

## TECHNICAL SPECIFICATIONS FOR COMPUTED RADIOGRAPHY

COMPUTED RADIOGRAPHY SYSTEM 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 70 cassette/films per hour.
- b. Automatic Cassette Identification e.g through bar code reader.
- c. Contrast spatial /reading resolution 10 pixel/mm or more.
- 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. It should have a resolution of 5 pixels/mm (MINIMUM) for standard resolution cassette & up to 20 pixels/mm 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, imageflipping, 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 soft ware 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- Laser camera with at least two film sizes online(simultaneously).
- 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 15 KW as per IS:7620 -1986
- 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
- g) MA range: 64 to 200 with multistep adjustments
- h) Exposure time between 3 sec minimum to 10 sec maximum with digital mAs integrator.
- i) No fluoroscopic attachments required.
- j) Serialography support required.
- k) Closed loop filament stabilization to be provided.
- l) Rotating anode of minimum 2800rpm speed with anode heat storage capacity of 100KJ

- m) HT connection with sufficient cable length to be provided.
- n) Inbuilt overload indicator and functional protection to be provided.
- o) Convenient to take x ray of all body parts.
- p) Deep penetrative range like lumbar spine, lumbosacral spine to possible for any mass (bulky) patient with optimum image quality and clear visualization.
- q) 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
- r) Radiation standard measures to be proved- Should confirm AERB standards.
- s) 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. Spares and consumable parts should be available for 10 years. Letter from Principle Company declaring manufacturing of CR films.
- b. Company should have service center in Hyderabad.
- c. AMC/CMC price, after completion of warranty period to be mentioned in price bid separately.
- d. Technical specifications must be supported by manufacturer's brochure failing which offer will be rejected.
- e. Vendor must be able to demonstrate the equipment within specified time limit, if asked for; failing which offer will be rejected
- f. Installation(erection and commissioning) and training to be provided by vendor free of cost.