Table of contents

\\MARTINOS DEVELOPER

HUBER

3rd_order_shim_tests_with_Gunjan

20250721

```
scout_axial
scout_sag
dzne_ep3d_3rd_order_shim_test_es1p01
dzne_ep3d_3rd_order_shim_test_es1p01_disconnect
cmrr_es_1.01
cmrr_es_1.01_disconnected
ep2d_siemens_bold_1p01
ep2d_siemens_bold_1p01_disconnected
ep2d_bold_mgh_dpg_FLEET_shoterTE_disconnected
ep2d_bold_mgh_dpg_FLEET_shoterTE_connected
```

\\MARTINOS DEVELOPER\\HUBER\\3rd_order_shim_tests_with_Gunjan\\20250721\\scout_axial

TA: 17 sec Coil Selection: Manual Voxel Size: 1.6×1.6×1.6 mm³ Acc:: 3 Rel. SNR: 1.00

Properties

| Start measurement without further preparation | Off |
|---|--------------------|
| Wait for User to Start | Off |
| Start measurements | Single Measurement |
| Prio Recon | Off |
| Auto Open Inline Display | Off |
| Auto Close Inline Display | Off |
| Load Images to MR View&GO | On |
| Auto Store Images | On |
| Disable auto transfer to PACS | Off |
| Load Images to Stamp Segments | Off |
| Load Images to Graphic Segments | On |
| Graphic segment | 3rd Segment |
| Inline Movie | Off |

Routine

| Slab Group | 1 |
|---------------------|--------------------|
| Slabs | 1 |
| Distance Factor | 20 % |
| Position | L0.0 A16.0 H0.0 mm |
| Orientation | Transversal |
| Phase Encoding Dir. | A >> P |
| Slices per Slab | 160 |
| Phase Oversampling | 0 % |
| Slice Oversampling | 0.0 % |
| FOV Read | 260 mm |
| FOV Phase | 100.0 % |
| Slice Thickness | 1.600 mm |
| TR | 3.6 ms |
| TE | 1.56 ms |
| Averages | 1 |
| Concatenations | 1 |
| AutoAlign | |
| Coil Elements | AC |

Contrast - Common

| TR | 3.6 ms |
|--------------------|-----------|
| TE | 1.56 ms |
| MTC | Off |
| Magn. Preparation | None |
| Flip Angle | 15 deg |
| Fat-Water Contrast | Standard |
| Dark Blood | Off |
| Contrasts | 1 |
| SWI | Off |
| Reconstruction | Magnitude |

Contrast - Dynamic

| Dynamic Mode | Standard |
|-----------------|------------------|
| Measurements | 1 |
| Multiple Series | Each Measurement |

Resolution - Common

| FOV Read | 260 mm |
|------------------|----------|
| FOV Phase | 100.0 % |
| Slice Thickness | 1.600 mm |
| Base Resolution | 160 |
| Phase Resolution | 100 % |
| Slice Resolution | 69 % |
| Interpolation | Off |

Resolution - Acceleration

| Acceleration Mode | GRAPPA |
|------------------------|------------|
| Reference Scans | Integrated |
| Acceleration Factor PE | 3 |
| Reference Lines PE | 24 |
| Acceleration Factor 3D | 1 |
| Phase Partial Fourier | 6/8 |
| Slice Partial Fourier | 6/8 |
| Asymmetric Echo | Off |
| Elliptical Scanning | Off |

Resolution - Filter

| Raw Filter | Off |
|-----------------------|-----|
| Elliptical Filter | Off |
| Distortion Correction | 3D |
| Normalize | Off |
| Image Filter | Off |

Geometry - Common

| Slab Group | 1 |
|---------------------|--------------------|
| Slabs | 1 |
| Distance Factor | 20 % |
| Position | L0.0 A16.0 H0.0 mm |
| Orientation | Transversal |
| Phase Encoding Dir. | A >> P |
| Slices per Slab | 160 |
| Phase Oversampling | 0 % |
| Slice Oversampling | 0.0 % |
| FOV Read | 260 mm |
| FOV Phase | 100.0 % |
| Slice Thickness | 1.600 mm |
| TR | 3.6 ms |
| Multi-Slice Mode | Interleaved |
| Series | Interleaved |
| Concatenations | 1 |

| Slab Group | 1 |
|---------------------|--------------------|
| Position | L0.0 A16.0 H0.0 mm |
| Orientation | Transversal |
| Phase Encoding Dir. | A >> P |
| AutoAlign | |

Geometry - AutoAlign

| Initial Position | L0.0 A16.0 H0.0 |
|---------------------|-----------------|
| L | 0.0 mm |
| Α | 16.0 mm |
| Н | 0.0 mm |
| Initial Orientation | Transversal |
| Initial Rotation | 0.00 deg |

Geometry - Saturation

| Saturation Mode | Standard |
|--------------------|----------|
| Special Saturation | None |

Geometry - Tim Planning Suite

| Set-n-Go Protocol | Off |
|-------------------|------|
| Table Position | 0 mm |
| Table Position | Н |

System - Miscellaneous

| Coil Selection | Manual |
|---------------------|------------------|
| Radial Sorting | Off |
| MSMA | S - C - T |
| Sagittal | R >> L |
| Coronal | A >> P |
| Transversal | F >> H |
| Coil Combination | Adaptive Combine |
| Matrix Optimization | Off |

System - Adjustments

| Adjustment Strategy | Standard |
|----------------------|----------|
| BO Shim | Tune up |
| B1 Shim | TrueForm |
| Adjustment Tolerance | Auto |
| Confirm Frequency | Never |
| Assume Silicone | Off |

System - Adjust Volume

| ! Position | L0.0 A36.7 F31.6 mm |
|---------------|---------------------|
| ! Orientation | Transversal |
| ! Rotation | 0.00 deg |
| ! A >> P | 263 mm |
| ! R >> L | 350 mm |
| ! F >> H | 350 mm |
| Reset | Off |

System - pTx

| B1 Shim | TrueForm |
|------------|----------|
| Excitation | Non-sel. |

System - Tx/Rx

| Frequency 1H | 297.118707 MHz |
|---------------------|----------------|
| ! Ref. Amplitude 1H | 250.000 V |
| Reset | Off |
| Correction Factor | 1.00 |
| Image Scaling | 1.000 |

Physio - Signal

| 1st Signal/Mode | None |
|-----------------|--------|
| TR | 3.6 ms |
| Segments | 1 |
| Concatenations | 1 |

Physio - Cardiac

| Tagging | None |
|--------------------|----------|
| Fat-Water Contrast | Standard |
| Magn. Preparation | None |
| Dark Blood | Off |
| FOV Read | 260 mm |
| FOV Phase | 100.0 % |
| Phase Resolution | 100 % |

Physio - PACE

| Resp. Control | Off |
|----------------|-----|
| Concatenations | 1 |

Inline - Liver

| Liver Registration | Off |
|----------------------|-----|
| Save Original Images | On |

Inline - Subtraction

| Subtract | Off |
|----------------------|-----|
| Measurements | 1 |
| StdDev | Off |
| Save Original Images | On |

Inline - MIP

| MIP Sag | Off |
|----------------------|-----|
| MIP Cor | Off |
| MIP Tra | Off |
| MIP Time | Off |
| Radial MIP | Off |
| Save Original Images | On |
| MPR Sag | Off |
| MPR Cor | Off |
| MPR Tra | Off |

Inline - Soft Tissue

| Wash-in | Off |
|--------------|-----|
| Wash-out | Off |
| TTP | Off |
| PEI | Off |
| MIP Time | Off |
| Measurements | 1 |

Inline - Composing

Inline - MapIt

| MapIt | None |
|--------------|--------|
| Flip Angle | 15 deg |
| Measurements | 1 |
| Contrasts | 1 |

Inline - MapIt

| TE | 1.56 ms |
|----------------------|---------|
| TR | 3.6 ms |
| Save Original Images | On |

Sequence - Part 1

| Sequence Name | fl |
|-------------------|-----------|
| Dimension | 3D |
| Excitation | Non-sel. |
| RF Pulse Type | Fast |
| Gradient Mode | Normal |
| Flow Compensation | None |
| Bandwidth | 540 Hz/Px |
| Asymmetric Echo | Off |
| Segments | 1 |

Sequence - Part 2

| Introduction | Off |
|--------------------------|-----|
| RF Spoiling | On |
| Acoustic noise reduction | Off |

Sequence - Nuclei

| TX/RX Nucleus | 1H |
|-----------------------|------|
| TX/RX Delta Frequency | 0 Hz |
| TX Nucleus | None |
| TX Delta Frequency | 0 Hz |
| Coil Elements | AC |

Sequence - Special

| Readout polarity | Positive |
|------------------------|----------|
| · | |
| Image processing | Standard |
| Apply echo spacing | Off |
| Echo spacing | 0 us |
| Delta echo spacing | 0 us |
| Dummy scans | 0 ms |
| RF pulse duration | 100 us |
| Gradient spoiling | Siemens |
| Gradient moment factor | 1.00 |
| Receiver gain mode | Siemens |
| Number of segments | 1 |
| Current segment | 0 |
| Lines before/after seg | 0 |

| SAR Assistant | Off | |
|---------------|-----|--|
| Allowed Delay | 0 s | |

$\verb|\MARTINOS| DEVELOPER \verb|\HUBER| 3rd_order_shim_tests_with_Gunjan| 20250721 \verb|\scout_sag| | Solution | Solut$

TA: 14 sec Coil Selection: Auto Voxel Size: 1.6×1.6×1.6 mm³ Acc:: 3 Rel. SNR: 1.00

Properties

| Start measurement without further preparation | Off |
|---|--------------------|
| Wait for User to Start | Off |
| Start measurements | Single Measurement |
| Prio Recon | Off |
| Auto Open Inline Display | On |
| Auto Close Inline Display | Off |
| Load Images to MR View&GO | On |
| Auto Store Images | On |
| Disable auto transfer to PACS | Off |
| Load Images to Stamp Segments | Off |
| Load Images to Graphic Segments | On |
| Graphic segment | Default |
| Inline Movie | Off |

Routine

| Slab Group | 1 |
|---------------------|--------------------|
| Slabs | 1 |
| Distance Factor | 20 % |
| Position | L0.0 A16.0 H0.0 mm |
| Orientation | Sagittal |
| Phase Encoding Dir. | A >> P |
| Slices per Slab | 128 |
| Phase Oversampling | 0 % |
| Slice Oversampling | 0.0 % |
| 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 |
| AutoAlign | Head |

Contrast - Common

| TR | 3.25 ms |
|--------------------|-----------|
| TE | 1.53 ms |
| Flip Angle | 16 deg |
| Fat-Water Contrast | Standard |
| Contrasts | 1 |
| Reconstruction | Magnitude |

Contrast - Dynamic

| Dynamic Mode | Standard |
|----------------|----------|
| Measurements | 1 |
| Time to Center | 6.3 s |

Resolution - Common

| FOV Read | 260 mm |
|-----------|---------|
| FOV Phase | 100.0 % |

Resolution - Common

| Slice Thickness | 1.6 mm |
|------------------|-----------|
| Base Resolution | 160 |
| Phase Resolution | 100 % |
| Slice Resolution | 69 % |
| Trajectory | Cartesian |

Resolution - Acceleration

| Acceleration Mode | GRAPPA |
|------------------------|------------|
| Reference Scans | Integrated |
| Acceleration Factor PE | 3 |
| Reference Lines PE | 24 |
| Acceleration Factor 3D | 1 |
| Phase Partial Fourier | 6/8 |
| Slice Partial Fourier | 6/8 |
| Asymmetric Echo | Weak |

Resolution - Filter

| Raw Filter | Off |
|-----------------------|-----------|
| Elliptical Filter | Off |
| Distortion Correction | 3D |
| Normalize | B1 Filter |
| Image Filter | Off |

Geometry - Common

| Slab Group | 1 |
|---------------------|--------------------|
| Slabs | 1 |
| Distance Factor | 20 % |
| Position | L0.0 A16.0 H0.0 mm |
| Orientation | Sagittal |
| Phase Encoding Dir. | A >> P |
| Slices per Slab | 128 |
| Phase Oversampling | 0 % |
| Slice Oversampling | 0.0 % |
| 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 |

| Slab Group | 1 |
|---------------------|--------------------|
| Position | L0.0 A16.0 H0.0 mm |
| Orientation | Sagittal |
| Phase Encoding Dir. | A >> P |
| AutoAlign | Head |
| Initial Position | L0.0 A16.0 H0.0 |
| L | 0.0 mm |
| Α | 16.0 mm |

Geometry - AutoAlign

| Н | 0.0 mm |
|---------------------|----------|
| Initial Orientation | Sagittal |
| Initial Rotation | 0.00 deg |

Geometry - Tim Planning Suite

| Set-n-Go Protocol | Off |
|-------------------|------|
| Table Position | 0 mm |
| Table Position | Н |

System - Miscellaneous

| Coil Selection | Auto Coil Select |
|---------------------|------------------|
| Radial Sorting | Off |
| MSMA | S - C - T |
| Sagittal | R >> L |
| Coronal | A >> P |
| Transversal | F >> H |
| Coil Combination | Sum of Squares |
| Matrix Optimization | Off |
| Coil Focus | Flat |

System - Adjustments

| Adjustment Strategy | Standard |
|-----------------------|----------|
| B0 Shim | Tune up |
| B1 Shim | TrueForm |
| Adjustment Tolerance | Auto |
| Adjust with Body Coil | Off |
| Confirm Frequency | Never |
| Assume Silicone | Off |

System - Adjust Volume

| ! Position | L0.0 A36.7 F31.6 mm |
|---------------|---------------------|
| ! Orientation | Transversal |
| ! Rotation | 0.00 deg |
| ! A >> P | 263 mm |
| ! R >> L | 350 mm |
| ! F >> H | 350 mm |
| Reset | Off |

System - pTx

| B1 Shim | TrueForm |
|------------|----------|
| Excitation | Non-sel. |

System - Tx/Rx

| Frequency 1H | 297.118707 MHz |
|---------------------|----------------|
| ? Ref. Amplitude 1H | 0.000 V |
| Reset | Off |
| Image Scaling | 1.000 |

Physio - PACE

| Resp. Control | Off |
|----------------|-----|
| Concatenations | 1 |

Inline - Subtraction

| Subtract | Off | |
|----------|-----|--|
|----------|-----|--|

Inline - Subtraction

| Measurements | 1 |
|----------------------|-----|
| StdDev | Off |
| Save Original Images | On |

Inline - MIP

| MIP Sag | Off |
|----------------------|-----|
| MIP Cor | Off |
| MIP Tra | Off |
| MIP Time | Off |
| Radial MIP | Off |
| Save Original Images | On |
| MPR Sag | Off |
| MPR Cor | Off |
| MPR Tra | Off |

Inline - Composing

Inline - MapIt

| MapIt | None |
|----------------------|---------|
| Flip Angle | 16 deg |
| Measurements | 1 |
| Contrasts | 1 |
| TE | 1.53 ms |
| TR | 3.25 ms |
| Save Original Images | On |

Sequence - Part 1

| Sequence Name | fl |
|-----------------|-----------|
| Dimension | 3D |
| Excitation | Non-sel. |
| RF Pulse Type | Fast |
| Gradient Mode | Normal |
| Bandwidth | 540 Hz/Px |
| Asymmetric Echo | Weak |

Sequence - Part 2

| Introduction | On |
|--------------------|-----------|
| RF Spoiling | On |
| Breast Application | Off |
| Phase Enc. Order | Automatic |

| SAR Assistant | Off | |
|---------------|-----|--|

\\MARTINOS DEVELOPER\HUBER\3rd_order_shim_tests_with_Gunjan\20250721\dzne_ep3d_3rd_order_ shim_test_es1p01

TA: 42 sec Coil Selection: Auto Voxel Size: 0.8×0.8×0.8 mm³ Acc:: 3 Rel. SNR: 1.00

Properties

| Start measurement without further preparation | On |
|---|--------------------|
| Wait for User to Start | Off |
| Start measurements | Single Measurement |
| Prio Recon | Off |
| Auto Open Inline Display | Off |
| Auto Close Inline Display | Off |
| Load Images to MR View&GO | On |
| Auto Store Images | On |
| Disable auto transfer to PACS | Off |
| Load Images to Stamp Segments | Off |
| Load Images to Graphic Segments | Off |
| Graphic segment | Default |
| Inline Movie | Off |

Routine

| Slab Group | 1 |
|---------------------|--------------------|
| Slabs | 1 |
| Position | R7.5 P5.0 F17.4 mm |
| Orientation | Transversal |
| Phase Encoding Dir. | A >> P |
| Slices per Slab | 36 |
| Slice Oversampling | 0.0 % |
| FOV Read | 175 mm |
| FOV Phase | 100.0 % |
| Slice Thickness | 0.84 mm |
| TR | 72.1 ms |
| Vol. TR | 2595.6 ms |
| TE 1 | 25.50 ms |
| Averages | 1 |
| Multi-echo Shots | 1 |
| AutoAlign | |

Contrast - Common

| TR | 72.1 ms |
|--------------------|-----------|
| Vol. TR | 2595.6 ms |
| TE 1 | 25.50 ms |
| Multi-echo spacing | 53.40 ms |
| MTC | Off |
| Flip Angle | 15 deg |
| Fat-Water Contrast | Standard |
| Contrasts | 1 |
| Reconstruction | Magnitude |

Contrast - Dynamic

| Dynamic Mode | Standard |
|---------------------|----------|
| Measurements | 5 |
| Pause after Meas. 1 | 0.0 s |
| Pause after Meas. 2 | 0.0 s |

Contrast - Dynamic

| Pause after Meas. 3 | 0.0 s |
|---------------------|--------|
| Pause after Meas. 4 | 0.0 s |
| Reordering | Linear |

Resolution - Common

| FOV Read | 175 mm |
|------------------|---------|
| FOV Phase | 100.0 % |
| Slice Thickness | 0.84 mm |
| Base Resolution | 206 |
| Phase Resolution | 100 % |
| Slice Resolution | 100 % |
| Interpolation | Off |

Resolution - Acceleration

| Acceleration Mode | CAIPIRINHA |
|------------------------|--------------|
| CAIPIRINHA Mode | Free |
| Reference Scans | GRE/Separate |
| Acceleration Factor PE | 1 |
| Reference Lines PE | 63 |
| Acceleration Factor 3D | 3 |
| Reference Lines 3D | 36 |
| Reordering Shift 3D | 1 |
| Phase Partial Fourier | 6/8 |
| Slice Partial Fourier | Off |

Resolution - Filter

| Raw Filter | Off |
|-----------------------|-----|
| Elliptical Filter | Off |
| Distortion Correction | Off |
| Normalize | Off |
| Image Filter | Off |

Geometry - Common

| Slab Group | 1 |
|---------------------|--------------------|
| Slabs | 1 |
| Position | R7.5 P5.0 F17.4 mm |
| Orientation | Transversal |
| Phase Encoding Dir. | A >> P |
| Slices per Slab | 36 |
| Slice Oversampling | 0.0 % |
| FOV Read | 175 mm |
| FOV Phase | 100.0 % |
| Slice Thickness | 0.84 mm |
| TR | 72.1 ms |
| Vol. TR | 2595.6 ms |
| Multi-echo Shots | 1 |

| Slab Group | 1 | |
|------------|---|--|
|------------|---|--|

Geometry - AutoAlign

| Position | R7.5 P5.0 F17.4 mm |
|---------------------|--------------------|
| Orientation | Transversal |
| Phase Encoding Dir. | A >> P |
| AutoAlign | |
| Initial Position | R7.5 P5.0 F17.4 |
| R | 7.5 mm |
| Р | 5.0 mm |
| F | 17.4 mm |
| Initial Orientation | Transversal |
| Initial Rotation | 0.00 deg |

Geometry - Saturation

| Saturation Mode | Standard |
|-----------------|----------|
|-----------------|----------|

Geometry - Tim Planning Suite

| Set-n-Go Protocol | Off |
|-------------------|------|
| Table Position | 0 mm |
| Table Position | Н |

System - Miscellaneous

| Coil Selection | Auto Coil Select |
|---------------------|------------------|
| Radial Sorting | Off |
| MSMA | S - C - T |
| Sagittal | R >>> L |
| Coronal | A >> P |
| Transversal | F >> H |
| Coil Combination | Adaptive Combine |
| Matrix Optimization | Off |
| Coil Focus | Flat |

System - Adjustments

| Adjustment Strategy | Standard |
|-----------------------|----------|
| B0 Shim | Brain |
| B1 Shim | TrueForm |
| Adjustment Tolerance | Auto |
| Adjust with Body Coil | Off |
| Confirm Frequency | Never |
| Assume Silicone | Off |

System - Adjust Volume

| Position | R7.5 P5.0 F17.4 mm |
|-------------|--------------------|
| Orientation | Transversal |
| Rotation | 0.00 deg |
| A >> P | 175 mm |
| R >> L | 175 mm |
| F >> H | 31 mm |
| Reset | Off |

System - pTx

| B1 Shim | TrueForm |
|------------|-----------|
| Excitation | Slab-sel. |

System - Tx/Rx

| Frequency 1H | 297.118707 MHz |
|--------------|----------------|
|--------------|----------------|

System - Tx/Rx

| ? Ref. Amplitude 1H | 0.000 V |
|---------------------|---------|
| Reset | Off |
| Image Scaling | 1.000 |

Sequence - Part 1

| Sequence Name | ep 256d7d0 |
|---------------|------------|
| Dimension | 3D |
| Excitation | Slab-sel. |
| RF Pulse Type | Normal |
| Gradient Mode | Normal |
| Reordering | Linear |
| Bandwidth | 1104 Hz/Px |
| Echo Spacing | 1.01 ms |
| Segmentation | 3 |
| EPI Factor | 52 |

Sequence - Part 2

| Introduction | On |
|--------------|----|
| RF Spoiling | On |

Sequence - Special

| PAT ref. FA | 3 deg |
|-----------------------|--------------|
| RF duration | 2000 us |
| RF BWT product | 8 |
| Ernst T1 | 1200 ms |
| PATRef prep. shots | 10 |
| Volume dummy shots | 0 |
| Noise dummy shots | -1 |
| CHECK FLIP ANGLE! | On |
| Integrated PC | Off |
| Invert PE | Off |
| Min. TE w/ PF | On |
| Dual-polarity | On |
| Ramp Sampling | On |
| Ext. trigger/shot | Off |
| Water Exc. | -none- |
| Phase Correction | per Series |
| EPI rise time factor | 1.10 |
| G. spoil dephasing[1] | 0.0 pi |
| G. spoil dephasing[2] | 4.0 pi |
| G. spoil dephasing[3] | 2.0 pi |
| Modify Ice Config | On |
| G-factor map | Off |
| GRAPPA Regularization | 5000 /10^6 |
| Slab Scale | -10 % |
| RF spoil scheme | Conventional |
| | |

| SAR Assistant | Off | |
|---------------|-----|--|
| DAN Assistant | OII | |

\\MARTINOS DEVELOPER\HUBER\3rd_order_shim_tests_with_Gunjan\20250721\dzne_ep3d_3rd_order_ shim_test_es1p01_disconnect

TA: 42 sec Coil Selection: Auto Voxel Size: 0.8×0.8×0.8 mm³ Acc:: 3 Rel. SNR: 1.00

Properties

| Start measurement without further preparation | On |
|---|--------------------|
| Wait for User to Start | Off |
| Start measurements | Single Measurement |
| Prio Recon | Off |
| Auto Open Inline Display | Off |
| Auto Close Inline Display | Off |
| Load Images to MR View&GO | On |
| Auto Store Images | On |
| Disable auto transfer to PACS | Off |
| Load Images to Stamp Segments | Off |
| Load Images to Graphic Segments | Off |
| Graphic segment | Default |
| Inline Movie | Off |

Routine

| Slab Group | 1 |
|---------------------|--------------------|
| Slabs | 1 |
| Position | R7.5 P5.0 F17.4 mm |
| Orientation | Transversal |
| Phase Encoding Dir. | A >> P |
| Slices per Slab | 36 |
| Slice Oversampling | 0.0 % |
| FOV Read | 175 mm |
| FOV Phase | 100.0 % |
| Slice Thickness | 0.84 mm |
| TR | 72.1 ms |
| Vol. TR | 2595.6 ms |
| TE 1 | 25.50 ms |
| Averages | 1 |
| Multi-echo Shots | 1 |
| AutoAlign | |

Contrast - Common

| TR | 72.1 ms |
|--------------------|-----------|
| Vol. TR | 2595.6 ms |
| TE 1 | 25.50 ms |
| Multi-echo spacing | 53.40 ms |
| MTC | Off |
| Flip Angle | 15 deg |
| Fat-Water Contrast | Standard |
| Contrasts | 1 |
| Reconstruction | Magnitude |

Contrast - Dynamic

| Dynamic Mode | Standard |
|---------------------|----------|
| Measurements | 5 |
| Pause after Meas. 1 | 0.0 s |
| Pause after Meas. 2 | 0.0 s |

Contrast - Dynamic

| Pause after Meas. 3 | 0.0 s |
|---------------------|--------|
| Pause after Meas. 4 | 0.0 s |
| Reordering | Linear |

Resolution - Common

| FOV Read | 175 mm |
|------------------|---------|
| FOV Phase | 100.0 % |
| Slice Thickness | 0.84 mm |
| Base Resolution | 206 |
| Phase Resolution | 100 % |
| Slice Resolution | 100 % |
| Interpolation | Off |

Resolution - Acceleration

| Acceleration Mode | CAIPIRINHA |
|------------------------|--------------|
| CAIPIRINHA Mode | Free |
| Reference Scans | GRE/Separate |
| Acceleration Factor PE | 1 |
| Reference Lines PE | 63 |
| Acceleration Factor 3D | 3 |
| Reference Lines 3D | 36 |
| Reordering Shift 3D | 1 |
| Phase Partial Fourier | 6/8 |
| Slice Partial Fourier | Off |

Resolution - Filter

| Raw Filter | Off |
|-----------------------|-----|
| Elliptical Filter | Off |
| Distortion Correction | Off |
| Normalize | Off |
| Image Filter | Off |

Geometry - Common

| Slab Group | 1 |
|---------------------|--------------------|
| Slabs | 1 |
| Position | R7.5 P5.0 F17.4 mm |
| Orientation | Transversal |
| Phase Encoding Dir. | A >> P |
| Slices per Slab | 36 |
| Slice Oversampling | 0.0 % |
| FOV Read | 175 mm |
| FOV Phase | 100.0 % |
| Slice Thickness | 0.84 mm |
| TR | 72.1 ms |
| Vol. TR | 2595.6 ms |
| Multi-echo Shots | 1 |

| Slab Group | 1 | |
|------------|---|--|
|------------|---|--|

Geometry - AutoAlign

| Position | R7.5 P5.0 F17.4 mm |
|---------------------|--------------------|
| Orientation | Transversal |
| Phase Encoding Dir. | A >> P |
| AutoAlign | |
| Initial Position | R7.5 P5.0 F17.4 |
| R | 7.5 mm |
| Р | 5.0 mm |
| F | 17.4 mm |
| Initial Orientation | Transversal |
| Initial Rotation | 0.00 deg |

Geometry - Saturation

Geometry - Tim Planning Suite

| Set-n-Go Prof | tocol | Off |
|----------------|-------|------|
| Table Position | n | 0 mm |
| Table Position | n | Н |

System - Miscellaneous

| Coil Selection | Auto Coil Select |
|---------------------|------------------|
| Radial Sorting | Off |
| MSMA | S - C - T |
| Sagittal | R >>> L |
| Coronal | A >> P |
| Transversal | F >> H |
| Coil Combination | Adaptive Combine |
| Matrix Optimization | Off |
| Coil Focus | Flat |

System - Adjustments

| Adjustment Strategy | Standard |
|-----------------------|----------|
| BO Shim | Brain |
| B1 Shim | TrueForm |
| Adjustment Tolerance | Auto |
| Adjust with Body Coil | Off |
| Confirm Frequency | Never |
| Assume Silicone | Off |

System - Adjust Volume

| Position | R7.5 P5.0 F17.4 mm |
|-------------|--------------------|
| Orientation | Transversal |
| Rotation | 0.00 deg |
| A >> P | 175 mm |
| R >> L | 175 mm |
| F >> H | 31 mm |
| Reset | Off |

System - pTx

| B1 Shim | TrueForm |
|------------|-----------|
| Excitation | Slab-sel. |

System - Tx/Rx

| Frequency 1H | 297.118707 MHz |
|--------------|----------------|
| | |

System - Tx/Rx

| ? Ref. Amplitude 1H | 0.000 V |
|---------------------|---------|
| Reset | Off |
| Image Scaling | 1.000 |

Sequence - Part 1

| Sequence Name | ep 256d7d0 |
|---------------|------------|
| Dimension | 3D |
| Excitation | Slab-sel. |
| RF Pulse Type | Normal |
| Gradient Mode | Normal |
| Reordering | Linear |
| Bandwidth | 1104 Hz/Px |
| Echo Spacing | 1.01 ms |
| Segmentation | 3 |
| EPI Factor | 52 |

Sequence - Part 2

| Introduction | On |
|--------------|----|
| RF Spoiling | On |

Sequence - Special

| PAT ref. FA | 3 deg |
|-----------------------|--------------|
| RF duration | 2000 us |
| RF BWT product | 8 |
| Ernst T1 | 1200 ms |
| PATRef prep. shots | 10 |
| Volume dummy shots | 0 |
| Noise dummy shots | -1 |
| CHECK FLIP ANGLE! | On |
| Integrated PC | Off |
| Invert PE | Off |
| Min. TE w/ PF | On |
| Dual-polarity | On |
| Ramp Sampling | On |
| Ext. trigger/shot | Off |
| Water Exc. | -none- |
| Phase Correction | per Series |
| EPI rise time factor | 1.10 |
| G. spoil dephasing[1] | 0.0 pi |
| G. spoil dephasing[2] | 4.0 pi |
| G. spoil dephasing[3] | 2.0 pi |
| Modify Ice Config | On |
| G-factor map | Off |
| GRAPPA Regularization | 5000 /10^6 |
| Slab Scale | -10 % |
| RF spoil scheme | Conventional |

| SAR Assistant | Off | |
|-----------------|-----|--|
| 3/11 /3313ta11t | OII | |

TA: 32 sec Coil Selection: Manual Voxel Size: 0.8×0.8×0.8 mm³ Acc:: 3 Rel. SNR: 1.00

Properties

| Start measurement without further preparation | On |
|---|--------------------|
| Wait for User to Start | Off |
| Start measurements | Single Measurement |
| Prio Recon | Off |
| Auto Open Inline Display | Off |
| Auto Close Inline Display | Off |
| Load Images to MR View&GO | On |
| Auto Store Images | On |
| Disable auto transfer to PACS | Off |
| Load Images to Stamp Segments | Off |
| Load Images to Graphic Segments | Off |
| Graphic segment | Default |
| Inline Movie | Off |

Routine

| Slice Group | 1 |
|--------------------------|--------------------|
| Slices | 36 |
| Distance Factor | 0 % |
| Position | R7.5 P5.0 F17.4 mm |
| Orientation | Transversal |
| Phase Encoding Dir. | A >> P |
| Phase Oversampling | 0 % |
| FOV Read | 175 mm |
| FOV Phase | 100.0 % |
| Slice Thickness | 0.8 mm |
| TR | 3246.0 ms |
| TE | 32.40 ms |
| Averages | 1 |
| Multi-band accel. factor | 1 |
| AutoAlign | |
| Coil Elements | AC |

Contrast - Common

| TR | 3246.0 ms |
|--------------------|----------------|
| TE | 32.40 ms |
| MTC | Off |
| Magn. Preparation | None |
| Flip Angle | 55 deg |
| Fat-Water Contrast | Fat Saturation |
| Contrasts | 1 |
| Reconstruction | Magnitude |
| | |

Contrast - Dynamic

| Dynamic Mode | Standard |
|--------------|----------|
| Measurements | 5 |
| Delay in TR | 0.00 ms |

Resolution - Common

Resolution - Common

| FOV Phase | 100.0 % |
|------------------|---------|
| Slice Thickness | 0.8 mm |
| Base Resolution | 208 |
| Phase Resolution | 100 % |
| Interpolation | Off |

Resolution - Acceleration

| Acceleration Mode | GRAPPA |
|------------------------|-----------|
| Reference scan mode | Segmented |
| Acceleration Factor PE | 3 |
| Reference Lines PE | 108 |
| Phase Partial Fourier | 6/8 |

Resolution - Filter

| Raw Filter | Off |
|-------------------------|-----|
| Elliptical Filter | Off |
| Hamming | Off |
| Distortion Correction | Off |
| Static Field Correction | Off |
| Normalize | Off |

Geometry - Common

| Slice Group | 1 |
|--------------------------|--------------------|
| Slices | 36 |
| Distance Factor | 0 % |
| Position | R7.5 P5.0 F17.4 mm |
| Orientation | Transversal |
| Phase Encoding Dir. | A >> P |
| Phase Oversampling | 0 % |
| FOV Read | 175 mm |
| FOV Phase | 100.0 % |
| Slice Thickness | 0.8 mm |
| TR | 3246.0 ms |
| Multi-Slice Mode | Interleaved |
| Series | Interleaved |
| Multi-band accel. factor | 1 |

| Slice Group | 1 |
|---------------------|--------------------|
| Position | R7.5 P5.0 F17.4 mm |
| Orientation | Transversal |
| Phase Encoding Dir. | A >> P |
| AutoAlign | |
| Initial Position | R7.5 P5.0 F17.4 |
| R | 7.5 mm |
| P | 5.0 mm |
| F | 17.4 mm |
| Initial Orientation | Transversal |
| Initial Rotation | 0.00 deg |

Geometry - Saturation

| Special Saturation | None |
|--------------------|------|
| | |

Geometry - Tim Planning Suite

| Set-n-Go Protocol | Off |
|-------------------|------|
| Table Position | 0 mm |
| Table Position | Н |

System - Miscellaneous

| Coil Selection | Manual |
|---------------------|----------------|
| Radial Sorting | Off |
| MSMA | S - C - T |
| Sagittal | R >> L |
| Coronal | A >> P |
| Transversal | F >> H |
| Coil Combination | Sum of Squares |
| Matrix Optimization | Off |

System - Adjustments

| Adjustment Strategy | Standard |
|----------------------|----------|
| B0 Shim | Brain |
| B1 Shim | TrueForm |
| Adjustment Tolerance | Auto |
| Confirm Frequency | Never |
| Assume Silicone | Off |

System - Adjust Volume

| <u> </u> | |
|---------------|--------------------|
| ! Position | R7.5 P5.0 F17.4 mm |
| ! Orientation | Transversal |
| ! Rotation | 0.00 deg |
| ! A >> P | 175 mm |
| ! R >> L | 175 mm |
| ! F >> H | 31 mm |
| Reset | Off |

System-pTx

| B1 Shim | TrueForm |
|------------|----------|
| Excitation | Standard |

System - Tx/Rx

| Frequency 1H | 297.118707 MHz |
|---------------------|----------------|
| ? Ref. Amplitude 1H | 0.000 V |
| Reset | Off |
| Correction Factor | 1.00 |
| Image Scaling | 1.000 |

Physio - Signal

| 1st Signal/Mode | None |
|--------------------------|-----------|
| TR | 3246.0 ms |
| Log Signals | Off |
| Multi-band accel. factor | 1 |

BOLD

| GL | M Statistics | Off |
|-----|---------------------|-----|
| lgn | nore Meas. at Start | 0 |

BOLD

| Ignore After Transition | 0 |
|-------------------------|----------|
| Model Transition States | On |
| Temp. Highpass Filter | On |
| Threshold | 4.00 |
| Paradigm Size | 15 |
| Meas[1] | Baseline |
| Meas[2] | Baseline |
| Meas[3] | Baseline |
| Meas[4] | Baseline |
| Meas[5] | Baseline |
| Meas[6] | Baseline |
| Meas[7] | Baseline |
| Meas[8] | Baseline |
| Meas[9] | Baseline |
| Meas[10] | Baseline |
| Meas[11] | Active |
| Meas[12] | Active |
| Meas[13] | Active |
| Meas[14] | Active |
| Meas[15] | Active |
| Motion Correction | Off |
| Spatial Filter | Off |
| Measurements | 5 |
| Delay in TR | 0.00 ms |

Sequence - Part 1

| Sequence Name | epfid |
|-------------------|------------|
| Dimension | 2D |
| Excitation | Standard |
| Gradient Mode | Normal |
| Flow Compensation | None |
| Bandwidth | 1144 Hz/Px |
| Echo Spacing | 1.00 ms |
| Free Echo Spacing | Off |
| EPI Factor | 208 |

Sequence - Part 2

| Introduction | Off |
|--------------|-----|
| RF Spoiling | Off |

Sequence - Special

| Excite pulse duration | 5000 us |
|--------------------------|------------|
| Min. prep scans | 0 |
| Delay before PC scans | 0 us |
| SENSE1 coil combine | Off |
| Invert RO/PE polarity | Off |
| PF omits higher k-space | Off |
| Disable B1 control loop | Off |
| Disable freq. update | Off |
| Suppress 16-bit DICOM | Off |
| Force equal slice timing | Off |
| FFT scale factor | 1.00 |
| Fat saturation FA | 110.00 deg |
| Fat sat. offset | 0.00 Hz |

SIEMENS MAGNETOM 7.0T W60 Numaris/X VA60A-0CT2

Sequence - Special

| Sinc exc. pulse BWTP | 5.20 |
|----------------------|----------|
| Physio recording | Off |
| Triggering scheme | Standard |

| SAR Assistant | Off | |
|---------------|-----|--|
| SAR ASSISTANT | OII | |

\\MARTINOS DEVELOPER\HUBER\3rd_order_shim_tests_with_Gunjan\20250721\cmrr_es_1.01_disconn

TA: 32 sec Coil Selection: Manual Voxel Size: 0.8×0.8×0.8 mm³ Acc:: 3 Rel. SNR: 1.00

Properties

| Start measurement without further preparation | On |
|---|--------------------|
| Wait for User to Start | Off |
| Start measurements | Single Measurement |
| Prio Recon | Off |
| Auto Open Inline Display | Off |
| Auto Close Inline Display | Off |
| Load Images to MR View&GO | On |
| Auto Store Images | On |
| Disable auto transfer to PACS | Off |
| Load Images to Stamp Segments | Off |
| Load Images to Graphic Segments | Off |
| Graphic segment | Default |
| Inline Movie | Off |

Routine

| Slice Group | 1 |
|--------------------------|--------------------|
| Slices | 36 |
| Distance Factor | 0 % |
| Position | R7.5 P5.0 F17.4 mm |
| Orientation | Transversal |
| Phase Encoding Dir. | A >> P |
| Phase Oversampling | 0 % |
| FOV Read | 175 mm |
| FOV Phase | 100.0 % |
| Slice Thickness | 0.8 mm |
| TR | 3246.0 ms |
| TE | 32.40 ms |
| Averages | 1 |
| Multi-band accel. factor | 1 |
| AutoAlign | |
| Coil Elements | AC |

Contrast - Common

| 5.0 ms 0 ms |
|----------------|
| 0 ms |
| UTIIS |
| |
| e |
| eg |
| aturation |
| |
| nitude |
| |

Contrast - Dynamic

| Dynamic Mode | Standard |
|--------------|----------|
| Measurements | 5 |
| Delay in TR | 0.00 ms |

Resolution - Common

| FOV Read | 175 mm |
|------------------|---------|
| FOV Phase | 100.0 % |
| Slice Thickness | 0.8 mm |
| Base Resolution | 208 |
| Phase Resolution | 100 % |
| Interpolation | Off |

Resolution - Acceleration

| Acceleration Mode | GRAPPA |
|------------------------|-----------|
| Reference scan mode | Segmented |
| Acceleration Factor PE | 3 |
| Reference Lines PE | 108 |
| Phase Partial Fourier | 6/8 |

Resolution - Filter

| Raw Filter | Off |
|-------------------------|-----|
| Elliptical Filter | Off |
| Hamming | Off |
| Distortion Correction | Off |
| Static Field Correction | Off |
| Normalize | Off |

Geometry - Common

| Slice Group | 1 |
|--------------------------|--------------------|
| Slices | 36 |
| Distance Factor | 0 % |
| Position | R7.5 P5.0 F17.4 mm |
| Orientation | Transversal |
| Phase Encoding Dir. | A >> P |
| Phase Oversampling | 0 % |
| FOV Read | 175 mm |
| FOV Phase | 100.0 % |
| Slice Thickness | 0.8 mm |
| TR | 3246.0 ms |
| Multi-Slice Mode | Interleaved |
| Series | Interleaved |
| Multi-band accel. factor | 1 |

| Slice Group | 1 |
|---------------------|--------------------|
| Position | R7.5 P5.0 F17.4 mm |
| Orientation | Transversal |
| Phase Encoding Dir. | A >> P |
| AutoAlign | |
| Initial Position | R7.5 P5.0 F17.4 |
| R | 7.5 mm |
| P | 5.0 mm |
| F | 17.4 mm |
| Initial Orientation | Transversal |

Geometry - AutoAlign

| Initial Rotation | 0.00 deg |
|------------------|----------|
| | |

Geometry - Saturation

Geometry - Tim Planning Suite

| Set-n-Go Protocol | Off |
|-------------------|------|
| Table Position | 0 mm |
| Table Position | Н |

System - Miscellaneous

| Coil Selection | Manual |
|---------------------|----------------|
| Radial Sorting | Off |
| MSMA | S - C - T |
| Sagittal | R >> L |
| Coronal | A >> P |
| Transversal | F >> H |
| Coil Combination | Sum of Squares |
| Matrix Optimization | Off |

System - Adjustments

| Adjustment Strategy | Standard |
|----------------------|----------|
| BO Shim | Brain |
| B1 Shim | TrueForm |
| Adjustment Tolerance | Auto |
| Confirm Frequency | Never |
| Assume Silicone | Off |

System - Adjust Volume

| <u>, , , , , , , , , , , , , , , , , , , </u> | |
|---|--------------------|
| ! Position | R7.5 P5.0 F17.4 mm |
| ! Orientation | Transversal |
| ! Rotation | 0.00 deg |
| ! A >> P | 175 mm |
| ! R >> L | 175 mm |
| ! F >> H | 31 mm |
| Reset | Off |

System - pTx

| B1 Shim | TrueForm |
|------------|----------|
| Excitation | Standard |

System - Tx/Rx

| Frequency 1H | 297.118707 MHz |
|---------------------|----------------|
| ? Ref. Amplitude 1H | 0.000 V |
| Reset | Off |
| Correction Factor | 1.00 |
| Image Scaling | 1.000 |

Physio - Signal

| 1st Signal/Mode | None |
|--------------------------|-----------|
| TR | 3246.0 ms |
| Log Signals | Off |
| Multi-band accel. factor | 1 |

BOLD

| | - " |
|-------------------------|----------|
| GLM Statistics | Off |
| Ignore Meas. at Start | 0 |
| Ignore After Transition | 0 |
| Model Transition States | On |
| Temp. Highpass Filter | On |
| Threshold | 4.00 |
| Paradigm Size | 15 |
| Meas[1] | Baseline |
| Meas[2] | Baseline |
| Meas[3] | Baseline |
| Meas[4] | Baseline |
| Meas[5] | Baseline |
| Meas[6] | Baseline |
| Meas[7] | Baseline |
| Meas[8] | Baseline |
| Meas[9] | Baseline |
| Meas[10] | Baseline |
| Meas[11] | Active |
| Meas[12] | Active |
| Meas[13] | Active |
| Meas[14] | Active |
| Meas[15] | Active |
| Motion Correction | Off |
| Spatial Filter | Off |
| Measurements | 5 |
| Delay in TR | 0.00 ms |

Sequence - Part 1

| Sequence Name | epfid |
|-------------------|------------|
| Dimension | 2D |
| Excitation | Standard |
| Gradient Mode | Normal |
| Flow Compensation | None |
| Bandwidth | 1144 Hz/Px |
| Echo Spacing | 1.00 ms |
| Free Echo Spacing | Off |
| EPI Factor | 208 |

Sequence - Part 2

| Introduction | Off |
|--------------|-----|
| RF Spoiling | Off |

Sequence - Special

| Excite pulse duration | 5000 us |
|--------------------------|---------|
| Min. prep scans | 0 |
| Delay before PC scans | 0 us |
| SENSE1 coil combine | Off |
| Invert RO/PE polarity | Off |
| PF omits higher k-space | Off |
| Disable B1 control loop | Off |
| Disable freq. update | Off |
| Suppress 16-bit DICOM | Off |
| Force equal slice timing | Off |
| FFT scale factor | 1.00 |

SIEMENS MAGNETOM 7.0T W60 Numaris/X VA60A-0CT2

Sequence - Special

| Fat saturation FA | 110.00 deg |
|----------------------|------------|
| Fat sat. offset | 0.00 Hz |
| Sinc exc. pulse BWTP | 5.20 |
| Physio recording | Off |
| Triggering scheme | Standard |

| SAR Assistant Off | SAR Assistant | Off |
|-------------------|---------------|-----|
|-------------------|---------------|-----|

\\MARTINOS DEVELOPER\HUBER\3rd_order_shim_tests_with_Gunjan\20250721\ep2d_siemens_bold_1

TA: 49 sec Coil Selection: Manual Voxel Size: 0.8×0.8×0.8 mm³ Acc:: 3 Rel. SNR: 1.00

Properties

| Start measurement without further preparation | On |
|---|--------------------|
| Wait for User to Start | Off |
| Start measurements | Single Measurement |
| Prio Recon | Off |
| Auto Open Inline Display | Off |
| Auto Close Inline Display | Off |
| Load Images to MR View&GO | On |
| Auto Store Images | On |
| Disable auto transfer to PACS | Off |
| Load Images to Stamp Segments | On |
| Load Images to Graphic Segments | On |
| Graphic segment | Default |
| Inline Movie | Off |

Routine

| Slice Group | 1 |
|---------------------|--------------------|
| Slices | 36 |
| Distance Factor | 0 % |
| Position | R7.5 P5.0 F17.4 mm |
| Orientation | Transversal |
| Phase Encoding Dir. | A >> P |
| Phase Oversampling | 0 % |
| FOV Read | 175 mm |
| FOV Phase | 100.0 % |
| Slice Thickness | 0.8 mm |
| TR | 3100.0 ms |
| TE | 31.00 ms |
| Averages | 1 |
| Concatenations | 1 |
| AutoAlign | |
| Coil Elements | AC |

Contrast - Common

| TR | 3100.0 ms |
|--------------------|----------------|
| TE | 31.00 ms |
| MTC | Off |
| Flip Angle | 60 deg |
| Fat-Water Contrast | Fat Saturation |
| Reconstruction | Magnitude |

Contrast - Dynamic

| Dyna | mic Mode | Standard |
|-------|----------|----------|
| Meas | urements | 5 |
| Delay | in TR | 0.00 ms |

Resolution - Common

| FOV Read | 175 mm |
|-----------|---------|
| FOV Phase | 100.0 % |

Resolution - Common

| Slice Thickness | 0.8 mm |
|------------------|--------|
| Base Resolution | 208 |
| Phase Resolution | 100 % |
| Interpolation | Off |

Resolution - Acceleration

| Acceleration Mode | GRAPPA |
|------------------------|--------------|
| Reference Scans | GRE/Separate |
| Acceleration Factor PE | 3 |
| Reference Lines PE | 126 |
| Phase Partial Fourier | 6/8 |

Resolution - Filter

| Raw Filter | Off | |
|-----------------------|-----|--|
| Elliptical Filter | Off | |
| Hamming | Off | |
| Distortion Correction | Off | |
| Normalize | Off | |

Geometry - Common

| Slice Group | 1 |
|---------------------|--------------------|
| Slices | 36 |
| Distance Factor | 0 % |
| Position | R7.5 P5.0 F17.4 mm |
| Orientation | Transversal |
| Phase Encoding Dir. | A >> P |
| Phase Oversampling | 0 % |
| FOV Read | 175 mm |
| FOV Phase | 100.0 % |
| Slice Thickness | 0.8 mm |
| TR | 3100.0 ms |
| Multi-Slice Mode | Interleaved |
| Series | Interleaved |
| Concatenations | 1 |

| Slice Group | 1 |
|---------------------|--------------------|
| Position | R7.5 P5.0 F17.4 mm |
| Orientation | Transversal |
| Phase Encoding Dir. | A >> P |
| AutoAlign | |
| Initial Position | R7.5 P5.0 F17.4 |
| R | 7.5 mm |
| P | 5.0 mm |
| F | 17.4 mm |
| Initial Orientation | Transversal |
| Initial Rotation | 0.00 deg |

Geometry - Saturation

| Special Saturation | None |
|--------------------|------|
| | |

Geometry - Tim Planning Suite

| Set-n-Go Protocol | Off |
|-------------------|------|
| Table Position | 0 mm |
| Table Position | Н |

System - Miscellaneous

| Coil Selection | Manual |
|---------------------|------------------|
| Radial Sorting | Off |
| MSMA | S - C - T |
| Sagittal | R >> L |
| Coronal | A >> P |
| Transversal | F >> H |
| Coil Combination | Adaptive Combine |
| Matrix Optimization | Off |

System - Adjustments

| Adjustment Strategy | Standard |
|----------------------|----------|
| BO Shim | Brain |
| B1 Shim | TrueForm |
| Adjustment Tolerance | Auto |
| Confirm Frequency | Never |
| Assume Silicone | Off |

System - Adjust Volume

| ! Position | R7.5 P5.0 F17.4 mm |
|---------------|--------------------|
| ! Orientation | Transversal |
| ! Rotation | 0.00 deg |
| ! A >> P | 175 mm |
| ! R >> L | 175 mm |
| ! F >> H | 31 mm |
| Reset | Off |

System-pTx

| B1 Shim | TrueForm |
|------------|----------|
| Excitation | Standard |

System - Tx/Rx

| Frequency 1H | 297.118707 MHz |
|---------------------|----------------|
| ? Ref. Amplitude 1H | 0.000 V |
| Reset | Off |
| Correction Factor | 1.00 |
| Image Scaling | 1.000 |

Physio - Signal

| 1st Signal/Mode | None |
|-----------------|-----------|
| TR | 3100.0 ms |
| Log Signals | Off |
| Concatenations | 1 |

BOLD

| GLM Statistics | Off |
|-----------------------|-----|
| Ignore Meas. at Start | 0 |

BOLD

| Ignore After Transition | 0 |
|-------------------------|----------|
| Model Transition States | On |
| Temp. Highpass Filter | On |
| Threshold | 4.00 |
| Paradigm Size | 20 |
| Meas[1] | Baseline |
| Meas[2] | Baseline |
| Meas[3] | Baseline |
| Meas[4] | Baseline |
| Meas[5] | Baseline |
| Meas[6] | Baseline |
| Meas[7] | Baseline |
| Meas[8] | Baseline |
| Meas[9] | Baseline |
| Meas[10] | Baseline |
| Meas[11] | Active |
| Meas[12] | Active |
| Meas[13] | Active |
| Meas[14] | Active |
| Meas[15] | Active |
| Meas[16] | Active |
| Meas[17] | Active |
| Meas[18] | Active |
| Meas[19] | Active |
| Meas[20] | Active |
| Motion Correction | Off |
| Spatial Filter | Off |
| Measurements | 5 |
| Delay in TR | 0.00 ms |

Sequence - Part 1

| Sequence Name | epfid |
|-------------------|------------|
| Excitation | Standard |
| RF Pulse Type | Normal |
| Gradient Mode | Normal |
| Bandwidth | 1144 Hz/Px |
| Echo Spacing | 1.00 ms |
| Free Echo Spacing | Off |
| EPI Factor | 208 |

Sequence - Part 2

| Introduction | On | |
|--------------|----|--|

| SAR Assistant | Off | |
|---------------------|-----|--|
| J/ (I(/ (3313ta11t | OII | |

\\MARTINOS DEVELOPER\\HUBER\3rd_order_shim_tests_with_Gunjan\20250721\ep2d_siemens_bold_1 p01_disconnected

TA: 49 sec Coil Selection: Manual Voxel Size: 0.8×0.8×0.8 mm³ Acc:: 3 Rel. SNR: 1.00

Properties

| Start measurement without further preparation | On |
|---|--------------------|
| Wait for User to Start | Off |
| Start measurements | Single Measurement |
| Prio Recon | Off |
| Auto Open Inline Display | Off |
| Auto Close Inline Display | Off |
| Load Images to MR View&GO | On |
| Auto Store Images | On |
| Disable auto transfer to PACS | Off |
| Load Images to Stamp Segments | On |
| Load Images to Graphic Segments | On |
| Graphic segment | Default |
| Inline Movie | Off |

Routine

| Slice Group | 1 |
|---------------------|--------------------|
| Slices | 36 |
| Distance Factor | 0 % |
| Position | R7.5 P5.0 F17.4 mm |
| Orientation | Transversal |
| Phase Encoding Dir. | A >> P |
| Phase Oversampling | O % |
| FOV Read | 175 mm |
| FOV Phase | 100.0 % |
| Slice Thickness | 0.8 mm |
| TR | 3100.0 ms |
| TE | 31.00 ms |
| Averages | 1 |
| Concatenations | 1 |
| AutoAlign | |
| Coil Elements | AC |

Contrast - Common

| TR TE | 3100.0 ms |
|--------------------|----------------|
| TE | 31.00 ms |
| MTC | Off |
| Flip Angle | 60 deg |
| Fat-Water Contrast | Fat Saturation |
| Reconstruction | Magnitude |

Contrast - Dynamic

| Dynamic Mode | Standard |
|--------------|----------|
| Measurements | 5 |
| Delay in TR | 0.00 ms |

Resolution - Common

| FOV Read | 175 mm |
|-----------|---------|
| FOV Phase | 100.0 % |

Resolution - Common

| Slice Thickness | 0.8 mm |
|------------------|--------|
| Base Resolution | 208 |
| Phase Resolution | 100 % |
| Interpolation | Off |

Resolution - Acceleration

| Acceleration Mode | GRAPPA |
|------------------------|--------------|
| Reference Scans | GRE/Separate |
| Acceleration Factor PE | 3 |
| Reference Lines PE | 126 |
| Phase Partial Fourier | 6/8 |

Resolution - Filter

| Raw Filter | Off | |
|-----------------------|-----|--|
| Elliptical Filter | Off | |
| Hamming | Off | |
| Distortion Correction | Off | |
| Normalize | Off | |

Geometry - Common

| Slice Group | 1 |
|---------------------|--------------------|
| Slices | 36 |
| Distance Factor | 0 % |
| Position | R7.5 P5.0 F17.4 mm |
| Orientation | Transversal |
| Phase Encoding Dir. | A >> P |
| Phase Oversampling | 0 % |
| FOV Read | 175 mm |
| FOV Phase | 100.0 % |
| Slice Thickness | 0.8 mm |
| TR | 3100.0 ms |
| Multi-Slice Mode | Interleaved |
| Series | Interleaved |
| Concatenations | 1 |

| Slice Group | 1 |
|---------------------|--------------------|
| Position | R7.5 P5.0 F17.4 mm |
| Orientation | Transversal |
| Phase Encoding Dir. | A >> P |
| AutoAlign | |
| Initial Position | R7.5 P5.0 F17.4 |
| R | 7.5 mm |
| P | 5.0 mm |
| F | 17.4 mm |
| Initial Orientation | Transversal |
| Initial Rotation | 0.00 deg |

Geometry - Saturation

| Special Saturation | None |
|--------------------|------|
| | |

Geometry - Tim Planning Suite

| Set-n-Go Protocol | Off |
|-------------------|------|
| Table Position | 0 mm |
| Table Position | Н |

System - Miscellaneous

| Coil Selection | Manual |
|---------------------|------------------|
| Radial Sorting | Off |
| MSMA | S - C - T |
| Sagittal | R >> L |
| Coronal | A >> P |
| Transversal | F >> H |
| Coil Combination | Adaptive Combine |
| Matrix Optimization | Off |

System - Adjustments

| Adjustment Strategy | Standard |
|----------------------|----------|
| B0 Shim | Brain |
| B1 Shim | TrueForm |
| Adjustment Tolerance | Auto |
| Confirm Frequency | Never |
| Assume Silicone | Off |

System - Adjust Volume

| ! Position | R7.5 P5.0 F17.4 mm |
|---------------|--------------------|
| ! Orientation | Transversal |
| ! Rotation | 0.00 deg |
| ! A >> P | 175 mm |
| ! R >> L | 175 mm |
| ! F >> H | 31 mm |
| Reset | Off |

System-pTx

| B1 Shim | TrueForm |
|------------|----------|
| Excitation | Standard |

System - Tx/Rx

| Frequency 1H | 297.118707 MHz |
|---------------------|----------------|
| ? Ref. Amplitude 1H | 0.000 V |
| Reset | Off |
| Correction Factor | 1.00 |
| Image Scaling | 1.000 |

Physio - Signal

| 1st Signal/Mode | None |
|-----------------|-----------|
| TR | 3100.0 ms |
| Log Signals | Off |
| Concatenations | 1 |

BOLD

| GLM Statistics | Off |
|-----------------------|-----|
| Ignore Meas. at Start | 0 |

BOLD

| Ignore After Transition | 0 |
|-------------------------|----------|
| Model Transition States | On |
| Temp. Highpass Filter | On |
| Threshold | 4.00 |
| Paradigm Size | 20 |
| Meas[1] | Baseline |
| Meas[2] | Baseline |
| Meas[3] | Baseline |
| Meas[4] | Baseline |
| Meas[5] | Baseline |
| Meas[6] | Baseline |
| Meas[7] | Baseline |
| Meas[8] | Baseline |
| Meas[9] | Baseline |
| Meas[10] | Baseline |
| Meas[11] | Active |
| Meas[12] | Active |
| Meas[13] | Active |
| Meas[14] | Active |
| Meas[15] | Active |
| Meas[16] | Active |
| Meas[17] | Active |
| Meas[18] | Active |
| Meas[19] | Active |
| Meas[20] | Active |
| Motion Correction | Off |
| Spatial Filter | Off |
| Measurements | 5 |
| Delay in TR | 0.00 ms |

Sequence - Part 1

| Sequence Name | epfid |
|-------------------|------------|
| Excitation | Standard |
| RF Pulse Type | Normal |
| Gradient Mode | Normal |
| Bandwidth | 1144 Hz/Px |
| Echo Spacing | 1.00 ms |
| Free Echo Spacing | Off |
| EPI Factor | 208 |

Sequence - Part 2

| Introduction | On | |
|--------------|----|--|
|--------------|----|--|

| SAR Assistant | Off |
|---------------|-----|
|---------------|-----|

\\MARTINOS DEVELOPER\\HUBER\3rd_order_shim_tests_with_Gunjan\20250721\ep2d_bold_mgh_dpg_ FLEET_shoterTE_disconnected

TA: 54 sec Coil Selection: Manual Voxel Size: 0.8×0.8×0.8 mm³ Acc:: 3 Rel. SNR: 1.00

Properties

| Start measurement without further preparation | On |
|---|--------------------|
| Wait for User to Start | Off |
| Start measurements | Single Measurement |
| Prio Recon | Off |
| Auto Open Inline Display | Off |
| Auto Close Inline Display | Off |
| Load Images to MR View&GO | On |
| Auto Store Images | On |
| Disable auto transfer to PACS | Off |
| Load Images to Stamp Segments | Off |
| Load Images to Graphic Segments | Off |
| Graphic segment | Default |
| Inline Movie | Off |

Routine

| Slice Group | 1 |
|---------------------|--------------------|
| Slices | 33 |
| Distance Factor | 0 % |
| Position | R7.5 P5.0 F17.4 mm |
| Orientation | Transversal |
| Phase Encoding Dir. | A >> P |
| Phase Oversampling | 0 % |
| FOV Read | 175 mm |
| FOV Phase | 100.0 % |
| Slice Thickness | 0.8 mm |
| TR | 3000.0 ms |
| TE | 28.00 ms |
| Averages | 1 |
| Concatenations | 1 |
| AutoAlign | |
| Coil Elements | AC |

Contrast - Common

| TR | 3000.0 ms |
|--------------------|----------------|
| TE | 28.00 ms |
| MTC | Off |
| Flip Angle | 60 deg |
| Fat-Water Contrast | Fat Saturation |
| Reconstruction | Magnitude |

Contrast - Dynamic

| Dynamic Mode | Standard |
|--------------|----------|
| Measurements | 10 |
| Delay in TR | 0.00 ms |

Resolution - Common

| FOV Read | 175 mm |
|-----------|---------|
| FOV Phase | 100.0 % |

Resolution - Common

| Slice Thickness | 0.8 mm |
|------------------|--------|
| Base Resolution | 208 |
| Phase Resolution | 100 % |
| Interpolation | Off |

Resolution - Acceleration

| Acceleration Mode | GRAPPA |
|------------------------|--------------|
| Reference Scans | EPI/Separate |
| Acceleration Factor PE | 3 |
| Reference Lines PE | 126 |
| Phase Partial Fourier | 6/8 |

Resolution - Filter

| Raw Filter | Off | |
|-----------------------|-----|--|
| Elliptical Filter | Off | |
| Hamming | Off | |
| Distortion Correction | Off | |
| Normalize | Off | |

Geometry - Common

| Slice Group | 1 |
|---------------------|--------------------|
| Slices | 33 |
| Distance Factor | 0 % |
| Position | R7.5 P5.0 F17.4 mm |
| Orientation | Transversal |
| Phase Encoding Dir. | A >> P |
| Phase Oversampling | 0 % |
| FOV Read | 175 mm |
| FOV Phase | 100.0 % |
| Slice Thickness | 0.8 mm |
| TR | 3000.0 ms |
| Multi-Slice Mode | Interleaved |
| Series | Interleaved |
| Concatenations | 1 |

| Slice Group | 1 |
|---------------------|--------------------|
| Position | R7.5 P5.0 F17.4 mm |
| Orientation | Transversal |
| Phase Encoding Dir. | A >> P |
| AutoAlign | |
| Initial Position | R7.5 P5.0 F17.4 |
| R | 7.5 mm |
| Р | 5.0 mm |
| F | 17.4 mm |
| Initial Orientation | Transversal |
| Initial Rotation | 0.00 deg |

Geometry - Saturation

| Special Saturation | Mana |
|--------------------|------|
| Special Saturation | None |
| | |

Geometry - Tim Planning Suite

| Set-n-Go Protocol | Off |
|-------------------|------|
| Table Position | 0 mm |
| Table Position | Н |

System - Miscellaneous

| Coil Selection | Manual |
|---------------------|----------------|
| Radial Sorting | Off |
| MSMA | S - C - T |
| Sagittal | R >> L |
| Coronal | A >> P |
| Transversal | F >> H |
| Coil Combination | Sum of Squares |
| Matrix Optimization | Off |

System - Adjustments

| Adjustment Strategy | Standard |
|----------------------|----------|
| , 3, | |
| B0 Shim | Brain |
| B1 Shim | TrueForm |
| Adjustment Tolerance | Auto |
| Confirm Frequency | Never |
| Assume Silicone | Off |

System - Adjust Volume

| ! Position | R7.5 P5.0 F17.4 mm |
|---------------|--------------------|
| ! Orientation | Transversal |
| ! Rotation | 0.00 deg |
| ! A >> P | 175 mm |
| ! R >> L | 175 mm |
| ! F >> H | 31 mm |
| Reset | Off |

System-pTx

| B1 Shim | TrueForm |
|------------|----------|
| Excitation | Standard |

System - Tx/Rx

| Frequency 1H | 297.118707 MHz |
|---------------------|----------------|
| ! Ref. Amplitude 1H | 250.000 V |
| Reset | Off |
| Correction Factor | 1.00 |
| Image Scaling | 1.000 |

Physio - Signal

| 1st Signal/Mode | None |
|-----------------|-----------|
| TR | 3000.0 ms |
| Log Signals | Off |
| Concatenations | 1 |

BOLD

| GLM Statistics | Off |
|-----------------------|-----|
| Ignore Meas. at Start | 0 |

BOLD

| Ignore After Transition | 0 |
|-------------------------|----------|
| Model Transition States | On |
| Temp. Highpass Filter | On |
| Threshold | 4.00 |
| Paradigm Size | 20 |
| Meas[1] | Baseline |
| Meas[2] | Baseline |
| Meas[3] | Baseline |
| Meas[4] | Baseline |
| Meas[5] | Baseline |
| Meas[6] | Baseline |
| Meas[7] | Baseline |
| Meas[8] | Baseline |
| Meas[9] | Baseline |
| Meas[10] | Baseline |
| Meas[11] | Active |
| Meas[12] | Active |
| Meas[13] | Active |
| Meas[14] | Active |
| Meas[15] | Active |
| Meas[16] | Active |
| Meas[17] | Active |
| Meas[18] | Active |
| Meas[19] | Active |
| Meas[20] | Active |
| Motion Correction | Off |
| Spatial Filter | Off |
| Measurements | 10 |
| Delay in TR | 0.00 ms |

Sequence - Part 1

| Sequence Name | epfid |
|-------------------|------------|
| Excitation | Standard |
| RF Pulse Type | Fast |
| Gradient Mode | Normal |
| Bandwidth | 1144 Hz/Px |
| Echo Spacing | 1.00 ms |
| Free Echo Spacing | Off |
| EPI Factor | 208 |

Sequence - Part 2

| Introduction Off | Introduction | Off |
|------------------|--------------|-----|
|------------------|--------------|-----|

Sequence - Special

| Imaging Dummy TRs | 4 |
|--------------------|-----------------|
| SMS ACS Dummy TRs | -1 |
| FLEET Dummy Pulses | 0 |
| CC Mode | Direct adj coil |
| RF Clip | 0 |
| VERSE Factor | 1.00 |
| ACS mode | GRAPPA FLEET |
| FLEET FA | 10 deg |
| Kernel Size | 5x5 |
| Run Siemens DPG. | On |

SIEMENS MAGNETOM 7.0T W60 Numaris/X VA60A-0CT2

Sequence - Special

| Wait for TCP/IP Trigger | Off |
|-------------------------|-----|
| Reverse Phase Encoding | Off |

| SAR Assistant | Off | |
|---------------|-----|--|

\\MARTINOS DEVELOPER\\HUBER\3rd_order_shim_tests_with_Gunjan\20250721\ep2d_bold_mgh_dpg_ FLEET_shoterTE_connected

TA: 54 sec Coil Selection: Manual Voxel Size: 0.8×0.8×0.8 mm³ Acc:: 3 Rel. SNR: 1.00

Properties

| Start measurement without further preparation | On |
|---|--------------------|
| Wait for User to Start | Off |
| Start measurements | Single Measurement |
| Prio Recon | Off |
| Auto Open Inline Display | Off |
| Auto Close Inline Display | Off |
| Load Images to MR View&GO | On |
| Auto Store Images | On |
| Disable auto transfer to PACS | Off |
| Load Images to Stamp Segments | Off |
| Load Images to Graphic Segments | Off |
| Graphic segment | Default |
| Inline Movie | Off |

Routine

| Slice Group | 1 |
|---------------------|--------------------|
| Slices | 33 |
| Distance Factor | 0 % |
| Position | R7.5 P5.0 F17.4 mm |
| Orientation | Transversal |
| Phase Encoding Dir. | A >> P |
| Phase Oversampling | 0 % |
| FOV Read | 175 mm |
| FOV Phase | 100.0 % |
| Slice Thickness | 0.8 mm |
| TR | 3000.0 ms |
| TE | 28.00 ms |
| Averages | 1 |
| Concatenations | 1 |
| AutoAlign | |
| Coil Elements | AC |

Contrast - Common

| TR | 3000.0 ms |
|--------------------|----------------|
| TR TE | 28.00 ms |
| MTC | Off |
| Flip Angle | 60 deg |
| Fat-Water Contrast | Fat Saturation |
| Reconstruction | Magnitude |

Contrast - Dynamic

| Dynamic Mode | Standard |
|--------------|----------|
| Measurements | 10 |
| Delay in TR | 0.00 ms |

Resolution - Common

| FOV Read | 175 mm |
|-----------|---------|
| FOV Phase | 100.0 % |

Resolution - Common

| Slice Thickness | 0.8 mm |
|------------------|--------|
| Base Resolution | 208 |
| Phase Resolution | 100 % |
| Interpolation | Off |

Resolution - Acceleration

| Acceleration Mode | GRAPPA |
|------------------------|--------------|
| Reference Scans | EPI/Separate |
| Acceleration Factor PE | 3 |
| Reference Lines PE | 126 |
| Phase Partial Fourier | 6/8 |

Resolution - Filter

| Raw Filter | Off | |
|-----------------------|-----|--|
| Elliptical Filter | Off | |
| Hamming | Off | |
| Distortion Correction | Off | |
| Normalize | Off | |

Geometry - Common

| Slice Group | 1 |
|---------------------|--------------------|
| Slices | 33 |
| Distance Factor | O % |
| Position | R7.5 P5.0 F17.4 mm |
| Orientation | Transversal |
| Phase Encoding Dir. | A >> P |
| Phase Oversampling | 0 % |
| FOV Read | 175 mm |
| FOV Phase | 100.0 % |
| Slice Thickness | 0.8 mm |
| TR | 3000.0 ms |
| Multi-Slice Mode | Interleaved |
| Series | Interleaved |
| Concatenations | 1 |

| Slice Group | 1 |
|---------------------|--------------------|
| Position | R7.5 P5.0 F17.4 mm |
| Orientation | Transversal |
| Phase Encoding Dir. | A >> P |
| AutoAlign | |
| Initial Position | R7.5 P5.0 F17.4 |
| R | 7.5 mm |
| P | 5.0 mm |
| F | 17.4 mm |
| Initial Orientation | Transversal |
| Initial Rotation | 0.00 deg |

Geometry - Saturation

| Special Saturation | None |
|--------------------|------|
| | |

Geometry - Tim Planning Suite

| Set-n-Go Protocol | Off |
|-------------------|------|
| Table Position | 0 mm |
| Table Position | Н |

System - Miscellaneous

| Coil Selection | Manual |
|---------------------|----------------|
| Radial Sorting | Off |
| MSMA | S - C - T |
| Sagittal | R >> L |
| Coronal | A >> P |
| Transversal | F >> H |
| Coil Combination | Sum of Squares |
| Matrix Optimization | Off |

System - Adjustments

| Adjustment Strategy | Standard |
|----------------------|----------|
| BO Shim | Brain |
| B1 Shim | TrueForm |
| Adjustment Tolerance | Auto |
| Confirm Frequency | Never |
| Assume Silicone | Off |

System - Adjust Volume

| ! Position | R7.5 P5.0 F17.4 mm |
|---------------|--------------------|
| ! Orientation | Transversal |
| ! Rotation | 0.00 deg |
| ! A >> P | 175 mm |
| ! R >> L | 175 mm |
| ! F >> H | 31 mm |
| Reset | Off |

System-pTx

| B1 Shim | TrueForm |
|------------|----------|
| Excitation | Standard |

System - Tx/Rx

| Frequency 1H | 297.118707 MHz |
|---------------------|----------------|
| ! Ref. Amplitude 1H | 250.000 V |
| Reset | Off |
| Correction Factor | 1.00 |
| Image Scaling | 1.000 |

Physio - Signal

| 1st Signal/Mode | None |
|-----------------|-----------|
| TR | 3000.0 ms |
| Log Signals | Off |
| Concatenations | 1 |

BOLD

| GLM Statistics | Off |
|-----------------------|-----|
| GLIVI Statistics | OII |
| Ignore Meas. at Start | 0 |

BOLD

| Ignore After Transition | 0 |
|-------------------------|----------|
| Model Transition States | On |
| Temp. Highpass Filter | On |
| Threshold | 4.00 |
| Paradigm Size | 20 |
| Meas[1] | Baseline |
| Meas[2] | Baseline |
| Meas[3] | Baseline |
| Meas[4] | Baseline |
| Meas[5] | Baseline |
| Meas[6] | Baseline |
| Meas[7] | Baseline |
| Meas[8] | Baseline |
| Meas[9] | Baseline |
| Meas[10] | Baseline |
| Meas[11] | Active |
| Meas[12] | Active |
| Meas[13] | Active |
| Meas[14] | Active |
| Meas[15] | Active |
| Meas[16] | Active |
| Meas[17] | Active |
| Meas[18] | Active |
| Meas[19] | Active |
| Meas[20] | Active |
| Motion Correction | Off |
| Spatial Filter | Off |
| Measurements | 10 |
| Delay in TR | 0.00 ms |

Sequence - Part 1

| Sequence Name | epfid |
|-------------------|------------|
| Excitation | Standard |
| RF Pulse Type | Fast |
| Gradient Mode | Normal |
| Bandwidth | 1144 Hz/Px |
| Echo Spacing | 1.00 ms |
| Free Echo Spacing | Off |
| EPI Factor | 208 |

Sequence - Part 2

| Introduction | Introduction | on (| off |
|--------------|--------------|------|-----|
|--------------|--------------|------|-----|

Sequence - Special

| Imaging Dummy TRs | 4 |
|--------------------|-----------------|
| SMS ACS Dummy TRs | -1 |
| FLEET Dummy Pulses | 0 |
| CC Mode | Direct adj coil |
| RF Clip | 0 |
| VERSE Factor | 1.00 |
| ACS mode | GRAPPA FLEET |
| FLEET FA | 10 deg |
| Kernel Size | 5x5 |
| Run Siemens DPG. | On |

SIEMENS MAGNETOM 7.0T W60 Numaris/X VA60A-0CT2

Sequence - Special

| Wait for TCP/IP Trigger | Off | |
|-------------------------|-----|--|
| Reverse Phase Encoding | Off | |

| SAR Assistant | Off | |
|---------------|-----|--|