4	Payload characteristics																										
4.1	Payloads required	(a) Electric Optic (EO) for day (b) Thermal Imager (TI) for night payload (c) Integrated day & night camera payload complying above specifications both of Day & night (As per user requirement)	BOO will check practically.																								
4.2	Payload and video stabilization	a) All payload should be Gimbal stabilized on board b) Video output should be digitally stabilized at all zoom levels c) Quality of video should not be affected by UAV vibrations. d) Payload with 360° pan & 90° tilt control during flight	BOO will check practically.																								
4.3	Electro optic (EO) daylight Payload	a) UAV should transmit real time imagery to GCs b) Resolution: 1920 X 1080 or better c) Optical zoom:-30X or more with minimum-NFOV 5°, maximum- WFOV ≥ 45° (wide field). Digital Zoom:- 4X or more	BOO will check practically. Firm will submit OEM certificate. BOO will check practically & firm will submit OEM certificate.																								
4.4	Thermal imager (TI) night payload	a) Payload with 360° pan and 90° tilt control during flight. b) Resolution: 640 X 480 pixels or better or As per user requirement. c) Digital Zoom: 4X or more d) White and Black hot modes	BOO will check practically. Firm will submit OEM certificate. BOO will check practically.																								
4.5	Target Detection, Recognition, Identification	<table border="1"> <thead> <tr> <th></th> <th colspan="2">Day Payload</th> </tr> <tr> <th></th> <th>Vehicle size (4.5 m X 1.5m)</th> <th>Group of 3-4 People</th> </tr> </thead> <tbody> <tr> <td>Detection</td> <td>4000M</td> <td>3000M</td> </tr> <tr> <td>Recognition</td> <td>3000M</td> <td>1500M</td> </tr> <tr> <td>Identification</td> <td>1500M</td> <td>1000M</td> </tr> <tr> <th></th> <th colspan="2">Night Payload</th> </tr> <tr> <th></th> <th>1250M</th> <th>500M</th> </tr> <tr> <td>Recognition</td> <td>700M</td> <td>400M</td> </tr> </tbody> </table>		Day Payload			Vehicle size (4.5 m X 1.5m)	Group of 3-4 People	Detection	4000M	3000M	Recognition	3000M	1500M	Identification	1500M	1000M		Night Payload			1250M	500M	Recognition	700M	400M	Board will check practically, the picture quality for detection recognition identification. Detection- Ability to distinguish an object from background. Recognition- Ability to classify the object class (Animal, Human, Vehicle, Boat etc) Identification- Ability to describe the object in details (man with weapon, hat, Uniform/Colour of cloths, type/Colour of vehicles)
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Sanjay Bhargava

Chauhan A. J. Chauhan

S N	Parameter	Specifications	Trial Directives
5	Ground Control Station and RVT Characteristics		
5.1 (Option-1)	(a)GCS should be portable minimum 7-inch display with semi rugged IP 53 tablet/laptop which is compatible with GCS for surveillance Or (b)GCS should be portable minimum 10-inch display with rugged IP 65 tablet/laptop which is compatible with GCS for surveillance Or (c) - As per user requirement		Firm will submit certificate of Govt. Lab. or NABL/ILAC accredited laboratory.
5.2 (Option-2)	Computing Hardware (as per user requirement) for 5.1(a) & (b)		
	CPU	CPU- Clock speed minimum 2.3 GHz or better	BOO will check practically and firm will also submit OEM certificate.
	Storage	Minimum 256 GB or more for tablets Minimum 500 GB or more for Laptop (as per user requirement)	BOO will check practically and firm will also submit OEM certificate.
	RAM Memory	8 GB or more	
5.3	Battery operation	Minimum 150 minutes at peak utilization	
5.4	Battery charging time of GCS	Suitable battery charger using normal commercial supply	
5.5	Data portability	Suitable Ports for data transfer to external secondary storage devices and compatible with GCS	
5.6	Capability	a) Transmit control commands to UAV b) Receive UAV flight and propulsion parameters c) Receive, display and transfer real time day and night video to display unit from GCS d) Capability to control UAV while on the move. e) Record real time video in display unit. f) Capable to storing 100 or more flight routes with each route having capacity to configure minimum 70 waypoints in GCS	BOO will check practically and firm will also submit OEM certificate.
5.7	GCS application software	a) Able to control all aspect like pre-flight checks, self-tests, control of takeoff/landing payloads, Output: go/no go.	BOO will check practically and firm will also submit OEM certificate only for xvii & xviii

4

S N	Parameter	Specifications	Trial Directives
		b) The software should have following mission information:- <ol style="list-style-type: none"> i. Coordinate of target ii. Target distance. iii. AV Co-ordinates iv. Distance of AV from GCS v. AV Speed vi. Mission time vii. Payload looking angle viii. Communication link status ix. GPS Status x. Health status of AV battery xi. UAV heading /true North indication xii. Bearing (Azimuth) of UAV from GCS. xiii. Geographic map and real time video should be displayed at all times during the flight xiv. Geographic map & 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 input. xv. Artificial horizon indicating UAV altitude. xvi. Switchable between 2D/3D views, capability to tilt/rotate 3D maps as per user input. xvii. Perpetual proprietary software of the system product support for minimum 5 years xviii. AI/ML capability for identification & detection of targets /humans /friendlies/ Point of Interest (As per user requirement) 	
5.8	Map formats	a) Should have the capability to integrate geo-referenced raster maps provided in commonly Digital formats as per user requirement. b) Ability to display 3D maps with the digital terrain data provided. Option to switch between 2D and 3D maps in real time.	Board will check practically and firm will also submit OEM certificate.

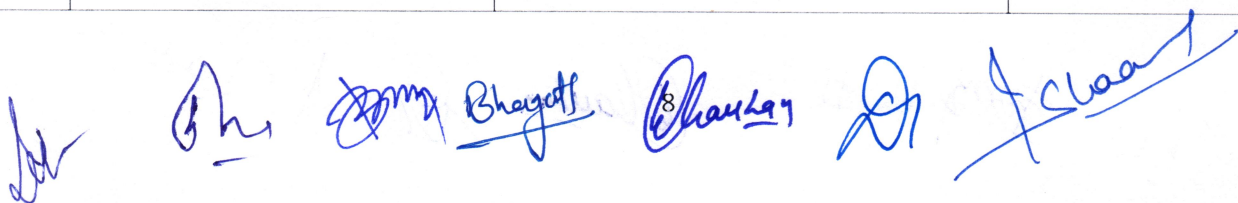
See Mr. Pooja Bhargava

5 Chaitan A Sharma

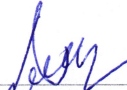
S N	Parameter	Specifications	Trial Directives
5.9	Remote Video Terminal (RVT)	Tablet :- Minimum 7" MIL STD-810G or more and IP 53 or More, compact. Light weight and portable with wrist/chest mountable holder (as per user requirement). UAV should be able to transmit video to RVT at a minimum distance of 3KM or more from UAV. RVT have capability to display video, map and OSD (on screen display) similar to GCS. Capable to record, playback and freeze the imagery received for AV. Sunlight readable and touch screen. Or As per user requirement	Board will check practically and firm will submit certificate of NABL/ILAC accredited laboratory for MIL-STD 810G or more and IP 55 or more.
5.10	Payload controls	a) Selection and switch on/off of payload b) Pan, Tilt, Zoom controls c) Point payload to ground co-ordinate function d) Recording ON & OFF	BOO will check practically.
5.11	Button based/ USB Joystick control	a) Full Camera Control Pan, Tilt b) Zoom In and Out Black hot and White Hot c) RPV Mode d) Altitude Control	BOO will check practically.
6 Communication Link			
6.1	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	BOO will check practically.
6.2	Data link	S/C band (2 Ghz to 6 Ghz) with AES encryption a) 128-bit b) 256-bit (As per User Requirement)	Firm will submit OEM certificate
7 General System requirements			
7.1	Weight (In kgs)	Complete weight of the UAV system not more than 20 kg in two IP 66 backpacks (includes: Aerial vehicle - 01 Payload - 01 (either 01 integrated payload or 1 EO payload & 1 IR payload) Spare Battery- 01 Set GCS - 01 Data link equipment/ Antenna - 01 Cables/spares)	BOO will check practically.


S N	Parameter	Specifications	Trial Directives
7.2	Assembly/ Disassembly time	Up to 20 minutes with 2 persons.	
7.3	Environmental conditions for operation and storage	The UAV and associated systems should operate and stored at following environment conditions. i) Damp heat: 40°±2°C at RH not less than 90% as per JSS 55555 or equivalent standard ii) Starting operating temperature & Storage temp: -10°C to +55°C with ±10% Tolerance. iii) Ability to withstand dust, drizzle and humid conditions	Firm will submit certificate of Govt lab or NABL/ILAC accredited laboratory
7.4	IP (Ingress Protection) of the UAV	IP 54 or better	
7.5	Battery of AV	The intelligent standard lithium based battery pack should have the back up of minimum 80 minutes ± 5 minutes	
7.6	Battery charger of AV battery	Suitable universal battery charger to charge the batteries within two to three hours	BOO will check practically and firm will submit OEM certificate.
7.7	Accessories	i. Field repair kit: 1 Nos ii. Lithium based battery packs: 2 Nos iii. Spare propeller set: 1 Complete set iv. Spare landing gear sets: 1 Complete set v. Associated cables & mounting: 1 Set vi. User, technical & maintenance manual: 1 set vii. Rugged, Compact and light weight transportation box- 02 Nos	BOO will check practically BOO will check practically BOO will check practically BOO will check practically BOO will check practically BOO will check practically
7.8	Night recovery Beacon	Switchable LED light when operating with night payload	BOO will check practically


S N	Parameter	Specifications	Trial Directives
8	Miscellaneous requirement.		
8.1	Total technical life	Minimum 1000 landings	firm will submit OEM certificate
8.2	Total product support	05 years or as per user requirement.	firm will submit OEM certificate
8.3	Manufacturer recommended list of spares	Should be provided	BOO will check practically
8.4	Warranty	Minimum 02 years or as per user requirement	Firm will submit OEM certificate.
8.5	Life of UAV battery	200 charging cycles or 2 years whichever is earlier.	Firm will submit OEM certificate.
9	Additional Requirement.		
9.1	Resistance against jamming (Optional as per user requirement)	a) GNSS denied return to home - Autonomous and safe return to home in case of GNSS loss or jamming, both during day & night, within a landing area of 10m x 10m	Firm will submit OEM certificate
		b) Auto Channel Selection - System should select best channel of operation automatically both pre-flight and during flight	BOO will check practically
		c) Frequency Hopping to improve Jamming resistance - frequency hopping methodology to be decided by user	BOO will check practically
9.2	3D Scan Capability with EO Day payload (Optional/as per user requirement)	System Should be able to autonomously undertake 3D scan of the target area & provide a processed 3D scan image with Standard day (EO) payload.	BOO will check practically
9.3	Training simulator (Optional /as per user requirement)	Suitable simulation software module to be provided for operator training. The operator should be able to practice. 1. Doing pre-flight checks, 2. Take-off, landing, 3. Creating waypoints, flight plans, 4. Executing various flight modes, 5. Checking payload viewing coverage area and drone coverage area, 6. Drawing polygons for obstacle, no-fly zones, and geofences 7. See simulated telemetry parameters 8. Load different geographical maps with ability to switch between 2D and 3D views etc.	BOO will check practically

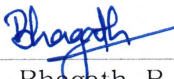



9.4	Swarm UAV Capability for Coordinated flights (As per User Requirement)	Coordinated flight of up to 4 AVs or more for Surveillance purpose in defined area	BOO will check practically
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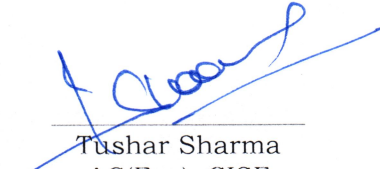

 AC-I Dipankar Roy
 NSG

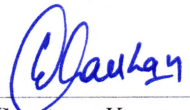

 Dinesh S.A
 AC(QR/UAV), CRPF

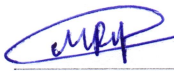

 Laljee Ram
 JAD, DCPW

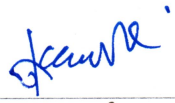

 Bhagath. R
 AC (Drones/TUC), SSB

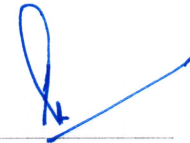

 Bhupendra Kumar
 AC, BSF

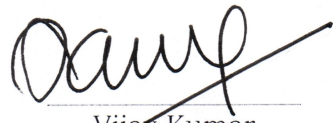

 Tushar Sharma
 AC(Exe), CISF



 Gautam Kumar
 DC, ITBP


 Lt. Col. Mihir Ghooi
 Assam Rifles


 (Meghraj)
 DIG (Eqpt), CRPF


 (P.C. Jha)
 DIG (Comn), CRPF


 Vijay Kumar
 IG (Comn & IT), CRPF


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

✓
 Approved/ Not Approved


 (Gyanendra Pratap Singh, IPS)
 DG, CRPF