

Specifications of the MRI machine

No.	Item Specification	Fill Your Specifications
1	Description of Functions	
	latest state of the art whole bodies MR 1.5 Tesla scanner with the following minimum specs are required	
2	Technical Specifications	
	Magnet Parameters	
	1.5 Tesla superconducting magnet with active shielding and External Interference Shielding (E.I.S.).	
	Bore Diameter to be least 60cm or more with short possible system length for patient comfort.	
	Homogeneity of the magnetic field should be stated at different field of views at highest number of planes plots using VRMS Method.	
	Passive and active installation shimming, dynamic FOV shimming.	
	Automatic improve field homogeneity	
	Shielding against external interferences active during a scan.	
	Least helium consumption will be preferred, with Zero helium boiling off technology	
	Gradient System	
	Minimum gradient field strength per axis (in x, y, z-direction) 30mT/m	
	Actively shielded gradient coils	
	Minimum slew rate (in x, y, z-direction) 100mT/m/ms	
	Gradient performance will be rated according to its clinical impact, like resolution, TSE factor, 2D/3D slice thickness, and EPI parameters.	
	Duty-Cycle 100%, full gradient performance for long term scanning.	
	Noise reduction for different scans mode should be included, mentioned and will be rated.	
	Radio Frequency (RF) System	
	Solid states RF Amplifier not less than 15KW transmit power at 100% efficiency.	
	1 MHz Receiver sampling rate per each channel.	
	At least 8 independent RF receiver channels or higher.	
	Coils integration is mandatory point of evaluation "more than2 coils simultaneously to be connected especially for Liver and abdomen imaging" additional to different applications over the body to show the maximum number of coil elements over defined FOV.	
	Any new features or techniques with clinical impact will be rated	
	RF-Coils	
	Designs to enhance SNR as well as parallel image compatibility should be offered (for every coil, parallel Imaging reduction factor should be stated), Coils, Higher Channels / Wider coverage will be preferable and Automatic Coil Switching	
	• Body coil for transmission & receiving.	
	• Array Spine coil.	
	• Array Head coil.	
	• Array Body coil.	
	CTL array coil or equivalent for imaging whole CNS without patient repositioning	
	• Array Neurovascular Coil or equivalent.	
	• Array Cardiac Coil or equivalent.	
	Breast coil	
	• Array Flex coil (2 Sizes) for shoulder and extremities.	
	• Neck array coil	
	•Short cable and light-weight coils, array coils	
	•The ability for multiple coils connections and integrations at different procedures.	
	• No. of channels as well as parallel Imaging reduction factor should be stated for coils	
	Patient Positioning and Supervision	
	Maximum patient weight not less than 200Kg higher will be rated	
	Accuracy of repositioning, +/- 1 mm, with Digital display of table position	
	Automatic positioning of patient table	
	Manual table move in case of emergency, Table control from console (e.g. for peripheral MRA)	
	Patient Comfort, Active patient alarm, Music entertainment for the patient (Integrated, incl. CD-disc interface), intercom system.	
	Display of ECG, respiration and pulse at the main console	
	Computer System	
	Maximum Speed of image reconstruction, 2562 or 5122 without reducing FOV	
	Image can be stored, Matrix 256 ² ; uncompressed approx. 110,000, Matrix 512 ² ; Uncompressed approx. 110,000	
	Archiving using routine CD-R Disk & DVD.	
	Color LCD flat screen monitor, 1024x 1024 matrix	
	The array processor should be able to perform simultaneous reconstructions at the Same time during data acquisition.	
	The system should have a state-of-the-art multi-tasking host computer with at least 4GB RAM" the higher will be rated".	
	Storage capacity as high as possible "The maximum number of images to be stored will be rated	
	The long term archiving should be on CD-R or MOD.	
	DICOM standard functions - Send/Receive, Query/Retrieve and Work list, as well As any extra-connectivity features.	
	Sequence Techniques and parameters	
	Spectral Water-Excitation, Fat saturation without increase of repetition time TR is Preferred.	
	TSE with Echo Sharing, dual contrast TSE (PD+T2), can be achieved without time penalty	
	Fiesta (True FISP or Balanced FFE), for cine heart imaging, imaging of the veins and imaging of the gastrointestinal tract, and is optimally suited for hi-res real- Time imaging.	

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	TSE, max. Turbo factor (ETL), min. Echo Spacing (128 matrix), min. Scan Time (single-shot 128 matrix) max. ETL should be stated.	
	Parallel Imaging Techniques will be rated according to :-	
	2D and 3D reduction factors	
	Number of compatible coils.	
	Techniques used	
3	Applications	
	Angiography Applications	
	Angiography sequences like TOF & phase contrast	
	Contrast Enhanced MRA with Techniques for optimized vessel contrast and venous Suppression.	
	Dynamic Contrast –Enhanced Angiography	
	Automatic Table Movement.	
	Motion Correction for Abdominal Imaging.	
	First pass perfusion.	
	CSF flow.	
	Neuro Functions	
	Diffusion weighted imaging with ADC mapping at higher b values.	
	High Resolution 3D, MRCP	
	Gradient Motion Rephasing (GMR)	
	Post-Processing, MIP, Surface Rendering	
	Single Voxel and Multi voxel MR Spectroscopy Prostate Spectroscopy package	
	Perfusion imaging with all available maps.	
	Motion Correction techniques should be offered to overcome the motion in different directions at different contrast	
	DICOM, Send / Receive, Query / Retrieve, Basic Print, Paper Print, Worklist,	
	Storage Commitment	
	Automatic Voice Commands	
	3D Post-Processing, Multi-Planar Reconstruction (MPR), Maximum Intensity	
	Projection (MIP), Surface Shaded Display.	
	Min Slice thickness in 2D & 3D should be stated and will be rated. (Less than 0.5mm)	
	Highest available Real time reconstruction (# images/sec (FF1 2562)	
	High Acquisition / reconstruction Matrix (not less than 10242).	
	Unique features with clinical impact and additional software will be rated.	
	RF Cage RF room shielding, RF Door screen, and interiors for the same should be carried out suitably and All necessary shielding should be provided such that the field strength/RF outside the scanning room is within acceptable limit and have no effect on nearby equipment	
	UPS with MF batteries with rack for the backup for the Complete System for at least 30 minutes.	
	New Chiller System	
	Automatic Injector: MR-compatible pressure injector for double barrel perfusion imaging, infusion pumps, contrast enhanced MR angiogram & bolus tracking. Name and model of injector offered to be mentioned.	
	MRI Stretcher: is extremely beneficial to any MRI suite that requires transportation of prone patients. Due to the inherent power of the magnet in MRI machines, only non-magnetic equipment can be used within the MRI room	
	Non Magnetic MRI wheel Chair: Wheelchair is constructed entirely of non-ferrous materials. Specifically designed for use in and around the MRI suite. All materials including fasteners and bearings are either non-ferrous metals or special polymers.	
4	Drawing Layout: Bidder must provide proposal of MRI Layout rooms	
	Bidder must Preparing the installation site including in the Offer.	
5	Power supply	
	Input power supply: 380/440 V.AC , 50Hz three phase	
6	Environmental factors	
	The system offered shall be designed to operate normally under the conditions of Sudan. The conditions include Power Supply, Climate, Temperature, Humidity, Dust , etc.	
7	Standards and safety	
	Should be FDA or CE approved product certificate.	
8	User Training and Service Training	
	Must provide operating and service trainings local and overseas	
9	Warranty	
	Comprehensive warranty for two years.	
10	Documentation	
	User (Operating) manual in English Should provide 2 sets(hardcopy and soft-copy)	
	Service (Technical / Maintenance) manual in English Should provide 2 sets(hardcopy and soft-copy)	
	List of important spare parts, accessories and consumables with their part numbers and costing.	
	Certificate of calibration and inspection from factory.	