

QRs/SPECIFICATIONS OF FOUR WHEELED DAY AND NIGHT SURVEILLANCE ROBOT

Ser No	Qualitative Requirements	
1.	General	
	(a)	Four Wheeled Day and Night Svl Robot should be a mini robot that enables easy maneuverability through a remote control and instantaneous video and audio reconnaissance within indoor or outdoor environments.
	(b)	Wireless Link with Control Unit. The Robot should be able to receive Command and Control instructions from Control Unit and should be able to transmit audio and video svl data to control unit through a Wireless NLOS Link at a range of 80 mtr or better without any mesh topology in Non Line of Sight Environment and 250 mtr or better without any mesh topology in Line of Sight Environment.
	(c)	Robot should be able to self right even when overturned.
2.	Four Wheeled Robot	
	(a)	Weight of Robot less battery and accessories 4.5 Kg or lesser
	(b)	Should be able to sustain drops on concrete floor 2.5 mtr or more
	(c) Day and Night Camera- For video Surveillance	
	(i)	Four Day and night cameras with IR illumination (non visible) efficacy of 7.5 meters is essential
	(ii)	The cameras should provide 360 degree Field of View(Front camera, rear Camera and two side cameras) simultaneously
	(iii)	Front camera should offer tilt of +/- 40 Degrees
	(iv)	The resolution of the day camera should be 750 (H) x 500 (V) or better.
	(d) IR Illumination	
	(i)	IR illumination should be provided for darkness for front, rear, left and right camera.
	(ii)	Range of IR Illumination 7.5 Meters or Higher
	(e)	Microphone – For Audio Surveillance. Super sensitive omni directionnel microphone with microphone sensitivity of 75 db.
	(f) Battery	
	(i)	Endurance 3 Hours
	(ii)	Spare Battery Pack to be provided
	(g) Drive and Speed	
	(i)	Drive 4 Wheel drive
	(ii)	Tracks Suitable tracks to be provided for movement in rough terrain
	(iii)	Speed 4 Km/Hr
	(iv)	Maneuverability (i) The Robot should be maneuverable in a variety of rough terrain. Should be able to climb steps at least 200mm high. It should also be able to climb two or more steps in continuation provided the width of each step is at least 400mm. (ii) Overcome curves and should have small turnings radius. (iii) Self righting property when flipped over.

QRs/SPECIFICATIONS OF FOUR WHEELED DAY AND NIGHT SURVEILLANCE ROBOT (Contd....)

Ser No	Qualitative Requirements	
3.	Control Unit. To receive and display audio and video reconnaissance data picked up by Robot and also to move the Robot.	
(a)	Weight excluding battery and external transmitter	Less than 1.5 Kg
(b)	Screen	Control Unit to have suitable 5 inches screen or better to display video being received.
(c)	Display	The display should offer 360° FoV
(d)	Battery. Suitable rechargeable battery to offer 3 hrs of endurance or better	
4.	Digital Video Recorder. Suitable inbuilt or miniaturized external DVR to store the videos for evidence collection and post operation analysis with a minimum capacity of 500 GB.	
5.	Battery Charger. Suitable 110/220 V AC battery Chargers to charge the Robot and Control Unit batteries. Separate chargers required for Control Unit and Robot.	
6.	Portability and Storage. The equipment to be provided in suitable pelican box for ease of carriage. In addition, vendor to provide suitable deployment sling and bag to carry robot and control unit during operations.	
7.	Maintenance Kit. Suitable maintenance kit with recommended accessories to be provided to reduce Mean Time to Repair (MTTR).	
8.	Literature. Operating and Technical literature for each discrete components of system should be in English language	
9.	Training. Demonstration of one set of complete system with its full accessories should be arranged at buyers premises on NO cost NO commitment basis. In situ training of users for three day on operation, maintenance, fault finding and user level repairs.	
10.	Ruggedisation. All the equipment should comply with Mil Std 810 and IP 67.	

(Col Ashish Singh)
GC (POS)

GC (POS)
TSE, CRP

Major R Shiva
TCLUB, NSH

M. Elangovan
INSPECTOR, ITOP

Major R Shiva
TCLUB, NSH

Major R Shiva
TCLUB, NSH

Major R Shiva
TCLUB, NSH

GC AK Sharma
GC (POS)

SANJAY SHARMA
BPR&D (SOC&E)

APPROVED / NOT APPROVED

(K K Sharma) IPS
DG, NSG

TRIAL DIRECTIVES FOR FOUR WHEELED DAY AND NIGHT SURVEILLANCE ROBOT

Ser No	<u>Qualitative Requirements</u>		<u>Trial Methodology</u>
1.	General		
	(a)	Four Wheeled Day and Night Svl Robot should be a mini robot that enables easy maneuverability through a remote control and instantaneous video and audio reconnaissance within indoor or outdoor environments.	To be physically checked by BOO
	(b)	Wireless Link with Control Unit. The Robot should be able to receive Command and Control instructions from Control Unit and should be able to transmit audio and video svl data to control unit through a Wireless NLOS Link at a range of 80 mtr or better without any mesh topology in Non Line of Sight Environment and 250 mtr or better without any mesh topology in Line of Sight Environment.	To be physically checked by BOO
	(c)	Robot should be able to self right even when overturned.	To be physically checked by BOO
2.	Four Wheeled Robot		
	(a)	Weight of Robot less battery and accessories	4.5 Kg or lesser
	(b)	Should be able to sustain drops on concrete floor	2.5 mtr or more
	(c)	Day and Night Camera- For video Surveillance	
	(i)	Four Day and night cameras with IR illumination (non visible) efficacy of 7.5 meters is essential	To be physically checked by BOO
	(ii)	The cameras should provide 360 degree Field of View(Front camera, rear Camera and two side cameras) simultaneously	To be physically checked by BOO
	(iii)	Front camera should offer tilt of +/- 40 Degrees	To be physically checked by BOO
	(iv)	The resolution of the day camera should be 750 (H) x 500 (V) or better.	Lab certificate to be provided by the firm.
	(d)	IR Illumination	
	(i)	IR illumination should be provided for darkness for front, rear, left and right camera.	
	(ii)	Range of IR Illumination	7.5 Meters or Higher
	(e)	Microphone – For Audio Surveillance. Super sensitive omni directionnel microphone with microphone sensitivity of 75 db.	

TRIAL DIRECTIVES FOR FOUR WHEELED DAY AND NIGHT SURVEILLANCE ROBOT (Contd...)

Ser No	Qualitative Requirements			Trial Methodology	
	(f)	Battery			
		(i)	Endurance	3 Hours	To be physically checked by BOO
	(ii)	Spare Battery Pack to be provided		To be physically checked by BOO	
	(g)	Drive and Speed			
		(i)	Drive	4 Wheel drive	To be physically checked by BOO
(ii)		Tracks	Suitable tracks to be provided for movement in rough terrain	To be physically checked by BOO	
(iii)		Speed	4 Km/Hr	To be physically checked by BOO	
(iv)	Maneuverability	(i) The Robot should be maneuverable in a variety of rough terrain. Should be able to climb steps at least 200mm high. It should also be able to climb two or more steps in continuation provided the width of each step is at least 400mm. (ii) Overcome curves and should have small turnings radius. (iii) Self righting property when flipped over.	To be physically checked by BOO		
3.	Control Unit. To receive and display audio and video reconnaissance data picked up by Robot and also to move the Robot.			To be physically checked by BOO	
(a)	Weight excluding battery and external transmitter	Less than 1.5 Kg		To be physically checked by BOO	
(b)	Screen	Control Unit to have suitable 5 inches screen or better to display video being received.		To be physically checked by BOO	
(c)	Display	The display should offer 360° FoV		To be physically checked by BOO	
(d)	Battery. Suitable rechargeable battery to offer 180 minutes of endurance or better.			To be physically checked by BOO	
4.	Digital Video Recorder. Suitable inbuilt or miniaturized external DVR to store the videos for evidence collection and post operation analysis with a minimum capacity of 500 GB.			To be physically checked by BOO	
5.	Battery Charger. Suitable 110/220 V AC battery Chargers to charge the Robot and Control Unit batteries. Separate chargers required for Control Unit and Robot.			To be physically checked by BOO	

TRIAL DIRECTIVES FOR FOUR WHEELED DAY AND NIGHT SURVEILLANCE ROBOT (Contd...)

Ser No	Qualitative Requirements	Trial Methodology
6.	Portability and Storage. The equipment to be provided in suitable pelican box for ease of carriage. In addition, vendor to provide suitable deployment sling and bag to carry robot and control unit during operations.	To be physically checked by BOO
7.	Maintenance Kit. Suitable maintenance kit with recommended accessories to be provided to reduce Mean Time to Repair (MTTR).	To be physically checked by BOO
8.	Literature. Operating and Technical literature for each discrete components of system should be in English language	To be physically checked by BOO
9.	Training. Demonstration of one set of complete system with its full accessories should be arranged at buyers premises on NO cost NO commitment basis. In situ training of users for three day on operation, maintenance, fault finding and user level repairs.	Undertaking from the OEM for the training. Authenticity and Correctness of the undertaking to be submitted by BOO.
10.	Ruggedisation. All the equipment should comply with Mil Std 810 and IP 67.	OEM to provide International/ National/NABL accredited lab certificate and the same will be physically checked by BOO.

[Signature]
 (Col AB Singh)
 GC (POS)

[Signature]
 Maj R Shiva
 (CCWE), NSH

[Signature]
 Hrishabh
 DG CRPF

[Signature]
 N. B. GOVIL
 INSPECTOR, ITBP

[Signature]
 H. N. ...
 (AC) SSB

[Signature]
 Col AK Sharma
 GC TSG

[Signature]
 SANJAY SHARMA
 BPRD PS(WE)

[Signature]
 APPROVED / NOT APPROVED
 (K K Sharma) IPS
 DG, NSG