

**\\MR Physics 2 - AAT\Brain\Brain all\AAT options\t2\_tse\_tra\_AAT-DRB \***TA: 1:14 min Coil Selection: Auto Voxel Size: 0.4x0.4x4.0 mm<sup>3</sup> 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 - Common**

FoV Phase	90.4 %
Slice Thickness	4.0 mm
Base Resolution	272
Phase Resolution	75 %
Interpolation	On

**Resolution - Acceleration**

Acceleration mode	GRAPPA
Reference Scans	TSE/Separate
Acceleration Factor PE	4
Reference Lines PE	32
Deep Resolve	On
Phase Partial Fourier	Off

**Routine**

Slice Group	1
Slices	30
Distance Factor	20 %
Position	L0.2 A11.1 H11.6 mm
Orientation	T > C9.3
Phase Encoding Dir.	R >> L
Phase Oversampling	100 %
FoV Read	230 mm
FoV Phase	90.4 %
Slice Thickness	4.0 mm
TR	5120.0 ms
TE	96.00 ms
Averages	2
Concatenations	1
AutoAlign	---

**Resolution - Filter**

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

**Geometry - Common**

Slice Group	1
Slices	30
Distance Factor	20 %
Position	L0.2 A11.1 H11.6 mm
Orientation	T > C9.3
Phase Encoding Dir.	R >> L
Phase Oversampling	100 %
FoV Read	230 mm
FoV Phase	90.4 %
Slice Thickness	4.0 mm
TR	5120.0 ms
Multi-Slice Mode	Interleaved
Series	Interleaved
Concatenations	1

**Contrast - Common**

TR	5120.0 ms
TE	96.00 ms
MTC	Off
Magn. Preparation	None
Flip Angle	150 deg
Fat-Water Contrast	Standard
Dark Blood	Off
Contrasts	1
Wrap-up Magn.	None
Reconstruction	Magnitude

**Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Each Measurement

**Resolution - Common**

FoV Read	230 mm
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**Geometry - AutoAlign**

Slice Group	1
Position	L0.2 A11.1 H11.6 mm
Orientation	T > C9.3
Phase Encoding Dir.	R >> L
AutoAlign	---
Initial Position	L0.2 A11.1 H11.6
L	0.2 mm
A	11.1 mm
H	11.6 mm
Initial Orientation	T > C
T > C	9.30
> S	0.00

**Geometry - AutoAlign**

Initial Rotation	87.49 deg
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**Geometry - Navigator****Geometry - Saturation**

Special Saturation	None
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**Geometry - Tim Planning Suite**

Set-n-Go Protocol	Off
Table Position	12 mm
Table Position	H
Inline Composing	Off

**System - Miscellaneous**

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

**System - Adjustments**

Adjustment Strategy	Standard
B0 Shim	Tune up
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	63.679699 MHz
? Ref. Amplitude 1H	0.000 V
Reset	Off
Image Scaling	1.000

**Physio - Signal**

1st Signal/Mode	None
TR	5120.0 ms
Concatenations	1

**Physio - Cardiac**

Fat-Water Contrast	Standard
Magn. Preparation	None
Dark Blood	Off
FoV Read	230 mm
FoV Phase	90.4 %
Phase Resolution	75 %
Motion Correction	None

**Physio - PACE**

Resp. Control	Off
Concatenations	1

**Inline - Subtraction**

Subtract	Off
Measurements	1
StdDev	Off
Motion Correction	None
Save Original Images	On

**Inline - MIP**

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

**Inline - Composing**

Inline 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	191 Hz/Px
Echo Spacing	9.58 ms
Free Echo Spacing	Off
Define	Turbo Factor
Turbo Factor	17
Echo Trains per Slice	6

**Sequence - Part 2**

Introduction	On
Phase Correction	Automatic
Compensate T2 Decay	Off
Fast Mode	Off
WARP	Off
Red. EC Sensitivity	Off
Acoustic noise reduction	Off

**Sequence - Part 2**

Reduce Motion Sens.	On
Motion Correction	None

**Sequence - Assistant**

SAR Assistant	Off
Allowed Delay	30 s

**\\MR Physics 2 - AAT\Brain\Brain all\AAT options\1\_se\_cor -AAT-DRG \***TA: 1:28 min Coil Selection: Auto Voxel Size: 0.4x0.4x5.0 mm<sup>3</sup> 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 - Common**

FoV Read	230 mm
FoV Phase	81.3 %
Slice Thickness	5.0 mm
Base Resolution	256
Phase Resolution	80 %
Interpolation	On

**Resolution - Acceleration**

Deep Resolve	On
Phase Partial Fourier	Off
Asymmetric Echo	Off

**Resolution - Filter**

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

**Routine**

Slice Group	1
Slices	30
Distance Factor	30 %
Position	L0.6 A17.5 H37.8 mm
Orientation	C > T-16.3 > S1.2
Phase Encoding Dir.	R >> L
Phase Oversampling	0 %
FoV Read	230 mm
FoV Phase	81.3 %
Slice Thickness	5.0 mm
TR	504.0 ms
TE	11.00 ms
Averages	1
Concatenations	1
AutoAlign	Head > Brain

**Geometry - Common**

Slice Group	1
Slices	30
Distance Factor	30 %
Position	L0.6 A17.5 H37.8 mm
Orientation	C > T-16.3 > S1.2
Phase Encoding Dir.	R >> L
Phase Oversampling	0 %
FoV Read	230 mm
FoV Phase	81.3 %
Slice Thickness	5.0 mm
TR	504.0 ms
Multi-Slice Mode	Interleaved
Series	Interleaved
Concatenations	1

**Contrast - Common**

TR	504.0 ms
TE	11.00 ms
MTC	Off
Magn. Preparation	None
Flip Angle 1	90 deg
Flip Angle 2	180 deg
Fat-Water Contrast	Standard
Dark Blood	Off
Blood Suppression	Off
Contrasts	1
Reconstruction	Magnitude

**Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Off

**Geometry - AutoAlign**

Slice Group	1
Position	L0.6 A17.5 H37.8 mm
Orientation	C > T-16.3 > S1.2
Phase Encoding Dir.	R >> L
AutoAlign	Head > Brain
Initial Position	L0.4 P0.3 F18.4
L	0.4 mm
P	0.3 mm
H	18.4 mm
Initial Orientation	C > T
C > T	-15.30
> S	0.00
Initial Rotation	0.09 deg

**Geometry - Saturation**

Special Saturation	None
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**Geometry - Tim Planning Suite**

Set-n-Go Protocol	Off
Table Position	38 mm
Table Position	H
Inline Composing	Off

**System - Miscellaneous**

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

**System - Adjustments**

Adjustment Strategy	Standard
B0 Shim	Tune up
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	63.679699 MHz
? Ref. Amplitude 1H	0.000 V
Reset	Off
Image Scaling	1.000

**Physio - Signal**

1st Signal/Mode	None
TR	504.0 ms
Concatenations	1

**Physio - Cardiac**

Fat-Water Contrast	Standard
Magn. Preparation	None
Dark Blood	Off
FoV Read	230 mm
FoV Phase	81.3 %

**Physio - Cardiac**

Phase Resolution	80 %
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**Inline - Subtraction**

Subtract	Off
Measurements	1
StdDev	Off
Save Original Images	On

**Inline - MIP**

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

**Inline - Composing**

Inline Composing	Off
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**Sequence - Part 1**

Sequence Name	se
RF Pulse Type	Normal
Gradient Mode	Normal
Bandwidth	150 Hz/Px
Asymmetric Echo	Off

**Sequence - Part 2**

Introduction	On
Acoustic noise reduction	Off

**Sequence - Assistant**

SAR Assistant	TR
Max. TR	650.0 ms
Allowed Delay	30 s

**\\MR Physics 2 - AAT\Brain\Brain all\AAT options\t2\_tse\_sag-AAT-DRB \***TA: 54 sec Coil Selection: Auto Voxel Size: 0.3×0.3×4.0 mm<sup>3</sup> 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

**Resolution - Common**

FoV Phase	100.0 %
Slice Thickness	4.0 mm
Base Resolution	336
Phase Resolution	80 %
Interpolation	On

**Resolution - Acceleration**

Acceleration mode	GRAPPA
Reference Scans	TSE/Separate
Acceleration Factor PE	2
Reference Lines PE	32
Deep Resolve	On
Phase Partial Fourier	Off

**Routine**

Slice Group	1
Slices	30
Distance Factor	25 %
Position	R0.4 A13.5 F24.8 mm
Orientation	S > T0.8 > C-0.5
Phase Encoding Dir.	A >> P
Phase Oversampling	20 %
FoV Read	230 mm
FoV Phase	100.0 %
Slice Thickness	4.0 mm
TR	4480.0 ms
TE	81.00 ms
Averages	1
Concatenations	1
AutoAlign	Head > Brain

**Resolution - Filter**

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

**Geometry - Common**

Slice Group	1
Slices	30
Distance Factor	25 %
Position	R0.4 A13.5 F24.8 mm
Orientation	S > T0.8 > C-0.5
Phase Encoding Dir.	A >> P
Phase Oversampling	20 %
FoV Read	230 mm
FoV Phase	100.0 %
Slice Thickness	4.0 mm
TR	4480.0 ms
Multi-Slice Mode	Interleaved
Series	Interleaved
Concatenations	1

**Contrast - Common**

TR	4480.0 ms
TE	81.00 ms
MTC	Off
Magn. Preparation	None
Flip Angle	141 deg
Fat-Water Contrast	Standard
Dark Blood	Off
Contrasts	1
Wrap-up Magn.	Restore
Reconstruction	Magnitude

**Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Each Measurement

**Resolution - Common**

FoV Read	230 mm
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**Geometry - AutoAlign**

Slice Group	1
Position	R0.4 A13.5 F24.8 mm
Orientation	S > T0.8 > C-0.5
Phase Encoding Dir.	A >> P
AutoAlign	Head > Brain
Initial Position	R0.4 A13.5 F24.8
R	0.4 mm
A	13.5 mm
F	24.8 mm
Initial Orientation	S > T
S > T	0.80
> C	-0.50

**Geometry - AutoAlign**

Initial Rotation	-11.73 deg
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**Geometry - Navigator****Geometry - Saturation**

Special Saturation	None
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**Geometry - Tim Planning Suite**

Set-n-Go Protocol	Off
Table Position	25 mm
Table Position	F
Inline Composing	Off

**System - Miscellaneous**

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

**System - Adjustments**

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

**System - Adjust Volume**

Position	R0.4 A13.5 F24.8 mm
Orientation	S > T0.8 > C-0.5
Rotation	-11.73 deg
A >> P	230 mm
F >> H	230 mm
R >> L	149 mm
Reset	Off

**System - Tx/Rx**

Frequency 1H	63.679699 MHz
? Ref. Amplitude 1H	0.000 V
Reset	Off
Image Scaling	1.000

**Physio - Signal**

1st Signal/Mode	None
TR	4480.0 ms
Concatenations	1

**Physio - Cardiac**

Fat-Water Contrast	Standard
Magn. Preparation	None
Dark Blood	Off
FoV Read	230 mm
FoV Phase	100.0 %
Phase Resolution	80 %
Motion Correction	None

**Physio - PACE**

Resp. Control	Off
Concatenations	1

**Inline - Subtraction**

Subtract	Off
Measurements	1
StdDev	Off
Motion Correction	None
Save Original Images	On

**Inline - MIP**

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

**Inline - Composing**

Inline Composing	Off
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**Sequence - Part 1**

Sequence Name	tseR
Dimension	2D
RF Pulse Type	Fast
Gradient Mode	Fast
Flow Compensation	None
Bandwidth	191 Hz/Px
Echo Spacing	8.06 ms
Free Echo Spacing	Off
Define	Turbo Factor
Turbo Factor	17
Echo Trains per Slice	10

**Sequence - Part 2**

Introduction	On
Phase Correction	Off
Compensate T2 Decay	Off
Fast Mode	Off
WARP	Off
Red. EC Sensitivity	Off
Acoustic noise reduction	Off

**Sequence - Part 2**

Reduce Motion Sens.	On
Motion Correction	None

**Sequence - Assistant**

SAR Assistant	Off
Allowed Delay	30 s



**\\MR Physics 2 - AAT\Brain\Brain all\AAT options\t2\_tse\_dark-fluid\_cor\_4mm-AAT-DRG \***TA: 1:50 min Coil Selection: Auto Voxel Size: 0.4×0.4×5.0 mm<sup>3</sup> 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	Default
Inline Movie	Off

**Routine**

Slice Group	1
Slices	30
Distance Factor	30 %
Position	L0.6 A17.5 H37.8 mm
Orientation	C > T-16.3 > S1.2
Phase Encoding Dir.	R >> L
Phase Oversampling	0 %
FoV Read	230 mm
FoV Phase	79.4 %
Slice Thickness	5.0 mm
TR	9000.0 ms
TE	105.00 ms
Averages	1
Concatenations	2
AutoAlign	Head > Brain

**Contrast - Common**

TR	9000.0 ms
TE	105.00 ms
TD	0.00 ms
MTC	Off
Magn. Preparation	Slice-sel. IR
TI	2500 ms
Freeze Suppr. Tissue	On
Flip Angle	150 deg
Fat-Water Contrast	Fat Saturation
Fat Saturation	Strong
Dark Blood	Off
Contrasts	1
Wrap-up Magn.	None
Reconstruction	Magnitude

**Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Each Measurement

**Resolution - Common**

FoV Read	230 mm
FoV Phase	79.4 %
Slice Thickness	5.0 mm
Base Resolution	272
Phase Resolution	75 %
Interpolation	On

**Resolution - Acceleration**

Acceleration mode	GRAPPA
Reference Scans	Integrated
Acceleration Factor PE	2
Reference Lines PE	47
Deep Resolve	On
Phase Partial Fourier	Off

**Resolution - Filter**

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

**Geometry - Common**

Slice Group	1
Slices	30
Distance Factor	30 %
Position	L0.6 A17.5 H37.8 mm
Orientation	C > T-16.3 > S1.2
Phase Encoding Dir.	R >> L
Phase Oversampling	0 %
FoV Read	230 mm
FoV Phase	79.4 %
Slice Thickness	5.0 mm
TR	9000.0 ms
Multi-Slice Mode	Interleaved
Series	Interleaved
Concatenations	2

**Geometry - AutoAlign**

Slice Group	1
Position	L0.6 A17.5 H37.8 mm
Orientation	C > T-16.3 > S1.2
Phase Encoding Dir.	R >> L
AutoAlign	Head > Brain
Initial Position	L0.4 P0.3 F18.4
L	0.4 mm
P	0.3 mm
H	18.4 mm
Initial Orientation	C > T
C > T	-15.30

**Geometry - AutoAlign**

> S	0.00
Initial Rotation	0.09 deg

**Geometry - Navigator****Geometry - Saturation**

Special Saturation	None
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**Geometry - Tim Planning Suite**

Set-n-Go Protocol	Off
Table Position	38 mm
Table Position	H
Inline Composing	Off

**System - Miscellaneous**

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

**System - Adjustments**

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

**System - Adjust Volume**

Position	L0.6 A17.5 H37.8 mm
Orientation	C > T-16.3 > S1.2
Rotation	-2.22 deg
R >> L	183 mm
F >> H	230 mm
A >> P	194 mm
Reset	Off

**System - Tx/Rx**

Frequency 1H	63.679699 MHz
? Ref. Amplitude 1H	0.000 V
Reset	Off
Image Scaling	1.000

**Physio - Signal**

1st Signal/Mode	None
TR	9000.0 ms
Concatenations	2

**Physio - Cardiac**

Fat-Water Contrast	Fat Saturation
Magn. Preparation	Slice-sel. IR
TI	2500 ms
Dark Blood	Off
FoV Read	230 mm
FoV Phase	79.4 %
Phase Resolution	75 %
Motion Correction	None

**Physio - PACE**

Resp. Control	Off
Concatenations	2

**Inline - Subtraction**

Subtract	Off
Measurements	1
StdDev	Off
Motion Correction	None
Save Original Images	On

**Inline - MIP**

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

**Inline - Composing**

Inline Composing	Off
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**Sequence - Part 1**

Sequence Name	tir
Dimension	2D
RF Pulse Type	Normal
Gradient Mode	Normal
Flow Compensation	None
Bandwidth	191 Hz/Px
Echo Spacing	9.58 ms
Free Echo Spacing	Off
Define	Turbo Factor
Turbo Factor	21
Echo Trains per Slice	5

**Sequence - Part 2**

Introduction	On
Phase Correction	Automatic
Compensate T2 Decay	Off
Fast Mode	Off
WARP	Off
Red. EC Sensitivity	Off

**Sequence - Part 2**

Acoustic noise reduction	Off
Reduce Motion Sens.	On
Motion Correction	None

**Sequence - Assistant**

SAR Assistant	Off
Allowed Delay	30 s

**\\MR Physics 2 - AAT\Brain\Brain all\AAT options\resolve\_4scan\_trace\_tra-AAT-SMS \***TA: 2:20 min Coil Selection: Auto Voxel Size: 1.4x1.4x4.0 mm<sup>3</sup> Acc:: 4 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	30
Distance Factor	30 %
Position	L0.2 A11.1 H11.6 mm
Orientation	T > C9.3
Phase Encoding Dir.	A >> P
Phase Oversampling	0 %
FoV Read	230 mm
FoV Phase	100.0 %
Slice Thickness	4.0 mm
TR	2720.0 ms
TE 1	70 ms
TE 2	111 ms
Concatenations	1
AutoAlign	---

**Contrast - Common**

TR	2720.0 ms
TE 1	70 ms
TE 2	111 ms
MTC	Off
Magn. Preparation	None
Flip Angle	180 deg
Fat-Water Contrast	Fat Saturation
Fat Saturation	Strong
Contrasts	2
Reconstruction	Magnitude

**Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1

**Resolution - Common**

FoV Read	230 mm
FoV Phase	100.0 %

**Resolution - Common**

Slice Thickness	4.0 mm
Base Resolution	160
Phase Resolution	100 %
Interpolation	Off

**Resolution - Acceleration**

Accel. Mode	SMS
Reference Scans	EPI/Separate
Acceleration Factor PE	2
Reference Lines PE	80
SMS Factor	2
FOV Shift Factor	3
Phase Partial Fourier	Off
Readout Partial Fourier	7/8
Readout Segments	5

**Resolution - Filter**

Raw Filter	On
Distortion Correction	2D
Normalize	Prescan
Noise Masking	Off

**Geometry - Common**

Slice Group	1
Slices	30
Distance Factor	30 %
Position	L0.2 A11.1 H11.6 mm
Orientation	T > C9.3
Phase Encoding Dir.	A >> P
Phase Oversampling	0 %
FoV Read	230 mm
FoV Phase	100.0 %
Slice Thickness	4.0 mm
TR	2720.0 ms
Multi-Slice Mode	Interleaved
Series	Interleaved
Concatenations	1

**Geometry - AutoAlign**

Slice Group	1
Position	L0.2 A11.1 H11.6 mm
Orientation	T > C9.3
Phase Encoding Dir.	A >> P
AutoAlign	---
Initial Position	L0.2 A11.1 H11.6
L	0.2 mm
A	11.1 mm
H	11.6 mm
Initial Orientation	T > C
T > C	9.30

**Geometry - AutoAlign**

> S	0.00
Initial Rotation	-2.51 deg

**Geometry - Saturation**

Special Saturation	None
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**Geometry - Tim Planning Suite**

Set-n-Go Protocol	Off
Table Position	12 mm
Table Position	H
Inline Composing	Off

**System - Miscellaneous**

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

**System - Adjustments**

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

**System - Adjust Volume**

Position	L0.2 A11.1 H11.6 mm
Orientation	T > C9.3
Rotation	-2.51 deg
A >> P	230 mm
R >> L	230 mm
F >> H	155 mm
Reset	Off

**System - Tx/Rx**

Frequency 1H	63.679699 MHz
? Ref. Amplitude 1H	0.000 V
Reset	Off
Image Scaling	1.000

**Physio - Signal**

1st Signal/Mode	None
TR	2720.0 ms
Concatenations	1

**Diff**

Diffusion Mode	4-Scan Trace
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**Diff**

Diff. Directions	4
Diffusion Scheme	Monopolar
Diff. Weightings	2
b-value 1	0 s/mm <sup>2</sup>
b-value 2	1000 s/mm <sup>2</sup>
Averages 1	1
Averages 2	2
Invert Gray Scale	Off
Diff. Weighted Images	Off
Trace Weighted Images	On
ADC Maps	On
Exponential ADC Maps	Off
b-value >=	0 s/mm <sup>2</sup>
ADC Noise Threshold	15
Noise Masking	Off
Calculated b-value	500 s/mm <sup>2</sup>
Calculated Image	On

**Sequence - Part 1**

Sequence Name	resolve
Dimension	2D
RF Pulse Type	Normal
Gradient Mode	Fast
Bandwidth	919 Hz/Px
Echo Spacing	0.36 ms
Optimization	Min. TR
EPI Factor	80

**Sequence - Part 2**

Introduction	On
Reacquisition Mode	On

**Sequence - Assistant**

SAR Assistant	Off
Optimization	Min. TR

**\\MR Physics 2 - AAT\Brain\Brain all\AAT options\t2\_swi\_wave4\_2mm-AAT \***TA: 2:06 min Coil Selection: Auto Voxel Size: 0.9×0.9×2.0 mm<sup>3</sup> 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	On
Graphic segment	2nd Segment
Inline Movie	Off

**Resolution - Common**

FoV Phase	93.8 %
Slice Thickness	2.0 mm
Base Resolution	256
Phase Resolution	75 %
Slice Resolution	75 %

**Resolution - Acceleration**

Acceleration mode	Wave-CAIPI
Reference Scans	GRE/Separate
Acceleration Factor PE	2
Reference Lines PE	30
Acceleration Factor 3D	2
Reference Lines 3D	30

**Routine**

Slab Group	1
Slabs	1
Distance Factor	20 %
Position	Isocenter
Orientation	Transversal
Phase Encoding Dir.	R >> L
Slices per Slab	72
Phase Oversampling	0 %
FoV Read	230 mm
FoV Phase	93.8 %
Slice Thickness	2.0 mm
TR	49.0 ms
TE	40.00 ms
Averages	1
Concatenations	1
AutoAlign	Head > Brain

**Resolution - Filter**

Distortion Correction	2D
Normalize	Prescan

**Geometry - Common**

Slab Group	1
Slabs	1
Distance Factor	20 %
Position	Isocenter
Orientation	Transversal
Phase Encoding Dir.	R >> L
Slices per Slab	72
Phase Oversampling	0 %
FoV Read	230 mm
FoV Phase	93.8 %
Slice Thickness	2.0 mm
TR	49.0 ms
Multi-Slice Mode	Sequential
Series	Interleaved
Concatenations	1

**Contrast - Common**

TR	49.0 ms
TE	40.00 ms
Magn. Preparation	None
Flip Angle	15 deg
Fat-Water Contrast	Standard
Dark Blood	Off
Contrasts	1
SWI	On
Reconstruction	Magnitude

**Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Each Measurement

**Geometry - AutoAlign**

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

**Resolution - Common**

FoV Read	230 mm
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**Geometry - Saturation**

Saturation Mode	Standard
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**Geometry - Saturation**

Special Saturation	None
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**Sequence - Assistant**

SAR Assistant	Off
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**Geometry - Tim Planning Suite**

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

**System - Miscellaneous**

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

**System - Adjustments**

Adjustment Strategy	Standard
B0 Shim	Standard
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	216 mm
A >> P	230 mm
F >> H	144 mm
Reset	Off

**System - Tx/Rx**

Frequency 1H	63.679699 MHz
? Ref. Amplitude 1H	0.000 V
Reset	Off
Image Scaling	1.000

**Sequence - Part 1**

Sequence Name	swiW_r
Dimension	3D
RF Pulse Type	Normal
Gradient Mode	Fast
Flow Compensation	On
Bandwidth	100 Hz/Px
Segments	1

**Sequence - Part 2**

Introduction	On
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**\\MR Physics 2 - AAT\Brain\Brain all\AAT options\t2\_space\_dark-fluid\_sag\_3D-AAT-CS \***TA: 2:50 min Coil Selection: Auto Voxel Size: 0.5×0.5×1.0 mm<sup>3</sup> Acc:: 5.0 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	R0.8 A5.9 F49.2 mm
Orientation	Sagittal
Phase Encoding Dir.	A >> P
Slices per Slab	176
Phase Oversampling	0 %
Slice Oversampling	0.0 %
FoV Read	250 mm
FoV Phase	100.0 %
Slice Thickness	1.00 mm
TR	7000.0 ms
TE	385.00 ms
Averages	1.0
Concatenations	1
AutoAlign	---

**Contrast - Common**

TR	7000.0 ms
TE	385.00 ms
MTC	Off
Magn. Preparation	Non-sel. T2 prep. IR
T1	2050 ms
T2 Prep. Duration	125 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

**Contrast - Dynamic**

Reordering	Linear
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**Resolution - Common**

FoV Read	250 mm
FoV Phase	100.0 %
Slice Thickness	1.00 mm
Base Resolution	256
Phase Resolution	100 %
Slice Resolution	60 %
Interpolation	On

**Resolution - Acceleration**

Acceleration mode	CS
Total Factor	5.0
Reference Scans	Integrated
Reference Lines PE	24
Reference Lines 3D	24
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	R0.8 A5.9 F49.2 mm
Orientation	Sagittal
Phase Encoding Dir.	A >> P
Slices per Slab	176
Phase Oversampling	0 %
Slice Oversampling	0.0 %
FoV Read	250 mm
FoV Phase	100.0 %
Slice Thickness	1.00 mm
TR	7000.0 ms
Concatenations	1

**Geometry - AutoAlign**

Slab Group	1
Position	R0.8 A5.9 F49.2 mm
Orientation	Sagittal
Phase Encoding Dir.	A >> P
AutoAlign	---
Initial Position	R0.8 A5.9 F49.2



**Geometry - AutoAlign**

R	0.8 mm
A	5.9 mm
F	49.2 mm
Initial Orientation	Sagittal
Initial Rotation	0.00 deg

**Geometry - Navigator****Geometry - Saturation**

Special Saturation	None
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**Geometry - Tim Planning Suite**

Set-n-Go Protocol	Off
Table Position	49 mm
Table Position	F
Inline Composing	Off

**System - Miscellaneous**

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

**System - Adjustments**

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

**System - Adjust Volume**

Position	R0.8 A5.9 F49.2 mm
Orientation	Sagittal
Rotation	0.00 deg
A >> P	250 mm
F >> H	250 mm
R >> L	176 mm
Reset	Off

**System - Tx/Rx**

Frequency 1H	63.679699 MHz
? Ref. Amplitude 1H	0.000 V
Reset	Off
Image Scaling	1.000

**Physio - Signal**

1st Signal/Mode	None
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**Physio - Signal**

Trigger Delay	0 ms
TR	7000.0 ms
Concatenations	1

**Physio - Cardiac**

Fat-Water Contrast	Fat Saturation
Magn. Preparation	Non-sel. T2 prep. IR
T1	2050 ms
T2 Prep. Duration	125 ms
Dark Blood	Off
FoV Read	250 mm
FoV Phase	100.0 %
Phase Resolution	100 %

**Physio - PACE**

Resp. Control	Off
Concatenations	1

**Inline - Subtraction**

Subtract	Off
Measurements	1
StdDev	Off
Save Original Images	On

**Inline - MIP**

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

**Inline - 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	3.50 ms
Turbo Factor	220
Echo Train Duration	767 ms

**Sequence - Part 2**

Introduction	On
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**Sequence - Assistant**

SAR Assistant	Off
Allowed Delay	30 s

**\\MR Physics 2 - AAT\Brain\Brain all\AAT options\tof\_cs\_acc5.0-AAT \***TA: 3:28 min Coil Selection: Auto Voxel Size: 0.5×0.5×0.5 mm<sup>3</sup> Acc:: 5.0 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	4
Distance Factor	-20 %
Position	R2.1 P9.1 F31.3 mm
Orientation	T > C-6.6 > S1.7
Phase Encoding Dir.	R >> L
Slices per Slab	40
Phase Oversampling	0 %
Slice Oversampling	30.0 %
FoV Read	220 mm
FoV Phase	89.5 %
Slice Thickness	0.5 mm
TR	23.3 ms
TE	7.12 ms
Averages	1
Concatenations	4
AutoAlign	Head > Brain

**Contrast - Common**

TR	23.3 ms
TE	7.12 ms
TD	0.00 ms
MTC	Off
Magn. Preparation	None
Flip Angle Mode	Constant
Flip Angle	20 deg
Fat-Water Contrast	Standard
Dark Blood	Off
Contrasts	1
Wrap-up Magn.	None
Reconstruction	Magnitude

**Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Off

**Contrast - Dynamic**

Reordering	Linear
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**Contrast - Angio**

Flow Direction	F >> H
TONE Ramp	70 %

**Resolution - Common**

FoV Read	220 mm
FoV Phase	89.5 %
Slice Thickness	0.5 mm
Base Resolution	304
Phase Resolution	99 %
Slice Resolution	65 %
Trajectory	Cartesian
Interpolation	1.50

**Resolution - Acceleration**

Acceleration mode	CS
Total Factor	5.0
Reference Scans	Integrated
Reference Lines PE	24
Reference Lines 3D	32
Phase Partial Fourier	Off
Slice Partial Fourier	Off
Asymmetric Echo	Weak
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 %
Position	R2.1 P9.1 F31.3 mm
Orientation	T > C-6.6 > S1.7
Phase Encoding Dir.	R >> L
Slices per Slab	40
Phase Oversampling	0 %
Slice Oversampling	30.0 %
FoV Read	220 mm
FoV Phase	89.5 %
Slice Thickness	0.5 mm
TR	23.3 ms
Multi-Slice Mode	Sequential

**Geometry - Common**

Series	Descending
Concatenations	4

**Geometry - AutoAlign**

Slab Group	1
Position	R2.1 P9.1 F31.3 mm
Orientation	T > C-6.6 > S1.7
Phase Encoding Dir.	R >> L
AutoAlign	Head > Brain
Initial Position	R3.7 A4.5 F24.4
R	3.7 mm
A	4.5 mm
F	24.4 mm
Initial Orientation	T > C
T > C	-18.50
> S	0.00
Initial Rotation	89.40 deg

**Geometry - Navigator****Geometry - Saturation**

Special Saturation	Tracking H
Gap	10.00 mm
Thickness	40.00 mm

**Geometry - Tim Planning Suite**

Set-n-Go Protocol	Off
Table Position	31 mm
Table Position	F
Inline Composing	Off

**System - Miscellaneous**

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

**System - Adjustments**

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

**System - Adjust Volume**

Position	Isocenter
Orientation	Transversal

**System - Adjust Volume**

Rotation	0.00 deg
A >> P	263 mm
R >> L	350 mm
F >> H	350 mm
Reset	Off

**System - Tx/Rx**

Frequency 1H	63.679699 MHz
? Ref. Amplitude 1H	0.000 V
Reset	Off
Image Scaling	1.000

**Physio - Signal**

1st Signal/Mode	None
TR	23.3 ms
Segments	1
Concatenations	4

**Physio - Cardiac**

Tagging	None
Fat-Water Contrast	Standard
Magn. Preparation	None
Dark Blood	Off
FoV Read	220 mm
FoV Phase	89.5 %
Phase Resolution	99 %
Cine	Off
Trajectory	Cartesian
Dummy Heartbeats	1

**Physio - PACE**

Resp. Control	Off
Concatenations	4

**Inline - Subtraction**

Subtract	Off
Measurements	1
StdDev	Off
Save Original Images	On

**Inline - Cardiac**

Inline Evaluation	Off
Magn. Preparation	None
Save Original Images	On
Contrasts	1
TE	7.12 ms
TR	23.3 ms

**Inline - MIP**

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

**Inline - MIP**

Number of Radial Views	12
Axis of Radial Views	H-F
Save Original Images	On
MPR Sag	Off
MPR Cor	Off
MPR Tra	Off

**Inline - Composing**

Inline Composing	Off
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**Sequence - Part 1**

Sequence Name	fl_r
Dimension	3D
Sequence Type	Gre
Excitation	TONE
RF Pulse Type	Normal
Gradient Mode	Fast
Flow Compensation	Slice/Read
Reordering	Linear
Bandwidth	100 Hz/Px
Echo Spacing	14.87 ms
Asymmetric Echo	Weak
Optimization	None
Define	Segments
Segments	1

**Sequence - Part 2**

Introduction	On
RF Spoiling	On
Phase Enc. Rewinder	On

**Sequence - Assistant**

SAR Assistant	Flip Angle
Min Flip Angle	15 deg
Allowed Delay	0 s
Optimization	None

**\\MR Physics 2 - AAT\Brain\Brain all\AAT options\1\_tse\_fs\_tra-AAT-DRB \***TA: 2:01 min Coil Selection: Auto Voxel Size: 0.4×0.4×3.0 mm<sup>3</sup> 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

**Resolution - Common**

FoV Read	230 mm
FoV Phase	100.0 %
Slice Thickness	3.0 mm
Base Resolution	256
Phase Resolution	75 %
Interpolation	On

**Resolution - Acceleration**

Acceleration mode	GRAPPA
Reference Scans	TSE/Separate
Acceleration Factor PE	2
Reference Lines PE	32
Deep Resolve	On
Phase Partial Fourier	Off

**Routine**

Slice Group	1
Slices	32
Distance Factor	20 %
Position	R1.0 P4.9 F109.1 mm
Orientation	T > C11.0 > S2.1
Phase Encoding Dir.	R >> L
Phase Oversampling	50 %
FoV Read	230 mm
FoV Phase	100.0 %
Slice Thickness	3.0 mm
TR	518.0 ms
TE	20.00 ms
Averages	1
Concatenations	3
AutoAlign	Head > Brain

**Resolution - Filter**

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

**Geometry - Common**

Slice Group	1
Slices	32
Distance Factor	20 %
Position	R1.0 P4.9 F109.1 mm
Orientation	T > C11.0 > S2.1
Phase Encoding Dir.	R >> L
Phase Oversampling	50 %
FoV Read	230 mm
FoV Phase	100.0 %
Slice Thickness	3.0 mm
TR	518.0 ms
Multi-Slice Mode	Interleaved
Series	Interleaved
Concatenations	3

**Contrast - Common**

TR	518.0 ms
TE	20.00 ms
TD	0.00 ms
MTC	Off
Magn. Preparation	None
Flip Angle	160 deg
Fat-Water Contrast	Fat Saturation
Fat Saturation	Strong
Dark Blood	Off
Contrasts	1
Wrap-up Magn.	None
Reconstruction	Magnitude

**Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Off

**Geometry - AutoAlign**

Slice Group	1
Position	R1.0 P4.9 F109.1 mm
Orientation	T > C11.0 > S2.1
Phase Encoding Dir.	R >> L
AutoAlign	Head > Brain
Initial Position	R1.0 P4.9 F109.1
R	1.0 mm
P	4.9 mm
F	109.1 mm
Initial Orientation	T > C
T > C	11.00

**Geometry - AutoAlign**

> S	2.10
Initial Rotation	89.53 deg

**Geometry - Navigator****Geometry - Saturation**

Special Saturation	None
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**Geometry - Tim Planning Suite**

Set-n-Go Protocol	Off
Table Position	109 mm
Table Position	F
Inline Composing	Off

**System - Miscellaneous**

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

**System - Adjustments**

Adjustment Strategy	Standard
B0 Shim	Standard
CoilShim	Auto
Adjustment Tolerance	None
Adjust with Body Coil	Off
Confirm Frequency	Never
Assume Silicone	Off

**System - Adjust Volume**

Position	R1.0 P4.9 F109.1 mm
Orientation	T > C11.0 > S2.1
Rotation	89.53 deg
R >> L	230 mm
A >> P	230 mm
F >> H	115 mm
Reset	Off

**System - Tx/Rx**

Frequency 1H	63.679699 MHz
? Ref. Amplitude 1H	0.000 V
Reset	Off
Image Scaling	1.000

**Physio - Signal**

1st Signal/Mode	None
TR	518.0 ms
Concatenations	3

**Physio - Cardiac**

Fat-Water Contrast	Fat Saturation
Magn. Preparation	None
Dark Blood	Off
FoV Read	230 mm
FoV Phase	100.0 %
Phase Resolution	75 %
Motion Correction	None

**Physio - PACE**

Resp. Control	Off
Concatenations	3

**Inline - Subtraction**

Subtract	Off
Measurements	1
StdDev	Off
Motion Correction	None
Save Original Images	On

**Inline - MIP**

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

**Inline - Composing**

Inline Composing	Off
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**Sequence - Part 1**

Sequence Name	tse_rs
Dimension	2D
RF Pulse Type	Fast
Gradient Mode	Fast
Flow Compensation	Slice
Bandwidth	201 Hz/Px
Echo Spacing	10.0 ms
Free Echo Spacing	Off
Define	Turbo Factor
Turbo Factor	2
Echo Trains per Slice	72

**Sequence - Part 2**

Introduction	On
Phase Correction	Automatic
Compensate T2 Decay	Off
Fast Mode	Off
WARP	Off
Red. EC Sensitivity	Off
Acoustic noise reduction	Off

**Sequence - Part 2**

Reduce Motion Sens.	Off
Motion Correction	None

**Sequence - Assistant**

SAR Assistant	Flip Angle
Min Flip Angle	150 deg
Allowed Delay	30 s



**\\MR Physics 2 - AAT\Brain\Brain all\AAT options\t2\_tse\_dark-fluid\_cor\_3mm-AAT-DRB \***TA: 1:52 min Coil Selection: Auto Voxel Size: 0.5×0.5×3.0 mm<sup>3</sup> 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	Default
Inline Movie	Off

**Routine**

Slice Group	1
Slices	15
Distance Factor	30 %
Position	R0.1 A34.7 H36.0 mm
Orientation	C > T-24.8 > S1.0
Phase Encoding Dir.	R >> L
Phase Oversampling	50 %
FoV Read	230 mm
FoV Phase	80.4 %
Slice Thickness	3.0 mm
TR	9000.0 ms
TE	106.00 ms
Averages	1
Concatenations	2
AutoAlign	---

**Contrast - Common**

TR	9000.0 ms
TE	106.00 ms
TD	0.00 ms
MTC	Off
Magn. Preparation	Slice-sel. IR
TI	2500 ms
Freeze Suppr. Tissue	On
Flip Angle	150 deg
Fat-Water Contrast	Fat Saturation
Fat Saturation	Strong
Dark Blood	Off
Contrasts	1
Wrap-up Magn.	None
Reconstruction	Magnitude

**Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Each Measurement

**Resolution - Common**

FoV Read	230 mm
FoV Phase	80.4 %
Slice Thickness	3.0 mm
Base Resolution	224
Phase Resolution	75 %
Interpolation	On

**Resolution - Acceleration**

Acceleration mode	GRAPPA
Reference Scans	TSE/Separate
Acceleration Factor PE	2
Reference Lines PE	32
Deep Resolve	On
Phase Partial Fourier	Off

**Resolution - Filter**

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

**Geometry - Common**

Slice Group	1
Slices	15
Distance Factor	30 %
Position	R0.1 A34.7 H36.0 mm
Orientation	C > T-24.8 > S1.0
Phase Encoding Dir.	R >> L
Phase Oversampling	50 %
FoV Read	230 mm
FoV Phase	80.4 %
Slice Thickness	3.0 mm
TR	9000.0 ms
Multi-Slice Mode	Interleaved
Series	Interleaved
Concatenations	2

**Geometry - AutoAlign**

Slice Group	1
Position	R0.1 A34.7 H36.0 mm
Orientation	C > T-24.8 > S1.0
Phase Encoding Dir.	R >> L
AutoAlign	---
Initial Position	R0.1 A34.7 H36.0
R	0.1 mm
A	34.7 mm
H	36.0 mm
Initial Orientation	C > T
C > T	-24.80

**Geometry - AutoAlign**

> S	1.00
Initial Rotation	-0.70 deg

**Geometry - Navigator****Geometry - Saturation**

Special Saturation	None
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**Geometry - Tim Planning Suite**

Set-n-Go Protocol	Off
Table Position	36 mm
Table Position	H
Inline Composing	Off

**System - Miscellaneous**

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

**System - Adjustments**

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

**System - Adjust Volume**

Position	R0.1 A34.7 H36.0 mm
Orientation	C > T-24.8 > S1.0
Rotation	-0.70 deg
R >> L	185 mm
F >> H	230 mm
A >> P	58 mm
Reset	Off

**System - Tx/Rx**

Frequency 1H	63.679699 MHz
? Ref. Amplitude 1H	0.000 V
Reset	Off
Image Scaling	1.000

**Physio - Signal**

1st Signal/Mode	None
TR	9000.0 ms
Concatenations	2

**Physio - Cardiac**

Fat-Water Contrast	Fat Saturation
Magn. Preparation	Slice-sel. IR
TI	2500 ms
Dark Blood	Off
FoV Read	230 mm
FoV Phase	80.4 %
Phase Resolution	75 %
Motion Correction	None

**Physio - PACE**

Resp. Control	Off
Concatenations	2

**Inline - Subtraction**

Subtract	Off
Measurements	1
StdDev	Off
Motion Correction	None
Save Original Images	On

**Inline - MIP**

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

**Inline - Composing**

Inline Composing	Off
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**Sequence - Part 1**

Sequence Name	tir
Dimension	2D
RF Pulse Type	Normal
Gradient Mode	Normal
Flow Compensation	None
Bandwidth	191 Hz/Px
Echo Spacing	9.60 ms
Free Echo Spacing	Off
Define	Turbo Factor
Turbo Factor	21
Echo Trains per Slice	5

**Sequence - Part 2**

Introduction	On
Phase Correction	Automatic
Compensate T2 Decay	Off
Fast Mode	Off
WARP	Off
Red. EC Sensitivity	Off

**Sequence - Part 2**

Acoustic noise reduction	Off
Reduce Motion Sens.	On
Motion Correction	None

**Sequence - Assistant**

SAR Assistant	Off
Allowed Delay	30 s

**\\MR Physics 2 - AAT\Brain\Brain all\AAT options\t1\_se\_tra-AAT-DRG \***TA: 1:28 min Coil Selection: Auto Voxel Size: 0.4×0.4×4.0 mm<sup>3</sup> 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	30
Distance Factor	30 %
Position	L1.7 A22.5 H56.1 mm
Orientation	T > S-2.2 > C0.9
Phase Encoding Dir.	R >> L
Phase Oversampling	0 %
FoV Read	230 mm
FoV Phase	81.3 %
Slice Thickness	4.0 mm
TR	504.0 ms
TE	11.00 ms
Averages	1
Concatenations	1
AutoAlign	Head > Brain

**Contrast - Common**

TR	504.0 ms
TE	11.00 ms
MTC	Off
Magn. Preparation	None
Flip Angle 1	90 deg
Flip Angle 2	180 deg
Fat-Water Contrast	Standard
Dark Blood	Off
Blood Suppression	Off
Contrasts	1
Reconstruction	Magnitude

**Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Off

**Resolution - Common**

FoV Read	230 mm
FoV Phase	81.3 %
Slice Thickness	4.0 mm
Base Resolution	256
Phase Resolution	80 %
Interpolation	On

**Resolution - Acceleration**

Deep Resolve	On
Phase Partial Fourier	Off
Asymmetric Echo	Off

**Resolution - Filter**

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

**Geometry - Common**

Slice Group	1
Slices	30
Distance Factor	30 %
Position	L1.7 A22.5 H56.1 mm
Orientation	T > S-2.2 > C0.9
Phase Encoding Dir.	R >> L
Phase Oversampling	0 %
FoV Read	230 mm
FoV Phase	81.3 %
Slice Thickness	4.0 mm
TR	504.0 ms
Multi-Slice Mode	Interleaved
Series	Interleaved
Concatenations	1

**Geometry - AutoAlign**

Slice Group	1
Position	L1.7 A22.5 H56.1 mm
Orientation	T > S-2.2 > C0.9
Phase Encoding Dir.	R >> L
AutoAlign	Head > Brain
Initial Position	L0.6 A4.3 H0.0
L	0.6 mm
A	4.3 mm
H	0.0 mm
Initial Orientation	Transversal
Initial Rotation	90.00 deg

**Geometry - Saturation**

Special Saturation	None
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**Geometry - Tim Planning Suite**

Set-n-Go Protocol	Off
Table Position	56 mm
Table Position	H
Inline Composing	Off

**System - Miscellaneous**

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

**System - Adjustments**

Adjustment Strategy	Standard
B0 Shim	Tune up
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	63.679699 MHz
? Ref. Amplitude 1H	0.000 V
Reset	Off
Image Scaling	1.000

**Physio - Signal**

1st Signal/Mode	None
TR	504.0 ms
Concatenations	1

**Physio - Cardiac**

Fat-Water Contrast	Standard
Magn. Preparation	None
Dark Blood	Off
FoV Read	230 mm
FoV Phase	81.3 %
Phase Resolution	80 %

**Inline - Subtraction**

Subtract	Off
Measurements	1
StdDev	Off
Save Original Images	On

**Inline - MIP**

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

**Inline - Composing**

Inline Composing	Off
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**Sequence - Part 1**

Sequence Name	se
RF Pulse Type	Normal
Gradient Mode	Normal
Bandwidth	150 Hz/Px
Asymmetric Echo	Off

**Sequence - Part 2**

Introduction	On
Acoustic noise reduction	Off

**Sequence - Assistant**

SAR Assistant	TR
Max. TR	650.0 ms
Allowed Delay	30 s

**\\MR Physics 2 - AAT\Brain\Brain all\AAT options\t1\_tse\_tra\_3mm-AAT-DRB \***TA: 1:00 min Coil Selection: Auto Voxel Size: 0.5×0.5×3.0 mm<sup>3</sup> 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**

Slice Group	1
Slices	52
Distance Factor	10 %
Position	L0.0 P2.0 H24.5 mm
Orientation	T > C3.9 > S-3.3
Phase Encoding Dir.	R >> L
Phase Oversampling	0 %
FoV Read	230 mm
FoV Phase	80.4 %
Slice Thickness	3.0 mm
TR	505.0 ms
TE	10.00 ms
Averages	1
Concatenations	4
AutoAlign	Head > IAC

**Contrast - Common**

TR	505.0 ms
TE	10.00 ms
TD	0.00 ms
MTC	Off
Magn. Preparation	None
Flip Angle	150 deg
Fat-Water Contrast	Standard
Dark Blood	Off
Contrasts	1
Wrap-up Magn.	None
Reconstruction	Magnitude

**Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Each Measurement

**Resolution - Common**

FoV Read	230 mm
FoV Phase	80.4 %
Slice Thickness	3.0 mm
Base Resolution	224
Phase Resolution	80 %
Interpolation	On

**Resolution - Acceleration**

Acceleration mode	GRAPPA
Reference Scans	TSE/Separate
Acceleration Factor PE	2
Reference Lines PE	32
Deep Resolve	On
Phase Partial Fourier	Off

**Resolution - Filter**

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

**Geometry - Common**

Slice Group	1
Slices	52
Distance Factor	10 %
Position	L0.0 P2.0 H24.5 mm
Orientation	T > C3.9 > S-3.3
Phase Encoding Dir.	R >> L
Phase Oversampling	0 %
FoV Read	230 mm
FoV Phase	80.4 %
Slice Thickness	3.0 mm
TR	505.0 ms
Multi-Slice Mode	Interleaved
Series	Interleaved
Concatenations	4

**Geometry - AutoAlign**

Slice Group	1
Position	L0.0 P2.0 H24.5 mm
Orientation	T > C3.9 > S-3.3
Phase Encoding Dir.	R >> L
AutoAlign	Head > IAC
Initial Position	L0.0 P2.0 H24.5
L	0.0 mm
P	2.0 mm
H	24.5 mm
Initial Orientation	T > C
T > C	3.90

**Geometry - AutoAlign**

> S	-3.30
Initial Rotation	83.84 deg

**Geometry - Navigator****Geometry - Saturation**

Special Saturation	None
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**Geometry - Tim Planning Suite**

Set-n-Go Protocol	Off
Table Position	24 mm
Table Position	H
Inline Composing	Off

**System - Miscellaneous**

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

**System - Adjustments**

Adjustment Strategy	Standard
B0 Shim	Tune up
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	63.679699 MHz
? Ref. Amplitude 1H	0.000 V
Reset	Off
Image Scaling	1.000

**Physio - Signal**

1st Signal/Mode	None
TR	505.0 ms
Concatenations	4

**Physio - Cardiac**

Fat-Water Contrast	Standard
Magn. Preparation	None
Dark Blood	Off
FoV Read	230 mm
FoV Phase	80.4 %
Phase Resolution	80 %
Motion Correction	None

**Physio - PACE**

Resp. Control	Off
Concatenations	4

**Inline - Subtraction**

Subtract	Off
Measurements	1
StdDev	Off
Motion Correction	None
Save Original Images	On

**Inline - MIP**

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

**Inline - Composing**

Inline Composing	Off
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**Sequence - Part 1**

Sequence Name	tse_rr
Dimension	2D
RF Pulse Type	Normal
Gradient Mode	Normal
Flow Compensation	Read
Bandwidth	170 Hz/Px
Echo Spacing	10.2 ms
Free Echo Spacing	Off
Define	Turbo Factor
Turbo Factor	3
Echo Trains per Slice	24

**Sequence - Part 2**

Introduction	On
Phase Correction	Off
Compensate T2 Decay	Off
Fast Mode	Off
WARP	Off
Red. EC Sensitivity	Off
Acoustic noise reduction	Off

**Sequence - Part 2**

Reduce Motion Sens.	Off
Motion Correction	None

**Sequence - Assistant**

SAR Assistant	Flip Angle > TR
Min Flip Angle	130 deg
Max. TR	650.0 ms
Allowed Delay	30 s



**\\MR Physics 2 - AAT\Brain\Brain all\AAT options\t2\_space\_tra\_cs5-AAT-CS \***TA: 1:59 min Coil Selection: Auto Voxel Size: 0.3×0.3×0.6 mm<sup>3</sup> Acc:: 4.0 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	R2.9 P5.5 F26.5 mm
Orientation	T > C3.9 > S-3.3
Phase Encoding Dir.	R >> L
Slices per Slab	64
Phase Oversampling	0 %
Slice Oversampling	0.0 %
FoV Read	190 mm
FoV Phase	100.0 %
Slice Thickness	0.60 mm
TR	1200.0 ms
TE	176.00 ms
Averages	1.6
Concatenations	1
AutoAlign	Head > IAC

**Contrast - Common**

TR	1200.0 ms
TE	176.00 ms
MTC	Off
Magn. Preparation	None
Flip Angle Mode	Constant
Flip Angle	150 deg
Fat-Water Contrast	Standard
Dark Blood	Off
Blood Suppression	Off
Wrap-up Magn.	Restore
Reconstruction	Magnitude

**Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Each Measurement
Reordering	Linear

**Resolution - Common**

FoV Read	190 mm
FoV Phase	100.0 %
Slice Thickness	0.60 mm
Base Resolution	320
Phase Resolution	85 %
Slice Resolution	100 %
Interpolation	On

**Resolution - Acceleration**

Acceleration mode	CS
Total Factor	4.0
Reference Scans	Integrated
Reference Lines PE	64
Reference Lines 3D	32
Phase Partial Fourier	Off
Slice Partial Fourier	Off
Elliptical Scanning	On

**Resolution - Filter**

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

**Geometry - Common**

Slab Group	1
Slabs	1
Position	R2.9 P5.5 F26.5 mm
Orientation	T > C3.9 > S-3.3
Phase Encoding Dir.	R >> L
Slices per Slab	64
Phase Oversampling	0 %
Slice Oversampling	0.0 %
FoV Read	190 mm
FoV Phase	100.0 %
Slice Thickness	0.60 mm
TR	1200.0 ms
Concatenations	1

**Geometry - AutoAlign**

Slab Group	1
Position	R2.9 P5.5 F26.5 mm
Orientation	T > C3.9 > S-3.3
Phase Encoding Dir.	R >> L
AutoAlign	Head > IAC
Initial Position	R2.9 P5.5 F26.5
R	2.9 mm
P	5.5 mm
F	26.5 mm

**Geometry - AutoAlign**

Initial Orientation	T > C
T > C	3.90
> S	-3.30
Initial Rotation	83.84 deg

**Geometry - Navigator****Geometry - Saturation**

Special Saturation	None
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**Geometry - Tim Planning Suite**

Set-n-Go Protocol	Off
Table Position	26 mm
Table Position	F
Inline Composing	Off

**System - Miscellaneous**

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

**System - Adjustments**

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

**System - Adjust Volume**

Position	R2.9 P5.5 F26.5 mm
Orientation	T > C3.9 > S-3.3
Rotation	83.84 deg
R >> L	190 mm
A >> P	190 mm
F >> H	39 mm
Reset	Off

**System - Tx/Rx**

Frequency 1H	63.679699 MHz
? Ref. Amplitude 1H	0.000 V
Reset	Off
Image Scaling	3.000

**Physio - Signal**

1st Signal/Mode	None
Trigger Delay	0 ms

**Physio - Signal**

TR	1200.0 ms
Concatenations	1

**Physio - Cardiac**

Fat-Water Contrast	Standard
Magn. Preparation	None
Dark Blood	Off
FoV Read	190 mm
FoV Phase	100.0 %
Phase Resolution	85 %

**Physio - PACE**

Resp. Control	Off
Concatenations	1

**Inline - Subtraction**

Subtract	Off
Measurements	1
StdDev	Off
Save Original Images	On

**Inline - MIP**

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

**Inline - Composing**

Inline Composing	Off
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**Sequence - Part 1**

Sequence Name	spcR
Dimension	3D
Excitation	Slab-sel.
RF Pulse Type	Normal
Gradient Mode	Fast
Flow Compensation	None
Reordering	Linear
Bandwidth	340 Hz/Px
Echo Spacing	5.70 ms
Turbo Factor	78
Echo Train Duration	456 ms

**Sequence - Part 2**

Introduction	On
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**Sequence - Assistant**

SAR Assistant	Off
Allowed Delay	30 s

**\\MR Physics 2 - AAT\Brain\Brain all\AAT options\t1\_tse\_tra\_3mm-AAT-DRB \***TA: 1:00 min Coil Selection: Auto Voxel Size: 0.5×0.5×3.0 mm<sup>3</sup> 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**

Slice Group	1
Slices	52
Distance Factor	10 %
Position	L0.0 P2.0 H24.5 mm
Orientation	T > C3.9 > S-3.3
Phase Encoding Dir.	R >> L
Phase Oversampling	0 %
FoV Read	230 mm
FoV Phase	80.4 %
Slice Thickness	3.0 mm
TR	505.0 ms
TE	10.00 ms
Averages	1
Concatenations	4
AutoAlign	Head > IAC

**Contrast - Common**

TR	505.0 ms
TE	10.00 ms
TD	0.00 ms
MTC	Off
Magn. Preparation	None
Flip Angle	150 deg
Fat-Water Contrast	Standard
Dark Blood	Off
Contrasts	1
Wrap-up Magn.	None
Reconstruction	Magnitude

**Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Each Measurement

**Resolution - Common**

FoV Read	230 mm
FoV Phase	80.4 %
Slice Thickness	3.0 mm
Base Resolution	224
Phase Resolution	80 %
Interpolation	On

**Resolution - Acceleration**

Acceleration mode	GRAPPA
Reference Scans	TSE/Separate
Acceleration Factor PE	2
Reference Lines PE	32
Deep Resolve	On
Phase Partial Fourier	Off

**Resolution - Filter**

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

**Geometry - Common**

Slice Group	1
Slices	52
Distance Factor	10 %
Position	L0.0 P2.0 H24.5 mm
Orientation	T > C3.9 > S-3.3
Phase Encoding Dir.	R >> L
Phase Oversampling	0 %
FoV Read	230 mm
FoV Phase	80.4 %
Slice Thickness	3.0 mm
TR	505.0 ms
Multi-Slice Mode	Interleaved
Series	Interleaved
Concatenations	4

**Geometry - AutoAlign**

Slice Group	1
Position	L0.0 P2.0 H24.5 mm
Orientation	T > C3.9 > S-3.3
Phase Encoding Dir.	R >> L
AutoAlign	Head > IAC
Initial Position	L0.0 P2.0 H24.5
L	0.0 mm
P	2.0 mm
H	24.5 mm
Initial Orientation	T > C
T > C	3.90

**Geometry - AutoAlign**

> S	-3.30
Initial Rotation	83.84 deg

**Geometry - Navigator****Geometry - Saturation**

Special Saturation	None
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**Geometry - Tim Planning Suite**

Set-n-Go Protocol	Off
Table Position	24 mm
Table Position	H
Inline Composing	Off

**System - Miscellaneous**

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

**System - Adjustments**

Adjustment Strategy	Standard
B0 Shim	Tune up
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	63.679699 MHz
? Ref. Amplitude 1H	0.000 V
Reset	Off
Image Scaling	1.000

**Physio - Signal**

1st Signal/Mode	None
TR	505.0 ms
Concatenations	4

**Physio - Cardiac**

Fat-Water Contrast	Standard
Magn. Preparation	None
Dark Blood	Off
FoV Read	230 mm
FoV Phase	80.4 %
Phase Resolution	80 %
Motion Correction	None

**Physio - PACE**

Resp. Control	Off
Concatenations	4

**Inline - Subtraction**

Subtract	Off
Measurements	1
StdDev	Off
Motion Correction	None
Save Original Images	On

**Inline - MIP**

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

**Inline - Composing**

Inline Composing	Off
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**Sequence - Part 1**

Sequence Name	tse_rr
Dimension	2D
RF Pulse Type	Normal
Gradient Mode	Normal
Flow Compensation	Read
Bandwidth	170 Hz/Px
Echo Spacing	10.2 ms
Free Echo Spacing	Off
Define	Turbo Factor
Turbo Factor	3
Echo Trains per Slice	24

**Sequence - Part 2**

Introduction	On
Phase Correction	Off
Compensate T2 Decay	Off
Fast Mode	Off
WARP	Off
Red. EC Sensitivity	Off
Acoustic noise reduction	Off

**Sequence - Part 2**

Reduce Motion Sens.	Off
Motion Correction	None

**Sequence - Assistant**

SAR Assistant	Flip Angle > TR
Min Flip Angle	130 deg
Max. TR	650.0 ms
Allowed Delay	30 s

**\\MR Physics 2 - AAT\Brain\Brain all\AAT options\t1\_tse\_cor\_3mm-AAT-DRB \***TA: 1:04 min Coil Selection: Auto Voxel Size: 0.5×0.5×3.0 mm<sup>3</sup> 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**

Slice Group	1
Slices	52
Distance Factor	10 %
Position	R4.2 P17.1 H7.4 mm
Orientation	C > S6.9 > T-0.4
Phase Encoding Dir.	R >> L
Phase Oversampling	0 %
FoV Read	220 mm
FoV Phase	85.7 %
Slice Thickness	3.0 mm
TR	505.0 ms
TE	10.00 ms
Averages	1
Concatenations	4
AutoAlign	Head > Brain

**Contrast - Common**

TR	505.0 ms
TE	10.00 ms
TD	0.00 ms
MTC	Off
Magn. Preparation	None
Flip Angle	150 deg
Fat-Water Contrast	Standard
Dark Blood	Off
Contrasts	1
Wrap-up Magn.	None
Reconstruction	Magnitude

**Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Each Measurement

**Resolution - Common**

FoV Read	220 mm
FoV Phase	85.7 %
Slice Thickness	3.0 mm
Base Resolution	224
Phase Resolution	80 %
Interpolation	On

**Resolution - Acceleration**

Acceleration mode	GRAPPA
Reference Scans	TSE/Separate
Acceleration Factor PE	2
Reference Lines PE	32
Deep Resolve	On
Phase Partial Fourier	Off

**Resolution - Filter**

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

**Geometry - Common**

Slice Group	1
Slices	52
Distance Factor	10 %
Position	R4.2 P17.1 H7.4 mm
Orientation	C > S6.9 > T-0.4
Phase Encoding Dir.	R >> L
Phase Oversampling	0 %
FoV Read	220 mm
FoV Phase	85.7 %
Slice Thickness	3.0 mm
TR	505.0 ms
Multi-Slice Mode	Interleaved
Series	Interleaved
Concatenations	4

**Geometry - AutoAlign**

Slice Group	1
Position	R4.2 P17.1 H7.4 mm
Orientation	C > S6.9 > T-0.4
Phase Encoding Dir.	R >> L
AutoAlign	Head > Brain
Initial Position	R4.2 P17.1 H7.4
R	4.2 mm
P	17.1 mm
H	7.4 mm
Initial Orientation	C > S
C > S	6.90

**Geometry - AutoAlign**

> T	-0.40
Initial Rotation	-0.83 deg

**Geometry - Navigator****Geometry - Saturation**

Special Saturation	None
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**Geometry - Tim Planning Suite**

Set-n-Go Protocol	Off
Table Position	7 mm
Table Position	H
Inline Composing	Off

**System - Miscellaneous**

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

**System - Adjustments**

Adjustment Strategy	Standard
B0 Shim	Tune up
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	63.679699 MHz
? Ref. Amplitude 1H	0.000 V
Reset	Off
Image Scaling	1.000

**Physio - Signal**

1st Signal/Mode	None
TR	505.0 ms
Concatenations	4

**Physio - Cardiac**

Fat-Water Contrast	Standard
Magn. Preparation	None
Dark Blood	Off
FoV Read	220 mm
FoV Phase	85.7 %
Phase Resolution	80 %
Motion Correction	None

**Physio - PACE**

Resp. Control	Off
Concatenations	4

**Inline - Subtraction**

Subtract	Off
Measurements	1
StdDev	Off
Motion Correction	None
Save Original Images	On

**Inline - MIP**

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

**Inline - Composing**

Inline Composing	Off
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**Sequence - Part 1**

Sequence Name	tse_rr
Dimension	2D
RF Pulse Type	Normal
Gradient Mode	Normal
Flow Compensation	Read
Bandwidth	170 Hz/Px
Echo Spacing	10.2 ms
Free Echo Spacing	Off
Define	Turbo Factor
Turbo Factor	3
Echo Trains per Slice	26

**Sequence - Part 2**

Introduction	On
Phase Correction	Off
Compensate T2 Decay	Off
Fast Mode	Off
WARP	Off
Red. EC Sensitivity	Off
Acoustic noise reduction	Off

**Sequence - Part 2**

Reduce Motion Sens.	On
Motion Correction	None

**Sequence - Assistant**

SAR Assistant	Flip Angle > TR
Min Flip Angle	130 deg
Max. TR	650.0 ms
Allowed Delay	30 s



**\\MR Physics 2 - AAT\Brain\Brain all\AAT options\t2\_tse\_tra\_512-AAT-DRB \***TA: 56 sec Coil Selection: Auto Voxel Size: 0.2×0.2×5.0 mm<sup>3</sup> 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	Default
Inline Movie	Off

**Resolution - Common**

FoV Phase	90.6 %
Slice Thickness	5.0 mm
Base Resolution	512
Phase Resolution	75 %
Interpolation	On

**Resolution - Acceleration**

Acceleration mode	GRAPPA
Reference Scans	TSE/Separate
Acceleration Factor PE	2
Reference Lines PE	32
Deep Resolve	On
Phase Partial Fourier	Off

**Routine**

Slice Group	1
Slices	24
Distance Factor	30 %
Position	L0.6 A4.3 H0.0 mm
Orientation	Transversal
Phase Encoding Dir.	R >> L
Phase Oversampling	0 %
FoV Read	230 mm
FoV Phase	90.6 %
Slice Thickness	5.0 mm
TR	4360.0 ms
TE	92.00 ms
Averages	1
Concatenations	1
AutoAlign	Head > Brain

**Resolution - Filter**

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

**Geometry - Common**

Slice Group	1
Slices	24
Distance Factor	30 %
Position	L0.6 A4.3 H0.0 mm
Orientation	Transversal
Phase Encoding Dir.	R >> L
Phase Oversampling	0 %
FoV Read	230 mm
FoV Phase	90.6 %
Slice Thickness	5.0 mm
TR	4360.0 ms
Multi-Slice Mode	Interleaved
Series	Interleaved
Concatenations	1

**Contrast - Common**

TR	4360.0 ms
TE	92.00 ms
MTC	Off
Magn. Preparation	None
Flip Angle	150 deg
Fat-Water Contrast	Standard
Dark Blood	Off
Contrasts	1
Wrap-up Magn.	None
Reconstruction	Magnitude

**Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Each Measurement

**Resolution - Common**

FoV Read	230 mm
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**Geometry - AutoAlign**

Slice Group	1
Position	L0.6 A4.3 H0.0 mm
Orientation	Transversal
Phase Encoding Dir.	R >> L
AutoAlign	Head > Brain
Initial Position	L0.6 A4.3 H0.0
L	0.6 mm
A	4.3 mm
F	0.0 mm
Initial Orientation	Transversal
Initial Rotation	90.00 deg

**Geometry - Navigator****Geometry - Saturation**

Special Saturation	None
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**Geometry - Tim Planning Suite**

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

**System - Miscellaneous**

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

**System - Adjustments**

Adjustment Strategy	Standard
B0 Shim	Tune up
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	63.679699 MHz
? Ref. Amplitude 1H	0.000 V
Reset	Off
Image Scaling	1.000

**Physio - Signal**

1st Signal/Mode	None
TR	4360.0 ms
Concatenations	1

**Physio - Cardiac**

Fat-Water Contrast	Standard
Magn. Preparation	None
Dark Blood	Off

**Physio - Cardiac**

FoV Read	230 mm
FoV Phase	90.6 %
Phase Resolution	75 %
Motion Correction	None

**Physio - PACE**

Resp. Control	Off
Concatenations	1

**Inline - Subtraction**

Subtract	Off
Measurements	1
StdDev	Off
Motion Correction	None
Save Original Images	On

**Inline - MIP**

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

**Inline - Composing**

Inline 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	191 Hz/Px
Echo Spacing	10.2 ms
Free Echo Spacing	Off
Define	Turbo Factor
Turbo Factor	17
Echo Trains per Slice	11

**Sequence - Part 2**

Introduction	On
Phase Correction	Automatic
Compensate T2 Decay	Off
Fast Mode	Off
WARP	Off
Red. EC Sensitivity	Off
Acoustic noise reduction	Off
Reduce Motion Sens.	On
Motion Correction	None

**Sequence - Assistant**

SAR Assistant	Flip Angle > TR
Min Flip Angle	130 deg
Max. TR	5500.0 ms
Allowed Delay	30 s

**\\MR Physics 2 - AAT\Brain\Brain all\AAT options\t2\_tse\_dark-fluid\_cor\_4mm-AAT-DRB \***TA: 1:54 min Coil Selection: Auto Voxel Size: 0.4x0.4x4.0 mm<sup>3</sup> 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	Default
Inline Movie	Off

**Resolution - Common**

FoV Read	230 mm
FoV Phase	88.2 %
Slice Thickness	4.0 mm
Base Resolution	272
Phase Resolution	75 %
Interpolation	On

**Resolution - Acceleration**

Acceleration mode	GRAPPA
Reference Scans	TSE/Separate
Acceleration Factor PE	2
Reference Lines PE	32
Deep Resolve	On
Phase Partial Fourier	Off

**Routine**

Slice Group	1
Slices	35
Distance Factor	30 %
Position	L0.4 P0.3 F18.4 mm
Orientation	C > T-15.3
Phase Encoding Dir.	R >> L
Phase Oversampling	10 %
FoV Read	230 mm
FoV Phase	88.2 %
Slice Thickness	4.0 mm
TR	9000.0 ms
TE	105.00 ms
Averages	1
Concatenations	2
AutoAlign	Head > Brain

**Resolution - Filter**

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

**Geometry - Common**

Slice Group	1
Slices	35
Distance Factor	30 %
Position	L0.4 P0.3 F18.4 mm
Orientation	C > T-15.3
Phase Encoding Dir.	R >> L
Phase Oversampling	10 %
FoV Read	230 mm
FoV Phase	88.2 %
Slice Thickness	4.0 mm
TR	9000.0 ms
Multi-Slice Mode	Interleaved
Series	Interleaved
Concatenations	2

**Contrast - Common**

TR	9000.0 ms
TE	105.00 ms
TD	0.00 ms
MTC	Off
Magn. Preparation	Slice-sel. IR
TI	2500 ms
Freeze Suppr. Tissue	On
Flip Angle	150 deg
Fat-Water Contrast	Fat Saturation
Fat Saturation	Strong
Dark Blood	Off
Contrasts	1
Wrap-up Magn.	None
Reconstruction	Magnitude

**Geometry - AutoAlign**

Slice Group	1
Position	L0.4 P0.3 F18.4 mm
Orientation	C > T-15.3
Phase Encoding Dir.	R >> L
AutoAlign	Head > Brain
Initial Position	L0.4 P0.3 F18.4
L	0.4 mm
P	0.3 mm
F	18.4 mm
Initial Orientation	C > T
C > T	-15.30

**Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Each Measurement

**Geometry - AutoAlign**

> S	0.00
Initial Rotation	0.09 deg

**Geometry - Navigator****Geometry - Saturation**

Special Saturation	None
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**Geometry - Tim Planning Suite**

Set-n-Go Protocol	Off
Table Position	18 mm
Table Position	F
Inline Composing	Off

**System - Miscellaneous**

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

**System - Adjustments**

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

**System - Adjust Volume**

Position	L0.4 P0.3 F18.4 mm
Orientation	C > T-15.3
Rotation	0.09 deg
R >> L	203 mm
F >> H	230 mm
A >> P	181 mm
Reset	Off

**System - Tx/Rx**

Frequency 1H	63.679699 MHz
? Ref. Amplitude 1H	0.000 V
Reset	Off
Image Scaling	1.000

**Physio - Signal**

1st Signal/Mode	None
TR	9000.0 ms
Concatenations	2

**Physio - Cardiac**

Fat-Water Contrast	Fat Saturation
Magn. Preparation	Slice-sel. IR
TI	2500 ms
Dark Blood	Off
FoV Read	230 mm
FoV Phase	88.2 %
Phase Resolution	75 %
Motion Correction	None

**Physio - PACE**

Resp. Control	Off
Concatenations	2

**Inline - Subtraction**

Subtract	Off
Measurements	1
StdDev	Off
Motion Correction	None
Save Original Images	On

**Inline - MIP**

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

**Inline - Composing**

Inline Composing	Off
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**Sequence - Part 1**

Sequence Name	tir
Dimension	2D
RF Pulse Type	Normal
Gradient Mode	Normal
Flow Compensation	None
Bandwidth	191 Hz/Px
Echo Spacing	9.58 ms
Free Echo Spacing	Off
Define	Turbo Factor
Turbo Factor	21
Echo Trains per Slice	5

**Sequence - Part 2**

Introduction	On
Phase Correction	Automatic
Compensate T2 Decay	Off
Fast Mode	Off
WARP	Off
Red. EC Sensitivity	Off

**Sequence - Part 2**

Acoustic noise reduction	Off
Reduce Motion Sens.	On
Motion Correction	None

**Sequence - Assistant**

SAR Assistant	Off
Allowed Delay	30 s

**\\MR Physics 2 - AAT\Brain\Brain all\AAT options\t2\_space\_tra\_cs5\_iso-AAT-CS \***TA: 2:09 min Coil Selection: Auto Voxel Size: 0.3×0.3×0.8 mm<sup>3</sup> Acc:: 4.0 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	R3.4 P4.5 F65.4 mm
Orientation	T > C1.4 > S-0.8
Phase Encoding Dir.	R >> L
Slices per Slab	64
Phase Oversampling	10 %
Slice Oversampling	0.0 %
FoV Read	190 mm
FoV Phase	100.0 %
Slice Thickness	0.80 mm
TR	1200.0 ms
TE	173.00 ms
Averages	1.6
Concatenations	1
AutoAlign	Head > IAC

**Contrast - Common**

TR	1200.0 ms
TE	173.00 ms
MTC	Off
Magn. Preparation	None
Flip Angle Mode	Constant
Flip Angle	150 deg
Fat-Water Contrast	Standard
Dark Blood	Off
Blood Suppression	Off
Wrap-up Magn.	Restore
Reconstruction	Magnitude

**Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Each Measurement
Reordering	Linear

**Resolution - Common**

FoV Read	190 mm
FoV Phase	100.0 %
Slice Thickness	0.80 mm
Base Resolution	320
Phase Resolution	85 %
Slice Resolution	100 %
Interpolation	On

**Resolution - Acceleration**

Acceleration mode	CS
Total Factor	4.0
Reference Scans	Integrated
Reference Lines PE	64
Reference Lines 3D	32
Phase Partial Fourier	Off
Slice Partial Fourier	Off
Elliptical Scanning	On

**Resolution - Filter**

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

**Geometry - Common**

Slab Group	1
Slabs	1
Position	R3.4 P4.5 F65.4 mm
Orientation	T > C1.4 > S-0.8
Phase Encoding Dir.	R >> L
Slices per Slab	64
Phase Oversampling	10 %
Slice Oversampling	0.0 %
FoV Read	190 mm
FoV Phase	100.0 %
Slice Thickness	0.80 mm
TR	1200.0 ms
Concatenations	1

**Geometry - AutoAlign**

Slab Group	1
Position	R3.4 P4.5 F65.4 mm
Orientation	T > C1.4 > S-0.8
Phase Encoding Dir.	R >> L
AutoAlign	Head > IAC
Initial Position	R3.9 A5.4 H0.5
R	3.9 mm
A	5.4 mm
F	0.5 mm

**Geometry - AutoAlign**

Initial Orientation	T > C
T > C	-4.50
> S	0.90
Initial Rotation	87.73 deg

**Geometry - Navigator****Geometry - Saturation**

Special Saturation	None
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**Geometry - Tim Planning Suite**

Set-n-Go Protocol	Off
Table Position	65 mm
Table Position	F
Inline Composing	Off

**System - Miscellaneous**

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

**System - Adjustments**

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

**System - Adjust Volume**

Position	R3.4 P4.5 F65.4 mm
Orientation	T > C 1.4 > S-0.8
Rotation	90.04 deg
R >> L	190 mm
A >> P	190 mm
F >> H	52 mm
Reset	Off

**System - Tx/Rx**

Frequency 1H	63.679699 MHz
? Ref. Amplitude 1H	0.000 V
Reset	Off
Image Scaling	3.000

**Physio - Signal**

1st Signal/Mode	None
Trigger Delay	0 ms

**Physio - Signal**

TR	1200.0 ms
Concatenations	1

**Physio - Cardiac**

Fat-Water Contrast	Standard
Magn. Preparation	None
Dark Blood	Off
FoV Read	190 mm
FoV Phase	100.0 %
Phase Resolution	85 %

**Physio - PACE**

Resp. Control	Off
Concatenations	1

**Inline - Subtraction**

Subtract	Off
Measurements	1
StdDev	Off
Save Original Images	On

**Inline - MIP**

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

**Inline - Composing**

Inline Composing	Off
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**Sequence - Part 1**

Sequence Name	spcR
Dimension	3D
Excitation	Slab-sel.
RF Pulse Type	Normal
Gradient Mode	Fast
Flow Compensation	None
Reordering	Linear
Bandwidth	340 Hz/Px
Echo Spacing	5.42 ms
Turbo Factor	78
Echo Train Duration	434 ms

**Sequence - Part 2**

Introduction	On
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**Sequence - Assistant**

SAR Assistant	Off
Allowed Delay	30 s



**\\MR Physics 2 - AAT\Brain\Brain all\AAT options\t1\_tse\_r\_tra\_2mm-AAT-DRB \***TA: 1:38 min Coil Selection: Auto Voxel Size: 0.4x0.4x2.0 mm<sup>3</sup> 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

**Resolution - Common**

FoV Phase	100.0 %
Slice Thickness	2.0 mm
Base Resolution	224
Phase Resolution	75 %
Interpolation	On

**Resolution - Acceleration**

Acceleration mode	GRAPPA
Reference Scans	TSE/Separate
Acceleration Factor PE	2
Reference Lines PE	32
Deep Resolve	On
Phase Partial Fourier	Off

**Routine**

Slice Group	1
Slices	15
Distance Factor	10 %
Position	L4.7 A5.2 F0.1 mm
Orientation	T > C1.8 > S-1.0
Phase Encoding Dir.	R >> L
Phase Oversampling	30 %
FoV Read	170 mm
FoV Phase	100.0 %
Slice Thickness	2.0 mm
TR	566.0 ms
TE	14.00 ms
Averages	3
Concatenations	1
AutoAlign	Head > IAC

**Resolution - Filter**

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

**Geometry - Common**

Slice Group	1
Slices	15
Distance Factor	10 %
Position	L4.7 A5.2 F0.1 mm
Orientation	T > C1.8 > S-1.0
Phase Encoding Dir.	R >> L
Phase Oversampling	30 %
FoV Read	170 mm
FoV Phase	100.0 %
Slice Thickness	2.0 mm
TR	566.0 ms
Multi-Slice Mode	Interleaved
Series	Interleaved
Concatenations	1

**Contrast - Common**

TR	566.0 ms
TE	14.00 ms
MTC	Off
Magn. Preparation	None
Flip Angle	150 deg
Fat-Water Contrast	Standard
Dark Blood	Off
Contrasts	1
Wrap-up Magn.	None
Reconstruction	Magnitude

**Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Each Measurement

**Resolution - Common**

FoV Read	170 mm
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**Geometry - AutoAlign**

Slice Group	1
Position	L4.7 A5.2 F0.1 mm
Orientation	T > C1.8 > S-1.0
Phase Encoding Dir.	R >> L
AutoAlign	Head > IAC
Initial Position	L4.7 A5.2 F0.1
L	4.7 mm
A	5.2 mm
F	0.1 mm
Initial Orientation	T > C
T > C	1.80
> S	-1.00

**Geometry - AutoAlign**

Initial Rotation	86.45 deg
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**Geometry - Navigator****Geometry - Saturation**

Special Saturation	None
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**Geometry - Tim Planning Suite**

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

**System - Miscellaneous**

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

**System - Adjustments**

Adjustment Strategy	Standard
B0 Shim	Tune up
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	63.679699 MHz
? Ref. Amplitude 1H	0.000 V
Reset	Off
Image Scaling	1.000

**Physio - Signal**

1st Signal/Mode	None
TR	566.0 ms
Concatenations	1

**Physio - Cardiac**

Fat-Water Contrast	Standard
Magn. Preparation	None
Dark Blood	Off
FoV Read	170 mm
FoV Phase	100.0 %
Phase Resolution	75 %
Motion Correction	None

**Physio - PACE**

Resp. Control	Off
Concatenations	1

**Inline - Subtraction**

Subtract	Off
Measurements	1
StdDev	Off
Motion Correction	None
Save Original Images	On

**Inline - MIP**

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

**Inline - Composing**

Inline Composing	Off
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**Sequence - Part 1**

Sequence Name	tse_rs
Dimension	2D
RF Pulse Type	Normal
Gradient Mode	Fast
Flow Compensation	Slice
Bandwidth	170 Hz/Px
Echo Spacing	13.9 ms
Free Echo Spacing	Off
Define	Turbo Factor
Turbo Factor	2
Echo Trains per Slice	55

**Sequence - Part 2**

Introduction	On
Phase Correction	Automatic
Compensate T2 Decay	Off
Fast Mode	Off
WARP	Off
Red. EC Sensitivity	Off
Acoustic noise reduction	Off

**Sequence - Part 2**

Reduce Motion Sens.	On
Motion Correction	None

**Sequence - Assistant**

SAR Assistant	Flip Angle > TR
Min Flip Angle	130 deg
Max. TR	650.0 ms
Allowed Delay	30 s

**\\MR Physics 2 - AAT\Brain\Brain all\AAT options\t1\_tse\_r\_cor\_2mm-AAT-DRB \***TA: 1:39 min Coil Selection: Auto Voxel Size: 0.4×0.4×2.0 mm<sup>3</sup> 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	2nd Segment
Inline Movie	Off

**Resolution - Common**

FoV Phase	100.0 %
Slice Thickness	2.0 mm
Base Resolution	224
Phase Resolution	75 %
Interpolation	On

**Resolution - Acceleration**

Acceleration mode	GRAPPA
Reference Scans	TSE/Separate
Acceleration Factor PE	2
Reference Lines PE	32
Deep Resolve	On
Phase Partial Fourier	Off

**Routine**

Slice Group	1
Slices	15
Distance Factor	10 %
Position	R0.5 A0.1 H0.5 mm
Orientation	C > T3.4 > S-0.3
Phase Encoding Dir.	R >> L
Phase Oversampling	30 %
FoV Read	170 mm
FoV Phase	100.0 %
Slice Thickness	2.0 mm
TR	568.0 ms
TE	14.00 ms
Averages	3
Concatenations	1
AutoAlign	Head > IAC

**Resolution - Filter**

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

**Geometry - Common**

Slice Group	1
Slices	15
Distance Factor	10 %
Position	R0.5 A0.1 H0.5 mm
Orientation	C > T3.4 > S-0.3
Phase Encoding Dir.	R >> L
Phase Oversampling	30 %
FoV Read	170 mm
FoV Phase	100.0 %
Slice Thickness	2.0 mm
TR	568.0 ms
Multi-Slice Mode	Interleaved
Series	Interleaved
Concatenations	1

**Contrast - Common**

TR	568.0 ms
TE	14.00 ms
MTC	Off
Magn. Preparation	None
Flip Angle	150 deg
Fat-Water Contrast	Standard
Dark Blood	Off
Contrasts	1
Wrap-up Magn.	None
Reconstruction	Magnitude

**Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Each Measurement

**Resolution - Common**

FoV Read	170 mm
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**Geometry - AutoAlign**

Slice Group	1
Position	R0.5 A0.1 H0.5 mm
Orientation	C > T3.4 > S-0.3
Phase Encoding Dir.	R >> L
AutoAlign	Head > IAC
Initial Position	R0.5 A0.1 H0.5
R	0.5 mm
A	0.1 mm
H	0.5 mm
Initial Orientation	C > T
C > T	3.40
> S	-0.30

**Geometry - AutoAlign**

Initial Rotation	-0.47 deg
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**Geometry - Navigator****Geometry - Saturation**

Special Saturation	None
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**Geometry - Tim Planning Suite**

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

**System - Miscellaneous**

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

**System - Adjustments**

Adjustment Strategy	Standard
B0 Shim	Tune up
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	63.679699 MHz
? Ref. Amplitude 1H	0.000 V
Reset	Off
Image Scaling	1.000

**Physio - Signal**

1st Signal/Mode	None
TR	568.0 ms
Concatenations	1

**Physio - Cardiac**

Fat-Water Contrast	Standard
Magn. Preparation	None
Dark Blood	Off
FoV Read	170 mm
FoV Phase	100.0 %
Phase Resolution	75 %
Motion Correction	None

**Physio - PACE**

Resp. Control	Off
Concatenations	1

**Inline - Subtraction**

Subtract	Off
Measurements	1
StdDev	Off
Motion Correction	None
Save Original Images	On

**Inline - MIP**

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

**Inline - Composing**

Inline Composing	Off
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**Sequence - Part 1**

Sequence Name	tse_rs
Dimension	2D
RF Pulse Type	Normal
Gradient Mode	Fast
Flow Compensation	Slice
Bandwidth	170 Hz/Px
Echo Spacing	13.9 ms
Free Echo Spacing	Off
Define	Turbo Factor
Turbo Factor	2
Echo Trains per Slice	55

**Sequence - Part 2**

Introduction	On
Phase Correction	Automatic
Compensate T2 Decay	Off
Fast Mode	Off
WARP	Off
Red. EC Sensitivity	Off
Acoustic noise reduction	Off

**Sequence - Part 2**

Reduce Motion Sens.	On
Motion Correction	None

**Sequence - Assistant**

SAR Assistant	Flip Angle > TR
Min Flip Angle	130 deg
Max. TR	650.0 ms
Allowed Delay	30 s

**\\MR Physics 2 - AAT\Brain\Brain all\AAT options\t2\_tse\_stir\_tra-AAT-DRB \***TA: 1:52 min Coil Selection: Auto Voxel Size: 0.4×0.4×2.0 mm<sup>3</sup> 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	Default
Inline Movie	Off

**Routine**

Slice Group	1
Slices	25
Distance Factor	10 %
Position	L2.0 A4.8 F17.5 mm
Orientation	T > S-0.4 > C0.1
Phase Encoding Dir.	R >> L
Phase Oversampling	0 %
FoV Read	180 mm
FoV Phase	100.0 %
Slice Thickness	2.0 mm
TR	8110.0 ms
TE	95.00 ms
Averages	2
Concatenations	1
AutoAlign	---

**Contrast - Common**

TR	8110.0 ms
TE	95.00 ms
MTC	Off
Magn. Preparation	Slice-sel. IR
TI	160 ms
Freeze Suppr. Tissue	Off
Flip Angle	150 deg
Fat-Water Contrast	Standard
Dark Blood	Off
Contrasts	1
Wrap-up Magn.	None
Reconstruction	Magnitude

**Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Off

**Resolution - Common**

FoV Read	180 mm
FoV Phase	100.0 %
Slice Thickness	2.0 mm
Base Resolution	224
Phase Resolution	75 %
Interpolation	On

**Resolution - Acceleration**

Acceleration mode	GRAPPA
Reference Scans	TSE/Separate
Acceleration Factor PE	2
Reference Lines PE	32
Deep Resolve	On
Phase Partial Fourier	Off

**Resolution - Filter**

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

**Geometry - Common**

Slice Group	1
Slices	25
Distance Factor	10 %
Position	L2.0 A4.8 F17.5 mm
Orientation	T > S-0.4 > C0.1
Phase Encoding Dir.	R >> L
Phase Oversampling	0 %
FoV Read	180 mm
FoV Phase	100.0 %
Slice Thickness	2.0 mm
TR	8110.0 ms
Multi-Slice Mode	Interleaved
Series	Interleaved
Concatenations	1

**Geometry - AutoAlign**

Slice Group	1
Position	L2.0 A4.8 F17.5 mm
Orientation	T > S-0.4 > C0.1
Phase Encoding Dir.	R >> L
AutoAlign	---
Initial Position	L2.0 A4.8 F17.5
L	2.0 mm
A	4.8 mm
F	17.5 mm
Initial Orientation	T > S
T > S	-0.40

**Geometry - AutoAlign**

> C	0.10
Initial Rotation	88.95 deg

**Geometry - Navigator****Geometry - Saturation**

Saturation Region	1
Thickness	50.00 mm
Position	R5.9 P3.5 F72.0 mm
Orientation	T > S-1.1 > C0.7
Shape	Standard
Special Saturation	None

**Geometry - Tim Planning Suite**

Set-n-Go Protocol	Off
Table Position	18 mm
Table Position	F
Inline Composing	Off

**System - Miscellaneous**

Coil Selection	ACS All but spine
Radial Sorting	Off
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	H >> F
Coil Combination	Adaptive Combine
Matrix Optimization	Off
Coil Focus	Flat

**System - Adjustments**

Adjustment Strategy	Standard
B0 Shim	Standard
CoilShim	Auto
Adjustment Tolerance	None
Adjust with Body Coil	Off
Confirm Frequency	Never
Assume Silicone	Off

**System - Adjust Volume**

Position	L2.0 A4.8 F17.5 mm
Orientation	T > S-0.4 > C0.1
Rotation	88.95 deg
R >> L	180 mm
A >> P	180 mm
F >> H	55 mm
Reset	Off

**System - Tx/Rx**

Frequency 1H	63.679699 MHz
? Ref. Amplitude 1H	0.000 V
Reset	Off
Image Scaling	1.000

**Physio - Signal**

1st Signal/Mode	None
TR	8110.0 ms
Concatenations	1

**Physio - Cardiac**

Fat-Water Contrast	Standard
Magn. Preparation	Slice-sel. IR
TI	160 ms
Dark Blood	Off
FoV Read	180 mm
FoV Phase	100.0 %
Phase Resolution	75 %
Motion Correction	None

**Physio - PACE**

Resp. Control	Off
Concatenations	1

**Inline - Subtraction**

Subtract	Off
Measurements	1
StdDev	Off
Motion Correction	None
Save Original Images	On

**Inline - MIP**

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

**Inline - Composing**

Inline Composing	Off
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**Sequence - Part 1**

Sequence Name	tir
Dimension	2D
RF Pulse Type	Fast
Gradient Mode	Fast
Flow Compensation	None
Bandwidth	150 Hz/Px
Echo Spacing	10.6 ms
Free Echo Spacing	Off
Define	Turbo Factor
Turbo Factor	15
Echo Trains per Slice	6

**Sequence - Part 2**

Introduction	On
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**Sequence - Part 2**

Phase Correction	Automatic
Compensate T2 Decay	Off
Fast Mode	Off
WARP	Off
Red. EC Sensitivity	Off
Acoustic noise reduction	Off
Reduce Motion Sens.	On
Motion Correction	None

**Sequence - Assistant**

SAR Assistant	Flip Angle > TR
Min Flip Angle	120 deg
Max. TR	6000.0 ms
Allowed Delay	30 s

**\\MR Physics 2 - AAT\Brain\Brain all\AAT options\t1\_tse\_sag\_3mm-AAT-DRB \***TA: 51 sec Coil Selection: Auto Voxel Size: 0.4×0.4×3.0 mm<sup>3</sup> 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 - Common**

FoV Phase	100.0 %
Slice Thickness	3.0 mm
Base Resolution	240
Phase Resolution	80 %
Interpolation	On

**Resolution - Acceleration**

Acceleration mode	GRAPPA
Reference Scans	TSE/Separate
Acceleration Factor PE	2
Reference Lines PE	32
Deep Resolve	On
Phase Partial Fourier	Off

**Routine**

Slice Group	1
Slices	13
Distance Factor	10 %
Position	R3.0 A6.0 F10.1 mm
Orientation	S > T-1.9
Phase Encoding Dir.	A >> P
Phase Oversampling	30 %
FoV Read	200 mm
FoV Phase	100.0 %
Slice Thickness	3.0 mm
TR	565.0 ms
TE	12.00 ms
Averages	2
Concatenations	1
AutoAlign	Head > Brain

**Resolution - Filter**

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

**Geometry - Common**

Slice Group	1
Slices	13
Distance Factor	10 %
Position	R3.0 A6.0 F10.1 mm
Orientation	S > T-1.9
Phase Encoding Dir.	A >> P
Phase Oversampling	30 %
FoV Read	200 mm
FoV Phase	100.0 %
Slice Thickness	3.0 mm
TR	565.0 ms
Multi-Slice Mode	Interleaved
Series	Interleaved
Concatenations	1

**Contrast - Common**

TR	565.0 ms
TE	12.00 ms
MTC	Off
Magn. Preparation	None
Flip Angle	150 deg
Fat-Water Contrast	Standard
Dark Blood	Off
Contrasts	1
Wrap-up Magn.	None
Reconstruction	Magnitude

**Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Each Measurement

**Resolution - Common**

FoV Read	200 mm
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**Geometry - AutoAlign**

Slice Group	1
Position	R3.0 A6.0 F10.1 mm
Orientation	S > T-1.9
Phase Encoding Dir.	A >> P
AutoAlign	Head > Brain
Initial Position	R3.0 A6.0 F10.1
R	3.0 mm
A	6.0 mm
F	10.1 mm
Initial Orientation	S > T
S > T	-1.90
> C	0.00

**Geometry - AutoAlign**

Initial Rotation	0.00 deg
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**Geometry - Navigator****Geometry - Saturation**

Special Saturation	None
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**Geometry - Tim Planning Suite**

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

**System - Miscellaneous**

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

**System - Adjustments**

Adjustment Strategy	Standard
B0 Shim	Tune up
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	63.679699 MHz
? Ref. Amplitude 1H	0.000 V
Reset	Off
Image Scaling	1.000

**Physio - Signal**

1st Signal/Mode	None
TR	565.0 ms
Concatenations	1

**Physio - Cardiac**

Fat-Water Contrast	Standard
Magn. Preparation	None
Dark Blood	Off
FoV Read	200 mm
FoV Phase	100.0 %
Phase Resolution	80 %
Motion Correction	None

**Physio - PACE**

Resp. Control	Off
Concatenations	1

**Inline - Subtraction**

Subtract	Off
Measurements	1
StdDev	Off
Motion Correction	None
Save Original Images	On

**Inline - MIP**

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

**Inline - Composing**

Inline Composing	Off
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**Sequence - Part 1**

Sequence Name	tse_rr
Dimension	2D
RF Pulse Type	Low SAR
Gradient Mode	Normal
Flow Compensation	Read
Bandwidth	171 Hz/Px
Echo Spacing	11.6 ms
Free Echo Spacing	Off
Define	Turbo Factor
Turbo Factor	3
Echo Trains per Slice	42

**Sequence - Part 2**

Introduction	On
Phase Correction	Off
Compensate T2 Decay	Off
Fast Mode	Off
WARP	Off
Red. EC Sensitivity	Off
Acoustic noise reduction	Off

**Sequence - Part 2**

Reduce Motion Sens.	On
Motion Correction	None

**Sequence - Assistant**

SAR Assistant	Flip Angle > TR
Min Flip Angle	130 deg
Max. TR	650.0 ms
Allowed Delay	30 s

**\\MR Physics 2 - AAT\Brain\Brain all\AAT options\t1\_tse\_cor\_3mm-AAT-DRB \***TA: 49 sec Coil Selection: Auto Voxel Size: 0.4×0.4×3.0 mm<sup>3</sup> 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 - Common**

FoV Phase	89.7 %
Slice Thickness	3.0 mm
Base Resolution	272
Phase Resolution	80 %
Interpolation	On

**Resolution - Acceleration**

Acceleration mode	GRAPPA
Reference Scans	TSE/Separate
Acceleration Factor PE	2
Reference Lines PE	32
Deep Resolve	On
Phase Partial Fourier	Off

**Routine**

Slice Group	1
Slices	13
Distance Factor	10 %
Position	R2.7 A11.0 H2.6 mm
Orientation	C > T3.7 > S-1.3
Phase Encoding Dir.	R >> L
Phase Oversampling	20 %
FoV Read	200 mm
FoV Phase	89.7 %
Slice Thickness	3.0 mm
TR	575.0 ms
TE	12.00 ms
Averages	2
Concatenations	1
AutoAlign	Head > Brain

**Resolution - Filter**

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

**Geometry - Common**

Slice Group	1
Slices	13
Distance Factor	10 %
Position	R2.7 A11.0 H2.6 mm
Orientation	C > T3.7 > S-1.3
Phase Encoding Dir.	R >> L
Phase Oversampling	20 %
FoV Read	200 mm
FoV Phase	89.7 %
Slice Thickness	3.0 mm
TR	575.0 ms
Multi-Slice Mode	Interleaved
Series	Interleaved
Concatenations	1

**Contrast - Common**

TR	575.0 ms
TE	12.00 ms
MTC	Off
Magn. Preparation	None
Flip Angle	150 deg
Fat-Water Contrast	Standard
Dark Blood	Off
Contrasts	1
Wrap-up Magn.	None
Reconstruction	Magnitude

**Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Each Measurement

**Resolution - Common**

FoV Read	200 mm
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**Geometry - AutoAlign**

Slice Group	1
Position	R2.7 A11.0 H2.6 mm
Orientation	C > T3.7 > S-1.3
Phase Encoding Dir.	R >> L
AutoAlign	Head > Brain
Initial Position	R2.7 A11.0 H2.6
R	2.7 mm
A	11.0 mm
H	2.6 mm
Initial Orientation	C > T
C > T	3.70
> S	-1.30

**Geometry - AutoAlign**

Initial Rotation	0.00 deg
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**Geometry - Navigator****Geometry - Saturation**

Special Saturation	None
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**Geometry - Tim Planning Suite**

Set-n-Go Protocol	Off
Table Position	3 mm
Table Position	H
Inline Composing	Off

**System - Miscellaneous**

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

**System - Adjustments**

Adjustment Strategy	Standard
B0 Shim	Tune up
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	63.679699 MHz
? Ref. Amplitude 1H	0.000 V
Reset	Off
Image Scaling	1.000

**Physio - Signal**

1st Signal/Mode	None
TR	575.0 ms
Concatenations	1

**Physio - Cardiac**

Fat-Water Contrast	Standard
Magn. Preparation	None
Dark Blood	Off
FoV Read	200 mm
FoV Phase	89.7 %
Phase Resolution	80 %
Motion Correction	None

**Physio - PACE**

Resp. Control	Off
Concatenations	1

**Inline - Subtraction**

Subtract	Off
Measurements	1
StdDev	Off
Motion Correction	None
Save Original Images	On

**Inline - MIP**

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

**Inline - Composing**

Inline Composing	Off
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**Sequence - Part 1**

Sequence Name	tse_rr
Dimension	2D
RF Pulse Type	Low SAR
Gradient Mode	Normal
Flow Compensation	Read
Bandwidth	170 Hz/Px
Echo Spacing	11.8 ms
Free Echo Spacing	Off
Define	Turbo Factor
Turbo Factor	3
Echo Trains per Slice	39

**Sequence - Part 2**

Introduction	On
Phase Correction	Off
Compensate T2 Decay	Off
Fast Mode	Off
WARP	Off
Red. EC Sensitivity	Off
Acoustic noise reduction	Off

**Sequence - Part 2**

Reduce Motion Sens.	On
Motion Correction	None

**Sequence - Assistant**

SAR Assistant	Flip Angle > TR
Min Flip Angle	130 deg
Max. TR	650.0 ms
Allowed Delay	30 s

**\\MR Physics 2 - AAT\Brain\Brain all\AAT options\t2\_tse\_stir\_cor-AAT-DRB \***TA: 1:05 min Coil Selection: Auto Voxel Size: 0.4×0.4×3.0 mm<sup>3</sup> 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	2nd Segment
Inline Movie	Off

**Resolution - Common**

FoV Read	200 mm
FoV Phase	99.1 %
Slice Thickness	3.0 mm
Base Resolution	224
Phase Resolution	80 %
Interpolation	On

**Resolution - Acceleration**

Acceleration mode	GRAPPA
Reference Scans	TSE/Separate
Acceleration Factor PE	2
Reference Lines PE	32
Deep Resolve	On
Phase Partial Fourier	Off

**Routine**

Slice Group	1
Slices	35
Distance Factor	10 %
Position	L5.5 A47.1 H13.1 mm
Orientation	C > T-7.5 > S5.4
Phase Encoding Dir.	R >> L
Phase Oversampling	0 %
FoV Read	200 mm
FoV Phase	99.1 %
Slice Thickness	3.0 mm
TR	4210.0 ms
TE	32.00 ms
Averages	1
Concatenations	1
AutoAlign	---

**Resolution - Filter**

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

**Geometry - Common**

Slice Group	1
Slices	35
Distance Factor	10 %
Position	L5.5 A47.1 H13.1 mm
Orientation	C > T-7.5 > S5.4
Phase Encoding Dir.	R >> L
Phase Oversampling	0 %
FoV Read	200 mm
FoV Phase	99.1 %
Slice Thickness	3.0 mm
TR	4210.0 ms
Multi-Slice Mode	Interleaved
Series	Interleaved
Concatenations	1

**Contrast - Common**

TR	4210.0 ms
TE	32.00 ms
MTC	Off
Magn. Preparation	Slice-sel. IR
TI	160 ms
Freeze Suppr. Tissue	Off
Flip Angle	150 deg
Fat-Water Contrast	Standard
Dark Blood	Off
Contrasts	1
Wrap-up Magn.	None
Reconstruction	Magnitude

**Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Each Measurement

**Geometry - AutoAlign**

Slice Group	1
Position	L5.5 A47.1 H13.1 mm
Orientation	C > T-7.5 > S5.4
Phase Encoding Dir.	R >> L
AutoAlign	---
Initial Position	L5.5 A47.1 H13.1
L	5.5 mm
A	47.1 mm
H	13.1 mm
Initial Orientation	C > T
C > T	-7.50



**Geometry - AutoAlign**

> S	5.40
Initial Rotation	0.00 deg

**Geometry - Navigator****Geometry - Saturation**

Special Saturation	None
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**Geometry - Tim Planning Suite**

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

**System - Miscellaneous**

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

**System - Adjustments**

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

**System - Adjust Volume**

Position	L5.5 A47.1 H13.1 mm
Orientation	C > T-7.5 > S5.4
Rotation	0.00 deg
R >> L	199 mm
F >> H	200 mm
A >> P	116 mm
Reset	Off

**System - Tx/Rx**

Frequency 1H	63.679699 MHz
? Ref. Amplitude 1H	0.000 V
Reset	Off
Image Scaling	1.000

**Physio - Signal**

1st Signal/Mode	None
TR	4210.0 ms
Concatenations	1

**Physio - Cardiac**

Fat-Water Contrast	Standard
Magn. Preparation	Slice-sel. IR
TI	160 ms
Dark Blood	Off
FoV Read	200 mm
FoV Phase	99.1 %
Phase Resolution	80 %
Motion Correction	None

**Physio - PACE**

Resp. Control	Off
Concatenations	1

**Inline - Subtraction**

Subtract	Off
Measurements	1
StdDev	Off
Motion Correction	None
Save Original Images	On

**Inline - MIP**

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

**Inline - Composing**

Inline Composing	Off
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**Sequence - Part 1**

Sequence Name	tir
Dimension	2D
RF Pulse Type	Fast
Gradient Mode	Fast
Flow Compensation	None
Bandwidth	191 Hz/Px
Echo Spacing	8.10 ms
Free Echo Spacing	Off
Define	Turbo Factor
Turbo Factor	7
Echo Trains per Slice	13

**Sequence - Part 2**

Introduction	On
Phase Correction	Automatic
Compensate T2 Decay	Off
Fast Mode	Off
WARP	Off
Red. EC Sensitivity	Off

**Sequence - Part 2**

Acoustic noise reduction	Off
Reduce Motion Sens.	On
Motion Correction	None

**Sequence - Assistant**

SAR Assistant	Flip Angle > TR
Min Flip Angle	130 deg
Max. TR	4210.0 ms
Allowed Delay	30 s

**\\MR Physics 2 - AAT\Brain\Brain all\AAT options\t2\_tse\_stir\_tra-AAT-DRB \***TA: 1:02 min Coil Selection: Auto Voxel Size: 0.4×0.4×4.0 mm<sup>3</sup> 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	1st Segment
Inline Movie	Off

**Routine**

Slice Group	1
Slices	34
Distance Factor	20 %
Position	L0.0 A29.5 F23.3 mm
Orientation	T > C9.2
Phase Encoding Dir.	R >> L
Phase Oversampling	0 %
FoV Read	200 mm
FoV Phase	99.1 %
Slice Thickness	4.0 mm
TR	3990.0 ms
TE	32.00 ms
Averages	1
Concatenations	1
AutoAlign	Head > Brain

**Contrast - Common**

TR	3990.0 ms
TE	32.00 ms
MTC	Off
Magn. Preparation	Slice-sel. IR
TI	160 ms
Freeze Suppr. Tissue	Off
Flip Angle	150 deg
Fat-Water Contrast	Standard
Dark Blood	Off
Contrasts	1
Wrap-up Magn.	None
Reconstruction	Magnitude

**Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Each Measurement

**Resolution - Common**

FoV Read	200 mm
FoV Phase	99.1 %
Slice Thickness	4.0 mm
Base Resolution	224
Phase Resolution	80 %
Interpolation	On

**Resolution - Acceleration**

Acceleration mode	GRAPPA
Reference Scans	TSE/Separate
Acceleration Factor PE	2
Reference Lines PE	32
Deep Resolve	On
Phase Partial Fourier	Off

**Resolution - Filter**

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

**Geometry - Common**

Slice Group	1
Slices	34
Distance Factor	20 %
Position	L0.0 A29.5 F23.3 mm
Orientation	T > C9.2
Phase Encoding Dir.	R >> L
Phase Oversampling	0 %
FoV Read	200 mm
FoV Phase	99.1 %
Slice Thickness	4.0 mm
TR	3990.0 ms
Multi-Slice Mode	Interleaved
Series	Interleaved
Concatenations	1

**Geometry - AutoAlign**

Slice Group	1
Position	L0.0 A29.5 F23.3 mm
Orientation	T > C9.2
Phase Encoding Dir.	R >> L
AutoAlign	Head > Brain
Initial Position	L0.0 A29.5 F23.3
R	0.0 mm
A	29.5 mm
F	23.3 mm
Initial Orientation	T > C
T > C	9.20

**Geometry - AutoAlign**

> S	0.00
Initial Rotation	88.96 deg

**Geometry - Navigator****Geometry - Saturation**

Special Saturation	None
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**Geometry - Tim Planning Suite**

Set-n-Go Protocol	Off
Table Position	23 mm
Table Position	F
Inline Composing	Off

**System - Miscellaneous**

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

**System - Adjustments**

Adjustment Strategy	Standard
B0 Shim	Tune up
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	63.679699 MHz
? Ref. Amplitude 1H	0.000 V
Reset	Off
Image Scaling	1.000

**Physio - Signal**

1st Signal/Mode	None
TR	3990.0 ms
Concatenations	1

**Physio - Cardiac**

Fat-Water Contrast	Standard
Magn. Preparation	Slice-sel. IR
TI	160 ms
Dark Blood	Off
FoV Read	200 mm
FoV Phase	99.1 %
Phase Resolution	80 %
Motion Correction	None

**Physio - PACE**

Resp. Control	Off
Concatenations	1

**Inline - Subtraction**

Subtract	Off
Measurements	1
StdDev	Off
Motion Correction	None
Save Original Images	On

**Inline - MIP**

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

**Inline - Composing**

Inline Composing	Off
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**Sequence - Part 1**

Sequence Name	tir
Dimension	2D
RF Pulse Type	Fast
Gradient Mode	Fast
Flow Compensation	None
Bandwidth	191 Hz/Px
Echo Spacing	8.10 ms
Free Echo Spacing	Off
Define	Turbo Factor
Turbo Factor	7
Echo Trains per Slice	13

**Sequence - Part 2**

Introduction	On
Phase Correction	Automatic
Compensate T2 Decay	Off
Fast Mode	Off
WARP	Off
Red. EC Sensitivity	Off

**Sequence - Part 2**

Acoustic noise reduction	Off
Reduce Motion Sens.	On
Motion Correction	None

**Sequence - Assistant**

SAR Assistant	Flip Angle > TR
Min Flip Angle	130 deg
Max. TR	3990.0 ms
Allowed Delay	30 s

**\\MR Physics 2 - AAT\Brain\Brain all\AAT options\t1\_tse\_r\_tra\_fs-AAT-DRB \***TA: 1:15 min Coil Selection: Auto Voxel Size: 0.4×0.4×4.0 mm<sup>3</sup> 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	2nd Segment
Inline Movie	Off

**Resolution - Common**

FoV Read	200 mm
FoV Phase	100.0 %
Slice Thickness	4.0 mm
Base Resolution	224
Phase Resolution	80 %
Interpolation	On

**Resolution - Acceleration**

Acceleration mode	GRAPPA
Reference Scans	TSE/Separate
Acceleration Factor PE	2
Reference Lines PE	32
Deep Resolve	On
Phase Partial Fourier	Off

**Routine**

Slice Group	1
Slices	34
Distance Factor	20 %
Position	L0.0 A29.5 F23.3 mm
Orientation	T > C9.2
Phase Encoding Dir.	R >> L
Phase Oversampling	20 %
FoV Read	200 mm
FoV Phase	100.0 %
Slice Thickness	4.0 mm
TR	612.0 ms
TE	8.30 ms
Averages	1
Concatenations	3
AutoAlign	Head > Brain

**Resolution - Filter**

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

**Geometry - Common**

Slice Group	1
Slices	34
Distance Factor	20 %
Position	L0.0 A29.5 F23.3 mm
Orientation	T > C9.2
Phase Encoding Dir.	R >> L
Phase Oversampling	20 %
FoV Read	200 mm
FoV Phase	100.0 %
Slice Thickness	4.0 mm
TR	612.0 ms
Multi-Slice Mode	Interleaved
Series	Interleaved
Concatenations	3

**Contrast - Common**

TR	612.0 ms
TE	8.30 ms
TD	0.00 ms
MTC	Off
Magn. Preparation	None
Flip Angle	150 deg
Fat-Water Contrast	Fat Saturation
Fat Saturation	Strong
Dark Blood	Off
Contrasts	1
Wrap-up Magn.	None
Reconstruction	Magnitude

**Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Each Measurement

**Geometry - AutoAlign**

Slice Group	1
Position	L0.0 A29.5 F23.3 mm
Orientation	T > C9.2
Phase Encoding Dir.	R >> L
AutoAlign	Head > Brain
Initial Position	L0.0 A29.5 F23.3
R	0.0 mm
A	29.5 mm
F	23.3 mm
Initial Orientation	T > C
T > C	9.20

**Geometry - AutoAlign**

> S	0.00
Initial Rotation	88.96 deg

**Geometry - Navigator****Geometry - Saturation**

Special Saturation	None
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**Geometry - Tim Planning Suite**

Set-n-Go Protocol	Off
Table Position	23 mm
Table Position	F
Inline Composing	Off

**System - Miscellaneous**

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

**System - Adjustments**

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

**System - Adjust Volume**

Position	L0.0 A29.5 F23.3 mm
Orientation	T > C9.2
Rotation	88.96 deg
R >> L	200 mm
A >> P	200 mm
F >> H	163 mm
Reset	Off

**System - Tx/Rx**

Frequency 1H	63.679699 MHz
? Ref. Amplitude 1H	0.000 V
Reset	Off
Image Scaling	1.000

**Physio - Signal**

1st Signal/Mode	None
TR	612.0 ms
Concatenations	3

**Physio - Cardiac**

Fat-Water Contrast	Fat Saturation
Magn. Preparation	None
Dark Blood	Off
FoV Read	200 mm
FoV Phase	100.0 %
Phase Resolution	80 %
Motion Correction	None

**Physio - PACE**

Resp. Control	Off
Concatenations	3

**Inline - Subtraction**

Subtract	Off
Measurements	1
StdDev	Off
Motion Correction	None
Save Original Images	On

**Inline - MIP**

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

**Inline - Composing**

Inline Composing	Off
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**Sequence - Part 1**

Sequence Name	tse_rs
Dimension	2D
RF Pulse Type	Fast
Gradient Mode	Fast
Flow Compensation	Slice
Bandwidth	302 Hz/Px
Echo Spacing	8.32 ms
Free Echo Spacing	Off
Define	Turbo Factor
Turbo Factor	3
Echo Trains per Slice	36

**Sequence - Part 2**

Introduction	On
Phase Correction	Automatic
Compensate T2 Decay	Off
Fast Mode	Off
WARP	Off
Red. EC Sensitivity	Off
Acoustic noise reduction	Off

**Sequence - Part 2**

Reduce Motion Sens.	On
Motion Correction	None

**Sequence - Assistant**

SAR Assistant	TR > Flip Angle
Min Flip Angle	130 deg
Max. TR	650.0 ms
Allowed Delay	30 s