

Amendment No. 15**Date: 17.01.2024****Sub: Amendment No.15 to the Tender Enquiry Document****Ref: (i) Tender No: HITES/PCD/RML/01/MRI/23-24 Dated 23-06-2023****Section VII
Technical Specifications**

Tender Ref: HITES/PCD/RML/01/MRI/23-24 Dated 23-06-2023		
1.5 Tesla MRI Machine under buy back basis (2023_HLL_158559_1)		
Tender spec Para	TENDER SPECIFICATION	READ AS
	The 1.5T MRI should be state of the art and the latest with al the latest software as per release of the latest RSNA meet with the name of manufacturer country and software of artificila intelligence. The unit should be FDA and CE approved. Thhe vendor will provide all the latest software released upto date at the time of installation. Please mention the year of launch of the quoted model. The manufacturer will guarantee the latest best available model in the segmant(1.5T MRI scanner with 70 cm or more) quoted, at the time of delivery. The proof of availability of specifications detailed below should be made available in the tender, along with tender complaince statement for each of the item. Wherever parameters/values have been asked for, the same should be provided. The quoted model of the MRI system by the vendor should meet the tender specifications as on the date of technical evaluation(TEC) of the tenders.	1.5T MRI should be state of the art and with the latest software with model not being older than RSNA 2016 . The unit should be FDA and CE approved. The vendor will provide all the latest software released upto date at the time of installation. Please mention the year of launch of the quoted model. The manufacturer will guarantee the latest best available model in the segment (1.5T MRI with 70cm or more) quoted, at the time of delivery. The proof of availability of specifications detailed below should be made available in the tender, along with tender complaince statement for each of the item. Wherever parameters/values have been asked for, the same should be provided. The quoted model of the MRI system by the vendor should meet the tender specifications as on the date of technical evaluation(TEC) of the tenders.
1	Magnet	
1.viii.c	Specify nubmer of shim coils including higher order	2nd Order/ Higher Order Shim coil should be standard with the system. Specify number of shim coils including higher order.
3	Gradient System	
3.i.a	Actively shielded gradient system in X, Y , Z planes Minimum Gradient Strength should be 44 mT/m or more along each axis and a slew rate 200T/m/sec in each axis (with minimum rise time from 0 to 45 mT/m should be 225 μ s)	Actively shielded gradient system in X, Y , Z planes. Minimum Gradient Strength should be 44 mT/m or more along each axis and a slew rate 200T/m/sec in each axis (with minimum rise time from 0 to 45 mT/m should be 225 μ s & from 0 to 44mT/m should be 220μs)
4	RF Transmitter, Reciever, Coils	
4.i	RF Transmitter	
4.i.a	A fully digital RF system capable of transmitting enough power (a minimum of 16 kw please quote the value) vendor should provide FDA approval /certificate	A fully digital RF system capable of transmitting enough power (a minimum of 18 kw please quote the value) vendor should provide FDA approval /certificate
4.ii	RF Receiver	

b	Minimum 32 Independent RF Receiver Channels or Channel Independent (which can be demonstrated).Please provide the list of coils/coil combinations that use this configuration	Minimum 48 Independent RF Receiver Channels or Channel Independent (which can be demonstrated).Please provide the list of coils/coil combinations that use this configuration
4.iii	RF Transmit Technology	
a	Latest RF transmit system (Like multi-transmit/Multi Drive Transmit/ Trueform) with atleast two independent output channels should be offered to improve B1 uniformity and signal homogeneity to reduce patient induced inhomogeneities	Deleted
4.vi	Coils (In addition to inbuilt body coil)	
a	Head coil (20 channels) for high resolution brain EPI/DTI applications.The coil should have built in shim arrangement for high resolution	Neurovascular coil (20 channels) for high resolution brain EPI/DTI applications.The coil should have built in shim arrangement for high resolution
b	Neurovascular coil (20 Channel or more) for neurovascular application should be quoted as standard	Deleted
d	Body array coil / phased array coil with 44 channel imaging for maximum Z-axis FOV of 50 cm in combination with Spine by single or combination of anterior coils.	Body array coil / phased array coil with 46 channel imaging for maximum Z-axis FOV of 50 cm in combination with Spine by single or combination of anterior coils.
e	Breast array coil (16 Channel or more) for MRI & MRS. In case Biopsy is not possible with this coil, a separate coil for Biopsy should be provided at no extra cost, with accessories for ready to biopsy (all accessories should be quoted. Please provide 10 MR compatible Biopsy needle.	Breast array coil (16 Channel or more) for MRI & MRS should be offered
f.	Two quantities of Shoulder array Coil (16 Channel) (one large size & one small size)	Dedicated shoulder array Coil (16 Channel) should be offered
h	Dedicated Ankle/Foot Coil (16 channels or more)	Dedicated Ankle/Foot Coil (8 channels or more)
4.vii	Table technology (Integrated imaging features)	
4.vii.b	Latest Table technology available with the vendor (globally) should be offered	Deleted
5.b	Additional workstation - Server client architecture(no of client : 3)	Additional workstation - Server client architecture(no of client : 2) with one Osirix with basic post processing should be offered
6	Data Acquisition	
iv	All sequences using compressed sensing should be available in Neuro, Body, MSK imaging for 3D sequences	All sequences using compressed sensing should be available in Neuro, Body, MSK & cardiac imaging for 3D sequences
v	Neuro	
i	Simultaneous Multi Slice Imaging for EPI & TSE sequences should be provided	Simultaneous Multislice/Multiband Imaging for EPI & TSE/FSE sequences should be provided
vi.	Angiography	
f.	ECG triggered Non-Contrast Angiography	NON-Contrast Angiography techniques like QISS, Inhance, Trance for whole body applications to be quoted as standard.
xiv.	Motion Correction	
d.	Sequences employing arterial spin labelling (ASL) technique including 2D ASL and 3D ASL sequences	Sequences employing arterial spin labelling (ASL) technique including 2D ASL / 3D ASL sequences
7.c. iii	ASL quantitative analysis for 2D ASL & 3D ASL data	ASL quantitative analysis for 2D ASL/ 3D ASL data
7.d	BOLD Analysis	BOLD analysis fMRI is optional
9	Standard MRI Accessories	
i	Hand held metal detectors	

9.i.a	The vendor should supply 2 quantities of handheld rechargeable metal detectors, to detect any metal/implant/other ferros object	Ferromagnetic Implant detector for screening of Patients & for protecting against unexpected ferromagnetic implants entering Zone IV - 2 nos
9.iii	Ferromagnetic screening walkthrough metal detector with multiple sensor and multiple location LED (Zone 3 type) - 1 no. (Metrasens/Kopp/Equivalent)	Ferromagnetic object detector with multiple fluxgate sensor to help detect approaching ferromagnetic hazards and with door ignore function to be installed at entry door of MRI Scanner Room (Zone III type) - 01 no. Must have continuous detection with no breaks alert capability following MRI door opening, or following preceding alert. Must allow passage of patient trolley. Ferromagnetic detection should <ul style="list-style-type: none"> • detect approaching ferromagnetic threats, • be continuous with no breaks in alerts, • it should have door, ignore feature to ignore movement of the MRI Door
9.xi	Two channel MR compatible (minimum 2000 Gauss line) syringe/infusion pump a. Two Channel MR compatible (minimum 2000 Gauss line) syringe/infusion pump (MRI dium or better models), with 100 sets of line for patient use with a shelf life of three years from the date of supply.	Two Channel MR compatible infusion pump with one syringe pump and one volumetric pump should be supplied. Per patient consumables should be non proprietary and the system. should be supplied with 500 sets per year during warranty period.
9.xii	MR compatible anaesthesia machine (for Paediatric and adults use) with dual vaporisers (for sevoflurane, desflurane), and other accessories : The systems should be MR compatible (minimum 1000 Gauss line). (Penlon/Leon/or better models). The machine should be, antistatic, heavy frame & base with good quality castors with the following features	MRI Compatible Anaesthesia Machine (for Paediatric and adults use) with dual vaporisers (for sevoflurane, isoflurane), with atleast 12 inch touch screen and integrated electronic ventilator, 2 vaporiser, inbuilt suction and circle absorber suitable for adult, paediatric and neonatal patients (TV of 3 -1200 ml or better). - The AWS should have remote monitor in console room for continuous monitoring . -Per patient consumables should be non proprietary and the system should be supplied with 500 sets per year during warranty period.
9.xviii	Two MRI compatible patient transfer trolleys	Two certified MRI Compatible patient transfer trolleys which do not give alarm in a ferromagnetic detector.
9.xxi.m	m. Anaesthesia workstation should be USFDA Approved	Anaesthesia workstation should be USFDA or European CE Approved
13	Other accessories	
i	Five revolving chairs (Godrej make) with ergonomic support	Five revolving chairs with ergonomic support
iii	Almira of Godrej Interio make for storage of accessories of adequate size -02 no.	Almira for storage of accessories of (size 0.6x0.45x.1.8 m approx) -02 no.
v	Tables for the MRI console, MRI additional server/clients.	Tables for the MRI console, MRI additional server/clients.-(1.2X0.6X0.75m approx) (Fabricated)- 5 Nos
15	Turnkey Installation	
i	The system should be installed and handed over in working condition, with all the necessary electrical, air conditioning and civil works undertaken by the vendor in consultation with the user department. Some re arrangement of the existing place including relocation of staff may have to be carried out.	The system should be installed and handed over in working condition, with all the necessary electrical, air conditioning and civil works undertaken by the vendor as per quote. Some removable furniture shall be shifted by vendor to relocate the staff, rest of all the arrangement for relocation of staff to be carried out by hospital

iv	Civil work any ab initio new construction or demolition of existing structure/walls etc and reconstruction is unambiguously including in the site modification scope of work. This includes, but is not limited to expanding the area of MRI gantry room so as to make it complaint for installation of a 1.5T strength magnet	Civil work any minor wall construction or demolition of existing structure/walls etc and reconstruction is unambiguously including in the site modification scope of work. This includes, but is not limited to expanding the area of MRI gantry room (extended in length by minimum 4 feet) so as to make it complaint for installation of a 1.5T strength magnet. Confirmation on load bearing capacity and ability to remove the existing wall if any will be provided by the hospital.
h	Flooring with good quality of vitrified tiles size 2x2 feet, Brand Kajaria, Somany, 1st quality	Flooring with good quality of vitrified tiles size 2x2 feet, 1st quality to be installed in entire area under scope apart MRI room. 2 mm thick Anti static vinyl flooring within the Magnet room — Providing and laying approved quality, colour, design.
i	Tiles on wall upto ceiling level in all rooms (tiles size 2' x 1 ') brand- Kajaria, somany-1st quality	Tiles on wall (tiles size 2' x 1 ') 1st quality to upto false ceiling level in all rooms, apart lobby, UPS battery room, cabinet room and MRI exam room. Two coats plastic emulsion paint over 2 coats of wall putty including primer in patient preparation area, lobby area, MRI equipment room and UPS battery rooms. Pre laminated particleboard wall paneling to be done in MRI exam room
vi	Air conditioning works	
a	The complete area is to be centrally air conditioned except for toilets (equipment area) 22 degrees + 2 degrees and General zone 26 degrees+ 2 degrees	The complete area is to be centrally air conditioned except for toilets (equipment area) 22 degrees ± 2 degrees and General zone 23 degrees ± 2 degrees
b	All weather AC with cooling, heating and humidity control capabilities is to be provided	Heating and humidity control capabilities is to be provided
f.	Total capacity of Air conditioning (ductable+ Split) for the entire MRI scan Centre area should be at least 20 TR (including stand by air conditioning)	Total capacity of Air conditioning (ductable+ Split) for the entire MRI scan Centre area should be at least 34 TR (including stand by air conditioning)
g	Ductable Package air conditioners and Split AC Units may be used according to the room requirement and suitability. Humidity control should be effective to eliminate moisture condensation on equipment surface. The air conditioning should be designed with standby provision to function 24 hours a day.	Ductable split and Split AC Units may be used according to the room requirement and suitability. Humidity control should be effective to eliminate moisture condensation on equipment surface. The air conditioning should be designed with standby provision to function 24 hours a day.
vii	List of items and suggested manufacturers	Deleted
17	All the following items shall be quoted as standard configuration: All the following items shall be the part of the standard configuration	
i	Silent MRI protocols including T1W, T2W imaging without any lose of image quality on all sequences for other organs (other than Neuro) that is available with the vendor should be provided. Quote price separately for silent MR package for each organ, if the price is different for different applications.	Silent MRI protocols including T1W, T2W imaging without any lose of image quality on all sequences for other organs (other than Neuro) that is available with the vendor should be provided. Quote price separately for silent MR package for each organ, if the price is different for different applications. (Optional)
iii	Automatic positioning (for repeat scans), planning and orientation for joints/shoulder studies (Shoulder smart Exam/Dot matrix etc)	Automatic positioning (for repeat scans), planning and orientation for joints/shoulder studies (Shoulder smart Exam/Dot matrix etc) (Optional)

vi	Automatic positioning (for repeat scans), planning and orientation for knee studies (knee smart Exam/Dot matrix etc)	Automatic positioning (for repeat scans), planning and orientation for knee studies (knee smart Exam/Dot matrix etc) (Optional)
x	T1 quantification of iron (load)	T1 quantification of iron (load) (optional)
xi	The software for the artificial intelligence (AI) shall be the part of the equipment as per the prevailing guidelines	The software for the artificial intelligence (AI) shall be the part of the equipment as per the prevailing guidelines (optional)
		Added para: On site MRI safety and MRI Hazards training for all Level 1 and Level 2 personnel.
		Added para to comply with MDR 2017: It Should have import/manufacturing license from Central licensing Authority or State licensing authority of CDSCO for the quoted model and copy of valid license should be submitted in line with the prevailing rules/guidelines/circular from CDSCO

**Note: If EMD is submitted in the form of BG, then the validity of the BG should be at least 775 days from the date of tender opening.
All other terms and conditions of the tender enquiry remain unaltered**