Operator Manual of
1.5T 24E Posterior Array - English
Model 10-F28808

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GE Catalog Number: 5880867
RFT Document No.: 81-F28808

Version R2.0
November 2022

Proper performance of this coil can be guaranteed only when the coil is used on the MR system (hardware/software level) specified at the time of purchase. Upgrades or any other modifications to the system software and/or hardware may affect compatibility. Prior to upgrading your MR system, please contact your GE Medical Systems, LLC representative to discuss coil compatibility issues. Failure to do so may void your warranty.

Medical Device Directive

Products with the following CE Mark of Conformity meet the requirements of European Union Directive EU 2017/745 MDR concerning medical devices:

The product is a Class II device that complies with the international safety standard IEC 60601-1, and can be operated continuously. As a type BF application part, it is used in the environment with the IPX1 waterproof function and without flammable anesthetic gases.

WARNING:
The equipment must be disposed of separately from unsorted municipal waste. Contact an authorized manufacturer representative for information concerning disposal.

TABLE OF CONTENTS

INTRODUCTION

This manual describes the safety precautions, characteristics, usage, and maintenance methods for 1.5T 24E Posterior Array.
Read through this manual carefully before using the equipment for imaging. Please also refer to the MR Scanner manual associated with this manual.

If you have any questions or comments regarding this manual, or if you need any assistance with the use of the product, please contact your GE representative.
This equipment is intended for use by qualified staff only. Users must read and understand the contents of this manual before using this product.

COMPATIBILITY

The connector of 1.5T 24E Posterior Array, which is connected to the E port connector of the GE system, consists of 3 jacks. Please note the jack label. Compatibility of 1.5T 24E Posterior Array with GE 1.5T SIGNA Victor systems is controlled by coil ID and is documented in the system related documents.

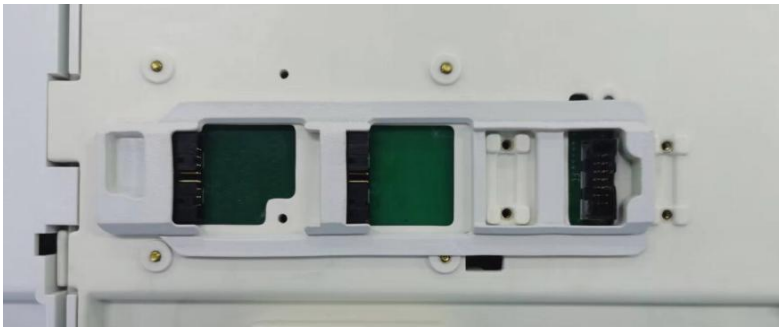


Diagram Three Jacks at the Bottom of Coil

INTENDED USE

The 1.5T 24E Posterior Array is an RF coil specially designed for GE 1.5T MRI systems. It is mainly intended for spine imaging. When used with other coils, it is also intended for the imaging of the abdomen, trunk, pelvis, prostate, heart, hip, and long bone. The surface material of the coil has limited contact (< 24 hours) with the patient's skin.

INTENDED USER

GE MR coils are intended to be used by experienced healthcare professionals.

IMAGING PRINCIPLES AND CLINICAL BENEFITS

MRI represents the relative response of a particular nucleus to the absorbed RF energy. Most MRIs aim to observe hydrogen atom nuclei because they are relatively abundant in human body. MRI is therefore typically a tomogram for proton distribution in an imaged sample. Similar to other imaging techniques, MRI images are a function of density.

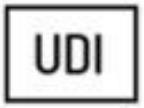
MRI is noninvasive and does not use ionizing radiation. The distribution of nuclei can be observed by MRI techniques. The contrast of the image is also affected by other physical factors, including differences in the ability to re-emit the absorbed RF signal (relaxation) and flow phenomena. This dependence on multiple parameters means that the information content of MRI differs greatly from that of X-ray or ultrasound images. The different physical and chemical characteristics of specific protons can be modified by changing specific elements of the acquisition protocol to highlight the relative appearance of normal versus pathological tissues, thereby ensuring excellent tissue comparison across various tissue types. The imaging sequences can even be modified to visualize blood flow and to compensate for the blurring effects of cardiac or respiratory motion.

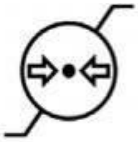
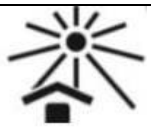
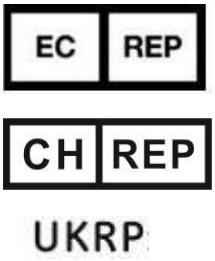
MRI also offers a unique ability to acquire images in almost any direction without repositioning the patient. This not only brings greater convenience to healthcare professionals, but also minimizes patient discomfort. Furthermore, magnetic resonance provides chemical information that cannot be measured with conventional X-ray or ultrasound. It is the combination of versatility, sensitivity, and specificity as a diagnostic modality that has accelerated the acceptance of MRI.

No undesirable side effects have been identified with the use of MRI coils. Refer to the MR System Instructions for Use/Operator's Manual for any undesirable side effects related to the use of MRI.

EXPLANATION OF SYMBOLS

S/N	Symbol	Description
1		Manufacturer
2		Date of Manufacture
3		Catalogue number
4		Serial number
5		High magnetic field
6		Follow instructions for use
7		Consult instructions for use

S/N	Symbol	Description
8		Type BF applied part
9		Class II equipment
10		Receive only
11		This symbol indicates that the waste of electrical and electronic equipment must not be disposed of as unsorted municipal waste and must be collected separately. Contact the authorized representative of the manufacturer for information concerning the decommissioning of your equipment.
12		CE Mark of Conformity or "CE Mark" indicates the mark that the manufacturer shows that the device complies with the applicable requirements set out in this regulation and other applicable EU harmonized regulations.
13		Medical device
14		Unique device identifier
15		Temperature limit
16		Humidity limitation

S/N	Symbol	Description
17		Atmospheric pressure limitation
18		Keep dry
19		Fragile, handle with care
20		Keep away from sunlight
21		This side up
22		Stacking limit by 2
23		Authorized representative
24		UK product certification mark
25		Prescription device Note: US Federal law restricts this device to sale by or on the order of a clinician.

S/N	Symbol	Description
26		The ETL Listed Mark indicates that the product has been tested by Intertek and found to be in compliance with accepted national standards.
27		General warning sign
28		MR safe
29		MR unsafe
30		MR constraints Note: Items that are demonstrated to be safe in the MR environment under defined conditions. They determine the conditions for the static magnetic field, switched gradient magnetic field, and RF magnetic field at least. Accessory conditions may be required, including specific item configurations.
31		Waterproof grade mark
32		Warning: Crush hazard/Mind your hand
33		Handle operation mark. If an emergency occurs or the electronic control function of the hospital bed fails, the coil must be unlocked manually. Hold the handle of the coil, rotate half a turn clockwise, and push out the coil.
34		Overweight warning sign. It means the product with packaging is overweight, and manual handling poses a risk of injury. It is recommended to use handling tools.

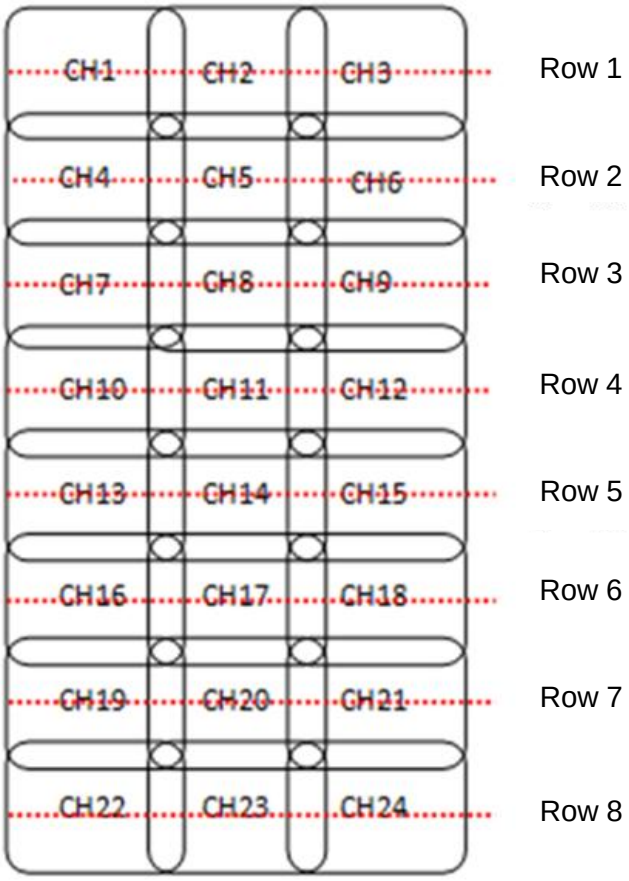
CHAPTER 1: APPLICATION PARTS OF 1.5T 24E POSTERIOR ARRAY

1-1 Application Parts

The application parts of 1.5T 24E Posterior Array consist of one separate component: The component group is marked on each side of the hospital bed and is used to position or landmark the patient.

1-2 Select Appropriate Configuration

1.5T 24E Posterior Array



Row 1
Row 2
Row 3
Row 4
Row 5
Row 6
Row 7
Row 8

CHAPTER 2: SAFETY

2-1 Prerequisite Skills

This manual contains detailed information regarding the installation, positioning, and use of 1.5T 24E Posterior Coil. Users must read the instructions carefully and thoroughly before attempting to scan patients with this coil.
This manual is not intended to teach MR imaging. Users must have sufficient knowledge to perform various diagnostic imaging procedures on their devices.
You may gain the knowledge through a variety of learning approaches, including clinical working experience, hospital based programs, and as part of many college and university radiological technology programs.

2-2 Importance

 **MRI system is very complex and precision equipment, the receiving coil is an important part of this system, and improper use and operation of the equipment may cause serious damage, and even endanger the patient and operator.**

 **Patient safety is critical; the primary prerequisite during operations and maintenance is to protect patients from electrical and mechanical damage.**

 **Make sure your operator manual is available at any time, and regularly review operating procedures and safety precautions.**

2-3 Quality Assurance

The procedure described in the chapter "Quality Assurance" of this manual should be performed upon receipt of the coil to establish a baseline of coil performance.

2-4 Cautions

The following general warning statements apply to scanning with an MR system.
For further details, consult the warnings in your MR System Operator Manual.

 Make sure that the patient does not touch the jack hole. If necessary, a pad should be placed between the patient and the surface of the jack hole.

 Please keep electronic equipment (e.g. mobile phones), magnet cards, and damp clothing outside the magnetic shielded room. Metal wire or metal components and other metal articles in clothes, such as watch and coins should be removed from the patient. Do not take them into the scanning room, otherwise electronic devices may be damaged, and magnet cards may be demagnetized.

 Make sure that the patient does not touch the magnetic cavity. If necessary, a guard should be placed between the patient and the surface of the magnetic cavity.

 Do not use the coil in the environment with flammable anesthetic gases and flammable air mixture, oxygen, or nitrous oxide gas mixture.

 If the patient feels fever, tingling, stinging, or similar sensations, immediately stop the scan procedure, examine the patient, and contact the responsible physician before continuing the procedure. Pay special attention to very young, sedated, or other compromised patients who may not be able to communicate effectively.

 Physiological monitors, ECG, respiratory gating, and auxiliary equipment including receiver coil may cause burns and other injuries to patients. Use only auxiliary equipment approved for MRI system.

 Patients with implantable magnetic metal devices should not be scanned, because the magnetic field may interact with the implantable surgical clips or other magnetic materials.

 Persons with cardiac pacemakers or other implantable electronic devices should not enter the magnetic field zone delineated by the MR system manufacturer.

 There is a risk of scanning patients with fever or cardiac metabolic disorder.

 Patients with a surgery history of surgery must clearly inform the presence of metal or electronic devices and other materials in their bodies.

 Facial makeup should be removed before scanning because it may contain small amounts of metallic substances that cause irritation to skin and eyes. Permanent eyeliner tattoos may cause eye irritation due to ferromagnetic particles.

 Patients who work in environments in which there is a risk of having embedded metallic fragments in or near the eye should be carefully screened before undergoing an MR examination.

 Some transdermal patches may cause burns to the subcutaneous skin due to absorption of RF energy. The supplier of the patches should be consulted or the patch should be removed to avoid burns. A new patch should be applied after the examination.

 In fact, a conductive ring may also be formed by contact with body parts, such as the inner thigh, inner calf, palm and palm, palm and body, ankle and ankle. Such contacts should be avoided, because they may cause burns to the patient.

 Advise the patient to keep still throughout the scanning to avoid nausea. Patients should be supervised at all times during the scanning.

 Avoid wearing damp clothes, which may cause burns to the patient.

 Patients should always be taken care of during system scanning.

2-5 Contraindications

 MR system has a very strong magnetic field that may be hazardous to persons entering the environment or the system room if they have some medical conditions or implantable devices.

When using this coil, please refer to the "Contraindication of Use" statement of your compatible MR system.

2-6 Precautions

Precautions should be taken during the scanning of patients with the following conditions:

 Risk of cardiac arrest exceeding the general level.

 Increased likelihood of seizures or claustrophobia.

 Unconscious, heavily sedated, or confused mental state.

 Inability to maintain effective communications

Please refer to Chapter 2 "Safety" in your MR System Operator Manual or your MR *Safety Guide* for more comprehensive MR safety information.

2-7 Emergency Procedures

If the coil creates smoke, sparks, or makes an unusually loud noise, or if the patient requires emergency assistance, perform the following steps:

1. Stop the scanning in case any of the above occurs.
2. Unplug other coils from the MR system and pull the cable assembly if other coils are present.
3. Release the scanning table by turning the handle at the end of the scanning table assembly.
4. Evacuate the patient from the scanning room. Provide medical treatment, if necessary.

2-8 Technical Considerations

 Special conditions should be met in terms of electromagnetic compatibility of coil and accessories. The coil must be installed and used in a shielded scanning room provided for the MR system.

 The user must ensure that the scanning room door is closed during system scanning. Failure to do so may cause mutual interference with portable and mobile RF communication equipment, affecting the performance of the MR coil and/or such equipment.

 The coil should only be used with the accessories specified in the MR System Operator Manual.

 The use of accessories other than those specified in this MR System Operator Manual may result in decreased ESD (electrostatic discharge) immunity of the MR system, causing damage to the coil and/or system.

 Users must be trained in the safe and effective use of the MRI scanner before attempting to operate the coil.

 After unpacking the coil, allow it to remain under stable atmospheric conditions for several hours prior to use. Extreme temperature and/or humidity during storage and/or transportation may cause condensation inside the coil.

 At the end of its service life, dispose of the coil in accordance with local regulations.

 Do not modify this equipment without authorization from the manufacturer.

2-9 Electrical and Mechanical Safety

 The coil contains electrical and mechanical components. The electrical and mechanical assemblies and parts of the coil must be used with care and should be regularly inspected.

 Service personnel must have received special training to ensure the safe operating condition of the coil. Therefore, only properly trained and qualified personnel should be authorized to repair the coil.

 Any changes or modifications to the coil must be approved and performed by GE Medical Systems prior to installation.

 Before using the coil, visually inspect it for any external damage. Do not use the coil if the housing is broken.

2-10 Accident Reporting

In the event of an accident or injury to the patient, operator, or maintenance personnel while operating the coil, the user should immediately report the situation to GE Healthcare and Shenzhen RF Tech Co., Ltd. as well as to the user and the patient's member state.

If an accident occurs as a result of coil operation, do not operate the equipment until an authorized investigation is conducted. For more information, please contact:

GE Healthcare Americas (North America)	
USA	800-558-5102
Canada	800-668-0732
GE Healthcare Asia/Australia (Asia/Australia)	
China	86-21-62192228
Taiwan Province of China	886-2-2505-7900
Singapore	65-291-8528
Australia	61-2-9975-5501
Japan	81-120-48-2630
South Korea	82-31-740-6119
India	91-80-845-2923
GE Healthcare SCS Europe (Europe)	
Europe	(33) 1-41-19-76-76

CHAPTER 3: INSTALLATION AND MAINTENANCE

3-1 Installation and Configuration

The coil must be installed and configured by the GE Service Representative.

3-2 Cleaning and Disinfection

Your MRI coils and accessories must be cleaned and disinfected in accordance with the regulations of your affiliation and your local, state, and federal regulations, and the following cleaning and disinfection instructions have been tested and verified.

To prevent accidents, pay special attention to:


Caution: No magnetic disinfection equipment should be brought into the magnet room (including the magnet UV device). The movable accessories between coil and magnet are recommended to be cleaned and disinfected outside the magnet room.


Cleaning and disinfection personnel entering the magnet room must be aware of the working practices under a strong magnetic field environment before they can perform cleaning and disinfection of equipment in the magnet room. After cleaning and disinfection are done in the magnet room, it is necessary to open the ventilation system for ventilation.


Remove the coil connector from the scanner before attempting to clean the coil. An electrical shock accident may occur if the system is connected during the process of cleaning the coils, the coils are not dry, or the system becomes damp.


Do not touch the connector by hand, nor wipe the connector with a corrosive cleaning substance, such as alcohol or isopropyl alcohol and bleach.


Do not continue to use the coil if it is found to be cracked or broken.


Check the pads for flaking or cracking. To prevent biological hazards, replace the cracked or flaked pads before use.


Dispose of the used cleaning, sanitizing, and drying materials according to the contamination procedures.

 Do not gather detergents after cleaning. Accessories such as coils and pads must be completely dry before use.

To avoid possible damage to equipment, avoid these practices:

 Do not use flammable or explosive sprays as the vapors generated may result in detonation, causing injury or damage to the equipment.

 Sprays are not recommended for disinfecting medical devices as this may allow disinfectant vapors to penetrate the device, causing a short circuit or corrosion.

 Do not pour any cleaning solution directly on the coil.

 Do not use solutions containing amines, strong bases, esters, iodine, aromatic hydrocarbons, or chlorinated hydrocarbons or ketones.

 In no case should the coil be placed in any type of sterilizer. Disinfection or contact with liquids may damage the electrical parts of the device. Do not autoclave any components of the coil.

 Harsh chemically degradable plastics may compromise device safety. It is known that some sterilizing and other harsh cleaning compounds may damage some plastics by weakening structural integrity and compromising electrical insulation.

 Cavicide, Virex, Virex 256, PDI Sani-Cloth Bleach Plus, Super Sani-Cloth, and Sani-Cloth AF3 are commonly used quaternary ammonium salt disinfectants. Manufacturers advertise that these disinfectants can be safely applied on hard, non-porous surfaces such as linoleum floors, Bakelite tables, and stainless steel. Manufacturers discourage the use of these disinfectants on data cables, patient cables, and power cables because these cables are classified as porous materials.

 Do not spray or pour cleaning solution directly on the coil as the coil contains sensitive electronics which are prone to damage.

 Do not immerse the coil in any solution. Under no circumstances should the coil be placed into any type of sterilizer. Soaking in liquid may cause equipment failure and will void the warranty.

3-2-1 Cleaning

1. Cleaning refers to physical removal of foreign matter, such as dust, soil, blood, secretions, excretions, microorganisms, and other organic matters.
2. Cleaning refers to removing microorganisms rather than killing them.
3. Cleaning is done with water, detergents, and wiping.
4. Cleaning is an essential prerequisite for effective disinfection.

3-2-2 Disinfection

1. Disinfection is the process of eliminating or reducing harmful microorganisms from inanimate objects and surfaces.
2. According to the Spaulding classification, the MRI coils and accessories are considered non-critical. Non-critical equipment refers to the instruments and devices with surface only contacting intact skin but not penetrating the skin. Medium or low level disinfection is required.

 Non-critical equipment does not come into direct contact with the patient, but may become contaminated with microorganisms and organic soil (e.g., blood fluids) during patient care.

3-2-3 Recommended Detergent

Use a mild household detergent (such as neutral soap or liquid soap), dilute with water, and wipe with a soft, damp lint-free cloth.

 Do not use plenty of water.

3-2-4 Recommended Disinfectant

Disinfectant	Level of disinfection	Exposure duration	Temperature	Drying duration
Isopropyl alcohol 70%	Intermediate	At least 1 min	Room temperature (15°C–25°C or 59°F–77°F)	1 min
1:200 bleach water (containing 250 ppm chlorine) (5 mL household bleach water plus 1 L water)	Low	At least 5 min	Room temperature (15°C–25°C or 59°F–77°F)	1 min

Use of a non-recommended disinfectant, use of an incorrect solution strength, or exposure of the coil to a detergent or disinfectant for longer than recommended duration may damage or discolor the coil and its accessories.

If using disinfectant wipes, make sure that they contain the active ingredient at the same concentration as above and no other ingredients.

Do not use bleach solutions above 250 ppm.

Do not use bleach wipes.

3-2-5 Prevent Residual Stain or Virus on MR Coil

Every effort should be made to cover the patient contact surfaces with coils and accessories with a test strip or MR-compatible working paper prior to patient positioning.

The use of bed sheet or paper sheet cannot prevent the spread of infectious diseases without actual cleaning and disinfection.

Risk of cross infection

Always clean and disinfect the bed, mattress, physiological sensor, positioning aid, coils, and cables after each examination of the (injured or infected) patient site.

Appropriate personal protective and preventive measures should be taken when removing blood or residual contrast media.

3-2-6 Cleaning and Disinfection Frequency

Equipment and accessories		Cleaning	Disinfection	Frequency
Non-critical diagnostic coil	Rigid coil	Yes	Yes	Clean before use for each patient
	Flexible coil	Yes	Yes	Clean before use for each patient
	Coil base	Yes	Yes	Clean before use for each patient
	Coil cable	Yes	Yes	Clean before use for each patient
Pad/mattress		Yes	Yes	Clean before use for each patient
Coil pad		Yes	Yes	Clean before use for each patient

3-2-7 Cleaning and Disinfection Steps

General Steps:

1 Check

1.1 Check the coil and cable for any damage such as cracks, fractures, and wear.

 If the coil or cable is damaged, contact your GE service representative.

1.2 Regularly check the surface of positioning tools such as a mattress, pad, sandbag regularly for damages, tears, or wear. Remove and place the damaged mattress or sandbag, if any.

 Internal sponge structures cannot be adequately cleaned and disinfected.

 Do not repair tears or holes with patches or adhesive tapes.

2 Instructions for Cleaning

2-1 Prepare a mild soap or detergent solution (see "Recommended Detergent" above).

2-2 Wipe all surfaces with a soft, lint-free cloth dampened with detergent.

2-3 Use a cotton swab or toothpick to remove the stain from the coil gap and corner of the housing.

2-4 Wipe all surfaces until all visible signs of surface contamination are removed.

2-5 Wipe off any residual detergent by applying a soft, lint-free cloth dampened with tap water.

2-6 Air dry for 2 minutes or wipe all surfaces dry with a lint-free cloth.

3 Instructions for Disinfection

3-1 Check all surfaces for cleanliness. Repeat the above steps for surface cleaning if necessary.

3-2 Dampen a soft, lint-free cloth with a recommended disinfectant (see "Recommended Disinfectant" above), and wipe the surface with a lint-free cloth dampened with clean tap water to remove the disinfectant solution.

3-3 Allow the surface to air dry when using alcohol.

3-4 When using bleach solution, contact with bleach for at least 5 minutes. Then wipe the surface with a lint-free cloth dampened with clean tap water to remove the bleach solution.

3-5 Dry with a clean lint-free cloth or allow to air dry.

 Residual detergent or disinfectant on the coil may damage the coil surface and cause surface cracks.

3-6 Dispose of any used sterilization materials according to your disposal policy.

3-3 Product Life

The function, lifetime, and normal performance of the coil can be guaranteed only if the coil is used on the MR system (hardware/software level) specified at the time of purchase. Upgrades or other modifications to the system software and/or hardware may affect compatibility.
Stop using the equipment immediately in case of the following conditions when using the coil continuously:

 Cracked coil housing: Cracked coil housing may expose electrical components and may cause an electrical shock.

 If the housing is damaged, immediately stop using your equipment.

 Damaged connectors and pins: Damaged cable pins and connectors may damage the MR system connector and compromise coil or system performance.

3-4 Storage

Store the coil in a scanning room or equipment room with an air conditioner.
To store the coil and base plate, a storage space of greater than 215 cm x 41 cm x 12 cm (D x W x H) is required.

3-5 Environmental Requirements

This equipment should be transported, stored and operated under the following conditions:

Item	Transport/Storage	Operating conditions
Atmospheric pressure	500 hPa–1,060 hPa	500 hPa–1,060 hPa
Relative humidity	5% to 95% Non-condensing	30% to 75%
Temperature	-30°C to +70°C	15°C to 21°C

3-6 Load Bearing of Coil

The coil can bear patients weighing $\leqslant$ 200 kg.

3-7 Weight and Dimensions

Item	Package	Coil
Weight	47 kg	18.0 kg
Dimensions	227.0 cm x 53.0 cm x 32.0 cm	214.5 cm x 40.2 cm x 11.5 cm

CHAPTER 4: QUALITY ASSURANCE

4-1 Purpose

To check the system single-noise ratio (SNR). This procedure allows the user to check the coil elements for proper functioning.
The quality assurance test should be performed upon receipt of the coil to establish a baseline of coil performance. To check the system-level signals and noise. For the specific frequency of quality assurance tests, please refer to the system service frequency.
The following steps detail the instructions for performing this assessment.

4-2 Tools Required

Table 4-2 Tools Required		
Description	GE part number	Quantity
TL uniform phantom	5343347	2

4-3 Coil Installation and Positioning

Figure 4-3-1

A 1.5T 24E Posterior Array is embedded on the patient table and connected to the MR system.

4-4 Coil Water Phantom Positioning

4.4.1 The TL uniform water phantom is placed on a 1.5T 24E Posterior Array, with the center of the first water phantom aligned with the middle of Row 1 and Row 2 marked on both sides of the bed, and the center of the second water phantom aligned with the middle of Row 3 and Row 4 marked on both sides of the bed.

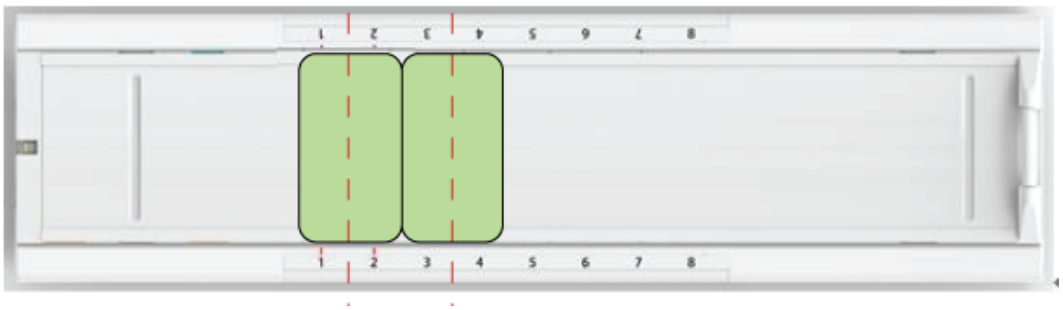


Figure 4-4-1: Alignment of Two Water Phantoms with Rows 1-4 on Both Sides of the Bed

4.4.2 Mark the center of the first water phantom.

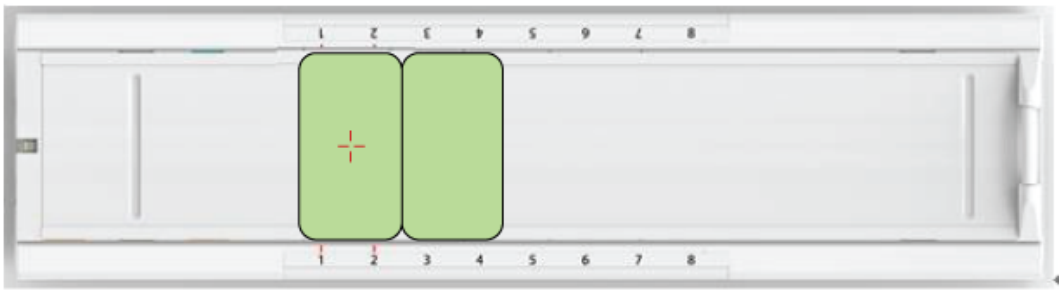


Figure 4-4-2: Marking of the Center of the First Water Phantom

4.4.3 Advance the coil to the magnet and press “Progress Scanning”.

4.4.4 Press “Move Scanning” to move the scanning position of the coil.

4.4.5 Run MCQA check.

4.4.6 Select the coil you want to check from the menu.

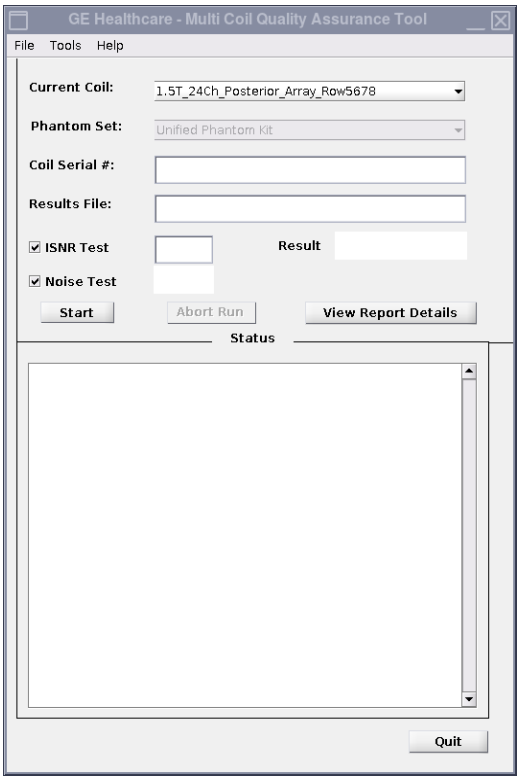


Figure 4-4-3: Selection of Rows 1, 2, 3, and 4 of the 1.5T 24E Posterior Array for MCQA Check

4.4.7 The TL uniform water phantom is placed on a 1.5T 24E Posterior Array, with the center of the first water phantom aligned with the middle of Row 5 and Row 6 marked on both sides of the bed, and the center of the second water phantom aligned with the middle of Row 7 and Row 8 marked on both sides of the bed.

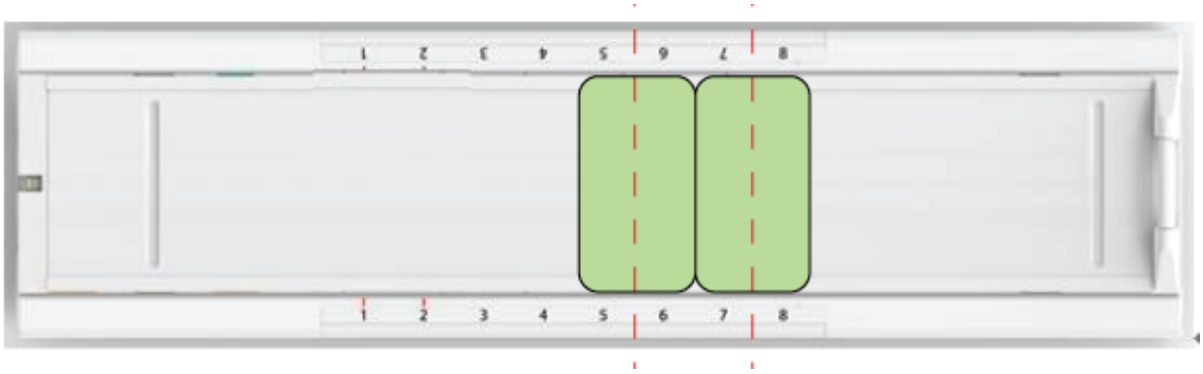


Figure 4-4-4: Alignment of Two Water Phantoms with Rows 5-8 on Both Sides of the Bed

4.4.8 Mark the center of the first water phantom.

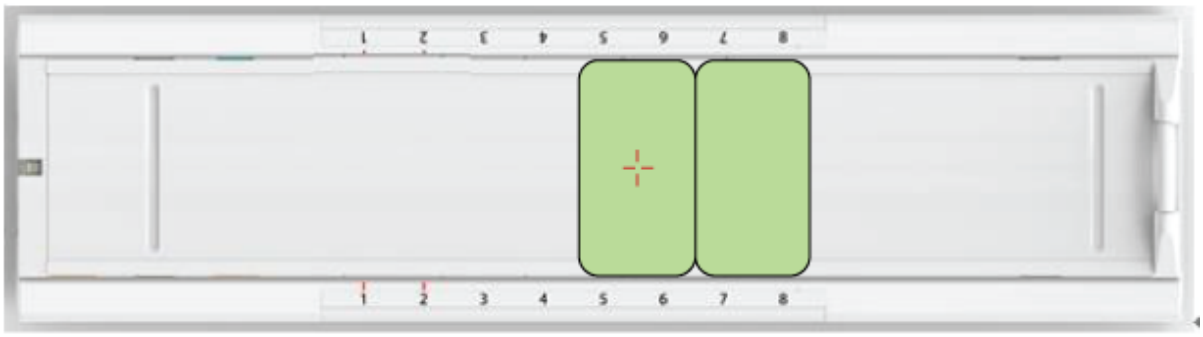


Figure 4-4-5: Marking of the Center of the First Water Phantom

4.4.9 Advance the coil to the magnet and press “Progress Scanning”.

4.4.10 Press “Move Scanning” to move the scanning position of the coil.

4.4.11 Run MCQA check.

4.4.12 Select the coil you want to check from the menu.

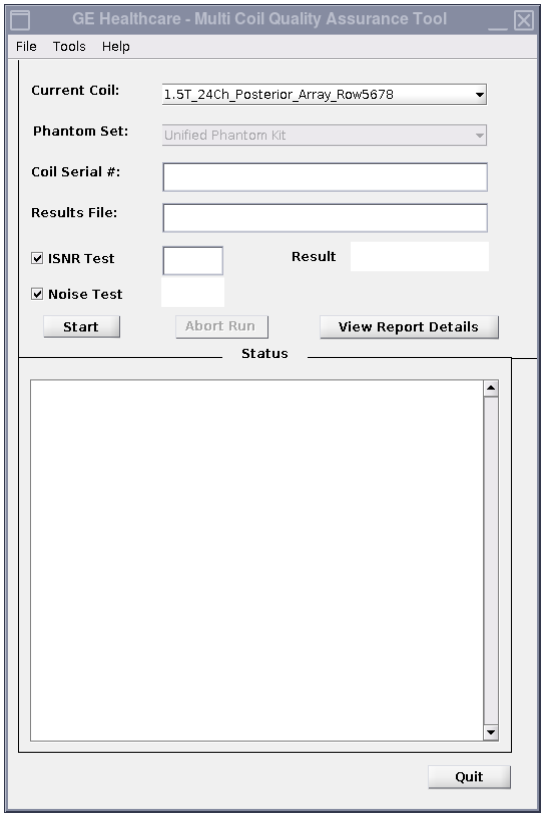


Figure 4-4-6: Selection of Rows 5, 6, 7, and 8 of the 1.5T 24E Posterior Array for MCQA Check

4-5 Multi-Coil Quality Assurance (MCQA) Tool

WARNING: All RF coil related tests must be run on a system that is well-calibrated and passes all system tests (the system should have passed "Install In Specification" (IIS)), especially white pixel, correlated noise, and MCR (Multi-Coil-Receive) tool.

From the Common Service Desktop (CSD), select [Image Quality], Multi-Coil QA Tool, and Click here to start this tool. The MCQA Tool window will open, as shown in Figure 4-5-1.

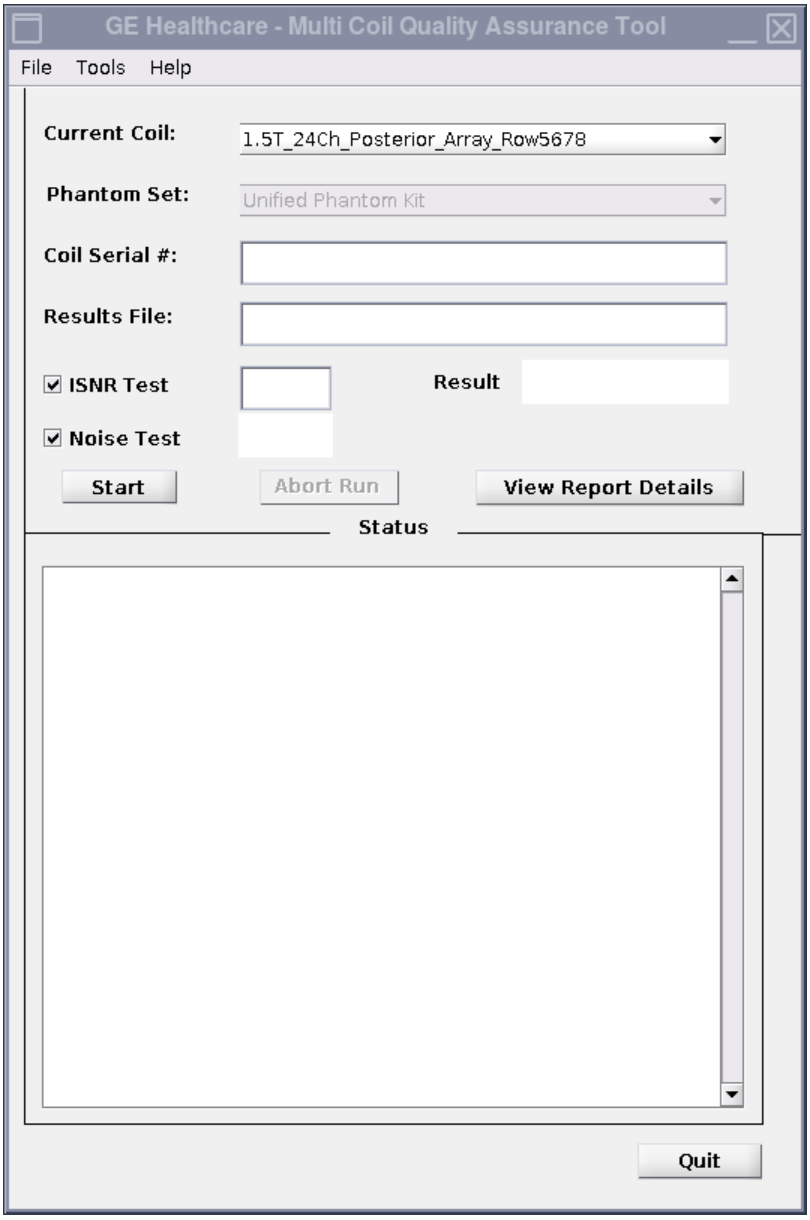


Figure 4-5-1: Multi-Coil QA Tool

When scanning is complete, scanning results are displayed on the screen (Figure 4-5-2). The PASS/FAIL status shows PASS if all coil elements are functioning properly. If any coil element displays FAIL, call the GE Service Representative for coil repair.

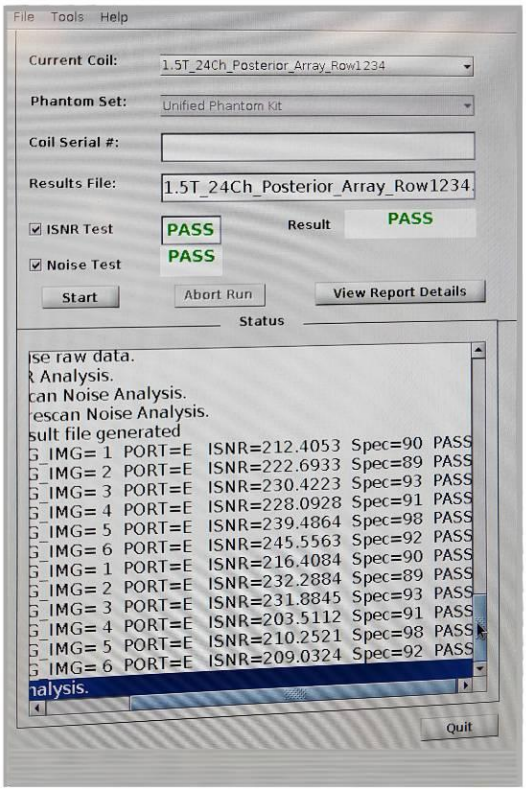


Figure 4-5-2: Test Results

The MCQA Tool GUI displays Fail for reasons including, but not limited to:

- Failure of coil element
- Incorrect phantom used for the test
- Incorrect positioning/placement of the phantom

Click [Quit] button to exit MCQA Tool.

Remove coil and phantoms from the system cavity.

CHAPTER 5: USE OF 1.5T 24E POSTERIOR ARRAY

5-1 Positioning of Patient Thoracic/Cervical Spine

The 1.5T 24E Posterior Array is designed for a head-first approach where the patient's neck is aligned to Row 1 of the coil in a supine position and the center of the thoracic or cervical spine to be scanned is positioned approximately on Row 1 and Row 2 of the coil, **as shown in Figure 5-1-1 below:**

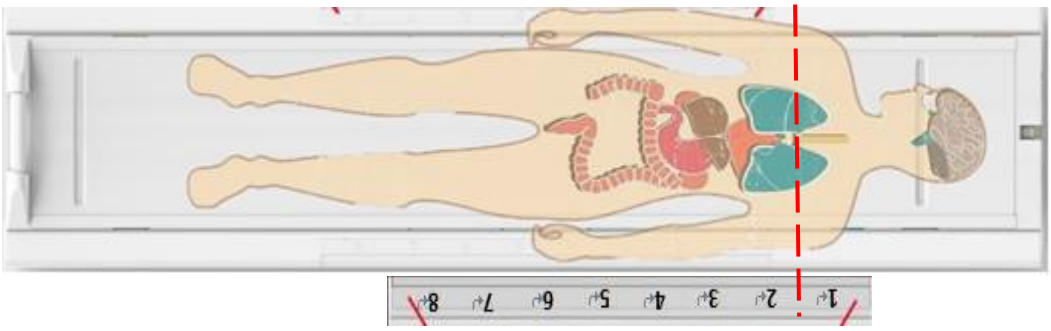


Figure 5-1-2: Patient Positioning

The patient is fed into the magnet for cervical/thoracic spine positioning, as shown in the right figures.	 **Figure 5-1-3: Positioning of Cervical/Thoracic Spine**

Figure 5-1-4: Positioning of Cervical/Thoracic Spine

5-2 Positioning of Patient Lumbar Spine/Abdomen

The 1.5T 24E Posterior Array is designed for a head-first approach where the patient's neck is aligned to Row 1 of the coil in a supine position and the center of the lumbar spine/abdomen to be scanned is positioned approximately on Row 3 and Row 4 of the coil, **as shown in Figure 5-2-1 below:**

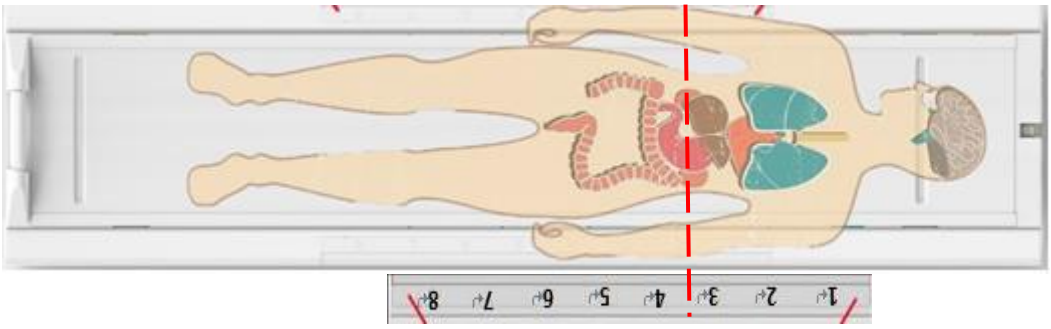
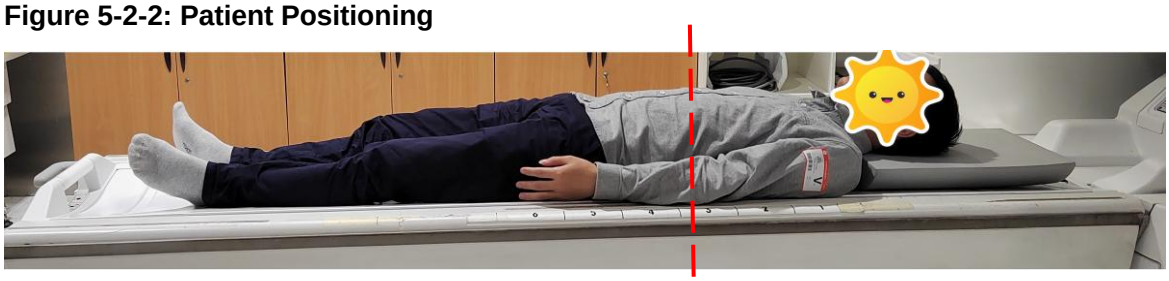


Figure 5-2-2: Patient Positioning



The patient is fed into the magnet for lumbar spine/abdomen positioning, as shown in the right figures.

Figure 5-2-3: Positioning of Lumbar Spine/Abdomen

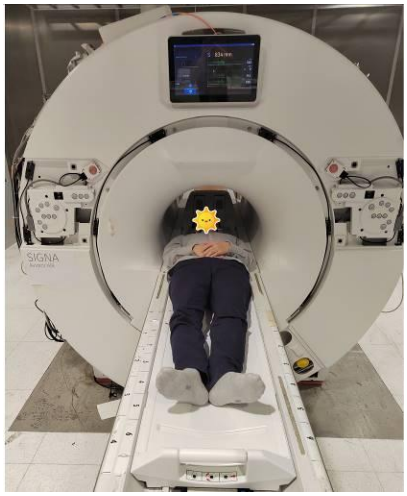


Figure 5-2-4: Positioning of Lumbar Spine/Abdomen

5-3 Positioning of Patient Pelvic/Caudal Region

The 1.5T 24E Posterior Array is designed for a head-first approach where the patient's neck is aligned to Row 1 of the coil in a supine position and the center of the pelvic/caudal region to be scanned is positioned approximately on Row 5–Row 8 of the coil, **as shown in Figure 5-3-1 below:**

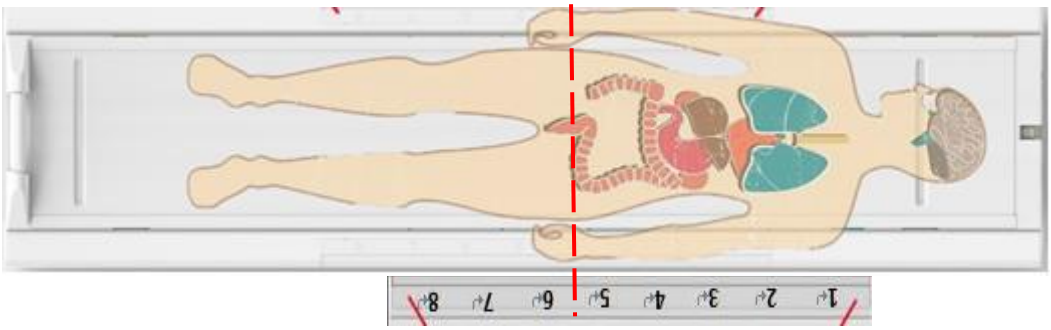
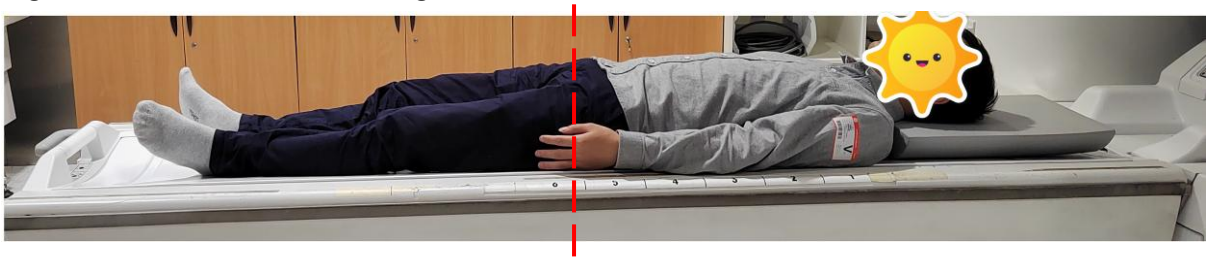


Figure 5-3-2: Patient Positioning



The patient is fed into the magnet for pelvic/caudal region positioning, as shown in the right figures.	 **Figure 5-3-3: Positioning of Pelvic/Caudal Region**  **Figure 5-3-4: Positioning of Pelvic/Caudal Region**

5-4 Patient's Hearing

Provide ear plugs for the patient after the patient is informed of all instructions.

Hearing protection is required for all personnel in the scanning room during scanning, to prevent hearing impairment.

Acoustic levels may exceed 99 dB(A). Hearing protection must have a Noise Reduction Rating (NRR) of 28 dB or better (e.g., 30 dB, 32 dB.)

5-5 Operation Guidelines for Termination

5-5-1 After normal scanning, smoothly remove the bed out of the magnet with the operation of the MR system.
5-5-2 If the scanning is to be terminated halfway, smoothly remove the bed out of the magnet with the operation of the MR system.

CHAPTER 6: SCANNING

6-1 Autoshim

Generally, the image quality can be improved by enabling autoshim. Autoshim is a feature of the GE MRI System to improve image quality. It does this by improving the magnetic field homogeneity within the FOV selected. When the selected FOV is far from the center, autoshim can improve the quality significantly.

6-2 Positioning

The 1.5T 24E Posterior Array is designed to produce diagnostic images of the spine (cervical/thoracic/lumbar spine), trunk, and pelvis, including imaging of vascular structures, when connected to a scanner.
This allows the use of a large FOV body coil positioner, which is helpful in determining the left or right offset required for imaging the anatomical regions of the spine.
You may scan using the body coil at any time, but the coil must be connected normally.

6-3 Fat Saturation Techniques

Off-center FOV imaging is a more complex and difficult technique since it is dependent upon the homogeneity of the magnetic field and the determined fat peak signal. Poor fat saturation may occur it is off the imaging center.
For best fat saturation results, position the patient as close to the isocenter as possible. For axial imaging, use an axial positioner, but before specifying the slices, use the same FOV you intend to use in your study for positioning or use explicit positioning. Use of graphic indication from a large FOV positioner sometimes results in software error, thus producing blank slices, shifted slices, or both.

6-4 Scanning Protocols

GE Corporation recommends that you select imaging protocols that have been created by your radiologist. In addition, you may refer to the GE protocols acting on the system.