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**\\MR-Physik\AG Zaiss\IMPI04\COMPARE_APTw_001_of_MPI04_816b_816c\gre_cest_816B_APTw_001_FastTrec_3s**

TA: 3:35 PM: FIX Voxel size: 2.0×2.0×5.0 mmPAT: 2 Rel. SNR: 1.00 : WIPCEST

### 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 | 20 % |
| Position | R1.2 A3.0 H19.2 mm |
| Orientation | T > C-6.5 |
| Phase enc. dir. | R >> L |
| AutoAlign | --- |
| Phase oversampling | 0 % |
| Slice oversampling | 16.7 % |
| Slices per slab | 12 |
| FoV read | 220 mm |
| FoV phase | 82.1 % |
| Slice thickness | 5.00 mm |
| TR | 4.1 ms |
| TE | 2.00 ms |
| Averages | 1 |
| Concatenations | 1 |
| Filter | Raw filter |
| Coil elements | HC3-6 |

### Contrast - Common

| | |
|---|---|
| TR | 4.1 ms |
| TE | 2.00 ms |
| MTC | Off |
| Magn. preparation | None |
| Flip angle | 8 deg |
| Fat suppr. | None |
| Water suppr. | None |
| SWI | Off |

### Contrast - Dynamic

| | |
|---|---|
| Averages | 1 |
| Averaging mode | Short term |
| Reconstruction | Magnitude |
| Measurements | 30 |
| Pause after meas. 1 | 0.0 s |
| Pause after meas. 2 | 0.0 s |
| Pause after meas. 3 | 0.0 s |
| Pause after meas. 4 | 0.0 s |
| Pause after meas. 5 | 0.0 s |
| Pause after meas. 6 | 0.0 s |
| Pause after meas. 7 | 0.0 s |
| Pause after meas. 8 | 0.0 s |
| Pause after meas. 9 | 0.0 s |
| Pause after meas. 10 | 0.0 s |

### Contrast - Dynamic

| | |
|---|---|
| Pause after meas. 11 | 0.0 s |
| Pause after meas. 12 | 0.0 s |
| Pause after meas. 13 | 0.0 s |
| Pause after meas. 14 | 0.0 s |
| Pause after meas. 15 | 0.0 s |
| Pause after meas. 16 | 0.0 s |
| Pause after meas. 17 | 0.0 s |
| Pause after meas. 18 | 0.0 s |
| Pause after meas. 19 | 0.0 s |
| Pause after meas. 20 | 0.0 s |
| Pause after meas. 21 | 0.0 s |
| Pause after meas. 22 | 0.0 s |
| Pause after meas. 23 | 0.0 s |
| Pause after meas. 24 | 0.0 s |
| Pause after meas. 25 | 0.0 s |
| Pause after meas. 26 | 0.0 s |
| Pause after meas. 27 | 0.0 s |
| Pause after meas. 28 | 0.0 s |
| Pause after meas. 29 | 0.0 s |
| Multiple series | Off |

### Resolution - Common

| | |
|---|---|
| FoV read | 220 mm |
| FoV phase | 82.1 % |
| Slice thickness | 5.00 mm |
| Base resolution | 112 |
| Phase resolution | 100 % |
| Slice resolution | 100 % |
| Phase partial Fourier | Off |
| Slice partial Fourier | Off |
| Interpolation | Off |

### Resolution - iPAT

| | |
|---|---|
| PAT mode | GRAPPA |
| Accel. factor PE | 2 |
| Ref. lines PE | 32 |
| Accel. factor 3D | 1 |
| Ref. lines 3D | 12 |
| Reference scan mode | GRE/separate |

### Resolution - Filter Image

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

### Resolution - Filter Rawdata

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

### Geometry - Common

| | |
|---|---|
| Slab group | 1 |
| Slabs | 1 |
| Dist. factor | 20 % |
| Position | R1.2 A3.0 H19.2 mm |
| Orientation | T > C-6.5 |
| Phase enc. dir. | R >> L |
| Slice oversampling | 16.7 % |

### Geometry - Common

| | |
|---|---|
| Slices per slab | 12 |
| FoV read | 220 mm |
| FoV phase | 82.1 % |
| Slice thickness | 5.00 mm |
| TR | 4.1 ms |
| Multi-slice mode | Interleaved |
| Series | Interleaved |
| Concatenations | 1 |

### Geometry - AutoAlign

| | |
|---|---|
| Slab group | 1 |
| Position | R1.2 A3.0 H19.2 mm |
| Orientation | T > C-6.5 |
| Phase enc. dir. | R >> L |
| AutoAlign | --- |
| Initial Position | R1.2 A3.0 H19.2 |
| R | 1.2 mm |
| A | 3.0 mm |
| H | 19.2 mm |
| Initial Rotation | 90.00 deg |
| Initial Orientation | T > C |
| T > C | -6.5 |
| > S | 0.0 |

### Geometry - Saturation

| | |
|---|---|
| Saturation mode | Standard |
| Fat suppr. | None |
| Water suppr. | None |
| Special sat. | None |

### Geometry - Tim Planning Suite

| | |
|---|---|
| Set-n-Go Protocol | Off |
| Table position | H |
| Table position | 0 mm |
| Inline Composing | Off |

### System - Miscellaneous

| | |
|---|---|
| Positioning mode | FIX |
| 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 |
| AutoAlign | --- |
| Coil Select Mode | Default |

### System - Adjustments

| | |
|---|---|
| B0 Shim mode | Standard |
| B1 Shim mode | TrueForm |
| Adjust with body coil | Off |
| Confirm freq. adjustment | Off |
| Assume Dominant Fat | Off |
| Assume Silicone | Off |
| Adjustment Tolerance | Auto |

### System - Adjust Volume

| | |
|---|---|
| ! Position | L0.0 A7.2 H20.4 mm |
| ! Orientation | T > C-6.7 |
| ! Rotation | 0.00 deg |
| ! A >> P | 220 mm |

### System - Adjust Volume

| | |
|---|---|
| ! R >> L | 181 mm |
| ! F >> H | 80 mm |
| Reset | Off |

### System - pTx Volumes

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

### System - Tx/Rx

| | |
|---|---|
| Frequency 1H | 123.257976 MHz |
| Correction factor | 1 |
| Gain | Low |
| Img. Scale Cor. | 4.000 |
| Reset | Off |
| ? Ref. amplitude 1H | 0.000 V |

### Physio - Signal1

| | |
|---|---|
| 1st Signal/Mode | None |
| TR | 4.1 ms |
| Concatenations | 1 |
| Segments | 1 |

### Physio - Cardiac

| | |
|---|---|
| Tagging | None |
| Magn. preparation | None |
| Fat suppr. | None |
| Dark blood | Off |
| FoV read | 220 mm |
| FoV phase | 82.1 % |
| Phase resolution | 100 % |

### Physio - PACE

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

### Inline - Common

| | |
|---|---|
| Subtract | Off |
| Measurements | 30 |
| StdDev | Off |
| Liver registration | Off |
| Save original images | On |

### Inline - MIP

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

### Inline - Soft Tissue

| | |
|---|---|
| Wash - In | Off |
| Wash - Out | Off |
| TTP | Off |
| PEI | Off |
| MIP - time | Off |
| Measurements | 30 |
| Pause after meas. 1 | 0.0 s |
| Pause after meas. 2 | 0.0 s |
| Pause after meas. 3 | 0.0 s |
| Pause after meas. 4 | 0.0 s |
| Pause after meas. 5 | 0.0 s |
| Pause after meas. 6 | 0.0 s |
| Pause after meas. 7 | 0.0 s |

### Inline - Soft Tissue

| | |
|---|---|
| Pause after meas. 8 | 0.0 s |
| Pause after meas. 9 | 0.0 s |
| Pause after meas. 10 | 0.0 s |
| Pause after meas. 11 | 0.0 s |
| Pause after meas. 12 | 0.0 s |
| Pause after meas. 13 | 0.0 s |
| Pause after meas. 14 | 0.0 s |
| Pause after meas. 15 | 0.0 s |
| Pause after meas. 16 | 0.0 s |
| Pause after meas. 17 | 0.0 s |
| Pause after meas. 18 | 0.0 s |
| Pause after meas. 19 | 0.0 s |
| Pause after meas. 20 | 0.0 s |
| Pause after meas. 21 | 0.0 s |
| Pause after meas. 22 | 0.0 s |
| Pause after meas. 23 | 0.0 s |
| Pause after meas. 24 | 0.0 s |
| Pause after meas. 25 | 0.0 s |
| Pause after meas. 26 | 0.0 s |
| Pause after meas. 27 | 0.0 s |
| Pause after meas. 28 | 0.0 s |
| Pause after meas. 29 | 0.0 s |

### Inline - Composing

| | |
|---|---|
| Inline Composing | Off |
| Distortion Corr. | Off |

### Inline - MapIt

| | |
|---|---|
| Save original images | On |
| MapIt | None |
| Flip angle | 8 deg |
| Measurements | 30 |
| Contrasts | 1 |
| TR | 4.1 ms |
| TE | 2.00 ms |

### Sequence - Part 1

| | |
|---|---|
| Introduction | On |
| Dimension | 3D |
| Elliptical scanning | On |
| Phase stabilisation | Off |
| Reordering | Spiral |
| Asymmetric echo | Off |
| Contrasts | 1 |
| Flow comp. | No |
| Multi-slice mode | Interleaved |
| Bandwidth | 700 Hz/Px |

### Sequence - Part 2

| | |
|---|---|
| Define | Segments |
| Shots per slice | 47 |
| Segments | 1 |
| Acoustic noise reduction | None |
| RF pulse type | Fast |
| Gradient mode | Fast |
| Excitation | Slab-sel. |
| RF spoiling | On |
| Incr. Gradient spoiling | Off |

### Sequence - Special

| | |
|---|---|
| CEST | On |
| Pulse Type | Gauss |
| B1 definition | pure FA |
| B1 | 1.78 uT |

### Sequence - Special

| | |
|---|---|
| Spiral Elong. E | 0.5 (null) |
| No. of Pulses | 36 n |
| Pulse Duration | 49920 µs |
| Duration Scale Factor | 1 |
| Interpulse Delay | 5 ms |
| Recover Time | 3000 ms |
| Recover Time M0 | 3000 ms |
| Offset M0 | 300 ppm |
| Deactivate Duty Cycle Check | 1 |
| Spoiling | only last |
| Offset Distribution | File |
| Suppressed M0 | On |
| Offset | 4.0 ppm |
| Freq Shift | 1.2 ppm |
| Delta Freq | 1.2 ppm |
| Scale Factor | 10.0 (null) |
| B0 Correction | PhaseMap |
| Image Registration | None |
| Save Unregistered | Off |

### Sequence - Assistant

| | |
|---|---|
| Mode | Off |
| Allowed delay | 0 s |

**\\MR-Physik\AG Zaiss\IMPI04\COMPARE_APTw_001_of_MPI04_816b_816c\gre_cest_816C_APTw_001_slabsel_CS2**

TA: 3:19 PM: FIX Voxel size: 2.0×2.0×5.0 mmPAT: Off Rel. SNR: 1.00 : flWIP

## 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 | 20 % |
| Position | R1.2 A3.0 H19.2 mm |
| Orientation | T > C-6.5 |
| Phase enc. dir. | R >> L |
| AutoAlign | --- |
| Phase oversampling | 0 % |
| Slice oversampling | 16.7 % |
| Slices per slab | 12 |
| FoV read | 220 mm |
| FoV phase | 82.1 % |
| Slice thickness | 5.0 mm |
| TR | 4.00 ms |
| TE | 2.00 ms |
| Averages | 1 |
| Concatenations | 1 |
| Filter | Raw filter |
| Coil elements | HC3-6 |

## Contrast - Common

| | |
|---|---|
| TR | 4.00 ms |
| TE | 2.00 ms |
| Flip angle | 8.0 deg |
| Fat suppr. | None |
| Lines Per Shot | 496 |
| Water suppr. | None |
| Dixon | Off |
| Dixon evaluation | Off |

## Contrast - Dynamic

| | |
|---|---|
| Averages | 1 |
| Averaging mode | Long term |
| Reconstruction | Magnitude |
| Measurements | 30 |
| Pause after meas. 1 | 0.0 s |
| Pause after meas. 2 | 0.0 s |
| Pause after meas. 3 | 0.0 s |
| Pause after meas. 4 | 0.0 s |
| Pause after meas. 5 | 0.0 s |
| Pause after meas. 6 | 0.0 s |
| Pause after meas. 7 | 0.0 s |
| Pause after meas. 8 | 0.0 s |
| Pause after meas. 9 | 0.0 s |
| Pause after meas. 10 | 0.0 s |

## Contrast - Dynamic

| | |
|---|---|
| Pause after meas. 11 | 0.0 s |
| Pause after meas. 12 | 0.0 s |
| Pause after meas. 13 | 0.0 s |
| Pause after meas. 14 | 0.0 s |
| Pause after meas. 15 | 0.0 s |
| Pause after meas. 16 | 0.0 s |
| Pause after meas. 17 | 0.0 s |
| Pause after meas. 18 | 0.0 s |
| Pause after meas. 19 | 0.0 s |
| Pause after meas. 20 | 0.0 s |
| Pause after meas. 21 | 0.0 s |
| Pause after meas. 22 | 0.0 s |
| Pause after meas. 23 | 0.0 s |
| Pause after meas. 24 | 0.0 s |
| Pause after meas. 25 | 0.0 s |
| Pause after meas. 26 | 0.0 s |
| Pause after meas. 27 | 0.0 s |
| Pause after meas. 28 | 0.0 s |
| Pause after meas. 29 | 0.0 s |
| Multiple series | Off |

## Resolution - Common

| | |
|---|---|
| FoV read | 220 mm |
| FoV phase | 82.1 % |
| Slice thickness | 5.0 mm |
| Base resolution | 112 |
| Phase resolution | 100 % |
| Slice resolution | 100 % |
| Phase partial Fourier | Off |
| Slice partial Fourier | Off |
| Trajectory | Cartesian |
| View sharing | Off |
| Interpolation | Off |

## Resolution - iPAT

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

## Resolution - Filter Image

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

## Resolution - Filter Rawdata

| | |
|---|---|
| Raw filter | On |
| Elliptical filter | Off |
| POCS | Off |

## Geometry - Common

| | |
|---|---|
| Slab group | 1 |
| Slabs | 1 |
| Dist. factor | 20 % |
| Position | R1.2 A3.0 H19.2 mm |
| Orientation | T > C-6.5 |
| Phase enc. dir. | R >> L |
| Slice oversampling | 16.7 % |
| Slices per slab | 12 |
| FoV read | 220 mm |

### Geometry - Common

| | |
|---|---|
| FoV phase | 82.1 % |
| Slice thickness | 5.0 mm |
| TR | 4.00 ms |
| Multi-slice mode | Sequential |
| Series | Ascending |
| Concatenations | 1 |

### Geometry - AutoAlign

| | |
|---|---|
| Slab group | 1 |
| Position | R1.2 A3.0 H19.2 mm |
| Orientation | T > C-6.5 |
| Phase enc. dir. | R >> L |
| AutoAlign | --- |
| Initial Position | R1.2 A3.0 H19.2 |
| R | 1.2 mm |
| A | 3.0 mm |
| H | 19.2 mm |
| Initial Rotation | 90.00 deg |
| Initial Orientation | T > C |
| T > C | -6.5 |
| > S | 0.0 |

### Geometry - Saturation

| | |
|---|---|
| Fat suppr. | None |
| Water suppr. | None |
| Dixon | Off |
| Dixon evaluation | Off |
| Special sat. | None |

### Geometry - Tim Planning Suite

| | |
|---|---|
| Set-n-Go Protocol | Off |
| Table position | H |
| Table position | 0 mm |
| Inline Composing | Off |

### System - Miscellaneous

| | |
|---|---|
| Positioning mode | FIX |
| 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 |
| AutoAlign | --- |
| Coil Select Mode | Default |

### System - Adjustments

| | |
|---|---|
| B0 Shim mode | Standard |
| B1 Shim mode | TrueForm |
| Adjust with body coil | Off |
| Confirm freq. adjustment | Off |
| Assume Dominant Fat | Off |
| Assume Silicone | Off |
| Adjustment Tolerance | Auto |

### System - Adjust Volume

| | |
|---|---|
| ! Position | L0.0 A7.2 H20.4 mm |
| ! Orientation | T > C-6.7 |
| ! Rotation | 0.00 deg |
| ! A >> P | 220 mm |
| ! R >> L | 181 mm |

### System - Adjust Volume

| | |
|---|---|
| ! F >> H | 80 mm |
| Reset | Off |

### System - pTx Volumes

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

### System - Tx/Rx

| | |
|---|---|
| Frequency 1H | 123.257976 MHz |
| Correction factor | 1 |
| Gain | Low |
| Img. Scale Cor. | 1.500 |
| Reset | Off |
| ? Ref. amplitude 1H | 0.000 V |

### Physio - PACE

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

### Inline - Common

| | |
|---|---|
| View sharing | Off |
| Flip angle | 8.0 deg |
| Measurements | 30 |
| Pause after meas. 1 | 0.0 s |
| Pause after meas. 2 | 0.0 s |
| Pause after meas. 3 | 0.0 s |
| Pause after meas. 4 | 0.0 s |
| Pause after meas. 5 | 0.0 s |
| Pause after meas. 6 | 0.0 s |
| Pause after meas. 7 | 0.0 s |
| Pause after meas. 8 | 0.0 s |
| Pause after meas. 9 | 0.0 s |
| Pause after meas. 10 | 0.0 s |
| Pause after meas. 11 | 0.0 s |
| Pause after meas. 12 | 0.0 s |
| Pause after meas. 13 | 0.0 s |
| Pause after meas. 14 | 0.0 s |
| Pause after meas. 15 | 0.0 s |
| Pause after meas. 16 | 0.0 s |
| Pause after meas. 17 | 0.0 s |
| Pause after meas. 18 | 0.0 s |
| Pause after meas. 19 | 0.0 s |
| Pause after meas. 20 | 0.0 s |
| Pause after meas. 21 | 0.0 s |
| Pause after meas. 22 | 0.0 s |
| Pause after meas. 23 | 0.0 s |
| Pause after meas. 24 | 0.0 s |
| Pause after meas. 25 | 0.0 s |
| Pause after meas. 26 | 0.0 s |
| Pause after meas. 27 | 0.0 s |
| Pause after meas. 28 | 0.0 s |
| Pause after meas. 29 | 0.0 s |
| Burn time-to-center | On |
| Temporal interpolation | 1 |
| 3D centric reordering | Off |
| Time to center | 11.1 s |

### Inline - Inline

| | |
|---|---|
| Subtract | Off |
| Measurements | 30 |
| StdDev | Off |
| Liver registration | Off |
| Save original images | On |

### Inline - MIP

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

### Inline - Soft Tissue

| | |
|---|---|
| Wash - In | Off |
| Wash - Out | Off |
| TTP | Off |
| PEI | Off |
| MIP - time | Off |
| Measurements | 30 |
| Pause after meas. 1 | 0.0 s |
| Pause after meas. 2 | 0.0 s |
| Pause after meas. 3 | 0.0 s |
| Pause after meas. 4 | 0.0 s |
| Pause after meas. 5 | 0.0 s |
| Pause after meas. 6 | 0.0 s |
| Pause after meas. 7 | 0.0 s |
| Pause after meas. 8 | 0.0 s |
| Pause after meas. 9 | 0.0 s |
| Pause after meas. 10 | 0.0 s |
| Pause after meas. 11 | 0.0 s |
| Pause after meas. 12 | 0.0 s |
| Pause after meas. 13 | 0.0 s |
| Pause after meas. 14 | 0.0 s |
| Pause after meas. 15 | 0.0 s |
| Pause after meas. 16 | 0.0 s |
| Pause after meas. 17 | 0.0 s |
| Pause after meas. 18 | 0.0 s |
| Pause after meas. 19 | 0.0 s |
| Pause after meas. 20 | 0.0 s |
| Pause after meas. 21 | 0.0 s |
| Pause after meas. 22 | 0.0 s |
| Pause after meas. 23 | 0.0 s |
| Pause after meas. 24 | 0.0 s |
| Pause after meas. 25 | 0.0 s |
| Pause after meas. 26 | 0.0 s |
| Pause after meas. 27 | 0.0 s |
| Pause after meas. 28 | 0.0 s |
| Pause after meas. 29 | 0.0 s |

### Inline - Composing

| | |
|---|---|
| Inline Composing | Off |
| Distortion Corr. | Off |

### Inline - MapIt

| | |
|---|---|
| Save original images | On |
| MapIt | None |
| Flip angle | ~~8.0 deg~~ |
| Measurements | 30 |
| Contrasts | 1 |
| TR | 4.00 ms |
| TE | 2.00 ms |

### Sequence - Part 1

| | |
|---|---|
| Introduction | Off |
| Dimension | 3D |
| Elliptical scanning | On |
| Asymmetric echo | Off |
| Contrasts | 1 |
| Optimization | None |
| Multi-slice mode | Sequential |

### Sequence - Part 1

| | |
|---|---|
| Bandwidth | 700 Hz/Px |

### Sequence - Part 2

| | |
|---|---|
| RF pulse type | Normal |
| Gradient mode | Normal |
| Excitation | Slab-sel. |
| RF spoiling | On |
| Incr. Gradient spoiling | Off |

### Sequence - Special

| | |
|---|---|
| Sparse Sampling | On |
| Increment PE | 1.0000 |
| Increment Par | 5.0000 |
| Temporal Incoherence | 0.0000 |
| Reg. Param 1 | 0.0001 |
| Reg. Param 2 | 0.0000 |
| Additional scaling | 0.0000 |
| Acceleration Factor | 2.0000 |
| Channel Compression | 1 |
| ReconMode | 2 |
| Number of RefScansPE | 36 |
| Number of RefscansPar | 12 |
| Iterations | 50 |
| CSM Mode | 2 |
| Retro Recon Ini File | 0 |
| Max Power | 5 |
| Sparse Recon | Off |
| CEST | APT |
| Fill Time after FatSat Pulse | 0 us |

### Sequence - Assistant

| | |
|---|---|
| Mode | Off |
| Allowed delay | 0 s |

**\\MR-Physik\AG Zaiss\IMPI04\COMPARE_APTw_001_of_MPI04_816b_816c\gre_cest_MPI04_APTw_001_FA8_fatsat**

TA: 3:16 PM: FIX Voxel size: 2.0×2.0×5.0 mmPAT: 2 Rel. SNR: 1.00 : fl_CEST

### 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 | 20 % |
| Position | R1.2 A3.0 H19.2 mm |
| Orientation | T > C-6.5 |
| Phase enc. dir. | R >> L |
| AutoAlign | --- |
| Phase oversampling | 0 % |
| Slice oversampling | 16.7 % |
| Slices per slab | 12 |
| FoV read | 220 mm |
| FoV phase | 82.1 % |
| Slice thickness | 5.00 mm |
| TR | 4.0 ms |
| TE | 2.00 ms |
| Averages | 1 |
| Concatenations | 1 |
| Filter | Raw filter |
| Coil elements | HC3-6 |

### Contrast - Common

| | |
|---|---|
| TR | 4.0 ms |
| TE | 2.00 ms |
| MTC | Off |
| Magn. preparation | None |
| Flip angle | ~~8 deg~~ |
| Fat suppr. | None |
| Water suppr. | None |
| SWI | Off |

### Contrast - Dynamic

| | |
|---|---|
| Averages | 1 |
| Averaging mode | Short term |
| Reconstruction | Magnitude |
| Measurements | 30 |
| Pause after meas. 1 | 0.0 s |
| Pause after meas. 2 | 0.0 s |
| Pause after meas. 3 | 0.0 s |
| Pause after meas. 4 | 0.0 s |
| Pause after meas. 5 | 0.0 s |
| Pause after meas. 6 | 0.0 s |
| Pause after meas. 7 | 0.0 s |
| Pause after meas. 8 | 0.0 s |
| Pause after meas. 9 | 0.0 s |
| Pause after meas. 10 | 0.0 s |

### Contrast - Dynamic

| | |
|---|---|
| Pause after meas. 11 | 0.0 s |
| Pause after meas. 12 | 0.0 s |
| Pause after meas. 13 | 0.0 s |
| Pause after meas. 14 | 0.0 s |
| Pause after meas. 15 | 0.0 s |
| Pause after meas. 16 | 0.0 s |
| Pause after meas. 17 | 0.0 s |
| Pause after meas. 18 | 0.0 s |
| Pause after meas. 19 | 0.0 s |
| Pause after meas. 20 | 0.0 s |
| Pause after meas. 21 | 0.0 s |
| Pause after meas. 22 | 0.0 s |
| Pause after meas. 23 | 0.0 s |
| Pause after meas. 24 | 0.0 s |
| Pause after meas. 25 | 0.0 s |
| Pause after meas. 26 | 0.0 s |
| Pause after meas. 27 | 0.0 s |
| Pause after meas. 28 | 0.0 s |
| Pause after meas. 29 | 0.0 s |
| Multiple series | Off |

### Resolution - Common

| | |
|---|---|
| FoV read | 220 mm |
| FoV phase | 82.1 % |
| Slice thickness | 5.00 mm |
| Base resolution | 112 |
| Phase resolution | 100 % |
| Slice resolution | 100 % |
| Phase partial Fourier | Off |
| Slice partial Fourier | Off |
| Interpolation | Off |

### Resolution - iPAT

| | |
|---|---|
| PAT mode | GRAPPA |
| Accel. factor PE | 2 |
| Ref. lines PE | 32 |
| Accel. factor 3D | 1 |
| Ref. lines 3D | 12 |
| Reference scan mode | GRE/separate |

### Resolution - Filter Image

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

### Resolution - Filter Rawdata

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

### Geometry - Common

| | |
|---|---|
| Slab group | 1 |
| Slabs | 1 |
| Dist. factor | 20 % |
| Position | R1.2 A3.0 H19.2 mm |
| Orientation | T > C-6.5 |
| Phase enc. dir. | R >> L |
| Slice oversampling | 16.7 % |

### Geometry - Common

| | |
|---|---|
| Slices per slab | 12 |
| FoV read | 220 mm |
| FoV phase | 82.1 % |
| Slice thickness | 5.00 mm |
| TR | 4.0 ms |
| Multi-slice mode | Interleaved |
| Series | Interleaved |
| Concatenations | 1 |

### Geometry - AutoAlign

| | |
|---|---|
| Slab group | 1 |
| Position | R1.2 A3.0 H19.2 mm |
| Orientation | T > C-6.5 |
| Phase enc. dir. | R >> L |
| AutoAlign | --- |
| Initial Position | R1.2 A3.0 H19.2 |
| R | 1.2 mm |
| A | 3.0 mm |
| H | 19.2 mm |
| Initial Rotation | 90.00 deg |
| Initial Orientation | T > C |
| T > C | -6.5 |
| > S | 0.0 |

### Geometry - Saturation

| | |
|---|---|
| Saturation mode | Standard |
| Fat suppr. | None |
| Water suppr. | None |
| Special sat. | None |

### Geometry - Tim Planning Suite

| | |
|---|---|
| Set-n-Go Protocol | Off |
| Table position | H |
| Table position | 0 mm |
| Inline Composing | Off |

### System - Miscellaneous

| | |
|---|---|
| Positioning mode | FIX |
| 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 |
| AutoAlign | --- |
| Coil Select Mode | On - AutoCoilSelect |

### System - Adjustments

| | |
|---|---|
| B0 Shim mode | Standard |
| B1 Shim mode | TrueForm |
| Adjust with body coil | Off |
| Confirm freq. adjustment | Off |
| Assume Dominant Fat | Off |
| Assume Silicone | Off |
| Adjustment Tolerance | Auto |

### System - Adjust Volume

| | |
|---|---|
| ! Position | L0.0 A7.2 H20.4 mm |
| ! Orientation | T > C-6.7 |
| ! Rotation | 0.00 deg |
| ! A >> P | 220 mm |

### System - Adjust Volume

| | |
|---|---|
| ! R >> L | 181 mm |
| ! F >> H | 80 mm |
| Reset | Off |

### System - pTx Volumes

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

### System - Tx/Rx

| | |
|---|---|
| Frequency 1H | 123.257976 MHz |
| Correction factor | 1 |
| Gain | Low |
| Img. Scale Cor. | 4.000 |
| Reset | Off |
| ? Ref. amplitude 1H | 0.000 V |

### Physio - Signal1

| | |
|---|---|
| 1st Signal/Mode | None |
| TR | 4.0 ms |
| Concatenations | 1 |
| Segments | 1 |

### Physio - Cardiac

| | |
|---|---|
| Tagging | None |
| Magn. preparation | None |
| Fat suppr. | None |
| Dark blood | Off |
| FoV read | 220 mm |
| FoV phase | 82.1 % |
| Phase resolution | 100 % |

### Physio - PACE

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

### Inline - Common

| | |
|---|---|
| Subtract | Off |
| Measurements | 30 |
| StdDev | Off |
| Liver registration | Off |
| Save original images | On |

### Inline - MIP

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

### Inline - Soft Tissue

| | |
|---|---|
| Wash - In | Off |
| Wash - Out | Off |
| TTP | Off |
| PEI | Off |
| MIP - time | Off |
| Measurements | 30 |
| Pause after meas. 1 | 0.0 s |
| Pause after meas. 2 | 0.0 s |
| Pause after meas. 3 | 0.0 s |
| Pause after meas. 4 | 0.0 s |
| Pause after meas. 5 | 0.0 s |
| Pause after meas. 6 | 0.0 s |
| Pause after meas. 7 | 0.0 s |

### Inline - Soft Tissue

| | |
|---|---|
| Pause after meas. 8 | 0.0 s |
| Pause after meas. 9 | 0.0 s |
| Pause after meas. 10 | 0.0 s |
| Pause after meas. 11 | 0.0 s |
| Pause after meas. 12 | 0.0 s |
| Pause after meas. 13 | 0.0 s |
| Pause after meas. 14 | 0.0 s |
| Pause after meas. 15 | 0.0 s |
| Pause after meas. 16 | 0.0 s |
| Pause after meas. 17 | 0.0 s |
| Pause after meas. 18 | 0.0 s |
| Pause after meas. 19 | 0.0 s |
| Pause after meas. 20 | 0.0 s |
| Pause after meas. 21 | 0.0 s |
| Pause after meas. 22 | 0.0 s |
| Pause after meas. 23 | 0.0 s |
| Pause after meas. 24 | 0.0 s |
| Pause after meas. 25 | 0.0 s |
| Pause after meas. 26 | 0.0 s |
| Pause after meas. 27 | 0.0 s |
| Pause after meas. 28 | 0.0 s |
| Pause after meas. 29 | 0.0 s |

### Inline - Composing

| | |
|---|---|
| Inline Composing | Off |
| Distortion Corr. | Off |

### Inline - MapIt

| | |
|---|---|
| Save original images | On |
| MapIt | None |
| Flip angle | ~~8 deg~~ |
| Measurements | 30 |
| Contrasts | 1 |
| TR | 4.0 ms |
| TE | 2.00 ms |

### Sequence - Part 1

| | |
|---|---|
| Introduction | On |
| Dimension | 3D |
| Elliptical scanning | On |
| Phase stabilisation | Off |
| Reordering | Spiral |
| Asymmetric echo | Off |
| Contrasts | 1 |
| Flow comp. | No |
| Multi-slice mode | Interleaved |
| Bandwidth | 700 Hz/Px |

### Sequence - Part 2

| | |
|---|---|
| Define | Segments |
| Shots per slice | 47 |
| Segments | 1 |
| Acoustic noise reduction | None |
| RF pulse type | Fast |
| Gradient mode | Fast |
| Excitation | Slab-sel. |
| RF spoiling | On |
| Incr. Gradient spoiling | Off |

### Sequence - Special

| | |
|---|---|
| CEST | On |
| Pulse Type | Gauss |
| B1 definition | pure FA |
| B1 | 1.78 uT |

### Sequence - Special

| | |
|---|---|
| No. of Pulses | 36 n |
| Pulse Duration | 49920 µs |
| Interpulse Delay | 5 ms |
| Recover Time | 2400 ms |
| Recover Time M0 | 2400 ms |
| No. of Locking Pulses | 1 n |
| Lock Interpulse Delay | 1 ms |
| Spoiling | only last |
| Fat Sat | On |
| Spiral Elong. E | 0.5 |
| Offset Distribution | APT |
| Suppressed M0 | On |
| Offset | 3.0 ppm |
| Freq Shift | 0.0 ppm |
| Delta Freq | 0.0 ppm |
| Scale Factor | 10.0 (null) |
| Duration | 1.0 ms |
| BWTP | 9.6 |
| EmpFactor | 0.87 |
| Samples | 200 |
| B0 Correction | Z-Spectrum |
| Image Registration | None |

### Sequence - Assistant

| | |
|---|---|
| Mode | Off |
| Allowed delay | 0 s |

**\\MR-Physik\AG Zaiss\IMPI04\COMPARE_APTw_001_of_MPI04_816b_816c\gre_cest_MPI04_WASAB 1**

TA: 2:02 PM: FIX Voxel size: 2.0×2.0×5.0 mmPAT: 2 Rel. SNR: 1.00 : fl_CEST

### 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 | 20 % |
| Position | R1.2 A3.0 H19.2 mm |
| Orientation | T > C-6.5 |
| Phase enc. dir. | R >> L |
| AutoAlign | --- |
| Phase oversampling | 0 % |
| Slice oversampling | 16.7 % |
| Slices per slab | 12 |
| FoV read | 220 mm |
| FoV phase | 82.1 % |
| Slice thickness | 5.00 mm |
| TR | 4.0 ms |
| TE | 2.00 ms |
| Averages | 1 |
| Concatenations | 1 |
| Filter | Raw filter |
| Coil elements | HC3-6 |

### Contrast - Common

| | |
|---|---|
| TR | 4.0 ms |
| TE | 2.00 ms |
| MTC | Off |
| Magn. preparation | None |
| Flip angle | 6 deg |
| Fat suppr. | None |
| Water suppr. | None |
| SWI | Off |

### Contrast - Dynamic

| | |
|---|---|
| Averages | 1 |
| Averaging mode | Short term |
| Reconstruction | Magnitude |
| Measurements | 24 |
| Pause after meas. 1 | 0.0 s |
| Pause after meas. 2 | 0.0 s |
| Pause after meas. 3 | 0.0 s |
| Pause after meas. 4 | 0.0 s |
| Pause after meas. 5 | 0.0 s |
| Pause after meas. 6 | 0.0 s |
| Pause after meas. 7 | 0.0 s |
| Pause after meas. 8 | 0.0 s |
| Pause after meas. 9 | 0.0 s |
| Pause after meas. 10 | 0.0 s |

### Contrast - Dynamic

| | |
|---|---|
| Pause after meas. 11 | 0.0 s |
| Pause after meas. 12 | 0.0 s |
| Pause after meas. 13 | 0.0 s |
| Pause after meas. 14 | 0.0 s |
| Pause after meas. 15 | 0.0 s |
| Pause after meas. 16 | 0.0 s |
| Pause after meas. 17 | 0.0 s |
| Pause after meas. 18 | 0.0 s |
| Pause after meas. 19 | 0.0 s |
| Pause after meas. 20 | 0.0 s |
| Pause after meas. 21 | 0.0 s |
| Pause after meas. 22 | 0.0 s |
| Pause after meas. 23 | 0.0 s |
| Multiple series | Off |

### Resolution - Common

| | |
|---|---|
| FoV read | 220 mm |
| FoV phase | 82.1 % |
| Slice thickness | 5.00 mm |
| Base resolution | 112 |
| Phase resolution | 100 % |
| Slice resolution | 100 % |
| Phase partial Fourier | Off |
| Slice partial Fourier | Off |
| Interpolation | Off |

### Resolution - iPAT

| | |
|---|---|
| PAT mode | GRAPPA |
| Accel. factor PE | 2 |
| Ref. lines PE | 32 |
| Accel. factor 3D | 1 |
| Ref. lines 3D | 12 |
| Reference scan mode | GRE/separate |

### Resolution - Filter Image

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

### Resolution - Filter Rawdata

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

### Geometry - Common

| | |
|---|---|
| Slab group | 1 |
| Slabs | 1 |
| Dist. factor | 20 % |
| Position | R1.2 A3.0 H19.2 mm |
| Orientation | T > C-6.5 |
| Phase enc. dir. | R >> L |
| Slice oversampling | 16.7 % |
| Slices per slab | 12 |
| FoV read | 220 mm |
| FoV phase | 82.1 % |
| Slice thickness | 5.00 mm |
| TR | 4.0 ms |
| Multi-slice mode | Interleaved |

### Geometry - Common

| | |
|---|---|
| Series | Interleaved |
| Concatenations | 1 |

### Geometry - AutoAlign

| | |
|---|---|
| Slab group | 1 |
| Position | R1.2 A3.0 H19.2 mm |
| Orientation | T > C-6.5 |
| Phase enc. dir. | R >> L |
| AutoAlign | --- |
| Initial Position | R1.2 A3.0 H19.2 |
| R | 1.2 mm |
| A | 3.0 mm |
| H | 19.2 mm |
| Initial Rotation | 90.00 deg |
| Initial Orientation | T > C |
| T > C | -6.5 |
| > S | 0.0 |

### Geometry - Saturation

| | |
|---|---|
| Saturation mode | Standard |
| Fat suppr. | None |
| Water suppr. | None |
| Special sat. | None |

### Geometry - Tim Planning Suite

| | |
|---|---|
| Set-n-Go Protocol | Off |
| Table position | H |
| Table position | 0 mm |
| Inline Composing | Off |

### System - Miscellaneous

| | |
|---|---|
| Positioning mode | FIX |
| Table position | H |
| Table position | 0 mm |
| MSMA | S - C - T |
| Sagittal | R >> L |
| Coronal | A >> P |
| Transversal | F >> H |
| Coil Combine Mode | Adaptive Combine |
| Save uncombined | Off |
| Matrix Optimization | Off |
| AutoAlign | --- |
| Coil Select Mode | On - AutoCoilSelect |

### System - Adjustments

| | |
|---|---|
| B0 Shim mode | Standard |
| B1 Shim mode | TrueForm |
| Adjust with body coil | Off |
| Confirm freq. adjustment | Off |
| Assume Dominant Fat | Off |
| Assume Silicone | Off |
| Adjustment Tolerance | Auto |

### System - Adjust Volume

| | |
|---|---|
| ! Position | L0.0 A7.2 H20.4 mm |
| ! Orientation | T > C-6.7 |
| ! Rotation | 0.00 deg |
| ! A >> P | 220 mm |
| ! R >> L | 181 mm |
| ! F >> H | 80 mm |
| Reset | Off |

### System - pTx Volumes

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

### System - Tx/Rx

| | |
|---|---|
| Frequency 1H | 123.257976 MHz |
| Correction factor | 1 |
| Gain | Low |
| Img. Scale Cor. | 4.000 |
| Reset | Off |
| ? Ref. amplitude 1H | 0.000 V |

### Physio - Signal1

| | |
|---|---|
| 1st Signal/Mode | None |
| TR | 4.0 ms |
| Concatenations | 1 |
| Segments | 1 |

### Physio - Cardiac

| | |
|---|---|
| Tagging | None |
| Magn. preparation | None |
| Fat suppr. | None |
| Dark blood | Off |
| FoV read | 220 mm |
| FoV phase | 82.1 % |
| Phase resolution | 100 % |

### Physio - PACE

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

### Inline - Common

| | |
|---|---|
| Subtract | Off |
| Measurements | 24 |
| StdDev | Off |
| Liver registration | Off |
| Save original images | On |

### Inline - MIP

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

### Inline - Soft Tissue

| | |
|---|---|
| Wash - In | Off |
| Wash - Out | Off |
| TTP | Off |
| PEI | Off |
| MIP - time | Off |
| Measurements | 24 |
| Pause after meas. 1 | 0.0 s |
| Pause after meas. 2 | 0.0 s |
| Pause after meas. 3 | 0.0 s |
| Pause after meas. 4 | 0.0 s |
| Pause after meas. 5 | 0.0 s |
| Pause after meas. 6 | 0.0 s |
| Pause after meas. 7 | 0.0 s |
| Pause after meas. 8 | 0.0 s |
| Pause after meas. 9 | 0.0 s |
| Pause after meas. 10 | 0.0 s |
| Pause after meas. 11 | 0.0 s |
| Pause after meas. 12 | 0.0 s |

### Inline - Soft Tissue

| | |
|---|---|
| Pause after meas. 13 | 0.0 s |
| Pause after meas. 14 | 0.0 s |
| Pause after meas. 15 | 0.0 s |
| Pause after meas. 16 | 0.0 s |
| Pause after meas. 17 | 0.0 s |
| Pause after meas. 18 | 0.0 s |
| Pause after meas. 19 | 0.0 s |
| Pause after meas. 20 | 0.0 s |
| Pause after meas. 21 | 0.0 s |
| Pause after meas. 22 | 0.0 s |
| Pause after meas. 23 | 0.0 s |

### Inline - Composing

| | |
|---|---|
| Inline Composing | Off |
| Distortion Corr. | Off |

### Inline - MapIt

| | |
|---|---|
| Save original images | On |
| MapIt | None |
| Flip angle | 6 deg |
| Measurements | 24 |
| Contrasts | 1 |
| TR | 4.0 ms |
| TE | 2.00 ms |

### Sequence - Part 1

| | |
|---|---|
| Introduction | On |
| Dimension | 3D |
| Elliptical scanning | On |
| Phase stabilisation | Off |
| Reordering | Spiral |
| Asymmetric echo | Off |
| Contrasts | 1 |
| Flow comp. | No |
| Multi-slice mode | Interleaved |
| Bandwidth | 700 Hz/Px |

### Sequence - Part 2

| | |
|---|---|
| Define | Segments |
| Shots per slice | 47 |
| Segments | 1 |
| Acoustic noise reduction | None |
| RF pulse type | Fast |
| Gradient mode | Fast |
| Excitation | Slab-sel. |
| RF spoiling | On |
| Incr. Gradient spoiling | Off |

### Sequence - Special

| | |
|---|---|
| CEST | On |
| Pulse Type | Rect |
| B1 definition | pure FA |
| B1 | 3.70 uT |
| No. of Pulses | 1 n |
| Pulse Duration | 5120 µs |
| Interpulse Delay | 100 ms |
| Recover Time | 2500 ms |
| Recover Time M0 | 12000 ms |
| No. of Locking Pulses | 1 n |
| Lock Interpulse Delay | 1 ms |
| Spoiling | only last |
| Fat Sat | On |
| Spiral Elong. E | 0.5 |
| Offset Distribution | Regular |

### Sequence - Special

| | |
|---|---|
| Suppressed M0 | On |
| Offset | 1.8 ppm |
| Freq Shift | 0.0 ppm |
| Delta Freq | 0.0 ppm |
| Scale Factor | 10.0 (null) |
| Duration | 1.0 ms |
| BWTP | 9.6 |
| EmpFactor | 0.87 |
| Samples | 200 |
| B0 Correction | Z-Spectrum |
| Image Registration | None |

### Sequence - Assistant

| | |
|---|---|
| Mode | Off |
| Allowed delay | 0 s |