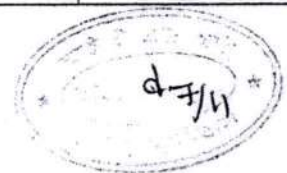


TECHNICAL SPECIFICATION OF NETWORK JAMMING SYSTEM (DP-5)

Ser	Description	Technical Specification	Must be filled up by Manufacturer
(a)	(b)	(c)	(d)
PART- 1: GENERAL SPECIFICATION			
1.	Nomenclature	Network Jamming System	
2.	Brand	To be mentioned	
3.	Model	To be mentioned	
4.	Year of Production	Brand new and not before the contracted year	
5.	Country of Origin	Group A Countries	
6.	Country of Manufacture/Assembly	Group A Countries	
7.	Name of Manufacturer with complete address (Office address, Telephone, Fax, Email and web address)	Details to be mentioned	
8.	Name of Principal with complete address (Office address, Telephone, Fax, Email and web address)	Details to be mentioned	
9.	Name of Local Agent with complete address (Office address, Telephone, Fax, Email and web address)	Details to be mentioned	
10.	General description, Functions and Capabilities	<p>a. It should be able to block/jam all types of devices simultaneously within the frequency band as specified in the technical specifications.</p> <p>b. It should be capable of performing active and reactive, or hybrid jamming to a target.</p> <p>c. Relatively small and backpack mounted.</p> <p>d. Should support one/several open communication window on each band for own communication.</p>	
PART- 2: TECHNICAL SPECIFICATION			
11.	Type of Jamming	<p>a. The system should not be restricted to a single method of jamming, rather it should integrate multiple, varying methods into a single system.</p> <p>b. It should have both barrage, spot jamming capability. Details to be mentioned.</p>	
12.	System design	<p>a. DDS (Different Digital Synthesis) to be used to generate jamming output.</p> <p>b. On board DDS based FPGA controlled technology to be used.</p>	
13.	Operational Jamming Radius	360°	
14.	Operational Jamming Range (m)	<p>Jamming range of single jammer is as follows:</p> <p>a. <u>Urban Area</u>. Minimum 30 meters radius.</p> <p>b. <u>Open Area</u>. Minimum 50 meters radius.</p> <p>c. Testing Procedure of Jammer is attached as appendix1 of this spec.</p>	



Ser	Description	Technical Specification	Must be filled up by Manufacturer		
15.	Operation Frequency Range	a. The system should cover the entire frequency range from 20 MHz to 2500 MHz for jamming. b. The system must be configured/programmed by the end user at any frequency within frequency band down to 1KHz resolution.			
16.	Operating Frequency Band	Minimum 03 band should be available.			
17.	Available Jamming Standard	a. VHF, UHF, Wi-Fi, Bluetooth, GSM (2G, 3G, 4G) To be mentioned. Other Jamming standards may also be mentioned (if available). b. Must be able to jam multiple threats simultaneously in real time. c. Maximum simultaneous jamming bandwidth to be mentioned.			
18.	Continuous Uninterruptable Jamming Period	To be mentioned. However, the system should jam for minimum 2 hours from DC source (external battery).			
19.	Power Output (W)	a. Minimum power output should be 30W or above in case of GSM, UMTS and LTE signals.			
		b. The power output to be given for each band as follows:			
		Band		Frequency	Watt
		VHF			
		UHF			
		2G		-	-
		3G			
		4G			
	WiFi				
	Bluetooth				
20.	Initial Warm up time	The system's minimum time required before operation from cold-start shall not exceed 01 (One) minutes.			
21.	Power Consumption				
	a. At Maximum RF Power	To be mentioned			
	b. At Stand By Mode	To be mentioned			
22.	Battery				
	a. Type of Battery	a. Rechargeable Lithium-Ion/lithium-polymer or equivalent. b. One additional battery to be provided.			
	b. Battery Operating Time	Minimum 2 hours continuous operation for any band.			
	c. Low Battery Alarm	The system should have audio//visual indication for low battery warning.			
	d. Operational Power Source:				
	(1) AC Power and Charging facility	AC 220 ± 10%, 50Hz, Standard power source will be provided			
	(2) DC power source	System to be operated from DC power source. Power source will be replaceable and rechargeable.			
	e. Battery charging time with battery charger	To be mentioned.			

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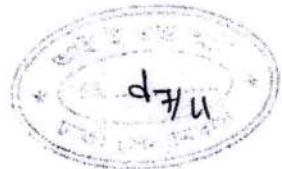


Ser	Description	Technical Specification	Must be filled up by Manufacturer
(a)	(b)	(c)	(d)
23.	Antenna		
	a. Type	High Gain Omni directional Antennas	
	b. Number of Antennas	To be mentioned (Minimum 2, Must cover full frequency range 20 to > 2500 MHz)	
	c. Antenna Impedance (Ω)	To be mentioned	
	d. Antenna Height	Antenna along with the jammer should not exceed 1.2 m	
	e. Antenna sensitivity	To be mentioned	
24.	Cooling System	To be mentioned	
25.	Dimension of Jammer Set (L x H x W)	To be mentioned.	
26.	Weight (In Full Operational condition)	To be mentioned. It should be less than 25 kg.	
27.	Colour	MB Green	
28.	Environmental Standards:		
	a. Operational Temperature	-5°C to + 60°C	
	b. Humidity	95% Humidity or above typical to BD weather	
	c. Vibration	To be mentioned	
	d. Rain/Splash Proof	To be mentioned	
	f. Protection against Radiation and EMI Shielding	a. RF & EMI Shielding protective layers to avoid RF/EMI interferences. b. The equipment must be designed to protect user from Radiation hazard. If any protective suit needs to be worn should be included in list of standard item c. Certificate to be provided by the manufacturer regarding health hazardness.	
29.	Built in Diagnostic Self- Test/Alarm System		
	a. VSWR.	To be mentioned	
	b. Low & Over Voltage.	To be mentioned	
	c. Over Temperature.	To be mentioned	
	d. Additional features to be mentioned	To be mentioned	
30.	Connectivity	a. Jammer should have provision of various ports (Ethernet/LAN/HDMI etc) for connectivity with external Computer/Laptops/Modem etc for software integration. b. Will have provision of wired/wireless remote connectivity to operate the jammer from a distance.	
31.	Backpack Carrier	To be provided.	
32.	Maximum Operational Altitude	Minimum 2500m.	
33.	GPS Facility (In Built)	To be available (Details to be mentioned).	
34.	Control software	a. Easily Programmable Software to be installed in Windows 10 or later version operating system. b. Control and programming backup software to be available with the system. c. Details about the software to be provided with the tender document.	

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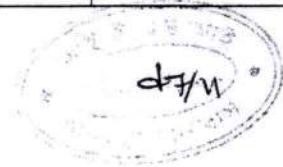
Ser	Description	Technical Specification	Must be filled up by Manufacturer		
(a)	(b)	(c)	(d)		
35.	Military Laptop (Rugged Laptop):(4:1Ratio) : International Reputed Brand Military standard Laptop should be included in the system Origin from Group A & Manufactured /Assembly from Group B countries. Detail Configurations are as under:				
	a. Processor: Core i7, 11 Generation, Minimum 2.2 GHz without turbo				
	b. HDD: Minimum 500GB or higher				
	c. RAM: 16GB DDR3 RAM or higher				
	d. Motherboard: To be mentioned				
	e. Monitor: Minimum 12 inch				
	f. MIL STD: To be mentioned				
	g. Any other information-Details to be mentioned				
36.	Maintenance support	Maintenance service to be provided by the local agent and manufacture for 05 (Five) year from the date of acceptance of the item and manufacture is to provided necessary waveform support as per end user requirement for 05 (Five) year.			
37.	Model Validity	Minimum 10 years. Certificate to be provided by the manufacturer			
38.	Any other	Any items/accessories not mentioned above but require for full range of operation/use of the offered Man Portable ECM to be mentioned.			
39.	List of standard accessories (For full range of operation)	Details to be mentioned as per following Proforma:			
Bil of Quantity/Material (BOQ/BOM) of Standard Items					
Ser	Name of Item	Brand	Model	Quantity	Country of Manufacturer
1.					
2.					
40.	List of Optional Accessories	Details to be mentioned as per following Proforma:			
Bil of Quantity/Material (BOQ/BOM) of Optional Items					
Ser	Name of Item	Brand	Model	Quantity	Country of Manufacturer
1.					
2.					



Ser	Description	Technical Specification	Must be filled up by Manufacturer
(a)	(b)	(c)	(d)
PART- 3: TRAINING REQUIREMENT			
41.	Use, Operation and Maintenance Training	To be mentioned	
PART- 4: REPAIR AND MAINTENACE REQUIREMENT LESS LIST OF SPARES			
42.	Level of Repair and Maintenance	To be mentioned	
43.	Books and Manuals	To be provided	
PART- 5: LIST OF SPARES			
44.	List of Standard spare parts, tools and accessories	Details to be mentioned	
PART- 6: TOOL LIST FOR DIFFERENT LEVEL OF MAINTENACE			
45.	SST and SSM	List of SST and SSM to be provided with technical offer	

Appendix:

1. Testing Procedure of Jammer.



FIELD TESTING PROCEDURE OF NETWORK JAMMING SYSTEM (DP-5)

Factors

1. This document explains the standard testing procedures of Remote Controlled Improvised Explosive Device (RCIED) Jammer (Network Jamming System) during procurement in Bangladesh Army. These procedures are based on various factors such as threat, terrain, environment, trigger's behaviour and moreover various situation faced by BD Army in real time. Apart from this, weather, base station behaviors, power source variability etc, are also taken into consideration. Following factors will be considered for testing the jammers:

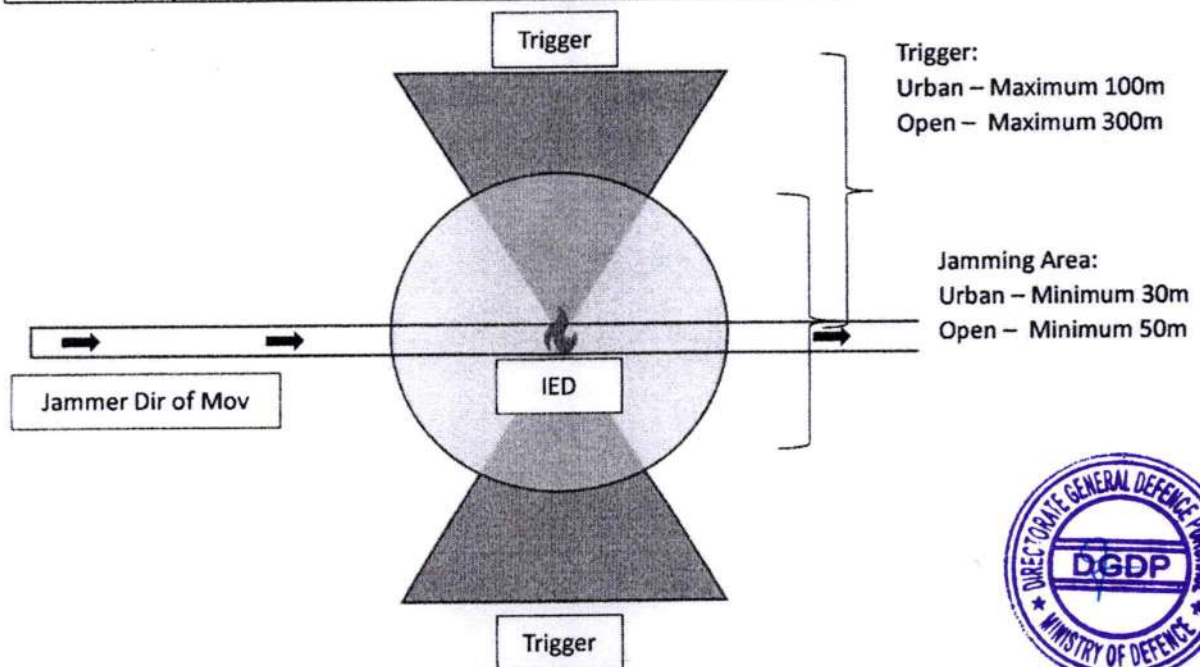
- a. Commercial off the Shelf (COTS) radio equipment mainly cellphone, VHF/UHF walkie Talkie, WiFi equipment should be used for test purpose.
- b. BTS Transmission Power will not be considered for the test. However, the distance of receiver/IED from the BTS (in case of Cellphone) will be maximum 200 meters. BTS may be located on the side of transmitter/trigger.
- c. Output power of any types of radios should not be more than 06 Watt.

Testing Criteria and Orientation of Transmitter/Trigger

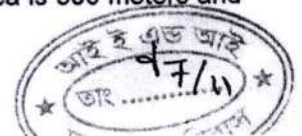
2. Testing environment will be categorized as urban and open area. In urban area, there may be an obstruction of one building between the trigger and receiver/IED considering the obstruction which might be faced in the urban area while moving on the road. The receiver representing the IED to be placed on ground without any support. The trigger/transmitter representing the terrorist will be placed under cover on the ground considering the fact that, RCIED will be exploded from a hidden place.

3. The following minimum Jamming Range is expected from RCIED Jammer which is also depicted in the picture below:

Serial	Type of Ground	Manpack Version
1	Urban Area	Minimum 30 meters
2	Open Area	Minimum 50 meters



4. The trigger will be placed as far as possible considering the fact that, he will seek separation from the device for his own safety. He also requires a good line of sight to ensure clear visibility of target and safeguard the arrival of radio signal at the receiver. The suggested distance for trigger in the open area is 300 meters and urban area is 100 meters.



5. The trigger will be placed at 60-120 degrees to the direction of travel of the targeted vehicle or patrol in a suitable location. The Receiver will be placed such that, the targeted vehicle or patrol passes within a distance of 1 or 2 meters. For cellphone, the trigger may be placed far away with a visual distance but the Receiver/IED will be placed nearer to the BTS as mentioned.

Testing Frequency Bands

6. For Backpack version the following Frequency Bands and number of tests will be conducted:

Serial	Type of Equipment	Frequency Band	No of Test	Remarks
1.	VHF	136 – 174 MHz	01	
2.	UHF	400 – 470 MHz 450 - 520 MHz	02	
3.	Cellphone 2G and 3G	900 MHz, 1800 MHz, 2100 MHz	02	As per availability in the testing area
4.	Cellphone 4G	850 MHz, 2300 MHz	02	As per availability in the testing area
5.	WiFi	2.4 GHz	01	
6.	Bluetooth	2.4 GHz	01	
	Total		09	

