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\\SiemensSitem

Optimized\_Protocols

Head

cs-mp2rage

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\\SiemensSitem\Optimized\_Protocols\Head\cs-mp2rage\AAHead\_Scout\_32ch-head-coil

TA: 0:14 PM: REF Voxel size: 1.6×1.6×1.6 mmPAT: 3 Rel. SNR: 1.00 : fl

**Properties**

|   |                    |
|---|--------------------|
| Prio recon                                    | Off                |
| Load images to viewer                         | On                 |
| Inline movie                                  | Off                |
| Auto store images                             | On                 |
| Load images to stamp segments                 | Off                |
| Load images to graphic segments               | On                 |
| Auto open inline display                      | Off                |
| Auto close inline display                     | Off                |
| Start measurement without further preparation | On                 |
| Wait for user to start                        | Off                |
| Start measurements                            | Single measurement |

**Routine**

|                    |                    |
|--------------------|--------------------|
| Slab group         | 1                  |
| Slabs              | 1                  |
| Dist. factor       | 20 %               |
| Position           | L0.0 A30.0 H0.0 mm |
| Orientation        | Sagittal           |
| Phase enc. dir.    | A >> P             |
| Phase oversampling | 0 %                |
| Slice oversampling | 0.0 %              |
| Slices per slab    | 128                |
| FoV read           | 260 mm             |
| FoV phase          | 100.0 %            |
| Slice thickness    | 1.6 mm             |
| TR                 | 3.25 ms            |
| TE                 | 1.53 ms            |
| Averages           | 1                  |
| Concatenations     | 1                  |
| Filter             | B1 filter          |
| Coil elements      | A32                |

**Contrast - Common**

|            |         |
|------------|---------|
| TR         | 3.25 ms |
| TE         | 1.53 ms |
| Flip angle | 16 deg  |

**Contrast - Dynamic**

|                |            |
|----------------|------------|
| Averages       | 1          |
| Averaging mode | Short term |
| Reconstruction | Magnitude  |
| Measurements   | 1          |

**Resolution - Common**

|                       |           |
|-----------------------|-----------|
| FoV read              | 260 mm    |
| FoV phase             | 100.0 %   |
| Slice thickness       | 1.6 mm    |
| Base resolution       | 160       |
| Phase resolution      | 100 %     |
| Slice resolution      | 69 %      |
| Phase partial Fourier | 6/8       |
| Slice partial Fourier | 6/8       |
| Trajectory            | Cartesian |

**Resolution - iPAT**

|                  |        |
|------------------|--------|
| PAT mode         | GRAPPA |
| Accel. factor PE | 3      |
| Ref. lines PE    | 24     |
| Accel. factor 3D | 1      |

**Resolution - iPAT**

|                     |            |
|---------------------|------------|
| Reference scan mode | Integrated |
|---------------------|------------|

**Resolution - Filter Image**

|                   |     |
|-------------------|-----|
| Image Filter      | Off |
| Distortion Corr.  | Off |
| Prescan Normalize | Off |
| Normalize         | Off |
| B1 filter         | On  |
| Unfiltered images | Off |

**Resolution - Filter Rawdata**

|                   |     |
|-------------------|-----|
| Raw filter        | Off |
| Elliptical filter | Off |

**Geometry - Common**

|                    |                    |
|--------------------|--------------------|
| Slab group         | 1                  |
| Slabs              | 1                  |
| Dist. factor       | 20 %               |
| Position           | L0.0 A30.0 H0.0 mm |
| Orientation        | Sagittal           |
| Phase enc. dir.    | A >> P             |
| Slice oversampling | 0.0 %              |
| Slices per slab    | 128                |
| FoV read           | 260 mm             |
| FoV phase          | 100.0 %            |
| Slice thickness    | 1.6 mm             |
| TR                 | 3.25 ms            |
| Multi-slice mode   | Sequential         |
| Series             | Ascending          |
| Concatenations     | 1                  |

**Geometry - AutoAlign**

|                     |                    |
|---------------------|--------------------|
| Slab group          | 1                  |
| Position            | L0.0 A30.0 H0.0 mm |
| Orientation         | Sagittal           |
| Phase enc. dir.     | A >> P             |
| Initial Position    | Isocenter          |
| L                   | 0.0 mm             |
| P                   | 0.0 mm             |
| H                   | 0.0 mm             |
| Initial Rotation    | 0.00 deg           |
| Initial Orientation | Transversal        |

**System - Miscellaneous**

|                     |                |
|---------------------|----------------|
| Positioning mode    | REF            |
| Table position      | H              |
| Table position      | 0 mm           |
| MSMA                | S - C - T      |
| Sagittal            | R >> L         |
| Coronal             | A >> P         |
| Transversal         | F >> H         |
| Coil Combine Mode   | Sum of Squares |
| Save uncombined     | Off            |
| Matrix Optimization | Off            |
| Coil Select Mode    | Default        |

**System - Adjustments**

|                          |          |
|--------------------------|----------|
| B0 Shim mode             | Tune up  |
| B1 Shim mode             | TrueForm |
| Confirm freq. adjustment | Off      |

**System - Adjustments**

|                      |      |
|----------------------|------|
| Assume Dominant Fat  | Off  |
| Assume Silicone      | Off  |
| Adjustment Tolerance | Auto |

**System - Adjust Volume**

|             |             |
|-------------|-------------|
| Position    | Isocenter   |
| Orientation | Transversal |
| Rotation    | 0.00 deg    |
| A >> P      | 263 mm      |
| R >> L      | 350 mm      |
| F >> H      | 350 mm      |
| Reset       | Off         |

**System - Tx/Rx**

|                     |                |
|---------------------|----------------|
| Frequency 1H        | 297.222862 MHz |
| Correction factor   | 1              |
| Gain                | High           |
| Img. Scale Cor.     | 1.000          |
| Reset               | Off            |
| ? Ref. amplitude 1H | 0.000 V        |

**Physio - PACE**

|                |     |
|----------------|-----|
| Resp. control  | Off |
| Concatenations | 1   |

**Inline - Common**

|                |        |
|----------------|--------|
| Flip angle     | 16 deg |
| Measurements   | 1      |
| Time to center | 6.3 s  |

**Inline - Inline**

|                      |     |
|----------------------|-----|
| Subtract             | Off |
| Measurements         | 1   |
| StdDev               | Off |
| Save original images | On  |

**Inline - MIP**

|                      |     |
|----------------------|-----|
| MIP-Sag              | Off |
| MIP-Cor              | Off |
| MIP-Tra              | Off |
| MIP-Time             | Off |
| Save original images | On  |

**Inline - Composing**

|                  |     |
|------------------|-----|
| Distortion Corr. | Off |
|------------------|-----|

**Sequence - Part 1**

|                  |            |
|------------------|------------|
| Introduction     | On         |
| Dimension        | 3D         |
| Asymmetric echo  | Weak       |
| Contrasts        | 1          |
| Multi-slice mode | Sequential |
| Bandwidth        | 540 Hz/Px  |

**Sequence - Part 2**

|               |          |
|---------------|----------|
| RF pulse type | Fast     |
| Gradient mode | Normal   |
| Excitation    | Non-sel. |
| RF spoiling   | On       |

**Sequence - Nuclei**

|                       |      |
|-----------------------|------|
| TX/RX Nucleus         | 1H   |
| TX/RX delta frequency | 0 Hz |

**Sequence - Nuclei**

|                    |      |
|--------------------|------|
| TX Nucleus         | None |
| TX delta frequency | 0 Hz |
| Coil elements      | A32  |

**Sequence - Assistant**

|      |     |
|------|-----|
| Mode | Off |
|------|-----|

\\SiemensSitem\Optimized\_Protocols\Head\cs-mp2rage\cstfl\_wip925b\_08mm\_iso\_sag

TA: 5:58 PM: REF Voxel size: 0.8×0.8×0.8 mmPAT: 0.7 Rel. SNR: 1.00 : WIP\_cmp

**Properties**

|   |                    |
|---|--------------------|
| Prio recon                                    | Off                |
| Load images to viewer                         | On                 |
| Inline movie                                  | Off                |
| Auto store images                             | On                 |
| Load images to stamp segments                 | Off                |
| Load images to graphic segments               | Off                |
| Auto open inline display                      | Off                |
| Auto close inline display                     | Off                |
| Start measurement without further preparation | Off                |
| Wait for user to start                        | Off                |
| Start measurements                            | Single measurement |

**Routine**

|                    |                      |
|--------------------|----------------------|
| Slab group         | 1                    |
| Slabs              | 1                    |
| Dist. factor       | 50 %                 |
| Position           | Isocenter            |
| Orientation        | Sagittal             |
| Phase enc. dir.    | A >> P               |
| AutoAlign          | ---                  |
| Phase oversampling | 0 %                  |
| Slice oversampling | 0.0 %                |
| Slices per slab    | 224                  |
| FoV read           | 240 mm               |
| FoV phase          | 94.4 %               |
| Slice thickness    | 0.83 mm              |
| TR                 | 6000.0 ms            |
| TE                 | 1.94 ms              |
| Averages           | 1                    |
| Concatenations     | 1                    |
| Filter             | Distortion Corr.(3D) |
| Coil elements      | A32                  |

**Contrast - Common**

|                   |             |
|-------------------|-------------|
| TR                | 6000.0 ms   |
| TE                | 1.94 ms     |
| Magn. preparation | Non-sel. IR |
| T1 1              | 800 ms      |
| T1 2              | 2700 ms     |
| Flip angle 1      | 4 deg       |
| Flip angle 2      | 5 deg       |
| Fat suppr.        | None        |
| Water suppr.      | None        |

**Contrast - Dynamic**

|                 |                  |
|-----------------|------------------|
| Averages        | 1                |
| Averaging mode  | Long term        |
| Reconstruction  | Magnitude        |
| Measurements    | 1                |
| Multiple series | Each measurement |

**Resolution - Common**

|                       |         |
|-----------------------|---------|
| FoV read              | 240 mm  |
| FoV phase             | 94.4 %  |
| Slice thickness       | 0.83 mm |
| Base resolution       | 288     |
| Phase resolution      | 100 %   |
| Slice resolution      | 100 %   |
| Phase partial Fourier | Off     |

**Resolution - Common**

|                       |     |
|-----------------------|-----|
| Slice partial Fourier | Off |
| Interpolation         | Off |

**Resolution - iPAT**

|          |      |
|----------|------|
| PAT mode | None |
|----------|------|

**Resolution - Filter Image**

|                   |     |
|-------------------|-----|
| Image Filter      | Off |
| Distortion Corr.  | On  |
| Mode              | 3D  |
| Unfiltered images | Off |
| Prescan Normalize | Off |
| Normalize         | Off |
| B1 filter         | Off |

**Resolution - Filter Rawdata**

|                   |     |
|-------------------|-----|
| Raw filter        | Off |
| Elliptical filter | Off |

**Geometry - Common**

|                    |             |
|--------------------|-------------|
| Slab group         | 1           |
| Slabs              | 1           |
| Dist. factor       | 50 %        |
| Position           | Isocenter   |
| Orientation        | Sagittal    |
| Phase enc. dir.    | A >> P      |
| Slice oversampling | 0.0 %       |
| Slices per slab    | 224         |
| FoV read           | 240 mm      |
| FoV phase          | 94.4 %      |
| Slice thickness    | 0.83 mm     |
| TR                 | 6000.0 ms   |
| Multi-slice mode   | Single shot |
| Series             | Interleaved |
| Concatenations     | 1           |

**Geometry - AutoAlign**

|                     |           |
|---------------------|-----------|
| Slab group          | 1         |
| Position            | Isocenter |
| Orientation         | Sagittal  |
| Phase enc. dir.     | A >> P    |
| AutoAlign           | ---       |
| Initial Position    | Isocenter |
| L                   | 0.0 mm    |
| P                   | 0.0 mm    |
| H                   | 0.0 mm    |
| Initial Rotation    | 0.00 deg  |
| Initial Orientation | Sagittal  |

**Geometry - Navigator****System - Miscellaneous**

|                   |                |
|-------------------|----------------|
| Positioning mode  | REF            |
| Table position    | H              |
| Table position    | 0 mm           |
| MSMA              | S - C - T      |
| Sagittal          | R >> L         |
| Coronal           | A >> P         |
| Transversal       | F >> H         |
| Coil Combine Mode | Sum of Squares |

**System - Miscellaneous**

|                     |         |
|---------------------|---------|
| Save uncombined     | Off     |
| Matrix Optimization | Off     |
| AutoAlign           | ---     |
| Coil Select Mode    | Default |

**System - Adjustments**

|                          |          |
|--------------------------|----------|
| B0 Shim mode             | Brain    |
| B1 Shim mode             | TrueForm |
| Confirm freq. adjustment | Off      |
| Assume Dominant Fat      | Off      |
| Assume Silicone          | Off      |
| Adjustment Tolerance     | Auto     |

**System - Adjust Volume**

|             |           |
|-------------|-----------|
| Position    | Isocenter |
| Orientation | Sagittal  |
| Rotation    | 0.00 deg  |
| A >> P      | 227 mm    |
| F >> H      | 240 mm    |
| R >> L      | 186 mm    |
| Reset       | Off       |

**System - Tx/Rx**

|                     |                |
|---------------------|----------------|
| Frequency 1H        | 297.222862 MHz |
| Correction factor   | 1              |
| Gain                | High           |
| Img. Scale Cor.     | 1.000          |
| Reset               | Off            |
| ? Ref. amplitude 1H | 0.000 V        |

**Physio - Signal1**

|                 |           |
|-----------------|-----------|
| 1st Signal/Mode | None      |
| TR              | 6000.0 ms |
| Concatenations  | 1         |

**Physio - Cardiac**

|                   |             |
|-------------------|-------------|
| Magn. preparation | Non-sel. IR |
| TI 1              | 800 ms      |
| TI 2              | 2700 ms     |
| Fat suppr.        | None        |
| Dark blood        | Off         |
| FoV read          | 240 mm      |
| FoV phase         | 94.4 %      |
| Phase resolution  | 100 %       |

**Physio - PACE**

|                |     |
|----------------|-----|
| Resp. control  | Off |
| Concatenations | 1   |

**Inline - Common**

|                      |     |
|----------------------|-----|
| Subtract             | Off |
| Measurements         | 1   |
| StdDev               | Off |
| Save original images | On  |

**Inline - MIP**

|                      |     |
|----------------------|-----|
| MIP-Sag              | Off |
| MIP-Cor              | Off |
| MIP-Tra              | Off |
| MIP-Time             | Off |
| Save original images | On  |

**Inline - Composing**

|                   |     |
|-------------------|-----|
| Distortion Corr.  | On  |
| Mode              | 3D  |
| Unfiltered images | Off |

**Sequence - Part 1**

|                     |             |
|---------------------|-------------|
| Introduction        | On          |
| Dimension           | 3D          |
| Elliptical scanning | Off         |
| Reordering          | Linear      |
| Asymmetric echo     | Allowed     |
| Contrasts           | 1           |
| Flow comp.          | No          |
| Multi-slice mode    | Single shot |
| Echo spacing        | 5.7 ms      |
| Bandwidth           | 240 Hz/Px   |

**Sequence - Part 2**

|                         |          |
|-------------------------|----------|
| RF pulse type           | Fast     |
| Gradient mode           | Fast     |
| Excitation              | Non-sel. |
| RF spoiling             | On       |
| Incr. Gradient spoiling | Off      |
| Turbo factor            | 224      |

**Sequence - Special**

|                     |          |
|---------------------|----------|
| Sparse Sampling     | On       |
| US                  | 4.0 x    |
| Samples/TR          | 200      |
| Density             | 0.50     |
| Jitter Radius       | 1.2      |
| Reference Scan      | External |
| No. Ref-Lines       | 32       |
| Centric             | Off      |
| Virtual Coils       | Off      |
| Shift Inv Pulse     | 0 Hz     |
| No. Iterations      | 15       |
| CSM RO Resolution   | 0        |
| Regularisation INV1 | 0.00100  |
| Regularisation INV2 | 0.00100  |
| Uniform             | On       |
| Denoised UNI        | On       |
| FLAWS               | Off      |
| FLAWS-hc            | Off      |
| FLAWS-hc inv.       | Off      |
| Division image      | Off      |
| Synthetic TI 0      | 0 ms     |
| Synthetic TI 1      | 0 ms     |
| Denoise Lambda      | 7        |
| Scaling             | -1 10^   |
| Echo Averaging      | Off      |
| FID Monitoring      | Off      |

**Sequence - Assistant**

|      |     |
|------|-----|
| Mode | Off |
|------|-----|

\\SiemensSitem\Optimized\_Protocols\Head\cs-mp2rage\cstfl\_wip925b\_06mm\_iso\_sag

TA: 8:10 PM: REF Voxel size: 0.6×0.6×0.6 mmPAT: 0.7 Rel. SNR: 1.00 : WIP\_cmp

**Properties**

|   |                    |
|---|--------------------|
| Prio recon                                    | Off                |
| Load images to viewer                         | On                 |
| Inline movie                                  | Off                |
| Auto store images                             | On                 |
| Load images to stamp segments                 | Off                |
| Load images to graphic segments               | Off                |
| Auto open inline display                      | Off                |
| Auto close inline display                     | Off                |
| Start measurement without further preparation | Off                |
| Wait for user to start                        | Off                |
| Start measurements                            | Single measurement |

**Routine**

|                    |                      |
|--------------------|----------------------|
| Slab group         | 1                    |
| Slabs              | 1                    |
| Dist. factor       | 50 %                 |
| Position           | Isocenter            |
| Orientation        | Sagittal             |
| Phase enc. dir.    | A >> P               |
| AutoAlign          | ---                  |
| Phase oversampling | 0 %                  |
| Slice oversampling | 0.0 %                |
| Slices per slab    | 288                  |
| FoV read           | 240 mm               |
| FoV phase          | 94.3 %               |
| Slice thickness    | 0.63 mm              |
| TR                 | 6000.0 ms            |
| TE                 | 2.06 ms              |
| Averages           | 1                    |
| Concatenations     | 1                    |
| Filter             | Distortion Corr.(3D) |
| Coil elements      | A32                  |

**Contrast - Common**

|                   |             |
|-------------------|-------------|
| TR                | 6000.0 ms   |
| TE                | 2.06 ms     |
| Magn. preparation | Non-sel. IR |
| TI 1              | 800 ms      |
| TI 2              | 2700 ms     |
| Flip angle 1      | 4 deg       |
| Flip angle 2      | 5 deg       |
| Fat suppr.        | None        |
| Water suppr.      | None        |

**Contrast - Dynamic**

|                 |                  |
|-----------------|------------------|
| Averages        | 1                |
| Averaging mode  | Long term        |
| Reconstruction  | Magnitude        |
| Measurements    | 1                |
| Multiple series | Each measurement |

**Resolution - Common**

|                       |         |
|-----------------------|---------|
| FoV read              | 240 mm  |
| FoV phase             | 94.3 %  |
| Slice thickness       | 0.63 mm |
| Base resolution       | 384     |
| Phase resolution      | 100 %   |
| Slice resolution      | 100 %   |
| Phase partial Fourier | Off     |

**Resolution - Common**

|                       |     |
|-----------------------|-----|
| Slice partial Fourier | Off |
| Interpolation         | Off |

**Resolution - iPAT**

|          |      |
|----------|------|
| PAT mode | None |
|----------|------|

**Resolution - Filter Image**

|                   |     |
|-------------------|-----|
| Image Filter      | Off |
| Distortion Corr.  | On  |
| Mode              | 3D  |
| Unfiltered images | Off |
| Prescan Normalize | Off |
| Normalize         | Off |
| B1 filter         | Off |

**Resolution - Filter Rawdata**

|                   |     |
|-------------------|-----|
| Raw filter        | Off |
| Elliptical filter | Off |

**Geometry - Common**

|                    |             |
|--------------------|-------------|
| Slab group         | 1           |
| Slabs              | 1           |
| Dist. factor       | 50 %        |
| Position           | Isocenter   |
| Orientation        | Sagittal    |
| Phase enc. dir.    | A >> P      |
| Slice oversampling | 0.0 %       |
| Slices per slab    | 288         |
| FoV read           | 240 mm      |
| FoV phase          | 94.3 %      |
| Slice thickness    | 0.63 mm     |
| TR                 | 6000.0 ms   |
| Multi-slice mode   | Single shot |
| Series             | Interleaved |
| Concatenations     | 1           |

**Geometry - AutoAlign**

|                     |           |
|---------------------|-----------|
| Slab group          | 1         |
| Position            | Isocenter |
| Orientation         | Sagittal  |
| Phase enc. dir.     | A >> P    |
| AutoAlign           | ---       |
| Initial Position    | Isocenter |
| L                   | 0.0 mm    |
| P                   | 0.0 mm    |
| H                   | 0.0 mm    |
| Initial Rotation    | 0.00 deg  |
| Initial Orientation | Sagittal  |

**Geometry - Navigator****System - Miscellaneous**

|                   |                |
|-------------------|----------------|
| Positioning mode  | REF            |
| Table position    | H              |
| Table position    | 0 mm           |
| MSMA              | S - C - T      |
| Sagittal          | R >> L         |
| Coronal           | A >> P         |
| Transversal       | F >> H         |
| Coil Combine Mode | Sum of Squares |

**System - Miscellaneous**

|                     |         |
|---------------------|---------|
| Save uncombined     | Off     |
| Matrix Optimization | Off     |
| AutoAlign           | ---     |
| Coil Select Mode    | Default |

**System - Adjustments**

|                          |          |
|--------------------------|----------|
| B0 Shim mode             | Brain    |
| B1 Shim mode             | TrueForm |
| Confirm freq. adjustment | Off      |
| Assume Dominant Fat      | Off      |
| Assume Silicone          | Off      |
| Adjustment Tolerance     | Auto     |

**System - Adjust Volume**

|             |           |
|-------------|-----------|
| Position    | Isocenter |
| Orientation | Sagittal  |
| Rotation    | 0.00 deg  |
| A >> P      | 227 mm    |
| F >> H      | 240 mm    |
| R >> L      | 182 mm    |
| Reset       | Off       |

**System - Tx/Rx**

|                     |                |
|---------------------|----------------|
| Frequency 1H        | 297.222862 MHz |
| Correction factor   | 1              |
| Gain                | High           |
| Img. Scale Cor.     | 1.000          |
| Reset               | Off            |
| ? Ref. amplitude 1H | 0.000 V        |

**Physio - Signal1**

|                 |           |
|-----------------|-----------|
| 1st Signal/Mode | None      |
| TR              | 6000.0 ms |
| Concatenations  | 1         |

**Physio - Cardiac**

|                   |             |
|-------------------|-------------|
| Magn. preparation | Non-sel. IR |
| TI 1              | 800 ms      |
| TI 2              | 2700 ms     |
| Fat suppr.        | None        |
| Dark blood        | Off         |
| FoV read          | 240 mm      |
| FoV phase         | 94.3 %      |
| Phase resolution  | 100 %       |

**Physio - PACE**

|                |     |
|----------------|-----|
| Resp. control  | Off |
| Concatenations | 1   |

**Inline - Common**

|                      |     |
|----------------------|-----|
| Subtract             | Off |
| Measurements         | 1   |
| StdDev               | Off |
| Save original images | On  |

**Inline - MIP**

|                      |     |
|----------------------|-----|
| MIP-Sag              | Off |
| MIP-Cor              | Off |
| MIP-Tra              | Off |
| MIP-Time             | Off |
| Save original images | On  |

**Inline - Composing**

|                   |     |
|-------------------|-----|
| Distortion Corr.  | On  |
| Mode              | 3D  |
| Unfiltered images | Off |

**Sequence - Part 1**

|                     |             |
|---------------------|-------------|
| Introduction        | On          |
| Dimension           | 3D          |
| Elliptical scanning | Off         |
| Reordering          | Linear      |
| Asymmetric echo     | Allowed     |
| Contrasts           | 1           |
| Flow comp.          | No          |
| Multi-slice mode    | Single shot |
| Echo spacing        | 6.2 ms      |
| Bandwidth           | 240 Hz/Px   |

**Sequence - Part 2**

|                         |          |
|-------------------------|----------|
| RF pulse type           | Fast     |
| Gradient mode           | Fast     |
| Excitation              | Non-sel. |
| RF spoiling             | On       |
| Incr. Gradient spoiling | Off      |
| Turbo factor            | 288      |

**Sequence - Special**

|                     |          |
|---------------------|----------|
| Sparse Sampling     | On       |
| US                  | 4.0 x    |
| Samples/TR          | 252      |
| Density             | 0.50     |
| Jitter Radius       | 1.2      |
| Reference Scan      | External |
| No. Ref-Lines       | 32       |
| Centric             | Off      |
| Virtual Coils       | Off      |
| Shift Inv Pulse     | 0 Hz     |
| No. Iterations      | 15       |
| CSM RO Resolution   | 0        |
| Regularisation INV1 | 0.00100  |
| Regularisation INV2 | 0.00100  |
| Uniform             | On       |
| Denoised UNI        | On       |
| FLAWS               | Off      |
| FLAWS-hc            | Off      |
| FLAWS-hc inv.       | Off      |
| Division image      | Off      |
| Synthetic TI 0      | 0 ms     |
| Synthetic TI 1      | 0 ms     |
| Denoise Lambda      | 7        |
| Scaling             | -1 10^   |
| Echo Averaging      | Off      |
| FID Monitoring      | Off      |

**Sequence - Assistant**

|      |     |
|------|-----|
| Mode | Off |
|------|-----|

\\SiemensSitem\Optimized\_Protocols\Head\cs-mp2rage\cstfl\_wip925b\_08mm\_iso\_sag\_pTX

TA: 5:58 PM: REF Voxel size: 0.8×0.8×0.8 mmPAT: 1.0 Rel. SNR: 1.00 : WIP\_cmp

**Properties**

|   |                    |
|---|--------------------|
| Prio recon                                    | Off                |
| Load images to viewer                         | On                 |
| Inline movie                                  | Off                |
| Auto store images                             | On                 |
| Load images to stamp segments                 | Off                |
| Load images to graphic segments               | Off                |
| Auto open inline display                      | Off                |
| Auto close inline display                     | Off                |
| Start measurement without further preparation | Off                |
| Wait for user to start                        | Off                |
| Start measurements                            | Single measurement |

**Routine**

|                    |                      |
|--------------------|----------------------|
| Slab group         | 1                    |
| Slabs              | 1                    |
| Dist. factor       | 50 %                 |
| Position           | Isocenter            |
| Orientation        | Sagittal             |
| Phase enc. dir.    | A >> P               |
| AutoAlign          | ---                  |
| Phase oversampling | 0 %                  |
| Slice oversampling | 0.0 %                |
| Slices per slab    | 224                  |
| FoV read           | 240 mm               |
| FoV phase          | 94.4 %               |
| Slice thickness    | 0.83 mm              |
| TR                 | 6000.0 ms            |
| TE                 | 2.89 ms              |
| Averages           | 1                    |
| Concatenations     | 1                    |
| Filter             | Distortion Corr.(3D) |
| Coil elements      | A32                  |

**Contrast - Common**

|                   |             |
|-------------------|-------------|
| TR                | 6000.0 ms   |
| TE                | 2.89 ms     |
| Magn. preparation | Non-sel. IR |
| T1 1              | 800 ms      |
| T1 2              | 2700 ms     |
| Flip angle 1      | 4 deg       |
| Flip angle 2      | 5 deg       |
| Fat suppr.        | None        |
| Water suppr.      | None        |

**Contrast - Dynamic**

|                 |                  |
|-----------------|------------------|
| Averages        | 1                |
| Averaging mode  | Long term        |
| Reconstruction  | Magnitude        |
| Measurements    | 1                |
| Multiple series | Each measurement |

**Resolution - Common**

|                       |         |
|-----------------------|---------|
| FoV read              | 240 mm  |
| FoV phase             | 94.4 %  |
| Slice thickness       | 0.83 mm |
| Base resolution       | 288     |
| Phase resolution      | 100 %   |
| Slice resolution      | 100 %   |
| Phase partial Fourier | Off     |

**Resolution - Common**

|                       |     |
|-----------------------|-----|
| Slice partial Fourier | Off |
| Interpolation         | Off |

**Resolution - iPAT**

|          |      |
|----------|------|
| PAT mode | None |
|----------|------|

**Resolution - Filter Image**

|                   |     |
|-------------------|-----|
| Image Filter      | Off |
| Distortion Corr.  | On  |
| Mode              | 3D  |
| Unfiltered images | Off |
| Prescan Normalize | Off |
| Normalize         | Off |
| B1 filter         | Off |

**Resolution - Filter Rawdata**

|                   |     |
|-------------------|-----|
| Raw filter        | Off |
| Elliptical filter | Off |

**Geometry - Common**

|                    |             |
|--------------------|-------------|
| Slab group         | 1           |
| Slabs              | 1           |
| Dist. factor       | 50 %        |
| Position           | Isocenter   |
| Orientation        | Sagittal    |
| Phase enc. dir.    | A >> P      |
| Slice oversampling | 0.0 %       |
| Slices per slab    | 224         |
| FoV read           | 240 mm      |
| FoV phase          | 94.4 %      |
| Slice thickness    | 0.83 mm     |
| TR                 | 6000.0 ms   |
| Multi-slice mode   | Single shot |
| Series             | Interleaved |
| Concatenations     | 1           |

**Geometry - AutoAlign**

|                     |           |
|---------------------|-----------|
| Slab group          | 1         |
| Position            | Isocenter |
| Orientation         | Sagittal  |
| Phase enc. dir.     | A >> P    |
| AutoAlign           | ---       |
| Initial Position    | Isocenter |
| L                   | 0.0 mm    |
| P                   | 0.0 mm    |
| H                   | 0.0 mm    |
| Initial Rotation    | 0.00 deg  |
| Initial Orientation | Sagittal  |

**Geometry - Navigator****System - Miscellaneous**

|                   |                |
|-------------------|----------------|
| Positioning mode  | REF            |
| Table position    | H              |
| Table position    | 0 mm           |
| MSMA              | S - C - T      |
| Sagittal          | R >> L         |
| Coronal           | A >> P         |
| Transversal       | F >> H         |
| Coil Combine Mode | Sum of Squares |



**System - Miscellaneous**

|                     |         |
|---------------------|---------|
| Save uncombined     | Off     |
| Matrix Optimization | Off     |
| AutoAlign           | ---     |
| Coil Select Mode    | Default |

**System - Adjustments**

|                          |          |
|--------------------------|----------|
| B0 Shim mode             | Brain    |
| B1 Shim mode             | TrueForm |
| Confirm freq. adjustment | Off      |
| Assume Dominant Fat      | Off      |
| Assume Silicone          | Off      |
| Adjustment Tolerance     | Auto     |

**System - Adjust Volume**

|             |           |
|-------------|-----------|
| Position    | Isocenter |
| Orientation | Sagittal  |
| Rotation    | 0.00 deg  |
| A >> P      | 227 mm    |
| F >> H      | 240 mm    |
| R >> L      | 186 mm    |
| Reset       | Off       |

**System - Tx/Rx**

|                     |                |
|---------------------|----------------|
| Frequency 1H        | 297.222862 MHz |
| Correction factor   | 1              |
| Gain                | High           |
| Img. Scale Cor.     | 1.000          |
| Reset               | Off            |
| ? Ref. amplitude 1H | 0.000 V        |

**Physio - Signal1**

|                 |           |
|-----------------|-----------|
| 1st Signal/Mode | None      |
| TR              | 6000.0 ms |
| Concatenations  | 1         |

**Physio - Cardiac**

|                   |             |
|-------------------|-------------|
| Magn. preparation | Non-sel. IR |
| TI 1              | 800 ms      |
| TI 2              | 2700 ms     |
| Fat suppr.        | None        |
| Dark blood        | Off         |
| FoV read          | 240 mm      |
| FoV phase         | 94.4 %      |
| Phase resolution  | 100 %       |

**Physio - PACE**

|                |     |
|----------------|-----|
| Resp. control  | Off |
| Concatenations | 1   |

**Inline - Common**

|                      |     |
|----------------------|-----|
| Subtract             | Off |
| Measurements         | 1   |
| StdDev               | Off |
| Save original images | On  |

**Inline - MIP**

|                      |     |
|----------------------|-----|
| MIP-Sag              | Off |
| MIP-Cor              | Off |
| MIP-Tra              | Off |
| MIP-Time             | Off |
| Save original images | On  |

**Inline - Composing**

|                   |     |
|-------------------|-----|
| Distortion Corr.  | On  |
| Mode              | 3D  |
| Unfiltered images | Off |

**Sequence - Part 1**

|                     |             |
|---------------------|-------------|
| Introduction        | On          |
| Dimension           | 3D          |
| Elliptical scanning | Off         |
| Reordering          | Linear      |
| Asymmetric echo     | Off         |
| Contrasts           | 1           |
| Flow comp.          | No          |
| Multi-slice mode    | Single shot |
| Echo spacing        | 6.7 ms      |
| Bandwidth           | 240 Hz/Px   |

**Sequence - Part 2**

|                         |          |
|-------------------------|----------|
| RF pulse type           | Fast     |
| Gradient mode           | Fast     |
| Excitation              | Non-sel. |
| RF spoiling             | On       |
| Incr. Gradient spoiling | Off      |
| Turbo factor            | 224      |

**Sequence - Special**

|                     |          |
|---------------------|----------|
| Sparse Sampling     | On       |
| US                  | 4.0 x    |
| Samples/TR          | 200      |
| Density             | 0.50     |
| Jitter Radius       | 1.2      |
| Reference Scan      | External |
| No. Ref-Lines       | 32       |
| Centric             | Off      |
| Virtual Coils       | Off      |
| Shift Inv Pulse     | 0 Hz     |
| No. Iterations      | 15       |
| CSM RO Resolution   | 0        |
| Regularisation INV1 | 0.00100  |
| Regularisation INV2 | 0.00100  |
| Uniform             | On       |
| Denoised UNI        | On       |
| FLAWS               | Off      |
| FLAWS-hc            | Off      |
| FLAWS-hc inv.       | Off      |
| Division image      | Off      |
| Synthetic TI 0      | 0 ms     |
| Synthetic TI 1      | 0 ms     |
| Denoise Lambda      | 1        |
| Scaling             | 0 10^    |
| Echo Averaging      | Off      |
| FID Monitoring      | Off      |

**Sequence - Assistant**

|      |     |
|------|-----|
| Mode | Off |
|------|-----|