

Tender No.: e-Tender/Technical Services/Digital Wireless Radios/2020-21/007
Dated 24.12.2020.

Tender for Supply of Digital Wireless Radios

ADGP, Technical Services Wing, Punjab Police invites online bids (two bid system) for the purchase of following equipment: -

Sr. No.	Name of the equipment	Qty	Earnest Money (In Rs)	Tender fee
1.	20/25 Watt Digital Radio Wireless Sets	110	3,00,000/-	500
2.	2/5 Watt Digital Radio Wireless Sets	330		
3.	25/50 Watt Digital Repeater Set	06		

Note: - Required Technical Specifications of above equipment is specified in Annexure-A.

1. Important Dates and other conditions: -

- i) Publication of Tender : 24.12.2020
- ii) Tender Closing Date : 14.01.2021
- iii) Opening of Technical Bid : 15.01.2021
- iv) Opening of Financial Bid : To be informed subsequently.

- a. For participating in the above e-Tendering process, the bidder shall have to get themselves registered with **www.eproc.punjab.gov.in** and get **user ID and Password**. Class 3 digital signature is mandatory to participate in the e-Tendering process. For any clarification/difficulty regarding e-Tendering process, bidders may contact NIC helpdesk No. 0172-2970236/2970284.
- b. A copy of Tender document can be downloaded from eproc.punjab.gov.in. The Bidder shall submit the Tender fee of Rs. 500/- (Rupees Five Hundred Only) through online/electronic mode as provided on eproc.punjab.gov.in.
- c. The Tender is floated through the e-Tendering process and only e-bids shall be accepted. Bids are invited in two bid systems, i.e. Technical Bid and Financial Bid.
- d. Bidder shall deposit a processing fee as mentioned in the above portal through online mode provided.
- e. The Tender shall be uploaded on the www.eproc.punjab.gov.in. For any technical help, please contact on numbers provided on the said website.
- f. Punjab Police reserve the right to vary the quantity of material at the time of placement of Supply Order/Signing of Contract.

- g. Punjab Police reserve the right to place additional orders at the same rates upto 12 months of placing of supply order.
- h. Punjab Police reserve the right to accept any bid and to annul the bid process and reject all bids at any time, without assigning any reason, prior to placement of supply order/ signing of contract, without thereby incurring any liability to the affected Bidder(s) or any obligation to inform the affected Bidder(s) of the grounds for the Punjab Police's action.
- i. The Bidder shall mention the unit price including GST (as applicable)/any other applicable Tax or Duty and/or any other incidental expenses as per the format of financial bid provided on the **website www.eproc.punjab.gov.in**. The bidder shall be selected on the basis of total price inclusive any taxes and charges, if any.
- j. Bidders are advised to study this Tender document carefully before participating. It shall be deemed that submission of Bid by the bidder has been done after their careful study and examination of the Tender document with full understanding to its implications.

2. Nodal Officer

The Nodal officer for this Tender is as below:-

Sh. Inderbir Singh, PPS,
DSP Telecom, Technical Services, Punjab, Chandigarh
Room No.124, Ground Floor
Punjab Police Headquarters,
Sector- 9-A, Chandigarh.
Contact no. 0172-2748100-06 Extn 2136
Mobile No. 98154-54519

Note: For any query, please contact from 9:30 A.M to 4:30 P.M on working days.

3. Scope of Work

The selected bidder would be required to supply the required number of equipment as per the following table:

1.	20/25 Watt Digital Radio Wireless Sets	110
2.	2/5 Watt Digital Radio Wireless Sets	330
3.	25/50 Watt Digital Repeater Set	06

Note-1 :- The quantity may increase or decrease as per requirement or any other reason (s).

Note-2 :- Required Technical Specifications of above item are specified in Annexure-A.

- (i) **Equipment Delivery:-** The selected bidder shall ensure the free on-site delivery of the complete order at the Telecom Store, Punjab Police Training Center, Village Charbar, Near Banur, District S.A.S Nagar, Punjab.
- (ii) **Warranty:-** Selected bidder shall supply equipment along with the warranty of at-least Three years against manufacturing defects.

4. Eligibility Criteria for Bidders and documents required to be submitted along with Technical Bid.

- A. This Tender is open to all firms/companies registered in India.
- B. The OEM of the equipment should be registered in India since last 10 years.
- C. The bidder must be in the business of supplying and maintenance of same category equipment for at-least last three years. The bidder shall upload relevant documentary proof regarding the same along with the technical bid.
- D. The bidder or its OEM should have supplied same or similar category products for at least 50% of bid value, in last two years before the bid opening date to any State/Central Government department/agency or any Government company/PSU or any State/Central Government PSU. The bidder must attach at least one supply order alongwith Technical/financial bid.
- E. In case the bidder is not the OEM of the equipment, the bidder must be authorized to bid for the equipment by the OEM. Bidder shall upload an authorization letter from the OEM, along with the technical bid.
- F. Average annual turnover during the last three financial years (ending 31st March 2020) of the bidding company must be at least Rupees 5 crore. Bidder shall upload the copy of the Balance Sheet and Profit & Loss Accounts for the last three financial years or a certificate from the Chartered Accountant certifying the year wise turnover for the last three financial years (ending 31st March 2020) along with technical bid.
- G. Average annual turnover during the last three financial years (ending 31st March 2020) of the concerned OEM must be at least Rupees 500 crore. Bidder shall upload the copy of the Balance Sheet and Profit & Loss Accounts for the last three financial years or a certificate from the Chartered Accountant certifying the year wise turnover for the last three financial years (ending 31st March 2020) along with technical bid.
- H. Relaxation of Norms in Public procurement for Start-ups based in Punjab shall be given as per the Government of Punjab, Department of Industries and Commerce, (Controller of Stores) Notification No. COS/Start-ups/2019/11288 dated 16.08.2019 and No. COS/PPO-2019/11726 dated 03.09.2019.
- I. Bidder must not be blacklisted by any State/ Central Government, PSU or Government Company. The Bidder must attach an affidavit undertaking the same along with the Technical Bid.
- J. The Bidder is required to submit an undertaking, that the price quoted by them are not higher than those quoted to GeM, other State/ Central Government/PSUs or Government Company during the current financial year. This undertaking shall be uploaded along with Technical Bid.

- K. The OEM should have well-staffed and functional support centres in major cities in the State. The bidder will have to submit supporting documents regarding the same with the bid.
- L. The bidder will have to submit/upload Technical Data sheet of the product with the bid for verification of Technical Specifications.
- M. The bidder will have to submit/upload OEM warranty declaration regarding the offered product with the bid.
- N. The offered radios must have compatibility with currently working dispatcher solution with Punjab Police for GPS tracking.

5. Earnest Money Deposit (EMD)

The Bidders shall submit the Earnest Money Deposit (EMD), through online/electronic mode as provided on eproc.punjab.gov.in. No interest shall be payable by Punjab Police on the Earnest Money deposited by Bidder.

6. Performance Bank Guarantee

The selected bidder shall submit a Performance Bank Guarantee (PBG) amounting to 5 % of the contract value of Goods to be supplied in favour of ADGP/Technical Services, Punjab, Chandigarh within Seven days of the award of the contract/issue of supply order. This PBG will be released after expiry of warranty period.

7. Delivery

Free on-site delivery of the equipment shall be made by the selected bidder at Telecom Store, Punjab Police Training Center, Village Charbar, Near Banur, District S.A.S Nagar, Punjab.

8. Period of Validity of Offer

Offer shall remain valid for 365 days, from the last date of submission of the bids. An offer valid for a shorter period may be rejected by Punjab Police as non-responsive.

9. Language of the Bid Proposal

The bidder shall submit documents pertaining to bid, supporting documents and all correspondence etc. in English or Punjabi.

10. Amendment of Tender Document

The amendments, if any, in any part of the Tender Document shall be uploaded in form of corrigendum on website: www.eproc.punjab.gov.in and will also be available on websites www.punjabpolice.gov.in and www.punjab.gov.in. All prospective bidders are advised to check these websites from time to time for any updates.

11. Withdrawal of Bid

No bid or any part of it will be permitted to be withdrawn/changed subsequent to the deadline for the submission of the bids.

12. Evaluation of Bids

The duly formed Tender Committee and Technical committee will technically and commercially evaluate the bids of all as per the following schedule/pattern: -

(A) Conditional bids shall be summarily rejected.

(B) The **Technical bids** shall be evaluated as per the following:

(B.1) Compliance to eligibility criteria: Compliance to the eligibility criteria and supporting documents specified in this Tender document. Non-compliance of ANY eligibility criteria shall result in dis-qualification of the bid.

(B.2) Compliance to the equipment specifications specified in this Tender: The bids found eligible according to the eligibility criteria would then be checked for compliance to the equipment's technical specifications mentioned in this Tender document. Non-compliance of any required specification shall result in dis-qualification of the bid.

(B.3) Live demo of the proposed equipment: The bidders would be required to give a live demonstration of the equipment (if required by Punjab Police) to the Technical Committee in Room No. 118, Level-1, PPHQ, Sector -9, Chandigarh.

(C) The Tender Committee, on the recommendation of Technical Committee, may disqualify any bid if the proposed equipment fails to meet the requirements on any one or more of the above-mentioned parameters.

(D) The Financial Bids of only the technically qualified bidders would be opened by the Tender Committee. The venue, date and time of the opening of the Financial Bids shall be notified separately. The bid with the lowest financial offer shall be awarded the contract and the bidder shall be selected on the basis of total price inclusive of all applicable taxes and charges, if any.

13. General criteria for Disqualification

Punjab Police will have the discretion to disqualify any bid(s) if: -

- A. The Bidder fails to provide the information required in the Bid Proposal or any additional information as requested by Punjab Police during the Tendering process.
- B. The Bidder not fulfilling any terms & conditions specified in Tender document.
- C. Material inconsistencies in the information uploaded.
- D. Misrepresentations in the Bid Proposal or any supporting documentation.
- E. Incomplete or conditional bids that do not fulfil all or any of the conditions specified in this Tender document and/or bids not quoted as per the Tender document.
- F. Use of unfair means.
- G. Bids found unsigned, bids signed by unauthorized person and unsigned corrections in the bids.
- H. Bid offer with price variation clause.
- I. Price quoted in the Technical Bid.
- J. Non-compliance of any requirement of this Tender document.

14. Acceptance of the Bid

Punjab Police reserve the right to accept any bid, reject all or any bids and to annul the Tendering process at any time without assigning any reason, thereby without incurring any liability to the affected bidder(s) or any obligation to inform the affected bidder(s) of the grounds of the action.

15. Cross Checking

Punjab Police reserve the right to contact and verify information, references and data uploaded by the bidder in the bid.

16. Cost involved in Tendering

The Bidder shall bear all costs associated with the preparation and submission of their Bid, including the cost of live demonstration of the proposed model of the equipment. Punjab Police will in no case be responsible or liable for any costs.

17. Return of EMD to unselected bidders

The Earnest Money Deposit (EMD) of the disqualified / unselected bidder(s) will be returned back to their account (from which the amount was paid) automatically.

18. Right to vary quantities at the time of award

Punjab Police reserve the right to vary the quantities and/or split the order among the selected bidder(s) and re-fix a delivery schedule. Punjab Police also reserve the right to order additional quantities during the contract period at a price not more than the unit price quoted in the contract/supply order.

19. Additional Information/Clarification

Punjab Police reserve the right to seek any additional information and samples, as they may deem necessary to evaluate the bid. Bidders shall provide such additional information or clarification as sought by Punjab Police within the provided time frame.

20. Bidder's obligation to carefully examine the Tender document

The bidder is expected to examine all the instructions, forms, terms & conditions and specifications in the Tender document carefully. Failure to furnish all the information required by the Tender document may result in rejection of the bid.

21. Prices

- A. The prices quoted in financial bid should be in **Indian Rupees** only.
- B. Price will be calculated as total price of the equipment inclusive of GST and any other applicable Taxes/Duties
- C. The prices quoted shall remain constant throughout the period of contract and shall not be subject to any upward modification whatsoever.

- D. A bid uploaded with a variable price will be treated as non-responsive and would be rejected.
- E. No upward revision shall be allowed in case of any fluctuation in the foreign currency.
- F. Punjab Police reserves the right to place additional orders at the same rates upto 12 months of placing of supply order.
- G. Bidder should certify that they have read and understood the terms and conditions applicable to the bidder and they undertake to supply as per these terms and conditions.
- H. The bid offer shall remain valid for 365 days, from the last date of submission of the bids. A bid offer valid for a shorter period may be rejected by Punjab Police as non-responsive.

22. Delivery SLA and penalty on SLA

A. Delivery SLA and Penalties

- (i) Supply of the equipment shall be completed within 45 days from the date of placement of supply order at the site as mentioned here in before in the Tender document.
- (ii) If the selected bidder fails to complete the task within the delivery period prescribed above, the delayed consignment will be subject to 2% penalty per consignment per month or part thereof recoverable on the value of stores supplied.
- (iii) In case of non-payment of penalty by the vendor, recovery will be made from his dues or Performance Bank Guarantee. Provided that:
 - a. No recovery of penalty will be made, if Punjab Police accept the delayed completion of task and decide that the delay was due to reasons beyond the control of the bidder.
 - b. On the failure of the selected bidder to complete the task within the stipulated period, ADGP/Technical Services or authority authorized by him/her can affect the Risk purchase. The said purchase at the cost of selected bidder will be made within 6 months from technically pre-qualified bidders who have participated in the bid or after inviting short-term Tenders. The excess cost thus incurred will be recovered from the selected bidder from his pending bills or Earnest Money / Performance Bank Guarantee or through court of law. This procedure will be adopted after serving a registered notice to the selected bidder to seek his explanation within 15 days and in the event of the selected bidder failing to reply or being unable to explain up to the satisfaction of ADGP/Technical Services.
- (iv) Where a part of consignment is rejected by Punjab Police subsequent to the inspection, the supplier will re-offer the material for inspection within 14 days from the date of issue of rejection note, after removing the defects. Any delay beyond the period of 14 days will invite a penalty @ 2% per month or a part thereof.
- (v) The unexcused delay in the completion of task by the selected bidder in the prescribed delivery period may render him liable to any or all of the following penalties:-
 - a. The penalty as mentioned in this Tender document.
 - b. Forfeiture of earnest money/ PBG/Security Deposit.
 - c. Black listing or debarring from participating in any Tender released by Punjab Government in future.
 - d. Technical Services Wing of Punjab Police may initiate the risk purchase mechanism as specified in this Tender.

23. Warranty and Penalties

- A. During the warranty period, the bidder would be required to address the complaints within 24 hours.
- B. If the complaint is not addressed within the stipulated period of 48 hours, a penalty upto @ 0.05% of the total contract value per day will be levied on the bidder.
- C. If, however, the complaint is not addressed within 5 days period, a penalty upto @ 0.1% of the total contract value will be levied on per day basis, after the expiry of 5 days.
- D. No recovery of penalty will be made, if Technical Services Wing of Punjab Police accepts the delayed completion of task and decides that the delay was due to reasons beyond the control of the bidder.

24. Responsibilities during Warranty period

- A. It shall be the responsibility of the selected bidder to effect necessary repairs and maintenance of equipment as and when required, during the contract period, otherwise it shall be treated as non-performance on the part of the selected bidder and penalty as mentioned in this Tender document shall be invoked.
- B. The Performance Bank Guarantee shall be kept by Technical Services wing of Punjab Police as a security during the warranty period. Penalty on SLA shall be deducted from the Dues/ PBG.

25. Inspection/Tests of the Equipment

- A. The inspection of the equipment may be carried out by Technical Services Wing of Punjab Police who shall have the power to inspect/verify the equipment supplied as per the supply order at any time before, during or after commissioning and to reject the same or any part or portion, in case of non-compliance of the supply order/contract specifications.
- B. The inspection of the stores to be supplied under this supply order shall be carried out at destination or any other place to be specified in the supply order/contract.
- C. Selected bidder shall neither claim nor be entitled to payment for any damage that rejected supplies may suffer from any harm whatsoever incidental to a full and proper inspection of such supplies.
- D. Rejected supplies, if any, shall be removed by the selected bidder at their own expense within 10 days after notice has been issued to them of such rejection, and failing such removal of rejected goods, the Technical Services wing of Punjab Police will be at liberty to charge the selected bidder the market rent for the space occupied by such rejected goods.

26. Payment Schedule

1	100% Delivery and Physical Inspection of equipment and successful commissioning.	100% of the contract value (after deducting penalties, if any)
---	--	--

27. Invoicing

- A. Invoice along with Delivery Challan in duplicate are to be sent by the selected bidder to the consignee. The duplicate of Delivery Challan will be returned by the respective indenting officers with the quantities or numbers received duly noted and signed thereon to the selected bidder.
- B. The payment shall be released after the inspection/verification of the equipment by Punjab Police and will be subject to the clearance of Bills by concerned Treasury of Punjab Government.

28. Sub- Contracting of the order

The selected bidder shall not assign or sublet the contract supply order without prior written approval of Punjab Police.

29. Compliance with laws and permits

The selected bidder shall comply with all relevant rules, regulations, ordinances, codes and laws relating to the work or the conduct thereof and shall secure and pay for any permits and/or licenses necessary for the execution of the work and selected bidder shall be responsible for the same.

30. Forfeiture of Earnest Money Deposit and Performance Bank Guarantee

- A. If the Bidder withdraws his bid before the expiry of validity or after the acceptance of the bid, the Earnest Money Deposited by the bidder will be forfeited.
- B. If the Bidder fails to comply with any of the terms, conditions or requirement of order and the technical specifications as indicated in the Tender document, the Earnest Money deposited by the Bidder will be forfeited.
- C. In case selected bidder fails to comply with the terms and conditions of this Tender then the earnest money deposit and performance bank guarantee will be forfeited.

31. Cancellation of Order

A. In the event of the selected bidder: -

- (i) Failing to fulfil the order, or
- (ii) commit breach of any terms and conditions of this contract/supply order, or
- (iii) found repeatedly supplying goods liable to rejection hereunder, or

- (iv) failing, declining, neglecting or delaying to comply with any demand or requisition or otherwise not executing the same in accordance with terms of this contract/supply order, or
- (v) the bidder or their agent or servants being guilty of fraud in respect of this contract, or
- (vi) bidder and/or any of their partners or representatives found promising or offering any bribe or any pecuniary benefit or otherwise to any official/person connected with this Tender, or
- (vii) the bidder or any of their partners become insolvent or apply for relief as insolvent debtor or commence any insolvency proceedings or make any composition with their creditors or attempt to do so,

Punjab Police shall be at liberty to cancel the supply order forthwith, to blacklist the bidder, to reclaim all or part of the money paid to the bidder and to initiate any criminal/civil proceedings against the bidder and/or their partners.

- B. During the currency of execution of this supply order, if the selected bidder becomes bankrupt or otherwise insolvent or is likely to become insolvent or bankrupt, Punjab Police may, at any time, cancel the order by giving written notice to the selected bidder. Notwithstanding anything above, such termination will not prejudice or affect any right of action or remedy which has accrued or will accrue thereafter to Punjab Police.

32. Consequences of Cancellation of Order

- A. Upon cancellation of order, the selected bidder shall deliver or cause to be delivered all data and records required from or on account of the Technical Services wing of Punjab Police.
- B. Cancellation of order shall not affect any continuing obligations of the selected bidder under this Contract, which, either expressly or by necessary implication, are to survive its expiry or termination, such as but not limited to confidentiality obligations of the selected bidder.
- C. Upon cancellation of order for any reason whatsoever, the selected bidder shall return any and all confidential information and any other property of Punjab Police to the Technical Services Wing of Punjab Police.
- D. Punjab Police may procure services similar to those undelivered, upon such terms and in such manner, as they deem appropriate, at the risk and responsibility of the selected bidder and the selected bidder shall be liable for any additional costs for such services.
- E. The selected bidder shall continue the performance of the contract/ supply order to the extent of not being terminated.
- F. Upon cancellation of contract/ supply order for reasons whatsoever, Punjab Police shall have the right to impose any or all of the following penalties: -
 - (i) Forfeiture of Earnest Money deposited
 - (ii) Forfeiture of PBG
 - (iii) Black listing of the bidder
 - (iv) Initiation of civil/criminal proceedings as the case may be
 - (v) Any other penalty as deemed appropriate

33. Force Majeure

If the selected bidder is prevented from performing any of its services under the Contract Agreement due to causes such as fire, Acts of God, or elements, embargoes, governmental orders, the selected bidder shall be excused from the non-performance of its obligations during the period that such cause continues to exist, but if such cause continues to exist and prevents performance by the selected bidder of its obligations for more than 60 days, ADGP/Technical Services Wing of Punjab Police may terminate the Contract Agreement in whole or part thereof effective upon delivery to the selected bidder of written notice of such termination. Upon termination of the Contract Agreement under this Section, the provisions regarding consequences of cancellation set out in this Tender here in before shall apply.

34. Arbitration

Any dispute, claim or difference relating to or arising out of this contract/supply order shall be referred for arbitration to the Director General of Police, Punjab or any other officer/official appointed by him/her and the decision so taken by the arbitrator shall be final and binding on all concerned. Where the matter involves claim of any amount that is awarded in such arbitration, the same shall be recoverable from the bidder out of dues pending/PBG/an order of the civil court.

35. Acquaintance with all conditions

The bidder should acknowledge that they have made themselves fully acquainted with all the conditions and circumstances under which the supplies required under the contract will have to be made or furnished and with all the terms, clauses, conditions, specifications and other details of the contract and the bidder shall not plead ignorance of any of those as excuse in case of complaint against or on rejection of supplies tendered by them or with a view either to asking for encashment of any rates agreed to in the contract or to evading any of their obligations under the contract.

Annexure-A

1. 20/25 WATT DIGITAL RADIO WIRELESS SETS: -

SN	Parameters	Specifications
1.	General	
	Frequency Range	136 -174 MHz
	Number of Channels	1000 or more
	Channel Spacing	12.5 KHz
	Frequency stability	+ 0.5 PPM or better
	Protocol	Digital TDMA 2 slot Technology
	Type of Emission	Analog: 11KOF3E & Digital: 4FSK
	Weight	< 2000 gms
	Power source	12VDC (typical)
	Protection	Protection against High VSWR & Reverse Polarity
	Compatibility	With all Analog and Digital Radios
2.	Transmitter	
	RF Power Output	25W or more Programmable / switchable
	Frequency Deviation	+2.5 KHz
	Audio Distortion	< 3% @ 1KHz
	FM Hum/ Noise	< -40 dB
	Adjacent Channel Power	< -60 db
	Audio Response	+ 1 , -3dB
3.	Receiver	
	Sensitivity	(a) Analog : < 0.30μV at 12 dB SINAD for better coverage
		(b) Digital : < 0.30μV at 5% BER for better coverage
	Selectivity	> 60 dB
	Audio Output	> 3W
	Audio Distortion	< 3%
	Audio Response	+ 1 , -3dB

4.	Environmental Specifications	
	Operating Temperature	-30°C to + 60°C
	Storage Temperature	-40°C to + 70°C
	Humidity	95% at 50°C
	Dust & Water Protection	IP-54
	Environment Standard	As per MIL STD 810 G
5.	Features	
	Support GPS	Should be supplied with GPS inside Radio with accuracy less than 5m, to enable being tracked from Remote Control Station on existing system
	Support GIS	Radio should have Application Protocol Interface along with software applications to provide Locations and messaging on PC / Console
	Text Messaging via inbuilt Modem	Should be capable of sending Short Messages from Keypad and Long messages from PC with high speed.
	Front Panel color Display	Radio with DTMF keypad & display
	TOT & BCLO	Should be available
	Battery strength indicator	Should be available
	Receive Signal strength indicator	Should be available in digital mode
	Emergency Button	Should be available
	Scan with Priority facility	Should be available
	Mode of call	Selective, Group, All Call, Inter & Intra Group call facility
	Contact list	Contact list of 1000 or more users for SMS and selective calling
	Transmitter Interrupt	Emergency calls can be passed by interrupting the call in progress.
	Bluetooth connectivity	Built-in Bluetooth for Voice & Data
	Radio Programming facility	PC, Over the air programming, Field programmable with password
	Remote Kill/Unkill Facility	Encrypted Kill/Unkill should be available
	Channel & Menu announcement	Should be available
	Keypad/channel lock facility	Should be available
	Auto voice enhancement in Noisy area	Should be available
	Caller ID & Alias Display	Radio should able to decode any radio ID & Alias
	Networking	Radio should be IP based, for features like automatic roaming, GPS/GIS.
	Emergency call facility (SOS)	Should be available
	Wi-Fi Integrated	Capable to be integrated with wi-fi for software Upgradation
	Text to speech	Radio should have provision for TEXT to Speech for text messages

	<p>Secrecy: The radio set should have provision of standard facility for installation of encryption device. Till SAG approved encryption is made available the vendor will provide commercial grade 256 Bit AES encryption. The commercial grade encryption will be deleted by the vendor at no extra cost at the time of fitment of SAG approved encryption which shall be procured separately. The OEM of the radio should give an undertaking that they will give details of interface for developing encryption in India whenever required. The developing agency in India will give NDA (Non-disclosure agreement) to OEM.</p>	
	<p>The radio set should be light weight and compact operating in conventional system in single location and automatic roaming in other locations of operation using IP based Repeater network without manual intervention. Radio should able to work with Simplex & Semi duplex Repeater operation & having facility to access repeater via user defined code.</p>	
6.	Accessories- Radio should be supplied with standard accessories	
	Mobile Antenna	0db Whip Antenna with 3mtr cable & bracket mounting & GPS Antenna (Qty in BOQ)
	Base Antenna	3db GP Antenna with 30mtr low loss cable(0.03db/mtr) (Qty in BOQ)
	Power Source-10A	12V, 10A Power supply should be supplied (Qty in BOQ)
	Programming Kit	All necessary programming software and hardware required. (Qty in BOQ)
	Technical Manual	Should be supplied. (Qty in BOQ)

2. 2/5 WATT DIGITAL RADIO WIRELESS SETS: -

SN	Parameters	Specifications
1.	General	
	Frequency Range	136 -174 MHz
	Number of Channels	1000 or more
	Channel Spacing	12.5 KHz
	Frequency stability	+ 0.5 PPM or better
	Protocol	Digital TDMA 2 slot Technology
	Type of Emission	Analog: 11KOF3E & Digital: 4FSK
	Weight	Less than 400 gms with battery & Ant
	Power source	>2400mAH Li-ion battery (BIS Certified) with belt clip for more than 20hrs operation 5:5:90
	Protection	Protection against High VSWR & Reverse Polarity
	Compatibility	With all Analog and Digital Radios
2.	Transmitter	
	RF Power Output	5W or more Programmable / switchable
	Frequency Deviation	+2.5 KHz
	Audio Distortion	< 3% @ 1KHz
	FM Hum/ Noise	< -40 dB
	Adjacent Channel Power	< -60 db
	Audio Response	+ 1 , -3dB
3.	Receiver	
	Sensitivity	(a) Analog : < 0.25µV at 12 dB SINAD or better coverage
		(b) Digital : < 0.25µV at 5% BER for better coverage
	Selectivity	> 60 dB

	Audio Output	> 500 mW
	Audio Distortion	< 3%
	Audio Response	+ 1 , -3dB
4.	Environmental Specifications	
	Operating Temperature	-30°C to + 60°C
	Storage Temperature	-40°C to + 70°C
	Humidity	95% at 50°C
	Dust & Water Protection	IP-68
	Environment Standard	As per MIL STD 810 G
5.	Features	
	Support GPS	Should be supplied with GPS inside Radio with accuracy less than 5m, to enable being tracked from Remote Control Station on existing system
	Support GIS	Radio should have Application Protocol Interface along with software applications to provide Locations and messaging on PC / Console
	Text Messaging via inbuilt Modem	Should be capable of sending Short Messages from Keypad and Long messages from PC with high speed.
	Front Panel color Display	Radio with DTMF keypad & display
	TOT & BCLO	Should be available
	Battery strength indicator	Should be available
	Receive Signal strength indicator	Should be available in digital mode+C17
	Emergency Button	Should be available
	Scan with Priority facility	Should be available
	Mode of call	Selective, Group, All Call, Inter & Intra Group call facility
	Contact list	Contact list of 1000 or more users for SMS and selective calling
	Transmitter Interrupt	Emergency calls can be passed by interrupting the call in progress.
	Bluetooth connectivity	Built-in Bluetooth for Voice & Data
	Radio Programming facility	PC, Over the air programming, Field programmable with password
	Remote Kill/Unkill Facility	Encrypted Kill/Unkill should be available
	Channel & Menu announcement	Should be available
	Keypad/channel lock facility	Should be available
	Auto voice enhancement in Noisy area	Should be available
	Caller ID & Alias Display	Radio should able to decode any radio ID & Alias
	Networking	Radio should be IP based, for features like automatic roaming, GPS/GIS.
	Emergency call facility (SOS)	Should be available
	Wi-Fi Integrated	Capable to be integrated with wi-fi for software Upgradation
	Text to speech	Radio should have provision for TEXT to Speech for text messages

	<p>Secrecy: The radio set should have provision of standard facility for installation of encryption device. Till SAG approved encryption is made available the vendor will provide commercial grade 256 Bit AES encryption. The commercial grade encryption will be deleted by the vendor at no extra cost at the time of fitment of SAG approved encryption which shall be procured separately. The OEM of the radio should give an undertaking that they will give details of interface for developing encryption in India whenever required. The developing agency in India will give NDA (Non disclosure agreement) to OEM.</p>	
	<p>The radio set should be light weight and compact operating in conventional system in single location and automatic roaming in other locations of operation using IP based Repeater network without manual intervention. Radio should able to work with Simplex & Semi duplex Repeater operation & having facility to access repeater via user defined code.</p>	
6.	<p>Accessories Radio should be supplied with 2 batteries with belt clip, Charger, Adaptor, Antenna, Dust cap & User manual.</p>	
	Battery Charger	Single Unit Rapid Charger from OEM. Reverse polarity/Short circuit protection at DC input and at battery terminal should be provided. .
	Programming Kit	All necessary programming software and hardware required. (Qty in BOQ)
	Technical Manual	Should be supplied. (Qty in BOQ)

3. 25/50 Watt Digital Repeater Sets for Radios: -

SN	Parameters	Specifications
1.	General	
	Type of Repeater	The repeater set should be Single Frequency Repeater (SFR)
	Frequency Range	136-174 MHz
	Number of Channels	64 or more
	Channel Spacing	12.5 KHz
	Frequency stability	±0.5 PPM or better
	Protocol	Digital TDMA 2 slots Technology
	Type of Emission	Analog: 11KOF3E, Digital: 4 FSK
	Type of Operation	Dedicated Repeater with 100% duty cycle at full power
	Weight	< 10 Kg
	Power source(Inbuilt)	i) Operating Supply Voltage: 230 VAC rated
		ii) 12VDC rated
		iii) Automatic change over to battery in case of mains failure with battery charging facility(3A)
	Status Indicator	LED indicator for operational status
	Protection	Reverse polarity protection and high VSWR protection
2.	Transmitter	
	RF Power Output	50 W programmable for AC & DC
	Frequency Deviation	±2.5 KHz
	FM Hum/Noise	< -40 dB
	Adjacent Channel power	< -60db
	Audio Distortion	< 3%
	Audio Response	+1, -3dB

3.	Receiver	
	Sensitivity	(a) Analog : < 0.25 μ V at 12 dB SINAD for better coverage (b) Digital : < 0.25 μ V at 5% BER for better coverage
	Selectivity	> 60 dB
	Image Rejection	> 60 dB
	Audio Response	+1, -3dB
4.	Environmental Specifications	
	Operating Temperature	-30°C to + 60°C
	Storage Temperature	-40°C to + 70°C
	Humidity	90% at 50°C
	Environment Standard	As per MIL STD 810 G
5.	Features	
	Networking	Repeater should be IP based, with capability to network over IP for wide area network of user repeater & radios operating from one site to another without manual intervention.
	Interfaces	Ethernet port RJ-45 inbuilt to provide following
		i) Wide area IP connectivity for voice and data up to 15 repeaters
		ii) Remote monitoring and status check
		iii) Should have deny access of user defined black list subscriber Id's range to prevent un-authorized access /Should have user defined access code validation of subscribers
6.	Accessories	
	Antenna	6dB Antenna
	RF Cable	45 meter low loss cable(0.03db/mtr)
7.	Description	
	i) The Repeater Station should be light weight, compact with state-of-the-art synthesized Radios to electronically generate the Radio frequencies. The Repeater should be capable of operating in unattended mode with remote diagnostics and maintenance features. The Repeater should support all features of HHRS & Mobile Radios with Simplex & Semiduplex operation for voice & Data.	
	ii) Vendor to indicate the service centers across India for repairing of equipment after sale warranty support	
8.	Essential Instructions	
	Protocol and Signaling Scheme	Handheld, Base/Mobile Radios, Repeaters shall be same in respect of protocol, Type of emission and signaling scheme etc. and shall be mutually interoperable so that full functional network can be established using these radios and repeaters
	Certificates of Tests	1. Vendor must provide Digital Communication Test Set for Testing of Digital W/Set Specifications.
		2. Firm must produce certificates of National Accreditation Board of Testing and Calibration Laboratories (NABL) approved laboratory or International laboratory accreditation corporation (ILAC) of Quoted model only
		3. OEM Certificate is mandatory for all above specification.

		4. IOP certificates from TWG-DMR with min 2 OEMs
	Installation, Service and	1. Onsite technical support for Installation of DMR solution,
	Spare Parts support	2. Support for Service / Spare Parts- Min. 10 Years and spare availability within four weeks after receipt of supply order.
	Training	Necessary technical training regarding Operational, Configuration and Programming of the set:- The onsite training shall be given to technical persons for 3 days.
	Warranty	Radio & Repeater for 3 year & Acc for 1 year.

Dispatcher Solution for 20/25 Watt & 2/5 Watt Hand held wireless sets

Dispatcher GIS Specification
Group, Individual call
SMS Messaging IN/OUT
Call recording & storage withstand 24X7 operation.
GPS Location & Display on free open source map.
Auto Kill/Unkill of Radio's without manual intervention.
Remote status weather Radio is online/Offline.
Geofencing
Telephone Voice & Data Gateway-Radio to Telephone (FXO, FXS), GSM, Soft phone, IP Phone & viceversa.
Capacity – For All HH & Mobiles