**Physical Research Laboratory, Ahmedabad**

**Minutes of pre-bid meeting held on 09th May 2023**

**For bid number: GEM/2023/B/3358140 for the Manufacturing, Development and Supply of Lens Barrels containing custom designed lenses and unmounted lenses for M-FOSC-EP instrument for PRL 2.5m telescope**

A pre-bid meeting for bid number: GEM/2023/B/3358140 (for the manufacturing etc. of lenses and lens barrels for M-FOSC-EP instrument) was scheduled on 09th May 2023 at 11:00 hrs at PRL Thaltej campus. On account of several requests by OEMs/vendors, online meeting link was also facilitated for those who could not physically attend the meeting. From PRL side Dr. Mudit K. Srivastava (instrument PI), Mr. Vaibhav Dixit (Scientist/Engineer-SE) and Mr. Pradeep Singh Chauhan (senior purchase officer) were present in the meeting. Mr. Ketal Patel from M/s. Luma Optics, Mr. K R Murli and Ms. Preet Virdi from M/s. Paras Defence & Space Technologies Ltd. and Ms. Pallavi Prasad from M/s. Advanced Photonics attended the meeting through online mode. In addition, Mr. Neeraj Tiwari from M/s. Advanced Photonics physically attended the meeting. The vendors/OEMs had given their queries with respect to the bid document in advance. However, they were also invited to raise any impromptu query/clarification.

**Following queries from M/s.** **Paras Defence & Space Technologies Ltd. were discussed:**

1. ***Query:*** *The CCD detector required for testing the PSF will be a FIM or it is the vendor’s SOW to procure the same. (Point 2.C.22 of the technical specifications document)*

**Response from PRL:** PRL will not provide any detector for testing. The testing is to be done by any Commercially Available Off-the-shelf (COTS) camera system (CMOS or CCD based) available with the OEM/vendor provided that it is sufficiently big to cover the entire field of view.

1. ***Query:*** *The custom grism, off the shelf grating and grism and the actual grism and grating required for testing at system level are FIM or to be procured by vendor. (Point 2.C.23 of the technical specifications document)*

**Response from PRL:** PRL would be separately buying Grisms and Reflection Gratings needed for the instrument. If these Grisms and Gratings are available with PRL by the time testing for Image Quality tests for the combination of Lens barrel Assemblies 1 and 3 as well as the combination of Lens barrel Assemblies 2 and 4 are to be carried out, PRL team would try to will bring these components to the OEM/vendor test facility, would participate in the testing process and get them back to PRL after testing is finished. Except for these gratings and grisms, all other logistics arrangements, measurement set-ups, test room facility, measuring equipment, mounting and alignment set-up etc. should be arranged by the vendor/OEM. In the situations where it is not possible to share these instrument specific gratings and grisms with the vendor/OEM, the vendor/OEM will arrange suitable test gratings/grisms/filters etc. of their own resources and develop the test process/methodology/strategy/ZEMAX Design Simulations etc. in due consultation with PRL team. PRL shall not be liable for the procurement of these test gratings/grisms etc. in any manner (including financial, administrative etc.).

1. ***Query:*** *What are the Overall System Specifications of the two Arms of the instrument.*

**Response from PRL:** Section-6 of the specifications document provide the overall system specifications. In addition, ZEMAX design file of M-FOSC-EP instrument may be shared with the vendor/OEM for complete system specifications, against the non-disclosure-agreement (NDA) signed by vender/OEM.

1. ***Query:*** *In LRA are the Filter and GRISM, mounted on a Flip-Flop type of arrangement so that only one of them is in the path at a time. Specifications of the Filter(S) and the GRISM may be provided.*

**Response from PRL:** Both filters and Grisms would be kept in two separate grism and filter wheels kind of arrangement. Specifications of the Filters and Grisms are mentioned in the M-FOSC-EP SPIE publication (https://doi.org/10.1117/12.2629090).

1. ***Query:*** Spectral specifications of the Echelle grating to be used in the High Resolution Arm

**Response from PRL:** The specifications of the Echelle grating are mentioned in the M-FOSC-EP SPIE publication (<https://doi.org/10.1117/12.2629090>).

1. ***Query:*** *From the image focal plane of the 2.5m Mount Abu telescope, any specific way is to be adopted for splitting the beam into the two arms of resolution.*

**Response from PRL:** The beam coming from the telescope focal plane would be collimated by the collimator Lens Barrel-1. This beam can either be directed towards low resolution arm using a mechanically actuated fold mirror or allowed to go towards high resolution arm, when fold mirror is removed from the beam path.

1. ***Query:*** *A copy of the paper published on this topic as referred in the tender may be provided as it is not freely downloadable from the site.*

**Response from PRL:** The copy of the paper can be obtained by writing a mail to the PRL Purchase department.

**Following queries from M/s.** **Luma Optics were discussed:**

1. ***Query:*** *How/where do we mention our commercial terms and conditions? Without mentioning any values/figures should we include it in the technical specifications being uploaded in the bid?*

**Response from PRL:** As part of technical bid submission, commercial terms and conditions can be attached without declaring the price. There are several available templates which can be used in this regard.

1. ***Query:*** *Material lead times are not known to us right now as they are variable. After the placement of order, we will know the lead times. How should we specify the project lead time? How the overall timeline would be decided?*

**Response from PRL:** Vendor/OEM must submit their bid with the current estimates/lead time based on some documentary evidence/communication with glass manufacturer/suppliers. It is expected that the lead times and project time-line quoted in the bid document should/would not deviate much till the award of purchase order. Any minor change in the project timeline, due to lead time of glass material procurement may be discussed during the kick-off meeting which will be convened within 2-4 weeks from the date of acceptance of the purchase order.

1. ***Query:*** *Does the opto-mechanical design need to be an athermal design so as to reduce any focal shift arising from temperature change?*

**Response from PRL:** PRL has ensured in the optical design that the focus shift arising due to the change in working environment conditions do not cause significant change in the image quality. Vendor/OEM must ensure that no degradation of the image quality should happen due to mechanical and structural designs of lens barrels, mounts etc. in any case.

1. ***Query:*** *In the specification document it has been mentioned that**the variation in refractive index should be less than 2.0 X 10-5 (2.0E-05). This number is too tight and glasses might not be readily available with this specification (Point 2.B.1 of the technical specifications document).*

**Response from PRL:** The design analysis carried out by PRL says that this requirement is stringent and cannot be compromised. However, if one/two of the glasses is not available with such specifications, the optical design may be reviewed for alternate glass types. It is within the work scope of the vendor/OEM to evaluate the optical design with suggested alternate glass/glasses including the effects of tolerances, temperature etc. The final decision on the usage of suggested alternate glass/glasses lies with PRL team and cannot be challenged. This discussion would come under the scope of Optical Design Review (ODR) meeting.

1. ***Query:*** *Can PRL provide Computer Generated Hologram (CGH) (Point 2.C.10 of the technical specifications document).*

**Response from PRL:** No. PRL would not provide CGH. It is within the work scope of vender/OEM to arrange for such test methodology and set-ups.

**Following queries from M/s. Advanced Photonics** **were discussed:**

1. ***Query:*** *In point 1.A.6 of the technical specifications document, Nominal conditions for design and extended conditions for Tolerance analysis are mentioned. Do you require the design to be at the conditions mentioned in this point.*

**Response from PRL:** The actual system need not be tested exactly in the nominal conditions, say exact 20-degree C room temperature. However, the systems must perform as per given requirements in the tender document in the specified test conditions.

1. ***Query:*** *In point 1.A.7 of the technical specifications document, Independent evaluation and confirmation by the vendor clause is mentioned. Please clarify what you specify by” Independent evaluation”. Do you need a separate test report apart from the standard report that will accompany the system?*

**Response from PRL:** PRL wants the OEM/vendor to evaluate and confirm the effects of various manufacturing tolerances on the final image quality themselves. There is no need for a third-party evaluation and confirmation.

1. ***Query:*** *We can specify Scratch/Dig Precision Grade – 60/40 after coating instead of 40/20*

**Response from PRL:** No. This criterion cannot be relaxed.

1. ***Query:*** *With respect to clear Aperture requirements of Lens and Lens barrel openings. We can specify >=90% . (Point 2.C.4 of the technical specifications document)*

**Response from PRL:** PRL team will cross-check for the requirement and publish corrigendum if required.

1. ***Query:*** *In point 5.A.2 vendor past experience criteria is mentioned. Is the experience criteria meant for the vendor or OEM?*

**Response from PRL:** The experience criteria is meant for the OEM not vendor. A corrigendum would be published in this regard.

No further queries were raised. Dr. Mudit K. Srivastava gave the concluding remarks, highlighting the importance of the project, and explain that a successful collaboration with industry on this project would pave the path for several upcoming future projects in the similar mode. Mr. Pradeep Singh Chauhan stressed that the bidders must go through all the terms and conditions mentioned in the GeM portal before bid submission. The external participants appreciated the entire PRL team for adopting a collaborative approach with private partners and expressed confidence to execute the project as per desired specifications.

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