

529-B48001
 BUTLER, PA.

Item No.	Qty	Catalog No.	Description
	1		Optima MR450w 1.5T GEM 24.0
1	1	S7524AB	<p>Optima MR450w GEM XP 1.5T MR System - EX Platform</p> <p>Optima MR450w GEM XP 1.5T MR System EX Platform</p> <p>The Optima MR450w GEM XP 1.5T MRI system from GE Healthcare is designed to deliver a comfortable patient-friendly environment while also delivering uncompromised clinical performance and streamlined workflow.</p> <p>The EX platform package delivers the system electronics, operating software, imaging software, post-processing software and RF coil suite for the Optima MR450w GEM XP system:</p> <ul style="list-style-type: none"> o XP Gradient Technology o Acoustic Reduction Technology o OpTix RF Receive Technology o Volume Reconstruction Engine o Computing Platform and DICOMM o GEM Express Patient Table with IntelliTouch o GEM Suite - EX Coil Package o Express 2.0 Workflow and In-Room Operator Console o ScanTools and EX Tools o Silent Suite - Silent Neuro Exam <p>XP Gradient Technology:</p> <p>The Optima MR450w GEM XP incorporates the latest in MR gradient technology with the wide eXtreme Resonance Module (XRMw). XRMw gradients deliver 44 mT/m peak amplitude, up to 200 T/m/s instantaneous peak slew-rate on each axis, and deliver unmatched fidelity, accuracy, and reproducibility (please refer</p>

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			<p>to system datasheet for additional information). They are water-cooled and equipped with integrated thermo-electric cooling panels to provide excellent stability and duty-cycle for gradient intensive applications. The XRMw gradients have been designed with excellent linearity across the 50cm FOV. Utilizing a unique acoustic barrier material, acoustic noise levels are reduced for enhanced patient comfort without compromising imaging performance.</p> <ul style="list-style-type: none"> o Peak amplitude per axis: 44 mT/m o Up to 200 T/m/s instantaneous peak slew rate per axis o Peak current: 830 Amps o Peak voltage: 1650 Volts o Maximum FOV: 50cm o Duty Cycle: 100% o Please refer to the MR system datasheet for more information <p>Acoustic Noise Reduction Technology: The Optima MR450w GEM XP system features five levels of acoustic reduction technology to deliver an enhanced patient environment. Magnet interaction with the building is addressed through the vibro-acoustic dampening pad. Resonance module interaction with support structures within the magnet is addressed through design that clearly separates the components. Mass-dampened acoustic barriers further reduce noise for the patient, and ScanTools provide a user selectable gradient waveform optimization.</p>

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			<ul style="list-style-type: none"> o Gradient coil isolation o RF coil isolation o Acoustic dampening material o Vibro-acoustic isolation o Gradient waveform optimization <p>OpTix RF Receive Technology: The Optima MR450w GEM XP system utilizes the OpTix RF receive chain to enable high bandwidth, high channel count reception with improved SNR over conventional MR receiver designs. The MR signal is digitized within the scan room and then optically transmitted to the reconstruction engine in the electronics room increasing SNR for all volume acquisitions, independent of which surface coil is being used.</p> <ul style="list-style-type: none"> o Coil input ports: 138 o Simultaneous channel/receivers: 32 o Receiver sampling per channel: 80 MHz o Receiver dynamic range at 1 Hz BW: >165 dB o Receiver resolution: up to 32 bits o Digital quadrature demodulation <p>Volume Reconstruction Engine: The Optima MR450w GEM XP system features a powerful volume reconstruction engine with onboard memory and local raw data storage to support and maintain simultaneous data acquisition and reconstruction under the most demanding applications. VRE uses 64-bit computing, delivering high acquisition memory and fast performance. Parallel processing and high speed interconnects provide scalable memory and throughput. The acquisition to disk</p>

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			<p>feature automatically expands the memory per the demands of the application.</p> <ul style="list-style-type: none"> o 13,000 2D FFTs/second 256x256 full FOV o 72GB ECC DDR3 1333 memory o 4 x 146GB hard disk storage <p>Computing Platform and DICOM:</p> <p>The Optima MR450w GEM XP system computing platform is designed for efficiency and built upon a parallel, multiprocessor design that delivers the simultaneity and speed needed for advanced clinical operation. Productivity, efficiency and streamlined data management are assured through simultaneous scanning, reconstruction, filming, archiving, networking and post-processing. The scan control keyboard features intercom speaker, microphone, volume controls, start scan, pause scan, stop scan and table advance to iso-center controls. Please refer to the Optima MR450w GEM product data sheet for greater detail.</p> <ul style="list-style-type: none"> o Single tower configuration o 24" flat panel LCD widescreen o 1920 x 1200 resolution o 8GB DDR3 memory o 146GB SAS disk subsystem o DVD interchange <p>The Optima MR450w GEM XP system generates MR Image, Secondary Capture, Structured Report, and Gray Scale Softcopy Presentation State DICOM objects. The DICOM networking supports both send and query retrieve as well as send with storage commit to integrate with PACS archive. Additionally, the Optima MR450w GEM</p>

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			<p>XP system supports the CT and PET image objects for display allowing the user to refer to previous exams. Please refer to the DICOM Compliance Statement for Optima MR450w GEM for further details.</p> <p>GEM Express Patient Table with IntelliTouch: The Optima MR450w GEM XP system features the GEM Express table which is a mobile patient transport device with an embedded high-density, GEM Posterior RF Array and touch sensitive IntelliTouch land-marking.</p> <p>The fully detachable GEM Express table is easily docked and undocked by a single operator and simple to move in and out of the exam room for patient transport and preparation. These features can be vital in instances where multiple patient transfers can negatively impact patient care or when emergency extraction is required.</p> <p>The GEM Express table and embedded GEM PA coil are designed to accommodate head-first or feet-first imaging for all supported exams. The table features three high-density coil connection ports: one at each end and one embedded for the GEM PA. Two additional coil connection ports are included in the docking mechanism.</p> <p>The GEM Express table features a set of Patient Comfort pads designed with variable density foam that uniquely compresses based on patient geometry and weight. The pad coating is strong, easily cleaned, and processed with an Ultra-Fresh treatment. An anti-skid</p>

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			<p>undersurface reduces pad movement.</p> <ul style="list-style-type: none"> o Maximum patient weight for scanning: 500 lbs o Maximum patient weight mobile: 500 lbs o Maximum patient weight for lift: 500 lbs o 205 cm symmetrical scan range o Automated vertical and longitudinal power drive o Fast longitudinal speed: 30 cm/sec o Slow longitudinal speed: 0.5 cm/sec o Integrated arm boards o Integrated non-ferrous IV pole o IntelliTouch land-marking o Laser alignment land-marking o Variable density patient comfort pads with Ultra-Fresh coating and anti-skid undersurface <p>The Optima MR450w GEM XP system has automated many routine tasks to simplify patient preparation and gain productivity. With IntelliTouch technology, In-Room Operator Console and dual-sided controls the technologist can touch the table sensor and the advance to scan button to complete the following:</p> <ul style="list-style-type: none"> o Landmark the patient o Activate the surface coil o Center the patient in the bore o Start scanning o Acquire, process and network images <p>GEM Suite - Expert Coil Package:</p> <p>The Geometry Embracing Method - GEM - Suite of coils for the Optima MR450w GEM XP system was designed to enhance patient comfort and image quality while simplifying workflow. The GEM</p>

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			<p>design ensures that the geometry of the surface coil matches the geometry of the patient. In addition, the GEM Suite is fully integrated into the GEM Express table, and the system automatically selects the coil mode configuration that best fits the selected region of interest.</p> <p>The EX Coil Package includes:</p> <ul style="list-style-type: none"> o GEM Posterior Array o GEM Head and Neck Unit o GEM Anterior Array o GEM Standard Flex Suite o 8-channel Knee Array o 3-channel Shoulder Array <p>The GEM Posterior Array is designed to provide optimal element geometry for each targeted anatomy by using different element geometries for the cervical-to-thoracic spine transition, thoracic and lumbar spine, and the body. This approach maximizes the SNR by matching the geometry of the coil elements to the size and shape geometry of the anatomy. The GEM PA supports parallel imaging in all three scan planes.</p> <ul style="list-style-type: none"> o Elements: 40 o Length: 100 cm o Width: 40 cm o S/I coverage: 100cm head-first or feet-first o Parallel imaging in all three scan planes o Head-first or feet-first positioning <p>The GEM PA is designed to be used in conjunction with the GEM HNU, GEM AA or GEM</p>

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			<p>Small AA (purchased separately), and the GEM PV Array (purchased separately),</p> <p>In addition, the GEM PA is invisible to additional surface coils when they are placed directly on top of the surface. Unique electronic decoupling circuits ensure there is no interference between the coils enabling the GEM PA to remain in place for all exams.</p> <p>The GEM Head and Neck Unit comprises the head base-plate and three anatomically optimized anterior arrays: the anterior Neuro-vascular array, the anterior cervical spine array, the anterior open-face array.</p> <p>The GEM HNU may be positioned at either end of the GEM Express table to support head-first or feet-first imaging and may remain in place for all body, vascular, spine, and the majority of MSK exams. The GEM HNU base plate supports the patient's head and contains three rows of elements separated in both the superior/inferior and right/left dimensions.</p> <p>The Comfort Tilt variable-degree ramp can be positioned under the HNU base plate to elevate the superior end of the coil to match the patient's head and neck position.</p> <ul style="list-style-type: none"> o Elements: up to 28 combined with PA and AA o Length: 49.5 cm o Width: 38.8 cm o Height with NV Array: 36.8 cm o Height with Cervical Array: 33.6 cm o Height with Open Array: 25.7 cm o S/I coverage: up to 50 cm with PA and AA o Parallel imaging in all three scan planes

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			<ul style="list-style-type: none"> o Head-first or feet-first positioning <p>The GEM Large Anterior Array facilitates chest, abdomen, pelvis, and cardiac imaging. The GEM AA is lightweight, thin and flexible, and pre-formed to conform to the patient's size and shape. With 54 cm of S/I coverage, the GEM AA permits upper abdomen and pelvis imaging without repositioning the coil.</p> <ul style="list-style-type: none"> o Elements: up to 36 combined with PA o Length: 55.6 cm o Width: 67.3 cm o Height: 3.6 cm o S/I coverage: 54 cm o R/L coverage: up to the full 50 cm FOV o Parallel imaging in all three scan planes o Head-first or feet-first positioning <p>The GEM Flex Suite is a versatile set of high-density 16CH receive arrays designed to provide high quality imaging in a wide range of clinical applications. The high degree of flexibility is particularly advantageous when imaging patients that do not fit the constraints of rigid coils, improving the patient and technologist experience. Consistent with the GEM design philosophy, the size and shape of the elements in each flexible coil have been optimized for high SNR and parallel imaging.</p> <p>This standard set includes two coil sizes and a knee stabilization fixture designed for compatibility with the GEM Express table.</p> <ul style="list-style-type: none"> o Large Flex Array: 23 cm x 70 cm o Medium Flex Array: 23 cm x 48 cm

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			<ul style="list-style-type: none"> o GEM Flex Interface Module P-Connector o GEM Flex Knee Stabilization Fixture o GEM Flex Strap and Interface Module Cover o GEM Flex Cable Take-up Pad and General Purpose Stabilization Pad <p>The GEM 8-channel Transmit and Receive Knee Array uses unique hybrid technology where separate birdcage coils are used for RF transmission and excitation, with independent receive elements, for high definition imaging of the knee.</p> <p>The 3-channel Shoulder Array offers the increased signal-to-noise characteristic of phased-array technology, along with a unique sleeve design that delivers exceptional joint-imaging capabilities.</p> <p>Express 2.0 Workflow and In-Room Operator Console:</p> <p>The Optima MR450w GEM XP system incorporates features designed to streamline and automate workflow. At the same time, the flexibility of the interface helps ensure the acquisition is tailored to every patient while the steps to set-up are consistent. Express Exam Workflow includes the following:</p> <ul style="list-style-type: none"> o In-Room Operator Console and controls. o Protocol Management: Protocol Libraries, ProtoCopy, Protocol Notes, Modality Worklist. o Workflow Management and Auto Features: Workflow Manager, Linking, AutoStart, AutoScan, Auto Coil Prescription, AutoVoice, Auto-Calibration. o Inline Processing and Inline Viewing.

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			<p>The In-Room Operator Console mounted on the front of the magnet and dual-sided controls enable interaction with the host computer from the magnet room. The user has direct control or selection of:</p> <ul style="list-style-type: none"> o Display of patient name, ID, study description o Display and entry of patient weight o Display and entry of patient orientation and position o Cardiac gating waveform display o EKG lead confirmation with gating control: trigger select, invert, and reset o Respiratory waveform display o IntelliTouch Landmarking o AutoStart o Display of coil connection and status o Display of table location and scan time o Screen saver <p>The Optima MR450w GEM XP system enables complete control of protocols for simple prescription, archiving, searching, and sharing. Protocols are organized into two libraries: GE authored and Site Authored. In addition, ProtoCopy enables a complete exam protocol, from either a library or previous exam, to be shared with a mouse click, and Protocol Notes allows customized notes to be saved with the protocol parameters. The Modality Worklist provides an automated method of linking exam and protocol information for a patient directly from a DICOM Worklist server.</p> <p>The Workflow Manager controls the execution of</p>

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			<p>scan prescription, acquisition, processing, viewing and networking and may automate these steps, when requested by the user, through the selection of Linking and AutoScan. Auto Coil Prescription will automatically select the optimum subset of elements for scanning based on the prescribed FOV once the landmark has been set, and AutoStart will automatically start the first acquisition as soon as the technologist exits the magnet room. In addition, AutoVoice ensures that consistent and repeatable instructions are delivered to the patient, and Auto Calibration will automatically acquire a calibration scan for ASSET and/or PURE when needed.</p> <p>Processing steps are automatically completed with Inline Processing once the data have been reconstructed and the images saved into the database. For certain tasks, the user must accept the results or complete additional steps prior to saving the images. These automatic Inline Processing steps can be saved into the Protocol Library.</p> <p>Inline Viewing allows the user to conveniently view, compare, and analyze images from the Scan Desktop by selecting the desired series from the Workflow Manager.</p> <p>ScanTools and EX Tools for Optima MR450w GEM XP comprise a comprehensive package of pulse sequences, core applications, imaging options and post-processing capability optimized for 1.5T performance. Please refer to the Optima MR450w GEM product data sheet for</p>

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			<p>detailed descriptions.</p> <ul style="list-style-type: none"> o Spin Echo and Fast-Spin Echo suites: SE, FSE, FSE XL, Fast Recovery FSE, FSE Inversion Recovery, 3D FSE, Single-Shot FSE, Single-Shot FSE IR. o T1 FLAIR and T2 FLAIR CNS imaging. o Gradient Echo suite: 2D and 3D GRE, 2D and 3D Fast GRE, 2D and 3D Spoiled PGR, 2D and 3D Fast SPGR. o 2D and 3D Dual Gradient Echo body imaging. o SPECIAL spectral-spatial, inversion-based fat suppression for 3D FGRE sequences. o Echo Planar Imaging suite: SE-based EPI, GRE-based EPI, Single-Shot EPI, Multi-Shot EPI, Multi-Phase EPI, FLAIR EPI. o Diffusion-Weighted EPI imaging with b-values up to 10,000 s/mm². o FIESTA steady-state imaging includes 2D FIESTA cardiac imaging, 2D FatSat FIESTA body imaging, 3D FIESTA Neuro imaging, 3D FatSat FIESTA coronary imaging. o PROPELLER 3.0 motion-insensitive imaging with T1 FLAIR, T2, T2 FLAIR or PD-weighted contrast - enabled in all scan planes. o PROPELLER 3.0 DWI FSE-based diffusion weighted imaging with radial k-space filling. o 3D Cube 2.0 high-resolution FSE-based imaging with T1, T2, T2 FLAIR or PD-weighted contrast. o 3D BRAVO high-resolution SPGR-based T1-weighted brain imaging. o ReadyBrain automated scan prescription for brain exams.

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			<ul style="list-style-type: none"> o 2D and 3D MERGE multi-echo GRE-based CNS imaging. o 3D COSMIC high-resolution GRE-based cervical spine imaging. o 3D LAVA single breath-hold, high-resolution SPGR-based T1-weighted liver imaging with SPECIAL fat suppression. o Time-of-Flight MRA Suite: 2D TOF, 2D Gated TOF, 3D TOF and Enhanced 3D TOF. o Phase Contrast MRA Suite: 2D PC, 3D PC, Cine PC. o SmartPrep automated bolus detection. o Fluoro-Trigger MRA real time bolus monitoring with interactive triggering. o QuickSTEP automated multi-station acquisition. o iDrive Pro real time interactive imaging. o Double/Triple IR black-blood cardiac imaging with/without fat suppression. o FastCINE functional cardiac imaging with full R-wave coverage. o 2D and 3D GradWarp automated distortion correction. o ARC acceleration 3D data-based, auto calibrating parallel imaging technique with acceleration factors up to 3X and extended factors with Turbo ARC. o ASSET image-based parallel imaging technique with acceleration factors up to 3X. o Cardiac gating/triggering, compensation, blood suppression, flow compensation. o Respiratory gating/triggering, compensation.

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			<ul style="list-style-type: none"> o Pencil Beam Body Navigators track diaphragm motion to acquire data when diaphragm is within an acceptable range. o DE Prep, IR Prep, T2 Prep. o ZIP 1024, ZIP 512, 2X Slice ZIP, 4X Slice ZIP. o IVI inline, interactive post-processing for vascular MRA data sets. o Multi-Planar Volume Reformat inline, interactive post-processing for 3D volume data sets. o FuncTool Performance advanced post processing algorithms: ADC maps, eADC maps, Negative Enhancement Integral, Positive Enhance Integral, Mean Time to Enhance, Signal Enhancement Ratio, Maximum Slope Increase, Maximum Difference Function, Correlation Coefficients, Diffusion Tensor, and 2D/3D CSI. o MR Pasting automated integration of multi-station exams into a single image. o Image Fusion overlays multiple images from separate acquisitions on one another for enhanced visualization. o BrainStat GVF automated calculation of parametric maps for Cerebral Blood Flow, Blood Volume, Mean Transit Time and Time to Peak signal intensity using a gamma variant fitting algorithm. o BrainStat AIF calculation of parametric maps for Cerebral Blood Flow, Blood Volume, Mean Transit Time and Time-to-Peak signal intensity using an automated or manually specified arterial input function algorithm.

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			<ul style="list-style-type: none"> o Fast Spin Echo utilizing High Bandwidth, Thin Slice and Long Echo Train to help manage distortion artifacts. EX Tools extend the depth and breadth of clinical applications performance for Optima MR450w GEM XP with advanced, specialized applications and post-processing capability. Please refer to the Optima MR450w GEM product data sheet for detailed descriptions. o eDWI enhanced SNR diffusion-weighted imaging for brain and liver - includes Multi-B, Smart NEX, "3 in 1", and tetrahedral techniques. o SWAN 2.0 enhanced SNR T2*-weighted susceptibility imaging - multi-echo, 3D GRE-based technique. o Diffusion Tensor imaging with up to 150 different diffusion directions - enables Fractional Anisotropy maps, ADC maps, and T2-weighted TRACE maps. o FiberTrak post-processing for the generation of Eigen-vector information from DTI data sets. o PROBE PRESS single voxel proton brain spectroscopy using the PRESS sequence. o IDEAL 2D FSE and 3D GRE-based fat and water separation imaging with T1, T2, and PD-weighted contrast - generates water-only, fat-only, in-phase and out-of-phase images from a single scan. o 3D LAVA Flex high resolution SPGR-based fat and water separation liver imaging with T1-weighted contrast - generates water-only,

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			<p>fat-only, in-phase and out-of-phase images from a single breath-hold scan.</p> <ul style="list-style-type: none"> o StarMap T2* decay curve imaging using a variable echo, 3D GRE-based technique - enables gray scale and color maps of the T2* signal decay across echoes. o Inhance 2.0 non-contrast MRA suite: Inflow IR (3D FIESTA-based), 3D Velocity (3D PC-based), 2D Inflow (2D TOF-based) and 3D DeltaFlow (3D FSE-based). o TRICKS dynamic, high resolution 3D volume MRA - eliminates the need for timing or triggering. o Cine IR multi-T1 myocardial imaging enables tissue characterization and approximation of the optimal null point for myocardium signal. o 2D PS MDE enables delayed myocardial imaging with IR suppression. PS-MDE is not compatible with ReportCard 4.0. o FGRE TC multi-phase myocardial imaging with reduced artifact sensitivity for viability assessment. o BB SSFSE Single Shot FSE-based whole heart imaging with black blood contrast. <p>Silent Suite comprises a comprehensive set of sequences designed to generate high resolution images with T1, T2, T2 FLAIR, and PD-weighted contrasts. The Silenz imaging sequence delivers 3D isotropic images with T1 and PD, with sound levels that are within 3dB of the ambient conditions. Newly enhanced gradient waveforms have been</p>

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			<p data-bbox="532 411 1024 684">employed to minimize the acoustic signature of FSE, 3D Cube, and PROPELLER-based acquisitions to generate T2 and T2 FLAIR weighted images. In addition, the localizer, Prescan, and calibration sequences have been optimized as well to deliver a complete Neuro exam at nearly silent levels.</p> <p data-bbox="532 709 1016 1062">Included in this Silent Suite product are any Silent software enhancements for those sequences previously purchased, as will be provided to all customers who purchase the Silent Suite and the underlying sequences, for a period of ten (10) years. This does not include any hardware or upgrades, which shall be available to you at an additional charge.</p> <p data-bbox="532 1087 1016 1776">GE Healthcare will provide the above referenced enhancements for the system quoted herein during above term if and/or when such enhancements receives any applicable FDA clearance and are made available as a general commercial offering in the United States. This Silent Suite product is not refundable and not contingent upon GE Healthcare's delivery of any particular enhancements or Customer's acceptance of any enhancements made available. Customer may, at its option, decline to accept any enhancements made available by GE Healthcare herein, provided that Customer shall not be entitled to any price reduction or refund if Customer declines to accept any such</p>

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2	1	M7000ZR	<p>enhancements. GE Healthcare makes no representation or warranty as to the quantity or type of technology or functionality that may be included under any such enhancements. Customer is responsible for the proper accounting for all payments made in the manner required under any state or federal program which provides reimbursement to Customer for or related to any products or services provided under this Agreement.</p>
			<p>Optima MR450w with GEM Magnet Design Optima MR450w with GEM Magnet Design To improve the patient experience and provide high image quality, no other component of an MRI system has greater impact than the magnet. The Optima MR450w system features a short, wide bore magnet that delivers a large field of view. The magnet geometry has been optimized to reduce patient anxiety by providing more space in the bore and more exams with the patient's head outside of the magnet. The 50cm field of view provides uniform image quality and can reduce exam times since fewer acquisitions may be necessary to cover large areas of anatomy. Complemented by GE's active shielding technology, the Optima MR450w has very flexible installation specifications to provide easy siting. And with zero-boil-off magnet technology, helium refills are effectively eliminated, thus reducing operating costs and maximizing uptime.</p>

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			<p>Magnet:</p> <ul style="list-style-type: none"> o Manufactured by GE Healthcare. o Operating field strength 1.5T (63.86 MHz). o Active magnet shielding. o Zero boil-off Cryogenics. o Magnet length 145cm. o Patient Aperture 76 cm. o Patient Bore Diameter 70cm. o Patient Bore Length 105cm. o Maximum Field of View 50 cm x 50 cm x 50 cm. <p>Magnet Homogeneity: Typical ppm and Guaranteed ppm shown.</p> <ul style="list-style-type: none"> o 10cm DSV 0.007 and 0.02. o 20cm DSV 0.035 and 0.06. o 30cm DSV 0.11 and 0.18. o 40cm DSV 0.5 and 0.7. o 45cm DSV 1.2 and 1.6. o 50x50x45cm 2.3 and 3.6. o 50cm DSV 3.3. <p>DSV = Diameter Spherical Volume. Homogeneity for an elliptical volume of 50cm (x,y) by 45cm (z) dimension volume is shown for reference.</p> <p>Fringe field (axial x radial):</p> <ul style="list-style-type: none"> o 5 Gauss = 4.0 m x 2.5 m. o 1 Gauss = 6.2 m x 3.7 m. <p>Quiet Technology:</p> <p>GE has implemented Quiet Technology on critical components of the Optima MR system to reduce acoustic noise and improve the patient environment. This technology enables full use of the eXtreme Gradient Platform for excellent image quality, while maintaining a safe environment for the patient. The technology</p>

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			encompasses the gradient coil, RF body coil, and magnet mounting.
3	1	S7505EK	<p>Preinstallation Collector and Cable Concealment Kit</p> <p>Preinstallation Collector and Cable Concealment Kit</p> <p>The Preinstallation Collector delivers to the site in advance of the magnet and main electronic components. This facilitates the later delivery and installation of supporting electronics. The following are the main components in the Preinstallation collector:</p> <ul style="list-style-type: none"> o Heat exchange cabinet for distribution of chilled water. o Primary Penetration wall panel for support of the penetration cabinet. o Secondary Penetration wall panel for support of gradient filters, helium cables, and chilled air and water. o Helium cryocooler hose kit. <p>The Cable Concealment Kit accommodates a wide-range of scan room ceiling heights and is designed to provide a clean-look installation by concealing the overhead cabling from view.</p>
4	1	M7004ZP	<p>MR450w Dock and 32-Channel Switch Collector</p> <p>MR450w Dock and 32-Channel Switch Collector</p> <p>The MR450w Dock and 32-Channel Switch collector provides the interface between the magnet and GEM Express Patient Table with IntelliTouch. Also included is the RF signal switching hardware that routes the input signals to the respective OpTix receivers.</p>

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5	1	S4500YH	<p>Optima MR450w Cable Configuration - A</p> <p>Optima MR450w Cable Configuration - A</p> <p>To accommodate various electronic and scan room configurations and sizes, the MR450w has preset lengths of cables and connector kits to speed system installation. This cable collection is compatible with fixed and relocatable building configurations.</p>
6	1	M1060MA	<p>Vibroacoustic Dampening Kit</p> <p>Vibroacoustic Dampening Kit</p> <p>Material in the Vibroacoustic Dampening Kit can significantly attenuate the transmission of gradient-generated acoustic noise through the building structure to nearby areas, including adjacent rooms and floors above or below the MR suite. If this kit is applied during the installation of a new magnet, no additional service charges are necessary. However, installation of the Vibroacoustic Dampening kit under an existing magnet requires special steps. The steps to prepare the site and steps to install, such as modifications to the RF screen room, and other magnet rigging, modifications to the RF screen room, and other finishing work, are not covered in the pricing.</p>
7	1	M7000WL	<p>Main Disconnect Panel</p> <p>Main Disconnect Panel</p> <p>The Main Disconnect Panel safeguards the MR system's critical electrical components, by providing complete power distribution and emergency-off control.</p>

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8	1	M3335JZ	<p>English Keyboard</p> <p>English Keyboard</p> <p>Required for our operator console. This keyboard is ergonomically designed to keep your staff comfortable even through the longest shifts. The scan control keyboard assembly has an intercom speaker, microphone, volume controls and emergency stop switch.</p>
9	1	M1000MW	<p>Operator's Console Table</p> <p>Operator's Console Table</p> <p>Wide table designed specifically for the color LCD monitor and keyboard.</p>
10	1	M3335CB	<p>1.5T Calibration Phantom Kit</p> <p>1.5T Calibration Phantom Kit</p> <p>This 1.5T calibration kit contains a large volume shim phantom, a daily quality assurance phantom, an echo-planar calibration phantom, and the associated loader shells.</p>
11	1	M3335CA	<p>Calibration Kit Phantom Holder Cart</p> <p>Calibration Kit Phantom Holder Cart</p>
12	1	S7024CD	<p>MSK Elite Package</p> <p>MSK Elite Package</p> <ul style="list-style-type: none"> o MAVRIC SL o Cartigram <p>MAVRIC SL is a new advanced magnetic resonance imaging technique for imaging soft tissue and bone near MR conditional metallic devices. MAVRIC SL is designed to greatly reduce susceptibility artifacts, compared to conventional fast spin echo techniques, and is</p>

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13	1	S7024CP	<p data-bbox="529 405 1003 474">suitable for use on all patients cleared for MR exams.</p> <p data-bbox="529 495 1036 730">Cartigram is a non-invasive imaging method for early detection of osteoarthritis. It quantifies the T2 relaxation of knee cartilage and can overlay the quantified parametric maps over high resolution images for clear visualization of the anatomy.</p> <p data-bbox="529 762 737 789">Body Elite Package</p> <p data-bbox="529 810 737 837">Body Elite Package</p> <ul data-bbox="529 858 646 928" style="list-style-type: none"> <li data-bbox="529 858 646 886">o IDEAL IQ <li data-bbox="529 907 646 934">o FOCUS <p data-bbox="529 955 1052 1388">IDEAL IQ is an acquisition and reconstruction software package that generates water and fat images, relative fat concentration, and R2* relaxation maps. This technique builds upon GE's IDEAL (Iterative Decomposition of water and fat with Echo Asymmetry and Least-squares estimation) technology by incorporating a fast, volumetric multi-echo imaging sequence and an enhanced reconstruction algorithm to improve the visualization of regional fat deposits in-vivo.</p> <p data-bbox="529 1409 1065 1768">FOCUS delivers a highly efficient method for increasing the resolution in Single Shot DW EPI sequences. The outcome delivers robust high resolution results while removing artifacts typically induced from motion, image backfolding or unsuppressed tissue. In addition, with the higher efficiency of the application, the reduced field of view imaging leads to a reduction in blurring that translates into</p>

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14	1	S7024CR	<p>an overall improvement to the image quality result. The sequence utilizes 2D selective excitation pulses in DW-EPI acquisitions to limit the prescribed phase encoded field of view.</p> <p>Breast Expert Package - GEM 1.5T Breast Expert Package - GEM 1.5T</p> <ul style="list-style-type: none"> o VIBRANT o BREASE (includes phantom) o 1.5T 8-channel GEM Breast Array <p>VIBRANT is a fast, high resolution T1-weighted imaging sequence and application optimized for evaluation of breast tissue. VIBRANT uses parallel imaging acceleration to quickly acquire multi-phase data without compromising spatial resolution. This 3D gradient echo technique, optimized for sagittal or axial acquisitions, uses an optimized inversion pulse and dual-shimming technology that yields enhanced image contrast and robust, uniform, bilateral fat suppression.</p> <p>For improved tissue contrast, VIBRANT is compatible with Flex imaging (sold separately). VIBRANT Flex acquisition will provide a water-only, fat-only, in-phase and out of phase data sets in a single acquisition and produce images with significantly reduced chemical shift and susceptibility artifacts.</p> <p>BREASE is a single-voxel TE-averaged PRESS sequence that is optimized for mapping the bio-chemical information of breast tissue. The TE averaging eliminates unwanted information</p>

Item No.	Qty	Catalog No.	Description
			<p>from side-bands to ensure clean and simple spectra and streamline interpretation.</p> <p>Optimized prescan and reconstruction algorithms are employed to accurately characterize tissue, especially in areas normally dominated by lipid signal.</p> <p>The GEM Breast Array generates high-definition breast images, designed for optimized use with ASSET and ARC parallel imaging techniques to accelerate image acquisition for both 2D and 3D data sets. The eight element phased-array coil helps ensure excellent temporal and spatial resolution, patient after patient. The array is compatible with VIBRANT, VIBRANT Flex, IDEAL, Fast Spin Echo, Fast Gradient Echo, spectroscopy and diffusion imaging sequences, and includes a set of MR compatible biopsy grids.</p>
15	1	M7000JC	<p>3D ASL - Arterial Spin Labeling</p> <p>3D ASL (Arterial Spin Labeling)</p> <p>3D ASL utilizes water in arterial blood as an endogenous contrast media to help visualize tissue perfusion and provide quantitative assessment of cerebral blood flow (CBF) in ml/100 g/min. The quantitative CBF maps can be generated and stored in DICOM format.</p> <p>3D ASL deploys stacked spiral FSE readout with modulated flip angle to acquire 3D data with increased SNR and less image distortion compared to conventional 2D EPI-based ASL techniques. A pulsed-continuous labeling is applied to label arterial blood close to the imaging volume thus improving conspicuity of</p>

Item No.	Qty	Catalog No.	Description
16	1	M7000MT	<p data-bbox="532 405 1078 636">flowing blood. Selective, interwoven pulses are then used to saturate and invert the imaging volume, in order to achieve better background suppression, and reduce sensitivity to motion. The isotropic 3D volume data can be reformatted to axial, sagittal, coronal or oblique planes.</p> <p data-bbox="532 657 1078 810">3D ASL helps generate robust, reproducible images and perfusion maps with high SNR, reduced motion artifacts and less distortion in high magnetic susceptibility regions.</p> <p data-bbox="532 842 639 867">MR Touch</p> <p data-bbox="532 888 639 913">MR-Touch</p> <p data-bbox="532 934 1036 1003">MR-Touch is a non-invasive method to measure relative tissue stiffness with MR.</p> <p data-bbox="532 1024 1062 1759">MR-Touch is a new acquisition and reconstruction technique that combines hardware, and acquisition and reconstruction algorithms to produce Elastograms, color-coded anatomical images showing varying degrees of elasticity or stiffness. The image contrast is related to relative stiffness of soft tissue and is generated from the real-time data acquisition during tissue palpation with low amplitude and low frequency sound waves. The hardware component is comprised of an active sound wave generator and a passive transducer that produces small vibrations in the area of the patient to be scanned. The MR-Touch acquisition software is an evolutionary improvement to the gradient echo sequence. The acquisition software also triggers the sound wave generator to produce synchronized</p>

Item No.	Qty	Catalog No.	Description
17	1	M7000JF	<p>vibrations on the surface of the patient during the data acquisition. The reconstruction algorithms generate images that show the propagation of sound waves through the tissue (phase images) and also the corresponding strain wave and relative stiffness images. Parallel imaging is used to accelerate image acquisition and provide for whole liver coverage in a few breath holds.</p> <p>MR-Touch is designed to evaluate relative liver and muscle tissue stiffness.</p> <p>MR-Touch is compatible with the Optima MR450w, Discovery MR450, and HDxt 23.0 1.5T systems.</p> <p>3D Heart with CINE-IR, 3D MDE and Navigator</p> <p>3D Heart</p> <p>3D Heart is a 3D Fat Sat FIESTA sequence (Optimized for 1.5T) or 3D IRPrep FGRE sequence (Optimized for 3T) that provides whole-heart coverage for coronary artery imaging or cardiac chamber imaging. It employs a T2 preparation pulse at 1.5T to provide myocardial suppression for better coronary visualization. A multi-slab localizer allows easy whole-heart prescription, and increase inflow effect for high vessel conspicuity. A navigator echo pulse that detects motion of the diaphragm is utilized to enable free breathing acquisition. The navigator has been optimized to improve robustness, and employs prospective real-time motion correction to improve motion suppression and increase scan efficiency. The multi-slab acquisition minimizes the effect of respiratory drift and heart rate</p>

Item No.	Qty	Catalog No.	Description
			<p>variability on image quality. An optimized phase ordering and steady state preparation has also been used to improve CNR and SNR.</p> <p>As this sequence supports 3D IRPrep FGRE acquisition mode on both 1.5T & 3T, it can also be used for 3D MDE acquisition. With the purchase of 3D Heart, 3 additional options (3D MDE, Cine IR and Cardiac Navigator) would be included.</p> <p>Cine IR is a conventional ECG-gated, gradient recalled echo FASTCARD or FASTCINE acquisition sequence with an inversion recovery (IR) preparation. A single adiabatic inversion pulse is generated upon detection of the cardiac R-wave to trigger the multi-phase readout. Each image (i.e., cardiac phase) is at a progressively longer TI time; up to 30 TI times can be captured. Cine IR can be used to approximate the myocardial null point for a subsequent delayed enhancement (MDE) study for myocardial viability.</p>
18	1	M3340CD	<p>1.5T 8-Channel Foot / Ankle Coil - Invivo</p> <p>1.5T 8-Channel Foot / Ankle Coil - Invivo</p> <p>The 1.5T compatible foot / ankle coil produces high-resolution images of the foot and ankle by incorporating an 8-channel phased array design in a unique "ski" boot design. The unique coil design has excellent distal coverage and supports multiple foot positions for optimizing studies. Parallel imaging is supported to reduce acquisition times.</p>
19	1	E8912CA	MR Heat Exchanger for MR450w - Standard Ambient Temp

Item No.	Qty	Catalog No.	Description
			<p data-bbox="519 399 1047 472">GE Optima MR450w Heat Exchangers - 49kW (20 Tons)</p> <p data-bbox="519 493 1047 808">Cooling for your GE Healthcare MR system has never been so easy. GE Healthcare has partnered with the Glen Dimplex Group, a world leader in cooling systems, to offer heat exchangers designed to meet the needs of your Discovery MR System. Now you can look to GE Healthcare for your entire MR purchase and support.</p> <p data-bbox="519 829 1047 1312">This heat exchanger is highly reliable and the only unit verified to perform with the new platform of GE Healthcare MR systems. As part of your integrated GE Healthcare solution, you'll work with a single contact throughout the whole installation. A Project Manager of Installation will help with building layout, room designs, delivery and installation - every step until your system is ready to scan. Our team will work seamlessly with architects, contractors and your internal team to help ensure timely, cost-effective completion.</p> <p data-bbox="519 1333 1047 1522">Once your cooling system is running, you'll get fast, highly-skilled service support managed through GE Healthcare - with the same quality and response time you expect from your MR system.</p> <p data-bbox="519 1543 812 1575">FEATURES AND BENEFITS</p> <ul data-bbox="519 1596 1047 1753" style="list-style-type: none"> o Designed to provide stable fully dedicated cooling for your MR system's needs o Water/glycol outdoor-air-cooled heat exchangers to support your highest exam volumes

Item No.	Qty	Catalog No.	Description
			<p>and your full range of diagnostic procedures</p> <ul style="list-style-type: none"> o Redundant fluid pumps with automatic switchover let you keep operating with no loss of cooling even if one pump goes down o Quad compressor, dual tandem refrigeration circuit design saves on energy while your system smoothly transitions through the 10% to 100% heat load capacity cycles of patient scanning and idling o Quiet operation between patient exams and overnight - ideal for facilities in residential areas o Comes with installation support, installation visits, preventative maintenance visit and 1 full year of parts and labor warranty o Installation support includes: support through GE's Project Manager of Install, GE's Design Center, technical support from the Glen Dimplex company, two (2) installation visits o Comprehensive and quality service rapidly delivered through our CARES service solution o 65 gallons of 100% glycol concentrate for complete system filling and diluting o Wall mounted remote display panel provides the ability to monitor the system's operation and indicates possible system errors o Filter kit with flow meter helps to ensure purity of water prior to entry to the MR system o Highly recommended that Vibration Isolation Spring Kit (E8911CJ) be added for systems that will be roof top mounted <p>SPECIFICATIONS</p>

Item No.	Qty	Catalog No.	Description
20	1	E8823M	<ul style="list-style-type: none"> o Net Cooling Capacity: 49 kW / 20 Ton o Maximum Coolant Flow: 35 gpm (132 l/m) o Coolant Outlet Temperature: 48 F (8.9 C) o Coolant Temp Stability: E 1.8 F (E1.0 C) o Max Coolant Pressure : 70 Psi (4.8 Bar) o Refrigerant: R407C o Ambient Temp Range: -20 to 120 F (-30 to 50 C) o Condenser Air Flow (Approx): 18,000 Cfm o Tank Capacity: 100 gal (378 l) o Flow Meter Range: 4-40 gpm o Filters: 50 micron cartridge filters o Supply Voltage: 460v / 3 phase / 60 Hz o Coolant Connections: 2" NPTF o Overall Size (L x W x H) 44" x 136" x 84.5" <p>COMPATIBILITY:</p> <ul style="list-style-type: none"> o GE Optima MR450w 1.5T MR System <p>NOTES:</p> <ul style="list-style-type: none"> o Item is NON-RETURNABLE and NON-REFUNDABLE <p>Magnacoustics Genesis Ultra Music System for MR Magnacoustics Genesis ULTRA Communication & Music System</p> <p>The Magnacoustics Genesis ULTRA is the only MRI Communication & Music System to interface directly with GE's MRI hardware and software. This allows software driven Auto Voice Commands from GE's computer to be delivered directly into the patient's ears for breath-hold sequences. This same interface allows the Technologist to talk directly to the patient through the console Mic even while the scan is in progress. The Genesis ULTRA also</p>

Item No.	Qty	Catalog No.	Description
			<p>features an exclusive Patient Ready Signal. By simply depressing a small button on the handheld control an audible and visual signal is transmitted to the Technologist indicating the patient's readiness for the scan to begin. This simple step streamlines the breath-hold exam which amounts to approximately 30% of all exams.</p> <p>Patient Handheld Volume and Media Selection Controls with Voice Feedback interface with an FM/AM stereo, CD player, and iPod interface. This distracts even the most apprehensive of your patients by allowing them to be in control of their own environment. Additionally, the Auto Gain feature automatically raises and lowers the volume level for the patient based on the Sound Pressure Level of the MRI.</p> <p>Magnacoustics also provides the only patented 8-driver transducer that provides the highest sound directly to the patients ears with the MagnaLink Headset System. This patented system includes a stethoscope-style headset with the MagnaPlug (replaceable earplug) that provides 29dB of attenuation and complies with GE Healthcare MR Safety Guide Operator Manual.</p> <p>The Genesis ULTRA's See-In-the-Dark GUI Electroluminescent Backlit Technologist Control Unit enhances operation in the normally low-lit MRI environment allowing the Technologist to operate the entire system with the touch of a button.</p> <p>The Genesis ULTRA includes an integral interface for fMRI with built-in input for audio stimulation and output for responses...E</p>

Item No.	Qty	Catalog No.	Description
21	1	E4504FM	<p data-bbox="537 401 873 428">700 VA Partial System UPS - MR</p> <p data-bbox="537 447 873 474">700 VA Partial System UPS - MR</p> <p data-bbox="537 493 1073 932">Tested with all MR system computers, the 700VA Partial System UPS provides reliable, clean, consistent power for the data processing portion of the MR imaging system. The use of the double conversion UPS enables the MR system data processing portion electronics to operate when there is a power anomaly or total power loss. Valuable data and the system operating software are protected, if there is an extended outage the UPS allows for an orderly shutdown of the system.</p> <p data-bbox="537 951 756 978">FEATURES/BENEFITS</p> <ul data-bbox="537 997 1073 1528" style="list-style-type: none"> <li data-bbox="537 997 1073 1115">o True double-conversion, online technology provides reliable operation and uninterrupted glitch free power <li data-bbox="537 1125 1073 1192">o Automatic frequency selection eases startup, i.e., 50 or 60 Hz compatible <li data-bbox="537 1203 1073 1270">o Integral Electronic Static Bypass switch means zero transfer time <li data-bbox="537 1281 1073 1398">o Improves user productivity, system reliability, reduces service costs and increases system uptime <li data-bbox="537 1409 1073 1528">o Advanced Battery Management (ABM) software monitors / indicates battery health and improves battery service life <p data-bbox="537 1547 717 1575">SPECIFICATIONS</p> <ul data-bbox="537 1593 1073 1749" style="list-style-type: none"> <li data-bbox="537 1593 1073 1621">o Dimensions (H x W x D): 9.09" x 6.3" x 13.9" <li data-bbox="537 1631 1073 1659">o Weight: 26 lbs. <li data-bbox="537 1669 1073 1696">o Input Voltage Range: Single Phase 80-138 V <li data-bbox="537 1707 1073 1734">o Input Frequency Range: 47-70 Hz

Item No.	Qty	Catalog No.	Description
			<ul style="list-style-type: none"> o Rating: 700 VA / 630 W <p>COMPATIBILITY</p> <ul style="list-style-type: none"> o MR Systems <p>NOTES</p> <ul style="list-style-type: none"> o This is a partial system UPS - it covers only the computer, not the entire MR imaging system. After a power event portions of the system will have to be reset before operation can resume o Customer is responsible for rigging and arranging for installation with a certified electrician o ITEM IS NON-RETURNABLE AND NON-REFUNDABLE
22	1	W0107MR	<p>TiP Discovery and Optima Family Training 6 Days Onsite Plus 10 Hrs TVA</p> <p>TiP Discovery and Optima Family Training 6 Days Onsite Plus 10 Hrs TVA</p> <p>The TiP Training Choices program is designed for CURRENT GE customers WITH HD/HDx experience who purchase a Discovery or Optima system. Training is delivered onsite at the customer's facility and focuses on new system features and applications. Extended TVA support ensures learners maintain performance over the long term.</p> <p>This training program must be scheduled and completed within 36 months after the date of product delivery.</p>
23	1	W0120MR	<p>3 Day Advanced Cardiac Imaging</p> <p>3 Day Advanced Cardiac Imaging</p>

Item No.	Qty	Catalog No.	Description
			Three days onsite training: Intermediate to advanced cardiac imaging and/or post-processing applications. Three training days delivered consecutively.
24	1	W0200MR	<p>3 Day MR TiP Onsite Upgrade Training</p> <p>3 Days MR TiP Onsite Upgrade Training</p> <p>One 3 day onsite visit to coincide with upgrade completion. 8AM to 5PM, Monday through Friday. Includes T&L expenses. Days provided consecutively.</p> <p>This training program must be scheduled and completed within 12 months after the date of product delivery.</p>
25	1	W0001MR	<p>1 Day MR TiP Onsite Training</p> <p>1 Day MR TiP Onsite Training</p> <p>One Day MR Onsite Training provided from 8AM to 5PM, Monday through Friday. Includes T&L expenses.</p> <p>This training program must be scheduled and completed within 12 months after the date of product delivery.</p>
26	1	W0004MR	<p>4 Days MR TiP Onsite Training</p> <p>4 Days MR TiP Onsite Training</p> <p>Four Days MR Onsite Training provided from 8AM to 5PM, Monday through Friday. Includes T&L expenses. Days provided consecutively.</p> <p>This training program must be scheduled and completed within 12</p>

Item No.	Qty	Catalog No.	Description
			months after the date of product delivery.
	1		NonProducts
27	1		Rigging in new magnet

450w GEM 1.5T MR System.