

Integration Technology for Uncooled IIR Seeker for R044

1. Introduction

Uncooled IIR seeker has been developed for the passive homing head guidance to a very short range surface to air tactical missile and carry warhead to. The IIR seeker has been designed considering current state of the art.

2. Min Facility/Capability/ Requirements:

This is an integration ToT involving integration/ assembly, AT and QT testing to make an operational seeker.

Minimum In-House facility at the time of submission of EoI:

(Industry partner has to submit Annexures as attachment to the EoI as specified below)

Sl. No.	<u>Min Facility/Capability/ Requirements</u>	Essential/ Desirable	Compliance (Yes/No)	Reference to Attachments
1.0	Electro-Optical Assembly Line			
1.1	In-House Clean-room facility with Class 10,000 or better: The applicant must maintain a certified ISO class 5 (Class 100) to certified ISO class 7 (Class 10000) cleanroom environment under the ISO 14644-1 standard. The clean room should be equipped with vibration-isolated optical tables.	Essential		Annexure A1: Valid cleanroom certification, facility layout, and asset register of vibration-isolation tables.

Sl. No.	Min Facility/Capability/ Requirements	Essential/ Desirable	Compliance (Yes/No)	Reference to Attachments
1.2	In-House EPA/ESD-protected facility including Anti-Static (ESD) Safe Electronics Integration Benches: Industry must have—fully certified Electrostatic Discharge (ESD) protective flooring, grounding networks, and continuous ionization monitors.	Essential		Annexure A2: ESD audit logs and proof of compliance with ANSI/ESD S20.20 standards.
1.3	In-House PCB assembly and Soldering and cable harness facility The industry must have: • A dedicated soldering and cable harness facility along with Optical inspection microscope, functional test benches etc. • SMD assembly and Tick & Place machine.	Essential		Annexure A3: Data sheets, equipment calibration logs, and proof of facility.
2.0	System Calibration & Metrology infrastructure			
2.1	Blackbodies and Collimators at industry premises (In-House): The industry must possess operational absolute and differential blackbody radiation sources and operational IR collimators with suitable targets.	Essential		Annexure B1: Technical data sheets, equipment calibration logs, and proof of precision IR sources.
2.2	In-House Dynamic Centering & Balance set-ups: The industry should possess specialized dynamic balancing equipment and high-rate micro-positioning sensors.	Desirable		Annexure B2: Asset register certificates for micro-dynamic balancing and mechanical centering tools.
3.0	Functional Testing			

Sl. No.	<u>Min Facility/Capability/ Requirements</u>	Essential/ Desirable	Compliance (Yes/No)	Reference to Attachments
3.1	Provisions of isolated, non-networked workstation equipped with secure hardware security modules and secure JTAG.	Essential		Annexure C1: Facility security protocols for software deployment.
3.2	In house Environmental test Setup (Thermal Chamber): The facility must contain an operational, closed-loop functional and AT/QT tests featuring Thermal chambers for conducting low temperature (- 30°C) and high temperature (+80°C) tests.	Essential		Annexure C2: Detailed documentation of existing testing configurations.
3.3	In house Environmental test Setup (Vibration, Shock and Special Thermal Chambers with tropical exposure, damp heat facility etc) : The test facility must contain an operational, closed-loop functional and AT/QT tests featuring Shock and Vibration measurements and other test chambers with tropical exposure/damp heat facility etc.	Desirable		Annexure C3: Detailed documentation of existing testing configurations.
3.4	EMI/EMC Test facility should be available with the industry	Desirable		Annexure C4: Detailed documentation of existing testing configurations, or access to specialized test facilities accredited by NABL.
3.5	Hardware-in –loop (HILS) test facility should be available at the premises of the industry	Desirable		Annexure C5: Detailed documentation of existing testing configurations, or

Sl. No.	<u>Min Facility/Capability/ Requirements</u>	Essential/ Desirable	Compliance (Yes/No)	Reference to Attachments
				access to specialized test facilities accredited by NABL.
3.6	Two Axes Rate Table should be available at the premises of the industry.	Desirable		Annexure C6: Detailed documentation of existing testing configurations
4.	Financial and Licensing Criteria			
4.1	Requirement of Industrial license for Defence Manufacturing: Industry applying for ToT must have all requisite licences including industrial license for manufacturing of “ Guidance and navigation equipment ” of “ Allied items of Defence equipment ” category as per sl. No. iii (1 - iv) of Ministry of Commerce and Industry/ Department for promotion of industry and Internal Trade, Press Note 1, 2019 series	Essential		Annexure D1: Submit the documents in support of licenses.
4.2	Turnover Criteria: Minimum average annual turnover for last 03 financial years, ending 31st March of the previous financial year should not be less than Rs. 241 Cr.	Essential		Annexure D2: Submit the documents/proofs

Sl. No.	<u>Min Facility/Capability/ Requirements</u>	Essential/ Desirable	Compliance (Yes/No)	Reference to Attachments
<u>General Capability requirement</u> The industry seeking ToT must demonstrate high-fidelity capability in optoelectronic integration, precision electro-mechanical alignment, software/firmware flashing, and comprehensive end-of-line system calibration.				
5.	Specialized Human Resource for Integration & Testing:			
5.1	Lead System Integration Engineer (Minimum 2 Engineering graduates and 2 Diploma/ITI personnel): Minimum 3 years of experience in leading the multi-disciplinary integration (optical, mechanical, electronics and electrical) of complex airborne sensors or guided weapon systems.	Essential		Annexure E1: Submit the documents/proofs
5.2	Electro-Optical Test & Calibration Expert (Minimum 2 Engineering graduates and 2 Diploma/ITI personnel): Minimum 2 years of hands-on experience in soldering, calibrating thermal imaging sensors, determining MTF performance, and executing radiometric NUC routines.	Essential		Annexure E2: Submit the documents/proofs
5.3	Embedded System/Control Loop Engineer (Minimum 2 Engineering graduates and 2 Diploma/ITI personnel): Minimum 2 years of expertise in testing and debugging real-time closed-loop control systems, specifically servo loops, gimbal control loops, or	Essential		Annexure E3: Submit the documents/proofs

Sl. No.	<u>Min Facility/Capability/ Requirements</u>	Essential/ Desirable	Compliance (Yes/No)	Reference to Attachments
	guidance feedback networks.			
6.	Specialized Human Resource for Quality & Assurance:			
6.1	The industry seeking ToT should have dedicated quality personnel comprising: • Quality Engineer – Mechanical: 1 Engineer (minimum) • Quality Engineer – Electronics/Electrical: 1 Engineer (minimum) The applicant industry must provide details of quality team with the knowledge on Quality assurance and quality control practices for the integration, inspection, testing, verification, process audits, documentation-control throughout system integration and testing activities of electro-optical seeker systems for aviation, space, and defence applications.	Essential		Annexure F1: Submit the documents/proofs
6.2	Industry seeking ToT must possess relevant knowledge and experience in the application of recognized quality management systems and standards, including: • ISO 9001 for quality management and assembly of complex electro-optical systems, • AS 9100 requirements applicable to aerospace and defence	Essential		Annexure F2: Submit the documents/proofs

Sl. No.	<u>Min Facility/Capability/ Requirements</u>	Essential/ Desirable	Compliance (Yes/No)	Reference to Attachments
	industries			

3. Essential capacity/ capability/ facility required by industry seeking ToT at the time of technology absorption:

The industry seeking ToT must establish complete in-house environmental test facility at the time of technology absorption. This test facility must contain an operational, closed-loop functional and AT/QT tests featuring Shock and Vibration measurements, and other test chambers for tropical exposure/damp heat etc.

The industry must also establish complete in-house Dynamic Centering & Balance set-ups and Two-Axes Rate Table set up at the time of technology absorption.

Industry must submit documentary proof: Detailed documentation of existing testing configurations.

4. Requirements to issue Technology Absorption Certificate:

- Realization of 03 seekers on No Cost-No Commitment (NC-NC) basis under the guidance of DRDO team. One seeker should be realized at RCI as a part of training and two at their premises.
- One seeker out of two made by industry at their premises, has to undergo complete Qualification Test (QT). Industry thus has to deliver 2 AT and 1 QT cleared seekers to DRDO for testing and evaluation.

The expenditure incurred for testing and evaluation shall be borne by the industry seeking ToT.

After satisfactory realization and demonstration, Technology absorption certificate will be issued.

Interested Industries are requested to forward their Expression of Interest (Eoi) as follows:

‘Application cum Industry Assessment Form’ is to be forwarded to Research Centre Imarat, Hyderabad along with all supporting documents via email.

Director
Research Centre Imarat (RCI)
VIGYANAKANCHI, HYDERABAD 500 069
Phone: 040-24306000
Fax: 040-24306002
Email ID: director[dot]rci[at]gov[dot]in

A copy of ‘Application cum Industry Assessment Form’ may be forwarded to Director DIIQM, DRDO HQ on the following address for information via email:-

Director
Directorate of Industry Interface & Quality Management (DIIQM)
Room No. 447, DRDO Bhawan, DRDO HQrs,
Rajaji Marg, New Delhi-110011
Phone: 011-23013209/23015291
Fax: 011-23793008
Email: director-diiqm-hqr[at]gov[dot]in

All industries are requested to fill in the form given below and provide supporting documents (as applicable). Kindly provide the reference of page no. of supporting document in the relevant field of form. The list of documents to be attached is provided in Annexure – I.

Application cum Industry Assessment Form

PART-1

General Information

(Please enclose documents in support of information provided)

S.No	Information	Detail	Attachment reference
1.	Name of the Technology requested for Technology Transfer		
	Name of the concerned lab/estt		
	Category		
4.	Name of the industry/ organization		
5.	Complete Address and other details		
	Registered Office address State Phone No Fax Email Website		
	Factory address State Phone No Fax Email Website		
8.	Point of Contact Name Designation Address Mobile No Ph No Email ID		
9.	NAME OF CMD/ MD /PARTNERS/ PROPRIETOR/ etc. Name Designation Address Mobile No Ph No Email ID		

10.	Date of Incorporation of company		
11.	Foreign Direct Investment in company (if any in %)		
12.	Shareholding pattern		
13.	Turn over as per Audited Balance Sheet for the preceding three years. Year _____ Year _____ Year _____		
14.	Annual budget for R&D during last three years (if any) Year _____ Year _____ Year _____		
15.	Income Tax returns for the preceding three years period Year _____ Year _____ Year _____		
16.	Nature of company DPSU, Private Limited, Public Limited, Partnership, Proprietary, Ex- Serviceman Unit		
17.	Category of industry Large Scale, Medium Scale, Small Scale, Micro, Startup		
18.	MSME Registration No		
19.	Certificates of registration as a manufacturing unit, if any.		
20.	If Startup, DPIIT Registration No		
21.	UDYOG AADHAR No		
22.	PAN Number		
23.	Status and details of Industrial license for defence manufacturing issued by DPIIT		
24.	Details of PESO license (if any)		
25.	GST Number		
26.	Nature of business Manufacturing/ Sole Selling or Authorized Agent/ Assembler/ Traders/ Dealer/ Processor/ Repacker/ Others		
27.	Details of current products and services Products and services Supplied (please specify Govt/ Domestic market/ Export)		
28.	Record of past performance (e.g., Supply orders executed against of Ministry of Defence orders, Public Sectors and Paramilitary Forces, if any).		
29.	Details of registration with NSIC / SSI, DGS&D, other Defence Department, other Govt. Dept, membership		

	of FICCI/ASSOCHAM/CII or other Industrial Association (Attach relevant copies of registration letters)		
30.	Have you already taken any technology from DRDO (If yes, give details attaching separate sheet) Name of the Technology, Lab/estt, Year, License number & Status		
31.	ISO/ ISI certification or any other certification (If yes, give details)		
32.	Relevant clearances form the authorities/ ministries (if any)		
33.	Capacity and capability to undertake developmental work and to accept attendant financial and commercial risks.		
34.	Capacity/capability to market the product through the marketing network, sales and service network, reliability to maintain confidentiality.		

PART-2

Infrastructure and other Information

1.	Total area of factory Covered (m ²), Uncovered (m ²), Bonded space available (m ²)	
2.	Ownership of factory Self-owned, partnership, rental	
3.	Electric power Sanctioned Installed Standby (if any)	
4.	Availability of adequate infrastructure (List of machines and their production capacities) and technical expertise	
5.	Name of bank & A/c No Name of bank A/c type A/c no Address of the bank Phone: Email:	

6. Details of current products:

S.No	Type	Description	Licensed/installed capacity	Annual production for preceding 3 years

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7. Details of foreign collaboration, if any

S.No	Product	Name and address of collaborator	Year	Remarks

8. Details of products developed for services

S.No	Nomenclature of stores	Order No. and date	Remarks

9. Details of important facilities & infrastructure as per following format for:

- (a) Conventional Machines
- (b) Unconventional, Special Machines
- (c) Testing & quality control facilities

10. Furnish the following details with relevant certificates and documents

- (a) R&D facilities available :
- (b) Inspection quality control of raw material components :
- (c) Assistance from central agency for testing / calibration etc. :
- (d) laboratory and drawing office facility :

11. Principal customers:

S. No	Name & address	S.O No and date	Date of last supply	Products supplied	Value

12. Future plans (if any) in respect of expansion programme/ installation of additional machines/ test facilities etc.

13. Give self-assessment of your capability to absorb the technology

14. Any additional condition specified in the EoI compliance (to be submitted on separate sheet) to be enclosed with this form.

15. Details of employee as on date on firm's pay roll

PERMANENT				
Category	Post Held	Number	Qualification	Total Service
Technical	Prod. Manager Q.C. Manager Supervisor Testing Staff (QC) Skilled workers Unskilled workers, etc			

Administrative	Purchase Manager Accounts Officer Office Superintendent Clerical Others, etc			
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TEMPORARY				
Category	Post Held	Number	Qualification	Total Service
Technical	Prod. Manager Q.C. Manager Supervisor Testing Staff (QC) Skilled workers Unskilled workers, etc			
Administrative	Purchase Manager Accounts Officer Office Superintendent Clerical Others, etc			

DECLARATION:

I / we confirm that the information furnished in Part 1 & 2 above is correct. In the event of any information given by me / us is found incorrect / false at any time, I / we understand our EoI for ToT will be cancelled/ rejected without notice, beside any other appropriate action against me / us.

Industry seal

Authorized signatory

Name(s) in capital

Designation and seal of
authorized signatory

Date:

Place:

List of supporting documents to be attached with EoI:

- a. Memorandum and Articles of Association (Should be incorporated as per Indian Companies Act, as amended time to time)
- b. Certificates of registration as a manufacturing unit, if any.
- c. Audited Balance Sheet for the preceding three years.
- d. Income Tax returns for the preceding three-year period
- e. Details of shareholding/ownership pattern especially foreign partners/ shareholders, foreign employees, directors, etc. The company must adhere to the prevailing Govt of India policies and regulations on Foreign Direct Investment (FDI)/DIPP norms as applicable.
- f. Annual budget for R&D during last three years.
- g. Numbers and details of IPR or patents, etc., held by the company.
- h. Number of technically or professionally qualified personnel employed.
- i. Record of past performance (e.g., Supply orders executed against of Ministry of Defence orders, Public Sectors and Paramilitary Forces, if any).
- j. Availability of adequate infrastructure (List of machines and their production capacities) and technical expertise.
- k. List of testing and support equipment.
- l. ISO/ ISI certification or any other certification.
- m. Relevant clearances from the authorities/ ministries (if any).
- n. Capacity and capability to undertake developmental work and to accept attendant financial and commercial risks.
- o. Capacity/capability to market the product through the marketing network, sales and service network, reliability to maintain confidentiality.
- p. Industrial license for defence manufacturing issued by DPIIT (if any).
- q. PESO and DPIIT license for explosive handling if ToT is for high energy Material, explosives, propellants, and component/ system dealing with it etc.
- r. Undertaking from company seeking ToT that none of its Directors, Independent Directors, non-executive Directors, Key management personnel is involved in any corrupt practices, unfair means/ illegal activities.