

**GOVERNMENT OF INDIA
DEPARTMENT OF SPACE
LIQUID PROPULSION SYSTEMS CENTRE, VALIAMALA (LPSC)
THIRUVANANTHAPURAM**

Tender for Supply, installation and demonstration of microwave power supply system with associated components

Bids to be submitted online

Tender No.: LPSC/LVF/LP202400062301 dated 01-01-2025

A. Tender Details

Tender No :	LPSC/LVF/LP202400062301
Tender Date :	01-01-2025
Tender Classification:	GOODS
Purchase Entity :	LVF
Centre :	LIQUID PROPULSION SYSTEMS CENTRE, VALIAMALA (LPSC)

Supply, installation and demonstration of microwave power supply system with associated components

For and on behalf of the President of India, the Head, Purchase and Stores, Liquid Propulsion Systems Centre (LPSC), Valiamala , Thiruvananthapuram invites tenders through e-procurement mode; <https://eproc.isro.gov.in>.

Prospective vendors interested in participating in the tendering process need to get registered in the portal by using Digital Signature Certificate. Offers submitted through our online portal only will be considered and no other means will be considered.

Detailed instructions for vendor registration, bid submission etc. are available in the portal <https://eproc.isro.gov.in>. A help desk is also functioning to assist the vendors whose details are available in the portal.

ONLY CLASS I AND CLASS II LOCAL SUPPLIERS ARE ELIGIBLE TO PARTICIPATE IN THE TENDER. A SELF DECLARATION SHOWING THE STATUS OF YOUR FIRM SUBJECT TO LOCAL CONTENT INVOLVED IN THE QUOTED ITEM ALONG WITH DETAILS OF VALUE ADDITION PLACE SHALL BE STRICTLY FURNISHED ALONG WITH YOUR OFFER WITHOUT WHICH YOUR OFFER WILL NOT BE CONSIDERED.

THIS IS A TWO PART TENDER. Techno- Commercial Bid [Part-I] and Price Bid [Part-II] shall be submitted separately. Techno- Commercial Bid contains price details in any form will be summarily rejected.

As per Restrictions under Rule 144(xi) of GFR, a Bidder is permitted to procure raw material, components, sub assemblies etc. from vendors from countries which shares land border with India. Such vendors will not be required to be registered with the Competent Authority. However, in case a Bidder is proposed to supply finished goods procured directly or indirectly from the vendors from

countries sharing land border with India, such vendors are required to be registered with Competent Authority, which is mandatory.

Customs Duty: Suppliers are requested to furnish the list of items to be imported with quantity along with part-1 (Technical bid). Please note that, no price details shall be mentioned in Part-1 bid. Mention of any price detail in any form in the Part-1 bid will render the entire bid invalid.

The details will be included in the contract and customs duty concession certificate is issued against request from the supplier. The prevailing rate of total customs duty applicable is 10.775%.

Overall warranty period of One year shall be provided. However, applicable warranty shall be provided for items for which higher warranty is applicable. Cost of extended warranty shall be provided separately along with Price bid only.

Scope of Work: Supply, installation and demonstration of Microwave Power Supply System with associated components.

A.1 Tender Schedule

Tender Publish Date :	01-01-2025 14:30
Bid Clarification Due Date :	20-01-2025 12:00
Bid Submission Start Date :	16-01-2025 14:00
Bid Submission Due Date :	17-02-2025 12:00
Bid Opening Date :	17-02-2025 12:05
Price Bid Opening Date :	28-02-2025 12:00

A.2 Pre-bid Meeting Details

Date :	16-01-2025 10:30
Place :	Liquid Propulsion Systems Centre, Valiamala, Trivandrum
Location :	Liquid Propulsion Systems Centre, Valiamala, Trivandrum
Centre :	LIQUID PROPULSION SYSTEMS CENTRE, VALIAMALA (LPSC), THIRUVANANTHAPURAM, KERALA

Details :

A Pre- bid meeting is tentatively scheduled on 16.01.2025 @ 10.30am through online mode. Bidders who are interested to participate in the Pre- bid meeting shall intimate their willingness by mail to pso_1@lpsc.gov.in on or before 15.01.2025. Please note that only those bidders attending the Pre- bid meeting are eligible to participate in the tender.

B. Tender Attachments

Technical Write-up/Drawings

Document : List of manufacturers

Document : Breakdown charges

Instructions To Vendors

3. INSTRUCTIONS TO INDIGENOUS TENDERERS

1. a) As far as implementation of provision for Public Procurement (Preference to Make in India) Order, 2017 is concerned, the Office orders vide No. P-4502/2/2017-B.E-II dt 15.06.2017, which is partially modified by Order No.P-45021/2/2017-PP (BE-II) dt 28.05.2018, Order P- 45021/2/2017-PP (BE-II) dt 29.05.2019, Order No. P-45021/2/2017-PP (BE-II) dt 04.06.2020 and Order No. P-45021/2/2017-PP (BE-II) 16.09.2020 and subsequent Amendments issued by the Department of Promotion of Industries and Internal Trade, Ministry of Commerce and Industry regarding Class-I/Class-II local suppliers, Purchase preference, verification of local contents etc shall be applicable to this tender. Therefore, bidders are requested to ensure compliance of the same while submitting tenders. b) Price Preference shall be extended to the MSEs under the Public Procurement Policy for MSEs. Such MSE s shall produce documentary proof of registration as per provisions of the Policy ie: registration with District Industries Centre (DIC) or Khadi and Village Industries Commission (KVIC) or Khadi and Industries Board (KVIB) or Coir Board or National Small Industries Commission (NSIC) or Directorate of Handicrafts and Handlooms or Udyog Aadhar Memorandum or any other body specified by Ministry of MSME.

2. Applicable Law: - The Contractor shall be interpreted, construed and governed by the Law of India.

3. Bank Details :- The offer should contain Bank details viz., Bankers Name, Address, Phone No. & Mail id, Bank Account No., IFSC code, PAN No., GST No., etc.

4. Contractors Default Liability :- The purchaser may upon written notice of default to the Contractor terminate the Contract in whole or in part in circumstances detailed hereunder: a) If in the judgement of the Purchaser the Contractor fails to make delivery of Stores within the time specified in the Contract/agreement or within the period for which extension has been granted by the Purchaser to the Contractor. b) If in the judgment of the Purchaser the Contractor fails to comply with any of the other provisions of this Contract.

5. Counter Terms and Conditions of suppliers: - Where counter terms and conditions / printed or

cyclostyled conditions has been offered by the Supplier, the same shall not be deemed to have been accepted by the Purchaser unless specific written acceptance thereof is obtained.

6. DELIVERY AND LIQUIDATED DAMAGES (LD) :-

(a)The time for and the date of delivery of the stores stipulated in the Purchase Order shall be deemed to be the essence of the Contract and delivery must be completed on or before the specified dates.

(b)Should the Contractor fail to deliver the stores or any consignment thereof within the period prescribed for such delivery, the purchaser shall be entitled at his option either.

(i)to recover from the Contractor as agreed liquidated damages and not by way of penalty, a sum of 0.5% per week of the price of any stores which the Contractor has failed to deliver as aforesaid or during which the delivery of such store may be in arrears subject to a maximum of 5% of the order value for the delayed period. However in case of inordinate delay i.e, delays of more than one-fourth (25%) of the total completion period, LD shall be applicable subject to a maximum of 10% or

(ii)to purchase from elsewhere, without notice to the Contractor on the account and at the risk of the Contractor, the stores not delivered or others of a similar description (where others exactly complying with the particulars, are not, in the opinion of the purchaser, readily procurable, such opinion being final) without cancelling the Contract in respect of the consignment (s) not yet due for delivery, or (iii) to cancel the Contract or a portion thereof and if so desired to purchase or authorise the purchase of stores not so delivered or others of a similar description (where others exactly if complying with the particulars are not, in the opinion of the purchaser, readily procurable, such opinion final) at the risk and cost of the Contractor.

In the event of action being taken under sub-clause (ii) & (iii) of clause 15 (b) above, the Contractor shall be liable for any loss which the purchaser may sustain on that account, provided that the re-purchase or if there is an agreement to re-purchase then such agreement is made within six months from the date of such failure. But the Contractor shall not be entitled to any gain on such re-purchase made against default. The manner and method of such re-purchase shall be at the discretion of the purchaser, whose decision shall be final. It shall not be necessary for the purchaser to serve a notice of such re-purchase on the defaulting Contractor. This right shall be without prejudice to the right of the purchaser to recover damages for breach of Contract by the Contractor.

7. Delivery Period :- The time for and the date / period of delivery of the stores stipulated in the Tender / Purchase Order shall be deemed to be the essence of the contract and delivery must be completed on or before the specified dates.

8. Delivery Term :- Ex-Works / FOR LPSC

9. Extension of Time: - If the completion of supply of Stores is delayed due to reason of FORCE MAJEURE such as acts of God, acts of public enemy, acts of Government, fires, floods, epidemics, quarantine restrictions, strikes, and freight embargoes etc., the Contractor shall give notice within 15 days to the Purchaser in writing of his claim for an extension of time. The Purchaser on receipt of such

notice after verification, if necessary, may agree to extend the Contract delivery date as may be reasonable but without prejudice to the other terms and conditions of the Contract.

10. 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) For a period of twelve months or for a period as specified 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 a period of 14 months from the date of acceptance thereof 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 14 months 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 12 months or as to whether the nature of the defects requires renewal or replacement, shall be final, conclusive and binding on the Contractor. f) All the replacement stores shall also be guaranteed for a period of 12 months from the date of arrival of the stores at purchaser's site.

11. Indemnity:- The Contractor shall warrant and be deemed to have warranted that all stores supplied against this Contract are free and clean of Infringement of any Patent, Copy right or Trade mark and shall at all times indemnify the Purchaser against all claims which may be made in respect of stores for infringement of any right protected by patent, registration of design or trade mark, and shall take all risk of accident or damage which may cause a failure of the supply from whatever cause arising and the entire responsibility for the sufficiency of all the means used by him for the fulfilment of the Contract.

12. Language and Measures :- All documents pertaining to the Contract including specification, schedule, notice, correspondence, operating and maintenance instructions, drawings or any other writings shall be written in English Language. The metric system of measurement shall be used exclusively in the Contract.

13. Mode of Despatch :- For supplies BY ROAD / BY RAIL:- 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. The Contractor will be held

responsible for any demurrage / wharfage paid due to non-receipt of documents in time.

14. Offer Validity :- a) For Single Part Tender - Quotation should be valid for 90 days from the date of opening of the tender or any other period as specified in the tender. b) For Two Part Tender - Quotation should be valid for 120 days from the date of opening of the tender or any other period as specified in the tender. Note :- Offer with validity lesser than that specified is liable for exclusion from the procurement process

15. Packing Forwarding & Insurance:- The Contractor will be held responsible for the stores being sufficiently and properly packed for transport by Rail / Road 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. b) Insurance : 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.

16. Payment :- 100% payment shall be made through RTGS within 30 days of receipt and acceptance of the item at our site against submission of PBG.

17. Performance Bank Guarantee (PBG) :- To fulfil guarantee conditions outlined in clause 2(a) to (e) above, the Contractor shall, at the option of the purchaser, furnish a Bank Guarantee (as prescribed by the purchaser) from a Bank approved by the purchaser for an amount equivalent to 3% of the value of the Contract along with first shipment documents. On the performance and completion of the Contract in all respects, the Bank Guarantee will be returned to the Contractor without any interest.

18. Price : a) Price should be firm and fixed and should be on the basis of FOR, LPSC / delivery at site. The Purchaser will not pay separately for transit insurance, and the risk and cost during transit shall be exclusively the responsibility of the Contractor and the purchaser shall pay only for such stores as are actually received in good condition in accordance with the Contract. b) Tenders 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 variations. c) Prices are required to be quoted according to the units indicated in the tender. When quotations are given in terms of units other than those specified in the tender form, relationship between the two systems of unit must be furnished.

19. Quantity (QTY) and Unit of Measure (UOM) Quote should be as per the quantity and unit of measure mentioned the tender. If dimensional details are available, the same should also be indicated in your offer.

20. Resolution of Disputes:- Any dispute, disagreement or question arising out of or relating to or in consequence of the contract or to its fulfillment, or the validity of enforcement thereof which cannot be

settled mutually, or the settlement of which is not herein specifically provided for, shall within 30 (thirty) days from the date either party informs the other in writing that such dispute or disagreement exists be referred to arbitration by the sole arbitrator. The Arbitrator shall be appointed As per the Indian Arbitration and Conciliation Act 1996 and proceedings will be conducted in Trivandrum. The Arbitration proceedings shall be conducted in accordance with and subject to the Arbitration and Conciliation Act 1996 (Act 26 of 1996) as amended from time to time and the decision of the Arbitrator shall be final and binding on the parties thereto. Each party shall bear its own cost of preparing and presenting its case. The cost of Arbitration including the fees and expenses of the Arbitrator shall be shared equally by the parties unless the award provides otherwise. Subject to provisions of this clause, the courts at Kerala shall have exclusive jurisdiction. Performance under this Contract shall, however continue during Arbitration proceeding and no payment due or payable by the parties hereto shall be withheld unless any such payment is/or forms a part of the subject matter of the Arbitration proceedings.

21. Security Deposit (SD) :- Applicable for order value above INR 50 L.

On acceptance of the order, 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 three 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 15(b) hereof and/or to recover from the Contractor, damages arising from such cancellation.

22. Specifications:- a) Stores offered should strictly conform to Purchasers 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. Wherever options are called for in our specifications, the tenderer should address all such options. 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 non-acceptance of tender, the tenderer will have to remove the samples at his own expense.

23. Taxes :- The applicable GST / IGST shall be clearly mentioned in your offer along with HSN code of the offered items. We are eligible for IGST @ 5% as per the Department of Revenue Notification No. 25/2018 Integrated Tax (Rate) Schedule-I; Sl.No.243B dated 31.12.2018 (Amendment to Notification No. 7/2018 - Integrated Tax (Rate) dated 25.01.2018 and Notification No. 1/2017 - Integrated Tax (Rate) dated 28.06.2017

24. Training:- The Contractor shall, if required by the Purchaser, provide facilities for the practical training of Purchasers engineering / technical personnel from India and for the active association on

the manufacturing processes throughout the manufacturing period of the Contract / Stores, number of such personnel to be mutually agreed upon.

25. LPSC shall have the right to place part order among the parties for the items for which they are the lowest.

26. Option Clause : The Purchase reserves the right to increase/decrease the Ordered Quantity by up to 25% at any time, till final delivery date (or 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 delivery period (or the extended delivery period). It may please be noted that, this clause is not applicable for Development Orders.

C. Bid Templates

C.1 Technical Bid - Supply, installation and demonstration of microwave power supply system with associated components

1. RF AND MICROWAVE EQUIPMENT: Microwave generator

Item specifications for RF AND MICROWAVE EQUIPMENT

SI No	Specification	Value	Compliance	Offered Specification	Remark
1	Equipment type	Microwave generator	Yes / No / Explain		
2	Connector output	N type (50 ohm)	Yes / No / Explain		
3	Frequency (MHz)	≤ 2400 to ≥ 2500	Yes / No / Explain		
4	Technology	Semiconductor based	Yes / No / Explain		
5	Signal generator	Built-in	Yes / No / Explain		
6	Frequency resolution	Frequency adjustable with ≥ 200 kHz step	Yes / No / Explain		
7	Output power (W)	0 to ≥ 200 (CW)	Yes / No / Explain		
8	Output power resolution	Adjustable with ≤ 1 W steps	Yes / No / Explain		
9	Reflected power handling limit	≥ 50 W	Yes / No / Explain		
10	Protection for reflected power	Built-in isolator with automatic power reduction or switch off based on reflected power should be present.	Yes / No / Explain		
11	Protection for overheating	Excess temperature (overheating interlock) should be present.	Yes / No / Explain		
12	Local control	Should be present with LCD screen for display	Yes / No / Explain		

13	Remote control	Modbus on RS232 (preferable) / Ethernet / RS485 / USB	Yes / No / Explain		
14	Power supply	1 phase, 230V, 50Hz	Yes / No / Explain		
15	Cooling	Air cooled	Yes / No / Explain		
16	Frequency sweep function	Frequency sweep function to find the optimum matching frequency. All measured data should be available through remote control. Auto-tune algorithm to control the frequency automatically to minimize the reflected power.	Yes / No / Explain		
17	Total weight	20kg (or less)	Yes / No / Explain		
18	Operating temperature	≤ 10 deg C to ≥ 35 deg C	Yes / No / Explain		
19	Software	Software for remote operation, control and data logging for Windows OS must be provided. The total cost quoted should include the cost of the software.	Yes / No / Explain		
20	Accessories	Suitable accessories or software could be incorporated (if required) to meet the above requirements. All accessories must be within the chassis and modular individual components are not acceptable. Accessory list with details must be provided along with quotation. The total cost quoted should include the cost of these accessories also.	Yes / No / Explain		
21	Manuals	To be provided	Yes / No / Explain		

22	Calibration certificate	Calibration certificate from the NABL accredited lab or other accredited agency from the source country is to be provided along with the equipment.	Yes / No / Explain		
23	Standard base warranty (in years)	1	Yes / No / Explain		
24	Extended warranty (min. in years)	1	Yes / No / Explain		
25	Extended warranty separate quote requirement	Cost for extended warranty per year must be shown separately.	Yes / No / Explain		
26	Breakdown charges requirement	As per attached document.	Yes / No / Explain		
27	Catalogue	Product Catalogue / datasheet of the OEM should be submitted along with the quotation. Specifications should be substantiated by datasheets.	Yes / No / Explain		

2. Spectrum Analyser

Item specifications for Spectrum Analyser

Sl No	Specification	Value	Compliance	Offered Specification	Remark
1	Component type	Spectrum Analyzer	Yes / No / Explain		
2	Spectrum analyzer frequency range	≤ 10 kHz to ≥ 3 GHz	Yes / No / Explain		
3	Spectrum analyzer frequency resolution	≤ 1 Hz	Yes / No / Explain		
4	Internal Reference Frequency Aging (per year)	$\leq 1 \times 10^{-6}$	Yes / No / Explain		
5	Internal Reference Frequency Temperature Stability(20 degC to 30 deg C)	$\leq 1 \times 10^{-6}$	Yes / No / Explain		
6	Achievable Initial Calibration Accuracy of Internal Frequency Reference	$\leq 5 \times 10^{-7}$	Yes / No / Explain		

7	SSB Phase Noise for 1GHz / 0.5GHz at 100KHz offset	≤ -97 dBc/Hz	Yes / No / Explain		
8	SSB Phase Noise for 1GHz / 0.5GHz at 1MHz offset	≤ -118 dBc/Hz	Yes / No / Explain		
9	Spectrum analyzer resolution bandwidth (-3dB bandwidth)	≤ 10 Hz to ≥ 3 MHz	Yes / No / Explain		
10	Spectrum analyzer video bandwidth	≤ 1 Hz to ≥ 3 MHz	Yes / No / Explain		
11	DANL with Preamp off (at 0 dB RF attenuation, termination 50 Ω , normalized to 1 Hz) at 2 GHz to 3 GHz	≤ -138 dBm	Yes / No / Explain		
12	DANL with Preamp on (at 0 dB RF attenuation, termination 50 Ω , normalized to 1 Hz) at 2 GHz to 3 GHz	≤ -155 dBm	Yes / No / Explain		
13	RF Input Connector	N-Female (50 ohm)	Yes / No / Explain		
14	Communication interface	USB, Ethernet	Yes / No / Explain		
15	Power Supply	AC 230 V	Yes / No / Explain		
16	Spectrum analyzer frequency span range	0 Hz, ≤ 100 Hz to ≥ 3 GHz	Yes / No / Explain		
17	Spectrum analyzer sweep time	≤ 1000 s	Yes / No / Explain		
18	Spectrum analyzer trigger source	Free run, video, external	Yes / No / Explain		
19	Spectrum analyzer external trigger	3V to 5V TTL	Yes / No / Explain		
20	Vector Network Analyzer (VNA) or reflection measurement frequency Range	≤ 5 MHz to ≥ 3 GHz	Yes / No / Explain		
21	VNA or reflection measurements	S11 or more	Yes / No / Explain		
22	Spectrum analyzer Amplitude measurement range	DANL to ≥ 10 dBm	Yes / No / Explain		
23	Preamplifier	Required	Yes / No / Explain		

24	Max. input DC voltage	≥50 VDC	Yes / No / Explain		
25	VSWR for RF input (> 1MHz)	≤ 2 (typical)	Yes / No / Explain		
26	Second harmonic distortion (SHI) (att = 0 dB, preamp off, nominal value)	≤-60 dBc	Yes / No / Explain		
27	Tracking Generator feature	Required	Yes / No / Explain		
28	Tracking Generator Frequency range	≤5 MHz to ≥3 GHz	Yes / No / Explain		
29	Tracking Generator Output level	≤-20 dBm to ≥ 0 dBm	Yes / No / Explain		
30	Average safe reverse total power	≥1 W	Yes / No / Explain		
31	Maximum safe reverse level DC voltage	≥50VDC	Yes / No / Explain		
32	Operating temperature	≤10 to ≥40 deg C	Yes / No / Explain		
33	Weight	<15kg	Yes / No / Explain		
34	Distance to Fault Mode	Required	Yes / No / Explain		
35	Other measurements required	Spectrogram	Yes / No / Explain		
36	Total warranty including extended warranty (min. in years)	5	Yes / No / Explain		
37	Extended warranty separate quote requirement	Cost for extended warranty (if any) per year must be shown separately	Yes / No / Explain		
38	Remote operation	Should be available	Yes / No / Explain		
39	Accessories required	VNA mechanical calibration kit for N type interface	Yes / No / Explain		

40	Accessories list	Suitable accessories or software could be incorporated (if required) to meet the above requirements. Accessory list with details must be provided along with quotation. The total cost quoted should include the cost of these accessories also.	Yes / No / Explain		
41	Manuals	To be provided	Yes / No / Explain		
42	Calibration certificate	Calibration certificate from the NABL accredited lab or other accredited agency from the source country is to be provided along with the equipment.	Yes / No / Explain		
43	Catalogue	Product Catalogue / datasheet of the OEM should be submitted along with the quotation. Specifications should be substantiated by datasheets.	Yes / No / Explain		

3. POWER SENSOR

Item specifications for POWER SENSOR

SI No	Specification	Value	Compliance	Offered Specification	Remark
1	Component type	Diode Power sensor USB type	Yes / No / Explain		
2	Connector	N-male (50 ohms)	Yes / No / Explain		
3	Frequency range	≤ 10 kHz to ≥ 6 GHz	Yes / No / Explain		
4	Power dynamic range	≤ -60 to $\geq +20$ dBm	Yes / No / Explain		
5	Maximum power handling average	> 20 dBm	Yes / No / Explain		
6	Maximum power handling peak for max. 10 μ s	> 30 dBm	Yes / No / Explain		

7	SWR for 2.4 to 2.5GHz at 25 deg C	≤1.2	Yes / No / Explain		
8	Interface for communication	USB	Yes / No / Explain		
9	Remote programming	Remote programming feature must be present	Yes / No / Explain		
10	External Triggering	Feature must be present	Yes / No / Explain		
11	Direct standalone operation from PC without the need of power meter	Required	Yes / No / Explain		
12	Operating temperature	≤10°C to ≥40°C	Yes / No / Explain		
13	Standard base warranty (in years)	3	Yes / No / Explain		
14	Extended warranty (min. in years)	2	Yes / No / Explain		
15	Extended warranty separate quote requirement	Cost for extended warranty per year must be shown separately.	Yes / No / Explain		
16	Software	Software for operation, control and data logging for Windows OS must be provided. The total cost quoted should include the cost of the software.	Yes / No / Explain		
17	Accessories	Power sensor to PC USB cable (1.5 to 2m) with secure lock to power sensor	Yes / No / Explain		
18	Calibration certificate	Calibration certificate from the NABL accredited lab or other accredited agency from the source country is to be provided along with the equipment.	Yes / No / Explain		
19	Catalogue	Product Catalogue / datasheet of the OEM should be submitted along with the quotation. Specifications should be substantiated by datasheets.	Yes / No / Explain		

4. R.F.TUNER: Coaxial 3 stub manual tuner

Item specifications for R.F.TUNER

SI No	Specification	Value	Compliance	Offered Specification	Remark
1	Component type	Coaxial stub manual tuner	Yes / No / Explain		
2	Connector interface	N-Type Female	Yes / No / Explain		
3	Power (CW) handling	≥ 200 W	Yes / No / Explain		
4	Frequency (GHz)	≤ 1 to ≥ 3	Yes / No / Explain		
5	Number of stubs	3	Yes / No / Explain		
6	Tuning	Should remove upto $\geq 8:1$ mismatch	Yes / No / Explain		
7	Warranty (years)	≥ 1	Yes / No / Explain		
8	Catalogue	Product Catalogue / datasheet of the OEM should be submitted along with the quotation.	Yes / No / Explain		

5. DC BLOCK

Item specifications for DC BLOCK

SI No	Specification	Value	Compliance	Offered Specification	Remark
1	Component type	DC block	Yes / No / Explain		
2	Interface 1 type	N male (50 ohm)	Yes / No / Explain		
3	Interface 2 type	N female (50 ohm)	Yes / No / Explain		
4	Configuration	Inner and outer conductor separated	Yes / No / Explain		
5	Frequency range	≤ 2000 to ≥ 3000 MHz	Yes / No / Explain		
6	Insertion loss at 2500MHz	≤ 0.25 dB	Yes / No / Explain		

7	VSWR at 2500MHz	≤ 1.25	Yes / No / Explain		
8	RF power (CW), max.	≥ 200 W at 2500 MHz	Yes / No / Explain		
9	Blocking/breakdown DC voltage (outer to outer conductor and inner to inner conductor)	≥ 2000 V	Yes / No / Explain		
10	Inner and outer conductor surface plating	Gold-plated / silver-plated / Tri metal plated	Yes / No / Explain		
11	Temperature range	≤ 10 deg C to ≥ 50 deg C	Yes / No / Explain		
12	Warranty (years)	≥ 1	Yes / No / Explain		
13	Catalogue	Product Catalogue / datasheet of the OEM should be submitted along with the quotation. Specifications should be substantiated by datasheets.	Yes / No / Explain		

6. Co-axial bias Tees

Item specifications for Co-axial bias Tees

SI No	Specification	Value	Compliance	Offered Specification	Remark
1	Component type	Bias Tee	Yes / No / Explain		
2	Connector (mainline) in and out	N-Type Female (preferred) / DIN 7-16	Yes / No / Explain		
3	DC connector	N-Type Female (preferred) / solder post	Yes / No / Explain		
4	Power (CW)	≥ 200 W	Yes / No / Explain		
5	Frequency (GHz)	≤ 2 to ≥ 2.5	Yes / No / Explain		
6	Insertion Loss (dB) at 2.5GHz	≤ 0.5	Yes / No / Explain		
7	Isolation RF to DC (dB)	≥ 25	Yes / No / Explain		

8	VSWR at 2.5GHz	≤ 1.4:1	Yes / No / Explain		
9	DC voltage handling	≥ 100 V	Yes / No / Explain		
10	DC current handling	≥ 5 A	Yes / No / Explain		
11	Outer conductor material	Copper alloy	Yes / No / Explain		
12	Inner conductor material	Copper alloy	Yes / No / Explain		
13	Inner conductor plating	Silver or Gold Plated	Yes / No / Explain		
14	Insulator	PTFE	Yes / No / Explain		
15	Operating Temperature	≤ 10 deg C to ≥ 50 deg C	Yes / No / Explain		
16	Warranty (years)	≥ 1	Yes / No / Explain		
17	Catalogue	Product Catalogue / datasheet with specifications of the OEM should be submitted along with the quotation. Specifications should be substantiated by datasheets.	Yes / No / Explain		

7. DIRECTIONAL COUPLER: Dual-directional coupler

Item specifications for DIRECTIONAL COUPLER

Sl No	Specification	Value	Compliance	Offered Specification	Remark
1	Component type	Dual directional coupler	Yes / No / Explain		
2	Frequency (MHz)	≤ 2000 to ≥ 3000	Yes / No / Explain		
3	Power	≥ 200W (CW)	Yes / No / Explain		
4	Coupling	40 dB (fixed) / 30 dB (fixed)	Yes / No / Explain		
5	Coupling tolerance	+/- 1 dB (or less)	Yes / No / Explain		

6	Insertion Loss at 3GHz	≤ 0.3 dB	Yes / No / Explain		
7	Flatness (typ.)	+/- 0.75 dB (or less)	Yes / No / Explain		
8	VSWR at 3GHz	≤ 1.3:1	Yes / No / Explain		
9	Directivity (typ.)	≥ 20 dB	Yes / No / Explain		
10	Casing/package material	Aluminium	Yes / No / Explain		
11	Operating Temperature	≤ 10 deg C to ≥ 50 deg C (or better)	Yes / No / Explain		
12	Connector configuration for all ports	N Female (50 ohm)	Yes / No / Explain		
13	Warranty (years)	≥ 1	Yes / No / Explain		
14	Catalogue	Product Catalogue / datasheet of the OEM should be submitted along with the quotation. Datasheet should contain variations of coupling, VSWR, insertion loss and directivity with respect to frequency. Specifications should be substantiated by datasheets.	Yes / No / Explain		

8. CIRCULATORS

Item specifications for CIRCULATORS

SI No	Specification	Value	Compliance	Offered Specification	Remark
1	Component type	Circulator	Yes / No / Explain		
2	Frequency range	≤ 2.4 to ≥ 2.5 GHz	Yes / No / Explain		
3	Insertion Loss (typical)	≤ 0.6dB	Yes / No / Explain		
4	Isolation (typical)	≥ 20 dB	Yes / No / Explain		

5	VSWR (typical)	≤ 1.30	Yes / No / Explain		
6	Operating Temperature	≤ 10 deg C to ≥ 50 deg C	Yes / No / Explain		
7	Forward Power Rating (CW)	$\geq 200W$	Yes / No / Explain		
8	Connector Type	N-Female	Yes / No / Explain		
9	Impedance	50 ohm	Yes / No / Explain		
10	Warranty	≥ 1 year	Yes / No / Explain		
11	Catalogue	Product Catalogue / datasheet of the OEM should be submitted along with the quotation. Specifications should be substantiated by datasheets.	Yes / No / Explain		

9. DUMMY LOAD: 10W

Item specifications for DUMMY LOAD

SI No	Specification	Value	Compliance	Offered Specification	Remark
1	Component type	Dummy load	Yes / No / Explain		
2	Connector type	N male	Yes / No / Explain		
3	Power rating	≥ 10 W	Yes / No / Explain		
4	Impedance	50 ohm	Yes / No / Explain		
5	Frequency range	DC to ≥ 3 GHz	Yes / No / Explain		
6	VSWR at 3 GHz	≤ 1.2	Yes / No / Explain		
7	Inner conductor material	Copper alloy	Yes / No / Explain		
8	Inner conductor plating	Gold/Silver-plated	Yes / No / Explain		

9	Outer conductor	Copper alloy	Yes / No / Explain		
10	Outer conductor plating	Gold/Silver/Tri metal-plated	Yes / No / Explain		
11	Other metal parts	Copper alloy / aluminium alloy	Yes / No / Explain		
12	Insulation	PTFE	Yes / No / Explain		
13	Degree of protection	IP 64 (or equivalent/better)	Yes / No / Explain		
14	Temperature range	≤ 10 deg C to ≥ 50 deg C	Yes / No / Explain		
15	Warranty (years)	≥ 1	Yes / No / Explain		
16	Catalogue	Product Catalogue / datasheet of the OEM should be submitted along with the quotation. Datasheet should contain power derating values with respect to temperature. Specifications should be substantiated by datasheets.	Yes / No / Explain		

10. DUMMY LOAD: 200W

Item specifications for DUMMY LOAD

SI No	Specification	Value	Compliance	Offered Specification	Remark
1	Component type	Dummy load	Yes / No / Explain		
2	Frequency range	DC to ≥ 3 GHz	Yes / No / Explain		
3	Connector interface	N type female (50 ohm)	Yes / No / Explain		
4	VSWR at 3 GHz	≤ 1.25	Yes / No / Explain		
5	Power rating	≥ 200 W	Yes / No / Explain		
6	Ambient temperature range	≤ 10 to ≥ 40 deg C	Yes / No / Explain		

7	Inner conductor material	Copper alloy	Yes / No / Explain		
8	Inner conductor plating	Gold/Silver-plated	Yes / No / Explain		
9	Outer conductor material	Copper alloy	Yes / No / Explain		
10	Outer conductor surface finish	Silver plated/ CuSnZn plated / Nickel plated / Tri metal plated	Yes / No / Explain		
11	Heatsink material	Black anodized aluminium	Yes / No / Explain		
12	Total weight	≤ 5kg	Yes / No / Explain		
13	Warranty (years)	≥ 1	Yes / No / Explain		
14	Catalogue	Product Catalogue / datasheet of the OEM should be submitted along with the quotation. Datasheet should contain power derating values with respect to temperature. Specifications should be substantiated by datasheets.	Yes / No / Explain		

11. RF Components: Surge protector

Item specifications for RF Components

SI No	Specification	Value	Compliance	Offered Specification	Remark
1	Component	Surge protector	Yes / No / Explain		
2	Interface type	N type (50 ohm); male to female is preferred	Yes / No / Explain		
3	Surge protector type	Gas discharge arrestor or tube	Yes / No / Explain		
4	DC handling	DC pass	Yes / No / Explain		
5	Power rating	≥ 200 W	Yes / No / Explain		

6	Frequency range	DC to ≥ 2.5 GHz	Yes / No / Explain		
7	VSWR @ 2.5 GHz	≤ 1.35	Yes / No / Explain		
8	Insertion loss, max	≤ 0.5 dB	Yes / No / Explain		
9	Operating temperature range	≤ 10 to ≥ 50 deg C	Yes / No / Explain		
10	Accessories	Gas discharge arrester (to handle 150V or more), if required	Yes / No / Explain		
11	Accessories list	Suitable accessories could be incorporated (if required) to meet the above requirements. Accessory list with details must be provided along with quotation. The total cost quoted should include the cost of these accessories also.	Yes / No / Explain		
12	Static sparkover voltage or breakdown voltage	≥ 150 V. Typical 600V is preferred.	Yes / No / Explain		
13	Surge current	≥ 5 kA	Yes / No / Explain		
14	Warranty (years)	≥ 1	Yes / No / Explain		
15	Catalogue	Product Catalogue / datasheet of the OEM should be submitted along with the quotation.	Yes / No / Explain		

12. POWER DIVIDER: 2 way

Item specifications for POWER DIVIDER

SI No	Specification	Value	Compliance	Offered Specification	Remark
1	Components	Power divider 2-way	Yes / No / Explain		
2	Frequency Range	DC to ≥ 3000 MHz	Yes / No / Explain		

3	Insertion loss (typical)	6 ± 1.0 dB (or less)	Yes / No / Explain		
4	VSWR	≤ 1.40	Yes / No / Explain		
5	Amplitude Balance	$\leq \pm 0.5$ dB	Yes / No / Explain		
6	Power handling capacity	≥ 1 W	Yes / No / Explain		
7	Impedance	50 ohm	Yes / No / Explain		
8	Connector Type	N-Female	Yes / No / Explain		
9	Warranty (years)	≥ 1	Yes / No / Explain		
10	Catalogue	Product Catalogue / datasheet of the OEM should be submitted along with the quotation. Specifications should be substantiated by datasheets.	Yes / No / Explain		

13. POWER DIVIDER: 3 way

Item specifications for POWER DIVIDER

SI No	Specification	Value	Compliance	Offered Specification	Remark
1	Components	Power divider 3-way	Yes / No / Explain		
2	Frequency Range	DC to ≥ 3000 MHz	Yes / No / Explain		
3	Insertion loss (typical)	9.5 ± 1.5 dB (or less)	Yes / No / Explain		
4	VSWR	≤ 1.40	Yes / No / Explain		
5	Amplitude Balance	$\leq \pm 0.75$ dB	Yes / No / Explain		
6	Power handling capacity	≥ 1 W	Yes / No / Explain		
7	Impedance	50 ohm	Yes / No / Explain		

8	Connector Type	N-Female	Yes / No / Explain		
9	Warranty (years)	≥ 1	Yes / No / Explain		
10	Catalogue	Product Catalogue / datasheet of the OEM should be submitted along with the quotation. Specifications should be substantiated by datasheets.	Yes / No / Explain		

14. Co-axial Attenuator

Item specifications for Co-axial Attenuator

SI No	Specification	Value	Compliance	Offered Specification	Remark
1	Frequency range	DC to ≥ 3 GHz	Yes / No / Explain		
2	Connector interface	N female to N female/male	Yes / No / Explain		
3	Connector impedance	50 ohm	Yes / No / Explain		
4	VSWR (max.) @ 2 to 3 GHz	≤ 1.35	Yes / No / Explain		
5	Attenuation	30 dB (fixed)	Yes / No / Explain		
6	Attenuation tolerance	± 1.5 dB (or less)	Yes / No / Explain		
7	Power dissipation	≥ 100 W	Yes / No / Explain		
8	Ambient temperature range	≤ 10 to ≥ 40 deg C	Yes / No / Explain		
9	Absorbing unit Heat sink material	Black anodised aluminium	Yes / No / Explain		
10	Inner conductor material	Copper alloy	Yes / No / Explain		
11	Inner conductor surface finish	Silver plated / gold plated	Yes / No / Explain		
12	Outer conductor material	Copper alloy / Passivated stainless steel	Yes / No / Explain		

13	Weight	< 3kg	Yes / No / Explain		
14	Warranty (years)	1 (or more)	Yes / No / Explain		
15	Catalogue	Product Catalogue / datasheet of the OEM should be submitted along with the quotation. Specifications should be substantiated by datasheets.	Yes / No / Explain		

15. RF Adaptors: Adapter set with N-type and DIN 7-16 interface

Item specifications for RF Adaptors

SI No	Specification	Value	Compliance	Offered Specification	Remark
1	Component type	N-type and DIN 7-16 Adapter set	Yes / No / Explain		
2	Impedance	50 ohm	Yes / No / Explain		
3	Frequency range (GHz) except for adapters with BNC interface	DC to ≥ 6	Yes / No / Explain		
4	Frequency range (GHz) for adapters with BNC interface	DC to ≥ 3	Yes / No / Explain		
5	VSWR (maximum)	≤ 1.3	Yes / No / Explain		
6	Inner conductor material	Copper alloy	Yes / No / Explain		
7	Inner conductor plating	Gold-plated/Silver-plated	Yes / No / Explain		
8	Outer conductor material	Copper alloy	Yes / No / Explain		
9	Outer conductor plating	Gold-plated/Silver-plated/Nickel plated/Trimetal plated	Yes / No / Explain		
10	Insulation	PTFE	Yes / No / Explain		
11	Interface direction	Straight	Yes / No / Explain		

12	Interface and quantity	Adapter with N-female to N-female, Qty:8; Adapter with N-male to N-male, Qty:5; Adapter with N-female to BNC female, Qty:3; Adapter with N-male to TNC-female, Qty:2; Adapter with N-male to SMA-female, Qty:3; Adapter with DIN 7-16 female to DIN 7-16 female, Qty:3; Adapter with DIN 7-16 male to DIN 7-16 male, Qty:2; Adapter with N-male to DIN 7-16 female, Qty:5;	Yes / No / Explain		
13	Catalogue	Product Catalogue / datasheet of the OEM should be submitted along with the quotation. Specifications should be substantiated by datasheets.	Yes / No / Explain		

16. RF Connectors: Connector set panel mount

Item specifications for RF Connectors

SI No	Specification	Value	Compliance	Offered Specification	Remark
1	Component type	Panel mounting type connector set	Yes / No / Explain		
2	Interface type	N female (50 ohm)	Yes / No / Explain		
3	Frequency range (GHz)	DC to ≥ 4	Yes / No / Explain		
4	Number of interfaces	1	Yes / No / Explain		
5	Interface direction	Straight	Yes / No / Explain		
6	Mounting type	4-hole panel mounting	Yes / No / Explain		
7	Inner conductor material	Copper-alloy	Yes / No / Explain		

8	Inner conductor surface coating	Gold-plated/silver-plated	Yes / No / Explain		
9	Outer conductor material	Copper-alloy	Yes / No / Explain		
10	Outer conductor coating	Gold-plated/silver-plated/Nickel/Tri-metal plated	Yes / No / Explain		
11	Insulation material	PTFE	Yes / No / Explain		
12	Accessories	Metal dust cap for the interface must be provided for each connector.	Yes / No / Explain		
13	Interface and quantity	Connector N-female solder cup type, Qty: 8; Connector N-female slot type, Qty: 6; Connector TNC-female solder cup type, Qty: 3; Connector DIN 7-16 female solder cup type, Qty: 3;	Yes / No / Explain		
14	Catalogue	Product Catalogue / datasheet of the OEM should be submitted along with the quotation. Specifications should be substantiated by datasheets.	Yes / No / Explain		

17. copper wires: Braided copper wires for RF grounding

Item specifications for copper wires

SI No	Specification	Value	Compliance	Offered Specification	Remark
1	Component type	Braided copper wires for RF grounding	Yes / No / Explain		
2	Type	Flat	Yes / No / Explain		
3	Braid material	Electrolytic copper Cu-ETP with purity of minimum 99.9%	Yes / No / Explain		
4	Plating	Bare/silver plated	Yes / No / Explain		
5	Thickness	3 mm (typical)	Yes / No / Explain		

6	Lugs	Silver plated/ gold plated lugs at both ends for M6 bolts	Yes / No / Explain		
7	Width, length and quantity	1 inch width, length 2 m (07 Nos.); 1 inch width, length 20 m (04 Nos.); 2 inch width, length 20 m (02 Nos.).	Yes / No / Explain		

18. RF CABLES: Cable assembly set with N type

Item specifications for RF CABLES

SI No	Specification	Value	Compliance	Offered Specification	Remark
1	Component type	RF cable assembly	Yes / No / Explain		
2	Connector interface at both ends	N type Male Straight	Yes / No / Explain		
3	Impedance	50 ohm	Yes / No / Explain		
4	Frequency	$\leq 1\text{MHz}$ to $\geq 3\text{GHz}$	Yes / No / Explain		
5	Power handling of cable at 2.5GHz (in W)	≥ 900	Yes / No / Explain		
6	Shielding effectiveness (absolute value in dB)	≥ 80	Yes / No / Explain		
7	Attenuation per m at 2.5GHz (in dB)	≤ 0.30	Yes / No / Explain		
8	VSWR at 2.5GHz	≤ 1.4	Yes / No / Explain		
9	Operating temperature (in deg C)	≤ 10 to ≥ 50	Yes / No / Explain		
10	Minimum static bending Radius (in mm)	≤ 55	Yes / No / Explain		
11	Outer Jacket	FEP	Yes / No / Explain		

12	Length (typical) and quantity	Length: 0.2 m (Qty: 04 Nos.); Length: 0.5 m (Qty: 03 Nos.); Length: 1 m (Qty: 04 Nos.); Length: 1.5 m (Qty: 02 Nos.); Length: 2.0 m (Qty: 01 Nos.);	Yes / No / Explain		
13	Catalogue	Product Catalogue / datasheet with specifications of the OEM should be submitted along with the quotation.	Yes / No / Explain		

19. Industrial PC: with accessories

Item specifications for Industrial PC

SI No	Specification	Value	Compliance	Offered Specification	Remark
1	Component type	Industrial PC	Yes / No / Explain		
2	Processor System	Core i7 , 13th Gen (or latest)	Yes / No / Explain		
3	Speed	≥ 2 GHz	Yes / No / Explain		
4	Expansion Slot	PCI: ≥4 Slots; PCIe x 4: ≥1 Slot; PCIe x16: ≥1 Slot	Yes / No / Explain		
5	Memory	Min. 32 GB, Dual Channel DDR4 RAM	Yes / No / Explain		
6	Graphics	Chipset integrated UHD Graphics	Yes / No / Explain		
7	Ethernet	10/100/1000 Mbps	Yes / No / Explain		
8	Rear I/O Ports	VGA, HDMI, USB ports (Qty: ≥ 6), Audio ports, Serial ports (Qty: ≥2)	Yes / No / Explain		
9	Internal connectors	USB ports (Qty: ≥ 4), Serial ports (Qty: ≥4)	Yes / No / Explain		

10	Internal connectors availability at rear	All internal USB and Serial port connectors must be made available at rear side of industrial PC using suitable brackets and internal wiring. This must be integrated into the PC.	Yes / No / Explain		
11	Serial PCI Express Communication Card	8-Port RS-232/422/485 PCI Express Communication Card and suitable interface conversion cable to DB9. This must be integrated into the PC before or during the installation.	Yes / No / Explain		
12	Hard Disk	1TB SSD M.2 Based; 2TB SSD SATA;	Yes / No / Explain		
13	Optical Disc Drive	DVD writer with SATA interface	Yes / No / Explain		
14	Keyboard	Wireless keyboard	Yes / No / Explain		
15	Mouse	Wireless optical mouse	Yes / No / Explain		
16	Operating system	Windows 10 Pro 64bit	Yes / No / Explain		
17	Type	Rack mountable	Yes / No / Explain		
18	Cooling	Fan and Air filter Required. Adequate cooling and heatsink for CPU is required.	Yes / No / Explain		
19	LED Indicators	Power and HDD activity	Yes / No / Explain		
20	Control	Power switch and system reset button	Yes / No / Explain		
21	Operating Temperature	≤0 to ≥40° C	Yes / No / Explain		
22	Operating vibration environment handling (5 ~ 500 Hz)	1 Grms (or more)	Yes / No / Explain		
23	Shock	10 g (with 11 ms duration, 1/2 sine wave)	Yes / No / Explain		

24	Weight	≤ 25 kg	Yes / No / Explain		
25	Power supply	Power: 230 ± 5 VAC, 50 ± 3 Hz	Yes / No / Explain		
26	Display	27.0" (diagonal)(min.) IPS display with 2K resolution (min.). Wall mount and table mount accessories to be provided. Should have HDMI support.	Yes / No / Explain		
27	Ethernet switch	Total 8 (or more) Ports with min. 4 ports PoE enabled Ethernet/Network managed switch having transfer rates 10/100/1000 Mbps, power supply AC 230 V with suitable power supply adapter and DIN rail mounting kit.	Yes / No / Explain		
28	Serial-to-Ethernet convertor	4 (or more) Port RS-232/422/485 (selectable), power supply AC 230 V with suitable power supply adapter and DIN rail mounting kit.	Yes / No / Explain		
29	USB Hub	Industrial USB 3.2 Hub (backwards compatible), 4-port(or more), data transfer rate 5 Gbps, power per downstream port: ≥2A, external power with suitable power supply adapter and DIN rail mounting kit.	Yes / No / Explain		

30	Accessories	HDMI Cable (≥ 4m long) with 2K resolution support at 60 FPS; USB 3.0 Type A-B Male cable (≥ 0.9m long) with transfer data rates up to 5 Gbps (Qty:4); USB 3.0 Type A-B Male cable (≥ 4m long) with transfer data rates up to 5 Gbps (Qty:2); Power supply adapter 230 VAC to 12VDC, output current upto ≥2A supported with output plug (Qty:4); Serial Cable (≥ 4m long) DB9 Male to DB9 Female (Qty:6);	Yes / No / Explain		
31	Separate cost	Cost for Ethernet switch, Serial-to-Ethernet convertor, USB hub, serial PCI Express Communication Card and each accessory should be quoted separately.	Yes / No / Explain		
32	Warranty (years)	≥ 3	Yes / No / Explain		
33	Breakdown charges requirement	As per attached document.	Yes / No / Explain		
34	Catalogue	Product Catalogue / datasheet of the OEM should be submitted along with the quotation.	Yes / No / Explain		

20. EQUIPMENT RACK

Item specifications for EQUIPMENT RACK

Sl No	Specification	Value	Compliance	Offered Specification	Remark
1	Component type	Rack	Yes / No / Explain		
2	Height	42U	Yes / No / Explain		
3	Width	≥ 600mm	Yes / No / Explain		

4	Depth	≥ 1000mm	Yes / No / Explain		
5	Mounting modules	Should capable of containing 19" rack mountable modules	Yes / No / Explain		
6	Earthing continuity kit	To be provided	Yes / No / Explain		
7	AC mains distribution board	One No of AC mains distribution board with 6 Nos (or more) of 5A socket. Horizontal mounting to be provided.	Yes / No / Explain		
8	Holed profiles	Front and rear holed profiles for mounting equipment supports to be provided. 2 Nos on the front side and 2Nos on the rear side. Profiles to be equidistant from front and rear.	Yes / No / Explain		
9	Rollers	Rollers/wheels to be provided at the bottom for moving the rack. The rollers should be lockable type for positioning the rack.	Yes / No / Explain		
10	Front door	Detachable front door made of toughened glass having metal covering on its edges to protect glass.	Yes / No / Explain		
11	Rear door	Rear door with door lock and door handle	Yes / No / Explain		
12	Frame material	Aluminium extruded frame along with side, top and bottom panels in steel	Yes / No / Explain		
13	Power coating	Side, Top, Bottom panels, frame and doors to be powder coated	Yes / No / Explain		
14	Side panels	Side panels with slam latches	Yes / No / Explain		
15	Bottom panel	Bottom panel with cable gland plate for cable entry	Yes / No / Explain		
16	Vertical cable tray	Vertical cable tray (non conductive material) to be provided.	Yes / No / Explain		

17	Cooling svstem	Fan cooling. Each side panel qty of fans: 2 (or more). Top panel qty of fans: 4 (or more).	Yes / No / Explain		
18	Accessories integrated	Keyboard tray (Qty: 1 No.); Horizontal plate with slots (M4 size) for placing benchtop equipment (Qty: 2); Equipment tray (Qty: 2 No.);	Yes / No / Explain		
19	Accessories spares	Horizontal plate with slots (M4 size) for placing benchtop equipment (Qty: 4); Equipment tray (Qty: 2 No.); Powder coated Support angles (Qty: 10); Powder coated filler/dummy plates (1U: Qty: 10, 3U: Qty: 6); 19" rack mountable polyamide cable manager (Qty: 10); Fasteners (Captive mounting hardware) (Qty: 150);	Yes / No / Explain		

21. INSTALLATION: Installation, packing and transportation charges

Item specifications for INSTALLATION

Sl No	Specification	Value	Compliance	Offered Specification	Remark
1	Installation & demonstration	The requirements for installation and demonstration tests as per the attached document	Yes / No / Explain		
2	Distinction of various charges	Installation charges, packing & forwarding charges, transportation charges and other charges must be shown separately.	Yes / No / Explain		

Document : Installation plan

Common Specifications (Applicable for all items)

SI No	Specification	Value	Compliance	Offered Specification	Remark
1	Local content	Local content involved shall be declared / certified in percentage.	Yes / No / Explain		
2	Pre-Bid meeting	The Bidder's participation in the pre-bid meeting is mandatory and non-participation will lead to disqualification of their Bid.	Yes / No / Explain		
3	Part order not acceptable	Purchase Order will be placed on overall L1 party based on the evaluation of technical and commercial clauses compliance so as to ensure the compatibility of different subsystems and requirements of installation and demonstration tests.	Yes / No / Explain		
4	Installation	Party has to install and demonstrate the system at delivery location according to the installation document attached.	Yes / No / Explain		
5	Manufacturer list	Party should strictly quote from the list of makes given in table provided in attached document against each item.	Yes / No / Explain		
6	Compliance matrix	Compliance matrix for the specification of each item shall be submitted/duly filled along with the quotation.	Yes / No / Explain		
7	Payment terms	100% payment after the installation of the system.	Yes / No / Explain		
8	Experience documents	The party should have experience in RF/microwave system installation. Supporting documents (PO and job completion certificates) regarding previous installation of RF and microwave systems which shows the experience of party in RF system installation should be submitted.	Yes / No / Explain		

9	Make and model document	A document containing the list of make and model against each item should be submitted in a tabular format.	Yes / No / Explain		
10	Document submission	OEM datasheets and all relevant documents of each item should be submitted systematically under appropriate folders. Folder name should correspond to the item name as mentioned in the tender.	Yes / No / Explain		

Supporting Documents required from Vendor

1. Datasheets, product catalogues

2. Price details with breakup (Price Bid Related)

5 additional documents can be uploaded by the vendor

C.2 Commercial Terms / Bid

Sl. No.	Description	Compliance	Vendor Terms
1	After delivery, party has to install and demonstrate at delivery location according to the installation document attached.	Yes / No / Explain	
2	The items are to be supplied at LPSC, Valiamala adhering to standard packaging to avoid damage during transit	Yes / No / Explain	
3	As per the Rule 144(xi) of General Financial Rule ,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 service and non-consultancy services) or works (including turnkey projects) only if the bidder is registered with the competent authority ie., Department for Promotion of Industry and Internal Trade (DPIIT). Hence, Vendors or Agents of a Vendor (Indian or others) from a country sharing border with India shall submit copy of valid registration made with Department for Promotion of Industry and Internal Trade (DPIIT), Government of India along with the tender mandatorily, without which the offer will be treated as invalid.	Yes / No / Explain	
4	Whether applicable GST percentage mentioned in your offer.(We are eligible for IGST @ 5% as per the Department of Revenue Notification No. 25/2018 Integrated Tax (Rate) Schedule-I; Sl.No.243B dated 31.12.2018 (Amendment to Notification No. 7/2018 - Integrated Tax (Rate) dated 25.01.2018 and Notification No. 1/2017 - Integrated Tax (Rate) dated 28.06.2017) (If mentioned as EXTRA OR INCLUDED in your quote, please mention the percentage in Remarks Column).	Yes / No / Explain	

5	ISRO is eligible for Customs Duty Concession vide Notification No.12/2012-Customs dated 17.03.2012. and Notification No. 50/2017-customs dtd 30.06.2017 [We will provide Customs Duty Concession Certificate for bought out items being imported for manufacturing the ordered items (List of items to be imported with quantities to be enclosed along with offer) OR for Orders placed on Foreign Vendors OR for High Sea Sale orders.]	Yes / No / Explain	
6	Installation Charges, if any, (If mentioned as EXTRA OR INCLUDED in your quote, please mention the percentage in Remarks Column).	Yes / No / Explain	
7	Delivery Term :- FOR : LPSC, VALIAMALA If "NO" specify the exact delivery term with relevant details in remarks column	Yes / No / Explain	
8	Delivery Period [For supply & installation] (If any specific delivery period is mentioned in the tender, please comply the same. If not agreed, please mention your delivery period in remarks column OR if already mentioned in your quote please mention as already furnished in the quote)	Yes / No / Explain	
9	Payment Term :- (a)100% payment shall be made through RTGS within 30 days of receipt , installation , demonstration and acceptance of the item at our site.	Yes / No / Explain	
10	Liquidated Damages (LD) :- If the ordered items are not supplied within the delivery schedule, LD shall be levied from your bill @ 0.5% per week for the undelivered items subject to a maximum of 5% of the order value for the delayed period. However in case of inordinate delay i.e, delays of more than one-fourth (25%) of the total completion period, LD shall be applicable subject to a maximum of 10%.	Yes / No / Explain	
11	Warranty :- Warranty for the offered item shall be from the date of installation/acceptance of the item at our site for a minimum period of one years or as specified in the tender document.	Yes / No / Explain	

12	<p>Security Deposit (SD) :- (only for order value above Rs.50 Lakh) You have to furnish a Bank Guarantee for 3% of the order value (from a bank of international repute in case of foreign vendors) within 10 days of receipt of Order towards the faithful execution of the order valid till the completion of the scope of work as per order plus sixty days. (This will be returned to you immediately on execution of the order satisfactorily as per order terms. In case of non-performance / poor performance, the amount will be forfeited).</p>	Yes / No / Explain	
13	<p>Performance Bank Guarantee (PBG) :- (only for order value above Rs.50 Lakh) You have to submit a PBG from a Nationalised / Scheduled Bank (from a bank of international repute incase of foreign vendors) for 3% of the order value towards the performance of the system at the time of supply valid till the completion of warranty period plus 60 days as per the format provided by the Department. OR 3% OF THE ORDER VALUE SHALL BE WITH HELD TILL THE COMPLETION OF WARRANTY PERIOD PLUS 60 DAYS.</p>	Yes / No / Explain	
14	<p>In case, if parties are unable to provide two separate BGs, i.e., one for SD and one for PBG, they can submit a combined BG for SD & PBG within 10 days of receipt of order for 3% of order value valid till the completion of total contractual obligation (i.e., supply period plus warranty period plus 60 days) as per the format provided by the Department.</p>	Yes / No / Explain	
15	<p>Insurance :- Being a Govt. Of India Dept., Insurance is not required at our cost. Please ensure the safe delivery of the ordered item with proper AIR / SEA / ROAD worthy packing.</p>	Yes / No / Explain	

16	<p>Validity of Offer :-</p> <p>(a)The validity of the offers should be 90 days (in case of single part tender) from the date of opening of the tenders.</p> <p>(b)The validity of the offers should be 120 days (in case two part tender) from the date of opening of the tenders.</p> <p>Note :- Tenders shorter than offer validity mentioned above will not be considered for evaluation.</p>	Yes / No / Explain	
17	Bank Details, viz., Bank Name, Branch, Address, Account No., IFSC (Details to be given in Vendor Terms Column)	Yes / No / Explain	
18	PAN No. (Details to be furnished in Vendor Terms Column)	Yes / No / Explain	
19	GST No. (Details to be given in Vendor Terms Column)	Yes / No / Explain	
20	Purchase Order to be placed on whom (Please mention the Address, Phone No. & E-mail id)	Yes / No / Explain	
21	HSN Code of offered items	Yes / No / Explain	
22	Local content involved in the quoted item shall be declared/ certified in percentage.	Yes / No / Explain	
23	Furnish the details of place(s) where the value addition for the quoted item takes place.	Yes / No / Explain	
24	State whether MSE OEM or not. If yes, please provide the necessary documentary proof	Yes / No / Explain	

C.3 Price Bid

Sl. No.	Item	Quantity	Unit Price	Currency	Total Price	Other Costs, if any	Remark
1	RF AND MICROWAVE EQUIPMENT: Microwave generator	1.00 Unit		-			
2	Spectrum Analyser	1.00 Unit		-			
3	POWER SENSOR	3.00 Unit		-			

4	R.F.TUNER : Coaxial 3 stub manual tuner	1.00 Unit	-			
5	DC BLOCK	4.00 Unit	-			
6	Co-axial bias Tees	3.00 Unit	-			
7	DIRECTIONAL COUPLER: Dual-directional coupler	2.00 Unit	-			
8	CIRCULATORS	2.00 Unit	-			
9	DUMMY LOAD: 10W	8.00 Unit	-			
10	DUMMY LOAD: 200W	3.00 Unit	-			
11	RF Components: Surge protector	5.00 Unit	-			
12	POWER DIVIDER: 2 way	2.00 Unit	-			
13	POWER DIVIDER: 3 way	2.00 Unit	-			
14	Co-axial Attenuator	3.00 Unit	-			
15	RF Adaptors: Adapter set with N-type and DIN 7-16 interface	1.00 Sets	-			
16	RF Connectors : Connector set panel mount	1.00 Sets	-			
17	copper wires: Braided copper wires for RF grounding	1.00 Sets	-			

18	RF CABLES: Cable assembly set with N type	1.00 Sets		-			
19	Industrial PC: with accessories	1.00 Unit		-			
20	EQUIPMENT RACK	1.00 Unit		-			
21	INSTALLATION: Installation, packing and transportation charges	1.00 Unit		-			

Common charges (Applicable for all items)

Additional Costs, if any	
Additional Costs, if any (Value)	