TECHNICAL SPECIFICATIONS FOR HIGH END COLOUR DOPPLER ULTRASOUND SYSTEM FOR CARDIOLOGY DEPARTMENT.

This ultrasound machine should be a state of the art high end Colour Doppler System with full digital technology for the applications of whole body to include full cardiac and peripheral vascular applications, paediatrics, small parts and intracavitary applications.

1. Description of Function
COLOUR DOPPLER SYSTEM WITH ADVANCED 2D FACILITY.

2. Operational Requirements:
2.1 Latest generation Electronic Phased array Doppler system with Minimum 1200 Electronic independent channels, and desirably 4000 Electronic independent channels. System should be DICOM ready and capable of being interfaced with HIS/RIS/PACS.
2.2 Should be field up gradable to next generation system on site. All new software should be upgraded free of cost for at least 3 years
2.3 Frequency compounding or better technology for better resolution and penetration.

3. Technical Specifications
3.1 Latest generation Electronic Phased array Colour Doppler system with Minimum 1200 Electronic independent channels.
3.2 256 gray shades for sharp contrast resolutions
3.3 Adult Trans thoracic Cardiac Probe to be supplied which should be latest generation wide band transducers.
3.4 Harmonic Imaging- System should have Harmonics on all the probes following modes in harmonic with separate setting for:
3.5 Trapezoidal Image on B / Colour.
3.6 Automated Gain control for additional level of flexibility to image quality control.
3.7 Real time high frequency 2D for higher resolution.
3.8 Advanced 3D imaging package with multiplanar views & surface and volume rendering tools.
3.9 Frame rate should be 1000 FPS or more
3.10 High-definition acoustic zoom for enlarging sections of 2D and Colour flow images with more acoustic information for greater clarity and detail while maintaining an optimal frame rate.
3.11 Modes –2D, M-Mode, Steerable PW/CW Doppler, Colour Doppler, and High Definition Colour flow with Colour power angio imaging and full Colour Doppler echocardiography system.2D Duplex, and Colour Doppler, colour Power Angio, Directional power angio and colour panoraimic .
3.12 Monitor should be 15" or more, high-resolution Colour Monitor.
Tilt and Swivel monitor should be able to view in all angles and all light conditions.
3.13 Colour Flow Imaging for
a) Increased lateral & spatial resolution.
b) Detection of even subtle areas of turbulence, displaying a more physiological blood flow appearance without loss of frame rate.
c) Colour flow with capability of automatically picking up colour flow as a function of focal depth
3.14 Tissue Colourization (B-Colour) for improved contrast resolution
3.15 Application software for Adult, Pediatric, Fetal and Peripheral Vascular (All application package should be built into the system)

3.16 Cine loop memory- more than 1000 frames.
a. High Frame rate review for better clarity of playback images study in slow motion.
b. Quad loop with memory for pre and post image comparison of any procedure.
c. Memory- 256 frames or more in quad loop. M Mode & Doppler Scroll Memory-40 seconds or more.
d. Frame grabber facility for post analysis.
3.17 Various maps for pre and post processing.
3.18 ECG facility.
3.19 User defined system and application presets for multi-user department.
3.20 Minimum 4.8 GB optical disc drive / 80 GB hard drive for image storage and retrieval. (Standard with system)
3.21 Three or more transducer ports.
3.22 Facility for high definition digital acquisition, review and editing of complete patient studies.
3.23 Facility of Real Time perfusion studies with contrast (micro bubbles) for liver applications.
3.24 PC based Peripheral system comprising of dedicated computer at least 100 GB storage space (Hard disc) with 1 GB RAM or more with a Microprocessor speed of more than 3.00 GHz, frame grabber incorporated (All Software Inclusive) interfaced with the echocardiography machine with DVD writer and a high quality Colour Laser printer. CD/DVD produced should be playable on any system.
3.25 Anatomical M mode, M-Mode.

4. System Configuration Accessories, spares and consumables
4.1 Colour Doppler System with all application packages for serial studies with High frame rate review. Harmonic imaging capability in all modes. Digital Storage and Retrieval
4.2 Phased Array Transducer with frequency range of 2-4 MHz for adult cardiac application.
4.3 B/W thermal printer of latest model
4.4 Colour laser printer for direct printing of images from the system (with CE or FDA mark) –min dpi of 1200
4.5 DVD/CD Recorder with DICOM media transfer

5. Environmental factors
5.1 The unit shall be capable of operating continuously in ambient temperature of 30 deg C and relative humidity of 80%.
5.2 Pre Requisites should be clearly spelt out in terms of room requirements.

6. Power Supply
6.1 Power input to be 220-240VAC, 50Hz fitted with Indian plug
6.2 Resettable overcurrent breaker shall be fitted for protection
6.3 Suitable Servo controlled Stabilizer/CVT
6.4 Online UPS of suitable rating with voltage regulation and spike protection for 30 minutes back up.

7. Standards, Safety and Training
7.1 Should be FDA or CE approved product
7.2 Electrical safety conforms to standards for electrical safety IEC-60601 / IS-13450
7.3 The product shall comply to IEC 60601-2-37 ed1: Medical Electrical Equipment - Part 2-37: Particular Requirements for the Safety of Ultrasonic Medical Diagnostic and Monitoring Equipment
7.4 Type of protection against electric shocks -- Class I Degree of protection against electric shocks for ultrasound probes Type "BF" For ECG electrodes Type 'CF"
7.5 Manufacturer/Supplier should have ISO certification for quality standards.

8. Documentation
8.1 User manual in English.
8.2 Service manual in English.
8.3 List of important spare parts and accessories with their part number and costing available in stock with the supplier.

9. Maintainance and Serviceability
9.1 Remote Service Network Connectivity
9.2 Optional Service agreement
9.3 Online phone Support
9.4 Clinical application support