## **Table of contents**

# FMRIF [XT-ID:93-M-0170]|Renzo scanner\_comparison localizer\_irtfl\_ptx b1map\_tra\_p2\_250 tfl\_MP2RAGE\_0p75 rslh\_ep3d\_vaso\_nih5kk rslh\_ep3d\_vaso\_nih5kk\_g-factor uk7t\_gre\_epi\_96\_FROM\_tYLER

# \\USER\FMRIF\[XT-ID:93-M-0170]|Renzo\scanner\_comparison\localizer\_irtfl\_ptx

TA: 1:28 PM: REF Voxel size: 1.0×1.0×2.0 mmPAT: Off Rel. SNR: 1.00 : tfl

## **Properties**

Prio recon	Off
Load images to viewer	On
Inline movie	Off
Auto store images	On
Load images to stamp segments	Off
Load images to graphic segments	Off
Auto open inline display	On
Auto close inline display	Off
Start measurement without further preparation	On
Wait for user to start	Off
Start measurements	Single measurement

## Routine

Routine	
Slice group	1
Slices	6
Dist. factor	600 %
Position	L1.5 A5.0 F25.3 mm
Orientation	Sagittal
Phase enc. dir.	A >> P
Slice group	2
Slices	8
Dist. factor	250 %
Position	L1.5 P21.0 H30.0 mm
Orientation	Transversal
Phase enc. dir.	A >> P
Slice group	3
Slices	6
Dist. factor	700 %
Position	L1.5 A10.0 F25.9 mm
Orientation	Coronal
Phase enc. dir.	R >> L
AutoAlign	
Phase oversampling	0 %
FoV read	200 mm
FoV phase	100.0 %
Slice thickness	2.0 mm
TR	4300.0 ms
TE	3.46 ms
Averages	1
Concatenations	20
Filter	None
Coil elements	AC

#### **Contrast - Common**

TR	4300.0 ms
TE	3.46 ms
TD	0 ms
Magn. preparation	Slice-sel. IR
TI 1	840 ms
TI 2	2540 ms
Flip angle 1	5.0 deg
Flip angle 2	8.0 deg
Fat suppr.	None
Water suppr.	None

## **Contrast - Dynamic**

Averages	1
Averaging mode	Long term
Reconstruction	Magnitude

## **Contrast - Dynamic**

Measurements	1
Multiple series	Each measurement

#### **Resolution - Common**

FoV read	200 mm
FoV phase	100.0 %
Slice thickness	2.0 mm
Base resolution	192
Phase resolution	100 %
Phase partial Fourier	Off
Interpolation	Off

## **Resolution - iPAT**

PAT mode	None

# **Resolution - Filter Image**

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

## **Resolution - Filter Rawdata**

Raw filter	Off	
Elliptical filter	Off	

#### **Geometry - Common**

Geometry - Common	
Slice group	1
Slices	6
Dist. factor	600 %
Position	L1.5 A5.0 F25.3 mm
Orientation	Sagittal
Phase enc. dir.	A >> P
Slice group	2
Slices	8
Dist. factor	250 %
Position	L1.5 P21.0 H30.0 mm
Orientation	Transversal
Phase enc. dir.	A >> P
Slice group	3
Slices	6
Dist. factor	700 %
Position	L1.5 A10.0 F25.9 mm
Orientation	Coronal
Phase enc. dir.	R >> L
FoV read	200 mm
FoV phase	100.0 %
Slice thickness	2.0 mm
TR	4300.0 ms
Multi-slice mode	Sequential
Series	Ascending
Concatenations	20

# **Geometry - AutoAlign**

Slice group	1
Position	L1.5 A5.0 F25.3 mm
Orientation	Sagittal
Phase enc. dir.	A >> P
Slice group	2
Position	L1.5 P21.0 H30.0 mm

## Geometry - AutoAlign

Orientation         Transversal           Phase enc. dir.         A >> P           Slice group         3           Position         L1.5 A10.0 F25.9 mm           Orientation         Coronal           Phase enc. dir.         R >> L           AutoAlign            Initial Position         L1.5 A5.0 F25.3           L         1.5 mm           A         5.0 mm           F         25.3 mm           Initial Rotation         0.00 deg           Initial Orientation         Sagittal		
Slice group         3           Position         L1.5 A10.0 F25.9 mm           Orientation         Coronal           Phase enc. dir.         R >> L           AutoAlign            Initial Position         L1.5 A5.0 F25.3           L         1.5 mm           A         5.0 mm           F         25.3 mm           Initial Rotation         0.00 deg	Orientation	Transversal
Position L1.5 A10.0 F25.9 mm Orientation Coronal Phase enc. dir. R >> L  AutoAlign Initial Position L1.5 A5.0 F25.3 L 1.5 mm A 5.0 mm F 25.3 mm Initial Rotation 0.00 deg	Phase enc. dir.	A >> P
Orientation         Coronal           Phase enc. dir.         R >> L           AutoAlign            Initial Position         L1.5 A5.0 F25.3           L         1.5 mm           A         5.0 mm           F         25.3 mm           Initial Rotation         0.00 deg	Slice group	3
Phase enc. dir.         R >> L           AutoAlign            Initial Position         L1.5 A5.0 F25.3           L         1.5 mm           A         5.0 mm           F         25.3 mm           Initial Rotation         0.00 deg	Position	L1.5 A10.0 F25.9 mm
AutoAlign          Initial Position       L1.5 A5.0 F25.3         L       1.5 mm         A       5.0 mm         F       25.3 mm         Initial Rotation       0.00 deg	Orientation	Coronal
Initial Position L1.5 A5.0 F25.3  L 1.5 mm  A 5.0 mm  F 25.3 mm  Initial Rotation 0.00 deg	Phase enc. dir.	R >> L
L 1.5 mm A 5.0 mm F 25.3 mm Initial Rotation 0.00 deg	AutoAlign	
A 5.0 mm F 25.3 mm Initial Rotation 0.00 deg	Initial Position	L1.5 A5.0 F25.3
F 25.3 mm Initial Rotation 0.00 deg	L	1.5 mm
Initial Rotation 0.00 deg	A	5.0 mm
1	F	25.3 mm
Initial Orientation Sagittal	Initial Rotation	0.00 deg
g	Initial Orientation	Sagittal

# **Geometry - Navigator**

# **Geometry - Tim Planning Suite**

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

## **System - Miscellaneous**

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

## **System - Adjustments**

B0 Shim mode	Tune up
B1 Shim mode	TrueForm
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto

## **System - Adjust Volume**

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

## System - pTx Volumes

B1 Shim mode	TrueForm
Excitation	Slice-sel.

# System - Tx/Rx

Frequency 1H	297.145500 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off

## System - Tx/Rx

! Ref. amplitude 1H	250.000 V

## Physio - Signal1

1st Signal/Mode	None
TR	4300.0 ms
Concatenations	20

## Physio - Cardiac

Magn. preparation	Slice-sel. IR
TI 1	840 ms
TI 2	2540 ms
Fat suppr.	None
Dark blood	Off
FoV read	200 mm
FoV phase	100.0 %
Phase resolution	100 %

## **Physio - PACE**

Resp. control	Off	
Concatenations	20	

## Inline - Common

Subtract	Off
Measurements	1
StdDev	Off
Save original images	On

#### Inline - MIP

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

## **Inline - Composing**

Inline Composing	Off
Distortion Corr.	Off

## Inline - MapIt

Save original images	On
MapIt	None
Flip angle 1	5.0 deg
Flip angle 2	8.0 deg
Measurements	1
TR	4300.0 ms
TE	3.46 ms

## Sequence - Part 1

Introduction	On
Dimension	2D
Asymmetric echo	Off
Flow comp.	No
Multi-slice mode	Sequential
Echo spacing	6.7 ms
Bandwidth	240 Hz/Px

## Sequence - Part 2

RF pulse type	Normal
Gradient mode	Fast
Excitation	Slice-sel.
RF spoiling	On
Incr. Gradient spoiling	Off
Turbo factor	192

# SIEMENS MAGNETOM Investigational\_Device\_7T

# \\USER\FMRIF\[XT-ID:93-M-0170]|Renzo\scanner\_comparison\b1map\_tra\_p2\_250

TA: 0:18 PM: REF Voxel size: 4.0×4.0×3.0 mmPAT: 2 Rel. SNR: 1.00 : tfl

## **Properties**

Prio recon	Off
Load images to viewer	On
Inline movie	Off
Auto store images	On
Load images to stamp segments	Off
Load images to graphic segments	Off
Auto open inline display	Off
Auto close inline display	Off
Start measurement without further	Off
preparation	
Wait for user to start	Off
Start measurements	Single measurement

## Routine

Slice group	1
Slices	50
Dist. factor	33 %
Position	L0.0 A10.2 F16.0 mm
Orientation	Transversal
Phase enc. dir.	A >> P
AutoAlign	
Phase oversampling	0 %
FoV read	256 mm
FoV phase	100.0 %
Slice thickness	3.0 mm
TR	8500.0 ms
TE	1.91 ms
Averages	1
Concatenations	1
Filter	None
Coil elements	AC

#### **Contrast - Common**

TR	8500.0 ms
TE	1.91 ms
Magn. preparation	None
Flip angle	5.0 deg
Fat suppr.	None
Water suppr.	None

## **Contrast - Dynamic**

Averages	1
Averaging mode	Long term
Reconstruction	Magnitude
Measurements	1
Multiple series	Each measurement

## **Resolution - Common**

FoV read	256 mm
FoV phase	100.0 %
Slice thickness	3.0 mm
Base resolution	64
Phase resolution	100 %
Phase partial Fourier	Off
Interpolation	Off

## **Resolution - iPAT**

PAT mode	GRAPPA
Accel. factor PE	2
Ref. lines PE	16

#### **Resolution - iPAT**

Reference scan mode	Integrated	
Resolution - Filter Image		
Imaga Filtor	O#	

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

## **Resolution - Filter Rawdata**

Raw filter	Off	
Elliptical filter	Off	

## **Geometry - Common**

Slice group	1
Slices	50
Dist. factor	33 %
Position	L0.0 A10.2 F16.0 mm
Orientation	Transversal
Phase enc. dir.	A >> P
FoV read	256 mm
FoV phase	100.0 %
Slice thickness	3.0 mm
TR	8500.0 ms
Multi-slice mode	Interleaved
Series	Interleaved
Concatenations	1

## **Geometry - AutoAlign**

Slice group	1
Position	L0.0 A10.2 F16.0 mm
Orientation	Transversal
Phase enc. dir.	A >> P
AutoAlign	
Initial Position	L0.0 A10.2 F16.0
L	0.0 mm
A	10.2 mm
F	16.0 mm
Initial Rotation	0.00 deg
Initial Orientation	Transversal

## **Geometry - Navigator**

## **Geometry - Tim Planning Suite**

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

## **System - Miscellaneous**

-,	
Positioning mode	REF
Table position	Н
Table position	0 mm
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	F >> H
Coil Combine Mode	Sum of Squares
Save uncombined	Off
Matrix Optimization	Off

AutoAlign	
Coil Select Mode	Default

# **System - Adjustments**

Ī	B0 Shim mode	Tune up
	B1 Shim mode	TrueForm
	Confirm freq. adjustment	Off
	Assume Dominant Fat	Off
	Assume Silicone	Off
	Adjustment Tolerance	Auto

# **System - Adjust Volume**

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

## System - pTx Volumes

B1 Shim mode	TrueForm
Excitation	Slice-sel.

## System - Tx/Rx

Frequency 1H	297.145500 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
! Ref. amplitude 1H	250.000 V

# Physio - Signal1

1st Signal/Mode	None
TR	8500.0 ms
Concatenations	1

## Physio - Cardiac

Magn. preparation	None
Fat suppr.	None
Dark blood	Off
FoV read	256 mm
FoV phase	100.0 %
Phase resolution	100 %

## Physio - PACE

Resp. control	Off
Concatenations	1

## Sequence - Part 1

Introduction	Off
Dimension	2D
Reordering	Centric
Asymmetric echo	Allowed
Flow comp.	No
Multi-slice mode	Interleaved
Echo spacing	4 ms
Bandwidth	440 Hz/Px

# Sequence - Part 2

RF pulse type	Normal
Gradient mode	Whisper
Excitation	Slice-sel.

# Sequence - Part 2

RF spoiling	On
Incr. Gradient spoiling	Off
Turbo factor	64

# Sequence - pTX Pulses

# Sequence - Special

Tx scale diag mag	0.0
Tx scale diag phs	0 deg
Tx scale offdiag mag	1.0
Tx scale offdiag phs	0 deg
Rel. B1 mapping	Off
Ref. scan	On
Use B1 map recon	On
Dummy RF pulses	1000

Mode	Off	

# \\USER\FMRIF\[XT-ID:93-M-0170]|Renzo\scanner\_comparison\tfl\_MP2RAGE\_0p75

TA: 9:25 PM: REF Voxel size: 0.8×0.8×0.8 mmPAT: 3 Rel. SNR: 1.00 : tfl

## **Properties**

Prio recon	Off
Load images to viewer	On
Inline movie	Off
Auto store images	On
Load images to stamp segments	Off
Load images to graphic segments	Off
Auto open inline display	Off
Auto close inline display	Off
Start measurement without further	Off
preparation	
Wait for user to start	Off
Start measurements	Single measurement

## Routine

Slab group	1
Slabs	1
Dist. factor	50 %
Position	R0.5 A2.6 F29.3 mm
Orientation	Sagittal
Phase enc. dir.	A >> P
AutoAlign	
Phase oversampling	0 %
Slice oversampling	0.0 %
Slices per slab	240
FoV read	240 mm
FoV phase	100.0 %
Slice thickness	0.75 mm
TR	4300.0 ms
TE	1.94 ms
Averages	1
Concatenations	1
Filter	None
Coil elements	AC

#### **Contrast - Common**

TR	4300.0 ms
TE	1.94 ms
Magn. preparation	Non-sel. IR
TI 1	840 ms
TI 2	2370 ms
Flip angle 1	5.0 deg
Flip angle 2	6.0 deg
Fat suppr.	Water excit. fast
Water suppr.	None

# **Contrast - Dynamic**

Averages	1
Averaging mode	Long term
Reconstruction	Magnitude
Measurements	1
Multiple series	Each measurement

#### **Resolution - Common**

FoV read	240 mm
FoV phase	100.0 %
Slice thickness	0.75 mm
Base resolution	320
Phase resolution	100 %
Slice resolution	100 %
Phase partial Fourier	Off

#### **Resolution - Common**

Slice partial Fourier	6/8	
Interpolation	Off	

#### **Resolution - iPAT**

PAT mode	GRAPPA
Accel. factor PE	3
Ref. lines PE	37
Accel. factor 3D	1
Reference scan mode	Integrated

## **Resolution - Filter Image**

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

## **Resolution - Filter Rawdata**

Raw filter	Off
Elliptical filter	Off

## **Geometry - Common**

Slab group	1
Slabs	1
Dist. factor	50 %
Position	R0.5 A2.6 F29.3 mm
Orientation	Sagittal
Phase enc. dir.	A >> P
Slice oversampling	0.0 %
Slices per slab	240
FoV read	240 mm
FoV phase	100.0 %
Slice thickness	0.75 mm
TR	4300.0 ms
Multi-slice mode	Single shot
Series	Interleaved
Concatenations	1

## Geometry - AutoAlign

Slab group	1
Position	R0.5 A2.6 F29.3 mm
Orientation	Sagittal
Phase enc. dir.	A >> P
AutoAlign	
Initial Position	R0.5 A2.6 F29.3
R	0.5 mm
Α	2.6 mm
F	29.3 mm
Initial Rotation	0.00 deg
Initial Orientation	Sagittal

## **Geometry - Navigator**

## **Geometry - Tim Planning Suite**

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

•	
Positioning mode	REF
Table position	Н
Table position	0 mm
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	F >> H
Coil Combine Mode	Sum of Squares
Save uncombined	Off
Matrix Optimization	Off
AutoAlign	
Coil Select Mode	Default

# **System - Adjustments**

B0 Shim mode	Standard
B1 Shim mode	TrueForm
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto

## **System - Adjust Volume**

! Position	R0.5 P2.4 H17.2 mm
! Orientation	Sagittal
! Rotation	13.88 deg
! A >> P	202 mm
! F >> H	109 mm
! R >> L	151 mm
Reset	Off

## System - pTx Volumes

B1 Shim mode	TrueForm
Excitation	Non-sel.

# System - Tx/Rx

Frequency 1H	297.145500 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
! Ref. amplitude 1H	250.000 V

# Physio - Signal1

1st Signal/Mode	None
TR	4300.0 ms
Concatenations	1

# Physio - Cardiac

•	
Magn. preparation	Non-sel. IR
TI 1	840 ms
TI 2	2370 ms
Fat suppr.	Water excit. fast
Dark blood	Off
FoV read	240 mm
FoV phase	100.0 %
Phase resolution	100 %

## **Physio - PACE**

Resp. control	Off
Concatenations	1

# Inline - Common

Subtract	Off

## **Inline - Common**

Measurements	1
StdDev	Off
Save original images	On

#### Inline - MIP

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

## **Inline - Composing**

Inline Composing	Off
Distortion Corr.	Off

## Inline - MapIt

Save original images	On
MapIt	None
Flip angle 1	5.0 deg
Flip angle 2	6.0 deg
Measurements	1
TR	4300.0 ms
TE	1.94 ms

## Sequence - Part 1

Introduction	On
Dimension	3D
Elliptical scanning	Off
Reordering	Linear
Asymmetric echo	Allowed
Flow comp.	No
Multi-slice mode	Single shot
Echo spacing	6.3 ms
Bandwidth	250 Hz/Px

# Sequence - Part 2

RF pulse type	Fast
Gradient mode	Fast
Excitation	Non-sel.
RF spoiling	On
Incr. Gradient spoiling	Off
Turbo factor	180

Mode	Off	
------	-----	--

# \\USER\FMRIF\[XT-ID:93-M-0170]|Renzo\scanner\_comparison\rslh\_ep3d\_vaso\_nih5kk

TA: 10:22 PM: REF Voxel size: 0.8×0.8×0.8 mmPAT: 3 Rel. SNR: 1.00 : nih5k

## **Properties**

Prio recon	Off
Load images to viewer	On
Inline movie	Off
Auto store images	On
Load images to stamp segments	Off
Load images to graphic segments	Off
Auto open inline display	Off
Auto close inline display	Off
Start measurement without further	Off
preparation	
Wait for user to start	Off
Start measurements	Single measurement

## Routine

Slab group	1
Slabs	1
Position	R32.9 P0.0 F5.6 mm
Orientation	Sagittal
Phase enc. dir.	A >> P
AutoAlign	
Slab Scale	-10 %
Slices per slab	36
FoV read	175 mm
FoV phase	100.0 %
Slice thickness	0.84 mm
TR 1	71.9 ms
TR 2	6102 ms
TE 1	23.40 ms
Averages	1
Filter	None
Coil elements	AC

#### **Contrast - Common**

TR 1	71.9 ms
TR 2	6102 ms
TE 1	23.40 ms
Multi-echo spacing	62.2 ms
Magn. preparation	Non-sel. HSN IR
TI 1	1554.2 ms
TI 2	4142.6 ms
Flip angle	57 deg
Fat suppr.	Fat sat.
Magn. Prep. Shots	1

## **Contrast - Dynamic**

Averages	1
Averaging mode	Long term
Reconstruction	Magn./Phase
Measurements	100
Pause after meas.	0.0 s

## **Resolution - Common**

FoV read	175 mm
FoV phase	100.0 %
Slice thickness	0.84 mm
Base resolution	206
Phase resolution	100 %
Slice resolution	100 %
Phase partial Fourier	6/8
Slice partial Fourier	Off

#### **Resolution - Common**

#### **Resolution - iPAT**

PAT mode	CAIPIRINHA
Acc. factor PE	1
Ref. lines PE	63
Acc. factor 3D	3
Ref. lines 3D	36
CAIPI 3D Shift	1
Reference Scan Mode	EPI/separate
CAIPI Mode (tooltip)	Skipped-CAIPI
Total PAT factor	3

## **Resolution - Filter Image**

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

#### **Resolution - Filter Rawdata**

Raw filter	Off	
Elliptical filter	Off	

## **Geometry - Common**

Slab group	1
Slabs	1
Position	R32.9 P0.0 F5.6 mm
Orientation	Sagittal
Phase enc. dir.	A >> P
Slab Scale	-10 %
Slices per slab	36
FoV read	175 mm
FoV phase	100.0 %
Slice thickness	0.84 mm
TR 1	71.9 ms
TR 2	6102 ms

## Geometry - AutoAlign

Slab group	1
Position	R32.9 P0.0 F5.6 mm
Orientation	Sagittal
Phase enc. dir.	A >> P
AutoAlign	
Initial Position	R32.9 P0.0 F5.6
R	32.9 mm
A	0.0 mm
F	5.6 mm
Initial Rotation	0.00 deg
Initial Orientation	Sagittal

## **Geometry - Saturation**

Saturation mode	Standard
Fat suppr.	Fat sat.

## **Geometry - Tim Planning Suite**

Set-n-Go Protocol	Off
00111 00111010001	O.I.
Table position	Н
Table position	1.1
Table position	0 mm
Table position	O IIIIII
Inline Composing	Off
mine composing	OII

Positioning mode	REF
Table position	Н
Table position	0 mm
MSMA	S-C-T
Sagittal	R >> L
Coronal	A >> P
Transversal	F >> H
Coil Combine Mode	Sum of Squares
Save uncombined	Off
Matrix Optimization	Off
AutoAlign	
Coil Select Mode	Default

# **System - Adjustments**

B0 Shim mode	Brain
B1 Shim mode	TrueForm
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto

# **System - Adjust Volume**

! Position	R32.9 P9.3 H12.4 mm
! Orientation	Sagittal
! Rotation	13.54 deg
! A >> P	175 mm
! F >> H	115 mm
! R >> L	48 mm
Reset	Off

# System - pTx Volumes

B1 Shim mode	TrueForm
Excitation	Slab-sel.

# System - Tx/Rx

Frequency 1H	297.145500 MHz
Correction factor	1
Gain	Low
Img. Scale Cor.	1.000
Reset	Off
! Ref. amplitude 1H	215.000 V

# Sequence - Part 1

Introduction	On
Dimension	3D
Reordering	Linear
Contrasts	1
Echo spacing	1.18 ms
Bandwidth	934 Hz/Px

# Sequence - Part 2

EPI factor	52
Segmentation	3
RF pulse type	Normal
Gradient mode	Fast
Excitation	Slab-sel.
RF spoiling	On
Turbo factor	36

# Sequence - Special

PATRef FA	3 deg
RF duration	2000 us
RF BWT product	8

# Sequence - Special

Ernst T1	1200 ms
PATRef prep. shots	10
Volume dummy shots	0
Dummy Measurements	0
ETL per RTEB	1
CHECK FLIP ANGLE!	On
Invert PE	Off
Min. TE if PF	On
Echo Time Shift	On
Ramp Sampling	On
NORDIC	On
SVDPC	Off
Sym VASO	Off
Dual-pol. EPI	On
Invert RO	Off
Invert 3D	Off
Disable PF reco	Off
Disable PF reco	Off
Save sampling	Off
PE VComp	Off
Water Exc.	-none-
External PC	per Series
Saturation RF	per Shot
FIDNavs	-none-
EPI rise time factor	1.10
Mosaic DICOMs	On
Modify Ice Config	On
G-factor map	Off
GRAPPA Regularization	50000 10^-6
HSN RF power scale	3.00
Inversion Delay	250 ms
Relaxation Delay	0 ms
Var. FA /MAGEC	4

Mode Off	
----------	--

# $\verb|\USER\FMRIF|[XT-ID:93-M-0170]| Renzo \scanner\_comparison \rslh\_ep3d\_vaso\_nih5kk\_g-factor| | \cite{Annex of the comparison of the compa$

TA: 0:18 PM: REF Voxel size: 0.8×0.8×0.8 mmPAT: 3 Rel. SNR: 1.00 : nih5k

## **Properties**

Prio recon	Off
Load images to viewer	On
Inline movie	Off
Auto store images	On
Load images to stamp segments	Off
Load images to graphic segments	Off
Auto open inline display	Off
Auto close inline display	Off
Start measurement without further	Off
preparation	
Wait for user to start	Off
Start measurements	Single measurement

## Routine

Slab group	1
Slabs	1
Position	R32.9 P0.0 F5.6 mm
Orientation	Sagittal
Phase enc. dir.	A >> P
AutoAlign	
Slab Scale	-10 %
Slices per slab	36
FoV read	175 mm
FoV phase	100.0 %
Slice thickness	0.84 mm
TR 1	71.9 ms
TR 2	6102 ms
TE 1	23.40 ms
Averages	1
Filter	None
Coil elements	AC

#### **Contrast - Common**

TR 1	71.9 ms
TR 2	6102 ms
TE 1	23.40 ms
Multi-echo spacing	62.2 ms
Magn. preparation	Non-sel. HSN IR
TI 1	1554.2 ms
TI 2	4142.6 ms
Flip angle	57 deg
Fat suppr.	Fat sat.
Magn. Prep. Shots	1

## **Contrast - Dynamic**

Averages	1
Averaging mode	Long term
Reconstruction	Magn./Phase
Measurements	1

#### **Resolution - Common**

FoV read	175 mm
FoV phase	100.0 %
Slice thickness	0.84 mm
Base resolution	206
Phase resolution	100 %
Slice resolution	100 %
Phase partial Fourier	6/8
Slice partial Fourier	Off
Interpolation	Off

#### **Resolution - iPAT**

PAT mode	CAIPIRINHA
Acc. factor PE	1
Ref. lines PE	63
Acc. factor 3D	3
Ref. lines 3D	36
CAIPI 3D Shift	1
Reference Scan Mode	EPI/separate
CAIPI Mode (tooltip)	Skipped-CAIPI
Total PAT factor	3

# **Resolution - Filter Image**

		_
Image Filter	Off	
Distortion Corr.	Off	
Prescan Normalize	Off	
Normalize	Off	
B1 filter	Off	

## **Resolution - Filter Rawdata**

Raw filter	Off	
Elliptical filter	Off	

## **Geometry - Common**

Slab group	1
Slabs	1
Position	R32.9 P0.0 F5.6 mm
Orientation	Sagittal
Phase enc. dir.	A >> P
Slab Scale	-10 %
Slices per slab	36
FoV read	175 mm
FoV phase	100.0 %
Slice thickness	0.84 mm
TR 1	71.9 ms
TR 2	6102 ms

## **Geometry - AutoAlign**

Slab group	1
Position	R32.9 P0.0 F5.6 mm
Orientation	Sagittal
Phase enc. dir.	A >> P
AutoAlign	
Initial Position	R32.9 P0.0 F5.6
R	32.9 mm
A	0.0 mm
F	5.6 mm
Initial Rotation	0.00 deg
Initial Orientation	Sagittal

## **Geometry - Saturation**

Saturation mode	Standard
Fat suppr.	Fat sat.

## **Geometry - Tim Planning Suite**

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

## System - Miscellaneous

Positioning mode	REF

Table position	Н
Table position	0 mm
MSMA	S-C-T
Sagittal	R >> L
Coronal	A >> P
Transversal	F >> H
Coil Combine Mode	Sum of Squares
Save uncombined	Off
Matrix Optimization	Off
AutoAlign	
Coil Select Mode	Default

# **System - Adjustments**

B0 Shim mode	Brain
B1 Shim mode	TrueForm
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto

# **System - Adjust Volume**

! Position	R32.9 P9.3 H12.4 mm
! Orientation	Sagittal
! Rotation	13.54 deg
! A >> P	175 mm
! F >> H	115 mm
! R >> L	48 mm
Reset	Off

# System - pTx Volumes

B1 Shim mode	TrueForm
Excitation	Slab-sel.

# System - Tx/Rx

Frequency 1H	297.145500 MHz
Correction factor	1
Gain	Low
Img. Scale Cor.	1.000
Reset	Off
! Ref. amplitude 1H	215.000 V

## Sequence - Part 1

Introduction	On
Dimension	3D
Reordering	Linear
Contrasts	1
Echo spacing	1.18 ms
Bandwidth	934 Hz/Px

# Sequence - Part 2

EPI factor	52
Segmentation	3
RF pulse type	Normal
Gradient mode	Fast
Excitation	Slab-sel.
RF spoiling	On
Turbo factor	36

# Sequence - Special

PATRef FA	3 deg
RF duration	2000 us
RF BWT product	8
Ernst T1	1200 ms

# Sequence - Special

PATRef prep. shots  Volume dummy shots  Dummy Measurements  ETL per RTEB  CHECK FLIP ANGLE!  Invert PE  Min. TE if PF  On  Echo Time Shift  On  NORDIC  SVDPC  Off  Sym VASO  Dual-pol. EPI  Invert RO  Invert RO  Disable PF reco  Disable PF reco  Save sampling  Off  Water Exc.  External PC  Saturation RF  FIDNavs  EPI rise time factor  Modify Ice Config  GRAPPA Regularization  HSN RF power scale  Inversion Delay  Relaxation Delay  Var. FA /MAGEC   On  On  On  On  On  On  On  On  On	<u> </u>	
Dummy Measurements  ETL per RTEB  CHECK FLIP ANGLE!  Invert PE  Min. TE if PF  Chech Time Shift  Ramp Sampling  NORDIC  SVDPC  SVDPC  Off  Dual-pol. EPI  Invert RO  Invert 3D  Disable PF reco  Disable PF reco  Save sampling  Off  Water Exc.  External PC  Saturation RF  FIDNavs  EPI rise time factor  Modify Ice Config  GRAPPA Regularization  HSN RF power scale  Inversion Delay  Relaxation Delay  Relaxation Delay  Relaxation Delay  Relaxation Delay  Relaxation Delay  On  Off  On  On  On  On  On  On  On  O	PATRef prep. shots	10
ETL per RTEB CHECK FLIP ANGLE! On Invert PE Off Min. TE if PF On Echo Time Shift On Ramp Sampling On NORDIC SVDPC Off Sym VASO Off Dual-pol. EPI On Invert RO Invert 3D Off Disable PF reco Off Save sampling Off PE VComp Water Exc. External PC Saturation RF FIDNavs EPI rise time factor Modify Ice Config G-factor map GRAPPA Regularization Inversion Delay Relaxation Delay Relaxation Delay Relaxation Delay Relaxation Delay Relaxation On	1	0
CHECK FLIP ANGLE! Invert PE Off Min. TE if PF On Echo Time Shift On Ramp Sampling On NORDIC SVDPC Off Sym VASO Off Dual-pol. EPI Invert RO Invert 3D Off Disable PF reco Off Save sampling Off Water Exc. External PC Saturation RF FIDNavs EPI rise time factor Modify Ice Config GRAPPA Regularization HSN RF power scale Inversion Delay Relaxation Delay Relaxation Delay Relaxation Delay Relaxation Delay On  On On On On On On On On On On On On	Dummy Measurements	0
Invert PE  Min. TE if PF  Cho Time Shift  Ramp Sampling  On  NORDIC  SVDPC  SVDPC  Sym VASO  Off  Dual-pol. EPI  Invert RO  Invert RO  Invert 3D  Off  Disable PF reco  Off  Save sampling  Off  Water Exc.  External PC  Saturation RF  FIDNavs  EPI rise time factor  Modify Ice Config  GRAPPA Regularization  HSN RF power scale  Inversion Delay  Relaxation Delay  Relaxation Delay  Ron  On  On  On  On  On  On  On  On  On	ETL per RTEB	1
Min. TE if PF Echo Time Shift Ramp Sampling On NORDIC SVDPC Off Sym VASO Off Dual-pol. EPI Invert RO Invert 3D Off Disable PF reco Off Save sampling Off PE VComp Water Exc. External PC Saturation RF FIDNavs EPI rise time factor Modify Ice Config G-factor map GRAPPA Regularization Remains On Non Non Non Non Non Non Non Non Relaxation Delay Relaxation On Non Non Non Non Non Non Non Non Non No	CHECK FLIP ANGLE!	On
Echo Time Shift Ramp Sampling On NORDIC SVDPC SVDPC Sym VASO Off Sym VASO Off Dual-pol. EPI On Invert RO Invert 3D Off Disable PF reco Off Save sampling Off PE VComp Water Exc. External PC Saturation RF FIDNavs EPI rise time factor Modify Ice Config G-factor map GRAPPA Regularization HSN RF power scale Inversion Delay Relaxation Delay Relaxation Delay Off On	Invert PE	Off
Ramp Sampling  NORDIC  SVDPC  SVDPC  Off  Sym VASO  Off  Dual-pol. EPI  Invert RO  Invert 3D  Disable PF reco  Disable PF reco  Off  Save sampling  Off  PE VComp  Water Exc.  External PC  Saturation RF  FIDNavs  EPI rise time factor  Mosaic DICOMs  Modify Ice Config  GRAPPA Regularization  HSN RF power scale  Inversion Delay  Relaxation Delay  Relaxation Off  Off  Off  On  Off  On  On  On  On	Min. TE if PF	On
NORDIC SVDPC SVM VASO Off Sym VASO Off Dual-pol. EPI On Invert RO Invert 3D Off Disable PF reco Off Save sampling Off PE VComp Water Exc. External PC Saturation RF FIDNavs EPI rise time factor Mosaic DICOMs Modify Ice Config GRAPPA Regularization HSN RF power scale Inversion Delay Relaxation Delay Relaxation Off On Off Off Off Off Off Off Disable PF reco Off Off Off Off PE VComp Off Water Excnone- epr Series Saturation RF per Shot 1.10 On	Echo Time Shift	On
SVDPC Sym VASO Off Dual-pol. EPI Invert RO Invert RO Off Disable PF reco Disable PF reco Off Save sampling Off PE VComp Water Exc. External PC Saturation RF FIDNavs FIDNavs EPI rise time factor Mosaic DICOMs Modify Ice Config G-factor map GRAPPA Regularization HSN RF power scale Inversion Delay Relaxation Delay Relaxation Delay Off Off Off Off Off Off Off PE VComp Off Water Excnone- Per Series Per Shot 1.10 On	Ramp Sampling	On
Sym VASO Off Dual-pol. EPI On Invert RO Off Invert 3D Off Disable PF reco Off Disable PF reco Off Save sampling Off PE VComp Off Water Excnone- External PC per Series Saturation RF per Shot FIDNavs -none- EPI rise time factor 1.10 Mosaic DICOMs On Modify Ice Config On G-factor map On GRAPPA Regularization 50000 10^-6 HSN RF power scale 3.00 Inversion Delay 250 ms Relaxation Delay 0 ms	NORDIC	On
Dual-pol. EPI Invert RO Invert RO Invert 3D Off Disable PF reco Off Save sampling Off PE VComp Water Exc. External PC Saturation RF FIDNavs FIDNavs EPI rise time factor Modify Ice Config G-factor map GRAPPA Regularization Inversion Delay Relaxation Delay Relaxation Delay Off Off Off Off PE VComp Off Water Excnone	SVDPC	Off
Invert RO Invert 3D Off Disable PF reco Off Disable PF reco Off Save sampling Off PE VComp Water Exc. External PC Saturation RF FIDNavs FIDNavs FIDNavs FIDNavs FIDNavs FIDNavs On Modify Ice Config G-factor map GRAPPA Regularization HSN RF power scale Inversion Delay Relaxation Delay Resource Off Off PF Off Off PF Off Off Off Off Off Off PF Off Off Off Off Off Off Off Off Off Of	Sym VASO	Off
Invert 3D Off Disable PF reco Off Disable PF reco Off Save sampling Off PE VComp Off Water Excnone- External PC per Series Saturation RF per Shot FIDNavs -none- EPI rise time factor 1.10 Mosaic DICOMs On Modify Ice Config On G-factor map On GRAPPA Regularization 50000 10^-6 HSN RF power scale 3.00 Inversion Delay 250 ms Relaxation Delay 0 ms	Dual-pol. EPI	On
Disable PF reco Disable PF reco Off Save sampling Off PE VComp Off Water Exc. External PC Saturation RF FIDNavs FIDNavs FIDNavs FIDNavs FIDNavs On Modify Ice Config G-factor map GRAPPA Regularization HSN RF power scale Inversion Delay Relaxation Delay Off Off PF Off PF Off Off PF Off Off Off PP Off Off PP Off Off Off O	Invert RO	Off
Disable PF reco Save sampling Off PE VComp Off Water Exc. External PC Saturation RF FIDNavs FIDNavs FIDNavs FIDNavs On Modify Ice Config G-factor map GRAPPA Regularization HSN RF power scale Inversion Delay Relaxation Delay Off FIDNav Per Series Per Shot FIDNav On	Invert 3D	Off
Save sampling PE VComp Water Exc. External PC Saturation RF FIDNavs EPI rise time factor Modify Ice Config G-factor map GRAPPA Regularization HSN RF power scale Inversion Delay Relaxation Delay Relaxation Off FIDNavs -none- Per Series per Shot -none- 1.10 On	Disable PF reco	Off
PE VComp Water Excnone- External PC per Series Saturation RF per Shot FIDNavs -none- EPI rise time factor 1.10 Mosaic DICOMs On Modify Ice Config On G-factor map On GRAPPA Regularization 50000 10^-6 HSN RF power scale 3.00 Inversion Delay 250 ms Relaxation Delay 0 ms	Disable PF reco	Off
Water Excnone- External PC per Series Saturation RF per Shot FIDNavs -none- EPI rise time factor 1.10 Mosaic DICOMs On Modify Ice Config On G-factor map On GRAPPA Regularization 50000 10^-6 HSN RF power scale 3.00 Inversion Delay 250 ms Relaxation Delay 0 ms	Save sampling	Off
External PC Saturation RF FIDNavs FIDNavs EPI rise time factor Mosaic DICOMs Modify Ice Config G-factor map GRAPPA Regularization HSN RF power scale Inversion Delay Relaxation Delay Response Shot per Series per Series per Shot 1.10 On	PE VComp	Off
Saturation RF per Shot FIDNavs -none- EPI rise time factor 1.10 Mosaic DICOMs On Modify Ice Config On G-factor map On GRAPPA Regularization 50000 10^-6 HSN RF power scale 3.00 Inversion Delay 250 ms Relaxation Delay 0 ms	Water Exc.	-none-
FIDNavs -none- EPI rise time factor 1.10  Mosaic DICOMs On  Modify Ice Config On  G-factor map On  GRAPPA Regularization 50000 10^-6  HSN RF power scale 3.00  Inversion Delay 250 ms  Relaxation Delay 0 ms	External PC	per Series
EPI rise time factor  Mosaic DICOMs  Modify Ice Config  G-factor map  GRAPPA Regularization  HSN RF power scale  Inversion Delay  Relaxation Delay  To n  1.10  On  On  On  Solution  1.10  On  On  Solution  1.10  On  On  Solution  2.50  MS  Relaxation Delay  On  0 ms	Saturation RF	per Shot
Mosaic DICOMs  Modify Ice Config  G-factor map  GRAPPA Regularization  HSN RF power scale  Inversion Delay  Relaxation Delay  On  3.00  250 ms  Relaxation Delay  0 ms	FIDNavs	-none-
Modify Ice Config G-factor map GRAPPA Regularization HSN RF power scale Inversion Delay Relaxation Delay On 50000 10^-6 3.00 Inversion Delay 250 ms Relaxation Delay 0 ms	EPI rise time factor	1.10
G-factor map GRAPPA Regularization HSN RF power scale Inversion Delay Relaxation Delay On 50000 10^-6 3.00 Inversion Delay 250 ms Relaxation Delay 0 ms	Mosaic DICOMs	On
GRAPPA Regularization 50000 10^-6 HSN RF power scale 3.00 Inversion Delay 250 ms Relaxation Delay 0 ms	, ,	On
HSN RF power scale 3.00 Inversion Delay 250 ms Relaxation Delay 0 ms		On
Inversion Delay 250 ms Relaxation Delay 0 ms	GRAPPA Regularization	50000 10^-6
Relaxation Delay 0 ms	HSN RF power scale	3.00
,	Inversion Delay	250 ms
Var. FA /MAGEC 4	,	0 ms
	Var. FA /MAGEC	4

Mode	Off

# \\USER\FMRIF\[XT-ID:93-M-0170]|Renzo\scanner\_comparison\uk7t\_gre\_epi\_96\_FROM\_tYLER

TA: 3:03 PM: FIX Voxel size: 1.5×1.5×1.5 mmPAT: 2 Rel. SNR: 1.00 : epfid

## **Properties**

Prio recon	Off
Load images to viewer	On
Inline movie	Off
Auto store images	On
Load images to stamp segments	Off
Load images to graphic segments	Off
Auto open inline display	Off
Auto close inline display	Off
Start measurement without further preparation	Off
Wait for user to start	Off
Start measurements	Single measurement

## Routine

Slice group	1
Slices	96
Dist. factor	0 %
Position	L0.0 P0.7 H7.2 mm
Orientation	T > C-15.0
Phase enc. dir.	A >> P
AutoAlign	
Phase oversampling	0 %
FoV read	192 mm
FoV phase	100.0 %
Slice thickness	1.50 mm
TR	1500 ms
TE	22.00 ms
Multi-band accel. factor	4
Filter	None
Coil elements	AC

#### **Contrast - Common**

TR	1500 ms
TE	22.00 ms
MTC	Off
Magn. preparation	None
Flip angle	65 deg
Fat suppr.	Fat sat.

## **Contrast - Dynamic**

Averaging mode	Long term
Reconstruction	Magn./Phase
Measurements	100
Delay in TR	0 ms
Multiple series	Off

#### **Resolution - Common**

FoV read	192 mm
FoV phase	100.0 %
Slice thickness	1.50 mm
Base resolution	128
Phase resolution	100 %
Phase partial Fourier	6/8
Interpolation	Off

## **Resolution - iPAT**

PAT mode	GRAPPA
Accel. factor PE	2
Ref. lines PE	24
Reference scan mode	GRE

## **Resolution - Filter Image**

Distortion Corr.	Off	
Prescan Normalize	Off	

#### **Resolution - Filter Rawdata**

Raw filter	Off
Elliptical filter	Off
Hamming	Off

## **Geometry - Common**

Slice group	1
Slices	96
Dist. factor	0 %
Position	L0.0 P0.7 H7.2 mm
Orientation	T > C-15.0
Phase enc. dir.	A >> P
FoV read	192 mm
FoV phase	100.0 %
Slice thickness	1.50 mm
TR	1500 ms
Multi-slice mode	Interleaved
Series	Interleaved
Multi-band accel. factor	4

## **Geometry - AutoAlign**

Slice group	1
Position	L0.0 P0.7 H7.2 mm
Orientation	T > C-15.0
Phase enc. dir.	A >> P
AutoAlign	
Initial Position	L0.0 P0.7 H7.2
L	0.0 mm
P	0.7 mm
Н	7.2 mm
Initial Rotation	0.00 deg
Initial Orientation	T > C
T > C	-15.0
> S	0.0

## **Geometry - Saturation**

Fat suppr.	Fat sat.
Special sat.	None

## **Geometry - Tim Planning Suite**

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

## System - Miscellaneous

<u> </u>	
Positioning mode	FIX
Table position	Н
Table position	0 mm
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	F >> H
Coil Combine Mode	Sum of Squares
Matrix Optimization	Off
AutoAlign	
Coil Select Mode	Default

# System - Adjustments

B0 Shim mode	Standard
B1 Shim mode	TrueForm
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto

# System - Adjust Volume

! Position	R0.5 P2.4 H17.2 mm
! Orientation	Sagittal
! Rotation	13.88 deg
! A >> P	202 mm
! F >> H	109 mm
! R >> L	151 mm
Reset	Off

# System - pTx Volumes

B1 Shim mode	TrueForm
Excitation	Standard

# System - Tx/Rx

Frequency 1H	297.145500 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
! Ref. amplitude 1H	250.000 V

# Physio - Signal1

1st Signal/Mode	None
TR	1500 ms
Multi-band accel. factor	4

# **BOLD**

GLM Statistics	Off
Dynamic t-maps	Off
Ignore meas. at start	0
Ignore after transition	0
Model transition states	On
Temp. highpass filter	On
Threshold	4.00
Paradigm size	20
Meas[1]	Baseline
Meas[2]	Baseline
Meas[3]	Baseline
Meas[4]	Baseline
Meas[5]	Baseline
Meas[6]	Baseline
Meas[7]	Baseline
Meas[8]	Baseline
Meas[9]	Baseline
Meas[10]	Baseline
Meas[11]	Active
Meas[12]	Active
Meas[13]	Active
Meas[14]	Active
Meas[15]	Active
Meas[16]	Active
Meas[17]	Active
Meas[18]	Active
Meas[19]	Active
Meas[20]	Active
Motion correction	Off
Spatial filter	Off

## **BOLD**

Measurements	100
Delay in TR	0 ms
Multiple series	Off

# Sequence - Part 1

Introduction	Off
Contrasts	1
Flow comp.	No
Multi-slice mode	Interleaved
Free echo spacing	Off
Echo spacing	0.72 ms
Bandwidth	1628 Hz/Px

# Sequence - Part 2

EPI factor	128
Gradient mode	Normal
Excitation	Standard
RF spoiling	Off

# Sequence - Special

ordinance observe		
Excite pulse duration	7000 us	
EPI noise scans	2	
Single-band images	On	
MB LeakBlock kernel	Off	
MB dual kernel	On	
MB RF phase scramble	On	
SENSE1 coil combine	Off	
Invert RO/PE polarity	Off	
Force Maxwell corr.	Off	
PF omits higher k-space	Off	
Disable freq. update	Off	
Force equal slice timing	Off	
Online multi-band recon.	Online	
FFT scale factor	1.00	
Fat saturation FA	110.0 deg	
GRE iPAT ref. FA	12.0 deg	
Physio recording	Off	
Triggering scheme	Standard	