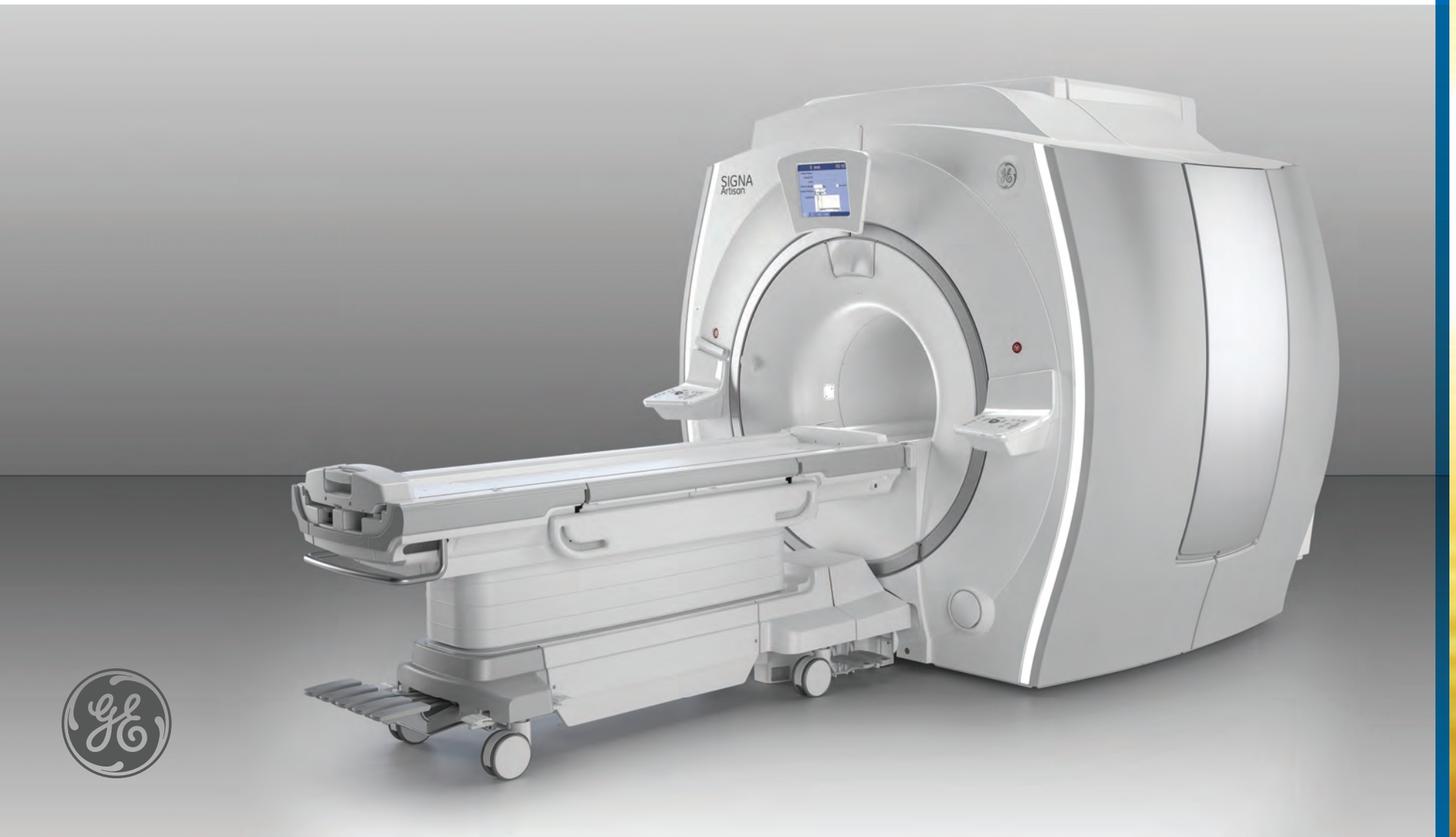
GE Healthcare

SIGNA™ Architect

Data Sheet



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GE Healthcare

SIGNA™ Architect

System

Magnet

The Foundation of Quality

When it comes to delivering on the promise of 3.0T image quality while enhancing the openness and patient experience, no other MR component has greater impact than the magnet. The SIGNA™ Architect 3.0T system features a compact, lightweight, superconducting magnet designed to provide excellent homogeneity ensuring uniform signal and fat-suppression over a larger FOV. While improving the patient experience with a 70 cm bore size, the SIGNA™ Architect 3.0T magnet supports a large 50 cm FOV and may reduce exam time since fewer acquisitions are needed to cover a large anatomy.

Magnet Specifications	
Operating field strength	3.0 Tesla
Magnet shielding	Active
EMI shielding factor	97.5% 0.6 hertz excitation and 94.5% dc step
Size (without enclosures) (L x W x H)	1.74 x 2.12 x 2.30 meters
Size (with enclosures) (L x W x H)	1.96 x 2.13 x 2.40 meters
Magnet weight with cryogens	15,684 lbs. (7,187 kg)
Magnet cooling	Cryogenic
Long-term stability	< 0.1 ppm per hour over a 24 hour period
Cryogen refill period	Zero-Boil Off‡
Boil-off rate	Zero-Boil Off‡
Fringe field – (axial x radial)	7.8 m x 4.9 m at 1 Gauss 5.2 m x 2.8 m at 5 Gauss
Manufacturer	GE Healthcare

Patient Focused Design	
Patient Bore (L x W x H)	130 cm x 70 cm x 70 cm
Patient Aperture	78 cm at magnet flair 70 cm at isocenter
Patient comfort module	Head or feet first imaging Dual-flared patient bore 2 way in-bore intercom system Adjustable in-bore lighting system Adjustable in-bore patient ventilation system

LV-vrms Homogeneity Specifications		
Diameter of Spherical Volume – DSV	Guaranteed ppm	Typical ppm
10 cm		0.02
20 cm	< 0.050	0.03
30 cm	< 0.150	0.08
40 cm	< 0.500	0.27
45 cm	< 1.500	0.7
40 (z) x 50 cm	< 3.000	1.8
50 (z) x 50 cm	< 4.000	2.5

Gradients

The gradients of an MR system play a crucial role when it comes to imaging performance, throughput, and consistency during clinical practice. Gradient speed, accuracy, and reproducibility often determine the success of demanding acquisitions.

ART (Acoustic Reduction Technology) Quiet Technology
State-of-the-art clinical imaging demands the routine use of ultra-fast imaging techniques. At 3.0T, the strong gradients interact with the magnetic field to create mechanical forces resulting in acoustic noise. GE has implemented Quiet Technology on many components of the system to reduce acoustic noise and improve the patient environment.

Gradient Coil Isolation and Acoustic Damping
The full performance of the Extreme Gradient Driver is used while helping to maintain a safe environment for the patient. Clear separation between the gradient coil, RF body coil, and patient support structures ensures minimal component interactions. In addition, mass- damped acoustic barriers are used under the system enclosures to further reduce acoustic noise for the patient.

RF Coil Isolation
During gradient pulses, the RF body coil acts as a secondary source of noise. To further reduce the noise heard by the patient, the RF body coil mounting has been optimally designed with features to reduce acoustic noise.

Vibro-Acoustic Isolation
To isolate the magnet from the building and reduce the transmission of acoustic noise in the structure, GE has designed a vibro-acoustic dampening pad that sits under the feet of the magnet. The dampening characteristics of the pad are optimized based on the magnet geometry and weight.

Gradient Waveform Optimization
User selectable mode to further reduce acoustic noise.

Gradient Performance*	
Peak amplitude	44 mT/m
Slew-rate	200 T/m/s
Maximum FOV (x,y,z)	50 cm x 50 cm x 50 cm
Duty Cycle	100%

*Based on the product of the gradient coil gain, inductance, and peak gradient amplifier current & voltage.

Gradient Amplifier & Coil (water-cooled)	
Peak amplifier current and voltage	830A/1650V
Control	Full-digital control
Frequency dependent feed-forward model to match amplifier output to gradient coil	
Dedicated active feedback control loop to regulate current errors	
Gradient current accuracy	300 uAs
Shot-to-Shot repeatability‡	100 uAs
Symmetry‡	200 uAs

‡Typical gradient fit expressed in terms of the absolute integrated errors in micro- Amperes-second (μAs). Gradient integral precision is the maximum integrated current error over a full-scale, echo-planar gradient waveform. Shot-toshot repeatability is the largest difference between integrated errors across waveforms. Symmetry is the largest difference in integrated current error when comparing positive and negative gradient waveforms

RF

The RF acquisition technology of the SIGNA™ Architect 3.0T enables greater clinical performance and higher image quality especially for data-intensive applications and provides an improvement in SNR versus previous generation systems.

OpTix Optical RF Architecture	
Simultaneous RF Receivers (A/D Converters)	Up to 128
Receiver sampling per channel	80 Mhz
Quadrature demodulation	Digital
Receiver dynamic range at 1 Hz BW	> 165 dB
Receiver resolution	Up to 32 bits

MultiDrive

At 3.0T, precise control over the RF environment in a 70 cm patient bore has been challenging until now. The SIGNA™ Architect 3.0T RF transmit architecture technology consists of a liquid-cooled 30 kW solid-state RF power amplifier with multiple output channels. By optimizing the phase and amplitude of each RF amplifier output channel that is applied to GE's 70 cm 4-port drive whole body RF transmit coil, 4-port drive whole body RF transmit coil improves RF uniformity and signal homogeneity regardless of patient shape, size, and/or body habitus.

RF Transmit Architecture	
RF amplifier	Multiple output Small footprint Water cooled
Maximum output power	15 kW body per channel (30 kW peak total) 4.5 KW Head
Maximum B1 field with whole body RF coil	16 uT at 75 kg (> 25 uT at 20 kg)
Transmit gain	40 db coarse, > 84 dB instantaneous
RF exciter frequency range	127.72 +/- 0.625 MHz
Receiver resolution	< 0.6 Hz/step
Frequency stability	14 parts per billion (0 to 50 C)
Phase resolution	0.005 deg/step
Amplitude control	16 bit with 12.5 ns resolution
Amplitude stability	< 0.1 dB over one minute at rated power
Digital RF pulse control	2 amplitude modulators 2 frequency/phase modulators
Transmit / Receive Body Coil	Fully integrated 4 port drive, 16 rung quadrature birdcage 70 cm inner diameter 50 cm FOV

Volume Reconstruction Engine & Host Computer

Reconstruction performance today is challenged by explosive growth in data, and increased computational complexity. The amount of data to be stored and processed continues to increase with the advances in MR system technology. The SIGNA™ Architect 3.0T meets that challenge head-on with innovations in reconstruction to take full advantage of computing power and by leveraging both hardware and software technology.

Reconstruction System Gen6 ES/EX platform	
Operating system	Scientific Linux (RT)
Processor	Intel® Xeon® E5-2680 v3 (12 core) x 2
Clock rate	2 x 2.5 GHz
Memory	96 GB
Network	1 GbE
Hard disk storage	400 GB SSD (System Software) 400 GB SSD (Raw Data)
2D FFT/second (256 x 256 full FOV)	62,000 2D FFTs/second

Host Computer	
Operating system	Scientific Linux (RT)
Processor	Intel® Xeon® E5-1620 v3 (4 core, 8 threads)
Clock rate	3.7 GHz
Memory	32 GB
Network	Gigabit (10/100/1000) Ethernet
Hard disk storage	1024 GB SSD
Graphics subsytem	PCI-Express x16 2GB Single DVI-I 3D
Media drives	CD/DVD drive
Cabinets	Single, tower configuration

Orchestra Reconstruction Platform

Orchestra is a high Performance computing software library toolbox that enables new possibilities for integration of advanced reconstruction elements. Delivering enhanced productivity gains by minimizing image reconstruction times and eliminating delays between scans. A powerful platform not only built to support the most demanding applications such as HyperSense and HyperBand, but also to provide our collaborators with easy access to the product reconstruction algorithms.

Computing Platform

Operator Console

The SIGNA™ Architect 3.0T system comes equipped with a scan control keyboard assembly that contains intercom speaker, microphone and volume controls, and an emergency stop switch. Start-scan, pause-scan, stop-scan, and table advance to isocenter hot keys are also included.

Display and DICOM Data

The SIGNA™ Architect 3.0T system generates MR Image, Secondary Capture, Structured Report, and Gray Scale Softcopy Presentation State (GSPS) DICOM objects. The DICOM networking supports both send and query retrieve as well as send with storage commit to integrate with the site's PACS archive. DICOM filming support includes both Basic Grayscale and Basic Color Print Service Classes. Additionally, the SIGNA™ Architect 3.0T system supports the CT and PET image objects for display allowing the user to refer to cross-modality studies.

Display	
AutoView	560 x 560 Image Window (standard)
Window/Level (W/L)	7 user-programmable keys on scan control keyboard plus one key for returning to prior setting 6 user-programmable buttons in image viewer Arrow keys on scan control keyboard On-image through middle mouse button Save State stores user-selected image orientation, user annotation and window level
Image display	Zoom/Roam/Flip/Rotate/Scroll/Explicit Magnify and Magnifying Glass Image Measurement Tools Grid On/Off Cross Reference/User Annotation Exam/Series Page Hide Graphics/Erase Annotation/Screen Save Accelerator Command Bar Compare Mode/Reference Image Scoutview Cine Paging (up to 4 windows and 128 images/window) Add/Subtract/Edit Patient Data
Image display performance	256 Image buffer (256 x 256) at 30 fps
Image annotation	Shadowed to permit ease in reading Two graphic/text planes overlay the entire screen Grid placement with anatomical reference on an image Drawing and annotation may be added to and removed from images

Computing Platform (continued)

Filming	
Filming	Drag and Drop filming
	One-button Print Series
	One-button Print Page
	Multi-image formats – from 1 to 24 images displayed simultaneously in various layouts
	DICOM Basic Grayscale Print Service Class
	DICOM Basic Color Print Service Class

Wide-screen display monitor	
Display monitor	24" Widescreen LCD Flat Panel
	1920 x 1200 dot resolution
	Non-interlaced, flicker-free presentation
	Contrast ratio 1000:1
	Digital DVI Interface

Scan Parameters

Sequences	Parameters	Matrix 64	Matrix 128	Matrix 256	Matrix 512
2D Spin Echo	Min. TR (ms)	N/A	2.8 ms	3.5 ms	5.0 ms
	Min. TE (ms)	N/A	1.6 ms	2.0 ms	2.816 ms
2D Fast Spin Echo	Min. TR (ms)	N/A	3.4 ms	3.9 ms	8.1 ms
	Min. TE (ms)	N/A	1.6 ms	2.0 ms	2.792 ms
	Min. slice thickness			0.2 mm	
	Min. ESP (ms)	N/A	1.6 ms	2.0 ms	2.792 ms
	Max. ETL	N/A		480	480
3D Fast Spin Echo	Min. TR (ms)	N/A	48 ms	53 ms	74 ms
	Min. TE (ms)	N/A	6.9 ms	8.399 ms	11.073 ms
	Min. slice thickness			0.3 mm	
	Min. ESP (ms)	N/A	1.7 ms	1.7 ms	4.128 ms
	Max. ETL	N/A	395	395	395
2D Fast Gradient Echo	Min. TR (ms)	0.532 ms	0.66 ms	0.924 ms	1.324 ms
	Min. TE (ms)	0.184 ms	0.184 ms	0.188 ms	0.192 ms
3D Fast Gradient Echo	Min. TR (ms)	0.540 ms	0.660 ms	0.900 ms	1.270 ms
	Min. TE (ms)	0.184 ms	0.184 ms	0.18 ms	0.184 ms
Inversion Recovery	Min. TR (ms)	N/A	58.5 ms	59.4 ms	61.5 ms
	Min. TE (ms)	N/A	1.608 ms	1.952 ms	2.792 ms
	Min. TI (ms)	N/A	50 ms	50 ms	50 ms

Scan Parameters (continued)

Sequences	Parameters	Matrix 64	Matrix 128	Matrix 256	Matrix 512
3D FIESTA	Min. TR (ms)	0.940 ms	1.248 ms	1.930 ms	
	Min. TE (ms)	0.248 ms	0.324 ms	0.452 ms	
Echo Planar Imaging	Min. TR (ms)	4.0 ms	5.0 ms	6.0 ms	N/A
	Min. TE (ms)	1.1 ms	1.4 ms	1.8 ms	N/A
	Min. slice thickness	4 cm			
	ESP at 25 cm	0.456 ms	0.656 ms	1.056 ms	N/A
	ESP at 48 cm	0.328 ms	0.460 ms	0.672 ms	N/A
	ESP at 99 cm	0.228 ms	0.320 ms	0.556 ms	N/A
	Images per second	138	71	36	N/A
	b value	Maximum(s/mm2): 10.000 Max # for ADC: 40			
	Diffusion Tensor directions	Max: 150			
Minimum slice thickness in 2D					0.2 mm
Minimum slice thickness in 3D					0.1 mm
Min / Max FOV					10 mm / 500 mm
Min / Max Matrix					32-1024

GE Healthcare

SIGNA™ Architect

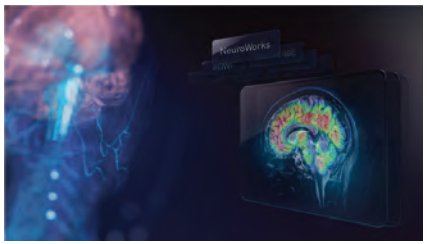
SIGNA™ Works

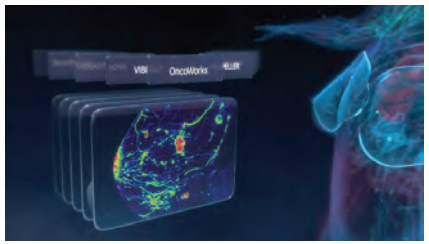
SIGNA™Works

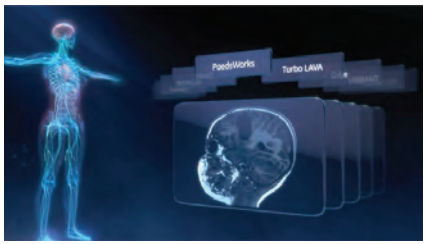
The latest software platform provided by GE, it includes the base pulse sequences, workflow enhancements and visualization tools to enable high productivity with exceptional quality and outcomes. SIGNA™Works, starting with the acquisition provides the tools needed to enable superb results in the various clinical fields. With 6 optimized Works categories, GE delivers preset protocols for the most demanding Neuro, Muskuloskeletal, CardioVascular, Body, Oncology and Paediatric areas. In addition to enabling the routine imaging, SIGNA™Works provides the user with a streamlined and efficient operating environment with in-line processing through single-click outcomes for even the most demanding processes.

SIGNA™Works provides:

- Software platform with a wide range of assets for image acquisition, display and post processing.
- Strategically packaged to deliver speed, high quality diagnostic images and reliable post processing to each clinical area.
- An intelligent combination of MR pulse sequences and advanced techniques, designed to bring solutions for enhanced care and productivity.
- From SE, FSE, FRFSE, Inversion Recovery, SSFSE, SSFSE-IR, GRE, FGRE, SPGR, FSPGR to Volumetric imaging, Motion Correction, Diffusion Weighted, Vascular imaging and beyond.







NeuroWorks

NeuroWorks includes the basic imaging acquisitions and processing along with the latest in motion correction, functional and volumetrics. Supporting both simple reconstruction and real-time perfusion results with Brainstat AIF.

Volumetric Imaging	
3D Cube	PD, T1, T2, T1 FLAIR and T2 FLAIR Isotropic high resolution volumetric One sequence, reformat in all planes
3D Cube DIR	DIR, typically but not limited to CSF and white matter suppression
BRAVO T1	BRAVO, 1 mm isotropic sequence of choice for functional data overlay
Visualization	3D reformat MPR Volume segmentation Volume rendering Auto-contour

Motion Correction	
PROPELLER MB	Multiple contrasts – T1, PD, T2, T1 Flair, T2 Flair and DWI Motion reduction Magnetic susceptibility effects reduction
Visualization	Registration Motion correction

One Touch Protocol	
READYBrain	Automated multi series, multi plane prescription Combine with Auto Scan for one touch protocol Inline for Auto Post processing

NeuroWorks (continued)

Enhanced Diffusion Weighted	
eDWI	Multi b-value 3:1, Tetrahedral Smart NEX Inversion recovery for robust fat sat RTFA: Increases SNR by 50% and distortion reduction for accurate post processing
Visualization	ADC and eADC

Spectroscopy	
PROBE PRESS	Concentrations of in-vivo metabolites evaluation Acquisition and display Reduced flip angles for lower min TE values Twice the SNR when compared to PROBE STEAM
Visualization	Brain Spectroscopy

Dynamic Brain Function	
BrainSTAT Perfusion and Analysis	Blood flow Blood volume Mean transit time Time to peak parametric Fusion
BrainSTAT (AIF) Arterial Input Function	Manage tracer arrival differences due to patient flow dynamics Automatically or manually specify the AIF to normalize maps
Visualization	Brain STAT

NeuroWorks (continued)

Spine Imaging	
2D/3D MERGE	High SNR T2* contrast Grey/white matter differentiation Foraminal detail
3D COSMIC	SSFP to emphasize T2 signal for improved contrast Nerve root and disc detail
Visualization	3D reformat MPR Volume segmentation Volume rendering

BodyWorks

The latest in Torso imaging is delivered with volumetric imaging supporting advanced Parallel imaging standard. Including, Snapshot imaging with optimized Single Shot FSE, 3D isotropic imaging for MRCP, Dynamic Imaging and Routine Volumetric imaging enabled with Motion Free navigation for post-contrast uses with high temporal resolution results. Motion correction is further enhanced with both the PB navigators as well as PROPELLER including T1 weighted results. Turbo class of acquisitions, streamlines the speed and enables higher quality results. Advanced processing is made one-touch with the new READYView on Console capabilities.

Volumetric Imaging	
3D Cube	Isotropic high resolution volumetric One sequence, reformat in all planes
3D Dual Echo	In- and out-of-phase Used to help identifying fatty infiltration, focal fatty sparing, liver lesions, and other conditions SNR increase up to 30% (compared to the 2D equivalent technique) High spatial resolution
Visualization	3D reformat MPR Volume segmentation Volume rendering Auto-contour

Motion Correction	
PROPELLER MB	Motion free
PB Navigators	Free breathing tracker
Respiratory Trigger	Free breathing bellows
Visualization	Registration Motion correction

BodyWorks (continued)

Enhanced Diffusion Imaging	
eDWI	Multi b-value, 3:1, Tetrahedral Smart NEX Inversion recovery for robust fat sat RTFA: Increases SNR by 50% and distortion reduction for accurate post processing
Visualization	ADC and eADC Fusion

Dynamic Brain Imaging	
LAVA	SPGR Fast Liver Acquisition SPECIAL for robust fat suppression
LAVA Turbo	ARC acceleration for full organ coverage Shorter breath holds
Multi Phase Dynaplan	Customizable phase delay for dynamic studies Series per phase Auto subtraction Pause after mask
Visualization	MR standard SER

BodyWorks (continued)

Non-Invasive Non Contrast Biliary System – MRCP	
3D FRFSE MRCP	T2 Prep for background suppression Breath hold and PB navigator
2D SSFSE	T2 weighted, with sub second single slice acquisition High signal from fluids Good suppression of other tissues Snapshot acquisition, motion artifacts virtually eliminated Thin slices and thick slab protocols Single breath hold acquisition MIP post processing
2D Fat Sat FIESTA	Excellent contrast between ducts and gallbladder with surrounding anatomy Fat sat for increased conspicuity
2D FRFSE	T2 weighted High resolution Supplementary information for assessment of extra ductal masses
Visualization	3D Reformat MPR MIP & HD MIP

CVWorks

CVWorks provides GE's extensive coverage for the latest techniques enabling high performance CardioVascular imaging outcomes. Single Breath-Hold imaging for whole heart coverage are available from Morphology to Delayed enhancement. Enabling simplified generation of superb results including head-to-toe MRA support to single acquisition Time of Flight and additional non-contrast imaging for flow. With SmartPrep and Fluoro triggering enabled for first time right contrast injections.

Viability Imaging	
MDE PLUS	
Single-Shot Myocardial Delayed Enhancement (SSH MDE)	Shorten breath-holds or free breathing for better patient tolerance Potential for reduced scan time Imaging arrhythmic patients Snapshot imaging for motion reduction
Adiabatic IR Pulse	Robust Myocardial Suppression Improved image quality near MR-Conditional Implants Fat Suppression Adiabatic fat suppression pulse Improved characterization of enhancing tissue
MDE Plus: Phase Sensitive MDE (PSMDE)	Inversion Recovery FGRE sequence Phase-sensitive image reconstruction Consistent myocardium suppression, even with sub-optimal TI Improved contrast for myocardium Potential to shorten overall exam time
CINE IR	Multiphase FGRE Cine acquisition...quick assessment of optimal TI time for MDE Captures image contrast evolution at different TI times Adiabatic Inversion Recovery for uniform myocardial suppression Support both 1 RR and 2 RR mode

CVWorks (continued)

Single Breath Hold Whole Heart	
Black Blood SSFSE	Difficult patients with irregular heartbeats or limited breath-hold capacity Potential to shorten exam times Shorten breath-holds for better patient tolerance Whole chest survey

Function	
FIESTA	Fast Cine with retrospective gating Fast Card with prospective gating

T2* Mapping	
StarMap	T2* mapping compatible with gating for cardiac evaluation Non-invasive evaluation of the entire organ
READY View	R2 Star

Navigator Free Breathing Acquisition	
PB Navigators	Used with 3D IR Prepared FGRE or 3D Fat Sat FIESTA Free breathing navigator diaphragm tracking

CVWorks (continued)

Flow Imaging	
Flow Analysis	Flow velocity and volume flow quantification Peak and average flow charts and graphics Automated contour detection Brain, chest and abdominal clinical applications

Contrast Enhancement Tracking	
SmartPrep	Automated bolus tracking
Fluoro triggered	Real Time bolus tracking
Visualization	MIP & HD MIP

Peripheral Vascular Runoff	
QuickStep	Multi-station, multi phase acquisition Automatically prescribes, acquires, and combines images from multiple stations Entire exam complete with no user intervention from 6 to 8 minutes Auto subtraction

Non Contrast Vascular Imaging	
2DTOF	Carotid bifurcation, venous anatomy, aortic arch, peripheral vesselsr
3DTOF	Circle of willis, intracranial vasculature, abdominal vasculature
3DTOF Multi Slab	Intracranial vasculature, carotid bifurcation, aortic arch, peripheral vessels, venous anatomy
2D Phase Contrast	Localizer, flow direction and velocity for intracranial and extracranial vasculature, portal or hepatic vein, quantitative measurement of flow velocity
3D Phase Contrast	Intracranial vasculature, renal arteries
Visualization	MIP & HD MIP

Ortho™Works

Ortho™Works delivers routine imaging that is not always a given. From motion correction to advanced volumetric imaging, GE's latest MSK techniques provide you with the contrasts you need for the basic imaging to enhanced cartilage imaging. And with multiple tissue suppression methods available, Ortho™Works enables the best of what can be achieved in a standard configuration.

High Resolution Imaging	
FSE & FRFSE	Intermediate PD, T1, T2 weighted imaging Compatible with all fat suppression methods Gold standard for articular cartilage, cartilage ligaments, menisci and subcondral bone

Volumetric Imaging	
3D Cube	PD, T1, T2, T1 FLAIR and T2 FLAIR Isotropic high resolution volumetric One sequence, reformat in all planes
Visualization	3D reformat MPR Volume segmentation Volume rendering

Motion Correction	
PROPELLER MB	Multiple contrasts – T1, PD, T2, T1 Flair, T2 Flair and DWI Motion reduction
Visualization	Registration Motion correction

OrthoWorks (continued)

T2* Weighted Imaging	
3D MERGE	High SNR T2* contrast Visualization of ligaments while adding soft tissue contrast Reduced chemical shift
3D COSMIC	Fast, high resolution volumetric imaging SSFP to emphasize T2 signal for improved contrast
Visualization	3D reformat MPR Volume segmentation Volume rendering

Artifact Reduction Standard Sequence	
MARS	FSE High bandwidth protocols High resolution, small FOV imaging

Fat Supression	
Chemical Fat Sat	Frequency selective fat saturation
STIR	Inversion recovery fat null point method
ASPIR	Solution for poor fat suppression due to B1 inhomogeneity
SPECIAL	Hybrid method between chemical fat sat and STIR
Spectral Spatial	Water excitation only

OncoWorks

Onco™Works delivers a complete platform for your needs in Prostate, Breast and Radiation Therapy planning. From the basic routine acquisitions to whole body imaging including volumetric and enhanced diffusion capabilities, GE enables superb linearity from the gradient platform and hardware performance. GE provides the necessary preset protocols to supply you with optimal imaging for your oncology needs that is further enhanced visualization capabilities so that your results can be a single click away.

Volumetric Imaging	
3D Cube	PD, T1, T2, T1 FLAIR and T2 FLAIR Isotropic high resolution volumetric One sequence, reformat in all planes
3D Cube DIR	DIR, typically but not limited to CSF and white matter suppression
BRAVO T1	BRAVO, 1 mm isotropic sequence of choice for functional data overlay
Visualization	3D reformat MPR Volume segmentation Volume rendering Auto–contour

Enhanced Diffusion Weighted	
eDWI	Multi b-value 3:1, Tetrahedral Smart NEX Inversion recovery for robust fat sat RTFA: Increases SNR by 50% and distortion reduction for accurate post processing
Visualization	ADC and eADC

OncoWorks (continued)

Dynamic Imaging	
Multi-phase SPGR	SPGR dynamic fast acquisition SPECIAL for robust fat suppression
Visualization	MR standard SER

Whole Body Scanning	
FSE-IR / 3D SPGR / DWI	Whole body imaging Multiple stations with large FOV Metastasis screening

PaedWorks

Paed™Works is the GE solution to address your specific needs in Paediatric imaging, from standard sequences supported with the latest in motion control for brain to toes. GE delivers standard acoustic reduction technologies and further addresses clinical needs for volumetric imaging, whole body imaging and enhanced diffusion results. The streamlined processing enables simplified one-click processing and visualization of complex results. Paed™Works covers your needs for all anatomies and provides optimized protocols and preset procedures.

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Visualization	3D reformat MPR Volume segmentation Volume rendering

PaedWorks (continued)

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Dynamic Brain Function	
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PaedWorks (continued)

Spectroscopy	
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Visualization	Brain spectroscopy

Spine Imaging	
2D/3D MERGE	High SNR T2* contrast Grey/white matter differentiation Foraminal detail
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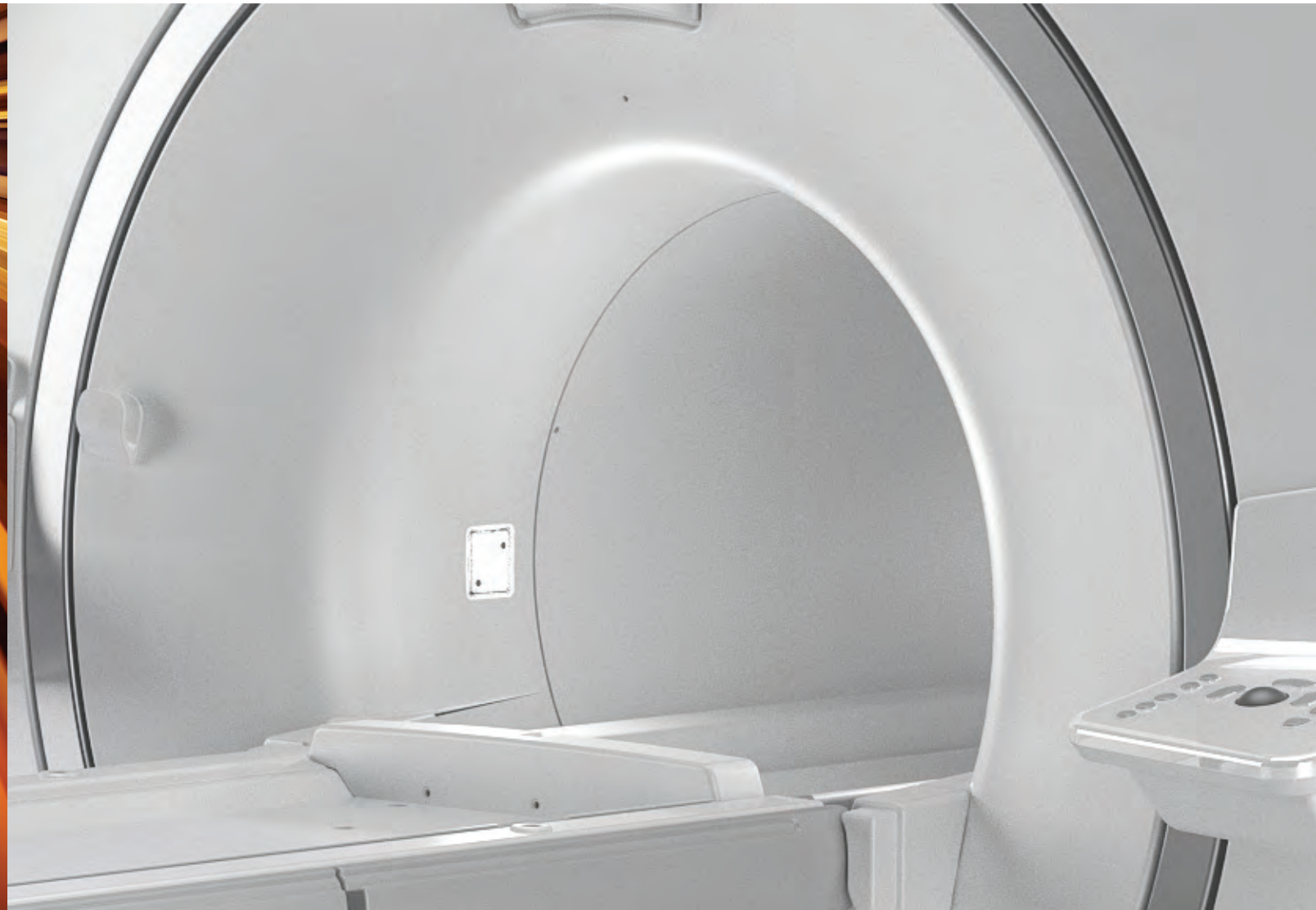
Visualization	3D reformat MPR Volume segmentation Volume rendering

GE Healthcare

SIGNA™ Architect

SIGNA™ Works Features



HyperSense

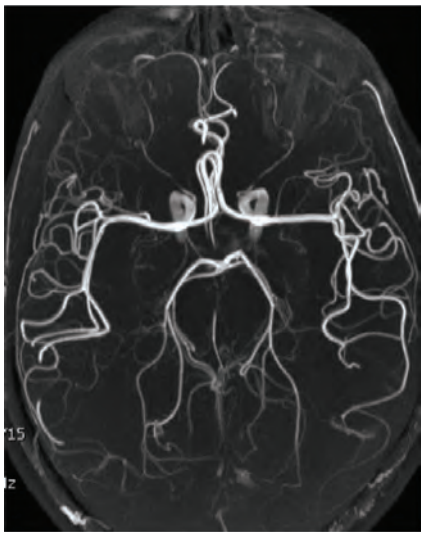
Benefits

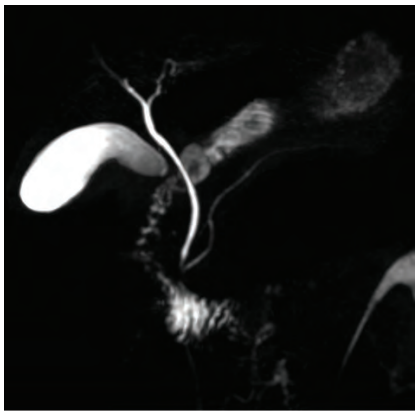
- Increase productivity by reduced scan times
- Faster 3D isotropic imaging acquisitions
- Enhance patient comfort with shorter breath holds
- Acceleration independent of coil geometry while maintaining SNR efficiency
- Combined with ARC for higher acceleration factors

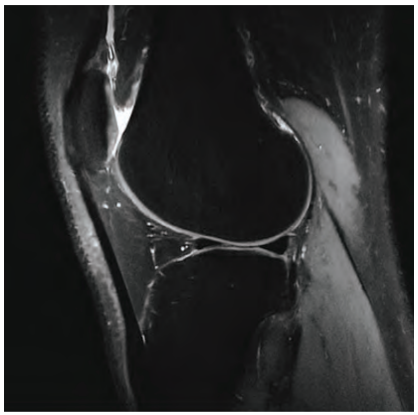
Going further than common sense

HyperSense is an acceleration technique based on sparse data sampling for up to 50% scan time reduction without compromising image quality*. The application is not restricted by pulse sequence, anatomy or coil.

Most beneficial to volumetric acquisitions, it can be combined with other methods of acceleration (ARC) for achieving optimal signal to noise ratio with shorter acquisition times. HyperSense delivers higher spatial resolution images with reduced scan times.







*Compared to conventional techniques.

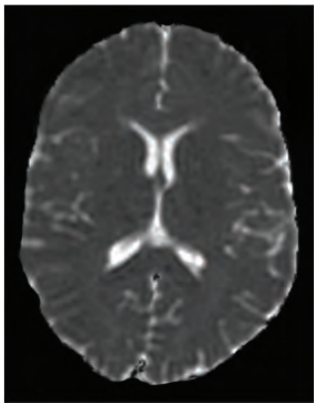
HyperBand

Benefits

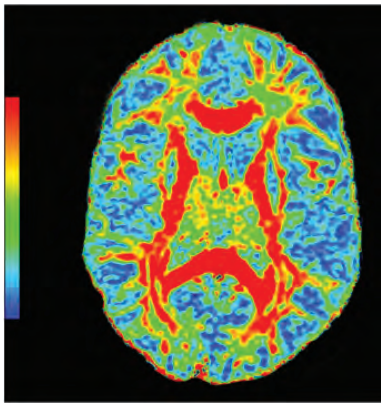
- Simultaneous excitation: multiple slices at multiple locations
- Acquisition time reduction without compromising postprocessing metrics
- More diffusion directions, number of slices or higher temporal resolution without extra scan time
- Shorter breath holds
- Combine with ARC for higher acceleration factor

Quality and Speed Synchronized

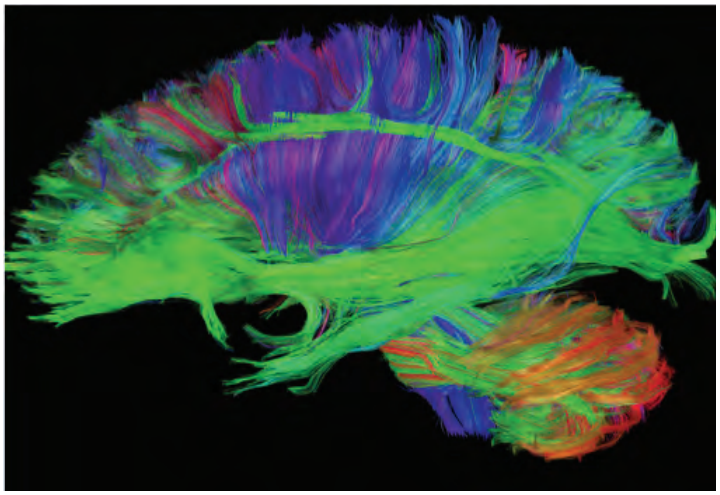
HyperBand provides a reduction in scan time by simultaneously exciting multiple slices at multiple locations. It can lead to higher acceleration reduction factors when combined to other methods of parallel imaging. The benefits of HyperBand acceleration include enhancements on productivity and patient experience by shortened breath holds, increased anatomy coverage and higher resolution image acquisition.



ADC Map



FA Map



FiberTracks

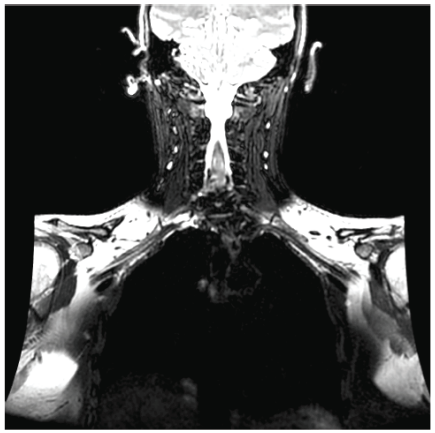
HyperCube

Benefits

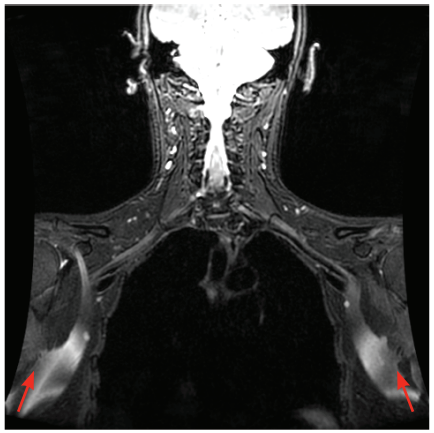
- Significant scan time reduction without compromising image quality
- High resolution small FOV isotropic volumetric imaging
- Motion artifact reduction
- FLEX for large FOV robust fat suppression

Tailored 3D imaging that fits to perfection

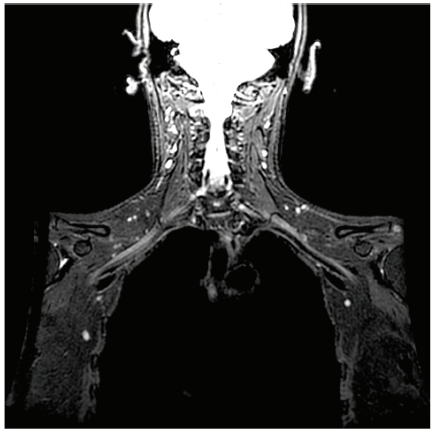
Delivers small field of view organ specific volumetric imaging acquisition that reduces artifacts caused by motion outside the prescribed field of view. HyperCube can be applied with or without fat suppression using Flex or chemical saturation methods. Provides significant savings of imaging time without sacrificing SNR or contrast quality and it can be used across the entire body.



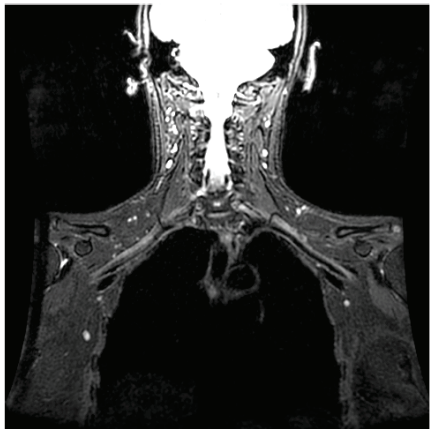
FatSat Failure
Chem GatSat



Arm wrap causing swaps
Cube with Flex

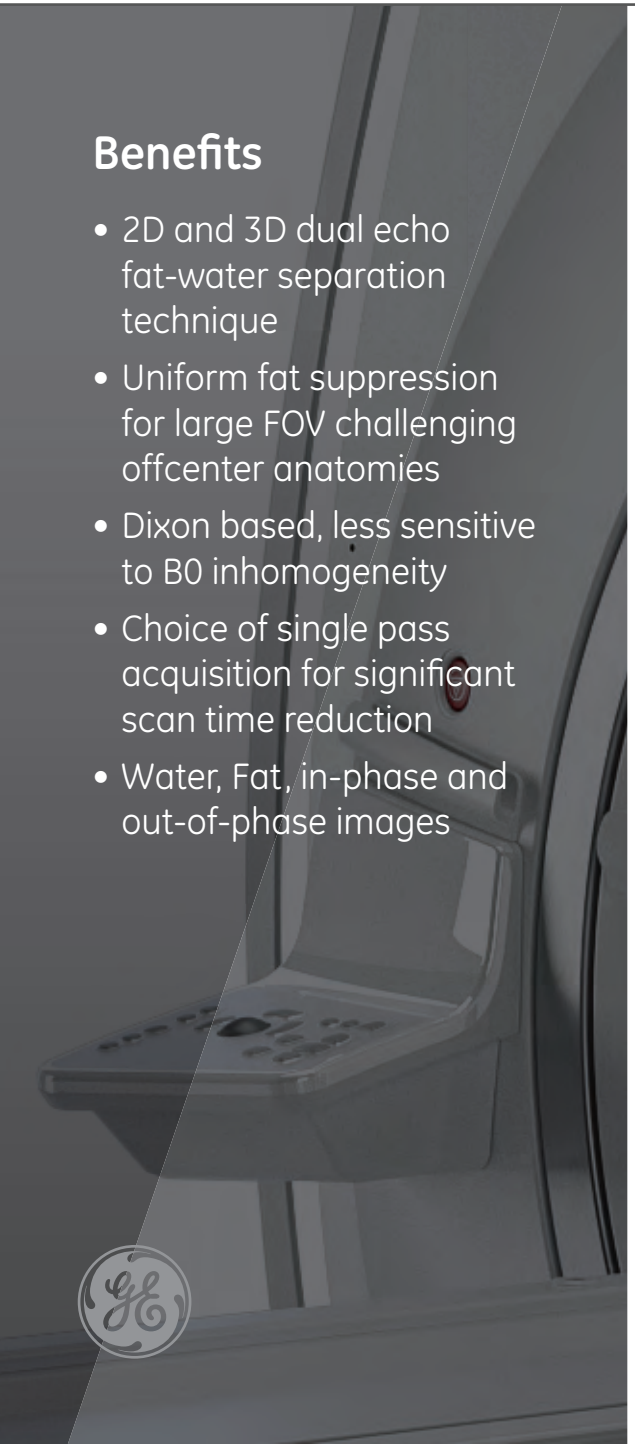


Time 3:37
HyperCube with Flex



Time 2:37
HyperCube with Flex and HyperSense

Flex for Cube and FSE

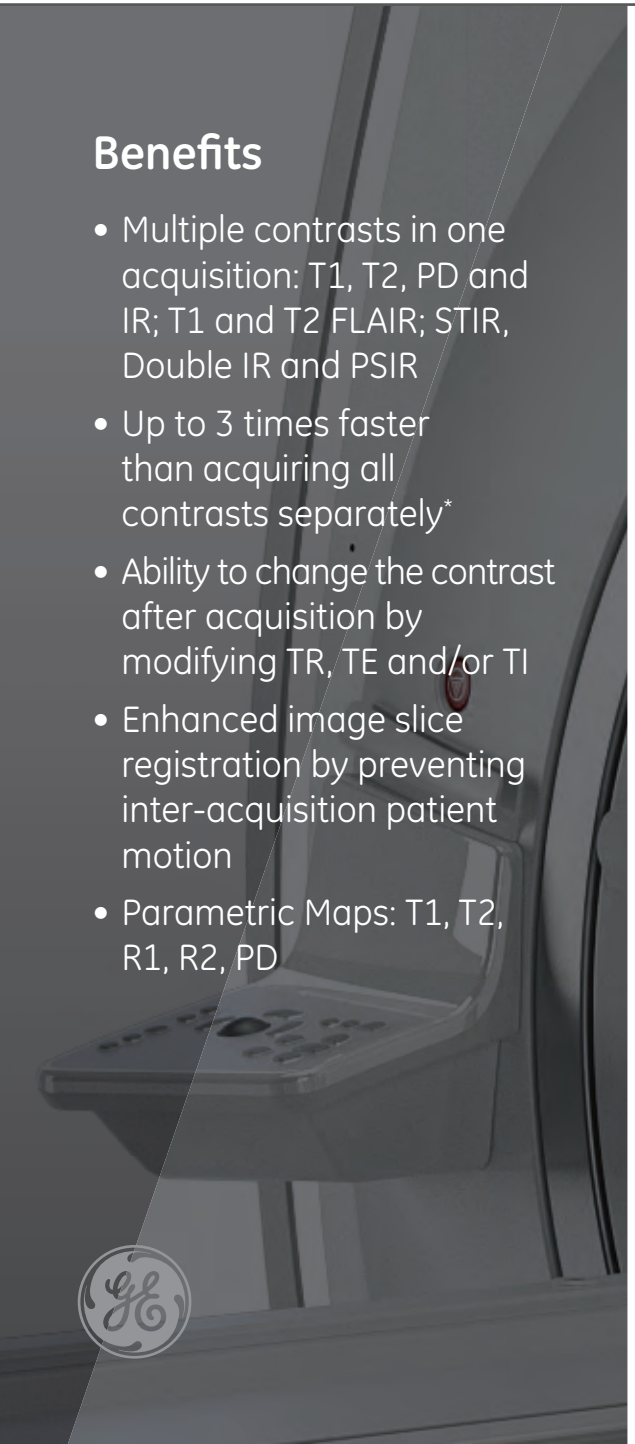


Benefits

- 2D and 3D dual echo fat-water separation technique
- Uniform fat suppression for large FOV challenging offcenter anatomies
- Dixon based, less sensitive to B0 inhomogeneity
- Choice of single pass acquisition for significant scan time reduction
- Water, Fat, in-phase and out-of-phase images

Unlimited solutions, consistent results

Flex uses a dual echo fat-water separation technology to provide robust and homogeneous fat suppressed images. Flex is compatible with ARC acceleration and can be used with a fast triple echo selection for significant scan time reduction. Enhanced uniformity and control of fat water swaps allow large field of view and off-center imaging where uniformity is a challenge. Delivering fast 2D and 3D acquisitions with reconstructed in-phase, out-of-phase, water and fat images, Flex represents productivity gains in all clinical areas.

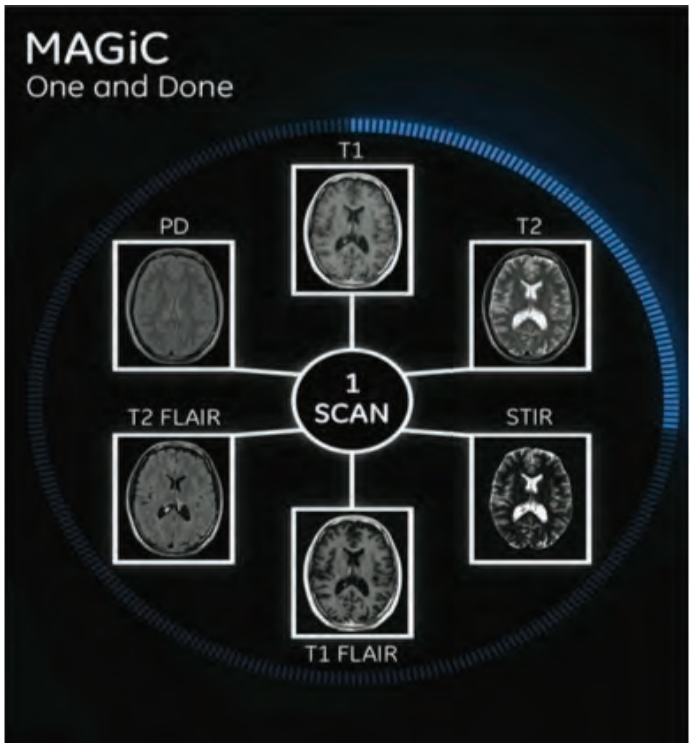


Benefits

- Multiple contrasts in one acquisition: T1, T2, PD and IR; T1 and T2 FLAIR; STIR, Double IR and PSIR
- Up to 3 times faster than acquiring all contrasts separately*
- Ability to change the contrast after acquisition by modifying TR, TE and/or TI
- Enhanced image slice registration by preventing inter-acquisition patient motion
- Parametric Maps: T1, T2, R1, R2, PD

One and Done

MAGiC (MAGnetic resonance image Compilation), enables one and done imaging capability by delivering multiple contrasts in a single scan. MAGiC utilizes a multi-delay, multi-echo acquisition. The data acquired is processed using a technique to generate T1, T2, PD and Inversion Recovery (IR) (including: T1-FLAIR, T2-FLAIR, STIR, Dual and PSIR weighted images), all at once. Because of the efficiency of MAGiC, the user has the flexibility to explore more advanced imaging, such as Spectroscopy**, Susceptibility Weighted Imaging** etc., in the same time required to perform the routine exam without MAGiC.

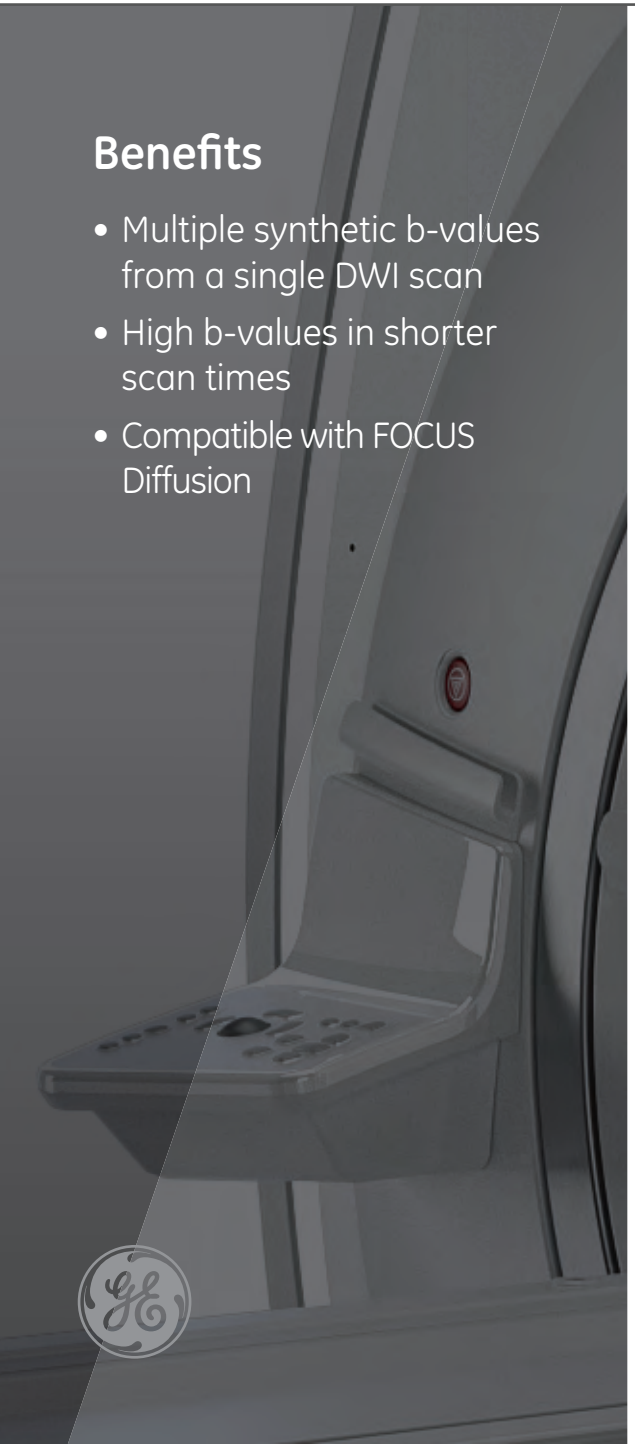


One MAGiC scan defivers six contrasts

*Actual results may vary depending on the number of desired contrasts. Data on file (based on MAGiC neuro protocol).

**Optional package (MAGiC in itself does not deliver advanced imaging).

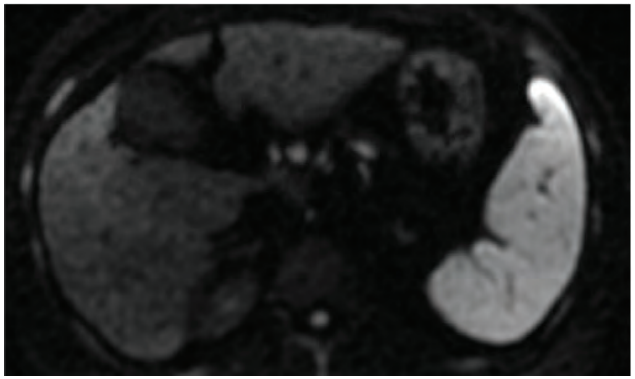
MAGiC DWI



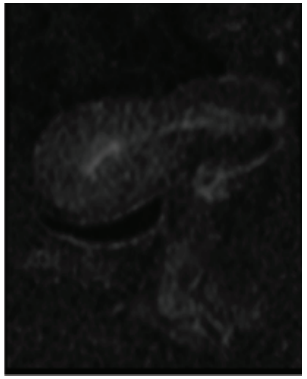
Benefits

- Multiple synthetic b-values from a single DWI scan
- High b-values in shorter scan times
- Compatible with FOCUS Diffusion

Synthetic diffusion generates multiple synthetic b-values from a single DWI scanned series allowing the user to view diffusion contrasts changes in real time after the acquisition. It delivers high b-values without stressing protocol parameters and resulting in shorter scan times without sacrificing signal to noise, contrast or anatomy coverage. Synthetic Diffusion is not limited to diffusion directionality or coil type.

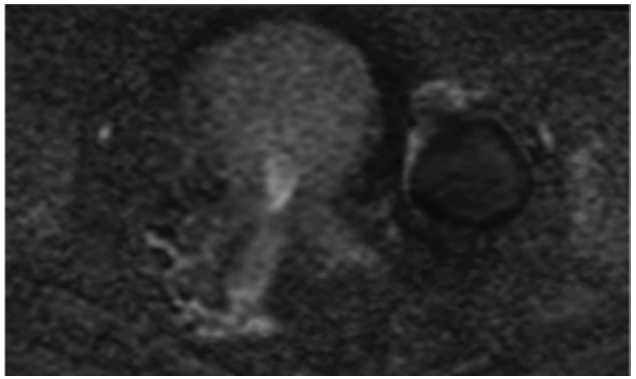


Synthetic b value = 1000

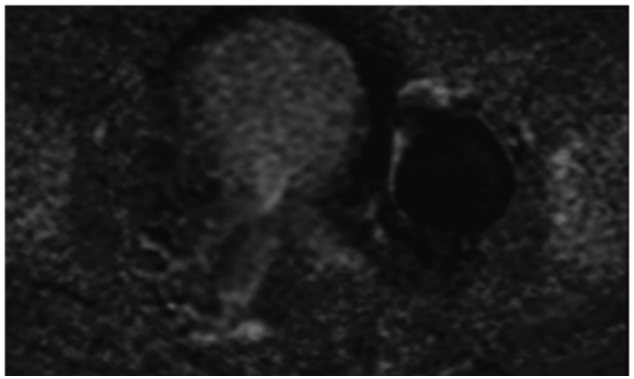


Synthetic b value = 1400

Synthetic b value = 2000



Synthetic b value = 1400



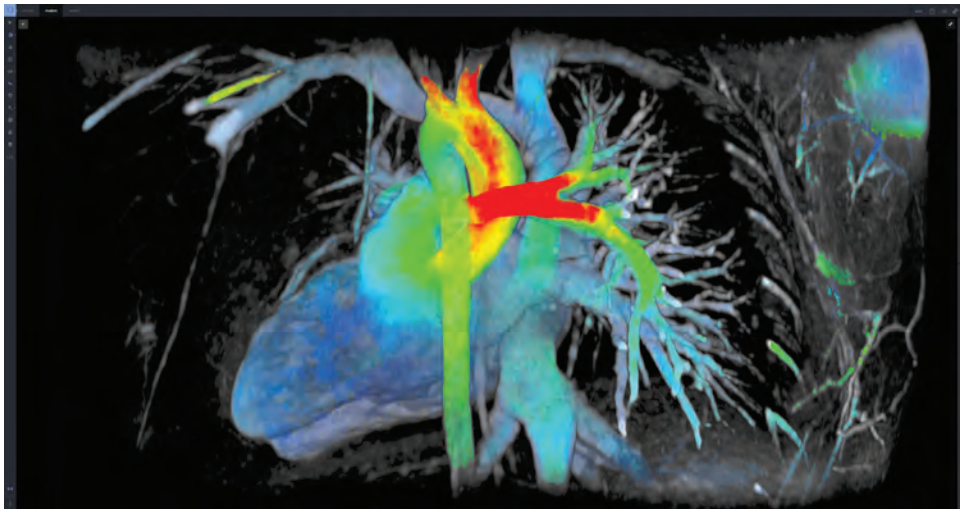
Synthetic b value = 2000

Benefits

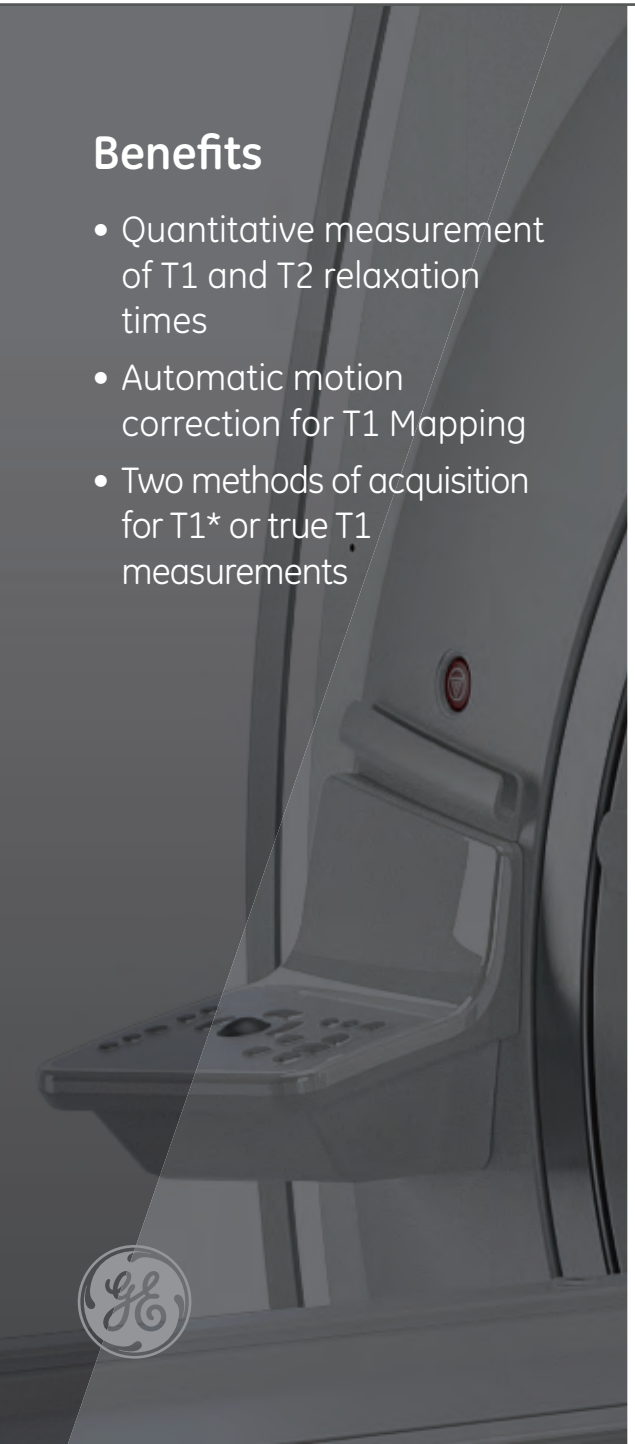
- 3D cine acquisition in any dimension
- Free breathing whole chest coverage
- Allows velocity encoding in all directions
- Single and view sharing frames for higher temporal resolution
- Effortless workflow

Confident Functional Accuracy

Vios is a 3D cine based acquisition that can be planned in any dimension and allows for velocity encoding in all directions to assess vascular flow. The acquisition delivers fast imaging with the use of Hyperkat acceleration including both, single and view sharing frames for higher temporal results. Provides high spatial resolution to enable visualization of flow through complex structures.



CardioMaps

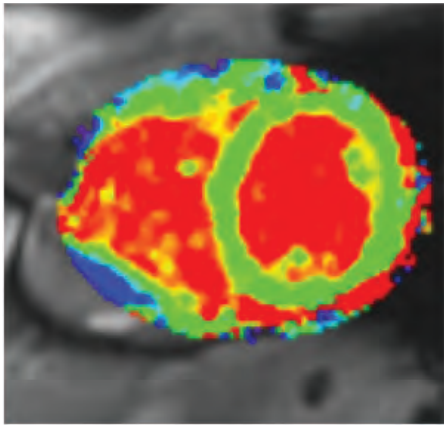


Benefits

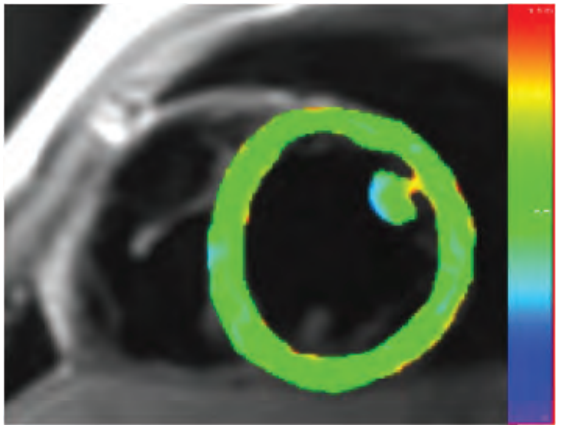
- Quantitative measurement of T1 and T2 relaxation times
- Automatic motion correction for T1 Mapping
- Two methods of acquisition for T1* or true T1 measurements

Achieving measurable benefits

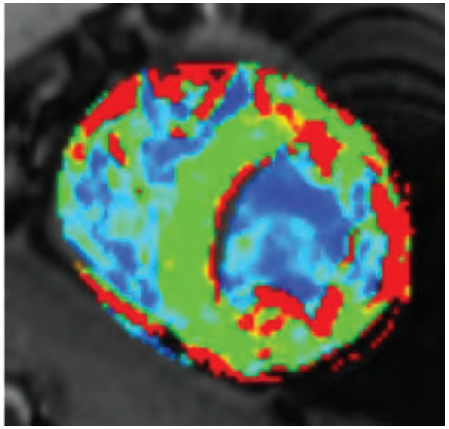
Powerful diagnostic technique that supports detection of cardiac pathologies by quantitative measurement of T1 and T2 tissue characteristics. The T1 Mapping acquisition includes automatic motion correction that compensates for cardiac and/or respiratory motion, providing reliable results. T1 Mapping offers two methods of acquisition: Inversion-recovery Look-Locker with FIESTA readout (MOLLI) for apparent T1 (T1*) measurements or saturation-recovery SMART1Map for true T1 measurements.



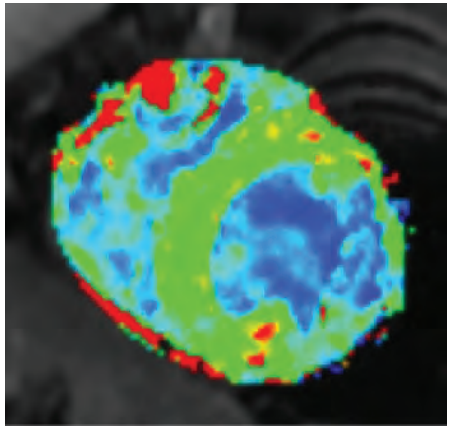
T1 CardioMap



T2 CardioMap



T1 CardioMap
Without Motion Correction



T1 CardioMap
With Motion Correction

GE Healthcare

SIGNA™ Architect

Image Acquisition

Pulse Sequences

SPIN Echo	
SE FSE FrFSE	Standard pulse sequences that are used to generate T1, Proton Density and T2 contrasts. The FSE technique enables long TR and long TE choices in reduced scan times. frFSE produces images with more T2 contribution allowing shorter TR values and resulting in shorter scan times when compared to FSE.
IR FSE-IR	IR techniques provide uniform suppression of tissues by applying an inversion pulse to null signal. FSE-IR reduces scan time while still achieving efficient tissue suppression.
3D FSE 3D frFSE	Three-dimensional imaging acquisitions mostly used for T2 weighted contrast.
T1 FLAIR T2 FLAIR	T1 and T2 Fluid Attenuated Inversion Recovery (FLAIR) pulse sequences allow the suppression of signal from cerebrospinal fluid (CSF). This sequence provides contrast to differentiate white and gray matter to T1- and T2-weighted brain and spine imaging.
Double IR/Triple IR (Black Blood)	These pulse sequences are included to allow black-blood imaging for studies of cardiac morphology. Triple IR adds fat suppression to black-blood imaging. It also can be combined with Single Shot.
Double IR/Triple IR Single Shot	Single Shot Black Blood acquisitions allow larger volume acquisitions in fewer breath holds.
SSFSE SSFSE-IR	Single Shot Fast Spin Echo is a technique that permits single slice data acquisition in less than one second. It is frequently used for MRCP studies in a single breath hold and myielograms.
3D MRCP	3D FRFSE sequence that combined with the T2 Prep option provides improved background tissue suppression for MRCP exams.
T2 MAP*	T2 MAP is a multiple acquisition; multiple echoes FSE based method to obtain images that represent different T2 weighting values. The acquired data is processed to produce T2 color maps that are used for cartilage evaluation.

*Optional

Pulse Sequences (continued)

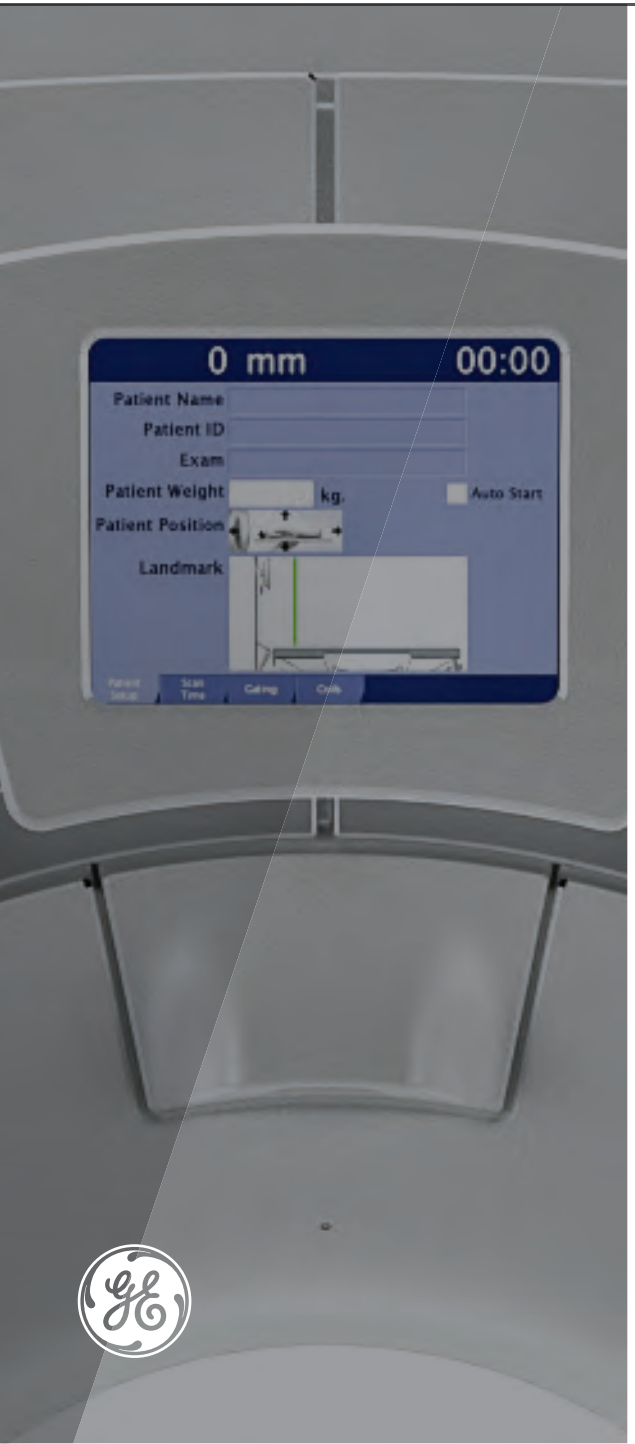
SPIN Echo (Continued)	
Cube Cube FLAIR	3D FSE technique that applies modified refocusing pulses for increased SNR. It is used to acquire isotropic data that can be reformatted in any plane.
Cube DIR	Cube DIR, double inversion recovery, is designed to achieve signal suppression from either gray or white matter and CSF.
Cube PROMO*	Prospective Motion correction is a real time 3D navigator based motion correction technique compatible with CUBE T2, Cube DIR and CUBE T2 FLAIR.
2D IDEAL*	2DFSE 3-point Dixon Water Fat Separation method that acquires 4 contrasts in one acquisition: Water, Fat, in-phase and out-of phase.
MAVRIC SL*	Multi-Spectral imaging technique designed to reduce metal artifact near MR Conditional implants. The sequence provides T1, PD or STIR contrast.
3D ASL*	3D FSE based technique that uses a “labeling” pulse to quantify cerebral blood flow.

*Optional

Gradient Echo	
2D and 3D GRE/SPGR 3D GRE Dual Echo 2D and 3D FGRE/FSPGR 2D MFGRE (Multi Echo) 2D CINE GRE / SPGR	Gradient echo basic techniques offer a variety of possibilities to support imaging of all anatomies and can be acquired in 2D, 3D and Cine modes. The sequences generate T1 or T2 contrasts and support single, dual and multi echo acquisitions.
2D and 3D MDE	Myocardial delayed enhancement is a technique used for tissue characterization to provide the assessment of myocardial perfusion.
PSMDE	Phase sensitive MDE increases the contrast between enhanced and normal tissue even with non-optimal inversion delay times.
SSMDE and SSPSMDE	MDE and PSMDE single shot fiesta based sequence that provides multi slice coverage with reduced breath hold times and optimized fat sat for better contrast visualization.
2D and 3D FIESTA 2D FIESTA CINE 2D Fat Sat FIESTA 3D FIESTA-C	Fast Imaging employing steady-state acquisition generates great contrast differentiation between tissues of low T2/T1 ratios and high T2/T1 ratios. Provides high SNR images in short acquisition times. FIESTA sequences offer benefits for Neuro, Cardiac and Abdominal imaging.

*Optional

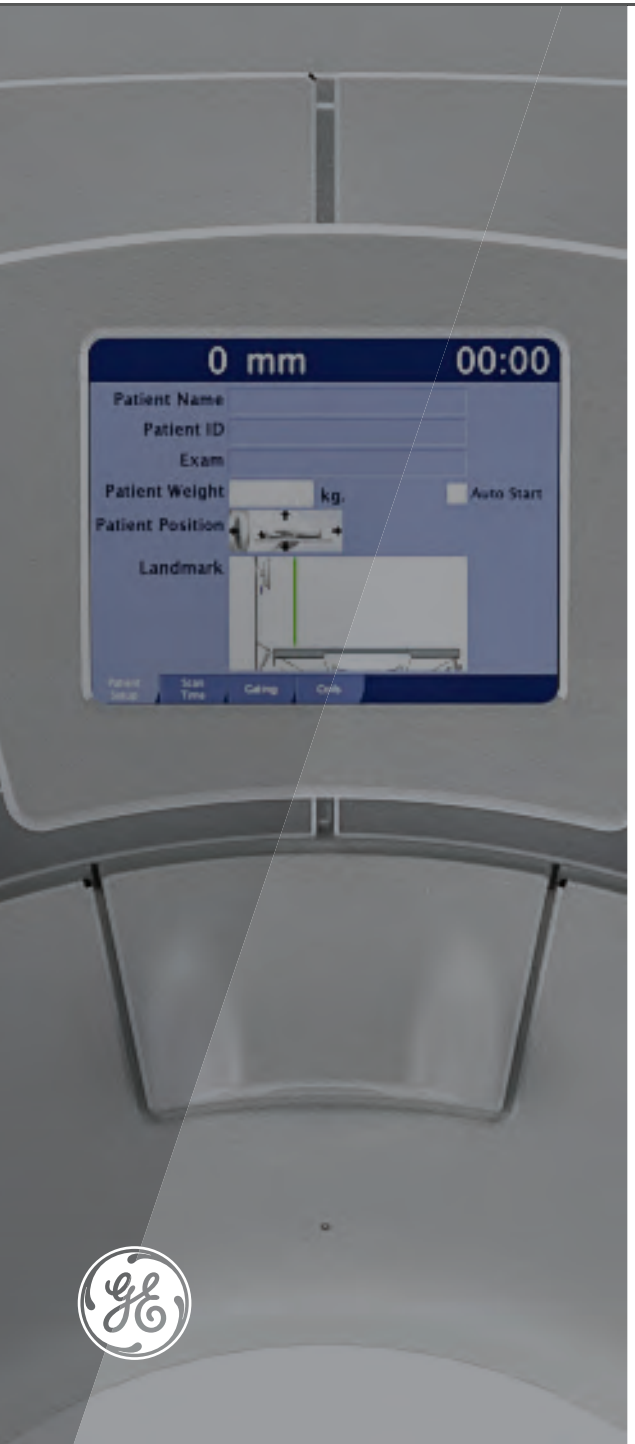
Pulse Sequences (continued)



Gradient Echo (Continued)	
2D and 3D MERGE FGRE	T2* contrast technique that acquires multiple echoes at several different TE values.
2D Fastcard GRE/SPGR	Prospective gating sequence designed for breath hold, aortic arch gated imaging.
2D FastCINE GRE/SPGR	Retrospective gating sequence, beneficial to cardiac wall motion studies, assessment of valve function and visualization of regurgitation and stenosis.
2D FGRE-ET* 2D FGRE-ET Realtime*	Fast gradient echo sequence combined with an EPI echo train for acquiring multiple phase encoding steps per TR. Used for first pass myocardial perfusion studies. Compatible with real time for cardiac planning and imaging uncooperative patients.
2D FGRE TC*	Fast Gradient Time Course used for myocardium tissue evaluation on first pass studies. Allows multiple planes radial acquisitions.
2D CINE-IR	FAST-CINE GRE IR Prep sequence is designed for myocardial viability studies. Supports TI time selection for consistent results.
2D Realtime FGRE/FIESTA	Free breathing, real time planning sequence for whole heart coverage.
2D Tagging*	Fast Cine GRE based sequence for visualization of cardiac contractile function.
3D Heart*	3D FGRE/FIESTA navigated sequence for free breathing coronary artery imaging.
3D COSMIC	Coherent oscillatory state acquisition for the manipulation of imaging contrast is a modified FGRE sequence with steady-state free precession segmented acquisition for high SNR, high contrast spine imaging.
3D LAVA	Liver Acquisition with Volume Acceleration is a 3DSPGR technique designed to image the liver. SPECIAL is the fat suppression method applied and parallel imaging provides shorter scan times.
3D LAVA Flex*	3D FSPGR technique that acquires in-phase, out-of-phase, water only and fat only images in one acquisition. LAVA Flex uses ARC; a self calibrated 2D parallel imaging technique that allows acceleration in phase and slice direction.
3D Turbo LAVA 3D Turbo LAVA Flex*	Turbo mode reduces the RF pulse width, which shortens the TR, decreasing scan time.

*Optional

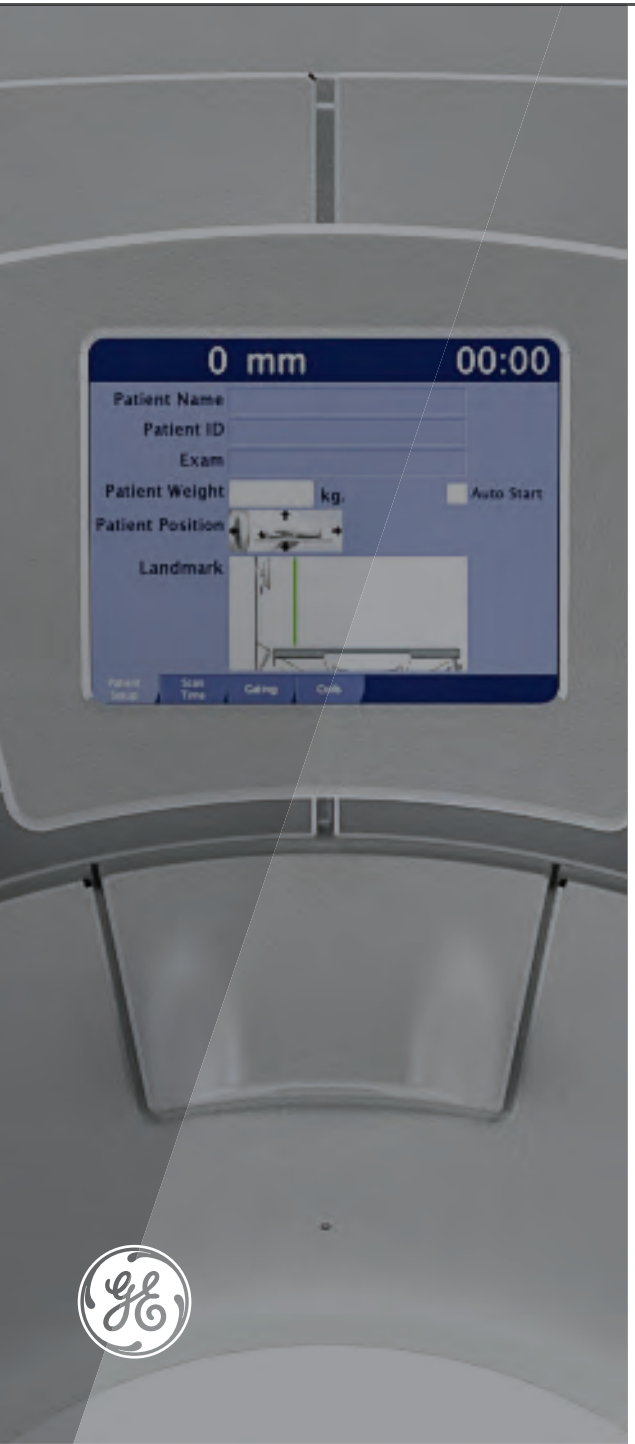
Pulse Sequences (continued)



Gradient Echo (Continued)	
3D VIBRANT*	Simultaneous bilateral breast imaging technique in the axial and sagittal plane. SPECIAL and dual-shim volume capabilities provide homogeneous fat suppression.
3D VIBRANT Flex*	Acquires in-phase, out-of-phase, water only and fat only images in a single scan. It provides robust fat saturation and applies ARC, 2D self calibrated acceleration method for high spatial and temporal resolution images.
3D QuickSTEP	QuickStep is an automated multi-station run-off acquisition. This application automatically prescribes, acquires, and combines images from multiple stations for fast acquisition and simplified workflow
3D TRICKS*	The time resolved imaging of Contrast KineticS (TRICKS) is a fast 3D dynamic acquisition for high temporal and spatial resolution MR angiography imaging. Combined with elliptical-centric data sampling for consistent results.
3D SWAN*	High-resolution susceptibility weighting 3D multi echo gradient acquisition designed for small vessels visualization, as well as large vascular structures and iron or calcium deposits in the brain.
3D IDEAL*	IDEAL is a 3-point dixon water fat separation method that generates in-phase, out-of-phase, water images and fat images in one single scan. Provides homogeneous fat saturation for imaging for challenging anatomies as such as neck and spine.
3D IDEAL-IQ*	Whole liver 3D coverage in a single breath-hold, IDEAL IQ provides a non-invasive, quantitative assessment of triglyceride fat content in the liver that can aid in diagnosing steatosis.
StarMap*	StarMap is an acquisition and post processing technique that helps evaluate iron content in the heart and liver. Multiple echoes are acquired at different TE times for each pixel resulting in images that represent variations of T2* weighting. After the acquisition the images are post processed to generate color and gray scale T2* and R2* Maps.
DISCO*	Differential sub-sampling with cartesian ordering, combine TRICKS and LAVA Flex technologies to acquire high temporal resolution 3D dynamic images with robust fat suppression and without compromising spatial resolution.

*Optional

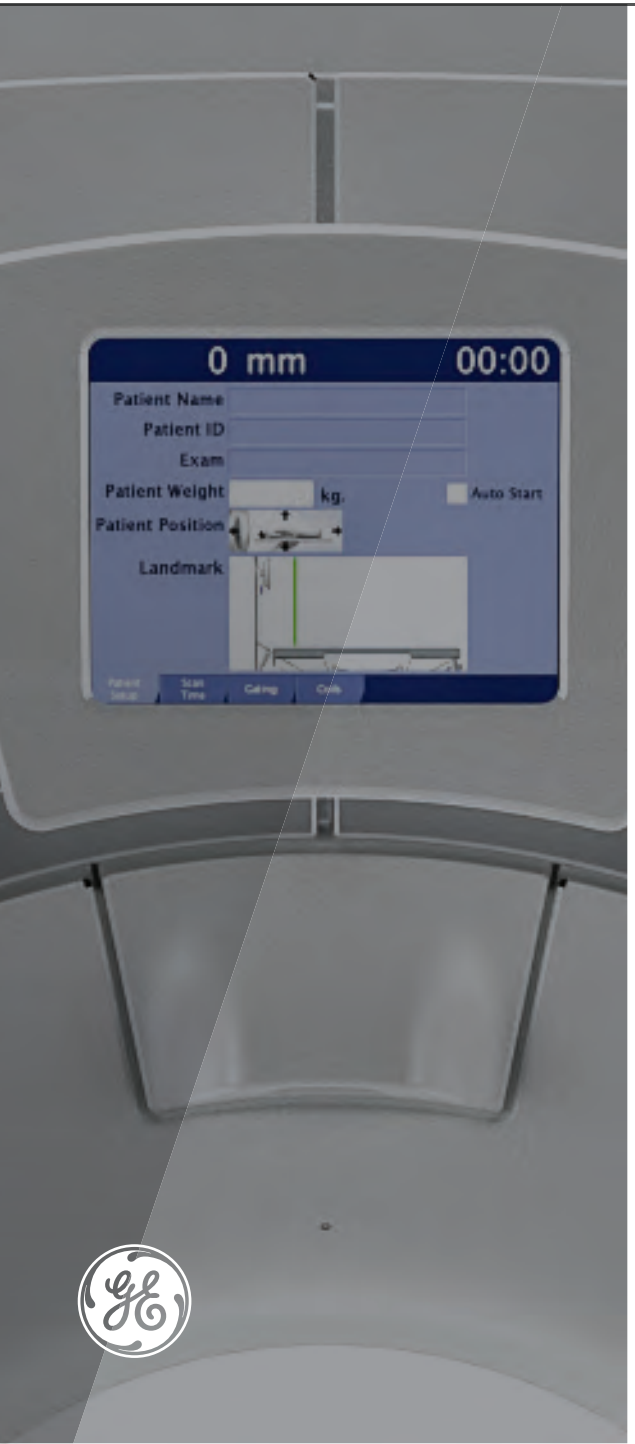
Pulse Sequences (continued)



Vascular	
Inhance Inflow IR*	3D Fiesta based non-contrast-enhanced MR angiography technique that provides static background tissue and venous flow suppression for imaging arteries. It uses SPECIAL for uniform fat suppression and respiratory gating compatibility reduces respiratory motion artifacts during free-breathing renal exams.
Inhance 3D Velocity*	3D Phase Contrast based technique designed to acquire angiographic images in brain and renal arteries with robust background suppression in a short scan time. Respiratory triggering compatibility enabling abdominal angiography.
Inhance 2D Inflow*	Designed for imaging arteries that follow almost a straight path (i.e. femoral, popliteal, and carotid arteries) Inhance 2D Inflow acquires data during the systolic phase only. Compatible with Respiratory Gating and ASSET.
Inhance 3D Delta Flow*	3D FSE cardiac gated based non-contrast-enhanced MRA application designed for peripheral arterial imaging. This technique uses the differences between systolic and diastolic flow to help generate arterial signal contrast with robust background and venous suppression. ASSET compatibility provides shorter scan times.
2D TOF 2D Gated TOF 2D Fast TOF FGRE/SPGR 3DTOF 3D Fast TOF FGRE/SPGR 2D CINE	2D TOF Imaging, 2D Gated TOF Imaging, 3D TOF Imaging and Enhanced 3D TOF Imaging are used for MR angiography imaging. Based on conventional gradient echo scanning, TOF imaging techniques rely primarily on flow-related enhancements to distinguish moving from stationary spins.
2D CINE Phase Contrast 2D FastCINE Phase Contrast	This pulse sequence is included specifically for studies of cardiac function. Through the use of retrospective gating, it allows full R-R coverage.
2D Phase Contrast 3D Phase Contrast	These techniques demonstrate flow velocities and directional properties in vessels and other moving fluids such as CSF and aortic flow.

*Optional

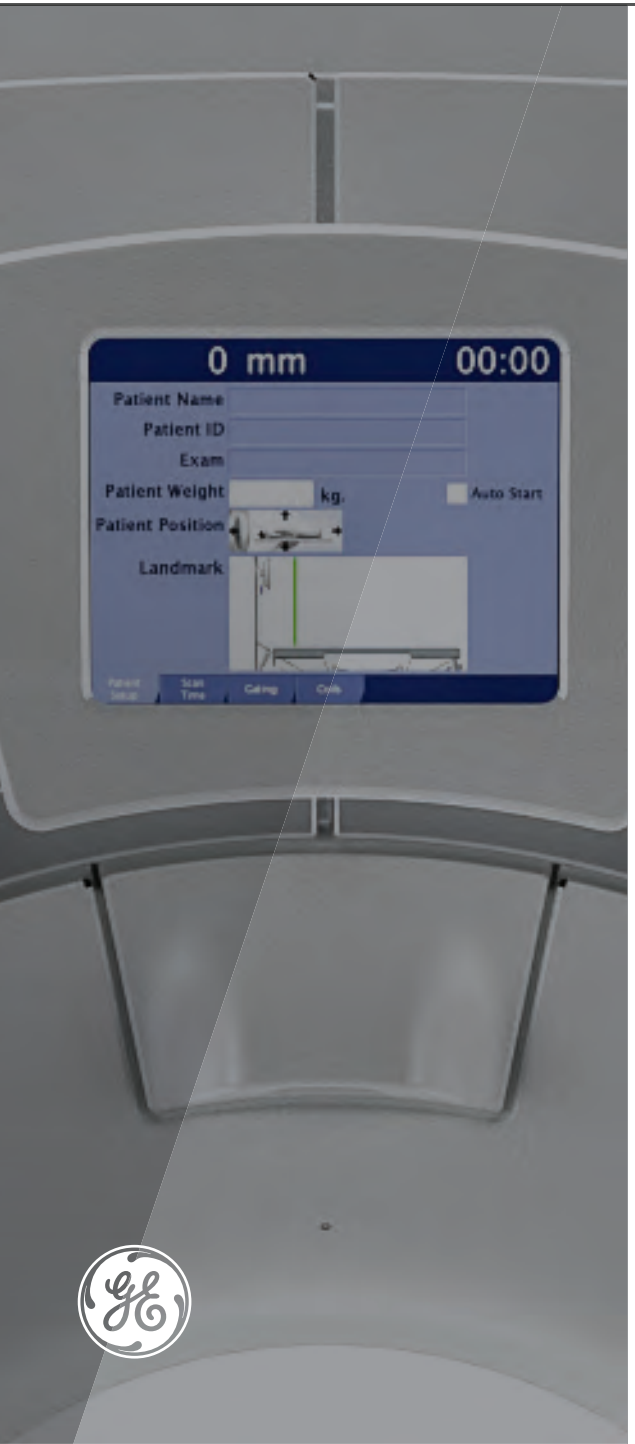
Pulse Sequences (continued)



EPI	
fMRI – BrainWave*	Real time acquisition, processing and display of functional imaging.
GRE-EPI SE-EPI FLAIR-EPI DW-EPI	Standard on all systems are gradient echo, spin echo, flair, and diffusion weighted echo planar imaging. The EPI sequence supports single and multishot imaging, multi-phase imaging, as well as cardiac gating. Diffusion EPI produces images that can detect acute and hyper-acute stroke with b-value up to 10,000 s/mm2, multi-NEX compatibility and the ability to generate ADC and T2-weighted TRACE images. The FLAIR option suppresses the CSF signal.
DTI*	DTI (Diffusion Tensor Imaging) is an EPI technique that acquires diffusion information in up to 150 different directions. The image contrast is based on the degree of diffusion anisotropy in the tissues. FiberTrack post processing capabilities include Fractional Anisotropy (FA), Apparent Diffusion Coefficient (ADC), 2D directional maps and 3D fiber track models.
eDWI	Enhanced DWI (eDWI) provides high SNR diffusion images with short acquisition times. Supports Multi b-values with SMART NEX for variable NEX selection per B-value, "3 in 1" diffusion weighting to all three gradients simultaneously, tetrahedral selection with four different diffusion weighting combinations for shorter TE values and Inversion recovery for fat signal reduction.
RTFA	DW-EPI often suffers from direction dependent distortions due to diffusion gradient generated eddy currents. These eddy currents typically have significant high order spatial components that cannot be compensated by conventional gradient or B0 preemphasis. The uncorrected, direction dependent distortions can lead to misregistration among DW images and inaccuracies in the subsequent DW or diffusion tensor data processing. The high order eddy current correction (HOECC) feature is introduced to reduce DW-EPI image distortion and misregistration.
RTCF	Real Time Center Frequency (RTCF) option can be applied to DWI & DTI to enable using the optimal center frequency for each slice. This is intended to help improve fat suppression and signal drop off at areas of high B0 inhomogeneity (off-isocenter, or area with high tissue susceptibility). It is also intended to reduce station-to-station misalignment in whole body diffusion imaging.
FOCUS DWI*	FOV Optimized & Constrained Undistorted Single-shot (FOCUS) DWI utilizes 2D selective excitation pulses to limit the prescribed phase encode FOV eliminating artifacts from motion, imaging back folding or unsuppressed tissue.
MR-Touch*	MR-Touch is software and hardware application designed to measure relative tissue stiffness with MR. The acquisition uses a EPI based sequence that synchronizes induced vibrations to acquire a series of phase-contrast images over time.

*Optional

Pulse Sequences (continued)



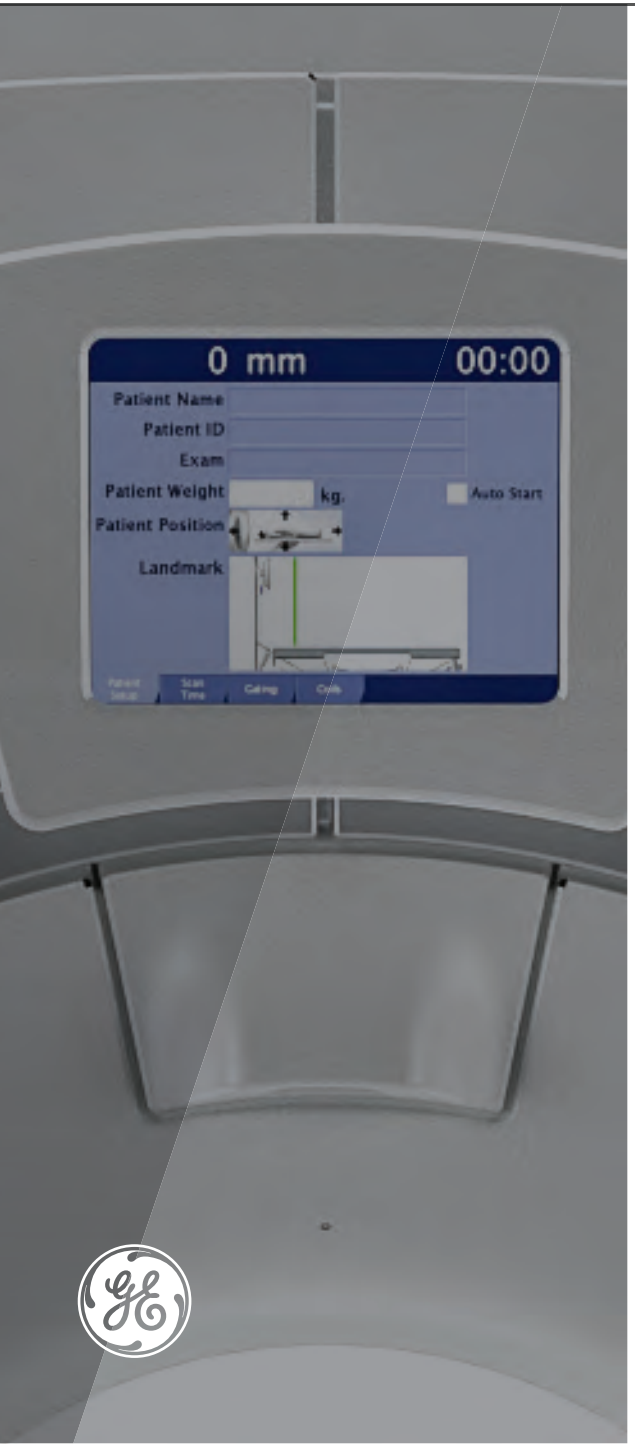
Spectroscopy	
PROBE-PRESS PROBE-STEAM*	PROBE Single-Voxel spectroscopy allows non-invasive evaluation of the relative concentrations of in-vivo metabolites. The sequence provides acquisition and display of volume localized, water-suppressed H1 spectra in single-voxel mode. The sequence consists of three slice selective RF pulses with crusher gradients. PRESS provides up to twice the SNR over STEAM.
PROBE-PRESS CSI 2D & 3D*	PROBE 2D and 3D CSI enable simultaneous multi-voxel spectroscopic acquisitions in the brain. It is available with PRESS excitation to maximize SNR. Post processing includes automatically generated metabolic maps.
BREASE*	A TE-averaged PRESS (Point RESolved Spectroscopy) acquisition that provides the necessary biochemical information to help characterize breast tissue by assessing the presence of choline.
TEA-PRESS*	TEA PRESS is a TE-Averaged variant of the PRESS CSI pulse sequence. It collects spectra across a range of TE values and averages the results together to reduce the appearance of signals whose intensity varies as a function of TE. This allows signals whose intensity does not vary with TE to be accentuated in comparison. This is the underlying pulse sequence behind the BREASE application.

*Optional

PROPELLER MB	
Silent T1, PD, T2, T1, DWI, FLAIR and T2 FLAIR PROPELLER MB*	PROPELLER MB is a multi shot per blade sequence that uses a radial k-space filling pattern acquisition and a post processing correction algorithm to significantly reduce the effects of motion artifacts. PROPELLER DWI, It is compatible Spatial and chemical Sat, ASPIR, STIR T1, PD and T2 Auto TI/TR and navigator.
T1, PD and T2 PROPELLER MB	
T2FLAIR PROPELLER MB	
T1FLAIR PROPELLER MB	
DWI PROPELLER MB	

*Optional

Pulse Sequences (continued)



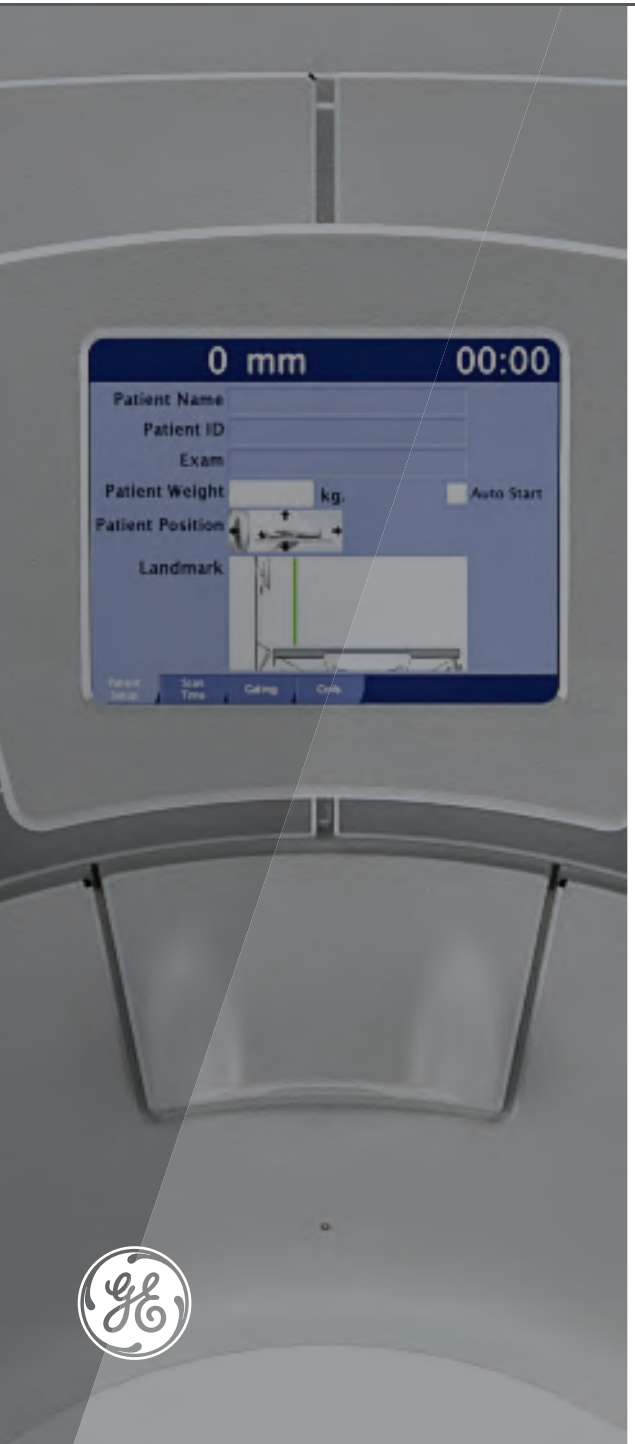
Silenz*	
Silenz T1 Silenz PD Silenz MRA	Silenz is a 3D Zero-TE sequence comprising high bandwidth excitation and reduced gradient-switching radial acquisition that results in sound levels that are within 3-4dB of ambient level. Silenz has added flexibility in sequence prescription for anisotropic resolution enabling faster scan times and includes axial as well as oblique geometries.

*Optional

Fat Suppression Technology	
FatSat	Applies a frequency selective saturation pulse at the frequency of fat before the imaging excitation pulse with the result being a signal measurement primarily from water.
STIR	STIR Is an inversion recovery method that takes advantage of the T1 difference between water and fat to allow selection of the signal to suppress. In order to eliminate the signal from tissues, the TI time must match exactly the null point of the tissue that needs to be suppressed.
SPECIAL	Hybrid fat suppression technique that incorporates features from both the frequency selective Fat Sat and the STIR techniques by using a spectrally selective inversion pulse that inverts only the fat magnetization and leaves the only the water peak available for excitation.
Spectral Spatial	Method that applies selective pulses for water excitation only, while fat is left untouched, thereby producing no signal.
ASPIR	ASPIR method is a solution for poor fat suppression due to B1 inhomogeneity. It is based on the frequency and the relaxation fat behaviors. Applies a spectrally selective adiabatic inversion pulse to excite the fat spins, imaging pulses are then applied after TI null time when longitudinal magnetization of fat crosses zero. The disadvantages include sensitivity to B0 and longer scan times.
IDEAL*	IDEAL is a 3-point Dixon technique that acquires three images at slightly different echo times to generate phase shifts between water and fat. The water/fat separation method is very efficient at providing homogeneous image quality. One acquisition provides four contrasts: water, fat, in-phase and out-of-phase images.
Flex*	Flex is a two point dixon technique delivering faster scan times compared to IDEAL 3-point dixon. It is based on the difference between fat and water resonance frequencies using two flexible echo times for further scan time reduction. One acquisition provides four contrasts: Water, Fat, in-phase and out-of-phase images.

*Optional

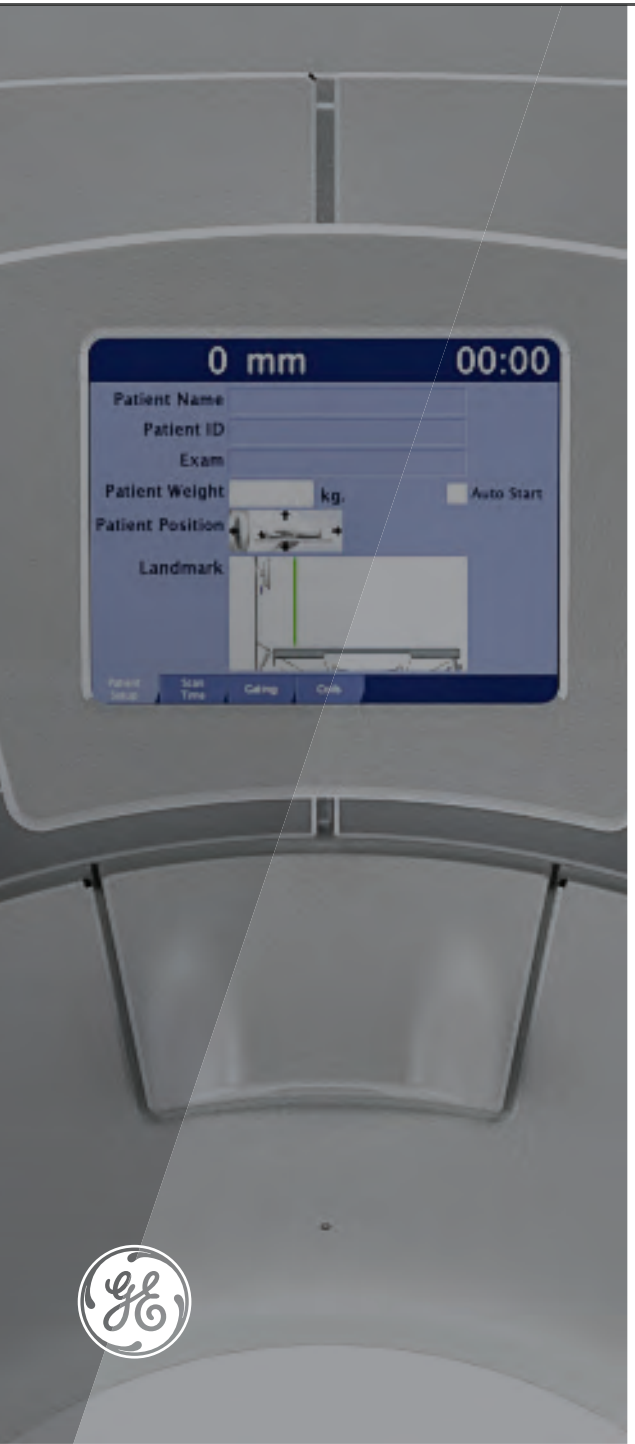
Pulse Sequences (continued)



Motion Correction Technology	
PROPELLER MB	PROPELLER MB is a multi shot per blade sequence that uses a radial k-space filling pattern acquisition and a post processing correction algorithm to significantly reduce the effects of motion artifacts. It is compatible with spatial and chemical Sat, ASPIR, STIR Auto TI/TR and navigator.
PROMO*	Prospective motion correction is a real time 3D navigator based motion correction technique compatible with CUBE T2, Cube DIR and CUBE T2 FLAIR.
PB Navigators	Pencil beam navigators allow free breathing body and cardiac imaging by tracking the motion of the diaphragm. There are two navigator modes: navigator gating, uses a predefined signal acceptable range during the expiration and navigator triggering, uses signal to trigger data collection during the expiration.
Respiratory Trigger	Reduces breathing motion artifacts by synchronizing the acquisition with the respiratory cycle.
VCG	Vector cardiac gating reduces motion artifacts by synchronizing the acquisition with the cardiac cycle.
PG	Peripheral gating reduces motion artifacts caused by pulsating blood.

*Optional

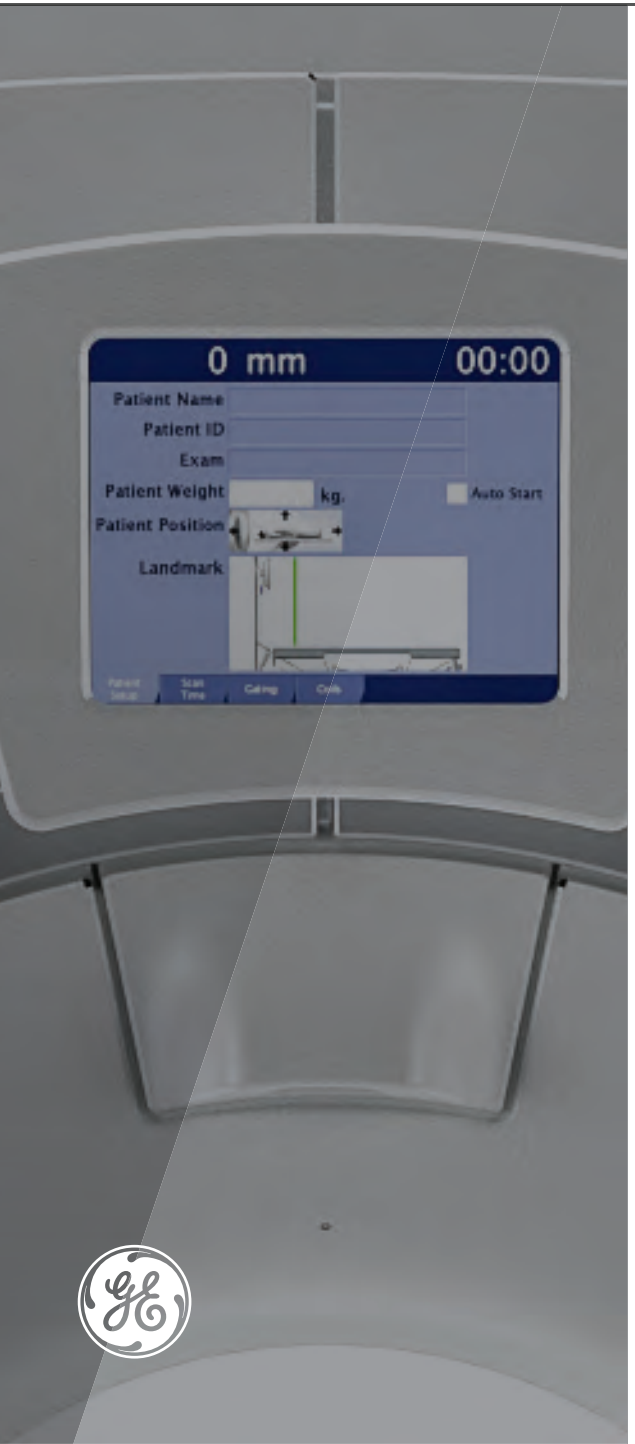
Pulse Sequences (continued)



Acceleration Technology	
Fractional Nex	Technique in which only partial k-space data is collected and the remaining data is estimated. It uses the phase conjugate symmetry reconstruction method, which only half of the phase encode steps are acquired for scan time reduction.
ASSET	Array spatial sensitivity encoding technique acquires under sampled multicoil data generating aliased images. These are post processed with coil sensitivity maps from the calibration scan to unfold the images.
ARC	Auto-calibrating reconstruction for cartesian imaging is a highly accelerated parallel imaging auto-calibrating method that doesn't require coil sensitivity maps. It enables smaller FOV prescriptions, less sensitivity to motion and prevents artifacts caused by coil calibration inaccuracies.
HyperSense*	High performance acceleration based on sparse or compressible images. It can be extended to include inherent compressibility in dimensions besides kspace. While parallel imaging suffers from SNR loss due to scan time reduction and coil spatial encoding, with HyperSense there is no SNR loss caused by the coil geometric factor.
HyperBand*	HyperBand enables scan time reduction by simultaneously exciting multiple slices at multiple locations. Reconstruction algorithms are then applied in order to separate the images acquired.
Hyperkat*	HyperKat s an advanced k-t acceleration method that employs time–shifted sampling in data acquisition and exploits both spatial and temporal correlation with motion-adaptive time window selection in image reconstruction.
HyperCube*	Small FOV organ specific volumetric imaging acquisition method that enables outside phase FOV signal suppression. The technique reduces artifacts caused by motion outside the prescribed field of view and allows for significant time saving without sacrificing SNR or contrast.

*Optional

Pulse Sequences (continued)



Uniformity Correction Technology	
SCIC	SCIC is a method that uses statistics from the actual image for inhomogeneity correction. It uses an optimized set of parameters for tuning that are defined according to the different anatomies and coils.
PURE	PURE corrects the field inhomogeneity by collecting a calibration scan from the (uniform) body coil and the (non-uniform) surface coil and calculating maps that relate the intensity correction values to the images.
deFINE	deFINE is an integrated inline imaging processing method that provides edge enhancement and smoothing algorithms allowing the user to customize the image appearance.
reFINE	reFINE is an advanced image uniformity correction algorithm that addresses non-uniformity due to coil sensitivity profiles and dielectric shading effects. It reduces organ-motion induced misregistration artifacts, effects of low signal in dark regions and edge effects at tissue interfaces and borders. Refine optimizes parameter settings for each application, coil, and body anatomy maximizing image uniformity results.

*Optional

Noise Reduction Technology	
ART	Acoustic Noise Reduction Technology optimizes the gradient waveform to reduce the gradient noise without compromising performance.
Silenz*	Silenz is a 3D Zero-TE sequence comprising high bandwidth excitation and reduced gradient-switching radial acquisition that results in sound levels that are within 3-4dB of ambient level. Silenz has added flexibility in sequence prescription for anisotropic resolution enabling faster scan times and includes axial as well as oblique geometries.
Silent PROPELLER*	Silent PROPELLER gradient waveform approach reduces the acoustic noise level to less than 11dB above the ambient room noise.

*Optional

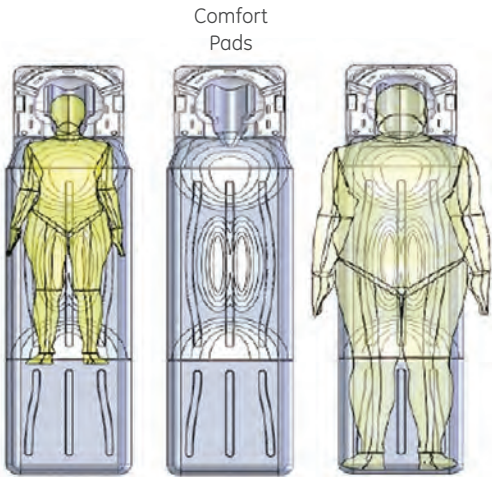
GE Healthcare

SIGNA™ Architect

RF Coils Suite

eXpress Table & Posterior Array

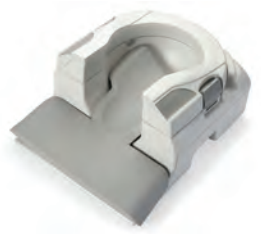
- Detachable Table with embedded posterior array
- 101 cm S/I Coverage
- 40 Elements with dedicated spine configurations
- Head-first or feet-first
- Automatic coil mode selection
- Acceleration in all directions
- Density foam comfort pads



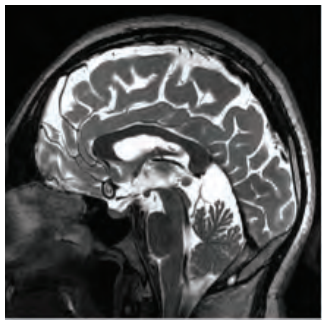
Head & Neck Unit

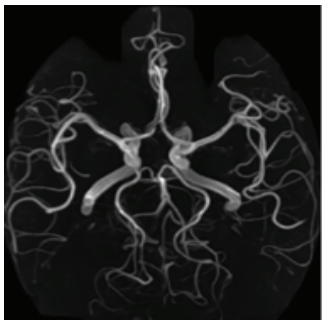
Head and Neck NV with Comfort Tilt

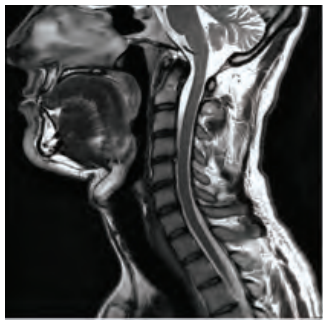
Head and Neck



Cervical Open Face







Head Neck Unit NV Specifications	
Length	49.5 cm (19.5 in)
Width	38.8 cm (15.3 in)
Height	35.4 cm (13.9 in)
Weight of HNU base	5.2 kg (11.4 lb)
Weight of Anterior Adapter	2.7 kg (5.9 lb)
S/I Coverage	50 cm (19.7 in), when combined with the PA and AA
R/L Coverage in head mode	24 cm (9.4 in)
R/L Coverage for NV	50 cm (19.7 in), when combined with the PA and AA
Head-first or feet-first imaging	
Up to 28 elements in the FOV, when combined with the PA and AA	

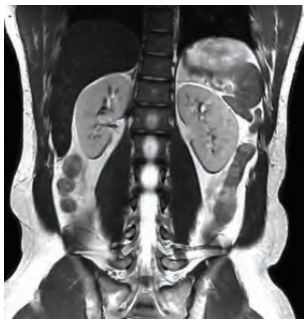
Head & Neck Unit (continued)

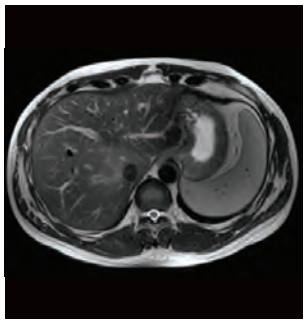
Head Neck Unit Cervical Specifications	
Length	49.5 cm (19.5 in)
Width	38.8 cm (15.3 in)
Height	32.6 cm (12.8 in)
Weight of Cervical Adapter	1.7 kg (3.7 lbs)
S/I Coverage	28 cm (11 in)
R/L Coverage	24 cm (9.4 in)
Head-first or feet-first imaging	
Up to 14 elements in the FOV, when combined with the PA	

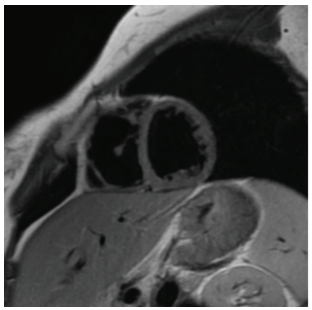
Head Neck Unit with Open Face Adapter Specifications	
Length	49.5 cm (19.5 in)
Width	38.8 cm (15.3 in)
Height	25.9 cm (10.2 in)
Weight of Open Face Adapter	1.3 kg (2.8 lbs)
S/I Coverage	28 cm (11 in)
R/L Coverage	24 cm (9.4 in)
Head-first or feet-first imaging	
Up to 12 elements in the FOV, when combined with the PA	

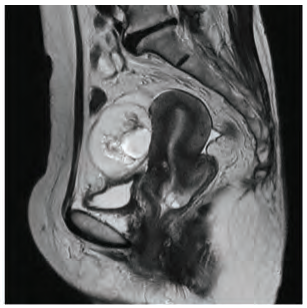
Anterior Array

Compatible with two AA coils









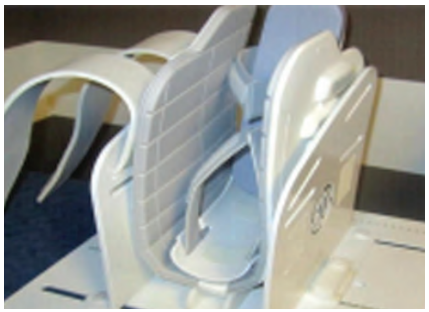
Anterior Array Specifications	
Length	55.6 cm (21.9 in)
Width	67.4 cm (26.5 in)
Height	3.3 cm (1.3 in)
Weight	2.8 kg (6.16 lb) resting on patient 3.9 kg (8.6 lb) with cable
S/I Coverage	54 cm (21.3 in)
R/L Coverage	Full 50 cm (19.7 in) FOV of the system
Head-first or feet-first imaging	
Up to 36 elements in the FOV, when combined with the PA	

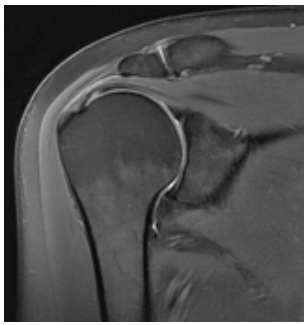
Peripheral Vascular Array

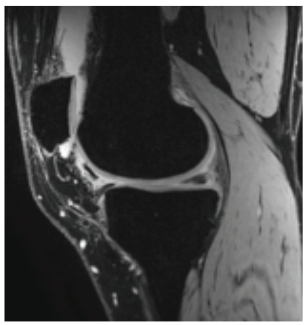
Optional Peripheral Vascular/Lower Extremity Array	
Length	105 cm (41.3 in)
Width	2nd station: 64.2 cm (25.3 in) 3rd station: 51.6 cm (20.3 in)
Height	24.8 cm (9.8 in)
Weight	9.1 kg (20.0 lbs)
S/I Coverage	104 cm (49.9 in) overall 2nd station: 52 cm (20.5 in) 3rd station: 52 cm (20.5 in)
R/L Coverage	Full 50 cm (19.7 in) FOV of the system
Head-first or feet-first imaging	
Up to 35 elements in the FOV, when combined with the PA	

16 channel Flex Coils

Knee and foot ankle positioner



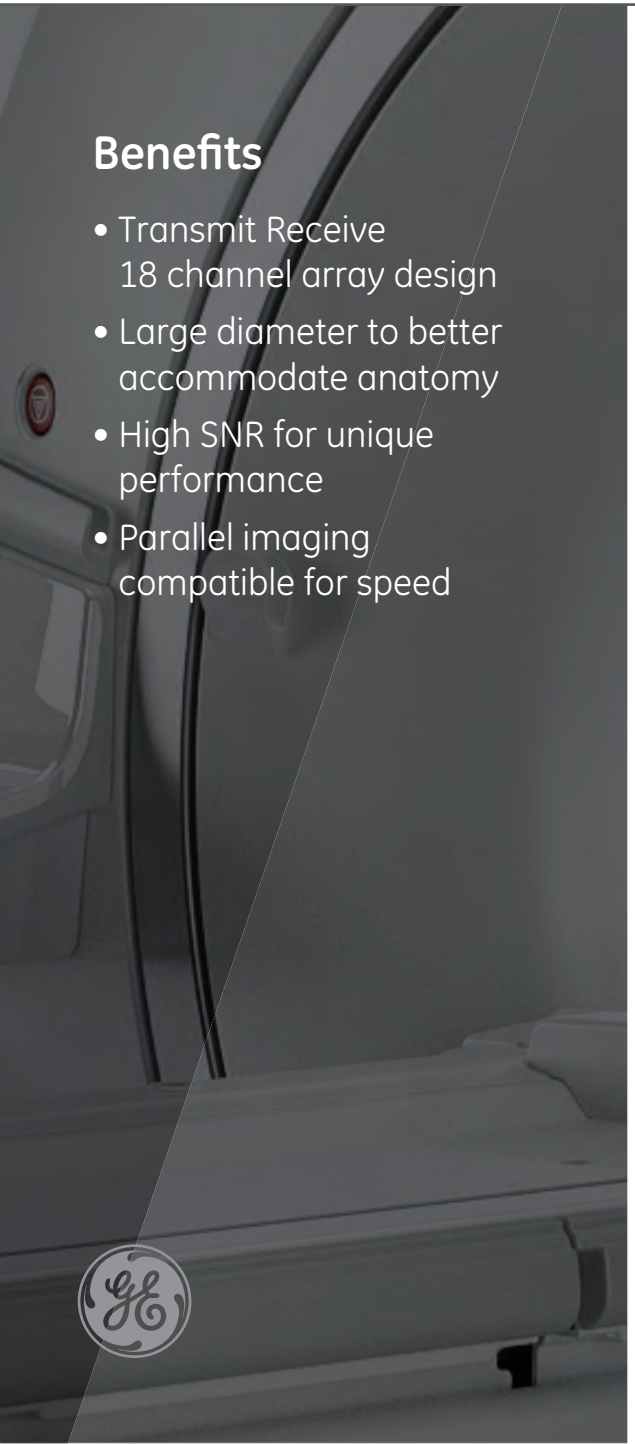




GEM Flex Specifications

Coil	Coverage (W x L)	Wrap Diameter	Elements	Weight
GEM Flex Large	230 mm x 700 mm	155 mm – 215 mm	16	1.2 kg
GEM Flex Medium	230 mm x 480 mm	115 mm – 155 mm	16	0.9 kg
GEM Flex Small	230 mm x 380 mm	900 mm – 125 mm	16	0.9 kg
Baseplate Foot/Ankle	402 mm x 480 mm x 269.2 mm			

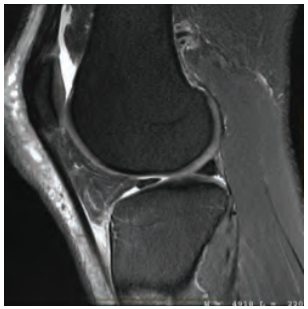
18 channel T/R Knee Coil

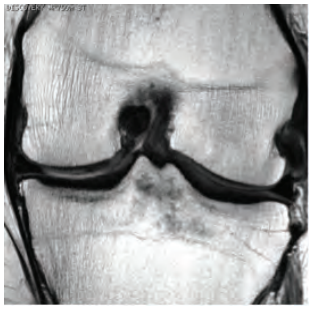


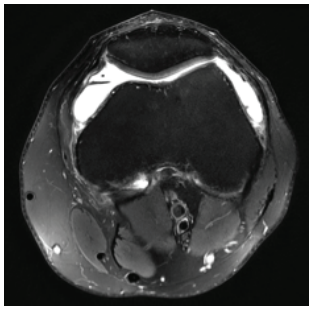
Benefits

- Transmit Receive 18 channel array design
- Large diameter to better accommodate anatomy
- High SNR for unique performance
- Parallel imaging compatible for speed

The 18 channel Transmit Receive Phased Array Knee coil is designed to acquire high SNR images of the knee. It is generously sized to effortlessly accommodate a wide range of the patient population. The two-part design provides a quick and efficient workflow. Offset imaging is fully supported with adjustable left-right coil positioning.







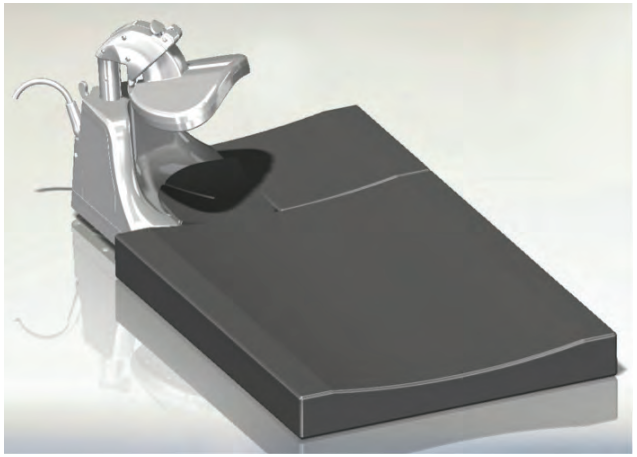
Specifications

Coil	Approximate dimensions (W x L x H)	Approximate Diameter	Elements	Approximate Weight
18ch T/R Knee	507 mm x 500 mm x 282 mm	155 mm	18	6.8 kg

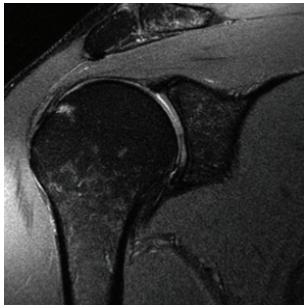
16 channel Shoulder Coil

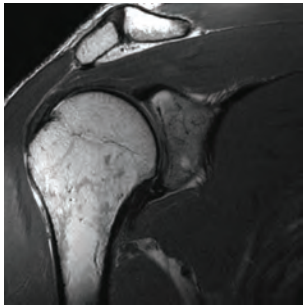
Benefits

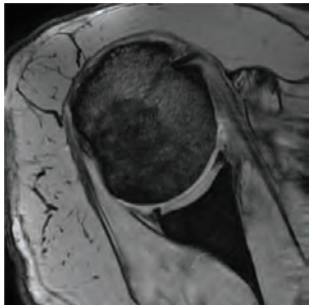
- 16 channel phased array design
- Adjustable anterior plate for ease of positioning
- Parallel imaging compatible for speed

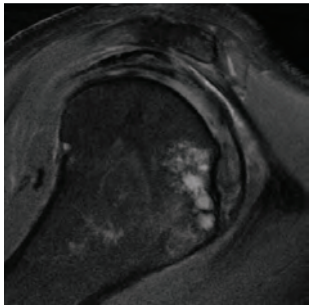


The Phased Array 16 channel Shoulder coil consists of a baseplate that supports a posterior hard shell connected to an adjustable anterior plate, designed to better accommodate the patient anatomy. The baseplate and customized pad provide easy right - left adjustment for off center positioning.









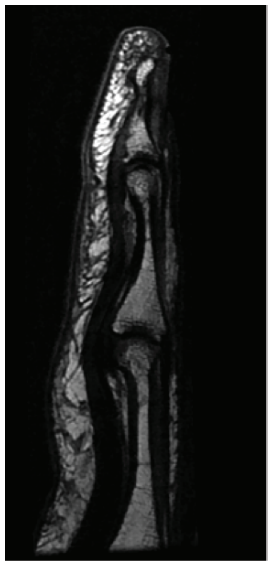
Specifications				
Coil	**Approximate dimensions (W x L x H)**	**Approximate Diameter**	**Elements**	**Approximate Weight**
16ch Shoulder	280 mm x 280 mm x 311 mm	155 mm	16	3.9 kg

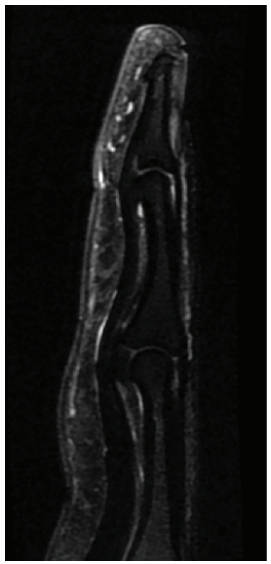
16 channel T/R Hand and Wrist Coil

Benefits

- Prone or Supine positioning
- Optimized design for Fingers through wrist
- High SNR to enable high resolution images
- Parallel imaging compatible for speed

The Phased Array 16 channel T/R hand and wrist coil is designed for high resolution hand and wrist imaging, providing superior coverage from wrist to fingers. The baseplate accommodates the coil for supine or prone patient positioning.

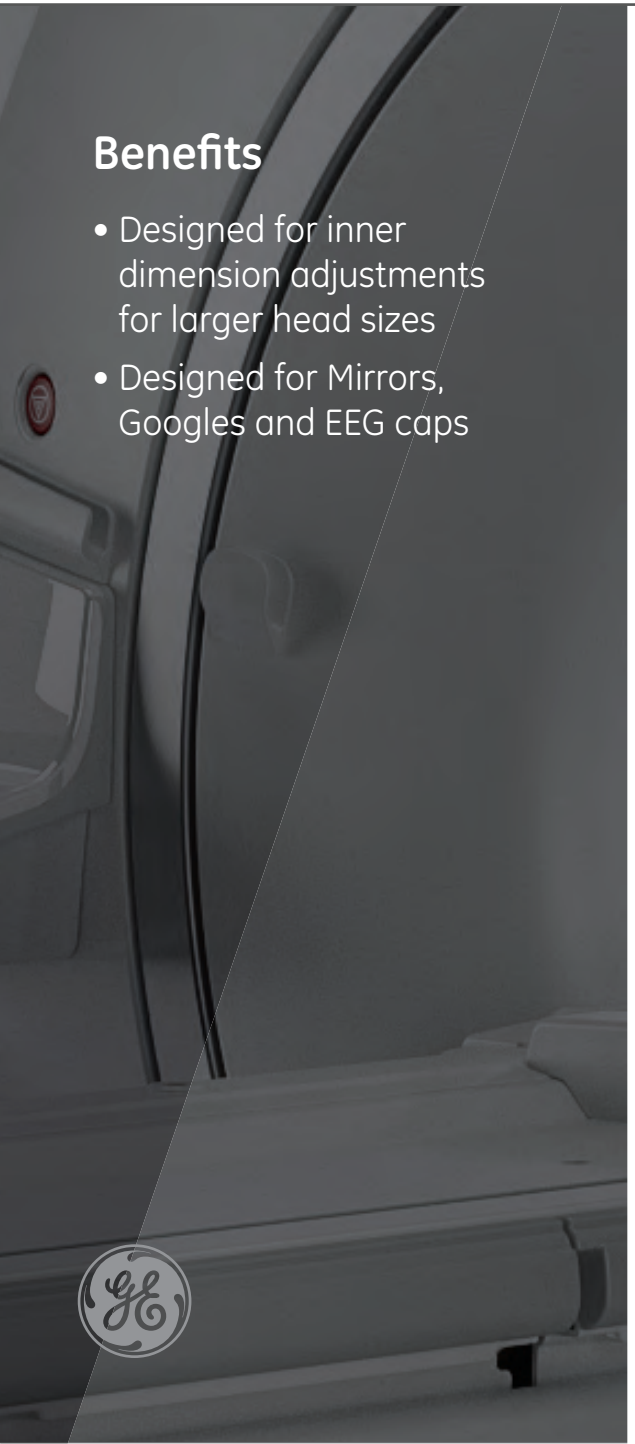




Specifications

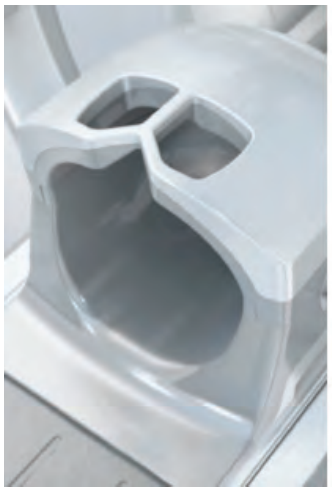
Coil	Approximate dimensions (W x L x H)	Elements	Approximate Weight
16ch T/R Hand and Wrist	392 mm x 459 mm x 189 mm	16	3.5 kg

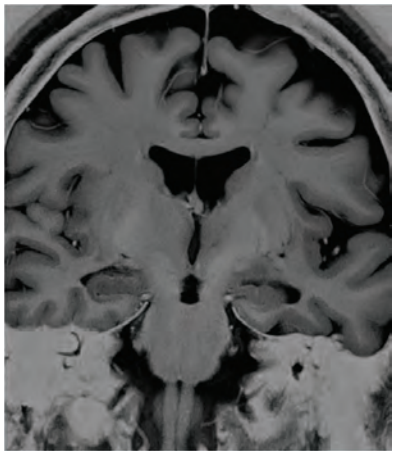
48 channel Head Coil

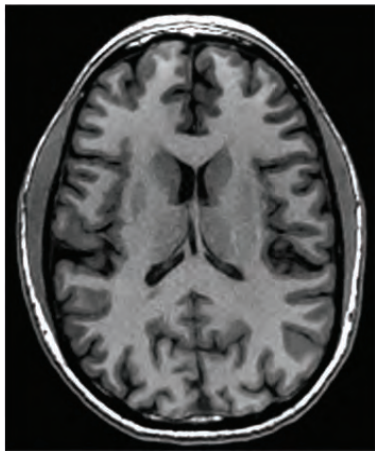


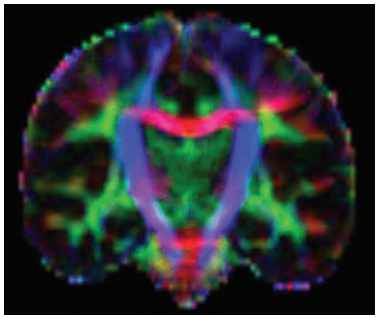
Benefits

- Designed for inner dimension adjustments for larger head sizes
- Designed for Mirrors, Googles and EEG caps



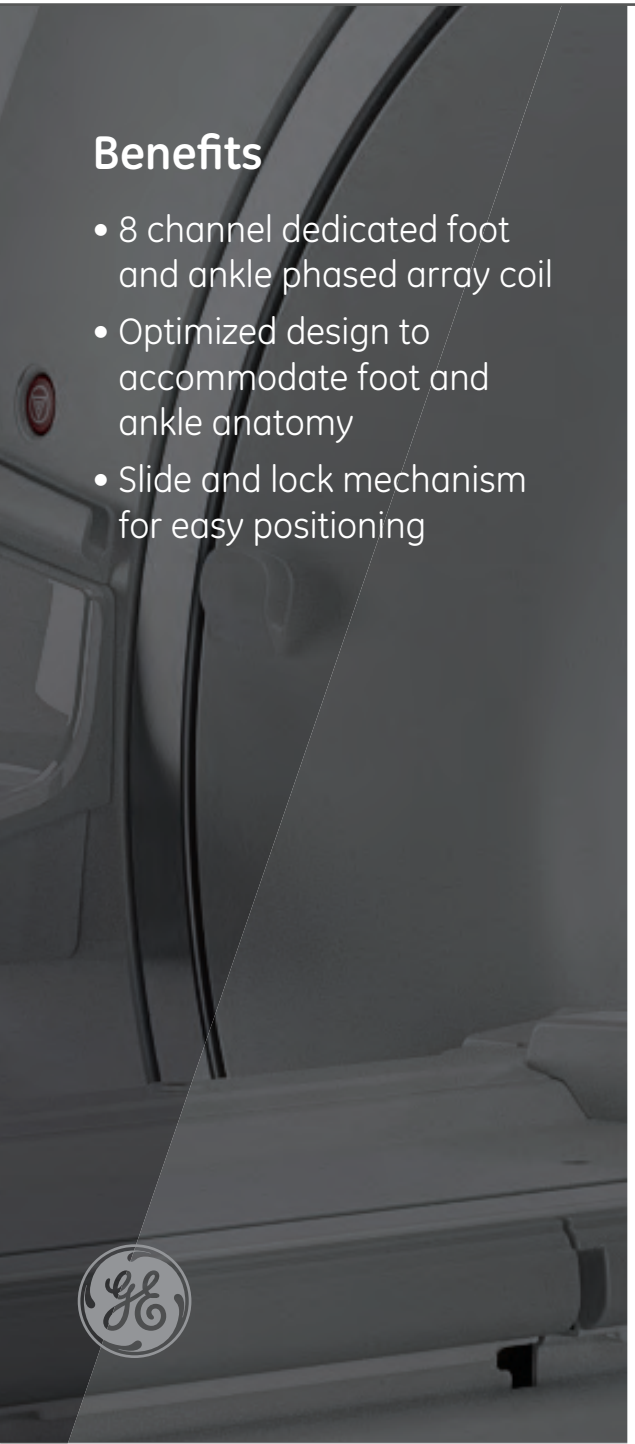






Specifications			
Coil	**Approximate dimensions (W x H)**	**Elements**	**Approximate Weight**
48ch Brain	230 mm x 295 mm	48	6.5 kg

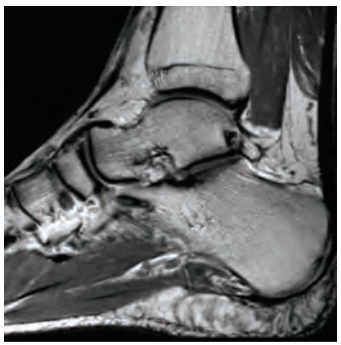
8 channel Foot and Ankle Coil

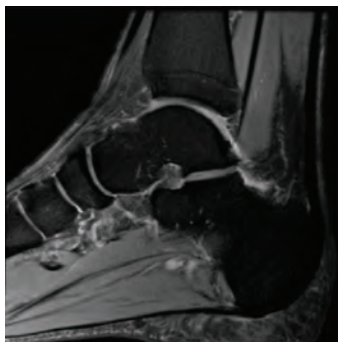


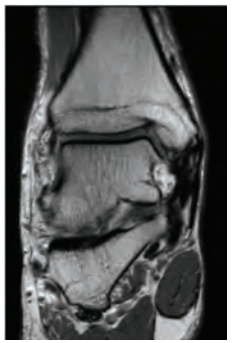
Benefits

- 8 channel dedicated foot and ankle phased array coil
- Optimized design to accommodate foot and ankle anatomy
- Slide and lock mechanism for easy positioning

The Phased Array 8 channel Foot and Ankle coil consists of a baseplate and a detachable hard shell coil that is designed for fast and easy positioning, comfortably accommodating the anatomy while providing proper immobilization.







Specifications

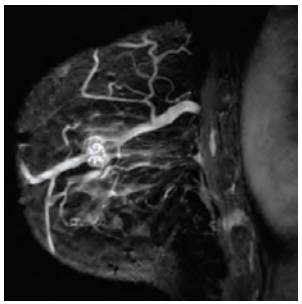
Coil	Approximate dimensions (W x L x H)	Elements	Approximate Weight
8ch Foot and Ankle	180 mm x 314 mm x 525 mm	16	3.0 kg
Baseplate	338 mm x 336 mm x 525 mm	–	3.0 kg

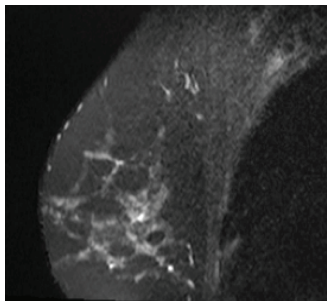
16 channel Sentinelle Breast Coil

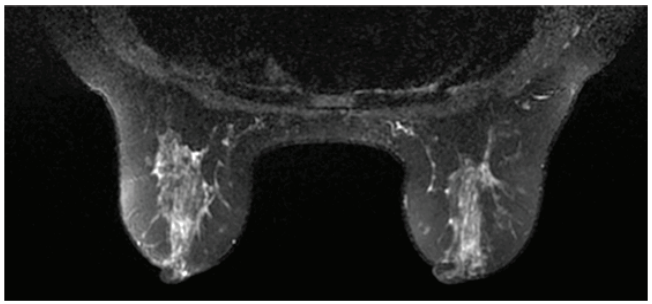
Benefits

- Variable Coil Geometry optimized for parallel imaging
- Ease access for breast biopsy procedures
- Visco-elastic padding for improved patient comfort
- High SNR, lower scan time and uniform fat suppression

The 16 channel Sentinelle Breast tabletop supports different coil configurations to provide optimal performance for high resolution bilateral, unilateral and biopsy mode breast imaging.







Specifications			
Coil	**Approximate dimensions (W x L x H)**	**Elements**	**Approximate Weight**
16ch Sentinelle Breast Coil	22.25 in x 34.7 in x 10.9 in	16	28.6 lbs.

RF coils and Arrays

There are many optional receiver coils available to configure a SIGNA™Architect 3.0T to meet specific application requirements. The coils listed below are commercially available at the time of printing and are optional with the system. Please contact your local GE sales representative for the most current list.

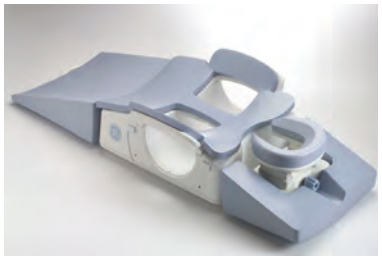
Shoulder Phased Array

- 3-channel phased-array coil
- Sleeve design
- Comprehensive shoulder imaging

Homogeneous penetration of the humeral head and neck, rotator cuff, glenoid labrum, acromium process, and glenohumeral articular surfaces

Small Anterior Array

- Up to 33 elements in the FOV when combined with PA
- Head first or feet first
- Optimized for parallel imaging
- Anterior coil demensions (L x W x H) 45 cm x 40.5 cm x 4.5 cm (17.7 in x 15.9 in x 1.8 in)
- Anterior coil weight: 2.95 kg (6.5 lbs)



HD Breast Array

- 8-channel 8-element phased-array design
- Optimized for uniformity, parallel imaging and VIBRANT
- Bilateral and unilateral breast imaging Biopsy plates available
- Coil dimensions: 50 cm x 54 cm x 25 cm (20 in x 21 in x 10 in)

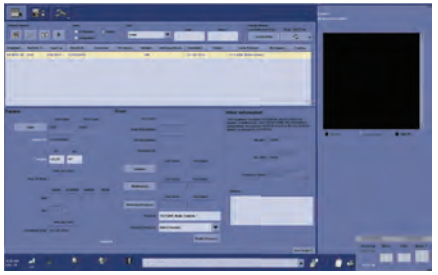
GE Healthcare

SIGNA™ Architect

SIGNA™Flow

SIGNA™Flow is designed to standardize and accelerate workflows for patient set-up, exam prescription, scanning and post-processing. SIGNA™Flow can begin before the patient enters the magnet room and exams can be completed within a few mouse clicks – delivering quality and consistency for all patients and from all technologists. At the same time, SIGNA™Flow maintains the flexibility needed to rapidly adapt and optimize exams for patient specific situations.

Exam Set-up



Modality Worklist

Automated and standardized rapid set up

- Allows the MR protocol to be selected and linked to the patient record in advance of the patient's arrival
- For sites with full DICOM connectivity, select the patient from the Modality Worklist, start a new session and view the relevant exam details on the in-room operator console
- Add critical patient information such as allergies, pre-medication, pregnancy status and history

Protocol Tools

Search, select and one click to share

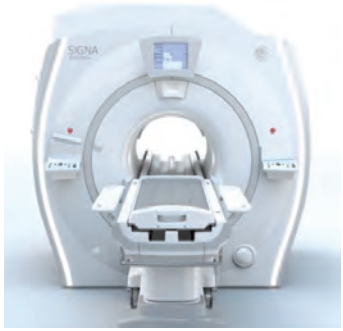
- Protocol Libraries: GE Optimized (preloaded protocols) and Site Authored (customized and saved)
- Protocols can be saved based on patient demographics, anatomy, scan type, or identification number for rapid search
- Commonly used protocols can be flagged for quick selection from the modality worklist
- Once click to share protoCopy – enables a complete exam protocol to be shared with the click of a mouse and provides a process for managing protocols across multiple systems as well as saving protocols for back up
- Step-by-step protocol notes – guide the user through the entire clinical routine procedure via expert inputs
- Step-by-step protocol notes – can be edited by the user for site specific instructions
- Step-by-step video guides – provide simplified video instructions on-console

Patient Set-up

eXpress Patient Table

Safety, Comfort and Efficiency

- Reduce patient transfers – transfer outside the magnet room directly to the eXpress table
- Accelerate emergency egress – can be undocked and removed by one user in under 30 seconds typically
- Automatic coil disconnect – in time sensitive situations the system coils are automatically disconnected
- Patient choice – feet-first or head-first positioning for all supported exams
- Reduce in-room patient setup and address privacy by fully preparing the patient and coils for an exam outside of the magnet room
- Integrate arm-boards and IV pole to support patient for transport
- Embedded posterior array and multiple high density surface coil connectors
- IntelliTouch land-marking sensors
- Compatible second table, prepare the next patient outside the magnet room while scanning the current patient

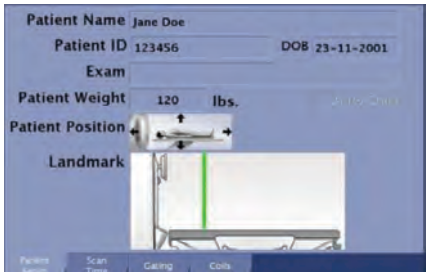


Patient Set-up (continued)

eXpress Patient Table

GEM Express Patient Table	
Configuration	Detachable and mobile
Minimum & Maximum Height	70 cm to 93 cm continuous
Table Drive	Automated power-driven vertical automated power-driven longitudinal
Longitudinal Speed	30 cm/sec (fast) and 0.5 cm/sec (slow)
Total Cradle Length	210.8 cm
Total Cradle Travel	278.1 cm
Total Scan-able Range	205 cm
Maximum Patient Weight for Scanning	227 kgs (500 lbs)
Maximum Patient Weight Detached and Mobile	227 kgs (500 lbs)
Maximum Lift Capacity	227 kgs (500 lbs)
Patient Transport Accessories	Self-storing non-ferrous IV pole Positioning pads Immobilization straps
Land-marking	Laser alignment with S/I and R/L alignment IntelliTouch touch sensors
Total Cradle Travel	2 high density, auto-sensing ports

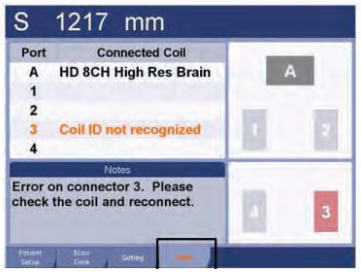
Patient Set-up (continued)



RF Coil Suite

Multi-station coverage with one set-up

- Less coil lifting – posterior array is em bedded in the eXpress patient table, eliminating the need to remove the coil
- Confirm coil connection – automatic information when coils are properly connected
- Head first/feet first scan – patients can be scanned feet-first or head-first for all supported exams



IntelliTouch

Touch to Landmark

- IntelliTouch sensors for simplified non-laser patient landmarking
- With IntelliTouch technology, the user can touch to complete
  - Patient landmarking
  - Localizing to the surface coil for auto-coil selection
  - Move patient to scan
  - Start scanning (with AutoStart activated)
  - Acquire, process and network images

Patient Set-up (continued)

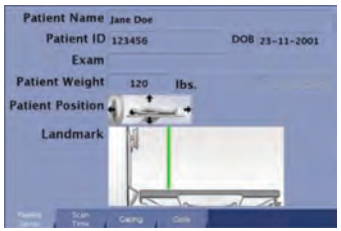
In-Room Operator Console and Control

Full Control from table side

From the in-room operator console and controls, the user can:

- Position the table
- Return the table to home
- Stop the table movement
- Control multiple levels of in-bore ventilation an lighting
- Display of patient name, ID, study description
- Display and entry of patient weight
- Display and entry of patient orientation and patient position
- Cardiac waveform display and ECG/EKG lead confirmation
- Gating control for trigger select, invert and reset
- Respiratory waveform display
- IntelliTouch technology land-marking
- AutoStart to initiate scanning of the selected protocol
- Display connected coils and coil status
- Display of table location and scan time remaining
- Activate Screen Saver

The in-room display also allows for the integration of third-party visualization tools.



Inline Processing & Inline Viewing

Inline Processing

Automated post-processing

- Automated post-processing of specific applications
- Automatic opening and loading to advanced visualization tools when appropriate
- Initiate ReadyView for one-click processing
- Automated in-line processing can be stored within the protocol

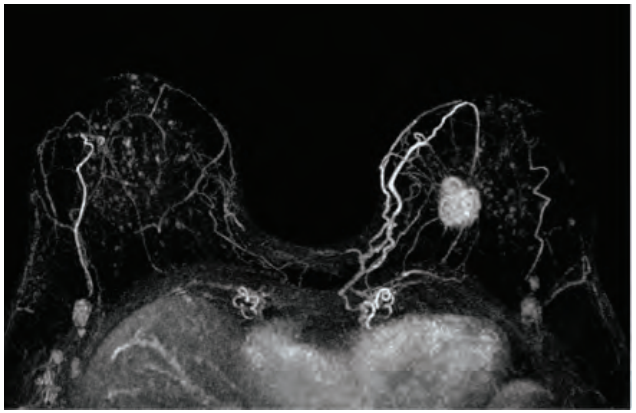
3D ASL series	Automatic compute and save
Diffusion weighted series	Automatic compute and save
Diffusion tensor series	Automatic compute and save
eDWI series	Automatic compute and save
Image filtering: A-E, SCIC, PURE	Automatic compute and save
Maximum/Minimum Intensity Projection	Automatic compute and save
Reformat to orthogonal plane	Automatic compute and save
T2 map for cartilage evaluation	Automatic compute and save
3D Volume Viewer	Automatic load
BrainStat	Automatic load
FiberTrak	Automatic load
Image Fusion	Automatic load
Interactive Vascular Imaging	Automatic load
Pasting	Automatic load

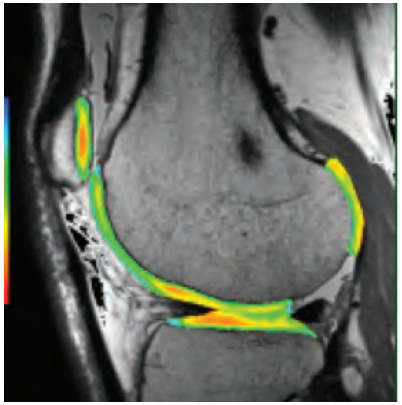
Inline Processing & Inline Viewing (continued)

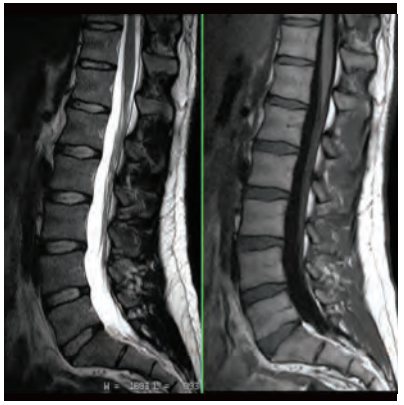
Inline Viewing

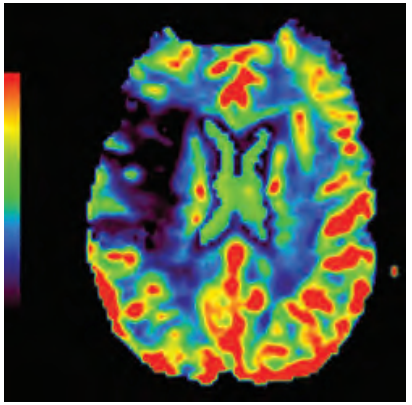
Enhanced Visualization

Inline Viewing allows the user to seamlessly and conveniently view, compare, and analyze images (during scan progress). The user simply selects the series, or multiple series, to view from the workflow manager, and the images are displayed along with the image display tools.









GE Healthcare

SIGNA™ Architect

Visualization

READY View on MR Operator Console

Benefits

- 3D ROI
- 3D Reformat MPR
- Auto-contour
- Distortion Correction
- Fusion & Registration
- MIP & HD MIP
- Motion Correction
- Multi-parametric protocols
- Multiple graphics display
- Ratio AB/CD
- Reformat & Graphview
- Subtraction
- Volume Rendering
- Volume segmentation ROI

Integrated Post Processing & Advanced Visualization

READY View, is an image analysis software that allows the user to process dynamic or functional volumetric data and to generate maps that display changes in image intensity over time, echo time, b-value (diffusion imaging), frequency (spectroscopy). The combination of acquired images, reconstructed images, calculated parametric images, tissue segmentation, annotations and measurement performed by the clinician allows multi-parametric analysis and may provide clinically relevant information for diagnosis.

- Automatically selects the most relevant post-processing protocol*
- Provides guided workflow and general assistance for the processing algorithms
- Multi-parametric protocols selection for Brain, Breast, Liver, Knee and Pelvis studies when two or more functional series are present
- MR general review enables efficient reading of multi-contrast exams based on Smart Layout Technology
- One Click – to select and process functional data
- One Click – to save all generated parametric images
- One Click – to save and restore the state of processed images at any stage
- One ROI – display all multi-parametric images and get all related functional values from a single ROI
- Export – display and export ROI statistics from the summary table
- Export graph values as csv file
- Customize workflows with adjustable layouts, personalized parameter settings, and custom review steps

*When only one protocol is compatible with the selected data, the access is made through the One-Touch mode. If more than one protocol is compatible, the Protocol page opens for user selection.

READY View

Standard Protocols

READY View One-Touch
Protocols uses display intelligence with pulse sequence, image contrast and scan plane recognition to enable direct access between a unique post processing that is associated with the series selection.

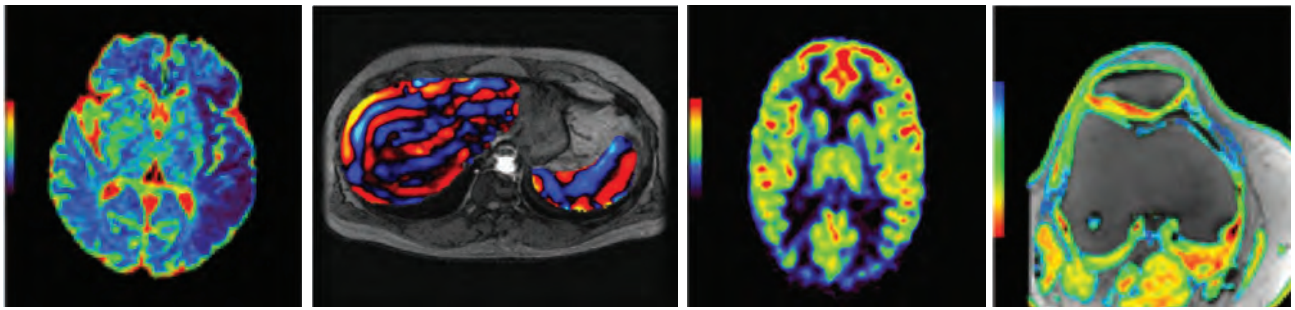
One-Touch ADC and eADC
Provide algorithms to process DWI1 images to generate ADC maps and eADC maps to eliminate T2 "shine through" in the isotropic (trace) DWI.

One-Touch ASL
ASL READY View has algorithms that calculate Cerebral Blood Flow maps from a 3DASL series. ASL acquisition is a non-invasive, one-click application that allows whole brain CBF measurements.

One-Touch Brain & Prostate Spectroscopy
The READY View Brain and Prostate MR spectroscopy protocols are used to display functional maps for metabolites and metabolite ratios in the brain and prostate.

One-Touch MR-Touch
READY View MR-Touch is a post process of an MR-Touch acquisition, which is a Phase Contrast (PC) application that generates an image contrast related to the shear stiffness of soft tissue. An algorithm is used to derive a relative stiffness map (Elastogram) and wave images from the phase images.

One-Touch T2MAP
The READY View T2 Map protocol post processes data sets acquired using the T2 Map (Cartigram) application. The T2 Map acquisition is displayed in READY View, where the T2 relaxation time color map is coded to capture T2 values from the TE range of the acquired images.



READY View (continued)

BrainStat
BrainStat is an MR Time Course imaging READY View protocol that provides accurate spatial resolution for brain tissue viability given by hemodynamic parameters: BV, BF, TTP, MTT (SVD), BAT, Tmax. These hemodynamic parameters can provide unique information on tissue changes and improve delineation of vasculardeficient or vascular-rich regions in normal and abnormal anatomy.

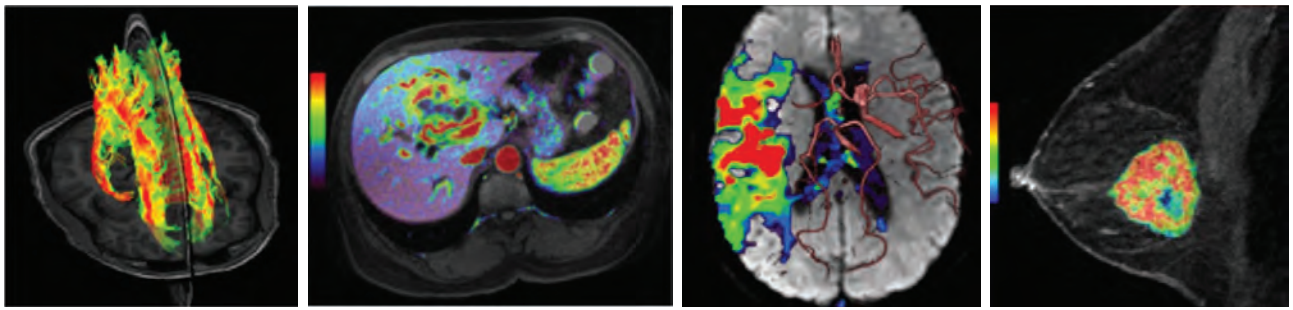
MR Standard
MR Standard is a time course protocol. The READY View MR Standard is a time course protocol that can be used to create the following maps: enhancement integral (negative and positive), time to peak, mean time to enhance, maximum slope of increase, maximum slope of decrease.

SER
SER is a time course protocol for analyzing T1-contrast changes. The READY View SER protocol can be used to create the following maps: Positive enhancement integral, signal enhancement ratio and maximum slope of increase.

FiberTrak
FiberTrak is designed for the advanced analysis of MR images acquired with a DTI technique. It allows for processing of isotropic, ADC and FA maps among other options. The FiberTrak option augments this functionality to allow DTI processing to create: 2D color orientation maps, 2D color eigenvector maps and 3D tractography maps.

fMRI
Functional imaging or BOLD provides fMRI analysis using the correlation coefficient algorithm to analyze an image set. Neuronal activity of either motor or cognitive functions can be mapped by fMRI through changes in signal intensity. The resulting functional maps can be used for mapping the motor cortex and higher cognitive regions of the brain.

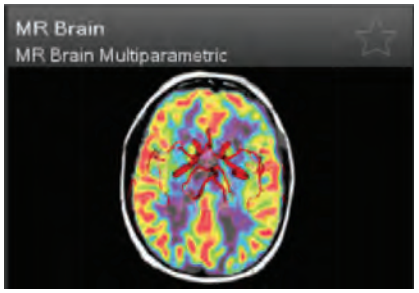
R2 Star
The R2 Star feature uses water proton transverse relaxation rates (R2) technique. It provides parametric maps for R2* (Hz) and T2* (ms). The R2* values vary with tissue characteristics such as iron concentration.



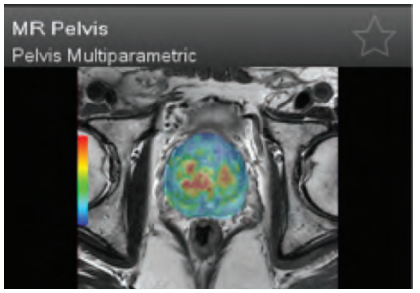
READY View (continued)

Multiparametric Protocols: Visualization at a Glance

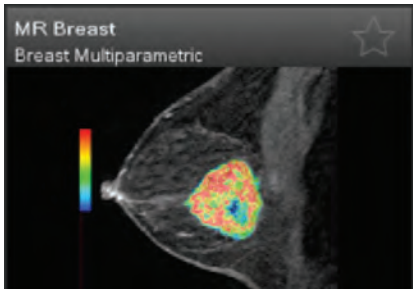
READY View Multiparametric protocols provide a guided workflow to streamline post processing and analysis of multi parametric studies. All measurements can be obtained with one ROI and the user customizable workflow has the ability to display all processed maps in one screen.



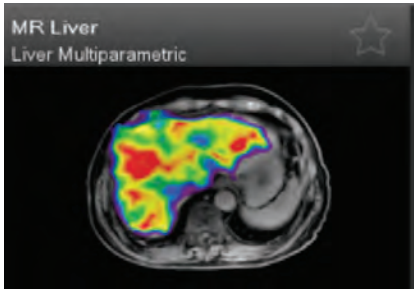
MR Brain*
Diffusion, Perfusion, Brain Spectroscopy, Brain SVQ DTI and ASL



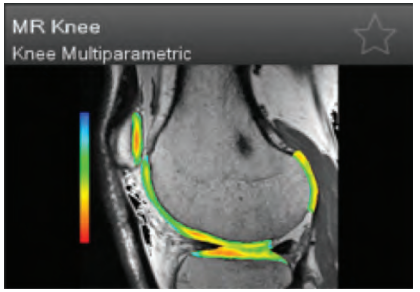
MR Pelvis*
Diffusion, Perfusion, and Prostate Spectroscopy



MR Breast*
Diffusion, SER and Breast SVQ



MR Liver*
Diffusion, R2Star or MR TouchL



MR Knee*
T2 Map

* Requires two or more of the functional series selected.

GE Healthcare

SIGNA™ Architect

Siting

SIGNA™ Architect 3.0T

Siting and Other Specifications

Typical Room Layouts	
	System configuration minimum values
Magnet Room	3.6 m x 6.23 m
Minimum Ceiling Height	2.5 m (8 ft 2.4 in) min ceiling height
Equipment Room	7.9 sq m (85 sq ft)
Control Room	3.2 sq m

Fringe Field		
	Axial	Radial
0.5 mT (5 Gauss)	5.0 m	2.8 m
0.1 mT (1 Gauss)	7.4 m	4.4 m

Electrical Supply Requirements

Supply system recommended configuration:

- 3-phase grounded WYE with neutral and ground (5-wire system)

Note: Neutral must be terminated inside main disconnect control

Alternate configuration:

- 3-phase DELTA with ground (4-wire)
- Recommended grounded delta configuration
- Voltage: 480/415/400/380/Vrms
- Frequency: 50 ± 3Hz (380/400/415V) ; 60 ± 3Hz (480V)

Altitude Requirements	
Upper limit	2600 m
Lower limit	-30 m

SIGNA™ Architect 3.0T (continued)

Siting and Other Specifications

Power Consumption	
Power consumption depends on actual usage. They exclude consumption by the shield cooler compressor (9 kVA). The following values are approximate:	
Standby (no scan)	<17 kVA
Maximum continuous sustained power (> 5 secs)	99 kVA
Peak instantaneous power (< 5 secs)	123 kVA

RF Shielding
100 db. for 10 - 100 MHz plane wave

Workspace Monitor Positions	
	Maximum field strength
LCD flat panel monitor	5 mT (50 Gauss)

Temperature and Humidity Requirements			
	Magnet Room	Control Room	Equipment Room
Temperature	15 - 21° C	15 - 32° C	15 - 32° C
Max. temperature change rate	3° C/hour	3° C/hour	3° C/hour
Humidity (non- condensing)	30 - 60%	30 - 70%	30 - 70%
Max. humidity change rate	5% RH/hr	5% RH/hr	5% RH/hr

Water Requirements	
Maximum heat removal to customer-supplied water	70 kW
Water flow	114 liters/min (30 gpm) minimum at a maximum temperature of 10 degrees C

Miscellaneous

Alternative environments
Modular buildings may also be available (including air-conditioning, heating, chiller, RF shielding, additional magnetic shielding in walls). Contact your local GE representative for GEcertified designs and vendors.

Please ask your local GE project manager for a comprehensive installation and siting manual.

Filming considerations
Filming requires the SignaTMArchitect 3.0T analog or digital filming.

Interface (purchased separately) unless DICOM Print will be used exclusively for software filming to DICOM print peripheral devices. An Analog/VDB or Digital/LCAM camera interface is typically required for most installations.

Accessory Package
- SPT phantom set with storage cart
- Customer diagnostic software
- Operator manuals
- Patient log books

Emergency stop
Disconnects electrical power from RF and gradient components in the magnet room (duplicate control at the magnet).

Warranty
The published GE warranty in effect on the date of shipment shall apply.

InSite* Remote Diagnostics
GE's unique remote service and applications support including magnet monitoring. Also allows downloading of applications software such as eFlexTrials program.

Optional capabilities
Some features and capabilities listed in this data sheet are optional with a Signa™Architect 3.0T and are subject to change without notice. Contact a GE representative for the most recent data.

GE regulatory compliance
The SignaTMArchitect 3.0T complies with all applicable safety standards including but not limited to IEC60601-1, IEC60601-1-2 (Electromagnetic Compatibility), and IEC 60601-2-33 (MR).

Laser alignment devices contained within this system are appropriately labeled according to the requirements of the FDA's Center for Devices and Radiological Health (CDRH) and I EC 60825-1.

Imagination at work

Product may not be available in all countries and regions.
Contact a GE Healthcare Representative for more information.

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