

**GOVERNMENT OF INDIA
DEPARTMENT OF SPACE
ISRO TELEMETRY TRACKING & COMMAND NETWORK (ISTRAC)
BANGALORE**

Tender for Integrated Cryo-Receiver Sub-array Development

Bids to be submitted online

Tender No.: ISTRAC/ISTRAC PURCHASE/TR202600011701 dated 07-05-2026

A. Tender Details

Tender No :	ISTRAC/ISTRAC PURCHASE/TR202600011701
Tender Date :	07-05-2026
Tender Classification:	GOODS
Purchase Entity :	ISTRAC PURCHASE
Centre :	ISRO TELEMETRY TRACKING & COMMAND NETWORK (ISTRAC)

Integrated Cryo-Receiver Sub-array Development

- A) Type of tender:- Public Tender- Two part
- B) GeM Non-availability report ID number GEM/GARPTS/30102025/4M094LYSTD8B
- C) Evaluation criteria:- Overall L1
- D) Only Class I/ Class II Local supplier shall be eligible to bid against this tender as defined in Make in India order .
- E) Any clarification with respect to this tender shall be raised against clarification window in the new EGPS. No mail enquiries shall be entertained.
- F) The rate of GST will be as applicable per the HSN code.

A.1 Tender Schedule

Bid Submission Start Date :	07-05-2026 17:00
Bid Clarification Due Date :	28-05-2026 17:00
Bid Submission Due Date :	08-06-2026 14:00
Bid Opening Date :	08-06-2026 14:30
Price Bid Opening Date :	18-06-2026 14:00

B. Tender Attachments

NA

Instructions To Vendors

1. PROFORMA FOR INSTRUCTIONS TO TENDERERS AND TERMS & CONDITIONS OF TENDER

1. a) All available technical literature, catalogues and other data in support of the specifications and details of the items should be furnished along with the offer.

(b) Samples, if called for, should be submitted free of all charges by the tenderer and the Purchaser shall not be responsible for any loss or damage thereof due to any reason whatsoever. In the event of nonacceptance of tender, the tenderer will have to remove the samples at his own expense.

(c) Approximate net and gross weight of the items offered shall be indicated in your offer. If dimensional details are available the same should also be indicated in your offer.

(d) Specifications: Stores offered should strictly confirm to our specifications. Deviations, if any, should be clearly indicated by the tenderer in his quotation. The tenderer should also indicate the Make/Type number of the stores offered and provide catalogues, technical literature and samples, wherever necessary, along with the quotations. Test Certificates, wherever necessary, should be forwarded along with supplies. Wherever options have been called for in our specifications, the tenderer should address all such options. Wherever specifically mentioned by us, the tenderer could suggest changes to specifications with appropriate response for the same.

2. ACCEPTANCE OF STORES: (a) The stores shall be tendered by the Contractor for inspection at such places as may be specified by the purchaser at the Contractor's own risk, expense and cost. (b) It is expressly agreed that the acceptance of the stores Contracted for, is subject to final approval by the purchaser, whose decision shall be final. (c) If, in the opinion of the purchaser, all or any of the stores do not meet the performance or quality requirements specified in the Purchase Order, they may be either rejected or accepted at a price to be fixed by the purchaser and his decision as to rejection and the prices to be fixed shall be final and binding on the Contractor. (d) If the whole or any part of the stores supplied are rejected in accordance with Clause No. (c) above, the purchaser shall be at liberty, with or without notice to the Contractor, to purchase in the open market at the expense of the Contractor stores meeting the necessary performance and quality Contracted for in place of those rejected, provided that either the purchase, or the agreement to purchase, from another supplier is made within six months from the date of rejection of the stores as aforesaid.

3. ARBITRATION : All disputes, differences, claims and demands arising under or pursuant to or touching this agreement shall be referred to Arbitration of a sole Arbitrator to be appointed by the Director, ISTRAC, whose decision/award will be final and binding on both the parties. Such arbitration shall be held in Bangalore and shall be subject to and governed by the provisions of the Arbitration and Conciliation Act of 1996 or any statutory modification or re-enactment thereof. The language to be

used in Arbitration is English only.

4. As a Government of India Department, this office is exempted from payment of Octroi and similar local levies. Tenderers shall ensure that necessary Exemption Certificates are obtained by them from the Purchase Officer concerned to avoid any payment of such levies.

5. a) Your offer should be valid for 120 days from the date of opening of the tender. b) Prices are required to be quoted according to the units indicated in the annexed tender form. When quotations are given in terms of units other than those specified in the tender form, relationship between the two sets of units must be furnished.

6. CUSTOMS DUTY : This office is eligible for Concessional Customs Duty @ 5.5% against Ministry of Finance, Department of Revenue, Government of India, vide Customs Notification No.51/96-Cus Dated 23-07-1996 (Sl.No.1) and amended under Notification No.93/96 dated 11th December 1996 and 24/2002 dated 01-03-2002

7. DESPATCH: The Contractor is responsible for obtaining a clear receipt from the Transport Authorities specifying the goods despatched. The consignment should be despatched with clear Railway Receipt/Lorry Receipt. If sent in any other mode, it shall be at the risk of the Contractor. Purchaser will take no responsibility for short deliveries or wrong supply of goods when the same are booked on 'said to contain' basis. Purchaser shall pay for only such stores as are actually received by them in accordance with the Contract.

8. TAXES: GST is payable as per applicable rates.

9. GUARANTEE & REPLACEMENT: (a) The Contractor shall guarantee that the stores supplied shall comply fully with the specifications laid down, for material, workmanship and performance. (b) Warranty shall be for the period mentioned in the tender document. After the acceptance of the stores, if any defects are discovered therein or any defects therein found to have developed under proper use, arising from faulty stores design or workmanship, the Contractor shall remedy such defects at his own cost provided he is called upon to do so within the warranty period, by the purchaser who shall state in writing in what respect the stores or any part thereof are faulty. (c) If, in the opinion of the purchaser, it becomes necessary to replace or renew any defective stores such replacement or renewal shall be made by the Contractor free of all costs to the purchaser, provided the notice informing the Contractor of the defect is given by the purchaser in this regard within the said period of warranty from the date of acceptance thereof. (d) Should the Contractor fail to rectify the defects, the purchaser shall have the right to reject or repair or replace at the cost of the Contractor the whole or any portion of the defective stores. (e) The decision of the Purchaser notwithstanding any prior approval or acceptance or inspection thereof on behalf of the Purchaser, as to whether or not the Stores supplied by the Contractor are defective or any defect has developed within the said period of warranty or any other period or as to whether the nature of defects requires renewal or replacement, shall be final, conclusive

and binding on the Contractor. (f) To fulfill guarantee conditions outlined in (a) to (e) above, the Contractor shall, at the option of the Purchaser, furnish a Bank Guarantee (as prescribed by the Purchaser)

10. If the IGST is applicable, the same will be reimbursed if it is reflected in Bill Of Entry. Proof shall be provided while claiming payment.

11. It is to be noted that either Customs Duty or GST is applicable (any one)

12. JURISDICTION : The contract/ purchase order shall be governed by an interpreted and construed in accordance with the laws of India. The courts situated at Bangalore only shall have jurisdiction to deal with and decide any legal matter or dispute arising out of contract/ purchase order.

13. PACKING FORWARDING & INSURANCE: The Contractor will be held responsible for the stores being sufficiently and properly packed for transport by rail, road, sea or air to withstand transit hazards and ensure safe arrival at the destination. The packing and marking of packages shall be done by and at the expense of the Contractor. The purchaser will not pay separately for transit insurance, all risks in transit being exclusively of the Contractor and the Purchaser shall pay only for such stores as are actually received in good condition in accordance with the Contract.

14. Please provide your compliance for Security Deposit, Performance Bank Guarantee and Liquidated Damages Clause.

15. PRICES: Tender offering firm prices will be preferred. Where a price variation clause is insisted upon by a tenderer, quotation with a reasonable ceiling should be submitted. Such offers should invariably be supported by the base price taken into account at the time of tendering and also the formula for any such variation/s.

16. REJECTED STORES: Rejected stores will remain at destination at the Contractor's risk and responsibility. If instructions for their disposal are not received from the Contractor within a period of 14 days from the date of receipt of the advice of rejection, the purchaser or his representative has, at his discretion, the right to scrap or sell or consign the rejected stores to Contractor's address at the Contractor's entire risk and expense, freight being payable by the Contractor at actuals.

17. Sales Tax and/or other duties/levies legally leviable and intended to be claimed should be mentioned in the price bid template. If nothing is mentioned, then it will be presumed that the rate quoted is inclusive of all taxes/duties.

18. SECURITY DEPOSIT: Wherever, the Purchase Order value is Rs. 5.00 Lakhs or more, on acceptance of the tender, the Contractor shall, at the option of the Purchaser and within the period specified by him, deposit with him, in cash or in any other form as the Purchaser may determine,

security deposit not exceeding ten percent of the value of the Contract as the Purchaser shall specify. If the Contractor is called upon by the Purchaser to deposit, 'Security' and the Contractor fails to provide the security within the period specified, such failure shall constitute a breach of the Contract, and the Purchaser shall be entitled to make other arrangements for the re-purchase of the stores Contracted at the risk of the Contractor in terms of Sub-Clause (ii) and (iii) of clause regarding Delivery. (b) hereof and/or to recover from the Contractor, damages arising from such cancellation.

19. SETTLEMENT OF DISPUTES : Except as otherwise specifically provided in the contract, all disputes concerning question of fact arising under the Contract shall be decided by the Purchaser subject to a written appeal by the Contractor to the Purchaser whose decision shall be final to the parties hereto. Any disputes or differences including those considered as such by only one of the parties arising out of or in connection with the Contract shall be, to the extent possible, settled amicably between the parties. If amicable settlement cannot be reached, then all disputes shall be settled by arbitration.

20. TERMS & CONDITIONS OF TENDER

21. TEST CERTIFICATE: Wherever required, test certificates should be sent along with the despatch documents.

22. The authority of the person signing the tender, if called for, should be produced.

23. The Purchaser reserves the right to place order on the successful tenderer for additional quantity up to 25% of the quantity offered by them at the rates quoted.

24. The purchaser shall be under no obligation to accept the lowest or any tender and reserves the right of acceptance of the whole or any part of the tender or portions of the quantity offered and the tenderers shall supply the same at the rates quoted.

25. The tenderer should supply along with his tender, the name of his bankers as well as the latest Income-Tax clearance certificate duly countersigned by the Income-Tax Officer of the Circle concerned under the seal of his office, if required by the Purchaser.

26. The term Contractor shall mean, the person, firm or company with whom or with which the order for the supply of Stores is placed and shall be deemed to include the Contractor's successors, representative, heirs, executors and administrators unless excluded by the Contract.

27. The term Purchase Order shall mean the communication signed on behalf of the Purchaser by an Officer duly authorised intimating the acceptance on behalf of the Purchaser on the terms and conditions mentioned or referred to in the said communication accepting the tender or offer of the Contractor for supply of stores or plant, machinery or equipment or part thereof.

28. The term Purchaser shall mean the President of India or his successors or assigns.

29. The term "Stores" shall mean what the Contractor agrees to supply under the Contract as specified in the Purchase Order including erection of plants & machinery and subsequent testing, should such a condition is included in the Purchase Order.

30. Option Clause:- ISTRAC reserves the right to increase/decrease the ordered quantity by upto (25) Twenty Five percent at any time, till final delivery date (of the extended delivery date of the contract), by giving reasonable notice even though the quantity ordered initially has been supplied in full before the last date of the delivery period (or the extended delivery period)

2. TENDER TERMS AND CONDITIONS

1. All information in Vendor Specified Terms shall be provided without fail to avoid unnecessary correspondence / delay in process. The same should reach before technical bid opening date and time without fail.

2. a) Order no: F.No.6/18/2019 PPD dated 23.07.2020 of Department of Expenditure), Ministry of Finance

Under Public procurement division for the General Financial rule (GFRs).

3. As per Rule 144(xi) of General Financial Rules, 2017, any bidder from a country which shares a land border with India will be eligible to bid in any procurement whether of goods, services (including consultancy services and non consultancy services) or works (including turnkey projects) only if the bidder is registered with the Competent Authority (i.e., Department for Promotion of Industry and Internal Trade) in line with Order (Public Procurement No. 1, 2 and 3) dated 23/07/2020 and 24/07/2020 or any amendments thereon issued by the Public Procurement Division, Department of Expenditure, Ministry of Finance. Hence, Vendors or Agents of a Vendor (Indian or Others) from a country sharing border with India shall submit the copy of Valid Registration made with DPIIT along with the tender mandatorily, without which the offer will be treated as invalid.

4. A supplier who has been debarred by any procuring entry for violation of this order shall not be eligible

for preference under this order for procurement by any other procuring entity for the duration of the debarment. The debarment for such other procuring entities shall take effect prospectively from the date on which it comes to the notice of other procurement entities, in the manner prescribed.

5. b) Class I local supplier means a supplier or service provider, whose goods, service or works offered for procurement, has local content equal to or more than 50%, as defined under order.

6. c) Class II local supplier means a supplier or service provider, whose goods, services or works offered for procurement, has local content more than 20% but less than 50%, as defined under this Order.

7. d) Bidders offering imported products will fall under the category of Non-local suppliers. They cannot claim themselves as Class I Local suppliers/Class II Local suppliers by claiming the services such as transportation, insurance, installation, commissioning, training and after sales service support like AMC/CMC etc. as local value addition.

8. Delivery Terms: FOR ISTRAC

9. e) Verification of local content:

i) The Class I local supplier/ Class II local supplier at the time to tender, bidding or solicitation shall be required to indicate percentage of local content and provide self certification that the item offered meets the local content requirement for Class I local supplier / Class II local supplier as the case may be. They shall also give details of the location(s) at which the local value addition is made.

10. GENERAL TERMS & CONDITIONS FOR BIDDERS: For this procurement, bids from Class I & class II Local Suppliers are admissible. hence provisions contained in Public Procurement (Preference to Make in India), Order 2017 issued by Department for Promotion of Industry and Internal Trade (DIPP), Ministry of Commerce & Industries vide letter No. P 45021/2/2017 PP(BE II) dated 04.06.2020 and subsequent amendment & directives shall be followed. Accordingly, offer will be evaluated & processed in conformation with above referred GOI order (Specially mentioned below). The bidder shall provide compliance and undertaking as per order and hereafter amendments:

11. If an agent submit bid on behalf of the principal/OEM, the same agent shall not submit a bid on behalf of another principal/OEM in this tender for the same item. If submitted, all offers will be liable for rejection.

12. iii) False declarations will be in breach of the code of Integrity under Rule 175(1)(i)(h) of the General Financial Rules (GFR) for which a bidder or its successors can be debarred for up to two years as per Rule 151 (iii) of the general Financial Rules along with such other actions as may be permissible under Law.

13. ii) In case bid value is in excess of Rs. 10 Cr., Class I local supplier/ Class II local supplier shall be required to provide a certificate from the statutory auditor or cost auditor of the company (in the case of companies) or from a practicing cost accountant or practicing chartered accountant (in respect of suppliers other than companies) giving the percentage of local content.

14. In case the bidders propose any other payment terms in deviation with the standard terms mentioned in the tender enquiry, it may be noted that applicable cash flow implications will be loaded on the prices quoted for commercial comparison of the offers. If advance payments are insisted by the bidders, interest at the rate of MCLR (Marginal Cost Linked Rate) as notified by State Bank of India from time to time shall be loaded on the prices for price comparison.

15. In this tender either the Indian agent on behalf of the principal/OEM or the principal /OEM itself can bid, but both cannot bid simultaneously for the same item. Indian agents while quoting on behalf of their principals shall provide necessary latest authorisation letter obtained from their principals/manufacturers.

16. Liquidated damages: If the vendor fails to deliver the items on or before the delivery date, or any extension thereafter purchaser shall recover from the vendor as liquidated damages a sum of 0.5% of the contract price of the undelivered stores for each calendar week of delay. The total liquidated damages shall not exceed 10% of the contract price of the unit or units so delayed.

17. Model Certificate for Tenders:

I have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India I certify that this bidder is not from such a country or, if from such a country, has been registered with the Competent Authority. I hereby certify that this bidder fulfills all requirements in this regard and is eligible to be considered.

18. Model Certificates for Tenders for Work involving possibility of sub contacting:

I have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India and on sub contracting to contracting from such countries I certify that this bidder is not from such a country or, if from such a country, has been registered with the Competent Authority and will not sub contract any work to a contract form such countries unless such contractor is registered with the Competent Authority. I hereby certify that this bidder fulfills all requirements in this regard and is eligible to be considered.

Provide Compliance for the above in Vendor Specified Commercial Terms.

19. NO EMD AND TENDER FEE.

20. Performance Bank Guarantee (PBG) to be furnished as a security for fulfilment of warranty obligations by the successful vendor after satisfactory execution of purchase order/Contract (3% of the value of the purchase order/Contract). Central SUs/PSE/Autonomous bodies are exempted from the production of Performance Bank Guarantee. Instead; an indemnity bond shall be furnished in lieu of PBG.

21. Product Scope: Class I local supplier/ Class II local supplier shall offer only standard and catalogued product for Equipment / Spares Cards / assemblies. If the above offered Equipment / Cards

/ Assemblies are under development / to be developed the bid will not be considered.

22. PUBLICITY: No publicity of any kind whatsoever in case of PURCHASE ORDER shall be given by the Supplier without prior permission of the Purchaser.

23. SECRECY: The technical information, drawings, specifications and other related documents, forming part of the CONTRACT, are the property of the Purchaser and shall not be used for any other purpose, except for execution of the CONTRACT. All rights, including rights in the event of grant of patent and registration of designs are reserved. The technical information, drawings, specifications, records and other documents shall not be copied, transcribed, traced or reproduced in any other form or otherwise in whole and/or duplicated, modified, divulged and/or disclosed to a third party nor misused in any other form whatsoever without Purchasers consent in writing except to the extent required for the execution of this CONTRACT. These technical informations, drawings, specifications and other related documents shall be returned to the Purchaser with approved copies and duplicates, if any, immediately after they have been used for the agreed purpose.

24. Senior Purchase and Stores Officer, ISTRAC, reserves the right to accept or reject any/or all the tenders in part or full without assigning any reasons thereof.

25. Submit the bid on or before due date.

26. Successful vendor has to submit the security deposit. (3 % of the value of the purchase order). Central PSUs/PSE/Autonomous bodies shall be exempted from the payment of security deposit, and instead, an indemnity bond shall be secured from them.

27. VENDORS HAS TO REFLECT THE POINT NO (4), (5) AND (6) IN THEIR BID.

28. TAXES: GST is payable as per applicable rates.

29. Foreign OEMs/Agents quoting on behalf of Foreign OEMs are not permitted to quote. High Sea Sales quotes not permitted. The bids shall be in INR only.

30. Option Clause:- ISTRAC reserves the right to increase/decrease the ordered quantity by upto (25) Twenty Five percent at any time, till final delivery date (of the extended delivery date of the contract), by giving reasonable notice even though the quantity ordered initially has been supplied in full before the last date of the delivery period (or the extended delivery period)

3. CERTIFICATE OF UNDERTAKING

1. A certificate from the bidder shall be enclosed along with their quotation (Technical bid) as per the format enclosed.
2. An AGENT is a person employed to do any act for another, or to represent another in dealings with third person.
3. Any bidder from a country which shares a land border with India will be eligible to bid in this tender only if the bidder is registered with the Competent Authority. (Competent authority is : DEPARTMENT FOR PROMOTION OF INDUSTRY AND INTERNAL TRADE (DPIIT)).
4. (b)Control shall include the right to appoint majority of the directors or to control the management or policy decisions including by virtue of their shareholding or management rights or shareholders agreements or voting agreements.
5. Bidder from a country which shares a land border with India for the purpose means:
 - (a)An entity incorporated, established or registered in such a country; or
 - (b)A subsidiary of an entity incorporated, established or registered in such a country; or
 - (c)An entity substantially controlled through entities incorporated, established or registered in a such a country; or
 - (d)An entity whose beneficial owner is situated in such a country; or
 - (e)An Indian (or other) agent of such an entity; or
 - (f)A natural person who is a citizen of such a country; or
 - (g)A consortium or joint venture where any member of the consortium or joint venture falls under any of the above.
6. BIDDER (including the term tenderer, consultant or service provider in certain contexts) means any person or firm or company, including any member of a consortium or joint venture (that is an association of several persons, or firms or companies), every artificial juridical person not falling in any of the descriptions of bidders stated hereinbefore, including any agency branch or office controlled by such person, participating in a procurement process.

7. CERTIFICATE

8.

COMPANY NAME AND SEAL:

9. DESIGNATION:

10. Explanation:

(a)Controlling Ownership interest means ownership of or entitlement to more than twenty-five per cent of shares or capital or profits of the company;

11. GOVERNMENT OF INDIA

DEPARTMENT OF SPACE

ISTRAC, BENGALURU: 560 058.

12. iii)In case of an unincorporated association or body of individuals, the beneficial owner is the natural person(s), who, whether acting alone or together, or through one or more juridical person, has ownership of or entitlement to more than fifteen percent of the property or capital or profits of such association or body of individuals.

13. (iii).I/We _____ hereby undertake that if the Certificate is found to be false at any given time ISRO/ISTRAC may treat this as a ground for immediate termination and further legal action in accordance with law can be initiated.

14. ii)In case of a partnership firm, the beneficial owner is the natural person(s) who, whether acting alone or together, or through one or more juridical person, has ownership of entitlement to more than fifteen percent of capital or profits of the partnership.

15. (ii).I/We hereby confirm that the country of origin of goods is _____

16. i)In case of a company or Limited Liability Partnership, the beneficial owner is a natural person(s), who, whether acting alone or together, or through one or more juridical person, has a controlling ownership interest or who exercises control through other means.

17. (i).I/WE _____ read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India. I / We _____ Certify that this bidder is not from such a country.

18. iv)Where no natural person is identified under (i) or (ii) or (iii) above, the beneficial owner is the relevant natural person who holds the position of senior managing official.

19. I / We _____ Certify that this bidder is from such a country and registered with the Competent Authority (i.e. Registration Committee constituted by the Department for Promotion of Industry and Internal Trade (DPIIT). Copy of Registration Certificate is enclosed.

20. NAME:

21. OR*

I/We _____ read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India.

22. Ref:Tender No _____ date _____

Our Quotation No. _____ date _____

23. REQUIREMENT OF REGISTRATION:

24. SIGNATURE:

25. (* Strike out whichever is not applicable).

26. Subject: Restrictions under Rule 144 (xi) of the General Financial Rules (GFRs) 2017 - reg.

27. The beneficial owner for the purpose of (6) above will be as under:

28. (TO BE PRINTED ON THE LETTER HEAD OF THE VENDOR)

29. v) In case of a trust, the identification of beneficial owner(s) shall include identification of the author of the trust, the trustee, the beneficiaries with fifteen percent or more interest in the trust and any other natural person exercising ultimate effective control over the trust through a chain of control or ownership.

4. INSTRUCTIONS TO TENDERERS FOR ONLINE SUBMISSION OF TENDERS THROUGH E-PROCUREMENT SYSTEM

1. a) Bidders shall arrange themselves all resources, including Digital signature certificates and Internet Connections at their own cost, for participating in online tendering.
- b) Vendors can download the tender details and submit their offers online using their vendor accounts (obtained during registration) in our portal. Help demos for tender download and bidding processes are given on home page.
- c) The tender should be submitted online in the ISTRAC link before the due date and time as specified

in the tender schedule in the portal.

d) Vendors shall also take note of other Instructions to tenderers indicated in the tender documents.

2. Conditions for online submission of tenders:

- a) It is mandatory for interested parties to register as vendors in our e-procurement portal <https://eproc.vssc.gov.in/home.html> for participating in online eProcurement process of ISRO. Only registered vendors can submit their offers online in our eProcurement portal.
- b) Vendors who are already registered in the existing EGPS software of ISRO, please register by clicking the link in the email you would have already received from 'eproc@vssc.gov.in'. After registration, do the profile update by login to this portal.
- c) For new vendors, who are not registered in the existing EGPS software, vendor registration will be released along with the portal release. To register as vendors please refer to the help demos listed on the home page of the e-procurement link mentioned above. They may approach help desk (contact details provided on the home page) for any technical help for registration and subsequent process.
- d) OEM details should be added in your E-Procurement profile under Add Agent/Principal without fail.

3. ISTRAC shall not be responsible for failure of vendors in submitting bids online caused due to technical reasons at vendor end such as network or power failures, computer failure, internet-browser, mistakes / errors in filling the bids on line by vendor etc.

4. Procedure for seeking clarifications/help for the tender:

- a) All enquiries regarding the tenders and submission of offers shall be online and only through our eProcurement portal.
- b) Vendors may approach help desk e-mail id and phone number given on the home page for any technical help (e-mail: eproc@vssc.gov.in and Phone: +91471 2565454/4574/2527/3753/3289).

5. Queries by vendors on technical problems on the last day of tender will not be binding on ISTRAC/ISRO for resolving/addressing. ISTRAC will not be responsible for non-submission of bids for those cases.

5. MAKE IN INDIA UNDERTAKING (VENDORS SHALL SUBMIT THE BELOW CERTIFICATE ON THEIR LETTER HEAD DULY SIGNED)

1. The type of Class which the vendor belongs: Class-I or Class-II Local Suppliers as defined under DPIIT Order dtd 04/06/2020- Preference to Make in India Order-2017 Revision.(Class I local supplier means a supplier or service provider, whose goods, service or works offered for procurement, has local content equal to or more than 50% & Class II local supplier means a supplier or service provider, whose goods, services or works offered for procurement, has local content more than 20% but less than 50%). NOTE: Bidders offering imported products will fall under the category of Non-local suppliers. They cannot claim themselves as Class I Local suppliers/Class II Local suppliers by claiming the services such as transportation, insurance, installation, commissioning, training and after sales

service support like AMC/CMC etc. as local value addition.

2. Percentage of local content for the quoted item.

3. Details of location (s) at which the local value addition is made

4. Provide self-certification that the item (s) offered meets the local content requirement for Class-I/Class-II Local Suppliers as the case may be.

C. Bid Templates

C.1 Technical Bid - Integrated Cryo-Receiver Sub-array Development

1. Cryogenic Dewar (Integrated Cryo-Receiver Sub-array Development)

Item specifications for Cryogenic Dewar (Integrated Cryo-Receiver Sub-array Development)

SI No	Specification	Value	Compliance	Offered Specification	Remark
1	Scope of Work: Spec # 1	The vendor is required to design, develop, realize, test and deliver SINGLE system named as Integrated Cryo-Receiver Sub-array along with Cryo-chamber, Cryo-cooler, Compressor & Vacuum Pump with necessary Power Supplies and Automatic Control & Status Monitoring systems as well as other accessories mentioned in the "List of Deliverables" section based on the specifications & technical guidelines provided by ISTRAC.	Yes / No / Explain		
2	Scope of Work: Spec # 2	Vendor shall take complete responsibility on the following design, development, realization and qualification steps applicable for the realization of the required hardware:	Yes / No / Explain		
3	Scope of Work: Spec # 3	Complete system designing and overall engineering based on the design specifications & technical guidelines provided in subsequent sections of this document.	Yes / No / Explain		

4	Scope of Work: Spec # 4	Complete cryogenic temperature & RF simulation analysis and relevant two-staged cryo-temperature distribution solution (customized Cryo-head design & analysis with Cryo-cooler) for cooling of all MMICs & Antenna elements along with necessary engineering solution to meet the required form factor and specifications. Vendor shall complete multiple iterations of thermal profile optimization based on ISTRAC recommendations.	Yes / No / Explain		
5	Scope of Work: Spec # 5	Submission of the final 3D drawing design & cooling/temperature profile simulation files (softcopy) to ISTRAC in specified file format for obtaining design clearance from ISTRAC.	Yes / No / Explain		
6	Scope of Work: Spec # 6	Vendor shall obtain clearance from ISTRAC PDR & CDR committees for final design specification arrived at. Any deviations in design to be vetted and approved by ISTRAC PDR or CDR committees.	Yes / No / Explain		
7	Scope of Work: Spec # 7	Complete mechanical engineering to ensure modularity in system design, configuration and engineering for future augmentation.	Yes / No / Explain		

8	Scope of Work: Spec # 8	Realization, testing and qualification of single unit of L-band antenna element and a smaller sample of Cryo-radome material as well as the corresponding connectorised Cryo-Front-end module based on the ISTRAC supplied Cryo-MMIC Front-ends with compliance to the specified RF, electrical specifications at specified Cryo-temperature and operating conditions. Any deviations in test results to be vetted and approved by ISTRAC committee. Vendor shall obtain production clearance from ISTRAC review committee.	Yes / No / Explain		
9	Scope of Work: Spec # 9	Design, Simulation, Realization & testing of customized Cold-heads for the mounting of specified number of ISTRAC supplied Cryo-MMIC Front-ends at the 2nd stage Cryo-head of the Cryo-cooler as well as for the mounting of Antenna Array at the 1st stage of the Cryo-cooler. This includes the cryo-temperature profiling and analysis of the customized Cryo-heads along with cryo-coolers based on simulated and measured results with original heating elements. Any deviations in test results to be vetted and approved by ISTRAC committee.	Yes / No / Explain		

10	Scope of Work: Spec # 10	Design, Realization, testing and qualification of antenna sub-array integrated with ISTRAC supplied Cryo-MMIC Front-ends using properly mechanically enclosed & connectorised PCB hardware with compliance to the specified RF, electrical specifications at ambient temperature near 300 K. Array size and no. of antenna elements & Cryo-MMICs shall be based on the specifications mentioned in the Section No. E. Any deviations in test results to be vetted and approved by ISTRAC committee.	Yes / No / Explain		
11	Scope of Work: Spec # 11	Realization, testing and qualification of the Cryo-chamber & internal Cryo-Dewar structure along with antenna sub-array integrated with Cryo-MMIC Front-ends hardware (mentioned above) with compliance to the specified RF, digital, Cryo & electrical specifications at specified Cryo-temperature and operating conditions. This includes the realization, testing and qualification of the cryo-compatible Radome structure as per corresponding radome specifications. Any deviations in test results to be vetted and approved by ISTRAC committee.	Yes / No / Explain		

12	Scope of Work: Spec # 12	Establishing a standalone test set-up along with required hardware for automation GUI, Controls, Status monitoring, plotting & logging with displays for demonstration of all the specified parameters and features (automation controller & scheduler system along with cryo-temperature monitoring & control with necessary performance evaluation features).	Yes / No / Explain		
13	Scope of Work: Spec # 13	Vendor shall obtain clearance from ISTRAC during FAT & SAT meetings against all the finalized design specifications as per the approved ATP documents. Any deviations in test results to be vetted and approved by ISTRAC FAT or SAT committee.	Yes / No / Explain		
14	Scope of Work: Spec # 14	Delivery of all the hardware related to the Integrated Cryo-Receiver Sub-array along with other accessories hardware at ISTRAC, Bangalore as per the List of Deliverables specified in this RFP. Integration and performance demonstration of the hardware units at ISTRAC, Bangalore.	Yes / No / Explain		

15	Scope of Work: Spec # 15	Vendor shall provide manpower support throughout the qualification of Integrated Cryo-Receiver Sub-array for its RF & electrical parameters at ambient & Cryo-conditions at ISTRAC Bangalore campus without any additional cost.	Yes / No / Explain		
16	Scope of Work: S1:16pec # 16	Vendor shall provide training to the ISTRAC operating personnel of the Cryogenic system operation, maintenance and troubleshooting the Cryo-subsystems for duration of two weeks after installation at ISTRAC, Bangalore.	Yes / No / Explain		
17	Overall System: Operating Center Frequency	1.3 GHz	Yes / No / Explain		
18	Overall System: Bandwidth	20 MHz or better	Yes / No / Explain		
19	Overall System: No. of Antenna Elements	37 (Thirty-Seven)	Yes / No / Explain		
20	Overall System: No. of Cryo-Front-ends Modules	2×37=74 (Seventy-Four), two per antenna for 2 pol.	Yes / No / Explain		
21	Overall System: No. of Cryo-cooler	ONE integrated with cryo-chamber & cold-heads	Yes / No / Explain		
22	Overall System: Operating Temp	4 – 300 Kelvin	Yes / No / Explain		
23	Overall System: Cryo-chamber Vacuum Level	10 ⁻⁷ mbar or better	Yes / No / Explain		
24	Overall System: Overall Noise Figure at 300K	1.2 dB or better	Yes / No / Explain		
25	Overall System: Overall Noise Figure at 10K	0.25 dB or better	Yes / No / Explain		
26	Overall System: Input/output Connectors	Blind-mate Press-fit SMA (F) for output and Sim. ports for each MMIC	Yes / No / Explain		
27	Overall System: Input AC Supply	Single/3-Phase AC Supply, 50±2 Hz	Yes / No / Explain		

28	Overall System: System Maintenance Cycle	Better than ONE year	Yes / No / Explain		
29	Cryo-Antenna & Sub-array: Antenna Design	Fully-Metallic (Vendor's responsibility)	Yes / No / Explain		
30	Cryo-Antenna & Sub-array: Antenna Material	Grade-1 OFHC Copper or equivalent	Yes / No / Explain		
31	Cryo-Antenna & Sub-array: Antenna Bandwidth	20 MHz around the center freq.	Yes / No / Explain		
32	Cryo-Antenna & Sub-array: Single Antenna Gain	Better than 5 dB	Yes / No / Explain		
33	Cryo-Antenna & Sub-array: Antenna sub-array elements	37 in hexagon aperture with triangular grid spacing	Yes / No / Explain		
34	Cryo-Antenna & Sub-array: Inter- element Spacing	Less than 0.55×Wavelength	Yes / No / Explain		
35	Cryo-Antenna & Sub-array: Overall Sub-array Gain	Better than 20 dB	Yes / No / Explain		
36	Cryo-Antenna & Sub-array: Antenna Return Loss	Better than 15 dB	Yes / No / Explain		
37	Cryo-Antenna & Sub-array: Antenna Cross-pol. Level	Better than -20 dB	Yes / No / Explain		
38	Cryo-Antenna & Sub-array: Antenna Mutual Coupling	Better than -15 dB	Yes / No / Explain		
39	Cryo-Antenna & Sub-array: Antenna Feeds	DUAL feeds for H & V	Yes / No / Explain		
40	Cryo-Antenna & Sub-array: Antenna Array Operating Temp.	4 – 300 Kelvin	Yes / No / Explain		
41	Cryo-Antenna & Sub-array: Antenna & Array Qualification	Shall be done at Ambient (near 300K)	Yes / No / Explain		
42	Cryo-Antenna & Sub-array: Interface with Cryo-Chamber	Vendor shall provide provision to replace the antenna array from Cryo-Chamber	Yes / No / Explain		
43	Cryo-compatible Radome: Radome Design	Vendor's responsibility	Yes / No / Explain		
44	Cryo-compatible Radome: Radome Type	Single Layered OR Multi-layered (desirable for thermal insulation)	Yes / No / Explain		

45	Cryo-compatible Radome: Radome Features	(a) Cryo-compatible up to 50K, (b) Withstand temp. difference > 300K, (c) Withstand pressure difference > 1 bar, (d) Withstand Vacuum < 10 ⁻⁷ mBar (inside chamber), (e) Shall be RF transparent	Yes / No / Explain		
46	Cryo-compatible Radome: Radome RF Loss	1 dB (typical)	Yes / No / Explain		
47	Cryo-compatible Radome: Radome Operating Temp.	50 – 300 Kelvin	Yes / No / Explain		
48	Cryo-compatible Radome: Radome Material	PMMA or Boro-Silicate or equivalent (same shall be reviewed during PDR)	Yes / No / Explain		
49	Cryo-compatible Radome: Interface & Mounting holes	Vendor shall provide leak-proof mounting with provision to replace radome from Cryo-Chamber	Yes / No / Explain		
50	Cryo-Frontend Module: No. of Front-end Units	2×37=74 (Seventy-Four), two per antenna for 2 pol.	Yes / No / Explain		
51	Cryo-Frontend Module: RF Ports for each Module	(a) RF Input port (directly connected to antenna), (b) RF Output Port (SMA, Female), (c) RF Simulation Input Port (SMA, Female)	Yes / No / Explain		
52	Cryo-Frontend Module: Chn-to-Chn Isolation	30 dB or better between modules	Yes / No / Explain		
53	Cryo-Frontend Module: Chn-to-Chn Gain Matching	±1 dB or better between modules	Yes / No / Explain		
54	Cryo-Frontend Module: Chn-to-Chn Phase Matching	±6° or better than Cryo-MMIC	Yes / No / Explain		

55	Cryo-Frontend Module: Cryo-compatible Front-end MMICs (Hermetically sealed QFM packaged)	Front-end MMICs will be provided by ISTRAC during SAT as well as at any other necessary stages of qualification as per PDR/CDR committee recommendation. Major Specifications of ISTRAC Supplied Front-end Cryo-MMIC: (a) BW >200 MHz , (b) Gain >30 dB , (c) NF @ 300K < 1.2 dB , (d) Dissipation < 60mW per MMIC, (e) Coupled Port: 30 dB, (f) Voltage: ±5V (Single or Dual Polarity), (g) MMIC Size: 5×5×3mm (Max.); Full specifications and drawing details will be provided by ISTRAC after Purchase Order release.	Yes / No / Explain		
56	Cryo-Frontend Module: Cryo-Frontend Module	Vendor shall do PCB design & Mechanical housing for Cryo-MMIC with minimum deviation in the RF & electrical parameters.	Yes / No / Explain		
57	Cryo-Frontend Module: Front-end MMIC Mounting	Cryo-MMIC bottom metal shall have contact with 2nd stage cold head	Yes / No / Explain		
58	Cryo-Frontend Module: Interface with antenna	Connectorised or direct connection	Yes / No / Explain		
59	Cryo-cooler & Cold-Head: Cryo-cooler Temperature	≤ 50 K at 1st Stage Cold Head AND ≤ 4 K at 2nd Stage Cold Head.	Yes / No / Explain		
60	Cryo-cooler & Cold-Head: 2nd Stage Capacity @ 50Hz	Better than 1.5 W at 4 K	Yes / No / Explain		
61	Cryo-cooler & Cold-Head: 1st Stage Capacity @ 50Hz	Better than 100 W at 50 K	Yes / No / Explain		
62	Cryo-cooler & Cold-Head: Max. Equilibrium Temp	1st Stage Cold Head = Better than 70 K 2nd Stage Cold Head = Better than 10K	Yes / No / Explain		

63	Cryo-cooler & Cold-Head: 2nd Stage Cold-head Design	Customized design for mounting all the Cryo-MMICs directly	Yes / No / Explain		
64	Cryo-cooler & Cold-Head: 1st Stage Cold-head Design	Customized design for mounting all the antenna elements or sub-array with Radome on top	Yes / No / Explain		
65	Cryo-cooler & Cold-Head: Cooling Capacity Loss	Better than 10% after ONE year	Yes / No / Explain		
66	Cryo-cooler & Cold-Head: Temperature Fluctuations	Better than 10% after stabilization	Yes / No / Explain		
67	Cryo-cooler & Cold-Head: Cool Down Time	Better than 10 Hours (from ambient to cryo-equilibrium)	Yes / No / Explain		
68	Cryo-cooler & Cold-Head: Cold-Head Material	OFHC Copper or equivalent	Yes / No / Explain		
69	Cryo-cooler & Cold-Head: Operating Temp	4 – 300 Kelvin	Yes / No / Explain		
70	Cryo-Chamber & Compressor: Chamber Material	Stainless Steel (SS304) or equivalent	Yes / No / Explain		
71	Cryo-Chamber & Compressor: Wall Thickness	Better than 2 mm (Inner wall) & Better than 4 mm (Outer wall)	Yes / No / Explain		
72	Cryo-Chamber & Compressor: Door Opening	Manual by bolting (Top cover Radome may be used as door with provision to replace antenna array and Radome)	Yes / No / Explain		
73	Cryo-Chamber & Compressor: Mass	80 – 100 Kg	Yes / No / Explain		
74	Cryo-Chamber & Compressor: Insulation	Super Insulation (Vacuum + Multilayer Paper)	Yes / No / Explain		
75	Cryo-Chamber & Compressor: Working Temperature	4 K to 300 K (or better)	Yes / No / Explain		
76	Cryo-Chamber & Compressor: Annular Space Vacuum	1×10^{-8} mBar with 99.9% vacuum (or better)	Yes / No / Explain		
77	Cryo-Chamber & Compressor: MSLD Test	Shall be performed at 4×10^{-9} atm-cc/sec or more	Yes / No / Explain		
78	Cryo-Chamber & Compressor: Service Fluid	Lab Grade Gas Helium, Grade 5 or above	Yes / No / Explain		

79	Cryo-Chamber & Compressor: Vacuum Pump	Compatible for the Cryo-cooler selected (to be reviewed during PDR)	Yes / No / Explain		
80	Cryo-Chamber & Compressor:Helium Compressor	Compatible for the Cryo-cooler selected (to be reviewed during PDR)	Yes / No / Explain		
81	Temperature & Vacuum Sensors: No. of Temp. Sensors	More than 12 sensors (Shall be decided by PDR Committee)	Yes / No / Explain		
82	Temperature & Vacuum Sensors: Temperature Range	4K to 300K (or better)	Yes / No / Explain		
83	Temperature & Vacuum Sensors: Temp. Monitoring Accuracy	Better than $\pm 0.1K$	Yes / No / Explain		
84	Temperature & Vacuum Sensors: Temperature sensor	Silicon Diode or better	Yes / No / Explain		
85	Temperature & Vacuum Sensors: Sensor response time	Better than 10 ms at 10 K	Yes / No / Explain		
86	Temperature & Vacuum Sensors: Sensor Dissipation (max)	Better than 16 μW at 10 K	Yes / No / Explain		
87	Temperature & Vacuum Sensors: Vacuum Range	1×10^{-8} mBar to 1.0 Bar (Accuracy = $\pm 10\%$ of reading)	Yes / No / Explain		
88	Temperature & Vacuum Sensors: Vacuum Sensor Type	Absolute Vacuum Sensor (Filament Pirani & Capacitance)	Yes / No / Explain		
89	Temperature & Vacuum Sensors: Overpressure limit	Better than 1.0 Bar	Yes / No / Explain		
90	Simulation Test-bench & Demonstration Fixture: RF Divider/Combiner (PDC)	Minimum Qty. = FOUR with 1:37 configuration (with Return loss better than -20dB at each port), SMA(F) ports	Yes / No / Explain		
91	Simulation Test-bench & Demonstration Fixture: Phase Matched cables	Minimum Qty. = $4 \times 40 = 160$; with minimum 2m length, SMA (M) connectors (4 sets of 40 cables)	Yes / No / Explain		
92	Simulation Test-bench & Demonstration Fixture: Mechanical Mounting Fixture	Attached metal fixture (with wheels) for all the hardware bolted together	Yes / No / Explain		

93	Simulation Test-bench & Demonstration Fixture: Cryo-chamber Size (tentative)	Length = 1 m, Width = 1 m, Height = 1 m (depending on antenna array size, radome & cryo-cooler design)	Yes / No / Explain		
94	Automatic Control & Status Monitoring System Specifications: Control & Status Monitoring system features	Automatic current & voltage control feature for optimization of gain & power consumption under cryo-condition Monitoring and logging feature of sufficient no. of electrical as well as temperature & vacuum parameters Control & data logging with automatic testing of Integrated Cryo-Receiver Sub-array along with other support sub-systems Provision to switch-OFF one polarization channels.	Yes / No / Explain		
95	Automatic Control & Status Monitoring System Specifications: Interlocks	Over Pressure, Vacuum Limit, Over Voltage, Over Current, Door Open, etc. with Bypass and Auto-shut-down feature (NOTE: Vendor shall add other interlocks based on system design & safety or based on PDR/CDR recommendations)	Yes / No / Explain		
96	Automatic Control & Status Monitoring System Specifications: Warranty	THREE year or more (Vendor shall repair/replace the faulty components/sub-systems as well as execute the scheduled maintenance works during warranty period at ISTRAC based on ISTRAC recommendations)	Yes / No / Explain		
97	List of Deliverables	Vendor shall deliver following hardware items:	Yes / No / Explain		

98	List of Deliverables # 1	ONE no. of Integrated Cryo-Receiver Sub-array with specified nos. of antenna elements and Cryo-MMICs mounted on.	Yes / No / Explain		
99	List of Deliverables # 2	ONE set of Cryo-chamber, Cryo-cooler, Compressor & Vacuum Pump with necessary Power Supply units as well as other related necessary hardware.	Yes / No / Explain		
100	List of Deliverables # 3	ONE mechanical mounting fixture for mounting the Integrated Cryo-Receiver Sub-array	Yes / No / Explain		
101	List of Deliverables # 4	Specified no. of phase-matched RF Cables, RF PDCs along with necessary & sufficient no. of power cords, DC supply cables and mating connectors	Yes / No / Explain		
102	List of Deliverables # 5	FOUR nos. of Cryo-compatible 1:37 PDC units to be used as RF combiner/divider for main/simulation path.	Yes / No / Explain		
103	List of Deliverables # 6	FOUR sets of phase-matched RF cables each with minimum 2m length & SMA (M) connectors. (Apart from the phase-matched RF cables used inside the Cryo-chamber).	Yes / No / Explain		
104	List of Deliverables # 7	ONE Control & Status Monitoring setup with GUI for automatic testing of complete system in cryogenic condition as well as normal ambient environment for its functionality and performance qualifications	Yes / No / Explain		

105	List of Deliverables # 8	TWO sets of Cryogenic Hand Gloves, Cryogenic Aprons, Cryogenic Face Shields and other related items for human safety during handling Cryo-liquid/fumes.	Yes / No / Explain		
106	List of Deliverables # 9	Softcopies of all the design related items including Mechanical drawings, Design Schematics, PCB Layout Designs, Fabrication drawings, simulation model & results, all source codes for FPGA, GUI and firmware (if any) as well as the datasheets of the all the components used.	Yes / No / Explain		
107	List of Deliverables # 10	All the other documentation & reports related to: (a) Mechanical structural Design & Drawings, (b) Thermal & RF Simulation reports, (c) Realization plan with final approved design files, (d) All circuits details & packaging diagrams, (e) Test reports at various design, simulation & realization stages, (f) Interface Control Document, (g) Quality & Reliability Assurance Plan, (h) Operation, maintenance and troubleshooting manuals, (i) PDR, CDR, ATP, FAT, SAT plan & reports	Yes / No / Explain		

108	Responsibility Matrix:Work Flow / Activities # 1	Conversion of the concept, specifications and block diagrams into circuit and mechanical diagram as well as complete system configuration required for Integrated Cryo-Receiver Sub-array Development & Realization based on the design specifications & technical guidelines provided; Responsible Entity: VENDOR	Yes / No / Explain		
109	Responsibility Matrix:Work Flow / Activities # 2	Complete system designing and overall engineering based on the design specifications & technical guidelines provided in subsequent sections of this document ; Responsible Entity: VENDOR & ISTRAC	Yes / No / Explain		
110	Responsibility Matrix:Work Flow / Activities # 3	Complete design and cryogenic temperature analysis of relevant two-staged cryo-temperature distribution solution with customised Cold-head design for mounting each LNA and Antenna element cooling along with necessary engineering solution to meet the form factor and specs ; Responsible Entity: VENDOR & ISTRAC	Yes / No / Explain		

111	Responsibility Matrix:Work Flow / Activities # 4	Vendor shall obtain clearance from ISTRAC PDR & CDR committees for final design specification arrived at. Any deviations in design to be vetted and approved by ISTRAC PDR or CDR committees; Responsible Entity:VENDOR; ISTRAC Approval required:YES	Yes / No / Explain		
112	Responsibility Matrix:Work Flow / Activities # 5	Submission of the final 3D drawing design & cooling/temperature profile simulation files (softcopy) to ISTRAC in specified file format for obtaining design clearance from ISTRAC; Responsible Entity:VENDOR; ISTRAC Approval required:YES	Yes / No / Explain		
113	Responsibility Matrix:Work Flow / Activities # 6	Complete mechanical engineering to ensure modularity in system design, configuration and engineering for future; Responsible Entity: VENDOR; ISTRAC Approval required: YES	Yes / No / Explain		

114	Responsibility Matrix:Work Flow / Activities # 7	Realization, testing and stand-alone qualification of 37-element Antenna Array integrated with ISTRAC supplied Cryo-MMIC Front-ends using properly mechanically enclosed & connectorised PCB hardware with compliance to the RF & electrical specifications at ambient temperature near 300K. Any deviations in test results to be vetted and approved by ISTRAC committee. ; Responsible Entity: VENDOR; ISTRAC Approval required: YES	Yes / No / Explain		
115	Responsibility Matrix:Work Flow / Activities # 8	Realization, testing and qualification of the Cryo-chamber & internal Cryo-Dewar structure along with antenna sub-array integrated with Cryo-MMIC Front-ends hardware (mentioned above) with compliance to the specified RF, digital, Cryo & electrical specifications at specified Cryo-temperature and operating conditions. This includes the realization, testing and qualification of the cryo-compatible Radome structure as per corresponding radome specifications. Any deviations in test results to be vetted and approved by ISTRAC committee; Responsible Entity: VENDOR & (ISTRAC for Radome design & material selection); ISTRAC Approval required: YES	Yes / No / Explain		

116	Responsibility Matrix:Work Flow / Activities # 9	Establishing a standalone test set-up along with required hardware for automation GUI, Controls, Status monitoring, plotting & logging with displays for demonstration of all the specified parameters and features (automation controller & scheduler system along with cryo-temperature monitoring & control with necessary performance evaluation features); Responsible Entity: VENDOR.	Yes / No / Explain		
117	Responsibility Matrix:Work Flow / Activities # 10	Factory Acceptance Test: Integration and performance demonstration of the complete system at Vendor's site with compliance to the specified RF, digital, Cryo & electrical specifications at Cryo-temperature and operating conditions;Responsible Entity:VENDOR; ISTRAC Approval required: YES	Yes / No / Explain		
118	Responsibility Matrix:Work Flow / Activities # 11	Site Acceptance Test: Delivery of all the hardware related to the Integrated Cryo-Receiver Sub-array along with other accessories hardware at ISTRAC, Bangalore as per the List of Deliverables specified. Integration & performance demonstration of the complete system at ISTRAC; Responsible Entity: VENDOR; ISTRAC Approval required: YES	Yes / No / Explain		

119	Responsibility Matrix:Work Flow / Activities # 12	Vendor shall obtain clearance from ISTRAC during FAT & SAT meetings against all the finalized design specifications as per the approved ATP documents. Any deviations in test results to be vetted and approved by ISTRAC committee; Responsible Entity: VENDOR; ISTRAC Approval required: YES	Yes / No / Explain		
120	Responsibility Matrix:Work Flow / Activities # 13	Vendor shall provide manpower support throughout the qualification of Integrated Cryo-Receiver Sub-array for its RF & electrical parameters at ambient & Cryo-conditions at ISTRAC Bangalore campus without any additional cost;Responsible Entity: VENDOR	Yes / No / Explain		
121	Vendor Eligibility Criteria:	Followings are the vendor eligibility criteria necessary for this tender:	Yes / No / Explain		
122	Vendor Eligibility Criteria # 1	Vendor (means any person or firm or company, including any member of a consortium or joint venture) shall have proven credentials in indigenous design and development of phased array antenna and related sub-systems which are successfully deployed for a phased array radar system within India. Documentary proof shall be submitted along with the tender.	Yes / No / Explain		

123	Vendor Eligibility Criteria # 2	Vendor (means any person or firm or company, including any member of a consortium or joint venture) shall have proven credentials in the design, development and supply of cryogenic cooling systems operating below 100K including cryo-temp. & vacuum monitoring and control systems which are successfully deployed specifically for RF or radar application within India. Documentary proof shall be submitted along with the tender.	Yes / No / Explain		
124	Vendor Eligibility Criteria # 3	Vendor (means any person or firm or company, including any member of a consortium or joint venture) shall submit necessary documents (like Purchase order or Delivery Challans or User satisfaction certificates etc.) specific to each of the above-mentioned vendor qualification criteria along with their technical bid, mandatorily. Offer/Bid will not be considered valid if documentary proofs for any of the above conditions are not submitted along with the technical bid.	Yes / No / Explain		

125	Vendor Eligibility Criteria # 4	To avoid the conflict of interest, it shall be mandatory for any vendor to participate in the tender only through exclusively one collaboration or consortium, i.e. any vendor shall not be under any consortium or collaboration or alike; with common third-party among the other bids. Otherwise, all the bids involving the common third-party shall be considered invalid.	Yes / No / Explain		
126	Vendor Eligibility Criteria # 5	Due to the key technical requirements of this critical equipment as well as considering the health & safety of the operators, the Start-ups or MSME (Micro, Small & Medium Enterprises) waiver shall not be considered for any of the vendor eligibility criteria mentioned.	Yes / No / Explain		
127	Delivery Schedule:	Vendor shall comply and meet the delivery schedule table given below (however, LD clause shall be applicable based on the overall 18-month delivery period):	Yes / No / Explain		
128	Delivery Schedule # 1	Purchase Order Release; T0	Yes / No / Explain		
129	Delivery Schedule # 2	PDR Meetings & Action Closure; T0+2 Months	Yes / No / Explain		
130	Delivery Schedule # 3	Readiness of single integrated antenna & cryo-front-end module; T0+8 Months	Yes / No / Explain		
131	Delivery Schedule # 4	Qualification of single integrated antenna & cryo-front-end module; T0+9 Months	Yes / No / Explain		

132	Delivery Schedule # 5	Submission of design/drawing files & cryo-cooling analysis results; T0+10 Months	Yes / No / Explain		
133	Delivery Schedule # 6	CDR Closure & Clearance for complete system fabrication; T0+11 Months	Yes / No / Explain		
134	Delivery Schedule # 7	Completion of FAT of overall system as per approved ATP; T0+15 Months	Yes / No / Explain		
135	Delivery Schedule # 8	Complete System Delivery at ISTRAC Bangalore; T0+16 Months	Yes / No / Explain		
136	Delivery Schedule # 9	Completion of SAT of overall system as per approved ATP; T0+17 Months	Yes / No / Explain		
137	Delivery Schedule # 10	Complete System Qualification & Work Completion; T0+18 Months	Yes / No / Explain		
138	Qualification & Acceptance Tests:	The design, realization and qualification of the complete system is proposed in four following stages and the corresponding major acceptance tests are also tabulated below (however, final test and acceptance will be based on ISTRAC approved ATP document):	Yes / No / Explain		
139	Realization & Qualification Stage # 1: Standalone Single Antenna qualification tests with two Front-end modules at ambient	Major Acceptance Test Parameters: (a) Design & Material Compatibility, (b) Antenna Gain, NF, BW & Return Loss, (c) Cross-pol. Level & Mutual Coupling between feeds, (d) Chn-to-Chn Isolation and Gain & Phase Matching, (e) Front-end MMIC Mounting & Interface	Yes / No / Explain		

140	Realization & Qualification Stages # 2: Qualification of the Cryo-Chamber System along with cold-heads & dummy Radome with dummy heat loads	Major Acceptance Test Parameters: (a) Cryo-chamber design & Material, (b) Vacuum & Compressor related verifications, (c) Chamber MSLD Test , (d) Cryo-cooler 1st & 2nd Stage Temp. & Capacity, (e) Equilibrium Temp. with dummy heat loads , (f) Cold-Head material & design, (g) Temp. sensor verification & variation	Yes / No / Explain		
141	Realization & Qualification Stages # 3: Standalone Single Antenna qualification tests with Front-end module at cryo-temp.	Major Acceptance Test Parameters: (a)Design & Material Compatibility, (b) Antenna Gain, NF, BW & Return Loss , (c) Front-end MMIC Mounting & Interface, (d) Temp. & NF improvement	Yes / No / Explain		
142	Realization & Qualification Stages # 4: Qualification of Cryo-Radome	Major Acceptance Test Parameters: (a)Radome Design, Material & Loss, (b) Interface & Mounting holes	Yes / No / Explain		
143	Realization & Qualification Stages # 5: Qualification of the Antenna & Cryo-MMICs Sub-array at ambient	Major Acceptance Test Parameters: (a)Gain, NF, BW & Return Loss in array, (b) Cross-pol. Level & Mutual Coupling , (c) Chn-to-Chn Isolation, Gain & Phase Matching, (d) Front-end MMIC Mounting & Interface, (e)1:37 Combined output performances	Yes / No / Explain		
144	Realization & Qualification Stages # 6: FAT Level Qualification of the Cryo-chamber integrated with Antenna & Cryo-MMICs Sub-array	Major Acceptance Test Parameters: (a)Complete system interface & compatibility, (b) Gain & NF Tests using 1:37 PDCs, (c) Integrated Cryo-Receiver Sub-array tests , (d) Temp. & NF improvement, (e) Control, Status & Interlock tests	Yes / No / Explain		

145	Realization & Qualification Stages # 7: SAT Level Qualification of the complete "Integrated Cryo-Receiver Sub-array"	Complete System functionality & performance tests at ISTRAC	Yes / No / Explain		
146	Realization Guidelines # 1	The vendor shall indigenously do the complete design, development, engineering and assembly of Cryo-cooler & cold-heads, Cryo-MMICs, cryo-chamber and other supporting subsystems involved in the proposed system as well as they shall complete the testing & qualification of the same within India.	Yes / No / Explain		
147	Realization Guidelines # 2	Vendor shall finalize the design configuration & realization approach of all the sub-systems based on the overall technical specifications provided by ISTRAC.	Yes / No / Explain		
148	Realization Guidelines # 3	All the technical information, drawings and other related documents given by ISTRAC in the course of the work should remain the exclusive property of ISTRAC/ISRO. The given design/material/documents should not be used by vendor for any other purpose or be duplicated in any case, other than agreed upon.	Yes / No / Explain		
149	Realization Guidelines # 4	Vendor shall update and conduct required design review by ISTRAC in phased manner and take all necessary steps to minimize delay in obtaining design approvals by ISTRAC.	Yes / No / Explain		

150	Realization Guidelines # 5	Vendor shall provide all the design and simulation files and related records, as well as versions of design along with generated reports and post processed files (CAD Drawing Files, Layout, Gerber, Drill, Fabrication notes, packaging, mechanical drawings etc.). Vendor is required to change the design & configuration (if needed), based on ISTRAC inputs to meet the technical specifications specified.	Yes / No / Explain		
151	Realization Guidelines # 6	All the components used in this development as well as the power supply units to be used here should be of high quality & reliability to support long-term operation. Adequate de-rating margin shall be kept during the selection of all the selected components.	Yes / No / Explain		
152	Realization Guidelines # 7	Vendors shall provide quality control and reliability analysis report for all the components selected for the hardware realization. Any non-conformance, if any, shall be reported to ISTRAC	Yes / No / Explain		
153	Realization Guidelines # 8	Component population and PCB assembly, surface treatment, mechanical packaging shall be done by the vendor as per ISTRAC inputs and clearance.	Yes / No / Explain		

154	Realization Guidelines # 9	All RF & DC connectors shall be procured from highly reputed manufacturers only, after obtaining ISTRAC clearance for its cryo-compatibility. Other connectors for control and power shall be from M/s. Amphenol or equivalent.	Yes / No / Explain		
155	Realization Guidelines # 10	Vendor shall select or use AC-DC & DC-DC power supplies only from following reputed manufacturers: M/s. TDK-Lambda, GE, GWinstek, Vicor, Cosel, LNF, Sorenson etc. The power supply configuration and make shall be approved by ISTRAC during PDR.	Yes / No / Explain		
156	Realization Guidelines # 11	Vendor shall use genuine licensed copies of professional CAD design & thermal simulation tools, like ADS, AWR, Cadence or equivalent for design and development.	Yes / No / Explain		
157	Realization Guidelines # 12	All raw materials, components, connectors, cables, mechanical parts, substrates, PCBs, etc. shall be procured by vendor through qualified sub-vendors. The same shall be approved by ISTRAC during PDR.	Yes / No / Explain		
158	Realization Guidelines # 13	Complete set of RF cables used inside Cryo-chamber as well as outside the chamber shall be phased-matched cables respectively for each set.	Yes / No / Explain		

159	Realization Guidelines # 14	Adequate test points should be provided in the Cryo-Front-end Module PCB boards for the health monitoring and speedy troubleshooting.	Yes / No / Explain		
160	Realization Guidelines # 15	The vendor shall maintain complete traceability for all materials, processes and in-process measurement and resulting documentation.	Yes / No / Explain		
161	Realization Guidelines # 16	Vendor may procure the best suitable Cryo-coolers around the globe based on the Cryogenic temperature & heat-load requirement of the design, after obtaining clearance from ISTRAC during PDR. However, vendor shall submit the bifurcated table for Local Content percentage to meet Class-I or II criteria of Make-In-India Clause mentioned in the tender.	Yes / No / Explain		
162	Realization Guidelines # 17	Any changes carried out in the design, drawings or documents during the contract tenure, done by vendor or ISTRAC shall be exclusive property of ISTRAC and shall not be used for any purpose other than agreed upon.	Yes / No / Explain		
163	Realization Guidelines # 18	Operation, reference, maintenance and troubleshooting manuals for both hardware and software should be made available.	Yes / No / Explain		

164	Realization Guidelines # 19	The vendor should have necessary test and measurement equipment for standalone performance qualification of the deliverables at vendor's site.	Yes / No / Explain		
165	Realization Guidelines # 20	All the hardware units realized during this development shall have ISRO logo at the front view with its name & unique serial number. Vendors may put their logo at card level or at the rear side	Yes / No / Explain		
166	Realization Guidelines # 21	Vendor shall do necessary modifications in the design based on ISTRAC committee suggestions & recommendations during PDR & CDR without extra cost.	Yes / No / Explain		
167	Realization Guidelines # 22	Vendor shall submit compliance as per ISRO E-procurement Portal Compliance matrix for this tender as well as the RFP document attached in the online portal.	Yes / No / Explain		

Document : RFP Document for Vendors

Common Specifications (Applicable for all items)

Sl No	Specification	Value	Compliance	Offered Specification	Remark
-------	---------------	-------	------------	-----------------------	--------

1	TENDER FINANCIAL EVALUATION:	<p>[A] After Technical Evaluation, the Price Bids of only the technically qualified vendors and meeting eligibility criteria shall be opened for further scrutiny and evaluation on a date notified after completion of evaluation of the techno commercial tender.</p> <p>[B] The purchaser shall evaluate the technically qualified financial bids for deciding lowest vendor, L1, on the basis of landing costs including all applicable taxes/levies/duties etc. If any charges are not indicated specifically and separately in the bid, same will be treated as inclusive.</p>	Yes / No / Explain		
---	------------------------------	--	--------------------	--	--

Supporting Documents required from Vendor

- 1. Vendor shall provide compliance for the each specifications mentioned in the tender.**
- 2. Vendor should be able to supply all the items and should quote for all the items, then only offer will be considered for technical evaluation.**
- 3. Vendor shall provide the Local Content Declaration Certificate with clear mention of percentage of local contents in their bid; with compliance of the Make-in-India clause mentioned in the tender.**

5 additional documents can be uploaded by the vendor

C.2 Commercial Terms / Bid

Sl. No.	Description	Compliance	Vendor Terms
1	If any damage is found in the delivered product, the same will be returned to the vendor.	Yes / No / Explain	
2	Payment Term (Our normal terms of payment is 100% within 30 days from the date of receipt and acceptance of the item at our site)	Yes / No / Explain	
3	Taxes and other costs, if any	Yes / No / Explain	
4	Delivery Period	Yes / No / Explain	
5	Delivery Term	Yes / No / Explain	
6	Security Deposit: FD or BG for 3% of PO value to be submitted within 30 days after receipt of PO and valid till supply & acceptance.	Yes / No / Explain	
7	Performance Bank guarantee : BG for 3% of PO value to be submitted while claiming payment valid till end of warranty period with a claim period of 60 days.	Yes / No / Explain	
8	SD-cum-Warranty (PBG) (in lieu of SD & PBG as a single instrument): BG for 3% of PO value to be submitted within 30 days after receipt of PO valid till end of warranty period with a claim period of 60 days.	Yes / No / Explain	
9	DELAY IN COMPLETION / LIQUIDATED DAMAGES : Time is the essence of the contract. If the Contractor fails to deliver the stores within the time specified in the Contract or any extension thereof, the Purchaser shall recover from the Contractor as Liquidated Damages a sum of one-half of one per cent (0.5%) of the Contract price of the delayed stores for each calendar week of delay. The total liquidated damages shall not exceed ten percent (10%) of the contract price. Stores will be deemed to have been delivered only when all their component parts are also delivered. If certain components are not delivered in time, the stores will be considered as delayed until such time as the missing parts are delivered.	Yes / No / Explain	

10	Warranty Period.	Yes / No / Explain	
11	Validity (90 days for Single part bid , 120 days for two part tenders and 90 days after price bid opening)	Yes / No / Explain	
12	Name and Address of the company on whom purchase order to be placed.	Yes / No / Explain	
13	Certificate of Undertaking: Any bidder from a country which shares a land border with India will be eligible to bid in any procurement whether of goods or services (including consultancy services and non consultancy services) or works (including turn-key projects) only if the bidder is registered with the Competent authority (i.e. DPIIT). Hence, it is mandatory to furnish Certificate of Undertaking as indicated in the tender document.	Yes / No / Explain	
14	Foreign vendors are not permitted to quote. 1.Only Class -I and Class-II Local suppliers as per make in India policy are eligible to participate in the bid. 2. The percentage of local content should be specifically mentioned in the offer, without which will be summarily rejected 3. Preference will be given to class-I Local Supplier and in their absence, class-II Local supplier will be considered.	Yes / No / Explain	

15	<p>This tender is restricted only to Class-I and Class-II Local Suppliers as defined under DPIIT Order dtd 04/06/2020- Preference to Make in India Order-2017 Revision. Non-Local Suppliers need not quote. Foreign OEMs/Agents quoting on behalf of Foreign OEMs are not permitted to quote. High Sea Sales Quotes not permitted. The bids shall be in INR only.</p> <p>Purchase preference to eligible vendors are applicable as per extant notifications issued by the Government of India.</p> <p>The Class-I/Class-II Local suppliers, at the time of submitting their offer, shall also indicate percentage of local content and provide self certification that the item (s) offered meets the local content requirement for Class-I/Class-II Local Suppliers as the case may be. They shall also give details of location (s) at which the local value addition is made.</p> <p>In cases if the item(s) offered exceed Rs. 10 Crores, the Class-I/Class-II Local Suppliers shall provide a Certificate from the statutory auditor or cost auditor of the company (in case of companies) or from a practicing cost accountant or practicing chartered accountant (in respect of suppliers other than companies) giving the percentage of local content. False Declarations will be in breach of the Code of Integrity under Rule 175 (1) (i) (h) of the General Financial Rules for which a bidder or its successors can be debarred for up to two years as per Rule 151 (iii) of the General Financial Rules along with such other actions as may be permissible under law.</p>	Yes / No / Explain	
16	<p>Percentage of local content for the quoted item. Details of break-up of local content shall be provided in terms of percentage. Please note that the value should not be mentioned.</p>	Yes / No / Explain	
17	<p>Details of location (s) at which the local value addition is made</p>	Yes / No / Explain	
18	<p>Foreign OEMs/Agents quoting on behalf of Foreign OEMs are not permitted to quote. High Sea Sales quotes not permitted. The bids shall be in INR only.</p>	Yes / No / Explain	
19	<p>GeM Seller ID</p>	Yes / No / Explain	

20	Any other terms	Yes / No / Explain	
21	Whether Micro and Small Enterprises [MSEs] (Yes or No) Submit a copy of Valid Certificate with self-attestation along with the Techno-commercial bid. No Certificate claiming exemption will be entertained after Tender due date.	Yes / No / Explain	
22	Whether claiming for Purchase Preference as per MSE Policy (Yes or No)	Yes / No / Explain	

23	<p>Arbitration: Local suppliers: :In the event of any dispute/s, difference/s or claim/s arising out of or relating to the interpretation and application of the Contract, such dispute/s or difference/s or claim/s shall be settled amicably by mutual consultations of the good Offices of the respective Parties and recognizing their mutual interests attempt to reach a solution satisfactory to both the parties. If such a resolution is not possible, within 30 days from the date of receipt of written notice of the existence of such dispute/s, then the unresolved dispute/s or difference/s or claim/s shall be referred to the Sole Arbitrator appointed by the Parties by mutual consent, in accordance with the rules and procedures of Arbitration and Conciliation Act 1996 together with amendments thereto or any modification thereof. The Arbitration shall be conducted in Bengaluru in the Arbitration and Conciliation Centre-Bengaluru (Domestic and International) as per its rules and regulations. The expenses for the Arbitration shall be shared equally or as may be determined by the Arbitrator. The considered and written decision of the Arbitrator shall be final and binding between the Parties. The applicable language for Arbitration shall be English only. Work under the contract shall be continued by the Tenderer during the pendency of arbitration proceedings, without prejudice to a final adjustment in the accordance with the decision of the Arbitrator unless otherwise directed in writing by the Purchaser or unless the matter is such that the works cannot be possibly continued until the decision (whether final or interim) of the Arbitrator is obtained. Adherence and acceptance to this Clause is Compulsory or otherwise the Tender will be rejected.</p>	Yes / No / Explain	
----	--	--------------------	--

24	Arbitration with Overseas Supplier: In the event of any dispute or difference arising out of or in connection with this Purchase Order, such dispute or difference shall be settled amicably by mutual consultants or through the good offices of the respective parties. If such resolution is not possible, then the unresolved dispute or difference shall be referred to the Sole Arbitrator appointed in accordance with provisions of the ICADR Arbitration Rules, 1996 of the International Center for Alternative Dispute Resolution, New Delhi. The Arbitration shall be conducted in India in accordance with the Rules & Procedures of the Arbitration and Conciliation Act of 1996 or any re-enactment or modification thereof. The expenses for the Arbitration shall be paid as may be determined by the Arbitrator. The Seat for Arbitration shall be Bengaluru. The applicable language for Arbitration shall be English only. Adherence and acceptance to this Clause is Compulsory or otherwise the Tender will be rejected.	Yes / No / Explain	
25	Arbitration with Public Sector Undertakings: In the event of any dispute or difference relating to the interpretation and application of the Contract, such dispute or difference shall be taken up by either party for resolution through AMRCD as mentioned in DPE OM No. 4 (1)/2013 - DPE (GM) /FTS 1835 dated 22.05.2018. And/or amended thereafter".	Yes / No / Explain	
26	Country of Origin	Yes / No / Explain	
27	Percentage of Agency Commission included in the quoted price.	Yes / No / Explain	
28	During warranty period To & Fro shipping charges in case of repairs/replacements will be to suppliers account.	Yes / No / Explain	

C.3 Price Bid

Sl. No.	Item	Quantity	Unit Price	Currency	Total Price	Remark
---------	------	----------	------------	----------	-------------	--------

1	Cryogenic Dewar (Integrated Cryo-Receiver Sub-array Development)	1.00 Sets		-		
---	---	-----------	--	---	--	--

Common charges (Applicable for all items)

P&F Charges	
Freight Charges	
Installation Charges	
Documentation & Handling Charges	
Other Charges (If any)	