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\\MARTINOS DEVELOPER
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\\MARTINOS DEVELOPER\HUBER\T1\_protocols\AZMA\_coil\_20251210\Scout\_alternative

TA: 13 sec Coil Selection: Manual Voxel Size: 1.6×1.6×1.6 mm<sup>3</sup> Acc:: 3 Rel. SNR: 1.00**Properties**

Start measurement without further preparation	Off
Wait for User to Start	Off
Start measurements	Single Measurement
Prio Recon	Off
Auto Open Inline Display	Off
Auto Close Inline Display	Off
Load Images to MR View&GO	On
Auto Store Images	On
Disable auto transfer to PACS	Off
Load Images to Stamp Segments	Off
Load Images to Graphic Segments	On
Graphic segment	2nd Segment
Inline Movie	Off

**Routine**

Slab Group	1
Slabs	1
Distance Factor	20 %
Position	L0.0 A16.0 H0.0 mm
Orientation	Sagittal
Phase Encoding Dir.	A >> P
Slices per Slab	128
Phase Oversampling	0 %
Slice Oversampling	0.0 %
FOV Read	260 mm
FOV Phase	100.0 %
Slice Thickness	1.600 mm
TR	3.5 ms
TE	1.51 ms
Averages	1
Concatenations	1
AutoAlign	---
Coil Elements	AC

**Contrast - Common**

TR	3.5 ms
TE	1.51 ms
MTC	Off
Magn. Preparation	None
Flip Angle	15 deg
Fat-Water Contrast	Standard
Dark Blood	Off
Contrasts	1
SWI	Off
Reconstruction	Magnitude

**Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Each Measurement

**Resolution - Common**

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

**Resolution - Acceleration**

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

**Resolution - Filter**

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

**Geometry - Common**

Slab Group	1
Slabs	1
Distance Factor	20 %
Position	L0.0 A16.0 H0.0 mm
Orientation	Sagittal
Phase Encoding Dir.	A >> P
Slices per Slab	128
Phase Oversampling	0 %
Slice Oversampling	0.0 %
FOV Read	260 mm
FOV Phase	100.0 %
Slice Thickness	1.600 mm
TR	3.5 ms
Multi-Slice Mode	Interleaved
Series	Interleaved
Concatenations	1

**Geometry - AutoAlign**

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

**Geometry - AutoAlign**

Initial Position	L0.0 A16.0 H0.0
L	0.0 mm
A	16.0 mm
H	0.0 mm
Initial Orientation	Sagittal
Initial Rotation	0.00 deg

**Geometry - Saturation**

Saturation Mode	Standard
Special Saturation	None

**Geometry - Tim Planning Suite**

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

**System - Miscellaneous**

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

**System - Adjustments**

Adjustment Strategy	Standard
B0 Shim	Tune up
B1 Shim	TrueForm
Adjustment Tolerance	Auto
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 - pTx**

B1 Shim	TrueForm
Excitation	Non-sel.

**System - Tx/Rx**

Frequency 1H	297.117813 MHz
? Ref. Amplitude 1H	0.000 V
Reset	Off
Correction Factor	1.00
Image Scaling	1.000

**Physio - Signal**

1st Signal/Mode	None
TR	3.5 ms
Segments	1
Concatenations	1

**Physio - Cardiac**

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

**Physio - PACE**

Resp. Control	Off
Concatenations	1

**Inline - Liver**

Liver Registration	Off
Save Original Images	On

**Inline - Subtraction**

Subtract	Off
Measurements	1
StdDev	Off
Save Original Images	On

**Inline - MIP**

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

**Inline - Soft Tissue**

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

**Inline - Composing****Inline - MapIt**

MapIt	None
Flip Angle	15 deg
Measurements	1
Contrasts	1

**Inline - MapIt**

TE	1.51 ms
TR	3.5 ms
Save Original Images	On

**Sequence - Part 1**

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

**Sequence - Part 2**

Introduction	Off
RF Spoiling	On
Acoustic noise reduction	Off

**Sequence - Nuclei**

TX/RX Nucleus	<sup>1</sup> H
TX/RX Delta Frequency	0 Hz
TX Nucleus	None
TX Delta Frequency	0 Hz
Coil Elements	AC

**Sequence - Special**

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

**Sequence - Assistant**

SAR Assistant	Off
Allowed Delay	0 s

\\MARTINOS DEVELOPER\HUBER\T1\_protocols\AZMA\_coil\_20251210\wip\_ShimToolbox\_B0map\_3mm

TA: 44 sec Coil Selection: Auto Voxel Size: 3.0×3.0×3.0 mm<sup>3</sup> Acc:: None Rel. SNR: 1.00**Properties**

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

**Routine**

Slab Group	1
Slabs	1
Distance Factor	20 %
Position	Isocenter
Orientation	Sagittal
Phase Encoding Dir.	A >> P
Slices per Slab	52
Phase Oversampling	0 %
Slice Oversampling	0.0 %
FOV Read	216 mm
FOV Phase	100.0 %
Slice Thickness	3.00 mm
TR	15.0 ms
TE 1	2.20 ms
TE 2	5.40 ms
Concatenations	1
AutoAlign	---

**Contrast - Common**

TR	15.0 ms
TE 1	2.20 ms
TE 2	5.40 ms
MTC	Off
Magn. Preparation	None
Flip Angle	8 deg
Fat-Water Contrast	Water Excitation
Dark Blood	Off
Contrasts	2
SWI	Off
Reconstruction	Magn./Phase

**Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Each Measurement

**Resolution - Common**

FOV Read	216 mm
FOV Phase	100.0 %
Slice Thickness	3.00 mm
Base Resolution	72
Phase Resolution	100 %
Slice Resolution	100 %

**Resolution - Acceleration**

Acceleration Mode	None
Phase Partial Fourier	Off
Slice Partial Fourier	Off
Asymmetric Echo	Off
Elliptical Scanning	On

**Resolution - Filter**

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

**Geometry - Common**

Slab Group	1
Slabs	1
Distance Factor	20 %
Position	Isocenter
Orientation	Sagittal
Phase Encoding Dir.	A >> P
Slices per Slab	52
Phase Oversampling	0 %
Slice Oversampling	0.0 %
FOV Read	216 mm
FOV Phase	100.0 %
Slice Thickness	3.00 mm
TR	15.0 ms
Multi-Slice Mode	Interleaved
Series	Interleaved
Concatenations	1

**Geometry - AutoAlign**

Slab Group	1
Position	Isocenter
Orientation	Sagittal
Phase Encoding Dir.	A >> P
AutoAlign	---
Initial Position	Isocenter
L	0.0 mm
P	0.0 mm
H	0.0 mm
Initial Orientation	Sagittal

**Geometry - AutoAlign**

Initial Rotation	0.00 deg
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**Geometry - Saturation**

Saturation Mode	Standard
Special Saturation	None

**Geometry - Tim Planning Suite**

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

**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
B1 Shim	TrueForm
Adjustment Tolerance	Auto
Adjust with Body Coil	Off
Confirm Frequency	Never
Assume Silicone	Off

**System - Adjust Volume**

Position	Isocenter
Orientation	Sagittal
Rotation	0.00 deg
A >> P	216 mm
F >> H	216 mm
R >> L	156 mm
Reset	Off

**System - pTx**

B1 Shim	TrueForm
Excitation	Non-sel.
LR Balancing	Off

**System - Tx/Rx**

Frequency 1H	297.117813 MHz
? Ref. Amplitude 1H	0.000 V
Reset	Off
Image Scaling	1.000

**Physio - Signal**

1st Signal/Mode	None
TR	15.0 ms

**Physio - Signal**

Segments	1
Concatenations	1

**Physio - Cardiac**

Tagging	None
Fat-Water Contrast	Water Excitation
Magn. Preparation	None
Dark Blood	Off
FOV Read	216 mm
FOV Phase	100.0 %
Phase Resolution	100 %

**Physio - PACE**

Resp. Control	Off
Concatenations	1

**Inline - Liver**

Liver Registration	Off
Save Original Images	On

**Inline - Subtraction**

Subtract	Off
Measurements	1
StdDev	Off
Save Original Images	On

**Inline - MIP**

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

**Inline - Soft Tissue**

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

**Inline - Composing****Inline - MapIt**

MapIt	None
Flip Angle	8 deg
Measurements	1
Contrasts	2
TE 1	2.20 ms
TE 2	5.40 ms

**Inline - MapIt**

TR	15.0 ms
Save Original Images	On

**Sequence - Part 1**

Sequence Name	WIP_GRE
Dimension	3D
Excitation	Non-sel.
RF Pulse Type	Normal
Readout Mode	Monopolar
Gradient Mode	Whisper
Flow Compensation 1	None
Flow Compensation 2	None
Bandwidth 1	500 Hz/Px
Bandwidth 2	500 Hz/Px
Asymmetric Echo	Off
Segments	1

**Sequence - Part 2**

Introduction	Off
RF Spoiling	On
Acoustic noise reduction	Off

**Sequence - Nuclei**

TX/RX Nucleus	1H
TX/RX Delta Frequency	0 Hz
TX Nucleus	None
TX Delta Frequency	0 Hz

**Sequence - Special**

Mode	B0 Mapping
Masking	Brain Extraction
Phase Unwrapping	Spatial

**Sequence - Assistant**

SAR Assistant	Off
Allowed Delay	0 s

\\MARTINOS DEVELOPER\HUBER\T1\_protocols\AZMA\_coil\_20251210\scout\_axial\_princes

TA: 17 sec Coil Selection: Manual Voxel Size: 1.6×1.6×1.6 mm<sup>3</sup> Acc:: 3 Rel. SNR: 1.00**Properties**

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

**Routine**

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

**Contrast - Common**

TR	3.6 ms
TE	1.56 ms
MTC	Off
Magn. Preparation	None
Flip Angle	16 deg
Fat-Water Contrast	Standard
Dark Blood	Off
Contrasts	1
SWI	Off
Reconstruction	Magnitude

**Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Each Measurement

**Resolution - Common**

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

**Resolution - Acceleration**

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

**Resolution - Filter**

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

**Geometry - Common**

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

**Geometry - AutoAlign**

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



**Geometry - AutoAlign**

Initial Position	L0.0 A16.0 H0.0
L	0.0 mm
A	16.0 mm
H	0.0 mm
Initial Orientation	Transversal
Initial Rotation	0.00 deg

**Geometry - Saturation**

Saturation Mode	Standard
Special Saturation	None

**Geometry - Tim Planning Suite**

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

**System - Miscellaneous**

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

**System - Adjustments**

Adjustment Strategy	Standard
B0 Shim	Tune up
B1 Shim	TrueForm
Adjustment Tolerance	Auto
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 - pTx**

B1 Shim	TrueForm
Excitation	Non-sel.

**System - Tx/Rx**

Frequency 1H	297.117813 MHz
? Ref. Amplitude 1H	0.000 V
Reset	Off
Correction Factor	1.00
Image Scaling	1.000

**Physio - Signal**

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

**Physio - Cardiac**

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

**Physio - PACE**

Resp. Control	Off
Concatenations	1

**Inline - Liver**

Liver Registration	Off
Save Original Images	On

**Inline - Subtraction**

Subtract	Off
Measurements	1
StdDev	Off
Save Original Images	On

**Inline - MIP**

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

**Inline - Soft Tissue**

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

**Inline - Composing****Inline - MapIt**

MapIt	None
Flip Angle	16 deg
Measurements	1
Contrasts	1

**Inline - MapIt**

TE	1.56 ms
TR	3.6 ms
Save Original Images	On

**Sequence - Part 1**

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

**Sequence - Part 2**

Introduction	Off
RF Spoiling	On
Acoustic noise reduction	Off

**Sequence - Nuclei**

TX/RX Nucleus	<sup>1</sup> H
TX/RX Delta Frequency	0 Hz
TX Nucleus	None
TX Delta Frequency	0 Hz
Coil Elements	AC

**Sequence - Special**

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

**Sequence - Assistant**

SAR Assistant	Off
Allowed Delay	0 s

\\MARTINOS DEVELOPER\HUBER\T1\_protocols\AZMA\_coil\_20251210\MEMPRAGE\_4e\_p2\_FOCI\_1mm\_Axial

TA: 5:39 min Coil Selection: Manual Voxel Size: 1.0x1.0x1.0 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
Disable auto transfer to PACS	Off
Load Images to Stamp Segments	Off
Load Images to Graphic Segments	Off
Graphic segment	Default
Inline Movie	Off

### Routine

Slab Group	1
Slabs	1
Distance Factor	50 %
Position	L0.0 A22.4 F20.5 mm
Orientation	Transversal
Phase Encoding Dir.	A >> P
Slices per Slab	256
Phase Oversampling	0 %
Slice Oversampling	0.0 %
FOV Read	256 mm
FOV Phase	100.0 %
Slice Thickness	1.00 mm
TR	2440.0 ms
TE 1	1.61 ms
TE 2	3.47 ms
TE 3	5.33 ms
TE 4	7.19 ms
Averages	1
Concatenations	1
AutoAlign	---
Coil Elements	AC

### Contrast - Common

TR	2440.0 ms
TE 1	1.61 ms
TE 2	3.47 ms
TE 3	5.33 ms
TE 4	7.19 ms
Magn. Preparation	Non-sel. IR
TI	1230 ms
Flip Angle	7 deg
Fat-Water Contrast	Standard
Dark Blood	Off

### Contrast - Common

Contrasts	4
Reconstruction	Magnitude

### Contrast - Dynamic

Dynamic Mode	Standard
Measurements	1
Multiple Series	Each Measurement
Reordering	Linear

### Resolution - Common

FOV Read	256 mm
FOV Phase	100.0 %
Slice Thickness	1.00 mm
Base Resolution	256
Phase Resolution	100 %
Slice Resolution	100 %
Interpolation	Off

### Resolution - Acceleration

Acceleration Mode	GRAPPA
Reference Scans	Integrated
Acceleration Factor PE	2
Reference Lines PE	24
Acceleration Factor 3D	1
Phase Partial Fourier	Off
Slice Partial Fourier	Off
Asymmetric Echo	Off
Elliptical Scanning	Off

### Resolution - Filter

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

### Geometry - Common

Slab Group	1
Slabs	1
Distance Factor	50 %
Position	L0.0 A22.4 F20.5 mm
Orientation	Transversal
Phase Encoding Dir.	A >> P
Slices per Slab	256
Phase Oversampling	0 %
Slice Oversampling	0.0 %
FOV Read	256 mm
FOV Phase	100.0 %
Slice Thickness	1.00 mm

**Geometry - Common**

TR	2440.0 ms
Multi-Slice Mode	Single Shot
Series	Interleaved
Concatenations	1

**Geometry - AutoAlign**

Slab Group	1
Position	L0.0 A22.4 F20.5 mm
Orientation	Transversal
Phase Encoding Dir.	A >> P
AutoAlign	---
Initial Position	L0.0 A22.4 F20.5
L	0.0 mm
A	22.4 mm
F	20.5 mm
Initial Orientation	Transversal
Initial Rotation	0.00 deg

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

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

**System - Miscellaneous**

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

**System - Adjustments**

Adjustment Strategy	Standard
B0 Shim	Tune up
B1 Shim	TrueForm
Adjustment Tolerance	Auto
Confirm Frequency	Never
Assume Silicone	Off

**System - Adjust Volume**

! Position	L0.0 A7.8 F5.5 mm
! Orientation	T > C-23.0
! Rotation	0.00 deg
! A >> P	159 mm
! R >> L	128 mm
! F >> H	120 mm
Reset	Off

**System - pTx**

B1 Shim	TrueForm
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**System - pTx**

Excitation	Non-sel.
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**System - Tx/Rx**

Frequency 1H	297.117813 MHz
? Ref. Amplitude 1H	0.000 V
Reset	Off
Correction Factor	1.00
Image Scaling	1.000

**Physio - Signal**

1st Signal/Mode	None
TR	2440.0 ms
Concatenations	1

**Physio - Cardiac**

Fat-Water Contrast	Standard
Magn. Preparation	Non-sel. IR
TI	1230 ms
Dark Blood	Off
FOV Read	256 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 - MapIt**

MapIt	None
Flip Angle	7 deg
Measurements	1
Contrasts	4
TE 1	1.61 ms
TE 2	3.47 ms
TE 3	5.33 ms

**Inline - MapIt**

TE 4	7.19 ms
TR	2440.0 ms
Save Original Images	On

**Sequence - Part 1**

Sequence Name	tfl_me
Dimension	3D
Excitation	Non-sel.
RF Pulse Type	Fast
Gradient Mode	Fast
Flow Compensation 1	None
Flow Compensation 2	None
Flow Compensation 3	None
Flow Compensation 4	None
Reordering	Linear
Bandwidth 1	650 Hz/Px
Bandwidth 2	650 Hz/Px
Bandwidth 3	650 Hz/Px
Bandwidth 4	650 Hz/Px
Echo Spacing	9.42 ms
Asymmetric Echo	Off
Turbo Factor	256

**Sequence - Part 2**

Introduction	Off
RF Spoiling	On
Incr. Gradient Spoiling	Off

**Sequence - Special**

Readout polarity	Positive
Readout trajectory	Bipolar
FOCI pulse voltage	500.00 V
Gradient spoiling	Siemens
Gradient moment factor	1.00
Averaging	RMS

**Sequence - Assistant**

SAR Assistant	Off
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\\MARTINOS DEVELOPER\HUBERT1\_protocols\AZMA\_coil\_20251210\t1\_mprage\_sag\_stx\_sharp\_butNoisy

TA: 3:55 min Coil Selection: Manual Voxel Size: 0.6×0.6×0.7 mm<sup>3</sup> Acc:: 6.5 Rel. SNR: 1.00

### Properties

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

### Routine

Slab Group	1
Slabs	1
Distance Factor	50 %
Position	L0.0 A27.9 F42.9 mm
Orientation	Sagittal
Phase Encoding Dir.	A >> P
Slices per Slab	256
Phase Oversampling	0 %
Slice Oversampling	0.0 %
FOV Read	240 mm
FOV Phase	100.0 %
Slice Thickness	0.65 mm
TR	4000.0 ms
TE	3.47 ms
Averages	1
Concatenations	1
AutoAlign	Head > Basis
Coil Elements	AC

### Contrast - Common

TR	4000.0 ms
TE	3.47 ms
Magn. Preparation	Non-sel. IR
TI	1500 ms
Flip Angle	4 deg
Fat-Water Contrast	Standard
Dark Blood	Off
Contrasts	1
Reconstruction	Magnitude

### Contrast - Dynamic

Dynamic Mode	Standard
Measurements	1

### Contrast - Dynamic

Multiple Series	Each Measurement
Reordering	Linear

### Resolution - Common

FOV Read	240 mm
FOV Phase	100.0 %
Slice Thickness	0.65 mm
Base Resolution	416
Phase Resolution	100 %
Slice Resolution	100 %
Interpolation	Off

### Resolution - Acceleration

Acceleration Mode	CS
Total Factor	6.5
Reference Scans	GRE/Separate
Reference Lines PE	32
Phase Partial Fourier	Off
Slice Partial Fourier	Off
Asymmetric Echo	Off
Elliptical Scanning	Off

### Resolution - Filter

Raw Filter	On
Elliptical Filter	Off
Distortion Correction	2D
Normalize	B1 Filter
Image Filter	On

### Geometry - Common

Slab Group	1
Slabs	1
Distance Factor	50 %
Position	L0.0 A27.9 F42.9 mm
Orientation	Sagittal
Phase Encoding Dir.	A >> P
Slices per Slab	256
Phase Oversampling	0 %
Slice Oversampling	0.0 %
FOV Read	240 mm
FOV Phase	100.0 %
Slice Thickness	0.65 mm
TR	4000.0 ms
Multi-Slice Mode	Single Shot
Series	Interleaved
Concatenations	1

### Geometry - AutoAlign

Slab Group	1
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**Geometry - AutoAlign**

Position	L0.0 A27.9 F42.9 mm
Orientation	Sagittal
Phase Encoding Dir.	A >> P
AutoAlign	Head > Basis
Initial Position	L0.0 A27.9 F42.9
L	0.0 mm
A	27.9 mm
F	42.9 mm
Initial Orientation	Sagittal
Initial Rotation	0.00 deg

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

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

**System - Miscellaneous**

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

**System - Adjustments**

Adjustment Strategy	Standard
B0 Shim	Tune up
B1 Shim	TrueForm
Adjustment Tolerance	Auto
Confirm Frequency	Never
Assume Silicone	Off

**System - Adjust Volume**

! Position	L0.0 A7.8 F5.5 mm
! Orientation	T > C-23.0
! Rotation	0.00 deg
! A >> P	159 mm
! R >> L	128 mm
! F >> H	120 mm
Reset	Off

**System - pTx**

B1 Shim	TrueForm
Excitation	Non-sel.

**System - Tx/Rx**

Frequency 1H	297.117813 MHz
! Ref. Amplitude 1H	350.000 V
Reset	Off
Correction Factor	1.00

**System - Tx/Rx**

Image Scaling	1.000
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**Physio - Signal**

1st Signal/Mode	None
TR	4000.0 ms
Concatenations	1

**Physio - Cardiac**

Fat-Water Contrast	Standard
Magn. Preparation	Non-sel. IR
TI	1500 ms
Dark Blood	Off
FOV Read	240 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 - MapIt**

MapIt	None
Flip Angle	4 deg
Measurements	1
Contrasts	1
TE	3.47 ms
TR	4000.0 ms
Save Original Images	On

**Sequence - Part 1**

Sequence Name	tfl
Dimension	3D
Excitation	Non-sel.
RF Pulse Type	Fast
Gradient Mode	Fast

**Sequence - Part 1**

Flow Compensation	None
Reordering	Linear
Bandwidth	200 Hz/Px
Echo Spacing	8.12 ms
Asymmetric Echo	Off
Turbo Factor	220

**Sequence - Part 2**

Introduction	On
RF Spoiling	On
Incr. Gradient Spoiling	Off

**Sequence - Assistant**

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



\\MARTINOS DEVELOPER\HUBERT1\_protocols\AZMA\_coil\_20251210\MEMPAGE\_4e\_p2\_FOCI\_1mm\_sagittal

TA: 5:39 min Coil Selection: Manual Voxel Size: 1.0x1.0x1.0 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
Disable auto transfer to PACS	Off
Load Images to Stamp Segments	Off
Load Images to Graphic Segments	Off
Graphic segment	Default
Inline Movie	Off

### Routine

Slab Group	1
Slabs	1
Distance Factor	50 %
Position	L0.0 A22.4 F20.5 mm
Orientation	Sagittal
Phase Encoding Dir.	A >> P
Slices per Slab	256
Phase Oversampling	0 %
Slice Oversampling	0.0 %
FOV Read	256 mm
FOV Phase	100.0 %
Slice Thickness	1.00 mm
TR	2440.0 ms
TE 1	1.61 ms
TE 2	3.47 ms
TE 3	5.33 ms
TE 4	7.19 ms
Averages	1
Concatenations	1
AutoAlign	---
Coil Elements	AC

### Contrast - Common

TR	2440.0 ms
TE 1	1.61 ms
TE 2	3.47 ms
TE 3	5.33 ms
TE 4	7.19 ms
Magn. Preparation	Non-sel. IR
TI	1230 ms
Flip Angle	7 deg
Fat-Water Contrast	Standard
Dark Blood	Off

### Contrast - Common

Contrasts	4
Reconstruction	Magnitude

### Contrast - Dynamic

Dynamic Mode	Standard
Measurements	1
Multiple Series	Each Measurement
Reordering	Linear

### Resolution - Common

FOV Read	256 mm
FOV Phase	100.0 %
Slice Thickness	1.00 mm
Base Resolution	256
Phase Resolution	100 %
Slice Resolution	100 %
Interpolation	Off

### Resolution - Acceleration

Acceleration Mode	GRAPPA
Reference Scans	Integrated
Acceleration Factor PE	2
Reference Lines PE	24
Acceleration Factor 3D	1
Phase Partial Fourier	Off
Slice Partial Fourier	Off
Asymmetric Echo	Off
Elliptical Scanning	Off

### Resolution - Filter

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

### Geometry - Common

Slab Group	1
Slabs	1
Distance Factor	50 %
Position	L0.0 A22.4 F20.5 mm
Orientation	Sagittal
Phase Encoding Dir.	A >> P
Slices per Slab	256
Phase Oversampling	0 %
Slice Oversampling	0.0 %
FOV Read	256 mm
FOV Phase	100.0 %
Slice Thickness	1.00 mm

**Geometry - Common**

TR	2440.0 ms
Multi-Slice Mode	Single Shot
Series	Interleaved
Concatenations	1

**Geometry - AutoAlign**

Slab Group	1
Position	L0.0 A22.4 F20.5 mm
Orientation	Sagittal
Phase Encoding Dir.	A >> P
AutoAlign	---
Initial Position	L0.0 A22.4 F20.5
L	0.0 mm
A	22.4 mm
F	20.5 mm
Initial Orientation	Sagittal
Initial Rotation	0.00 deg

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

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

**System - Miscellaneous**

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

**System - Adjustments**

Adjustment Strategy	Standard
B0 Shim	Tune up
B1 Shim	TrueForm
Adjustment Tolerance	Auto
Confirm Frequency	Never
Assume Silicone	Off

**System - Adjust Volume**

! Position	L0.0 A7.8 F5.5 mm
! Orientation	T > C-23.0
! Rotation	0.00 deg
! A >> P	159 mm
! R >> L	128 mm
! F >> H	120 mm
Reset	Off

**System - pTx**

B1 Shim	TrueForm
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**System - pTx**

Excitation	Non-sel.
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**System - Tx/Rx**

Frequency 1H	297.117813 MHz
? Ref. Amplitude 1H	0.000 V
Reset	Off
Correction Factor	1.00
Image Scaling	1.000

**Physio - Signal**

1st Signal/Mode	None
TR	2440.0 ms
Concatenations	1

**Physio - Cardiac**

Fat-Water Contrast	Standard
Magn. Preparation	Non-sel. IR
TI	1230 ms
Dark Blood	Off
FOV Read	256 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 - MapIt**

MapIt	None
Flip Angle	7 deg
Measurements	1
Contrasts	4
TE 1	1.61 ms
TE 2	3.47 ms
TE 3	5.33 ms

**Inline - MapIt**

TE 4	7.19 ms
TR	2440.0 ms
Save Original Images	On

**Sequence - Part 1**

Sequence Name	tfl_me
Dimension	3D
Excitation	Non-sel.
RF Pulse Type	Fast
Gradient Mode	Fast
Flow Compensation 1	None
Flow Compensation 2	None
Flow Compensation 3	None
Flow Compensation 4	None
Reordering	Linear
Bandwidth 1	650 Hz/Px
Bandwidth 2	650 Hz/Px
Bandwidth 3	650 Hz/Px
Bandwidth 4	650 Hz/Px
Echo Spacing	9.42 ms
Asymmetric Echo	Off
Turbo Factor	256

**Sequence - Part 2**

Introduction	Off
RF Spoiling	On
Incr. Gradient Spoiling	Off

**Sequence - Special**

Readout polarity	Positive
Readout trajectory	Bipolar
FOCI pulse voltage	500.00 V
Gradient spoiling	Siemens
Gradient moment factor	1.00
Averaging	RMS

**Sequence - Assistant**

SAR Assistant	Off
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\\MARTINOS DEVELOPER\HUBER\T1\_protocols\AZMA\_coil\_20251210\t1\_mp2rage\_sag\_p3\_0.75mm\_blue

TA: 8:50 min Coil Selection: Manual Voxel Size: 0.8x0.8x0.8 mm<sup>3</sup> Acc:: 3 Rel. SNR: 1.00

### Properties

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

### Contrast - Dynamic

Dynamic Mode	Standard
Measurements	1
Multiple Series	Each Measurement
Reordering	Linear

### Resolution - Common

FOV Read	240 mm
FOV Phase	93.8 %
Slice Thickness	0.75 mm
Base Resolution	320
Phase Resolution	100 %
Slice Resolution	100 %
Interpolation	Off

### Routine

Slab Group	1
Slabs	1
Distance Factor	50 %
Position	L0.0 A26.9 F46.0 mm
Orientation	Sagittal
Phase Encoding Dir.	A >> P
Slices per Slab	192
Phase Oversampling	0 %
Slice Oversampling	8.3 %
FOV Read	240 mm
FOV Phase	93.8 %
Slice Thickness	0.75 mm
TR	4300.0 ms
TE	2.27 ms
Averages	1
Concatenations	1
AutoAlign	Head > Basis
Coil Elements	AC

### Resolution - Acceleration

Acceleration Mode	GRAPPA
Reference Scans	Integrated
Acceleration Factor PE	3
Reference Lines PE	36
Acceleration Factor 3D	1
Phase Partial Fourier	Off
Slice Partial Fourier	6/8
Asymmetric Echo	Allowed
Elliptical Scanning	Off

### Resolution - Filter

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

### Geometry - Common

Slab Group	1
Slabs	1
Distance Factor	50 %
Position	L0.0 A26.9 F46.0 mm
Orientation	Sagittal
Phase Encoding Dir.	A >> P
Slices per Slab	192
Phase Oversampling	0 %
Slice Oversampling	8.3 %
FOV Read	240 mm
FOV Phase	93.8 %
Slice Thickness	0.75 mm
TR	4300.0 ms
Multi-Slice Mode	Single Shot
Series	Interleaved
Concatenations	1

### Contrast - Common

TR	4300.0 ms
TE	2.27 ms
Magn. Preparation	Non-sel. IR
TI 1	1000 ms
TI 2	3200 ms
Flip Angle 1	4 deg
Flip Angle 2	4 deg
Fat-Water Contrast	Fast Water Excitation
Dark Blood	Off
Contrasts	1
Reconstruction	Magnitude

**Geometry - AutoAlign**

Slab Group	1
Position	L0.0 A26.9 F46.0 mm
Orientation	Sagittal
Phase Encoding Dir.	A >> P
AutoAlign	Head > Basis
Initial Position	L0.0 A26.9 F46.0
L	0.0 mm
A	26.9 mm
F	46.0 mm
Initial Orientation	Sagittal
Initial Rotation	0.01 deg

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

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

**System - Miscellaneous**

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

**System - Adjustments**

Adjustment Strategy	Standard
B0 Shim	Tune up
B1 Shim	TrueForm
Adjustment Tolerance	Auto
Confirm Frequency	Never
Assume Silicone	Off

**System - Adjust Volume**

! Position	L0.0 A7.8 F5.5 mm
! Orientation	T > C-23.0
! Rotation	0.00 deg
! A >> P	159 mm
! R >> L	128 mm
! F >> H	120 mm
Reset	Off

**System - pTx**

B1 Shim	TrueForm
Excitation	Non-sel.

**System - Tx/Rx**

Frequency 1H	297.117813 MHz
? Ref. Amplitude 1H	0.000 V
Reset	Off

**System - Tx/Rx**

Correction Factor	1.00
Image Scaling	1.000

**Physio - Signal**

1st Signal/Mode	None
TR	4300.0 ms
Concatenations	1

**Physio - Cardiac**

Fat-Water Contrast	Fast Water Excitation
Magn. Preparation	Non-sel. IR
TI 1	1000 ms
TI 2	3200 ms
Dark Blood	Off
FOV Read	240 mm
FOV Phase	93.8 %
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 - MapIt**

MapIt	None
Flip Angle 1	4 deg
Flip Angle 2	4 deg
Measurements	1
Contrasts	1
TE	2.27 ms
TR	4300.0 ms
Save Original Images	On

**Sequence - Part 1**

Sequence Name	tfl
Dimension	3D

**Sequence - Part 1**

Excitation	Non-sel.
RF Pulse Type	Fast
Gradient Mode	Fast*
Flow Compensation	None
Reordering	Linear
Bandwidth	200 Hz/Px
Echo Spacing	7.22 ms
Asymmetric Echo	Allowed
Turbo Factor	156

**Sequence - Part 2**

Introduction	On
RF Spoiling	On
Incr. Gradient Spoiling	Off

**Sequence - Assistant**

SAR Assistant	Off
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\\MARTINOS DEVELOPER\HUBER\T1\_protocols\AZMA\_coil\_20251210\t1\_mprage\_sag\_stx\_second\_average

TA: 3:55 min Coil Selection: Manual Voxel Size: 0.6x0.6x0.7 mm<sup>3</sup> Acc:: 6.5 Rel. SNR: 1.00

### Properties

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

### Routine

Slab Group	1
Slabs	1
Distance Factor	50 %
Position	L0.0 A27.9 F42.9 mm
Orientation	Sagittal
Phase Encoding Dir.	A >> P
Slices per Slab	256
Phase Oversampling	0 %
Slice Oversampling	0.0 %
FOV Read	240 mm
FOV Phase	100.0 %
Slice Thickness	0.65 mm
TR	4000.0 ms
TE	3.47 ms
Averages	1
Concatenations	1
AutoAlign	Head > Basis
Coil Elements	AC

### Contrast - Common

TR	4000.0 ms
TE	3.47 ms
Magn. Preparation	Non-sel. IR
TI	1500 ms
Flip Angle	4 deg
Fat-Water Contrast	Standard
Dark Blood	Off
Contrasts	1
Reconstruction	Magnitude

### Contrast - Dynamic

Dynamic Mode	Standard
Measurements	1

### Contrast - Dynamic

Multiple Series	Each Measurement
Reordering	Linear

### Resolution - Common

FOV Read	240 mm
FOV Phase	100.0 %
Slice Thickness	0.65 mm
Base Resolution	416
Phase Resolution	100 %
Slice Resolution	100 %
Interpolation	Off

### Resolution - Acceleration

Acceleration Mode	CS
Total Factor	6.5
Reference Scans	GRE/Separate
Reference Lines PE	32
Phase Partial Fourier	Off
Slice Partial Fourier	Off
Asymmetric Echo	Off
Elliptical Scanning	Off

### Resolution - Filter

Raw Filter	On
Elliptical Filter	Off
Distortion Correction	2D
Normalize	B1 Filter
Image Filter	On

### Geometry - Common

Slab Group	1
Slabs	1
Distance Factor	50 %
Position	L0.0 A27.9 F42.9 mm
Orientation	Sagittal
Phase Encoding Dir.	A >> P
Slices per Slab	256
Phase Oversampling	0 %
Slice Oversampling	0.0 %
FOV Read	240 mm
FOV Phase	100.0 %
Slice Thickness	0.65 mm
TR	4000.0 ms
Multi-Slice Mode	Single Shot
Series	Interleaved
Concatenations	1

### Geometry - AutoAlign

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

**Geometry - AutoAlign**

Position	L0.0 A27.9 F42.9 mm
Orientation	Sagittal
Phase Encoding Dir.	A >> P
AutoAlign	Head > Basis
Initial Position	L0.0 A27.9 F42.9
L	0.0 mm
A	27.9 mm
F	42.9 mm
Initial Orientation	Sagittal
Initial Rotation	0.00 deg

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

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

**System - Miscellaneous**

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

**System - Adjustments**

Adjustment Strategy	Standard
B0 Shim	Tune up
B1 Shim	TrueForm
Adjustment Tolerance	Auto
Confirm Frequency	Never
Assume Silicone	Off

**System - Adjust Volume**

! Position	L0.0 A7.8 F5.5 mm
! Orientation	T > C-23.0
! Rotation	0.00 deg
! A >> P	159 mm
! R >> L	128 mm
! F >> H	120 mm
Reset	Off

**System - pTx**

B1 Shim	TrueForm
Excitation	Non-sel.

**System - Tx/Rx**

Frequency 1H	297.117813 MHz
! Ref. Amplitude 1H	350.000 V
Reset	Off
Correction Factor	1.00

**System - Tx/Rx**

Image Scaling	1.000
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**Physio - Signal**

1st Signal/Mode	None
TR	4000.0 ms
Concatenations	1

**Physio - Cardiac**

Fat-Water Contrast	Standard
Magn. Preparation	Non-sel. IR
TI	1500 ms
Dark Blood	Off
FOV Read	240 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 - MapIt**

MapIt	None
Flip Angle	4 deg
Measurements	1
Contrasts	1
TE	3.47 ms
TR	4000.0 ms
Save Original Images	On

**Sequence - Part 1**

Sequence Name	tfl
Dimension	3D
Excitation	Non-sel.
RF Pulse Type	Fast
Gradient Mode	Fast



**Sequence - Part 1**

Flow Compensation	None
Reordering	Linear
Bandwidth	200 Hz/Px
Echo Spacing	8.12 ms
Asymmetric Echo	Off
Turbo Factor	220

**Sequence - Part 2**

Introduction	On
RF Spoiling	On
Incr. Gradient Spoiling	Off

**Sequence - Assistant**

SAR Assistant	Off
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\\MARTINOS DEVELOPER\HUBER\T1\_protocols\AZMA\_coil\_20251210\t1\_mprage\_sag\_stx\_CS4\_less\_noisy

TA: 6:23 min Coil Selection: Manual Voxel Size: 0.6×0.6×0.7 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
Disable auto transfer to PACS	Off
Load Images to Stamp Segments	On
Load Images to Graphic Segments	On
Graphic segment	Default
Inline Movie	Off

### Routine

Slab Group	1
Slabs	1
Distance Factor	50 %
Position	L0.0 A27.9 F42.9 mm
Orientation	Sagittal
Phase Encoding Dir.	A >> P
Slices per Slab	256
Phase Oversampling	0 %
Slice Oversampling	0.0 %
FOV Read	240 mm
FOV Phase	100.0 %
Slice Thickness	0.65 mm
TR	4000.0 ms
TE	3.47 ms
Averages	1
Concatenations	1
AutoAlign	Head > Basis
Coil Elements	AC

### Contrast - Common

TR	4000.0 ms
TE	3.47 ms
Magn. Preparation	Non-sel. IR
TI	1500 ms
Flip Angle	4 deg
Fat-Water Contrast	Standard
Dark Blood	Off
Contrasts	1
Reconstruction	Magnitude

### Contrast - Dynamic

Dynamic Mode	Standard
Measurements	1

### Contrast - Dynamic

Multiple Series	Each Measurement
Reordering	Linear

### Resolution - Common

FOV Read	240 mm
FOV Phase	100.0 %
Slice Thickness	0.65 mm
Base Resolution	416
Phase Resolution	100 %
Slice Resolution	100 %
Interpolation	Off

### Resolution - Acceleration

Acceleration Mode	CS
Total Factor	4.0
Reference Scans	GRE/Separate
Reference Lines PE	32
Phase Partial Fourier	Off
Slice Partial Fourier	Off
Asymmetric Echo	Off
Elliptical Scanning	Off

### Resolution - Filter

Raw Filter	On
Elliptical Filter	Off
Distortion Correction	2D
Normalize	B1 Filter
Image Filter	On

### Geometry - Common

Slab Group	1
Slabs	1
Distance Factor	50 %
Position	L0.0 A27.9 F42.9 mm
Orientation	Sagittal
Phase Encoding Dir.	A >> P
Slices per Slab	256
Phase Oversampling	0 %
Slice Oversampling	0.0 %
FOV Read	240 mm
FOV Phase	100.0 %
Slice Thickness	0.65 mm
TR	4000.0 ms
Multi-Slice Mode	Single Shot
Series	Interleaved
Concatenations	1

### Geometry - AutoAlign

Slab Group	1
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**Geometry - AutoAlign**

Position	L0.0 A27.9 F42.9 mm
Orientation	Sagittal
Phase Encoding Dir.	A >> P
AutoAlign	Head > Basis
Initial Position	L0.0 A27.9 F42.9
L	0.0 mm
A	27.9 mm
F	42.9 mm
Initial Orientation	Sagittal
Initial Rotation	0.00 deg

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

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

**System - Miscellaneous**

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

**System - Adjustments**

Adjustment Strategy	Standard
B0 Shim	Tune up
B1 Shim	TrueForm
Adjustment Tolerance	Auto
Confirm Frequency	Never
Assume Silicone	Off

**System - Adjust Volume**

! Position	L0.0 A7.8 F5.5 mm
! Orientation	T > C-23.0
! Rotation	0.00 deg
! A >> P	159 mm
! R >> L	128 mm
! F >> H	120 mm
Reset	Off

**System - pTx**

B1 Shim	TrueForm
Excitation	Non-sel.

**System - Tx/Rx**

Frequency 1H	297.117813 MHz
! Ref. Amplitude 1H	350.000 V
Reset	Off
Correction Factor	1.00

**System - Tx/Rx**

Image Scaling	1.000
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**Physio - Signal**

1st Signal/Mode	None
TR	4000.0 ms
Concatenations	1

**Physio - Cardiac**

Fat-Water Contrast	Standard
Magn. Preparation	Non-sel. IR
TI	1500 ms
Dark Blood	Off
FOV Read	240 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 - MapIt**

MapIt	None
Flip Angle	4 deg
Measurements	1
Contrasts	1
TE	3.47 ms
TR	4000.0 ms
Save Original Images	On

**Sequence - Part 1**

Sequence Name	tfl
Dimension	3D
Excitation	Non-sel.
RF Pulse Type	Fast
Gradient Mode	Fast

**Sequence - Part 1**

Flow Compensation	None
Reordering	Linear
Bandwidth	200 Hz/Px
Echo Spacing	8.12 ms
Asymmetric Echo	Off
Turbo Factor	219

**Sequence - Part 2**

Introduction	On
RF Spoiling	On
Incr. Gradient Spoiling	Off

**Sequence - Assistant**

SAR Assistant	Off
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\\MARTINOS DEVELOPER\HUBERT1\_protocols\AZMA\_coil\_20251210\t1\_mprage\_sag\_stx\_0.75\_two\_halfs

TA: 7:07 min Coil Selection: Manual Voxel Size: 0.8×0.8×0.8 mm<sup>3</sup> Acc:: 5.5 Rel. SNR: 1.00

### Properties

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

### Contrast - Dynamic

Pause after Meas. 1	0.0 s
Multiple Series	Each Measurement
Reordering	Linear

### Resolution - Common

FOV Read	240 mm
FOV Phase	100.0 %
Slice Thickness	0.75 mm
Base Resolution	320
Phase Resolution	100 %
Slice Resolution	100 %
Interpolation	Off

### Resolution - Acceleration

Acceleration Mode	CS
Total Factor	5.5
Reference Scans	GRE/Separate
Reference Lines PE	32
Phase Partial Fourier	Off
Slice Partial Fourier	Off
Asymmetric Echo	Off
Elliptical Scanning	Off

### Routine

Slab Group	1
Slabs	1
Distance Factor	50 %
Position	L0.0 A27.9 F42.9 mm
Orientation	Sagittal
Phase Encoding Dir.	A >> P
Slices per Slab	256
Phase Oversampling	0 %
Slice Oversampling	0.0 %
FOV Read	240 mm
FOV Phase	100.0 %
Slice Thickness	0.75 mm
TR	4000.0 ms
TE	3.33 ms
Averages	1
Concatenations	1
AutoAlign	Head > Basis
Coil Elements	AC

### Resolution - Filter

Raw Filter	On
Elliptical Filter	Off
Distortion Correction	2D
Normalize	B1 Filter
Image Filter	On

### Geometry - Common

Slab Group	1
Slabs	1
Distance Factor	50 %
Position	L0.0 A27.9 F42.9 mm
Orientation	Sagittal
Phase Encoding Dir.	A >> P
Slices per Slab	256
Phase Oversampling	0 %
Slice Oversampling	0.0 %
FOV Read	240 mm
FOV Phase	100.0 %
Slice Thickness	0.75 mm
TR	4000.0 ms
Multi-Slice Mode	Single Shot
Series	Interleaved
Concatenations	1

### Contrast - Common

TR	4000.0 ms
TE	3.33 ms
Magn. Preparation	Non-sel. IR
TI	1500 ms
Flip Angle	4 deg
Fat-Water Contrast	Standard
Dark Blood	Off
Contrasts	1
Reconstruction	Magnitude

### Contrast - Dynamic

Dynamic Mode	Standard
Measurements	2

**Geometry - AutoAlign**

Slab Group	1
Position	L0.0 A27.9 F42.9 mm
Orientation	Sagittal
Phase Encoding Dir.	A >> P
AutoAlign	Head > Basis
Initial Position	L0.0 A27.9 F42.9
L	0.0 mm
A	27.9 mm
F	42.9 mm
Initial Orientation	Sagittal
Initial Rotation	0.00 deg

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

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

**System - Miscellaneous**

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

**System - Adjustments**

Adjustment Strategy	Standard
B0 Shim	Tune up
B1 Shim	TrueForm
Adjustment Tolerance	Auto
Confirm Frequency	Never
Assume Silicone	Off

**System - Adjust Volume**

! Position	L0.0 A7.8 F5.5 mm
! Orientation	T > C-23.0
! Rotation	0.00 deg
! A >> P	159 mm
! R >> L	128 mm
! F >> H	120 mm
Reset	Off

**System - pTx**

B1 Shim	TrueForm
Excitation	Non-sel.

**System - Tx/Rx**

Frequency 1H	297.117813 MHz
! Ref. Amplitude 1H	350.000 V
Reset	Off

**System - Tx/Rx**

Correction Factor	1.00
Image Scaling	1.000

**Physio - Signal**

1st Signal/Mode	None
TR	4000.0 ms
Concatenations	1

**Physio - Cardiac**

Fat-Water Contrast	Standard
Magn. Preparation	Non-sel. IR
TI	1500 ms
Dark Blood	Off
FOV Read	240 mm
FOV Phase	100.0 %
Phase Resolution	100 %

**Physio - PACE**

Resp. Control	Off
Concatenations	1

**Inline - Subtraction**

Subtract	Off
Measurements	2
StdDev	Off
Save Original Images	On

**Inline - MIP**

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

**Inline - Composing****Inline - MapIt**

MapIt	None
Flip Angle	4 deg
Measurements	2
Contrasts	1
TE	3.33 ms
TR	4000.0 ms
Save Original Images	On

**Sequence - Part 1**

Sequence Name	tfl
Dimension	3D
Excitation	Non-sel.
RF Pulse Type	Fast

**Sequence - Part 1**

Gradient Mode	Fast
Flow Compensation	None
Reordering	Linear
Bandwidth	200 Hz/Px
Echo Spacing	7.66 ms
Asymmetric Echo	Off
Turbo Factor	220

**Sequence - Part 2**

Introduction	On
RF Spoiling	On
Incr. Gradient Spoiling	Off

**Sequence - Assistant**

SAR Assistant	Off
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# MARTINOS DEVELOPER\HUBER\T1\_protocols\AZMA\_coil\_20251210\t1\_mp2rage\_sag\_p3\_0.75mm\_no\_DICO

TA: 8:50 min Coil Selection: Manual Voxel Size: 0.8x0.8x0.8 mm<sup>3</sup> Acc:: 3 Rel. SNR: 1.00

## Properties

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

## Contrast - Dynamic

Dynamic Mode	Standard
Measurements	1
Multiple Series	Each Measurement
Reordering	Linear

## Resolution - Common

FOV Read	240 mm
FOV Phase	93.8 %
Slice Thickness	0.75 mm
Base Resolution	320
Phase Resolution	100 %
Slice Resolution	100 %
Interpolation	Off

## Routine

Slab Group	1
Slabs	1
Distance Factor	50 %
Position	L0.0 A26.9 F46.0 mm
Orientation	Sagittal
Phase Encoding Dir.	A >> P
Slices per Slab	192
Phase Oversampling	0 %
Slice Oversampling	8.3 %
FOV Read	240 mm
FOV Phase	93.8 %
Slice Thickness	0.75 mm
TR	4300.0 ms
TE	2.27 ms
Averages	1
Concatenations	1
AutoAlign	Head > Basis
Coil Elements	AC

## Resolution - Acceleration

Acceleration Mode	GRAPPA
Reference Scans	Integrated
Acceleration Factor PE	3
Reference Lines PE	36
Acceleration Factor 3D	1
Phase Partial Fourier	Off
Slice Partial Fourier	6/8
Asymmetric Echo	Allowed
Elliptical Scanning	Off

## Resolution - Filter

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

## Geometry - Common

Slab Group	1
Slabs	1
Distance Factor	50 %
Position	L0.0 A26.9 F46.0 mm
Orientation	Sagittal
Phase Encoding Dir.	A >> P
Slices per Slab	192
Phase Oversampling	0 %
Slice Oversampling	8.3 %
FOV Read	240 mm
FOV Phase	93.8 %
Slice Thickness	0.75 mm
TR	4300.0 ms
Multi-Slice Mode	Single Shot
Series	Interleaved
Concatenations	1

## Contrast - Common

TR	4300.0 ms
TE	2.27 ms
Magn. Preparation	Non-sel. IR
TI 1	1000 ms
TI 2	3200 ms
Flip Angle 1	4 deg
Flip Angle 2	4 deg
Fat-Water Contrast	Fast Water Excitation
Dark Blood	Off
Contrasts	1
Reconstruction	Magnitude



**Geometry - AutoAlign**

Slab Group	1
Position	L0.0 A26.9 F46.0 mm
Orientation	Sagittal
Phase Encoding Dir.	A >> P
AutoAlign	Head > Basis
Initial Position	L0.0 A26.9 F46.0
L	0.0 mm
A	26.9 mm
F	46.0 mm
Initial Orientation	Sagittal
Initial Rotation	0.01 deg

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

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

**System - Miscellaneous**

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

**System - Adjustments**

Adjustment Strategy	Standard
B0 Shim	Tune up
B1 Shim	TrueForm
Adjustment Tolerance	Auto
Confirm Frequency	Never
Assume Silicone	Off

**System - Adjust Volume**

! Position	L0.0 A7.8 F5.5 mm
! Orientation	T > C-23.0
! Rotation	0.00 deg
! A >> P	159 mm
! R >> L	128 mm
! F >> H	120 mm
Reset	Off

**System - pTx**

B1 Shim	TrueForm
Excitation	Non-sel.

**System - Tx/Rx**

Frequency 1H	297.117813 MHz
? Ref. Amplitude 1H	0.000 V
Reset	Off

**System - Tx/Rx**

Correction Factor	1.00
Image Scaling	1.000

**Physio - Signal**

1st Signal/Mode	None
TR	4300.0 ms
Concatenations	1

**Physio - Cardiac**

Fat-Water Contrast	Fast Water Excitation
Magn. Preparation	Non-sel. IR
TI 1	1000 ms
TI 2	3200 ms
Dark Blood	Off
FOV Read	240 mm
FOV Phase	93.8 %
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 - MapIt**

MapIt	None
Flip Angle 1	4 deg
Flip Angle 2	4 deg
Measurements	1
Contrasts	1
TE	2.27 ms
TR	4300.0 ms
Save Original Images	On

**Sequence - Part 1**

Sequence Name	tfl
Dimension	3D

**Sequence - Part 1**

Excitation	Non-sel.
RF Pulse Type	Fast
Gradient Mode	Fast*
Flow Compensation	None
Reordering	Linear
Bandwidth	200 Hz/Px
Echo Spacing	7.22 ms
Asymmetric Echo	Allowed
Turbo Factor	156

**Sequence - Part 2**

Introduction	On
RF Spoiling	On
Incr. Gradient Spoiling	Off

**Sequence - Assistant**

SAR Assistant	Off
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\\MARTINOS DEVELOPER\HUBERT1\_protocols\AZMA\_coil\_20251210\t1\_mprage\_sag\_stx\_0.75\_again\_4\_half\_test

TA: 7:07 min Coil Selection: Manual Voxel Size: 0.8x0.8x0.8 mm<sup>3</sup> Acc:: 5.5 Rel. SNR: 1.00

### Properties

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

### Contrast - Dynamic

Pause after Meas. 1	0.0 s
Multiple Series	Each Measurement
Reordering	Linear

### Resolution - Common

FOV Read	240 mm
FOV Phase	100.0 %
Slice Thickness	0.75 mm
Base Resolution	320
Phase Resolution	100 %
Slice Resolution	100 %
Interpolation	Off

### Resolution - Acceleration

Acceleration Mode	CS
Total Factor	5.5
Reference Scans	GRE/Separate
Reference Lines PE	32
Phase Partial Fourier	Off
Slice Partial Fourier	Off
Asymmetric Echo	Off
Elliptical Scanning	Off

### Routine

Slab Group	1
Slabs	1
Distance Factor	50 %
Position	L0.0 A27.9 F42.9 mm
Orientation	Sagittal
Phase Encoding Dir.	A >> P
Slices per Slab	256
Phase Oversampling	0 %
Slice Oversampling	0.0 %
FOV Read	240 mm
FOV Phase	100.0 %
Slice Thickness	0.75 mm
TR	4000.0 ms
TE	3.33 ms
Averages	1
Concatenations	1
AutoAlign	Head > Basis
Coil Elements	AC

### Resolution - Filter

Raw Filter	On
Elliptical Filter	Off
Distortion Correction	2D
Normalize	B1 Filter
Image Filter	On

### Geometry - Common

Slab Group	1
Slabs	1
Distance Factor	50 %
Position	L0.0 A27.9 F42.9 mm
Orientation	Sagittal
Phase Encoding Dir.	A >> P
Slices per Slab	256
Phase Oversampling	0 %
Slice Oversampling	0.0 %
FOV Read	240 mm
FOV Phase	100.0 %
Slice Thickness	0.75 mm
TR	4000.0 ms
Multi-Slice Mode	Single Shot
Series	Interleaved
Concatenations	1

### Contrast - Common

TR	4000.0 ms
TE	3.33 ms
Magn. Preparation	Non-sel. IR
TI	1500 ms
Flip Angle	4 deg
Fat-Water Contrast	Standard
Dark Blood	Off
Contrasts	1
Reconstruction	Magnitude

### Contrast - Dynamic

Dynamic Mode	Standard
Measurements	2

**Geometry - AutoAlign**

Slab Group	1
Position	L0.0 A27.9 F42.9 mm
Orientation	Sagittal
Phase Encoding Dir.	A >> P
AutoAlign	Head > Basis
Initial Position	L0.0 A27.9 F42.9
L	0.0 mm
A	27.9 mm
F	42.9 mm
Initial Orientation	Sagittal
Initial Rotation	0.00 deg

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

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

**System - Miscellaneous**

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

**System - Adjustments**

Adjustment Strategy	Standard
B0 Shim	Tune up
B1 Shim	TrueForm
Adjustment Tolerance	Auto
Confirm Frequency	Never
Assume Silicone	Off

**System - Adjust Volume**

! Position	L0.0 A7.8 F5.5 mm
! Orientation	T > C-23.0
! Rotation	0.00 deg
! A >> P	159 mm
! R >> L	128 mm
! F >> H	120 mm
Reset	Off

**System - pTx**

B1 Shim	TrueForm
Excitation	Non-sel.

**System - Tx/Rx**

Frequency 1H	297.117813 MHz
! Ref. Amplitude 1H	350.000 V
Reset	Off

**System - Tx/Rx**

Correction Factor	1.00
Image Scaling	1.000

**Physio - Signal**

1st Signal/Mode	None
TR	4000.0 ms
Concatenations	1

**Physio - Cardiac**

Fat-Water Contrast	Standard
Magn. Preparation	Non-sel. IR
TI	1500 ms
Dark Blood	Off
FOV Read	240 mm
FOV Phase	100.0 %
Phase Resolution	100 %

**Physio - PACE**

Resp. Control	Off
Concatenations	1

**Inline - Subtraction**

Subtract	Off
Measurements	2
StdDev	Off
Save Original Images	On

**Inline - MIP**

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

**Inline - Composing****Inline - MapIt**

MapIt	None
Flip Angle	4 deg
Measurements	2
Contrasts	1
TE	3.33 ms
TR	4000.0 ms
Save Original Images	On

**Sequence - Part 1**

Sequence Name	tfl
Dimension	3D
Excitation	Non-sel.
RF Pulse Type	Fast

**Sequence - Part 1**

Gradient Mode	Fast
Flow Compensation	None
Reordering	Linear
Bandwidth	200 Hz/Px
Echo Spacing	7.66 ms
Asymmetric Echo	Off
Turbo Factor	220

**Sequence - Part 2**

Introduction	On
RF Spoiling	On
Incr. Gradient Spoiling	Off

**Sequence - Assistant**

SAR Assistant	Off
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# \\MARTINOS DEVELOPER\HUBER\T1\_protocols\AZMA\_coil\_20251210\t1\_mprage\_sag\_stx\_0.75\_Tuprbo\_factor\_andCS

TA: 3:35 min Coil Selection: Manual Voxel Size: 0.8×0.8×0.8 mm<sup>3</sup> Acc:: 5.6 Rel. SNR: 1.00

## Properties

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

## Routine

Slab Group	1
Slabs	1
Distance Factor	50 %
Position	L0.0 A27.9 F42.9 mm
Orientation	Sagittal
Phase Encoding Dir.	A >> P
Slices per Slab	240
Phase Oversampling	0 %
Slice Oversampling	0.0 %
FOV Read	240 mm
FOV Phase	100.0 %
Slice Thickness	0.75 mm
TR	4000.0 ms
TE	4.66 ms
Averages	1
Concatenations	1
AutoAlign	Head > Basis
Coil Elements	AC

## Contrast - Common

TR	4000.0 ms
TE	4.66 ms
Magn. Preparation	Non-sel. IR
TI	1500 ms
Flip Angle	4 deg
Fat-Water Contrast	Standard
Dark Blood	Off
Contrasts	1
Reconstruction	Magnitude

## Contrast - Dynamic

Dynamic Mode	Standard
Measurements	1

## Contrast - Dynamic

Multiple Series	Each Measurement
Reordering	Linear

## Resolution - Common

FOV Read	240 mm
FOV Phase	100.0 %
Slice Thickness	0.75 mm
Base Resolution	320
Phase Resolution	100 %
Slice Resolution	100 %
Interpolation	Off

## Resolution - Acceleration

Acceleration Mode	CS
Total Factor	5.6
Reference Scans	GRE/Separate
Reference Lines PE	32
Phase Partial Fourier	Off
Slice Partial Fourier	Off
Asymmetric Echo	Off
Elliptical Scanning	Off

## Resolution - Filter

Raw Filter	On
Elliptical Filter	Off
Distortion Correction	2D
Normalize	B1 Filter
Image Filter	On

## Geometry - Common

Slab Group	1
Slabs	1
Distance Factor	50 %
Position	L0.0 A27.9 F42.9 mm
Orientation	Sagittal
Phase Encoding Dir.	A >> P
Slices per Slab	240
Phase Oversampling	0 %
Slice Oversampling	0.0 %
FOV Read	240 mm
FOV Phase	100.0 %
Slice Thickness	0.75 mm
TR	4000.0 ms
Multi-Slice Mode	Single Shot
Series	Interleaved
Concatenations	1

## Geometry - AutoAlign

Slab Group	1
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**Geometry - AutoAlign**

Position	L0.0 A27.9 F42.9 mm
Orientation	Sagittal
Phase Encoding Dir.	A >> P
AutoAlign	Head > Basis
Initial Position	L0.0 A27.9 F42.9
L	0.0 mm
A	27.9 mm
F	42.9 mm
Initial Orientation	Sagittal
Initial Rotation	0.00 deg

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

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

**System - Miscellaneous**

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

**System - Adjustments**

Adjustment Strategy	Standard
B0 Shim	Tune up
B1 Shim	TrueForm
Adjustment Tolerance	Auto
Confirm Frequency	Never
Assume Silicone	Off

**System - Adjust Volume**

! Position	L0.0 A7.8 F5.5 mm
! Orientation	T > C-23.0
! Rotation	0.00 deg
! A >> P	159 mm
! R >> L	128 mm
! F >> H	120 mm
Reset	Off

**System - pTx**

B1 Shim	TrueForm
Excitation	Non-sel.

**System - Tx/Rx**

Frequency 1H	297.117813 MHz
! Ref. Amplitude 1H	350.000 V
Reset	Off
Correction Factor	1.00

**System - Tx/Rx**

Image Scaling	1.000
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**Physio - Signal**

1st Signal/Mode	None
TR	4000.0 ms
Concatenations	1

**Physio - Cardiac**

Fat-Water Contrast	Standard
Magn. Preparation	Non-sel. IR
TI	1500 ms
Dark Blood	Off
FOV Read	240 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	On
MIP Cor	On
MIP Tra	On
MIP Time	Off
Radial MIP	Off
Save Original Images	On
MPR Sag	Off
MPR Cor	Off
MPR Tra	Off

**Inline - Composing****Inline - MapIt**

MapIt	None
Flip Angle	4 deg
Measurements	1
Contrasts	1
TE	4.66 ms
TR	4000.0 ms
Save Original Images	On

**Sequence - Part 1**

Sequence Name	tfl
Dimension	3D
Excitation	Non-sel.
RF Pulse Type	Fast
Gradient Mode	Fast

**Sequence - Part 1**

Flow Compensation	None
Reordering	Linear
Bandwidth	130 Hz/Px
Echo Spacing	10.34 ms
Asymmetric Echo	Off
Turbo Factor	200

**Sequence - Part 2**

Introduction	On
RF Spoiling	On
Incr. Gradient Spoiling	Off

**Sequence - Assistant**

SAR Assistant	Off
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\\MARTINOS DEVELOPER\HUBER\T1\_protocols\AZMA\_coil\_20251210\t1\_mprage\_sag\_stx\_0.75\_turnbo\_ factor\_and\_

TA: 2:35 min Coil Selection: Manual Voxel Size: 0.8x0.8x0.8 mm<sup>3</sup> Acc:: 5.6 Rel. SNR: 1.00

### Properties

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

### Routine

Slab Group	1
Slabs	1
Distance Factor	50 %
Position	L0.0 A27.9 F42.9 mm
Orientation	Sagittal
Phase Encoding Dir.	A >> P
Slices per Slab	240
Phase Oversampling	0 %
Slice Oversampling	0.0 %
FOV Read	240 mm
FOV Phase	100.0 %
Slice Thickness	0.75 mm
TR	4000.0 ms
TE	4.66 ms
Averages	1
Concatenations	1
AutoAlign	Head > Basis
Coil Elements	AC

### Contrast - Common

TR	4000.0 ms
TE	4.66 ms
Magn. Preparation	Non-sel. IR
TI	1500 ms
Flip Angle	4 deg
Fat-Water Contrast	Standard
Dark Blood	Off
Contrasts	1
Reconstruction	Magnitude

### Contrast - Dynamic

Dynamic Mode	Standard
Measurements	1

### Contrast - Dynamic

Multiple Series	Each Measurement
Reordering	Linear

### Resolution - Common

FOV Read	240 mm
FOV Phase	100.0 %
Slice Thickness	0.75 mm
Base Resolution	320
Phase Resolution	100 %
Slice Resolution	100 %
Interpolation	Off

### Resolution - Acceleration

Acceleration Mode	CS
Total Factor	5.6
Reference Scans	GRE/Separate
Reference Lines PE	32
Phase Partial Fourier	Off
Slice Partial Fourier	Off
Asymmetric Echo	Off
Elliptical Scanning	Off

### Resolution - Filter

Raw Filter	On
Elliptical Filter	Off
Distortion Correction	2D
Normalize	B1 Filter
Image Filter	On

### Geometry - Common

Slab Group	1
Slabs	1
Distance Factor	50 %
Position	L0.0 A27.9 F42.9 mm
Orientation	Sagittal
Phase Encoding Dir.	A >> P
Slices per Slab	240
Phase Oversampling	0 %
Slice Oversampling	0.0 %
FOV Read	240 mm
FOV Phase	100.0 %
Slice Thickness	0.75 mm
TR	4000.0 ms
Multi-Slice Mode	Single Shot
Series	Interleaved
Concatenations	1

### Geometry - AutoAlign

Slab Group	1
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**Geometry - AutoAlign**

Position	L0.0 A27.9 F42.9 mm
Orientation	Sagittal
Phase Encoding Dir.	A >> P
AutoAlign	Head > Basis
Initial Position	L0.0 A27.9 F42.9
L	0.0 mm
A	27.9 mm
F	42.9 mm
Initial Orientation	Sagittal
Initial Rotation	0.00 deg

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

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

**System - Miscellaneous**

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

**System - Adjustments**

Adjustment Strategy	Standard
B0 Shim	Tune up
B1 Shim	TrueForm
Adjustment Tolerance	Auto
Confirm Frequency	Never
Assume Silicone	Off

**System - Adjust Volume**

! Position	L0.0 A7.8 F5.5 mm
! Orientation	T > C-23.0
! Rotation	0.00 deg
! A >> P	159 mm
! R >> L	128 mm
! F >> H	120 mm
Reset	Off

**System - pTx**

B1 Shim	TrueForm
Excitation	Non-sel.

**System - Tx/Rx**

Frequency 1H	297.117813 MHz
! Ref. Amplitude 1H	350.000 V
Reset	Off
Correction Factor	1.00

**System - Tx/Rx**

Image Scaling	1.000
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**Physio - Signal**

1st Signal/Mode	None
TR	4000.0 ms
Concatenations	1

**Physio - Cardiac**

Fat-Water Contrast	Standard
Magn. Preparation	Non-sel. IR
TI	1500 ms
Dark Blood	Off
FOV Read	240 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	On
MIP Cor	On
MIP Tra	On
MIP Time	Off
Radial MIP	Off
Save Original Images	On
MPR Sag	Off
MPR Cor	Off
MPR Tra	Off

**Inline - Composing****Inline - MapIt**

MapIt	None
Flip Angle	4 deg
Measurements	1
Contrasts	1
TE	4.66 ms
TR	4000.0 ms
Save Original Images	On

**Sequence - Part 1**

Sequence Name	tfl
Dimension	3D
Excitation	Non-sel.
RF Pulse Type	Fast
Gradient Mode	Fast

**Sequence - Part 1**

Flow Compensation	None
Reordering	Linear
Bandwidth	130 Hz/Px
Echo Spacing	10.34 ms
Asymmetric Echo	Off
Turbo Factor	280

**Sequence - Part 2**

Introduction	On
RF Spoiling	On
Incr. Gradient Spoiling	Off

**Sequence - Assistant**

SAR Assistant	Off
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\\MARTINOS DEVELOPER\HUBERT1\_protocols\AZMA\_coil\_20251210\t1\_mprage\_sag\_stx\_0.75\_

TA: 3:15 min Coil Selection: Manual Voxel Size: 0.8×0.8×0.8 mm<sup>3</sup> Acc:: 4.4 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
Disable auto transfer to PACS	Off
Load Images to Stamp Segments	On
Load Images to Graphic Segments	On
Graphic segment	Default
Inline Movie	Off

**Routine**

Slab Group	1
Slabs	1
Distance Factor	50 %
Position	L0.0 A27.9 F42.9 mm
Orientation	Sagittal
Phase Encoding Dir.	A >> P
Slices per Slab	240
Phase Oversampling	0 %
Slice Oversampling	0.0 %
FOV Read	240 mm
FOV Phase	100.0 %
Slice Thickness	0.75 mm
TR	4000.0 ms
TE	4.66 ms
Averages	1
Concatenations	1
AutoAlign	Head > Basis
Coil Elements	AC

**Contrast - Common**

TR	4000.0 ms
TE	4.66 ms
Magn. Preparation	Non-sel. IR
TI	1500 ms
Flip Angle	4 deg
Fat-Water Contrast	Standard
Dark Blood	Off
Contrasts	1
Reconstruction	Magnitude

**Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Each Measurement
Reordering	Linear

**Resolution - Common**

FOV Read	240 mm
FOV Phase	100.0 %
Slice Thickness	0.75 mm
Base Resolution	320
Phase Resolution	100 %
Slice Resolution	100 %
Interpolation	Off

**Resolution - Acceleration**

Acceleration Mode	CS
Total Factor	4.4
Reference Scans	GRE/Separate
Reference Lines PE	32
Phase Partial Fourier	Off
Slice Partial Fourier	Off
Asymmetric Echo	Off
Elliptical Scanning	Off

**Resolution - Filter**

Raw Filter	On
Elliptical Filter	Off
Distortion Correction	2D
Normalize	B1 Filter
Image Filter	On

**Geometry - Common**

Slab Group	1
Slabs	1
Distance Factor	50 %
Position	L0.0 A27.9 F42.9 mm
Orientation	Sagittal
Phase Encoding Dir.	A >> P
Slices per Slab	240
Phase Oversampling	0 %
Slice Oversampling	0.0 %
FOV Read	240 mm
FOV Phase	100.0 %
Slice Thickness	0.75 mm
TR	4000.0 ms
Multi-Slice Mode	Single Shot
Series	Interleaved
Concatenations	1

**Geometry - AutoAlign**

Slab Group	1
Position	L0.0 A27.9 F42.9 mm
Orientation	Sagittal
Phase Encoding Dir.	A >> P
AutoAlign	Head > Basis
Initial Position	L0.0 A27.9 F42.9

**Geometry - AutoAlign**

L	0.0 mm
A	27.9 mm
F	42.9 mm
Initial Orientation	Sagittal
Initial Rotation	0.00 deg

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

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

**System - Miscellaneous**

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

**System - Adjustments**

Adjustment Strategy	Standard
B0 Shim	Tune up
B1 Shim	TrueForm
Adjustment Tolerance	Auto
Confirm Frequency	Never
Assume Silicone	Off

**System - Adjust Volume**

! Position	L0.0 A7.8 F5.5 mm
! Orientation	T > C-23.0
! Rotation	0.00 deg
! A >> P	159 mm
! R >> L	128 mm
! F >> H	120 mm
Reset	Off

**System - pTx**

B1 Shim	TrueForm
Excitation	Non-sel.

**System - Tx/Rx**

Frequency 1H	297.117813 MHz
! Ref. Amplitude 1H	350.000 V
Reset	Off
Correction Factor	1.00
Image Scaling	1.000

**Physio - Signal**

1st Signal/Mode	None
TR	4000.0 ms

**Physio - Signal**

Concatenations	1
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**Physio - Cardiac**

Fat-Water Contrast	Standard
Magn. Preparation	Non-sel. IR
TI	1500 ms
Dark Blood	Off
FOV Read	240 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	On
MIP Cor	On
MIP Tra	On
MIP Time	Off
Radial MIP	Off
Save Original Images	On
MPR Sag	Off
MPR Cor	Off
MPR Tra	Off

**Inline - Composing****Inline - MapIt**

MapIt	None
Flip Angle	4 deg
Measurements	1
Contrasts	1
TE	4.66 ms
TR	4000.0 ms
Save Original Images	On

**Sequence - Part 1**

Sequence Name	tfl
Dimension	3D
Excitation	Non-sel.
RF Pulse Type	Fast
Gradient Mode	Fast
Flow Compensation	None
Reordering	Linear
Bandwidth	130 Hz/Px
Echo Spacing	10.34 ms
Asymmetric Echo	Off

**Sequence - Part 1**

Turbo Factor	280
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**Sequence - Part 2**

Introduction	On
RF Spoiling	On
Incr. Gradient Spoiling	Off

**Sequence - Assistant**

SAR Assistant	Off
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\MARTINOS DEVELOPER\HUBER\T1\_protocols\AZMA\_coil\_20251210\t1\_mprage\_sag\_stx\_0.75\_again

TA: 4:31 min Coil Selection: Manual Voxel Size: 0.8×0.8×0.8 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
Disable auto transfer to PACS	Off
Load Images to Stamp Segments	On
Load Images to Graphic Segments	On
Graphic segment	Default
Inline Movie	Off

**Routine**

Slab Group	1
Slabs	1
Distance Factor	50 %
Position	L0.0 A27.9 F42.9 mm
Orientation	Sagittal
Phase Encoding Dir.	A >> P
Slices per Slab	240
Phase Oversampling	0 %
Slice Oversampling	0.0 %
FOV Read	240 mm
FOV Phase	100.0 %
Slice Thickness	0.75 mm
TR	4000.0 ms
TE	4.66 ms
Averages	1
Concatenations	1
AutoAlign	Head > Basis
Coil Elements	AC

**Contrast - Common**

TR	4000.0 ms
TE	4.66 ms
Magn. Preparation	Non-sel. IR
TI	1500 ms
Flip Angle	4 deg
Fat-Water Contrast	Standard
Dark Blood	Off
Contrasts	1
Reconstruction	Magnitude

**Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Each Measurement
Reordering	Linear

**Resolution - Common**

FOV Read	240 mm
FOV Phase	100.0 %
Slice Thickness	0.75 mm
Base Resolution	320
Phase Resolution	100 %
Slice Resolution	100 %
Interpolation	Off

**Resolution - Acceleration**

Acceleration Mode	CS
Total Factor	5.0
Reference Scans	GRE/Separate
Reference Lines PE	32
Phase Partial Fourier	Off
Slice Partial Fourier	Off
Asymmetric Echo	Off
Elliptical Scanning	Off

**Resolution - Filter**

Raw Filter	On
Elliptical Filter	Off
Distortion Correction	2D
Normalize	B1 Filter
Image Filter	On

**Geometry - Common**

Slab Group	1
Slabs	1
Distance Factor	50 %
Position	L0.0 A27.9 F42.9 mm
Orientation	Sagittal
Phase Encoding Dir.	A >> P
Slices per Slab	240
Phase Oversampling	0 %
Slice Oversampling	0.0 %
FOV Read	240 mm
FOV Phase	100.0 %
Slice Thickness	0.75 mm
TR	4000.0 ms
Multi-Slice Mode	Single Shot
Series	Interleaved
Concatenations	1

**Geometry - AutoAlign**

Slab Group	1
Position	L0.0 A27.9 F42.9 mm
Orientation	Sagittal
Phase Encoding Dir.	A >> P
AutoAlign	Head > Basis
Initial Position	L0.0 A27.9 F42.9

**Geometry - AutoAlign**

L	0.0 mm
A	27.9 mm
F	42.9 mm
Initial Orientation	Sagittal
Initial Rotation	0.00 deg

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

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

**System - Miscellaneous**

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

**System - Adjustments**

Adjustment Strategy	Standard
B0 Shim	Tune up
B1 Shim	TrueForm
Adjustment Tolerance	Auto
Confirm Frequency	Never
Assume Silicone	Off

**System - Adjust Volume**

! Position	L0.0 A7.8 F5.5 mm
! Orientation	T > C-23.0
! Rotation	0.00 deg
! A >> P	159 mm
! R >> L	128 mm
! F >> H	120 mm
Reset	Off

**System - pTx**

B1 Shim	TrueForm
Excitation	Non-sel.

**System - Tx/Rx**

Frequency 1H	297.117813 MHz
! Ref. Amplitude 1H	350.000 V
Reset	Off
Correction Factor	1.00
Image Scaling	1.000

**Physio - Signal**

1st Signal/Mode	None
TR	4000.0 ms

**Physio - Signal**

Concatenations	1
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**Physio - Cardiac**

Fat-Water Contrast	Standard
Magn. Preparation	Non-sel. IR
TI	1500 ms
Dark Blood	Off
FOV Read	240 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	On
MIP Cor	On
MIP Tra	On
MIP Time	Off
Radial MIP	Off
Save Original Images	On
MPR Sag	Off
MPR Cor	Off
MPR Tra	Off

**Inline - Composing****Inline - MapIt**

MapIt	None
Flip Angle	4 deg
Measurements	1
Contrasts	1
TE	4.66 ms
TR	4000.0 ms
Save Original Images	On

**Sequence - Part 1**

Sequence Name	tfl
Dimension	3D
Excitation	Non-sel.
RF Pulse Type	Fast
Gradient Mode	Fast
Flow Compensation	None
Reordering	Linear
Bandwidth	130 Hz/Px
Echo Spacing	10.34 ms
Asymmetric Echo	Off



**Sequence - Part 1**

Turbo Factor	180
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**Sequence - Part 2**

Introduction	On
RF Spoiling	On
Incr. Gradient Spoiling	Off

**Sequence - Assistant**

SAR Assistant	Off
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