

To whom it may concern

This is a tender document requesting bids from **domestic (India-based) manufacturers only** for the tape-out and fabrication of Integrated Photonic Circuit chips to be procured at the department of Electrical Communication Engineering (ECE), Indian Institute of Science, Bangalore.

All interested vendors shall submit a response demonstrating their capabilities to provide the requested service to the primary point of contact listed below. Quotation should come only from Indian Original Equipment Manufacturer (OEM) or their Indian authorized distributor. The quotations should be on FOR-IISc Bangalore basis in Indian Rupees only.

With respect to this tender, the rules laid out by the Government of India in order No. P45021/2/2017-pp-BE-II issued by the Public Procurement Section, Department or Promotion of Industry and Internal Trade, Ministry of Commerce and Industry, dated 4th June 2020 will be followed. As per this order, the government has defined a 'Class-I local supplier' as "a supplier or service provider whose goods, services or work offered for procurement, has local content equal to or more than 50%". A 'Class-II local supplier' is "a supplier or service provider, whose goods, services or works offered for procurement, has local content more than 20% but less than 50%". Only Class-I and Class-II local suppliers are eligible to participate in this open domestic tender. Any "Non-local supplier" i.e. "a supplier or service provider, whose goods, services or works offered for procurement, has local content less than 20%" is ineligible to participate in this tender.

Bidders offering imported products will fall under the category of non-local suppliers. They cannot claim themselves as Class-1 local suppliers/Class-2 local suppliers by claiming the services such as transportation, insurance, installation, commissioning, training, and other sales service support like AMC/CMC, etc., as local value addition.

Purchase preference as defined by the recent edits to GFR (within the "margin of purchase preference") will be given to the Class-1 supplier.

MSMEs can seek an exemption to some qualification criteria. IISc follows GFR2017 for such details.

The deadline for submission of proposals is **5th August 2024 by 5:00 PM**. Proposals should arrive at the office of **Dr. Varun Raghunathan, Department of Electrical Communication Engineering, Indian Institute of Science, Bangalore, Karnataka 560012, India**.

Direct all questions concerning the acquisition to **Dr. Varun Raghunathan** at: **varunr@iisc.ac.in**.

General Terms and Conditions:

1. The bid should be submitted in the two-cover system, i.e. technical bid and commercial bid separately in sealed covers. The technical bid should contain all commercial terms and conditions, except the price.
2. The technical bid must contain a point-by-point technical compliance document. The technical proposal should contain a compliance table that should describe your compliance in a "yes" or "no" response against each of the items in the table listed in this RFQ. If "no" the second column should state the extent of deviation. The third

column should state the reason for the deviation, if any. The fourth column can be used to compare your tool with that of your competitors or provide details as requested in the technical requirement table below.

3. In the commercial bid, the price should be inclusive of all discounts.
4. The vendor should have qualified technical service and/or applications personnel for the service requested based in India (preferably in Bangalore).
5. The covering letter should clearly state the whether the vendor is a Class-I or Class-II local supplier. Failing this the bid will be automatically rejected.
6. The vendor to state the percentage of the local content and provide self-certification that the item offered meets the minimum local content requirement. They should also give details of the location(s) at which the local value addition is made.
7. The lead time for the delivery of the service should not be more than 3 months from the date of receipt of our purchase order. It should be clearly mentioned in the technical and commercial bids.
8. All the quotations must be valid for at least 90 days at the time of submission.
9. List of customers and references: The Bidder should have provided similar services in Central Universities preferably in centrally Funded Technical Institutes (IITs, IISc, IISERs, NITs, government labs etc.) . Please provide the details and contact information.
10. The Bidder must not be blacklisted/banned/suspended or have a record of any service-related dispute with any organization in India or elsewhere. A declaration to this effect should be provided.
11. Items in addition to that listed in the technical table that you would like to bring to the attention of the committee, such as data sheets, technical plots etc. can be listed at the end of the compliance table.
12. Vendors are encouraged to highlight the advantage of their service over comparable offerings from the competitors.
13. If needed, a meeting for any technical clarifications can be scheduled with the undersigned by sending an email.
14. The Institute reserves the right to accept or reject any bid, or to annul the bidding process and reject all bids, at any time prior to the award of contract without thereby incurring any liability of the affected bidder or bidders.
15. Warranty terms and additional warranty options is a must for all the components. Please specify the service plan like whether the local distributor will address the issue or the parent company.
16. Terms and conditions for the service provided should be clearly mentioned.
17. After the award of purchase order, the vendor must provide an Order Acknowledgement within 30 days from the receipt of the Purchase Order.
18. Please quote the price of each optional line item, separately.

Technical requirements:

Please note that the requirements and options listed below are only guidelines. It does not disbar bids that do not meet the criteria listed. Vendors are requested to quote for service that meet the criteria to the best extent possible and list deviations. Deviations are NOT an automatic reason for disqualification. They will be discussed by the technical committee prior to making an informed decision.

Technical Specifications	Values/ Range
<i>Photonic chip tape-out and fabrications service</i>	
Process	Indium Phosphide (InP) Photonic Foundry Run

Technology provider	[1] Fraunhofer HHI – InP Photonic multi-project wafer (MPW) run [2] Smart Photonics – InP Photonic multi-project wafer (MPW) run [3] Alternatively, a 100% Indian manufacturer providing the InP photonic fabrication service meeting the below listed specifications
Chip area	16 – 18 mm ² area diced chips (square or rectangular dimensions)
Quantity	>= 8 chips
Facet preparation	Antireflection coating on both optical I/O facets
Passive waveguide – propagation loss	< 2 dB/cm
Arc waveguide – minimum radius	<= 250 micron Bend loss to be specified
Tapered waveguide	< 2 dB/cm
Linear grating coupler: Coupling factor	<= 300 cm ⁻¹ Tuning range to be specified
Sampled grating coupler: Coupling factor	<= 300 cm ⁻¹
MMI coupler- 1x2 and 2x2: Loss	<= 0.5 dB
Directional coupler: Loss	<= 0.5 dB
Spot-size converter: Edge coupling loss	<= 1.5 dB Geometry to be specified
Semiconductor optical amplifier (SOA): Gain	>= 300 dB/cm
SOA Saturation power	>= 13 dBm
DBR grating: Tuning range	>= 4 nm
Isolation section	Required
Broadband MMI reflector – 1x1 and 1x2: Loss	<= 2 dB
Broadband MMI reflector: Reflectivity	>= 30%
PIN photodiode: 3dB bandwidth	>= 30 GHz
PIN photodiode: Responsivity	>= 0.7 A/W
PIN photodiode: Dark current	<= 25 nA, bias voltage to be specified
Balanced photodetector: 3dB bandwidth	>= 20 GHz
Balanced photodetector: Dark current	<= 25 nA, bias voltage to be specified
Balanced photodetector: Responsivity	>= 0.7 A/W
Thermo-optic phase modulator: Loss	<= 2 dB/cm

Thermo-optic phase modulator: $I\pi \times L$	≤ 20 mA-mm
Current injection phase modulator: Loss	≤ 10 dB/mm
Current injection phase modulator: $I\pi \times L$	≤ 20 mA-mm
Electro-optic phase modulator: Loss	≤ 4 dB
Electro-optic phase modulator: Bandwidth	≥ 25 GHz
Electro-optic phase modulator: $V\pi$	≤ 4 V, Length to be specified
Electro-absorption Modulator: Bandwidth	≥ 20 GHz
Electro-absorption Modulator: Extinction ratio	≥ 6 GHz, Length to be specified

Other requirements:

1.	Must provide the PDKs for all the processes.
2.	PDKs to be compatible with Luceda IPKISS and Lumerical Interconnect
3.	Detailed test report supporting the above required specifications to be included with the equipment at the time of delivery
4.	Expected performance data sheets to be included with the technical bid
5.	The requirements for electronic interfacing of the fabricated chips with electronic boards and drivers to be specified.
6.	Please include other options currently available which can be added
7.	Cost of shipping to Indian Institute of Science, Bangalore should be included
8.	Warranty terms to be specified in the commercial proposal and is subject to negotiations
9.	Payment terms to be specified in the commercial proposal and is subject to negotiations
10.	List of acceptance tests for on-site inspection at IISc to be provided
11.	A set of basic experiments for performing routine checks of acceptable operation with clear instructions to be provided
12.	Please provide details of the number of trained personnel in India, number in southern region or in Bangalore who can provide after sales support
13.	Service credentials: The supplier should have at least two similar installation in India. Customer list with contact details mandatory to prove your credential
14.	Authorisation letter from OEM manufacturer to be included
15.	Vendor must provide complete compliance statement against each technical point

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