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**TENDER SPECIFICATION - HF TRANSCEIVER (400-500 W)**

1. **Name of the Equipment.** : Military standard HF Transceiver (400-500W).
2. **Purpose.** : To establish medium/ long range HF radio communications among ships and shore stations.
3. **Quantity.** : 04 (Four) complete sets with all standard accessories.
4. **Type.** : Marine Type or to be mentioned.
5. **Brand.** : CODAN/ ROHDE & SCHWARZ/ SUNAIR.
6. **Model.** : NGT MR/ M3SR/ RT-9000E/ R-9000D/ T-9000D/ Latest production model/ Version/ Series
7. **Country of Origin.** : Australia/ Germany/ USA.
8. **Country of Manufacturer.** : Australia/ Germany/ USA.
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 Manufacturing** : 2025 or later.
12. **Classification/ Standard.** : The offered items/ equipment under the scope of supply are to fulfill to the requirement of MIL-STD-810G (Dust, Shock, Vibration, Humidity, Fungus, Altitude), Ingress Protection IP43, MIL-STD-810G method 510.5 and other internationally recognized standards. The applicable classification standard(s) of offered items are to be mentioned and should be well supported by the certificates/ OEM brochures.
13. **Environmental condition:**
  - a. Temperature : -30° to +60° C.
  - b. Humidity : non-condensing.
  - c. Storage Temperature : To be mentioned



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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 HF Transceiver (500W) set is to be supplied fulfilling the technical specifications and complete in all respect with all required standard accessories (any additional devices, hardware, software and/ or technical support) and attachment which are required to obtain 100% performance of the sets whether it is mentioned in the specification or not. Itemised are to be quoted separately in offer. In this regards the Bangladesh Navy (BN) authorities reserve the right to reduce/ increase the quantity of item mentioned in the tender.
16. **Technical Specification.** The offered HF Transceiver (400-500 W) sets must have following features:

Ser	Name	Description
<b><u>GENERAL</u></b>		
a.	Range coverage	World Wide.
b.	Channels capacity	1000 simplex or semi
c.	Scanning	Voice, Selcall, ALE scan capabilities. Dwell time have to be mentioned.
d.	Interfaces	USB (Handset or Console). Serial RS232 (supports NMEA-0183 GPS). Ethernet (TCP/IP, supports remote control) or to be mentioned
e.	Remote Operation	Capable to operate from remote location.
f.	Compliance	To be mentioned ( i.e. CE, NTIA, FCC).
g.	Temperature range and humidity	a. -20°C to +55°C or better. b. 95%, non-condensing.
h.	Display	Large high-resolution, sunlight-readable colour display, and intuitive menu system
j.	Antenna Type	Compatible latest antenna (Bi-conical Dipole/ Sloping Long Wire (SLW)/ Whip antenna/ Inverted L antenna) for better performance is to be supplied with each HF Transceiver. Purchaser will select type of antenna(s).





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<b><u>RF UNIT</u></b>		
k.	Frequency range	a. Transmit: 1.6 to 30 MHz. b. Receive: 250 kHz to 30 MHz.
l.	Frequency stability	±0.3 ppm or less from -30°C to +60°C
m.	Modes	Single sideband (J3E), USB/LSB, ISB (B7D or B2B) AM (H3E), CW (J2A, J2E), AFSK (J2B), FSK (J2D, F1B), Digital Voice and Data (G1D) (SDR)
n.	Output power	500 W PEP ±1 dB, 300W average.
p.	Duty cycle	100% normal speech over full temperature range 100% all modes up to maximum ambient 45°C
q.	RF output impedance	50 Ω
r.	Filter bandwidths	2.4 kHz standard.
s.	Programming	To be mentioned.
t.	Transmitter specifications	a. Spurious & harmonic emissions: Better than <69 dB. b. Carrier suppression: Better than 65 dB. c. Sideband suppression: 70 dB or better.
u.	Receiver specifications	a. Sensitivity: 0.12 µV, -125 dBm for 10 dB SINAD. b. Selectivity: >70 dB at -1 kHz and +4 kHz. c. Image rejection: >95 dB. d. Spurious response: >85 dB.
v.	Switching speed	<25 ms.
<b><u>ELECTRICAL &amp; MECHANICAL</u></b>		
w.	Operating range (V)	10 to 15 V DC.
x.	Supply current (VA)	Rx: 500 mA & Tx: 8 A or to be mentioned.
y.	Protection	Safe under all load conditions bypass to 500W from Transceiver in the event of excess VSWR, excess heat sink temperature & internal fault conditions.
z.	Size (RF Unit)	To be mentioned.
aa.	Weight (RF Unit)	To be mentioned.
<b><u>OTHERS</u></b>		
ab.	High speed data communication (HF data modem) facility.	Compatible Hardware and Software for HF mail server and HF email client. Supplied Hardware and Software must be compatible to use with Data Message Terminal running on minimum Windows 10 (64 bit) or better. Offered High speed data communication facilities must be compatible with existing BNL HF mail server and HF email client.
ac.	Encryption	Offered set must have voice and data encryption/scrambler facilities that must be compatible with existing system
ad.	Vocoder	MELPe (1200/2400 bit/s); TWELP (600/1200/2400 bit/s).
ae.	Frequency Hopping	a. Hop rate: 6/12/25 hops per second (user programmable) b. Security: 128 bit. c. Number of hop plans: 32. d. Key code length: 18 digits. e. PIN length: 10 digits.



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af.	Environmental Compatibility	The offered HF Transceiver (500W) has to be complied with Ingress protection (MIL-STD-810G method 510.5) and MIL-STD-810G (Dust, Shock, Vibration, Humidity, Fungus, Altitude)
ag.	Supporting Documents	All supporting documents (ICD, IRS, booklets, leaflet, catalogue, brochure, drawing etc) and detailed particulars of the offered item to be provided.

**POWER AMPLIFIER**

ah.	RF Power Output	400-500W.
aj.	Frequency range	1.6 to 30 MHz.
ak.	Power supply	100 to 240 V AC $\pm 10\%$ , 50 / 60 Hz single phase
al.	Protection	Safe under all load conditions Bypass to (400-500W) from transceiver in the event of excess VSWR, excess heatsink temperature or internal fault conditions
am.	Cooling System	Fan forced front panel exhaust Thermostatically controlled dual speed or better .
an.	Size (H x W x D)	To be mentioned.
ap.	Weight	To be mentioned.

**AUTOMATIC ANTENNA TUNER**

aq.	Frequency range	1.6/2 to 30 MHz
ar.	Power rating	400-500 W or more.
as.	Duty cycle	100%
at.	VSWR	$\leq 1.5:1$
au.	Memory Channel	To be mentioned.
av.	Operational temperature	20°C to +55°C
aw.	Certifications	MIL-STD-810G
ax.	Input voltage	115 to 240 VAC

**OPTIONAL FEATURE (TO BE QUOTED SEPARATELY AS OPTIONAL)**

ay.	3G ALE & Digital Voice & 2G Data (optional)	3G ALE system to be quoted separately as optional. The 3G ALE must include voice messaging feature and software supplied to provided chat, file transfer and email capabilities. Received chat messages must be displayed on transceiver display when the data software disconnected
az.	Ethernet/USB Connectivity feature	There should be an option for Ethernet Connectivity feature so that we can operate the Radio from far away if needed using a LAN or WAN.
ba.	Software (Virtual) Control Point feature	There should be a software (virtual) control point available so that we can control and operate the radio using an existing Navy computer or laptop with ethernet connection

17. **Cable.** High quality compatible feeder cable and control cable (60m for each set) with minimum attenuation (approx 1 watt per 10 mtr) is to be supplied with each set.





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18. **Programming Kits/ Software.** Three sets of original programming kit and software is to be provided for programming/ cloning the HF Transceiver (400-500 W) sets and peripheral's units. Within the warranty period the updated version of the programming software is to be provided (if necessary) by the bidder free of cost.

19. **Programming.** Upon receipt of the consignment at Naval Stores Depot Chattogram, the supplier's engineer is to assist BNL reps to programme all sets at BNL Dockyard with given frequencies. The supplier's engineer is to show BNL personnel, the procedure of programming the sets so that BN personnel can reconfigure/ re-programme the sets any time later if required. Thereafter "Bench Test" is to be conducted at BNL Dockyard in presence of supplier's engineer.

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

a. The supplier will install the set with proper earthing in presence of BNL personnel at respective BNL Units/Ships as soon as possible and carryout necessary test and trials. The Supplier's Engineer will show BNL personnel about routine operation and maintenance procedure of the set. 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). BNL 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. On satisfactory completion of installation, test and trial, BNL will issue Final Acceptance Certificate.

e. 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.

21. **Installation Materials.** Standard installation materials are to be provided for all equipment. List to be provided.

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

23. **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 itemised 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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24. **Price of Optional Accessories.** be quoted separately as follows:

Unit prices for optional accessories are to

Ser	Part Number/ Model	Description	Brand	Country of Origin	Country of Manufacturer	Qty (EA)	Unit Price	Total Amount	Remarks

25. **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.

26. **Documents.** The following documents are to be submitted with the offer:

- Certificate of assurance for minimum 10 years supply of spares with reasonable price.
- Original brochure/catalogue of the offered model of HF Transceiver (400-500 W) sets.
- Manufacturer's/ distributor's/ agent's/ dealer's certificate mentioning that the supplier (enlisted bidder) is being authorised for this quotation/offer and will be liable to fulfil all contractual obligation if the firm is awarded contract.
- Certificate of ingress protection standard.
- Certificate of MIL-STD-810D/E/G standard.
- Quality assurance certificate (QAC).
- Radio Equipment Importer and Vendor Enlistment Certificate from BTRC (For Local Agent only).

27. **Manual.** Following documents in English are to be provided free of cost at the time of delivery:

- Operators Manual.** One set of original operator's manual (covering major system units) to be provided with each HF Transceiver (400-500W) set.
- Technical Manual.** One set of original technical manuals (covering principle of design and operations, detail circuit diagram, trouble shooting flowchart, parts catalogue) for each supplied HF Transceiver (400-500W)/ accessories to be provided.
- Workshop Manual.** Two sets of original workshop level repair manual.

28. **Warranty Support.**

- Warranty for three years or manufacturer standard whichever is higher by the principal/ manufacturer for trouble free operation of HF transceiver (500W) set and its accessories wef the date of final acceptance by (CINS) BNL. 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





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whole warranty of the said set shall be extended automatically for the period of subject component remains defective.

b. 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.

29. **Extension of Warranty.** During the warranty period, if the item/ equipment remain 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.

30. **After Sales Service.** After sales 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.

31. **Delivery Schedule.** Within 180 days after signing of contract.

32. **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. BNL may be asked for necessary certificates/ documents.

33. **Consignee.** The Commanding Officer, Naval Stores Depot, Chattogram, New Mooring, Chattogram, Bangladesh/ Officer In-charge, Naval Stores Sub Depot Dhaka, Namapara Khilkheth, Dhaka 1229.

34. **Port of Shipment.** Any port of country of origin/ manufacturer/ principal. To be mentioned in the offer.

35. **Source of Supply.** Source of supply is to be from the country of manufacturer or country of origin/ principal (To be mentioned).

36. **Validity of Offer.** Offer should remain valid up to 30 June 2026.

37. **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 BNL following successful test and trial upon delivery of items as per contract.

38. **Price Quotation.** HF Transceiver (400-500 W) sets price is to be quoted in FC without VAT/ Tax etc as follows:

- a. FOB price.
- b. Air/ Sea Freight.



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39. **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).

40. **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:

- a. One certificate by the Original Equipment Manufacturer (OEM) in favour of the supplier/ local agent (in case of OEM as principal).
- b. 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).
- c. 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.

41. **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.

