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Head

Coma

Coma Science Group

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# SIEMENS MAGNETOM

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\\User\Head\Coma\Coma Science Group\AAhead\_scout \*

TA: 14 sec Coil Selection: Manual Voxel Size: 1.6×1.6×1.6 mm 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
Load Images to Stamp Segments	Off
Load Images to Graphic Segments	On
Graphic segment	Default
Inline Movie	Off

**Resolution - Acceleration**

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	Prescan
Image Filter	Off

**Routine**

Slab Group	1
Slabs	1
Distance Factor	20 %
Position	Isocenter
Orientation	Sagittal
Phase Encoding Dir.	A >> P
Phase Oversampling	0 %
Slice Oversampling	0.0 %
FoV Read	260 mm
FoV Phase	100.0 %
Slice Thickness	1.6 mm
TR	3.15 ms
TE	1.37 ms
Averages	1
Concatenations	1
AutoAlign	Head
Coil Elements	HE1-4

**Geometry - Common**

Slab Group	1
Slabs	1
Distance Factor	20 %
Position	Isocenter
Orientation	Sagittal
Phase Encoding Dir.	A >> P
Phase Oversampling	0 %
Slice Oversampling	0.0 %
FoV Read	260 mm
FoV Phase	100.0 %
Slice Thickness	1.6 mm
TR	3.15 ms
Series	Ascending
Multi-Slice Mode	Sequential
Concatenations	1

**Contrast - Common**

TR	3.15 ms
TE	1.37 ms
Flip Angle	8 deg
Fat-Water Contrast	Standard
Contrasts	1
Reconstruction	Magnitude

**Geometry - AutoAlign**

Slab Group	1
Position	Isocenter
Orientation	Sagittal
Phase Encoding Dir.	A >> P
Initial Position	Isocenter
L	0.0 mm
P	0.0 mm
H	0.0 mm
Initial Rotation	0.00 deg
Initial Orientation	Transversal

**Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Time to Center	6.2 s

**Geometry - Tim Planning Suite**

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

**Resolution - Common**

FoV Read	260 mm
FoV Phase	100.0 %
Slice Thickness	1.6 mm
Base Resolution	160
Phase Resolution	100 %
Slice Resolution	69 %
Trajectory	Cartesian

**System - Miscellaneous**

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

**Resolution - Acceleration**

Acceleration mode	GRAPPA
Reference Scans	Integrated
Acceleration Factor PE	3
Reference Lines PE	24

**System - Adjustments**

Adjustment Strategy	Standard
B0 Shim	Tune up
B1 Shim	TrueForm

**System - Adjustments**

CoilShim	Off
Adjustment Tolerance	Auto
Adjust with Body Coil	Off
Confirm Frequency	Never
Assume Silicone	Off

**System - Adjust Volume**

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

**System - Tx/Rx**

Frequency 1H	123.217555 MHz
Correction Factor	1
Image Scaling	1.000
Reset	Off
? Ref. Amplitude 1H	0.000 V

**Physio - PACE**

Resp. Control	Off
Concatenations	1

**Inline - Dynamic**

Dynamic Mode	Standard
Flip Angle	8 deg
Measurements	1
Time to Center	6.2 s

**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
MPR Sag	Off
MPR Cor	Off
MPR Tra	Off
Save Original Images	On

**Inline - Composing**

Inline Composing	Off
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**Inline - MapIt**

Save Original Images	On
MapIt	None
Flip Angle	8 deg
Measurements	1
Contrasts	1
TR	3.15 ms
TE	1.37 ms

**Sequence - Part 1**

Sequence Name	fl
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**Sequence - Part 1**

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

**Sequence - Assistant**

SAR Assistant	Off
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\\User\Head\Coma\Coma Science Group\ep2d\_bold\_repos\_moco\_s3\_p2\_long\_avec\_AG \*

TA: 6:13 min Coil Selection: Auto Voxel Size: 3.0×3.0×3.0 mm Acc.: 6 Rel. SNR: 1.00

### Properties

Start measurement without further preparation	On
Wait for User to Start	On
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
Load Images to Stamp Segments	On
Load Images to Graphic Segments	Off
Graphic segment	Default
Inline Movie	Off

### Routine

Slice Group	1
Slices	39
Distance Factor	25 %
Position	Isocenter
Orientation	Transversal
Phase Encoding Dir.	A >> P
Phase Oversampling	0 %
FoV Read	192 mm
FoV Phase	100.0 %
Slice Thickness	3.0 mm
TR	728 ms
TE	30.0 ms
Averages	1
Concatenations	1
AutoAlign	Head > Brain
Coil Elements	HE1-4

### Contrast - Common

TR	728 ms
TE	30.0 ms
MTC	Off
Flip Angle	35 deg
Fat-Water Contrast	Fat Saturation
Reconstruction	Magnitude

### Contrast - Dynamic

Dynamic Mode	Standard
Measurements	500
Delay in TR	0 ms

### Resolution - Common

FoV Read	192 mm
FoV Phase	100.0 %
Slice Thickness	3.0 mm
Base Resolution	64
Phase Resolution	100 %
Interpolation	Off

### Resolution - Acceleration

Accel. Mode	SMS
Reference Scans	EPI/Separate
Acceleration Factor PE	2
Reference Lines PE	32
Phase Partial Fourier	Off
SMS Factor	3

### Resolution - Filter

Raw Filter	Off
Elliptical Filter	Off
Hamming	Off
Distortion Correction	3D
Normalize	Prescan

### Geometry - Common

Slice Group	1
Slices	39
Distance Factor	25 %
Position	Isocenter
Orientation	Transversal
Phase Encoding Dir.	A >> P
Phase Oversampling	0 %
FoV Read	192 mm
FoV Phase	100.0 %
Slice Thickness	3.0 mm
TR	728 ms
Series	Descending
Multi-Slice Mode	Interleaved
Concatenations	1

### Geometry - Saturation

Special Saturation	None
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### Geometry - AutoAlign

Slice Group	1
Position	Isocenter
Orientation	Transversal
Phase Encoding Dir.	A >> P
AutoAlign	Head > Brain
Initial Position	Isocenter
L	0.0 mm
P	0.0 mm
H	0.0 mm
Initial Rotation	0.00 deg
Initial Orientation	Transversal

### Geometry - Tim Planning Suite

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

### System - Miscellaneous

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

### System - Adjustments

Adjustment Strategy	Standard
B0 Shim	Standard
B1 Shim	TrueForm
CoilShim	Off
Adjustment Tolerance	Auto
Adjust with Body Coil	Off

# SIEMENS MAGNETOM

## System - Adjustments

Confirm Frequency	Never
Assume Silicone	Off

## System - Adjust Volume

Position	Isocenter
Orientation	Transversal
Rotation	0.00 deg
A >> P	192 mm
R >> L	192 mm
F >> H	146 mm
Reset	Off

## System - Tx/Rx

Frequency 1H	123.217555 MHz
Correction Factor	1
Image Scaling	1.000
Reset	Off
! Ref. Amplitude 1H	353.882 V

## Physio - Signal

1st Signal/Mode	None
TR	728 ms
Concatenations	1

## BOLD

GLM Statistics	On
Ignore Meas. at Start	0
Ignore After Transition	0
Model Transition States	On
Temp. Highpass Filter	On
Threshold	4.00
Paradigm Size	30
Meas[1]	Active
Meas[2]	Active
Meas[3]	Active
Meas[4]	Active
Meas[5]	Active
Meas[6]	Active
Meas[7]	Active
Meas[8]	Active
Meas[9]	Active
Meas[10]	Active
Meas[11]	Active
Meas[12]	Active
Meas[13]	Active
Meas[14]	Active
Meas[15]	Active
Meas[16]	Ignore
Meas[17]	Ignore
Meas[18]	Ignore
Meas[19]	Ignore
Meas[20]	Ignore
Meas[21]	Ignore
Meas[22]	Ignore
Meas[23]	Ignore
Meas[24]	Ignore
Meas[25]	Ignore
Meas[26]	Ignore
Meas[27]	Ignore
Meas[28]	Ignore
Meas[29]	Ignore
Meas[30]	Ignore
Motion Correction	Off
Spatial Filter	Off

## BOLD

Measurements	500
Delay in TR	0 ms

## Sequence - Part 1

Sequence Name	epfid
RF Pulse Type	Normal
Gradient Mode	Fast*
Bandwidth	2232 Hz/Px
Free Echo Spacing	Off
Echo Spacing	0.54 ms
EPI Factor	64

## Sequence - Part 2

Introduction	On
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\\User\Head\Coma\Coma Science Group\ep2d\_bold\_repos\_moco\_s3\_p2\_long\_sans\_AG \*

TA: 6:13 min Coil Selection: Auto Voxel Size: 3.0×3.0×3.0 mm Acc.: 6 Rel. SNR: 1.00

**Properties**

Start measurement without further preparation	On
Wait for User to Start	On
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
Load Images to Stamp Segments	On
Load Images to Graphic Segments	Off
Graphic segment	Default
Inline Movie	Off

**Routine**

Slice Group	1
Slices	39
Distance Factor	25 %
Position	Isocenter
Orientation	Transversal
Phase Encoding Dir.	A >> P
Phase Oversampling	0 %
FoV Read	192 mm
FoV Phase	100.0 %
Slice Thickness	3.0 mm
TR	728 ms
TE	30.0 ms
Averages	1
Concatenations	1
AutoAlign	Head > Brain
Coil Elements	HE1-4

**Contrast - Common**

TR	728 ms
TE	30.0 ms
MTC	Off
Flip Angle	35 deg
Fat-Water Contrast	Fat Saturation
Reconstruction	Magnitude

**Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	500
Delay in TR	0 ms

**Resolution - Common**

FoV Read	192 mm
FoV Phase	100.0 %
Slice Thickness	3.0 mm
Base Resolution	64
Phase Resolution	100 %
Interpolation	Off

**Resolution - Acceleration**

Accel. Mode	SMS
Reference Scans	EPI/Separate
Acceleration Factor PE	2
Reference Lines PE	32
Phase Partial Fourier	Off
SMS Factor	3

**Resolution - Filter**

Raw Filter	Off
Elliptical Filter	Off
Hamming	Off
Distortion Correction	3D
Normalize	Prescan

**Geometry - Common**

Slice Group	1
Slices	39
Distance Factor	25 %
Position	Isocenter
Orientation	Transversal
Phase Encoding Dir.	A >> P
Phase Oversampling	0 %
FoV Read	192 mm
FoV Phase	100.0 %
Slice Thickness	3.0 mm
TR	728 ms
Series	Descending
Multi-Slice Mode	Interleaved
Concatenations	1

**Geometry - Saturation**

Special Saturation	None
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**Geometry - AutoAlign**

Slice Group	1
Position	Isocenter
Orientation	Transversal
Phase Encoding Dir.	A >> P
AutoAlign	Head > Brain
Initial Position	Isocenter
L	0.0 mm
P	0.0 mm
H	0.0 mm
Initial Rotation	0.00 deg
Initial Orientation	Transversal

**Geometry - Tim Planning Suite**

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

**System - Miscellaneous**

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

**System - Adjustments**

Adjustment Strategy	Standard
B0 Shim	Standard
B1 Shim	TrueForm
CoilShim	Off
Adjustment Tolerance	Auto
Adjust with Body Coil	Off

**System - Adjustments**

Confirm Frequency	Never
Assume Silicone	Off

**System - Adjust Volume**

Position	Isocenter
Orientation	Transversal
Rotation	0.00 deg
A >> P	192 mm
R >> L	192 mm
F >> H	146 mm
Reset	Off

**System - Tx/Rx**

Frequency 1H	123.217555 MHz
Correction Factor	1
Image Scaling	1.000
Reset	Off
! Ref. Amplitude 1H	353.882 V

**Physio - Signal**

1st Signal/Mode	None
TR	728 ms
Concatenations	1

**BOLD**

GLM Statistics	On
Ignore Meas. at Start	0
Ignore After Transition	0
Model Transition States	On
Temp. Highpass Filter	On
Threshold	4.00
Paradigm Size	30
Meas[1]	Active
Meas[2]	Active
Meas[3]	Active
Meas[4]	Active
Meas[5]	Active
Meas[6]	Active
Meas[7]	Active
Meas[8]	Active
Meas[9]	Active
Meas[10]	Active
Meas[11]	Active
Meas[12]	Active
Meas[13]	Active
Meas[14]	Active
Meas[15]	Active
Meas[16]	Ignore
Meas[17]	Ignore
Meas[18]	Ignore
Meas[19]	Ignore
Meas[20]	Ignore
Meas[21]	Ignore
Meas[22]	Ignore
Meas[23]	Ignore
Meas[24]	Ignore
Meas[25]	Ignore
Meas[26]	Ignore
Meas[27]	Ignore
Meas[28]	Ignore
Meas[29]	Ignore
Meas[30]	Ignore
Motion Correction	Off
Spatial Filter	Off

**BOLD**

Measurements	500
Delay in TR	0 ms

**Sequence - Part 1**

Sequence Name	epfid
RF Pulse Type	Normal
Gradient Mode	Fast*
Bandwidth	2232 Hz/Px
Free Echo Spacing	Off
Echo Spacing	0.54 ms
EPI Factor	64

**Sequence - Part 2**

Introduction	On
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\\User\Head\Coma\Coma Science Group\gre\_field\_mapping \*

TA: 57 sec Coil Selection: Manual Voxel Size: 3.0×3.0×3.0 mm 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
Load Images to Stamp Segments	Off
Load Images to Graphic Segments	Off
Graphic segment	Default
Inline Movie	Off

### Routine

Slice Group	1
Slices	44
Distance Factor	25 %
Position	Isocenter
Orientation	Transversal
Phase Encoding Dir.	R >> L
Phase Oversampling	0 %
FoV Read	192 mm
FoV Phase	100.0 %
Slice Thickness	3.0 mm
TR	427.0 ms
TE 1	4.92 ms
TE 2	7.38 ms
Averages	1
Concatenations	1
AutoAlign	Head > Brain
Coil Elements	HE1-4

### Contrast - Common

TR	427.0 ms
TE 1	4.92 ms
TE 2	7.38 ms
MTC	Off
Flip Angle	60 deg
Fat-Water Contrast	Standard
Contrasts	2
Reconstruction	Phase

### Contrast - Dynamic

Dynamic Mode	Standard
Measurements	1
Multiple Series	Off

### Resolution - Common

FoV Read	192 mm
FoV Phase	100.0 %
Slice Thickness	3.0 mm
Base Resolution	64
Phase Resolution	100 %
Interpolation	Off

### Resolution - Acceleration

Phase Partial Fourier	Off
Asymmetric Echo	Off

### Resolution - Filter

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

### Geometry - Common

Slice Group	1
Slices	44
Distance Factor	25 %
Position	Isocenter
Orientation	Transversal
Phase Encoding Dir.	R >> L
Phase Oversampling	0 %
FoV Read	192 mm
FoV Phase	100.0 %
Slice Thickness	3.0 mm
TR	427.0 ms
Series	Interleaved
Multi-Slice Mode	Interleaved
Concatenations	1

### Geometry - Saturation

Special Saturation	None
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### Geometry - AutoAlign

Slice Group	1
Position	Isocenter
Orientation	Transversal
Phase Encoding Dir.	R >> L
AutoAlign	Head > Brain
Initial Position	L0.0 P0.0 H13.0
L	0.0 mm
P	0.0 mm
H	13.0 mm
Initial Rotation	90.00 deg
Initial Orientation	Transversal

### Geometry - Tim Planning Suite

Set-n-Go Protocol	Off
Table Position	H
Table Position	13 mm
Inline Composing	Off

### System - Miscellaneous

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

### System - Adjustments

Adjustment Strategy	Standard
B0 Shim	Standard
B1 Shim	TrueForm
CoilShim	Off
Adjustment Tolerance	Auto
Adjust with Body Coil	Off

**System - Adjustments**

Confirm Frequency	Never
Assume Silicone	Off

**System - Adjust Volume**

Position	Isocenter
Orientation	Transversal
Rotation	90.00 deg
R >> L	192 mm
A >> P	192 mm
F >> H	165 mm
Reset	Off

**System - Tx/Rx**

Frequency 1H	123.217555 MHz
Correction Factor	1
Image Scaling	1.000
Reset	Off
? Ref. Amplitude 1H	0.000 V

**Sequence - Part 1**

Sequence Name	fm_r
Dimension	2D
RF Pulse Type	Normal
Gradient Mode	Fast
Flow Compensation	On
Bandwidth	601 Hz/Px
Asymmetric Echo	Off

**Sequence - Part 2**

Introduction	On
RF Spoiling	On

**Sequence - Assistant**

SAR Assistant	Off
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\\User\Head\Coma\Coma Science Group\t1\_mp2rage\_sag\_p2\_iso\_FLAWS\_fast2 \*

TA: 5:02 min Coil Selection: Manual Voxel Size: 1.0×1.0×1.0 mm Acc.: 2 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
Load Images to Stamp Segments	Off
Load Images to Graphic Segments	Off
Graphic segment	Default
Inline Movie	Off

**Routine**

Slab Group	1
Slabs	1
Distance Factor	50 %
Position	Isocenter
Orientation	Sagittal
Phase Encoding Dir.	A >> P
Phase Oversampling	0 %
Slice Oversampling	0.0 %
FoV Read	256 mm
FoV Phase	93.8 %
Slice Thickness	1.00 mm
TR	2500.0 ms
TE	2.27 ms
Averages	1
Concatenations	1
AutoAlign	Head > Basis
Coil Elements	HE1-4

**Contrast - Common**

TR	2500.0 ms
TE	2.27 ms
Magn. Preparation	Non-sel. IR
TI 1	450 ms
TI 2	1350 ms
Flip Angle 1	4 deg
Flip Angle 2	4 deg
Fat-Water Contrast	Standard
Dark Blood	Off
Reconstruction	Magnitude

**Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Each Measurement
Reordering	Linear

**Resolution - Common**

FoV Read	256 mm
FoV Phase	93.8 %
Slice Thickness	1.00 mm
Base Resolution	256
Phase Resolution	100 %
Slice Resolution	100 %
Interpolation	Off

**Resolution - Acceleration**

Acceleration mode	GRAPPA
Reference Scans	Integrated
Acceleration Factor PE	2
Reference Lines PE	32
Acceleration Factor 3D	1
Phase Partial Fourier	7/8
Slice Partial Fourier	7/8
Asymmetric Echo	Off
Elliptical Scanning	Off

**Resolution - Filter**

Raw Filter	Off
Elliptical Filter	Off
Distortion Correction	3D
Normalize	Prescan
Image Filter	Off

**Geometry - Common**

Slab Group	1
Slabs	1
Distance Factor	50 %
Position	Isocenter
Orientation	Sagittal
Phase Encoding Dir.	A >> P
Phase Oversampling	0 %
Slice Oversampling	0.0 %
FoV Read	256 mm
FoV Phase	93.8 %
Slice Thickness	1.00 mm
TR	2500.0 ms
Series	Interleaved
Multi-Slice Mode	Single Shot
Concatenations	1

**Geometry - AutoAlign**

Slab Group	1
Position	Isocenter
Orientation	Sagittal
Phase Encoding Dir.	A >> P
AutoAlign	Head > Basis
Initial Position	Isocenter
L	0.0 mm
P	0.0 mm
H	0.0 mm
Initial Rotation	0.00 deg
Initial Orientation	Sagittal

**Geometry - Navigator****Geometry - Tim Planning Suite**

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

**System - Miscellaneous**

Coil Selection	Manual
Coil Combination	Adaptive Combine
Matrix Optimization	Off
MSMA	S - C - T

**System - Miscellaneous**

Sagittal	R >> L
Coronal	A >> P
Transversal	F >> H

**System - Adjustments**

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

**System - Adjust Volume**

Position	Isocenter
Orientation	Sagittal
Rotation	0.00 deg
A >> P	240 mm
F >> H	256 mm
R >> L	176 mm
Reset	Off

**System - Tx/Rx**

Frequency 1H	123.217555 MHz
Correction Factor	1
Image Scaling	1.000
Reset	Off
? Ref. Amplitude 1H	0.000 V

**Physio - Signal**

1st Signal/Mode	None
TR	2500.0 ms
Concatenations	1

**Physio - Cardiac**

Magn. Preparation	Non-sel. IR
TI 1	450 ms
TI 2	1350 ms
Fat-Water Contrast	Standard
Dark Blood	Off
FoV Read	256 mm
FoV Phase	93.8 %
Phase Resolution	100 %
Dynamic Mode	Standard

**Physio - PACE**

Resp. Control	Off
Concatenations	1

**Inline - Subtraction**

Subtract	Off
Measurements	1
StdDev	Off
Save Original Images	On

**Inline - Cardiac**

Magn. Preparation	Non-sel. IR
TE	2.27 ms
TR	2500.0 ms
Save Original Images	On

**Inline - MIP**

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

**Inline - Composing**

Inline Composing	Off
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**Inline - Maplt**

Save Original Images	On
Maplt	None
Flip Angle 1	4 deg
Flip Angle 2	4 deg
Measurements	1
TR	2500.0 ms
TE	2.27 ms

**Sequence - Part 1**

Sequence Name	tfl
Dimension	3D
Excitation	Non-sel.
RF Pulse Type	Fast
Gradient Mode	Fast
Flow Compensation	None
Reordering	Linear
Bandwidth	350 Hz/Px
Echo Spacing	5.56 ms
Turbo Factor	154
Asymmetric Echo	Off

**Sequence - Part 2**

Introduction	On
RF Spoiling	On
Incr. Gradient Spoiling	Off

**Sequence - Assistant**

SAR Assistant	Off
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\\User\Head\Coma\Coma Science Group\ep2d_diff_mddw_30_p2_s4_b700_AP_DO_NOT_READJUS T *
TA: 1:38 min Coil Selection: Manual Voxel Size: 2.0×2.0×2.0 mm Acc.: 8 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
Load Images to Stamp Segments	On
Load Images to Graphic Segments	Off
Graphic segment	Default
Inline Movie	Off

**Routine**

Slice Group	1
Slices	64
Distance Factor	30 %
Position	Isocenter
Orientation	Transversal
Phase Encoding Dir.	A >> P
Phase Oversampling	0 %
FoV Read	256 mm
FoV Phase	100.0 %
Slice Thickness	2.0 mm
TR	2200 ms
TE	87.0 ms
Concatenations	1
AutoAlign	Head > Brain
Coil Elements	HE1-4

**Contrast - Common**

TR	2200 ms
TE	87.0 ms
MTC	Off
Magn. Preparation	None
Fat-Water Contrast	Fat Saturation
Fat Saturation	Strong
Reconstruction	Magnitude

**Contrast - Dynamic**

Dynamic Mode	Standard
Multiple Series	Off
Delay in TR	0 ms

**Resolution - Common**

FoV Read	256 mm
FoV Phase	100.0 %
Slice Thickness	2.0 mm
Base Resolution	128
Phase Resolution	100 %
Interpolation	Off

**Resolution - Acceleration**

Accel. Mode	SMS
Reference Scans	EPI/Separate
Acceleration Factor PE	2
Reference Lines PE	30
Phase Partial Fourier	6/8

**Resolution - Acceleration**

SMS Factor	4
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**Resolution - Filter**

Raw Filter	Off
Elliptical Filter	Off
Distortion Correction	Off
Normalize	Prescan

**Geometry - Common**

Slice Group	1
Slices	64
Distance Factor	30 %
Position	Isocenter
Orientation	Transversal
Phase Encoding Dir.	A >> P
Phase Oversampling	0 %
FoV Read	256 mm
FoV Phase	100.0 %
Slice Thickness	2.0 mm
TR	2200 ms
Series	Interleaved
Multi-Slice Mode	Interleaved
Concatenations	1

**Geometry - Saturation**

Special Saturation	None
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**Geometry - AutoAlign**

Slice Group	1
Position	Isocenter
Orientation	Transversal
Phase Encoding Dir.	A >> P
AutoAlign	Head > Brain
Initial Position	Isocenter
R	0.0 mm
A	0.0 mm
H	0.0 mm
Initial Rotation	0.00 deg
Initial Orientation	Transversal

**Geometry - Navigator****Geometry - Tim Planning Suite**

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

**System - Miscellaneous**

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

**System - Adjustments**

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

**Sequence - Part 2**

Introduction	On
--------------	----

**System - Adjust Volume**

Position	Isocenter
Orientation	Transversal
Rotation	0.00 deg
A >> P	256 mm
R >> L	256 mm
F >> H	166 mm
Reset	Off

**System - Tx/Rx**

Frequency 1H	123.217555 MHz
Correction Factor	1
Image Scaling	1.000
Reset	Off
? Ref. Amplitude 1H	0.000 V

**Physio - Signal**

1st Signal/Mode	None
TR	2200 ms
Concatenations	1

**Physio - PACE**

Resp. Control	Off
Concatenations	1

**Diff**

Diffusion Mode	MDDW
Diff. Directions	30
Diffusion Scheme	Bipolar
Diff. Weightings	2
b-Value 1	0 s/mm <sup>2</sup>
b-Value 2	700 s/mm <sup>2</sup>
b-Value 1	5
b-Value 2	1
Dynamic Field Correction	Off
Invert Gray Scale	Off
Diff. Weighted Images	On
Trace Weighted Images	On
Tensor	On
FA Maps	On
ADC Maps	On
Exponential ADC Maps	Off
ADC Noise Threshold	30
Noise Masking	Off
Calculated Image	Off

**Sequence - Part 1**

Sequence Name	epse
RF Pulse Type	Low SAR
Gradient Mode	Fast
Bandwidth	1502 Hz/Px
Free Echo Spacing	Off
Echo Spacing	0.77 ms
Optimization	None
EPI Factor	128

\\User\Head\Coma\Coma Science Group\ep2d\_diff\_mddw\_64\_p2\_s4\_b1000\_AP\_DO\_NOT\_READJUST \*

TA: 4:11 min Coil Selection: Manual Voxel Size: 2.0×2.0×2.0 mm Acc.: 8 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
Load Images to Stamp Segments	On
Load Images to Graphic Segments	Off
Graphic segment	Default
Inline Movie	Off

### Routine

Slice Group	1
Slices	64
Distance Factor	30 %
Position	Isocenter
Orientation	Transversal
Phase Encoding Dir.	A >> P
Phase Oversampling	0 %
FoV Read	256 mm
FoV Phase	100.0 %
Slice Thickness	2.0 mm
TR	3200 ms
TE	89.0 ms
Concatenations	1
AutoAlign	Head > Brain
Coil Elements	HE1-4

### Contrast - Common

TR	3200 ms
TE	89.0 ms
MTC	Off
Magn. Preparation	None
Fat-Water Contrast	Fat Saturation
Fat Saturation	Strong
Reconstruction	Magnitude

### Contrast - Dynamic

Dynamic Mode	Standard
Multiple Series	Off
Delay in TR	0 ms

### Resolution - Common

FoV Read	256 mm
FoV Phase	100.0 %
Slice Thickness	2.0 mm
Base Resolution	128
Phase Resolution	100 %
Interpolation	Off

### Resolution - Acceleration

Accel. Mode	SMS
Reference Scans	EPI/Separate
Acceleration Factor PE	2
Reference Lines PE	30
Phase Partial Fourier	6/8

### Resolution - Acceleration

SMS Factor	4
------------	---

### Resolution - Filter

Raw Filter	Off
Elliptical Filter	Off
Distortion Correction	Off
Normalize	Prescan

### Geometry - Common

Slice Group	1
Slices	64
Distance Factor	30 %
Position	Isocenter
Orientation	Transversal
Phase Encoding Dir.	A >> P
Phase Oversampling	0 %
FoV Read	256 mm
FoV Phase	100.0 %
Slice Thickness	2.0 mm
TR	3200 ms
Series	Interleaved
Multi-Slice Mode	Interleaved
Concatenations	1

### Geometry - Saturation

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

### Geometry - AutoAlign

Slice Group	1
Position	Isocenter
Orientation	Transversal
Phase Encoding Dir.	A >> P
AutoAlign	Head > Brain
Initial Position	Isocenter
R	0.0 mm
A	0.0 mm
H	0.0 mm
Initial Rotation	0.00 deg
Initial Orientation	Transversal

### Geometry - Navigator

### Geometry - Tim Planning Suite

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

### System - Miscellaneous

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

**System - Adjustments**

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

**Sequence - Part 2**

Introduction	On
--------------	----

**System - Adjust Volume**

Position	Isocenter
Orientation	Transversal
Rotation	0.00 deg
A >> P	256 mm
R >> L	256 mm
F >> H	166 mm
Reset	Off

**System - Tx/Rx**

Frequency 1H	123.217555 MHz
Correction Factor	1
Image Scaling	1.000
Reset	Off
? Ref. Amplitude 1H	0.000 V

**Physio - Signal**

1st Signal/Mode	None
TR	3200 ms
Concatenations	1

**Physio - PACE**

Resp. Control	Off
Concatenations	1

**Diff**

Diffusion Mode	MDDW
Diff. Directions	64
Diffusion Scheme	Bipolar
Diff. Weightings	2
b-Value 1	0 s/mm <sup>2</sup>
b-Value 2	1000 s/mm <sup>2</sup>
b-Value 1	5
b-Value 2	1
Dynamic Field Correction	Off
Invert Gray Scale	Off
Diff. Weighted Images	On
Trace Weighted Images	On
Tensor	On
FA Maps	On
ADC Maps	On
Exponential ADC Maps	Off
ADC Noise Threshold	30
Noise Masking	Off
Calculated Image	Off

**Sequence - Part 1**

Sequence Name	epse
RF Pulse Type	Low SAR
Gradient Mode	Fast
Bandwidth	1628 Hz/Px
Free Echo Spacing	Off
Echo Spacing	0.72 ms
Optimization	None
EPI Factor	128



\\User\Head\Coma\Coma Science Group\lep2d\_diff\_mddw\_64\_p2\_s4\_b2000\_AP\_DO\_NOT\_READJUST \*

TA: 3:40 min Coil Selection: Manual Voxel Size: 2.0×2.0×2.0 mm Acc.: 8 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
Load Images to Stamp Segments	On
Load Images to Graphic Segments	Off
Graphic segment	Default
Inline Movie	Off

### Routine

Slice Group	1
Slices	64
Distance Factor	30 %
Position	Isocenter
Orientation	Transversal
Phase Encoding Dir.	A >> P
Phase Oversampling	0 %
FoV Read	256 mm
FoV Phase	100.0 %
Slice Thickness	2.0 mm
TR	2800 ms
TE	117.0 ms
Concatenations	1
AutoAlign	Head > Brain
Coil Elements	HE1-4

### Contrast - Common

TR	2800 ms
TE	117.0 ms
MTC	Off
Magn. Preparation	None
Fat-Water Contrast	Fat Saturation
Fat Saturation	Strong
Reconstruction	Magnitude

### Contrast - Dynamic

Dynamic Mode	Standard
Multiple Series	Off
Delay in TR	0 ms

### Resolution - Common

FoV Read	256 mm
FoV Phase	100.0 %
Slice Thickness	2.0 mm
Base Resolution	128
Phase Resolution	100 %
Interpolation	Off

### Resolution - Acceleration

Accel. Mode	SMS
Reference Scans	EPI/Separate
Acceleration Factor PE	2
Reference Lines PE	30
Phase Partial Fourier	6/8

### Resolution - Acceleration

SMS Factor	4
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### Resolution - Filter

Raw Filter	Off
Elliptical Filter	Off
Distortion Correction	Off
Normalize	Prescan

### Geometry - Common

Slice Group	1
Slices	64
Distance Factor	30 %
Position	Isocenter
Orientation	Transversal
Phase Encoding Dir.	A >> P
Phase Oversampling	0 %
FoV Read	256 mm
FoV Phase	100.0 %
Slice Thickness	2.0 mm
TR	2800 ms
Series	Interleaved
Multi-Slice Mode	Interleaved
Concatenations	1

### Geometry - Saturation

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

### Geometry - AutoAlign

Slice Group	1
Position	Isocenter
Orientation	Transversal
Phase Encoding Dir.	A >> P
AutoAlign	Head > Brain
Initial Position	Isocenter
R	0.0 mm
A	0.0 mm
H	0.0 mm
Initial Rotation	0.00 deg
Initial Orientation	Transversal

### Geometry - Navigator

### Geometry - Tim Planning Suite

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

### System - Miscellaneous

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

**System - Adjustments**

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

**Sequence - Part 2**

Introduction	On
--------------	----

**System - Adjust Volume**

Position	Isocenter
Orientation	Transversal
Rotation	0.00 deg
A >> P	256 mm
R >> L	256 mm
F >> H	166 mm
Reset	Off

**System - Tx/Rx**

Frequency 1H	123.217555 MHz
Correction Factor	1
Image Scaling	1.000
Reset	Off
? Ref. Amplitude 1H	0.000 V

**Physio - Signal**

1st Signal/Mode	None
TR	2800 ms
Concatenations	1

**Physio - PACE**

Resp. Control	Off
Concatenations	1

**Diff**

Diffusion Mode	MDDW
Diff. Directions	64
Diffusion Scheme	Bipolar
Diff. Weightings	2
b-Value 1	0 s/mm <sup>2</sup>
b-Value 2	2000 s/mm <sup>2</sup>
b-Value 1	5
b-Value 2	1
Dynamic Field Correction	Off
Invert Gray Scale	Off
Diff. Weighted Images	On
Trace Weighted Images	On
Tensor	On
FA Maps	On
ADC Maps	On
Exponential ADC Maps	Off
ADC Noise Threshold	30
Noise Masking	Off
Calculated Image	Off

**Sequence - Part 1**

Sequence Name	epse
RF Pulse Type	Low SAR
Gradient Mode	Fast
Bandwidth	1502 Hz/Px
Free Echo Spacing	Off
Echo Spacing	0.77 ms
Optimization	None
EPI Factor	128

\\User\Head\Coma\Coma Science Group\12\_space\_FLAIR\_sag\_c4\_iso \*

TA: 4:35 min Coil Selection: Manual Voxel Size: 1.0×1.0×1.0 mm Acc.: 4 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
Load Images to Stamp Segments	On
Load Images to Graphic Segments	Off
Graphic segment	Default
Inline Movie	Off

**Routine**

Slab Group	1
Slabs	1
Position	Isocenter
Orientation	Sagittal
Phase Encoding Dir.	A >> P
Phase Oversampling	0 %
Slice Oversampling	0.0 %
FoV Read	256 mm
FoV Phase	92.2 %
Slice Thickness	1.00 mm
TR	7600 ms
TE	432 ms
Averages	1.0
Concatenations	1
AutoAlign	Head > Basis
Coil Elements	HE1-4

**Contrast - Common**

TR	7600 ms
TE	432 ms
MTC	Off
Magn. Preparation	Non-sel. IR
T1 1	2400 ms
Flip Angle Mode	T2 Var
Fat-Water Contrast	Fat Saturation
Fat Saturation	Strong
Dark Blood	Off
Blood Suppression	Off
Wrap-up Magn.	None
Reconstruction	Magnitude

**Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Each Measurement
Reordering	Linear

**Resolution - Common**

FoV Read	256 mm
FoV Phase	92.2 %
Slice Thickness	1.00 mm
Base Resolution	256
Phase Resolution	100 %
Slice Resolution	100 %
Interpolation	Off

**Resolution - Acceleration**

Acceleration mode	CAIPIRINHA
Total Factor	4
Reference Scans	Integrated
Acceleration Factor PE	2
Reference Lines PE	24
Acceleration Factor 3D	2
Reference Lines 3D	24
Reordering Shift 3D	0
Phase Partial Fourier	Allowed
Slice Partial Fourier	Off
Elliptical Scanning	On

**Resolution - Filter**

Raw Filter	On
Elliptical Filter	Off
Distortion Correction	2D
Normalize	Prescan
Image Filter	Off

**Geometry - Common**

Slab Group	1
Slabs	1
Position	Isocenter
Orientation	Sagittal
Phase Encoding Dir.	A >> P
Phase Oversampling	0 %
Slice Oversampling	0.0 %
FoV Read	256 mm
FoV Phase	92.2 %
Slice Thickness	1.00 mm
TR	7600 ms
Concatenations	1

**Geometry - Saturation**

Special Saturation	None
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**Geometry - AutoAlign**

Slab Group	1
Position	Isocenter
Orientation	Sagittal
Phase Encoding Dir.	A >> P
AutoAlign	Head > Basis
Initial Position	Isocenter
L	0.0 mm
P	0.0 mm
H	0.0 mm
Initial Rotation	0.00 deg
Initial Orientation	Sagittal

**Geometry - Navigator****Geometry - Tim Planning Suite**

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

**System - Miscellaneous**

Coil Selection	Manual
Coil Combination	Adaptive Combine

**System - Miscellaneous**

Matrix Optimization	Off
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	F >> H

**System - Adjustments**

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

**System - Adjust Volume**

Position	Isocenter
Orientation	Sagittal
Rotation	0.00 deg
A >> P	236 mm
F >> H	256 mm
R >> L	192 mm
Reset	Off

**System - Tx/Rx**

Frequency 1H	123.217555 MHz
Correction Factor	1
Image Scaling	1.000
Reset	Off
? Ref. Amplitude 1H	0.000 V

**Physio - Signal**

1st Signal/Mode	None
Trigger Delay	0 ms
TR	7600 ms
Concatenations	1

**Physio - Cardiac**

Magn. Preparation	Non-sel. IR
TI 1	2400 ms
Fat-Water Contrast	Fat Saturation
Dark Blood	Off
FoV Read	256 mm
FoV Phase	92.2 %
Phase Resolution	100 %
Dynamic Mode	Standard

**Physio - PACE**

Resp. Control	Off
Concatenations	1

**Inline - Subtraction**

Subtract	Off
Measurements	1
StdDev	Off
Save Original Images	On

**Inline - Cardiac**

Magn. Preparation	Non-sel. IR
TE	432 ms
TR	7600 ms
Save Original Images	On

**Inline - MIP**

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

**Inline - Composing**

Inline Composing	Off
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**Sequence - Part 1**

Sequence Name	spcir
Dimension	3D
Excitation	Non-sel.
RF Pulse Type	Normal
Gradient Mode	Fast
Flow Compensation	None
Reordering	Linear
Bandwidth	651 Hz/Px
Echo Spacing	3.66 ms
Turbo Factor	270
Echo Train Duration	922 ms

**Sequence - Part 2**

Introduction	On
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**Sequence - Assistant**

SAR Assistant	Off
Allowed Delay	30 s

\\User\Head\Coma\Coma Science Group\t2\_swi\_tra\_p2s2\_ir\_2mm \*

TA: 3:00 min Coil Selection: Manual Voxel Size: 0.3×0.3×2.0 mm Acc.: 4 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
Load Images to Stamp Segments	On
Load Images to Graphic Segments	Off
Graphic segment	Default
Inline Movie	Off

**Routine**

Slab Group	1
Slabs	1
Distance Factor	20 %
Position	Isocenter
Orientation	Transversal
Phase Encoding Dir.	R >> L
Phase Oversampling	0 %
Slice Oversampling	10.0 %
FoV Read	220 mm
FoV Phase	87.5 %
Slice Thickness	2.00 mm
TR	28.0 ms
TE	20.00 ms
Averages	1
Concatenations	1
AutoAlign	Head > Brain
Coil Elements	HE1-4

**Contrast - Common**

TR	28.0 ms
TE	20.00 ms
MTC	Off
Magn. Preparation	None
Flip Angle	15 deg
Fat-Water Contrast	Standard
Dark Blood	Off
SWI	Off
Contrasts	1
Reconstruction	Magn./Phase

**Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Each Measurement

**Resolution - Common**

FoV Read	220 mm
FoV Phase	87.5 %
Slice Thickness	2.00 mm
Base Resolution	384
Phase Resolution	80 %
Slice Resolution	100 %
Interpolation	On

**Resolution - Acceleration**

Acceleration mode	GRAPPA
Reference Scans	Integrated
Acceleration Factor PE	2
Reference Lines PE	24
Acceleration Factor 3D	2
Reference Lines 3D	24
Phase Partial Fourier	Off
Slice Partial Fourier	Off
Asymmetric Echo	Off
Elliptical Scanning	Off

**Resolution - Filter**

Raw Filter	Off
Elliptical Filter	Off
Distortion Correction	3D
Normalize	Prescan
Image Filter	Off

**Geometry - Common**

Slab Group	1
Slabs	1
Distance Factor	20 %
Position	Isocenter
Orientation	Transversal
Phase Encoding Dir.	R >> L
Phase Oversampling	0 %
Slice Oversampling	10.0 %
FoV Read	220 mm
FoV Phase	87.5 %
Slice Thickness	2.00 mm
TR	28.0 ms
Series	Interleaved
Multi-Slice Mode	Interleaved
Concatenations	1

**Geometry - Saturation**

Saturation Mode	Standard
Special Saturation	None

**Geometry - AutoAlign**

Slab Group	1
Position	Isocenter
Orientation	Transversal
Phase Encoding Dir.	R >> L
AutoAlign	Head > Brain
Initial Position	Isocenter
L	0.0 mm
P	0.0 mm
H	0.0 mm
Initial Rotation	90.00 deg
Initial Orientation	Transversal

**Geometry - Tim Planning Suite**

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

**System - Miscellaneous**

Coil Selection	Manual
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**System - Miscellaneous**

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

**System - Adjustments**

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

**System - Adjust Volume**

Position	Isocenter
Orientation	Transversal
Rotation	90.00 deg
R >> L	193 mm
A >> P	220 mm
F >> H	160 mm
Reset	Off

**System - Tx/Rx**

Frequency 1H	123.217555 MHz
Correction Factor	1
Image Scaling	1.000
Reset	Off
? Ref. Amplitude 1H	0.000 V

**Physio - Signal**

1st Signal/Mode	None
TR	28.0 ms
Concatenations	1
Segments	1

**Physio - Cardiac**

Tagging	None
Magn. Preparation	None
Fat-Water Contrast	Standard
Dark Blood	Off
FoV Read	220 mm
FoV Phase	87.5 %
Phase Resolution	80 %
Dynamic Mode	Standard

**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 - Cardiac**

Magn. Preparation	None
Contrasts	1
TE	20.00 ms
TR	28.0 ms
Save Original Images	On

**Inline - MIP**

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

**Inline - Soft Tissue**

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

**Inline - Composing**

Inline Composing	Off
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**Inline - Maplt**

Save Original Images	On
Maplt	None
Flip Angle	15 deg
Measurements	1
Contrasts	1
TR	28.0 ms
TE	20.00 ms

**Sequence - Part 1**

Sequence Name	fl_r
Dimension	3D
Excitation	Slab-sel.
RF Pulse Type	Fast
Gradient Mode	Normal
Flow Compensation	On
Bandwidth	120 Hz/Px
Segments	1
Asymmetric Echo	Off

**Sequence - Part 2**

Introduction	On
RF Spoiling	On
Acoustic noise reduction	Off

**Sequence - Assistant**

SAR Assistant	Off
Allowed Delay	30 s

\\User\Head\Coma\Coma Science Group\pcasl\_3d\_tra\_p2\_iso\_3mm\_highres\_fast\_withintub \*

TA: 2:17 min Coil Selection: Auto Voxel Size: 1.5×1.5×3.0 mm Acc.: 4 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
Load Images to Stamp Segments	Off
Load Images to Graphic Segments	Off
Graphic segment	Default
Inline Movie	Off

**Routine**

Slab Group	1
Slabs	1
Distance Factor	50 %
Position	Isocenter
Orientation	Transversal
Phase Encoding Dir.	P >> A
Phase Oversampling	15 %
Slice Oversampling	25.0 %
FoV Read	192 mm
FoV Phase	100.0 %
Slice Thickness	3.00 mm
TR	4380 ms
TE	20.3 ms
Averages	1
Concatenations	1
AutoAlign	Head > Brain
Coil Elements	HE1-4;NE2

**Contrast - Common**

TR	4380 ms
TE	20.3 ms
Flip Angle	180 deg
Fat-Water Contrast	Fat Saturation
Reconstruction	Magnitude

**Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	5
Multiple Series	Off
Delay in TR	0 ms
Reordering	Centric

**Contrast - ASL**

Perfusion Mode	PCASL
Suppression	Gray-White
Labeling Duration	1800 ms
Delay Array Size	1
Postlabeling Delay	1800 ms

**Resolution - Common**

FoV Read	192 mm
FoV Phase	100.0 %
Slice Thickness	3.00 mm
Base Resolution	64
Phase Resolution	96 %

**Resolution - Common**

Interpolation	On
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**Resolution - Acceleration**

Acceleration mode	GRAPPA
Reference Scans	GRE/Separate
Acceleration Factor PE	2
Reference Lines PE	24
Acceleration Factor 3D	2
Reference Lines 3D	8
Phase Partial Fourier	7/8
Slice Partial Fourier	Off

**Resolution - Filter**

Raw Filter	Off
Elliptical Filter	Off
Hamming	Off
Distortion Correction	3D
Normalize	Prescan

**Geometry - Common**

Slab Group	1
Slabs	1
Distance Factor	50 %
Position	Isocenter
Orientation	Transversal
Phase Encoding Dir.	P >> A
Phase Oversampling	15 %
Slice Oversampling	25.0 %
FoV Read	192 mm
FoV Phase	100.0 %
Slice Thickness	3.00 mm
TR	4380 ms
Series	Ascending
Multi-Slice Mode	Interleaved
Concatenations	1

**Geometry - Saturation**

Special Saturation	Parallel F
Gap	35.0 mm

**Geometry - AutoAlign**

Slab Group	1
Position	Isocenter
Orientation	Transversal
Phase Encoding Dir.	P >> A
AutoAlign	Head > Brain
Initial Position	Isocenter
L	0.0 mm
P	0.0 mm
F	0.0 mm
Initial Rotation	-180.00 deg
Initial Orientation	Transversal

**Geometry - Tim Planning Suite**

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

**System - Miscellaneous**

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

**System - Adjustments**

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

**System - Adjust Volume**

Position	Isocenter
Orientation	Transversal
Rotation	180.00 deg
A >> P	192 mm
R >> L	192 mm
F >> H	144 mm
Reset	Off

**System - Tx/Rx**

Frequency 1H	123.217555 MHz
Correction Factor	1
Image Scaling	1.000
Reset	Off
? Ref. Amplitude 1H	0.000 V

**Physio - Signal**

1st Signal/Mode	None
TR	4380 ms
Concatenations	1
Segments	3

**Sequence - Part 1**

Sequence Name	tgse
Dimension	3D
RF Pulse Type	Normal
Gradient Mode	Fast
Reordering	Centric
Bandwidth	2232 Hz/Px
Echo Spacing	0.54 ms
Turbo Factor	10
Segments	3
EPI Factor	31

**Sequence - Part 2**

Introduction	Off
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\\User\Head\Coma\Coma Science Group\pd+t2\_tse\_tra\_3mm \*

TA: 2:50 min Coil Selection: Manual Voxel Size: 0.4×0.4×3.0 mm Acc.: 2 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
Load Images to Stamp Segments	On
Load Images to Graphic Segments	Off
Graphic segment	Default
Inline Movie	Off

**Resolution - Acceleration**

Acceleration mode	GRAPPA
Reference Scans	Integrated
Acceleration Factor PE	2
Reference Lines PE	30
Phase Partial Fourier	Off

**Resolution - Filter**

Raw Filter	Off
Elliptical Filter	On
Distortion Correction	2D
Normalize	Prescan
Image Filter	Off

**Routine**

Slice Group	1
Slices	56
Distance Factor	0 %
Position	L0.0 A12.0 F5.0 mm
Orientation	Transversal
Phase Encoding Dir.	R >> L
Phase Oversampling	0 %
FoV Read	230 mm
FoV Phase	75.0 %
Slice Thickness	3.0 mm
TR	3500.0 ms
TE 1	11 ms
TE 2	88 ms
Averages	1
Concatenations	2
AutoAlign	Head > Brain
Coil Elements	HE1-4

**Geometry - Common**

Slice Group	1
Slices	56
Distance Factor	0 %
Position	L0.0 A12.0 F5.0 mm
Orientation	Transversal
Phase Encoding Dir.	R >> L
Phase Oversampling	0 %
FoV Read	230 mm
FoV Phase	75.0 %
Slice Thickness	3.0 mm
TR	3500.0 ms
Series	Interleaved
Multi-Slice Mode	Interleaved
Concatenations	2

**Geometry - Saturation**

Special Saturation	None
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**Contrast - Common**

TR	3500.0 ms
TE 1	11 ms
TE 2	88 ms
TD	0.0 ms
MTC	Off
Magn. Preparation	None
Flip Angle	126 deg
Fat-Water Contrast	Standard
Dark Blood	Off
Wrap-up Magn.	None
Contrasts	2
Reconstruction	Magnitude

**Geometry - AutoAlign**

Slice Group	1
Position	L0.0 A12.0 F5.0 mm
Orientation	Transversal
Phase Encoding Dir.	R >> L
AutoAlign	Head > Brain
Initial Position	L0.0 A12.0 F5.0
R	0.0 mm
A	12.0 mm
F	5.0 mm
Initial Rotation	90.00 deg
Initial Orientation	Transversal

**Geometry - Navigator****Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Each Measurement

**Geometry - Tim Planning Suite**

Set-n-Go Protocol	Off
Table Position	F
Table Position	5 mm
Inline Composing	Off

**Resolution - Common**

FoV Read	230 mm
FoV Phase	75.0 %
Slice Thickness	3.0 mm
Base Resolution	320
Phase Resolution	83 %
Interpolation	On
Trajectory	Cartesian

**System - Miscellaneous**

Coil Selection	Manual
Coil Combination	Adaptive Combine
Matrix Optimization	Off
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P

**System - Miscellaneous**

Transversal	F >> H
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**System - Adjustments**

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

**System - Adjust Volume**

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

**System - Tx/Rx**

Frequency 1H	123.217555 MHz
Correction Factor	1
Image Scaling	1.000
Reset	Off
? Ref. Amplitude 1H	0.000 V

**Physio - Signal**

1st Signal/Mode	None
TR	3500.0 ms
Concatenations	2

**Physio - Cardiac**

Magn. Preparation	None
Fat-Water Contrast	Standard
Dark Blood	Off
FoV Read	230 mm
FoV Phase	75.0 %
Phase Resolution	83 %
Trajectory	Cartesian
Dynamic Mode	Standard

**Physio - PACE**

Resp. Control	Off
Concatenations	2

**Inline - Subtraction**

Subtract	Off
Measurements	1
StdDev	Off
Save Original Images	On

**Inline - Cardiac**

Magn. Preparation	None
Contrasts	2
TE 1	11 ms
TE 2	88 ms
TR	3500.0 ms
Save Original Images	On

**Inline - MIP**

MIP Sag	Off
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**Inline - MIP**

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

**Inline - Composing**

Inline Composing	Off
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**Sequence - Part 1**

Sequence Name	tse_rr
Dimension	2D
RF Pulse Type	Low SAR
Gradient Mode	Whisper
Flow Compensation	Read
Bandwidth	252 Hz/Px
Free Echo Spacing	Off
Echo Spacing	10.9 ms
Define	Turbo Factor
Turbo Factor	5
Echo Trains per Slice	23

**Sequence - Part 2**

Introduction	On
Phase Correction	Automatic
Compensate T2 Decay	Off
Hyperecho	Off
WARP	Off
Red. EC Sensitivity	Off
Acoustic noise reduction	Off
Reduce Motion Sens.	On

**Sequence - Assistant**

SAR Assistant	Flip Angle
Min Flip Angle	130 deg
Allowed Delay	0 s

\\User\Head\Coma\Coma Science Group\pcasl\_3d\_tra\_p2\_iso\_3mm\_highres\_fast\_nointub \*

TA: 2:17 min Coil Selection: Auto Voxel Size: 1.5×1.5×3.0 mm Acc.: 4 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
Load Images to Stamp Segments	Off
Load Images to Graphic Segments	Off
Graphic segment	Default
Inline Movie	Off

**Routine**

Slab Group	1
Slabs	1
Distance Factor	50 %
Position	Isocenter
Orientation	Transversal
Phase Encoding Dir.	P >> A
Phase Oversampling	15 %
Slice Oversampling	25.0 %
FoV Read	192 mm
FoV Phase	100.0 %
Slice Thickness	3.00 mm
TR	4380 ms
TE	20.3 ms
Averages	1
Concatenations	1
AutoAlign	Head > Brain
Coil Elements	HE1-4;NE2

**Contrast - Common**

TR	4380 ms
TE	20.3 ms
Flip Angle	180 deg
Fat-Water Contrast	Fat Saturation
Reconstruction	Magnitude

**Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	5
Multiple Series	Off
Delay in TR	0 ms
Reordering	Centric

**Contrast - ASL**

Perfusion Mode	PCASL
Suppression	Gray-White
Labeling Duration	1800 ms
Delay Array Size	1
Postlabeling Delay	1800 ms

**Resolution - Common**

FoV Read	192 mm
FoV Phase	100.0 %
Slice Thickness	3.00 mm
Base Resolution	64
Phase Resolution	96 %

**Resolution - Common**

Interpolation	On
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**Resolution - Acceleration**

Acceleration mode	GRAPPA
Reference Scans	GRE/Separate
Acceleration Factor PE	2
Reference Lines PE	24
Acceleration Factor 3D	2
Reference Lines 3D	8
Phase Partial Fourier	7/8
Slice Partial Fourier	Off

**Resolution - Filter**

Raw Filter	Off
Elliptical Filter	Off
Hamming	Off
Distortion Correction	3D
Normalize	Prescan

**Geometry - Common**

Slab Group	1
Slabs	1
Distance Factor	50 %
Position	Isocenter
Orientation	Transversal
Phase Encoding Dir.	P >> A
Phase Oversampling	15 %
Slice Oversampling	25.0 %
FoV Read	192 mm
FoV Phase	100.0 %
Slice Thickness	3.00 mm
TR	4380 ms
Series	Ascending
Multi-Slice Mode	Interleaved
Concatenations	1

**Geometry - Saturation**

Special Saturation	Parallel F
Gap	35.0 mm

**Geometry - AutoAlign**

Slab Group	1
Position	Isocenter
Orientation	Transversal
Phase Encoding Dir.	P >> A
AutoAlign	Head > Brain
Initial Position	Isocenter
L	0.0 mm
P	0.0 mm
F	0.0 mm
Initial Rotation	-180.00 deg
Initial Orientation	Transversal

**Geometry - Tim Planning Suite**

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

**System - Miscellaneous**

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

**System - Adjustments**

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

**System - Adjust Volume**

Position	Isocenter
Orientation	Transversal
Rotation	180.00 deg
A >> P	192 mm
R >> L	192 mm
F >> H	144 mm
Reset	Off

**System - Tx/Rx**

Frequency 1H	123.217555 MHz
Correction Factor	1
Image Scaling	1.000
Reset	Off
? Ref. Amplitude 1H	0.000 V

**Physio - Signal**

1st Signal/Mode	None
TR	4380 ms
Concatenations	1
Segments	3

**Sequence - Part 1**

Sequence Name	tgse
Dimension	3D
RF Pulse Type	Normal
Gradient Mode	Fast
Reordering	Centric
Bandwidth	2232 Hz/Px
Echo Spacing	0.54 ms
Turbo Factor	10
Segments	3
EPI Factor	31

**Sequence - Part 2**

Introduction	Off
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\\User\Head\Coma\Coma Science Group\pd+t2\_tse\_tra\_3mm \*

TA: 2:08 min Coil Selection: Manual Voxel Size: 0.4×0.4×3.0 mm 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
Load Images to Stamp Segments	On
Load Images to Graphic Segments	Off
Graphic segment	Default
Inline Movie	Off

**Resolution - Acceleration**

Acceleration mode	GRAPPA
Reference Scans	Integrated
Acceleration Factor PE	3
Reference Lines PE	27
Phase Partial Fourier	Off

**Resolution - Filter**

Raw Filter	Off
Elliptical Filter	On
Distortion Correction	3D
Normalize	Prescan
Image Filter	Off

**Routine**

Slice Group	1
Slices	56
Distance Factor	0 %
Position	L0.0 A12.0 F5.0 mm
Orientation	Transversal
Phase Encoding Dir.	R >> L
Phase Oversampling	0 %
FoV Read	230 mm
FoV Phase	75.0 %
Slice Thickness	3.0 mm
TR	3500.0 ms
TE 1	11 ms
TE 2	88 ms
Averages	1
Concatenations	2
AutoAlign	Head > Brain
Coil Elements	HE1-4

**Geometry - Common**

Slice Group	1
Slices	56
Distance Factor	0 %
Position	L0.0 A12.0 F5.0 mm
Orientation	Transversal
Phase Encoding Dir.	R >> L
Phase Oversampling	0 %
FoV Read	230 mm
FoV Phase	75.0 %
Slice Thickness	3.0 mm
TR	3500.0 ms
Series	Interleaved
Multi-Slice Mode	Interleaved
Concatenations	2

**Geometry - Saturation**

Special Saturation	None
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**Contrast - Common**

TR	3500.0 ms
TE 1	11 ms
TE 2	88 ms
TD	0.0 ms
MTC	Off
Magn. Preparation	None
Flip Angle	126 deg
Fat-Water Contrast	Standard
Dark Blood	Off
Wrap-up Magn.	None
Contrasts	2
Reconstruction	Magnitude

**Geometry - AutoAlign**

Slice Group	1
Position	L0.0 A12.0 F5.0 mm
Orientation	Transversal
Phase Encoding Dir.	R >> L
AutoAlign	Head > Brain
Initial Position	L0.0 A12.0 F5.0
R	0.0 mm
A	12.0 mm
F	5.0 mm
Initial Rotation	90.00 deg
Initial Orientation	Transversal

**Geometry - Navigator****Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Each Measurement

**Geometry - Tim Planning Suite**

Set-n-Go Protocol	Off
Table Position	F
Table Position	5 mm
Inline Composing	Off

**Resolution - Common**

FoV Read	230 mm
FoV Phase	75.0 %
Slice Thickness	3.0 mm
Base Resolution	320
Phase Resolution	83 %
Interpolation	On
Trajectory	Cartesian

**System - Miscellaneous**

Coil Selection	Manual
Coil Combination	Adaptive Combine
Matrix Optimization	Off
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P

**System - Miscellaneous**

Transversal	F >> H
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**System - Adjustments**

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

**System - Adjust Volume**

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

**System - Tx/Rx**

Frequency 1H	123.217555 MHz
Correction Factor	1
Image Scaling	1.000
Reset	Off
? Ref. Amplitude 1H	0.000 V

**Physio - Signal**

1st Signal/Mode	None
TR	3500.0 ms
Concatenations	2

**Physio - Cardiac**

Magn. Preparation	None
Fat-Water Contrast	Standard
Dark Blood	Off
FoV Read	230 mm
FoV Phase	75.0 %
Phase Resolution	83 %
Trajectory	Cartesian
Dynamic Mode	Standard

**Physio - PACE**

Resp. Control	Off
Concatenations	2

**Inline - Subtraction**

Subtract	Off
Measurements	1
StdDev	Off
Save Original Images	On

**Inline - Cardiac**

Magn. Preparation	None
Contrasts	2
TE 1	11 ms
TE 2	88 ms
TR	3500.0 ms
Save Original Images	On

**Inline - MIP**

MIP Sag	Off
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**Inline - MIP**

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

**Inline - Composing**

Inline Composing	Off
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**Sequence - Part 1**

Sequence Name	tse_rr
Dimension	2D
RF Pulse Type	Low SAR
Gradient Mode	Whisper
Flow Compensation	Read
Bandwidth	252 Hz/Px
Free Echo Spacing	Off
Echo Spacing	10.9 ms
Define	Turbo Factor
Turbo Factor	5
Echo Trains per Slice	17

**Sequence - Part 2**

Introduction	On
Phase Correction	Automatic
Compensate T2 Decay	Off
Hyperecho	Off
WARP	Off
Red. EC Sensitivity	Off
Acoustic noise reduction	Off
Reduce Motion Sens.	On

**Sequence - Assistant**

SAR Assistant	Flip Angle
Min Flip Angle	130 deg
Allowed Delay	0 s

\\User\Head\Coma\Coma Science Group\pd+t2\_tse\_tra\_3mm \*

TA: 2:08 min Coil Selection: Manual Voxel Size: 0.4×0.4×3.0 mm 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
Load Images to Stamp Segments	On
Load Images to Graphic Segments	Off
Graphic segment	Default
Inline Movie	Off

**Resolution - Acceleration**

Acceleration mode	GRAPPA
Reference Scans	Integrated
Acceleration Factor PE	3
Reference Lines PE	27
Phase Partial Fourier	Off

**Resolution - Filter**

Raw Filter	Off
Elliptical Filter	On
Distortion Correction	2D
Normalize	Prescan
Image Filter	Off

**Routine**

Slice Group	1
Slices	56
Distance Factor	0 %
Position	L0.0 A12.0 F5.0 mm
Orientation	Transversal
Phase Encoding Dir.	R >> L
Phase Oversampling	0 %
FoV Read	230 mm
FoV Phase	75.0 %
Slice Thickness	3.0 mm
TR	3500.0 ms
TE 1	11 ms
TE 2	88 ms
Averages	1
Concatenations	2
AutoAlign	Head > Brain
Coil Elements	HE1-4

**Geometry - Common**

Slice Group	1
Slices	56
Distance Factor	0 %
Position	L0.0 A12.0 F5.0 mm
Orientation	Transversal
Phase Encoding Dir.	R >> L
Phase Oversampling	0 %
FoV Read	230 mm
FoV Phase	75.0 %
Slice Thickness	3.0 mm
TR	3500.0 ms
Series	Interleaved
Multi-Slice Mode	Interleaved
Concatenations	2

**Geometry - Saturation**

Special Saturation	None
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**Contrast - Common**

TR	3500.0 ms
TE 1	11 ms
TE 2	88 ms
TD	0.0 ms
MTC	Off
Magn. Preparation	None
Flip Angle	126 deg
Fat-Water Contrast	Standard
Dark Blood	Off
Wrap-up Magn.	None
Contrasts	2
Reconstruction	Magnitude

**Geometry - AutoAlign**

Slice Group	1
Position	L0.0 A12.0 F5.0 mm
Orientation	Transversal
Phase Encoding Dir.	R >> L
AutoAlign	Head > Brain
Initial Position	L0.0 A12.0 F5.0
R	0.0 mm
A	12.0 mm
F	5.0 mm
Initial Rotation	90.00 deg
Initial Orientation	Transversal

**Geometry - Navigator****Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Each Measurement

**Geometry - Tim Planning Suite**

Set-n-Go Protocol	Off
Table Position	F
Table Position	5 mm
Inline Composing	Off

**Resolution - Common**

FoV Read	230 mm
FoV Phase	75.0 %
Slice Thickness	3.0 mm
Base Resolution	320
Phase Resolution	83 %
Interpolation	On
Trajectory	Cartesian

**System - Miscellaneous**

Coil Selection	Manual
Coil Combination	Adaptive Combine
Matrix Optimization	Off
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P

**System - Miscellaneous**

Transversal	F >> H
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**System - Adjustments**

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

**System - Adjust Volume**

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

**System - Tx/Rx**

Frequency 1H	123.217555 MHz
Correction Factor	1
Image Scaling	1.000
Reset	Off
? Ref. Amplitude 1H	0.000 V

**Physio - Signal**

1st Signal/Mode	None
TR	3500.0 ms
Concatenations	2

**Physio - Cardiac**

Magn. Preparation	None
Fat-Water Contrast	Standard
Dark Blood	Off
FoV Read	230 mm
FoV Phase	75.0 %
Phase Resolution	83 %
Trajectory	Cartesian
Dynamic Mode	Standard

**Physio - PACE**

Resp. Control	Off
Concatenations	2

**Inline - Subtraction**

Subtract	Off
Measurements	1
StdDev	Off
Save Original Images	On

**Inline - Cardiac**

Magn. Preparation	None
Contrasts	2
TE 1	11 ms
TE 2	88 ms
TR	3500.0 ms
Save Original Images	On

**Inline - MIP**

MIP Sag	Off
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**Inline - MIP**

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

**Inline - Composing**

Inline Composing	Off
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**Sequence - Part 1**

Sequence Name	tse_rr
Dimension	2D
RF Pulse Type	Low SAR
Gradient Mode	Whisper
Flow Compensation	Read
Bandwidth	252 Hz/Px
Free Echo Spacing	Off
Echo Spacing	10.9 ms
Define	Turbo Factor
Turbo Factor	5
Echo Trains per Slice	17

**Sequence - Part 2**

Introduction	On
Phase Correction	Automatic
Compensate T2 Decay	Off
Hyperecho	Off
WARP	Off
Red. EC Sensitivity	Off
Acoustic noise reduction	Off
Reduce Motion Sens.	On

**Sequence - Assistant**

SAR Assistant	Flip Angle
Min Flip Angle	130 deg
Allowed Delay	0 s



\\User\Head\Coma\Coma Science Group\t1\_mp2rage\_sag\_p2\_iso\_fast \*

TA: 5:36 min Coil Selection: Manual Voxel Size: 1.0×1.0×1.0 mm Acc.: 2 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
Load Images to Stamp Segments	Off
Load Images to Graphic Segments	Off
Graphic segment	Default
Inline Movie	Off

**Routine**

Slab Group	1
Slabs	1
Distance Factor	50 %
Position	Isocenter
Orientation	Sagittal
Phase Encoding Dir.	A >> P
Phase Oversampling	0 %
Slice Oversampling	0.0 %
FoV Read	256 mm
FoV Phase	93.8 %
Slice Thickness	1.00 mm
TR	2790.0 ms
TE	2.27 ms
Averages	1
Concatenations	1
AutoAlign	Head > Basis
Coil Elements	HE1-4

**Contrast - Common**

TR	2790.0 ms
TE	2.27 ms
Magn. Preparation	Non-sel. IR
TI 1	700 ms
TI 2	2300 ms
Flip Angle 1	5 deg
Flip Angle 2	5 deg
Fat-Water Contrast	Standard
Dark Blood	Off
Reconstruction	Magnitude

**Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Each Measurement
Reordering	Linear

**Resolution - Common**

FoV Read	256 mm
FoV Phase	93.8 %
Slice Thickness	1.00 mm
Base Resolution	256
Phase Resolution	100 %
Slice Resolution	100 %
Interpolation	Off

**Resolution - Acceleration**

Acceleration mode	GRAPPA
Reference Scans	Integrated
Acceleration Factor PE	2
Reference Lines PE	32
Acceleration Factor 3D	1
Phase Partial Fourier	7/8
Slice Partial Fourier	6/8
Asymmetric Echo	Off
Elliptical Scanning	Off

**Resolution - Filter**

Raw Filter	Off
Elliptical Filter	Off
Distortion Correction	3D
Normalize	Prescan
Image Filter	Off

**Geometry - Common**

Slab Group	1
Slabs	1
Distance Factor	50 %
Position	Isocenter
Orientation	Sagittal
Phase Encoding Dir.	A >> P
Phase Oversampling	0 %
Slice Oversampling	0.0 %
FoV Read	256 mm
FoV Phase	93.8 %
Slice Thickness	1.00 mm
TR	2790.0 ms
Series	Interleaved
Multi-Slice Mode	Single Shot
Concatenations	1

**Geometry - AutoAlign**

Slab Group	1
Position	Isocenter
Orientation	Sagittal
Phase Encoding Dir.	A >> P
AutoAlign	Head > Basis
Initial Position	Isocenter
L	0.0 mm
P	0.0 mm
H	0.0 mm
Initial Rotation	0.00 deg
Initial Orientation	Sagittal

**Geometry - Navigator****Geometry - Tim Planning Suite**

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

**System - Miscellaneous**

Coil Selection	Manual
Coil Combination	Adaptive Combine
Matrix Optimization	Off
MSMA	S - C - T

**System - Miscellaneous**

Sagittal	R >> L
Coronal	A >> P
Transversal	F >> H

**System - Adjustments**

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

**System - Adjust Volume**

Position	Isocenter
Orientation	Sagittal
Rotation	0.00 deg
A >> P	240 mm
F >> H	256 mm
R >> L	176 mm
Reset	Off

**System - Tx/Rx**

Frequency 1H	123.217555 MHz
Correction Factor	1
Image Scaling	1.000
Reset	Off
? Ref. Amplitude 1H	0.000 V

**Physio - Signal**

1st Signal/Mode	None
TR	2790.0 ms
Concatenations	1

**Physio - Cardiac**

Magn. Preparation	Non-sel. IR
TI 1	700 ms
TI 2	2300 ms
Fat-Water Contrast	Standard
Dark Blood	Off
FoV Read	256 mm
FoV Phase	93.8 %
Phase Resolution	100 %
Dynamic Mode	Standard

**Physio - PACE**

Resp. Control	Off
Concatenations	1

**Inline - Subtraction**

Subtract	Off
Measurements	1
StdDev	Off
Save Original Images	On

**Inline - Cardiac**

Magn. Preparation	Non-sel. IR
TE	2.27 ms
TR	2790.0 ms
Save Original Images	On

**Inline - MIP**

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

**Inline - Composing**

Inline Composing	Off
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**Inline - Maplt**

Save Original Images	On
Maplt	None
Flip Angle 1	5 deg
Flip Angle 2	5 deg
Measurements	1
TR	2790.0 ms
TE	2.27 ms

**Sequence - Part 1**

Sequence Name	tfl
Dimension	3D
Excitation	Non-sel.
RF Pulse Type	Fast
Gradient Mode	Fast
Flow Compensation	None
Reordering	Linear
Bandwidth	350 Hz/Px
Echo Spacing	5.56 ms
Turbo Factor	132
Asymmetric Echo	Off

**Sequence - Part 2**

Introduction	On
RF Spoiling	On
Incr. Gradient Spoiling	Off

**Sequence - Assistant**

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

\\User\Head\Coma\Coma Science Group\tof\_fl3d\_tra \*

TA: 5:33 min Coil Selection: Auto Voxel Size: 0.3×0.3×0.5 mm Acc.: 2 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
Load Images to Stamp Segments	On
Load Images to Graphic Segments	Off
Graphic segment	Default
Inline Movie	Off

**Routine**

Slab Group	1
Slabs	4
Distance Factor	-20.00 %
Position	Isocenter
Orientation	Transversal
Phase Encoding Dir.	R >> L
Phase Oversampling	0 %
Slice Oversampling	20.0 %
FoV Read	200 mm
FoV Phase	90.6 %
Slice Thickness	0.50 mm
TR	21.0 ms
TE	3.69 ms
Averages	1
Concatenations	4
AutoAlign	Head > Basis
Coil Elements	HE1-4;NE1,2

**Contrast - Common**

TR	21.0 ms
TE	3.69 ms
TD	0.000 ms
MTC	Off
Flip Angle	25 deg
Fat-Water Contrast	Standard
Contrasts	1
Reconstruction	Magnitude

**Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
3D Reordering	Min. TTC

**Resolution - Common**

FoV Read	200 mm
FoV Phase	90.6 %
Slice Thickness	0.50 mm
Base Resolution	384
Phase Resolution	95 %
Slice Resolution	50 %
Interpolation	On

**Resolution - Acceleration**

Acceleration mode	GRAPPA
Reference Scans	Integrated

**Resolution - Acceleration**

Acceleration Factor PE	2
Reference Lines PE	32
Acceleration Factor 3D	1
Phase Partial Fourier	Off
Slice Partial Fourier	7/8
Asymmetric Echo	Allowed
Elliptical Scanning	Off

**Resolution - Filter**

Raw Filter	Off
Elliptical Filter	Off
POCS	Off
Distortion Correction	2D
Normalize	Prescan
Image Filter	Off

**Geometry - Common**

Slab Group	1
Slabs	4
Distance Factor	-20.00 %
Position	Isocenter
Orientation	Transversal
Phase Encoding Dir.	R >> L
Phase Oversampling	0 %
Slice Oversampling	20.0 %
FoV Read	200 mm
FoV Phase	90.6 %
Slice Thickness	0.50 mm
TR	21.0 ms
Series	Descending
Multi-Slice Mode	Sequential
Concatenations	4

**Geometry - Saturation**

Special Saturation	Tracking H
Gap	10 mm
Thickness	40 mm

**Geometry - AutoAlign**

Slab Group	1
Position	Isocenter
Orientation	Transversal
Phase Encoding Dir.	R >> L
AutoAlign	Head > Basis
Initial Position	L0.0 P0.0 H10.0
L	0.0 mm
P	0.0 mm
H	10.0 mm
Initial Rotation	90.00 deg
Initial Orientation	Transversal

**Geometry - Tim Planning Suite**

Set-n-Go Protocol	Off
Table Position	H
Table Position	10 mm
Inline Composing	Off

**System - Miscellaneous**

Coil Selection	Default
Coil Combination	Sum of Squares

**System - Miscellaneous**

Matrix Optimization	Off
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	F >> H

**System - Adjustments**

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

**System - Adjust Volume**

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

**System - Tx/Rx**

Frequency 1H	123.217555 MHz
Correction Factor	1
Image Scaling	1.000
Reset	Off
? Ref. Amplitude 1H	0.000 V

**Angio - Dynamic**

Dynamic Mode	Standard
TONE Ramp	70 %
Flow Direction	F >> H
Flip Angle	25 deg
MTC	Off
Measurements	1
3D Reordering	Min. TTC

**Angio - Subtraction**

Subtract	Off
Measurements	1
StdDev	Off
Save Original Images	On

**Angio - MIP**

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

**Angio - Composing**

Inline Composing	Off
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**Sequence - Part 1**

Sequence Name	fl_r
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**Sequence - Part 1**

Dimension	3D
Excitation	TONE
Gradient Mode	Fast
Flow Compensation	On
Bandwidth	186 Hz/Px
Asymmetric Echo	Allowed

**Sequence - Part 2**

Introduction	On
RF Spoiling	On

**Sequence - Assistant**

SAR Assistant	Flip Angle
Min Flip Angle	16 deg

\\User\Head\Coma\Coma Science Group\t1\_mp2rage\_sag\_p2\_iso\_FLAWS \*

TA: 10:02 min Coil Selection: Manual Voxel Size: 1.0×1.0×1.0 mm Acc:: 2 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
Load Images to Stamp Segments	Off
Load Images to Graphic Segments	Off
Graphic segment	Default
Inline Movie	Off

**Routine**

Slab Group	1
Slabs	1
Distance Factor	50 %
Position	Isocenter
Orientation	Sagittal
Phase Encoding Dir.	A >> P
Phase Oversampling	0 %
Slice Oversampling	0.0 %
FoV Read	256 mm
FoV Phase	93.8 %
Slice Thickness	1.00 mm
TR	5000.0 ms
TE	2.9 ms
Averages	1
Concatenations	1
AutoAlign	Head > Brain
Coil Elements	HE1-4

**Contrast - Common**

TR	5000.0 ms
TE	2.9 ms
Magn. Preparation	Non-sel. IR
TI 1	409 ms
TI 2	1210 ms
Flip Angle 1	5 deg
Flip Angle 2	5 deg
Fat-Water Contrast	Standard
Dark Blood	Off
Reconstruction	Magnitude

**Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Each Measurement
Reordering	Linear

**Resolution - Common**

FoV Read	256 mm
FoV Phase	93.8 %
Slice Thickness	1.00 mm
Base Resolution	256
Phase Resolution	100 %
Slice Resolution	100 %
Interpolation	Off

**Resolution - Acceleration**

Acceleration mode	GRAPPA
Reference Scans	Integrated
Acceleration Factor PE	2
Reference Lines PE	32
Acceleration Factor 3D	1
Phase Partial Fourier	7/8
Slice Partial Fourier	6/8
Asymmetric Echo	Off
Elliptical Scanning	Off

**Resolution - Filter**

Raw Filter	Off
Elliptical Filter	Off
Distortion Correction	3D
Normalize	Prescan
Image Filter	Off

**Geometry - Common**

Slab Group	1
Slabs	1
Distance Factor	50 %
Position	Isocenter
Orientation	Sagittal
Phase Encoding Dir.	A >> P
Phase Oversampling	0 %
Slice Oversampling	0.0 %
FoV Read	256 mm
FoV Phase	93.8 %
Slice Thickness	1.00 mm
TR	5000.0 ms
Series	Interleaved
Multi-Slice Mode	Single Shot
Concatenations	1

**Geometry - AutoAlign**

Slab Group	1
Position	Isocenter
Orientation	Sagittal
Phase Encoding Dir.	A >> P
AutoAlign	Head > Brain
Initial Position	Isocenter
R	0.0 mm
P	0.0 mm
H	0.0 mm
Initial Rotation	0.00 deg
Initial Orientation	Sagittal

**Geometry - Navigator****Geometry - Tim Planning Suite**

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

**System - Miscellaneous**

Coil Selection	Manual
Coil Combination	Adaptive Combine
Matrix Optimization	Off
MSMA	S - C - T

**System - Miscellaneous**

Sagittal	R >> L
Coronal	A >> P
Transversal	F >> H

**System - Adjustments**

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

**System - Adjust Volume**

Position	Isocenter
Orientation	Sagittal
Rotation	0.00 deg
A >> P	240 mm
F >> H	256 mm
R >> L	144 mm
Reset	Off

**System - Tx/Rx**

Frequency 1H	123.217555 MHz
Correction Factor	1
Image Scaling	1.000
Reset	Off
? Ref. Amplitude 1H	0.000 V

**Physio - Signal**

1st Signal/Mode	None
TR	5000.0 ms
Concatenations	1

**Physio - Cardiac**

Magn. Preparation	Non-sel. IR
TI 1	409 ms
TI 2	1210 ms
Fat-Water Contrast	Standard
Dark Blood	Off
FoV Read	256 mm
FoV Phase	93.8 %
Phase Resolution	100 %
Dynamic Mode	Standard

**Physio - PACE**

Resp. Control	Off
Concatenations	1

**Inline - Subtraction**

Subtract	Off
Measurements	1
StdDev	Off
Save Original Images	On

**Inline - Cardiac**

Magn. Preparation	Non-sel. IR
TE	2.9 ms
TR	5000.0 ms
Save Original Images	On

**Inline - MIP**

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

**Inline - Composing**

Inline Composing	Off
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**Inline - Maplt**

Save Original Images	On
Maplt	None
Flip Angle 1	5 deg
Flip Angle 2	5 deg
Measurements	1
TR	5000.0 ms
TE	2.9 ms

**Sequence - Part 1**

Sequence Name	tfl
Dimension	3D
Excitation	Non-sel.
RF Pulse Type	Fast
Gradient Mode	Fast
Flow Compensation	None
Reordering	Linear
Bandwidth	240 Hz/Px
Echo Spacing	6.88 ms
Turbo Factor	108
Asymmetric Echo	Off

**Sequence - Part 2**

Introduction	On
RF Spoiling	On
Incr. Gradient Spoiling	Off

**Sequence - Assistant**

SAR Assistant	Off
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\\User\Head\Coma\Coma Science Group\t2\_tse\_tra\_512\_p2\_fast \*

TA: 40 sec Coil Selection: Auto Voxel Size: 0.4×0.4×4.0 mm Acc:: 4 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
Load Images to Stamp Segments	On
Load Images to Graphic Segments	Off
Graphic segment	Default
Inline Movie	Off

**Resolution - Acceleration**

Reference Scans	TSE/Separate
Acceleration Factor PE	4
Reference Lines PE	64
Phase Partial Fourier	Off

**Resolution - Filter**

Raw Filter	Off
Elliptical Filter	On
Distortion Correction	3D
Normalize	Prescan
Image Filter	Off

**Geometry - Common**

Slice Group	1
Slices	34
Distance Factor	10 %
Position	L0.0 A12.0 F5.0 mm
Orientation	Transversal
Phase Encoding Dir.	R >> L
Phase Oversampling	0 %
FoV Read	230 mm
FoV Phase	81.3 %
Slice Thickness	4.0 mm
TR	5950.0 ms
Series	Interleaved
Multi-Slice Mode	Interleaved
Concatenations	1

**Routine**

Slice Group	1
Slices	34
Distance Factor	10 %
Position	L0.0 A12.0 F5.0 mm
Orientation	Transversal
Phase Encoding Dir.	R >> L
Phase Oversampling	0 %
FoV Read	230 mm
FoV Phase	81.3 %
Slice Thickness	4.0 mm
TR	5950.0 ms
TE	103.0 ms
Averages	1
Concatenations	1
AutoAlign	Head > Brain
Coil Elements	HE1-4;NE2

**Geometry - Saturation**

Special Saturation	None
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**Contrast - Common**

TR	5950.0 ms
TE	103.0 ms
MTC	Off
Magn. Preparation	None
Flip Angle	150 deg
Fat-Water Contrast	Standard
Dark Blood	Off
Wrap-up Magn.	None
Contrasts	1
Reconstruction	Magnitude

**Geometry - AutoAlign**

Slice Group	1
Position	L0.0 A12.0 F5.0 mm
Orientation	Transversal
Phase Encoding Dir.	R >> L
AutoAlign	Head > Brain
Initial Position	L0.0 A12.0 F5.0
L	0.0 mm
A	12.0 mm
F	5.0 mm
Initial Rotation	89.99 deg
Initial Orientation	Transversal

**Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Each Measurement

**Geometry - Navigator****Geometry - Tim Planning Suite**

Set-n-Go Protocol	Off
Table Position	F
Table Position	5 mm
Inline Composing	Off

**Resolution - Common**

FoV Read	230 mm
FoV Phase	81.3 %
Slice Thickness	4.0 mm
Base Resolution	320
Phase Resolution	75 %
Interpolation	On
Trajectory	Cartesian

**System - Miscellaneous**

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

**Resolution - Acceleration**

Acceleration mode	GRAPPA
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**System - Adjustments**

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

**System - Adjust Volume**

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

**System - Tx/Rx**

Frequency 1H	123.217555 MHz
Correction Factor	1
Image Scaling	1.000
Reset	Off
? Ref. Amplitude 1H	0.000 V

**Physio - Signal**

1st Signal/Mode	None
TR	5950.0 ms
Concatenations	1

**Physio - Cardiac**

Magn. Preparation	None
Fat-Water Contrast	Standard
Dark Blood	Off
FoV Read	230 mm
FoV Phase	81.3 %
Phase Resolution	75 %
Trajectory	Cartesian
Dynamic Mode	Standard

**Physio - PACE**

Resp. Control	Off
Concatenations	1

**Inline - Subtraction**

Subtract	Off
Measurements	1
StdDev	Off
Save Original Images	On

**Inline - Cardiac**

Magn. Preparation	None
Contrasts	1
TE	103.0 ms
TR	5950.0 ms
Save Original Images	On

**Inline - MIP**

MIP Sag	Off
MIP Cor	Off
MIP Tra	Off
MIP Time	Off
Radial MIP	Off

**Inline - MIP**

MPR Sag	Off
MPR Cor	Off
MPR Tra	Off
Save Original Images	On

**Inline - Composing**

Inline Composing	Off
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**Sequence - Part 1**

Sequence Name	tse
Dimension	2D
RF Pulse Type	Normal
Gradient Mode	Normal
Flow Compensation	None
Bandwidth	223 Hz/Px
Free Echo Spacing	Off
Echo Spacing	9.36 ms
Define	Turbo Factor
Turbo Factor	15
Echo Trains per Slice	4

**Sequence - Part 2**

Introduction	On
Phase Correction	Automatic
Compensate T2 Decay	Off
Hyperecho	Off
WARP	Off
Red. EC Sensitivity	Off
Acoustic noise reduction	Off
Reduce Motion Sens.	Off

**Sequence - Assistant**

SAR Assistant	TR
Max. TR	6500.0 ms
Allowed Delay	60 s



\\User\Head\Coma\Coma Science Group\t2\_tse\_tra\_512\_p2 \*

TA: 1:21 min Coil Selection: Auto Voxel Size: 0.2×0.2×4.0 mm Acc:: 2 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
Load Images to Stamp Segments	On
Load Images to Graphic Segments	Off
Graphic segment	Default
Inline Movie	Off

**Resolution - Acceleration**

Reference Scans	TSE/Separate
Acceleration Factor PE	2
Reference Lines PE	64
Phase Partial Fourier	Off

**Resolution - Filter**

Raw Filter	Off
Elliptical Filter	On
Distortion Correction	3D
Normalize	Prescan
Image Filter	Off

**Routine**

Slice Group	1
Slices	34
Distance Factor	10 %
Position	L0.0 A12.0 F5.0 mm
Orientation	Transversal
Phase Encoding Dir.	R >> L
Phase Oversampling	0 %
FoV Read	230 mm
FoV Phase	81.3 %
Slice Thickness	4.0 mm
TR	5950.0 ms
TE	100 ms
Averages	1
Concatenations	1
AutoAlign	Head > Brain
Coil Elements	HE1-4;NE2

**Geometry - Common**

Slice Group	1
Slices	34
Distance Factor	10 %
Position	L0.0 A12.0 F5.0 mm
Orientation	Transversal
Phase Encoding Dir.	R >> L
Phase Oversampling	0 %
FoV Read	230 mm
FoV Phase	81.3 %
Slice Thickness	4.0 mm
TR	5950.0 ms
Series	Interleaved
Multi-Slice Mode	Interleaved
Concatenations	1

**Geometry - Saturation**

Special Saturation	None
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**Contrast - Common**

TR	5950.0 ms
TE	100 ms
MTC	Off
Magn. Preparation	None
Flip Angle	150 deg
Fat-Water Contrast	Standard
Dark Blood	Off
Wrap-up Magn.	None
Contrasts	1
Reconstruction	Magnitude

**Geometry - AutoAlign**

Slice Group	1
Position	L0.0 A12.0 F5.0 mm
Orientation	Transversal
Phase Encoding Dir.	R >> L
AutoAlign	Head > Brain
Initial Position	L0.0 A12.0 F5.0
R	0.0 mm
A	12.0 mm
F	5.0 mm
Initial Rotation	89.99 deg
Initial Orientation	Transversal

**Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Each Measurement

**Geometry - Navigator****Geometry - Tim Planning Suite**

Set-n-Go Protocol	Off
Table Position	F
Table Position	5 mm
Inline Composing	Off

**Resolution - Common**

FoV Read	230 mm
FoV Phase	81.3 %
Slice Thickness	4.0 mm
Base Resolution	512
Phase Resolution	75 %
Interpolation	On
Trajectory	Cartesian

**System - Miscellaneous**

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

**Resolution - Acceleration**

Acceleration mode	GRAPPA
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**System - Adjustments**

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

**System - Adjust Volume**

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

**System - Tx/Rx**

Frequency 1H	123.217555 MHz
Correction Factor	1
Image Scaling	1.000
Reset	Off
? Ref. Amplitude 1H	0.000 V

**Physio - Signal**

1st Signal/Mode	None
TR	5950.0 ms
Concatenations	1

**Physio - Cardiac**

Magn. Preparation	None
Fat-Water Contrast	Standard
Dark Blood	Off
FoV Read	230 mm
FoV Phase	81.3 %
Phase Resolution	75 %
Trajectory	Cartesian
Dynamic Mode	Standard

**Physio - PACE**

Resp. Control	Off
Concatenations	1

**Inline - Subtraction**

Subtract	Off
Measurements	1
StdDev	Off
Save Original Images	On

**Inline - Cardiac**

Magn. Preparation	None
Contrasts	1
TE	100 ms
TR	5950.0 ms
Save Original Images	On

**Inline - MIP**

MIP Sag	Off
MIP Cor	Off
MIP Tra	Off
MIP Time	Off
Radial MIP	Off

**Inline - MIP**

MPR Sag	Off
MPR Cor	Off
MPR Tra	Off
Save Original Images	On

**Inline - Composing**

Inline Composing	Off
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**Sequence - Part 1**

Sequence Name	tse
Dimension	2D
RF Pulse Type	Normal
Gradient Mode	Normal
Flow Compensation	None
Bandwidth	222 Hz/Px
Free Echo Spacing	Off
Echo Spacing	11.1 ms
Define	Turbo Factor
Turbo Factor	15
Echo Trains per Slice	11

**Sequence - Part 2**

Introduction	On
Phase Correction	Automatic
Compensate T2 Decay	Off
Hyperecho	Off
WARP	Off
Red. EC Sensitivity	Off
Acoustic noise reduction	Off
Reduce Motion Sens.	Off

**Sequence - Assistant**

SAR Assistant	TR
Max. TR	6500.0 ms
Allowed Delay	60 s

\\User\Head\Coma\Coma Science Group\ep2d\_diff\_mddw\_30\_p2\_s3\_b700\_AP \*

TA: 2:07 min Coil Selection: Manual Voxel Size: 2.0×2.0×2.0 mm Acc.: 6 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
Load Images to Stamp Segments	Off
Load Images to Graphic Segments	Off
Graphic segment	Default
Inline Movie	Off

**Routine**

Slice Group	1
Slices	66
Distance Factor	30 %
Position	Isocenter
Orientation	Transversal
Phase Encoding Dir.	A >> P
Phase Oversampling	0 %
FoV Read	256 mm
FoV Phase	100.0 %
Slice Thickness	2.0 mm
TR	3000 ms
TE	94.0 ms
Concatenations	1
AutoAlign	Head > Brain
Coil Elements	HE1-4

**Contrast - Common**

TR	3000 ms
TE	94.0 ms
MTC	Off
Magn. Preparation	None
Fat-Water Contrast	Fat Saturation
Fat Saturation	Strong
Reconstruction	Magnitude

**Contrast - Dynamic**

Dynamic Mode	Standard
Multiple Series	Off
Delay in TR	0 ms

**Resolution - Common**

FoV Read	256 mm
FoV Phase	100.0 %
Slice Thickness	2.0 mm
Base Resolution	128
Phase Resolution	100 %
Interpolation	Off

**Resolution - Acceleration**

Accel. Mode	SMS
Reference Scans	EPI/Separate
Acceleration Factor PE	2
Reference Lines PE	30
Phase Partial Fourier	6/8
SMS Factor	3

**Resolution - Filter**

Raw Filter	Off
Elliptical Filter	Off
Distortion Correction	Off
Normalize	Prescan

**Geometry - Common**

Slice Group	1
Slices	66
Distance Factor	30 %
Position	Isocenter
Orientation	Transversal
Phase Encoding Dir.	A >> P
Phase Oversampling	0 %
FoV Read	256 mm
FoV Phase	100.0 %
Slice Thickness	2.0 mm
TR	3000 ms
Series	Interleaved
Multi-Slice Mode	Interleaved
Concatenations	1

**Geometry - Saturation**

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

**Geometry - AutoAlign**

Slice Group	1
Position	Isocenter
Orientation	Transversal
Phase Encoding Dir.	A >> P
AutoAlign	Head > Brain
Initial Position	Isocenter
L	0.0 mm
P	0.0 mm
H	0.0 mm
Initial Rotation	0.00 deg
Initial Orientation	Transversal

**Geometry - Navigator****Geometry - Tim Planning Suite**

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

**System - Miscellaneous**

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

**System - Adjustments**

Adjustment Strategy	Standard
B0 Shim	Standard
B1 Shim	TrueForm
CoilShim	Off
Adjustment Tolerance	Auto

**System - Adjustments**

Adjust with Body Coil	Off
Confirm Frequency	Never
Assume Silicone	Off

**System - Adjust Volume**

Position	Isocenter
Orientation	Transversal
Rotation	0.00 deg
A >> P	256 mm
R >> L	256 mm
F >> H	171 mm
Reset	Off

**System - Tx/Rx**

Frequency 1H	123.217555 MHz
Correction Factor	1
Image Scaling	1.000
Reset	Off
? Ref. Amplitude 1H	0.000 V

**Physio - Signal**

1st Signal/Mode	None
TR	3000 ms
Concatenations	1

**Physio - PACE**

Resp. Control	Off
Concatenations	1

**Diff**

Diffusion Mode	MDDW
Diff. Directions	30
Diffusion Scheme	Bipolar
Diff. Weightings	2
b-Value 1	0 s/mm <sup>2</sup>
b-Value 2	700 s/mm <sup>2</sup>
b-Value 1	5
b-Value 2	1
Dynamic Field Correction	Off
Invert Gray Scale	Off
Diff. Weighted Images	On
Trace Weighted Images	On
Tensor	On
FA Maps	On
ADC Maps	On
Exponential ADC Maps	Off
ADC Noise Threshold	30
Noise Masking	Off
Calculated Image	Off

**Sequence - Part 1**

Sequence Name	epse
RF Pulse Type	Low SAR
Gradient Mode	Fast
Bandwidth	1562 Hz/Px
Free Echo Spacing	Off
Echo Spacing	0.72 ms
Optimization	None
EPI Factor	128

**Sequence - Part 2**

Introduction	On
--------------	----

\\User\Head\Coma\Coma Science Group\lep2d\_diff\_mddw\_64\_p2\_s3\_b1000\_AP\_DO\_NOT\_READJU  
ST \*

TA: 5:35 min Coil Selection: Manual Voxel Size: 2.0×2.0×2.0 mm Acc.: 6 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
Load Images to Stamp Segments	Off
Load Images to Graphic Segments	Off
Graphic segment	Default
Inline Movie	Off

### Routine

Slice Group	1
Slices	66
Distance Factor	30 %
Position	Isocenter
Orientation	Transversal
Phase Encoding Dir.	A >> P
Phase Oversampling	0 %
FoV Read	256 mm
FoV Phase	100.0 %
Slice Thickness	2.0 mm
TR	4400 ms
TE	89.0 ms
Concatenations	1
AutoAlign	Head > Brain
Coil Elements	HE1-4

### Contrast - Common

TR	4400 ms
TE	89.0 ms
MTC	Off
Magn. Preparation	None
Fat-Water Contrast	Fat Saturation
Fat Saturation	Strong
Reconstruction	Magnitude

### Contrast - Dynamic

Dynamic Mode	Standard
Multiple Series	Off
Delay in TR	0 ms

### Resolution - Common

FoV Read	256 mm
FoV Phase	100.0 %
Slice Thickness	2.0 mm
Base Resolution	128
Phase Resolution	100 %
Interpolation	Off

### Resolution - Acceleration

Accel. Mode	SMS
Reference Scans	EPI/Separate
Acceleration Factor PE	2
Reference Lines PE	30
Phase Partial Fourier	6/8

### Resolution - Acceleration

SMS Factor	3
------------	---

### Resolution - Filter

Raw Filter	Off
Elliptical Filter	Off
Distortion Correction	Off
Normalize	Prescan

### Geometry - Common

Slice Group	1
Slices	66
Distance Factor	30 %
Position	Isocenter
Orientation	Transversal
Phase Encoding Dir.	A >> P
Phase Oversampling	0 %
FoV Read	256 mm
FoV Phase	100.0 %
Slice Thickness	2.0 mm
TR	4400 ms
Series	Interleaved
Multi-Slice Mode	Interleaved
Concatenations	1

### Geometry - Saturation

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

### Geometry - AutoAlign

Slice Group	1
Position	Isocenter
Orientation	Transversal
Phase Encoding Dir.	A >> P
AutoAlign	Head > Brain
Initial Position	Isocenter
L	0.0 mm
P	0.0 mm
H	0.0 mm
Initial Rotation	0.00 deg
Initial Orientation	Transversal

### Geometry - Navigator

### Geometry - Tim Planning Suite

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

### System - Miscellaneous

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

**System - Adjustments**

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

**Sequence - Part 2**

Introduction	On
--------------	----

**System - Adjust Volume**

Position	Isocenter
Orientation	Transversal
Rotation	0.00 deg
A >> P	256 mm
R >> L	256 mm
F >> H	171 mm
Reset	Off

**System - Tx/Rx**

Frequency 1H	123.217555 MHz
Correction Factor	1
Image Scaling	1.000
Reset	Off
? Ref. Amplitude 1H	0.000 V

**Physio - Signal**

1st Signal/Mode	None
TR	4400 ms
Concatenations	1

**Physio - PACE**

Resp. Control	Off
Concatenations	1

**Diff**

Diffusion Mode	MDDW
Diff. Directions	64
Diffusion Scheme	Bipolar
Diff. Weightings	2
b-Value 1	0 s/mm <sup>2</sup>
b-Value 2	1000 s/mm <sup>2</sup>
b-Value 1	5
b-Value 2	1
Dynamic Field Correction	Off
Invert Gray Scale	Off
Diff. Weighted Images	On
Trace Weighted Images	On
Tensor	On
FA Maps	On
ADC Maps	On
Exponential ADC Maps	Off
ADC Noise Threshold	30
Noise Masking	Off
Calculated Image	Off

**Sequence - Part 1**

Sequence Name	epse
RF Pulse Type	Low SAR
Gradient Mode	Fast
Bandwidth	1562 Hz/Px
Free Echo Spacing	Off
Echo Spacing	0.72 ms
Optimization	None
EPI Factor	128

\\User\Head\Coma\Coma Science Group\ep2d\_diff\_mddw\_64\_p2\_s3\_b2000\_AP\_DO\_NOT\_READJUST \*

TA: 5:43 min Coil Selection: Manual Voxel Size: 2.0×2.0×2.0 mm Acc.: 6 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
Load Images to Stamp Segments	Off
Load Images to Graphic Segments	Off
Graphic segment	Default
Inline Movie	Off

### Routine

Slice Group	1
Slices	66
Distance Factor	30 %
Position	Isocenter
Orientation	Transversal
Phase Encoding Dir.	A >> P
Phase Oversampling	0 %
FoV Read	256 mm
FoV Phase	100.0 %
Slice Thickness	2.0 mm
TR	4500 ms
TE	110.0 ms
Concatenations	1
AutoAlign	Head > Brain
Coil Elements	HE1-4

### Contrast - Common

TR	4500 ms
TE	110.0 ms
MTC	Off
Magn. Preparation	None
Fat-Water Contrast	Fat Saturation
Fat Saturation	Strong
Reconstruction	Magnitude

### Contrast - Dynamic

Dynamic Mode	Standard
Multiple Series	Off
Delay in TR	0 ms

### Resolution - Common

FoV Read	256 mm
FoV Phase	100.0 %
Slice Thickness	2.0 mm
Base Resolution	128
Phase Resolution	100 %
Interpolation	Off

### Resolution - Acceleration

Accel. Mode	SMS
Reference Scans	EPI/Separate
Acceleration Factor PE	2
Reference Lines PE	30
Phase Partial Fourier	6/8

### Resolution - Acceleration

SMS Factor	3
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### Resolution - Filter

Raw Filter	Off
Elliptical Filter	Off
Distortion Correction	Off
Normalize	Prescan

### Geometry - Common

Slice Group	1
Slices	66
Distance Factor	30 %
Position	Isocenter
Orientation	Transversal
Phase Encoding Dir.	A >> P
Phase Oversampling	0 %
FoV Read	256 mm
FoV Phase	100.0 %
Slice Thickness	2.0 mm
TR	4500 ms
Series	Interleaved
Multi-Slice Mode	Interleaved
Concatenations	1

### Geometry - Saturation

Special Saturation	None
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### Geometry - AutoAlign

Slice Group	1
Position	Isocenter
Orientation	Transversal
Phase Encoding Dir.	A >> P
AutoAlign	Head > Brain
Initial Position	Isocenter
L	0.0 mm
P	0.0 mm
H	0.0 mm
Initial Rotation	0.00 deg
Initial Orientation	Transversal

### Geometry - Navigator

### Geometry - Tim Planning Suite

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

### System - Miscellaneous

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

**System - Adjustments**

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

**Sequence - Part 2**

Introduction	On
--------------	----

**System - Adjust Volume**

Position	Isocenter
Orientation	Transversal
Rotation	0.00 deg
A >> P	256 mm
R >> L	256 mm
F >> H	171 mm
Reset	Off

**System - Tx/Rx**

Frequency 1H	123.217555 MHz
Correction Factor	1
Image Scaling	1.000
Reset	Off
? Ref. Amplitude 1H	0.000 V

**Physio - Signal**

1st Signal/Mode	None
TR	4500 ms
Concatenations	1

**Physio - PACE**

Resp. Control	Off
Concatenations	1

**Diff**

Diffusion Mode	MDDW
Diff. Directions	64
Diffusion Scheme	Bipolar
Diff. Weightings	2
b-Value 1	0 s/mm <sup>2</sup>
b-Value 2	2000 s/mm <sup>2</sup>
b-Value 1	5
b-Value 2	1
Dynamic Field Correction	Off
Invert Gray Scale	Off
Diff. Weighted Images	On
Trace Weighted Images	On
Tensor	On
FA Maps	On
ADC Maps	On
Exponential ADC Maps	Off
ADC Noise Threshold	30
Noise Masking	Off
Calculated Image	Off

**Sequence - Part 1**

Sequence Name	epse
RF Pulse Type	Low SAR
Gradient Mode	Fast
Bandwidth	1562 Hz/Px
Free Echo Spacing	Off
Echo Spacing	0.72 ms
Optimization	None
EPI Factor	128



\\User\Head\Coma\Coma Science Group\ep2d\_diff\_mddw\_6\_p2\_s3\_5b0\_PA\_DO\_NOT\_READJUST \*

TA: 45 sec Coil Selection: Manual Voxel Size: 2.0×2.0×2.0 mm Acc:: 6 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
Load Images to Stamp Segments	Off
Load Images to Graphic Segments	Off
Graphic segment	Default
Inline Movie	Off

**Routine**

Slice Group	1
Slices	66
Distance Factor	30 %
Position	Isocenter
Orientation	Transversal
Phase Encoding Dir.	P >> A
Phase Oversampling	0 %
FoV Read	256 mm
FoV Phase	100.0 %
Slice Thickness	2.0 mm
TR	4400 ms
TE	89.0 ms
Concatenations	1
AutoAlign	Head > Brain
Coil Elements	HE1-4

**Contrast - Common**

TR	4400 ms
TE	89.0 ms
MTC	Off
Magn. Preparation	None
Fat-Water Contrast	Fat Saturation
Fat Saturation	Strong
Reconstruction	Magnitude

**Contrast - Dynamic**

Dynamic Mode	Standard
Multiple Series	Off
Delay in TR	0 ms

**Resolution - Common**

FoV Read	256 mm
FoV Phase	100.0 %
Slice Thickness	2.0 mm
Base Resolution	128
Phase Resolution	100 %
Interpolation	Off

**Resolution - Acceleration**

Accel. Mode	SMS
Reference Scans	EPI/Separate
Acceleration Factor PE	2
Reference Lines PE	30
Phase Partial Fourier	6/8
SMS Factor	3

**Resolution - Filter**

Raw Filter	Off
Elliptical Filter	Off
Distortion Correction	Off
Normalize	Prescan

**Geometry - Common**

Slice Group	1
Slices	66
Distance Factor	30 %
Position	Isocenter
Orientation	Transversal
Phase Encoding Dir.	P >> A
Phase Oversampling	0 %
FoV Read	256 mm
FoV Phase	100.0 %
Slice Thickness	2.0 mm
TR	4400 ms
Series	Interleaved
Multi-Slice Mode	Interleaved
Concatenations	1

**Geometry - Saturation**

Special Saturation	None
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**Geometry - AutoAlign**

Slice Group	1
Position	Isocenter
Orientation	Transversal
Phase Encoding Dir.	P >> A
AutoAlign	Head > Brain
Initial Position	Isocenter
L	0.0 mm
P	0.0 mm
H	0.0 mm
Initial Rotation	180.00 deg
Initial Orientation	Transversal

**Geometry - Navigator****Geometry - Tim Planning Suite**

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

**System - Miscellaneous**

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

**System - Adjustments**

Adjustment Strategy	Standard
B0 Shim	Standard
B1 Shim	TrueForm
CoilShim	Off
Adjustment Tolerance	Auto

**System - Adjustments**

Adjust with Body Coil	Off
Confirm Frequency	Never
Assume Silicone	Off

**System - Adjust Volume**

! Position	Isocenter
! Orientation	Transversal
! Rotation	0.00 deg
! A >> P	256 mm
! R >> L	256 mm
! F >> H	171 mm
Reset	Off

**System - Tx/Rx**

Frequency 1H	123.217555 MHz
Correction Factor	1
Image Scaling	1.000
Reset	Off
? Ref. Amplitude 1H	0.000 V

**Physio - Signal**

1st Signal/Mode	None
TR	4400 ms
Concatenations	1

**Physio - PACE**

Resp. Control	Off
Concatenations	1

**Diff**

Diffusion Mode	MDDW
Diff. Directions	6
Diffusion Scheme	Bipolar
Diff. Weightings	1
b-Value	0 s/mm <sup>2</sup>
b-Value	5
Dynamic Field Correction	Off
Invert Gray Scale	Off
Diff. Weighted Images	On
Trace Weighted Images	Off
Tensor	Off
FA Maps	Off
ADC Maps	Off
Exponential ADC Maps	Off
Noise Masking	Off
Calculated Image	Off

**Sequence - Part 1**

Sequence Name	epse
RF Pulse Type	Low SAR
Gradient Mode	Fast
Bandwidth	1562 Hz/Px
Free Echo Spacing	Off
Echo Spacing	0.72 ms
Optimization	None
EPI Factor	128

**Sequence - Part 2**

Introduction	On
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\\User\Head\Coma\Coma Science Group\pcasl\_3d\_tra\_p2\_iso\_3mm\_highres\_fast\_withintub \*

TA: 2:55 min Coil Selection: Auto Voxel Size: 1.5×1.5×3.0 mm Acc.: 4 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
Load Images to Stamp Segments	Off
Load Images to Graphic Segments	Off
Graphic segment	Default
Inline Movie	Off

**Routine**

Slab Group	1
Slabs	1
Distance Factor	50 %
Position	Isocenter
Orientation	Transversal
Phase Encoding Dir.	P >> A
Phase Oversampling	15 %
Slice Oversampling	25.0 %
FoV Read	192 mm
FoV Phase	100.0 %
Slice Thickness	3.00 mm
TR	5600 ms
TE	20.3 ms
Averages	1
Concatenations	1
AutoAlign	Head > Brain
Coil Elements	HE1-4;NE2

**Contrast - Common**

TR	5600 ms
TE	20.3 ms
Flip Angle	180 deg
Fat-Water Contrast	Fat Saturation
Reconstruction	Magnitude

**Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	5
Multiple Series	Off
Delay in TR	0 ms
Reordering	Centric

**Contrast - ASL**

Perfusion Mode	PCASL
Suppression	Gray-White
Labeling Duration	1800 ms
Delay Array Size	1
Postlabeling Delay	1800 ms

**Resolution - Common**

FoV Read	192 mm
FoV Phase	100.0 %
Slice Thickness	3.00 mm
Base Resolution	64
Phase Resolution	96 %

**Resolution - Common**

Interpolation	On
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**Resolution - Acceleration**

Acceleration mode	GRAPPA
Reference Scans	GRE/Separate
Acceleration Factor PE	2
Reference Lines PE	24
Acceleration Factor 3D	2
Reference Lines 3D	8
Phase Partial Fourier	7/8
Slice Partial Fourier	Off

**Resolution - Filter**

Raw Filter	Off
Elliptical Filter	Off
Hamming	Off
Distortion Correction	3D
Normalize	Prescan

**Geometry - Common**

Slab Group	1
Slabs	1
Distance Factor	50 %
Position	Isocenter
Orientation	Transversal
Phase Encoding Dir.	P >> A
Phase Oversampling	15 %
Slice Oversampling	25.0 %
FoV Read	192 mm
FoV Phase	100.0 %
Slice Thickness	3.00 mm
TR	5600 ms
Series	Ascending
Multi-Slice Mode	Interleaved
Concatenations	1

**Geometry - Saturation**

Special Saturation	Parallel F
Gap	35.0 mm

**Geometry - AutoAlign**

Slab Group	1
Position	Isocenter
Orientation	Transversal
Phase Encoding Dir.	P >> A
AutoAlign	Head > Brain
Initial Position	Isocenter
L	0.0 mm
P	0.0 mm
F	0.0 mm
Initial Rotation	180.00 deg
Initial Orientation	Transversal

**Geometry - Tim Planning Suite**

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

**System - Miscellaneous**

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

**System - Adjustments**

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

**System - Adjust Volume**

Position	Isocenter
Orientation	Transversal
Rotation	180.00 deg
A >> P	192 mm
R >> L	192 mm
F >> H	144 mm
Reset	Off

**System - Tx/Rx**

Frequency 1H	123.217555 MHz
Correction Factor	1
Image Scaling	1.000
Reset	Off
? Ref. Amplitude 1H	0.000 V

**Physio - Signal**

1st Signal/Mode	None
TR	5600 ms
Concatenations	1
Segments	3

**Sequence - Part 1**

Sequence Name	tgse
Dimension	3D
RF Pulse Type	Normal
Gradient Mode	Fast
Reordering	Centric
Bandwidth	2232 Hz/Px
Echo Spacing	0.54 ms
Turbo Factor	10
Segments	3
EPI Factor	31

**Sequence - Part 2**

Introduction	Off
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\\User\Head\Coma\Coma Science Group\t1\_mprage\_tra\_p2\_iso\_optimized \*

TA: 3:40 min Coil Selection: Manual Voxel Size: 1.0×1.0×1.0 mm Acc.: 2 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
Load Images to Stamp Segments	Off
Load Images to Graphic Segments	Off
Graphic segment	Default
Inline Movie	Off

**Routine**

Slab Group	1
Slabs	1
Distance Factor	50 %
Position	Isocenter
Orientation	Transversal
Phase Encoding Dir.	R >> L
Phase Oversampling	10 %
Slice Oversampling	16.7 %
FoV Read	250 mm
FoV Phase	81.3 %
Slice Thickness	1.00 mm
TR	1950.0 ms
TE	2.82 ms
Averages	1
Concatenations	1
AutoAlign	Head > Brain
Coil Elements	HE1-4

**Contrast - Common**

TR	1950.0 ms
TE	2.82 ms
Magn. Preparation	Non-sel. IR
TI	950 ms
Flip Angle	12 deg
Fat-Water Contrast	Standard
Dark Blood	Off
Reconstruction	Magnitude

**Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Each Measurement
Reordering	Linear

**Resolution - Common**

FoV Read	250 mm
FoV Phase	81.3 %
Slice Thickness	1.00 mm
Base Resolution	256
Phase Resolution	100 %
Slice Resolution	100 %
Interpolation	Off

**Resolution - Acceleration**

Acceleration mode	GRAPPA
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**Resolution - Acceleration**

Reference Scans	Integrated
Acceleration Factor PE	2
Reference Lines PE	24
Acceleration Factor 3D	1
Phase Partial Fourier	7/8
Slice Partial Fourier	Off
Asymmetric Echo	Allowed
Elliptical Scanning	Off

**Resolution - Filter**

Raw Filter	On
Elliptical Filter	Off
Distortion Correction	3D
Normalize	Prescan
Image Filter	On

**Geometry - Common**

Slab Group	1
Slabs	1
Distance Factor	50 %
Position	Isocenter
Orientation	Transversal
Phase Encoding Dir.	R >> L
Phase Oversampling	10 %
Slice Oversampling	16.7 %
FoV Read	250 mm
FoV Phase	81.3 %
Slice Thickness	1.00 mm
TR	1950.0 ms
Series	Descending
Multi-Slice Mode	Sequential
Concatenations	1

**Geometry - AutoAlign**

Slab Group	1
Position	Isocenter
Orientation	Transversal
Phase Encoding Dir.	R >> L
AutoAlign	Head > Brain
Initial Position	L0.0 P0.0 H13.0
L	0.0 mm
P	0.0 mm
H	13.0 mm
Initial Rotation	90.00 deg
Initial Orientation	Transversal

**Geometry - Navigator****Geometry - Tim Planning Suite**

Set-n-Go Protocol	Off
Table Position	H
Table Position	13 mm
Inline Composing	Off

**System - Miscellaneous**

Coil Selection	Manual
Coil Combination	Adaptive Combine
Matrix Optimization	Off
MSMA	S - C - T
Sagittal	R >> L

**System - Miscellaneous**

Coronal	A >> P
Transversal	F >> H

**System - Adjustments**

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

**System - Adjust Volume**

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

**System - Tx/Rx**

Frequency 1H	123.217555 MHz
Correction Factor	1
Image Scaling	1.000
Reset	Off
? Ref. Amplitude 1H	0.000 V

**Physio - Signal**

1st Signal/Mode	None
TR	1950.0 ms
Concatenations	1

**Physio - Cardiac**

Magn. Preparation	Non-sel. IR
TI	950 ms
Fat-Water Contrast	Standard
Dark Blood	Off
FoV Read	250 mm
FoV Phase	81.3 %
Phase Resolution	100 %
Dynamic Mode	Standard

**Physio - PACE**

Resp. Control	Off
Concatenations	1

**Inline - Subtraction**

Subtract	Off
Measurements	1
StdDev	Off
Save Original Images	On

**Inline - Cardiac**

Magn. Preparation	Non-sel. IR
TE	2.82 ms
TR	1950.0 ms
Save Original Images	On

**Inline - MIP**

MIP Sag	Off
MIP Cor	Off

**Inline - MIP**

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

**Inline - Composing**

Inline Composing	Off
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**Inline - MapIt**

Save Original Images	On
MapIt	None
Flip Angle	12 deg
Measurements	1
TR	1950.0 ms
TE	2.82 ms

**Sequence - Part 1**

Sequence Name	tfl
Dimension	3D
Excitation	Slab-sel.
RF Pulse Type	Fast
Gradient Mode	Normal
Flow Compensation	None
Reordering	Linear
Bandwidth	190 Hz/Px
Echo Spacing	8.10 ms
Turbo Factor	224
Asymmetric Echo	Allowed

**Sequence - Part 2**

Introduction	On
RF Spoiling	On
Incr. Gradient Spoiling	On

**Sequence - Assistant**

SAR Assistant	Off
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\\User\Head\Coma\Coma Science Group\t2\_space\_dark-fluid\_sag\_p2\_cp4\_ns-IR\_0.5x0.5x1.0\_mtc\_v  
arflipangl \*

TA: 4:06 min Coil Selection: Auto Voxel Size: 0.5×0.5×1.0 mm Acc.: 4 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
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	Isocenter
Orientation	Sagittal
Phase Encoding Dir.	A >> P
Phase Oversampling	0 %
Slice Oversampling	8.3 %
FoV Read	250 mm
FoV Phase	100.0 %
Slice Thickness	1.00 mm
TR	7600 ms
TE	430 ms
Averages	1.0
Concatenations	1
AutoAlign	Head > Basis
Coil Elements	HE1-4

### Contrast - Common

TR	7600 ms
TE	430 ms
MTC	On
Magn. Preparation	Non-sel. IR
TI 1	2400 ms
Flip Angle Mode	T2 Var
Fat-Water Contrast	Fat Saturation
Fat Saturation	Strong
Dark Blood	Off
Blood Suppression	Off
Wrap-up Magn.	None
Reconstruction	Magnitude

### Contrast - Dynamic

Dynamic Mode	Standard
Measurements	1
Multiple Series	Each Measurement
Reordering	Linear

### Resolution - Common

FoV Read	250 mm
FoV Phase	100.0 %
Slice Thickness	1.00 mm
Base Resolution	256
Phase Resolution	101 %
Slice Resolution	61 %

### Resolution - Common

Interpolation	On
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### Resolution - Acceleration

Acceleration mode	CAIPIRINHA
Total Factor	4
Reference Scans	GRE/Separate
Acceleration Factor PE	2
Reference Lines PE	16
Acceleration Factor 3D	2
Reference Lines 3D	24
Reordering Shift 3D	0
Phase Partial Fourier	Allowed
Slice Partial Fourier	Off
Elliptical Scanning	Off

### Resolution - Filter

Raw Filter	On
Elliptical Filter	Off
Distortion Correction	3D
Normalize	Prescan
Image Filter	Off

### Geometry - Common

Slab Group	1
Slabs	1
Position	Isocenter
Orientation	Sagittal
Phase Encoding Dir.	A >> P
Phase Oversampling	0 %
Slice Oversampling	8.3 %
FoV Read	250 mm
FoV Phase	100.0 %
Slice Thickness	1.00 mm
TR	7600 ms
Concatenations	1

### Geometry - Saturation

Special Saturation	None
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### Geometry - AutoAlign

Slab Group	1
Position	Isocenter
Orientation	Sagittal
Phase Encoding Dir.	A >> P
AutoAlign	Head > Basis
Initial Position	Isocenter
L	0.0 mm
P	0.0 mm
H	0.0 mm
Initial Rotation	0.00 deg
Initial Orientation	Sagittal

### Geometry - Navigator

### Geometry - Tim Planning Suite

Set-n-Go Protocol	Off
Table Position	H
Table Position	0 mm

**Geometry - Tim Planning Suite**

Inline Composing	Off
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**System - Miscellaneous**

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

**System - Adjustments**

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

**System - Adjust Volume**

Position	Isocenter
Orientation	Sagittal
Rotation	0.00 deg
A >> P	250 mm
F >> H	250 mm
R >> L	192 mm
Reset	Off

**System - Tx/Rx**

Frequency 1H	123.217555 MHz
Correction Factor	1
Image Scaling	1.000
Reset	Off
? Ref. Amplitude 1H	0.000 V

**Physio - Signal**

1st Signal/Mode	None
Trigger Delay	0 ms
TR	7600 ms
Concatenations	1

**Physio - Cardiac**

Magn. Preparation	Non-sel. IR
TI 1	2400 ms
Fat-Water Contrast	Fat Saturation
Dark Blood	Off
FoV Read	250 mm
FoV Phase	100.0 %
Phase Resolution	101 %
Dynamic Mode	Standard

**Physio - PACE**

Resp. Control	Off
Concatenations	1

**Inline - Subtraction**

Subtract	Off
Measurements	1
StdDev	Off
Save Original Images	On

**Inline - Cardiac**

Magn. Preparation	Non-sel. IR
TE	430 ms
TR	7600 ms
Save Original Images	On

**Inline - MIP**

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

**Inline - Composing**

Inline Composing	Off
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**Sequence - Part 1**

Sequence Name	spcir
Dimension	3D
Excitation	Non-sel.
RF Pulse Type	Normal
Gradient Mode	Fast
Flow Compensation	None
Reordering	Linear
Bandwidth	651 Hz/Px
Echo Spacing	3.64 ms
Turbo Factor	268
Echo Train Duration	914 ms

**Sequence - Part 2**

Introduction	On
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**Sequence - Assistant**

SAR Assistant	Off
Allowed Delay	30 s



\\User\Head\Coma\Coma Science Group\12\_space\_FLAIR\_sag\_p3\_iso \*

TA: 3:12 min Coil Selection: Manual Voxel Size: 0.5×0.5×1.0 mm Acc.: 6 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
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	Isocenter
Orientation	Sagittal
Phase Encoding Dir.	A >> P
Phase Oversampling	0 %
Slice Oversampling	0.0 %
FoV Read	256 mm
FoV Phase	92.2 %
Slice Thickness	1.00 mm
TR	7600 ms
TE	432 ms
Averages	1.0
Concatenations	1
AutoAlign	Head > Basis
Coil Elements	HE1-4

**Contrast - Common**

TR	7600 ms
TE	432 ms
MTC	On
Magn. Preparation	Non-sel. IR
T1 1	2400 ms
Flip Angle Mode	T2 Var
Fat-Water Contrast	Fat Saturation
Fat Saturation	Strong
Dark Blood	Off
Blood Suppression	Off
Wrap-up Magn.	None
Reconstruction	Magnitude

**Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Each Measurement
Reordering	Linear

**Resolution - Common**

FoV Read	256 mm
FoV Phase	92.2 %
Slice Thickness	1.00 mm
Base Resolution	256
Phase Resolution	100 %
Slice Resolution	100 %
Interpolation	On

**Resolution - Acceleration**

Acceleration mode	CAIPIRINHA
Total Factor	6
Reference Scans	Integrated
Acceleration Factor PE	3
Reference Lines PE	24
Acceleration Factor 3D	2
Reference Lines 3D	24
Reordering Shift 3D	0
Phase Partial Fourier	Allowed
Slice Partial Fourier	Off
Elliptical Scanning	On

**Resolution - Filter**

Raw Filter	On
Elliptical Filter	Off
Distortion Correction	3D
Normalize	Prescan
Image Filter	Off

**Geometry - Common**

Slab Group	1
Slabs	1
Position	Isocenter
Orientation	Sagittal
Phase Encoding Dir.	A >> P
Phase Oversampling	0 %
Slice Oversampling	0.0 %
FoV Read	256 mm
FoV Phase	92.2 %
Slice Thickness	1.00 mm
TR	7600 ms
Concatenations	1

**Geometry - Saturation**

Special Saturation	None
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**Geometry - AutoAlign**

Slab Group	1
Position	Isocenter
Orientation	Sagittal
Phase Encoding Dir.	A >> P
AutoAlign	Head > Basis
Initial Position	Isocenter
L	0.0 mm
P	0.0 mm
H	0.0 mm
Initial Rotation	0.00 deg
Initial Orientation	Sagittal

**Geometry - Navigator****Geometry - Tim Planning Suite**

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

**System - Miscellaneous**

Coil Selection	Manual
Coil Combination	Adaptive Combine

**System - Miscellaneous**

Matrix Optimization	Off
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	F >> H

**System - Adjustments**

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

**System - Adjust Volume**

Position	Isocenter
Orientation	Sagittal
Rotation	0.00 deg
A >> P	236 mm
F >> H	256 mm
R >> L	192 mm
Reset	Off

**System - Tx/Rx**

Frequency 1H	123.217555 MHz
Correction Factor	1
Image Scaling	1.000
Reset	Off
? Ref. Amplitude 1H	0.000 V

**Physio - Signal**

1st Signal/Mode	None
Trigger Delay	0 ms
TR	7600 ms
Concatenations	1

**Physio - Cardiac**

Magn. Preparation	Non-sel. IR
TI 1	2400 ms
Fat-Water Contrast	Fat Saturation
Dark Blood	Off
FoV Read	256 mm
FoV Phase	92.2 %
Phase Resolution	100 %
Dynamic Mode	Standard

**Physio - PACE**

Resp. Control	Off
Concatenations	1

**Inline - Subtraction**

Subtract	Off
Measurements	1
StdDev	Off
Save Original Images	On

**Inline - Cardiac**

Magn. Preparation	Non-sel. IR
TE	432 ms
TR	7600 ms
Save Original Images	On

**Inline - MIP**

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

**Inline - Composing**

Inline Composing	Off
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**Sequence - Part 1**

Sequence Name	spcir
Dimension	3D
Excitation	Non-sel.
RF Pulse Type	Normal
Gradient Mode	Fast
Flow Compensation	None
Reordering	Linear
Bandwidth	651 Hz/Px
Echo Spacing	3.66 ms
Turbo Factor	270
Echo Train Duration	922 ms

**Sequence - Part 2**

Introduction	On
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**Sequence - Assistant**

SAR Assistant	Off
Allowed Delay	30 s

\\User\Head\Coma\Coma Science Group\t1\_mprage\_tra\_p2\_iso \*

TA: 3:15 min Coil Selection: Manual Voxel Size: 1.0×1.0×1.0 mm Acc.: 2 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
Load Images to Stamp Segments	Off
Load Images to Graphic Segments	Off
Graphic segment	Default
Inline Movie	Off

**Routine**

Slab Group	1
Slabs	1
Distance Factor	50 %
Position	L5.3 P14.5 H17.7 mm
Orientation	T > S3.4 > C-1.4
Phase Encoding Dir.	R >> L
Phase Oversampling	10 %
Slice Oversampling	20.0 %
FoV Read	250 mm
FoV Phase	81.3 %
Slice Thickness	1.00 mm
TR	1730.0 ms
TE	2.82 ms
Averages	1
Concatenations	1
AutoAlign	Head > Brain
Coil Elements	HE1-4

**Contrast - Common**

TR	1730.0 ms
TE	2.82 ms
Magn. Preparation	Non-sel. IR
TI	950 ms
Flip Angle	12 deg
Fat-Water Contrast	Standard
Dark Blood	Off
Reconstruction	Magnitude

**Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Each Measurement
Reordering	Linear

**Resolution - Common**

FoV Read	250 mm
FoV Phase	81.3 %
Slice Thickness	1.00 mm
Base Resolution	256
Phase Resolution	100 %
Slice Resolution	100 %
Interpolation	Off

**Resolution - Acceleration**

Acceleration mode	GRAPPA
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**Resolution - Acceleration**

Reference Scans	Integrated
Acceleration Factor PE	2
Reference Lines PE	24
Acceleration Factor 3D	1
Phase Partial Fourier	7/8
Slice Partial Fourier	Off
Asymmetric Echo	Allowed
Elliptical Scanning	Off

**Resolution - Filter**

Raw Filter	On
Elliptical Filter	Off
Distortion Correction	3D
Normalize	Prescan
Image Filter	On

**Geometry - Common**

Slab Group	1
Slabs	1
Distance Factor	50 %
Position	L5.3 P14.5 H17.7 mm
Orientation	T > S3.4 > C-1.4
Phase Encoding Dir.	R >> L
Phase Oversampling	10 %
Slice Oversampling	20.0 %
FoV Read	250 mm
FoV Phase	81.3 %
Slice Thickness	1.00 mm
TR	1730.0 ms
Series	Descending
Multi-Slice Mode	Sequential
Concatenations	1

**Geometry - AutoAlign**

Slab Group	1
Position	L5.3 P14.5 H17.7 mm
Orientation	T > S3.4 > C-1.4
Phase Encoding Dir.	R >> L
AutoAlign	Head > Brain
Initial Position	Isocenter
L	0.0 mm
P	0.0 mm
F	0.0 mm
Initial Rotation	90.00 deg
Initial Orientation	Transversal

**Geometry - Navigator****Geometry - Tim Planning Suite**

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

**System - Miscellaneous**

Coil Selection	Manual
Coil Combination	Adaptive Combine
Matrix Optimization	Off
MSMA	S - C - T
Sagittal	R >> L

**System - Miscellaneous**

Coronal	A >> P
Transversal	F >> H

**System - Adjustments**

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

**System - Adjust Volume**

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

**System - Tx/Rx**

Frequency 1H	123.217555 MHz
Correction Factor	1
Image Scaling	1.000
Reset	Off
? Ref. Amplitude 1H	0.000 V

**Physio - Signal**

1st Signal/Mode	None
TR	1730.0 ms
Concatenations	1

**Physio - Cardiac**

Magn. Preparation	Non-sel. IR
TI	950 ms
Fat-Water Contrast	Standard
Dark Blood	Off
FoV Read	250 mm
FoV Phase	81.3 %
Phase Resolution	100 %
Dynamic Mode	Standard

**Physio - PACE**

Resp. Control	Off
Concatenations	1

**Inline - Subtraction**

Subtract	Off
Measurements	1
StdDev	Off
Save Original Images	On

**Inline - Cardiac**

Magn. Preparation	Non-sel. IR
TE	2.82 ms
TR	1730.0 ms
Save Original Images	On

**Inline - MIP**

MIP Sag	Off
MIP Cor	Off

**Inline - MIP**

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

**Inline - Composing**

Inline Composing	Off
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**Inline - MapIt**

Save Original Images	On
MapIt	None
Flip Angle	12 deg
Measurements	1
TR	1730.0 ms
TE	2.82 ms

**Sequence - Part 1**

Sequence Name	tfl
Dimension	3D
Excitation	Slab-sel.
RF Pulse Type	Fast
Gradient Mode	Normal
Flow Compensation	None
Reordering	Linear
Bandwidth	190 Hz/Px
Echo Spacing	8.10 ms
Turbo Factor	192
Asymmetric Echo	Allowed

**Sequence - Part 2**

Introduction	On
RF Spoiling	On
Incr. Gradient Spoiling	On

**Sequence - Assistant**

SAR Assistant	Off
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\\User\Head\Coma\Coma Science Group\dir\_space\_sag\_1.2mm\_4min\_GMIR \*

TA: 4:37 min Coil Selection: Manual Voxel Size: 1.0×1.0×1.2 mm Acc.: 2 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
Load Images to Stamp Segments	On
Load Images to Graphic Segments	Off
Graphic segment	Default
Inline Movie	Off

**Routine**

Slab Group	1
Slabs	1
Position	L6.9 A0.7 F10.8 mm
Orientation	S > C-5.1 > T-3.2
Phase Encoding Dir.	A >> P
Phase Oversampling	0 %
Slice Oversampling	12.5 %
FoV Read	260 mm
FoV Phase	100.0 %
Slice Thickness	1.20 mm
TR	5500 ms
TE	254 ms
Averages	1.0
Concatenations	1
AutoAlign	Head > Basis
Coil Elements	HE1-4

**Contrast - Common**

TR	5500 ms
TE	254 ms
MTC	Off
Magn. Preparation	Non-sel. DIR
TI 1	2600 ms
TI 2	625 ms
Flip Angle Mode	T2 Var
Fat-Water Contrast	Fat Saturation
Fat Saturation	Strong
Dark Blood	Off
Blood Suppression	Off
Wrap-up Magn.	None
Reconstruction	Magnitude

**Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Each Measurement
Reordering	Linear

**Resolution - Common**

FoV Read	260 mm
FoV Phase	100.0 %
Slice Thickness	1.20 mm
Base Resolution	256
Phase Resolution	80 %
Slice Resolution	100 %

**Resolution - Common**

Interpolation	Off
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**Resolution - Acceleration**

Acceleration mode	GRAPPA
Total Factor	2
Reference Scans	Integrated
Acceleration Factor PE	2
Reference Lines PE	24
Acceleration Factor 3D	1
Phase Partial Fourier	Allowed
Slice Partial Fourier	7/8
Elliptical Scanning	On

**Resolution - Filter**

Raw Filter	On
Elliptical Filter	Off
Distortion Correction	3D
Normalize	Prescan
Image Filter	On

**Geometry - Common**

Slab Group	1
Slabs	1
Position	L6.9 A0.7 F10.8 mm
Orientation	S > C-5.1 > T-3.2
Phase Encoding Dir.	A >> P
Phase Oversampling	0 %
Slice Oversampling	12.5 %
FoV Read	260 mm
FoV Phase	100.0 %
Slice Thickness	1.20 mm
TR	5500 ms
Concatenations	1

**Geometry - Saturation**

Special Saturation	None
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**Geometry - AutoAlign**

Slab Group	1
Position	L6.9 A0.7 F10.8 mm
Orientation	S > C-5.1 > T-3.2
Phase Encoding Dir.	A >> P
AutoAlign	Head > Basis
Initial Position	Isocenter
R	0.0 mm
A	0.0 mm
H	0.0 mm
Initial Rotation	0.00 deg
Initial Orientation	Sagittal

**Geometry - Navigator****Geometry - Tim Planning Suite**

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

**System - Miscellaneous**

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

**System - Adjustments**

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

**System - Adjust Volume**

Position	L6.9 A0.7 F10.8 mm
Orientation	S > C-5.1 > T-3.2
Rotation	-2.88 deg
A >> P	260 mm
F >> H	260 mm
R >> L	154 mm
Reset	Off

**System - Tx/Rx**

Frequency 1H	123.217555 MHz
Correction Factor	1
Image Scaling	1.000
Reset	Off
? Ref. Amplitude 1H	0.000 V

**Physio - Signal**

1st Signal/Mode	None
Trigger Delay	0 ms
TR	5500 ms
Concatenations	1

**Physio - Cardiac**

Magn. Preparation	Non-sel. DIR
TI 1	2600 ms
TI 2	625 ms
Fat-Water Contrast	Fat Saturation
Dark Blood	Off
FoV Read	260 mm
FoV Phase	100.0 %
Phase Resolution	80 %
Dynamic Mode	Standard

**Physio - PACE**

Resp. Control	Off
Concatenations	1

**Inline - Subtraction**

Subtract	Off
Measurements	1
StdDev	Off
Save Original Images	On

**Inline - Cardiac**

Magn. Preparation	Non-sel. DIR
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**Inline - Cardiac**

TE	254 ms
TR	5500 ms
Save Original Images	On

**Inline - MIP**

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

**Inline - Composing**

Inline Composing	Off
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**Sequence - Part 1**

Sequence Name	spcir
Dimension	3D
Excitation	Non-sel.
RF Pulse Type	Normal
Gradient Mode	Fast
Flow Compensation	None
Reordering	Linear
Bandwidth	849 Hz/Px
Echo Spacing	3.38 ms
Turbo Factor	256
Echo Train Duration	683 ms

**Sequence - Part 2**

Introduction	On
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**Sequence - Assistant**

SAR Assistant	Off
Allowed Delay	30 s

\\User\Head\Coma\Coma Science Group\dir\_space\_sag\_1.5mm\_WMIR\_FGATIR \*

TA: 2:54 min Coil Selection: Manual Voxel Size: 1.0×1.0×1.5 mm Acc.: 2 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
Load Images to Stamp Segments	On
Load Images to Graphic Segments	Off
Graphic segment	Default
Inline Movie	Off

**Routine**

Slab Group	1
Slabs	1
Position	L6.9 A0.7 F10.8 mm
Orientation	S > C-5.1 > T-3.2
Phase Encoding Dir.	A >> P
Phase Oversampling	0 %
Slice Oversampling	12.5 %
FoV Read	260 mm
FoV Phase	100.0 %
Slice Thickness	1.50 mm
TR	4000 ms
TE	326 ms
Averages	1.0
Concatenations	1
AutoAlign	Head > Basis
Coil Elements	HE1-4

**Contrast - Common**

TR	4000 ms
TE	326 ms
MTC	Off
Magn. Preparation	Non-sel. DIR
TI 1	3000 ms
TI 2	450 ms
Flip Angle Mode	T2 Var
Fat-Water Contrast	Fat Saturation
Fat Saturation	Strong
Dark Blood	Off
Blood Suppression	Off
Wrap-up Magn.	None
Reconstruction	Magnitude

**Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Each Measurement
Reordering	Linear

**Resolution - Common**

FoV Read	260 mm
FoV Phase	100.0 %
Slice Thickness	1.50 mm
Base Resolution	256
Phase Resolution	80 %
Slice Resolution	100 %

**Resolution - Common**

Interpolation	Off
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**Resolution - Acceleration**

Acceleration mode	GRAPPA
Total Factor	2
Reference Scans	Integrated
Acceleration Factor PE	2
Reference Lines PE	24
Acceleration Factor 3D	1
Phase Partial Fourier	Allowed
Slice Partial Fourier	6/8
Elliptical Scanning	On

**Resolution - Filter**

Raw Filter	On
Elliptical Filter	Off
Distortion Correction	3D
Normalize	Prescan
Image Filter	On

**Geometry - Common**

Slab Group	1
Slabs	1
Position	L6.9 A0.7 F10.8 mm
Orientation	S > C-5.1 > T-3.2
Phase Encoding Dir.	A >> P
Phase Oversampling	0 %
Slice Oversampling	12.5 %
FoV Read	260 mm
FoV Phase	100.0 %
Slice Thickness	1.50 mm
TR	4000 ms
Concatenations	1

**Geometry - Saturation**

Special Saturation	None
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**Geometry - AutoAlign**

Slab Group	1
Position	L6.9 A0.7 F10.8 mm
Orientation	S > C-5.1 > T-3.2
Phase Encoding Dir.	A >> P
AutoAlign	Head > Basis
Initial Position	Isocenter
R	0.0 mm
A	0.0 mm
H	0.0 mm
Initial Rotation	0.00 deg
Initial Orientation	Sagittal

**Geometry - Navigator****Geometry - Tim Planning Suite**

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

**System - Miscellaneous**

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

**System - Adjustments**

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

**System - Adjust Volume**

Position	L6.9 A0.7 F10.8 mm
Orientation	S > C-5.1 > T-3.2
Rotation	-2.88 deg
A >> P	260 mm
F >> H	260 mm
R >> L	192 mm
Reset	Off

**System - Tx/Rx**

Frequency 1H	123.217555 MHz
Correction Factor	1
Image Scaling	1.000
Reset	Off
? Ref. Amplitude 1H	0.000 V

**Physio - Signal**

1st Signal/Mode	None
Trigger Delay	0 ms
TR	4000 ms
Concatenations	1

**Physio - Cardiac**

Magn. Preparation	Non-sel. DIR
TI 1	3000 ms
TI 2	450 ms
Fat-Water Contrast	Fat Saturation
Dark Blood	Off
FoV Read	260 mm
FoV Phase	100.0 %
Phase Resolution	80 %
Dynamic Mode	Standard

**Physio - PACE**

Resp. Control	Off
Concatenations	1

**Inline - Subtraction**

Subtract	Off
Measurements	1
StdDev	Off
Save Original Images	On

**Inline - Cardiac**

Magn. Preparation	Non-sel. DIR
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**Inline - Cardiac**

TE	326 ms
TR	4000 ms
Save Original Images	On

**Inline - MIP**

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

**Inline - Composing**

Inline Composing	Off
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**Sequence - Part 1**

Sequence Name	spcir
Dimension	3D
Excitation	Non-sel.
RF Pulse Type	Normal
Gradient Mode	Fast
Flow Compensation	None
Reordering	Linear
Bandwidth	751 Hz/Px
Echo Spacing	3.40 ms
Turbo Factor	256
Echo Train Duration	758 ms

**Sequence - Part 2**

Introduction	On
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**Sequence - Assistant**

SAR Assistant	Off
Allowed Delay	30 s



\\User\Head\Coma\Coma Science Group\ep2d\_bold\_repos\_moco\_s3\_p2\_short\_sansAG \*

TA: 3:48 min Coil Selection: Auto Voxel Size: 3.0×3.0×3.0 mm Acc.: 6 Rel. SNR: 1.00

**Properties**

Start measurement without further preparation	On
Wait for User to Start	On
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
Load Images to Stamp Segments	On
Load Images to Graphic Segments	Off
Graphic segment	Default
Inline Movie	Off

**Routine**

Slice Group	1
Slices	39
Distance Factor	25 %
Position	Isocenter
Orientation	Transversal
Phase Encoding Dir.	A >> P
Phase Oversampling	0 %
FoV Read	192 mm
FoV Phase	100.0 %
Slice Thickness	3.0 mm
TR	728 ms
TE	30.0 ms
Averages	1
Concatenations	1
AutoAlign	Head > Brain
Coil Elements	HE1-4

**Contrast - Common**

TR	728 ms
TE	30.0 ms
MTC	Off
Flip Angle	35 deg
Fat-Water Contrast	Fat Saturation
Reconstruction	Magnitude

**Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	300
Delay in TR	0 ms

**Resolution - Common**

FoV Read	192 mm
FoV Phase	100.0 %
Slice Thickness	3.0 mm
Base Resolution	64
Phase Resolution	100 %
Interpolation	Off

**Resolution - Acceleration**

Accel. Mode	SMS
Reference Scans	EPI/Separate
Acceleration Factor PE	2
Reference Lines PE	30
Phase Partial Fourier	Off
SMS Factor	3

**Resolution - Filter**

Raw Filter	Off
Elliptical Filter	Off
Hamming	Off
Distortion Correction	3D
Normalize	Prescan

**Geometry - Common**

Slice Group	1
Slices	39
Distance Factor	25 %
Position	Isocenter
Orientation	Transversal
Phase Encoding Dir.	A >> P
Phase Oversampling	0 %
FoV Read	192 mm
FoV Phase	100.0 %
Slice Thickness	3.0 mm
TR	728 ms
Series	Descending
Multi-Slice Mode	Interleaved
Concatenations	1

**Geometry - Saturation**

Special Saturation	None
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**Geometry - AutoAlign**

Slice Group	1
Position	Isocenter
Orientation	Transversal
Phase Encoding Dir.	A >> P
AutoAlign	Head > Brain
Initial Position	Isocenter
R	0.0 mm
P	0.0 mm
H	0.0 mm
Initial Rotation	0.00 deg
Initial Orientation	Transversal

**Geometry - Tim Planning Suite**

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

**System - Miscellaneous**

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

**System - Adjustments**

Adjustment Strategy	Standard
B0 Shim	Standard
B1 Shim	TrueForm
CoilShim	Off
Adjustment Tolerance	Auto
Adjust with Body Coil	Off

**System - Adjustments**

Confirm Frequency	Never
Assume Silicone	Off

**System - Adjust Volume**

Position	Isocenter
Orientation	Transversal
Rotation	0.00 deg
A >> P	192 mm
R >> L	192 mm
F >> H	146 mm
Reset	Off

**System - Tx/Rx**

Frequency 1H	123.217555 MHz
Correction Factor	1
Image Scaling	1.000
Reset	Off
! Ref. Amplitude 1H	353.882 V

**Physio - Signal**

1st Signal/Mode	None
TR	728 ms
Concatenations	1

**BOLD**

Measurements	300
Delay in TR	0 ms

**Sequence - Part 1**

Sequence Name	epfid
RF Pulse Type	Normal
Gradient Mode	Fast*
Bandwidth	2232 Hz/Px
Free Echo Spacing	Off
Echo Spacing	0.54 ms
EPI Factor	64

**Sequence - Part 2**

Introduction	On
--------------	----

**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	30
Meas[1]	Active
Meas[2]	Active
Meas[3]	Active
Meas[4]	Active
Meas[5]	Active
Meas[6]	Active
Meas[7]	Active
Meas[8]	Active
Meas[9]	Active
Meas[10]	Active
Meas[11]	Active
Meas[12]	Active
Meas[13]	Active
Meas[14]	Active
Meas[15]	Active
Meas[16]	Ignore
Meas[17]	Ignore
Meas[18]	Ignore
Meas[19]	Ignore
Meas[20]	Ignore
Meas[21]	Ignore
Meas[22]	Ignore
Meas[23]	Ignore
Meas[24]	Ignore
Meas[25]	Ignore
Meas[26]	Ignore
Meas[27]	Ignore
Meas[28]	Ignore
Meas[29]	Ignore
Meas[30]	Ignore
Motion Correction	On
Spatial Filter	Off

\\User\Head\Coma\Coma Science Group\t2\_haste\_tra\_p2 \*

TA: 44 sec Coil Selection: Manual Voxel Size: 0.7×0.7×4.0 mm Acc:: 2 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
Load Images to Stamp Segments	On
Load Images to Graphic Segments	Off
Graphic segment	Default
Inline Movie	Off

**Routine**

Slice Group	1
Slices	28
Distance Factor	30 %
Position	L3.7 P17.4 F7.3 mm
Orientation	T > C-5.3 > S-3.0
Phase Encoding Dir.	R >> L
Phase Oversampling	0 %
FoV Read	220 mm
FoV Phase	100.0 %
Slice Thickness	4.0 mm
TR	1500.0 ms
TE	70 ms
Averages	1
Concatenations	1
AutoAlign	Head > Brain
Coil Elements	HE1-4

**Contrast - Common**

TR	1500.0 ms
TE	70 ms
MTC	Off
Magn. Preparation	None
Flip Angle	150 deg
Fat-Water Contrast	Standard
Dark Blood	Off
Wrap-up Magn.	None
Contrasts	1
Reconstruction	Magnitude

**Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Each Measurement

**Resolution - Common**

FoV Read	220 mm
FoV Phase	100.0 %
Slice Thickness	4.0 mm
Base Resolution	320
Phase Resolution	80 %
Interpolation	Off

**Resolution - Acceleration**

Acceleration mode	GRAPPA
Reference Scans	Integrated

**Resolution - Acceleration**

Acceleration Factor PE	2
Reference Lines PE	24
Phase Partial Fourier	5/8

**Resolution - Filter**

Raw Filter	Off
Elliptical Filter	On
Distortion Correction	2D
Normalize	Prescan
Image Filter	Off

**Geometry - Common**

Slice Group	1
Slices	28
Distance Factor	30 %
Position	L3.7 P17.4 F7.3 mm
Orientation	T > C-5.3 > S-3.0
Phase Encoding Dir.	R >> L
Phase Oversampling	0 %
FoV Read	220 mm
FoV Phase	100.0 %
Slice Thickness	4.0 mm
TR	1500.0 ms
Series	Interleaved
Multi-Slice Mode	Single Shot
Concatenations	1

**Geometry - Saturation**

Special Saturation	None
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**Geometry - AutoAlign**

Slice Group	1
Position	L3.7 P17.4 F7.3 mm
Orientation	T > C-5.3 > S-3.0
Phase Encoding Dir.	R >> L
AutoAlign	Head > Brain
Initial Position	Isocenter
L	0.0 mm
P	0.0 mm
F	0.0 mm
Initial Rotation	90.00 deg
Initial Orientation	Transversal

**Geometry - Navigator****Geometry - Tim Planning Suite**

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

**System - Miscellaneous**

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

**System - Adjustments**

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

**System - Adjust Volume**

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

**System - Tx/Rx**

Frequency 1H	123.217555 MHz
Correction Factor	1
Image Scaling	1.000
Reset	Off
? Ref. Amplitude 1H	0.000 V

**Physio - Signal**

1st Signal/Mode	None
TR	1500.0 ms
Concatenations	1

**Physio - Cardiac**

Magn. Preparation	None
Fat-Water Contrast	Standard
Dark Blood	Off
FoV Read	220 mm
FoV Phase	100.0 %
Phase Resolution	80 %
Dynamic Mode	Standard

**Physio - PACE**

Resp. Control	Off
Concatenations	1

**Inline - Subtraction**

Subtract	Off
Measurements	1
StdDev	Off
Save Original Images	On

**Inline - Cardiac**

Magn. Preparation	None
Contrasts	1
TE	70 ms
TR	1500.0 ms
Save Original Images	On

**Inline - MIP**

MIP Sag	Off
MIP Cor	Off
MIP Tra	Off
MIP Time	Off
Radial MIP	Off
MPR Sag	Off

**Inline - MIP**

MPR Cor	Off
MPR Tra	Off
Save Original Images	On

**Inline - Composing**

Inline Composing	Off
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**Sequence - Part 1**

Sequence Name	h
Dimension	2D
RF Pulse Type	Fast
Gradient Mode	Fast
Flow Compensation	None
Bandwidth	601 Hz/Px
Echo Spacing	4.68 ms
Turbo Factor	256

**Sequence - Part 2**

Introduction	On
Hyperecho	Off

**Sequence - Assistant**

SAR Assistant	Flip Angle
Min Flip Angle	130 deg
Allowed Delay	30 s

\\User\Head\Coma\Coma Science Group\t2\_space\_FLAIR\_sag\_p3\_iso \*

TA: 6:37 min Coil Selection: Manual Voxel Size: 1.0×1.0×1.0 mm 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
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	Isocenter
Orientation	Sagittal
Phase Encoding Dir.	A >> P
Phase Oversampling	0 %
Slice Oversampling	0.0 %
FoV Read	256 mm
FoV Phase	92.2 %
Slice Thickness	1.00 mm
TR	7600 ms
TE	432 ms
Averages	1.0
Concatenations	1
AutoAlign	Head > Basis
Coil Elements	HE1-4

**Contrast - Common**

TR	7600 ms
TE	432 ms
MTC	Off
Magn. Preparation	Non-sel. IR
T1 1	2400 ms
Flip Angle Mode	T2 Var
Fat-Water Contrast	Fat Saturation
Fat Saturation	Strong
Dark Blood	Off
Blood Suppression	Off
Wrap-up Magn.	None
Reconstruction	Magnitude

**Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Each Measurement
Reordering	Linear

**Resolution - Common**

FoV Read	256 mm
FoV Phase	92.2 %
Slice Thickness	1.00 mm
Base Resolution	256
Phase Resolution	100 %
Slice Resolution	100 %
Interpolation	Off

**Resolution - Acceleration**

Acceleration mode	GRAPPA
Total Factor	3
Reference Scans	Integrated
Acceleration Factor PE	3
Reference Lines PE	24
Acceleration Factor 3D	1
Phase Partial Fourier	Allowed
Slice Partial Fourier	7/8
Elliptical Scanning	On

**Resolution - Filter**

Raw Filter	On
Elliptical Filter	Off
Distortion Correction	2D
Normalize	Prescan
Image Filter	Off

**Geometry - Common**

Slab Group	1
Slabs	1
Position	Isocenter
Orientation	Sagittal
Phase Encoding Dir.	A >> P
Phase Oversampling	0 %
Slice Oversampling	0.0 %
FoV Read	256 mm
FoV Phase	92.2 %
Slice Thickness	1.00 mm
TR	7600 ms
Concatenations	1

**Geometry - Saturation**

Special Saturation	None
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**Geometry - AutoAlign**

Slab Group	1
Position	Isocenter
Orientation	Sagittal
Phase Encoding Dir.	A >> P
AutoAlign	Head > Basis
Initial Position	Isocenter
L	0.0 mm
P	0.0 mm
H	0.0 mm
Initial Rotation	0.00 deg
Initial Orientation	Sagittal

**Geometry - Navigator****Geometry - Tim Planning Suite**

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

**System - Miscellaneous**

Coil Selection	Manual
Coil Combination	Adaptive Combine
Matrix Optimization	Off
MSMA	S - C - T

**System - Miscellaneous**

Sagittal	R >> L
Coronal	A >> P
Transversal	F >> H

**System - Adjustments**

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

**System - Adjust Volume**

Position	Isocenter
Orientation	Sagittal
Rotation	0.00 deg
A >> P	236 mm
F >> H	256 mm
R >> L	192 mm
Reset	Off

**System - Tx/Rx**

Frequency 1H	123.217555 MHz
Correction Factor	1
Image Scaling	1.000
Reset	Off
? Ref. Amplitude 1H	0.000 V

**Physio - Signal**

1st Signal/Mode	None
Trigger Delay	0 ms
TR	7600 ms
Concatenations	1

**Physio - Cardiac**

Magn. Preparation	Non-sel. IR
TI 1	2400 ms
Fat-Water Contrast	Fat Saturation
Dark Blood	Off
FoV Read	256 mm
FoV Phase	92.2 %
Phase Resolution	100 %
Dynamic Mode	Standard

**Physio - PACE**

Resp. Control	Off
Concatenations	1

**Inline - Subtraction**

Subtract	Off
Measurements	1
StdDev	Off
Save Original Images	On

**Inline - Cardiac**

Magn. Preparation	Non-sel. IR
TE	432 ms
TR	7600 ms
Save Original Images	On

**Inline - MIP**

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

**Inline - Composing**

Inline Composing	Off
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**Sequence - Part 1**

Sequence Name	spcir
Dimension	3D
Excitation	Non-sel.
RF Pulse Type	Normal
Gradient Mode	Fast
Flow Compensation	None
Reordering	Linear
Bandwidth	651 Hz/Px
Echo Spacing	3.66 ms
Turbo Factor	270
Echo Train Duration	922 ms

**Sequence - Part 2**

Introduction	On
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**Sequence - Assistant**

SAR Assistant	Off
Allowed Delay	30 s

\\User\Head\Coma\Coma Science Group\t1\_mp2rage\_sag\_p2\_iso\_FLAWS\_fast2\_ti300 \*

TA: 5:02 min Coil Selection: Manual Voxel Size: 1.0×1.0×1.0 mm Acc.: 2 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
Load Images to Stamp Segments	Off
Load Images to Graphic Segments	Off
Graphic segment	Default
Inline Movie	Off

**Routine**

Slab Group	1
Slabs	1
Distance Factor	50 %
Position	Isocenter
Orientation	Sagittal
Phase Encoding Dir.	A >> P
Phase Oversampling	0 %
Slice Oversampling	0.0 %
FoV Read	256 mm
FoV Phase	93.8 %
Slice Thickness	1.00 mm
TR	2500.0 ms
TE	2.27 ms
Averages	1
Concatenations	1
AutoAlign	Head > Basis
Coil Elements	HE1-4

**Contrast - Common**

TR	2500.0 ms
TE	2.27 ms
Magn. Preparation	Non-sel. IR
TI 1	300 ms
TI 2	1220 ms
Flip Angle 1	4 deg
Flip Angle 2	4 deg
Fat-Water Contrast	Standard
Dark Blood	Off
Reconstruction	Magnitude

**Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Each Measurement
Reordering	Linear

**Resolution - Common**

FoV Read	256 mm
FoV Phase	93.8 %
Slice Thickness	1.00 mm
Base Resolution	256
Phase Resolution	100 %
Slice Resolution	100 %
Interpolation	Off

**Resolution - Acceleration**

Acceleration mode	GRAPPA
Reference Scans	Integrated
Acceleration Factor PE	2
Reference Lines PE	32
Acceleration Factor 3D	1
Phase Partial Fourier	7/8
Slice Partial Fourier	6/8
Asymmetric Echo	Off
Elliptical Scanning	Off

**Resolution - Filter**

Raw Filter	Off
Elliptical Filter	Off
Distortion Correction	3D
Normalize	Prescan
Image Filter	Off

**Geometry - Common**

Slab Group	1
Slabs	1
Distance Factor	50 %
Position	Isocenter
Orientation	Sagittal
Phase Encoding Dir.	A >> P
Phase Oversampling	0 %
Slice Oversampling	0.0 %
FoV Read	256 mm
FoV Phase	93.8 %
Slice Thickness	1.00 mm
TR	2500.0 ms
Series	Interleaved
Multi-Slice Mode	Single Shot
Concatenations	1

**Geometry - AutoAlign**

Slab Group	1
Position	Isocenter
Orientation	Sagittal
Phase Encoding Dir.	A >> P
AutoAlign	Head > Basis
Initial Position	Isocenter
L	0.0 mm
P	0.0 mm
H	0.0 mm
Initial Rotation	0.00 deg
Initial Orientation	Sagittal

**Geometry - Navigator****Geometry - Tim Planning Suite**

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

**System - Miscellaneous**

Coil Selection	Manual
Coil Combination	Adaptive Combine
Matrix Optimization	Off
MSMA	S - C - T

**System - Miscellaneous**

Sagittal	R >> L
Coronal	A >> P
Transversal	F >> H

**System - Adjustments**

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

**System - Adjust Volume**

Position	Isocenter
Orientation	Sagittal
Rotation	0.00 deg
A >> P	240 mm
F >> H	256 mm
R >> L	176 mm
Reset	Off

**System - Tx/Rx**

Frequency 1H	123.217555 MHz
Correction Factor	1
Image Scaling	1.000
Reset	Off
? Ref. Amplitude 1H	0.000 V

**Physio - Signal**

1st Signal/Mode	None
TR	2500.0 ms
Concatenations	1

**Physio - Cardiac**

Magn. Preparation	Non-sel. IR
TI 1	300 ms
TI 2	1220 ms
Fat-Water Contrast	Standard
Dark Blood	Off
FoV Read	256 mm
FoV Phase	93.8 %
Phase Resolution	100 %
Dynamic Mode	Standard

**Physio - PACE**

Resp. Control	Off
Concatenations	1

**Inline - Subtraction**

Subtract	Off
Measurements	1
StdDev	Off
Save Original Images	On

**Inline - Cardiac**

Magn. Preparation	Non-sel. IR
TE	2.27 ms
TR	2500.0 ms
Save Original Images	On

**Inline - MIP**

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

**Inline - Composing**

Inline Composing	Off
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**Inline - Maplt**

Save Original Images	On
Maplt	None
Flip Angle 1	4 deg
Flip Angle 2	4 deg
Measurements	1
TR	2500.0 ms
TE	2.27 ms

**Sequence - Part 1**

Sequence Name	tfl
Dimension	3D
Excitation	Non-sel.
RF Pulse Type	Fast
Gradient Mode	Fast
Flow Compensation	None
Reordering	Linear
Bandwidth	350 Hz/Px
Echo Spacing	5.56 ms
Turbo Factor	132
Asymmetric Echo	Off

**Sequence - Part 2**

Introduction	On
RF Spoiling	On
Incr. Gradient Spoiling	Off

**Sequence - Assistant**

SAR Assistant	Off
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\\User\Head\Coma\Coma Science Group\pcasl\_3d\_tra\_p2\_fast\_withintub \*

TA: 2:21 min Coil Selection: Auto Voxel Size: 2.0×2.0×5.0 mm Acc.: 2 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
Load Images to Stamp Segments	Off
Load Images to Graphic Segments	Off
Graphic segment	Default
Inline Movie	Off

### Routine

Slab Group	1
Slabs	1
Distance Factor	50 %
Position	L5.7 P11.8 H27.6 mm
Orientation	T > S-5.1 > C-4.8
Phase Encoding Dir.	P >> A
Phase Oversampling	0 %
Slice Oversampling	25.0 %
FoV Read	256 mm
FoV Phase	100.0 %
Slice Thickness	5.00 mm
TR	5600 ms
TE	18.2 ms
Averages	1
Concatenations	1
AutoAlign	Head > Brain
Coil Elements	HE1-4;NE2

### Contrast - Common

TR	5600 ms
TE	18.2 ms
Flip Angle	180 deg
Fat-Water Contrast	Fat Saturation
Reconstruction	Magnitude

### Contrast - Dynamic

Dynamic Mode	Standard
Measurements	3
Multiple Series	Off
Delay in TR	0 ms
Reordering	Centric

### Contrast - ASL

Perfusion Mode	PCASL
Suppression	Gray-White
Labeling Duration	1800 ms
Delay Array Size	1
Postlabeling Delay	1800 ms

### Resolution - Common

FoV Read	256 mm
FoV Phase	100.0 %
Slice Thickness	5.00 mm
Base Resolution	64
Phase Resolution	97 %

### Resolution - Common

Interpolation	On
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### Resolution - Acceleration

Acceleration mode	GRAPPA
Reference Scans	GRE/Separate
Acceleration Factor PE	2
Reference Lines PE	24
Acceleration Factor 3D	1
Reference Lines 3D	8
Phase Partial Fourier	Off
Slice Partial Fourier	Off

### Resolution - Filter

Raw Filter	Off
Elliptical Filter	Off
Hamming	Off
Distortion Correction	3D
Normalize	Prescan

### Geometry - Common

Slab Group	1
Slabs	1
Distance Factor	50 %
Position	L5.7 P11.8 H27.6 mm
Orientation	T > S-5.1 > C-4.8
Phase Encoding Dir.	P >> A
Phase Oversampling	0 %
Slice Oversampling	25.0 %
FoV Read	256 mm
FoV Phase	100.0 %
Slice Thickness	5.00 mm
TR	5600 ms
Series	Ascending
Multi-Slice Mode	Interleaved
Concatenations	1

### Geometry - Saturation

Special Saturation	Parallel F
Gap	35.0 mm

### Geometry - AutoAlign

Slab Group	1
Position	L5.7 P11.8 H27.6 mm
Orientation	T > S-5.1 > C-4.8
Phase Encoding Dir.	P >> A
AutoAlign	Head > Brain
Initial Position	Isocenter
L	0.0 mm
P	0.0 mm
F	0.0 mm
Initial Rotation	180.00 deg
Initial Orientation	Transversal

### Geometry - Tim Planning Suite

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

**System - Miscellaneous**

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

**System - Adjustments**

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

**System - Adjust Volume**

Position	L5.7 P11.8 H27.6 mm
Orientation	T > S-5.1 > C-4.8
Rotation	176.84 deg
A >> P	256 mm
R >> L	256 mm
F >> H	160 mm
Reset	Off

**System - Tx/Rx**

Frequency 1H	123.217555 MHz
Correction Factor	1
Image Scaling	1.000
Reset	Off
? Ref. Amplitude 1H	0.000 V

**Physio - Signal**

1st Signal/Mode	None
TR	5600 ms
Concatenations	1
Segments	4

**Sequence - Part 1**

Sequence Name	tgse
Dimension	3D
RF Pulse Type	Normal
Gradient Mode	Fast
Reordering	Centric
Bandwidth	3126 Hz/Px
Echo Spacing	0.40 ms
Turbo Factor	10
Segments	4
EPI Factor	31

**Sequence - Part 2**

Introduction	Off
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\\User\Head\Coma\Coma Science Group\t2\_tse\_FLAIR\_tra\_fs\_gobrain \*

TA: 4:01 min Coil Selection: Memory Voxel Size: 0.9×0.9×1.0 mm Acc:: 2 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
Load Images to Stamp Segments	On
Load Images to Graphic Segments	On
Graphic segment	3rd Segment
Inline Movie	Off

**Routine**

Slice Group	1
Slices	122
Distance Factor	10 %
Position	L3.7 P17.4 F7.3 mm
Orientation	T > C-5.3 > S-3.0
Phase Encoding Dir.	R >> L
Phase Oversampling	0 %
FoV Read	230 mm
FoV Phase	75.0 %
Slice Thickness	1.0 mm
TR	15960.0 ms
TE	109 ms
Averages	1
Concatenations	3
AutoAlign	Head > Brain
Coil Elements	HE1-4

**Contrast - Common**

TR	15960.0 ms
TE	109 ms
TD	0.0 ms
MTC	Off
Magn. Preparation	Slice-sel. IR
TI	2930 ms
Freeze Suppr. Tissue	On
Flip Angle	180 deg
Fat-Water Contrast	Fat Saturation
Fat Saturation	Strong
Dark Blood	Off
Wrap-up Magn.	None
Contrasts	1
Reconstruction	Magnitude

**Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Each Measurement

**Resolution - Common**

FoV Read	230 mm
FoV Phase	75.0 %
Slice Thickness	1.0 mm
Base Resolution	256
Phase Resolution	75 %
Interpolation	Off

**Resolution - Common**

Trajectory	Cartesian
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**Resolution - Acceleration**

Acceleration mode	GRAPPA
Reference Scans	Integrated
Acceleration Factor PE	2
Reference Lines PE	24
Phase Partial Fourier	Off

**Resolution - Filter**

Raw Filter	On
Elliptical Filter	Off
Distortion Correction	3D
Normalize	Prescan
Image Filter	Off

**Geometry - Common**

Slice Group	1
Slices	122
Distance Factor	10 %
Position	L3.7 P17.4 F7.3 mm
Orientation	T > C-5.3 > S-3.0
Phase Encoding Dir.	R >> L
Phase Oversampling	0 %
FoV Read	230 mm
FoV Phase	75.0 %
Slice Thickness	1.0 mm
TR	15960.0 ms
Series	Interleaved
Multi-Slice Mode	Interleaved
Concatenations	3

**Geometry - Saturation**

Special Saturation	Parallel F
Gap	5 mm
Thickness	40 mm

**Geometry - AutoAlign**

Slice Group	1
Position	L3.7 P17.4 F7.3 mm
Orientation	T > C-5.3 > S-3.0
Phase Encoding Dir.	R >> L
AutoAlign	Head > Brain
Initial Position	Isocenter
L	0.0 mm
P	0.0 mm
F	0.0 mm
Initial Rotation	90.00 deg
Initial Orientation	Transversal

**Geometry - Navigator****Geometry - Tim Planning Suite**

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

**System - Miscellaneous**

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

**System - Adjustments**

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

**System - Adjust Volume**

Position	L3.7 P17.4 F7.3 mm
Orientation	T > C-5.3 > S-3.0
Rotation	85.75 deg
R >> L	173 mm
A >> P	230 mm
F >> H	135 mm
Reset	Off

**System - Tx/Rx**

Frequency 1H	123.217555 MHz
Correction Factor	1
Image Scaling	1.000
Reset	Off
? Ref. Amplitude 1H	0.000 V

**Physio - Signal**

1st Signal/Mode	None
TR	15960.0 ms
Concatenations	3

**Physio - Cardiac**

Magn. Preparation	Slice-sel. IR
TI	2930 ms
Fat-Water Contrast	Fat Saturation
Dark Blood	Off
FoV Read	230 mm
FoV Phase	75.0 %
Phase Resolution	75 %
Trajectory	Cartesian
Dynamic Mode	Standard

**Physio - PACE**

Resp. Control	Off
Concatenations	3

**Inline - Subtraction**

Subtract	Off
Measurements	1
StdDev	Off
Save Original Images	On

**Inline - Cardiac**

Magn. Preparation	Slice-sel. IR
Contrasts	1

**Inline - Cardiac**

TE	109 ms
TR	15960.0 ms
Save Original Images	On

**Inline - MIP**

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

**Inline - Composing**

Inline Composing	Off
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**Sequence - Part 1**

Sequence Name	tir
Dimension	2D
RF Pulse Type	Normal
Gradient Mode	Fast
Flow Compensation	None
Bandwidth	199 Hz/Px
Free Echo Spacing	Off
Echo Spacing	12.1 ms
Define	Turbo Factor
Turbo Factor	21
Echo Trains per Slice	4

**Sequence - Part 2**

Introduction	On
Phase Correction	Automatic
Compensate T2 Decay	Off
Hyperecho	Off
WARP	Off
Red. EC Sensitivity	Off
Acoustic noise reduction	Off
Reduce Motion Sens.	On

**Sequence - Assistant**

SAR Assistant	Off
Allowed Delay	60 s

\\User\Head\Coma\Coma Science Group\t2\_space\_FLAIR\_sag\_p3\_iso\_fast4 \*

TA: 4:42 min Coil Selection: Manual Voxel Size: 1.0×1.0×1.0 mm Acc.: 2 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
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	Isocenter
Orientation	Sagittal
Phase Encoding Dir.	A >> P
Phase Oversampling	0 %
Slice Oversampling	0.0 %
FoV Read	256 mm
FoV Phase	92.2 %
Slice Thickness	1.00 mm
TR	5000 ms
TE	209 ms
Averages	1.0
Concatenations	1
AutoAlign	Head > Basis
Coil Elements	HE1-4

**Contrast - Common**

TR	5000 ms
TE	209 ms
MTC	Off
Magn. Preparation	Non-sel. IR
T1 1	1750 ms
Flip Angle Mode	T2 Var
Fat-Water Contrast	Fat Saturation
Fat Saturation	Strong
Dark Blood	Off
Blood Suppression	Off
Wrap-up Magn.	None
Reconstruction	Magnitude

**Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Each Measurement
Reordering	Linear

**Resolution - Common**

FoV Read	256 mm
FoV Phase	92.2 %
Slice Thickness	1.00 mm
Base Resolution	256
Phase Resolution	100 %
Slice Resolution	100 %
Interpolation	Off

**Resolution - Acceleration**

Acceleration mode	GRAPPA
Total Factor	2
Reference Scans	Integrated
Acceleration Factor PE	2
Reference Lines PE	24
Acceleration Factor 3D	1
Phase Partial Fourier	Allowed
Slice Partial Fourier	6/8
Elliptical Scanning	On

**Resolution - Filter**

Raw Filter	On
Elliptical Filter	Off
Distortion Correction	3D
Normalize	Prescan
Image Filter	Off

**Geometry - Common**

Slab Group	1
Slabs	1
Position	Isocenter
Orientation	Sagittal
Phase Encoding Dir.	A >> P
Phase Oversampling	0 %
Slice Oversampling	0.0 %
FoV Read	256 mm
FoV Phase	92.2 %
Slice Thickness	1.00 mm
TR	5000 ms
Concatenations	1

**Geometry - Saturation**

Special Saturation	None
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**Geometry - AutoAlign**

Slab Group	1
Position	Isocenter
Orientation	Sagittal
Phase Encoding Dir.	A >> P
AutoAlign	Head > Basis
Initial Position	Isocenter
L	0.0 mm
P	0.0 mm
F	0.0 mm
Initial Rotation	0.00 deg
Initial Orientation	Sagittal

**Geometry - Navigator****Geometry - Tim Planning Suite**

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

**System - Miscellaneous**

Coil Selection	Manual
Coil Combination	Adaptive Combine
Matrix Optimization	Off
MSMA	S - C - T

**System - Miscellaneous**

Sagittal	R >> L
Coronal	A >> P
Transversal	F >> H

**System - Adjustments**

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

**System - Adjust Volume**

Position	Isocenter
Orientation	Sagittal
Rotation	0.00 deg
A >> P	236 mm
F >> H	256 mm
R >> L	176 mm
Reset	Off

**System - Tx/Rx**

Frequency 1H	123.217555 MHz
Correction Factor	1
Image Scaling	1.000
Reset	Off
? Ref. Amplitude 1H	0.000 V

**Physio - Signal**

1st Signal/Mode	None
Trigger Delay	0 ms
TR	5000 ms
Concatenations	1

**Physio - Cardiac**

Magn. Preparation	Non-sel. IR
TI 1	1750 ms
Fat-Water Contrast	Fat Saturation
Dark Blood	Off
FoV Read	256 mm
FoV Phase	92.2 %
Phase Resolution	100 %
Dynamic Mode	Standard

**Physio - PACE**

Resp. Control	Off
Concatenations	1

**Inline - Subtraction**

Subtract	Off
Measurements	1
StdDev	Off
Save Original Images	On

**Inline - Cardiac**

Magn. Preparation	Non-sel. IR
TE	209 ms
TR	5000 ms
Save Original Images	On

**Inline - MIP**

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

**Inline - Composing**

Inline Composing	Off
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**Sequence - Part 1**

Sequence Name	spcir
Dimension	3D
Excitation	Non-sel.
RF Pulse Type	Normal
Gradient Mode	Fast
Flow Compensation	None
Reordering	Linear
Bandwidth	781 Hz/Px
Echo Spacing	3.42 ms
Turbo Factor	270
Echo Train Duration	667 ms

**Sequence - Part 2**

Introduction	On
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**Sequence - Assistant**

SAR Assistant	Off
Allowed Delay	30 s

\\User\Head\Coma\Coma Science Group\lp2d\_diff\_mddw\_30\_p2\_s3\_b700 \*

TA: 2:07 min Coil Selection: Manual Voxel Size: 2.0×2.0×2.0 mm Acc.: 6 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
Load Images to Stamp Segments	Off
Load Images to Graphic Segments	Off
Graphic segment	Default
Inline Movie	Off

**Routine**

Slice Group	1
Slices	66
Distance Factor	30 %
Position	Isocenter
Orientation	Transversal
Phase Encoding Dir.	A >> P
Phase Oversampling	0 %
FoV Read	256 mm
FoV Phase	100.0 %
Slice Thickness	2.0 mm
TR	3000 ms
TE	94.0 ms
Concatenations	1
AutoAlign	Head > Brain
Coil Elements	HE1-4

**Contrast - Common**

TR	3000 ms
TE	94.0 ms
MTC	Off
Magn. Preparation	None
Fat-Water Contrast	Fat Saturation
Fat Saturation	Strong
Reconstruction	Magnitude

**Contrast - Dynamic**

Dynamic Mode	Standard
Multiple Series	Off
Delay in TR	0 ms

**Resolution - Common**

FoV Read	256 mm
FoV Phase	100.0 %
Slice Thickness	2.0 mm
Base Resolution	128
Phase Resolution	100 %
Interpolation	Off

**Resolution - Acceleration**

Accel. Mode	SMS
Reference Scans	EPI/Separate
Acceleration Factor PE	2
Reference Lines PE	30
Phase Partial Fourier	6/8
SMS Factor	3

**Resolution - Filter**

Raw Filter	Off
Elliptical Filter	Off
Distortion Correction	Off
Normalize	Prescan

**Geometry - Common**

Slice Group	1
Slices	66
Distance Factor	30 %
Position	Isocenter
Orientation	Transversal
Phase Encoding Dir.	A >> P
Phase Oversampling	0 %
FoV Read	256 mm
FoV Phase	100.0 %
Slice Thickness	2.0 mm
TR	3000 ms
Series	Interleaved
Multi-Slice Mode	Interleaved
Concatenations	1

**Geometry - Saturation**

Special Saturation	None
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**Geometry - AutoAlign**

Slice Group	1
Position	Isocenter
Orientation	Transversal
Phase Encoding Dir.	A >> P
AutoAlign	Head > Brain
Initial Position	Isocenter
L	0.0 mm
P	0.0 mm
H	0.0 mm
Initial Rotation	0.00 deg
Initial Orientation	Transversal

**Geometry - Navigator****Geometry - Tim Planning Suite**

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

**System - Miscellaneous**

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

**System - Adjustments**

Adjustment Strategy	Standard
B0 Shim	Standard
B1 Shim	TrueForm
CoilShim	Off
Adjustment Tolerance	Auto

**System - Adjustments**

Adjust with Body Coil	Off
Confirm Frequency	Never
Assume Silicone	Off

**System - Adjust Volume**

Position	Isocenter
Orientation	Transversal
Rotation	0.00 deg
A >> P	256 mm
R >> L	256 mm
F >> H	171 mm
Reset	Off

**System - Tx/Rx**

Frequency 1H	123.217555 MHz
Correction Factor	1
Image Scaling	1.000
Reset	Off
? Ref. Amplitude 1H	0.000 V

**Physio - Signal**

1st Signal/Mode	None
TR	3000 ms
Concatenations	1

**Physio - PACE**

Resp. Control	Off
Concatenations	1

**Diff**

Diffusion Mode	MDDW
Diff. Directions	30
Diffusion Scheme	Bipolar
Diff. Weightings	2
b-Value 1	0 s/mm <sup>2</sup>
b-Value 2	700 s/mm <sup>2</sup>
b-Value 1	5
b-Value 2	1
Dynamic Field Correction	Off
Invert Gray Scale	Off
Diff. Weighted Images	On
Trace Weighted Images	On
Tensor	On
FA Maps	On
ADC Maps	On
Exponential ADC Maps	Off
ADC Noise Threshold	30
Noise Masking	Off
Calculated Image	Off

**Sequence - Part 1**

Sequence Name	epse
RF Pulse Type	Low SAR
Gradient Mode	Fast
Bandwidth	1562 Hz/Px
Free Echo Spacing	Off
Echo Spacing	0.72 ms
Optimization	None
EPI Factor	128

**Sequence - Part 2**

Introduction	On
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\\User\Head\Coma\Coma Science Group\t2\_fl2d\_cor\_p2\_hemo \*

TA: 1:22 min Coil Selection: Auto Voxel Size: 0.8×0.8×4.0 mm Acc:: 2 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
Load Images to Stamp Segments	On
Load Images to Graphic Segments	Off
Graphic segment	Default
Inline Movie	Off

**Resolution - Acceleration**

Acceleration Factor PE	2
Reference Lines PE	24
Phase Partial Fourier	6/8
Asymmetric Echo	Off

**Resolution - Filter**

Raw Filter	Off
Elliptical Filter	On
Distortion Correction	2D
Normalize	Prescan
Image Filter	Off

**Geometry - Common**

Slice Group	1
Slices	38
Distance Factor	10 %
Position	Isocenter
Orientation	Coronal
Phase Encoding Dir.	R >> L
Phase Oversampling	20 %
FoV Read	230 mm
FoV Phase	75.0 %
Slice Thickness	4.0 mm
TR	944.0 ms
Series	Interleaved
Multi-Slice Mode	Interleaved
Concatenations	1

**Routine**

Slice Group	1
Slices	38
Distance Factor	10 %
Position	Isocenter
Orientation	Coronal
Phase Encoding Dir.	R >> L
Phase Oversampling	20 %
FoV Read	230 mm
FoV Phase	75.0 %
Slice Thickness	4.0 mm
TR	944.0 ms
TE	19.90 ms
Averages	1
Concatenations	1
AutoAlign	Head > Brain
Coil Elements	HE3,4;NE2

**Geometry - Saturation**

Saturation Mode	Standard
Special Saturation	None

**Contrast - Common**

TR	944.0 ms
TE	19.90 ms
MTC	Off
Magn. Preparation	None
Flip Angle	20 deg
Fat-Water Contrast	Standard
Dark Blood	Off
SWI	Off
Contrasts	1
Reconstruction	Magnitude

**Geometry - AutoAlign**

Slice Group	1
Position	Isocenter
Orientation	Coronal
Phase Encoding Dir.	R >> L
AutoAlign	Head > Brain
Initial Position	L0.0 P0.0 F5.0
L	0.0 mm
P	0.0 mm
F	5.0 mm
Initial Rotation	0.00 deg
Initial Orientation	Coronal

**Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Each Measurement

**Resolution - Common**

FoV Read	230 mm
FoV Phase	75.0 %
Slice Thickness	4.0 mm
Base Resolution	288
Phase Resolution	75 %
Interpolation	Off

**Resolution - Acceleration**

Acceleration mode	GRAPPA
Reference Scans	Integrated

**Geometry - Tim Planning Suite**

Set-n-Go Protocol	Off
Table Position	F
Table Position	5 mm
Inline Composing	Off

**System - Miscellaneous**

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

**System - Adjustments**

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

**System - Adjust Volume**

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

**System - Tx/Rx**

Frequency 1H	123.217555 MHz
Correction Factor	1
Image Scaling	1.000
Reset	Off
? Ref. Amplitude 1H	0.000 V

**Physio - Signal**

1st Signal/Mode	None
TR	944.0 ms
Concatenations	1
Segments	1

**Physio - Cardiac**

Tagging	None
Magn. Preparation	None
Fat-Water Contrast	Standard
Dark Blood	Off
FoV Read	230 mm
FoV Phase	75.0 %
Phase Resolution	75 %
Dynamic Mode	Standard

**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 - Cardiac**

Magn. Preparation	None
Contrasts	1
TE	19.90 ms
TR	944.0 ms
Save Original Images	On

**Inline - MIP**

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

**Inline - Soft Tissue**

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

**Inline - Composing**

Inline Composing	Off
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**Inline - MapIt**

Save Original Images	On
MapIt	None
Flip Angle	20 deg
Measurements	1
Contrasts	1
TR	944.0 ms
TE	19.90 ms

**Sequence - Part 1**

Sequence Name	fl_r
Dimension	2D
Excitation	Slice-sel.
RF Pulse Type	Fast
Gradient Mode	Fast
Flow Compensation	Slice/Read
Bandwidth	220 Hz/Px
Segments	1
Asymmetric Echo	Off

**Sequence - Part 2**

Introduction	On
RF Spoiling	On
Acoustic noise reduction	Off

**Sequence - Assistant**

SAR Assistant	Off
Allowed Delay	60 s

\\User\Head\Coma\Coma Science Group\t2\_swi\_tra\_p3\_ir\_magpha\_2mm \*

TA: 3:57 min Coil Selection: Auto Voxel Size: 0.3×0.3×2.0 mm 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
Load Images to Stamp Segments	Off
Load Images to Graphic Segments	Off
Graphic segment	Default
Inline Movie	Off

**Routine**

Slab Group	1
Slabs	1
Distance Factor	20 %
Position	Isocenter
Orientation	Transversal
Phase Encoding Dir.	R >> L
Phase Oversampling	0 %
Slice Oversampling	11.1 %
FoV Read	220 mm
FoV Phase	87.5 %
Slice Thickness	2.00 mm
TR	28.0 ms
TE	20.00 ms
Averages	1
Concatenations	1
AutoAlign	Head > Brain
Coil Elements	HE1-4

**Contrast - Common**

TR	28.0 ms
TE	20.00 ms
MTC	Off
Magn. Preparation	None
Flip Angle	15 deg
Fat-Water Contrast	Standard
Dark Blood	Off
SWI	On
Contrasts	1
Reconstruction	Magn./Phase

**Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Each Measurement

**Resolution - Common**

FoV Read	220 mm
FoV Phase	87.5 %
Slice Thickness	2.00 mm
Base Resolution	384
Phase Resolution	80 %
Slice Resolution	100 %
Interpolation	On

**Resolution - Acceleration**

Acceleration mode	GRAPPA
Reference Scans	Integrated
Acceleration Factor PE	3
Reference Lines PE	24
Acceleration Factor 3D	1
Phase Partial Fourier	Off
Slice Partial Fourier	Off
Asymmetric Echo	Off
Elliptical Scanning	Off

**Resolution - Filter**

Raw Filter	Off
Elliptical Filter	Off
Distortion Correction	3D
Normalize	Prescan
Image Filter	Off

**Geometry - Common**

Slab Group	1
Slabs	1
Distance Factor	20 %
Position	Isocenter
Orientation	Transversal
Phase Encoding Dir.	R >> L
Phase Oversampling	0 %
Slice Oversampling	11.1 %
FoV Read	220 mm
FoV Phase	87.5 %
Slice Thickness	2.00 mm
TR	28.0 ms
Series	Interleaved
Multi-Slice Mode	Interleaved
Concatenations	1

**Geometry - Saturation**

Saturation Mode	Standard
Special Saturation	None

**Geometry - AutoAlign**

Slab Group	1
Position	Isocenter
Orientation	Transversal
Phase Encoding Dir.	R >> L
AutoAlign	Head > Brain
Initial Position	Isocenter
L	0.0 mm
P	0.0 mm
H	0.0 mm
Initial Rotation	90.00 deg
Initial Orientation	Transversal

**Geometry - Tim Planning Suite**

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

**System - Miscellaneous**

Coil Selection	Default
Coil Combination	Adaptive Combine

**System - Miscellaneous**

Matrix Optimization	Off
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	F >> H

**System - Adjustments**

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

**System - Adjust Volume**

Position	Isocenter
Orientation	Transversal
Rotation	90.00 deg
R >> L	193 mm
A >> P	220 mm
F >> H	144 mm
Reset	Off

**System - Tx/Rx**

Frequency 1H	123.217555 MHz
Correction Factor	1
Image Scaling	1.000
Reset	Off
? Ref. Amplitude 1H	0.000 V

**Physio - Signal**

1st Signal/Mode	None
TR	28.0 ms
Concatenations	1
Segments	1

**Physio - Cardiac**

Tagging	None
Magn. Preparation	None
Fat-Water Contrast	Standard
Dark Blood	Off
FoV Read	220 mm
FoV Phase	87.5 %
Phase Resolution	80 %
Dynamic Mode	Standard

**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 - Cardiac**

Magn. Preparation	None
Contrasts	1
TE	20.00 ms
TR	28.0 ms
Save Original Images	On

**Inline - MIP**

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

**Inline - Soft Tissue**

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

**Inline - Composing**

Inline Composing	Off
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**Inline - Maplt**

Save Original Images	On
Maplt	None
Flip Angle	15 deg
Measurements	1
Contrasts	1
TR	28.0 ms
TE	20.00 ms

**Sequence - Part 1**

Sequence Name	swi_r
Dimension	3D
Excitation	Slab-sel.
RF Pulse Type	Fast
Gradient Mode	Normal
Flow Compensation	On
Bandwidth	120 Hz/Px
Segments	1
Asymmetric Echo	Off

**Sequence - Part 2**

Introduction	On
RF Spoiling	On
Acoustic noise reduction	Off

**Sequence - Assistant**

SAR Assistant	Off
Allowed Delay	30 s