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Note

To run SPT Full Test Mode, read how SPT compares to TLT, or how to diagnose problems SPT finds, go to System Performance Test -Full Test Mode procedure.

1- INTRODUCTION

The System Performance Test (SPT) provides a means of quickly verifying that all critical parameters that affect image quality are within specification. The data generated by SPT are useful for both local and global trending, and for additional automated interpretation by processes that are not part of SPT.

Table 1 identifies the parameters that SPT evaluates (which are critical to image quality) that are included in the Quick Check. The Quick Check uses only the DQA phantom in the head coil. It is intended to be used daily by the customer as a fast verification of the basic functionality of the scanner. The time for data collection and processing is approximately six minutes.

TABLE 1
IMAGE QUALITY PARAMETERS

PARAMETERS	IN QUICK CHECK
Center Frequency	Yes
Gradcal	Yes
Z-isocenter	Yes
System Gain	Yes
SNR	Yes
Stability	Optional

1-1 Problems with SPT Full Test and Head Quick Check

PROBLEM 1: You cannot have any duplicate exam numbers when running SPT.

SOLUTION 1: Before running SPT, go into the Browser desktop and remove any duplicate exam numbers.

PROBLEM 2: If the MRConfig file exceeds the file size of 16383, the SPT Head Quick check will crash (this problem is more likely to occur in mobiles). To verify the file size:

1. Open a [C-shell] on the Service Desktop.
2. Type: `cd /w/config <Enter>`
3. Type `ls -l MR* <Enter>`. The following is an example of the files:

```
{sdc@lx-bay4}[8] ls -l MR*
-rw-r--r-- 1 sdc      informix 16123 May 13 22:06 MRconfig.cfg
-rw-r--r-- 1 sdc      informix 16123 May 13 21:44 MRconfig.cfg%
-rw-rw-rw- 1 sdcbin   informix 15397 May 7 21:56 MRconfig.cfg.0.5T
-rw-rw-rw- 1 sdcbin   informix 16482 May 7 21:56 MRconfig.cfg.1.0T
-rw-r--r-- 1 root     sys      16123 May 7 22:22 MRconfig.cfg.1.5T
-rw-r--r-- 1 root     sys      16123 May 7 22:28 MRconfig.cfg.old
-rw-rw-rw- 1 sdcbin   informix 28863 May 7 21:56 MRconfig.vf
-rw-rw-rw- 1 sdcbin   informix 26937 May 7 21:56 MRconfig.vf.0.5T
-rw-rw-rw- 1 sdcbin   informix 28371 May 7 21:56 MRconfig.vf.1.0T
-rw-rw-rw- 1 sdcbin   informix 28863 May 7 21:56 MRconfig.vf.1.5T
{sdc@lx-bay4}[9] □
```

The file size must be less than 16383

SOLUTION 2: Deleting 2 lines of comments fixes the problem. (Edit the file, remove two "#" lines and save.)

To perform the fix:

1. Type: **jot MRconfig.cfg <Enter>**
2. Delete any two lines that begin with "#" (i.e. comment lines).
3. Save and Exit the file using the jot toolbar.

2- SPT HEAD QUICK CHECK PROCEDURE

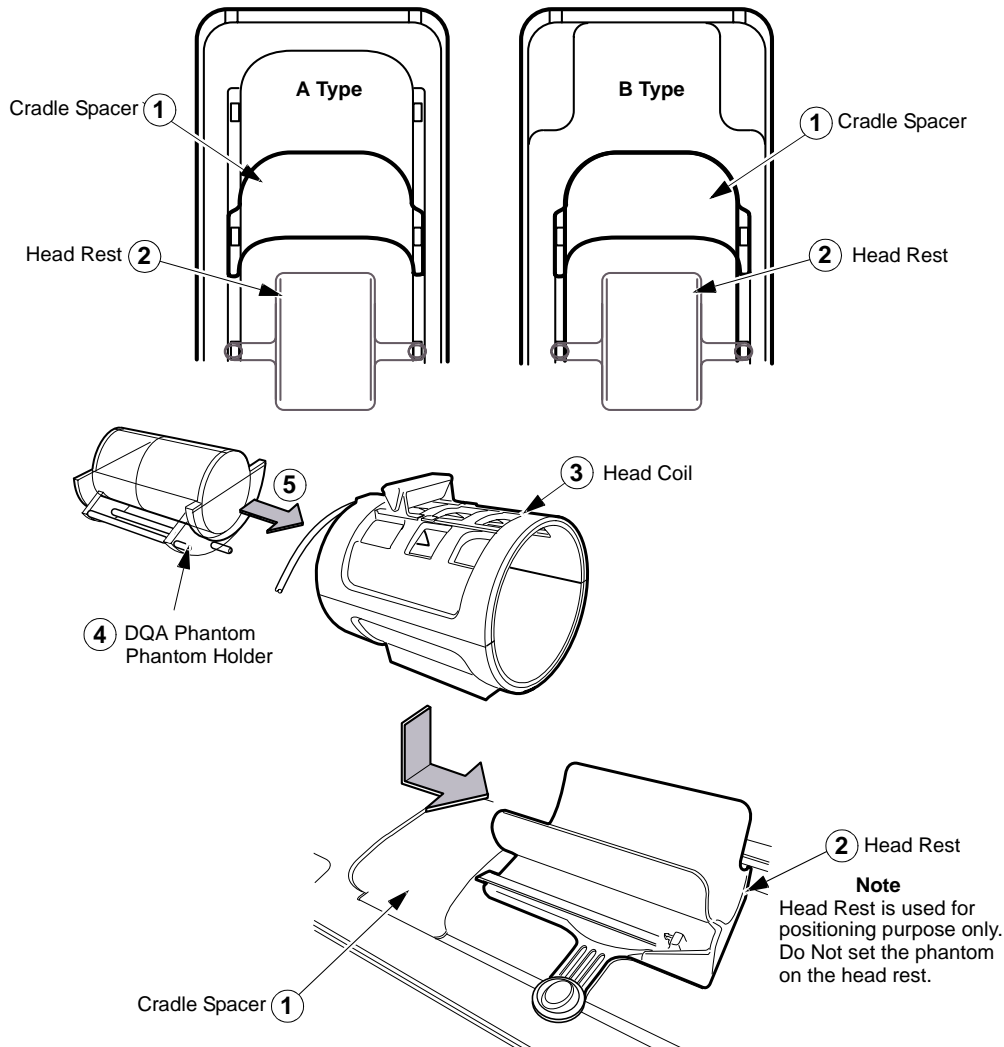
To set up and run SPT Head Quick Check, three general tasks must be completed:

- Cancel out of any previous exams. Click on **[End Exam]**.
- Phantom must be positioned and a landmark must be established.
- SPT must be invoked from the Service Desktop Manager.

2-1 Phantom Positioning for SPT Head Quick Check

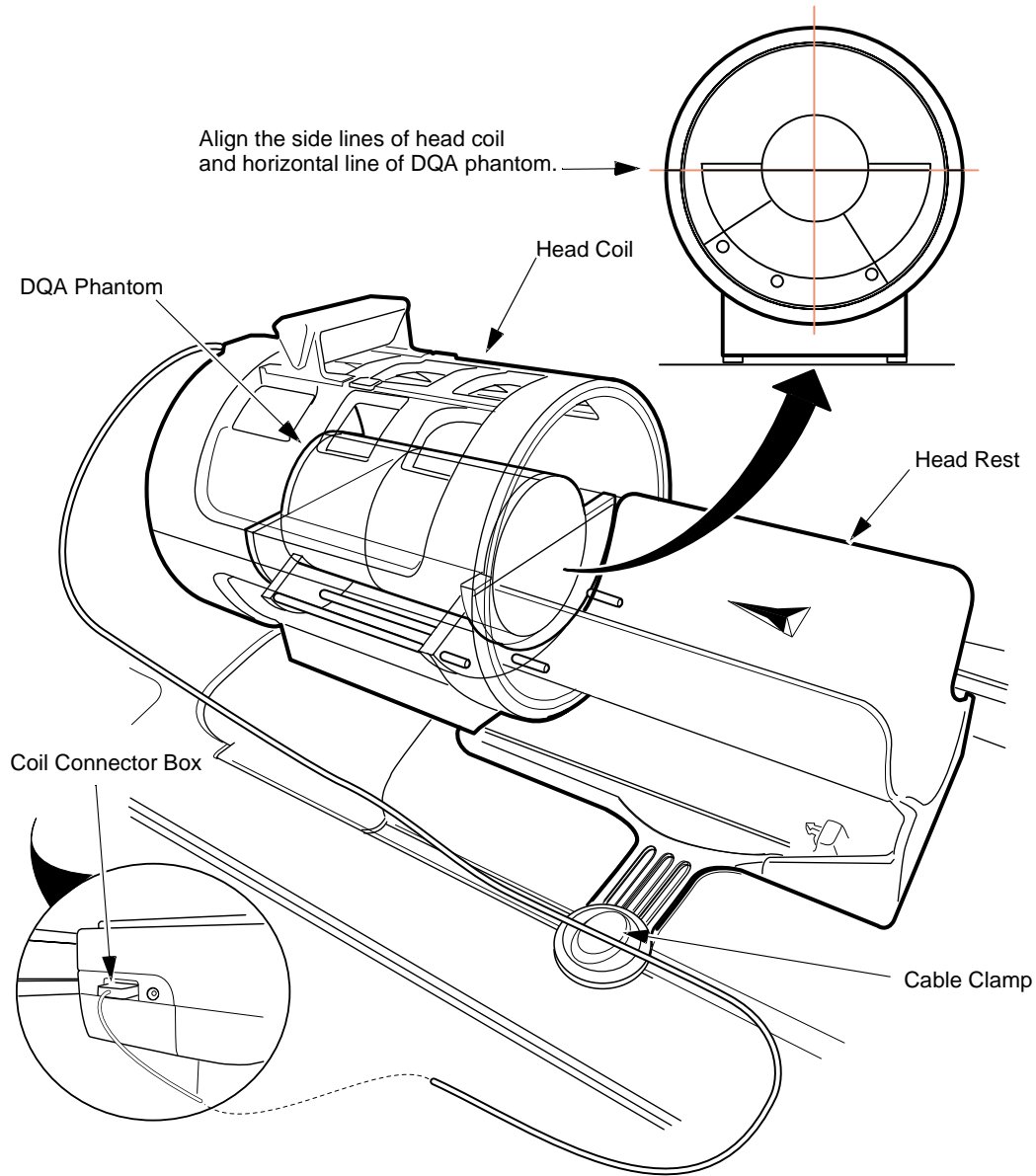
1. Set cradle spacer to cradle.
2. Set head rest onto cradle.
(Head rest is used for positioning purpose only. Do Not set the phantom on the head coil.)
3. Set head coil to head rest.
4. Set DQA phantom to phantom holder.
5. Insert DQA phantom and phantom holder into head coil.

NOTE: There are two type of table as following illustration.



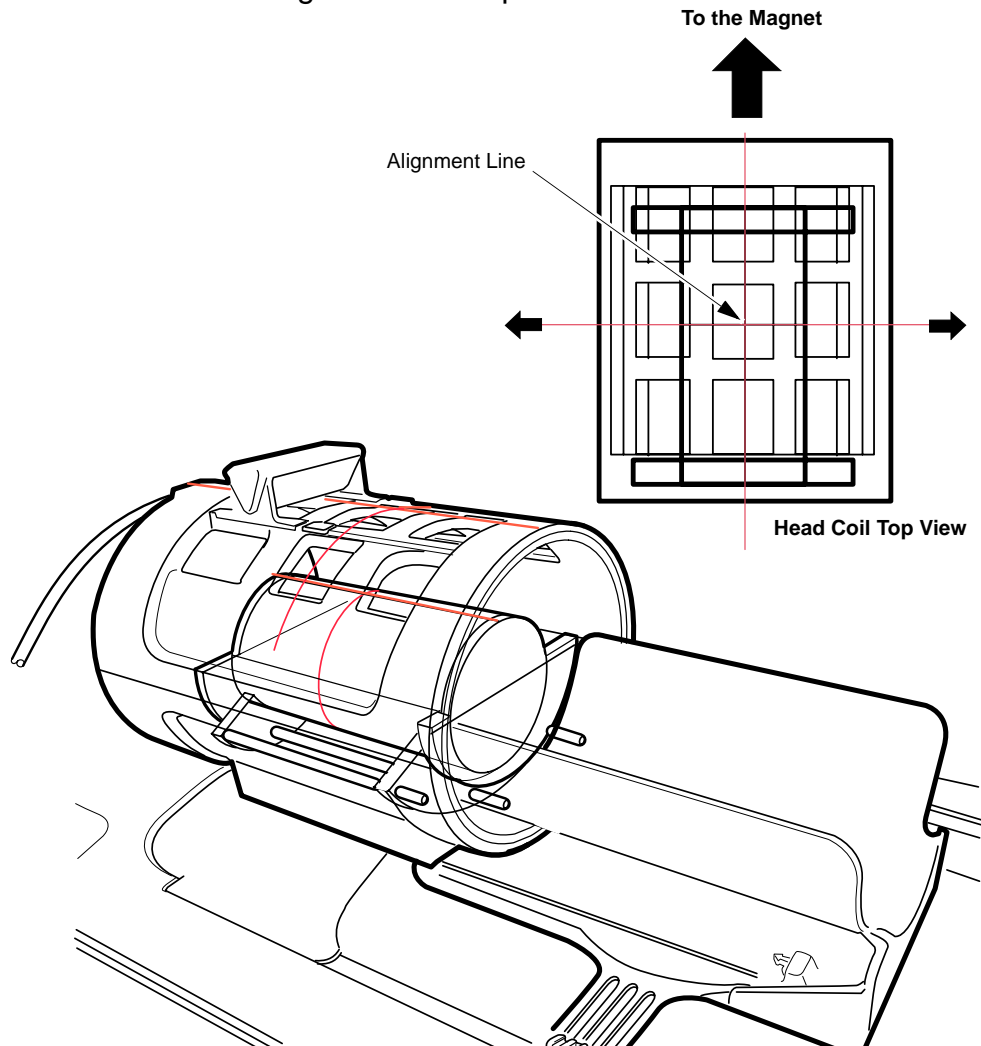
HEAD COIL POSITIONING
ILLUSTRATION 3-1

- Align the side lines of head coil and horizontal line of DQA phantom.
- Connect the coil connector box to table connector port.



HEAD COIL POSITIONING
ILLUSTRATION 3-2

8. Attach the coil cable to cable clamp of head rest.
9. Advance the cradle to the position where the A-light beam hits the center of coil.
10. Align the head coil and DQA phantom center position to laser center.
11. Landmark in the sagittal and axial planes.



HEAD COIL POSITIONING
ILLUSTRATION 3-2

12. Move the cradle to the scan center.

2-2 Invoking SPT Head Quick Check



Test functionality and system functionality may be adversely affected if the previous exam is not terminated. Click on [End Exam] to terminate any previous exam. It is not necessary to touch [New Pt] as SPT automatically enters the scan protocol when it is invoked via the MR Tools menu.

1. Click [End Exam] to cancel any previous exam. (You do not need to click on [New Pt].)
2. Select **SPT Head Quick Check** from the [Troubleshoot] menu on the Service Desktop.
3. Invoke SPT by clicking on [Start].
4. Select the appropriate tests to run. See Illustration 2-3



SYSTEM PERFORMANCE TEST MENU
ILLUSTRATION 2-3

2-3 SPT Options/Status

Test Options

Test options for clinical users are limited to: Quick Check, and Quick Check with Stability. After options are chosen and the test is started, data collection and processing proceed without further user input. (i.e., you are not required to select protocols, pre-scan, scan, reposition phantoms, or initiate data analysis processes while SPT is running.)

Test Status

When an SPT run is started, a status window is displayed that indicates all selected test options. As each individual test is running, a message is displayed in the window indicating what data is being collected or processed. Start time and estimated completion time are also displayed in the status window.

SPT can be aborted at any time by selecting [**Quit SPT**]. If you abort the test before completion, valid test results that were created prior to the abort are preserved.

Note

Verify the SPT result only by the report tool. Refer to "Result of SPT Check".
Do not care the messages of SPT result.

3- VIEWING SPT RESULTS

After SPT has finished the analysis, the data files can be reported with both graphics and text using the Report Manager tool program located in the Service Desktop Manager under UTILITIES, or on the PC windows desktop once the data file transfer from the SGI-host to the PC is completed. Refer to the "Report Manager Tool" procedure to view the SPT test results.

3-1 System Gain Updates

The System Gain test uses the unnormalized signal value measured during the SNR test(s) to compute coil gain for inclusion in the rational image scaling recon scale factor. If the customer is running SPT, i.e., only the InSite security key is present, coil gain is measured and trended, but the config file is not updated.

If the service person authorized automatic config file updates when SPT was initiated, and coil gain is out of specification by an amount that is equal to or greater than the update threshold, then the config file is automatically updated.

Note

Do not update the Recon Scale Factor for any Surface Coils, since scan automatically multiplies the Surface Coil Recon Scale Factor times the Head Coil Recon Scale Factor.

4- SPT TROUBLESHOOTING

4-1 When to Reboot

If there is a stop scan condition, such as a hardware error, during a run of SPT, it is a good idea to reboot the system. This condition may be caused by the test software being out of sync with the scan software. The only way to clear this condition is to reboot. Follow these instructions:

1. Right-click on the desktop wallpaper area, and select **Service Tools** from the root menu, then select **System Shutdown** to log out. Wait for Signa logout to complete, where a login screen appears.

It is not necessary to perform a complete reboot.

2. Restart system software by double clicking on the **Signa** icon, then enter the password **adw2.0<Enter>**. Allow initialization to fully complete before any user interaction.
3. Continue with the SPT test.

4-2 Utilities for SPT

There are five utilities that are useful when you use SPT. To view a short description of them, refer to the following:

- **Exit SPT Window** - If a problem occurs when exiting SPT, and nothing else seems to work, click on [Exit] from the window function pulldown menu (upper-left corner of SPT window). This closes all SPT windows, and kills all processes that run the SVAT scripting.
- **Sptreset** - If a problem occurs when exiting SPT in an unusual manner, and the system seems to be in an unusual configuration, type the following in a **[C-Shell]**: **cd /usr/g/service/cclass/spt<Enter>, sptreset<Enter>**. This puts all the files and configuration values back in their correct condition.
- **PRUNE** - Prune is used to take out trend file entries.
- **"T" File Cleanup** - "T" File Cleanup is a file space management tool. It cleans up the `/usr/g/service/data` directory. See the procedure for "T" File Cleanup for more information on how to run it.
- **"whatFailed"** - This utility, run from a C-shell, scans through user selected SPT result files and reports: what portion of the test failed, the actual result and test spec for that test. To run the **"whatFailed"** utility:

From the MR Tools screen, open a C-shell. Type **"whatFailed"** followed by **<Enter>**. A menu of all the SPT files for that system will pop up. Pick one of the tests displayed (or quit). The utility will then read through the file comparing each test (except for Coherent Noise) against it's limits. If there are no failing values in the file, you just get the following message:

{sdc lx} [1] **whatFailed**

Index	Name	Size	Last modified
=====	=====	=====	=====
1.	642M5026.SPT	303045	Mon Apr 15 16:37:40 1996
2.	64432616.SPT	367539	Mon Apr 15 16:37:44 1996

Enter command or the number of the desired data file
(N)ext (P)revious (S)top (Q)uit :**2**

FSE Body Stability Phase Drift Slice Y Readout Z at P78 with a value of 6.068

Fails **MARGINALLY**

This parameter must be less than 4.000 to pass
Greater than 8.000 is a severe failure

Press ENTER to continue ->**ENTER**

FSE Body Stability Phase Drift Slice X Readout Y at Iso-center with a value of 5.927

Fails **MARGINALLY**

This parameter must be less than 4.000 to pass
Greater than 8.000 is a severe failure

Press ENTER to continue ->**ENTER**

FSE Body Stability Phase Drift Slice Y Readout Z at A78 with a value of 5.026

Fails **MARGINALLY**

This parameter must be less than 4.000 to pass
Greater than 8.000 is a severe failure

Press ENTER to continue ->**ENTER**

Body TG with a value of 71.000

Fails **MARGINALLY**

This parameter must be between 74.000 and 104.000 to pass
Outside of 59.000 to 119.000 is a severe failure

Press ENTER to continue ->**ENTER**

This utility does not check for Coherent Noise failures

Press ENTER to continue....

REVISION HISTORY

REV	DATE	AUTHOR	PRIMARY REASONS FOR CHANGE
0	May 15, 2001	Y. Masumo	Initial Release
1	Oct 18, 2001	Y. Masumo	Page 5: Added the purpose of Head Rest.
2	Aug 22, 2002	Y. Masumo	Page 7: Illustration 2-3 is changed from MFO3.