



# Practicum Team Project Report

Team Name: Africa 3

# Summary (30-50 words):

Before the swim program we had just, a single protocol (named: Cardiac Main) we run for all cardiac cases. But with the SWiM program we were able to create protocols based on common pathologies such bas HCM, Inflammation, Congenital Diseases and Stress MRI.

Table 1: List of Scanners used by team members at their sites

Scanner	Make	Model	Current Software Version	RF coil
1.5T	Siemens	Somatom Essenza	Syngo	8-channel body coil

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#### \\USER

#### Cardiac

#### ALTERED SEQUENCES- TAILORED PROTOCOLS

## CARDIC OS PROTOCOL

trufi loc multi iPAT TRUFI 2-CHAMBER Loc TRUFI\_4-CHAMBER\_Loc TRUFI\_SHORT **AXIS** Loc LT\_2-CHAMBER\_CINE 4-CHAMBER CINE **3-CHAMBER** Cine SA Cine OS **BASELINE** OS CONTINUOUS **ACQUISITION** 

#### **CONGENITAL**

trufi\_loc\_multi\_iPAT HASTE 19-SL AXIAL DB **AXIAL STACK** 2CH **STACK** SAX LOC AT PAPILLARY LEVEL 4CH **STACK** STACK SAX WHOLE **HEART RVOT** LVOT FLOW OF PULMONARY ARTERY TEST **3-CHAMBER** Cine OF **FLOW AORTA** 

#### **INFLAMMATION**

trufi\_loc\_multi\_iPAT HASTE\_19-SL\_AXIAL DB TRUFI\_2-CHAMBER Loc TRUFI\_4-CHAMBER\_Loc TRUFI\_SHORT AXIS Loc LT 2-CHAMBER CINE 4-CHAMBER\_CINE Cine 3-CHAMBER SA Cine **RVOT** LVOT **FLOW** OF **AORTA** tirm\_20\_db\_t2\_SAX OS **BASELINE** OS CONTINUOUS **ACQUISITION** EG\_high-res\_tfl20\_psir\_seg----4 CHAMBER\_B

EG_high-res_tfl20_psir_seg2 CHAMBER_A EG_high-res_tfl20_psir_segSA_M tse_17_db_t2_iPAT-EGE 2C tse_17_db_t2_iPAT-EGE 4C tse_17_db_t2_iPAT-EGE SA TI-Scout_10 MIN POST GAD DE_high-res_tfl20_psir_segSA DE_high-res_tfl20_psir_seg4C DE_high-res_tfl20_psir_seg2C	
HYPERTROPHIC CARDIOMYOPATHY	
trufi_loc_multi_iPAT HASTE_19-SL_AXIAL DB TRUFI_2-CHAMBER Loc TRUFI_4-CHAMBER_Loc TRUFI_SHORT AXIS Loc LT_2-CHAMBER_CINE	
4-CHAMBER_CINE SA - Cine 3-CHAMBER Cine tirm_20_db_t2_SAX	
OS BASELINE OS CONTINUOUS ACQUISITION EG_high-res_tfl20_psir_seg4 CHAMBER_B EG_high-res_tfl20_psir_seg2 CHAMBER_A EG_high-res_tfl20_psir_segSA_M	
tse_17_db_t2_iPAT-EGE 2C tse_17_db_t2_iPAT-EGE 4C tse_17_db_t2_iPAT-EGE SA TI-Scout_10 MIN POST GAD DE_high-res_tfl20_psir_segSA DE_high-res_tfl20_psir_seg4C DE_high-res_tfl20_psir_seg2C	
STRESS MRI	
trufi_loc_multi_iPAT HASTE_19-SL_AXIAL DB TRUFI_2-CHAMBER Loc TRUFI_4-CHAMBER_Loc	
TRUFI_SHORT AXIS Loc LT_2-CHAMBER_CINE 4-CHAMBER_CINE SA - Cine	
3-CHAMBER Cine tirm_20_db_t2_SAX OS BASELINE OS CONTINUOUS ACQUISITION cine_tf2d_SA_Rest	
cine_ti2d_SA_Nest	

cine\_tf2d\_SA\_Stress\_Level1

# \\USER\Cardiac\ALTERED SEQUENCES- TAILORED PROTOCOLS\CARDIC OS PROTOCOL\trufi\_loc \_multi\_iPAT

TA: 4.0 s PM: REF Voxel size: 1.7×1.7×8.0 mmPAT: 2 Rel. SNR: 1.00 : tfi

#### **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	On
Auto open inline display	Off
Auto close inline display	Off
Start measurement without further	On
preparation	0,4
Wait for user to start	Off
Start measurements	Single measurement

#### Routine

Slice group	1
Slices	3
Dist. factor	300 %
Position	L0.0 P20.0 H0.0 mm
Orientation	Transversal
Phase enc. dir.	A >> P
Slice group	2
Slices	3
Dist. factor	300 %
Position	L30.0 P0.0 H0.0 mm
Orientation	Sagittal
Phase enc. dir.	A >> P
Slice group	3
Slices	3
Dist. factor	300 %
Position	L0.0 P10.0 H0.0 mm
Orientation	Coronal
Phase enc. dir.	R >> L
AutoAlign	
Phase oversampling	0 %
FoV read	400 mm
FoV phase	100.0 %
Slice thickness	8.0 mm
TR	350.73 ms
TE	1.43 ms
Averages	1
Concatenations	9
Filter	Distortion Corr.(2D),
	Prescan Normalize
Coil elements	BO1,2;SP1,2

#### **Contrast - Common**

TR	350.73 ms
TE	1.43 ms
TD	0 ms
Magn. preparation	None
Flip angle	80 deg
Fat suppr.	None
Wrap-up Magn.	Restore

#### **Contrast - Dynamic**

Averages	1
Averaging mode	Short term
Reconstruction	Magnitude
Measurements	1

#### **Contrast - Dynamic**

Multiple series

Resolution - Common		
FoV read	400 mm	
FoV phase	100.0 %	
Slice thickness	8.0 mm	
Base resolution	240	
Phase resolution	66 %	
Phase partial Fourier	Off	

Each measurement

Cartesian

Off

#### **Resolution - iPAT**

Trajectory

Interpolation

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

#### **Resolution - Filter Image**

Image Filter	Off
Distortion Corr.	On
Mode	2D
Unfiltered images	Off
Prescan Normalize	On
Unfiltered images	Off
Normalize	Off
B1 filter	Off

# **Resolution - Filter Rawdata**

Raw filter	Off
Elliptical filter	Off
POCS	Off

## **Geometry - Common**

Slice group	1
Slices	3
Dist. factor	300 %
Position	L0.0 P20.0 H0.0 mm
Orientation	Transversal
Phase enc. dir.	A >> P
Slice group	2
Slices	3
Dist. factor	300 %
Position	L30.0 P0.0 H0.0 mm
Orientation	Sagittal
Phase enc. dir.	A >> P
Slice group	3
Slices	3
Dist. factor	300 %
Position	L0.0 P10.0 H0.0 mm
Orientation	Coronal
Phase enc. dir.	R >> L
FoV read	400 mm
FoV phase	100.0 %
Slice thickness	8.0 mm
TR	350.73 ms
Multi-slice mode	Sequential
Series	Descending
Concatenations	9

## **Geometry - AutoAlign**

1
2
3
L0.0 P10.0 H0.0 mm
Coronal
R >> L
L0.0 P20.0 H0.0
0.0 mm
20.0 mm
0.0 mm
0.00 deg
Transversal

# **Geometry - Saturation**

Fat suppr.	None
Wrap-up Magn.	Restore
Special sat.	None

## **Geometry - Navigator**

# **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	Off - AutoCoilSelect

## **System - Adjustments**

B0 Shim mode	Cardiac
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto

# System - Adjust Volume

Position	L0.0 P10.0 H0.0 mm
Orientation	Sagittal
Rotation	90.00 deg
F >> H	400 mm
F >> H A >> P R >> L	420 mm
R >> L	400 mm
Reset	Off

# System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

# Physio - Signal1

1st Signal/Mode	ECG/Trigger
Average cycle	225 ± 213 ms

## Physio - Signal1

Average cycle	No Signal ms
Captured cycle	225 ± 213 ms
Acquisition window	800 ms
Trigger pulse	1
Trigger delay	400 ms
TR	350.73 ms
Concatenations	9
Segments	91
Phases	1

# Physio - Cardiac

Magn. preparation	None
Fat suppr.	None
Dark blood	Off
FoV read	400 mm
FoV phase	100.0 %
Phase resolution	66 %
Cine	Off
Trajectory	Cartesian
Dummy heartbeats	0

## **Physio - PACE**

Resp. control	Off
Concatenations	9

#### Inline - Common

Subtract	Off	
Measurements	1	
StdDev	Off	
Save original images	On	

#### Inline - Cardiac

Inline Evaluation	Off
Magn. preparation	None
Contrasts	1
TE	1.43 ms
TR	350.73 ms
Save original images	On

#### Inline - MIP

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

## **Inline - Composing**

Distortion Corr.	On
Mode	2D
Unfiltered images	Off

## Sequence - Part 1

Introduction	Off
Dimension	2D
Reordering	Linear
Asymmetric echo	Weak
Contrasts	1
Optimization	Min. TE
Multi-slice mode	Sequential
Echo spacing	3.4 ms
Sequence type	Trufi
Bandwidth	1096 Hz/Px

# SIEMENS MAGNETOM MAGNETOM\_ESSENZA

# Sequence - Part 2

Define	Shots
Shots per slice	1
Segments	91
Trufi delta freq.	0 Hz
RF pulse type	Fast
Gradient mode	Normal
Excitation	Slice-sel.
Flip angle mode	Constant
Cine	Off

Mode	Min flip angle
Min flip angle	50 deg
Allowed delay	0 s

# \\USER\Cardiac\ALTERED SEQUENCES- TAILORED PROTOCOLS\CARDIC OS PROTOCOL\TRUFI\_2 -CHAMBER Loc

TA: 0.4 s PM: REF Voxel size: 1.6×1.6×8.0 mmPAT: 2 Rel. SNR: 1.00 : tfi

#### **Properties**

Prio recon	Off
Load images to viewer	On
Inline movie	Off
Auto store images	On
Load images to stamp segments	On
Load images to graphic segments	On
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	1
Dist. factor	20 %
Position	L42.5 P9.8 H12.3 mm
Orientation	C > S-37.7
Phase enc. dir.	L >> R
AutoAlign	
Phase oversampling	0 %
FoV read	387 mm
FoV phase	87.5 %
Slice thickness	8.0 mm
TR	316.29 ms
TE	1.46 ms
Averages	1
Concatenations	1
Filter	Distortion Corr.(2D), Prescan Normalize, Image Filter
Coil elements	BO1,2;SP1,2

#### **Contrast - Common**

TR	316.29 ms
TE	1.46 ms
Magn. preparation	None
Flip angle	80 deg
Fat suppr.	None
Wrap-up Magn.	Restore

## **Contrast - Dynamic**

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

#### **Resolution - Common**

FoV read	387 mm
FoV phase	87.5 %
Slice thickness	8.0 mm
Base resolution	240
Phase resolution	64 %
Phase partial Fourier	Off
Trajectory	Cartesian
Interpolation	Off

#### **Resolution - iPAT**

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

## **Resolution - Filter Image**

Image Filter	On
! Intensity	Medium
Edge Enhancement	3
Smoothing	2
Unfiltered images	Off
Distortion Corr.	On
Mode	2D
Unfiltered images	Off
Prescan Normalize	On
Unfiltered images	Off
Normalize	Off
B1 filter	Off

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

Raw filter	Off
Elliptical filter	Off
POCS	Off

## **Geometry - Common**

Slice group	1
Slices	1
Dist. factor	20 %
Position	L42.5 P9.8 H12.3 mm
Orientation	C > S-37.7
Phase enc. dir.	L >> R
FoV read	387 mm
FoV phase	87.5 %
Slice thickness	8.0 mm
TR	316.29 ms
Multi-slice mode	Sequential
Series	Interleaved
Concatenations	1

## Geometry - AutoAlign

Slice group	1
	'
AutoAlign	
Position	L42.5 P9.8 H12.3 mm
Orientation	C > S-37.7
Phase enc. dir.	L >> R
Initial Position	L42.5 P9.8 H12.3
L	42.5 mm
P	9.8 mm
Н	12.3 mm
Initial Rotation	-180.00 deg
Initial Orientation	C > S
C > S	-37.7
> T	0.0

## **Geometry - Saturation**

Fat suppr.	None
Wrap-up Magn.	Restore
Special sat.	None

# **Geometry - Navigator**

# **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	Off - AutoCoilSelect

# **System - Adjustments**

B0 Shim mode	Cardiac
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto

## **System - Adjust Volume**

Position	L42.5 P9.8 H12.3 mm
Orientation	C > S-37.7
Rotation	180.00 deg
R >> L	339 mm
R >> L F >> H A >> P	387 mm
A >> P	8 mm
Reset	Off

# System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

# Physio - Signal1

1st Signal/Mode	ECG/Trigger
Average cycle	225 ± 213 ms
Average cycle	No Signal ms
Captured cycle	225 ± 213 ms
Acquisition window	779 ms
Trigger pulse	1
Trigger delay	462 ms
TR	316.29 ms
Concatenations	1
Segments	79
Phases	1

## Physio - Cardiac

,	
Magn. preparation	None
Fat suppr.	None
Dark blood	Off
FoV read	387 mm
FoV phase	87.5 %
Phase resolution	64 %
Cine	Off
Trajectory	Cartesian
Dummy heartbeats	0

# Physio - PACE

Resp. control	Off
Concatenations	1

#### **Inline - Common**

Subtract	Off
Measurements	1
StdDev	Off
Save original images	On

## Inline - Cardiac

Inline Evaluation	Off
Magn. preparation	None
Contrasts	1
TE	1.46 ms
TR	316.29 ms
Save original images	On

## Inline - MIP

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

## **Inline - Composing**

Distortion Corr.	On
Mode	2D
Unfiltered images	Off

# Sequence - Part 1

Introduction	Off
Dimension	2D
Reordering	Linear
Asymmetric echo	Weak
Contrasts	1
Optimization	Min. TE
Multi-slice mode	Sequential
Echo spacing	3.5 ms
Sequence type	Trufi
Bandwidth	1096 Hz/Px

# Sequence - Part 2

_	
Define	Shots
Shots per slice	1
Segments	79
Trufi delta freq.	0 Hz
RF pulse type	Fast
Gradient mode	Normal
Excitation	Slice-sel.
Flip angle mode	Constant
Cine	Off

Mode	Min flip angle
Min flip angle	50 deg
Allowed delay	0 s

# \\USER\Cardiac\ALTERED SEQUENCES- TAILORED PROTOCOLS\CARDIC OS PROTOCOL\TRUFI\_4 -CHAMBER\_Loc

TA: 0.4 s PM: REF Voxel size: 1.6×1.6×8.0 mmPAT: 2 Rel. SNR: 1.00 : tfi

#### **Properties**

Prio recon	Off
Load images to viewer	On
Inline movie	Off
Auto store images	On
Load images to stamp segments	On
Load images to graphic segments	On
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	1
Dist. factor	20 %
Position	L34.3 A0.5 H22.0 mm
Orientation	T > C40.0 > S-11.2
Phase enc. dir.	A >> P
AutoAlign	
Phase oversampling	0 %
FoV read	340 mm
FoV phase	94.2 %
Slice thickness	8.0 mm
TR	286.98 ms
TE	1.45 ms
Averages	1
Concatenations	1
Filter	Distortion Corr.(2D),
	Prescan Normalize
Coil elements	BO1,2;SP1,2

#### **Contrast - Common**

TR	286.98 ms
TE	1.45 ms
Magn. preparation	None
Flip angle	80 deg
Fat suppr.	None
Wrap-up Magn.	Restore

## **Contrast - Dynamic**

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

#### **Resolution - Common**

FoV read	340 mm
FoV phase	94.2 %
Slice thickness	8.0 mm
Base resolution	208
Phase resolution	60 %
Phase partial Fourier	Off
Trajectory	Cartesian
Interpolation	Off

#### **Resolution - iPAT**

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

#### **Resolution - Filter Image**

Image Filter	Off
Distortion Corr.	On
Mode	2D
Unfiltered images	Off
Prescan Normalize	On
Unfiltered images	Off
Normalize	Off
B1 filter	Off

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

Raw filter	Off
Elliptical filter	Off
POCS	Off

#### **Geometry - Common**

Slice group	1
Slices	1
Dist. factor	20 %
Position	L34.3 A0.5 H22.0 mm
Orientation	T > C40.0 > S-11.2
Phase enc. dir.	A >> P
FoV read	340 mm
FoV phase	94.2 %
Slice thickness	8.0 mm
TR	286.98 ms
Multi-slice mode	Sequential
Series	Interleaved
Concatenations	1

#### **Geometry - AutoAlign**

- · · · , · · · · · · · · · · · · · ·	
Slice group	1
AutoAlign	
Position	L34.3 A0.5 H22.0 mm
Orientation	T > C40.0 > S-11.2
Phase enc. dir.	A >> P
Initial Position	L34.3 A0.5 H22.0
L	34.3 mm
A	0.5 mm
Н	22.0 mm
Initial Rotation	9.22 deg
Initial Orientation	T > C
T > C	40.0
> S	-11.2

## **Geometry - Saturation**

Fat suppr.	None
Wrap-up Magn.	Restore
Special sat.	None

## **Geometry - Navigator**

#### **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	Off - AutoCoilSelect

# **System - Adjustments**

B0 Shim mode	Cardiac
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto

## System - Adjust Volume

Position	L34.3 A0.5 H22.0 mm
Orientation	T > C40.0 > S-11.2
Rotation	9.23 deg
A >> P	321 mm
R >> L	340 mm
F >> H	8 mm
Reset	Off

## System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

## Physio - Signal1

1st Signal/Mode	ECG/Trigger
Average cycle	225 ± 213 ms
Average cycle	No Signal ms
Captured cycle	225 ± 213 ms
Acquisition window	750 ms
Trigger pulse	1
Trigger delay	463 ms
TR	286.98 ms
Concatenations	1
Segments	71
Phases	1
Phases	1

# Physio - Cardiac

Magn. preparation	None
Fat suppr.	None
Dark blood	Off
FoV read	340 mm
FoV phase	94.2 %
Phase resolution	60 %
Cine	Off
Trajectory	Cartesian
Dummy heartbeats	0

## **Physio - PACE**

Doon control	0#	
Resp. control	Off	

#### **Physio - PACE**

Concatenations	1	
Inline - Common		
Subtract	Off	
Measurements	1	
StdDev	Off	
Save original images	On	

#### Inline - Cardiac

Inline Evaluation	Off
Magn. preparation	None
Contrasts	1
TE	1.45 ms
TR	286.98 ms
Save original images	On

## Inline - MIP

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

## **Inline - Composing**

Distortion Corr.	On
Mode	2D
Unfiltered images	Off

#### Sequence - Part 1

Introduction	Off
Dimension	2D
Reordering	Linear
Asymmetric echo	Weak
Contrasts	1
Optimization	Min. TE
Multi-slice mode	Sequential
Echo spacing	3.4 ms
Sequence type	Trufi
Bandwidth	1093 Hz/Px

# Sequence - Part 2

Define	Shots
Shots per slice	1
Segments	71
Trufi delta freq.	0 Hz
RF pulse type	Fast
Gradient mode	Normal
Excitation	Slice-sel.
Flip angle mode	Constant
Cine	Off

Mode	Min flip angle
Min flip angle	50 deg
Allowed delay	0 s

# \\USER\Cardiac\ALTERED SEQUENCES- TAILORED PROTOCOLS\CARDIC OS PROTOCOL\TRUFI\_S HORT AXIS Loc

TA: 3.6 s PM: REF Voxel size: 1.7×1.7×8.0 mmPAT: 2 Rel. SNR: 1.00 : tfi

#### **Properties**

Prio recon	Off
Load images to viewer	On
Inline movie	Off
Auto store images	On
Load images to stamp segments	On
Load images to graphic segments	On
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	8
Dist. factor	100 %
Position	L62.9 A7.2 H12.9 mm
Orientation	S > C37.7 > T28.3
Phase enc. dir.	A >> P
AutoAlign	
Phase oversampling	0 %
FoV read	360 mm
FoV phase	87.5 %
Slice thickness	8.0 mm
TR	283.54 ms
TE	1.39 ms
Averages	1
Concatenations	8
Filter	Distortion Corr.(2D), Prescan Normalize, Image Filter
Coil elements	BO1,2;SP1,2

#### **Contrast - Common**

TR	283.54 ms
TE	1.39 ms
TD	0 ms
Magn. preparation	None
Flip angle	80 deg
Fat suppr.	None
Wrap-up Magn.	Restore

# **Contrast - Dynamic**

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

#### **Resolution - Common**

FoV read	360 mm
FoV phase	87.5 %
Slice thickness	8.0 mm
Base resolution	208
Phase resolution	64 %
Phase partial Fourier	Off
Trajectory	Cartesian
Interpolation	Off

#### **Resolution - iPAT**

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

## **Resolution - Filter Image**

Image Filter	On
! Intensity	Medium
Edge Enhancement	3
Smoothing	2
Unfiltered images	Off
Distortion Corr.	On
Mode	2D
Unfiltered images	Off
Prescan Normalize	On
Unfiltered images	Off
Normalize	Off
B1 filter	Off

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

Raw filter	Off
Elliptical filter	Off
POCS	Off

#### **Geometry - Common**

Slice group	1
Slices	8
Dist. factor	100 %
Position	L62.9 A7.2 H12.9 mm
Orientation	S > C37.7 > T28.3
Phase enc. dir.	A >> P
FoV read	360 mm
FoV phase	87.5 %
Slice thickness	8.0 mm
TR	283.54 ms
Multi-slice mode	Sequential
Series	Descending
Concatenations	8

## **Geometry - AutoAlign**

Slice group	1
AutoAlign	
Position	L62.9 A7.2 H12.9 mm
Orientation	S > C37.7 > T28.3
Phase enc. dir.	A >> P
Initial Position	L62.9 A7.2 H12.9
L	62.9 mm
A	7.2 mm
Н	12.9 mm
Initial Rotation	20.14 deg
Initial Orientation	S > C
S > C	37.7
> T	28.3

## **Geometry - Saturation**

Fat suppr.	None
Wrap-up Magn.	Restore
Special sat.	None

# **Geometry - Navigator**

# **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	Off - AutoCoilSelect

## **System - Adjustments**

B0 Shim mode	Cardiac
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto

## **System - Adjust Volume**

Position	L62.9 A7.2 H12.9 mm
Orientation	S > C37.7 > T28.3
Rotation	20.14 deg
A >> P	315 mm
F >> H	360 mm
R >> L	120 mm
Reset	Off

# System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

# Physio - Signal1

1st Signal/Mode	ECG/Trigger
Average cycle	225 ± 213 ms
Average cycle	No Signal ms
Captured cycle	225 ± 213 ms
Acquisition window	755 ms
Trigger pulse	1
Trigger delay	471 ms
TR	283.54 ms
Concatenations	8
Segments	70
Phases	1

# Physio - Cardiac

y 0.10	
Magn. preparation	None
Fat suppr.	None
Dark blood	Off
FoV read	360 mm
FoV phase	87.5 %
Phase resolution	64 %
Cine	Off
Trajectory	Cartesian
Dummy heartbeats	0

# Physio - PACE

Resp. control	Off	
Concatenations	8	

#### **Inline - Common**

Subtract	Off
Measurements	1
StdDev	Off
Save original images	On

## Inline - Cardiac

Inline Evaluation	Off
Magn. preparation	None
Contrasts	1
TE	1.39 ms
TR	283.54 ms
Save original images	On

## Inline - MIP

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

## **Inline - Composing**

Distortion Corr.	On
Mode	2D
Unfiltered images	Off

# Sequence - Part 1

Introduction	Off
Dimension	2D
Reordering	Linear
Asymmetric echo	Weak
Contrasts	1
Optimization	Min. TE
Multi-slice mode	Sequential
Echo spacing	3.3 ms
Sequence type	Trufi
Bandwidth	1045 Hz/Px

# Sequence - Part 2

Define	Shots
Shots per slice	1
Segments	70
Trufi delta freq.	0 Hz
RF pulse type	Fast
Gradient mode	Normal
Excitation	Slice-sel.
Flip angle mode	Constant
Cine	Off

Mode	Min flip angle
Min flip angle	50 deg
Allowed delay	0 s

# \\USER\Cardiac\ALTERED SEQUENCES- TAILORED PROTOCOLS\CARDIC OS PROTOCOL\LT\_2-CH AMBER\_CINE

TA: 2.0 s PM: REF Voxel size: 1.9×1.9×8.0 mmPAT: 2 Rel. SNR: 1.00 : tfi

#### **Properties**

Prio recon	Off
Load images to viewer	On
Inline movie	On
Auto store images	On
Load images to stamp segments	On
Load images to graphic segments	On
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	1
Dist. factor	20 %
Position	L41.8 P10.3 H13.2 mm
Orientation	C > S-37.7
Phase enc. dir.	L >> R
AutoAlign	
Phase oversampling	0 %
FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
TR	41.60 ms
TE	1.34 ms
Averages	1
Concatenations	1
Filter	Distortion Corr.(2D),
	Prescan Normalize, Image Filter
Coil elements	BO1,2;SP1,2

#### **Contrast - Common**

TR	41.60 ms
TE	1.34 ms
Magn. preparation	None
Flip angle	60 deg
Fat suppr.	None
Wrap-up Magn.	Restore

## **Contrast - Dynamic**

Averages	1
Averaging mode	Short term
Reconstruction	Magnitude
Measurements	1
Multiple series	Off

#### **Resolution - Common**

FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
Base resolution	192
Phase resolution	100 %
Phase partial Fourier	Off
Trajectory	Cartesian
View sharing	Off
Interpolation	Off

#### **Resolution - iPAT**

PAT mode	GRAPPA
Accel. factor PE	2
Ref. lines PE	44
Reference scan mode	Integrated

#### **Resolution - Filter Image**

Image Filter	On
! Intensity	Medium
Edge Enhancement	3
Smoothing	2
Unfiltered images	Off
Distortion Corr.	On
Mode	2D
Unfiltered images	Off
Prescan Normalize	On
Unfiltered images	Off
Normalize	Off
B1 filter	Off

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

Raw filter	Off
Elliptical filter	Off
POCS	Off

#### **Geometry - Common**

Slice group	1
Slices	1
Dist. factor	20 %
Position	L41.8 P10.3 H13.2 mm
Orientation	C > S-37.7
Phase enc. dir.	L >> R
FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
TR	41.60 ms
Multi-slice mode	Sequential
Series	Interl. in Bh.
Concatenations	1

## Geometry - AutoAlign

Slice group	1
AutoAlign	
Position	L41.8 P10.3 H13.2 mm
Orientation	C > S-37.7
Phase enc. dir.	L >> R
Initial Position	L41.8 P10.3 H13.2
L	41.8 mm
P	10.3 mm
Н	13.2 mm
Initial Rotation	-180.00 deg
Initial Orientation	C > S
C > S	-37.7
> T	0.0

## **Geometry - Saturation**

Fat suppr.	None
Wrap-up Magn.	Restore
Special sat.	None

# **Geometry - Navigator**

# **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	Off - AutoCoilSelect

# **System - Adjustments**

B0 Shim mode	Cardiac
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto

## **System - Adjust Volume**

Position	L41.8 P10.3 H13.2 mm
Orientation	C > S-37.7
Rotation	180.00 deg
R >> L	293 mm
F >> H	360 mm
A >> P	8 mm
Reset	Off

# System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

# Physio - Signal1

1st Signal/Mode	ECG/Retro
Average cycle	225 ± 213 ms
Average cycle	No Signal ms
Calculated phases	25
TR	41.60 ms
Concatenations	1
Segments	13
Arrhythmia detection	None

# Physio - Cardiac

Magn. preparation	None
Fat suppr.	None
Dark blood	Off
FoV read	360 mm
FoV phase	81.3 %
Phase resolution	100 %
Cine	On
Trajectory	Cartesian
View sharing	Off
Dummy heartbeats	1

# Physio - PACE

Resp. control	Breath-hold
Concatenations	1

#### **Inline - Common**

Subtract	Off
Measurements	1
StdDev	Off
Save original images	On

## Inline - Cardiac

Inline Evaluation	Off
Magn. preparation	None
Contrasts	1
TE	1.34 ms
TR	41.60 ms
Save original images	On

## Inline - MIP

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

## **Inline - Composing**

Distortion Corr.	On
Mode	2D
Unfiltered images	Off

# Sequence - Part 1

Introduction	Off
Dimension	2D
Reordering	Linear
Asymmetric echo	Weak
Contrasts	1
Optimization	Min. TE TR
Multi-slice mode	Sequential
Echo spacing	3.2 ms
Sequence type	Trufi
Bandwidth	965 Hz/Px

# Sequence - Part 2

Define	Segments
Segments	13
Trufi delta freq.	0 Hz
RF pulse type	Fast
Gradient mode	Normal
Excitation	Slice-sel.
Flip angle mode	Constant
Cine	On

Mode	Min flip angle
Min flip angle	50 deg
Allowed delay	0 s

# \\USER\Cardiac\ALTERED SEQUENCES- TAILORED PROTOCOLS\CARDIC OS PROTOCOL\4-CHAM BER\_CINE

TA: 2.5 s PM: REF Voxel size: 1.9×1.9×8.0 mmPAT: 2 Rel. SNR: 1.00 : tfi

#### **Properties**

Prio recon	Off
Load images to viewer	On
Inline movie	On
Auto store images	On
Load images to stamp segments	On
Load images to graphic segments	On
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	1
Dist. factor	20 %
Position	L30.8 A0.1 H23.5 mm
Orientation	T > C39.4 > S-10.6
Phase enc. dir.	A >> P
AutoAlign	
Phase oversampling	0 %
FoV read	360 mm
FoV phase	100.0 %
Slice thickness	8.0 mm
TR	41.60 ms
TE	1.34 ms
Averages	1
Concatenations	1
Filter	Distortion Corr.(2D),
	Prescan Normalize, Image Filter
Coil elements	BO1,2;SP1,2

#### **Contrast - Common**

TR TE	41.60 ms
TE	1.34 ms
Magn. preparation	None
Flip angle	60 deg
Fat suppr.	None
Wrap-up Magn.	Restore

## **Contrast - Dynamic**

Averages	1
Averaging mode	Short term
Reconstruction	Magnitude
Measurements	1
Multiple series	Off

#### **Resolution - Common**

FoV read	360 mm
FoV phase	100.0 %
Slice thickness	8.0 mm
Base resolution	192
Phase resolution	100 %
Phase partial Fourier	Off
Trajectory	Cartesian
View sharing	Off
Interpolation	Off

#### **Resolution - iPAT**

PAT mode	GRAPPA
Accel. factor PE	2
Ref. lines PE	44
Reference scan mode	Integrated

## **Resolution - Filter Image**

Image Filter	On
! Intensity	Medium
Edge Enhancement	3
Smoothing	2
Unfiltered images	Off
Distortion Corr.	On
Mode	2D
Unfiltered images	Off
Prescan Normalize	On
Unfiltered images	Off
Normalize	Off
B1 filter	Off

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

Raw filter	Off
Elliptical filter	Off
POCS	Off

#### **Geometry - Common**

Slice group	1
Slices	1
Dist. factor	20 %
Position	L30.8 A0.1 H23.5 mm
Orientation	T > C39.4 > S-10.6
Phase enc. dir.	A >> P
FoV read	360 mm
FoV phase	100.0 %
Slice thickness	8.0 mm
TR	41.60 ms
Multi-slice mode	Sequential
Series	Interl. in Bh.
Concatenations	1

## Geometry - AutoAlign

Slice group	1
AutoAlign	
Position	L30.8 A0.1 H23.5 mm
Orientation	T > C39.4 > S-10.6
Phase enc. dir.	A >> P
Initial Position	L30.8 A0.1 H23.5
L	30.8 mm
Α	0.1 mm
Н	23.5 mm
Initial Rotation	8.59 deg
Initial Orientation	T > C
T > C	39.4
> S	-10.6

# **Geometry - Saturation**

Fat suppr.	None
Wrap-up Magn.	Restore
Special sat.	None

# **Geometry - Navigator**

## **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	Off - AutoCoilSelect

## **System - Adjustments**

B0 Shim mode	Cardiac
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto

## **System - Adjust Volume**

Position	L30.8 A0.1 H23.5 mm
Orientation	T > C39.4 > S-10.6
Rotation	8.59 deg
A >> P	360 mm
R >> L	360 mm
F >> H	8 mm
Reset	Off

# System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

# Physio - Signal1

1st Signal/Mode	ECG/Retro
Average cycle	225 ± 213 ms
Average cycle	No Signal ms
Calculated phases	25
TR	41.60 ms
Concatenations	1
Segments	13
Arrhythmia detection	None

# Physio - Cardiac

Magn. preparation	None
Fat suppr.	None
Dark blood	Off
FoV read	360 mm
FoV phase	100.0 %
Phase resolution	100 %
Cine	On
Trajectory	Cartesian
View sharing	Off
Dummy heartbeats	1

# Physio - PACE

Resp. control	Breath-hold
Concatenations	1

#### **Inline - Common**

Subtract	Off
Measurements	1
StdDev	Off
Save original images	On

## Inline - Cardiac

Inline Evaluation	Off
Magn. preparation	None
Contrasts	1
TE	1.34 ms
TR	41.60 ms
Save original images	On

## Inline - MIP

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

## **Inline - Composing**

Distortion Corr.	On
Mode	2D
Unfiltered images	Off

# Sequence - Part 1

Introduction	Off
Dimension	2D
Reordering	Linear
Asymmetric echo	Weak
Contrasts	1
Optimization	Min. TE TR
Multi-slice mode	Sequential
Echo spacing	3.2 ms
Sequence type	Trufi
Bandwidth	965 Hz/Px

# Sequence - Part 2

Define	Segments
Segments	13
Trufi delta freq.	0 Hz
RF pulse type	Fast
Gradient mode	Normal
Excitation	Slice-sel.
Flip angle mode	Constant
Cine	On

Mode	Min flip angle
Min flip angle	50 deg
Allowed delay	0 s

# \\USER\Cardiac\ALTERED SEQUENCES- TAILORED PROTOCOLS\CARDIC OS PROTOCOL\3-CHAM BER Cine

TA: 2.0 s PM: REF Voxel size: 1.9×1.9×8.0 mmPAT: 2 Rel. SNR: 1.00 : tfi

#### **Properties**

Prio recon	Off
Load images to viewer	On
Inline movie	On
Auto store images	On
Load images to stamp segments	On
Load images to graphic segments	On
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	1
Dist. factor	20 %
Position	L4.5 P24.0 F35.2 mm
Orientation	S > T-32.2 > C-17.4
Phase enc. dir.	A >> P
AutoAlign	
Phase oversampling	0 %
FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
TR	41.60 ms
TE	1.34 ms
Averages	1
Concatenations	1
Filter	Distortion Corr.(2D),
	Prescan Normalize,
	Image Filter
Coil elements	BO1,2;SP2

#### **Contrast - Common**

TR	41.60 ms
TE	1.34 ms
Magn. preparation	None
Flip angle	58 deg
Fat suppr.	None
Wrap-up Magn.	Restore

## **Contrast - Dynamic**

Averages	1
Averaging mode	Short term
Reconstruction	Magnitude
Measurements	1
Multiple series	Off

#### **Resolution - Common**

FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
Base resolution	192
Phase resolution	100 %
Phase partial Fourier	Off
Trajectory	Cartesian
View sharing	Off
Interpolation	Off

#### **Resolution - iPAT**

PAT mode	GRAPPA
Accel. factor PE	2
Ref. lines PE	44
Reference scan mode	Integrated

#### **Resolution - Filter Image**

Image Filter	On
! Intensity	Medium
Edge Enhancement	3
Smoothing	2
Unfiltered images	Off
Distortion Corr.	On
Mode	2D
Unfiltered images	Off
Prescan Normalize	On
Unfiltered images	Off
Normalize	Off
B1 filter	Off

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

Raw filter	Off
Elliptical filter	Off
POCS	Off

#### **Geometry - Common**

Slice group	1
Slices	1
Dist. factor	20 %
Position	L4.5 P24.0 F35.2 mm
Orientation	S > T-32.2 > C-17.4
Phase enc. dir.	A >> P
FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
TR	41.60 ms
Multi-slice mode	Sequential
Series	Interl. in Bh.
Concatenations	1

# **Geometry - AutoAlign**

Slice group	1
AutoAlign	
Position	L4.5 P24.0 F35.2 mm
Orientation	S > T-32.2 > C-17.4
Phase enc. dir.	A >> P
Initial Position	L4.5 P24.0 F2.2
L	4.5 mm
P	24.0 mm
F	2.2 mm
Initial Rotation	10.67 deg
Initial Orientation	S > T
S > T	-32.2
> C	-17.4

# **Geometry - Saturation**

Fat suppr.	None
Wrap-up Magn.	Restore
Special sat.	None

# **Geometry - Navigator**

## **System - Miscellaneous**

Positioning mode	REF
Table position	F
Table position	33 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	Off - AutoCoilSelect

# **System - Adjustments**

B0 Shim mode	Cardiac
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto

## **System - Adjust Volume**

Position	L4.5 P24.0 F35.2 mm
Orientation	S > T-32.2 > C-17.4
Rotation	10.67 deg
A >> P	293 mm
F >> H	360 mm
R >> L	8 mm
Reset	Off

# System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

# Physio - Signal1

1st Signal/Mode	ECG/Retro
Average cycle	225 ± 213 ms
Average cycle	No Signal ms
Calculated phases	25
TR	41.60 ms
Concatenations	1
Segments	13
Arrhythmia detection	None

# Physio - Cardiac

Magn. preparation	None
Fat suppr.	None
Dark blood	Off
FoV read	360 mm
FoV phase	81.3 %
Phase resolution	100 %
Cine	On
Trajectory	Cartesian
View sharing	Off
Dummy heartbeats	1

## Physio - PACE

Resp. control	Breath-hold
Concatenations	1

#### **Inline - Common**

Subtract	Off
Measurements	1
StdDev	Off
Save original images	On

## Inline - Cardiac

Inline Evaluation	Off
Magn. preparation	None
Contrasts	1
TE	1.34 ms
TR	41.60 ms
Save original images	On

#### Inline - MIP

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

## **Inline - Composing**

Distortion Corr.	On
Mode	2D
Unfiltered images	Off

# Sequence - Part 1

Introduction	Off
Dimension	2D
Reordering	Linear
Asymmetric echo	Weak
Contrasts	1
Optimization	Min. TE TR
Multi-slice mode	Sequential
Echo spacing	3.2 ms
Sequence type	Trufi
Bandwidth	965 Hz/Px

# Sequence - Part 2

Define	Segments
Segments	13
Trufi delta freq.	0 Hz
RF pulse type	Fast
Gradient mode	Normal
Excitation	Slice-sel.
Flip angle mode	Constant
Cine	On

Mode	Min flip angle
Min flip angle	50 deg
Allowed delay	0 s

# \\USER\Cardiac\ALTERED SEQUENCES- TAILORED PROTOCOLS\CARDIC OS PROTOCOL\SA - Cin

е

TA: 0:55 PM: REF Voxel size: 1.9×1.9×8.0 mmPAT: 3 Rel. SNR: 1.00 : tfi

#### **Properties**

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

#### Routine

Slice group	1
Slices	14
Dist. factor	25 %
Position	L36.5 P10.9 F53.2 mm
Orientation	C > S38.2 > T-27.5
Phase enc. dir.	A >> P
AutoAlign	
Phase oversampling	0 %
FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
TR	51.20 ms
TE	1.34 ms
Averages	1
Concatenations	7
Filter	Distortion Corr.(2D),
	Prescan Normalize,
l	Image Filter
Coil elements	BO1,2;SP2

#### **Contrast - Common**

TR	51.20 ms
TE	1.34 ms
Magn. preparation	None
Flip angle	60 deg
Fat suppr.	None
Wrap-up Magn.	Restore

## **Contrast - Dynamic**

Averages	1
Averaging mode	Short term
Reconstruction	Magnitude
Measurements	1
Multiple series	Each slice and
	measurement

#### **Resolution - Common**

FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
Base resolution	192
Phase resolution	70 %
Phase partial Fourier	Off
Trajectory	Cartesian
View sharing	Off
Interpolation	Off

#### **Resolution - iPAT**

PAT mode	GRAPPA
Accel. factor PE	3
Ref. lines PE	54
Reference scan mode	Integrated

## **Resolution - Filter Image**

Image Filter	On
! Intensity	Medium
Edge Enhancement	3
Smoothing	2
Unfiltered images	Off
Distortion Corr.	On
Mode	2D
Unfiltered images	Off
Prescan Normalize	On
Unfiltered images	Off
Normalize	Off
B1 filter	Off

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

Raw filter	Off
Elliptical filter	Off
POCS	Off

#### **Geometry - Common**

Slice group	1
Slices	14
Dist. factor	25 %
Position	L36.5 P10.9 F53.2 mm
Orientation	C > S38.2 > T-27.5
Phase enc. dir.	A >> P
FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
TR	51.20 ms
Multi-slice mode	Sequential
Series	Base To Apex
Concatenations	7

# **Geometry - AutoAlign**

1
L36.5 P10.9 F53.2 mm
C > S38.2 > T-27.5
A >> P
L36.5 P10.9 F20.2
36.5 mm
10.9 mm
20.2 mm
-30.37 deg
C > S
38.2
-27.5

## **Geometry - Saturation**

Fat suppr.	None
Wrap-up Magn.	Restore
Special sat.	None

# **Geometry - Navigator**

# **System - Miscellaneous**

Positioning mode	REF
Table position	F
Table position	33 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	Off - AutoCoilSelect

# **System - Adjustments**

B0 Shim mode	Cardiac
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto

## System - Adjust Volume

Position	L36.5 P10.9 F53.2 mm
Orientation	C > S38.2 > T-27.5
Rotation	-30.37 deg
A >> P	293 mm
F >> H	360 mm
A >> P	138 mm
Reset	Off

# System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

# Physio - Signal1

1st Signal/Mode	ECG/Retro
Average cycle	225 ± 213 ms
Average cycle	No Signal ms
Calculated phases	25
TR	51.20 ms
Concatenations	7
Segments	16
Arrhythmia detection	None

## Physio - Cardiac

None
None
Off
360 mm
31.3 %
70 %
On
Cartesian
Off
3

# Physio - PACE

Resp. control	Breath-hold
Concatenations	7

#### **Inline - Common**

Subtract	Off
Measurements	1
StdDev	Off
Save original images	On

## Inline - Cardiac

Inline Evaluation	Off
Magn. preparation	None
Contrasts	1
TE	1.34 ms
TR	51.20 ms
Save original images	On

## Inline - MIP

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

## **Inline - Composing**

Distortion Corr.	On
Mode	2D
Unfiltered images	Off

# Sequence - Part 1

Introduction	Off
Dimension	2D
Reordering	Linear
Asymmetric echo	Weak
Contrasts	1
Optimization	Min. TE TR
Multi-slice mode	Sequential
Echo spacing	3.2 ms
Sequence type	Trufi
Bandwidth	965 Hz/Px

# Sequence - Part 2

Define	Segments
Segments	16
Trufi delta freq.	0 Hz
RF pulse type	Fast
Gradient mode	Normal
Excitation	Slice-sel.
Flip angle mode	Constant
Cine	On

Mode	Min flip angle
Min flip angle	50 deg
Allowed delay	0 s

# \\USER\Cardiac\ALTERED SEQUENCES- TAILORED PROTOCOLS\CARDIC OS PROTOCOL\OS BAS ELINE

TA: 9.6 s PM: REF Voxel size: 1.9×1.9×10.0 mmPAT: 2 Rel. SNR: 1.00 : tfi

#### **Properties**

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

#### Routine

Slice group	1
Slices	2
Dist. factor	100 %
Position	L36.5 P10.9 F53.2 mm
Orientation	C > S38.2 > T-27.5
Phase enc. dir.	A >> P
AutoAlign	
Phase oversampling	0 %
FoV read	360 mm
FoV phase	81.3 %
Slice thickness	10.0 mm
TR	42.36 ms
TE	1.57 ms
Averages	1
Concatenations	2
Filter	Distortion Corr.(2D),
	Prescan Normalize, Image Filter
Coil elements	BO1,2;SP2

#### **Contrast - Common**

TR	42.36 ms
TE	1.57 ms
Magn. preparation	None
Flip angle	35 deg
Fat suppr.	None
Wrap-up Magn.	Restore

## **Contrast - Dynamic**

Averages	1
Averaging mode	Short term
Reconstruction	Magnitude
Measurements	1
Multiple series	Each slice and
	measurement

#### **Resolution - Common**

FoV read	360 mm
FoV phase	81.3 %
Slice thickness	10.0 mm
Base resolution	192
Phase resolution	83 %
Phase partial Fourier	Off
Trajectory	Cartesian
View sharing	Off
Interpolation	Off

#### **Resolution - iPAT**

PAT mode	GRAPPA
Accel. factor PE	2
Ref. lines PE	26
Reference scan mode	Integrated

## **Resolution - Filter Image**

Image Filter	On
! Intensity	Medium
Edge Enhancement	3
Smoothing	2
Unfiltered images	Off
Distortion Corr.	On
Mode	2D
Unfiltered images	Off
Prescan Normalize	On
Unfiltered images	Off
Normalize	Off
B1 filter	Off

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

Raw filter	Off
Elliptical filter	Off
POCS	Off

#### **Geometry - Common**

Slice group	1
Slices	2
Dist. factor	100 %
Position	L36.5 P10.9 F53.2 mm
Orientation	C > S38.2 > T-27.5
Phase enc. dir.	A >> P
FoV read	360 mm
FoV phase	81.3 %
Slice thickness	10.0 mm
TR	42.36 ms
Multi-slice mode	Sequential
Series	Descending
Concatenations	2

## Geometry - AutoAlign

Slice group	1
AutoAlign	
Position	L36.5 P10.9 F53.2 mm
Orientation	C > S38.2 > T-27.5
Phase enc. dir.	A >> P
Initial Position	L36.5 P10.9 F20.2
L	36.5 mm
P	10.9 mm
F	20.2 mm
Initial Rotation	-30.37 deg
Initial Orientation	C > S
C > S	38.2
> T	-27.5

## **Geometry - Saturation**

Fat suppr.	None
Wrap-up Magn.	Restore
Special sat.	None

# **Geometry - Navigator**

# **System - Miscellaneous**

Positioning mode	REF
Table position	F
Table position	33 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	Off - AutoCoilSelect

## **System - Adjustments**

B0 Shim mode	Cardiac
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto

## **System - Adjust Volume**

Position	L36.5 P10.9 F53.2 mm
Orientation	C > S38.2 > T-27.5
Rotation	-30.37 deg
A >> P	293 mm
F >> H	360 mm
A >> P	30 mm
Reset	Off

# System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

# Physio - Signal1

1st Signal/Mode	ECG/Retro
Average cycle	225 ± 213 ms
Average cycle	No Signal ms
Calculated phases	25
TR	42.36 ms
Concatenations	2
Segments	12
Arrhythmia detection	None

## Physio - Cardiac

Magn. preparation	None	
Fat suppr.	None	
Dark blood	Off	
FoV read	360 mm	
FoV phase	81.3 %	
Phase resolution	83 %	
Cine	On	
Trajectory	Cartesian	
View sharing	Off	
Dummy heartbeats	1	
·	•	

# Physio - PACE

Resp. control	Breath-hold
Concatenations	2

#### **Inline - Common**

Subtract	Off
Measurements	1
StdDev	Off
Save original images	On

## Inline - Cardiac

Inline Evaluation	Off
Magn. preparation	None
Contrasts	1
TE	1.57 ms
TR	42.36 ms
Save original images	On

#### Inline - MIP

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

## **Inline - Composing**

Distortion Corr.	On
Mode	2D
Unfiltered images	Off

# Sequence - Part 1

Introduction	Off
Dimension	2D
Reordering	Linear
Asymmetric echo	Weak
Contrasts	1
Optimization	Min. TE TR
Multi-slice mode	Sequential
Echo spacing	3.5 ms
Sequence type	Trufi
Bandwidth	1240 Hz/Px

# Sequence - Part 2

Define	Segments
Segments	12
Trufi delta freq.	0 Hz
RF pulse type	Normal
Gradient mode	Normal
Excitation	Slice-sel.
Flip angle mode	Constant
Cine	On

Mode	Min flip angle
Min flip angle	50 deg
Allowed delay	0 s

# \\USER\Cardiac\ALTERED SEQUENCES- TAILORED PROTOCOLS\CARDIC OS PROTOCOL\OS CON TINUOUS ACQUISITION

TA: 3:36 PM: REF Voxel size: 1.9×1.9×10.0 mmPAT: 2 Rel. SNR: 1.00 : tfi

## **Properties**

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

#### **Routine**

Slice group	1
Slices	2
Dist. factor	100 %
Position	L36.5 P10.9 F53.2 mm
Orientation	C > S38.2 > T-27.5
Phase enc. dir.	A >> P
AutoAlign	
Phase oversampling	0 %
FoV read	360 mm
FoV phase	75.0 %
Slice thickness	10.0 mm
TR	42.36 ms
TE	1.57 ms
Averages	1
Concatenations	2
Filter	Distortion Corr.(2D),
	Prescan Normalize
Coil elements	BO1,2;SP2

#### **Contrast - Common**

TR	42.36 ms
TE	1.57 ms
TD	0 ms
Magn. preparation	None
Flip angle	35 deg
Fat suppr.	None
Wrap-up Magn.	None

# **Contrast - Dynamic**

Averages	1
Averaging mode	Short term
Reconstruction	Magnitude
Measurements	40
Pause after meas. 1	0.0 s
Pause after meas. 2	0.0 s
Pause after meas. 3	0.0 s
Pause after meas. 4	0.0 s
Pause after meas. 5	0.0 s
Pause after meas. 6	0.0 s
Pause after meas. 7	0.0 s
Pause after meas. 8	0.0 s
Pause after meas. 9	0.0 s
Pause after meas. 10	0.0 s
Pause after meas. 11	0.0 s
Pause after meas. 12	0.0 s

## **Contrast - Dynamic**

Pause after meas. 13	0.0 s
Pause after meas. 14	0.0 s
Pause after meas. 15	0.0 s
Pause after meas. 16	0.0 s
Pause after meas. 17	0.0 s
Pause after meas. 18	0.0 s
Pause after meas. 19	0.0 s
Pause after meas. 20	0.0 s
Pause after meas. 21	0.0 s
Pause after meas. 22	0.0 s
Pause after meas. 23	0.0 s
Pause after meas. 24	0.0 s
Pause after meas. 25	0.0 s
Pause after meas. 26	0.0 s
Pause after meas. 27	0.0 s
Pause after meas. 28	0.0 s
Pause after meas. 29	0.0 s
Pause after meas. 30	0.0 s
Pause after meas. 31	0.0 s
Pause after meas. 32	0.0 s
Pause after meas. 33	0.0 s
Pause after meas. 34	0.0 s
Pause after meas. 35	0.0 s
Pause after meas. 36	0.0 s
Pause after meas. 37	0.0 s
Pause after meas. 38	0.0 s
Pause after meas. 39	0.0 s
Multiple series	Off

#### **Resolution - Common**

FoV read	360 mm
FoV phase	75.0 %
Slice thickness	10.0 mm
Base resolution	192
Phase resolution	83 %
Phase partial Fourier	5/8
Trajectory	Cartesian
View sharing	Off
Interpolation	Off

## **Resolution - iPAT**

PAT mode	GRAPPA
Accel. factor PE	2
Ref. lines PE	26
Reference scan mode	Integrated

## **Resolution - Filter Image**

Image Filter	Off
Distortion Corr.	On
Mode	2D
Unfiltered images	Off
Prescan Normalize	On
Unfiltered images	Off
Normalize	Off
B1 filter	Off

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

Raw filter	Off	
Elliptical filter	Off	

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

POCS Off			
1 003	IPULO	Off	

## **Geometry - Common**

Slice group	1
Slices	2
Dist. factor	100 %
Position	L36.5 P10.9 F53.2 mm
Orientation	C > S38.2 > T-27.5
Phase enc. dir.	A >> P
FoV read	360 mm
FoV phase	75.0 %
Slice thickness	10.0 mm
TR	42.36 ms
Multi-slice mode	Sequential
Series	Descending
Concatenations	2

#### **Geometry - AutoAlign**

Slice group	1
AutoAlign	
Position	L36.5 P10.9 F53.2 mm
Orientation	C > S38.2 > T-27.5
Phase enc. dir.	A >> P
Initial Position	L36.5 P10.9 F20.2
L	36.5 mm
Р	10.9 mm
F	20.2 mm
Initial Rotation	-30.37 deg
Initial Orientation	C > S
C > S	38.2
> T	-27.5

# **Geometry - Saturation**

Fat suppr.	None
Wrap-up Magn.	None
Special sat.	None

# **Geometry - Navigator**

#### **System - Miscellaneous**

Positioning mode	REF
Table position	F
Table position	33 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	Off - AutoCoilSelect

# **System - Adjustments**

B0 Shim mode	Cardiac	
Adjust with body coil	Off	
Confirm freq. adjustment	Off	
Assume Dominant Fat	Off	
Assume Silicone	Off	
Adjustment Tolerance	Auto	

#### System - Adjust Volume

Position	L36.5 P10.9 F53.2 mm

#### **System - Adjust Volume**

Orientation	C > S38.2 > T-27.5
Rotation	-30.37 deg
A >> P	270 mm
F >> H	360 mm
A >> P	30 mm
Reset	Off

## System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

## Physio - Signal1

1st Signal/Mode	ECG/Trigger
Average cycle	225 ± 213 ms
Average cycle	No Signal ms
Captured cycle	-not set-
Acquisition window	575 ms
Trigger pulse	1
Trigger delay	0 ms
TR	42.36 ms
Concatenations	2
Segments	12
Phases	13

# Physio - Cardiac

Magn. preparation	None
Fat suppr.	None
Dark blood	Off
FoV read	360 mm
FoV phase	75.0 %
Phase resolution	83 %
Cine	On
Trajectory	Cartesian
View sharing	Off
Dummy heartbeats	1

## **Physio - PACE**

Resp. control	Off
Concatenations	2

## **Inline - Common**

Subtract	Off
Measurements	40
StdDev	Off
Save original images	On

# Inline - Cardiac

Inline Evaluation	Off
Magn. preparation	None
Contrasts	1
TE	1.57 ms
TR	42.36 ms
Save original images	On

#### Inline - MIP

MIP-Sag	Off	
MIP-Cor	Off	
MIP-Tra	Off	
MIP-Time	Off	

# SIEMENS MAGNETOM MAGNETOM\_ESSENZA

# Inline - MIP

Save original images	On	

# Inline - Composing

Distortion Corr.	On
Mode	2D
Unfiltered images	Off

# Sequence - Part 1

Introduction	Off
Dimension	2D
Reordering	Linear
Asymmetric echo	Weak
Contrasts	1
Optimization	Min. TE TR
Multi-slice mode	Sequential
Echo spacing	3.5 ms
Sequence type	Trufi
Bandwidth	1240 Hz/Px

# Sequence - Part 2

Define	Segments
Segments	12
Trufi delta freq.	0 Hz
RF pulse type	Normal
Gradient mode	Normal
Excitation	Slice-sel.
Flip angle mode	Constant
Cine	On

Mode	Min flip angle
Min flip angle	50 deg
Allowed delay	0 s

#### \\USER\Cardiac\ALTERED SEQUENCES- TAILORED PROTOCOLS\CONGENITAL\trufi\_loc\_multi\_iPA T

TA: 4.0 s PM: REF Voxel size: 1.7×1.7×8.0 mmPAT: 2 Rel. SNR: 1.00 : tfi

## **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	On
Auto open inline display	Off
Auto close inline display	Off
Start measurement without further	On
preparation	
Wait for user to start	Off
Start measurements	Single measurement

#### **Routine**

Slice group	1
Slices	3
Dist. factor	300 %
Position	L0.0 P20.0 H0.0 mm
Orientation	Transversal
Phase enc. dir.	A >> P
Slice group	2
Slices	3
Dist. factor	300 %
Position	L30.0 P0.0 H0.0 mm
Orientation	Sagittal
Phase enc. dir.	A >> P
Slice group	3
Slices	3
Dist. factor	300 %
Position	L0.0 P10.0 H0.0 mm
Orientation	Coronal
Phase enc. dir.	R >> L
AutoAlign	
Phase oversampling	0 %
FoV read	400 mm
FoV phase	100.0 %
Slice thickness	8.0 mm
TR	350.73 ms
TE	1.43 ms
Averages	1
Concatenations	9
Filter	Distortion Corr.(2D),
	Prescan Normalize
Coil elements	BO1,2;SP1,2

#### **Contrast - Common**

TR	350.73 ms
TE	1.43 ms
TD	0 ms
Magn. preparation	None
Flip angle	80 deg
Fat suppr. Wrap-up Magn.	None
Wrap-up Magn.	Restore

## **Contrast - Dynamic**

Averages	1
Averaging mode	Short term
Reconstruction	Magnitude
Measurements	1

# **Contrast - Dynamic**

Docalution	Camman	
Multiple series		Each measurement

#### **Resolution - Common**

FoV read	400 mm	
FoV phase	100.0 %	
Slice thickness	8.0 mm	
Base resolution	240	
Phase resolution	66 %	
Phase partial Fourier	Off	
Trajectory	Cartesian	
Interpolation	Off	

#### **Resolution - iPAT**

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

#### **Resolution - Filter Image**

Image Filter	Off
Distortion Corr.	On
Mode	2D
Unfiltered images	Off
Prescan Normalize	On
Unfiltered images	Off
Normalize	Off
B1 filter	Off

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

Raw filter	Off
Elliptical filter	Off
POCS	Off

## **Geometry - Common**

Slice group	1
Slices	3
Dist. factor	300 %
Position	L0.0 P20.0 H0.0 mm
Orientation	Transversal
Phase enc. dir.	A >> P
Slice group	2
Slices	3
Dist. factor	300 %
Position	L30.0 P0.0 H0.0 mm
Orientation	Sagittal
Phase enc. dir.	A >> P
Slice group	3
Slices	3
Dist. factor	300 %
Position	L0.0 P10.0 H0.0 mm
Orientation	Coronal
Phase enc. dir.	R >> L
FoV read	400 mm
FoV phase	100.0 %
Slice thickness	8.0 mm
TR	350.73 ms
Multi-slice mode	Sequential
Series	Descending
Concatenations	9

## **Geometry - AutoAlign**

Slice group	1
Slice group	2
Slice group	3
AutoAlign	
Position	L0.0 P10.0 H0.0 mm
Orientation	Coronal
Phase enc. dir.	R >> L
Initial Position	L0.0 P20.0 H0.0
L	0.0 mm
Р	20.0 mm
Н	0.0 mm
Initial Rotation	0.00 deg
Initial Orientation	Transversal

# **Geometry - Saturation**

Fat suppr.	None
Wrap-up Magn.	Restore
Special sat.	None

## **Geometry - Navigator**

# **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	Off - AutoCoilSelect

## **System - Adjustments**

B0 Shim mode	Cardiac
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto

# System - Adjust Volume

Position	L0.0 P10.0 H0.0 mm
Orientation	Sagittal
Rotation	90.00 deg
F >> H	400 mm
A >> P	420 mm
R >> L	400 mm
Reset	Off

# System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

# Physio - Signal1

1st Signal/Mode	ECG/Trigger
Average cycle	$225 \pm 213  \text{ms}$

# Physio - Signal1

Average cycle	No Signal ms
Captured cycle	225 ± 213 ms
Acquisition window	800 ms
Trigger pulse	1
Trigger delay	400 ms
TR	350.73 ms
Concatenations	9
Segments	91
Phases	1

# Physio - Cardiac

Magn. preparation	None
Fat suppr.	None
Dark blood	Off
FoV read	400 mm
FoV phase	100.0 %
Phase resolution	66 %
Cine	Off
Trajectory	Cartesian
Dummy heartbeats	0

## **Physio - PACE**

Resp. control	Off
Concatenations	9

#### Inline - Common

Subtract	Off
Measurements	1
StdDev	Off
Save original images	On

#### Inline - Cardiac

Inline Evaluation	Off
Magn. preparation	None
Contrasts	1
TE	1.43 ms
TR	350.73 ms
Save original images	On

#### Inline - MIP

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

## **Inline - Composing**

Distortion Corr.	On
Mode	2D
Unfiltered images	Off

## Sequence - Part 1

Introduction	Off
Dimension	2D
Reordering	Linear
Asymmetric echo	Weak
Contrasts	1
Optimization	Min. TE
Multi-slice mode	Sequential
Echo spacing	3.4 ms
Sequence type	Trufi
Bandwidth	1096 Hz/Px

# SIEMENS MAGNETOM MAGNETOM\_ESSENZA

# Sequence - Part 2

Define	Shots
Shots per slice	1
Segments	91
Trufi delta freq.	0 Hz
RF pulse type	Fast
Gradient mode	Normal
Excitation	Slice-sel.
Flip angle mode	Constant
Cine	Off

Mode	Min flip angle
Min flip angle	50 deg
Allowed delay	0 s

## \\USER\Cardiac\ALTERED SEQUENCES-TAILORED PROTOCOLS\CONGENITAL\AXIAL STACK

TA: 0:36 PM: REF Voxel size: 1.4×1.4×8.0 mmPAT: 2 Rel. SNR: 1.00 : tfi

#### **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	On
Auto open inline display	Off
Auto close inline display	Off
Start measurement without further	On
preparation	
Wait for user to start	Off
Start measurements	Single measurement

## Routine

Slice group	1
Slices	12
Dist. factor	25 %
Position	L0.0 P20.0 H0.0 mm
Orientation	Transversal
Phase enc. dir.	A >> P
Slice group	2
Slices	3
Dist. factor	300 %
Position	L30.0 P0.0 H0.0 mm
Orientation	Sagittal
Phase enc. dir.	A >> P
Slice group	3
Slices	3
Dist. factor	300 %
Position	L0.0 P10.0 H0.0 mm
Orientation	Coronal
Phase enc. dir.	R >> L
AutoAlign	
Phase oversampling	50 %
FoV read	334 mm
FoV phase	80.0 %
Slice thickness	8.0 mm
TR	55.20 ms
TE	1.54 ms
Averages	1
Concatenations	12
Filter	Prescan Normalize
Coil elements	BO1,2;SP1,2

#### **Contrast - Common**

TR	55.20 ms
TE	1.54 ms
Magn. preparation	None
Flip angle	80 deg
Fat suppr.	None
Wrap-up Magn.	Restore

## **Contrast - Dynamic**

Averages	1
Averaging mode	Short term
Reconstruction	Magnitude
Measurements	1
Multiple series	Each slice

#### **Resolution - Common**

FoV read	334 mm
FoV phase	80.0 %
Slice thickness	8.0 mm
Base resolution	240
Phase resolution	70 %
Phase partial Fourier	Off
Trajectory	Cartesian
View sharing	Off
Interpolation	Off

#### **Resolution - iPAT**

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

## **Resolution - Filter Image**

Image Filter	Off
Distortion Corr.	Off
Prescan Normalize	On
Unfiltered images	Off
Normalize	Off
B1 filter	Off

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

Raw filter	Off
Elliptical filter	Off
POCS	Off

## **Geometry - Common**

Slice group	1
Slices	12
Dist. factor	25 %
Position	L0.0 P20.0 H0.0 mm
Orientation	Transversal
Phase enc. dir.	A >> P
Slice group	2
Slices	3
Dist. factor	300 %
Position	L30.0 P0.0 H0.0 mm
Orientation	Sagittal
Phase enc. dir.	A >> P
Slice group	3
Slices	3
Dist. factor	300 %
Position	L0.0 P10.0 H0.0 mm
Orientation	Coronal
Phase enc. dir.	R >> L
FoV read	334 mm
FoV phase	80.0 %
Slice thickness	8.0 mm
TR	55.20 ms
Multi-slice mode	Sequential
Series	Descending
Concatenations	12

## **Geometry - AutoAlign**

Slice group	1
Slice group	2
Slice group	3

## **Geometry - AutoAlign**

AutoAlign	
Position	L0.0 P10.0 H0.0 mm
Orientation	Coronal
Phase enc. dir.	R >> L
Initial Position	L0.0 P20.0 H0.0
L	0.0 mm
P	20.0 mm
Н	0.0 mm
Initial Rotation	0.00 deg
Initial Orientation	Transversal

## **Geometry - Saturation**

Fat suppr.	None
Wrap-up Magn.	Restore
Special sat.	None

## **Geometry - Navigator**

## **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	Off - AutoCoilSelect

## **System - Adjustments**

B0 Shim mode	Cardiac
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto

# System - Adjust Volume

Position	L0.0 P10.0 H0.0 mm
Orientation	Coronal
Rotation	0.00 deg
R >> L	334 mm
F >> H A >> P	334 mm
A >> P	288 mm
Reset	Off

## System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

# Physio - Signal1

1st Signal/Mode	ECG/Retro
Average cycle	225 ± 213 ms
Average cycle	No Signal ms
Calculated phases	25
TR	55.20 ms

## Physio - Signal1

Concatenations	12
Segments	15
Arrhythmia detection	None

# Physio - Cardiac

Magn. preparation	None
Fat suppr.	None
Dark blood	Off
FoV read	334 mm
FoV phase	80.0 %
Phase resolution	70 %
Cine	On
Trajectory	Cartesian
View sharing	Off
Dummy heartbeats	1

# Physio - PACE

Resp. control	Breath-hold
Concatenations	12

#### Inline - Common

Subtract	Off	
Measurements	1	
StdDev	Off	
Save original images	On	

#### Inline - Cardiac

Inline Evaluation	Off
Magn. preparation	None
Contrasts	1
TE	1.54 ms
TR	55.20 ms
Save original images	On

#### Inline - MIP

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

# **Inline - Composing**

Distortion Corr.	Off
------------------	-----

## Sequence - Part 1

Introduction	Off
Dimension	2D
Reordering	Linear
Asymmetric echo	Weak
Contrasts	1
Optimization	Min. TE TR
Multi-slice mode	Sequential
Echo spacing	3.7 ms
Sequence type	Trufi
Bandwidth	947 Hz/Px

#### Sequence - Part 2

Define	Segments
Segments	15
Trufi delta freq.	0 Hz
RF pulse type	Fast
Gradient mode	Normal
Excitation	Slice-sel.

# SIEMENS MAGNETOM MAGNETOM\_ESSENZA

# Sequence - Part 2

Flip angle mode	Constant
Cine	On

Mode	Min flip angle
Min flip angle	50 deg
Allowed delay	0 s

## \\USER\Cardiac\ALTERED SEQUENCES- TAILORED PROTOCOLS\CONGENITAL\2CH STACK

TA: 0:36 PM: REF Voxel size: 1.4×1.4×8.0 mmPAT: 2 Rel. SNR: 1.00 : tfi

#### **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	On
Auto open inline display	Off
Auto close inline display	Off
Start measurement without further preparation	On
Wait for user to start	Off
Start measurements	Single measurement

## Routine

Slice group	1
Slices	12
Dist. factor	25 %
Position	L0.0 P20.0 H0.0 mm
Orientation	Transversal
Phase enc. dir.	A >> P
Slice group	2
Slices	3
Dist. factor	300 %
Position	L30.0 P0.0 H0.0 mm
Orientation	Sagittal
Phase enc. dir.	A >> P
Slice group	3
Slices	3
Dist. factor	300 %
Position	L0.0 P10.0 H0.0 mm
Orientation	Coronal
Phase enc. dir.	R >> L
AutoAlign	
Phase oversampling	50 %
FoV read	334 mm
FoV phase	80.0 %
Slice thickness	8.0 mm
TR	55.20 ms
TE	1.54 ms
Averages	1
Concatenations	12
Filter	Prescan Normalize
Coil elements	BO1,2;SP1,2

#### **Contrast - Common**

TR	55.20 ms
TE	1.54 ms
Magn. preparation	None
Flip angle	80 deg
Fat suppr.	None
Wrap-up Magn.	Restore

## **Contrast - Dynamic**

Averages	1
Averaging mode	Short term
Reconstruction	Magnitude
Measurements	1
Multiple series	Each slice

#### **Resolution - Common**

FoV read	334 mm
FoV phase	80.0 %
Slice thickness	8.0 mm
Base resolution	240
Phase resolution	70 %
Phase partial Fourier	Off
Trajectory	Cartesian
View sharing	Off
Interpolation	Off

#### **Resolution - iPAT**

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

## **Resolution - Filter Image**

Image Filter	Off
Distortion Corr.	Off
Prescan Normalize	On
Unfiltered images	Off
Normalize	Off
B1 filter	Off

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

Raw filter	Off
Elliptical filter	Off
POCS	Off

## **Geometry - Common**

1
12
25 %
L0.0 P20.0 H0.0 mm
Transversal
A >> P
2
3
300 %
L30.0 P0.0 H0.0 mm
Sagittal
A >> P
3
3
300 %
L0.0 P10.0 H0.0 mm
Coronal
R >> L
334 mm
80.0 %
8.0 mm
55.20 ms
Sequential
Descending
12

## **Geometry - AutoAlign**

Slice group	1
Slice group	2
Slice group	3

## **Geometry - AutoAlign**

AutoAlign	
Position	L0.0 P10.0 H0.0 mm
Orientation	Coronal
Phase enc. dir.	R >> L
Initial Position	L0.0 P20.0 H0.0
L	0.0 mm
L P	20.0 mm
Н	0.0 mm
Initial Rotation	0.00 deg
Initial Orientation	Transversal

## **Geometry - Saturation**

Fat suppr.	None
Wrap-up Magn.	Restore
Special sat.	None

## **Geometry - Navigator**

## **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	Off - AutoCoilSelect

## **System - Adjustments**

B0 Shim mode	Cardiac
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto

# System - Adjust Volume

Position	L0.0 P10.0 H0.0 mm
Orientation	Coronal
Rotation	0.00 deg
R >> L	334 mm
R >> L F >> H A >> P	334 mm
A >> P	288 mm
Reset	Off

## System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

# Physio - Signal1

1st Signal/Mode	ECG/Retro
Average cycle	$225 \pm 213  \text{ms}$
Average cycle	No Signal ms
Calculated phases	25
TR	55.20 ms

## Physio - Signal1

Concatenations	12
Segments	15
Arrhythmia detection	None

# Physio - Cardiac

Magn. preparation	None
Fat suppr.	None
Dark blood	Off
FoV read	334 mm
FoV phase	80.0 %
Phase resolution	70 %
Cine	On
Trajectory	Cartesian
View sharing	Off
Dummy heartbeats	1

## **Physio - PACE**

Resp. control	Breath-hold
Concatenations	12

#### Inline - Common

Subtract	Off
Measurements	1
StdDev	Off
Save original images	On

#### Inline - Cardiac

Inline Evaluation	Off
Magn. preparation	None
Contrasts	1
TE	1.54 ms
TR	55.20 ms
Save original images	On

## Inline - MIP

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

# **Inline - Composing**

Distortion Corr.	Off
------------------	-----

## Sequence - Part 1

Introduction	Off
Dimension	2D
Reordering	Linear
Asymmetric echo	Weak
Contrasts	1
Optimization	Min. TE TR
Multi-slice mode	Sequential
Echo spacing	3.7 ms
Sequence type	Trufi
Bandwidth	947 Hz/Px

#### Sequence - Part 2

Define	Segments
Segments	15
Trufi delta freq.	0 Hz
RF pulse type	Fast
Gradient mode	Normal
Excitation	Slice-sel.

# SIEMENS MAGNETOM MAGNETOM\_ESSENZA

# Sequence - Part 2

Flip angle mode	Constant
Cine	On

Mode	Min flip angle
Min flip angle	50 deg
Allowed delay	0 s

# \\USER\Cardiac\ALTERED SEQUENCES- TAILORED PROTOCOLS\CONGENITAL\SAX LOC AT PAPI LLARY LEVEL

TA: 0:14 PM: REF Voxel size: 1.4×1.4×8.0 mmPAT: 2 Rel. SNR: 1.00 : tfi

## **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	On
Auto open inline display	Off
Auto close inline display	Off
Start measurement without further preparation	On
Wait for user to start	Off
Start measurements	Single measurement

#### **Routine**

Slice group	1
Slices	1
Dist. factor	25 %
Position	L0.0 P20.0 H0.0 mm
Orientation	Transversal
Phase enc. dir.	A >> P
Slice group	2
Slices	3
Dist. factor	300 %
Position	L30.0 P0.0 H0.0 mm
Orientation	Sagittal
Phase enc. dir.	A >> P
Slice group	3
Slices	3
Dist. factor	300 %
Position	L0.0 P10.0 H0.0 mm
Orientation	Coronal
Phase enc. dir.	R >> L
AutoAlign	
Phase oversampling	50 %
FoV read	334 mm
FoV phase	80.0 %
Slice thickness	8.0 mm
TR	55.20 ms
TE	1.54 ms
Averages	1
Concatenations	7
Filter	Prescan Normalize
Coil elements	BO1,2;SP1,2

#### **Contrast - Common**

-	
TR TE	55.20 ms
TE	1.54 ms
Magn. preparation	None
Flip angle	80 deg
Fat suppr.	None
Wrap-up Magn.	Restore

#### **Contrast - Dynamic**

Averages	1
Averaging mode	Short term
Reconstruction	Magnitude
Measurements	1
Multiple series	Each slice

#### **Resolution - Common**

FoV read	334 mm
FoV phase	80.0 %
Slice thickness	8.0 mm
Base resolution	240
Phase resolution	70 %
Phase partial Fourier	Off
Trajectory	Cartesian
View sharing	Off
Interpolation	Off

#### **Resolution - iPAT**

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

## **Resolution - Filter Image**

Image Filter	Off	$\Box$
Distortion Corr.	Off	ļ
Prescan Normalize	On	
Unfiltered images	Off	
Normalize	Off	
B1 filter	Off	

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

Raw filter	Off
Elliptical filter	Off
POCS	Off

#### **Geometry - Common**

Slice group	1
Slices	1
Dist. factor	25 %
Position	L0.0 P20.0 H0.0 mm
Orientation	Transversal
Phase enc. dir.	A >> P
Slice group	2
Slices	3
Dist. factor	300 %
Position	L30.0 P0.0 H0.0 mm
Orientation	Sagittal
Phase enc. dir.	A >> P
Slice group	3
Slices	3
Dist. factor	300 %
Position	L0.0 P10.0 H0.0 mm
Orientation	Coronal
Phase enc. dir.	R >> L
FoV read	334 mm
FoV phase	80.0 %
Slice thickness	8.0 mm
TR	55.20 ms
Multi-slice mode	Sequential
Series	Descending
Concatenations	7
·	

## Geometry - AutoAlign

Slice group	1	
Slice group	2	

## **Geometry - AutoAlign**

Slice group	3
AutoAlign	
Position	L0.0 P10.0 H0.0 mm
Orientation	Coronal
Phase enc. dir.	R >> L
Initial Position	L0.0 P20.0 H0.0
L	0.0 mm
Р	20.0 mm
Н	0.0 mm
Initial Rotation	0.00 deg
Initial Orientation	Transversal

# **Geometry - Saturation**

Fat suppr.	None
Wrap-up Magn.	Restore
Special sat.	None

# **Geometry - Navigator**

## **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	Off - AutoCoilSelect

## **System - Adjustments**

B0 Shim mode	Cardiac
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto

## System - Adjust Volume

Position	L0.0 P10.0 H0.0 mm
Orientation	Coronal
Rotation	0.00 deg
R >> L	334 mm
F >> H A >> P	334 mm
A >> P	288 mm
Reset	Off

# System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

# Physio - Signal1

1st Signal/Mode	ECG/Retro
Average cycle	225 ± 213 ms
Average cycle	No Signal ms
Calculated phases	25

## Physio - Signal1

TR	55.20 ms
Concatenations	7
Segments	15
Arrhythmia detection	None

# Physio - Cardiac

Magn. preparation	None
Fat suppr.	None
Dark blood	Off
FoV read	334 mm
FoV phase	80.0 %
Phase resolution	70 %
Cine	On
Trajectory	Cartesian
View sharing	Off
Dummy heartbeats	1

## **Physio - PACE**

Resp. control	Breath-hold
Concatenations	7

#### Inline - Common

Subtract	Off	
Measurements	1	
StdDev	Off	
Save original images	On	

## Inline - Cardiac

Inline Evaluation	Off
Magn. preparation	None
Contrasts	1
TE	1.54 ms
TR	55.20 ms
Save original images	On

#### Inline - MIP

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

#### **Inline - Composing**

Distantian Corr	O#	
Distortion Corr.	Off	

# Sequence - Part 1

Introduction	Off
Dimension	2D
Reordering	Linear
Asymmetric echo	Weak
Contrasts	1
Optimization	Min. TE TR
Multi-slice mode	Sequential
Echo spacing	3.7 ms
Sequence type	Trufi
Bandwidth	947 Hz/Px

## Sequence - Part 2

Define	Segments
Segments	15
Trufi delta freq.	0 Hz
RF pulse type	Fast
Gradient mode	Normal

## SIEMENS MAGNETOM MAGNETOM\_ESSENZA

# Sequence - Part 2

Excitation	Slice-sel.
Flip angle mode	Constant
Cine	On

Mode	Min flip angle
Min flip angle	50 deg
Allowed delay	0 s

## \\USER\Cardiac\ALTERED SEQUENCES- TAILORED PROTOCOLS\CONGENITAL\4CH STACK

TA: 0:36 PM: REF Voxel size: 1.4×1.4×8.0 mmPAT: 2 Rel. SNR: 1.00 : tfi

## **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	On
Auto open inline display	Off
Auto close inline display	Off
Start measurement without further	On
preparation	
Wait for user to start	Off
Start measurements	Single measurement

## Routine

Slice group	1
Slices	12
Dist. factor	25 %
Position	L0.0 P20.0 H0.0 mm
Orientation	Transversal
Phase enc. dir.	A >> P
Slice group	2
Slices	3
Dist. factor	300 %
Position	L30.0 P0.0 H0.0 mm
Orientation	Sagittal
Phase enc. dir.	A >> P
Slice group	3
Slices	3
Dist. factor	300 %
Position	L0.0 P10.0 H0.0 mm
Orientation	Coronal
Phase enc. dir.	R >> L
AutoAlign	
Phase oversampling	50 %
FoV read	334 mm
FoV phase	80.0 %
Slice thickness	8.0 mm
TR	55.20 ms
TE	1.54 ms
Averages	1
Concatenations	18
Filter	Prescan Normalize
Coil elements	BO1,2;SP1,2

#### **Contrast - Common**

TR	55.20 ms
TE	1.54 ms
Magn. preparation	None
Flip angle	80 deg
Fat suppr.	None
Wrap-up Magn.	Restore

## **Contrast - Dynamic**

Average	5	1
Averagin	g mode	Short term
Reconsti	ruction	Magnitude
Measure	ments	1
Multiple	series	Each slice

#### **Resolution - Common**

FoV read	334 mm
FoV phase	80.0 %
Slice thickness	8.0 mm
Base resolution	240
Phase resolution	70 %
Phase partial Fourier	Off
Trajectory	Cartesian
View sharing	Off
Interpolation	Off

## **Resolution - iPAT**

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

## **Resolution - Filter Image**

Image Filter	Off
Distortion Corr.	Off
Prescan Normalize	On
Unfiltered images	Off
Normalize	Off
B1 filter	Off

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

Raw filter	Off
Elliptical filter	Off
POCS	Off

## **Geometry - Common**

Slice group         1           Slices         12           Dist. factor         25 %           Position         L0.0 P20.0 H0.0 mm           Orientation         Transversal           Phase enc. dir.         A >> P           Slice group         2           Slices         3           Dist. factor         300 %           Position         L30.0 P0.0 H0.0 mm           Orientation         Sagittal           Phase enc. dir.         A >> P           Slice group         3           Slices         3           Dist. factor         300 %           Position         L0.0 P10.0 H0.0 mm           Orientation         Coronal           Phase enc. dir.         R >> L           FoV read         334 mm           FoV phase         80.0 %           Slice thickness         8.0 mm           TR         55.20 ms           Multi-slice mode         Sequential           Series         Descending           Concatenations         18		
Dist. factor         25 %           Position         L0.0 P20.0 H0.0 mm           Orientation         Transversal           Phase enc. dir.         A >> P           Slice group         2           Slices         3           Dist. factor         300 %           Position         L30.0 P0.0 H0.0 mm           Orientation         Sagittal           Phase enc. dir.         A >> P           Slice group         3           Slices         3           Dist. factor         300 %           Position         L0.0 P10.0 H0.0 mm           Orientation         Coronal           Phase enc. dir.         R >> L           FoV read         334 mm           FoV phase         80.0 %           Slice thickness         8.0 mm           TR         55.20 ms           Multi-slice mode         Sequential           Series         Descending	Slice group	1
Position         L0.0 P20.0 H0.0 mm           Orientation         Transversal           Phase enc. dir.         A >> P           Slice group         2           Slices         3           Dist. factor         300 %           Position         L30.0 P0.0 H0.0 mm           Orientation         Sagittal           Phase enc. dir.         A >> P           Slice group         3           Slices         3           Dist. factor         300 %           Position         L0.0 P10.0 H0.0 mm           Orientation         Coronal           Phase enc. dir.         R >> L           FoV read         334 mm           FoV phase         80.0 %           Slice thickness         8.0 mm           TR         55.20 ms           Multi-slice mode         Sequential           Series         Descending	Slices	12
Orientation         Transversal           Phase enc. dir.         A >> P           Slice group         2           Slices         3           Dist. factor         300 %           Position         L30.0 P0.0 H0.0 mm           Orientation         Sagittal           Phase enc. dir.         A >> P           Slice group         3           Slices         3           Dist. factor         300 %           Position         L0.0 P10.0 H0.0 mm           Orientation         Coronal           Phase enc. dir.         R >> L           FoV read         334 mm           FoV phase         80.0 %           Slice thickness         8.0 mm           TR         55.20 ms           Multi-slice mode         Sequential           Series         Descending	Dist. factor	25 %
Phase enc. dir.         A >> P           Slice group         2           Slices         3           Dist. factor         300 %           Position         L30.0 P0.0 H0.0 mm           Orientation         Sagittal           Phase enc. dir.         A >> P           Slice group         3           Slices         3           Dist. factor         300 %           Position         L0.0 P10.0 H0.0 mm           Orientation         Coronal           Phase enc. dir.         R >> L           FoV read         334 mm           FoV phase         80.0 %           Slice thickness         8.0 mm           TR         55.20 ms           Multi-slice mode         Sequential           Series         Descending	Position	L0.0 P20.0 H0.0 mm
Slice group         2           Slices         3           Dist. factor         300 %           Position         L30.0 P0.0 H0.0 mm           Orientation         Sagittal           Phase enc. dir.         A >> P           Slice group         3           Slices         3           Dist. factor         300 %           Position         L0.0 P10.0 H0.0 mm           Orientation         Coronal           Phase enc. dir.         R >> L           FoV read         334 mm           FoV phase         80.0 %           Slice thickness         8.0 mm           TR         55.20 ms           Multi-slice mode         Sequential           Series         Descending	Orientation	Transversal
Slices         3           Dist. factor         300 %           Position         L30.0 P0.0 H0.0 mm           Orientation         Sagittal           Phase enc. dir.         A >> P           Slice group         3           Slices         3           Dist. factor         300 %           Position         L0.0 P10.0 H0.0 mm           Orientation         Coronal           Phase enc. dir.         R >> L           FoV read         334 mm           FoV phase         80.0 %           Slice thickness         8.0 mm           TR         55.20 ms           Multi-slice mode         Sequential           Series         Descending	Phase enc. dir.	A >> P
Dist. factor         300 %           Position         L30.0 P0.0 H0.0 mm           Orientation         Sagittal           Phase enc. dir.         A >> P           Slice group         3           Slices         3           Dist. factor         300 %           Position         L0.0 P10.0 H0.0 mm           Orientation         Coronal           Phase enc. dir.         R >> L           FoV read         334 mm           FoV phase         80.0 %           Slice thickness         8.0 mm           TR         55.20 ms           Multi-slice mode         Sequential           Series         Descending	Slice group	2
Position         L30.0 P0.0 H0.0 mm           Orientation         Sagittal           Phase enc. dir.         A >> P           Slice group         3           Slices         3           Dist. factor         300 %           Position         L0.0 P10.0 H0.0 mm           Orientation         Coronal           Phase enc. dir.         R >> L           FoV read         334 mm           FoV phase         80.0 %           Slice thickness         8.0 mm           TR         55.20 ms           Multi-slice mode         Sequential           Series         Descending	Slices	3
Orientation         Sagittal           Phase enc. dir.         A >> P           Slice group         3           Slices         3           Dist. factor         300 %           Position         L0.0 P10.0 H0.0 mm           Orientation         Coronal           Phase enc. dir.         R >> L           FoV read         334 mm           FoV phase         80.0 %           Slice thickness         8.0 mm           TR         55.20 ms           Multi-slice mode         Sequential           Series         Descending	Dist. factor	300 %
Phase enc. dir.         A >> P           Slice group         3           Slices         3           Dist. factor         300 %           Position         L0.0 P10.0 H0.0 mm           Orientation         Coronal           Phase enc. dir.         R >> L           FoV read         334 mm           FoV phase         80.0 %           Slice thickness         8.0 mm           TR         55.20 ms           Multi-slice mode         Sequential           Series         Descending	Position	L30.0 P0.0 H0.0 mm
Slice group         3           Slices         3           Dist. factor         300 %           Position         L0.0 P10.0 H0.0 mm           Orientation         Coronal           Phase enc. dir.         R >> L           FoV read         334 mm           FoV phase         80.0 %           Slice thickness         8.0 mm           TR         55.20 ms           Multi-slice mode         Sequential           Series         Descending	Orientation	Sagittal
Slices         3           Dist. factor         300 %           Position         L0.0 P10.0 H0.0 mm           Orientation         Coronal           Phase enc. dir.         R >> L           FoV read         334 mm           FoV phase         80.0 %           Slice thickness         8.0 mm           TR         55.20 ms           Multi-slice mode         Sequential           Series         Descending	Phase enc. dir.	A >> P
Dist. factor   300 %     Position   L0.0 P10.0 H0.0 mm     Orientation   Coronal     Phase enc. dir.   R >> L     FoV read   334 mm     FoV phase   80.0 %     Slice thickness   8.0 mm     TR   55.20 ms     Multi-slice mode   Sequential     Series   Descending	Slice group	3
Position         L0.0 P10.0 H0.0 mm           Orientation         Coronal           Phase enc. dir.         R >> L           FoV read         334 mm           FoV phase         80.0 %           Slice thickness         8.0 mm           TR         55.20 ms           Multi-slice mode         Sequential           Series         Descending	Slices	3
Orientation         Coronal           Phase enc. dir.         R >> L           FoV read         334 mm           FoV phase         80.0 %           Slice thickness         8.0 mm           TR         55.20 ms           Multi-slice mode         Sequential           Series         Descending	Dist. factor	300 %
Phase enc. dir.         R >> L           FoV read         334 mm           FoV phase         80.0 %           Slice thickness         8.0 mm           TR         55.20 ms           Multi-slice mode         Sequential           Series         Descending	Position	L0.0 P10.0 H0.0 mm
FoV read 334 mm FoV phase 80.0 % Slice thickness 8.0 mm TR 55.20 ms Multi-slice mode Sequential Series Descending	Orientation	Coronal
FoV phase 80.0 % Slice thickness 8.0 mm TR 55.20 ms Multi-slice mode Sequential Series Descending	Phase enc. dir.	R >> L
Slice thickness 8.0 mm TR 55.20 ms Multi-slice mode Sequential Series Descending	FoV read	334 mm
TR 55.20 ms Multi-slice mode Sequential Series Descending	FoV phase	80.0 %
Multi-slice mode Sequential Series Descending	Slice thickness	8.0 mm
Series Descending	TR	55.20 ms
g	Multi-slice mode	Sequential
Concatenations 18	Series	Descending
	Concatenations	18

## **Geometry - AutoAlign**

Slice group	1
Slice group	2
Slice group	3

## **Geometry - AutoAlign**

AutoAlign	
Position	L0.0 P10.0 H0.0 mm
Orientation	Coronal
Phase enc. dir.	R >> L
Initial Position	L0.0 P20.0 H0.0
L	0.0 mm
Р	20.0 mm
Н	0.0 mm
Initial Rotation	0.00 deg
Initial Orientation	Transversal

## **Geometry - Saturation**

Fat suppr.	None
Wrap-up Magn.	Restore
Special sat.	None

## **Geometry - Navigator**

## **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	Off - AutoCoilSelect

## **System - Adjustments**

B0 Shim mode	Cardiac
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto

## System - Adjust Volume

Position	L0.0 P10.0 H0.0 mm
Orientation	Coronal
Rotation	0.00 deg
R >> L	334 mm
R >> L F >> H A >> P	334 mm
A >> P	288 mm
Reset	Off

## System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

## Physio - Signal1

1st Signal/Mode	ECG/Retro
Average cycle	225 ± 213 ms
Average cycle	No Signal ms
Calculated phases	25
TR	55.20 ms

## Physio - Signal1

I	Concatenations	18
	Segments	15
	Arrhythmia detection	None

## Physio - Cardiac

Magn. preparation	None
Fat suppr.	None
Dark blood	Off
FoV read	334 mm
FoV phase	80.0 %
Phase resolution	70 %
Cine	On
Trajectory	Cartesian
View sharing	Off
Dummy heartbeats	1

# Physio - PACE

Resp. control	Breath-hold
Concatenations	18

## Inline - Common

Subtract	Off
Measurements	1
StdDev	Off
Save original images	On

## Inline - Cardiac

Inline Evaluation	Off
Magn. preparation	None
Contrasts	1
TE	1.54 ms
TR	55.20 ms
Save original images	On

## Inline - MIP

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

## **Inline - Composing**

## Sequence - Part 1

Introduction	Off
Dimension	2D
Reordering	Linear
Asymmetric echo	Weak
Contrasts	1
Optimization	Min. TE TR
Multi-slice mode	Sequential
Echo spacing	3.7 ms
Sequence type	Trufi
Bandwidth	947 Hz/Px

## Sequence - Part 2

Define	Segments
Segments	15
Trufi delta freq.	0 Hz
RF pulse type	Fast
Gradient mode	Normal
Excitation	Slice-sel.

# SIEMENS MAGNETOM MAGNETOM\_ESSENZA

# Sequence - Part 2

Flip angle mode	Constant
Cine	On

Mode	Min flip angle
Min flip angle	50 deg
Allowed delay	0 s

## \\USER\Cardiac\ALTERED SEQUENCES- TAILORED PROTOCOLS\CONGENITAL\SAX STACK WHOL E HEART

TA: 0:53 PM: REF Voxel size: 1.4×1.4×8.0 mmPAT: 2 Rel. SNR: 1.00 : tfi

## **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	On
Auto open inline display	Off
Auto close inline display	Off
Start measurement without further	On
preparation	
Wait for user to start	Off
Start measurements	Single measurement

## **Routine**

Slice group	1
Slices	20
Dist. factor	25 %
Position	L0.0 P20.0 H0.0 mm
Orientation	Transversal
Phase enc. dir.	A >> P
Slice group	2
Slices	3
Dist. factor	300 %
Position	L30.0 P0.0 H0.0 mm
Orientation	Sagittal
Phase enc. dir.	A >> P
Slice group	3
Slices	3
Dist. factor	300 %
Position	L0.0 P10.0 H0.0 mm
Orientation	Coronal
Phase enc. dir.	R >> L
AutoAlign	
Phase oversampling	50 %
FoV read	334 mm
FoV phase	80.0 %
Slice thickness	8.0 mm
TR	55.20 ms
TE	1.54 ms
Averages	1
Concatenations	26
Filter	Prescan Normalize
Coil elements	BO1,2;SP1,2

## **Contrast - Common**

-	
TR TE	55.20 ms
TE	1.54 ms
Magn. preparation	None
Flip angle	80 deg
Fat suppr.	None
Wrap-up Magn.	Restore

## **Contrast - Dynamic**

Averages	1
Averaging mode	Short term
Reconstruction	Magnitude
Measurements	1
Multiple series	Each slice

## **Resolution - Common**

FoV read	334 mm
FoV phase	80.0 %
Slice thickness	8.0 mm
Base resolution	240
Phase resolution	70 %
Phase partial Fourier	Off
Trajectory	Cartesian
View sharing	Off
Interpolation	Off

#### **Resolution - iPAT**

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

## **Resolution - Filter Image**

Image Filter	Off
Distortion Corr.	Off
Prescan Normalize	On
Unfiltered images	Off
Normalize	Off
B1 filter	Off

## **Resolution - Filter Rawdata**

Raw filter	Off
Elliptical filter	Off
POCS	Off

## **Geometry - Common**

Slice group	1
Slices	20
Dist. factor	25 %
Position	L0.0 P20.0 H0.0 mm
Orientation	Transversal
Phase enc. dir.	A >> P
Slice group	2
Slices	3
Dist. factor	300 %
Position	L30.0 P0.0 H0.0 mm
Orientation	Sagittal
Phase enc. dir.	A >> P
Slice group	3
Slices	3
Dist. factor	300 %
Position	L0.0 P10.0 H0.0 mm
Orientation	Coronal
Phase enc. dir.	R >> L
FoV read	334 mm
FoV phase	80.0 %
Slice thickness	8.0 mm
TR	55.20 ms
Multi-slice mode	Sequential
Series	Descending
Concatenations	26

## Geometry - AutoAlign

Slice group	1	
Slice group	2	

## **Geometry - AutoAlign**

Slice group	3
AutoAlign	
Position	L0.0 P10.0 H0.0 mm
Orientation	Coronal
Phase enc. dir.	R >> L
Initial Position	L0.0 P20.0 H0.0
L	0.0 mm
Р	20.0 mm
Н	0.0 mm
Initial Rotation	0.00 deg
Initial Orientation	Transversal

# **Geometry - Saturation**

Fat suppr.	None
Wrap-up Magn.	Restore
Special sat.	None

## **Geometry - Navigator**

## **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	Off - AutoCoilSelect

## **System - Adjustments**

B0 Shim mode	Cardiac
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto

## System - Adjust Volume

Position	L0.0 P10.0 H0.0 mm
Orientation	Coronal
Rotation	0.00 deg
R >> L	334 mm
F >> H	334 mm
A >> P	288 mm
Reset	Off

## System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

## Physio - Signal1

1st Signal/Mode	ECG/Retro
Average cycle	225 ± 213 ms
Average cycle	No Signal ms
Calculated phases	25

## Physio - Signal1

TR	55.20 ms
Concatenations	26
Segments	15
Arrhythmia detection	None

## Physio - Cardiac

Magn. preparation	None
Fat suppr.	None
Dark blood	Off
FoV read	334 mm
FoV phase	80.0 %
Phase resolution	70 %
Cine	On
Trajectory	Cartesian
View sharing	Off
Dummy heartbeats	1

## **Physio - PACE**

Resp. control	Breath-hold
Concatenations	26

## Inline - Common

Subtract	Off	
Measurements	1	
StdDev	Off	
Save original images	On	

## Inline - Cardiac

Inline Evaluation	Off
Magn. preparation	None
Contrasts	1
TE	1.54 ms
TR	55.20 ms
Save original images	On

## Inline - MIP

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

## **Inline - Composing**

D: 1 1: 0	0"	
Distortion Corr.	()††	

## Sequence - Part 1

Introduction	Off
Dimension	2D
Reordering	Linear
Asymmetric echo	Weak
Contrasts	1
Optimization	Min. TE TR
Multi-slice mode	Sequential
Echo spacing	3.7 ms
Sequence type	Trufi
Bandwidth	947 Hz/Px

## Sequence - Part 2

Define	Segments
Segments	15
Trufi delta freq.	0 Hz
RF pulse type	Fast
Gradient mode	Normal

## SIEMENS MAGNETOM MAGNETOM\_ESSENZA

# Sequence - Part 2

Excitation	Slice-sel.
Flip angle mode	Constant
Cine	On

Mode	Min flip angle
Min flip angle	50 deg
Allowed delay	0 s

## \\USER\Cardiac\ALTERED SEQUENCES-TAILORED PROTOCOLS\CONGENITAL\RVOT

TA: 2.0 s PM: REF Voxel size: 1.9×1.9×8.0 mmPAT: 2 Rel. SNR: 1.00 : tfi

## **Properties**

Prio recon	Off
Load images to viewer	On
Inline movie	On
Auto store images	On
Load images to stamp segments	On
Load images to graphic segments	On
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	1
Dist. factor	20 %
Position	L32.3 P45.4 F15.5 mm
Orientation	S > C-34.7 > T-29.1
Phase enc. dir.	A >> P
AutoAlign	
Phase oversampling	0 %
FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
TR	41.60 ms
TE	1.34 ms
Averages	1
Concatenations	1
Filter	Distortion Corr.(2D), Prescan Normalize, Image Filter
Coil elements	FL;SP1,2

## **Contrast - Common**

TR	41.60 ms
TE	1.34 ms
Magn. preparation	None
Flip angle	60 deg
Fat suppr.	None
Wrap-up Magn.	Restore

## **Contrast - Dynamic**

Averages	1
Averaging mode	Short term
Reconstruction	Magnitude
Measurements	1
Multiple series	Off

## **Resolution - Common**

FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
Base resolution	192
Phase resolution	100 %
Phase partial Fourier	Off
Trajectory	Cartesian
View sharing	Off
Interpolation	Off

#### **Resolution - iPAT**

PAT mode	GRAPPA
Accel. factor PE	2
Ref. lines PE	44
Reference scan mode	Integrated

## **Resolution - Filter Image**

Image Filter	On
! Intensity	Medium
Edge Enhancement	3
Smoothing	2
Unfiltered images	Off
Distortion Corr.	On
Mode	2D
Unfiltered images	Off
Prescan Normalize	On
Unfiltered images	Off
Normalize	Off
B1 filter	Off

## **Resolution - Filter Rawdata**

Raw filter	Off	
Elliptical filter	Off	
POCS	Off	

## **Geometry - Common**

Slice group	1
Slices	1
Dist. factor	20 %
Position	L32.3 P45.4 F15.5 mm
Orientation	S > C-34.7 > T-29.1
Phase enc. dir.	A >> P
FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
TR	41.60 ms
Multi-slice mode	Sequential
Series	Interl. in Bh.
Concatenations	1

## **Geometry - AutoAlign**

Slice group	1
AutoAlign	
Position	L32.3 P45.4 F15.5 mm
Orientation	S > C-34.7 > T-29.1
Phase enc. dir.	A >> P
Initial Position	L32.3 P45.4 F15.5
L	32.3 mm
P	45.4 mm
F	15.5 mm
Initial Rotation	18.62 deg
Initial Orientation	S > C
S > C	-34.7
> T	-29.1

## **Geometry - Saturation**

Fat suppr.	None
Wrap-up Magn.	Restore
Special sat.	None

## **Geometry - Navigator**

## **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	Off - AutoCoilSelect

## **System - Adjustments**

B0 Shim mode	Cardiac
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto

## **System - Adjust Volume**

Position	L32.3 P45.4 F15.5 mm
Orientation	S > C-34.7 > T-29.1
Rotation	18.62 deg
A >> P	293 mm
F >> H	360 mm
R >> L	8 mm
Reset	Off

## System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

## Physio - Signal1

1st Signal/Mode	ECG/Retro
Average cycle	225 ± 213 ms
Average cycle	No Signal ms
Calculated phases	25
TR	41.60 ms
Concatenations	1
Segments	13
Arrhythmia detection	None

## Physio - Cardiac

Magn. preparation	None
Fat suppr.	None
Dark blood	Off
FoV read	360 mm
FoV phase	81.3 %
Phase resolution	100 %
Cine	On
Trajectory	Cartesian
View sharing	Off
Dummy heartbeats	1

## **Physio - PACE**

Resp. control	Breath-hold
Concatenations	1

## **Inline - Common**

Subtract	Off
Measurements	1
StdDev	Off
Save original images	On

## Inline - Cardiac

Inline Evaluation	Off
Magn. preparation	None
Contrasts	1
TE	1.34 ms
TR	41.60 ms
Save original images	On

## Inline - MIP

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

## **Inline - Composing**

Distortion Corr.	On	
Mode	2D	
Unfiltered images	Off	

## Sequence - Part 1

Introduction	Off
Dimension	2D
Reordering	Linear
Asymmetric echo	Weak
Contrasts	1
Optimization	Min. TE TR
Multi-slice mode	Sequential
Echo spacing	3.2 ms
Sequence type	Trufi
Bandwidth	965 Hz/Px

## Sequence - Part 2

Define	Segments
Segments	13
Trufi delta freq.	0 Hz
RF pulse type	Fast
Gradient mode	Normal
Excitation	Slice-sel.
Flip angle mode	Constant
Cine	On

Mode	Min flip angle
Min flip angle	50 deg
Allowed delay	0 s

## \\USER\Cardiac\ALTERED SEQUENCES- TAILORED PROTOCOLS\CONGENITAL\LVOT

TA: 2.0 s PM: REF Voxel size: 1.9×1.9×8.0 mmPAT: 2 Rel. SNR: 1.00 : tfi

## **Properties**

Prio recon	Off
Load images to viewer	On
Inline movie	On
Auto store images	On
Load images to stamp segments	On
Load images to graphic segments	On
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	1
Dist. factor	20 %
Position	L14.9 P48.8 F19.6 mm
Orientation	C > S37.8 > T12.7
Phase enc. dir.	R >> L
AutoAlign	
Phase oversampling	0 %
FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
TR	41.60 ms
TE	1.34 ms
Averages	1
Concatenations	1
Filter	Distortion Corr.(2D), Prescan Normalize, Image Filter
Coil elements	FL;SP1,2

## **Contrast - Common**

TR TE	41.60 ms
TE	1.34 ms
Magn. preparation	None
Flip angle	60 deg
Fat suppr.	None
Wrap-up Magn.	Restore

## **Contrast - Dynamic**

Averages	1
Averaging mode	Short term
Reconstruction	Magnitude
Measurements	1
Multiple series	Off
manipro conce	•

## **Resolution - Common**

) mm
3 %
mm
2
) %
rtesian

#### **Resolution - iPAT**

PAT mode	GRAPPA
Accel. factor PE	2
Ref. lines PE	44
Reference scan mode	Integrated

## **Resolution - Filter Image**

Image Filter	On
! Intensity	Medium
Edge Enhancement	3
Smoothing	2
Unfiltered images	Off
Distortion Corr.	On
Mode	2D
Unfiltered images	Off
Prescan Normalize	On
Unfiltered images	Off
Normalize	Off
B1 filter	Off

## **Resolution - Filter Rawdata**

Raw filter	Off
Elliptical filter	Off
POCS	Off

## **Geometry - Common**

Slice group	1
Slices	1
Dist. factor	20 %
Position	L14.9 P48.8 F19.6 mm
Orientation	C > S37.8 > T12.7
Phase enc. dir.	R >> L
FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
TR	41.60 ms
Multi-slice mode	Sequential
Series	Interl. in Bh.
Concatenations	1

## Geometry - AutoAlign

Slice group	1
AutoAlign	
Position	L14.9 P48.8 F19.6 mm
Orientation	C > S37.8 > T12.7
Phase enc. dir.	R >> L
Initial Position	L14.9 P48.8 F19.6
L	14.9 mm
P	48.8 mm
F	19.6 mm
Initial Rotation	15.78 deg
Initial Orientation	C > S
C > S	37.8
> T	12.7

## **Geometry - Saturation**

Fat suppr.	None
Wrap-up Magn.	Restore
Special sat.	None

## **Geometry - Navigator**

## **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	Off - AutoCoilSelect

## **System - Adjustments**

B0 Shim mode	Cardiac
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto

## **System - Adjust Volume**

Position	L14.9 P48.8 F19.6 mm
Orientation	C > S37.8 > T12.7
Rotation	15.78 deg
R >> L	293 mm
F >> H	360 mm
A >> P	8 mm
Reset	Off

## System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

## Physio - Signal1

1st Signal/Mode	ECG/Retro
Average cycle	225 ± 213 ms
Average cycle	No Signal ms
Calculated phases	25
TR	41.60 ms
Concatenations	1
Segments	13
Arrhythmia detection	None

## Physio - Cardiac

Magn. preparation	None
Fat suppr.	None
Dark blood	Off
FoV read	360 mm
FoV phase	81.3 %
Phase resolution	100 %
Cine	On
Trajectory	Cartesian
View sharing	Off
Dummy heartbeats	1

## **Physio - PACE**

Resp. control	Breath-hold
Concatenations	1

## **Inline - Common**

Subtract	Off
Measurements	1
StdDev	Off
Save original images	On

## Inline - Cardiac

Inline Evaluation	Off
Magn. preparation	None
Contrasts	1
TE	1.34 ms
TR	41.60 ms
Save original images	On

## Inline - MIP

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

## Inline - Composing

Distortion Corr.	On
Mode	2D
Unfiltered images	Off

## Sequence - Part 1

Introduction	Off
Dimension	2D
Reordering	Linear
Asymmetric echo	Weak
Contrasts	1
Optimization	Min. TE TR
Multi-slice mode	Sequential
Echo spacing	3.2 ms
Sequence type	Trufi
Bandwidth	965 Hz/Px

## Sequence - Part 2

Define	Segments
Segments	13
Trufi delta freq.	0 Hz
RF pulse type	Fast
Gradient mode	Normal
Excitation	Slice-sel.
Flip angle mode	Constant
Cine	On

Mode	Min flip angle
Min flip angle	50 deg
Allowed delay	0 s

# \\USER\Cardiac\ALTERED SEQUENCES- TAILORED PROTOCOLS\CONGENITAL\FLOW OF PULMON ARY ARTERY TEST

TA: 0:45 PM: REF Voxel size: 1.3×1.3×5.0 mmPAT: 2 Rel. SNR: 1.00 : pc

## **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	1
Dist. factor	20 %
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
AutoAlign	
Phase oversampling	0 %
FoV read	340 mm
FoV phase	68.8 %
Slice thickness	5.0 mm
TR	42.40 ms
TE	3.24 ms
Averages	2
Concatenations	1
Filter	Distortion Corr.(2D)
Coil elements	BC

## **Contrast - Common**

TR	42.40 ms
TE	3.24 ms
Flip angle	20 deg

## **Contrast - Dynamic**

Averages	2
Averaging mode	Long term
Reconstruction	Magnitude
Measurements	1
Multiple series	Off

## **Resolution - Common**

FoV read	340 mm
FoV phase	68.8 %
Slice thickness	5.0 mm
Base resolution	256
Phase resolution	100 %
Phase partial Fourier	Off
Interpolation	Off

#### **Resolution - iPAT**

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

## **Resolution - Filter Image**

Image Filter	Off
Distortion Corr.	On
Mode	2D
Unfiltered images	Off
Prescan Normalize	Off
Normalize	Off
B1 filter	Off

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

Raw filter	Off
Elliptical filter	Off

#### **Geometry - Common**

Slice group	1
Slices	1
Dist. factor	20 %
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
FoV read	340 mm
FoV phase	68.8 %
Slice thickness	5.0 mm
TR	42.40 ms
Multi-slice mode	Sequential
Series	Ascending
Concatenations	1

## **Geometry - AutoAlign**

Slice group	1
AutoAlign	
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
Initial Position	Isocenter
L	0.0 mm
P	0.0 mm
Н	0.0 mm
Initial Rotation	0.00 deg
Initial Orientation	Transversal

## **Geometry - Saturation**

Special sat.	None

## **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
Matrix Optimization	Off
AutoAlign	
Coil Select Mode	Default

## **System - Adjustments**

B0 Shim mode	Standard
Adjust with body coil	Off

# System - Adjustments

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	234 mm
R >> L	340 mm
A >> P R >> L F >> H	5 mm
Reset	Off

## System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

## Physio - Signal1

1st Signal/Mode	ECG/Trigger
Average cycle	225 ± 213 ms
Average cycle	No Signal ms
Captured cycle	-not set-
Acquisition window	48 ms
Trigger pulse	1
Trigger delay	5 ms
TR	42.40 ms
Concatenations	1
Segments	1
Phases	1

## **Angio - Common**

•	
Flow mode	Single dir.
Encodings	1
Velocity enc.	200 cm/s
Direction	Through plane
Rephased images	On
Magnitude images	Off
Magnitude sum	Off
Phase images	On

# Angio - Inline

Subtract	Off
Measurements	1
StdDev	Off
Save original images	On

## Angio - MIP

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

## **Angio - Composing**

Distortion Corr.	On	
Mode	2D	
Unfiltered images	Off	

# Sequence - Part 1

Introduction	Off
Dimension	2D
Asymmetric echo	Strong
Contrasts	1
Flow comp.	No
Multi-slice mode	Sequential
Bandwidth	454 Hz/Px

## Sequence - Part 2

Segments	1
RF pulse type	Fast
Gradient mode	Normal
RF spoiling	On

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

## \\USER\Cardiac\ALTERED SEQUENCES- TAILORED PROTOCOLS\CONGENITAL\3-CHAMBER Cine

TA: 2.0 s PM: REF Voxel size: 1.9×1.9×8.0 mmPAT: 2 Rel. SNR: 1.00 : tfi

## **Properties**

Prio recon	Off
Load images to viewer	On
Inline movie	On
Auto store images	On
Load images to stamp segments	On
Load images to graphic segments	On
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	1
Dist. factor	20 %
Position	L4.5 P24.0 F35.2 mm
Orientation	S > T-32.2 > C-17.4
Phase enc. dir.	A >> P
AutoAlign	
Phase oversampling	0 %
FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
TR	41.60 ms
TE	1.34 ms
Averages	1
Concatenations	1
Filter	Distortion Corr.(2D), Prescan Normalize, Image Filter
Coil elements	BO1,2;SP2

## **Contrast - Common**

Wrap-up Magn.	Restore
Fat suppr.	None
Flip angle	58 deg
Magn. preparation	None
TE	1.34 ms
TR	41.60 ms

## **Contrast - Dynamic**

Averages	1
Averaging mode	Short term
Reconstruction	Magnitude
Measurements	1
Multiple series	Off

## **Resolution - Common**

) mm
3 %
mm
2
) %
rtesian

#### **Resolution - iPAT**

PAT mode	GRAPPA
Accel. factor PE	2
Ref. lines PE	44
Reference scan mode	Integrated

## **Resolution - Filter Image**

Image Filter	On
! Intensity	Medium
Edge Enhancement	3
Smoothing	2
Unfiltered images	Off
Distortion Corr.	On
Mode	2D
Unfiltered images	Off
Prescan Normalize	On
Unfiltered images	Off
Normalize	Off
B1 filter	Off

## **Resolution - Filter Rawdata**

Raw filter	Off	
Elliptical filter	Off	
POCS	Off	

## **Geometry - Common**

Slice group	1
Slices	1
Dist. factor	20 %
Position	L4.5 P24.0 F35.2 mm
Orientation	S > T-32.2 > C-17.4
Phase enc. dir.	A >> P
FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
TR	41.60 ms
Multi-slice mode	Sequential
Series	Interl. in Bh.
Concatenations	1

## Geometry - AutoAlign

Slice group	1
AutoAlign	
Position	L4.5 P24.0 F35.2 mm
Orientation	S > T-32.2 > C-17.4
Phase enc. dir.	A >> P
Initial Position	L4.5 P24.0 F2.2
L	4.5 mm
Р	24.0 mm
F	2.2 mm
Initial Rotation	10.67 deg
Initial Orientation	S > T
S > T	-32.2
> C	-17.4

## **Geometry - Saturation**

Fat suppr.	None
Wrap-up Magn.	Restore
Special sat.	None

## **Geometry - Navigator**

## **System - Miscellaneous**

Positioning mode	REF
Table position	F
Table position	33 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	Off - AutoCoilSelect

## **System - Adjustments**

B0 Shim mode	Cardiac
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto

## **System - Adjust Volume**

Position	L4.5 P24.0 F35.2 mm
Orientation	S > T-32.2 > C-17.4
Rotation	10.67 deg
A >> P	293 mm
F >> H	360 mm
R >> L	8 mm
Reset	Off

## System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

## Physio - Signal1

1st Signal/Mode	ECG/Retro
Average cycle	225 ± 213 ms
Average cycle	No Signal ms
Calculated phases	25
TR	41.60 ms
Concatenations	1
Segments	13
Arrhythmia detection	None

## Physio - Cardiac

Magn. preparation	None
Fat suppr.	None
Dark blood	Off
FoV read	360 mm
FoV phase	81.3 %
Phase resolution	100 %
Cine	On
Trajectory	Cartesian
View sharing	Off
Dummy heartbeats	1

## **Physio - PACE**

Resp. control	Breath-hold
Concatenations	1

## **Inline - Common**

Subtract	Off
Measurements	1
StdDev	Off
Save original images	On

## Inline - Cardiac

Inline Evaluation	Off
Magn. preparation	None
Contrasts	1
TE	1.34 ms
TR	41.60 ms
Save original images	On

## Inline - MIP

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

## **Inline - Composing**

Distortion Corr.	On	
Mode	2D	
Unfiltered images	Off	

## Sequence - Part 1

Introduction	Off
Dimension	2D
Reordering	Linear
Asymmetric echo	Weak
Contrasts	1
Optimization	Min. TE TR
Multi-slice mode	Sequential
Echo spacing	3.2 ms
Sequence type	Trufi
Bandwidth	965 Hz/Px

## Sequence - Part 2

Define	Segments
Segments	13
Trufi delta freq.	0 Hz
RF pulse type	Fast
Gradient mode	Normal
Excitation	Slice-sel.
Flip angle mode	Constant
Cine	On

Mode	Min flip angle
Min flip angle	50 deg
Allowed delay	0 s

## \\USER\Cardiac\ALTERED SEQUENCES- TAILORED PROTOCOLS\CONGENITAL\FLOW OF AORTA

TA: 7.6 s PM: REF Voxel size: 1.8×1.8×8.0 mmPAT: Off Rel. SNR: 1.00 : fl\_r

## **Properties**

Prio recon	Off
Load images to viewer	On
Inline movie	On
Auto store images	On
Load images to stamp segments	On
Load images to graphic segments	On
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	1
Dist. factor	20 %
Position	R10.2 P63.3 H69.4 mm
Orientation	Transversal
Phase enc. dir.	A >> P
AutoAlign	
Phase oversampling	0 %
FoV read	340 mm
FoV phase	68.8 %
Slice thickness	8.0 mm
TR	28.04 ms
TE	4.09 ms
Averages	1
Concatenations	1
Filter	Distortion Corr.(2D),
	Prescan Normalize
Coil elements	FL;SP1,2

#### **Contrast - Common**

TR	28.04 ms
TE	4.09 ms
Magn. preparation	None
Flip angle	20 deg
Fat suppr.	None
Wrap-up Magn.	None

## **Contrast - Dynamic**

Averages	1
Averaging mode	Short term
Reconstruction	Magnitude
Measurements	1
Multiple series	Off

#### **Resolution - Common**

FoV read	340 mm
FoV phase	68.8 %
Slice thickness	8.0 mm
Base resolution	192
Phase resolution	100 %
Phase partial Fourier	Off
Trajectory	Cartesian
View sharing	Off
Interpolation	Off

#### **Resolution - iPAT**

PAT mode	None	
Resolution - Filter Ima	ge	
Image Filter	Off	
Distortion Corr.	On	
Mode	2D	
Unfiltered images	Off	
Prescan Normalize	On	
Unfiltered images	Off	
Normalize	Off	
B1 filter	Off	

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

Raw filter	Off
Elliptical filter	Off
POCS	Off

## **Geometry - Common**

Slice group	1
Slices	1
Dist. factor	20 %
Position	R10.2 P63.3 H69.4 mm
Orientation	Transversal
Phase enc. dir.	A >> P
FoV read	340 mm
FoV phase	68.8 %
Slice thickness	8.0 mm
TR	28.04 ms
Multi-slice mode	Sequential
Series	Ascending
Concatenations	1

#### **Geometry - AutoAlign**

Slice group	1
AutoAlign	
Position	R10.2 P63.3 H69.4 mm
Orientation	Transversal
Phase enc. dir.	A >> P
Initial Position	R10.2 P63.3 H18.4
R	10.2 mm
Р	63.3 mm
Н	18.4 mm
Initial Rotation	0.00 deg
Initial Orientation	Transversal
	·

## **Geometry - Saturation**

Fat suppr.	None
Wrap-up Magn.	None
Special sat.	None

## **Geometry - Navigator**

## **System - Miscellaneous**

-,	
Positioning mode	REF
Table position	Н
Table position	51 mm
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	F >> H

## **System - Miscellaneous**

Coil Combine Mode	Sum of Squares
Save uncombined	Off
Matrix Optimization	Off
AutoAlign	
Coil Select Mode	Off - AutoCoilSelect

## **System - Adjustments**

B0 Shim mode	Cardiac	
Adjust with body coil	Off	
Confirm freq. adjustment	Off	
Assume Dominant Fat	Off	
Assume Silicone	Off	
Adjustment Tolerance	Auto	

## **System - Adjust Volume**

Position	R10.2 P63.3 H69.4 mm
Orientation	Transversal
Rotation	0.00 deg
A >> P R >> L F >> H	234 mm
R >> L	340 mm
F >> H	8 mm
Reset	Off

## System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

## Physio - Signal1

1st Signal/Mode	ECG/Retro
Average cycle	225 ± 213 ms
Average cycle	No Signal ms
Calculated phases	20
TR	28.04 ms
Concatenations	1
Segments	4
Arrhythmia detection	None

## Physio - Cardiac

Magn. preparation	None
Fat suppr.	None
Dark blood	Off
FoV read	340 mm
FoV phase	68.8 %
Phase resolution	100 %
Cine	On
Trajectory	Cartesian
View sharing	Off
Dummy heartbeats	1

## Physio - PACE

Resp. control	Breath-hold
Concatenations	1

## Inline - Common

Subtract	Off
Measurements	1
StdDev	Off
Save original images	On

## Inline - Cardiac

Inline Evaluation	Off
Magn. preparation	None
Contrasts	1
TE	4.09 ms
TR	28.04 ms
Save original images	On

## Inline - MIP

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

## Inline - Composing

Distortion Corr.	On
Mode	2D
Unfiltered images	Off

## Sequence - Part 1

Introduction	Off
Dimension	2D
Reordering	Linear
Asymmetric echo	Weak
Contrasts	1
Flow comp.	Yes
Optimization	Min. TE TR
Multi-slice mode	Sequential
Echo spacing	7 ms
Sequence type	Gre
Bandwidth	491 Hz/Px

## Sequence - Part 2

Define	Segments
Segments	4
RF pulse type	Normal
Gradient mode	Normal
Excitation	Slice-sel.
Flip angle mode	Constant
RF spoiling	On
Phase Enc. Rewinder	On
Cine	On

Mode	Min flip angle
Min flip angle	50 deg
Allowed delay	0 s

# \\USER\Cardiac\ALTERED SEQUENCES- TAILORED PROTOCOLS\INFLAMMATION\trufi\_loc\_multi\_i PAT

TA: 4.0 s PM: REF Voxel size: 1.7×1.7×8.0 mmPAT: 2 Rel. SNR: 1.00 : tfi

## **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	On
Auto open inline display	Off
Auto close inline display	Off
Start measurement without further	On
preparation	
Wait for user to start	Off
Start measurements	Single measurement

#### Routine

Slice group	1
Slices	3
Dist. factor	300 %
Position	L0.0 P20.0 H0.0 mm
Orientation	Transversal
Phase enc. dir.	A >> P
Slice group	2
Slices	3
Dist. factor	300 %
Position	L30.0 P0.0 H0.0 mm
Orientation	Sagittal
Phase enc. dir.	A >> P
Slice group	3
Slices	3
Dist. factor	300 %
Position	L0.0 P10.0 H0.0 mm
Orientation	Coronal
Phase enc. dir.	R >> L
AutoAlign	
Phase oversampling	0 %
FoV read	400 mm
FoV phase	100.0 %
Slice thickness	8.0 mm
TR	350.73 ms
TE	1.43 ms
Averages	1
Concatenations	9
Filter	Distortion Corr.(2D),
	Prescan Normalize
Coil elements	BO1,2;SP1,2

#### **Contrast - Common**

TR	350.73 ms
TE	1.43 ms
TD	0 ms
Magn. preparation	None
Flip angle	80 deg
Fat suppr.	None
Wrap-up Magn.	Restore

## **Contrast - Dynamic**

Averages	1
Averaging mode	Short term
Reconstruction	Magnitude
Measurements	1

## **Contrast - Dynamic**

Multiple series

Resolution - Common		
FoV read	400 mm	
FoV phase	100.0 %	
Slice thickness	8.0 mm	
Base resolution	240	
Phase resolution	66 %	
Phase partial Fourier	Off	

Each measurement

Cartesian

Off

#### **Resolution - iPAT**

Trajectory Interpolation

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

## **Resolution - Filter Image**

Image Filter	Off
Distortion Corr.	On
Mode	2D
Unfiltered images	Off
Prescan Normalize	On
Unfiltered images	Off
Normalize	Off
B1 filter	Off

## **Resolution - Filter Rawdata**

Raw filter	Off
Elliptical filter	Off
POCS	Off

## **Geometry - Common**

0.0	*
Slice group	1
Slices	3
Dist. factor	300 %
Position	L0.0 P20.0 H0.0 mm
Orientation	Transversal
Phase enc. dir.	A >> P
Slice group	2
Slices	3
Dist. factor	300 %
Position	L30.0 P0.0 H0.0 mm
Orientation	Sagittal
Phase enc. dir.	A >> P
Slice group	3
Slices	3
Dist. factor	300 %
Position	L0.0 P10.0 H0.0 mm
Orientation	Coronal
Phase enc. dir.	R >> L
FoV read	400 mm
FoV phase	100.0 %
Slice thickness	8.0 mm
TR	350.73 ms
Multi-slice mode	Sequential
Series	Descending
Concatenations	9

## **Geometry - AutoAlign**

Slice group	1
Slice group	2
Slice group	3
AutoAlign	
Position	L0.0 P10.0 H0.0 mm
Orientation	Coronal
Phase enc. dir.	R >> L
Initial Position	L0.0 P20.0 H0.0
L	0.0 mm
Р	20.0 mm
Н	0.0 mm
Initial Rotation	0.00 deg
Initial Orientation	Transversal

## **Geometry - Saturation**

Fat suppr.	None
Wrap-up Magn.	Restore
Special sat.	None

## **Geometry - Navigator**

## **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	Off - AutoCoilSelect

## **System - Adjustments**

B0 Shim mode	Cardiac
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto

## System - Adjust Volume

Position	L0.0 P10.0 H0.0 mm
Orientation	Sagittal
Rotation	90.00 deg
F >> H	400 mm
A >> P	420 mm
R >> L	400 mm
Reset	Off

# System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

## Physio - Signal1

1st Signal/Mode	ECG/Trigger
Average cycle	$225 \pm 213  \text{ms}$

## Physio - Signal1

Average cycle	No Signal ms
Captured cycle	225 ± 213 ms
Acquisition window	800 ms
Trigger pulse	1
Trigger delay	400 ms
TR	350.73 ms
Concatenations	9
Segments	91
Phases	1

# Physio - Cardiac

Magn. preparation	None
Fat suppr.	None
Dark blood	Off
FoV read	400 mm
FoV phase	100.0 %
Phase resolution	66 %
Cine	Off
Trajectory	Cartesian
Dummy heartbeats	0

## **Physio - PACE**

Resp. control	Off
Concatenations	9

## Inline - Common

Subtract	Off	
Measurements	1	
StdDev	Off	
Save original images	On	

## Inline - Cardiac

Inline Evaluation	Off
Magn. preparation	None
Contrasts	1
TE	1.43 ms
TR	350.73 ms
Save original images	On

## Inline - MIP

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

## **Inline - Composing**

Distortion Corr.	On
Mode	2D
Unfiltered images	Off

## Sequence - Part 1

Introduction	Off
Dimension	2D
Reordering	Linear
Asymmetric echo	Weak
Contrasts	1
Optimization	Min. TE
Multi-slice mode	Sequential
Echo spacing	3.4 ms
Sequence type	Trufi
Bandwidth	1096 Hz/Px

# SIEMENS MAGNETOM MAGNETOM\_ESSENZA

# Sequence - Part 2

Define	Shots
Shots per slice	1
Segments	91
Trufi delta freq.	0 Hz
RF pulse type	Fast
Gradient mode	Normal
Excitation	Slice-sel.
Flip angle mode	Constant
Cine	Off

Mode	Min flip angle
Min flip angle	50 deg
Allowed delay	0 s

# $\verb|\USER|\Cardiac|\ALTERED| SEQUENCES-TAILORED| PROTOCOLS \\| INFLAMMATION| TRUFI\_2-CHAM| \\| BER| Loc|$

TA: 0.4 s PM: REF Voxel size: 1.6×1.6×8.0 mmPAT: 2 Rel. SNR: 1.00 : tfi

## **Properties**

Prio recon	Off
Load images to viewer	On
Inline movie	Off
Auto store images	On
Load images to stamp segments	On
Load images to graphic segments	On
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	1
Dist. factor	20 %
Position	L42.5 P9.8 H12.3 mm
Orientation	C > S-37.7
Phase enc. dir.	L >> R
AutoAlign	
Phase oversampling	0 %
FoV read	387 mm
FoV phase	87.5 %
Slice thickness	8.0 mm
TR	316.29 ms
TE	1.46 ms
Averages	1
Concatenations	1
Filter	Distortion Corr.(2D),
	Prescan Normalize,
	Image Filter
Coil elements	BO1,2;SP1,2

#### **Contrast - Common**

TR	316.29 ms
TE	1.46 ms
Magn. preparation	None
Flip angle	80 deg
Fat suppr.	None
Wrap-up Magn.	Restore

## **Contrast - Dynamic**

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

#### **Resolution - Common**

FoV read	387 mm
FoV phase	87.5 %
Slice thickness	8.0 mm
Base resolution	240
Phase resolution	64 %
Phase partial Fourier	Off
Trajectory	Cartesian
Interpolation	Off

## **Resolution - iPAT**

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

## **Resolution - Filter Image**

Image Filter	On
! Intensity	Medium
Edge Enhancement	3
Smoothing	2
Unfiltered images	Off
Distortion Corr.	On
Mode	2D
Unfiltered images	Off
Prescan Normalize	On
Unfiltered images	Off
Normalize	Off
B1 filter	Off

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

Raw filter	Off
Elliptical filter	Off
POCS	Off

## **Geometry - Common**

Slice group	1
Slices	1
Dist. factor	20 %
Position	L42.5 P9.8 H12.3 mm
Orientation	C > S-37.7
Phase enc. dir.	L >> R
FoV read	387 mm
FoV phase	87.5 %
Slice thickness	8.0 mm
TR	316.29 ms
Multi-slice mode	Sequential
Series	Interleaved
Concatenations	1

## Geometry - AutoAlign

Slice group	1
AutoAlign	
Position	L42.5 P9.8 H12.3 mm
Orientation	C > S-37.7
Phase enc. dir.	L >> R
Initial Position	L42.5 P9.8 H12.3
L	42.5 mm
P	9.8 mm
Н	12.3 mm
Initial Rotation	-180.00 deg
Initial Orientation	C > S
C > S	-37.7
> T	0.0

## **Geometry - Saturation**

Fat suppr.	None
Wrap-up Magn.	Restore
Special sat.	None

## **Geometry - Navigator**

## **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	Off - AutoCoilSelect

## **System - Adjustments**

B0 Shim mode	Cardiac	
Adjust with body coil	Off	
Confirm freq. adjustment	Off	
Assume Dominant Fat	Off	
Assume Silicone	Off	
Adjustment Tolerance	Auto	

## **System - Adjust Volume**

Position	L42.5 P9.8 H12.3 mm
Orientation	C > S-37.7
Rotation	180.00 deg
R >> L F >> H A >> P	339 mm
F >> H	387 mm
A >> P	8 mm
Reset	Off

## System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

## Physio - Signal1

1st Signal/Mode	ECG/Trigger
Average cycle	225 ± 213 ms
Average cycle	No Signal ms
Captured cycle	225 ± 213 ms
Acquisition window	779 ms
Trigger pulse	1
Trigger delay	462 ms
TR	316.29 ms
Concatenations	1
Segments	79
Phases	1

## Physio - Cardiac

, o	
Magn. preparation	None
Fat suppr.	None
Dark blood	Off
FoV read	387 mm
FoV phase	87.5 %
Phase resolution	64 %
Cine	Off
Trajectory	Cartesian
Dummy heartbeats	0

## **Physio - PACE**

Resp. control	Off
Concatenations	1

## **Inline - Common**

Subtract	Off
Measurements	1
StdDev	Off
Save original images	On

## Inline - Cardiac

Inline Evaluation	Off
Magn. preparation	None
Contrasts	1
TE	1.46 ms
TR	316.29 ms
Save original images	On

## Inline - MIP

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

## **Inline - Composing**

Distortion Corr.	On
Mode	2D
Unfiltered images	Off

## Sequence - Part 1

Introduction	Off
Dimension	2D
Reordering	Linear
Asymmetric echo	Weak
Contrasts	1
Optimization	Min. TE
Multi-slice mode	Sequential
Echo spacing	3.5 ms
Sequence type	Trufi
Bandwidth	1096 Hz/Px

## Sequence - Part 2

Define	Shots
Shots per slice	1
Segments	79
Trufi delta freq.	0 Hz
RF pulse type	Fast
Gradient mode	Normal
Excitation	Slice-sel.
Flip angle mode	Constant
Cine	Off

Mode	Min flip angle
Min flip angle	50 deg
Allowed delay	0 s

# $\verb|\USER|\Cardiac|\ALTERED|\SEQUENCES-TAILORED|\PROTOCOLS|\INFLAMMATION|\TRUFI\_4-CHAM|\BER\_Loc|$

TA: 0.4 s PM: REF Voxel size: 1.6×1.6×8.0 mmPAT: 2 Rel. SNR: 1.00 : tfi

## **Properties**

Prio recon	Off
Load images to viewer	On
Inline movie	Off
Auto store images	On
Load images to stamp segments	On
Load images to graphic segments	On
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	1
Dist. factor	20 %
Position	L34.3 A0.5 H22.0 mm
Orientation	T > C40.0 > S-11.2
Phase enc. dir.	A >> P
AutoAlign	
Phase oversampling	0 %
FoV read	340 mm
FoV phase	94.2 %
Slice thickness	8.0 mm
TR	286.98 ms
TE	1.45 ms
Averages	1
Concatenations	1
Filter	Distortion Corr.(2D),
	Prescan Normalize
Coil elements	BO1,2;SP1,2

#### **Contrast - Common**

TR	286.98 ms
TE	1.45 ms
Magn. preparation	None
Flip angle	80 deg
Fat suppr.	None
Wrap-up Magn.	Restore

## **Contrast - Dynamic**

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

#### **Resolution - Common**

FoV read	340 mm
FoV phase	94.2 %
Slice thickness	8.0 mm
Base resolution	208
Phase resolution	60 %
Phase partial Fourier	Off
Trajectory	Cartesian
Interpolation	Off

## **Resolution - iPAT**

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

## **Resolution - Filter Image**

Image Filter	Off
Distortion Corr.	On
Mode	2D
Unfiltered images	Off
Prescan Normalize	On
Unfiltered images	Off
Normalize	Off
B1 filter	Off

## **Resolution - Filter Rawdata**

Raw filter	Off
Elliptical filter	Off
POCS	Off

## **Geometry - Common**

Slice group	1
Slices	1
Dist. factor	20 %
Position	L34.3 A0.5 H22.0 mm
Orientation	T > C40.0 > S-11.2
Phase enc. dir.	A >> P
FoV read	340 mm
FoV phase	94.2 %
Slice thickness	8.0 mm
TR	286.98 ms
Multi-slice mode	Sequential
Series	Interleaved
Concatenations	1

## Geometry - AutoAlign

- · · · · · · · · · · · · · · · · · · ·	
Slice group	1
AutoAlign	
Position	L34.3 A0.5 H22.0 mm
Orientation	T > C40.0 > S-11.2
Phase enc. dir.	A >> P
Initial Position	L34.3 A0.5 H22.0
L	34.3 mm
A	0.5 mm
Н	22.0 mm
Initial Rotation	9.22 deg
Initial Orientation	T > C
T > C	40.0
> S	-11.2

## **Geometry - Saturation**

Fat suppr.	None
Wrap-up Magn.	Restore
Special sat.	None

## **Geometry - Navigator**

## **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	Off - AutoCoilSelect

## **System - Adjustments**

B0 Shim mode	Cardiac
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto

## System - Adjust Volume

Position	L34.3 A0.5 H22.0 mm
Orientation	T > C40.0 > S-11.2
Rotation	9.23 deg
A >> P	321 mm
R >> L	340 mm
F >> H	8 mm
Reset	Off

## System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

## Physio - Signal1

, c.c - c.g	
1st Signal/Mode	ECG/Trigger
Average cycle	225 ± 213 ms
Average cycle	No Signal ms
Captured cycle	$225 \pm 213  \text{ms}$
Acquisition window	750 ms
Trigger pulse	1
Trigger delay	463 ms
TR	286.98 ms
Concatenations	1
Segments	71
Phases	1

## Physio - Cardiac

Magn. preparation	None
Fat suppr.	None
Dark blood	Off
FoV read	340 mm
FoV phase	94.2 %
Phase resolution	60 %
Cine	Off
Trajectory	Cartesian
Dummy heartbeats	0

## **Physio - PACE**

Resp. control	Off	

#### **Physio - PACE**

Concatenations	1	
Inline - Common		
Subtract	Off	
Measurements	1	
StdDev	Off	
Save original images	On	

## Inline - Cardiac

Inline Evaluation	Off
Magn. preparation	None
Contrasts	1
TE	1.45 ms
TR	286.98 ms
Save original images	On

## Inline - MIP

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

## **Inline - Composing**

Distortion Corr.	On
Mode	2D
Unfiltered images	Off

#### Sequence - Part 1

Introduction	Off	
Dimension	2D	
Reordering	Linear	
Asymmetric echo	Weak	
Contrasts	1	
Optimization	Min. TE	
Multi-slice mode	Sequential	
Echo spacing	3.4 ms	
Sequence type	Trufi	
Bandwidth	1093 Hz/Px	

## Sequence - Part 2

Define	Shots
Shots per slice	1
Segments	71
Trufi delta freq.	0 Hz
RF pulse type	Fast
Gradient mode	Normal
Excitation	Slice-sel.
Flip angle mode	Constant
Cine	Off

Mode	Min flip angle
Min flip angle	50 deg
Allowed delay	0 s

# \\USER\Cardiac\ALTERED SEQUENCES- TAILORED PROTOCOLS\INFLAMMATION\TRUFI\_SHORT A XIS Loc

TA: 3.6 s PM: REF Voxel size: 1.7×1.7×8.0 mmPAT: 2 Rel. SNR: 1.00 : tfi

## **Properties**

Prio recon	Off
Load images to viewer	On
Inline movie	Off
Auto store images	On
Load images to stamp segments	On
Load images to graphic segments	On
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	8
Dist. factor	100 %
Position	L62.9 A7.2 H12.9 mm
Orientation	S > C37.7 > T28.3
Phase enc. dir.	A >> P
AutoAlign	
Phase oversampling	0 %
FoV read	360 mm
FoV phase	87.5 %
Slice thickness	8.0 mm
TR	283.54 ms
TE	1.39 ms
Averages	1
Concatenations	8
Filter	Distortion Corr.(2D),
	Prescan Normalize,
	Image Filter
Coil elements	BO1,2;SP1,2

#### **Contrast - Common**

TR	283.54 ms
TE	1.39 ms
TD	0 ms
Magn. preparation	None
Flip angle	80 deg
Fat suppr.	None
Wrap-up Magn.	Restore

## **Contrast - Dynamic**

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

## **Resolution - Common**

FoV read	360 mm
FoV phase	87.5 %
Slice thickness	8.0 mm
Base resolution	208
Phase resolution	64 %
Phase partial Fourier	Off
Trajectory	Cartesian
Interpolation	Off

## **Resolution - iPAT**

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

## **Resolution - Filter Image**

Image Filter	On
! Intensity	Medium
Edge Enhancement	3
Smoothing	2
Unfiltered images	Off
Distortion Corr.	On
Mode	2D
Unfiltered images	Off
Prescan Normalize	On
Unfiltered images	Off
Normalize	Off
B1 filter	Off

## **Resolution - Filter Rawdata**

Raw filter	Off
Elliptical filter	Off
POCS	Off

## **Geometry - Common**

Slice group	1
Slices	8
Dist. factor	100 %
Position	L62.9 A7.2 H12.9 mm
Orientation	S > C37.7 > T28.3
Phase enc. dir.	A >> P
FoV read	360 mm
FoV phase	87.5 %
Slice thickness	8.0 mm
TR	283.54 ms
Multi-slice mode	Sequential
Series	Descending
Concatenations	8

## Geometry - AutoAlign

Slice group	1
AutoAlign	
Position	L62.9 A7.2 H12.9 mm
Orientation	S > C37.7 > T28.3
Phase enc. dir.	A >> P
Initial Position	L62.9 A7.2 H12.9
L	62.9 mm
Α	7.2 mm
Н	12.9 mm
Initial Rotation	20.14 deg
Initial Orientation	S > C
S > C	37.7
> T	28.3

## **Geometry - Saturation**

Fat suppr.	None
Wrap-up Magn.	Restore
Special sat.	None

## **Geometry - Navigator**

## **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	Off - AutoCoilSelect

## **System - Adjustments**

ſ	B0 Shim mode	Cardiac
Į,	Adjust with body coil	Off
ŀ	Confirm freq. adjustment	Off
Į,	Assume Dominant Fat	Off
Į,	Assume Silicone	Off
ı,	Adjustment Tolerance	Auto

## **System - Adjust Volume**

Position	L62.9 A7.2 H12.9 mm
Orientation	S > C37.7 > T28.3
Rotation	20.14 deg
A >> P	315 mm
F >> H	360 mm
R >> L	120 mm
Reset	Off

## System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

## Physio - Signal1

4 - ( O' 1/N 41 -	E00/E:
1st Signal/Mode	ECG/Trigger
Average cycle	225 ± 213 ms
Average cycle	No Signal ms
Captured cycle	225 ± 213 ms
Acquisition window	755 ms
Trigger pulse	1
Trigger delay	471 ms
TR	283.54 ms
Concatenations	8
Segments	70
Phases	1

## Physio - Cardiac

y 0.10	
Magn. preparation	None
Fat suppr.	None
Dark blood	Off
FoV read	360 mm
FoV phase	87.5 %
Phase resolution	64 %
Cine	Off
Trajectory	Cartesian
Dummy heartbeats	0

## Physio - PACE

Resp. control	Off
Concatenations	8

## **Inline - Common**

Subtract	Off
Measurements	1
StdDev	Off
Save original images	On

## Inline - Cardiac

Inline Evaluation	Off
Magn. preparation	None
Contrasts	1
TE	1.39 ms
TR	283.54 ms
Save original images	On

## Inline - MIP

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

## **Inline - Composing**

Distortion Corr.	On
Mode	2D
Unfiltered images	Off

## Sequence - Part 1

Introduction	Off
Dimension	2D
Reordering	Linear
Asymmetric echo	Weak
Contrasts	1
Optimization	Min. TE
Multi-slice mode	Sequential
Echo spacing	3.3 ms
Sequence type	Trufi
Bandwidth	1045 Hz/Px

## Sequence - Part 2

Define	Shots
Shots per slice	1
Segments	70
Trufi delta freq.	0 Hz
RF pulse type	Fast
Gradient mode	Normal
Excitation	Slice-sel.
Flip angle mode	Constant
Cine	Off

Mode	Min flip angle
Min flip angle	50 deg
Allowed delay	0 s

## \\USER\Cardiac\ALTERED SEQUENCES- TAILORED PROTOCOLS\INFLAMMATION\LT\_2-CHAMBER \_CINE

TA: 2.0 s PM: REF Voxel size: 1.9×1.9×8.0 mmPAT: 2 Rel. SNR: 1.00 : tfi

## **Properties**

Prio recon	Off
Load images to viewer	On
Inline movie	On
Auto store images	On
Load images to stamp segments	On
Load images to graphic segments	On
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	1
Dist. factor	20 %
Position	L41.8 P10.3 H13.2 mm
Orientation	C > S-37.7
Phase enc. dir.	L >> R
AutoAlign	
Phase oversampling	0 %
FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
TR	41.60 ms
TE	1.34 ms
Averages	1
Concatenations	1
Filter	Distortion Corr.(2D),
	Prescan Normalize, Image Filter
Coil elements	BO1,2;SP1,2

#### **Contrast - Common**

TR	41.60 ms
TE	1.34 ms
Magn. preparation	None
Flip angle	60 deg
Fat suppr. Wrap-up Magn.	None
Wrap-up Magn.	Restore

## **Contrast - Dynamic**

Averages	1
Averaging mode	Short term
Reconstruction	Magnitude
Measurements	1
Multiple series	Off

#### **Resolution - Common**

FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
Base resolution	192
Phase resolution	100 %
Phase partial Fourier	Off
Trajectory	Cartesian
View sharing	Off
Interpolation	Off

## **Resolution - iPAT**

PAT mode	GRAPPA
Accel. factor PE	2
Ref. lines PE	44
Reference scan mode	Integrated

## **Resolution - Filter Image**

Image Filter	On
! Intensity	Medium
Edge Enhancement	3
Smoothing	2
Unfiltered images	Off
Distortion Corr.	On
Mode	2D
Unfiltered images	Off
Prescan Normalize	On
Unfiltered images	Off
Normalize	Off
B1 filter	Off

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

Raw filter	Off
Elliptical filter	Off
POCS	Off

## **Geometry - Common**

Slice group	1
Slices	1
Dist. factor	20 %
Position	L41.8 P10.3 H13.2 mm
Orientation	C > S-37.7
Phase enc. dir.	L >> R
FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
TR	41.60 ms
Multi-slice mode	Sequential
Series	Interl. in Bh.
Concatenations	1

## Geometry - AutoAlign

Slice group	1
AutoAlign	
Position	L41.8 P10.3 H13.2 mm
Orientation	C > S-37.7
Phase enc. dir.	L >> R
Initial Position	L41.8 P10.3 H13.2
L	41.8 mm
P	10.3 mm
Н	13.2 mm
Initial Rotation	-180.00 deg
Initial Orientation	C > S
C > S	-37.7
> T	0.0

## **Geometry - Saturation**

Fat suppr.	None
Wrap-up Magn.	Restore
Special sat.	None

## **Geometry - Navigator**

## **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	Off - AutoCoilSelect

## **System - Adjustments**

B0 Shi	m mode	Cardiac	
Adjust	with body coil	Off	
Confirm	n freq. adjustment	Off	
Assum	e Dominant Fat	Off	
Assum	e Silicone	Off	
Adjustr	nent Tolerance	Auto	

## **System - Adjust Volume**

Position	L41.8 P10.3 H13.2 mm
Orientation	C > S-37.7
Rotation	180.00 deg
R >> L	293 mm
F >> H	360 mm
A >> P	8 mm
Reset	Off

## System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

## Physio - Signal1

1st Signal/Mode	ECG/Retro
Average cycle	225 ± 213 ms
Average cycle	No Signal ms
Calculated phases	25
TR	41.60 ms
Concatenations	1
Segments	13
Arrhythmia detection	None

## Physio - Cardiac

Magn. preparation	None
Fat suppr.	None
Dark blood	Off
FoV read	360 mm
FoV phase	81.3 %
Phase resolution	100 %
Cine	On
Trajectory	Cartesian
View sharing	Off
Dummy heartbeats	1

## Physio - PACE

Resp. control	Breath-hold
Concatenations	1

## **Inline - Common**

Subtract	Off
Measurements	1
StdDev	Off
Save original images	On

## Inline - Cardiac

Inline Evaluation	Off
Magn. preparation	None
Contrasts	1
TE	1.34 ms
TR	41.60 ms
Save original images	On

## Inline - MIP

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

## **Inline - Composing**

Distortion Corr.	On
Mode	2D
Unfiltered images	Off

## Sequence - Part 1

Introduction	Off
Dimension	2D
Reordering	Linear
Asymmetric echo	Weak
Contrasts	1
Optimization	Min. TE TR
Multi-slice mode	Sequential
Echo spacing	3.2 ms
Sequence type	Trufi
Bandwidth	965 Hz/Px

## Sequence - Part 2

Define	Segments
Segments	13
Trufi delta freq.	0 Hz
RF pulse type	Fast
Gradient mode	Normal
Excitation	Slice-sel.
Flip angle mode	Constant
Cine	On

Mode	Min flip angle
Min flip angle	50 deg
Allowed delay	0 s

# \\USER\Cardiac\ALTERED SEQUENCES- TAILORED PROTOCOLS\INFLAMMATION\4-CHAMBER\_CI

TA: 2.5 s PM: REF Voxel size: 1.9×1.9×8.0 mmPAT: 2 Rel. SNR: 1.00 : tfi

## **Properties**

Prio recon	Off
Load images to viewer	On
Inline movie	On
Auto store images	On
Load images to stamp segments	On
Load images to graphic segments	On
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	1
Dist. factor	20 %
Position	L30.8 A0.1 H23.5 mm
Orientation	T > C39.4 > S-10.6
Phase enc. dir.	A >> P
AutoAlign	
Phase oversampling	0 %
FoV read	360 mm
FoV phase	100.0 %
Slice thickness	8.0 mm
TR	41.60 ms
TE	1.34 ms
Averages	1
Concatenations	1
Filter	Distortion Corr.(2D),
	Prescan Normalize, Image Filter
Coil elements	BO1,2;SP1,2

#### **Contrast - Common**

TR	41.60 ms
TE	1.34 ms
Magn. preparation	None
Flip angle	60 deg
Fat suppr.	None
Wrap-up Magn.	Restore

## **Contrast - Dynamic**

Averages	1
Averaging mode	Short term
Reconstruction	Magnitude
Measurements	1
Multiple series	Off

#### **Resolution - Common**

FoV read	360 mm
FoV phase	100.0 %
Slice thickness	8.0 mm
Base resolution	192
Phase resolution	100 %
Phase partial Fourier	Off
Trajectory	Cartesian
View sharing	Off
Interpolation	Off

## **Resolution - iPAT**

PAT mode	GRAPPA
Accel. factor PE	2
Ref. lines PE	44
Reference scan mode	Integrated

## **Resolution - Filter Image**

Image Filter	On
! Intensity	Medium
Edge Enhancement	3
Smoothing	2
Unfiltered images	Off
Distortion Corr.	On
Mode	2D
Unfiltered images	Off
Prescan Normalize	On
Unfiltered images	Off
Normalize	Off
B1 filter	Off

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

Raw filter	Off
Elliptical filter	Off
POCS	Off

## **Geometry - Common**

Slice group	1
Slices	1
Dist. factor	20 %
Position	L30.8 A0.1 H23.5 mm
Orientation	T > C39.4 > S-10.6
Phase enc. dir.	A >> P
FoV read	360 mm
FoV phase	100.0 %
Slice thickness	8.0 mm
TR	41.60 ms
Multi-slice mode	Sequential
Series	Interl. in Bh.
Concatenations	1

## Geometry - AutoAlign

Slice group	1
AutoAlign	
Position	L30.8 A0.1 H23.5 mm
Orientation	T > C39.4 > S-10.6
Phase enc. dir.	A >> P
Initial Position	L30.8 A0.1 H23.5
L	30.8 mm
A	0.1 mm
Н	23.5 mm
Initial Rotation	8.59 deg
Initial Orientation	T > C
T > C	39.4
> S	-10.6

## **Geometry - Saturation**

Fat suppr.	None
Wrap-up Magn.	Restore
Special sat.	None

## **Geometry - Navigator**

## **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	Off - AutoCoilSelect

## **System - Adjustments**

B0 Shim mode	Cardiac
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto

## System - Adjust Volume

Position	L30.8 A0.1 H23.5 mm
Orientation	T > C39.4 > S-10.6
Rotation	8.59 deg
A >> P	360 mm
R >> L	360 mm
F >> H	8 mm
Reset	Off

## System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

## Physio - Signal1

1st Signal/Mode	ECG/Retro
Average cycle	225 ± 213 ms
Average cycle	No Signal ms
Calculated phases	25
TR	41.60 ms
Concatenations	1
Segments	13
Arrhythmia detection	None

## Physio - Cardiac

Magn. preparation	None	
Fat suppr.	None	
Dark blood	Off	
FoV read	360 mm	
FoV phase	100.0 %	
Phase resolution	100 %	
Cine	On	
Trajectory	Cartesian	
View sharing	Off	
Dummy heartbeats	1	

## Physio - PACE

Resp. control	Breath-hold
Concatenations	1

## **Inline - Common**

Subtract	Off
Measurements	1
StdDev	Off
Save original images	On

## Inline - Cardiac

Inline Evaluation	Off
Magn. preparation	None
Contrasts	1
TE	1.34 ms
TR	41.60 ms
Save original images	On

## Inline - MIP

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

## Inline - Composing

Distortion Corr.	On
Mode	2D
Unfiltered images	Off

## Sequence - Part 1

Introduction	Off
Dimension	2D
Reordering	Linear
Asymmetric echo	Weak
Contrasts	1
Optimization	Min. TE TR
Multi-slice mode	Sequential
Echo spacing	3.2 ms
Sequence type	Trufi
Bandwidth	965 Hz/Px

# Sequence - Part 2

Define	Segments
Segments	13
Trufi delta freq.	0 Hz
RF pulse type	Fast
Gradient mode	Normal
Excitation	Slice-sel.
Flip angle mode	Constant
Cine	On

Mode	Min flip angle
Min flip angle	50 deg
Allowed delay	0 s

# \\USER\Cardiac\ALTERED SEQUENCES- TAILORED PROTOCOLS\INFLAMMATION\3-CHAMBER Cin

TA: 2.0 s PM: REF Voxel size: 1.9×1.9×8.0 mmPAT: 2 Rel. SNR: 1.00 : tfi

## **Properties**

Prio recon	Off
Load images to viewer	On
Inline movie	On
Auto store images	On
Load images to stamp segments	On
Load images to graphic segments	On
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	1
Dist. factor	20 %
Position	L4.5 P24.0 F35.2 mm
Orientation	S > T-32.2 > C-17.4
Phase enc. dir.	A >> P
AutoAlign	
Phase oversampling	0 %
FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
TR	41.60 ms
TE	1.34 ms
Averages	1
Concatenations	1
Filter	Distortion Corr.(2D), Prescan Normalize, Image Filter
Coil elements	BO1,2;SP2

#### **Contrast - Common**

TR TE	41.60 ms
TE	1.34 ms
Magn. preparation	None
Flip angle	58 deg
Fat suppr.	None
Wrap-up Magn.	Restore

## **Contrast - Dynamic**

Averages	1
Averaging mode	Short term
Reconstruction	Magnitude
Measurements	1
Multiple series	Off

#### **Resolution - Common**

FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
Base resolution	192
Phase resolution	100 %
Phase partial Fourier	Off
Trajectory	Cartesian
View sharing	Off
Interpolation	Off

## **Resolution - iPAT**

PAT mode	GRAPPA
Accel. factor PE	2
Ref. lines PE	44
Reference scan mode	Integrated

## **Resolution - Filter Image**

Image Filter	On
! Intensity	Medium
Edge Enhancement	3
Smoothing	2
Unfiltered images	Off
Distortion Corr.	On
Mode	2D
Unfiltered images	Off
Prescan Normalize	On
Unfiltered images	Off
Normalize	Off
B1 filter	Off

## **Resolution - Filter Rawdata**

Raw filter	Off
Elliptical filter	Off
POCS	Off

## **Geometry - Common**

Slice group	1
Slices	1
Dist. factor	20 %
Position	L4.5 P24.0 F35.2 mm
Orientation	S > T-32.2 > C-17.4
Phase enc. dir.	A >> P
FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
TR	41.60 ms
Multi-slice mode	Sequential
Series	Interl. in Bh.
Concatenations	1

## Geometry - AutoAlign

Slice group	1
AutoAlign	
Position	L4.5 P24.0 F35.2 mm
Orientation	S > T-32.2 > C-17.4
Phase enc. dir.	A >> P
Initial Position	L4.5 P24.0 F2.2
L	4.5 mm
P	24.0 mm
F	2.2 mm
Initial Rotation	10.67 deg
Initial Orientation	S > T
S > T	-32.2
> C	-17.4

## **Geometry - Saturation**

Fat suppr.	None
Wrap-up Magn.	Restore
Special sat.	None

## **Geometry - Navigator**

## **System - Miscellaneous**

Positioning mode	REF
Table position	F
Table position	33 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	Off - AutoCoilSelect

## **System - Adjustments**

B0 Shim mode	Cardiac	
Adjust with body coil	Off	
Confirm freq. adjustment	Off	
Assume Dominant Fat	Off	
Assume Silicone	Off	
Adjustment Tolerance	Auto	

## System - Adjust Volume

Position	L4.5 P24.0 F35.2 mm
Orientation	S > T-32.2 > C-17.4
Rotation	10.67 deg
A >> P	293 mm
F >> H	360 mm
R >> L	8 mm
Reset	Off

## System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

## Physio - Signal1

1st Signal/Mode	ECG/Retro
Average cycle	225 ± 213 ms
Average cycle	No Signal ms
Calculated phases	25
TR	41.60 ms
Concatenations	1
Segments	13
Arrhythmia detection	None

## Physio - Cardiac

Magn. preparation	None	
Fat suppr.	None	
Dark blood	Off	
FoV read	360 mm	
FoV phase	81.3 %	
Phase resolution	100 %	
Cine	On	
Trajectory	Cartesian	
View sharing	Off	
Dummy heartbeats	1	
·	·	

## Physio - PACE

Resp. control	Breath-hold
Concatenations	1

## **Inline - Common**

Subtract	Off
Measurements	1
StdDev	Off
Save original images	On

## Inline - Cardiac

Inline Evaluation	Off
Magn. preparation	None
Contrasts	1
TE	1.34 ms
TR	41.60 ms
Save original images	On

## Inline - MIP

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

## **Inline - Composing**

Distortion Corr.	On
Mode	2D
Unfiltered images	Off

## Sequence - Part 1

Introduction	Off
Dimension	2D
Reordering	Linear
Asymmetric echo	Weak
Contrasts	1
Optimization	Min. TE TR
Multi-slice mode	Sequential
Echo spacing	3.2 ms
Sequence type	Trufi
Bandwidth	965 Hz/Px

## Sequence - Part 2

Define	Segments
Segments	13
Trufi delta freq.	0 Hz
RF pulse type	Fast
Gradient mode	Normal
Excitation	Slice-sel.
Flip angle mode	Constant
Cine	On

Mode	Min flip angle
Min flip angle	50 deg
Allowed delay	0 s

## \\USER\Cardiac\ALTERED SEQUENCES- TAILORED PROTOCOLS\INFLAMMATION\SA - Cine

TA: 0:55 PM: REF Voxel size: 1.9×1.9×8.0 mmPAT: 3 Rel. SNR: 1.00 : tfi

## **Properties**

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

## Routine

Slice group	1
Slices	14
Dist. factor	25 %
Position	L36.5 P10.9 F53.2 mm
Orientation	C > S38.2 > T-27.5
Phase enc. dir.	A >> P
AutoAlign	
Phase oversampling	0 %
FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
TR	51.20 ms
TE	1.34 ms
Averages	1
Concatenations	7
Filter	Distortion Corr.(2D),
	Prescan Normalize,
	Image Filter
Coil elements	BO1,2;SP2

## **Contrast - Common**

TR	51.20 ms
TE	1.34 ms
Magn. preparation	None
Flip angle	60 deg
Fat suppr.	None
Wrap-up Magn.	Restore

## **Contrast - Dynamic**

Averages	1
Averaging mode	Short term
Reconstruction	Magnitude
Measurements	1
Multiple series	Each slice and
	measurement

## **Resolution - Common**

FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
Base resolution	192
Phase resolution	70 %
Phase partial Fourier	Off
Trajectory	Cartesian
View sharing	Off
Interpolation	Off

#### **Resolution - iPAT**

PAT mode	GRAPPA
Accel. factor PE	3
Ref. lines PE	54
Reference scan mode	Integrated

## **Resolution - Filter Image**

Image Filter	On
! Intensity	Medium
Edge Enhancement	3
Smoothing	2
Unfiltered images	Off
Distortion Corr.	On
Mode	2D
Unfiltered images	Off
Prescan Normalize	On
Unfiltered images	Off
Normalize	Off
B1 filter	Off

## **Resolution - Filter Rawdata**

Raw filter	Off	
Elliptical filter	Off	
POCS	Off	

## **Geometry - Common**

Slice group	1
Slices	14
Dist. factor	25 %
Position	L36.5 P10.9 F53.2 mm
Orientation	C > S38.2 > T-27.5
Phase enc. dir.	A >> P
FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
TR	51.20 ms
Multi-slice mode	Sequential
Series	Base To Apex
Concatenations	7

## Geometry - AutoAlign

Slice group	1
AutoAlign	
Position	L36.5 P10.9 F53.2 mm
Orientation	C > S38.2 > T-27.5
Phase enc. dir.	A >> P
Initial Position	L36.5 P10.9 F20.2
L	36.5 mm
P	10.9 mm
F	20.2 mm
Initial Rotation	-30.37 deg
Initial Orientation	C > S
C > S	38.2
> T	-27.5

## **Geometry - Saturation**

Fat suppr.	None
Wrap-up Magn.	Restore
Special sat.	None

## **Geometry - Navigator**

## **System - Miscellaneous**

Positioning mode	REF
Table position	F
Table position	33 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	Off - AutoCoilSelect

## **System - Adjustments**

B0 Shim mode	Cardiac
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto

## **System - Adjust Volume**

Position	L36.5 P10.9 F53.2 mm
Orientation	C > S38.2 > T-27.5
Rotation	-30.37 deg
A >> P	293 mm
F >> H	360 mm
A >> P	138 mm
Reset	Off

## System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

## Physio - Signal1

1st Signal/Mode	ECG/Retro
Average cycle	225 ± 213 ms
Average cycle	No Signal ms
Calculated phases	25
TR	51.20 ms
Concatenations	7
Segments	16
Arrhythmia detection	None

## Physio - Cardiac

Magn. preparation	None
Fat suppr.	None
Dark blood	Off
FoV read	360 mm
FoV phase	81.3 %
Phase resolution	70 %
Cine	On
Trajectory	Cartesian
View sharing	Off
Dummy heartbeats	1

## **Physio - PACE**

Resp. control	Breath-hold
Concatenations	7

## **Inline - Common**

Subtract	Off
Measurements	1
StdDev	Off
Save original images	On

## Inline - Cardiac

Inline Evaluation	Off
Magn. preparation	None
Contrasts	1
TE	1.34 ms
TR	51.20 ms
Save original images	On

## Inline - MIP

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

## **Inline - Composing**

Distortion Corr.	On	
Mode	2D	
Unfiltered images	Off	

## Sequence - Part 1

Introduction	Off
Dimension	2D
Reordering	Linear
Asymmetric echo	Weak
Contrasts	1
Optimization	Min. TE TR
Multi-slice mode	Sequential
Echo spacing	3.2 ms
Sequence type	Trufi
Bandwidth	965 Hz/Px

## Sequence - Part 2

Define	Segments
Segments	16
Trufi delta freq.	0 Hz
RF pulse type	Fast
Gradient mode	Normal
Excitation	Slice-sel.
Flip angle mode	Constant
Cine	On

Mode	Min flip angle
Min flip angle	50 deg
Allowed delay	0 s

## \\USER\Cardiac\ALTERED SEQUENCES- TAILORED PROTOCOLS\INFLAMMATION\RVOT

TA: 2.0 s PM: REF Voxel size: 1.9×1.9×8.0 mmPAT: 2 Rel. SNR: 1.00 : tfi

## **Properties**

Prio recon	Off
Load images to viewer	On
Inline movie	On
Auto store images	On
Load images to stamp segments	On
Load images to graphic segments	On
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	1
Dist. factor	20 %
Position	L32.3 P45.4 F15.5 mm
Orientation	S > C-34.7 > T-29.1
Phase enc. dir.	A >> P
AutoAlign	
Phase oversampling	0 %
FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
TR	41.60 ms
TE	1.34 ms
Averages	1
Concatenations	1
Filter	Distortion Corr.(2D), Prescan Normalize, Image Filter
Coil elements	FL;SP1,2

## **Contrast - Common**

TR	41.60 ms
TE	1.34 ms
Magn. preparation	None
Flip angle	60 deg
Fat suppr.	None
Wrap-up Magn.	Restore

## **Contrast - Dynamic**

Averages	1
Averaging mode	Short term
Reconstruction	Magnitude
Measurements	1
Multiple series	Off

## **Resolution - Common**

) mm
3 %
mm
2
) %
rtesian

#### **Resolution - iPAT**

PAT mode	GRAPPA
Accel. factor PE	2
Ref. lines PE	44
Reference scan mode	Integrated

## **Resolution - Filter Image**

Image Filter	On
! Intensity	Medium
Edge Enhancement	3
Smoothing	2
Unfiltered images	Off
Distortion Corr.	On
Mode	2D
Unfiltered images	Off
Prescan Normalize	On
Unfiltered images	Off
Normalize	Off
B1 filter	Off

## **Resolution - Filter Rawdata**

Raw filter	Off	
Elliptical filter	Off	
POCS	Off	

## **Geometry - Common**

Slice group	1
Slices	1
Dist. factor	20 %
Position	L32.3 P45.4 F15.5 mm
Orientation	S > C-34.7 > T-29.1
Phase enc. dir.	A >> P
FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
TR	41.60 ms
Multi-slice mode	Sequential
Series	Interl. in Bh.
Concatenations	1

## **Geometry - AutoAlign**

Slice group	1
AutoAlign	
Position	L32.3 P45.4 F15.5 mm
Orientation	S > C-34.7 > T-29.1
Phase enc. dir.	A >> P
Initial Position	L32.3 P45.4 F15.5
L	32.3 mm
Р	45.4 mm
F	15.5 mm
Initial Rotation	18.62 deg
Initial Orientation	S > C
S > C	-34.7
> T	-29.1

## **Geometry - Saturation**

Fat suppr.	None
Wrap-up Magn.	Restore
Special sat.	None

## **Geometry - Navigator**

## **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	Off - AutoCoilSelect

## **System - Adjustments**

B0 Shim mode	Cardiac
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto

## **System - Adjust Volume**

Position	L32.3 P45.4 F15.5 mm
Orientation	S > C-34.7 > T-29.1
Rotation	18.62 deg
A >> P	293 mm
F >> H	360 mm
R >> L	8 mm
Reset	Off

## System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

## Physio - Signal1

•	
1st Signal/Mode	ECG/Retro
Average cycle	225 ± 213 ms
Average cycle	No Signal ms
Calculated phases	25
TR	41.60 ms
Concatenations	1
Segments	13
Arrhythmia detection	None

## Physio - Cardiac

Magn. preparation	None
Fat suppr.	None
Dark blood	Off
FoV read	360 mm
FoV phase	81.3 %
Phase resolution	100 %
Cine	On
Trajectory	Cartesian
View sharing	Off
Dummy heartbeats	1

## **Physio - PACE**

Resp. control	Breath-hold
Concatenations	1

## **Inline - Common**

Subtract	Off
Measurements	1
StdDev	Off
Save original images	On

## Inline - Cardiac

Inline Evaluation	Off
Magn. preparation	None
Contrasts	1
TE	1.34 ms
TR	41.60 ms
Save original images	On

## Inline - MIP

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

## **Inline - Composing**

Distortion Corr.	On	
Mode	2D	
Unfiltered images	Off	

## Sequence - Part 1

Introduction	Off
Dimension	2D
Reordering	Linear
Asymmetric echo	Weak
Contrasts	1
Optimization	Min. TE TR
Multi-slice mode	Sequential
Echo spacing	3.2 ms
Sequence type	Trufi
Bandwidth	965 Hz/Px

## Sequence - Part 2

Define	Segments
Segments	13
Trufi delta freq.	0 Hz
RF pulse type	Fast
Gradient mode	Normal
Excitation	Slice-sel.
Flip angle mode	Constant
Cine	On

Mode	Min flip angle
Min flip angle	50 deg
Allowed delay	0 s

## \\USER\Cardiac\ALTERED SEQUENCES-TAILORED PROTOCOLS\INFLAMMATION\LVOT

TA: 2.0 s PM: REF Voxel size: 1.9×1.9×8.0 mmPAT: 2 Rel. SNR: 1.00 : tfi

#### **Properties**

Prio recon	Off
Load images to viewer	On
Inline movie	On
Auto store images	On
Load images to stamp segments	On
Load images to graphic segments	On
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	1
Dist. factor	20 %
Position	L14.9 P48.8 F19.6 mm
Orientation	C > S37.8 > T12.7
Phase enc. dir.	R >> L
AutoAlign	
Phase oversampling	0 %
FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
TR	41.60 ms
TE	1.34 ms
Averages	1
Concatenations	1
Filter	Distortion Corr.(2D),
	Prescan Normalize,
	Image Filter
Coil elements	FL;SP1,2

# **Contrast - Common**

Wrap-up Magn.	Restore
Fat suppr.	None
Flip angle	60 deg
Magn. preparation	None
TE	1.34 ms
TR	41.60 ms

## **Contrast - Dynamic**

Averages	1
Averaging mode	Short term
Reconstruction	Magnitude
Measurements	1
Multiple series	Off

#### **Resolution - Common**

FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
Base resolution	192
Phase resolution	100 %
Phase partial Fourier	Off
Trajectory	Cartesian
View sharing	Off
Interpolation	Off

#### **Resolution - iPAT**

PAT mode	GRAPPA
Accel. factor PE	2
Ref. lines PE	44
Reference scan mode	Integrated

#### **Resolution - Filter Image**

Image Filter	On
! Intensity	Medium
Edge Enhancement	3
Smoothing	2
Unfiltered images	Off
Distortion Corr.	On
Mode	2D
Unfiltered images	Off
Prescan Normalize	On
Unfiltered images	Off
Normalize	Off
B1 filter	Off

## **Resolution - Filter Rawdata**

Raw filter	Off	
Elliptical filter	Off	
POCS	Off	

## **Geometry - Common**

Slice group	1
Slices	1
Dist. factor	20 %
Position	L14.9 P48.8 F19.6 mm
Orientation	C > S37.8 > T12.7
Phase enc. dir.	R >> L
FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
TR	41.60 ms
Multi-slice mode	Sequential
Series	Interl. in Bh.
Concatenations	1

## Geometry - AutoAlign

Slice group	1
AutoAlign	
Position	L14.9 P48.8 F19.6 mm
Orientation	C > S37.8 > T12.7
Phase enc. dir.	R >> L
Initial Position	L14.9 P48.8 F19.6
L	14.9 mm
P	48.8 mm
F	19.6 mm
Initial Rotation	15.78 deg
Initial Orientation	C > S
C > S	37.8
> T	12.7

## **Geometry - Saturation**

Fat suppr.	None
Wrap-up Magn.	Restore
Special sat.	None

## **Geometry - Navigator**

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	Off - AutoCoilSelect

# **System - Adjustments**

B0 Shim mode	Cardiac
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto

# **System - Adjust Volume**

Position	L14.9 P48.8 F19.6 mm
Orientation	C > S37.8 > T12.7
Rotation	15.78 deg
R >> L	293 mm
F >> H	360 mm
A >> P	8 mm
Reset	Off

# System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

## Physio - Signal1

1st Signal/Mode	ECG/Retro
Average cycle	225 ± 213 ms
Average cycle	No Signal ms
Calculated phases	25
TR	41.60 ms
Concatenations	1
Segments	13
Arrhythmia detection	None

# Physio - Cardiac

Magn. preparation	None
Fat suppr.	None
Dark blood	Off
FoV read	360 mm
FoV phase	81.3 %
Phase resolution	100 %
Cine	On
Trajectory	Cartesian
View sharing	Off
Dummy heartbeats	1

# **Physio - PACE**

Resp. control	Breath-hold
Concatenations	1

#### **Inline - Common**

Subtract	Off
Measurements	1
StdDev	Off
Save original images	On

#### Inline - Cardiac

Inline Evaluation	Off
Magn. preparation	None
Contrasts	1
TE	1.34 ms
TR	41.60 ms
Save original images	On

## Inline - MIP

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

## **Inline - Composing**

Distortion Corr.	On
Mode	2D
Unfiltered images	Off

## Sequence - Part 1

Introduction	Off
Dimension	2D
Reordering	Linear
Asymmetric echo	Weak
Contrasts	1
Optimization	Min. TE TR
Multi-slice mode	Sequential
Echo spacing	3.2 ms
Sequence type	Trufi
Bandwidth	965 Hz/Px

# Sequence - Part 2

Define	Segments
Segments	13
Trufi delta freq.	0 Hz
RF pulse type	Fast
Gradient mode	Normal
Excitation	Slice-sel.
Flip angle mode	Constant
Cine	On

Mode	Min flip angle
Min flip angle	50 deg
Allowed delay	0 s

# \\USER\Cardiac\ALTERED SEQUENCES- TAILORED PROTOCOLS\INFLAMMATION\FLOW OF AORT

TA: 7.6 s PM: REF Voxel size: 1.8×1.8×8.0 mmPAT: Off Rel. SNR: 1.00 : fl\_r

#### **Properties**

Prio recon	Off
Load images to viewer	On
Inline movie	On
Auto store images	On
Load images to stamp segments	On
Load images to graphic segments	On
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	1
Dist. factor	20 %
Position	R10.2 P63.3 H69.4 mm
Orientation	Transversal
Phase enc. dir.	A >> P
AutoAlign	
Phase oversampling	0 %
FoV read	340 mm
FoV phase	68.8 %
Slice thickness	8.0 mm
TR	28.04 ms
TE	4.09 ms
Averages	1
Concatenations	1
Filter	Distortion Corr.(2D),
	Prescan Normalize
Coil elements	FL;SP1,2

#### **Contrast - Common**

TR	28.04 ms
TE	4.09 ms
Magn. preparation	None
Flip angle	20 deg
Fat suppr.	None
Wrap-up Magn.	None

## **Contrast - Dynamic**

Averages	1
Averaging mode	Short term
Reconstruction	Magnitude
Measurements	1
Multiple series	Off

#### **Resolution - Common**

FoV read	340 mm
FoV phase	68.8 %
Slice thickness	8.0 mm
Base resolution	192
Phase resolution	100 %
Phase partial Fourier	Off
Trajectory	Cartesian
View sharing	Off
Interpolation	Off

#### **Resolution - iPAT**

PAT mode	None	
Resolution - Filter Image		

itesolution - i liter lilla	gc	
Image Filter	Off	
Distortion Corr.	On	
Mode	2D	
Unfiltered images	Off	
Prescan Normalize	On	
Unfiltered images	Off	
Normalize	Off	

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

Raw filter	Off
Elliptical filter	Off
POCS	Off

Off

#### **Geometry - Common**

B1 filter

Slice group	1
Slices	1
Dist. factor	20 %
Position	R10.2 P63.3 H69.4 mm
Orientation	Transversal
Phase enc. dir.	A >> P
FoV read	340 mm
FoV phase	68.8 %
Slice thickness	8.0 mm
TR	28.04 ms
Multi-slice mode	Sequential
Series	Ascending
Concatenations	1

#### **Geometry - AutoAlign**

Slice group	1
AutoAlign	
Position	R10.2 P63.3 H69.4 mm
Orientation	Transversal
Phase enc. dir.	A >> P
Initial Position	R10.2 P63.3 H18.4
R	10.2 mm
P	63.3 mm
Н	18.4 mm
Initial Rotation	0.00 deg
Initial Orientation	Transversal

# **Geometry - Saturation**

Fat suppr.	None
Wrap-up Magn.	None
Special sat.	None

## **Geometry - Navigator**

## **System - Miscellaneous**

Positioning mode	REF
Table position	Н
Table position	51 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	Off - AutoCoilSelect

# **System - Adjustments**

B0 Shim mode	Cardiac
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto

## System - Adjust Volume

Position	R10.2 P63.3 H69.4 mm
Orientation	Transversal
Rotation	0.00 deg
A >> P	234 mm
A >> P R >> L F >> H	340 mm
F >> H	8 mm
Reset	Off

## System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

# Physio - Signal1

1st Signal/Mode	ECG/Retro
Average cycle	225 ± 213 ms
Average cycle	No Signal ms
Calculated phases	20
TR	28.04 ms
Concatenations	1
Segments	4
Arrhythmia detection	None

#### Physio - Cardiac

Magn. preparation	None
Fat suppr.	None
Dark blood	Off
FoV read	340 mm
FoV phase	68.8 %
Phase resolution	100 %
Cine	On
Trajectory	Cartesian
View sharing	Off
Dummy heartbeats	1

## **Physio - PACE**

Resp. control	Breath-hold
Concatenations	1

#### **Inline - Common**

Subtract	Off
Measurements	1
StdDev	Off

#### **Inline - Common**

Save original images	On	
Inline - Cardiac		
Inline Evaluation	Off	
Magn. preparation	None	
Contrasts	1	
TE	4.09 ms	
TR	28.04 ms	
Save original images	On	

## Inline - MIP

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

# Inline - Composing

Distortion Corr.	On
Mode	2D
Unfiltered images	Off

# Sequence - Part 1

Introduction	Off
Dimension	2D
Reordering	Linear
Asymmetric echo	Weak
Contrasts	1
Flow comp.	Yes
Optimization	Min. TE TR
Multi-slice mode	Sequential
Echo spacing	7 ms
Sequence type	Gre
Bandwidth	491 Hz/Px

# Sequence - Part 2

Define	Segments	
Segments	4	
RF pulse type	Normal	
Gradient mode	Normal	
Excitation	Slice-sel.	
Flip angle mode	Constant	
RF spoiling	On	
Phase Enc. Rewinder	On	
Cine	On	

Mode	Min flip angle
Min flip angle	50 deg
Allowed delay	0 s

## \\USER\Cardiac\ALTERED SEQUENCES- TAILORED PROTOCOLS\INFLAMMATION\tirm\_20\_db\_t2\_S AX

TA: 0:19 PM: REF Voxel size: 1.4×1.4×6.0 mmPAT: Off Rel. SNR: 1.00 : tir

#### **Properties**

Prio recon	Off
Load images to viewer	On
Inline movie	Off
Auto store images	On
Load images to stamp segments	On
Load images to graphic segments	On
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	3
Dist. factor	50 %
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
AutoAlign	
Phase oversampling	0 %
FoV read	360 mm
FoV phase	81.3 %
Slice thickness	6.0 mm
TR	800.0 ms
TE	53.0 ms
Averages	1
Concatenations	3
Filter	Distortion Corr.(2D), Prescan Normalize, Image Filter
Coil elements	BO1,2;SP1,2

#### **Contrast - Common**

TR	800.0 ms
TE	53.0 ms
TD	0.0 ms
MTC	Off
Magn. preparation	Slice-sel. IR
TI	160 ms
Flip angle	180 deg
Fat suppr.	None
Water suppr.	None
Restore magn.	Off
Freeze suppressed tissue	Off

## **Contrast - Dynamic**

Averages	1
Averaging mode	Long term
Reconstruction	Magnitude
Measurements	1
Multiple series	Off

#### **Resolution - Common**

FoV read	360 mm
FoV phase	81.3 %
Slice thickness	6.0 mm
Base resolution	256

#### **Resolution - Common**

Phase resolution	57 %
Phase partial Fourier	Off
Trajectory	Cartesian
Interpolation	Off

#### **Resolution - iPAT**

PAT mode	None

#### **Resolution - Filter Image**

Image Filter	On
! Intensity	Medium
Edge Enhancement	3
Smoothing	2
Unfiltered images	Off
Distortion Corr.	On
Mode	2D
Unfiltered images	Off
Prescan Normalize	On
Unfiltered images	Off
Normalize	Off
B1 filter	Off

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

Raw filter	Off	
Elliptical filter	Off	

#### **Geometry - Common**

•	
Slice group	1
Slices	3
Dist. factor	50 %
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
FoV read	360 mm
FoV phase	81.3 %
Slice thickness	6.0 mm
TR	800.0 ms
Multi-slice mode	Sequential
Series	Ascending
Concatenations	3

#### **Geometry - AutoAlign**

Slice group	1
AutoAlign	
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
Initial Position	Isocenter
L	0.0 mm
P	0.0 mm
Н	0.0 mm
Initial Rotation	10.35 deg
Initial Orientation	Transversal

## **Geometry - Saturation**

Fat suppr.	None
Water suppr.	None
Restore magn.	Off
Special sat.	None

# **Geometry - Navigator**

# **Geometry - Tim CT**

Tim CT mode	Off
Slices	3
Slice thickness	6.0 mm
Dist. factor	50 %
FoV read	360 mm
FoV phase	81.3 %

# **System - Miscellaneous**

Positioning mode	REF
Table position	F
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	Off - AutoCoilSelect

## **System - Adjustments**

B0 Shim mode	Cardiac
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto

## System - Adjust Volume

Position	Isocenter
Orientation	Transversal
Rotation	10.35 deg
A >> P	293 mm
R >> L	360 mm
F >> H	24 mm
Reset	Off

# System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

# Physio - Signal1

1st Signal/Mode	ECG/Trigger
Average cycle	225 ± 213 ms
Average cycle	No Signal ms
Captured cycle	-not set-
Acquisition window	826 ms
Trigger pulse	2
Trigger delay	0 ms
TR	800.0 ms
Concatenations	3
Phases	1

# Physio - Cardiac

Magn. preparation	Slice-sel. IR
TI	160 ms

# Physio - Cardiac

Fat suppr.	None
Dark blood	On
Dark blood thickness	200 %
FoV read	360 mm
FoV phase	81.3 %
Phase resolution	57 %
Trajectory	Cartesian

## **Physio - PACE**

Resp. control	Off
Concatenations	3

#### Inline - Common

Subtract	Off
Measurements	1
StdDev	Off
Save original images	On

## Inline - MIP

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

# **Inline - Composing**

Distortion Corr.	On	
Mode	2D	
Unfiltered images	Off	

# Sequence - Part 1

Introduction	Off
Dimension	2D
Compensate T2 decay	Off
Reduce Motion Sens.	Off
Contrasts	1
Flow comp.	No
Multi-slice mode	Sequential
Free echo spacing	Off
Echo spacing	4.8 ms
Bandwidth	849 Hz/Px

## Sequence - Part 2

Define	Turbo factor
Echo trains per slice	6
Phase correction	Automatic
Acoustic noise reduction	None
RF pulse type	Fast
Gradient mode	Normal
WARP	Off
Turbo factor	20

Mode	Off
Allowed delay	30 s

## \\USER\Cardiac\ALTERED SEQUENCES- TAILORED PROTOCOLS\INFLAMMATION\OS BASELINE

TA: 0:33 PM: REF Voxel size: 1.9×1.9×10.0 mmPAT: 2 Rel. SNR: 1.00 : tfi

#### **Properties**

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

## Routine

Slice group	1
Slices	5
Dist. factor	100 %
Position	L36.5 P10.9 F53.2 mm
Orientation	C > S38.2 > T-27.5
Phase enc. dir.	A >> P
AutoAlign	
Phase oversampling	0 %
FoV read	360 mm
FoV phase	81.3 %
Slice thickness	10.0 mm
TR	42.36 ms
TE	1.57 ms
Averages	1
Concatenations	5
Filter	Distortion Corr.(2D),
	Prescan Normalize,
	Image Filter
Coil elements	BO1,2;SP2

## **Contrast - Common**

Wrap-up Magn.	Restore
Fat suppr.	None
Flip angle	35 deg
Magn. preparation	None
TE	1.57 ms
TR	42.36 ms

## **Contrast - Dynamic**

Averages	1
Averaging mode	Short term
Reconstruction	Magnitude
Measurements	1
Multiple series	Each slice and
	measurement

#### **Resolution - Common**

FoV read	360 mm
FoV phase	81.3 %
Slice thickness	10.0 mm
Base resolution	192
Phase resolution	83 %
Phase partial Fourier	Off
Trajectory	Cartesian
View sharing	Off
Interpolation	Off

#### **Resolution - iPAT**

PAT mode	GRAPPA
Accel. factor PE	2
Ref. lines PE	26
Reference scan mode	Integrated

#### **Resolution - Filter Image**

Image Filter	On
! Intensity	Medium
Edge Enhancement	3
Smoothing	2
Unfiltered images	Off
Distortion Corr.	On
Mode	2D
Unfiltered images	Off
Prescan Normalize	On
Unfiltered images	Off
Normalize	Off
B1 filter	Off

## **Resolution - Filter Rawdata**

Raw filter	Off	
Elliptical filter	Off	
POCS	Off	

#### **Geometry - Common**

Slice group	1
Slices	5
Dist. factor	100 %
Position	L36.5 P10.9 F53.2 mm
Orientation	C > S38.2 > T-27.5
Phase enc. dir.	A >> P
FoV read	360 mm
FoV phase	81.3 %
Slice thickness	10.0 mm
TR	42.36 ms
Multi-slice mode	Sequential
Series	Descending
Concatenations	5

## **Geometry - AutoAlign**

Slice group	1
AutoAlign	
Position	L36.5 P10.9 F53.2 mm
Orientation	C > S38.2 > T-27.5
Phase enc. dir.	A >> P
Initial Position	L36.5 P10.9 F20.2
L	36.5 mm
P	10.9 mm
F	20.2 mm
Initial Rotation	-30.37 deg
Initial Orientation	C > S
C > S	38.2
> T	-27.5

# **Geometry - Saturation**

Fat suppr.	None
Wrap-up Magn.	Restore
Special sat.	None

# **Geometry - Navigator**

Positioning mode	REF
Table position	F
Table position	33 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	Off - AutoCoilSelect

# **System - Adjustments**

ſ	B0 Shim mode	Cardiac
L	Adjust with body coil	Off
ŀ	Confirm freq. adjustment	Off
1	Assume Dominant Fat	Off
1	Assume Silicone	Off
L	Adjustment Tolerance	Auto

# **System - Adjust Volume**

Position	L36.5 P10.9 F53.2 mm
Orientation	C > S38.2 > T-27.5
Rotation	-30.37 deg
A >> P	293 mm
F >> H	360 mm
A >> P	90 mm
Reset	Off

## System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

## Physio - Signal1

1st Signal/Mode	ECG/Retro
Average cycle	225 ± 213 ms
Average cycle	No Signal ms
Calculated phases	25
TR	42.36 ms
Concatenations	5
Segments	12
Arrhythmia detection	None

# Physio - Cardiac

Magn. preparation	None
Fat suppr.	None
Dark blood	Off
FoV read	360 mm
FoV phase	81.3 %
Phase resolution	83 %
Cine	On
Trajectory	Cartesian
View sharing	Off
Dummy heartbeats	1

# **Physio - PACE**

Resp. control	Breath-hold
Concatenations	5

#### **Inline - Common**

Subtract	Off
Measurements	1
StdDev	Off
Save original images	On

#### Inline - Cardiac

Inline Evaluation	Off
Magn. preparation	None
Contrasts	1
TE	1.57 ms
TR	42.36 ms
Save original images	On

## Inline - MIP

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

# Inline - Composing

Distortion Corr.	On
Mode	2D
Unfiltered images	Off

## Sequence - Part 1

Introduction	Off
Dimension	2D
Reordering	Linear
Asymmetric echo	Weak
Contrasts	1
Optimization	Min. TE TR
Multi-slice mode	Sequential
Echo spacing	3.5 ms
Sequence type	Trufi
Bandwidth	1240 Hz/Px

## Sequence - Part 2

Define	Segments
Segments	12
Trufi delta freq.	0 Hz
RF pulse type	Normal
Gradient mode	Normal
Excitation	Slice-sel.
Flip angle mode	Constant
Cine	On

Mode	Min flip angle
Min flip angle	50 deg
Allowed delay	0 s

# \\USER\Cardiac\ALTERED SEQUENCES- TAILORED PROTOCOLS\INFLAMMATION\OS CONTINUOU S ACQUISITION

TA: 3:36 PM: REF Voxel size: 1.9×1.9×10.0 mmPAT: 2 Rel. SNR: 1.00 : tfi

#### **Properties**

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

#### **Routine**

Slice group	1
Slices	2
Dist. factor	100 %
Position	L36.5 P10.9 F53.2 mm
Orientation	C > S38.2 > T-27.5
Phase enc. dir.	A >> P
AutoAlign	
Phase oversampling	0 %
FoV read	360 mm
FoV phase	75.0 %
Slice thickness	10.0 mm
TR	42.36 ms
TE	1.57 ms
Averages	1
Concatenations	2
Filter	Distortion Corr.(2D),
	Prescan Normalize
Coil elements	BO1,2;SP2

#### **Contrast - Common**

TR	42.36 ms
TE	1.57 ms
TD	0 ms
Magn. preparation	None
Flip angle	35 deg
Fat suppr.	None
Wrap-up Magn.	None

# **Contrast - Dynamic**

Averages	1	
Averaging mode	Short term	
Reconstruction	Magnitude	
Measurements	40	
Pause after meas. 1	0.0 s	
Pause after meas. 2	0.0 s	
Pause after meas. 3	0.0 s	
Pause after meas. 4	0.0 s	
Pause after meas. 5	0.0 s	
Pause after meas. 6	0.0 s	
Pause after meas. 7	0.0 s	
Pause after meas. 8	0.0 s	
Pause after meas. 9	0.0 s	
Pause after meas. 10	0.0 s	
Pause after meas. 11	0.0 s	
Pause after meas. 12	0.0 s	

## **Contrast - Dynamic**

Pause after meas. 13	0.0 s
Pause after meas. 14	0.0 s
Pause after meas. 15	0.0 s
Pause after meas. 16	0.0 s
Pause after meas. 17	0.0 s
Pause after meas. 18	0.0 s
Pause after meas. 19	0.0 s
Pause after meas. 20	0.0 s
Pause after meas. 21	0.0 s
Pause after meas. 22	0.0 s
Pause after meas. 23	0.0 s
Pause after meas. 24	0.0 s
Pause after meas. 25	0.0 s
Pause after meas. 26	0.0 s
Pause after meas. 27	0.0 s
Pause after meas. 28	0.0 s
Pause after meas. 29	0.0 s
Pause after meas. 30	0.0 s
Pause after meas. 31	0.0 s
Pause after meas. 32	0.0 s
Pause after meas. 33	0.0 s
Pause after meas. 34	0.0 s
Pause after meas. 35	0.0 s
Pause after meas. 36	0.0 s
Pause after meas. 37	0.0 s
Pause after meas. 38	0.0 s
Pause after meas. 39	0.0 s
Multiple series	Off
	<u> </u>

#### **Resolution - Common**

FoV read	360 mm
FoV phase	75.0 %
Slice thickness	10.0 mm
Base resolution	192
Phase resolution	83 %
Phase partial Fourier	5/8
Trajectory	Cartesian
View sharing	Off
Interpolation	Off

## **Resolution - iPAT**

PAT mode		GRAPPA
Accel. factor I	PE	2
Ref. lines PE		26
Reference sc	an mode	Integrated

#### **Resolution - Filter Image**

Image Filter	Off	
Distortion Corr.	On	
Mode	2D	
Unfiltered images	Off	
Prescan Normalize	On	
Unfiltered images	Off	
Normalize	Off	
B1 filter	Off	

# **Resolution - Filter Rawdata**

Raw filter	Off	
Elliptical filter	Off	

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

POCS Off			
1 003	IPULO	Off	

## **Geometry - Common**

Slice group	1
Slices	2
Dist. factor	100 %
Position	L36.5 P10.9 F53.2 mm
Orientation	C > S38.2 > T-27.5
Phase enc. dir.	A >> P
FoV read	360 mm
FoV phase	75.0 %
Slice thickness	10.0 mm
TR	42.36 ms
Multi-slice mode	Sequential
Series	Descending
Concatenations	2

#### **Geometry - AutoAlign**

Slice group	1
AutoAlign	
Position	L36.5 P10.9 F53.2 mm
Orientation	C > S38.2 > T-27.5
Phase enc. dir.	A >> P
Initial Position	L36.5 P10.9 F20.2
L	36.5 mm
Р	10.9 mm
F	20.2 mm
Initial Rotation	-30.37 deg
Initial Orientation	C > S
C > S	38.2
> T	-27.5

# **Geometry - Saturation**

Fat suppr.	None
Wrap-up Magn.	None
Special sat.	None

## **Geometry - Navigator**

## **System - Miscellaneous**

Positioning mode	REF
Table position	F
Table position	33 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	Off - AutoCoilSelect

#### **System - Adjustments**

B0 Shim mode	Cardiac
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto

#### System - Adjust Volume

Position L36.5 P10.9 F53.2	' mm
----------------------------	------

#### **System - Adjust Volume**

Orientation	C > S38.2 > T-27.5
Rotation	-30.37 deg
A >> P	270 mm
F >> H A >> P	360 mm
A >> P	30 mm
Reset	Off

## System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

## Physio - Signal1

1st Signal/Mode	ECG/Trigger
Average cycle	225 ± 213 ms
Average cycle	No Signal ms
Captured cycle	-not set-
Acquisition window	575 ms
Trigger pulse	1
Trigger delay	0 ms
TR	42.36 ms
Concatenations	2
Segments	12
Phases	13

## Physio - Cardiac

Magn. preparation	None
Fat suppr.	None
Dark blood	Off
FoV read	360 mm
FoV phase	75.0 %
Phase resolution	83 %
Cine	On
Trajectory	Cartesian
View sharing	Off
Dummy heartbeats	1

## **Physio - PACE**

Resp. control	Off
Concatenations	2

## **Inline - Common**

Subtract	Off
Measurements	40
StdDev	Off
Save original images	On

## Inline - Cardiac

Inline Evaluation	Off
Magn. preparation	None
Contrasts	1
TE	1.57 ms
TR	42.36 ms
Save original images	On

#### Inline - MIP

MIP-Sag	Off	
MIP-Cor	Off	
MIP-Tra	Off	
MIP-Time	Off	

# SIEMENS MAGNETOM MAGNETOM\_ESSENZA

# Inline - MIP

Save original images	On	

# Inline - Composing

Distortion Corr.	On
Mode	2D
Unfiltered images	Off

# Sequence - Part 1

Introduction	Off
Dimension	2D
Reordering	Linear
Asymmetric echo	Weak
Contrasts	1
Optimization	Min. TE TR
Multi-slice mode	Sequential
Echo spacing	3.5 ms
Sequence type	Trufi
Bandwidth	1240 Hz/Px

# Sequence - Part 2

Define	Segments
Segments	12
Trufi delta freq.	0 Hz
RF pulse type	Normal
Gradient mode	Normal
Excitation	Slice-sel.
Flip angle mode	Constant
Cine	On

Mode	Min flip angle
Min flip angle	50 deg
Allowed delay	0 s

# \\USER\Cardiac\ALTERED SEQUENCES- TAILORED PROTOCOLS\INFLAMMATION\EG\_high-res\_tfl2 0\_psir\_seg----4 CHAMBER\_B

TA: 8.1 s PM: REF Voxel size: 1.4×1.4×8.0 mmPAT: Off Rel. SNR: 1.00 : fl

#### **Properties**

Prio recon	Off
Load images to viewer	On
Inline movie	On
Auto store images	On
Load images to stamp segments	On
Load images to graphic segments	On
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	1
Dist. factor	20 %
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
AutoAlign	
Phase oversampling	0 %
FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
TR	597.00 ms
TE	3.4 ms
Averages	1
Concatenations	1
Filter	Raw filter, Distortion
	Corr.(2D), Prescan
	Normalize, Image Filter
Coil elements	BO1,2;SP1,2

#### **Contrast - Common**

TR	597.00 ms
TE	3.4 ms
Magn. preparation	Non-sel. IR
ТІ	300 ms
Flip angle	25 deg
Fat suppr.	None
Wrap-up Magn.	Suppress

#### **Contrast - Dynamic**

Averages	1
Averaging mode	Short term
Reconstruction	Magnitude/Real
Measurements	1
Multiple series	Each measurement

## **Resolution - Common**

FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
Base resolution	256
Phase resolution	75 %
Phase partial Fourier	Off
Trajectory	Cartesian
Interpolation	Off

#### **Resolution - iPAT**

PAT mode	None
-	

# Resolution - Filter Image

Image Filter	On
! Intensity	Medium
Edge Enhancement	3
Smoothing	2
Unfiltered images	Off
Distortion Corr.	On
Mode	2D
Unfiltered images	Off
Prescan Normalize	On
Unfiltered images	Off
Normalize	Off
B1 filter	Off

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

Raw filter	On
Elliptical filter	Off
POCS	Off

#### **Geometry - Common**

Slice group	1
Slices	1
Dist. factor	20 %
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
TR	597.00 ms
Multi-slice mode	Sequential
Series	Interleaved
Concatenations	1

#### Geometry - AutoAlign

,	
Slice group	1
AutoAlign	
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
Initial Position	Isocenter
L	0.0 mm
Р	0.0 mm
Н	0.0 mm
Initial Rotation	0.00 deg
Initial Orientation	Transversal

# **Geometry - Saturation**

Fat suppr.	None
Wrap-up Magn.	Suppress
Special sat.	None

#### **Geometry - Navigator**

#### 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	Cardio
AutoAlign	
Coil Select Mode	Off - AutoCoilSelect

# **System - Adjustments**

B0 Shim mode	Cardiac
Adjust with body coil	Off
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	293 mm
R >> L	360 mm
F >> H	8 mm
Reset	Off

# System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

#### Physio - Signal1

<u> </u>	
1st Signal/Mode	ECG/Trigger
Average cycle	225 ± 213 ms
Average cycle	No Signal ms
Captured cycle	225 ± 213 ms
Acquisition window	597 ms
Trigger pulse	2
Trigger delay	0 ms
TR	597.00 ms
Concatenations	1
Segments	20
Phases	1

## Physio - Cardiac

Magn. preparation	Non-sel. IR
TI	300 ms
Fat suppr.	None
Dark blood	Off
FoV read	360 mm
FoV phase	81.3 %
Phase resolution	75 %
Cine	Off
Trajectory	Cartesian
Dummy heartbeats	1

## **Physio - PACE**

Doon control	0#	
Resp. control	Off	

#### **Physio - PACE**

Concatenations	1	
Inline - Common		
Subtract	Off	
Measurements	1	
StdDev	Off	
Save original images	On	

#### **Inline - Cardiac**

Inline Evaluation	Off
Magn. preparation	Non-sel. IR
Contrasts	1
TE	3.4 ms
TR	597.00 ms
Save original images	On

#### Inline - MIP

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

## **Inline - Composing**

Distortion Corr.	On	Ī
Mode	2D	
Unfiltered images	Off	

#### Sequence - Part 1

Introduction	Off
Dimension	2D
Reordering	Linear
Asymmetric echo	Weak
Contrasts	1
Flow comp.	No
Optimization	Min. TE
Multi-slice mode	Sequential
Echo spacing	9 ms
Sequence type	Gre
Bandwidth	140 Hz/Px

## Sequence - Part 2

_	
Define	Segments
Segments	20
RF pulse type	Fast
Gradient mode	Normal
Excitation	Slice-sel.
Flip angle mode	Constant
RF spoiling	On
Phase Enc. Rewinder	On
Cine	Off

Mode	Off
Allowed delay	0 s

# \\USER\Cardiac\ALTERED SEQUENCES- TAILORED PROTOCOLS\INFLAMMATION\EG\_high-res\_tfl2 0\_psir\_seg----2 CHAMBER\_A

TA: 8.1 s PM: REF Voxel size: 1.4×1.4×8.0 mmPAT: Off Rel. SNR: 1.00 : fl

#### **Properties**

Prio recon	Off
Load images to viewer	On
Inline movie	On
Auto store images	On
Load images to stamp segments	On
Load images to graphic segments	On
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	1
Dist. factor	20 %
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
AutoAlign	
Phase oversampling	0 %
FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
TR	597.00 ms
TE	3.4 ms
Averages	1
Concatenations	1
Filter	Raw filter, Distortion
	Corr.(2D), Prescan
	Normalize, Image Filter
Coil elements	BO1,2;SP1,2

#### **Contrast - Common**

TR	597.00 ms
TE	3.4 ms
Magn. preparation	Non-sel. IR
ТІ	300 ms
Flip angle	25 deg
Fat suppr.	None
Wrap-up Magn.	Suppress

#### **Contrast - Dynamic**

Averages	1
Averaging mode	Short term
Reconstruction	Magnitude/Real
Measurements	1
Multiple series	Each measurement

## **Resolution - Common**

FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
Base resolution	256
Phase resolution	75 %
Phase partial Fourier	Off
Trajectory	Cartesian
Interpolation	Off

#### **Resolution - iPAT**

PAT mode	None

# Resolution - Filter Image

Image Filter	On
! Intensity	Medium
Edge Enhancement	3
Smoothing	2
Unfiltered images	Off
Distortion Corr.	On
Mode	2D
Unfiltered images	Off
Prescan Normalize	On
Unfiltered images	Off
Normalize	Off
B1 filter	Off

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

Raw filter	On
Elliptical filter	Off
POCS	Off

#### **Geometry - Common**

Slice group	1
Slices	1
Dist. factor	20 %
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
TR	597.00 ms
Multi-slice mode	Sequential
Series	Interleaved
Concatenations	1

#### **Geometry - AutoAlign**

•	
Slice group	1
AutoAlign	
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
Initial Position	Isocenter
L	0.0 mm
Р	0.0 mm
Н	0.0 mm
Initial Rotation	0.00 deg
Initial Orientation	Transversal

# **Geometry - Saturation**

Fat suppr.	None
Wrap-up Magn.	Suppress
Special sat.	None

#### **Geometry - Navigator**

#### **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	Cardio
AutoAlign	
Coil Select Mode	Off - AutoCoilSelect

# **System - Adjustments**

B0 Shim mode	Cardiac
Adjust with body coil	Off
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 F >> H	293 mm
R >> L	360 mm
F >> H	8 mm
Reset	Off

# System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

#### Physio - Signal1

<u>,                                     </u>	
1st Signal/Mode	ECG/Trigger
Average cycle	$225 \pm 213 \text{ ms}$
Average cycle	No Signal ms
Captured cycle	225 ± 213 ms
Acquisition window	597 ms
Trigger pulse	2
Trigger delay	0 ms
TR	597.00 ms
Concatenations	1
Segments	20
Phases	1

## Physio - Cardiac

Magn. preparation	Non-sel. IR	
TI	300 ms	
Fat suppr.	None	
Dark blood	Off	
FoV read	360 mm	
FoV phase	81.3 %	
Phase resolution	75 %	
Cine	Off	
Trajectory	Cartesian	
Dummy heartbeats	1	

## **Physio - PACE**

Doon control	0#	
Resp. control	Off	

#### **Physio - PACE**

Concatenations	1	
Inline - Common		
Subtract	Off	
Measurements	1	
StdDev	Off	
Save original images	On	

#### Inline - Cardiac

Inline Evaluation	Off
Magn. preparation	Non-sel. IR
Contrasts	1
TE	3.4 ms
TR	597.00 ms
Save original images	On

## Inline - MIP

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

## **Inline - Composing**

Distortion Corr.	On
Mode	2D
Unfiltered images	Off

#### Sequence - Part 1

Introduction	Off
Dimension	2D
Reordering	Linear
Asymmetric echo	Weak
Contrasts	1
Flow comp.	No
Optimization	Min. TE
Multi-slice mode	Sequential
Echo spacing	9 ms
Sequence type	Gre
Bandwidth	140 Hz/Px

## Sequence - Part 2

_	
Define	Segments
Segments	20
RF pulse type	Fast
Gradient mode	Normal
Excitation	Slice-sel.
Flip angle mode	Constant
RF spoiling	On
Phase Enc. Rewinder	On
Cine	Off

Mode	Off
Allowed delay	0 s

# \\USER\Cardiac\ALTERED SEQUENCES- TAILORED PROTOCOLS\INFLAMMATION\EG\_high-res\_tfl2 0\_psir\_seg----SA\_M

TA: 8.1 s PM: REF Voxel size: 1.4×1.4×8.0 mmPAT: Off Rel. SNR: 1.00 : fl

#### **Properties**

Prio recon	Off
Load images to viewer	On
Inline movie	On
Auto store images	On
Load images to stamp segments	On
Load images to graphic segments	On
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	1
Dist. factor	20 %
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
AutoAlign	
Phase oversampling	0 %
FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
TR	597.00 ms
TE	3.4 ms
Averages	1
Concatenations	1
Filter	Raw filter, Distortion
	Corr.(2D), Prescan
	Normalize, Image Filter
Coil elements	BO1,2;SP1,2

#### **Contrast - Common**

TR	597.00 ms
TE	3.4 ms
Magn. preparation	Non-sel. IR
ті	300 ms
Flip angle	25 deg
Fat suppr.	None
Wrap-up Magn.	Suppress

## **Contrast - Dynamic**

Averages	1
Averaging mode	Short term
Reconstruction	Magnitude/Real
Measurements	1
Multiple series	Each measurement

#### **Resolution - Common**

FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
Base resolution	256
Phase resolution	75 %
Phase partial Fourier	Off
Trajectory	Cartesian
Interpolation	Off

#### **Resolution - iPAT**

PAT mode	None
-	

## **Resolution - Filter Image**

Image Filter	On
! Intensity	Medium
Edge Enhancement	3
Smoothing	2
Unfiltered images	Off
Distortion Corr.	On
Mode	2D
Unfiltered images	Off
Prescan Normalize	On
Unfiltered images	Off
Normalize	Off
B1 filter	Off

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

Raw filter	On
Elliptical filter	Off
POCS	Off

#### **Geometry - Common**

Slice group	1
Slices	1
Dist. factor	20 %
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
TR	597.00 ms
Multi-slice mode	Sequential
Series	Interleaved
Concatenations	1

#### **Geometry - AutoAlign**

,	
Slice group	1
AutoAlign	
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
Initial Position	Isocenter
L	0.0 mm
P	0.0 mm
Н	0.0 mm
Initial Rotation	0.00 deg
Initial Orientation	Transversal

## **Geometry - Saturation**

Fat suppr.	None
Wrap-up Magn.	Suppress
Special sat.	None

#### **Geometry - Navigator**

#### 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	Cardio
AutoAlign	
Coil Select Mode	Off - AutoCoilSelect

# **System - Adjustments**

B0 Shim mode	Cardiac
Adjust with body coil	Off
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	293 mm
R >> L	360 mm
F >> H	8 mm
Reset	Off

# System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

## Physio - Signal1

1st Signal/Mode	ECG/Trigger
Average cycle	225 ± 213 ms
Average cycle	No Signal ms
Captured cycle	225 ± 213 ms
Acquisition window	597 ms
Trigger pulse	2
Trigger delay	0 ms
TR	597.00 ms
Concatenations	1
Segments	20
Phases	1

# Physio - Cardiac

Magn. preparation	Non-sel. IR	
TI	300 ms	
Fat suppr.	None	
Dark blood	Off	
FoV read	360 mm	
FoV phase	81.3 %	
Phase resolution	75 %	
Cine	Off	
Trajectory	Cartesian	
Dummy heartbeats	1	

## **Physio - PACE**

Doon control	0#	
Resp. control	Off	

#### **Physio - PACE**

Concatenations	1	
Inline - Common		
Subtract	Off	
Measurements	1	
StdDev	Off	
Save original images	On	

#### Inline - Cardiac

Inline Evaluation	Off
Magn. preparation	Non-sel. IR
Contrasts	1
TE	3.4 ms
TR	597.00 ms
Save original images	On

#### Inline - MIP

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

## **Inline - Composing**

Distortion Corr.	On
Mode	2D
Unfiltered images	Off

#### Sequence - Part 1

Introduction	Off
Dimension	2D
Reordering	Linear
Asymmetric echo	Weak
Contrasts	1
Flow comp.	No
Optimization	Min. TE
Multi-slice mode	Sequential
Echo spacing	9 ms
Sequence type	Gre
Bandwidth	140 Hz/Px

## Sequence - Part 2

Define	Segments	
Segments	20	
RF pulse type	Fast	
Gradient mode	Normal	
Excitation	Slice-sel.	
Flip angle mode	Constant	
RF spoiling	On	
Phase Enc. Rewinder	On	
Cine	Off	

Mode	Off
Allowed delay	0 s

# \\USER\Cardiac\ALTERED SEQUENCES- TAILORED PROTOCOLS\INFLAMMATION\tse\_17\_db\_t2\_iP AT-EGE 2C

TA: 6.3 s PM: REF Voxel size: 1.4×1.4×5.0 mmPAT: 2 Rel. SNR: 1.00 : tse

#### **Properties**

Prio recon	Off
Load images to viewer	On
Inline movie	Off
Auto store images	On
Load images to stamp segments	On
Load images to graphic segments	On
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	1
Dist. factor	50 %
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
AutoAlign	
Phase oversampling	0 %
FoV read	360 mm
FoV phase	78.1 %
Slice thickness	5.0 mm
TR	800.0 ms
TE	62.0 ms
Averages	1
Concatenations	1
Filter	Distortion Corr.(2D),
	Prescan Normalize,
	Elliptical filter, Image Filter
Coil elements	BO1,2;SP1,2

#### **Contrast - Common**

TR	800.0 ms
TE	62.0 ms
MTC	Off
Magn. preparation	None
Flip angle	180 deg
Fat suppr.	None
Water suppr.	None
Restore magn.	Off

#### **Contrast - Dynamic**

Averages	1
Averaging mode	Long term
Reconstruction	Magnitude
Measurements	1
Multiple series	Off

#### **Resolution - Common**

FoV read	360 mm
FoV phase	78.1 %
Slice thickness	5.0 mm
Base resolution	256
Phase resolution	77 %
Phase partial Fourier	Off
Trajectory	Cartesian

#### **Resolution - Common**

Interpolation	Off

#### **Resolution - iPAT**

PAT mode	GRAPPA
Accel. factor PE	2
Ref. lines PE	50
Reference scan mode	Integrated

#### **Resolution - Filter Image**

Image Filter	On
! Intensity	Medium
Edge Enhancement	3
Smoothing	2
Unfiltered images	Off
Distortion Corr.	On
Mode	2D
Unfiltered images	Off
Prescan Normalize	On
Unfiltered images	Off
Normalize	Off
B1 filter	Off

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

Raw filter	Off
Elliptical filter	On

#### **Geometry - Common**

Slice group	1
Slices	1
Dist. factor	50 %
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
FoV read	360 mm
FoV phase	78.1 %
Slice thickness	5.0 mm
TR	800.0 ms
Multi-slice mode	Sequential
Series	Ascending
Concatenations	1

#### **Geometry - AutoAlign**

Slice group	1
AutoAlign	
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
Initial Position	Isocenter
L	0.0 mm
P	0.0 mm
Н	0.0 mm
Initial Rotation	0.00 deg
Initial Orientation	Transversal

## **Geometry - Saturation**

Fat suppr.	None
Water suppr.	None
Restore magn.	Off
Special sat.	None

# **Geometry - Navigator**

# **Geometry - Tim CT**

Tim CT mode	Off
Slices	1
Slice thickness	5.0 mm
Dist. factor	50 %
FoV read	360 mm
FoV phase	78.1 %

## **System - Miscellaneous**

Positioning mode	REF
Table position	F
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	Off - AutoCoilSelect

## **System - Adjustments**

B0 Shim mode	Cardiac
Adjust with body coil	Off
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	282 mm
R >> L	360 mm
F >> H	5 mm
Reset	Off

## System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

## Physio - Signal1

1st Signal/Mode	ECG/Trigger
Average cycle	225 ± 213 ms
Average cycle	No Signal ms
Captured cycle	-not set-
Acquisition window	974 ms
Trigger pulse	2
Trigger delay	0 ms
TR	800.0 ms
Concatenations	1
Phases	1

# Physio - Cardiac

Magn. preparation	None
Fat suppr.	None

## Physio - Cardiac

Dark blood	On
Dark blood thickness	200 %
FoV read	360 mm
FoV phase	78.1 %
Phase resolution	77 %
Trajectory	Cartesian

## **Physio - PACE**

Resp. control	Off
Concatenations	1

#### 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**

Distortion Corr.	On
Mode	2D
Unfiltered images	Off

# Sequence - Part 1

Introduction	Off
Dimension	2D
Compensate T2 decay	Off
Reduce Motion Sens.	Off
Contrasts	1
Flow comp.	No
Multi-slice mode	Sequential
Free echo spacing	Off
Echo spacing	4.8 ms
Bandwidth	849 Hz/Px

# Sequence - Part 2

•		
Define	Turbo factor	
Echo trains per slice	6	
Phase correction	Automatic	
Acoustic noise reduction	None	
RF pulse type	Fast	
Gradient mode	Normal	
WARP	Off	
Turbo factor	17	

Mode	Off
Allowed delay	30 s

# \\USER\Cardiac\ALTERED SEQUENCES- TAILORED PROTOCOLS\INFLAMMATION\tse\_17\_db\_t2\_iP AT-EGE 4C

TA: 6.3 s PM: REF Voxel size: 1.4×1.4×5.0 mmPAT: 2 Rel. SNR: 1.00 : tse

#### **Properties**

Prio recon	Off
Load images to viewer	On
Inline movie	Off
Auto store images	On
Load images to stamp segments	On
Load images to graphic segments	On
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	1
Dist. factor	50 %
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
AutoAlign	
Phase oversampling	0 %
FoV read	360 mm
FoV phase	78.1 %
Slice thickness	5.0 mm
TR	800.0 ms
TE	62.0 ms
Averages	1
Concatenations	1
Filter	Distortion Corr.(2D),
	Prescan Normalize,
	Elliptical filter, Image Filter
Coil elements	BO1,2;SP1,2

#### **Contrast - Common**

TR	800.0 ms
TE	62.0 ms
MTC	Off
Magn. preparation	None
Flip angle	180 deg
Fat suppr.	None
Water suppr.	None
Restore magn.	Off

#### **Contrast - Dynamic**

Averages	1
Averaging mode	Long term
Reconstruction	Magnitude
Measurements	1
Multiple series	Off

#### **Resolution - Common**

FoV read	360 mm
FoV phase	78.1 %
Slice thickness	5.0 mm
Base resolution	256
Phase resolution	77 %
Phase partial Fourier	Off
Trajectory	Cartesian

#### **Resolution - Common**

	Interpolation	Off	
--	---------------	-----	--

#### **Resolution - iPAT**

PAT mode	GRAPPA
Accel. factor PE	2
Ref. lines PE	50
Reference scan mode	Integrated

#### **Resolution - Filter Image**

Image Filter	On
! Intensity	Medium
Edge Enhancement	3
Smoothing	2
Unfiltered images	Off
Distortion Corr.	On
Mode	2D
Unfiltered images	Off
Prescan Normalize	On
Unfiltered images	Off
Normalize	Off
B1 filter	Off

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

Raw filter	Off
Elliptical filter	On

#### **Geometry - Common**

_	
Slice group	1
Slices	1
Dist. factor	50 %
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
FoV read	360 mm
FoV phase	78.1 %
Slice thickness	5.0 mm
TR	800.0 ms
Multi-slice mode	Sequential
Series	Ascending
Concatenations	1

#### **Geometry - AutoAlign**

Slice group	1
AutoAlign	
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
Initial Position	Isocenter
L	0.0 mm
P	0.0 mm
Н	0.0 mm
Initial Rotation	0.00 deg
Initial Orientation	Transversal

## **Geometry - Saturation**

Fat suppr.	None
Water suppr.	None
Restore magn.	Off
Special sat.	None

# **Geometry - Navigator**

# **Geometry - Tim CT**

Tim CT mode	Off
Slices	1
Slice thickness	5.0 mm
Dist. factor	50 %
FoV read	360 mm
FoV phase	78.1 %

## **System - Miscellaneous**

Positioning mode	REF
Table position	F
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	Off - AutoCoilSelect

## **System - Adjustments**

B0 Shim mode	Cardiac
Adjust with body coil	Off
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	282 mm
R >> L	360 mm
F >> H	5 mm
Reset	Off

# System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

# Physio - Signal1

3	
1st Signal/Mode	ECG/Trigger
Average cycle	225 ± 213 ms
Average cycle	No Signal ms
Captured cycle	-not set-
Acquisition window	974 ms
Trigger pulse	2
Trigger delay	0 ms
TR	800.0 ms
Concatenations	1
Phases	1

# Physio - Cardiac

Magn. preparation	None
Fat suppr.	None

## Physio - Cardiac

Dark blood	On
Dark blood thickness	200 %
FoV read	360 mm
FoV phase	78.1 %
Phase resolution	77 %
Trajectory	Cartesian

#### **Physio - PACE**

Resp. control	Off
Concatenations	1

#### Inline - Common

Subtra	act	Off
Measu	ırements	1
StdDe	v	Off
Save of	original images	On

#### Inline - MIP

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

# Inline - Composing

Distortion Corr.	On
Mode	2D
Unfiltered images	Off

# Sequence - Part 1

Introduction	Off
Dimension	2D
Compensate T2 decay	Off
Reduce Motion Sens.	Off
Contrasts	1
Flow comp.	No
Multi-slice mode	Sequential
Free echo spacing	Off
Echo spacing	4.8 ms
Bandwidth	849 Hz/Px

# Sequence - Part 2

Define	Turbo factor	
Echo trains per slice	6	
Phase correction	Automatic	
Acoustic noise reduction	None	
RF pulse type	Fast	
Gradient mode	Normal	
WARP	Off	
Turbo factor	17	

Mode	Off
Allowed delay	30 s

# \\USER\Cardiac\ALTERED SEQUENCES- TAILORED PROTOCOLS\INFLAMMATION\tse\_17\_db\_t2\_iP AT-EGE SA

TA: 6.3 s PM: REF Voxel size: 1.4×1.4×5.0 mmPAT: 2 Rel. SNR: 1.00 : tse

#### **Properties**

Prio recon	Off
Load images to viewer	On
Inline movie	Off
Auto store images	On
Load images to stamp segments	On
Load images to graphic segments	On
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	1
Dist. factor	50 %
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
AutoAlign	
Phase oversampling	0 %
FoV read	360 mm
FoV phase	78.1 %
Slice thickness	5.0 mm
TR	800.0 ms
TE	62.0 ms
Averages	1
Concatenations	1
Filter	Distortion Corr.(2D),
	Prescan Normalize,
	Elliptical filter, Image Filter
Coil elements	BO1,2;SP1,2

#### **Contrast - Common**

TR	800.0 ms
TE	62.0 ms
MTC	Off
Magn. preparation	None
Flip angle	180 deg
Fat suppr.	None
Water suppr.	None
Restore magn.	Off

#### **Contrast - Dynamic**

Averages	1
Averaging mode	Long term
Reconstruction	Magnitude
Measurements	1
Multiple series	Off

#### **Resolution - Common**

FoV read	360 mm
FoV phase	78.1 %
Slice thickness	5.0 mm
Base resolution	256
Phase resolution	77 %
Phase partial Fourier	Off
Trajectory	Cartesian

#### **Resolution - Common**

Interpolation	Off

#### **Resolution - iPAT**

PAT mode	GRAPPA
Accel. factor PE	2
Ref. lines PE	50
Reference scan mode	Integrated

#### **Resolution - Filter Image**

Image Filter	On
! Intensity	Medium
Edge Enhancement	3
Smoothing	2
Unfiltered images	Off
Distortion Corr.	On
Mode	2D
Unfiltered images	Off
Prescan Normalize	On
Unfiltered images	Off
Normalize	Off
B1 filter	Off

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

Raw filter	Off
Elliptical filter	On

#### **Geometry - Common**

_	
Slice group	1
Slices	1
Dist. factor	50 %
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
FoV read	360 mm
FoV phase	78.1 %
Slice thickness	5.0 mm
TR	800.0 ms
Multi-slice mode	Sequential
Series	Ascending
Concatenations	1

#### Geometry - AutoAlign

Slice group	1
AutoAlign	
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
Initial Position	Isocenter
L	0.0 mm
P	0.0 mm
Н	0.0 mm
Initial Rotation	0.00 deg
Initial Orientation	Transversal

## **Geometry - Saturation**

Fat suppr.	None
Water suppr.	None
Restore magn.	Off
Special sat.	None

# **Geometry - Navigator**

# **Geometry - Tim CT**

Tim CT mode	Off
Slices	1
Slice thickness	5.0 mm
Dist. factor	50 %
FoV read	360 mm
FoV phase	78.1 %

## **System - Miscellaneous**

Positioning mode	REF
Table position	F
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	Off - AutoCoilSelect

## **System - Adjustments**

B0 Shim mode	Cardiac
Adjust with body coil	Off
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	282 mm
R >> L	360 mm
F >> H	5 mm
Reset	Off

# System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

# Physio - Signal1

1st Signal/Mode	ECG/Trigger
Average cycle	225 ± 213 ms
Average cycle	No Signal ms
Captured cycle	-not set-
Acquisition window	974 ms
Trigger pulse	2
Trigger delay	0 ms
TR	800.0 ms
Concatenations	1
Phases	1

# Physio - Cardiac

Magn. preparation	None
Fat suppr.	None

## Physio - Cardiac

Dark blood	On
Dark blood thickness	200 %
FoV read	360 mm
FoV phase	78.1 %
Phase resolution	77 %
Trajectory	Cartesian

# **Physio - PACE**

Resp. control	Off
Concatenations	1

#### Inline - Common

Subtra	act	Off
Measu	ırements	1
StdDe	v	Off
Save of	original images	On

#### Inline - MIP

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

## **Inline - Composing**

Distortion Corr.	On
Mode	2D
Unfiltered images	Off

# Sequence - Part 1

Introduction	Off
Dimension	2D
Compensate T2 decay	Off
Reduce Motion Sens.	Off
Contrasts	1
Flow comp.	No
Multi-slice mode	Sequential
Free echo spacing	Off
Echo spacing	4.8 ms
Bandwidth	849 Hz/Px

## Sequence - Part 2

Define	Turbo factor
Echo trains per slice	6
Phase correction	Automatic
Acoustic noise reduction	None
RF pulse type	Fast
Gradient mode	Normal
WARP	Off
Turbo factor	17

Mode	Off
Allowed delay	30 s

# \\USER\Cardiac\ALTERED SEQUENCES- TAILORED PROTOCOLS\INFLAMMATION\TI-Scout\_10 MIN POST GAD

TA: 9.0 s PM: REF Voxel size: 1.9×1.9×8.0 mmPAT: Off Rel. SNR: 1.00 : tfi

#### **Properties**

Prio recon	Off
Load images to viewer	On
Inline movie	Off
Auto store images	On
Load images to stamp segments	On
Load images to graphic segments	On
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	1
Dist. factor	20 %
Position	Isocenter
Orientation	Coronal
Phase enc. dir.	H >> F
AutoAlign	
Phase oversampling	0 %
FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
TR	28.80 ms
TE	1.34 ms
Averages	1
Concatenations	1
Filter	Distortion Corr.(2D),
	Image Filter
Coil elements	BO1,2;SP1,2

#### **Contrast - Common**

TR	28.80 ms
TE	1.34 ms
Magn. preparation	TI Scout
Flip angle	30 deg
Fat suppr.	None
Wrap-up Magn.	None

## **Contrast - Dynamic**

Averages	1
Averaging mode	Short term
Reconstruction	Magnitude
Measurements	1
Multiple series	Off

#### **Resolution - Common**

FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
Base resolution	192
Phase resolution	50 %
Phase partial Fourier	Off
Trajectory	Cartesian
View sharing	Off
Interpolation	Off

#### **Resolution - iPAT**

PAT mode	None
•	

#### **Resolution - Filter Image**

Image Filter	On
! Intensity	Medium
Edge Enhancement	3
Smoothing	2
Unfiltered images	Off
Distortion Corr.	On
Mode	2D
Unfiltered images	Off
Prescan Normalize	Off
Normalize	Off
B1 filter	Off

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

Raw filter	Off
Elliptical filter	Off
POCS	Off

#### **Geometry - Common**

Slice group	1
Slices	1
Dist. factor	20 %
Position	Isocenter
Orientation	Coronal
Phase enc. dir.	H >> F
FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
TR	28.80 ms
Multi-slice mode	Sequential
Series	Interleaved
Concatenations	1

#### **Geometry - AutoAlign**

Slice group	1
AutoAlign	
Position	Isocenter
Orientation	Coronal
Phase enc. dir.	H >> F
Initial Position	Isocenter
L	0.0 mm
P	0.0 mm
Н	0.0 mm
Initial Rotation	-49.03 deg
Initial Orientation	Coronal

#### **Geometry - Saturation**

Fat suppr.	None
Wrap-up Magn.	None
Special sat.	None

## **Geometry - Navigator**

#### 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	Off - AutoCoilSelect

## **System - Adjustments**

B0 Shim mode	Cardiac
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto

# **System - Adjust Volume**

Position	Isocenter
Orientation	Coronal
Rotation	-49.03 deg
F >> H	293 mm
R >> L	360 mm
A >> P	8 mm
Reset	Off

# System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

# Physio - Signal1

1st Signal/Mode	ECG/Trigger
Average cycle	225 ± 213 ms
Average cycle	No Signal ms
Captured cycle	-not set-
Acquisition window	603 ms
Trigger pulse	2
Trigger delay	0 ms
TR	28.80 ms
Concatenations	1
Segments	9
Phases	17

## Physio - Cardiac

Magn. preparation	TI Scout
Fat suppr.	None
Dark blood	Off
FoV read	360 mm
FoV phase	81.3 %
Phase resolution	50 %
Cine	On
Trajectory	Cartesian
View sharing	Off
Dummy heartbeats	1

# Physio - PACE

Resp. control	Off
Concatenations	1

#### **Inline - Common**

Subtract	Off
Measurements	1
StdDev	Off
Save original images	On

#### Inline - Cardiac

Inline Evaluation	Off
Magn. preparation	TI Scout
Contrasts	1
TE	1.34 ms
TR	28.80 ms
Save original images	On

## Inline - MIP

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

# Inline - Composing

Distortion Corr.	On
Mode	2D
Unfiltered images	Off

## Sequence - Part 1

•	
Introduction	Off
Dimension	2D
Reordering	Centric
Asymmetric echo	Weak
Contrasts	1
Optimization	Min. TE TR
Multi-slice mode	Sequential
Echo spacing	3.2 ms
Sequence type	Trufi
Bandwidth	965 Hz/Px

## Sequence - Part 2

Define	Segments
Segments	9
Trufi delta freq.	0 Hz
RF pulse type	Fast
Gradient mode	Normal
Excitation	Slice-sel.
Flip angle mode	Constant
Cine	On

Mode	Off
Allowed delay	0 s

# \\USER\Cardiac\ALTERED SEQUENCES- TAILORED PROTOCOLS\INFLAMMATION\DE\_high-res\_tfl2 0\_psir\_seg----SA

TA: 1:53 PM: REF Voxel size: 1.4×1.4×6.0 mmPAT: Off Rel. SNR: 1.00 : fl

#### **Properties**

Prio recon	Off
Load images to viewer	On
Inline movie	On
Auto store images	On
Load images to stamp segments	On
Load images to graphic segments	On
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	14
Dist. factor	20 %
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
AutoAlign	
Phase oversampling	0 %
FoV read	360 mm
FoV phase	81.3 %
Slice thickness	6.0 mm
TR	597.00 ms
TE	3.57 ms
Averages	1
Concatenations	14
Filter	Raw filter, Distortion
	Corr.(2D), Prescan
	Normalize, Image Filter
Coil elements	BO1,2;SP1,2

#### **Contrast - Common**

TR	597.00 ms
TE	3.57 ms
Magn. preparation	Non-sel. IR
TI	300 ms
Flip angle	25 deg
Fat suppr.	None
Wrap-up Magn.	Suppress

#### **Contrast - Dynamic**

Averages	1
Averaging mode	Short term
Reconstruction	Magnitude/Real
Measurements	1
Multiple series	Each measurement

## **Resolution - Common**

FoV read	360 mm
FoV phase	81.3 %
Slice thickness	6.0 mm
Base resolution	256
Phase resolution	75 %
Phase partial Fourier	Off
Trajectory	Cartesian
Interpolation	Off

#### **Resolution - iPAT**

PAT mode	None
-	

## **Resolution - Filter Image**

Image Filter	On
! Intensity	Medium
Edge Enhancement	3
Smoothing	2
Unfiltered images	Off
Distortion Corr.	On
Mode	2D
Unfiltered images	Off
Prescan Normalize	On
Unfiltered images	Off
Normalize	Off
B1 filter	Off

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

Raw filter	On	
Elliptical filter	Off	
POCS	Off	

#### **Geometry - Common**

Slice group	1
Slices	14
Dist. factor	20 %
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
FoV read	360 mm
FoV phase	81.3 %
Slice thickness	6.0 mm
TR	597.00 ms
Multi-slice mode	Sequential
Series	Interl. in Bh.
Concatenations	14

#### **Geometry - AutoAlign**

,	
Slice group	1
AutoAlign	
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
Initial Position	Isocenter
L	0.0 mm
Р	0.0 mm
F	0.0 mm
Initial Rotation	0.00 deg
Initial Orientation	Transversal

## **Geometry - Saturation**

Fat suppr.	None
Wrap-up Magn.	Suppress
Special sat.	None

#### **Geometry - Navigator**

#### **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	Cardio
AutoAlign	
Coil Select Mode	Off - AutoCoilSelect

## **System - Adjustments**

B0 Shim mode	Cardiac
Adjust with body coil	Off
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	293 mm
R >> L	360 mm
F >> H	100 mm
Reset	Off

## System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

#### Physio - Signal1

1st Signal/Mode	ECG/Trigger
Average cycle	225 ± 213 ms
Average cycle	No Signal ms
Captured cycle	225 ± 213 ms
Acquisition window	597 ms
Trigger pulse	2
Trigger delay	0 ms
TR	597.00 ms
Concatenations	14
Segments	20
Phases	1

## Physio - Cardiac

Magn. preparation	Non-sel. IR	
ТІ	300 ms	
Fat suppr.	None	
Dark blood	Off	
FoV read	360 mm	
FoV phase	81.3 %	
Phase resolution	75 %	
Cine	Off	
Trajectory	Cartesian	
Dummy heartbeats	1	

## **Physio - PACE**

Resp. control	Breath-hold

#### **Physio - PACE**

Concatenations	14	
Inline - Common		
Subtract	Off	
Measurements	1	
StdDev	Off	
Save original images	On	

#### **Inline - Cardiac**

Inline Evaluation	Off
Magn. preparation	Non-sel. IR
Contrasts	1
TE	3.57 ms
TR	597.00 ms
Save original images	On

## Inline - MIP

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

#### **Inline - Composing**

Distortion Corr.	On
Mode	2D
Unfiltered images	Off

#### Sequence - Part 1

ooquonee : air :	
Introduction	Off
Dimension	2D
Reordering	Linear
Asymmetric echo	Weak
Contrasts	1
Flow comp.	No
Optimization	Min. TE
Multi-slice mode	Sequential
Echo spacing	9.2 ms
Sequence type	Gre
Bandwidth	140 Hz/Px

# Sequence - Part 2

Define	Segments	
Segments	20	
RF pulse type	Fast	
Gradient mode	Normal	
Excitation	Slice-sel.	
Flip angle mode	Constant	
RF spoiling	On	
Phase Enc. Rewinder	On	
Cine	Off	

Mode	Off
Allowed delay	0 s

# \\USER\Cardiac\ALTERED SEQUENCES- TAILORED PROTOCOLS\INFLAMMATION\DE\_high-res\_tfl2 0\_psir\_seg----4C

TA: 8.1 s PM: REF Voxel size: 1.4×1.4×8.0 mmPAT: Off Rel. SNR: 1.00 : fl

#### **Properties**

Prio recon	Off
Load images to viewer	On
Inline movie	On
Auto store images	On
Load images to stamp segments	On
Load images to graphic segments	On
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	1
Dist. factor	20 %
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
AutoAlign	
Phase oversampling	0 %
FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
TR	597.00 ms
TE	3.4 ms
Averages	1
Concatenations	1
Filter	Raw filter, Distortion
	Corr.(2D), Prescan
	Normalize, Image Filter
Coil elements	BO1,2;SP1,2

#### **Contrast - Common**

TR	597.00 ms
TE	3.4 ms
Magn. preparation	Non-sel. IR
TI	300 ms
Flip angle	25 deg
Fat suppr.	None
Wrap-up Magn.	Suppress

## **Contrast - Dynamic**

Averages	1	
Averaging mode	Short term	
Reconstruction	Magnitude/Real	
Measurements	1	
Multiple series	Each measurement	

#### **Resolution - Common**

FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
Base resolution	256
Phase resolution	75 %
Phase partial Fourier	Off
Trajectory	Cartesian
Interpolation	Off

#### **Resolution - iPAT**

PAT mode	None
•	

## **Resolution - Filter Image**

Image Filter	On
! Intensity	Medium
Edge Enhancement	3
Smoothing	2
Unfiltered images	Off
Distortion Corr.	On
Mode	2D
Unfiltered images	Off
Prescan Normalize	On
Unfiltered images	Off
Normalize	Off
B1 filter	Off

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

Raw filter	On
Elliptical filter	Off
POCS	Off

#### **Geometry - Common**

Slice group	1
Slices	1
Dist. factor	20 %
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
TR	597.00 ms
Multi-slice mode	Sequential
Series	Interleaved
Concatenations	1

#### **Geometry - AutoAlign**

•	
Slice group	1
AutoAlign	
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
Initial Position	Isocenter
L	0.0 mm
Р	0.0 mm
Н	0.0 mm
Initial Rotation	0.00 deg
Initial Orientation	Transversal

## **Geometry - Saturation**

Fat suppr.	None
Wrap-up Magn.	Suppress
Special sat.	None

#### **Geometry - Navigator**

#### **System - Miscellaneous**

Positioning mode REF

<u> </u>	
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	Cardio
AutoAlign	
Coil Select Mode	Off - AutoCoilSelect

## **System - Adjustments**

B0 Shim mode	Cardiac
Adjust with body coil	Off
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	293 mm
R >> L	360 mm
F >> H	8 mm
Reset	Off

# System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

#### Physio - Signal1

1st Signal/Mode	ECG/Trigger
Average cycle	225 ± 213 ms
Average cycle	No Signal ms
Captured cycle	225 ± 213 ms
Acquisition window	597 ms
Trigger pulse	2
Trigger delay	0 ms
TR	597.00 ms
Concatenations	1
Segments	20
Phases	1

## Physio - Cardiac

Magn. preparation	Non-sel. IR	
TI	300 ms	
Fat suppr.	None	
Dark blood	Off	
FoV read	360 mm	
FoV phase	81.3 %	
Phase resolution	75 %	
Cine	Off	
Trajectory	Cartesian	
Dummy heartbeats	1	

## **Physio - PACE**

Resp. control	Off	

#### **Physio - PACE**

Concatenations	1	
Inline - Common		
Subtract	Off	
Measurements	1	
StdDev	Off	
Save original images	On	

#### Inline - Cardiac

Inline Evaluation	Off
Magn. preparation	Non-sel. IR
Contrasts	1
TE	3.4 ms
TR	597.00 ms
Save original images	On

#### Inline - MIP

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

#### **Inline - Composing**

Distortion Corr.	On
Mode	2D
Unfiltered images	Off

#### Sequence - Part 1

1	
Introduction	Off
Dimension	2D
Reordering	Linear
Asymmetric echo	Weak
Contrasts	1
Flow comp.	No
Optimization	Min. TE
Multi-slice mode	Sequential
Echo spacing	9 ms
Sequence type	Gre
Bandwidth	140 Hz/Px

## Sequence - Part 2

Define	Segments	
Segments	20	
RF pulse type	Fast	
Gradient mode	Normal	
Excitation	Slice-sel.	
Flip angle mode	Constant	
RF spoiling	On	
Phase Enc. Rewinder	On	
Cine	Off	

Mode	Off
Allowed delay	0 s

# \\USER\Cardiac\ALTERED SEQUENCES- TAILORED PROTOCOLS\INFLAMMATION\DE\_high-res\_tfl2 0\_psir\_seg----2C

TA: 8.1 s PM: REF Voxel size: 1.4×1.4×8.0 mmPAT: Off Rel. SNR: 1.00 : fl

#### **Properties**

Prio recon	Off
Load images to viewer	On
Inline movie	On
Auto store images	On
Load images to stamp segments	On
Load images to graphic segments	On
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	1
Dist. factor	20 %
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
AutoAlign	
Phase oversampling	0 %
FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
TR	597.00 ms
TE	3.4 ms
Averages	1
Concatenations	1
Filter	Raw filter, Distortion
	Corr.(2D), Prescan
	Normalize, Image Filter
Coil elements	BO1,2;SP1,2

#### **Contrast - Common**

TR	597.00 ms
TE	3.4 ms
Magn. preparation	Non-sel. IR
ті	300 ms
Flip angle	25 deg
Fat suppr.	None
Wrap-up Magn.	Suppress

#### **Contrast - Dynamic**

Averages	1
Averaging mode	Short term
Reconstruction	Magnitude/Real
Measurements	1
Multiple series	Each measurement

#### **Resolution - Common**

FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
Base resolution	256
Phase resolution	75 %
Phase partial Fourier	Off
Trajectory	Cartesian
Interpolation	Off

#### **Resolution - iPAT**

PAT mode	None
-	

## **Resolution - Filter Image**

Image Filter	On
! Intensity	Medium
Edge Enhancement	3
Smoothing	2
Unfiltered images	Off
Distortion Corr.	On
Mode	2D
Unfiltered images	Off
Prescan Normalize	On
Unfiltered images	Off
Normalize	Off
B1 filter	Off

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

Raw filter	On
Elliptical filter	Off
POCS	Off

#### **Geometry - Common**

Slice group	1
Slices	1
Dist. factor	20 %
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
TR	597.00 ms
Multi-slice mode	Sequential
Series	Interleaved
Concatenations	1

## **Geometry - AutoAlign**

Slice group	1
AutoAlign	
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
Initial Position	Isocenter
L	0.0 mm
P	0.0 mm
Н	0.0 mm
Initial Rotation	0.00 deg
Initial Orientation	Transversal

## **Geometry - Saturation**

Fat suppr.	None
Wrap-up Magn.	Suppress
Special sat.	None

#### **Geometry - Navigator**

## 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	Cardio
AutoAlign	
Coil Select Mode	Off - AutoCoilSelect

## **System - Adjustments**

B0 Shim mode	Cardiac
Adjust with body coil	Off
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	293 mm
R >> L	360 mm
F >> H	8 mm
Reset	Off

## System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

#### Physio - Signal1

1st Signal/Mode	ECG/Trigger
Average cycle	225 ± 213 ms
Average cycle	No Signal ms
Captured cycle	225 ± 213 ms
Acquisition window	597 ms
Trigger pulse	2
Trigger delay	0 ms
TR	597.00 ms
Concatenations	1
Segments	20
Phases	1

## Physio - Cardiac

Magn. preparation	Non-sel. IR	
TI	300 ms	
Fat suppr.	None	
Dark blood	Off	
FoV read	360 mm	
FoV phase	81.3 %	
Phase resolution	75 %	
Cine	Off	
Trajectory	Cartesian	
Dummy heartbeats	1	

## **Physio - PACE**

Resp. control	Off	
TRESD. COLLIDI	OII	

#### **Physio - PACE**

Concatenations	1	
Inline - Common		
Subtract	Off	
Measurements	1	
StdDev	Off	
Save original images	On	

#### Inline - Cardiac

Inline Evaluation	Off
Magn. preparation	Non-sel. IR
Contrasts	1
TE	3.4 ms
TR	597.00 ms
Save original images	On

#### Inline - MIP

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

## **Inline - Composing**

Distortion Corr.	On
Mode	2D
Unfiltered images	Off

#### Sequence - Part 1

ooquonee : air :	
Introduction	Off
Dimension	2D
Reordering	Linear
Asymmetric echo	Weak
Contrasts	1
Flow comp.	No
Optimization	Min. TE
Multi-slice mode	Sequential
Echo spacing	9 ms
Sequence type	Gre
Bandwidth	140 Hz/Px

## Sequence - Part 2

Define	Segments
Segments	20
RF pulse type	Fast
Gradient mode	Normal
Excitation	Slice-sel.
Flip angle mode	Constant
RF spoiling	On
Phase Enc. Rewinder	On
Cine	Off

Mode	Off
Allowed delay	0 s

# \\USER\Cardiac\ALTERED SEQUENCES- TAILORED PROTOCOLS\HYPERTROPHIC CARDIOMYOPA THY\trufi\_loc\_multi\_iPAT

TA: 4.0 s PM: REF Voxel size: 1.7×1.7×8.0 mmPAT: 2 Rel. SNR: 1.00 : tfi

#### **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	On
Auto open inline display	Off
Auto close inline display	Off
Start measurement without further	On
preparation	
Wait for user to start	Off
Start measurements	Single measurement

#### Routine

Slice group         1           Slices         3           Dist. factor         300 %           Position         L0.0 P20.0 H0.0 mm           Orientation         Transversal           Phase enc. dir.         A >> P           Slices group         2           Slices         3           Dist. factor         300 %           Position         L30.0 P0.0 H0.0 mm           Orientation         Sagittal           Phase enc. dir.         A >> P           Slice group         3           Slices         3           Dist. factor         300 %           Position         L0.0 P10.0 H0.0 mm           Orientation         Coronal           Phase enc. dir.         R >> L           AutoAlign            Phase oversampling         0 %           FoV read         400 mm           FoV phase         100.0 %           Slice thickness         8.0 mm           TR         350.73 ms           TE         1.43 ms           Averages         1           Concatenations         9           Filter         Distortion Corr.(2D), Prescan Normalize           C		
Dist. factor         300 %           Position         L0.0 P20.0 H0.0 mm           Orientation         Transversal           Phase enc. dir.         A >> P           Slice group         2           Slices         3           Dist. factor         300 %           Position         L30.0 P0.0 H0.0 mm           Orientation         Sagittal           Phase enc. dir.         A >> P           Slice group         3           Slices         3           Dist. factor         300 %           Position         L0.0 P10.0 H0.0 mm           Orientation         Coronal           Phase enc. dir.         R >> L           AutoAlign            Phase oversampling         0 %           FoV read         400 mm           FoV phase         100.0 %           Slice thickness         8.0 mm           TR         350.73 ms           TE         1.43 ms           Averages         1           Concatenations         9           Filter         Distortion Corr.(2D), Prescan Normalize	Slice group	1
Position         L0.0 P20.0 H0.0 mm           Orientation         Transversal           Phase enc. dir.         A >> P           Slice group         2           Slices         3           Dist. factor         300 %           Position         L30.0 P0.0 H0.0 mm           Orientation         Sagittal           Phase enc. dir.         A >> P           Slice group         3           Slices         3           Dist. factor         300 %           Position         L0.0 P10.0 H0.0 mm           Orientation         Coronal           Phase enc. dir.         R >> L           AutoAlign            Phase oversampling         0 %           FoV read         400 mm           FoV phase         100.0 %           Slice thickness         8.0 mm           TR         350.73 ms           TE         1.43 ms           Averages         1           Concatenations         9           Filter         Distortion Corr.(2D), Prescan Normalize	Slices	3
Orientation Phase enc. dir.  Slice group  Slices  Slices  Dist. factor Position Orientation Phase enc. dir.  Slice group  Slices  Dist. factor  Phase enc. dir.  Sagittal Phase enc. dir.  A >> P  Slice group  Slices  Dist. factor Position Orientation Coronal Phase enc. dir.  AutoAlign Phase oversampling FoV read FoV phase Slice thickness TR  Slice group  3  Slices  3  Dist. factor Bown  Coronal Phase enc. dir.  AutoAlign Phase oversampling FoV read FoV phase Slice thickness TR  Slice thickness TR  Slice thickness TE  Slice thickness The Slic	Dist. factor	300 %
Phase enc. dir.         A >> P           Slice group         2           Slices         3           Dist. factor         300 %           Position         L30.0 P0.0 H0.0 mm           Orientation         Sagittal           Phase enc. dir.         A >> P           Slice group         3           Slices         3           Dist. factor         300 %           Position         L0.0 P10.0 H0.0 mm           Orientation         Coronal           Phase enc. dir.         R >> L           AutoAlign            Phase oversampling         0 %           FoV read         400 mm           FoV phase         100.0 %           Slice thickness         8.0 mm           TR         350.73 ms           TE         1.43 ms           Averages         1           Concatenations         9           Filter         Distortion Corr.(2D), Prescan Normalize	Position	L0.0 P20.0 H0.0 mm
Slice group         2           Slices         3           Dist. factor         300 %           Position         L30.0 P0.0 H0.0 mm           Orientation         Sagittal           Phase enc. dir.         A >> P           Slice group         3           Slices         3           Dist. factor         300 %           Position         L0.0 P10.0 H0.0 mm           Orientation         Coronal           Phase enc. dir.         R >> L           AutoAlign            Phase oversampling         0 %           FoV read         400 mm           FoV phase         100.0 %           Slice thickness         8.0 mm           TR         350.73 ms           TE         1.43 ms           Averages         1           Concatenations         9           Filter         Distortion Corr.(2D), Prescan Normalize	Orientation	Transversal
Slices         3           Dist. factor         300 %           Position         L30.0 P0.0 H0.0 mm           Orientation         Sagittal           Phase enc. dir.         A >> P           Slice group         3           Slices         3           Dist. factor         300 %           Position         L0.0 P10.0 H0.0 mm           Orientation         Coronal           Phase enc. dir.         R >> L           AutoAlign            Phase oversampling         0 %           FoV read         400 mm           FoV phase         100.0 %           Slice thickness         8.0 mm           TR         350.73 ms           TE         1.43 ms           Averages         1           Concatenations         9           Filter         Distortion Corr.(2D), Prescan Normalize	Phase enc. dir.	A >> P
Dist. factor         300 %           Position         L30.0 P0.0 H0.0 mm           Orientation         Sagittal           Phase enc. dir.         A >> P           Slice group         3           Slices         3           Dist. factor         300 %           Position         L0.0 P10.0 H0.0 mm           Orientation         Coronal           Phase enc. dir.         R >> L           AutoAlign            Phase oversampling         0 %           FoV read         400 mm           FoV phase         100.0 %           Slice thickness         8.0 mm           TR         350.73 ms           TE         1.43 ms           Averages         1           Concatenations         9           Filter         Distortion Corr.(2D), Prescan Normalize	Slice group	2
Position         L30.0 P0.0 H0.0 mm           Orientation         Sagittal           Phase enc. dir.         A >> P           Slice group         3           Slices         3           Dist. factor         300 %           Position         L0.0 P10.0 H0.0 mm           Orientation         Coronal           Phase enc. dir.         R >> L           AutoAlign            Phase oversampling         0 %           FoV read         400 mm           FoV phase         100.0 %           Slice thickness         8.0 mm           TR         350.73 ms           TE         1.43 ms           Averages         1           Concatenations         9           Filter         Distortion Corr.(2D), Prescan Normalize	Slices	3
Orientation         Sagittal           Phase enc. dir.         A >> P           Slice group         3           Slices         3           Dist. factor         300 %           Position         L0.0 P10.0 H0.0 mm           Orientation         Coronal           Phase enc. dir.         R >> L           AutoAlign            Phase oversampling         0 %           FoV read         400 mm           FoV phase         100.0 %           Slice thickness         8.0 mm           TR         350.73 ms           TE         1.43 ms           Averages         1           Concatenations         9           Filter         Distortion Corr.(2D), Prescan Normalize	Dist. factor	300 %
Phase enc. dir.         A >> P           Slice group         3           Slices         3           Dist. factor         300 %           Position         L0.0 P10.0 H0.0 mm           Orientation         Coronal           Phase enc. dir.         R >> L           AutoAlign            Phase oversampling         0 %           FoV read         400 mm           FoV phase         100.0 %           Slice thickness         8.0 mm           TR         350.73 ms           TE         1.43 ms           Averages         1           Concatenations         9           Filter         Distortion Corr.(2D), Prescan Normalize	Position	L30.0 P0.0 H0.0 mm
Slice group         3           Slices         3           Dist. factor         300 %           Position         L0.0 P10.0 H0.0 mm           Orientation         Coronal           Phase enc. dir.         R >> L           AutoAlign            Phase oversampling         0 %           FoV read         400 mm           FoV phase         100.0 %           Slice thickness         8.0 mm           TR         350.73 ms           TE         1.43 ms           Averages         1           Concatenations         9           Filter         Distortion Corr.(2D), Prescan Normalize	Orientation	Sagittal
Slices   3   300 %   Position   L0.0 P10.0 H0.0 mm   Coronal   Phase enc. dir.   R >> L   AutoAlign     Phase oversampling   0 %   FoV read   400 mm   FoV phase   100.0 %   Slice thickness   8.0 mm   TR   350.73 ms   TE   1.43 ms   Averages   1   Concatenations   9   Filter   Distortion Corr.(2D), Prescan Normalize   Proposition   Prescan Normalize   Proposition   Proposition   Prescan Normalize   Proposition   Prescan Normalize   Proposition   Proposition   Proposition   Proposition   Prescan Normalize   Proposition   Pro	Phase enc. dir.	A >> P
Dist. factor         300 %           Position         L0.0 P10.0 H0.0 mm           Orientation         Coronal           Phase enc. dir.         R >> L           AutoAlign            Phase oversampling         0 %           FoV read         400 mm           FoV phase         100.0 %           Slice thickness         8.0 mm           TR         350.73 ms           TE         1.43 ms           Averages         1           Concatenations         9           Filter         Distortion Corr.(2D), Prescan Normalize	Slice group	3
Position         L0.0 P10.0 H0.0 mm           Orientation         Coronal           Phase enc. dir.         R >> L           AutoAlign            Phase oversampling         0 %           FoV read         400 mm           FoV phase         100.0 %           Slice thickness         8.0 mm           TR         350.73 ms           TE         1.43 ms           Averages         1           Concatenations         9           Filter         Distortion Corr.(2D), Prescan Normalize	Slices	3
Orientation         Coronal           Phase enc. dir.         R >> L           AutoAlign            Phase oversampling         0 %           FoV read         400 mm           FoV phase         100.0 %           Slice thickness         8.0 mm           TR         350.73 ms           TE         1.43 ms           Averages         1           Concatenations         9           Filter         Distortion Corr.(2D), Prescan Normalize	Dist. factor	300 %
Phase enc. dir.         R >> L           AutoAlign            Phase oversampling         0 %           FoV read         400 mm           FoV phase         100.0 %           Slice thickness         8.0 mm           TR         350.73 ms           TE         1.43 ms           Averages         1           Concatenations         9           Filter         Distortion Corr.(2D), Prescan Normalize	Position	L0.0 P10.0 H0.0 mm
AutoAlign Phase oversampling 0 % FoV read 400 mm FoV phase 100.0 % Slice thickness 8.0 mm TR 350.73 ms TE 1.43 ms Averages 1 Concatenations 9 Filter Distortion Corr.(2D), Prescan Normalize	Orientation	Coronal
Phase oversampling         0 %           FoV read         400 mm           FoV phase         100.0 %           Slice thickness         8.0 mm           TR         350.73 ms           TE         1.43 ms           Averages         1           Concatenations         9           Filter         Distortion Corr.(2D), Prescan Normalize	Phase enc. dir.	R >> L
FoV read         400 mm           FoV phase         100.0 %           Slice thickness         8.0 mm           TR         350.73 ms           TE         1.43 ms           Averages         1           Concatenations         9           Filter         Distortion Corr.(2D), Prescan Normalize	AutoAlign	
FoV phase         100.0 %           Slice thickness         8.0 mm           TR         350.73 ms           TE         1.43 ms           Averages         1           Concatenations         9           Filter         Distortion Corr.(2D), Prescan Normalize	Phase oversampling	0 %
Slice thickness         8.0 mm           TR         350.73 ms           TE         1.43 ms           Averages         1           Concatenations         9           Filter         Distortion Corr.(2D), Prescan Normalize	FoV read	400 mm
TR 350.73 ms TE 1.43 ms Averages 1 Concatenations 9 Filter Distortion Corr.(2D), Prescan Normalize	FoV phase	100.0 %
TE 1.43 ms  Averages 1  Concatenations 9  Filter Distortion Corr.(2D), Prescan Normalize	Slice thickness	8.0 mm
Averages 1 Concatenations 9 Filter Distortion Corr.(2D), Prescan Normalize	TR	350.73 ms
Concatenations 9 Filter Distortion Corr.(2D), Prescan Normalize	TE	1.43 ms
Filter Distortion Corr.(2D), Prescan Normalize	Averages	1
Prescan Normalize	Concatenations	9
	Filter	
Coil elements BO1,2;SP1,2		
	Coil elements	BO1,2;SP1,2

#### **Contrast - Common**

TR	350.73 ms
TE	1.43 ms
TD	0 ms
Magn. preparation	None
Flip angle	80 deg
Fat suppr.	None
Wrap-up Magn.	Restore

#### **Contrast - Dynamic**

Averages	1
Averaging mode	Short term
Reconstruction	Magnitude
Measurements	1

#### **Contrast - Dynamic**

Multiple series

Resolution - Common		
FoV read	400 mm	
FoV phase	100.0 %	
Slice thickness	8.0 mm	
Base resolution	240	
Phase resolution	66 %	
Phase partial Fourier	Off	

Each measurement

Cartesian

Off

#### **Resolution - iPAT**

Trajectory

Interpolation

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

#### **Resolution - Filter Image**

Image Filter	Off
Distortion Corr.	On
Mode	2D
Unfiltered images	Off
Prescan Normalize	On
Unfiltered images	Off
Normalize	Off
B1 filter	Off

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

Raw filter	Off
Elliptical filter	Off
POCS	Off

## **Geometry - Common**

Slice group	1
Slices	3
Dist. factor	300 %
Position	L0.0 P20.0 H0.0 mm
Orientation	Transversal
Phase enc. dir.	A >> P
Slice group	2
Slices	3
Dist. factor	300 %
Position	L30.0 P0.0 H0.0 mm
Orientation	Sagittal
Phase enc. dir.	A >> P
Slice group	3
Slices	3
Dist. factor	300 %
Position	L0.0 P10.0 H0.0 mm
Orientation	Coronal
Phase enc. dir.	R >> L
FoV read	400 mm
FoV phase	100.0 %
Slice thickness	8.0 mm
TR	350.73 ms
Multi-slice mode	Sequential
Series	Descending
Concatenations	9

## **Geometry - AutoAlign**

Slice group	1
Slice group	2
Slice group	3
AutoAlign	
Position	L0.0 P10.0 H0.0 mm
Orientation	Coronal
Phase enc. dir.	R >> L
Initial Position	L0.0 P20.0 H0.0
L	0.0 mm
P	20.0 mm
Н	0.0 mm
Initial Rotation	0.00 deg
Initial Orientation	Transversal

# **Geometry - Saturation**

Fat suppr.	None
Wrap-up Magn.	Restore
Special sat.	None

## **Geometry - Navigator**

# **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	Off - AutoCoilSelect

## **System - Adjustments**

B0 Shim mode	Tune up
Adjust with body coil	Off
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	263 mm
R >> L	350 mm
F >> H	350 mm
Reset	Off

# System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

# Physio - Signal1

1st Signal/Mode	ECG/Trigger
Average cycle	$225 \pm 213  \text{ms}$

# Physio - Signal1

Average cycle	No Signal ms
Captured cycle	225 ± 213 ms
Acquisition window	800 ms
Trigger pulse	1
Trigger delay	400 ms
TR	350.73 ms
Concatenations	9
Segments	91
Phases	1

# Physio - Cardiac

Magn. preparation	None
Fat suppr.	None
Dark blood	Off
FoV read	400 mm
FoV phase	100.0 %
Phase resolution	66 %
Cine	Off
Trajectory	Cartesian
Dummy heartbeats	0

## **Physio - PACE**

Resp. control	Off
Concatenations	9

#### Inline - Common

Subtract	Off
Measurements	1
StdDev	Off
Save original images	On

#### Inline - Cardiac

Inline Evaluation	Off
Magn. preparation	None
Contrasts	1
TE	1.43 ms
TR	350.73 ms
Save original images	On

#### Inline - MIP

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

## **Inline - Composing**

Distortion Corr.	On
Mode	2D
Unfiltered images	Off

# Sequence - Part 1

Introduction	Off
Dimension	2D
Reordering	Linear
Asymmetric echo	Weak
Contrasts	1
Optimization	Min. TE
Multi-slice mode	Sequential
Echo spacing	3.4 ms
Sequence type	Trufi
Bandwidth	1096 Hz/Px

# SIEMENS MAGNETOM MAGNETOM\_ESSENZA

# Sequence - Part 2

Define	Shots
Shots per slice	1
Segments	91
Trufi delta freq.	0 Hz
RF pulse type	Fast
Gradient mode	Normal
Excitation	Slice-sel.
Flip angle mode	Constant
Cine	Off

Mode	Min flip angle
Min flip angle	50 deg
Allowed delay	0 s

# \\USER\Cardiac\ALTERED SEQUENCES- TAILORED PROTOCOLS\HYPERTROPHIC CARDIOMYOPA THY\TRUFI\_2-CHAMBER Loc

TA: 0.4 s PM: REF Voxel size: 1.6×1.6×8.0 mmPAT: Off Rel. SNR: 1.00 : tfi

#### **Properties**

Prio recon	Off
Load images to viewer	On
Inline movie	Off
Auto store images	On
Load images to stamp segments	On
Load images to graphic segments	On
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	1
Dist. factor	20 %
Position	L42.5 P9.8 H12.3 mm
Orientation	C > S-37.7
Phase enc. dir.	L >> R
AutoAlign	
Phase oversampling	0 %
FoV read	387 mm
FoV phase	87.5 %
Slice thickness	8.0 mm
TR	506.59 ms
TE	1.46 ms
Averages	1
Concatenations	1
Filter	Distortion Corr.(2D),
	Prescan Normalize
Coil elements	BO1,2;SP1,2

#### **Contrast - Common**

TR	506.59 ms
TE	1.46 ms
Magn. preparation	None
Flip angle	80 deg
Fat suppr.	None
Wrap-up Magn.	Restore

## **Contrast - Dynamic**

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

#### **Resolution - Common**

FoV read	387 mm
FoV phase	87.5 %
Slice thickness	8.0 mm
Base resolution	240
Phase resolution	64 %
Phase partial Fourier	Off
Trajectory	Cartesian
Interpolation	Off

#### **Resolution - iPAT**

PAI mode	None
Resolution - Filter Image	

Image Filter	Off
Distortion Corr.	On
Mode	2D
Unfiltered images	Off
Prescan Normalize	On
Unfiltered images	Off
Normalize	Off
B1 filter	Off

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

Raw filter	Off
Elliptical filter	Off
POCS	Off

#### **Geometry - Common**

Slice group	1
Slices	1
Dist. factor	20 %
Position	L42.5 P9.8 H12.3 mm
Orientation	C > S-37.7
Phase enc. dir.	L >> R
FoV read	387 mm
FoV phase	87.5 %
Slice thickness	8.0 mm
TR	506.59 ms
Multi-slice mode	Sequential
Series	Interleaved
Concatenations	1

#### **Geometry - AutoAlign**

Slice group	1
AutoAlign	
Position	L42.5 P9.8 H12.3 mm
Orientation	C > S-37.7
Phase enc. dir.	L >> R
Initial Position	L42.5 P9.8 H12.3
L	42.5 mm
P	9.8 mm
Н	12.3 mm
Initial Rotation	-180.00 deg
Initial Orientation	C > S
C > S	-37.7
> T	0.0

## **Geometry - Saturation**

Fat suppr.	None
Wrap-up Magn.	Restore
Special sat.	None

# **Geometry - Navigator**

#### 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	Off - AutoCoilSelect

## **System - Adjustments**

B0 Shim mode	Cardiac	
Adjust with body coil	Off	
Confirm freq. adjustment	Off	
Assume Dominant Fat	Off	
Assume Silicone	Off	
Adjustment Tolerance	Auto	

# System - Adjust Volume

Position	L42.5 P9.8 H12.3 mm
Orientation	C > S-37.7
Rotation	180.00 deg
R >> L	339 mm
F >> H	387 mm
A >> P	8 mm
Reset	Off

## System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

## Physio - Signal1

ye.e e.ga	
1st Signal/Mode	ECG/Trigger
Average cycle	225 ± 213 ms
Average cycle	No Signal ms
Captured cycle	225 ± 213 ms
Acquisition window	969 ms
Trigger pulse	1
Trigger delay	462 ms
TR	506.59 ms
Concatenations	1
Segments	134
Phases	1

# Physio - Cardiac

Magn. preparation	None
Fat suppr.	None
Dark blood	Off
FoV read	387 mm
FoV phase	87.5 %
Phase resolution	64 %
Cine	Off
Trajectory	Cartesian
Dummy heartbeats	0

## **Physio - PACE**

Resp. control	Off
Concatenations	1

#### **Inline - Common**

Subtract	Off
Measurements	1
StdDev	Off
Save original images	On

#### Inline - Cardiac

Inline Evaluation	Off
Magn. preparation	None
Contrasts	1
TE	1.46 ms
TR	506.59 ms
Save original images	On

#### Inline - MIP

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

# Inline - Composing

Distortion Corr.	On
Mode	2D
Unfiltered images	Off

## Sequence - Part 1

Introduction	Off
Dimension	2D
Reordering	Linear
Asymmetric echo	Weak
Contrasts	1
Optimization	Min. TE
Multi-slice mode	Sequential
Echo spacing	3.5 ms
Sequence type	Trufi
Bandwidth	1096 Hz/Px

## Sequence - Part 2

Define	Shots
Shots per slice	1
Segments	134
Trufi delta freq.	0 Hz
RF pulse type	Fast
Gradient mode	Normal
Excitation	Slice-sel.
Flip angle mode	Constant
Cine	Off

Mode	Min flip angle
Min flip angle	50 deg
Allowed delay	0 s

# \\USER\Cardiac\ALTERED SEQUENCES- TAILORED PROTOCOLS\HYPERTROPHIC CARDIOMYOPA THY\TRUFI\_4-CHAMBER\_Loc

TA: 0.4 s PM: REF Voxel size: 1.6×1.6×8.0 mmPAT: Off Rel. SNR: 1.00 : tfi

#### **Properties**

Prio recon	Off
Load images to viewer	On
Inline movie	Off
Auto store images	On
Load images to stamp segments	On
Load images to graphic segments	On
Auto open inline display	Off
Auto close inline display	Off
Start measurement without further	Off
preparation	0"
Wait for user to start	Off
Start measurements	Single measurement

#### Routine

Slice group	1
Slices	1
Dist. factor	20 %
Position	L34.3 A0.5 H22.0 mm
Orientation	T > C40.0 > S-11.2
Phase enc. dir.	A >> P
AutoAlign	
Phase oversampling	0 %
FoV read	340 mm
FoV phase	94.2 %
Slice thickness	8.0 mm
TR	448.66 ms
TE	1.45 ms
Averages	1
Concatenations	1
Filter	Distortion Corr.(2D),
	Prescan Normalize
Coil elements	BO1,2;SP1,2

#### **Contrast - Common**

TR	448.66 ms
TE	1.45 ms
Magn. preparation	None
Flip angle	80 deg
Fat suppr.	None
Wrap-up Magn.	Restore

## **Contrast - Dynamic**

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

#### **Resolution - Common**

FoV read	340 mm
FoV phase	94.2 %
Slice thickness	8.0 mm
Base resolution	208
Phase resolution	60 %
Phase partial Fourier	Off
Trajectory	Cartesian
Interpolation	Off

#### **Resolution - iPAT**

Unfiltered images

Normalize

B1 filter

PAT mode

Resolution - Filter Image	ge	
Image Filter	Off	
Distortion Corr.	On	
Mode	2D	
Unfiltered images	Off	
Prescan Normalize	On	

None

Off

Off

Off

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

Raw filter	Off
Elliptical filter	Off
POCS	Off

## **Geometry - Common**

Slice group	1
Slices	1
Dist. factor	20 %
Position	L34.3 A0.5 H22.0 mm
Orientation	T > C40.0 > S-11.2
Phase enc. dir.	A >> P
FoV read	340 mm
FoV phase	94.2 %
Slice thickness	8.0 mm
TR	448.66 ms
Multi-slice mode	Sequential
Series	Interleaved
Concatenations	1

#### Geometry - AutoAlign

- · · · , · · · · · · · · · · · · · ·	
Slice group	1
AutoAlign	
Position	L34.3 A0.5 H22.0 mm
Orientation	T > C40.0 > S-11.2
Phase enc. dir.	A >> P
Initial Position	L34.3 A0.5 H22.0
L	34.3 mm
A	0.5 mm
Н	22.0 mm
Initial Rotation	9.22 deg
Initial Orientation	T > C
T > C	40.0
> S	-11.2

## **Geometry - Saturation**

Fat suppr.	None
Wrap-up Magn.	Restore
Special sat.	None

## **Geometry - Navigator**

## 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	Off - AutoCoilSelect

# **System - Adjustments**

B0 Shim mode	Cardiac
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto

# System - Adjust Volume

Position	L34.3 A0.5 H22.0 mm
Orientation	T > C40.0 > S-11.2
Rotation	9.23 deg
A >> P	321 mm
R >> L	340 mm
R >> L F >> H	8 mm
Reset	Off

## System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

#### Physio - Signal1

, c.c	
1st Signal/Mode	ECG/Trigger
Average cycle	225 ± 213 ms
Average cycle	No Signal ms
Captured cycle	225 ± 213 ms
Acquisition window	912 ms
Trigger pulse	1
Trigger delay	463 ms
TR	448.66 ms
Concatenations	1
Segments	118
Phases	1

## Physio - Cardiac

Magn. preparation	None
Fat suppr.	None
Dark blood	Off
FoV read	340 mm
FoV phase	94.2 %
Phase resolution	60 %
Cine	Off
Trajectory	Cartesian
Dummy heartbeats	0

## **Physio - PACE**

Resp. control	Off
Concatenations	1

#### **Inline - Common**

Subtract	Off
Measurements	1
StdDev	Off
Save original images	On

## Inline - Cardiac

Inline Evaluation	Off
Magn. preparation	None
Contrasts	1
TE	1.45 ms
TR	448.66 ms
Save original images	On

## Inline - MIP

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

## **Inline - Composing**

Distortion Corr.	On
Mode	2D
Unfiltered images	Off

## Sequence - Part 1

Introduction	Off
Dimension	2D
Reordering	Linear
Asymmetric echo	Weak
Contrasts	1
Optimization	Min. TE
Multi-slice mode	Sequential
Echo spacing	3.4 ms
Sequence type	Trufi
Bandwidth	1093 Hz/Px

## Sequence - Part 2

Define	Shots
Shots per slice	1
Segments	118
Trufi delta freq.	0 Hz
RF pulse type	Fast
Gradient mode	Normal
Excitation	Slice-sel.
Flip angle mode	Constant
Cine	Off

Mode	Min flip angle
Min flip angle	50 deg
Allowed delay	0 s

# \\USER\Cardiac\ALTERED SEQUENCES- TAILORED PROTOCOLS\HYPERTROPHIC CARDIOMYOPA THY\TRUFI\_SHORT AXIS Loc

TA: 3.6 s PM: REF Voxel size: 1.7×1.7×8.0 mmPAT: Off Rel. SNR: 1.00 : tfi

#### **Properties**

Prio recon	Off
Load images to viewer	On
Inline movie	Off
Auto store images	On
Load images to stamp segments	On
Load images to graphic segments	On
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	8
Dist. factor	100 %
Position	L62.9 A7.2 H12.9 mm
Orientation	S > C37.7 > T28.3
Phase enc. dir.	A >> P
AutoAlign	
Phase oversampling	0 %
FoV read	360 mm
FoV phase	87.5 %
Slice thickness	8.0 mm
TR	426.66 ms
TE	1.39 ms
Averages	1
Concatenations	8
Filter	Distortion Corr.(2D),
	Prescan Normalize
Coil elements	BO1,2;SP1,2

#### **Contrast - Common**

TR	426.66 ms
TE	1.39 ms
TD	0 ms
Magn. preparation	None
Flip angle	80 deg
Fat suppr.	None
Wrap-up Magn.	Restore

#### **Contrast - Dynamic**

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

## **Resolution - Common**

FoV read	360 mm
FoV phase	87.5 %
Slice thickness	8.0 mm
Base resolution	208
Phase resolution	64 %
Phase partial Fourier	Off
Trajectory	Cartesian
Interpolation	Off

#### **Resolution - iPAT**

PAT mode

B1 filter

Resolution - Filter Image		
Image Filter	Off	
Distortion Corr.	On	
Mode	2D	
Unfiltered images	Off	
Prescan Normalize	On	
Unfiltered images	Off	
Normalize	Off	

None

Off

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

Raw filter	Off	
Elliptical filter	Off	
POCS	Off	

#### **Geometry - Common**

O.	4
Slice group	1
Slices	8
Dist. factor	100 %
Position	L62.9 A7.2 H12.9 mm
Orientation	S > C37.7 > T28.3
Phase enc. dir.	A >> P
FoV read	360 mm
FoV phase	87.5 %
Slice thickness	8.0 mm
TR	426.66 ms
Multi-slice mode	Sequential
Series	Descending
Concatenations	8

#### **Geometry - AutoAlign**

Slice group	1
AutoAlign	
Position	L62.9 A7.2 H12.9 mm
Orientation	S > C37.7 > T28.3
Phase enc. dir.	A >> P
Initial Position	L62.9 A7.2 H12.9
L	62.9 mm
Α	7.2 mm
Н	12.9 mm
Initial Rotation	20.14 deg
Initial Orientation	S > C
S > C	37.7
> T	28.3

## **Geometry - Saturation**

Fat suppr.	None
Wrap-up Magn.	Restore
Special sat.	None

## **Geometry - Navigator**

## 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	Off - AutoCoilSelect

# **System - Adjustments**

B0 Shim mode	Cardiac	
Adjust with body coil	Off	
Confirm freq. adjustment	Off	
Assume Dominant Fat	Off	
Assume Silicone	Off	
Adjustment Tolerance	Auto	

# System - Adjust Volume

Position	L62.9 A7.2 H12.9 mm
Orientation	S > C37.7 > T28.3
Rotation	20.14 deg
A >> P	315 mm
F >> H	360 mm
R >> L	120 mm
Reset	Off

## System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

#### Physio - Signal1

yo.o o.ga	
1st Signal/Mode	ECG/Trigger
Average cycle	225 ± 213 ms
Average cycle	No Signal ms
Captured cycle	225 ± 213 ms
Acquisition window	898 ms
Trigger pulse	1
Trigger delay	471 ms
TR	426.66 ms
Concatenations	8
Segments	116
Phases	1

## Physio - Cardiac

Magn. preparation	None
Fat suppr.	None
Dark blood	Off
FoV read	360 mm
FoV phase	87.5 %
Phase resolution	64 %
Cine	Off
Trajectory	Cartesian
Dummy heartbeats	0

## **Physio - PACE**

Resp. control	Off
Concatenations	8

#### **Inline - Common**

Subtract	Off
Measurements	1
StdDev	Off
Save original images	On

## Inline - Cardiac

Inline Evaluation	Off
Magn. preparation	None
Contrasts	1
TE	1.39 ms
TR	426.66 ms
Save original images	On

## Inline - MIP

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

## Inline - Composing

Distortion Corr.	On
Mode	2D
Unfiltered images	Off

## Sequence - Part 1

Introduction	Off
Dimension	2D
Reordering	Linear
Asymmetric echo	Weak
Contrasts	1
Optimization	Min. TE
Multi-slice mode	Sequential
Echo spacing	3.3 ms
Sequence type	Trufi
Bandwidth	1045 Hz/Px

## Sequence - Part 2

Define	Shots
Shots per slice	1
Segments	116
Trufi delta freq.	0 Hz
RF pulse type	Fast
Gradient mode	Normal
Excitation	Slice-sel.
Flip angle mode	Constant
Cine	Off

Mode	Min flip angle
Min flip angle	50 deg
Allowed delay	0 s

# \\USER\Cardiac\ALTERED SEQUENCES- TAILORED PROTOCOLS\HYPERTROPHIC CARDIOMYOPA THY\LT\_2-CHAMBER\_CINE

TA: 2.5 s PM: REF Voxel size: 1.9×1.9×8.0 mmPAT: Off Rel. SNR: 1.00 : tfi

#### **Properties**

Prio recon	Off
Load images to viewer	On
Inline movie	On
Auto store images	On
Load images to stamp segments	On
Load images to graphic segments	On
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	1
Dist. factor	20 %
Position	L41.8 P10.3 H13.2 mm
Orientation	C > S-37.7
Phase enc. dir.	L >> R
AutoAlign	
Phase oversampling	0 %
FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
TR	42.25 ms
TE	1.35 ms
Averages	1
Concatenations	1
Filter	Distortion Corr.(2D),
	Prescan Normalize
Coil elements	BO1,2;SP1,2

#### **Contrast - Common**

TR	42.25 ms
TE	1.35 ms
Magn. preparation	None
Flip angle	80 deg
Fat suppr.	None
Wrap-up Magn.	Restore

## **Contrast - Dynamic**

Averages	1
Averaging mode	Short term
Reconstruction	Magnitude
Measurements	1
Multiple series	Off

#### **Resolution - Common**

FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
Base resolution	192
Phase resolution	80 %
Phase partial Fourier	Off
Trajectory	Cartesian
View sharing	Off
Interpolation	Off

#### **Resolution - iPAT**

PAT mode	None
Pasalutian Eiltar I	maga

#### Resolution - Filter Image

Image Filter	Off
Distortion Corr.	On
Mode	2D
Unfiltered images	Off
Prescan Normalize	On
Unfiltered images	Off
Normalize	Off
B1 filter	Off

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

Raw filter	Off
Elliptical filter	Off
POCS	Off

#### **Geometry - Common**

Slice group	1
Slices	1
Dist. factor	20 %
Position	L41.8 P10.3 H13.2 mm
Orientation	C > S-37.7
Phase enc. dir.	L >> R
FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
TR	42.25 ms
Multi-slice mode	Sequential
Series	Interl. in Bh.
Concatenations	1

#### Geometry - AutoAlign

Slice group	1
AutoAlign	
Position	L41.8 P10.3 H13.2 mm
Orientation	C > S-37.7
Phase enc. dir.	L >> R
Initial Position	L41.8 P10.3 H13.2
L	41.8 mm
P	10.3 mm
Н	13.2 mm
Initial Rotation	-180.00 deg
Initial Orientation	C > S
C > S	-37.7
> T	0.0

## **Geometry - Saturation**

Fat suppr.	None
Wrap-up Magn.	Restore
Special sat.	None

## **Geometry - Navigator**

## 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	Off - AutoCoilSelect

## **System - Adjustments**

B0 Shim mode	Cardiac
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto

# System - Adjust Volume

Position	L41.8 P10.3 H13.2 mm
Orientation	C > S-37.7
Rotation	180.00 deg
R >> L	293 mm
F >> H	360 mm
A >> P	8 mm
Reset	Off

# System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

#### Physio - Signal1

1st Signal/Mode	ECG/Retro
Average cycle	225 ± 213 ms
Average cycle	No Signal ms
Calculated phases	25
TR	42.25 ms
Concatenations	1
Segments	13
Arrhythmia detection	None

## Physio - Cardiac

one
one
ff
60 mm
.3 %
) %
n
artesian
ff

#### **Physio - PACE**

Resp. control	Breath-hold
Concatenations	1

#### **Inline - Common**

Subtract	Off	
----------	-----	--

#### **Inline - Common**

Measurements	1	
StdDev	Off	
Save original images	On	

#### Inline - Cardiac

Inline Evaluation	Off
Magn. preparation	None
Contrasts	1
TE	1.35 ms
TR	42.25 ms
Save original images	On

## Inline - MIP

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

## **Inline - Composing**

Distortion Corr.	On	
Mode	2D	
Unfiltered images	Off	

## Sequence - Part 1

Introduction	Off
Dimension	2D
Reordering	Linear
Asymmetric echo	Weak
Contrasts	1
Optimization	Min. TE TR
Multi-slice mode	Sequential
Echo spacing	3.3 ms
Sequence type	Trufi
Bandwidth	930 Hz/Px

## Sequence - Part 2

Define	Segments
Segments	13
Trufi delta freq.	0 Hz
RF pulse type	Fast
Gradient mode	Normal
Excitation	Slice-sel.
Flip angle mode	Constant
Cine	On

Mode	Min flip angle
Min flip angle	50 deg
Allowed delay	0 s

## \\USER\Cardiac\ALTERED SEQUENCES- TAILORED PROTOCOLS\HYPERTROPHIC CARDIOMYOPA THY\4-CHAMBER\_CINE

TA: 6.8 s PM: REF Voxel size: 1.9×1.9×8.0 mmPAT: 2 Rel. SNR: 1.00 : tfi

#### **Properties**

Prio recon	Off
Load images to viewer	On
Inline movie	On
Auto store images	On
Load images to stamp segments	On
Load images to graphic segments	On
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	3
Dist. factor	20 %
Position	L30.8 A0.1 H23.5 mm
Orientation	T > C39.4 > S-10.6
Phase enc. dir.	A >> P
AutoAlign	
Phase oversampling	0 %
FoV read	360 mm
FoV phase	100.0 %
Slice thickness	8.0 mm
TR	41.60 ms
TE	1.34 ms
Averages	1
Concatenations	3
Filter	Distortion Corr.(2D), Prescan Normalize
Coil elements	BO1,2;SP1,2

#### **Contrast - Common**

TR	41.60 ms
TE	1.34 ms
Magn. preparation	None
Flip angle	60 deg
Fat suppr.	None
Wrap-up Magn.	Restore

## **Contrast - Dynamic**

Averages	1
Averaging mode	Short term
Reconstruction	Magnitude
Measurements	1
Multiple series	Off

#### **Resolution - Common**

FoV read	360 mm
FoV phase	100.0 %
Slice thickness	8.0 mm
Base resolution	192
Phase resolution	100 %
Phase partial Fourier	Off
Trajectory	Cartesian
View sharing	Off
Interpolation	Off

#### **Resolution - iPAT**

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

#### **Resolution - Filter Image**

Image Filter	Off
Distortion Corr.	On
Mode	2D
Unfiltered images	Off
Prescan Normalize	On
Unfiltered images	Off
Normalize	Off
B1 filter	Off

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

Raw filter	Off
Elliptical filter	Off
POCS	Off

#### **Geometry - Common**

Slice group	1
Slices	3
Dist. factor	20 %
Position	L30.8 A0.1 H23.5 mm
Orientation	T > C39.4 > S-10.6
Phase enc. dir.	A >> P
FoV read	360 mm
FoV phase	100.0 %
Slice thickness	8.0 mm
TR	41.60 ms
Multi-slice mode	Sequential
Series	Interl. in Bh.
Concatenations	3

#### **Geometry - AutoAlign**

- · · · · · · · · · · · · · · · · · · ·	
Slice group	1
AutoAlign	
Position	L30.8 A0.1 H23.5 mm
Orientation	T > C39.4 > S-10.6
Phase enc. dir.	A >> P
Initial Position	L30.8 A0.1 H23.5
L	30.8 mm
A	0.1 mm
Н	23.5 mm
Initial Rotation	8.59 deg
Initial Orientation	T > C
T > C	39.4
> S	-10.6

## **Geometry - Saturation**

Fat suppr.	None
Wrap-up Magn.	Restore
Special sat.	None

## **Geometry - Navigator**

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	Off - AutoCoilSelect

## **System - Adjustments**

B0 Shim mode	Cardiac
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto

## **System - Adjust Volume**

Position	L30.8 A0.1 H23.5 mm
Orientation	T > C39.4 > S-10.6
Rotation	8.59 deg
A >> P	360 mm
R >> L	360 mm
F >> H	28 mm
Reset	Off

## System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

## Physio - Signal1

1st Signal/Mode	ECG/Retro
Average cycle	225 ± 213 ms
Average cycle	No Signal ms
Calculated phases	25
TR	41.60 ms
Concatenations	3
Segments	13
Arrhythmia detection	None

# Physio - Cardiac

Magn. preparation	None
Fat suppr.	None
Dark blood	Off
FoV read	360 mm
FoV phase	100.0 %
Phase resolution	100 %
Cine	On
Trajectory	Cartesian
View sharing	Off
Dummy heartbeats	1

## **Physio - PACE**

Resp. control	Breath-hold
Concatenations	3

#### **Inline - Common**

Subtract	Off
Measurements	1
StdDev	Off
Save original images	On

#### Inline - Cardiac

Inline Evaluation	Off
Magn. preparation	None
Contrasts	1
TE	1.34 ms
TR	41.60 ms
Save original images	On

## Inline - MIP

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

## **Inline - Composing**

Distantian Osm	0	
Distortion Corr.	On	
Mode	2D	
Unfiltered images	Off	

## Sequence - Part 1

_	
Introduction	Off
Dimension	2D
Reordering	Linear
Asymmetric echo	Weak
Contrasts	1
Optimization	Min. TE TR
Multi-slice mode	Sequential
Echo spacing	3.2 ms
Sequence type	Trufi
Bandwidth	965 Hz/Px

## Sequence - Part 2

Define	Segments
Segments	13
Trufi delta freq.	0 Hz
RF pulse type	Fast
Gradient mode	Normal
Excitation	Slice-sel.
Flip angle mode	Constant
Cine	On

Mode	Min flip angle
Min flip angle	50 deg
Allowed delay	0 s

## \\USER\Cardiac\ALTERED SEQUENCES- TAILORED PROTOCOLS\HYPERTROPHIC CARDIOMYOPA THY\SA - Cine

TA: 0:58 PM: REF Voxel size: 1.9×1.9×8.0 mmPAT: 2 Rel. SNR: 1.00 : tfi

#### **Properties**

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

#### Routine

Slice group	1
Slices	14
Dist. factor	25 %
Position	L36.5 P10.9 F53.2 mm
Orientation	C > S38.2 > T-27.5
Phase enc. dir.	A >> P
AutoAlign	
Phase oversampling	0 %
FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
TR	51.20 ms
TE	1.34 ms
Averages	1
Concatenations	7
Filter	Distortion Corr.(2D),
	Prescan Normalize
Coil elements	BO1,2;SP2

#### **Contrast - Common**

TR	51.20 ms
TE	1.34 ms
Magn. preparation	None
Flip angle	60 deg
Fat suppr.	None
Wrap-up Magn.	Restore

## **Contrast - Dynamic**

Averages	1
Averaging mode	Short term
Reconstruction	Magnitude
Measurements	1
Multiple series	Each slice and
•	measurement

#### **Resolution - Common**

FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
Base resolution	192
Phase resolution	70 %
Phase partial Fourier	Off
Trajectory	Cartesian
View sharing	Off
Interpolation	Off

#### **Resolution - iPAT**

PAT mode	GRAPPA
Accel. factor PE	2
Ref. lines PE	54
Reference scan mode	Integrated

#### **Resolution - Filter Image**

Image Filter	Off
Distortion Corr.	On
Mode	2D
Unfiltered images	Off
Prescan Normalize	On
Unfiltered images	Off
Normalize	Off
B1 filter	Off

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

Raw filter	Off
Elliptical filter	Off
POCS	Off

## **Geometry - Common**

Slice group	1
Slices	14
Dist. factor	25 %
Position	L36.5 P10.9 F53.2 mm
Orientation	C > S38.2 > T-27.5
Phase enc. dir.	A >> P
FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
TR	51.20 ms
Multi-slice mode	Sequential
Series	Base To Apex
Concatenations	7

#### **Geometry - AutoAlign**

Slice group	1
AutoAlign	
Position	L36.5 P10.9 F53.2 mm
Orientation	C > S38.2 > T-27.5
Phase enc. dir.	A >> P
Initial Position	L36.5 P10.9 F20.2
L	36.5 mm
P	10.9 mm
F	20.2 mm
Initial Rotation	-30.37 deg
Initial Orientation	C > S
C > S	38.2
> T	-27.5

## **Geometry - Saturation**

F	Fat suppr.	None
١	Wrap-up Magn.	Restore
9	Special sat.	None

## **Geometry - Navigator**

Positioning mode	REF
Table position	F
Table position	33 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	Off - AutoCoilSelect

## **System - Adjustments**

B0 Shim mode	Cardiac
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto

## **System - Adjust Volume**

Position	L36.5 P10.9 F53.2 mm
Orientation	C > S38.2 > T-27.5
Rotation	-30.37 deg
A >> P	293 mm
F >> H	360 mm
A >> P	138 mm
Reset	Off

## System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

## Physio - Signal1

1st Signal/Mode	ECG/Retro
Average cycle	225 ± 213 ms
Average cycle	No Signal ms
Calculated phases	25
TR	51.20 ms
Concatenations	7
Segments	16
Arrhythmia detection	None

## Physio - Cardiac

Magn. preparation	None
Fat suppr.	None
Dark blood	Off
FoV read	360 mm
FoV phase	81.3 %
Phase resolution	70 %
Cine	On
Trajectory	Cartesian
View sharing	Off
Dummy heartbeats	1

## **Physio - PACE**

Resp. control	Breath-hold
Concatenations	7

#### **Inline - Common**

Subtract	Off
Measurements	1
StdDev	Off
Save original images	On

#### Inline - Cardiac

Inline Evaluation	Off
Magn. preparation	None
Contrasts	1
TE	1.34 ms
TR	51.20 ms
Save original images	On

## Inline - MIP

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

## Inline - Composing

Distortion Corr.	On
Mode	2D
Unfiltered images	Off

## Sequence - Part 1

Introduction	Off
Dimension	2D
Reordering	Linear
Asymmetric echo	Weak
Contrasts	1
Optimization	Min. TE TR
Multi-slice mode	Sequential
Echo spacing	3.2 ms
Sequence type	Trufi
Bandwidth	965 Hz/Px

## Sequence - Part 2

Define	Segments
Segments	16
Trufi delta freq.	0 Hz
RF pulse type	Fast
Gradient mode	Normal
Excitation	Slice-sel.
Flip angle mode	Constant
Cine	On

Mode	Min flip angle
Min flip angle	50 deg
Allowed delay	0 s

## \\USER\Cardiac\ALTERED SEQUENCES- TAILORED PROTOCOLS\HYPERTROPHIC CARDIOMYOPA THY\3-CHAMBER Cine

TA: 0:29 PM: REF Voxel size: 1.9×1.9×8.0 mmPAT: Off Rel. SNR: 1.00 : tfi

#### **Properties**

Prio recon	Off
Load images to viewer	On
Inline movie	On
Auto store images	On
Load images to stamp segments	On
Load images to graphic segments	On
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

Modelino	
Slice group	1
Slices	3
Dist. factor	20 %
Position	L4.5 P24.0 F35.2 mm
Orientation	S > T-32.2 > C-17.4
Phase enc. dir.	A >> P
AutoAlign	
Phase oversampling	0 %
FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
TR	41.60 ms
TE	1.34 ms
Averages	1
Concatenations	3
Filter	Distortion Corr.(2D), Prescan Normalize
Coil elements	BO1,2;SP2

#### **Contrast - Common**

TR	41.60 ms
TE	1.34 ms
Magn. preparation	None
Flip angle	58 deg
Fat suppr.	None
Wrap-up Magn.	Restore

#### **Contrast - Dynamic**

Averages	1
Averaging mode	Short term
Reconstruction	Magnitude
Measurements	1
Multiple series	Off

#### **Resolution - Common**

FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
Base resolution	192
Phase resolution	100 %
Phase partial Fourier	Off
Trajectory	Cartesian
View sharing	Off
Interpolation	Off

#### **Resolution - iPAT**

Unfiltered images

Normalize B1 filter

PAT mode

Resolution - Filter Ima	ge	
Image Filter	Off	
Distortion Corr.	On	
Mode	2D	
Unfiltered images	Off	
Prescan Normalize	On	

None

Off Off

Off

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

Raw filter	Off
Elliptical filter	Off
POCS	Off

#### **Geometry - Common**

Slice group	1
Slices	3
Dist. factor	20 %
Position	L4.5 P24.0 F35.2 mm
Orientation	S > T-32.2 > C-17.4
Phase enc. dir.	A >> P
FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
TR	41.60 ms
Multi-slice mode	Sequential
Series	Interl. in Bh.
Concatenations	3

#### Geometry - AutoAlign

Slice group	1
AutoAlign	
Position	L4.5 P24.0 F35.2 mm
Orientation	S > T-32.2 > C-17.4
Phase enc. dir.	A >> P
Initial Position	L4.5 P24.0 F2.2
L	4.5 mm
P	24.0 mm
F	2.2 mm
Initial Rotation	10.67 deg
Initial Orientation	S > T
S > T	-32.2
> C	-17.4

## **Geometry - Saturation**

Fat suppr.	None
Wrap-up Magn.	Restore
Special sat.	None

## **Geometry - Navigator**

## **System - Miscellaneous**

Positioning mode	REF
Table position	F
Table position	33 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	Off - AutoCoilSelect

## **System - Adjustments**

B0 Shim mode	Cardiac
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto

# System - Adjust Volume

Position	L4.5 P24.0 F35.2 mm
Orientation	S > T-32.2 > C-17.4
Rotation	10.67 deg
A >> P F >> H R >> L	293 mm
F >> H	360 mm
R >> L	28 mm
Reset	Off

# System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

#### Physio - Signal1

1st Signal/Mode	ECG/Retro
Average cycle	225 ± 213 ms
Average cycle	No Signal ms
Calculated phases	25
TR	41.60 ms
Concatenations	3
Segments	13
Arrhythmia detection	None

## Physio - Cardiac

one
one
ff
60 mm
.3 %
00 %
n
artesian
ff

#### **Physio - PACE**

Resp. control	Breath-hold
Concatenations	3

#### **Inline - Common**

Subtract Off	
--------------	--

#### **Inline - Common**

Measurements	1
StdDev	Off
Save original images	On

#### Inline - Cardiac

Inline Evaluation	Off
Magn. preparation	None
Contrasts	1
TE	1.34 ms
TR	41.60 ms
Save original images	On

## Inline - MIP

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

## **Inline - Composing**

Distortion Corr.	On
Mode	2D
Unfiltered images	Off

## Sequence - Part 1

Introduction	Off
Dimension	2D
Reordering	Linear
Asymmetric echo	Weak
Contrasts	1
Optimization	Min. TE TR
Multi-slice mode	Sequential
Echo spacing	3.2 ms
Sequence type	Trufi
Bandwidth	965 Hz/Px

## Sequence - Part 2

Define	Segments
Segments	13
Trufi delta freq.	0 Hz
RF pulse type	Fast
Gradient mode	Normal
Excitation	Slice-sel.
Flip angle mode	Constant
Cine	On

Mode	Min flip angle
Min flip angle	50 deg
Allowed delay	0 s

# \\USER\Cardiac\ALTERED SEQUENCES- TAILORED PROTOCOLS\HYPERTROPHIC CARDIOMYOPA THY\tirm\_20\_db\_t2\_SAX

TA: 1:16 PM: REF Voxel size: 1.4×1.4×8.0 mmPAT: Off Rel. SNR: 1.00 : tir

#### **Properties**

Prio recon	Off
Load images to viewer	On
Inline movie	Off
Auto store images	On
Load images to stamp segments	On
Load images to graphic segments	On
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	12
Dist. factor	50 %
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
AutoAlign	
Phase oversampling	0 %
FoV read	370 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
TR	700.0 ms
TE	53.0 ms
Averages	1
Concatenations	12
Filter	Distortion Corr.(2D), Prescan Normalize
Coil elements	BO1,2;SP1,2

#### **Contrast - Common**

TR	700.0 ms
TE	53.0 ms
MTC	Off
Magn. preparation	Slice-sel. IR
ТΙ	170 ms
Flip angle	180 deg
Fat suppr.	None
Water suppr.	None
Restore magn.	Off
Freeze suppressed tissue	Off
	•

## **Contrast - Dynamic**

Averages	1
Averaging mode	Long term
Reconstruction	Magnitude
Measurements	1
Multiple series	Off

#### **Resolution - Common**

FoV read	370 mm	
FoV phase	81.3 %	
Slice thickness	8.0 mm	
Base resolution	256	
Phase resolution	57 %	
Phase partial Fourier	Off	

#### **Resolution - Common**

Trajectory	Cartesian
Interpolation	Off

#### **Resolution - iPAT**

PAT mode	None

## **Resolution - Filter Image**

Image Filter	Off
Distortion Corr.	On
Mode	2D
Unfiltered images	Off
Prescan Normalize	On
Unfiltered images	Off
Normalize	Off
B1 filter	Off

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

Raw filter	Off
Elliptical filter	Off

#### **Geometry - Common**

Slice group	1
Slices	12
Dist. factor	50 %
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
FoV read	370 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
TR	700.0 ms
Multi-slice mode	Sequential
Series	Ascending
Concatenations	12

#### **Geometry - AutoAlign**

- · · · · · · · · · · · · · · · · · · ·	
Slice group	1
AutoAlign	
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
Initial Position	Isocenter
L	0.0 mm
Р	0.0 mm
Н	0.0 mm
Initial Rotation	10.35 deg
Initial Orientation	Transversal

## **Geometry - Saturation**

Fat suppr.	None
Water suppr.	None
Restore magn.	Off
Special sat.	None

# **Geometry - Navigator**

#### **Geometry - Tim CT**

Time OT manda	04	
Tim CT mode	Off	

## **Geometry - Tim CT**

Slices	12	
Slice thickness	8.0 mm	
Dist. factor	50 %	
FoV read	370 mm	
FoV phase	81.3 %	

## **System - Miscellaneous**

Positioning mode	REF
Table position	F
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	Off - AutoCoilSelect

## **System - Adjustments**

B0 Shim mode	Cardiac
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto

## **System - Adjust Volume**

Position	Isocenter
Orientation	Transversal
Rotation	10.35 deg
A >> P	301 mm
R >> L	370 mm
F >> H	140 mm
Reset	Off

## System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

## Physio - Signal1

1st Signal/Mode	ECG/Trigger
Average cycle	$225 \pm 213 \text{ ms}$
Average cycle	No Signal ms
Captured cycle	-not set-
Acquisition window	826 ms
Trigger pulse	2
Trigger delay	0 ms
TR	700.0 ms
Concatenations	12
Phases	1

## Physio - Cardiac

Magn. preparation	Slice-sel. IR
ті	170 ms
Fat suppr.	None
Dark blood	On
Dark blood thickness	200 %
Slice-sel. IR thickness	200 %

## Physio - Cardiac

FoV read	370 mm
FoV phase	81.3 %
Phase resolution	57 %
Trajectory	Cartesian

## Physio - PACE

Resp. control	Breath-hold
Concatenations	12

## 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**

Distortion Corr.	On
Mode	2D
Unfiltered images	Off

# Sequence - Part 1

Introduction	Off	
Dimension	2D	
Compensate T2 decay	Off	
Reduce Motion Sens.	Off	
Contrasts	1	
Flow comp.	No	
Multi-slice mode	Sequential	
Free echo spacing	Off	
Echo spacing	4.8 ms	
Bandwidth	849 Hz/Px	

## Sequence - Part 2

Define	Turbo factor
Echo trains per slice	6
Phase correction	Automatic
Acoustic noise reduction	None
RF pulse type	Fast
Gradient mode	Normal
WARP	Off
Turbo factor	20

Mode	Off
Allowed delay	30 s

## \\USER\Cardiac\ALTERED SEQUENCES- TAILORED PROTOCOLS\HYPERTROPHIC CARDIOMYOPA THY\OS BASELINE

TA: 0:11 PM: REF Voxel size: 1.9×1.9×10.0 mmPAT: Off Rel. SNR: 1.00 : tfi

#### **Properties**

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

#### Routine

Slice group	1
Slices	2
Dist. factor	100 %
Position	L36.5 P10.9 F53.2 mm
Orientation	C > S38.2 > T-27.5
Phase enc. dir.	A >> P
AutoAlign	
Phase oversampling	0 %
FoV read	360 mm
FoV phase	81.3 %
Slice thickness	10.0 mm
TR	42.36 ms
TE	1.57 ms
Averages	1
Concatenations	2
Filter	Distortion Corr.(2D),
	Prescan Normalize
Coil elements	BO1,2;SP2

#### **Contrast - Common**

TR	42.36 ms
TE	1.57 ms
Magn. preparation	None
Flip angle	35 deg
Fat suppr.	None
Wrap-up Magn.	Restore

## **Contrast - Dynamic**

Averages	1
Averaging mode	Short term
Reconstruction	Magnitude
Measurements	1
Multiple series	Each slice and
·	measurement

#### **Resolution - Common**

FoV read 360 mm  FoV phase 81.3 %  Slice thickness 10.0 mm  Base resolution 192  Phase resolution 83 %  Phase partial Fourier Off  Trajectory Cartesian  View sharing Off		
Slice thickness 10.0 mm  Base resolution 192  Phase resolution 83 %  Phase partial Fourier Off  Trajectory Cartesian	FoV read	360 mm
Base resolution 192 Phase resolution 83 % Phase partial Fourier Off Trajectory Cartesian	FoV phase	81.3 %
Phase resolution 83 % Phase partial Fourier Off Trajectory Cartesian	Slice thickness	10.0 mm
Phase partial Fourier Off Trajectory Cartesian	Base resolution	192
Trajectory Cartesian	Phase resolution	83 %
, , ,	Phase partial Fourier	Off
View sharing Off	Trajectory	Cartesian
	View sharing	Off
Interpolation Off	Interpolation	Off

#### **Resolution - iPAT**

PAT mode

Normalize

B1 filter

Resolution - Filter Image	•	
Image Filter	Off	
Distortion Corr.	On	
Mode	2D	
Unfiltered images	Off	
Prescan Normalize	On	
Unfiltered images	Off	

None

Off

Off

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

Raw filter	Off
Elliptical filter	Off
POCS	Off

#### **Geometry - Common**

Slice group	1
Slices	2
Dist. factor	100 %
Position	L36.5 P10.9 F53.2 mm
Orientation	C > S38.2 > T-27.5
Phase enc. dir.	A >> P
FoV read	360 mm
FoV phase	81.3 %
Slice thickness	10.0 mm
TR	42.36 ms
Multi-slice mode	Sequential
Series	Descending
Concatenations	2

## **Geometry - AutoAlign**

Slice group	1
AutoAlign	
Position	L36.5 P10.9 F53.2 mm
Orientation	C > S38.2 > T-27.5
Phase enc. dir.	A >> P
Initial Position	L36.5 P10.9 F20.2
L	36.5 mm
P	10.9 mm
F	20.2 mm
Initial Rotation	-30.37 deg
Initial Orientation	C > S
C > S	38.2
> T	-27.5

## **Geometry - Saturation**

Fat suppr.	None
Wrap-up Magn.	Restore
Special sat.	None

## **Geometry - Navigator**

## System - Miscellaneous

Positioning mode	REF
Table position	F
Table position	33 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	Off - AutoCoilSelect

## **System - Adjustments**

B0 Shim mode	Cardiac	
Adjust with body coil	Off	
Confirm freq. adjustment	Off	
Assume Dominant Fat	Off	
Assume Silicone	Off	
Adjustment Tolerance	Auto	

# System - Adjust Volume

Position	L36.5 P10.9 F53.2 mm
Orientation	C > S38.2 > T-27.5
Rotation	-30.37 deg
A >> P	293 mm
F >> H	360 mm
A >> P	30 mm
Reset	Off

# System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

#### Physio - Signal1

1st Signal/Mode	ECG/Retro
Average cycle	225 ± 213 ms
Average cycle	No Signal ms
Calculated phases	25
TR	42.36 ms
Concatenations	2
Segments	12
Arrhythmia detection	None

## Physio - Cardiac

None
None
Off
360 mm
81.3 %
83 %
On
Cartesian
Off
1

#### **Physio - PACE**

Resp. control	Breath-hold
Concatenations	2

#### **Inline - Common**

Subtract Off	
--------------	--

#### **Inline - Common**

Measurements	1	
StdDev	Off	
Save original images	On	

#### Inline - Cardiac

Inline Evaluation	Off
Magn. preparation	None
Contrasts	1
TE	1.57 ms
TR	42.36 ms
Save original images	On

## Inline - MIP

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

## **Inline - Composing**

Distortion Corr.	On	
Mode	2D	
Unfiltered images	Off	

## Sequence - Part 1

Introduction	Off
Dimension	2D
Reordering	Linear
Asymmetric echo	Weak
Contrasts	1
Optimization	Min. TE TR
Multi-slice mode	Sequential
Echo spacing	3.5 ms
Sequence type	Trufi
Bandwidth	1240 Hz/Px
	Dimension Reordering Asymmetric echo Contrasts Optimization Multi-slice mode Echo spacing Sequence type

# Sequence - Part 2

Define	Segments
Segments	12
Trufi delta freq.	0 Hz
RF pulse type	Normal
Gradient mode	Normal
Excitation	Slice-sel.
Flip angle mode	Constant
Cine	On

Mode	Min flip angle
Min flip angle	50 deg
Allowed delay	0 s

# \\USER\Cardiac\ALTERED SEQUENCES- TAILORED PROTOCOLS\HYPERTROPHIC CARDIOMYOPA THY\OS CONTINUOUS ACQUISITION

TA: 4:12 PM: REF Voxel size: 1.9×1.9×10.0 mmPAT: Off Rel. SNR: 1.00 : tfi

## **Properties**

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

#### Routine

Slice group	1
Slices	2
Dist. factor	100 %
Position	L36.5 P10.9 F53.2 mm
Orientation	C > S38.2 > T-27.5
Phase enc. dir.	A >> P
AutoAlign	
Phase oversampling	0 %
FoV read	360 mm
FoV phase	75.0 %
Slice thickness	10.0 mm
TR	42.36 ms
TE	1.57 ms
Averages	1
Concatenations	2
Filter	Distortion Corr.(2D),
	Prescan Normalize
Coil elements	BO1,2;SP2

#### **Contrast - Common**

TR	42.36 ms
TE	1.57 ms
TD	0 ms
Magn. preparation	None
Flip angle	35 deg
Fat suppr.	None
Wrap-up Magn.	None

#### **Contrast - Dynamic**

Averages	1	
Averaging mode	Short term	
Reconstruction	Magnitude	
Measurements	40	
Pause after meas. 1	0.0 s	
Pause after meas. 2	0.0 s	
Pause after meas. 3	0.0 s	
Pause after meas. 4	0.0 s	
Pause after meas. 5	0.0 s	
Pause after meas. 6	0.0 s	
Pause after meas. 7	0.0 s	
Pause after meas. 8	0.0 s	
Pause after meas. 9	0.0 s	
Pause after meas. 10	0.0 s	
Pause after meas. 11	0.0 s	
Pause after meas. 12	0.0 s	

## **Contrast - Dynamic**

Pause after meas. 13	0.0 s
Pause after meas. 14	0.0 s
Pause after meas. 15	0.0 s
Pause after meas. 16	0.0 s
Pause after meas. 17	0.0 s
Pause after meas. 18	0.0 s
Pause after meas. 19	0.0 s
Pause after meas. 20	0.0 s
Pause after meas. 21	0.0 s
Pause after meas. 22	0.0 s
Pause after meas. 23	0.0 s
Pause after meas. 24	0.0 s
Pause after meas. 25	0.0 s
Pause after meas. 26	0.0 s
Pause after meas. 27	0.0 s
Pause after meas. 28	0.0 s
Pause after meas. 29	0.0 s
Pause after meas. 30	0.0 s
Pause after meas. 31	0.0 s
Pause after meas. 32	0.0 s
Pause after meas. 33	0.0 s
Pause after meas. 34	0.0 s
Pause after meas. 35	0.0 s
Pause after meas. 36	0.0 s
Pause after meas. 37	0.0 s
Pause after meas. 38	0.0 s
Pause after meas. 39	0.0 s
Multiple series	Off
·	_

#### **Resolution - Common**

FoV read	360 mm
FoV phase	75.0 %
Slice thickness	10.0 mm
Base resolution	192
Phase resolution	83 %
Phase partial Fourier	5/8
Trajectory	Cartesian
View sharing	Off
Interpolation	Off

## **Resolution - iPAT**

PA	AT mode	None

#### **Resolution - Filter Image**

Image Filter	Off
Distortion Corr.	On
Mode	2D
Unfiltered images	Off
Prescan Normalize	On
Unfiltered images	Off
Normalize	Off
B1 filter	Off

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

Raw filter	Off
Elliptical filter	Off
POCS	Off

#### **Geometry - Common**

Slice group	1
Slices	2
Dist. factor	100 %
Position	L36.5 P10.9 F53.2 mm
Orientation	C > S38.2 > T-27.5
Phase enc. dir.	A >> P
FoV read	360 mm
FoV phase	75.0 %
Slice thickness	10.0 mm
TR	42.36 ms
Multi-slice mode	Sequential
Series	Descending
Concatenations	2

## Geometry - AutoAlign

Slice group       1         AutoAlign          Position       L36.5 P10.9 F53.2 mm         Orientation       C > S38.2 > T-27.5         Phase enc. dir.       A >> P         Initial Position       L36.5 P10.9 F20.2         L       36.5 mm         P       10.9 mm         F       20.2 mm         Initial Rotation       -30.37 deg         Initial Orientation       C > S         C > S       38.2         > T       -27.5		
Position       L36.5 P10.9 F53.2 mm         Orientation       C > S38.2 > T-27.5         Phase enc. dir.       A >> P         Initial Position       L36.5 P10.9 F20.2         L       36.5 mm         P       10.9 mm         F       20.2 mm         Initial Rotation       -30.37 deg         Initial Orientation       C > S         C > S       38.2	Slice group	1
Orientation         C > S38.2 > T-27.5           Phase enc. dir.         A >> P           Initial Position         L36.5 P10.9 F20.2           L         36.5 mm           P         10.9 mm           F         20.2 mm           Initial Rotation         -30.37 deg           Initial Orientation         C > S           C > S         38.2	AutoAlign	
Phase enc. dir.       A >> P         Initial Position       L36.5 P10.9 F20.2         L       36.5 mm         P       10.9 mm         F       20.2 mm         Initial Rotation       -30.37 deg         Initial Orientation       C > S         C > S       38.2	Position	L36.5 P10.9 F53.2 mm
Initial Position       L36.5 P10.9 F20.2         L       36.5 mm         P       10.9 mm         F       20.2 mm         Initial Rotation       -30.37 deg         Initial Orientation       C > S         C > S       38.2	Orientation	C > S38.2 > T-27.5
L       36.5 mm         P       10.9 mm         F       20.2 mm         Initial Rotation       -30.37 deg         Initial Orientation       C > S         C > S       38.2	Phase enc. dir.	A >> P
P 10.9 mm F 20.2 mm Initial Rotation -30.37 deg Initial Orientation C > S C > S 38.2	Initial Position	L36.5 P10.9 F20.2
F 20.2 mm Initial Rotation -30.37 deg Initial Orientation C > S C > S 38.2	L	36.5 mm
Initial Rotation -30.37 deg Initial Orientation C > S C > S 38.2	P	10.9 mm
Initial Orientation C > S C > S 38.2	F	20.2 mm
C > S 38.2	Initial Rotation	-30.37 deg
	Initial Orientation	C > S
> T -27.5	C > S	38.2
	> T	-27.5

## **Geometry - Saturation**

Fat suppr.	None
Wrap-up Magn.	None
Special sat.	None

## **Geometry - Navigator**

#### **System - Miscellaneous**

Cyclom imocomunicous	
Positioning mode	REF
Table position	F
Table position	33 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	Off - AutoCoilSelect

## **System - Adjustments**

B0 Shim mode	Tune up
Adjust with body coil	Off
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	263 mm
R >> L	350 mm

## **System - Adjust Volume**

F >> H	350 mm
Reset	Off

## System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

## Physio - Signal1

1st Signal/Mode	ECG/Trigger
Average cycle	225 ± 213 ms
Average cycle	No Signal ms
Captured cycle	-not set-
Acquisition window	575 ms
Trigger pulse	1
Trigger delay	0 ms
TR	42.36 ms
Concatenations	2
Segments	12
Phases	13

## Physio - Cardiac

Magn. preparation	None
Fat suppr.	None
Dark blood	Off
FoV read	360 mm
FoV phase	75.0 %
Phase resolution	83 %
Cine	On
Trajectory	Cartesian
View sharing	Off
Dummy heartbeats	1

## Physio - PACE

Resp. control	Off
Concatenations	2

## **Inline - Common**

Subtract	Off
Measurements	40
StdDev	Off
Save original images	On

## Inline - Cardiac

Inline Evaluation	Off
Magn. preparation	None
Contrasts	1
TE	1.57 ms
TR	42.36 ms
Save original images	On

## Inline - MIP

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

## **Inline - Composing**

# SIEMENS MAGNETOM MAGNETOM\_ESSENZA

# Inline - Composing

Mode	2D	
Unfiltered images	Off	

# Sequence - Part 1

Introduction	Off
Dimension	2D
Reordering	Linear
Asymmetric echo	Weak
Contrasts	1
Optimization	Min. TE TR
Multi-slice mode	Sequential
Echo spacing	3.5 ms
Sequence type	Trufi
Bandwidth	1240 Hz/Px

# Sequence - Part 2

Define	Segments
Segments	12
Trufi delta freq.	0 Hz
RF pulse type	Normal
Gradient mode	Normal
Excitation	Slice-sel.
Flip angle mode	Constant
Cine	On

Mode	Min flip angle
Min flip angle	50 deg
Allowed delay	0 s

# \\USER\Cardiac\ALTERED SEQUENCES- TAILORED PROTOCOLS\HYPERTROPHIC CARDIOMYOPA THY\EG\_high-res\_tfl20\_psir\_seg----4 CHAMBER\_B

TA: 8.1 s PM: REF Voxel size: 1.4×1.4×8.0 mmPAT: Off Rel. SNR: 1.00 : fl

#### **Properties**

Prio recon	Off
Load images to viewer	On
Inline movie	On
Auto store images	On
Load images to stamp segments	On
Load images to graphic segments	On
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	1
Dist. factor	20 %
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
AutoAlign	
Phase oversampling	0 %
FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
TR	597.00 ms
TE	3.4 ms
Averages	1
Concatenations	1
Filter	Raw filter, Distortion
	Corr.(2D), Prescan
	Normalize, Image Filter
Coil elements	BO1,2;SP1,2

## **Contrast - Common**

TR	597.00 ms
TE	3.4 ms
Magn. preparation	Non-sel. IR
ТІ	300 ms
Flip angle	25 deg
Fat suppr.	None
Wrap-up Magn.	Suppress

### **Contrast - Dynamic**

Averages	1
Averaging mode	Short term
Reconstruction	Magnitude/Real
Measurements	1
Multiple series	Each measurement

## **Resolution - Common**

FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
Base resolution	256
Phase resolution	75 %
Phase partial Fourier	Off
Trajectory	Cartesian
Interpolation	Off

#### **Resolution - iPAT**

PAT mode	None
-	

# Resolution - Filter Image

Image Filter	On
! Intensity	Medium
Edge Enhancement	3
Smoothing	2
Unfiltered images	Off
Distortion Corr.	On
Mode	2D
Unfiltered images	Off
Prescan Normalize	On
Unfiltered images	Off
Normalize	Off
B1 filter	Off

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

Raw filter	On
Elliptical filter	Off
POCS	Off

#### **Geometry - Common**

Slice group	1
Slices	1
Dist. factor	20 %
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
TR	597.00 ms
Multi-slice mode	Sequential
Series	Interleaved
Concatenations	1

## **Geometry - AutoAlign**

•	
Slice group	1
AutoAlign	
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
Initial Position	Isocenter
L	0.0 mm
Р	0.0 mm
Н	0.0 mm
Initial Rotation	0.00 deg
Initial Orientation	Transversal

# **Geometry - Saturation**

Fat suppr.	None
Wrap-up Magn.	Suppress
Special sat.	None

#### **Geometry - Navigator**

#### **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	Cardio
AutoAlign	
Coil Select Mode	Off - AutoCoilSelect

## **System - Adjustments**

B0 Shim mode	Cardiac
Adjust with body coil	Off
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	293 mm
R >> L	360 mm
F >> H	8 mm
Reset	Off

## System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

## Physio - Signal1

1st Signal/Mode	ECG/Trigger
Average cycle	225 ± 213 ms
Average cycle	No Signal ms
Captured cycle	225 ± 213 ms
Acquisition window	597 ms
Trigger pulse	2
Trigger delay	0 ms
TR	597.00 ms
Concatenations	1
Segments	20
Phases	1

# Physio - Cardiac

Magn. preparation	Non-sel. IR	
TI	300 ms	
Fat suppr.	None	
Dark blood	Off	
FoV read	360 mm	
FoV phase	81.3 %	
Phase resolution	75 %	
Cine	Off	
Trajectory	Cartesian	
Dummy heartbeats	1	

## **Physio - PACE**

Resp. control	Off	
Nesp. Control	OII	

#### **Physio - PACE**

Concatenations	1	
Inline - Common		
Subtract	Off	
Measurements	1	
StdDev	Off	
Save original images	On	

#### Inline - Cardiac

Inline Evaluation	Off
Magn. preparation	Non-sel. IR
Contrasts	1
TE	3.4 ms
TR	597.00 ms
Save original images	On

#### Inline - MIP

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

## **Inline - Composing**

Distortion Corr.	On
Mode	2D
Unfiltered images	Off

#### Sequence - Part 1

Introduction	Off
Dimension	2D
Reordering	Linear
Asymmetric echo	Weak
Contrasts	1
Flow comp.	No
Optimization	Min. TE
Multi-slice mode	Sequential
Echo spacing	9 ms
Sequence type	Gre
Bandwidth	140 Hz/Px

# Sequence - Part 2

Define	Segments
Segments	20
RF pulse type	Fast
Gradient mode	Normal
Excitation	Slice-sel.
Flip angle mode	Constant
RF spoiling	On
Phase Enc. Rewinder	On
Cine	Off

Mode	Off
Allowed delay	0 s

# \\USER\Cardiac\ALTERED SEQUENCES- TAILORED PROTOCOLS\HYPERTROPHIC CARDIOMYOPA THY\EG\_high-res\_tfl20\_psir\_seg----2 CHAMBER\_A

TA: 8.1 s PM: REF Voxel size: 1.4×1.4×8.0 mmPAT: Off Rel. SNR: 1.00 : fl

#### **Properties**

Prio recon	Off
Load images to viewer	On
Inline movie	On
Auto store images	On
Load images to stamp segments	On
Load images to graphic segments	On
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	1
Dist. factor	20 %
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
AutoAlign	
Phase oversampling	0 %
FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
TR	597.00 ms
TE	3.4 ms
Averages	1
Concatenations	1
Filter	Raw filter, Distortion
	Corr.(2D), Prescan
	Normalize, Image Filter
Coil elements	BO1,2;SP1,2

## **Contrast - Common**

TR	597.00 ms
TE	3.4 ms
Magn. preparation	Non-sel. IR
ТІ	300 ms
Flip angle	25 deg
Fat suppr.	None
Wrap-up Magn.	Suppress

#### **Contrast - Dynamic**

Averages	1
Averaging mode	Short term
Reconstruction	Magnitude/Real
Measurements	1
Multiple series	Each measurement

## **Resolution - Common**

FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
Base resolution	256
Phase resolution	75 %
Phase partial Fourier	Off
Trajectory	Cartesian
Interpolation	Off

#### **Resolution - iPAT**

PAT mode	None
•	

# **Resolution - Filter Image**

Image Filter	On
! Intensity	Medium
Edge Enhancement	3
Smoothing	2
Unfiltered images	Off
Distortion Corr.	On
Mode	2D
Unfiltered images	Off
Prescan Normalize	On
Unfiltered images	Off
Normalize	Off
B1 filter	Off

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

Raw filter	On
Elliptical filter	Off
POCS	Off

#### **Geometry - Common**

Slice group	1
Slices	1
Dist. factor	20 %
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
TR	597.00 ms
Multi-slice mode	Sequential
Series	Interleaved
Concatenations	1

## **Geometry - AutoAlign**

Slice group	1
AutoAlign	
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
Initial Position	Isocenter
L	0.0 mm
P	0.0 mm
Н	0.0 mm
Initial Rotation	0.00 deg
Initial Orientation	Transversal

## **Geometry - Saturation**

Fat suppr.	None
Wrap-up Magn.	Suppress
Special sat.	None

#### **Geometry - Navigator**

#### 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	Cardio
AutoAlign	
Coil Select Mode	Off - AutoCoilSelect

## **System - Adjustments**

B0 Shim mode	Cardiac
Adjust with body coil	Off
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	293 mm
R >> L	360 mm
F >> H	8 mm
Reset	Off

## System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

## Physio - Signal1

1st Signal/Mode	ECG/Trigger
Average cycle	225 ± 213 ms
Average cycle	No Signal ms
Captured cycle	225 ± 213 ms
Acquisition window	597 ms
Trigger pulse	2
Trigger delay	0 ms
TR	597.00 ms
Concatenations	1
Segments	20
Phases	1

## Physio - Cardiac

Magn. preparation	Non-sel. IR	
ТІ	300 ms	
Fat suppr.	None	
Dark blood	Off	
FoV read	360 mm	
FoV phase	81.3 %	
Phase resolution	75 %	
Cine	Off	
Trajectory	Cartesian	
Dummy heartbeats	1	

## **Physio - PACE**

Resp. control	Off	
LKESO, COUITOI	CIII	

#### **Physio - PACE**

Concatenations	1	
Inline - Common		
Subtract	Off	
Measurements	1	
StdDev	Off	
Save original images	On	

#### Inline - Cardiac

Inline Evaluation	Off
Magn. preparation	Non-sel. IR
Contrasts	1
TE	3.4 ms
TR	597.00 ms
Save original images	On

#### Inline - MIP

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

## **Inline - Composing**

Distortion Corr.	On
Mode	2D
Unfiltered images	Off

#### Sequence - Part 1

ooquonee : air :	
Introduction	Off
Dimension	2D
Reordering	Linear
Asymmetric echo	Weak
Contrasts	1
Flow comp.	No
Optimization	Min. TE
Multi-slice mode	Sequential
Echo spacing	9 ms
Sequence type	Gre
Bandwidth	140 Hz/Px

# Sequence - Part 2

Define	Segments
Segments	20
RF pulse type	Fast
Gradient mode	Normal
Excitation	Slice-sel.
Flip angle mode	Constant
RF spoiling	On
Phase Enc. Rewinder	On
Cine	Off

Mode	Off
Allowed delay	0 s

# \\USER\Cardiac\ALTERED SEQUENCES- TAILORED PROTOCOLS\HYPERTROPHIC CARDIOMYOPA THY\EG\_high-res\_tfl20\_psir\_seg----SA\_M

TA: 8.1 s PM: REF Voxel size: 1.4×1.4×8.0 mmPAT: Off Rel. SNR: 1.00 : fl

#### **Properties**

Prio recon	Off
Load images to viewer	On
Inline movie	On
Auto store images	On
Load images to stamp segments	On
Load images to graphic segments	On
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	1
Dist. factor	20 %
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
AutoAlign	
Phase oversampling	0 %
FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
TR	597.00 ms
TE	3.4 ms
Averages	1
Concatenations	1
Filter	Raw filter, Distortion Corr.(2D), Prescan Normalize, Image Filter
Coil elements	BO1,2;SP1,2

#### **Contrast - Common**

TR	597.00 ms
TE	3.4 ms
Magn. preparation	Non-sel. IR
ТІ	300 ms
Flip angle	25 deg
Fat suppr.	None
Wrap-up Magn.	Suppress

#### **Contrast - Dynamic**

Averages	1
Averaging mode	Short term
Reconstruction	Magnitude/Real
Measurements	1
Multiple series	Each measurement

#### **Resolution - Common**

FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
Base resolution	256
Phase resolution	75 %
Phase partial Fourier	Off
Trajectory	Cartesian
Interpolation	Off

#### **Resolution - iPAT**

PAT mode	None
•	

# Resolution - Filter Image

Image Filter	On
! Intensity	Medium
Edge Enhancement	3
Smoothing	2
Unfiltered images	Off
Distortion Corr.	On
Mode	2D
Unfiltered images	Off
Prescan Normalize	On
Unfiltered images	Off
Normalize	Off
B1 filter	Off

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

Raw filter	On
Elliptical filter	Off
POCS	Off

#### **Geometry - Common**

Slice group	1
Slices	1
Dist. factor	20 %
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
TR	597.00 ms
Multi-slice mode	Sequential
Series	Interleaved
Concatenations	1

## **Geometry - AutoAlign**

•	
Slice group	1
AutoAlign	
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
Initial Position	Isocenter
L	0.0 mm
Р	0.0 mm
Н	0.0 mm
Initial Rotation	0.00 deg
Initial Orientation	Transversal

## **Geometry - Saturation**

Fat suppr.	None
Wrap-up Magn.	Suppress
Special sat.	None

#### **Geometry - Navigator**

#### **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	Cardio
AutoAlign	
Coil Select Mode	Off - AutoCoilSelect

## **System - Adjustments**

B0 Shim mode	Cardiac
Adjust with body coil	Off
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 F >> H	293 mm
R >> L	360 mm
F >> H	8 mm
Reset	Off

# System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

#### Physio - Signal1

<u> </u>	
1st Signal/Mode	ECG/Trigger
Average cycle	225 ± 213 ms
Average cycle	No Signal ms
Captured cycle	225 ± 213 ms
Acquisition window	597 ms
Trigger pulse	2
Trigger delay	0 ms
TR	597.00 ms
Concatenations	1
Segments	20
Phases	1

# Physio - Cardiac

Magn. preparation	Non-sel. IR	
TI	300 ms	
Fat suppr.	None	
Dark blood	Off	
FoV read	360 mm	
FoV phase	81.3 %	
Phase resolution	75 %	
Cine	Off	
Trajectory	Cartesian	
Dummy heartbeats	1	

## **Physio - PACE**

Resp. control	Off	
Nesp. Control	OII	

#### **Physio - PACE**

Concatenations	1	
Inline - Common		
Subtract	Off	
Measurements	1	
StdDev	Off	
Save original images	On	

#### **Inline - Cardiac**

Inline Evaluation	Off
Magn. preparation	Non-sel. IR
Contrasts	1
TE	3.4 ms
TR	597.00 ms
Save original images	On

## Inline - MIP

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

## **Inline - Composing**

Distortion Corr.	On
Mode	2D
Unfiltered images	Off

#### Sequence - Part 1

Introduction	Off
Dimension	2D
Reordering	Linear
Asymmetric echo	Weak
Contrasts	1
Flow comp.	No
Optimization	Min. TE
Multi-slice mode	Sequential
Echo spacing	9 ms
Sequence type	Gre
Bandwidth	140 Hz/Px

## Sequence - Part 2

Define	Segments
Segments	20
RF pulse type	Fast
Gradient mode	Normal
Excitation	Slice-sel.
Flip angle mode	Constant
RF spoiling	On
Phase Enc. Rewinder	On
Cine	Off

Mode	Off
Allowed delay	0 s

# \\USER\Cardiac\ALTERED SEQUENCES- TAILORED PROTOCOLS\HYPERTROPHIC CARDIOMYOPA THY\tse\_17\_db\_t2\_iPAT-EGE 2C

TA: 6.3 s PM: REF Voxel size: 1.4×1.4×5.0 mmPAT: 2 Rel. SNR: 1.00 : tse

#### **Properties**

Prio recon	Off
Load images to viewer	On
Inline movie	Off
Auto store images	On
Load images to stamp segments	On
Load images to graphic segments	On
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	1
Dist. factor	50 %
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
AutoAlign	
Phase oversampling	0 %
FoV read	360 mm
FoV phase	78.1 %
Slice thickness	5.0 mm
TR	800.0 ms
TE	62.0 ms
Averages	1
Concatenations	1
Filter	Distortion Corr.(2D),
	Prescan Normalize,
	Elliptical filter, Image Filter
Coil elements	BO1,2;SP1,2

#### **Contrast - Common**

TR	800.0 ms
TE	62.0 ms
MTC	Off
Magn. preparation	None
Flip angle	180 deg
Fat suppr.	None
Water suppr.	None
Restore magn.	Off

#### **Contrast - Dynamic**

Averages	1
Averaging mode	Long term
Reconstruction	Magnitude
Measurements	1
Multiple series	Off

#### **Resolution - Common**

FoV read	360 mm
FoV phase	78.1 %
Slice thickness	5.0 mm
Base resolution	256
Phase resolution	77 %
Phase partial Fourier	Off
Trajectory	Cartesian

#### **Resolution - Common**

Interpolation	Off	

#### **Resolution - iPAT**

PAT mode	GRAPPA
Accel. factor PE	2
Ref. lines PE	50
Reference scan mode	Integrated

#### **Resolution - Filter Image**

Image Filter	On
! Intensity	Medium
Edge Enhancement	3
Smoothing	2
Unfiltered images	Off
Distortion Corr.	On
Mode	2D
Unfiltered images	Off
Prescan Normalize	On
Unfiltered images	Off
Normalize	Off
B1 filter	Off

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

Raw filter	Off
Elliptical filter	On

#### **Geometry - Common**

_	
Slice group	1
Slices	1
Dist. factor	50 %
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
FoV read	360 mm
FoV phase	78.1 %
Slice thickness	5.0 mm
TR	800.0 ms
Multi-slice mode	Sequential
Series	Ascending
Concatenations	1

#### **Geometry - AutoAlign**

Slice group	1
AutoAlign	
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
Initial Position	Isocenter
L	0.0 mm
P	0.0 mm
Н	0.0 mm
Initial Rotation	0.00 deg
Initial Orientation	Transversal

# **Geometry - Saturation**

Fat suppr.	None
Water suppr.	None
Restore magn.	Off
Special sat.	None

## **Geometry - Navigator**

## **Geometry - Tim CT**

Tim CT mode	Off
Slices	1
Slice thickness	5.0 mm
Dist. factor	50 %
FoV read	360 mm
FoV phase	78.1 %

## **System - Miscellaneous**

Positioning mode	REF
Table position	F
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	Off - AutoCoilSelect

## **System - Adjustments**

B0 Shim mode	Cardiac
Adjust with body coil	Off
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	282 mm
R >> L	360 mm
F >> H	5 mm
Reset	Off

## System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

## Physio - Signal1

1st Signal/Mode	ECG/Trigger
Average cycle	225 ± 213 ms
Average cycle	No Signal ms
Captured cycle	-not set-
Acquisition window	974 ms
Trigger pulse	2
Trigger delay	0 ms
TR	800.0 ms
Concatenations	1
Phases	1

# Physio - Cardiac

Magn. preparation	None
Fat suppr.	None

# Physio - Cardiac

Dark blood	On
Dark blood thickness	200 %
FoV read	360 mm
FoV phase	78.1 %
Phase resolution	77 %
Trajectory	Cartesian

## **Physio - PACE**

Resp. control	Off
Concatenations	1

#### Inline - Common

Subtra	act	Off
Measu	ırements	1
StdDe	v	Off
Save of	original images	On

#### Inline - MIP

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

# Inline - Composing

Distortion Corr.	On
Mode	2D
Unfiltered images	Off

# Sequence - Part 1

Introduction	Off
Dimension	2D
Compensate T2 decay	Off
Reduce Motion Sens.	Off
Contrasts	1
Flow comp.	No
Multi-slice mode	Sequential
Free echo spacing	Off
Echo spacing	4.8 ms
Bandwidth	849 Hz/Px

## Sequence - Part 2

Define	Turbo factor
Echo trains per slice	6
Phase correction	Automatic
Acoustic noise reduction	None
RF pulse type	Fast
Gradient mode	Normal
WARP	Off
Turbo factor	17

Mode	Off
Allowed delay	30 s

# \\USER\Cardiac\ALTERED SEQUENCES- TAILORED PROTOCOLS\HYPERTROPHIC CARDIOMYOPA THY\tse\_17\_db\_t2\_iPAT-EGE 4C

TA: 6.3 s PM: REF Voxel size: 1.4×1.4×5.0 mmPAT: 2 Rel. SNR: 1.00 : tse

#### **Properties**

Prio recon	Off
Load images to viewer	On
Inline movie	Off
Auto store images	On
Load images to stamp segments	On
Load images to graphic segments	On
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	1
Dist. factor	50 %
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
AutoAlign	
Phase oversampling	0 %
FoV read	360 mm
FoV phase	78.1 %
Slice thickness	5.0 mm
TR	800.0 ms
TE	62.0 ms
Averages	1
Concatenations	1
Filter	Distortion Corr.(2D),
	Prescan Normalize,
	Elliptical filter, Image Filter
Coil elements	BO1,2;SP1,2

#### **Contrast - Common**

TR	800.0 ms
TE	62.0 ms
MTC	Off
Magn. preparation	None
Flip angle	180 deg
Fat suppr.	None
Water suppr.	None
Restore magn.	Off

#### **Contrast - Dynamic**

Averages	1
Averaging mode	Long term
Reconstruction	Magnitude
Measurements	1
Multiple series	Off

#### **Resolution - Common**

FoV read	360 mm
FoV phase	78.1 %
Slice thickness	5.0 mm
Base resolution	256
Phase resolution	77 %
Phase partial Fourier	Off
Trajectory	Cartesian
Trajectory	Cartesian

#### **Resolution - Common**

Interpolation	Off

#### **Resolution - iPAT**

PAT mode	GRAPPA
Accel. factor PE	2
Ref. lines PE	50
Reference scan mode	Integrated

## **Resolution - Filter Image**

Image Filter	On
! Intensity	Medium
Edge Enhancement	3
Smoothing	2
Unfiltered images	Off
Distortion Corr.	On
Mode	2D
Unfiltered images	Off
Prescan Normalize	On
Unfiltered images	Off
Normalize	Off
B1 filter	Off

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

Raw filter	Off
Elliptical filter	On

#### **Geometry - Common**

Slice group	1
Slices	1
Dist. factor	50 %
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
FoV read	360 mm
FoV phase	78.1 %
Slice thickness	5.0 mm
TR	800.0 ms
Multi-slice mode	Sequential
Series	Ascending
Concatenations	1

## Geometry - AutoAlign

Slice group	1
AutoAlign	
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
Initial Position	Isocenter
L	0.0 mm
P	0.0 mm
Н	0.0 mm
Initial Rotation	0.00 deg
Initial Orientation	Transversal

## **Geometry - Saturation**

Fat suppr.	None
Water suppr.	None
Restore magn.	Off
Special sat.	None

## **Geometry - Navigator**

## **Geometry - Tim CT**

Tim CT mode	Off
Slices	1
Slice thickness	5.0 mm
Dist. factor	50 %
FoV read	360 mm
FoV phase	78.1 %

## **System - Miscellaneous**

Positioning mode	REF
Table position	F
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	Off - AutoCoilSelect

## **System - Adjustments**

B0 Shim mode	Cardiac
Adjust with body coil	Off
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	282 mm
R >> L	360 mm
F >> H	5 mm
Reset	Off

## System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

## Physio - Signal1

1st Signal/Mode	ECG/Trigger
Average cycle	225 ± 213 ms
Average cycle	No Signal ms
Captured cycle	-not set-
Acquisition window	974 ms
Trigger pulse	2
Trigger delay	0 ms
TR	800.0 ms
Concatenations	1
Phases	1

## Physio - Cardiac

Magn. preparation	None
Fat suppr.	None

# Physio - Cardiac

Dark blood	On
Dark blood thickness	200 %
FoV read	360 mm
FoV phase	78.1 %
Phase resolution	77 %
Trajectory	Cartesian

## **Physio - PACE**

Resp. control	Off
Concatenations	1

#### 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**

Distortion Corr.	On
Mode	2D
Unfiltered images	Off

# Sequence - Part 1

Introduction	Off
Dimension	2D
Compensate T2 decay	Off
Reduce Motion Sens.	Off
Contrasts	1
Flow comp.	No
Multi-slice mode	Sequential
Free echo spacing	Off
Echo spacing	4.8 ms
Bandwidth	849 Hz/Px

## Sequence - Part 2

Define	Turbo factor
Echo trains per slice	6
Phase correction	Automatic
Acoustic noise reduction	None
RF pulse type	Fast
Gradient mode	Normal
WARP	Off
Turbo factor	17

Mode	Off
Allowed delay	30 s

# \\USER\Cardiac\ALTERED SEQUENCES- TAILORED PROTOCOLS\HYPERTROPHIC CARDIOMYOPA THY\tse\_17\_db\_t2\_iPAT-EGE SA

TA: 6.3 s PM: REF Voxel size: 1.4×1.4×5.0 mmPAT: 2 Rel. SNR: 1.00 : tse

#### **Properties**

Prio recon	Off
Load images to viewer	On
Inline movie	Off
Auto store images	On
Load images to stamp segments	On
Load images to graphic segments	On
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	1
Dist. factor	50 %
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
AutoAlign	
Phase oversampling	0 %
FoV read	360 mm
FoV phase	78.1 %
Slice thickness	5.0 mm
TR	800.0 ms
TE	62.0 ms
Averages	1
Concatenations	1
Filter	Distortion Corr.(2D),
	Prescan Normalize,
	Elliptical filter, Image Filter
Coil elements	BO1,2;SP1,2

#### **Contrast - Common**

TR	800.0 ms
TE	62.0 ms
MTC	Off
Magn. preparation	None
Flip angle	180 deg
Fat suppr.	None
Water suppr.	None
Restore magn.	Off

#### **Contrast - Dynamic**

Averages	1
Averaging mode	Long term
Reconstruction	Magnitude
Measurements	1
Multiple series	Off

#### **Resolution - Common**

FoV read	360 mm
FoV phase	78.1 %
Slice thickness	5.0 mm
Base resolution	256
Phase resolution	77 %
Phase partial Fourier	Off
Trajectory	Cartesian

#### **Resolution - Common**

Interpolation	Off

#### **Resolution - iPAT**

PAT mode	GRAPPA
Accel. factor PE	2
Ref. lines PE	50
Reference scan mode	Integrated

#### **Resolution - Filter Image**

Image Filter	On
! Intensity	Medium
Edge Enhancement	3
Smoothing	2
Unfiltered images	Off
Distortion Corr.	On
Mode	2D
Unfiltered images	Off
Prescan Normalize	On
Unfiltered images	Off
Normalize	Off
B1 filter	Off

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

Raw filter	Off
Elliptical filter	On

#### **Geometry - Common**

_	
Slice group	1
Slices	1
Dist. factor	50 %
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
FoV read	360 mm
FoV phase	78.1 %
Slice thickness	5.0 mm
TR	800.0 ms
Multi-slice mode	Sequential
Series	Ascending
Concatenations	1

#### **Geometry - AutoAlign**

Slice group	1
AutoAlign	
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
Initial Position	Isocenter
L	0.0 mm
P	0.0 mm
Н	0.0 mm
Initial Rotation	0.00 deg
Initial Orientation	Transversal

## **Geometry - Saturation**

Fat suppr.	None
Water suppr.	None
Restore magn.	Off
Special sat.	None

## **Geometry - Navigator**

## **Geometry - Tim CT**

Tim CT mode	Off
Slices	1
Slice thickness	5.0 mm
Dist. factor	50 %
FoV read	360 mm
FoV phase	78.1 %

## **System - Miscellaneous**

Positioning mode	REF
Table position	F
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	Off - AutoCoilSelect

## **System - Adjustments**

B0 Shim mode	Cardiac
Adjust with body coil	Off
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	282 mm
R >> L	360 mm
F >> H	5 mm
Reset	Off

## System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

## Physio - Signal1

1st Signal/Mode	ECG/Trigger
Average cycle	225 ± 213 ms
Average cycle	No Signal ms
Captured cycle	-not set-
Acquisition window	974 ms
Trigger pulse	2
Trigger delay	0 ms
TR	800.0 ms
Concatenations	1
Phases	1

## Physio - Cardiac

Magn. preparation	None
Fat suppr.	None

## Physio - Cardiac

Dark blood	On
Dark blood thickness	200 %
FoV read	360 mm
FoV phase	78.1 %
Phase resolution	77 %
Trajectory	Cartesian

## **Physio - PACE**

Resp. control	Off
Concatenations	1

#### 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**

Distortion Corr.	On
Mode	2D
Unfiltered images	Off

# Sequence - Part 1

Introduction	Off
Dimension	2D
Compensate T2 decay	Off
Reduce Motion Sens.	Off
Contrasts	1
Flow comp.	No
Multi-slice mode	Sequential
Free echo spacing	Off
Echo spacing	4.8 ms
Bandwidth	849 Hz/Px

## Sequence - Part 2

Define	Turbo factor
Echo trains per slice	6
Phase correction	Automatic
Acoustic noise reduction	None
RF pulse type	Fast
Gradient mode	Normal
WARP	Off
Turbo factor	17

Mode	Off
Allowed delay	30 s

# \\USER\Cardiac\ALTERED SEQUENCES- TAILORED PROTOCOLS\HYPERTROPHIC CARDIOMYOPA THY\TI-Scout\_10 MIN POST GAD

TA: 9.0 s PM: REF Voxel size: 1.9×1.9×8.0 mmPAT: Off Rel. SNR: 1.00 : tfi

#### **Properties**

Prio recon	Off
Load images to viewer	On
Inline movie	Off
Auto store images	On
Load images to stamp segments	On
Load images to graphic segments	On
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         1           Dist. factor         20 %           Position         Isocenter           Orientation         Coronal           Phase enc. dir.         H >> F           AutoAlign            Phase oversampling         0 %           FoV read         360 mm           FoV phase         78.1 %           Slice thickness         8.0 mm           TR         28.80 ms           TE         1.34 ms           Averages         1           Concatenations         1           Filter         Distortion Corr.(2D), Image Filter           Coil elements         BO1,2;SP1,2		
Dist. factor         20 %           Position         Isocenter           Orientation         Coronal           Phase enc. dir.         H >> F           AutoAlign            Phase oversampling         0 %           FoV read         360 mm           FoV phase         78.1 %           Slice thickness         8.0 mm           TR         28.80 ms           TE         1.34 ms           Averages         1           Concatenations         1           Filter         Distortion Corr.(2D), Image Filter	Slice group	1
Position Isocenter Orientation Coronal Phase enc. dir. H >> F  AutoAlign Phase oversampling 0 % FoV read 360 mm FoV phase 78.1 % Slice thickness 8.0 mm TR 28.80 ms TE 1.34 ms Averages 1 Concatenations 1 Filter Distortion Corr.(2D), Image Filter	Slices	1
Orientation Coronal Phase enc. dir. H >> F  AutoAlign Phase oversampling 0 % FoV read 360 mm FoV phase 78.1 % Slice thickness 8.0 mm TR 28.80 ms TE 1.34 ms Averages 1 Concatenations 1 Filter Distortion Corr.(2D), Image Filter	Dist. factor	20 %
Phase enc. dir.         H >> F           AutoAlign            Phase oversampling         0 %           FoV read         360 mm           FoV phase         78.1 %           Slice thickness         8.0 mm           TR         28.80 ms           TE         1.34 ms           Averages         1           Concatenations         1           Filter         Distortion Corr.(2D), Image Filter	Position	Isocenter
AutoAlign Phase oversampling 0 % FoV read 360 mm FoV phase 78.1 % Slice thickness 8.0 mm TR 28.80 ms TE 1.34 ms Averages 1 Concatenations 1 Filter Distortion Corr.(2D), Image Filter	Orientation	Coronal
Phase oversampling         0 %           FoV read         360 mm           FoV phase         78.1 %           Slice thickness         8.0 mm           TR         28.80 ms           TE         1.34 ms           Averages         1           Concatenations         1           Filter         Distortion Corr.(2D), Image Filter	Phase enc. dir.	H >> F
FoV read       360 mm         FoV phase       78.1 %         Slice thickness       8.0 mm         TR       28.80 ms         TE       1.34 ms         Averages       1         Concatenations       1         Filter       Distortion Corr.(2D), Image Filter	AutoAlign	
FoV phase         78.1 %           Slice thickness         8.0 mm           TR         28.80 ms           TE         1.34 ms           Averages         1           Concatenations         1           Filter         Distortion Corr.(2D), Image Filter	Phase oversampling	0 %
Slice thickness 8.0 mm TR 28.80 ms TE 1.34 ms Averages 1 Concatenations 1 Filter Distortion Corr.(2D), Image Filter	FoV read	360 mm
TR 28.80 ms  TE 1.34 ms  Averages 1  Concatenations 1  Filter Distortion Corr.(2D), Image Filter	FoV phase	78.1 %
TE 1.34 ms  Averages 1  Concatenations 1  Filter Distortion Corr.(2D), Image Filter	Slice thickness	8.0 mm
Averages 1 Concatenations 1 Filter Distortion Corr.(2D), Image Filter	TR	28.80 ms
Concatenations 1  Filter Distortion Corr.(2D), Image Filter	TE	1.34 ms
Filter Distortion Corr.(2D), Image Filter	Averages	1
Image Filter	Concatenations	1
Coil elements BO1,2;SP1,2	Filter	
	Coil elements	BO1,2;SP1,2

#### **Contrast - Common**

TR	28.80 ms
TE	1.34 ms
Magn. preparation	TI Scout
Flip angle	30 deg
Fat suppr.	None
Wrap-up Magn.	None

#### **Contrast - Dynamic**

Averages	1
Averaging mode	Short term
Reconstruction	Magnitude
Measurements	1
Multiple series	Off

#### **Resolution - Common**

FoV read	360 mm
FoV phase	78.1 %
Slice thickness	8.0 mm
Base resolution	192
Phase resolution	50 %
Phase partial Fourier	Off
Trajectory	Cartesian
View sharing	Off
Interpolation	Off

#### **Resolution - iPAT**

PAT mode	None
•	

#### **Resolution - Filter Image**

Image Filter	On
! Intensity	Medium
Edge Enhancement	3
Smoothing	2
Unfiltered images	Off
Distortion Corr.	On
Mode	2D
Unfiltered images	Off
Prescan Normalize	Off
Normalize	Off
B1 filter	Off

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

Raw filter	Off	
Elliptical filter	Off	
POCS	Off	

#### **Geometry - Common**

Slice group	1
Slices	1
Dist. factor	20 %
Position	Isocenter
Orientation	Coronal
Phase enc. dir.	H >> F
FoV read	360 mm
FoV phase	78.1 %
Slice thickness	8.0 mm
TR	28.80 ms
Multi-slice mode	Sequential
Series	Interleaved
Concatenations	1

## **Geometry - AutoAlign**

Slice group	1
AutoAlign	
Position	Isocenter
Orientation	Coronal
Phase enc. dir.	H >> F
Initial Position	Isocenter
L	0.0 mm
Р	0.0 mm
Н	0.0 mm
Initial Rotation	-49.03 deg
Initial Orientation	Coronal

#### **Geometry - Saturation**

Fat suppr.	None
Wrap-up Magn.	None
Special sat.	None

## **Geometry - Navigator**

#### **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	Off - AutoCoilSelect

## **System - Adjustments**

B0 Shim mode	Cardiac
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto

## **System - Adjust Volume**

Position	Isocenter
Orientation	Coronal
Rotation	-49.03 deg
F >> H	282 mm
R >> L	360 mm
A >> P	8 mm
Reset	Off

## System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

## Physio - Signal1

G/Trigger ± 213 ms
± 213 ms
Signal ms
set-
ms
S
0 ms

## Physio - Cardiac

Magn. preparation	TI Scout
Fat suppr.	None
Dark blood	Off
FoV read	360 mm
FoV phase	78.1 %
Phase resolution	50 %
Cine	On
Trajectory	Cartesian
View sharing	Off
Dummy heartbeats	1

## Physio - PACE

Resp. control	Off
Concatenations	1

#### **Inline - Common**

Subtract	Off
Measurements	1
StdDev	Off
Save original images	On

#### Inline - Cardiac

Inline Evaluation	Off
Magn. preparation	TI Scout
Contrasts	1
TE	1.34 ms
TR	28.80 ms
Save original images	On

#### Inline - MIP

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

# Inline - Composing

Distantian Osm	0	
Distortion Corr.	On	
Mode	2D	
Unfiltered images	Off	

## Sequence - Part 1

Introduction	Off
Dimension	2D
Reordering	Centric
Asymmetric echo	Weak
Contrasts	1
Optimization	Min. TE TR
Multi-slice mode	Sequential
Echo spacing	3.2 ms
Sequence type	Trufi
Bandwidth	965 Hz/Px

## Sequence - Part 2

Define	Segments
Segments	9
Trufi delta freq.	0 Hz
RF pulse type	Fast
Gradient mode	Normal
Excitation	Slice-sel.
Flip angle mode	Constant
Cine	On

Mode	Off
Allowed delay	0 s

# \\USER\Cardiac\ALTERED SEQUENCES- TAILORED PROTOCOLS\HYPERTROPHIC CARDIOMYOPA THY\DE\_high-res\_tfl20\_psir\_seg----SA

TA: 1:53 PM: REF Voxel size: 1.4×1.4×6.0 mmPAT: Off Rel. SNR: 1.00 : fl

#### **Properties**

Prio recon	Off
Load images to viewer	On
Inline movie	On
Auto store images	On
Load images to stamp segments	On
Load images to graphic segments	On
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	14
Dist. factor	20 %
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
AutoAlign	
Phase oversampling	0 %
FoV read	360 mm
FoV phase	81.3 %
Slice thickness	6.0 mm
TR	597.00 ms
TE	3.57 ms
Averages	1
Concatenations	14
Filter	Raw filter, Distortion
	Corr.(2D), Prescan
	Normalize, Image Filter
Coil elements	BO1,2;SP1,2

## **Contrast - Common**

TR	597.00 ms
TE	3.57 ms
Magn. preparation	Non-sel. IR
ТІ	300 ms
Flip angle	25 deg
Fat suppr.	None
Wrap-up Magn.	Suppress

#### **Contrast - Dynamic**

Averages	1
Averaging mode	Short term
Reconstruction	Magnitude/Real
Measurements	1
Multiple series	Each measurement

#### **Resolution - Common**

FoV read	360 mm
FoV phase	81.3 %
Slice thickness	6.0 mm
Base resolution	256
Phase resolution	75 %
Phase partial Fourier	Off
Trajectory	Cartesian
Interpolation	Off

#### **Resolution - iPAT**

PAT mode	None
-	

# Resolution - Filter Image

Image Filter	On
! Intensity	Medium
Edge Enhancement	3
Smoothing	2
Unfiltered images	Off
Distortion Corr.	On
Mode	2D
Unfiltered images	Off
Prescan Normalize	On
Unfiltered images	Off
Normalize	Off
B1 filter	Off

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

Raw filter	On
Elliptical filter	Off
POCS	Off

#### **Geometry - Common**

Slice group	1
Slices	14
Dist. factor	20 %
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
FoV read	360 mm
FoV phase	81.3 %
Slice thickness	6.0 mm
TR	597.00 ms
Multi-slice mode	Sequential
Series	Interl. in Bh.
Concatenations	14

## **Geometry - AutoAlign**

Slice group	1
AutoAlign	
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
Initial Position	Isocenter
L	0.0 mm
Р	0.0 mm
F	0.0 mm
Initial Rotation	0.00 deg
Initial Orientation	Transversal

#### **Geometry - Saturation**

Fat suppr.	None
Wrap-up Magn.	Suppress
Special sat.	None

#### **Geometry - Navigator**

#### 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	Cardio
AutoAlign	
Coil Select Mode	Off - AutoCoilSelect

## **System - Adjustments**

B0 Shim mode	Cardiac
Adjust with body coil	Off
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	293 mm
A >> P R >> L F >> H	360 mm
F >> H	100 mm
Reset	Off

# System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

#### Physio - Signal1

1st Signal/Mode ECG/Trigger Average cycle 225 ± 213 ms Average cycle No Signal ms Captured cycle 225 ± 213 ms	
Average cycle No Signal ms	
, , , , , , , , , , , , , , , , , , ,	
Captured cycle 225 + 213 ms	
Captarea cycle	
Acquisition window 597 ms	
Trigger pulse 2	
Trigger delay 0 ms	
TR 597.00 ms	
Concatenations 14	
Segments 20	
Phases 1	

## Physio - Cardiac

Magn. preparation	Non-sel. IR
ТІ	300 ms
Fat suppr.	None
Dark blood	Off
FoV read	360 mm
FoV phase	81.3 %
Phase resolution	75 %
Cine	Off
Trajectory	Cartesian
Dummy heartbeats	1

## **Physio - PACE**

Resp. control	Breath-hold
INCOP. COLLINI	Di catti-liota

#### **Physio - PACE**

Concatenations	14	
Inline - Common		
Subtract	Off	
Measurements	1	
StdDev	Off	
Save original images	On	

## Inline - Cardiac

Inline Evaluation	Off
Magn. preparation	Non-sel. IR
Contrasts	1
TE	3.57 ms
TR	597.00 ms
Save original images	On

#### Inline - MIP

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

## **Inline - Composing**

Distortion Corr.	On
Mode	2D
Unfiltered images	Off

#### Sequence - Part 1

Introduction	Off
Dimension	2D
Reordering	Linear
Asymmetric echo	Weak
Contrasts	1
Flow comp.	No
Optimization	Min. TE
Multi-slice mode	Sequential
Echo spacing	9.2 ms
Sequence type	Gre
Bandwidth	140 Hz/Px

## Sequence - Part 2

Define	Segments
Segments	20
RF pulse type	Fast
Gradient mode	Normal
Excitation	Slice-sel.
Flip angle mode	Constant
RF spoiling	On
Phase Enc. Rewinder	On
Cine	Off

Mode	Off
Allowed delay	0 s

# \\USER\Cardiac\ALTERED SEQUENCES- TAILORED PROTOCOLS\HYPERTROPHIC CARDIOMYOPA THY\DE\_high-res\_tfl20\_psir\_seg----4C

TA: 8.1 s PM: REF Voxel size: 1.4×1.4×8.0 mmPAT: Off Rel. SNR: 1.00 : fl

#### **Properties**

Prio recon	Off
Load images to viewer	On
Inline movie	On
Auto store images	On
Load images to stamp segments	On
Load images to graphic segments	On
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	1
Dist. factor	20 %
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
AutoAlign	
Phase oversampling	0 %
FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
TR	597.00 ms
TE	3.4 ms
Averages	1
Concatenations	1
Filter	Raw filter, Distortion
	Corr.(2D), Prescan
	Normalize, Image Filter
Coil elements	BO1,2;SP1,2

#### **Contrast - Common**

TR	597.00 ms
TE	3.4 ms
Magn. preparation	Non-sel. IR
ТІ	300 ms
Flip angle	25 deg
Fat suppr.	None
Wrap-up Magn.	Suppress

#### **Contrast - Dynamic**

Averages	1
Averaging mode	Short term
Reconstruction	Magnitude/Real
Measurements	1
Multiple series	Each measurement

## **Resolution - Common**

FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
Base resolution	256
Phase resolution	75 %
Phase partial Fourier	Off
Trajectory	Cartesian
Interpolation	Off

#### **Resolution - iPAT**

PAT mode	None
•	

## **Resolution - Filter Image**

Image Filter	On
! Intensity	Medium
Edge Enhancement	3
Smoothing	2
Unfiltered images	Off
Distortion Corr.	On
Mode	2D
Unfiltered images	Off
Prescan Normalize	On
Unfiltered images	Off
Normalize	Off
B1 filter	Off

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

Raw filter	On
Elliptical filter	Off
POCS	Off

#### **Geometry - Common**

Slice group	1
Slices	1
Dist. factor	20 %
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
TR	597.00 ms
Multi-slice mode	Sequential
Series	Interleaved
Concatenations	1

## **Geometry - AutoAlign**

,	
Slice group	1
AutoAlign	
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
Initial Position	Isocenter
L	0.0 mm
P	0.0 mm
Н	0.0 mm
Initial Rotation	0.00 deg
Initial Orientation	Transversal

# **Geometry - Saturation**

Fat suppr.	None
Wrap-up Magn.	Suppress
Special sat.	None

#### **Geometry - Navigator**

#### 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	Cardio
AutoAlign	
Coil Select Mode	Off - AutoCoilSelect

# **System - Adjustments**

B0 Shim mode	Cardiac
Adjust with body coil	Off
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	293 mm
R >> L	360 mm
F >> H	8 mm
Reset	Off

## System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

## Physio - Signal1

1st Signal/Mode	ECG/Trigger
Average cycle	225 ± 213 ms
Average cycle	No Signal ms
Captured cycle	225 ± 213 ms
Acquisition window	597 ms
Trigger pulse	2
Trigger delay	0 ms
TR	597.00 ms
Concatenations	1
Segments	20
Phases	1

# Physio - Cardiac

Magn. preparation	Non-sel. IR	
TI	300 ms	
Fat suppr.	None	
Dark blood	Off	
FoV read	360 mm	
FoV phase	81.3 %	
Phase resolution	75 %	
Cine	Off	
Trajectory	Cartesian	
Dummy heartbeats	1	

## **Physio - PACE**

Resp. control	Off	
TRESD. COLLIDI	Oll	

#### **Physio - PACE**

Concatenations	1	
Inline - Common		
Subtract	Off	
Measurements	1	
StdDev	Off	
Save original images	On	

#### Inline - Cardiac

Inline Evaluation	Off
Magn. preparation	Non-sel. IR
Contrasts	1
TE	3.4 ms
TR	597.00 ms
Save original images	On

#### Inline - MIP

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

## **Inline - Composing**

Distortion Corr.	On
Mode	2D
Unfiltered images	Off

#### Sequence - Part 1

ooquonee : air :	
Introduction	Off
Dimension	2D
Reordering	Linear
Asymmetric echo	Weak
Contrasts	1
Flow comp.	No
Optimization	Min. TE
Multi-slice mode	Sequential
Echo spacing	9 ms
Sequence type	Gre
Bandwidth	140 Hz/Px

# Sequence - Part 2

Define	Segments
Segments	20
RF pulse type	Fast
Gradient mode	Normal
Excitation	Slice-sel.
Flip angle mode	Constant
RF spoiling	On
Phase Enc. Rewinder	On
Cine	Off

Mode	Off
Allowed delay	0 s

# \\USER\Cardiac\ALTERED SEQUENCES- TAILORED PROTOCOLS\HYPERTROPHIC CARDIOMYOPA THY\DE\_high-res\_tfl20\_psir\_seg----2C

TA: 8.1 s PM: REF Voxel size: 1.4×1.4×8.0 mmPAT: Off Rel. SNR: 1.00 : fl

#### **Properties**

Prio recon	Off
Load images to viewer	On
Inline movie	On
Auto store images	On
Load images to stamp segments	On
Load images to graphic segments	On
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	1
Dist. factor	20 %
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
AutoAlign	
Phase oversampling	0 %
FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
TR	597.00 ms
TE	3.4 ms
Averages	1
Concatenations	1
Filter	Raw filter, Distortion
	Corr.(2D), Prescan
	Normalize, Image Filter
Coil elements	BO1,2;SP1,2

#### **Contrast - Common**

TR	597.00 ms
TE	3.4 ms
Magn. preparation	Non-sel. IR
TI	300 ms
Flip angle	25 deg
Fat suppr.	None
Wrap-up Magn.	Suppress

#### **Contrast - Dynamic**

Averages	1
Averaging mode	Short term
Reconstruction	Magnitude/Real
Measurements	1
Multiple series	Each measurement

#### **Resolution - Common**

FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
Base resolution	256
Phase resolution	75 %
Phase partial Fourier	Off
Trajectory	Cartesian
Interpolation	Off

#### **Resolution - iPAT**

PAT mode	None
-	

#### **Resolution - Filter Image**

Image Filter	On
! Intensity	Medium
Edge Enhancement	3
Smoothing	2
Unfiltered images	Off
Distortion Corr.	On
Mode	2D
Unfiltered images	Off
Prescan Normalize	On
Unfiltered images	Off
Normalize	Off
B1 filter	Off

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

Raw filter	On
Elliptical filter	Off
POCS	Off

#### **Geometry - Common**

Slice group	1
Slices	1
Dist. factor	20 %
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
TR	597.00 ms
Multi-slice mode	Sequential
Series	Interleaved
Concatenations	1

#### **Geometry - AutoAlign**

•	
Slice group	1
AutoAlign	
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
Initial Position	Isocenter
L	0.0 mm
Р	0.0 mm
Н	0.0 mm
Initial Rotation	0.00 deg
Initial Orientation	Transversal

## **Geometry - Saturation**

Fat suppr.	None
Wrap-up Magn.	Suppress
Special sat.	None

#### **Geometry - Navigator**

#### **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	Cardio
AutoAlign	
Coil Select Mode	Off - AutoCoilSelect

# **System - Adjustments**

B0 Shim mode	Cardiac
Adjust with body coil	Off
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	293 mm
R >> L	360 mm
F >> H	8 mm
Reset	Off

## System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

#### Physio - Signal1

<u> </u>	
1st Signal/Mode	ECG/Trigger
Average cycle	225 ± 213 ms
Average cycle	No Signal ms
Captured cycle	225 ± 213 ms
Acquisition window	597 ms
Trigger pulse	2
Trigger delay	0 ms
TR	597.00 ms
Concatenations	1
Segments	20
Phases	1

# Physio - Cardiac

Magn. preparation	Non-sel. IR	
TI	300 ms	
Fat suppr.	None	
Dark blood	Off	
FoV read	360 mm	
FoV phase	81.3 %	
Phase resolution	75 %	
Cine	Off	
Trajectory	Cartesian	
Dummy heartbeats	1	

## **Physio - PACE**

Resp. control	Off	

#### **Physio - PACE**

Concatenations	1	
Inline - Common		
Subtract	Off	
Measurements	1	
StdDev	Off	
Save original images	On	

#### Inline - Cardiac

Inline Evaluation	Off
Magn. preparation	Non-sel. IR
Contrasts	1
TE	3.4 ms
TR	597.00 ms
Save original images	On

#### Inline - MIP

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

## **Inline - Composing**

Distortion Corr.	On
Mode	2D
Unfiltered images	Off

# Sequence - Part 1

Introduction	Off
Dimension	2D
Reordering	Linear
Asymmetric echo	Weak
Contrasts	1
Flow comp.	No
Optimization	Min. TE
Multi-slice mode	Sequential
Echo spacing	9 ms
Sequence type	Gre
Bandwidth	140 Hz/Px

## Sequence - Part 2

Define	Segments
Segments	20
RF pulse type	Fast
Gradient mode	Normal
Excitation	Slice-sel.
Flip angle mode	Constant
RF spoiling	On
Phase Enc. Rewinder	On
Cine	Off

Mode	Off
Allowed delay	0 s

# \\USER\Cardiac\ALTERED SEQUENCES- TAILORED PROTOCOLS\STRESS MRI\trufi\_loc\_multi\_iPA

TA: 4.0 s PM: REF Voxel size: 1.7×1.7×8.0 mmPAT: 2 Rel. SNR: 1.00 : tfi

## **Properties**

P	Prio recon	Off
L	oad images to viewer	On
Ir	nline movie	Off
Α	auto store images	On
L	oad images to stamp segments	Off
L	oad images to graphic segments	On
А	uto open inline display	Off
Α	uto close inline display	Off
1 -	Start measurement without further reparation	On
٧	Vait for user to start	Off
S	Start measurements	Single measurement

#### **Routine**

Slice group	1
Slices	3
Dist. factor	300 %
Position	L0.0 P20.0 H0.0 mm
Orientation	Transversal
Phase enc. dir.	A >> P
Slice group	2
Slices	3
Dist. factor	300 %
Position	L30.0 P0.0 H0.0 mm
Orientation	Sagittal
Phase enc. dir.	A >> P
Slice group	3
Slices	3
Dist. factor	300 %
Position	L0.0 P10.0 H0.0 mm
Orientation	Coronal
Phase enc. dir.	R >> L
AutoAlign	
Phase oversampling	0 %
FoV read	400 mm
FoV phase	100.0 %
Slice thickness	8.0 mm
TR	350.73 ms
TE	1.43 ms
Averages	1
Concatenations	9
Filter	Distortion Corr.(2D),
	Prescan Normalize
Coil elements	BO1,2;SP1,2

#### **Contrast - Common**

TR	350.73 ms
TE	1.43 ms
TD	0 ms
Magn. preparation	None
Flip angle	80 deg
Fat suppr. Wrap-up Magn.	None
Wrap-up Magn.	Restore

#### **Contrast - Dynamic**

Averages	1
Averaging mode	Short term
Reconstruction	Magnitude
Measurements	1

#### **Contrast - Dynamic**

Multiple series

Resolution - Common		
FoV read	400 mm	
FoV phase	100.0 %	

Each measurement

Fov read	400 mm
FoV phase	100.0 %
Slice thickness	8.0 mm
Base resolution	240
Phase resolution	66 %
Phase partial Fourier	Off
Trajectory	Cartesian
Interpolation	Off

#### **Resolution - iPAT**

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

#### **Resolution - Filter Image**

Image Filter	Off
Distortion Corr.	On
Mode	2D
Unfiltered images	Off
Prescan Normalize	On
Unfiltered images	Off
Normalize	Off
B1 filter	Off

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

Raw filter	Off	
Elliptical filter	Off	ļ
POCS	Off	

## **Geometry - Common**

Slice group	1
Slices	3
Dist. factor	300 %
Position	L0.0 P20.0 H0.0 mm
Orientation	Transversal
Phase enc. dir.	A >> P
Slice group	2
Slices	3
Dist. factor	300 %
Position	L30.0 P0.0 H0.0 mm
Orientation	Sagittal
Phase enc. dir.	A >> P
Slice group	3
Slices	3
Dist. factor	300 %
Position	L0.0 P10.0 H0.0 mm
Orientation	Coronal
Phase enc. dir.	R >> L
FoV read	400 mm
FoV phase	100.0 %
Slice thickness	8.0 mm
TR	350.73 ms
Multi-slice mode	Sequential
Series	Descending
Concatenations	9

## **Geometry - AutoAlign**

Slice group	1
Slice group	2
Slice group	3
AutoAlign	
Position	L0.0 P10.0 H0.0 mm
Orientation	Coronal
Phase enc. dir.	R >> L
Initial Position	L0.0 P20.0 H0.0
L	0.0 mm
Р	20.0 mm
Н	0.0 mm
Initial Rotation	0.00 deg
Initial Orientation	Transversal

## **Geometry - Saturation**

Fat suppr.	None
Wrap-up Magn.	Restore
Special sat.	None

## **Geometry - Navigator**

# **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	Off - AutoCoilSelect

# **System - Adjustments**

B0 Shim mode	Cardiac
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto

# **System - Adjust Volume**

Position	L0.0 P10.0 H0.0 mm
Orientation	Sagittal
Rotation	90.00 deg
F >> H	400 mm
A >> P	420 mm
R >> L	400 mm
Reset	Off

# System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

# Physio - Signal1

1st Signal/Mode	ECG/Trigger
Average cycle	$225 \pm 213 \text{ ms}$

## Physio - Signal1

Average cycle	No Signal ms
Captured cycle	225 ± 213 ms
Acquisition window	800 ms
Trigger pulse	1
Trigger delay	400 ms
TR	350.73 ms
Concatenations	9
Segments	91
Phases	1

# Physio - Cardiac

Magn. preparation	None
Fat suppr.	None
Dark blood	Off
FoV read	400 mm
FoV phase	100.0 %
Phase resolution	66 %
Cine	Off
Trajectory	Cartesian
Dummy heartbeats	0

## **Physio - PACE**

Resp. control	Off
Concatenations	9

#### Inline - Common

Subtract	Off	
Measurements	1	
StdDev	Off	
Save original images	On	

#### Inline - Cardiac

Inline Evaluation	Off
Magn. preparation	None
Contrasts	1
TE	1.43 ms
TR	350.73 ms
Save original images	On

#### Inline - MIP

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

## **Inline - Composing**

Distortion Corr.	On
Mode	2D
Unfiltered images	Off

## Sequence - Part 1

Introduction	Off
Dimension	2D
Reordering	Linear
Asymmetric echo	Weak
Contrasts	1
Optimization	Min. TE
Multi-slice mode	Sequential
Echo spacing	3.4 ms
Sequence type	Trufi
Bandwidth	1096 Hz/Px

# SIEMENS MAGNETOM MAGNETOM\_ESSENZA

# Sequence - Part 2

Define	Shots
Shots per slice	1
Segments	91
Trufi delta freq.	0 Hz
RF pulse type	Fast
Gradient mode	Normal
Excitation	Slice-sel.
Flip angle mode	Constant
Cine	Off

Mode	Min flip angle
Min flip angle	50 deg
Allowed delay	0 s

# \\USER\Cardiac\ALTERED SEQUENCES- TAILORED PROTOCOLS\STRESS MRI\TRUFI\_2-CHAMBER

TA: 0.4 s PM: REF Voxel size: 1.6×1.6×8.0 mmPAT: 2 Rel. SNR: 1.00 : tfi

#### **Properties**

Prio recon	Off
Load images to viewer	On
Inline movie	Off
Auto store images	On
Load images to stamp segments	On
Load images to graphic segments	On
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	1
Dist. factor	20 %
Position	L42.5 P9.8 H12.3 mm
Orientation	C > S-37.7
Phase enc. dir.	L >> R
AutoAlign	
Phase oversampling	0 %
FoV read	387 mm
FoV phase	87.5 %
Slice thickness	8.0 mm
TR	316.29 ms
TE	1.46 ms
Averages	1
Concatenations	1
Filter	Distortion Corr.(2D), Prescan Normalize, Image Filter
Coil elements	BO1,2;SP1,2

#### **Contrast - Common**

TR	316.29 ms
TE	1.46 ms
Magn. preparation	None
Flip angle	80 deg
Fat suppr.	None
Wrap-up Magn.	Restore

## **Contrast - Dynamic**

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

#### **Resolution - Common**

FoV read	387 mm
FoV phase	87.5 %
Slice thickness	8.0 mm
Base resolution	240
Phase resolution	64 %
Phase partial Fourier	Off
Trajectory	Cartesian
Interpolation	Off

#### **Resolution - iPAT**

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

## **Resolution - Filter Image**

Image Filter	On
! Intensity	Medium
Edge Enhancement	3
Smoothing	2
Unfiltered images	Off
Distortion Corr.	On
Mode	2D
Unfiltered images	Off
Prescan Normalize	On
Unfiltered images	Off
Normalize	Off
B1 filter	Off

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

Raw filter	Off
Elliptical filter	Off
POCS	Off

## **Geometry - Common**

Slice group	1
Slices	1
Dist. factor	20 %
Position	L42.5 P9.8 H12.3 mm
Orientation	C > S-37.7
Phase enc. dir.	L >> R
FoV read	387 mm
FoV phase	87.5 %
Slice thickness	8.0 mm
TR	316.29 ms
Multi-slice mode	Sequential
Series	Interleaved
Concatenations	1

## Geometry - AutoAlign

Slice group	1
AutoAlign	
Position	L42.5 P9.8 H12.3 mm
Orientation	C > S-37.7
Phase enc. dir.	L >> R
Initial Position	L42.5 P9.8 H12.3
L	42.5 mm
P	9.8 mm
Н	12.3 mm
Initial Rotation	-180.00 deg
Initial Orientation	C > S
C > S	-37.7
> T	0.0

## **Geometry - Saturation**

Fat suppr.	None
Wrap-up Magn.	Restore
Special sat.	None

# **Geometry - Navigator**

## **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	Off - AutoCoilSelect

## **System - Adjustments**

B0 Shim mode	Cardiac
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto

## **System - Adjust Volume**

Position	L42.5 P9.8 H12.3 mm
Orientation	C > S-37.7
Rotation	180.00 deg
R >> L	339 mm
F >> H	387 mm
A >> P	8 mm
Reset	Off

# System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

# Physio - Signal1

1st Signal/Mode	ECG/Trigger
Average cycle	225 ± 213 ms
Average cycle	No Signal ms
Captured cycle	225 ± 213 ms
Acquisition window	779 ms
Trigger pulse	1
Trigger delay	462 ms
TR	316.29 ms
Concatenations	1
Segments	79
Phases	1

## Physio - Cardiac

, o	
Magn. preparation	None
Fat suppr.	None
Dark blood	Off
FoV read	387 mm
FoV phase	87.5 %
Phase resolution	64 %
Cine	Off
Trajectory	Cartesian
Dummy heartbeats	0

# Physio - PACE

Resp. control	Off
Concatenations	1

#### **Inline - Common**

Subtract	Off
Measurements	1
StdDev	Off
Save original images	On

## Inline - Cardiac

Inline Evaluation	Off
Magn. preparation	None
Contrasts	1
TE	1.46 ms
TR	316.29 ms
Save original images	On

## Inline - MIP

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

# Inline - Composing

Distortion Corr.	On
Mode	2D
Unfiltered images	Off

# Sequence - Part 1

Introduction	Off
Dimension	2D
Reordering	Linear
Asymmetric echo	Weak
Contrasts	1
Optimization	Min. TE
Multi-slice mode	Sequential
Echo spacing	3.5 ms
Sequence type	Trufi
Bandwidth	1096 Hz/Px

## Sequence - Part 2

_	
Define	Shots
Shots per slice	1
Segments	79
Trufi delta freq.	0 Hz
RF pulse type	Fast
Gradient mode	Normal
Excitation	Slice-sel.
Flip angle mode	Constant
Cine	Off

Mode	Min flip angle
Min flip angle	50 deg
Allowed delay	0 s

# \\USER\Cardiac\ALTERED SEQUENCES- TAILORED PROTOCOLS\STRESS MRI\TRUFI\_4-CHAMBER \_Loc

TA: 0.4 s PM: REF Voxel size: 1.6×1.6×8.0 mmPAT: 2 Rel. SNR: 1.00 : tfi

#### **Properties**

Prio recon	Off
Load images to viewer	On
Inline movie	Off
Auto store images	On
Load images to stamp segments	On
Load images to graphic segments	On
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	1
Dist. factor	20 %
Position	L34.3 A0.5 H22.0 mm
Orientation	T > C40.0 > S-11.2
Phase enc. dir.	A >> P
AutoAlign	
Phase oversampling	0 %
FoV read	340 mm
FoV phase	94.2 %
Slice thickness	8.0 mm
TR	286.98 ms
TE	1.45 ms
Averages	1
Concatenations	1
Filter	Distortion Corr.(2D),
	Prescan Normalize
Coil elements	BO1,2;SP1,2

#### **Contrast - Common**

TR	286.98 ms
TE	1.45 ms
Magn. preparation	None
Flip angle	80 deg
Fat suppr.	None
Wrap-up Magn.	Restore

## **Contrast - Dynamic**

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

#### **Resolution - Common**

FoV read	340 mm	
FoV phase	94.2 %	
Slice thickness	8.0 mm	
Base resolution	208	
Phase resolution	60 %	
Phase partial Fourier	Off	
Trajectory	Cartesian	
Interpolation	Off	

#### **Resolution - iPAT**

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

#### **Resolution - Filter Image**

Image Filter	Off
Distortion Corr.	On
Mode	2D
Unfiltered images	Off
Prescan Normalize	On
Unfiltered images	Off
Normalize	Off
B1 filter	Off

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

Raw filter	Off
Elliptical filter	Off
POCS	Off

#### **Geometry - Common**

Slice group	1
Slices	1
Dist. factor	20 %
Position	L34.3 A0.5 H22.0 mm
Orientation	T > C40.0 > S-11.2
Phase enc. dir.	A >> P
FoV read	340 mm
FoV phase	94.2 %
Slice thickness	8.0 mm
TR	286.98 ms
Multi-slice mode	Sequential
Series	Interleaved
Concatenations	1

#### **Geometry - AutoAlign**

- · · · · · · · · · · · · · · · · · · ·	
Slice group	1
AutoAlign	
Position	L34.3 A0.5 H22.0 mm
Orientation	T > C40.0 > S-11.2
Phase enc. dir.	A >> P
Initial Position	L34.3 A0.5 H22.0
L	34.3 mm
A	0.5 mm
Н	22.0 mm
Initial Rotation	9.22 deg
Initial Orientation	T > C
T > C	40.0
> S	-11.2

## **Geometry - Saturation**

Fat suppr.	None
Wrap-up Magn.	Restore
Special sat.	None

## **Geometry - Navigator**

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	Off - AutoCoilSelect

# **System - Adjustments**

B0 Shim mode	Cardiac
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto

# System - Adjust Volume

Position	L34.3 A0.5 H22.0 mm
Orientation	T > C40.0 > S-11.2
Rotation	9.23 deg
A >> P	321 mm
R >> L	340 mm
F >> H	8 mm
Reset	Off

## System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

## Physio - Signal1

1st Signal/Mode	ECG/Trigger
Average cycle	$225 \pm 213 \text{ ms}$
Average cycle	No Signal ms
Captured cycle	$225 \pm 213 \text{ ms}$
Acquisition window	750 ms
Trigger pulse	1
Trigger delay	463 ms
TR	286.98 ms
Concatenations	1
Segments	71
Phases	1
Segments	71

# Physio - Cardiac

Magn. preparation	None
Fat suppr.	None
Dark blood	Off
FoV read	340 mm
FoV phase	94.2 %
Phase resolution	60 %
Cine	Off
Trajectory	Cartesian
Dummy heartbeats	0

## **Physio - PACE**

Resp. control	Off	
Nesp. Control	OII	

#### **Physio - PACE**

Concatenations	1	
Inline - Common		
Subtract	Off	
Measurements	1	
StdDev	Off	
Save original images	On	

#### Inline - Cardiac

Inline Evaluation	Off
Magn. preparation	None
Contrasts	1
TE	1.45 ms
TR	286.98 ms
Save original images	On

## Inline - MIP

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

## **Inline - Composing**

Distortion Corr.	On
Mode	2D
Unfiltered images	Off

#### Sequence - Part 1

Introduction	Off
Dimension	2D
Reordering	Linear
Asymmetric echo	Weak
Contrasts	1
Optimization	Min. TE
Multi-slice mode	Sequential
Echo spacing	3.4 ms
Sequence type	Trufi
Bandwidth	1093 Hz/Px

# Sequence - Part 2

Define	Shots
Shots per slice	1
Segments	71
Trufi delta freq.	0 Hz
RF pulse type	Fast
Gradient mode	Normal
Excitation	Slice-sel.
Flip angle mode	Constant
Cine	Off

Mode	Min flip angle
Min flip angle	50 deg
Allowed delay	0 s

#### \\USER\Cardiac\ALTERED SEQUENCES- TAILORED PROTOCOLS\STRESS MRI\TRUFI\_SHORT AXIS Loc

TA: 3.6 s PM: REF Voxel size: 1.7×1.7×8.0 mmPAT: 2 Rel. SNR: 1.00 : tfi

#### **Properties**

Prio recon	Off
Load images to viewer	On
Inline movie	Off
Auto store images	On
Load images to stamp segments	On
Load images to graphic segments	On
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	8
Dist. factor	100 %
Position	L62.9 A7.2 H12.9 mm
Orientation	S > C37.7 > T28.3
Phase enc. dir.	A >> P
AutoAlign	
Phase oversampling	0 %
FoV read	360 mm
FoV phase	87.5 %
Slice thickness	8.0 mm
TR	283.54 ms
TE	1.39 ms
Averages	1
Concatenations	8
Filter	Distortion Corr.(2D), Prescan Normalize, Image Filter
Coil elements	BO1,2;SP1,2

#### **Contrast - Common**

TR TE	283.54 ms
	1.39 ms
TD	0 ms
Magn. preparation	None
Flip angle	80 deg
Fat suppr.	None
Wrap-up Magn.	Restore

## **Contrast - Dynamic**

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

#### **Resolution - Common**

FoV read	360 mm
FoV phase	87.5 %
Slice thickness	8.0 mm
Base resolution	208
Phase resolution	64 %
Phase partial Fourier	Off
Trajectory	Cartesian
Interpolation	Off

#### **Resolution - iPAT**

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

#### **Resolution - Filter Image**

Image Filter	On
! Intensity	Medium
Edge Enhancement	3
Smoothing	2
Unfiltered images	Off
Distortion Corr.	On
Mode	2D
Unfiltered images	Off
Prescan Normalize	On
Unfiltered images	Off
Normalize	Off
B1 filter	Off

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

Raw filter	Off
Elliptical filter	Off
POCS	Off

#### **Geometry - Common**

Slice group	1
Slices	8
Dist. factor	100 %
Position	L62.9 A7.2 H12.9 mm
Orientation	S > C37.7 > T28.3
Phase enc. dir.	A >> P
FoV read	360 mm
FoV phase	87.5 %
Slice thickness	8.0 mm
TR	283.54 ms
Multi-slice mode	Sequential
Series	Descending
Concatenations	8

# **Geometry - AutoAlign**

Slice group	1
	'
AutoAlign	
Position	L62.9 A7.2 H12.9 mm
Orientation	S > C37.7 > T28.3
Phase enc. dir.	A >> P
Initial Position	L62.9 A7.2 H12.9
L	62.9 mm
A	7.2 mm
Н	12.9 mm
Initial Rotation	20.14 deg
Initial Orientation	S > C
S > C	37.7
> T	28.3

#### **Geometry - Saturation**

Fat suppr.	None
Wrap-up Magn.	Restore
Special sat.	None

# **Geometry - Navigator**

# **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	Off - AutoCoilSelect

## **System - Adjustments**

B0 Shim mode	Cardiac
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto

## **System - Adjust Volume**

Position	L62.9 A7.2 H12.9 mm
Orientation	S > C37.7 > T28.3
Rotation	20.14 deg
A >> P F >> H	315 mm
F >> H	360 mm
R >> L	120 mm
Reset	Off

# System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

# Physio - Signal1

1st Signal/Mode	ECG/Trigger
Average cycle	225 ± 213 ms
Average cycle	No Signal ms
Captured cycle	225 ± 213 ms
Acquisition window	755 ms
Trigger pulse	1
Trigger delay	471 ms
TR	283.54 ms
Concatenations	8
Segments	70
Phases	1

## Physio - Cardiac

i iiyolo Garalas	
Magn. preparation	None
Fat suppr.	None
Dark blood	Off
FoV read	360 mm
FoV phase	87.5 %
Phase resolution	64 %
Cine	Off
Trajectory	Cartesian
Dummy heartbeats	0

## Physio - PACE

Resp. control	Off
Concatenations	8

#### **Inline - Common**

Subtract	Off
Measurements	1
StdDev	Off
Save original images	On

## Inline - Cardiac

Inline Evaluation	Off
Magn. preparation	None
Contrasts	1
TE	1.39 ms
TR	283.54 ms
Save original images	On

## Inline - MIP

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

## **Inline - Composing**

Distortion Corr.	On
Mode	2D
Unfiltered images	Off

# Sequence - Part 1

Introduction	Off
Dimension	2D
Reordering	Linear
Asymmetric echo	Weak
Contrasts	1
Optimization	Min. TE
Multi-slice mode	Sequential
Echo spacing	3.3 ms
Sequence type	Trufi
Bandwidth	1045 Hz/Px

## Sequence - Part 2

Define	Shots
Shots per slice	1
Segments	70
Trufi delta freq.	0 Hz
RF pulse type	Fast
Gradient mode	Normal
Excitation	Slice-sel.
Flip angle mode	Constant
Cine	Off

Mode	Min flip angle
Min flip angle	50 deg
Allowed delay	0 s

#### \\USER\Cardiac\ALTERED SEQUENCES- TAILORED PROTOCOLS\STRESS MRI\LT\_2-CHAMBER\_CI NF

TA: 2.0 s PM: REF Voxel size: 1.9×1.9×8.0 mmPAT: 2 Rel. SNR: 1.00 : tfi

#### **Properties**

Prio recon	Off
Load images to viewer	On
Inline movie	On
Auto store images	On
Load images to stamp segments	On
Load images to graphic segments	On
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	1
Dist. factor	20 %
Position	L41.8 P10.3 H13.2 mm
Orientation	C > S-37.7
Phase enc. dir.	L >> R
AutoAlign	
Phase oversampling	0 %
FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
TR	41.60 ms
TE	1.34 ms
Averages	1
Concatenations	1
Filter	Distortion Corr.(2D),
	Prescan Normalize,
	Image Filter
Coil elements	BO1,2;SP1,2

#### **Contrast - Common**

TR TE	41.60 ms
TE	1.34 ms
Magn. preparation	None
Flip angle	60 deg
Fat suppr.	None
Wrap-up Magn.	Restore

## **Contrast - Dynamic**

Averages	1
Averaging mode	Short term
Reconstruction	Magnitude
Measurements	1
Multiple series	Off

#### **Resolution - Common**

360 mm
81.3 %
8.0 mm
192
100 %
Off
Cartesian
Off
Off

#### **Resolution - iPAT**

PAT mode	GRAPPA
Accel. factor PE	2
Ref. lines PE	44
Reference scan mode	Integrated

## **Resolution - Filter Image**

Image Filter	On
! Intensity	Medium
Edge Enhancement	3
Smoothing	2
Unfiltered images	Off
Distortion Corr.	On
Mode	2D
Unfiltered images	Off
Prescan Normalize	On
Unfiltered images	Off
Normalize	Off
B1 filter	Off

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

Raw filter	Off
Elliptical filter	Off
POCS	Off

#### **Geometry - Common**

Slice group	1
Slices	1
Dist. factor	20 %
Position	L41.8 P10.3 H13.2 mm
Orientation	C > S-37.7
Phase enc. dir.	L >> R
FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
TR	41.60 ms
Multi-slice mode	Sequential
Series	Interl. in Bh.
Concatenations	1

## Geometry - AutoAlign

Slice group	1
AutoAlign	
Position	L41.8 P10.3 H13.2 mm
Orientation	C > S-37.7
Phase enc. dir.	L >> R
Initial Position	L41.8 P10.3 H13.2
L	41.8 mm
P	10.3 mm
Н	13.2 mm
Initial Rotation	-180.00 deg
Initial Orientation	C > S
C > S	-37.7
> T	0.0

## **Geometry - Saturation**

Fat suppr.	None
Wrap-up Magn.	Restore
Special sat.	None

# **Geometry - Navigator**

# **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	Off - AutoCoilSelect

## **System - Adjustments**

B0 Shim mode	Cardiac
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto

## **System - Adjust Volume**

Position	L41.8 P10.3 H13.2 mm
Orientation	C > S-37.7
Rotation	180.00 deg
R >> L	293 mm
F >> H	360 mm
A >> P	8 mm
Reset	Off

# System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

# Physio - Signal1

1st Signal/Mode	ECG/Retro
Average cycle	225 ± 213 ms
Average cycle	No Signal ms
Calculated phases	25
TR	41.60 ms
Concatenations	1
Segments	13
Arrhythmia detection	None

## Physio - Cardiac

Magn. preparation	None
Fat suppr.	None
Dark blood	Off
FoV read	360 mm
FoV phase	81.3 %
Phase resolution	100 %
Cine	On
Trajectory	Cartesian
View sharing	Off
Dummy heartbeats	1

# Physio - PACE

Resp. control	Breath-hold
Concatenations	1

#### **Inline - Common**

Subtract	Off
Measurements	1
StdDev	Off
Save original images	On

## Inline - Cardiac

Inline Evaluation	Off
Magn. preparation	None
Contrasts	1
TE	1.34 ms
TR	41.60 ms
Save original images	On

#### Inline - MIP

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

## **Inline - Composing**

Distortion Corr.	On
Mode	2D
Unfiltered images	Off

# Sequence - Part 1

Introduction	Off
Dimension	2D
Reordering	Linear
Asymmetric echo	Weak
Contrasts	1
Optimization	Min. TE TR
Multi-slice mode	Sequential
Echo spacing	3.2 ms
Sequence type	Trufi
Bandwidth	965 Hz/Px

## Sequence - Part 2

Define	Segments
Segments	13
Trufi delta freq.	0 Hz
RF pulse type	Fast
Gradient mode	Normal
Excitation	Slice-sel.
Flip angle mode	Constant
Cine	On

Mode	Min flip angle
Min flip angle	50 deg
Allowed delay	0 s

## \\USER\Cardiac\ALTERED SEQUENCES- TAILORED PROTOCOLS\STRESS MRI\4-CHAMBER\_CINE

TA: 2.5 s PM: REF Voxel size: 1.9×1.9×8.0 mmPAT: 2 Rel. SNR: 1.00 : tfi

#### **Properties**

Prio recon	Off
Load images to viewer	On
Inline movie	On
Auto store images	On
Load images to stamp segments	On
Load images to graphic segments	On
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	1
Dist. factor	20 %
Position	L30.8 A0.1 H23.5 mm
Orientation	T > C39.4 > S-10.6
Phase enc. dir.	A >> P
AutoAlign	
Phase oversampling	0 %
FoV read	360 mm
FoV phase	100.0 %
Slice thickness	8.0 mm
TR	41.60 ms
TE	1.34 ms
Averages	1
Concatenations	1
Filter	Distortion Corr.(2D), Prescan Normalize, Image Filter
Coil elements	BO1,2;SP1,2

## **Contrast - Common**

TR	41.60 ms
TE	1.34 ms
Magn. preparation	None
Flip angle	60 deg
Fat suppr.	None
Wrap-up Magn.	Restore

## **Contrast - Dynamic**

Averages	1
Averaging mode	Short term
Reconstruction	Magnitude
Measurements	1
Multiple series	Off

#### **Resolution - Common**

FoV read	360 mm
FoV phase	100.0 %
Slice thickness	8.0 mm
Base resolution	192
Phase resolution	100 %
Phase partial Fourier	Off
Trajectory	Cartesian
View sharing	Off
Interpolation	Off

#### **Resolution - iPAT**

PAT mode	GRAPPA
Accel. factor PE	2
Ref. lines PE	44
Reference scan mode	Integrated

#### **Resolution - Filter Image**

Image Filter	On
! Intensity	Medium
Edge Enhancement	3
Smoothing	2
Unfiltered images	Off
Distortion Corr.	On
Mode	2D
Unfiltered images	Off
Prescan Normalize	On
Unfiltered images	Off
Normalize	Off
B1 filter	Off

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

Raw filter	Off	
Elliptical filter	Off	
POCS	Off	

## **Geometry - Common**

Slice group	1
Slices	1
Dist. factor	20 %
Position	L30.8 A0.1 H23.5 mm
Orientation	T > C39.4 > S-10.6
Phase enc. dir.	A >> P
FoV read	360 mm
FoV phase	100.0 %
Slice thickness	8.0 mm
TR	41.60 ms
Multi-slice mode	Sequential
Series	Interl. in Bh.
Concatenations	1

## Geometry - AutoAlign

Slice group	1
AutoAlign	
Position	L30.8 A0.1 H23.5 mm
Orientation	T > C39.4 > S-10.6
Phase enc. dir.	A >> P
Initial Position	L30.8 A0.1 H23.5
L	30.8 mm
A	0.1 mm
Н	23.5 mm
Initial Rotation	8.59 deg
Initial Orientation	T > C
T > C	39.4
> S	-10.6

## **Geometry - Saturation**

Fat suppr.	None
Wrap-up Magn.	Restore
Special sat.	None

## **Geometry - Navigator**

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	Off - AutoCoilSelect

# **System - Adjustments**

B0 Shim mode	Cardiac
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto

# **System - Adjust Volume**

L30.8 A0.1 H23.5 mm
T > C39.4 > S-10.6
8.59 deg
360 mm
360 mm
8 mm
Off

# System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

## Physio - Signal1

1st Signal/Mode	ECG/Retro
Average cycle	225 ± 213 ms
Average cycle	No Signal ms
Calculated phases	25
TR	41.60 ms
Concatenations	1
Segments	13
Arrhythmia detection	None

# Physio - Cardiac

Magn. preparation	None
Fat suppr.	None
Dark blood	Off
FoV read	360 mm
FoV phase	100.0 %
Phase resolution	100 %
Cine	On
Trajectory	Cartesian
View sharing	Off
Dummy heartbeats	1

# **Physio - PACE**

Resp. control	Breath-hold
Concatenations	1

#### **Inline - Common**

Subtract	Off
Measurements	1
StdDev	Off
Save original images	On

#### Inline - Cardiac

Inline Evaluation	Off
Magn. preparation	None
Contrasts	1
TE	1.34 ms
TR	41.60 ms
Save original images	On

## Inline - MIP

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

## **Inline - Composing**

Distortion Corr.	On	
Mode	2D	
Unfiltered images	Off	

## Sequence - Part 1

Introduction	Off
Dimension	2D
Reordering	Linear
Asymmetric echo	Weak
Contrasts	1
Optimization	Min. TE TR
Multi-slice mode	Sequential
Echo spacing	3.2 ms
Sequence type	Trufi
Bandwidth	965 Hz/Px

## Sequence - Part 2

Define	Segments
Segments	13
Trufi delta freq.	0 Hz
RF pulse type	Fast
Gradient mode	Normal
Excitation	Slice-sel.
Flip angle mode	Constant
Cine	On

Mode	Min flip angle
Min flip angle	50 deg
Allowed delay	0 s

## \\USER\Cardiac\ALTERED SEQUENCES- TAILORED PROTOCOLS\STRESS MRI\SA - Cine

TA: 0:55 PM: REF Voxel size: 1.9×1.9×8.0 mmPAT: 3 Rel. SNR: 1.00 : tfi

#### **Properties**

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

## Routine

Slice group	1
Slices	14
Dist. factor	25 %
Position	L36.5 P10.9 F53.2 mm
Orientation	C > S38.2 > T-27.5
Phase enc. dir.	A >> P
AutoAlign	
Phase oversampling	0 %
FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
TR	51.20 ms
TE	1.34 ms
Averages	1
Concatenations	7
Filter	Distortion Corr.(2D),
	Prescan Normalize, Image Filter
Coil elements	BO1,2;SP2

## **Contrast - Common**

TR	51.20 ms
TE	1.34 ms
Magn. preparation	None
Flip angle	60 deg
Fat suppr.	None
Wrap-up Magn.	Restore

## **Contrast - Dynamic**

Averages	1
Averaging mode	Short term
Reconstruction	Magnitude
Measurements	1
Multiple series	Each slice and
·	measurement

#### **Resolution - Common**

FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
Base resolution	192
Phase resolution	70 %
Phase partial Fourier	Off
Trajectory	Cartesian
View sharing	Off
Interpolation	Off

#### **Resolution - iPAT**

PAT mode	GRAPPA
Accel. factor PE	3
Ref. lines PE	54
Reference scan mode	Integrated

#### **Resolution - Filter Image**

Image Filter	On
! Intensity	Medium
Edge Enhancement	3
Smoothing	2
Unfiltered images	Off
Distortion Corr.	On
Mode	2D
Unfiltered images	Off
Prescan Normalize	On
Unfiltered images	Off
Normalize	Off
B1 filter	Off

## **Resolution - Filter Rawdata**

Raw filter	Off
Elliptical filter	Off
POCS	Off

## **Geometry - Common**

Slice group	1
Slices	14
Dist. factor	25 %
Position	L36.5 P10.9 F53.2 mm
Orientation	C > S38.2 > T-27.5
Phase enc. dir.	A >> P
FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
TR	51.20 ms
Multi-slice mode	Sequential
Series	Base To Apex
Concatenations	7

## Geometry - AutoAlign

Slice group	1
AutoAlign	
Position	L36.5 P10.9 F53.2 mm
Orientation	C > S38.2 > T-27.5
Phase enc. dir.	A >> P
Initial Position	L36.5 P10.9 F20.2
L	36.5 mm
P	10.9 mm
F	20.2 mm
Initial Rotation	-30.37 deg
Initial Orientation	C > S
C > S	38.2
> T	-27.5

## **Geometry - Saturation**

Fat suppr.	None
Wrap-up Magn.	Restore
Special sat.	None

# **Geometry - Navigator**

Positioning mode	REF
Table position	F
Table position	33 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	Off - AutoCoilSelect

# **System - Adjustments**

B0 Shim mode	Cardiac
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto

# **System - Adjust Volume**

Position	L36.5 P10.9 F53.2 mm
Orientation	C > S38.2 > T-27.5
Rotation	-30.37 deg
A >> P	293 mm
F >> H	360 mm
A >> P	138 mm
Reset	Off

## System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

## Physio - Signal1

<u>,                                      </u>	
1st Signal/Mode	ECG/Retro
Average cycle	225 ± 213 ms
Average cycle	No Signal ms
Calculated phases	25
TR	51.20 ms
Concatenations	7
Segments	16
Arrhythmia detection	None

# Physio - Cardiac

Magn. preparation	None
Fat suppr.	None
Dark blood	Off
FoV read	360 mm
FoV phase	81.3 %
Phase resolution	70 %
Cine	On
Trajectory	Cartesian
View sharing	Off
Dummy heartbeats	1

# **Physio - PACE**

Resp. control	Breath-hold
Concatenations	7

#### **Inline - Common**

Subtract	Off
Measurements	1
StdDev	Off
Save original images	On

#### Inline - Cardiac

Inline Evaluation	Off
Magn. preparation	None
Contrasts	1
TE	1.34 ms
TR	51.20 ms
Save original images	On

## Inline - MIP

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

## **Inline - Composing**

Distortion Corr.	On	
Mode	2D	
Unfiltered images	Off	

## Sequence - Part 1

Introduction	Off
Dimension	2D
Reordering	Linear
Asymmetric echo	Weak
Contrasts	1
Optimization	Min. TE TR
Multi-slice mode	Sequential
Echo spacing	3.2 ms
Sequence type	Trufi
Bandwidth	965 Hz/Px

## Sequence - Part 2

Define	Segments
Segments	16
Trufi delta freq.	0 Hz
RF pulse type	Fast
Gradient mode	Normal
Excitation	Slice-sel.
Flip angle mode	Constant
Cine	On

Mode	Min flip angle
Min flip angle	50 deg
Allowed delay	0 s

## \\USER\Cardiac\ALTERED SEQUENCES- TAILORED PROTOCOLS\STRESS MRI\3-CHAMBER Cine

TA: 2.0 s PM: REF Voxel size: 1.9×1.9×8.0 mmPAT: 2 Rel. SNR: 1.00 : tfi

#### **Properties**

Prio recon	Off
Load images to viewer	On
Inline movie	On
Auto store images	On
Load images to stamp segments	On
Load images to graphic segments	On
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	1
Dist. factor	20 %
Position	L4.5 P24.0 F35.2 mm
Orientation	S > T-32.2 > C-17.4
Phase enc. dir.	A >> P
AutoAlign	
Phase oversampling	0 %
FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
TR	41.60 ms
TE	1.34 ms
Averages	1
Concatenations	1
Filter	Distortion Corr.(2D), Prescan Normalize, Image Filter
Coil elements	BO1,2;SP2

#### **Contrast - Common**

TR	41.60 ms
TE	1.34 ms
Magn. preparation	None
Flip angle	58 deg
Fat suppr.	None
Wrap-up Magn.	Restore

## **Contrast - Dynamic**

Averages 1	1
Averaging mode	Short term
Reconstruction N	Magnitude
Measurements 1	1
Multiple series	Off

#### **Resolution - Common**

FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
Base resolution	192
Phase resolution	100 %
Phase partial Fourier	Off
Trajectory	Cartesian
View sharing	Off
Interpolation	Off

#### **Resolution - iPAT**

PAT mode	GRAPPA
Accel. factor PE	2
Ref. lines PE	44
Reference scan mode	Integrated

#### **Resolution - Filter Image**

Image Filter	On
! Intensity	Medium
Edge Enhancement	3
Smoothing	2
Unfiltered images	Off
Distortion Corr.	On
Mode	2D
Unfiltered images	Off
Prescan Normalize	On
Unfiltered images	Off
Normalize	Off
B1 filter	Off

## **Resolution - Filter Rawdata**

Raw filter	Off	
Elliptical filter	Off	
POCS	Off	

## **Geometry - Common**

Slice group	1
Slices	1
Dist. factor	20 %
Position	L4.5 P24.0 F35.2 mm
Orientation	S > T-32.2 > C-17.4
Phase enc. dir.	A >> P
FoV read	360 mm
FoV phase	81.3 %
Slice thickness	8.0 mm
TR	41.60 ms
Multi-slice mode	Sequential
Series	Interl. in Bh.
Concatenations	1

## Geometry - AutoAlign

Slice group	1
AutoAlign	
Position	L4.5 P24.0 F35.2 mm
Orientation	S > T-32.2 > C-17.4
Phase enc. dir.	A >> P
Initial Position	L4.5 P24.0 F2.2
L	4.5 mm
Р	24.0 mm
F	2.2 mm
Initial Rotation	10.67 deg
Initial Orientation	S > T
S > T	-32.2
> C	-17.4

## **Geometry - Saturation**

Fat suppr.	None
Wrap-up Magn.	Restore
Special sat.	None

## **Geometry - Navigator**

Positioning mode	REF
Table position	F
Table position	33 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	Off - AutoCoilSelect

# **System - Adjustments**

B0 Shim mode	Cardiac
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto

# **System - Adjust Volume**

Position	L4.5 P24.0 F35.2 mm
Orientation	S > T-32.2 > C-17.4
Rotation	10.67 deg
A >> P	293 mm
F >> H	360 mm
R >> L	8 mm
Reset	Off

## System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

## Physio - Signal1

1st Signal/Mode	ECG/Retro
Average cycle	225 ± 213 ms
Average cycle	No Signal ms
Calculated phases	25
TR	41.60 ms
Concatenations	1
Segments	13
Arrhythmia detection	None

# Physio - Cardiac

Magn. preparation	None
Fat suppr.	None
Dark blood	Off
FoV read	360 mm
FoV phase	81.3 %
Phase resolution	100 %
Cine	On
Trajectory	Cartesian
View sharing	Off
Dummy heartbeats	1

# **Physio - PACE**

Resp. control	Breath-hold
Concatenations	1

#### **Inline - Common**

Subtract	Off
Measurements	1
StdDev	Off
Save original images	On

#### Inline - Cardiac

Inline Evaluation	Off
Magn. preparation	None
Contrasts	1
TE	1.34 ms
TR	41.60 ms
Save original images	On

## Inline - MIP

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

## **Inline - Composing**

Distortion Corr.	On
Mode	2D
Unfiltered images	Off

## Sequence - Part 1

Introduction	Off
Dimension	2D
Reordering	Linear
Asymmetric echo	Weak
Contrasts	1
Optimization	Min. TE TR
Multi-slice mode	Sequential
Echo spacing	3.2 ms
Sequence type	Trufi
Bandwidth	965 Hz/Px

## Sequence - Part 2

Define	Segments
Segments	13
Trufi delta freq.	0 Hz
RF pulse type	Fast
Gradient mode	Normal
Excitation	Slice-sel.
Flip angle mode	Constant
Cine	On

Mode	Min flip angle
Min flip angle	50 deg
Allowed delay	0 s

# \\USER\Cardiac\ALTERED SEQUENCES- TAILORED PROTOCOLS\STRESS MRI\tirm\_20\_db\_t2\_SAX

TA: 0:19 PM: REF Voxel size: 1.4×1.4×6.0 mmPAT: Off Rel. SNR: 1.00 : tir

#### **Properties**

Prio recon	Off
Load images to viewer	On
Inline movie	Off
Auto store images	On
Load images to stamp segments	On
Load images to graphic segments	On
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	3
Dist. factor	50 %
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
AutoAlign	
Phase oversampling	0 %
FoV read	360 mm
FoV phase	81.3 %
Slice thickness	6.0 mm
TR	800.0 ms
TE	53.0 ms
Averages	1
Concatenations	3
Filter	Distortion Corr.(2D),
	Prescan Normalize, Image Filter
Coil elements	BO1,2;SP1,2

## **Contrast - Common**

TR	800.0 ms
TE	53.0 ms
TD	0.0 ms
MTC	Off
Magn. preparation	Slice-sel. IR
ТІ	160 ms
Flip angle	180 deg
Fat suppr.	None
Water suppr.	None
Restore magn.	Off
Freeze suppressed tissue	Off
	·

## **Contrast - Dynamic**

Averages	1
Averaging mode	Long term
Reconstruction	Magnitude
Measurements	1
Multiple series	Off

#### **Resolution - Common**

FoV read	360 mm
FoV phase	81.3 %
Slice thickness	6.0 mm
Base resolution	256
Phase resolution	57 %
Phase partial Fourier	Off

#### **Resolution - Common**

Trajectory	Cartesian
Interpolation	Off

#### **Resolution - iPAT**

## **Resolution - Filter Image**

Image Filter	On
! Intensity	Medium
Edge Enhancement	3
Smoothing	2
Unfiltered images	Off
Distortion Corr.	On
Mode	2D
Unfiltered images	Off
Prescan Normalize	On
Unfiltered images	Off
Normalize	Off
B1 filter	Off

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

Raw filter	Off	
Elliptical filter	Off	

## **Geometry - Common**

Slice group	1
Slices	3
Dist. factor	50 %
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
FoV read	360 mm
FoV phase	81.3 %
Slice thickness	6.0 mm
TR	800.0 ms
Multi-slice mode	Sequential
Series	Ascending
Concatenations	3

## Geometry - AutoAlign

Slice group	1
AutoAlign	
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
Initial Position	Isocenter
L	0.0 mm
Р	0.0 mm
Н	0.0 mm
Initial Rotation	10.35 deg
Initial Orientation	Transversal

#### **Geometry - Saturation**

Fat suppr.	None
Water suppr.	None
Restore magn.	Off
Special sat.	None

## **Geometry - Navigator**

# **Geometry - Tim CT**

Tim CT mode	Off
Slices	3
Slice thickness	6.0 mm
Dist. factor	50 %
FoV read	360 mm
FoV phase	81.3 %

#### **System - Miscellaneous**

Positioning mode	REF
Table position	F
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	Off - AutoCoilSelect

# **System - Adjustments**

B0 Shim mode	Cardiac
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto

## **System - Adjust Volume**

Position	Isocenter
Orientation	Transversal
Rotation	10.35 deg
A >> P	293 mm
R >> L	360 mm
F >> H	24 mm
Reset	Off

## System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

# Physio - Signal1

1st Signal/Mode	ECG/Trigger
Average cycle	$225 \pm 213 \text{ ms}$
Average cycle	No Signal ms
Captured cycle	-not set-
Acquisition window	826 ms
Trigger pulse	2
Trigger delay	0 ms
TR	800.0 ms
Concatenations	3
Phases	1

## Physio - Cardiac

Magn. preparation	Slice-sel. IR
TI	160 ms
Fat suppr.	None
Dark blood	On
Dark blood thickness	200 %

## Physio - Cardiac

FoV read	360 mm
FoV phase	81.3 %
Phase resolution	57 %
Trajectory	Cartesian

## Physio - PACE

Resp. control	Off
Concatenations	3

## Inline - Common

Subtract	Off
Measurements	1
StdDev	Off
Save original images	On

#### Inline - MIP

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

## **Inline - Composing**

Distortion Corr.	On
Mode	2D
Unfiltered images	Off

# Sequence - Part 1

Introduction	Off
Dimension	2D
Compensate T2 decay	Off
Reduce Motion Sens.	Off
Contrasts	1
Flow comp.	No
Multi-slice mode	Sequential
Free echo spacing	Off
Echo spacing	4.8 ms
Bandwidth	849 Hz/Px

# Sequence - Part 2

Define	Turbo factor
Echo trains per slice	6
Phase correction	Automatic
Acoustic noise reduction	None
RF pulse type	Fast
Gradient mode	Normal
WARP	Off
Turbo factor	20

Mode	Off
Allowed delay	30 s

## \\USER\Cardiac\ALTERED SEQUENCES- TAILORED PROTOCOLS\STRESS MRI\OS BASELINE

TA: 9.6 s PM: REF Voxel size: 1.9×1.9×10.0 mmPAT: 2 Rel. SNR: 1.00 : tfi

#### **Properties**

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

## Routine

Slice group	1
Slices	2
Dist. factor	100 %
Position	L36.5 P10.9 F53.2 mm
Orientation	C > S38.2 > T-27.5
Phase enc. dir.	A >> P
AutoAlign	
Phase oversampling	0 %
FoV read	360 mm
FoV phase	81.3 %
Slice thickness	10.0 mm
TR	42.36 ms
TE	1.57 ms
Averages	1
Concatenations	2
Filter	Distortion Corr.(2D),
	Prescan Normalize,
	Image Filter
Coil elements	BO1,2;SP2

## **Contrast - Common**

TR	42.36 ms
TE	1.57 ms
Magn. preparation	None
Flip angle	35 deg
Fat suppr. Wrap-up Magn.	None
Wrap-up Magn.	Restore

## **Contrast - Dynamic**

Averages	1
Averaging mode	Short term
Reconstruction	Magnitude
Measurements	1
Multiple series	Each slice and
	measurement

#### **Resolution - Common**

FoV read	360 mm
FoV phase	81.3 %
Slice thickness	10.0 mm
Base resolution	192
Phase resolution	83 %
Phase partial Fourier	Off
Trajectory	Cartesian
View sharing	Off
Interpolation	Off

#### **Resolution - iPAT**

PAT mode	GRAPPA
Accel. factor PE	2
Ref. lines PE	26
Reference scan mode	Integrated

#### **Resolution - Filter Image**

Image Filter	On
! Intensity	Medium
Edge Enhancement	3
Smoothing	2
Unfiltered images	Off
Distortion Corr.	On
Mode	2D
Unfiltered images	Off
Prescan Normalize	On
Unfiltered images	Off
Normalize	Off
B1 filter	Off

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

Raw filter	Off	
Elliptical filter	Off	
POCS	Off	

## **Geometry - Common**

Slice group	1
Slices	2
Dist. factor	100 %
Position	L36.5 P10.9 F53.2 mm
Orientation	C > S38.2 > T-27.5
Phase enc. dir.	A >> P
FoV read	360 mm
FoV phase	81.3 %
Slice thickness	10.0 mm
TR	42.36 ms
Multi-slice mode	Sequential
Series	Descending
Concatenations	2

## Geometry - AutoAlign

Slice group	1
AutoAlign	
Position	L36.5 P10.9 F53.2 mm
Orientation	C > S38.2 > T-27.5
Phase enc. dir.	A >> P
Initial Position	L36.5 P10.9 F20.2
L	36.5 mm
P	10.9 mm
F	20.2 mm
Initial Rotation	-30.37 deg
Initial Orientation	C > S
C > S	38.2
> T	-27.5

## **Geometry - Saturation**

Fat suppr.	None
Wrap-up Magn.	Restore
Special sat.	None

# **Geometry - Navigator**

Positioning mode	REF
Table position	F
Table position	33 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	Off - AutoCoilSelect

# **System - Adjustments**

B0 Shim mode	Cardiac
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto

## **System - Adjust Volume**

L36.5 P10.9 F53.2 mm
C > S38.2 > T-27.5
-30.37 deg
293 mm
360 mm
30 mm
Off

## System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

## Physio - Signal1

1st Signal/Mode	ECG/Retro
Average cycle	225 ± 213 ms
Average cycle	No Signal ms
Calculated phases	25
TR	42.36 ms
Concatenations	2
Segments	12
Arrhythmia detection	None

# Physio - Cardiac

Magn. preparation	None
Fat suppr.	None
Dark blood	Off
FoV read	360 mm
FoV phase	81.3 %
Phase resolution	83 %
Cine	On
Trajectory	Cartesian
View sharing	Off
Dummy heartbeats	1

# **Physio - PACE**

Resp. control	Breath-hold
Concatenations	2

#### **Inline - Common**

Subtract	Off
Measurements	1
StdDev	Off
Save original images	On

#### Inline - Cardiac

Inline Evaluation	Off
Magn. preparation	None
Contrasts	1
TE	1.57 ms
TR	42.36 ms
Save original images	On

## Inline - MIP

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

## **Inline - Composing**

Distortion Corr.	On	
Mode	2D	
Unfiltered images	Off	

## Sequence - Part 1

Introduction	Off
Dimension	2D
Reordering	Linear
Asymmetric echo	Weak
Contrasts	1
Optimization	Min. TE TR
Multi-slice mode	Sequential
Echo spacing	3.5 ms
Sequence type	Trufi
Bandwidth	1240 Hz/Px

## Sequence - Part 2

Define	Segments
Segments	12
Trufi delta freq.	0 Hz
RF pulse type	Normal
Gradient mode	Normal
Excitation	Slice-sel.
Flip angle mode	Constant
Cine	On

Mode	Min flip angle
Min flip angle	50 deg
Allowed delay	0 s

# \\USER\Cardiac\ALTERED SEQUENCES- TAILORED PROTOCOLS\STRESS MRI\OS CONTINUOUS A CQUISITION

TA: 3:36 PM: REF Voxel size: 1.9×1.9×10.0 mmPAT: 2 Rel. SNR: 1.00 : tfi

## **Properties**

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

#### **Routine**

Slice group	1
Slices	2
Dist. factor	100 %
Position	L36.5 P10.9 F53.2 mm
Orientation	C > S38.2 > T-27.5
Phase enc. dir.	A >> P
AutoAlign	
Phase oversampling	0 %
FoV read	360 mm
FoV phase	75.0 %
Slice thickness	10.0 mm
TR	42.36 ms
TE	1.57 ms
Averages	1
Concatenations	2
Filter	Distortion Corr.(2D),
	Prescan Normalize
Coil elements	BO1,2;SP2

#### **Contrast - Common**

TR TE	42.36 ms
	1.57 ms
TD	0 ms
Magn. preparation	None
Flip angle	35 deg
Fat suppr.	None
Wrap-up Magn.	None

#### **Contrast - Dynamic**

Averages	1
Averaging mode	Short term
Reconstruction	Magnitude
Measurements	40
Pause after meas. 1	0.0 s
Pause after meas. 2	0.0 s
Pause after meas. 3	0.0 s
Pause after meas. 4	0.0 s
Pause after meas. 5	0.0 s
Pause after meas. 6	0.0 s
Pause after meas. 7	0.0 s
Pause after meas. 8	0.0 s
Pause after meas. 9	0.0 s
Pause after meas. 10	0.0 s
Pause after meas. 11	0.0 s
Pause after meas. 12	0.0 s

## **Contrast - Dynamic**

Pause after meas. 13	0.0 s
Pause after meas. 14	0.0 s
Pause after meas. 15	0.0 s
Pause after meas. 16	0.0 s
Pause after meas. 17	0.0 s
Pause after meas. 18	0.0 s
Pause after meas. 19	0.0 s
Pause after meas. 20	0.0 s
Pause after meas. 21	0.0 s
Pause after meas. 22	0.0 s
Pause after meas. 23	0.0 s
Pause after meas. 24	0.0 s
Pause after meas. 25	0.0 s
Pause after meas. 26	0.0 s
Pause after meas. 27	0.0 s
Pause after meas. 28	0.0 s
Pause after meas. 29	0.0 s
Pause after meas. 30	0.0 s
Pause after meas. 31	0.0 s
Pause after meas. 32	0.0 s
Pause after meas. 33	0.0 s
Pause after meas. 34	0.0 s
Pause after meas. 35	0.0 s
Pause after meas. 36	0.0 s
Pause after meas. 37	0.0 s
Pause after meas. 38	0.0 s
Pause after meas. 39	0.0 s
Multiple series	Off

#### **Resolution - Common**

FoV read	360 mm
FoV phase	75.0 %
Slice thickness	10.0 mm
Base resolution	192
Phase resolution	83 %
Phase partial Fourier	5/8
Trajectory	Cartesian
View sharing	Off
Interpolation	Off

## **Resolution - iPAT**

PAT mode	GRAPPA
Accel. factor PE	2
Ref. lines PE	26
Reference scan mode	Integrated

#### **Resolution - Filter Image**

Image Filter	Off
Distortion Corr.	On
Mode	2D
Unfiltered images	Off
Prescan Normalize	On
Unfiltered images	Off
Normalize	Off
B1 filter	Off

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

Raw filter	Off	
Elliptical filter	Off	

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

POCS Off			
1 003	IPULO	Off	

## **Geometry - Common**

Slice group	1
Slices	2
Dist. factor	100 %
Position	L36.5 P10.9 F53.2 mm
Orientation	C > S38.2 > T-27.5
Phase enc. dir.	A >> P
FoV read	360 mm
FoV phase	75.0 %
Slice thickness	10.0 mm
TR	42.36 ms
Multi-slice mode	Sequential
Series	Descending
Concatenations	2

## **Geometry - AutoAlign**

Slice group	1
AutoAlign	
Position	L36.5 P10.9 F53.2 mm
Orientation	C > S38.2 > T-27.5
Phase enc. dir.	A >> P
Initial Position	L36.5 P10.9 F20.2
L	36.5 mm
P	10.9 mm
F	20.2 mm
Initial Rotation	-30.37 deg
Initial Orientation	C > S
C > S	38.2
> T	-27.5

# **Geometry - Saturation**

Fat suppr.	None
Wrap-up Magn.	None
Special sat.	None

#### **Geometry - Navigator**

#### **System - Miscellaneous**

Positioning mode	REF
Table position	F
Table position	33 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	Off - AutoCoilSelect

#### **System - Adjustments**

B0 Shim mode	Cardiac
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto

#### **System - Adjust Volume**

Position	L36.5 P10.9 F53.2 mm
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## **System - Adjust Volume**

Orientation	C > S38.2 > T-27.5
Rotation	-30.37 deg
A >> P	270 mm
F >> H A >> P	360 mm
A >> P	30 mm
Reset	Off

## System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

## Physio - Signal1

1st Signal/Mode	ECG/Trigger
Average cycle	225 ± 213 ms
Average cycle	No Signal ms
Captured cycle	-not set-
Acquisition window	575 ms
Trigger pulse	1
Trigger delay	0 ms
TR	42.36 ms
Concatenations	2
Segments	12
Phases	13

# Physio - Cardiac

Magn. preparation	None
Fat suppr.	None
Dark blood	Off
FoV read	360 mm
FoV phase	75.0 %
Phase resolution	83 %
Cine	On
Trajectory	Cartesian
View sharing	Off
Dummy heartbeats	1

#### **Physio - PACE**

Resp. control	Off	
Concatenations	2	

## **Inline - Common**

Subtract	Off
Measurements	40
StdDev	Off
Save original images	On

## Inline - Cardiac

Inline Evaluation	Off
Magn. preparation	None
Contrasts	1
TE	1.57 ms
TR	42.36 ms
Save original images	On

#### Inline - MIP

MIP-Sag	Off
MIP-Cor	Off
MIP-Tra	Off
MIP-Time	Off

# SIEMENS MAGNETOM MAGNETOM\_ESSENZA

# Inline - MIP

Save original images	On

# Inline - Composing

Distortion Corr.	On
Mode	2D
Unfiltered images	Off

# Sequence - Part 1

Introduction	Off
Dimension	2D
Reordering	Linear
Asymmetric echo	Weak
Contrasts	1
Optimization	Min. TE TR
Multi-slice mode	Sequential
Echo spacing	3.5 ms
Sequence type	Trufi
Bandwidth	1240 Hz/Px

# Sequence - Part 2

Define	Segments
Segments	12
Trufi delta freq.	0 Hz
RF pulse type	Normal
Gradient mode	Normal
Excitation	Slice-sel.
Flip angle mode	Constant
Cine	On

Mode	Min flip angle
Min flip angle	50 deg
Allowed delay	0 s

# \\USER\Cardiac\ALTERED SEQUENCES-TAILORED PROTOCOLS\STRESS MRI\cine\_tf2d\_SA\_Rest

TA: 2:15 PM: REF Voxel size: 1.8×1.8×15.0 mmPAT: 2 Rel. SNR: 1.00 : fl

#### **Properties**

Prio recon	Off
Load images to viewer	On
Inline movie	On
Auto store images	On
Load images to stamp segments	On
Load images to graphic segments	On
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	3
Dist. factor	40 %
Position	Isocenter
Orientation	T > C-42.5 > S33.6
Phase enc. dir.	A >> P
AutoAlign	
Phase oversampling	31 %
FoV read	340 mm
FoV phase	75.0 %
Slice thickness	15.0 mm
TR	197.85 ms
TE	1.31 ms
Averages	1
Concatenations	1
Filter	Distortion Corr.(2D),
	Prescan Normalize
Coil elements	BO1,2;SP1,2

#### **Contrast - Common**

TR	197.85 ms
TE	1.31 ms
Magn. preparation	Non-sel. SR perf
TI	110 ms
Flip angle	10 deg
Fat suppr.	None
Wrap-up Magn.	None

#### **Contrast - Dynamic**

1
Long term
Magnitude
30
0.0 s

#### **Contrast - Dynamic**

Pause after meas. 15	0.0 s
Pause after meas. 16	0.0 s
Pause after meas. 17	0.0 s
Pause after meas. 18	0.0 s
Pause after meas. 19	0.0 s
Pause after meas. 20	0.0 s
Pause after meas. 21	0.0 s
Pause after meas. 22	0.0 s
Pause after meas. 23	0.0 s
Pause after meas. 24	0.0 s
Pause after meas. 25	0.0 s
Pause after meas. 26	0.0 s
Pause after meas. 27	0.0 s
Pause after meas. 28	0.0 s
Pause after meas. 29	0.0 s
Multiple series	Each slice

#### **Resolution - Common**

FoV read	340 mm
FoV phase	75.0 %
Slice thickness	15.0 mm
Base resolution	192
Phase resolution	73 %
Phase partial Fourier	Off
Trajectory	Cartesian
Interpolation	Off

#### **Resolution - iPAT**

PAT mode	GRAPPA
Accel. factor PE	2
Ref. lines PE	128
Reference scan mode	Integrated

# **Resolution - Filter Image**

Image Filter	Off
Distortion Corr.	On
Mode	2D
Unfiltered images	Off
Prescan Normalize	On
Unfiltered images	Off
Normalize	Off
B1 filter	Off

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

Raw filter	Off
Elliptical filter	Off
POCS	Off

## **Geometry - Common**

Slice group	1
Slices	3
Dist. factor	40 %
Position	Isocenter
Orientation	T > C-42.5 > S33.6
Phase enc. dir.	A >> P
FoV read	340 mm
FoV phase	75.0 %
Slice thickness	15.0 mm
TR	197.85 ms
Multi-slice mode	Single shot

## **Geometry - Common**

Series	Descending
Concatenations	1

# **Geometry - AutoAlign**

Slice group	1
AutoAlign	
Position	Isocenter
Orientation	T > C-42.5 > S33.6
Phase enc. dir.	A >> P
Initial Position	Isocenter
L	0.0 mm
Р	0.0 mm
Н	0.0 mm
Initial Rotation	26.84 deg
Initial Orientation	T > C
T > C	-42.5
> S	33.6

# **Geometry - Saturation**

	Fat suppr.	None
'	Wrap-up Magn.	None
	Special sat.	None

# **Geometry - Navigator**

## **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	Off - AutoCoilSelect

# **System - Adjustments**

B0 Shim mode	Cardiac	
Adjust with body coil	Off	
Confirm freq. adjustment	Off	
Assume Dominant Fat	Off	
Assume Silicone	Off	
Adjustment Tolerance	Auto	

# System - Adjust Volume

Position	Isocenter
Orientation	T > C-42.5 > S33.6
Rotation	26.84 deg
A >> P	255 mm
R >> L	340 mm
F >> H	57 mm
A >> P R >> L F >> H Reset	Off

#### System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

## Physio - Signal1

1st Signal/Mode	ECG/Trigger
Average cycle	225 ± 213 ms
Average cycle	No Signal ms
Captured cycle	225 ± 213 ms
Acquisition window	700 ms
Trigger pulse	2
Trigger delay	0 ms
TR	197.85 ms
Concatenations	1
Segments	69
Phases	1

# Physio - Cardiac

Magn. preparation	Non-sel. SR perf
TI	110 ms
Fat suppr.	None
Dark blood	Off
FoV read	340 mm
FoV phase	75.0 %
Phase resolution	73 %
Cine	Off
Trajectory	Cartesian
Dummy heartbeats	1

## **Physio - PACE**

Resp. control	Off
Concatenations	1

#### Inline - Common

Subtract	Off
Measurements	30
StdDev	Off
Save original images	On

#### Inline - Cardiac

Inline Evaluation	Off
Magn. preparation	Non-sel. SR perf
Contrasts	1
TE	1.31 ms
TR	197.85 ms
Save original images	On

## Inline - MIP

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

## **Inline - Composing**

Distortion Corr.	On
Mode	2D
Unfiltered images	Off

## Sequence - Part 1

•	
Introduction	Off
Dimension	2D
Reordering	Linear
Asymmetric echo	Weak
Contrasts	1
Flow comp.	No
Optimization	Min. TE
Multi-slice mode	Single shot

# SIEMENS MAGNETOM MAGNETOM\_ESSENZA

# Sequence - Part 1

Echo spacing	2.5 ms
Sequence type	Gre
Bandwidth	1184 Hz/Px

# Sequence - Part 2

Define	Segments
Segments	69
RF pulse type	Fast
Gradient mode	Normal
Excitation	Slice-sel.
Flip angle mode	Constant
RF spoiling	On
Phase Enc. Rewinder	On
Cine	Off

Mode	Min flip angle
Min flip angle	50 deg
Allowed delay	0 s

# \\USER\Cardiac\ALTERED SEQUENCES- TAILORED PROTOCOLS\STRESS MRI\cine\_tf2d\_SA\_Stres s\_Level1

TA: 2.7 s PM: FIX Voxel size: 1.8×1.8×9.0 mmPAT: 2 Rel. SNR: 1.00 : tfl

#### **Properties**

Prio recon	Off
Load images to viewer	On
Inline movie	On
Auto store images	On
Load images to stamp segments	On
Load images to graphic segments	On
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	4
Dist. factor	50 %
Position	Isocenter
Orientation	T > C-42.5 > S33.6
Phase enc. dir.	A >> P
AutoAlign	
Phase oversampling	31 %
FoV read	340 mm
FoV phase	75.0 %
Slice thickness	9.0 mm
TR	285.62 ms
TE	1.41 ms
Averages	1
Concatenations	2
Filter	Distortion Corr.(2D), Prescan Normalize
Coil elements	BO1,2;SP1,2

#### **Contrast - Common**

TR	285.62 ms
TE	1.41 ms
TD	0 ms
Magn. preparation	Non-sel. SR perf
ті	155 ms
Flip angle	12 deg
Fat suppr.	None
Wrap-up Magn.	None

#### **Contrast - Dynamic**

Averages	1
Averaging mode	Long term
Reconstruction	Magnitude
Measurements	3
Pause after meas. 1	0.0 s
Pause after meas. 2	0.0 s
Proton Dens. Maps	0
Multiple series	Each slice

#### **Resolution - Common**

FoV read	340 mm
FoV phase	75.0 %
Slice thickness	9.0 mm
Base resolution	192
Phase resolution	89 %

#### **Resolution - Common**

Phase partial Fourier	Off
Trajectory	Cartesian
Interpolation	Off

#### **Resolution - iPAT**

PAT mode	GRAPPA
Accel. factor PE	2
Ref. lines PE	128
Reference scan mode	GRE/separate

## **Resolution - Filter Image**

Image Filter	Off
Distortion Corr.	On
Mode	2D
Unfiltered images	Off
Prescan Normalize	On
Unfiltered images	Off
Normalize	Off
B1 filter	Off

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

Raw filter	Off
Elliptical filter	Off
POCS	Off

## **Geometry - Common**

Slice group	1
Slices	4
Dist. factor	50 %
Position	Isocenter
Orientation	T > C-42.5 > S33.6
Phase enc. dir.	A >> P
FoV read	340 mm
FoV phase	75.0 %
Slice thickness	9.0 mm
TR	285.62 ms
Multi-slice mode	Single shot
Series	Descending
Concatenations	2

## Geometry - AutoAlign

Slice group	1
AutoAlign	
Position	Isocenter
Orientation	T > C-42.5 > S33.6
Phase enc. dir.	A >> P
Initial Position	Isocenter
L	0.0 mm
Р	0.0 mm
Н	0.0 mm
Initial Rotation	26.84 deg
Initial Orientation	T > C
T > C	-42.5
> S	33.6

## **Geometry - Saturation**

Fat suppr.	None
Wrap-up Magn.	None
Special sat.	None

# **Geometry - Navigator**

## **System - Miscellaneous**

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	Adaptive Combine
Save uncombined	Off
Matrix Optimization	Off
AutoAlign	
Coil Select Mode	Off - AutoCoilSelect

## **System - Adjustments**

B0 Shim mode	Cardiac	
Adjust with body coil	On	
Confirm freq. adjustment	Off	
Assume Dominant Fat	Off	
Assume Silicone	Off	
Adjustment Tolerance	Auto	

## System - Adjust Volume

Position	Isocenter
Orientation	T > C-42.5 > S33.6
Rotation	26.84 deg
A >> P	255 mm
R >> L	340 mm
F >> H	50 mm
Reset	Off

## System - Tx/Rx

Frequency 1H	63.672133 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

# Physio - Signal1

1st Signal/Mode	ECG/Trigger
Average cycle	225 ± 213 ms
Average cycle	No Signal ms
Captured cycle	225 ± 213 ms
Acquisition window	974 ms
Trigger pulse	1
Trigger delay	0 ms
TR	285.62 ms
Concatenations	2
Segments	84
Phases	1

## Physio - Cardiac

Non-sel. SR perf
155 ms
None
Off
340 mm
75.0 %
89 %
Off
Cartesian
0

# Physio - Cardiac Motion Correction

Physio - PACE	
Resp. control	Off
Concatenations	2

Advanced

#### **Inline - Common**

Subtract	Off
Measurements	3
StdDev	Off
Motion Correction	Advanced
Save original images	On

#### Inline - Cardiac

Inline Evaluation	Off
Magn. preparation	Non-sel. SR perf
Contrasts	1
TE	1.41 ms
TR	285.62 ms
Motion Correction	Advanced
Save original images	On

## Inline - MIP

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

## **Inline - Composing**

Distortion Corr.	On
Mode	2D
Unfiltered images	Off

## Sequence - Part 1

Introduction	Off
Dimension	2D
Reordering	Linear
Asymmetric echo	Weak
Contrasts	1
Flow comp.	No
Optimization	Min. TE
Multi-slice mode	Single shot
Echo spacing	3.1 ms
Sequence type	Gre
Bandwidth	651 Hz/Px

## Sequence - Part 2

Define	Shots
Shots per slice	1
Segments	84
RF pulse type	Fast
Gradient mode	Normal
Excitation	Slice-sel.
Flip angle mode	Constant
RF spoiling	On
Phase Enc. Rewinder	On
Cine	Off

Mode	Min flip angle
Min flip angle	50 deg
Allowed delay	0 s