

Specifications for 100 mA mobile X-Ray Unit

State of Art High frequency microprocessor controlled Portable X Ray having following features:

1. Compact, lightweight, easily transportable mobile X Ray unit suitable for bedside x-rays, trauma, Intensive care units, Operations theatres and also in the Radiology department.
2. The unit should be fully counterbalanced and can be positioned to suit different bed heights. The unit should have facility of vertical swing and horizontal rotation of the tube head to ensure X-Ray of any anatomy even within limited space.
3. The unit must have an effective braking system for parking and transport.
4. The tube stand must be fully counterbalanced with rotation in all directions.
5. The exposure release switch should be detachable with a cord of sufficient length (at least 3 m)
6. The unit should have integrated cassette box of size 542 mm (W) x 420 mm(H)
7. The unit must have cassette storage facility for all sizes of cassettes (14x17, 10x12 & 8x10)
8. The Generator:
 - a. Microprocessor controlled high frequency / inverter type of high frequency (100 KHz or more) for constant output.
 - b. It should have power rating of 4 KW or more
 - c. It should have a digital display of mAs and KV.
 - d. KV range : 100 KV or more
 - e. mA range: 100 mA or more
 - f. KV selection: 40 kV to 100 KV, with 1 kV step
 - g. mAs selection: 0.1 to 250 mAs
 - h. Exposure time of 10 ms to 5 s or less
 - i. It should have over loading protection.
9. X-Ray Tube and Collimator:
 - a. Stationary anode and focal spot size should be less than 2mm or less (IEC 60336).
 - b. Output of tube should match with that of generator.
 - c. Light Beam diaphragm Collimator of multi leaf type with auto cut off switch. The light intensity shall be at least 160 lux at 1 m distance.
 - d. Collimator rotation should not be less than -90 degree to +90 degree.
10. The unit should be capable to deliver 100 mAs at 100 KV and 250 mAs at 40 KV to meet varied radiographic requirements.
11. The unit should operate on single phase power supply and should have plug in facility to any standard wall outlet with automatic adaptation to line voltage 200 to 240 volts, 15 Amp plug.
12. The weight of unit should be less than 100 kg
13. The unit should have facility to set doses from Tube head and with Anatomical programmed Radiography (APR) feature from a separate control consol.
14. The Systems should be fully safe with respect to
 - a. Over current
 - b. Over Voltage
 - c. Maximum loading of tube
- All specification to be provided with original product data sheet. All technical Specification should be supported with original data sheet highlighting the Page number in the compliance sheet.
- Power input to be 220-240VAC, 50Hz fitted with Indian plug.
- Certified to be compliant with IEC 60601 for Medical Electrical Equipments.
- Manufacturer / supplier should have ISO / CE / USFDA approved certification.
- Should be an AERB approved product.
- User/Technical/Maintenance manuals to be supplied in English.
- Certificate of calibration and inspection.

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15. Essential Accessories: The following essential accessories to be provided with the unit.
- Where applicable, Voltage stabilizer of required capacity, the capacity and make of the voltage stabilizer should be specified.
 - Lateral cassette holder – One.
16. Should comply with AERB or BIS or ICRP Guidelines for radiation leakage and X-Ray equipments.
17. List of Equipments available for providing calibration and routine Preventive Maintenance Support as per manufacturer documentation in service/technical manual.
18. Compliance Report to be submitted in a tabulated and point wise manner clearly mentioning the page / Para number of original catalogue/data sheet. Any point, if not substantiated with authenticated catalogue/manual, will not be considered.
19. The warranty of the unit should be 3(three) years.

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Specification of X-RAY Machine 600 mA

1. **X-Ray Generator:**
 - A. High frequency X-Ray generator
 - B. Inverter frequency – 200 KHz or more
 - C. Output power 45KW or more.
 - D. KV Range – 40 to 125KVp
 - E. mA range – 10 to 600 mA
 - F. 600mA @ 100KV or better
 - G. mAs range – 0.1mAs to 800 mAs
2. **X-Ray tube:**
 - A. Rotating ~~anode~~
 - B. Focal spot :- small – 1mm x 1 mm & Large – 2mm x 2 mm
 - C. One pair of High tension cable (at least 6 meters)
 - D. Manual Collimator with accurate light field correspondence with X-Ray field
 - E. Tubehead rotation (Manual), Rotatable $\pm 90^\circ$ (with magnetic lock)
3. **Table:**
 - A. The table should be horizontal floating type.
 - B. Bucky table with floating table top with immense flexibility and ease in positioning.
 - C. Table top positioning with release of electromagnetic brakes controlled with a foot operated lever.
 - D. Table Height – 75 cm ($\pm 5\%$)
 - E. Table top – 218 x 80 cm ($\pm 10\%$)
 - F. Table top should be made up of low radiation absorption, water proof material, stain free
 - G. Longitudinal Travel: ± 40 cm ($\pm 2\%$)
 - H. Transverse Travel : ± 12.5 cm ($\pm 2\%$)
 - I. Electromagnetic locking of the table movement
4. **Bucky:**
 - A. Grid 8:1, 60 lines / cm for X-Ray Table.
 - B. 65 cm travel; movement arrested by electromagnetic brakes
 - C. Suitable for cassettes in cm and inch formats and should be capable to accommodate 17"x17"
5. **X-Ray Tube column**
 - A. Travel range: 195 cm ($\pm 10\%$); movement arrested with electromagnetic brakes
 - B. Vertical travel: 140 cm ($\pm 10\%$); movement arrested with electromagnetic brakes
 - C. Column rotation: 360° ; from $+180^\circ$ to -180° in 90° increments
 - D. X-ray tube rotation: $\pm 180^\circ$; locks at 0° / $+90^\circ$ / -90°
 - E. Motorized feather touch Horizontal movement for tube stand: 1500mm
6. **STANDARD ACCESSORIES**
 - A. Lead apron 0.5mm lead equivalence with thyroid guard – 3 no.
 - B. Should be supplied with Chest stand with adjustable Bucky for cassette size up to 14"x17"
 - C. **Anti scatter Grid of size: 17 1/4" x 18 7/8" size / Ratio 8:1 -1 No (for Table Bucky)**
7. **POWER SUPPLY REQUIREMENTS**
 - A. 3 Phase, 5 Wire, 415V AC, 50Hz.
8. **4 WAY TABLE:**
 - A. The table should be horizontal 4 way movements

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- B. Motorised Bucky with immense flexibility and ease in positioning
- C. Foot switch control
- D. Table Height – 70 cm ($\pm 5\%$)
- E. Table top – 200 x 80 cm ($\pm 10\%$)
- F. Table top should be made up of low radiation absorption, water proof material, stain free
- 9. ISO13485:2003, ISO9001:2008, UL Registered and AERB Approved model should be offered.
- 10. The warranty of the unit should be 3 years.

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