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DESCRIPTION

The Noise Floor Test uses a fast scan sequence without phantoms. The scan is performed first with the head coil then with the body coil.

1- INITIAL CONDITIONS

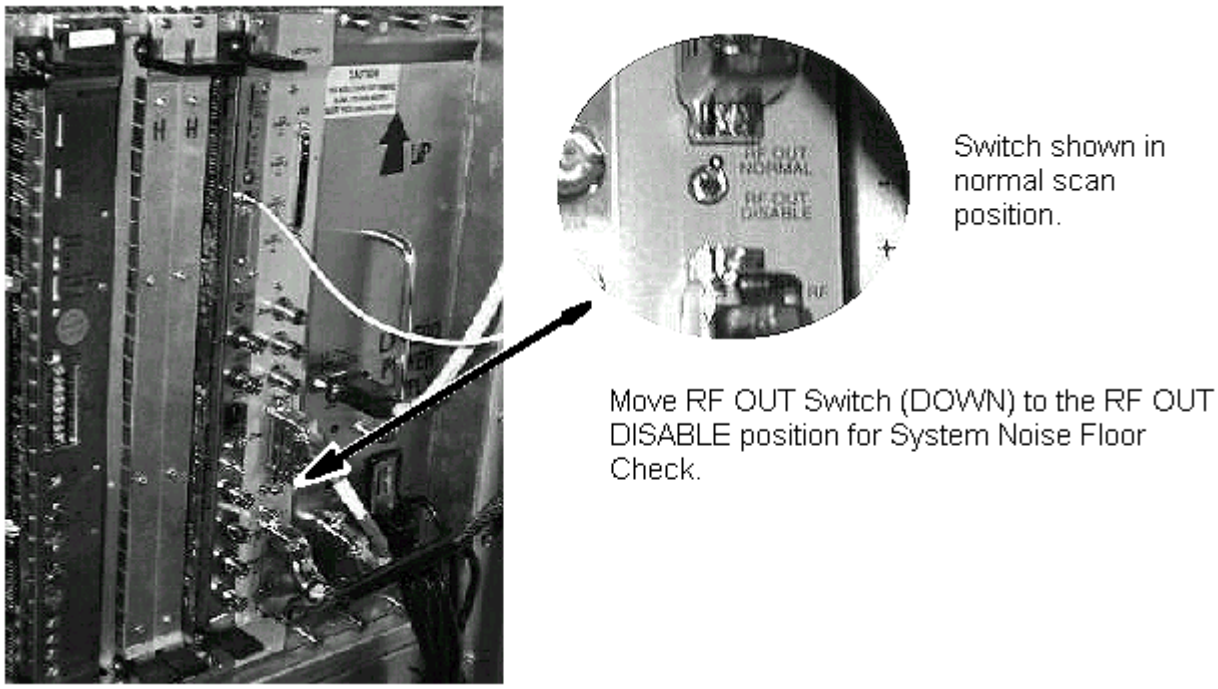
- SNR scans and image analysis must be complete. SNR signal data recorded earlier will be used in this procedure to calculate test gain.

- System Gain Calibration procedure was previously done (so the system has calibrated gain).

2- SYSTEM HARDWARE PREPARATION

1. Remove front cover panel from system cabinet.

2. On the CERD, move the RF Output switch from RF OUT NORMAL to RF OUT DISABLE (see Illustration 2-1).



DISABLING RF OUTPUT
ILLUSTRATION 2-1

3- HEAD SCANS

1. At the Operator Workspace, select the scan icon in the desktop control panel.

2. If necessary, exit out of any previous exams by selecting **[End Exam].**

3. Click on **[New Pt]** and enter the following:
   Id: **geservice**
   Name: **noise floor**
   Weight (Lb.): **111**

4. Remove all phantoms from the patient table. This is an empty bore test.

5. Install head coil. LANDMARK on center of empty head coil. Then, press MOVE TO SCAN.

*The following three steps are **proprietary** and only available for GE use, and to sites with a valid Advanced Service Package Limited License. The non-proprietary procedure is listed after these steps.*

6. Set Patient Protocols to **Service**.

7. In the Protocol field, Type **o.29.1** (o=Other, 29=protocol number, 1=series number).
   OR
   Click on "Other" and select protocol **29** and series **1** from the menu.

8. Click on **[Accept]** to load the protocol.

***Non-proprietary** procedure:*
At the Operator Workspace, prepare the system for a “Noise Floor - Head” scan using the scan protocol (**o.29.1**) shown in the "Service Protocols" procedure located on the service methods CD-ROM.

9. Click on **[Save Series]** and then **[Manual Prescan]**.

10. Set R_1 = **11**, R_2 = **15**, TG = **0**. Record these values and the system frequency in the Data Sheet (Appendix A).

11. Click on **[Done]**, then **[Scan]**.

12. After the scan is complete, press BACK TO ALIGN on the magnet front enclosure. When table is back at the landmark position, remove head coil from bore, and then press MOVE TO SCAN.

4- BODY SCANS

1. Click on **[New Pt]** and enter the following:
   Id: **geservice**
   Name: **noise floor**
   Weight (Lb.): **111**

*The following three steps are **proprietary** and only available for GE use, and to sites with a valid Advanced Service Package Limited License. The non-proprietary procedure is listed after these steps.*

2. Set Patient Protocols to **Service**.

3. In the Protocol field, Type **o.29.2** (o=Other, 29=protocol number, 2=series number).
   OR
   Click on "Other" and select protocol **29** and series 2 from the menu.

4. Click on **[Accept]** to load the protocol.

Non-proprietary *procedure:*
At the Operator Workspace, prepare the system for a “Noise Floor - Body” scan using the scan protocol (**o.29.2**) shown in the "Service Protocols" procedure located on the service methods CD-ROM.

5. Click on **[Save Series]** and then **[Prepare for Scan]** and **[Manual Prescan]**.

6. Verify or set R_1 = **11**, R_2 = **15**, TG = **0**. Record these values and the system frequency in the Data Sheet (Appendix A).

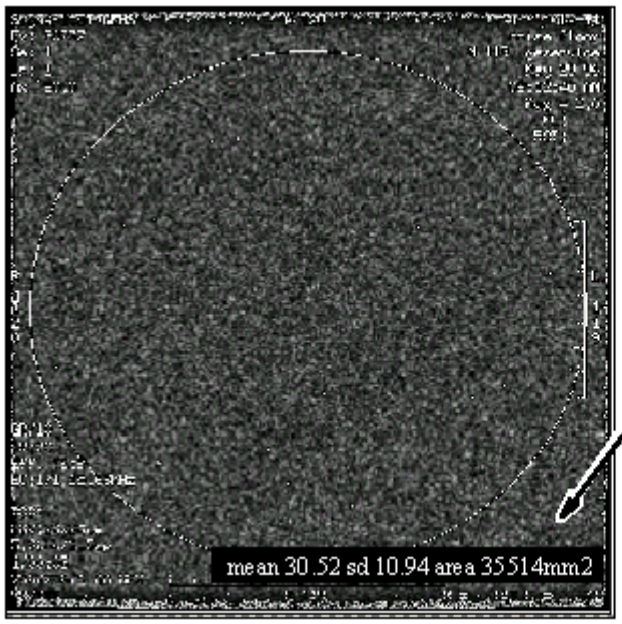
7. Click on **[Done]**, then **[Scan]**. After scan is complete, proceed to the next section.

5- SYSTEM NOISE FLOOR IMAGE ANALYSIS

1. Go to the Image Management Desk Top and select **[Browser]**. Select the noise floor check exam.

2. Select the image from Series # 1 (head coil image) by clicking on **[Viewer]**.

3. Select **[Measure].** Create a round cursor and size/position cursor to cover 80% of the displayed image (screen). See Illustration 5-1. The ROI area should be between 30000 and 40000 mm^2. If it is not, resize to at least 30000 mm^2.



Create round cursor and size/position cursor to cover 80%. The circle size should be between 30000 and 40000 mm^2 in size. Mean noise and standard deviation appear at the bottom of the image. Mean and standard deviation information is displayed in the lower-right corner of the image screen while the cursor is displayed.

ROI SIZE FOR NOISE FLOOR ANALYSIS
ILLUSTRATION 5-1

4. Record standard deviation and mean noise values in the Data Sheet (Appendix A), under Head Image Data.

5. Compare noise values to acceptance spec value in the Data Sheet. (For a system with calibrated gain, calibrated noise = mean noise value).

6. Display image from Series # 2 (body coil image).

7. Create a round cursor and size/position cursor to cover 80% of the displayed image. See Illustration 5-1. The ROI area should be between 30,000 and 40,000 mm^2. If it is not, resize to at least 30000 mm^2.

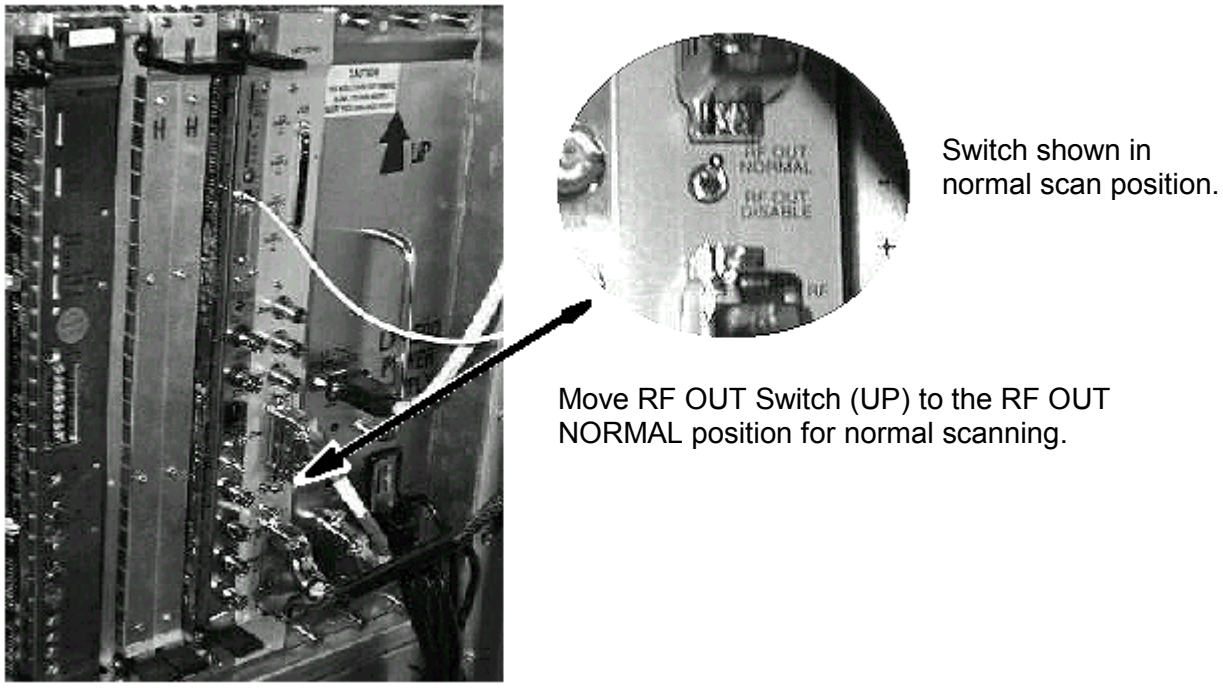
8. Record standard deviation and mean noise values in Data Sheet, under Body Image Data.

9. Compare noise values to acceptance specification values in the Data Sheet.

10. Store completed data sheets in *Direction 15403, Signa Advantage / Horizon Data*, System tab, or on floppy disk for future reference.

6- SYSTEM RESTORATION

1. Restore the system by changing the RF Output switch located on the CERD back to RF OUT NORMAL (see Illustration 6-1).



ENABLING RF OUTPUT
ILLUSTRATION 6-1

2. Install front cover panel on system cabinet.

APPENDIX A - SYSTEM NOISE FLOOR DATA SHEET

Head Image Data

Exam/Servies/Images	/ /	**System Freq**	
R1/R2/TG	/ /	**ROI (mm^2)**	

		Acceptance Specifications	
MEAN NOISE (M) (CALIBRATED NOISE)	**STANDARD DEVIATION (S.D)**	**1.5T System**	**1.0T System**
		2.5<Mean Noise<18.2	8<Mean Noise<26

Body Image Data

Exam/Servies/Images	/ /	**System Freq**	
R1/R2/TG	/ /	**ROI (mm^2)**	

		Acceptance Specifications	
MEAN NOISE (M) (CALIBRATED NOISE)	**STANDARD DEVIATION (S.D)**	**1.5T System**	**1.0T System**
		26.5<Mean Noise<37.5	42<Mean Noise<64

REVISION HISTORY

REV	DATE	AUTHOR	PRIMARY REASONS FOR CHANGE
0	Aug 19, 1998	R. Hawthorne	Initial conversion to Word
1	Nov 4, 1998	M. Keber	Removed obsolete 8.1 information; misc. style guide cleanup.
2	Dec 30,1999	G. Boerner	Corrected landmarking per SPR MRIge56065.