

## **Request For Quote for the procurement of “an Electron Multiplying CCD (EMCCD)” from domestic (India-based) manufacturers**

Ref: PH/SBM/542/2022-23

Date: 10.01.2023

This is a Request for Quote (RFQ) from domestic (India-based) manufacturers for the procurement of “**an Electron Multiplying CCD (EMCCD)**” (referred to as equipment or system in the RFQ) that will be utilized for optics experiments. The required technical details, including terms and conditions, are provided below. The last date of reaching the quotation to us is mentioned below.

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 of Promotion of Industry and Internal Trade, Ministry of Commerce and Industry, dated 04th June 2020, will be followed. Per this order, the government has defined a ‘Class-I local supplier’ as “a supplier or service provider, whose goods, services or works 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.

### **Technical specifications:**

1. Sensor Type: Electron Multiplying CCD, Back-illuminated.
2. Pixel count: 512 x 512 or bigger
3. Pixel size: 16 x 16 microns or bigger.
4. Image/sensor area: 8.1 x 8.1 mm or better
5. Pixel readout rates: At least 16 MHz
6. Deepest cooling: - 100 °C or better
7. Blemish specification: Grade 1 sensor
8. System Window type: VIS and Anti-Reflection coated with fringe suppression
9. Wavelength range: 400 nm – 1100 nm

10. Quantum Efficiency (QE):  $\geq 95\%$  near 550 nm wavelength. Provide a graph showing the variation of QE from 400 nm to 1100 nm wavelength.
11. Dark current (electron/pixel/sec) at max cooling: 0.00015 or better
12. Spurious background (Events/pixel) at 1000x gain: 0.0018
13. Active area pixel well depth: 180000 electrons or better
14. Gain register pixel well depth: 800000 electrons or better
15. Pixel readout rates: EM mode (17, 10, 5 & 1 MHz)
16. Pixel readout rate in conventional mode (3, 1 & 0.08 MHz)
17. Minimum Read noise:  $< 1$  with EM multiplication
18. Linear absolute Electron Multiplier gain: 1 - 1000 times
19. Linearity: Better than 99.9%
20. Vertical clock speed: 0.3 to 3.32 micro-second
21. Time stamp accuracy: 10 ns
22. Frame rate: 56 fps for full frame size (512 x 512  $\mu\text{m}$ )
23. Digitization: 16-bit (At all speeds)
24. Triggering: Internal, External, External start, External Exposure, Software trigger
25. PC interface: USB 2.0 or better
26. Spectral Imaging: adaptive focus compatibility
27. Calibration should be stable at all cooling temperatures (Temperature compensated EM gain)
28. EM calibration by software routine (No use of maintenance-prone light source which ages/degrades with time)
29. Data acquisition and analysis software – Windows based
30. The supplier should agree to provide performance test reports prior to dispatch of goods.
31. Warranty: 1 year from installation. Quote separately for an additional one-year (1+1=2 years total) warranty.
32. Installation should be performed on site.

**Terms and conditions:**

1. Quotations should come only from Indian Original Equipment Manufacturer (OEM) or their Indian authorized distributor.

2. The bid should be submitted in a 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**.
3. 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 specification. If "no" the second column should mention the extent of the 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. **Tender documents without technical compliance documents will not be considered.**
4. In the commercial bid, the price should be inclusive of all discounts.
5. Authorisation letter from OEM manufacturer should be included
6. Track record: The supplier should have at least five installations of similar EMCCDs in India. A customer list with contact details must be provided along with the technical bid.
7. The vendor must provide a complete compliance statement against each technical point.
8. The bidder shall have an office or branch in Bangalore and must have enough qualified and experienced engineers. OEM Factory trained engineers are desirable. The vendor/company and/or their associate (agent) in India should provide after-sales service, full support, and repair if required.
9. The vendors quoting should ideally be registered with IISc, and the quote should ideally carry the vendor registration number in the bid.
10. The covering letter in the bid should clearly mention whether the vendor is a 'Class I' local supplier or a 'Class II' local supplier, failing which the vendor will be automatically disqualified. The vendor should indicate the percentage of the local content and provide self-certification that the items offered meet the minimum local content requirement. They should also give details of the location(s) at which the local value addition was made.
11. Lead time should be clearly mentioned in the technical and commercial bids.
12. The offer shall be valid at least 90 Days from the date of opening of the commercial bid.

13. The vendor/company should have existence for a minimum of 3 years. (Enclose Company Registration Certificate).
14. The vendor/company must not be blacklisted/banned/suspended or have a record of any service-related dispute with any organization in India or elsewhere.
15. The quotations should be on FOR-IISc Bangalore basis in INR only
16. 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.
17. Notwithstanding anything specified in this tender document, IISc Bangalore, in its sole discretion, unconditionally and without having to assign any reason, reserves the rights:
  - a. To accept OR reject lowest tender or any other tender or all the tenders.
  - b. To accept any tender in full or in part.
  - c. To reject the tender, offer not confirming to the tender terms.
18. The tender documents can be sent at the following address by post or in-person, and the document should reach us on/before **1 February 2023**.

The Chairman  
Department of Physics  
Indian Institute of Science,  
Bangalore 560012, Karnataka, India  
Attention: Sebabrata Mukherjee