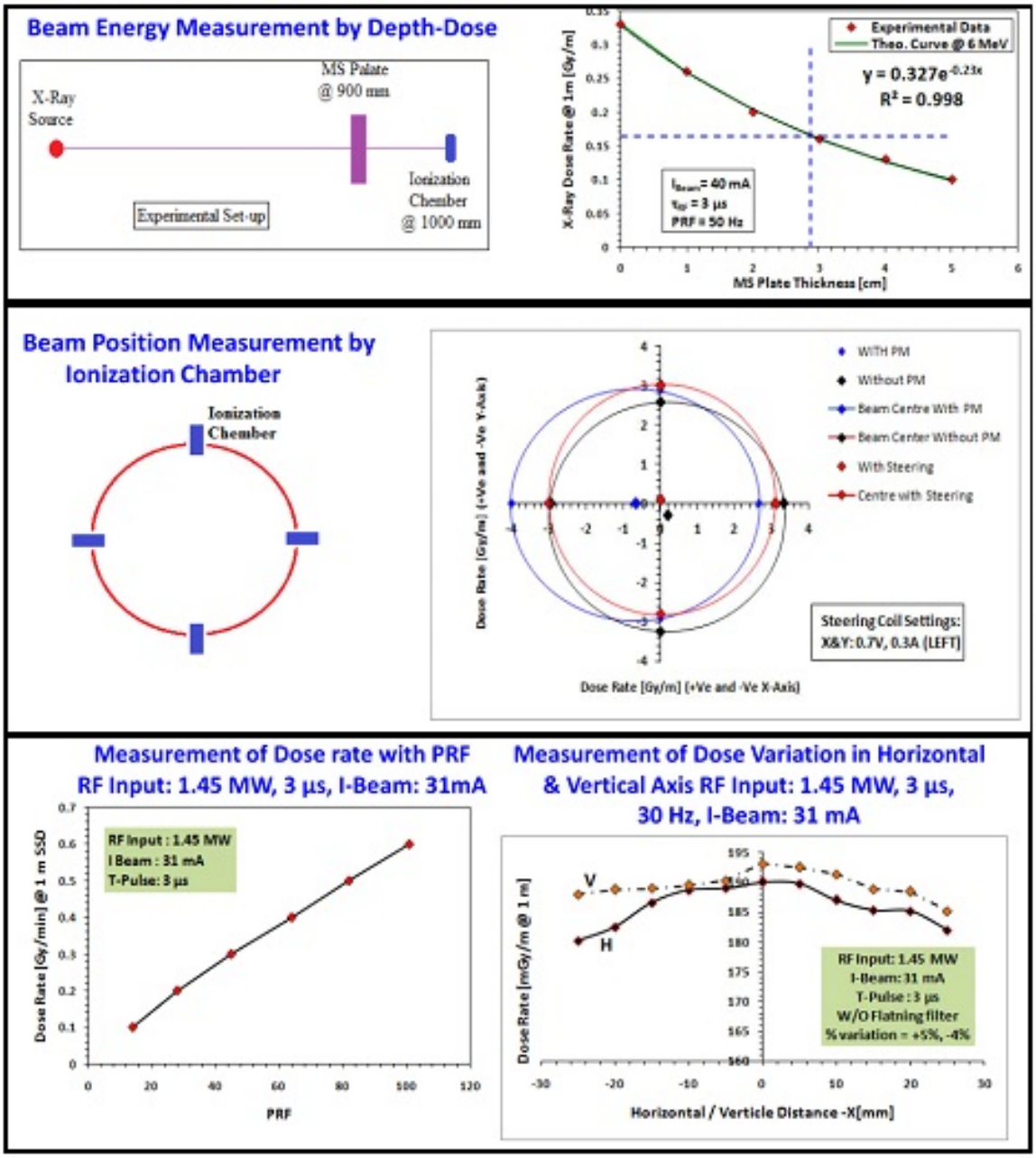
# 6 MV X-Band Linac Based X-Ray Source for Medical Applications

**6 MV compact 9.3 GHz X-Band band linac based compact X-Ray source successfully designed and tested at Electron Beam Centre, Kharghar for medical applications. BARC has developed a 9300 MHz, 6 MeV, 0.48 kW standing wave type X-band LINAC (XBL) cavity based x-ray source. The major components of the beam line are electron gun, LINAC cavity, X-Ray target, focussing and steering magnets. The LINAC cavity has 6 bunching cells, 18 accelerating cells and 1 power feed cell. The first bunching cell is of asymmetric type to provide RF phase focussing.**

## Specifications of X-Band Linac Based X-RAY Source

| X-Band Linac Parameters | |
|---|---|
| **Operating Frequency** | 9300 ±10 MHz |
| **Duty Cycle** | 0.08% |
| **Output Beam Energy ($E_{av}$)** | 6 MeV ± 3% |
| **Output Beam Current (Pulsed)** | 50-100 mA |
| **Output Beam Power (Average)** | 240-480 W |
| **Dose rate @ SSD 80 cm** | ≥ 350-500 CGy/m |


Compact 6 MV X-Band Linac and Auxiliaries




## Measurement Results

## ❑ Advantages

- **Compact in size and light weight**
- **More efficient than S –Band Technology**
- **Requires less footprint**

## ❑ Application

- **Inter-Operative Radiation Therapy (IORT)**
- **Stereotactic Radio-surgery**
- **Non Destructive Testing (NDT) of materials and industrial components.**

- Presently the technology is incubated with M/s Panacea Medical Technologies.