TECHNICAL SPECIFICATION FOR ANALOGUE MAMMOGRAPHY

I	**General** Mammography Machine should be ergonomically designed with iso-centric carm 3D Stereotaxic biopsy has to be quoted as option.
II	**X-ray Tube and generator**
1.	High frequency generator 20 KHz ripple or more, constant potential
2.	Power : 3.0KW or more
3.	Rotating anode
4.	Focal spot: dual; Large: 0.3mm and small: 0.1mm
5.	Molybdenum target
6.	KVp – 22 to 32 in increments of 1 KVp
7.	mA – 100mA or more
8.	Max mAs 400 or more @ 30 KVp
9.	Anode heat capacity should be 150 KHU or more
10.	Beryllium Window
11.	Molybdenum Filter
12.	Digital display of KV, mAs and dose delivered in the control panel.
III	**Exposure modes**
1.	Automatic Exposure control (AEC) should be available in 3 modes –fully automatic, Semi automatic and manual mode.
2.	Should have at least three electronically user selectable detector positions for AEC
3.	Should have at least six levels of Optical Density correction
4.	Should have in-built AEC calibration programmes and at least three programme locations. During installation the tenderer shall calibrate as per user requirements and suit the conditions to get optimum image quality.
5.	Source Image Distance: The distance from the focal spot to the image receptor should be at least 60 or 65 cms.
6.	Should have light beam collimation device with interchangeable (without tools) collimation plates. Automatic interchangeable collimation device should be available

7.	Should have exposure switch with extendable cables
8.	AEC should be compatible with CR system
9.	Exposure should not possible when cassette not present in the bucky and appropriate alarm messages should be displayed in the display
IV	**C-ARM**
1.	C-arm should be Isocentric
2.	C-arm should have motorized vertical travel of 75 to 135 cms with respect to the bucky platform from the floor (±10% tolerance)
3.	C-arm rotation with selectable reference projections for quick, easy and light operation
4.	It should be capable of rotating at least 180° to the vertical in at least one direction and 120° in the other direction
5.	It should be possible to lock C-arm rotation at any point just by release of the switch
6.	The angle of rotation shall be displayed in the control panel
7.	Vertical movement of the C-arms for favoring examination of patients on a wheel chair (Telescopic movement).
8.	Should have provision for magnification 1.5 or 1.8
9.	Should have ergonomic handles located conveniently on both sides of the c-arm.
10.	Should have provision to prevent the entry of patient head into the x-ray field while x-ray exposure
V	**COMPRESSION DEVICE should have the following features for patients safety**
1.	Compression system should be motorized, comfortable in such a way that the paddle speed progressively should reduce as it gets in contact with the breast and the overall movement shall be smooth and slow.
2.	The applied force of compression should be readily visible on the display and the maximum limit should be adjustable.
3	After compression, for patient safety no up/ down movement or any movement of “C” should be possible.
4	After compression, if adjustment is required, micro compression knob should be available only for fine & soft adjustments.
5	Should be able to release the compression paddle by just single press of a button in a second in emergency & not by rotating a knob.
6	Compression paddle controlled through foot switch including the release of compression paddle.
4.	It should have an automatic post exposure release and also the compression force should be released in the event of power failure.

5.	There should be provision for knowing the thickness of breast after compression.
VI	**BUCKY DEVICE**
1.	Should have 24 x 30 bucky device with adaptior for 18 x 24 cassette. So that Bucky device accepts both the cassette sizes of 18 x 24 and 24 x 30 cm **(OR)** Two bucky devices of sizes both 18 x 24 with carbon fibre top and 24 x 30 with carbon fibre top should be provided
2.	Moving carbon fiber grid on both bucky device
	System should be CR Cassette compatible
VII	**OTHERS**
1.	Compression paddle for 18x 24cms and 24 x 30cms bucky device
2.	Spot compression paddle for magnification.
3.	Operator shield at least half part shall be transparent
4.	Magnification device
5.	Should be provided with required phantoms for periodic check up and routine calibration of AEC
6.	Should be supplied with suitable capacity automatic servo stabilizer.
7.	The offer should be accompanied by original product data sheet/brochure of the product and AERB type approval certificate or valid No Objection Certificate (NOC) for the model offered. In case of NOC valid type approval certificate has to be submitted prior to submission of invoice for payments.
8	Should be certified by European CE along with notify body number.
9	IEC test reports should be submitted along with technical bid
VIII	**OPTIONAL ITEMS (Rates offered will not be taken for evaluation)**
A.	**Stereotaxic Biopsy (3D)**
1.	Should be a 3D stereotaxic biopsy system automated in all the three axis X, Y and Z.
2.	Should have an accuracy of 0.1mm in all the three axis.
3.	The offer for stereotaxic biopsy will not be taken for price bid evaluation
B	**Cassettes**
1.	Rates for analogue 18x24 cms and 24x30cms cassettes with screen has to be quoted as option