**الموضوع: المواصفات الفنية لأجهزةعيادة القلب**

**Technical Specifications for *Mobile Cardiology Ultrasound Machine***

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| **No.** | **Technical Specifications** | **Min KAUH Requirement** |
| 1 | Manufacturer | Please specify manufacturer and country of origin |
| 2 | Model Number | Please specify model number of the offered equipment |
| 3 | Safety Standard | FDA approval or CE marking |
| 4 | Features | * High End, mobility diagnostic ultrasound system that can be configured to meet a variety of specialized cardiac clinical demands.
* Top of the line Latest technology (preferred).
* System design should be ergonomic and easy to use.
* System should have an advanced operating system which allows expansion and upgradeability.
* System should have networking capabilities and support full Dicom latest version.
* System should have good diagnostics for service and technical support.
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| 5 | System Architecture  | * Full digital beam former.
* There shall be no analog delay line components employed in the construction of the beam former.
* The system shall use the highest digitally processing channels for simultaneous formation, acquisition and delay processing of multiple ultrasound beams.
* Processing channels not less than 4 million hardware channels (Dynamic channels).
* Should have automatic system-wide optimization for selected application and scan head.
* Easy to learn and use with graphical user interface.
* High mobility cart.
* Track ball, built-in.
* Touch Screen Capability.
* Ultra-low noise.
* Predefined settings
* Built-In Battery backup
* Integrated A/C line conditioning and battery back-up system.
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| 6 | Display annotation | * On-Screen annotations of all needed parameters for complete viewing and documentation: (Scan head type, frequency, active software option, depth, grayscale, TGC curve, frame rate, Dynamic range, color image mode, hospital name, and patient data).
* Embedded ECG electrode and the capability for ECG gated imaging.
* User defined keyboard keys.
* Frame Rate up to 1400 frame per second.
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| 7 | Imaging mode | * Grayscale and color 2D.
* Color Doppler.
* Power Doppler.
* Steered Pulsed Wave.
* Pulsed Wave and Continuous Wave Doppler.
* Triplex mode of 2D, color Doppler and Doppler Spectral.
* Duplex mode of Simultaneous 2D and Pulsed Doppler.
* Tissue Harmonic Imaging.
* Dual imaging should be possible in both linear and convex display modes.
* Compounding imaging.
* Speckle reduction technique and Speckle tracking.
* Trapezoid scan.
* Tissue Doppler Imaging and Color Tissue Doppler Imaging.
* M-mode and Color M-mode.
* Anatomical M-mode.
* 4D TEE Imaging.
* Strain imaging via speckle tracking and tissue Doppler imaging.
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| 8 | Image presentation | * Up/Down, Left/Right.
* Multiple Duplex images formats.
* Digital cine reply of all imaging and Doppler modality.
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| 9 | Image management | * The system shall provide integrated digital storage onto internal hard drive 500G and optical disk, CD or flash memory for later recall or printing.
* Capability for Loop or Sweep back.
* Must have integrated Image management software.
* On screen cine storage and image recall.
* Digital image storage and patient archive with true scanner frame rate.
* Full measurement and analysis capabilities. both online and offline.
* Approximate Imaging frequencies from 1-12 MHz.
* Review of stored ultrasound images.
* User adjustable B colorization map, gain setting ,color Doppler, baseline ,angle correction and other important parameters with live /frozen archived images /loops.
* Should have a display of single, dual images side by side.
* System should have a programmable architecture with data processing of phase, amplitude and frequencies with raw data digital reply for cine /single loops allowing the adjustable of all major parameters and measurements/with post reviewing and processing station (to be mentioned).
* Stress-Echo (Software), (optional)/ to be price separately (Required).
* Should have a zoom capability with live /frozen /stored images should have capability of zooming the archive cine loops.
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| 10 | Dicom Connectivity | * The system shall provide dicom capability with all license needed to connect it with systems available at KAUH.
* Full DICOM.
* Offered system should provide Dicom Work list.
* Offered system should provide Dicom query-retrieve.
* Offered system should provide Dicom send.
* Offered system should provide Dicom print.
* Offered system should provide Dicom storage.
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| 11 | Dynamic Range | * Full time input Dynamic Range should not be less than 250 dB.
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| 12 | Gray scale | * 256 shades of gray.
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| 13 | Monitor Type | * Not less than 21’’ high resolution LCD screen, with full articulating Arm with touch screen.
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| 14 | Scan head Ports | * Minimum Four Scan head ports
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| 15 | Scan head technology Supported | * System should be capable of supporting available multi frequency linear array, phased array, curved array and compact high density probes.
* System should be capable of supporting available broadband Crystal probes and matrix probes.
* The system should be able to support 4D transesophagealprobes .
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| 16 | Upgrade Path | * The System supports full upgrade capabilities to latest Software/Hardware release.
* Rates of consumables & accessories should be freezed 8 years.
* Operating and detailed service manual should be supplied.
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| 17 | Application | * Adult Echo.
* Pediatric Echo.
* Transesophageal.
* Complete calculation package for applications above.
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| 18 | Probes | * Phased Array at least single crystal matrix Transducer for Adult Cardiology with approximate ±10% frequency 1-5 MHz bandwidth.
* Phased array Transducer for Pediatric Cardiac Applications with approximate ±10% frequency 3-8 MHz bandwidth.
* 4D TEE Probe, Adult (1)/ TEE probe (1) to be priced.
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| 19 | Note  | * **UPS is to be provided by the company if required**
* **Country of origin: USA, Germany, Netherland, Norway, or Japan. (Preferable).**
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| 20 | Main Power | 220 - 240 VAC , 50 Hz |

**UN CODE :**42201712

**Technical Specifications for *Defibrillator / Pacemaker***

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| **No.** | **Technical Specifications** | **Min KAUH Requirement** |
| 1 | Manufacturer | Please specify manufacturer and country of origin |
| 2 | Model Number | Please specify model number of the offered equipment |
| 3 | Safety Standard | FDA approval or CE marking |
| 4 | Main Features | * Energy Selection: Rotary Knob (preferred).
* External: 20-270 J pediatric / neonatal.
* Paddle Controls: Charge, Discharge, and Energy select.
* Wave Form Shape: Biphasic.
* Synchronizer: Required.
* Pediatric Paddles: Required.
* Optional Paddles: Adult, Pediatric, internal.
* AED Mode: Required.
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| 5 | ECG Monitor Specification | * Type: LCD, Color, TFT not less than 6”.
* Sweep Speed / Sec: 25.
* Lead Configuration: I, II, III (3-leads), optional (5-Leads).
* Through the Paddles: Required.
* HR Display: Required.
* HR Alarms: Required.
* Lead-Fault Indicator: Required.
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| 6 | External Pacemaker Specification | * Pacing Mode: Demand, Fixed.
* Pacing Rate, PPM: 50-150.
* ECG Recorder: Required.
* Other Monitored Parameters: SPO2, NIBP.
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| 7 | Battery | * Required
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| 8 | Main Power | 220 - 240 VAC , 50 Hz |

**UN CODE : 42141811**

**Technical Specifications for *cardiac stress system***

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| **No.** | **Technical Specifications** | **Min KAUH Requirement** |
| 1 | Manufacturer | Please specify manufacturer and country of origin |
| 2 | Model Number | Please specify model number of the offered equipment |
| 3 | Safety Standard | FDA approval or CE marking |
| 4 | Main Features | * Controller station

Design: update computer based technology upgradeable SW and HW mobile on 4 castors with breaks and drawer for system accessories.* Data acquisition: direct connect or wireless connection.
* Optional: interface to external automatic blood pressure device to measure blood pressure during exercise.
* Display: min 19" hi resolution TFT LCD tilt and swivel facility.
* Display information ECG wave forms, HR, NIBP, Patient data, stage no, time, speed angle, data, state exc, or reset or post, report trends.
* Operation modes: reset, analysis, exercise, post.
* Patient data entry: via keyboard, mouse and direct access keys
* Data storage : DVD R/RW,HD
* ECG Acquisition: 10 leads wire cable.
* Included items: ST, history ,trends,12 leads monitoring,report,6 leads exercise monitoring protocols, user protocols, filters

-treadmill control auto and manual.- Emergency stop.- SW OPTIONS: - resting ECG interpretation for children and adult. - Full disclosure rhythm review. - Late potential analysis time domain. - Vector cardiograph. -In test review of stress testing data that includes rewind and freeze frame. - Fully customizable panel display plus the flexibility to add your own user defined protocols. - Treadmill - heavy duty TMT -Front handrails ,side hand rails- UP to 200 KG capacity.- dicom compatible./ with laser Printer. |
| 5 | Main Power | 220 - 240 VAC , 50 Hz |

**UN CODE : 49201501**

**Transit Time Flowmeter**

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| **No.** | **Technical Specifications** | **Min KAUH Requirement** |
| 1 | Manufacturer | Please specify manufacturer and country of origin |
| 2 | Model Number | Please specify model number of the offered equipment |
| 3 | Safety Standard | FDA approval or CE marking |
| 4 | Application | specialized design for cardiac application |
| 5 | Measurement | combination of the following :- Blood flow and volume measurement.-Optional:- ultrasound imaging  B. mode image color Doppler, pulsed wave. |
| 6 | Features | * With adjustable rotating arm facility.
* Original trolley.
* Built in computer.
* Steam Autoclavable capability.
* Patient management software with search and sort option.
* Storage capability: to be mentioned.
* Dicom compatible: to be mentioned.
* Probe Sizes: to be mentioned. the prices should be mentioned.
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| 7 | Display | not less than 17" display for imaging and flow data. |
|  | Measured parameters | * Peak systolic veicity.
* M V.
* E D V.
* Flow volume (ml/min).
* Transit time.
* Pulsatility index.
* Transducer excitation frequency 500KHz-7.5MHz.
* Ultrasonic parameters Doppler.
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| 8 | Main Power | 220 - 240 VAC , 50 Hz |