Clinical Guide

Philips Customer Services Clinical Education

PHILIPS

# Clinical Education ACR Guidance Document

**This is a clinical guide for Intera, Achieva, Ingenia, & Panorama HFO Systems.** For more detailed information, please refer to the Philips Instructions for Use (IFU).



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# Clinical Education ACR Guidance Document

## Contents

# Clinical Guide

Philips Customer Services Clinical Education

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## 1.0 General Introduction

This guide is intended to provide the information necessary for collecting required ACR accreditation phantom and clinical data on Philips MRI systems.

**Liability Statement:** This is intended as a guidance document only. Philips assumes no responsibility for obtaining ACR accreditation.

## 2.0 Optimizing System Performance

2.1 Notification of Field Service Engineer (FSE)

Please notify your FSE of your intent to perform ACR Accreditation (Phantom & Clinical Data Collection) in order that a thorough check of your system and Periodic Maintenance (PM) may be performed.

2.2 FSE Documentation Notification of Field Service Engineer (FSE)

Please have your FSE refer to appropriate internal Philips documentation

## 3.0 ACR Accreditation Initial Application

How to find Model Name, Serial Number, Year Manufactured, Software Version

3.1 Model Name: See QuickStep: ACR- Initial Application Information

3.2 Serial Number: See QuickStep: ACR- Initial Application Information

3.3 Year Unit Manufactured: See QuickStep: ACR- Initial Application Information

3.4 Software Version: See QuickStep: ACR- Initial Application Information


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Quick Steps

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# ACR- Initial Application Information

(Finding Model Name, Serial Number, Year Manufactured & Software version)

**This is a quick step guide for locating the Model Name, Unit Serial Number, Year manufactured & Software Version for the ACR MRI Initial Application for Accreditation.**

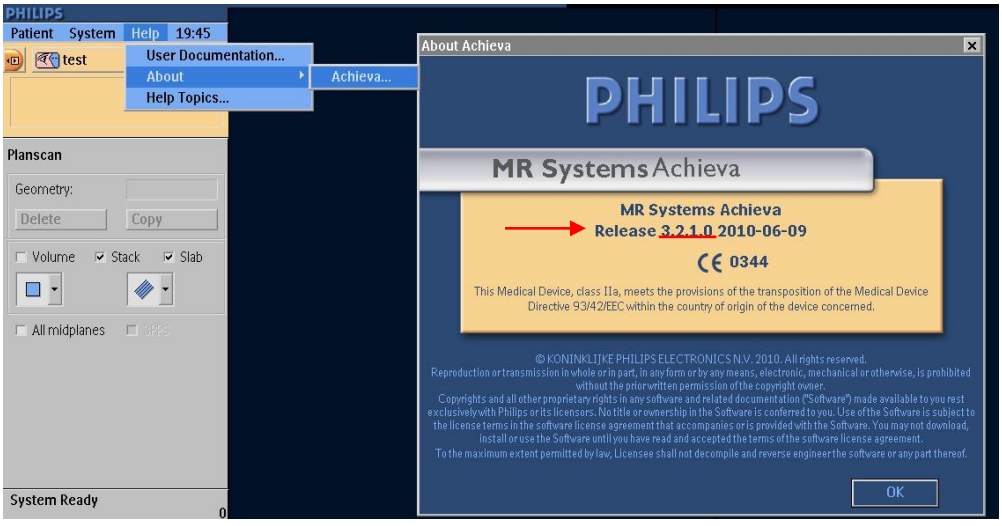
For more detailed information, please refer to the Philips operator or user guide.

## ACR Initial Application Information

1. Needed information for ACR Initial Application
2. Locate system badge: (If you cannot locate, ask your FSE)


3. **Model Name:** (Example: Achieva XR- red arrow)
4. **Serial Number S/N:** (Example: 00000- red arrow)
5. **Year Manufactured:** (Example: 2011- red arrow)
6. **Software Release:**

**a.** Select**:** Help, About, Intera/Achieva/Ingenia/Panorama HFO- (Release 10 (R1) and above




**b.** Software Release 9 and prior- Contact FSE for assistance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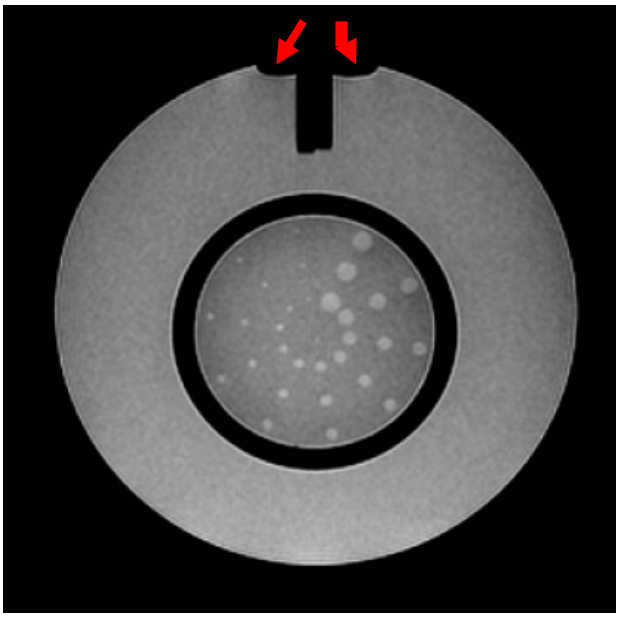
## 4.0 ACR Phantom Data Collection

### 4.1 ACR Phantom Inspection

4.1.1 Prior to performing ACR Phantom Data Collection, inspect ACR Phantom for large air bubbles which may lead to improper A/P distance measurement.

If air bubbles exist, contact JM Specialty (contact information below) to have fluid replenished.



Large air bubbles will appear as void at the top of the axial image (red arrows) and may make it difficult to measure the y-axis (A/P distance measurement).

Reference: "ACR MRI Accreditation Update: The Role of the Medical Physicist". Ron Price, Vanderbilt University Medical Cntr, 35-9883-89748-278, Powerpoint Slide 32

4.1.2 As per ACR instructions: Contact JM Specialty for Phantom fluid replenishment
JM Specialty Parts, Inc
11689 Sorrento Valley Rd
Suite – Q
San Diego, CA 92121
Phone: (858) 794-7200
Fax: (858) 453-1522
Email: customerservice@jmspecialtyparts.com

### 4.2 Positioning ACR Phantom in Head Coil

4.2.1 Proper Alignment/Leveling Techniques Phantom Positioning (Courtesy Dave Hitt, Gregory Thomas)

***Alignment of the ACR Phantom in the head coil is critical; Special attention must be paid to avoid tilting and rotation of the phantom.**

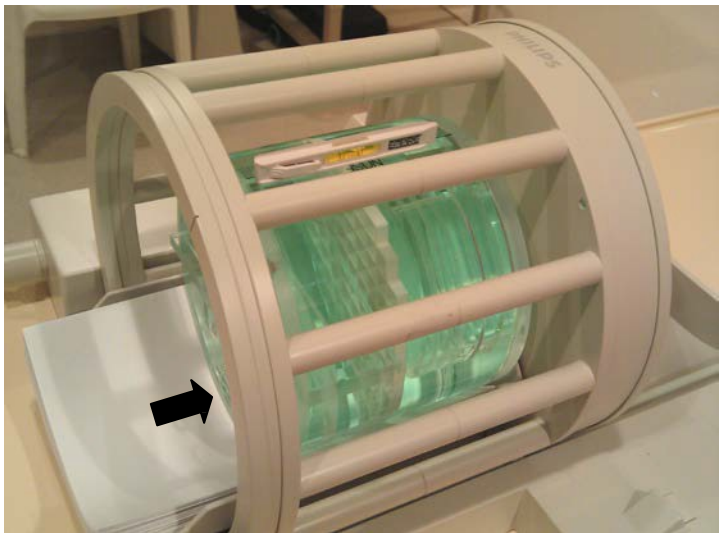
1. One position is used for all the phantom scans.

2. Place the nose and chin of the phantom as if it were a patient's head.

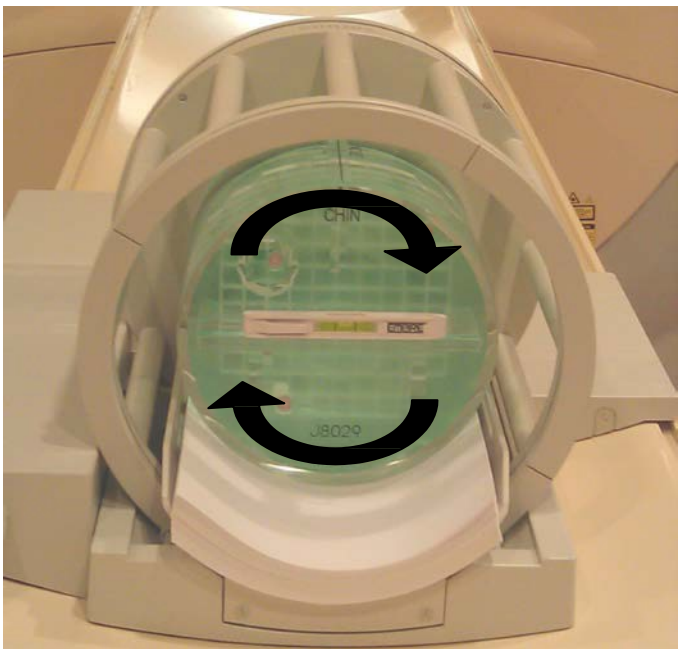
3. There is a dark notch, which is the center of the phantom. This should be placed in the center of the head coil, aligned by the centering light and placed in the magnet's isocenter.

4. Fine-tuning is necessary in all three directions.

**Placement:** For the Quadrature Head, T/R Head or Head-8 Coils, place the ACR Phantom on leveling support i.e. (3rd party ACR phantom holder, stack of paper, cardboard, foam pad etc). For the Ingenia Head coil, place the ACR phantom in the NVC/ACR Phantom holder (part# 4598 000 45042).



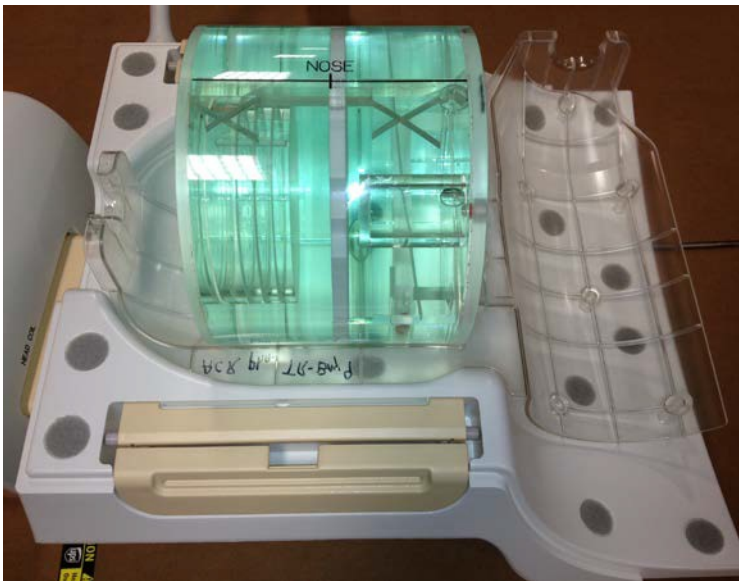

a. Place the bubble level (purchased separately, i.e. JM Specialty) along the Z-axis on the top of the phantom and shim under the lower end of the phantom until the bubble is showing in the center of the level.





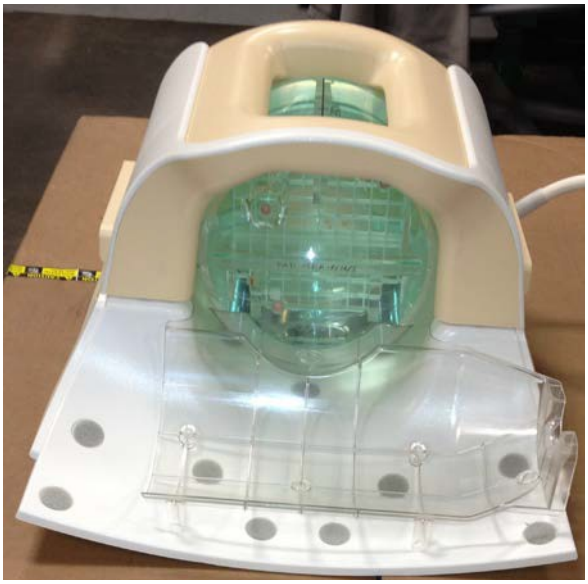
b. Place the level on the plastic bar at the chin. Rotate the chin bar until the bubble is showing in the center of the level.

NVC/ACR Phantom Holder
(part# 4598 000 45042)




Ingenia Head Base Coil with (NVC/ACR Phantom Holder)

Ingenia Head Base Coil with (NVC/ACR Phantom Holder)



Ingenia Head Coil (Base + Anterior)

c. Check the sagittal position. The laser light should be parallel with the black nose surface line on top of phantom. Placing one sheet of paper on top of the phantom may make the laser line easier to see.

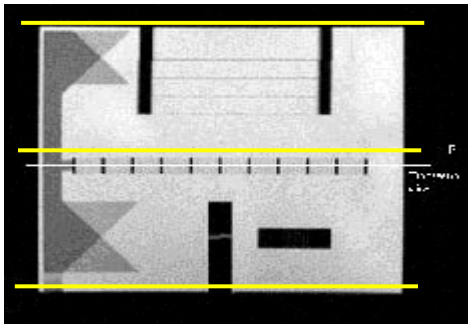
d. Recheck all three positioned planes.

e. See 4.2.2 Confirming Proper Phantom Alignment

4.2.2 Confirming Proper Phantom Alignment

The correct positioning can be checked using two surveys: Sagittal and Axial.

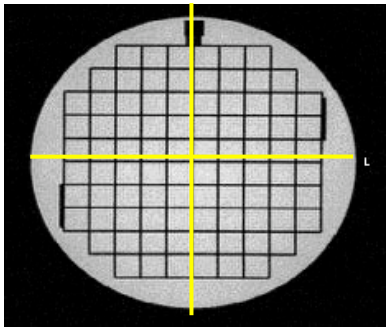
a. Sagittal- Straight horizontal lines drawn along the edges can be used to check the tilt along the z-axis.



Sagittal View of ACR Phantom

1. To confirm proper alignment along the z-axis, rt. mouse on image, then select line/dist profile
2. Lt click drops starting point of line, then drag line the length of the phantom image maintaining a straight line with no variations. Lt click again ends line
3. Lt mouse hold & drag on drawn line to move to the straight edges of phantom as shown
4. If the drawn line is parallel to the straight edges of the phantom, the alignment along the z-axis is correct

b. Axial- Straight lines drawn in the linearity section of the phantom can be used to check for x & y-axis rotation.



Axial (Slice#5) View of ACR Phantom

5. To confirm proper alignment with the x-axis, draw a horizontal line on axial slice#5, using method as described above
6. Lt mouse hold & drag on drawn line to move to one of the grid lines of phantom as shown
7. For alignment along the y-axis, draw line vertically on axial slice #5 using method as described above
8. Lt mouse hold & drag on drawn line to move to one of the grid lines of phantom as shown
9. If the drawn lines are parallel to the grid lines of the phantom, the x & y alignments are correct

c. If necessary, correct the positioning of the phantom, then re-run surveys to insure proper alignment.
***This procedure may be time consuming, but is absolutely necessary.**

d. Once proper alignment is achieved, see 4.3 Positioning Axial Slices on ACR Phantom

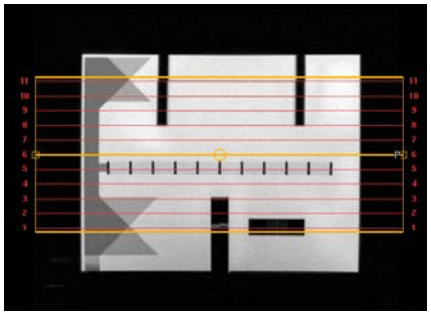
References: Philips Document #4522 981 09881 & Pano23acr_instructions_v2.pdf

## 4.3 Positioning Axial Slices on ACR Phantom

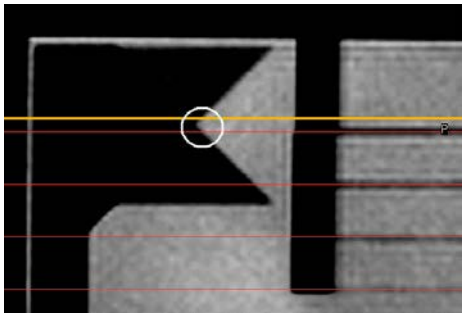
4.3.1 Proper slice positioning on ACR Phantom

a. Once proper phantom alignment has been achieved, it is now possible to acquire the ACR mandated Axial studies (ACR Ax T1, ACR Ax T2 DE, Site Ax T1, & Site Ax T2 )

b. It is important to align slices 8-11 with the low contrast discs (see images below). Although this may appear to be only a slight adjustment in positioning the impact may be significant



**Alignment with low contrast discs**



**Detail of alignment**

Reference: Philips Document #4522 981 09881 & Pano23acr_instructions_v2.pdf

American College of Radiology
MRI Accreditation Program
1891 Preston White Drive
Reston VA 20191-4397

Phantom Data Form Label here

# MRI Phantom – Site Scanning Data Form

Please complete one copy of these data for each MR Magnet being evaluated. Photocopy this blank form for additional magnets. Detailed instructions for scanning the MRI phantom are attached. All information on this data sheet must be accurately specified. Please print or type. Please place your Phantom Data Form Label in the space above. Return completed form with phantom images.

1. MR Manufacturer: check one

☐ ELS Elscint ☐ HI Health Images ☐ OTS Otsuka ☐ RES Resonex ☐ TCH Technicare
☐ FON Fonar ☐ HIT Hitachi ☐ PIC Picker ☐ SIE Siemens ☐ TOS Toshiba
☐ GE GE ☐ IN Instrumentarium ☐ PHI Philips ☐ SHI Shimadzu ☐ OTH Other
specify _____

2. Model Name: _____ 3. Serial Number: _____

4. Software Version: _____ 5. Year Manufactured: _____

6. Magnetic Field Strength: check one ☐ [1]0.064 ☐ [2]0.2 T ☐ [3]0.3 T ☐ [4]0.35 T ☐ [5]0.5 T ☐ [6]1.0 T ☐ [7]1.5 T ☐ [99]Other specify

7. Operating Location: check one ☐ [6]Fixed ☐ [2]Fixed Trailer ☐ [3]Mobile Trailer ☐ [9]Other specify

## Pulse Sequence Acquisition Parameters

In the box below each parameter:
Record actual values if they differ from the prescribed protocol parameters or
Place a check mark to indicate use of prescribed parameter.
Fill in all parameters for "Your Site's Axial T1- and T2-weighted Brain Scan."

| | | a | b | c | d | e | f | g | h | i | j | k | l |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Study | Pulse Sequence | TR (ms) | TE (ms) | FOV (cm) | Number of Slices | Slice Thickness (mm) | Slice Gap (mm) | NEX | Matrix | | Routine Receive Band-Width (kHz) | Scan Time (min:sec) |
| 8. | ACR Sagittal locator | Spin Echo | 200 | 20 | 25 | 1 | 20 | N/A | 1 | 256 | 256 | | 0:56 |
| | | | | | | | | N/A | | | | | |
| 9. | ACR Axial T1 | Spin Echo | 500 | 20 | 25 | 11 | 5 | 5 | 1 | 256 | 256 | | 2:16 |
| | | | | | | | | | | | | | |
| 10. | ACR Axial T2 Double-echo | Spin Echo | 2000 | 20/80 | 25 | 11 | 5 | 5 | 1 | 256 | 256 | | 8:56 |
| | | | | / | | | | | | | | | |
| 11. | Your Site's Axial T1 weighted Brain Scan | | | | Freq: | 11 | 5 | 5 | | | | | |
| | | | | | Phase: | | | | | | | | |
| 12. | Your Site's Axial T2 weighted Brain Scan | | | | Freq: | 11 | 5 | 5 | | | | | |
| | | | | | Phase: | | | | | | | | |

13. Scan Options Used on the ACR Spin-echo T1- and T2-weighted Axial Scans: _____

14. Scan Options Used on "Your Site's Axial T1- and T2-weighted Brain Scans:" _____

15. Serial number of phantom used for testing _____

Date of Testing: _____ Testing Performed by: _____ Phone: _____
(Please Print)

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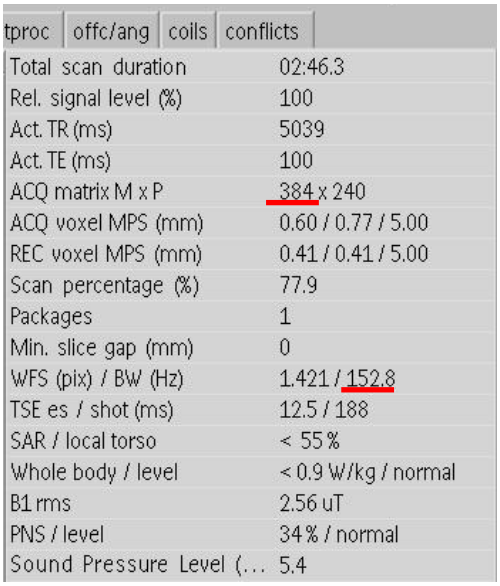
### 4.5 How to Find Routine Receive Bandwidth (kHz)

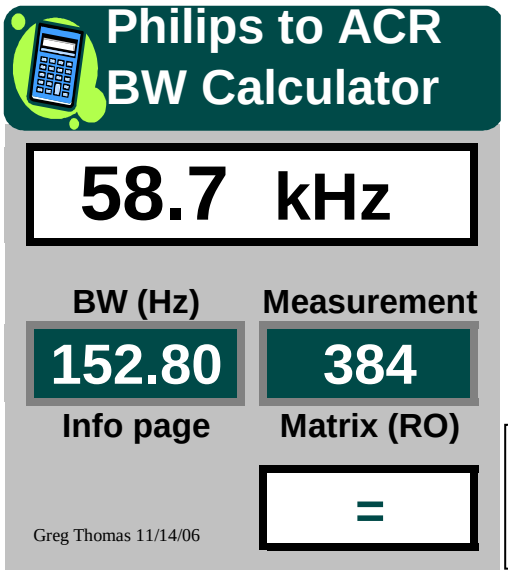
On Philips MR Systems, to calculate the ACR routine receive bandwidth (kHz), column K on sample ACR document, you will need the Acquired Measurement Matrix (ACQ matrix M x P), and the Water Fat Shift/ Bandwidth (WFS/BW Hz) from the Information Page.

Example calculators are included below:

#### 4.5.1 NT/Intera/Achieva/Ingenia/Panorama HFO- Software releases R12(R2)-R4 & above



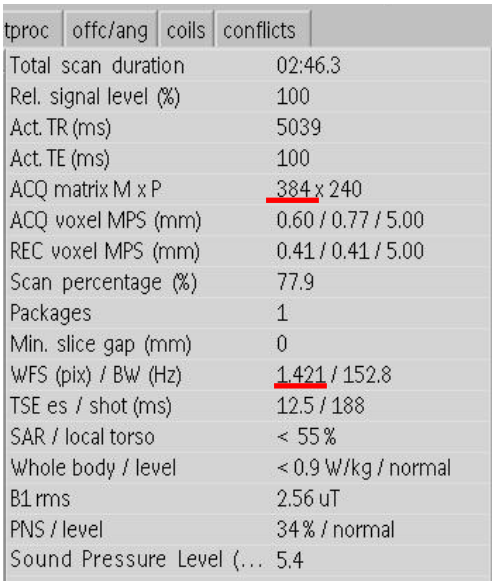
| tproc | offc/ang | coils | conflicts |
|---|---|---|---|
| Total scan duration | | 02:46.3 | |
| Rel. signal level (%) | | 100 | |
| Act. TR (ms) | | 5039 | |
| Act. TE (ms) | | 100 | |
| ACQ matrix M x P | | 384 x 240 | |
| ACQ voxel MPS (mm) | | 0.60 / 0.77 / 5.00 | |
| REC voxel MPS (mm) | | 0.41 / 0.41 / 5.00 | |
| Scan percentage (%) | | 77.9 | |
| Packages | | 1 | |
| Min. slice gap (mm) | | 0 | |
| WFS (pix) / BW (Hz) | | 1.421 / 152.8 | |
| TSE es / shot (ms) | | 12.5 / 188 | |
| SAR / local torso | | < 55 % | |
| Whole body / level | | < 0.9 W/kg / normal | |
| B1 rms | | 2.56 uT | |
| PNS / level | | 34 % / normal | |
| Sound Pressure Level (... | | 5.4 | |



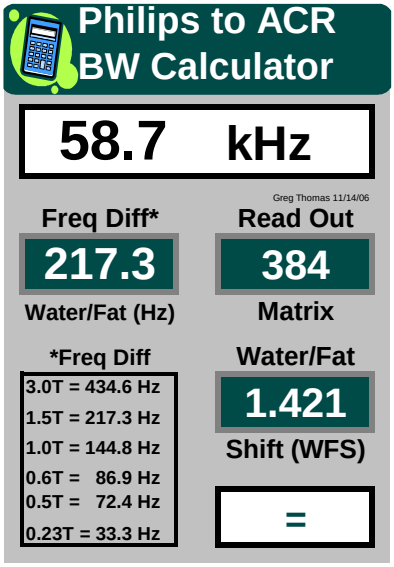

Download Philips to ACR BW Calculator Excel spreadsheet from Netforum, or contact the CCSC (1-800-722-9377).

Or manually calculate using: ACR BandWidth (kHz) = Philips BW (Hz) x ACQ Measurement Matrix/1000Hz

#### 4.5.2 NT/Intera/Achieva/Panorama HFO- Software releases R4-R11(R1)



| tproc | offc/ang | coils | conflicts |
|---|---|---|---|
| Total scan duration | | 02:46.3 | |
| Rel. signal level (%) | | 100 | |
| Act. TR (ms) | | 5039 | |
| Act. TE (ms) | | 100 | |
| ACQ matrix M x P | | 384 x 240 | |
| ACQ voxel MPS (mm) | | 0.60 / 0.77 / 5.00 | |
| REC voxel MPS (mm) | | 0.41 / 0.41 / 5.00 | |
| Scan percentage (%) | | 77.9 | |
| Packages | | 1 | |
| Min. slice gap (mm) | | 0 | |
| WFS (pix) / BW (Hz) | | 1.421 / 152.8 | |
| TSE es / shot (ms) | | 12.5 / 188 | |
| SAR / local torso | | < 55 % | |
| Whole body / level | | < 0.9 W/kg / normal | |
| B1 rms | | 2.56 uT | |
| PNS / level | | 34 % / normal | |
| Sound Pressure Level (... | | 5.4 | |




Download Philips to ACR BW Calculator Excel spreadsheet from Netforum, or contact the CCSC (1-800-722-9377).

Or manually: ACR BandWidth (kHz) = Freq Diff Water-Fat/WaterFatShift x ACQ Measurement Matrix/1000Hz

Quick Steps

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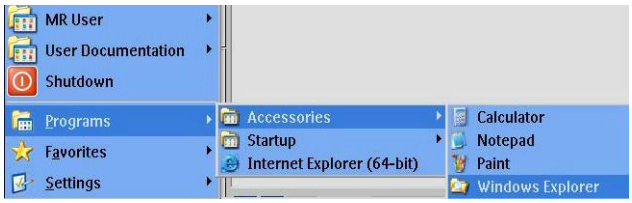
# ACR-Burning Images to CD without DICOM Viewer

**This is a quick step guide for burning DICOM images to a CD without a DICOM viewer for ACR.** For additional information, please refer to the Philips operator or user guide.

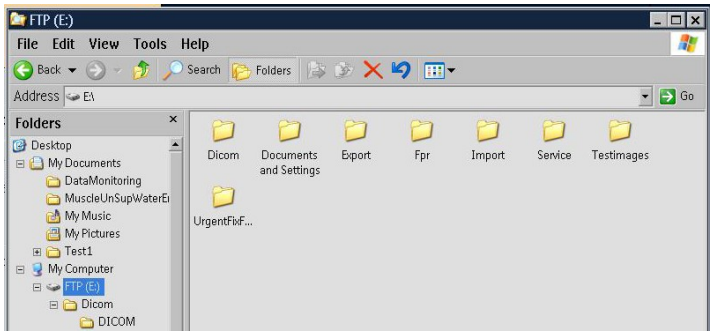
**Prior to burning CD:** Please request (FSE/CCSC) to modify the System Configuration > DICOM Media Output Type to Classic DICOM output. Immediately following burning the CD, change back to Enhanced.

## Creating and Preparing an ACR Phantom Folder

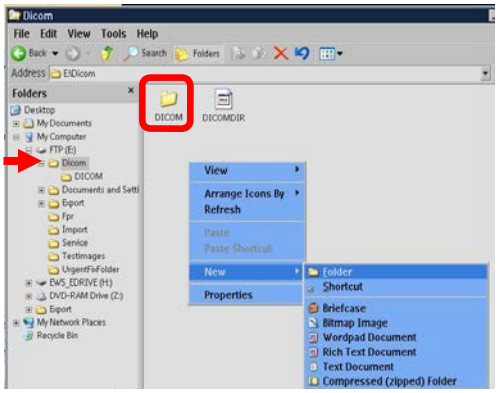
1. **Click:** the windows key on the keyboard 
2. **Select: Programs** > **Accessories** > **Windows Explorer**



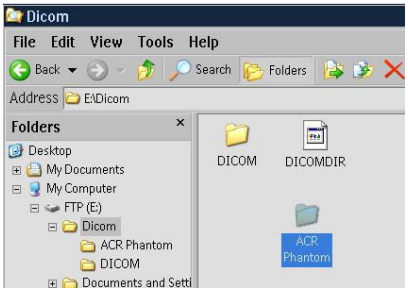

3. **Navigate to FTP (E:)- My Computer** > **Hard Disk Drives** > **FTP(E:)**




4. Continue to navigate to the DICOM folder, next right click and select **New** > **Folder**

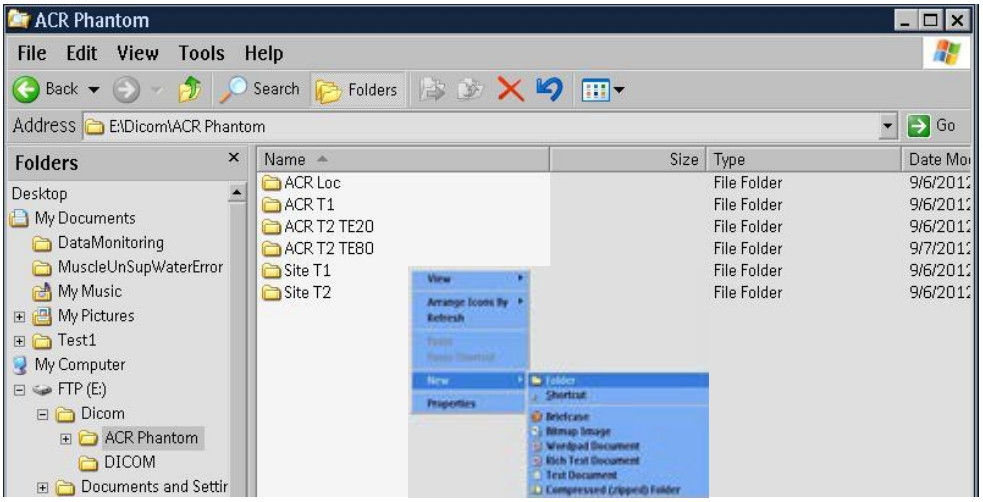



5. Name the folder ACR Phantom



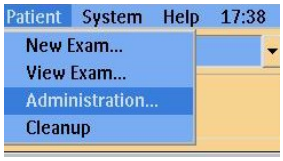
# Quick Steps

6. Double click ACR Phantom folder, right click and select **New** > **Folder** to create the 6 required ACR folders (ACR Loc, ACR T1, ACR T2 TE20, ACR T2 TE80, Site T1, Site T2);
*once finished, Minimize ACR Phantom folder (click on  )

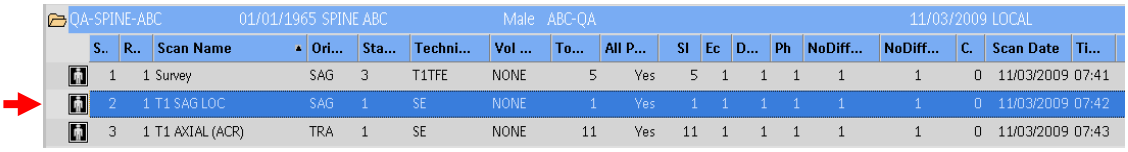



## Selecting Files to be copied to CD

7. Go to **Patient** > **Administration** and open the ACR Phantom exam by double-clicking the name or folder

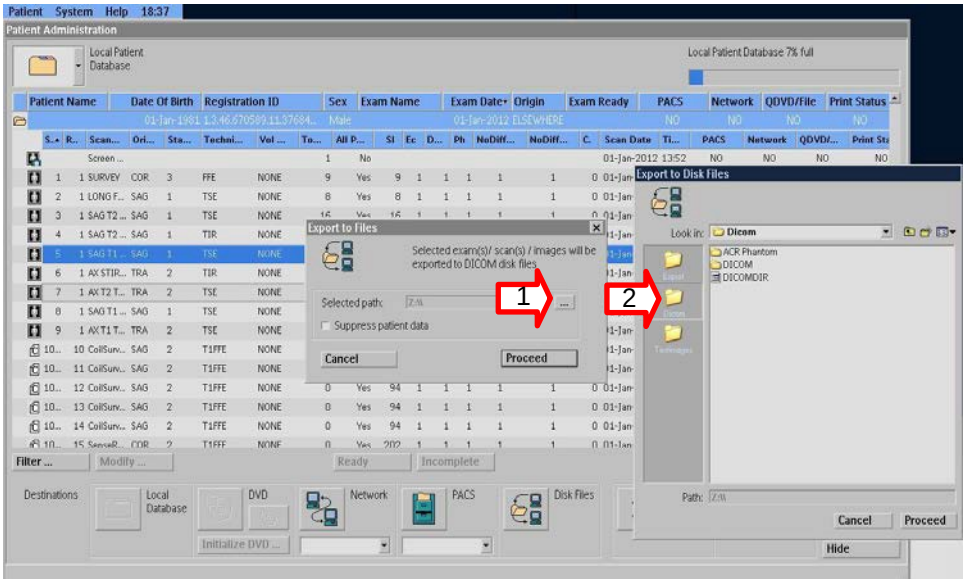



8. **Select:** the appropriate sequence to be saved (ACR Loc, ACR T1, Site T1, Site T2)



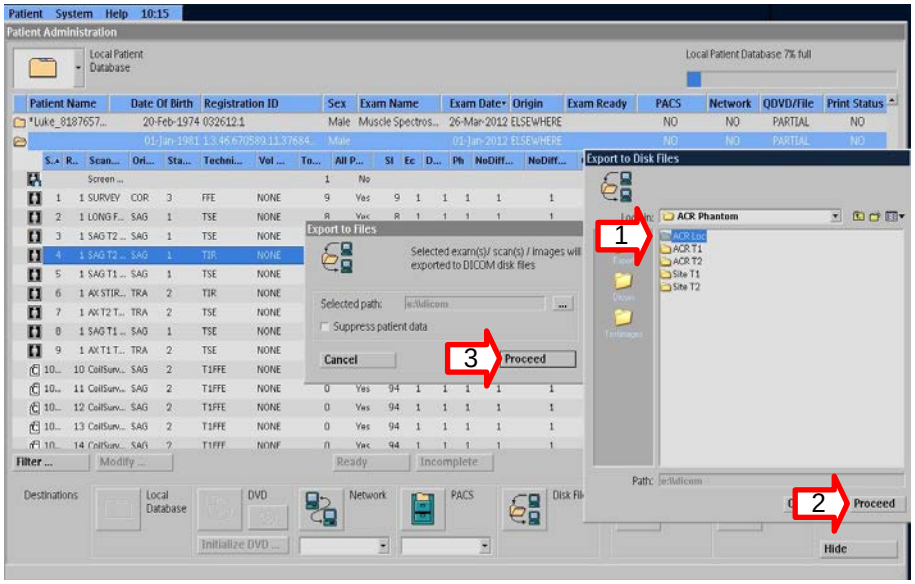

9. **Click:** the disk files icon


10. **Click** "**…**": (arrow 1), then click on the DICOM folder (arrow 2),



# Quick Steps

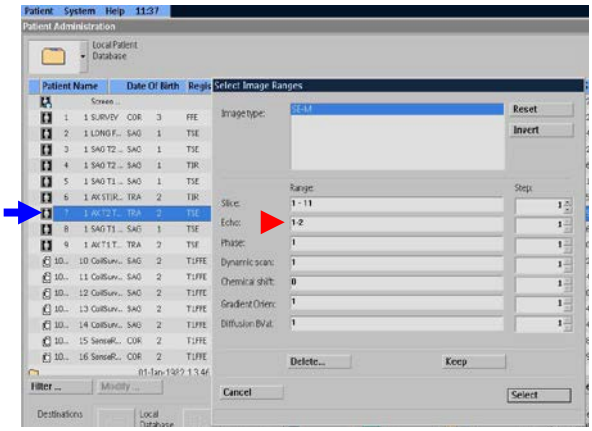
**11. Select:** ACR Phantom Folder (double-click), then select the appropriate subfolder (double-click) (arrow 1), then **Proceed** to accept the folder (arrow 2), then **Proceed** to archive the data (arrow 3)



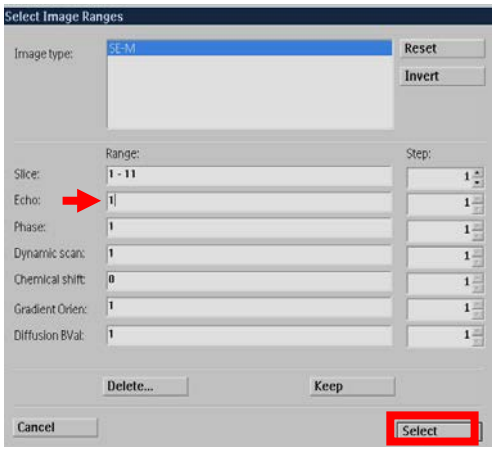

**12. Repeat:** Steps 9-11 for each of the single echo exams

## Separating ACR T2 Double Echo sequence

**13. Select:** the ACR T2 (Double-Echo) sequence, click on the image silhouette  (blue arrow), which opens the **Select Image Ranges** window (notice Echo 1-2, red arrow)



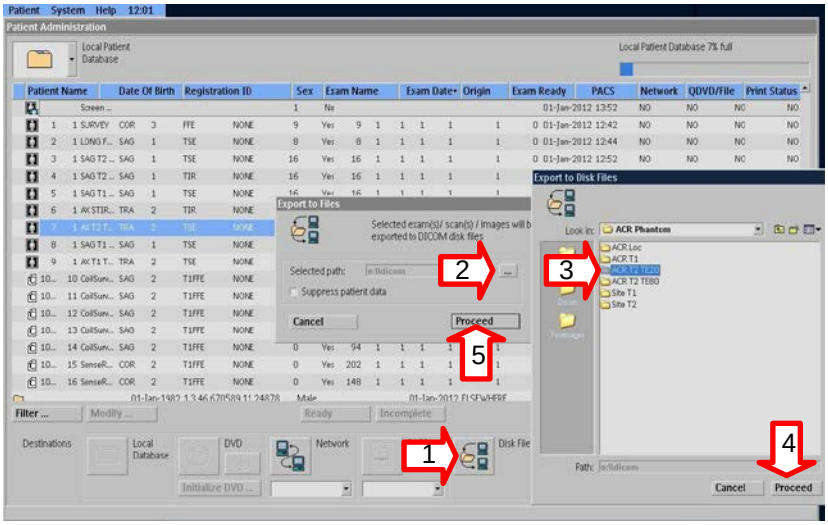

**14. Change:** Echo=1-2 to Echo=1 (red arrow) to select only the first echo (TE=20), then click **Select**



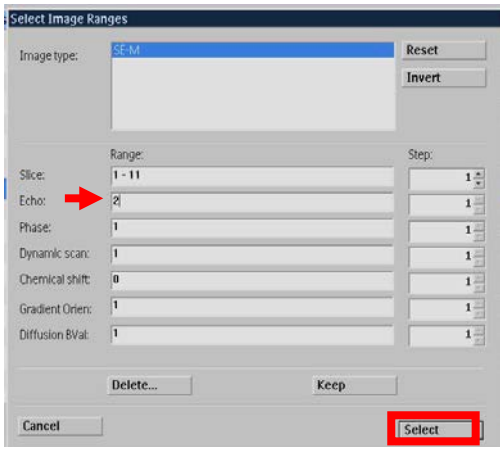
# Quick Steps

**15.** After clicking **Select** above, you will see the directory with the selected acquisition in a light blue highlight.
Next:

a. Click **Disk Files** icon (arrow 1)
b. Click **"…"** (arrow 2)
c. Navigate to the ACR T2 TE20 folder (1st echo) (arrow 3)
d. Click **Proceed** to accept the folder (arrow 4)
e. Click **Proceed** to Export to Files (arrow 5)




**16. Repeat:** Steps 13-15, this time selecting Echo=2 (TE80) (red arrow), and selecting the ACR T2 TE80 folder, then click **Select**

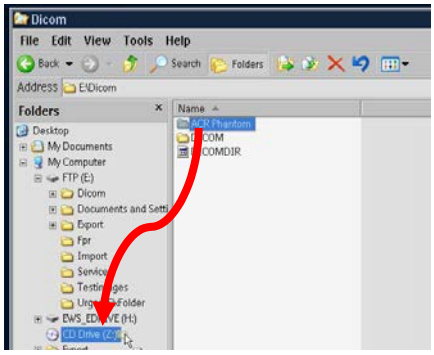



## Write ACR Phantom Files to CD

**17.** Place a blank CD (-R) into the CD Drive on the Console Tower (CPU)

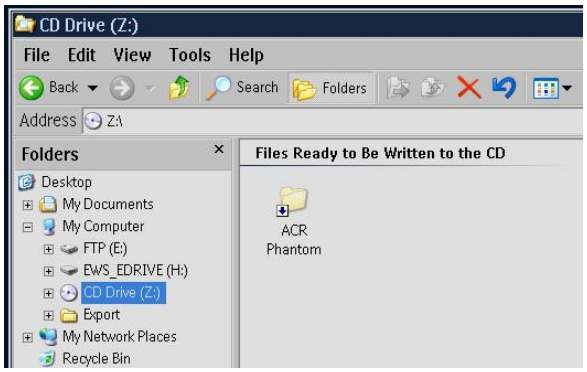
**18. Click:** the windows key on the keyboard ⊞; next, click on ACR Phantom folder tab on bottom task bar (previously minimized)

**19. Drag and Drop:** ACR Phantom folder onto CD Drive (Z:)

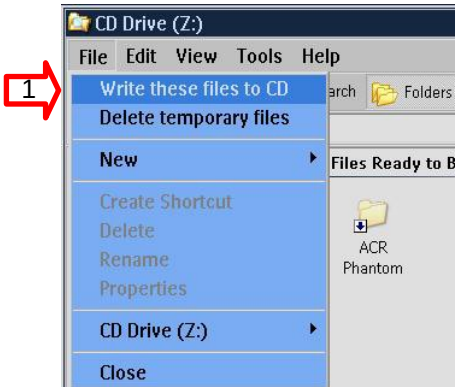


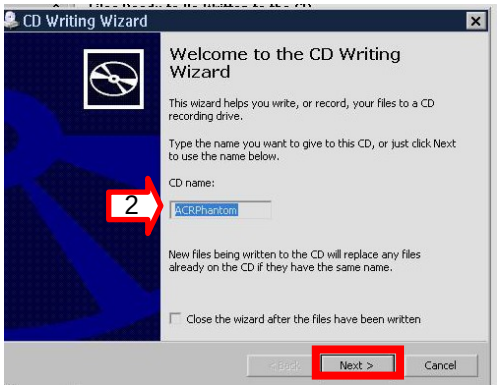
# Quick Steps

**20. Click** on CD Drive (Z:) to confirm that files are ready to be written to CD



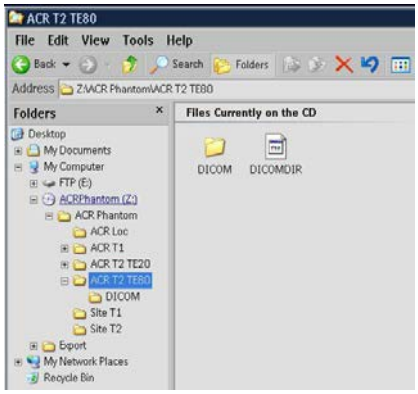

**21.** Click **File** on the top left Menu, then click on **Write these files to CD** (arrow 1), When the CD Writing Wizard asks for CD name: (**type: "ACR Phantom"**) (arrow 2), click **Next**
**Note:** CD writing Wizard will automatically eject CD when finished

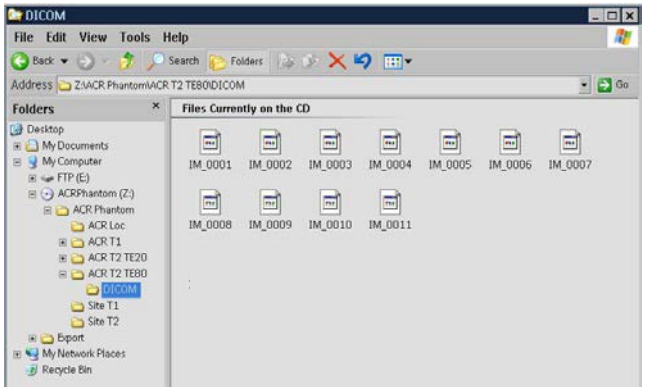



**22. Verify CD contains ACR Phantom Files:**

a. Re-insert ACR Phantom CD
b. **Click:** the windows key on the keyboard
c. **Select: Programs** > **Accessories** > **Windows Explorer**
d. **Navigate:** to the **ACR Phantom CD** in Drive (Z:)- **My Computer** > **CD Drive (Z:)**
e. **Navigate:** to each individual ACR folder to verify that the folders contain image files




**23.** Label the CD with a Permanent marker

### 4.7 FAQ's- Frequently Asked Questions for ACR Phantom Data

1. **Can I submit Phantom Images on CD?**
   a. Phantom images may be submitted on CD without the DICOM viewer
   b. Two phantom CD's must be burned without the DICOM viewer for submittal
   c. This can be accomplished via the Philips Extended MR Workspace (EWS) as described above, simply burn 2 copies
   d. Another option might be from certain PACs systems. Check with your PACs provider for instructions regarding removing the DICOM viewer
   e. If burning from PACs, ensure data is in classic (not enhanced) uncompressed DICOM format

2. **Can I submit a DVD?**
   The ACR has issued conflicting information regarding the use of DVDs versus CD-ROM.
   Please contact the ACR for final approval prior to using DVDs.

3. **Other possible options for burning Phantom CDs**
   a. 3rd Party Vendor - DesAcc: 1-866-638-0936 (fees apply)
   b. Lance King (Philips)- 440-483-5436 (fees apply)

4. **Questions:**
   If you have further questions- Call the ACR 1-800-770-0145 or visit their website**:** **www.acr.org**

Back to Contents

## 5.0 ACR Weekly QC Form Information

### 5.1 Sample Document: ACR Weekly QC Form (next page)

### 5.2 How to find information needed to complete the ACR Weekly QC Form

5.2.1 Table OK? (ACR Weekly QC Form, Column 2)

Examine patient table and verify correct movement both vertically & horizontally. Check alignment light (patient positioning light) and all other lights on User Interface Module (UIM), as well as, call bell.
If table functions correctly, place OK in (Column 2).

5.2.2 Console OK? (ACR Weekly QC Form, Column 3)

If operator console monitor, keyboard, mouse, and intercom function properly, place OK in (Column 3).

5.2.3 Center Frequency (ACR Weekly QC Form, Column 4): Refer to QuickStep for appropriate software release

5.2.4 Transmit Gain/Attn (ACR Weekly QC Form, Column 5): Refer to QuickStep for appropriate software release

### 5.3 Quicksteps: Locating Center Frequency & TX Gain/Attn- Use appropriate software release

5.3.1 Edge/Vista/Asset/Eclipse/Polaris/Infinion (Via2.x/3.x)
5.3.2 NT/Intera (R9 & below): ACR Weekly QC Procedure
5.3.3 Intera/Achieva/Panorama HFO (R10 to R2.6): ACR- Center Frequency & TX Gain/Attn
5.3.4 Achieva (R3.2) & Ingenia (R4.1 & higher)

### 5.4 Weekly Laser Film Printer Control Chart

How to find print SMPTE Pattern for Weekly Laser Film Printer Control Chart

5.4.1 Printing SMPTE Pattern : Refer to QuickStep: ACR – Filming SMPTE Pattern

5.4.2 Sample Document: ACR Laser Film Printer Control Chart


Printed in The Netherlands
4522 962 80251 * November 2011 -en-US

## A. DATA FORM FOR WEEKLY MRI EQUIPMENT QUALITY CONTROL

MR Facility Name _____

MR Scanner Identifier _____

| 1 Date of Test Year ____ | 2 Table OK? | 3 Console OK? | 4 CF (Hz) | 5 TX Gain/ Atten-uation (dB) | Phantom Distances (mm) Sag Loc Length | Axial Slice #5 ←Diameters→ | | Slice 1 HR Holes # | | Slice # ____ Number of LCD Spokes | Artifacts ? | Test By | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | |
| | | | | | H/F (148) | A/P (190) | R/L (190) | UL | LR | | | | |
| | Action Limits → | | | | | | | | | | | | |
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Reviewed by: _____ _____

Qualified Medical Physicist/MRI Scientist — Date of Review

# ACR Quick Step for finding Center Frequency and Transmit Gain

Applies to Philips High Field, Cleveland based systems (Picker/Marconi)

Software Version Via2.x/3.x

## Primary Method

1)**Transmit Gain** on these systems **is** known as **RF Scale Factor**, and can be displayed during the "study calibration" scan. As soon as the "study calibration scan begins, select:

UTILITIES >> SCAN_DISPLAY  This will display the scan simulate page.

This page displays the process of transmit gain optimization. The final RF Scale factor is the transmit gain.

NOTE: It may be necessary to put a "Pause before Run" option on the sequence immediately following the "study calibration" to hold the" scan simulate" display while you read the data.

2) **Center frequency** is always displayed **during** the CF Tune or **CF Tune/Shim**.

If the scan does not automatically take you to the Scan Simulate page, select:

UTILITIES >> SCAN_DISPLAY  Center frequency is displayed, and can be adjusted if required.

The final CF value is what is required for the ACR.

## Secondary Method

This method requires service access.

Click on the system icon in the upper right of the screen. (Eclipse…Polaris…etc.)

Select "Enable Features"

Click on "Service" … Enter **Picker** as the password. Select OK

Load the sequence of interest into VIEW

Right click on any of the slices in the stack (not the Pilot image)

Select "SEQUENCE DATA"

Click PREVIOUS or NEXT until you see the "SYSTEM 2" section.

**RF Scale** (Transmit Gain) and **Center Frequency** are both displayed in this section.

Click on the system icon in the upper right of the screen. (Eclipse…Polaris…etc.) ; Select "Enable Features"

Click on "Normal" … Select OK.

# ACR Intera Weekly QC Procedure

Greg Thomas
Rev1 02/09/03

## I. TEST Procedure: Setup & Position Accuracy

1. Place ACR phantom in head coil; center phantom cross-hair with coil center marker
   *Use bubble level to ensure proper setup
2. Run **Survey/MST** (3 plane localizer)
3. Run **ACR Sag Localizer** sequence

| Geometry | Contrast | Motion | Post Proc |
|---|---|---|---|
| FOV=250 | SE | NSA=1 | Prep Phase=full |
| RFOV=100% | TR=200 | | |
| 256x256 | TE=20 | | |
| Scan %=100 | WFS=2.0 | | |
| Slices=1 | | | |
| Slcthk =10mm | | | |

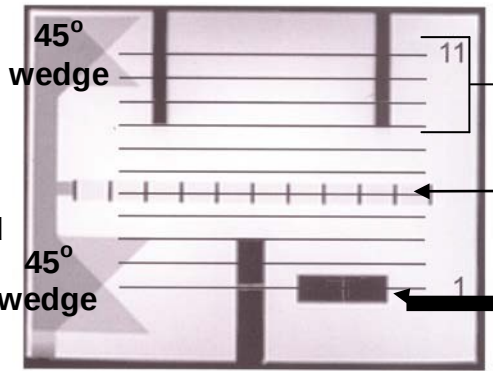
4. Did computer boot up without problems? Mouse, Keyboard & Monitor?
   Enter "yes" in Column #2 of QC Data Sheet
5. Is center of ACR Sag Localizer slice (+/-2mm) of central grid structure?
   Enter "yes" in Column #3 of QC Data Sheet

## II. TEST Procedure: Prescan Parameters

1. Display **ACR Sag Localizer** slice in large viewport
2. Center Axial images as shown below
3. Run **ACR T1 Axial** sequence

| Geometry | Contrast | Motion | Post Proc |
|---|---|---|---|
| FOV=250 | SE | NSA=1 | Prep Phase=full |
| RFOV=100% | TR=500 | | |
| 256x256 | TE=20 | | |
| Scan %=100 | WFS=2.0 | | |
| Slices=11 | | | |
| Slcthk =5mm/gap=5mm | | | |

4. Find Center Frequency & TX Gain/Attenuation:
   a. Select Acquisition Context (Plan Scan Man)
   b. Select Prev. Scans
   c. Select #1 Display Parameters
   d. Select Patient, then proceed
   e. Select sequence (ACR T1 AX), then proceed
   f. Select #6 Hardware parameters
   g. Center Frequency (1st line)=
   **Resonant Frequency [Hz]** =63896552
   Enter value in Column #4 of QC Data Sheet
   h. TX Gain/Attenuation (2nd line)=
   **power att. cal.values [dB]**→ Hit Return for values
   1:0.00 5.07 10.06
   4:14.66 19.62 24.56 etc.
   Choose middle value on line one (ex. circled)
   Enter value in Column #5 of QC Data Sheet



## III. TEST Procedure: Geometric Accuracy

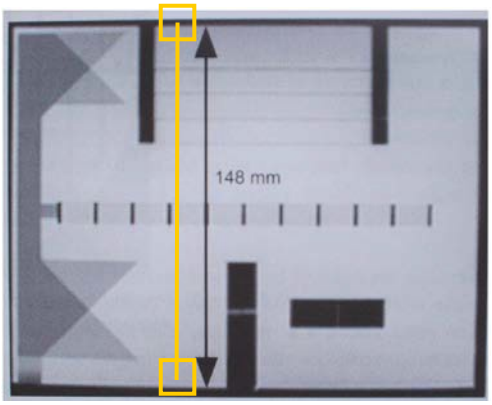
### Z- Axis

**Setting Window & Level**

1. Display **ACR Sag Localizer** image on 1 on 1 format
2. Rt mouse on image, then more, then window settings
3. Set width =1
4. Adjust level (middle mouse) until image is 50% white/50% black
5. Note level value (i.e. 1750)
6. Change width to the level value from above (i.e. 1750)
7. Change level to 1/2 of width (i.e. 1750/2=875)

| Window Settings: |
|---|
| |
| **Width:** 1750 |
| **Level:** 875 |
| |

1. To measure z-axis, rt. mouse on image, then line/dist
2. Measure image top to bottom (see pict)
   * Center of line/dist box to edge of phantom (see example)
   Enter value in Column #6 of QC Data Sheet



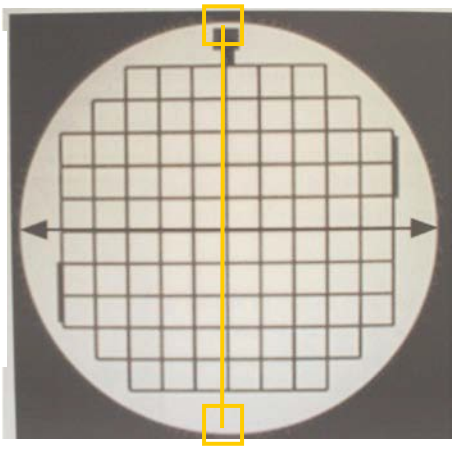

### Y & X- Axis

**Setting Window & Level**

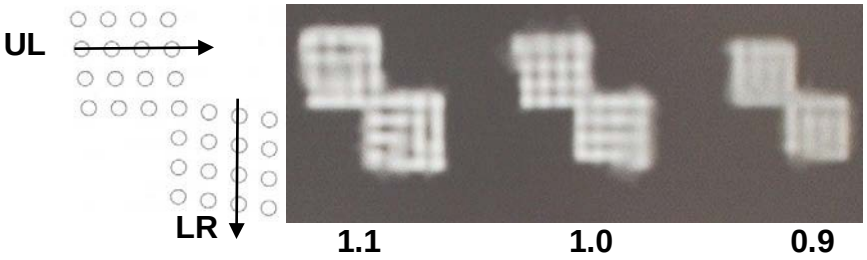
1. Display **ACR T1 Ax (Slice #5)** image on 1 on 1 format
2. Rt mouse on image, then more, then window settings
3. Set width =1
4. Adjust level (middle mouse) until image is 50% white/50% black
5. Note level value (i.e. 1860)
6. Change width to the level value from above (i.e. 1860)
7. Change level to 1/2 of width (i.e. 1860/2=930)

| Window Settings: |
|---|
| |
| **Width:** 1860 |
| **Level:** 930 |
| |

1. To measure y-axis, rt. mouse on image, then line/dist
2. Measure image top to bottom (Ax slice#5)
   * Center of line/dist box to edge of phantom (see ex)
   Enter value in Column #7 of QC Data Sheet
3. To measure x-axis, rt. mouse on image, then line/dist
4. Measure image left to right (Ax slice#5)
   * Center of line/dist box to edge of phantom
   Enter value in Column #8 of QC Data Sheet



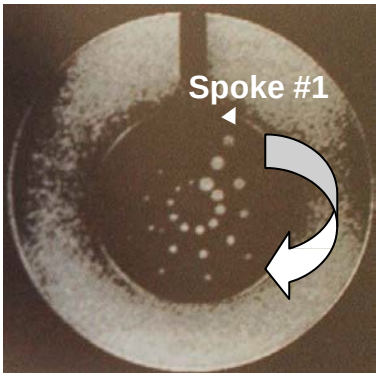
## IV. TEST Procedure: Spatial Resolution Measurements




1. Display **ACR T1 Ax (Slice #1)** image on 1 on 1 format
2. Magnify image (mag factor 2-4), keeping resolution insert visible
3. Set window width to a small value (enough image contrast to see holes)
4. Set window level until the holes are individually displayed
5. Look at the **UL** (Upper Left) row of holes starting with the far left (1.1). Adjust the window width/level as to best distinguish the holes one from another. If all 4 holes in any single row (see arrow) are distinguishable, then it is considered resolved left to right.
   Enter the smallest holes resolved (1.1, 1.0, 0.9) in Column #9 of QC Data Sheet
6. Look at the **LR** (Lower Right) column of holes starting with the far left (1.1). Adjust the window width/level as to best distinguish the holes one from another. If all 4 holes in any single column (see arrow) are distinguishable, then it is considered resolved top to bottom.
   Enter the smallest holes resolved (1.1, 1.0, 0.9) in Column #10 of QC Data Sheet

## V. TEST Procedure: Low Contrast Detectability (LCD) Measurements

1. Display **ACR T1 Ax (Slice #8-11)** image as determined by the Medical Physicist on 1 on 1 format (often slice #9)
2. Adjust window width/level as to see low contrast spikes
3. Counting clockwise from spoke #1 (at 1 o'clock), count the number of *complete* spokes (3 holes each).
   Enter value in Column #11 of QC Data Sheet




## VI. TEST Procedure: Image Artifact Assessment

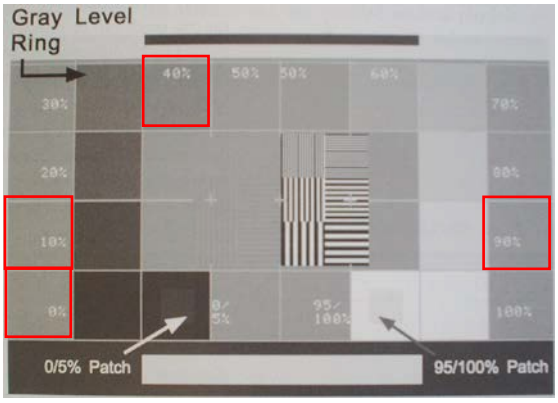
1. Display **ACR T1 Ax Slices** in a 1 on 1 format
2. Rt mouse on the image, then on ROI's
3. Draw a region of interest over a bright area of the phantom
4. Rt mouse on the roi #, select Statistics, then Statistics
5. Write down the mean value displayed in Statistics (ie 1600)
6. Rt mouse on image, then more, then window settings
7. Set width =1600 (Mean Value)
8. Set level =800 (1/2 of width)

TESTS

1. Does the phantom appear circular (not elliptical or distorted)?
2. Any ghosting through image or background?
3. Any streaks or spots-bright or dark?
4. Any unusual or new features in the images?

   Describe all artifacts in Column#12 on QC Data Sheet

## VII. TEST Procedure: Hard Copy Image




1. Display SMPTE test pattern by:
2. Selecting empty viewport
3. Lt mouse on System, then Service
4. Check for an even progression of gray scale around the gray level ring
5. Check to see that you can distinguish the 5% patch in the 0/5% box
6. Check to see that you can distinguish the 95% patch in the 95/100% box

Enter Check marks in Column#13 on QC Data Sheet

7. Film SMPTE pattern using Hardcopy Screen (Film Layout 4:1); expose all 4 frames
8. Using a densitometer, measure the density of the 0%, 10%, 40%, 90% boxes in the upper left frame of the film
9. Plot the densities on the laser Film QC Chart
10. Circle any points that fall outside the control limits
11. Visually check film for streaks, uneven densities, or artifacts

| Patch | 0% | 10% | 40% | 90% |
|---|---|---|---|---|
| Density | 2.45 | 2.10 | 1.15 | 0.3 |
| Control Limit | +/- 0.15 | +/- 0.15 | +/- 0.15 | +/- 0.8 |

## VIII. TEST Procedure: Visual Checklist

1. Add additional items to the list that are specific to your equipment
2. Each item listed should receive a checkmark

**References & Acknowledgements**

1. ACR MRI QC Manual
2. Mary Unson & The Staff of Suncoast Imaging of Ormond Beach, FL for their assistance in the writing of these documents

# TROUBLESHOOTING

## I. TEST Procedure: Setup & Position Accuracy

Column #2,3 – If "no", contact Philips Service, but continue on if possible

## II. TEST Procedure: Prescan Parameters

Column #4 – If CF deviates more than 1.5 ppm/day, contact Philips Service
* If Philips Service Engineers adjust CF, they must make notation on QC Data Sheet
Column #5 – TX Gain/Attenuation (dB)

## III. TEST Procedure: Geometric Accuracy

Column #6,7,8 – If deviations exceed (+/-2mm):

1. Check for ferrous objects in bore of magnet
2. Has system been on at least 1 hour?
3. Repeat images and measurements
4. If deviations remain excessive, contact Philips Service

## IV. TEST Procedure: Spatial Resolution Measurements

Column #9,10 – Resolution should **never** change, if it does contact Philips Service

1. For a point to be determined "distinguishable", it is not necessary for the image intensity to drop to zero between the holes; only that you can find a window & level setting such that all four holes [in any one row (UL) or one column (LR)] are recognizable as points of brighter signal intensity and have a distinguishable space between them. It is acceptable for the holes to blur together with neighbors in adjacent rows (UL) or columns (LR), but NOT with holes in the same row or column.

## V. TEST Procedure: Low Contrast Detectability (LCD) Measurements

Column #11 – If the score is reduced by more than 3:

1. Recheck Phantom positioning, especially tilting in the head/foot direction
2. Rerun Axials, checking to be sure that slices 8-11 are correctly positioned on the sag scout (over the Low contrast disks)
3. A spoke is only considered complete if all 3 of the holes are discernible
4. Stop counting at the first incomplete spoke, even if there is one smaller that is complete
5. Ragged or misshapen holes are OK; one that is no different than background noise fluctuations is NOT
6. Score conservatively, don't bother pondering difficult decisions on barely visible holes

## VI. TEST Procedure: Image Artifact Assessment

Column #12 –

1. If ghosting is present, check to be sure the Phantom is stable in the coil, not free to move or vibrate as this can cause ghosting.
2. Re-run axial if it was unstable, otherwise report all artifacts to Philips Service

## VII. TEST Procedure: Hard Copy Image

Column #13 –

*Monitor*

1. Ambient lighting at filming console should be kept low at all times
2. Monitor should be positioned so there is no glare on screen
3. Lighting level should be kept the same whenever filming is done
4. To reduce the need for printer calibration, use up all of one emulsion batch before starting another.
5. If visual display at the monitor fails inspection, contact Philips service

*Laser Film Printer QC*

1. Use only the Philips specified window width/level values (default) for SMPTE-changing window invalidates procedure
2. If optical densities fall out of acceptable range on graph:
   Repeat QC procedure to rule out error in measurements
3. Has the film been exposed to light leak (90% box most sensitive)?
4. Has there been a change in film type (new action limit needed)?
5. Is there dirt or debris causing spots or marks?
6. Are there streaks from dirty rollers? Contact Laser Manuf. Service
7. If test exceeds control limits, consult reading Radiologist for approval to continue filming.

## VIII. TEST Procedure: Visual Checklist

Each of the items on the Visual Checklist should pass inspection for operation;
if not, have Philips Service check or replace problem items immediately

Quick Steps

Philips Customer Services Clinical Education

# ACR- Weekly QC System Information

(Finding Center Frequency & Transmitter Gain/Attenutation)

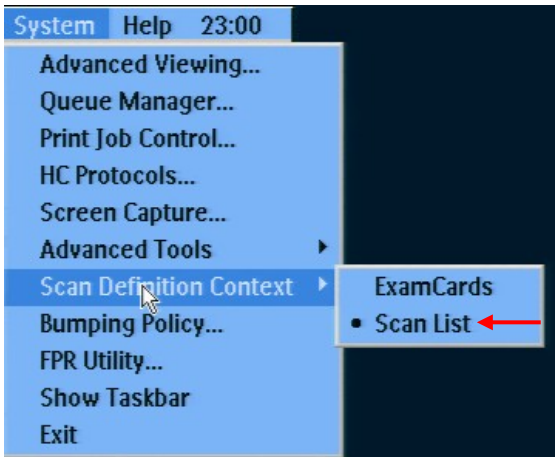
**This is a quick step guide for locating the Center Frequency and Transmitter Gain/Attenuation for the ACR Weekly QC Software Versions R11 to R2.5.3.**

For more detailed information, please refer to the Philips Instructions for Use (IFU).

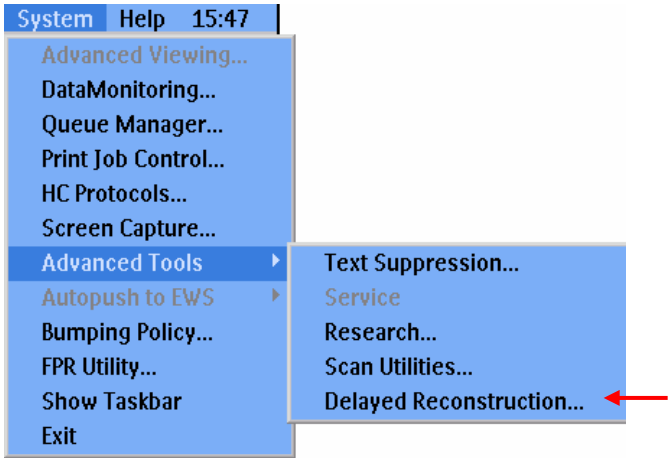
## ACR Weekly QC System Information

**In order to obtain preparation parameters of a specific sequence, if is necessary to first be in the "scan list environment. Please follow the following steps:**

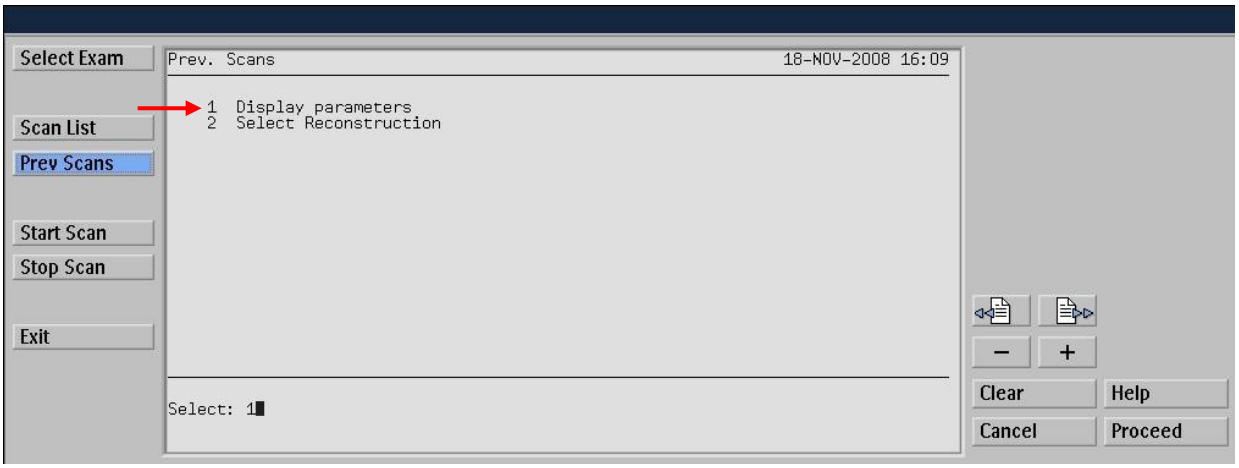
**1.** (R11) Select: **System, Scan Definition Context** then **Scan List**



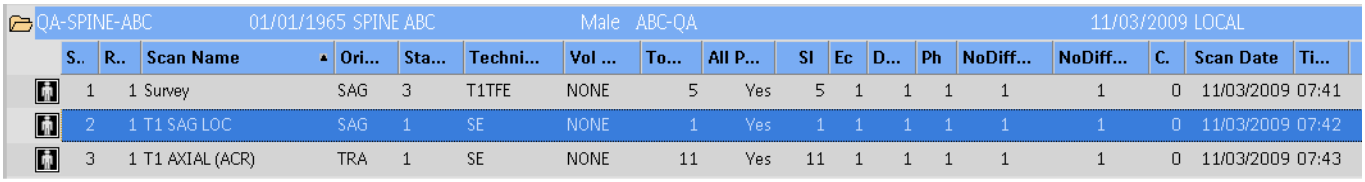

(R2.5) Select: **System, Advanced Tools** then **Delayed Reconstruction**



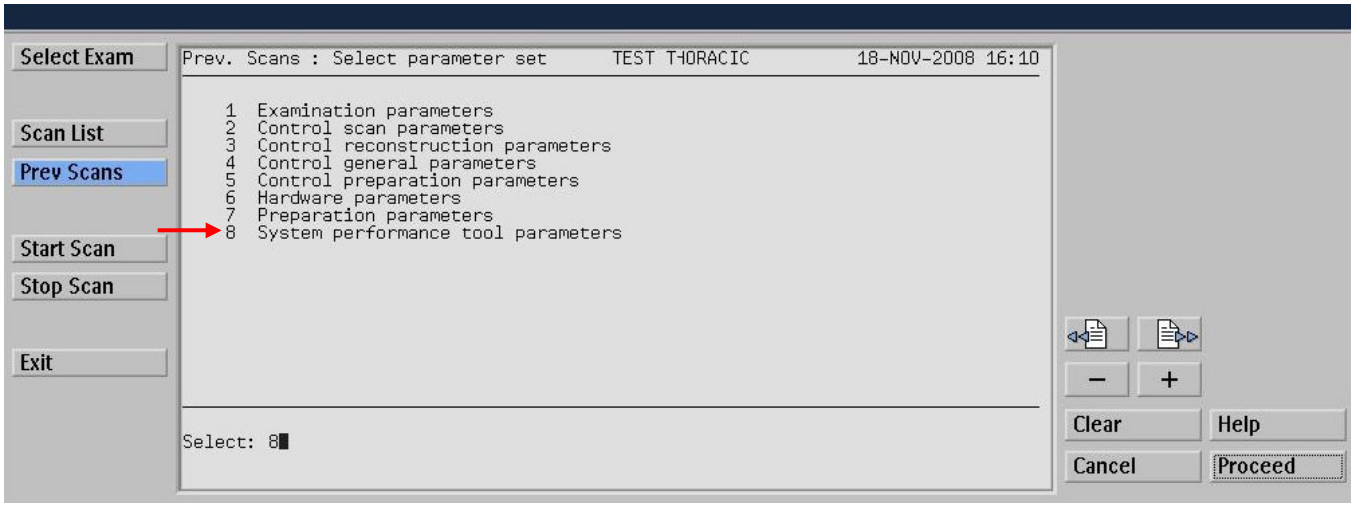

**2.** Select: **Prev Scans,** then **(1)Display Parameters**



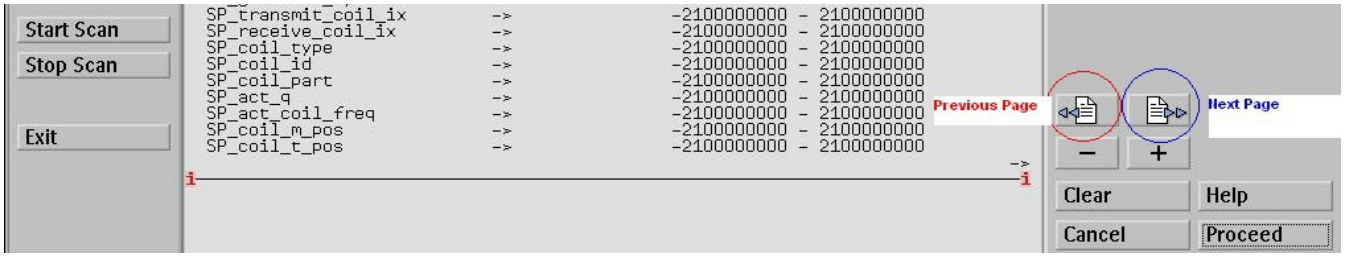
**3.** Select: **ACR QA Exam,** then **ACR QA Sequence**




**4.** Select: **(8)System Performance Tool Parameters**



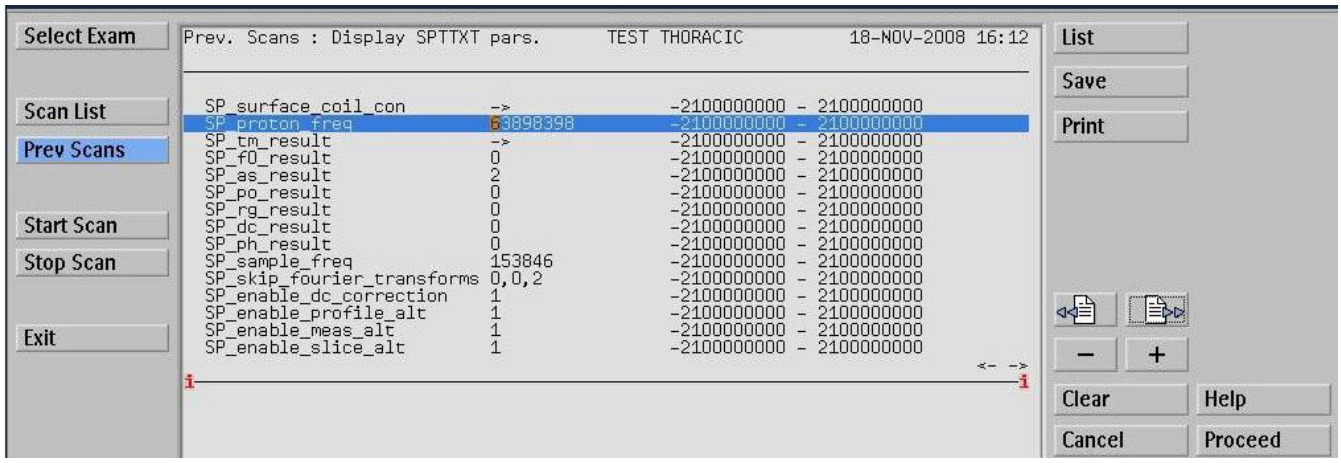

**5:** Select: **Previous Page or Next Page to move through the list of parameters**



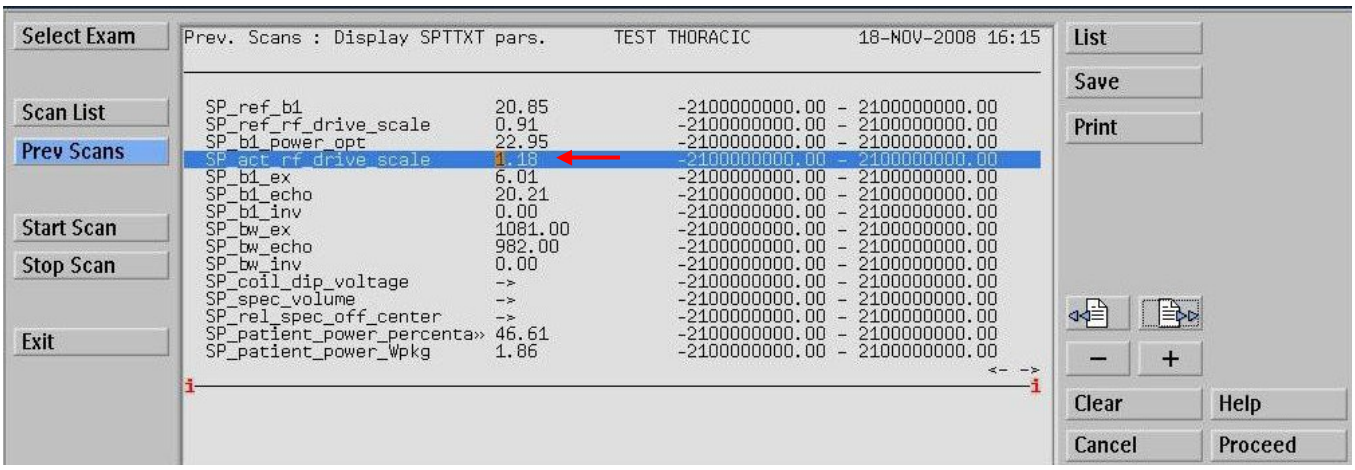

**6:** Select the various pages to locate the preparation parameters needed for the ACR Weekly QC Data Form

# Quick Steps

7. **Use next page**  **to locate SP_ Proton Frequency (Center Frequency)**
   a. Enter value into Column 4, CF (Hz) (ACR Weekly QC Form)
   **Example:** 63898398 Hz




8. **Use next page**  **to locate SP_Act_RF_Drive_Scale (TX Gain/Attenuation)**
   a. Enter value into Column 5, TX Gain/Attenuation (dB) (ACR Weekly QC Form)
   **Example** 1.18




**Note:** Achieva/Panorama HFO- Transmit power is expressed in the RF Drive Scale (indicating the value of RF input to the RF amplifier

Reference: Quickstep ACR Parameters 452296235801 * June 2008

# ACR- Finding Center Frequency & Transmit Gain

**This is a quick step guide for Achieva (R3.2) & Ingenia (R4.1 & higher).**

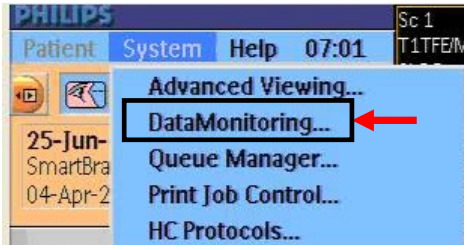
How to find Center Frequency & Transmit Gain/Attenuation in order to complete the **ACR Data Form for Weekly MRI Equipment Quality Control**. For more detailed information, please refer to Philips Instructions for Use (IFU).

**Center Frequency (CF):** Must be determined for each sequence. This optimization is done in the F0 preparation phase, where an initial coarse tune is followed by an optimized fine tune. The number of iterations will vary depending on shim preparation phases and ease of tuning the sample. Preparation phases and available tabs will vary depending on the **Prep Phase Parameter** setting under the (Post Processing Tab).

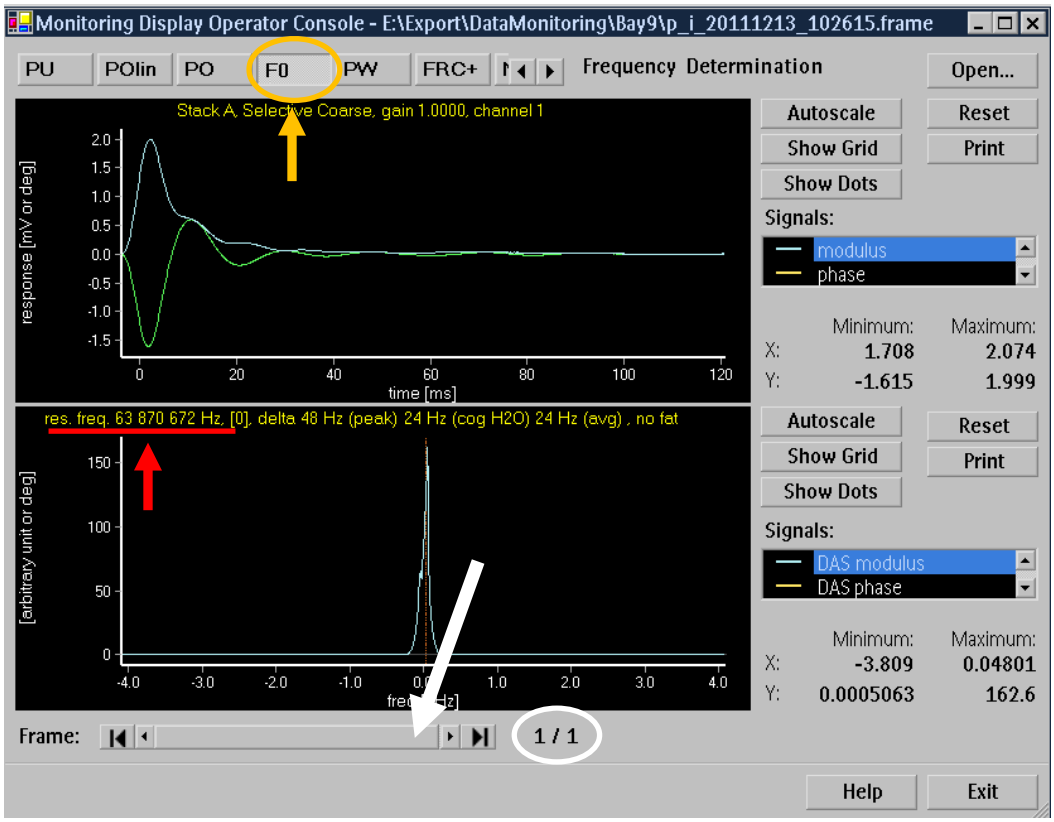
**Note:** To simplify this procedure, ensure **Prep Phase = full** (Post Processing Tab) on all ACR Phantom sequences.

## Steps for finding Center Frequency (CF) value

1. While the ACR sequence is running, on the **Main Menu**, choose **System**, then **Data Monitoring**.




2. Next, the window will display the preparation phases of the currently running sequence.
**Note:** You must review this page prior to the next sequence beginning, or you will be forced to use a different method to obtain the needed CF information. (see addendum 1)




3. **Click:** F0 button at top (orange circle & arrow)

4. **Move Frame Slider:** to last iteration (i.e. 1/1, 2/2, 6/6, etc.) (white arrow & circle)

5. **Note:** that in the bottom window you will see in yellow writing (red line & arrow)

   res. freq. **( 63 870 xxx Hz for 1.5T)** or **(128 xxx xxx Hz for 3.0T)**

6. res. freq. is the resonant frequency (Center Frequency) for this sequence, and is the number you will enter on **ACR Data Form for Weekly MRI Equipment Quality Control column #4 CF.**

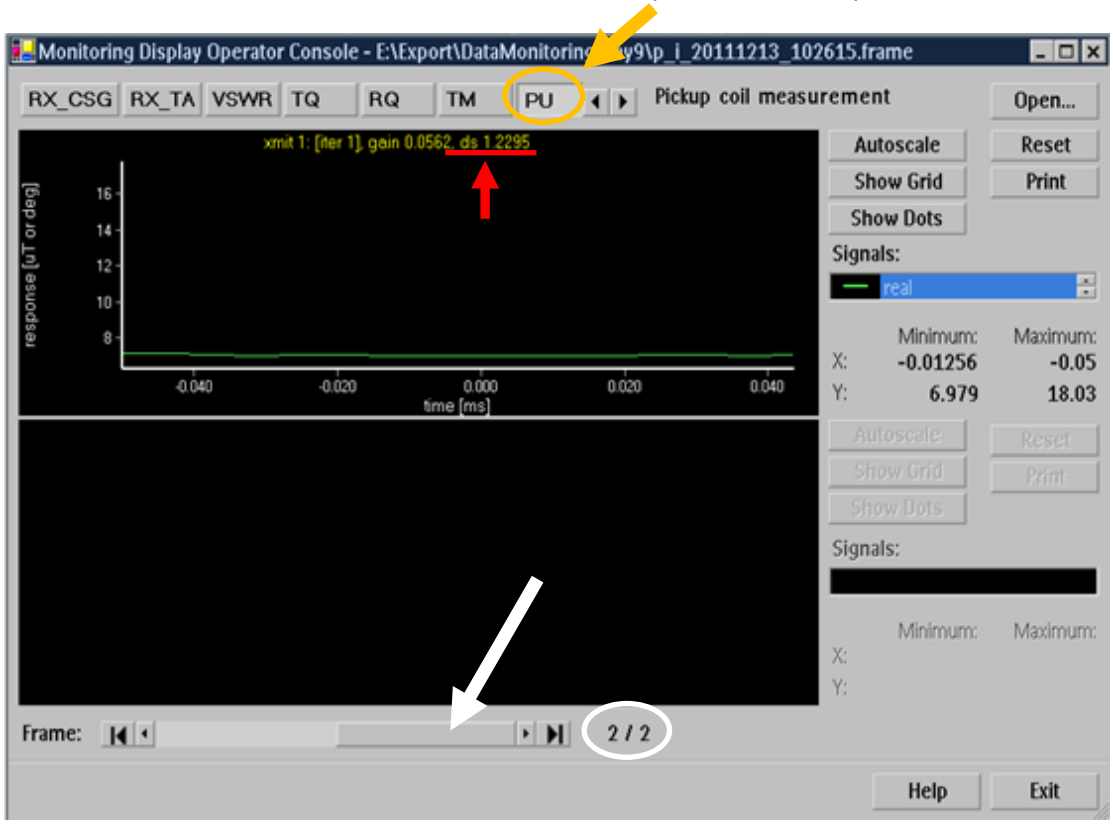
## Steps for finding Transmit Gain/Attenuation values

**Transmit Gain/Attenuation (Tx Gain/Attn):** Must be determined for each sequence. In order to excite the hydrogen proton, the power of the RF Amplifier must be modified per sequence to properly provide 90° & 180° RF pulses. This optimization is done in two closely linked preparation phases, Pickup Coil (PU) power determination and Power Optimization (PO) on the Philips software.
**Note:** Tx Gain/Attn is reported in the 2nd iteration of the Pickup Coil (PU) determination.

### Steps for 1.5T or Single Transmit 3.0T

1. While the ACR sequence is running, on the **Main Menu**, choose **System**, then **Data Monitoring**.

2. Next, the window will display the preparation phases of the currently running sequence.
   **Note:** You must review this page prior to the next sequence beginning, or you will be forced to use a different method to obtain the needed Tx Gain/Attn information. (see addendum 1)




3. **Click:** PU button at top (orange circle & arrow)
4. **Move Frame Slider:** to 2/2 (white arrow & circle)
5. **Note:** that in the top window you will see in yellow writing (red line & arrow)

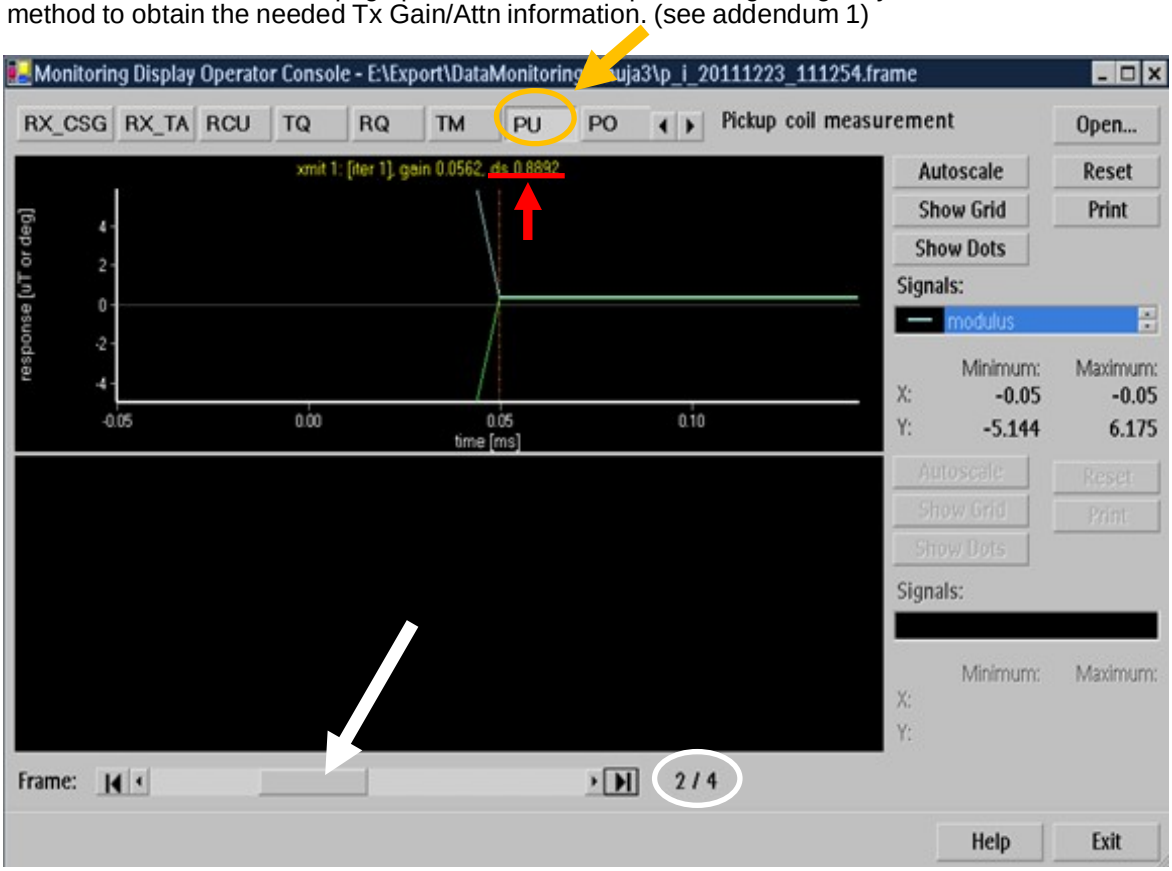
   xmit 1: [iter 1], gain 0.0562, **ds 1.2295**

6. **ds** is the abbreviation for drive scale (Transmit Gain/Attn) for this sequence, and is the number you will enter on ACR Data Form for Weekly MRI Equipment Quality Control column #5 Tx Gain/Attn.

**Steps for 3.0T Multi-Transmit Systems**

1. While the ACR sequence is running, on the **Main Menu**, choose **System**, then **Data Monitoring**.

2. Next, the window will display the preparation phases of the currently running sequence.
**Note:** You must review this page prior to the next sequence beginning, or you will be forced to use a different method to obtain the needed Tx Gain/Attn information. (see addendum 1)

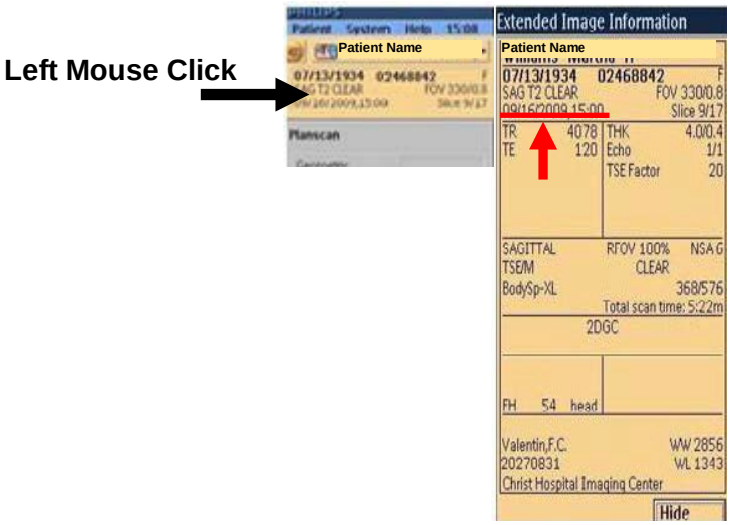



3. **Click:** PU button at top (orange circle & arrow)
4. **Move Frame Slider:** to 2/4 for transmit 1 & 4/4 for transmit 2 (white arrow & circle)
5. **Note:** that in the top window you will see in yellow writing (red line & arrow)
xmit 1: [iter 1], gain 0.0562, **ds 0.0892** xmit 2: [iter 1], gain 0.xxxx, **ds 0.xxxx** for 2nd RF Amp
6. **Note:** Since there are 2 RF amplifiers on the 3.0T multi-transmit system, there are 2 drive scales. You will therefore see 4 iterations, Frame 2/4 [xmit 1] & 4/4 [xmit 2] are the actual drive scales (Transmit Gain) used for the sequence.
*Please defer to your ACR site physicist to determine if it is necessary to report both numbers.
7. **ds** is the abbreviation for drive scale (Transmit Gain/Attn) for this sequence, and is the number you will enter on ACR Data Form for Weekly MRI Equipment Quality Control column #5 Tx Gain/Attn.

## Addendum 1: Steps for Accessing Data Monitoring on Sequences Previously Acquired

Note: This procedure cannot reliably obtain the needed information for sequences older than 1 week.

1. You must first know the Date & Time of the sequence of interest. Bring up the image in **Image Viewing**, note the date & time in the **Extended Image Information** window.



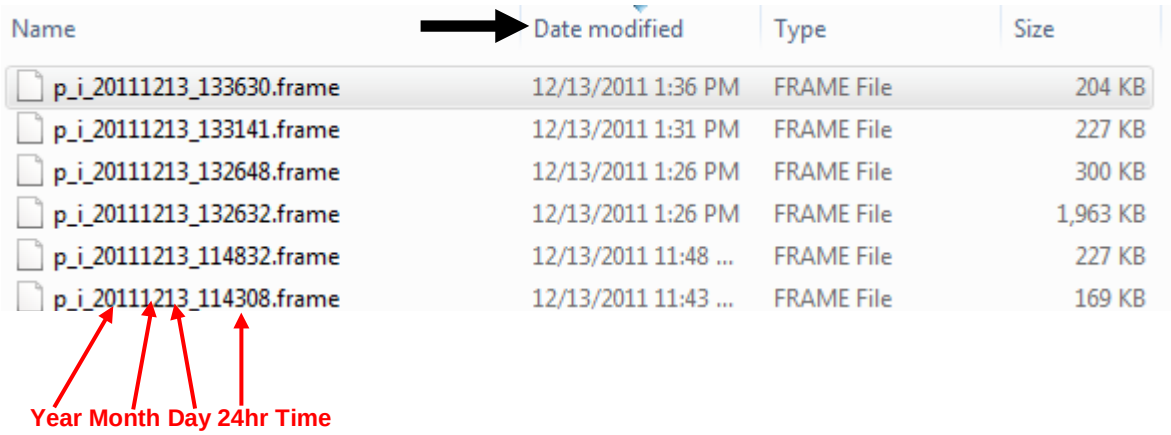

2. From the **Main Menu**, choose **System**, then **Display Task Bar** or alternatively press the **Windows button** on the keyboard to activate the **Windows Task Bar.**

3. **Click: Start** > **All programs** > **Accessories** > **Windows Explorer**

   This will activate **Windows Explorer** which should default to **My Documents** (E:\Export); if not navigate to (E:\Export)

4. **Double Click:** Data Monitoring Folder to open
   **a.** Select **View** from the menu and select **Details**
   **b.** Click the Date Modified tab 2 times to sort by date (black arrow)
   **c.** This will place the most recent file at the top

5. **Note:** The File Name will include the date & time which will match that previously found in the **Extended Image Information** window.




6. **Double Click:** The matching file which will open the Data Monitoring Application

7. Follow the previously described steps for determining Center Frequency (CF) and Transmit Gain/Attenuation (Tx Gain/Attn).

Quick Steps

Philips Customer Services Clinical Education

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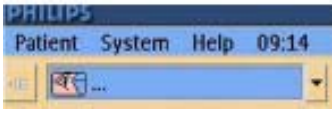
# ACR- Filming SMPTE Pattern for Achieva/Intera & Panorama HFO MR systems

**This is a quick step guide for Achieva/Intera and Panorama HFO systems.**
How to print SMPTE pattern for the process of ACR accreditation. The SMPTE pattern can also be saved in an electronic format; it is recommended that the FSE complete this task. Please refer to CCSC for instructions on this process.

For more detailed information, please refer to the Philips operator or user guide.

## Filming the SMPTE pattern for ACR accreditation

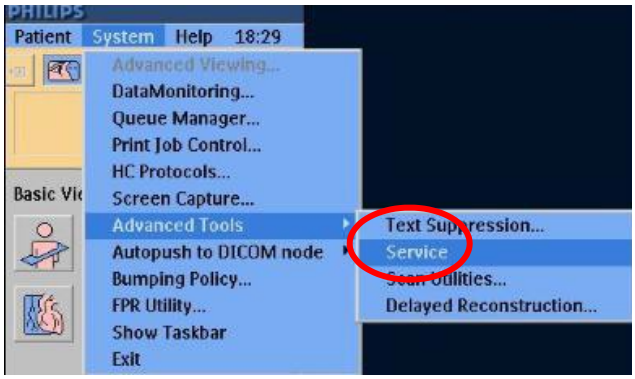
1. **Select:** The first or second viewport



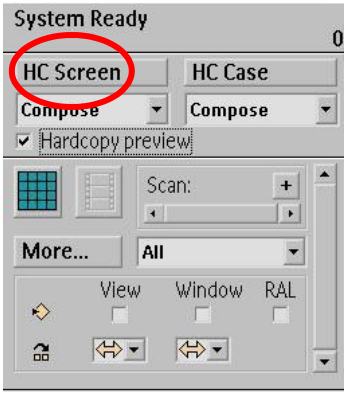

2. **Select:** System on the main tool bar

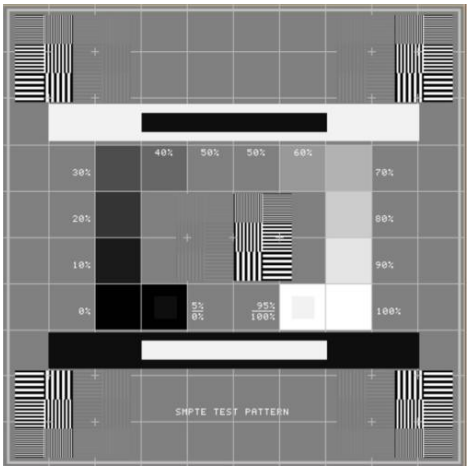
3. **Select:** Advanced Tools from the dropdown

4. **Select:** Service- the SMPTE pattern will appear




5. **Select:** HC Screen- A single SMPTE pattern will be printed on a sheet of film.




*Note:* The ACR request 6 SMPTE patterns on one sheet of film, however, will accept this format for Philips MR systems.

6. **Visually Check SMTPE pattern film for:**
   a. Even progression of gray scale around the gray level ring

   b. Distinguishing the 5% patch in the 0/5% box

   c. Distinguishing the 95% patch in the 95/100% box

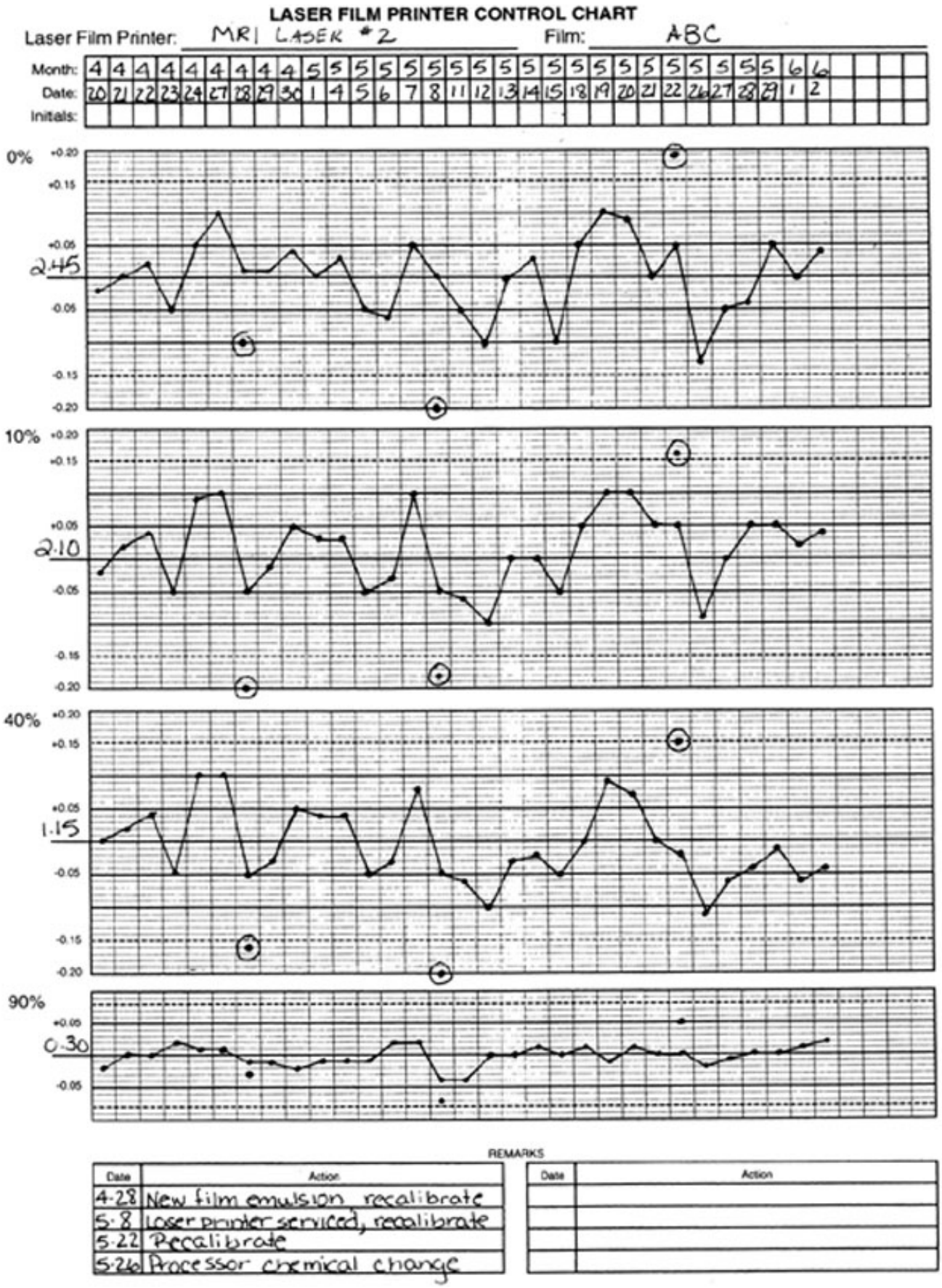
   d. Streaks, uneven densities, or artifacts

7. **As per the ACR instructions, using a densitometer, measure the density of the 0%, 10%, 40%, 90% boxes on the film**
   a. Plot the densities on the ACR Laser Film QC Chart

   b. Circle any points that fall outside the control limits


| Patch | 0% | 10% | 40% | 90% |
|---|---|---|---|---|
| Density | 2.45 | 2.10 | 1.15 | 0.3 |
| Control Limit | +/- 0.15 | +/- 0.15 | +/- 0.15 | +/- 0.8 |

ACR Control Limits




REMARKS

| Date | Action |
|---|---|
| 4-28 | New film emulsion, recalibrate |
| 5-8 | Laser printer serviced, recalibrate |
| 5-22 | Recalibrate |
| 5-26 | Processor chemical change |

| Date | Action |
|---|---|
| | |
| | |
| | |
| | |

MRI Laser Film Printer Control Chart Example

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## 6.0 ACR Clinical Test Image Datasheet Information

How to find information needed to complete the ACR Clinical Test Image Datasheet

### 6.1 ACR Clinical Test Image Data Sheet (Questions 1-4)

6.1.1 1. Scanner Serial Number: See QuickStep: ACR- Initial Application Information (page 1-2)
6.1.2 2. Manufacturer: Philips
6.1.3 3. Model Name: See QuickStep: ACR- Initial Application Information (page 1-2)
6.1.4 4. Year Installed: See QuickStep: ACR- Initial Application Information (page 1-2) or ask your FSE

### 6.2 Sample Document: ACR Clinical Test Image Data Sheet

### 6.3 QuickStep: ACR to Philips Parameter Equivalency Chart

Use this chart to locate requested information for the ACR Clinical Test Image Data Sheet

### 6.4 QuickStep: PlanScan Screen Capture for Acquisition Slice Locations

A Planscan showing acquisition slice locations must accompany both the phantom and clinical images. These images are collected on the Philips systems by either filming, or acquiring screen captures of the Planscan for each acquisition and properly naming them with the Scan number they represent

### 6.5 QuickStep: Burning Clinical Images onto DVD (w/DICOM viewer)


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**Magnetic Resonance (MR) Accreditation Program**
**1891 Preston White Drive, Reston VA 20191-4397** **CLINICAL TEST IMAGE DATA SHEET**

*Use this form to record the technical factors used for the required sequences only. Do not use for additional sequences. Enter info online.*



1. Scanner Serial number:_____ 2. Manufacturer: _____

*3. Model name:*_____ *4. Year installed:* _____

Type of exam: _____ Date of exam:_____

Reason for exam: _____

Age of patient:_____ Approximate weight of patient, if available (kg):_____

| Parameter | Sequence 1 | Sequence 2 | Sequence 3 | Sequence 4 | Sequence 5 | Sequence 6 |
|---|---|---|---|---|---|---|
| Sequence name/type | | | | | | |
| Sequence # | | | | | | |
| Slice Orientation | | | | | | |
| Acquisition time (min, sec) | | | | | | |
| Slice Thickness (mm) | | | | | | |
| Gap (mm) | | | | | | |
| FOVp (mm) | | | | | | |
| FOVf (mm) | | | | | | |
| Np (phase matrix) (Do not use interpolation) | | | | | | |
| Nf (frequency matrix) (Do not use interpolation) | | | | | | |
| Np (reconstruction phase matrix) | | | | | | |
| Nf (reconstruction frequency matrix) | | | | | | |
| Np (display phase matrix) | | | | | | |
| Nf (display frequency matrix) | | | | | | |
| # Acquisitions | | | | | | |
| TR | | | | | | |
| TE | | | | | | |
| FA | | | | | | |
| TI | | | | | | |
| B values | | | | | | |
| Temporal Resolution (ms) (cine sequences only) | | | | | | |
| # Views per Segment (cine sequences only) | | | | | | |
| Contrast volume (if applicable) | | | | | | |
| Contrast Rate (if applicable) | | | | | | |

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# ACR to Philips Parameter Equivalency Chart

Use this chart to locate requested information for the ACR Clinical Test Image Data Sheet

| ACR Parameter | Philips Equivalent | Location |
|---|---|---|
| Sequence Name/Type | Technique | Contrast Tab |
| Sequence # | Scan # | Image display |
| Slice Orientation | Orientation | Geometry Tab |
| Acquistion Time (Min:Sec) | Total Scan Duration | Info Page |
| Slice Thickness (mm) | Slice Thickness (mm) | Geometry Tab |
| Gap (mm) | Gap | Geometry Tab |
| FOVp | FOV (Phase) | Geometry Tab- 2nd line of FOV |
| FOVf | FOV (Measurement)/Frequency | Geometry Tab-1st line of FOV |
| Np (phase matrix)<br>Do not use interpolation | ACQ Matrix P (phase) | Info Page- ACQ matrix M x P<br>As labeled (P)- 2nd number |
| Nf (freq. matrix)<br>Do not use interpolation | ACQ Matrix M (Measurement) | Info Page- ACQ matrix M x P<br>As labeled (M)- 1st number |
| Np (reconstruction phase matrix) | Reconstruction Matrix | Geometry Tab |
| Nf (reconstruction freq. matrix) | Reconstruction Matrix | Geometry Tab |
| Np (display phase matrix) | Reconstruction Matrix | Geometry Tab |
| Nf (display freq. matrix) | Reconstruction Matrix | Geometry Tab |
| # Acquistions | NSA | Motion Tab |
| TR | Actual TR (ms) | Info Page |
| TE | Actual TE (ms) | Info Page |
| FA (Fllip Angle) | Flip Angle | Contrast Tab- Flip Angle (deg) |
| TI | Inversion Time (FLAIR or STIR) | Contrast Tab- Inversion Time |
| B values | B-values | Contrast Tab- B-values |
| Temporal Resolution (ms)<br>Cine sequences only | TFE or b-TFE | Info Page- Shot duration |
| # Views per Segment<br>Cine sequences only | Displayed on Info Page- # Shots | Info Page |
| Contrast Volume (if applicable) | n/a | n/a |
| Contrast Rate (if applicable) | n/a | n/a |

Quick Steps

Philips Customer Services Clinical Education

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# ACR- Capturing Survey Images for Clinical Data

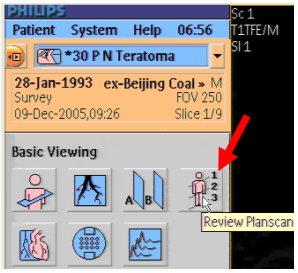
**This is a quick step guide for Intera/Achieva/Ingenia & Panorama HFO systems.**

How to capture Survey Images for the process of Clinical Data Submission for ACR Accreditation. For more detailed information, please refer to the Philips Instructions for Use (IFU).

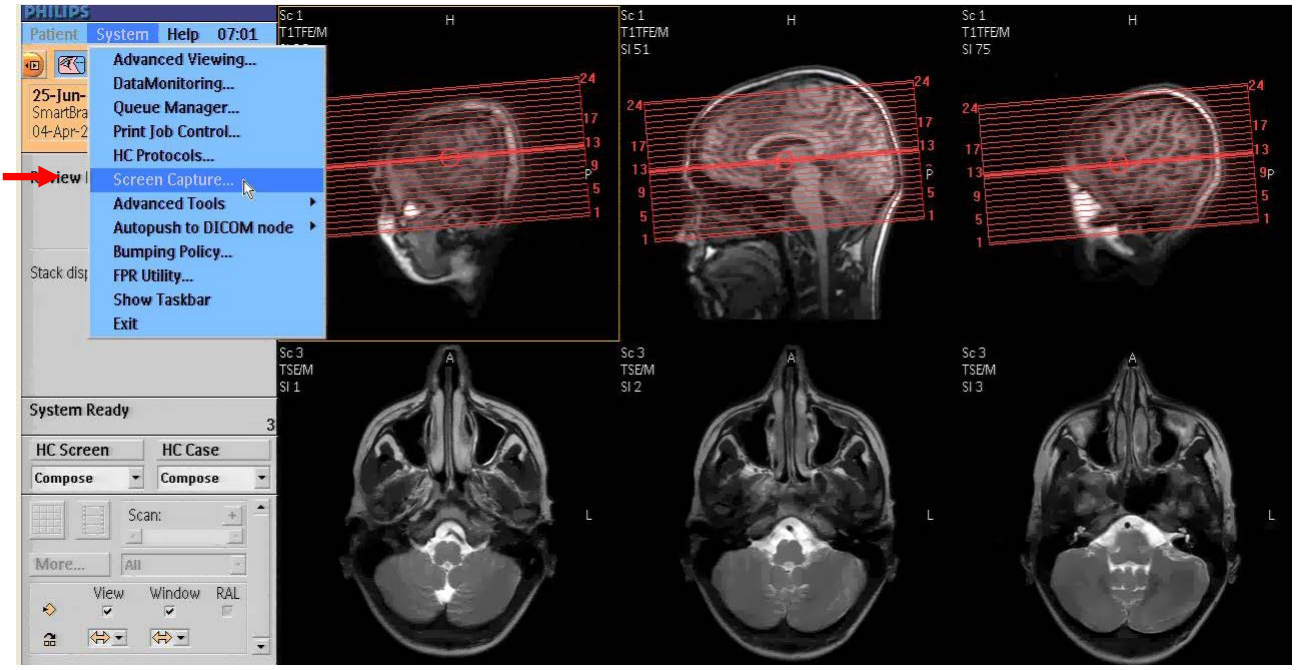
Survey images are generated by the Philips scanner as a Planscan, however, are not automatically generated so they can be sent electronically. A Planscan showing acquisition slice locations must accompany both the phantom and clinical images. These images are collected on the Philips systems by either filming, or acquiring screen captures of the Planscan for each acquisition and properly naming them with the Scan number they represent (ie. Planscan for Scan _1.1).

## Screen Grab of Planscan Survey Image

1. **Select:** Review Planscan (red arrow)
   From Basic Viewing

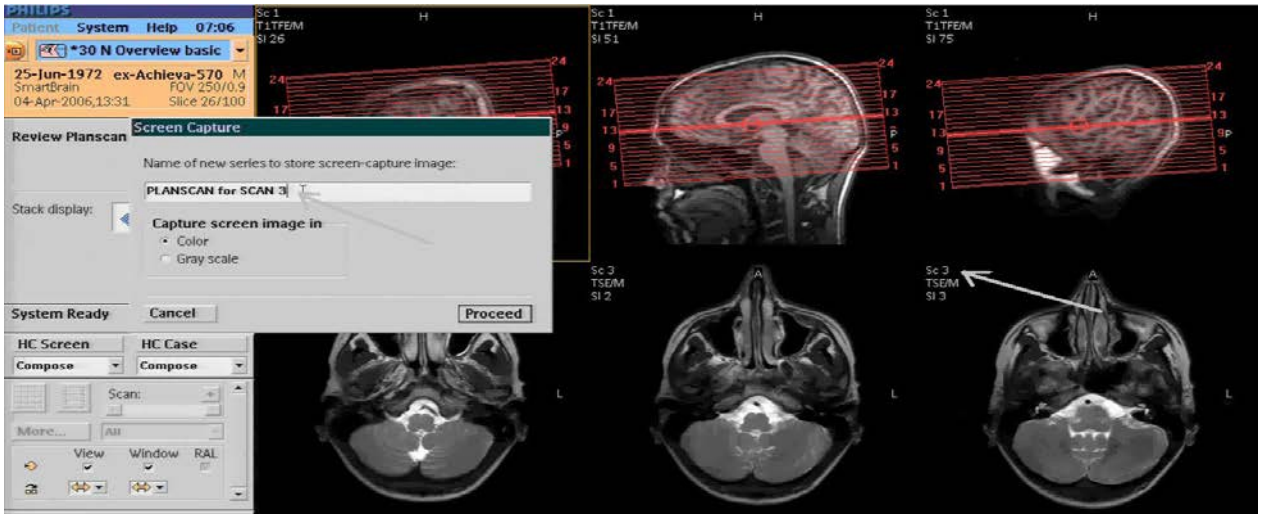



2. **Select**: System on the main tool bar and dropdown to Screen Capture (red arrow)
   *You may have to zoom the Survey Image out to see slice numbers

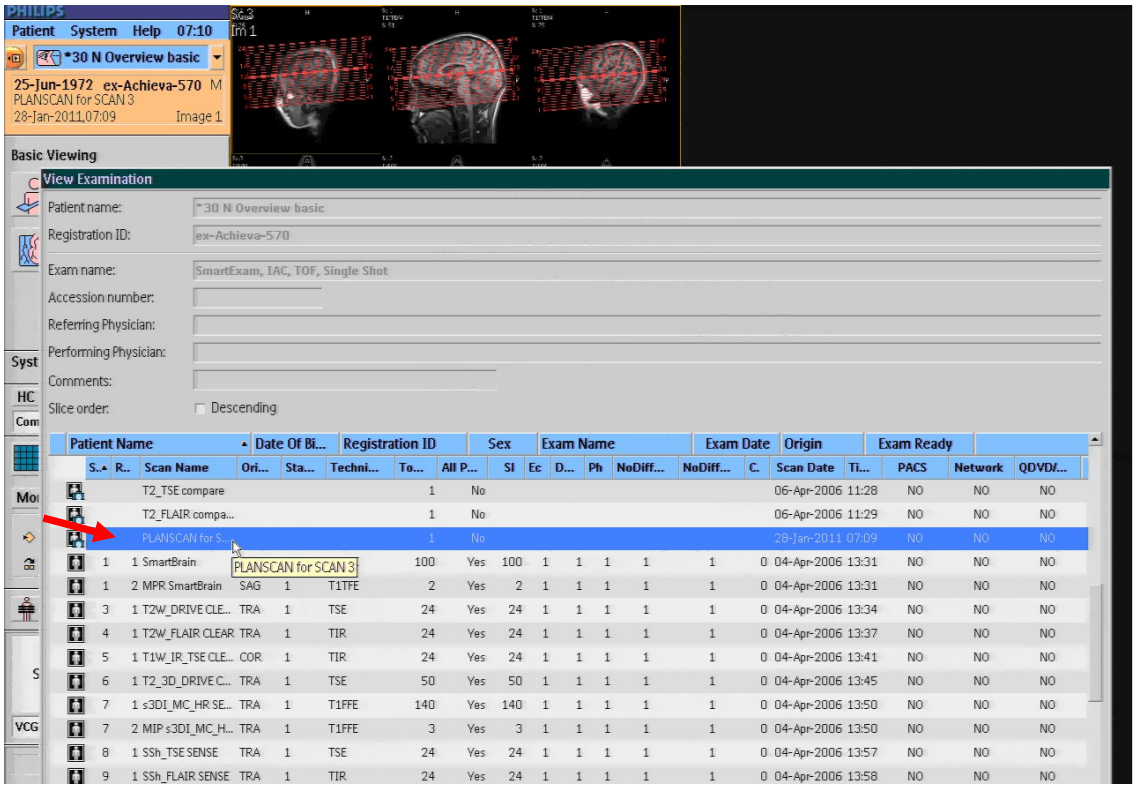


3. **Name Screen Capture:** Make certain to match the correct scan names ie Planscan for Scan 3 to Sc3 (see arrows below)

Note: An incorrectly named Planscan Screen capture may cause confusion for the ACR reviewer, which might result in a failed submission to ACR.




4. **Example:** Below is an example of a properly named screen capture, which is visible in the patient database**.** (red arrow)



Quick Steps

Philips Customer Services Clinical Education

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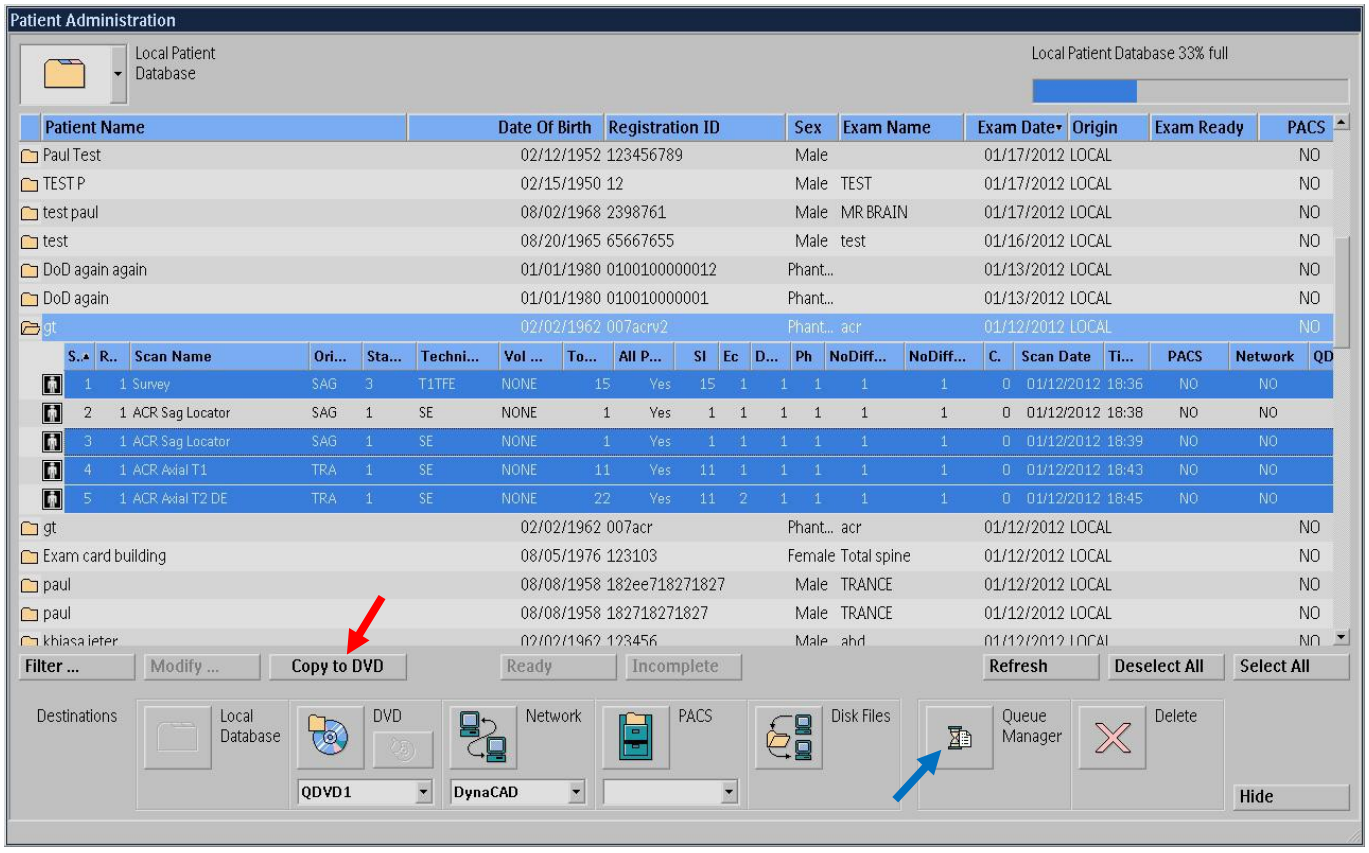
# ACR-Burning Images to DVD with DICOM Viewer

**This is a quick step guide for burning DICOM images (Clinical Images) to a DVD with a DICOM viewer for ACR.** For more detailed information, please refer to the Philips Instructions for Use (IFU).

## Write ACR Clinical Files to DVD

1. **Place:** DVD+RW 4.7GB Speed=4X into DVD Burner
2. **Select:** ACR patient exam in patient administration
3. **Select:** Sequences that need to be saved for ACR Clinical Data Collection

   ***Example:** Sreen grab of Survey, 3 plane Localizer, T1, T2, STIR, etc

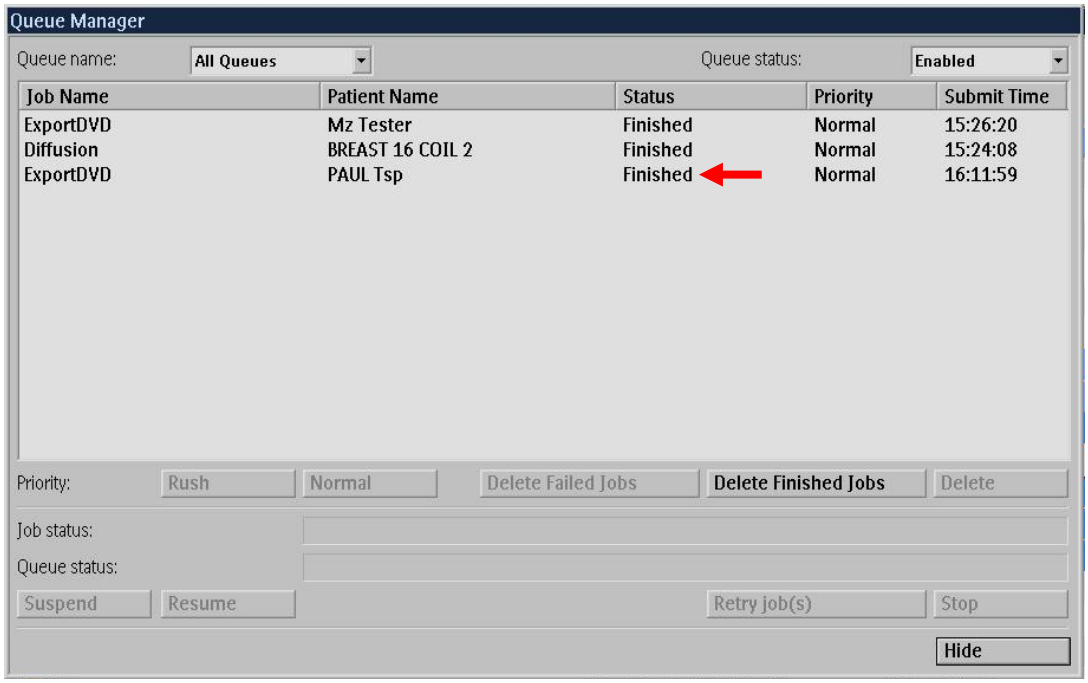



4. **Click:** Copy to DVD icon (red arrow) 


5. **Name DVD:** Type Label Name for DVD

6. **Click:** Queue Manager (blue arrow) 

7. **Check:** Queue Manager to verify Copy (Export DVD) is completed




8. **Remove DVD:** Identify by writing on DVD with Sharpie Marker (ACR Cervical, ACR Lumbar etc)

9. **Test DVD:** Place DVD into DVD/CD-ROM drive on a secondary computer running windows operating system to test that DVD has burned correctly and the DICOM viewer is functioning appropriately.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## 6.6 FAQ's- Frequently Asked Questions for ACR Clinical Data

**1. How is Scan Time Calculated?**

Total time allotted is equal to the total time for required scans, not overall total scan time

a. Injection time or additional scan times do not count in the total scan time.
b. Submit the best possible exam with the least amount of pathology.

**2. What if there are other scans needed by the radiologist that ACR is not requesting?**

a. Submit the entire exam, do not delete scans. They will only total the required scans for ACR testing.

**3. Can I submit Clinical Images on Film?**

a. Clinical Images may be submitted on Film.
b. If films are submitted, a SMPTE pattern test must also be included.

**4. Can I submit Clinical Images on CD?**

a. Clinical images may be submitted on CD and must contain an ACR compliant DICOM viewer
b. Two identical sets of Clinical CD's must be burned with DICOM viewer for submittal
c. This can be accomplished via the Philips Extended MR Workspace (EWS).
d. Another option might be from certain PACs systems.
e. The Philips DICOM viewer does not currently provide the ability to see the cross sectional lines indicating slice position. Planscan screen captures may be utilized for reference.

**5. Can I submit Clinical Images on DVD?**

The ACR has issued conflicting information regarding the use of DVDs versus CD-ROM.
Please contact the ACR for final approval prior to using DVDs.

a. If Clinical images are submitted on DVD they must contain an ACR compliant DICOM viewer
b. Two identical sets of Clinical DVD's must be burned with DICOM viewer for submittal
c. The Philips DICOM viewer does not currently provide the ability to see the cross sectional lines indicating slice position. Planscan screen captures may be utilized for reference.

**6. Other possible options for burning Clinical CDs**

a. 3rd Party Vendor - DesAcc: 1-866-638-0936 (fees apply)
b. Lance King (Philips)- 440-483-5436 (fees apply)

**7. Questions:**

If you have further questions- Call the ACR 1-800-770-0145 or visit their website**:** **www.acr.org**

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