Directorate General Defence Purchase
Ministry of Defence
New Airport Road
Tejgaon, Dhaka-1215
Telephone: Military- 5040
Civil - 9132225
E-mail: adp7army1@gmail.com

16 Poush 1431

06.06.0000.221.Eval (C-UAV).24(P-2&3) 31 December 2024

EVALUATION OF COUNTER UNMANNED AERIAL VEHICLE (C-UAV) SYSTEM

References:

A. Army Headquarters, General Staff Branch, Adhoc Army Air Defence Directorate letter number 23.01.901.066.01.192.01.26.11.24 dated 26 November 2024 (Not to all).
B. Directorate General Defence Purchase letter number 06.06.0000.221.Eval(C-UAV).24(P-2&3) dated 28 November 2024.
C. Army Headquarters, General Staff Branch, Adhoc Army Air Defence Directorate letter number 23.01.901.066.01.192.01.18.12.24 dated 18 December 2024 (Not to all).

1. Please be informed that Bangladesh Army is currently undertaking an evaluation to procure **Counter Unmanned Aerial Vehicle (C-UAV) System** vide Reference C. Therefore, to facilitate this endeavor, interested firms are requested to provide necessary offers, manuals, catalogues, brochures (originally printed by manufacturer) include list of spares, details of training & warranty period with CD and budgetary offers etcetera (each in duplicate) for the standardization of the said equipment. All the documents are to be submitted on manufacturer's/principle's official pad including official stamp with sign by approval authority. The detailed information/documents have to be sent directly to **Army Headquarters, General Staff Branch, Adhoc Army Air Defence Directorate, e-mail: armyaddte@army.mil.bd by 15 January 2025** with an intimation to this Directorate General please. Please note that, the offered models should be compatible with amended general specification attached as Annex A to this letter. Short fall of any information will disqualify the offer. Also, kindly be requested to provide enlistment certificate of DGDP along with the technical offer.

2. **For Board of Officer, Army Headquarters, General Staff Branch, Adhoc Army Air Defence Directorate Only:** Price can be disclosed during the tender process only.

3. Your co-operation will be highly appreciated.

MD ZAHIDUL KABIR
Major
For Director General

Enclosure:

1. Amended General Specification for Catagory-1: Portable C-UAV System (Handheld/ Backpack Jammer) -03 (Three) pages Only.
2. Amended General Specification for Catagory-2: Integrated C-UAV System (Only Soft Kill)-10 (Ten) pages Only.
3. Amended General Specification for Catagory-3: Integrated C-UAV System (Soft and Hard Kill)-14 (Fourteen) pages Only.

Distribution:
External:
Action:

(All Concerned Firm/Supplier)

Information:

Army Headquarters, General Staff Branch, Weapon, Equipment and Statistics Directorate

Army Headquarters, General Staff Branch, Adhoc Army Air Defence Directorate

Army Headquarters, Master General of Ordnance Branch, Ordnance Directorate

Internal:

Action:

IT Section - **(For immediate flashing on DGDP web site only).**

Notice Board

ANX A TO
ADHOC ARMY AD DTE LM NO
23.01.901.066.02.053.01.18.12.24
DT: 18 DEC 2024

GENERAL SPECIFICATION FOR CAT-1: PORTABLE COUNTER UNMANNED AERIAL VEHICLE (C-UAV) SYSTEM (HANDHELD/ BACKPACK JAMMER)

Ser	Facts	Specification	To be filled up by Supplier/ Manufacturer
Part-1: General Specification			
1.	Name of the System/Equipment	Portable C-UAV Sys (Handheld/ Backpack Jammer)	
2.	Make & Model	To be mentioned	
3.	Country of Origin	Gp A and B	
4.	Country of Manufacturer/Assembly	Gp A and B	
5.	Name and Address of the Manufacturer	To be mentioned	
6.	Name and Address of the Principal	To be mentioned	
7.	Port of Shipment	From country of origin or manufacture	
8.	Year of Production	Not earlier than the year of contract	
9.	Capability	a. Be able to operate under extreme weather conditions eg. Heat, rain, fog, sand, snow etc. b. Man portable. c. Able to engage both commercial and military variant drones. d. Capable of neutralizing/dropping/deterring/ destroying drone from minimum 2 km distance. e. Capable of proactive and reactive jamming as per requirement while encountering threat.	
Part-2: Technical Specification			
10.	a. Type of Jamming	Details to be mentioned	
	b. Jamming Bands	To be mentioned (All frequency bands used by different commercial and military UAV's to be included)	
	c. Jamming Range		
	(1) Directional coverage range	To be mentioned	
	(2) Angle of coverage	(a) For vertical and horizontal to be mentioned in degree. (b) Minimum jamming coverage should be 10^{0} on either sides from the direction of jamming.	
	d. Jamming Frequency Range	Jamming frequency range of all the frequency bands (ISM and GNSS) are to be mentioned	
	e. Jammer Mode of Operation	Frequency Selective/ Window/ Programmable	
	f. Ability to defeat drone swarm attack	To be mentioned (No of drones can be engaged at a time)	
	g. Jamming outcome	Drone jammed should proceed to anyone of the following: (1) Controlled landing in its current position. (2) Drone falls uncontrolled on ground. (3) Drone flies off in a random direction. (4) Drone returns to user set home location.	
	h. Jamming Power Output	(1) Minimum power output of 160 watt or above is preferable. (2) The power output for each band to be mentioned separately.	
	j. **Antenna**		
	(1) Antenna type	High Gain Directional Antenna	

Ser	Facts	Specification	To be filled up by Supplier/ Manufacturer
	(2) Number of Antenna	To be mentioned	
	(3) Antenna Gain	To be mentioned	
	(4) Antenna Beam Width	Directional: To be mentioned	
	k. Battery type and capacity	(1) Rechargeable battery to be mentioned. (2) Voltage and AH should be enough to run the system for minimum 01 hour. (3) Battery charging time ≤ 04 hours.	
	l. Continuous Operation/Endurance time	Minimum 01 hour	
	m. Power input	220V / 50 Hz	
	n. Aiming sight: (1) Sight type (2) Magnification	To be mentioned	
	p. Built-in display	To be mentioned	
	q. Dimension/Product size	LxWxH to be mentioned	
	r. Weight	Drone Gun include battery to be mentioned	
	s. Colour	Black/MB Green	
11.	**Environmental Standards**		
	a. Operational Temperature	-05°C to + 55°C	
	b. Humidity	95% Humidity or above	
12.	List of Standard Accessories (For full range operation)	Details to be mentioned	
13.	Product Availability	Minimum 10 years	
14.	Warranty Period	02 years	
15.	Model validity	Minimum 10 years	
Part-3 : Training Requirement			
16.	a. Operations and maintenance training	To be provided (As per requirement of AD Dte)	
	b. Care, maintenance and preservation training	To be provided (As per requirement of Ord Dte)	
	c. Maintenance and repair training	To be provided (As per requirement of EME Dte)	
Part-4 : Repair and Maintenance Requirement less list of spares			
17.	a. Provision for SST, Special Testing Equipment, Performance Test, fault finding and rectification gauges	To be provided as per requirement of EME Directorate	
	b. List of Special Service Materials (SSM)	To be provided as per requirement of EME Directorate	
	c. **Publication**		
	(1) Owners/Operations Manual in English (Book Type) including CD/DVD)	To be provided as per requirement of EME Directorate	
	(2) Workshop/Repair Manual in English (Book Type) including CD/DVD)	To be provided as per requirement of EME Directorate	
	(3) 100% updated master spare parts catalogue in English (Book Type) including CD/DVD)	To be provided as per requirement of EME Directorate	
	(4) Complete and updated master spare parts price catalogue/ List in English (Book Type) including CD/DVD)	To be provided as per requirement of EME Directorate	
Part-5 : List of Spares			
18.	a. Operational/ first line spares, tools, accessories and kits (SPTA)	To be provided as per requirement of EME Directorate	
	b. Fast and slow moving spare parts	To be provided as per requirement of EME Directorate	

Ser	Facts	Specification	To be filled up by Supplier/ Manufacturer
Part-6 : Tools List for Different Level of Maintenance			
19.	Tools box	All essential and integral tools and accessories to be available and fitted and supplied in the tools box.(To be confirmed with submitted list)	
Part-7: Financial Specification			
20.	Financial aspects (Financial Terms and Conditions)	To be provided	

ANX B TO
ADHOC ARMY AD DTE LM NO
23.01.901.066.02.053.01.18.12.24
DT: 18 DEC 2024

GENERAL SPECIFICATION FOR CAT-2: INTEGRATED COUNTER UNMANNED AERIAL VEHICLE (C-UAV) SYSTEM (ONLY SOFT KILL)

Ser	Facts	Specification	To be filled by Principal/ Manufacturer
Part-1: General Specification			
1.	Name of the System/Equipment	Integrated Counter Unmanned Aerial Vehicle (C-UAV) Sys (Only Soft Kill)	
2.	Make & Model	To be mentioned (in case different make and model, should be mentioned separately for each item)	
3.	Country of Origin	Gp A and B	
4.	Country of Manufacturer/ Assembly	Gp A and B	
5.	Name and complete address of Manufacturer (Address, Telephone, E-mail & Website)	To be mentioned (in case of different manufacturer, should be mentioned separately for each item)	
6.	Name and completed address of Principal(Address, Telephone, E-mail & Website)	To be mentioned (in case of different principal, should be mentioned separately for each item)	
7.	Name and completed address of Local Agent(Address, Telephone, E-mail & Website)	To be mentioned (in case of different local agent, should be mentioned separately for each item)	
8.	Port of Shipment	From country of origin/ manufacture	
9.	Year of Production	Not earlier than the calendar year of contract	
10.	Capability of the Integrated Counter Unmanned Aerial Vehicle System (Only Soft Kill)	All kinds of Integrated Counter Unmanned Aerial Vehicle System (Only Soft Kill) should have capability to: a. Detect, locate and neutralize drone/C-UAV. b. Operate in all-weather condition of Bangladesh. c. Ply in cross country terrain of Bangladesh. d. Engage multiple targets attacking from several directions. e. To identify the targets and operate in intense Electronic Warfare environment. f. Able to operate in extreme weather conditions eg. Heat, rain, fog, dust, snow etc. g. Able to deter swarm drone attack h. Ability to deploy and be operational within 30 minutes time.	
11.	List of Equipment / System Configuration	Integrated Counter Unmanned Aerial Vehicle System (Only Soft Kill) with following Sub-systems: a. 3D Surveillance Radar. b. EO and IR Camera. c. TV Camera. d. RF Scanner, analyzer and Direction. Finding System e. Command and Control System including software along with preputial license. f. RF Directional and Omni-Directional Jammer. g. Spoofing. h. Power supply system (Generator). j. Any Other Neutralization System.	

Ser	Facts	Specification	To be filled by Principal/ Manufacturer

Ser	Facts	Specification	To be filled by Principal/ Manufacturer
Part-2: Technical Specification			
	3D Surveillance Radar		
12.	a. **General**		
	(1) Nomenclature	To be mentioned	
	(2) Brandand Model	To be mentioned	
	(3) Name and address of manufacturer	To be mentioned	
	(4) Year of manufacture	Not before the signing of the contract	
	b. **Technical Capabilities**		
	(1) Detection Capability	All type of drone/CUAV including Military drone of any size, weight and velocity	
	(2) Target detection Range		
	(a) NANO	To be mentioned	
	(b) Micro	To be mentioned	
	(c) Mini	To be mentioned	
	(d) Large	To be mentioned	
	(3) Target tracking range		
	(a) NANO	To be mentioned	
	(b) Micro	To be mentioned	
	(c) Mini	To be mentioned	
	(d) Large	To be mentioned	
	(4) Azimuth coverage	0°- 360°	
	(5) Minimum and maximum target tracking altitude (**From Mean Sea level/ From Mean Ground level**)	To be mentioned	
	(6) Operation frequency/ Frequency range	To be mentioned	
	(7) Bandwidth	To be mentioned	
	(8) PRF	To be mentioned	
	(9) Pulse power (Peak Power)	To be mentioned	
	(10) Radar Cross Section (RCS)	To be mentioned	
	(11) **Measuring Accuracy**		
	(a) Range	To be mentioned	
	(b) Bearing	To be mentioned	
	(12) Target discrimination	Details to be mentioned	
	(13) Maximum target handling capability	To be mentioned	
	(14) Target tracking capacity	To be mentioned	
	(15) TWS (Track While Scan)	To be mentioned	
	(16) Power of transmitter (Average power)	To be mentioned	
	c. **Antenna System**		
	(1) Nomenclature	To be mentioned	
	(2) Brand	To be mentioned	
	(3) Type of antenna	To be mentioned	
	(4) Dimension	To be mentioned (Search and tracking antenna)	
	(5) Feed system	To be mentioned(Search and tracking antenna)	
	(6) Antenna RPM	To be mentioned (Search and tracking antenna)	
	(7) Maximum height of antenna from the ground	-	

Ser	Facts	Specification	To be filled by Principal/ Manufacturer
	(a) Normal height	To be mentioned	
	(b) Height in extended condition	To be mentioned	
	(8) Antenna mounting	To be mentioned	
	(9) Maximum antenna elevation	0°- 45° on above	
	(10) Main lobe width	To be mentioned	
	(11) Side lobe width and level	To be mentioned	

Ser	Facts	Specification	To be filled by Principal/ Manufacturer
	(12) Bearing beam width	To be mentioned	
	(13) Gain		
	(a) Low beam	To be mentioned	
	(b) Middle beam	To be mentioned	
	(c) High beam	To be mentioned	
	(14) Elevation pattern	To be mentioned	
	(15) Elevation coverage	To be mentioned	
	(a) Low beam	To be mentioned	
	(b) Middle beam	To be mentioned	
	(c) High beam	To be mentioned	
	(16) Scan rate	To be mentioned	
	(17) Other specification	Details to be mentioned	
	d. **Transmitter**		
	(1) Transmitter type	To be mentioned	
	(2) Frequency band	To be mentioned	
	(3) Number of frequency	To be mentioned	
	(4) Frequency change	To be mentioned	
	(5) Power of transmitter (Average power)	To be mentioned	
	(6) Output peak power	To be mentioned	
	(7) Pulse width	To be mentioned	
	(8) Pulse repetition frequency	To be mentioned	
	(9) Range	To be mentioned	
	(10) PRF selection	To be mentioned	
	(11) PRF switching	To be mentioned	
	e. **Solid State Microwave Unit (MU2)/ Searching Receiver**		
	(1) Receiver type	To be mentioned	
	(2) Intermediate frequency	To be mentioned	
	(3) Noise figure	To be mentioned	
	(4) Sensitivity	To be mentioned	
	(5) STC function	To be mentioned	
	(6) Detection range		
	(a) NANO	To be mentioned	
	(b) Micro	To be mentioned	
	(c) Mini	To be mentioned	
	(d) Large	To be mentioned	
	f. **Low Noise Microwave Unit (MU1)/ Tracking Receiver**		
	(1) Receiver type	To be mentioned	
	(2) Intermediate frequency	To be mentioned	
	(3) Noise figure	To be mentioned	
	(4) Sensitivity	To be mentioned	
	g. **Radar Operation**		
	(1) Continuous operation time	To be mentioned	
	(2) Number of crews	To be mentioned	

Ser	Facts	Specification	To be filled by Principal/ Manufacturer
	(3) Operational life of radar transmitter	Minimum Hours (To be mentioned)	
	(4) Cooling system	To be mentioned	
	(5) Operation timer/ Timer indicator	Radar must have timer indicator for reading operation time	
	(6) ECCM Capability	System should be immune to active, passive jamming. Both manual and fully automatic frequency hopping, pseudo-random and adaptive frequency agility preferable. Besides, side lobe blanking, side lobe cancellation, CFAR etc may be incorporated	
	(7) Built in test equipment	Available	
	(8) Total weight	To be mentioned	
	(9) Moving target detection	Available	
	(10) Identification of Friend or Foe (IFF)	Bangladesh Armed Forces is developing its won IFF system. The offered Fire Control System should have provision to integrate IFF system used by Bangladesh when it is ready. Necessary technical support to integrate the own IFF system to be provided by the supplier/manufacturer.	
	(11) Communication/ data link with air defence command post/center/other radars	To be mentioned	
	(12) System orientation time (Preparation Time)	To be mentioned	
	(13) System reaction time/ activation time	To be mentioned	
	(14) Emplacement/ displacement time	To be mentioned	
	(15) Scope for up gradation	To be mentioned	
	(16) Number and type of display	To be mentioned	
	(17) Range measurement	To be mentioned	
	(18) Portability/ Carrying vehicle	To be mentioned	
	(19) Provision for Power Supply		
	(a) Generator System		
	(1) Nomenclature	To be mentioned	
	(2) Brand and Model	To be mentioned	
	(3) Country of origin	Group A and B countries	
	(4) Country of manufacture and assembly	Group A and B countries	
	(5) Name and complete Address of manufacturer	Details to be mentioned	
	(6) Year of production	Brand new and not before the year of contract	
	(7) Rated power Output/ capacity compatible with CUAV whole system	(a) Prime: To be mentioned (b) Standby: To be mentioned.	
	(8) Overall dimension (Length x Width x Height in mm)	To be mentioned	
	(9) Total weight	To be mentioned	
	(10) Maximum continuous operation time (without interval)	To be mentioned	
	(11) Maximum length of output cable	To be mentioned	
	(12) Operating temperature	To be mentioned	
	(13) Fuel tank capacity	To be mentioned	
	(14) Type of generator mounting	To be mentioned	

Ser	Facts	Specification	To be filled by Principal/ Manufacturer
	(15) Operational life of generator	To be mentioned	
	(16) Control panel of Generator	Details to be mentioned	
	(17) Arrangement for sound attenuation	Maximum 90 dB from 1 meter distance	
	(b) Engine		
	(1) Brand	To be mentioned	
	(2) Model	To be mentioned	
	(3) Country of Origin and Manufacture	Group A and B countries	
	(4) Type of Engine	Diesel Engine	
	(5) Cooling system	To be mentioned	
	(6) Output power (KW with RPM)	To be mentioned	
	(7) Number of cylinder	To be mentioned	
	(8) Self starter system	To be available	
	(9) Fuel consumption (Liter/hour) @ 100% load	To be mentioned	
	(10) Weight of engine	To be mentioned	
	(c) Alternator		
	(1) Brand	To be mentioned	
	(2) Model	To be mentioned	
	(3) Output power of Alternator	Prime: To be mentioned Standby: To be mentioned	
	(4) Output voltage and phase	To be mentioned	
	(5) Power factor (CosΦ)	0.8 - 1.00	
	(6) Frequency	To be mentioned	
	(d) Commercial Electric Line		
	(1) Voltage and frequency	System must be able to operate in 220V/380V ± 10%, 50 Hz	
	(2) Converter system and necessary connector (if required)	To be mentioned	
	(3) Length of cable	To be mentioned	
	(20) Portability/Carrying vehicle	To be mentioned	
	h. **Electro Optical System**		
	(1) **Laser Range Finder**		
	(a) Make and model	To be mentioned	
	(b) Main functions	To be mentioned	
	(c) Laser transmitter type	To be mentioned	
	(d) Wavelength	To be mentioned	
	(e) Beam divergence	To be mentioned	
	(f) Instrumented range	To be mentioned	
	(g) Range measuring resolution interface (LSB)	To be mentioned	
	(h) Laser safety classification	To be mentioned	
	(j) Nominal Ocular Hazard Distance (NOHD)	To be mentioned	
	(k) Range measuring resolution interface (LSB)	To be mentioned	
	(l) Laser safety classification	To be mentioned	
	(m) Nominal Ocular Hazard Distance (NOHD)	To be mentioned	
	(n) Range measuring accuracy	To be mentioned	
	(2) **Pan & Tilt**		

Ser	Facts	Specification	To be filled by Principal/ Manufacturer
	(a) Motor	Harmonic Gear System	
	(b) Angle	PAN:360^0 continuous, Tilt: ±90^0	
	(c) Speed	To be mentioned	
	(d) Accuracy	To be mentioned	
	(e) Power	AC220V	
	(3)**Others**		
	(a) Interface	TCP/IP, Ethernet (IP4/IP6 optional)	
	(b) Operating Temperature	To be mentioned	
	(c) Ingress Protection	Minimum IP 66	
	(d) Weight and Dimension	To be mentioned	
	(4) **EO and IR Camera**		
	(a) Nomenclature	To be mentioned	
	(b) Name of manufacturer	To be mentioned	
	(c) Brand	To be mentioned	
	(d) Model and type	To be mentioned	
	(e) Main functions	To be mentioned	
	(f) Spectral sensitivity waveband	To be mentioned	
	(g) Detector	To be mentioned	
	(h) Color	To be mentioned	
	(j) Generation	Minimum generation III or better	
	(k) Resolution	To be mentioned	
	(l) Figure of Merit (FoM)	To be mentioned	
	(m) Signal to Noise ratio (SNR)	To be mentioned	
	(n) Video output (TV Standard)	To be mentioned	
	(p) Video signal	To be mentioned	
	(q) Fields of view		
	(i) Narrow FoV	To be mentioned	
	(ii) Medium FoV	To be mentioned	
	(iii) Wide FoV	To be mentioned	
	(r) NETD (NFOV, blackbody 20^{0}C)	To be mentioned	
	(s) Focussing distance ranges (NFOV)	To be mentioned	
	(t) Switch on time	To be mentioned	
	(u)Minimum and maximum tracking range	To be mentioned	
	(v) Identification range	2 km minimum	
	(w) Classification range	1.5 km minimum	
	(x) Detector Type	To be mentioned	
	(y) Pixel Size	To be mentioned	
	(z) Spectral Band	To be mentioned	
	(aa) Image Processing	AGC, MIDE, Sharpness, Smooth	
	(bb) Focus	Auto, Manual	
	(5) **TV Camera**		
	(a) Nomenclature	To be mentioned	
	(b) Country of origin	To be mentioned	
	(c) Country of manufacture	To be mentioned	
	(d) Country of assembly	To be mentioned	
	(e) Name of manufacturer	To be mentioned	
	(f) Brand	To be mentioned	
	(g) Model and type	To be mentioned	
	(h) Year of manufacture	Not before the signing of the contract	
	(j) Main functions	To be mentioned	
	(k) Technology	Details to be mentioned	
	(l) Effective CCD picture	To be mentioned	

Ser	Facts	Specification	To be filled by Principal/ Manufacturer
	elements		
	(m) Video output (TV standard)	To be mentioned	
	(n) Video signal	To be mentioned	
	(p) Field of view	To be mentioned (Horizontal x Vertical)	
	(q) Bore sight accuracy	To be mentioned	
	(r) Scene luminance	To be mentioned	
	(s) Identification range	Minimum 2 km	
	(t) Classification range	Minimum 1.5 km	
	(u) Image type	To be mentioned	
	(v) Resolution	HD/FHD	
	(w) Lowest Light	To be mentioned	
	(x) Day & Night	Auto, Manual and External Input.	
	(y) Lens Type	Mega Pixel Lens.	
	(z) Zoom Lens	3.4~1000 mm Motorized Optical Zoom 66x, Extender 132x20x Digital Zoom.	
	(aa) Focus	Auto Focus, Manual Control.	
	j. **Commander Console**		
	(1) Capabilities	Should have following capabilities: (a) Threat recognition, assessment and classification. (b) View and control multi domain information. (c) Target engagement. (d) Alert commander on mission critical events. (e) All sensor must be integrated in Secured means.	
	(2) Main parts	Complete the search target display processing, tracking target designation, search radar parameter setting and other functions. Search air situation terminal, search air situation processing computer, etc.	
	(3) Workstation	Should provide Mil STD Laptop/workstation. Following to be mentioned: (a) Brand and model. (b) Processor and processor speed. (c)Memory (RAM). (d) Graphics. (e) Storage capacity. (f) Display size.	
	k. **Target Operator Console**		
	(1) Main functions	Complete tracking target observation, fire control operations, and tracking related functional operations.	
	(2) Main parts	Tracking fire control terminal, tracking fire control computer etc.	
	(3) Main computer specification	Should provide Mil STD Laptop/workstation. Following to be mentioned: (a) Brand and model. (b) Processor and processor speed. (c) Memory (RAM). (d) Graphics. (e) Storage capacity. (f) Display size.	
	l. **Environment**		
	(1) Temperature	-5°C to + 55°C	
	(2) Humidity	Minimum 95% or above	
	(3) Wind speed tolerance	Survival : To be mentioned	

Ser	Facts	Specification	To be filled by Principal/ Manufacturer
		Operational: To be mentioned	
	(4) Nuclear, Biological and Chemical (NBC) protection (if available)	To be mentioned	
	(5) Lightning arrester	To be provided	
	(6) Dust	System should be dustproof with IP66 standard	
	(7) Rain	System should be rainproof with IP66 standard	
	m. **Maneuverability**		
	(1) Gross weight of the system	To be mentioned	
	(2) Ground pressure	To be mentioned	
	(3) Fording depth	To be mentioned	
	(4) Ground clearance	To be mentioned	
	n. **Dimension**		
	(1) Length of the system it static condition	To be mentioned	
	(2) Width of the system in static condition	To be mentioned	
	(3) Length of the system in traveling condition	To be mentioned	
	(4) Width of the system in traveling condition	To be mentioned	
	(5) Height of the system when antenna folded	To be mentioned	
	(6) Maximum height of the system with antenna is rotating	To be mentioned	
	p. **Miscellaneous**		
	(1) Air condition to be present. Details to to mentioned including following:		
	(a) Country of origin and manufacturer	To be mentioned	
	(b) Brand and model	To be mentioned	
	(c) Capacity	To be mentioned	
	(2) Colour of Radar Cabin including vehicle	MB Green (nitro cellulose based, non-shining)	
	(3) Armour protection level (if available)	To be mentioned	
	(4) Fire extinguishing and suppression system	To be mentioned	
13.	**RF Scanner System and Direction Finding System**		
	a. **General**		
	(1) Nomenclature	To be mentioned	
	(2) Brand and Model	To be mentioned	
	b. **Technical Capabilities**		
	(1) Frequency Range (MHz/GHz)	To be mentioned	
	(2) Drone Detection Range		
	(a) NANO	To be mentioned	
	(b) Micro	To be mentioned	
	(c) Mini	To be mentioned	
	(d) Large	To be mentioned	
	(3) Detection Sensitivity	To be mentioned	
	(4) Controller Sensitivity	To be mentioned	
	(5) Direction-finding Accuracy	ITU Class A (probability of less than 5% that error exceeds 1°)	
	(6) Analogue Band width	To be mentioned	
	(7) Control Interface	10GB Ethernet to processor indoor unit	
	(8) Antenna Type	Omni-antenna	
	(9) Operating Temperature	-5°C to + 55°C	

Ser	Facts	Specification	To be filled by Principal/ Manufacturer
	(10) Ingress Protection	Minimum IP66	
	(11) Power Supply	1+1 (Active and Standby) 100%Duty cycle (Details to be mentioned)	
	(12) Weight	To be mentioned	
	(13) Detection and direction finding ground station control	To be mentioned	
	(14) TWS capability	To be mentioned	
	(15) Operation hour	24 x 7	
	(16) Alarm indication and automatic notification	To be mentioned	
	(17) Weather	To be mentioned	
	(18) Remote control Ethernet interface	To be mentioned	
	(19) Direction-finding method	To be mentioned	
	(20) Frequency compatibility	To be mentioned	
14.	**Jammer System**		
	a. **General**		
	(1) Nomenclature	To be mentioned	
	(2) Brand and Model	To be mentioned	
	b. **Technical Capabilities**		
	(1) Jamming Distance	Directional Jamming: Minimum 05 Km Omni Directional Jamming: Minimum 03 km	
	(2) Antenna Gain	High Gain Omni and Directional Antenna	
	(3) Antenna Beam Width	Directional: To be mentioned.	
		Omni directional:360^0	
		No of antenna required for 360 coverage should be mentioned	
	(4) Antenna VSWR	To be mentioned	
	(5) Operating Temperature	To be mentioned	
	(6) Ingress Protection	Minimum IP66	
	c. **RF and GNSS Jammer**		
	(1) Jammer type	Static/Portable	
	(2) Effective range for directional jamming	Minimum 05 km	
	(3) Effective range for omni directional jamming	Minimum 03 km radius	
	(4) Auto target pointing from the C2 center	To be mentioned	
	(5) Jamming frequency range	All frequency bands (navigation bands, GSM, GLONAS, Baidu, GPS, ISM, HF, VHF, UHF, L, S,C, bands) (To be mentioned)	
	(6) Jammer Mode of Operation	Frequency Selective/ Window/ Programmable	
	(7) Ability to defeat drone swarm attack	To be mentioned (Minimum 500 drones to be neutralize at a time)	
	(8) Jamming outcome	Controlled landing in its current position/ Drone falls uncontrolled on ground/ Drone flies off in a random direction/ drone returns to user set home location	
	(9) Jamming Power Output	To be mentioned	
	(10) Scalable	To cover any size site	
	(11) Shall allow the user to configure each channel independently	To be mentioned	

Ser	Facts	Specification	To be filled by Principal/ Manufacturer
	(12) System shall be programmable to exclude any required frequencies used for local communication	To be mentioned	
	(13) Operation time	24/7	
	(14) Power input	220V / 50 Hz	
15.	**Control System**		
	(a) Operating system	To be mentioned	
	(b) Maps	To be mentioned	
	(c) Software interface	To be mentioned	
	(d) Server requirements	To be mentioned	
	(e) Client requirements	To be mentioned	
16.	Model Validity	Minimum 10 years from date of production	
17.	Warranty/Guaranty	02 years from date of Issuance of I/Note	
18.	Service Support	Minimum 05 years from date of warranty expire	
Part-3 : Training Requirement			
19.	a. Operations and maintenance training	To be provided (As per requirement of AD Dte)	
	b. Care, maintenance and preservation training	To be provided (As per requirement of Ord Dte)	
	c. Maintenance and repair training	To be provided (As per requirement of EME Dte)	
Part-4 : Repair and Maintenance Requirement less list of spares			
20.	a. Provision for SST, Special Testing Equipment, Performance Test, fault finding and rectification gauges	To be provided as per requirement of EME Directorate	
	b. List of Special Service Materials (SSM)	To be provided as per requirement of EME Directorate	
	c. **Publication**		
	(1) Owners/Operations Manual in English (Book Type) including CD/DVD)	To be provided as per requirement of EME Directorate	
	(2) Workshop/Repair Manual in English (Book Type) including CD/DVD)	To be provided as per requirement of EME Directorate	
	(3)100% updated master spare parts catalogue in English (Book Type) including CD/DVD)	To be provided as per requirement of EME Directorate	
	(4) Complete and updated master spare parts price catalogue/ List in English (Book Type) including CD/DVD)	To be provided as per requirement of EME Directorate	
Part-5 : List of Spares			
21.	a. Operational/ first line spares, tools, accessories and kits (SPTA)	To be provided as per requirement of EME Directorate.	
	b. Fast and slow moving spare parts	To be provided as per requirement of EME Directorate.	
Part-6 : Tools List for Different Level of Maintenance			
22.	Tools box	All essential and integral tools and accessories to be available and fitted and supplied in the tools box. (To be confirmed with submitted list)	
Part-7 :Financial Specification			
23.	Financial aspects (Financial Terms and Conditions)	To be provided	

ANX C TO
ADHOC ARMY AD DTE LM NO
23.01.901.066.02.053.01.18.12.24
DT: 18 DEC 2024

GENERAL SPECIFICATION FOR CAT-3: INTEGRATED COUNTER UNMANNED AERIAL VEHICLE (C-UAV) SYSTEM (SOFT KILL AND HARD KILL)

Ser	Facts	Specification	To be filled by Principal/ Manufacturer
Part-1: General Specification			
1.	Name of the System/Equipment	Integrated Counter Unmanned Aerial Vehicle (C-UAV) System (Soft Kill and Hard Kill)	
2.	Make & Model	To be mentioned (in case different make and model, should be mentioned separately for each item)	
3.	Country of Origin	Gp A and B	
4.	Country of Manufacturer/ Assembly	Gp A and B	
5.	Name and complete address of Manufacturer (Address, Telephone, E-mail & Website)	To be mentioned (in case of different manufacturer, should be mentioned separately for each item)	
6.	Name and completed address of Principal (Address, Telephone, E-mail & Website)	To be mentioned (in case of different principal, should be mentioned separately for each item)	
7.	Name and completed address of Local Agent(Address, Telephone, E-mail & Website)	To be mentioned (in case of different local agent, should be mentioned separately for each item)	
8.	Port of Shipment	From country of origin/ manufacture	
9.	Year of Production	Not earlier than the calendar year of contract	
10.	Capability of the Integrated Counter Unmanned Aerial Vehicle System (Soft Kill and Hard Kill)	All kinds of Integrated Counter Unmanned Aerial Vehicle System (Soft Kill and Hard Kill) should have capability to: a. Detect, locate and neutralize drone/C-UAV. b. Operate in all-weather condition of Bangladesh. c. Ply in cross country terrain of Bangladesh. d. Engage multiple targets attacking from several directions. e. To identify the targets and operate in intense Electronic Warfare environment. f. Able to operate in extreme weather conditions eg. Heat, rain, fog, dust, snow etc. g. Able to deter/neutralize swarm drone attack h. Ability to deploy and be operational within 30	
11.	List of Equipment / System Configuration	Integrated Counter Unmanned Aerial Vehicle System(Soft Kill and Hard Kill)with following Sub-systems: a. 3D Surveillance Radar. b. EO and IR Camera. c. TV Camera. d. RF Scanner, analyzer and Direction. Finding System e. Command and Control System including software along with pre putial license. f. RF Directional and Omni-Directional Jammer. g. Spoofing. h. Laser. j. Anti drone Gun system for hard kill. k. Power supply system (Generator). l. Any Other Neutralization System.	

Ser	Facts	Specification	To be filled by Principal/ Manufacturer
Part-2: Technical Specification			
12.	**3D Surveillance Radar**		
	a. **General**		
	(1) Nomenclature	To be mentioned	
	(2) Brand and Model	To be mentioned	
	(3) Name and address of manufacturer	To be mentioned	
	(4) Year of manufacture	Not before the signing of the contract	
	b. **Technical Capabilities**		
	(1) Detection Capability	All type of drone/CUAV including Military drone of any size, weight and velocity	
	(2) Target detection Range		
	(a) NANO	To be mentioned	
	(b) Micro	To be mentioned	
	(c) Mini	To be mentioned	
	(d) Large	To be mentioned	
	(3) Target tracking range		
	(a) NANO	To be mentioned	
	(b) Micro	To be mentioned	
	(c) Mini	To be mentioned	
	(d) Large	To be mentioned	
	(4) Azimuth coverage	0°- 360°	
	(5) Minimum and maximum target tracking altitude (**From Mean Sea level/ From Mean Ground level**)	To be mentioned	
	(6) Operation frequency/ Frequency range	To be mentioned	
	(7) Bandwidth	To be mentioned	
	(8) PRF	To be mentioned	
	(9) Pulse power (Peak Power)	To be mentioned	
	(10) Radar Cross Section (RCS)	To be mentioned	
	(11) **Measuring Accuracy**		
	(a) Range	To be mentioned	
	(b) Bearing	To be mentioned	
	(12) Target discrimination	Details to be mentioned	
	(13) Maximum target handling capability	To be mentioned	
	(14) Target tracking capacity	To be mentioned	
	(15) TWS (Track While Scan)	To be mentioned	
	(16) Power of transmitter (Average power)	To be mentioned	
	c. **Antenna System**		
	(1) Nomenclature	To be mentioned	
	(2) Brand	To be mentioned	
	(3) Type of antenna	To be mentioned	
	(4) Dimension	To be mentioned (Search and tracking antenna)	
	(5) Feed system	To be mentioned(Search and tracking antenna)	
	(6) Antenna RPM	To be mentioned (Search and tracking antenna)	
	(7) Maximum height of antenna from the ground	-	
	(a) Normal height	To be mentioned	
	(b) Height in extended condition	To be mentioned	
	(8) Antenna mounting	To be mentioned	
	(9) Maximum antenna elevation	0°- 45° on above	

Ser	Facts	Specification	To be filled by Principal/ Manufacturer
	(10) Main lobe width	To be mentioned	
	(11) Side lobe width and level	To be mentioned	
	(12) Bearing beam width	To be mentioned	
	(13) Gain		
	(a) Low beam	To be mentioned	
	(b) Middle beam	To be mentioned	
	(c) High beam	To be mentioned	
	(14) Elevation pattern	To be mentioned	
	(15) Elevation coverage	To be mentioned	
	(a) Low beam	To be mentioned	
	(b) Middle beam	To be mentioned	
	(c) High beam	To be mentioned	
	(16) Scan rate	To be mentioned	
	(17) Other specification	Details to be mentioned	
	d. **Transmitter**		
	(1) Transmitter type	To be mentioned	
	(2) Frequency band	To be mentioned	
	(3) Number of frequency	To be mentioned	
	(4) Frequency change	To be mentioned	
	(5) Power of transmitter (Average power)	To be mentioned	
	(6) Output peak power	To be mentioned	
	(7) Pulse width	To be mentioned	
	(8) Pulse repetition frequency	To be mentioned	
	(9) Range	To be mentioned	
	(10) PRF selection	To be mentioned	
	(11) PRF switching	To be mentioned	
	e. **Solid State Microwave Unit (MU2)/ Searching Receiver**		
	(1) Receiver type	To be mentioned	
	(2) Intermediate frequency	To be mentioned	
	(3) Noise figure	To be mentioned	
	(4) Sensitivity	To be mentioned	
	(5) STC function	To be mentioned	
	(6) Detection range		
	(a) NANO	To be mentioned	
	(b) Micro	To be mentioned	
	(c) Mini	To be mentioned	
	(d) Large	To be mentioned	
	f. **Low Noise Microwave Unit (MU1)/ Tracking Receiver**		
	(1) Receiver type	To be mentioned	
	(2) Intermediate frequency	To be mentioned	
	(3) Noise figure	To be mentioned	
	(4) Sensitivity	To be mentioned	
	g. **Radar Operation**		
	(1) Continuous operation time	To be mentioned	
	(2) Number of crews	To be mentioned	
	(3) Operational life of radar transmitter	Minimum Hours (To be mentioned)	
	(4) Cooling system	To be mentioned	
	(5) Operation timer/ Timer indicator	Radar must have timer indicator for reading operation time	
	(6) ECCM Capability	System should be immune to active, passive jamming. Both manual and fully automatic frequency hopping, pseudo-random and adaptive frequency agility preferable. Besides, side lobe	

Ser	Facts	Specification	To be filled by Principal/ Manufacturer
		blanking, side lobe cancellation, CFAR etc may be incorporated	
	(7) Built in test equipment	Available	
	(8) Total weight	To be mentioned	
	(9) Moving target detection	Available	
	(10) Identification of Friend or Foe (IFF)	Bangladesh Armed Forces is developing its won IFF system. The offered Fire Control System should have provision to integrate IFF system used by Bangladesh when it is ready. Necessary technical support to integrate the own IFF system to be provided by the supplier/manufacturer.	
	(11) Communication/ data link with air defence command post/center/other radars	To be mentioned	
	(12) System orientation time (Preparation Time)	To be mentioned	
	(13) System reaction time/ activation time	To be mentioned	
	(14) Emplacement/ displacement time	To be mentioned	
	(15) Scope for up gradation	To be mentioned	
	(16) Number and type of display	To be mentioned	
	(17) Range measurement	To be mentioned	
	(18) Portability/ Carrying vehicle	To be mentioned	
	(19) Provision for Power Supply		
	(a) Generator System		
	(1) Nomenclature	To be mentioned	
	(2) Brand and Model	To be mentioned	
	(3) Country of origin	Group A and B countries	
	(4) Country of manufacture and assembly	Group A and B countries	
	(5) Name and complete Address of manufacturer	Details to be mentioned	
	(6) Year of production	Brand new and not before the year of contract	
	(7) Rated power Output/ capacity compatible with CUAV whole system	(a) Prime: To be mentioned (b) Standby: To be mentioned.	
	(8) Overall dimension (Length x Width x Height in mm)	To be mentioned	
	(9) Total weight	To be mentioned	
	(10) Maximum continuous operation time (without interval)	To be mentioned	
	(11) Maximum length of output cable	To be mentioned	
	(12) Operating temperature	To be mentioned	
	(13) Fuel tank capacity	To be mentioned	
	(14) Type of generator mounting	To be mentioned	
	(15) Operational life of generator	To be mentioned	
	(16) Control panel of Generator	Details to be mentioned	
	(17) Arrangement for sound attenuation	Maximum 90 dB from 1 meter distance	
	(b) Engine		
	(1) Brand	To be mentioned	

Ser	Facts	Specification	To be filled by Principal/ Manufacturer
	(2) Model	To be mentioned	
	(3) Type of Engine	Diesel Engine	
	(4) Country of Origin and Manufacture	Group A and B countries	
	(5) Cooling system	To be mentioned	
	(6) Output power (KW with RPM)	To be mentioned	
	(7) Number of cylinder	To be mentioned	
	(8) Self starter system	To be available	
	(9) Fuel consumption (Liter/ hour) @ 100% load	To be mentioned	
	(10) Weight of engine	To be mentioned	
	(c) Alternator		
	(1) Brand	To be mentioned	
	(2) Model	To be mentioned	
	(3) Output power of Alternator	Prime: To be mentioned Standby: To be mentioned	
	(4) Output voltage and phase	To be mentioned	
	(5) Power factor (CosΦ)	0.8 - 1.00	
	(6) Frequency	To be mentioned	
	(d) Commercial Electric Line		
	(1) Voltage and frequency	System must be able to operate in 220V/380V ± 10%, 50 Hz	
	(2) Converter system and necessary connector (if required)	To be mentioned	
	(3) Length of cable	To be mentioned	
	(20) Portability/Carrying vehicle	To be mentioned	
	h. **Electro Optical System**		
	(1) **Laser Range Finder**		
	(a) Make and model	To be mentioned	
	(b) Main functions	To be mentioned	
	(c) Laser transmitter type	To be mentioned	
	(d) Wavelength	To be mentioned	
	(e) Beam divergence	To be mentioned	
	(f) Instrumented range	To be mentioned	
	(g) Range measuring resolution interface (LSB)	To be mentioned	
	(h) Laser safety classification	To be mentioned	
	(j) Nominal Ocular Hazard Distance (NOHD)	To be mentioned	
	(k) Range measuring resolution interface (LSB)	To be mentioned	
	(l) Laser safety classification	To be mentioned	
	(m) Nominal Ocular Hazard Distance (NOHD)	To be mentioned	
	(n) Range measuring accuracy	To be mentioned	
	(2) **Pan & Tilt**		
	(a) Motor	Harmonic Gear System	
	(b) Angle	PAN:360^0 continuous, Tilt: ±90^0	
	(c) Speed	To be mentioned	
	(d) Accuracy	To be mentioned	
	(e) Power	AC220V	
	(3)**Others**		
	(a) Interface	TCP/IP, Ethernet (IP4/IP6 optional)	
	(b) Operating Temperature	To be mentioned	

Ser	Facts	Specification	To be filled by Principal/ Manufacturer
	(c) Ingress Protection	Minimum IP 66	
	(d) Weight and Dimension	To be mentioned	
	(4) **EO and IR Camera**		
	(a) Nomenclature	To be mentioned	
	(b) Name of manufacturer	To be mentioned	
	(c) Brand	To be mentioned	
	(d) Model and type	To be mentioned	
	(e) Main functions	To be mentioned	
	(f) Spectral sensitivity waveband	To be mentioned	
	(g) Detector	To be mentioned	
	(h) Color	To be mentioned	
	(j) Generation	Minimum generation III or better	
	(k) Resolution	To be mentioned	
	(l) Figure of Merit (FoM)	To be mentioned	
	(m) Signal to Noise ratio (SNR)	To be mentioned	
	(n) Video output (TV Standard)	To be mentioned	
	(p) Video signal	To be mentioned	
	(q) Fields of view		
	(i) Narrow FoV	To be mentioned	
	(ii) Medium FoV	To be mentioned	
	(iii) Wide FoV	To be mentioned	
	(r) NETD (NFOV, blackbody 20°C)	To be mentioned	
	(s) Focussing distance ranges (NFOV)	To be mentioned	
	(t) Switch on time	To be mentioned	
	(u)Minimum and maximum tracking range	To be mentioned	
	(v) Identification range	2 Km minimum	
	(w) Classification range	1.5 km minimum	
	(x) Detector Type	To be mentioned	
	(y) Pixel Size	To be mentioned	
	(z) Spectral Band	To be mentioned	
	(aa) Image Processing	AGC, MIDE, Sharpness, Smooth	
	(bb) Focus	Auto, Manual	
	(5) **TV Camera**		
	(a) Nomenclature	To be mentioned	
	(b) Country of origin	To be mentioned	
	(c) Country of manufacture	To be mentioned	
	(d) Country of assembly	To be mentioned	
	(e) Name of manufacturer	To be mentioned	
	(f) Brand	To be mentioned	
	(g) Model and type	To be mentioned	
	(h) Year of manufacture	Not before the signing of the contract	
	(j) Main functions	To be mentioned	
	(k) Technology	Details to be mentioned	
	(l) Effective CCD picture elements	To be mentioned	
	(m) Video output (TV standard)	To be mentioned	
	(n) Video signal	To be mentioned	
	(p) Field of view	To be mentioned (Horizontal x Vertical)	
	(q) Bore sight accuracy	To be mentioned	
	(r) Scene luminance	To be mentioned	
	(s) Identification range	Minimum 2 Km	
	(t) Classification range	Minimum 1.5 Km	

Ser	Facts	Specification	To be filled by Principal/ Manufacturer
	(u) Image type	To be mentioned	
	(v) Resolution	HD/FHD	
	(w) Lowest Light	To be mentioned	
	(x) Day & Night	Auto, Manual and External Input.	
	(y) Lens Type	Mega Pixel Lens.	
	(z) Zoom Lens	3.4~1000 mm Motorized Optical Zoom 66x, Extender 132x20x Digital Zoom.	
	(aa) Focus	Auto Focus, Manual Control.	
	j. **Commander Console**		
	(1) Capabilities	Should have following capabilities: (a) Threat recognition, assessment and classification. (b) View and control multi domain information. (c) Target engagement. (d) Alert commander on mission critical events. (e) All sensor must be integrated in Secured means.	
	(2) Main parts	Complete the search target display processing, tracking target designation, search radar parameter setting and other functions. Search air situation terminal, search air situation processing computer, etc.	
	(3) Workstation	Should provide Mil STD Laptop/workstation. Following to be mentioned: (a) Brand and model. (b) Processor and processor speed. (c)Memory (RAM). (d) Graphics. (e) Storage capacity. (f) Display size.	
	k. **Target Operator Console**		
	(1) Main functions	Complete tracking target observation, fire control operations, and tracking related functional operations.	
	(2) Main parts	Tracking fire control terminal, tracking fire control computer etc.	
	(3) Main computer specification	Should provide Mil STD Laptop/workstation. Following to be mentioned: (a) Brand and model. (b) Processor and processor speed. (c) Memory (RAM). (d) Graphics. (e) Storage capacity. (f) Display size.	
	l. **Environment**		
	(1) Temperature	-5°C to + 55°C	
	(2) Humidity	Minimum 95% or above	
	(3) Wind speed tolerance	Survival : To be mentioned Operational: To be mentioned	
	(4) Nuclear, Biological and Chemical (NBC) protection (if available)	To be mentioned	
	(5) Lightning arrester	To be provided	
	(6) Dust	System should be dustproof with IP66 standard	
	(7) Rain	System should be rainproof with IP66 standard	
	m. **Manoeuvrability**		
	(1) Gross weight of the system	To be mentioned	

Ser	Facts	Specification	To be filled by Principal/ Manufacturer
	(2) Ground pressure	To be mentioned	
	(3) Fording depth	To be mentioned	
	(4) Ground clearance	To be mentioned	
	n. **Dimension**		
	(1) Length of the system it static condition	To be mentioned	
	(2) Width of the system in static condition	To be mentioned	
	(3) Length of the system in traveling condition	To be mentioned	
	(4) Width of the system in traveling condition	To be mentioned	
	(5) Height of the system when antenna folded	To be mentioned	
	(6) Maximum height of the system with antenna is rotating	To be mentioned	
	p. **Miscellaneous**		
	(1) Air condition to be present. Details to to mentioned including following:		
	(a) Country of origin and manufacturer	To be mentioned	
	(b) Brand and model	To be mentioned	
	(c) Capacity	To be mentioned	
	(2) Colour of Radar Cabin including vehicle	MB Green (nitro cellulose based, non-shining)	
	(3) Armour protection level (if available)	To be mentioned	
	(4) Fire extinguishing and suppression system	To be mentioned	
13.	**RF Scanner System and Direction Finding System**		
	a. **General**		
	(1) Nomenclature	To be mentioned	
	(2) Brand and Model	To be mentioned	
	b. **Technical Capabilities**		
	(1) Frequency Range (MHz/GHz)	To be mentioned	
	(2) Drone Detection Range		
	(a) NANO	To be mentioned	
	(b) Micro	To be mentioned	
	(c) Mini	To be mentioned	
	(d) Large	To be mentioned	
	(3) Detection Sensitivity	To be mentioned	
	(4) Controller Sensitivity	To be mentioned	
	(5) Direction-finding Accuracy	ITU Class A (probability of less than 5% that error exceeds 1°)	
	(6) Analogue Band width	To be mentioned	
	(7) Control Interface	10GB Ethernet to processor indoor unit	
	(8) Antenna Type	Omni-antenna	
	(9) Operating Temperature	-5^{0}C to + 55^{0}C	
	(10) Ingress Protection	Minimum IP66	
	(11) Power Supply	1+1 (Active and Standby) 100%Duty cycle (Details to be mentioned)	
	(12) Weight	To be mentioned	
	(13) Detection and direction finding ground station control	To be mentioned	
	(14) TWS capability	To be mentioned	
	(15) Operation hour	24 x 7	
	(16) Alarm indication and automatic notification	To be mentioned	

Ser	Facts	Specification	To be filled by Principal/ Manufacturer
	(17) Weather	To be mentioned	
	(18) Remote control Ethernet interface	To be mentioned	
	(19) Direction-finding method	To be mentioned	
	(20) Frequency compatibility	To be mentioned	
14.	**Jammer/Neutralize System (Soft Kill)**		
	a. **General**		
	(1) Nomenclature	To be mentioned	
	(2) Brand and Model	To be mentioned	
	b. **Technical Capabilities**		
	(1) Jamming Distance	Directional Jamming: Minimum 05 Km Omni Directional Jamming: Minimum 03 km	
	(2) Antenna Gain	High Gain Omni and Directional Antenna	
	(3) Antenna Beam Width	Directional: To be mentioned.	
		Omni directional:360^0	
		No of antenna required for 360 coverage should be mentioned	
	(4) Antenna VSWR	To be mentioned	
	(5) Operating Temperature	To be mentioned	
	(6) Ingress Protection	Minimum IP66	
	c. **RF and GNSS Jammer**		
	(1) Jammer type	Static/Portable	
	(2) Effective range for directional jamming	Minimum 05 km	
	(3) Effective range for omni directional jamming	Minimum 03 km radius	
	(4) Auto target pointing from the C2 center	To be mentioned	
	(5) Jamming frequency range	All frequency bands (navigation bands, GSM, GLONAS, Baidu, GPS, ISM, HF, VHF, UHF, L, S,C, bands) (To be mentioned)	
	(6) Jammer Mode of Operation	Frequency Selective/ Window/ Programmable	
	(7) Ability to defeat drone swarm attack	To be mentioned (Minimum 500 drones to be neutralize at a time)	
	(8) Jamming outcome	Controlled landing in its current position/ Drone falls uncontrolled on ground/ Drone flies off in a random direction/ drone returns to user set home location	
	(9) Jamming Power Output	To be mentioned	
	(10) Scalable	To cover any size site	
	(11) Shall allow the user to configure each channel independently	To be mentioned	
	(12) System shall be programmable to exclude any required frequencies used for local communication	To be mentioned	
	(13) Operation time	24/7	
	(14) Power input	220V / 50 Hz	
15.	**Drone Capture/Destructions System (Hard Kill)**		
	a. **General**		
	(1) Nomenclature	To be mentioned	
	(2) Brand and Model	To be mentioned	

Ser	Facts	Specification	To be filled by Principal/ Manufacturer
	(3) Country of origin	To be mentioned	
	(4) Country of manufacture and assembly	To be mentioned	
	(5) Name and complete address of Manufacturer	To be mentioned	
	(6) Type	To be mentioned	
	b. **Laser**		
	(1) **Directed Energy Weapon**		
	(a) Destruction Range	500 meter or more	
	(b) Laser Power	5 KW (single/combined) or better	
	(c)Automatic Aiming to Target Detected by C2 system	To be mentioned	
	(d)Selection of Precise Destruction Point on the Target	To be mentioned	
	(e) Tracking and Destruction of High-Speed Targets	To be mentioned	
	(f) High Precision Target Tracking	To be mentioned	
	(g) Successive firing capability	To be mentioned	
	(h) System capability	Must be able to work in standalone mode and in networked mode	
	c. **Anti Drone Gun**		
	(1) Mounting	Chassis mounted or towed (Preferably Towed. To be specified)	
	(2) Target engagement range(distance)		
	(a) NANO	To be mentioned	
	(b) Micro	To be mentioned	
	(c) Mini	To be mentioned	
	(d) Large	To be mentioned	
	(3) Environmental condition	Wide range. (To be mentioned) (Any limitation in temperature limits, winds, humidity, visibility, and precipitation for operation of radar and other systems to be specified)	
	(4) Transportation	By Road, Rail, Air (Weight, dimensions, and volume for air transportation to be specified)	
	(5) Mobility	Highly mobile. (Speed on metalled road and cross country to be specified)	
	(6) Protection during transportation and storage	Should have a durable all-weather protection during transportation and storage. (Details to be provided)	
	(7) **Operational Parameters of Gun System (Upper Carriage)**		
	(a) Caliber	To be mentioned	
	(b) Muzzle velocity	To be mentioned	
	(c) Number of barrels	To be mentioned (Provide technical information)	
	(d) Length of barrel	To be mentioned	
	(e) Number of rifling	To be mentioned	
	(f) Twist	To be mentioned	
	(g) Caliber length ratio	To be mentioned	
	(h) Chamber length	To be mentioned	
	(j) Normal recoil length (Inmm)	To be mentioned	
	(k) Maximum allowable recoil	To be mentioned	

Ser	Facts	Specification	To be filled by Principal/ Manufacturer
	length (In mm)		
	(l) Maximum allowable chamber Pressure	To be mentioned	
	(m) Maximum operating temperature	To be mentioned	
	(n) Number of extra barrelper Gun	To be mentioned	
	(p) Time needed to change barrel in the field	To be mentioned	
	(q) Muzzle break/flashhider/ sound and flash suppression system	Details to be mentioned	
	(r) Traverse (0^0- 360^0)	To be mentioned	
	(s) Maximum and minimum elevation of barrel during firing	To be mentioned	
	(t) Maximum and minimum barrel elevation during normal time	To be mentioned	
	(u) System of azimuth/ elevation bracketing/locking	Details to be mentioned	
	(v) Cyclic Rate of Fire (rounds/min/barrel)	To be mentioned (minimum 250 rounds/min/barrel) (Provide technical information)	
	(w) Manual loading and reloading time	To be mentioned (Provide technical information)	
	(x) Availability of auto loading system	Capable of auto loading. To be confirmed	
	(y) Function of auto loading system	To be mentioned	
	(z) Availability of auto feeding system	Capable of auto feeding (To be confirmed)	
	(aa) Effective range against air targets	To be mentioned	
	(bb) Kill Probability SSKP (Single Shot Kill Probability)	To be mentioned (Provide information)	
	(cc) **Operation Mode**		
	(i) Autonomous/ Manual mode by Electro-optical Fire Control System (EOFCS)/ Infrared Fire Control System (IRFCS)(if available)	Guns should be independently capable of engaging a target with EOFCS/IRFCS. (Provide technical information)	
	(ii) Semi-automatic mode by Fire Control System (FCS) (**if available**)	Target searching is conducted by Fire Control System (FCS), then tracking and firing are controlled by gun operator and the gun sight on the gun.	
	(iii) Remote controlled/Fully-automatic mode by Fire Control System (**if available**) (FCS)	Guns should be capable of engaging target with Fire Control System (FCS) provided with the system.	
	(dd) Time needed for transformation from travelling position to firing position, deploy and redeployment time	Short redeployment time. (Provide technical information)	
	(ee) Number of crew	Minimum number of crew to operate system should be indicated.	
	(ff) Safety features	Proven safety record. Adequate safety features and redundancies to cater for failures.	
	(gg) BITE	To be mentioned	

Ser	Facts	Specification	To be filled by Principal/ Manufacturer
	(hh) Barrel life (Basing on number of round fired)	To be mentioned (Provide technical information)	
	(jj) Night laying device	To be mentioned	
	(kk) Breaking system (both automatic and hand brake)	To be mentioned	
	(ll) Type and capacity of tower	To be mentioned	
	(mm) **Cannon Components**		
	(i)**Muzzle Brake**		
	(aa) Country of origin	To be mentioned	
	(bb) Country of manufacture	To be mentioned	
	(cc) Country of assembly	To be mentioned	
	(dd) Year of manufacture	Not before the signing of the contract	
	(ii)**Barrel**		
	(aa) Country of origin	To be mentioned	
	(bb) Country of manufacture	To be mentioned	
	(cc) Country of assembly	To be mentioned	
	(dd) Year of manufacture	Not before the signing of the contract	
	(iii)**Breech Block**		
	(aa) Country of origin	To be mentioned	
	(bb) Country of manufacture	To be mentioned	
	(cc) Country of assembly	To be mentioned	
	(dd) Year of manufacture	Not before the signing of the contract	
	(iv)**Recoil Mechanism**		
	(aa) Country of origin	To be mentioned	
	(bb) Country of manufacture	To be mentioned	
	(cc) Country of assembly	To be mentioned	
	(dd) Year of manufacture	Not before the signing of the contract	
	(nn) **Automatic Loaders and Re-loaders**	a. Automatic Loaders: To be provided b. Automatic re-loaders: To be provided (if available)	
	(i) Country of origin	To be mentioned	
	(ii) Country of manufacture	To be mentioned	
	(iii) Country of assembly	To be mentioned	
	(iv) Year of manufacture	Not before the signing of the contract	
	(pp) **Servo System**		
	(i) Country of origin	To be mentioned	
	(ii) Country of manufacture	To be mentioned	
	(iii) Country of assembly	To be mentioned	
	(iv) Year of manufacture	Not before the signing of the contract	
	(v) Functional capabilities	Details to be mentioned	
	(8) **Lower Carriage**		
	(a) Number of wheel requirement for move	To be mentioned	
	(b) Condition of wheel during firing position	To be mentioned	
	(c) Tyre size	To be mentioned	
	(d) Wheel attachment system	To be mentioned	
	(e) Type of tyre (solid/ pneumatic)	To be mentioned	
	(f) Number of spare tyres provided with each gun	To be mentioned	
	(g) Manual steering system	To be mentioned	
	(h) Steering when attachment with gun tower	To be mentioned	
	(9) **Ammunition System**		

Ser	Facts	Specification	To be filled by Principal/ Manufacturer
	(a) Type of explosive (main filling)	Advance high efficiency explosive to cause destruction/ Incapacitation of the target at specified ranges. a. Provide technical information. (What all types of ammunition are available like HE, HEAT etc to be mentioned). b. Preferably to be able to fire Air burst ammunition with proximity fuze).	
	(b) Length of cartridge	To be mentioned	
	(c) Weight of shell	To be mentioned	
	(d) Type of fuze	To be mentioned	
	(e) Self destruction time	To be mentioned	
	(f) Minimum arming distance	To be mentioned	
	(g) Lethal radius	To be mentioned	
	(h) Fragmentation pattern (solid or preg-fragmented)	To be mentioned	
	(j) Shelf life of ammunition and fuze	To be mentioned	
	(k) Safety mechanism of fuze	Details mechanism with cross sectional diagram showing all component and mechanical system.	
	(l) Penetration capability	To be mentioned	
	(m) Maximum chamber temp that the ammunition can sustain before doing "Runaway" action	To be mentioned	
	(n) Number of rounds that can be loaded on the gun	To be mentioned	
	(p) Capacity of belt/tray/box	To be mentioned	
	(q) Weight of each belt/ box/tray when loaded	To be mentioned	
	(r) Metal of cartridge case body	To be mentioned	
	(s) Number and type of driving bands	To be mentioned	
	(t) Primer	To be mentioned (Type and model)	
	(u) Quantity of ammunition in gun carriage. Or belt/box/tray	Sufficient for effective engagement of at least one air target without reloading.	
	(v) Number of belt/box/tray per gun	To be mentioned	
	(w) Storage of ammunition (Requirement of storage temp, humidity)	Storage to facilitate easy and quick reloading by one /two crew members.	
	(x) Diameter of cartridge	To be mentioned	
	(y) Type of propellant	To be mentioned	
	(z) Weight of propellant	To be mentioned	
	(aa) Type of primer	To be mentioned	
	(bb) Chamber pressure	To be mentioned	
	(10) **Sighting System**		
	(a) Make and model	To be mentioned	
	(b) Brand	To be mentioned	
	(c) Type	To be mentioned	
	(d) Country of origin	To be mentioned	
	(e) Country of manufacture	To be mentioned	
	(f) An Electro-optical Fire Control System (EOFCS)/ Infrared Fire Control System (IRFCS) (if available)	Gun should be capable of engaging air targets using the EOFCS/ IRFCS when it is operating without a radar.	
	(g) Gun Laying System	Mechanism for laying the gun in bearing and	

Ser	Facts	Specification	To be filled by Principal/ Manufacturer
		azimuth.	
	(h) **Range**		
	(i) For ground target	To be mentioned	
	(ii) For aerial target	To be mentioned	
16.	**Control System**		
	(a) Operating system	To be mentioned	
	(b) Maps	To be mentioned	
	(c) Software interface	To be mentioned	
	(d) Server requirements	To be mentioned	
	(e) Client requirements	To be mentioned	
17.	Model Validity	Minimum 10 years from date of production	
18.	Warranty/Guaranty	02 years from date of Issuance of I/Note	
19.	Service Support	Minimum 05 years from date of warranty expire	
Part-3 : Training Requirement			
20.	a. Operations and maintenance training	To be provided (As per requirement of AD Dte)	
	b. Care, maintenance and preservation training	To be provided (As per requirement of Ord Dte)	
	c. Maintenance and repair training	To be provided (As per requirement of EME Dte)	
Part-4 : Repair and Maintenance Requirement less list of spares			
21.	a. Provision for SST, Special Testing Equipment, Performance Test, fault finding and rectification gauges	To be provided as per requirement of EME Directorate	
	b. List of Special Service Materials (SSM)	To be provided as per requirement of EME Directorate	
	c. **Publication**		
	(1) Owners/Operations Manual in English (Book Type) including CD/DVD)	To be provided as per requirement of EME Directorate	
	(2) Workshop/Repair Manual in English (Book Type) including CD/DVD)	To be provided as per requirement of EME Directorate	
	(3)100% updated master spare parts catalogue in English (Book Type) including CD/DVD)	To be provided as per requirement of EME Directorate	
	(4) Complete and updated master spare parts price catalogue/ List in English (Book Type) including CD/DVD)	To be provided as per requirement of EME Directorate	
Part-5 : List of Spares			
22.	a. Operational/ first line spares, tools, accessories and kits (SPTA)	To be provided as per requirement of EME Directorate.	
	b. Fast and slow moving spare parts	To be provided as per requirement of EME Directorate.	
Part-6 : Tools List for Different Level of Maintenance			
23.	Tools box	All essential and integral tools and accessories to be available and fitted and supplied in the tools box. (To be confirmed with submitted list)	
Part-7 : Financial Specification			
24.	Financial aspects (Financial Terms and Conditions)	To be provided	