

THE GEM & JEWELLERY EXPORT PROMOTION COUNCIL  
3<sup>rd</sup> FLOOR, RAJASTHAN CHAMBER BHAWAN  
M.I. ROAD, JAIPUR 302003

**Tender No. TIES/2018-19/01: ANNEXURE 2**  
(Revised: 30<sup>th</sup> March 2019, after Pre-Bid Meeting)

**Technical specifications for X-Ray Imaging**

Key features: Fully-automated, high-resolution, bench top system, capable of performing 2D and 3D micro-imaging of pearls (loose and as strings). Following are the desired minimum specifications.

Feature / Item	Specification	Compliance (Yes / No)	Quoted item with part no. (If any). Please mark the item in submitted brochure.	Deviation (if any) with consequences on analyses / results
<b>A. Imaging Unit</b>	A.1. Cone beam, Parallel beam or other appropriate scanning geometry with optical or geometrical magnification for high resolution 2D and 3D imaging.			
	A.2. X-Ray source should be maintenance free and air-cooled			
	A.3. Continuously adjustable 20-100 KeV peak energy			
	A.4. 5 micron or less spot size with minimum 10 Watt power			
	A.5. Nominal resolution of 4 - 50 Microns			
	A.6. Maximum scanning time within 120 seconds and nominal scanning time within 10 minutes			
	A.7. Large flat-panel camera and detector with minimum 3MP active pixel or technology providing equivalent results			
	A.8. Integrated 5 MP (minimum) camera for sample monitoring			

	A.9. Automatically stitched partial scans for longer objects			
	A.10. X-Ray source and cabinet should be completely shielded			
	A.11. External emissions should be less than 1 Micro Sievert per hour on the surface of the instrument			
<b>B. Specimen handling system / sample chamber</b>	B.1. Four axis precision object manipulator based on stepping motors with micro stepping drives			
	B.2. Sample holder/s should be compatible with measurement of loose pearls as well as pearls in strings of minimum 16 inches in length			
<b>C. Computer and Work station</b>	<p>C.1. A high-end computer system with all required accessories</p> <ul style="list-style-type: none"> <li>2x Intel XEON processor E5-2640 v3 (eight core HT, 2.6 GHz Turbo 20 MB, 90W)</li> <li>Windows 7/10 Professional (64-bit)</li> <li>64 GB DDR3 2133 MHz RAM</li> <li>8 GB NVIDIA® Quadro® M4000 Graphical card</li> <li>8 TB (2x 4 TB) SATA HDD in RAID 0 for data</li> <li>512GB SolidStateDrive for operating system and programs</li> <li>DVD+/- RW drive</li> <li>One 24" UltraSharp LCD/LED monitor with 1920 x 1200 pixels native resolution</li> <li>QWERTY keyboard</li> <li>Optical scroll mouse</li> <li>Soundbar</li> </ul> <p>C.2. Fast Reconstruction with GPU server</p>			
<b>D. Software</b>	D.1. Round and spiral scanning trajectories			

	D.2. Automatic connection of multiple partial scans with exact fit in positions, with interpolation in overlaps to avoid reconstruction artifacts			
	D.3. GPU accelerated reconstruction			
	D.4. Result output in *.bmp, *.jpeg, *.tiff and DICOM formats			
	D.5. Reconstruction of a previously scanned sample and scanning of next sample to be performed parallel for faster overall performance			
	D.6. Software for 2D as well as 3D image analysis, and realistic visualization by surface rendering with STL-file export			
	D.7. Software for realistic visualization by volume rendering			
	D.8. Single-click operation using predefined sequence from recognition of sample size, setting magnification, taking optical image, scanning, reconstruction, etc.			
	D.9. Slice tool for density profile and longitudinal section from transverse sections			
	D.10. Advanced, rapid and user friendly options to region-of-interest and volume-of-interest selection			
	D.11. 3D triangularized surface rendering for precise 3D viewing			
	D.12. The software should support Application Programming Interface (API) access to test results / data			
<b>E. Calibration Standards</b>	E.1. Calibration standards (if any) required to optimize the scanning system shall be supplied with a certificate			
<b>F. References</b>	F.1. Vendor has to give at least 3 references in India where the quoted (or the immediate earlier generation) imaging system is working satisfactorily			

	F.2. At least 2 references world-wide with similar applications in gemmological (pearl testing) / mineralogical laboratory			
	F.3. Submit published articles / papers in gemmology (pearl testing) / mineralogy using the quoted (or the immediate earlier generation) system.			
<b>G. Training Schedule</b>	G.1. Minimum 3 days on-site immediately on completion of the installation			
	G.2. Thereafter, periodical training sessions through on-site visit or through web assistance as per need and call of the customer.			
	G.3. Additional remote assistance as and when required			
<b>H. Warranty</b>  It will be the responsibility of the vendor to keep the supplied instrument in optimized operating condition for next 5 years from the date of acceptance of installation and demonstration of claimed specifications.	H.1. All necessary consumables or spares or parts are to be covered under 5 years comprehensive warranty, and need to be supplied as and when required during 5 years comprehensive warranty for keeping the instrument operational all the time.			
	H.2. Maximum response time in case of any breakdown On-line support: 24 Hours Physical (On-site) support: 48 Hours			
	H.3. A list of all consumables, spares, or accessories, with no exception, required during 5 years comprehensive warranty to be furnished.			
	H.4. A detailed scope of 5-years comprehensive warranty to be furnished with the bid.			
	H.5. Indicative cost of per sample analysis to be provided			
<b>I. AMC / CMC</b>	I.1. Vendor should be able to provide support for next 5 years through AMC / CMC, after completion of initial 5 years comprehensive warranty.			

**Note:**

1. Technical evaluation will be based on:
  - a. Submitted compliance statement along with the supporting document for each parameter.
  - b. Demonstration of the quoted make / model (or the immediate earlier generation model)
2. Attach supporting documents such as brochures, declaration, etc with the claimed specifications. The quoted items must be marked with consecutive item nos. as per the technical-cum-compliance statement.
3. The Gem & Jewellery Export Promotion Council reserves the right to relax any of the above mentioned specifications in overall evaluation, without giving any reason whatsoever.