



Aerial Threat Detection and Neutralization System at Chhatrapati Shivaji Maharaj International Airport, Mumbai, Maharashtra, India

adani
Airports

Mumbai International Airport Limited
1st Floor, Terminal 1,
Chhatrapati Shivaji Maharaj International Airport, Vile Parle,
Mumbai, PIN- 400099, Maharashtra, India.

Greetings from **Mumbai International Airport Limited!**

1. Mumbai International Airport Limited intends to award contract for design, supply, installation, testing and commissioning including comprehensive maintenance for a period of 2 (two) years of the Aerial Threat Detection and Neutralization System referred as 'System' covering the entire Airport area on 24 X7 basis as per the requirement in the scope document basis on Service Fee Basis at Chhatrapati Shivaji Maharaj International Airport, Mumbai, Maharashtra, India ("**Airport**").
2. Find attached relevant techno commercial points covered in this document i.e., Eligibility Criteria, Evaluation Criteria, Terms Sheet, Price Schedule, Scope and Technical requirement for further details.
3. Applicant Companies are advised to strictly adhere to the following timelines for the purposes of this RFP:

Date of issuance of RFP	23 rd June 2022
Online Pre- Bid Meeting	28 th June 2022 (11:00 AM to 01:00 PM)
Last date for receipt of queries/ clarifications	02 nd July 2022
Last date for issuance of response to queries/ clarifications	04 th July 2022
Last date for submission of Techno Commercial Proposal	08 th July 2022
Declaration of the Selected Applicant Company	18 th July 2022

4. Bid shall be submitted in 1 Envelope, 2 bids (Technical and Commercial) format.
5. Commercial bid shall be opened for only Technically shortlisted Companies meeting the eligibility criteria for further processing.
6. For any queries & clarifications, please contact- Mr. Aditya Nandula, Mob No. +91 7303418571, Email Id- Nandula.Aditya@adani.com
7. Looking forward for long lasting and healthy business relationship.

1. Eligibility Criteria:

Sr No.	Criteria
1	<p>The applicant company should be registered under Indian Companies Act.</p> <p>Or</p> <p>In case the companies interested to participate as consortium (Not more than 2 companies in a consortium), the lead firm shall submit the documents required for evaluation criteria.</p>
2	<p>The credentials of the holding company shall be accepted if the applicant company is the wholly owned subsidiary of the holding company.</p>
3	<p>The applicant company / companies in consortium shouldn't be declared insolvent/ under NCLT process or defaulted on loans. A certificate stating the same shall be produced.</p>
4	<p>The applicant company / companies in consortium should submit an undertaking that – none of its Directors, Independent Directors, Non-Executive Directors and Key Managerial Personnel are involved in any corrupt practices, unfair means and illegal activities.</p>
5	<p>The applicant company / companies in consortium are requested to furnish information pertaining to blacklisting by any Indian Government Agency including blacklisting of the technology partner.</p>
6	<p>The consortium should submit an undertaking that - If selected for the tender, the applicant companies in consortium shall form a Special Purpose Vehicle (SPV) wherein the lead company shall hold at least 51% in the SPV. Non-compliance can lead to cancellation of the contract to the consortium.</p>
7	<p>No bids will be accepted from the Participating Companies (complying to any or all of the below criteria from (a) to (e)) that has origin or has component manufactured in the countries sharing the land borders with India or are non-allied countries of India.</p> <p>a) An entity incorporated, established or registered in such a country; or</p> <p>b) A subsidiary of an entity incorporated, established or registered in such a country; or</p> <p>c) An entity substantially controlled through entities incorporated, established or registered in such a country; or</p> <p>d) An entity whose beneficial owner is situation in such a country; or</p> <p>e) A consortium or Joint Venture where any member of the consortium or Joint Venture falls under any of the above.</p>

2. Evaluation Criteria:

Sr No.	Criteria
1	Annual Turnover: The applicant company should have minimum of Rs 500 crores for each of last three financial years (Financial Year 2020-2021, Financial Year 2019-2020, Financial Year 2018-2019) based on consolidated financial statements audited under the relevant Companies Act and approved by the Board of directors / shareholders.
2	Net worth: The applicant company should have minimum net worth of Rs 1000 Crores on consolidated basis at the close of the financial year 2020-2021. Net worth is to be based on the financial statements audited under the relevant Companies Act and approved by the board of directors / shareholders.
3	Capital assets: The Capital Assets of the applicant company as on 31st March 2021 as specified in the last consolidated financial statements audited under the relevant companies Act and approved by the board of directors/ shareholders shall be greater than Rs 5000 crores.
4	Credit Rating: Applicant company to have minimum credit rating (long term/issuer rating) equivalent to CRISIL / ICRA "BBB+" (stable) as on the date of submission of application or equivalent credit rating (issued by other credit rating agencies, such credit agencies being approved by Reserve Bank of India/ Securities Exchange Board of India. A documentary evidence duly certified by company's chartered accountant to be produced.
5	Proven Capabilities: The applicant company should have experience in deployment of system in Airport Environment and should have participated in atleast 2 such contracts in last 3 years. The proposed system should have been deployed and operational in atleast 2 airports globally
6	The applicant company should be Original Equipment Manufacturer (OEM) or the Licensed Manufacturer of the System in India (Documentary Proof to be provided).
7	Minimum 25% indigenization of the System to be ensured by the applicant company aligned to the "AatmaNirbhar Bharat Abhiyaan". No System or sub-system/components of the System should be manufactured / originated from the countries sharing the land borders with India and other non-allied countries of India.
8	At least 2 Client testimonials to be provided by the applicant company for the deployed system.
9	Participating companies (including its associates and subsidiaries) to furnish CEMILAC/ DGCA/ Any Other Government Quality Agencies Certification.

3. Terms Sheet

Sr. No.	Particulars	Details
1.	Scope of Work	<p>Design, Supply, Installation, Testing and Commissioning along with Comprehensive Maintenance for a period of 2 (two) years of the Aerial Threat Detection and Neutralization System 'System' covering the entire Airport area on 24X7 basis as per the requirement in the Scope document on service basis at Chhatrapati Shivaji Maharaj International Airport, Mumbai, Maharashtra, India.</p> <p>Please refer Scope and Technical requirement document for details.</p> <p>The equipment, system, hardware and software deployed at the Airport as part of the 'System' shall be new and most recent /current model.</p>
2.	Price with Applicable taxes	<p>The Service Fee shall remain firm and inclusive of 'System' hardware & software, its installation and commissioning, consumables, tools and tackles, service charges, finance charges and any other costs associated with the performance on service basis.</p> <p>Indian Applicant Companies shall quote in INR basis, GST as applicable extra.</p> <p>Foreign Applicant Companies shall quote in USD or EURO (including India Withholding Tax) or in INR, GST as applicable extra.</p> <p>To facilitate evaluation and comparison, the Purchaser will convert all bid prices expressed in the amounts in various currencies in which the bid prices are payable to Indian Rupees at the selling exchange rate established by any bank in India as notified in the Newspapers on the date of bid submission. For this purpose, exchange rate notified in www.xe.com or www.rbi.org or any other website would be used by the purchaser.</p>
3.	Payment Terms	100 % of the Monthly Running Bill Amount (along with applicable GST) shall be paid within 30 days after submission of certified invoice by the User.
4.	Contract Duration	2 (Two) years from date of commissioning and acceptance of system by user.
5.	Shortfall Liquidated Damages	For any shortfall in performance, LD shall be levied which shall be discussed and agreed with the shortlisted applicant companies.
6.	Contract Performance Bank Guarantee	Within Fifteen (15) days from the Effective Date, the Applicant Companies shall submit The Contract Performance Bank Guarantee, in the format provided, for an amount equal to Ten percent (10%) of the Contract Basic Price and shall remain valid and effective till the date of

		Completion as per the Completion Schedule, with a claim period of [One (1) month] beyond such validity.
7.	Specific Provisions	<p>The 'System' shall be free from defects arising from any act or omission of the Applicant Companies or arising from design, materials, and workmanship, under normal use in the conditions prevailing in India in general or at specifically at Chhatrapati Shivaji Maharaj International Airport, Mumbai. The 'System' shall not be prone to damage during power failures and trip outs.</p> <p>Warranty Period shall commence from date of successful operation commencement/ customer acceptance test of the 'System' at site and shall be valid for Two (2) year</p> <p>After the Customer notifies the Applicant Company on a defect/deficiency and the Applicant Company fails to remedy the defect within a reasonable period of time; the Customer may take such remedial action as may be necessary at the Applicant Company's risk and expense.</p> <p>Adequate spare parts to be made available in India and be replenished from time to time to ensure uninterrupted service.</p> <p>The 'System' must be supported by a Service Centre manned by the Applicant Company's technical support engineers, available on 24X7X365 India Toll Free Number and Email.</p> <p>Permanent deployment of 1-2 people at the site location to ensure 24X7 support and system availability.</p> <p>The applicant company to keep equipment functional for 24X7. Dysfunction should be adequately repaired or replaced aligned to mutually agreed timelines.</p>
8.	OMDA	<p>OMDA and development of the Airport</p> <p>a) The Applicants should note that the provisions of the Operation, Management and Development Agreement dated 4th April 2006 ("OMDA") govern the operation, management and development of the Airport. By submitting an application, Applicants acknowledges and agrees that the selection process hereunder is subject to the terms of the OMDA (a copy of the OMDA is available on the URL http://www.civilaviation.gov.in/agreements). In the event of any inconsistency or conflict between the terms of the application, the RFP or the format of Concession Documents and the provisions and requirements of the OMDA, the provisions and requirements of the OMDA shall prevail. Without prejudice to the generality of the</p>

		<p>foregoing, each Applicant agrees that the agreements executed by it pursuant to the RFP may be assigned by MIAL in favour of AAI, its nominee(s), the lenders of MIAL and / or nominee(s) of MIAL's lenders.</p> <p>b) This Concession is subject to the provisions of OMDA and the State Support Agreement ("SSA") dated 26th April 2006 and the Concessionaire shall ensure compliance with the provisions of the OMDA and related agreements which relate to its obligations under the agreements.</p> <p>c) Applicants shall declare whether they are or are not Group Entities, of MIAL or its shareholders (other than AAI). For this purpose; (A) "Group Entity" with respect to a specified Entity, means any other Entity directly or indirectly controlling, controlled by or under common control with such specified Entity; provided however, that, for purposes of this definition, the terms "controlling", "controlled by" or "under common control with" mean the possession, directly or indirectly, of the power to direct or cause the direction of the management and policies of an Entity, whether through the ownership of voting securities, by contract or otherwise, or the power to elect or appoint at least 50% (fifty percent) of the directors, managers, partners or other individuals exercising similar authority with respect to such Entity; and (B) "Entity" means any person, body corporate, trust, partnership firm or other association of persons/individuals whether registered or not.</p>
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Note: General Terms & Conditions shall be discussed and finalized with the shortlisted Applicant Company.

4. Price Schedule

Price Schedule

YEAR -1					
Sr. No	Description	UOM	QTY	RATE (INR)	AMOUNT (INR)
1	Platform for System	Month	12		
2	Services for System	Month	12		
3	Total				
4	GST@18%				
5	Total inc GST Year 1				

YEAR -2					
Sr. No	Description	UOM	QTY	RATE (INR)	AMOUNT (INR)
1	Platform for System	Month	12		
2	Services for System	Month	12		
3	Total				
4	GST@18%				
5	Total inc GST Year 2				

5. SCOPE & TECHNICAL REQUIREMENT

System Description

The Aerial Threat Detection and Neutralization Systems for airports [hereinafter referred to as '**System**'] should provide Multi Sensor based complete and comprehensive solution with regards to drone detection, tracking, identification and neutralization (Soft Kills and Hard kill options). The decision to employ hard kill measures shall be depending on the situations and specific to the airport as per SOP. The hard kill option will be the last resort for drone neutralization. If the hard kill option is decided then, the laser will be the first hard kill option for drone neutralization. The solution may also be implemented in stages as per the approvals from relevant regulatory bodies for the hard kill options. Hence the expectations on subsystems have been divided into two stages for implementation.

The solution should integrate detection, identification and engagement sub-systems and provide operator with a composite air situational picture as well as tools for managing response.

The salient features of 'System' expected are given below:

- a. The 'System' should be effective and efficient in all-weather conditions with minimum of 95% detection and neutralization probability of all drones with or without RF command and control and data link.
- b. The 'System' should simultaneously detect, identify and neutralize multiple/ swarm of drones (minimum 20 Nos).
- c. Operation of the 'System' in no case should interfere with RF environment of Airport operations.
- d. The 'System' may be an integrated solution with multiple sub-systems for detection, identification and neutralization (like Radar, RF, EO, Infrared (IR), etc. systems for detection & identification and jammed; (Soft Kills) and laser and Fire Control Locking system (FCS) by ASG (Hard Kill) for neutralization.
- e. The 'System' should be of an open standard architecture to allow seamless integration with other systems of detection, identification and neutralization having standard interfaces and protocols.
- f. The 'System' should integrate detection, identification and engagement sub-systems and provide operator with a composite air situational picture as well as tools for managing response.
- g. The 'System' should be scalable and easily deployable.

System Capability

The composition of 'System':

- a. Primary Drone Detection Radar.
- b. Radio Frequency **(RF)** Detector and Direction Finder.
- c. Electro Optical (EO) and Infra-Red (IR) Sensor.
- d. Global Navigation Satellite System **(GNSS)** and RF Jammer.
- e. Option for Hard-kill options such as Laser and Fire Control locking system (FCS).
- f. Command & Control, Communication, Computers and Intelligence management systems.
- g. Masts required to mount the system for Fixed installation and aligned to Airport guidelines

The 'System' should identify, classify and provide alerts to the user through Audio and Visual alarm to the system operator at the Command-and-Control center on detection of a Drone / RPA platform. The system should have provision of inbuilt database library to identify specific type of drones which shall be updatable on periodic basis.

Deployment of 'System'

The 'System' needs to be deployed in the airport to protect the airspace from unauthorized unmanned aircraft / rogue drone in and around airfield. In the approach funnel area, the coverage shall be approximately 10 KMs and other direction of airfield it shall be around 05 KMs radius.

The number of 'System' to be deployed in particular airfield is depending on the geographical conditions of that airfield and availability of Line-of-sight coverage and area to be covered. All the 'System' deployed in any airfield needs to be integrated in the Command-and-Control Center (CCC).

Common Command and Control Center (CCCC)

The integrated command and control systems are required to provide target detection, identification and neutralization capability. The requirements are as follows:

- a. User friendly interfaces for easy identification, classification and tactical action.
- b. Combine information from integral sensors and other sensors to generate a Composite air situation picture.
- c. Provide alerts to the operator based on the criteria set by the operator.
- d. Facility for the operator to define criteria for threat and counter measure initiation.
- e. Provide decision support to the operator for selecting the most suitable action for tackling threat.
- f. Capability to operate on 24X7X365 hours.

- g. Difference between Drones and birds and provide alerts on detection of a drone.
- h. Detection capability against hovering drones.
- i. Scalable to accommodate future developments in regulation, system expansion and technology.
- j. Should be customizable to meet the user requirements.
- k. Should have auto recording and playback of the air situation picture, recording of individual sensor information and playback facility.
- l. Automatic monitoring of entire system health, including various 3rd party components and sub-systems.
- m. Detection, tracking, interdiction systems all shall be interconnected through high-speed digital network.
- n. All information from each of the sub-systems shall be fused and relevant, vital information shall be made available in numerical, graphical form.
- o. Shall be equipped with a dedicated human machine interface system.
- p. Shall be equipped with digital switches to select/switch various detection and interdiction system.
- q. Shall be equipped with intelligent algorithm to detect and track all the targets and make alarms.
- r. The system shall be capable of operating in three modes, fully automatic (including slew to cue) without any human intervention, semi-automatic with final interdiction decision involving human in loop and manual mode of operation.
- s. The system shall be equipped with Built In Test Equipment (BITE) to assess the health of the system periodically or on command.
- t. **Operator Workstation (OWS):** The input from Drone Detection Radar, RF Sensor and EO/IR camera system should be available on the operator works station.
- u. **Air Situation Display:** Air Situation display should be a multicolored display for presenting and updating Air Situation Picture with all track's parameters and associated features like maps, locations picture in picture etc.
- v. The command-and-control system should have the capability to integrate with ATS Automation Systems and Digital Sky platform, DSP/UTM systems for the purpose of obtaining real-time information about legal and approved unmanned aircraft operating in the airspace.

System Level Specification

- a. Shall be capable of operating in 220 V AC, 50 Hz or 24 V DC.
- b. Shall be capable of operating at 24 X 7 X 365.
- c. Mean Time Between Failures (MTBF) shall be 1500 hours or more.
- d. Shall be capable of operating at -20° to 55° temperature, 95% humidity.
- e. Shall be capable of storage at -30° to 55° temperature, 95% humidity.
- f. Shall be compatible with IP67 ingress protection or better.
- g. EMI / EMC compliance to MIL-STD-461 or equivalent international standard.

h. The system clock shall be synchronized with Airport Authority of India clock.

Essential Technical Specs

The essential technical specification of the 'System' is as placed in this document. The essential technical specification has been categorized into two Stages: Stage 1 and Stage 2.

The Sub systems planned in Stage 1 are planned for implementation initially to support Aerial Threat Detection and Neutralisation operations. Sub Systems in Stage 2 are planned post clearance from concerned authorities and other regulatory considering the nature of their deployment and its impact on the airport operations. Pricing Schedule is to be provided for Stage 1. The vendor should be able to meet both Stage 1 & Stage 2 requirement at the time of participating in the RFP process. Additional features expected out of the 'System' are also mentioned in this document, which are also taken into consideration during selection of the right system.

Exclusion

Following activity shall be not part of successful applicant company:

- Site infrastructure works i.e. power supply, electrical works, UPS, civil works, optical fiber or any other infrastructure support required for installation and operation of the 'System' shall be provided by Airport.
- Space for Command and Control center, power supply, workstations, IT support.
- Permissions and Approvals like NOCAS, SACFA, WPC, AAI, DGCA, MoCA and any other applicable permissions for deployment and operations of the system in the Airport Infrastructure however technical details required for the permissions and approvals of the system shall be provided by the successful applicant company to the Airport or its appointed agency.

Stage-1

Sr. No.	Parameter	Tech Specs
	NO DRONE ZONE DEFINITION	
1	(a) Altitude	10m to 2000m
	(b) Azimuth	360°
	(c) Elevation Coverage	At least 70°
	(d) Distance	Up to 5 Kms in all direction other than approach funnel area and up to 10Kms in Approach funnel area
2	TARGET CHARACTERISTICS	
	(a) Target Type	Aerial
	(b) Drone to be detected	All Types of Drones
3	DETECTION, IDENTIFICATION AND TRACKING SYSTEM	
	(a) Detection and Tracking configuration	Detection configuration consists of combination of one or multiple technology and multiple subsystems among Radar/ Electro Optic Device/ IR/ LRF/ RF Detection/ RF Direction Finder
	(b) Detection and Tracking System	Should be capable of detecting all types of UAVs/ RPAs
	(c) Operating Temperature	-20° to +55° Celsius
	(d) Operational Humidity	95%
	(e) Detection Range	No Drone Zone Area
	(f) Altitude	No Drone Zone Area
	(g) Azimuth Coverage	360°
	(h) Elevation Coverage	At least 70°
	(i) Track while Scan	Yes
	(k) Communication	Ethernet 1000 Base-T or better
	(l) Self-Localization	GPS/ GLONASS and upgradeable to Galileo and BeiDou
	(m) Target Location Accuracy	+/- 10.0 meter or better
	(n) Target Display	Separate symbol for each target
	(o) Live feed to Command Centre	Yes
	(p) Updated Rate	10 Hz
	(q) IP Protection	Should be minimum IP 67
	(r) False Alarm	False Alarm rate should not be more that 5%
	(s) Desirable	Capability to provide pilot location of UAV/ PRAs
I	Radar Specification	

	(a) Technology	FMCW and Active Electronically Scanning array-based Radar or any other Radar
	(b) Frequency of Operation	X/ Ku/ KA Band
	(c) Output Power	Sufficient to cover No Drone Zone Area
	(d) Detection Range	
	Type of Target	Detection Range
	Nano UAV/ RPA	More than or equal to 02Kms
	Micro UAV/ RPA	More than or equal to 05 Kms
	Mini UAV/ RPA	More than or equal to 10kms
	(e) Scan Speed	60RPM or better
	(f) Minimum Range	Less than or equal to 30m
	(g) Tracking Accuracy	10m
	(h) Communication	Ethernet 1000 Base-T or better / OFC
II	Electro Optic	
	(a) Capability	1. Capability to slew to the Radar/ R Sensor
		2. Auto Pan, Tilt and Zoom (PTZ) and inbuilt software stabilization
		3. Should have visible, SWIR and FLIR channels
		4. Should have detect, recognize and identification facility of the designated targets
	(b) Image Resolution	1280 X 1080 or better
	(c) Sensor Resolution	40MP or more
	(d) Optical Zoom	60X Continuous or more for day camera (EO Camera)
	(e) Camera	It should be with Day Night Camera and Thermal Imaging Camera in Pan Tilt Zoom unit
	(f) Other System Features	EO should have Integrated Automatic Target Tracker
		The day camera should have inbuilt Defog and De-haze Image Processing
		The thermal imager should have feature of digital enhancement
		The camera should have Ethernet IP interface for camera settings and pan tilt control
	(g) Live Video Stream	
	(h) Angular Accuracy	Less than or equal to 1m Rad
III	Infra-Red (IR)	
	(a) Image Resolution	640 x 480 or better
	(b) Cooling	Inbuilt
IV	Laser Range Finder (LRF)	
	(a) Range	
	Type of Target	Max Detection Range
	Nano UAV/ RPA	More than or equal to 02Kms
	Micro UAV/ RPA	More than or equal to 05Kms
	Mini UAV/ RPA	More than or equal to 10Kms
	(b) Accuracy	+/- 1 meter

V	RF Detection/ DF	
	(a) Capability	<p>It should have the ability to provide 360° azimuth coverage by scanning the environment, detecting and identifying potential drone threat in the area of interest with following minimum capability</p> <p>(a) Classification of threat</p> <p>(b) Generate Alerts</p> <p>(c) Inbuild threat library to identify specific types of drones</p> <p>(d) Wide band receiver covering 400 MHz to 6.0 GHz</p> <p>(e) Display Drone and Operator Location</p>
	(b) Detection	Automatic
	(c) Frequency Range	400 MHz to 6.0 Ghz
	(d) Coverage	No Drone Zone Area
4	INTERDICTION SYSTEMS	
	(a) Configuration	Soft Kill
	(b) Soft Kill Systems	RF & GNSS Jamming, Spoofing & Nets
	(c) Coverage	No Drone Zone Area
	(d) Altitude	No Drone Zone Area
	(e) Number of simultaneous Target	Swarm of Drones (Minimum 20)
	(f) Communication	Ethernet 1000 Base-T or better
	(g) Self-Localization	GPS/ GLONASS and upgradeable to Galileo and BeiDou
	(h) Live feed to Command Centre	Yes
I	RF Jammers	
	(a) Frequency Selection	Fully Automatic and Software programmable
	(b) Frequency Band	Minimum 04 Bands covering RF from 430 MHz to 6.0 Ghz
		(a) 400Mhz and 430 MHz Band
		(b) 800 MHz and 900 MHz Band
		(c) 2400 – 2500 MHz Band
		(d) 5.8 – 5.9 Ghz Band
	(c) Output Power	Sufficient to cover No Drone Zone Area
II	GNSS Jammers	
	(a) Frequency Selection	Fully Automatic and Software programmable
	(b) Frequency Band	Covering RF from 1.0 Ghz to 1.6 GHz GPS/ GLONASS and ability to upgradeable for Galileo and BeiDou
	(c) Output Power	Sufficient to cover No Drone Zone Area

Stage-2

Sr. No.	Parameter	Tech Specs
1	NO DRONE ZONE DEFINITION	
	(a) Altitude	10m to 2000m
	(b) Azimuth	360°
	(c) Elevation Coverage	At least 70°
	(d) Distance	Up to 5 Kms meters in all direction other than approach funnel area and up to 10Kms in Approach funnel area
2	INTERDICTION SYSTEMS	
	(a) Configuration	Soft & Hard Kill
	(b) Systems	Spoofing & Nets
	(c) Coverage	No Drone Zone Area
	(d) Altitude	No Drone Zone Area
	(e) Number of simultaneous Target	Swarm of Drones (Minimum 20)
	(f) Communication	Ethernet 1000 Base-T or better
	(g) Self-Localization	GPS/ GLONASS and upgradeable to Galileo and BeiDou
	(h) Live feed to Command Centre	Yes
I	Spoofing	
	(a) Frequency Selection	Fully Automatic and Software programmable
	(b) Frequency Band	Covering RF from 1.0 Ghz to 1.6 Ghz GPS/ GLONASS and ability to upgradeable for Galileo and BeiDou
	(c) Output Power	Sufficient to cover No Drone Area
II	Nets	
	(a) Trigger System	Fully Automatic in Sync with Detection and Tracking System
	(b) Action	Net shall deploy, capture RPAS by entangle the targeted RPAS and shall land with No Drone Zone
III	High Energy Laser System	
	(a) Input Power	5KW
	(b) Drone intercept and Neutralization range	>=2 Kms
	(c) Capability	Should have capability to conduct Day and Night Operations
	Fire Control Locking System (FCS)	ASG

Additional Technical Specifications:

Sr No	Specifications
1	The 'System' should be upgradable to include cyber based takeover of unauthorized drones and land at designated place.
2	The 'System' shall be able to detect and classify unknown drones [not stored in database] based on the electronic signal transmission between drones and the Ground control System
3	The 'System' shall be able to carry out dedicated follower jamming for frequency hopping transmissions, and not wide band jamming.
4	The 'System' should be immune to GPS Jamming from external sources.
5	The 'System' shall be able to detect spoofing on it and provide an alert to the operator.
6	The 'System' shall have high availability rate of 98% and above. False detection shall be lesser than 2%
7	The 'System' shall have a feature to upgrade its drone database automatically or manually, based on the choice of user.
8	The 'System' shall include features to include the local air situation picture[military/civil], by validating the ADS-B (secondary radar) signals.
9	The 'System' shall have simulator facilities to train operators, without actively deploying the sensors [RF/Radar/EO/IR] or effectors [jammers/spoofing equipment]