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Ministry of Defence
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১৯ Baishakh 1431

০৬ May 2024

06.06.0000.215.49.24/Re-Eval

RE-EVALUATION OF THE SPECIFICATION OF RADIO RELAY TERMINAL STATION AND RADIO RELAY REPEATER STATION

References:

- A. Army Headquarters, General Staff Branch, Signal Directorate letter number 23.01.901.032.03.099.01. 21.12.23 dated 24 December 2023 (Not to all).
B. Army Headquarters, General Staff Branch, Signal Directorate letter number 23.01.901.032.03.099.01.24.04.24 dated 24 December 2023 (Not to all).

1. In light of above references, a technical specification of Radio Relay Terminal Station and Radio Relay Repeater Station is attached with this letter. Interested authorized vendors/firms/local agents of the manufacturers are requested to submit your offer for above mentioned RR Terminal Station and RR Repeater Station directly to Army Headquarters, General Staff Branch, Signal Directorate with intimation to this office **by 30 May 2024** fulfilling the requirements mentioned below:

- a. Offer as per technical specification.
- b. Letter of authorization by Manufacturer/Principal mentioning that the said company will be the local vendor/agent for offered model.
- c. Manuals (Original Printed by Manufacture) and CD.
- d. Catalogue (Original Printed by Manufacture) and CD.
- e. Catalogue of Spare Parts (Original Printed by Manufacture) and CD.
- f. Brochure (Original Printed by Manufacture) and CD.
- g. Enlistment Certificate of DGDP and BTRC.
- h. Valid Certificate from Original Equipment Manufacturer (OEM) as authorized agent.
- j. Certification from manufacturer on permission to export the said system to Bangladesh Army.

2. All the documents are to be submitted on Manufacture's/Principal's official pad including official stamp with signed by proper authority.

3. Forwarded for your information and necessary action please.


RAIHAN RAHMAN
Major
For Director General

Enclosure:

1. Technical Specification-09 (Nine) Pages Only.

Distribution:

External:

Information:

Army Headquarters, General Staff Branch (Coordination)

Army Headquarters, General Staff Branch, Signal Directorate

Action:

All Concerned Supplier/Firm

Internal:

IT Section (For uploading to website)

Notice Board

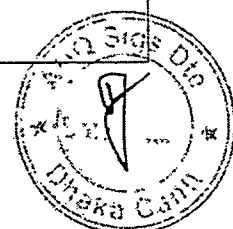
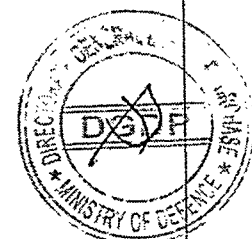
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**ANNEX B TO
DGBP LETTER NUMBER
06.06.0000.215.49.23/TEST & TRIAL
DATED: 06 MAY 2024**

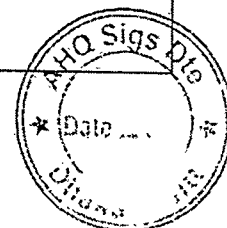
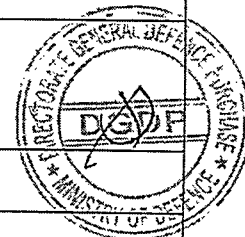
TECHNICAL SPECIFICATION OF RADIO RELAY REPEATER STATION COMPLETE WITH STANDARD TOOLS AND ACCESSORIES

Ser	Items/Description	Technical Specifications	To be filled by the Manufacturer/Principal
(a)	(b)	(c)	(d)
PART-1: GENERAL SPECIFICATION			
1.	Nomenclature	Radio Relay Repeater Station (Category - 1)	
2.	Brand Name	To be mentioned	
3.	Type	To be mentioned	
4.	Make and Model	To be mentioned	
5.	Country of Origin	Group A Countries	
6.	Country of Manufacture	Group A Countries	
7.	Country of Assembly	Group A Countries	
8.	Year of Manufacture	Not earlier than the calendar year of contract	
9.	Name of Manufacturer with complete address (office address, Telephone, Fax, Email and web address)	To be mentioned	
10.	Name of Principal with complete address (office address, Telephone, Fax, Email and web address)	To be mentioned	
11.	Name of Local Agent with complete address (office address, Telephone, Fax, Email and web address)	To be mentioned	
12.	Color	Metallic Bronze (MB) Green	
PART-2: TECHNICAL SPECIFICATION			
13.	Frequency Range	To be mentioned	
14.	Frequency Band	NATO Band III / Band III + / Band IV or any other suitable band	
15.	Channel Spacing	125 KHz or better	
16.	Number of Channels	To be mentioned	
17.	Communication Range:		
	a. Point to Point	Minimum 25 km	
	b. Point to Multipoint (Optional)	Details to be mentioned	
18.	Data Transfer Rate	64 Mbps or more (at minimum range)	
19.	Power output with auto power control	To be available	
20.	Power Source	Should work with both AC and DC power supply along with power management system: a. AC: Input Volt Range: 170V-250V, 50Hz ±5% b. DC: 12V/24V DC ±10% secondary Battery/ Special Battery system which must be rechargeable at 170V-250V, 50Hz ±5% AC power system	



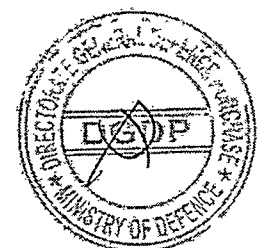
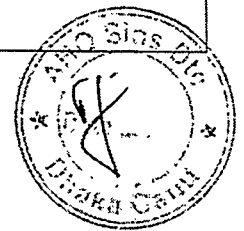
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Ser	Items/Description	Technical Specifications	To be filled by the Manufacturer/Principal
(a)	(b)	(c)	(d)
21.	Power Consumption	To be mentioned	
22.	Spectrum analyzing / Path Profiling / Frequency planning and Network planning & monitoring Software (Optional)	To be mentioned as optional	
23.	Antenna		
	a. Suitable types of antenna to cover the expected communication range and provision to fix in a 3-ton lorry or any shelter based communication vehicle used in Bangladesh Army.	To be mentioned	
	b. <u>Antenna Element</u> : One antenna will be used for TX/RX Op and to cover the complete frequency band	To be mentioned	
	c. <u>Antenna Mast</u> : (1) The Antenna Mast should be telescopic and it should be possible to deploy the mast section to full height of max 24m with lightning protector (2) Antenna should be connected with appropriate length of cable for outdoor or indoor units/operations	To be mentioned	
	d. Antenna arrangement will be provided to rotate the Antenna by $\pm 180^\circ$ (360° preferable) in horizontal plane and $\pm 10^\circ$ in vertical plane from the ground	To be mentioned	
	e. The Antenna when erected, should be able to withstand a wind velocity of 80 km/h Op and 120km/hr (survival)	To be mentioned	
	f. The vendor will indicate weight and other spec of Antenna (Planar Antenna, Parabolic antenna, Sectorial antenna, Omni directional antenna, Array antenna etc.) being offered	To be mentioned	
	g. The Antenna Mast should preferably have double rotator system (Two Antenna can be fixed in one Mast)	To be mentioned	
	h. Switching between the frequency bands to be automatic	To be mentioned	
24.	Feeder/Cable (Both for Indoor and Outdoor Operation)	PoE, Cat 5E or better cable is preferable. Details to be mentioned	



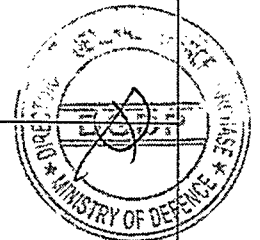
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Ser	Items/Description	Technical Specifications	To be filled by the Manufacturer/Principal
(a)	(b)	(c)	(d)
25.	Details of Radio		
	a. Dimension (Radio)	To be mentioned	
	b. Weight (Radio only)	To be mentioned	
	c. Maximum Tx power	To be mentioned	
	d. Receiver Sensitivity	To be mentioned	
	e. Minimum Available Output Ports: (1) Fast Ethernet (FE) port (2) Fibre Optics (FO) port	To be mentioned	
26.	Security Feature/ Encryption Facility		
	a. ECCM	a. Must have Frequency Hopping b. No of hops to be mentioned	
	b. Voice and Data Encryption	Details to be mentioned	
	c. Modulation	Details to be mentioned	
27.	Interface/Integration Facilities	Graphical User Interface (GUI) based remote configuration capability with the provision of integrating standard router / switch / E1 Converter / PCM Voice Gateway through open standard interface / port	
28.	NMS. For the purpose of network management the following will be required:	Details to be mentioned	
	a. The NMS should be incorporated with the equipment or it should be possible to configure and monitor the equipment over LAN/WAN. (Optional)	Details to be mentioned	
	b. Laptop/Computer. Laptop/ Computer from a renowned OEM should be provided with each equipment incorporating following or better features.	Details to be mentioned	



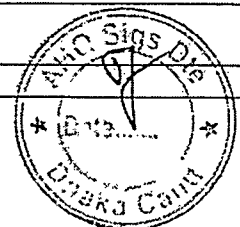
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Ser	Items/Description	Technical Specifications	To be filled by the Manufacturer/Principal
(a)	(b)	(c)	(d)
	(1) Brand	International Reputed Brand	
	(2) Make and Model	To be mentioned	
	(3) Country of Origin	Group A Countries	
	(4) Country of Manufacture / Assembly	Group B Countries	
	(5) Processor	Minimum Intel Chipset Core i5 (8th Generation above) or better	
	(6) Processor Speed	Minimum 3 GHz or better.	
	(7) Memory	Minimum 16GB DDR4 1600MHz or higher	
	(8) Other Ports/ Interfaces/ Connectivity	(1) Minimum 3xUSB (2.0 and 3.0), HDMI, SIM Card slot (optional), SD Card slot, Headphone/ Microphone Combo Jack, Smart Card Reader (Optional), and HD Audio (2) Required Network Interface / connector (Open Standard) for connecting to the Radio Relay system (if required).	
	(9) Operating System	Windows 10 Pro version (Licensed copy) or better	
	(10) Security	(a) <u>User and System Security</u> : Option for Fingerprint reader, TPM Module (b) <u>Physical Security</u> : Steel reinforced cable lock slots and hard drive locks	
	c. The equipment will incorporate SNMP (Simple Network Management Protocol) management software (SNMP v2/ SNMP v3 or better) facility from a SNMP manager	Details to be mentioned	
29.	Environment Issue		
	a. Shock/ Drop Proof	6 drops on hard surface from 122 cm height	
	b. Vibration	5 Mins continuous vibration in the machine	
	c. Immersion Proof	30 mins immersion in 1 meter depth	
	d. Dust Proof	Military Standard 810 E/F/G	
	e. Temperature	Operating: -5 ^o to + 55 ^o C Storage: -10 ^o to + 60 ^o C	
30.	Special Requirement		
	a. The system should also provide the communication performance graph in all kinds of territorial and weather condition for Bangladesh	Details to be mentioned	
	b. Vendor should provide rack, hard casing for antenna, operator console for all equipment with all accessories and provision to fix in a 3-ton lorry or any shelter-based communication vehicle used in Bangladesh Army	Details to be mentioned	



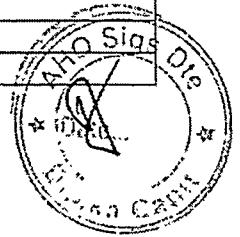
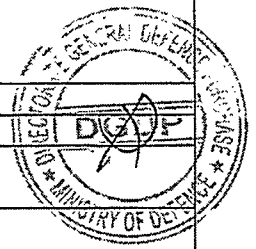
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Ser	Items/Description	Technical Specifications	To be filled by the Manufacturer/Principal
(a)	(b)	(c)	(d)
31.	Generator		
a.	Nomenclature	Generator 5 KVA (minimum)	
b.	Name of Manufacturer/ Maker	To be mentioned	
c.	Name of the Principal with full address	To be mentioned	
d.	Name of the Local Agent with full address	To be mentioned	
e.	Make and Model	To be mentioned	
f.	Country of Origin	Group A countries	
g.	Country of Manufacturer	Group A countries	
h.	Country of Assembly	Group A countries	
j.	Year of Production	Not before the year of contract	
k.	Overall Length, Width & Height (With Canopy) without trailer	To be mentioned	
l.	Overall Weight with Canopy	To be mentioned	
m.	Output of the Generator		
(1)	Prime	Minimum 5 KVA	
(2)	Stand by	To be mentioned	
n.	Working Condition		
(1)	Operation	Generator set to be able to sustain 12 Hours Continuous Operation per day at prime load	
(2)	Noise	The generator must have noise suppression system and able to operate in the open and in all-weather condition.	
(3)	Canopy	Should be made of anticorrosive steel sheet and fireproof painting. Should be able to attenuate sound up to (maximum) db 90 at 1 meter having lockable louvers, doors. Glass windows for monitoring the meters to be provided. Colour - MB Green	
(4)	Transportation	The generator must be easily portable	
(5)	Mounting	The generator to be mounted on its base with anti-vibration mounting	
(6)	Starting System	Self-starter with auto provision to be provided	
(7)	Safety Feature	The generator must have shutdown facility with sound warning against over voltage, over current, over load, Low/high oil pressure over temperature etc	
(8)	Overall Efficiency	To be mentioned (To be compatible between engine and alternator)	
p.	Engine		
(1)	Name of Manufacturer/Maker	To be mentioned	
(2)	Model	To be mentioned	



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Ser	Items/Description	Technical Specifications	To be filled by the Manufacturer/Principal
(a)	(b)	(c)	(d)
	(3) Country of Origin	Group A Countries	
	(4) Country of Manufacturer and Assembly	Group A Countries	
	(5) Year of Production	Not before the year of contract	
	(6) Type of Engine	4 Stroke Octane Engine	
	(7) Numbers of Cylinders	To be mentioned	
	(8) Capability	Prime power available at variable load with a load factor not exceeding 80% of prime power rating, over load of 10% is permitted for 1 hour in every 12 hours operation	
	(9) Bore/Stroke	To be mentioned	
	(10) Piston Displacement	To be mentioned	
	(11) Compression Ratio	To be mentioned	
	(12) Output power (KW) with RPM	To be mentioned	
	(13) Cooling System	Liquid / Air cooling	
	(14) Turbo charger (if available)	To be mentioned	
	(15) Specific Fuel consumption Liters/ hour at full load	To be mentioned	
	(16) Engine Efficiency	To be mentioned	
	(17) Weight of Engine	To be mentioned	
	(18) Fuel Tank Capacity	To be mentioned (for minimum 12 hours continuous operations at full load)	
	(19) Battery for start the Generator (12 Volt)	AH to be mentioned	
	(20) Battery Charging Facilities	Self-battery charging by engine driven dynamo/ alternator	
	(21) Starting Voltage	12 Volt DC	
	(22) Engine Alternator	Capacity to be mentioned (Volt, Amp, KW) Self battery charging by engine driven	
	(23) Self-Starter	Volt & KW to be mentioned	
	q. Alternator (Generator)		
	(1) Name of Manufacturer / maker	To be mentioned	
	(2) Model	To be mentioned	
	(3) Country of Origin	Group A Countries	
	(4) Country of Manufacture and Assembly	Group A Countries	
	(5) Year of Production	Not before the year of contract	
	(6) Type	To be mentioned	
	(7) Rated Prime and Standby output (KVA)	To be mentioned	
	(8) Rated Output Voltage	220 Volt Single phase and minimum 380 Volt three phase	
	(9) Frequency	50z.	
	(10) No of phases & wires	To be mentioned	
	(11) Power Factor(Cos ϕ)	Not less than 0.8	

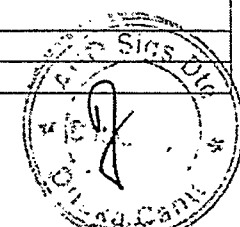
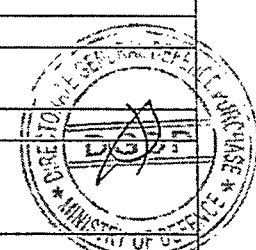


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Ser	Items/Description	Technical Specifications	To be filled by the Manufacturer/Principal
(a)	(b)	(c)	(d)
	(12) Enclosure	To be mentioned	
	(13) Voltage Regulation	Maximum $\pm 1.5\%$	
	(14) AVR	To be available (Preferably built-in)	
	(15) Ventilation	Self-ventilated air cooled	
	(16) Insulation Class	To be mentioned	
	(17) RPM	To be mentioned	
	(18) Efficiency	85% (Minimum)	
	(19) Weight of Alternator	To be mentioned	
	r. Control Panel		
	(1) Meter & Gauges	Displaying Volt, Ampere, Frequency, Fuel in Tank, Oil Pressure, Running/Operating Hour, Water Temperature, KVA, KW, RPM, Power factor (PF) etc. Must be easily visible by the operator. All alarm and data logging system should be available	
	(2) Switches	Start & Stop key/push button with auto starter provision	
	s. Cables & Terminals	4 x 25m = 100 m single core per Generator. Flexible type std/adequate size (RM to be mentioned), 3 phases with neutral power cable to be provided with each Generator with cable plugs/lugs at the delivery end & adequate size power plugs/lugs at the generator end/Out let	
	t. Tools Kits	A complete set of tool kits to be provided with each Generator (List to be provided)	

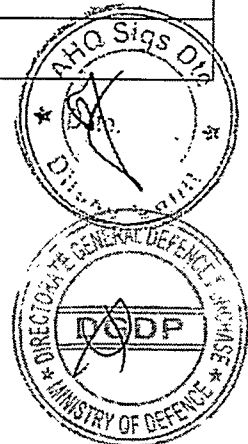
32. **List of Standard Items and Accessories (For Each Station)**

Ser	Item Name/Nomenclature	Part No/Serial No	Quantity
Radio			
a.	Radio with all accessories	To be provided	02 (Two)
Antenna & Mast			
a.	Parabolic antenna with all accessories	To be provided	02 (Two)
b.	Antenna Alignment System with all accessories		02 (Two)
c.	24 Meter Antenna Mast		02 (Two)
Interface Unit			
a.	Network Interface Unit (NIU) with all accessories	To be provided	01 (One)
Power Supply			
a.	Power Distribution and AC/DC Power supply with battery charging	To be provided	01 (One)
b.	Maintenance free sealed battery		02 (Two)
Laptop			
a.	Laptop with genuine and updated OS	To be provided	01 (One)
System Setup			
a.	System setup in military vehicle	To be provided	01 (One)



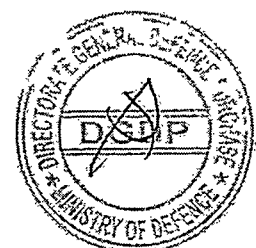
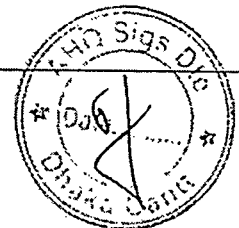
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Ser	Items/Description	Technical Specifications	To be filled by the Manufacturer/Principal	
(a)	(b)	(c)	(d)	
	Generator			
	a. Portable generator with trailer minimum 5 KVA with all accessories	To be provided	01 (One)	
	Miscellaneous			
	a. All other required accessories including Lightening Protector	To be provided	01 (One)	
33.	List of Optional Items and Accessories			
Ser	Item Name/Nomenclature	Part No/Serial No	Quantity	
	Radio			
	a. Radio with all accessories	To be provided	01 (One)	
	Antenna			
	a. Parabolic antenna with all accessories	To be provided	01 (One)	
	b. Sector Parabolic antenna with all accessories		01 (One)	
	c. Omni Directional Antenna with all accessories		01 (One)	
	d. Panel Antenna with all accessories	To be provided	01 (One)	
	e. Antenna Alignment System with all accessories		01 (One)	
	Antenna Mast			
	a. 24 Meter antenna Mast	To be provided	01 (One)	
	Interface Unit			
	a. Network Interface Unit (NIU) with all accessories	To be provided	01 (One)	
	System Setup			
	a. System setup in military vehicle	To be provided	01 (One)	
	Power Supply			
	a. Power Distribution and AC/DC Power supply w/battery charging	To be provided	01 (One)	
	b. Maintenance free sealed Battery	To be provided	01 (One)	
	Laptop			
	a. Laptop with genuine and updated OS	To be provided	01 (One)	
	b. Rugged Laptop with genuine and updated OS	To be provided	01 (One)	
	Software			
	a. Spectrum Analyzing / Path Profiling / Frequency Planning Software	To be provided	01 (One)	
	b. Network Planning & Monitoring Software	To be provided	01 (One)	
	Miscellaneous			
	a. Intercom System (for Connecting tactical Radio)	Will be provided during tender stage	01 (One)	



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Ser	Items/Description	Technical Specifications	To be filled by the Manufacturer/Principal
(a)	(b)	(c)	(d)
34.	Vehicle Management. Radio Relay equipment must have provision to be fitted on existing 3-ton lorry of BD Army	Details to be mentioned	
35.	Any other	If any item not specifically mentioned above but required technically for full range of operation, The bidder should specifies and quote such item(s) in their offer. In case of failure to specify and quote, the bidder must provide such items free of cost.	
PART - 3: TRAINING REQUIREMENT			
36.	User training	To be provided as per requirement	
37.	Operations, repair and maintenance training	To be provided as per requirement	
38.	Equipment management training	To be provided as per requirement	
39.	Books and Publications a. Operational/User Manual in English original (Book Type) b. Repair Manual in English original (Book Type) c. 100% Parts Catalogue in English original (Book Type) d. 100% Price list of Catalogue in English original (Book Type) e. A list of fast and slow moving Spares (with unit price of 5% of FOB value) in English	To be provided as per requirement	
PART - 4: REPAIR AND MAINTENANCE REQUIREMENT LESS LIST OF SPARE			
40.	Level of maintenance	Details to be mentioned	
PART - 5: LIST OF SPARES			
41.	List of standard spare parts, tools and accessories	To be mentioned and list to be provided	
PART - 6: TOOL LIST FOR DIFFERENT LEVEL OF MAINTENANCE			
42.	SST and SSM a. For Repeater Station b. For Generator & Trailer	Details To be mentioned and to be provided	

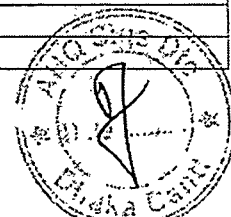
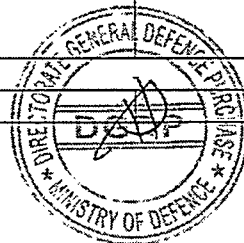


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**ANNEX A TO
DGDP LETTER NUMBER
06.06.0000.215.49.23/TEST & TRIAL
DATED: 06 MAY 2024**

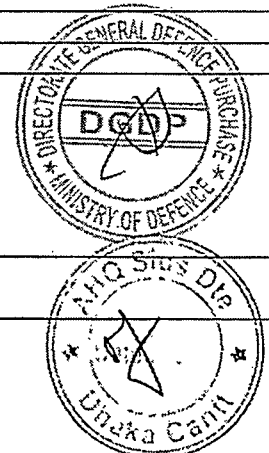
TECHNICAL SPECIFICATION OF RADIO RELAY TERMINAL STATION COMPLETE WITH STANDARD TOOLS AND ACCESSORIES

Ser	Items/Description	Technical Specifications	To be filled by the Manufacturer/Principal
(a)	(b)	(c)	(d)
PART-1: GENERAL SPECIFICATION			
1.	Nomenclature	Radio Relay Terminal Station (Category - 1)	
2.	Brand Name	To be mentioned	
3.	Type	To be mentioned	
4.	Make and Model	To be mentioned	
5.	Country of Origin	Group A Countries	
6.	Country of Manufacture	Group A Countries	
7.	Country of Assembly	Group A Countries	
8.	Year of Manufacture	Not earlier than the calendar year of contract.	
9.	Name of Manufacturer with complete address (office address, Telephone, Fax, Email and web address)	To be mentioned	
10.	Name of Principal with complete address (office address, Telephone, Fax, Email and web address)	To be mentioned	
11.	Name of Local Agent with complete address (office address, Telephone, Fax, Email and web address)	To be mentioned	
12.	Color	Metallic Bronze (MB) Green	
PART-2: TECHNICAL SPECIFICATION			
13.	Frequency Range	To be mentioned	
14.	Frequency Band	NATO Band III / Band III + / Band IV or any other suitable band	
15.	Channel Spacing	125 KHz or better	
16.	Number of Channels	To be mentioned	
17.	Communication Range:		
	a. Point to Point	Minimum 25 km	
	b. Point to Multipoint (Optional)	Details to be mentioned	
18.	Data Transfer Rate	64 Mbps or more (at minimum range)	
19.	Power output with auto power control	To be available	
20.	Power Source	Should work with both AC and DC power supply along with power management system: a. AC: Input Voltage Range:170V-250V, 50Hz ±5% b. DC: 12V/24V DC ±10% Secondary battery / Special Battery system which must be rechargeable at 170V-250V, 50Hz ±5% AC power system	
21.	Power Consumption	To be mentioned	
22.	Spectrum Analyzing / Path Profile / Frequency Planning Software (Optional)	To be mentioned	
23.	Antenna		
	a. Suitable types of antenna to cover	To be mentioned	



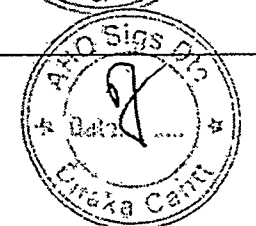
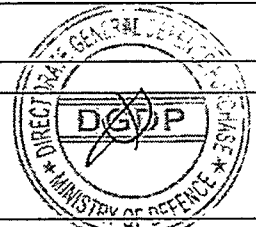
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Ser	Items/Description	Technical Specifications	To be filled by the Manufacturer/Principal
(a)	(b)	(c)	(d)
	the expected communication range and provision to fix in a 3-ton lorry or any shelter based communication vehicle used in Bangladesh Army		
	b. <u>Antenna Element</u> : One antenna will be used for Tx/Rx Operation and to cover the complete frequency band	To be mentioned	
	c. <u>Antenna Mast</u> : (1) The Antenna Mast should be telescopic and it should be possible to deploy the mast section to full height of max 24m with lightning protector (2) Antenna should be connected with appropriate length of cable for outdoor and/or indoor unit operations	To be mentioned	
	d. Antenna arrangement will be provided to rotate the Antenna by $\pm 180^\circ$ (360° preferable) in horizontal plane and $\pm 10^\circ$ in vertical plane from the ground	To be mentioned	
	e. The Antenna when erected, should be able to withstand a wind velocity of 80 km/h (Operational) and 120 km/h (Survival)	To be mentioned	
	f. The vendor will indicate weight and other spec of Antenna (Planar antenna, Parabolic antenna, Sectoral antenna, Omni directional antenna, Array antenna etc.) being offered	To be mentioned	
	g. The Antenna Mast should preferably have double rotator system (Two Antenna can be fixed in one Mast)	To be mentioned	
	h. Switching between the frequency bands to be automatic	To be mentioned	
24.	Feeder/Cable (Both for Indoor and Outdoor Operation)	PoE, Cat 5e or better Cable is preferable Details to be mentioned	
25.	Details of Radio		
	a. Dimension (Radio)	To be mentioned	
	b. Weight (Radio only)	To be mentioned	
	c. Maximum Tx power	To be mentioned	
	d. Receiver Sensitivity	To be mentioned	
	e. Minimum Available Output Ports: (1) Fast Ethernet (FE) port (2) Fiber Optic (FO) port	To be mentioned	
26.	Security Feature/ Encryption Facility		
	a. ECCM	(1) Must have Frequency Hopping (2) No of hops to be mentioned	
	b. Voice and Data Encryption	Details to be mentioned	
	c. Modulation	Details to be mentioned	
27.	Interface / Integration Facilities	Graphical User Interface (GUI) based remote configuration capability with the provision of integrating standard router / switch / E1 Converter / PCM Voice Gateway through open standard interface / port	
28.	<u>NMS</u> . For the purpose of network management the following will be	Details to be mentioned	



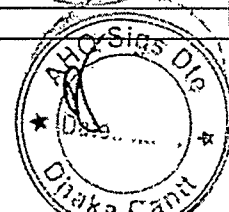
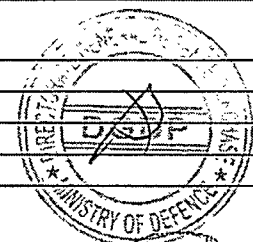
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Ser	Items/Description	Technical Specifications	To be filled by the Manufacturer/Principal
(a)	(b)	(c)	(d)
	required:		
	a. The NMS should be Incorporated with the equipment or it should be possible to configure and monitor the equipment over LAN / WAN. (Optional)	Details to be mentioned	
	b. <u>Laptop / Computer</u> . Laptop/ Computer from a renowned OEM should be provided with each equipment incorporating following or better features.	Details to be mentioned	
	(1) Brand	International Reputed Brand	
	(2) Make and Model	To be mentioned	
	(3) Country of Origin	Group A Countries	
	(4) Country of Manufacture / Assembly	Group B Countries	
	(5) Processor	Minimum Intel Chipset Core i5 (8th Generation above) or better	
	(6) Processor Speed	Minimum 3 GHz or better	
	(7) Memory	Minimum 16GB DDR4 1600MHz or higher	
	(8) Other Ports / Interfaces / Connectivity	(1) Minimum 3xUSB (2.0 and 3.0), HDMI, SIM Card slot (optional), SD Card slot, Headphone/ Microphone Combo Jack, Smart Card Reader (Optional), and HD Audio (2) Required Network Interface / connector (Open Standard) for connecting to the Radio Relay system (if required).	
	(9) Operating System	Windows 10 Pro version (Licensed copy) or better	
	(10) Security	(a) <u>User and System Security</u> : Option for Fingerprint reader, TPM Module (b) <u>Physical Security</u> : Steel reinforced cable lock slots and hard drive locks	
	c. The equipment will incorporate SNMP (Simple Network Management Protocol) management software (SNMP v2/ SNMP v3 or better) facility from a SNMP manager	Details to be mentioned	
29.	Environment Protection		
	a. Shock/ Drop Proof	6 drops on hard surface from 122 cm height	
	b. Vibration	5 Mins continuous vibration in the machine	
	c. Immersion Proof	30 mins immersion in 1 meter depth	
	d. Dust Proof	Military Standard 810 E/F/G	
	e. Temperature	Operating: -5 ^o to + 55 ^o C Storage: -10 ^o to + 60 ^o C	
30.	Special Requirement		
	a. The system should also provide the communication performance graph in all kinds of territorial and weather condition for Bangladesh	Details to be mentioned	
	b. Vendor should provide rack, hard casing for antenna, operator console for	Details to be mentioned	



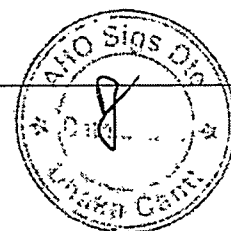
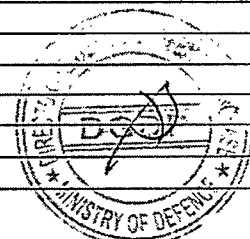
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Ser	Items/Description	Technical Specifications	To be filled by the Manufacturer/Principal
(a)	(b)	(c)	(d)
	all equipment with all accessories and provision to fix in a 3-ton lorry or any shelter-based communication vehicle used in Bangladesh Army		
31.	Generator		
a.	Nomenclature	Generator 5 KVA (minimum)	
b.	Name of Manufacturer / Maker	To be mentioned	
c.	Name of the Principal with full address	To be mentioned	
d.	Name of the Local Agent with full address	To be mentioned	
e.	Make and Model	To be mentioned	
f.	Country of Origin	Group A countries	
g.	Country of Manufacturer	Group A countries	
h.	Country of Assembly	Group A countries	
j.	Year of Production	Not before the year of contract	
k.	Overall Length, Width & Height (With Canopy)	To be mentioned	
l.	Overall Weight with Canopy	To be mentioned	
m.	Output of the Generator		
(1)	Prime	Minimum 5 KVA	
(2)	Stand by	To be mentioned	
n.	Working Condition		
(1)	Operation	Generator set to be able to sustain 12 hours continuous operation per day at prime load	
(2)	Noise	The generator must have noise suppression system and able to operate in the open and in all-weather condition	
(3)	Canopy	Should be made of anticorrosive steel sheet and fireproof painting. Should be able to attenuate sound up to (maximum) db 90 at 1 meter having lockable louvers, doors. Glass windows for monitoring the meters to be provided. Colour – MB Green	
(4)	Transportation	The generator must be easily portable	
(5)	Mounting	The generator to be mounted on its base with anti-vibration mounting	
(6)	Starting System	Self-starter with auto provision to be provided	
(7)	Safety Feature	The generator must have shutdown facility with sound warning against over voltage, over current, over load, Low/high oil pressure over temperature etc	
(8)	Overall Efficiency	To be mentioned (To be compatible between engine and alternator)	
p.	Engine		
(1)	Name of Manufacturer/ Maker	To be mentioned	
(2)	Model	To be mentioned	
(3)	Country of Origin	Group A Countries	
(4)	Country of Manufacturer and Assembly	Group A Countries	
(5)	Year of Production	Not before the year of contract	



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Ser	Items/Description	Technical Specifications	To be filled by the Manufacturer/Principal
(a)	(b)	(c)	(d)
	(6) Type of Engine	4 Stroke Octane Engine	
	(7) Numbers of Cylinders	To be mentioned	
	(8) Capability	Prime power available at variable load with a load factor not exceeding 80% of prime power rating, over load of 10% is permitted for 1 hour in every 12 hours operation	
	(9) Bore/Stroke	To be mentioned	
	(10) Piston Displacement	To be mentioned	
	(11) Compression Ratio	To be mentioned	
	(12) Output power (KW) with RPM	To be mentioned	
	(13) Cooling System	Liquid / Air cooling	
	(14) Turbo charger (if available)	To be mentioned	
	(15) Specific Fuel consumption Liters/ hour at full load	To be mentioned	
	(16) Engine Efficiency	To be mentioned	
	(17) Weight of Engine	To be mentioned	
	(18) Fuel Tank Capacity	To be mentioned (for minimum 12 hours continuous operations at full load)	
	(19) Battery for start the Generator (12 Volt)	AH to be mentioned	
	(20) Battery Charging Facilities	Self-battery charging by engine driven dynamo/ alternator	
	(21) Starting Voltage	12 Volt DC.	
	(22) Engine Alternator	Capacity to be mentioned (Volt, Amp, KW) Self battery charging by engine driven.	
	(23) Self- Starter	Volt & KW to be mentioned	
q. Alternator (Generator)			
	(1) Name of Manufacturer / maker	To be mentioned	
	(2) Model	To be mentioned	
	(3) Country of Origin	Group A Countries	
	(4) Country of Manufacture and Assembly	Group A Countries	
	(5) Year of Production	Not before the year of contract	
	(6) Type	To be mentioned	
	(7) Rated Prime and Standby output (KVA)	To be mentioned	
	(8) Rated Output Voltage	220 Volt Single phase and minimum 380 Volt three phase	
	(9) Frequency	50 Hz.	
	(10) No of phases & wires	To be mentioned	
	(11) Power Factor (Cos ϕ)	Not less than 0.8	
	(12) Enclosure	To be mentioned	
	(13) Voltage Regulation	Maximum $\pm 1.5\%$	
	(14) AVR or Similar Facility	To be available (Preferably built-in)	
	(15) Ventilation	Self-ventilated air cooled	
	(16) Insulation Class	To be mentioned	
	(17) RPM	To be mentioned	
	(18) Efficiency	85% (Minimum)	
	(19) Weight of Alternator	To be mentioned	
r. Control Panel			
	(1) Meter & Gauges	Displaying Volt, Ampere, Frequency, Fuel in Tank, Oil Pressure, Running/Operating Hour, Water Temperature, KVA, KW, RPM, Power factor (PF) etc. Must be easily visible	



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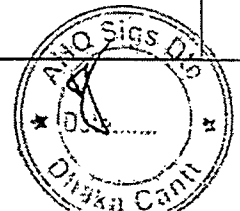
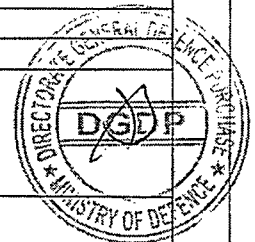
Ser	Items/Description	Technical Specifications	To be filled by the Manufacturer/Principal
(a)	(b)	(c)	(d)
		by the operator. All alarm and data logging system should be available	
	(2) Switches	Start & Stop key/push button with auto starter provision	
	s. Cables & Terminals	4 x 25m = 100 m single core per Generator. Flexible type std/adequate size (RM to be mentioned), 3 phases with neutral power cable to be provided with each Generator with cable plugs/lugs at the delivery end & adequate size power plugs/lugs at the generator end/Out let	
	t. Tools Kits	A complete set of tool kits to be provided with each Generator (List to be provided)	

32. **List of Standard Items and Accessories (For Each Station)**

Ser	Item Name / Nomenclature	Part No / Serial No	Quantity	Country of Manufacture
Radio				
a.	Radio with all accessories	To be provided	01 (One)	To be mentioned
Antenna & Mast				
a.	Antenna with all accessories	To be provided	01 (One)	To be mentioned
b.	Antenna Alignment System with all accessories		01 (One)	
c.	24 Meter Antenna Mast		01 (One)	To be mentioned
Interface Unit				
a.	Network Interface Unit with all accessories	To be provided	01 (One)	To be mentioned
Power Supply				
a.	Power Distribution and AC/DC Power supply with battery charging	To be provided	01 (One)	To be mentioned
b.	Maintenance free sealed battery		02 (Two)	
Laptop				
a.	Laptop with genuine and updated OS	To be provided	01 (One)	To be mentioned
System Setup				
a.	System setup in Military Vehicle	To be provided	01 (One)	To be mentioned
Generator				
a.	Portable generator minimum 5 KVA with all accessories	To be provided	01 (One)	To be mentioned
Miscellaneous				
a.	All Other Required Accessories including Lightning Protector	To be provided	01 (One)	To be mentioned

33. **List of Optional Items and Accessories**

Ser	Item Name / Nomenclature	Part No/Serial No	Quantity	Country of Manufacture
Radio				
a.	Radio with all accessories	To be provided	01 (One)	
Antenna				
a.	Parabolic antenna with all accessories	To be provided	01 (One)	
b.	Sector Antenna with all accessories		01 (One)	
c.	Omni Directional Antenna with all accessories		01 (One)	
d.	Panel Antenna with all accessories		01 (One)	
e.	Antenna Alignment System with all accessories		01 (One)	



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Ser	Items/Description	Technical Specifications	To be filled by the Manufacturer/Principal
(a)	(b)	(c)	(d)
	Antenna Mast		
	a. 24 Meter Antenna Mast	To be provided	01 (One)
	Interface Unit		
	a. Network Interface Unit with all accessories	To be provided	01 (One)
	System Setup		
	a. System setup in military vehicle	To be provided	01 (One)
	Power supply		
	a. Power Distribution and AC/DC Power supply w/battery charging	To be provided	01 (One)
	b. Maintenance free sealed Battery		01 (One)
	Laptop		
	a. Laptop with genuine and updated OS	To be provided	01 (One)
	b. Rugged Laptop with genuine and updated OS		01 (One)
	Software		
	a. Spectrum Analyzing/Path Profiling / Frequency Planning Software	To be provided	01 (One)
	b. Network Planning & Monitoring Software		01 (One)
	Miscellaneous		
	a. Intercom System (for Connecting Tactical Radio)	To be provided	01 (One)
34.	Vehicle Management. Radio Relay equipment must have provision to be fitted on existing 3-ton lorry of BD Army	Details to be mentioned	
35.	Any other	If any item not specifically mentioned above but required technically for full range of operation, The bidder should specify and quote such item(s) in their offer. In case of failure to specify and quote, the bidder must provide such items free of cost.	
PART - 3: TRAINING REQUIREMENT			
36.	User training	To be provided as per requirement	
37.	Operations, Repair and Maintenance training	To be provided as per requirement	
38.	Equipment Management training	To be provided as per requirement	
39.	Books and Publications a. Operational/User Manual in English original (Book Type) b. Repair Manual in English original (Book Type) c. 100% Parts Catalogue in English original (Book Type) d. 100% Price list of Catalogue in English original (Book Type) e. A list of fast and slow moving Spares (with unit price of 5% of FOB value) in English	To be provided as per requirement	
PART - 4: REPAIR AND MAINTENANCE REQUIREMENT LESS LIST OF SPARE			
40.	Level of maintenance	Details to be mentioned	
PART - 5: LIST OF SPARES			
41.	List of standard spare parts, tools and accessories	To be mentioned and list to be provided	
PART - 6: TOOL LIST FOR DIFFERENT LEVEL OF MAINTENANCE			
42.	SST and SSM a. For Repeater Station b. For Generator	Details to be mentioned and to be provided	

