**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. |
| 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. |
| 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. |
| 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. |
| 8 | Image presentation | * Up/Down, Left/Right. * Multiple Duplex images formats. * Digital cine reply of all imaging and Doppler modality. |
| 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. |
| 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. |
| 11 | Dynamic Range | * Full time input Dynamic Range should not be less than 250 dB. |
| 12 | Gray scale | * 256 shades of gray. |
| 13 | Monitor Type | * Not less than 21’’ high resolution LCD screen, with full articulating Arm with touch screen. |
| 14 | Scan head Ports | * Minimum Four Scan head ports |
| 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 . |
| 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. |
| 17 | Application | * Adult Echo. * Pediatric Echo. * Transesophageal. * Complete calculation package for applications above. |
| 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. |
| 19 | Note | * **UPS is to be provided by the company if required** * **Country of origin: USA, Germany, Netherland, Norway, or Japan. (Preferable).** |
| 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. |
| 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. |
| 6 | External Pacemaker Specification | * Pacing Mode: Demand, Fixed. * Pacing Rate, PPM: 50-150. * ECG Recorder: Required. * Other Monitored Parameters: SPO2, NIBP. |
| 7 | Battery | * Required |
| 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. |
| 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. |
| 8 | Main Power | 220 - 240 VAC , 50 Hz |