

**GOVERNMENT OF INDIA
DEPARTMENT OF SPACE
ISRO INERTIAL SYSTEMS UNIT (IISU)
THIRUVANANTHAPURAM**

Tender for Procurement of Radhard Components, fabrication and screening of Radhard HMC DC-DC Converters - Type-1 and Type-2 variants

Bids to be submitted online

Tender No.: IISU/PURCHASE UNIT IX (IISU PURCHASE)/IU202600160801 dated 06-05-2026

A. Tender Details

Tender No :	IISU/PURCHASE UNIT IX (IISU PURCHASE)/IU202600160801
Tender Date :	06-05-2026
Tender Classification:	GOODS
Purchase Entity :	PURCHASE UNIT IX (IISU PURCHASE)
Centre :	ISRO INERTIAL SYSTEMS UNIT (IISU)

Procurement of Radhard Components, fabrication and screening of Radhard HMC DC-DC Converters - Type-1 and Type-2 variants

Only online tenders will be accepted. No manual / Postal / e-mail / fax offers will be entertained. No manual tender document will be issued. Bidders can seek help from help desk 0471-2565454 also as provided in the home page of e-procurement portal in case of any problem for bid submitting and subsequent process.

Important Notice: Tender will be automatically closed on the due date, if at least one offer is received. If the tender could not be opened on the first day due to any technical snag, it will be opened on the subsequent day as per the schedule.

A.1 Tender Schedule

Bid Submission Start Date :	06-05-2026 16:00
Bid Clarification Due Date :	11-05-2026 16:00
Bid Submission Due Date :	04-06-2026 14:00
Bid Opening Date :	04-06-2026 14:30
Price Bid Opening Date :	11-06-2026 14:30

B. Tender Attachments

Technical Write-up/Drawings

Document : General

Document : General

Document : General

Document : General

Document : General

Document : General

Instructions To Vendors

7. Local Content Declaration Format (In your Letter Head)

1. In line with the Government Public Procurement Order No. P/45021/2/2017-BE-II dtd . 15.06.2017 , as amended from time to time, and as applicable on the date of submission of tender, we hereby certify that , we M/s. _____ are local supplier meeting the requirement of minimum local content, _____%, as defined above in the orders for the material against Tender Enquiry No. ____ dtd. ____ . The HSN No. of the item supplied is _____

2. Percentage of Local value addition , involved in the item are:

3. This is also certified that the following factors are excluded in the above percentage:
(strike out which are not applicable)

1. imported item sourced locally from resellers/distributors (value in ____% including tax, if applicable)
2. The license fee/royalties paid/technical charges paid out of india. (value in____% including tax, if applicable)
3. Repackaged/refurbished/rebranded imported products (value in ____% including tax, if applicable)

4. The details of location at which the value addition will be made is as follows :

5. We also understand that , false declarations will be in breach of 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 3 years under Rule 151 (iii) of the GFR along with such other actions as may be permissible under law.

6. For (company name)

Authorised Signatory.

8. Specific Terms and Conditions to Tender (MII Compliant)

1. 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.
2. Please quote applicable GST separately. For Goods under schedule II with GST @ 18%, IISU is eligible for concessional rate of tax @ 5% under Sl.No.462 (Chapter 88 or any other Chapter) of Schedule-I of Notification No.09/2025 Central Tax (Rate) dated 17.09.2025 & IGST in term of Notification No.09/2025 - Integrated Tax (Rate) dated 17.09.2025. Necessary IGST/ CGST/ SGST concession certificate shall be issued by us. [Please Specify the rates with HSN Code].
3. Our standard delivery term is FOR, IISU. In case any vendor offers delivery term of Ex-works, Packing and Forwarding charges if any should be indicated separately either as a percentage of the quoted rate or as a Lumpsum amount.
4. Our standard payment term is 100% within 30 days after receipt and acceptance of the items at our site (after installation and commissioning in cases where installation and commissioning is required).
5. Liquidated Damages @ 0.5% per week of delay or part thereof subject to maximum of 5% of order value including elements of GST, freight & statutory variation is applicable beyond the promised delivery schedule. However, in case of inordinate delay of more than one-fourth in completion period, LD subject to a maximum of 10% of the total order value shall be recovered. Wherever, installation and commissioning is also involved, the supply will be deemed to have been completed only when the entire Stores is supplied, installed and accepted.
6. Performance Bank Guarantee: Wherever products offered carry warranty, the warranty should be for one year or as per manufacturers standard warranty term. Against such cases, please confirm submission of Performance Bank Guarantee. The Performance Bank Guarantee should be for 3% of the order value covering the warranty period obtained from any Commercial Bank on Rs.200/- Non Judicial Stamp Paper and should be valid beyond 2 months from the completion of the warranty period. Alternately vendors can request for withholding 3% payment till completion of the warranty period.
7. Security Deposit: Wherever the offer value is Rs. 5.00 Lakhs or above, the successful tenderer

should submit Security Deposit @ 3% of the order value by way of Bank Guarantee / FD Receipt/ account payee DD/ Insurance Surety Bond. The Bank Guarantee shall be obtained from any Commercial Bank on Rs.200/- Non Judicial Stamp Paper and should be valid beyond 2 months from the completion of all contractual obligations. 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 case if Security Deposit is submitted and the contractor fails to execute the order, then the security deposit will be forfeited.

8. SD, LD and PBG clauses are mandatory and offers of the vendors who have not agreed for the above conditions will be excluded from the procurement process. Micro and Small Vendors are not exempted from the submission of Security Deposit. Only Govt Departments/PSUs/PSEs can submit Indemnity Bond instead of Bank Guarantee towards SD/PBG.

9. Please upload the Technical Details / Catalogue / Data Sheets (wherever applicable)

10. The offer should be valid for a period of minimum 90 days for Single Part from the date of opening of Tender and 180 Days for PT Two Part (120 Days for Technical Bid and 60 Days for Price Bid from the date of opening).

11. In order to avail of the benefits extended to by Govt. of India to the Micro and Small Sectors, please submit attested copy of the valid Entrepreneur Memorandum Part-II signed by the General Manager, District Industries Centre / Udyam Registration / NSIC Registration Certification along with your offer.

12. If any bidder submits forged / false document along with the tender, offer of such vendors will be summarily rejected and such bidders will be blacklisted for all future tenders.

13. Wherever samples are required to be submitted along with the quotation, offer without sample will not be considered.

14. The other attached forms are our standard terms and conditions, which are to be complied with. If any conflict arise between the specific terms and standard terms, then in those cases, the specific terms will prevail over the standard terms.

15. Purchase preference to eligible vendors are applicable as per extant notifications issued by the Government of India.

16. Definitions: A supplier or service provider, whose goods, services or works offered for procurement, has local content: a) Equal to or more than 50% : Class-I local supplier. b) Minimum 20% but less than 50% : Class-II local supplier. c) Less than 20% : Non-local supplier.

17. Local content means the amount of value added in India (i.e. indigenous items/services added in the offered products/services/works) be the total value of the item offered (excluding net domestic indirect taxes) minus the value of imported content in the item (including all customs duties/IGST) as a proportion of the total value (excluding net domestic indirect taxes), in percent. Indicate extent of Minimum Local Content in offered product/service and location of such value additions.

18. The Class-I & II local supplier should provide a Self Certification along with your offer in PDF format indicating that the item offered meets the minimum local content as called for in the tender as mentioned above and provide the % of local content along with details of the location(s) at which the local value addition is made. In case of two part tenders, it is mandatory to indicate compliance to MLC(minimum local content) in Technical bid itself.

19. 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.

20. 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.

21. Purchase Preference Policy:- Goods/Works which are divisible in nature (required quantity is greater than 1 or not a package basis): i. If L1 is 'Class-1 local supplier', the order/contract for full quantity shall be awarded to L1 bidder. ii. If L1 bid is not from a 'Class-I local supplier', 50% of the order quantity shall be awarded to L1. Thereafter, the lowest bidder among the 'Class-I local supplier' will be invited to match the L1 price for the remaining 50% quantity subject to the Class-I local supplier's quoted price falling within the margin of purchase preference (i.e. 20%) and contract for that quantity shall be awarded to such Class-I local supplier subject to matching the L1 price (inclusive of duties, taxes and freight & insurance). iii. In case such lowest eligible 'Class-I local supplier' fails to match the L1 price or accepts less than the offered quantity, the next higher 'Class-I local supplier' within the margin of purchase preference shall be invited to match the L1 price for remaining quantity and so on, and contract shall be awarded accordingly. In cases where none of the 'Class-I local supplier' within the margin of purchase agree to match L1 price, in such cases 100% quantity shall be ordered on original L1 bidder. iv. In case no offers are received from 'Class-I local supplier' or none of the 'Class-I local supplier' falls within the margin of purchase preference of 20%, the order shall be processed on L1 vendor. v Guidelines for evaluation of concurrent application: MSE and MII policies guidelines issued by Department of Expenditure vide OM No.F.1/4/2021-PPD dtd 18.05.2023 will be applicable and any other notification issued by Department Of Space from time to time will be applicable.

22. Purchase Preference Policy:- Goods/Works which are not divisible in nature (required quantity is 1 or on a package basis):

(i). If L1 is 'Class-1 local supplier', the order/contract for full quantity shall be awarded to L1 bidder. (ii). If L1 bid is not from a 'Class-I local supplier', then, the lowest bidder among the 'Class-I local supplier' will be invited to match the L1 price subject to the Class-I local supplier's quoted price falling within the margin of purchase preference (i.e. 20%) and contract for that quantity shall be awarded to such Class-I local supplier subject to matching the L1 price (inclusive of duties, taxes and freight & insurance). (iii). In case such lowest eligible 'Class-I local supplier' fails to match the L1 price, the next higher 'Class-I local supplier' within the margin of purchase preference shall be invited to match the L1 price and so on, and contract shall be awarded accordingly. In cases where none of the 'Class-I local supplier' within the margin of purchase agree to match L1 price, in such cases the contract shall be placed on original L1 bidder. (iv). In case no offers are received from 'Class-I local supplier' or none of the 'Class-I local supplier' falls within the margin of purchase preference of 20%, the order shall be processed on L1 vendor. Guidelines for evaluation of concurrent application: MSE and MII policies guidelines issued by Department of Expenditure vide OM No.F.1/4/2021-PPD dtd 18.05.2023 will be applicable and any other notification issued by Department Of Space from time to time will be applicable.

23. IISU 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.

9. Declaration Declaration as per Office Memorandum No. F. No. 6/18/2019- PPD dtd. 23.07.2020 (In the Letter Head of the Bidder)

1. As per the provisions of Office Memorandum No. F. No. 6/18/2019- PPD dtd. 23.07.2020 (i.e., Rule No. 144 (xi) of GFR) and its Amendments dtd 23.02.2023, issued by Department of Expenditure, Ministry of Finance. I hereby declare and certify the following.

I have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India

2. I certify that this bidder is not from such a country or, if from such a country. I have registered with the Department for Promotion of Industry and Internal Trade.

" Bidder from a country which shares a land border with India" for the purpose of the Order means:

- 2.1. An entity incorporated, established or registered in such a country; or
- 2.2. A subsidiary of an entity incorporated established or registered in such a country; or
- 2.3. An entity substantially controlled through entities incorporated established or registered in such a country; or
- 2.4. An entity whose beneficial owner is situated in such a country; or
- 2.5. An Indian (or other) agent of such an entity; or
- 2.6. A natural person who is a citizen of such a country; or
- 2.7. A consortium or joint venture where any member of the consortium or joint venture falls under any of the above.

3. I hereby certify that I am not an agent as defined in the order who procures and supplies finished goods from an entity from a country which shares a land border with India, regardless of the nature of legal or commercial relationship with the producer of the goods.

4. I hereby certify that this bidder fulfills all requirements in this regard and is eligible to be considered

10. Instructions to Vendors

1. Last minute clarification on tenders will not be entertained.

2. This is an E Tender. Hence Postal/Fax/Email tenders will not be accepted.

11. Conditions for BIDDER FROM A COUNTRY WHICH SHARES LAND BORDER WITH INDIA

1. 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 for the purpose of registration shall be the Registration Committee constituted by the Department for Promotion of Industry and Internal Trade (DPIIT).

2. Any false declaration and non-compliance of the above would be a ground for immediate rejection of offer or termination of the contract and further legal action in accordance with the laws.

3. Validity of Registration: Registration should be valid at the time of submission of bids and should be valid at the time of placement of order.

12. PROFORMA FOR INSTRUCTIONS TO TENDERERS AND TERMS AND CONDITIONS OF TENDER

1. 1.1 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.

1.2 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.

1.3 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.

1.4 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 or 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:

2.1 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.

2.2 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.

2.3 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.

2.4 If the whole or any part of the stores supplied are rejected in accordance with Clause No. 2.3 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. DISPUTE RESOLUTION MECHANISM:

(A) CONCILIATION: Notwithstanding anything contained in this contract, any disputes or differences whatsoever, which are to be settled amicably between the parties, shall be resolved through Conciliation.

(B) MEDIATION: Any disputes or differences, which are not settled amicably through Conciliation, then either of the parties, may approach for mediation to settle under Mediation Act, 2023. The procedure is to be followed as prescribed in the Mediation Act, 2023 amended from time to time.

(C) ARBITRATION - 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 as amended from time to time. 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 CONTRACTOR during the pendency of arbitration proceedings, without prejudice to a final adjustment in accordance with the decision of the Arbitrator unless

otherwise directed in writing by the DEPARTMENT 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. Arbitration will be a method of dispute resolution in contracts where dispute value is lesser than Rs.10 Crore.

4. VALIDITY:4.1.Quotation should be valid for at least 90 days(for single part tender), Minimum 180 days (for Two part Tender) from the date of opening of the tender.

4.2. Prices are required to be quoted according to the units indicated in the Price Template.When quotations are given in terms of units other than those specified in the Price Template, relationship between the two sets of units must be furnished.

5. PURCHASE ORDER: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.

6. 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 or 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.

7. FORCE MAJEURENeither the Purchaser nor the Contractor shall be considered default of the performance of their obligations under this contract if such performance is prevented or delayed for any causes beyond the reasonable control of the parties to the contract affected, such as Acts of God, war, riots, civil commotion, illegal strikes, legal lockouts, epidemics, fire accidents, floods, earthquakes, proclamation or regulation or ordinance of any Government thereof, provided notice in writing of any such cause with necessary proof that the obligation under the contract is thereby affected or prevented or delayed, is given within 14 days from the happening of the event. As soon as the cause of force majeure has ceased to exist, the party whose ability to perform his obligation has been affected shall notify the other party of the actual delay that has occurred due to such force majeure conditions.

8. FOREIGN VENDORS ARE NOT PERMITTED TO QUOTE a. Only Class I and Class II Local suppliers as per Make in India Policy are eligible to participate in the bid in line with Public Procurement (Preference to Make in India) Order, 2017 dtd 19.07.2024 and its amendments. b. The percentage of local content should be specifically mentioned in the offer, without which it will be summarily rejected. c. Preference will be given to Class I Local supplier and in their absence, Class II Local supplier will be considered.

9. GUARANTEE AND REPLACEMENT

9.1 The Contractor shall guarantee that the stores supplied shall comply fully with the specifications laid down, for material, workmanship and performance.

9.2. For a period of twelve months 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.

9.3. 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. 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.

9.4. 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 any other period or as to whether the nature of defects requires renewal or replacement, shall be final, conclusive and binding on the Contractor.

9.5. To fulfill guarantee conditions outlined in 9.1 to 9.2 above, the Contractor shall, at the option of the Purchaser, furnish a Bank Guarantee/account payee DD/Insurance Surety Bond/ Fixed Deposit Receipt as prescribed by the Purchaser

10. LIQUIDATED DAMAGES: Delivery Date mentioned in the Contract or Order will be the essence of the Contract. You shall strictly adhere to the delivery schedule mentioned in your quotation. Please confirm acceptance of LD clause and that you will strictly adhere to the delivery schedule.

11. PACKING FORWARDING AND 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.

12. Preference will be given to those tenders offering supplies from ready stocks and on the basis of FOR destination or delivery at site.

13. 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 variations. DELIVERY: (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% of the price of any stores per week or part thereof 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 total PO value including elements of GST, freight & statutory variation. However, in case of inordinate delay of more than one-fourth in completion period, LD subject to a maximum of 10% of the total order value shall be recovered, 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 13 (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 repurchase 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.

14. REJECTED STORES: Rejected stores will remain at destination at the Contractors 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 Contractors address at the Contractors entire risk and expense, freight being payable by the Contractor at actuals.

15. GOODS AND SERVICE TAX and or other duties or 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 and duties.

16. SECURITY DEPOSIT: Wherever, the Purchase Order value is Rs. 5.00 Lakhs or more, on acceptance of the Purchase Order, the Contractor shall, at the option of the Purchaser and within the period specified by him, shall submit Security Deposit @ 3% of the order value by way of Bank Guarantee / FD Receipt/ account payee DD/ Insurance Surety Bond 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 repurchase of the stores Contracted at the risk of the Contractor Sub-Clause (ii) and (iii) of clause 13(b) hereof and/or to recover from the Contractor, damages arising from such cancellation.

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

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

19. OPTION CLAUSE: The purchaser reserves the right to increase/decrease the ordered quantity by up to [25] per cent at any time, till the 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 the delivery period (or the extended delivery period).

20. 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.

21. The tenderer should supply along with his tender, the name of his Bankers with IFSC code 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.

22. 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.

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

24. 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 be included in the Purchase Order.

25. GeM Seller Registration: All vendors shall register themselves in GeM Portal (gem.gov.in) and provide GeM Seller unique ID in the tender documents.

26. EXTENSION OF TIME: As soon as it is apparent that the Contract dates cannot be adhered to, an application shall be sent by the Contractor to the purchaser. If failure, on the part of the Contractor, to deliver the stores in proper time shall have arisen from any cause which the purchaser may admit as reasonable ground for an extension of the time (and his decision shall be final) he may allow such additional time as he considers it to be justified by circumstances, of the case without prejudice to the purchaser's right to recover liquidated damages under clause 10 thereof.

27. **ERECTION OF PLANT & MACHINERY:** Wherever erection of a plant or machinery is the responsibility of the Contractor as per the terms of the Contract and in case the Contractor fails to carry out the erection as and when called upon to do so within the period specified by the purchaser, the purchaser shall have the right to get the erection done through any source of his choice. In such an event, the Contractor shall be liable to bear any additional expenditure that the purchaser is liable to incur towards erection. The Contractor shall, however, not be entitled to any gain due to such an action by the purchaser.

28. **PAYMENT:** Contractor's bill will be passed for payment only after the stores have been received, inspected and accepted by the Purchaser.

29. **MODE OF PAYMENT:** Normally payment will be made for the accepted stores within 30 days from the date of receipt of the materials.

30. **RECOVERY OF SUM DUE:** Whenever any claim for the payment of, whether liquidated or not, money arising out of or under this Contract against the Contractor, the purchaser shall be entitled to recover such sum by appropriating in part or whole, the security deposited by the Contractor, if a security is taken against the Contract. In the event of the security being insufficient or if no security has been taken from the Contractor, then the balance or the total sum recoverable as the case may be, shall be deducted from any sum then due or which at any time thereafter may become due to the Contractor under this or any other Contract with the purchaser. Should this sum be not sufficient to cover the full amount recoverable, the Contractor shall pay to the purchaser on demand the remaining balance due. Similarly, if the purchaser has or makes any claim, whether liquidated or not, against the Contractor under any other Contract with the purchaser, the payment of all moneys payable under the Contract to the Contractor including the security deposit shall be withheld till such claims of the purchaser are finally adjudicated upon and paid by the Contractor.

31. **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, Copyright or Trademark, and shall at all times indemnify the purchaser against all claims which may be made in respect of the stores for infringement of any right protected by Patent Registration of design or Trade mark and shall take all risk of accidents or damage which may cause a failure of the supply from whatever cause arising and the entire responsibility for sufficiency of all means used by him for the fulfillment of the contract.

32. Purchase preference will be given to MSEs having valid Udyam Registration Certificate (URC) as defined in Public Procurement policy for Micro and Small Enterprises(MSEs) Order, 2012 dated 23.03.2012 issued by Ministry of Micro, Small and Medium Enterprises and its subsequent orders/Notifications issued by concerned Ministry. If the bidder wants to avail themselves of the Purchase Preference, the bidder must be the manufacturer/OEM of the offered product. Traders and Resellers offering products manufactured by some other OEM are not eligible for any Purchase

preference. Relevant documentary evidence in this regard shall be uploaded along with the bid in respect of offered product and eligibility for purchase preference will be decided based on documentary evidence submitted while evaluating the bid.

C. Bid Templates

C.1 Technical Bid - Procurement of Radhard Components, fabrication and screening of Radhard HMC DC-DC Converters - Type-1 and Type-2 variants

1. HYBRID MICRO-CIRCUITS (HMC) - Type -1 / 1C1 Radhard DC-DC Converters

Item specifications for HYBRID MICRO-CIRCUITS (HMC) - Type -1 / 1C1 Radhard DC-DC Converters

Sl No	Specification	Value	Compliance	Offered Specification	Remark
1	DC Input Voltage Range (Type-1)	24V to 45V	Yes / No / Explain		
2	No. of DC Output Voltages (Type-1)	3	Yes / No / Explain		
3	Main Output Voltage (Type-1)	5.1V +/- 1%	Yes / No / Explain		
4	Auxiliary Output Voltages (Type-1)	±15.1V +/- 1%	Yes / No / Explain		
5	Main Output Current (Type-1)	0.5A	Yes / No / Explain		
6	Auxiliary Output Currents (Type-1)	0.1A on +15.1V, 0.1A on -15.1V	Yes / No / Explain		
7	Line & Cross Regulation (Type-1)	±0.25%	Yes / No / Explain		
8	Load Regulation (Type-1)	±0.5%	Yes / No / Explain		
9	Ripple (Type-1)	30mV on +5V, 50mV on ±15V	Yes / No / Explain		
10	Spike (Type-1)	50mV on +5V, 100mV on ±15V	Yes / No / Explain		
11	Insulation (@50V) (Type-1)	> 300MΩ	Yes / No / Explain		
12	Efficiency at nom load (Type-1)	> 65%	Yes / No / Explain		
13	HMC Size (Type-1)	66mm x 34.22mm x 11mm	Yes / No / Explain		
14	DC Input Voltage Range (Type-1C1)	24V to 45V	Yes / No / Explain		

15	No. of DC Output Voltages (Type-1C1)	3	Yes / No / Explain		
16	Main Output Voltage (Type-1C1)	10.1V +/- 1%	Yes / No / Explain		
17	Auxiliary Output Voltages (Type-1C1)	±15.1V +/- 1%	Yes / No / Explain		
18	Main Output Current (Type-1C1)	0.3A	Yes / No / Explain		
19	Auxiliary Output Currents (Type-1C1)	0.3A on +15.1V, 0.3A on -15.1V	Yes / No / Explain		
20	Line & Cross Regulation (Type-1C1)	±0.25%	Yes / No / Explain		
21	Load Regulation (Type-1C1)	±0.5%	Yes / No / Explain		
22	Ripple (Type-1C1)	50mV on +10V, 50mV on ±15V	Yes / No / Explain		
23	Spike (Type-1C1)	100mV on +10V, 100mV on ±15V	Yes / No / Explain		
24	Insulation (@50V) (Type-1C1)	> 300MΩ	Yes / No / Explain		
25	Efficiency at nom load (Type-1C1)	> 68%	Yes / No / Explain		
26	HMC Size (Type-1C1)	66mm x 34.22mm x 11mm	Yes / No / Explain		

2. HYBRID MICRO-CIRCUITS (HMC) - Type-2 Radhard DC-DC Converters

Item specifications for HYBRID MICRO-CIRCUITS (HMC) - Type-2 Radhard DC-DC Converters

SI No	Specification	Value	Compliance	Offered Specification	Remark
1	DC Input Voltage Range	24V to 45V	Yes / No / Explain		
2	No. of DC Output Voltages	3	Yes / No / Explain		
3	Main Output Voltage	5.1V +/- 1%	Yes / No / Explain		
4	Auxiliary Output Voltages	±15.1V +/- 1%	Yes / No / Explain		
5	Main Output Current	0.5A	Yes / No / Explain		

6	Auxiliary Output Currents	0.5A on +15.1V, 0.5A on -15.1V	Yes / No / Explain		
7	Line & Cross Regulation	±0.25%	Yes / No / Explain		
8	Load Regulation	±0.5%	Yes / No / Explain		
9	Ripple	30mV on +5V, 50mV on ±15V	Yes / No / Explain		
10	Spike	50mV on +5V, 100mV on ±15V	Yes / No / Explain		
11	Insulation (@50V)	> 300MΩ	Yes / No / Explain		
12	Efficiency at nom load	> 67%	Yes / No / Explain		
13	HMC Size	66mm x 34.22mm x 11mm	Yes / No / Explain		

3. HYBRID MICRO-CIRCUITS (HMC) - Type-1-70V/ 1C1-70V Radhard DC-DC Converters

Item specifications for HYBRID MICRO-CIRCUITS (HMC) - Type-1-70V/ 1C1-70V Radhard DC-DC Converters

Sl No	Specification	Value	Compliance	Offered Specification	Remark
1	DC Input Voltage Range (Type-1-70V)	45V to 75V	Yes / No / Explain		
2	No. of DC Output Voltages (Type-1-70V)	3	Yes / No / Explain		
3	Main Output Voltage (Type-1-70V)	5.1V +/- 1%	Yes / No / Explain		
4	Auxiliary Output Voltages (Type-1-70V)	±15.1V +/- 1%	Yes / No / Explain		
5	Main Output Current (Type-1-70V)	0.5A	Yes / No / Explain		
6	Auxiliary Output Currents (Type-1-70V)	0.1A on +15.1V, 0.1A on -15.1V	Yes / No / Explain		
7	Line & Cross Regulation (Type-1-70V)	±0.25%	Yes / No / Explain		
8	Load Regulation (Type-1-70V)	±0.5%	Yes / No / Explain		

9	Ripple (Type-1-70V)	30mV on +5V, 50mV on $\pm 15V$	Yes / No / Explain		
10	Spike (Type-1-70V)	50mV on +5V, 100mV on $\pm 15V$	Yes / No / Explain		
11	Insulation (@50V) (Type-1-70V)	> 300M Ω	Yes / No / Explain		
12	Efficiency at nom load (Type-1-70V)	> 58%	Yes / No / Explain		
13	HMC Size (Type-1-70V)	66mm x 34.22mm x 11mm	Yes / No / Explain		
14	DC Input Voltage Range (Type-1C1-70V)	45V to 75V	Yes / No / Explain		
15	No. of DC Output Voltages (Type-1C1-70V)	3	Yes / No / Explain		
16	Main Output Voltage (Type-1C1-70V)	10.1V +/- 1%	Yes / No / Explain		
17	Auxiliary Output Voltages (Type-1C1-70V)	$\pm 15.1V$ +/- 1%	Yes / No / Explain		
18	Main Output Current (Type-1C1-70V)	0.3A	Yes / No / Explain		
19	Auxiliary Output Currents (Type-1C1-70V)	0.3A on +15.1V, 0.3A on -15.1V	Yes / No / Explain		
20	Line & Cross Regulation (Type-1C1-70V)	$\pm 0.25\%$	Yes / No / Explain		
21	Load Regulation (Type-1C1-70V)	$\pm 0.5\%$	Yes / No / Explain		
22	Ripple (Type-1C1-70V)	50mV on +10V, 50mV on $\pm 15V$	Yes / No / Explain		
23	Spike (Type-1C1-70V)	100mV on +10V, 100mV on $\pm 15V$	Yes / No / Explain		
24	Insulation (@50V) (Type-1C1-70V)	> 300M Ω	Yes / No / Explain		
25	Efficiency at nom load (Type-1C1-70V)	> 63%	Yes / No / Explain		
26	HMC Size (Type-1C1-70V)	66mm x 34.22mm x 11mm	Yes / No / Explain		

4. HYBRID MICRO-CIRCUITS (HMC) - Type-2-70V Radhard DC-DC Converters

Item specifications for HYBRID MICRO-CIRCUITS (HMC) - Type-2-70V Radhard DC-DC Converters

SI No	Specification	Value	Compliance	Offered Specification	Remark
1	DC Input Voltage Range	45V to 75V	Yes / No / Explain		
2	No. of DC Output Voltages	3	Yes / No / Explain		
3	Main Output Voltage	5.1V +/- 1%	Yes / No / Explain		
4	Auxiliary Output Voltages	±15.1V +/- 1%	Yes / No / Explain		
5	Main Output Current	0.5A	Yes / No / Explain		
6	Auxiliary Output Currents	0.5A on +15.1V, 0.5A on -15.1V	Yes / No / Explain		
7	Line & Cross Regulation	±0.25%	Yes / No / Explain		
8	Load Regulation	±0.5%	Yes / No / Explain		
9	Ripple	30mV on +5V, 50mV on ±15V	Yes / No / Explain		
10	Spike	50mV on +5V, 100mV on ±15V	Yes / No / Explain		
11	Insulation (@50V)	> 300MΩ	Yes / No / Explain		
12	Efficiency at nom load	> 63%	Yes / No / Explain		
13	HMC Size	66mm x 34.22mm x 11mm	Yes / No / Explain		

Common Specifications (Applicable for all items)

SI No	Specification	Value	Compliance	Offered Specification	Remark
1	Screening Tests	ISRO PAS 206 MIL-STD-883	Yes / No / Explain		
2	Min output voltage at burn-in (125°C)	4.8V on 5V O/P, 14.7V on 15V O/P, -14.7V on -15V O/P, 9.8V on 10V O/P	Yes / No / Explain		
3	Max output voltage at ATC (-40°C)	5.35V on 5V O/P, 15.45V on 15V O/P, -15.45V on -15V O/P, 10.4V on 10V O/P	Yes / No / Explain		
4	Pre to Post Burn-in change	+/-1% in output voltage, 3mA in no load current	Yes / No / Explain		

5	Isolation between HMC pins	> 1.2GΩ	Yes / No / Explain		
6	Switching frequency	400 to 500kHz	Yes / No / Explain		
7	Load transient in 5V O/P	50mV	Yes / No / Explain		
8	Turn ON delay	35msec in 5V O/P, 50msec in +/-15V and 10V O/P	Yes / No / Explain		
9	HKB Voltage	12.7 +/-0.2V	Yes / No / Explain		
10	Feedback Resistor tolerance	Rfb±0.1%	Yes / No / Explain		
11	CT Resistor tolerance	Rct±0.1%	Yes / No / Explain		

Supporting Documents required from Vendor

1. Compliance statement for technical, general specifications and supply conditions (Price Bid Related)
2. Latest purchase orders received on Procurement/ fabrication & screening of Space grade HMC DC-DC Converters (Price Bid Related)
3. Budgetary quote with delivery schedule for procurement of radhard components, fabrication and screening of radhard HMC DC-DC converters (Price Bid Related)
4. Heritage in fabrication & screening Space grade HMC DC-DC Converters
5. Vendor HMC fabrication & screening facility audit & approved report by ISRO/ DRDO/ ESA/ NASA
6. Supporting documents for in-house HMC DC-DC Screening (MIL-STD-883/ ISRO-PAS-206) facility
7. ISRO/ ESA/ NASA Certification for Process Qualification (Annexure 6) of DC-DC Converters fabricated by Vendor
8. HMC DC-DC Converters fabrication line certification (Annexure 5) of Vendor as per ISRO-PAS-206/ MIL-STD-1772/ ESA-PSS-606/ MIL-PRF-38535

9. Supporting documents for in-house HMC fabrication facility compliant with MIL-PRF-38535 and MIL-STD-1772 / ISRO-PAS-206

10. Circuit Type Qualification (CTQ) document of any Space grade HMC DC-DC Converters as per ISRO-PAS-206/ MIL-STD-883B executed by vendor

5 additional documents can be uploaded by the vendor

C.2 Commercial Terms / Bid

Sl. No.	Description	Compliance	Vendor Terms
1	14.10.2) The license fee/ royalties paid/ technical charges paid out of India.	Yes / No / Explain	
2	14.10.1) Imported item (Radhard components, raw materials, packages) sourced locally from resellers/ distributors.	Yes / No / Explain	
3	14.10) The vendor shall provide minimum local content (in %) as per declaration format (In your letter head) provided by IISU purchase. The vendor has to certify that the following factors are excluded in the local content percentage.	Yes / No / Explain	
4	14.9.1) The vendor shall provide the supplier category (Class-1, Class-2, etc.) in accordance with ISRO norms.	Yes / No / Explain	
5	14.9) Rad-hard components or raw materials procured through an authorized distributor or original manufacturer outside India shall not be considered as a local content.	Yes / No / Explain	
6	14.8.1) If the vendor's HMC manufacturing facility does not comply with MIL-PRF-38535, MIL-STD-1772, or ISRO-PAS-206 requirements, the vendor shall be rejected, and the order shall be awarded to the next qualified vendor at the L1 agreed price.	Yes / No / Explain	
7	14.8) If a vendor meets the above guidelines, IISU/URSC shall audit the vendor facility before the Purchase Order (PO) is released.	Yes / No / Explain	
8	14.7) The price bids of the technically suitable vendors will be opened and ranked as L1, L2, L3, and so on. The purchase order will be awarded only to the technically suitable L1 bidder (lowest quoted party).	Yes / No / Explain	
9	14.6.4) d)Raw materials, substrate and packages	Yes / No / Explain	
10	14.6.3) c)Radhard/ Space grade Components	Yes / No / Explain	
11	14.6.2) b)S-level screening	Yes / No / Explain	
12	14.6.1) a)Fabrication and testing	Yes / No / Explain	

13	14.6) The vendor must provide the cost split up for quoted price of following (per HMC DC-DC):	Yes / No / Explain	
14	14.5) The vendor shall provide ongoing/ executed purchase order copy for radhard components procurement, HMC DC-DC fabrication, screening and testing (Preferably).	Yes / No / Explain	
15	14.4) The vendor must provide a quote for all variants of DC-DC converters; partial quotes will not be accepted.	Yes / No / Explain	
16	14.3) The vendor shall provide their HMC fabrication and screening facility, along with the certification of their HMC fabrication line, DC-DC special process qualification and qualification reports.	Yes / No / Explain	
17	14.2) The converter design is proprietary to IISU and shall not be reproduced, duplicated, implemented in hardware, or supplied, in whole or in part, to any other party without prior written permission from the competent authority.	Yes / No / Explain	
18	14.1) Part supply is permitted, and payment shall be made on a pro-rata basis.	Yes / No / Explain	
19	14) Commercial terms:	Yes / No / Explain	
20	13.4) Manufactured and delivered items shall carry a warranty period of one year from the date of acceptance.	Yes / No / Explain	
21	13.3) Verification of test results through electrical checks	Yes / No / Explain	
22	13.2) External visual inspection	Yes / No / Explain	
23	13.1) Review of fabrication/SCS/Screening data	Yes / No / Explain	
24	13) Acceptance of Products: Manufactured products will be accepted by IISU based on:	Yes / No / Explain	
25	12.5) Use metallic trays with glass lids when transporting products between work areas during assembly.	Yes / No / Explain	
26	12.4) Use Teflon tweezers and finger cots when handling metallized substrates.	Yes / No / Explain	
27	12.3) Use antistatic gloves during product sealing and transport sealed packages in antistatic boxes.	Yes / No / Explain	

28	12.2) Ensure the use of antistatic wrist straps, table mats, and ground mats during the assembly, inspection, and testing of products to prevent ESD damage.	Yes / No / Explain	
29	12.1.1) Ensure wrist straps are properly connected to thick grounding lines and used in conjunction with certified anti-static mats for effective ESD protection.	Yes / No / Explain	
30	12.1) Utilize wrist straps when handling assembled substrates and devices to prevent electrostatic discharge.	Yes / No / Explain	
31	12) Precautions shall be taken to prevent failures due to Electro-static discharge (ESD):	Yes / No / Explain	
32	11.8) Photo-sensitive films shall be stored in a dark room, and their exposure to yellow light shall be limited during handling or use.	Yes / No / Explain	
33	11.7) Nitrogen-purged systems shall be used for storing half-assembled products.	Yes / No / Explain	
34	11.6) Nitrogen-purged systems shall be used for storing bare chip components.	Yes / No / Explain	
35	11.5) All fabrication materials shall be stored in accordance with the instructions provided in the technical manuals or datasheets supplied by the manufacturer(s).	Yes / No / Explain	
36	11.4) Caution shall be exercised to prevent damage to products from ESD/EOS during all electrical tests.	Yes / No / Explain	
37	11.3) Proper sockets shall be used during all tests to avoid damage to leads.	Yes / No / Explain	
38	11.2) Precap HMCs or partially fabricated HMCs supplied to IISU shall be delivered in nitrogen-purged desiccators.	Yes / No / Explain	
39	11.1) All materials shall be handled with care during processing, and safety precautions shall be followed as per the technical manuals or datasheets supplied by the manufacturer(s).	Yes / No / Explain	
40	11) Guidelines to be followed as a minimum during handling, storage and packing:	Yes / No / Explain	
41	10.4) Delivery of functional and burn-in test jig data packs to IISU shall be as per Annexure 16.	Yes / No / Explain	
42	10.3) Delivery of HMC converters shall be as per the delivery schedule specified in Annexure 14 & 16.	Yes / No / Explain	

43	10.2) Fabrication Schedule of Test Jigs: This includes the fabrication of functional and burn-in jigs and delivery of its data packs for review at IISU as specified in Annexure 15 & 16.	Yes / No / Explain	
44	10.1) Procurement Schedule: Completion shall be in accordance with Annexure 16 for the procurement of components, raw materials, and packages, as specified in Annexure 1.	Yes / No / Explain	
45	10) Delivery Schedule:	Yes / No / Explain	
46	9.23) The vendor shall quote the price of HMC DC-DC converters variants by considering condition 1.1, 2.6, 6.3 & 9.22.	Yes / No / Explain	
47	9.22.1) The Type-1/1C1 and Type-1-70V/Type-1C1-70V types combined requirement mentioned as 60 nos. and 44nos. respectively. IISU shall provide exact quantity of each variant during PO release.	Yes / No / Explain	
48	9.22) The order contains, end to end realization & testing of 240 space grade HMC DC-DC Converters as mentioned in 1.1.	Yes / No / Explain	
49	9.21.1) A separate PO will be issued for end-to-end realization of proto & CTQ, screening and CTQ tests of HMCs.	Yes / No / Explain	
50	9.21) The vendor shall carry out proto & circuit-type qualification of HMCs for the modified design and provide the results to IISU for validation and further clearance, if required by IISU.	Yes / No / Explain	
51	9.20) The vendor shall support design and layout changes/ new layout to optimize converter performance/ change the converter configuration, if required by IISU.	Yes / No / Explain	
52	9.19) The final schematic, approved HMC layout, test specification, and screening procedure documents will be provided by IISU at the time of order placement.	Yes / No / Explain	
53	9.18) The vendor shall provide facility and test support for any design changes at no additional cost.	Yes / No / Explain	
54	9.17.2) Environmental and mechanical tests as listed in the Screening Matrix of Annexure 9.	Yes / No / Explain	
55	9.17.1) Fabrication of functional and burn-in jigs as per Annexure 15	Yes / No / Explain	

56	9.17) The vendor shall not subcontract the services, in whole or in part, to any third party, except for the following activities:	Yes / No / Explain	
57	9.15) Acceptance of the HMCs shall be entirely at the discretion of IISU, subject to clearance by IISU QC and QA based on satisfactory test results and data pack verification.	Yes / No / Explain	
58	9.14) Each HMC shall strictly conform to the specifications. Any deviations shall be reported to IISU, and the final acceptance or rejection shall be determined by IISU.	Yes / No / Explain	
59	9.13.1) If any internal abnormalities are found due to vendor defects, the HMCs shall be returned to the vendor for replacement or rework at no additional cost.	Yes / No / Explain	
60	9.13) Post-delivery, if HMCs fail during testing, they shall undergo failure analysis as per IISU norms.	Yes / No / Explain	
61	9.12) If failures of HMCs or jigs are traced to the manufacturing process at any stage of fabrication, testing, or screening, the vendor shall be liable to manufacture and provide replacement products or jigs at no additional cost.	Yes / No / Explain	
62	9.11) Any non-conformance observed during product realization or testing shall be reported to IISU before proceeding further with fabrication or testing. Corrective and preventive actions suggested by IISU shall be implemented by the vendor.	Yes / No / Explain	
63	9.10) The vendor shall participate in reviews related to the failure of products or jigs, carry out failure analysis as required, and implement the identified corrective actions at no additional cost.	Yes / No / Explain	
64	9.9.2) A Non-Disclosure Agreement (NDA) shall be signed at the time of purchase order placement. The vendor shouldn't reproduce or use any of the IISU HMC design partly or fully in other designs.	Yes / No / Explain	
65	9.9.1) . All drawings, documents, and materials provided by IISU shall be treated as confidential by the vendor and any of their subcontractors and shall remain the property of IISU.	Yes / No / Explain	
66	9.9) The vendor shall use all technical data supplied by IISU solely for the intended purpose.	Yes / No / Explain	

67	9.8) The vendor shall submit all documents both as hard copies and as soft copies (scanned) on a Compact Disc, along with the products.	Yes / No / Explain	
68	9.7) The vendor shall pack HMCs in ESD-safe boxes in accordance with the approved procedures and deliver them to IISU.	Yes / No / Explain	
69	9.6) The vendor shall store and maintain the functional test and burn-in jigs safely for testing of HMCs.	Yes / No / Explain	
70	9.5) The vendor shall submit fabrication data, Specification Control Sheets (SCS), inspection reports, test results, and all applicable data for the activities listed in Annexure 3 for the fabricated samples to IISU.	Yes / No / Explain	
71	9.4) The vendor shall submit the Specification Control Sheet (SCS) covering fabrication up to the pre-cap stage to IISU for sealing clearance.	Yes / No / Explain	
72	9.3) The vendor shall facilitate pre-seal inspection of each HMC by IISU QC and implement any suggested corrections at no additional cost.	Yes / No / Explain	
73	9.2.1) In the case of offline inspection, the vendor shall submit HMCs along with pre-cap electrical test results to IISU for pre-cap inspection prior to sealing. The submitted HMCs will be returned to the vendor after inspection.	Yes / No / Explain	
74	9.2) The vendor shall have an online remote inspection facility and shall submit HMCs to IISU for 100% pre-cap inspection.	Yes / No / Explain	
75	9.1) The vendor shall collect all required design details of the HMCs, including design details of the test jigs, fabrication details, and test procedures after PO release.	Yes / No / Explain	
76	9) Vendor?s other Responsibility:	Yes / No / Explain	
77	8.3) Upon completion of screening & CTQ tests, HMCs shall be delivered to IISU in accordance with Annexure 14 & 16, along with the corresponding screening data pack for each batch.	Yes / No / Explain	

78	8.2) A Specification Control Sheet (SCS) detailing the Parts, Materials, and Processes used for the realization of HMCs shall be prepared and submitted to IISU for each batch separately, prior to initiation of Screening.	Yes / No / Explain	
79	8.1) Upon completion of fabrication of both Functional and Burn-in Jigs, the fabricated jigs data pack shall be delivered to IISU as per Annexure 16 for review and clearance prior to their use in HMC testing.	Yes / No / Explain	
80	8) Data Pack:	Yes / No / Explain	
81	7.5) The vendor shall refer to the Annexure 8, 9 & 18 for standalone electrical tests, burn-in and mechanical test levels.	Yes / No / Explain	
82	7.4) All test results shall be documented in the prescribed screening document formats and delivered along with the products.	Yes / No / Explain	
83	7.3) Upon completion of screening & CTQ, samples specified by IISU shall be subjected to Destructive Physical Analysis (DPA) in accordance with the requirements outlined in Annexure 11, at no additional cost.	Yes / No / Explain	
84	7.2.1) Screening & CTQ activities shall be initiated only after obtaining fabrication clearance from IISU.	Yes / No / Explain	
85	7.2) The vendor shall carry out proto & circuit-type qualification of HMCs for the modified design and provide the results to IISU for validation and further clearance, if required by IISU.	Yes / No / Explain	
86	7.1) The vendor shall carry out screening of HMCs in accordance with the requirements specified in Annexure 8.	Yes / No / Explain	
87	7) Screening & CTQ of HMC Products:	Yes / No / Explain	
88	6.10) No rework is allowed for HMCs. In unavoidable circumstances, any required rework must be reported and receive prior approval from IISU.	Yes / No / Explain	
89	6.9) The vendor shall provide facilities and support for substrate- and package-level testing of HMCs, with IISU participation, when necessary, at no additional cost.	Yes / No / Explain	

90	6.8) The vendor shall submit the Specification Control Sheet (SCS) to IISU in the prescribed format for review and approval and shall obtain clearance prior to screening of HMCs.	Yes / No / Explain	
91	6.7) The vendor shall perform 100% inspection of products at all specified stages of fabrication in accordance with the approved procedure and shall document the results in the Specification Control Sheet (SCS).	Yes / No / Explain	
92	6.6) The vendor shall inform IISU of the schedule for pre-cap inspection at least one week in advance. IISU may, if required, depute its representative to perform 100% pre-cap inspection.	Yes / No / Explain	
93	6.5) All process details shall be documented in the Specification Control Sheet (SCS)/ fabrication datapack format in accordance with Annexure 3.	Yes / No / Explain	
94	6.4) All activities and IISU inspection checkpoints to be performed during fabrication and post-fabrication shall be in accordance with Annexure 17.	Yes / No / Explain	
95	6.3.1) The jigs data pack shall be delivered to IISU for verification in compliance with the delivery terms Annexure 16.	Yes / No / Explain	
96	6.3) Functional and burn-in jigs shall be fabricated in accordance with the jig fabrication specifications provided in Annexure 15, at no additional cost.	Yes / No / Explain	
97	6.2) Batches of converters shall be fabricated, tested, and screened in accordance with the specified requirements, submitted for IISU QA clearance, and delivered to IISU within the agreed schedule.	Yes / No / Explain	
98	6.1.5) HMC products shall be fabricated strictly in accordance with the PID approved by IISU/URSC. No deviations from the approved process are permitted.	Yes / No / Explain	
99	6.1.4) substrate, layer, PTH, layout details, probing pad, unused components, IISU QC number, layout revision, layout name and part number, company details etc.).	Yes / No / Explain	
100	6.1.3) Layout shall contain HMC layout, BOM, resistor paste, gold conductor, dielectric layer, Epoxy layer, Nonconductive/ conductive epoxy, over glaze, solderable gold conductor, wire and ribbon bond,	Yes / No / Explain	

101	6.1.2) BOM, layout, HMC package and lid drawing, layout design document) shall be delivered to IISU for verification and approval.	Yes / No / Explain	
102	6.1.1) All the HMC layout files (Auto CAD files both top and bottom layer, stencil printing, resistor design, track current rating, die diagram, substrate drill drawing,	Yes / No / Explain	
103	6.1) If any correction required in the layout of above-mentioned converters, Vendor shall carry out the layout design as per ISRO-PAS-206 and obtained approval from IISU designer, IISU QC & QA.	Yes / No / Explain	
104	6) Layout design and Fabrication of Items:	Yes / No / Explain	
105	5.11.1) All ESD (Electrostatic Discharge) control procedures shall be strictly followed.	Yes / No / Explain	
106	5.11) The procured components shall be handled and stored in accordance with Annexure 14. Storage conditions concerning environment, humidity, and particulate contamination shall comply with ISRO guidelines.	Yes / No / Explain	
107	5.10) If the vendor encounters technical issues, delays, or any problems during component procurement, they shall inform IISU and obtain real-time ratification.	Yes / No / Explain	
108	5.9) If any quality deviation is observed in vendor-procured component lots resulting in rejection, the cost of procuring fresh components shall be borne by the vendor.	Yes / No / Explain	
109	5.8) Any deviation requested by the supplier during component procurement or incoming inspection shall be reported to IISU, and formal approval shall be obtained prior to procurement or commencement of fabrication, as applicable.	Yes / No / Explain	
110	5.7.2) Approval from IISU shall be obtained prior to commencing fabrication.	Yes / No / Explain	
111	5.7.1) quality conformance reports, and all other technical details for each component listed in the Bill of Materials (BOM), in the ?Parts Approval Document? format specified in Annexure 13.	Yes / No / Explain	

112	5.7) The vendor shall submit the Incoming Goods Inspection (IGI) report, Certificate of Conformance (CoC), data packs including element evaluation reports,	Yes / No / Explain	
113	5.6.1) PID to verify that all received components meet the required quality standards and are accompanied by the necessary certificates and data package, as specified in the procurement specification in Annexure 12.	Yes / No / Explain	
114	5.6) After procurement, the vendor shall perform Incoming Goods Inspection (IGI) in accordance with the approved PID,	Yes / No / Explain	
115	5.5) The die diagram used for procurement shall conform to the approved HMC layout. Any deviation from the approved layout shall require prior approval from IISU.	Yes / No / Explain	
116	5.4) The die shall be from a single wafer lot, lot code, or date code, preferably less than five years and passives less than 2 years old (Annexure 12). Any deviation must receive approval from IISU prior to procurement.	Yes / No / Explain	
117	5.3) All components procured for Radhard DC-DC realization shall be space grade. Parts shall be sourced only from QML/QPL-listed Original Component Manufacturers (OCMs) or their authorized distributors.	Yes / No / Explain	
118	5.2) The die and chip component devices for Radhard converters shall meet Class-K requirements of MIL-PRF-38534 when assembled and tested.	Yes / No / Explain	
119	5.1.1) in accordance with the component details specified in Annexure 1 and the procurement specifications outlined in Annexure 12.	Yes / No / Explain	
120	5.1) The vendor shall be responsible for procuring all EEE components including MOSFETs, PWM controllers, diodes, Zener diodes, and transistors-in bare die form.	Yes / No / Explain	
121	5) Procurement of EEE Components:	Yes / No / Explain	
122	4.5.1) A Certificate of Conformance (CoC), along with the complete LAT fabrication and test data package, shall be submitted to IISU/URSC for review and approval.	Yes / No / Explain	

123	4.5) The HMC packages shall be procured from a qualified source as per BOM (Annexure 1). Upon receipt, weight-simulated packages shall undergo Lot Acceptance Tests (LAT) as per (Annexure 10).	Yes / No / Explain	
124	4.4) The vendor shall ensure that all shelf-life-limited items are used before the expiration date specified by the manufacturer.	Yes / No / Explain	
125	4.3) The vendor shall submit adhesive samples to IISU/URSC for outgassing tests and obtain formal approval prior to use.	Yes / No / Explain	
126	4.2) The vendor shall perform incoming goods inspection for each material in accordance with ISRO-approved procedures and submit the inspection data for review.	Yes / No / Explain	
127	4.1) The vendor shall be responsible for procuring all raw materials (including substrates, printing inks, adhesives, wire/ribbons, packages, cleaning agents, gases, Single-In-Line clips, solders, etc.) from ISRO-approved sources.	Yes / No / Explain	
128	4) Procurement of HMC Packages and Raw Materials:	Yes / No / Explain	
129	3.4) The process steps specified in the PID, as approved by IISU/URSC, shall be strictly followed at every stage of product realization.	Yes / No / Explain	
130	3.3.1) IISU/URSC shall provide the necessary technical support and guidance to facilitate the preparation of this portion of the PID.	Yes / No / Explain	
131	3.3) If new processes are introduced, incremental PIDs (Process Identification Documents) shall be prepared by the vendor and submitted to IISU/URSC for review.	Yes / No / Explain	
132	3.2.1) The HMC fabrication process, materials, operators, equipment, and practices specified in the ISRO-approved PID shall be strictly followed during the realization of this product.	Yes / No / Explain	
133	3.2) The vendor's Process Identification Document (PID), as approved by ISRO, shall form the basis for all activities to be carried out by the vendor.	Yes / No / Explain	
134	3.1) All tasks shall be executed in accordance with the standards and specifications defined in MIL-PRF-38534, which shall serve as the governing baseline.	Yes / No / Explain	

135	3) Applicable Standards and Process Identification Document (PID) for Reference:	Yes / No / Explain	
136	2.6.1) Upon successful completion of the proto HMCs, the clearance for fabrication of Radhard HMC DC-DCs will be provided to the vendor.	Yes / No / Explain	
137	2.6) If proto HMCs results are not meeting as per specification (Annexure 8), the vendor has to identify the root cause for the deviation and complete the rework and rescreening as per IISU recommendation.	Yes / No / Explain	
138	2.5.6) The screening & DPA results for the above proto HMCs shall be submitted to IISU for approval.	Yes / No / Explain	
139	2.5.5) The vendor shall carry out the proto HMC fabrication, screening (Annexure 9) and DPA (Destructive physical analysis) as per Annexure 11 at no additional cost, in full compliance with ISRO-PAS-206.	Yes / No / Explain	
140	2.5.4) The HMC layout, circuit schematic, transformer & inductor details and resistor design sheets shall be provided along with the PO.	Yes / No / Explain	
141	2.5.3) Vendor shall procure the components, packages, lids and drilled substrates for the proto samples as per Annexure 7 & 1.	Yes / No / Explain	
142	2.5.2) 12W (P/N: HDM281015TmTB, HDM701015TmTB) and 6W (P/N: HDV280515TmTB, HDV700515TmTB) proto HMC DC-DC Converters each 1no within 36 weeks from PO date.	Yes / No / Explain	
143	2.5.1) After PO release, they shall complete the fabrication and screening of triple output 17.5W (P/N: HDM280515TmTB, HDM700515TmTB),	Yes / No / Explain	
144	2.5) If vendor meets the technical requirements (i.e., 2.1 to 2.4), price bid of the vendor will be opened as per IISU technical bid committee recommendation.	Yes / No / Explain	
145	2.4.3) Any deviation or non-compliance will result in the vendor being disqualified from further consideration.	Yes / No / Explain	
146	2.4.2) During the technical bid review, both line and process qualification certifications will be evaluated critically along with HMCs qualification report.	Yes / No / Explain	

147	2.4.1) It is mandatory to submit the approved qualification report of HMC DC-DCs along with technical bid for evaluation.	Yes / No / Explain	
148	2.4) The vendor shall have fabricated and completed the Circuit Type Qualification (CTQ) of any Space grade HMC DC-DC Converters as per ISRO-PAS-206/ MIL-STD-883B.	Yes / No / Explain	
149	2.3.2) It is the vendor's responsibility to qualify all special processes required for DC-DC converters and obtain approval from IISU/URSC, at no additional cost.	Yes / No / Explain	
150	2.3.1) If a vendor's HMC line is qualified but the associated processes are not, vendor must complete the required process qualification as per Annexure 6 and submit the approved report along with the technical bid.	Yes / No / Explain	
151	2.3) The vendor shall have completed the process qualification required for DC-DC Converter as per ISRO-PAS-206/ MIL-PRF-38535. The details of process qualification mentioned in Annexure 6.	Yes / No / Explain	
152	2.2) The Indian vendor shall have an in-house HMC fabrication facility compliant with MIL-PRF-38535 and MIL-STD-1772 / ISRO-PAS-206 and shall not subcontract the fabrication work, in whole or in part, to any third party.	Yes / No / Explain	
153	2.1.2) Provide supporting documents as per Annexure 5 for evaluation of certified manufacturing line.	Yes / No / Explain	
154	2.1.1) with proven expertise in manufacturing and delivering space-qualified Hybrid Microcircuits (HMC) DC-DC converters are required to submit quotations.	Yes / No / Explain	
155	2.1) Indian industries with production lines qualified as per ISRO-PAS-206/ MIL-STD-1772/ ESA-PSS-606/ MIL-PRF-38535,	Yes / No / Explain	
156	2) Entitlement Criteria:	Yes / No / Explain	
157	1.8) Delivery of HMC DC-DCs along with data packs to IISU stores.	Yes / No / Explain	
158	1.7) Preparation of fabrication and screening data pack as per Annexure-3 & 4, submission to IISU QA for audit.	Yes / No / Explain	

159	1.6) Submission of Procured Space grade components, substrates, raw materials & gold plated Kovar packages & data packs to IISU for approval and clearance.	Yes / No / Explain	
160	1.5) Submission of HMC DC-DCs for IISU Precap inspection and obtain HMC package sealing clearance from IISU QC and QA as per Annexure- 2.	Yes / No / Explain	
161	1.4) Fabrication of burn-in test Jigs for active burn-in & active thermal cycling of Type-1/ 1C1/ 1-70V/ 1C1-70V and Type-2/ 2-70V HMC DC-DC Converter variants.	Yes / No / Explain	
162	1.3) Fabrication of functional test Jigs for electrical testing of Type-1/1C1/1-70V/1C1-70V and Type-2/ 2-70V HMC DC-DC variants.	Yes / No / Explain	
163	1.2) Fabrication, testing and S-level screening of Radhard HMC DC-DC Converters (240nos).	Yes / No / Explain	
164	1.1) Procurement of Space grade components, substrates, raw materials & gold plated Kovar packages as per Annexure-1.	Yes / No / Explain	
165	1) The scope shall cover end-to-end activities as per below:	Yes / No / Explain	
166	Part Supply	Yes / No / Explain	
167	This tender is proposed as a DOMESTIC PUBLIC TENDER. 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. NonLocal Suppliers need not quote. Foreign OEMs/Agents quoting on behalf of Foreign OEMs are not permitted to quote. High Sea Sales Quotes not permitted.	Yes / No / Explain	

168	<p>This is a TWO-PART tender i.e. Techno-Commercial Bid (Part-I) and Price Bid (Part-II) shall be submitted separately. All technical and commercial terms and conditions shall be furnished in the Techno-Commercial Bid while price shall be indicated only in the Price Bid.</p> <p>Uploading price details anywhere else other than the price-bid shall lead to unconditional rejection of the tender. Please make note of the same. Tenderers are advised NOT TO UPLOAD any documents revealing the price of the main equipment, accessories, spares or AMC in technical & Commercial bid. They are however, requested to upload UNPRICED BIDS (i.e. Price details masked) showing appropriate breakup of components of main equipment, individual accessories and spares as desired.</p>	Yes / No / Explain	
169	<p>The vendor has to compulsorily submit the compliance statement online otherwise their offer will not be considered for further evaluation. Before entering the compliance statement, vendors are advised to refer the detailed specification provided.</p>	Yes / No / Explain	
170	<p>The Technical Specification/ Drawing/ Product Catalogues/ Works Carried by vendor/ Make offered etc. as a PDF file without any financial details has to be uploaded online mode by the vendor.</p>	Yes / No / Explain	
171	<p>Technical Bids will be opened at the scheduled due date & time. No further intimation will be sent in this regard. The schedule for price bid opening shown is only indicative. Price bids will only be opened in the case of parties who have been techno commercially accepted, the details of which will be communicated at a later stage.</p>	Yes / No / Explain	

172	As per Public Procurement (Preference to Make in India) Order, 2017 dtd 19.07.2024 and its amendments. 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, classII Local supplier will be considered.	Yes / No / Explain	
173	Currency of Quoting: This is a domestic tender and the currency of the bid should be in Indian Rupee only.	Yes / No / Explain	
174	Purchase preference to eligible vendors are applicable as per extant notifications issued by the Government of India. 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.	Yes / No / Explain	
175	Confirm the percentage of local content in the item and attach documentary proof for the same.	Yes / No / Explain	

176	<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	
177	<p>Taxes and other costs, if any, please specify the rates with HSN/SAC code, wherever applicable. For Goods under schedule II with GST @ 18%, IISU is eligible for concessional rate of tax @ 5% under Sl.No.462 (Chapter 88 or any other Chapter) of Schedule-I of Notification No.09/2025 Central Tax (Rate) dated 17.09.2025 & IGST in term of Notification No.09/2025 - Integrated Tax (Rate) dated 17.09.2025. Necessary IGST/CGST/SGST concession certificate shall be issued by us.</p>	Yes / No / Explain	
178	<p>Delivery Terms [Normal delivery terms - FOR IISU]</p>	Yes / No / Explain	
179	<p>Delivery Period [Please Specify the period, LD shall be applicable in case of delayed delivery]. Mention the time required for supply and installation wherever applicable.</p>	Yes / No / Explain	
180	<p>Payment [Within 30 days after receipt and acceptance of Item at our Stores].</p>	Yes / No / Explain	

181	Liquidated Damages @ 0.5% per week of delay or part thereof subject to maximum of 5% of order value including elements of GST, freight & statutory variation is applicable beyond the promised delivery schedule. However, in case of inordinate delay of more than one-fourth in completion period, LD subject to maximum of 10% of the total order value shall be recovered.	Yes / No / Explain	
182	Security Deposit: In case order value exceeds Rs. 5 lakhs Successful Tenderer shall submit Security Deposit equivalent to 3% of the order value valid for a period of 60 days beyond the date for completion of the Purchase Order. This security deposit is collected towards the performance of the Contract. The said Security Deposit shall be submitted either in the form of Insurance surety bond/ Bank Guarantee/ Fixed Deposit receipts or account payee DD from Commercial Banks in India. No exemption is applicable for MSE vendors from submission of Security Deposit. In case PSU/Autonomous bodies/Central Government organisations, Indemnity Bond shall be accepted. Wherever SD and PBG are involved, the same can be submitted in consolidated SD cum PBG, valid for a period of 60 days beyond the completion of contractual obligation/ warranty obligations under the contract. Necessary formats will be issued to the successful tenderer along with Purchase order.	Yes / No / Explain	
183	Country of Origin	Yes / No / Explain	
184	GeM Seller Unique ID	Yes / No / Explain	
185	Quote Validity: Minimum 180 days from the date of Tender opening.	Yes / No / Explain	
186	PO ordering address in full with Contact Persons Name, E-mail id, Phone No. [also attach your Quotation in PDF format]. Supplier shall furnish Bank Account details with IFSC code.	Yes / No / Explain	

187	As per the provisions of Office Memorandum No. F. No. 6/18/2019-PPD dtd. 23.07.2020 (i.e., Rule No. 144 (xi) of GFR) and its Amendments, issued by Department of Expenditure, Ministry of Finance. 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.	Yes / No / Explain	
188	If any of the bidders submit any forged or false documents along with the Tender, such tenders will be summarily rejected and such bidders will be blacklisted for all future tenders.	Yes / No / Explain	
189	Bidder shall mandatorily furnish declaration regarding Land Border sharing in the document sought with all terms and conditions given in Instructions to Vendors in your letter head duly signed by authorized signatory with company seal.	Yes / No / Explain	
190	Any other terms.	Yes / No / Explain	

C.3 Price Bid

Sl. No.	Item	Quantity	Unit Price	Currency	Total Price	Remark
1	HYBRID MICRO-CIRCUITS (HMC) - Type -1 / 1C1 Radhard DC-DC Converters	60.00 Nos.		-		

2	HYBRID MICRO-CIRCUITS (HMC) - Type-2 Radhard DC-DC Converters	90.00 Nos.				
3	HYBRID MICRO-CIRCUITS (HMC) - Type-1-70V/1C1-70V Radhard DC-DC Converters	44.00 Nos.				
4	HYBRID MICRO-CIRCUITS (HMC) - Type-2-70V Radhard DC-DC Converters	46.00 Nos.				

Common charges (Applicable for all items)

Freight charge	
P&F Charges	