

## TECHNICAL SPECIFICATIONS FOR COMPUTED RADIOGRAPHY

### COMPUTED RADIOGRAPHY CONSISTING OF FOLLOWING COMPONENTS:

#### 1.DIGITIZER SYSTEM/READER-FOR READING THE CASSETTE AND PROCESSING THE IMAGE

##### I. DIGITIZER SYSTEM/READER

- a. Should have capacity to process at least 65 cassettes of 14”X17” size per hour.
- b. Automatic Cassette Identification e.g through bar code reader.
- c. Maximum spatial resolution attainable should be 10 pixels/mm with range between 5 to 10 pixels/mm for fast mode to standard mode for general radiographic purposes.
- d. Constant high resolution in all the sizes.
- e. Automatic exposure correction & facility for maneuvering reading sensitivity manually.
- f. Gamma curves for multiple object intensity processing.
- g. Registration and cassette identification should be possible to be done before and after the exposure(pre/post registration)

##### II. STANDARD WORK STATION (CONSOLE)

- a. Storage capacity-at least 2000 images specify the numbers.
- b. Grey scale resolution during image acquisition and display should be 12 bits/pixel or more.
- c. Image preview time 25-60 sec (large image)
- d. System should be fully compliant with DICOM 3
- e. True size printing should be possible from a reader console
- f. Multiple image printing with multiple format
- g. Measurement of image, insert scale
- h. Preloaded annotation
- i. DICOM CD writing and reading
- j. Image inverse, image flipping, image magnification, zooming and image cropping
- k. Reporting format
- l. Image preview
- m. Printing multiple patient on one film
- n. CD writing for multiple patient on one CD
- o. Should have hard disk of 80 GB or more for storing image.

##### III. SEPARATE DICOM WORK STATION with the following software facilities

- a. Image post processing
- b. Window leveling, Annotation
- c. Area of interest, zoom, Magnification
- d. Flipping and panning

- e. Preview software
- f. Edge enhancement stepwise.
- g. Contrast/brightness adjustment
- h. Shutter/ROI finder.
- i. DICOM image output to network work station.
- j. Grid pattern removal and noise compression software.
- k. Gray scale reversal.
- l. Image rotation.

## 2. DRY IMAGER- FOR PRINTING THE FILMS

- a. Recording method- dry chemistry printer with at least two film sizes online.
- b. Resolution/output grade/pixel resolution: Mention spatial resolution higher level: preferably minimum of 500 DPI/PPI.
- c. Printing resolution: more than 12 bits preferable. (GREY SCALE).
- d. Processing capacity/hour for (14"x17") films, it should not be less than 70 films/hour.
- e. Film sizes supported: following sizes should be supported: 35x43 cm, 35x35 cm, 26x36 cm, 25x30 cm & 20x25 cm (8x10 inch, 10x12 inch, 11x14 inch, 14x14 inch & 14x17 inch)
- f. Applicable film- blue/clear base

## 3. HIGH FREQUENCY X-RAY MACHINE

- a) X-Ray machine-quantity 1 with output power of 30 KW as per ISO Standardization.
- b) High frequency-high voltage wave form
- c) Single focus.
- d) Radiographic parameter with multidigital display
- e) Multi digital(Finger touch adjustment)
- f) KVp ranges from 40 to 125 KVp or beyond.
- g) MA range: 0 to 300 or beyond with multistep adjustments
- h) No fluoroscopic attachments required.
- i) Closed loop filament stabilization to be provided.
- j) Rotating anode of minimum 2700 rpm speed with anode heat storage capacity of 100KJ
- k) HT connection with sufficient cable length to be provided.
- l) Inbuilt overload indicator and functional protection to be provided.
- m) Convenient to take x ray of all body parts.
- n) Deep penetrative range like lumbar spine, lumbosacral spine to possible for any mass (bulky) patient with optimum image quality and clear visualization.
- o) Angulation of tube for any position ,measurement scales to be provided on horizontal and vertical beam connected to x-ray tube to identify the degree of angulation and

also measurement scale to be provided in vertical beam to identify tube to table length

- p) Radiation standard measures to be proved- Should confirm AERB standards.
- q) Operating voltage -415 volts +/- 10%,50hz+/-3%,3 phase AC supply

#### 4.MISCELLANEOUS COMPONENTS

- a. CR CASSETTES :
  - a. 14"x17"- Four cassettes
  - b. 10"x12"-Two cassettes
- b. Suitable online UPS with at least 30 minutes back up for the whole system
- c. Reputed make 1.5 ton split AC

#### 5. OTHERS:

- a. Company should have service center in Hyderabad.
- b. AMC/CMC price,, after completion of warranty period to be mentioned in price bid separately.
- c. Technical specifications must be supported by manufacturer's brochure failing which offer will be rejected.
- d. Vendor must be able to demonstrate the equipment within the specified time limit, if asked for; failing which offer will be rejected.
- e. Installation (erection and commissioning) and training to be provided by vendor.

#### 6- PREQUALIFICATION CRITERIA: Vendor has to provide at least one of the below mentioned:

- (a)- Performance certificate issued by any customer using the equipment quoted by vendor.
- (b)- Customer reference i.e. Name and contact details ( phone number of customer must be provided) of any customer using the equipment quoted by vendor.