Technical specification for Portable Colour Doppler Ultrasound Unit for use in OT, ICU.

A state of art fully digital, compact portable Colour Doppler Ultrasound machine with following technical features.

1. Unit should be able to give very high image quality with advance technologies like compound imaging for better tissue differentiation and edge detection, equivalent to high end cart based systems
2. System should be able to support speckle reduction imaging for better tissue differentiation and edge enhancement
3. The system shall have the ability to enhance tissue margine and improve contrast resolution by reducing artifacts and improving visualization of texture patterns
4. Imaging modes of real time 2D, colour Doppler, Pulsed wave Doppler, continuous wave Doppler must be available
5. System should support transducer technologies like phased array, convex, linear
6. Cine memory on all modes
7. System must have fast start up to scanning in less 60 seconds from off condition
8. The system shall process a dynamic range that is at least 100db, The system must display at a maximum depth of 35 - 40 cm
9. The system must have cardiac packages, vascular calculation package
10. The unit must be compact, portable and lightweight, weighing less than 8 kg.
11. Flat LCD monitor of at least 10 inches with flicker free image
12. Keyboards must be touch control with easy access scan controls
13. The system must have the ability to function by AC/DC or Battery power with the same degree of functionality, the battery life (run time) shall be at least 1 hours, this need to be demonstrated
14. Data Transfer should be as standard to transfer images etc. easily onto another system /computer etc
15. System should posse's software for Enhanced Needle Visualization to track the needle clearly at steep angles during the procedures while maintaining striking image quality of the target structures. This facility should be available on both High frequency Linear and Convex probes for superficial as well as deeper blocks
16. Preferably system should be Triad THI, Auto Steer, Stain Elastrography, simple layout, full Screen mode
17. The system shall support the all DICOM functionality Storage print and work list also ready to connect to PACS
18. Unit must be FDA & CE certified.

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Transducers to be supplied as standard

19. 4-13 or more MHz Multi-frequency, broadband Linear array transducer for vascular, nerve imaging with less then 40 mm size for vascular access, small parts, vascular, musculoskeletal interscalene, supraclavicular, Axillary, Musculocutaneous, Higher frequency will be preferred.
20. 2-5 MHz multi-frequency broadband curved array transducer for general purpose, abdominal, deep nerve access Specially Subgluteal & abdominal application
21. Trolley: Essential Requirements
22. Warranty: The unit, Transducers and all accessories should be covered with comprehensive onsite warranty for three years commencing from the date of issue of installation certificate.
23. 5-1 MHz phased for heart examination (Cardiac Transducer)

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Specification for High End Whole Body 4D Ultrasound with Color Doppler System

1. Should have very high-end system capable of performing Whole Ob/Gyn, Abdominal, Vascular, Cardiac, Small Parts, Musculoskeletal, TCD imaging application.
2. System should have minimum 17" High Resolution non-interlaced flat monitor with tilt & Swivel facility. The flat monitor should be movable and height adjustable.
3. The system should have the following modes: 2D, 3D with Multiplanner reformation, 4D, M-Mode, High Q Automatic Doppler Analysis, Intelligent Doppler scan facility, Tomographic Ultrasound Imaging capability of (TUI), Pulse Inversion Harmonics, Tissue Doppler Imaging, breast-liver other elastography facility, compatible with contrast color Doppler facility.
4. The system shall support full screen display of all 3D views including individual A, B and C MPR views and simultaneous display of thumbnail views on the same system display monitor.
5. System should have at least 3 active ports.
6. System should have more than 2000 Transmission channels.
7. System should have color Doppler Imaging with Quad-beam receiving.
8. System should have Trapezoidal Imaging of around 20%.
9. Cine for 256 frames and loop review.
10. System offering 2D imaging with volume probes will be preferred.
11. System should have Integrated 3D/4D Imaging package.
12. System should have facility to cut 3D/4D image in different direction,
13. System should have volume CT/Sono MRI or equivalent to enable a particular scan to be viewed in minimum 20 slices with cut facility from 1mm.
14. System should have dual Live mode or equivalent.
15. System should have Panaromic view with Linear probe.
16. System should have Auto Measurement facility.
17. System should have facility for future stress eco up gradation.
18. System should have colour compare mode, colour/Colour power Mode and the normal grayscale mode, side-by-side or equivalent.
19. The system should have minimum 256 Grayscales or more.
20. Should have high frames rate per second and scanning depth upto 30 cm.
21. All transducers should have broad Band width Beamformer technology for extreme high Resolution 2D Imaging. Frequency range of Transducers should be 1 to 15 MHz or more. This should be available without the need for frequency switching.
22. System should have Tissue Harmonic Imaging.
23. System should have Adaptive image Processing for noise and artifact reduction that improves tissue conspicuity and margin definition.
24. High Dynamic Range of 150 dB or more.

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25. System should have auto optimization features for ease of use and automatic Quantification of Doppler parameters in Real-time & freeze modes.
26. Pan Zoom facilities on live and freeze images.
27. Facility for independent steering of B mode and Colour beam on linear probe.
28. Should have multiplanar 3D imaging in linear and 4D imaging with volume linear Probe for Musculoskeletal studies.
29. System should have an easy to use control panel, which can be raised up and down and also be rotated sidewise more than 180 degrees for use in ICU, OT etc. Should have an alphanumeric Keyboard with illuminated Keys and status display.
30. The system should have facility for grain adjustments using slide pot controls in both directions including the lateral direction for excellent Image quality or equivalent.
31. System should have Image management facility with facility for direct storage of image and loops in the Hard Disk Drive and also thumbnail review to view & edit Images, loops and also reports.
32. Storage – should have image storage facility in the hard disk drive. Should have inbuilt 1TB hard disk for image storage.
33. Archive - should have inbuilt DVD/CDR-W and 31/2 "Floppy disc" with the facility to transfer images.
34. Advanced DICOM facility and capable of Networking and communicating images through DICOM. System should be DICOM 3.0 complaint.
35. Equipment should have direct connectivity to colour Inkjet/Laser printer for printing images & report, without any interface of computer.
36. The system should have extensive Calculation software package for Musculoskeletal imaging, General Imaging, Obs/Gyn & Vascular Imaging.
37. System should be quoted with one 2D convex probe of 3MHz to 6MHz frequency, one 2D Linear probe of 12 MHz or more frequency, one volume linear probe of 12 or more MHz and one phased array probe of around 2.5 MHz, one volume convex probe 3MHz to 6MHz, one intracavitatory probe for TVS and TRUS along with USG guided biopsy/apparatus.
38. Three years warranty required.
39. Quote CMC rates for next seven years after warranty period.
40. System should be US-FDA approved.

Equipment with the above features to be offered with the following.

1. B/W Thermal Printer of latest model.
2. Color Inkjet/Laser Printer for direct printing of Images from the system.
3. Online UPS with 30 min backup for entire system.

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