3-418

Advanced Radiology CONSULTANTS

- Connecticut Open MRI
- Bridgeport MRI Center
- HealthScreen Center

December 22, 2004

Cristine Vogel
Commissioner
Office of Health Care Access
410 Capitol Avenue
Post Office Box 340308
Hartford, CT 06134-0308

Re: ***Advanced Radiology Consultants, LLC***

Dear Commissioner Vogel:

Enclosed please find an original and three (3) copies of a Letter of Intent for the replacement by Advanced Radiology Consultants, LLC of the MRI unit presently in operation at its Stratford office. As noted in the attached filing, the scanner that Advanced Radiology is seeking to replace has been having intermittent problems for over a year, which the manufacturer has been unable to correct. Advanced Radiology has therefore decided to replace the existing unit. Note that, while this approval process is pending, Advanced Radiology will have difficulty performing lumbar spine examinations with the current unit. Advanced Radiology respectfully requests that OHCA review this application as expeditiously as possible in order to ensure the availability of MRI services for existing patients and referring physicians.

Thank you in advance.

Very truly yours,

Alan Kaye MD

Alan D. Kaye, M.D.

Business Office ◆ 56 Quarry Road ◆ Trumbull, Connecticut 06611
(203) 696-6125 ◆ Fax: (203) 696-6130 ◆ Website: www.adrad.com

State of Connecticut
Office of Health Care Access
Letter of Intent/Waiver Form
Form 2030

All Applicants must complete a Letter of Intent (LOI) form prior to submitting a Certificate of Need application, pursuant to Sections 19a-638 and 19a-639 of the Connecticut General Statutes and Section 19a-643-79 of OHCA's Regulations. Please submit this form to the Commissioner of the Office of Health Care Access, 410 Capitol Avenue, MS# 13HCA, P.O. Box 340308, Hartford, Connecticut 06134-0308.

SECTION I. APPLICANT INFORMATION

If there are more than two Applicants, please attach a separate sheet of paper and provide additional information in the format below.

	Applicant One	Applicant Two
Full legal name	Advanced Radiology Consultants, LLC.	
Doing Business As	Advanced Radiology Consultants, LLC.	
Name of Parent Corporation	Advanced Radiology Consultants, LLC.	
Mailing Address, if Post Office Box, include a street mailing address for Certified Mail	56 Quarry Road, Trumbull, CT 06611	
Applicant type (e.g., profit/non-profit)	Profit	
Contact person, including title or position	Alan Kaye, MD President	
Contact person's street mailing address	Department of Radiology 267 Grant Street Bridgeport 06610	
Contact person's phone #, fax # and e-mail address	(p)203-384-3559 (f) 203-384-4363 alankaye@adrad.com	

SECTION II. GENERAL APPLICATION INFORMATION

a. Proposal/Project Title: **Replacement of Stratford MRI scanner**

b. Type of Proposal, please check all that apply:

☐ Change in Facility (F), Service (S) or Function (Fnc) pursuant to Section 19a-638, C.G.S.:

☐ New (F, S, Fnc) Replacement ☐ Additional (F, S, Fnc)

☐ Expansion (F, S, Fnc) ☐ Relocation ☐ Service Termination

☐ Bed Addition` ☐ Bed Reduction ☐ Change in Ownership/Control

☐ Capital Expenditure/Cost, pursuant to Section 19a-639, C.G.S.:

☐ Project expenditure/cost cost greater than $ 1,000,000

☒ Equipment Acquisition greater than $ 400,000

☐ New ☒ Replacement ☐ Major Medical

☐ Imaging ☐ Linear Accelerator

☐ Change in ownership or control, pursuant to Section 19a-639 C.G.S., resulting in a capital expenditure over $1,000,000

c. Location of proposal (Town including street address):
2876 Main Street, Stratford, Connecticut 06614

d. List all the municipalities this project is intended to serve: **Stratford, Bridgeport, Trumbull**

e. Estimated starting date for the project: **Within 30 days of CON approval**

f. Type of project: **19**

Number of Beds (to be completed if changes are proposed)

Type	Existing Staffed	Existing Licensed	Proposed Increase (Decrease)	Proposed Total Licensed

SECTION III. ESTIMATED CAPITAL EXPENDITURE INFORMATION

a. Estimated Total Capital Expenditure: $ 2,140,500

b. Please provide the following breakdown as appropriate:

Construction/Renovations	$ 100,000
Medical Equipment (Purchase)	
Imaging Equipment (Purchase)	$1,925,000
Non-Medical Equipment (Purchase)	
Sales Tax	$115,500
Delivery & Installation	
Total Capital Expenditure	**$ 2,140,500**
Fair Market Value of Leased Equipment	
Total Capital Cost	**$**

Major Medical and/or Imaging equipment acquisition:

Equipment Type	Name	Model	Number of Units	Cost per unit
MRI System	Siemens	Avanto	1	$1,925,000

Note: Provide a copy of the contract with the vendor for major medical/imaging equipment.
(See attached quotation)

c. Type of financing or funding source (more than one can be checked):

☒ Applicant's Equity ☒ Lease Financing ☐ Conventional Loan

☐ Charitable Contributions ☐ CHEFA Financing ☐ Grant Funding

☐ Funded Depreciation ☐ Other (specify): _____

SECTION IV. PROJECT DESCRIPTION

Please attach a separate 8.5" X 11" sheet(s) of paper and provide no more than a 2 page description of the proposed project, highlighting all the important aspects of the proposed project. Please be sure to address the following (if applicable):

1. Currently what types of services are being provided? If applicable, provide a copy of each Department of Public Health license held by the Petitioner.
2. What types of services are being proposed and what DPH licensure categories will be sought, if applicable?
3. Who is the current population served and who is the target population to be served?
4. Identify any unmet need and how this project will fulfill that need.
5. Are there any similar existing service providers in the proposed geographic area?
6. What is the effect of this project on the health care delivery system in the State of Connecticut?
7. Who will be responsible for providing the service?
8. Who are the payers of this service?

RECEIVED
2004 DEC 23 PM 12:03
CONNECTICUT OFFICE OF HEALTH CARE ACCESS

AFFIDAVIT

Applicant: ADVANCED RADIOLOGY

Project Title: STRATFORD MRI REPLACEMENT

I, ALAN KAYE, MD, Pres
(Name) (Position – CEO or CFO)

of ADVANCED RADIOLOGY being duly sworn, depose and state that the information provided in this CON Letter of Intent/Waiver Form (2030) is true and accurate to the best of my knowledge, and that ADVANCED RADIOLOGY (Facility Name) complies with the appropriate and applicable criteria as set forth in the Sections 19a-630, 19a-637, 19a-638, 19a-639, 19a-486 and/or 4-181 of the Connecticut General Statutes.

Signature

12-22-04
Date

Subscribed and sworn to before me on December 22, 2004

Nina A Santossio
Notary Public/Commissioner of Superior Court

My commission expires: NINA A. SANTOSSIO
NOTARY PUBLIC, STATE OF CONNECTICUT
My Commission Expires 3/31/2009

Project Type Listing

Please indicate the number or numbers of types of projects that apply to your request on the line provided on the Letter of Intent Form (Section II, page 2).

Inpatient

1. Cardiac Services
2. Hospice
3. Maternity
4. Med/ Surg.
5. Pediatrics
6. Rehabilitation Services
7. Transplantation Programs
8. Trauma Centers
9. Behavioral Health (Psychiatric and Substance Abuse Services)
10. Other Inpatient

Outpatient

11. Ambulatory Surgery Center
12. Birthing Centers
13. Oncology Services
14. Outpatient Rehabilitation Services
15. Paramedics Services
16. Primary Care Clinics
17. Urgent Care Units
18. Behavioral Health (Psychiatric and Substance Amuse Services)
19. MRI
20. CT Scanner
21. PET Scanner
22. Other Imaging Services
23. Lithotripsy
24. Mobile Services
25. Other Outpatient
26. Central Services Facility

Non-Clinical

27. Facility Development
28. Non-Medical Equipment
29. Land and Building Acquisitions
30. Organizational Structure (Mergers, Acquisitions, Affiliations, and Changes in Ownership)
31. Renovations
32. Other

Section IV: Project Description

Advanced Radiology Consultants, LLC (ARC), is a major provider of imaging services in Fairfield County, with offices in the towns of Stamford, Fairfield, Bridgeport, Stratford, Trumbull, and Orange. Our radiologists, under the name of Advanced Radiology Consultants, LLC and its predecessor organizations, have provided imaging services provider to the Southern Connecticut area for 99 years, including serving as the exclusive provider of radiology services to Bridgeport Hospital. ARC and its affiliates are the largest providers of MRI services in the State. Our current scanners include high field scanners and mid and low field open units.

Advanced Radiology has operated an MRI scanner at 2876 Main Street in Stratford since 1998. This service has received authorization under Certificate of Need Inquiry Report Number 98-05, dated January 27, 1999. This unit has received ACR accreditation, most recently on April 7, 2004.

This office serves the towns of Stratford, Bridgeport, and Trumbull. Examinations are supervised by the same subspecialty radiologists of Advanced Radiology as provide services at its other CON-approved facilities in Bridgeport, Fairfield, and Stamford. Other providers of MRI services in the proposed service area include: St. Vincent's Medical Center and Robert D. Russo, M.D. and Associates Radiology, P.C.

For well over a year now, we have noticed intermittent problems with certain important imaging sequences for lumbar spine examinations, our most frequent MRI procedure. This has resulted in having to bring patients back for repeat scans. We have had Hitachi, the manufacturer of the unit, into our office many times in attempts to rectify the situation, but with no acceptable or lasting solution. We have decided to replace the unit. We have elected to seek a CON for replacing the unit with a high field machine. While we could replace it with a machine that is less expensive, we have decided to seek CON approval for a full-service, high field unit, similar to that which we have operational in our Fairfield office.

Our current volume of MRI patients in our Stratford office will certainly justify approval of a replacement. With the expansion in the use of MRI imaging as a diagnostic tool, continued growth in this modality over the next five years is projected by nationally recognized organizations. This project will have only a positive effect on the health of the people of Connecticut in that Advanced Radiology will replace a lower field strength magnet with one that is higher and capable of more diverse and complete examinations.

The credentials of Advanced Radiology's radiologists and business staff are well-known to OHCA through multiple prior CON filings. The examinations will be supervised and interpreted by subspecialist radiologists with unmatched MRI experience. Advanced Radiology serves clients of almost all commercial payers, and has a long track record of serving the governmental payers and the indigent.

SIEMENS

Quote

Siemens Medical Solutions USA, Inc.
Valley Stream Parkway, Malvern PA 19355

Siemens Medical Solutions Health Services Corporation

Siemens Medical Solutions Ultrasound Division

ADVANCED RADIOLOGY

56 Quarry Rd.
Trumbull, CT 06611

PROPOSAL REFERENCE
Proposal: 5Y8-1MO7 Date: 12/21/2004
Siemens' REPRESENTATIVE
Elizabeth Dermody

LOCAL SALES OFFICE: Boston
Siemens Medical Solutions USA, Inc.
200 Wheeler Rd, 3rd Floor
Burlington, MA 01803
Phone: (781) 203-6000 Fax: (781) 203-6025

INQUIRIES REGARDING THIS PROPOSAL SHOULD REFER TO **SYSTEM QUOTE #** AND BE DIRECTED TO THE LOCAL SALES OFFICE

Siemens Medical Solutions USA, Inc., is pleased to submit the following quotation for the products and services described herein at the stated prices and terms, subject to your acceptance of the terms and conditions on the face and back hereof, and on any attachment hereto.

Order is CON continent based upon the state of CT guidelines.

DELIVERY SUBJECT TO AVAILABILITY
FREIGHT CHARGES AND TAXES, IF ANY, ARE PAYABLE UPON RECEIPT OF INVOICE.
WARRANTY: See specific product line attachment definitions.
THIS QUOTATION IS IN US DOLLARS AND IS VALID FOR 45 DAYS.

Siemens Medical Solutions USA, Inc.

SUBMITTED BY: _____ (signature)
NAME: Elizabeth Dermody
TITLE: Siemens' REPRESENTATIVE
DATE: 12/21/2004

CUSTOMER'S ACCEPTANCE:

BY: _____ (signature)
NAME: _____
TITLE: _____
DATE: _____

SIEMENS

Quote

Siemens Medical Solutions USA, Inc.
Valley Stream Parkway, Malvern PA 19355

Siemens Medical Solutions
Health Services Corporation

Siemens Medical Solutions
Ultrasound Division

ADVANCED RADIOLOGY

56 Quarry Rd.
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PROPOSAL REFERENCE
Proposal: 5Y8-1MO7 Date: 12/21/2004

System Quote #	System Quote Name	Revision	Terms of Payment
5Y8-1MPF	MAGNETOM Avanto	1	10% Down, 80% Delivery, 10% Installation

FOB: Shipping Point

RELEVANT Items for System Quote #5Y8-1MPF

Qty	Part #	Description	Extended Net Price
		MAGNETOM Avanto	
1	08464690	**MAGNETOM Avanto - System**	

The Siemens 1.5T MAGNETOM Avanto, the first Tim system, is a revolutionary, high performance whole body scanner and the optimal choice for highest patient throughput and best image quality through:

Tim (Total imaging matrix) technology, which shifts the spotlight onto a new and tremendously innovative RF system and matrix coil technology.

AudioComfort for optimal noise reduction during image acquisition with world class gradients

syngo, the Siemens unique multi modality software providing innovative applications and workflow automation features.

The system including magnet, electronics and control room can be installed in 30 sqm space.

The basic system includes for example:

- Ultra-short 150 cm long, whole-body superconductive 1.5T magnet with Zero Helium Boil-Off technology
- Actively Shielded water-cooled Siemens exclusive gradient system
- Digital RF Transmit and Receive System

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Proposal: 5Y8-1MO7 Date: 12/21/2004

RELEVANT Items for System Quote #5Y8-1MPF

Qty	Part #	Description	Extended Net Price

- RF Coils
- High performance new host computer and image processor
- syngo MR software including Inline Technology, 1D/2D PACE, iPAT and Phoenix
- Tim Application Suite including the dedicated Neuro Suite, Angio Suite, Cardiac Suite, Body Suite, Onco Suite, Ortho Suite, and Pediatric Suite

According to the Guidelines of the European Union are we required to carry components accessible to new utilization back to the manufacturing process. Our products correspond to these Guidelines and contain recycled or reconditioned ETN (Equivalent To New) parts and components. We safeguard for the ETN parts and components the same function, quality and lifetime as for new components through severe selection and quality assurance during the entire manufacturing process.

For system cooling either the predefined chiller option or the Separator is required.

The MAGNETOM Avanto features the Tim Application Suite. The **Tim Application Suite** provides a complete range of clinically optimized sequences, protocols and workflow functionalities for virtually all clinical questions. There are seven dedicated application packages:

- **Neuro Suite**
- **Angio Suite**
- **Cardiac Suite**
- **Body Suite**
- **Onco Suite**
- **Ortho Suite**
- **Pediatric Suite**

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The high performance host computer and image processor are ideally suited for even the most demanding applications.

The system including magnet, electronics and control room can be installed in 30 m2 (325 ft²) space.

The system includes:

Magnet:

- Ultra-short 150 cm (4' 11") long, whole-body superconductive 1.5T magnet with 5th generation active shielding (AS) technology with counter coils, External Interference Shielding (E.I.S.) and excellent homogeneity (based on 24 plane plot, 50 cm DSV typ. 0.8 ppm). The magnet has a helium capacity of 1,600 liters and a typical Helium Boil-Off rate of 0 l/h during normal clinical operation depending on the sequences used and examination time. It has an integrated magnet cooling system.

Gradient System and AudioComfort:

- Prepared for Actively Shielded water-cooled worldclass gradient system with AudioComfort.
- Maximum FoV is 50 cm

RF Transmit and Receive System:

- Compact water cooled solid state RF amplifier with 15 kW peak power
- integrated electronics cabinet water cooling
- Integrated circularly polarized Body Coil
- The revolutionary Total imaging matrix that allows a huge number of coil elements to be seamlessly integrated into one examination together with a large number of RF channels, optimizes coil positioning and virtually eliminates coil changing times.

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RF Coils:

- **Head Matrix coil**
- 12-element design with 12 integrated preamplifiers, two rings of 6 elements each (i.e. 4 clusters of 3 elements each)
- Operated depending on the Matrix Coil Mode as a 4-channel coil (CP Mode), 8-channel coil (Double Mode) or 12-channel coil (Triple Mode).
- For applications like Head examinations, MR Angiography, combined head/neck examinations, TMJ (temporo mandibular joints)

- **Neck Matrix coil**
- 4-element design with 4 integrated preamplifiers, 2 clusters of 2 elements each
- Operated depending on the Matrix Coil Mode as a 2-channel coil (CP Mode) or 4-channel coil (Double Mode, Triple Mode).
- For applications like Cervical Spine, Neck, Larynx/Esophagus, MR Angiography, Mediastinum, combined head/ neck examinations

- **Spine Matrix coil**
- 24-element design with 24 integrated preamplifiers, 8 clusters of 3 elements each
- Operated depending on the Matrix Coil Mode as a 8-channel coil (CP Mode), 16-channel coil (Double Mode) or 24-channel coil (Triple Mode).
- For applications like high resolution imaging of the whole spine, but also for various applications in combination with additional coils

- **CP Flex coil, large**
- Wrap-around coil made from soft and flexible material
- For applications like imaging of large regions such as medium to large shoulders, hip and knee

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RELEVANT Items for System Quote #5Y8-1MPF

Qty	Part #	Description	Extended Net Price

- **CP Flex coil, small**
- Wrap-around coil made from soft and flexible material
- For applications like imaging of small regions such as small to medium shoulders, wrist, elbow and ankle

- **Flex Coil Interface**
- For connection of e.g. the large and small CP Flex coil

Workflow and Patient Handling

- **Tim – Total imaging matrix**
- Tim provides increased patient comfort and optimized workflow efficiency. Only one patient setup, no repositioning, no changing of coils
- Ultra-light weight coils
- Imaging with optimized surface coil quality
- Software controlled remote table move
- Feet-first positioning for almost all examinations

- **Patient table**
- Free floating table with max. scan range of 154 cm (5' 1") and max. patient weight including vertical movement of 200 kg (440 lbs). The tabletop travels approx. 52 cm (20.5") - resp. 103 cm (40.6") with the optional Tim Whole Body Suite - beyond the rear end of the system, for additional patient access.
- Two Tableside Control Units left and right integrated into the front covers ergonomically designed and positioned
- The system has a large 90 cm flare with a patient friendly 60 cm opening to enhance

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comfort for the patients. The system is only 160 cm long and thus gives a short and open appearance that can significantly help patients with claustrophobia or anxiety about the MR examination. The cantilevered table design gives the system a light and unimposing appearance while providing unobstructed foot space for attending staff and better access to the patient.

- **Patient Positioning Aids**
- Comprehensive set of cushions for comfortable and stable patient positioning together with safety straps.

- **Patient Comfort facilities, Patient Communication**
- Ergonomically designed patient intercom
- Variable (3 levels) ventilation and lighting inside the magnet bore

Application packages:

Tim Application Suite: MR Imaging - par excellence

The Tim Application Suite has a complete range of clinically optimized examinations for all regions. Excellent head-to-toe imaging can be accomplished with the sequences and features included in this application suite. To enable comprehensive head-to-toe MR imaging, seven dedicated application packages Neuro Suite, Angio Suite, Cardiac Suite, Body Suite, Onco Suite, Ortho Suite, and Pediatric Suite have been included as standard applications.

Neuro Suite

The Neuro Suite is a part of the Tim Application Suite. Comprehensive head and spine examinations can be performed with dedicated programs that are optimized for clinical examinations. High resolution protocols and fast protocols for uncooperative patients are provided. Neuro Suite also includes protocols for diffusion imaging, perfusion imaging and fMRI.

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It includes for example:

- EPI sequences and protocols for diffusion, perfusion and fMRI for advanced neurological applications.
  Diffusion is possible with up to 3 b-values in the orthogonal directions.
- Dynamic Analysis software (included in standard configuation) enables calculation of:
- ADC maps
- t-test maps from the EPI images for fMRI
- Time-to-Peak maps for perfusion analysis
- 3D isotropic resolution volume imaging using T1 3D MPRAGE / 3D FLASH and T2 dark fluid 3D TSE
- Whole spine protocols in multiple steps with software controlled table movement
- T2-weighted high resolution 3D Restore protocols optimized for inner ear examinations
- 2D and 3D MEDIC protocols for T2 weighted imaging particularly in C-spine transverse where reproducibility can be difficult due to CSF pulsations and flowings.
- 3D Myelo with 3D HASTE and 3D TrueFISP sequence for anatomical details
- Dynamic sacro-iliac joint imaging using fast T1 weighted FLASH 2D sequence
- Spine diffusion protocols with PSIF sequence.

Angio Suite

The Angio Suite is also a part of the Tim Application Suite. Excellent MR Angiography can be performed to visualize arteries and veins with or without contrast agent.

This package includes for example:

Contrast-enhanced MRA

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- 3D contrast-enhanced MRA protocols with or without iPAT for head, neck, thorax, abdomen, peripheral regions with the shortest TR and TE. The strong gradients make it possible to separate the arterial phase from the venous phase. The ultrafast ce-MRA protocols avoid venous contamination.
- CareBolus functionality for excellent results. It supports accurate determination of the Bolus arrival time and the "Stop and Continue" realtime switching to the 3D ce-MRA scan protocol after the 2D bolus observation scan.
- Excellent peripheral ce-MRA can be acquired with flexible coil combinations.

Non contrast-MRA and venography

- 2D and 3D ToF protocols for MRA for Circle of Willis, carotids, neck vessels, and breath-hold protocols for abdominal vessels
- Triggered 2D/3D ToF sequences for non-contrast MRA, particularly in the abdomen and the extremities
- 2D/3D phase-contrast
- MR venography with 2D/3D ToF and phase-contrast
- Tilted optimized non-saturation excitation and MTC techniques for improved CNR
- Water-excitation 3D ToF protocol for better suppression of orbital fat

Image processing and workflow features

- MIP, MinIP, and 3D SSD (Maximum Intensity Projection, Minimum Intensity Projection, Shaded Surface Display)
- Inline Subtraction and MIP for immediate results
- Inline standard deviation maps of phase-contrast measurements for differentiating arteries from veins.
- Software-controlled table movement.

Cardiac Suite

The Cardiac Suite covers the complete application range from morphology,

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Qty	Part #	Description	Extended Net Price

ventricular and valvular functions to dynamic signal, coronary imaging and angiography.

The utilization of triggering requires the optional PMU Wireless Physio Control.

This package includes for example:

Cardiac view creation

- Fast acquisition of the basic cardiac views for further examination planning. Cardiac scouting provides users with a step-by-step procedure for the visualisation and planning of typical cardiac views, e.g. based on TrueFISP or dark blood TurboFLASH: Short-axis, 4-Chamber and 2-Chamber views.

Morphology – Heart and Vessel structure and valve function

- Various breath-hold techniques for strong contrast between the blood and vascular structures (dark blood Turbo SE and HASTE imaging are available for the structural evaluation of the cardio-thoracic anatomy, including vessels or heart valves. Standard cine techniques (FLASH) can also be used to visualize functions of the heart valves.
- Optimized workflow with Drag & Drop recall (Phoenix), Scan button and Copy Position

Ventricular function and wall motion

Tools for rapid evaluation of left or right ventricular function:

- Acquisition of a stack of short-axis slices (standard segmented FLASH, or advanced segmented TrueFISP)
- Automatic adjustment of the acquisition window to the current heart rate
- Use of Inline ECG for graphical ECG triggering setup
- Prospective gating with cine sequences (TrueFISP, FLASH)
- Protocols for coverage of the whole heart
- iPAT integration for highest temporal/spatial resolution

Tissue characterization

Siemens Medical Solutions USA, Inc.
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- Protocols for high contrast and high resolution tissue characterization
- Ultra-fast protocols for dynamic imaging, e.g. for 8 arbitrarily oriented slices per heart beat. These protocols provide multi-slice information for the assessment of coronary heart disease (Turbo FLASH)
- Segmented IR TrueFISP/FLASH
- TI scout for optimization of contrast between tissues
- Protocols for pediatric examinations, stress imaging and plaque characterization

Coronary Imaging

- Coronary imaging based on 3D FLASH sequence

Body Suite

The Body Suite covers your needs for clinical body applications. Ultrafast high-resolution 2D and 3D protocols are provided for abdomen, pelvis, MR Colonography, MRCP, dynamic kidney, and MR Urography applications. Siemens unique 2D PACE technique makes body imaging easy allowing for multi-breath-hold examinations as well as free breathing during the scans. Motion artifacts are greatly reduced with 2D PACE Inline technology.

This package includes for example:

- Free breathing 2D PACE applications with 2D/3D HASTE (RESTORE) and 2D/3D TSE (RESTORE)
- Optimized fast single shot HASTE protocols and high-resolution 3D RESTORE protocols for MRCP and MR Urography examinations
- Excellent fat suppression protocols with Quick FatSat, STIR, FLASH and HASTE in-phase and opposed-phase protocols and multi-echo TSE
- Dynamic 3D VIBE protocols for best visualization of focal lesions with high spatial and temporal resolution
- High resolution pelvic imaging (prostate, cervix
- Colonography bright lumen with T2-weighted TrueFISP and dark lumen with T1-

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Qty	Part #	Description	Extended Net Price

weighted VIBE

- Dynamic volume examinations with 3D VIBE

Onco Suite

MR imaging has an excellent advantage of soft tissue contrast, multi-planar capabilities and the possibility of selectively suppressing specific tissue e.g. fat or water. This helps in the visualization of pathologies, particularly metastases. The Onco Suite features a collection of sequences as well as protocols and evaluation tools that guide through a detailed screening of clinical questions, such as in Breast Imaging.

This package includes for example:

- STIR TSE and FLASH in-phase and opposed-phase protocols with a high sensitivity to metastases visualization
- Breast imaging protocols with iPAT for highest temporal and spatial resolution.
- Dynamic imaging protocols for assessment of the kinetic behavior for lesion visualization and characterization
- Quantitative evaluation and fast analysis of the data with colorized Wash-in, Wash-out, Time-To-Peak, Positive-Enhancement-Integral, MIPtime and combination maps with Inline technology or for offline calculation
- Display and analysis of the temporal behavior in selected regions of interest with the included MeanCurve postprocessing application. This includes the capability of using additional datasets as a guide for defining regions of interest even faster and easier than before.

Ortho Suite

The Ortho Suite is a comprehensive collection of protocols for joint imaging including the spine. MR imaging is advantageous in Avascular necrosis and internal derangements. Also in case of tumors and infections, information can be acquired using the protocols provided as standard in this suite.

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This package includes for example:

- 2D TSE protocols for PD, T1 and T2-weighted contrast with high in-plane resolution and thin slices
- 3D MEDIC, 3D TrueFISP protocols with water excitation for T2-weighted imaging with high in-plane resolution and thin slices
- High resolution 3D VIBE protocol for MR arthrography (knee, shoulder and hip)
- 3D MEDIC, 3D TrueFISP, 3D VIBE protocols with water excitation having high isotropic resolution optimized for 3D post-processing
- 3D TSE with variable flip angle and high isotropic resolution optimized for 3D post-processing
- Whole spine single-step or multi-step protocols
- Excellent fat suppression in off-center positions, e.g. in the shoulder due to high magnet homogeneity
- Dynamic TMJ and ilio-sacral joint protocol
- Susceptibility-insensitive protocols for imaging in the presence of prosthesis.

Pediatric Suite

The parameters for pediatric imaging vary significantly in comparison to the parameters for adults due to developing tissues, body size, faster heart rates and compliance with breath-hold commands. This suite provides dedicated protocols for pediatric imaging by age groups, for example, protocols for imaging tumors, malformations and epilepsy in the brain, cardiac morphology as well as functional imaging and contrast enhanced MR Angiography.

This package includes, for example:

Neuro

- Head protocols divided according to age groups and providing best contrast-to-noise ratio with optimized parameters, for example, protocols for under 6 months old infants, protocols for infants between 6 months and one year, protocols for toddlers

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between one and two years of age

- Excellent T1-weighted contrast with optimized TR, TE and flip angles
- Protocols with MTC pulse for post-contrast T1-weighted imaging that provides excellent contrast-to-noise ratio resulting in improved conspicuity of lesions/pathologies

Cardiovascular

- Cardiac morphology protocols according to age groups and optimized for a small FoV and faster heart rates in congenital heart diseases (CHD)
- Imaging protocols for ventricular function as well as valvular and septal defects
- ce-MRA as an adjuvant in the assessment of CHD and vasculature

The sequences, features and techniques for acquisition and reconstruction included in the Tim Application Suite are described in detail below.

Sequences

- Spin Echo (SE): Single, Double and Multi Echo (up to 32 echoes)
- Inversion Recovery (IR)
- 2D/3D FLASH (spoiled GRE)
- 2D/3D FISP
- 2D GRE segmented
- 2D/3D PSIF
- PSIF Diffusion
- 2D/3D TrueFISP
- TrueFISP segmented
- Shared Phases Real-time TrueFISP

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- 2D/3D MEDIC (Multi Echo Data Image Combination)
- 2D/3D TurboFLASH (MPRAGE)
- 3D VIBE (Volume Interpolated Breath-hold Examination), using interpolation and quick fat saturation
- 2D/3D TSE
- Echo Sharing technique for dual-contrast TSE enhancing speed by using acquired echoes in both proton density and T2 images simultaneously.
- Speeds up dual-contrast TSE by almost a factor of 2
- 2D/3D RESTORE TSE
- Single slab 3D TSE with ultra high turbo factors for T2 and dark fluid applications with isotropic resolution
- 2D/3D TurboIR (TrueIR, STIR, dark-fluid T1 and T2)
- 2D/3D HASTE (Half-Fourier Acquisition with Single Shot Turbo Spin Echo)
- 2D/3D HASTE IR for fat or fluid suppression
- 2D/3D Single Shot TSE for heavy T2 weighting
- 2D/3D Time-of-Flight (ToF) Angiography, single and multi-slab
- 2D/3D Time-of Flight (ToF), triggered and segmented
- 2D/3D Phase Contrast and multi-venc Phase Contrast Angiography
- 2D/3D Phase Contrast triggered
- ce-MRA sequences
- Single Shot EPI (SE and FID)
- 2D/3D Segmented EPI (SE and FID)

Tim Application Suite: Acquisition and Reconstruction Techniques

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- Diffusion-weighted imaging
- Perfusion imaging
- fMRI BOLD imaging
- 1D/2D PACE (Prospective Acquisition CorrEction)
- Whisper Mode for scanning with reduced noise; beneficial for children, non-cooperative, or anxious patients
- LOTA (Long Term Data Averaging) technique for motion and flow artifact reduction without increasing scan time
- Elliptical scanning reduces scan time for 3D imaging
- Selectable centric elliptical phase reordering in the user interface for special applications
- Inversion Recovery to null the fat or fluid signal and to obtain high T1-weighted image contrast
- Dark-blood inversion recovery technique that nulls fluid blood signal
- Saturation Recovery for 2D TurboFLASH, gradient echo, and T1-weighted 3D Turbo-FLASH with short scan time (e.g. MPRAGE)
- Presaturation Technique. RF saturation pulses to suppress flow and motion artifacts. Up to six saturation bands may be positioned in any orientation
- Tracking SAT Bands maintain constant saturation of venous and/or arterial blood flow, e.g. for 2D/3D sequential MRA
- Fat Saturation. Additional frequency selective RF pulses, used to suppress bright signal from fatty tissue. Two selectable modes: weak, strong
- Water Saturation. All sequences used for fat saturation can be used to suppress the water signal
- Quick FatSat
- Fat Excitation. Spectral selective RF pulses for exclusive fat excitation
- Water Excitation. Spectral selective RF pulses for exclusive water excitation

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- Silicone detection for breast examinations
- MTC (Magnetization Transfer Contrast). Off-resonance RF pulses to suppress signal from certain tissues, thus enhancing the contrast used e.g. in MRA
- TONE (Tilted Optimized Nonsaturating Excitation). Variable excitation flip angle to compensate inflow saturation effects in 3D MRA. TONE pulse are selectable depending on the desired direction of flow sensitivity
- GMR (Gradient Motion Rephasing). Sequences with additional bipolar gradient pulses, permitting effective reduction of flow artifacts
- Freely adjustable receiver bandwidth, permitting studies with increased signal-to-noise ratio
- Freely adjustable flip angle. Optimized RF pulses for image contrast enhancement and increased signal-to-noise ratio
- Half-fourier technique to further reduce the scan time (by approximately half), while maintaining the same spatial resolution
- Rectangular FoV capability from 10% to 100% in steps of 1%, enables reduction in scan time by reducing the number of phase encoding steps while maintaining the same in-plane resolution
- Multi-Slice-Multi-Angle: Scans in different planes can be acquired simultaneously in a single sequence, such as for the acquisition of superimposed orthogonal survey images (Scout) or studies in the spinal region, in order to image several vertebral disks exactly in their transverse orientation

Installation:

- The relatively lightweight design of the MAGNETOM Avanto in most cases eliminates the need for structural building reinforcements and thus often allows the installation in upper floors.
- The compact design reduces the required space to only 30 sqm (325 sq. ft.) for the entire installation, and the necessary room height clearance is only 2.35 m (7' 9"),
- The MAGNETOM Avanto allows siting of the system without a dedicated computer

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room.

- The MAGNETOM Avanto combines state-of-the-art performance with peace of mind. High system availability is ensured by the expert, highly trained Siemens MR service engineers;
- Your Siemens service contract (not included in the basic unit) offers a comprehensive range of benefits such as Uptime Remote Diagnostics for improved productivity and maximum uptime.

The MAGNETOM Avanto Magnet:

- The 1.5 T MAGNETOM Avanto magnet utilizes a Stainless-Steel cryostat due to its proven structural reliability and excellent behavior in minimizing artifact-inducing eddy currents
- Magnet Length is only 1.50 m while the excellent homogeneity allows for 50 cm FoV imaging. This is unique for such a short magnet and provides excellent image quality over a wide range of applications
- Homogeneity: Guaranteed <1.5 ppm Vrms (typ.: 0.8 ppm Vrms, Vrms = Volume root-mean-square) in a spherical Volume (DSV) of 50 cm using the most accurate 24 plane method with 20 sampling points per plane. The 24 plane plot method measures the largest number of sampling points in the industry and provides accurate values that are not subject to aliasing (which may occur with other plotting methods; the Vrms technique is more representative than the older peak-peak methods).
- The MAGNETOM Avanto magnet has the 5th generation of active shielding technology with counter coils. The magnet has patented External Interference Shielding (E.I.S.). E.I.S. protects against moving external interferences caused by ferromagnetic objects (e.g. elevators, cars) and works continuously (especially also during scanning when you need it most) to maintain premium image quality
- The magnetic 0.5 mT fringe field is 2.5 m in the radial direction (x, y) and 4.0 m in the

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axial direction (z) for easy siting most often without additional shielding

- The system is equipped with "Zero Helium Boil-Off" technology. During normal clinical use of the system the boil off rate is 0.0 l/h depending on the sequences used and the operation time. The helium capacity is about 1,600 liters.
- Magnet Weight: 3630 kg, which, in many cases, allows siting on upper floors or older rooms without special floor reinforcement.
- Hybrid Shim System: Active (with 3 electric linear shim channels) and Passive shims for maintaining very high homogeneity and excellent image quality over a wide range of applications. Online shimming is performed using 3D shim, a patient and coil specific technique which optimizes the homogeneity for each patient in normally less than 20 seconds.

MAGNETOM Avanto Digital Radio Frequency System:

- The digital signal processing system operates at 63 MHz resonance frequency and utilizes digital filtering, digital quadrature demodulation as well as digital controls for RF amplitude stabilization for superior resolution and image quality
- The RF transmitter incorporates a compact maintenance-free high-performance solid state amplifier of 15 kW with integrated water cooling.
- The receiver operates over a very large 1 MHz bandwidth for outstanding sampling speed and high signal-to-noise ratio. The high bandwidth enables fast imaging techniques including Single Shot EPI.
- The transmit amplitude digitization resolution is 50 ns and the receive amplitude digitization resolution is 100 ns
- Dynamic gain control eliminates the need for receiver adjustments, thus saving up to 30 seconds for every study
- The system has built-in bandwidth flexibility which compensates for natural magnetic field drift for up to a 5 year period, without the need for adjustments

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MAGNETOM Avanto - Table and System controls

Two ergonomically designed tableside control units (one on each side of the magnet main face plate) at a comfortable level, control a number of patient table and system functions.

- Illuminated control buttons for:
- "Table up/in" and "table out/down" buttons. Horizontal speed can be accelerated with an additional "Speed" button. One button sequentially transitions from the "table up" to the "table in" motion, while the other sequentially transitions from the "table out" to the "table down" motion
- "Table Stop" button
- "Localizer" button activates and deactivates the laser for exact patient positioning light localizer for accurate patient positioning
- "Auto-Center" button. If the laser localizer has been used, the system places the selected location in isocenter. If the laser localizer has not been used, the system centers to the center of the Head matrix coil
- "Home Position" button drives the table all the way out, but not down. Useful for repositioning the patient or at the end of an examination
- "Fan" button controls the ventilation within the patient opening. The fan has 4 settings: off, low, medium, high
- "Light" button controls the brightness within the magnet aperture. The light has 4 settings: off, low, medium, high
- "Scan Start" button starts a pre-loaded scan. Useful, e.g. for breath-hold, when an operator is inside the examination room

MAGNETOM Avanto standard surface coils:

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Head Matrix Coil

The Head Matrix Coil is a fully iPAT-compatible no-tune coil. It has a 12-element design with 12 integrated preamplifiers that are arranged in 4 clusters of 3 coil elements each. The Head Matrix Coil can be operated depending on the Matrix Coil Mode as a 4-channel coil (CP Mode), 8-channel coil (Double Mode) or 12-channel coil (Triple Mode).

The upper coil part is removable for easy patient handling. The lower coil part which may remain on the table for most of the examinations can be used without the upper part. The Head Matrix, Neck Matrix and Spine Matrix coils are smoothly integrated into the patient table, thus enabling high flexibility in imaging and facilitating fewer coil changes and easy handling when switching patients.

The Head Matrix Coil is equipped with two removable cushioned head stabilizers for stable and comfortable patient positioning. A detachable double mirror for increased patient comfort and reduced claustrophobic feeling is included. It attaches to the upper part of the Head Matrix Coil and enables the patient to look outside even when his head is in the center of the magnet. This double mirror design shows all objects in their correct up/down and left/right orientation. It might also be used for visual fMRI studies.

The Head Matrix Coil can be used for applications like head examinations, MR Angiography, combined head/neck examinations (in combination with the Neck Matrix Coil) or for imaging of the TMJ (temporo mandibular joints).

A combination with the Neck Matrix and Spine Matrix Coil and the optional Body Matrix coils (up to 4) and PA (Peripheral Angio) Matrix Coil is possible. Additionally, the combination of flexible coils like the CP Flex coils is possible.

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The dimensions of the Head Matrix Coil are 300 mm x 300 mm x 280 mm (L x W x H), its weight is about 5 kg (11 lbs).

Neck Matrix Coil

The Neck Matrix Coil is a fully iPAT-compatible no-tune coil. It has a 4-element design with 4 integrated preamplifiers that are arranged in 2 clusters of 2 coil elements each, and can thus be operated as a 2-channel (CP Mode) or 4-channel (Dual Mode, Triple Mode) coil.

The upper coil part is removable for easy patient handling. The lower coil part may remain on the table for most of the examinations. The Head Matrix, Neck Matrix and Spine Matrix coils are smoothly integrated into the patient table, thus enabling high flexibility in imaging and facilitating less coil changes and easy handling when switching patients.

The Neck Matrix Coil through its easy combinability with the Head Matrix and Spine Matrix Coil can be used for applications like neck or cervical spine examinations, imaging of the Larynx/Esophagus and Mediastinum MR Angiography, combined head/neck examinations and thus takes the place of a Neurovascular coil.

Besides the typical combination with the Head Matrix and Spine Matrix Coil also the optional Body Matrix coils (up to 4) and PA (Peripheral Angio) Matrix Coil can be combined for whole body imaging. Additionally, the combination of flexible coils like the CP Flex coils is possible.

The dimensions of the Neck Matrix Coil are 190 mm x 330 mm x 332 mm (L x W x H), its weight is about 2.6 kg (5.7 lbs).

Spine Matrix Coil

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The Spine Matrix Coil is a fully iPAT-compatible no-tune coil. It has a 24-element design with 24 integrated preamplifiers that are arranged in 8 clusters of 3 coil elements each, and is operated as a 8-channel coil (CP Mode), 16-channel coil (Dual Mode) or 24-channel coil (Triple Mode).

The Spine Matrix Coil may remain on the table for almost all examinations. The Head Matrix, Neck Matrix and Spine Matrix coils are smoothly integrated into the patient table, thus enabling high flexibility in imaging and facilitating less coil changes and easy handling when switching patients.

The Spine Matrix Coil can be used for high resolution imaging of the whole spine as well as for various other applications through its perfect combinability with the Head Matrix and Neck Matrix Coil and also the optional Body Matrix coils (up to 4) as well as the PA Matrix Coil (Peripheral Angio Matrix) and all flexible coils (e.g. CP Flex coils).

The dimensions of the Spine Matrix Coil are 1185 mm x 485 mm x 33 mm (L x W x H), its weight is about 11 kg (24 lbs).

CP Flex Coil, Large

Light weighted wrap-around coil made of soft and flexible material. Circularly Polarized iPAT-compatible no-tune receive coil for examinations of the upper and lower extremities (e.g. medium to large shoulder, hip or knee) or of the abdominal region. The coil can be wound around or placed flat on top of the area of interest. This rectangular coil measures approx. 21 cm x 52 cm and connects to the Flex Coil Interface. The optional comfort kit enhances positioning flexibility and helps minimize involuntary patient motion artifacts.

CP Flex Coil, Small

Light weighted wrap-around coil made of soft and flexible material. Circularly

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Polarized iPAT-compatible no-tune receive coil for examinations of the upper and lower extremities (e.g. small to medium shoulder, wrist, elbow or ankle). The coil can be wound around or placed flat on top of the area of interest. This rectangular coil measures approx. 17 cm x 36 cm and connects to the Flex Coil Interface. The optional comfort kit enhances positioning flexibility and helps minimize involuntary patient motion artifacts.

Flex Coil Interface

Interface with integrated preamplifiers for the connection of the following coils:

- CP Flex Coil, large
- CP Flex Coil, small
- Loop Flex Coil, large (optional)
- Loop Flex Coil, small (optional)
- Endorectal Coil (optional)

The interface is not permanently mounted and therefore allows free positioning of the flexible coils as required by the examination procedure.

MAGNETOM Avanto Computer and Intercom system:

The PC based computer system uses the intuitive *syngo* MR user interface. The computer and intercom system includes:

- High-performance image processor with dual processor 2 x AMD Opteron 248 CPU generation with 2.2 GHz clock-pulse rate, 4 GB RAM, one hard disk (36 GB) for system software and 4 hard discs for raw data storage (each 36 GB), one CD-ROM drive

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- 1002 recons per second for online Fast Fourier Transformation (FFT) of a 256^2 matrix full FoV or 3773 recons per second (2562 FFT, 25% recFoV),
- High-performance host computer with dual processor 2x Pentium 4 CPU with 3.06 GHz clock-pulse rate, 2 GB RAM, one 36 GB system hard disk, one 36 GB hard disk for the image database, one 73 GB hard disk for about 110,000 images (2562 or 5122 matrix, non-compressed), one CD-R writer for non-compressed image storage (approx. 4,000 images 2562) on CD-R in DICOM standard (ISO 9660 Level 1) or storage of other data like avi files, CD-ROM drive and Floppy disk drive and electronic mouse. The combination of host computer and image processor offers a truly powerful imaging system designed for large matrix sizes of up to 1024 x 1024. The unrestricted multi-tasking capability allows time-saving parallel scanning and reconstruction.
- High resolution color LCD flat screen monitor 18" with 1280 x 1024 pixel display, integrated gamma correction for optimum display of radiographic grayscale and automatic backlight control for longterm brightness stability,
- Interface for optional separate magneto-optical disk (MOD), 5 ¼", 1.7 GB, read-only
- The intercom system includes an ergonomically designed patient communication unit for desktop positioning on the MRC control board and pneumatic headphones for the patient during examination; the intercom unit controls emergency table stop, volume control of speaker and headphones in examination room, volume control of speaker in control room, response to the patient's activation of the assistance-call button and provides a connection to an external audio system (external audio system is not included in the basic unit) for music playback.

MAGNETOM Avanto *syngo* MR Software:

MAGNETOM Avanto runs *syngo* MR software. *syngo*®, the unique software platform for medical applications and integrates all patient related information, physiological and imaging data across the entire clinical workflow. In every workplace *syngo*'s innovative user interface allows the operator to know intuitively what to do. It's

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intelligent automated features accelerate your examination, enabling smooth, efficient workflow, across modalities, departments and people. Siemens brought intelligence to MR. With Inline technology, Phoenix, Intelligent Coil Control and a variety of other features the system is geared for optimal high throughput, high resolution scans with excellent image quality.

- *syngo* based, graphical user interface offers optimized clinical workflow. Parallel working and one-click exams are supported efficiently.
- Parallel scanning and reconstruction are standard. Images can be loaded and used for graphical slice planning during reconstruction
- Task card approach enables structured workflow with multiple patients by easy image exchange between tasks,
- In addition to the three segments of graphical slice positioning the interface shows small reference views from other series. The drag&drop functionality is fully supported. As soon as images are reconstructed they can be used for slice positioning. Images can be automatically loaded into the User Interface and displayed in Movie mode (Inline Movie)
- Prepared exam-oriented scan programs can be customized to fit clinical requirement in daily routine, and stored in a hierarchical structure
- The unique Phoenix technique is the easiest way to exchange protocol data. It supports intelligent extraction of sequence parameters from images acquired on a MAGNETOM Avanto system
- Software-controlled patient table movement by soft buttons or automatically within the scan protocols. Almost all table control functions, including ventilation and illumination of the magnet bore can be controlled from the operator console.
- Automatic voice commands, e.g. for breath-hold examinations
- The context-sensitive "Online Help" function and the *syngo* Scan Assistant offer support and propose solutions to MR specific questions and parameter conflicts,
- Intelligent Coil Control detects the position of the fixed-position and flexible-position receiving coils and displays it graphically within the images that are used for slice

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planning.

- Processing instead of post-processing by the Siemens-unique Inline Technology. Image data is processed on-the-fly, e.g. for calculation of subtraction, MIP, standard deviation, wash-in and wash-out maps etc.
- 1D/2D PACE (Prospective Acquisition CorrEction) – the motion correction for breath-hold examinations and free breathing.
- iPAT (integrated Parallel Acquisition Techniques) further increase the acquisition speed compared with conventional standard scan techniques. iPAT is fully compatible with the MAGNETOM Avanto surface coils. Due to the Matrix coil technology iPAT gives highest flexibility even for large scan ranges. The Tim Assistant helps to make Parallel Imaging easier by automatically recommending the appropriate PAT factor for the selected application. Tim Assistant always knows the selected coil elements and the MR protocol, ensuring the optimal iPAT configuration for each application.
- The Image Viewing Card allows simultaneous management, viewing and processing of up to three patients or comparisons of different studies or patients.
- Dynamic Analysis evaluation software allows the calculation of functions such as addition/subtraction, division/multiplication, ADC maps, T1 and T2, z-Score (t-Test), Time-to-Peak maps (TTP) and standard deviation.
- Mean Curve can be used to evaluate dynamic examinations, e.g. employing contrast media.
- The 3D Post-Processing Card includes the basic functionalities for manual MPR, MIP, MinIP and SSD image reconstructions (Multiplanar Reconstruction, Maximum Intensity Projection, Minimum Intensity Projection and Shaded Surface Display).
- Efficient filming is possible directly from the different Task Cards and can be controlled by minimum user interaction. There is a wide range of different film layouts with regular and irregular formats. The Mother and Child function allows to display the position of the measured slice in a scout showing a small image in the upper right-hand or the lower left-hand corner of the larger image (image within an image).
- With the Patient Browser the images can be freely positioned on the film via drag&drop. Pan&zoom and windowing of images on the film sheet is also possible.

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(Camera is not included)

- Supports storing of a viewing tool (DICOM Viewer) together with images on a DICOM CD to be handed out to the patient.
- Argus viewer can be used to display cine studies. The Argus Viewer allows users to load a large list of dynamic data sets and view it comfortably. This is a feature that greatly reduces the reading and review time for cardiac MR studies.
- Additionally, integrated 8on1 movie provides efficient review of data.
- AVI creation of movie loops (up to 4on1) is possible.
- Studies can be easily networked and managed using the standard DICOM 3.0 protocol for efficient support of workflow. The following standard functions are supported: send/receive, query/retrieve, basic print for DICOM-compatible laser cameras (camera is not included in the basic unit), DICOM Worklist, DICOM Storage Commitment (SC); as a separate option the DICOM MPPS (Modality Performed Procedure Steps) functionality is offered for efficient organization of workflow within HIS/RIS systems.

1 07819894 Tim [32x8] Q-engine #Av

Tim [32x8] Q-engine performance level

Tim [32x8] is Total imaging matrix with 32 seamlessly integrated coil elements, combinable to 8 RF channels. It is the leading technology for clinical routine. Tim [32x8] has flexibility in Parallel Imaging. PAT factors up to 4 (one direction) or 9 (in two directions, with optional iPAT Extensions) help speed acquisitions. Maximum SNR is ensured through the new matrix coil technology.

Q-engine Gradient System with AudioComfort

The Q-engine is designed combining high performance and quietness.

Tim [32x8] performance level has

- Up to 32 simultaneously connected coil elements which can be seamlessly integrated

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into one examination

- 8 independent RF channels (Analog/Digital Converters, ADCs)

Combinations of receiving coils with up to 32 CP coil elements in total can be connected simultaneously. They can be seamlessly integrated into the examination without patient repositioning or changing the coil setup which improves throughput. Up to 8 coil elements can be used simultaneously within one scan.

The multi-element **Matrix coil technology** is an essential part supplementing **Total imaging matrix**. The numerous Matrix Coil elements enable advanced iPAT capabilities. Full iPAT applied throughout the large FoV without patient repositioning or changing the coil setup improves throughput. Multi-directional, i.e. three dimensional, high-speed, high-resolution iPAT in the head-feet, anterior-posterior or left-right directions benefit from the multiple coils and Matrix Coil Modes. The user selectable Matrix Coil Modes (CP, Dual and Triple Mode) enable a flexible operation of the Matrix Coils depending on the application profile.

iPAT with acceleration factors up to 4 (one direction) or 9 (in two directions with iPAT², optional) speeds up acquisitions. The easy-to-use Tim Assistant provides optimized iPAT settings.

Q-engine Gradient System with AudioComfort

Siemens Q-engine are actively shielded, water cooled world-class gradients with AudioComfort. Innovative integrated measures comprehensively reduce acoustic noise without compromising gradient performance. With AudioComfort, acoustic noise is reduced by up to 30 dB(A) as compared to conventional systems. This is a reduction of 97% in sound pressure. Patients will benefit significantly from this feature. All gradient demanding protocols using EPI techniques such as diffusion imaging, perfusion imaging or fMRI examinations show a significant acoustic noise reduction. AudioComfort makes MR examinations a comfortable experience even for children. AudioComfort prevents the necessity of implementing noise-absorbing measures to gain a comfortable noise level for technicians and neighbors.

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The Q-engine gradients have

- Maximum gradient amplitude of 33 mT/m, per axis, i.e. 57 mT/m vector summation gradient performance,
- max. slew rate 125 T/m/s per axis, i.e. 216 T/m/s vector summation,
- minimal rise time 264 µs, from 0 to 33 mT/m amplitude
- Max. output voltage for each of the gradient axes 1250 V
- Max. output current for each of the gradient axes 460 A
- Separate cooling channels that simultaneously cool primary and secondary coils. The peak cooling capacity of 16 kW ensures highest clinical performance and thus allows the application of extremely gradient -intensive techniques like EPI
- 100% duty cycle for fast and demanding techniques such as ultra-short TE MRA in continuous operation, thin slice single breath-hold liver studies and EPI imaging techniques
- Variable Field-of-View selection from 0.5 cm to 50 cm for optimum coverage and highest resolution in diagnostics. The minimum slice thickness in 2D and 3D is 0.1 mm and 0.05 mm, respectively.
- Acquisition of sagittal, transverse, coronal, oblique and double oblique slices with highest resolution.
- The extremely compact water-cooled gradient amplifier features a modular expandable design with excellent linearity and pulse reproducibility. It is digitally controlled and has very low switching losses due to ultrafast solid state technology.

1 08464872 PC Keyboard US english #Av,Es

Standard PC keyboard with 101 keys.

The keys of the numerical key panel are assigned to *syngo*-specific functions and labelled with the corresponding *syngo* icons. The keyboard supports the country specific special characters.

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1 **07819977** **Cover Satin White #Av**

The color of the main face plate cover with integrated control panel and table display is Translucent Teal. The table elevator cover and adjoining upper left cover are presented in an optically appealing Satin White design.

This unique color selection enhances the visual appeal of the new system design from MAGNETOM Avanto, thereby creating an enticing, patient-friendly impression.

The control panel and table display have been neatly integrated into this main face plate. These aesthetically pleasing controls are also well illuminated for easy visual recognition.

In particular, the table elevator cover and the adjoining asymmetric upper left cover have also been designed to promote a modern visual appearance. This combination of ingenuity and practical design as presented in Satin White color simply makes MAGNETOM Avanto an overall visually appealing system.

1 **07820025** **Standard Patient Matrix Table #Av**

The patient table is mounted directly to the magnet assembly.

The table can support up to 200 kg (440 lbs) patients with unrestricted vertical and horizontal movement.

The cantilevered table design gives the system a light and unimposing appearance while providing unobstructed foot space for attending staff and better access to the patient.

The patient table can be lowered to a minimum height of 47 cm (18.5") from the floor, for easier patient positioning and better accessibility for geriatric or pediatric patients. The tabletop travels beyond the rear end of the system, enabling additional patient access.

For a seamless integration of multiple surface coils 10 coil connector slots are embedded in the table.

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Qty	Part #	Description	Extended Net Price
1	07820017	**Tim Whole Body Suite #Av,Es**	

Tim Whole Body Suite puts it all together, for the very first time. This suite enables telescopic table movement for imaging of 205 cm FoV without compromise. It maximizes SNR while performing seamless, head-to-toe imaging with a total FoV of up to 205 cm (6' 9") in full local coil image quality - local becomes total.

Tim and the Tim Whole Body Suite enable for the first time true whole body MR scanning for head to toe imaging.

The Tim Whole Body Suite features:

- Unique telescopic patient table which enables a full Field-of-View of length as the standard system, additional space in the scanner 205 cm (6' 9"), without increasing total system length.

  No additional table extension is required. The table top has the same length as the standard system without whole body capabilities. Additional free space is only required at the rear part of the magnet to ensure, that the table movement is not limited by the oposing wall.
- Table movement to its full extent can be remote controlled from the operator console either by the operator or by sequence protocols.
- Protocols and programs for whole body MR angiography and morphology e.g. for metastasis visualization and preventive care examinations.
- Whole body MR Angiography is possible with high speed, high resolution and high image contrast on the entire volume combining high speed gradients and iPAT.
- The large FoV of 205 cm supports the assessment of metastases distribution in the

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body with sequences such as TIRM (Turbo Inversion Recovery).

Whole body imaging with highest image quality without patient repositioning and without the need to change a single coil, not even once, this means whole body imaging without compromise.

1 08464989 PMU Wireless Physio Control #Av,Es

Physiological Measurement Unit (PMU) - Wireless Physio Control for wireless triggering, synchronizes the measurement with the physiological cycles of cardiac and/or respiratory motion. Wireless technology for all sensors allows fast and easy patient set-up and comfort, and robust cardiac or respiratory signal transmission as it eliminates the need to attach cables to the patient.

The Wireless Physio Control contains wireless VCG, respiration and pulse sensors and a charging station as all sensors are powered by rechargeable batteries.

The physiologic signals are displayed on the console monitor. They can also be displayed on the optional exam room PMU display.

- Cable free signal transmission allows robust triggering and high patient comfort especially in cardiac imaging.
- Wireless VCG acquires ECG signal from two projection directions, for easy identification of the R-wave with superior gradient interference suppression via digital signal processing.
- 30 ECG - disposable electrodes are provided
- Wireless red-light pulse sensor for peripheral pulse signal
- Wireless pneumatic cushion to be placed on the chest or abdomen (for respiratory triggering)
- Signals can be transmitted to an external MRI compatible patient monitoring system (Option) via a respective receiver interface in the patient monitoring system

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Qty	Part #	Description	Extended Net Price

- Wireless Physiological Signal Display
- ECG (2 channels I and / or aVF)
- Pulse
- Respiration
- External Trigger Input Display

1 08464732 Advanced Cardiac #Av,Es

This package contains special sequences and scan protocols for advanced MR examinations of the heart.

It enables comprehensive cardiac MR examinations covering morphology, function, tissue characterization, coronary imaging, plaque characterization and much more.

Combining the unique advantages of Tim with iPAT and high speed gradients, allows performing cardiac MR examinations without compromise in image resolution or acquisition speed.

Morphology – Heart and Vessel Structure

- Localizer: easy and fast acquisition of multi-chamber views with predefined protocols, e.g. based on segmented TrueFISP or HASTE; additionally interactive real-time localizer
- Dark-blood sequences using breath-hold technique for high resolution morphological information

Ventricular Function, Valve Function and Wall Motion

- Segmented CINE TrueFISP imaging of cardiac function with prospective and retrospective triggering (VCG or pulse triggering possible), supporting iPAT.
- Arrhythmia rejection for VCG-triggered retrogated cine imaging with TrueFISP, supporting iPAT - no compromise in image quality for patients with arrhythmia

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- Radial Imaging - no compromise in high spatial and temporal resolution
- Real-time radial imaging cine studies, e.g. for stress examinations
- Cine TrueFISP radial imaging
- Cine imaging with echo sharing for high temporal resolution and short breath-hold acquisitions, supporting iPAT.
- Dedicated protocols for stress studies of ventricular function and wall motion
- Real-time cine TrueFISP imaging for non-triggered, free breathing acquisitions, supporting iPAT
- Visualization of myocardial contractility using various tagging techniques

Tissue characterization

- Ultra-fast, high SNR sequences for dynamic imaging using TrueFISP iPAT and Half Fourier techniques for the assessment of coronary heart disease. These protocols allow the acquisition of multiple slices with high resolution, even under stress, with arbitrary slice orientation for each slice.
- Robust and reproducible contrast between tissues with phase-sensitive Inversion Recovery (2D Flash and 2D TrueFISP). Adjustment of TI is no longer necessary with this technique
- Complete coverage of the myocardium Flash and TrueFISP

Coronary Imaging

- Dedicated sequences in 2D and 3D for high resolution coronary artery imaging, providing free breathing navigator (1D PACE) and breath-hold techniques (2D and 3D FLASH and TrueFISP)

Plaque characterization

- High resolution sequences and protocols for plaque characterization

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Pediatric CMR protocols

- Dedicated protocols for pediatric examinations, according to age groups. Optimized for high heart rates, small FoV and uncooperative patients regarding breathing commands.

1 07365393 Argus Function

The necessary tools for quantification of cardiac function from images acquired or reconstructed in the short axis view. The combination of automated contouring and easy-to-use editing tools, provides users with a rapid way to quantify parameters of interest. Main features are:

* Calculation of Ejection Fraction, Cardiac Output, Stroke Volume, Wall thickening, etc.
* A Guided Mode is provided which walks new users through a series of necessary steps for basic parameter calculations.
* For users wanting advanced or research oriented quantification, a Free Mode provides the necessary freedom and detailed calculations.

Prerequisite: Syngo Argus Viewer

When reordering options, it is absolutely necessary that you specify the following:

* Dongle ID (Hardware Identifier)
* System Serial Number
* System Part Number

1 07820132 Spine Composing syngo

The option "Spine Composing" features:

Display and storage of full-format images of the spine.

Original, detail and reconstructed images can be displayed in different layouts.

Comparison of two reconstructed images for evaluation and diagnosis is thus made possible.

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Filming in different layouts is supported.

Measurements of basic functions via reconstructed images is then possible.

Measurements of extended orthopedic functions:

scoliotic angle, kyphotic angle, vertical distance measurement and differences in width of the intervertebral spaces.

Conditions:

If possible, original images should be used for making diagnoses.

The image information of reconstructed images, especially at the regions of image transition, is only of limited value for assessments.

Prerequisite: SW syngo MR 2004A

1 07820074 Inline Diffusion #Av,Es

Automatic real-time calculation of trace-weighted images and ADC maps with Inline technology.

Compatible to single-shot diffusion-weighted EPI.

Inline Technology – Processing Instead of Post-processing.

Inline Technology helps to streamline the clinical workflow by automating post-processing steps before image viewing. This facilitates getting clinical results immediately. This

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package integrates Inline technology with diffusion imaging. Automatic real-time calculation of trace-weighted images and ADC maps with Inline technology is possible.

An optimized EPI sequence for diffusion imaging is included in the standard Tim Application Suite. In this package there are additionally special 1- and 3-scan Trace EPI with strong diffusion weighting and short echo times with integrated post-processing for an ADC-Map and trace-weighted images.

1 07820082 Inline Perfusion #Av,Es

Automatic real-time calculation of Global Bolus Plot (GBP), Percentage of Baseline at Peak map (PBP), and Time-to-Peak map (TTP) with Inline technology.

Inline Technology – Processing Instead of Post-processing.

Inline Technology helps to streamline the clinical workflow by automating post-processing steps before image viewing. This facilitates getting clinical results immediately. This package integrates Inline technology with perfusion imaging. Automatic real-time calculation of Global Bolus Plot (GBP), Percentage of Baseline at map (PBP) and Time-to-Peak map (TTP) with Inline technology is possible.

An optimized EPI sequence for perfusion-diagnostics is included in the standard Tim Application Suite. With this package real-time calculations are done of anatomical images and, in addition, of a global bolus plot and a Time-to-Peak map for visualizing the time dependence of tissue perfusion.

1 07820116 Single Voxel Spectroscopy #Av,Es

Integrated software package including sequences and protocols for proton spectroscopy to examine metabolic changes in the brain (e.g. in tumors and degenerative diseases).

The Single Voxel Spectroscopy option is used to measure proton spectra from single voxels. The spectra may show alterations in brain metabolism e.g. in brain tumors, in degenerative changes of the brain and in metabolic diseases. The possibility of

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automatic adjustment, measurement and evaluation permits near automatic spectroscopy measurements. The whole procedure, including the evaluation of the spectra using the mandatory spectroscopy evaluation option, takes approx. 6 minutes and can be done by doctors or technologists.

The package comprises:

- Single voxel measurement with Spin Echo and STEAM techniques
- Echo times down to 30 msec for Spin Echo and 20 msec for STEAM
- Voxel size down to 1 cm3
- Voxel can be freely angulated
- Fully automatic adjustments including localized 3D volume shimming for optimized homogeneity of the volume of interest
- Optimized B1- and T1-insensitive water suppression with variable suppression bandwidth
- Variable phase cycling
- An online display allows monitoring of scan progress
- All adjustments can still be performed manually with real-time guidance.
- Optimized protocols for proton spectroscopy of the brain
- Quality control using a FID techique is available to the user

1 07365385 Spectroscopy Evaluation syngo

The evaluation software is integrated in the syngo MR menu. Evaluation protocols adapted to the scan protocols carry out a complete and automatic evaluation of the measured data.

The following functions are included:

* Subsequent water suppression and phase correction
* Apodization
* Zero filling
* Fourier transformation

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* Base line correction
* Automatic or manual phase correction
* Curve fitting and peak labeling
* Summaries in tabular form of the essential results specifying the metabolites, their position and the metabolite ratios in relation to a selectable reference.
* Capability of exporting spectroscopy header information and data into a documented external format.

For CSI the following functions are included:
* Spectra of selected voxels are automatically calculated, corrected for possible B0 deviations and displayed.
* Spectral fit is automatically optimized for each voxel
* CSI data can be represented as spectral maps and colored metabolite images that can be superposed onto anatomical images.

1 08464716 Advanced High Order Shim #Av

The 'Advanced High Order Shim' System includes 5 non-linear 2nd order electric channels for precise additional fine-tuning of homogeneity once the patient is inside the system.

1 08464724 Chemical Shift Imaging #Av,Es

Integrated software package with sequences and protocols for proton chemical shift imaging (CSI) to examine metabolic changes in the brain (e.g. in tumors and degenerative diseases) and in the prostate.

The Chemical Shift Imaging option is used to measure 2D and 3D proton spectroscopic data to generate metabolite images e.g. in brain tumors, metabolic diseases of the brain and degenerative changes in brain metabolism. The whole procedure, including the generation of metabolite images using the spectroscopy evaluation takes approximately 8 minutes (the evaluation package is required and the license must be selected for the MRC, MRSC or the LEONARDO).

Optimized protocols for 3D CSI in the prostate are also included.

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The package comprises:

- 2D and 3D hybrid CSI measurement with Spin Echo and STEAM techniques
- Echo times 30-300 msec for Spin Echo and 20-300 msec for STEAM
- Repetition times 0,5-10 sec.
- voxel size down to 2,5x2,5x5 mm3 in the three spatial directions
- Field of View down to 80mm, matrix size between 8x8 and 32x32 voxels
- volume can be freely angulated
- Fully automatic adjustments including localized 3D volume shimming for optimized homogeneity of large volumes for 2D and 3D hybrid CSI
- All adjustments can still be performed manually with real-time guidance (as i.e. interactive shimming).
- Optimized B1- and T1-insensitive water suppression with variable suppression bandwidth
- Optimized protocols for CSI brain examinations
- Quality control using a FID techique is available to the user
- Fully excited Vol
- Outer Volume Suppression (OVS)
- Spectral Suppression

1 08464765 CISS & DESS #Av,Es

Advanced 3D imaging sequences and protocols which are unique to Siemens:

- 3D DESS and
- 3D CISS

3D DESS:

for high-resolution 3D studies of joints with excellent T1 and T2 contrast. DESS is a double

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echo gradient sequence in which a FISP (transversally rephased gradient echo) and a PSIF (RF-refocused gradient echo) echo are simultaneously acquired and added, resulting in an increased signal-to-noise ratio

3D CISS:

for excellent very high resolution studies, especially useful in inner-ear examinations

These Advanced 3D data sets provide very thin contiguous slices with high signal-to-noise ratio which are also well suited to MPR post-processing along straight, oblique or double oblique or curved lines. In some cases such as MR Myelography or inner ear work, the MIP algorithm may also provides very useful information.

1 07819639 syngo Security Package

Software option for general regulatory security rules, providing enhanced security features

including user management and audit trail functionality. This package supports customers in

their achieving compliance with the HIPAA "Privacy" rule.

Included Features:

User authentication to prohibit unauthorized access

Privileges to define user/role based functionality

Permissions to control data access

Audit trails to log system and data access

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MAGNETOM Harmony, Symphony, Sonata, Concerto, Trio, Allegra systems require

Software version syngo MR 2004A!

1 08464815 Body Matrix Coil #Av,Es

The new multi-element Matrix coil technology is an essential part supplementing the most innovative Total imaging matrix. Matrix coils have multiple receive coil elements that can be clustered in groups. Each receive coil element is equipped with a low noise preamplifier to maximize signal-to-noise ratio.

The Body Matrix Coil features:

- 6-element design with 6 integrated preamplifiers, with 2 clusters of 3 elements each
- Operated depending on the Matrix Coil Mode as a 2-channel coil (CP Mode), 4-channel coil (Dual Mode) or 6-channel coil (Triple Mode)
- Operates in an integrated fashion with the Spine Matrix coil (2 rings of 6 elements each = 12-element design)
- Can be combined with further Body Matrix coils for larger coverage
- No coil tuning
- iPAT-compatible

Applications:

- Thorax (incl. heart)
- Abdomen
- Pelvis
- Hip

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Can be combined with:

- Head Matrix coil
- Neck Matrix coil
- Spine Matrix coil
- Additional Body Matrix coils (typically 2-3 in total) for additional anatomical coverage
- PA Matrix coil (Peripheral Angio Matrix; optional)
- All flexible coils (e.g. CP Flex coil, small, CP Flex coil, large)
- CP Head Array coil
- Endorectal coils

The Body Matrix Coil has a 6-element design with 6 integrated preamplifiers that are arranged in 2 clusters of 3 coil elements each. Depending on the user selectable Matrix Coil Mode it is operated as a 2-channel coil (CP Mode), 4-channel coil (Dual Mode) or 6-channel coil (Triple Mode). The Body Matrix Coil will be typically used together with the Spine Matrix Coil with which it operates in an integrated fashion as 12-element design, creating 2 rings of 6 elements each.

No tuning of the fully iPAT-compatible Body Matrix Coil is necessary.

For examinations where larger anatomical coverage is required, several Body Matrix Coils can be used simultaneously. Up to 4 Body Matrix Coils can be used simultaneously, typically 2-3 will be used for coverage of the entire abdomen or in the case of large patients.

The Body Matrix Coil is typically used in combination with the Spine Matrix Coil for examinations of the thorax, abdomen, pelvis or hip. The Body Matrix Coil can also be used for cardiac applications. Through its perfect combinability with the Spine Matrix Coil, further Body Matrix Coils, the optional PA Matrix Coil (Peripheral Angio Matrix), but also the Head

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Matrix and Neck Matrix Coil as well as all flexible coils (e.g. CP Flex coils, Endorectal coils) it contributes for all large-Field-of-View applications including whole-body imaging.

The dimensions of the Body Matrix Coil are 322 mm x 520 mm x 70 mm (L x W x H). Its weight is about 2 kg (4.5 lbs), whereas the patient feels as little weight as 950 g (2 lbs).

1 08464823 PA Matrix Coil #Av,Es

The new multi-element Matrix coil technology is an essential part supplementing the most innovative Total imaging matrix. Matrix coils have multiple receive coil elements that can be clustered in groups. Each receive coil element is equipped with a low noise preamplifier to maximize signal-to-noise ratio.

The PA Matrix Coil features:

- 16-element design with 16 integrated preamplifiers, in 8 CP pairs, i. e. 4 levels with 2 CP elements each
- Operates in an integrated fashion with the Body Matrix coils and Spine Matrix coil and for Whole-Body examinations also with the Head and Neck Matrix coil (for Whole-Body examinations the optional Tim Whole Body Suite is required)
- Can be utilized Head and Feet First
- Both legs are independently covered with coil elements, maximizing the coil filling factor and the signal-to-noise ratio
- No coil tuning
- Includes special non-ferromagnetic coil cart for safe, user-friendly storage
- iPAT-compatible

Applications:

- High-resolution angiography of both legs incl. pelvis with highest signal-to-noise ratio
- Visualization of the iliac arteries and aorta

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Qty	Part #	Description	Extended Net Price

Can be combined with:

- Head Matrix coil
- Neck Matrix coil
- Spine Matrix coil
- Body Matrix coils (up to 3)
- All flexible coils (e.g. CP Flex coil, small, CP Flex coil, large)

The PA Matrix Coil has a 16-element design with 16 integrated preamplifiers that are arranged in 8 CP pairs, i.e. 4 levels with 2 CP elements each, and is operated as a 8-channel coil.

A uniquely designed non-ferromagnetic coil cart for safe coil storage is included. The PA Matrix Coil is also shipped with a set of positioning cushions for proper handling.

No tuning of the fully iPAT-compatible PA Matrix Coil is necessary.

With a length of about 1m both legs are covered from the iliac artery level down to the foot arch vessels using multiple, flexible wings. For the visualization of the abdominal aorta and the iliac bifurcation it can be combined with the Body Matrix Coil.

Besides the typical combination with the Body Matrix and Spine Matrix coil, but also the Head Matrix and Neck Matrix Coil as well as all flexible coils (e.g. CP Flex coils, Endorectal coils) it contributes for all large-Field-of-View applications including whole-body imaging. For peripheral Angiography the PA Matrix coil will be typically used in feet-first position, but also

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Qty	Part #	Description	Extended Net Price

head-first positioning for whole-body examinations is possible (optional Tim Whole Body Suite required).

The dimensions of the PA Matrix coil are 970 mm x 300-600 mm x 270 mm (L x W x H), its weight is about 5.75 kg (13 lbs).

1 08464930 Shoulder Array Coil #Av,Es

This iPAT compatible coil for examinations of the left or right shoulder consists of a base plate and two receive array coil attachments available in different sizes, these will be attached and can be relocated on the basis plate.

The iPAT compatible receive shoulder array coil is adapted to the shape of the shoulder.

To obtain maximum image quality for different body shapes two different sized coil tops are included.

- 165 mm (6.5 in) diameter for small and medium sized shoulders
- 200 mm (7.9 in) diameter for large shoulders

The coil top can be used either for left or right shoulders. It features slidable attachment to the base plate and can easily be adjusted for comfortable positioning. The coil excels in highest resolution imaging with exceptional signal/noise ratio.

1 08464948 CP Extremity Coil #Av,Es

Circularly Polarized no-tune transmit/receive coil for joint examinations in the region of the lower extremities.

The coil is placed on a laterally movable holder and is capable to allow off-center scanning with comfortable positioning of the other leg and has special fixation aids with automatic inflation. The coil may be placed on top of the Spine Matrix Coil.

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Qty	Part #	Description	Extended Net Price
		The upper part of the coil can be removed for easy patient positioning and has an opening for examinations of the ankle. Because of the circular polarization this coil is suited for highest resolution imaging with excellent signal/noise ratio. The integrated transmit functionality allows volume selective excitation with significantly reduced RF-power, and avoids the occurrence of aliasing artifacts (e.g. from the other knee).	
1	08465028	**Coil Storage Cart #Av,Es** Its dimensions are: Width 140 cm (4' 7") when closed and 280 cm (10' 10") when opened, depth 55 cm (22") and height 127 cm (4' 2"). Specially designed non-ferromagnetic cart for easy storage of some of the most commonly used coils and accessories. The cart may be rolled to convenient locations in the examination room. It can be opened up to work like a shelf. The coil storage cart has multiple drawers and trays as well as many other storage spaces for coils, cushions and miscellaneous items.	
1	08465226	**Cable Set syngo 11/9 #Av** Cable length inside the cabin 11 m, cable length outside the cabin 9 m. Inclusive Ethernet Twisted Pair Adapter and 10 m cable.	
1	14401476	**Venting Kit Airfreight #Av,Es**	
1	05672105	**Helium Fill 30/70 #S,SON,Av,Es**	

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RELEVANT Items for System Quote #5Y8-1MPF

Qty	Part #	Description	Extended Net Price
1	08465481	**Chiller, 60 Hz #Av,Es**	

The KKT KCC 215 is a dedicated MAGNETOM Avanto 20°C chiller.

The chiller has to be used in combination with the IFP (Interface Panel). This applies if no chilled water supply is available at all on-site.

The IFP is included in delivery.

Chiller KKT KCC 215

Function:

Delivering dedicated primary chilled water in cases where no chilled water supply is available on site.

The cooling capacity of the chiller is 60 kW, the chilled water temperature is 20°C, the water flow is 130 l/min.

Switching on and off of the chiller can be done with an optional remote module. Chiller operating parameters can be displayed on the remote module as well. The soft start option has to be ordered if the chiller is used in combination with an UPS system.

Connection value: 48 kVA

Voltage: 400 V to 480 V / 60 Hz

Fuse rate: 63 A

Power consumption: 58.5 A

Dimension: 1850 mm x 3040 mm x 940 mm (height x width x depth).

Weight: 1050 kg

IFP (Interface Panel)

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Qty	Part #	Description	Extended Net Price

Main functions of the IFP:

- Interface function between the KKT chiller and the ACC cabinet.
- Water supply for the cold head compressor, which is connected directly to the IFP.

Additional devices like built in flow meters and a strainer are to guarantee a precise function of the cooling water circuit, especially for the cold head compressor.

The connection has to be established locally with 2" pipes. Two 5m hoses (forward and return) to connect the IFP to the ACC are part of the delivery volume.

Dimension: 800 mm x 1050 mm x 200 mm (height x width x depth).
Weight: 40 kg

1 MR_APPLS_5_3 MR Application Training

On-Site - Thirty two (32) hours (not including travel time) of on-site imaging of volunteers (scheduled by the customer) using standard clinical scanning protocols, to familiarize technologists (select up to 2 for training) with the operation of the system within the clinical routine. Also during this week advanced applications such as cardiac imaging, MRA, and Turbo sequences will be discussed.

Follow-up - Eighteen (18) hours (not including travel time) general, on-site follow-up applications visit to address open questions and assist in optimizing workflow

Hotline - Supported by Siemens Applications specialists from 8:00 am to 9:00 pm Eastern time, provides quick response to your critical applications questions including those about

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Qty	Part #	Description	Extended Net Price

sequence parameters, patient positioning, artifact reduction, and post-processing, etc for the warranty period.

1 APT_MR_MGAVT_9417 Applications Training Avanto

On-Site - Thirty two (32) hours (not including travel time) of on-site imaging of volunteers (scheduled by the customer) using standard clinical scanning protocols, to familiarize technologists (select up to 2 for training) with the operation of the system within the clinical routine. Also during this week advanced applications such as cardiac imaging, MRA, and Turbo sequences will be discussed.

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1 MR_STD_RIG_INST MR Standard Rigging and Installation

MR Standard Rigging and Installation

This quotation includes standard rigging and installation of your new MAGNETOM system

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Qty	Part #	Description	Extended Net Price

Freight & Standard rigging into a room on ground floor level of the building during standard working hours (Mon. – Fri./ 8 a.m. to 5 p.m.)
It remains the responsibility of the Customer to prepare the room in accordance with the SIEMENS planning documents
Any rigging requiring a crane over 80 tons and/or special site requirements (e.g. removal of existing systems, etc.) is an incremental cost and the responsibility of the Customer.
All other "out of scope" charges (not covered by the standard rigging and installation) will be identified during the site assessment and remain the responsibility of the Customer.

1 MR_SYNGO Syngo Training (Cary or Utah)

Training for two (2) technologists to attend Siemens-sponsored four (4) day course introducing the user interface of the common syngo platform and instructions on building protocols. A minimum of one (1) technologist is required to participate prior to on-site Application Training. Software functions are demonstrated in class and in hands-on laboratory sessions. Includes registration, tuition, lunch, and course materials. *

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Qty	Part #	Description	Extended Net Price

*NOTE: Expenses for travel, lodging, other meals and other expenses are not included and are the responsibility of the attendee.

1	05142869	**Arm Rest for MR H/S**	

An MR-compatible arm rest that supports the patient's arm on the magnet patient table when starting intravenous lines. The board is removed after the IV is inserted.

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OPTIONAL Items for System Quote #5Y8-1MPF (not included in contract total)

Qty	Part #	Description	Extended Net Price
1	07365419	**Argus Flow**	**$15,000**

Evaluation software for determination of flow properties in the blood vessel and Cerebrospinal Fluid (CSF). The software has automatic segmentation capabilities for determination of regions.

Output parameters include:
peak velocity, mean velocity, mean flow, total flow and more. The results are displayed graphically on the monitor and can be documented and stored as DICOM images.

Prerequisite: Syngo Argus Viewer

When reordering options, it is absolutely necessary that you specify the following:
* Dongle ID (Hardware Identifier)
* System Serial Number
* System Part Number

Qty	Part #	Description	Extended Net Price
1	07820066	**AutoAlign #Av,Es**	**$45,000**

Automated alignment for standardized and reproducible slice positioning in the head based on a 3D MR brain atlas and 3D AutoAlign Scout for

- Automatic slice planning
- Accurate and easy follow-up examinations (scan/rescan alignment)
- Reproducible slice orientation for different patients.

This option optimizes the clinical workflow and is designed to improve diagnostic outcome in many ways.

Automatic slice planning:

- Introduction of standardized examination protocols for brain studies becomes fast and easy by referencing the 3D MR brain atlas.

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Qty	Part #	Description	Extended Net Price

- No manual adjustments of slice positioning necessary.

Accurate and easy follow-up examinations (scan/rescan alignment):

- It reapplies exactly the same image position and orientation, independent of how the head is positioned in the coil.
- Additional use of Phoenix provides the examiner with consistently the same protocol parameters to be scanned.
- Together with Phoenix fast, easy and operator independent patient follow-up is possible.

Reproducible slice orientation for different patients:

- Reviews all head images in the same position and orientation.
- It enables reproducible and accurate imaging of the same slice positions referring to tissue characteristics.

Conditions:

- Due to different tissue characteristics, applies to patients not younger than 17 years.
- Patient must not show gross pathological findings.

1	**07275899**	**ImageFilter SW syngo**	**$10,000**

Post-processing software for noise reduction in already acquired MR images. The software uses high-pass and low-pass filtering and automatically adjusts to the local image content (adaptive filtering). A total of 1-20 filter values can be selected. Three different filter intensities (soft, middle, sharp) can be stored individually. Single and multiple images as well as complete series can be selected simultaneously for filtering. An additional window shows the current calculation status and a preview of the already filtered images.

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OPTIONAL Items for System Quote #5Y8-1MPF (not included in contract total)

Qty	Part #	Description	Extended Net Price
1	07365534	**MPPS syngo**	**$10,000**

DICOM Modality Performed Procedure Step (MPPS) allows communication of information about the examinations from the MR system to an information system (such as RIS systems). MPPS enables provision of data for billing, documentation and planning purposes to an information system. This includes data on protocols performed, series created, consumables such as number of films. In addition, it allows continuous communication of the job status of an examination and thus support of the workflow.

The modality MR supports the DICOM Modality Performed Procedure Step (MPPS) service as ServiceClass User. The services N-CREATE and N-SET are supported. The MPPS references to Worklist entries, provided that the examination was loaded In by a DICOM Worklist Provider. Our MPPS implementation is IHE Y3-compliant.

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Contract Total: $1,925,000

(items marked 'optional' not included in total)

FINANCING:

The equipment listed above may be financed through Siemens. Ask us about our full range of financial products that can be tailored to meet your business and cash flow requirements. For further information, please contact your local Sales Representative.

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Terms and Conditions of Sale

1. GENERAL

1.1 Contract Terms. These terms and conditions constitute an integral part of any contract between the Seller identified on the first page hereof to sell products ("Products") and Purchaser and shall govern the sale of the Products. Seller shall not be bound by, and specifically objects to, any term, condition or other provisions which are different from or in addition to the provisions of this Agreement (whether or not it would materially alter this Agreement) which is proffered by Purchaser in any purchase order, receipt, acceptance, confirmation, correspondence or otherwise, unless Seller specifically agrees to any such provision in a writing signed by Seller. Products may contain used, reworked or refurbished parts and components that comply with performance and reliability specifications. Purchaser acknowledges that this is a commercial and not a consumer transaction.

1.2 Acceptance. An order shall be binding on Seller only after a credit approval and an order confirmation have been issued by Seller. Acceptance is expressly made conditional on Purchaser's acceptance of these terms and conditions. Purchaser shall be deemed to have assented to, and waived any objection to, this Agreement upon the earliest to occur of any of the following: Purchaser's completion or execution of this Agreement; Purchaser's acceptance of all or any part of the Products subject to this Agreement; Purchaser's failure to object in writing to this Agreement or to cancel its order within ten (10) days of receipt of Seller's confirmation of Purchaser's purchase order; or delivery of the Products to the common carrier for shipment pursuant hereto.

1.3 Third Party Products. If this Agreement includes the sale of third party products not manufactured by Seller, then Purchaser agrees and acknowledges that (a) Purchaser has made the selection of these products on its own, (b) the products are being acquired by Seller solely at the request of and for the benefit of Purchaser, in order to eliminate the need for Purchaser to issue a separate purchase order to the manufacturer of the products, (c) no representation, warranty or guarantee has been made by Seller with respect to the products, (d) the obligation of Purchaser to pay Seller for the products is absolute and unconditional, (f) Purchaser will assert no claim whatsoever against the Seller with respect to the products, and will look solely to the manufacturer regarding any such claims, and (g) Purchaser will indemnify and hold Seller harmless from and against any and all claims, regardless of the form of action, related to, resulting from or caused by the products or any work or service provided by the manufacturer of the products or any other party.

2. PRICES

2.1 Quotations. Unless otherwise agreed to in writing or set forth in the quotation, all prices quoted by Seller are based on U.S. dollars F.O.B. Shipping Point, and include standard and customary packaging. Domestic prices apply only to purchasers located in, and who will use the Products in, the U.S. International prices apply to all purchasers located outside of, or who will use or ship or facilitate shipment of the Products outside of, the U.S. Unless otherwise stated, the quotation shall only be valid for forty-five (45) days from the date of the quotation.

2.2 Delay in Acceptance of Delivery. Should the agreed delivery date be postponed by Purchaser, Seller shall have the right to deliver to storage at Purchaser's risk and expense, and payments due upon delivery shall become due when Seller is ready to deliver.

2.3 Escalation. Unless otherwise agreed to in writing, except as to goods to be delivered within six (6) months of Seller's acceptance of Purchaser's order, Seller reserves the right to increase its prices to those in effect at the time of shipment.

3. TAXES

3.1 Any sales, use or manufacturer's tax which may be imposed upon the sale or use of Products, or any property tax levied after readiness to ship, or any excise tax, license or similar fee required under this transaction, shall be in addition to the quoted prices and shall be paid by Purchaser.

4. TERMS OF PAYMENT

4.1 Due Date. Unless otherwise set forth in the quotation, Seller's payment terms are as follows: an initial deposit of 10% of the purchase price for each Product is due upon submission of the purchase order, an additional 80% of the purchase price is due upon delivery of each Product, and the final 10% of the purchase price is due upon completion of installation. Unless otherwise agreed, all payments other than the initial deposit are due net thirty (30) days from the date of invoice. All amounts payable pursuant to this Agreement are denominated in United States dollars, and Purchaser shall pay all such amount in lawful money of the United States. Partial shipments shall be billed as made, and payments for such shipments will be made in accordance with the foregoing payment terms.

4.2 Late Payment. A service charge of 1½% per month, not to exceed the maximum rate allowed by law, shall be made on any portion of Purchaser's outstanding balance which is not paid within thirty (30) days after invoice date, which charge shall be determined and compounded on a daily basis from the due date until the date paid. Payment of such service charge shall not excuse or cure Purchaser's breach or default for late payment. In addition, in the event that Purchaser fails to make any payment to Seller within this thirty (30) day period, including but not limited to any payment under any service contract, promissory note or other agreement with Seller, then Seller shall have no obligation to continue performance under any agreement with Purchaser.

4.3 Payment of Lesser Amount. If Purchaser pays, or Seller otherwise receives, a lesser amount than the full amount provided for under this Agreement, such payment or receipt shall not constitute or be construed other than as on account of the earliest amount due Seller. Seller may accept any check or payment in any amount without prejudice to Seller's right to recover the balance of the amount due to or pursue any other right or remedy. No endorsement or statement on any check or payment or in any letter accompanying a check or payment or elsewhere shall constitute or be construed as an accord or satisfaction.

4.4 Where Payment Upon Installation or Completion. Should any special terms of payment provide for either full or partial payment upon installation or completion of installation or thereafter, and the installation or completion is delayed for any reason for which Seller is not responsible, the Products shall be deemed installed upon delivery and, if no other terms were agreed upon in writing signed by the parties, the balance of payments shall be due no later than thirty (30) days from delivery regardless of the actual installation date.

4.5 Failure of Purchaser to Pay. At Seller's election upon Purchaser's failure to pay when due any amount required to be paid to Seller under this Agreement: (a) the entire amount of any indebtedness and obligation due Seller under this Agreement and interest thereon shall become immediately due and payable without notice, demand, or period of grace; (b) Purchaser shall put Seller in possession of the Products upon demand; (c) Seller may enter any premises where the Products are located and take possession of the Products without notice or demand and without legal proceedings; (d) at the request of Seller, Purchaser shall assemble the Products and make them available to Seller at a place designated by Seller which is reasonable and convenient to all parties; (e) Seller may sell or otherwise dispose of all or any part of the Products and apply the proceeds thereof against any indebtedness or obligation of Purchaser under this Agreement (Purchaser agrees that a period of 10 days from the time notice is sent to Purchaser shall be a reasonable period of notification of sale or other disposition of the Products by or for Seller); (f) if this Agreement or any indebtedness or obligation of Purchaser under this Agreement is referred to an attorney for collection or realization, Purchaser shall pay to Seller all costs of collection and realization (including, without limitation, a reasonable sum for attorneys' fees, expenses of title search, all court costs and other legal expenses) incurred thereby; and (g) Purchaser shall pay any deficiency remaining after collection of or realization by Seller on the Products.

5. EXPORT TERMS

5.1 Unless other arrangements have been made, payment on export orders shall be made by irrevocable confirmed letter of credit, payable in U.S. dollars against Seller's invoice and standard shipping documents. Such letter of credit shall be in an amount equal to the full purchase price of the Products and shall be established in a U.S. bank acceptable to Seller. Purchaser shall procure all necessary permits and licenses for shipment and compliance with any governmental regulations concerning control of final destination of Products.

5.2 Purchaser shall not, directly or indirectly, violate any U.S. law, regulation or treaty, or any other international treaty or agreement, relating to the export or reexport of any Product or associated technical data, to which the U.S. adheres or with which the U.S. complies. Purchaser shall defend, indemnify and hold Seller harmless from any claim, damage, liability or expense (including but not limited to reasonable attorney's fees) arising out of or in connection with any violation of the preceding sentence. If Purchaser purchases a Product at the domestic price and exports such Product, or transfers such Product to a third party for export, outside of the U.S., Purchaser shall pay to Seller the difference between the domestic price and the international retail price of such Product pursuant to the payment terms set forth herein. Purchaser shall deliver to Seller, upon Seller's request, written assurance regarding compliance with this section in form and content acceptable to Seller.

6. DELIVERY, RISK OF LOSS

6.1 Delivery Date. Delivery and completion schedules are approximate only and are based on conditions at the time of acceptance of Purchaser's order by Seller. Seller shall make every reasonable effort to meet the delivery date(s) quoted or acknowledged, but shall not be liable for any failure to meet such date(s). Partial shipments may be made.

6.2 Risk of Loss, Title. Unless otherwise agreed to in writing, delivery shall be complete upon transfer of possession to common carrier, F.O.B. Shipping Point, whereupon title to and all risk of loss, damage to or destruction of the Products shall pass to Purchaser. All freight charges and other transportation, packing and insurance costs, license fees, custom duties and other similar charges shall be the sole responsibility of the Purchaser unless otherwise agreed to in writing by Seller. In the event of any loss or damage to any of the Products during shipment, Purchaser should make claim against the carrier.

7. SECURITY INTEREST/FILING

7.1 From the F.O.B. point, Seller shall have a purchase money security interest in the Products (and all accessories and replacements thereto and all proceeds thereof) until payment in full by Purchaser and satisfaction of all other obligations of Purchaser hereunder. Purchaser hereby (i) authorizes Seller to file (and Purchaser shall promptly execute, if requested by Seller) and (ii) irrevocably appoints Seller its agent and attorney-in-fact to execute in the name of Purchaser and file, with such authorities and at such locations as Seller may deem appropriate, any Uniform Commercial Code financing statements with respect to the Products and/or this Agreement. Purchaser also agrees that an original or a photocopy of this Agreement (including any addenda, attachments and amendments hereto) may be filed by Seller as a Uniform Commercial Code financing statement. Purchaser further represents and covenants that (a) it will keep the Products in good order and repair until the purchase price has been paid in full, (b) it will promptly pay all taxes and assessments upon the Products or the use thereof, (c) it will not attempt to transfer any interest in the Products until the purchase price has been paid in full, and (d) it is solvent and financially capable of paying the full purchase price for the Products.

8. CHANGES, CANCELLATION, AND RETURN

8.1 Orders accepted by Seller are not subject to change except upon written agreement.

8.2 Orders accepted by Seller are noncancellable by Purchaser except upon Seller's written consent and payment by Purchaser of Seller's reasonable cancellation charges not to exceed 25% of the price of the affected Products, plus any shipping, insurance, inspection and refurbishment charges. In no event can an order be cancelled by Purchaser or Products be returned to Seller after shipment has been made.

8.3 Seller shall have the right to change the manufacture and/or design of its Products if, in the judgment of Seller, such change does not alter the general function of the Products.

9. FORCE MAJEURE

9.1 Seller will make every effort to complete shipment, and installation where indicated, but shall not be liable for any loss or damage for delay in delivery, inability to install or any other failure to perform due to causes beyond its reasonable control including, but not limited to, acts of government or compliance with any governmental rules or regulations, acts of God or the public, war, civil commotion, blockades, embargoes, calamities, floods, fires, earthquakes, explosions, storms, strikes, lockouts, labor disputes, or unavailability of labor, raw materials, power or supplies. Should such a delay occur, Seller may reasonably extend delivery or production schedules or, at its option, cancel the order in whole or part without liability other than to return any unearned deposit or prepayment.

10. WARRANTY

10.1 Seller warrants that the Products manufactured by Seller and sold hereunder shall be free from defects in material or workmanship under normal use and service for the warranty period. Unless otherwise set forth in the quotation or in a separate Warranty Statement covering the Products to be provided by Seller, the warranty period shall commence on the date that the Products have been installed in accordance with 12.6 hereof, which date shall be confirmed in writing by Seller, and shall continue for 12 consecutive months. Seller makes no warranty for any Products made by persons other than Seller or its affiliates, and Purchaser's sole warranty therefor, if any, is the original manufacturer's warranty, which Seller agrees to pass on to Purchaser, as applicable.

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Ultrasound Division

Terms and Conditions of Sale

10.2 No warranty extended by Seller shall apply to any Products which have been damaged by accident, misuse, abuse, negligence, improper application or alteration or by a force majeure occurrence as described in Section 9 hereof or by the Purchaser's failure to operate the Products in accordance with the manufacturer's instructions or to maintain the recommended operating environment and line conditions; which are defective due to unauthorized attempts to repair, relocate, maintain, service, add to or modify the Products by the Purchaser or any third party or due to the attachment and/or use of non-Seller supplied equipment without Seller's prior written approval; which failed due to causes from within non-Seller supplied equipment;; which have been damaged from the use of operating supplies or consumable parts not approved by Seller. In addition, no warranty extended by Seller shall apply to any transducer failure due to events such as cracking from high impact drops, cable rupture from rolling equipment over the cable, or delamination from cleaning with inappropriate solutions. Seller's obligation under this warranty is limited to the repair or replacement, at Seller's option, of defective parts. Seller may effectuate such repair at Purchaser's facility, and Purchaser shall furnish Seller safe and sufficient access for such repair. Repair or replacement may be with parts or products that are new, used or refurbished. Repairs or replacements shall not interrupt, extend or prolong the term of the warranty. Purchaser shall, upon Seller's request, return the noncomplying Product or part to Seller with all transportation charges prepaid, but shall not return any Product or part to Seller without Seller's prior written authorization. Purchaser shall pay Seller its normal charges for service and parts for any inspection, repair or replacement that is not, in Seller's sole judgement, required by noncompliance with the warranty set forth in Section 10.1. Seller's warranty does not apply to consumable materials, except as specifically stated in writing, nor to products or parts thereof supplied by Purchaser.

10.3 This warranty is made on condition that immediate written notice of any noncompliance be given to Seller and Seller's inspection reveals that the Purchaser's claim is valid under the terms of the warranty (i.e., that the noncompliance is due to traceable defects in original materials and/or workmanship).

10.4 Warranty service will be provided without charge during Seller's regular working hours (8:30-5:00), Monday through Friday, except Seller's recognized holidays. If Purchaser requires that service be performed other than during these times, such service can be made available at an additional charge, at Seller's then current rates.

SELLER MAKES NO WARRANTY OTHER THAN THE ONE SET FORTH HEREIN OR THAT WHICH MAY BE PROVIDED IN A SEPARATE WARRANTY COVERING THE APPLICABLE PRODUCT CATEGORY. SUCH WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY EXPRESS OR IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR PARTICULAR PURPOSES, AND SUCH CONSTITUTES THE ONLY WARRANTY MADE WITH RESPECT TO THE PRODUCTS AND ANY DEFECT, DEFICIENCY OR NONCONFORMITY IN ANY PRODUCT, SERVICE OR OTHER ITEM FURNISHED UNDER THIS AGREEMENT.

11. LIMITATION OF LIABILITY

11.1 In no event shall Seller's liability hereunder exceed the actual loss or damage sustained by Purchaser, up to the purchase price of the Products.

11.2 SELLER SHALL NOT BE LIABLE FOR ANY LOSS OF USE, REVENUE OR ANTICIPATED PROFITS, LOSS OF STORED, TRANSMITTED OR RECORDED DATA, OR FOR ANY INCIDENTAL, UNFORESEEN, SPECIAL, PUNITIVE OR CONSEQUENTIAL DAMAGES ARISING OUT OF OR IN CONNECTION WITH THIS AGREEMENT OR THE SALE OR USE OF THE PRODUCTS. This provision does not affect third party claims for personal injury arising as a result of Seller's negligence or product defect. **THE FOREGOING IS A SEPARATE, ESSENTIAL TERM OF THIS AGREEMENT AND SHALL BE EFFECTIVE UPON THE FAILURE OF ANY REMEDY, EXCLUSIVE OR NOT.**

12. INSTALLATION - ADDITIONAL CHARGES

12.1 General. Unless otherwise expressly stipulated in writing, the Products covered hereby shall be installed by and at the expense of Seller except for rigging charges which shall be the responsibility of Purchaser.

12.2 Installation by Seller. If Seller specifies it will install the Products, the following applies: subject to fulfillment of the obligations set forth in 12.4 below, Seller shall install the Products covered hereby and connect same to the requisite safety switches and power lines to be installed by Purchaser. Except as otherwise specified below, if such installation and connection are performed by Seller technical personnel, prices shown include the cost thereof, provided that the installation and connection can be performed within the Continental United States or Puerto Rico and during normal business hours. Any overtime charges or other special expenses shall be additional charges to the prices shown.

12.3 Trade Unions. If a trade union, or unions, prevents Seller from performing the above work, the Purchaser shall make all required arrangements with the trade union, or unions, to permit Seller completion of said work. Moreover, any additional cost related to such labor disputes shall be paid by the Purchaser and Seller's obligations under such circumstances will be limited to providing engineering supervision of installation and connection of Seller equipment to existing wiring.

12.4 Purchaser's Obligations. Purchaser shall, at its expense, provide all proper and necessary labor and materials for plumbing service, carpentry work, conduit wiring, and other preparations required for such installation and connection. All such labor and materials shall be completed and available at the time of delivery of the Products by Seller. Additionally, the Purchaser shall provide free access to the premises of installation and, if necessary, safe and secure space thereon for storage of Products and equipment prior to installation by Seller. If any special work of any type must be performed in order to comply with requirements of any governmental authority, including procurement of special certificates, permits and approvals, the same shall be performed or procured by Purchaser at Purchaser's expense. Purchaser shall provide a suitable environment for the Products and shall ensure, at its sole cost and expense, that its premises are free of asbestos, hazardous conditions and any concealed dangerous conditions and that all site requirements are met. In the event that Seller is requested to supervise the installation of the Products, it remains the Purchaser's responsibility to comply with local regulations. Seller is not an architect and all drawings furnished by Seller are not construction drawings.

12.5 Regulatory Reporting. In the event that any regulatory activity is performed by other than Seller authorized personnel, Purchaser shall be responsible for fulfilling any and all reporting requirements. Seller shall only report activity performed by its authorized personnel.

12.6 Completion of Installation. Installation shall be complete upon the conclusion of final calibration and checkout under Seller standard procedures to verify that the Products meet applicable written performance specifications. Notwithstanding the foregoing, first use of the Products by Purchaser, its agents or employees for any purpose after delivery shall constitute completion of installation.

13. PATENT, TRADEMARK AND OTHER INFRINGEMENT CLAIMS

13.1 Infringement by Seller. Seller warrants that the Products manufactured by Seller and sold hereunder do not infringe any U.S. patent or copyright. If Purchaser receives a claim that any such Product, or parts thereof, infringe upon the rights of others under any U.S. patent or copyright, Purchaser shall notify Seller immediately in writing. As to all infringement claims relating to Products or parts manufactured by Seller or one of its affiliates:

(a) Purchaser shall give Seller information, assistance and exclusive authority to evaluate, defend and settle such claims.

(b) Seller shall then, at its own expense, defend or settle such claims, procure for the Purchaser the right to use the Products, or remove or modify them to avoid infringement. If none of these alternatives is available on terms reasonable to Seller, then Purchaser shall return the Products to Seller and Seller shall refund to Purchaser the purchase price paid by the Purchaser less reasonable depreciation for Purchaser's use of the Products.

13.2 Infringement by Purchaser. If some or all of the Products sold hereunder are made by Seller pursuant to drawings or specifications furnished by the Purchaser, or if Purchaser modifies or combines, operates or uses the Products other than as specified by Seller or with any product, data, software, apparatus or program not provided or approved by Seller, then the indemnity obligation of Seller under Section 13.1 shall be null and void and should a claim be made that such Products infringe the rights of any third party under patent, trademark or otherwise, then Purchaser shall indemnify and hold Seller harmless against any liability or expense, including reasonable attorneys' fees, incurred by Seller in connection therewith.

14. DESIGNS AND TRADE SECRETS/LICENSE

14.1 Any drawings, data, designs, software programs or other technical information supplied by Seller to Purchaser in connection with the sale of the Products are not included in the sale of the Products to Purchaser, shall remain Seller's property and shall at all times be held in confidence by Purchaser. Such information shall not be reproduced or disclosed to others without Seller's prior written consent.

14.2 For all goods purchased hereunder which utilize software for their operation, such "Applications Software" shall be licensed to Purchaser under the terms of Seller's Software License Schedule as attached hereto.

14.3 Diagnostic/Maintenance Software is not included under 14.2 above, is available only as a special option under a separate Diagnostic Materials License Agreement and may be subject to a separate licensing fee.

15. ENGINEERING CHANGES

15.1 Seller makes no representation that engineering changes which may be announced in the future will be suitable for use on, or in connection with, the Products.

16. ASSIGNMENT

16.1 Neither party may assign any rights or obligations under this Agreement without the written consent of the other and any attempt to do so shall be void, except that Seller may assign this Agreement without consent to any subsidiary or affiliated company. This Agreement shall inure to and be binding upon the parties and their respective successors, permitted assigns and legal representatives.

17. DAMAGES, COSTS AND FEES

17.1 In the event that any dispute or difference is brought arising from or relating to this Agreement or the breach, termination or validity thereof, the prevailing party shall NOT be entitled to recover from the other party any punitive damages. The prevailing party shall be entitled to recover from the other party all reasonable attorneys' fees incurred, together with such other expenses, costs and disbursements as may be allowed by law.

18. MODIFICATION

18.1 This Agreement may not be changed, modified or amended except in writing signed by duly authorized representatives of the parties.

19. GOVERNING LAW

19.1 This Agreement shall be governed by the laws of the Commonwealth of Pennsylvania.

20. INTEGRATION

20.1 These terms and conditions, including any attachments or other documents incorporated by reference herein, constitute the entire agreement and the complete and exclusive statement of agreement with respect to the subject matter hereof, and supersede any and all prior agreements, understandings and communications between the parties with respect to the Products.

21. SEVERABILITY; HEADINGS

21.1 No provision of this Agreement which may be deemed unenforceable will in any way invalidate any other portion or provision of this Agreement. Section headings are for convenience only and will have no substantive effect.

22. WAIVER

22.1 No failure and no delay in exercising, on the part of any party, any right under this Agreement will operate as a waiver thereof, nor will any single or partial exercise of any right preclude the further exercise of any other right.

23. NOTICES

23.1 Any notice or other communication under this Agreement shall be deemed properly given if given in writing and delivered in person or mailed, properly addressed and stamped with the required postage, to the intended recipient at its address specified on the face hereof. Either party may from time to time change such address by giving the other party notice of such change in accordance with this section.

24. RIGHTS CUMULATIVE

24.1 The rights and remedies afforded to Seller under this Agreement are in addition to, and do not in anyway limit, any other rights or remedies afforded to Seller by any other agreement, by law or otherwise.

25. END USER CERTIFICATION

25.1 Purchaser represents, warrants and covenants that it is acquiring the Products for its own end use and not for reselling, leasing or transferring to a third party (except for lease-back financings).

06/03 Rev.

SIEMENS

Quote

Siemens Medical Solutions USA, Inc.

Valley Stream Parkway, Malvern PA 19355

Siemens Medical Solutions
Health Services Corporation

Siemens Medical Solutions
Ultrasound Division

Software License Schedule To The Siemens Medical Solutions USA, Inc. Terms and Conditions of Sale

1. DEFINITIONS: The following definitions apply to this Schedule:
"Agreement" shall mean the attached (i) Quotation for Products and/or Services including the Terms and Conditions of Sale and applicable schedules; and/or (ii) Software License Agreement describing the software licensed herein and the specific system for which the license is issued.
"Licensor" shall mean Siemens Medical Solutions USA, Inc.
"Licensee" shall mean the end-user to whom Licensor provides Software or Documentation for its internal use under the Agreement.
"Software" shall mean the software described in the attached Agreement, including the following as contained therein: (i) software programs consisting of a series of statements or instructions to be used directly or indirectly in a programmable controller or computer to bring about a certain result and (ii) databases consisting of systemized collections of data to be used or referenced directly or indirectly by a programmed controller or computer. Notwithstanding the foregoing, "Software" does not include "firmware" as such term is conventionally understood. Diagnostic/Maintenance Software also is not included within the scope of the Software licensed under this Schedule, and is available only as a special option under a separate Diagnostic Materials License Agreement and may be subject to a separate licensing fee.
"Documentation" shall mean the documents and other supporting materials which are intended to support the use of an associated product, including (but not limited to) instructions, descriptions, flow charts, logic diagrams and listings of the Software, in text or graphic form, on machine readable or printed media.
"Designated Unit" shall mean a single control unit or computer identified on the first page of the Agreement, on which Software licensed hereunder may be used by Licensee.

2. SCOPE: The following terms and conditions shall apply to all Software and Documentation provided by Licensor to Licensee under the Agreement (whether included with other products listed in the Agreement or listed separately in the Agreement), together with any updates or revisions thereto which Licensor may provide to Licensee, and all copies thereof, except any Software and/or Documentation licensed directly by Licensor's supplier under a separate end-user ...se agreement accompanying the Software or the Documentation, ...hich case Licensee agrees to be bound by that license agreement as ...dition to using the Software and/or Documentation. Except as expressly provided herein, and provided that in no event shall the warranties or other obligations of Licensor with respect to such Software or Documentation exceed those set forth in this Schedule, this Schedule shall be subject to the liability limitations and exclusions and other terms and conditions set forth in the Agreement. **ANY USE OF THE SOFTWARE, INCLUDING BUT NOT LIMITED TO USE ON THE DESIGNATED UNIT, WILL CONSTITUTE LICENSEE'S AGREEMENT TO THIS SOFTWARE LICENSE SCHEDULE (OR RATIFICATION OF ANY PREVIOUS CONSENT).**

3. SOFTWARE AND DOCUMENTATION LICENSE: Subject to the payment of any applicable annual license fee(s), whether stated separately or included in the purchase price of another product, and to Licensee's acceptance of all of the obligations set forth herein and to the fulfillment of those obligations, Licensor or, if applicable, its licensor or supplier, hereby grants to Licensee a paid-up, nonexclusive and nontransferable (except as expressly provided in this Schedule) limited license to use the Software provided by Licensor under the Agreement solely for Licensee's own use on the Designated Unit and to use the Documentation in support of Licensee's authorized use of the Software, for the purpose of operating the Designated Unit in accordance with the instructions set forth in the user's manual supplied with the Designated Unit and for no other purpose whatsoever. A separate license is required for each control unit or computer on which the Software is to be used. Licensee may obtain from Licensor one copy of the Software licensed hereunder for backup and archival purposes only as is necessary to support Licensee's own authorized use of the Software, provided that Licensee includes on or in all copies (in any form) all copyright, trade secret or other proprietary notices contained on or in the Software as provided by Licensor. Additional copies of the Documentation may be licensed from Licensor at its then applicable charges. Licensee may make the Software and Documentation (including any copies) available only to its employees and other persons on Licensee's premises to whom such disclosure is necessary to enable Licensee to use the Software or Documentation within the scope of the license provided in this Schedule. If the Software is supplied to any unit or agency of the United States Government other than the Department of Defense, the Software and Documentation are classified as "restricted computer software" and the Government's rights in the Software and Documentation shall be as provided in paragraph (c) (2) of the Commercial Computer Software-Restricted Rights clause in FAR 52.227-19 and any successor laws, rules or regulations thereto. If the Software is supplied to the United States Department of Defense, the Software is classified as "commercial computer software" and the Government is furnished the Software and Documentation with "restricted rights" as defined in paragraph (c) (1) of the Rights in Technical Data and Computer Software clause in DFARS 252.227-7013 and any successor laws, rules or regulations thereto.

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5. UPDATES AND REVISIONS: During the warranty period or under a separate service contract, revised or updated versions of the Software licensed under this Schedule may be made available, at Licensor's option, to Licensee to use or to test while Licensee continues use of a previous version. Licensee has the right to decide whether to install any such revised or updated versions or to continue use of the previous version after giving due regard to the United States Food and Drug Administration rules and regulations. However, Licensee shall pay Licensor for any services necessitated by any modifications of the Software by Licensee or by Licensee's failure to utilize the current non-investigational version of the Software provided by Licensor. Software updates that provide new features or capabilities or that require hardware changes will be offered to Licensee at purchase prices established by Licensor. Licensor retains the sole right to determine whether an update represents an enhancement of a previously purchased capability or a new capability for which the Licensee will be charged. In addition, some updates may require Applications Training performed by Licensor's personnel that will be offered at Licensor's prevailing rates. Licensor retains the sole right to determine whether an update requires such training.

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Siemens Medical Solutions USA, Inc.

Valley Stream Parkway, Malvern PA 19355

Siemens Medical Solutions
Health Services Corporation

Siemens Medical Solutions
Ultrasound Division

Software License Schedule To The Siemens Medical Solutions USA, Inc. Terms and Conditions of Sale

AND/OR DOCUMENTATION. THIS LIMITATION ON LIABILITY SHALL APPLY EVEN IF ANY REMEDY FAILS OF ITS ESSENTIAL PURPOSE.

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(b) Licensee is licensed to use the Software to provide only the limited functionality (specific tasks or processes) for which the Designated Unit has been designed and marketed by Licensor. This license specifically prohibits any other use of the software programs or functions, or inclusion of additional software programs or functions that do not directly support the limited functionality, on the Designated Unit. If Licensee uses the Designated Unit to access or utilize the services or functionality of Microsoft Windows Server products (such as Microsoft Windows NT Server 4.0 (all editions) or Microsoft Windows 2000 Server (all editions)), or uses the Designated Unit to permit workstation or computing devices to access or utilize the services or functionality of Microsoft Windows Server products, Licensee may be required to obtain a Client Access License for the Designated Unit and/or each such workstation or computing device. Licensee should refer to the end user license agreement for its Microsoft Windows Server product for additional information.

(c) The Software may contain support for programs written in Java. Java technology is not fault tolerant and is not designed, manufactured, or intended for use or resale as online control equipment in hazardous environments requiring fail-safe performance, such as in the operation of nuclear facilities, aircraft navigation or communication systems, air traffic control, direct life support machines, or weapons systems, in which the failure of Java technology could lead directly to death, personal injury, or severe physical or environmental damage. Sun Microsystems, Inc. has contractually obligated Licensor's supplier to make this disclaimer.

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Revised 9-23-04

Siemens Medical Solutions USA, Inc.

Valley Stream Parkway, Malvern PA 19355

Siemens Medical Solutions
Health Services Corporation

Siemens Medical Solutions
Ultrasound Division

MR Warranty Information

Product	Period of Warranty 1)	Coverage
MR System	12 month	Full Warranty (parts & labor)

Excluding items listed below:

Consumables	Not covered

Post-Warranty Coverage (after expiration of system warranty)

Coverage for the following items that are purchased by a customer after the expiration of the 12 month warranty period shall include a parts only warranty for the period indicated below:

Magnet Parts/Components	12 month	Parts only
er Spare Parts	6 month	Parts only

Note: Optional extended warranty coverage can be obtained by purchase of a service agreement.
Magnet extends to 60 month only if there is a Five Year Cryogen Supply Contract plus a Five Year Magnet Maintenance Agreement attached to the Service Agreement.

1) Period of warranty commences from the date of first use or completion of installation, whichever occurs first. In the event the completion of installation is delayed for reasons beyond Siemens' control, the stated warranty period shall commence 60 days after delivery of equipment.

STATE OF CONNECTICUT

OFFICE OF HEALTH CARE ACCESS

M. JODI RELL
GOVERNOR

CRISTINE A. VOGEL
COMMISSIONER

January 11, 2005

Alan Kaye M.D. M.D.
Advanced Radiology Consultants, L.L.C.
56 Quarry Road
Trumbull, CT 06611

RE: Certificate of Need Application Forms, Docket Number 04-30418-CON
Advanced Radiology Consultants, L.L.C.
Replacement of an MRI Unit at Stratford Office

Dear Dr. Kaye:

Enclosed are the application forms for Advanced Radiology Consultants, L.L.C.'s Certificate of Need ("CON") proposal for the Replacement of an MRI Unit at Stratford Office with an associated capital expenditure of $2,140,500.

According to the parameters stated in Section 19a-639 of the Connecticut General Statutes as amended by Public Act 03-17, the CON application may be filed between February 21, 2005, and April 22, 2005. The analysts assigned to the CON application are Tillman Foster and Steven Lazarus.

When submitting your CON Application, please paginate and date each page contained in your submission. In addition, please submit one (1) original and two hard copies; as well as an electronic copy on CD or Diskette. OHCA requests that the electronic copy be in Adobe or MS Word format and that the Financial Pro Forma and other data as appropriate be in MS Excel format.

Please feel free to contact him/her at (860) 418-7001, if you have any questions.

Sincerely,

Kimberly Martone
Certificate of Need Supervisor

Enclosure

An Equal Opportunity Employer
410 Capitol Avenue, MS #13HCA, P.O. Box 340308, Hartford, Connecticut 06134-0308
Telephone: (860) 418-7001 • Toll free (800) 797-9688
Fax: (860) 418-7053