TABLE OF CONTENTS

1- OVERVIEW

This section determines the quadrature balance of the quad coil and the phase splitter network. In this test, the Body or Head TLT Sphere phantom is scanned with the quadrature coil connected in two ways. First, an image is taken with the quadrature coil as presently connected. Next, the cables to the quadrature switches are reversed, and the phantom is scanned a second time using the same protocol. The resultant images are analyzed to verify proper quadrature drive function and cable configuration.

1-1 Tools Required

- Body TLT Sphere, 46-265635G6
- SPT Body Loader, 2135652-2
- Head TLT Sphere, 46-265826G6
- Head Loader, 46-287899G1

WARNING!

POISON HAZARD! THE PHANTOM CONTAINS NICKEL CHLORIDE, A SUSPECT CARCINOGEN. DO NOT INGEST. DISPOSE OF AS A HAZARDOUS WASTE ACCORDING TO STATE AND FEDERAL REGULATIONS.

2- BODY FORWARD/REVERSE QUADRATURE SCANS

2-1 Procedure

CAUTION

Equipment damage possibility. Completely remove the Quad Head Coil from the cradle before performing any body scans. Failure to do so may damage head coil T/R network.

1. At the operator work space, prepare the system for a Body F/R scan using the *Service Protocols* procedure located on the service methods CD-ROM or use the proprietary procedure as shown below.

Note

This proprietary procedure is only available for GE use, and to sites with a valid Advanced Service Package Limited License.

a. At the Scan Desktop, click on **[New Pt]** (or **[New Series]** if the head scan was done first) and enter the following:
   Id: **geservice**
   Name: **body f/r quad**
   Weight (Lb): **111**
b. Set Patient Protocols to **Service**.
c. In the Protocol field, type **o.17.1** (o=Other, 1=series number) to load the protocol.

2. At the scanner, remove the Head Coil from the cradle.

3. Place the Body TLT Sphere Phantom in the SPT Body Loader and place the Body Loader/TLT Phantom in the center of the cradle.

4. Landmark on the center of the sphere (press the LANDMARK button at the keypad on the front of the magnet enclosure), then press the ADV TO SCAN button.

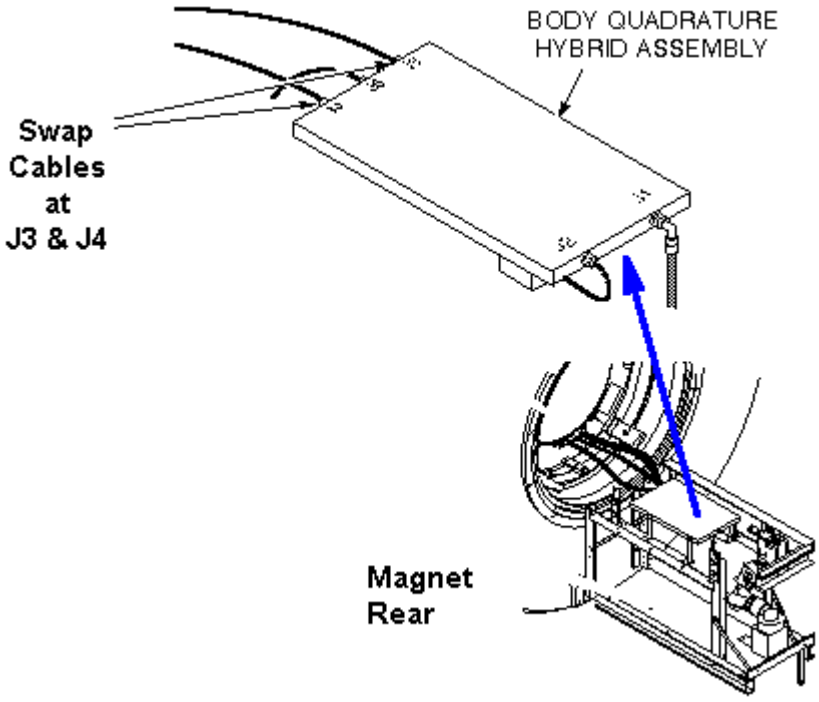
5. Select **[Save Series],** then click on **[Prepare to Scan]** at the RX Manager.

6. Select **[Auto Prescan]**. Jot down the values for R1, R2, TG, and frequency from the prescan, then select **[Scan].**

Note

Prior to reversing the cable connections, note or mark the original connections to ensure that they are reconnected in the original orientation after test is completed.

7. Reverse the RF cables J7 with J9 and J8 with J10 at the hybrid splitter on top of the magnet. (They are connected to the quad coil switch box input connectors J1 and J2.) See Illustration 2-1.



BODY COIL HYBRID SPLITTER
ILLUSTRATION 2-1

8. Without changing the prescan settings, rescan the phantom using the same scan protocol (click on **[SCAN]**).

9. For analysis, see Section 4, Forward/Reverse Quadrature Test Image Analysis.

3- HEAD FORWARD/REVERSE QUADRATURE SCANS

3-1 Procedure

1. At the operator work space, prepare the system for a Head F/R scan using the *Service Protocols* procedure located on the service methods CD-ROM or use the proprietary procedure as shown below.

Note

This proprietary procedure is only available for GE use, and to sites with a valid Advanced Service Package Limited License.

a. Click on **[New Series]** (or **[New Pt]** if this is the first test) and enter the following:
Id: **geservice**
Name: **head f/r quad**
Weight (Lb): **111**
d. Set Patient Protocols to **Service**.
e. In the Protocol field, type **o.17.2** (o=Other, 2=series number) to load the protocol.

CAUTION

Equipment damage possibility. Be sure that Series 2 is selected before scanning. The coil type in Series 1 is *Body*. Using Series 1 could cause damage to the head coil.

2. At the scanner, place the Head Coil on the cradle and connect to the Mousehouse.

3. Place the Head TLT Sphere Phantom and the Head Loader in the center of the quadrature head coil.

4. Landmark on the center of the sphere (at the keypad on the front of the magnet enclosure, press the LANDMARK button**,** then press the ADV TO SCAN button.

5. Select **[Save Series],** then **[Prepare to Scan]** (at RX Manager).

6. Select **[Auto Prescan]**. Jot down the values for R1, R2, TG, and frequency from the prescan, then select **[Scan].**

Note

Prior to reversing the cable connections, note or mark the original connections to ensure that they are reconnected in the original orientation after the test is completed.

7. Reverse the RF cables at the quick-disconnect adaptor box on the back of the head coil.

8. Without changing the prescan settings, rescan the phantom using the identical scan protocol.

9. For analysis, see the next section.

4- FORWARD/REVERSE QUADRATURE TEST IMAGE ANALYSIS

Note

This analysis procedure applies to either body or head scans.

1. Display the first image by going to the Image Archive Desktop and selecting the correct image and clicking on **[VIEWER]** or **[MINI VIEWER]**.

2. Then measure the Mean Pixel Value (MPV_1) by clicking on **[MEASURE]**, and selecting the box function. Modify the box that appears on the image so that it covers a square Region of Interest (ROI) of 4000 mm^2 ± 50 mm^2, located at the center of the image. Record the mean pixel value, which is shown in the lower right corner of the viewer as m=xxx.

3. Display the second image.

4. Use the same square Region of Interest (ROI) of 4000 mm^2 ± 50 mm^2 located at the center of the image (see note, below). Record the mean pixel value (MPV_2) which is shown in the viewer as m=xxx.

Note

To use the same ROI box, press **CTRL-C** on the keyboard for the first image. Move the mouse cursor to the second image and click the left button. Finally, press **CTRL-V** on the keyboard. This will copy the ROI to the second image.

5. Use the cable configuration which produced the highest mean value from the ROI.

REVISION HISTORY

REV	DATE	AUTHOR	PRIMARY REASONS FOR CHANGE
A	August 8, 2000	R. Liu	Initial Release – convert from 8x version