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TENDER SPECIFICATION – VHF REPEATER STATION (DIGITAL)

1. **Name of Equipment.** : VHF Repeater Station (Digital).
2. **Purpose.** : To expand VHF communication range by using Walkie Talkie sets as well as communication via IP Linking Digital Repeater Station.
3. **Quantity.** : 10 (Ten) complete sets with all standard accessories.
4. **Type.** : Marine Type or to be mentioned.
5. **Brand.** : ICOM/ MOTOROLA/ ROHDE & SCHWARZ.
6. **Model.** : IC-FR5300/ MOTOTRBO™ SLR 8000/ ROHDE & SCHWARZ/ Latest production/ Version/ Series.
7. **Country of Origin.** : Japan/ USA/ Germany.
8. **Country of Manufacturer.** : Japan/ USA/ Germany/ Australia/ New Zealand/ EU Countries/ UK/ Singapore/ Malaysia/ Mexico/ Canada.
9. **Original Equipment Manufacturer (OEM).** : Name & Full address with e-mail of OEM is to be mentioned.
10. **Supplier.** : Name & Full address with e-mail of Supplier is to be mentioned.
11. **Year of Manufacture.** : 2025 or later.
12. **Date of Introduction of the Offered Model in the Market.** : To be mentioned.
13. **Environmental Condition.**
 - a. Temperature : Minimum -20° to +55° C.
 - b. Humidity : Non-condensing.
 - c. Storage Temperature : To be mentioned.
14. **Qualification of Bidders.** Only the genuine manufacturers or their authorized dealer (principal) can submit quotation through their authorized agents enlisted at DGDP. In case of dealer (principal), manufacturers certificate of authorization has to be submitted with the offer.
15. **Scope of Supply.** The equipment for each VHF Repeater set are to be supplied fulfilling the technical specifications and with all required standard accessories which are required to obtain 100% performance (Walkie Talkie communication through Repeater Station) of the Repeater Station whether it is mentioned in the tender specification or not. A list of offered standard accessories to be attached with the quotation. In this regards the Bangladesh Navy (BN) reserve the right to reduce/ increase the quantity of item mentioned in the tender.



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16. **Technical Specification.**
features:

The offered VHF Repeater sets must have following

Ser	Name	Description
GENERAL		
a.	Range coverage	15 - 20 KM
b.	Frequency coverage	136 - 174 MHz
c.	Number of channels	32 channels or more
d.	Channel spacing	6.25/12.5/ 25 KHz
e.	Type of emission	16K0F3E, 14K0F3E, 8K50F3E, 4K00F1E / F1D, 1K0F3E, 16K0F3E, 7K60FXD, 7K60F7D, 7K60FXE, 7K60F7E, 7K60F7W Or to be mentioned
f.	Frequency stability	±0.5-2.5 ppm or better.
g.	Antenna impedance	50 Ω
h.	Antenna gain	9 dB or higher
j.	Networking compatibility	IP Multi-site connectivity
k.	Operating temperature range	Minimum -20°C to +55°C
l.	Power supply voltage	AC and DC to be mentioned
m.	Maximum Duty Cycle	100%
n.	Dimensions (W×H×D)	To be mentioned
p.	Weight	To be mentioned
q.	Battery Backup	In case of AC power failure the repeater should have the facility to continue operation automatically with backup battery. The backup duration of battery is to be at least 24 hours.
r.	Life Expectancy of the Equipment	To be mentioned
s.	Compatibility	The offered Repeater must be compatible with existing TDMA/FDMA/CDMA protocol based Walkie Talkie set in digital and analog mode.
t.	Effective IP connectivity among sites	Effective IP connectivity among the sites is to be established as required by BN. Necessary hardware and software are to be provided for data security. Detailed is to be mentioned. In this regards internet facility will be provided by BN.
u.	Number of Simultaneous Channel Operation at a time in Digital and in Analogue mode	To be mentioned.



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<u>TRANSMITTER</u>		
v.	Power output	100 Watt
w.	Maximum frequency deviation	± 5.0 kHz/ ± 2.5 kHz, (± 5.0 kHz/ ± 2.5 kHz) Analog and (± 1.203 kHz- 1.471 kHz) Digital Or to be mentioned
x.	Spurious emissions	80 dB typ or to be mentioned
y.	FM hum and noise (25/12.5 KHz)	83/77 dB typ or better
z.	Audio harmonic distortion	0.9% typ. (40% deviation) or to be mentioned
aa.	FSK error	0.6% maximum (digital)
<u>RECEIVER</u>		
ab.	Sensitivity	a. Digital (1-5% BER): (0.18 to 0.32) μ V typ or better b. Analog (12dB SINAD): (0.22 to 0.25) μ V typ or better
ac.	Adjacent channel selectivity	a. Digital: 66 dB typ or better b. Analog: 84/83/78 dB typ or better
ad.	Spurious response deviation	a. 87 dB μ V typ. emf (Digital) b. 85 dB typ (Analog) or to be mentioned
ae.	Intermodulation rejection	87/ 78 dB typ or 78 dB μ V emf typ. (Digital) or 81 dB typ (Analog) or to be mentioned
af.	Hum and noise	-56/-52 dB typ or to be mentioned
ag.	Audio output power	2 watt or more

17. **RF Cable.** 100 mtrs high quality 1/2" dia Foam Helix low loss Cable with short Jumper Cable & Connector is to be supplied with each set.

18. **Repeater Antenna Tower.** Repeater Antenna Tower/ pipe Mast (local/ foreign) for installing the supplied antennas (is to be well reputed branded) to be provided as per requirement. Detail to be mentioned.

19. **Programming Kits/ Software.** Three sets of programming kit and software are to be provided for programming/ cloning the VHF Repeater sets and peripheral units. Within the warranty period the updated version of the programming software is to be provided (if necessary) by the bidder free of cost.



20. **Programming.** Upon receipt of the consignment at Naval Stores Depot Chattogram, the supplier is to assist BN reps to programme all VHF Repeater sets at BN Dockyard with given frequencies. The supplier is to show BN reps the procedure of programming so that BN can reconfigure/ reprogramme the sets any time later if requires. Thereafter "Bench Test" to be completed at BN Dockyard in presence of supplier's engineer.

21. **Installation, Test/ Trial & Acceptance.**

a. The supplier will install the sets with proper earthing in presence of BN personnel at respective BN Units as soon as possible and will carry out necessary test and trials. The supplier will show BN personnel routine operation and maintenance procedure of the sets. For the test trial and operation of the set, supplier shall provide all required items (equipment, accessories and other associated supporting materials including consultancy fee (if applicable)) at free of cost whether mentioned in contract or not. Supplier's Engineer will ensure the competency of BN personnel in operation and maintenance of the set.

b. If any equipment is found defective during installation, test and trial, they are to be replaced immediately by new ones free of cost (including freight, insurance and all other cost). BN is to return the defective equipment after receiving the replaced item.

c. Cost for installation is to be quoted and borne by the supplier.

d. Any damage to on board existing equipment, items, machineries are to be compensated by bidder during installation and make the damage items operational with its full functionality.

e. Installation, test and trial must be completed within 30 working days by supplier after issuing allocation by BN.

f. On satisfactory completion of test/ trials and installation, BN will issue final acceptance certificate.

22. **Installation Materials.** Standard installation materials are to be provided for all equipment. List to be provided by the bidder.

23. **Tools/ Test Equipment.** Special tools, test equipment and kits necessary for maintenance/repair are to be quoted, indicating itemised price.

24. **Standard Accessories.** Standard accessories and assemblies will include all items and accessories, which are essential to operate the equipment whether those are mentioned in the specification or not. A list of such items/ accessories/ assemblies with itemized price is to be included in the quotation as follows:

Ser	Part Number/ Model	Description	Brand	Country of Origin	Country of Manufacturer	Qty (EA)	Unit Price	Total Amount	Remarks
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25. **Price of Optional Accessories.** Unit prices for optional accessories are to be quoted separately as follows:

Ser	Part Number/ Model	Description	Brand	Country of Origin	Country of Manufacturer	Qty (EA)	Unit Price	Total Amount	Remarks
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26. **Quality Assurance Certificate.** The Quality assurance certificate (QAC) in respect of the associated equipment in regard to its manufacturing and performance is to be provided by the manufacturer at the time of delivery.



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27. **Documents.** The following documents are to be submitted with the offer:
- Certificate of assurance for minimum 10 years supply of spares with reasonable price.
 - Itemised prices list of all spare parts that would be required within 05 years for repair/ maintenance. Original brochure/ catalogue of the offered model of VHF Repeater sets.
 - Principle/ manufacturer's/ distributor's/ agent/ dealers certificate mentioning that the supplier (enlisted bidder) is authorised for this quotation/offer and will be liable to fulfil all contractual obligation if the firm is awarded contract.
 - Radio Equipment Importer and Vendor Enlistment Certificate from BTRC (For Local Agent only).
28. **Manual.** Following documents in English are to be provided free of cost with the supplied item:
- Operators Manual.** One set of original operator's manual (covering major system units) to be provided with each VHF Repeater sets.
 - Technical Manual.** Two sets of original technical operating manuals (covering principle of design and operations, detail circuit diagram, trouble shooting flowchart, parts catalogue) for each supplied VHF Repeater sets /accessories is to be provided.
 - Workshop Manual.** Two sets of workshop level repair manual in original.
29. **Warranty.**
- Supplier will provide 03 (three) years warranty certificate given by the principal/manufacturer for trouble free operation of VHF Repeater sets and its accessories wef the date of final acceptance by BN. If any component of the supplied item becomes defective during the warranty period, the warranty (for defective component) shall be extended automatically for the period of the subject component remains defective. Moreover, in case of any defective item(s) or component if the whole set defective or non-operational then the whole warranty of the said set shall be extended automatically for the period of subject component remains defective.
 - For warranty repair/ replacement, the supplier will collect the defective item from NSD, Chittagong/ NSSD, Dhaka (as applicable) and re-supply the same to collecting place after warranty repair or for replacement within 90 (ninety) days from the date of defect at no cost to the purchaser.
30. **Extension of Warranty.** During the warranty period, if the item/ equipment remains non-operational for any action pending by the supplier, the warranty period will be extended for the non operational period from the date of rectification. The warranty covers all parts and labour (including service engineer's cost) throughout the warranty period.
31. **After Sales Service.** After sale service is to be provided by the local agent within warranty period and thereafter as and when required (at least 10 years). Extension of warranty will be considered as warranty period.
32. **Delivery Schedule.** Within 180 days after signing of contract.



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33. **Delivery Destination.** The supplier will arrange delivery of all items to the NSD Chattogram. All sea/ air port formalities, customs clearance, transportation etc to be completed/ arranged by supplier. BN may be asked for necessary certificates/ documents.
34. **Consignee.** The Commanding Officer, Naval Stores Depot, Chattogram, New Mooring, Chattogram, Bangladesh/ Officer In-charge, Naval Stores Sub Depot Dhaka, Namapara Khilkhet, Dhaka 1229.
35. **Port of Shipment.** The port of country of origin/ manufacturer/ principal. To be mentioned in the offer.
36. **Source of Supply.** The source of supply is to be from the country of manufacturer or country of origin/ principal. To be mentioned.
37. **Validity of Offer.** Offer should remain valid up to 30 June 2026.
38. **Terms of Payment.** 80% of total CPT/ CFR value will be paid on completion of shipment of the contracted goods. Remaining 20% payment and 100% installation cost will be made on production of "Acceptance Certificate" rendered by BN following successful test and trial upon delivery of items as per contract.
39. **Price Quotation.** VHF Repeater sets price is to be quoted in FC without VAT/ Tax etc as follows:
- FOB price.
 - Air/ Sea Freight.
40. **Compliance Matrix.** Bidder will submit a Compliance Matrix with the offer stating "COMPLIANT" or "NON COMPLIANT" against every Clause and Sub-Clause of this Specification. All "COMPLIANT" statements are to be explained adequately and should be supported by technical brochures/documentation. Insufficient documentation shall be considered as disqualification. (If required, a set of Technical /Operator Manual may be included with the offer).
41. **Certificate and Document of Authentication.** The concerned supplier must provide following original certificate(s)/ document(s) as applicable with the quotation and during delivery of items as regard to the genuinity of source and item(s) in order to establish chain of links from the original source to supply of items:
- One certificate by the Original Equipment Manufacturer (OEM) in favour of the supplier/ local agent (in case of OEM as principal).
 - Two certificates, one by the OEM to authorized agent and other by the authorized agent to supplier/ local agent (in case of authorized agent as principal).
 - Three certificates, first one by OEM to authorized agent, second one by authorized agent to sub-agent and third one by sub-agent to supplier/ local agent (in case of sub-agent as principal). If the supplier/ local agent is unable to obtain the first certificate (by OEM to authorized agent), then it has to produce relevant document to prove agency-ship of its claimed agent of the recognized manufacturer.
 - Quality Assurance Certificate (QAC) by the Original Equipment Manufacturer (OEM).



42. **Compliance Statement.**

A compliance statement fulfilling all the requirement of the tender is to be submitted for evaluation of the quotations. An incomplete compliance statement may attribute to cancellation of the offer. If any clause of this specification does not commensurate with offered item, the deviation has to be spelt out clearly.

