



भारत सरकार / Government of India  
अंतरिक्ष विभाग / Department of Space  
यू.आर. राव उपग्रह केंद्र / U.R.RAO SATELLITE CENTRE  
एच.ए.एल. एयरपोर्ट रोड, विमानापुरा डाक / HAL Airport Road, Vimanapura Post,  
बेंगलूरु/ BENGALURU – 560 017

संदर्भ सं/Ref No.: URSC/PUR/ISMS 2026068753/EOI/JOINT DEVELOPMENT OF LDROSR 19.08.2026

**विषय: एल डी आर ओ एस आर के संयुक्त विकास के लिए इच्छा की अभिव्यक्ति का आमंत्रण**  
**Invitation for Expression of Interest [Eoi]**  
**for Joint Development OF LDROSR -Reg**

यू.आर.राव उपग्रह केंद्र (यू.आर.एस.सी), (पूर्व में इसरो उपग्रह केन्द्र के रूप में जाना जाता था) सभी भारतीय उपग्रहों की अभिकल्पना, विकास, संविरोचन तथा परीक्षण के लिए भारत सरकार के अंतरिक्ष विभाग के तहत भारतीय अंतरिक्ष अनुसंधान संगठन (इसरो) का अग्रणी केंद्र है। वर्तमान में यू आर एस सी, अंतरिक्ष उपयोग हेतु एल डी आर ओ एस आर के उत्पादन, स्क्रीनिंग, अर्ह बनाना तथा आपूर्ति हेतु स्वदेशी उद्योग भागीदारों को आमंत्रित करता है।

U. R. Rao Satellite Centre [URSC] (Formerly known as ISRO Satellite Centre), of Indian Space Research Organization [ISRO] under Department of Space, Government of India is responsible for Design, Development, Fabrication and Testing of all Indian made Satellites. URSC is currently inviting indigenous Industry Partners for manufacturing, Screening, Qualification and supply of Joint Development OF LDROSR.

केवल उन भारतीय उद्योगों से इच्छा की अभिव्यक्ति को आमंत्रित करने का प्रस्ताव है जिनके पास तकनीकी अवसंरचना है और एल डी आर ओ एस आर की अभिकल्पना, विकास, उत्पादन तथा परीक्षण करने की क्षमता है और अर्हता सिद्ध करने के लिए तैयार है। ऐसे विक्रेता जो स्वीकार योग्य अंतरिक्ष श्रेणी के एल डी आर ओ एस आर की अर्हता सिद्ध कर सकते हैं, इसकी सुपुर्दगी कर सकते हैं वे इस प्रस्ताव के लिए प्रतिक्रिया दे सकते हैं। एल डी आर ओ एस आर की आवश्यकताओं को इस दस्तावेज के साथ अनुबंध के रूप में संलग्न किया जाता है।

This proposal is to invite Expression of Interest exclusively for INDIAN MANUFACTURERS/VENDORS ONLY, with the relevant infrastructure and expertise for joint development and realisation of URSC designed LDROSR. The requirements for joint development and selection criteria of the Indian vendor through technical evaluation and for evaluating the capability of the vendor in providing long-term production support for meeting product quantity & quality requirements. The requirements of LDROSR is attached as Annexure to this document.

इस संबंध में जिनके पास पूर्णतः सुसज्जित एल डी आर ओ एस आर का उत्पादन और परीक्षण करने की क्षमता है अथवा इसे स्थापित करने की प्रक्रिया में है और यू आर एस सी को स्वीकृत अंतरिक्ष श्रेणी के एल डी आर ओ एस की सुपुर्दगी कर सकते हैं, से इच्छा की अभिव्यक्ति का आमंत्रण करता है।

In this regard, URSC invites the Expression of Interest [Eoi] from INDIAN MANUFACTURERS/VENDORS ONLY for realisation of URSC designed LDROSR.

ई ओ आई का मूल्यांकन बोलीकर्ताओं के अनुभव, कार्यक्षेत्र की जानकारी, सुविधा अवसंरचना, प्रस्तावित कार्यप्रणाली और कार्य योजना, कुशल जनशक्ति और उद्योग की वित्तीय ताकत के आधार पर किया जाएगा।

The EOI will be evaluated on the basis of bidder's experience, understanding of scope of work, facility infrastructure, proposed methodology and work plan, skilled manpower and the financial strength of the industry.

यूआरएससी आवश्यकता पड़ने पर ईओआई की प्रक्रिया को रद्द करने/पुनः जारी करने या और जानकारी/विवरण मांगने का अधिकार सुरक्षित रखता है।

URSC reserves the right to cancel/re-issue the process of EOI if the necessity so arises or to seek further information/details.

यदि कोई कंपनी/फर्म किसी भ्रष्ट या धोखाधड़ीपूर्ण व्यवहार में लिप्त पाई जाती है, तो उसे निविदा प्रक्रिया में भाग लेने से रोक दिया जाएगा और उसके ईओआई दस्तावेज़ पर विचार नहीं किया जाएगा।

Companies/Firms, if found to have indulged in any corrupt or fraudulent practices, will be debarred taking part in the Tendering process and their EOI Document will not be taken up for consideration.

इच्छा की अभिव्यक्ति के साथ-साथ आपूर्तिकर्ताओं/फर्मों को निम्नलिखित जानकारी भी विस्तार से प्रस्तुत करनी चाहिए:

Along with "Expression of Interest" Suppliers/ Firm[s] should furnish the following information also in detail:

1. कंपनियों का पंजीकृत पता के साथ, फोन, फैक्स, ईमेल, वेब आदि।  
Registered address of the Companies with Phone, Fax, Email, Web etc.
2. कंपनी/संगठन की स्थिति (स्वामित्व/साझेदारी/निजी/सार्वजनिक लिमिटेड आदि) के साथ मालिक, भागीदारों, निदेशक मंडल आदि के नाम और पता।  
Company/Organization Status (Proprietary/Partnership/Private/Public Ltd. etc.) with Name and Address of Proprietor, Partners, Board of Directors, etc.
3. सहयोगी: (ए) भारतीय (बी) विदेशी।  
Associates: (a) Indian (b) Foreign.
4. पिछले 3 वर्षों के दौरान प्रमुख ग्राहकों की सूची, पूर्ण पता और उनके संपर्क व्यक्ति।  
List of Major Customers during the last 3 Years with full address and their Contact Persons.
5. स्वामित्व वाली/उपलब्ध अवसंरचना सुविधाओं का विवरण।  
Details of Infrastructure Facilities owned / available.

6. कंपनी के प्रमुख शेयरधारकों के नाम और पते तथा उनकी शेयर पूंजी का प्रतिशत।  
Names and addresses of the major Shareholders of the Company and the percentage of their share capital.
7. नवीनतम वार्षिक रिपोर्ट की प्रति के साथ पिछले 3 वित्तीय वर्षों के लिए पूंजी और कारोबार।  
Capital and Turnover for the preceding 3 Financial Years with copy of latest Annual Report.
8. उपलब्ध वित्तीय क्षमता /क्रेडिट सुविधाएं।  
Financial Capacity/Credit facilities available.
9. बैंकों का नाम और पता।  
Name and Address of Bankers.
10. व्यापार संघ जिससे उद्योग जुड़ा/ जुड़े हैं।  
Trade Association to which Industry/ies belong to.
11. संस्था/बिक्री/सेवा कर पंजीकरण संख्या।  
Establishment/Sales/Service Tax Registration Number.
12. व्यापार का प्रकार।  
Nature of Business
13. बैंकों द्वारा जारी फर्म की सॉल्वेंसी/वित्तीय क्षमता।  
Solvency/Financial capacity of the Firm issued by their Bankers.
14. उद्योगों की अन्य कोई प्रासंगिक जानकारीयाँ।  
Any other information the Industry/ies consider relevant.
15. सामर्थ्य और कमियों के क्षेत्रों को स्पष्टतः प्रकट करते हुए कंपनी/कंपनियों के प्रोफाइल  
The Profile of the Company/ies clearly bringing out the areas of Strength and Weaknesses.
16. ई ओ आई में भाग लेने के लिए तकनीकी और संगठनात्मक सामर्थ्य का स्व-मूल्यांकन।  
Self-Assessment Technical and Organizational Competence to take part in the EOI.
17. ई ओ आई में उल्लिखित प्रत्युत्तर प्रपत्र  
Response forms as mentioned in the EOI

### **ईओआई प्रतिक्रिया को पूरा करना/Completion of the EOI Response:**

- a. कंपनी/फर्म को ईओआई दस्तावेजों के सभी अनुदेशों, निबंधन और शर्तों, प्रपत्रों, आवश्यकताओं और अन्य सूचनाओं का सावधानीपूर्वक अध्ययन करने की सलाह दी जाती है। ईओआई प्रस्तुत करना ईओआई दस्तावेजों के सावधानीपूर्वक अध्ययन और जांच के बाद किया गया माना जाएगा, जिसमें इसके निहितार्थों की पूरी समझ हो।  
The Company/Firms are advised to study all the instructions; Terms and Conditions; Forms; Requirements and other information in the EOI documents carefully. The submission of EOI shall be deemed to have been done after a careful study and examination of the EOI documents with full understanding of its implications.
- b. इस ई ओ आई का जवाब सभी मामलों में पूर्ण और संपूर्ण होना चाहिए। ई ओ आई दस्तावेज द्वारा आवश्यक सभी जानकारी प्रस्तुत करने में विफलता या ईओआई दस्तावेजों के हर पहलू के प्रति पर्याप्त रूप से उत्तरदायी न होने वाला प्रस्ताव प्रस्तुत करना कंपनी/फर्म के जोखिम पर होगा और इसके परिणामस्वरूप दस्तावेज को अस्वीकार किया जा सकता है।

The response to this EOI should be full and complete in all respect. Failure to furnish all the information required by the EOI document or submission of proposal not substantially responsive to the EOI documents to every aspect will be at the risk of the Company/Firms and may result in rejection of the document.

- c. प्रस्तुत किए गए ईओआई के सभी पृष्ठों पर क्रमांक होना चाहिए और अधिकृत हस्ताक्षरकर्ता द्वारा हस्ताक्षरित होना चाहिए।

All the pages of the EOI submitted must be numbered and signed by the authorized signatory.

- d. ई ओ आई के संबंध में प्रचार करना सख्त वर्जित है और एजेंसी द्वारा प्रस्तुत किए गए ऐसे प्रचार किए गए ईओआई को अस्वीकार किया जा सकता है।

Canvassing in connection with the EOI be strictly prohibited and such canvassed EOI submitted by the Agency are liable to be rejected.

क्रियाकलापों को अच्छी तरह समझने और यदि कोई संदेह हो तो उसका निवारण करने हेतु यू आर राव उपग्रह केन्द्र द्वारा एक पूर्व ई ओ आई बैठक का आयोजन किया जाएगा। तदुपरांत, आर एफ पी में मांगे गए विवरण के साथ विक्रेताओं को इच्छा की अभिव्यक्ति की प्रतिक्रिया प्रस्तुत करना होगा।

A Pre-Eoi meeting will be arranged by U.R. Rao Satellite Centre, Bengaluru in order to have a better understanding of the activities involved, clarify doubts, if any. Subsequently, the vendor(s) shall submit the response to Expression of Interest along with the details sought in RFP

सुरक्षा अनुमति की व्यवस्था करने हेतु इच्छुक विक्रेताओं को निर्दिष्ट प्राधिकार को सारणी -1 में विनिर्दिष्टानुसार नियत दिनांक से पहले पूर्व ई ओ आई प्रतिनिधियों का विवरण प्रदान करना है। विक्रेता के प्रतिनिधि, को पूर्व ई ओ आई बैठक में उपस्थित होने हेतु एक "प्राधिकार पत्र" लाना होगा। सदस्य प्रतिनिधियों की संख्या एक बोली कर्ता/कंपनी/संगठन से अधिकतम दो (2) होगी।

Interested Vendor[s] may please provide the details of the representative[s] taking part in the Pre-Eoi meeting well in advance prior to dates specified in Table-1 to the Focal Point in order to arrange for Security clearance. Vendor[s] representative shall carry an "Authorization Letter" for attending the Pre-Eoi meeting. Member Representative shall be limited to maximum of two (2) per bidder/company/organisation

विक्रेता द्वारा पूर्व- ई ओ आई पूछताछ पूर्व ई ओ आई बैठक के दिनांक से 05 दिन पहले यू आर एस सी ई मेल आई डी [psa\\_h@urisc.gov.in](mailto:psa_h@urisc.gov.in) पर प्राप्त होना होगा। कृपया नोट करें कि किसी भी परिस्थिति में ई ओ आई बैठक के दिनांक को पूर्वित करने/स्थगित करने के अनुरोध पर विचार नहीं किया जाएगा।

Pre-EOI Queries from vendor [s] shall reach URSC 5 days prior to date of Pre-EOI meeting to Mail ID: [psa\\_h@urisc.gov.in](mailto:psa_h@urisc.gov.in). Please note that request for "Pre-ponement/postponement of Pre-Eoi meeting" will not be entertained under any circumstances.

उपरोक्त सभी जानकारी के साथ इच्छा की अभिव्यक्ति नीचे दिए गए पते पर, उपरोक्त संदर्भ संख्या का उल्लेख करते हुए, नियत तिथि और समय तक पहुंच जानी चाहिए।

"Expression of Interest" with all the above information shall reach the address given below, quoting the above Reference Number on or before the due date & time.

वरिष्ठ प्रधान, क्रय एवं भंडार/Sr. Head, Purchase & Stores  
यू आर राव उपग्रह केंद्र/U R Rao Satellite Centre,  
एचएएल एयर पोर्ट रोड/HAL Airport Road,  
विमानपुरा पोस्ट, बेंगलूरु/ Vimanapura Post, Bengaluru 560 017,  
कर्नाटक, भारत/Karnataka, India

कृपया ई ओ आई बैठक संख्या का उल्लेख करते हुए अपने स्पष्टीकरण ई-मेल पर भेजें: [psa\\_h@urac.gov.in](mailto:psa_h@urac.gov.in) पूर्व ई ओ आई बैठक में भाग लेने के लिए अनुरोध **26.08.2026 16:00 IST** या उससे पहले यहाँ उल्लिखित ई-मेल पर पहुँच जाना चाहिए। तथापि ई ओ आई का जवाब (हार्डकॉपी) केवल ऊपर उल्लिखित डाक पते पर भेजा जाएगा। ईमेल और फैक्स कोटेशन स्वीकार्य नहीं हैं। नियत तिथि और समय के बाद प्राप्त कोटेशन स्वीकार्य नहीं हैं।

Please address your clarifications quoting the EOI number to E-mail: **psa\_h@urac.gov.in**. Request for participation in Pre-EOI meeting shall reach on or before **26.08.2026 16:00 @ Hrs IST** to the Email mentioned herein. However, response to EOI (hardcopy) shall be sent to above mentioned postal address only). E-mail & Fax quotations are not acceptable. Quotation received after due date & time are not acceptable.

तालिका 1

Table 1:

| ई ओ आई विवरण की प्रस्तुति<br>Submission of EOI Details                                                                                                               |                                 |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|
| स्पष्टीकरण प्रस्तुत करने की अंतिम तिथि<br>Last date of submission of clarification                                                                                   | <b>26.08.2026 16:00 Hrs IST</b> |
| पूर्व-ईओआई बैठक (सम्मेलन कक्ष, स्वगत कक्ष, यू आर एस सी में):<br>Pre-EOI meeting (II Floor Conference Hall, Thermal Systems Group, MSA Building, ISITE Campus, URSC.) | <b>31.08.2026 14:00 Hrs IST</b> |
| ईओआई प्रस्तुत करने की अंतिम तिथि<br>Last date for submission of EOI                                                                                                  | <b>08.09.2026 14:30 Hrs IST</b> |
| ई ओ आई की खोलने की तिथि<br>Opening date of EOI                                                                                                                       | <b>10.09.2026 15:00 Hrs IST</b> |

उपरोक्त सभी जानकारी के साथ इच्छा की अभिव्यक्ति **08.09.2026 @ 14:30 IST** बजे तक या उससे पहले उपरोक्त संदर्भ संख्या का उल्लेख करते हुए, नीचे अधोहस्ताक्षरी को पहुँच जानी चाहिए। यह

प्रस्ताव पूर्व-ईओआई अर्हता के रूप में आरंभ किया गया है। यूआरएससी बिना कोई कारण बताए सभी या किसी भी इच्छा की अभिव्यक्ति को स्वीकार या अस्वीकार करने का अधिकार सुरक्षित रखता है।

"Expression of Interest" with all the above information shall reach the undersigned, Quoting above Reference Number on or before **08.09.2026 @14:30 Hrs IST**. This proposal is initiated as a Pre-EOI Qualification. URSC reserves the right to accept or reject all or any such "Expression of Interest" without assigning any reasons what so ever.

Sd/-  
**वरिष्ठ प्रधान, क्रय एवं भंडार**  
**Sr. Head, Purchase & Stores**

**Expression of Interest (EoI)**  
**for**  
**Joint Development of**  
**Low Degradation Rigid Optical Solar Reflector (LDROSR)**

**Government of India**  
**Indian Space Research Organisation (ISRO)**  
**U R Rao Satellite Centre (URSC)**  
**Bengaluru-560017**  
**INDIA**

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7. Roles/Responsibilities for EoI



## 1. Introduction

Multilayer optical heterostructure using metals and metal oxides on thin glass referred as Low Degradation Rigid Optical Solar Reflector (LDROSR), is proposed to be used as passive thermal control element for spacecraft's thermal control management. This heterostructure consist of ultra-thin multiple layers (individual layer thickness less than 100 nm) fabricated by PVD (Physical Vapor Deposition), for achieving the intended purpose of LDROSR.

URSC has designed multilayer heterostructure for LDROSR having desired functional properties. As part of our indigenization programme, we are looking for technically competent, **ONLY INDIAN MANUFACTURERS/VENDORS**, with the relevant infrastructure and expertise for joint development and realisation of URSC designed LDROSR.

This document describes the requirements for joint development and selection criteria of the Indian vendor through technical evaluation. In addition, it also describes the criteria for evaluating the capability of the vendor in providing long-term production support for meeting product quantity & quality requirements.

## 2. Requirements for Joint Development

### 2.1 Preliminary Requirements

- A. **ONLY INDIAN MANUFACTURERS/VENDORS**, with the relevant infrastructure and expertise of thin film deposition and characterizations, with a pool of manpower resources in such sophisticated fabrication, can participate in EOI.
- B. Should have established **mandatory infrastructure** (S.No. B.-I to IV) with
  - I. class 1000 or better clean room
  - II. vacuum deposition facility
  - III. substrate cleaning facility
  - IV. edge coating facility
  - V. **Desirable infrastructure** at vendor's end: characterisation facilities such as thin film thickness measurement unit (e.g.; X-Ray Reflectometry etc), sheet resistance measurement unit, UV-VIS-NIR spectrophotometer (200-2500 nm), Fourier transform IR spectrometer (3-30  $\mu\text{m}$ ).
  - VI. handling proficiency of thin glass wafers (of thickness 75 to 100  $\mu\text{m}$ ) without damage, to take up the activity.
- C. Vacuum deposition chamber should be capable of processing minimum 100 numbers of 40 mm x 40 mm glass wafers in each batch, along with IR heating provision of chamber upto 200°C, for realisation of LDROSRs. **Processing for development of LDROSRs to be done in class 1000 or better clean room** (minimum dimensions for processing: 10ft(L) x 10ft(W) x 10ft(H)). [Glass Substrates would be provided by URSC during EoI Phase-2. However, during development stage in RfP Phase, vendor has to procure / arrange the glass substrates with desired quality dictated by URSC].
- D. Should have minimum inventory of deposition materials like silver, silicon dioxide, indium tin oxide, hafnium oxide, nichrome etc with purity better than **4N**.
- E. Thickness uniformity of individual layers should be better than  **$\pm 10\%$**  in 40mm x 40mm sample size and thickness tolerance of individual layers should be  **$\pm 2\text{nm}$**  or better of design value
- F. Processing with no corner exclusion is preferable. Corner exclusion, if any, shall be maintained less than or equal to 1mm in four corners.
- G. The vendors shall express their willingness to execute a "**Non-Disclosure Agreement**" to URSC at a later stage that the multilayer design configuration of LDROSR, under this joint development,

will neither be used nor reproduced/shared with any external agencies, at any point of time. The rights of this LDROSR design is the sole property of URSC/ISRO/ GoI.

- H. The vendors shall also express their willingness to sign a joint development agreement to produce the required quantity of LDROSR.

**Note:**

- Infrastructure requirements (S.No. B.-I to IV) necessarily to be in vendor premises.
- Vendors can take support/outsource characterisation facilities (s.no. B.-V) within India. Details of that agency to be disclosed.

### **3. Pre-EoI Meeting**

A pre-EoI meeting will be arranged at ISITE Campus, URSC-ISRO, Marathahalli ORR, Bengaluru.

- ✓ The vendors (and / Or their representative) are encouraged to take part in the pre-EoI meet, either in person or through video-conference, to better understand the scope of EoI and clarify doubts, if any, relating to technical terms and conditions. However, participation in person is encouraged.
- ✓ It may be noted that participation in pre-EoI meeting is not mandatory for submitting the proposal.
- ✓ The vendor shall bear the cost towards participation in pre-EoI meet, preparation of proposal, any other meetings required (if any) and related activities.

### **4. Selection Criteria for different Phases of EoI**

#### ***4.1 Selection Criteria in Phase-1 of EoI***

- A. Documentary evidence (photographs, purchase order etc) of the above preliminary requirements (S.No. A-D of Section 2.1) and the willingness to execute “Non-Disclosure Agreement” and joint development agreement with URSC at a later stage shall be **mandatorily** submitted along with the willingness to participate in EoI. In case of failure to submit the above stated documents, URSC reserves the right to reject all or any such “Expression of Interest” without assigning any reasons what so ever.
  - B. Proposal document without the required information or offers with incomplete/ inaccurate/ false information are liable to be rejected without any further communication.
  - C. An expert team from URSC reserves the right to visit the vendor premises, to verify if the above mandatory requirements are in place. Proposal shall be rejected if any discrepancies are observed during facility visit as compared to the submission.
- The expert team shall audit the vendor w.r.t technical requirements and make suitable recommendations to shortlist the vendor for participation in Phase-2 of EoI. **Only those vendors who satisfy the criteria mentioned in Section 4.1 will be eligible to participate in Phase-2 of EoI.**

#### **Terms and Conditions:**

- A. The vendor shall be deemed to have understood the nature, scope and magnitude of the work as outlined in this note when they submit a proposal with full understanding of the implications.
- B. All documents submitted in the proposal shall become the whole and sole property of URSC. Any information in such documents that is proprietary to the vendor should be specified clearly. At its own discretion, URSC reserves the right to disclose proposals within URSC to assist it in the evaluation.

#### ***4.2 Selection Criteria in Phase-2 of EoI (Shortlisting vendors for RfP Phase):***

- These short-listed vendors in Phase-1 shall be provided with indicative multilayer design configuration, along with the targeted specification corresponding to that design to assess their technical capability towards realisation of URSC designed LDROSR.
- URSC shall provide 05 nos. of glass substrates, for thin film deposition. During this stage of deposition, expert team from URSC reserves the right to visit the vendor's facility to assess the process.

A. Samples fabricated during Phase-2 of EoI shall be evaluated/characterized, by expert team at URSC as per following selection criteria -

- I. Thermo-optical properties (Solar absorptance, IR emittance)
- II. Electrical properties (Sheet resistance)
- III. Process capability (thickness uniformity better than  $\pm 10\%$  in 40mm x 40mm sample size, thickness tolerance of individual layers should be  $\pm 2\text{nm}$  or better of design value)

**B. The vendor, whose samples meet the targeted specification values of above-mentioned parameters (Solar absorptance, IR emittance, sheet resistance, process capability), shall only be considered for further assessment/ RFP.**

**Note:**

- Same targeted specifications with indicative multilayer design pertaining to selection criteria shall be provided to only short-listed vendors in EoI Phase-1, through URSC Purchase.
- Documentary proof of the deposition process corresponding to the indicative design provided by URSC, along with log sheets containing details of machine, process timings, clean room class, materials etc. must be provided along with the samples for evaluation.
- Glass substrates would be provided by URSC to short-listed vendors in EoI Phase-1, as free issue material (FIM).
- Short-listed vendors in EoI Phase-1, shall coat/fabricate the 05 samples **free of cost** during EoI Phase-2.
- Indicative design is only for evaluation purpose, it should not be considered as final design and for flight use.

## **5. Request for Proposal (RfP) Phase**

- ✚ After successful completion of EoI Phase-1 & Phase-2, Limited Tender (LT) will be floated (based on outcome of EoI) by URSC for RfP phase (development of LDROSR), and the short-listed vendors from EoI phase-2 **ONLY** will be eligible to participate in LT/RfP.
- ✚ After successful completion of RfP, subsequent tender enquiries (if any) will be floated to qualified vendor/s to support production requirement of LDROSRs.

## **6. Schedule/Timeline for EoI**

Schedule for EoI is given below in table-1, highlighting major events. Vendors shall adhere to given timeline strictly.

**Table-1**

| <b>Event</b>                                                                                                                                            | <b>Timeline</b>                            | <b>Responsibility</b> |
|---------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|-----------------------|
| Invitation for EoI                                                                                                                                      | T0                                         | URSC                  |
| Last date of submission of clarification, if any                                                                                                        | Shall reach URSC on or before T0 + 07 days | Vendor                |
| Confirmation for participation in Pre-EoI meeting                                                                                                       | Shall reach URSC on or before T0 + 09 days | Vendor                |
| Pre-EoI meeting                                                                                                                                         | T1                                         | URSC                  |
| Last date for submission of EoI                                                                                                                         | T1 + 07 days                               | Vendor                |
| Opening of EoI proposals                                                                                                                                | T2                                         | URSC                  |
| Evaluation of submitted proposals and recommendation of short-listed vendors in EoI Phase-1                                                             | T2+ 21 working days                        | URSC                  |
| Approval of recommendation of short-listed vendors in EoI Phase-1                                                                                       | T3                                         | URSC                  |
| Dispatch of substrates (5 Nos) and communication, through URSC purchase, of indicative design for deposition to the short-listed vendors in EoI Phase-1 | T3+ 10 working days                        | URSC                  |
| Confirmation of receipt of both the substrates and indicative design by the short-listed vendors in EoI Phase-1                                         | T4                                         | Vendor                |
| Receipt of coated samples at URSC along with relevant documents as detailed in Section 4.2                                                              | T4 + 60 days= T5                           | Vendor                |
| Evaluation and characterization of coated samples by expert team at URSC                                                                                | T5 + 30 working days = T6                  | URSC                  |
| Recommendation of short-listed vendors in EoI Phase-2, eligible to participate in RfP phase                                                             | T6 + 5 working days                        | URSC                  |

## 7. Roles/Responsibilities for EoI

Roles/responsibilities for EoI execution are given below in table-2, highlighting major events. Vendors shall adhere to given roles/responsibilities. In case of failure to adherence, URSC reserves the right to reject all or any such “EoIs” without assigning any reasons what so ever.

**Table-2**

| <b>Event</b> [Timeline as per table-1]                                                                                                                                                                               | <b>Role/Responsibility</b> |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
| <ul style="list-style-type: none"><li>• Submit proposal for EoI (phase-1).</li></ul>                                                                                                                                 | Vendor                     |
| <ul style="list-style-type: none"><li>• Evaluation of submitted proposals and recommendation of short-listed vendors in EoI Phase-1.</li></ul>                                                                       | URSC                       |
| <ul style="list-style-type: none"><li>• Dispatch of substrates (5 Nos) and communication through URSC purchase, of indicative design with target specification to the short-listed vendors in EoI Phase-1.</li></ul> | URSC                       |
| <ul style="list-style-type: none"><li>• Coating (free of cost) on supplied substrates 05 nos. as per shared indicative design &amp; specifications during EoI Phase-2.</li></ul>                                     | Vendor                     |
| <ul style="list-style-type: none"><li>• Evaluation and characterization of coated samples.</li></ul>                                                                                                                 | URSC                       |
| <ul style="list-style-type: none"><li>• Recommendation of short-listed vendors in EoI Phase-2, eligible to participate in RfP phase.</li></ul>                                                                       | URSC                       |
| <ul style="list-style-type: none"><li>• Limited Tender (LT) will be floated (based on outcome of EoI) for RfP phase (development of LDROSR) to short listed vendors from EoI phase -2</li></ul>                      | URSC                       |

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Annexure-1  
**Compliance Matrix**

**Instruction to vendors:** Vendors must provide explicit technical details, exact values, or detailed confirmation statements for every single point/condition listed below for LDROSR. Indicating merely 'YES', 'NO', 'OK', or leaving the compliance statement blank will lead to immediate rejection.

Vendor Name: \_\_\_\_\_

Date: \_\_\_\_\_

| S.No | EoI Section                           | Required Condition                                                                                                                                                                                                                                                                                                                                                                           | Vendor's Detailed Compliance Statement |
|------|---------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|
| 1.   | Section-2.1, Preliminary Requirements | <b>ONLY INDIAN MANUFACTURERS/VENDORS</b> , with the relevant infrastructure and expertise of thin film deposition and characterizations, with a pool of manpower resources in such sophisticated fabrication, can participate in EOI                                                                                                                                                         |                                        |
| 2.   | Section-2.1, Preliminary Requirements | Should have established <b>mandatory infrastructure (S.No. B.-I to IV) as mentioned in section 2.1</b> <ul style="list-style-type: none"> <li>• Infrastructure requirements (S.No. B.-I to IV) necessarily to be in vendor premises.</li> <li>• Vendors can take support/outsource characterisation facilities (s.no. B.-V) within India. Details of that agency to be disclosed.</li> </ul> |                                        |
| 3.   | Section-2.1, Preliminary Requirements | Vacuum deposition chamber should be capable of processing minimum 100 numbers of 40 mm x 40 mm glass wafers in each batch, along with IR heating provision of chamber upto 200 <sup>0</sup> C, for realisation of LDROSRs. <b>Processing for development of LDROSRs to be done in class 1000 or better clean room</b> (minimum dimensions for processing: 10ft(L) x 10ft(W) x 10ft(H)).      |                                        |
| 4.   | Section-2.1, Preliminary Requirements | Should have minimum inventory of deposition materials like silver, silicon dioxide, indium tin oxide, hafnium oxide, nichrome etc with purity better than <b>4N</b> .                                                                                                                                                                                                                        |                                        |
| 5.   | Section-2.1, Preliminary Requirements | Thickness uniformity of individual layers should be better than <b>±10%</b> in 40mm x 40mm sample size and thickness tolerance of individual layers should be <b>±2nm</b> or better of design value                                                                                                                                                                                          |                                        |
| 6.   | Section-2.1, Preliminary Requirements | Processing with no corner exclusion is preferable. Corner exclusion, if any, shall be maintained less than or equal to 1mm in four corners.                                                                                                                                                                                                                                                  |                                        |
| 7.   | Section-2.1, Preliminary Requirements | The vendor shall express their willingness to execute a “ <b>Non-Disclosure Agreement</b> ” to URSC at a later stage that the multilayer design                                                                                                                                                                                                                                              |                                        |

|     |                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |
|-----|---------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
|     |                                                   | configuration of LDROSR, under this joint development, will neither be used nor reproduced/shared with any external agencies, at any point of time. The rights of this LDROSR design is the sole property of URSC/ISRO/ GoI.                                                                                                                                                                                                                                                                                                                                           |  |
| 8.  | Section-2.1, Preliminary Requirements             | The vendor shall also express their willingness to sign a joint development agreement to produce the required quantity of LDROSR.                                                                                                                                                                                                                                                                                                                                                                                                                                      |  |
| 9.  | Section-3.0, Pre-EoI Meeting                      | <p>The vendor (and / Or their representative) is encouraged to take part in the pre-EoI meet, either in person or through video-conference, to better understand the scope of EoI and clarify doubts, if any, relating to technical terms and conditions. However, participation in person is encouraged.</p> <p>Participation in pre-EoI meeting is not mandatory for submitting the proposal.</p> <p>The vendor shall bear the cost towards participation in pre-EoI meet, preparation of proposal, any other meetings required (if any) and related activities.</p> |  |
| 10. | Section-4.1, Selection Criteria in Phase-1 of EoI | Documentary evidence (photographs, purchase order etc) of the above preliminary requirements (S.No. A-D of Section 2.1) and the willingness to execute “Non-Disclosure Agreement” and joint development agreement with URSC at a later stage shall be <b>mandatorily</b> submitted along with the willingness to participate in EoI. In case of failure to submit the above stated documents, URSC reserves the right to reject all or any such “Expression of Interest” without assigning any reasons what so ever.                                                   |  |
| 11. | Section-4.1, Selection Criteria in Phase-1 of EoI | Proposal document without the required information or offers with incomplete/ inaccurate/ false information are liable to be rejected without any further communication.                                                                                                                                                                                                                                                                                                                                                                                               |  |
| 12. | Section-4.1, Selection Criteria in Phase-1 of EoI | An expert team from URSC reserves the right to visit the vendor premises, to verify if the above mandatory requirements are in place. Proposal shall be rejected if any discrepancies are observed during facility visit as compared to the submission.                                                                                                                                                                                                                                                                                                                |  |
| 13. | Section-4.1, Selection Criteria in Phase-1 of EoI | The vendor shall be deemed to have understood the nature, scope and magnitude of the work as outlined in this note when they submit a proposal with full understanding of the implications.                                                                                                                                                                                                                                                                                                                                                                            |  |

|     |                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |  |
|-----|---------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| 14. | Section-4.1, Selection Criteria in Phase-1 of EoI | All documents submitted in the proposal shall become the whole and sole property of URSC. Any information in such documents that is proprietary to the vendor should be specified clearly. At its own discretion, URSC reserves the right to disclose proposals within URSC to assist it in the evaluation.                                                                                                                                                                                                                                                                                                                                          |  |
| 15. | Section-4.2, Selection Criteria in Phase-2 of EoI | Short-listed vendors in Phase-1 shall be provided with indicative multilayer design configuration, along with the targeted specification corresponding to that design to assess their technical capability towards realisation of URSC designed LDROS.                                                                                                                                                                                                                                                                                                                                                                                               |  |
| 16. | Section-4.2, Selection Criteria in Phase-2 of EoI | URSC shall provide 05 nos. of glass substrates, for thin film deposition. During this stage of deposition, expert team from URSC reserves the right to visit the vendor's facility to assess the process                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |
| 17. | Section-4.2, Selection Criteria in Phase-2 of EoI | Samples fabricated during Phase-2 of EoI shall be evaluated/characterized, by expert team at URSC as per following selection criteria -<br><br>IV. Thermo-optical properties (Solar absorptance, IR emittance)<br>V. Electrical properties (Sheet resistance)<br>VI. Process capability (thickness uniformity better than $\pm 10\%$ in 40mm x 40mm sample size, thickness tolerance of individual layers should be $\pm 2\text{nm}$ or better of design value)                                                                                                                                                                                      |  |
| 18. | Section-4.2, Selection Criteria in Phase-2 of EoI | The vendor, whose samples meet the targeted specification values of above-mentioned parameters (Solar absorptance, IR emittance, sheet resistance, process capability), shall only be considered for further assessment/ RFP                                                                                                                                                                                                                                                                                                                                                                                                                         |  |
| 19. | Section-4.2, Selection Criteria in Phase-2 of EoI | <ul style="list-style-type: none"> <li>• Same targeted specifications with indicative multilayer design pertaining to selection criteria shall be provided to only short-listed vendors in EoI Phase-1, through URSC Purchase.</li> <li>• Documentary proof of the deposition process corresponding to the indicative design provided by URSC, along with log sheets containing details of machine, process timings, clean room class, materials etc. must be provided along with the samples for evaluation.</li> <li>• Glass substrates would be provided by URSC to short-listed vendors in EoI Phase-1, as free issue material (FIM).</li> </ul> |  |



|     |                                             |                                                                                                                                                                                                                                                                                                   |  |
|-----|---------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
|     |                                             | <ul style="list-style-type: none"> <li>• Short-listed vendors in EoI Phase-1, shall coat/fabricate the 05 samples <b>free of cost</b> during EoI Phase-2.</li> <li>• Indicative design is only for evaluation purpose, it should not be considered as final design and for flight use.</li> </ul> |  |
| 20. | Section-5.0, RfP Phase                      | After successful completion of EoI Phase-1 & Phase-2, Limited Tender (LT) will be floated (based on outcome of EoI) by URSC for RfP phase (development of LDROSR), and the short-listed vendors from EoI phase-2 <b>ONLY</b> will be eligible to participate in LT/RfP                            |  |
| 21. | Section-5.0, RfP Phase                      | After successful completion of RfP, subsequent tender enquiries (if any) will be floated to qualified vendor/s to support production requirement of LDROSRs.                                                                                                                                      |  |
| 22. | Section-6.0, Schedule for EoI               | Vendor shall adhere to given timeline as per table-1, strictly.                                                                                                                                                                                                                                   |  |
| 23. | Section-7.0, Roles/responsibilities for EoI | Vendor shall adhere to given roles/responsibilities as per table-2. In case of failure to adherence, URSC reserves the right to reject all or any such “EoIs” without assigning any reasons what so ever.                                                                                         |  |

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