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1- OVERVIEW

LVshim Check is a PM procedure that enables you to quickly check your magnet shim. It is recommended that you run it monthly. For ***TwinSpeed***, this procedure needs to be run separately for each gradient coil, **Whole-Body** (WB) and **Zoom** (ZM) gradients. The scan and analysis should be completed for one gradient, before testing the other.

1-1 Tools Required

- LVshim Phantom Assembly, 2125245
- Nesting Plate Assembly, 2125247

Note

Foreign material (such as staples, metal filings, dirt, etc.) on the LVshim phantom or Nesting Plate will alter shim harmonics, ensuring that the system will not properly shim. Therefore, before using the phantom and nesting plate, be sure that all foreign material has been cleaned off.

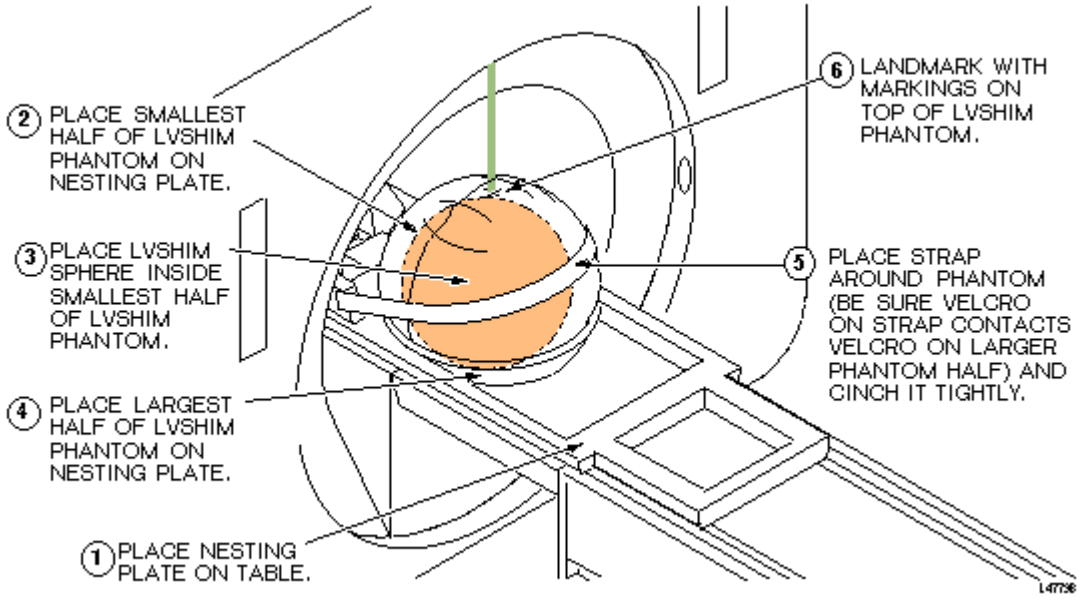
2- LVSHIM PHANTOM SETUP

CAUTION

Completely remove the quad head coil from the cradle before performing any body scans. Failure to do this may damage the head coil T/R network.

1. Remove quad head coil from cradle, and remove any other phantoms from bore.

2. Set up and align LVshim Phantom per Illustration 2-1.



ALIGNING LVSHIM PHANTOM ON PATIENT TABLE
Illustration 2-1

3. When phantom is properly aligned, go on to the next section.

3- LOCALIZER SCAN

1. At keypad on front magnet enclosure, press LANDMARK and MOVE TO SCAN to position landmarked phantom at center of magnet bore.

2. At operator workspace, select the scan icon in the desktop control panel, if you have not already done so.

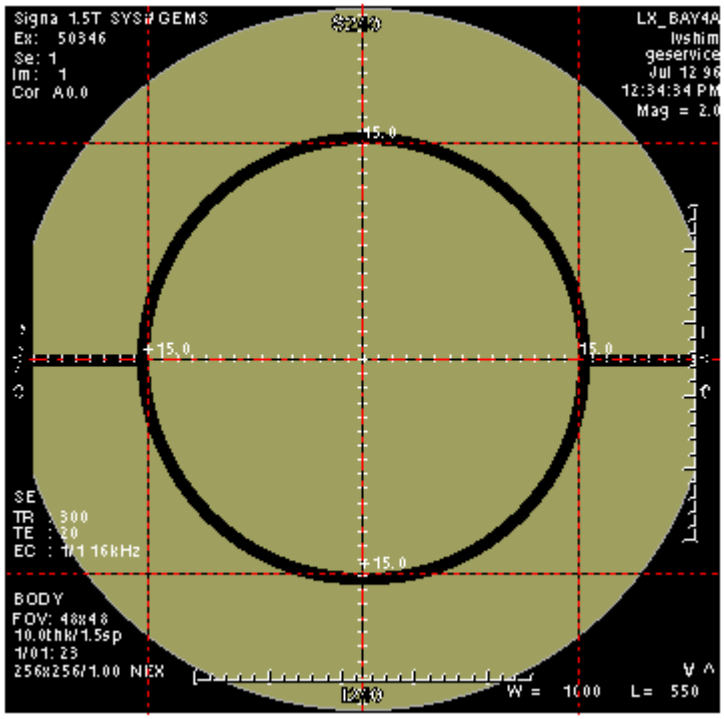
3. Click on **[Autoview]**, just below the Autoview image display screen; your images will display automatically.

   Prepare system to scan using protocol LVshim (Localizer), shown in the "Service Protocols" procedure located on the service methods CD-ROM, or for the alternate proprietary procedure, see Table 4-1. For ***TwinSpeed***, ensure **GradMode** is set to **WHOLE**. There is no need to repeat this for **ZOOM**.

   Note

   If you are performing Rough LVshim, you may have to use **[Manual Prescan]** to find the center frequency. Use **[Center Freq Coarse (CFL)]** to center on the frequency peak as necessary. Be sure to save Center Frequency before exiting manual prescan. Select Frequency menu pull down at the top of Manual Prescan window and select Save Frequency. You should also write down the center frequency value for future reference

4. When image displays on Autoview window, select the display icon in the desktop control panel. To display the image select the Exam, Series, Image, and click **[Viewer]**. Do the following to verify that phantom is centered in the Z direction. See Illustration 3-1.



CENTERING LVSHIM PHANTOM
ILLUSTRATION 3-1

a. Click **[User Prefs]**.

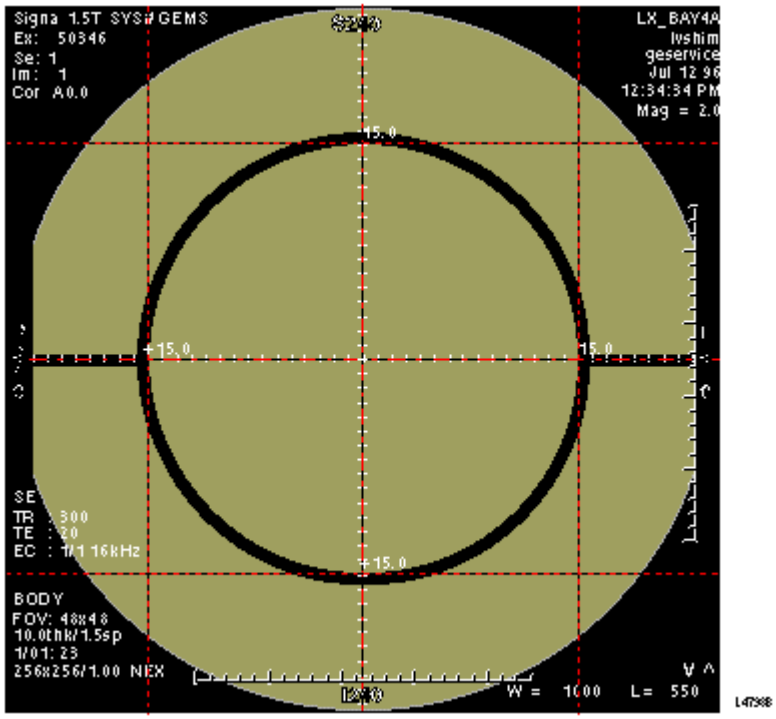
b. Select **[Customize]** under Grid Prefs.

c. Change Grid Spacing (mm) to 150, click **[Ok]**, and then click **[Apply]**.

d. Select button with grid symbol to turn on grid.

e. Adjust Window (W) and Level (L) settings until edges of phantom image can be clearly seen.

f. Verify the inner phantom sphere is centered within the 150 mm grid in the S/I direction, see to Illustration 3-2. If the phantom is not centered, move the phantom in or out of the bore as necessary (based on the grid markings), then landmark again and rescan.



CENTERING LVSHIM PHANTOM
ILLUSTRATION 3-2

5. When phantom is centered, go to Section 4- LVshim Scan.

4- LVSHIM SCAN

1. At operator workspace, select the scan icon in the desktop control panel and set up LVshim scan as follows:

   a. In RX MANAGER click **[New Series]**

   b. Prepare system to scan using protocol LVshim Scan, shown in the "Service Protocols" procedure located on the service methods CD-ROM, or for the alternate proprietary procedure, see Table 4-1.

TABLE 4-1
LVSHIM SCAN

Note

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

1. Set Patient Protocols to **Service**.

2. In the Protocol field, type **o.19.1** to scan the localizer image, or the corresponding LVShim protocol. To complete the actual LV shim scan, type the second series in the same protocol. For ***TwinSpeed***, select the **GradMode**.

Note

In scan parameters window under ACQUISITION TIMING, be sure that Autoshim is off for LVshim scans. LVshim results may be affected by performing the scan with Autoshim on.

   c. In ADDITIONAL PARAMETERS click **[User CVs Screen]**. In USER CONTROL VARIABLES window enter the following:
   No. of Scan Planes. **6**
   Bandwidth. **200**
   Click **[Accept]**

   d. Click **[Save Series]**. In RX MANAGER click **[Prepare to Scan]**.

Note

Perform an auto prescan and a manual prescan before every scan. If the manual prescan check is not made, the frequency may not be properly centered or the gain values may be set too high (overranged), causing the scan data to be invalid.

2. Click **[Auto Prescan]**

3. When auto prescan is finished, click **[Manual Prescan]**.

a. While in the **[Center Freq Fine (CFH)]** mode, verify that the frequency peak is centered in the display. Center the frequency peak as necessary. After locating the best signal, select Frequency menu pull down at the top of Manual Prescan window and select **[Save Frequency]** to save the new center frequency.

b. Click **[Transmit Gain (TG)]** select Markers menu pull down at the top of the Manual Prescan and select **[Horizontal Hairline]**. Adjust Transmit Gain.

Note

The TG needs to be adjusted correctly after performing Auto Prescan. Auto Prescan sets the TG for this phantom too high which results in the RF being overdriven and will produce NaN (Not a Number) in the LVshim analysis. Typically the TG will maximize at approximately 20 counts less than the Auto Prescan setting when adjusted in Manual Prescan.

c. Click **[Scan TR (R1/R2)]**. Verify that R1 and R2 are not overranged. Adjust R1 and R2 for approximately 50%.

4. Click **[Done]** to exit manual prescan.

5. When finished with auto prescan and manual prescan, click **[Scan]**.

6. When scan is completed, continue with Section 5- LVshim Analysis.

Note

The annotation on the LVshim images is not correct and do not change because the scan plane is driven by the LVshim PSD and not through scan prescription. Therefore, the software which is responsible for the image annotation doesn't know about the plane changes and keeps the annotation at the first plane. The images are in the correct plane and orientation, however, the annotation does not reflect this.

5- LVSHIM ANALYSIS

Record data from LVshim Check on the proper data sheet. They can be found on the 8X Service Methods CD, under Service Documentation / System Level Procedures / Setup and Calibrations / Lvshim. The datasheets are in Appendix B.

1. At operator workspace, select the tools icon in the desktop control panel.

2. In the Service Desktop Manager, click **[Cal/Checks]** and click **[LVshim Analysis] [Start]**. For ***TwinSpeed***, highlight the **GradMode** (corresponding to the last scan) in the pop-up window, click on **OK**, and continue as shown in the following.

```
<<< LVshim Analysis >>>
      (Magnet Type : GE S-III)
```
An S-III magnet was used in this example. Make sure the correct magnet type is displayed

```
1. Shim Type (Gradient, Sup18 1.5T, TEST):Gradient <--Change to TEST
2. Image Data (Ex, Se, Im Number)        :50007, 3, 1
3. Operation Mode (Service or Research)  :Service
4. Display Mag and Phase Diff Images     : No
5. Calibration File Name : qsc_grad.f60v22.2R
6. Existing Current in Each Coil.

XGRAD:  0.000   YGRAD:  0.000   ZGRAD: 0.000

0. Accept (q or s to quit).

Enter the Index Number to Change Default (0..6) [0]:
```
(For this example, the above change was made to the initial LVshim Analysis menu. See menu below for result of the change.)

```
<<< LVshim Analysis >>>
          (Magnet Type : GE S-III)

  1. Shim Type (Gradient, Sup18 1.5T, TEST): TEST
  2. Image Data (Ex, Se, Im Number)        : 5007, 3, 1
  3. Operation Mode (Service or Research)  : Service
  4. Display Mag and Phase Diff Images     : No
  5. Sampling Diameter in Centimeters      : 45
  6. Generate Mechanical Plot Points       : No

  0. Accept (q or s to quit).

Enter the Index Number to Change Default (0..6) [0]:
```
Enter **0** when all items in the menu are acceptable. Refer to procedure for LVshim Rel. 8.X Section 7, LVshim Analysis Details, for more information about the menu items.

```
Processing ... plane  1 of 6
.
.
.              <----------------------------- Image data is processed
```

. (planes 1-6)
Processing ... done. 6 of 6

If image phase wrap was detected, the following message appears:

```
Excessive phase wrapping.
    ...Please rescan at wider Bandwidth or smaller test diameter

   Exit LVshim? (Y,N) [N] :.........................
```

Touch **[Modify CVs]**. Type **opuser2** and enter a higher bandwidth. Valid bandwidth entries are: 200, 500, 1000, and 5000. Touch **[Download]**, then rescan. When the new scan is finished, touch the LVshim window and press **Enter**.

```
Exam 50007, Series 3, Image 1
6 Planes, Bandwidth = 200 Hz, FOV = 60 cm, DSV = 45 cm
Inhomogeneity = 31.98 Hz. ( 0.504 ppm)
```

Compare the displayed inhomogeneity and Harmonic Coeffigeneity and Harmonic Coeffi- in Table 3. If the displayed values do not meet the specs, make arrangements to LVshim the magnet.

```
Harmonic Coefficients (Zero to Peak

 Z1:  -8.19      X:  -8.70      Z2X:  -3.44

 Z2:   4.55      Y:  36.93      Z2Y:  -0.49

 Z3:   3.71     ZX:  -5.56  ZX2_ZY2:   0.64
 Z4:   0.08     ZY:   4.76      ZXY:   2.83
 Z5:  -2.64  X2_Y2:   2.12       X3:  -3.73
 Z6:   5.25     XY:  -2.36       Y3:  -1.83

Generating LVshim report file
============================
Please enter two lines of comments (Max 70 characters/line)
Press Return at the end of each line
To leave a comment line empty, press Return
|-------------- Max comment length -----------------|

Comment Line 1:.....................................Enter comments if desired.

Comment Line 2:.....................................Enter comments if desired.
```

f Yes *was entered for Display Mag and Phase Diff Images, this appears:*

```
    The Following Are the Image Display Options.

      1. Image Plane 1
      2. Image Plane 2
      3. Image Plane 3
      4. Image Plane 4
      5. Image Plane 5
      6. Image Plane 6
      0. Continue

   Enter Index (0..6) [1] :.........................
```

Enter appropriate choice. Refer to procedure for Lvshim Section 8-7, Display Mag and

	Diff Images, for more information about the image Display Options. Enter **0** to continue.
`Run LVshim Again? (Y,N) [Y] :.....`	Enter **n** to quit Lvshim Analysis tool.
`Press any key to quit.....`	Press any key, then go to Step 3.

3. Compare your results with the LVshim Specifications in Table 5-1 or 5-2. Table 5-1 contains the results of LV shim for BRM coils, Table 5-2 contains the results for CRM coils. For ***TwinSpeed***, compare **WHOLE-BODY** with BRM, and **ZOOM** with CRM.

TABLE 5-1
LVSHIM SPECIFICATIONS – BRM AND TRM (WB)

LVSHIM TYPE	OVERALL HOMOGENEITY		HARMONIC COEFFICIENTS (ZERO TO PEAK)			
	"SHIM TO" GOAL*	CUSTOMER ACCEPTANCE	MAGNET TYPE	HARMONIC NAME	"SHIM TO" GOAL*	CUSTOMER ACCEPTANCE
Main (45-cm DSV 500Hz BW)	<45 Hz	< 80 Hz after Gradshim	**Oxford** (12 coils)	Z5, Z6, Z(X2-Y2), ZXY, X3, Y3	NA**	NA
				Z3, Z4, Z2X, Z2Y	< 100 mA† delta current	NA
				Z2, ZX, ZY, X2-Y2, XY	< ±25 Hz	< ±50 Hz after Gradshim
Main (45-cm DSV 500Hz BW)	<45 Hz	< 80 Hz after Gradshim	**S-I** (14 coils)	Z5, Z6, X3, Y3	NA**	NA
				Z3, Z4, Z2X, Z2Y	< 100 mA† delta current	NA
				Z2, ZX, ZY, X2-Y2, XY	< ±25 Hz	< ±50 Hz after Gradshim
				X, Y, Z1	< ±10 Hz	NA
Main (45-cm DSV 500Hz BW)	<45 Hz	< 80 Hz after Gradshim	**S-II**, **S-III**, **S-IV**, **S-X**, **S-XC_1** (18 coils)	Z6	< ±200 Hz‡	NA
				Z3, Z4, Z5, Z2X, Z2Y, Z(X2-Y2), ZXY, X3, Y3	< 100 mA† delta current	NA
				Z2, ZX, ZY, X2-Y2, XY	< ±25 Hz	< ±50 Hz after Gradshim
				X, Y, Z1	< ±10 Hz	NA
Main (45-cm DSV 500Hz BW)	<45 Hz	< 80 Hz after Gradshim	**S-V, S-XC_2** (12 coils)	X2-Y2, XY, Z(X2-Y2), ZXY, X3, Y3	NA**	NA
				Z6	< ±200 Hz‡	NA
				Z3, Z4, Z5, Z2X, Z2Y	< 100 mA† delta current	NA
				Z2, ZX, ZY	< ±25 Hz	< ±50 Hz after Gradshim
				X, Y, Z1	< ±10 Hz	NA
Gradient (22-cm DSV)	< 6 Hz	< 12 Hz after Gradshim	**All** (3 coils)	X, Y Z1	≥ ±1 delta gradient unit	< 200 total gradient units

***** Most magnets should be able to achieve the “Shim To” values shown. All magnets must meet the “Customer Acceptance” values. As long as the magnet meets the Customer Acceptance values, Gradient LVshim should be sufficient to maintain an acceptable shim quality. When the Customer Acceptance values are exceeded, Main LVshim must be performed to re-establish an acceptable shim quality.

****** Oxford, S-I, S-V, and S-XC_2 magnets do not have a full set of 18 shim coils; therefore, the harmonics associated with the "missing" coils do not have LVshim specifications. Passive shimming is required to reduce these harmonics. For S-V and S-XC_2 magnets, if X2-Y2, or XY, are > ±25 Hz, you must perform passive to reduce these to < ±25 Hz.

† Note that this spec is for **< 100 mA** delta current, **NOT < ±100 Hz.** As a rule of thumb, all the power supply delta currents should be below 100 mA.

‡ The specification for the Z6 harmonic can be ignored if it forces the center frequency to move out of specification (i.e., forcing the magnet to be re-parked) or if it forces the current in the Z4 or Z6 power supply to exceed 20 amps.

TABLE 5-1 (Continued)
LVSHIM SPECIFICATIONS – BRM AND TRM (WB)

LVSHIM TYPE	OVERALL HOMOGENEITY		HARMONIC COEFFICIENTS (ZERO TO PEAK)			
	"SHIM TO" GOAL*	CUSTOMER ACCEPTANCE	MAGNET TYPE	HARMONIC NAME	"SHIM TO" GOAL*	CUSTOMER ACCEPTANCE
Main LVshim 45 cm dsv 6 scan Planes 500 Hz BW LVshim 50 cm Diam Phantom	< 33 Hz < 20 units of Gradshim	< 54 Hz after Gradshim	**Cx 1.0T & LCC 1.0T** (18 coils)	1, 0 (Z1) 2, 0 (Z2) 3, 0 (Z3) 4, 0 (Z4) 5, 0 (Z5) 6, 0 (Z6) 8, 0 (Z8) 10, 0 (Z10) 12, 0 (Z12) 1, 1 (Y) 1, -1 (X) 2, 1 (ZY) 2, -1 (ZX) 2, 2 (X2-Y2) 3, 1 (Z2Y) 3, -1 (Z2X) 3, 2 (ZX2-ZY2) 3, -2 (ZXY) 3, 3 (Y3) 3, -3 (Y3)	< 15 Hz < 25 Hz < 25 Hz < 50 Hz < 50 Hz < 50 Hz No spec No spec No spec < 15 Hz < 15 Hz < 25 Hz < 25 Hz < 25 Hz < 25 Hz < 25 Hz < 25 Hz < 25 Hz < 25 Hz < 25 Hz	see Gradshim < 50 Hz < 50 Hz < 100 Hz < 100 Hz < 100 Hz No spec No spec No spec see Gradshim see Gradshim < 50 Hz < 50 Hz < 50 Hz < 50 Hz < 50 Hz < 50 Hz < 50 Hz < 50 Hz < 50 Hz
Gradshim 22cm DSV	< 4 Hz	< 6 Hz after Gradshim		XYZ	≤ 1unit	< 200 units
6 scan planes, 200 Hz BW, TLT or LVshim Phantom						
Main LVshim 45 cm dsv 6 scan Planes 500 Hz BW LVshim 50 cm Diam Phantom	< 50 Hz < 20 units of Gradshim	< 80 Hz after Gradshim	**Cx 1.5T & LCC 1.5T** (18 coils)	1, 0 (Z1) 2, 0 (Z2) 3, 0 (Z3) 4, 0 (Z4) 5, 0 (Z5) 6, 0 (Z6) 8, 0 (Z8) 10, 0 (Z10) 12, 0 (Z12) 1, 1 (Y) 1, -1 (X) 2, 1 (ZY) 2, -1 (ZX) 2, 2 (X2-Y2) 3, 1 (Z2Y) 3, -1 (Z2X) 3, 2 (ZX2-ZY2) 3, -2 (ZXY) 3, 3 (Y3) 3, -3 (Y3)	< 10 Hz < 25 Hz < 25 Hz < 50 Hz < 50 Hz < 50 Hz No spec No spec No spec < 10 Hz < 10 Hz < 25 Hz < 25 Hz < 25 Hz < 25 Hz < 25 Hz < 25 Hz < 25 Hz < 25 Hz < 25 Hz	see Gradshim < 50 Hz < 50 Hz < 100 Hz < 100 Hz < 100 Hz No spec No spec No spec see Gradshim see Gradshim < 50 Hz < 50 Hz < 50 Hz < 50 Hz < 50 Hz < 50 Hz < 50 Hz < 50 Hz < 50 Hz
Gradshim 22cm DSV	< 4 Hz	< 6 Hz after Gradshim		XYZ	≤ 1unit	< 200 units
6 scan planes, 200 Hz BW, TLT or LVshim Phantom						

***** Most magnets should be able to achieve the “Shim To” values shown. All magnets must meet the “Customer Acceptance” values. As long as the magnet meets the Customer Acceptance values, Gradient LVshim should be sufficient to maintain an acceptable shim quality. When the Customer Acceptance values are exceeded, Main LVshim must be performed to re-establish an acceptable shim quality.

TABLE 2-2
LVSHIM SPECIFICATIONS – CRM AND TRM (SG)

LVSHIM TYPE	OVERALL HOMOGENEITY		HARMONIC COEFFICIENTS (ZERO TO PEAK)			
	"SHIM TO" GOAL*	CUSTOMER ACCEPTANCE	MAGNET TYPE	HARMONIC NAME	"SHIM TO" GOAL*	CUSTOMER ACCEPTANCE
Main (45-cm DSV 500Hz BW)			**Oxford** (12 coils)	Z5, Z6, Z(X2-Y2), ZXY, X3, Y3	Magnet not compatible at present.	
				Z3, Z4, Z2X, Z2Y		
				Z2, ZX, ZY, X2-Y2, XY		
Main (40-cm DSV 500Hz BW)	<36 Hz	< 64 Hz after Gradshim	**S-I** (14 coils)	Z5, Z6, X3, Y3	NA**	NA
				Z3, Z4, Z2X, Z2Y	< 100 mA† delta current	NA
				Z2, ZX, ZY, X2-Y2, XY	< ±18 Hz	< ±36 Hz after Gradshim
				X, Y, Z1	< ±10 Hz	NA
Main (40-cm DSV 500Hz BW)	<36 Hz	< 64 Hz after Gradshim	**S-II**, **S-III**, **S-IV** (18 coils)	Z6	< ±160 Hz‡	NA
				Z3, Z4, Z5, Z2X, Z2Y, Z(X2-Y2), ZXY, X3, Y3	< 100 mA† delta current	NA
				Z2, ZX, ZY, X2-Y2, XY	< ±18 Hz	< ±36 Hz after Gradshim
				X, Y, Z1	< ±10 Hz	NA
Main (40-cm DSV 500Hz BW)	<40 Hz	< 64 Hz after Gradshim	**S-V** (12 coils)	X2-Y2, XY, Z(X2-Y2), ZXY, X3, Y3	NA**	NA
				Z6	< ±160 Hz‡	NA
				Z3, Z4, Z5, Z2X, Z2Y	< 100 mA† delta current	NA
				Z2, ZX, ZY	< ±18 Hz	< ±36 Hz after Gradshim
				X, Y, Z1	< ±10 Hz	NA
Gradshim (22-cm DSV)	< 6 Hz	< 12 Hz after Gradshim	**All** (3 coils)	X, Y Z1	≥ ±1 delta gradient unit	< 200 total gradient units

***** Most magnets should be able to achieve the "Shim To" values shown. All magnets must meet the "Customer Acceptance" values. As long as the magnet meets the Customer Acceptance values, Gradient LVshim should be sufficient to maintain an acceptable shim quality. When the Customer Acceptance values are exceeded, Main LVshim must be performed to re-establish an acceptable shim quality.

****** Oxford, S-I, S-V, and S-XC_2 magnets do not have a full set of 18 shim coils; therefore, the harmonics associated with the "missing" coils do not have LVshim specifications. Passive shimming is required to reduce these harmonics. For S-V and S-XC_2 magnets, if X2-Y2, or XY, are > ±25 Hz, you must perform passive to reduce these to < ±25 Hz.

† Note that this spec is for **< 100 mA** delta current, **NOT < ±100 Hz.** As a rule of thumb, all the power supply delta currents should be below 100 mA.

‡ The specification for the Z6 harmonic can be ignored if it forces the center frequency to move out of specification (i.e., forcing the magnet to be re-parked) or if it forces the current in the Z4 or Z6 power supply to exceed 20 amps.

TABLE 2-2 (Continued)
LVSHIM SPECIFICATIONS – CRM AND TRM (SG)

LVSHIM TYPE	OVERALL HOMOGENEITY		HARMONIC COEFFICIENTS (ZERO TO PEAK)			
	"SHIM TO" GOAL*	CUSTOMER ACCEPTANCE	MAGNET TYPE	HARMONIC NAME	"SHIM TO" GOAL*	CUSTOMER ACCEPTANCE
Main LVshim 40 cm dsv 6 scan Planes 500 Hz BW LVshim 50 cm Diam Phantom	< 40 Hz < 20 units of Gradshim	< 64 Hz after Gradshim	**Cx 1.5T, LCC 1.5T** (18 coils)	1, 0 (Z1) 2, 0 (Z2) 3, 0 (Z3) 4, 0 (Z4) 5, 0 (Z5) 6, 0 (Z6) 8, 0 (Z8) 10, 0 (Z10) 12, 0 (Z12) 1, 1 (Y) 1, -1 (X) 2, 1 (ZY) 2, -1 (ZX) 2, 2 (X2-Y2) 3, 1 (Z2Y) 3, -1 (Z2X) 3, 2 (ZX2-ZY2) 3, -2 (ZXY) 3, 3 (Y3) 3, -3 (Y3)	< 10 Hz < 25 Hz < 25 Hz < 50 Hz < 50 Hz < 50 Hz No spec No spec No spec < 10 Hz < 10 Hz < 25 Hz < 25 Hz < 25 Hz < 25 Hz < 25 Hz < 25 Hz < 25 Hz < 25 Hz < 25 Hz < 25 Hz	see Gradshim < 50 Hz < 50 Hz < 100 Hz < 100 Hz < 100 Hz No spec No spec No spec see Gradshim see Gradshim < 50 Hz < 50 Hz < 50 Hz < 50 Hz < 50 Hz < 50 Hz < 50 Hz < 50 Hz < 50 Hz < 50 Hz
Gradshim 22cm DSV 6 scan planes, 200 Hz BW, TLT or LVshim Phantom	< 4 Hz	< 6 Hz after Gradshim		XYZ	≤ 1unit	< 200 units

***** Most magnets should be able to achieve the “Shim To” values shown. All magnets must meet the “Customer Acceptance” values. As long as the magnet meets the Customer Acceptance values, Gradient LVshim should be sufficient to maintain an acceptable shim quality. When the Customer Acceptance values are exceeded, Main LVshim must be performed to re-establish an acceptable shim quality.

4. When finished checking shim, delete LVshim images in order to maximize image disk space for the customer.

5. For ***TwinSpeed***, repeat through sections 4 and 5 for both **GradModes**.

REVISION HISTORY

REV	DATE	AUTHOR	PRIMARY REASONS FOR CHANGE
0	Aug 19, 1998	R. Hawthorne	Initial conversion to Word
1	Feb. 22, 1999	K. Keshena	Updated information of the Service Protocol location on the CD Rom.
2	May 20, 1999	P. Kargard	Updated tables to include specs for LCC magnets.
3	Feb 15, 2000	P. Kargard	Updated tables to include specs for Cardiac. Included reference for 8.3 software.
4	Sep 7, 2000	J.Gerber	Updated for TwinSpeed
5	July 16, 2001	J.Gerber	Updated for TwinSpeed scanner for 9.0 release