MFO3 M4 Release

Overview

Please be informed that the MFO3 (Signa Ovation3) is available from FW03, 2003 with the following features:

- •SPT SNR coefficient is not more used in the calculation to obtain the SPT SNR;
- •Advanced/Restricted/Applications software list;
- •Option List.

Also, Signa Ovation Additional Feature Enhancements and Signa Ovation Errata, Version 9.0 Release are transcribed in the Appendix of this Service Notes. These documents describe in details all features and enhancements included in MFO3 M4 version.

1. SPT noise coefficient

Per Service Notes SN62712 (Signa Ovation3 SPT SNR Change Notice), where the correction coefficient (1.12) was multiplied by the result of SPT value to obtain the correct SNR value, **is not applicable from MFO3 M4 release**. It is not more necessary to multiply the coefficient to the SPT value.

2. Advanced/Restricted/Applications Software List

Below is the MFO3 M4 Advanced/Restricted/Applications Software available in this release:

Table 1: Advanced/Restricted/Applications Software available with MFO3 M4 release

Option Name	Part Number
P9422MA GEMS Linux OS	2359543
P9422MB Application Software	2359544
P9422MC Advanced Service Software	2359545
P9422MD Restricted Software	2359546

3. Option List

MFO3 M4 Options available in this release are listed as follows:

Table 2: Options available with MFO3 M4 release

Option Name	Part Number	M-Cat No.
iDrive Pro Plus	2364229	M20272BP
Connect Pro Plus (*1)	2364230	M20282BP
MFO3 M4 Open Source	2363771	M20292BP

(*1): Connect Pro Plus Option will be fully available after “MFO3 M4 Patch” release.

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Signa Ovation
Additional Feature Enhancements
Version 9.0 Release
January 22, 2003

Please confirm that DICOM-related problem will not happen when transferring (getting/sending) the images through your Image Server and ConnectPro (HIS/RIS) systems, which are connected by DICOM.

DICOM specifications may be accessed through:

GET GE DICOM Conformance statements on the Internet:
http://ge.com/dicom.

If you have any questions, contact your GE Service Representative.

Overview

New Features

- Gradient Echo EPI (GRE-EPI)
- 3 Plane Graphic Prescription (3 Plane GRx)
- Radial Prescription (on 3 Plane GRx)
- FuncTool 2 (option)
- i/Drive Pro Plus (option) – Real Time Imaging
- ConnectPro Plus (option) which includes Performed Procedure Step (PPS) feature.

Feature Enhancements

- Fat/Water Imaging availability with 2D GRE/SPGR and 2D/3D FIESTA
- Real Time Blurring Cancellation availability with Multi Coils
- Image Filter Window modifications
- 3D User Interface Screen modifications
- Interactive Vascular Imaging (IVI) procedure changes according to 3D User Interface Screen modifications

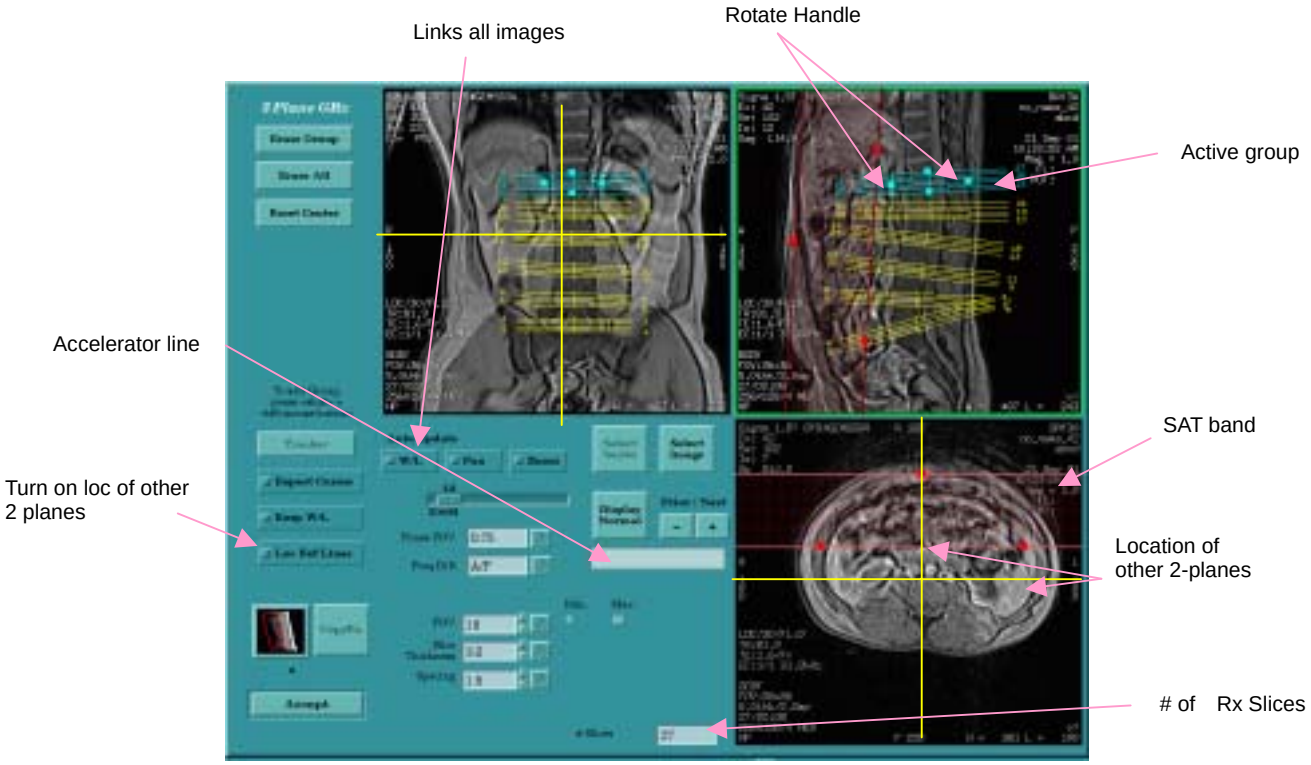
Others

- PC Host enhancements
- Network only uses DICOM format and no longer uses Advantage Net format

Description of New Features

- **Gradient Echo Planar Imaging** (GRE-EPI) is an optional pulse sequence that is designed to improve contrast-enhance weighted images. GRE-EPI uses gradients with both positive and negative polarity that produces odd and even echoes after the initial RF pulse. Multiple lines of K-space are collected following each TR period, thus reducing chemical shift artifacts or ghosting. GRE-EPI uses a multi-shot EPI mode (minimum # of shots = 16), phase values ranging from 64-128 in steps of 8, and sets the frequency direction to A/P.

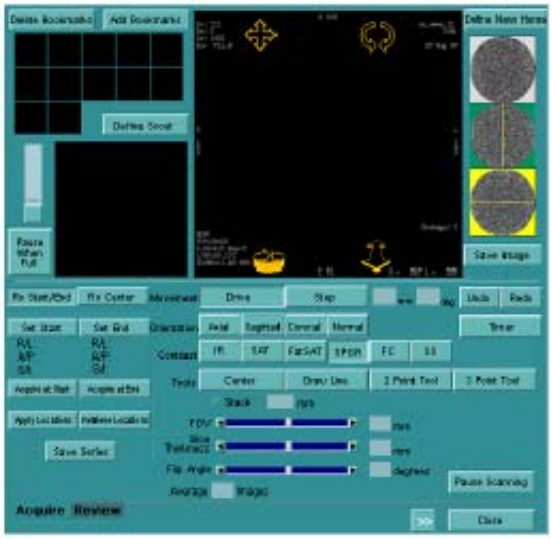
- **3 Plane Graphic Prescription (GRx)** is now available. It allows you to define slices and saturation (SAT) bands while visualizing their exact locations on three different image planes simultaneously. This feature helps you achieve reductions in prescription time, as well as increase your prescription accuracy.



- **Radial prescription** is now available with GRx (including 3 Plane GRx). This allows multiple slices in the same series to be acquired around a central axis. Radial and partial radial graphic prescription is available with 2D FSE, FRFSE, FGRE/FSPGR, GRE/SPGR, FastCARD, Fast CINE, and FIESTA pulse sequences (see the Version 9 New Feature operator manual for restrictions on these pulse sequences).

- **Functool analysis** software (optional) allows you to post process MR data to generate parametric image maps. See optional Functool 2 Booklet.

- **i/Drive Pro Plus software (optional)** allows you to interactively manipulate the scan plane and image contrast (Real Time Imaging). Images you acquire with i/Drive Pro plus can be used to prescribe scan planes and locations for other series in the exam once the correct plane and locations have been determined. Real Time Imaging is activated with a selection of the [Real Time] Imaging Option.
  Real Time Imaging (RTI) is compatible with 2D Fast GRE/Fast SPGR. The following window is displayed when selecting [Scan] at RTI.



- **The optional ConnectPro Plus (HIS/RIS) includes Performed Procedure Step (PPS).** The PPS is a closed loop of information transfer. The patient information is transferred to the system from the HIS/RIS system after you select the patient from the Schedule window (conventional HIS/RIS feature). The PPS is completed when the images are archived and transferred to a PACS. The HIS/RIS is also notified that the exam is complete and of the location of images (e.g., at the PACS).

Description of Enhanced Changes

- **Fat/Water Imaging (Separation)** is now available with 2D GRE/SPGR and 2D/3D FIESTA. It uses the phase differences between fat and water to generate fat or water suppressed images. The phase difference between fat and water is determined by the TE, which is automatically set by the system and therefore TE is not a selectable parameter. The reconstruction algorithm uses this information to reconstruct a fat and/or water image(s) in addition to the original image. To implement fat/water imaging, click either one or both of these options from the Imaging Options window: [Single Quadrature Water Imaging] and/or [Single Quadrature Fat Imaging]

  Two User CVs are available with Fat/Water Imaging: CV5 (DFT) and CV6 (a method of combining data for each NEX). When FIESTA is the PSD, if CV5 =1, then CV6 must = 4.

  When using [FIESTA] with Fat and/or Water Imaging, set Auto Center Frequency, located on the Acquisition Timing window, to [Water]. The default is [Peak].
  Fat/Water Imaging is compatible with the following coils:
  - Head, Neuro-vascular (NV-Head or NV-Neck),
  - 9-INCH GP,
  - Open Body,
  - Knee Array Small,
  - Knee Array Large,
  - K-nee Foot Array,
  - Shoulder Array coils.

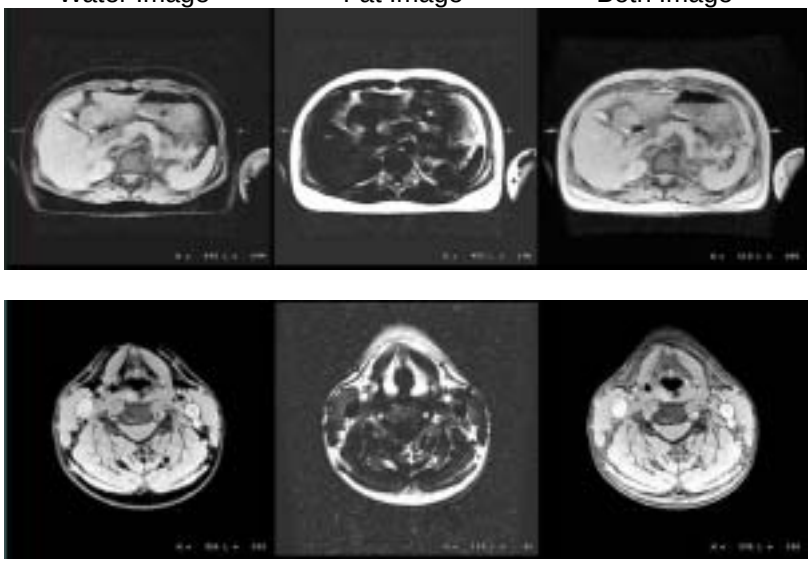
<NOTES>:

Fat/Water Imaging may not be performed properly in the following cases:

- When the FOV is not located at magnet center. To get effective fat/water separation images, set the anatomy of interest as close as possible to the magnet center.
- An improper phase estimation caused by the discontinuity of body parts results when the FOV covers different anatomical parts for a scan, such as 2 axial legs.
- Mis-registration of the Fat/Water signal may occur in specific anatomical areas where there is breathing motion such as the abdomen or breast.
- For optimal Fat/Water Imaging, use it on an area of interest within 100 mm from isocenter.
- Do not use [Respiratory Compensation] with GRE, or artifacts may occur.
- The Autoview image display time is 2 to 4 times longer than normal when using [ZIP x 2] or [ZIP x 4] with 3D FIESTA.

<**Sample Images**>

Water Image Fat Image Both Image

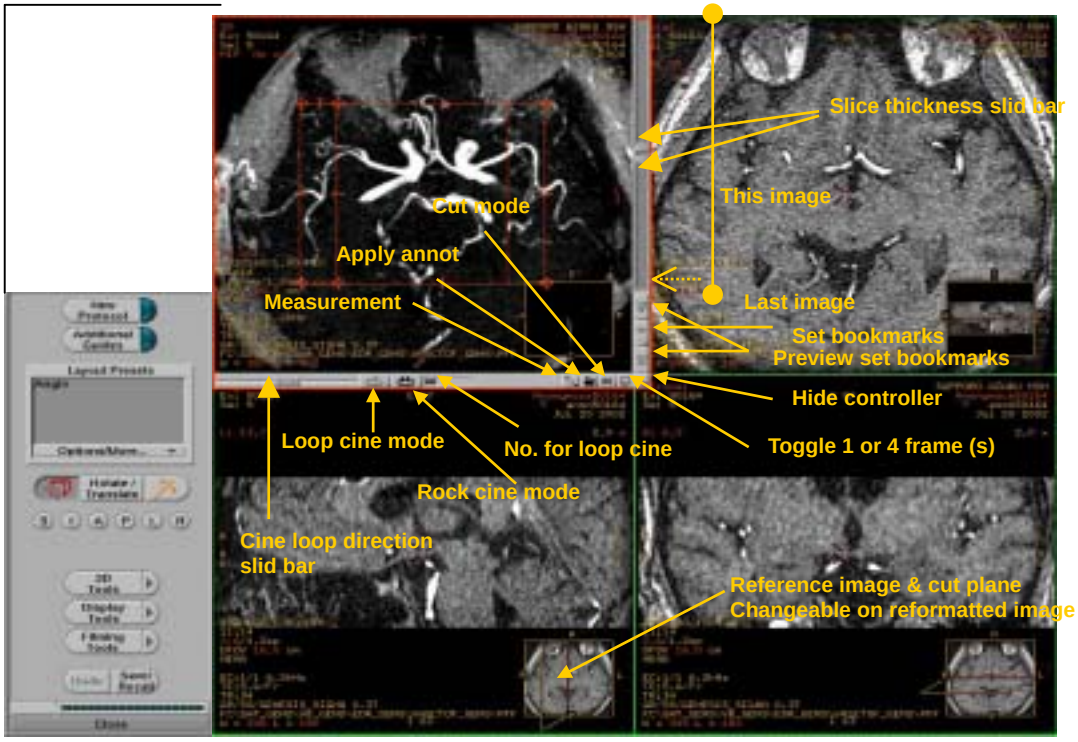


- Real Time Blurring Cancellation (RTBC) is now available with the Knee Array Large coil and NV-Head coils.

- **The Image Filter window** has been modified. When Image Filter is selected, the center image from the selected series is displayed in the left viewport and the filtered image is displayed in the right viewport after [Preview] is selected.

Before Filtering After Filtering

- **3D User Interface** window has been modified. When activating IVI, IVI-F, Reformat, or 3D the following window is displayed. Right click on the annotation of 3D, MIP, or Reformat, located in the upper left corner of the viewport, to start each application.



- Interactive Vascular Imaging (IVI) procedure has been changed according to 3D Interface Screen modifications.
  IVI, post-processing tool is focuses on the creation of vascular projection images. The IVI creates projection images from a 2D stack or 3D volume of magnetic Resonance Angiography (MRA) images and allows you to view the data from different angles. IVI allows you to modify the volume of interest to remove competing structures, such as fat, to improve the vascular images.

  The IVI feature is not included in the operator manual, please refer to a quick guide attached at the end of this note.

Others

- The PC host is replaced with a unit that produces faster image reconstruction and filter processing.

- Network only send/receives DICOM formatted images. Advantage net is no longer supported.

Signa Ovation
Errata

Version 9.0 Release
January 22, 2003

This document is dedicated to Signa Ovation software release 9.0 and contains information about the operation of the Ovation system. Read these items carefully.

Each section contains a list of 9.0 software issues. When possible, a work around has been provided. It is recommended that you keep this list stored with your Ovation operator documentation.

This list will serve as a supplement to instruction contained in the operator manual. We ask you to please make us aware of any additional issues so that we can address them appropriately.

The errata is divided into 3 sections:

1. General System
2. Scan Desktop
3. Display Desktop

General System

- If Paging is continually used for several hours on the Mini Viewer, the screen may lock. Reboot the system.

- When simultaneously pressing Ctrl, Alt and any F key, a Command pop-up window may be displayed. Press Ctrl, Alt and F7 together to eliminate the Command pop-up window and then reboot the system.

- When simultaneously pressing Ctrl, Alt and the <Backspace> key, the Login screen is displayed. Reboot the system by selecting [Reboot] from the System pull-down menu located on the Login screen's menu bar.

Scan Desktop

- Failure to download a series occurs when having selected [FSE-IR] to pulse sequence, followed by reselecting [FSE] in the same series from which you modify any scan parameter and trying to save the series.

  The same failure occurs when a FLAIR series is followed by a FSE or FSE-IR in the same series. Do not reselect the pulse sequences in the same series and use a new series using the [New Series] button.

- A T1 FLAIR may fail to download or scan may stop if the number of slices is not divisible by the number of acquisitions, e.g. 14 slices and 3 acquisitions.

- For a 5 minute gated FIESTA acquisition, scanning may continue even though the view count or scan time on the PC displays 0.

- A PSD error occurs when selecting [Oblique], Cine mode, graphically prescribing Multi Angle Multi Group, and then changing the prescription to Single Group. Select [New Series] and prescribe Single Group again.

- When rotating an image using the Drive Mode in i/Drive Pro Plus, the mouse cursor may not correctly reflect the mouse motion. The rotation angle and direction displayed on the image is defined by the mouse angle and dragging motion. Therefore, ignore the indication of mouse cursor.

- If the message ‘During saving’ appears under the following conditions, then the operation and termination of i/Drive Pro Plus will occur:
  1. Perform [Save Range] on the Review Tab.
  2. Change desktops while saving images.

- While activating Archive, Network or Filming, if i/Drive Pro Plus is initiated and then terminated, the Archive, Network or filming feature may stop. Either reinitiate and terminate i/Drive Pro Plus, or reboot the system. Therefore, do not archive, network or film while i/Drive Pro Plus is active.

- When using GRx, clicking [Fallback] will not move the slices.

- When graphically prescribing Multi Group, the desired slices may not be correctly obtained. The system does not recognize multiple groups prescribed inside of the scanning range and therefore, only a single group will be calculated. Decrease the number of slices or slice thickness to cover the desired scan range within a single group.

- Slice lines will not be displayed when the following conditions occur:
  1. Graphically prescribing a 3D FSE or FIESTA
  2. Close the GRx window to change the values for ‘Slices to discard’ field on the User CVs window.
  3. Reopen the GRx window and the slice lines are not displayed.

  If the scan prescription continues without displaying the slice lines, the scan locations may not be registered correctly. Either change the values for ‘Slices to discard’ before prescribing the slice lines or delete the prescribed slice lines and then re-prescribe the slices.

Protocol Desktop

- When building a protocol on the Patient Rx window, if you close the Scheduler window by clicking [Schedule] from the Patient Information window, the Patient Protocol window will also close and your edits will be cancelled. Re-edit the protocol and do not close the Patient Protocol window from the Patient Information window.

Display Desktop

- The Viewer is hidden behind the Browser when the following conditions occur:
  1. Click [Compare] from the Viewer.
  2. Change desktops.
  3. Click [Cancel] from the Compare window.
  4. Return to the Display Desktop.

  Place the cursor over the Browser and press the Alt and F3 keys together. This pushes the Browser behind the Viewer.

- When rebooting the system or detaching the MOD, the message letters displayed at the bottom of the Browser may be corrupted. Ignore the problem since it doesn't affect any system function.

- The [Image Enhance] Gray Scale feature does not work alone. Use it with the [Image Enhance] Filters' feature.

- 3D, IVI, or Reformat can be activated with PD, T2, or Fat/Water Imaging series that have multiple images per location. However, correct post processing information is not generated. Therefore, load a series set into 3D, IVI, and Reformat that only includes one image per location.

- When using 3D, IVI or Reformat, if you change the display location on the reference image, the original location may not change accordingly. Reselect the location.

- The COMB series resulting from an [Add/Sub] processing displays a '0T' field strength when recalled into the Viewer.

- When using a COMB and PROC series type in [Add/Sub], two series with the same series number are registered in the Browser.

- If an Exam includes a COMB and PROC series type, [Add/Sub] has been completed, and an [Edit Patient] has been completed, then two Exams with the same exam number will be registered in the Browser. One Exam includes both COMB and PROC series, and the other exam includes all other series except the COMB and PROC series.

- If a COMB series type has been created in [Add/Sub], no other parameters than Matrix, NEX, and Archive will be displayed on the Browser.

- If a COMB or PROC series type has been created in [Add/Sub], 3D, IVI or Reformat cannot be activated.

- When [Edit Patient Data] has been completed on an exam that includes a SSAVE series, then two Exams with the same exam number are placed in the Browser: one exam with the SSAVE series, and the other exam with the remaining series.

- Image Filter cannot be applied to series made using the [BIND] feature in Add/Sub mode. Apply Image Filter to the original images and then select [BIND].

- If Image Filter is activated when the used disk space is greater than 95%, the filtered series will not be created due to lack of disk space.

- When using the mouse to adjust the ww/wl on a filtered image, a small motion of the mouse results in large changes in ww/wl, much more so than the norm.

- The F6 to F10 ww/wl preset keys cannot be used with images that have been filtered using the Image Filter feature.

- The ww/wl arrow keys cannot be used with images that have been filtered using the Image Filter feature.

- The Review Controller bars displayed on the Functool 2 movie mode viewport, remain on until toggled off. To turn off, click the - button in the lower right corner of the movie viewport.

- Data cannot be saved as a Tiff format in Functool 2.

- When the [Browser] and [Functool 2] buttons are repeatedly used, the Browser window may not shift forward. Reactivate Functool 2.

Service Desktop

- [Print Protocol] in Utilities is not applicable.

- Protocols on the Octane host computer that are saved to MOD using the Save, Restore, and Print Protocol function cannot be restored to the PC host computer and vice versa.

Networking Desktop

- When transferring Projection or Reformat images to other Signa MR systems, the following annotation will be changed:
  - Scan time image annotation changes from the actual scan time to the time the PJN or REFMT image was created.
  - /0.0sp/C is annotated on the Spacing line.

- When an [Add/Sub], COMB series is transferred to another Signa system, the series type is changed to SSAVE and any annotation except for ww/wl will not be displayed.

- When an [Add/Sub], COMB series is transferred to another Signa system and then saved to MOD from the originating system, only one image can be saved - the other images are not saved. Therefore, save the COMB images before transferring them or make the COMB images after transferring the images.

- When transferring an exam that includes a SSAVE series type amongst other series types to another Signa systems, two exams with the same exam number will be created: one exam includes the SSAVE images and the other exam includes all remaining series.

- [Add/Sub], PROC images cannot be transferred to Signa Contour/Profile systems. Transfer the original images and then make PROC images from the end destination system.

SSAVE images acquired from systems installed with PPS (Performed Procedure Step) and then transferred to a Signa Contour/Profile system, cannot be saved to MOD. Save the images before transferring or make the SSAVE images after the transfer.