

### Section III: Technical Specifications

PROJECT TITLE : IOM-2021-008, Supply and Delivery of Digital X-Ray Machines	
Item Code :	
Item Description : _____	
Manufacturer :	
Origin :	
Model :	
Cat./Page :	
PURCHASER'S SPECIFICATIONS	BIDDER'S SPECIFICATIONS
General	
<ul style="list-style-type: none"> <li>• Digital x-ray machine system including X-ray tube, detector, chest stand, table and computer with the necessary software's and accessories, and complete package of training, installation and warranty.</li> <li>• The primary function is for diagnostic chest radiography with person standing, sitting or lying down, and additional chest imaging either chest or other body parts including lateral decubitus view to detect Tuberculosis and other significant health conditions.</li> </ul>	
The X-Ray Machine	
<p><b>X-ray Generator:</b></p> <ul style="list-style-type: none"> <li>o Brand/model,</li> <li>o High frequency generator,</li> <li>o Three phase if the machine doesn't have DQE&gt;60%, otherwise single phase can be acceptable</li> <li>o Minimum power KW 40-50,</li> <li>o mAs up to 500 or more,</li> <li>o High voltage range, up to KVP 150,</li> <li>o Automatic exposure control</li> </ul>	
<p><b>X-ray tube:</b></p> <ul style="list-style-type: none"> <li>o the tube size: dual focal spot size, 0.6/1.2mm</li> <li>o Tube material: Tungsten-Rhenium, with</li> <li>o High heat capacity, high cooling rate and thermal protection</li> <li>o Multi rotating and maximum movable tube, with maximum vertical and horizontal movement and rotation, which allows to do decubitus view on the table, with</li> <li>o Floor mounted tube stand</li> </ul>	
<p><b>X-ray exposure console:</b></p> <ul style="list-style-type: none"> <li>o If separate from the operator's work station, automatic /digital display with exposing button.</li> </ul>	
<p><b>The collimator:</b></p>	

<ul style="list-style-type: none"> <li>o Automatic/semiautomatic collimator with light source for centering and timer</li> </ul>	
<p><b>Chest Bucky:</b></p> <ul style="list-style-type: none"> <li>o Strong Bucky stand, well fixed on the floor</li> <li>o strong and automatic cassette adjustments and grid</li> <li>o Highest vertical and rotation movement</li> <li>o Distance from chin rest to active area of Bucky allows to fully include the chest x-ray image and avoid cutting of the apices</li> </ul>	
<p><b>X-ray Table:</b></p> <ul style="list-style-type: none"> <li>o Table included, simple two ways movable with locking wheel and basic function</li> </ul>	
<p><b>The electricity Requirement:</b></p> <ul style="list-style-type: none"> <li>o Check if the electricity requirement of the machine matches with the electricity supply of the unit. (the electric supply of the x-ray unit should be known)</li> <li>o Three phases and 40-50KW electric capacity, or</li> <li>o If single phase X ray machine, detector should have Detective quantum efficiency (DQE)&gt;60%</li> </ul>	
<p><b>X-ray Room size requirement and structure</b></p> <ul style="list-style-type: none"> <li>• What is the room size and shape requirement of the machine?</li> <li>• If the room to be used is known, does it fit to the available room without compromising the function and the requirement from the local Government, if there is?</li> </ul>	
<p><b>The Digital X-ray Panel Detector</b></p> <ul style="list-style-type: none"> <li>o Stated brand and model of detector</li> <li>o Detector material: Cesium Iodide ( CsI )</li> <li>o Pixel number and pixel size, higher pixel number, more than 2800x3000), and</li> <li>o Pixel size/pitch, lower than 60%, required especially if the machine is single phase</li> <li>o Image preview time, shorter better, average 6sec, less than 10 secs</li> <li>o Time to be ready for next image taking, shorter the better, less 10 secs</li> <li>o Charging method: preferred direct electric charging than battery charging, if battery charging, need with tethering option,</li> <li>o If battery charged, number of batteries and number of chest x-ray it can take after full charge of the battery</li> <li>o Number of detector: double/single, preferred if double for both table and Bucky instead of moving the detector between the Bucky and</li> </ul>	

<p>table</p> <ul style="list-style-type: none"> <li>o Image transfer method: Wired/wireless image transfer –or wireless through Wi-Fi router, the best specification and latest model of router.</li> <li>o Integrated/external detector-if single external preferred, if double integrated preferred.</li> </ul>	
<p><b>The x-ray Operator’s Computer Hardware and Software</b></p> <ul style="list-style-type: none"> <li>o Operating system: windows 7 or higher</li> <li>o Operator’s (radiographer’s) Screen/Monitor size minimum 21”,</li> <li>o RAM (8GB or more), processor (latest, i5 or above) and storage (1TB) or higher,</li> <li>o Image display and manipulating software with all parameters included and brand/model mentioned</li> <li>o DICOM 3 compatible and IHE compliant, with ability to network to multiple Picture archiving and communication system (PACS)</li> <li>o Ports for USB, DVD/CD burning</li> <li>o HIS/RIS included and enabled, and</li> <li>o Supports worklist modality, storage, printing and query and retrieve. Automatic/manual selection of parameters and exposure control</li> <li>o All biodata fields can be accessible on the display</li> <li>o High quality digital image output</li> </ul>	
<p><b>Accessories and services included package</b></p> <ul style="list-style-type: none"> <li>• Lead aprons, skirts and gloves (usually included in the package)</li> <li>• Is the x-ray laser printer, if needed?</li> <li>• If license requirement from government, does the vender assist for getting the license.</li> <li>• Do the vender participate/guide in the room construction and renovation to have radiation protected room and compliance to government requirements</li> </ul>	
<p><b>Installation and users Training</b></p> <ul style="list-style-type: none"> <li>• The package includes installation of the machine, testing, and training of the users</li> </ul>	
<p><b>After sale Service and Spare parts</b></p> <ul style="list-style-type: none"> <li>• Availability of spare parts in stock, and</li> <li>• The time needed to bring spare parts when not available in stock 4</li> <li>• The quality and availability of the Technicians to provide regular maintenance service and response time for emergency failure of the machine</li> </ul>	
<p><b>Warranty and registration</b></p>	

<ul style="list-style-type: none"> <li>o Minimum warranty period of 2years stating the parts included and the service.</li> <li>o Warranty of the detector and x-ray machine and need to state the detail included in the warranty,</li> <li>o Need the warranty to include changing new detector- if the detector fails.</li> </ul>	
<p><b>The delivery time of the machine</b></p> <ul style="list-style-type: none"> <li>o the time need to get the machine</li> <li>o the vender time of delivery meet the required by the mission</li> </ul>	
<p><b>Quality check/Validation</b></p> <ul style="list-style-type: none"> <li>o Vender can provide contact addresses of the user of the machine in the country or neighboring country for collecting user's opinion from the users of the machine if needed</li> <li>o Users opinion survey may include: the uninterrupted functionality of the machine, image quality, the quality and timeliness of technicians, availability of spare parts and timely delivery verified by users.</li> <li>o Sample of chest x-ray images from the machine installed before can be provided for checking the image quality</li> <li>o The General requirements of safety of the machine approved by authorized regulatory bodies and manufacturer is legally registered and agent/vender is available in the country, and can provide documents</li> </ul>	

Name of Bidder: \_\_\_\_\_

Signature: \_\_\_\_\_

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