

SPECIFICATIONS OF ULTRASOUND MACHINE WITH COLOUR DOPPLER SYSTEM

- A. **Applications** - Abdomen, Abdominal Vascular, Urology, OB/GYN, Neonatal Brain, Small Parts (Breast, Thyroid, Scrotal, Prostate, MSK), 2-D Echo
- B. **Types Of Probes & Features:**
1. Flat linear array: 2-10 MHz (± 2)
 2. Convex array: 2-5 MHz (± 2)
 3. Cardiac Probe: 1-5 MHz (± 2)
 4. Volume Convex Probe: 2 to 5 MHz (± 2)
 5. Endocavitatory (TV) Probe: 4 to 9 MHz (± 2)
 6. Hockey Stick Probe: 8 to 20 MHz (± 2)
 7. Probe technology: Probe should be one of the modern technologies such as (1) Pure wave, (2) Single crystal, (3) Matrix etc. Mention the technology of each quoted probe.
 8. Dedicated 3-D/4-D: Yes
 9. Gel Warmer: Yes
- C. **Scan Modes**
1. B-mode: Yes
 2. M-mode: Yes
 3. Contrast harmonic imaging with angio mode: Yes/No/Higher
 4. Tissue harmonic imaging mode: Yes
 5. Provision of Harmonic imaging in Linear Probe: Yes
 6. Color Doppler imaging (CDI): Yes
 7. Color Doppler 3-D/4-D option: Yes
 8. Breast Elastography: Yes
 9. Thyroid Elastography: Yes
 10. Liver Elastography: Yes (Shear wave elastography)
 11. Power Doppler imaging (PDI): Yes
 12. Power Doppler 3-D/4-D option : Yes
 13. Continuous wave Yes:
 14. Pulsed wave: Yes
 15. Duplex mode: Yes
 16. Triplex mode: Yes
 17. Tissue Doppler imaging: Yes
 18. Contrast-enhanced ultrasound (CEUS) option: Yes/ No/Higher
 19. Tissue synchronization, tissue velocity: Yes
 20. Gain control in two dimensions for additional level of flexibility for image quality control: Yes
 21. Provision for higher resolution: Real time high frequency 2D
 22. Probes supplied shall be in latest generation bandwidth: Yes
 23. Provision for higher sensitivity for low frequency Doppler in all probes: Yes
 24. Number of Channels in Color Doppler System: 15,00,000 or more (If Channels are being designated as digital channels)

25. Live 3 D imaging in Color Doppler system: Yes
26. Colour Doppler system with all application packages Quad loop for serial studies with high frame rate revise, harmonic imaging capability in all modes and integrated stress echo package digital storage and retrieval: Yes
27. Number of grey shades for sharp contrast resolutions in db: 256 or more
28. High-definition acoustic zoom provision for enlarging sections of 2D and Colour flow images with more acoustic information for greater clarity and detail while maintaining an optimal frame rate: yes
29. Colour Flow Imaging Option: Yes
30. Provision of Tissue Colorization (B-Colour) for improved contrast resolution: Yes
31. All application packages should be inbuilt into the system: Yes
32. Cine Loop Features: Yes
33. Cine Loop Memory in MB: 150 or more
34. Frame grabber facility for post analysis: Yes
35. Facility for Various maps for pre and post processing: Yes
36. User defined system and application presets for multi-user department: Yes
37. Number of transducer/probe ports: 4 or More active ports
38. System should be capable of generating real time live 3-D images: Yes
39. Contrast agent imaging: Yes/ No / Higher
40. Color Doppler system with all applications package, quad loop for serial studies with high frame rate, harmonic imaging capability in all modes and digital storage and retrieval: Yes

D. Image Display And Processing:

1. DICOM 3 COMPLIANT: Yes
2. Adjustable transmit focus: Yes
3. Automated B-mode (2-D) image: Yes
4. Automated CDI image optimization: Yes
5. Automated PW Doppler image optimization: Yes
6. Dynamic receive focus: Yes
7. Grayscale levels: 256 or more
8. Image magnification (zoom): Yes
9. Real-time image: Yes
10. Frozen image: Yes
11. Touch Screen: Yes
12. Monitor shall have high-resolution: Yes
13. Provision of Tilt and Swivel monitor should be able to view in all angles and all light conditions: Yes
14. Monitor display size, cm (in): 23" or more, preferably LED with handle
15. Split screen: Twin View and Live Quad Screen
16. Single/dual monitors: Dual (image display and touch panel)
17. Depth, cm: $\geq 30(11.8)$
18. Pre processing: Yes
19. Post processing: Yes
20. Selectable dynamic range: Yes, ≥ 275
21. Spectrum analyzer: Yes
22. DIGTTAL IMAGE STORAGE: YES
23. Cine loop playback: Yes
24. Max number frames: 1500 or More

25. Digital storage hard drive, GB: 1 TB or More
26. Speckle-tracking strain and strain rate: Yes
27. Exam protocols: Yes
28. Automated: Yes
29. Digital calipers: Yes
30. Exam presets: Yes
31. Customizable presets: Yes
32. On-screen annotation: Yes
33. DVD/CD Writer: Yes
34. Flash Memory: Yes
35. USB connector: Yes (minimum 2)
36. Facility for high-definition digital acquisition, review and editing of complete patient studies: Yes
37. Frame Grabber incorporated: Yes
38. Additional PC with all software inclusive interfaced with USG machine: Yes
39. Additional PC: Latest Windows OS, Microsoft Office (professional), USB connectors: Yes
40. Type of processor: i7 or latest
41. Processor speed in GHZ: ≥ 3
42. Connectivity between USG and PC: Yes
43. RAM capacity of PC in GB: ≥ 8
44. Additional PC should be Wi-Fi enabled: Yes
45. Laser Color printer provided with computer for reporting: Yes
46. CD/DVD Produced should be playable on any System: Yes
47. Glossy Colour Print Paper supplied: 500 sheets
48. Dicom Interfacility: Dicom to PACS: Yes
49. Interfacility: Dicom to RIS: Yes
50. USG system supplied should be upgradable to next generation system on site: Yes

E. Power Requirements:

1. Power input, VAC: 220-240VAC, 50Hz fitted with Indian plug
2. Resettable over current breaker shall be fitted for protection: yes
3. Power backup: UPS
4. Minimum Back up time in minutes: 30

F. Additional requirements

1. Panoramic & Trapezoid imaging options should be available with linear probe.
2. Linear probe should have automated quantification for easier identification of breast & Thyroid lesions (preferably with BIRAD & TIRAD based lesion classification tools)
3. System should have extensive obstetric measurement package including software for automatic measurement of NT,
4. System should have automatic tool to derive 9 planes of fetal heart (as per AIUM recommendation) from one volume sweep.
5. System should have automatic tool for deriving 9 planes for Fetal central Nervous System.
6. Fat quantification tool for liver
7. Special measures for preventing entry of rats/mice inside the machine.

8. Additional software for PCPNDT F form filing on the website of concerned Government & USG patient registration & report management. With full support during the Warranty and CMC period.
9. Biopsy attachment for Endo-cavitatory probe & Convex probe
10. One ergonomic chair (Rotating, height adjustable with hand support)
11. Quoted USG Model should be US FDA/CE/BIS approved.
12. Provide technical datasheet of the quoted model along with brochure.
13. Warranty as per GEM conditions (Minimum 5 yrs warranty and 5 years CMC)
14. Service support including spare parts should be assured for 10 years from the date of installation.
15. The bidder shall be required to submit PCPNDT registration of concerned Government with the bid or shall submit the documentary Proof indicating submission of application for registration with PCPNDT authority
16. In case the bidder didn't submit the above-mentioned certificate along with the bid, the successful bidder shall produce the required PCPNDT registration within four weeks of award of contract purchase order, failing which the purchase order shall be liable for summary rejection/cancellation with forfeiture of EMD
17. All the PCPNDT-related formalities are to be handled by the successful bidder till the machine gets registered on the PCPNDT certificate of consignee hospitals.

