



सत्यमेव जयते  
Ministry of Defence  
Government of India

**REQUEST FOR INFORMATION  
BY  
MINISTRY OF DEFENCE  
GOVERNMENT OF INDIA  
FOR PROCUREMENT OF**

**HIGH CAPACITY RADIO RELAY (HCRR)**

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The contents of this RFI must not be disclosed to unauthorised persons and must be used only for the purpose of submission of responses.

**This document contains 25 pages including cover page and Appendices.**



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File No: B/46236/HCRR/Sigs 5(b)

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03 March 2022

To

Industry

**REQUEST FOR INFORMATION (RFI) FOR HIGH CAPACITY RADIO RELAY  
(HCRR)**

1. The Ministry of Defence, Government of India, intends to procure an approximate quantity of 800 units of High Capacity Radio Relay (HCRR) Equipment to be deployed in High Altitude Areas (HAA), Mountainous, Plains and Deserts for engineering and setting up secure, high bandwidth, point to point communication links.

2. This Request for Information (RFI) for the HCRR consists of three parts as given below:-

(a) **Part I.** This gives out the operational requirements, characteristics and features that should be met by the equipment. Important technical requirements that the equipment should fulfil are also mentioned.

(b) **Part II.** The second part of the RFI states the methodology of seeking response from the vendors. Submission of incomplete response will lead to rejection and non-consideration of the same.

(c) **Part III.** This part lays down the guidelines for Framing Criteria for Vendor Selection / Pre-Qualification in Buy Indian (IDDM), Buy (Indian) and Buy and Make (Indian) Cases.

**PART I : OPERATIONAL AND TECHNICAL PARAMETERS**

**Operational Requirements**

3. **Intended Use of Equipment.** Communications in today's battle space consist of high bandwidth digital links that converge voice, video and data applications into a single platform. The HCRR proposed for procurement by the Indian Army will meet the operational aim of engineering and setting up secure, high bandwidth, point to point communication links networks in HAA, Mountainous, Plains and Deserts.



4. The equipment will be deployed and fielded by a detachment of three personnel in the following roles:-

- (a) Semi-permanent role with the system deployed in the open in HAA, Mountainous, Plains and Deserts.
- (b) Mobile role with the system including the antenna and power subsystems fitted in a 5/7.5 ton vehicle.
- (c) Static role with the system fitted and housed in a field shelter.

5. **General Description.** In view of the proposed deployment and utility, the HCRR should be so designed that it can be transported by men, on mules, and in 5/7.5 ton vehicle. The HCRR should thus be light, ergonomic, compact, portable and easy to handle. It should be modular to facilitate quick troubleshooting, repair and up gradation. The equipment should be ruggedized to meet the rigours of the operating environment and the requisite standards for EMI / EMC compliance.

6. **Configuration of Equipment.** For ease of description, the equipment will be described in distinct subsystems as under:-

- (a) Radio Subsystem.
- (b) Antenna Subsystem.
- (c) Power Subsystem.

7. The detailed deployment and configuration of the equipment, including sub-assemblies deployed indoors and outdoors for each configuration will be indicated in detail by the vendor.

8. The vendors are required to follow the procedure for response as explained in **Appendix A** of this document. In addition, the vendors are required to furnish details as per Performa at **Appendix 'B'** (refer Annexure II of Appendix A of Chapter II of DAP 2020). The vendor must furnish answers to the Questionnaire as given at **Appendix 'C'**.

9. Vendors should also confirm that the following conditions are acceptable: -

- (a) The solicitation of offers will be as per 'Single Stage-Two Bid System'. It would imply that a 'Request for Proposal' would be issued soliciting the technical and commercial offers together, but in two separate sealed envelopes. The validity of commercial offers would be at least 18 months from the last date of submission of offers.
- (b) The technical offers would be evaluated by a Technical Evaluation Committee (TEC) to check its compliance with the RFP.
- (c) The equipment of all vendors who have cleared TEC would be put through a trial evaluation in India on a 'No Cost No Commitment' basis. A staff evaluation would be carried out by SHQ to analyse the result of field evaluation and shortlist the equipment for introduction into service.



- (d) Amongst the vendors cleared by staff evaluation, a Contract Negotiations Committee (CNC) would decide the lowest cost bidder (L1) and conclude the appropriate contract.
- (e) The Vendor would be bound to provide product support for the time period specified in the RFP, which includes spares and maintenance tools, jigs and fixtures for field and component level repairs.
- (f) The vendor would be required to accept the general conditions of contract given in the Standard Contract Document at Chapter VI of DAP 2020.
- (g) **Offset (if applicable).** The vendor will be required to undertake offset contracts amounting to \_\_\_\_% of the value of commercial proposals (**Refer Appendix E to Chapter II of DAP 2020**).
- (h) **Integrity Pact.** An integrity pact along with appropriate IPBG is a mandatory requirement in the instant case (Refer Annexure I to Appendix M of Schedule I of DAP 2020).
- (j) **Performance-cum-Warranty Bond.** Performance-cum-Warranty Bond both equal to 5% value of the contract inclusive of taxes and duties is required to be submitted after signing of contract.
- (k) **ToT (if applicable).** GOI is desirous of license production of equipment after acquiring ToT in the case.

## PART-II

### 10. Procedure for Response.

- (a) Vendors must fill the form of response as given in **Appendix 'A' (Refers to Annexure I of Appendix A of Chapter II of DAP 2020)**. Apart from filling details about the company, details about the exact product meeting other generic technical specifications should also be carefully filled. Additional literature on the product can also be attached with the form.
- (b) The filled form along with softcopy in a CD should be dispatched to the address given at **Para 3 of Appendix 'A'**
- (c) Last date of acceptance of filled form is **02 May 2022**. The vendors short listed for issue of RFP would be intimated.

11. The Government of India invites responses to this request only from Original Equipment Manufacturers (OEM), Authorised Vendors or Government Sponsored Export Agencies (applicable in the case of countries where domestic laws do not permit direct export by OEMs). The end user of the equipment is the Indian Armed Forces. A copy of the response also to be shared with Department of Defence Production (DDP) by the firms for updating the competency map of the firm held with DDP.

12. This information is being issued with no financial commitment and the Ministry of Defence reserves the right to change or vary any part thereof at any stage. The Government of India also reserves the right to withdraw it should it be so necessary at any stage. The acquisition process would be carried out under the provisions of DAP 2020.



**PART III****GUIDELINES FOR FRAMING CRITERIA FOR VENDOR SELECTION /  
PREQUALIFICATION IN 'BUY (INDIAN-IDDMM)' 'BUY (INDIAN)' AND 'BUY AND  
MAKE (INDIAN)' CASES (REFER ANNEXURE IV OF APPENDIX A OF CHAPTER  
II of DAP 2020)**

13. The guidelines prescribed for short-listing/ pre-qualification of Indian vendors in Buy (Indian-IDDMM), Buy (Indian) and Buy and Make (Indian) cases are enumerated in the succeeding paragraphs. Paragraph 14 deals with the parameters that may be considered for short-listing of vendors, whereas Paragraph 15 amplifies the process for applying selected parameters to the process of Vendor Short listing.

14. **Parameters.**

(a) **General Parameters.**

(i) Applicant Entity should be an Indian Vendor as defined at Paragraph 20 of Chapter I of DAP 2020.

(ii) Business dealing with applicant Entity or any of its allied entities should not have been suspended or banned, by MoD/ SHQ or any Government Department or organization (as defined in Guidelines for Penalties in Business Dealings with Entities issued vide Ministry of Defence, D(Vigilance) MoD ID No 31013/I/2006-D(Vig) Vol II dated 21 Nov 2016). None of the Promoters and Directors of applicant entity should be a wilful defaulter.

(iii) "Entities" will include companies, with whom the Ministry of Defence has entered into, or intends to enter into, or could enter into contracts or agreements.

(iv) "Applicant entity" may be a company, subsidiary, an associate company (as defined in the Companies Act, 2013), a consortium or a Joint Venture (JV).

(b) **Technical Parameters.**

(i) Vendor shall be a manufacturing entity or a system integrator of defence equipment and not a trading company, except in cases where the OEM participates only through its authorised Vendors.

(ii) Minimum two years' experience in broad areas like manufacturing/ electronics/ Radio Relay/ Radio Communication Equipment in the instant procurement case. If not, then cumulative experience of at least three years in above areas, resulting in gaining of competence for manufacturing the proposed product.

(iii) Where product involves integration, previous experience of not less than one year/ one project in integration of systems/ equipment shall be required.

(iv) **Turnkey Projects.** Experience of successful completion of one Turnkey project of similar nature within last five years with value of at least 20% of AoN cost or currently executing a contract of similar nature with value of at least 30% of the AoN cost. In case of no experience in Turnkey projects, the vendor for main component of



the Turnkey project may be selected if it has experience as per paragraph 14 (b) (ii) above and experience of installation or integration of similar equipment/system or system of systems.

(v) **ICT Cases.**

(aa) Certification to be included if linked to scope of work - Gartner Quadrant /ISO9001/CMMi3 or more (specifying development /service/ acquisition models) /ISO27001. For Information Security and large value projects preferably CMMi5 may be specified.

(ab) Compliance with IEEE/ ITU standards depending upon nature/type of project or solution required.

(c) **Financial Parameters.**

(i) **Average Annual Turnover.** Minimum average annual turnover for last three financial years, ending 31st March of the previous financial year i.e 31 Mar 2021.

(ii) **Net Worth.** Net worth of entities, ending 31st March of the previous financial year i.e 31 Mar 2021.

(iii) **Insolvency.** The entity should not be under insolvency resolution as per Indian Bankruptcy Code at any stage of procurement process from the issuing of RFP to the signing of contract.

(iv) **Credit Rating (Desirable Financial Parameter).** Long term credit rating equivalent to CRISIL rating on Corporate Credit Scale as CCR-BBB or better, and SME-04 or better for SMEs issued by credit rating agencies recognized by SEBI. Credit rating should be as on 31st March of the previous financial year, i.e 31 Mar 2021.

(d) **Other Parameters.**

(i) **Industrial License (IL).** Details of Valid defence industrial license with a copy to be enclosed by the vendor.

(ii) **Registration.** Details of registration.

15. **Stipulations for Applying Parameters.**

(a) Areas like manufacturing/ electronics/ Radio Relay/ Radio Communication Equipment etc.

(b) In case the Applicant Entity is unable to meet the Financial Parameters by itself, it may rely on its Holding Company (as defined in the Companies Act, 2013 and amendments thereof) ("Companies Act") for fulfilment of the Financial Parameters, in which case reliance must be placed on the Holding Company towards fulfilment of ALL the Financial Parameters.

(c) In case the Applicant Entity is unable to meet one or more of the Technical Parameters by itself, it may rely on a Group Company(ies) for fulfilment of the Technical Parameters. A Group Company in relation to the Applicant Entity may be:-

(i) A company of which the Applicant Entity it is an Associate Company. Such company should have ownership, directly or indirectly, of at least 26% of the voting shares of the Applicant Entity.



- (ii) A company which is an Associate Company of the Applicant Entity. The Applicant Entity should have ownership directly or indirectly, of at least 26% of the voting shares of such Associate Company.
- (iii) A Company with whom the Applicant Entity is commonly owned, directly or indirectly, for at least 26% of the voting shares by another company. For example: An Applicant Company A is an Associate Company of Company B, in which B holds at least 26%. Further, C is also an Associate Company of B, in which B holds at least 26%. In this case the Applicant Company may use the credentials of C as well.
- (iv) The Holding Company and Subsidiary Companies (as defined under the Companies Act) of the Applicant Entity.
- (d) The Applicant entity may be a single entity or a group of entities (the "Consortium"), coming together to implement the project. In such case:-
- (i) The credentials of only those members or their related entities may be counted, who have at least 26% equity stake in the Consortium.
- (ii) Each Consortium should have a designated Lead Member.
- (iii) For Technical Parameters, any of the Consortium members or their Group Companies may meet the criteria.
- (iv) For Financial Parameters; the Turnover and Net Worth of the Consortium Member shall be reckoned proportionate to Consortium Member's equity stake in the Consortium, and each Consortium member should meet the other criteria pertaining to Insolvency and Credit Rating. In case the Consortium Member relies on its Holding Company for any one of the above-mentioned Financial Parameters, then reliance must be placed on the Holding Company for meeting all the financial Parameters.
- (e) Vendors should provide all necessary self-authenticated documentation in support of their achievement of criteria. Such documentation should inter-alia include:-
- (i) Details of projects/ supply orders successfully executed in the last two years.
- (ii) Annual reports for three years of applicant entity, parent and associate companies, consortium and JV partners.
- (iii) Details of shareholders, promoters, associated, allied and JV companies.
- (iv) Details of vigilance action, viz. ongoing investigation and suspension/ debarment/ blacklisting actions against the applicant entity or any of its allied entities, parent company or consortium and JV partners, if any by any Department/agency of Central Government.
- (v) A certificate from CA/CS indicating the financial parameters for the last three years as per Paragraph 14(c).
- (f) Any vendor furnishing false information will be liable for action as per existing guidelines.



**Appendix A**

(Ref to Para 8,10 of RFI  
B/46236/HCRR/Sigs5(b)  
dt 03 Mar 22)

**REQUEST FOR INFORMATION: PROCEDURE FOR RESPONSE****General**

1. The Indian Army is planning to procure HCRR. With the view to identify probable vendors who can undertake the said project, OEMs and Authorised Vendors are requested to forward information on the product which they can offer. The parameters and broad specifications of the item are mentioned in the questionnaire attached as per **Appendix 'C'**. In addition, the vendors are required to furnish details as per Performa at **Appendix 'B' (refer Annexure II of Appendix A of Chapter II of DAP 2020)**.

2. Apart from the information sought in the Appendices, the vendors may also forward technical details, product brochures and literature etc pertaining to the item in question.

3. The required information / details may please be forwarded to the following address by **02 May 2022**:-

(a) Directorate Gen Sigs (Sigs-5), IHQ MoD (Army), Room No 602, A Wing, Sena Bhawan. Tele and Fax No: 0112301110, Email: [tac.comns-5@gov.in](mailto:tac.comns-5@gov.in)

(b) Directorate General of Capability Development (CD-9) General Staff Branch Room No -411, A Wing, Sena Bhawan, Integrated HQ MoD (Army), DHQ PO, New Delhi -110011, Fax No : 011-23793274, email: [tac.comns-5@gov.in](mailto:tac.comns-5@gov.in)

(c) Army Design Bureau (GSQR Cell), General Staff Branch, Room No -16, C Wing, Sena Bhawan, Integrated HQ MoD (Army), DHQ PO New Delhi 110011, email: [tac.comns-5@gov.in](mailto:tac.comns-5@gov.in)





**Appendix B**

(Ref to Para 8 of RFI and  
Para1 of Appendix A of RFI  
B/46236 / HCRR / Sigs5(b)  
dt 03 Mar 22

**VENDOR INFORMATION PROFORMA**

1. **Name of the Vendor / Company / Firm.** (Company profile including Share Holding pattern, in brief, to be attached)

2. **Type (Tick the Relevant Category).**

Original Equipment Manufacturer (OEM)	Yes / No
Authorised Vendor of foreign Firm	Yes / No (attach details, if Yes) Others (give specific details)

3. **Contact Details.**

- (a) Postal Address :  
(b) Building No :  
(c) City :  
(d) State :  
(e) Pin Code :  
(f) Tele :  
(g) Fax :  
(h) URL / Web Site :  
(i) Email :

4. **Local Branch / Liaison Office / Agent (if any).**

- (a) Name :  
(b) Postal Address :  
(c) Building No :  
(d) City :  
(e) State :  
(f) Pin Code :  
(g) Tele :  
(h) Fax :  
(i) URL / Web Site :  
(j) Email :

5. **Financial Details.** Category of Industry (Large / Medium / Small Scale): \_\_\_\_\_

6. **Certification by Quality Assurance Organisation.**

<u>Ser</u>	<u>Agency</u>	<u>Certification</u>	<u>Applicable from (Date and Year)</u>	<u>Valid Till (Date and Year)</u>



7. **Details of Registration.**

<b><u>Agency</u></b>	<b><u>Registration No</u></b>	<b><u>Validity (Date)</u></b>	<b><u>Equipment</u></b>
GeM			
DGQA/DGAQA/DGNAI			
OFB			
DRDO			
Any other Govt Agency			

8. **Membership of FICCI /ASSOCHAM / CII or other Industrial Associations.**

<b><u>Ser</u></b>	<b><u>Name of Organisation</u></b>	<b><u>Membership Number</u></b>
(a)		
(b)		
(c)		
(d)		

9. **Equipment / Product Profile (to be submitted for each product separately).**

- (a) Name of Product :  
(IDDM Capability be indicated against the product) (Should be given category wise for e.g. all products under night vision devices to be mentioned together)
- (b) Description (attach technical literature):
- (c) Whether OEM or Integrator
- (d) Name and address of Foreign collaborator (if any):
- (e) Industrial License Number:
- (f) Indigenous component of the product (in percentage)
- (g) Status (in service / design and development stage):
- (h) Production capacity per annum:
- (i) Countries / agencies where equipment supplied earlier (give details of quantity supplied):
- (j) Estimated price of the equipment.
- (k) Alternatives for meeting the objectives of the equipment set forth in the RFI.
- (l) Any other relevant information

10. **Declaration.** It is certified that the above information is true and any changes will be intimated at the earliest.

(Authorised Signatory)



**Appendix C**

(Ref to Para 8 of RFI and  
Para1 of Appendix A of RFI  
B/46236/ HCRR/Sigs5(b) dt  
03 Mar 22)

**REQUEST FOR INFORMATION: QUESTIONNAIRE****Operational Requirements**

1. **General.** The proposed service employment of HCRR and terrain of operation have been covered in detail in Paragraphs 1 – 7 of this RFI. The vendor is required to clearly indicate suitability of the equipment for the same.

2. **Weight and Dimensions.** The overall weight of the equipment should be as low as possible to enable easy carriage, deployment, setup and operation in the intended terrain of operation. The weight and dimensions of each equipment and part of the HCRR will be given. As a broad guideline, the Radio Unit, Antenna Assembly, Antenna Mast, Interface Unit, Antenna Alignment Unit, Carriage Boxes and Cables must be included. Any additional equipment and accessory being provided for enhanced performance must also be included in the list. This will be given in the following format:-

<u>Ser</u>	<u>Part / Subassembly / Accessory</u>	<u>Description</u>	<u>Weight</u>	<u>Dimensions</u>	<u>Material</u>
(a)					

3. **Transportability.** The equipment will be light, ergonomic, compact, portable and easy to handle. The vendors will confirm that the HCRR is transportable by the following means:-

(a) **By Troops.** It should be possible to transport the various sub-assemblies of the equipment on a man-pack basis. As an approximation weight that can be transportable by a man to be taken as 20Kg. The load to be carried by each man will be indicated by the vendor.

(b) **On Mules.** It should be possible to transport the various sub-assemblies of the equipment on mules. As an approximation weight that can be transportable by a mule to be taken as 50Kg. The load to be carried by each mule will be indicated by the vendor.

(c) **In 5/7.5 ton vehicle.** It should be possible to carry each part of the equipment in a vehicle with fixed antenna and antenna mast as described in Part I of this RFI. The equipment will be deployable and operable in the 5/7.5 ton vehicle. Modifications required to be made to the prime mover, if any, will be clearly indicated by the vendor. The modifications should be such that the prime mover is roadworthy and can be legally driven anywhere as per existent norms of the Road and Transport Department of India. The design presentation of the vehicle with HCRR to be given by the vendor.



4. **Platform of Operation**. The equipment should be modular and designed for ground based, shelter based and vehicle based tactical deployment and operation. The vendor will confirm that the equipment, accessories and sub-assemblies is suitable for fielding, deployment and operation in the roles desired. Any additional equipment and accessory being provided for enhanced performance may be included in the list as given below:-

<u>Sub-System</u>	<u>Ground</u>	<u>Vehicle</u>	<u>Shelter</u>
Radio			
Power			
Antenna			

5. **Time Required to Come into Action**. Time required to come into action with a team of three trained personnel in various roles will be indicated both by day and night in the following format:-

<u>Ground</u>		<u>Vehicle</u>		<u>Shelter</u>	
<u>Day</u>	<u>Night</u>	<u>Day</u>	<u>Night</u>	<u>Day</u>	<u>Night</u>

6. **Camouflage**. Colour of the equipment and possibility to change the colour of the equipment as per user requirement will be specified.

7. **Vehicle Mounting Kit**. Details and specifications of the vehicle mounting kit, to include material of the kit will be indicated. Any loose items like rope and bolts can be listed in the accessories column. The format is as given below:-

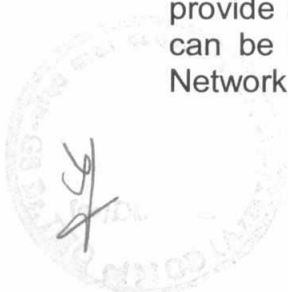
<u>Ser</u>	<u>Description</u>	<u>Weight</u>	<u>Dimensions</u>	<u>Material</u>	<u>Accessories</u>
(a)					
(b)					

8. **Shelter Mounting Kit**. Details and specifications of shelter mounting kit will be indicated as given below:-

<u>Ser</u>	<u>Description</u>	<u>Weight</u>	<u>Dimensions</u>	<u>Material</u>	<u>Accessories</u>
(a)					
(b)					

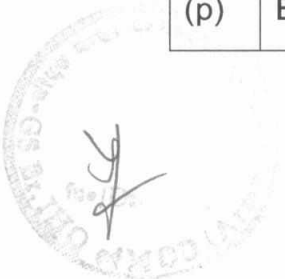
### **Technical Parameters**

9. **General**. The equipment will be deployed in Point to Point Mode in both Fixed Frequency (FF) and Frequency Hopping (FH) Operation. The vendor will provide all data in the table as given below. In case required, more than one table can be used. For example, FF and FH operation can be separately mentioned. Network Management features will be indicated by the vendor.



10. **Radio Subsystem.** Technical specifications of the radio subsystem will be given in the following format. Additional information may be added if so desired by the vendor.

<u>Ser</u>	<u>Parameter</u>	<u>Value</u>	<u>Remarks</u>
(a)	Communication Range		<ul style="list-style-type: none"> <li>• With CLOS, RLOS and FFZ Clearance in FF and FH modes.</li> <li>• Specify ranges at 99, 99.9 and 99.99% reliability.</li> </ul>
(b)	Frequency of Operation		
(c)	Throughput with Spectrum Requirement		Specify with range and reliability in FF and FH modes.
(d)	RF Power Output		In FF and FH modes. Provide both Peak to Peak and RMS.
(e)	Adaptive Power Control		To set up link with minimum radiated RF power
(f)	RF Power Modes		User selectable or configurable High/Low power modes.
(g)	Repeater Mode Configuration		<ul style="list-style-type: none"> <li>• Specify with range and reliability in FF and FH modes with one repeater link.</li> <li>• Maximum number of repeater stations deployable in a single chain of a link with the ranges.</li> </ul>
(h)	Noise Figure		
(i)	BER Tolerance		Should be greater than or equal to 1 in $10^3$ .
(j)	Receiver Sensitivity		For FF and FH.
(k)	Channel Bandwidth		For FF and FH.
(l)	Channel Spacing		For FF and FH.
(m)	Modulation Technique		For FF and FH.
(n)	Hopping Rate		Only for FH Operation.
(o)	Fade Margin		
(p)	EOW with Secrecy		



<u>Ser</u>	<u>Parameter</u>	<u>Value</u>	<u>Remarks</u>
(q)	Base Band Interfaces		Indicate No of Ports, both Optical and Electrical; Also the Standard, Type and Pin Configuration of the interfaces to be clearly indicated.
(r)	AC Power Input		<ul style="list-style-type: none"> <li>• Voltage, Current and Frequency.</li> <li>• Variation tolerance for the above.</li> <li>• No of ports and automatic changeover.</li> </ul>
(s)	DC Power Input		
(t)	Type of Antennas		Parabolic, Sectoral etc be mentioned along with coverage angle
(u)	Antenna Gain		For each type of antenna
(v)	Directivity		
(w)	VSWR		
(x)	Operating Temperature		Give Max and Min
(y)	Storage Temperature		Give Max and Min
(z)	Safety Features		Give for both Equipment and Operator safety.
(aa)	System Gain		
(ab)	Interfaces		
(ac)	Provision for Interference Mitigation		
(ad)	Security Feature in the Radio Relay wrt to Encryption and other aspects		Provision of 256 bit AES or other commercial grade secrecy algorithms and any other security provisions be specified.
(ae)	Network Management Features		(i) All functionalities of a radio relay should be configurable using the NMS. (ii) SNMP and Compatibility of OS to be given.
(af)	Parameters of Ruggedized Configuration terminal for the radio relay		Ruggedization Standard MIL-STD-810G/ JSS 55555, Processor, RAM 8 GB, Display Size, Operating System to be specified

11. **Software Upgrades.** The vendor will indicate if any software is being used in the equipment. If yes, it will be indicated as to how memory is available to accommodate software upgrades and whether the software is restorable in field by user/maintenance agency.



12. **Indigenous Software.** In order to leverage the highly developed indigenous software expertise existing in the country, it is pertinent that maximum equipment should function with indigenous software driving the desired applications while the backend software i.e. Operating Systems continues to be OEM defined. Vendor to indicate availability of following provisions for management of the Radio Relay in the indigenous software in the Network Management System being utilized in the equipment/system. Any additional provisions and status shown in the NMS also be intimated.

(a) **System Details.**

<u>Ser</u>	<u>Parameter</u>	<u>Value (Yes/No)</u>	<u>Remarks</u>
(i)	Name		
(ii)	Details		
(iii)	Location		
(iv)	Radio Type		
(v)	Mode		
(vi)	Version		
(vii)	Time Since System Start		
(viii)	Start Up Time		
(ix)	Current Time		
(x)	Mac Address		
(xi)	IP Address		
(xii)	Subnet Mask		
(xiii)	Gateway Address		

(b) **Wireless System.**

<u>Ser</u>	<u>Parameter</u>	<u>Value (Yes/No)</u>	<u>Remarks</u>
(i)	Transmission Power		
(ii)	Accessory Status		
(iii)	Channel Frequency		
(iv)	Channel Size		



<u>Ser</u>	<u>Parameter</u>	<u>Value (Yes/No)</u>	<u>Remarks</u>
(v)	Wireless Security		
(vi)	GPS Status		
(vii)	GPS Position		
(viii)	Configured Link		
(ix)	Active Link		
(x)	Radio Temp		
(xi)	RF1/RF2		
(xii)	Buffered Packets		
(xiii)	Discarded Packets		
(xiv)	Lost Packets		

(c) **Link Status.**

<u>Ser</u>	<u>Parameter</u>	<u>Value (Yes/No)</u>	<u>Remarks</u>
(i)	Name		
(ii)	ID		
(iii)	Subscriber IP		
(iv)	Subscriber MAC		
(v)	Active		
(vi)	Link Up Time		
(vii)	Link Distance		
(viii)	Link Operating Mode		
(ix)	Burst Rate		
(x)	Transmission Power		
(xi)	Throughput Load		

(d) **Network Management.**

<u>Ser</u>	<u>Parameter</u>	<u>Value (Yes/No)</u>	<u>Remarks</u>
(i)	Transmission Power		
(ii)	Frequency		





<u>Ser</u>	<u>Parameter</u>	<u>Value (Yes/No)</u>	<u>Remarks</u>
(iii)	Radio Network Planning		
(iv)	Line of Sight Analysis		
(v)	Radio Coverage Analysis		
(vi)	Spectrum Analysis		

13. **Electronic Counter Counter Measures (ECCM)**. The vendor will bring out any advanced ECCM features in the HCRR. If the feature being offered is frequency hopping then rate of hops with corresponding bandwidth will be tabulated in the response. Any other improved feature to implement ECCM will be indicated with details.

14. **Artificial Intelligence**. The vendor will indicate the feasibility of incorporating AI in the equipment. Possible areas where AI may be considered are predictive maintenance, ECCM features, training with simulators or any other feature which the vendors may elaborate.

15. **Adaptive Frequency Features**.

(a) **Adaptive Frequency Control**. The vendor will bring out if the equipment will support Adaptive Frequency Control to avoid jamming of the working frequency and if the feature is available in both FF and FH modes.

(b) **Adaptive Frequency Hopping**. The vendor will bring out if the equipment will support Adaptive Frequency Hopping to evade any frequency jamming in the FH mode.

16. **Power Subsystem**.

(a) The equipment should work on AC as well as DC power supply. On power failure, there will be auto changeover from AC to DC and vice versa without the equipment switching off or rebooting. The equipment will be hardened to ensure that power fluctuations in field conditions do not damage or cause malfunction in the equipment.

(b) **Secondary Battery**. The equipment will be supplied with secondary batteries for DC operation. The batteries will be light weight with high power density. Technical and physical specifications of the batteries will be given by the vendor. The aspect of ruggedness and environmental specifications to be mentioned by vendor.

(c) Hardware requirements, if any for primary power source like Generator set/ Civil main / secondary power source like battery need to be mentioned along with facility for Auto Switch over from AC to DC and vice versa.

(d) Technical specifications of Battery Charging for charging the Batteries and requirement of FCBC with the technical specifications to be indicated.

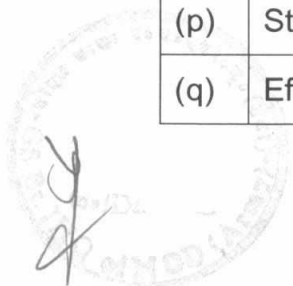


- (e) Uninterrupted Power Supply (UPS) requirement for critical equipment to be indicated with backup time.
- (f) Power supply system should fulfil the requirement of power for the system at High Altitude Area by taking Deration factor into consideration.
- (g) Safety and Protection to be included.
- (h) If the vendor is offering any additional items for enhanced performance at the cost of incurring weight or size penalty, the same may be given in different tables.

### **Antenna Subsystem**

17. Data about the antenna subsystem including the mast will be given as per the format in the table below. The following data to be given for each type/ configuration of antenna. Any additional data may also be given.

<b><u>Ser</u></b>	<b><u>Parameter</u></b>	<b><u>Value</u></b>	<b><u>Remarks</u></b>
(a)	Extended Height		
(b)	Retracted Height		
(c)	Diameter		
(d)	Mast Configuration		Telescopic, Sectional, Tripod, etc. All configuration which can be provided by the vendor to be mentioned separately.
(e)	Material		Provision of Carbon Fiber Mast to be mentioned.
(f)	Weight		
(g)	Head Load		
(h)	Wind Speed		Give values for Operation and Survival
(i)	Erection Mechanism		Manual, Electrical, Hydraulic, Pneumatic, Winch etc
(j)	Auto Rotator Mechanism		
(k)	Max Vertical Rotation		
(l)	Max Horizontal Rotation		
(m)	Automatic Alignment		Possible or not
(n)	Vehicle Mounting		For in-service 5/7.5 ton vehicle .
(o)	Operating Temperature		Give Max and Min
(p)	Storage Temperature		Give Max and Min
(q)	Effect of Height on		



<u>Ser</u>	<u>Parameter</u>	<u>Value</u>	<u>Remarks</u>
	Communication Range		
(r)	Effect of Height on Wind Velocity Range		
(s)	No. of Sections		
(t)	Area of Antenna exposed to Wind		
(u)	Guy Ropes		
(v)	Environmental Specification		
(w)	Adaptor for Lightening Arrestor		
(x)	Total time of deployment		
(y)	No. of people required.		

18. If the vendor is offering any additional items for enhanced performance at the cost of incurring weight or size penalty, the same may be given in different tables.

19. **Effect of Mast Height.** The effect of antenna height variation on communication ranges and other parameters will be brought out by the vendor. The table be provided for the complete height of the mast . The format is as given below:-

<u>Ser</u>	<u>Extend ed Height</u>	<u>Wind Velocity</u>		<u>Communicatio n Range</u>	<u>Diamete r</u>	<u>Retracte d Height</u>	<u>Weight</u>
		<u>Operatio n</u>	<u>Surviva l</u>				
(a)	2m						
(b)	3m						
(c)	4m						
(d)	5m						
(e)	6m						

20. **Explanatory Notes.**

(a) Values will be indicated separately for different mast types viz Pneumatic, electrical / any other.

(b) The variation in all parameters with change in height of the antenna mast from 2 – 20 Meters will be indicated in the table above. Suitability for each terrain will also be included alongside.



(c) Maximum Wind Velocity sustainable by the mast and antenna at each height and the corresponding effect on the weight and range of communication will be indicated.

(d) If the vendor is offering any additional items for enhanced performance at the cost of incurring weight or size penalty, the same may be given in different tables.

21. **Feeder / Cables / Connectors.** All types of feeder cables, other cables for connecting various parts of the equipment along with their specifications will be indicated. Ability to carry power in the feeder cable will also be indicated. If the vendor is offering any additional items for enhanced performance at the cost of incurring weight or size penalty, the same may be given in different tables.

<u>Ser</u>	<u>Name of Cable / Accessory</u>	<u>Material and Weight</u>	<u>Dimension</u>	<u>Technical Specifications</u>	<u>Purpose</u>
(a)					
(b)					

22. **Lightening Arrestor.** Provision for Protection against lightning by way of provision of lightening arresters to be mentioned along with the technical specifications of the lightening arrestor.

23. **Accessories for Antenna Erection on Various Platforms.** Accessories for antenna erection on various platforms like ground, vehicles and for sheltered operation will be given as below. Different tables will be used to give inputs for different platforms if required. If the vendor is offering any additional items for enhanced performance at the cost of incurring weight or size penalty, the same may be given in different tables.

<u>Ser</u>	<u>Name of Accessory</u>	<u>Material and Weight</u>	<u>Dimension</u>	<u>Technical Specifications</u>	<u>Purpose</u>
(a)					
(b)					

### **Environmental Specifications**

24. The environmental specifications being met by the equipment will be indicated. Conformity to JSS 5555 Class L3 will be indicated. Any variations to JSS 5555 Class L3 specification to any of the module/ sub system of the radio relay equipment to be indicated separately. The equipment will be evaluated for the specifications during the trial stage.



25. In addition, the following will also be indicated:-
- Any other Mil standards being conformed to by the equipment.
  - Joint Service Specifications (JSS) or Joint Service Guidelines (JSG) being conformed to by the equipment.
  - Name of accredited laboratory (Indian / International) which has certified the equipment.

26. **Electromagnetic Compatibility.** The EMI/EMC compatibility and Mil Standards that can be provided for the equipment will be indicated. Conformity to Mil Std 461E or later at Sub System level and Electric Static Discharge (ESD) at system level will also be indicated.

<u>Ser</u>	<u>Query</u>	<u>Vendor Response</u>
(a)	Has the equipment/product/product family been tested for conformity to Mil Std 461 (Version E or later) at sub system level	<u>Yes/ No</u>
(b)	If Yes to 26(a) details of the test conducted along with the date and name of the lab with accreditation	
(c)	If No to 26(a) what other EMC Standards does it comply to	
(d)	Has the equipment/product/product family been tested for conformity to Mil Std 464 (Version C or later) at sub system level	<u>Yes/ No</u>
(e)	If Yes to 26(c) details of the test conducted along with the date and name of the lab with accreditation	
(f)	If No to 26(c) what other EMC Standards does it comply to	

### Operating Aspects of the Equipment

27. **Built In Test Equipment (BITE).** The equipment will have BITE facility. The vendor will include methodology of conducting the BITE testing.

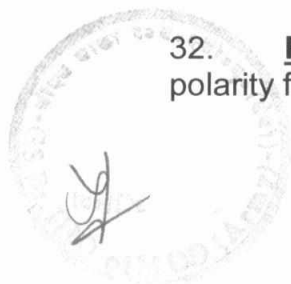
28. **POST.** The equipment will have POST to identify defects upto PCB level.

29. **Reliability.** The vendor will indicate for how many continuous hours the equipment will operate for without error and without switching off.

30. **Mean Time Between Failure and Mean Time to Repair.** MTBF and MTTR of the equipment will be indicated by the vendor.

31. **Counter for Usage.** The equipment will have a counter for displaying cumulative usage of the equipment for facilitating preventive and periodic maintenance.

32. **Reverse Polarity Protection.** Protection/provision to prevent reverse polarity fitment for all PCBs/Cards/Cables/Battery be provided.



33. **Modular Construction.** The equipment will have modular construction to facilitate repairs by replacement of PCBs and modules.
34. **Delivery Capacity.** The vendor will indicate the delivery capacity of the equipment. (Timeframe vis-à-vis quantity will be indicated).
35. **Equipment Life.** The service life and shelf life of the equipment will be given by the Vendor.

### **Repair and Maintenance**

36. **Warranty.** The vendor will give details of the following:-  
 (a) Guarantee.  
 (b) Warranty.  
 (c) AMC.
37. **After Sales Support.** The following details will be provided by the vendor:-  
 (a) Repair and maintenance philosophy of the OEM.  
 (b) What is the level of repair envisaged for maintenance?  
 (c) What are the repair facilities in terms of infrastructure and test equipment?  
 (d) Will spares, Special Maintenance Tools, Assemblies and Special Test Equipment's be provided for carrying our component level repair?  
 (e) Will AMC be available for repair and calibration cover for the equipment, special maintenance tools and special test equipment?  
 (f) Will Interactive Electronic Training manuals (IETMs) be provided as part of technical literature? If yes which class?
38. **Provisioning.** The vendor will provide details of vendors and sub vendors, especially those with establishments in India and readiness / Lead time towards spares provisioning.
39. **NSN No.** Possibility of provision of NSN No for each spare / component will be indicated as per Bill of Material (BoM). Compliance to submission of BoM as per format below will be indicated:-

<u>Ser</u>	<u>Item</u>	<u>Part No</u>	<u>Drq No</u>	<u>NSN</u>	<u>Manufactur er</u>	<u>Schematic Ref</u>	<u>Standard of Reference</u>	<u>Qty</u>	<u>Mil/ Industrial / Commercial</u>



40. **Product Support.** The vendor will indicate and give details of the information sought in the following paragraphs.

- (a) All major repair and overhaul facilities for major assemblies and component level repairs owned by the vendor in India or abroad.
- (b) Base overhaul facilities and availability of infrastructure in India.
- (c) Management of repairs and spares post contract.
- (d) Engineering Support Package' recommended by the OEM / Vendor and estimated cost.
- (e) Type of AMC provided and likely cost.
- (f) Life time support provided.
- (g) Budgetary estimate of life cycle support contract.
- (h) Upgrades for the software (as applicable).
- (i) Upgradability of hardware for enhanced performance features or due to modifications required to obviate recurring defects.
- (j) Capability of the equipment to back up data and redundancies provided for the same.

41. The vendor will indicate conformity to submission of Manufacturers Recommended List of Spares, Illustrated Spare Part List and Technical Manuals on STEs with drawing reference will be indicated.

42. The vendor will indicate willingness of the firm to participate in Joint Defect Investigation when a component suffers a defect will be indicated.

43. The vendor will indicate compliance to Tangible Obsolescence Management Plan and plan for upward compatibility for latest modules will be indicated.

#### **Manufacturing and Production Aspects**

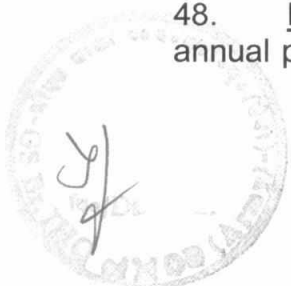
44. **Experience.** The vendor will indicate the number of years of experience and areas of expertise. Details of any similar projects executed by the vendor to supply such equipment to any entity in India and abroad may be provided.

45. **Research, Development and Manufacturing Facilities.** The vendor will provide details of all R&D and manufacturing infrastructure in India and abroad.

46. **Indigenisation.** The vendor will give out his ability and willingness to supply the product to meet the requirements of Buy Indian (IDDM) and / or Buy Indian to meet the aim of Indigenisation as per provisions and spirit of the DAP 2020.

47. **Packaging of Deliverables.** To ensure that each deliverable may be transported in an undamaged and serviceable condition, the vendor will package the deliverables as applicable in accordance with DEFSTAN 81-041(Part 1), STANAG-4280 or an equivalent Military Standard.

48. **Production Capacity.** The vendor will give out his current and planned annual production capability and proposed delivery schedule of the equipment. The



time required to deliver required quantity of the equipment for trials and post contract, time required to deliver the equipment.

### **Trials**

49. The OEM / Vendor will bring out if he is willing to participate in trials as per DAP 2020 in India on 'NCNC' basis.

50. **Timelines.** The following data is also required to be provided by the vendor:-

(a) Maximum quantity of equipment that can be made available for trials on 'NCNC' basis.

(b) Lead time required to field prototype for trials post intimation of clearance in TEC will also be intimated. This should factor in all activities like time for clearance, transportation etc.

51. **Imports.** In case of imported content, the vendor will intimate the likely time and clearances required for import of equipment for trials in India.

52. **Test Standards.** Inputs on test standards adopted for equipment of similar type will be indicated.

53. **Certifications.** Parameters for which certifications can be made applicable and provided in lieu of trial evaluation. Details of parameters of the equipment which can be certified from NABL accredited labs will be indicated.

54. **Simulation and Modelling.** Trials for which simulation or modelling is available will be indicated. Accordingly, feasibility of simulating the trials as per provision of **DAP 2020** will be indicated.

55. The vendor will indicate compliance to submission of the equipment for Maintainability Evaluation Trial as per procedure. MET would be undertaken to establish maintainability of equipment and Engineering Support Package in accordance to the repair philosophy.

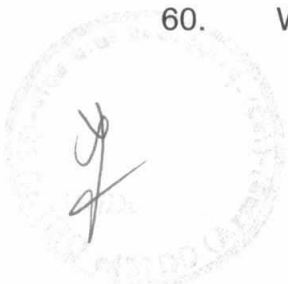
56. Willingness and capability of the firm to provide documentation as per JSS 0251 and as per applicable timelines will be indicated.

57. Willingness and capability of the firm to provide drawing of equipment for electronics and electrical stores as per JSS 50003 will be indicated.

58. Willingness and capability for ESS for all electronic and electrical equipment as per JSS 0613 will be indicated.

59. Conformity to Software Coding Standards IV and V testing as per JSG 0948 : 2017 will be indicated. Submission of Non Malware Certificate will be indicated. Confirmation of software as per IEEE 12207/ JSS 0950 will be indicated.

60. Willingness of firm for QA will be indicated by the vendor.





### **Financial Aspects**

61. **Budgetary Quote and Cost.** The vendor will intimate the cost of one HCRR including all accessories without tax. Details of tax will be indicated separately. Details of cost will include factors like AMC, product support package, training etc. Additional details as deemed appropriate must also be indicated.
62. The vendor will indicate acceptability to the terms of payment as per DAP 2020.
63. The vendor will indicate willingness to offer offsets (if applicable), if proposal exceeds Rs 2000 Crores (for Buy (Global) category only). The vendor to confirm an undertaking to discharge offset contracts amounting to \_\_\_\_% of the value of commercial proposal.
64. The vendor will also indicate willingness for option clause as per DAP 2020.

### **Training**

65. The vendor will indicate ability and willingness to offer the following:-  
 (a) Sectioned / Cut Models, 3D models CDs for training.  
 (b) Training aggregates for conduct of training like projection system, technical literature, charts, slides, blow-up diagrams, training work models, brochures and Computer Based Training (CBT) packages. The CBT should include symptom fault correlation.
66. The vendor will indicate the facilities available at OEM / Vendor premises to conduct training. He will also give out how he can assist in carrying out training of user, maintenance personnel and QA personnel.
67. Recommended training period of maintenance and QA persons and user will be given out by the vendor.
68. Availability and details including cost of simulators for the equipment.
69. Availability and willingness of the vendor to provide soft and hard copies of the "User Handbook", Design Specifications, Technical Manuals including technical manuals along with the CBT for training as per JSS 0251-1.

### **Miscellaneous**

70. Extract of the relevant Technology Perspective and Capability Roadmap TPCR will be included.
71. Any futuristic plans for modification and / or modernisation plans for the equipment being offered.
72. Vendors may consider RFI as advance information to obtain requisite government clearances.




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