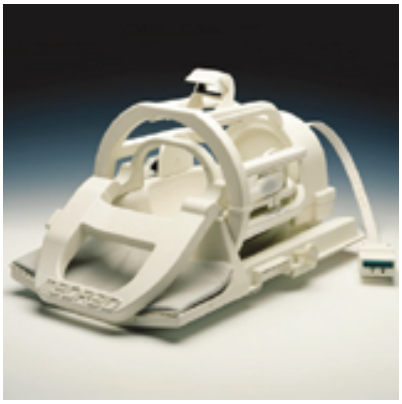
# *GE Signa® 1.5T Quadrature Neurovascular Array Coil*



## SERVICE MANUAL

## for
## GE Signa® Systems

Medrad Document 201452 Rev. A

GE Document Number: 2330440-6 Rev. 1

**GE Catalog Number: M1087NC**

**Supplier Part Number: M64NVA**

MEDRAD®

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# Damage in Transportation

All packages should be closely examined at time of delivery. If damage is apparent, have notation **"damage in shipment"** written on **all** copies of the freight or express bill **before** delivery is accepted or "signed for" by a General Electric representative or a hospital receiving agent. Whether noted or concealed, damage **MUST** be reported to the carrier **immediately** upon discovery, or in any event, within **14** days after receipt, and the contents and containers held for inspection by the carrier. A transportation company will not pay a claim for damage if an inspection is not requested within this **14**-day period.

**Immediately** complete a "Damage Loss Claim Form", available via MS Exchange Mail, after the damage is found.

MS Exchange Path:

Outlook/Public Folder/All Public Folders/Medical Systems/!Global Initiatives/Information Management/Forms/Common Forms/DAMAGE LOSS CLAIM FORM.

Send the completed form to the email address listed in the form.

For more information about the Transportation Claim Procedure, access the GE Medical Systems Intranet and enter the following URL address (case sensitive):

ftp://3.87.40.2/globepro/qualsys/Docs/190016MF.PDF

Rev. 11/15/2000

## Language Policy For Service Documentation (Dir. 2128126)

**W A R N I N G**

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- **THIS SERVICE MANUAL IS AVAILABLE IN ENGLISH ONLY.**
- **IF A CUSTOMER'S SERVICE PROVIDER REQUIRES A LANGUAGE OTHER THAN ENGLISH, IT IS THE CUSTOMER'S RESPONSIBILITY TO PROVIDE TRANSLATION SERVICES.**
- **DO NOT ATTEMPT TO SERVICE THE EQUIPMENT UNLESS THIS SERVICE MANUAL HAS BEEN CONSULTED AND IS UNDERSTOOD.**
- **FAILURE TO HEED THIS WARNING MAY RESULT IN INJURY TO THE SERVICE PROVIDER, OPERATOR OR PATIENT FROM ELECTRIC SHOCK, MECHANICAL OR OTHER HAZARDS.**

**AVERTISSEMENT**

- **CE MANUEL DE MAINTENANCE N'EST DISPONIBLE QU'EN ANGLAIS.**
- **SI LE TECHNICIEN DU CLIENT A BESOIN DE CE MANUEL DANS UNE AUTRE LANGUE QUE L'ANGLAIS, C'EST AU CLIENT QU'IL INCOMBE DE LE FAIRE TRADUIRE.**
- **NE PAS TENTER D'INTERVENTION SUR LES EQUIPEMENTS TANT QUE LE MANUEL SERVICE N'A PAS ETE CONSULTE ET COMPRIS.**
- **LE NON–RESPECT DE CET AVERTISSEMENT PEUT ENTRAINER CHEZ LE TECHNICIEN, L'OPERATEUR OU LE PATIENT DES BLESSURES DUES A DES DANGERS ELECTRIQUES, MECANIQUES OU AUTRES.**

**WARNUNG**

- **DIESES KUNDENDIENST-HANDBUCH EXISTIERT NUR IN ENGLISCHER SPRACHE.**
- **FALLS EIN FREMDER KUNDENDIENST EINE ANDERE SPRACHE BENÖTIGT, IST ES AUFGABE DES KUNDEN FÜR EINE ENTSPRECHENDE ÜBERSETZUNG ZU SORGEN.**
- **VERSUCHEN SIE NICHT, DAS GERÄT ZU REPARIEREN, BEVOR DIESES KUNDENDIENST-HANDBUCH NICHT ZU RATE GEZOGEN UND VERSTANDEN WURDE.**
- **WIRD DIESE WARNUNG NICHT BEACHTET, SO KANN ES ZU VERLETZUNGEN DES KUNDENDIENSTTECHNIKERS, DES BEDIENERS ODER DES PATIENTEN DURCH ELEKTRISCHE SCHLÄGE, MECHANISCHE ODER SONSTIGE GEFAHREN KOMMEN.**

**AVISO**

- **ESTE MANUAL DE SERVICIO SOLO EXISTE EN INGLES**
- **SI ALGÚN PROVEEDOR DE SERVICIOS AJENO A GEMS SOLICITA UN IDIOMA QUE NO SEA EL INGLÉS, ES RESPONSABILIDAD DEL CLIENTE OFRECER UN SERVICIO DE TRADUCCIÓN.**
- **NO SE DEBERÁ DAR SERVICIO TÉCNICO AL EQUIPO, SIN HABER CONSULTADO Y COMPRENDIDO ESTE MANUAL DE SERVICIO.**
- **LA NO OBSERVANCIA DEL PRESENTE AVISO PUEDE DAR LUGAR A QUE EL PROVEEDOR DE SERVICIOS, EL OPERADOR O EL PACIENTE SUFRAN LESIONES PROVOCADAS POR CAUSAS ELÉCTRICAS, MECÁNICAS O DE OTRA NATURALEZA.**

**ATENÇAO**

- **ESTE MANUAL DE ASSISTÊNCIA TÉCNICA SÓ SE ENCONTRA DISPONÍVEL EM INGLÊS.**
- **SE QUALQUER OUTRO SERVIÇO DE ASSISTÊNCIA TÉCNICA, QUE NÃO A GEMS, SOLICITAR ESTES MANUAIS NOUTRO IDIOMA, É DA RESPONSABILIDADE DO CLIENTE FORNECER OS SERVIÇOS DE TRADUÇÃO.**
- **NÃO TENTE REPARAR O EQUIPAMENTO SEM TER CONSULTADO E COMPREENDIDO ESTE MANUAL DE ASSISTÊNCIA TÉCNICA.**
- **O NÃO CUMPRIMENTO DESTE AVISO PODE POR EM PERIGO A SEGURANÇA DO TÉCNICO, OPERADOR OU PACIENTE DEVIDO A' CHOQUES ELÉTRICOS, MECÂNICOS OU OUTROS.**

**AVVERTENZA**

- **IL PRESENTE MANUALE DI MANUTENZIONE È DISPONIBILE SOLTANTO IN INGLESE.**
- **SE UN ADDETTO ALLA MANUTENZIONE ESTERNO ALLA GEMS RICHIEDE IL MANUALE IN UNA LINGUA DIVERSA, IL CLIENTE È TENUTO A PROVVEDERE DIRETTAMENTE ALLA TRADUZIONE.**
- **SI PROCEDA ALLA MANUTENZIONE DELL'APPARECCHIATURA SOLO DOPO AVER CONSULTATO IL PRESENTE MANUALE ED AVERNE COMPRESO IL CONTENUTO.**
- **NON TENERE CONTO DELLA PRESENTE AVVERTENZA POTREBBE FAR COMPIERE OPERAZIONI DA CUI DERIVINO LESIONI ALL'ADDETTO ALLA MANUTENZIONE, ALL'UTILIZZATORE ED AL PAZIENTE PER FOLGORAZIONE ELETTRICA, PER URTI MECCANICI OD ALTRI RISCHI.**

**警告**

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- 非 GEMS 公司的维修员要求非英文本的维修手册时，客户需自行负责翻译。
- 未详细阅读和完全了解本手册之前，不得进行维修。
- 忽略本注意事项会对维修员，操作员或病人造成触电，机械伤害或其他伤害。

## *SECTION 1 - INTRODUCTION*

### 1-1 Product Identification and Shipping List

The Quadrature Neurovascular Array (Quad NVA) Coil includes a Volume Head Coil Section, a Posterior Cervical Spine Section, a movable Anterior Neck Section, a Support Base to interface to the table, and associated comfort pads and positioning aids. The Quad NVA is Receive Only and suitable for complete MR imaging of the brain, soft tissue neck, cervical and upper thoracic spinal regions, head and neck MR angiographic studies.

**SHIPPING LIST – TABLE 1-1**

| Description | GE Part# | Supplier Part# | Qty |
|---|---|---|---|
| Comfort Pad | 2330440-7 | 3003252 | 1 |
| Operator Manual | 2330440-5 | 201537 | 1 |
| Patient Positioning Pads | 2330440-8 | 3006431 | 2 |
| Disposable Liners | 2330440-9 | 30510C10002 | 1 Box |
| Phantom | 46-265826G6 | 3008825 | 1 |
| Phantom Positioning Pad | 2330440-4 | 3008824 | 1 |
| Quad NVA | 2330440-2 | 3003023 | 1 |
| Service Manual | 2330440-6 | 201452 | 1 |

### 1-2 Compatibility

This coil is compatible with the following hardware configurations:

Signa 1.5 T, Horizon, LX Horizon, Signa Advantage, Signa Twin Speed

### 1-3 Related Documentation

Signa LX Service Methods CD, 2160623-1

Medrad Quadrature Neurovascular Array Operator Manual, 201537

## 1-4 Environmental Requirements

### Storage Requirements

-The Coil should be stored in a protected area (from both temperature and accessibility) to prevent damage.

-Store and operate the Coil in the scan room.

–DO NOT place items or materials on top of the Coil.

### Dimensions

28.4 in L x 15.1 in W x 13.2 in H
(72.1 cm L x 38.4 cm W x 33.5 cm H)

### Weight

21.9 lbs (9.9 kg)

## 1-5 Theory of Operation

-Refer to the block diagram and schematics in section 7-2 of this manual

The Coil is designed to achieve quadrature receive only operation in the head and C-Spine. Linear receive only operation is achieved in the anterior neck region. This provides magnetic resonance imaging applications within the coil geometry dictated by the subject's anatomy in the region from the top of the aortic arch to the top of the head with no repositioning of the patient.

The receive mode of the Head Coil is a Quadrature eight rod Tapered Birdcage coil for magnetic resonance imaging and spectroscopy. The coil is sensitive to both the horizontal and vertical modes of the NMR signal. Individual feed points electrically 90° apart are employed to drive the coil. The outputs can be used as a combined, single channel receiver configuration or a dual channel high-resolution receiver configuration.

Both feed points of the Head Coil are driven balanced with respect to common ground in the receive mode by employing 90° lattice baluns. The Lattice baluns are used both for matching the output of the individual modes to 50Ω as well as isolating common ground from the coil.

In the High-resolution configuration the outputs of each uncombined mode of the head coil is directly connected to the host system input port. In the single channel receiver configuration mode the outputs of the head coil are combined via a +/- 45° combiner and a diode switching circuit.

Decoupling of the coil from the transmit field is accomplished by parallel resonant networks switched in series with the legs of the head coil section by means of passive crossed RF

switching diodes activated by the transmit excitation field itself and by means of a pin diode activated by a Bias current supplied by the host machine.

The C-Spine Section of the coil consists of two conformal loops mirroring each other. They each have capacitors distributed around the loops as to minimize the detuning effects of varying patient loads on the coil. The loops are geometrically arranged such that the interaction between the loops is minimal. Decoupling of the loops from the transmit field is accomplished by parallel resonant networks switched in series with the loops by means of passive crossed RF switching diodes activated by the transmit excitation field itself and by means of a pin diode activated by a Bias current supplied by the host machine.

The anterior section of the coil consists of two semi-conformal loops in a “superior / inferior” configuration that are positionable. They have capacitors distributed around the loops as to minimize the detuning effects of varying patient loads on the coil. Decoupling of the loops from the transmit field Is accomplished by parallel resonant networks switched in series with the loops by means of passive crossed RF switching diodes activated by the transmit excitation field itself and by means of a pin diode activated by a Bias current supplied by the host machine.

The Tapered Birdcage resonator is geometrically aligned with the C-Spine section such that there is minimum coupling between the two modes of the tapered resonator and each of the C-Spine loops. It is also aligned with the anterior coil array such that there is minimal coupling between the two modes of the tapered resonator and the anterior coil array.

All electrical connections for the Tapered Birdcage resonator are at the superior end. The connections for the C-Spine are located such that the cabling runs along the outer edge of the coil base to the superior edge of the tapered resonator. The cabling of the Anterior coil runs along the outer edge of the tapered resonator to the superior end of the tapered resonator.

## *SECTION 2 - SETUP AND CALIBRATION*

### 2-1 Coil Installation

#### 2-1-1 Special Install Notes

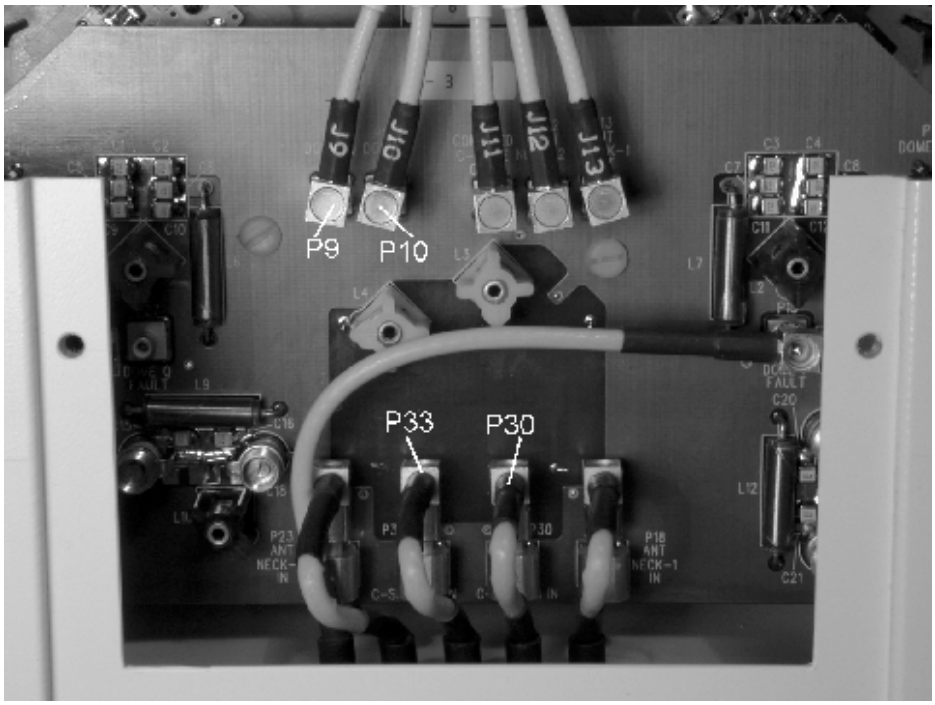
The Quad NVA Is shipped from the factory in the NORMAL polarity mode. Inspect the existing GE Quadrature Head Coil Quick Disconnect If the Head Coil Quick Disconnect Box is marked REVERSE polarity, use the following procedure to switch the polarity of the Quad NVA.

**The Quad NVA will not operate properly if the polarity of the coil and the system are not matched.**

- Remove the back cover plate on the Neurovascular Head Coil Section. (See Figure on following page.)

- Reverse the Polarity of the Quad NVA by swapping the cables connected to P33 and P30, and swapping the cables connected to P9 and P10 on the internal Circuit Board.

- Replace the cover plate.




**Note**- This Figure depicts the NORMAL(Positive) polarity Coil Configuration

### 2-1-2 Installing the Coil

The names for this coil are: NVPA (Neurovascular), FASTBRN (Fast Brain), HRBRN (High Resolution Brain).

Add the coil using the Configuration File Manager. Refer to: Service Methods CD; System Level Procedures; Software Utilities.

If the coil does not exist in Coil Config File refer to the Adding New Coils to Config File Manager procedure and use the coil configuration information in Section 7-3 of this manual.

## 2-2 Installation Functional Checks

1. Perform system level Signal to Noise Check. Refer to Service Methods CD; System Level Procedures; Functional Checks; Signal to Noise Check.

2. Perform Section 3 -2 Coil Imaging Performance Verification.

### 2-3 Periodic Quality Assurance Check

On a periodic basis, such as during planned maintenance, perform the quality assurance checks as outlined below to ensure the coils is operating properly.

1. Check external cable for cracks or cuts.

2. Perform Section 3 - Coil Imaging Performance Verification and record data values in Data Sheet. Section 3 - Functional Checks

## *SECTION 3 – FUNCTIONAL CHECKS*

### 3-1 Scanner Verification

Perform system level Signal to Noise Check. Refer to Service Methods CD; System Level Procedures; Functional Checks; Signal to Noise Check.

### 3-2 Coil Imaging Performance Verification

#### 3-2-1 Tools Required

**TOOLS REQUIRED – TABLE 3-2-1**

| Description | GE Part# | Supplier Part# | Qty |
|---|---|---|---|
| 100mm Phantom | 46-317586G-1 | N/A | 1 |
| TLT Head Sphere | 46-265826G6 | 3008825 | 2 |
| Phantom Positioning Pad | 2330440-4 | 3008824 | 1 |

#### 3-2-2 Explanation of Procedure

For evaluation of coil performance, images will be acquired in the sagittal plane. The following protocol shall be used for coil comparison and image quality analysis. All elements of the NV-Array are used by the coil configuration file NVPA. The protocol given below shall be run using NVPA on three phantoms. The SNR analyses will be performed on coronal images.

Refer to the Data Sheet in Appendix 7-1 to understand the data required to calculate the individual element SNR for each mode of operation. All ROI measurements are made on the individual element images, **not** on the composite image.

The image quality check uses two different protocols for signal and noise image acquisition. The signal scan is an **FSE** sequence used to minimize susceptibility and $B_0$ inhomogeneity effects. The noise scan is a **GRE** sequence that has a Control Variable (do_noise) to eliminate the transmit RF completely during the scan. The signal scan **must** be run prior to the noise scan as the R1, R2, and TG values from the signal scan are used for the noise scan.

### 3-2-3 Signal Scan

FIGURE 1

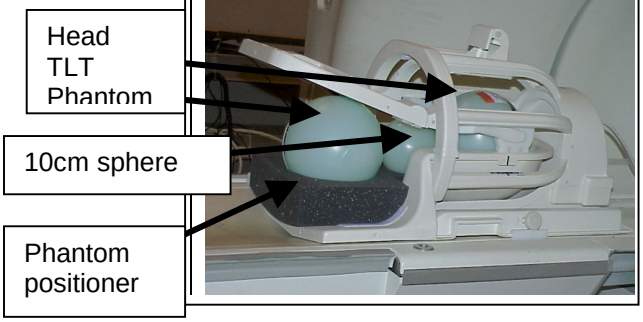
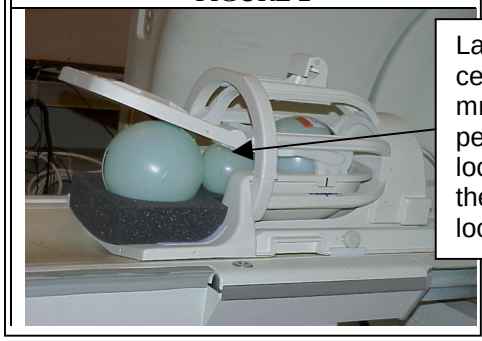



FIGURE 2




The following procedure is specific to the LX platform but can be easily adapted for 5.x systems.

1. From the Scan Desktop, start new scan by selecting [**New Pt**]; set **Patient ID** to "*geservice*" and **Patient Weight** to "*111*" pounds. Click [**Patient Position**] to open protocols window.

2. Remove any other surface coils from the cradle. Place the Quad NVA on the patient table and lock it into position with the coil-clamping bracket. Slide back the tapered Birdcage Resonator and lift the anterior Paddle. Place the phantom-positioning Pad into the coil and place the 3 Phantoms onto the pad. (170mm phantom in the head and chest regions and 100mm phantom in the neck region) Return the anterior paddle to its lowered position. Reengage Tapered Birdcage to the coil base ensuring that it is fully seated. Landmark on the center of the 100mm Sphere.

3. At the magnet, press "**Alignment Light**" button to turn on the light. Move the cradle to align the large end ring of the tapered birdcage to the alignment lights. Press "**Landmark**" button to landmark the alignment.

4. Move the coil to scan position by pushing the "**Move to Scan**" button, ensuring cable does not get snagged.

5. Perform a sagital localizer to obtain the proper S/I and A/P landmark position.

6. At the console select [**New Series**], set the protocols per the Signal section from Table 3-2-4: Signal and Noise Protocols.

7. Click [**Save Series**] to download the protocols, then click [**Prepare to Scan**].

8. Open [**Display CVs**] menu under [**Research Operations**] (click right mouse button). Set the "**saveinter"** CV to "*1*" (saves the intermediate images so ROI measurements can be performed).

9. Run [**Auto Prescan**]. Record the R1, R2 and TG values on the SNR Data Sheet (found at the end of this manual).

10. Run [**Scan**].

### 3-2-4 Noise Scan

A signal scan must be run **prior** to the noise scan as the same R1, R2 and TG values must be used for both the signal and noise scans. Do **not** run an Auto Prescan prior to the noise scan as the values will be changed.

1. Copy the signal scan series. Use [**Copy Series**] (highlight signal series and click right mouse button) and [**Paste Series**] in **RX Manager**.

2. Click [**View Edit**] and set the protocols per the Noise section from Table 3-2-4: Signal and Noise Protocols.

3. Click [**Save Series**] and click [**Prepare to Scan**].

4. Open [**Display CVs**] menu under [**Research Operations**]. Set the "**saveinter**", "**rhformat**", and "**do_noise**" CVs to "*1*".

5. Run [**Manual Prescan**], do **not** make any changes, and click [**Done**].

6. Run [**Scan**].

## SIGNAL AND NOISE PROTOCOLS – TABLE 3-2-4

| Protocol | Signal Value | Noise Value |
|---|---|---|
| PATIENT/EXAM INFORMATION | | |
| ID: | **geservice** | **geservice** |
| Name | **NVPA** | **NVPA** |
| Patient Weight | **111 lbs (50 kg**) | **111 LBS (50 KG)** |
| **PATIENT POSITION:** | | |
| Patient Position: | **Supine** | **Supine** |
| Patient Entry: | **Head First** | **Head First** |
| Coil: | **NVPA** | **NVPA** |
| Series Description | **Signal** | **Noise** |
| **IMAGING PARAMETERS** | | |
| Plane: | **Coronal** | **Coronal** |
| Mode: | **2D** | **2D** |
| Pulse Seq: | **FSE** | **GRE** |
| Imaging Options | **Fast** | **None** |
| PSD Name: | *leave blank* | *leave blank* |
| Protocol: | *leave blank* | *leave blank* |
| **SCAN TIMING** | | |
| # of Echoes: | **1** | **1** |
| TE: | **17** | **minfull** |
| TR: | **500** | **34** |
| Echo Train Length/Flip Angle | **4** | **1** |
| Bandwidth: | **15.63** | **15.63** |
| **ADDITIONAL PARAMETERS** | No entries required in this area | No entries required in this area |
| **ACQUISITION TIMING** | | |
| Freq: | **256** | **256** |
| Phase: | **256** | **256** |
| NEX: | **1** | **1** |
| Phase FOV: | **1.00** | **1.00** |
| Freq DIR: | **S/I** | **S/I** |
| Autocenter Freq: | **Peak** | **Peak** |
| Autoshim | **On** | **On** |
| Phase correct: | **On** | **N/A** |
| Contrast: | **Off** | **N/A** |
| # Reps B4 Pause: | **0** | **N/A** |
| **SCANNING RANGE** | | |
| FOV: | **48** | **48** |
| Slice Thickness: | **3** | **3** |
| Spacing: | **1.5** | **1.5** |
| Start | ***A17.0 *S0.0 R0.0** | ***A17.0 * S0.0 R0.0** |
| End | **A17.0** | **A17.0** |
| # Slices | **1** | **1** |
| Table Delta | **0.00** | **0.00** |

*Based on localizer

### 3-2-5 SNR Image Analysis

Regions of interest in both signal and noise images can be measured directly in the image browser. Click the user interface button Measure, select the circular shape, and adjust its size and orientation when the shape is displayed in the selected image. Mean, standard deviation, and area of the ROI will appear in the lower right corner of the image. Examples of typical Receiver Images are shown in Figures 3 through 7 below.

FIGURE 3: Receiver 1

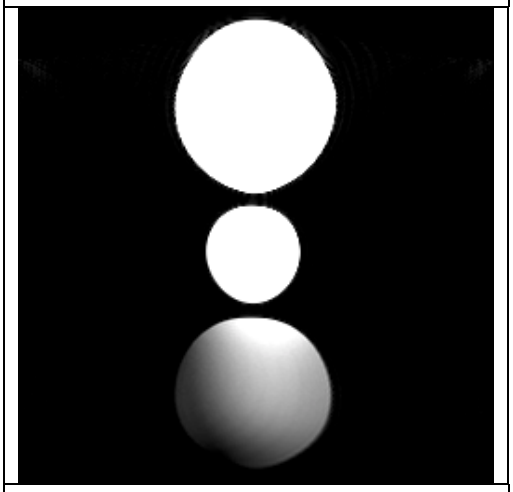


FIGURE 4: Receiver 2

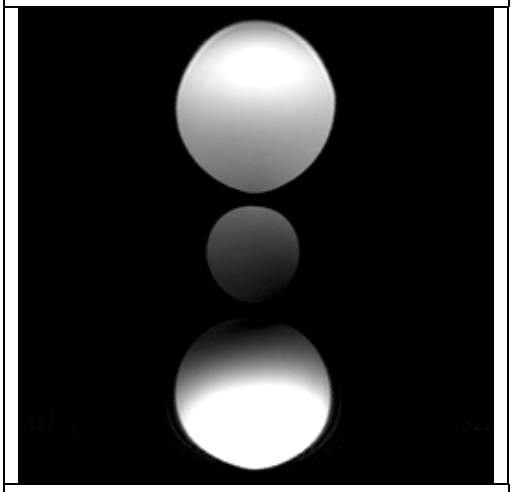


FIGURE 5: Receiver 3

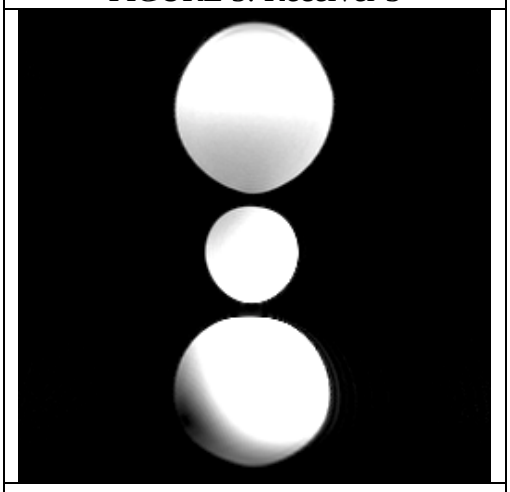


FIGURE 6: Receiver 4

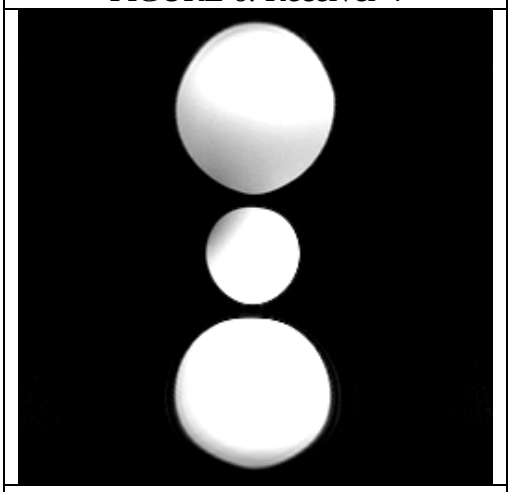
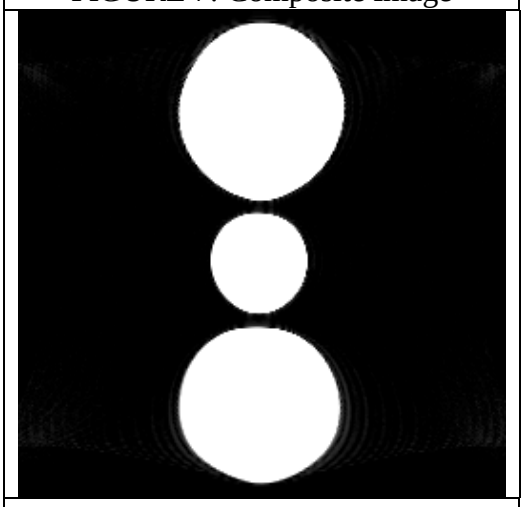


FIGURE 7: Composite Image



**SNR Measurement**

For the signal measurement, choose a circular ROI covering the appropriate section of the phantom for the receiver channel being scanned. Circular ROI should be 14cm diameter for the Head TLT phantom and 8cm diameter for the 100 mm sphere. ROI's are shown in Figures 8 through 12 below.

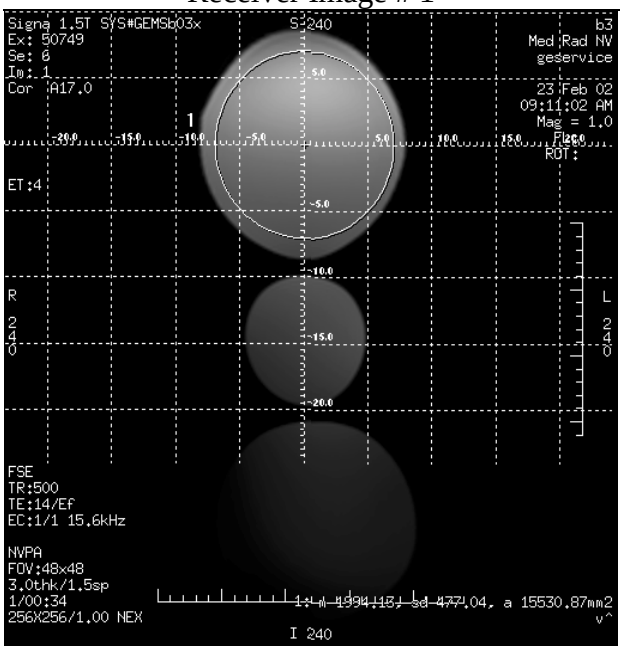
The SNR shall be calculated using the signal to noise ratios of the individual receiver channels. Individual receiver SNR is defined as the mean of data within the signal ROI divided by the standard deviation of data within the noise ROI:

$$SNR_{Element} = \frac{\text{Mean of Signal within ROI}}{\text{Standard Deviation of Noise within ROI}}$$

Note: The SNR calculation uses the **MEAN** of the signal image and **STANDARD DEVIATION** of the noise image. SNR is measured for each **element**, not on the composite image.

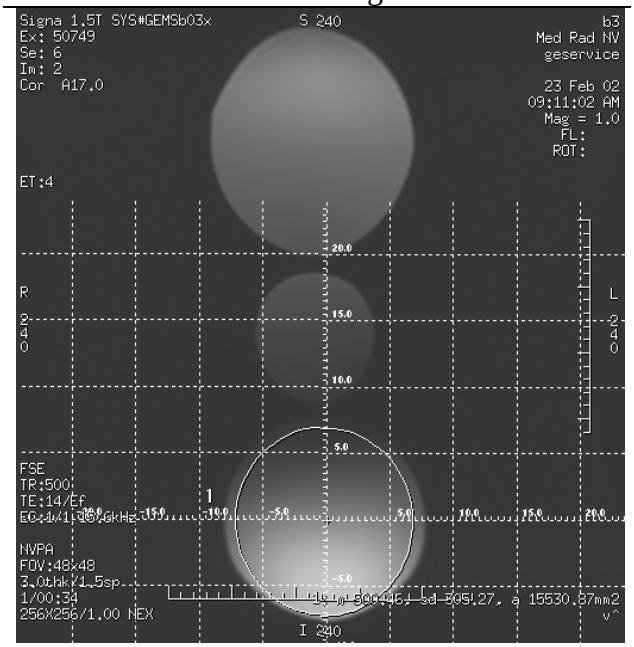
## Individual Element Performance

FIGURE 8: Medrad NVPA
Receiver Image # 1



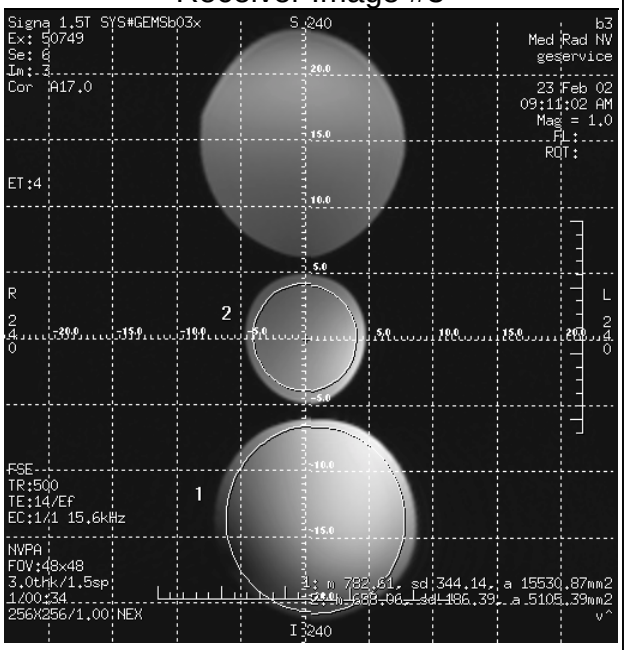

ROI = 14 cm diameter circle

FIGURE 9: Medrad NVPA
Receiver Image #2



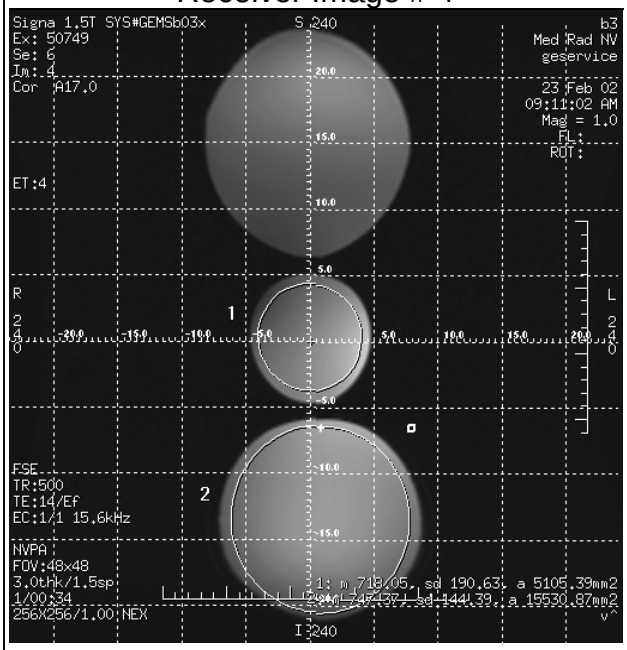

ROI =14 cm diameter circle

FIGURE 10: Medrad NVPA
Receiver Image #3



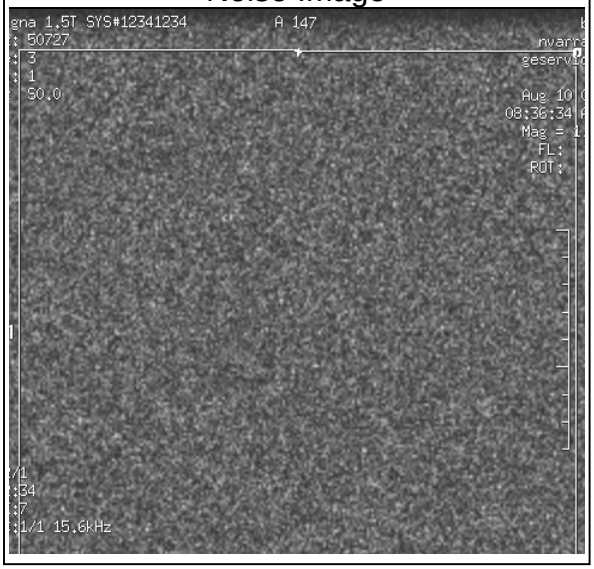

Small ROI= 8cm diameter circle
Large ROI = 14cm diameter circle

FIGURE 11: Medrad NVPA
Receiver Image # 4




Small ROI= 8cm diameter circle
Large ROI = 14cm diameter circle

FIGURE 12: Medrad NVPA
Noise Image




## SNR Specification

The SNR measurements must be greater than or equal to the following specifications:

**SNR SPECIFICATIONS – TABLE 3-2-5**

| CH 1<br>14cm ROI<br>SNR | CH 2<br>14cm ROI<br>SNR | CH 3<br>8 cm ROI<br>SNR | CH 3<br>14cm ROI<br>SNR | CH 4<br>8 cm ROI<br>SNR | CH 4<br>14 cm ROI<br>SNR |
|---|---|---|---|---|---|
| 952 | 448 | 275 | 309 | 289 | 276 |

## *SECTION 4 - MAINTENANCE*

### 4-1 Coil Care


**Detach coil connector from scanner before attempting to clean. Do not reattach after cleaning until coil has dried completely. Having the coil attached to the system during cleaning or when it is wet may result in electrical shock.**


**Do not spray or pour cleaning solution directly on coil. Do not submerge coil in solution. The coil contains sensitive electronics components that could be damaged by the solution.**


**To avoid possible damage to equipment, do not use solutions containing amines, strong alkalis, esters, iodine, aromatic or chlorinated hydrocarbons, or ketones.**

**Cleaning Tips**

- To clean, use a mild soap and water solution. Dry unit with a clean cloth.
- If necessary, a 10% bleach solution can be used for more rigorous cleaning. Some discoloration of the pads may occur.
- Do not soak the coil or apply excessive cleaning solution to the coil or the cable connection area.

### 4-2 Special Care Requirements (if applicable)

N/A

## *SECTION 5 - REPLACEMENT*

Simple removals that are clearly obvious are not described here.

Unless otherwise noted, the steps for re-assembly are simply the reverse order of the steps described for disassembly.

### 5-1 Disassembly of Coil (if applicable)

N/A

### 5-2 External Cable Replacement (if applicable)

N/A

### 5-3 Mechanical Hardware Replacement (if applicable)

N/A

# *SECTION 6 - RENEWAL PARTS*

## 6-1 Field Replaceable Units

**FIELD REPLACEABLE UNITS LIST – TABLE 6-1**

| Description | GE Part# | Supplier Part# |
|---|---|---|
| Quad NVA | 2330440-2 | 3008862 |
| TLT Head Sphere | 46-265826G6 | 3008863 |
| Phantom Positioning Pad | 2330440-4 | 3008861 |

## 6-2 Other Replaceable Accessories

**OTHER REPLACEABLE ACCESSORIES LIST – TABLE 6-2**

| Description | GE Part# | Supplier Part# |
|---|---|---|
| Disposable Liners | E8801SK | 30510C10002 |
| Comfort Pads | E8801SH | 3003252 |
| Positioning Pad | E8801SJ | 3006431 |

## *SECTION 7 - APPENDIX*

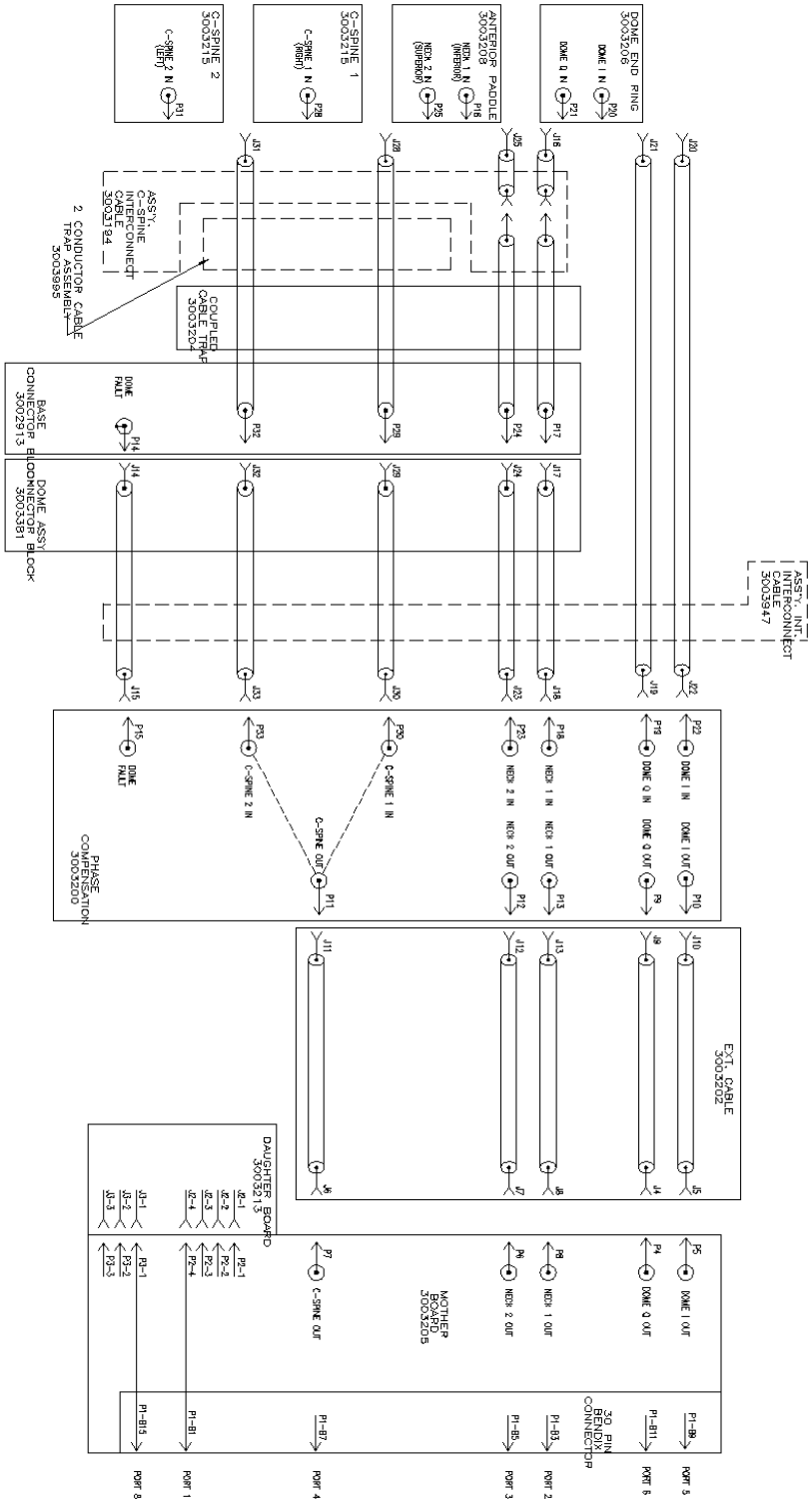
### 7-1 SNR Data Sheet

Use the table provided below to record the calculated signal to noise ratio (SNR) data obtained from the Functional Checks section.

| Date | Comments | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
| Mode | R1 | R2 | TG | Channel | Signal Mean | Noise Std Dev | SNR | Spec Limit |
| NVPA | | | | 1<br>14 cm ROI | | | | 952 |
| | | | | 2<br>14 cm ROI | | | | 448 |
| | | | | 3<br>8 cm ROI | | | | 275 |
| | | | | 3<br>14 cm ROI | | | | 309 |
| | | | | 4<br>8 cm ROI | | | | 289 |
| | | | | 4<br>14 cm ROI | | | | 276 |

| Date | Comments | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
| Mode | R1 | R2 | TG | Channel | Signal Mean | Noise Std Dev | SNR | Spec Limit |
| NVPA | | | | 1<br>14 cm ROI | | | | 952 |
| | | | | 2<br>14 cm ROI | | | | 448 |
| | | | | 3<br>8 cm ROI | | | | 275 |
| | | | | 3<br>14 cm ROI | | | | 309 |
| | | | | 4<br>8 cm ROI | | | | 289 |
| | | | | 4<br>14 cm ROI | | | | 276 |

## 7-2 Schematic




Block Diagram Neurovascular Array Coil

## 7-3 Coil Configuration

| Parameter | NEURO-VASCULAR ARRAY | HIGH RESOLUTION BRAIN | FASTBRAIN w/NO FAST Receiver | FASTBRAIN w/ONE FAST Receiver |
|---|---|---|---|---|
| Coil Name | NVPA | HRBRAIN | FASTBRN | FASTBRN |
| Coil Type | 3 | 3 | 3 | 3 |
| Extremity Coil | no | no | no | no |
| Cable Loss | See Note 1 | See Note 1 | See Note 1 | See Note 1 |
| Coil Loss | See Note 2 | See Note 2 | See Note 2 | See Note 2 |
| Recon Scale Factor | 1.0(See Note 3) | 1.0(See Note 3) | 1.0(See Note 3) | 1.0(See Note 3) |
| Linear vrs Quadrature | 1 | 1 | 1 | 1 |
| Multiple Receiver Coil? | yes | yes | yes | yes |
| Number of Receivers | 4 | 2 | 1 | 0 |
| Starting Receiver ID | 0 | 0 | 0 | 0 |
| Ending Receiver ID | 3 | 1 | 0 | 0 |
| Multi-Coil Port Enable | 7 | 4 | 12 | 12 |
| Multi-Coil Port Error Enable | 7 | 4 | 12 | 12 |
| Additional Transmit Attenuation | 0 | 0 | 0 | 0 |
| Number of Fast Receivers | 0 | 0 | 0 | 1 |
| Starting Fast Receiver ID | 4 | 4 | 4 | 4 |
| Ending Fast Receiver ID | 4 | 4 | 4 | 4 |
| Start TA Value | 100 | 100 | 100 | 100 |
| Start RG Value | 5(5.x systems) 11(8.x systems) | 5(5.x systems) 11(8.x systems) | 5(5.x systems) 11(8.x systems) | 5(5.x systems) 11(8.x systems) |
| Multi-Coil Recon Enable | 14 | 12 | 14 | 14 |
| Head Default Freq. Direction | 1 | 1 | 1 | 1 |
| SCIC Axial | 0 | 0 | 0 | 0 |
| SCIC Saggital | 0 | 0 | 0 | 0 |
| SCIC Coronal | 0 | 0 | 0 | 0 |
| Auto Shim Receiver | -1 | -1 | -1 | -1 |

Note 1: Same as Signa Body Coil Cable loss

Note 2: Same as Signa Body Coil Coil loss

Note 3: For 8.2.5 and later versions of software, do not calculate a value for the Recon Scale Factor based upon the Head Coil Reconstruction Factor parameter; simply enter the multiplier listed in the Configuration File data. For earlier software versions, the Reconstruction Scale Factor entry is the multiplier listed in the individual Configuration File data times the value for the Head Coil Reconstruction Scale Factor noted from the Head Coil Configuration File.

# REVISION HISTORY

| Rev | Date | Author | Primary Reason for Change |
|---|---|---|---|
| -- | 3/21/02 | W. Monski | Class A Document release |
| A | 4/9/02 | M. Yockel | Class A Document release |
| | | | |

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*NOTES:*