CLIENT NAME:

TAPAN MUKESHBHAI PATEL MEMORIAL HOSPITAL , MEDICAL COLLEGE AND RESEARCH CENTER, SHIRPUR

RADIOLOGY TENDER

TENDER DOCUMENT:

SVKM/TMPMH/Ultrasound /007

SECTION 2 – SPECIFICATIONS

1. CARDIOLOGY HIGH END ULTRASOUND

The system must be state of art, latest & top of line

Sr No	Specification
1	
1.01	Height:
1.02	Width:
1.03	Weight:
1.04	Electrical Power:
1.05	Power consumption:
1.06	Power input:
1.07	CE Mark:
1.08	Operating system:
1.09	Control panel height is user-adjustable
1.1	Articulates up and down
1.11	Control panel can be raised, lowered and rotated
1.12	Keyboard:
1.13	Palm rest
1.14	High resolution color monitor
1.15	Size:
1.16	Resolution:
1.17	Channel count:
1.18	Dynamic Range:
1.19	2D frame rates:
2	**MINIMUM IMAGING MODES**
2.01	2D, color, PW/CW/ M-Mode
2.02	Tissue Harmonic Imaging?
2.03	One-button optimiasation key for TGC, gain and compression map optimization for 2D, Color and Doppler modes
2.04	Simultaneous 2D and M-mode
2.05	Color M-mode
2.06	Anatomical M-mode
2.07	Color and Pulsed Wave Tissue Doppler Imaging
2.08	Continuous wave Doppler
2.09	Color Power Angio imaging and directional CPA
2.1	Intelligent Doppler for maintaining specified scanning angles during flow adjustments

Sr No	Specification
2.11	Duplex and simultaneous 2D/PW Doppler
2.12	Trixplex for simultaneous 2D, color flow, PW Doppler
2.13	Chroma colorization with multiple color maps
2.14	Anatomical M-Mode
2.15	Color M-mode
3	**MANDATORY MEASUREMENTS**
3.01	Volume by area/length method
3.02	M-mode analysis
3.03	Peak and mean gradients
3.04	Pressure half time
3.05	Continuity equation
3.06	Diastolic function
3.07	Cardiac output
3.08	Qp: Qs ratio
3.09	Proximal Isovelocity Surface Area
3.1	E/A ratio
3.11	Ejection fraction
3.12	Simpson's biplane and single plane
3.13	LV mass
3.14	Intima Media Thickness (IMT) Quantification plug-in
3.15	TDI velocity timing measurement
3.16	Strain Quantification (SQ) Plug-in
3.17	For evaluation of regional myocardial function, assessment of synchronicity and guidance during bi-ventricular pacing procedures
3.18	Tissue Doppler Imaging (TDI) velocity quantification
3.19	Measures the myocardial velocity and derives the strain rate and strain
3.2	Cardiac 3D Quantification
3.21	Multiplanar reconstruction
3.22	3D image controls:
3.23	Multiplanar reconstruction (MPR) views
3.24	Cardiac 3D measurements, 3D quantification from MPR view
3.25	Global an regional reports provide 3D LV global values and regional timing indices from all or a subset of 17 regional segments and bull's eye based parametric imaging display
3.26	Auto Cardiac Motion 2D Quantification
3.27	Quantification of the mitral valve with live 3D TEE data acquired.

3.28	Quantification and display of mitral leaflets and lefleat segments, annulus, coaptation lines and distance to papillary muscle

Sr No	Specification
4	**TRANSDUCERS**
4.01	Adult Cardiac : 1-5 MHz
4.02	Paediatric Cardiac - 3-8 Mhz
4.03	Neonate - 12-4 MHz
4.04	TEE 12-3 MHz
4.05	4D Cardiac transducer - Adult
4.06	4 Cardiac Transducer - Paediatric
4.07	4D TEE Transducer
4.08	Paediatric TEE transducer
5	Year Of Launch
6	No Of installations all over India
7	Name of institutes where installed

2. RADIOLOGY HIGH END ULTRASOUND

The system must be state of art, latest & top of line

Sr No	System Specification
1	Dimensions- Height -
	Weight-
	Width-
2	Monitor Should be minimum 21" with an articulating arm
3	Resolution of monitor
4	Keyboard should be able to slide up. Down & rotate
5	System should have Palm rest
6	Dynamic Range -
7	Scanning depth:
8	2D frame rate acquisition greater than 785 frames per second
9	Real-time display of Mechanical Index (MI)
10	Real-time display of Thermal Index (Tlb, Tlc, Tls)
11	System should have Tissue Harmonic Imaging, Compound Imaging,
12	Modes- 2D, Color, Doppler (CW/PW), M-Mode
13	Color power Angio Imaging and directional color power angio
14	Intelligent Doppler for maintaining specified scanning angles during flow adjustments
15	Trixplex for simultaneous 2D, color flow, PW Doppler
16	Triplex for simultaneous 2D, CPA, PW Doppler
17	Color compare
18	High Definition zoom (write zoom)

Sr No	System Specification
19	Reconstructed zoom with pan (read zoom)
20	Panoramic imaging, Trapezoidal Imaging
21	Automated 3D and real-time 4D imaging with harmonics and color modes
22	Frame Rate should be minimum 1200 fps
23	Intelligent Doppler Imaging - automatically maintains optimal angle-to-flow to assist in delivering accurate and consistent Doppler velocity measurements
24	Storage capacity should be minimum 1TB
25	CD/DVD writer, USB, DICOM
26	Transducer convex- 1-5MHz,Linear 3-15 MHz, Transvaginal 3-10MHz , Volume- 2-6 MHz.
27	Transducer technology- Matrix technology
28	Power consumption
29	Opertating system
30	1 button optimisation for 2D, doppler & color
31	Chroma colorization with multiple color maps
32	Chroma imaging in 2D, 3D, 4D, MPR, panoramic, M-mode, Doppler modes and CW
33	Reconstructed Zoom:
34	Continuous zoom
35	Acquisition zoom
36	one-button for TGC, gain and compression map optimization for 2D, Color and Doppler modes
37	Contrast Specific imaging with 2D Harmonics using Pulse Inversion Technology
38	Elastography (Breast/Liver)
39	Elastography display option
40	Support for elastography measurements
41	Muliple elastography maps available
42	Strain based elastography for Breast imaging, Gyn,Urology, Abdominal Imaging
43	Shear Wave Point Quantification imaging
44	Elastography display options
45	Muliple elastography maps available
46	DICOM structured reporting for cardiac, vascular, pediatric echo, and Ob/Gyn
47	Modality Worklist
48	shared service system
49	System optimized for detecting harmonic agent signatures
50	Variable low Mechanical Index and flash modes
51	Pulse inversion harmonic imaging and Power Modulation imaging
52	Flash control to destroy contrast
53	4D Imaging, STIC, MPR

Sr No	System Specification
54	Presents the heart beating in a multiplanar display, preserving spatial and temporal relationships
55	Utilizes MPR views and Cineloop capabilities for evaluating fetal heart anatomy
56	System supports capabilities to perform the spin technique to assess pathology
57	Fetal echo STIC supports image capture in gray scale only or combined with Color Doppler
58	Useful for easy detection of fetal heart anomalies during routine obstetrical exams
59	CE Mark:
60	year of launch
61	No Of units installed
62	The system should support touch screen with TGC & swipe manipulation of curve integrated with display image.
63	Year Of Launch
64	No Of installations
65	List of 10 installation at any premium Institutes or hospital

3. RADIOLOGY MID END ULTRASOUND

SR.NO	SPECIFICATION
1	System should have minimum 21" monitor wide format
2	The Control Panel of the system should rotate 180° from the centre for completefreedom side to side slide movement
3	Palm Rest
4	The system weight in Kg
5	USB
6	DICOM 2.0/3.0
7	Hard drive memory storage:
8	Real-time display of Mechanical Index (MI)
9	Real-time display of Thermal Index
10	Clinical applications supported
11	The system should support touch screen with TGC & swipe manipulation of curveintegrated with display image.
12	The system should sypport an optional battery power capability that enables the system to transition to sleep mode when ac power line is removed or interupted
13	The system noise level shall not exceed 46 db during operation
14	No of channels
15	Frame Rate should be more than 1200 fps
16	System should have all the Modes (2D,color mode, doppler mode- PW,CW, M-Mode
17	System should have 3D/4D mode

SR.NO	SPECIFICATION
18	Chroma imaging in 2D, 3D, 4D, MPR, panoramic, M-mode, Doppler modes and CW
19	Contrast Specific imaging with 2D Harmonics using Pulse Inversion Technology
20	High Definition zoom (write zoom)
21	Reconstructed zoom with pan (read zoom)
22	Panoramic imaging
23	Reconstructed Zoom:
24	Continuous zoom
25	Frame rate:
26	Colorization
27	Chroma imaging
28	Triplex mode displays tissue movement and blood flow in 2D, color/CPA and PW Doppler simultaneously
29	one-button for TGC, gain and compression map optimization for 2D, Color and Doppler modes
30	The system should have smart technology that automatically maintains optimal angle toflow and assists in delivering accurate and consistent Doppler velocity measurements
31	System shall provide semi-automated detection and tracking of carotid artery vessel wall, and of plaque within the vessel, including automated calculation of Maximum Percent Reduction (vessel stenosis), and automated calculation of Total Plaque Volume (plaque burden)
32	High resolution Directional Color Power Angio imaging, which enhances visualization of blood flow in very small vessels and tissue vascular beds, shall be supported.
33	Transducers- Convex - 5-2MHz for abdomen, OB/GY
	Linear - 3- 12 MHz for vascular studies
	Transvaginal - 3-10 MHz for OB/GY Studies, Volume- 6-2 MHz
34	System should be upgradable to elastogrphy
35	System should be upgradable to 3D/4D
36	Automated 3D fetal echo STIC
37	Quantitative 3D volume acquisition
38	Ability to acquire and display up to 30 volumes per second in 4D
39	Color 3D imaging
40	System optimized for detecting harmonic agent signatures
41	Variable low Mechanical Index and flash modes
42	Year Of Launch
43	No Of installations
44	List of 10 installation at any premium Institutes or hospital

4. GYNEC & OBS HIGH END ULTRASOUND

The system must be state of art, latest & top of line

SR NO	SPECIFICATION
1	Height
2	Weight
3	Width
4	Power consumption
5	Noise Level while operating
6	Operating system
7	Storage]
8	Battery Back up
9	Input /output ports
10	Control Panel height adjustment
11	Control panel movement, side to side movement
12	Monitor Size
13	Monitor should be with articulating arm
14	No of channels
15	Dynamic Range
16	Frame Rate
17	Image optimiasation key
18	Cine Memory
19	DICOM
20	Clinical Applications supported
21	Tissue Harmonic Imaging
22	Technology for reducing noise artifacts & real time comound Imaging
23	Single button optimisation key for 2D, color, Doppler mode
24	Imaging Modes-
25	2D,color, doppler (CW/PW), M-Mode
26	Color Power Angio imaging and directional CPA
27	Auto Doppler for maintaining specified scanning angles during flow adjustments
28	Trixplex for simultaneous 2D, color flow, PW Doppler
	Dual imaging with independent Cineloop buffers and mixed mode display where one image is live while other is frozen
29	High Definition zoom (write zoom)
30	Reconstructed zoom with pan (read zoom)
31	Panoramic imaging
32	Freehand 3D and MPR
33	Automated 3D and real-time 4D imaging with harmonics and color modes

SR NO	SPECIFICATION
34	Automated 3D fetal echo STIC
35	Reconstructed Zoom:
36	Continuous zoom
37	Display format:
38	Auto Doppler Imaging - automatically maintains optimal angle-to-flow to assist in delivering accurate and consistent Doppler velocity measurements?
39	PRF range:
40	Automatic color invert
41	Color compare?
42	Volume display with surface rendering
43	Multiplanar view display
44	Trim tools on both volume and multiplanar reconstructed (MPR) views
45	Quantitative 3D volume acquisition
46	Ability to acquire and display up to 30 volumes per second in 4D
47	Color 3D imaging
48	Volume display with surface rendering
49	Individual controls for manipulating the on-screen 3D rendering and display options?
50	Region of Interest trim tools on both volume and multiplanar reconstructed (MPR) views
51	STIC
52	Elastography
	Measurements
53	Ob/Gyn and fertility analysis
54	Fetal biometry
56	Amniotic fluid index
57	Early gestation
58	Fetal long bones
59	Fetal cranium
60	Nuchal thickness
61	Nuchal translucency
62	2D echo, fetal heart M-mode, fetal Doppler, echo Doppler, fetal echo
63	OB calculations and tables
64	OB trending data
65	Gynecology/Fertility
66	Uterus
67	Right and left ovary
68	Right and left follicles
69	General Imaging 3D Quantification
70	Review of 3D/4D, color 3D, and STIC files

SR NO	SPECIFICATION
71	Multiplanar reconstruction (MPR)
72	Slice and curved Slice precision volume slicing capability
	Transducers
73	Convex/ Abdomen - 6-1 MHz
74	Endocavity - 10-3 MHz
75	Linear - 12-3 MHz
76	Volume Transducer(Abdomen) - 6-2 MHz
77	Volume Transducer (Endocavity) - 9-3 MHz

5. ULTRASOUND FOR OBS WARD

Sr.No.	Description
1	System shall provide all-digital broadband technology using all digital time delay circuits, implemented using ASICs. There shall be no analog delay line components employed in the construction of beam former.
2	System should have minimum 1024 digitally processed channels for simultaneous formation, acquisition and delay processing of multiple ultrasound beams.
3	The system must use a Frequency(Fusion Compounding) Compounding Technique whereby a broad bandwidth of digital signals are broken down into multiple sub-bands and processed in parallel before being “fused” into a single image to reduce speckle noise and optimize tissue contrast, while retaining spatial and contrast resolution.
4	System should have 2D, M-Mode, Color Flow, PW, CW, Steerable CW and Directional Color Power Angio Facility, one button optimization for 2D and Doppler modes, Auto Doppler Calculation taking the entire sample acquired.
5	System should have minimum 250 frames per second.
6	The system should be capable of supporting the Extreme Resolution adaptive image processing technique that performs analysis at the pixel level.
7	The system should support broadband Phased and Linear Array and Convex Array transducer technologies. Frequency processing facility for this transducer should be 2-15 MHz. This should be available without the need for frequency switching.
8	System must be offered with Speckle Reduction Imaging : Image processing technique to remove speckles and clutter artifacts
9	Should have the state of the art Transmit Real Time Compound Imaging Technology with Multiple transmitted lines of sight, wherein Multiple Coplanar Images from different viewing angles are obtained and combined into a single compound Image at real-time frame rates for improved visualization & better Image quality in General Imaging, OB/GYN , Small parts and Vascular Imaging & to virtually clean up the Image of artifacts. Should show transmitted lines of sight during demostration in all probes quoted.
10	Slide pot TGC & gain optimization in the lateral walls (LGC) with pre-defined curves.
11	Triplex Imaging.

Sr.No.	Description
12	15” High Resolution non-interlaced LCD monitor with tilt & swivel facility.
13	System should have maximum scanning depth of 30 cm.
14	System should at least 232 dB full time input dynamic range.
15	System should have cineloop image review up to 1000 frames and should have dual loop facility for simultaneous full screen left & right display.
16	System should provide a technique that automatically maintains optimal angle to flow and assists in delivering accurate and consistent Doppler velocity measurements.
17	System should be a new generation ergonomically designed to curb minimum injury to the sonographer /physician with keyboard platform moveable (up/down).
18	Tissue Harmonic Imaging.
19	Simultaneous real time display Angio/Color Doppler and Gray scale images side by side.
20	System should support Tissue Harmonic Imaging facility in Phased Array, Convex Array, and Linear Array.
21	Linear Array should have extended field of view on side of the linear array.
22	System should have minimum 3 active transducer connectors
23	Online Help function and system manual accessible via dedicated “ Help” key on the control panel.
24	System should have more than 500GB hard drive.
25	On-board Image Management – should have facility to (A) direct digital storage of single B/W and Color image to internal hard disk and compact disk (B) direct digital storage of B/W and Color loops to internal hard disk and compact disk and (C) print patient reports & images directly on plain paper printer thru USB connector.
26	Full functional measurement facility and calculation should be possible.
27	Suitable UPS & B/w thermal Printer for direct printing to be quoted along with the system.
28	Transducer
29	2-5 MHz Broadband Curved Array Transducer with Tissue Harmonic Imaging for General Abdominal, Obstetrics & Gynecology imaging.
30	4-8 Mhz broadband curved array with 11mm radius curvature, 135 degree field of view for endovaginal applications.

6. PORTABLE ULTRASOUND

1	Portable USG machine with Minimum 3 transducer connectivity with electronic switching of transducers, transfer cart & thermal printer
2	**Imaging Modes-**
	2D, Color, M-Mode, THI, CW, PW, TDI
	Duplex Imaging
	Zoom
	Scan depth
3	**Image Processing**
	Tissue Optimization
	Compound Imaging
	Image optimization
	Needle visual guide software
4	**Calculations & Packages**
	OB/GY- Diametric measurements, HC, BPD, AC, AFI, HR, Fetal HR, Ovarian Volume, Follicle Volume, Endometrial Thickness
	Vascular
	Cardiac
	Trans cranial Doppler (TCD)
	Abdomen
5	**Storage**
	Memory to store up to minimum 50,000 Images or more.
	Cine store capability (minimum 60 seconds)
6	**Transducers:**
	Convex Transducer - 2-6 MHz (+/-1 MHz)
	Linear Transducer 13-5MHz (+/-1 MHz)
	Cardiac Transducer - 1-5 Mhz ((+/-1 MHz)
8	**Power Requirements**
	System/ac adaptor 220-240V
	Battery backup should be minimum 60 min for a fully charged battery
	Fast Boot up time required
9	**Onsite training & access to online Ultrasound training modules to the users**