

Rajasthan Medical Services Corporation Limited, Jaipur
D-Block, Swasthya Bhawan, C-Scheme, Jaipur – 302005

Ph. No. 0141-2223887, Fax No. 0141-2228065

E-Mail – rmsc@nic.in, edepmrmc-ri@nic.in

No. F-8(MI/)RMSC/ EPM/R.C. 13-14/NIT No.-21/2013/ S7

Dated: 22/4/13

Corrigendum/Amendments/Clarifications
(NIB No. 21)

Subject: - Amended technical Specifications for the tender of Equipment & Instruments, under NIB No. No. F-8(MI/) RMSC/ EPM/ R.C. 13-14/NIB No. 21/2013/443 Dated: 28.02.2013 Corrigendum No. F-8(MI/) RMSC/ EPM/ R.C. 13-14/NIB No. 21/2013/01 Dated: 02.04.2013 and 40 Dated: 15.04.2013

In Reference to above cited subject and NIB No. 21, the Competent Authorities/technical committee amended following technical specifications:-

S.N.	Code No.	Amended Specification
1	RXA001	<p>3.0 TESLA MRI UNIT</p> <p>Latest Whole Body 3T MRI System of 70 cm or more borer for routine & advance applications.</p> <p>1. Magnet: High homogeneity actively shielded magnet with a short length having a homogeneity of at least or better than 1.5 ppm at 40 cm. DSV. The system's should have special design to reduce acoustic noise. The magnet should have the latest technique for homogeneity B1 field distribution.</p> <p>2. Gradient: The actively shielded gradients should have at least a gradient strength of 40 mT/ m or more with a slew rate of at least 150T/m/ms independently for each axis.</p> <p>3. Patient Table: The table should be fully motorized, Dock able table top with vertical and horizontal movements. For patient monitoring CCTV with color monitor display should be there and also on the control console. ECG triggering, peripheral triggering and respiratory triggering gating to be provided.</p> <p>4. R F System: i. Up to 32 independent Receiver channels or more. ii. Compact solid state RF amplifier with RF Power of (30KW) or more. iii. Digital transmit and receive signal processing for fast and flexible modulation and demodulation of the radio frequency signals.</p>

[Signature]

S.N.	Code No.	Amended Specification
		<div><div><div>iv. Simultaneous acquisition from four or more coils is necessary.</div><div>v. Parallel Acquisition Techniques for reducing acquisition times with a factor of 4 or more in 2D.</div></div><div><div>5. Computer System:</div><div>Should be latest with all facilities & system should be DICOM 3.0 compatible & connected with Work stations.</div></div><div><div>6. Measurement System:</div><div>Measurement system should be complete in matrix upto 1024 X 1024. Minimum TE for Gradient Echo sequences should be less than 4 ms. The minimum slice thickness with 2D should be 0.5 mm or less and with 3D should be 0.3 mm or less.</div></div><div><div>7. Coil System: (Specify coil tuning procedure)</div><div><div><div>i. 28-32 Channel Head Coil</div><div>v. Bilateral Breast Coil</div></div><div><div>ii. 32 Channel Body Coil</div><div>vi. Shoulder Coil</div></div><div><div>iii. Neuro Vascular (16 Channel Coil)</div><div>vii. Flexible Coil</div></div><div><div>iv. Dedicated 8 Channel Knee Coil</div><div>viii. Channel Spine Coil</div></div></div></div><div><div>8. Application Package:</div><div><div>i. Complete Clinical imaging of Neuro, Body & Peripheral. Required complete software for evaluation of the Bold,, Perfusion, Cardiac, Angiography, Flow Quantification, fMRI, Diffusion Imaging. Cardiac/Body Imaging application like Balanced Fast Field Echo or its equivalent should be offered.</div><div>High resolution sequences for inner ear studies, sequences triggered with Bolus tracking and fast turbo spin echo sequence should also be offered.</div><div>ii. Proton Spectroscopy Package :</div><div><div>a. IH-MRS, single Voxel spectroscopy (Spin Echo, STEAM) (for brain, breast, prostate)</div><div>b. Chemical Shift Imaging -IH (2D 3D)/Multi-Voxel Spectroscopy/Multi Slice.</div><div>iii. Complete Diffusion Tensor, Imaging with Tractography/fibre tracking package with evaluation software.</div><div>iv. Advance Techniques for Neuro & body imaging with respect to motion correction in 3D, for fast and wate saturation.</div><div>v. Arterial spin labelling technique.</div></div></div><div><div>9. Two Stand- alone workstations with MP Monitors and post-processing capabilities for Tractography Bold evaluation, Functional evaluation, Complete Cardiac evaluation, Neuro Perfusion evaluation software with CBV/RBV Plots etc. and software for vessel segmentation and filming should be available.</div></div><div><div>10. Documentation:</div><div><div>i. Digital DICOM 3.0 Compatible Dry chemistry Laser camera for 14"x17"film size.</div></div></div></div></div>

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S.N.	Code No.	Amended Specification
		<ul style="list-style-type: none"> ii. Post-script color printer for spectroscopy data.
		<ul style="list-style-type: none"> 11. UPS: Suitable UPS for the complete unit to give a backup time of 30 minutes with maintenance free batteries. 12. Patient Transfer: At least two each mobile non-magnetic patient trolley & non-magnetic wheel chairs. Docable compatible table trolley. 13. Accessories: <ul style="list-style-type: none"> i. (Non Magnetic) Automatic Pressure Injector with 100 syringes. ii. MR Monitor for SpO2:- <ul style="list-style-type: none"> a) Unrestricted Gauss Rating b) Color Touch Screen c) Wireless Digital SpO2 d) Express Network Selection e) SpO2 Perfusion Index f) Heart Rate g) Battery Management Indicator h) Quick Connect Accessories i) Green Classification j) 360 Degree Alarm Light k) Light Weight l) Infection Control Compliant with disposable sensors m) Reusable sensors reduce cost of ownership n) Neonatal through Adult applications iii. MRI compatible Anaesthesia Machine with Ventilator a least one iv. Five Spilt ACs of 2 T on should be supplied along with complete installation (Hitachi/O-general/Daikin/Mitsubishi)
		<ul style="list-style-type: none"> 14. Machine should be European CE market/ FDA approved. 15. Recently launched model in RSNA up to 2012 but not before 2009 16. The machine should be supplied with 3 years guarantee and seven years CMC.

S.N.	Code No.	Amended Specification
2	RXA002	<u>128 Slice CT Scanner Of 70 Cm Or More Bore For All Purpose Scanning Including coronary Angiography</u>

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S.N.	Code No.	Amended Specification
		<p>Requirement</p> <ol style="list-style-type: none"> 1. Installation of top of a line Spiral Multi-Slice CT Scanner with capabilities of acquiring 128 slices per 360 degree in body and Cardiac Scan. 2. Mandatory Essential feature: <ol style="list-style-type: none"> 1. Scan Tim <p>The scan time for one gantry rotation of complete 360 degree should be 0.4 sec or less.</p> II. Detector <ol style="list-style-type: none"> a. Detector should have facility to acquire 128 slices simultaneously in one rotation b. The detector shall have at least 64 rows with each row having at least over 670 elements or specify. c. The detectors shall be large area detector with a Z axis coverage of 38.4 mm per rotation or specify. d. The detectors shall cover 38.4 mm per rotation for standard and cardiac scans or specify. III. Matrix size <ol style="list-style-type: none"> a. Display Matrix of 1024x1024 or more b. Reconstruction matrix of 512x512. IV. Slice Thickness for Spiral Mode: <ol style="list-style-type: none"> a. 128 slice Acquisition with minimum thickness of 0.625 mm or less in axial and spiral mode V. Gantry: <ol style="list-style-type: none"> a. Gantry Aperture : 70 cm or more b. Gantry Tilt: +/- 30 deg c. Scan Field of view : 50 cm or more VI. Scanning Capability: <ol style="list-style-type: none"> a. True 3 – Dimensional Cone beam correction technique shall be available in all modes of acquisition such as axial, spiral, 128 Slice mode, and also in various application studies for whole body and cardiac. b. The ECG gated acquisition shall have high accuracy of real time monitoring and adapting continuously Heart rate changes into the ECG

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		<p>trigger delay during each scan. Prospective ECG gated axial Cardiac Scanning for mode should also available as standard.</p> <p>c. The acquisition shall be 128 slice mode for all studies including cardiac. Step & shoot or an equivalent algorithm during cardiac scanning for dose reduction will be an essential requirement.</p> <p>d. Dose modulation shall be available for all types of studies including ECG gated tube current modulation.</p> <p>e. Pediatric and infant base protocols shall be available based on the infant weight.</p> <p>f. <u>Real time contrast monitoring acquisition with auto scan initiation protocol and with auto injector trigger</u></p> <p>g. Latest iterative reconstruction technique launched by company used for low dose scanning should be offered standard.</p> <p>VII. Resolution</p> <p>a. The high contrast Resolution should be at least 17 lp/.</p> <p>b. The low contrast resolution should be at least 4 mm at 3.0 HU. Dose to be less than 28 Mgy, Measurement to be based on 20 cm CATPHAN. (Specify scan time, mA, Filter for image reconstruction, scan field, slice).</p> <p>Desirable Feature as detailed under:</p> <p>3. Pitch: to be freely selectable in auto mode and also manual 0.15-1.5</p> <p>4. Patient Couch: The table should have a metal free scan able range of at least 160 cms</p> <p>5. X-Ray Generator :</p> <p>a. The Generator should be of high frequency type and having at least 72KW or more output with max current of 500 mA or more. Mention kV selections.</p> <p>6. X-Ray Tube :</p> <p>a. Tube of high heat storage capacity 7.5 MHu or more with effective storage of 25 Mhu.</p> <p>b. Peak Heat dissipation rate of Anode should be at least 800 KJ/hu/min.</p> <p>7. Operator Console:</p> <p>a. It should have a large 18" or more high resolution LCD monitor with a display 1024 X 1280 matrix or more. Dual monitor console one for scanning and one processing</p> <p>b. The System should be user friendly with all functions menu driven. It should be modern user interface.</p>



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		<p>c. All functions including scanning image reconstruction film documentation, archiving, transferring, MPR Angiography maximum intensity projection. Volume rendering, 3D SSD, CTAngio, vessel measurement, small volume quantification, Virtual endoscopy software for visualization of vessels and air filled structures and Colonography software for virtual endoscopic, colon study, Dental Planning software for panoramic views and cross-sectional cuts of mandible/ maxilla and Brain & Body Perfusion, Lung Nodule Assessment should be possible on this operating console and on the independent workstation simultaneously.</p> <p>8. Computer System & image processor</p> <p>a. 64 Bit/32 Bit main CPU with at least 20GB RAM memory or better.</p> <p>b. High speed CPU using Pentium IV ore better running at 3.0 GHz or better</p> <p>c. Hard disc of 250 GB Or more.</p> <p>d. Image storage of 4,00,000 or more of 512 matrix</p> <p>e. CD archive with 600 or 700 MB capacity Discs</p> <p>f. Image Processor : Operating system shall be windows based</p> <p>g. <u>The image reconstruction time should be at least 20 images /per second or better for all types of acquisition modes including Cone beam correction, Neuro Imaging studies and 512 matrix, and standard pitch</u></p> <p>9. Workstation</p> <p>a. The should be additional and a Remote Workstation with 2 nos of 18"LCD monitors for post processing, filming</p> <p>b. It shall be independent fully and be DICOM 3.0 compliant for multi modality study review.</p> <p>c. The computer shall be the latest state or art Pentium processor working on Windows base platform for ease of use</p> <p>d. It shall be a high speed CPU with a speed of 3.0 GHz or better and with an independant Hard disc storage capacity of 125 GB or more</p> <p>Two more remote stations (Thin client base) for image review & post-processing facility with all post-processing function including cardiac, as in available in the main workstation and can be placed anywhere inside the hospital.</p> <p>10. Spiral/Helical Technique:</p> <p>a. Scan length of at least 100 secs continuous.</p> <p>b. Should have facility of Multi-spirals bi-directional spirals and back-to-back spirals.</p>

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		<p>11. Software DICOM 3.0 capability</p> <ul style="list-style-type: none"> a. Software for cerebral perfusion study with stroke protocol b. MIP, Volume MIP, CT Angio software with quantitative vessel analysis, Virtual endoscopy software for visualization of vessels and air filled structures and Colonography software for virtual endoscopic, colon study, Dental Planning software for panoramic view and cross-sectional cuts of mandible/maxilla and Brain & Body Perfusion, Lung Nodule Assessment c. Volume rendering technique with axial cross reference imaging along with measurement tools on volume rendered image 3D, 3D Small volume measurement package MIP Slab viewer d. Calcium Scoring software for coronary arteries e. Complete cardiac package with ECG gated studies (Prospective and retrospective tagging) with <ul style="list-style-type: none"> i. Cardiac review with analysis functions such as Ventricular motion, short axis/long axis view, central stenosis analysis, regional wall motion studies ii. coronary angio, iii. coronary tree extraction, iv. one touch volume rendering of the whole heart, v. ECG gated dose modulation, vi. Calcium and coronary angio reporting, vii. Cardiac study reconstruction must be high speed of at least 20 image per second viii. Prospective ECG Gating cardiac scan <p>12. OTHERS</p> <ul style="list-style-type: none"> a. Software for Remote Diagnostics Service over a telephone line b. ECG Gating gadgets. c. System must be PACS interface ready without any new hardware or software. d. Fully DICOM 3.0 Compliant including: <ul style="list-style-type: none"> i. DICOM Modality work list, with automatic procedure selection

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		<ul style="list-style-type: none"> ii. Capability from HIS-RIS interface. e. Does saving protocols must be available including <ul style="list-style-type: none"> i. automatic tube current selection suited for selected exam ii. r dynamic on the fly tube current modulation while scanning iii. ECG gated dose modulation to reduce dose during undesired cardiac phases iv. Dose displays such as CTDI volume, DLP, Dose efficiency
		13. Hard Copy Unit: <ul style="list-style-type: none"> a. A Dry Camera with Digital Interface and control integrated with main console and workstation, Camera should print on 14"X17" film size, at 500dpi and a Colour Laser Printer for Printing Coronary Scans.
		14. Patient Accessories: All patient positioning accessories including head rest should be included
		15. Accessories: <ul style="list-style-type: none"> a. Dual Head Pressure Injector with 500 syringes b. 120kVA UPS for entire CT system with 30 minutes backup. Should be of USA or European /Japan origin. c. Five Split ACs of 2 Ton should be supplied along with complete installation (Hitachi/O-general/Daikin/Mitsubishi)
		16. Miscellaneous: <p><u>Country of origin of the Main Equipment: USA and or Europe/Japan</u></p> <p>European CE marked & FDA approved.</p>
		17. The machine should be supplied 3 years guarantee and seven years CMC.

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S.N.	Code No.	Amended Specification
3	RXA004	<p data-bbox="1308 1892 1340 2058"><u>High Frequency Dental Digital Ortho Pantograph (OPG)</u></p> <p data-bbox="1252 1892 1284 2058">Digital Ortho pantograph CCD/ Cemos sensor technology having high frequency DC generator of operating frequency 35 KHz or more.</p> <p data-bbox="1157 1892 1189 2058">Control Panel</p> <ul data-bbox="925 1892 1149 2058" style="list-style-type: none"> • Should have easy to use control panel imaging program selection, exposure value selection, fast and high quality panoramic program. Same selection available in the graphical user interface of the computer and all of the required settings should be visible. • Optimized imaging geometry on the control panel for easy operation should be able to expand the focal trough by narrow the width of collimator while imaging the anterior teeth. • Interlocking/ closing temple support and forehead support with all proper consents. • Automatic Collimator Selection (ACS) and Automatic Exposure setting (AES), the machine should recommend the KV- value according to size of the patient's Head. <p data-bbox="869 1892 901 2058">X-Ray Tube of 0.5mm focal spot size and 2.7mm AL or less total filtration.</p> <p data-bbox="805 1892 837 2058">Operation Modes:</p> <p data-bbox="742 1892 798 2058">Should be provided with imaging programme for Adult and child panoramic images, sectional panoramic images, TMJ images or sinus images for orthodontic examinations, with lateral and PA/AP projections</p> <p data-bbox="686 1892 718 2058">Movements :</p> <ul data-bbox="622 1892 678 2058" style="list-style-type: none"> • Should have positioning controls and accessories located close to the operator for improved workflow. • Vertical Movement motor driven with foot switch/Touch switch/ computerized. <p data-bbox="566 1892 598 2058">Anode Current:</p> <ul data-bbox="502 1892 558 2058" style="list-style-type: none"> • PAN-10mA (Max.) • CEPH-10mA (Max.) <p data-bbox="470 1892 502 2058">Exposure Time:</p> <ul data-bbox="406 1892 462 2058" style="list-style-type: none"> • PAN-15 sec or less for high quality image, 11 sec or less for fast panoramic image • CEPH-18to 20 sec or less. <p data-bbox="343 1892 375 2058">Digital Film Size:</p> <ul data-bbox="239 1892 335 2058" style="list-style-type: none"> • OPG & TMJ- 145x 5 mm or more (CCD /Cemos active sensor surface) • CEPH- Full size 22x26 cm/ Reduce size 22x18 cm, PA & AP projection 22x20 cm • Sectional image – 5 different sections to choose the region of interest – 18 or more combinations 3 positioning light, Mid Sagittal Plane.

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		<p>Positioning Markers</p> <ul style="list-style-type: none"> • Three positioning light, Mid sagital Plane • Frankfort plane • Focal Trough - Motorised by moving the rotating unit in Y Direction <p>Centering reference</p> <p>Hinged/ Swivel mirror, 4- point head support for patient stability and open design for accessibility for accurate patient positioning.</p> <p>Standard Accessories to be provided</p> <ul style="list-style-type: none"> • One Spilt ACs of 2 Ton should be supplied along with complete installation (Hitachi/O-general/Daikin/Mitsubishi) • Suitable rating UPS to provided with the machine • Bite Rods (10 Nos.) • Set of Fuses (1 each) <p>Power Supply: 230± 10%, 50Hz, 15A</p> <p>OTHER REQUIREMENTS:</p> <ul style="list-style-type: none"> • The Company should be ISO and European CE/USFDA certified. • The unit should be approved by AERB. • The company should have a local Service center. • Three years guarantee from the date installation. • Spilt ACs of 2 Ton should be supplied along with complete installation (Hitachi/O-general/Daikin/Mitsubishi) • The system should be quoted with guarantee of 3 years & CAMC of 7 years after completion of 3 years guarantee.

S.N.	Code No.	Amended Specification
4	RXA005	<p><u>100 mA HIGH FREQUENCY X-RAY MACHINE</u></p> <p>High Frequency X-Ray machine suitable for general Radiography.</p> <p>X- RAY GENERATOR</p> <ul style="list-style-type: none"> • High Frequency X-Ray generator having Frequency of 20 KHz or more suitable for Radiography Should be provided.

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S.N.	Code No.	Amended Specification
		<ul style="list-style-type: none"> • Power output of generator should be 6 KW or more • Radiography KV range should be 40 to 100 KV or more • mA range (Rad.) : 100mA or more • Exposure time (Rad.) : 1ms to 3 sec. with maximum numbers of steps. • The techniques selector switch should be provided for selecting table radiography/bucky <p>Control</p> <p>A very compact, Soft Touch Control Panel having following functions & indications should be provided. The panel can be supplied in floor or wall mount with Spill Proof design Following features should be available on the control panel</p> <ul style="list-style-type: none"> • Machine ON/OFF switch • Digital Display of KV & mAs. • KV & mAs increase and decrease switches • Tube focal spot selection switch. • Ready and x-ray on switch with indicators. • Bucky Selection switch. • Self diagnostic Programme with Indicators for Earth fault error, KV error, filament error & Tube's Thermal Overload. • Anatomical Programming Radiography should be provided in which KV and Mas are automatically selected depending upon the physique of the patient and part of the body to be X-rayed • A dual action hand switch retractable cord should be provided of Radiation Protection of Operator <p>X-RAY TUBE:</p> <ul style="list-style-type: none"> • X-ray tube should be one No stationary anode of BEL/Toshiba/Imported X-ray having focal spot 2.8 mm or less. • One pair of 6 meter H.V. Cable • One no manual collimator with aluminium filter & for adjustment of exposure area <p>COLUMN STAND:</p>



S.N.	Code No.	Amended Specification
		<ul style="list-style-type: none"> It should have floor to ceiling stand with vertical counter balanced travel It should have 360 deg. Rotation It should be provided one chest stand with machine <p>Table</p> <ul style="list-style-type: none"> Five position manual tilt table having bucky grid ratio of 6:1 with 60 lines per inches should be provided. The bucky tray should accept cassette up to 14"x17" size <p>Other Requirements</p> <ul style="list-style-type: none"> The company should be ISO Certified and machine European CE/USFDA certified The unit should be approved by AERB The company should have a Local Service Center The company should have proven track record in Govt. Sector Three years guarantee from the date of installation Rates of CMC including X-Ray Tube for seven years to be submitted. Demo of machine May be called if required. The Company should provide layout plan and QE test report for registration from AERB.

S.N.	Code No.	Amended Specification
	RXA006	<p><u>300 ma HIGH FREQUENCY X-RAY MACHINE</u></p> <p>High Frequency X-Ray machine suitable for general Radiography.</p> <p>X-RAY GENERATOR</p> <ul style="list-style-type: none"> High Frequency X-Ray generator having Frequency of 40 KHz or more suitable for Radiography Should be provided.

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S.N.	Code No.	Amended Specification
		<ul style="list-style-type: none"> Power output of generator should be 2.5 KW or more Radiography KV range should be 40 to 110 KV or more mA range (Rad.) : 300mA or more Exposure time (Rad.) : 1 ms to 2 sec. with maximum numbers of steps. <p>Control</p> <p>A very compact, Soft Touch Control Panel having following functions & indications should be provided. The panel can be supplied in floor or wall mount with Spill Proof design Following features should be available on the control panel</p> <ul style="list-style-type: none"> Machine ON/OFF switch Digital Display of KV & mAs. KV & mAs increase and decrease switches Tube focal spot selection switch. Ready and x-ray on switch with indicators. Bucky Selection switch. Self diagnostic Programme with Indicators for Earth fault error, KV error, filament error & Tube's Thermal Overload. Dual action hand switch retractable cord should be provide. <p>X-RAY TUBE:</p> <ul style="list-style-type: none"> One No Dual focus Rotating Anode BEL/Toshiba/Imported X-ray tube thermally protected having focal spot:- 1mm or less small Focus 2mm or less large Focus Anode heat storage capacity of tube should be more than 100KHU One Pair of 8 meter H. V. Cable. One no manual collimator with aluminium filter & for adjustment of exposure area <p>COLUMN STAND:</p>

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		<ul style="list-style-type: none"> It should have floor to ceiling stand with vertical counter balanced travel It should have 360 deg. Rotation It should be provided one chest stand with machine <p>Table</p> <ul style="list-style-type: none"> Five position manual tilt table having bucky grid ratio of 6:1 with 60 lines per inches should be provided. The bucky tray should accept cassette up to 14"x17" size <p>Other Requirements</p> <ul style="list-style-type: none"> The company should be ISO Certified and machine European CE/USFDA certified The unit should be approved by AERB The company should have a Local Service Center The company should have proven track record in Govt. Sector Three years guarantee from the date of installation The machine should be supplied with working compatibility on three phase supply Rates of CMC including X-Ray Tube for seven years to be submitted. Demo of machine May be called if required. The Company should provide layout plan and QE test report for registration from AERB.

S.N.	Code No.	Amended Specification
	RXA007	<p><u>500 mA HIGH FREQUENCY X-RAY MACHINE</u></p> <p>High Frequency X-Ray Generator of 40 KHz or suitable for Radiography</p> <p>X- RAY GENERATOR</p>

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S.N.	Code No.	Amended Specification
		<ul style="list-style-type: none"> • The X-Ray generator should be of 40 KW or more. • The X-Ray control should have digital display of KV, Ma and mAs. • The radiography KV should be from 40 to 110 KV or more • Ma range up to 500Ma • The exposure time should be from 0.01 to 5.0 seconds with maximum numbers of steps. • The techniques selector should be provided for selecting table radiography/ bucky etc. <p>Control</p> <ul style="list-style-type: none"> • The voltage indicator should be provided which indicates low/normal/high voltage • The generator should have micro processor based electronic overload system. • The generator should have dynamic range control with which maximum mAs. • Can be achieved at specific KV and Ma. • The X-Ray tube should be dual focus of BEL/Toshiba/Imported having rotating anode of 125/20/40 or more. • Focal Spot 1x2mm2 <p>HT CABLE:</p> <ul style="list-style-type: none"> • One pair of 8 meters HT Cable. <p>COLLIMATOR</p> <ul style="list-style-type: none"> • A Manual collimator with aluminium filter & adjustment of exposure area. <p>COLUMN STAND:</p> <ul style="list-style-type: none"> • It should be ceiling column stand/Floor mounted with vertical counter balanced travel. • It should have 360 deg. Rotation <p>Table</p>

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		<p>Type 4 way floating table top</p> <p>Lock system Electromagnetic locking system</p> <p>Tot table sliding 4 way sliding table top approx. 430 mm longitudinal, approx. 320 mm transverse</p> <p>The motorized bucky with grid ratio of 10:1 with 60 lines per cm should be provided. The bucky tray should accept cassettes up to "14x17" size</p> <p>Vertical Bucky Stand</p> <ul style="list-style-type: none"> Vertical bucky should be provided with grid for chest radiography & tray of at least "14x17" or more. <p>Other Requirements</p> <ul style="list-style-type: none"> The company should be ISO Certified and machine European CE/USFDA certified. The unit must be certified from AERB The company should provide the registration & layout plan approval of the installation from AERB before starting the facility. The company should have a Local Service Center The company should have proven track record in Govt. Sector The machine should be supplied with working compatibility on three phase supply Three years guarantee from the date of installation Rates of CMC including X-Ray Tube for seven years to be submitted Demonstration May be taken if required The Company should provide layout plan and QE test report for registration from AERB.

S.N.	Code No.	Amended Specification
RXA008		<p>HIGH FREQUENCY MOBILE X-RAY MACHINE</p> <p><u>X-Ray Generator:</u> 100KV VP & 60 mA or more, High frequency X ray generator.</p> <p>Output: - 2.5 KW or more.</p> <p>mA:- 140 mAs or more</p>

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		<p>KVP range: 40 to 100 KVP or wider range.</p> <p>Control:</p> <ul style="list-style-type: none"> • Attractive & ergonomically designed Control Panel with total soft Touch Switches for carious operations, • KV increase & decrease switches • mA increase & decrease switches • Machine ON/OFF switch. • Collimator Lamp ON Switch. • Standby & exposure release switch. • Self diagnostic programmed with indicators for:- <ul style="list-style-type: none"> ➤ Earth fault error ➤ KV error ➤ Filament error ➤ Tube head Thermal error • X ray on indicator. • Incoming voltage indicator. <p>Tube Head: - Mono block version, stationary anode X ray Tube, Mention about focal spot.</p> <p>Accessories:-</p> <ul style="list-style-type: none"> • Manual Light beam –cum –shutter diaphragm. • Hand switch with retractable cord. • Aluminium filter. <p>Stand: - spring balanced mobile stand very light in weight with tube arm for easy manoeuvre and smooth movements of tube head in vertical plane should be provided. Lead lined cassette storage box. The stand should be able to achieve tube focus on floor distance 75 inch and tube focus to tabletop distance 46 inches. The equipment should occupy minimum floor area and should be capable to be taken through elevator with ease. The Tube arm should be able to Swivel in the range of $\pm 90^\circ$ (Total 180°) for taking radiography on both sides of machine without moving it.</p> <p>Power requirement:- 230 Volt AC, 50 Hz, single phase.</p> <ul style="list-style-type: none"> • The unit must be able to deliver atleast 50 or more Exposures under controlled factors in case of power failure. <p>Other requirements :-</p> <ul style="list-style-type: none"> • The company should be ISO and BIS Certified.

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		<ul style="list-style-type: none"> The Unit should be approved by AERB. The company should have a local Service center. 3 years comprehensive guarantee of complete unit including tube. Comprehensive annual maintenance contract for 7 years after Completing the 3 years guarantee Period. Demo is to be given to if required before finalization <p>The Company should provide layout plan and QE test report for registration from AERB.</p>

S.N.	Code No.	Amended Specification												
RXA009		<p><u>SPECIFICATION OF DIGITAL RADIOGRAPHY FOR MULTIPATE LOADING CR SYSTEM</u></p> <p>The CR System should have following essential features</p> <p>1. Image recording System (Cassettes & Imaging Plated)</p> <p>The following Sizes of radiography cassettes along with image plates should supported & supplied with the unit. Image plates must be flexible/ Rigid to accommodate cassettes in case of OPG's</p> <table><thead><tr><th>Size</th><th>Quantity</th></tr></thead><tbody><tr><td>a. 14"X17"</td><td>2 Nos</td></tr><tr><td>b. 14"X14"</td><td>2 Nos</td></tr><tr><td>c. 10"X12"</td><td>2 Nos</td></tr><tr><td>d. 8"X10"</td><td>2 Nos</td></tr><tr><td>e. 10" X14"/11"X14"</td><td>(only plate size)</td></tr></tbody></table> <p>2. Image Reading (CR Reader/Digitizer)</p> <p>a. The CR Reader/Digitizer Should be able to process up to 90 imaging plates/hour or more, depending on size & application</p> <p>b. It should have a resolution of 5 pixels/mm (Minimum) for standard resolution cassette and 10 pixel for high resolution cassettes reading.</p> <p>c. The system Should have option of having high resolution cassette/reading for all cassette size including 14"X17" & 14"X14"</p> <p>d. It should have input/ output buffer or cassette slots for 4 cassettes or more at one time (for multiplate loading CR System).</p>	Size	Quantity	a. 14"X17"	2 Nos	b. 14"X14"	2 Nos	c. 10"X12"	2 Nos	d. 8"X10"	2 Nos	e. 10" X14"/11"X14"	(only plate size)
Size	Quantity													
a. 14"X17"	2 Nos													
b. 14"X14"	2 Nos													
c. 10"X12"	2 Nos													
d. 8"X10"	2 Nos													
e. 10" X14"/11"X14"	(only plate size)													

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S.N.	Code No.	Amended Specification
		<p>e. It should have a mammography reading resolution of 20 pixel/mm or more.</p> <p>3. Processing Server/CR Workstation with 19" LCD Paned</p> <p>a. PC based unified server/ workstation for centralized patient identification & management of image/ studies</p> <p>b. Process of identification should be ready for interface with existing Hospital information system (HIS) or Radiology Information system (RIS) in DICOM protocols</p> <p>c. This server must provide display of acquired images with a greater detail of demographics, like patient/ study listing for easy access.</p> <p>d. This server must provide full amount of post processing features like Geometric Corrections, Window/Level, Algorithms, Annotations such as markers, Predefined text, Drawing Lines and geometrical shapes, Multi scale image contrast amplification, Measuring Distance & Angles and determining leg length differences, shuttering, histograms, Zoom, Gray scale reversal, Edge enhancement, Noise Reduction, Indicate gray Scale saturation level, Latitude Reduction,</p> <p>e. This terminal must provide a full fledge DICOM printing, should be able to print multiple format (More then four) of patient study, print a true size</p> <p>f. Should be able to sent DICOM images to DICOM viewing station.</p> <p>g. Should be equipped with DICOM CD writer for allowing examination of a patient to be written a CD in DICOM format for referral purposes.</p> <p>4. Dry Laser Imager (For Film Printing)</p> <p>a. The system must be a Dry laser imager camera.</p> <p>b. The system must be DICOM 3.0 Print service class provider, allowing minimum of 10 associations at a time</p> <p>c. The system must be able to process up to 100 films/ hour (minimum) depending on the size</p> <p>d. The system must deliver its first film within 100 second or less from requested</p> <p>e. The system must have spatial resolution of 500PPi/DPI (minimum) for all size printed.</p> <p>f. The system must have contrast resolution of 12bits/pixel or more.</p> <p>g. The system must have at two or more online film sizes and should be capable to print of any of the 8"X10", 10"X12", 10"x14"/11"X14", 14"X14", 14"X17" sizes all input trays should be freely configurable at user level for all mentioned film sizes.</p> <p>h. The system must be not involve any wet process and must give a dry film in single stage (without any user intervention) functionality.</p>

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		<p>i. The system must have a standard film sorter at the output for storing the film based on modality connected</p> <p>j It should have single step direct digital printing.</p> <p>k. Please quote the price complete cassettes with imaging plates of different sizes in option</p> <p>5. Interconnectivity</p> <p>a. Interconnectivity between various CR module should be Ethernet/TCP IP based i.e. RJ 45 Connection (10/100 Base T/LAN)</p> <p>6. Connectivity to PACS</p> <p>The System must be ready to integrate itself in PACS environment</p> <p>7. Software</p> <p>a. Application Relate Software like Paediatric, black border/ black masking should be available.</p> <p>b. The system should have software & hardware to perform full leg-Full spine/Long body imaging/image switching.</p> <p>8. U.P.S.</p> <p>The Company should provide UPS for the whole system with minimum 30 minutes backup</p> <p>9. Installation List</p> <p>Firm should attach installation list in India of the model quoted out of which at least two installations should be government hospital of govt. medical college.</p> <p>10. Guarantee</p> <p>3 years comprehensive guarantee of complete system.</p> <p>11. Comprehensive annual maintenance contract for 7 years after completing the 3 years guarantee period.</p> <p>12. Two Split AC 2 Ton each should be supplied with installation (preferably Hitachi/O-general/Daikin/Mitsubishi)</p> <p>13. The Company should provide layout plan and QE test report for registration from AERB.</p>

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S.N.	Code No.	Amended Specification
	RXA012	<p><u>SONOGRAPHY COLOR DOPPLER SYSTEM</u></p> <p>The system should be state art with full Digital Technology & should be capable of whole body sonography & other application for adult & paediatrics (Infants & neonates) which including Abdominal, Obs/ Gyn, Endovascular, Peripheral vascular, Transcranial, transvaginal, transrectal & small parts.</p> <ol style="list-style-type: none"> 1. The system should incorporate facility for high resolution 2D, 3D, M Mode, PW color flow imaging, Power Doppler Angio Imaging Modes. 2. The equipment should have more than 20000 Digital Channels & on the site to higher numbers of channels, Higher number of channels is Preferred. 3. The system should have 256 Grey shed or more. 4. All Transducer have Broad Bandwidth for extreme High resolution 2D imaging. Frequency range of transducer should be 2 to 12 MHz or more. 5. System should have advance image processing algorithms to analyse between targets & artefacts so as to sharpen target anatomy, reduce the sparkle & artefacts for improve image quality. 6. The system should have a high Dynamic range of 170 DB or more. Higher dynamic range will be preferred. Scanning depth 30 cm or more. 7. The system should have a very high frame rate of 700 frames per second or more. Please specify frame rate in triplex mode. 8. The system should have Harmonic imaging for tissue for hard to image patients. The system shall support Tissue Harmonic imaging capability on phased, linear,, 3D and curved array transducers. 9. The system shall offer Harmonic imaging in Power Doppler imaging mode for improved sensitivity & specificity in differentiating blood/Agent from Tissue. 10. 11. The system should have a full alphanumeric key Board with illuminated keys & status Display. 12. The System should be able to support at least three Transducers with universal ports allowing any transducers to be connected to any Port. 13. The system should have high Regulation fully articulating non interlaced full flat TFT/LCD Display of 17 inch or more, with Tilt & swivel facility. 14. The system should have facility for Zoom (Real-Time & Frozen image) & manipulation of image through pre processing & post processing with cine loop viewing image of all modes. 15. System should have disc of at least 150 GB or more. 16. The system should have facility of digital storage & retrieval of B/W & color image data (Both frozen & cine loops) on built in as well as ramble media (CD,DVD) USB Port. 17. The system should have automatic real time quantification of Doppler parameter like velocity, frequency, time heart rate stop, flow volume, plasticity index, resistivity index, peak velocity, average value, point value, area & diameter flow volume etc. 18. The system should have capability of triplex display in real time with all probes. 19. The system should have extensive calculation software packages for general measurement, Obs/Gyn, Vascular, Paediatric 20. Machine should be supplied with following transducers:- <ol style="list-style-type: none"> 1. Board band convex array Transducer with multi frequency range of 2 to 5 MHz or wider range-1 no.

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S.N.	Code No.	Amended Specification
		<p>II. Broad band transvaginal/ transrectal Probe with multi frequency range between 5 to 8 MHz or wider range-1no.</p> <p>III. Linear probe Transducer 5 to 12 Mhz or more.-1 no.</p> <p>21. The System should have the following documentation devices</p> <p>a) Laser color printer for color image printing</p> <p>b) B/W Thermal printer of latest model</p> <p>c) Glazed thermal paper Rolls 50 no. & 5 rim of Glossy paper sheet.</p> <p>23. All information in the tender document must be supported with product date sheet. Companies should quote the latest model.</p> <p>22. UPS of appropriate rating for 30 minutes should be provided with the system</p> <p>23. One split A/C of 1.5 tone of reputed make.</p> <p>24. Comprehensive guarantee of complete unit including probes & A/C for 3 years</p> <p>25. Comprehensive CMC of complete unit including probes for 7 years</p> <p>26. The unit should be approved by US FDA /European CE to other international accreditation.</p> <p>27. The company should have a local service center</p> <p>28. The company should have proven track record in Govt. sector list of previous installation to be submitted.</p>

S.N.	Code No.	Amended Specification
	RXA013	<p><u>SPECIFICATION OF B&W ULTRASOUND SYSTEM</u></p> <p>Real time high resolution, ultrasound complete unit best for abdomen, obs/gynae, General use, small parts & peripheral vessels. Capable of high quality image, complying best and latest technology and should be future clinical needs.</p> <p>1. Technical specification:</p> <ul style="list-style-type: none"> • Ultrasound scanner with integrated trolley with probe, soft touch alphanumeric key board with track ball (size to be mentioned) • With panel switches & controls easily operable • Integrated High Resolution Monitor (15") • Probes & Gel holder-conveniently placed • Standard accessories, manual, catalogue of quoted model. <p>Following Transducers are to be supplied:</p>

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S.N.	Code No.	Amended Specification
		<ul style="list-style-type: none"> • A-2.0-5.0 Mhz. Multi Frequency Convex Transducer. - One • B- 5.0-12.0 Mhz. Multi Frequency Linear Transducer. - One • C- 5.0-8.0 Mhz or more Endo Cavity Probe - one. <p>2. Technical Data:</p> <ul style="list-style-type: none"> • All probes should be electronic transducers and multi frequency preferably three frequencies and should give Aperture & depths of scanning. • Controls for Depth, gain compensation, body markers with transducers position. • Real time Continuous dynamic focus. • Auto Annotation facility anywhere on image. • Image display in B,B/M&M Model (2B&2D) • Zoom facility minimum five times or more. • Shades for grey 256 • Inbuilt cine memory. • Unite should be capable of measuring BPD, CRL, FL & AC and other GA parameters. • Facility for image magnification, inversion, changing, scan, direction, freeze facility. • 8 Step STC/TOC should be available. • Frame rate minimum 50 FPS. • Minimum 200 patient memories. • Caliper with trackball for the measurement of distances circumferences, area volume etc. should be possible to make different measurement on single image. • Alphanumeric key board. • Panel Switches & foot controls. • Patient reports for Obs/ Gynae including fetal growth trend, including Histogram facility for tissue Texture & Trend graph for IU/GR cases, Urology, and ortho pedics. • Give the gain adjustable/ Range & its steps. • Calculations needed; Velocity, Heart rate, Volume addl. Modes. <p>3. The system should have the following Accessories:</p> <ul style="list-style-type: none"> • Sony/fuji make B&W thermal printer with 50 rolls • One KVA Online suitable UPS. <p>4. OTHER TERMS;</p> <ul style="list-style-type: none"> • There years complete guarantee for the entire system, probes and accessories, which should include service as well as parts. • Guarantee will commence after complete and successful installation of the main equipment and all the supplied accessories. • Comprehensive annual maintenance (Labour) for all supplied items to be quoted for next 7 years after expiry of 3 years guarantee period. • An uptime of 98% is to be ensured during guarantee and and CMC period.

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S.N.	Code No.	Amended Specification
		<ul style="list-style-type: none"> Unit must be USFDA/European CE approved. 1.5 Ton split AC should be supplied with machine with complete installation (Hitachi/O-general/Daikin/Mitsubishi)

S.N.	Code No.	Amended Specification
	RXA015	<p><u>STATE OF ART HIGH COLOR DOPPLER SYSTEM WITH ELASTOGRAPHY</u></p> <p>The system should be state art with full Digital Technology & should be capable of whole body elastography & other application for adult & paediatrics (Infants & neonates) which including Abdominal, Obs/ Gyn, Endovascular, Peripheral vascular, Transcranial, transvaginal, transrectal & small parts.</p> <ol style="list-style-type: none"> The system should incorporate facility for high resolution 2D, 3D, M Mode, PW color flow imagine, Power Doppler Angio Imaging Modes. The equipment should have more than 60000 Digital Channels & should be up gradable on the site to higher numbers of channels, Higher number of channels is Preferred. The system should have 256 Grey shed or more. All Transducer have Broad Bandwidth for extreme High resolution 2D imaging. Frequency range of transducer should be 2 to 16 MHz or more. The system should be able to capture all frequencies in a single probe without the need for user selection. System should have advance imaging - To evaluate relative tissue stiffness for liver, breast, prostate & other small part application on a variety of transducer like convex, linier & endocavity transducer. System should have elastic quantification. Liver & small parts imaging should be both non compressible & compressible based & it should be validated & reproducible. Tissue depth should be at least 8cm. or more.. The system should have advance image processing algorithms to analyse between targets & artifats so as to sharpen target anatomy, reduce the sparkle & artefacts for improve image quality The system should have a high Dynamic range of 180 DB or more. Higher dynamic range will be preferred. Scanning depth 30 cm or more. The system should have a very high frame rate of 500 frames per second or more. Please specify frame rate in triplex mode. The system should have Harmonic imaging for tissue for hard to image patients. The system shall support Tissue Harmonic imaging capability on phased, linear, 3D and curved array transducers. The system shall offer Harmonic imaging in Power Doppler imaging mode for improved sensitivity & specificity in differentiating blood/ Agent from Tissue. The system should have a full Panoramic imaging to have an extended field of view of structures. The system should have a full alphanumeric key Board with illuminated keys & status Display. The System should be able to support at least three Transducers with universal ports allowing any transducers to be connected to any Port. The system should have high Regulation fully articulating non interlaced full flat TFT/LCD Display of 19" or more, with Tilt & swivel facility.

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S.N.	Code No.	Amended Specification
15.		The system should have facility for Zoom (Real-Time & Frozen image) & manipulation of image through pre processing & post processing with cine loop viewing image of all modes.
16.		System should have disc of at least 500 GB or more.
17.		The system should have facility of digital storage & retrieval of B/W & color image data (Both frozen & cine loops) on built in as well as ramble media (CD,DVD & USB Port)
18.		The system should have automatic real time quantification of Doppler parameter like velocity, frequency, time, heart rate stop, flow volume, plasticity index, resistivity index, peak velocity, average value, point value, area & diameter flow volume etc.
19.		The system should have capability of triplex display in real time with all probes.
20.		The system should have extensive calculation software packages for general measurement, Obs/Gyn, Vascular, Paediatric
21.		Machine should be supplied with electrographic facility with following transducers:- <ul style="list-style-type: none"> • Board band convex array Transducer with multi frequency range of 2 to 5 MHz or wider range-1 no. • Broad band transvaginal/ transrectal Probe with multi frequency range between 5 to 9 MHz or wider range-1no. • Linear probe Transducer 9 to 14 Mhz or more-1 no.
22.		The System should have the following documentation devices <ul style="list-style-type: none"> • Laser color printer for color image printing • B/W Thermal printer of latest model • Glazed thermal paper Rolls 50 no. & 5 rim of Glossy paper sheet.
23.		All information in the tender document must be supported with product date sheet. Companies should quote the latest model.
24.		UPS of appropriate rating for 30 minutes should be provided with the system
25.		One split A/C of 1.5 tone of reputed make.
26.		Comprehensive guarantee of complete unit including probes & A/C for 3 years
27.		Comprehensive AMC of complete unit including probes for 7 years
28.		The unit should be approved by US FDA /CE to other international accreditation.
29.		The company should have a local service center.
30.		The company should have proven track record in Govt. sector list of previous installation to be submitted.
31.		Demonstration of quoted item is mandatory.

S.N.	Code No.	Amended Specification
RXA017		<p data-bbox="1300 392 1340 1747">FULLY MOTORIZED WIRELESS DIGITAL RADIOGRAPHY SYSTEM WITH TWO FLAT PANEL DETECTOR</p> <p data-bbox="1252 392 1292 1243">Flat Panel digital Radiography system for all possible Radiography application</p> <p data-bbox="1133 392 1244 2072">A fully digital radiography system capable of detector exposure in vertical, horizontal and oblique position to perform all skeletal body and chest radiography. The unit should be completed (integrated generator and image acquisition) and comprise the following along with quality control features incorporated.</p> <p data-bbox="1085 392 1109 526">Generator:</p> <ul data-bbox="877 392 1069 1668" style="list-style-type: none"> • Generator should be micro processor controlled high frequency / inverter technology with output 65KW or more. • KVP range 40 KV - 150 KV or more. • Output should be 650 MA or more. • It should have digital display or KVP and mAs with automatic exposure control device <p data-bbox="829 392 861 705">X-ray tube and Collimator</p> <ul data-bbox="582 392 813 1019" style="list-style-type: none"> • The X-ray tube should be rotating anode high speed with dual focus having focal spot of the following sizes: <ul data-bbox="686 470 766 828" style="list-style-type: none"> ➤ Large focus: 1.2mm or less ➤ Small focus: 0.6mm or less • The X-ray tube should be of BEL/Toshiba/Imported • Tube heat capacity should be 300 KHU or more. <p data-bbox="534 392 566 795">Ceiling suspended 3D Column Stand</p> <ul data-bbox="486 392 518 1836" style="list-style-type: none"> • It should be Ceiling suspended 3D Column Stand having 3 direction motorized movement supported by electromagnetic for safety. <p data-bbox="438 392 470 537">X-ray Table</p> <p data-bbox="383 392 414 1220">Horizontal Table with floating table top with motorized elevated facility</p> <ul data-bbox="231 392 367 2072" style="list-style-type: none"> • It should have in flat panel detector system of 35X43mm size or more/square detector • Table Detector & overhead tube can setup with automatic tracking along the length of table Vertical Bucky stand • Vertical Bucky should be provided with grid for chest radiography with tilting facility i.e. + 20 degree should have flat panel detector of atleast

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S.N.	Code No.	Amended Specification
		<p>35X43cms or more.</p> <ul style="list-style-type: none"> • Detector movement should be synchronised with movement of X-ray tube • Detector if needed can be shifted to another X-ray machine with its integration with same workstation station with compatibility. <p>Digital flat panel detector</p> <ul style="list-style-type: none"> • The detector to have mechanical dimension of standard 35X43cms or more • It should have amorphous cesium iodide matrix as receptor. • Detector should have pixel size of 175 micron or less per pixel, a image matrix should be greater than or equal to 1900 X 2400 pixels • The image acquisition time should be 5 sec. or less at console. • System should be wireless P with Wi-Fi capability • Detector should have in-built battery /removable battery capable of minimum of 150 exposures per charge • The battery should capable of external charging & two additional batteries to be supplied with the system. • The batteries must be replaced free of cost during the guarantee period and during the CMC period. • DQE should be 65% or more. • Both detector and software should be manufactured by the same bidder/ quoted company. • Detector should capable of being used with other x-ray system. • Bidder must provide sole authorization letter from the manufacturing company that detector can be supplied whenever capable of being during machine life. • Operating consol • Workstation should have high resolution TFT/LCD monitor of size 19 inch or more with minimum 1024 X 1024 or more & anti refractive front screen. • Should have latest high speed processor of 32 bit or more • It should have image storage disk 400GB or more.

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S.N.	Code No.	Amended Specification
		<ul style="list-style-type: none"> • Should be equipped with DICOM CD writer • System should be able to send or receive DICOM image to DICOM viewing station/ PACS & necessary software to take print out of JPEG images on medical films. • Must be provided for image processing image display post processing function and networking with matrix. • Image acquisition and image processing based on body part and viewing position. • Retrieval of patient list and examination data from Hospital/Radiology information systems (HIS/RIS) SHOULD BE POSSIBLE. • The system should have ready Dicom Interface and networking capability with RIS/HIS/PACS • Post processing function must be available <p>Essential Accessories</p> <ul style="list-style-type: none"> • Voltage stabilizer should be quoted separately along with the unit of required capacity. The capacity and make of the voltage stabilizer should be specified • On line UPS with 30 minutes back up for console/computer system <p>Dry Laser printer</p> <ul style="list-style-type: none"> • The system must be Laser with automatic image quality adjustment & single step printing • The system should accept multiple modality with DICOM input & output and can be connected any DICOM Modality. • The system should be capable of different layout format on single film • The system must deliver its first film within 70 seconds or less from requested • The system must deliver have spatial resolution of 500 DPI or more & contrast resolution of 12 bits/pixel or more for all size film printed. • The system must have three online film sizes and should be capable to print of any of the 8"X10", 10"X12", 11"X14", 110"X14", 14"X14", 14"X17" sizes. <p>OTHER REQUIREMENTS:</p> <ul style="list-style-type: none"> • Three years guarantee including all accessories from the date of installation. • CAMC rate after expiry of guarantee period should be submitted for next seven years.

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S.N.	Code No.	Amended Specification
		<ul style="list-style-type: none"> • The detector should be approved by US FDA/European CE & x-ray machine should be AERB approved. The company should have a local Service center. • The company should have provide the registration & layout plan approval of the installation from AERB before starting the facility. • The company should have proven track record in Govt. sector list of previous installation to be submitted. • AC of 2 ton 5 in number for Flat panel detector & processing work station & printer • Company should connect all workstations with existing printers for image printing at signal site • On 3 KV online UPS

S.N.	Code No.	Amended Specification
RXA018		<p><u>SPECIFICATION OF WIRELESS FLAT PANEL DETECTOR</u></p> <p>Flat panel Detectors System two in number to convert the existing analog x-ray system into digital radiography (DR) with a cassette sized wireless DR Detector that fits with existing equipment without any Bucky modification for department of Radiodiagnosis, SMS Hospital, Jaipur</p> <p>Above system should have following specification</p> <p>(A) <u>Digital flat panel detector</u></p> <ul style="list-style-type: none"> • Can be fitted in to vertical chest stand/vertical Bucky/horizontal Bucky or work in existing machine • The detector to have mechanical dimension of standard 35X43 cms or more • It should have amorphous cesium iodide matrix as receptor. • Detector should have Pixel size of 175 micron or less per pixel, a image matrix should be greater than or equal to 1900X2400 pixels • The Image acquisition time should be 5 sec. or less at consol • Weight should be wireless with Wi-Fi capability. • Detector should have built in/removable battery capable of minimum of 170 exposures per charge. • The batteries should be capable of external charging & two additional batteries to be supplied with the system.



S.N.	Code No.	Amended Specification
		<p>(B) <u>Processing work station</u></p> <ul style="list-style-type: none"> • P.C based work station, must be medical grade monitor with 5 mega pixel resolution with full amount or post processing software. • Terminal must be provide with full flagged DICOM printing which having facility of multiple format (Minimum Four), It must be able to print a true size image. • System should be able to send or receive DICOM image to DICOM viewing station/PACS & necessary software to take print out of JPEG image on medical films. • Should be equipped with DICOM CD writer. • Should have compatibility & connectivity with existing printer available in the department for image printing • Should be able to connect minimum of three detectors per system. • Monitor resolution should be at 1024X1024. • Hard disc storage should be 600 GB or more • Company should provide necessary software & integrate the PC of Registration Counter with Processing work station to transfer the patient demographics with registration <p>(C) <u>Dry Laser printer</u></p> <ul style="list-style-type: none"> • The system must be Laser with automatic image quality adjustment & single step printing. • The system should accept multiple modality with DICOM input & output and can be connected any DICOM Modality. • The system must be able to process up to 180 films/hour or more of mixed film sizes including 14"X17" film size. • The system should be capable of different layout format on single film. • The system must deliver its first film within 70 seconds or less from requested. • The system must have spatial resolution of 500 DPI or more & contrast resolution of 12 bits/pixel or more for all size film printed. • The system must have three online film sizes and should be capable to print of any of the 8"X10", 10"X12", 10"X14", 11"X14", 14"X14", 14"X17" sizes. <p>(D) <u>OTHER REQUIREMENTS:</u></p> <ul style="list-style-type: none"> • Three years guarantee including all accessories from the date of installation. • CAMC rate expiry of warranty period should be submitted for next seven years. • The unit should be approved by US FDA/European CE accreditation. • The company should have a local Service centre. • The company should have proven track record in Govt. sector list of previous installation to be submitted. • Down Time penalty 2500/- per day after 24 hours. • Four A.C. of 2 ton each should be supplied with machine with complete installation (Hitachi/O-general/Daikin/Mitsubishi) • Company should connect all workstations with existing printers for image printing at signal site.

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S.N.	Code No.	Amended Specification
		<ul style="list-style-type: none"> One 3 KV online UPS.

S.N.	Code No.	Amended Specification
	RXA019	<p><u>AUTOMATIC FILM PROCESSOR</u></p> <ol style="list-style-type: none"> Should be compatible for sheet type X-ray films. The assembly should be made up of material which is non corrosive and of latest technology, specify the material used. Should be suitable for film sizes from 8x10 inches to 14x17 inches. Should have continuous film roller transport and auto start and stop facility. Should have a variable processing time from 90 to 180 seconds. Should have a developer and fixer tank of minimum 5 liters capacity. The container assembly should be made of non-corrosive material. The main drive should automatically change to standby mode during idle time to prevent wear and tear. Should have sufficient sensors for film detection and level sensors for overflow protection. Should have variable developer and fixer temperature from 30 to 35°C or better. The replenishment containers should have capacity of at least 25 liters and the replenishment should be automatic. Should have film driver facility and the temperature should be adjustable. Should have individual setting for processing time, temperature and replenishment rate. Should have a digital display for processing time and temperature. Should be table top model and should be supplied with mounting stand. Should be supplied with suitable automatic servo stabilizer. Should supply all the accessories necessary for commissioning including 20 liters of developer and fixer. Should work with input 200 to 240V ac 50 Hz supply <p><u>OTHER REQUIREMENTS:</u></p> <ul style="list-style-type: none"> Three years guarantee including all accessories from the date of installation. CAMC rate expiry of warranty period should be submitted for next seven years The unit should be approved by US FDA/European CE accreditation. 1.5 Ton split AC should be supplied with machine with complete installation (Hitachi/O-general/Daikin/Mitsubishi)

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S.N.	Code No.	Amended Specification
	RXA020	<p><u>HIGH FREQUENCY MAMMOGRAPHY MACHINE</u></p> <p>A) X-RAY GENERATOR</p> <ul style="list-style-type: none"> • High frequency 20 KHz or more X-Ray Generator should be provided. • Power of generator should be more than 3.5 KW or more • Maximum mA output should be more than 100 mA or more • K V Range should be 23 to 32 KV in steps of increment of 1 KV each/ or more. • mAs Range for large filament should be from 4 mAs to 500 mAs or more. • 1 No. High Voltage Cable should be provided. <p>B) X-RAY TUBE</p> <ul style="list-style-type: none"> • Rotating Anode X-Ray Tube of BEL/Toshiba/Imported having dual focus, dual angle should be provided. • Focal Spots: <ul style="list-style-type: none"> Small Focus= 0.1 mm² Large Focus=0.3 mm² • Anode Heat Storage Capacity should be more than 150 KHU or more • Tube Assembly Heat capacity should be at least 1.25 MHU <p>C) <u>CONTROL PANEL</u></p> <ul style="list-style-type: none"> • Micro Processor controlled Feather Touch Control Panel with LED display should be provided. • Technique selection: Manual Two Point Technique (i.e. KV, mAs) should be possible. • Anatomic Program for small, medium & Large breasts should be provided. • More than 2 Step Film Density Control be provided. • Automatic Exposure Control device should be provided • Automatic selection of filter as per the KV selected (Molybdenum Filter and Rhodium) should be provided. • Following Digital display should be provided: <ul style="list-style-type: none"> ➤ Large format LED display on the stand – compression force in Kg, compressed breast thickness and Gantry angle should be provided. <p>Breast Release mechanism in case of power failure:</p> <ul style="list-style-type: none"> • Facility to manually release the breast or push to OFF type emergency switches should be available on both sides of gantry to release breast in case of power failure. <p>Below Safety feature should be provided:</p>

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		<ul style="list-style-type: none"> • Microcontroller based embedded platform to ensure accurate delivery of exposure parameters. • Automatic compression locking after maximum compression of compression paddle. • Electro Magnetic/Earthing interlock is provided in the machine for safety of user. • Fast Compression release mechanism in case if patient is uncomfortable with compression. • Automatic breast release after X-Ray exposure is completed. <p>D)</p> <p><u>STAND ASSEMBLY</u></p> <ul style="list-style-type: none"> • A compact Stand having Iso-Centric movement on which C-Arm containing X-Ray Tube & Bucky Assembly is mounted should be provided. • Vertical Movement (Motor operated) should be 600mm or more. • Source to image distance (SID) should be 600mm or more. • Breast Compression: Automatic compression with digital display of compression force should be provided. Adjustable compression force should be available. Automatic Compression release after Exposure completion should be available. • Compression Paddles for Normal & Magnification Mode (Spot Compression) should be provided. • Magnification Device: 1.5X or 1.8X should be provided. • 18 X 24 cm Bucky & collimation plate with Motor operated Oscillating Grid 5:1, 30 lines/cm should be provided. • Molybdenum Filter & Rhodium Filter Changer. • Light Beam collimator with Halogen Lamp with Auto shut off facility should be provided. • Cone for Localization & Radiation protection should be provided. • Switches for up/down movement of gantry, placed conveniently on both sides of gantry should be provided. <p>Separate foot control for gantry movements should also be available for hands free operation.</p> <p>E)</p> <ul style="list-style-type: none"> • Hand Switch with Retractable cord for initiation of exposure should be provided. • Film marking device & Alpha Number identification system should be provided. • Free standing fully Transparent Lead Glass Screen for operator protection should be provided. <p><u>POWER SUPPLY REQUIREMENT</u></p> <ul style="list-style-type: none"> • Single Phase, 230 Volts \pm 10%, AC, 50 Hz, 15 Amps with Independent earthing on the wall socket. <p>F)</p> <p><u>Accessories :</u></p> <ul style="list-style-type: none"> • 24 X 30 cm Bucky with Grid & collimation plate (Motor operated). • Breast equivalent phantom <p>G)</p> <p><u>Other Requirements :</u></p> <ul style="list-style-type: none"> • The company should be ISO certified and machine and USFDA/European CE Certified

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		<ul style="list-style-type: none"> • The unit should be approved by AERB • The company should have a local Service centre. • The company should have proven track record in Govt. sector. • Three year warranty from the date of installation • The system should be quoted with guarantee of 3 year & CAMC of 7 year after completion of 3 years guarantee. • 1.5 Ton split AC should be supplied with machine with complete installation (Hitachi/O-general/Daikin/Mitsubishi)

Note-1:- Where ever A.C. is required along with machine, it should be read as with brand name or equivalent with five star rating.


Note-2 :- Please note that above all Amendments/corrigendum in technical Specifications/bid conditions, is the integral part of Annexure-C and bid document. This corrigendum shall be signed and annexed with tender/ bid document.

Managing Director
Rajasthan Medical Services Corporation Ltd.,
Jaipur

Dated: 22/11/13

No. F-8(MI/)RMSC/EPM/R.C. 13-14/NIT No.-21/2013/ 59
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1. AGM (IT) to upload on RMSC Website


Executive Director
Rajasthan Medical Services Corporation Ltd.,
Jaipur