



**Request for Proposal  
of  
Large format colour and monochrome CMOS  
image sensor with evaluation board**

**June 2024**

**SENSORS DEVELOPMENT AREA (SEDA)**

**SPACE APPLICATIONS CENTRE (ISRO)**

**AHMEDABAD – 380015**

**INDIA**

**1. INTRODUCTION:**

Space Applications Centre (SAC), Indian Space Research Organization (ISRO), Department of Space, Government of India, is involved in various upcoming missions such as ISM, future lunar and mars missions.

Quotation is invited from proposer for the procurement of large format (1) colour and (2) monochrome CMOS image sensor along with their evaluation boards for the above mentioned ISRO projects, which meets the sensor specifications, mentioned in subsequent table.

Proposer shall provide cost break-up including the aspects like NRE (if any), accessories, acquisition hardware and software, shipment etc., however the final bid should be inclusive of all. It is very important for evaluation of the offer that the proposal includes sufficient technical data on form, fit and function. The proposal submitted in response shall be in conformity with requirements laid down in subsequent table.

Proposer may propose alternate available product, in case of any deviation to the requirements, but meeting the major specifications.

**2. LARGE FORMAT COLOUR AND MONOCHROME CMOS IMAGE SENSOR SPECIFICATIONS:**

Sr No.	Detector Parameters	Item No. 1	Item No. 2
		Specifications for colour CMOS image sensor	Specifications for monochrome CMOS image sensor
1.	Effective pixels	( $\geq 4096$ ) x ( $\geq 3072$ )	( $\geq 4096$ ) x ( $\geq 3072$ )
2.	Pixel pitch	( $\leq 5.5$ ) $\mu\text{m}$ x ( $\leq 5.5$ ) $\mu\text{m}$	( $\leq 5.5$ ) $\mu\text{m}$ x ( $\leq 5.5$ ) $\mu\text{m}$
3.	Total active area	( $\geq 22.5$ ) mm x ( $\geq 16.8$ ) mm	( $\geq 22.5$ ) mm x ( $\geq 16.8$ ) mm
4.	Shutter type	Global Shutter	Global Shutter
5.	Operating modes	Row windowing mode, HDR mode, pixel binning	Row windowing mode, HDR mode, pixel binning
6.	Full Well Charge/Pixel	$\geq 13,000$ e-	$\geq 13,000$ e-
7.	Temporal noise	$\leq 15$ e-	$\leq 15$ e-
8.	Dynamic range	$\geq 58$ dB	$\geq 58$ dB
9.	SNR (Max)	$\geq 40$ dB	$\geq 40$ dB
10.	Dark current	$< 80$ e-/s at 25°C temperature	$< 80$ e-/s at 25°C temperature
11.	Dark current non uniformity (DCNU)	$< 10$ e-/s at 25°C temperature	$< 10$ e-/s at 25°C temperature
12.	Photo response non uniformity (PRNU)	$< 1.5\%$ rms of signal	$< 1.5\%$ rms of signal
13.	Colour filters	Required, RGB Bayer pattern	Not Required, monochrome
14.	QE (including fill factor)	$\geq 35\%$ at 450nm (Blue Filter), $\geq 35\%$ at 550nm (Green Filter), $\geq 30\%$ at	$\geq 40\%$ at 450nm, $\geq 40\%$ at 550nm, $\geq 35\%$ at 650nm, $\geq 15\%$ at 850nm

		650nm (Red Filter), $\geq 15\%$ at 850nm (Blue, Green and Red Filter)	
15.	Exposure Range (Commandable)	0.1ms to $\geq 1s$	0.1ms to $\geq 1s$
16.	ADC	8/10/12 bit	8/10/12 bit
17.	Max Frame rate	$\geq 250$ fps using 10 bit/pixel digitization	$\geq 250$ fps using 10 bit/pixel digitization
18.	Detector Dimension	$(\leq 48)$ mm x $(\leq 35)$ mm	$(\leq 48)$ mm x $(\leq 35)$ mm
19.	Cover glass	Material: D263T eco With double sided AR coating, $T_{\geq 97\%}$ abs (400-900nm) per surface at AOI= $15^\circ$	Material: D263T eco With double sided AR coating, $T_{\geq 97\%}$ abs (400-900nm) per surface at AOI= $15^\circ$
20.	Interface	LVDS	LVDS
21.	Operating Temperature	0°C to 50°C	0°C to 50°C
22.	Operating Humidity	50 $\pm$ 10%	50 $\pm$ 10%
23.	Accessories	Evaluation board for the colour CMOS image sensor	Evaluation board for the monochrome CMOS image sensor
24.	Warranty	$\geq 1$ Year	$\geq 1$ Year

The sensor should meet all parameters requirement simultaneously

### 3. DELIVERABLES & DELIVERY TIMELINE:

Sr No.	Item	Quantity	Delivery Timeline
1.	Large format colour CMOS image sensor	24	$\leq 20$ Weeks (From the date of PO placement)
2.	Large format monochrome CMOS image sensor	21	$\leq 20$ Weeks (From the date of PO placement)
3.	Evaluation board for colour CMOS image sensor	4	$\leq 20$ Weeks (From the date of PO placement)
4.	Evaluation board for monochrome CMOS image sensor	1	$\leq 20$ Weeks (From the date of PO placement)

### 4. GENERAL REQUIREMENT AND TERMS & CONDITIONS:

- The following details shall be supplied by the manufacturer along with the proposal.
  - Detailed technical datasheet indicating electrical, mechanical, environmental specifications (Storage & Operating Temperature range) and package drawing.
  - Ordering information and details of marking on components and packaging clearly identifying the device serial numbers and date code.
- The following details shall be supplied along with the deliverable components.
  - Certificate of compliance.

- b. Handling & Operating instructions along with recommended soldering temperature and time for these sensors after receipt at ISRO.
  - c. Date code information of all devices.
3. General requirements
- a. It is desirable that:
    - i. Devices supplied by the manufacturer shall be from a single date code and should not be older than 2 years from the date of shipment to ISRO.
    - ii. Devices should have suitable marking to maintain traceability Like Part Number, Manufacturer's name or symbol & Lot identification etc.
  - b. Each unit shall be packaged in order to protect the device against ESD, electrical, mechanical and environmental damage.
  - c. The individual packages shall be placed / fixed within the shipping package which should be resistant to mechanical shocks, humidity and dust.
  - d. Pink poly-foam should not be in direct contact with device package, as this may lead to corrosion of gold plating of leads.
  - e. The shipping documentation shall be enclosed in the shipping package.
  - f. In addition to that following details are desirable to be provided along with the delivery of devices:
    - i. Details of Environmental Test carried out on the delivered devices.
    - ii. Radiation test data generic to the proposed device technology.
    - iii. Lab Ambient Electro-optical measurement data on the delivered devices.
    - iv. Details of manufacturing line conformance to any standard.
4. Warranty: Standard warranty of 1 Year from the date of acceptance of product at SAC.